

MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		70	70	

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GENERAL NOTES

**DESIGN SPECIFICATIONS:** A.A.S.H.T.O., 1977, Load Factor Design and Interim Specification 1978.

**DESIGN LOADING:** HS20-44 with 15#/sq. ft. for deck surfacing and 14#/sq. ft. for metal stay-in-place forms. Fatigue stress: Case II (Interim 1974).

**CONSTRUCTION SPECIFICATION:** Missouri Standard Specifications for Highway Construction, 1977.

**DESIGN UNIT STRESSES:**  
 Class B2 Concrete (Superstructure)  $f'c = 4,000$  psi.  
 Class B Concrete (Substructure)  $f'c = 3,000$  psi.  
 Reinforcing Steel - Grade 60  $f_y = 60,000$  psi.  
 Structural Steel  $f_y = 36,000$  psi.  
 Steel Pile  $f_b = 9,000$  psi.

**Concrete:**  
 Concrete for superstructure including parapets on end bents shall be Class B2. Concrete for substructure above construction joint or bottom of slab shall be Class B2 and concrete below this joint shall be Class B.

**PERMANENT FORMS:** Permanent corrugated metal forms for structural slabs shall be used in all areas of the superstructure, except for overhangs.

**REINFORCING STEEL:**  
 Bar sizes are designated on plans by numbers. The first digit after the letter in three digit marks and the first two digits after the letter in four digit marks indicate the size of the bar. Dimensions shown on the plans from the reinforcing steel to the outside edge of concrete are clear dimensions unless otherwise indicated. Minimum clearance to reinforcing steel shall be 1" unless shown otherwise. All bending dimensions are "out to out" of bars. Hooks and bends, unless otherwise shown, shall be in accordance with the ACI Manual of Standard Practice for Detailing Reinforced Concrete Structures (ACI-318-71).

**UTILITIES:** All utilities, unless shown otherwise, shall be removed or relocated by others. The Contractor shall notify the owner of the utilities of his work schedule sufficiently in advance to allow time for disposition of utilities.

**PAINT:** See Special Provisions.

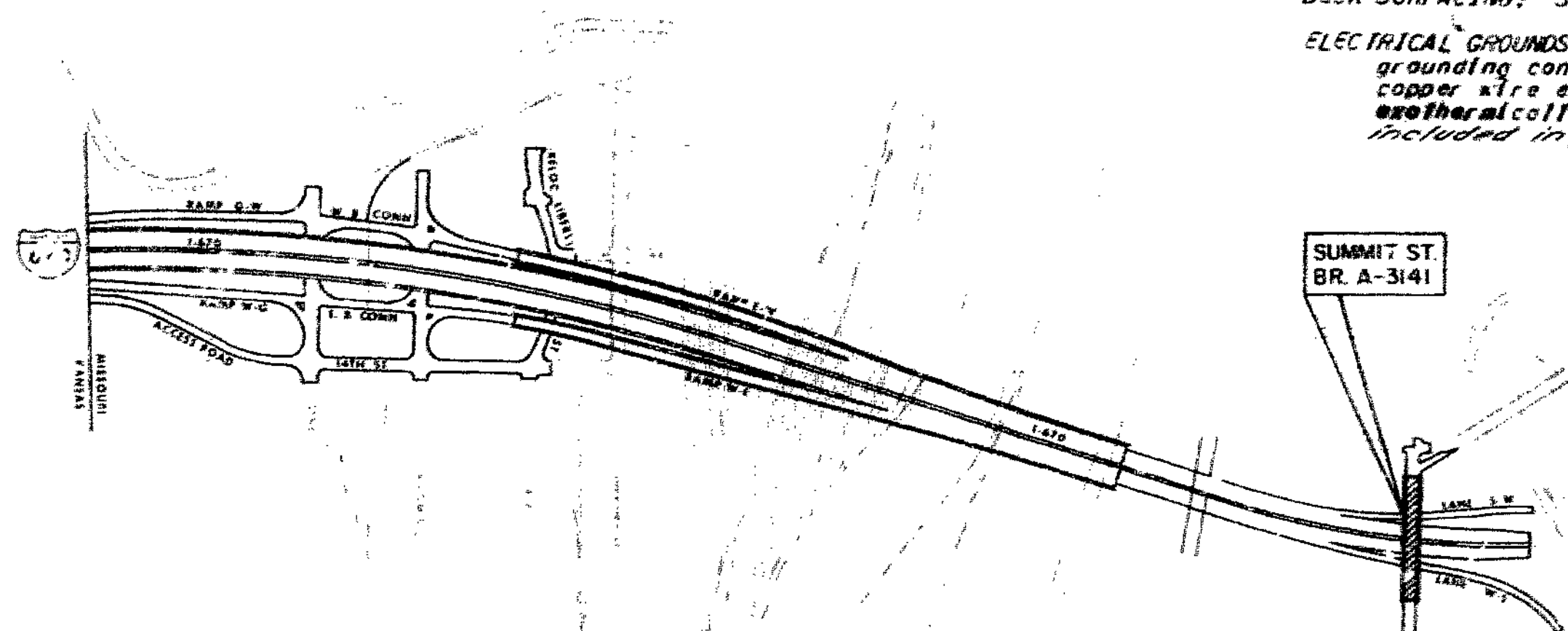
**ANCHOR BOLTS:** Anchor bolts of the diameters shown shall be drilled in at the location shown. The Contractor shall insure a 1/2" distance between center of anchor bolt and adjacent reinforcing; shifting of reinforcing bars shall be subject to approval of the Engineer.

**BOX GIRDERS:** Bolts shall be ASTM A325 1/2" with 2" holes unless otherwise shown or noted. By approval of the Engineer, the Contractor may omit any shop splice, if desired, by extending the heavier plate and providing approved modifications of details of field splices and elsewhere as required. Payweight in any case will be based on material shown on the design plans. All structural steel shall be ASTM A16.

**JOINT FILLER:** All joint filler shall meet the requirement of A.C.I. Spec. 10.7.2.4.

**DECK SURFACING:** See Special Provisions.

**ELECTRICAL GROUNDS:** An electrical ground shall be provided at End Bent 2. The grounding conductor shall be size 1/0 and shall be bare stranded solid-copper wire electrothermally welded at the lower end to a steel pile and electrothermally welded at the upper end to Box Girder 2. Cost shall be included in price bid for other items.



LOCATION SKETCH

Note: This drawing is not to scale. Follow dimensions.

Sheet No. 1 of 24



SUBMITTED BY  
*Arnell D. Williams*  
 REGISTERED PROFESSIONAL ENGINEER  
 MISSOURI NO. E-7860

DESIGNED A.N. 10 78  
 DETAILED H.E.B. 10 78  
 CHECKED C.K.B. 10 78

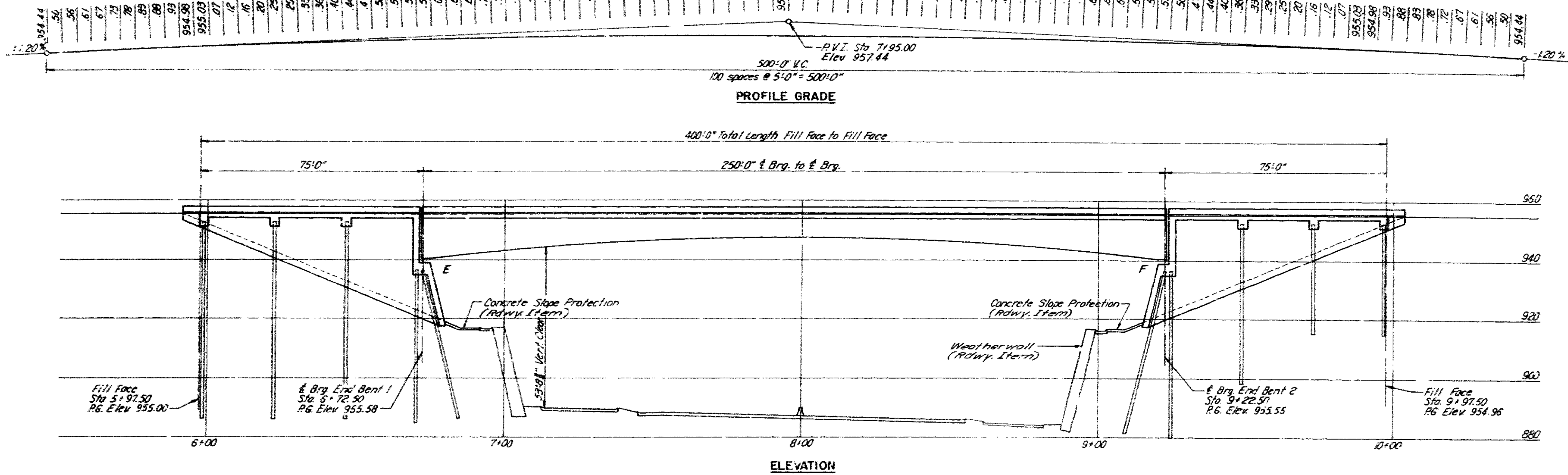
B.M.  
 MDH-11 "X" in E. bolt on fire hydrant on N.W. corner of 16th and Summit (State Elev. 956.17) Elev. 956.09

BRIDGE: SUMMIT STREET UNDERPASS  
 STATE ROAD I-670  
 IN KANSAS CITY  
 PROJECT NO. I-16-670-1(52) STA. 93+49.78 I-670  
 JOB NO. 4 I-670 46 RTE I-670  
 JACKSON COUNTY

STD. 611.60
STD. 706.35
A-3141

DATE 6/7/77

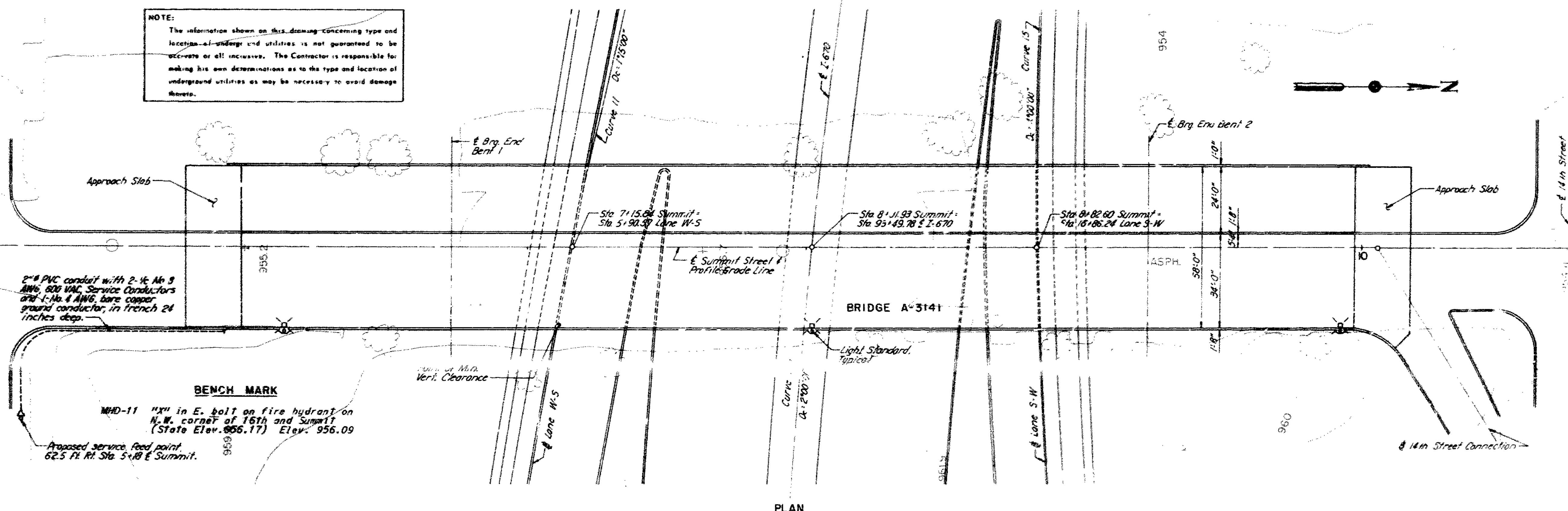
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
3	MO.		18	71	



**CURVE DATA**

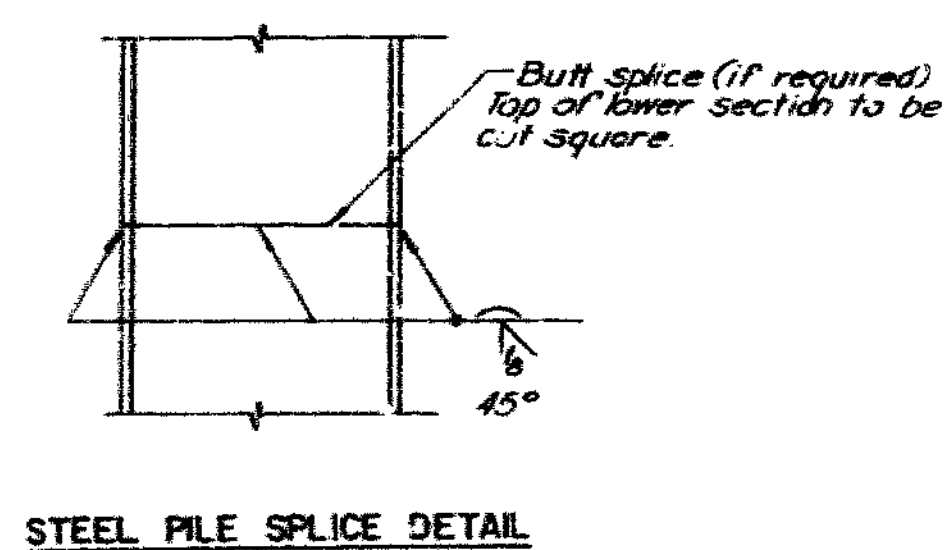
- CURVE 2**  
 P.I. Sta. 92+04.319  
 Δ = 16° 46' 49.7"  
 D = 2° 00' 00"  
 R = 2,864.785'  
 L = 939.024'  
 T = 422.538'
- CURVE 11**  
 P.I. Sta. 3+04.526  
 Δ = 6° 35' 20.4"  
 D = 1° 15' 00"  
 R = 4,583.662'  
 L = 532.453'  
 T = 266.526'
- CURVE 15**  
 P.I. Sta. 15+23.663  
 Δ = 18° 28' 41.0"  
 D = 4° 00' 00"  
 R = 1,432.394'  
 L = 232.989'  
 T = 461.951'

**NOTE:**  
 The information shown on this drawing concerning type and location of underground utilities is not guaranteed to be accurate or all inclusive. The Contractor is responsible for making his own determinations as to the type and location of underground utilities as may be necessary to avoid damage thereto.



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FED. ROAD DIST. NO.	F. ATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	NO.		72		



ESTIMATED QUANTITIES				
ITEM	UNIT	SUB STRUCTURE	SUPER STRUCTURE	TOTAL
Class 1 Excavation	Cu. Yd.	265	-	265
Pedestrian Fence (Structure)	Lin. Ft.	-	410	410
Structural Steel Pile (HP12x53)	Lin. Ft.	630	-	630
Structural Steel Pile (HP14x73)	Lin. Ft.	4,232	-	4,232
Class B Concrete	Cu. Yd.	638.1	-	638.1
Class B2 Concrete	Cu. Yd.	382.1	618.2	1,000.3
Type "N" R.T.F.E. Bearings	Each	28	-	28
Elastomeric Expansion Joint Seal (2.5 in.)	Lin. Ft.	-	56	56
Preformed Compression Expansion Joint Seal (2.5 in.)	Lin. Ft.	-	58	58
Reinforcing Steel (Grade 60)	Pound	134,720	51,100	185,820
Reinforcing Steel (Grade 60) (Epoxy)	Pound	42,260	47,210	89,470
Bridge Lighting	Lump Sum	-	-	1
Fabricated Structural Steel (Box Girder)	Pound	-	1,915,810	1,915,810
Painting (System B) Aluminum	Lump Sum	-	1	1
Bridge Rail (Line Tube)	Lin. Ft.	-	807	807
Pre-bore for Piling	Lin. Ft.	19.47	-	19.47
Boncrete Concrete Topping	Sq. Yd.	356	630	986
Textured Surface (Precast)	Sq. Yd.	592	-	592

Notes:

All concrete (Class B2) and reinforcing steel (Grade 60) above Construction Joint under slab in End Bents is included in substructure quantities.

All concrete and reinforcement in light standard supports, safety barrier curbs and railings is included with superstructure quantities.

PILE DATA								
BENT	END BENT 1				END BENT 2			
PILE GROUP	1	2	3	4	1	2	3	4
Pile Type and Size	HP14x73	HP14x73	HP14x73	HP12x53	HP14x73	HP14x73	HP14x73	HP12x53
Number	26	4	4	4	2	6	4	2
Approximate Length (Ft.)	52	67	46	67	57	67	55	34
Design Bearing Value (Tons)	97	97	97	70	97	97	97	70
Hammer Energy Required (Ft. Lbs.)	24,000	21,800	21,800	15,800	24,000	21,800	21,800	15,800

Notes:

Minimum energy requirement of hammer based on plan length and design bearing value of steel piles.

All piles shall be driven to practical refusal at End Bents 1 and 2, Pile Groups 2, 3 and 4.

Pre-bore piles to Elev. 888.0 under Bearing Beam End Bent 1, Pile Group 1, and to Elev. 883.0 under Bearing Beam End Bent 2, Pile Group 1.

Note: This drawing is not to scale. Follow dimensions.

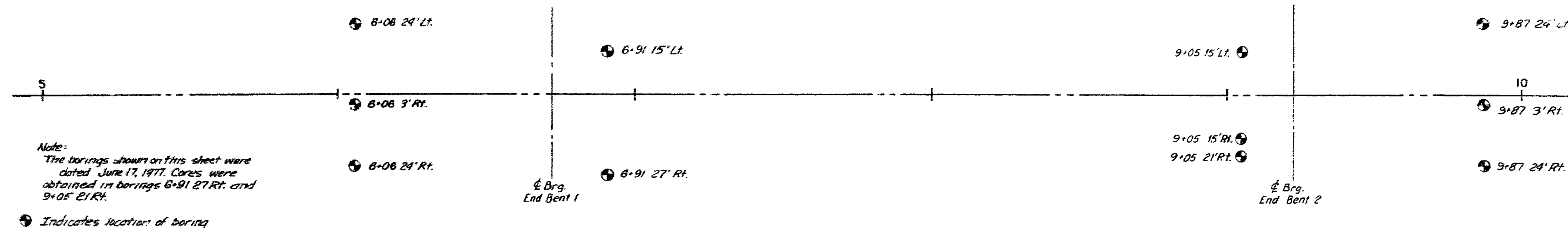
Sheet No. 3 of 24. SEE FINAL PLANS

SUMMARY OF QUANTITIES  
AND PILE DATA  
SUMMIT STREET  
JACKSON COUNTY

A-3141



FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		73	73	

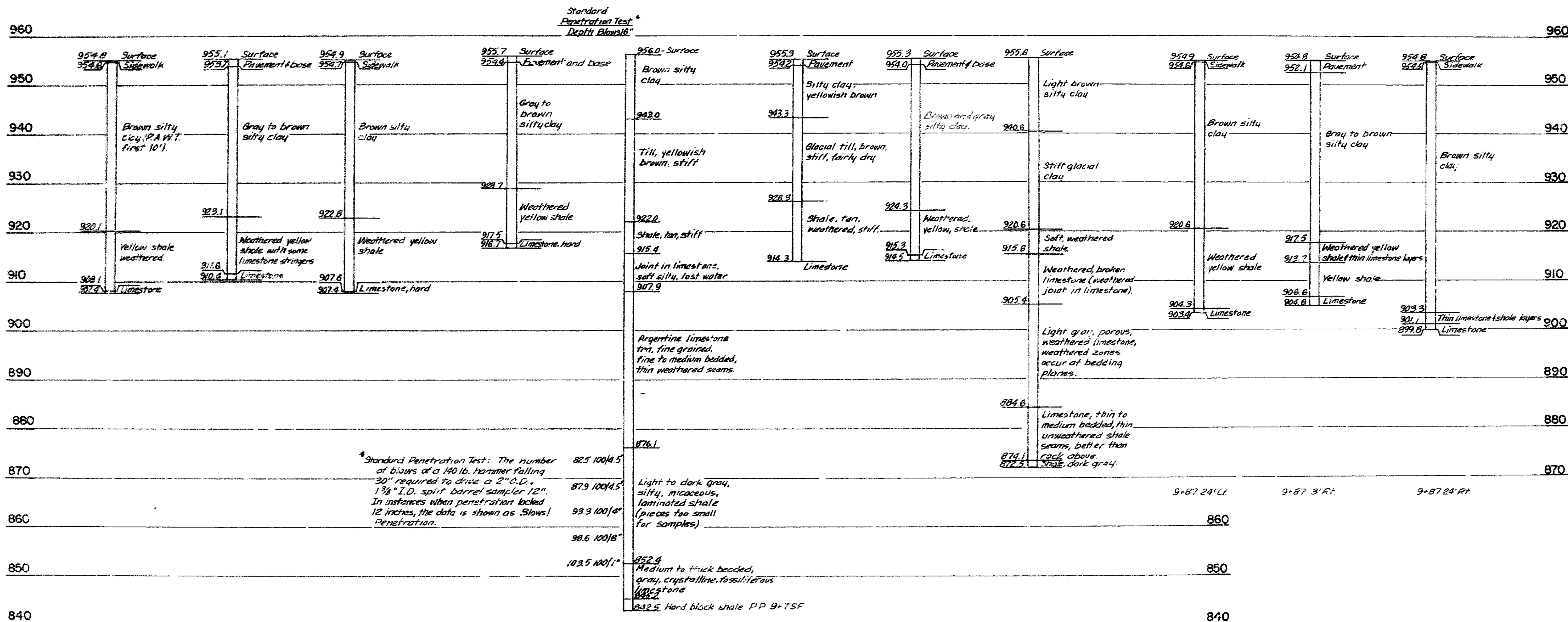


Note:  
The borings shown on this sheet were dated June 17, 1977. Cores were obtained in borings 6-91 27 Rt. and 9-05 21 Rt.

⊙ Indicates location of boring



BORING LOCATION SKETCH



\* Standard Penetration Test: The number of blows of a 140 lb. hammer falling 30" required to drive a 2" O.D., 1 3/8" I.D. split barrel sampler 12". In instances when penetration locked 12 inches, the data is shown as Slows/ Penetration.

NOTE:  
Subsurface information shown on this drawing was obtained solely for use in establishing design controls for the project. The accuracy of this information is not guaranteed and it is not to be construed as part of the plans governing construction of the project.

Note: This drawing is not to scale. Follow dimensions.

DETAILED JFS 19 78  
CHECKED GDJ 19 78

Sheet No. 4 of 24

BORINGS  
SUMMIT STREET  
JACKSON COUNTY

A-3141

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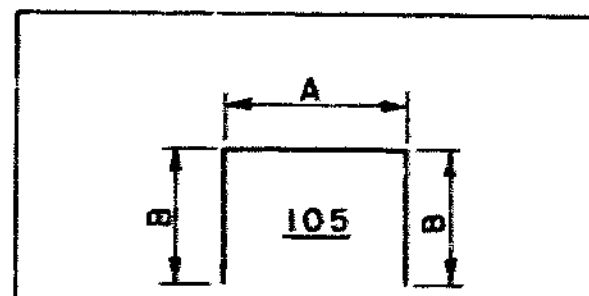
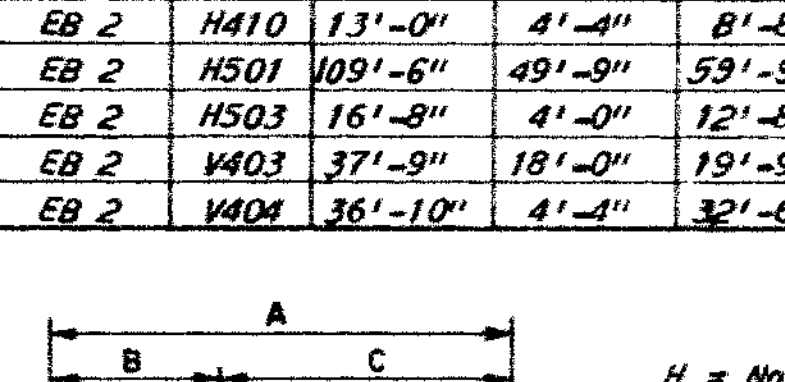
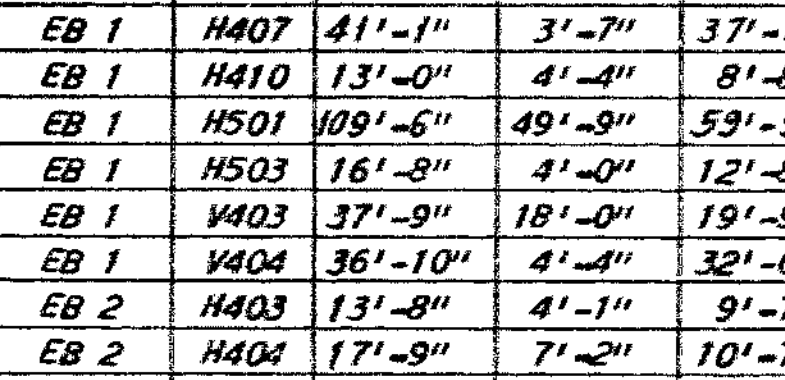
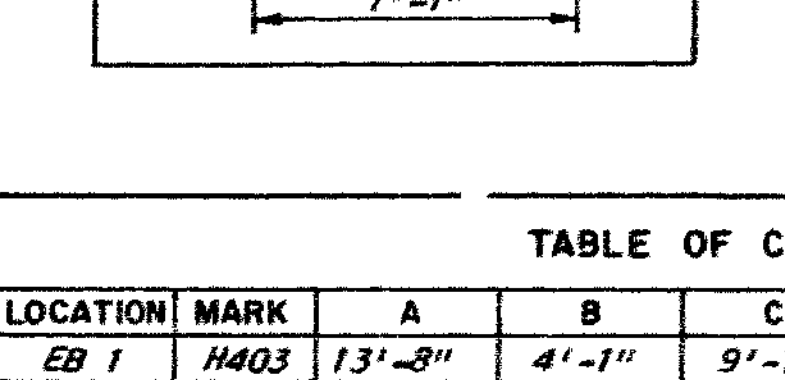
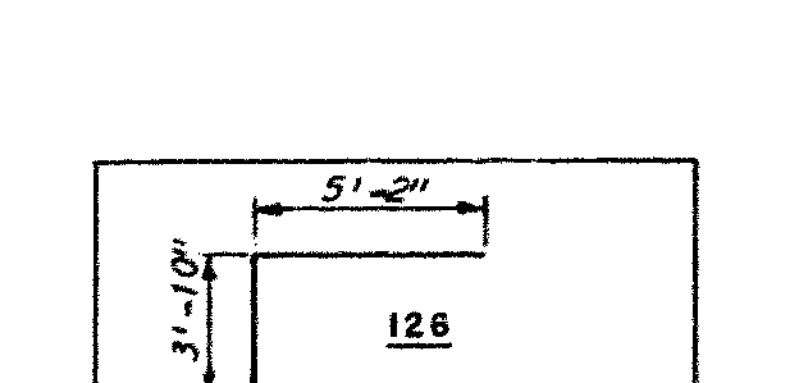
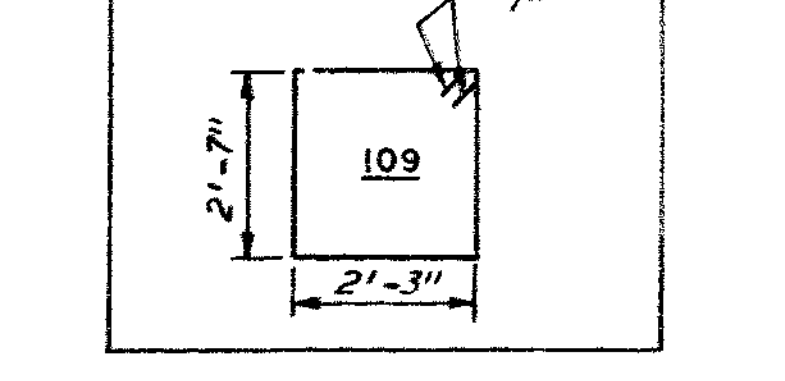
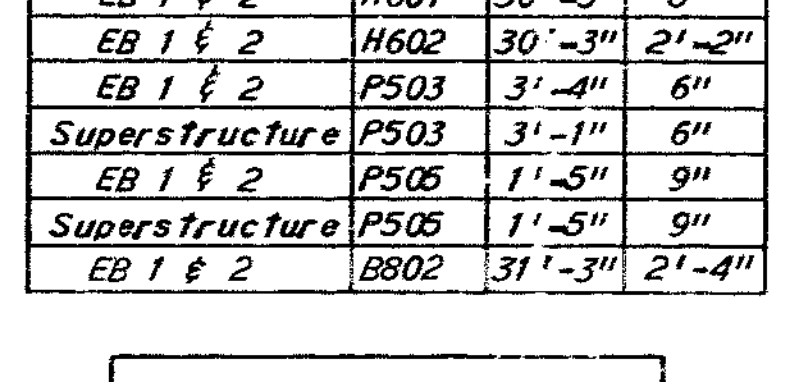
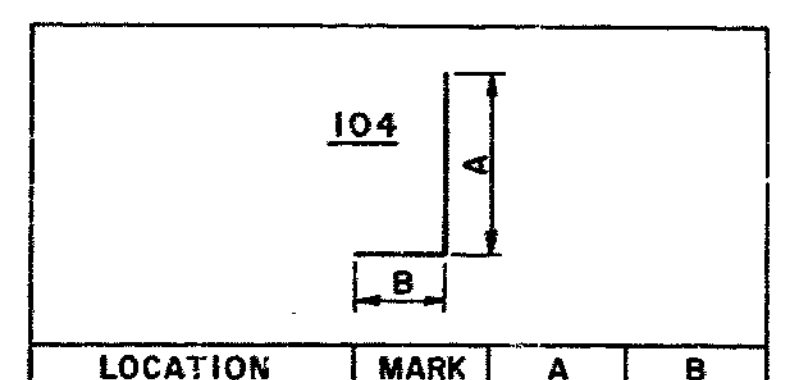
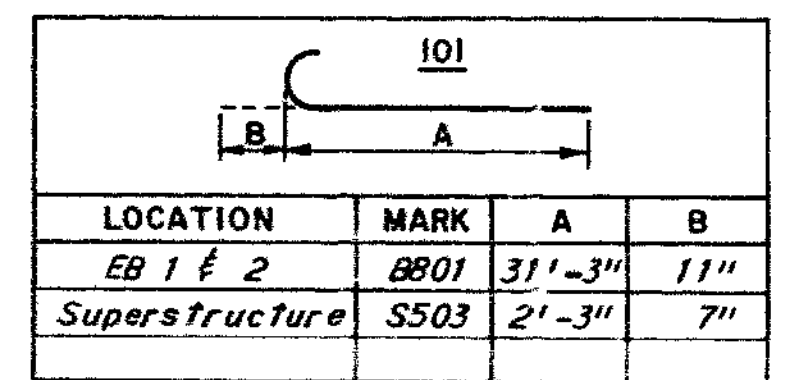


FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		74		

BILL OF REINFORCEMENT					
MARK	NO.	LENGTH	SHAPE	LOCATION	
<b>END BENT 1</b>					
<b>EPOXY COATED BARS</b>					
S401	102	31'-0"	Str.	Slab	
S901	98	38'-8"	Str.	Slab	
S902	49	36'-10"	Str.	Slab	
<b>NON-EPOXY COATED BARS</b>					
B501	180	5'-10"	105	Cross Beam	
B601	120	10'-5"	109	Cross Beam	
B602	12	30'-4"	Str.	Cross Beam	
B801	32	32'-2"	101	Cross Beam	
B802	16	33'-4"	104	Cross Beam	
H401	135	5'-6"	105	Pile Haunch	
H402	36	30'-1"	Str.	Backwall	
H403	6	13'-8"	*Str.	Wingwall	
H404	24	17'-9"	*Str.	Wingwall	
H405	4	6'-10"	Str.	Wingwall	
H406	4	6'-6"	Str.	Wingwall	
H407	24	41'-3"	*Str.	Wingwall	
H408	4	41'-3"	Str.	Wingwall	
H409	4	45'-0"	Str.	Wingwall	
H410	11	13'-0"	*105	Maskwall	
H411	124	6'-4"	105	Wingwall	
H501	10	109'-6"	*Str.	Wingwall	
H502	32	60'-0"	Str.	Wingwall	
H503	10	16'-8"	*Str.	Wingwall	
H504	12	15'-6"	Str.	Wingwall	
H505	3	4'-8"	105	Wingwall	
H506	3	11'-2"	105	Wingwall	
H507	3	10'-6"	105	Wingwall	
H601	2	30'-10"	104	Curtain Wall	
H602	30	32'-4"	104	Curtain Wall	
H603	32	30'-3"	Str.	Curtain Wall	
H604	4	30'-3"	Str.	Bearing Beam	
H605	8	30'-4"	Str.	Backwall	
H606	8	9'-10"	105	Wingwall	
H607	8	6'-10"	105	Wingwall	
H701	6	13'-9"	195	Wingwall	
H702	12	40'-11"	Str.	Wingwall	
H703	4	15'-9"	126	Wingwall	
H704	6	60'-0"	Str.	Wingwall	
H705	6	20'-9"	Str.	Wingwall	
H901	20	31'-8"	Str.	Bearing Beam	
L401	3	7'-0"	141	Light St'd. Sup.	
L402	3	6'-2"	110	Light St'd. Sup.	
L501	2	7'-0"	141	Light St'd. Sup.	
L502	2	6'-3"	110	Light St'd. Sup.	
L503	2	6'-7"	170	Light St'd. Sup.	
L504	3	7'-2"	170	Light St'd. Sup.	
L601	6	3'-5"	Str.	Light St'd. Sup.	
P501	24	37'-0"	Str.	Parapet	
P502	12	5'-2"	Str.	Parapet	
P503	158	3'-9"	104	Parapet	
P504	158	2'-11"	108	Parapet	
P505	152	2'-0"	104	Parapet	
P506	149	3'-0"	163	Parapet	
P507	9	3'-0"	164	Parapet	
R501	4	5'-2"	Str.	Rolling	
R502	8	37'-0"	Str.	Rolling	
R601	60	5'-11"	110	Rolling	
S501	196	30'-2"	Str.	Slab	
S502	196	2'-8"	Str.	Slab	
S901	194	38'-8"	Str.	Slab	
V401	4	9'-0"	Str.	Wingwall	
V402	4	14'-4"	Str.	Wingwall	

BILL OF REINFORCEMENT					
MARK	NO.	LENGTH	SHAPE	LOCATION	
V403	8	37'-9"	*Str.	Wingwall	
V404	96	36'-10"	*Str.	Wingwall	
V405	4	15'-3"	Str.	Maskwall	
V406	4	11'-3"	Str.	Maskwall	
V407	4	7'-3"	Str.	Maskwall	
V501	80	20'-6"	Str.	Curtain Wall	
V502	20	3'-10"	Str.	Wingwall	
V503	20	2'-6"	Str.	Wingwall	
V504	70	5'-1"	105	Bearing Beam	
V601	54	15'-7"	154	Bearing Beam	
V602	12	14'-3"	Str.	Wingwall	
V603	8	25'-2"	Str.	Wingwall	
V604	4	23'-2"	Str.	Wingwall	
V605	16	7'-11"	108	Wingwall	
V701	120	16'-9"	Str.	Backwall	
V801	8	14'-3"	Str.	Wingwall	
V802	8	25'-2"	Str.	Wingwall	
W501	8	6'-0"	Str.	Access Door	
Y201	28	23'-0"	129	Bearing Beam	
<b>END BENT 2</b>					
<b>EPOXY COATED BARS</b>					
S401	102	31'-0"	Str.	Slab	
S901	98	38'-8"	Str.	Slab	
S902	49	36'-10"	Str.	Slab	
<b>NON-EPOXY COATED BARS</b>					
B501	180	5'-10"	105	Cross Beam	
B601	120	10'-5"	109	Cross Beam	
B602	12	30'-4"	Str.	Cross Beam	
B801	32	32'-2"	101	Cross Beam	
B802	16	33'-4"	104	Cross Beam	
H401	135	5'-6"	105	Pile Haunch	
H402	36	30'-1"	Str.	Backwall	
H403	6	13'-8"	*Str.	Wingwall	
H404	24	17'-9"	*Str.	Wingwall	
H405	4	6'-10"	Str.	Wingwall	
H406	4	6'-6"	Str.	Wingwall	
H407	24	41'-3"	*Str.	Wingwall	
H408	4	41'-3"	Str.	Wingwall	
H409	4	45'-0"	Str.	Wingwall	
H410	11	13'-0"	*105	Maskwall	
H411	124	6'-4"	105	Wingwall	
H501	10	109'-6"	*Str.	Wingwall	
H502	32	60'-0"	Str.	Wingwall	
H503	10	16'-8"	*Str.	Wingwall	
H504	12	15'-6"	Str.	Wingwall	
H505	8	4'-8"	105	Wingwall	
H506	3	11'-2"	105	Wingwall	
H507	3	10'-6"	105	Wingwall	
H601	2	30'-10"	104	Curtain Wall	
H602	30	32'-4"	104	Curtain Wall	
H603	32	30'-3"	Str.	Curtain Wall	
H604	4	30'-3"	Str.	Bearing Beam	
H605	8	30'-4"	Str.	Backwall	
H606	8	9'-10"	105	Wingwall	
H607	8	6'-10"	105	Wingwall	
H701	6	13'-9"	195	Wingwall	
H702	12	40'-11"	Str.	Wingwall	
H703	4	15'-9"	126	Wingwall	
H704	6	60'-0"	Str.	Wingwall	
H705	6	20'-9"	Str.	Wingwall	
H901	20	31'-8"	Str.	Bearing Beam	
L401	3	7'-0"	141	Light St'd. Sup.	
L402	3	6'-2"	110	Light St'd. Sup.	
L501	2	7'-0"	141	Light St'd. Sup.	
L502	2	6'-3"	110	Light St'd. Sup.	
L503	2	6'-7"	170	Light St'd. Sup.	
L504	3	7'-2"	170	Light St'd. Sup.	
L601	6	3'-5"	Str.	Light St'd. Sup.	
P501	24	37'-0"	Str.	Parapet	
P502	12	5'-2"	Str.	Parapet	
P503	158	3'-9"	104	Parapet	
P504	158	2'-11"	108	Parapet	
P505	152	2'-0"	104	Parapet	
P506	149	3'-0"	163	Parapet	
P507	9	3'-0"	164	Parapet	
R501	4	5'-2"	Str.	Rolling	
R502	8	37'-0"	Str.	Rolling	
R601	60	5'-11"	110	Rolling	
S501	196	30'-2"	Str.	Slab	
S502	196	2'-8"	Str.	Slab	
S901	194	38'-8"	Str.	Slab	
V401	4	9'-0"	Str.	Wingwall	
V402	4	14'-4"	Str.	Wingwall	

BILL OF REINFORCEMENT					
MARK	NO.	LENGTH	SHAPE	LOCATION	
P501	24	37'-0"	Str.	Parapet	
P502	12	5'-2"	Str.	Parapet	
P503	158	3'-9"	104	Parapet	
P504	158	2'-11"	108	Parapet	
P505	152	2'-0"	104	Parapet	
P506	149	3'-0"	163	Parapet	
P507	9	3'-0"	164	Parapet	
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S901	194	38'-8"	Str.	Slab	
V401	4	9'-0"	Str.	Wingwall	
V402	4	14'-4"	Str.	Wingwall	
V403	8	37'-9"	*Str.	Wingwall	
V404	96	36'-10"	*Str.	Wingwall	
V405	4	15'-3"	Str.	Maskwall	
V406	4	11'-3"	Str.	Maskwall	
V407	4	7'-3"	Str.	Maskwall	
V501	80	20'-6"	Str.	Curtain Wall	
V502	20	3'-10"	Str.	Wingwall	
V503	20	2'-6"	Str.	Wingwall	
V504	70	5'-1"	105	Bearing Beam	
V601	64	15'-7"	154	Bearing Beam	
V602	12	14'-3"	Str.	Wingwall	
V603	8	25'-2"	Str.	Wingwall	
V604	4	23'-2"	Str.	Wingwall	
V605	16	7'-11"	108	Wingwall	
V701	120	16'-9"	Str.	Backwall	
V801	8	14'-3"	Str.	Wingwall	
V802	8	25'-2"	Str.	Wingwall	
W501	8	6'-0"	Str.	Access Door	
Y201	28	23'-0"	129	Bearing Beam	
<b>SUPERS. RUCTURE</b>					
<b>EPOXY COATED BARS</b>					
S501	384	22'-1"	Str.	Slab	
S502	382	40'-0"	Str.	Slab	
S503	47	2'-10"	101	Slab	
S504	188	60'-0"	Str.	Slab	
S505	47	20'-11"	Str.	Slab	
<b>NON-EPOXY COATED BARS</b>					
L401	3	7'-0"	141	Light St'd. Sup.	
L402	3	6'-2"	110	Light St'd. Sup.	
L501	2	7'-0"	141	Light St'd. Sup.	
L502	2	6'-3"	110	Light St'd. Sup.	
L503	2	6'-7"	170	Light St'd. Sup.	
L504	3	7'-2"	170	Light St'd. Sup.	
L601	6	3'-5"	Str.	Light St'd. Sup.	
<b>EPOXY COATED BARS</b>					
P501	24	37'-0"	Str.	Parapet	
P502	12	5'-2"	Str.	Parapet	
P503	158	3'-9"	104	Parapet	
P504	158	2'-11"	108	Parapet	
P505	152	2'-0"	104	Parapet	
P506	149	3'-0"	163	Parapet	
P507	9	3'-0"	164	Parapet	
<b>NON EPOXY COATED BARS</b>					
R501	8	15'-6"	Str.	Rolling	
R502	56	15'-7"	Str.	Rolling	
R601	203	5'-4"	110	Rolling	
S501	382	22'-1"	Str.	Slab	
S502	382	40'-0"	Str.	Slab	
S503	2	2'-10"	101	Slab	
S504	232	60'-0"	Str.	Slab	
S505	2	20'-11"	Str.	Slab	
S506	56	21'-4"	Str.	Slab	

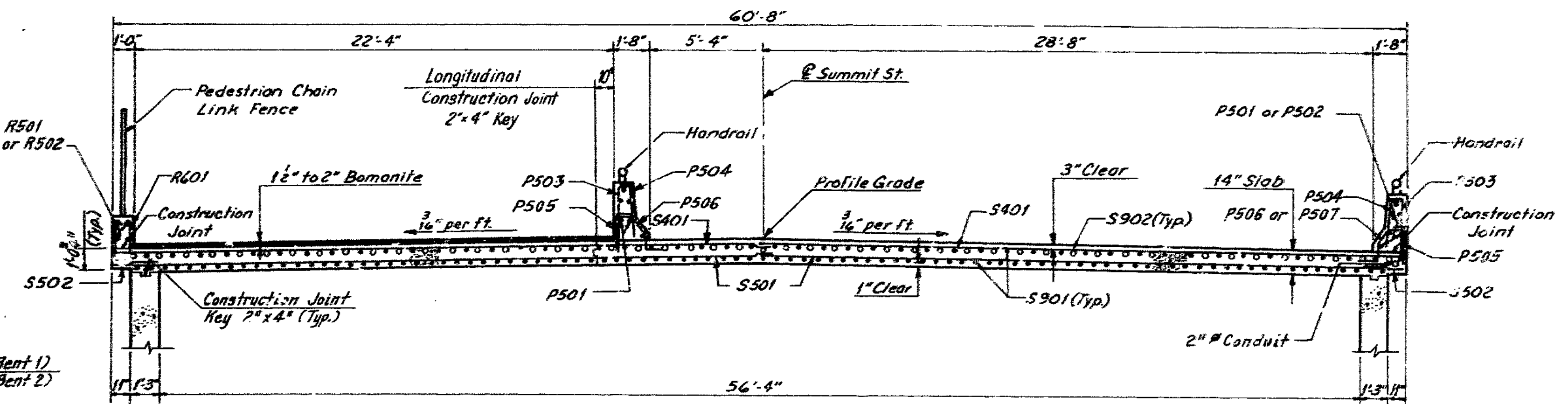
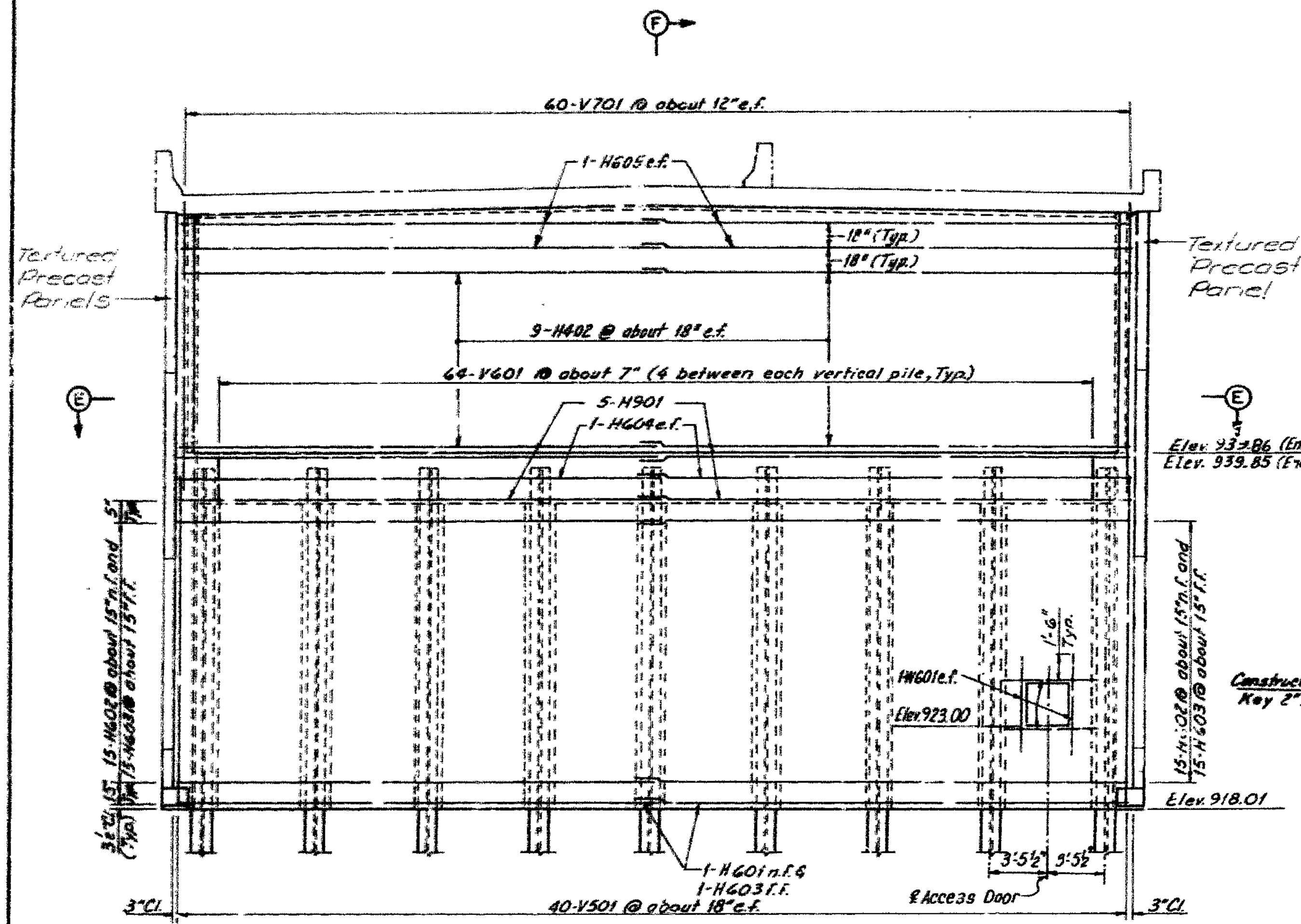






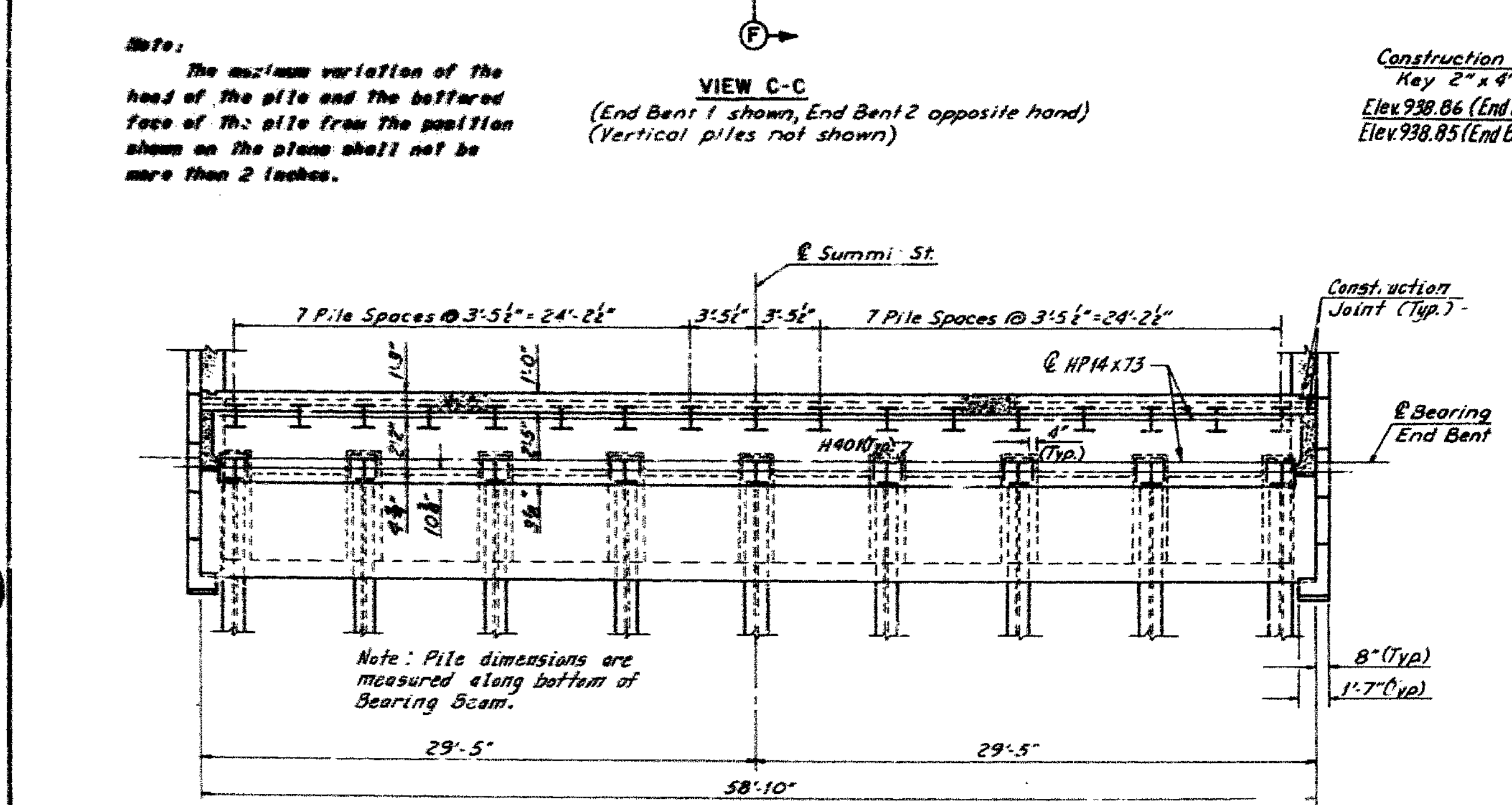


FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.				



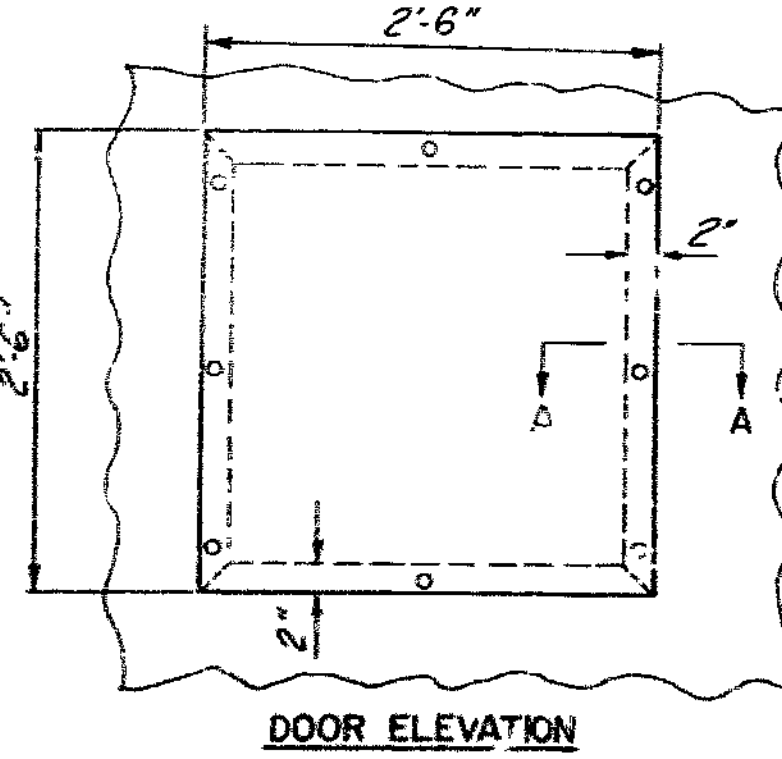
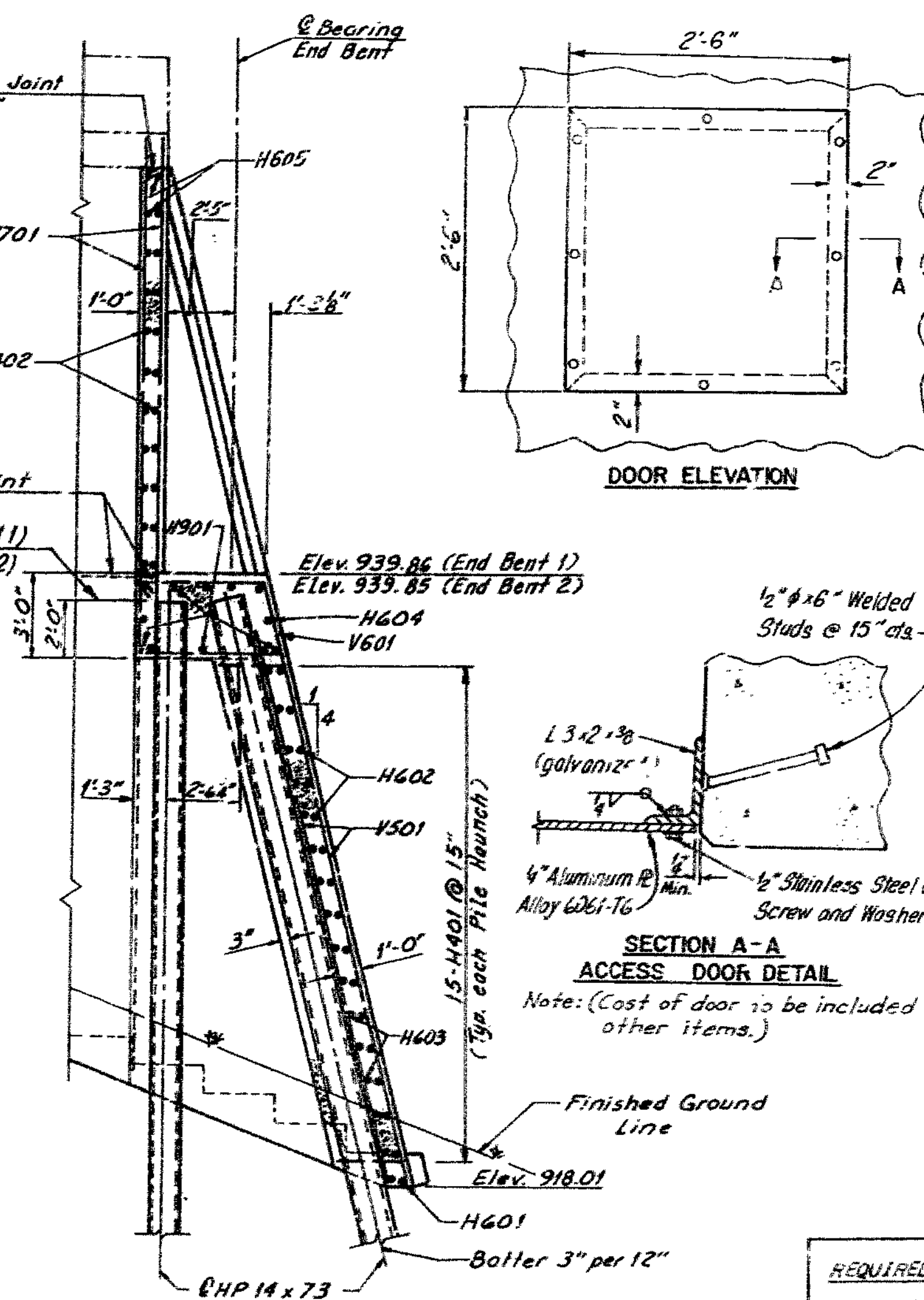
Note: The Bomanite material shall be 1/2" above grade line at the joints of the End Bents

SECTION D-D  
(End Bent 1 shown, End Bent 2 opposite hand)  
(Wingwall reinforcement not shown)

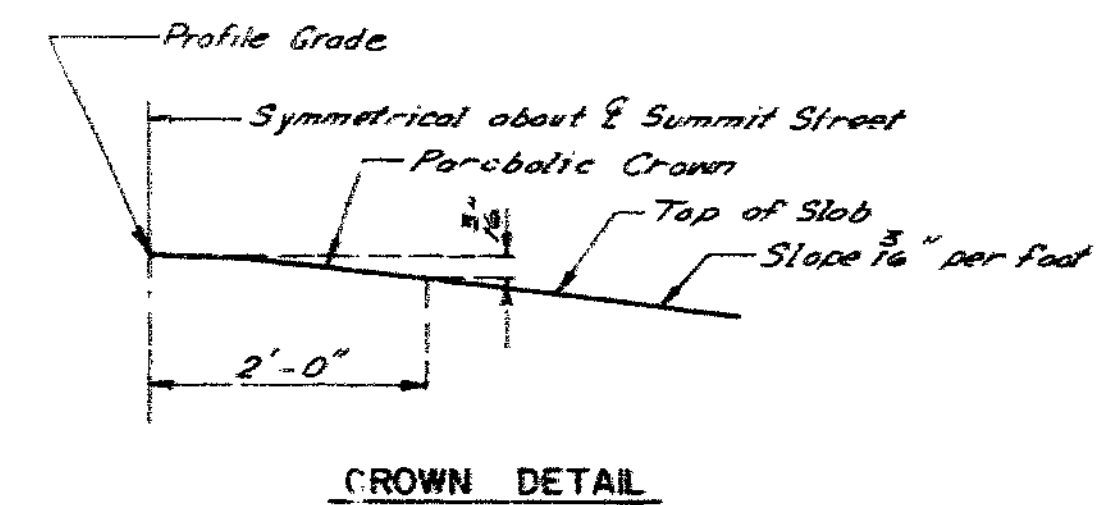


Note: The maximum variation of the head of the pile and the battered face of the pile from the position shown on the plan shall not be more than 2 inches.

VIEW C-C  
(End Bent 1 shown, End Bent 2 opposite hand)  
(Vertical piles not shown)

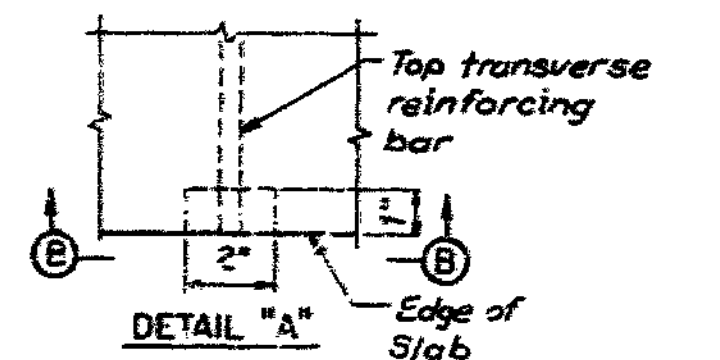


DOOR ELEVATION

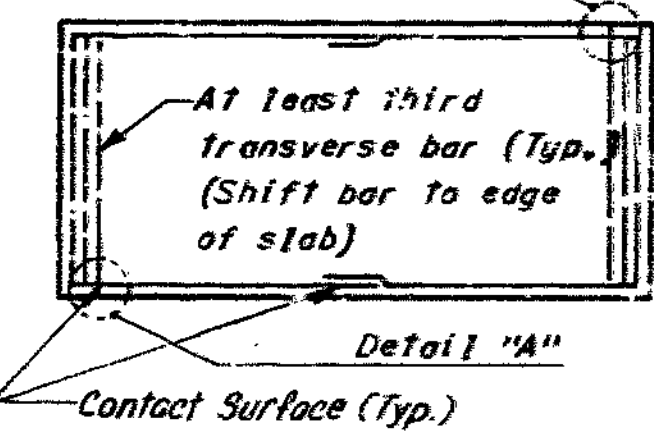


CROWN DETAIL

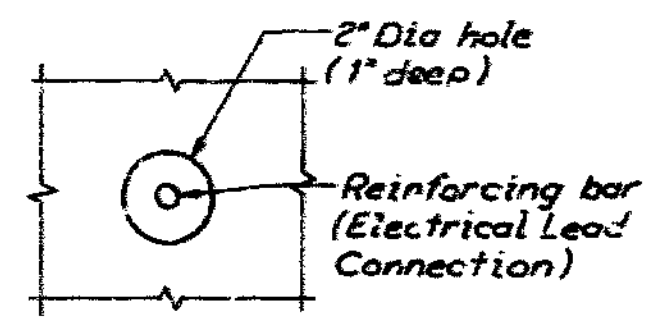
Note: 4-S401 bars (Top) as selected by the Engineer shall be clamped to the longitudinal top bar nearest edge of slab (See Special Provisions).  
Detail "A"



DETAIL "A"



END BENT SLAB PLAN



ELEVATION B-B

Note: 2 Electrical Lead Connections required. Actual location to be designated by the Engineer as part of the test system. (See Special Provision)

ELECTRICAL LEAD CONNECTION

Note: Concrete shall not be placed until the electrical test system has been checked by the Engineer.

REQUIRED LAP LENGTHS

No. 4 Bars	= 1'-8" Minimum
No. 5 Bars	= 1'-9" Minimum
No. 6 Bars	= 2'-2" Minimum
No. 7 Bars	= 3'-0" Minimum
No. 8 Bars	= 4'-0" Minimum
No. 9 Bars	= 5'-0" Minimum

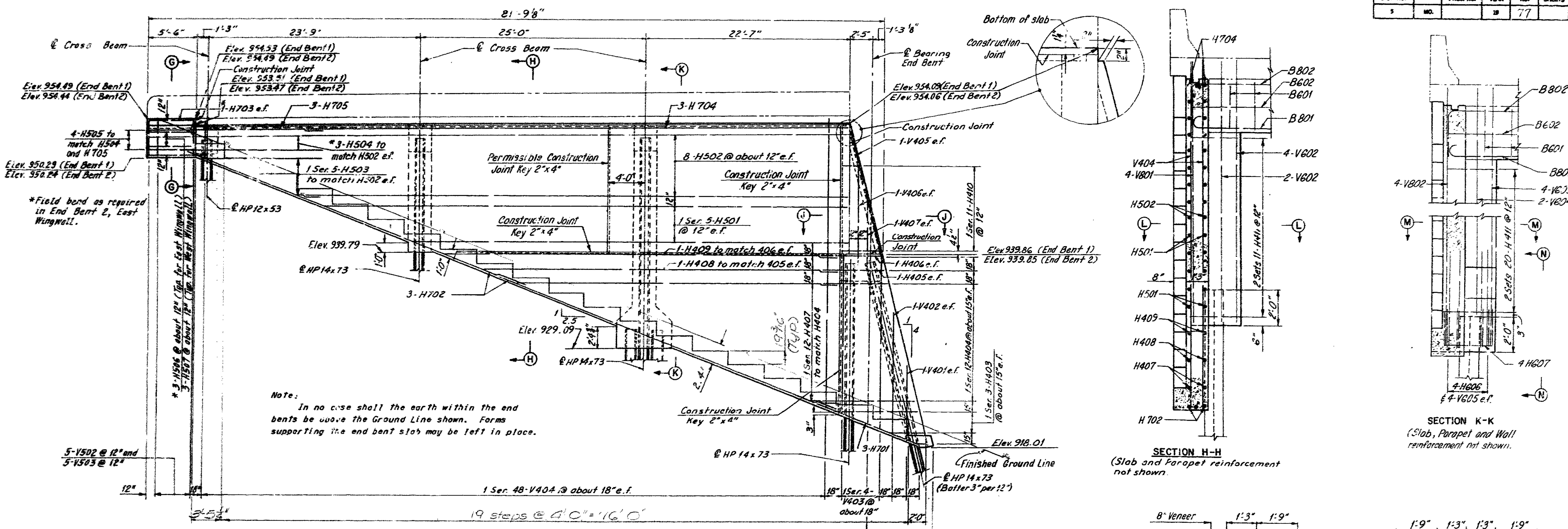
Notes:  
For End Bent Barrier Curb and Railing Details, see Sheet 9.  
For additional notes, see Sheet 8.

END BENT DETAILS  
SUMMIT STREET  
JACKSON COUNTY

55



FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		18	77	



56

DETAILED N.E.B. 10 78  
 CHECKED R.M. 10 78

Note: This drawing is not to scale. Follow dimensions.

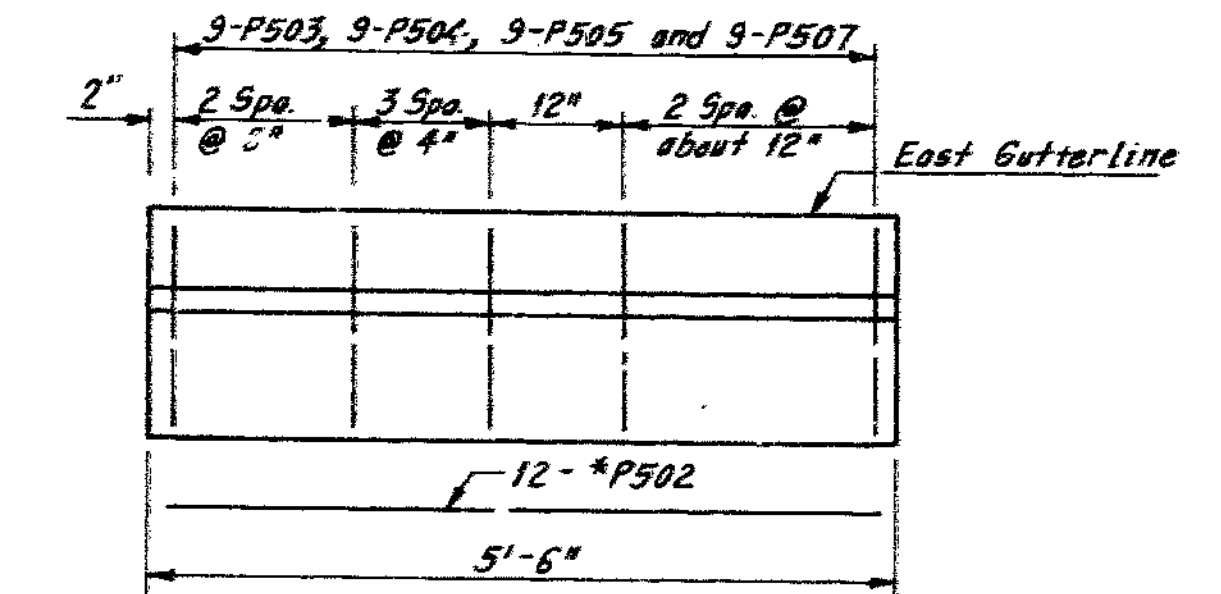
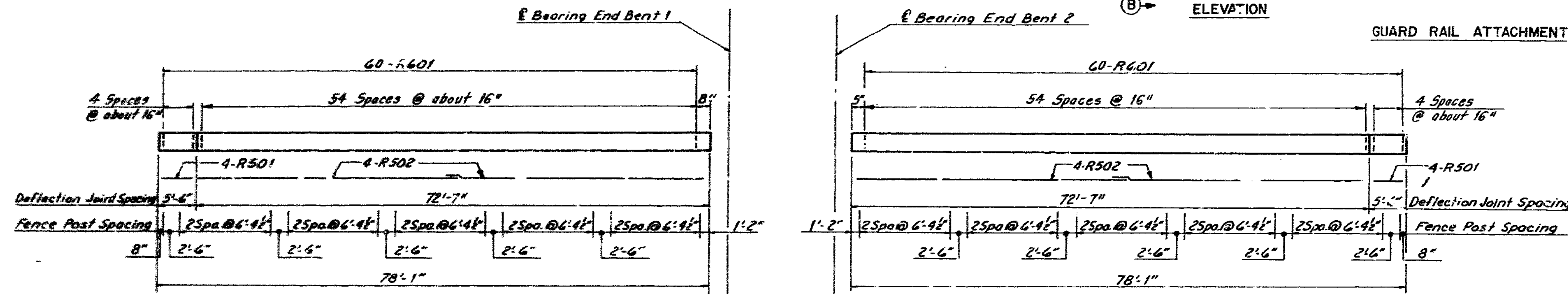
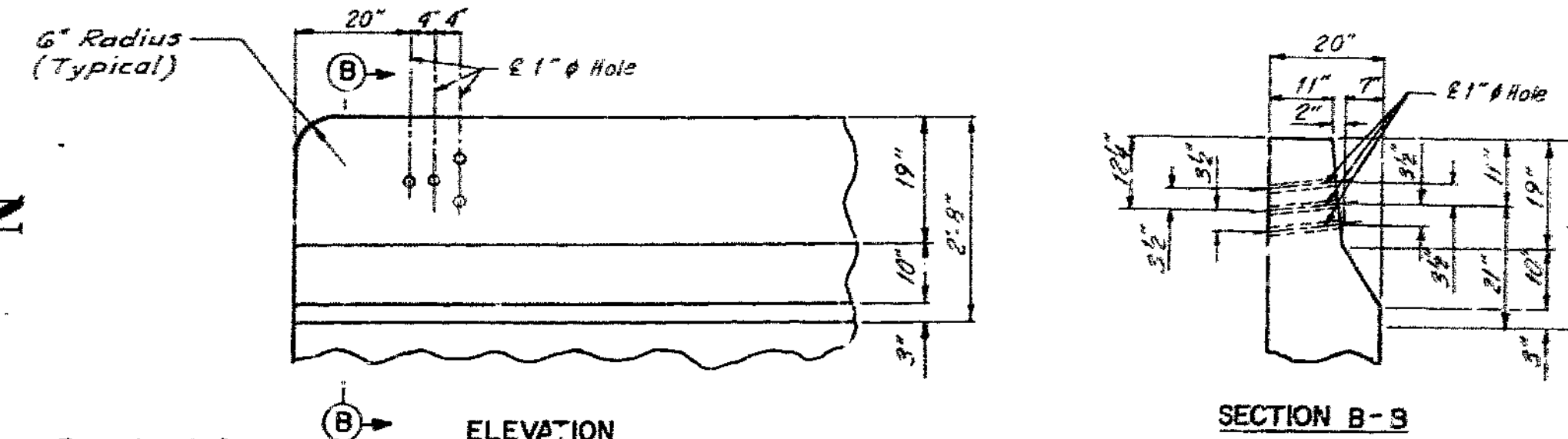
Sheet No. 8 of 24.

END BENT DETAILS  
 SUMMIT STREET  
 JACKSON COUNTY

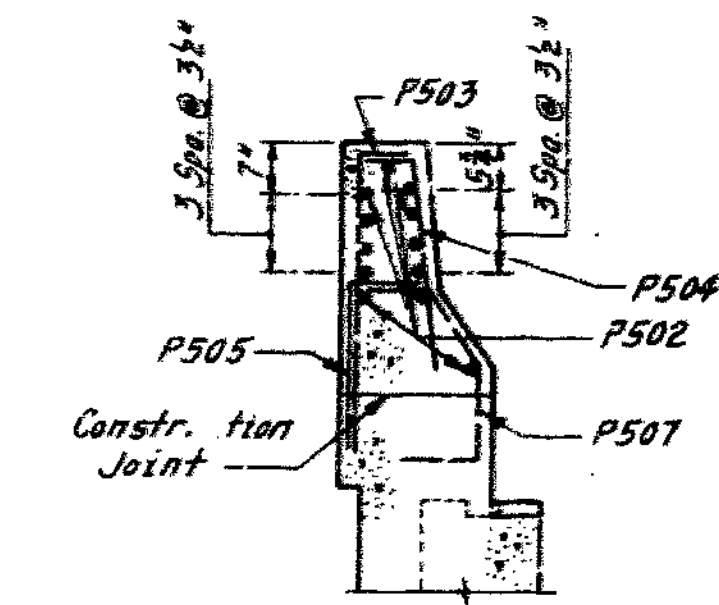
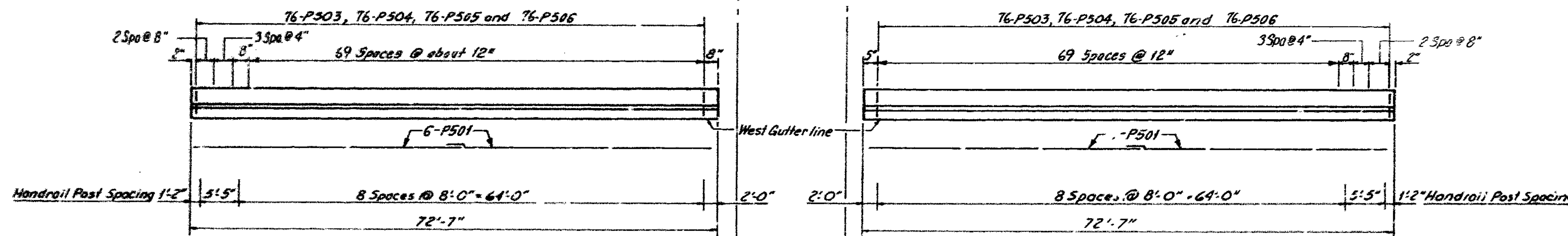
A-3141



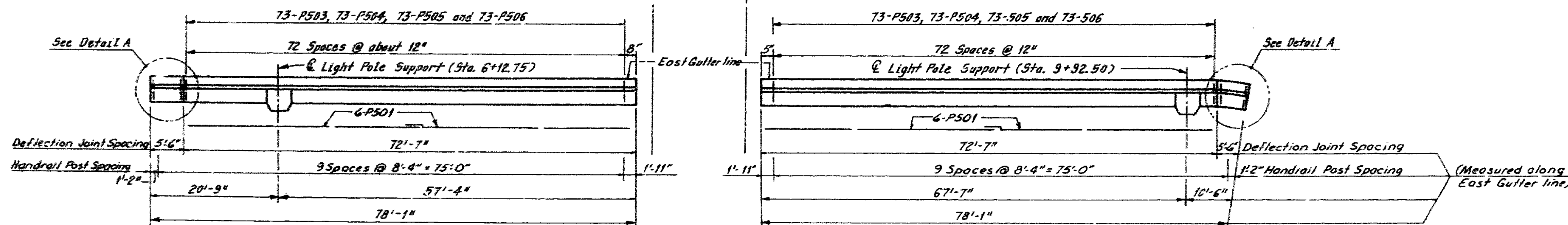
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		88	78	78



\*Field bend as required in End Bent 2.  
**DETAIL A**  
 (End Bent 1 shown, End Bent 2 similar and opposite hand)



**SECTION A-A**  
 (Wingwall reinforcement not shown)



**END BENT 1**

**END BENT 2**

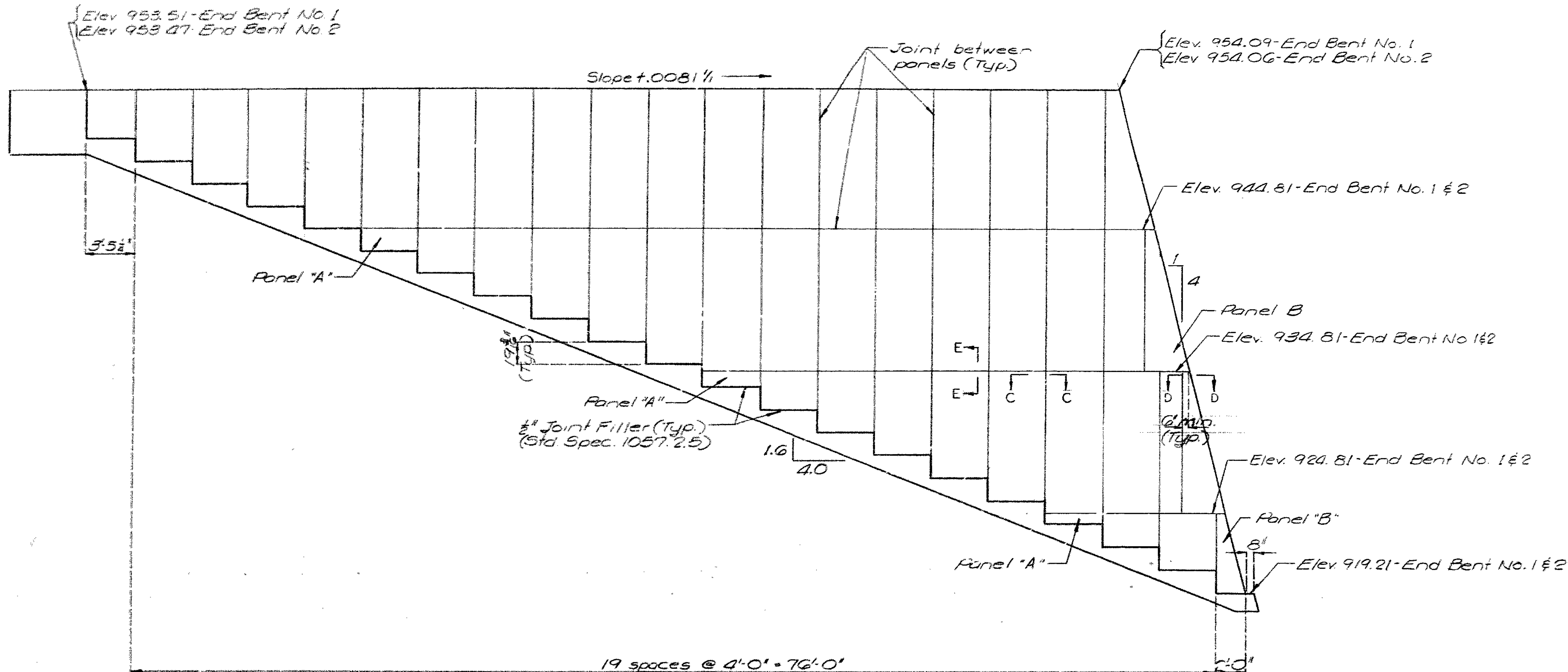
**REQUIRED LAP LENGTHS**  
 No. 5 Bars = 1'-9" Minimum

Notes:  
 For barrier curb and railing details, see Sheet 21.  
 For deflection joint and waterstop details, see Sheet 21.  
 For Lighting Details, see Sheet 24.  
 For Bill of Reinforcement, see Sheet 5.

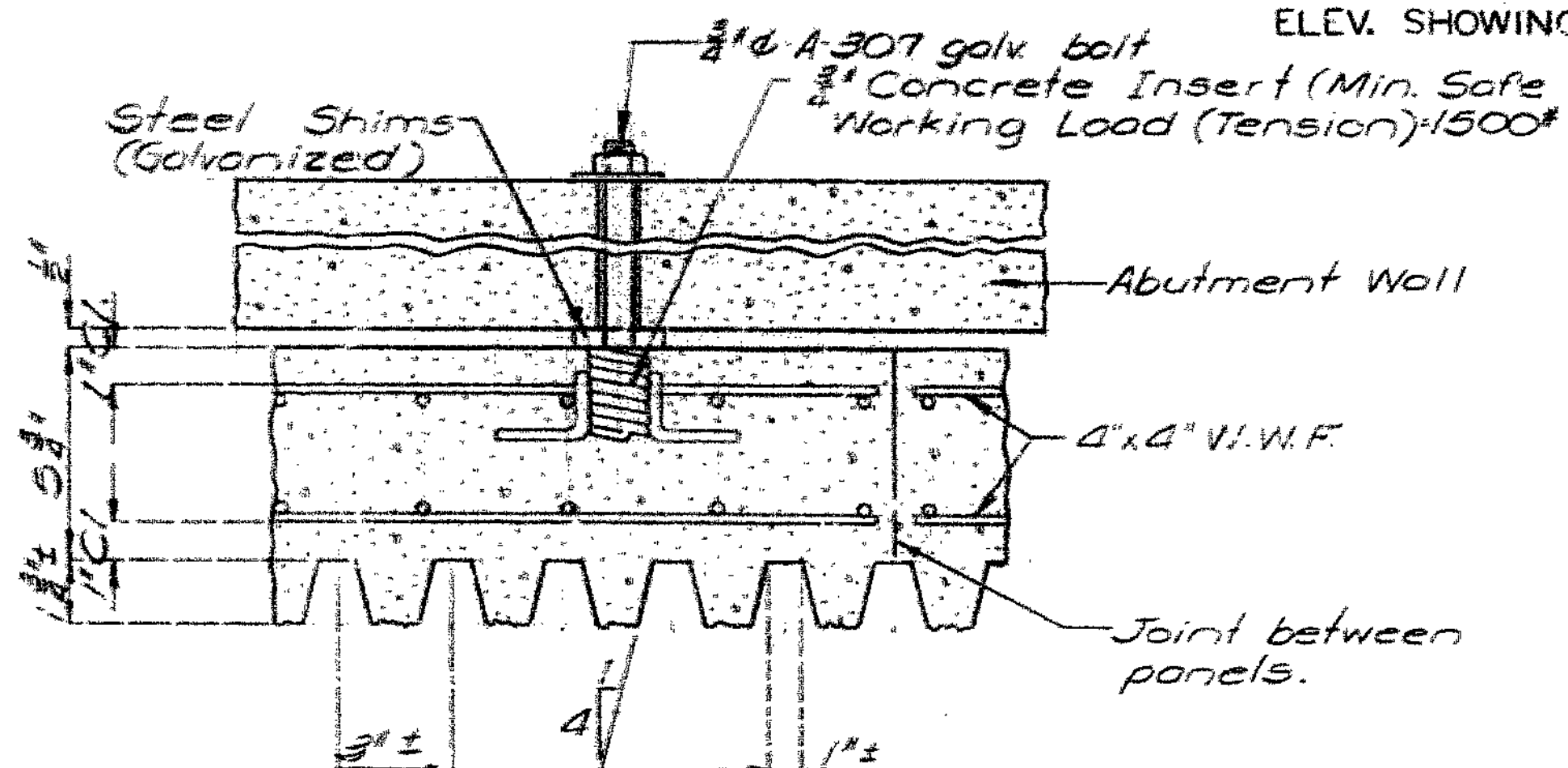
**END BENT BARRIER CURB AND RAILING DETAILS**  
**SUMMIT STREET**  
**JACKSON COUNTY**

MISSOURI STATE HIGHWAY DEPARTMENT

FED. ROAD DIST. NO.	ST. FE.	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		59	79	



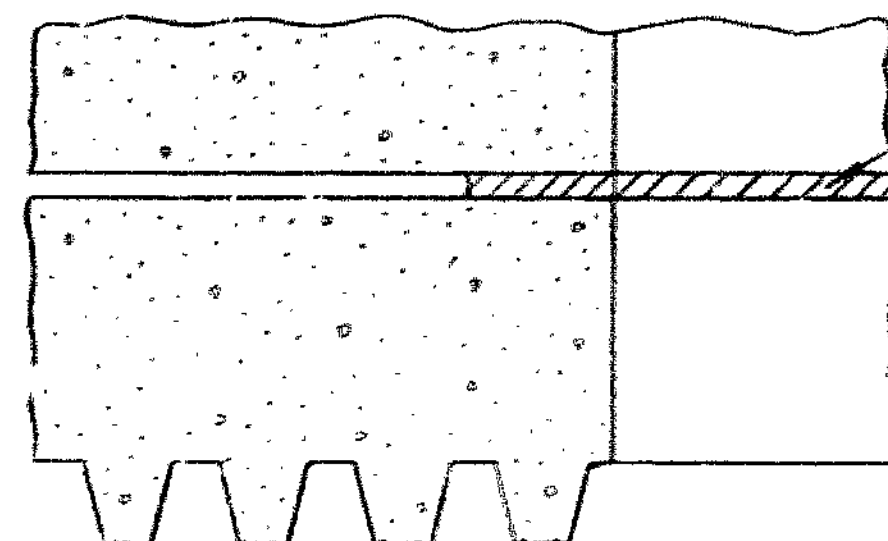
ELEV. SHOWING PRECAST PANEL LAYOUT



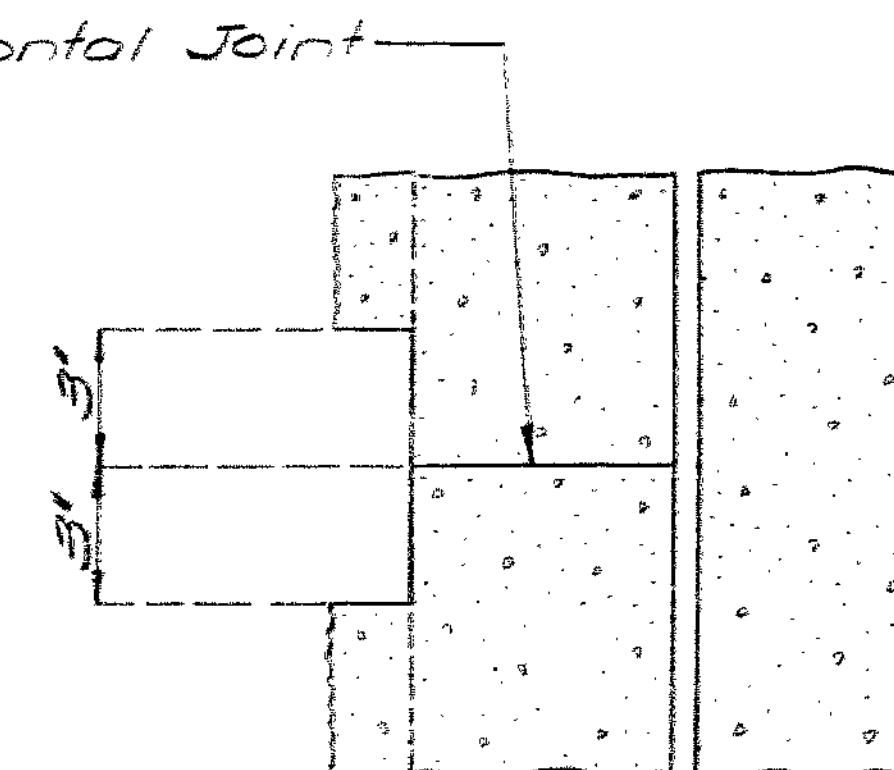
TYPICAL PART SECTION C-C

Note: All panels shall be attached to the End Bent wings with 4-3/4" A-307 galvanized bolts, with the exception of Panels "A" which requires 2 bolts and Panels "B" which requires 3 bolts

Note: Details are shown for End Bent No. 1. Details for End Bent No. 2 similar by rotation.



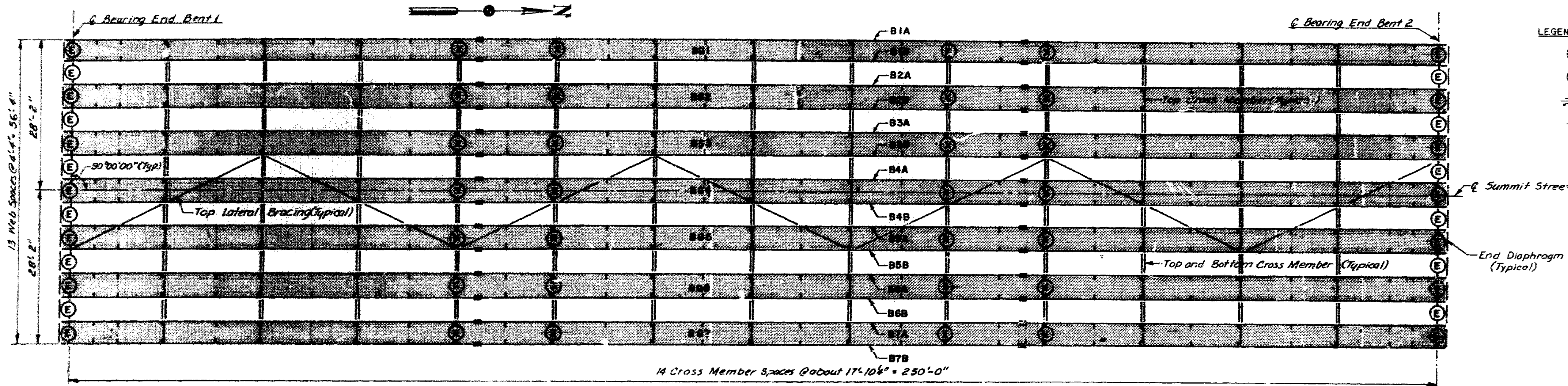
SECTION D-D



58

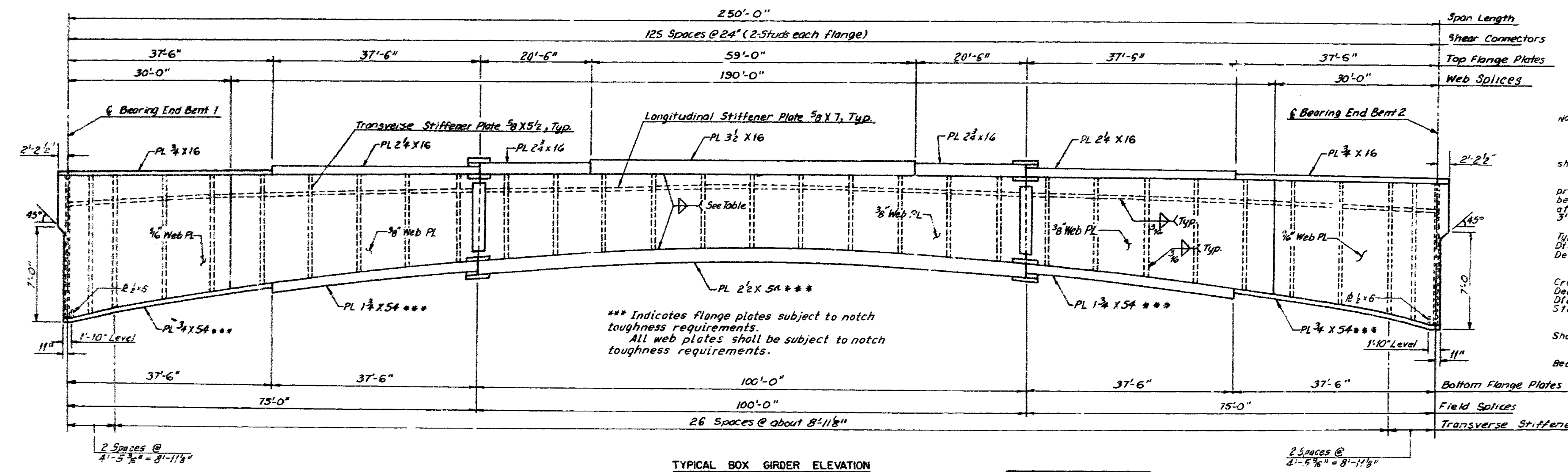


FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		80	80	



- LEGEND
- ⊙ Denotes Type E Diaphragm
  - ⊗ Denotes Type X Cross member
  - ≡≡≡ Denotes Field Splice
  - ⊥ Denotes Transverse Stiffener

FRAMING PLAN



- NOTES:
- All dimensions are horizontal. Fabricated structural steel shall be A36.
  - One (1) access door shall be provided in the closure plate between two adjacent box girders at each End Bent. Place & Access Door 3'-0" from & Clearing.
  - For Typical Box Girder Section, Type X Cross Member Details, Type E Diaphragm Details and Longitudinal Steel Diagram, see Sheet 12.
  - For Top Lateral Bracing and Cross Member Details, Web Heights, Dead Load Deflection Diagram, End Diaphragm Details and Longitudinal Steel Diagram, see Sheet 13.
  - For Access Door Details and Shop Splice Details, see Sheet 14.
  - For Field Splice Details and Bearing Details see Sheet 15.

TYPICAL BOX GIRDER ELEVATION

- Notes:
- Box girders shall be fabricated to conform with Camber Diagram shown on Sheet 13.
  - All transverse stiffeners shall be set normal to grade.
  - Transverse stiffeners shall have a tight fit with the bottom flange and shall be welded to the top flange with the fillet welds on both sides, the same size as the web to flange weld at the same location.

- Longitudinal stiffeners shall be placed in segments between and 1" clear of transverse stiffeners, web splice plates and diaphragm plates. Whenever longitudinal stiffeners interfere with Type X Cross Members, clip stiffeners.
- Transverse stiffener to web fillet welds shall be omitted for 3" above the bottom flange.

WELD SIZE	
WEB TO FLANGE	
Flange Plate Thickness	Fillet Weld Size
3"	1/4"
1 1/2" thru 3 1/2"	3/8"

59  
 DETAILED R.H.W. 10 78  
 CHECKED M.E.B. 10 78

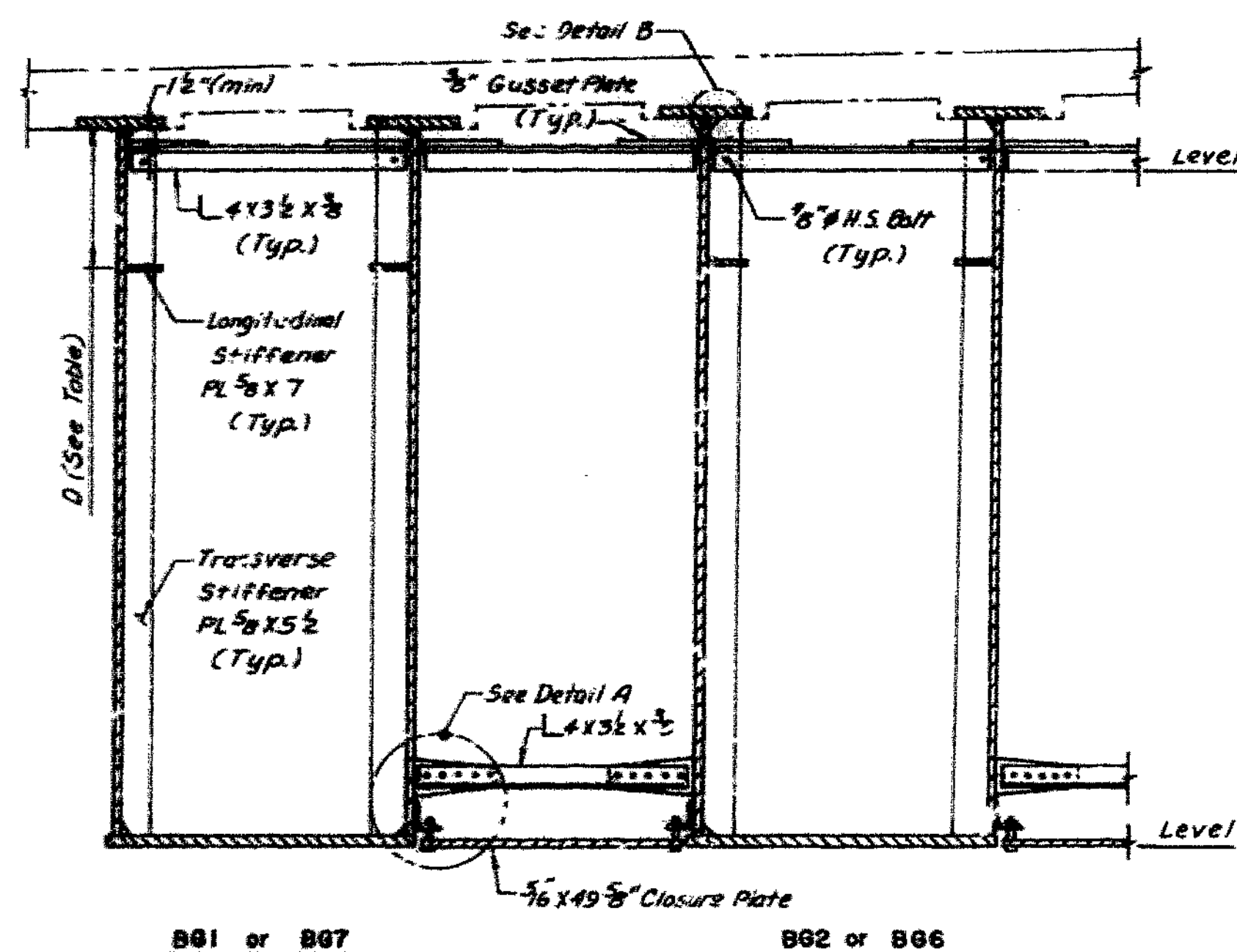
FRAMING PLAN AND  
 TYPICAL BOX GIRDER ELEVATION  
 SUMMIT STREET  
 JACKSON COUNTY

A-3141

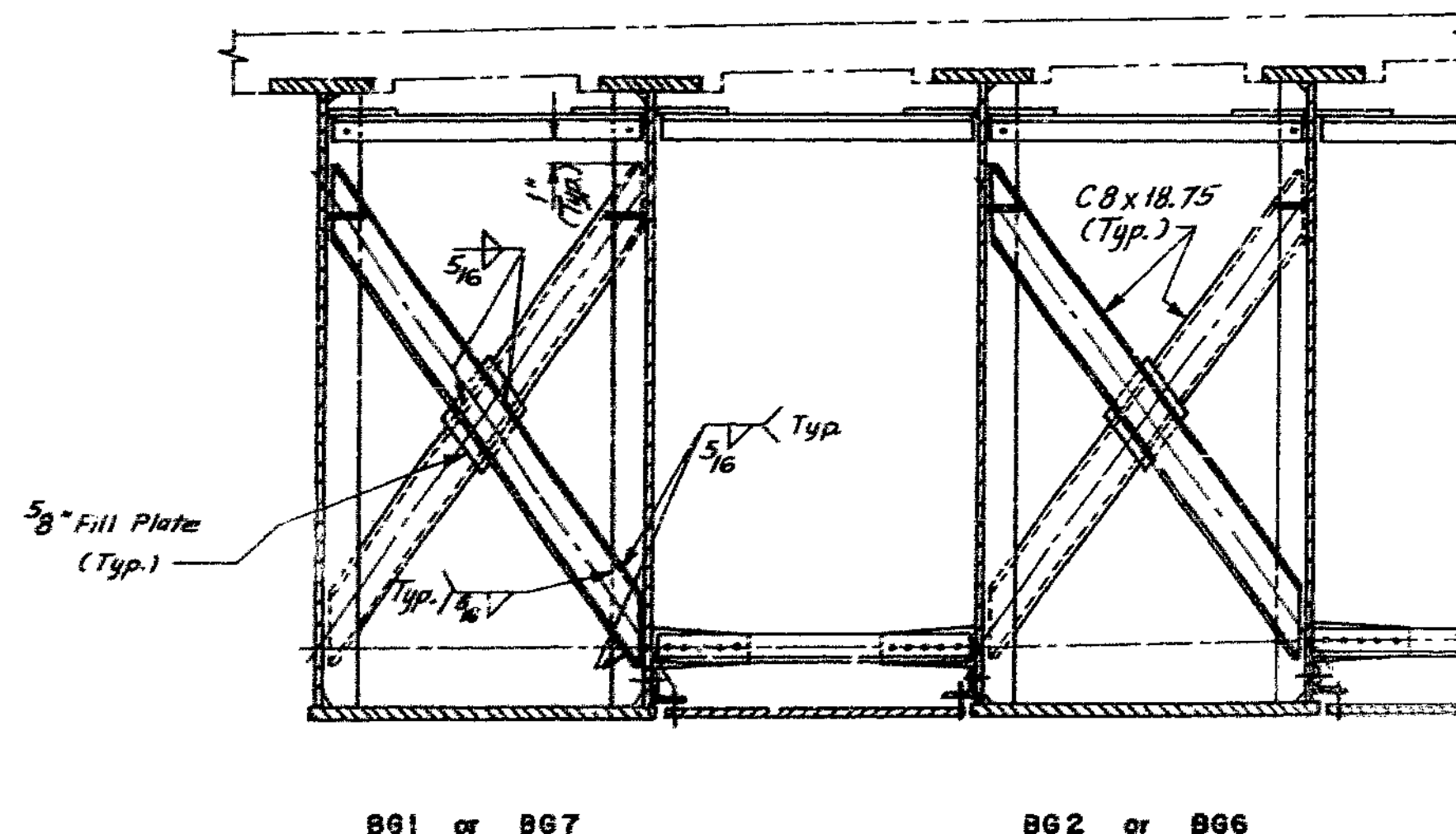


FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	81	

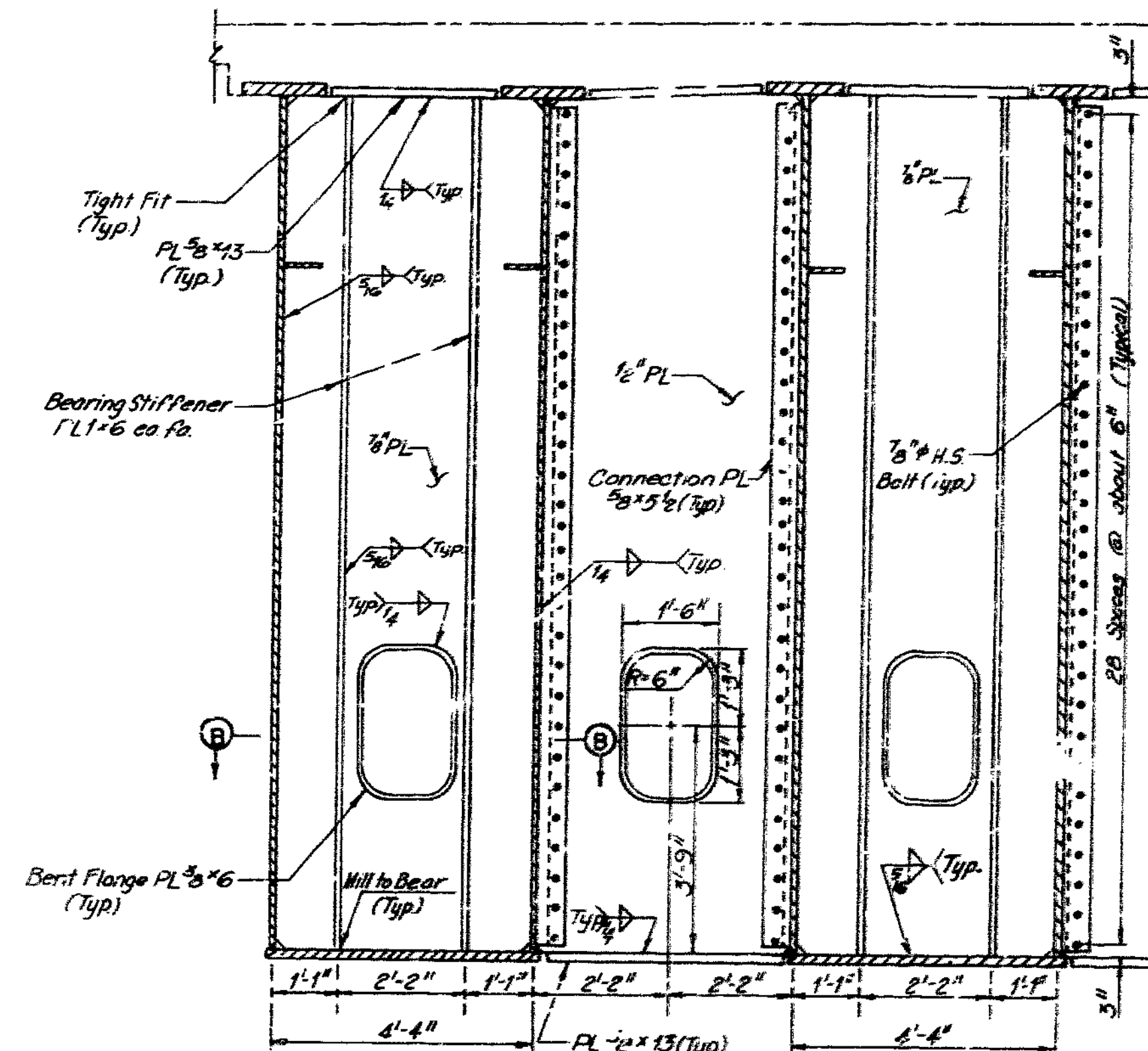
LONGITUDINAL STIFFENER LOCATION						
D	E. Bay End Con. (end E)	1 and 9	2 and 8	3 and 7	4 and 6	5
All Webs	1'-1"	1'-8"	1'-6"	1'-9"	1'-2"	1'-7"



TYPICAL BOX GIRDER SECTION WITH TOP AND BOTTOM CROSS MEMBERS

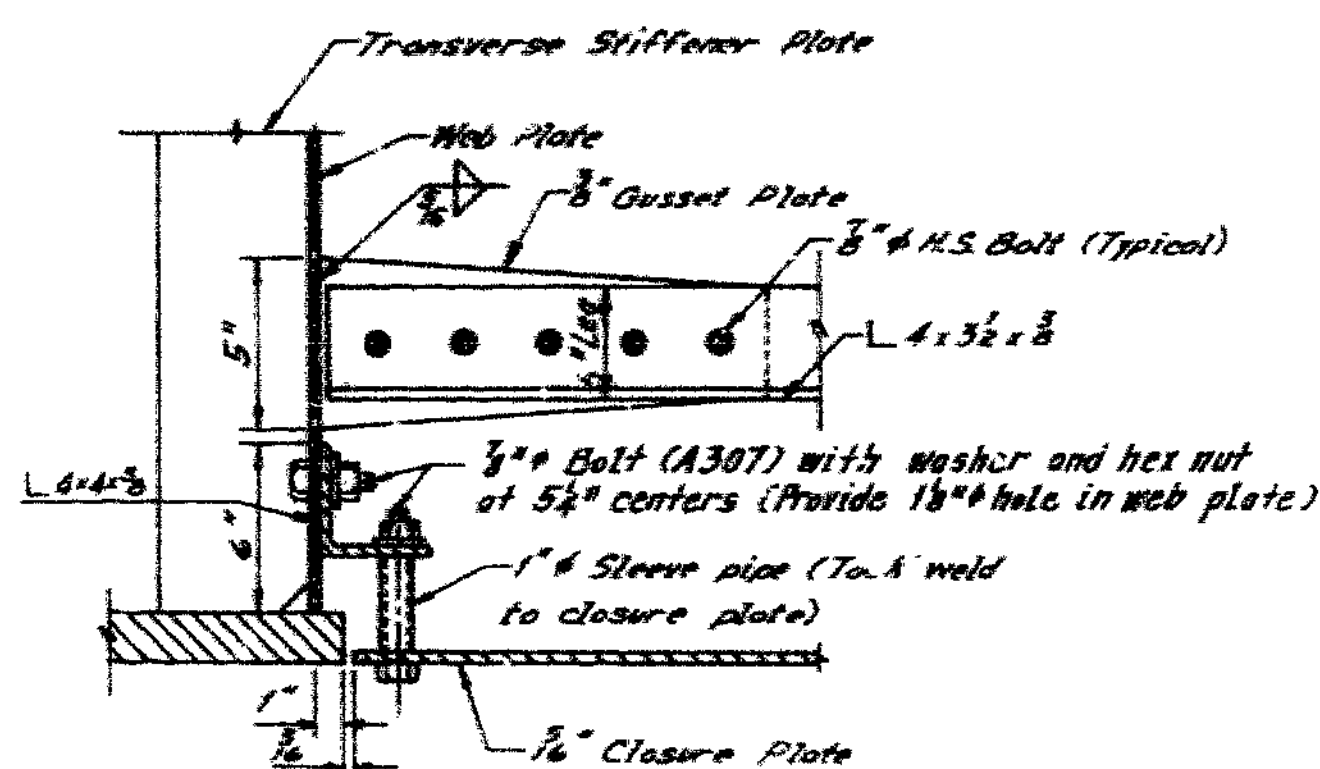


TYPE X CROSS MEMBER (For details not shown, see "Typical Box Girder Section With Top And Bottom Cross Members")

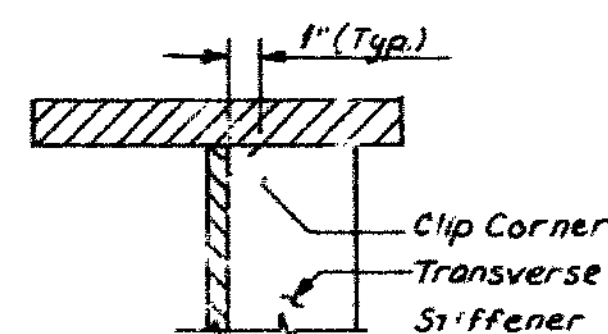


TYPE E DIAPHRAGM

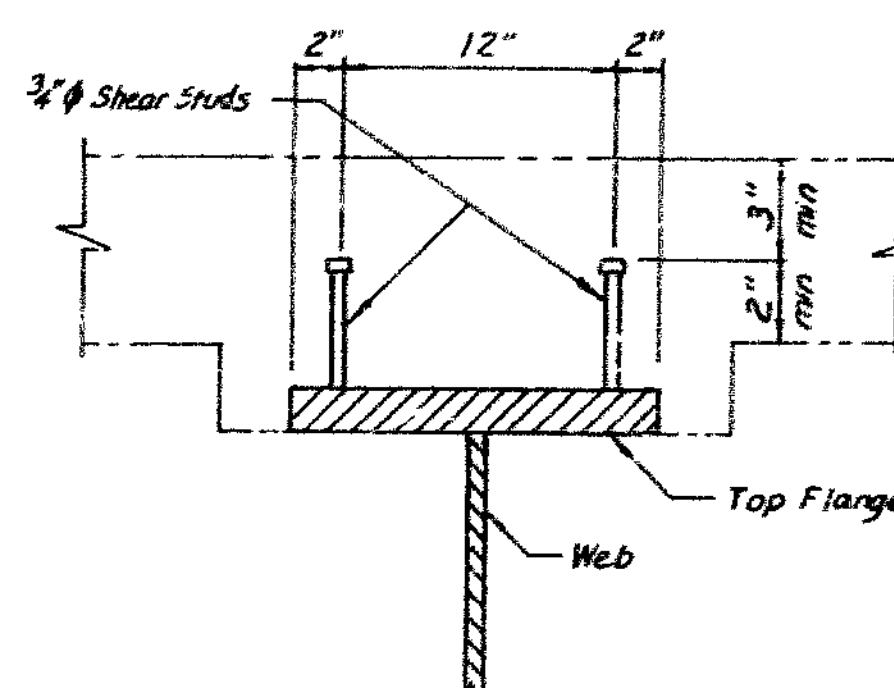
Note: The bearing stiffener shall be clipped as shown in Detail B.



DETAIL A

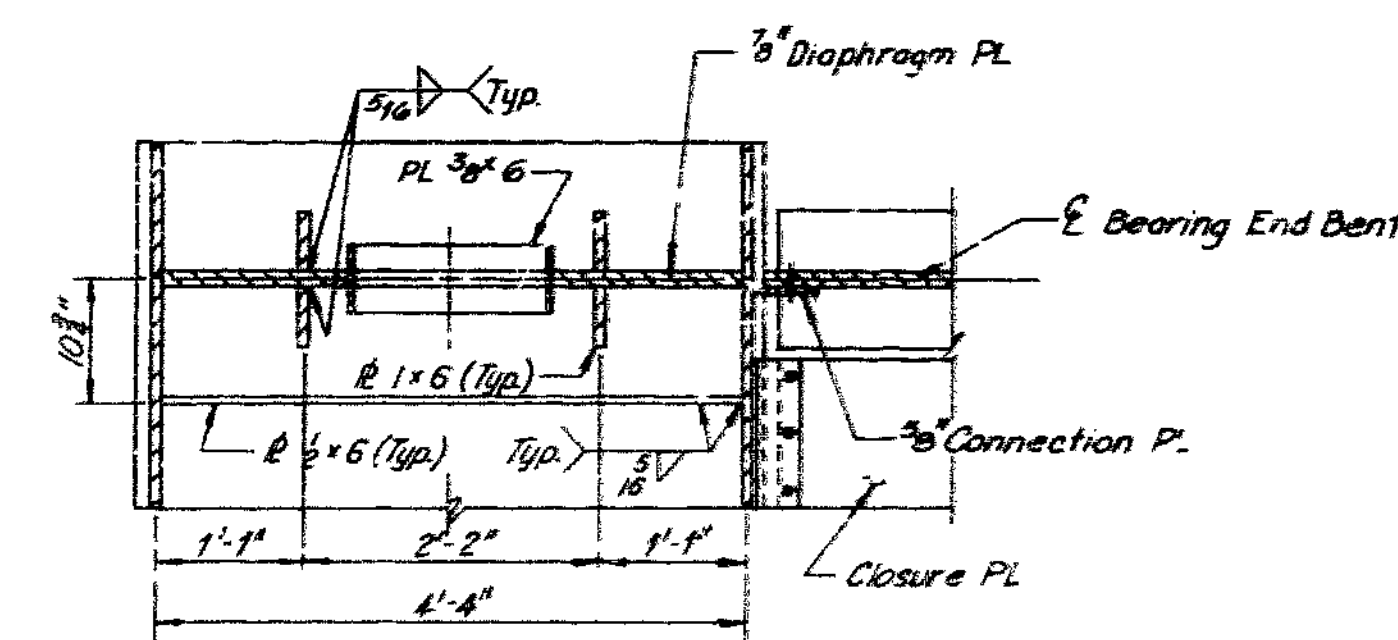


DETAIL B



SHEAR STUD DETAIL

Note: Weight of 2,765 lbs. of shear connectors is included in weight of Fabricated Carbon Steel.



SECTION B-B

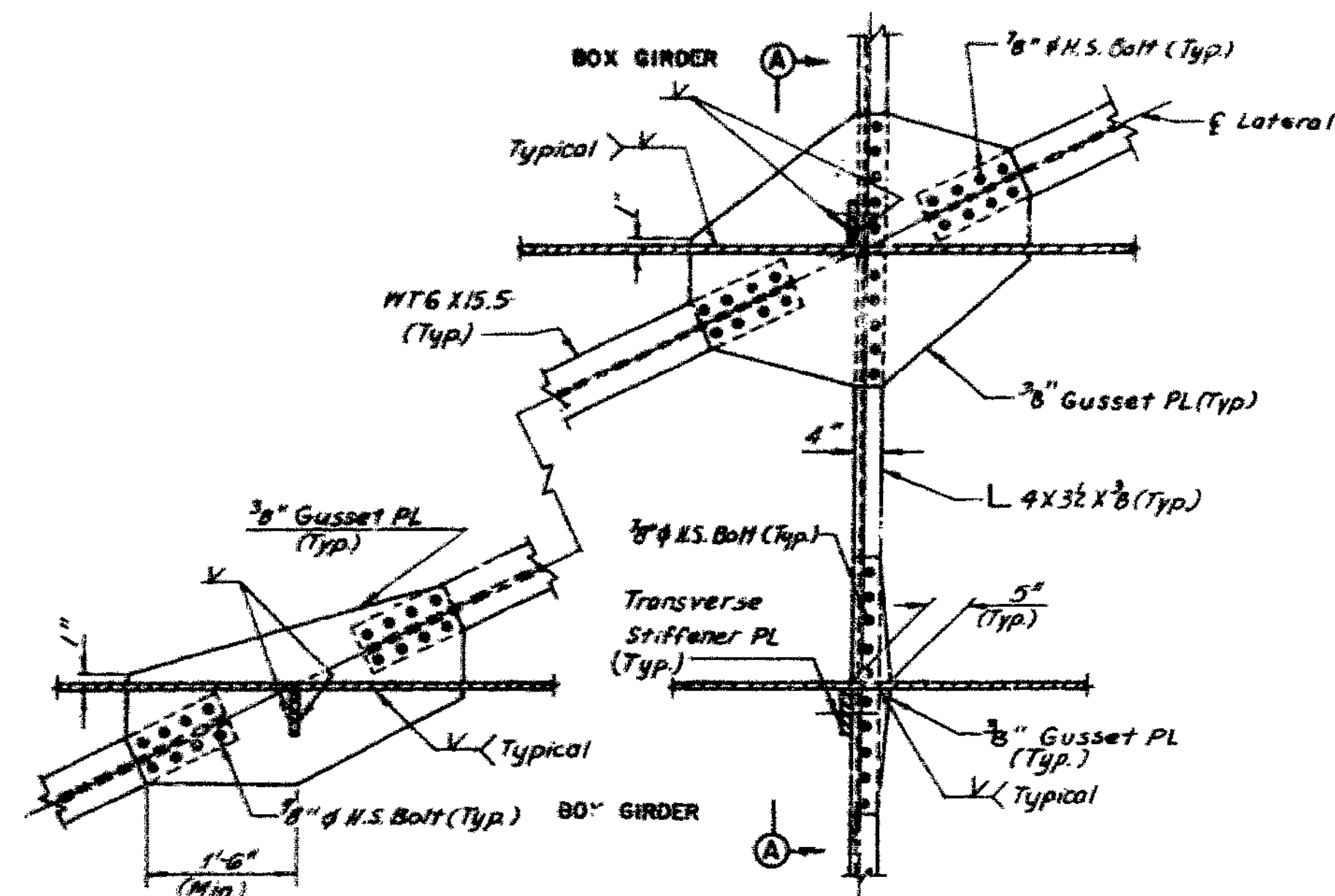
Note: The bottom flange stiffener @ 1/2 x 6 shall be clipped as shown in Detail B.

Notes: Closure plates shall be continuous except at changes in box girder sections and shall be butted at these locations.

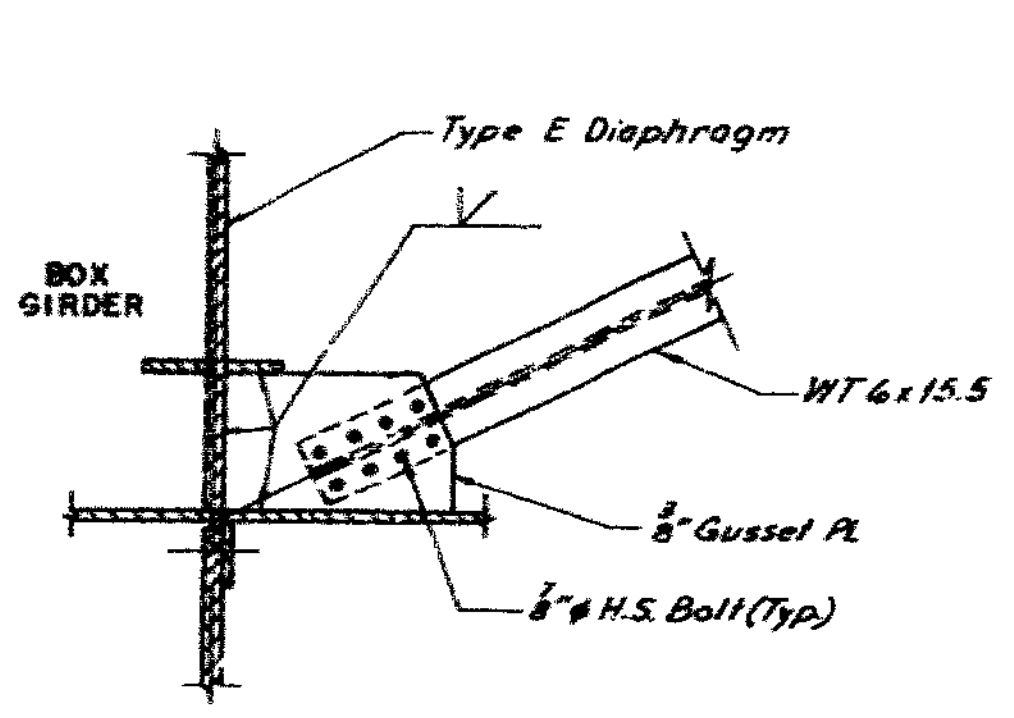
The closure plate angle to box girder web connections shall be snug tightened, then backed off 1/4 turn at time of installation and final tightened after all deck concrete has been placed.



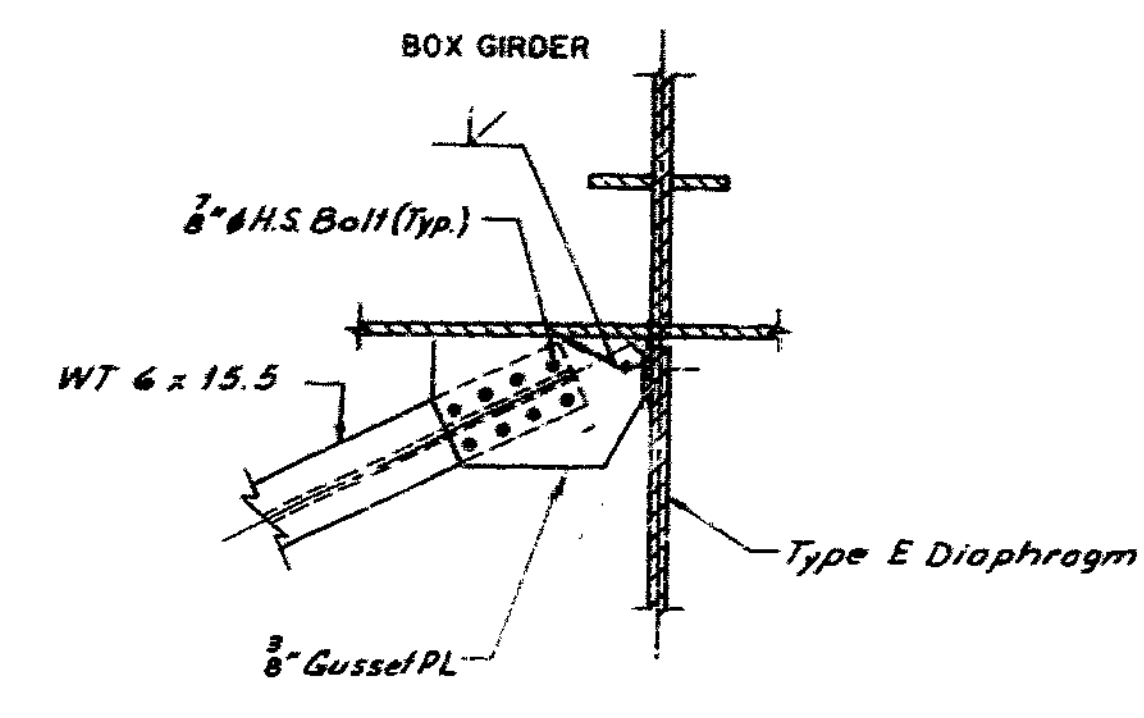
FED. ROAD DIST. NO.	STATE	FED. PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		82	82	



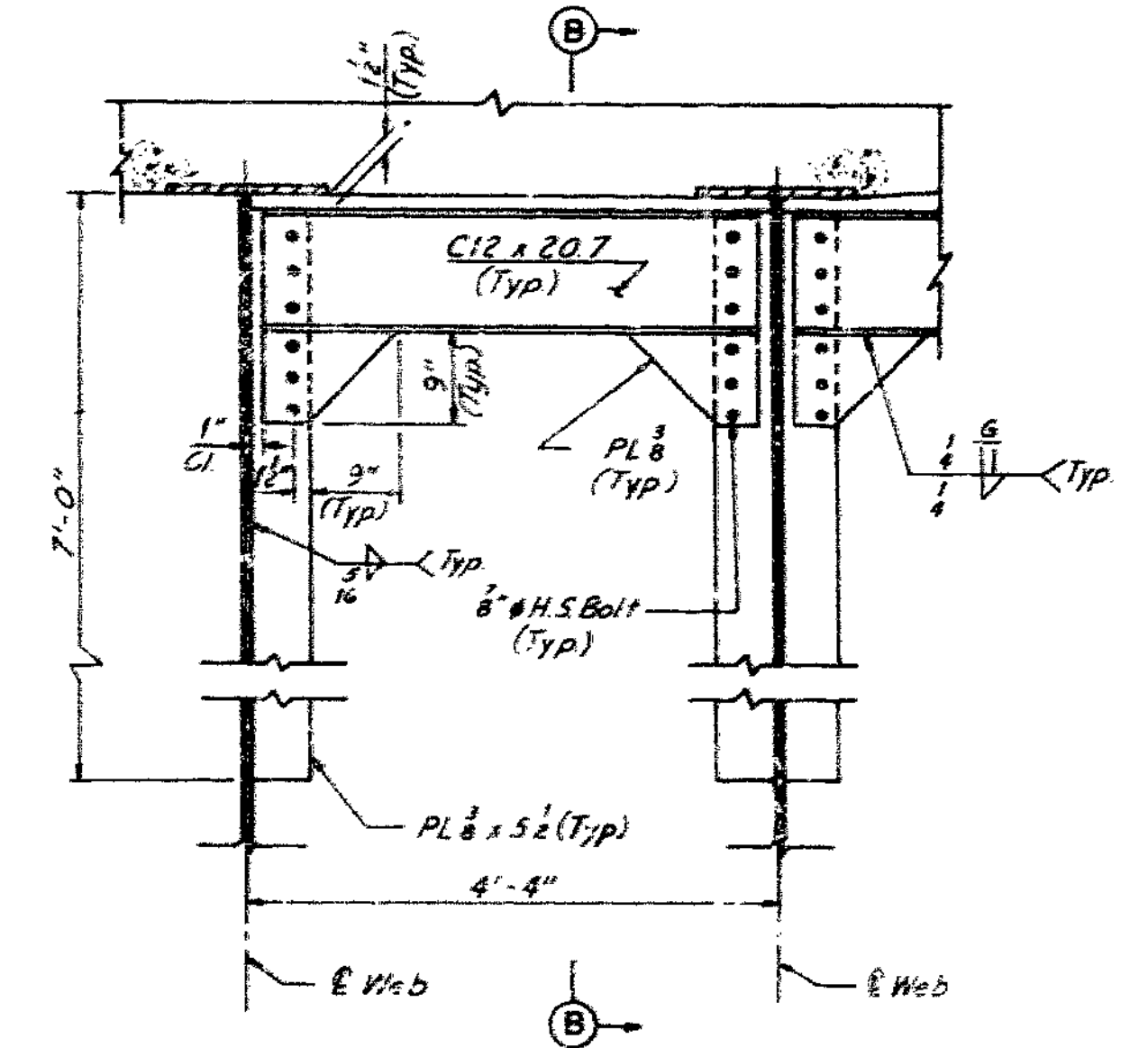
TOP LATERAL BRACING AND TOP CROSS MEMBER DETAIL



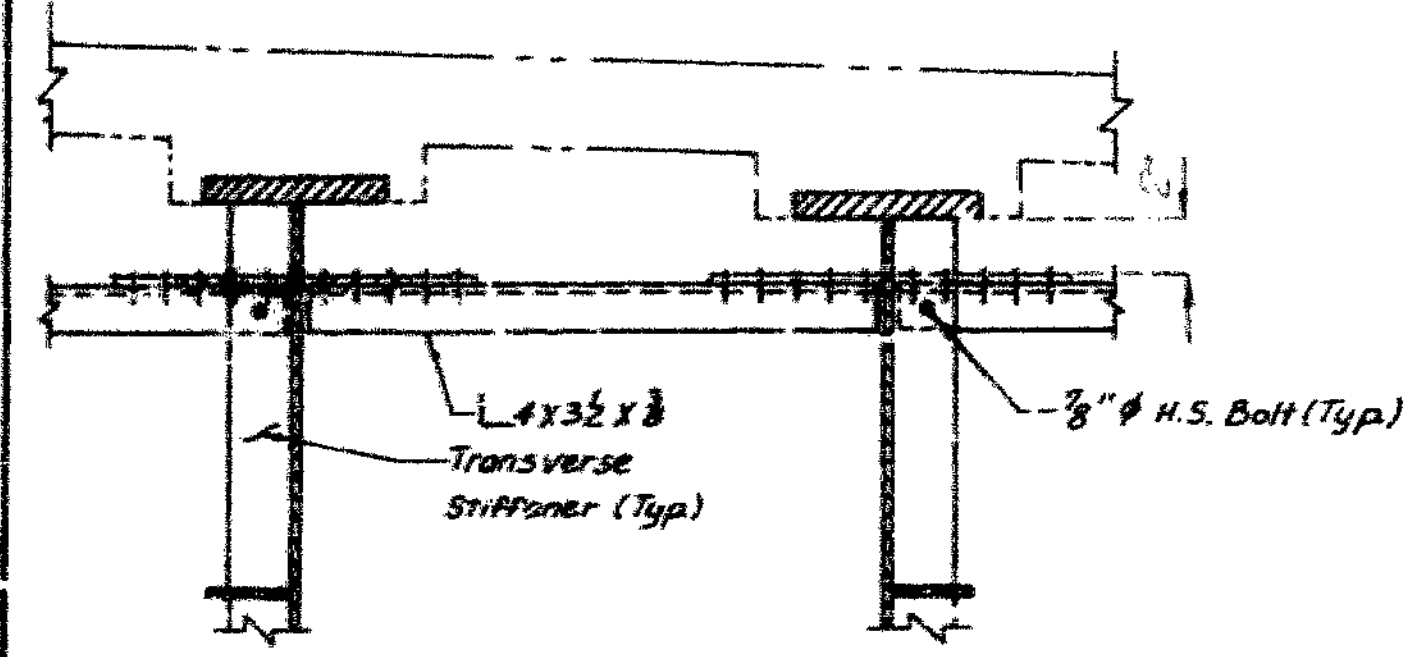
TOP LATERAL BRACING DETAIL AT TYPE E DIAPHRAGM



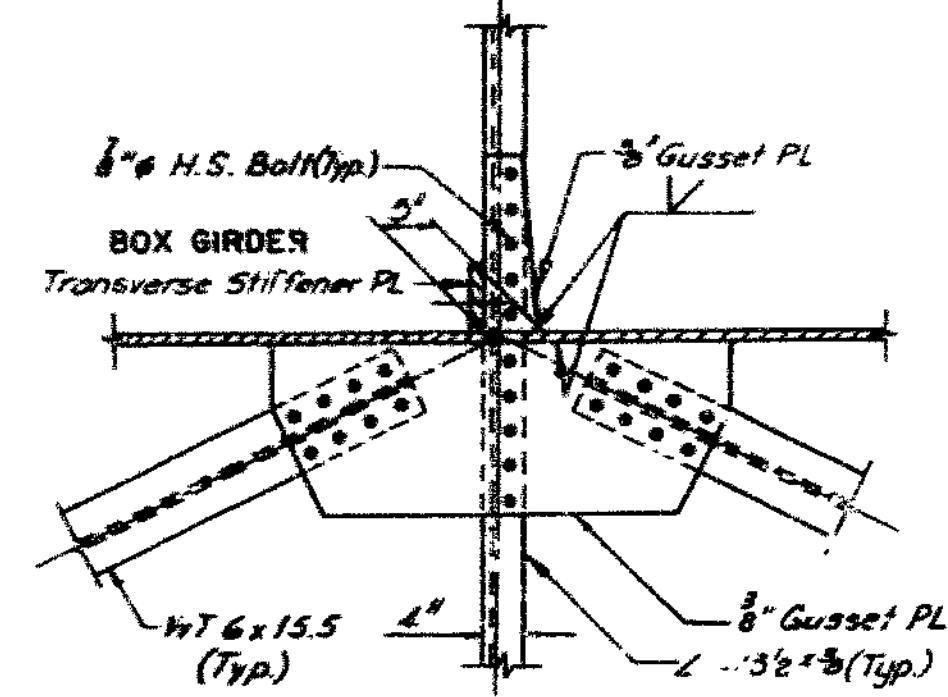
TOP LATERAL BRACING DETAIL AT TYPE E DIAPHRAGM



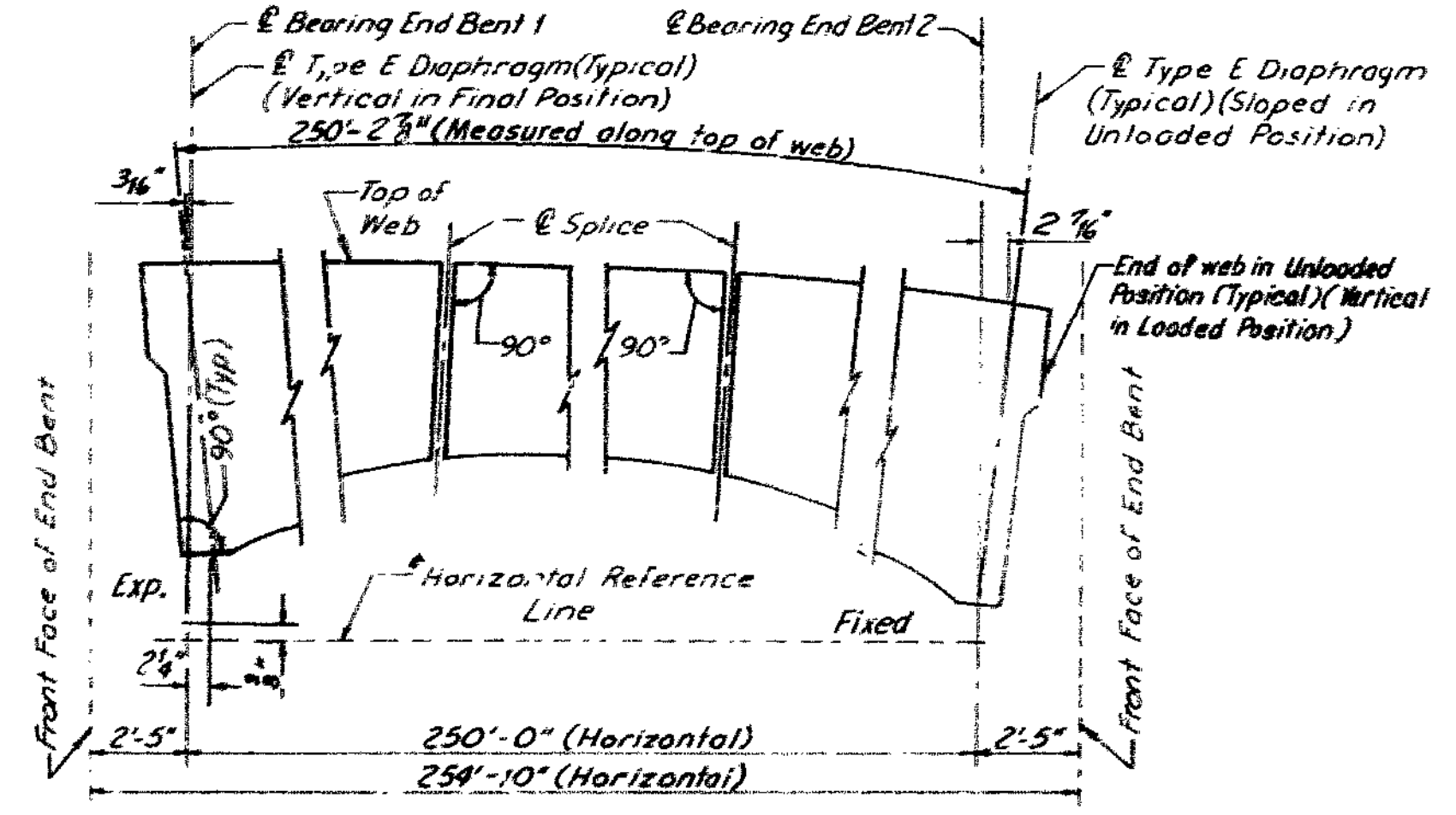
END DIAPHRAGM



SECTION A-A

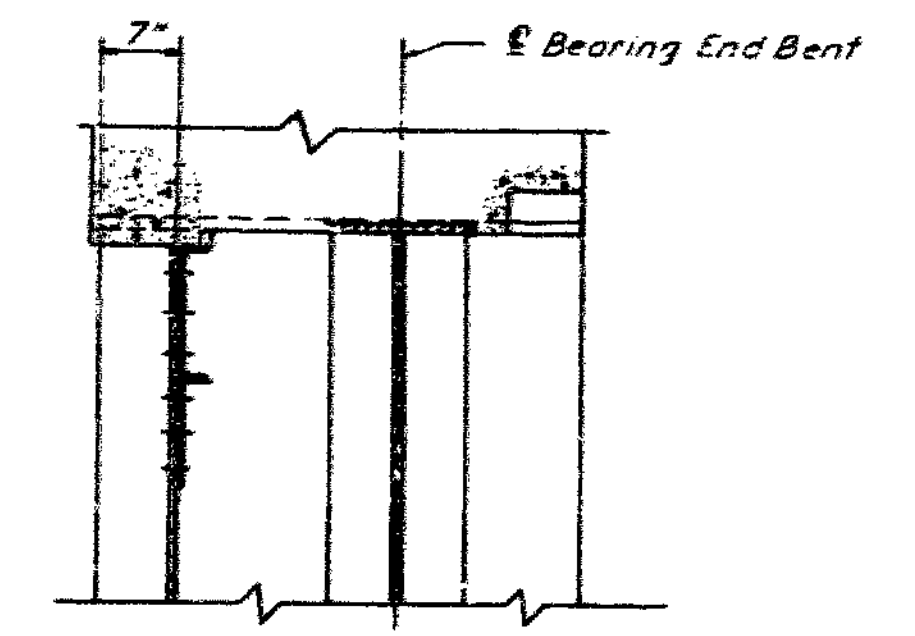


TOP LATERAL BRACING AND TOP CROSS MEMBER DETAIL

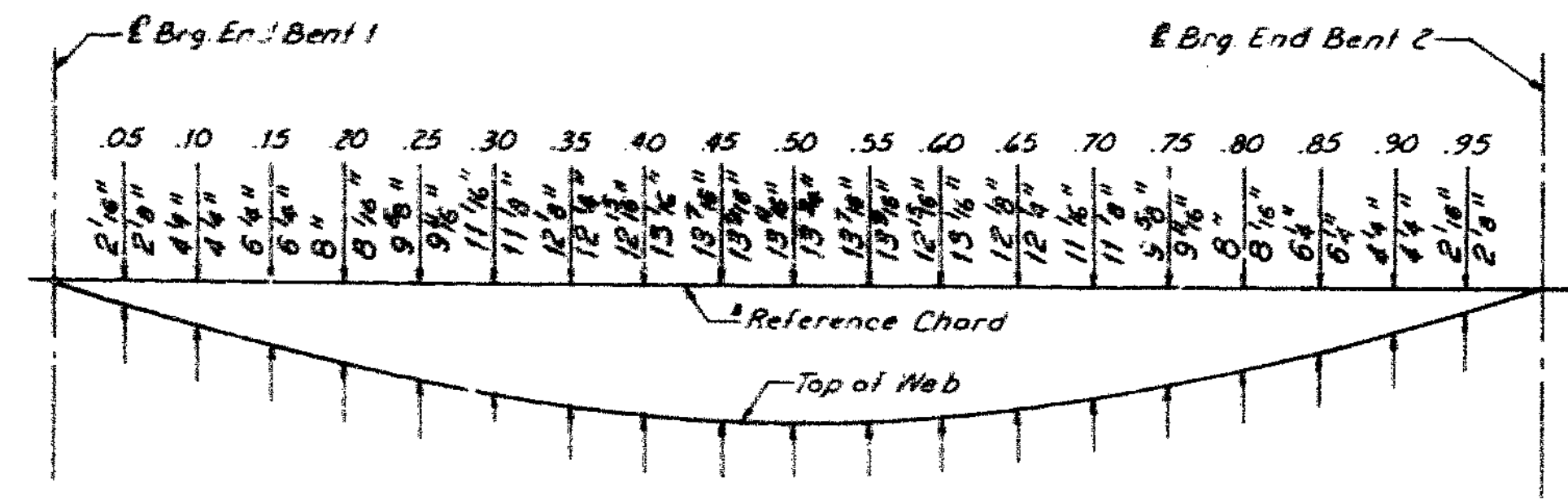


ELEVATION OF LONGITUDINAL STEEL DIAGRAM

\* Line through bottom of web at Bearing End Bent 2.



SECTION B-B

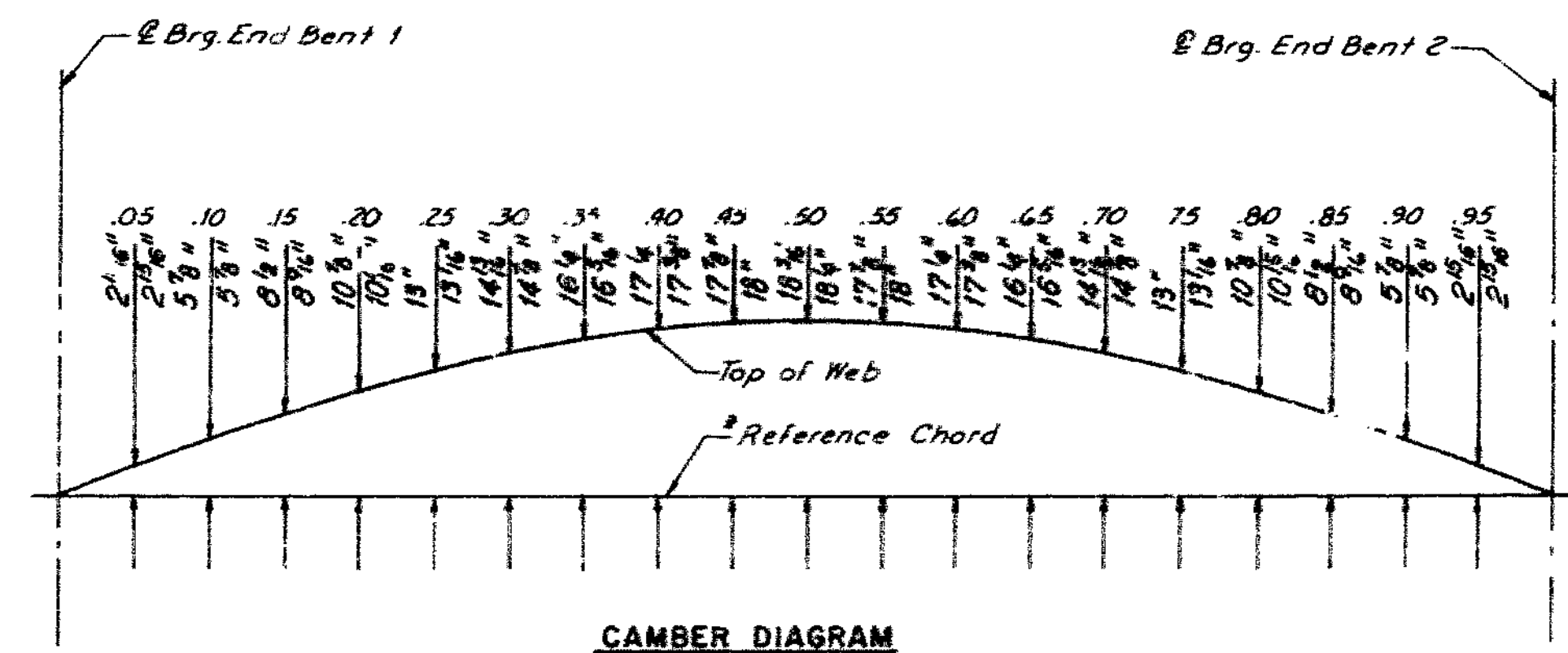


DEAD LOAD DEFLECTION DIAGRAM

Note: 47% of dead load deflection due to weight of structural steel.

Note: Values shown above the dimension line are for Box Girders 1 and 7. Values shown below the dimension line are for Box Girders 2 thru 6.

\* Chord between Bearing End Bents at top of web



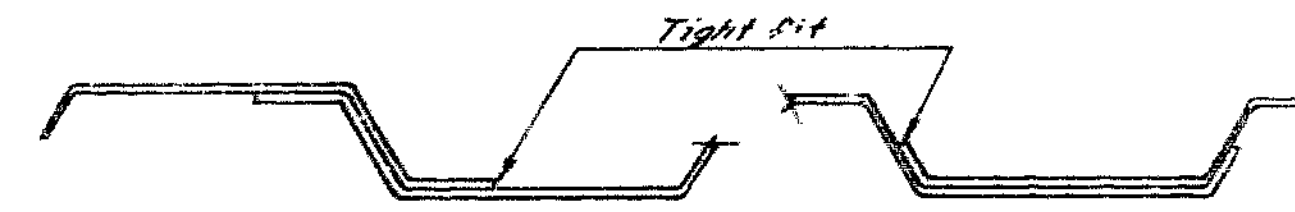
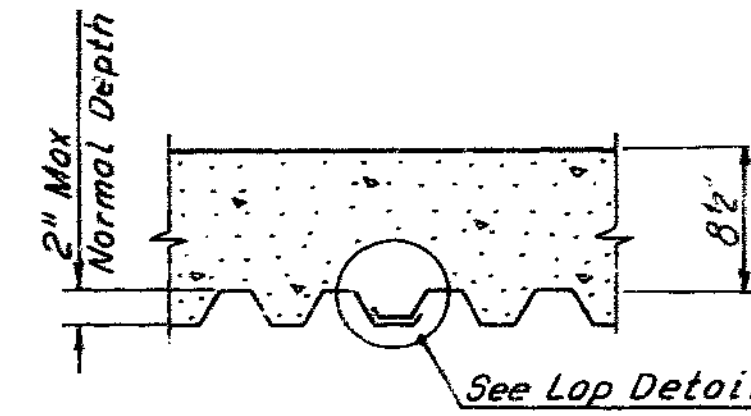
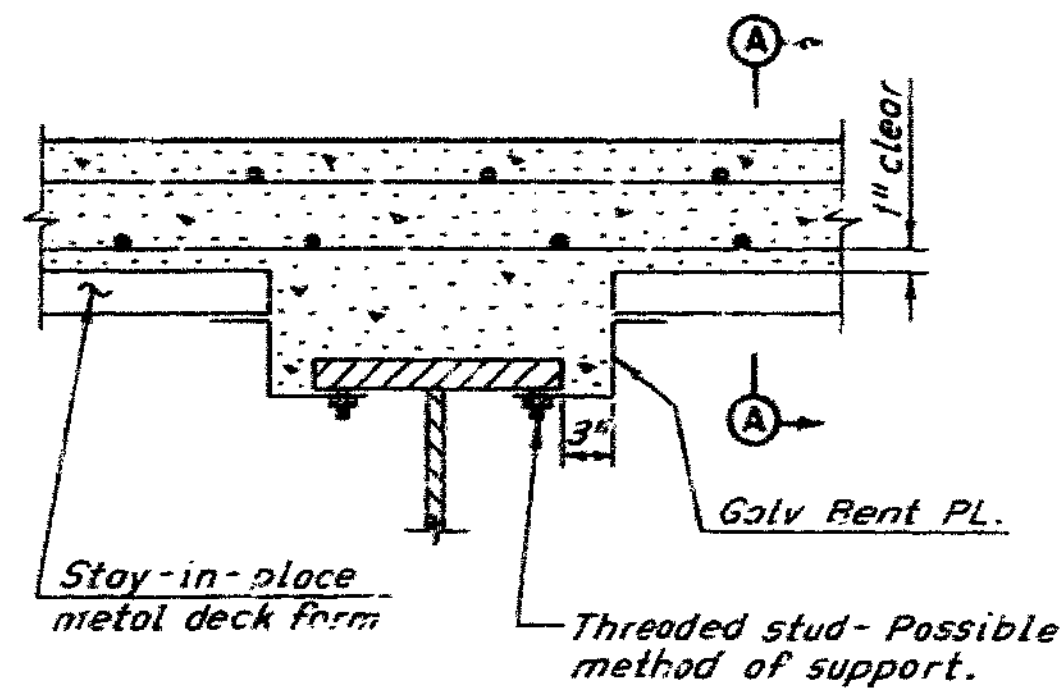
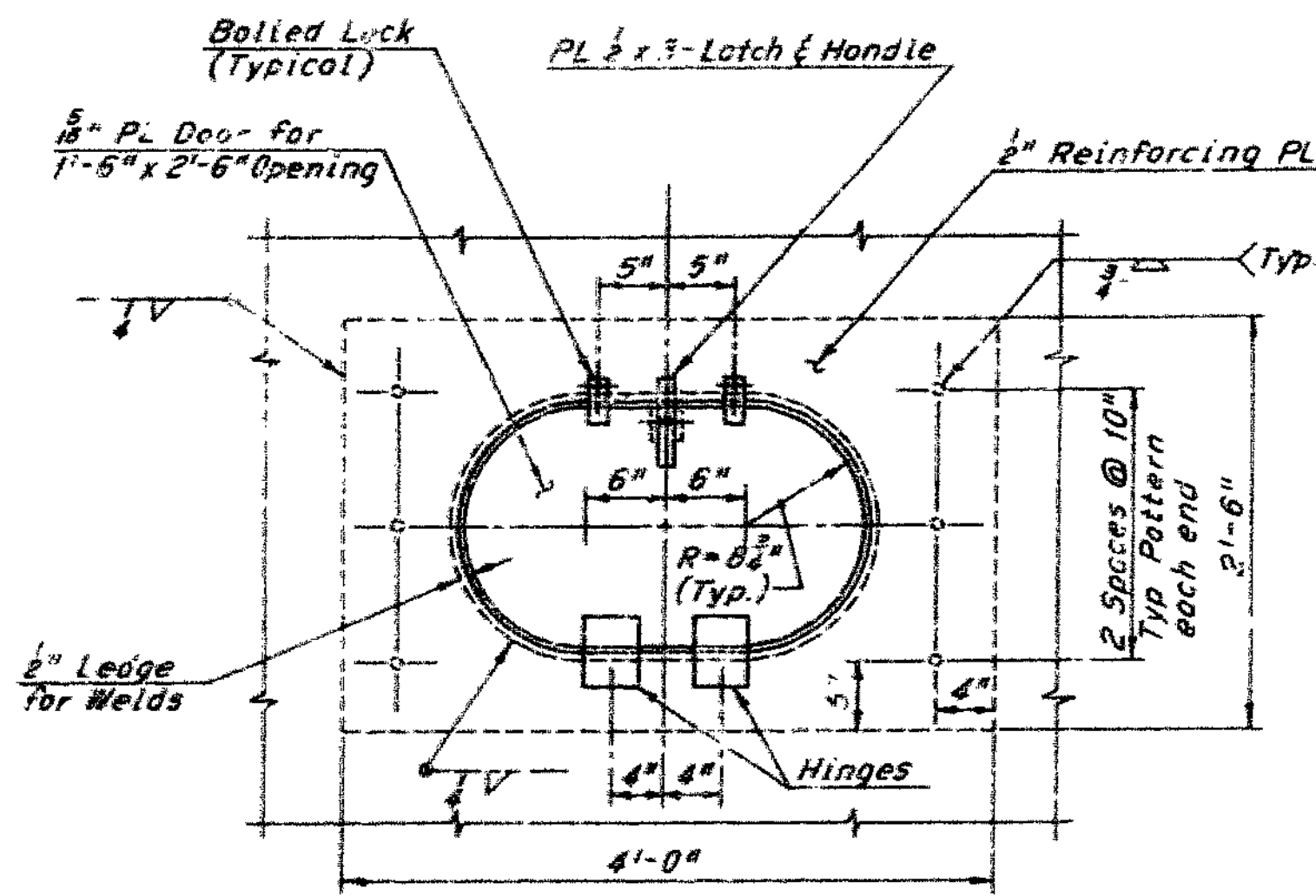
CAMBER DIAGRAM

Note: Camber includes allowance for vertical curve, and for dead load deflection due to concrete slab, curb, railing, bituminous wearing surface, stay-in-place metal deck forms and structural steel.

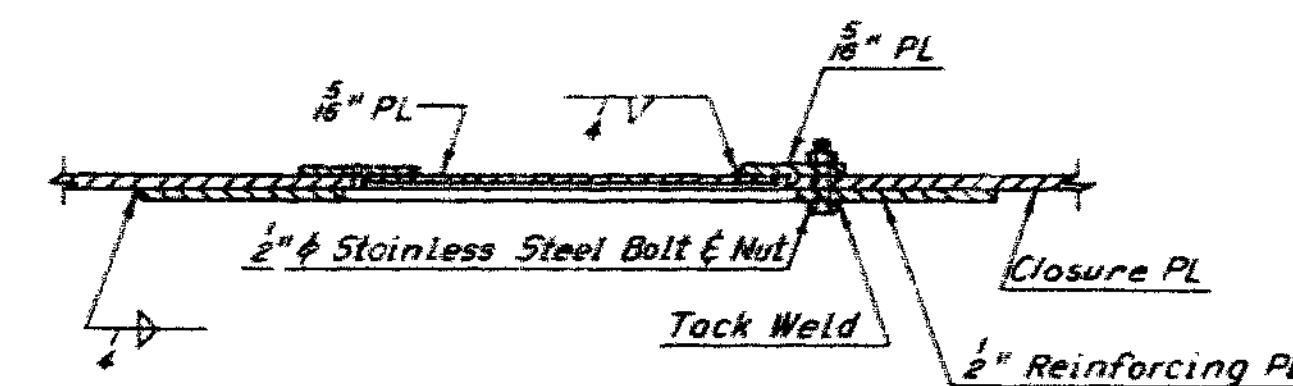
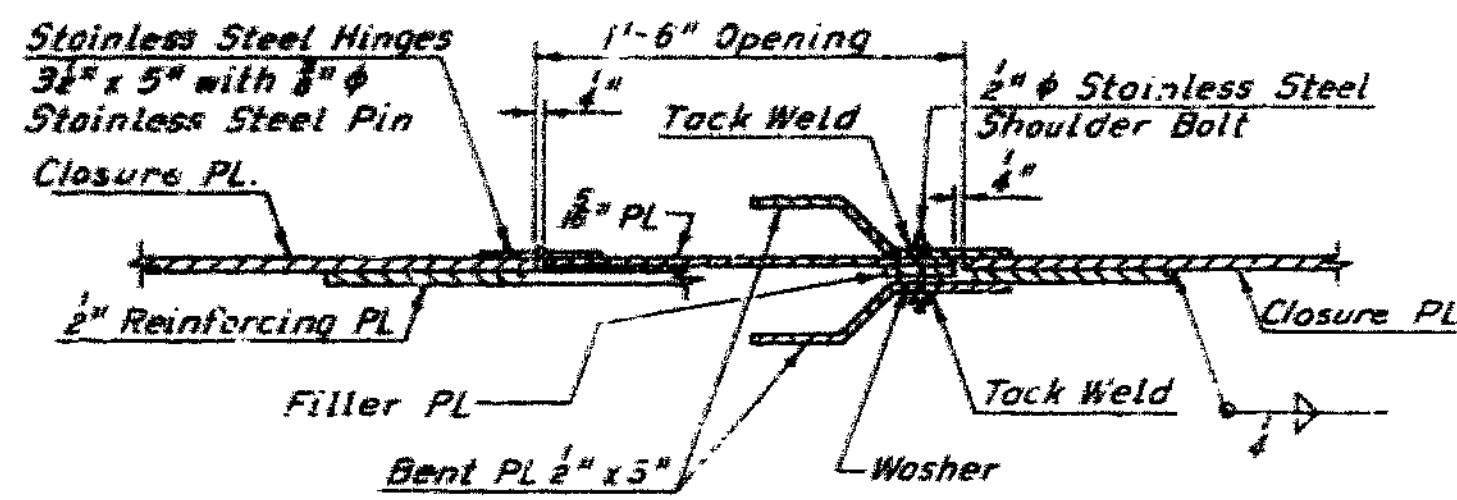
WEB	Brg. End Bent 1	WEB HEIGHTS																		Brg. End Bent 2	
		.05	.10	.15	.20	.25	.30	.35	.40	.45	.50	.55	.60	.65	.70	.75	.80	.85	.90		.95
B1A, B1B, B7A, B7B	14'-0"	12'-8 1/2"	11'-5 1/2"	10'-5 3/4"	9'-6 3/4"	8'-9"	8'-1 1/2"	7'-7 1/2"	7'-3 1/2"	7'-0 1/2"	7'-0"	7'-0 1/2"	7'-3 3/8"	7'-7 1/2"	8'-1 1/2"	8'-8 3/4"	9'-6 3/8"	10'-5 1/2"	11'-5 1/2"	12'-8"	14'-0"
B2A, B2B, B6A, B6B	14'-1 1/2"	12'-9 1/2"	11'-7 1/2"	10'-6 3/4"	9'-7 3/4"	8'-10 1/4"	8'-3 3/4"	7'-9 3/4"	7'-5 1/2"	7'-2 1/2"	7'-1 1/2"	7'-2 1/2"	7'-4 3/8"	7'-9 1/2"	8'-3 3/4"	8'-10 3/4"	9'-7 3/8"	10'-6 3/2"	11'-7 1/2"	12'-9 1/2"	14'-1 1/2"
B3A, B3B, B5A, B5B	14'-3 1/2"	12'-11 1/2"	11'-9 1/2"	10'-8 3/4"	9'-9 1/2"	9'-0 3/4"	8'-4 3/4"	7'-10 3/4"	7'-6 1/2"	7'-4 1/2"	7'-3 1/2"	7'-4 1/2"	7'-6 3/8"	7'-10 3/2"	8'-4 3/4"	9'-0 3/4"	9'-9 1/2"	10'-8 3/2"	11'-9"	12'-11 1/2"	14'-3 1/2"
B4A, B4B	14'-4 1/2"	13'-0 3/4"	11'-10 3/4"	10'-10 1/4"	9'-11 1/4"	9'-1 1/4"	8'-6 1/4"	8'-0 3/4"	7'-8 1/2"	7'-5 1/2"	7'-4 1/2"	7'-5 1/2"	7'-8 3/8"	8'-0 3/4"	8'-6 1/4"	9'-1 1/4"	9'-11 1/4"	10'-10"	11'-10 3/4"	13'-0 3/4"	14'-4 1/2"

TOP LATERAL BRACING AND TOP CROSS MEMBER, WEB HEIGHTS, DEAD LOAD DEFLECTION, CAMBER, END DIAPHRAGM, LONGITUDINAL STEEL DIAGRAM  
SUMMIT STREET  
JACKSON COUNTY

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		18	83	



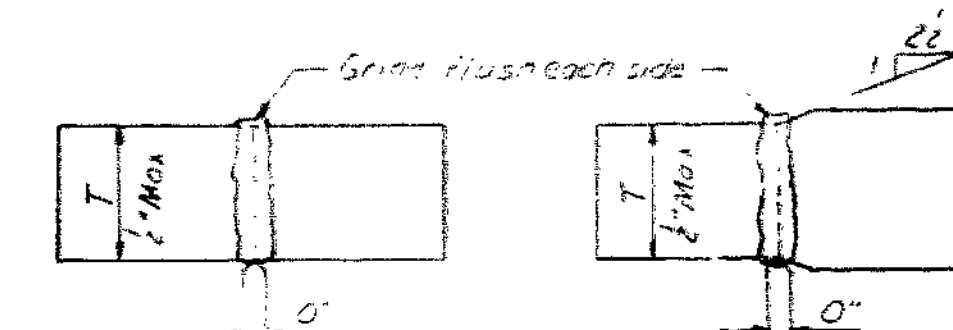
STAY-IN-PLACE METAL DECK FORMS



**DETAILS OF ACCESS DOOR IN CLOSURE PLATE AT END BENTS**  
(Curvature of access door shall match curvature of closure plate)

**Note:**  
Structural steel across doors shall be cleaned and painted in the shop or field with 2 coats of inorganic zinc prime paint, Std. Spec. 1045, to provide a minimum dry film thickness of 5 mils. Cleaning, application and touch up shall be in accordance with Std. Spec. 712.12. In lieu of painting the access doors they may be galvanized. Galvanizing shall be in accordance with ASTM A123 and A153. Cost of painting or galvanizing shall be included in price bid for other items.

**Notes:**  
Gage and size of supporting elements and form shall be shown on shop drawings. Minimum thickness of the forms shall be 22 gage.  
All form supports and their attachments shall be designed to carry dead load of deck slab plus 50 pounds per square foot minimum for construction loads.  
All forms shall be securely fastened to form supports and shall have a minimum bearing of 1 inch each side.  
Form sheets shall be attached promptly to avoid hazards that can result from lateral movement or sudden uplift.  
All attachments shall be made by welds, bolts, clips, or other approved means and shall be watertight. No welding other than studs will be permitted on girder flanges.  
Field cutting of forms, supports and attachments shall be performed with saw, shear or other approved means.  
Metal deck forms shall be galvanized and shall conform to ASTM A446.  
Cost of stay-in-place metal deck forms and supports to be included in unit price bid for Class B2 Concrete. See Special Provisions.

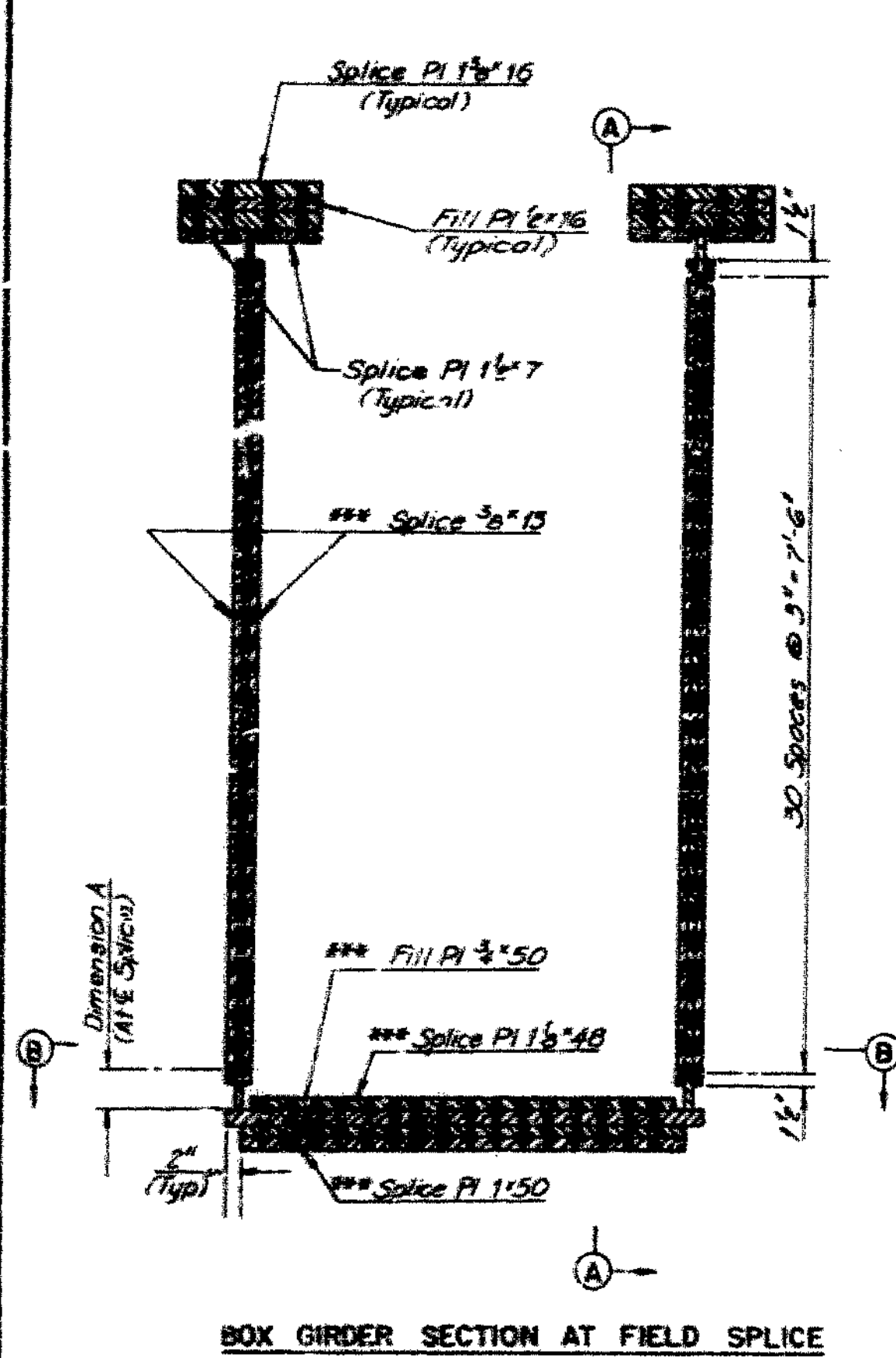


**Notes:**  
Shop welded web splices may be fabricated by the Contractor when detailed on the drawings and approved by the Engineer. No additional payment will be made for optional shop welded web splices.  
Weld grinding shall be performed in the longitudinal direction of the girder.  
By approval of the Engineer, the Contractor may, if desired, substitute a shop welded splice for field bolted splices by providing approved modifications of details required. All cost shall be borne by the Contractor. Pay weight in any case shall be based on materials shown on the design plans.  
All shop web splices shall be located at least 1'-0" from shop flange splices.

ACCESS DOOR, STAY-IN-PLACE DECK FORMS AND SHOP SPLICE DETAILS  
SUMMIT STREET  
JACSON COUNTY

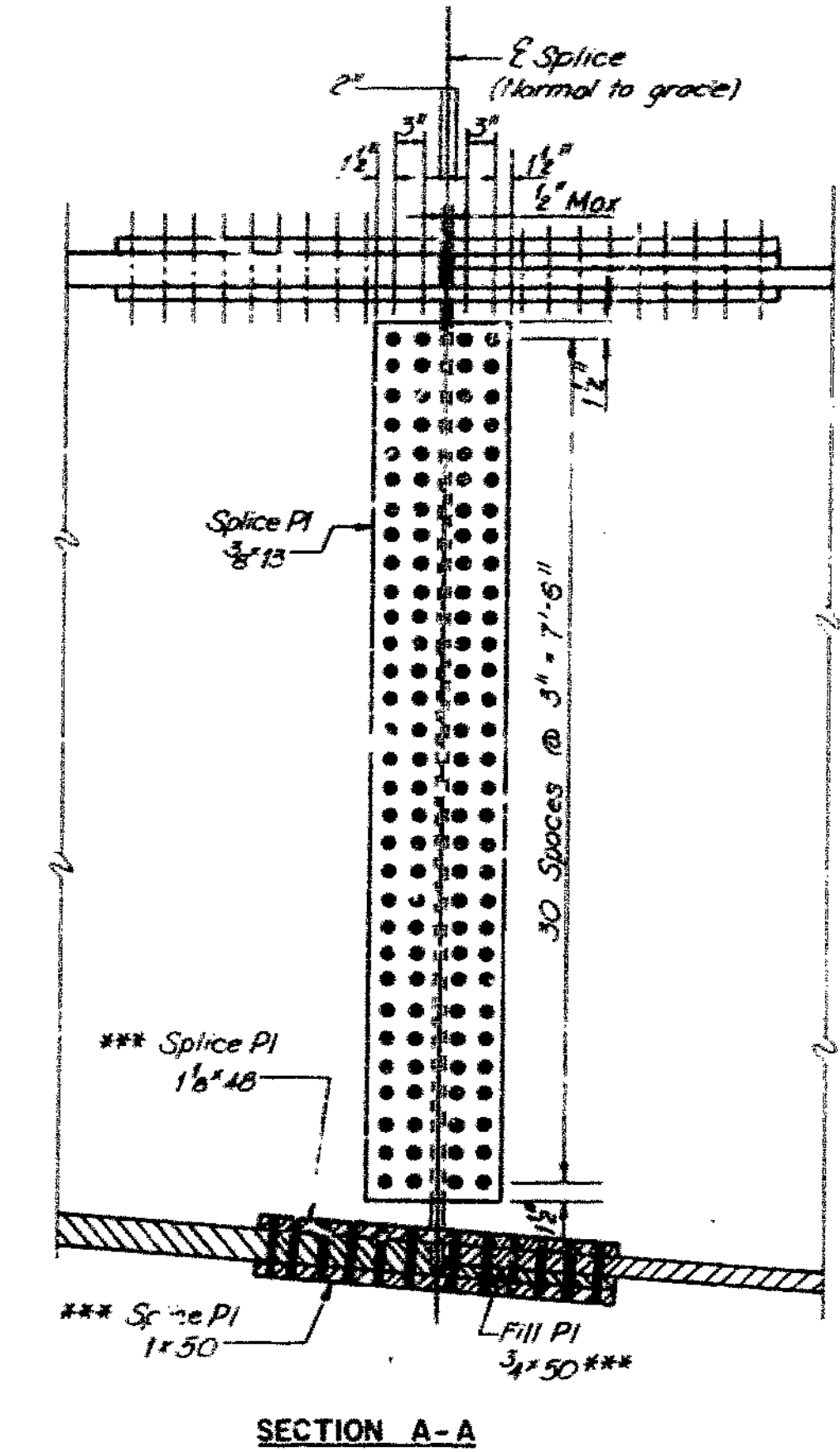


FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	84	



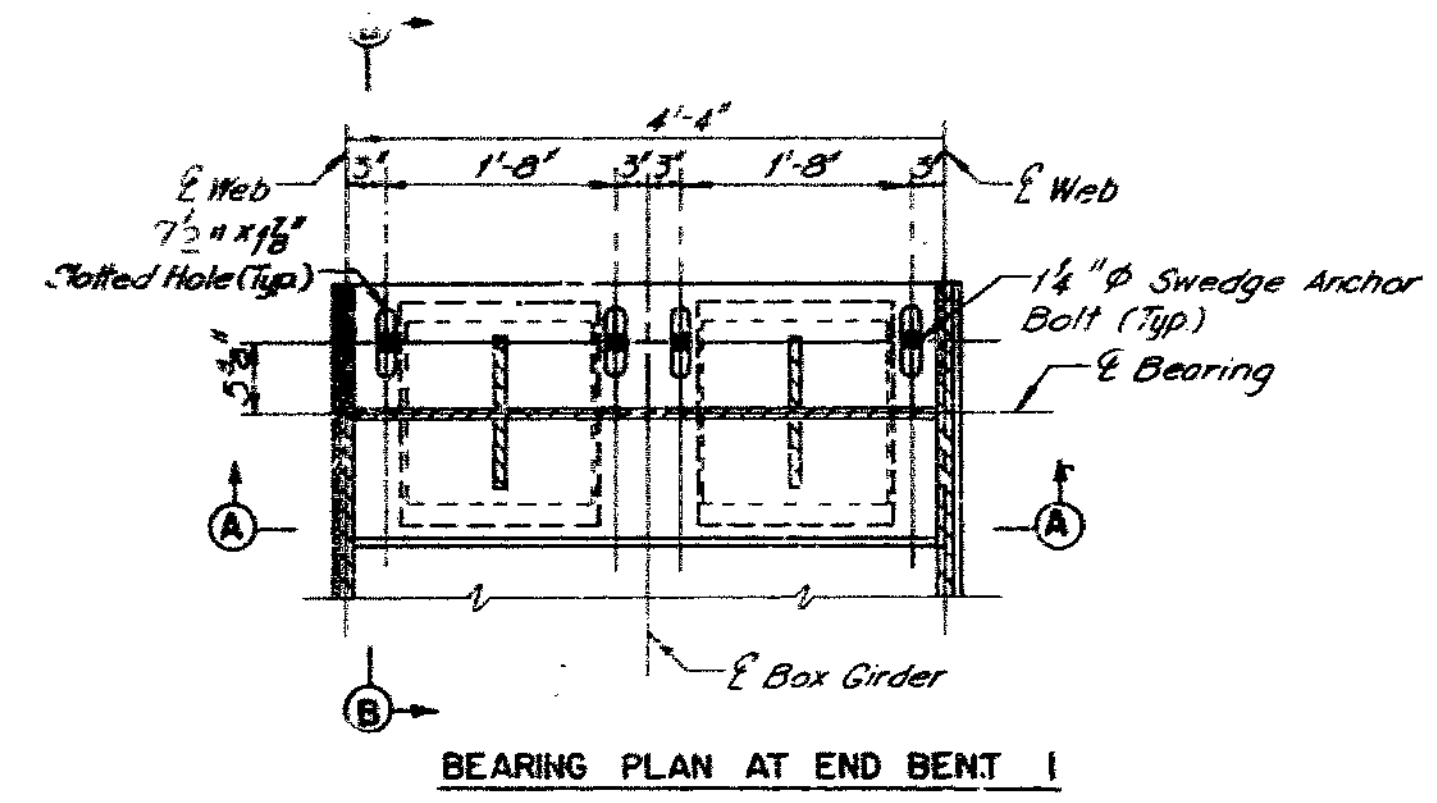
BOX GIRDER SECTION AT FIELD SPlice

DIMENSION A	
Box Girder	Dimension
1 and 7	3 3/4"
2 and 6	4 1/2"
3 and 5	5 3/8"
4	6 9/16"

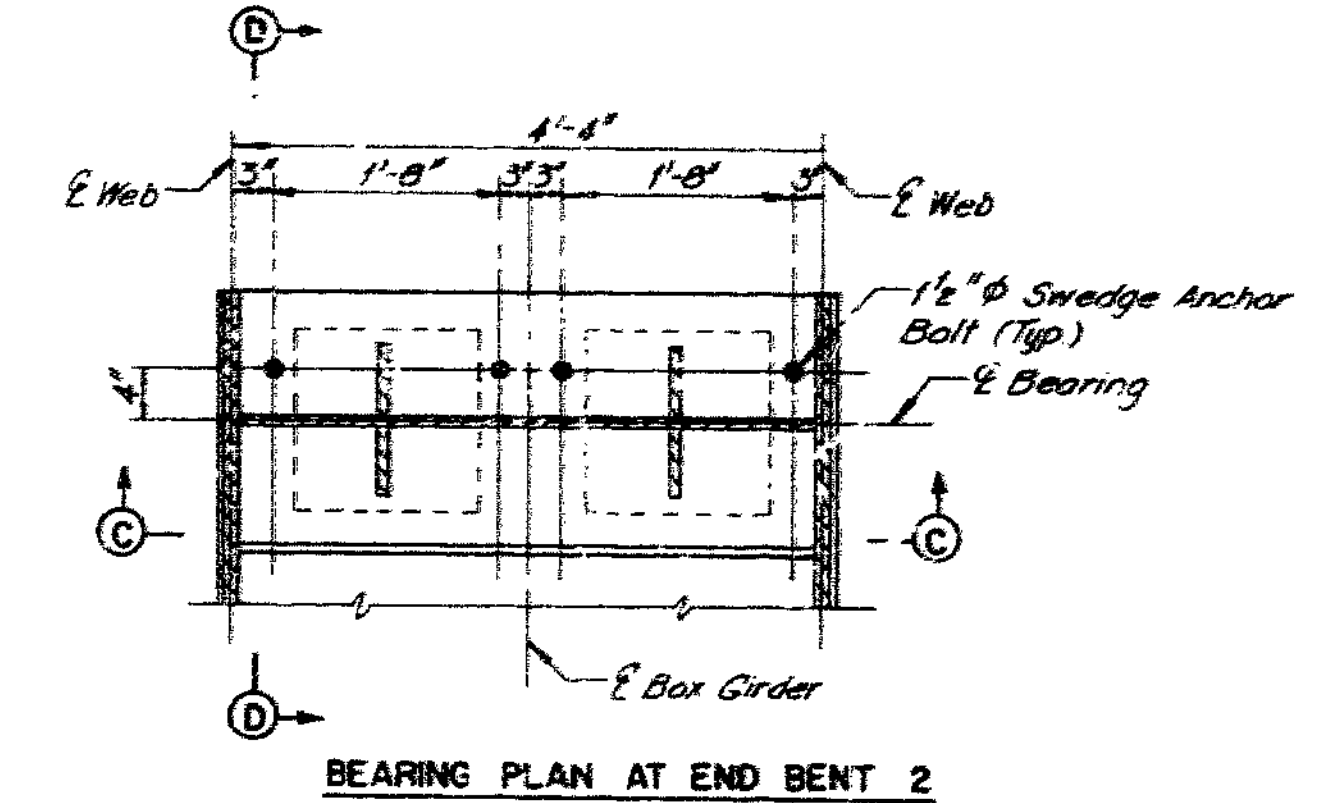


SECTION A-A

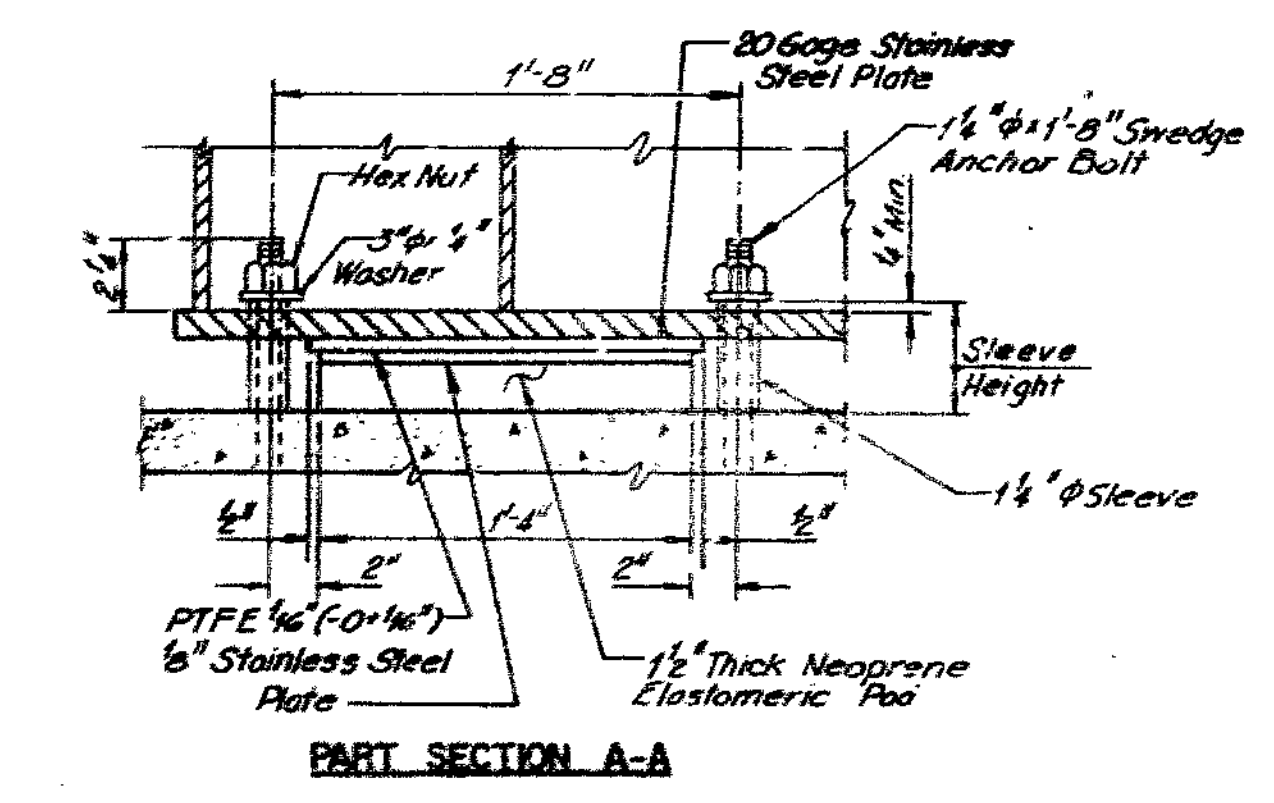
\*\*\* Indicates flange splice plates subject to notch toughness requirements.



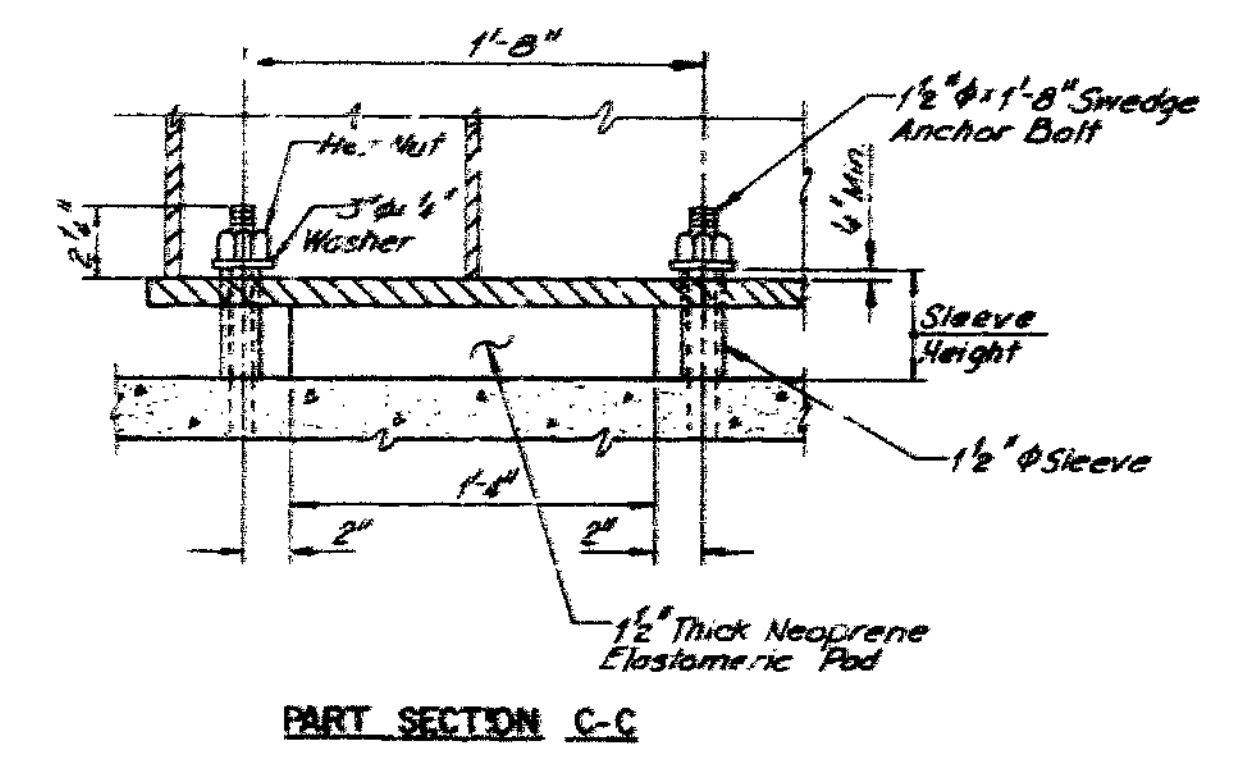
BEARING PLAN AT END BENT 1



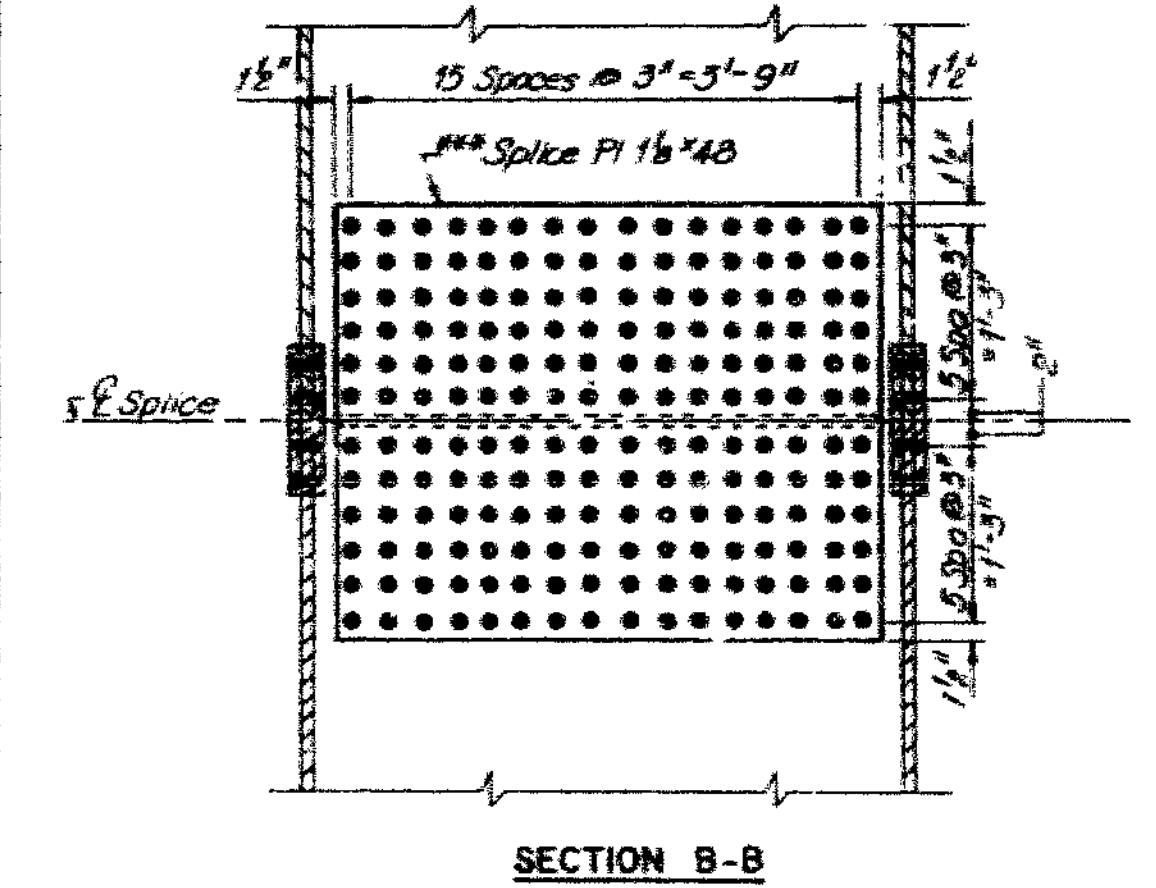
BEARING PLAN AT END BENT 2



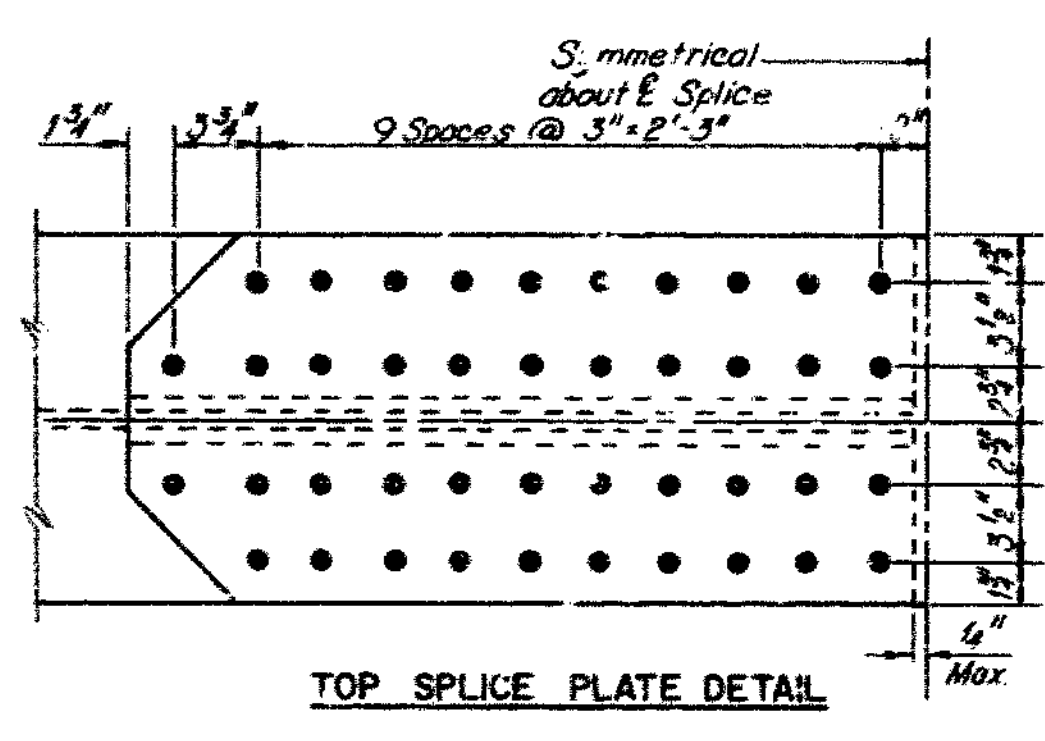
PART SECTION A-A



PART SECTION C-C



SECTION B-B



TOP SPlice PLATE DETAIL

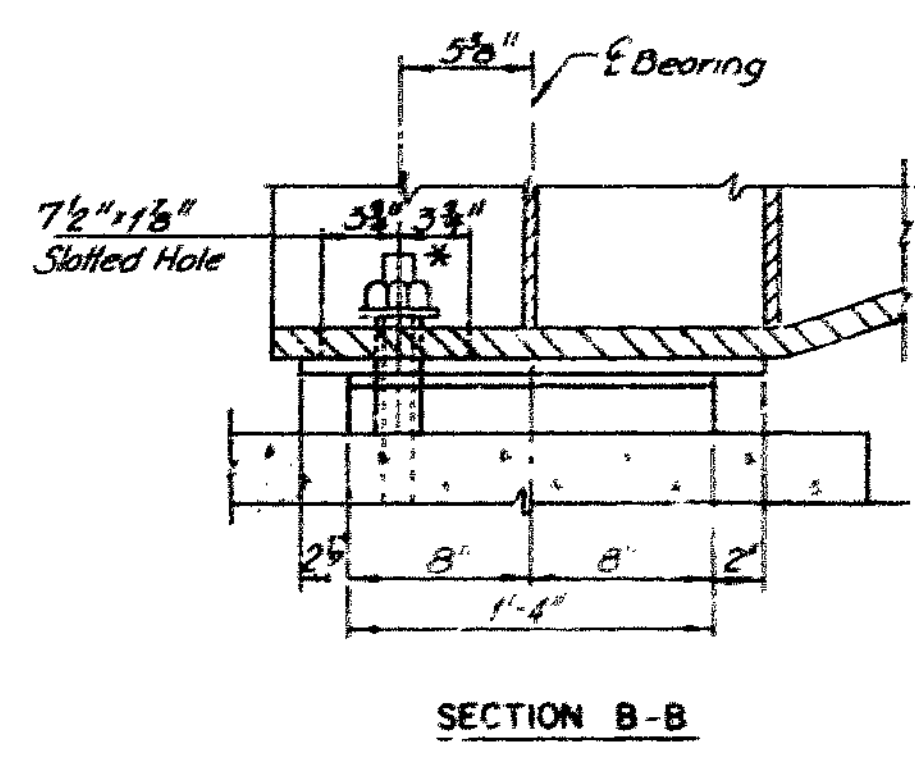
**FIELD SPlice NOTES**  
 All splice plates and fill plates are A36 steel.  
 All bolts are 7/8" diam. High Strength ASTM A325.  
 Curvature of splice plates shall match curvature of girder plates.

**FIELD SPlice DETAILS**

**Anchor Bolt Notes:**  
 The anchor bolts for the fixed bearings of End Bent 2 shall be set in drilled holes at the locations shown immediately after the girder section at this location is erected.  
 Holes for the expansion bearing at End Bent 1 shall be drilled and anchor bolts set after the superstructure concrete slab has been placed. The anchor bolts shall be positioned in the slotted holes in the girder flange as shown in the details.

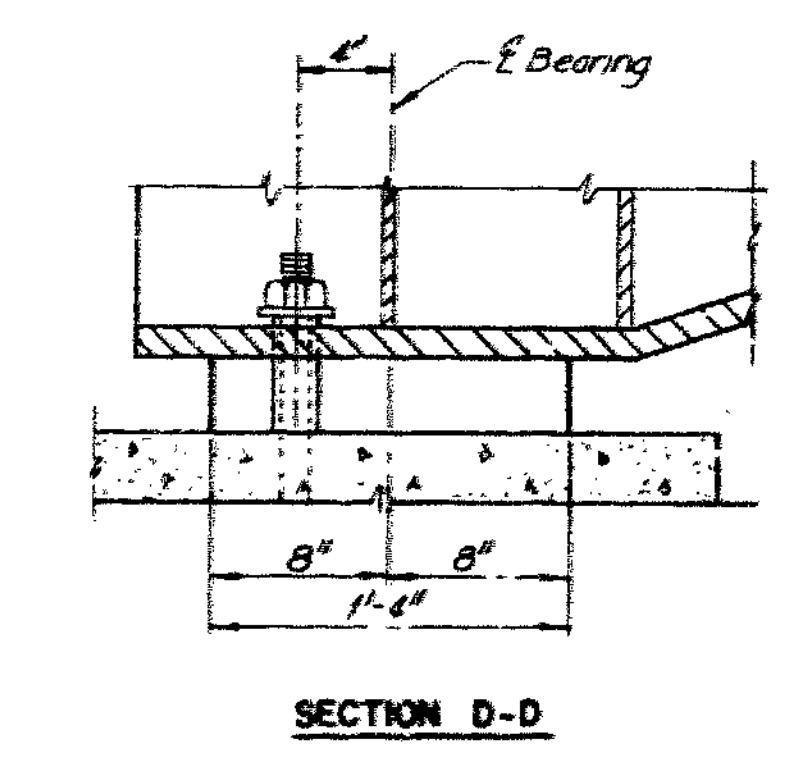
**Bearing Notes:**  
 Bearings shall be 70 durometer Neoprene Pads.  
 Locate one (1) 1/4" shim plate between equal layers of elastomer. (Pad thickness shown includes the thickness of the shim plate.)  
 The 20 gage stainless steel plate shall be bonded to the flange plate with high temperature-resistant epoxy.  
 The PTFE (PolyTetraFluoroEthylene) shall be bonded to the 1/2" stainless steel plate and then bonded to the Neoprene Pad.  
 The Neoprene Pad shall be bonded to the concrete bearing seat with an approved epoxy adhesive.

**BEARING DETAILS**



SECTION B-B

Note: Anchor bolts shall be centered in the slotted holes at 60° F. Dimension indicated by \* shall be decreased 3/16" for each 10° rise in temperature and increased 3/16" for each 10° fall in temperature.



SECTION D-D

Note: Cost of the stainless steel plates, shim plates, PTFE, epoxy adhesive and anchor bolts to be included in unit price bid for Item 114.02.5. Bearing Pads. See Special Provisions.

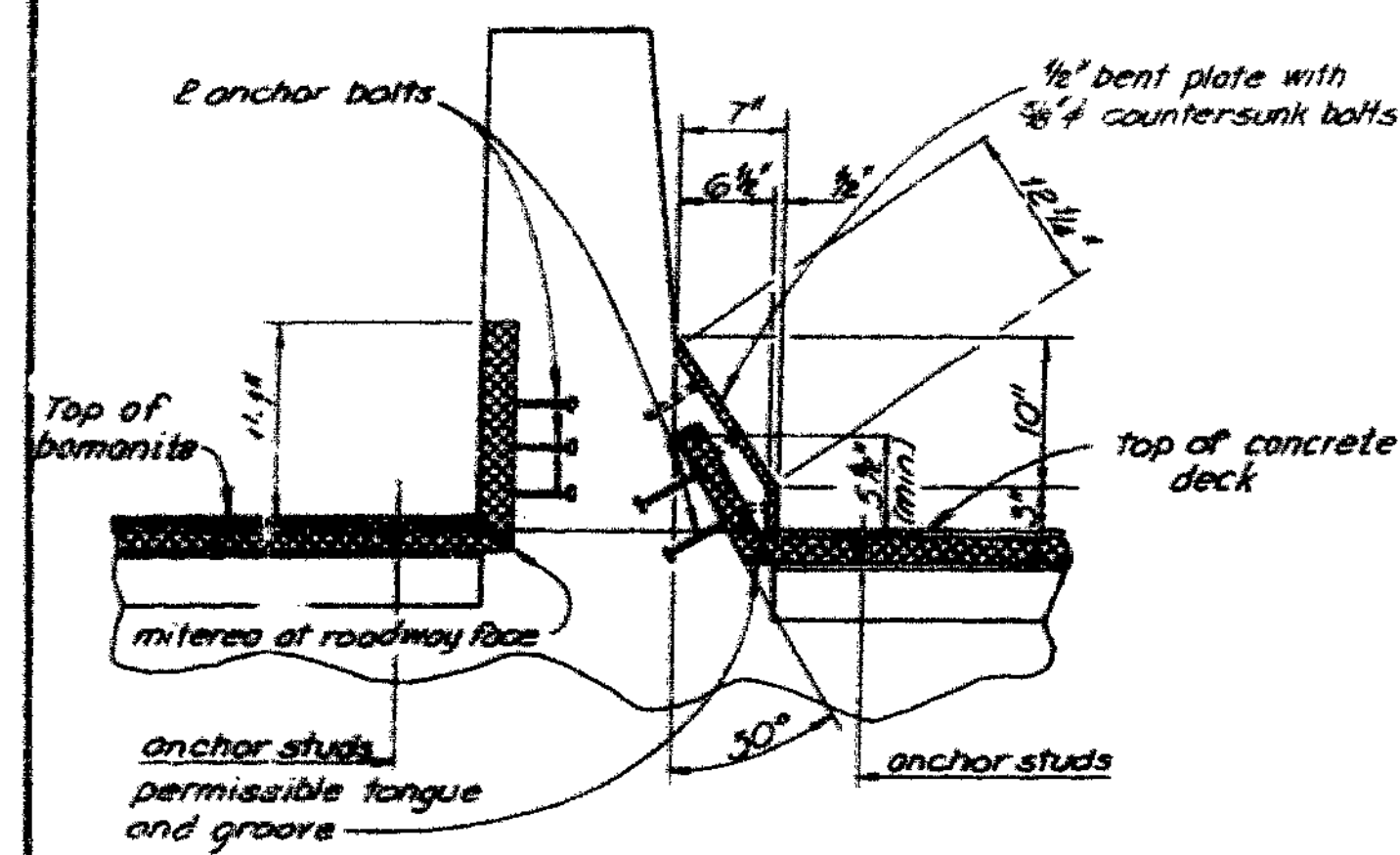
After the superstructure concrete slab has been placed, the neoprene pads at both end bents shall be inspected for vertical trueness of the ends of the pad perpendicular to the centerline of girder. If these ends are out of plumb by more than 3/16", the girder shall be jacked to remove all load from the pad, the pad ends plumbed, and the load reapplied.  
 All jacking procedures, including sequence and details of any jacking lugs or attachments required, shall be approved by the Engineer before any jacking is performed.  
 Cost of jacking, including any lugs and attachments and plumbing of neoprene pads, shall be included in the contract unit price bid for other items.

63

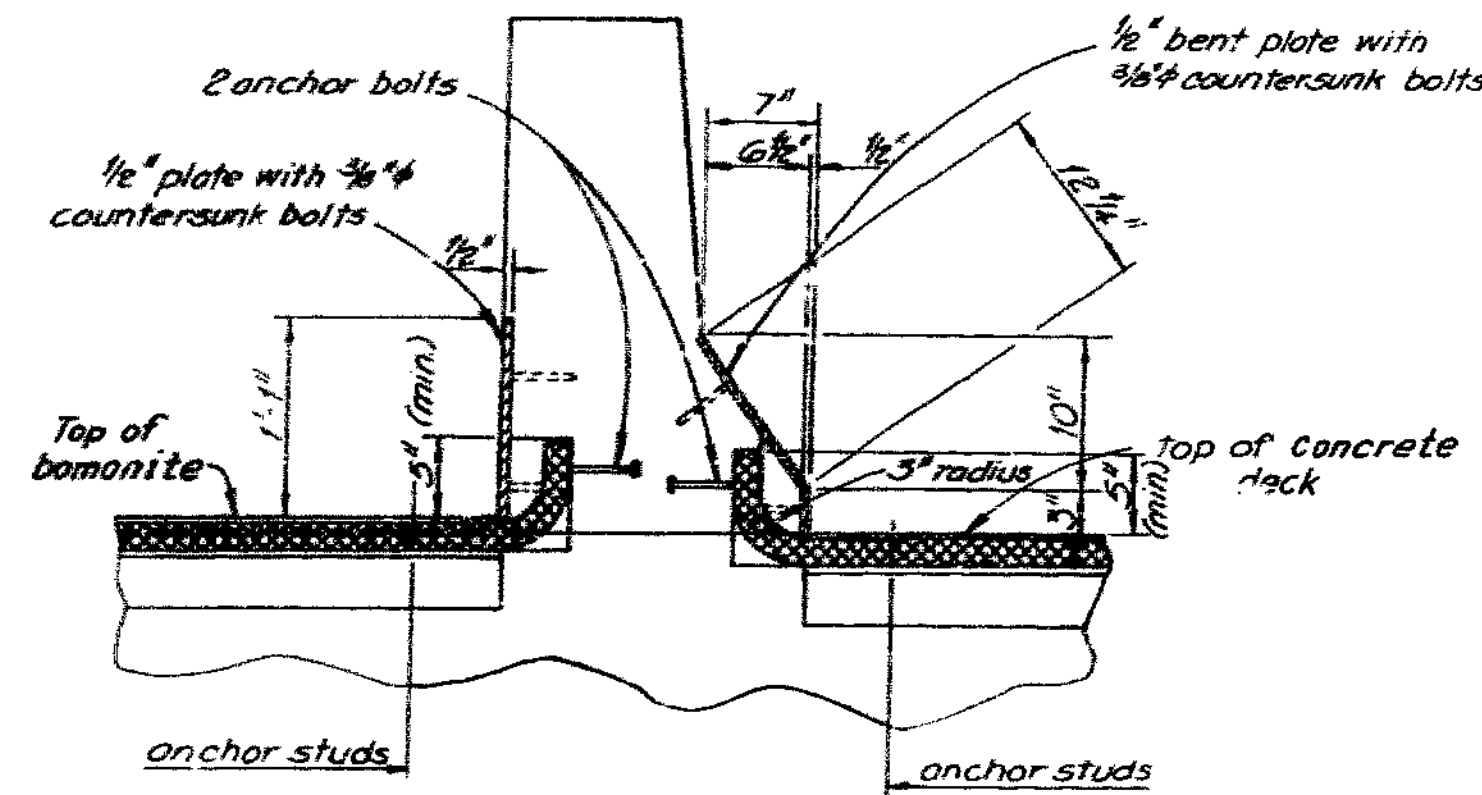




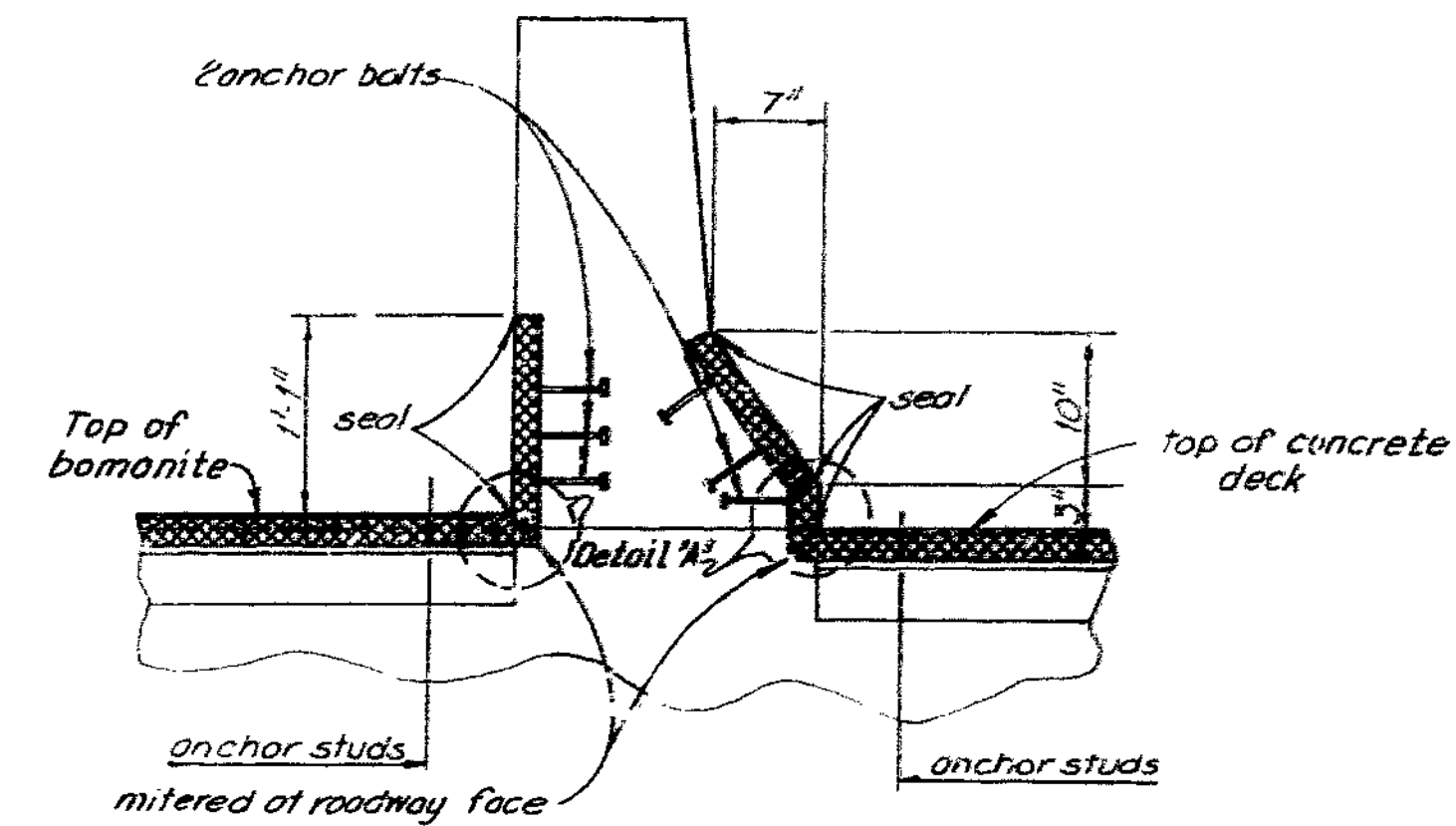
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	30	



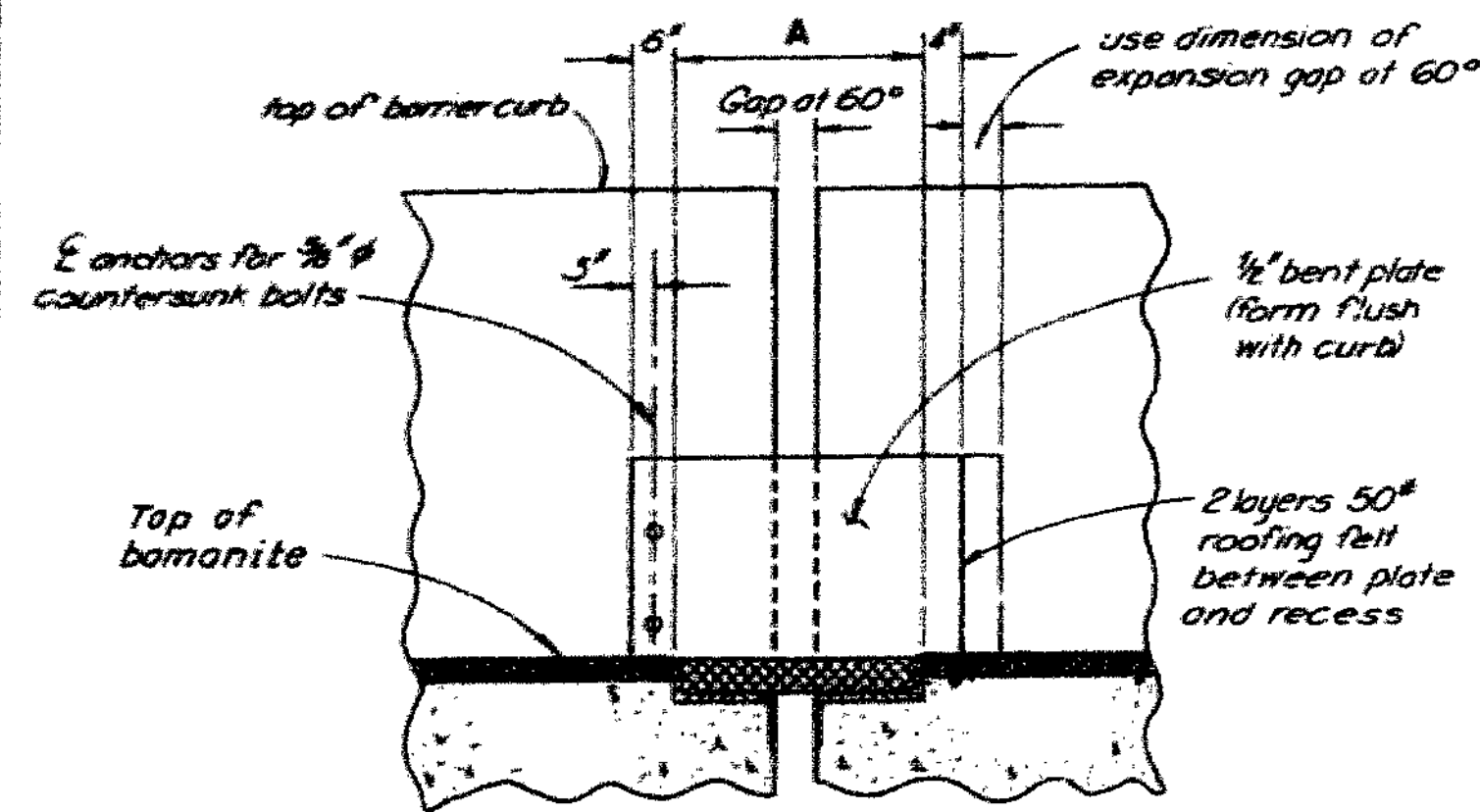
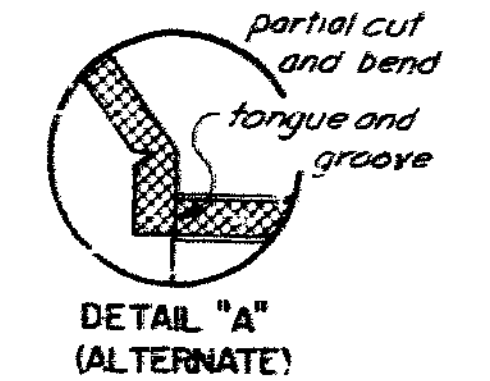
TYPE "A" CURB



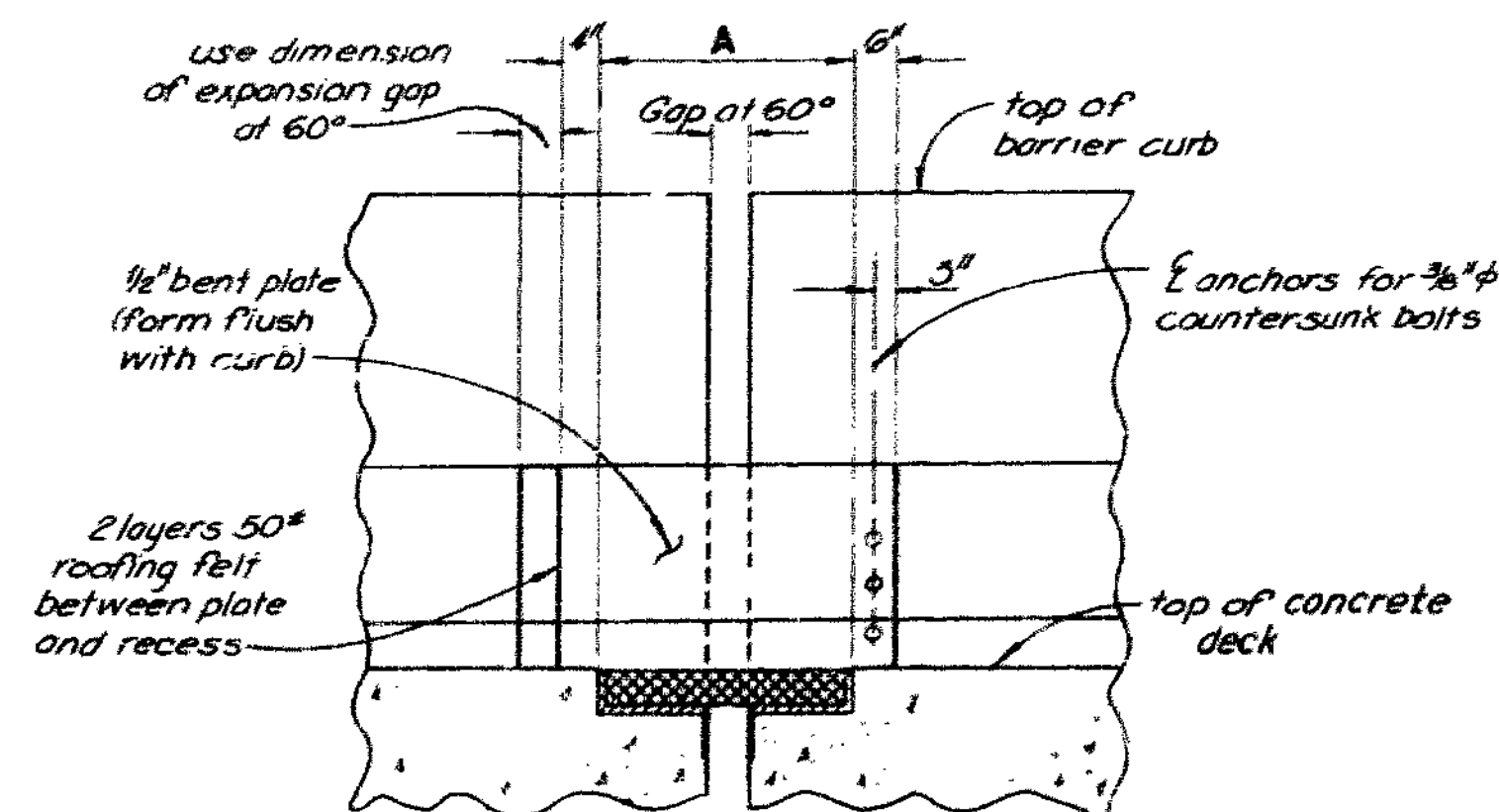
TYPE "B" CURB



TYPE "C" CURB

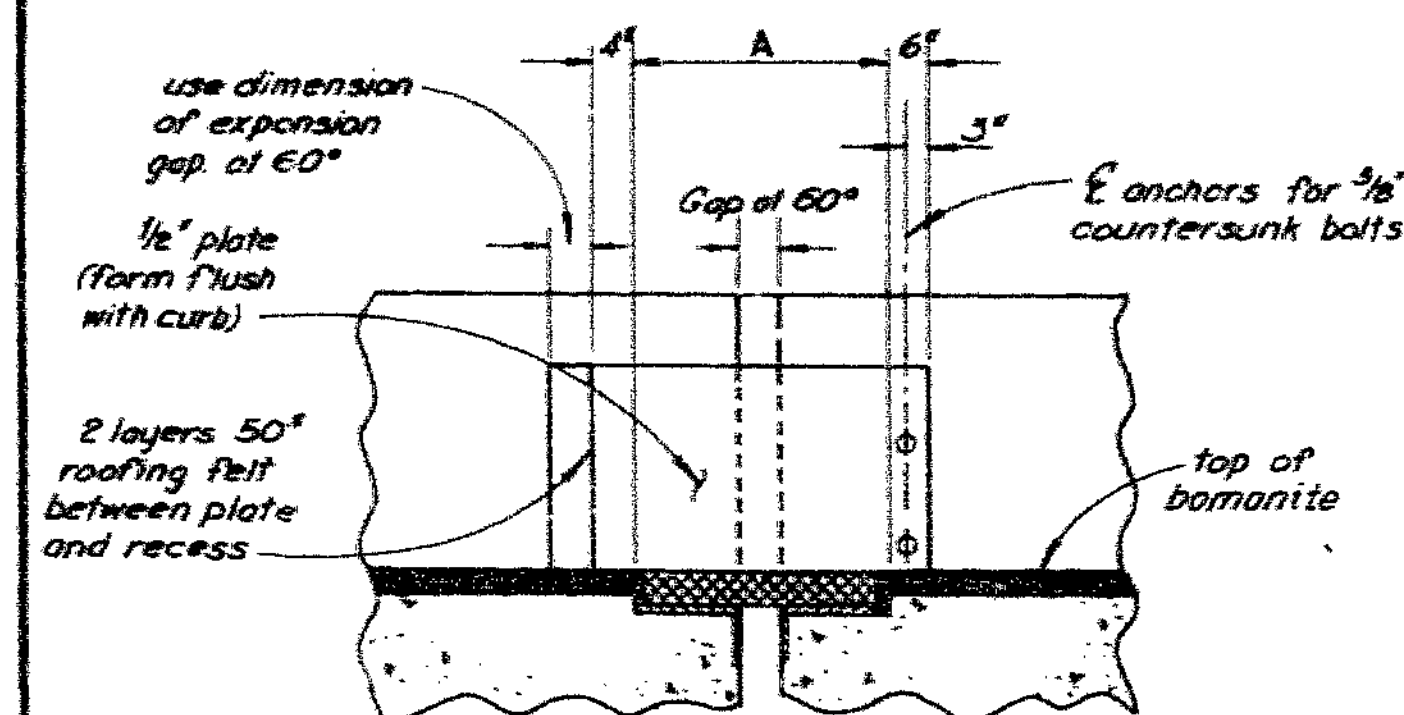


WEST PART ELEVATION OF WEST BARRIER CURB

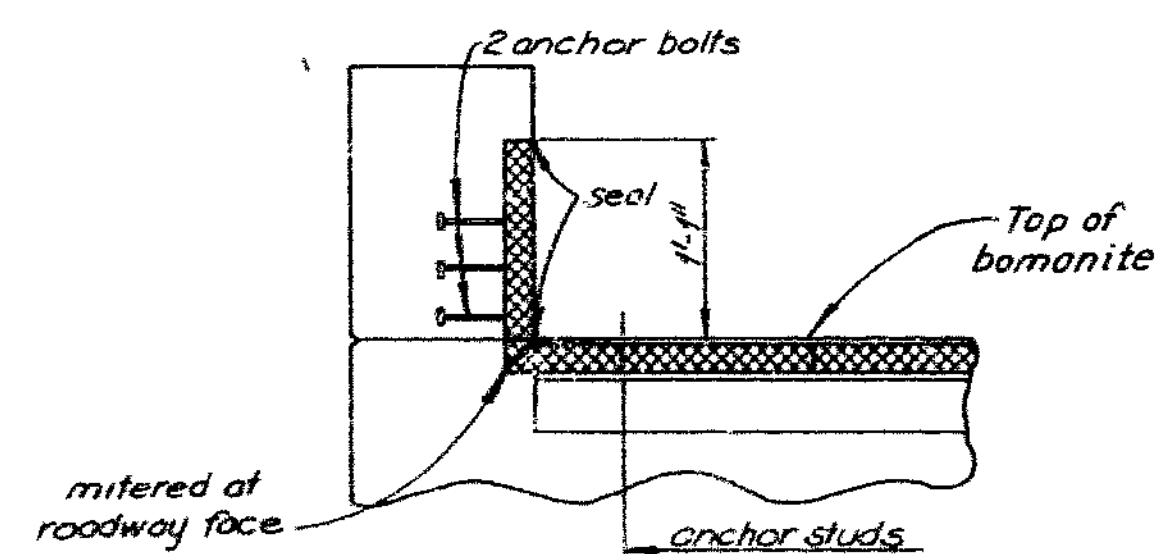


EAST PART ELEVATION OF WEST BARRIER CURB

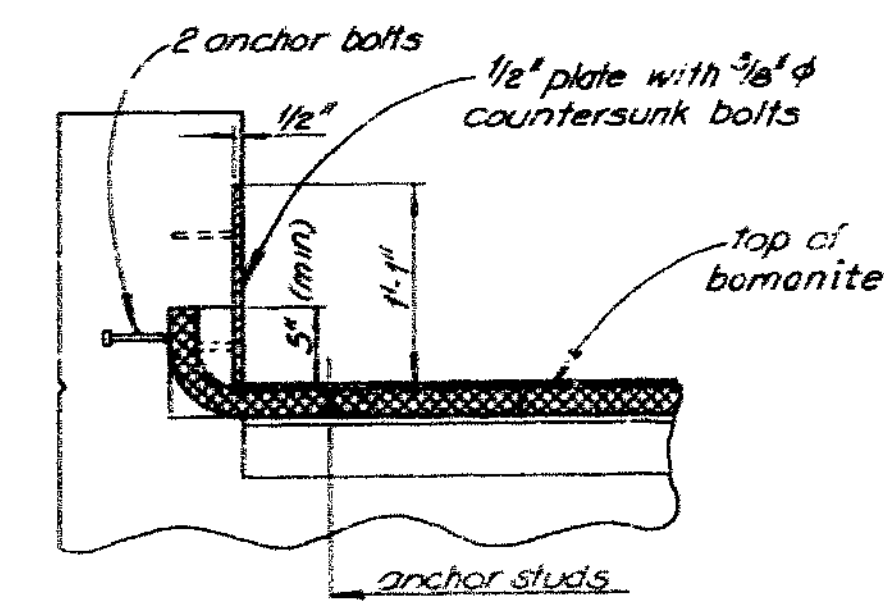
ALTERNATE WEST CURB TREATMENTS



PART ELEVATION OF RAILING CURB



TYPE "A" CURB AT RAILING



TYPE "B" CURB AT RAILING

ALTERNATE CURB TREATMENTS AT RAILING  
DETAILS OF ELASTOMERIC EXPANSION JOINT SEAL AT BENT NO. 1

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	87	

NOTES FOR PREFORMED COMPRESSION JOINT SEAL:

STRUCTURAL STEEL FOR EXPANSION DEVICE SHALL BE FABRICATED IN ONE SECTION EXCEPT THAT WHEN THE LENGTH IS OVER 50 FEET, SPLICING IS PERMISSIBLE. EXPANSION DEVICE SHALL BE BENT TO CONFORM TO CROWN AND GRADE OF ROADWAY.  
 NO. 5 BARS FOR EXPANSION DEVICE SHALL BE STRUCTURAL GRADE. APPROVED STUD WELDED ANCHORS OR DEFORMED BAR ANCHORS (ASTM A496) MAY BE USED IN LIEU OF #5 BARS SHOWN. PREFORMED COMPRESSION JOINT SEAL SHALL BE INSTALLED BEFORE CURBS ARE POURED. 3" B" CURB PLATE SHALL BE INSTALLED WITH CURB. PLAN DIMENSIONS ARE BASED ON INSTALLATION AT 60°F EXPANSION JOINT WIDTH SHALL BE ADJUSTED DURING INSTALLATION FOR COMPLIANCE WITH TABLES. SEE SPECIAL PROVISIONS FOR THE REQUIREMENTS OF COMPRESSION JOINT SEAL.

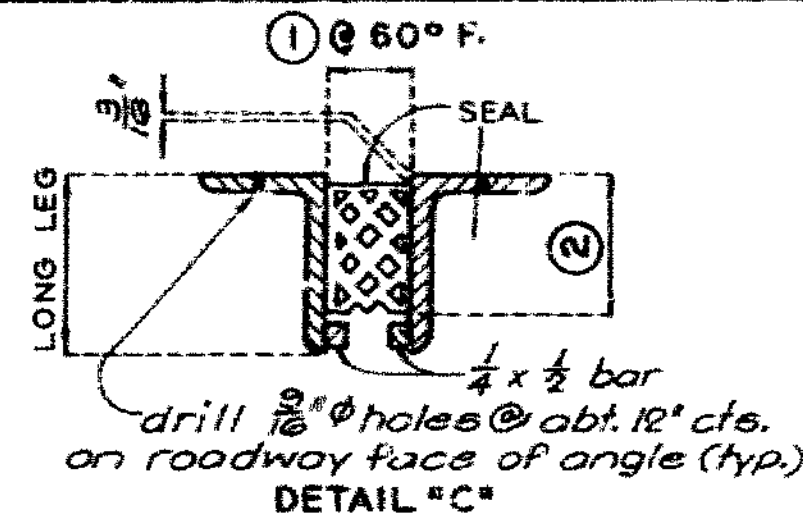
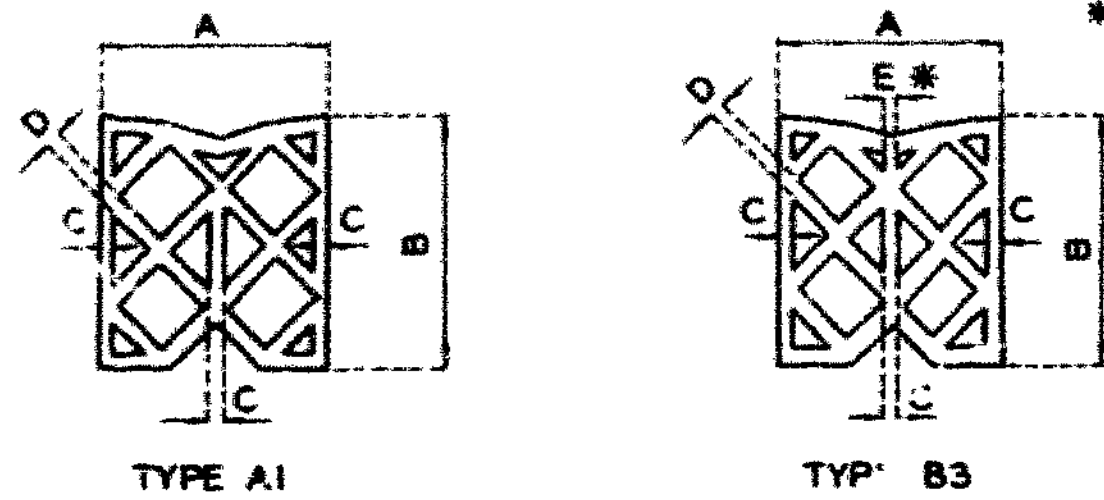


TABLE OF TRANSVERSE SEAL TOLERANCES (INCHES)

TYPE	"A" (WIDTH)	"B" (HEIGHT)	"C" (SHELL)	"D" (WEBS)	"E" (B3 ONLY) (SMALL WEBS)
A1 OR B3	2.500 +.250 -.000	2.750 +.125 -.125	0.187 +.046 -.015	0.093 +.031 -.015	0.062 +.031 -.031
A1 OR B3	3.000 +.250 -.000	3.406 +.187 -.187	0.187 +.046 -.015	0.125 +.046 -.015	0.075 +.046 -.031
A1 OR B3	3.500 +.250 -.000	3.500 +.187 -.187	0.187 +.046 -.015	0.125 +.046 -.015	0.097 +.046 -.031
A1 OR B3	4.000 +.312 -.000	4.718 +.250 -.250	A1 0.250 +.081 -.081	B3 0.235 +.081 -.081	0.111 +.046 -.031

TABLE OF TRANSVERSE SEALS & ARMOR ANGLES

TYPE	GROOVE SIZE AT 60°F.		SEAL SIZE		ANGLE SIZE
	①	②	WIDTH	HEIGHT	
A1 OR B3	1-5/8"	4"	2-1/2"	2-3/4"	5 x 3 x 3/8
A1 OR B3	1-7/8"	4-7/8"	3"	3-13/32"	6x3-1/2 x 3/8
A1 OR B3	2-1/4"	5-1/8"	3-1/2"	3-1/2"	6 x 3-1/2 x 3/8
A1 OR B3	2-5/8"	6-3/8"	4"	4-23/32"	8 x 4 x 7/16

TABLE OF GROOVE SIZE "1" (INSTALLATION DIMENSIONS)

TEMP. (°F.)	CONCRETE STRUCTURES				STEEL STRUCTURES			
	2 1/2"	3"	3 1/2"	4"	2 1/2"	3"	3 1/2"	4"
-10°	-	-	-	-	2-1/8"	2-5/8"	3"	3-3/8"
0°	2-1/8"	2-5/8"	3"	3-3/8"	2"	2-1/2"	2-7/8"	3-1/4"
+20°	1-7/8"	2-1/4"	2-3/4"	3-1/8"	1-7/8"	2-1/4"	2-5/8"	3"
+40°	1-3/4"	2-1/8"	2-1/2"	2-7/8"	1-3/4"	2-1/8"	2-1/2"	2-7/8"
+60°	1-5/8"	1-7/8"	2-1/4"	2-5/8"	1-5/8"	1-7/8"	2-1/4"	2-5/8"
+80°	1-3/8"	1-3/4"	2"	2-1/4"	1-3/8"	1-3/4"	2"	2-1/4"
+100°	1-1/4"	1-1/2"	1-3/4"	2"	1-1/4"	1-5/8"	1-7/8"	2-1/8"
+110°	1-1/8"	1-3/8"	1-5/8"	1-7/8"	1-1/4"	1-1/2"	1-3/4"	2"
+120°	-	-	-	-	1-1/8"	1-3/8"	1-5/8"	1-7/8"

TABLE OF LONGITUDINAL SEALS

TYPE	GROOVE SIZE AT 60°F.		SEAL SIZE	
	WIDTH	HEIGHT	WIDTH	HEIGHT
A1 OR B3	1-5/16"	2-3/4"	2"	2-1/16"

ARMOR ANGLES FOR LONGITUDINAL SEALS WILL NOT BE USED UNLESS SPECIFIED.

TABLE OF LONGITUDINAL SEAL TOLERANCES (INCHES)

TYPE	"A" (WIDTH)	"B" (HEIGHT)	"C" (SHELL)	"D" (WEBS)
A1 OR B3	2.000 +.187 -.000	2.0625 +.125 -.125	0.125 +.030 -.015	0.094 +.030 -.015

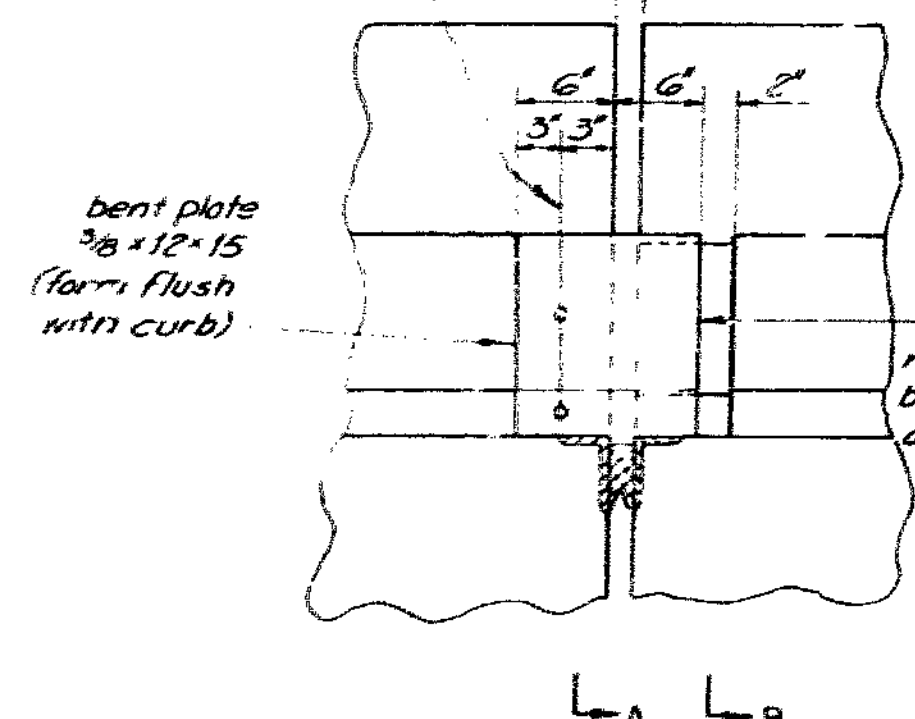
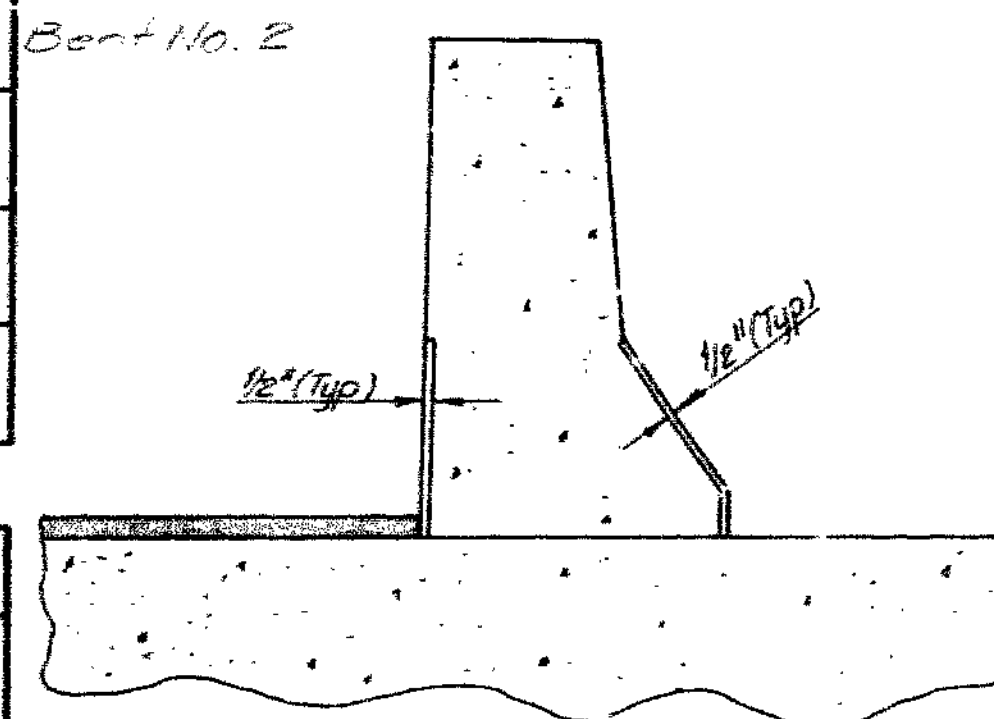
Bent No. 2

Bent No. 2

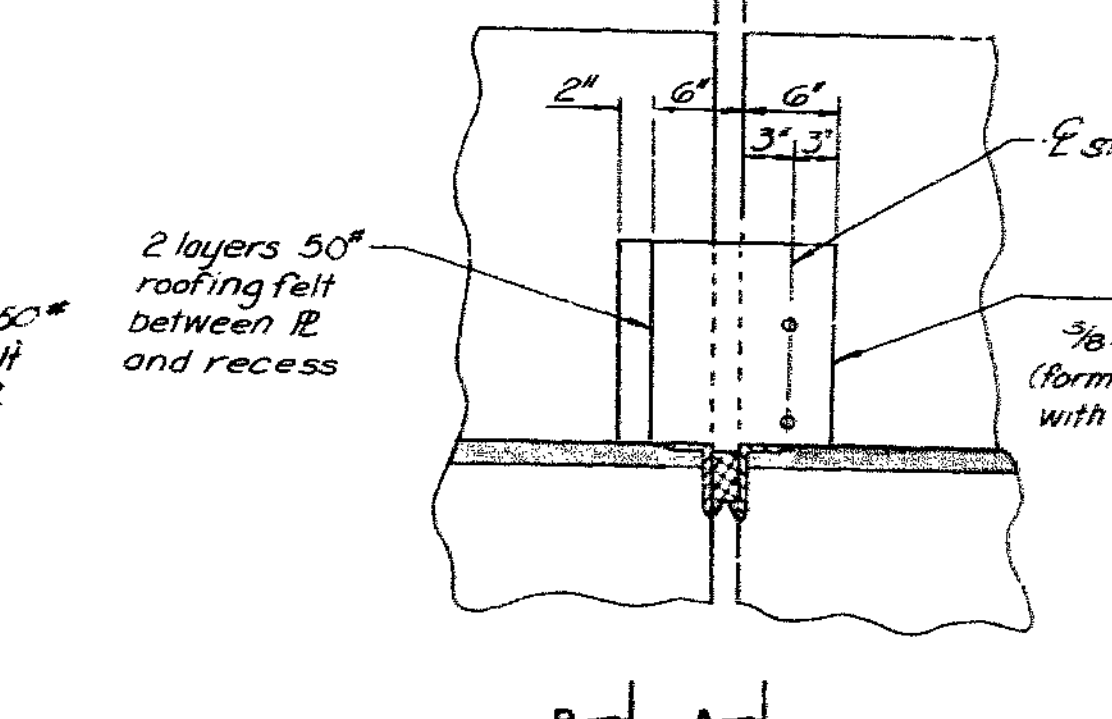
Drill 3/16" holes @ abt. 12" cts. (On roadway face of angle)

Note: This drawing is not to scale. Follow dimensions.

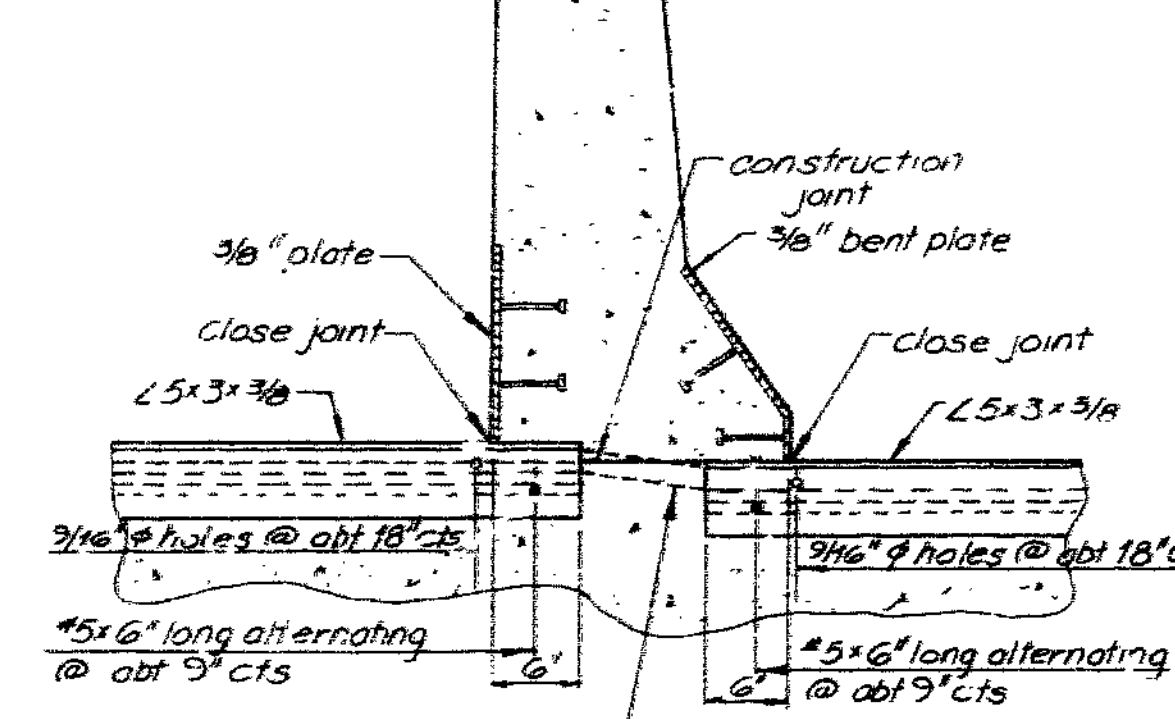
Note: This drawing is not to scale. Follow dimensions.



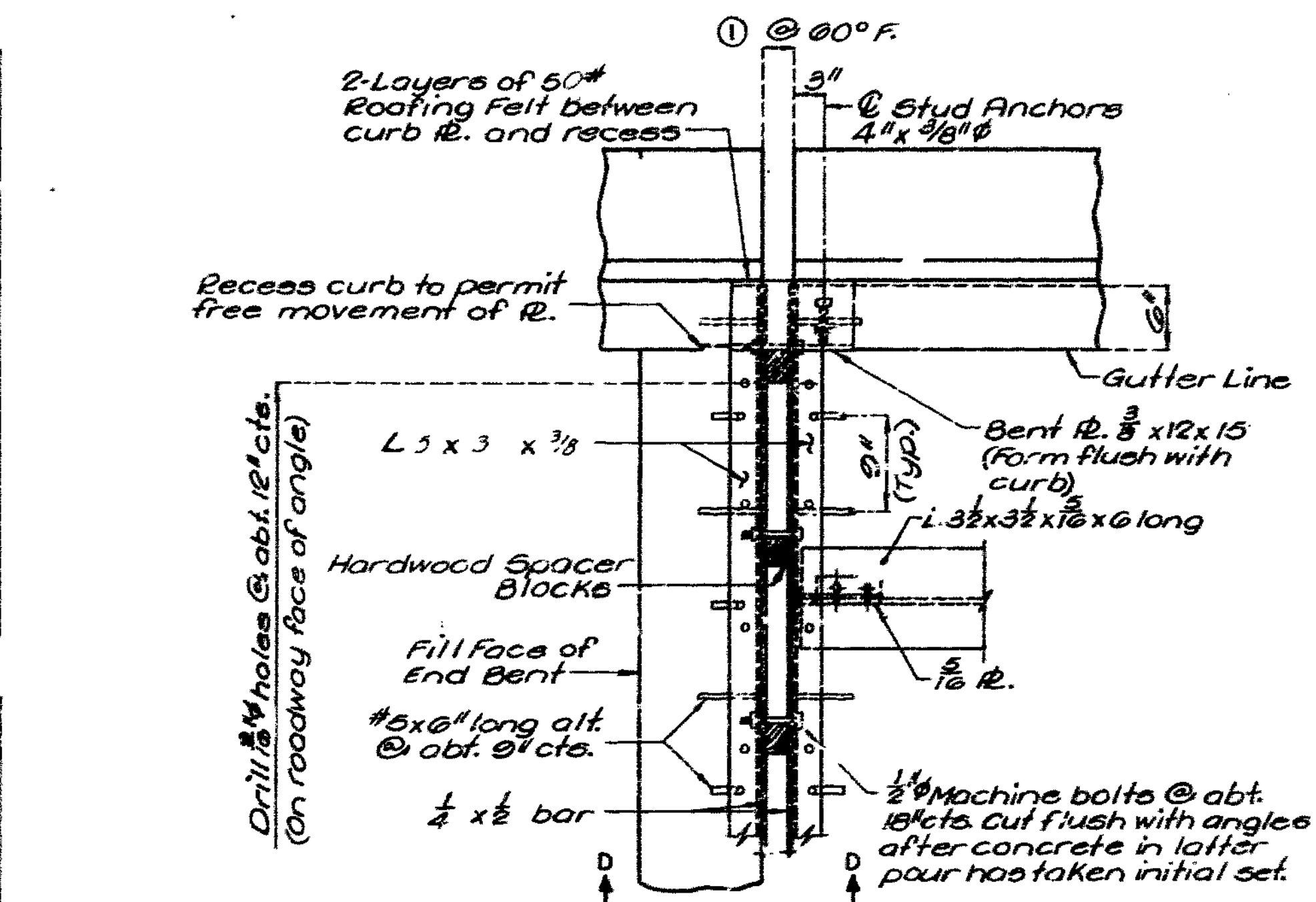
EAST ELEVATION OF WEST BARRIER CURB



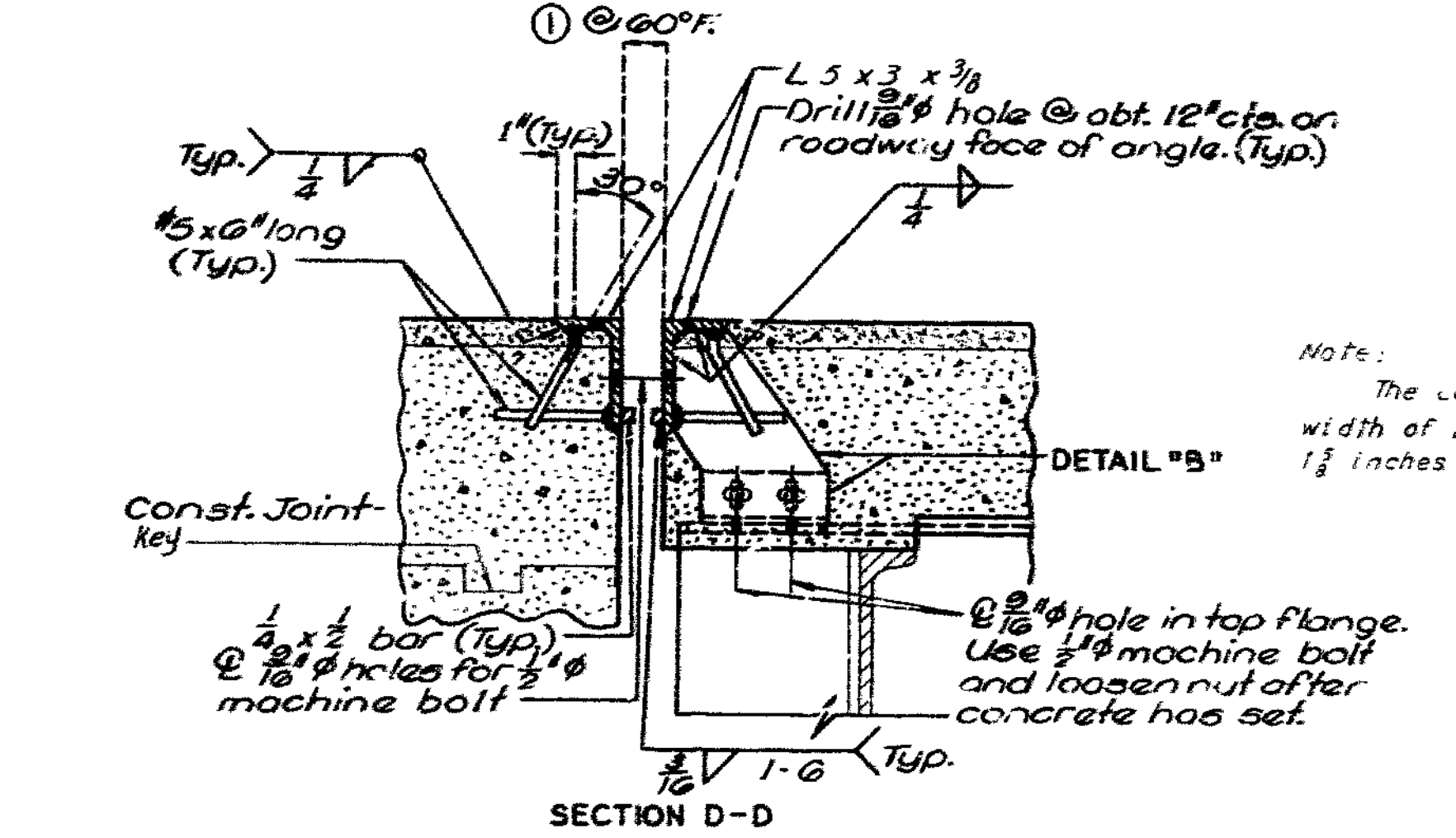
WEST ELEVATION OF WEST BARRIER CURB



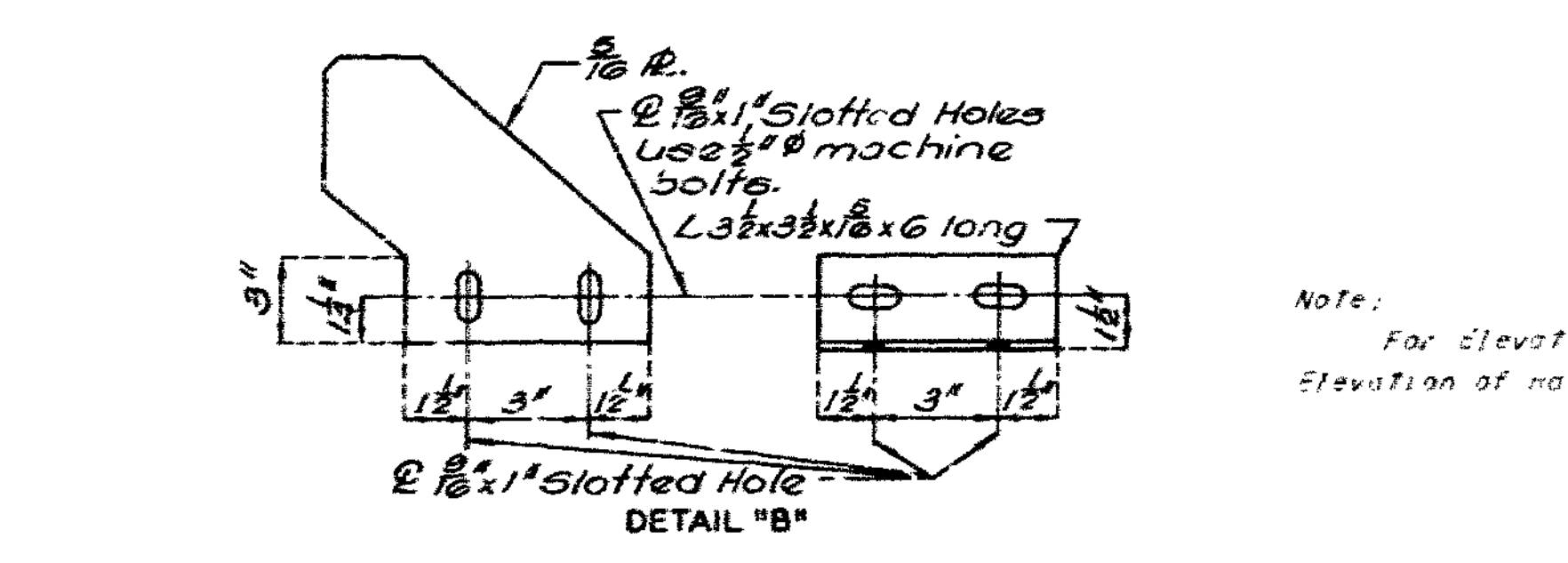
SECTION A-A



PART PLAN (East Barrier Curb shown, West Barrier Curb and Railing similar)



DETAIL "B"



DETAIL "B"

DETAILS OF PREFORMED COMPRESSION JOINT SEAL AT BENT NO. 2

Sheet No. 18 of 24

SUMMIT STREET JACKSON COUNTY

A-3141

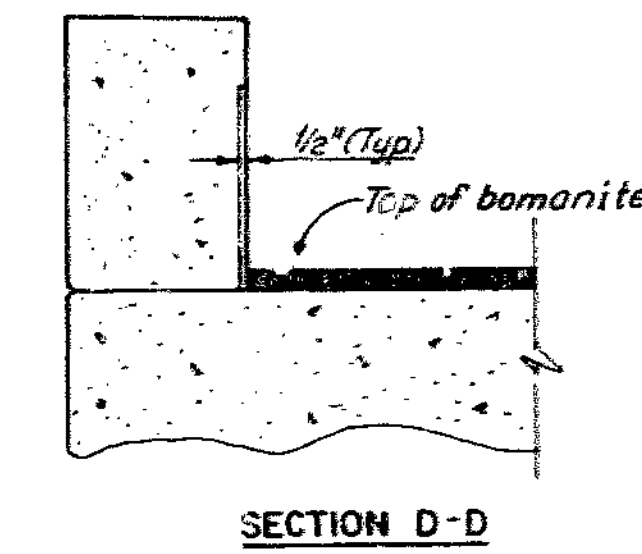
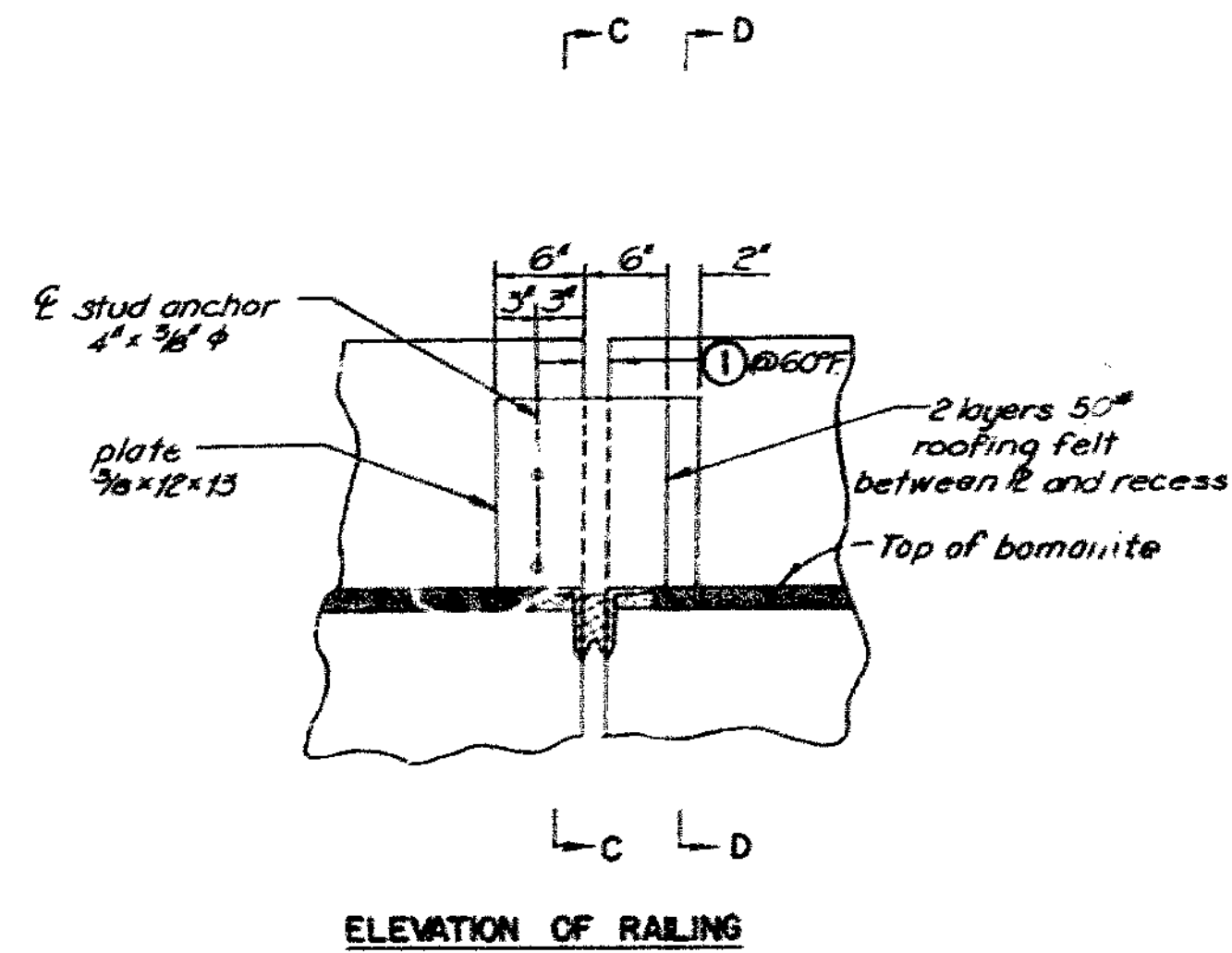
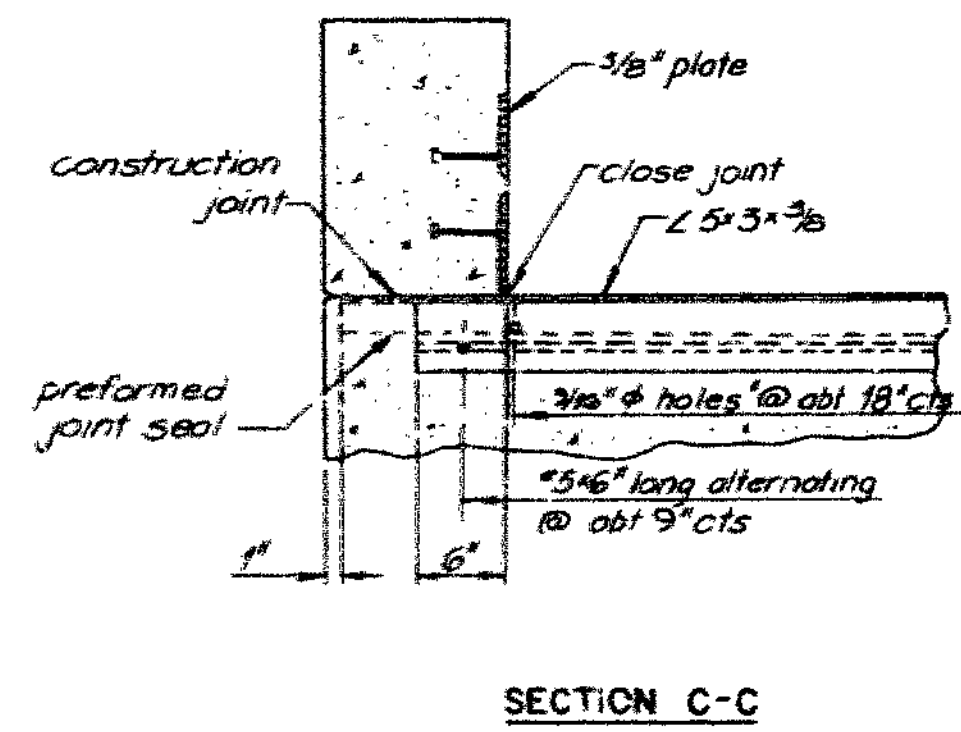
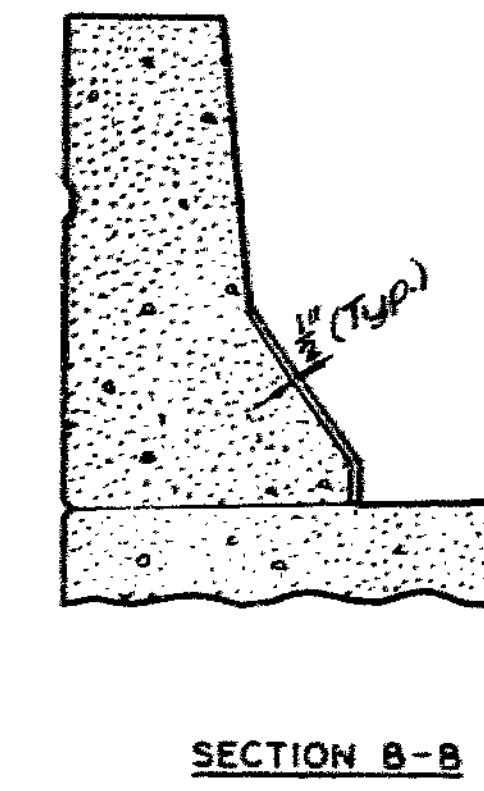
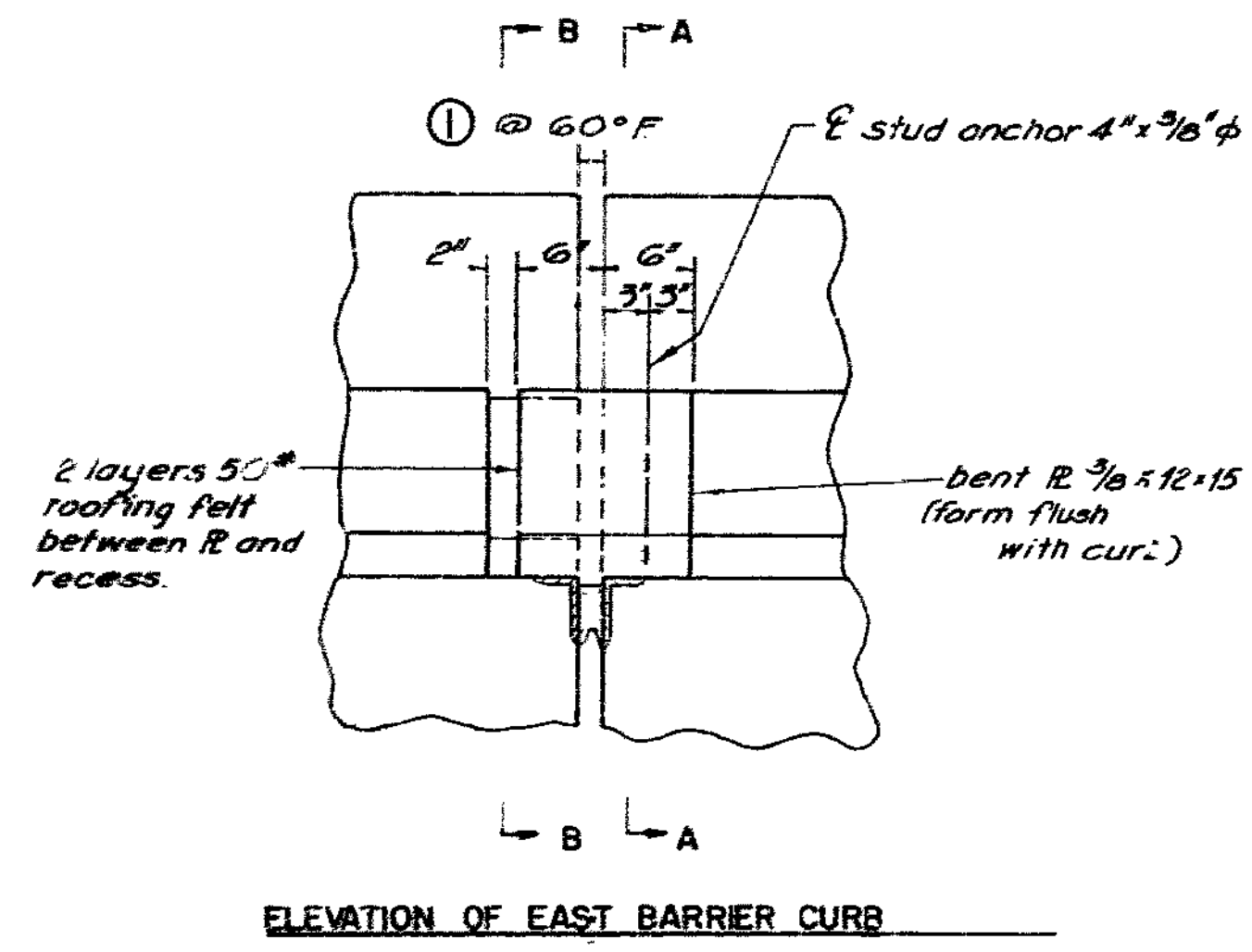
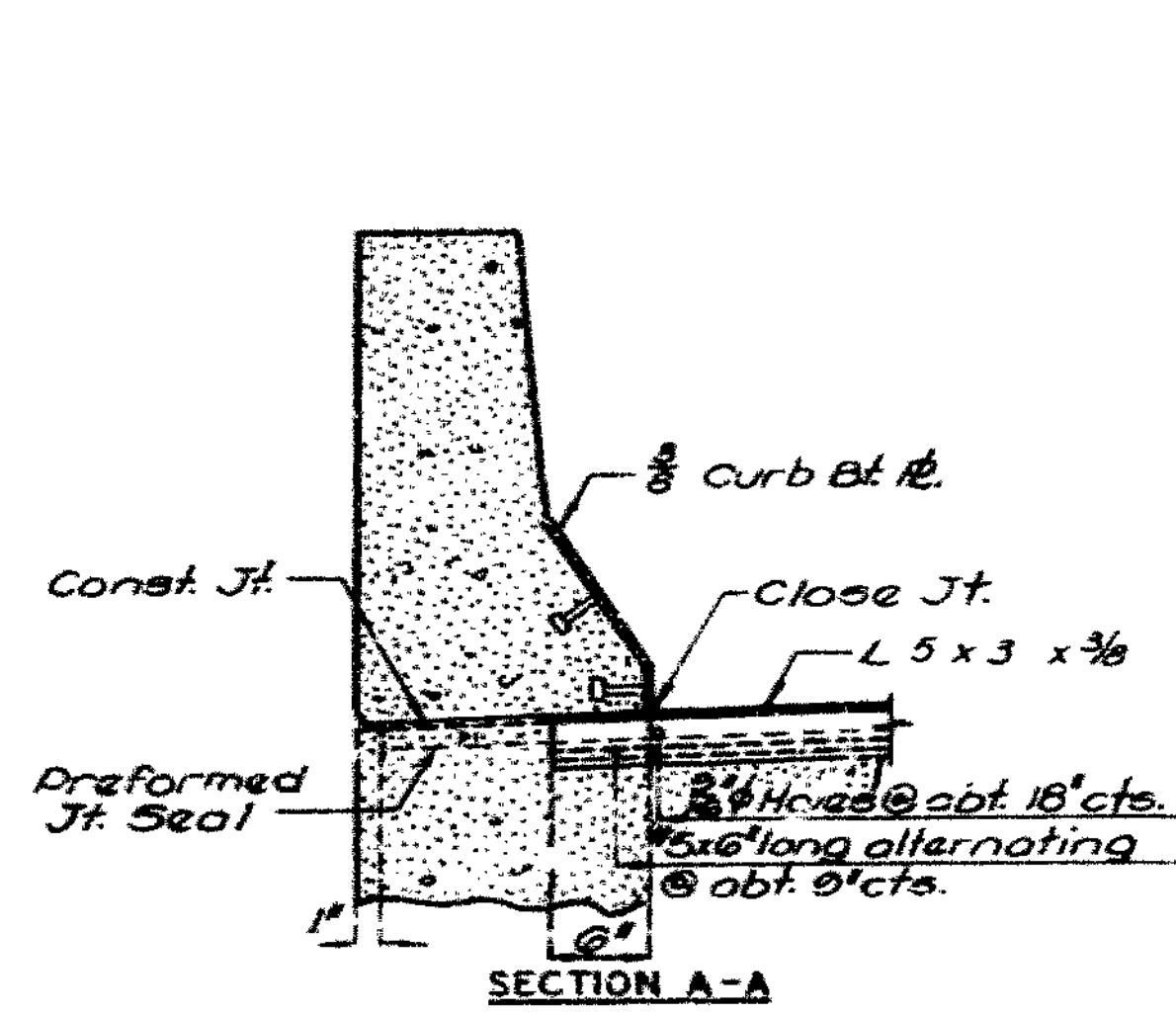
66

STD. PCJS REVISED OCT. 1973 DEC. 1976

DETAILED R.H.W. 18 78 CHECKED A.N. 18 78



FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MD.		88	88	



DETAILS OF PREFORMED COMPRESSION JOINT SEAL AT BENT NO. 2

DATE: 7.11.78  
CHECKED: A.N. 1978

Note: This drawing is not to scale. Follow dimensions.

Sheet No. 19 of 24.

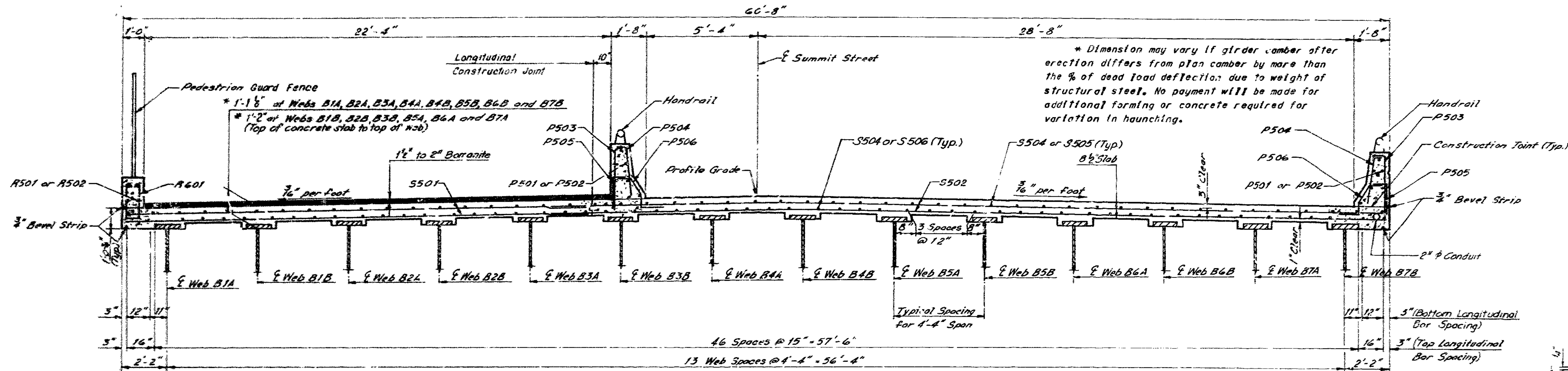
SUMMIT STREET  
JACKSON COUNTY

A-3141

67

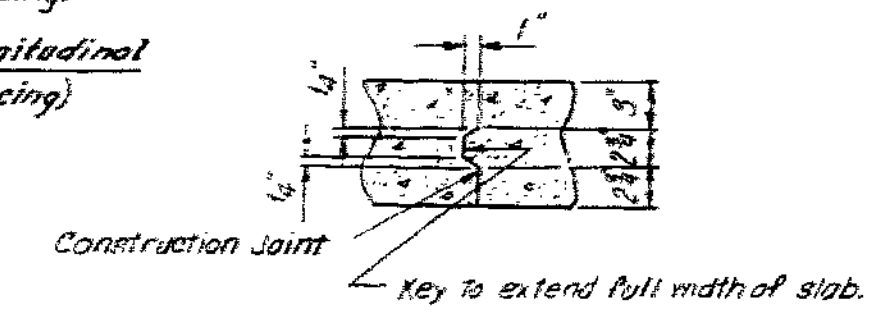
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		89	89	

Note: The Boronite Material shall be 1/2" above grade [irs at the joints of the End Bents.



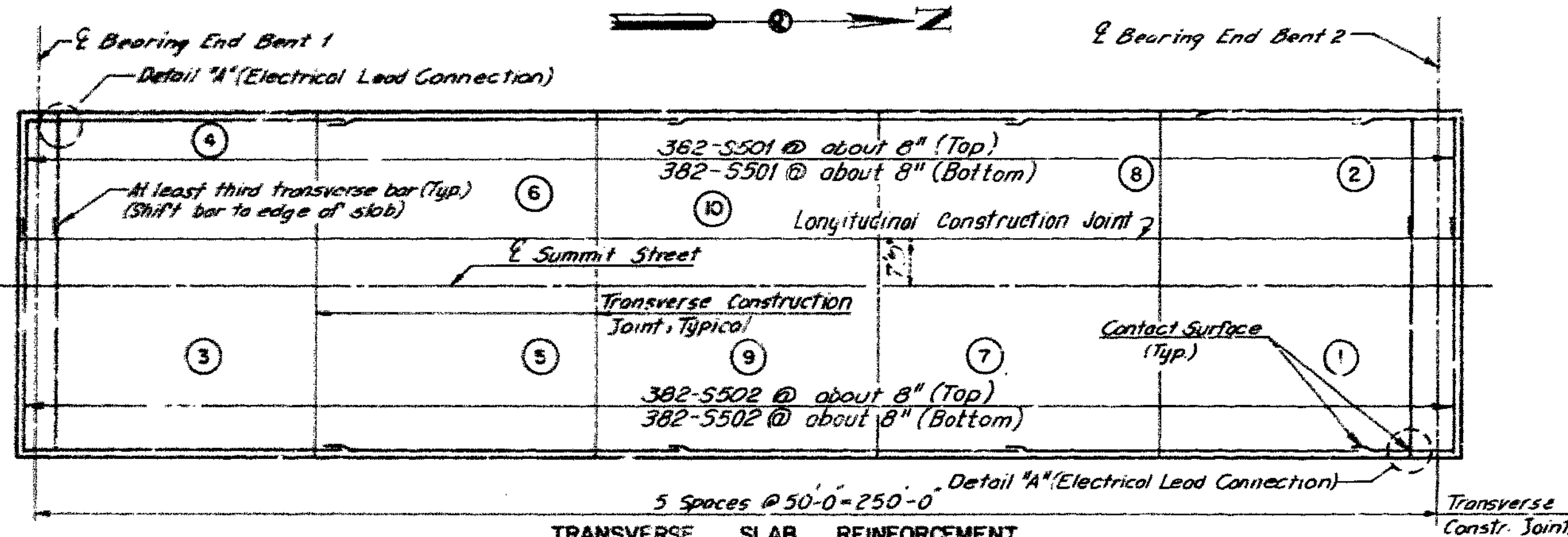
**SLAB POURING SEQUENCE**  
The Slab shall be placed in sections and in the sequence shown.  
① denotes sequence of pour.

**TYPICAL DECK SECTION**  
(Stay-In-Place Metal Deck forms not shown)

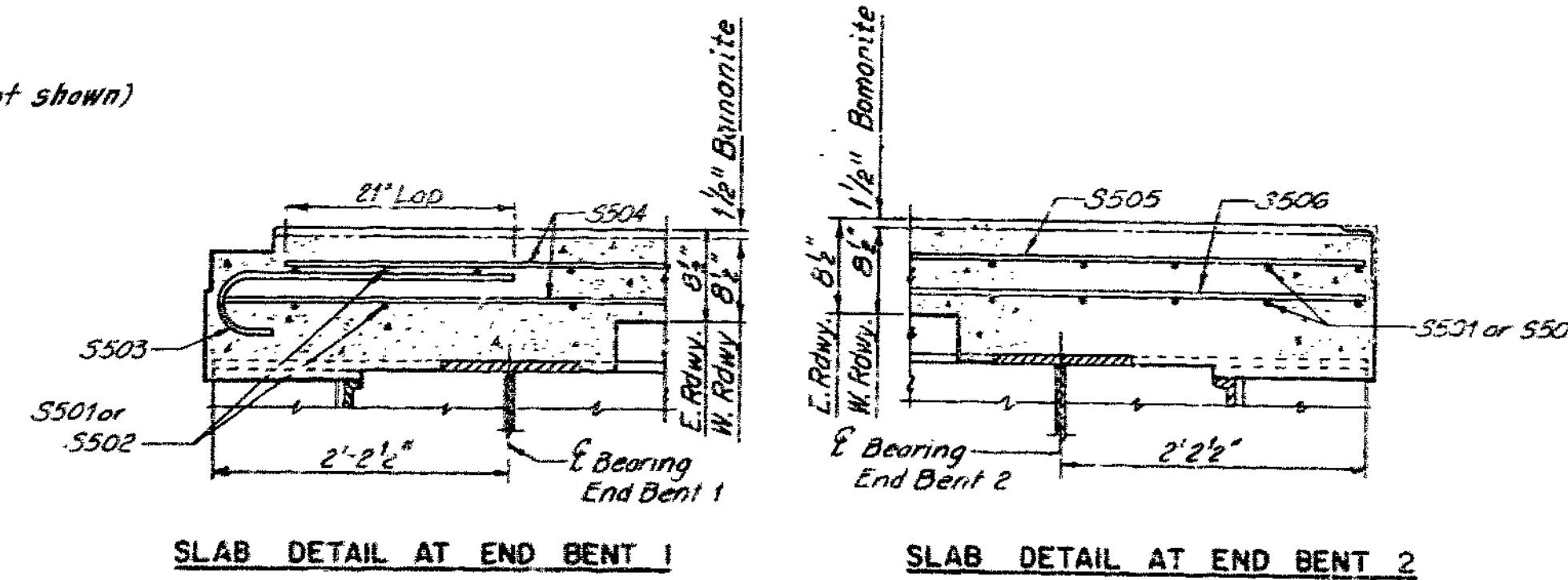


**CONSTRUCTION JOINT DETAIL**

**REQUIRED LAP LENGTH**  
No. 5 Bars = 1'-9" Minimum



**TRANSVERSE SLAB REINFORCEMENT**



**SLAB DETAIL AT END BENT 1**

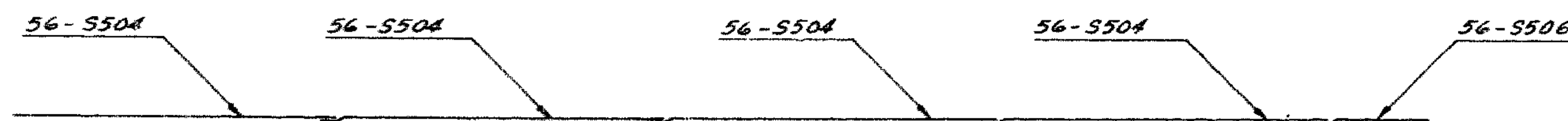
**SLAB DETAIL AT END BENT 2**

Note: 2 Electrical Lead Connections required. Actual location to be designated by the Engineer as part of the test system. (See Special Provision)

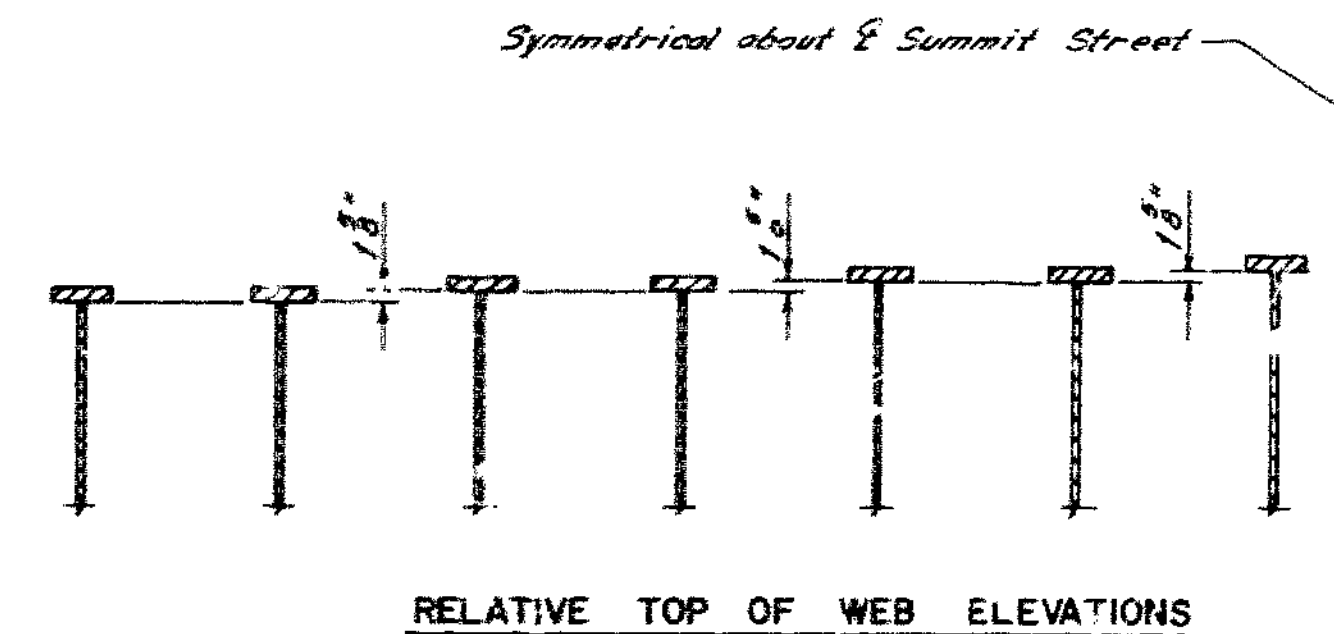
Note: 6-S501 or S502 bars (Top) as selected by the Engineer shall be clamped to the longitudinal top bar nearest edge of slab. (See Special Provision)



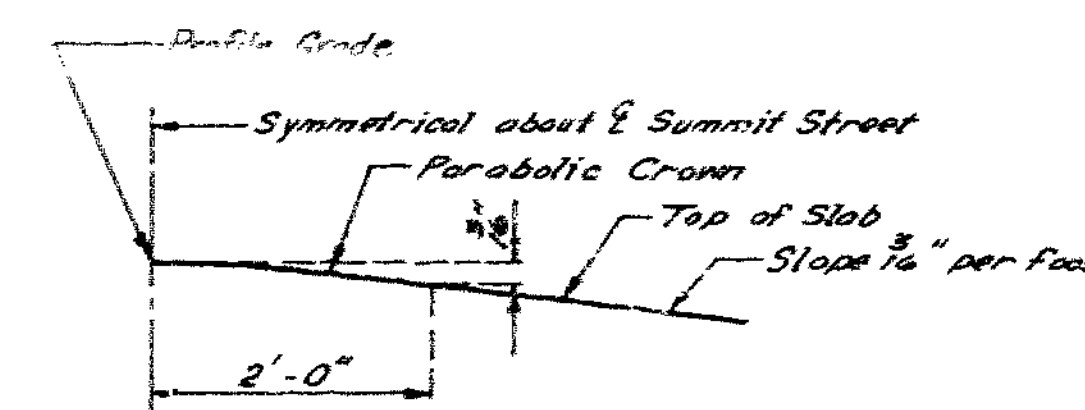
**TOP LONGITUDINAL SLAB REINFORCEMENT**



**BOTTOM LONGITUDINAL SLAB REINFORCEMENT**



**RELATIVE TOP OF WEB ELEVATIONS**



**CROWN DETAIL**

Notes: The Contractor shall pour and satisfactorily finish the roadway slab at a rate of not less than 25 cubic yards per hour. Concrete shall not be placed until the electrical test system has been checked by the Engineer. (See Special Provision).

All slab top reinforcement, except the longitudinal bars nearest the edge of the slab, shall be epoxy coated.

Minimum clearance to reinforcing steel shall be 1 1/2" unless otherwise shown.

For Bit of Reinforcement, see Sheet 5.

For Lighting Details, see Sheets 21 and 24. For Superstructure Barrier Curb and Railing Details, see Sheet 21.

For Elastomeric Expansion Joint Seal at Details, see Sheets 16 and 17.

For Preformed Compression Seal at End Bent 2 Details, see Sheets 18 and 19.

For Stay-In-Place Deck Form Details, see Sheet 14.

For Detail "A", see Sheet 8.

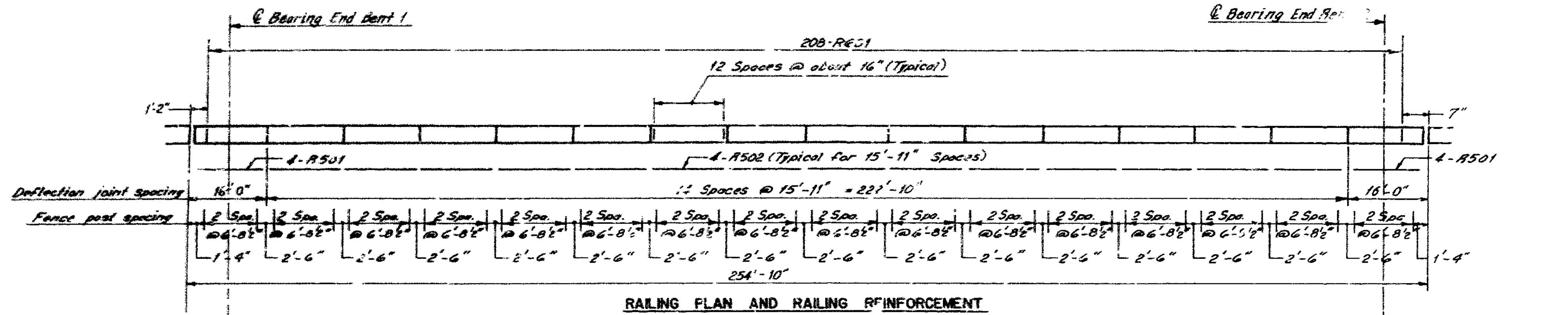
For Handrail Details, see Sheet 22.

For Force Details, see Sheet 23.

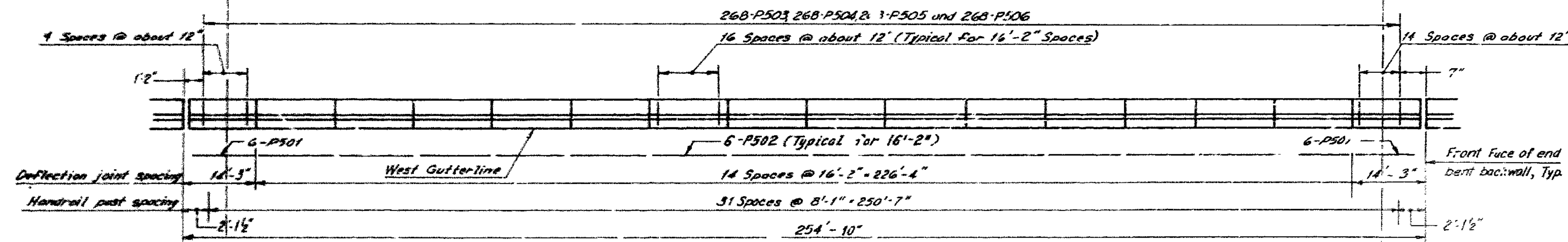
**TYPICAL DECK SECTION, SLAB REINFORCEMENT AND SLAB DETAILS**  
**SUMMIT STREET**  
**JACKSON COUNTY**



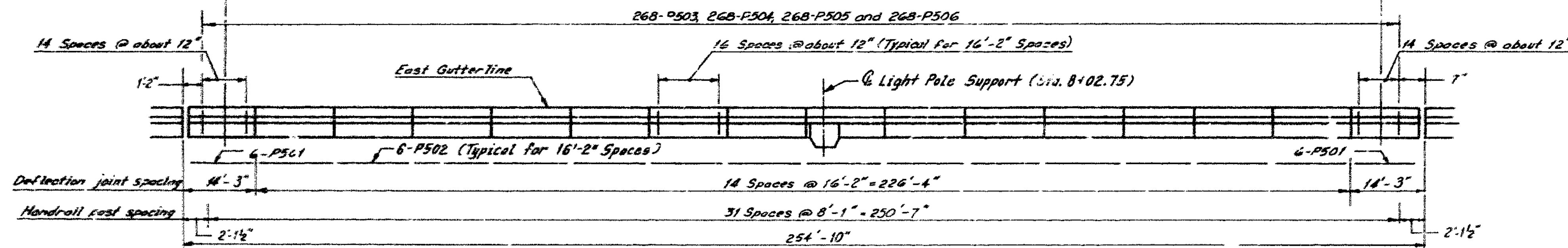
FED. AID DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.			30	



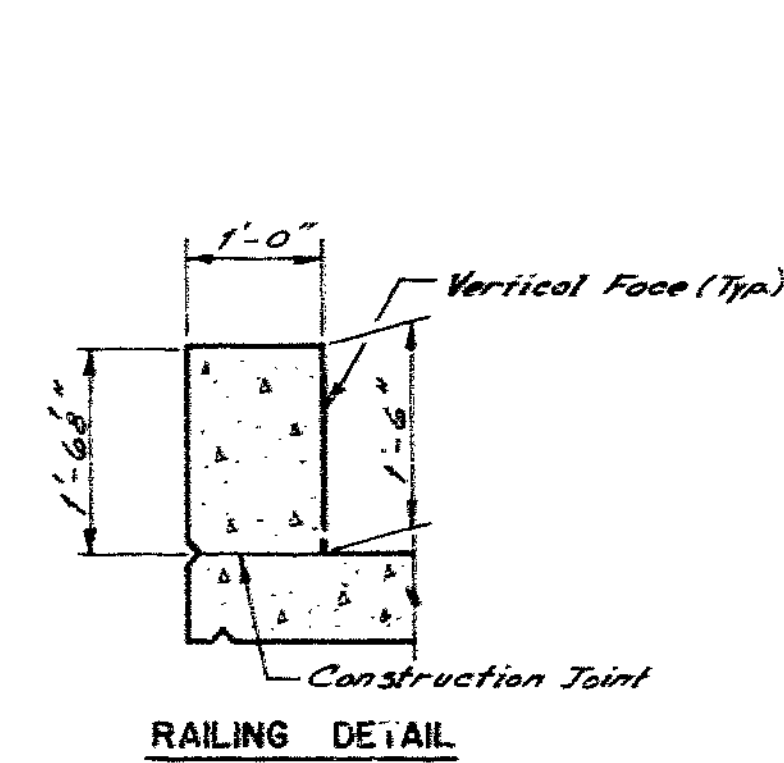
RAILING PLAN AND RAILING REINFORCEMENT



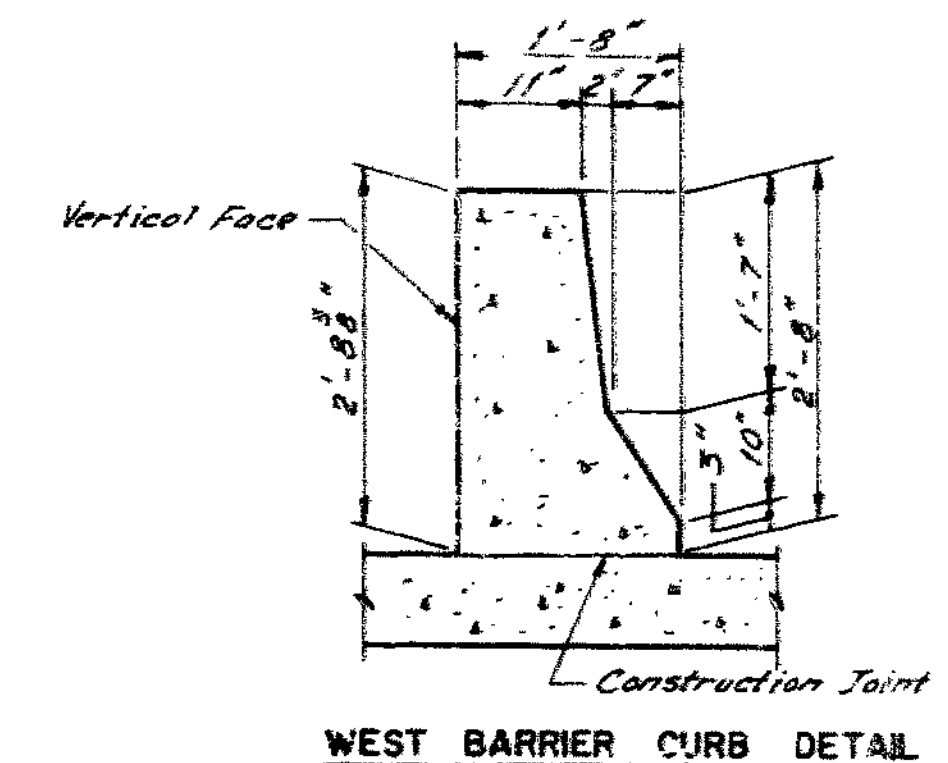
WEST CURB PLAN AND CURB REINFORCEMENT



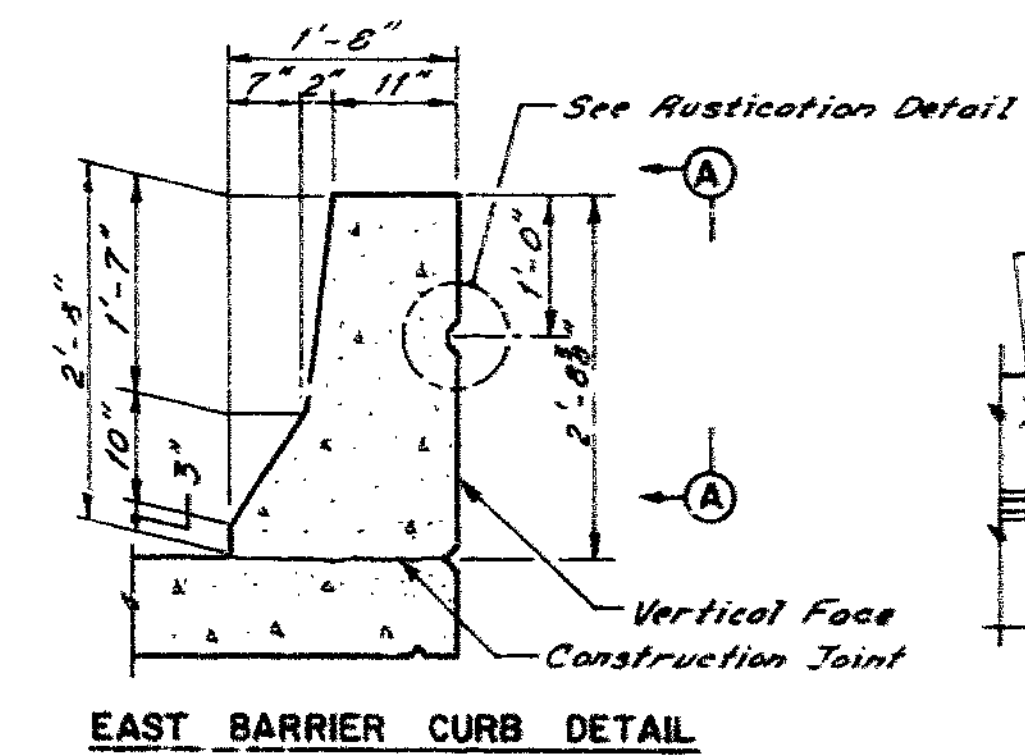
EAST CURB PLAN AND CURB REINFORCEMENT



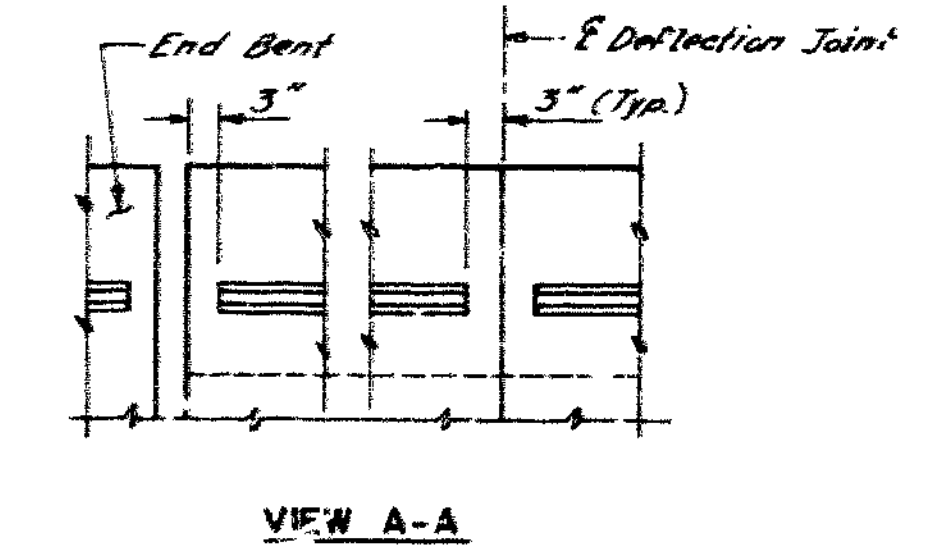
RAILING DETAIL



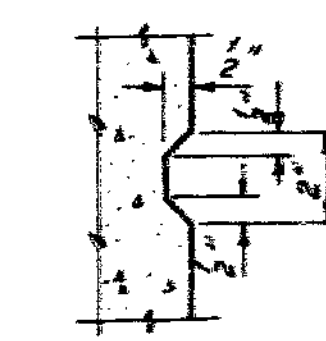
WEST BARRIER CURB DETAIL



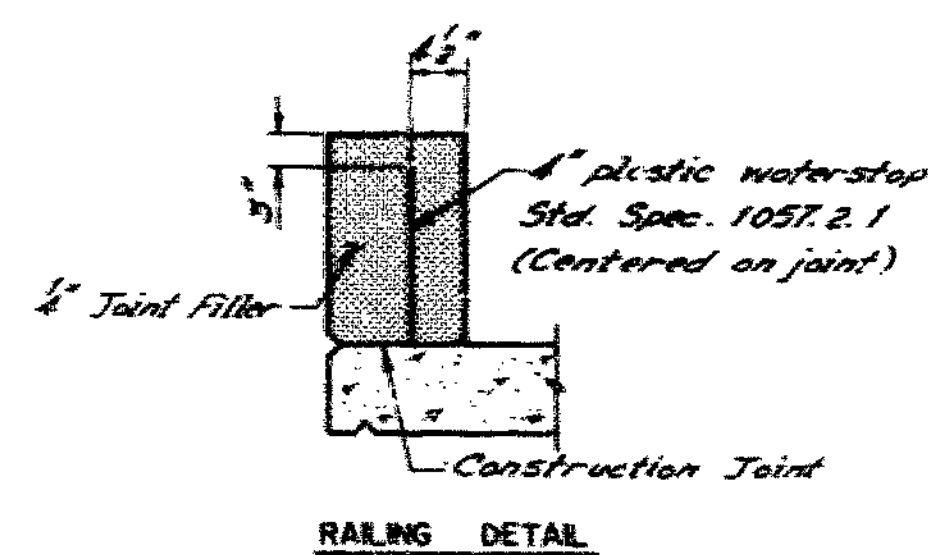
EAST BARRIER CURB DETAIL



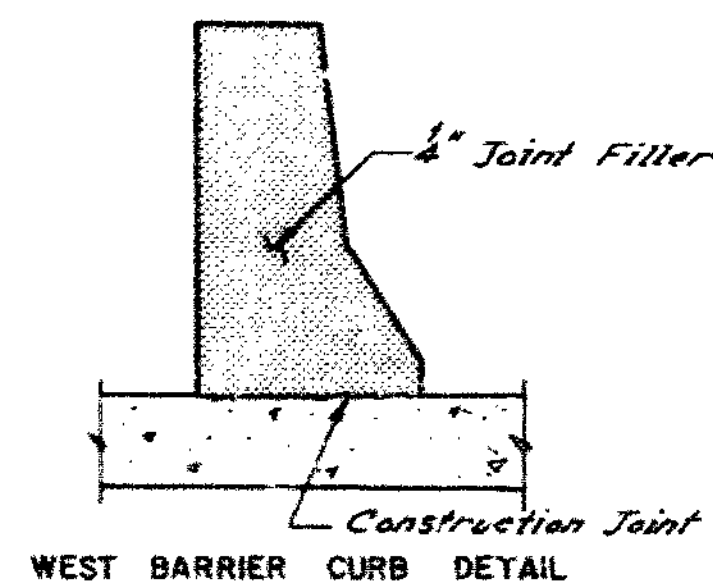
VIEW A-A



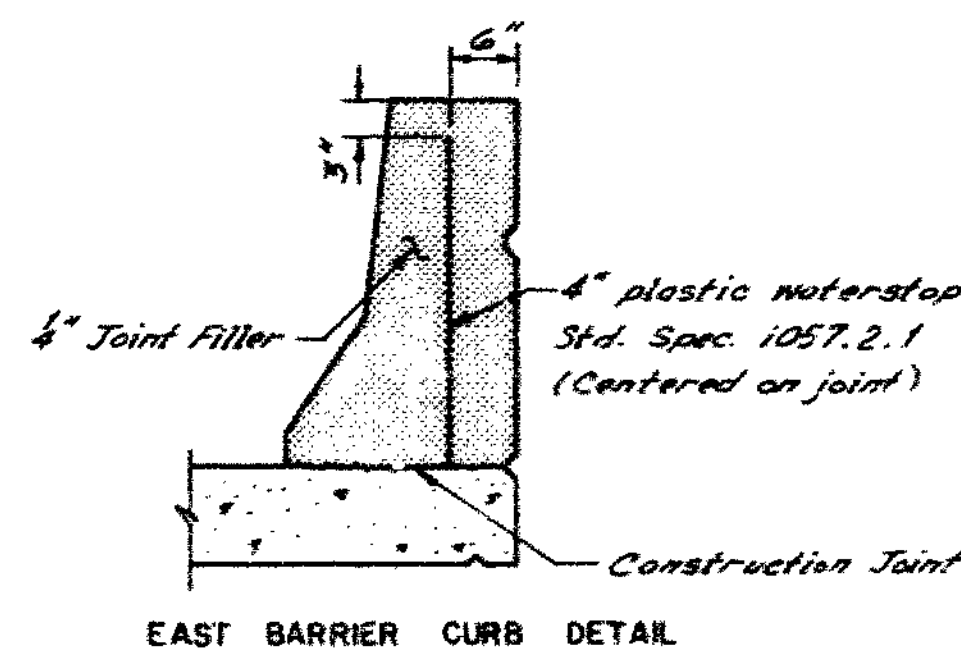
RUSTICATION DETAIL



RAILING DETAIL



WEST BARRIER CURB DETAIL



EAST BARRIER CURB DETAIL

DEFLECTION JOINT AND WATERSTOP DETAILS

Notes:  
 Plastic waterstop shall be placed in all East Barrier Curb and Railing filled joints.  
 Cost of plastic waterstop and joint filler complete in place to be included in unit price bid for concrete.

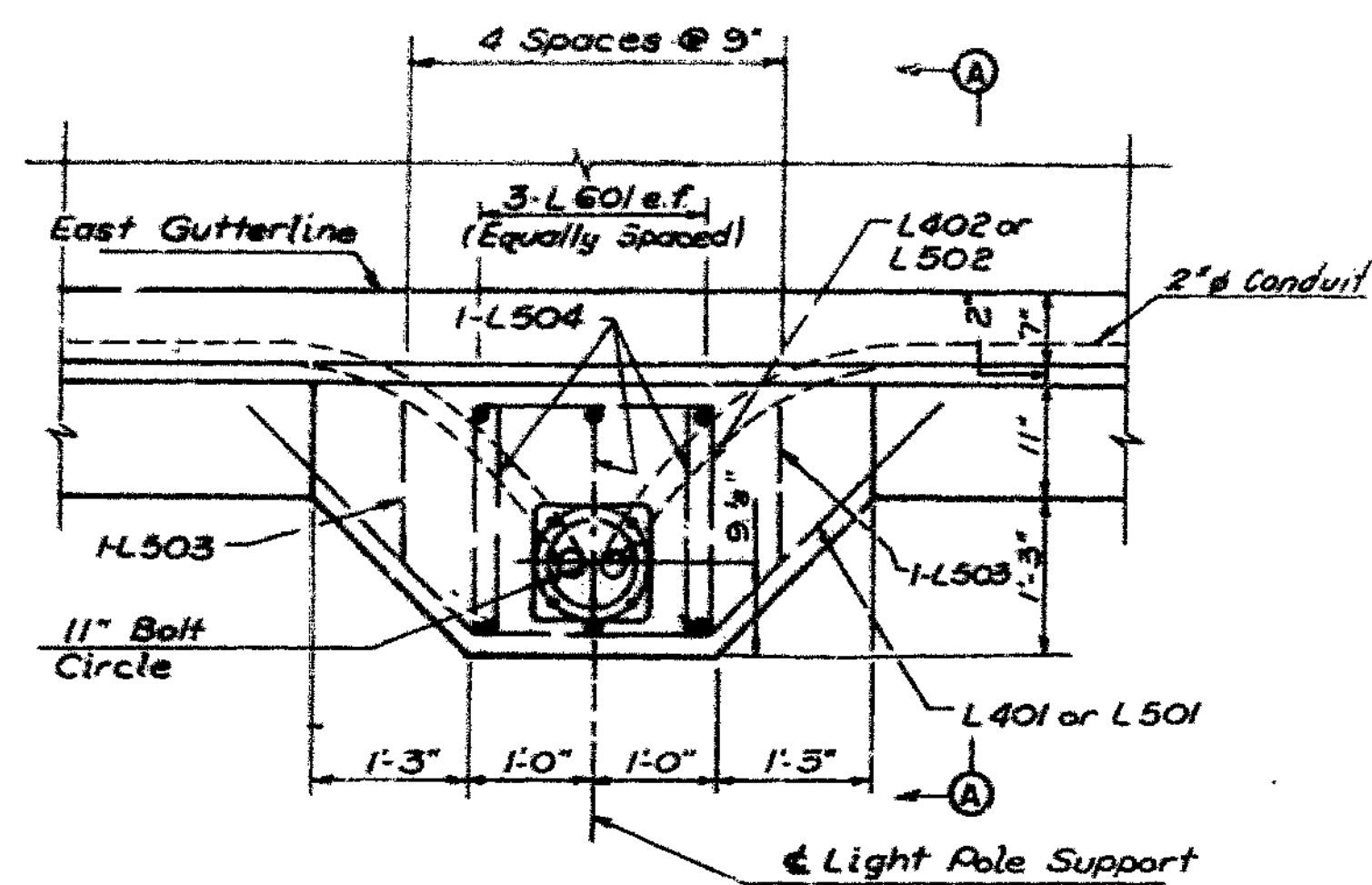
Notes:  
 For Bill of Reinforcement, see Sheet 5.  
 For Lighting Details, see Sheet 24.



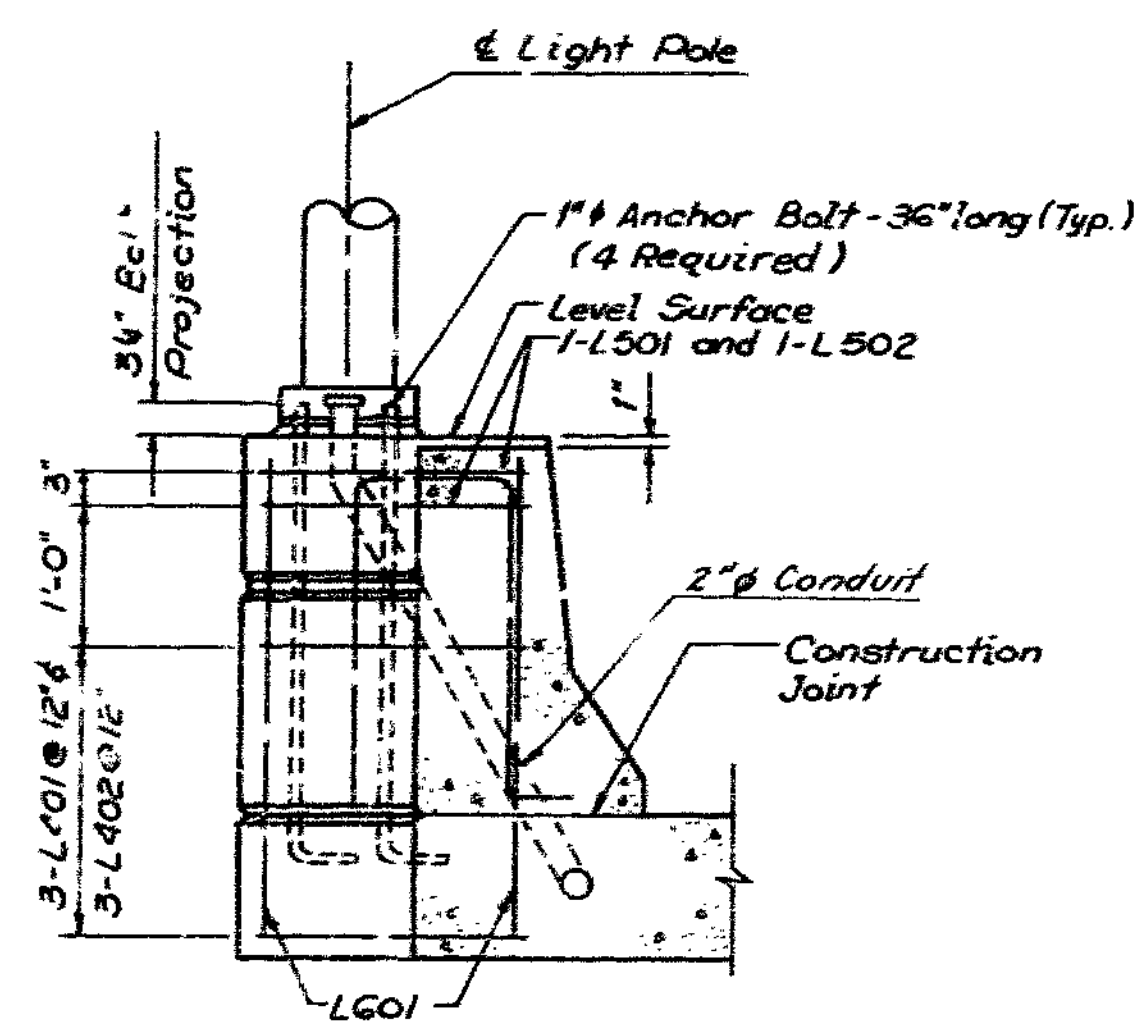




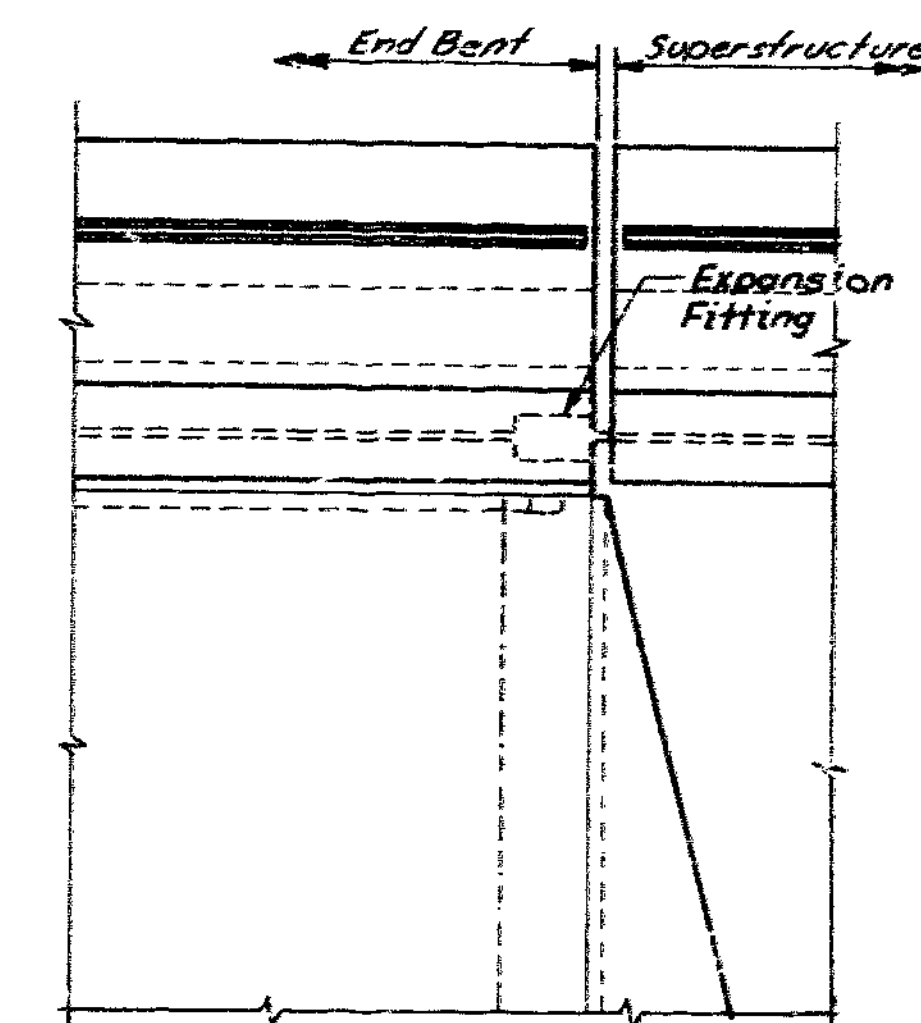
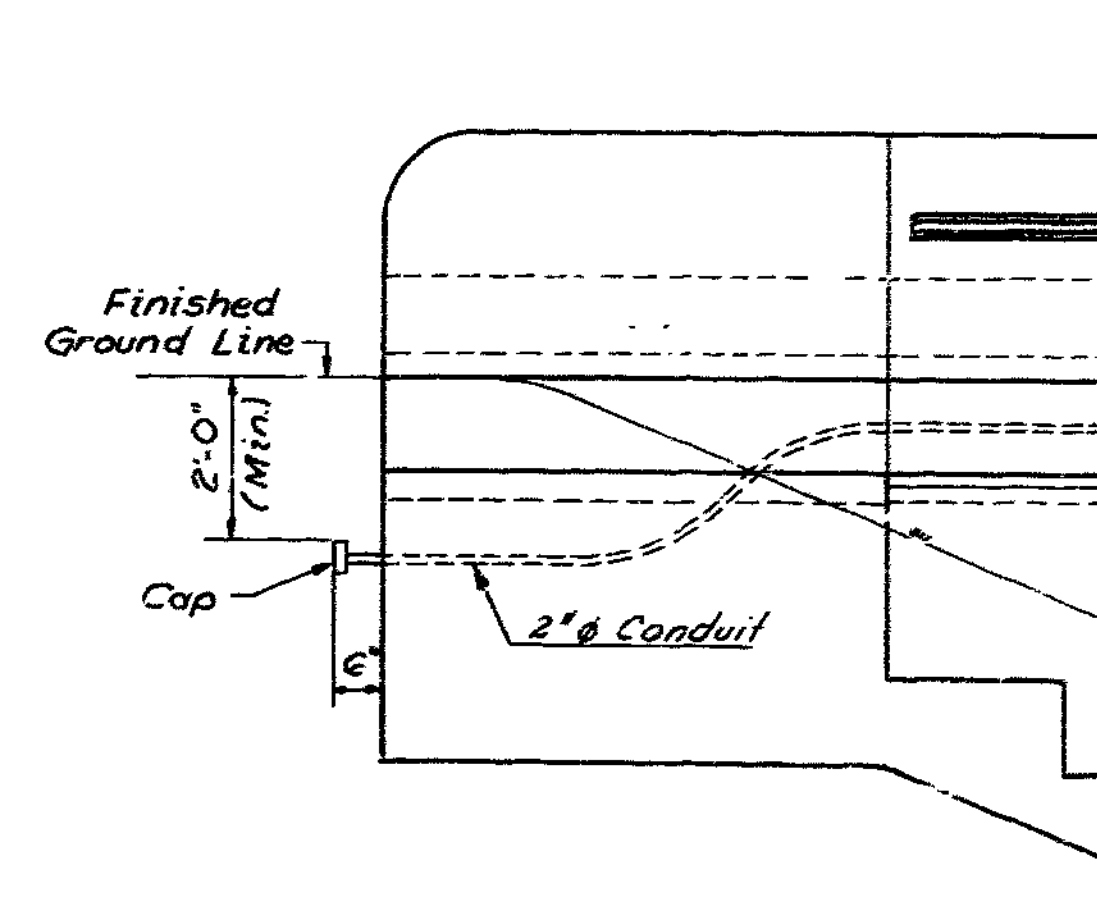
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		19	25	



PLAN



SECTION A-A

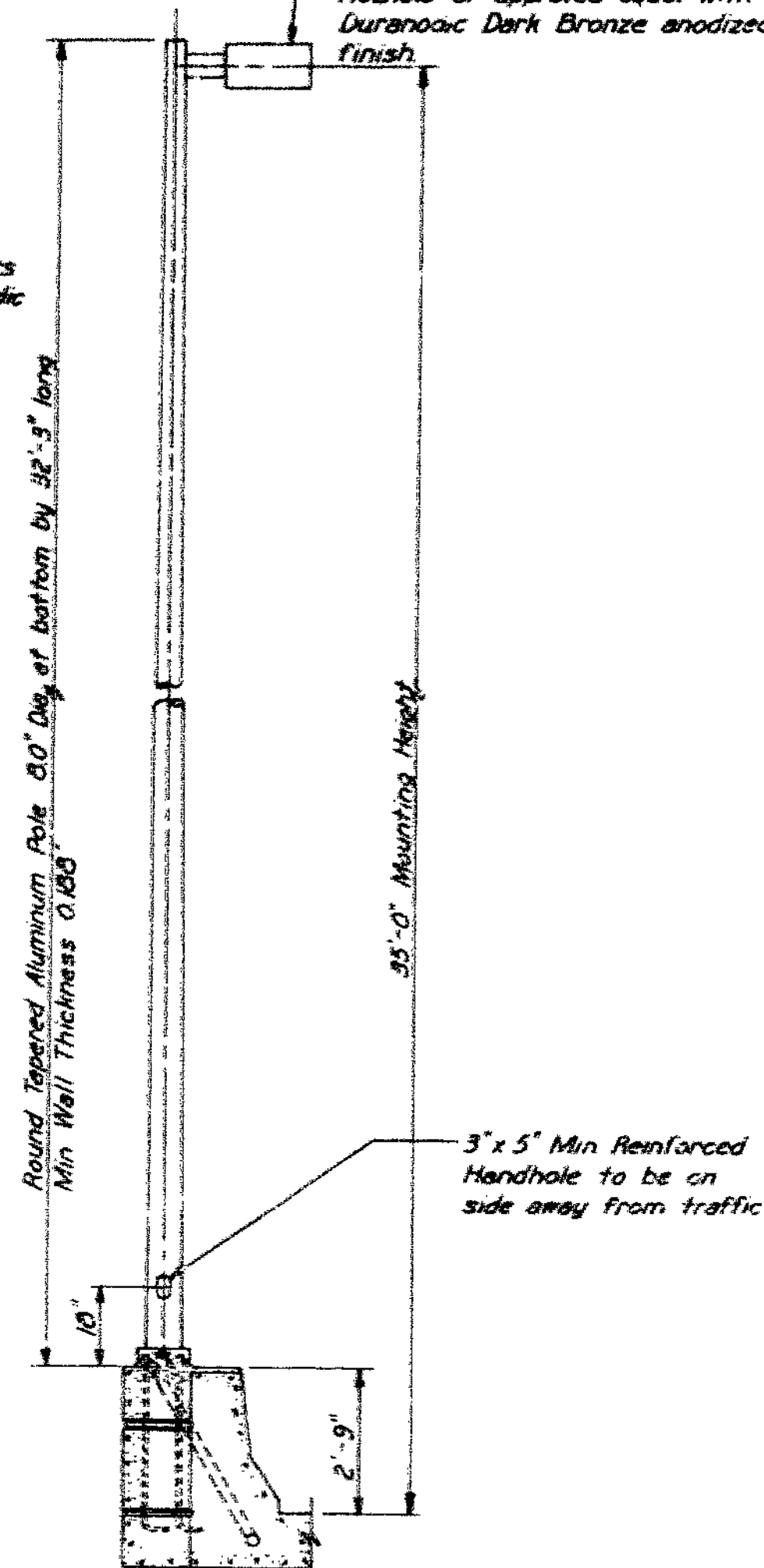


PART END BENT ELEVATION

(End Bent 1, East Wingwall shown)  
(End Bent 2, East Wingwall opposite hand)  
(Stone Veneer not shown)

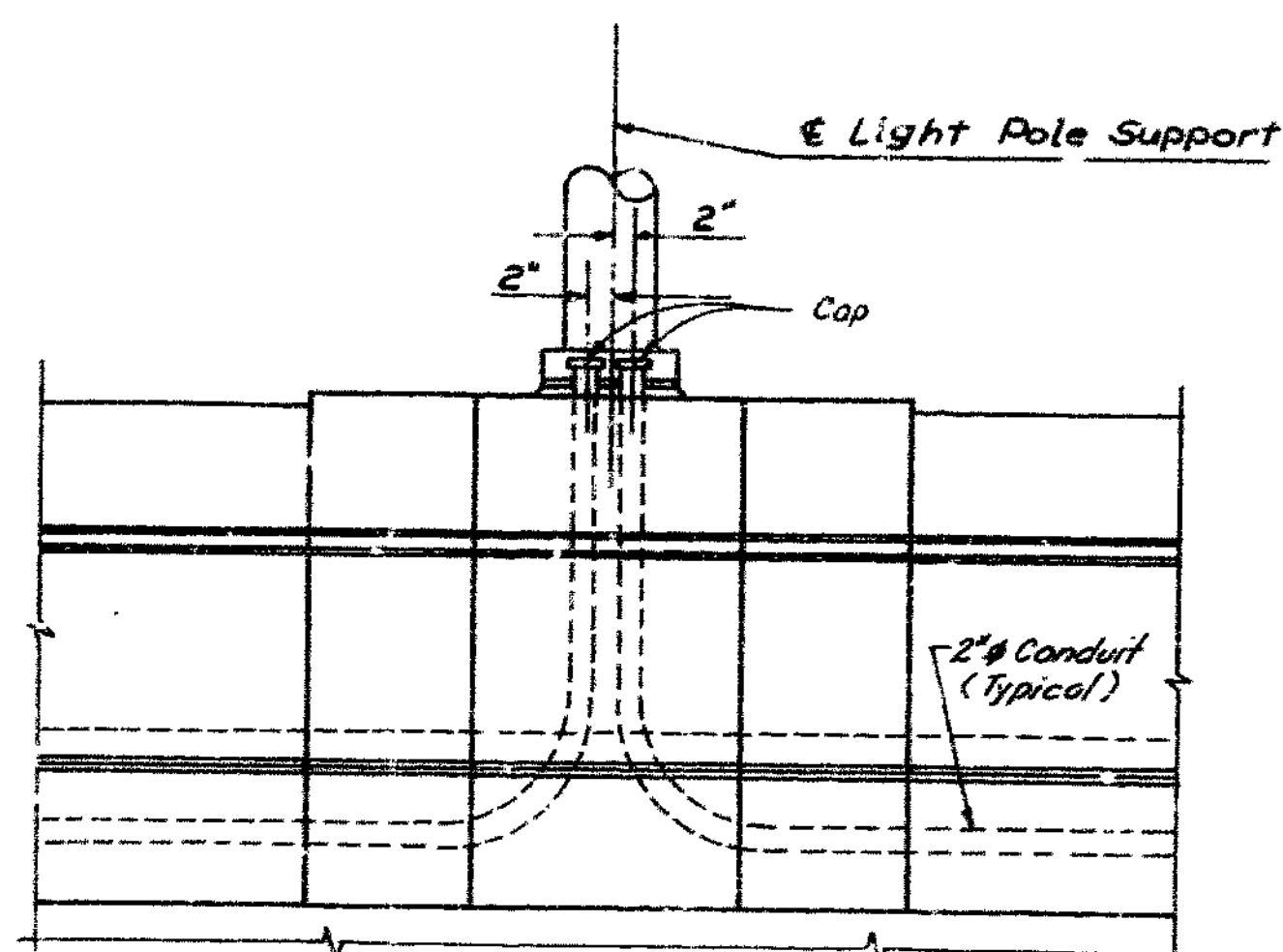
Roadway lighting luminaire with reflector and flat cover glass with integral ballast, 400-Watt size. Luminaires to be GARDCO Lighting Co's Form Ten H Type III Cat. No. HUB1913 or approved equal with Duranodic Dark Bronze anodized finish.

Note: All poles shall have internal vibration dampers and shall have a Duranodic Dark Bronze anodized finish.



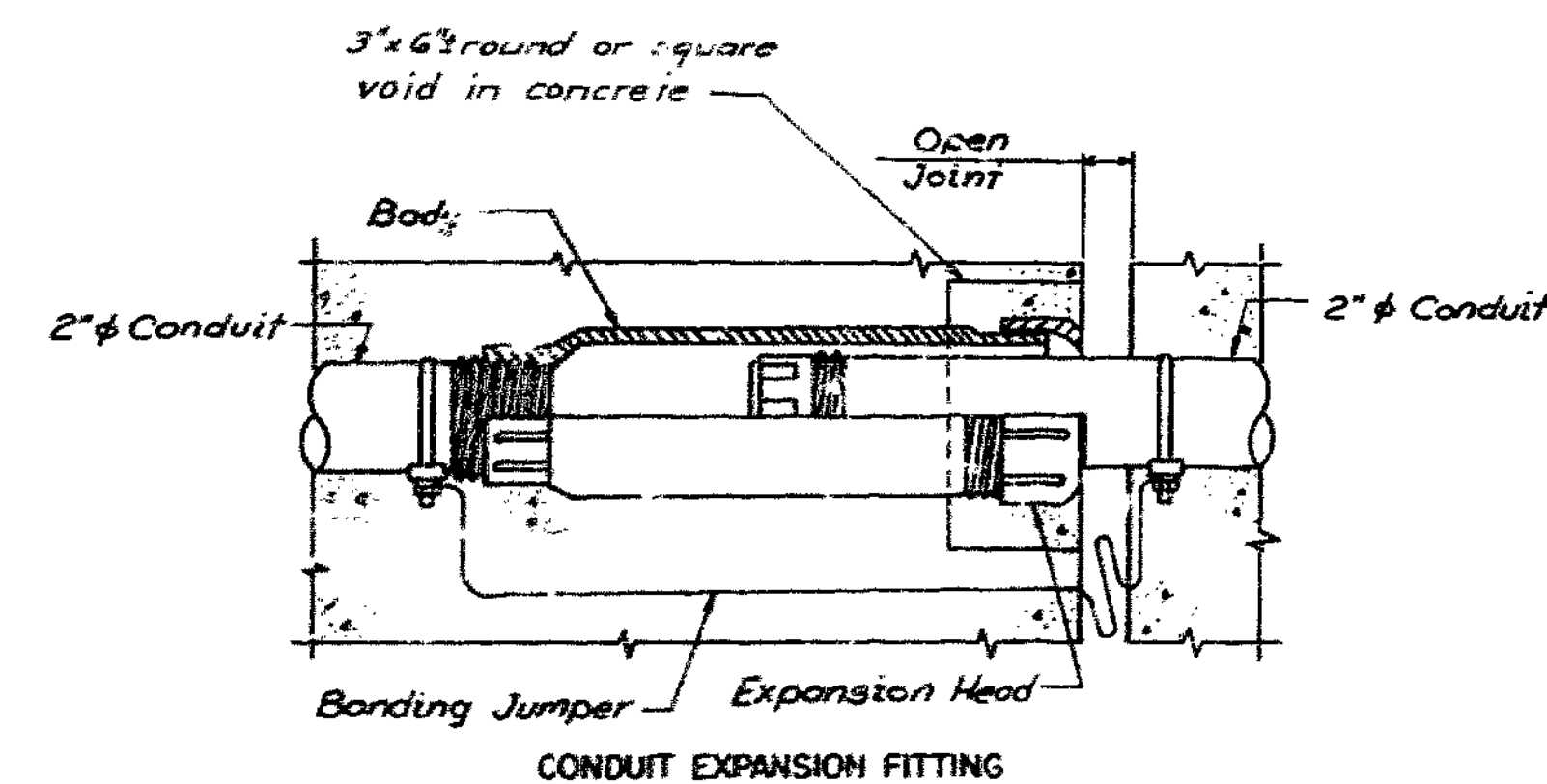
LIGHT POLE DETAIL

Note: Normal barrier curb and slab reinforcement not shown. Normal longitudinal reinforcement shall be continuous through light support.



ELEVATION

LIGHT STANDARD DETAILS



CONDUIT EXPANSION FITTING

Notes:  
Cost of furnishing and placing anchor bolts for light standard shall be included in contract unit price bid for other items.  
All conduit to be rigid galvanized steel with 3" minimum cover in concrete.

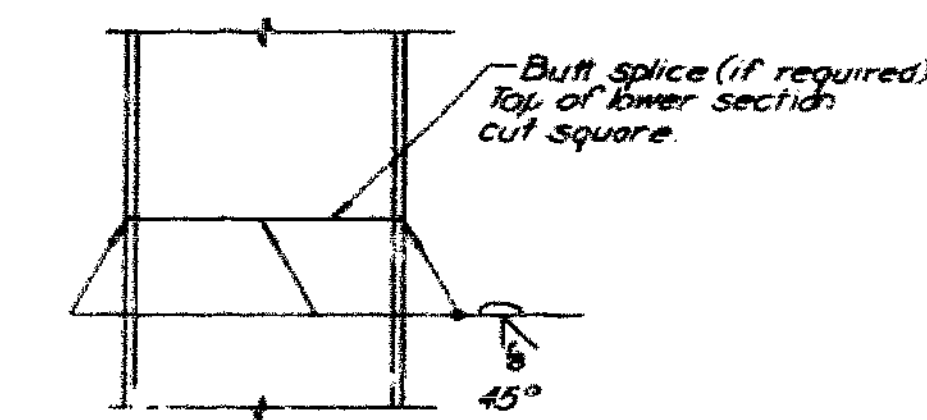
Shift reinforcing steel in field where necessary to clear conduit.  
Top of light standard supports to be made horizontal, anchor bolts to be placed vertically.

Galvanized expansion fittings shall provide a minimum movement in either direction of 1/2" at the End Bent 1 open joint and 1/4" at the End Bent 2 open joint. Expansion fittings shall be equal to O.Z. Gedney Co. Type "AX" and/or Spring City Elec. Mfg. Co. Type "FF", with approved bonding jumper.



FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.		72		

FINAL PRINT



STEEL PILE SPLICE DETAIL

FINAL QUANTITIES				
ITEM	UNIT	SUB STRUCTURE	SUPER STRUCTURE	TOTAL
Class 1 Excavation	Cu. Yd.	422.5	-	422.5
Pedestrian Fence (Structure)	Lin. Ft.	-	410	410
Structural Steel Pile (HP12x53)	Lin. Ft.	553	-	553
Structural Steel Pile (HP14x73)	Lin. Ft.	3946	-	3946
Class B Concrete	Cu. Yd.	638.1	-	638.1
Class B2 Concrete	Cu. Yd.	382.1	618.2	1,000.3
Type "N" P.T.F.E. Bearings	Each	28	-	28
Elastomeric Expansion Joint Seal (2.5 in.)	Lin. Ft.	-	56	56
Preformed Compression Expansion Joint Seal (2.5 in.)	Lin. Ft.	-	58	58
Reinforcing Steel (Grade 60)	Pound	134,720	51,100	185,820
Reinforcing Steel (Grade 60) (Epoxy)	Pound	42,260	47,210	89,470
Bridge Lighting	Lump Sum	-	-	1
Fabricated Structural Steel (Box Girder)	Pound	-	1,922,200	1,922,200
Painting (System B) Aluminum	Lump Sum	-	-	1
Bridge Rail (One Tube)	Lin. Ft.	-	307	307
Pre-bore for Piling	Lin. Ft.	1897	-	1897
Bomanite Concrete Topping	Sq. Yd.	358.5	629.8	988.3
Textured Surface (Precast)	Sq. Yd.	596	-	596

All concrete (Class B2) and reinforcing steel (Grade 60) above Construction Joint under slab in End Bents is included in substructure quantities.

All concrete and reinforcement in light standard supports, safety barrier curbs and railings is included with superstructure quantities.

PILE DATA								
BENT	END BENT 1				END BENT 2			
PILE GROUP	1	2	3	4	1	2	3	4
Pile Type and Size	HP14x73	HP14x73	HP14x73	HP12x53	HP14x73	HP14x73	HP14x73	HP12x53
Number	26	4	4	2	6	4	4	2
Approximate Length (FT.)	51 to 56	35 to 51	14 to 40	34 to 62	24 to 36	33 to 58	56 to 63	33 to 60
Design Bearing Value (Tons)	97	97	97	70	97	97	97	70
Hammer Energy Required (Ft. Lbs.)	24,000	21,800	21,800	15,800	24,000	21,800	21,800	15,800

Notes:

- Minimum energy requirement of hammer based on plan length and design bearing value of steel piles.
- All piles were driven to practical refusal at End Bents 1 and 2, Pile Groups 2, 3 and 4.
- Pre-bore piles to Elev. 888.0 under Bearing Beam End Bent 1, Pile Group 1, and to Elev. 883.0 under Bearing Beam End Bent 2, Pile Group 1.

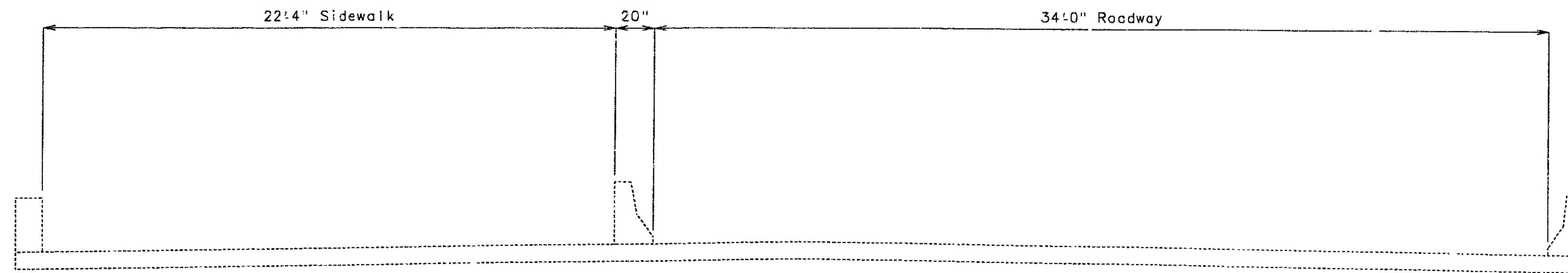
SUMMARY OF QUANTITIES  
AND PILE DATA  
SUMMIT STREET  
JACKSON COUNTY





MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION

STATE	PROJ. NO.	SHEET NO.
MO.		9
SEC./SUR.	TWP.	RCE.



SECTION THRU SLAB



STRIP SEAL GLAND  
MOVEMENT RATING 4"

NOTE: The Strip Seal Gland shall extend past the outside face of panel by 3/4".

NOTES FOR STRIP SEAL:

The Expansion Device shall be fabricated and installed in accordance with the recommendations of the manufacturer, and as set forth in the Special Provisions.

All welds shall conform to Section 712 of the Standard Specifications.

All steel shall be A36, except steel extrusions shall be A.S.T.M. A588 or A36. Payment for steel extrusions, Elastomeric Concrete, furnishing, painting, cleaning and placing structural steel plates and extrusions shall be made under the contract unit price bid for "Strip Seal Expansion Joint System".

For cleaning and painting of structural steel plates and extrusions see Special Provisions.

GENERAL NOTES:

DESIGN UNIT STRESSES:

Class B1 Concrete  $f'c = 4,000$  psi  
Reinforcing Steel Grade 60  $f'y = 60,000$  psi

OLD WORK:

Outline of old work is indicated by light dashed lines. Heavy lines indicate new work.

TRAFFIC HANDLING:

Close road during construction.

VERIFY DIMENSIONS:

Contractor shall verify all dimensions in field before ordering new steel.

PLAN DIMENSIONS:

Plan dimensions are based on installation at 60° F. The expansion gap and other dimensions shall be adjusted during installation for compliance with any temperature change.

RESIN ANCHOR SYSTEM:

The contractor shall use one of the resin anchor systems listed in the job special provisions.

These anchor systems shall be installed according to the manufacturer's specifications, except as modified by the job Special Provisions.

Cost of furnishing and installing the anchor system complete in place shall be included in the price bid for "Strip Seal Expansion Joint System".

The 1/2" diameter resin anchor systems shall have a minimum ultimate pullout strength of 9800 lbs. in concrete with  $f'c = 4000$  psi, see special provisions.

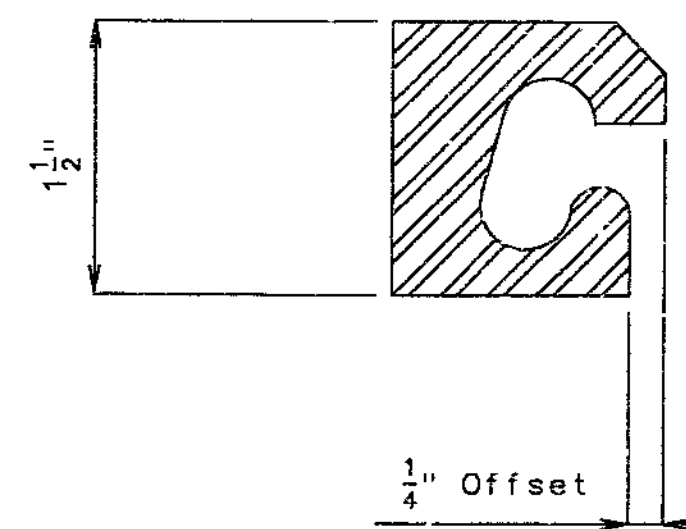
BARS BONDED IN OLD CONCRETE:

Bars bonded in old concrete not removed shall be cleanly stripped and embedded into new concrete where possible.

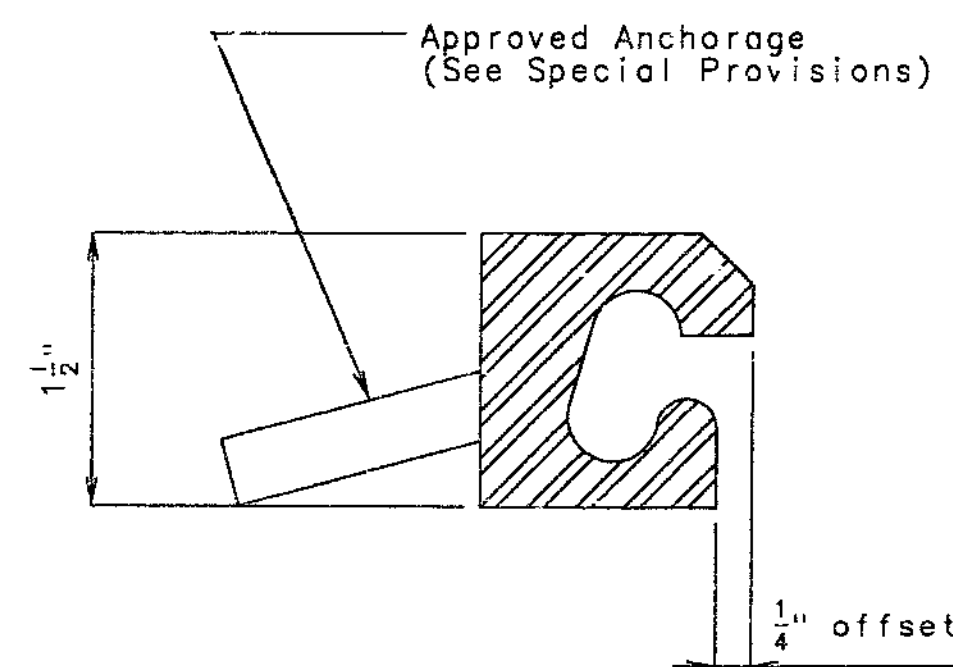
ESTIMATED QUANTITIES		
ITEM		TOTAL
* STRIP SEAL EXPANSION JOINT SYSTEM	LIN. FT.	34
* MODIFICATION OF EXISTING EXPANSION JOINT	LIN. FT.	34

NOTE: Cost of B1 concrete required to replace removed concrete in barrier curb shall be included in cost bid for Modification of Existing Expansion Joint.

\* Roadway only



DETAIL OF STEEL EXTRUSION  
(WELDED IN PLACE)



DETAIL OF STEEL EXTRUSION  
(ANCHORED IN ELASTOMERIC CONCRETE)

REPAIRS TO  
BRIDGE OVER I-670 AT END BENT NO. 1

STATE ROAD FROM KANSAS LINE TO RTE. I-29 & I-35 INTERCHANGE  
ABOUT .75 MILES EAST OF KANSAS LINE

PROJECT NO.

STA. 5+97.50

JOB NO. J4P1217

RTE. SUMMIT STREET

JACKSON

COUNTY

STD.
STD.
A31411

DETAILED MAY 1994  
CHECKED MAY 1994

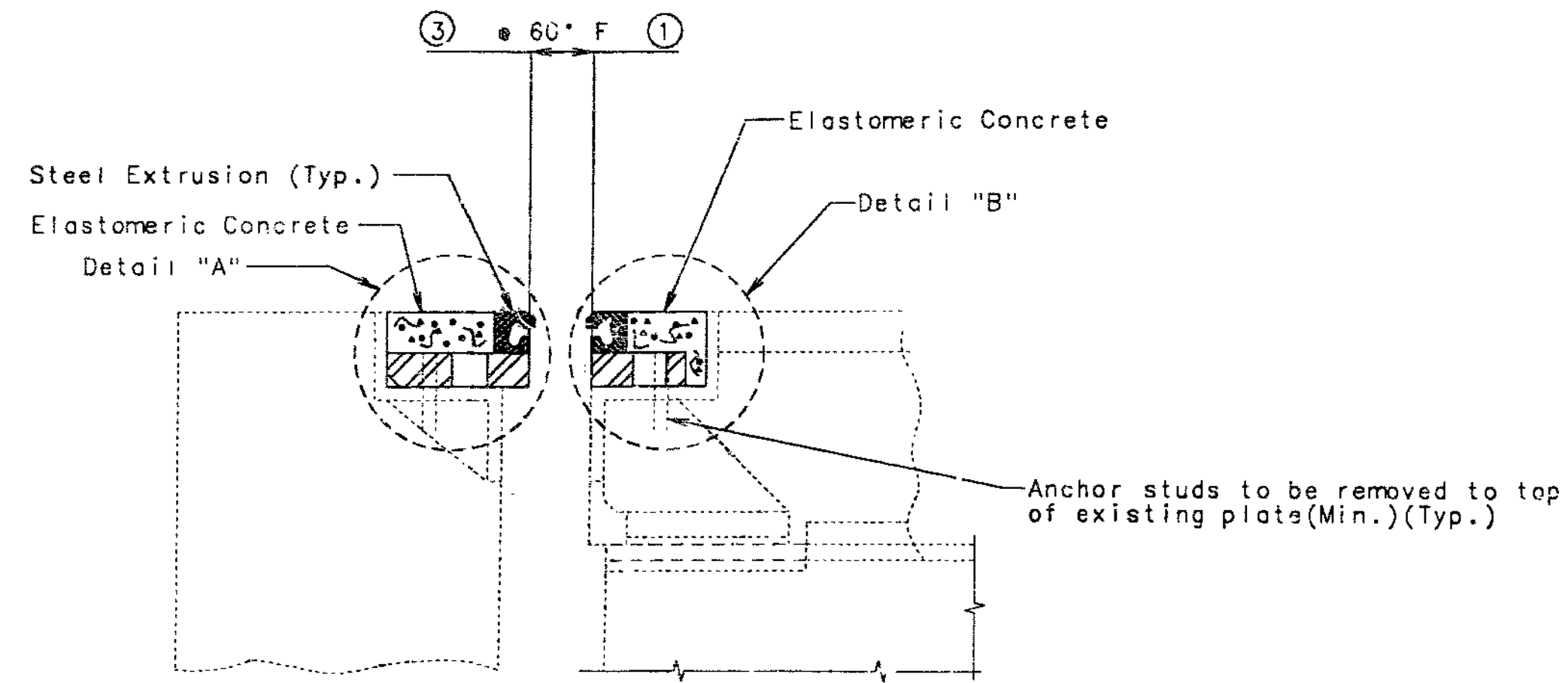
NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

SHEET NO. 1 OF 5

DATE 7/11/94

76 265

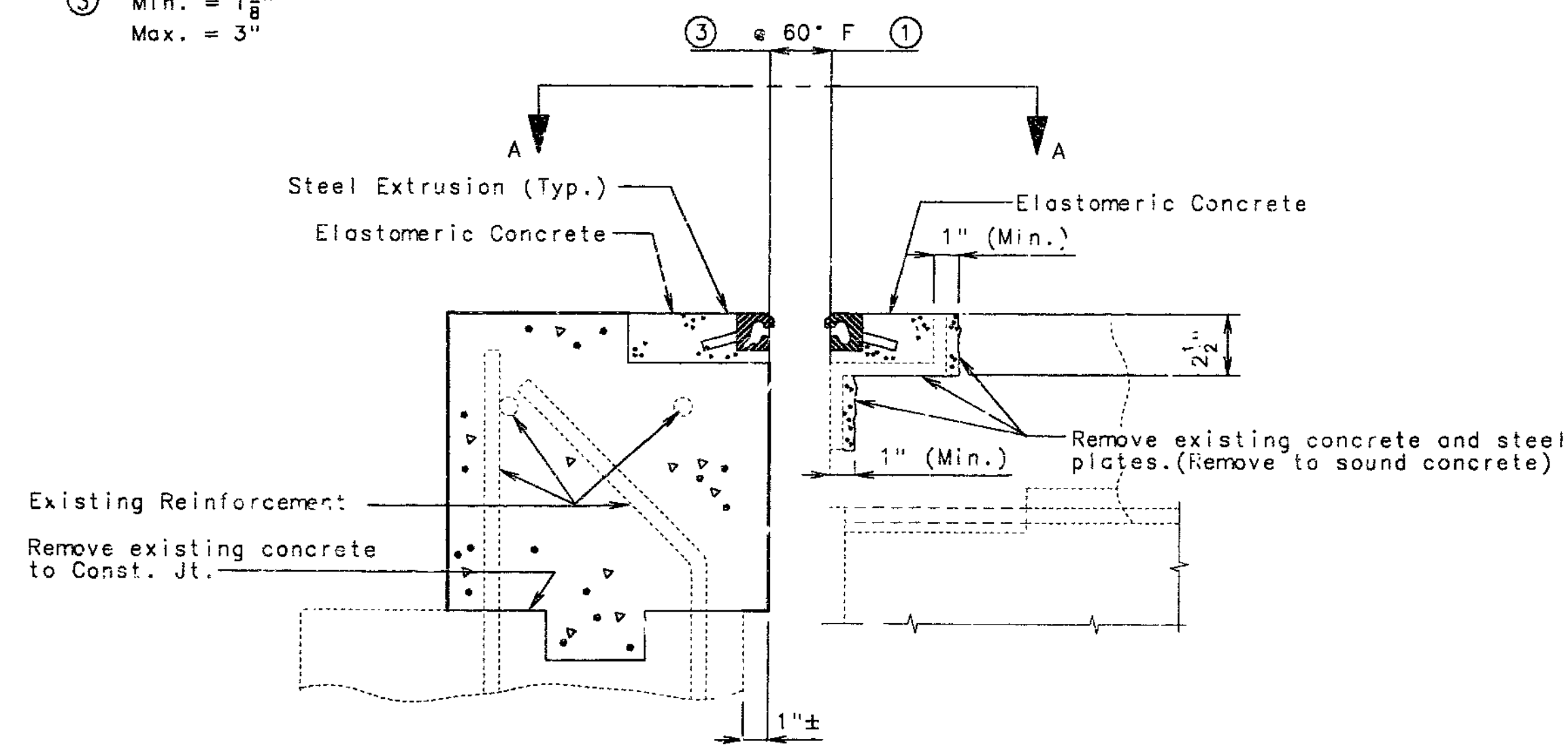
STATE	PROJ. NO.	SHEET NO.
MO.		10



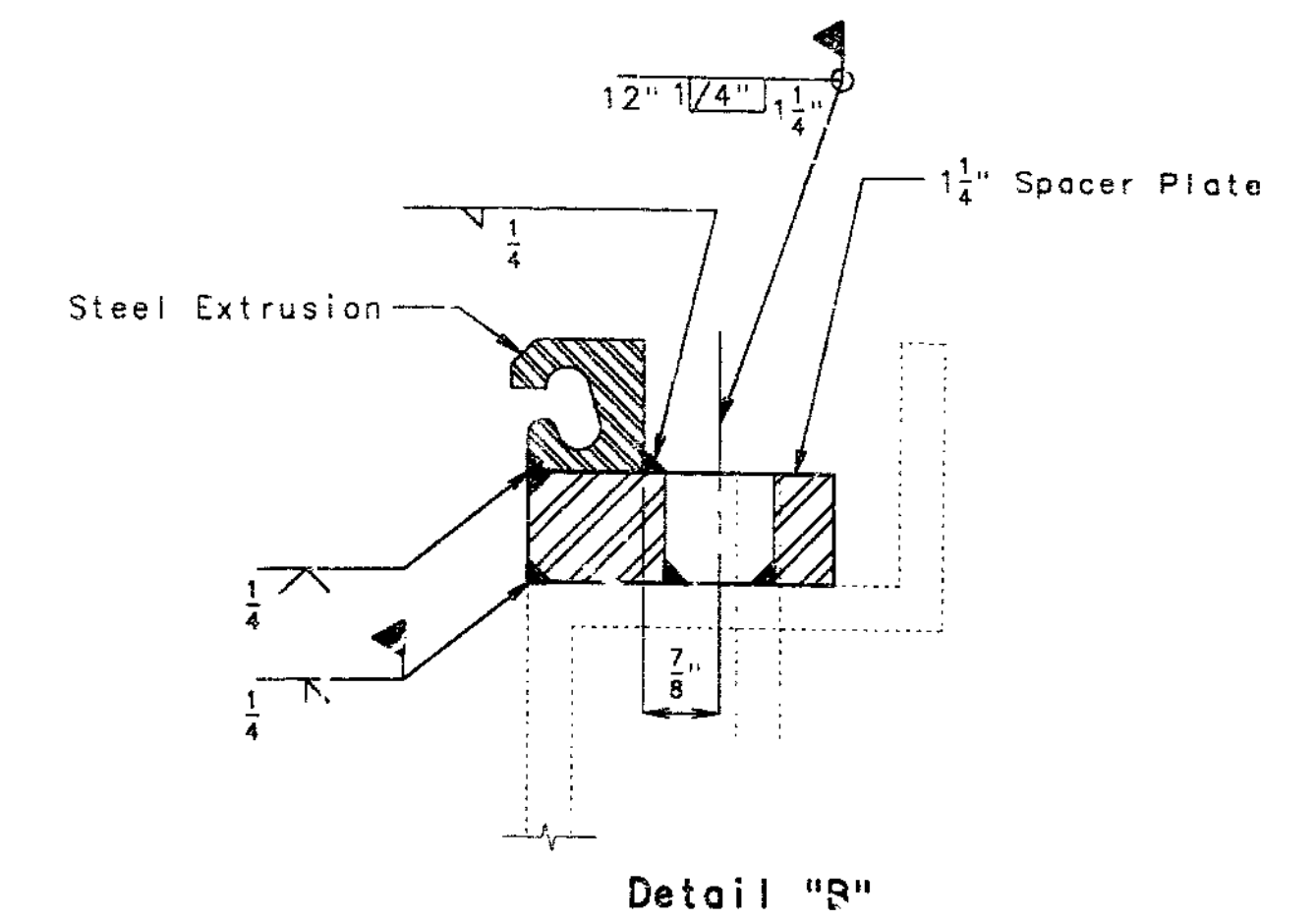
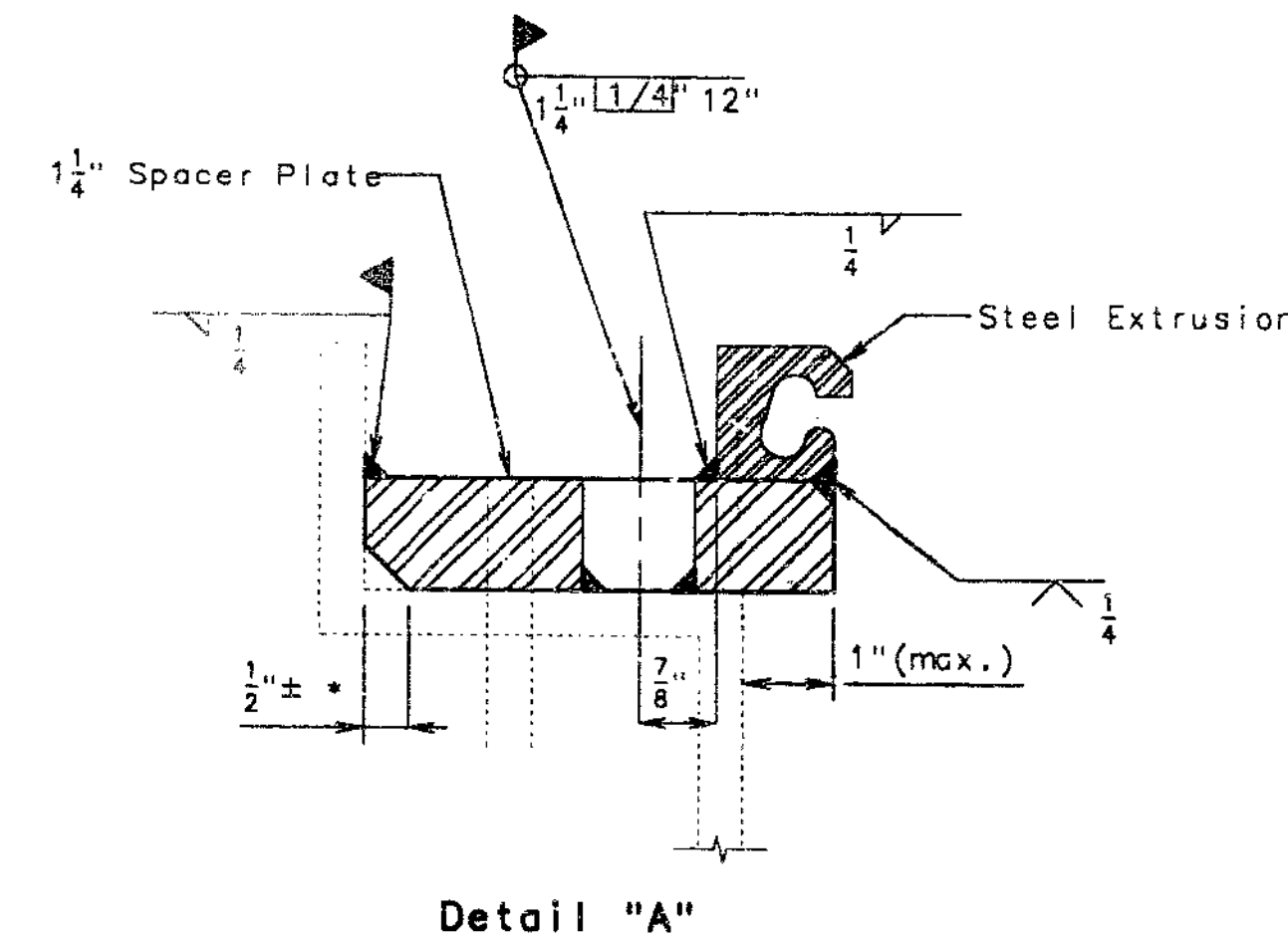
PART SECTION THRU EXPANSION DEVICE AT BENT NO. 1

Note: Dimension ① shall be increased  $\frac{3}{16}$ " for each 10' fall in temperature and decreased  $\frac{3}{16}$ " for each 10' rise in temperature at installation.

③ Min. =  $1\frac{5}{8}$ "  
Max. = 3"

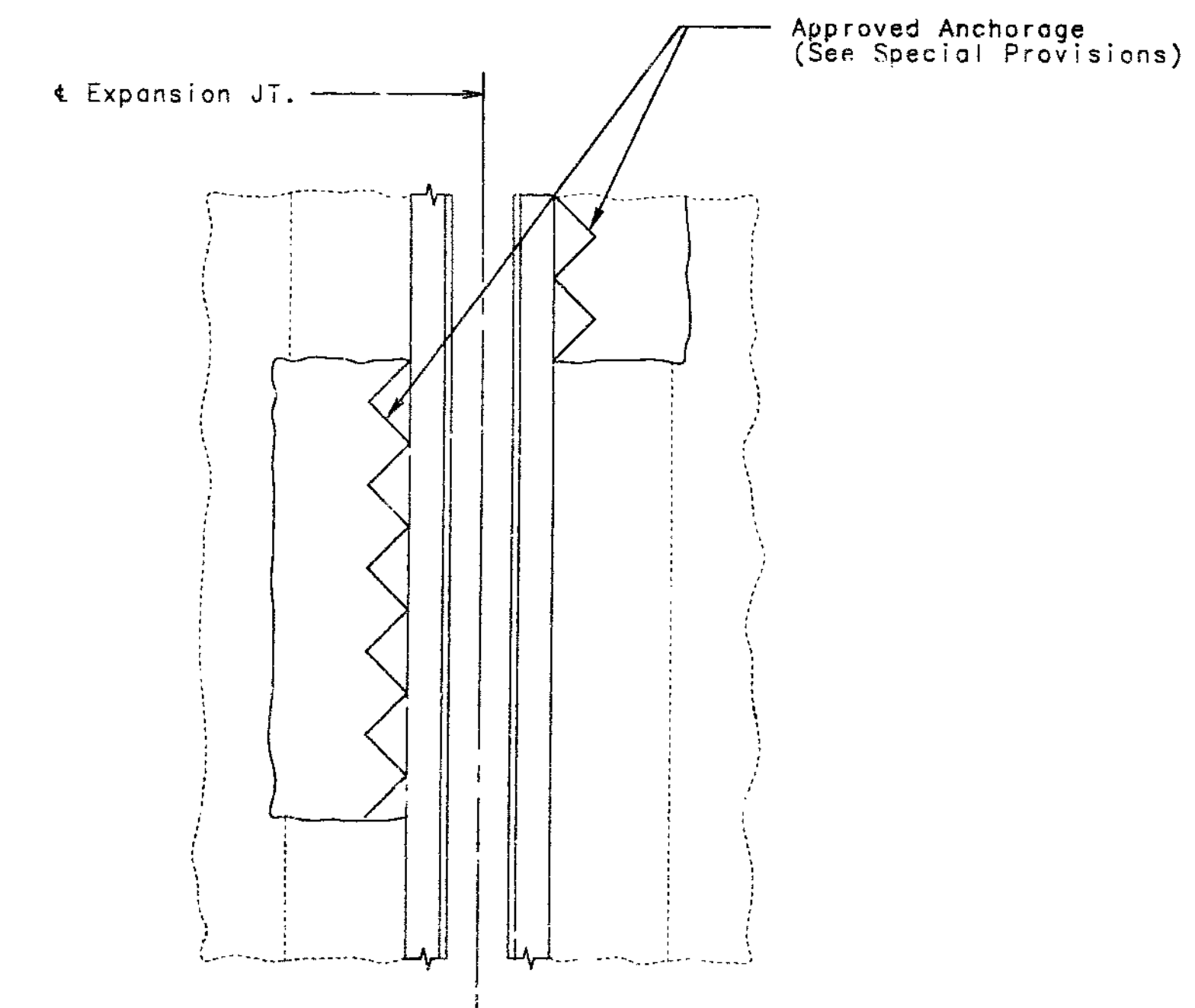


PART SECTION THRU MODIFICATION AT EXISTING EXPANSION DEVICE BT. NO. 1 WHEN LOOSE PLATES ARE ENCOUNTERED



Detail "A"

Detail "B"



PART PLAN A - A

77266

DETAILED MAY 1994  
CHECKED MAY 1994

NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

SHEET NO. 2 OF 5

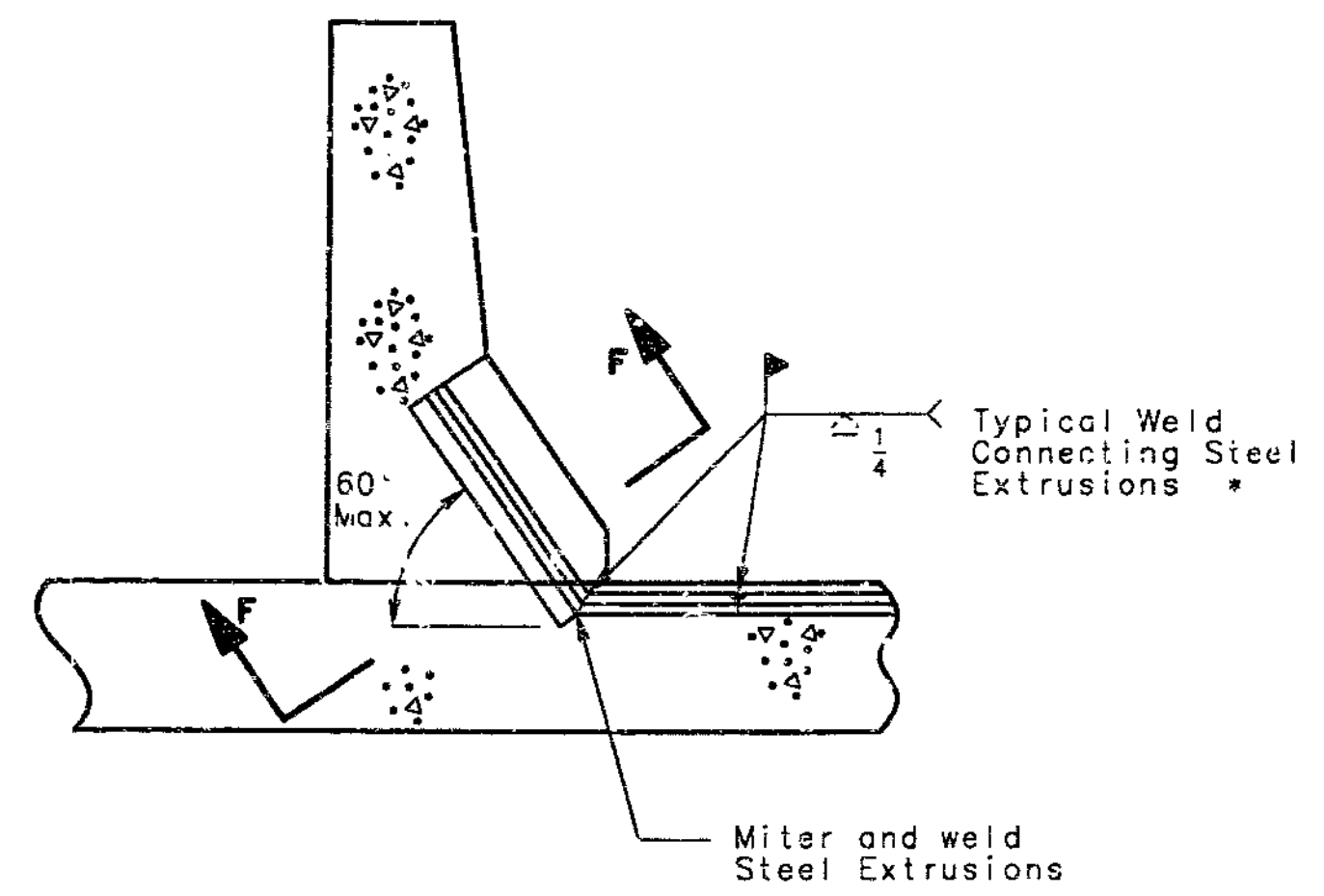
JACKSON

COUNTY

A31411

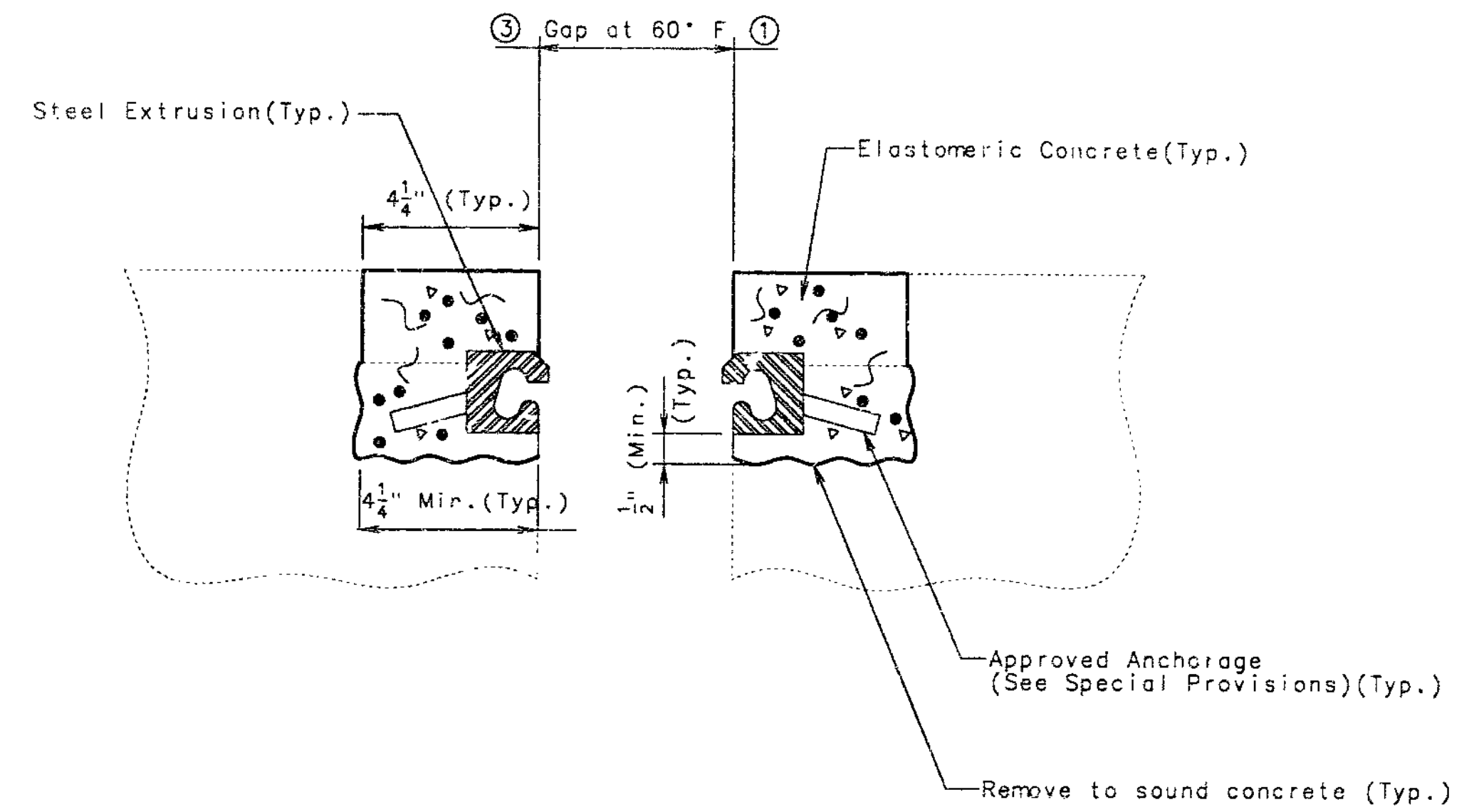


STATE	PROJ. NO.	SHEET NO.
MO.		11



SECTION THRU LEFT CURB AT END BENT #1

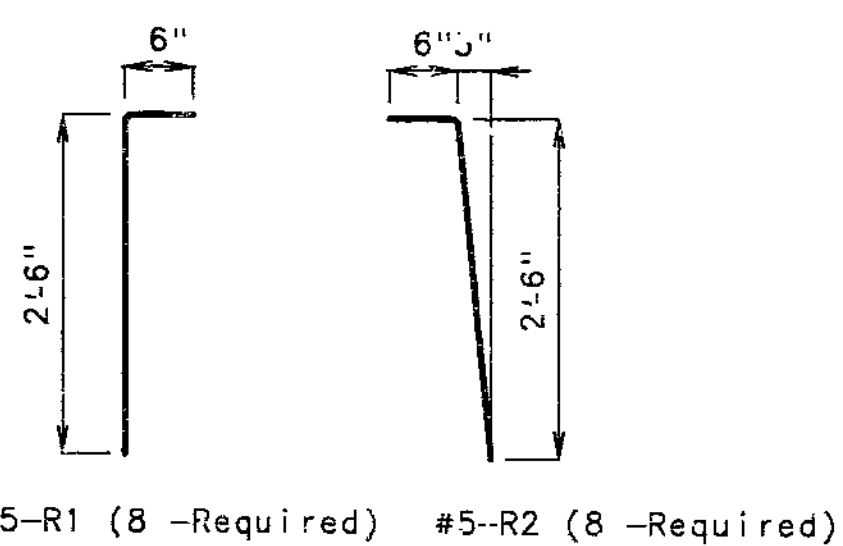
\* Extrusion shall be welded top and back.



PART SECTION F-F

Note: Dimension ① shall be increased  $\frac{3}{16}$ " for each 10° fall in temperature and decreased  $\frac{3}{16}$ " for each 10° rise in temperature at installation.

③ Min. =  $1\frac{5}{8}$ "  
Max. = 3"



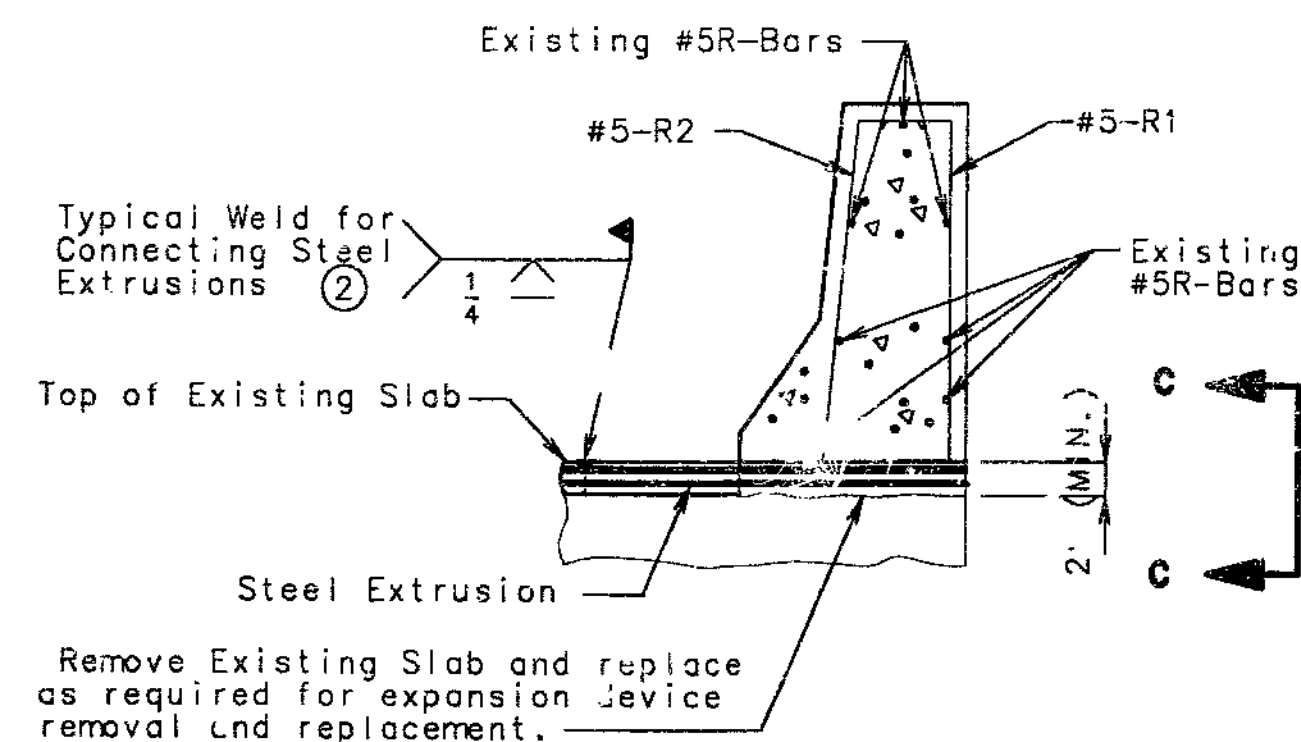
#5-R1 (8 -Required) #5-R2 (8 -Required)

Note: Bends shall be in accordance with CRSI Manual of Standard Practice for Detailing Reinforced Concrete Structures Stirrup and Tie Dimensions.

All Dimensions are out to out.  
New #5-R1 & #5-R2 Bars shall be Epoxy Coated.

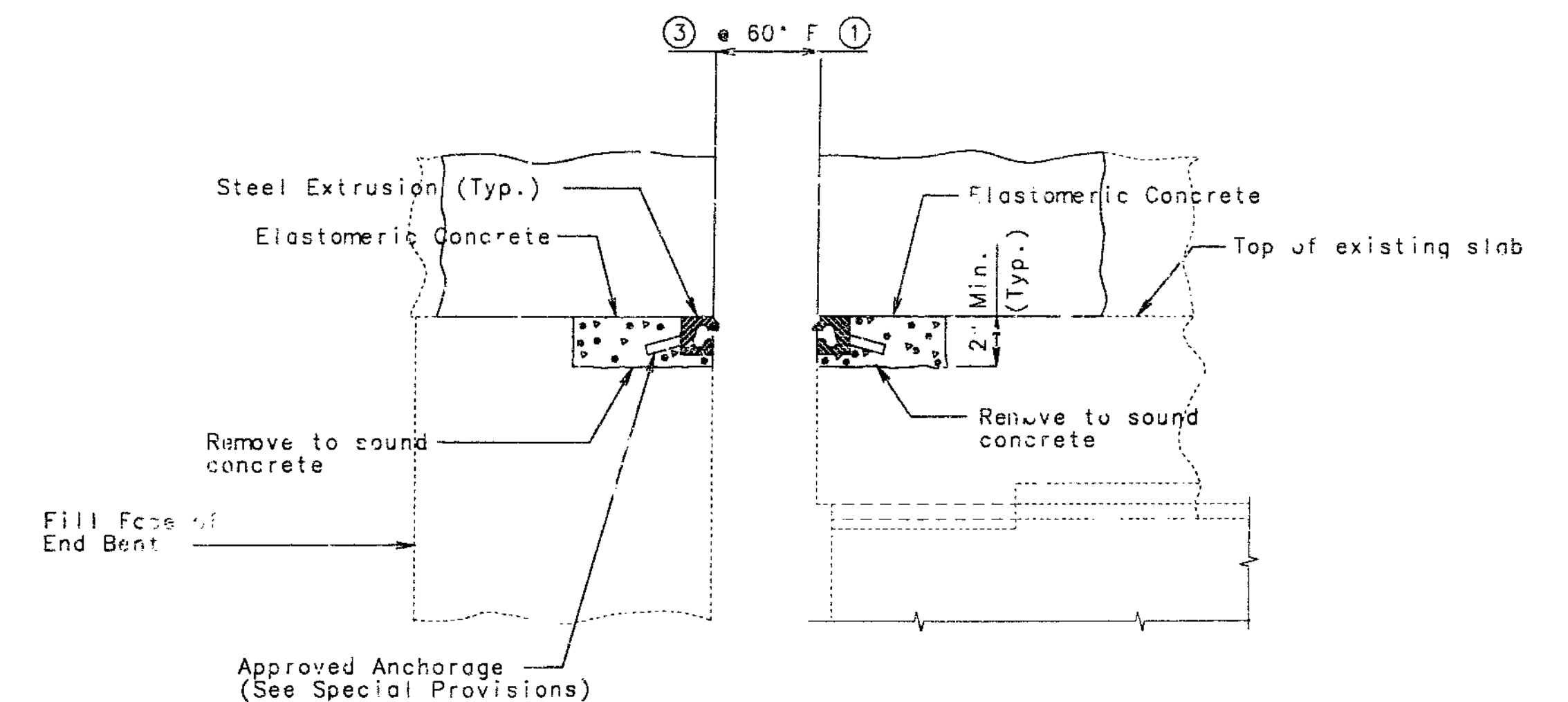
Furnishing and installing #5-R1 & #5-R2 Bars shall be included in the contract unit price bid for "Modification of Existing Expansion Joint."

BENDING DIAGRAM



SECTION THRU RIGHT CURB  
END BENT NO. 1

② Extrusion shall be welded top and back



ELEVATION C-C

DETAILED MAY 1994  
CHECKED MAY 1994

NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

SHEET NO. 3 OF 5

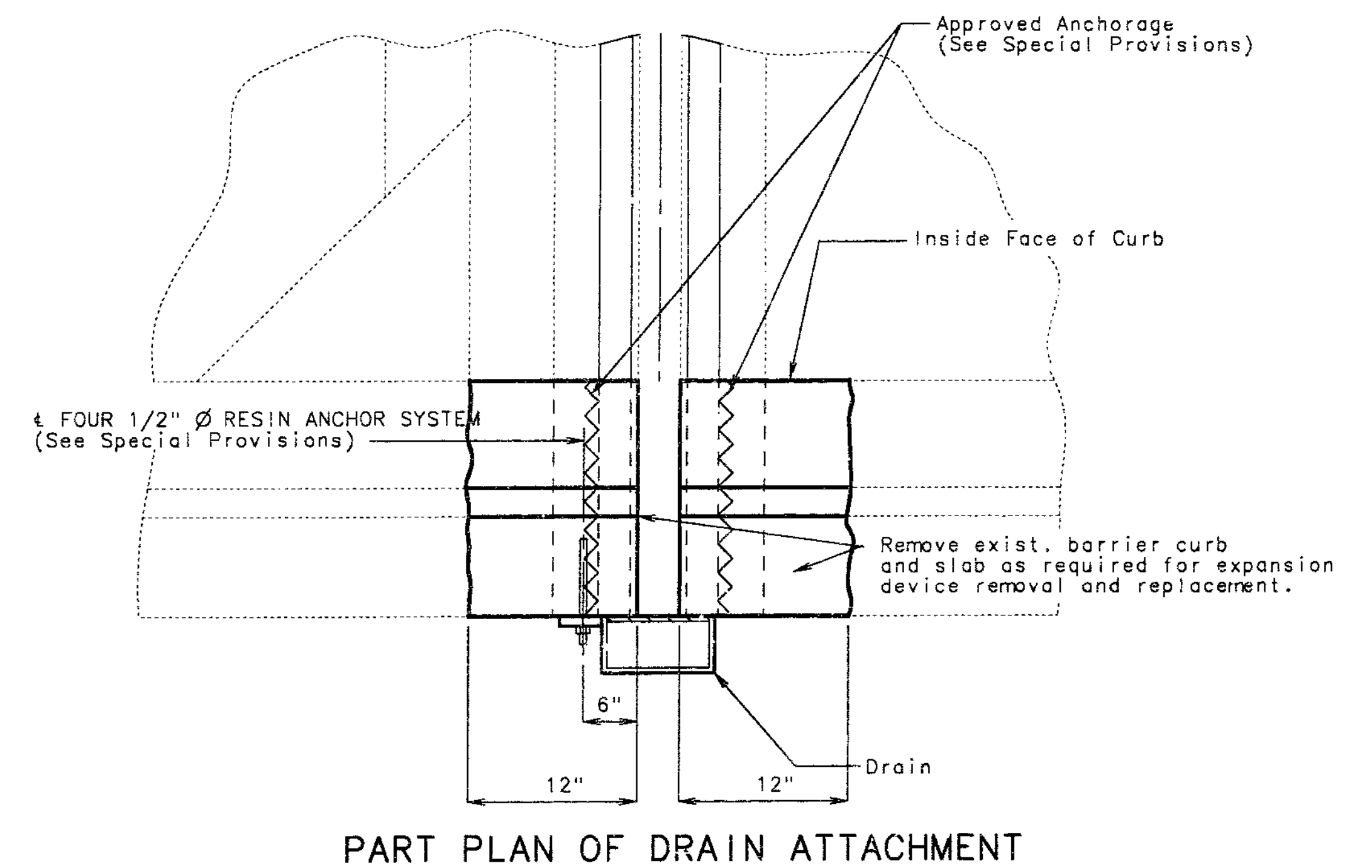
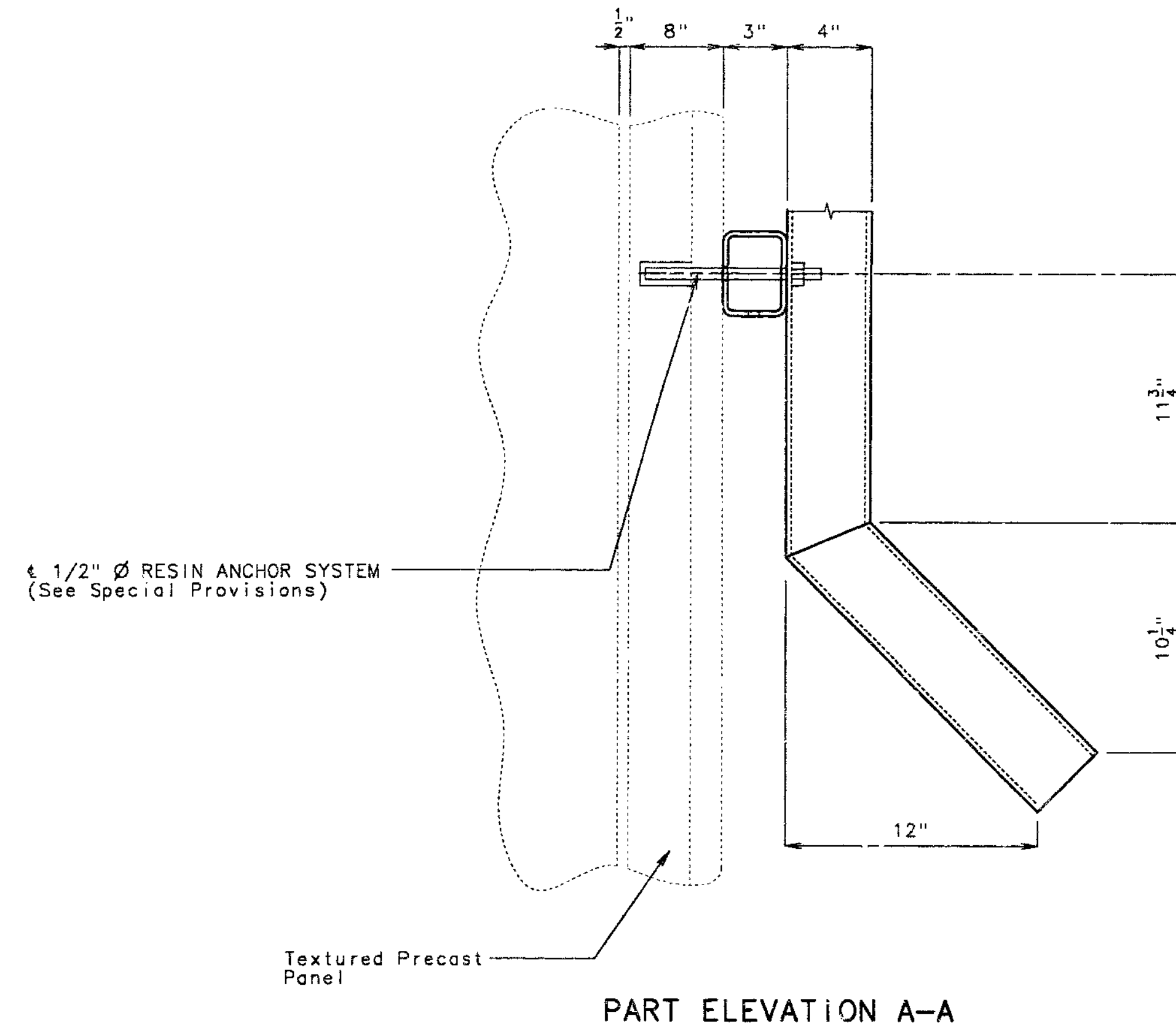
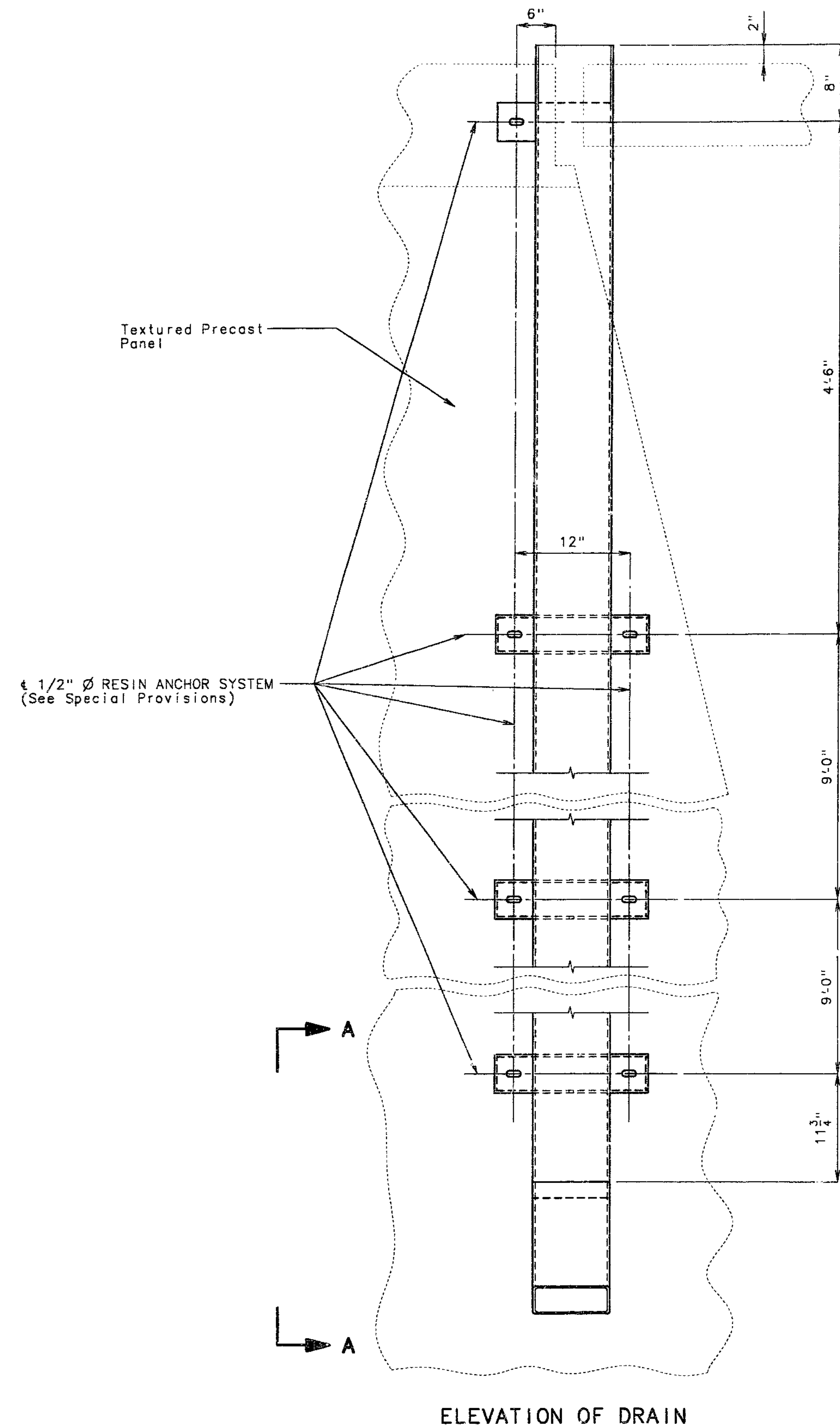
JACKSON

COUNTY

A31411

18-267

STATE	PROJ. NO.	SHEET NO.
MO.		12



DETAILS OF DRAIN AT EXPANSION DEVICE END BENT NO. 1 (RIGHT SIDE ONLY)

19 268

DETAILED MAY 1994  
CHECKED MAY 1994

NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

SHEET NO. 4 OF 5

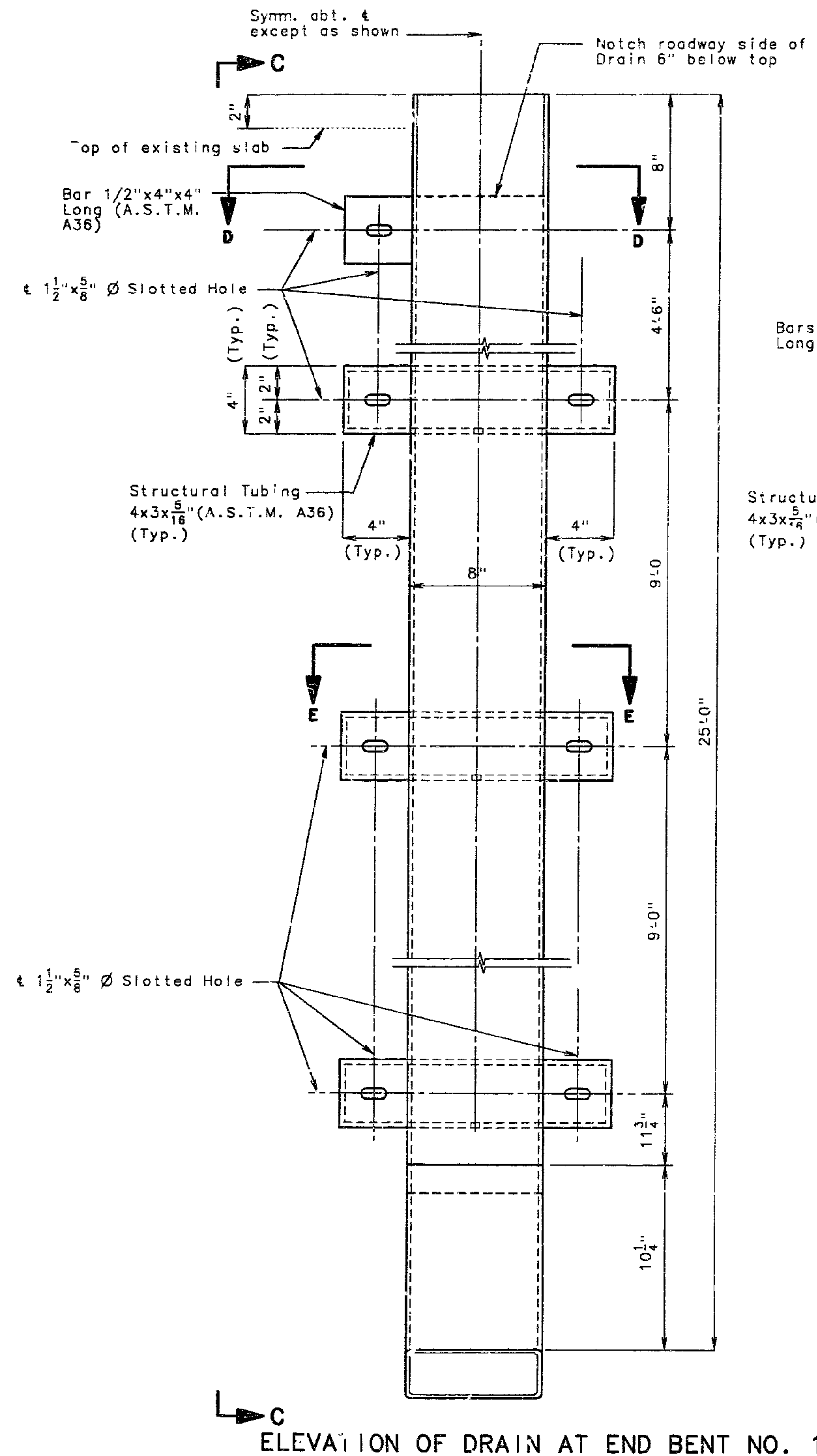
JACKSON

COUNTY

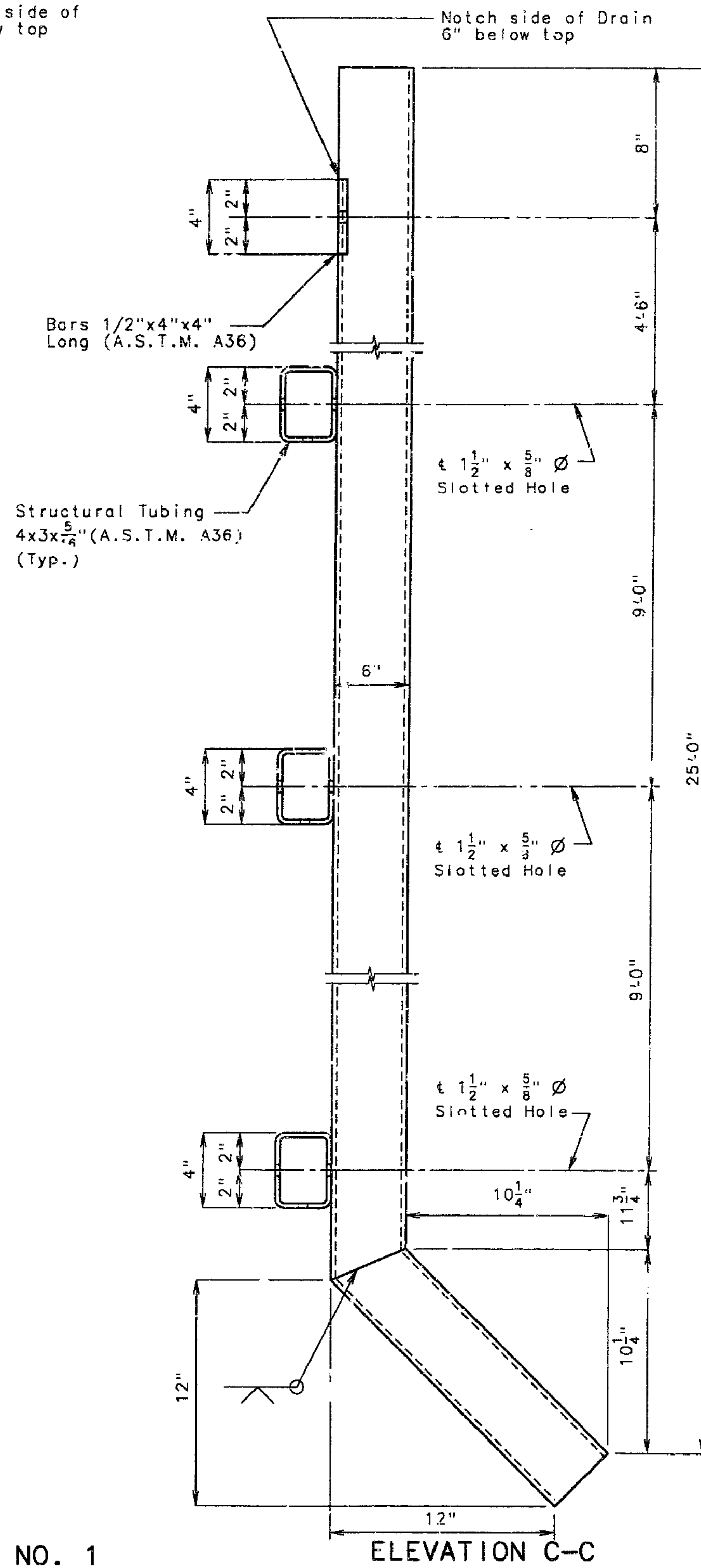
A31411



STATE	PROJ. NO.	SHEET NO.
MO.		13

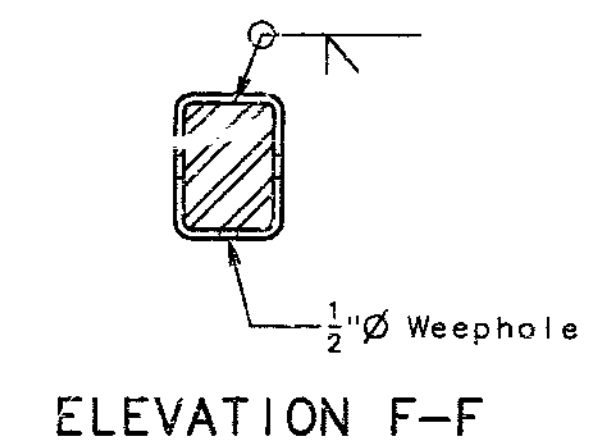
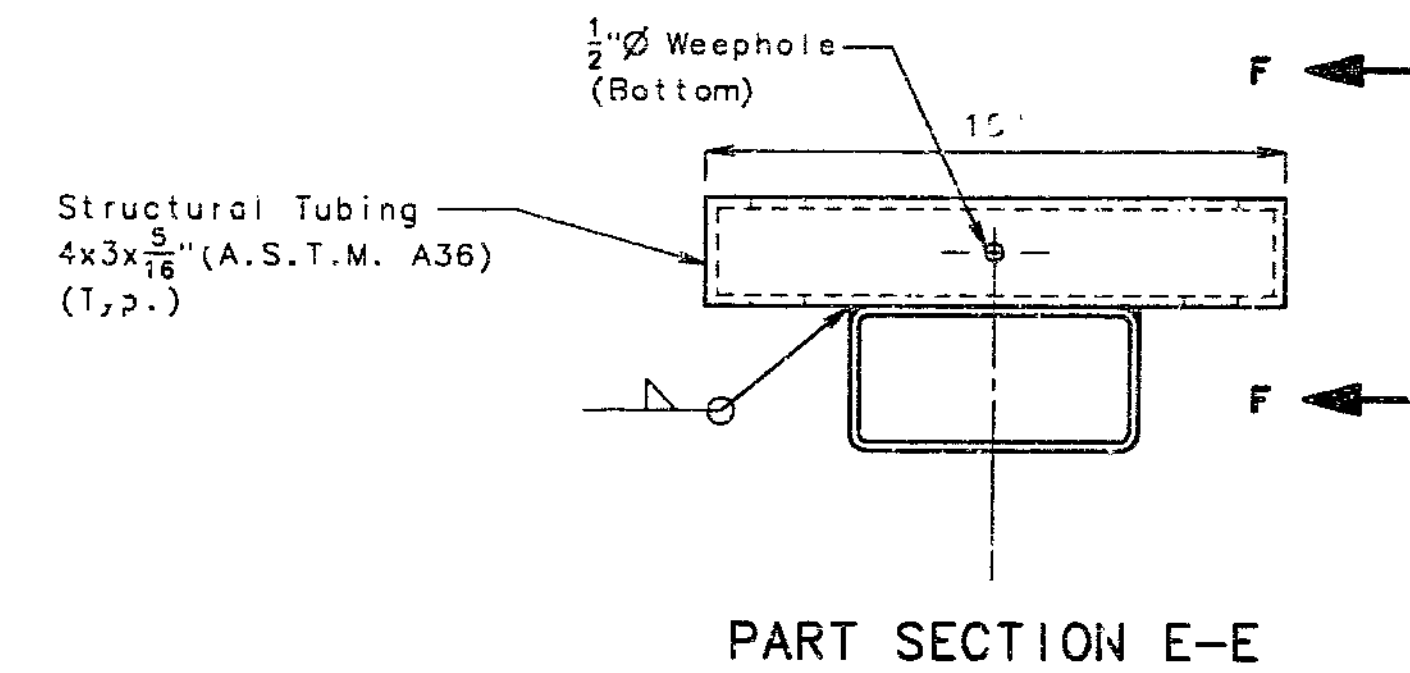
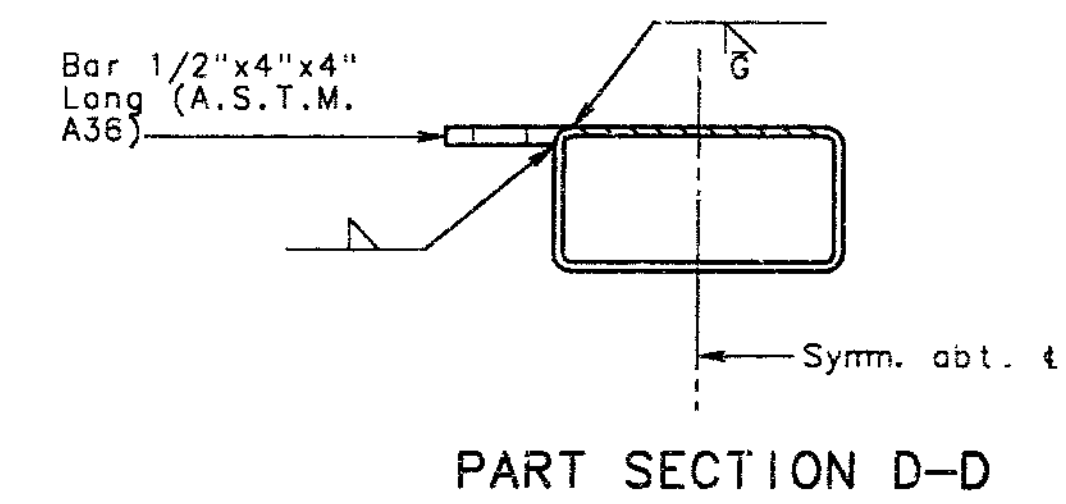


ELEVATION OF DRAIN AT END BENT NO. 1



DETAILS OF DRAIN

NOTE: Slab Drain shall be centered on top of Slab Expansion Joint ± 60" F.



NOTES FOR EXPANSION DEVICE DRAIN:

Drains may be fabricated of either 1/4" welded sheets of A.S.T.M. A36 steel or from 1/4" structural steel tubing A.S.T.M. A500 or A501.  
 Outside dimensions of Drains are 8"x6".  
 The Drains and Bracket Assembly shall be galvanized in accordance with A.S.T.M. A123.  
 All Bolts, Hardened Washers, Lock Washers and Nuts shall be galvanized in accordance with A.S.T.M. A153.  
 Payment for furnishing and installing Expansion Device Drains and Resin Anchor Systems complete in place shall be included in the contract unit price bid for "Strip Seal Expansion Joint System".

20 269

DETAILED MAY 1994  
 CHECKED MAY 1994

NOTE: THIS DRAWING IS NOT TO SCALE. FOLLOW DIMENSIONS.

SHEET NO. 5 OF 5

JACKSON

COUNTY

A31411