SEE SHEET 1A FOR INDEX AND GENERAL NOTES

STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION

PLAN AND PROFILE OF PROPOSED STATE HIGHWAY

CLEVELAND COUNTY

Beginning At Sta 10+00, A Point In The ℄ Of N.C. 18 South (S. Lafayette St.) In Shelby And Running Thence In A Northly Direction, Crossing U.S. 74 Bypass, To A Point In The ℄ Of N.C. 18 South Just North Of Its Intersection With West Graham St In Shelby. End Sta 56+77.

This Project Consist Of Curb And Gutter, Re-Surfacing, Widening, Grading, Drainage, And Structure.

THESE PLANS MICROFILMED BY NORTH CAROLINA STATE HIGHWAY COMMISSION REPRODUCTION DEPT.

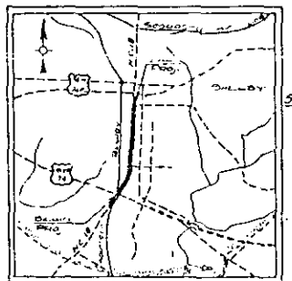
I-D ROAD UNIT	STATE	STATE PROJ. REF. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
14	N.C.	9 7122902		2	59

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION

CONVENTIONAL SIGNS

- County Line
- Township Line
- City or Town Line
- Right of Way Line
- Survey Line
- Property or Exist. Right of Way Line
- Fence
- Proposed Road
- Existing Road
- Railroad
- Control of Access Line
- Slope Stake Line
- Bridge
- Culvert
- Woods
- Telephone or Telegraph Pole
- Power Line and Line
- Power Pole
- Proposed Right of Way Marker
- Existing Right of Way Marker
- Guard Rail
- Prop Sidewalk

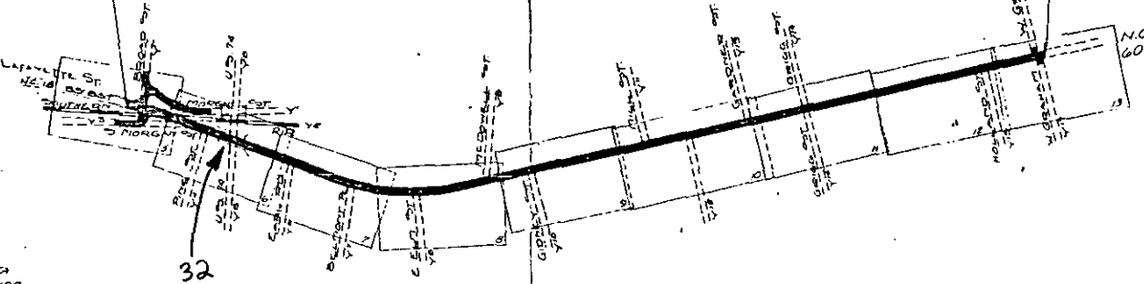
GRAPHIC SCALES
PLANS
PROFILE (HOR.)
PROFILE (VERT.)
TITLE SHEET
CROSS SECTIONS



SKETCH MAP SHOWING SHIPPING POINT AND LOCATION OF STATE PROJ. 9 7122902.

STA 10+00 BEG STATE PROJ 9 7122902

STA 56+77 END STATE PROJ 9 7122902



32

Prepared in Office of
STATE HIGHWAY COMMISSION
RALEIGH, N. C.

DESIGN DATA	
1970 ADT	12,100
1990 ADT	19,300
DHV	12 %
D	60 %
TTST	8 - 3%
V	35 MPH

Surveyed by: R O PURNELL
Plans Prepared by: Roby WALKER
Date:

Spec. 9.3 Rev.
State Standard Specifications
Approved by Bureau Control

LENGTH OF ROADWAY STATE PROJECT 9 7122902 = .851 MI
LENGTH OF STRUCTURES STATE PROJECT 9 7122902 = .034 MI
TOTAL LENGTH STATE PROJECT 9 7122902 = .885 MI

R/W ON THIS PROJ IS 80' OR AS SHOWN ON PLANS

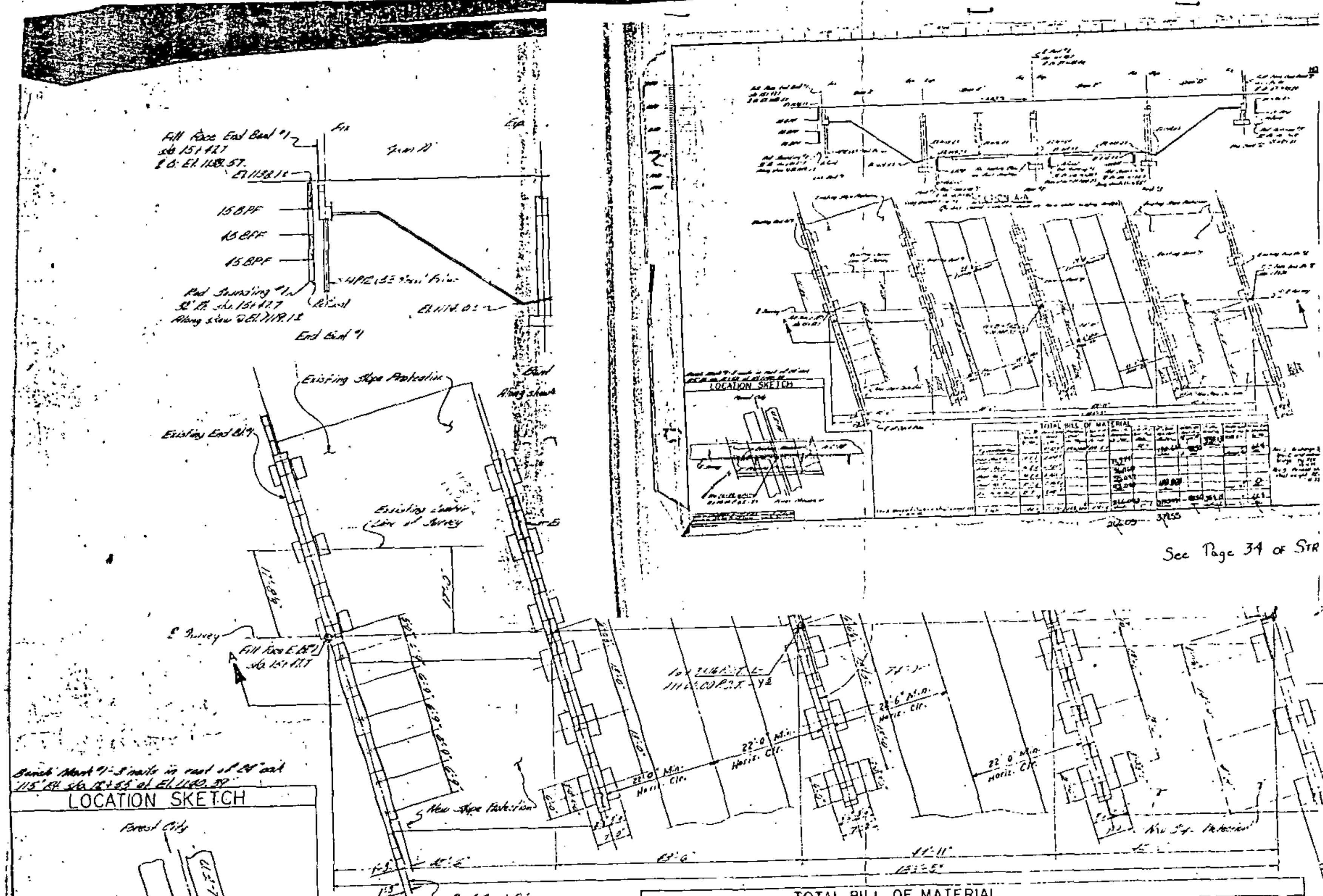
APPROVED

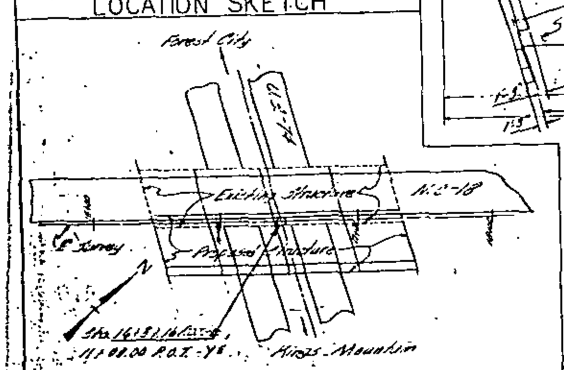
DEPARTMENT OF COMMERCE
BUREAU OF PUBLIC ROADS

APPROVED

DIVISION ENGINEER DATE

9 7122902





12. Traffic is to be maintained on N.C. 18. See Special Provisions.
13. For the Staging of Construction, See Special Provisions.
14. Traffic on U.S. 74 is to be maintained. See Special Provisions.

"I HEREBY CERTIFY THIS STRUCTURE WAS BUILT ACCORDING TO PLANS EXCEPT AS NOTED HEREIN."
RESIDENT ENGINEER E.R. Nichols

MR. C. B. PATTON, AREA STRUCTURE ENGINEER, DISCUSSED PAYMENT FOR UNCLASSIFIED EXCAVATION FOR STRUCTURE WITH THE RALEIGH OFFICE. IT WAS DECIDED THAT NO PAYMENT WOULD BE MADE FOR THIS ITEM EXCEPT FOR SLOPING THE EXISTING CUT SLOPE TO MAKE IT TIE TO THE NEW SLOPE PROTECTION.

TOTAL BILL OF MATERIAL

	Class A Concrete Cu. Yds.	Reinforcing Steel Lbs.	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	HP 12x53 Steel Piles No. / Lin. Ft.	[illegible]	[illegible]	[illegible]
Superstructure		17,123	146,100	117.5		22	190,661	98.50	35,513	Lump Sum	614
End Bent No. 1	33.3	2,414			7,959						
Bent No. 1	36.2	5,281			46,960						
Bent No. 2	34.9	6,005			55,647						
Bent No. 3	35.1	5,559			42,090		168,888			Lump Sum	0
End Bent No. 2	25.7	3,412									
Totals	183.5	[illegible]	146,100	117.5	[illegible]	22	[illegible]	98.50	35,513	[illegible]	614

* See Supplemental Agreement #12-149-3855.

Rev 1. Revised structural steel weight [illegible] by [illegible]

Rev 2: To change span length Span C and overall length bridge. By KEK. 12-12-72

REVISION 3 - SEE ATTACHED SHEET

SEE PAGE 34 OF STRUCTURE PAY RECORD BOOK #1.

Reel# 1026
Pos# 2

PROJECT No. 9.7122902
CLEVELAND COUNTY
#32 STATION: 16+39.16 -L- = 11+00.00 -Y5-

STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION
RALEIGH

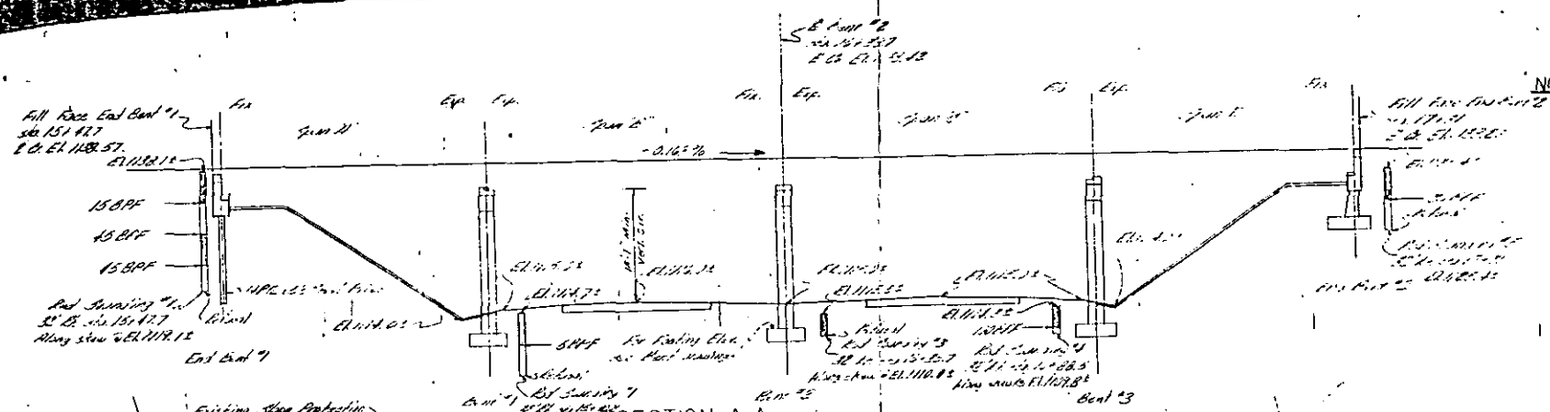
GENERAL DRAWING FOR WIDENING OF N.C.-16 OVER U.S.-74

DEC. 1971

REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1	CKS	7-22-72	3		
2	FZY	12-12-72	4		

FED. ROAD SYS. NO.	STATE	PROJECT NO.
	N.C.	9.7122902
A.A. PROJECT		

Sheet 49 of 84

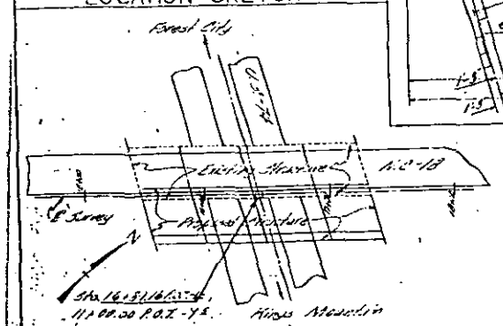


SECTION A-A

(Existing ground elevations shown are those under existing bridge)

Bench Mark #1-3 nails in root of 24" oak
115' Rt. Sta 16+55 of ℄ L16.39

LOCATION SKETCH



NOTES

1. Reinforcing steel to be epoxy coated.
2. For temporary shoring, see Sheet 3. See plan sheet.
3. Elevations of bent caps are top of bent caps at ends of caps.
4. Bridge to be constructed on a tangent.
5. Design Live Loading HS-20 Modified.
6. The Contractor will be required to submit working drawings of cofferdams for approval. See Special Provisions.
7. See Special Provisions for method of turning bridge back and making and applying the amount of deduction.
8. Class AA concrete shall be used in the superstructure and Class A concrete shall be used in all other portions of the structure. See Special Provisions and Specifications.
9. All rubber bearing pads will be required in any kind of structure except as provided in the Special Provisions.
10. For removal of portion of existing structure, see Special Provisions.
11. Cleaning and painting of existing beams and the placing of shear pegs in existing beams are to be measured in Structural Steel. Pay Items as per Special Provisions.
12. Traffic is to be maintained on N.C. 18. See Special Provisions.
13. For the Staging of Construction, See Special Provisions.
14. Traffic on U.S. 74 is to be maintained. See Special Provisions.
15. Excavation should be kept back from pavement for footing of bent #1 and No. 2 pile bents so as not to undermine the pavement. Excavation will be permitted to encroach on the pavement only to the extent necessary to place the footing.

See Note 14 of Rev. 1

"I HEREBY CERTIFY THIS STRUCTURE WAS BUILT ACCORDING TO PLANS EXCEPT AS NOTED HEREIN."

RESIDENT ENGINEER R.R. Nichols

See Page 34 of Structure Plan Record Book #1.

PROJECT No. 9.7122902

CLEVELAND COUNTY

STATION: 16+39.16-L-
11+00.00-Y2

TOTAL BILL OF MATERIAL

	Class "A" Concrete (Superstructure) C.Y.	Reinforcing Steel Lbs.	Structural Steel Lbs.	Class "AA" Concrete (Superstructure) C.Y.	Class "A" Concrete (Substructure) C.Y.	Class "AA" Concrete (Substructure) C.Y.	Class "A" Concrete (Slope Protection) C.Y.	Class "AA" Concrete (Slope Protection) C.Y.	Metal Bridge Rail Lin. Ft.	Bridge Slope Protection Sq. Yds.	Anchor Pile Points Each	Pile Extensions for Abutments Lin. Ft.
		17,100	115,100	114.5								614
Superstructure									355.15			
End Bent #1	15.9	2,340			71.9							
Bent #2	15.2	2,221			44.960							
Bent #3	14.8	2,225			33.247							
Bent #4	15.1	2,340			27.090							
End Bent #5	15.7	2,418										
Totals	114.5	25,644	115,100	114.5	177.397				355.15	98.50		614

Rev 1: To change Span Length, Span C and overall length of bridge. By KEK. 12-12-12

REVISION 3 - SEE ATTACHED SHEET

Mr. C. B. Patton, Area Structure Engineer, Discussed Payment For Unclassified Excavation For Structure With The Raleigh Office. It Was Decided That No Payment Would Be Made For This Item Except For Sloping The Existing Cut Slope To Make It Tie To The New Slope Protection.

Rev 1: Revised Station, Sizes, Weights, etc. By KEK

* See Supplemental Agreement #2-149-3955.

STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION
RALEIGH

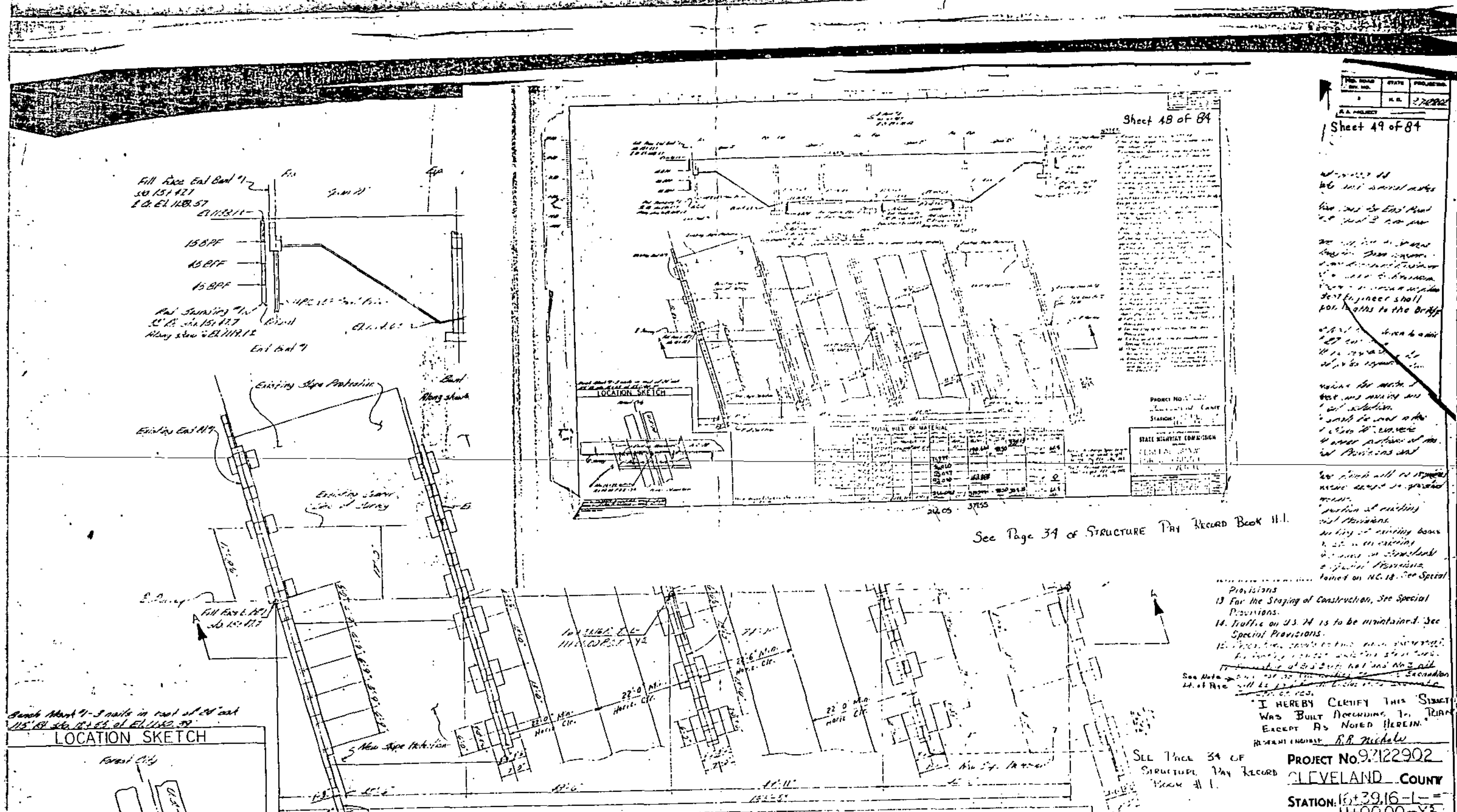
GENERAL DRAWING FOR WIDENING OF N.C. 18 OVER U.S. 74

DEC. 871

REVISIONS						SHEET NO. 1
NO.	BY	DATE	NO.	BY	DATE	TOTAL SHEETS 84
1	CRS	7-20-73	3			
2	TJH	11-19-73	4			

DRAWN BY: Richard N. Clegg DATE: 12-20-72
CHECKED BY: John W. Wilson DATE: 2-20-73

M 12-31 | CHD W-KEK | 12-12-12 | 87 OF 84



MR. C. B. Patton, Area Structure Engineer, Discussed Payment For Unclassified Excavation For Structure With The Raleigh Office. It Was Decided That No Payment Would Be Made For This Item Except For Sloping The Existing Cut Slope To Make It Tie To The New Slope Protection.

TOTAL BILL OF MATERIAL

Superstructure		[illegible]	146,100	111.5			190,661		98.50	354.13		614
[illegible] No. 1	13.3	[illegible]			71,939							
End Bent No. 1	36.2	[illegible]			46,960							
[illegible] No. 2	34.8	[illegible]			55,047							
[illegible] No. 3	35.1	[illegible]			97,090		188,888					0
End Bent No. 2	25.7	[illegible]										
Totals	144.5	[illegible]	146,100	111.5	[illegible]		379,549		98.50	354.13		614

* See Supplemental Agreement #Y2-149-3755

Rev 2: To change Span length Span C and overall length bridge. By [illegible]

Revision 3 — See Attached Sheet

"I Hereby Certify This Structure Was Built According To Plans Except As Noted Herein."

Resident Engineer R. R. Nichols

See Page 34 of Structure Pay Record Book #1.

PROJECT No. 9.7122902

CLEVELAND COUNTY

STATION: 16+39.16 -L- = 11+00.00 -Y2-

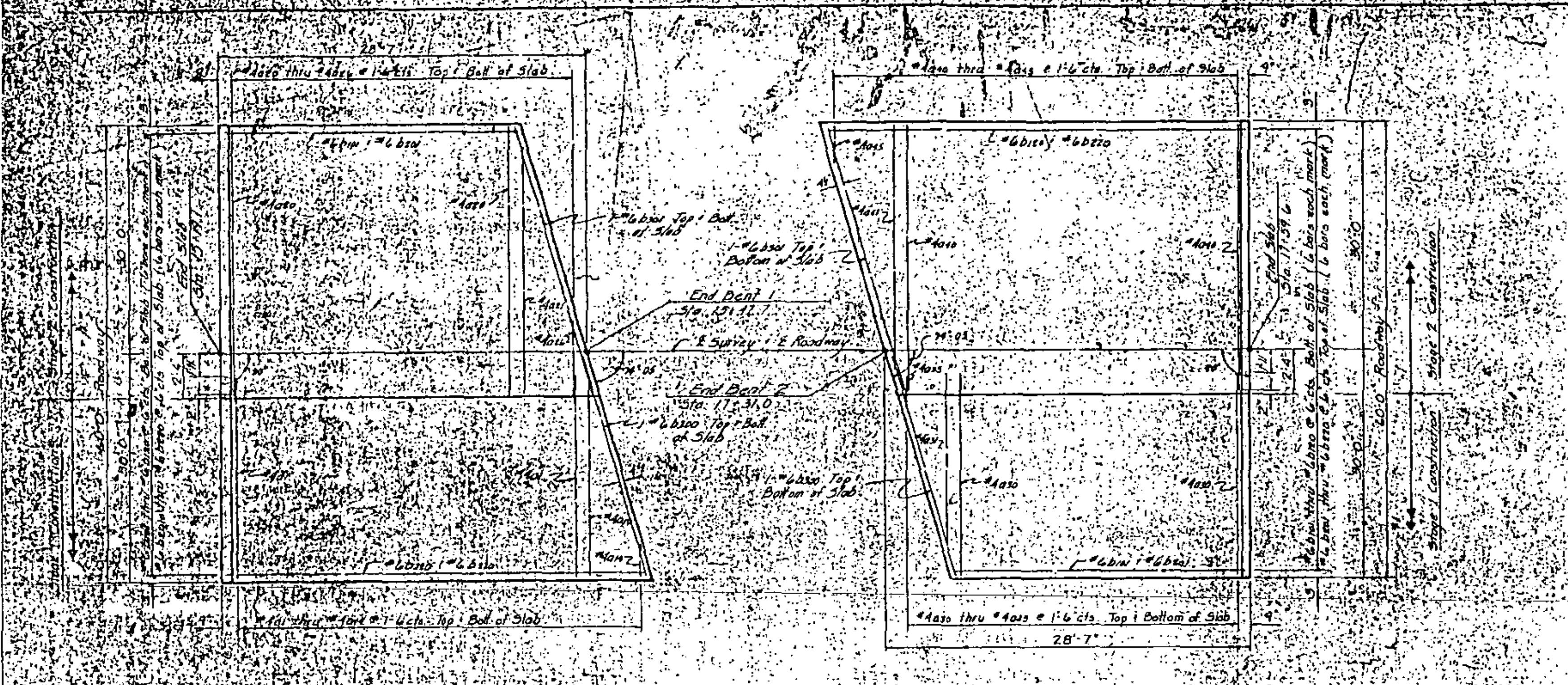
STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION
RALEIGH

GENERAL DRAWING FOR WIDENING OF N.C.-16 OVER U.S.-74

DEC. 1971

REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1	[illegible]	[illegible]	3		
2	[illegible]	[illegible]	4		

Sheet 50 of 84



BILL OF MATERIAL

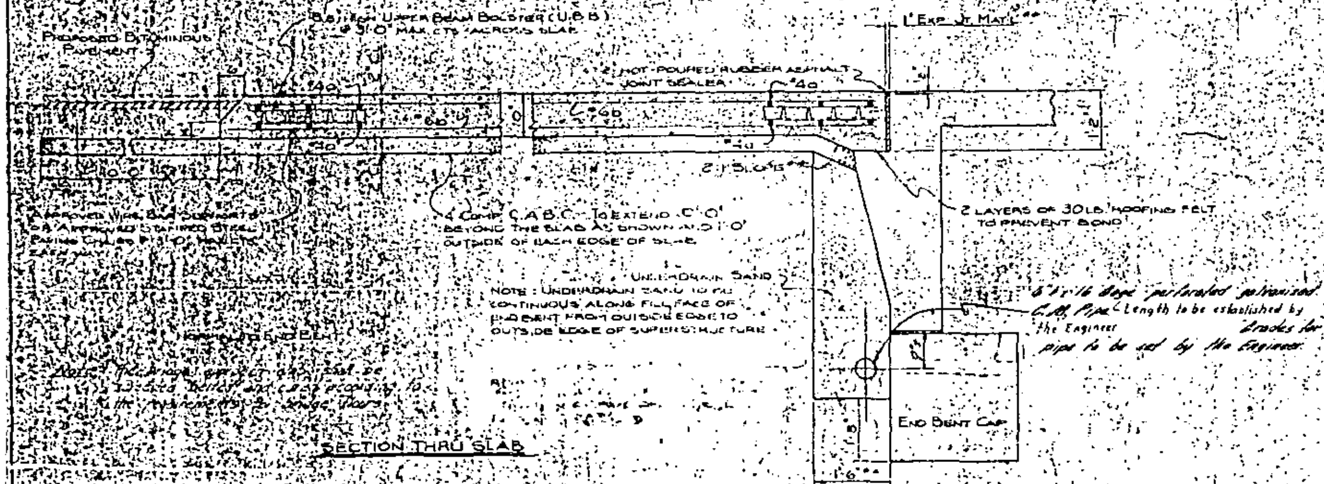
TWO APPROACH SLABS

BAR	NO	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO	SIZE	TYPE	LENGTH	WEIGHT
a1	38	#4	Str.	31'-3"	793	b109	12	#6	Str.	26'-5"	476
a10	2	#4	Str.	26'-9"	36	b110	12	#6	Str.	27'-4"	492
a11	2	#4	Str.	21'-6"	29	b111	12	#6	Str.	28'-2"	508
a12	2	#4	Str.	16'-3"	22	b112	12	#6	Str.	29'-1"	524
a13	2	#4	Str.	10'-11"	15	b113	12	#6	Str.	29'-11"	539
a14	2	#4	Str.	5'-7"	7	b114	12	#6	Str.	30'-9"	554
a20	26	#4	Str.	32'-0"	556	b115	12	#6	Str.	31'-7"	570
a21	2	#4	Str.	30'-9"	41	b116	12	#6	Str.	32'-5"	585
a22	2	#4	Str.	25'-6"	34	b117	12	#6	Str.	33'-2"	598
a23	2	#4	Str.	20'-2"	27	b118	12	#6	Str.	34'-0"	614
a24	2	#4	Str.	15'-0"	20	b119	12	#6	Str.	34'-10"	628
a25	2	#4	Str.	9'-9"	13	b120	12	#6	Str.	35'-8"	643
a26	2	#4	Str.	4'-4"	6	b201	12	#6	Str.	19'-2"	346
a30	26	#4	Str.	25'-11"	502	b202	12	#6	Str.	20'-0"	360
a31	2	#4	Str.	27'-8"	37	b203	12	#6	Str.	20'-10"	375
a32	2	#4	Str.	22'-5"	30	b204	12	#6	Str.	21'-8"	391
a33	2	#4	Str.	17'-1"	23	b205	12	#6	Str.	22'-6"	406
a34	2	#4	Str.	11'-11"	16	b206	12	#6	Str.	23'-4"	421
a35	2	#4	Str.	6'-7"	9	b207	12	#6	Str.	24'-3"	437
a40	38	#4	Str.	32'-0"	812	b208	12	#6	Str.	25'-1"	452
a41	2	#4	Str.	26'-9"	36	b209	12	#6	Str.	25'-11"	467
a42	2	#4	Str.	21'-6"	29	b210	12	#6	Str.	26'-10"	484
a43	2	#4	Str.	16'-3"	22	b211	12	#6	Str.	27'-8"	499
a44	2	#4	Str.	10'-11"	15	b212	12	#6	Str.	28'-7"	515
a45	2	#4	Str.	5'-7"	7	b213	12	#6	Str.	29'-5"	530
						b214	12	#6	Str.	30'-3"	546
b101	12	#6	Str.	19'-8"	354	b215	12	#6	Str.	31'-1"	560
b102	12	#6	Str.	20'-6"	369	b216	12	#6	Str.	31'-11"	575
b103	12	#6	Str.	21'-4"	385	b217	12	#6	Str.	32'-8"	589
b104	12	#6	Str.	22'-2"	400	b218	12	#6	Str.	33'-6"	604
b105	12	#6	Str.	23'-0"	415	b219	12	#6	Str.	34'-4"	619
b106	12	#6	Str.	23'-10"	430	b220	12	#6	Str.	35'-2"	634
b107	12	#6	Str.	24'-9"	446	b300	4	#6	Str.	30'-9"	185
b108	12	#6	Str.	25'-7"	461	b301	4	#6	Str.	33'-2"	199

STAGE 1 CONSTRUCTION
Class "A-A" Concrete Cu. Yds. – 48.3

STAGE 2 CONSTRUCTION
Class "A-A" Concrete Cu. Yds. 58.5

TOTAL
Reinforcing Steel Lbs. 23381
Class "A-A" Concrete Cu. Yds. 106.8



SECTION THRU SLAB

See Pages 12 & 28 of the Structure Pay Record Book #1.

Rev. No 2 – To change bar support designation. By K.G.P.

PROJECT No. 9.7122902
CLEVELAND COUNTY
STATION: 16+39.16 -L-

STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION
RALEIGH

BRIDGE APPROACH SLAB FOR FLEXIBLE PAVEMENT

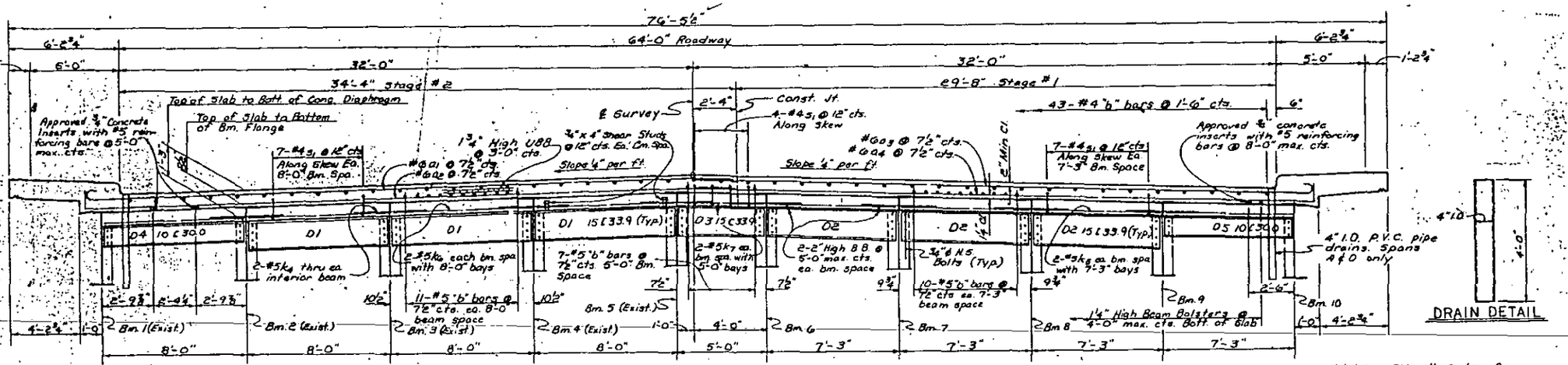
FEB 19

REVISIONS

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

		9.7122902

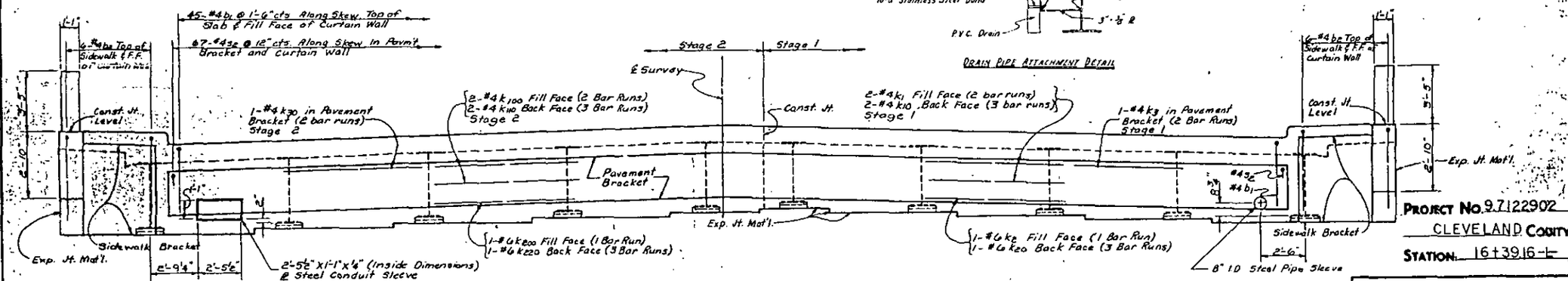
Sheet 51 of 89



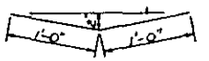
TYPICAL SECTION
SHOWING DIAPHRAGMS AT BENTS

Note: See Sidewalk Section for reinforcement & dimensions

DRAIN PIPE ATTACHMENT DETAIL

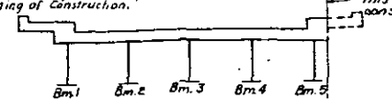


END ELEVATION



Detail of #5 reinforcing bar to be placed parallel to beams.

Traffic to be maintained on existing structure until Stage I is complete. Then existing deck is to be removed and existing beams raised and placed on cap buildups. See Special Provisions for Staging of Construction.



NOTE: The Conduit Sleeves and Pipe Sleeves are to be flush with both faces of the End Curtain Walls If necessary, field bend the reinforcing Steel to provide for the Sleeves. For responsibility of furnishing and placing the Inserts, #5 reinforcing Bars and Sleeves, see the Special Provisions.

See Page 32 of Structure Tan Record Book 11.

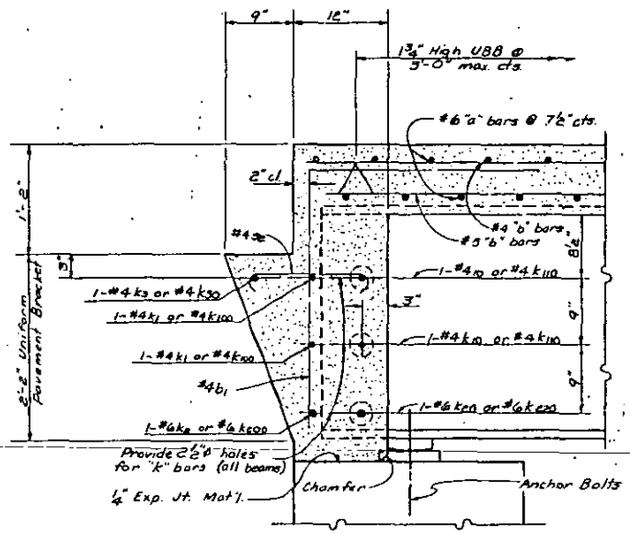
Drawn by: R. W. Moore Date: 2-10-71
Checked by: John O. Wilson Date: 3-22-71

PROJECT No. 9.7122902
CLEVELAND COUNTY
STATION: 16+39.16 -L-

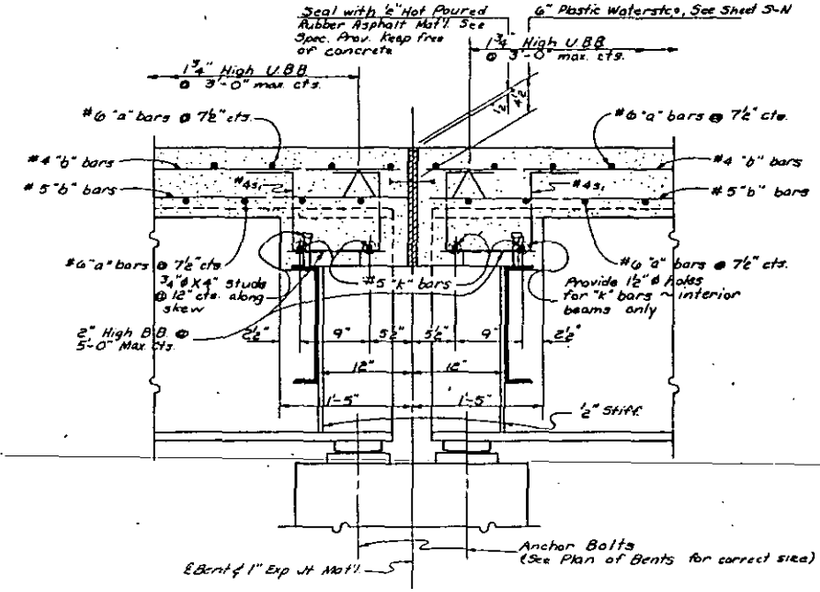
STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION
RALEIGH
SUPERSTRUCTURE TYPICAL SECTIONS
FEB. 197

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	
1			3			TOTAL SHEETS
2			4			89

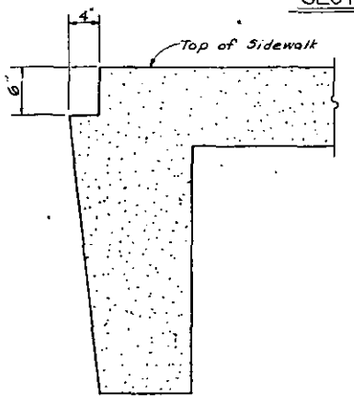
Sheet 52 of 84



SECTION A-A

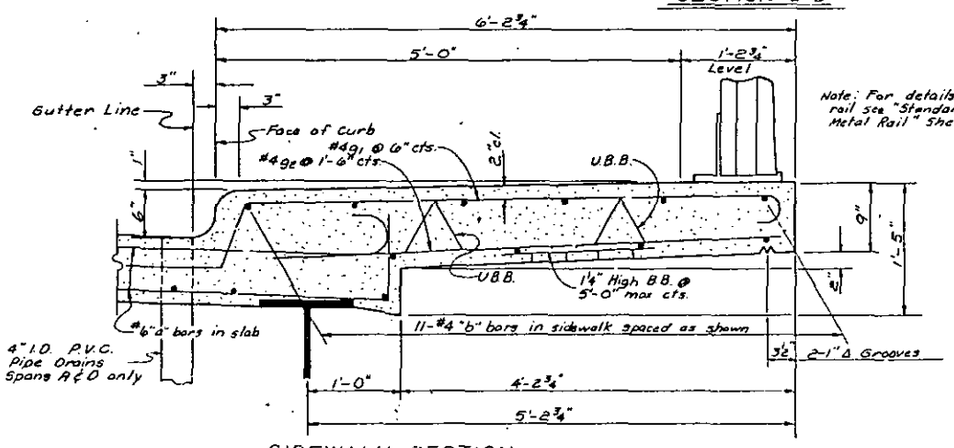


SECTION B-B



SIDEWALK BRACKET

REINFORCING NOT SHOWN



Note: For details of metal rail see "Standard 3 Bar Metal Rail" Sheet.

SIDEWALK SECTION

See Page 32 of Structure Pay Record Book #1

PROJECT No. 9.7122902
CLEVELAND COUNTY
STATION: 16+39.16 -L-

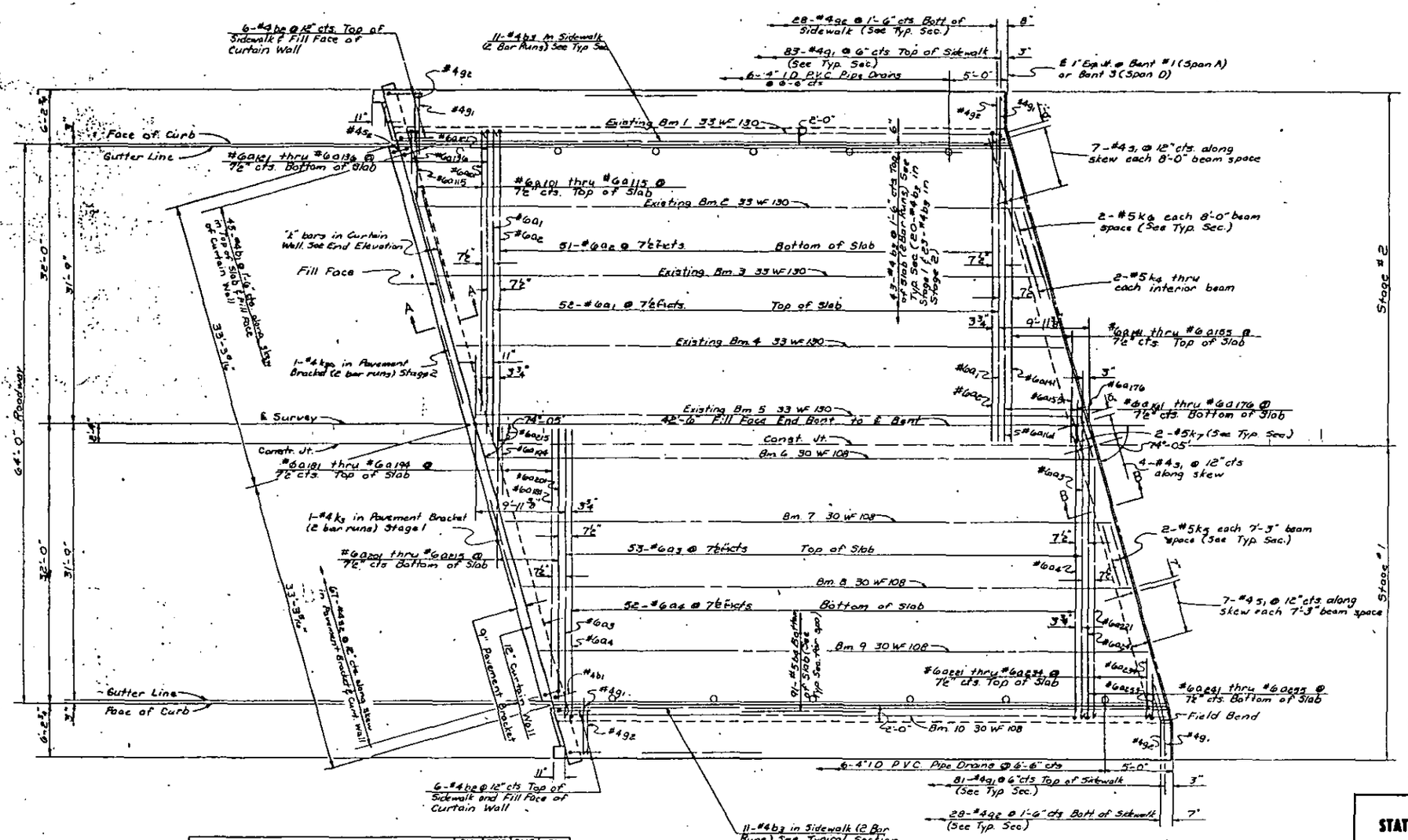
STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION
RALEIGH
SUPERSTRUCTURE TYPICAL SECTIONS

FEB. 1977

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

DRAWN BY: R. J. Mport DATE: 2-14-77
CHECKED BY: John A Wilson DATE: 3-97-77

Sheet 53 of 99



DEAD LOAD DEFLECTION	BM. 1	BMS 2-5	BMS 6-9	BM. 10
DEF. DUE TO WEIGHT OF STEEL	1/16"	1/16"	1/16"	1/16"
DEF. DUE TO SUPERIMPOSED DEAD LOAD	3/8"	5/16"	3/8"	9/16"
TOTAL DEAD LOAD DEFLECTION	7/16"	3/8"	7/16"	5/8"

NO SHOP CAMBER REQUIRED. TURN NATURAL MILL CAMBER UP

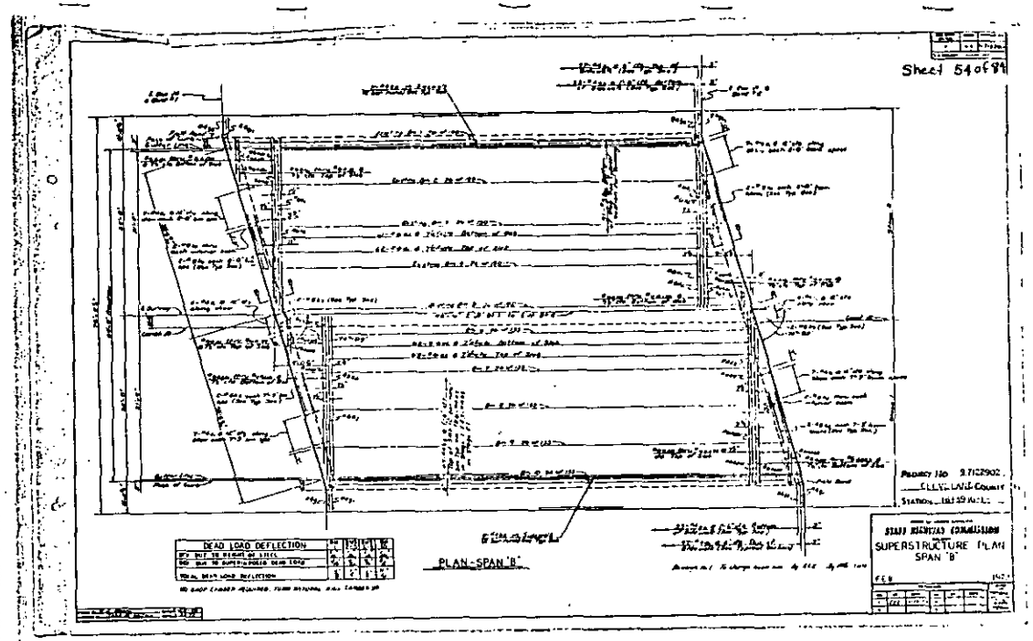
PLAN - SPAN "A"
SPAN "D" SIMILAR

SEE PAGE 32 OF STRUCTURE DAY RECORD BOOK #1

Project No. 9.7122902
Cleveland County
Station: 16+39.16-L-

STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION
RALEIGH
SUPERSTRUCTURE PLAN
SPAN "A" OR SPAN "D"
FEB 1972

Drawn by Rod Moore Date 2-21-72
Checked by Vicha B. Wilson Date 3-17-72



SEE PAGE 32 OF STR. PAY RECORD BOOK #1.

DEAD LOAD DEFLECTION					

PLAN-SPAN "B"

SUPERSTRUCTURE PLAN SPAN "B"

DEAD LOAD DEFLECTION #2	BM. 1	BMS 2-5	BMS 6-9	BM. 10
DEF. DUE TO WEIGHT OF STEEL	7/8"	1"	1"	7/8"
DEF. DUE TO SUPERIMPOSED DEAD LOAD	5/8"	3/4"	3/4"	5/8"
TOTAL DEAD LOAD DEFLECTION	1 1/2"	1 3/4"	1 3/4"	1 1/2"

NO SHOP CAMBER REQUIRED. TURN NATURAL MILL CAMBER UP.

Bm. 8 36 WF 150

Bm. 9 36 WF 150

Bm. 10 36 WF 150

7-#4g1 @ 12" ctrs. along skew each 7'-3" beam space

2-#5kg thru each interior beam

2-#5kg each 7'-3" beam space (See Typ. Sec.)

#6g01 thru #6g03 @ 7½ ctrs. Top of Slab

#6g01 thru #6g03 @ 7½ ctrs. Bottom of Slab

#6g01 thru #6g03 @ 7½ ctrs. Bottom of Slab

#6g01 thru #6g03 @ 7½ ctrs. Top of Slab

#5-#4b5 @ 1'-6" ctrs. Top of Slab (2 bar runs) See Typ. Sec. (20-#4b5 in Stage 1 & 3-#4b5 in Stage 2)

11-#4b5 in Sidewalk (2 bar runs) See Typ. Sec.

33-#4g2 @ 1'-6" ctrs. Bottom of Sidewalk (See Typ. Sec.)

97-#4g1 @ 6" ctrs. Top of Sidewalk (See Typical Section)

Field Bend

Face of Curb

Gutter Line

Const. Joint

Stage 1

Stage 2

PLAN-SPAN "B"

SEE PAGE 32 OF STR. PAY RECORD BOOK #1.

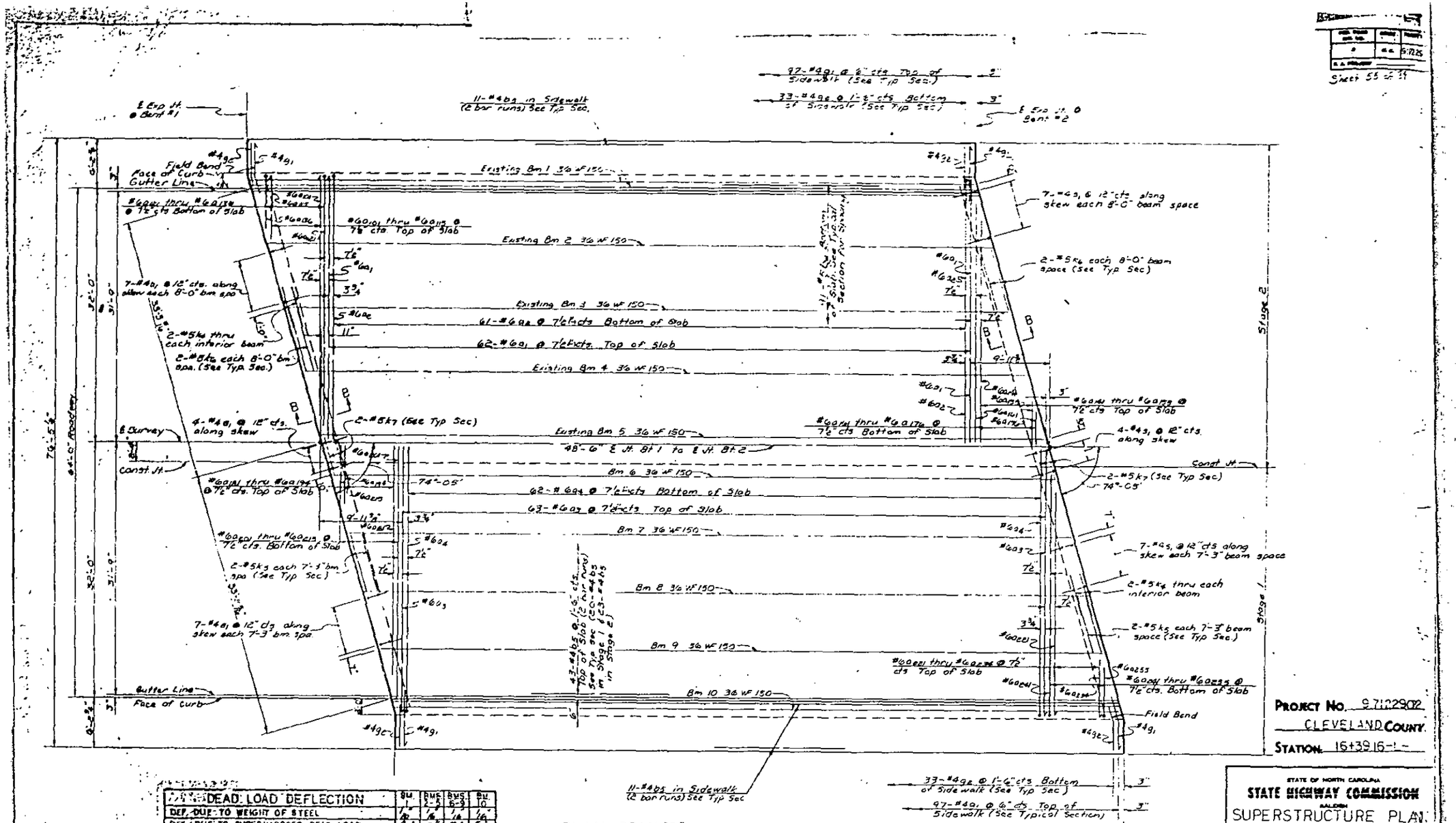
PROJECT NO. 9.7122902

CLEVELAND COUNTY

STATION 16+39.16-L

STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION
RALEIGH
SUPERSTRUCTURE PLAN
SPAN "B"
FEB. 192

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



PLAN - SPAN "B"

DEAD LOAD DEFLECTION	Bm 1	Bms 2-5	Bms 6-9	Bm 10
DEF. DUE TO WEIGHT OF STEEL	1"	1"	1"	1"
DEF. DUE TO SUPERIMPOSED DEAD LOAD	3/16	3/16	1/16	5/16
TOTAL DEAD LOAD DEFLECTION	5/8"	1/2"	1/2"	11/16

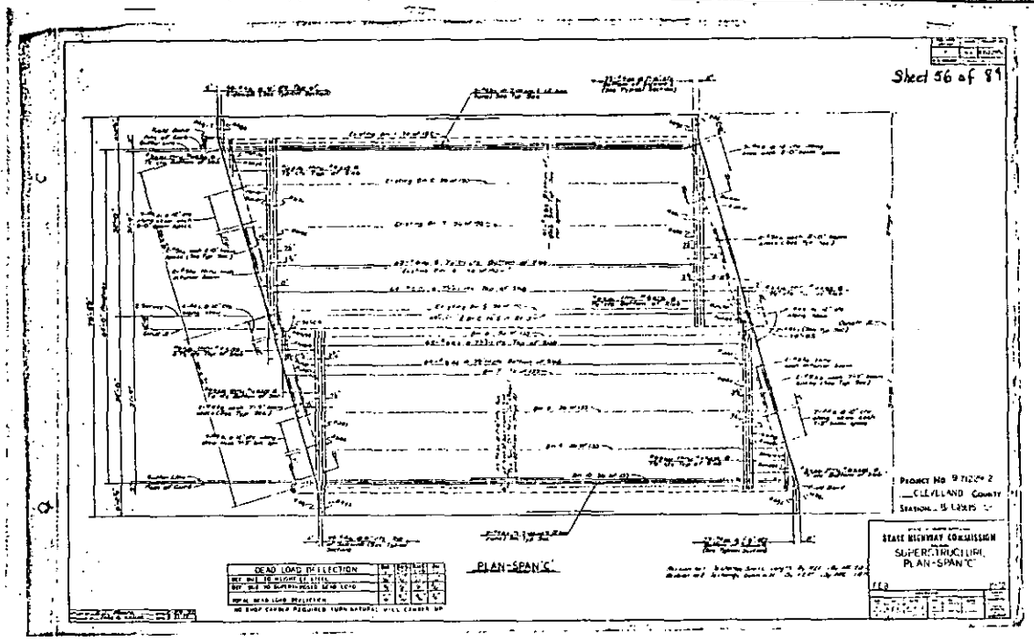
NO SHOP CAMBER REQUIRED TURN NATURAL MILL CAMBER UP

Project No. 9.7122902
Cleveland County
Station 16+39.16 -L-

STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION
RALEIGH
SUPERSTRUCTURE PLAN
SPAN "B"
FEB 192

Sheet 55 of 55

Sheet 56 of 81



See Page 32 of Str. Pay Record Book # 1.

DEAD LOADS DEFLECTION		PR	PVS	PVS	PM
DEF. DUE TO WEIGHT OF STEEL					
DEF. DUE TO SUPERIMPOSED DEAD LOAD					
TOTAL DEAD LOAD DEFLECTION					

NO SHIM CAMBER REQUIRED TURN NATURAL

PLAN-SPAN 'C'

See Pay Str. Pay Record Book # 1

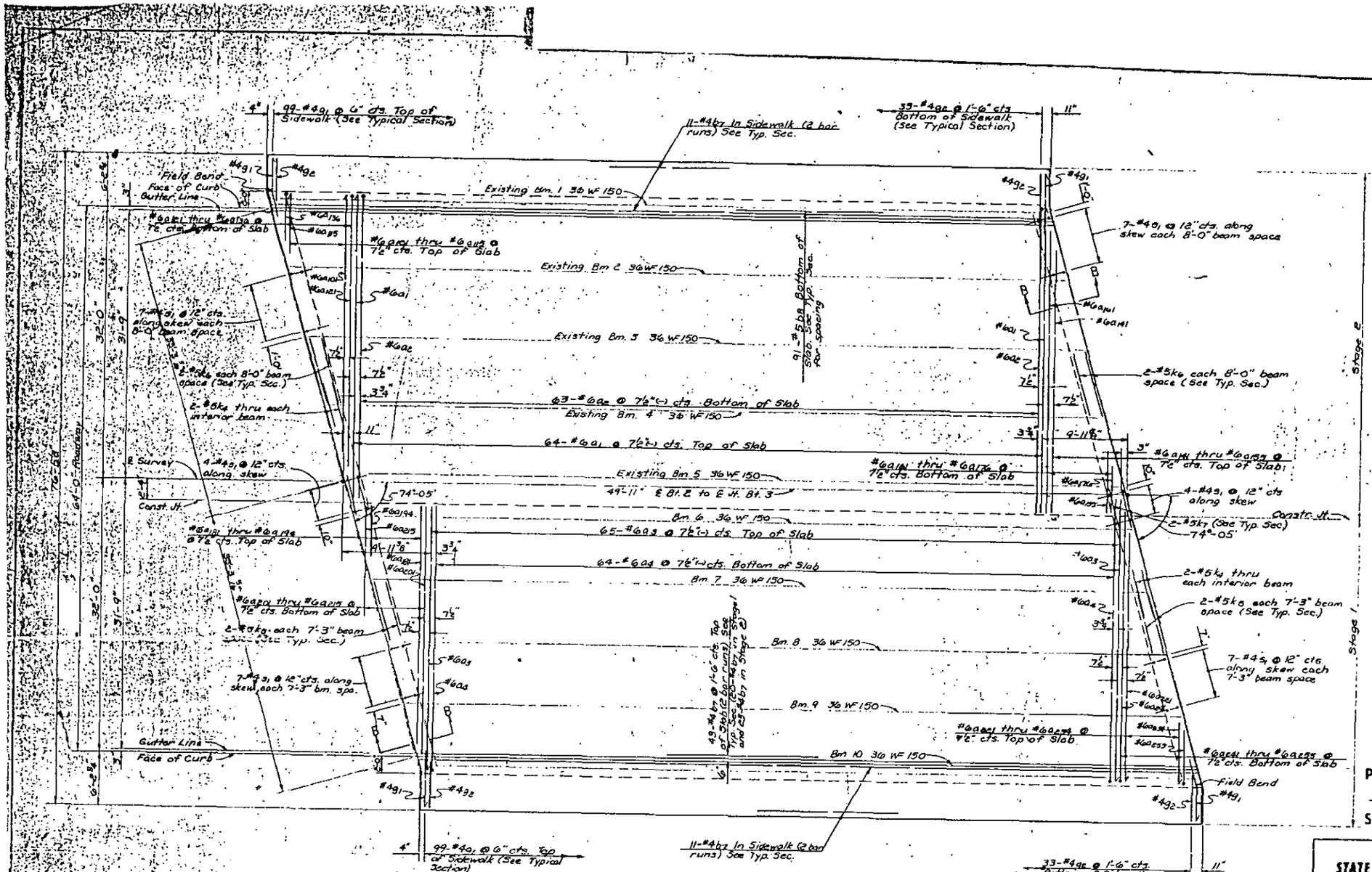
Remarks No. 1 To change Span 'C' Length By Adj. Pay Adj. 12-13-72

PROJECT NO. 9.7122902
CLEVELAND COUNTY
STATION 16+39.16 -L-

STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION
RALEIGH
SUPERSTRUCTURE
PLAN-SPAN 'C'

FEB 19

REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1	REK	12-13-72			
	CKB	7-20-72			



DEAD LOAD DEFLECTION	BM. 1	BMS 2-5	BMS 6-9	BM. 10
DEF. DUE TO WEIGHT OF STEEL	1/16"	1/8"	1/4"	1/16"
DEF. DUE TO SUPERIMPOSED DEAD LOAD	0"	1/16"	1/8"	1/16"
TOTAL DEAD LOAD DEFLECTION	1/16"	3/16"	3/8"	1/8"

NO SHOP CAMBER REQUIRED. TURN NATURAL MILL CAMBER UP

PLAN-SPAN "C"

Revision No 1: To change Span C Length By R.E.K. :By MC 12/13/72

See Pay 3.0 of Str. Pay Record Book #1.

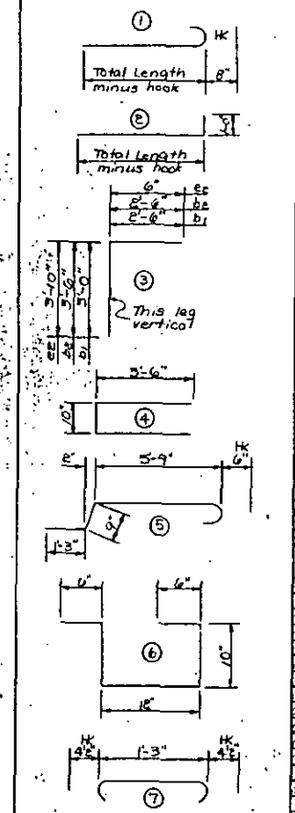
Project No. 9.7122902
Cleveland County
Station: 16+39.16 -L-

STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION
RALEIGH
SUPERSTRUCTURE
PLAN-SPAN "C"
FEB. 1972

REVISIONS
1 R.E.K. 12-13-72

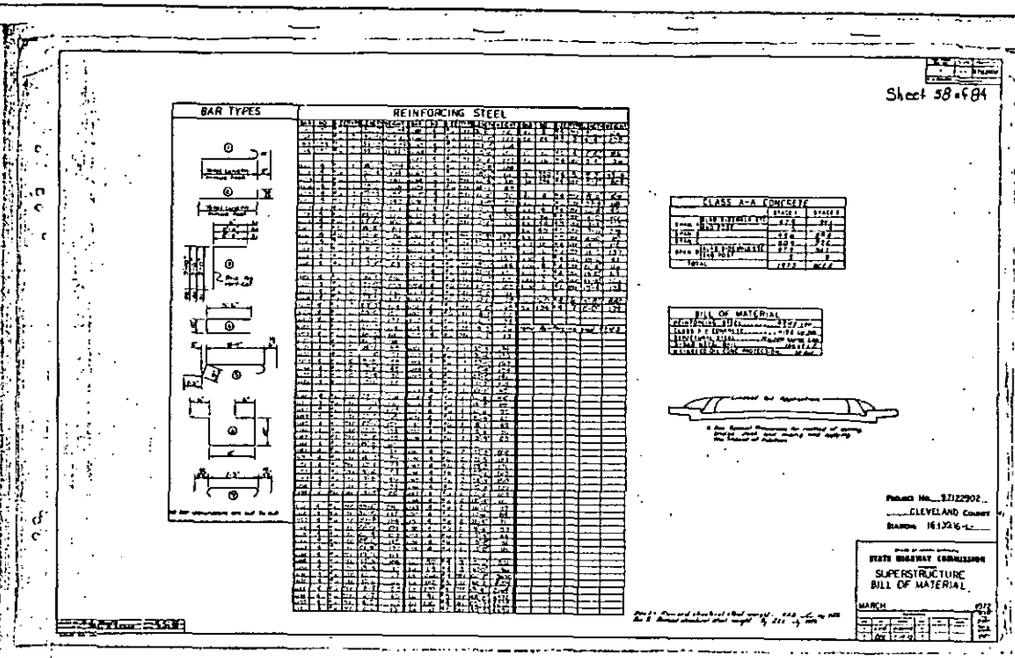
Sheet 57 of 81

BAR TYPES



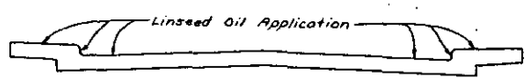
All bar dimensions are out to out.

BAR	NO.	SIZE	TYPE	L
B1	230	#6	1	5
B2	226	#6	2	3
B3	234	#6	1	2
B4	230	#6	2	1
A101	4	#6	1	1
A102	4	#6	1	1
A103	4	#6	1	1
A104	4	#6	1	1
A105	4	#6	1	1
A106	4	#6	1	1
A107	4	#6	1	1
A108	4	#6	1	1
A109	4	#6	1	1
A110	4	#6	1	1
A111	4	#6	1	1
A112	4	#6	1	1
A113	4	#6	1	1
A114	4	#6	1	1
A115	4	#6	1	1
A121	4	#6	2	1
A122	4	#6	2	1
A123	4	#6	2	1
A124	4	#6	2	1
A125	4	#6	2	1
A126	4	#6	2	1
A127	4	#6	2	1
A128	4	#6	2	1
A129	4	#6	2	1
A130	4	#6	2	1
A131	4	#6	2	1
A132	4	#6	2	1
A133	4	#6	2	1
A134	4	#6	2	1
A135	4	#6	2	1
A136	4	#6	2	1
A141	4	#6	Str	34'-0"	204
A142	4	#6	Str	31'-9"	191
A143	4	#6	Str	29'-7"	178
A144	4	#6	Str	27'-5"	165
A145	4	#6	Str	25'-2"	151
A146	4	#6	Str	23'-0"	138
A147	4	#6	Str	20'-10"	125
A148	4	#6	Str	18'-8"	112
A149	4	#6	Str	16'-5"	99
A150	4	#6	Str	14'-3"	86
A151	4	#6	Str	12'-1"	73
A152	4	#6	Str	9'-10"	59
A153	4	#6	Str	7'-8"	46
A154	4	#6	Str	5'-6"	33
A155	4	#6	Str	3'-3"	20
A161	4	#6	Str	35'-1"	211
A162	4	#6	Str	32'-10"	197
A163	4	#6	Str	30'-8"	184
A164	4	#6	Str	28'-6"	171
A165	4	#6	Str	26'-4"	158
A166	4	#6	Str	24'-1"	145
A167	4	#6	Str	21'-11"	132
A168	4	#6	Str	19'-9"	119
A169	4	#6	Str	17'-6"	105
A170	4	#6	Str	15'-4"	92
A171	4	#6	Str	13'-2"	79
A172	4	#6	Str	10'-11"	66
A173	4	#6	Str	8'-9"	53
A174	4	#6	Str	6'-7"	40
A175	4	#6	Str	4'-5"	27
A176	4	#6	Str	2'-2"	13
A229	4	#6	1	16'-11"	102
A229	4	#6	1	14'-9"	88
A230	4	#6	1	12'-6"	75
A231	4	#6	1	10'-4"	62
A232	4	#6	1	8'-1"	49
A233	4	#6	1	5'-11"	36
A234	4	#6	1	3'-9"	23
A241	4	#6	2	33'-8"	202
A242	4	#6	2	31'-5"	189
A243	4	#6	2	29'-3"	176
A244	4	#6	2	27'-1"	163
A245	4	#6	2	24'-11"	150
A246	4	#6	2	22'-8"	136
A247	4	#6	2	20'-6"	123
A248	4	#6	2	18'-4"	110
A249	4	#6	2	16'-1"	97
A250	4	#6	2	13'-11"	84
A251	4	#6	2	11'-9"	71
A252	4	#6	2	9'-6"	57
A253	4	#6	2	7'-4"	44
A254	4	#6	2	5'-2"	31
A255	4	#6	2	3'-0"	18
b1	90	#4	3	5'-6"	331
b2	24	#4	3	6'-0"	96
b3	260	#4	Str	22'-2"	3850
b4	152	#5	Str	42'-2"	8004
b5	130	#4	Str	24'-11"	2164
b6	91	#5	Str	49'-2"	4572
b7	130	#4	Str	25'-7"	2222
b8	91	#5	Str	49'-5"	4690



Sheet 58 of 84

See Page 32 of Str. Pay Record Book #1.



* See Special Provisions for method of curing bridge deck and mixing and applying the linseed oil solution

See Page 32 of Str. Pay Record Book #1.

Rev 1 - Revised structural steel weight - CKB ___ by MKG

PROJECT No. 9.7122902

CLEVELAND COUNTY

STATION: 16+39.16-L

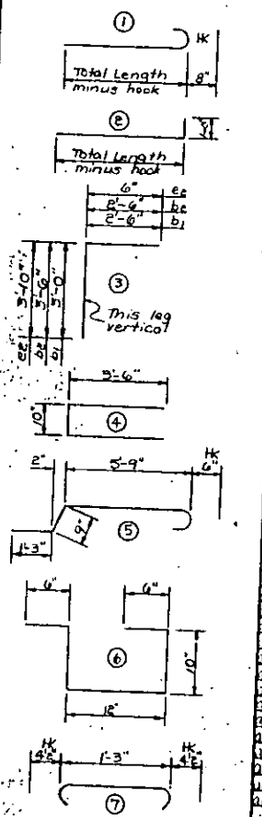
STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION
RALEIGH
SUPERSTRUCTURE
BILL OF MATERIAL

MARCH 1972

REVISIONS						
NO.	BY	DATE	NO.	BY	DATE
1	CKB	7-20-72	3		
2			4		

DRAWN BY R.J. Moore DATE 3-8-72
CHECKED BY John G. Wilson DATE 3-17-72

BAR TYPES



All bar dimensions are out to out.

REINFORCING STEEL

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
Q1	230	#6		34'-7"	12,633
Q2	226	#6	2	34'-11"	12,531
Q3	234	#6	1	34'-3"	12,035
Q4	230	#6	2	34'-7"	11,947
Q101	4	#6	1	34'-7"	208
Q102	4	#6	1	32'-4"	194
Q103	4	#6	1	30'-2"	181
Q104	4	#6	1	28'-0"	168
Q105	4	#6	1	25'-9"	155
Q106	4	#6	1	23'-7"	142
Q107	4	#6	1	21'-5"	129
Q108	4	#6	1	19'-3"	116
Q109	4	#6	1	17'-0"	102
Q110	4	#6	1	14'-10"	89
Q111	4	#6	1	12'-8"	76
Q112	4	#6	1	10'-5"	63
Q113	4	#6	1	8'-3"	50
Q114	4	#6	1	6'-1"	37
Q115	4	#6	1	3'-10"	23
Q121	4	#6	2	36'-0"	216
Q122	4	#6	2	33'-9"	203
Q123	4	#6	2	31'-7"	190
Q124	4	#6	2	29'-5"	177
Q125	4	#6	2	27'-3"	164
Q126	4	#6	2	25'-0"	150
Q127	4	#6	2	22'-10"	137
Q128	4	#6	2	20'-8"	124
Q129	4	#6	2	18'-5"	111
Q130	4	#6	2	16'-3"	98
Q131	4	#6	2	14'-1"	85
Q132	4	#6	2	11'-10"	71
Q133	4	#6	2	9'-8"	58
Q134	4	#6	2	7'-6"	45
Q135	4	#6	2	5'-4"	32
Q136	4	#6	2	3'-1"	19
Q141	4	#6	Str	34'-0"	204
Q142	4	#6	Str	31'-9"	191
Q143	4	#6	Str	29'-7"	178
Q144	4	#6	Str	27'-5"	165
Q145	4	#6	Str	25'-2"	151
Q146	4	#6	Str	23'-0"	138
Q147	4	#6	Str	20'-10"	125
Q148	4	#6	Str	18'-8"	112
Q149	4	#6	Str	16'-5"	99
Q150	4	#6	Str	14'-3"	86
Q151	4	#6	Str	12'-1"	73
Q152	4	#6	Str	9'-10"	59
Q153	4	#6	Str	7'-8"	46
Q154	4	#6	Str	5'-6"	33
Q155	4	#6	Str	3'-3"	20
Q161	4	#6	Str	35'-1"	211
Q162	4	#6	Str	32'-10"	197
Q163	4	#6	Str	30'-8"	184
Q164	4	#6	Str	28'-6"	171
Q165	4	#6	Str	26'-4"	158
Q166	4	#6	Str	24'-1"	145
Q167	4	#6	Str	21'-11"	132
Q168	4	#6	Str	19'-9"	119
Q169	4	#6	Str	17'-6"	105
Q170	4	#6	Str	15'-4"	92
Q171	4	#6	Str	13'-2"	79
Q172	4	#6	Str	10'-11"	66
Q173	4	#6	Str	8'-9"	53
Q174	4	#6	Str	6'-7"	40
Q175	4	#6	Str	4'-5"	27
Q176	4	#6	Str	2'-2"	13

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
Q181	4	#6	Str	31'-8"	190
Q182	4	#6	Str	29'-5"	177
Q183	4	#6	Str	27'-3"	164
Q184	4	#6	Str	25'-1"	151
Q185	4	#6	Str	22'-10"	137
Q186	4	#6	Str	20'-8"	124
Q187	4	#6	Str	18'-6"	111
Q188	4	#6	Str	16'-4"	98
Q189	4	#6	Str	14'-1"	85
Q190	4	#6	Str	11'-11"	72
Q191	4	#6	Str	9'-9"	59
Q192	4	#6	Str	7'-6"	45
Q193	4	#6	Str	5'-4"	32
Q194	4	#6	Str	3'-2"	19
Q201	4	#6	Str	32'-9"	197
Q202	4	#6	Str	30'-6"	183
Q203	4	#6	Str	28'-4"	170
Q204	4	#6	Str	26'-2"	157
Q205	4	#6	Str	24'-0"	144
Q206	4	#6	Str	21'-9"	131
Q207	4	#6	Str	19'-7"	118
Q208	4	#6	Str	17'-5"	105
Q209	4	#6	Str	15'-2"	91
Q210	4	#6	Str	13'-0"	78
Q211	4	#6	Str	10'-10"	65
Q212	4	#6	Str	8'-7"	52
Q213	4	#6	Str	6'-5"	39
Q214	4	#6	Str	4'-3"	26
Q215	4	#6	Str	2'-1"	13
Q221	4	#6	1	32'-9"	194
Q222	4	#6	1	30'-0"	150
Q223	4	#6	1	27'-10"	167
Q224	4	#6	1	25'-8"	154
Q225	4	#6	1	23'-5"	141
Q226	4	#6	1	21'-3"	128
Q227	4	#6	1	19'-1"	115
Q228	4	#6	1	16'-11"	102
Q229	4	#6	1	14'-9"	89
Q230	4	#6	1	12'-6"	75
Q231	4	#6	1	10'-4"	62
Q232	4	#6	1	8'-1"	49
Q233	4	#6	1	5'-11"	36
Q234	4	#6	1	3'-9"	23
Q241	4	#6	2	33'-8"	202
Q242	4	#6	2	31'-5"	189
Q243	4	#6	2	29'-3"	176
Q244	4	#6	2	27'-1"	163
Q245	4	#6	2	24'-11"	150
Q246	4	#6	2	22'-8"	136
Q247	4	#6	2	20'-6"	123
Q248	4	#6	2	18'-4"	110
Q249	4	#6	2	16'-1"	97
Q250	4	#6	2	13'-11"	84
Q251	4	#6	2	11'-9"	71
Q252	4	#6	2	9'-6"	57
Q253	4	#6	2	7'-4"	44
Q254	4	#6	2	5'-2"	31
Q255	4	#6	2	3'-0"	18
b1	90	#4	3	5'-6"	331
b2	24	#4	3	6'-0"	96
b3	260	#4	Str	22'-2"	3650
b4	156	#5	Str	42'-2"	8004
b5	130	#4	Str	24'-11"	2164
b6	91	#5	Str	49'-2"	4572
b7	130	#4	Str	25'-7"	2222
b8	91	#5	Str	49'-5"	4690

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
e1	8	#8	Str	5'-11"	126
e2	24	#8	3	4'-4"	279
f1	16	#6	4	7'-10"	188
f2	16	#4	Str	5'-4"	36
g1	720	#4	5	8'-3"	3963
g2	244	#4	Str	5'-1"	829
k1	8	#4	Str	19'-11"	106
k2	2	#6	Str	39'-4"	118
k3	4	#4	Str	11'-8"	45
k4	96	#5	Str	4'-0"	401
k5	48	#5	Str	7'-1"	355
k6	48	#5	Str	7'-11"	396
k7	12	#5	Str	4'-10"	60
k8	12	#4	Str	19'-0"	112
k9	12	#4	Str	14'-0"	112
k10	6	#6	Str	14'-5"	130
k11	4	#4	Str	18'-6"	49
k12	8	#4	Str	21'-8"	116
k13	12	#4	Str	14'-10"	119
k14	2	#6	Str	41'-10"	126
k15	6	#6	Str	15'-4"	138
S1	360	#4	6	3'-8"	882
S2	134	#4	7	2'-0"	179

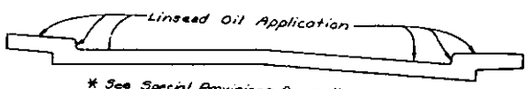
Total Reinforcing Steel 97123 ✓

CLASS A-A CONCRETE

		STAGE 1	STAGE 2
SPAN A	SLAB SIDEWALK ETC	47.9	54.1
	END POST	.5	.5
SPAN B		49.6	55.8
SPAN C		50.9	57.2
SPAN D	SLAB SIDEWALK ETC	47.9	54.1
	END POST	.5	.5
TOTAL		197.3	222.2 ✓

BILL OF MATERIAL

REINFORCING STEEL	97123 Lbs ✓
CLASS A-A CONCRETE	419.5 Cu Yds ✓
STRUCTURAL STEEL	183,130 Approx Lbs ✓
3-BAR METAL RAIL	334.15 = 364.49 L.F. ✓
*LINSEED OIL CONC. PROTECTION	32 Gal ✓



* See Special Provisions for method of curing bridge deck and mixing and applying the linseed oil solution.

See Page 32 of Str. Pay Record Book # 1.

Rev 1 - Revised structural steel weight. CKB ✓ By NKC

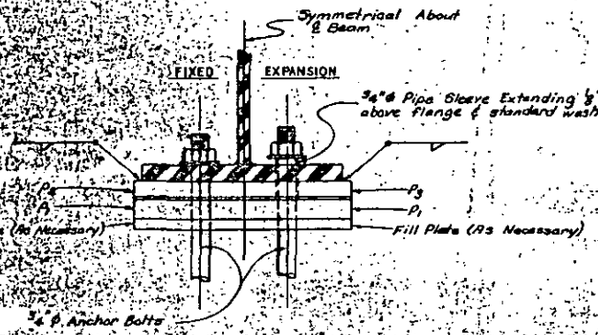
PROJECT No. 9.7122902
CLEVELAND COUNTY
STATION: 16+39.16 -L-

STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION
RALEIGH
SUPERSTRUCTURE
BILL OF MATERIAL
MARCH 1972

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	58
1	CKB	7-20-72	3			TOTAL SHEETS
2			4			86

DRAWN BY R. L. Mayo DATE 3-2-72
CHECKED BY Vera G. Wilson DATE 3-22-72

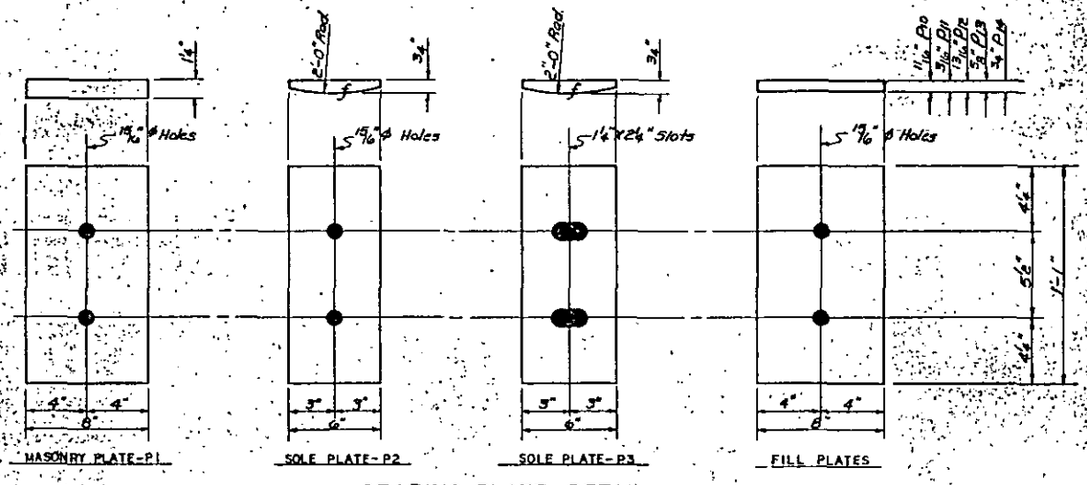
11-16-31 | DRAWN BY KLW | 1-23-73 | 87 OF 324



BEARING DETAIL

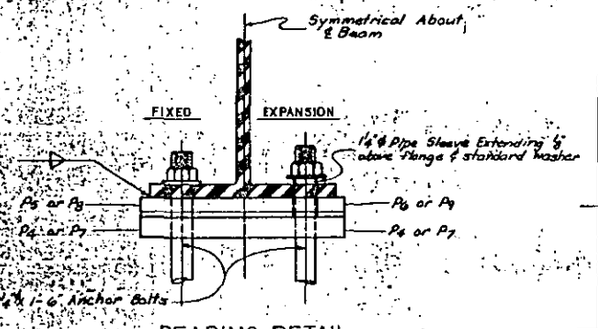
FOR EXISTING BEAMS ONLY

NOTE: EXISTING SOLE, MASONRY, AND SHIM PLATES TO BE REMOVED.



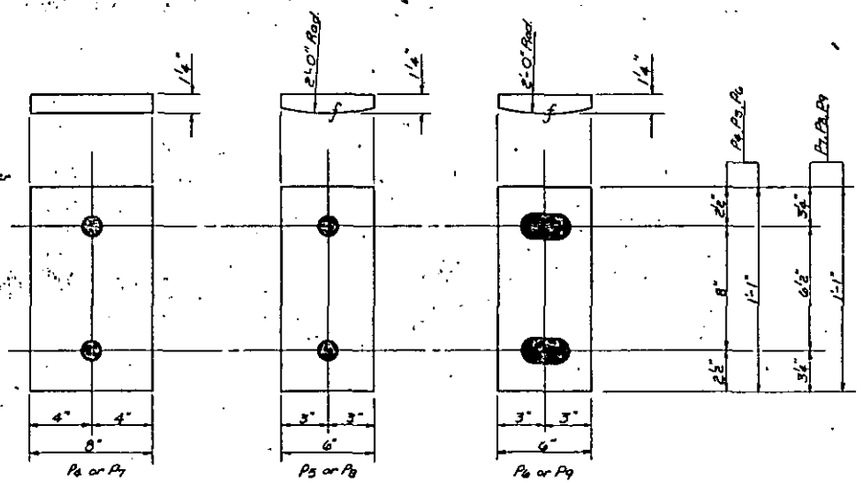
BEARING PLATE DETAIL
STAGE 2

Note: Masonry Plates and Fill Plates to be smooth and straight on both sides. Fill Plates may be combined together or with masonry plates.



BEARING DETAIL

FOR NEW BEAMS ONLY



BEARING PLATE DETAIL
STAGE 1

See Page 32 of Str. Pay. Record Book #1.

PROJECT NO. 9.7122902
CLEVELAND COUNTY
STATION: 16+39.16 -L-

STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION
RALEIGH

STRUCTURAL STEEL

MARCH 197

REVISIONS

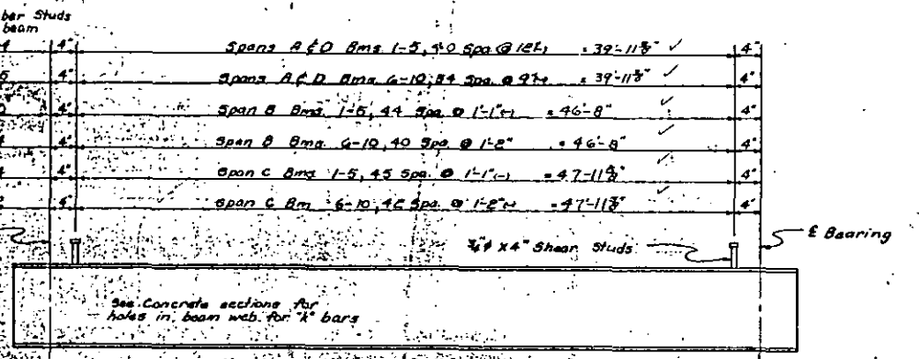
NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		

DESIGNED BY J.A. Rogers DATE 3-6-72
CHECKED BY Cook & Nelson DATE 3-21-72

11-1-31 | DWG. NO. FSW | 1-22-15 | SHEET NO. OF SHEETS

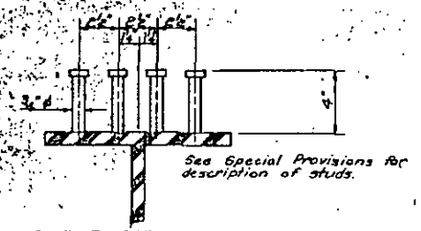
	9	9.7122902

Sheet 61 of 84



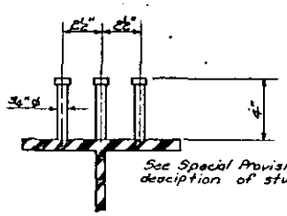
SHEAR STUD SPACING

Note: Turn natural beam camber up



SHEAR STUD DETAIL

BEAMS 1 THRU 5 SPANS A AND D
ALL BEAMS SPANS B AND C
SEE NOTES



SHEAR STUD DETAIL

BEAMS 6 THRU 10 SPANS A AND D

NOTES

SPECIFICATIONS: DESIGN — A.I.S.C. (1969)
WELDING — A.W.S. (CURRENT)

WELD SIZES NOT SHOWN ARE TO BE IN ACCORDANCE WITH THE LATEST AWS SPECIFICATIONS BUT NOT LESS THAN 1/4".

ALL DIMENSIONS SHOWN ARE HORIZONTAL OR VERTICAL UNLESS OTHERWISE NOTED.

ALL BOLTS, WASHERS, PLATES ETC. SHALL BE OF ASTM A36 GRADE STRUCTURAL STEEL. SEE SHEET B-11.

SEE SUPERSTRUCTURE DETAIL SHEETS FOR LOCATION OF FIELD SPLICE AND PLATE SIZES.

ALL PILED HOLES OR OVERSIZED HOLES FOR ANCHOR BOLTS ARE TO BE REAMED. REAMED HOLES MUST BACKED ONE ONE HALF THEIR DEPTH OF THE NUT END BOLT SHALL PROJECT BEYOND THE REAMED FACE.

HEADED STUDS SHALL BE WELDED TO STRUCTURAL STEEL IN ACCORDANCE WITH DETAILS SHOWN ON PLANS. FOR PAINTING OF EXPOSED STUD SEE SPECIAL PROVISIONS.

ALL STRUCTURAL STEEL SHALL BE PAINTED WITH ONE COAT OF SHOP PAINT. FIELD PAINTING SHALL BE AS SPECIFIED IN THE SPECIAL PROVISIONS.

ALL HIGH STRENGTH BOLTS SHALL BE TIGHTENED TO A SNUG TIGHT CONDITION AS DEFINED IN THE SPECIAL PROVISIONS.

ALL EXPOSED STRUCTURAL STEEL, INCLUDING ANCHOR BOLTS, LOCKNUTS AND COUNTER SUNK WASHERS MUST BE GALVANIZED. ALTERNATE POSITION OF EXPOSED BOLTS AS SHOWN ON THE PLANS. SEE SPECIAL PROVISIONS.

ALL BEARING ASSEMBLIES SHALL BE GALVANIZED. SEE SPECIAL PROVISIONS.

PROJECT NO. 9.7122902
CLEVELAND COUNTY
STATION: 16+39.16-L-

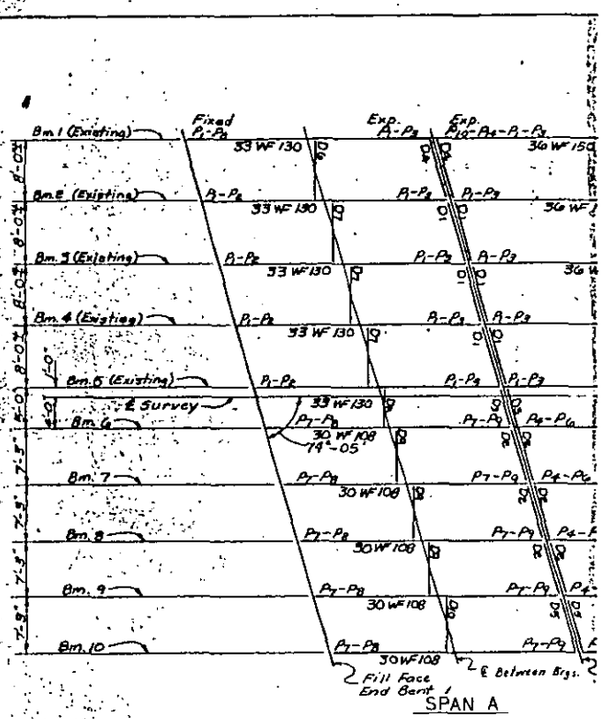
SEE PAGE 32 OF STR. PRELIM. PLAN RECORD BOOK #1.

STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION
RALEIGH
SUPERSTRUCTURE
STRUCTURAL STEEL

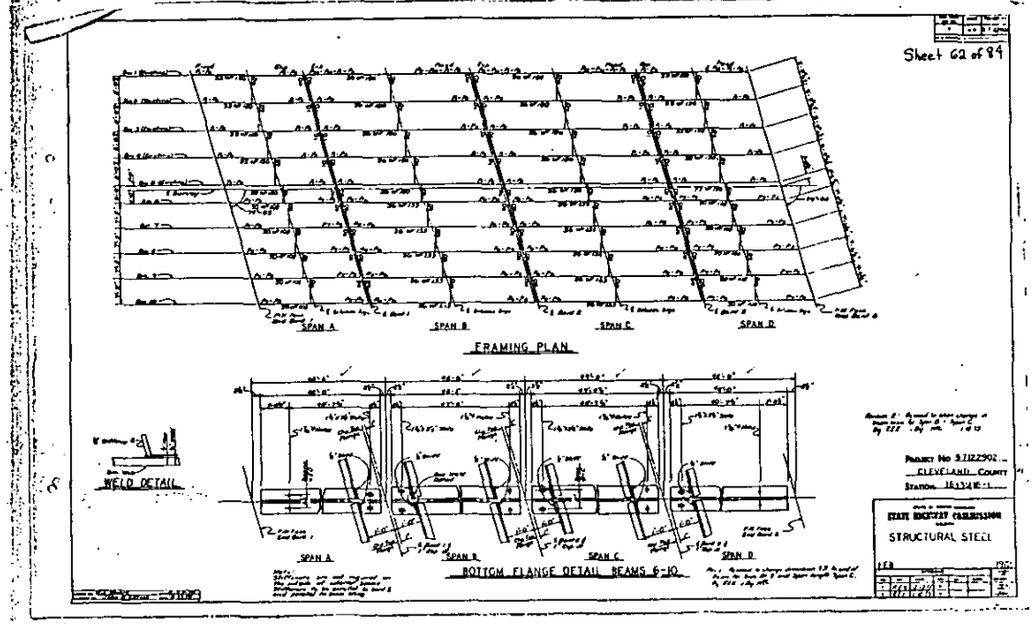
MARCH 1972

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

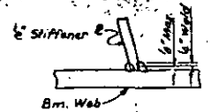
DRAWN BY R.J. Moore DATE 3-21-72
CHECKED BY John A Wilson DATE 3-27-72



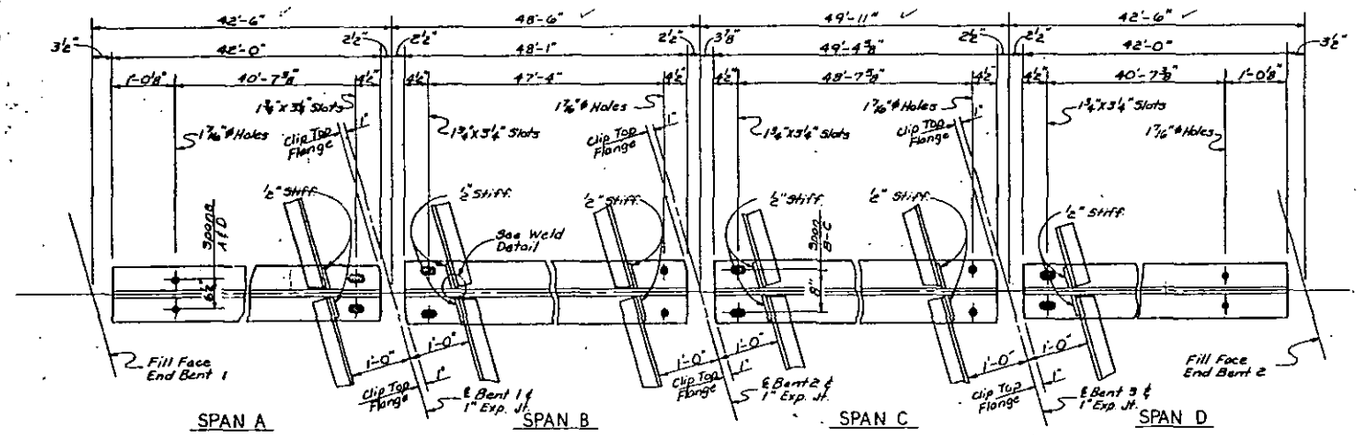
SPAN A



See Page 32 of Str. Pay Record Book # 1.



WELD DETAIL



BOTTOM FLANGE DETAIL BEAMS 6-10

See Page 32 of Str. Pay Record Book # 1

Note: Stiffeners are not required on the outside of exterior beams. Stiffeners to be parallel to bent ℄ and parallel to beam ends.

Rev 1: Revised to change dimension F.P. to end of beam for Side Sp. 2 and Span length Span C. By REK. By WSC

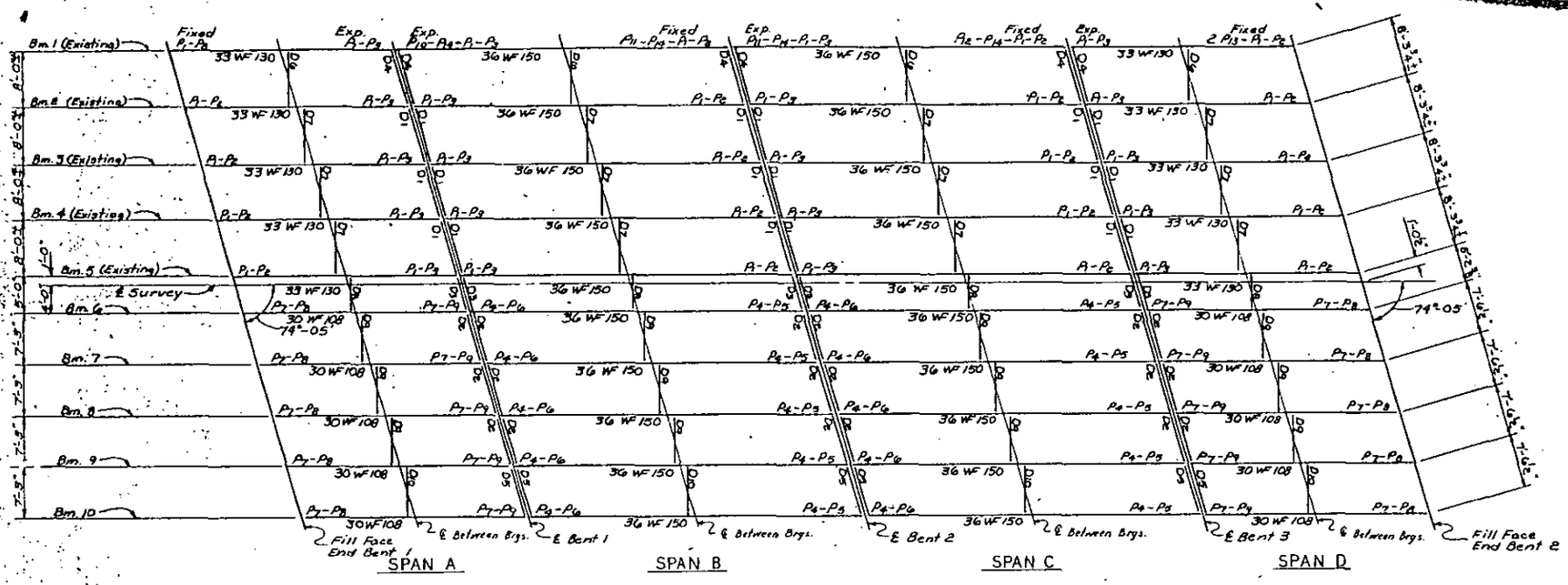
							9.7122902

PROJECT No. 9.7122902
CLEVELAND COUNTY
STATION: 16+39.16-L-

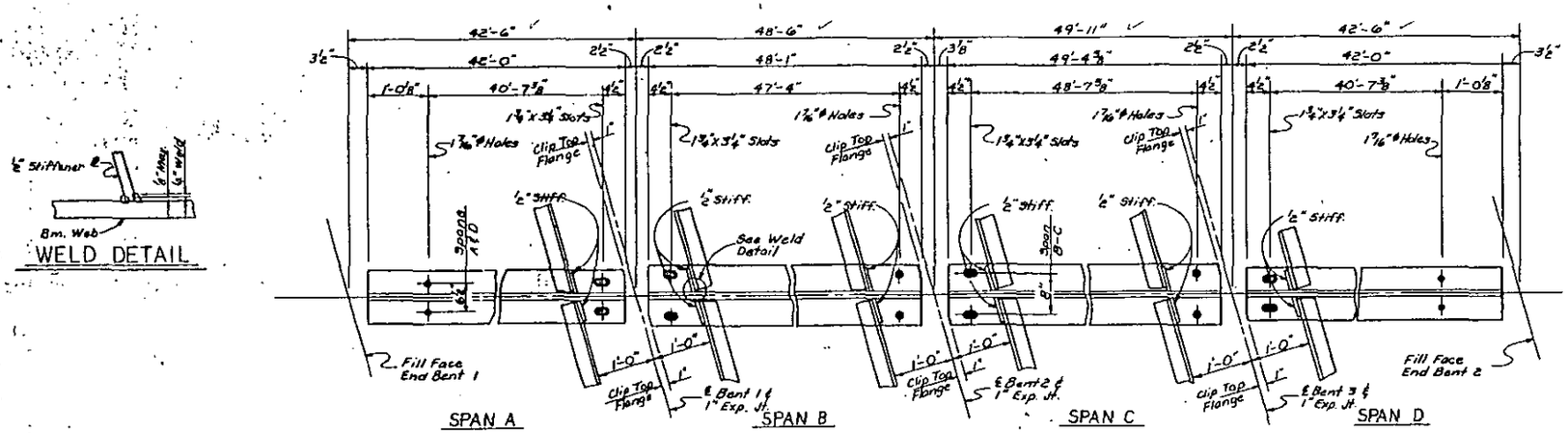
STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION
RALEIGH
STRUCTURAL STEEL
FEB. 1972

REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1	REK	12-13-72	3		
2			4		

DRAWN BY: R.L. Moore DATE: 2-23-72
CHECKED BY: John G. Wilson DATE: 9-27-72



FRAMING PLAN



BOTTOM FLANGE DETAIL BEAMS 6-10

WELD DETAIL

Note: Stiffeners are not required on the outside of exterior beams. Stiffeners to be parallel to bent ℄ and parallel to beam ends.

Rev 1: Revised to change dimension E.J. to end of beam for Side of 2 and Span length Span C. By R.E.K. By W.C.

See Page 32 of Str. Pay Record Book #1

Project No. 9.7122902
Cleveland County
Station: 16+39.16-L-

STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION
RALEIGH

STRUCTURAL STEEL

FEB 1972

REVISIONS						
NO.	BY	DATE	NO.	BY	DATE	
1	R.E.K.	12-15-72	3			
2			4			

Sheet No. 63
Total Sheets 79

Detailed by: R.L. Moore Date: 2-23-72
Checked by: John G. Wilson Date: 3-27-72

11-16-31 | Chkd by: R.L.J. | 2-23-72 | 63 OF 84

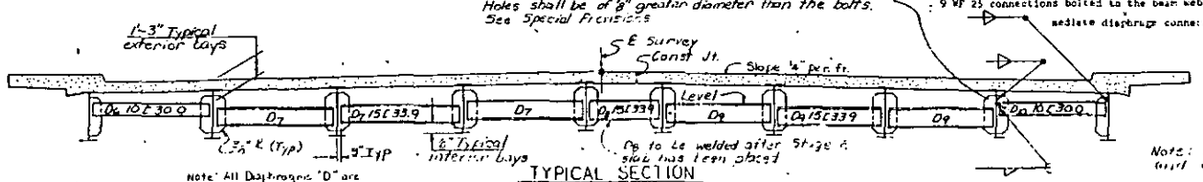
FED. ROAD DIV. NO.	STATE	PROJECT NO.
9	N.C.	9.712902

F. A. PROJECT

Sheet 64 of 84

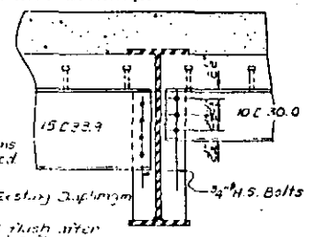
Note: In lieu of the welding procedure for shop and field welds indicated for the intermediate diaphragm connections, the contractor may, at his option, shop weld the connector plates to the beam webs and field weld the channels to the connector plates. Special care in handling the beams must be observed if the connector plates are shop welded to the beam webs. The contractor may, at his option, but without change in the contract price of structural steel, use ST 9 WF 25 connections bolted to the beam web and welded to the channel diaphragm in lieu of the welded plate intermediate diaphragm connections shown.

Note: Erection bolts may be used at the contractors option. One erection bolt for each diaphragm connection. Holes shall be of 8" greater diameter than the bolts. See Special Provisions

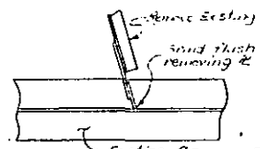


Note: All Diaphragms "D" are Horizontal and are placed normal to ℄ Survey

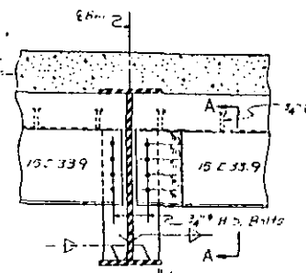
TYPICAL SECTION
SHOWING INTERMEDIATE DIAPHRAGMS



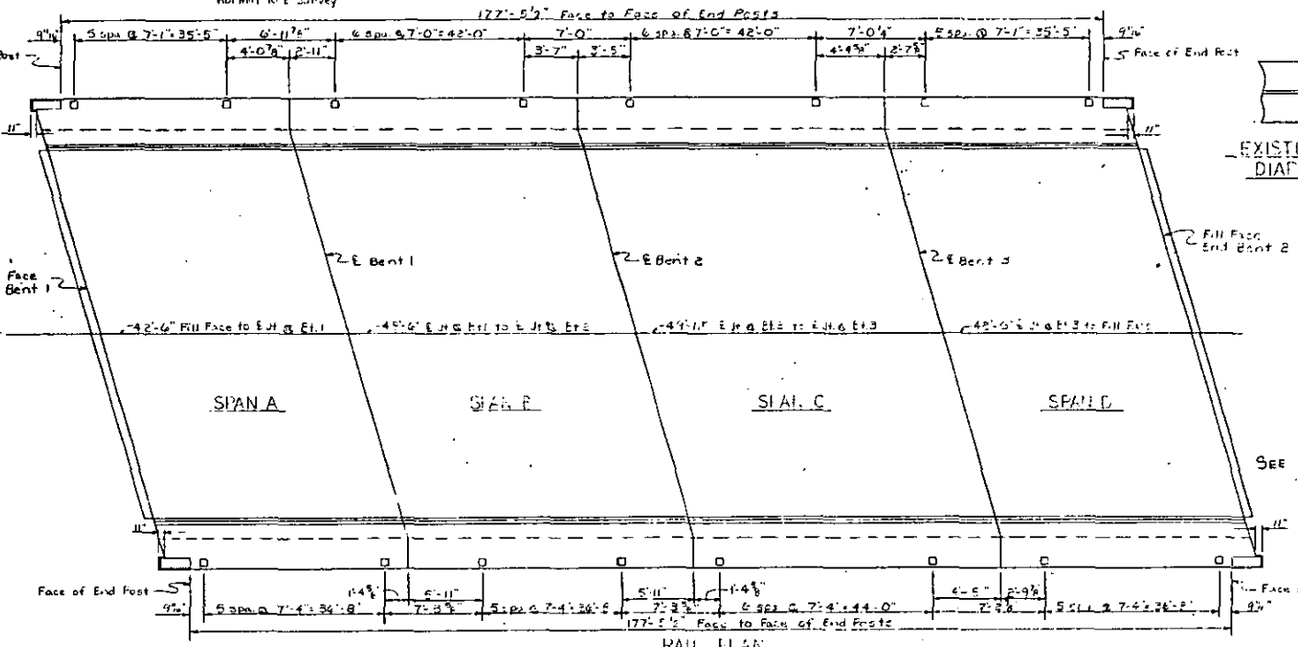
Note: Existing intermediate diaphragms must connector plates to be removed



EXISTING INTERMEDIATE DIAPHRAGM DETAIL

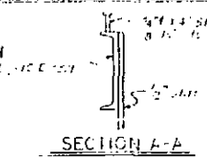


BENT DIAPHRAGM DETAILS



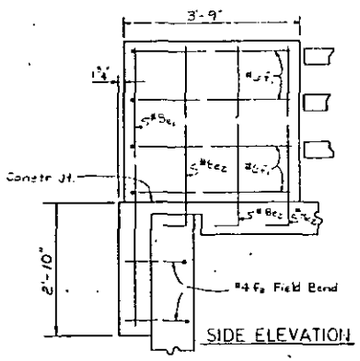
RAIL PLAN
Pay Length 354.69' Lin. Ft.

See Page 32 of Str. Dwg. Record Book II C.

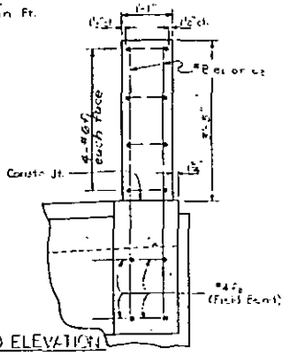


SECTION A-A

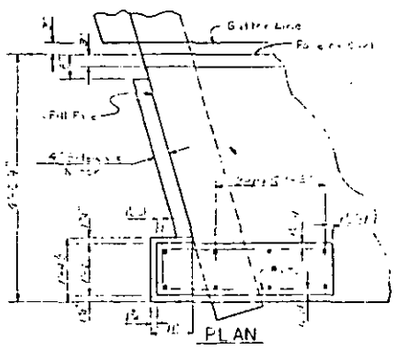
Rev 1: Revised to change dimension Face to Face of End Posts, End End Base to 10' Pad and Span Length Span C. By REK/BJH



SIDE ELEVATION



END ELEVATION



PROJECT No. 9712302
CLEVELAND COUNTY
STATION: 16+39.16-L-

STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION
RALEIGH

SUPERSTRUCTURE
STRUCTURAL STEEL-RAIL PLAN AND END POST DETAILS

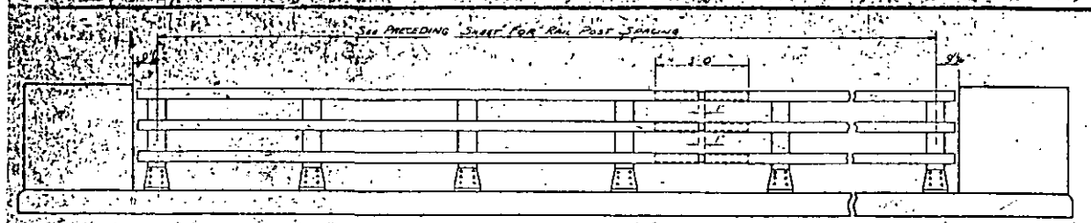
MARCH 1972

REVISIONS					
NO	BY	DATE	NO	BY	DATE
1	REF	10-13-72	3		
2			4		

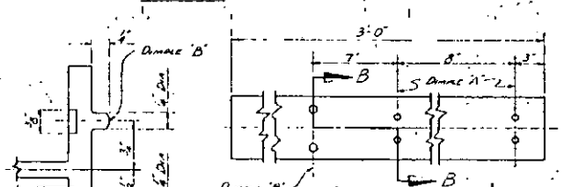
SHT. NO. 64
TOTAL SHEETS 84

DRAWN BY H. J. Moore DATE 9-7-72
CHECKED BY John G. Wilson DATE 9-27-72

11-16-31 CHKD BY REK DATE 10-13-72 64 OF 84

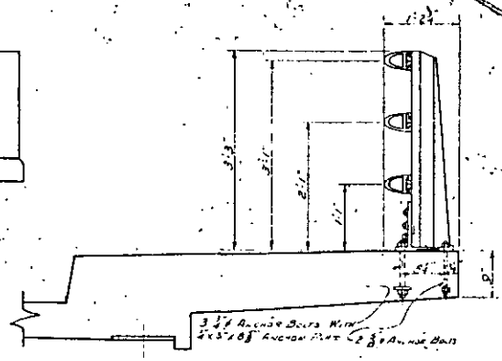


ELEVATION

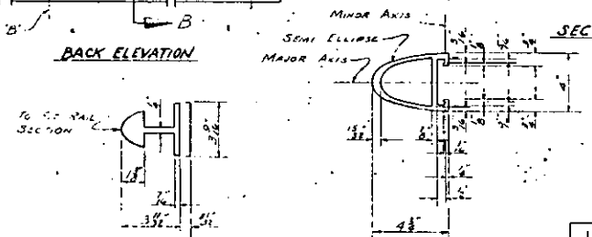


BACK ELEVATION

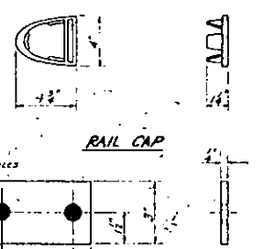
SECTION B-B



SECTION THRU CURB & RAIL



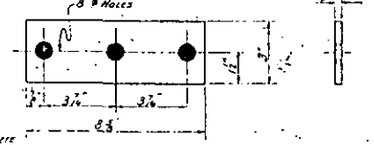
RAIL SECTION



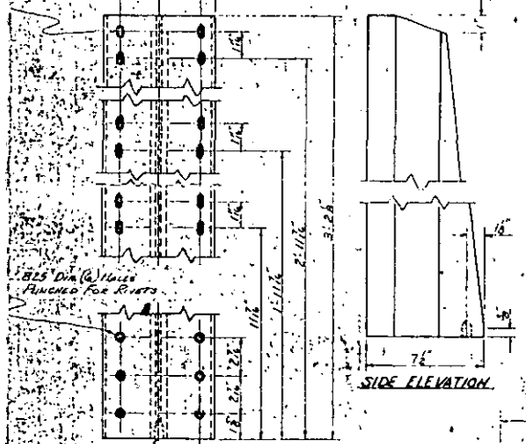
RAIL CAP

BAR SECTION

EXPANSION BAR DETAILS



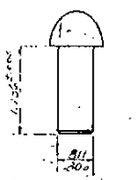
ANCHOR PLATE



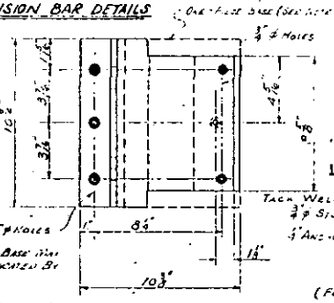
FRONT ELEVATION

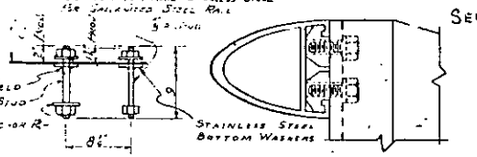
DETAILS OF POST

SIDE ELEVATION



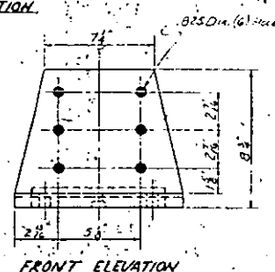
RIVET DETAIL



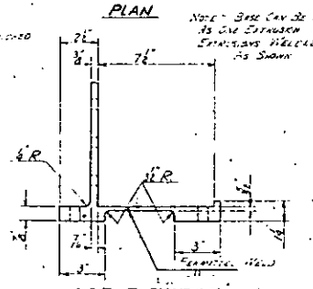


ANCHOR ASSEMBLY (For Optional Anchor Unit See Sheet 3 Of 3).

CLAMP & RAIL ASSEMBLY

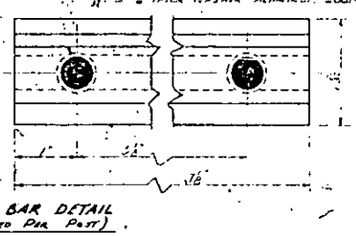


FRONT ELEVATION



SIDE ELEVATION

POST BASE DETAILS



CLAMP BAR DETAIL (6 Required Per Post)

At The Contractors 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, Shoes, Splices, Expansion Bars & Clamp Bars Shall Be A.S.T.M. B221 Alloy 6061-T6

Material For Aluminum Bar Rail Shall Be A.S.T.M. B-209 Alloy Alclad 2024-T3.

Material For Steel Posts Shall Be A.S.T.M. A 36

Alloy 6061-T6

Fillets Shall Be Std.

Button Head & One Point Cut Driven As Per Drawing.

Material For Aluminum Nuts Shall Be A.S.T.M. B211 Alloy 6061-T6

The Base Of Rail Posts, Or Any Other Aluminum Surface In Contact With Concrete Shall Be Thoroughly Coated With An Aluminum Impregnated Caulking Compound Of Approved Quality.

Material For Shims To Be A.S.T.M. B-209 Alloy 6061-T6

GALVANIZED STEEL RAILS

Materials And Galvanizing Are To Conform To The Following Specifications

Rail Post & Post Base: A.S.T.M. A36 Grade Structural Steel-Galvanized To A.S.T.M. A 123

Rail Expansion Bar: A.S.T.M. A36 Grade Structural Steel-Galvanized To A.S.T.M. A123

Closure Plates & Shims: A.S.T.M. A36 Grade Galvanized To A.S.T.M. A123

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 Paint Meeting The Requirements Of Federal Specification Mil P-26073 (SH) Type I

GENERAL NOTES

1. Rail To Shall Be Continuous From End Post To End Post Of Bridge, Each Section Of Rail Length Shall Be Spliced As Detailed. Panel Lengths Of Rail Shall Be Attached To A Maximum Of Four Posts.
2. End Of Rail To Come Face Of Concrete End Post As Shown.
3. Material For Anchor Studs Shall Be Type 430 Stainless Steel With Minimum 73,200 P.S.I. Ultimate Strength.

   Studs To Be Grouted In Concrete. Nuts Shall Be American Standard Finished Hexagon Thick Nuts. Conforming To ASTM A194 Gr. A or B Unless Otherwise Specified. Anchor Parts Shall Be ASTM A7 Or A36 Machine Screws. Nut For Rail Attachment Shall Be Stainless Steel.
4. Certified Mill Reports Are Required For Rails & Posts. Sample Section Is Not Required.
5. Metal Rail Posts To Be Set Normal To Curb Grade.
6. Method Of Measurement For Metal Rails: Unless Otherwise Stipulated, The Length Of Metal Rails To Be Paid For Shall Be The Continuous Horizontal Length Measured Along The Face Of The Rail Between Inside To Inside Of Concrete End Posts.
7. Curved Rail Shapes: Where Rails Are To Be Used On Bridges, Only Horizontal And/Or Vertical Curvatures Of The Centerline May At The Option Of The Fabricator Have The Required Curvature In The Rail Former In The Shop Or In The Field. The Finished Rail Shall Conform Without Buckling Or Kinking To The Required Curvature In A Uniform Manner Acceptable To The Engineer.
8. To Insure Future Identification Of The Fabricator, A Permanent Identifying Mark Shall Be Placed On Each Post. The Method Of Marking And Location Shall Be Such That It Does Not Detract From The Appearance Of The Post.
9. Shims To Be Used As Necessary For Post Alignment.
10. Alloy 6351-T5 May Be Substituted For Alloy 6061-T6 With A Corresponding Reduction In Allowable Stress.

See Page 32 of Str. Dwg. Record Book #1.

F.A.I. Length - ~~354.69'~~ 354.13'

Revision No. 8: To add bottom stainless steel washers. By JAJ By M.E.S. (1-8-71).

Revision No. 1: To allow use of Alloy 6351-T5 By J.E.P. (6-3-70).

Revision No. 2: To add reference to shims and change Rail As Per 5 Extrusion To Rail As Per 6 Extrusion. By R.E.V. (11-17-67).

Revision No. 3: To change from high Button head to standard button head for rivets. By J.L.S. (6-18-69)

Revision No. 4: To add to General Notes and revise weld detail on post base. By W.M. (12-6-69).

Revision No. 5: To eliminate reference to Alloy 6082-T6. By N.K.C. By J.L.S.

Revision No. 6: To add -T6 to "Alloy 6061". By W.M. J.S.P. (6-18-69)

Revision No. 7: To change dimension End Post Base to 1st Post By R.E.K. By W.M.

PROJECT NO. 9712290.2

CLEVELAND COUNTY

STATION: 16+39.16-L-

STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION

STANDARD
3 BAR
METAL RAIL

AUGUST 1967

Approved: [illegible] Date 3-7-72

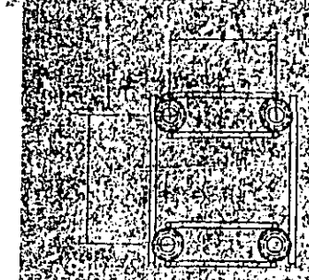
John C. Wilson Date 3-27-72

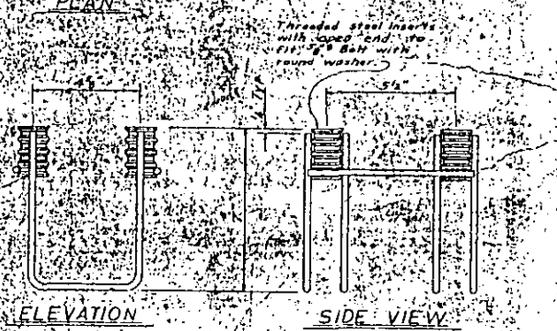
STATE	STATE PROJECT NO.	DESCRIPTION
N.C.	9712282	
3		

F. A. PROJECT

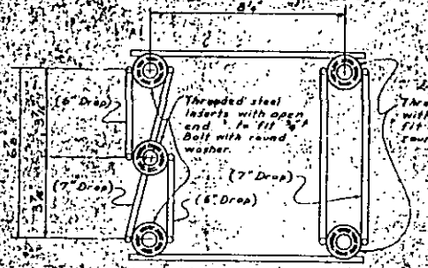
Sheet 65 of 84

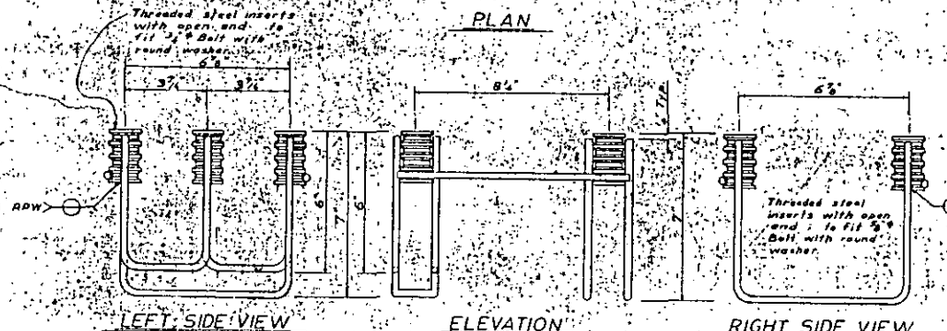
Sheet 64 of 84





4-BOLT PRESET ANCHOR
FOR 1 BAR METAL RAIL





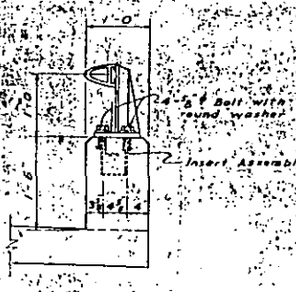
5-BOLT PRESET ANCHOR
FOR 2 OR 3 BAR METAL RAIL

GENERAL NOTES

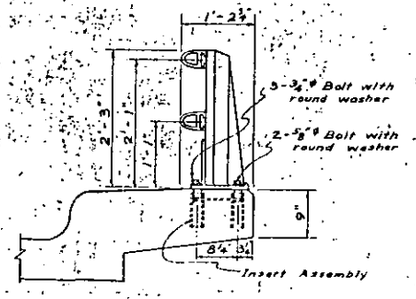
This Preset Anchor Assembly may be used in lieu of the anchorage shown on the Standard Metal Rail Sheets.
The cost of the Preset Anchor Assembly with bolts and washers complete in place shall be included in the price bid for Lin. Ft. Metal Rail.
The wire gage and threaded steel inserts to be of sufficient strength to insure load anchoring capacity as specified in the AASHO Specifications.
The Preset Anchor Units to be hot dipped galvanized to conform to requirements of A.S.T.M. A123.

Anchor Bolts to be either high tensile steel conforming to A.S.T.M. A449 and galvanized to conform to A.S.T.M. 153 or stainless steel Type 430 with a minimum 70,000 p.s.i. ultimate strength.

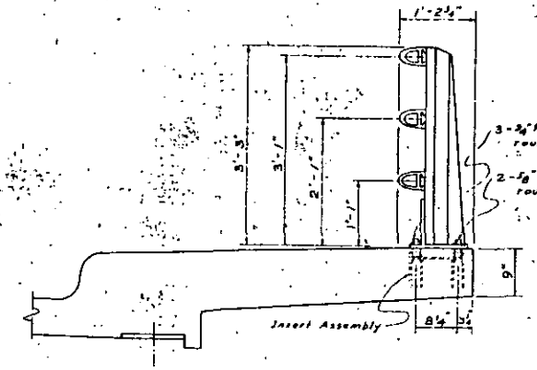
Bolts to be tightened one-half turn with the wrench from a finger tight position.



SECTION THRU PARAPET & RAIL



SECTION THRU CURB & RAIL



SECTION THRU SIDEWALK & RAIL

Revision No 1: Revised to change Preset Anchor for 1-Bar Metal Rail. 2-4-71 By J.A.J. ✓By J.L.S.
Revision No 2: Revised to change note concerning tightening of bolts. 3-15-71 By J.A.J. ✓ by J.L.S.
Revision No 3: Revised to change weld symbol. 3-19-71 By J.A.J. ✓By J.L.S.

SEE PAGE 32 OF STR. DAT RECORD BOOK # 1.

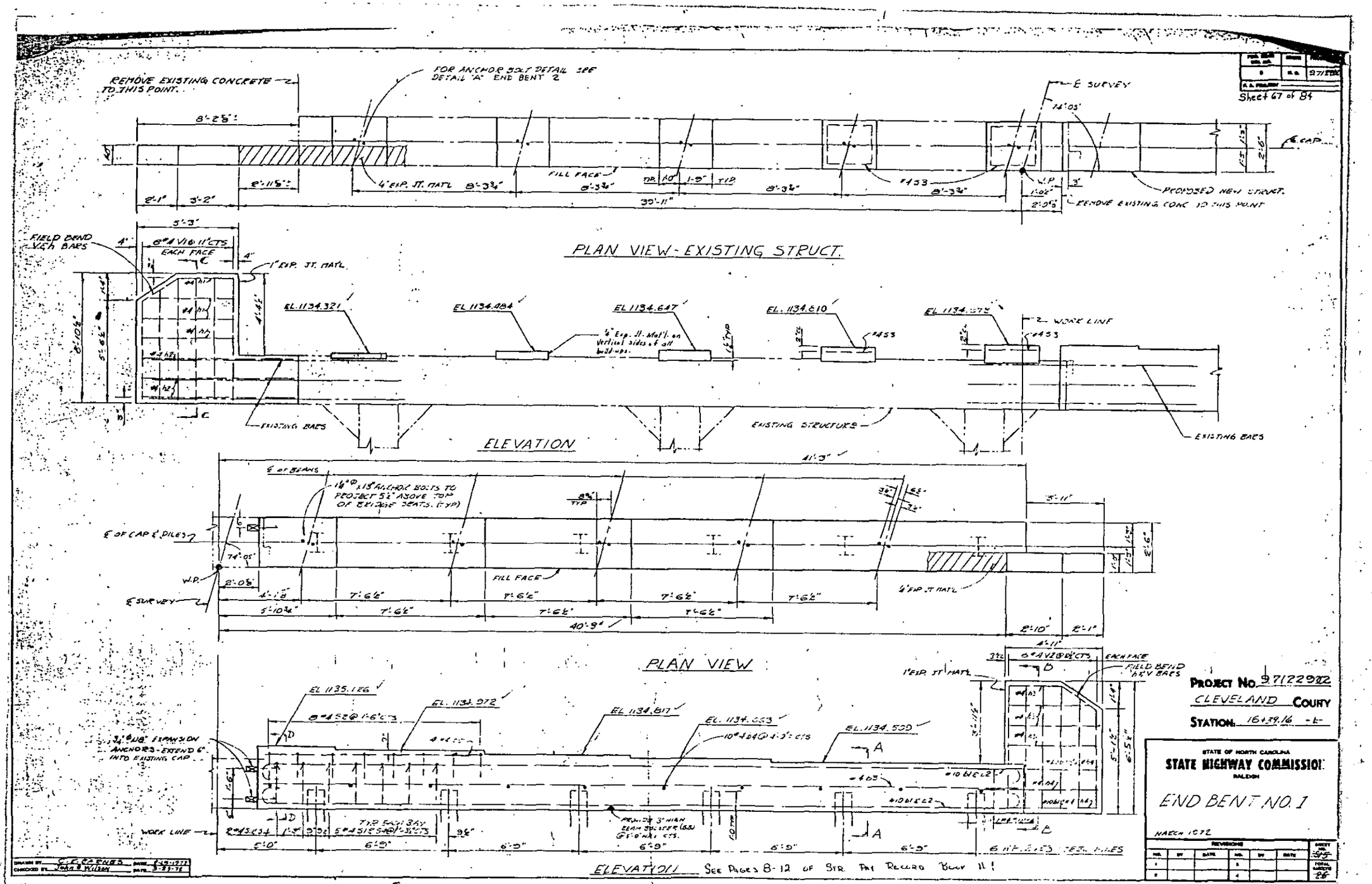
Designed for AASHO Loadings by R.V. Moore DATE 3-17-71	SPECIAL
Checked by R.V. Moore DATE 3-22-71	STANDARD

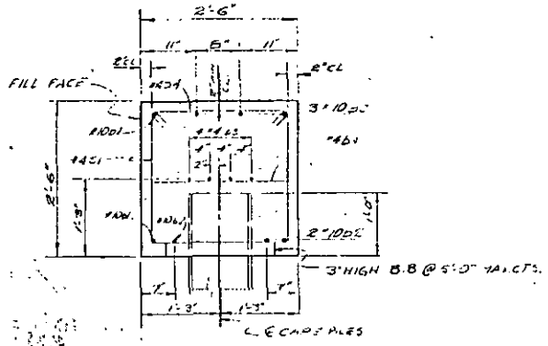
PROJECT No. 9.7122902
CLEVELAND COUNTY
STATION: 16+39.16-L

STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION
RALEIGH
STANDARD METAL RAIL OPTIONAL PRESET ANCHOR UNITS
DECEMBER 1970

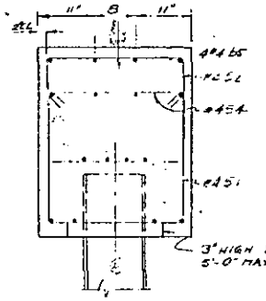
REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1	J.A.J.	2-4-71	3	J.A.J.	3-19-71
2	J.A.J.	3-15-71			

11-31	CKD BY RLW	1-24-25	27 OF 84

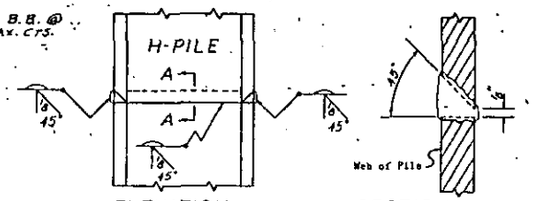

REMOVE EXISTING CONCRETE TO THIS POINT.
FOR ANCHOR BOLT DETAIL SEE DETAIL 'A' END BENT 2
℄ SURVEY
74°05'
℄ CAP
PROPOSED NEW STRUCT.
REMOVE EXISTING CONC TO THIS POINT
4" EXP. JT. MATL
FILL FACE
#453
W.P.
℄ WORK LINE
PLAN VIEW - EXISTING STRUCT.
FIELD BEND W/4 BARS
6"@ VIB 11 CTS. EACH FACE
1" EXP. JT. MATL.
EL. 1134.321
EL 1134.484
EL 1134.647
EL. 1134.810
EL. 1134.972
½" Exp. Jt. Matl. on Vertical sides of all build-ups.
EXISTING BARS
EXISTING STRUCTURE
ELEVATION
℄ of BEARING
1¼"Ø x 15" ANCHOR BOLTS TO PROJECT 5½" ABOVE TOP OF EXISTING SEATS. (TYP)
℄ OF CAP & PILES
FILL FACE
4" EXP. JT MATL
PLAN VIEW
EL 1135.166
EL. 1134.972
EL 1134.817
EL. 1134.663
EL. 1134.500
¾" Ø HIS EXPANSION ANCHORS - EXTEND 6" INTO EXISTING CAP.
WORK LINE
TYP EXT BAY
PRES. 36" HIGH BEAM SPLICER (GS) @ 5'-0" MAX CTS.
1'EXP. JT MATL
FIELD BEND #6 V BARS
ELEVATION
See Pages 8-12 of Str. Pay Record Book II
PROJECT NO. 9712202
CLEVELAND COUNTY
STATION: 16+39.16 -L-
STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION
RALEIGH
END BENT NO. 1
MARCH 1972
Sheet 67 of 84
DRAWN BY: C.C. GAINES
CHECKED BY: John B. Wilson



SECTION A-A

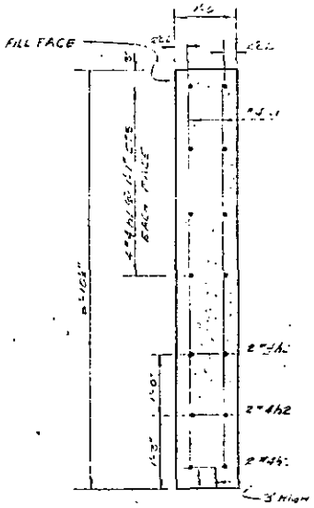


SECTION D-D

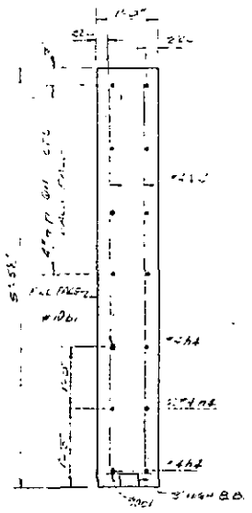


ELEVATION SECTION A-A

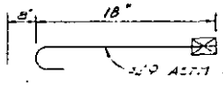
PILE SPLICE DETAIL



SECTION C-C



SECTION B-B



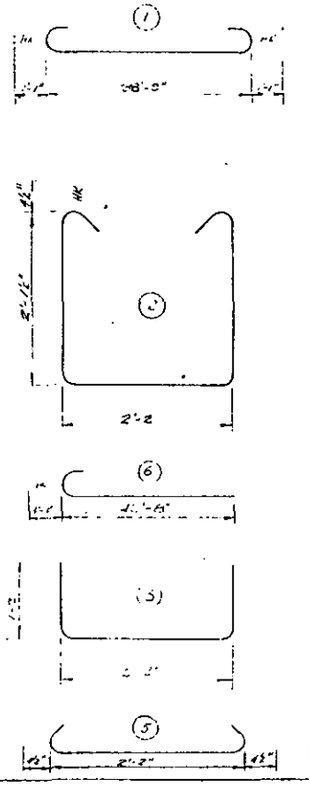
EXPANSION JOINT DETAIL

2 REQD. KEY EACH BULKHEAD

FOR EXPANSION JOINT REQUIREMENTS SEE SUPERSTRUCTURE SHEET

BAR TYPES

ALL BAR SHAPE DIMENSIONS ARE OUT TO OUT



BILL OF MATERIAL

END BENT NO. 1 *

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#10	1	43'-0"	3772
B2	6	#10	1	40'-11"	1036
B3	3	#11	2,2	20'-2"	1071
E1	10	#4	2,6	2'-2"	44
E2	4	#4	2,6	11'-0"	92
A1	6	#4	2,6	4'-11"	36
A2	6	#4	2,6	7'-0"	131
A3	6	#4	2,6	4'-7"	24
A4	2	#4	2,6	5'-3"	18
V1	12	#4	2,6	6'-4"	119
V2	12	#4	2,6	6'-0"	96
S1	24	#4	2	7'-8"	184
S2	8	#4	3	4'-9"	25
S3	2	#4	4	3'-2"	12
S4	28	#4	5	2'-11"	55

CLASS A CONCRETE FOR END BENTS 1 AND 2 INCLUDING WINGS

REINFORCING STEEL

NO. 6 #

LBS. 10,338.5#

Unclassified Excavation for Structures 619 40.0 C.Y.

* INCLUDES ALLOWANCE ON EXISTING STRUCTURE

NOTES

HORIZONTAL STEEL FROM EXISTING CAP SHALL BE EXTENDED INTO EXISTING WING WALL AND TO BE BENT AND ENCASED INTO NEW CAP EXTENSION. BUILT UP ENDS OF PILES TO BE OF CLASS A CONCRETE AND REINFORCED WITH SPIRALS. EXTREME CARE SHALL BE TAKEN NOT TO DAMAGE EXISTING STRUCTURE WHILE CHIPPING CONCRETE. 14" DIA MAY BE USED AT THE OPTIONAL DISCRETION OF THE CONTRACTOR. PILES TO BE DRIVEN TO AN ULTIMATE CAPACITY OF 27 TONS EACH. REINFORCING STEEL IN CAPS SHALL BE SPLICED TO CLEAR ALIGNMENT OF PILES.

PROJECT NO. 9.7122902

CLEVELAND COUNTY

STATION: 16+39.16 -L-

STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION
RALEIGH

END BENT NO. 1

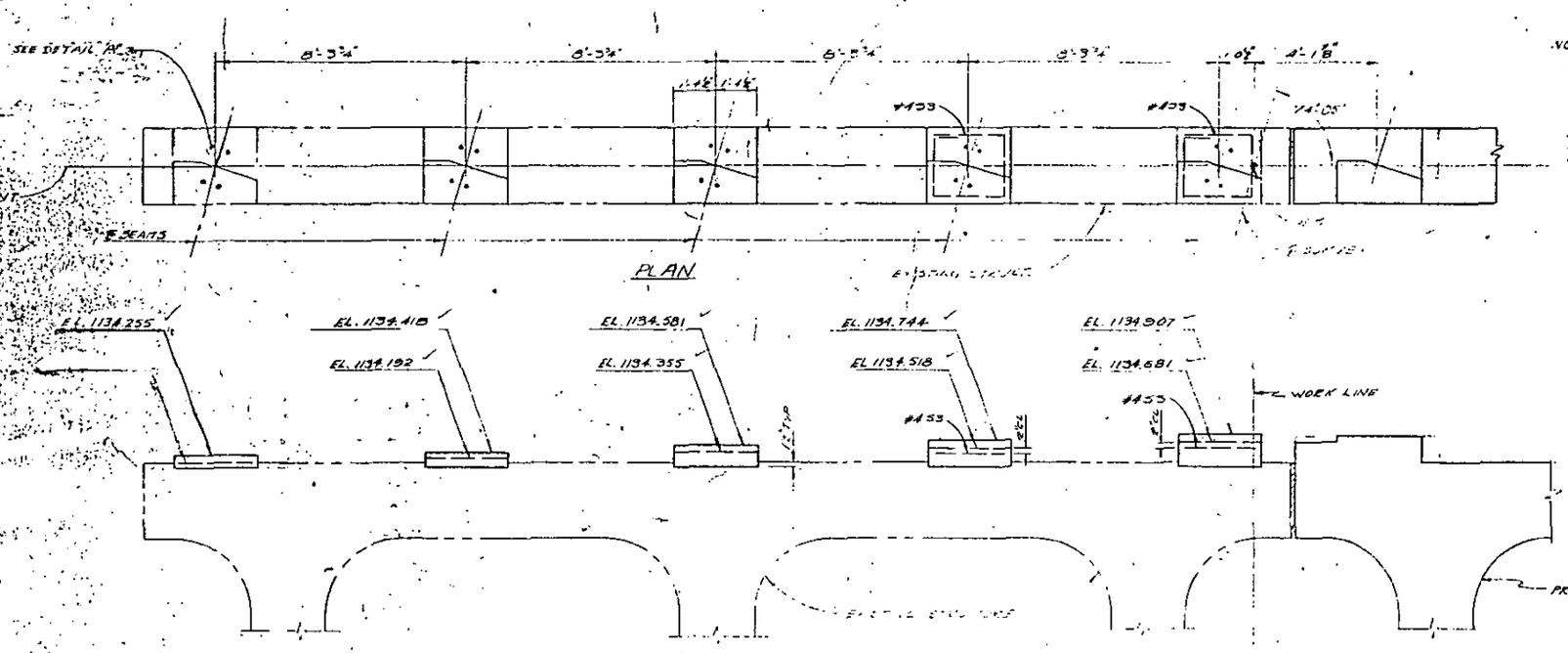
CAROLINA STEEL

REVISIONS						SHEET NO. 9/8
NO.	BY	DATE	NO.	BY	DATE	TOTAL SHEETS 26
1			3			
2			4			

DRAWN BY C.L. Noles DATE 6-14-72
CHECKED BY Vera O Wilson DATE 8-23-72

SEE PAGES 8-12 OF STR. PRJ RECORD BOOK #1

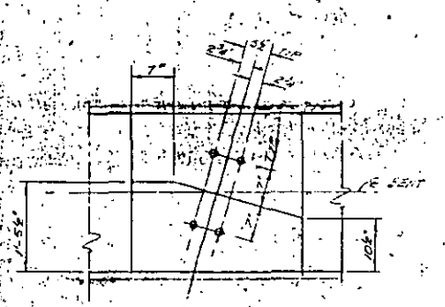
Sheet 69 of 84



PLAN

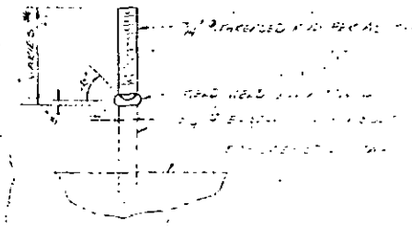
ELEVATION

NOTE
BUILT UP BRIDGE SEATS TO BE OF CLASS 'A' CONCRETE AND DOWELED INTO EXISTING CONCRETE CAP. EXTREME CARE SHOULD BE TAKEN NOT TO DAMAGE EXISTING REINFORCING STEEL WHILE CUTTING CONCRETE FOR BUILDUPS - 1" DIM. MAY BE REDUCED AT THE ENGINEERS DISCRETION.



BUILTUP BRIDGE SEAT DETAIL
DIMENSIONS SHOWN TO ANCHOR BOLTS ARE EXISTING(*) DIMENSIONS

* EXTEND EXISTING ANCHOR BOLTS AS REQUIRED TO PROJECT 5¼" ABOVE NEW BUILTUP BRIDGE SEATS.



DETAIL A (TYP)

See Pages 13-15 of Str. Prj Record Book # 1.

PROJECT No. 9.7122902
CLEVELAND COUNTY
STATION: 16+09.16 -L-

STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION
RALEIGH

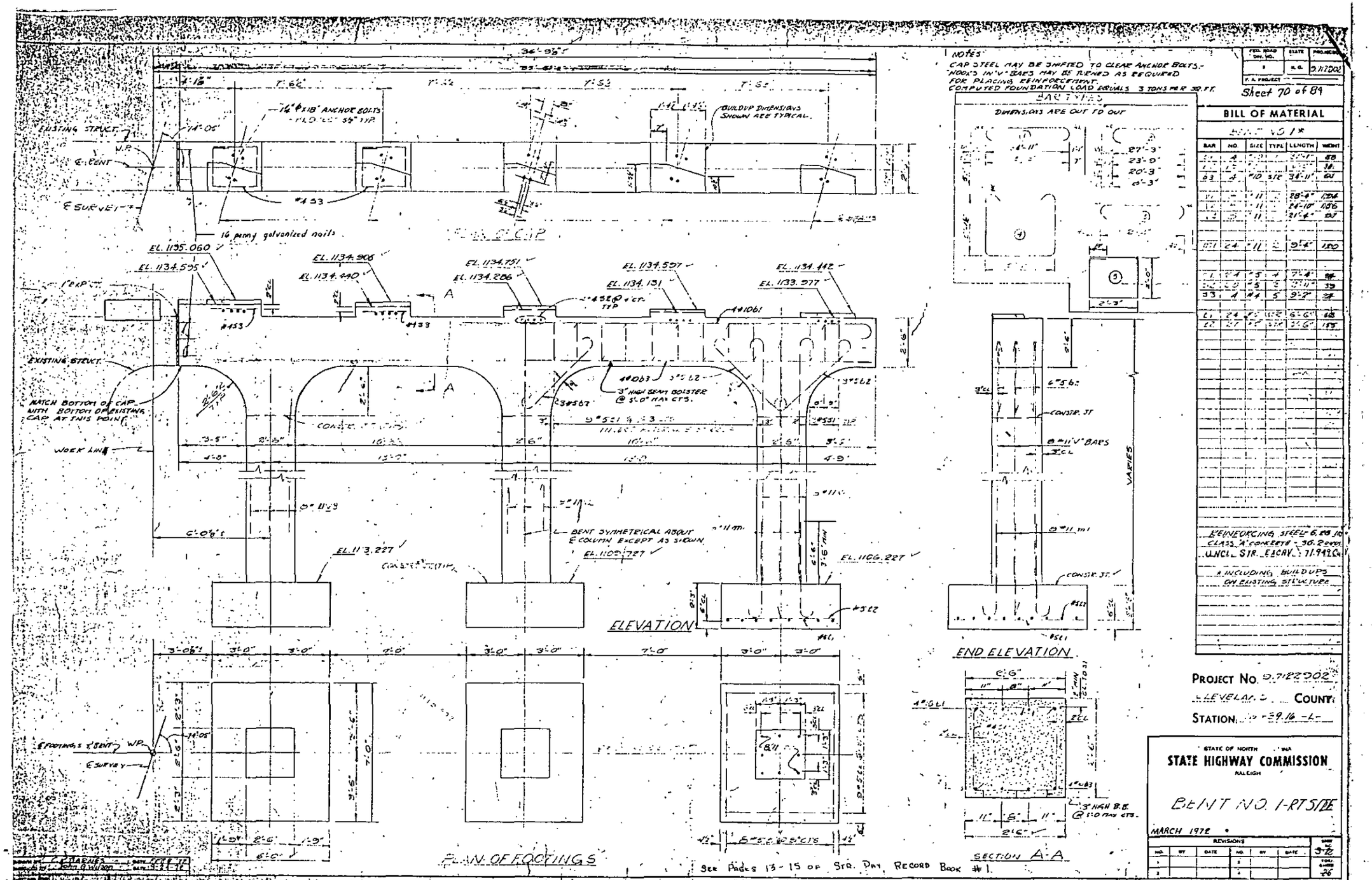
BENT NO. 1-LT. SIDE

MARCH 1972

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

DRAWN BY: C.E. BARNES DATE: DEC. 71
CHECKED BY: JOHN G. WILSON DATE: 3-21-72

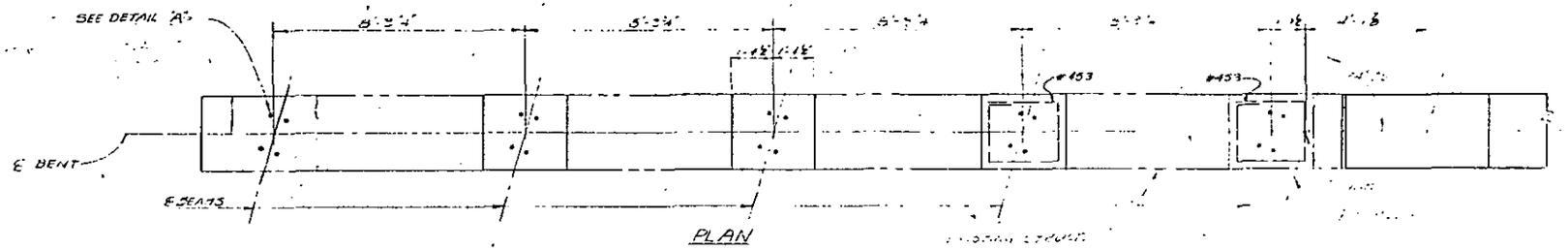
11-16-31 | CHKD BY: ELW | DRAWN BY: CEB | E.L. OFFICE



Sheet 70 of 89

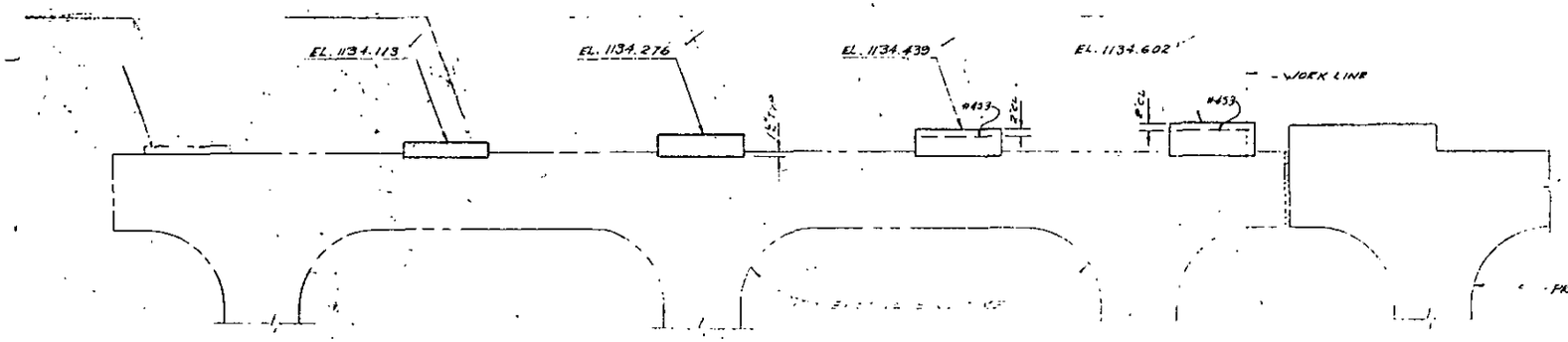
FED. ROAD DIST. NO.	STATE	PROJECT NO.
8	N.C.	9.7112901
F. A. PROJECT		

Sheet 71 of 89

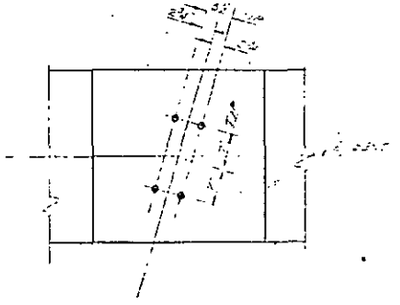


PLAN

1. FILL MIDDLE SEATS TO BE OF CLASS 'A' CONCRETE AND DOWEL IN INTO EXISTING CONCRETE CAP. EXTREME CARE SHALL BE TAKEN NOT TO DAMAGE EXISTING REINF. STEEL WHILE CUTTING CONCRETE FOR BUILDUPS. 1½" DIMENSION MAY BE REDUCED AT THE ENGINEERS DISCRETION.

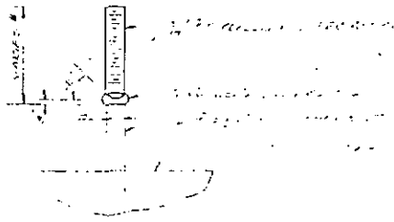


ELEVATION



BUILT UP BRIDGE SEAT DETAIL

DIMENSIONS SHOWN TO ANCHOR BOLTS ARE EXISTING (E) DIMENSIONS



DETAIL 'A' TYP

* EXTEND EXISTING ANCHOR BOLTS AS REQUIRED TO PROJECT 3½" ABOVE NEW BUILT UP BRIDGE SEATS.

SEE PAGES 17-19 OF STR PAY RECORD BOOK #1.

PROJECT NO. 9.7122901

FILE NO. 11-D COUNTY

STATION: 16+39.16 -L-

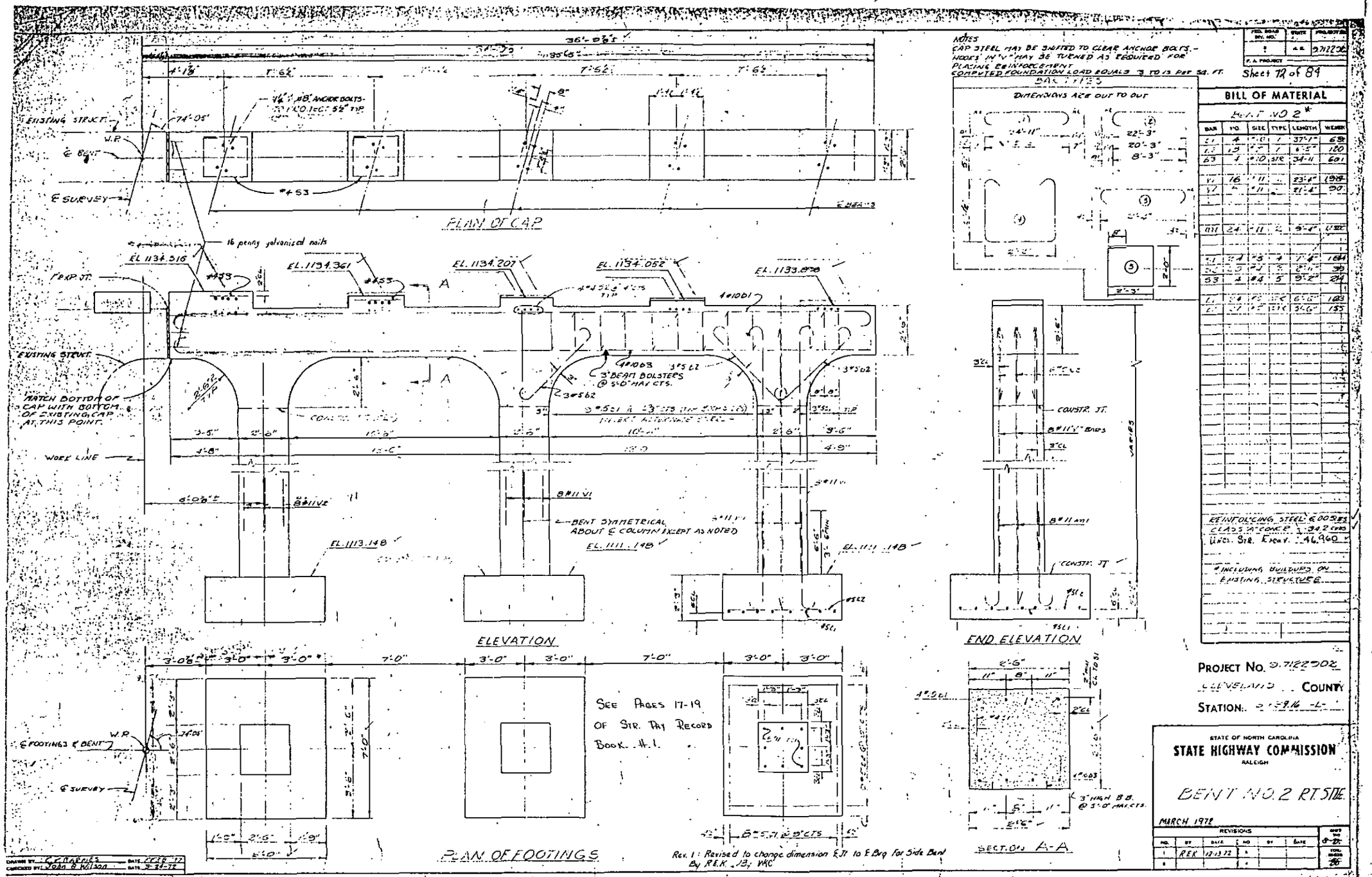
STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION
RALEIGH

BENT NO. 2-LT SIDE

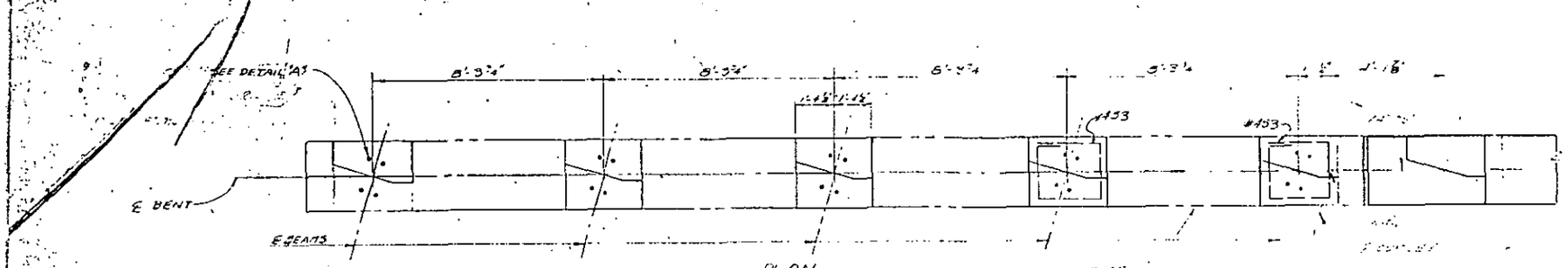
MARCH 1972

REVISIONS						SHT NO.
NO.	BY	DATE	NO.	BY	DATE	9-A
1			3			TOTAL SHTS.
2			4			28

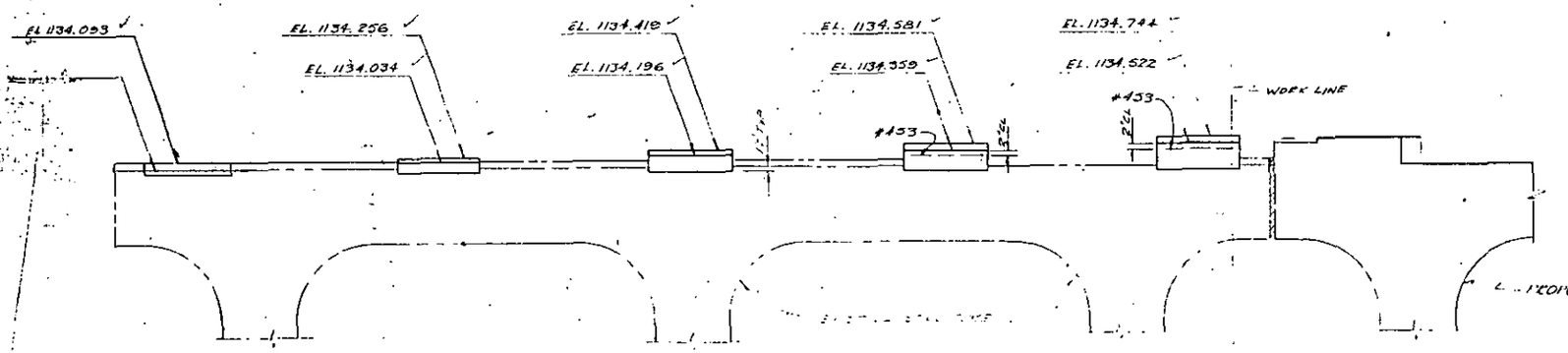
DRAWN BY: G.C. BARNES DATE: FEB 1972
CHECKED BY: John B. Wilson DATE: 3-24-72


PLAN OF CAP
ELEVATION
END ELEVATION
PLAN OF FOOTINGS
SECTION A-A
BAR TYPES
BILL OF MATERIAL
BENT NO 2 *
REINFORCING STEEL 6,005 LBS
CLASS A CONC. P. 342 CUYD
UNCL. STR. EXCAV. 46.960
INCLUDING BUILDUPS ON EXISTING STRUCTURE
PROJECT NO. 9.7122502
CLEVELAND COUNTY
STATION: 2+58.16 -L-
STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION
RALEIGH
BENT NO. 2 RT. SIDE
MARCH 1972
REVISIONS
Rev. 1: Revised to change dimension ℄ JT. to ℄ Brg. for Side Bent By R.E.K. 12-13-72 WKC
SEE PAGES 17-19 OF STR. PAY RECORD BOOK H-1.
Sheet 72 of 89

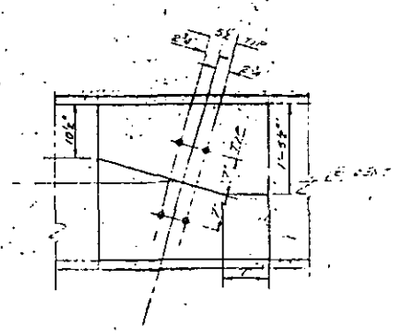
Sheet 73 of 84



NOTE
BUILTUP BRIDGE SEATS TO BE OF CLASS 'A' CONCRETE AND KEYED 12" INTO EXISTING CONCRETE CAP.
EXTREME CARE SHALL BE TAKEN NOT TO DAMAGE EXISTING REINF. STEEL WHILE CUTTING CONCRETE FOR BUILDUPS - 12" DIMENSION MAY BE REDUCED AT THE ENGINEER'S DISCRETION

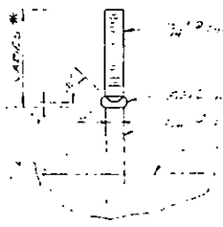


ELEVATION



BUILTUP BRIDGE SEAT DETAIL
DIMENSIONS SHOWN TO ANCHOR BOLTS ARE EXISTING (E) DIMENSIONS

* EXTEND EXISTING ANCHOR BOLTS AS REQUIRED TO PROJECT 5½" ABOVE NEW BUILTUP BRIDGE SEATS.



DETAIL A TYP

SEE PAGES 22-25 OF STR. DTL RECORD BOOK #1.

PROJECT NO. 9.7122302
CLEVELAND COUNTY
STATION: 14+38.16 -L-

STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION
RALEIGH

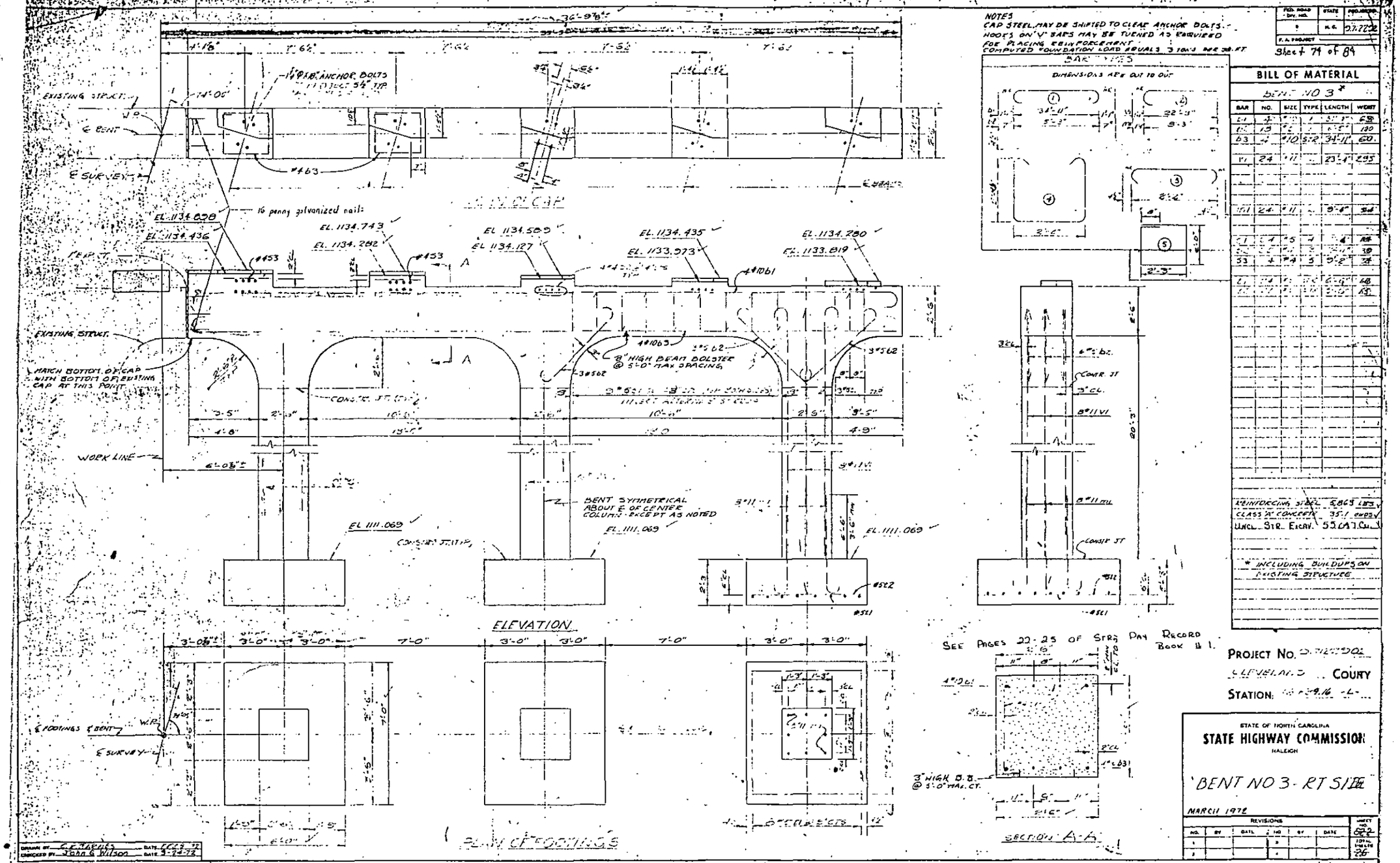
BENT NO. 3 (T.S.) IDE

MARCH 1972

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

SHEET NO. 521
TOTAL SHEETS 28

DRAWN BY C.F. RAGINES DATE FEB. 72
CHECKED BY John B. Wilson DATE 2-24-72



NOTES
CAP STEEL MAY BE SHIFTED TO CLEAR ANCHOR BOLTS.
HOOKS ON "V" BARS MAY BE TURNED AS REQUIRED FOR PLACING REINFORCEMENT.
COMPUTED FOUNDATION LOAD EQUALS 3 TONS PER SQ. FT.

FED. ROAD DIV. NO.	STATE	FED. AID NO.
9	N.C.	BRZ-2222

F. A. PROJECT

Sheet 71 of 89

BILL OF MATERIAL

BENT NO 3 *

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
E1	4	#11	1	37'-1"	616
E2	13	#7	1	10'-5"	130
E3	4	#10	5-2	34'-11"	60
V1	24	#11		23'-1"	595
V11	24	#11		9'-4"	344
C1	4	#5	4	6'-4"	26
C2	2	#5	4	5'-0"	10
S3	4	#4	3	5'-2"	14
C1	4	#5	4	6'-4"	26
C2	2	#5	4	5'-0"	10

REINFORCING STEEL 5,863 LBS.
CLASS "A" CONCRETE 35.1 CU. YDS.
UNCL. STR. EXCAV. 55.0 CU. YDS.

* INCLUDING BUILDUPS ON EXISTING STRUCTURE

PROJECT NO. [illegible]
CLEVELAND COUNTY
STATION: [illegible]

STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION
RALEIGH

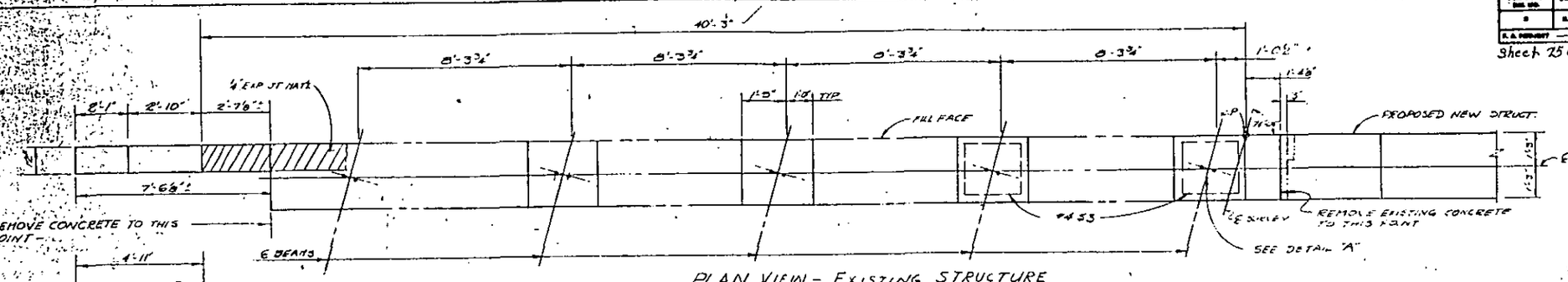
BENT NO 3 - RT SIDE

MARCH 1972

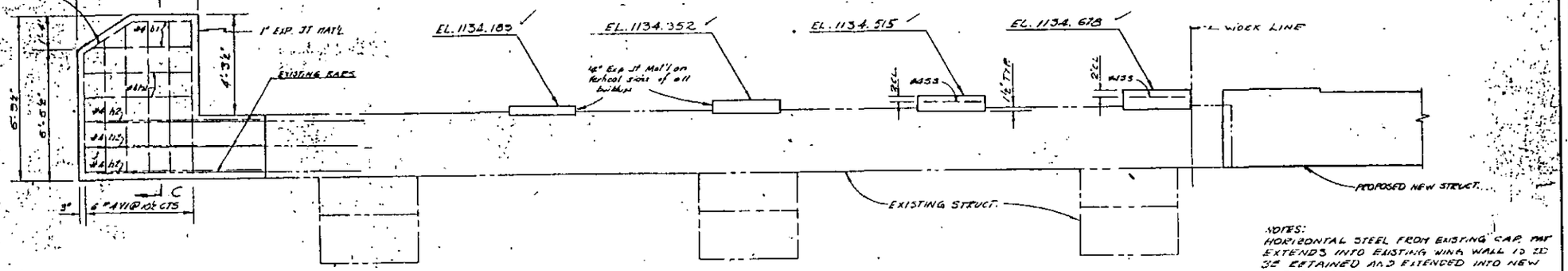
REVISIONS							SHEET NO.
NO.	BY	DATE	NO.	BY	DATE		22
1			3				TOTAL SHEETS
2			4				26

DRAWN BY C.C. HARDEE DATE 6/23/72
CHECKED BY JOHN G. WILSON DATE 9-26-72

Sheet 25 of 84

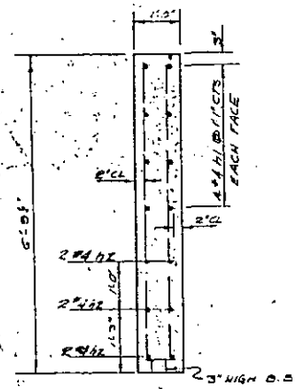


PLAN VIEW - EXISTING STRUCTURE

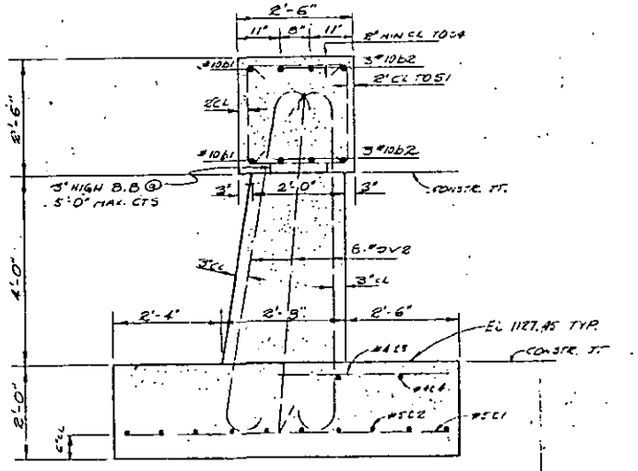


ELEVATION

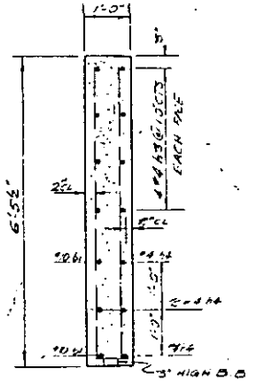
NOTES:
HORIZONTAL STEEL FROM EXISTING CAP THAT EXTENDS INTO EXISTING WING WALL IS TO BE RETAINED AND EXTENDED INTO NEW CAP EXTENSION.
BUILT UP BRIDGE SEATS TO BE OF CLASS 'A' CONCR. AND DOWELED 12" INTO EXISTING CONCR. CAP. EXTREME CARE SHALL BE TAKEN NOT TO DAMAGE EXISTING REINFORCING STEEL WHILE CUTTING CONCRETE FOR BUILT UP'S. 12" DIMENSION MAY BE REDUCED AT THE ENGINEER'S DISCRETION.



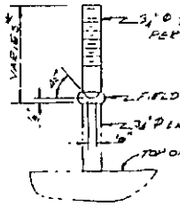
SECTION C-C



SECTION A-A



SECTION B-B



DETAIL A

A EXTEND EXISTING ANCHOR BOLTS AS REQUIRED TO PROJECT 3½" ABOVE NEW BUILT UP BRIDGE SEATS

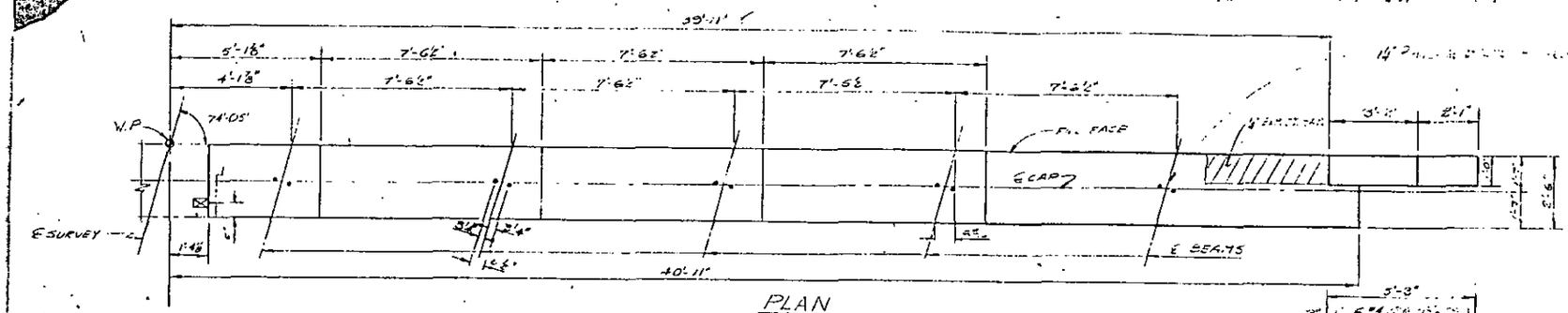
PROJECT No. 9.7122902
CLEVELAND COUNTY
STATION: 16+39.16 -L-

STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION
RALEIGH

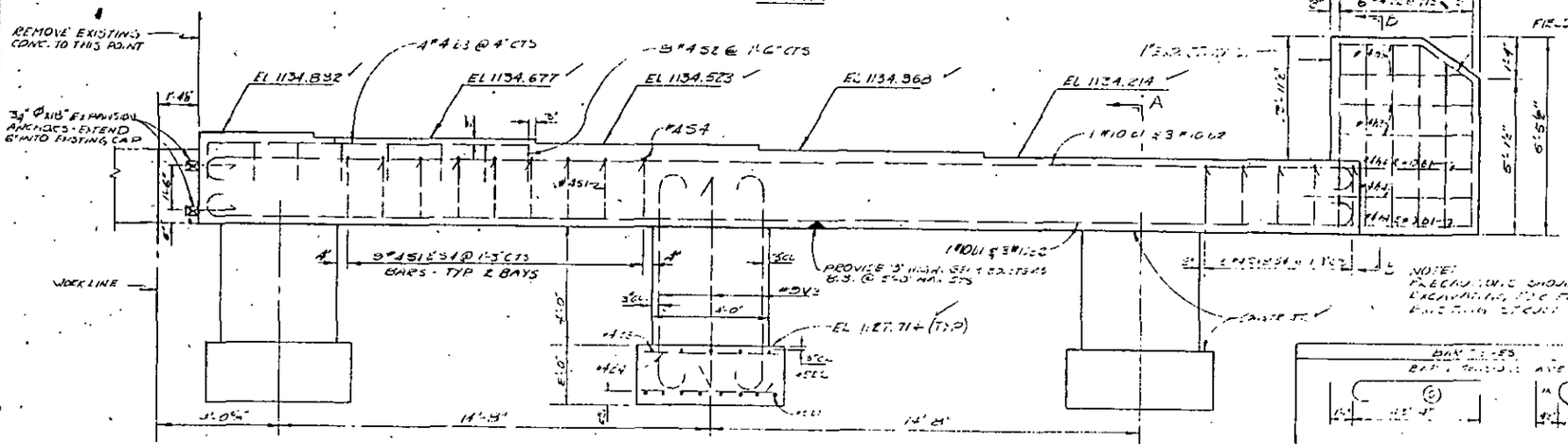
END BENT NO. 2

DESIGNED BY: C.P. BARNES DATE: 2-21-72
CHECKED BY: JOHN O. WILSON DATE: 3-24-72

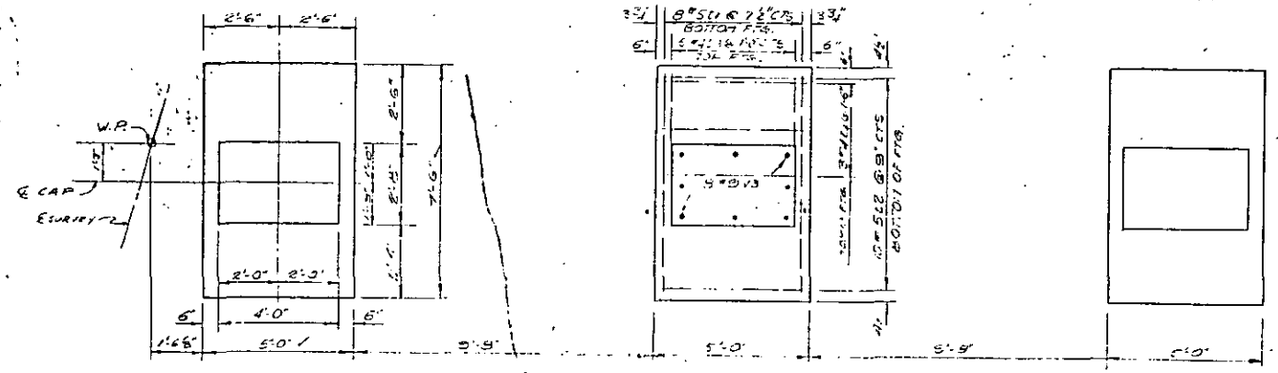
SEE PAGES 26-28 OF STR. PRJ RECORD BOOK #1.



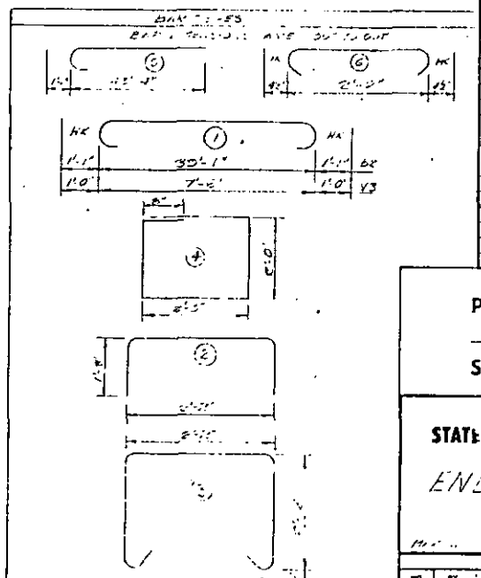
PLAN



ELEVATION



PLAN OF FOOTINGS



SEE PAGES 26-28 OF STR. PAT RECORD BOOK # 1.

FED. ROAD DIV. NO.	STATE	PROJECT NO.
9	N.C.	9.7122902
F. A. PROJECT		

Sheet 76 of 84

BILL OF MATERIAL

END BENT 2 *

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#10	5	41'-0"	342
B2	6	#10	1	41'-0"	1065
C*	4	#4	STR	10'-0"	20
B1	5	#4	STR	4'-5"	24
B2	6	#4	STR	7'-0"	28
B3	6	#4	1	4'-0"	16
B4	7	#4	STR	5'-6"	15
V1	12	#4	STR	6'-4"	51
V2	12	#4	STR	6'-0"	48
V3	24	#9	1	9'-6"	775
L1	24	#5	STR	7'-0"	175
L2	20	#5	STR	4'-6"	141
L3	12	#4	STR	3'-6"	28
L4	9	#4	STR	4'-6"	27
S1	23	#4	3	7'-2"	110
S2	8	#4	3	4'-2"	22
S3	2	#4	4	9'-2"	12
S4	23	#4	6	2'-11"	45

REINFORCING STEEL 4012 LBS
CLASS "A" CONCRETE 85.7 CU. YDS.
Unclassified Structure Excavation 2209 Cu. Yds.
Unclass. Excav. for Structures 88 Cu. Yds.
* INCLUDES BUILDING OF BACKWALLS

PROJECT NO. 9.7122902
CLEVELAND COUNTY
STATION: 16+39.16 -L-

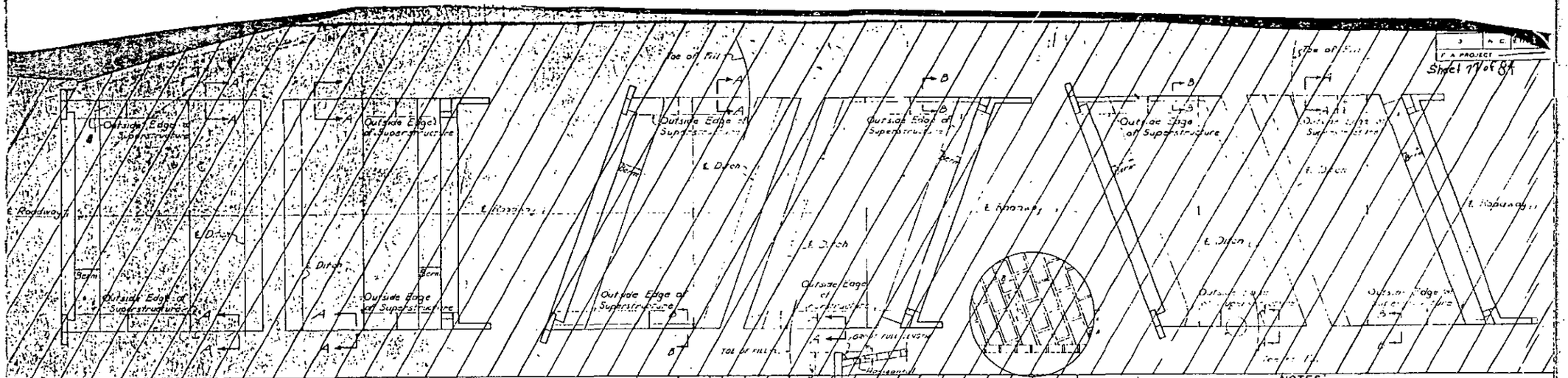
STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION
RALEIGH

END BENT NO. 2

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	5-76
1			3			TOTAL SHEETS
2			4			26

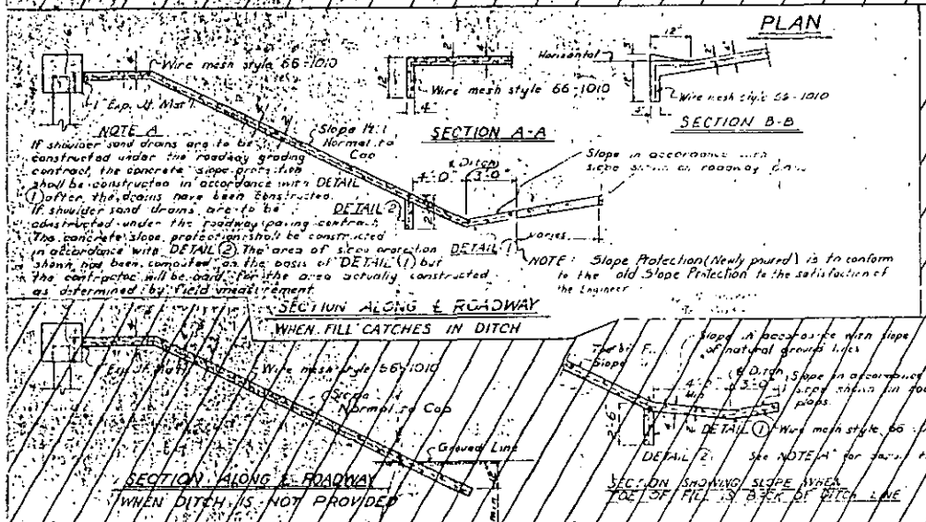
DRAWN BY: [illegible] DATE: 4-11-77
CHECKED BY: John G. Wilson DATE: 3-24-77

11-16-31 | CHKD BY: RLW | 8-24-78 | 82 OF 84

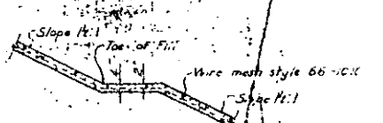


Sheet 7 of 8A

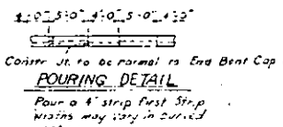
PLAN



See Pages 10-11 of Std. Pay Record Book #1.



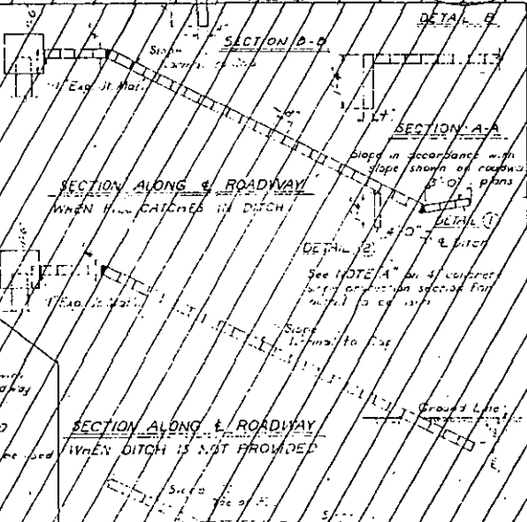
SECTION SHOWING CATCH BERM BETWEEN FILL SLOPE AND CUT SLOPE



POURING DETAIL

Pour a 4' strip first Strip widths may vary in curved portion

PLAN WHERE POURS OR CONSTRUCTION JOINTS SHALL BE PLACED IN SLOPE PROTECTION



DETAILS FOR ALTERNATE "B"

NOTES:

A 4" concrete slope protection paving shall be placed under the ends of the bridge seats at the locations shown on the details. [illegible] immediately before placing the paving, the slope shall be properly shaped and firmly compacted so that it conforms to the lines and grades shown. The finished surface shall be reasonably smooth and uniform and shall not vary more than 1 inch in a distance of 10 feet from straight edging and not be rejected unless, in the opinion of the Engineer, such inaccuracies indicate a need for it.

Slope Protection shall be: 4" poured in place concrete paving as shown in details on the sheet. Concrete shall be Class B. The concrete surface shall be floated with a wood float and finished.

The quantity to be paid for under this item shall be the number of square yards of slope protection measured in place complete and accepted, including the area of the toe walls being 4" thick or protection (For example 5 mile area for toe wall 10' thick)

The quantity measured as provided for above, shall be paid for at the contract unit price per square yard for mesh, excavation, backfilling, preparation of slopes, and all materials, labor, equipment, tools, and incidentals necessary to complete the work.

Alternate "B" Portion consist of solid concrete blocks 8"x8"x16" laid in regular courses that form a checkered pattern with open joints 4" wide in the pattern one block to be laid with their long axis parallel to the end bent cap. Joints shall be staggered so that no joint in row 2 performed shall be directly between successive courses and row 3 joints shall be graded by placing a mixture of fine soil, sand, and cement over the joints mixed with sufficient water to make the mixture of the consistency of thick cream.

The concrete blocks shall be laid to uniform dimensions and shall have uniform surfaces free from any appreciable irregularities or projections to produce a compact mass of the type specified. At the end of the day's work the open joints shall be filled with mortar to bring the joints along each side of the paving up to the surface of the blocks. The mortar shall be mixed in proper proportions of cement and sand to produce a dense mortar of such consistency as to be workable, shall not segregate when placed in the joints and shall adhere to the blocks sufficiently to prevent it from falling out of the joints when the forms are removed.

Wire mesh reinforcing to be style 66-1010 for wire. Reinforcing steel shall be placed as shown on Slope Protection Details in alternate "B" Slopes as shown on Paving Details. The cost of wire mesh to be included in the contract unit price bid per square yard for 4" concrete slope protection.

The same type of slope protection shall be used under both ends of the bridge.

PROJECT NO. 9712292

CLEVELAND COUNTY

STATION: 16+39.16 -L-

Rev. No. 1 Revise Section B-B & sheet 1 [illegible] By [illegible]
Rev. No. 2 To remove [illegible] By [illegible]
Rev. No. 3 To remove [illegible] By [illegible]

Sheet 7 of 8

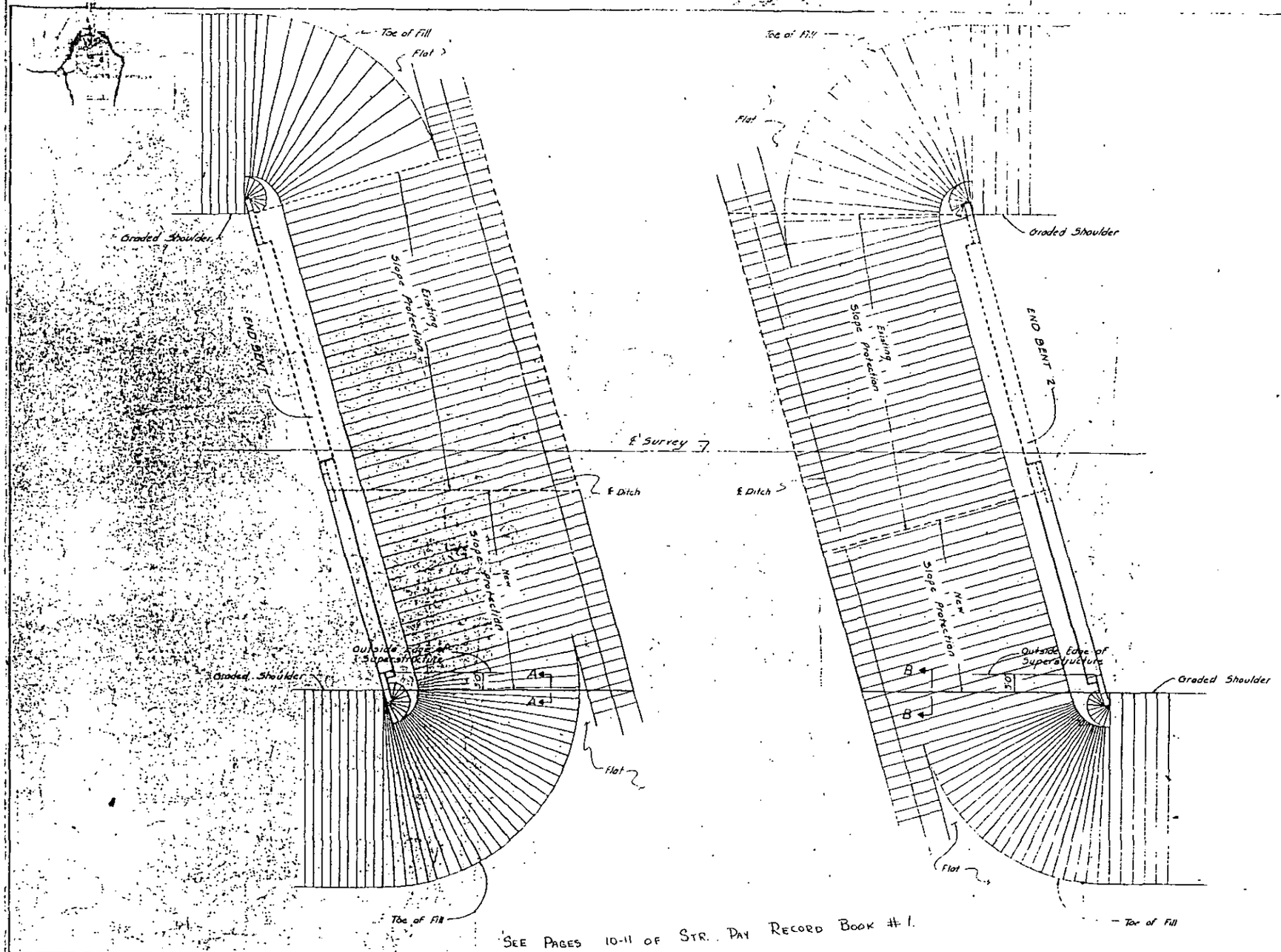
BRIDGE @ 16+35.7 E.P. 209 170.661 E.P. 180 188.888 P.O.

STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION

STANDARD
SLOPE PROTECTION
PAVING DETAILS

March 1972

ASSEMBLED BY: Ross E. Kykendall DATE: Dec. 1, 71
CHECKED BY: John G. Wilson DATE: 3-27-72
DRAWN BY: W. U. Bowers DATE: Sept. 7, 64
CHECKED BY: G. T. PHILLIPS DATE: MAR 10 '64



SEE PAGES 10-11 OF STR. PAY RECORD BOOK #1.

FED. ROAD DEM. NO.	STATE	PROJECT NO.
8	N. C.	9.7122902
R. A. PROJECT		

Sheet 78 of 84

PROJECT No. 9.7122902
CLEVELAND COUNTY
STATION: 16+39.16 -L-
SHEET 2 OF 2

STATE OF NORTH CAROLINA
STATE HIGHWAY COMMISSION
RALEIGH

SLOPE PROTECTION PAVING DETAIL

MARCH 1972

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	
1			3			TOTAL SHEETS
2			4			78

DRAWN BY: Rob Lloyd Lodge DATE: Dec. 2, 1971
CHECKED BY: John G. Wilson DATE: 1-10-72