

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS

F.A.S. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
2869	I-BR	JEFFERSON	15	1

P-87-050-80

~ INDEX OF SHEETS ~

SHEET NO.	TITLE
1	TITLE SHEET, INDEX OF SHEETS
2	GENERAL NOTES, TYPICAL SECTIONS & SUMMARY OF QUANTITIES
3	PLAN AND PROFILE
4	DETAIL OF STAGE CONSTRUCTION
5	TRAFFIC CONTROL AND PROTECTION STANDARD 2309 (SPECIAL)
6-15	BRIDGE PLANS (FOR BRIDGE SHEETS-SEE SHEET 6)

PLANS FOR PROPOSED  
FEDERAL AID HIGHWAY

THE FOLLOWING STANDARDS ARE A PART OF THESE PLANS  
AND ARE INCLUDED AFTER SHEET NO. 15

1686-4	SYMBOLS AND ABBREVIATIONS
2113-2	NAME PLATE FOR BRIDGES
2298-7	TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES
2299-10	DESIGN OF TRAFFIC CONTROL DEVICES
2300-3	FLAGMAN TRAFFIC CONTROL SIGN
2301-5	TRAFFIC CONTROL AND PROTECTION
2302-5	• • • • •
2305-5	• • • • •
2306-6	• • • • •
2307-8	• • • • •
2324-5	BRIDGE APPROACH SHOULDER PAVEMENT
2336-3	TRAFFIC BARRIER TERMINAL TYPE I AND IA
2341-1	TRAFFIC BARRIER TERMINAL TYPE 6
2381	TEMPORARY EROSION CONTROL SYSTEMS
2382-1	BRIDGE APPROACH PAVEMENT
2383-1	TEMPORARY CONCRETE BARRIERS
2386-1	TRAFFIC BARRIER TERMINAL TYPE II
2323-5	PAVEMENT JOINTS

F.A.S. ROUTE 2869 (ILL. RTE. 37)

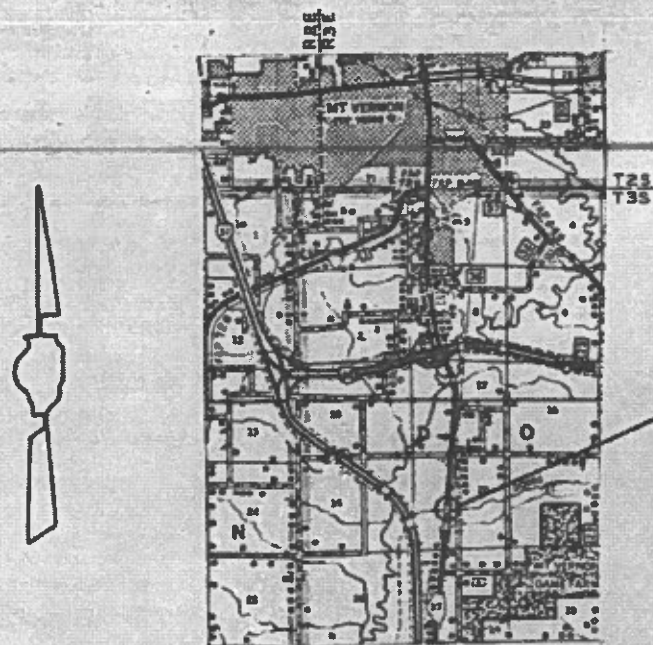
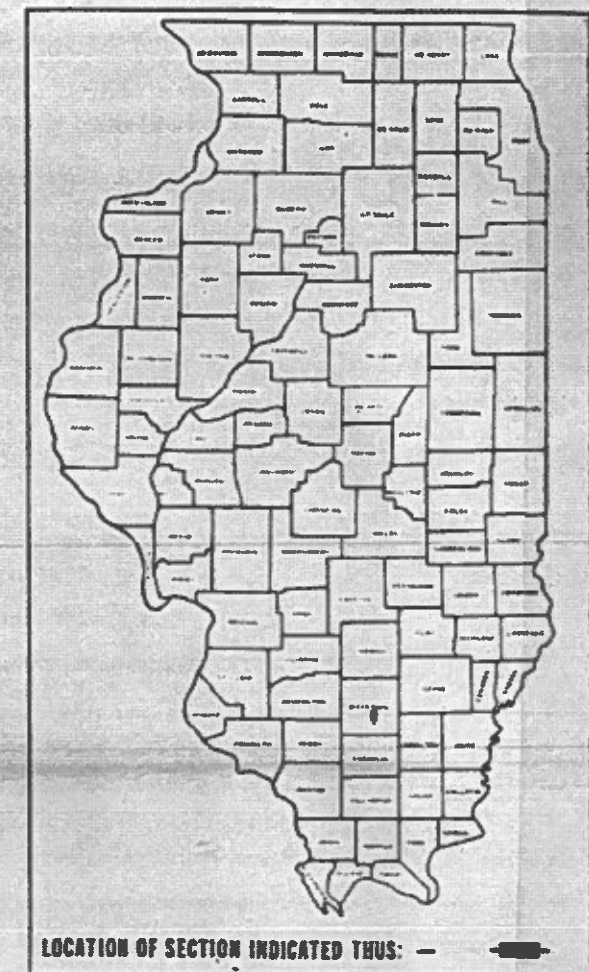
SECTION I-BR

PROJECT BRS-2869(101)

JEFFERSON COUNTY

FOR INFORMATION ONLY

C-97-003-84



LOCATION OF PROJECT  
SECTION I-BR  
DODDS CREEK  
BEGINS STA. 204 +30  
ENDS STA. 208 +90

~ LAYOUT MAP ~



NET LENGTH OF PROJECT = 460 FT. = 0.087 MILE

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS

SUBMITTED January 31 1984

DESIGNED 3-7 1984 BY M.R. Toole

CHECKED 3-7 1984 BY [Signature]

PASSED 3-7 1984 BY [Signature]

APPROVED 3-7 1984 BY [Signature]

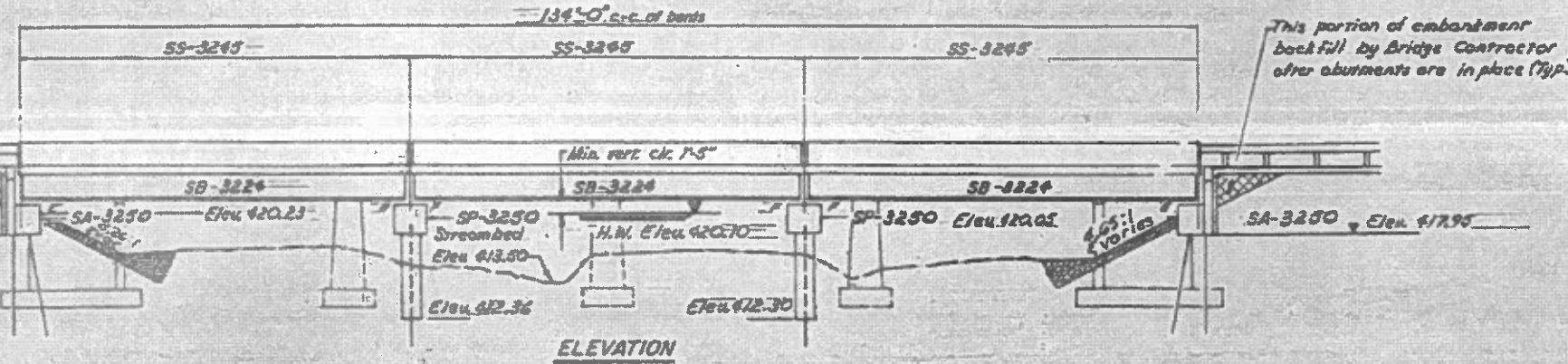
7-96

CONTRACT NO. 36928

B.M. - U.S.G.S. B.M. G-216 Brass plaque in S.E. wing of existing structure over Dodds Creek. Elev. 424.56

ROUTE NO.	SEC.	COUNTY	TOTAL SHEETS	SHEET NO.	SHEET NO. 1
1BR	1BR	Jefferson	15	6	11 SHEETS

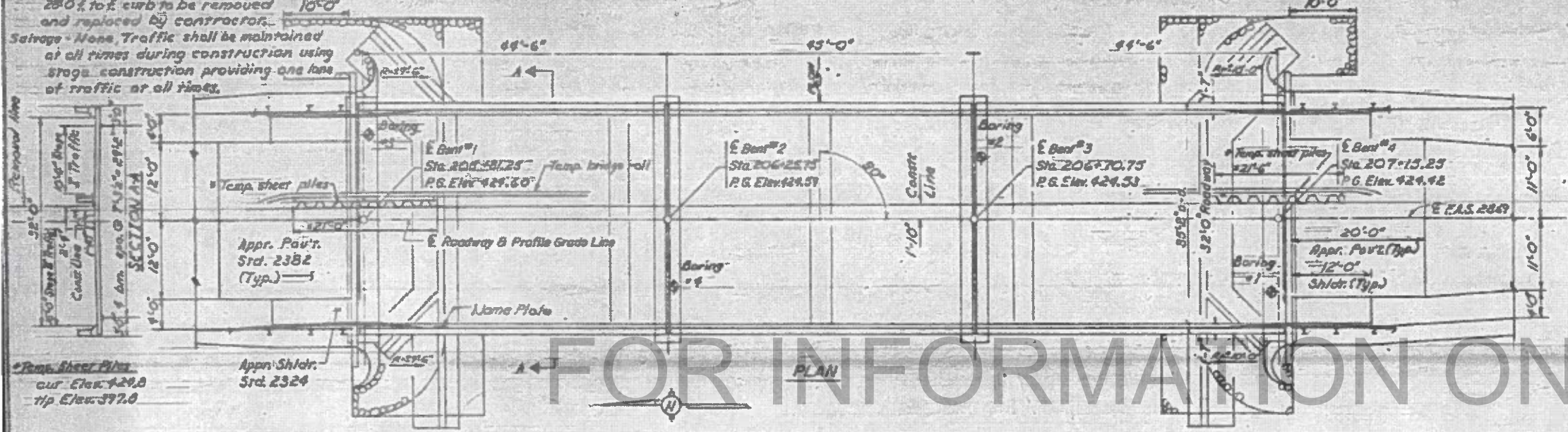
Existing Structure - 041-0036 - 4 simple spans R.C. slab bridge on solid piers and closed abuts. Built in 1921 as S.E.I. Rte. 37, Sec. 10 station 206+48 and widened in 1950 as S.B.I. Rte. 37, Sec. 1-B-Y, Sta. 206+48, Bk. to Bk. abutments 112'0" to 28'0" to f. curb to be removed and replaced by contractor. Salvage - None. Traffic shall be maintained at all times during construction using stage construction providing one lane of traffic at all times.



This portion of embankment backfill by Bridge Contractor after abutments are in place (Typ.)

**GENERAL NOTES**

See Special Provisions for boring logs and top of Slab Elevations  
 Class 'X' Concrete shall be used throughout.  
 Fasteners shall be high strength bolts (AASHTO M164, Type 3). Bolts 3/4" φ, open holes 1/2" φ, unless otherwise noted.  
 All structural steel shall be AASHTO M222 except expansion joint angles and attached bars which shall be AASHTO M183 and shall be shop primed with zinc-silicate primer.  
 AASHTO M222 structural steel shall not be painted except, that for a distance of three times the depth of the beams (but not exceeding 10ft) each way from deck joints, the AASHTO M222 structural steel shall be cleaned, and given one coat of the zinc-silicate primer and a dark anodized vinyl finish coat. Both coats to be applied in the shop with spot painting only in the field.  
 Field welding of construction accessories will be permitted on the top flange of beams only.  
 The structural steel bearing plates of the Elastomeric Bearing Assembly shall conform to the requirements of AASHTO M222.  
 The main beams shall conform to the supplemental requirements for Note Toughness Zone 2.  
 Anchor bolts shall be set before boring diaphragms over supports.  
 Reinforcement bars shall conform to the requirements of AASHTO M-31 or M-53 Grade 60.  
 Layout of riprap may be varied in the field to suit ground conditions as directed by the Engineer.



FOR INFORMATION ONLY

**TOTAL BILL OF MATERIAL**

Item	Unit	Super	Sub.	Total
			Piers Abuts	
Removal of Existing Structures	Each			1
Structure Excavation	Cu. Yd.		65.0 50.0	115.0
Floor Drains	Each	12		12
Protective Coat	Sq. Yd.	594.0		594.0
Class X Concrete	Cu. Yd.	166.9	27.6 50.8	245.3
Preformed Joint Seal 4"	Lin. Ft.	70		70
F.B.E. Struct. Steel	L. Sum	1		1
Stud Shear Connectors	Each	2010		2010
Elast. Bearing Assy. T1	Each	10		10
Reinforcement Bars	Lbs.		3,880 4,620	8,500
Weld. Bars (Cld.)	Lbs.	28,230		28,230
Steel Piles (HP 10x42)	Lin. Ft.		510 476	986
Stone Riprap	Sq. Yd.			355 355
Temp. Shear Piling	Sq. Ft.			1198 1198
Glass X Concrete Encasement	Cu. Yd.		23.8	23.8
Name Plates	Each	1		1
Temp. Bridge Rail	Lin. Ft.	155		155

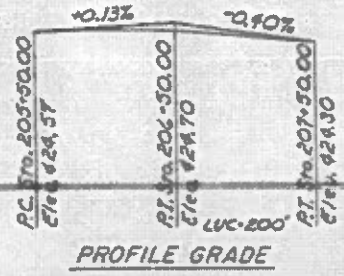
**BEARING CAP ELEVATION DATA**

Bent 'CE'	Bm. #1		Bm. #2		Bm. #3		Bm. #4		Bm. #5		
	BE <sub>1</sub>	E <sub>1</sub>	BE <sub>2</sub>	E <sub>2</sub>	BE <sub>3</sub>	E <sub>3</sub>	BE <sub>4</sub>	E <sub>4</sub>	BE <sub>5</sub>	E <sub>5</sub>	
#1	421.12	421.25	1/2	421.36	2/8	421.97	4/4	421.56	2/8	421.25	1/2
#2	421.16	421.48	1/2	421.60	2/8	421.71	4/4	421.68	2/8	421.48	1/2
#3	421.30	421.62	1/2	421.54	2/8	421.65	4/4	421.58	2/8	421.42	1/2
#4	420.95	421.07	1/2	421.19	2/8	421.30	4/4	421.19	2/8	421.07	1/2

**WATERWAY INFORMATION**

Drainage Area = 11.19 sq. mi. Low Grade Elev. = 423.1 A1 Sta.

Flood	Freq. Yr.	Q C.F.S.	Opening Sq. Ft. Exist. Prop.	Natural H.W.E.	Head-Ft. Exist. Prop.	Headwater El. Exist. Prop.
Design	50	1356	323 387	420.7	1.75	420.85 420.77
Base	100	1720	357 386	420.6	1.01	421.91 421.29
Overlapping						
Max. Calc.	500	2193	368 429	420.7	1.35	422.05 421.9



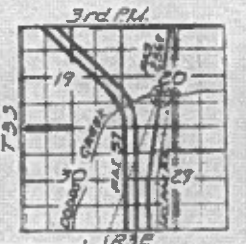
**PROFILE GRADE**

Note: Fiberglass pipe shall conform to ASTM D2196 with short-time rupture strength hoop tensile stress of 30,000psi minimum

**PILE DATA**

Bent	#1	#2	#3	#4
Type	HP10x42	HP10x42	HP10x42	HP10x42
Capacity - Ton	43	37	37	43
Estimated Length - Feet	29.0	34.0	60.0	41.0
Number Required	7	7	7	7
Test Piles	-	-	-	-

\*\* Steel H-piles driven to refusal



**LOCATION SKETCH**

**CALCULATED WEIGHT OF STRUCTURAL STEEL**

Standard SB 3224	52,103 lbs
Standard SD 3201	2,331 lbs
Standard SD 3202	2,620 lbs
<b>Total</b>	<b>64,254 lbs</b>

**DESIGN SPECIFICATIONS**

1977 AASHTO B 1978 thru 1980 Interims  
 HS 20-44 Loading. Load Factor Design

**INDEX OF SHEETS**

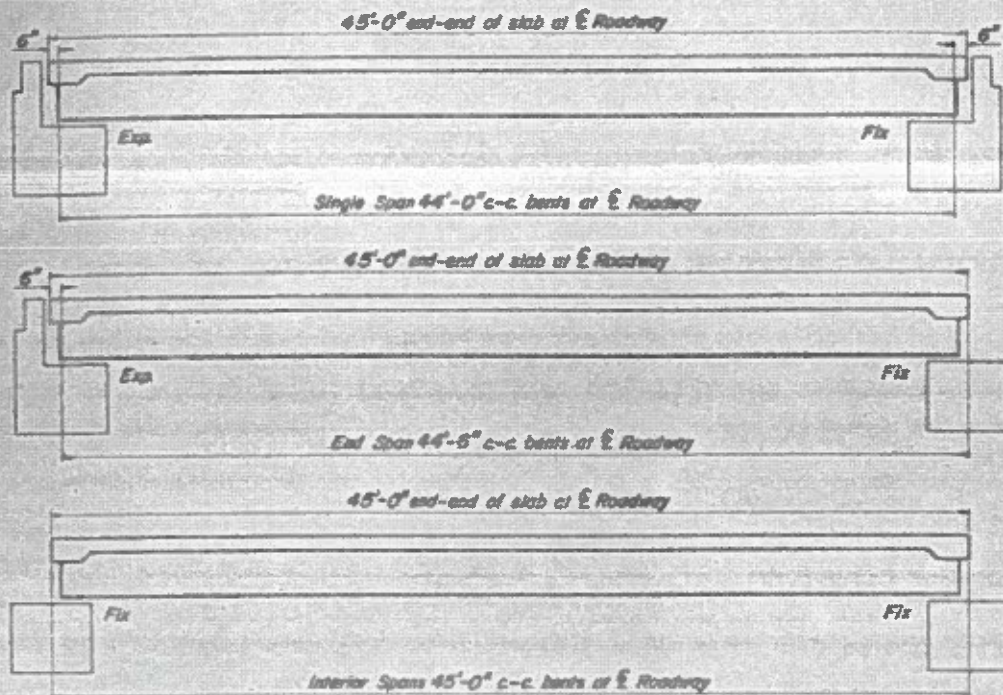
- General Plan & Elevation
  - Standard SB-3245
  - Standard SB-3224
  - Standard SA-3250
  - Standard SP-3250
  - Standard SD-3201
  - Standard SD-3202
  - Standard SE-3200
  - Stage Const. Details
  - Bar Splicer Details
  - Anchor Bolt Details for Bearings
- \*\*\* See sheet #11 for anchor bolt details.

**STANDARD BRIDGE**  
**STEEL BEAMS-32' ROADWAY**  
**GENERAL PLAN & ELEVATION**  
 ILLINOIS ROUTE 37  
**OVER DODDS CREEK**  
 RT. EAS.2869 SEC. 1-BR  
 JEFFERSON COUNTY  
 STATION 206+48.25

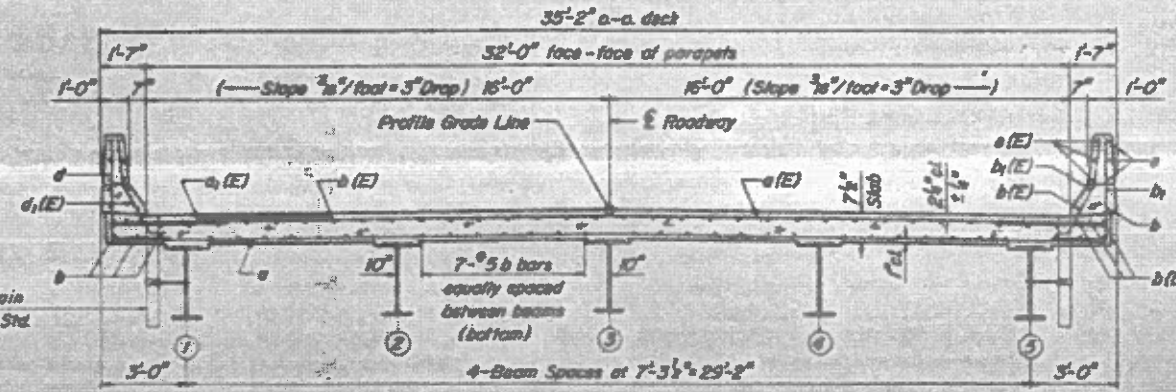
**RIPPRAP ANCHOR DETAIL**  
 SGP-3 (7-1-81) AFS BK. no. DR  
 Department of Transportation  
 APPROVED: [Signature]  
 Engineer of Structures

STATION 206+48.25  
 DODDS CREEK  
 BUILT 198  
 F.A. RT. 2861 SEC. 1-BR  
 F.A. PROJ. 885-2869(10)  
 LOADING HS20  
 STR. NO. 041-0097

**LETTERING FOR NAME PLATE**  
 Locate Name Plate at  
 Corner of Bridge (See Standard 2/13)

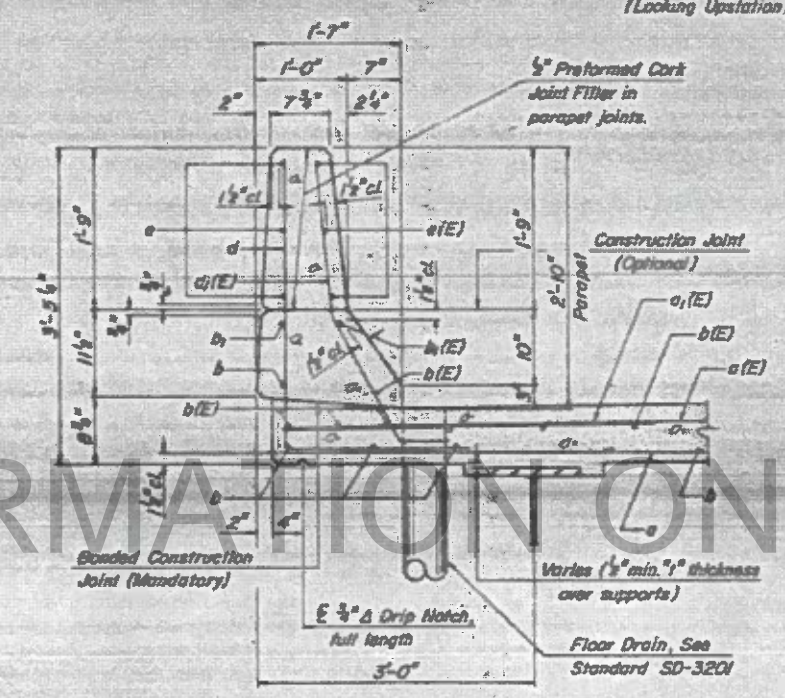


TYPICAL ELEVATIONS

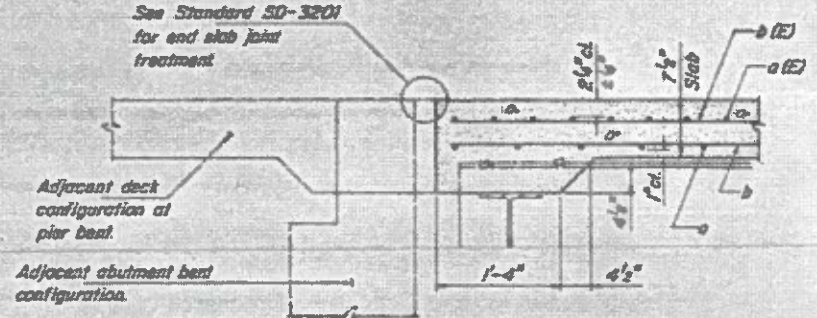


CROSS SECTION  
(Looking Upstation)

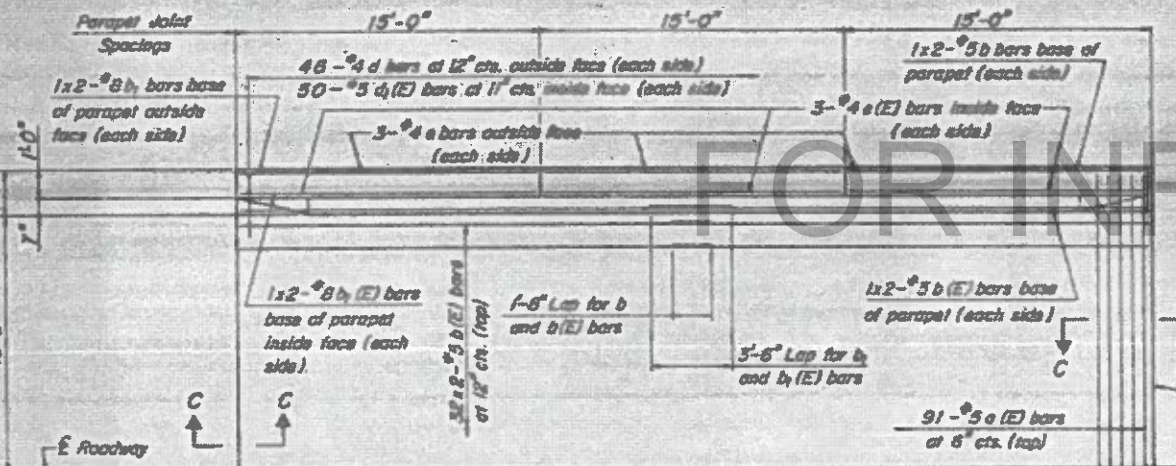
For Floor Drain Details, See Std. SD-3201



PARAPET SECTION



SECTION C-C



PLAN

BAR LIST FOR ONE SPAN

Bar	No.	Size	Length	Shape
a	64	#5	34'-7"	—
a1(E)	91	#5	34'-7"	—
a1(E)	92	#6	4'-0"	—
b	72	#5	25'-2"	—
b1(E)	80	#5	25'-2"	—
b2	4	#8	24'-1"	—
b2(E)	4	#8	24'-1"	—
d	92	#4	5'-2"	—
d1(E)	100	#5	3'-1"	—
e	18	#4	14'-8"	—
e1(E)	18	#4	14'-8"	—

Reinforcement bars designated (E) shall be epoxy coated. See Special Provisions.

QUANTITIES FOR ONE SPAN

Class X Concrete	48.3	Cu. Yds.
Reinforcement Bars	4800	Lbs.
Rain Bars (Epoxy Coated)	6610	Lbs.
Floor Drains	4	Each
Protective Coat	197.9	Sq. Yds.

DESIGN STRESSES

$f_c = 3,500$  psi  
 $f_y = 60,000$  psi

STEEL BEAM BRIDGES  
SUPERSTRUCTURE

32' RDWY.	45' SPAN	0° SKEW
STANDARD SS-3245		

Illinois Department of Transportation  
APPROVED JULY 1, 1992  
Engineer of Bridges and Structures  
APPROVED JULY 1, 1992  
Engineer of Design

Bars indicated thus; 28x2-#5 etc. indicates 28 lines of bars with 2 lengths per line.

METHOD FOR DETERMINING FILLET HEIGHT "Y"

After all structural steel has been erected, elevations of the top flanges of each beam shall be taken at intervals not to exceed 10 feet. From these elevations, subtract the increment of deflection for these points determined from the "Dead Load Deflection Diagram". The elevation so attained subtracted from the theoretical top of slab elevations over each beam minus the slab thickness equals the fillet height "Y" above the top of the beam.

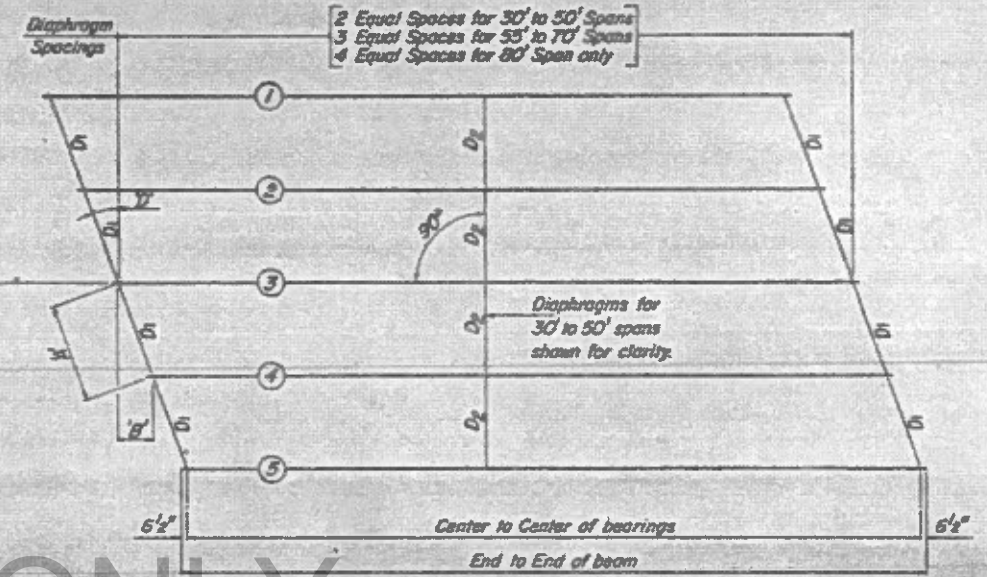
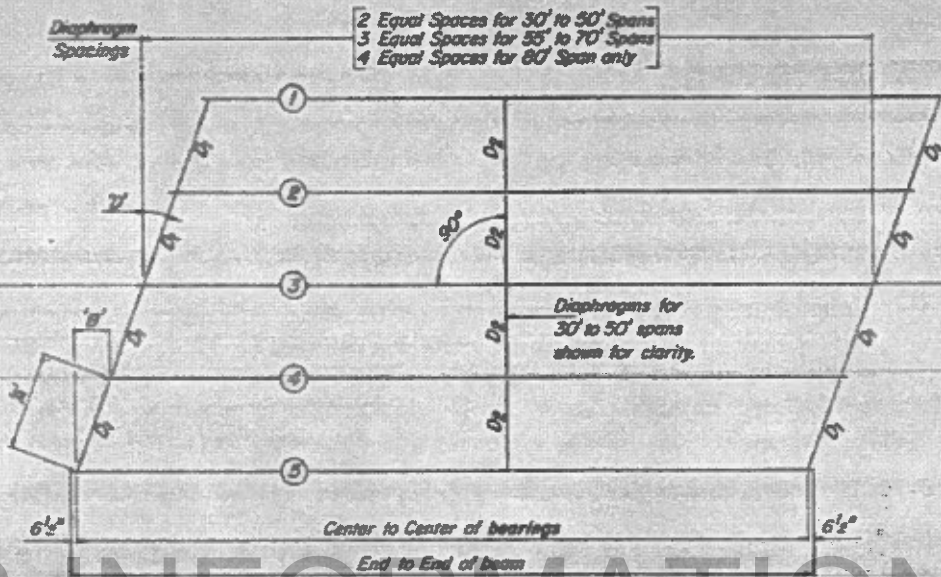
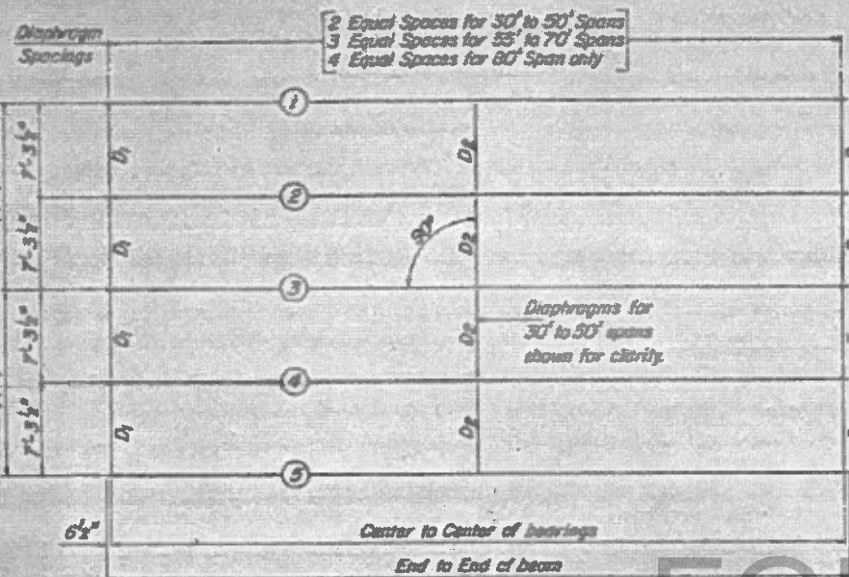
FILLET "Y" AT EXT BEAMS

5" Cheeks are optional where beams have shear connectors.

FILLET "Y" AT INT BEAMS

See Steel Framing Standards for Dead Load Deflection Diagram.

Span	Beam Size	Values for 'S'		Ctr. - Ctr. Bearings	End-End Beam	No. of Diaphragms		Stud Shear Connector Spacings					Studs Per Line	Total Studs	Deflections			Calculated Weight by 'D'						Bearing Type		
		Exp	Fixed			a	b	c	d	e	1/4 Pl	1/2 Pl			3/4 Pl	0°	5°	10°	15°	20°	25°	30°	Exp	Fixed		
30'	W24x50	3.055	2.850	25'-0"	25'-1"	8	4	10'-Spaced at 7"	8'-Spaced at 9"	4'-Spaced at 15"	8'-Spaced at 9"	10'-Spaced at 7"	2	410	.016	.023	.016	10948	10955	10977	11014	11069	11142	11238	EX-I	FX-I
35'	W24x62	3.109	2.864	33'-0"	34'-1"	8	4	13'-Spaced at 7"	7'-Spaced at 9"	6'-Spaced at 11"	7'-Spaced at 9"	13'-Spaced at 7"	2	490	.027	.038	.027	13515	13522	13544	13581	13635	13709	13806	EX-I	FX-I
40'	W24x62	3.109	2.864	36'-0"	36'-7"	8	4	10'-Spaced at 6"	12'-Spaced at 8"	12'-Spaced at 12"	12'-Spaced at 8"	10'-Spaced at 6"	2	370	.048	.067	.048	15065	15072	15094	15131	15185	15259	15355	EX-II	FX-I
45'	W24x76	3.124	2.879	43'-0"	44'-7"	8	4	13'-Spaced at 6"	15'-Spaced at 8"	10'-Spaced at 12"	15'-Spaced at 8"	13'-Spaced at 6"	2	670	.058	.082	.058	19701	19708	19730	19767	19821	19894	19990	EX-II	FX-II
50'	W24x94	3.157	2.912	48'-0"	49'-7"	8	4	17'-Spaced at 6"	7'-Spaced at 8"	26'-Spaced at 10"	7'-Spaced at 8"	17'-Spaced at 6"	2	750	.071	.099	.071	26016	26023	26045	26082	26136	26210	26306	EX-III	FX-II
55'	W24x117	3.153	2.908	53'-0"	54'-7"	8	8	17'-Spaced at 6"	18'-Spaced at 8"	18'-Spaced at 8"	18'-Spaced at 8"	17'-Spaced at 6"	2	890	.081	.113	.081	35259	35267	35288	35325	35379	35453	35549	EX-III	FX-II
60'	W24x131	3.171	2.926	58'-0"	59'-7"	8	8	18'-Spaced at 6"	20'-Spaced at 8"	20'-Spaced at 8"	20'-Spaced at 8"	18'-Spaced at 6"	2	970	.102	.143	.102	42320	42327	42348	42385	42439	42513	42608	EX-IV	FX-III
70'	W24x162	3.214	2.969	68'-0"	69'-7"	8	8	27'-Spaced at 7"	13'-Spaced at 9"	17'-Spaced at 12"	13'-Spaced at 9"	27'-Spaced at 7"	2	980	.152	.215	.152	59574	59581	59603	59640	59694	59767	59865	EX-IV	FX-III

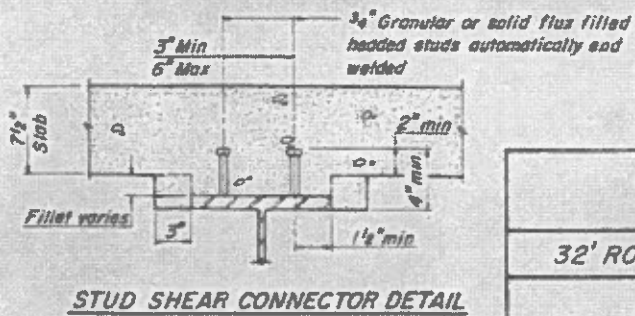
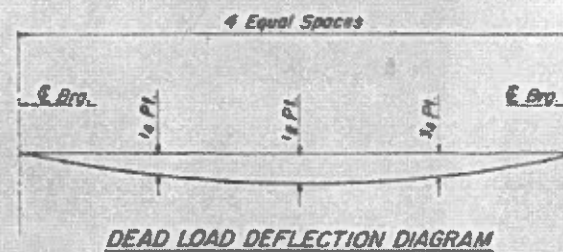
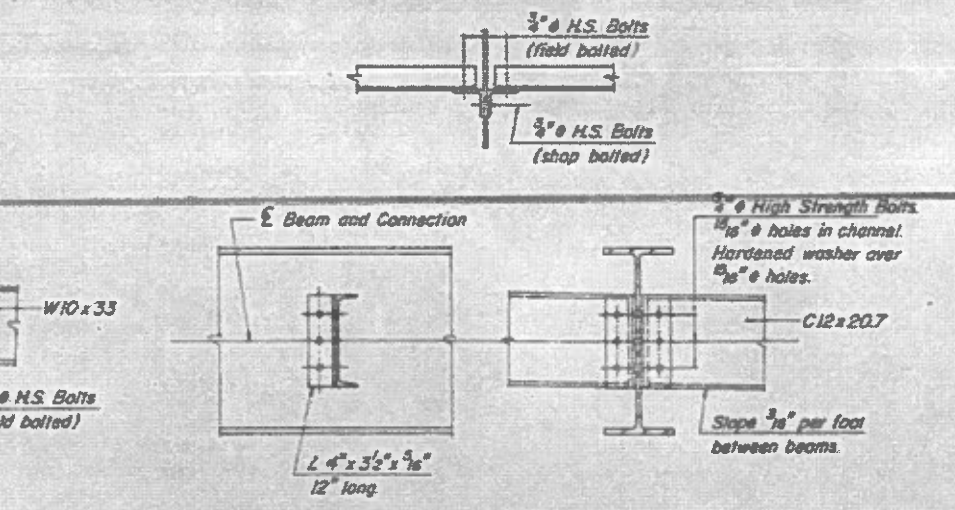
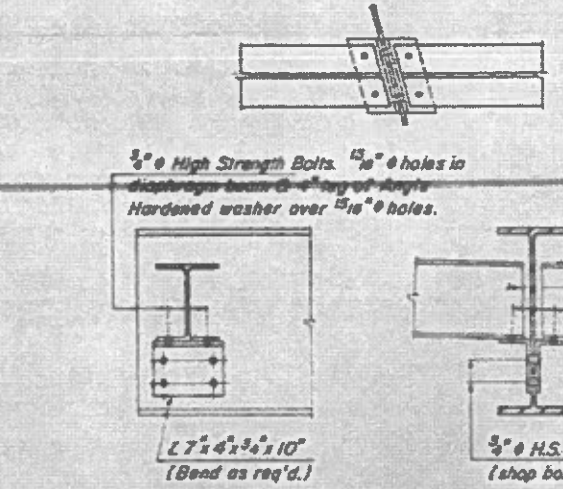
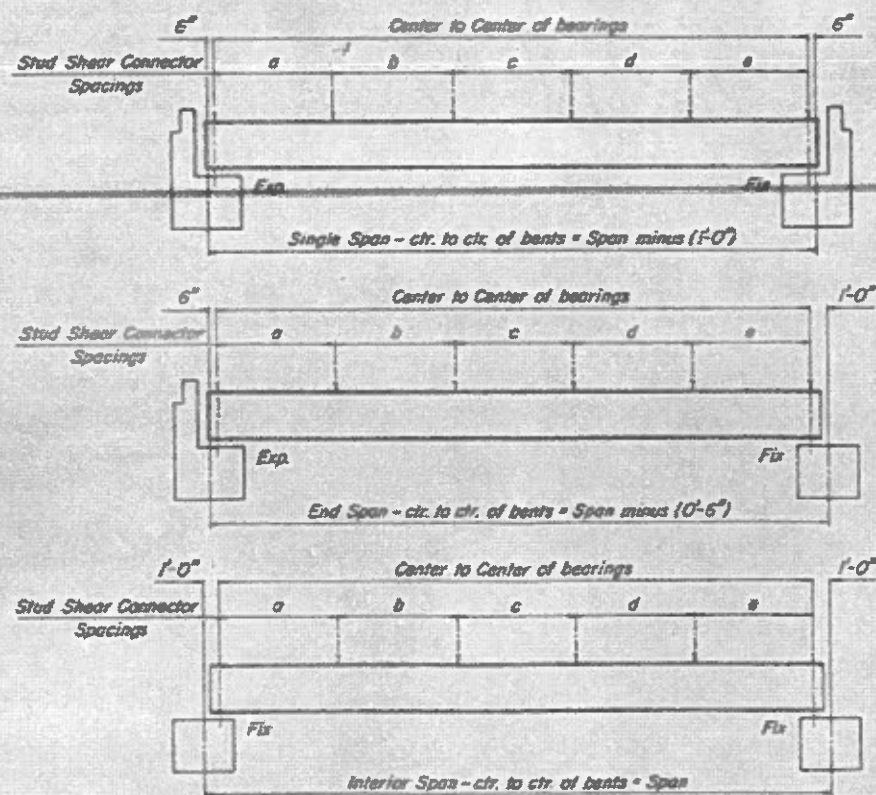


**DIMENSION 'A' & 'B'**

D'	A'	B'
5°	7'-5 1/8"	7'-8"
10°	7'-4 1/2"	7'-3 3/8"
15°	7'-6 3/8"	7'-11 1/8"
20°	7'-9 1/2"	8'-7 3/8"
25°	8'-0 3/4"	8'-4 13/16"
30°	8'-5 1/4"	8'-2 1/2"

**DESIGN STRESSES**

$f_y = 50,000$  psi  
 $n = 9$  (Composite)



**STEEL BEAM BRIDGES  
 STEEL BEAM DETAILS**

32' ROADWAY | W24 BEAMS

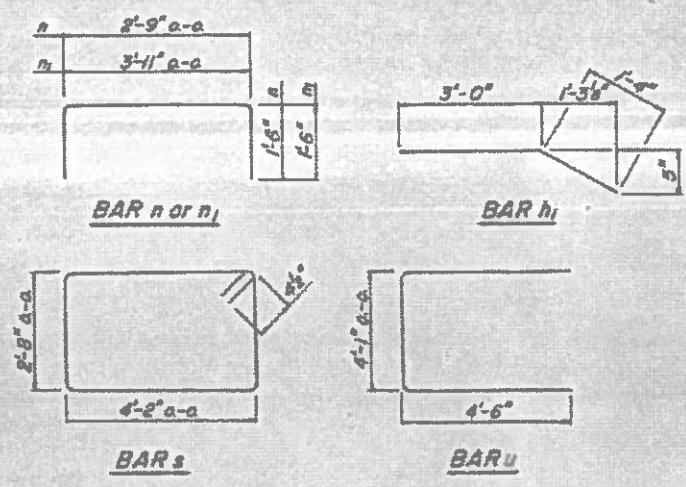
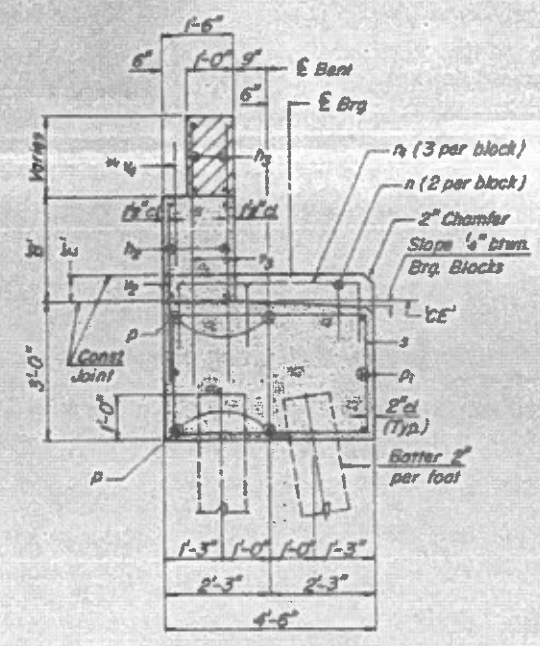
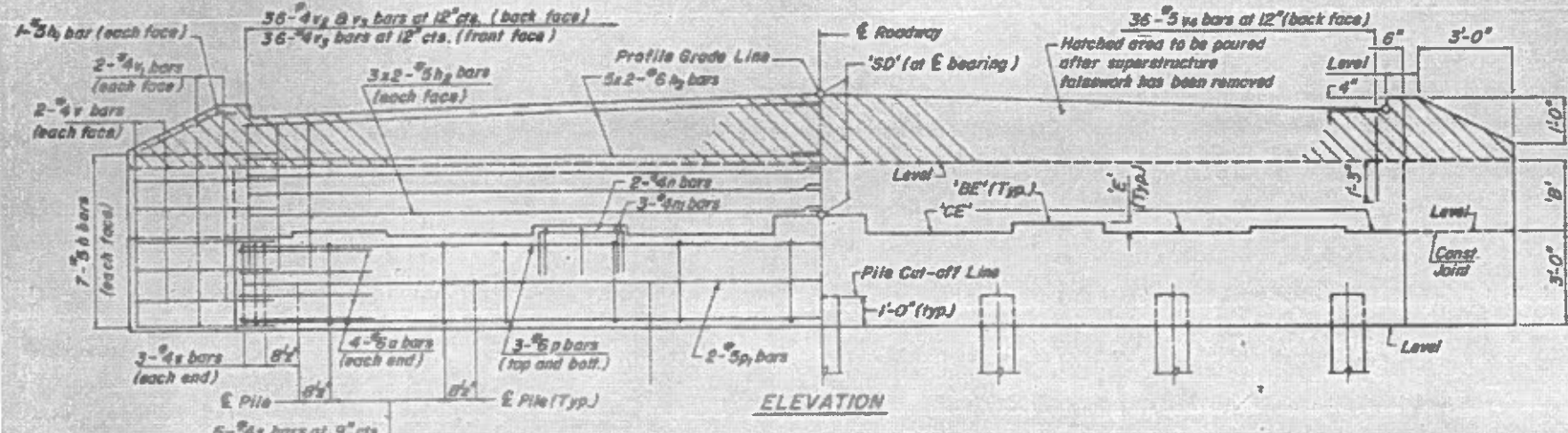
STANDARD SB-3224

Illinois Department of Transportation

APPROVED JULY 1, 1981

APPROVED JULY 1, 1981

ISSUED 7-1-80



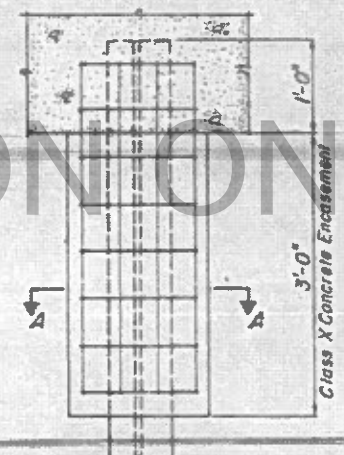
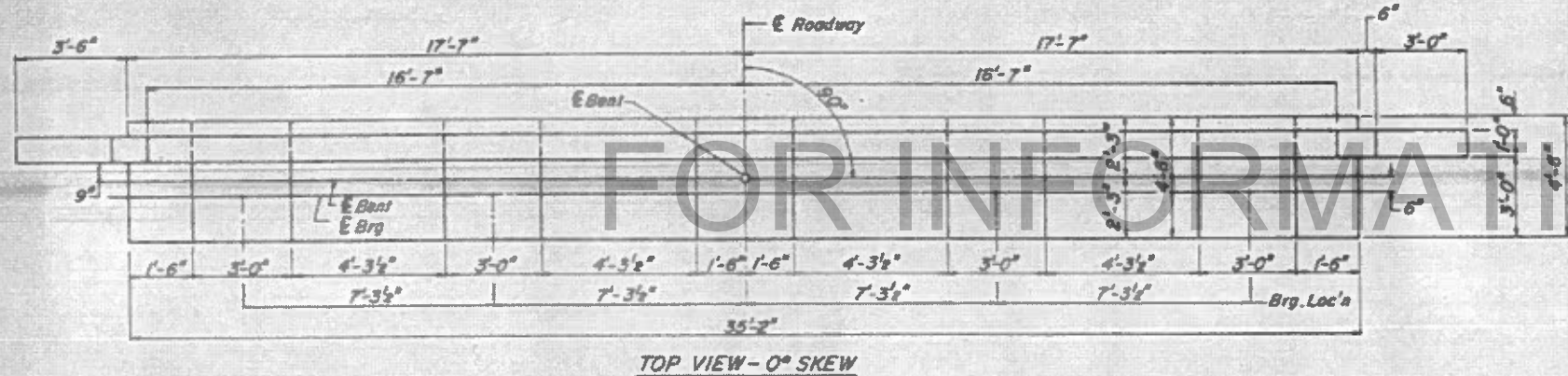
**DIMENSION 'B'**

Beam Size	'B'
W24	1'-8"
W27	1'-10"
W30	2'-1"
W33	2'-4"

**MAXIMUM PILE LOADS**

Span	Tons
30'	40
35'	41
40'	42
45'	43
50'	45

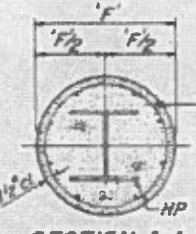
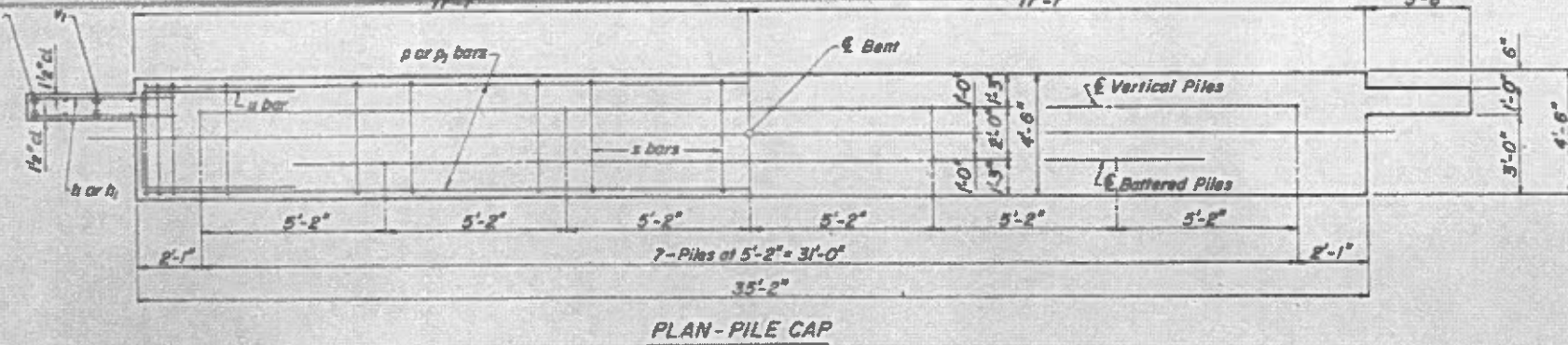


**ANCHOR BOLT LOCATIONS**

Bearing Type	'd'
FX-I	6"
FX-II	7"
FX-III	7 1/4"
FX-IV	8 1/2"
FX-V	10"

**BAR LIST FOR ONE ABUTMENT**

Bar	No.	Size	Length	Shape
n	28	#5	5'-3"	
n <sub>1</sub>	4	#5	4'-4"	
h <sub>1</sub>	12	#5	18'-4"	
h <sub>2</sub>	10	#6	18'-5"	
p	10	#4	5'-9"	
p <sub>1</sub>	15	#4	6'-1"	
s	6	#6	34'-10"	
s <sub>1</sub>	2	#5	34'-10"	
u	42	#4	14'-5"	
v	9	#6	3'-2"	
v <sub>1</sub>	8	#4	6'-2"	
v <sub>2</sub>	8	#4	6'-10"	
v <sub>3</sub>	36	#4	4'-0"	
v <sub>4</sub>	72	#4	5'-11"	
v <sub>5</sub>	36	#5	3'-2"	



Welded wire fabric 6x6-W40xW40 weighing 58 /100 sq ft. The cost of Class X Concrete Encasement and W.W. Fabric is incidental to the cost of furnishing piles. Forms for encasement may be omitted when soil conditions will permit.

**PILE 'F'**

PILE	'F'
HP 8	1'-6"
HP 10	1'-9"
HP 12	2'-0"

**DETAIL OF 'H' PILE ENCASEMENT**

**QUANTITIES FOR ONE ABUTMENT**

Beam Size	Item	Quantity
W24	Class X Concrete	25.4 Cu. Yds.
W27	Class X Concrete	25.9 Cu. Yds.
W30	Class X Concrete	26.4 Cu. Yds.
W33	Class X Concrete	27.0 Cu. Yds.
ALL	Reinforcement Bars	2310 Lbs.

- NOTES**
1. Reinforcement bars shall conform to A.A.S.H.T.O. M-31 or M-53 Grade 60.
  2. Space reinforcement in cap to miss anchor balls.
  3. The designation "4 x 2'-5" etc." indicates 4 lines of bars with 2 lengths per line.
  4. Pour Brg. Seat Blocks monolithically with cap.
  5. For Elevations 'BE' and 'CE', and dimension 'E' See General Plan and Elevation sheet. For dimension 'SD' see Steel Beam Details Standards.

**DESIGN STRESSES**  
 f<sub>c</sub> = 3,500 p.s.i.  
 f<sub>y</sub> = 60,000 p.s.i.

**STEEL BEAM BRIDGES ABUTMENT CAP**

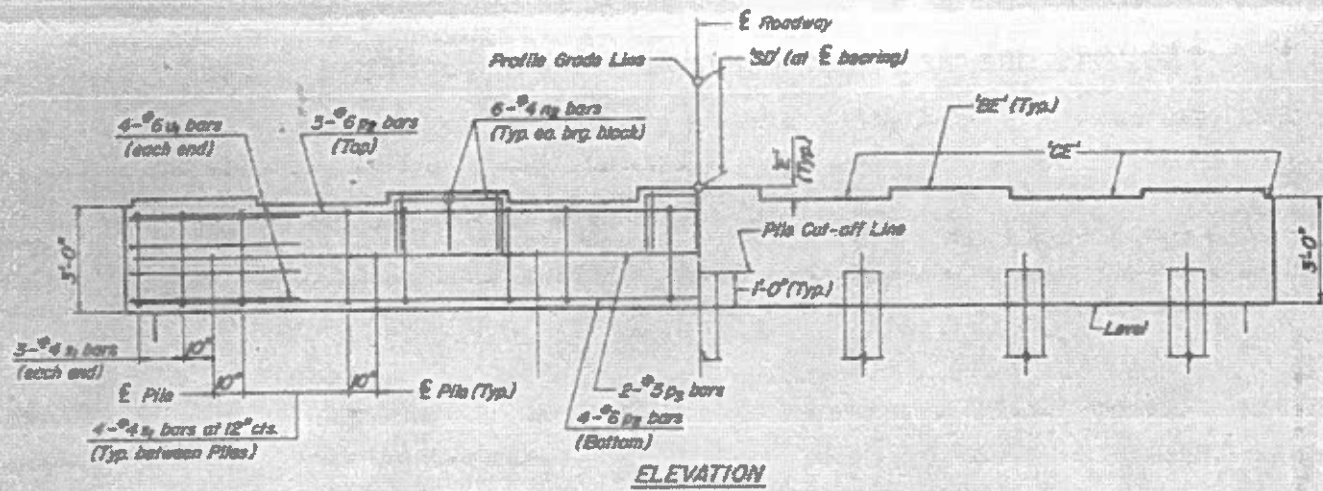
32' RDWY.	SPANS 30'-50'	'D'=0°
STANDARD SA-3250		

Illinois Department of Transportation

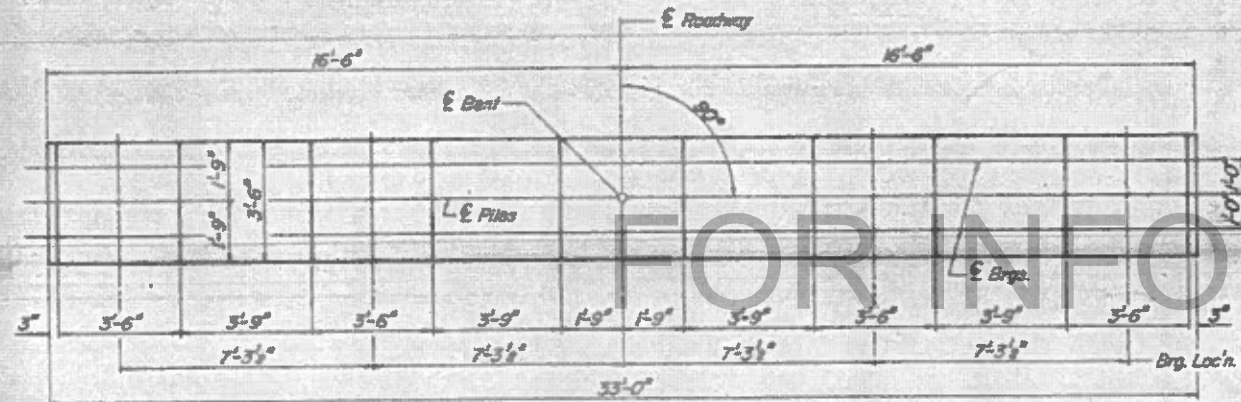
APPROVED: *[Signature]* MAY 1, 1981  
 Engineer of Bridges and Structures

APPROVED: *[Signature]* MAY 1, 1981  
 Engineer of Design

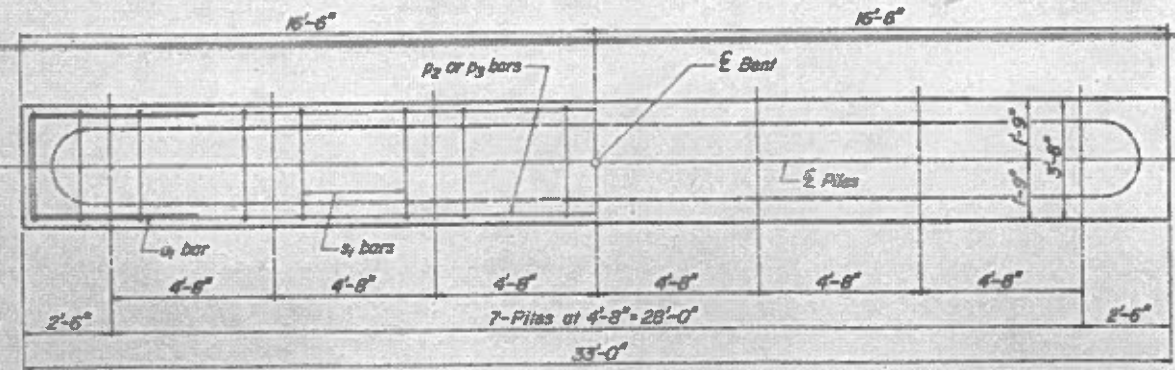
**Note:**  
When the PIER FOOTING AND STEM standards are used, the piles in the cap shall be omitted and the spacing of the  $s_1$  bars shall remain as shown.



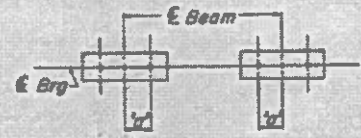
ELEVATION



TOP VIEW - 0° SKEW

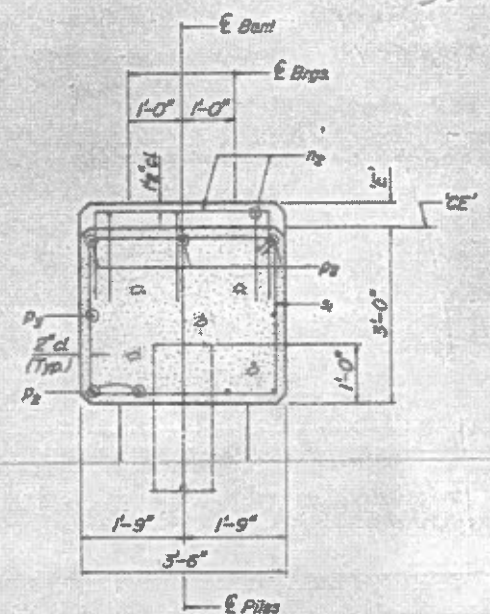


CAP PLAN

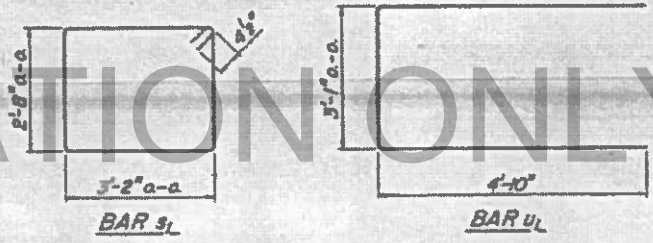


ANCHOR BOLT LOCATIONS

Bearing Type	'd'
FX-I	6"
FX-II	7"
FX-III	7 1/2"
FX-IV	8 1/2"
FX-V	10"



SECTION THRU PIER  
(At Right Angles)



MAXIMUM PILE LOADS (Tons) \*

Span	'E.H'		
	5'-9"	10'-14"	15'-19"
30'	30	33	36
35'	33	35	38
40'	35	38	41
45'	37	40	43
50'	40	43	45

\* 'E.H' - Encasement Height, see Pile Encasement Wall Standard  
Span - Longest of Either Span Supported by the Pier.

\* Maximum Pile Loads apply only for Pile Encasement Wall. For pile loads with Pier footing and Stem, see Pier Footing and Stem Standards.

DESIGN STRESSES

$f_c = 3,500$  p.s.i.  
 $f_y = 60,000$  p.s.i.

BAR LIST FOR ONE PIER

Bar	No.	Size	Length	Shape
$m_2$	30	#4	5'-11"	U
$p_2$	7	#6	32'-8"	—
$p_3$	2	#5	32'-8"	—
$s_1$	30	#4	12'-5"	U
$u_1$	8	#6	12'-9"	U

QUANTITIES FOR ONE PIER

Class 'X' Concrete	13.8	Cu. Yds.
Reinforcement Bars	930	Lbs.

NOTES

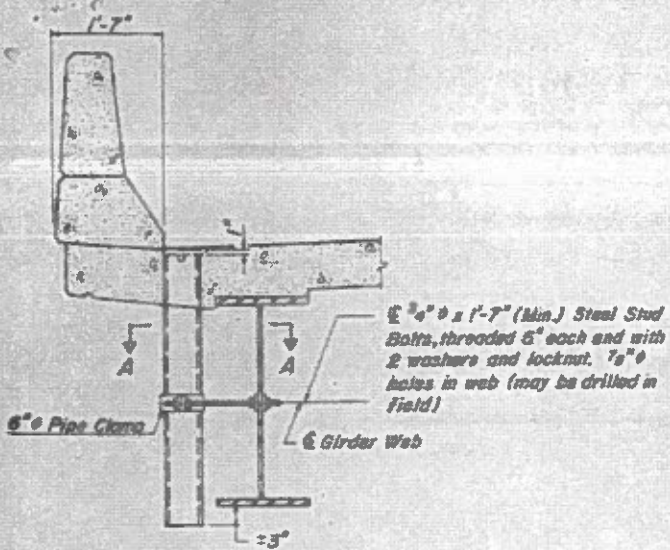
1. Reinforcement Bars shall conform to A.A.S.H.T.O. M-31 or M-53, Grade 60.
2. Space reinforcement in cap to miss anchor bolts.
3. All edges shall have standard 1/4" chamfers.
4. Pour Bearing Blocks monolithically with cap.
5. For Elevations 'BE' and 'CE' and dimension 'E' see General Plan and Elevation sheet. For dimension 'SD' see Steel Beam Details Standards.

STEEL BEAM BRIDGES  
PIER CAP

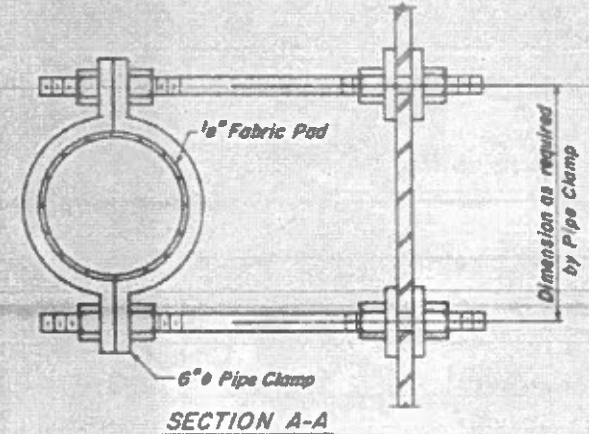
32' RDWY.	SPANS 30'-50'	0°-0°
-----------	---------------	-------

STANDARD SP-3250

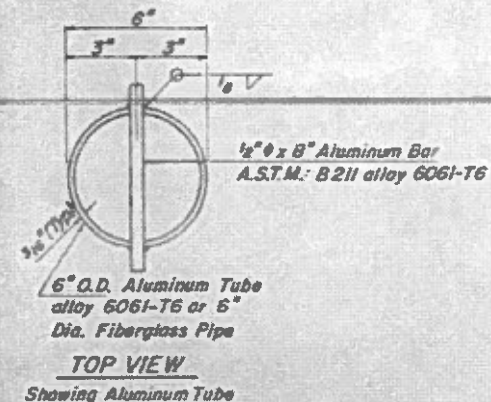
Illinois Department of Transportation  
APPROVED JULY 1, 1981  
Engineer of Bridges and Structures  
APPROVED JULY 1, 1981  
Engineer of Design



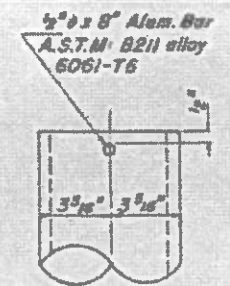
**SECTION AT PARAPET**



**SECTION A-A**

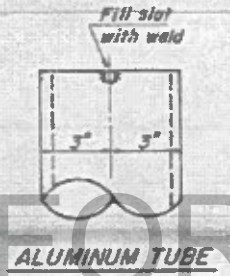


**TOP VIEW**  
Showing Aluminum Tube

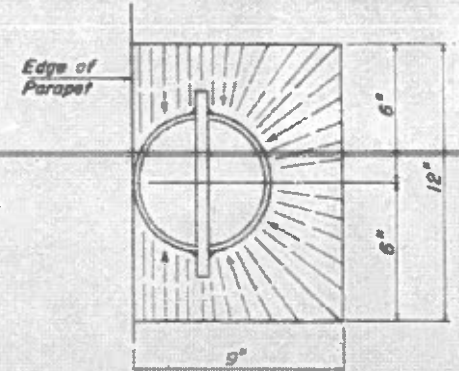


**FIBERGLASS PIPE**

Note: The surface of the Fiberglass pipe shall be free of bond inhibiting agents.



**ALUMINUM TUBE**

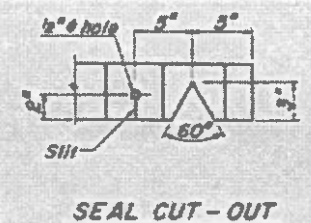


**DECK DRAIN PLAN**  
(Slopes to Drain)

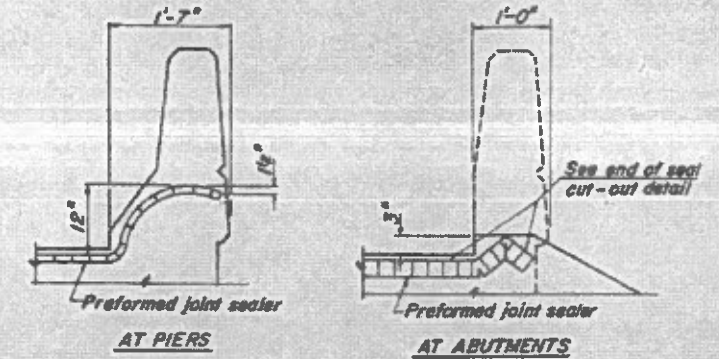
**NOTE**

Fiberglass pipe shall conform to ASTM D2996, Designation Code RTRP-11AE-5112. Pipes with Glass Cor F liner are acceptable. The exterior surfaces of all Floor Drains, including Clamp Brackets, shall be painted with the Basic Lead Silico Chromate painting specified for Structural Steel. The exterior surfaces of the Aluminum pipe shall be cleaned and given a washcoat pretreatment in accordance with Steel Structural Painting Council's Spec. SSPC-SPI B SSPC-PT3 prior to painting.

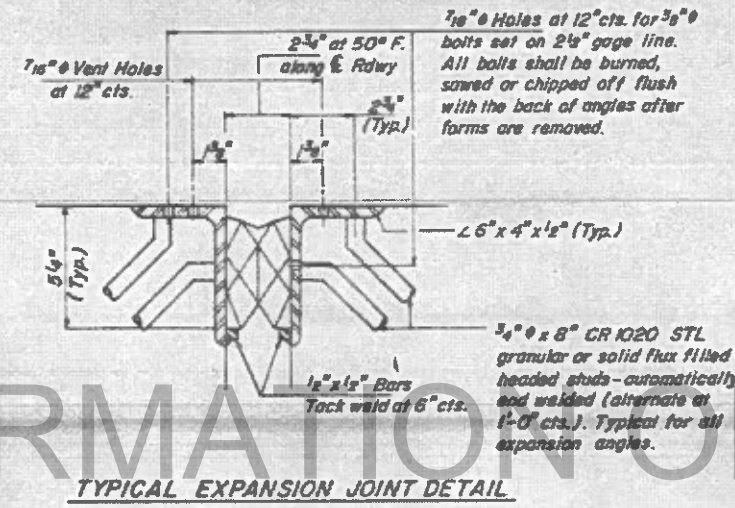
Illinois Department of Transportation  
 APPROVED                      JULY 1, 1988  
 Engineer of Bridges and Structures  
 APPROVED                      JULY 1, 1988  
 Engineer of Design



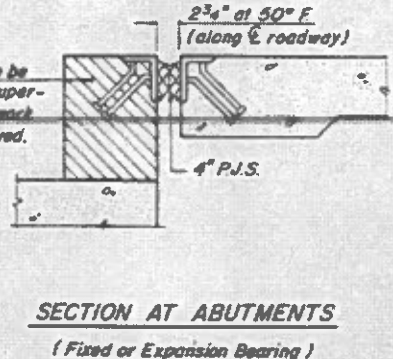
**SEAL CUT-OUT**



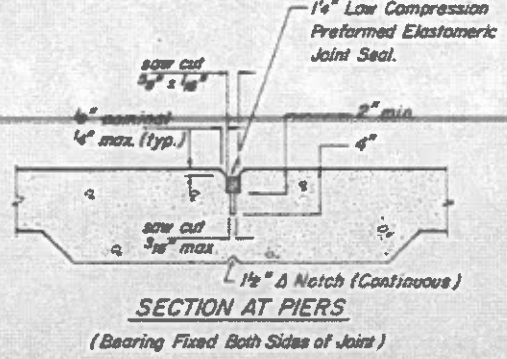
**TYPICAL END TREATMENTS**



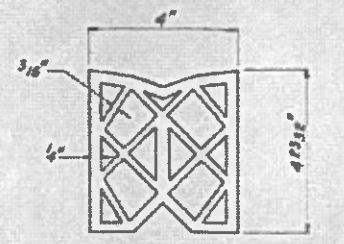
**TYPICAL EXPANSION JOINT DETAIL**



**SECTION AT ABUTMENTS**  
(Fixed or Expansion Bearing)



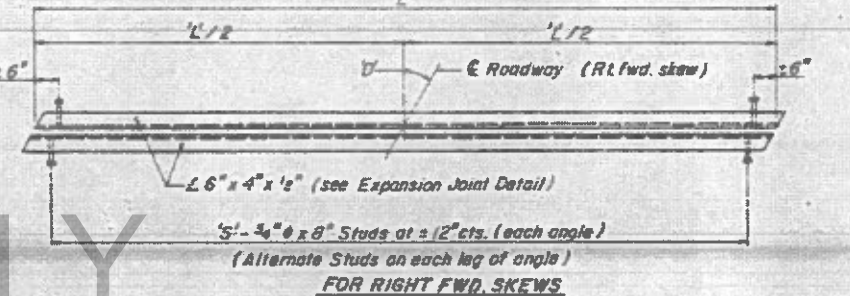
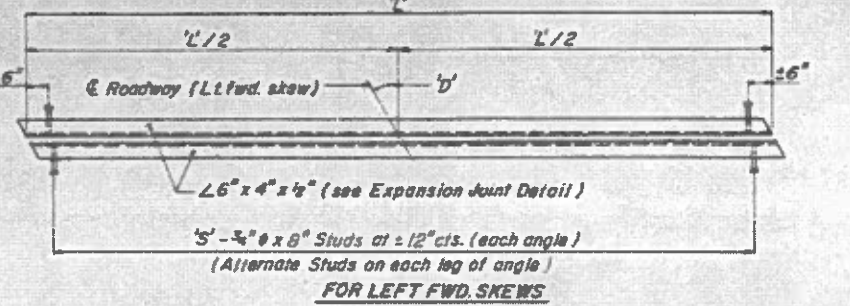
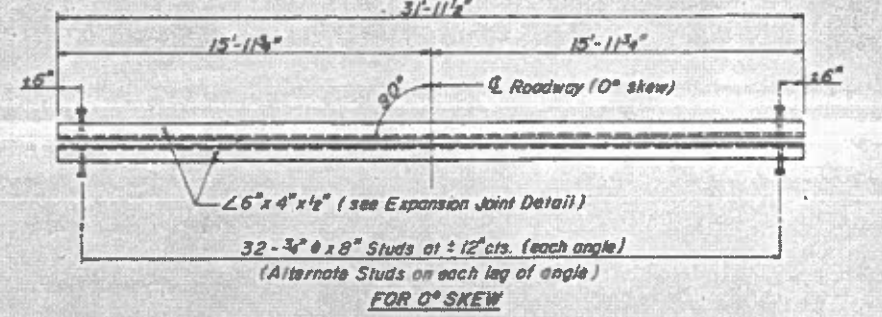
**SECTION AT PIERS**  
(Bearing Fixed Both Sides of Joint)



**PREFORMED JOINT SEALER 4\"/>
 (AT ABUTMENTS)**

**NOTES**

The 6" x 4" x 1/2" shall be fabricated to fit crown of roadway.  
 The Preformed Joint Sealer shall be paid for by the Unit Price per Lin. Ft.  
 Cost of 1/4" Low Compression Preformed Elastomeric Joint Seal is incidental to cost of Class 'X' Concrete.



**TYPICAL PLANS - EXPANSION ANGLES**

**CALCULATED WEIGHT**

θ	Lbs.
0°	2331
5°	2340
10°	2369
15°	2412
20°	2480
25°	2570
30°	2692

(Two abutments - 4 angles) (including studs)

**STUD NUMBER 'S'**

θ	S'
0°	32
5°	32
10°	33
15°	33
20°	34
25°	35
30°	37

(One angle only)

**DIMENSION 'L'**

θ	L'
5°	32'-1"
10°	32'-5 3/8"
15°	33'-1"
20°	34'-0 1/8"
25°	35'-3 1/8"
30°	36'-10 3/8"

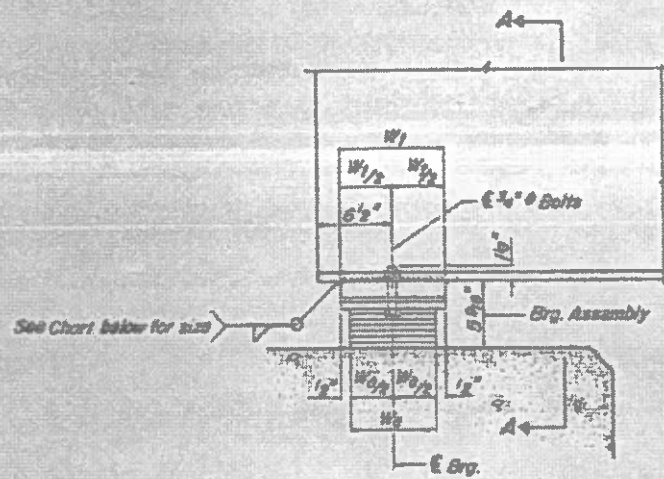
**QUANTITIES FOR ONE EXP. JOINT (BY SKEW)**

θ	Preformed Joint Seal 4"	35 Lin. Ft.
5°	Preformed Joint Seal 4"	35 Lin. Ft.
10°	Preformed Joint Seal 4"	36 Lin. Ft.
15°	Preformed Joint Seal 4"	36 Lin. Ft.
20°	Preformed Joint Seal 4"	37 Lin. Ft.
25°	Preformed Joint Seal 4"	39 Lin. Ft.
30°	Preformed Joint Seal 4"	40 Lin. Ft.

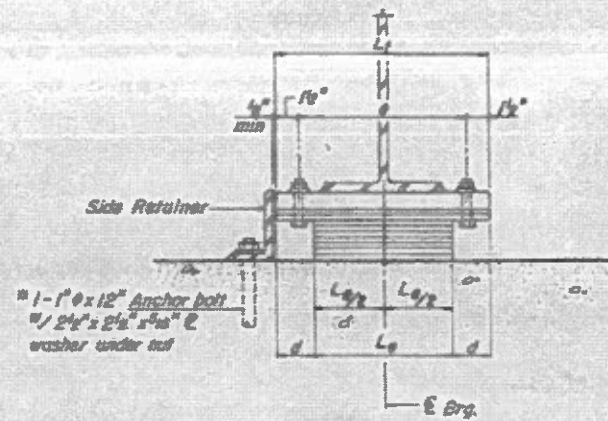
**STEEL BEAM BRIDGES**

**DRAIN & JOINT DETAILS**

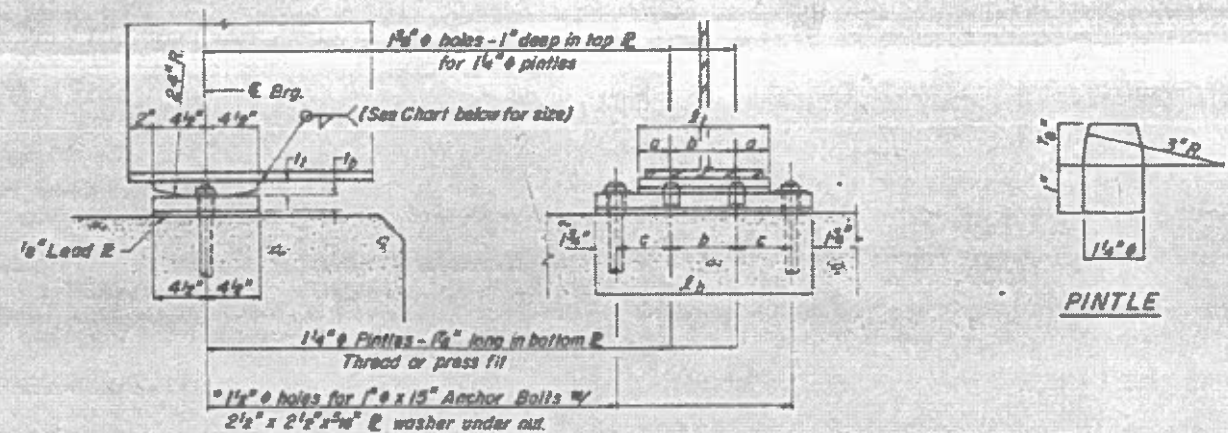
**STANDARD SD-3201**



ELEVATION

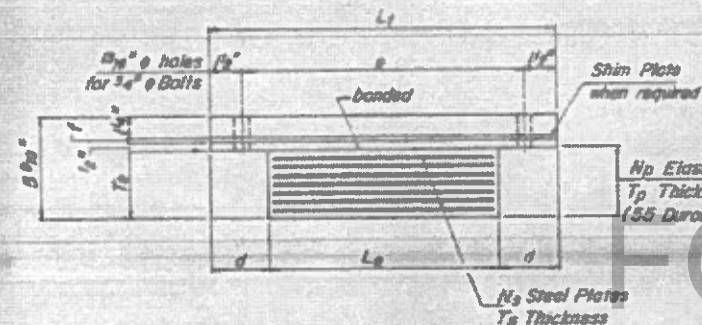


SECTION A-A

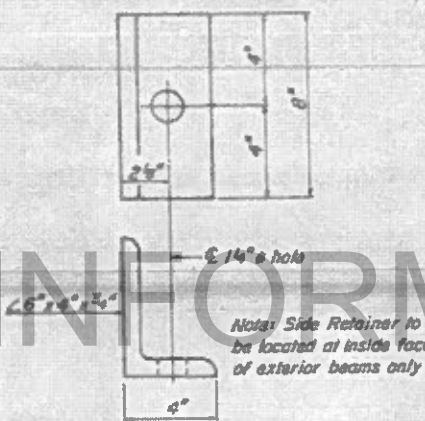


ELEVATION

SECTION



BEARING ASSEMBLY



SIDE RETAINER

Brg. Type	f <sub>1</sub>	f <sub>2</sub>	f <sub>3</sub>	h <sub>1</sub>	h <sub>2</sub>	a	b	c	Tot. Weight**
FX-I	8"	15 1/2"	5/8"	1 1/4"	1 1/4"	2"	4"	4"	94 Lbs.
FX-II	10"	17 1/2"	5/8"	1 1/4"	1 1/4"	2 1/2"	5"	4 1/2"	108 Lbs.
FX-III	11 1/2"	19"	5/8"	1 1/4"	1 1/4"	3"	5 1/2"	5"	118 Lbs.
FX-IV	13"	20 1/2"	3/4"	1 1/4"	1 1/4"	3 1/2"	6 1/2"	5 1/2"	129 Lbs.
FX-V	16"	23 1/2"	3/4"	1 1/4"	1 1/4"	4"	8"	6"	149 Lbs.

\*\*Total weight of one assembly includes Top Plate, Bottom Plate, Anchor Bolts, Plate Washers, and Lead Plate.

NOTE: Anchor Bolts at fixed Brgs. may be built into the masonry or drilled and grouted into place after beams are set.

TYPE FX FIXED BEARINGS

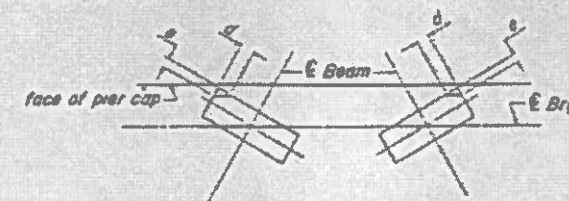
Brg. Type	L <sub>2</sub>	W <sub>2</sub>	L <sub>1</sub>	W <sub>1</sub>	f <sub>1</sub>	f <sub>2</sub>	N <sub>2</sub>	T <sub>2</sub>	N <sub>1</sub>	T <sub>1</sub>	d	e	f	Std. Wt.	Tapered Top E
EX-I	10"	7"	18"	8"	5/8"	3/8"	8	7	3 1/2"	4"	15"	3/8"	3/8"	66 lbs.	Grades > 4.0%
EX-II	12"	7"	18"	8"	5/8"	3/8"	8	7	3 1/2"	3"	15"	3/8"	3/8"	66 lbs.	Grades > 4.0%
EX-III	12"	9"	18"	10"	5/8"	3/8"	8	7	3 1/2"	3"	15"	3/8"	3/8"	76 lbs.	Grades > 2.5%
EX-IV	12"	9"	19"	10"	5/8"	3/8"	8	7	3 1/2"	3 1/2"	16"	3/8"	3/8"	80 lbs.	Grades > 2.5%
EX-V	12"	9"	21"	10"	5/8"	3/8"	8	7	3 1/2"	4 1/2"	18"	3/8"	3/8"	89 lbs.	Grades > 2.5%
EX-VI	14"	10"	21"	11"	5/8"	3/8"	7	6	3 1/2"	3 1/2"	18"	-	-	85 lbs.	Grades > 2.0%

\* Note: After beams have been erected, holes for Side Retainers shall be drilled and Anchor Bolts grouted in place.

TYPE EX EXPANSION BEARINGS

NOTES

The calculated STL Wt., for the 1/4" plate and Shim E (when req'd.), is to be included with the calculated weight of Structural Steel.  
Provide Side Retainers, Plate washers, and Anchor Bolts of Expansion Abutments only. Cost is incidental.  
For grades greater than shown in table, the top plate of the brg. shall be tapered to match grade. Maintain 1/4" thickness at E of brg.



BEARING CLIP DIM. (Bottom Plate)

Bearing	d	e
FX-IV	7/8"	1/2"
FX-V	2 3/8"	1 1/2"

Clip plates for 'd's > 20"

STEEL BEAM BRIDGES

EXPANSION AND FIXED BEARINGS

STANDARD SD-3202

Illinois Department of Transportation

APPROVED JULY 1, 1938

APPROVED JULY 1, 1938

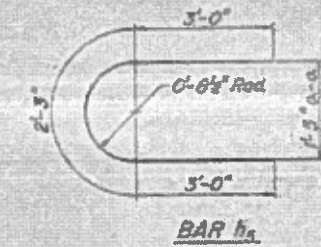
Engineer of Design

ISSUED 7-1-38

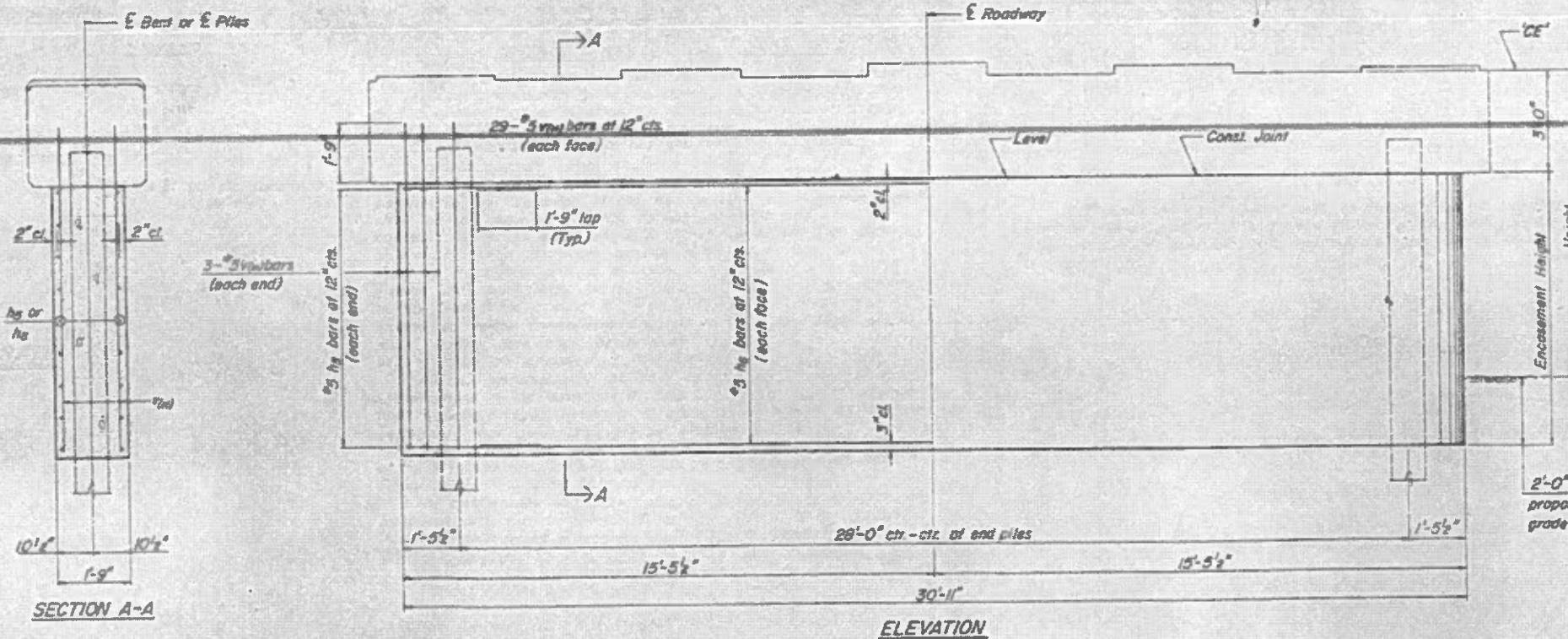
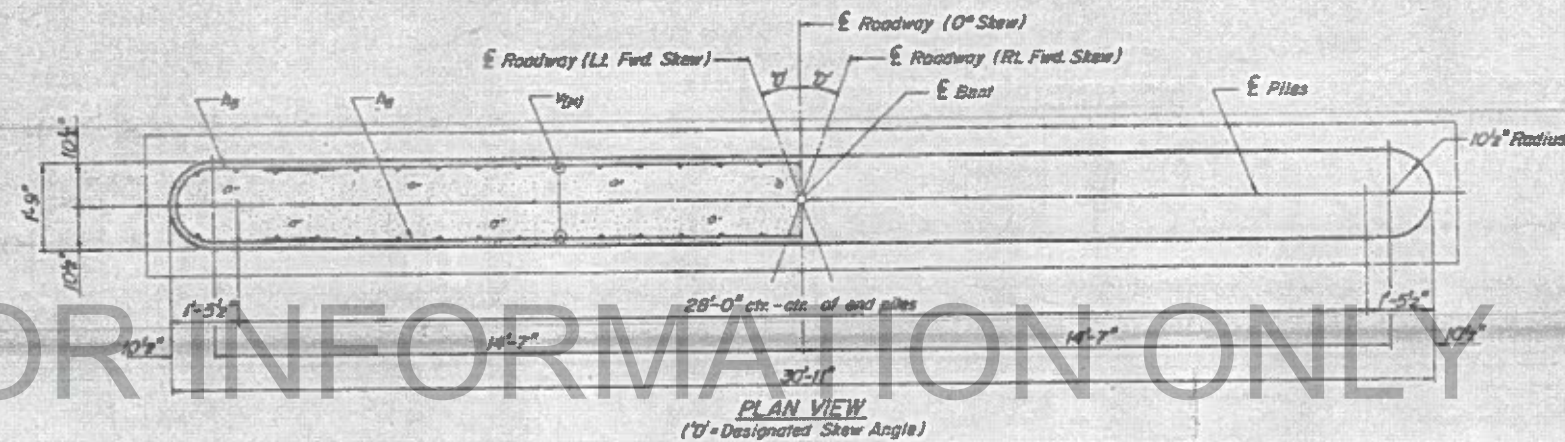


QUANTITIES FOR ONE ENCASEMENT

Height	Encasement Height	h <sub>16</sub> BARS		h <sub>18</sub> BARS		V <sub>10N</sub> BARS		Reinforcement Bars Pounds	Class X Concrete - Cubic Yards			
		Number	Size	Length	Number	Size	Length		h <sub>16</sub> Piles	M.H. Shell	h <sub>18</sub> Piles	M.H. Shell
6'	5'	12	#5	8'-3"	12	#5	26'-9"	870	9.9	8.9	9.9	8.6
7'	6'	14	#5	8'-3"	14	#5	26'-9"	1,010	11.9	10.7	11.9	10.3
8'	7'	16	#5	8'-3"	16	#5	26'-9"	1,150	13.9	12.4	13.9	12.0
9'	8'	18	#5	8'-3"	18	#5	26'-9"	1,290	15.8	14.2	15.8	13.7
10'	9'	20	#5	8'-3"	20	#5	26'-9"	1,430	17.8	16.0	17.8	15.5
11'	10'	22	#5	8'-3"	22	#5	26'-9"	1,570	19.8	17.8	19.8	17.2
12'	11'	24	#5	8'-3"	24	#5	26'-9"	1,710	21.8	19.5	21.8	18.9
13'	12'	26	#5	8'-3"	26	#5	26'-9"	1,850	23.8	21.3	23.8	20.6
14'	13'	28	#5	8'-3"	28	#5	26'-9"	1,990	25.7	23.1	25.7	22.3
15'	14'	30	#5	8'-3"	30	#5	26'-9"	2,130	27.7	24.9	27.7	24.0
16'	15'	32	#5	8'-3"	32	#5	26'-9"	2,270	29.7	26.6	29.7	25.8
17'	16'	34	#5	8'-3"	34	#5	26'-9"	2,410	31.7	28.4	31.7	27.5
18'	17'	36	#5	8'-3"	36	#5	26'-9"	2,550	33.7	30.2	33.7	29.2
19'	18'	38	#5	8'-3"	38	#5	26'-9"	2,690	35.6	32.0	35.6	30.9
20'	19'	40	#5	8'-3"	40	#5	26'-9"	2,830	37.6	33.7	37.6	32.6



FOR INFORMATION ONLY



**NOTE**  
Reinforcement bars shall conform to A.A.S.H.T.O. M-31 or M-53, Grade 60.

**DESIGN STRESSES**  
f<sub>c</sub> = 3,500 p.s.i.  
f<sub>y</sub> = 60,000 p.s.i.

2'-0" minimum below proposed channel grade line.

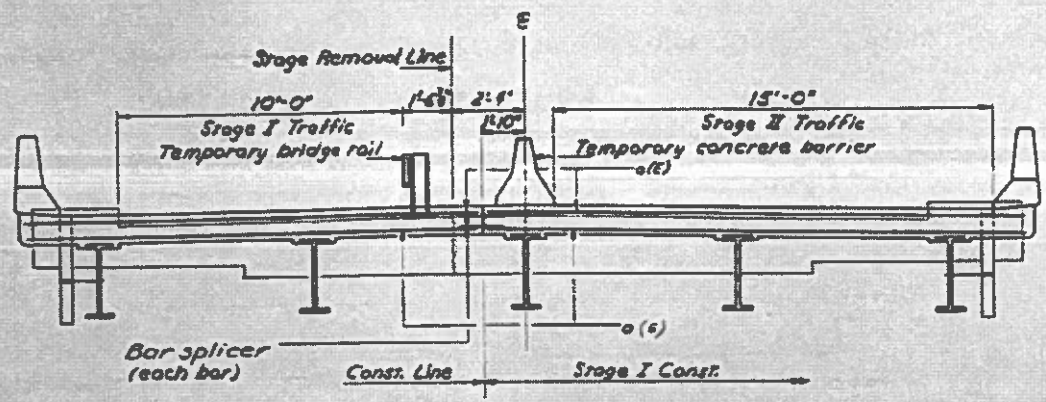
STEEL BEAM BRIDGES PILE ENCASEMENT WALL		
32' RDWY.	ALL SKEWS	ALL SPANS
STANDARD SE-3200		

Illinois Department of Transportation  
APPROVED JULY 1, 1961  
Engineer of Bridges and Structures  
APPROVED JULY 1, 1961  
Engineer of Design

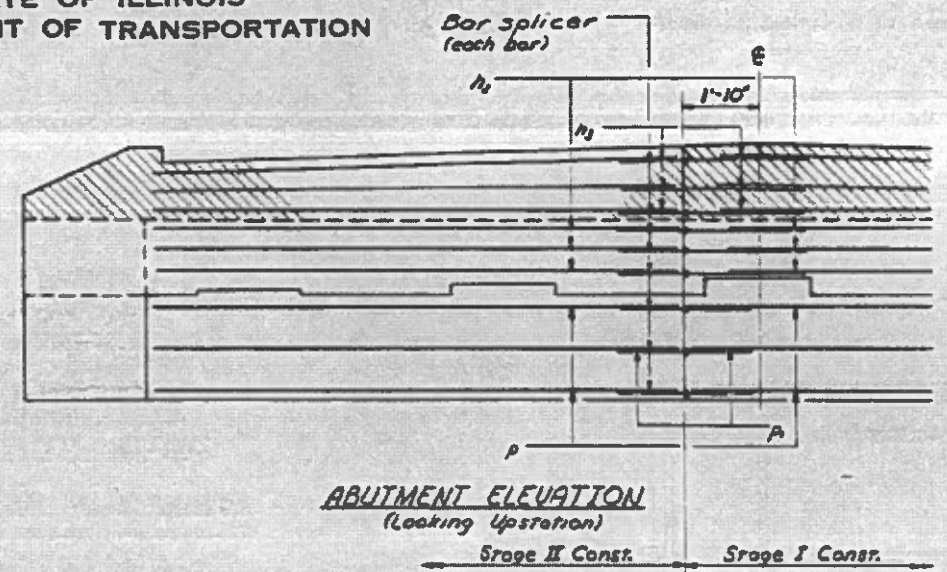
ISSUED 7-1-61

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

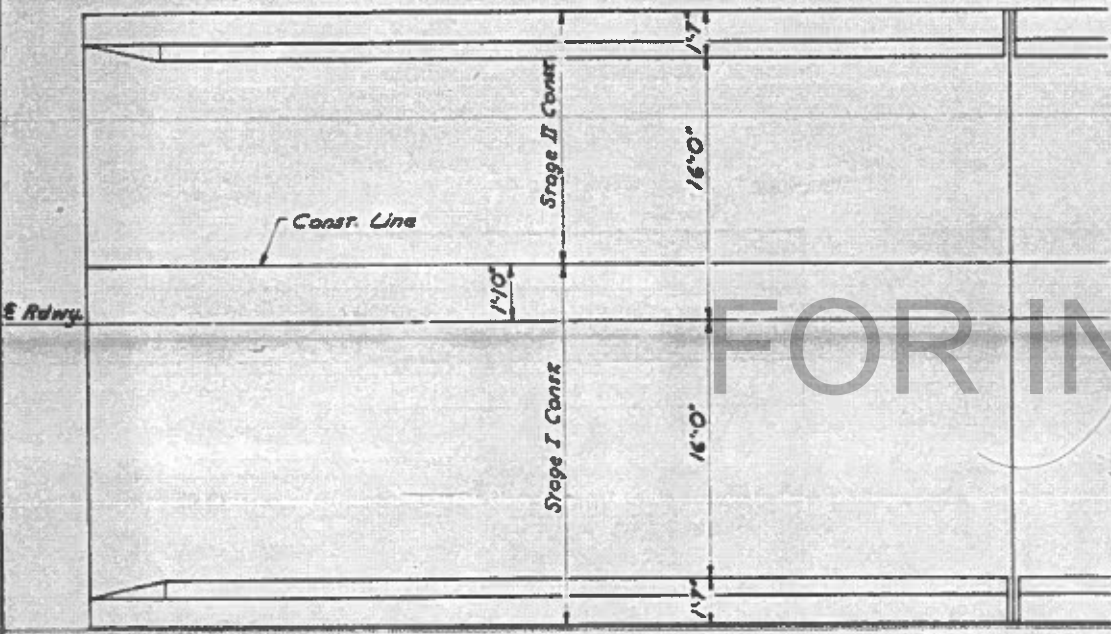
DATE	BY	CHKD	APP'D	SHEET
1/15/84	BR	Jefferson	15	13
SHEET NO. 9 # SHEETS				



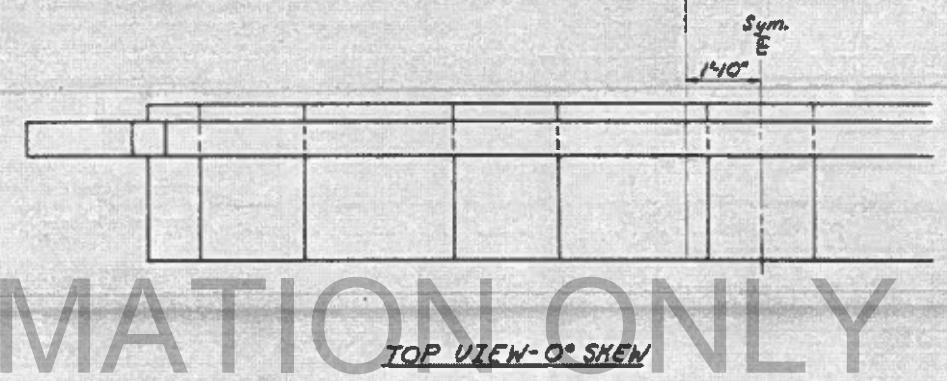
CROSS SECTION  
(Looking Upstation)



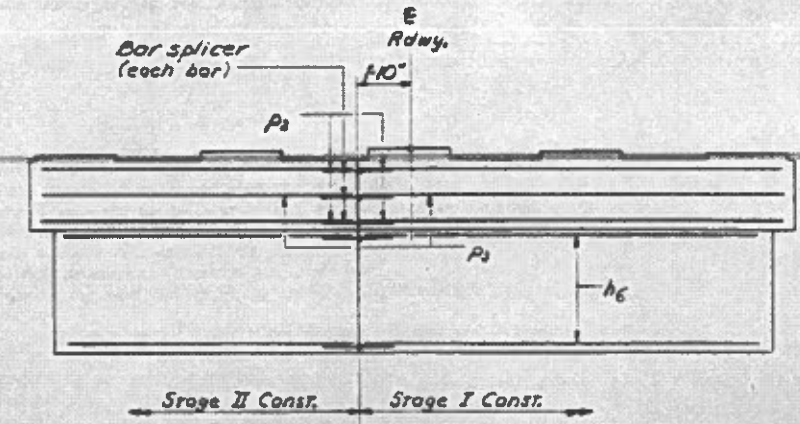
ABUTMENT ELEVATION  
(Looking Upstation)



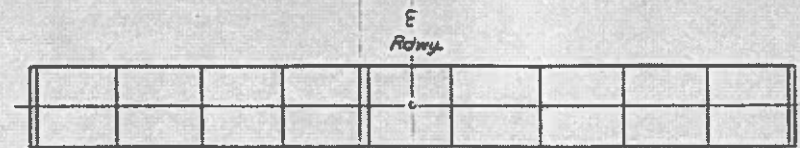
PLAN



TOP VIEW-0° SKEW



PIER ELEVATION  
(Looking Upstation)



TOP VIEW-0° SKEW

**Notes:**  
Order designated reinforcement bars full length in accordance with Standards SS-3245, SA-3250 and SP-3250. Cut bars at stage line in field and install mechanical splices (319 required). Cut ends of epoxy coated bars shall be epoxy pointed. Cost of bar splicers and cutting bar in field shall be considered incidental to the cost of Reinforcement Bars and Reinforcement Bars (Epoxy Coated)

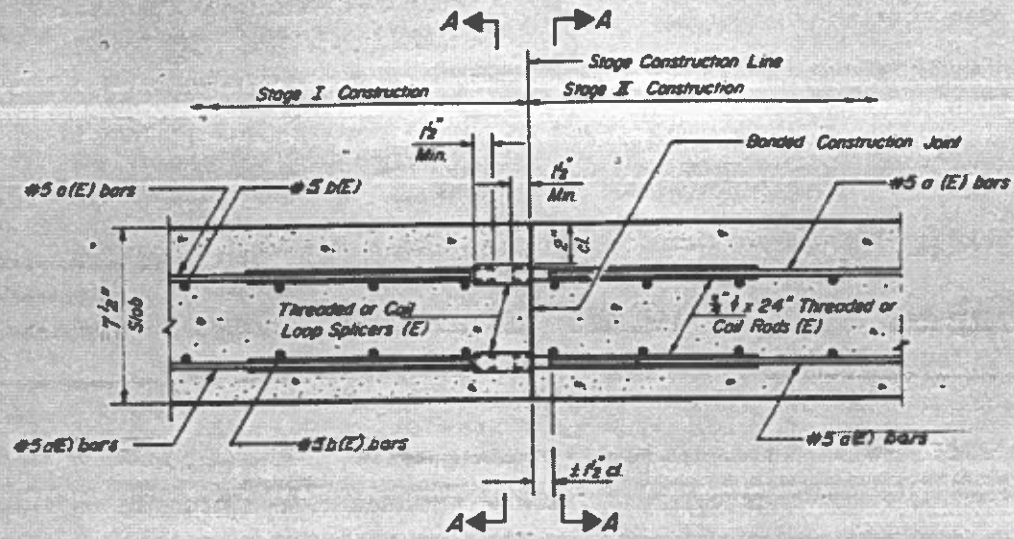
DESIGNED	AFS
CHECKED	FLG
DRAWN	MC
CHECKED	DJR
6-23-82	
2-8-84	

February 8, 1984  
EXAMINED *James J. ...*  
PASSED *Carl E. ...*  
APPROVED

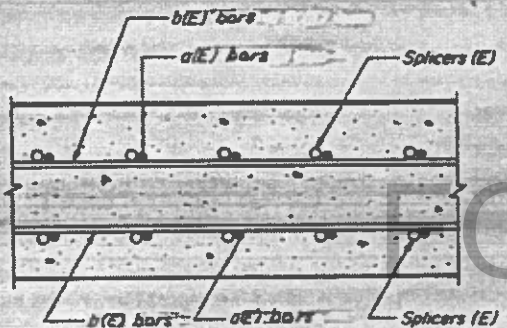
STANDARD BRIDGE  
STEEL BEAMS-32' ROADWAY  
STAGE CONSTRUCTION DETAILS  
ILLINOIS ROUTE 37  
OVER DODDS CREEK  
RT. F.A.S. 2869 SEC. 1-BR  
JEFFERSON COUNTY  
STATION 206+48.25

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

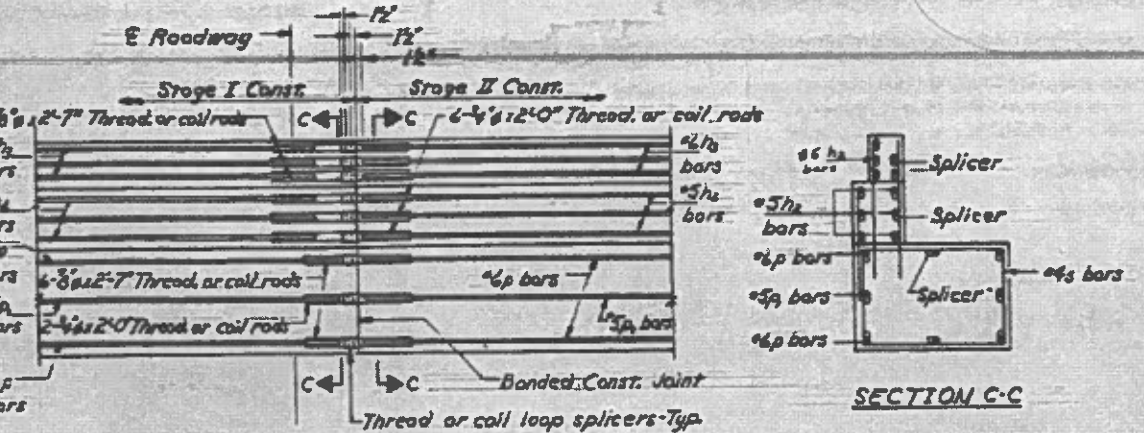
PROJECT NO.	16R	CONTRACT	Jefferson	DATE	15	10	SHEET NO. 10
							11 SHEETS



SECTION THRU SLAB  
(Looking Downstream)



SECTION A-A  
SPLICER DETAILS  
(No. Req'd. 135)



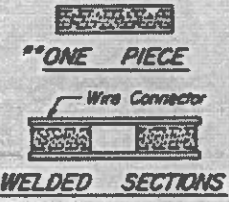
SECTION C-C

SECTION THRU ABUTMENTS  
(8-#5 bar splicers req'd., 11-#6 bar splicers req'd.)  
(No epoxy coating req'd.)  
(Looking Downstream)

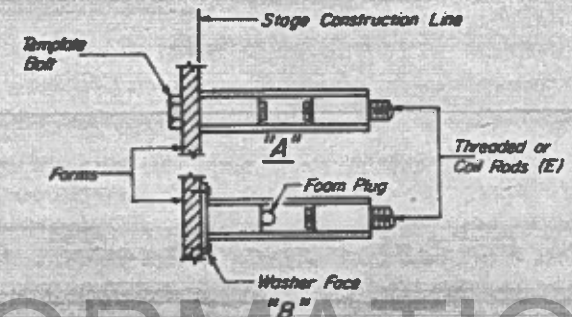
DESIGNED	A.F.S.
CHECKED	BYG
DRAWN	J.C.
CHECKED	D.J.R.

Feb. 8, 1984  
 EXAMINED  
 PASSED  
 APPROVED

BSD-1 6-1-82, 2-8-84



SPLICER ALTERNATIVES  
 Heavy Hex Nuts conforming to ASTM A 563, Grade C, D or DH may be used.



INSTALLATION AND SETTING METHODS

"A" Set splicer by means of a template bolt.  
 "B" Set splicer by nailing to wood forms or cementing to steel forms.  
 (E) Indicates epoxy coating, see Special Provisions.

NOTES

Steel Splicer (Coupler) assembly shall be of an approved type and shall develop at least 125 percent of the yield strength of the lapped reinforcement bars.  
 Steel Splicer rods shall be of minimum 60 ksi yield strength, threaded or coated full length and have effective tensile stress area equal or greater than that of the lapped reinforcement bars.  
 Splicer rods shall extend minimum 1 1/2 inches into the couplers.  
 All reinforcement bars shall be lapped and tied to the splicer rods.  
 Splicer (coupler) assembly in the slab shall be epoxy coated in accordance with the requirements for reinforcement bars.  
 Other systems of similar design may be submitted to the Engineer for approval. Approval shall be based on certified test results from an approved testing laboratory that the proposed splicer (coupler) assembly satisfies the following requirements:

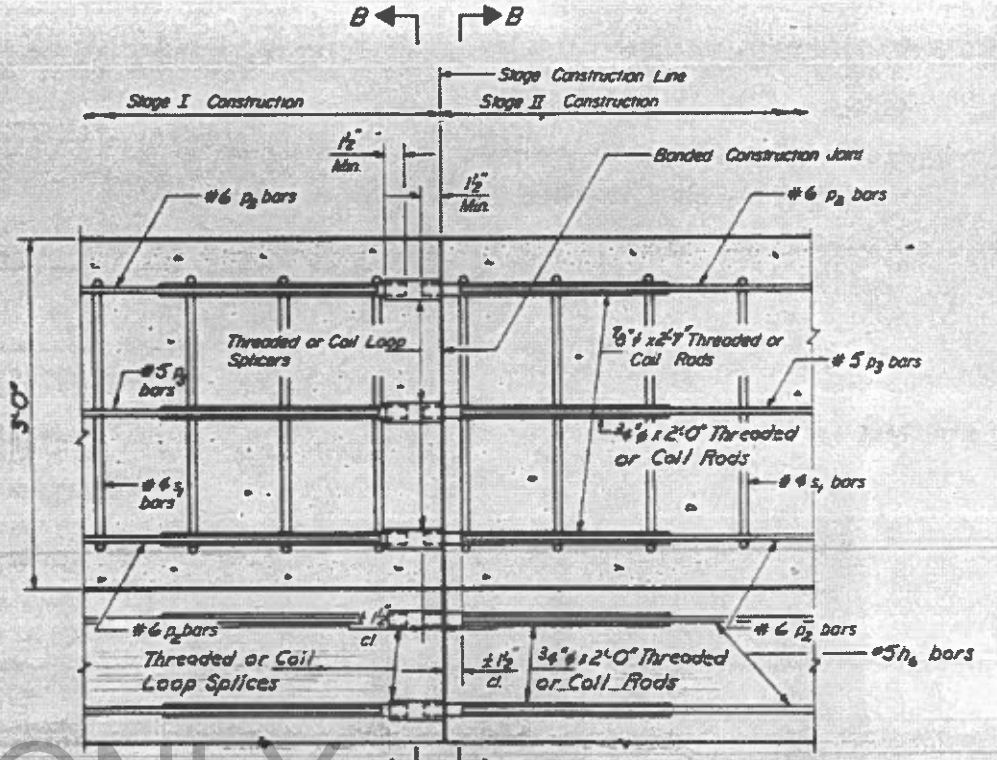
- Minimum Capacity =  $1.25 \times f_y \times A_s$   
(Tension in kips)
- Minimum Pull-out Strength =  $1.25 \times f_{s,allow} \times A_s$   
(Tension in kips)

Where  $f_y$  = Yield strength of lapped reinforcement bars in k.s.i.  
 $f_{s,allow}$  = Allowable tensile stress in lapped reinforcement bars in k.s.i. (Service Load)  
 $A_s$  = Tensile stress area of lapped reinforcement bars.  
 \* 28 day concrete

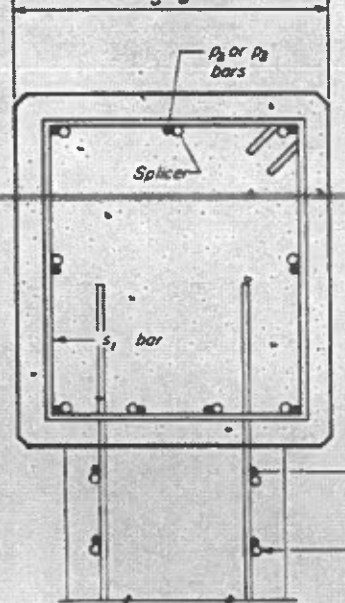
Typical Splicer (Coupler) Assembly Sizes:

In Slabs	#5 bar lap with 3/4" Splicer (Coupler) & 2'-0" Splicer Rods Min. Lap = 1'-10 1/2"	Minimum Capacity = 230 kips-tension Minimum Pull-out Strength = 9.2 kips-tension
In Piers & Abutts.	#6 bar lap with 3/4" Splicer (Coupler) & 2'-7" Splicer Rods Min. Lap = 2'-5 1/2"	Minimum Capacity = 33.1 kips-tension Minimum Pull-out Strength = 13.3 kips-tension

Cost of furnishing and installing splicers and threaded or coil rods shall be incidental to "Reinforcement Bars (Epoxy Coated)" or "Reinforcement Bars" as applicable.



SECTION THRU PIERS  
(No epoxy coating req'd.)  
(Looking Downstream)



SECTION B-B  
SPLICER DETAILS  
(No. Req'd. 23)

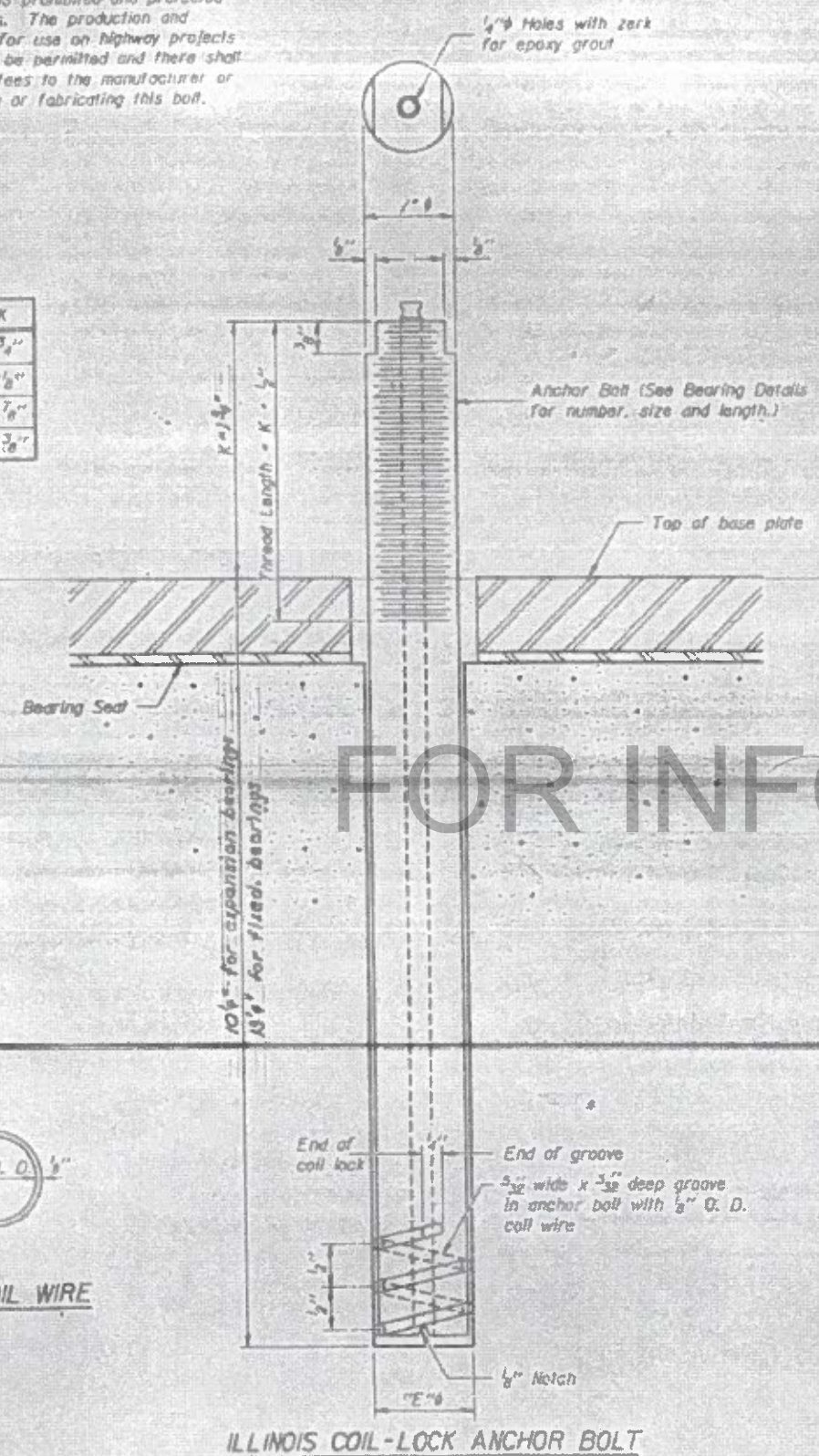
STANDARD BRIDGE  
 STEEL BEAMS-32' ROADWAY  
 BAR SPLICER (COUPLER) DETAILS  
 AT STAGE CONSTRUCTION  
 ILLINOIS ROUTE 37  
 OVER DODDS CREEK  
 RT. EAS 2847 SEC. 1-BF  
 JEFFERSON COUNTY  
 STATION 206+48.25

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

PROJECT NO.	DISTRICT	SECTION	SHEET NO.	TOTAL SHEETS
2069	10R	Jefferson	15	15

The Illinois Coil-Lock Anchor Bolt is a proprietary item which is the property of the Illinois Department of Transportation. Use, reproduction or disclosure without express written permission is prohibited and protected under Federal copyright laws. The production and the fabrication of this bolt for use on highway projects in the State of Illinois shall be permitted and there shall be no incurred charges or fees to the manufacturer or the fabricator for producing or fabricating this bolt.

D	E	H	K
1"	1 1/2"	3 3/8"	13 1/4"
1 1/2"	1 5/8"	1 5/8"	2 1/8"
2"	2 1/8"	1 5/8"	2 7/8"
2 1/2"	2 5/8"	2 5/8"	3 7/8"



**MATERIALS FOR ILLINOIS COIL-LOCK ANCHOR BOLT**

The anchor bolt shall be fabricated from cold drawn or hot finished seamless carbon steel mechanical tubing conforming to ASTM A519, Grade 1026 and supplied with hexagonal nuts and cut washers.  
The coil wire shall be made of any suitable soft steel wire.  
The finished anchor bolt shall be cleaned of rust and other foreign materials and wrapped or packaged to prevent contamination until they are installed.  
The epoxy grout shall be a two-component, epoxy resin bonding system conforming to ASTM C881, Type I, Grade 1 and of a Class suitable for the temperature of installation.

**INSTALLATION PROCEDURE for the ILLINOIS COIL-LOCK ANCHOR BOLT**

1. With the coil wire in place, the bolt shall be inserted into the hole and turned clockwise to a snug fit in the hole. Nut and washer shall be placed on the bolt. The nut shall be tensioned until the steel base plates are held securely to the concrete bearing seat.
2. Epoxy grout shall be pumped through the zerk filling with a pressure gun. Pumping shall continue until the epoxy overflows the hole around the bolt shank. After pumping is discontinued, excess epoxy shall be immediately wiped off.

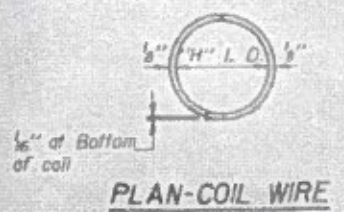
**ALTERNATE ANCHOR BOLTS**

The Contractor may use, at his option, the capsule or the adhesive cartridge type anchor rods that have been previously tested and given a prior approval by the Department. The Contractor shall install these anchor rods in pre-drilled holes in accordance with the manufacturer's recommendations and procedures.  
The capsule or the adhesive cartridge type anchor rods shall be a two part system composed of:  
1. A threaded rod stud with nut and washer conforming to ASTM A307.  
2. A sealed glass capsule or a sealed glass adhesive cartridge containing premeasured amounts of the adhesive chemical.

**GENERAL NOTES**

Holes in the masonry for anchor bolts shall be drilled through the base plates to the diameter and depth shown or in accordance with the manufacturer's recommendation after beams or girders have been erected and adjusted.  
Prior to setting the bolts, the holes shall be dry and all dust and loose particles shall be removed by the use of compressed air or vacuuming.  
The anchor bolts, furnished and installed and including the epoxy grout or capsules shall not be paid for separately but shall be included in the unit bid price for "Furnishing and Erecting Structural Steel".

FOR INFORMATION ONLY



DESIGNED	AFS
CHECKED	BK
DRAWN	JAC
CHECKED	DJK

EXAMINED  
APPROVED  
DIRECTOR OF HIGHWAYS

ABB-1 6-15-83

STANDARD BRIDGE  
STEEL BEAMS - 32' ROADWAY  
ANCHOR BOLT DETAILS  
FOR BEARINGS  
ILLINOIS ROUTE 37  
OVER DODDS CREEK  
R.T. F.A.S. 2069 SEC. 1-BR  
JEFFERSON COUNTY  
STATION 206+48.25