

Jefferson

SEC 113 BR, 113 BR-1, 113 BR-3

041-0041  
1988

AREA NO.	SECTION	SHEET	TOTAL SHEETS
S.B.I. 142	JEFFERSON 13 SETS	1	1

1 113 BR, 113 BR-1, 113 BR-3  
P 97-021-84  
P 97-020-84  
P 97-016-84

95%  
11-24-90

# STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION

## PLANS FOR PROPOSED FEDERAL AID HIGHWAY

### COMBINED INDEX OF SHEETS

SHEET NO.	TITLE
1	TITLE SHEET
2	SUMMARY OF QUANTITIES
3-4	STAGE CONSTRUCTION DETAILS
1-23	PLANS FOR SECTION 113 BR (SET 1 OF 3)
1-27	PLANS FOR SECTION 113 BR-1 (SET 2 OF 3)
1-22	PLANS FOR SECTION 113 BR-3 (SET 3 OF 3)

SCALE IN FEET

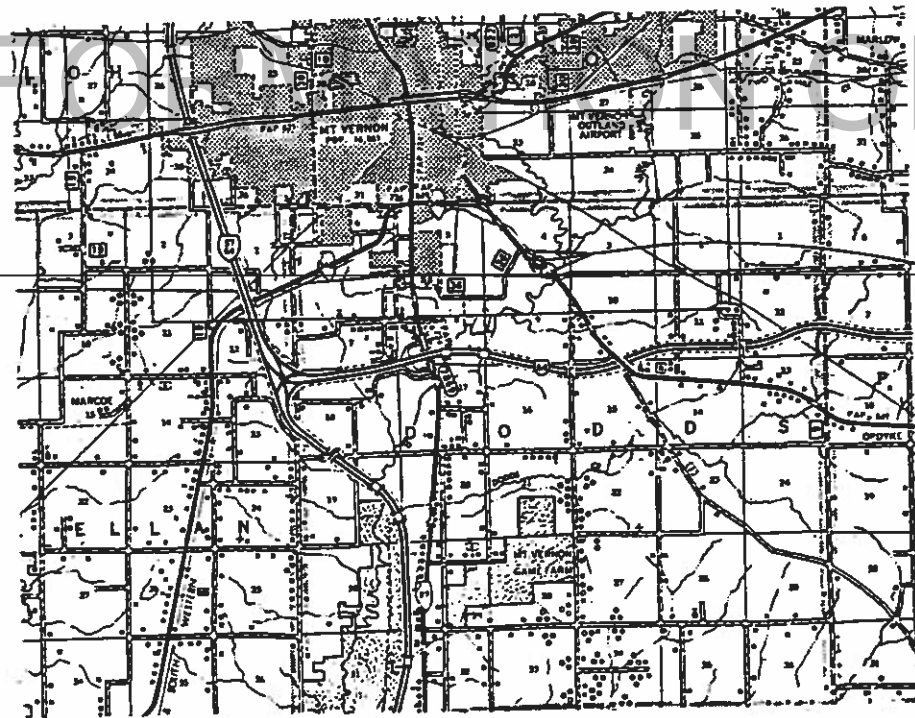


F.A. ROUTE 849 (ILL. RTE. 142)  
SECTION 113 BR, 113 BR-1, 113 BR-3  
PROJECT ACBHE-ACF-849 (6)  
JEFFERSON COUNTY

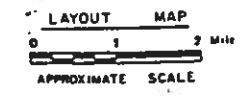
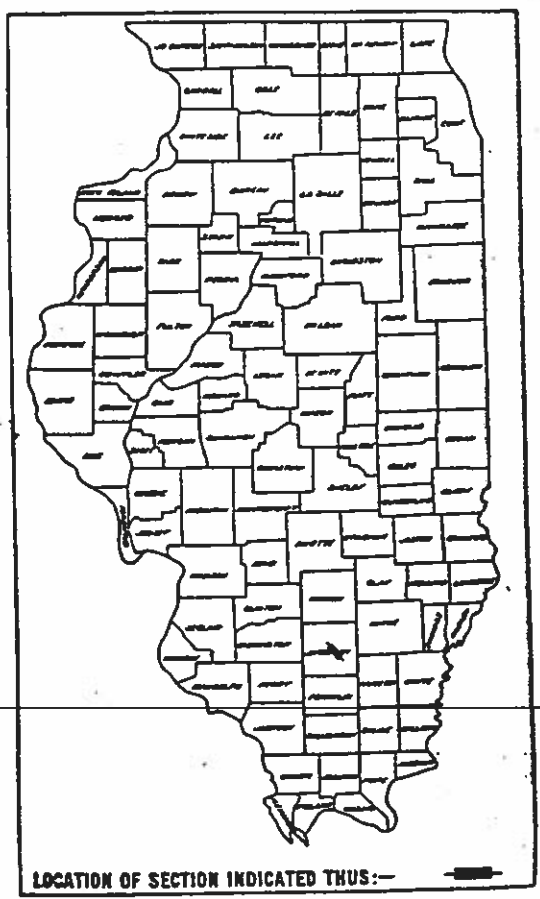
THE FOLLOWING STANDARDS ARE A PART OF THESE PLANS AND ARE INCLUDED AFTER SET NO. 3 OF 3 SETS

STD. NO.	DESCRIPTION
1666-4	SYMBOLS AND ABBREVIATIONS
1744-4	RIGHT OF WAY MARKERS
2113-2	NAME PLATE FOR BRIDGES
2230-15	STEEL PLATE BEAM GUARD RAIL TYPES A, B, C, & D
2262-4	PRECAST REINFORCED CONCRETE FLARED END SECTION
2298-7	TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES
2299-10	DESIGN OF TRAFFIC CONTROL DEVICES
2300-3	FLAGMAN TRAFFIC CONTROL SIGN
2301-5	TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES
2302-5	TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES
2305-5	TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES
2306-6	TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES
2307-6	TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES
2308-5	TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES
2311-8	TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES
2323-11	PAVEMENT JOINTS
2324-6	BRIDGE APPROACH SHOULDER PAVEMENT
2336-4	TRAFFIC BARRIER TERMINAL, TYPE I AND TYPE IA
2341-1	TRAFFIC BARRIER TERMINAL, TYPE C
2381	TEMPORARY EROSION CONTROL SYSTEMS
2382-2	BRIDGE APPROACH PAVEMENT
2383-1	TEMPORARY CONCRETE BARRIER
2409-1	TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES
2427	CLASS C AND D PATCHES

C-97-031-88



LOCATION OF PROJECTS  
FA. RTE. 849  
SECTION 113 BR, 113 BR-1, 113 BR-3  
CASEY FORK  
BEGIN STA. 109+00  
ENDS STA. 129+00



NET LENGTH OF PROJECT = 2 000 FEET = 0.379 MILES

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

Oct 3 88  
M. R. Taylor  
DEC 16 88  
James D. Taylor  
DEC 16 88  
DEC 16 88  
DIRECTOR OF HIGHWAYS

CONTRACT NO. 94034

041-0041 11034

7-105

ROUTE	SECTION	COUNTY	POST MILE	SHEET NO.
F.A. 849	113BR-3	JEFFERSON	22	5

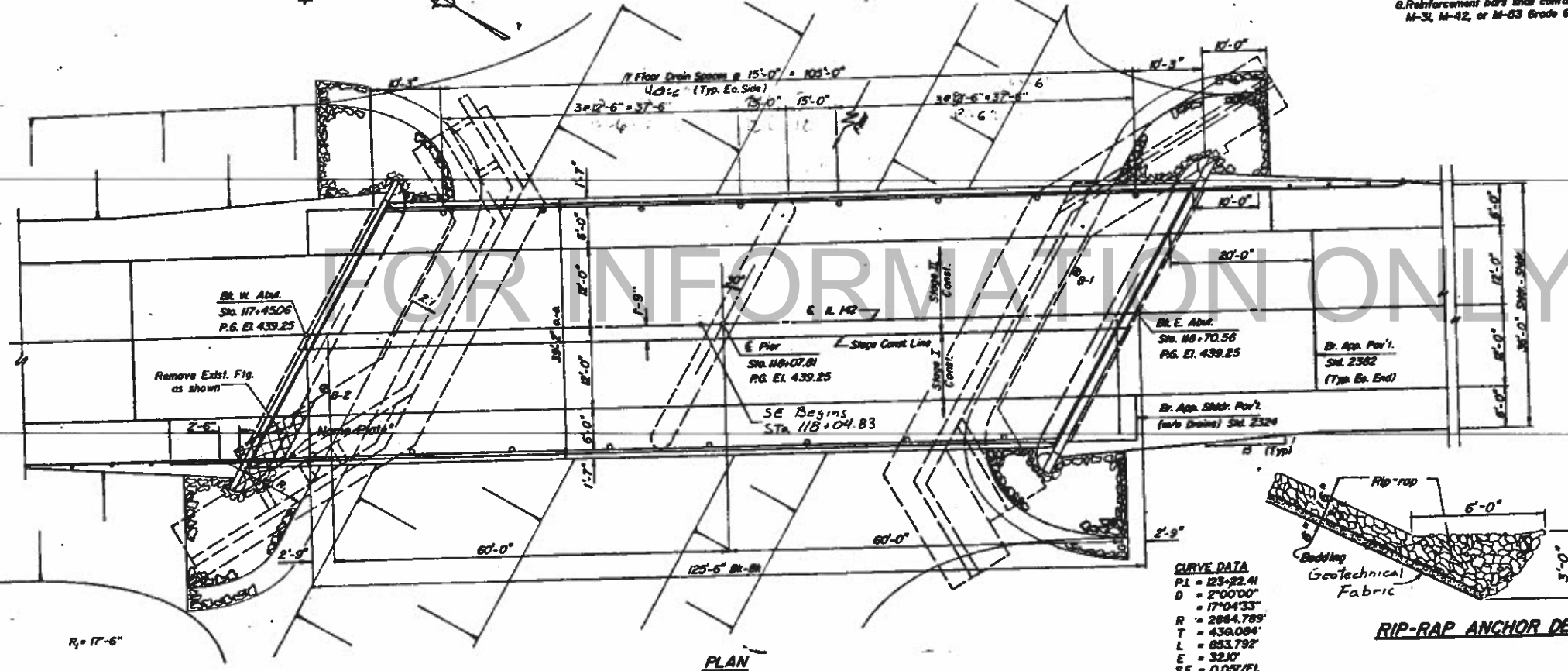
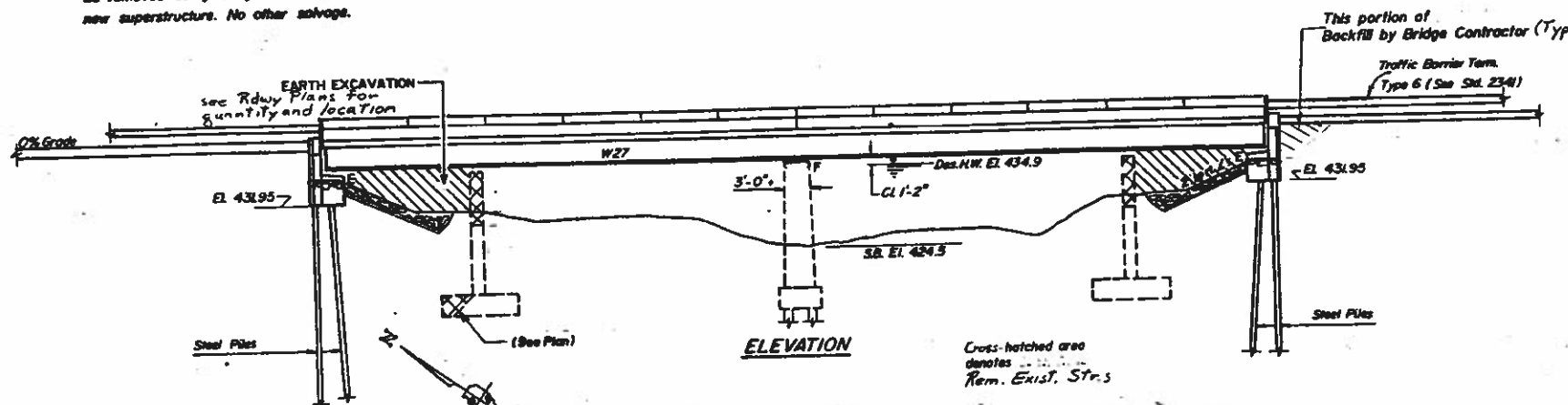
B.M. "D" Top of N.W. Wing of Exist. Br. Elev. 439.00

Exist. Struct #041-0041 Two span RC Deck girder. Built 1928 - Widened 1953 (35'-4" x 86'-11" Bk.-Bk.) RC. Closed Abutts. and Solid Pier. To be removed using Stage Const. Pier to be revised to accommodate new superstructure. No other salvage.

GENERAL NOTES

- Fasteners shall be high strength bolts. Bolts 3/4" ø, Open Holes 1/2" ø, or Bolts 7/8" ø, Open Holes 5/8" ø, unless otherwise noted.
- Calculated weight of structural steel 86,930 pounds. (M223-Gr. 50) — 70,300 (M183) — 16,800
- The zinc-alkoxide and vinyl paint system shall be used for shop and field painting of structural steel except where otherwise noted.
- All W27 beams and splice plates shall be AASHTO M223, Gr. 50.
- Field welding of construction accessories will not be permitted to the bottom flange of beams or girders nor to the top flange for a distance equal to 1/4 the span length each way from the pier supports. Field welding in other areas will be permitted only when approved by the Engineer.
- Anchor bolts shall be set before bolting diaphragms over supports.
- The main load carrying member components subject to tensile stress shall conform to the supplemental requirements for notch zone 2. These components are the wide flange beams and all splice plate material.
- Reinforcement bars shall conform to the requirements of AASHTO M-31, M-42, or M-53 Grade 60.

- Bearing seat surfaces shall be constructed or adjusted to the designated elevations within a tolerance of 1/4". Adjustment shall be made either by grinding the surface or by skimming the bearing. Two 1/2" adjusting shims, of the dimensions of the bottom bearing plate, shall be provided for each bearing in addition to all other plates or shims. For Type I Elementar bearings, shims of the dimensions of top plate shall be provided and placed as detailed.
- The Contractor shall drive one (1) Steel Test Pile in a permanent location of the East Abutment as directed by the Engineer before ordering the remainder of piles.
- See Sh 16 For Boring Data
- Layout of Stone Riprap may be varied in the field as directed by the Engineer to suit ground conditions.



TOTAL BILL OF MATERIAL				
ITEM	UNIT	SUB	SUPER	TOTAL
Protective Coat *	sq. yd.		761	761
Class X Concrete	cu. yd.	74.8		74.8
Structural Steel	L. sum		03	03
Stud Shear Connectors	ea.		1764	1764
Reinforcement Bars	lb.	6620		6620
Reinforcement Bars (Epoxy coated)	lb.		32010	32010
Name Plate	ea.		1	1
Preformed Joint Seal 2 1/2"	lin. ft.		90	90
Steel Piles HP 8x36	lin. ft.	672		672
Test Piles, Steel HP 8x36	ea.	1		1
Class X Concrete Superstrs	cu. yd.		145.2	145.2
Stone Riprap, Class A4	sq. yd.	540		540
Floor Drains	ea.	16		16
Concrete Removal	cu. yd.	6.3		6.3
Removal of Existing Structures **	ea.		1	1
Temp. Sheet Piling	sq. ft.	1000		1000
Elastomeric Brq. Assy. Ty. I	ea.	12		12
Fitter Fabric For use w/ Riprap	sq. yd.	540		540
Structure Excavation	cu. yd.	100		100

\* quantity includes bridge deck surface  
\*\* Except that the pier shall be rehabilitated for reuse.

RIP-RAP ANCHOR DETAIL

DESIGN STRESSES

f<sub>c</sub> = 3,500 p.s.i.  
f<sub>y</sub> = 60,000 p.s.i. (Reinf.)  
f<sub>y</sub> = 50,000 p.s.i. (St. M223) Gr. 50  
f<sub>y</sub> = 36,000 p.s.i. M-183  
LOADING HS20-44  
Design Specifications: 1983 A.A.S.H.T.O.  
# 1984 thru 1988 Interims  
Allow 25 #/sq. ft. for future wearing surface.



GENERAL PLAN & ELEVATION

F.A. RTE. 849 (ILL. 1421) CASEY FORK CREEK  
SECTION 113BR-3  
JEFFERSON COUNTY  
STATION 118+07.81  
STRUCTURE NO. 041-0041  
GREENE & BRADFORD, L.L.C.  
CONSULTING ENGINEERS

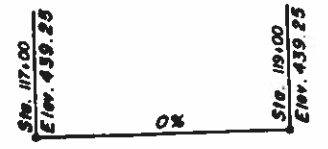
WATERWAY INFORMATION TABLE

Drainage Area 75.7 Square Miles Low Grade Elev. 438.52 at Sta. 124+50										
Section	Flood Yr.	Freq.	Q Total C.F.S.	Opening (Sq. Ft.)		Nat. H.W.E.	Head (Ft.)		Headwater Elev.	
				Exist.	Prop.		Exist.	Prop.	Exist.	Prop.
113BR-3	Design	50	2294	519	570	434.9	0.52	0.39	433.42	433.29
	100		2633	533	597	435.1	0.68	0.48	433.78	433.58
	Max Calc.	500	3389		600	435.5		0.76		436.26

APPROVED FOR STRUCTURAL AFFIDAVIT ONLY

James T. Robinson  
Engineer of Bridges & Structures

PROFILE GRADE



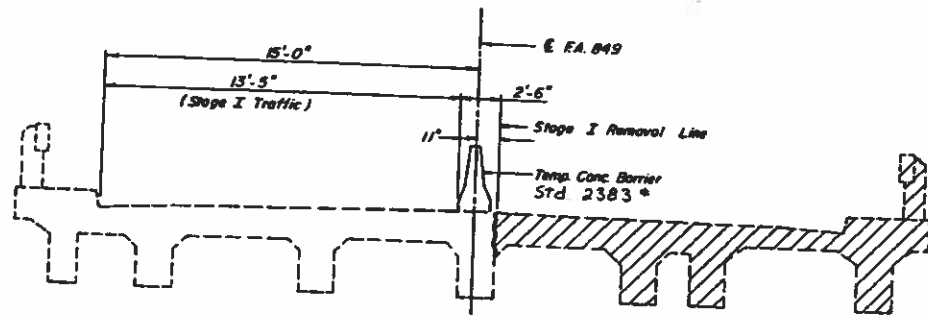
STATION 118+07.81  
Rebuilt 198 by  
STATE OF ILLINOIS  
F.A. 849 SEC. 113BR-3  
F.A. PROJ. ACBHF-ADR-849(6)  
Loading HS 20  
STR. NO. 041-0041

NAME PLATE  
(See Standard 213)

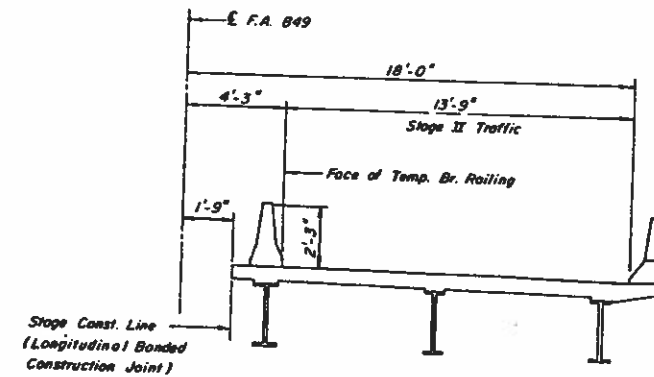
\* Locate Existing Name & adjacent to New. Cost incidental.

ROUTE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
FA 849	113 BR 3	JEFFERSON	22	6

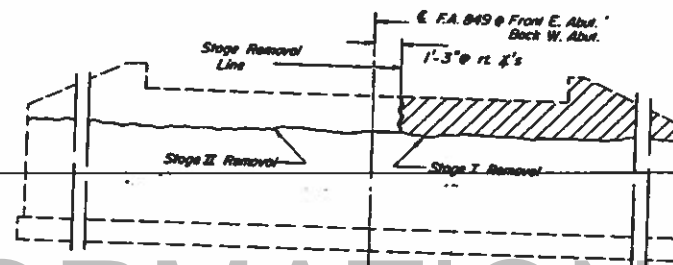
ILLINOIS FEDERAL AID PROJECT  
 BRIDGE SHEET 2 OF 17



**REMOVAL**  
 (Showing Stage I Traffic)  
 + see Rdwg Plans for quantity & location

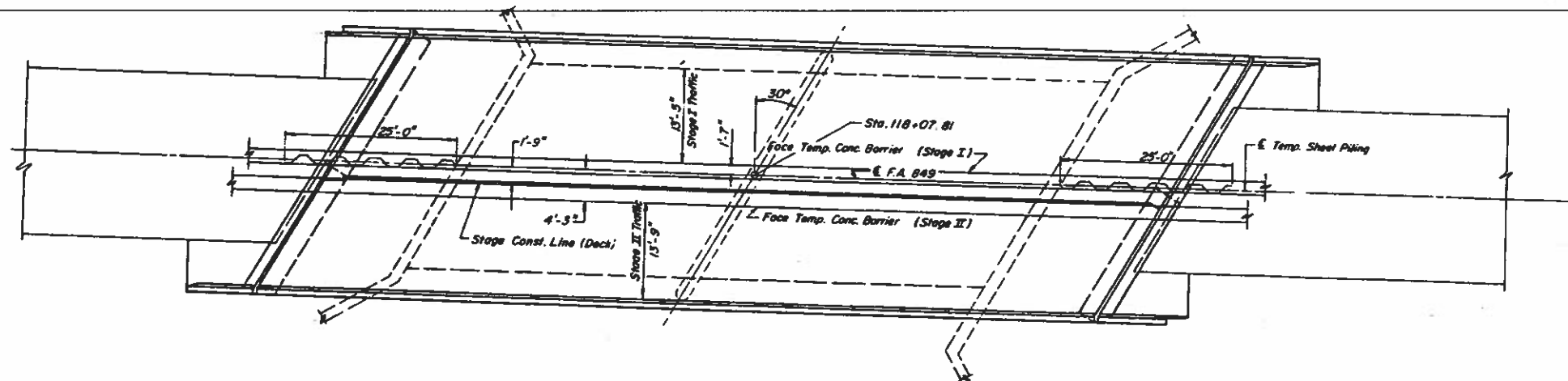


**CONSTRUCTION**  
 (Showing Stage II Traffic)



**ABUTMENTS - STAGE REMOVAL**  
 (Both Abutments Shown Looking Eastward)

FOR INFORMATION ONLY



**PLAN VIEW**  
 (Showing Stage Traffic Lanes)

NOTE: Following completion of Stage I the Temp. Conc. Barrier shall be removed and relocated to Stage II as shown.

Temporary sheet piling to extend from Elev. 419.0 (Tip Elev.) to Elev. 439.0 (Top of Exist. Pav.) at locations shown.

Contractor to anchor sheeting to back of existing abutment wall. Connection to be approved by Engineer. Sheeting within limits of existing footing shall have their tip Elev. at top of footing.

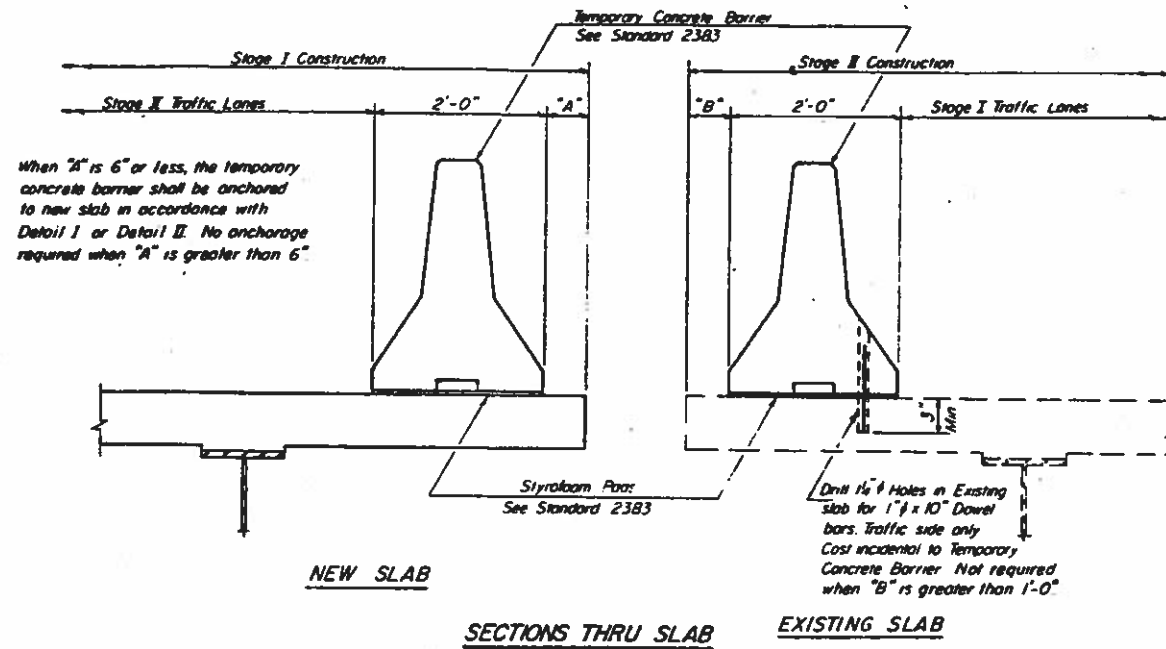
THE INFORMATION SHOWN FOR THE TEMPORARY SHEET PILING IS ESTIMATED. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE A DESIGN OF THE TEMPORARY SHEET PILING AND ASSOCIATED MEMBERS, IF REQUIRED, SUBJECT TO THE APPROVAL OF THE ENGINEER.

**STAGING DETAILS**  
 FA. RTE 849 SECTION 113 BR-3  
 JEFFERSON CO.  
 STATION 118+07.81  
 S.N. 041-0041

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

PROJECT NO.	SECTION	CONTRACT	SHEET NO.	TOTAL SHEETS
849	113BR-3	JEFFERSON	22	7
DESIGNED BY	DRAWN BY	CHECKED BY		

BRIDGE SHEET 3 OF 17



**NOTES**

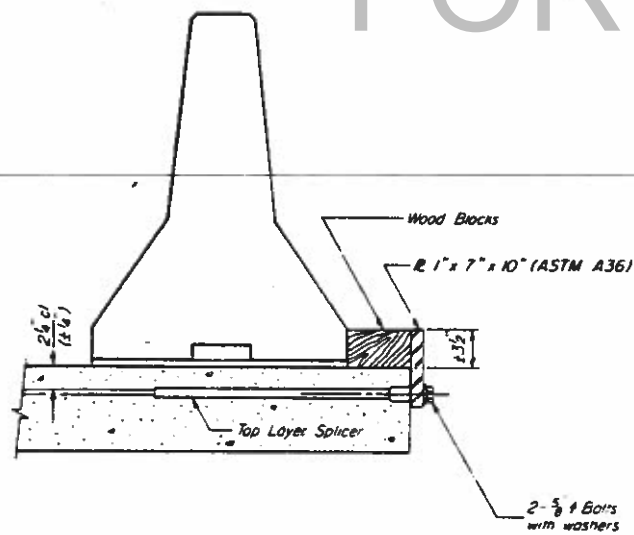
Detail I - With Bar Splicer or Couplers  
Connect one (1) 1" x 7" x 10" steel PL to the top layer of couplers with 2-5/8" bolts screwed to coupler at approximate 1/2" of each 10'-0" barrier panel

Detail II - With Extended Reinforcement Bars  
Connect one (1) 1" x 7" x 10" steel PL to the concrete slab with 2-5/8" Expansion Anchors or cast in place inserts spaced between the top layer of reinforcement at approximate 1/2" of each 10'-0" barrier panel

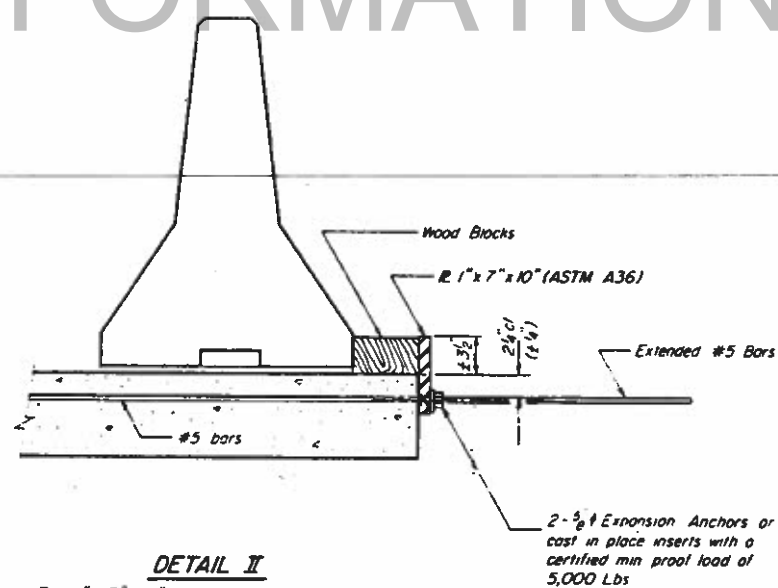
Cost of anchorage is incidental to Temporary Concrete Barrier

For Pay Item See Roadway plan

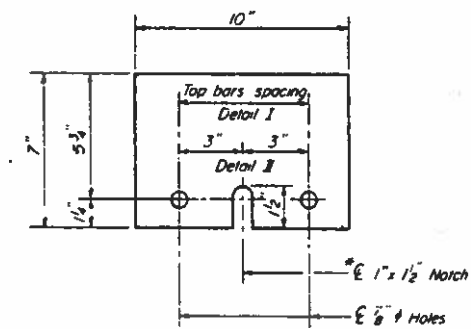
FOR INFORMATION ONLY



**DETAIL I**  
The 1" x 7" x 10" Plate shall not be removed until Stage II Construction forms and reinforcement bars are in place



**DETAIL II**  
The 1" x 7" x 10" Plate shall not be removed until Stage II Construction forms and all reinforcement bars are in place and the concrete is ready to be placed

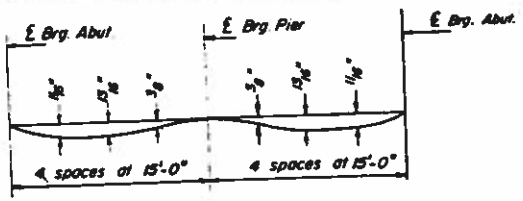


1" x 7" x 10"  
\* Required only with Detail II

**TEMPORARY CONCRETE BARRIER FOR  
STAGE CONSTRUCTION**

FA RTE 849 SECTION 113BR-3  
JEFFERSON CO.  
STATION 118+07.81  
S.N. 041-0041

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

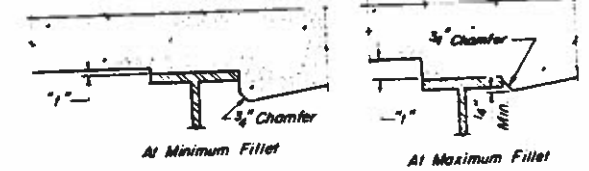


DEAD LOAD DEFLECTION DIAGRAM  
(Includes weight of concrete only)

Note: The above deflections are not to be used in the field if the engineer is working from the grade elevations adjusted for dead load deflections as shown below.

LINE	BEAM OR GIRDER	STATION	OFFSET	THEORETICAL GRADE ELEVATION	ELEVATION ADJUSTED FOR DEAD LOAD DEFLECTION
ABUT	BN 1	11754.603	16.667	438.965	438.965
	BN 2	11750.834	10.000	438.093	438.093
	BN 3	11746.984	3.333	439.190	439.190
	BN 4	11745.060	.000	439.250	439.250
	CENTER	11744.050	-1.750	439.223	439.223
	STAGE	11743.136	-3.333	439.190	439.190
B	BN 1	11757.433	16.667	438.965	438.965
	BN 2	11753.584	10.000	439.093	439.093
	BN 3	11749.734	3.333	439.190	439.190
	BN 4	11747.810	.000	439.250	439.250
	CENTER	11746.800	-1.750	439.223	439.223
	STAGE	11745.886	-3.333	439.190	439.190
C	BN 1	11767.433	16.667	438.965	438.965
	BN 2	11763.584	10.000	439.093	439.093
	BN 3	11759.734	3.333	439.190	439.190
	BN 4	11757.810	.000	439.250	439.250
	CENTER	11756.800	-1.750	439.223	439.223
	STAGE	11755.886	-3.333	439.190	439.190
D	BN 1	11777.433	16.667	438.965	438.965
	BN 2	11773.584	10.000	439.093	439.093
	BN 3	11769.734	3.333	439.190	439.190
	BN 4	11767.810	.000	439.250	439.250
	CENTER	11766.800	-1.750	439.223	439.223
	STAGE	11765.886	-3.333	439.190	439.190
E	BN 1	11787.433	16.667	438.965	438.965
	BN 2	11783.584	10.000	439.093	439.093
	BN 3	11779.734	3.333	439.190	439.190
	BN 4	11777.810	.000	439.250	439.250
	CENTER	11776.800	-1.750	439.223	439.223
	STAGE	11775.886	-3.333	439.190	439.190

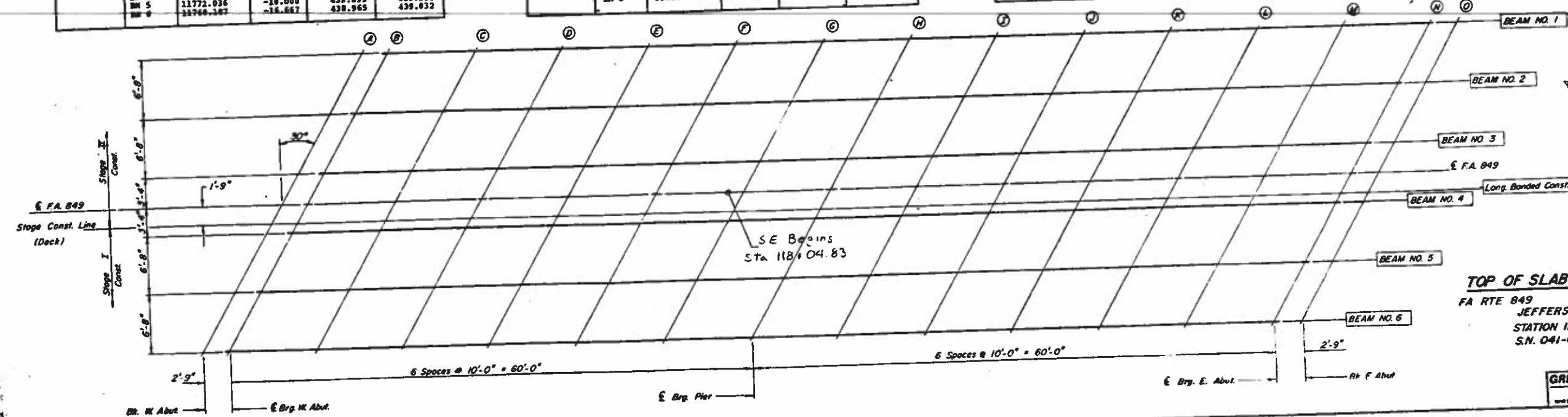
LINE	BEAM OR GIRDER	STATION	OFFSET	THEORETICAL GRADE ELEVATION	ELEVATION ADJUSTED FOR DEAD LOAD DEFLECTION
F	BN 1	11797.433	16.667	438.965	438.965
	BN 2	11793.584	10.000	439.093	439.093
	BN 3	11789.734	3.333	439.190	439.190
	BN 4	11787.810	.000	439.250	439.250
	CENTER	11786.800	-1.750	439.223	439.223
	STAGE	11785.886	-3.333	439.190	439.190
G	BN 1	11807.433	16.667	438.965	438.965
	BN 2	11803.584	10.000	439.093	439.093
	BN 3	11799.734	3.333	439.190	439.190
	BN 4	11797.810	.000	439.250	439.250
	CENTER	11796.800	-1.750	439.223	439.223
	STAGE	11795.886	-3.333	439.190	439.190
PIER	BN 1	11817.433	16.667	439.022	439.022
	BN 2	11813.584	10.000	439.127	439.127
	BN 3	11809.734	3.333	439.204	439.204
	BN 4	11807.810	.000	439.250	439.250
	CENTER	11806.800	-1.750	439.223	439.223
	STAGE	11805.886	-3.333	439.190	439.190



To determine "f" After all structural steel has been erected, elevations of the top flanges of the beams shall be taken at intervals shown below. These elevations subtracted from the "Theoretical Grade Elevations Adjusted for Dead Load Deflection" shown below, minus slab thickness, equals the fillet heights "f" above top flange of beams.

**FILLET HEIGHTS**

LINE	BEAM OR GIRDER	STATION	OFFSET	THEORETICAL GRADE ELEVATION	ELEVATION ADJUSTED FOR DEAD LOAD DEFLECTION
K	BN 1	11847.433	16.667	439.160	439.226
	BN 2	11843.584	10.000	439.241	439.308
	BN 3	11839.734	3.333	439.242	439.309
	BN 4	11837.810	.000	439.256	439.317
	CENTER	11836.800	-1.750	439.214	439.281
	STAGE	11835.886	-3.333	439.183	439.250
L	BN 1	11857.433	16.667	439.205	439.272
	BN 2	11853.584	10.000	439.279	439.346
	BN 3	11849.734	3.333	439.255	439.321
	BN 4	11847.810	.000	439.250	439.317
	CENTER	11846.800	-1.750	439.211	439.277
	STAGE	11845.886	-3.333	439.176	439.243
M	BN 1	11867.433	16.667	438.251	439.293
	BN 2	11863.584	10.000	439.317	439.359
	BN 3	11859.734	3.333	439.267	439.309
	BN 4	11857.810	.000	439.250	439.292
	CENTER	11856.800	-1.750	439.206	439.248
	STAGE	11855.886	-3.333	439.168	439.209
N	BN 1	11877.433	16.667	439.297	439.297
	BN 2	11873.584	10.000	439.355	439.355
	BN 3	11869.734	3.333	439.280	439.280
	BN 4	11867.810	.000	439.250	439.250
	CENTER	11866.800	-1.750	439.202	439.202
	STAGE	11865.886	-3.333	439.159	439.159
O	BN 1	11887.433	16.667	439.309	439.309
	BN 2	11883.584	10.000	439.366	439.366
	BN 3	11879.734	3.333	439.284	439.284
	BN 4	11877.810	.000	439.250	439.250
	CENTER	11876.800	-1.750	439.201	439.201
	STAGE	11875.886	-3.333	439.157	439.157



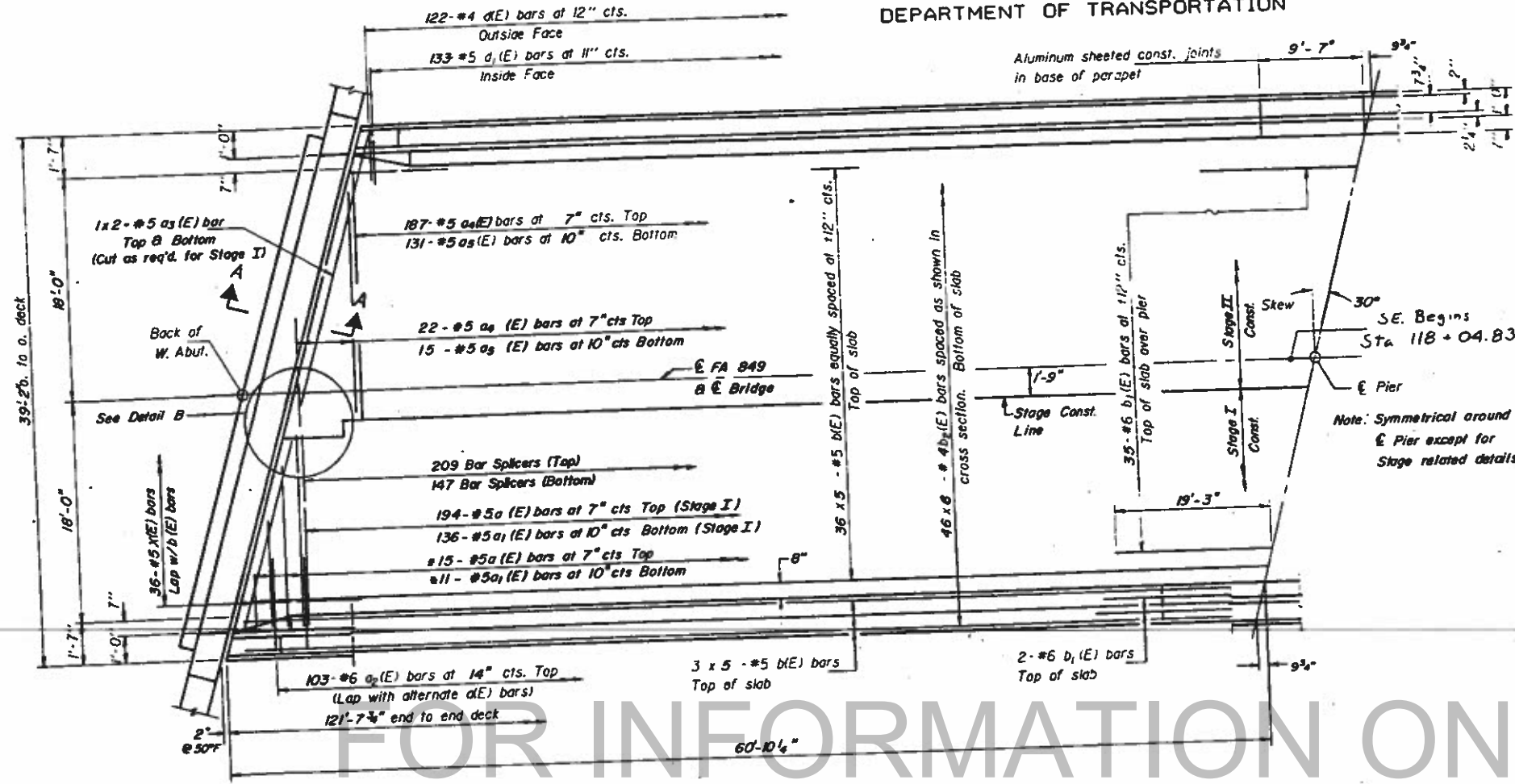
TOP OF SLAB ELEVATIONS  
FA RTE 849 SECTION 113 BR-3  
JEFFERSON CO.  
STATION 118+07.81  
S.N. 041-0041

GREENE & BRADFORD, L.L.C.  
CONSULTING ENGINEERS  
200 STEVENSON DR. • ST. LOUIS, MO. 63103 • SPRINGFIELD, IL

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

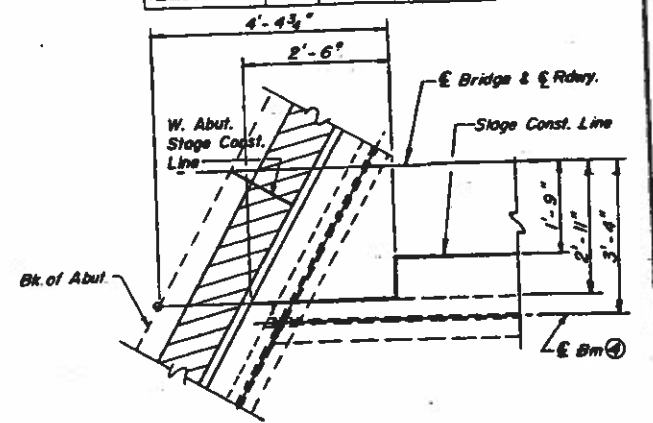
BRIDGE SHEET 5 OF 17

PROJECT NO.	DATE	DESIGNER	SCALE	SHEET NO.
849	11/30/33	JEFFERSON	22	9
SHEETS				

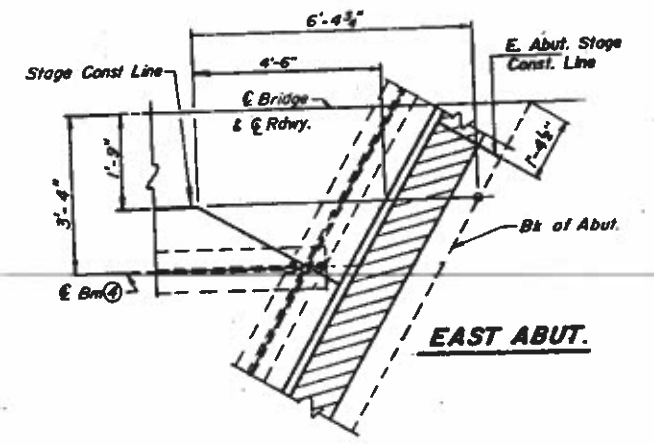


HALF PLAN  
(Span 1 shown)

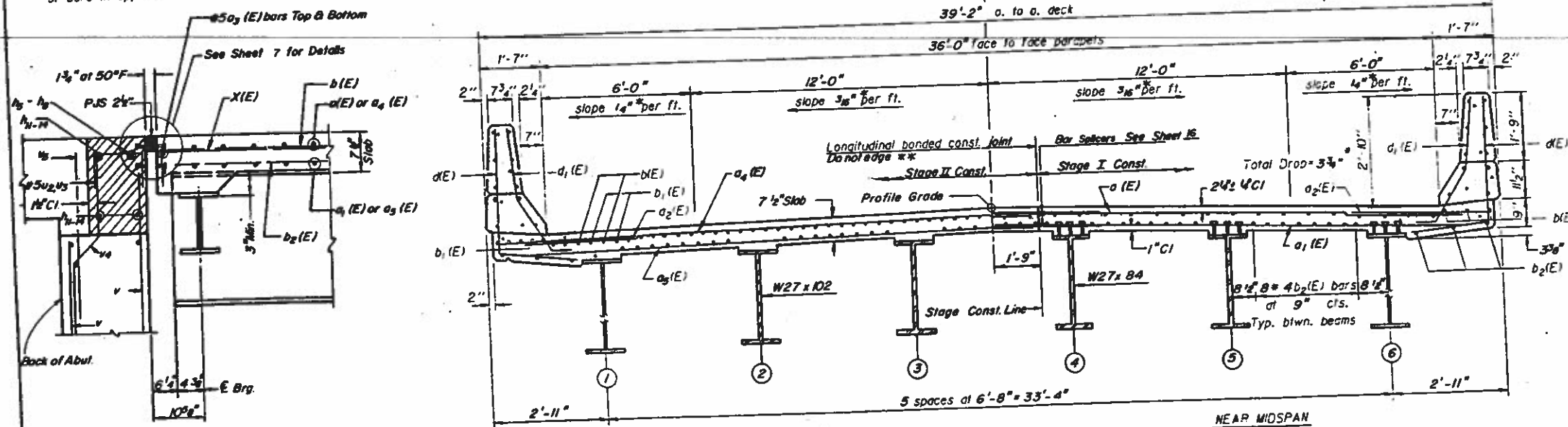
\* Order d(E), a<sub>1</sub>(E), a<sub>2</sub>(E), b as (E) bars full length. Cut to fit skew and/or Staging Joint (Detail B). Use remainder of bars in opposite end of same Stage.



WEST ABUT.



DETAIL B



CROSS SECTION  
(Looking East)

SEC. A-A

SEE SHEET 7 FOR EXP. DEVICE DETAILS

Notes: See sheet #6 for superstructure details and Bill of Material. Reinforcement bars designated (E) shall be epoxy coated. Bars indicated thus 20 x 3-#5 etc. indicates 20 lines of bars with 3 lengths per line.

Minimum Bar Laps  
#4 bar 1'-4"  
#5 bar 1'-8"

FOR FLOOR DRAIN LOCATION AND DETAILS, SEE SHEET 1

**SUPERSTRUCTURE**  
FA RTE 849 SECTION 113 BR-3  
JEFFERSON CO.  
STATION 118+07.81  
S.N. 041-0041

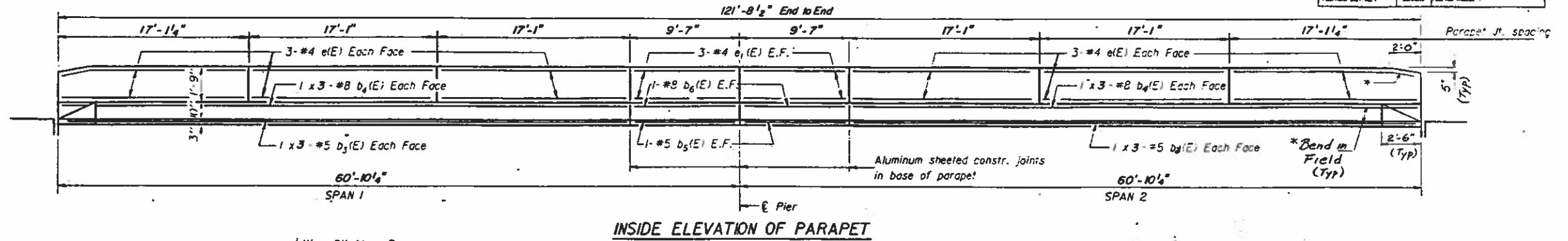
GREENE & BRADFORD, L.M.  
CONSULTING ENGINEERS  
1015 SPRINGFIELD ST. SPRINGFIELD, ILL.

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

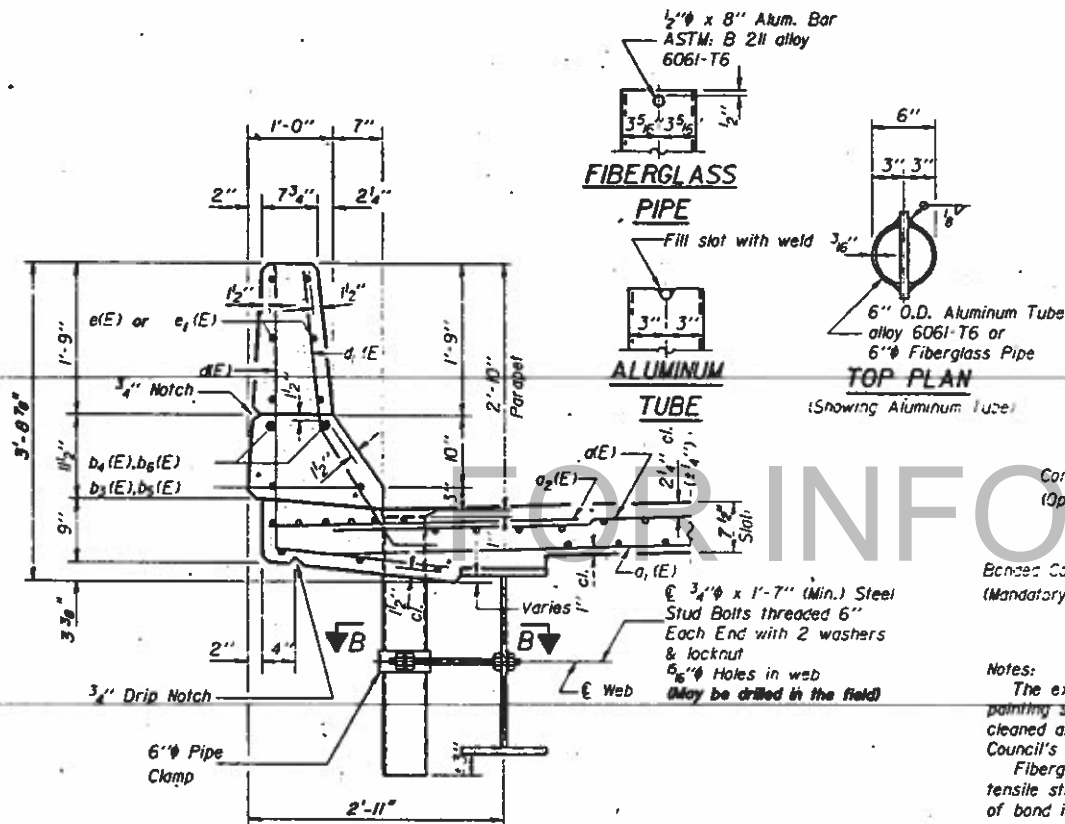
BRIDGE SHEET 6 of 17

PROJECT NO.	SECTION	DATE	SHEET	TOTAL SHEETS
113BR-3	JEFFERSON	22	10	

SHEET NO.  
SHEETS



INSIDE ELEVATION OF PARAPET



PARAPET JOINT DETAILS

Notes:

The exterior surfaces of the Floor Drain shall be painted with the vinyl enamel coat painting specified for Structural Steel. The exterior surfaces of the Aluminum tube shall be cleaned and given a washcoat pretreatment in accordance with Steel Structures Painting Council's Spec. SSPC-SPI & SSPC-Paint 27 prior to painting.

Fiberglass pipe shall conform to ASTM: D2936, with short-time rupture strength hoop tensile stress of 30,000 p.s.i. minimum. The surface of the Fiberglass pipe shall be free of bond inhibiting agents.

SUPERSTRUCTURE  
BILL OF MATERIAL

Bar	No.	Size	Length	Grade
a(E)	209	#5	16'-6"	
a <sub>1</sub> (E)	147	#5	16'-4"	
a <sub>2</sub> (E)	206	#6	4'-0"	
a <sub>3</sub> (E)	8	#5	26'-0"	
a <sub>4</sub> (E)	209	#5	20'-3"	
a <sub>5</sub> (E)	146	#5	20'-1"	
b(E)	210	#5	25'-6"	
b <sub>1</sub> (E)	39	#6	38'-6"	
b <sub>2</sub> (E)	276	#4	21'-6"	
b <sub>3</sub> (E)	24	#5	18'-4"	
b <sub>4</sub> (E)	24	#5	19'-4"	
b <sub>5</sub> (E)	8	#5	9'-3"	
b <sub>6</sub> (E)	8	#8	9'-3"	
d(E)	244	#4	5'-2"	
d <sub>1</sub> (E)	266	#5	3'-11"	
e(E)	72	#4	16'-9"	
e <sub>1</sub> (E)	24	#4	9'-3"	
x(E)	72	#5	4'-3"	
Reinforcement Bars (Epoxy Coated)				Lbs. 32,000
Class 1 Concrete Superstructures				Cu. Yds. 145.2
Protective Coat				Sq. Yd. 600

NOTE:

1. Bars indicated thusly, 1 x 3-#5 etc. indicates 1 line of bars with 3 lengths per line.

2. Minimum bar laps  
#4 bar - 1'-4"  
#5 bar - 1'-8"  
#8 bar - 3'-6"

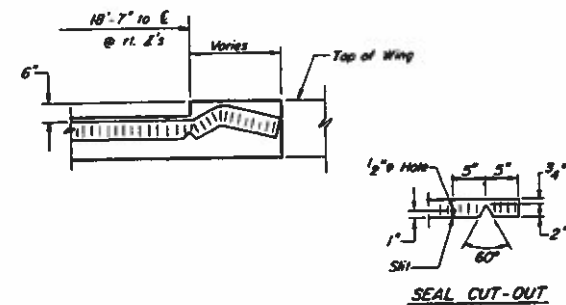
SUPERSTRUCTURE DETAIL

FA ROUTE 849 SECTION 113BR-3  
JEFFERSON CO.  
STATION 118+07.81

GREENE & BRADFORD, Ltd.  
CONSULTING ENGINEERS  
1111 W. WASHINGTON ST. CHICAGO, ILL. 60606

ROUTE	SECTION	COUNTY	SHEET
FA 049	113BR-3	JEFFERSON	22
STA.		10 STA.	
INTRA R.R. NO. 6   ELKHORN FED. AID PROJECT			

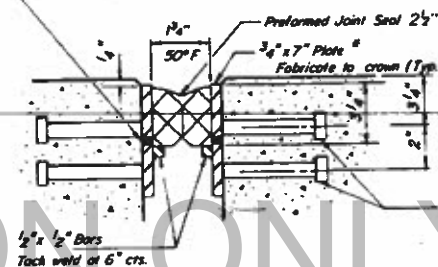
BRIDGE SHEET 7 OF 17



**END OF SEAL TREATMENT**

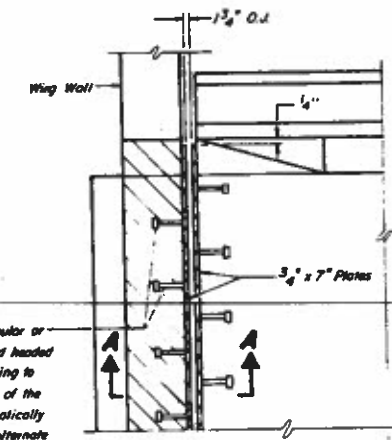
(TYP. EACH ABUT.)

7/16" Holes at 12" cts. for 3/8" bolts. All bolts shall be burned, sawed, or chipped off flush with the plates after the forms are removed. (Typ.)



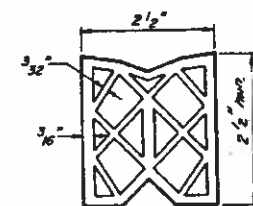
**SEC. A-A**

\* Provide 2 # 18-0<sup>3</sup>/<sub>8</sub>" & 2 # 24-0<sup>7</sup>/<sub>8</sub>" (W. Abut.)  
2 # 17-1<sup>3</sup>/<sub>4</sub>" & 2 # 25-8<sup>3</sup>/<sub>4</sub>" (E. Abut.)



**EXPANSION JOINT**

NOTE: After fabrication all surfaces of the steel plates shall be given one shop coat of paint specified for Structural Steel.



**PREFORMED JOINT**

**SEAL (2 1/2")**

**EXPANSION JOINT DETAILS**

FA RTE 049 SECTION 113BR-3  
JEFFERSON CO.  
STATION 118+07.81

**GREENE & BRADFORD, Ltd.**  
CONSULTING ENGINEERS  
2020 BROADWAY, SUITE 2000, NEW YORK, N.Y. 10023

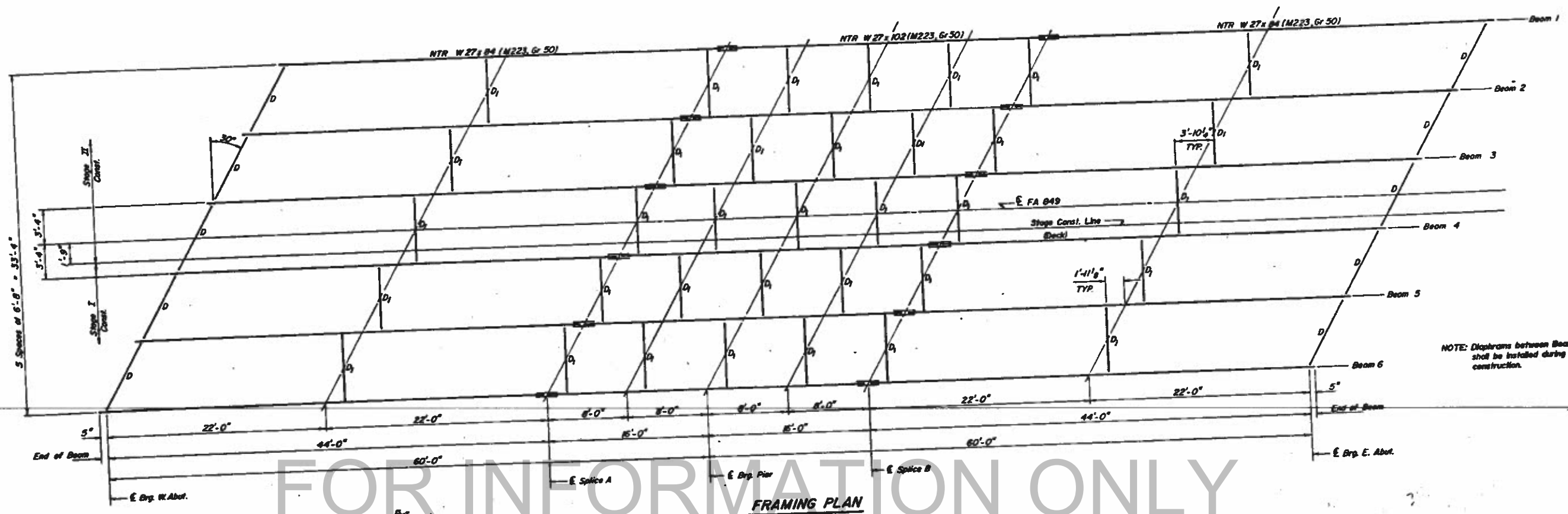
FOR INFORMATION ONLY



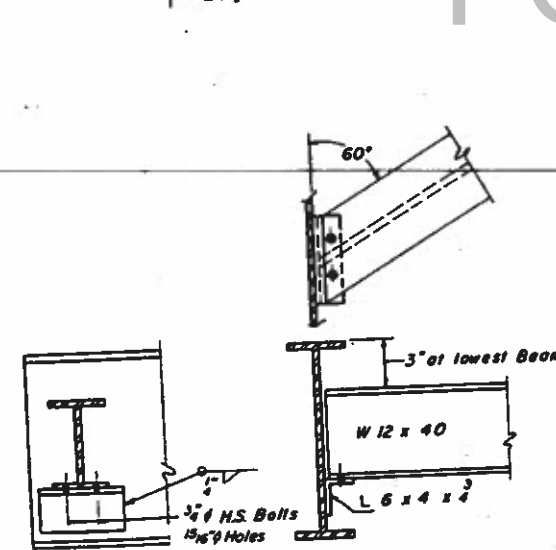
STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

ROUTE	SECTION	COUNTY	SHEET
FA RTE 113 BR 3		JEFFERSON	22
STA	TO STA		12
FHWA ROL NO 6   ILLINOIS FED AID PROJECT			

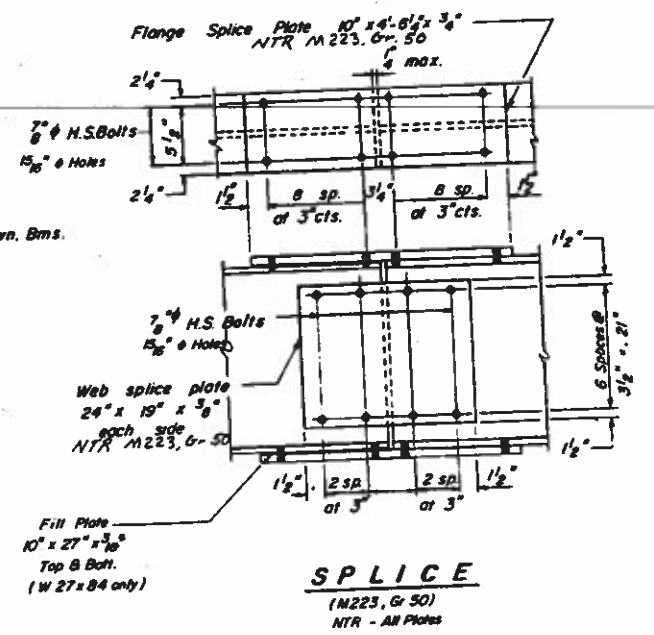
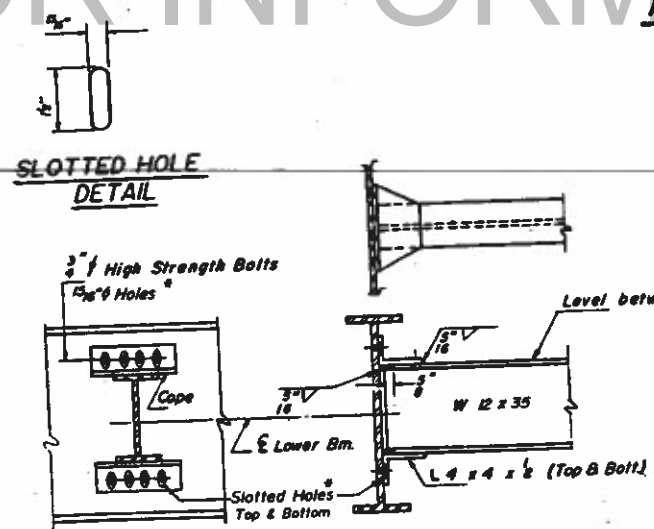
BRIDGE SHEET 8 OF 17



FOR INFORMATION ONLY



Note: Two hardened washers shall be required over all 15/16" holes. Provide slotted holes in 4x4x1/2 angles for diaphragms between Beams 3 & 4. Provide slots in angles at North end of diaphragms only. Provide 1/2" Str. I washer at each slotted connector. 3/4" H.S. Bolts for diaphragms D<sub>1</sub> between Beams 3 & 4 shall be tightened only after completing Stage II deck construction.



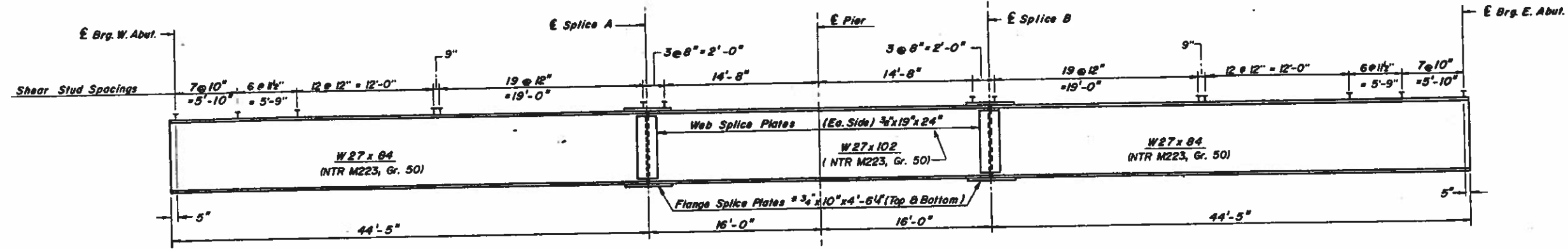
ELEVATION TOP OF WF \*\*

Location	Beam 1	2	3	4	5	6
West Abutment	438.17	438.27	438.40	438.40	438.27	438.17
* Splices A & B	438.17	438.27	438.40	438.40	438.27	438.17
Pier	438.17	438.27	438.40	438.40	438.27	438.17
East Abutment	438.53	438.59	438.51	438.59	438.21	438.04

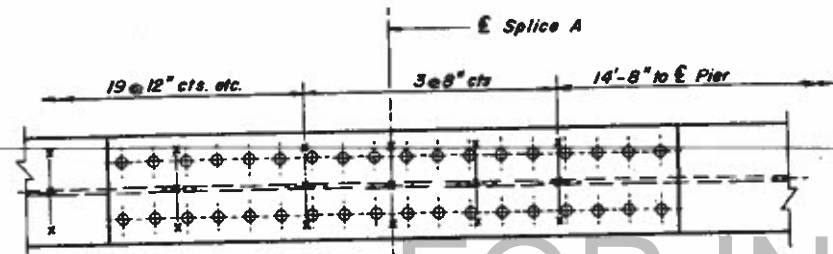
\* Elevations shown are for W27 x 84. For top of W27 x 102 at Splices add .02'  
\*\* Use for Shop Fabrication only.  
NTR - Notch Toughness Requirement.  
NOTE: Bolts for Interior Diaphragms between Beams 3 & 4 shall be tightened after Stage II Deck is in place.

**STRUCTURAL STEEL**  
FA RTE, 849 SECTION 113 BR-3  
JEFFERSON CO.  
STATION 118+07.81  
S.N. 041-0041

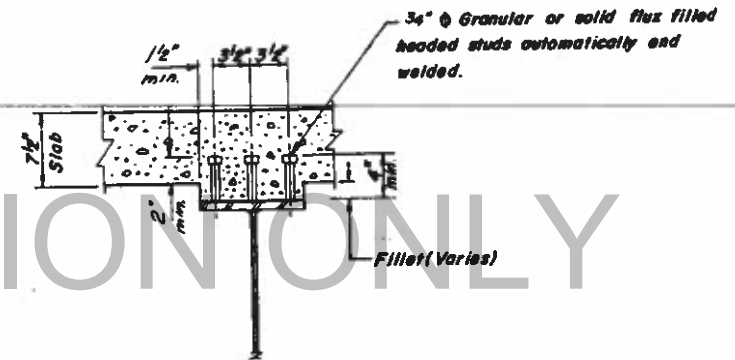
GREENE & BRADFORD, L.L.C.  
CONSULTING ENGINEERS  
400 W. BROADWAY, SUITE 2000, CHICAGO, ILL. 60601



**ELEVATION TYPICAL BEAM**  
 \* See Sheet 8 for Fill Plates



**STUD LOCATION PLAN**  
 (Splice A Shown - B Similar)



**SHEAR STUDS**  
 1.764 Req'd.

- o - Flange Splice Bolt
- x - Shear Stud

Note: Minor relocation of studs will be permitted in order to avoid flange bolts.

INTERIOR GIRDER MOMENT TABLE		
	0.4 Sp. 1	Pier
$I_x$ (in <sup>4</sup> )	2850	3620
$I_y$ (in <sup>4</sup> )	9088	
$S_x$ (in <sup>3</sup> )	213	267
$S_y$ (in <sup>3</sup> )	342	
$Z$ (in <sup>3</sup> )		305
$M$ (K/ft)	0.726	1.028
$M$ (K)	173	-463
$M$ (K/ft)	302	
$M_s$ (K)	86	
$M$ (K)	417	-222
$M$ imp. (K)	112	-60
$I_y$ (in <sup>4</sup> + I) (K)	882	-470
$M_s$ (K)	1483	-1212
$M_s$ (K)	1734	
$f_s$ (non-comp) (k.s.i)	9.7	18.2
$f_s$ (comp) (k.s.i)	3.3	
$f_s$ (I + I) (k.s.i)	30.9	18.2
$f_s$ (Overload) (k.s.i)	43.9	36.7
$f_s$ (Total) (k.s.i)		47.7
VR (K)	45.3	

INTERIOR GIRDER REACTION TABLE		
	Abut	Pier
R (K)	23.1	77.0
R imp. (K)	35.8	43.8
Imp. (K)	9.7	11.8
R Total (K)	68.6	132.6

**NOTES**

$I_x$  and  $S_x$  are the moment of inertia and section modulus of the composite section used in computing  $I_y$  (Total Overload).

$I_y$  and  $S_y$  are the moment of inertia and section modulus of the steel section used in computing  $I_x$  (Total Overload).

VR is the maximum  $L \times$  impact shear range in span.

$Z$  is the plastic section modulus used to determine the Fully Plastic Moments in the non-composite areas.

The Fully Plastic Moment capacity ( $M_p$ ) is computed according to AASHTO R2.4B.1 & 10.50.11.

$I_y$  (Total) is the sum of the stresses due to  $1.3[M \bar{L} + M_s \bar{L} + \frac{1}{2} M \bar{L} + I]$

$I_y$  (Overload) is the sum of the stresses due to  $M \bar{L} + M_s \bar{L} + \frac{1}{2} M \bar{L} + I]$

$M \bar{L}$  - Moment due to dead loads on non-composite section.

$M_s \bar{L}$  - Moment due to dead loads on composite section.

$M \bar{L}$  - Moment due to live load on non-composite or composite section.

$I$  - Live load impact

\*  $M_p$  = Full Plastic Moment Capacity for Compact, Braced section.

\*\* Non-compact section

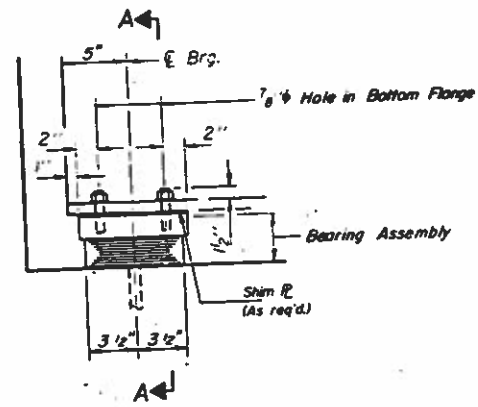
$M_s$  (Applied Moment) =  $1.3 [M \bar{L} + M_s \bar{L} + \frac{1}{2} M \bar{L} + I]$

**STRUCTURAL STEEL DETAILS**  
 FA RTE 849 SECTION 113BR-3  
 JEFFERSON CO.  
 STATION 118+07.81

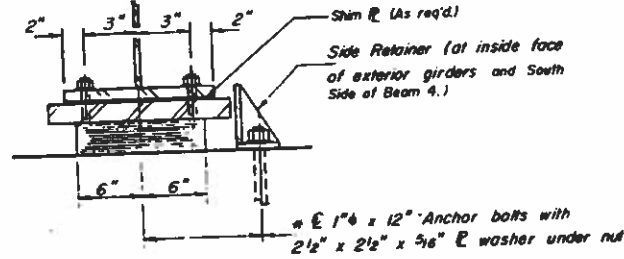
STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

GROUP NO.	SECTION	DATE	SHEET NO.	SHEETS
849	113BR3	JEFFERSON	22	14

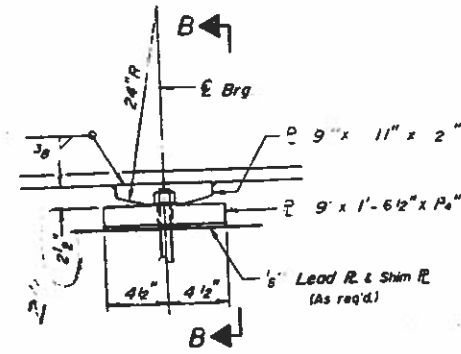
BRIDGE SHEET NO. OF 17



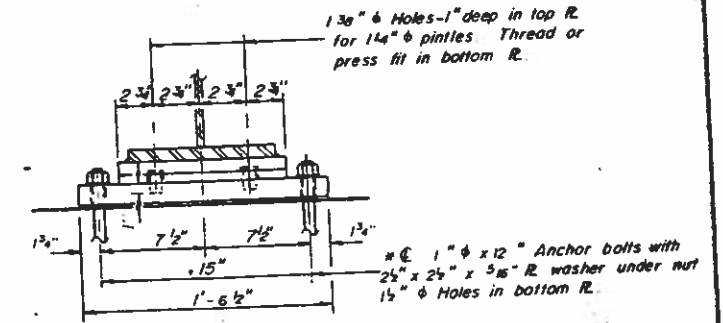
ELEVATION AT ABUT.



SECTION A-A



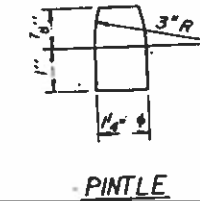
ELEVATION AT PIER



SECTION B-B

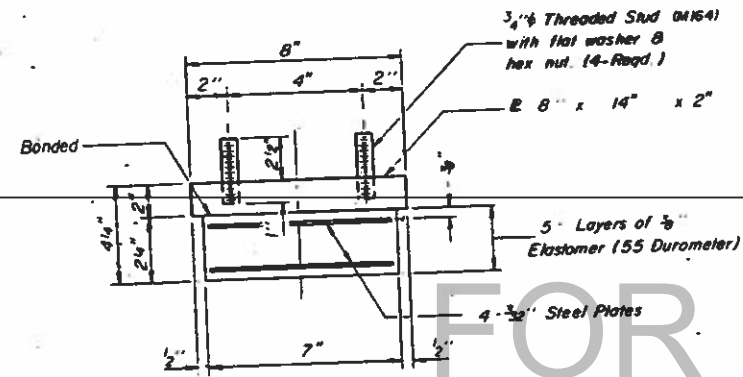
FIXED BEARING  
(6 Req'd.)

\* Notes: Anchor bolts at fixed bearings may be built into the masonry. See sheet #15 for Anchor Bolt installation.



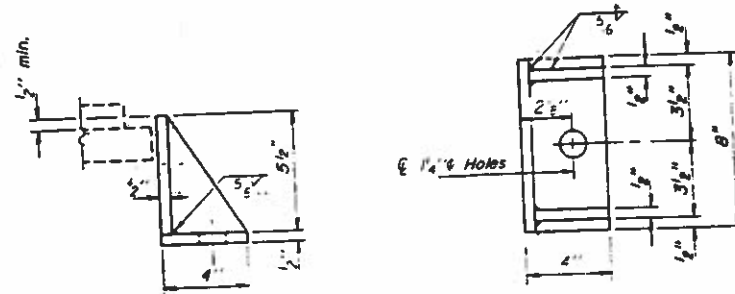
PINTLE

TYPE I ELASTOMERIC EXP. BRG.



BEARING ASSEMBLY

Note: Shim plates shall not be placed under Bearing Assembly



SIDE RETAINER

Equivalent rolled angle with stiffeners will be allowed in lieu of welded plates.

(6 Req'd.) Included with Structural Steel

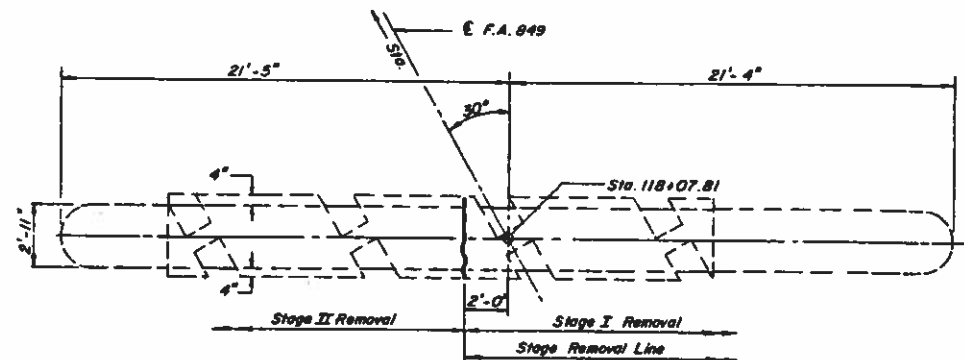
FOR INFORMATION ONLY

BILL OF MATERIAL

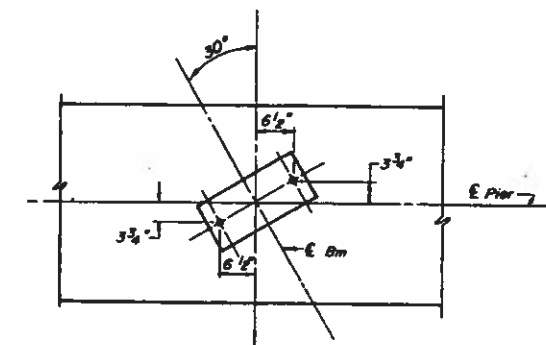
Item	Unit	Total
Elastomeric Bearing Assembly Type I	Each	12

BEARINGS  
FA RTE 849 SECTION 113BR-3  
JEFFERSON CO  
STATION 118+07.81

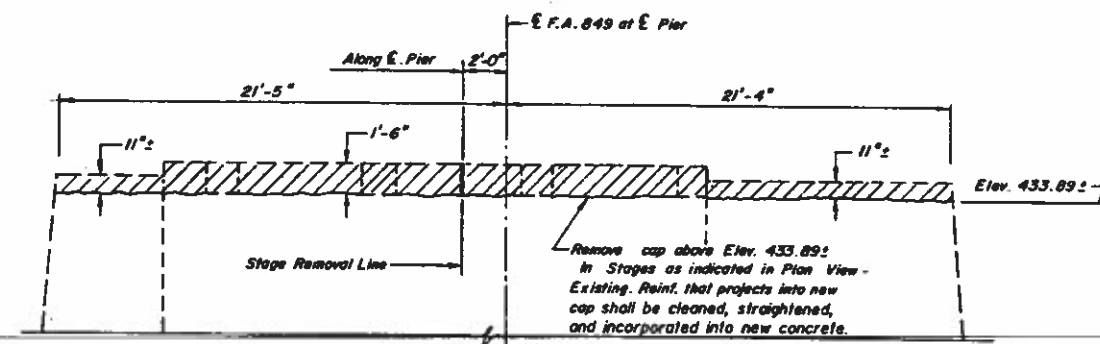
GREENE & BRADFORD, L.M.  
CONSULTING ENGINEERS  
111 1/2 ST. JOHNS DR. • ST. LOUIS, MO. 63102-1111



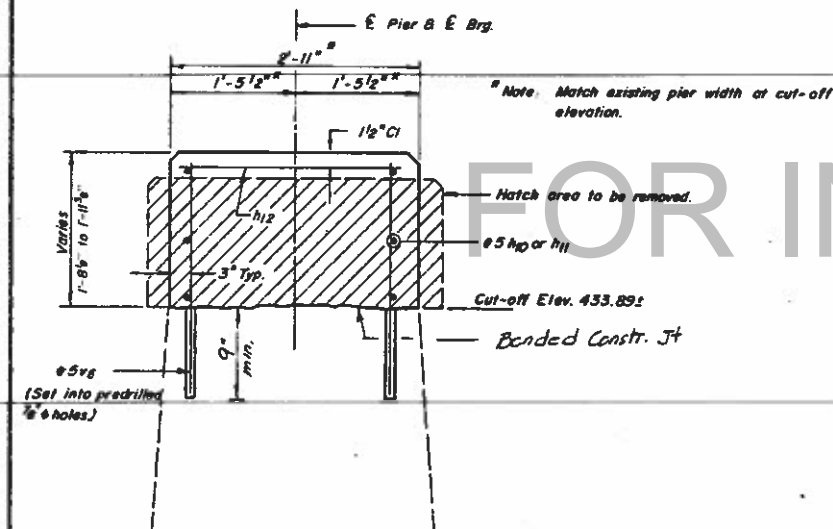
PLAN VIEW-EXISTING



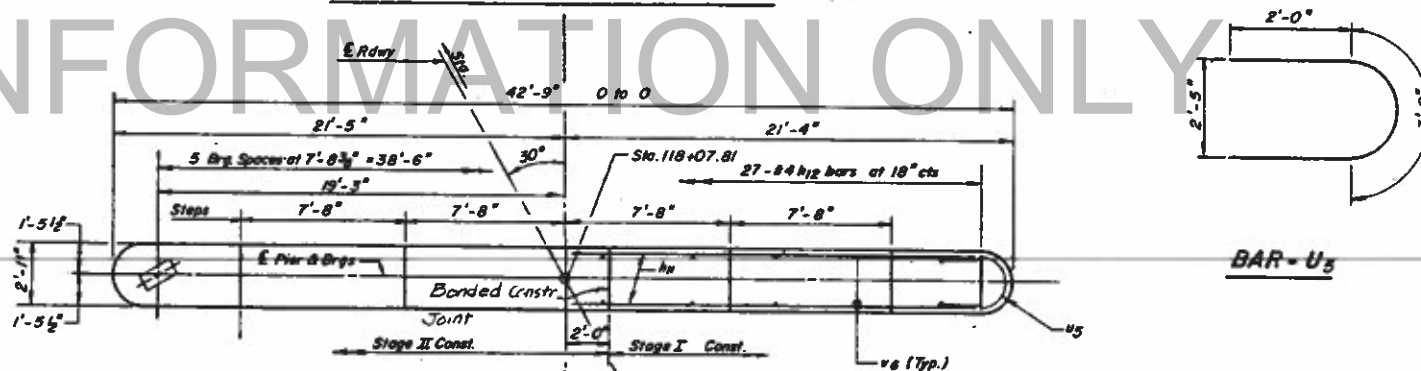
BEARING PLATE ANCHOR BOLT LAYOUT



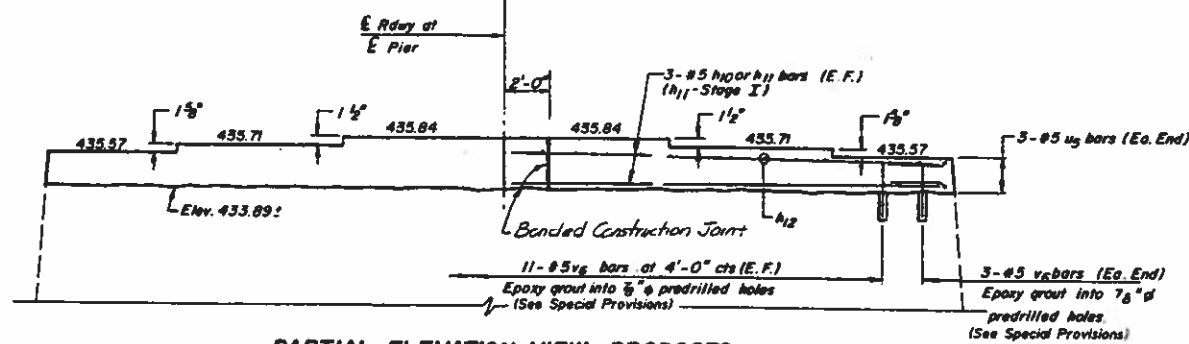
PARTIAL ELEVATION VIEW-EXISTING



SEC. THRU PIER CAP



PLAN VIEW-PROPOSED



PARTIAL ELEVATION VIEW-PROPOSED

PIER

BAR	NO.	SIZE	LENGTH	SHAPE
h10	6	#5	21'-10"	—
h11	6	#5	20'-0"	—
h12	27	#4	2'-8"	—
u5	6	#5	7'-9"	⊂
v6	28	#5	2'-7"	—
Concrete Removal		Cu. Yd.	6.3	
Class X Concrete		Cu. Yd.	6.3	
Reinforcement Bars		Lb.	430	

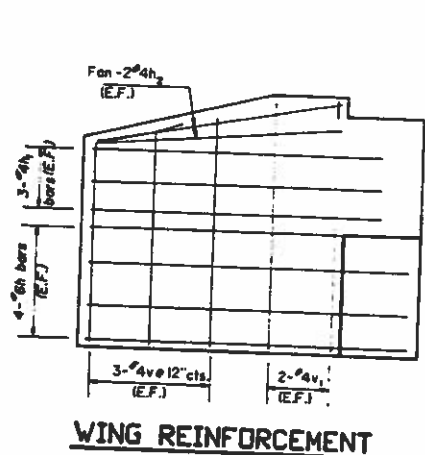
PIER

F.A. RTE 849 SECTION 113 BR-3  
JEFFERSON CO.  
STATION 118+07.81

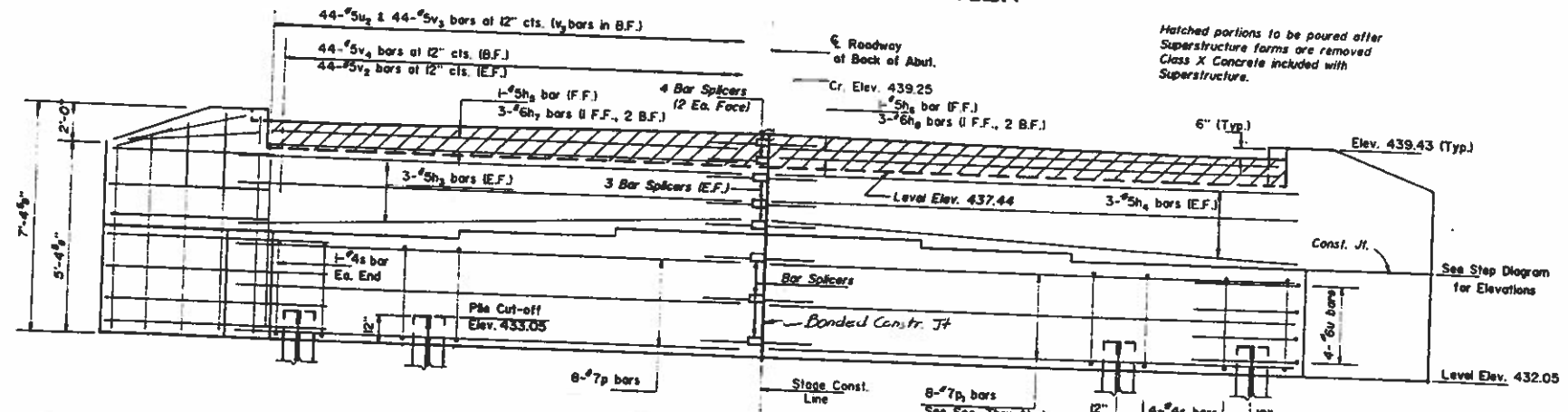
STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

SEC NO	ROUTE	COUNTY	SHEET	TOTAL
133R-3	FA 849	JEFFERSON	22	16

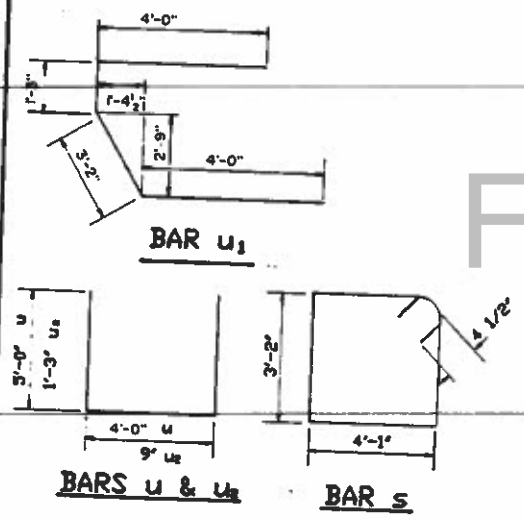
BRIDGE SHEET 12 OF 17



WING REINFORCEMENT

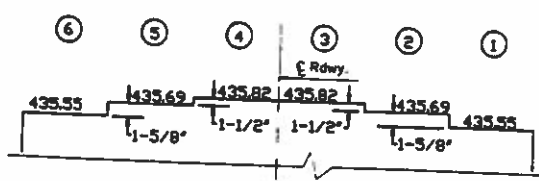


ELEVATION



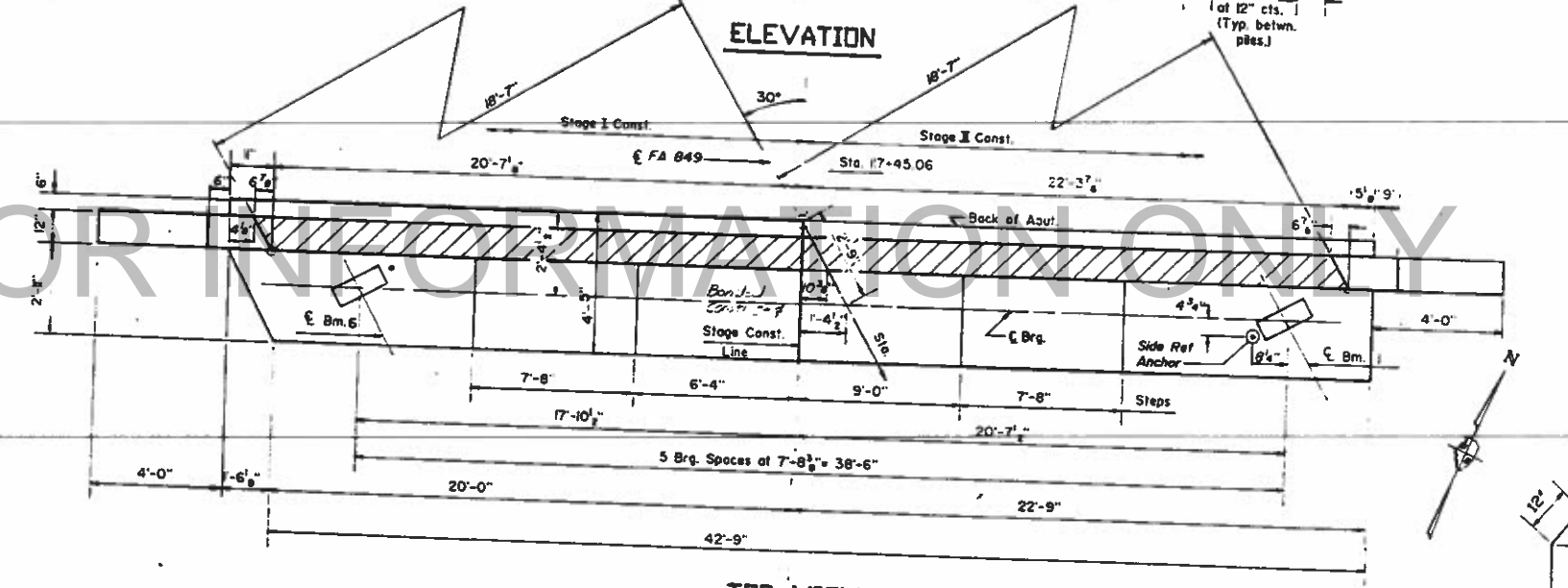
PILE DATA

TYPE: Steel HP BX36  
CAPACITY: To Refusal  
EST. LENGTH: 40  
NUMBER: 9

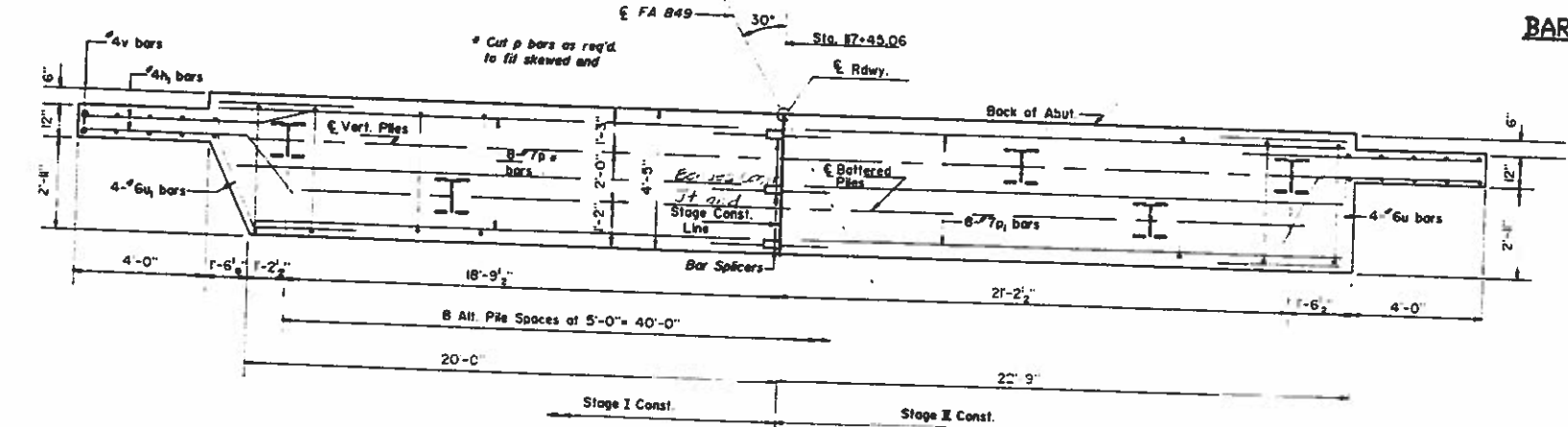


STEP DIAGRAM

(Pour steps nonolithically with cap)



TOP VIEW



PLAN PILE CAP

ONE ABUTMENT  
BILL OF MATERIALS

BAR	NO	SIZE	LENGTH	SHAPE	
h	15	#6	7'-0"		
h	12	#4	6'-0"		
h	8	#4	4'-6"		
h	6	#5	21'-9"		
h	6	#5	23'-0"		
h	1	#5	20'-9"		
h	1	#5	22'-3"		
h	3	#6	20'-9"		
h	3	#6	22'-3"		

D	8	#7	21'-3"	
P	8	#7	22'-6"	
S	34	#4	15'-3"	
U	4	#6	14'-0"	
U	4	#6	12'-5"	
U	44	#6	3'-3"	
V	12	#4	6'-2"	
V	8	#4	7'-0"	
W	88	#5	3'-0"	
W	44	#5	3'-3"	
W	44	#5	3'-6"	

REINFORCEMENT BARS POUND 3050  
CLASS X CONCRETE CU YD 32.3  
STEEL PILES HPBX36 LIN FT 360

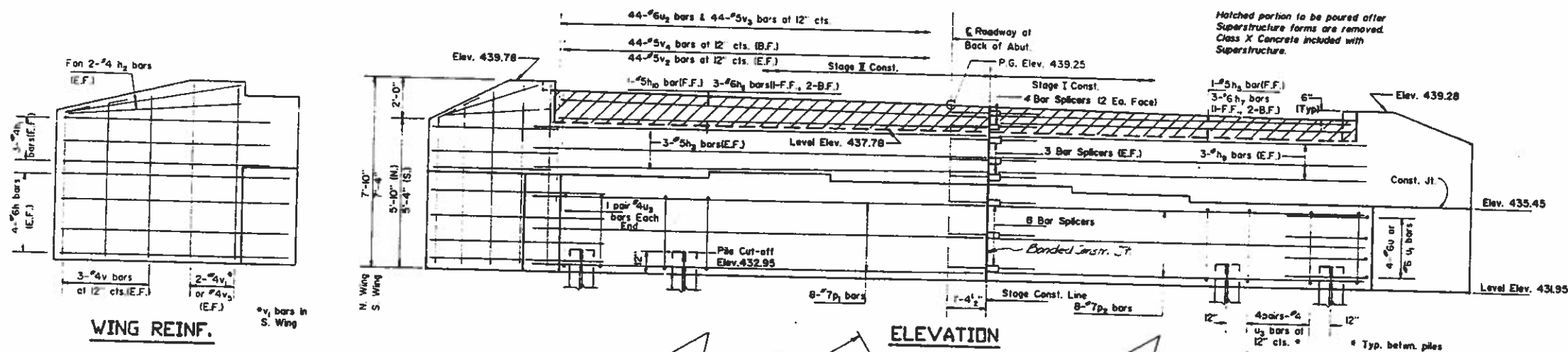
WEST ABUTMENT

FA RTE 849 SEC 113BR-3  
JEFFERSON COUNTY  
STATION 118+07.81

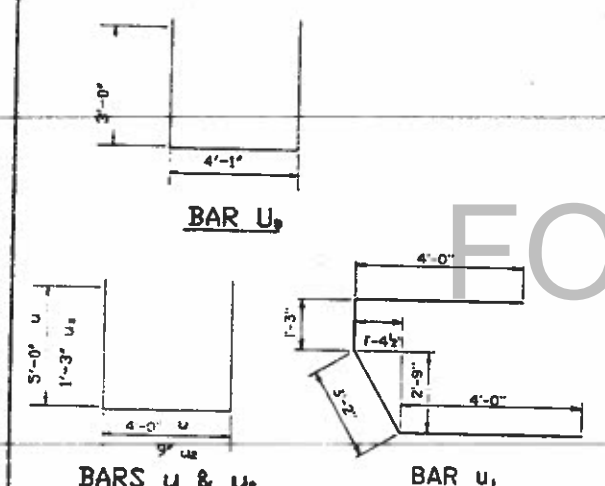
# STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION

SEC NO	ROUTE	COUNTY	POST MILE	SHEET NO
113BR-3	FA 849	JEFFERSON	22	17

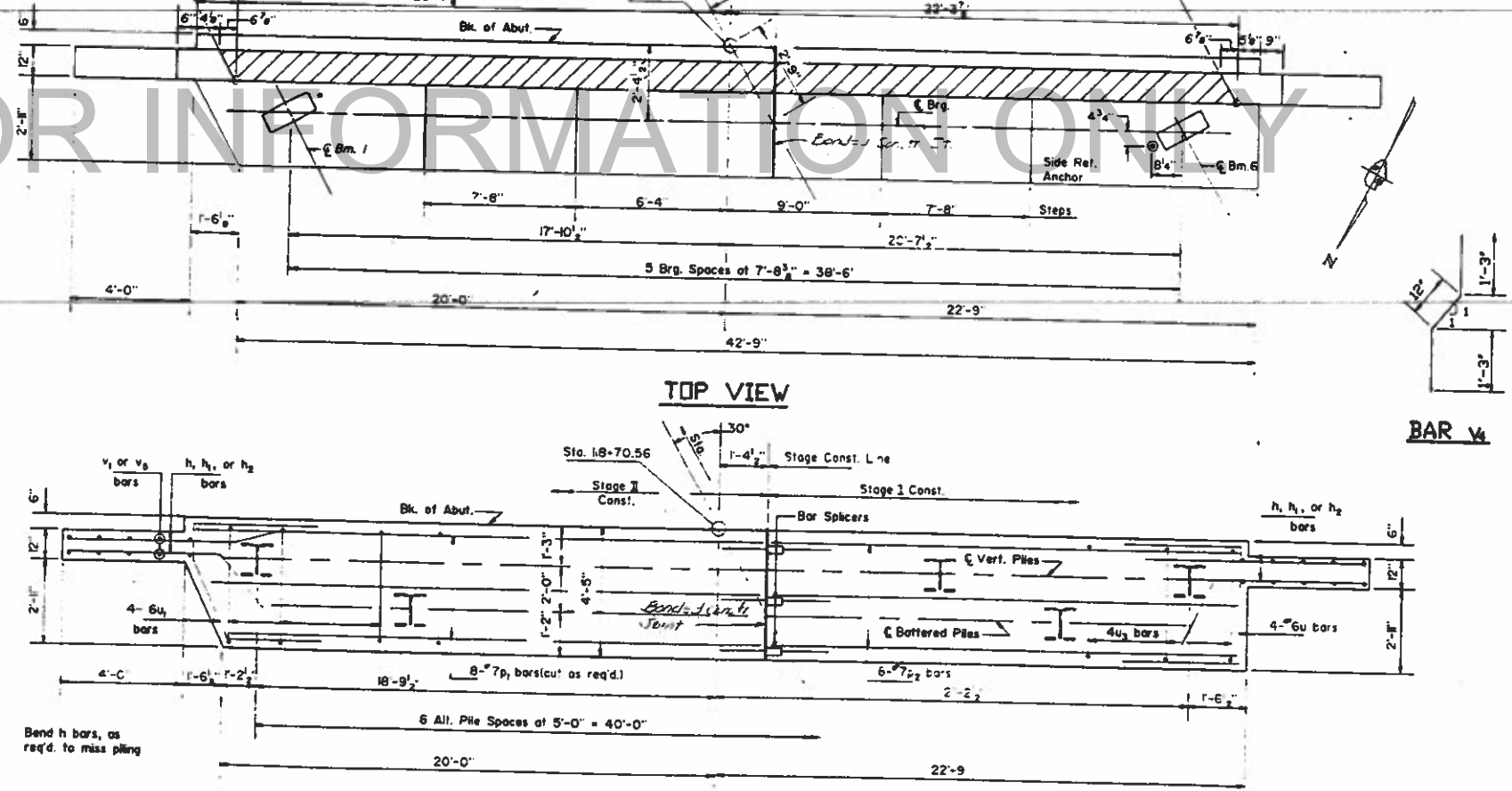
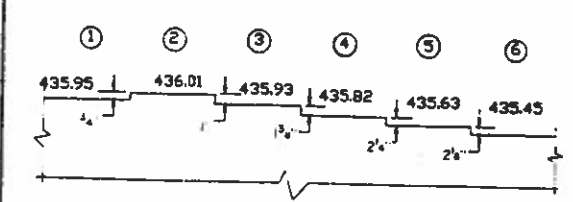
BRIDGE SHEET 13 OF 17



NOTE: Work this sheet with Sheet No. 14



**PILE DATA**  
 TYPE: Steel HP 8X36  
 CAPACITY: To Refusal  
 EST. LENGTH: 39  
 NUMBER: 8  
 TEST PILE: 1



**ONE ABUTMENT  
BILL OF MATERIALS**

BAR	NO	SIZE	LENGTH	SHAPE
h	16	#6	7'-0"	U
h1	12	#4	6'-0"	U
h2	8	#4	4'-6"	U
h3	6	#5	21'-9"	U
h4	1	#5	20'-9"	U
h5	3	#6	20'-9"	U
h6	6	#5	21'-0"	U
h7	1	#5	21'-8"	U
h8	3	#6	21'-8"	U
P1	8	#7	22'-8"	U
P2	8	#7	21'-0"	U
u	4	#6	14'-0"	U
u1	4	#6	12'-5"	U
u2	44	#6	3'-3"	U
u3	68	#4	10'-1"	U
v	12	#4	6'-2"	U
v1	4	#4	7'-0"	U
v2	88	#5	5'-0"	U
v3	44	#5	3'-3"	U
v4	44	#5	3'-6"	U
v5	4	#4	7'-3"	U
REINFORCEMENT BARS				POUND 3140
CLASS X CONCRETE				CU YD 34.2
STEEL PILES HPBX36				LN FT 312
TEST PILE HPBX36				EA 1

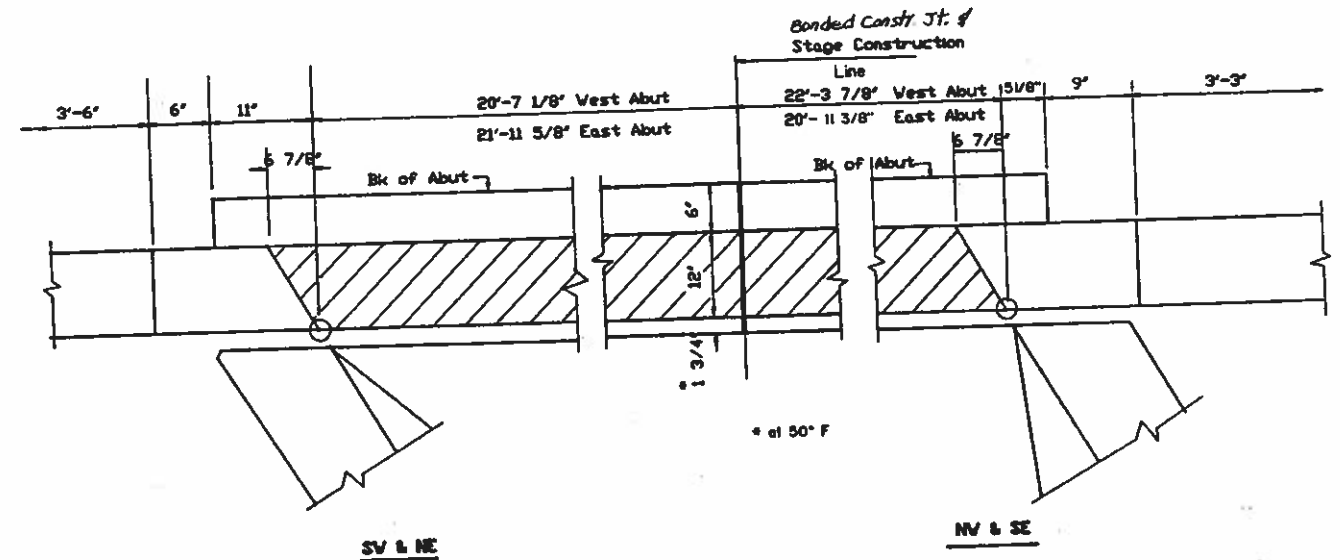
**EAST ABUTMENT**  
 FA RTE 849 SEC 113BR-3  
 JEFFERSON COUNTY  
 STATION 118+07.81

**GREENE & BRADFORD, LTD.**  
 Consulting Engineers  
 289 Shawnee Dr. 27701-6002, Raleigh, N.C.

SEC NO	ROUTE	COUNTY	STA	SP
113BR-3	FA 845	JEFFERSON	22	18
PIMA RECORD NO 8		BLANKS	PILA AND PILLI NO.	

BRIDGE SHEET 14 OF 17

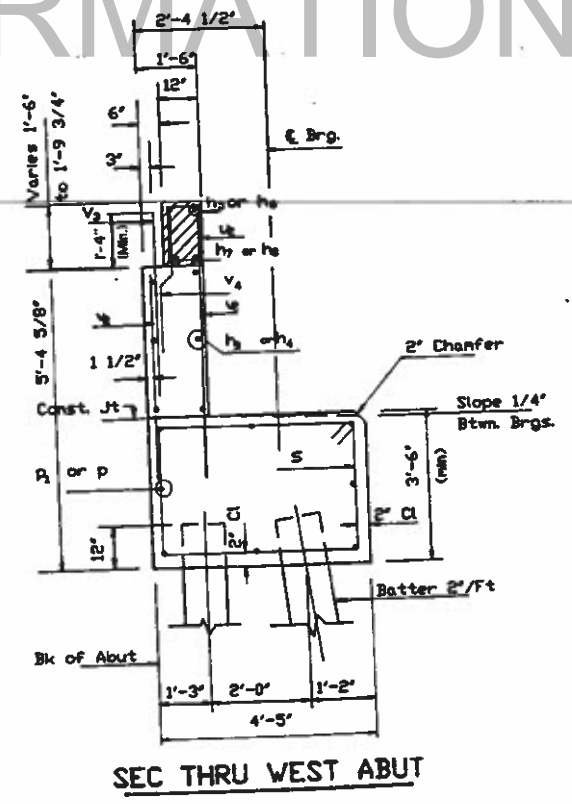
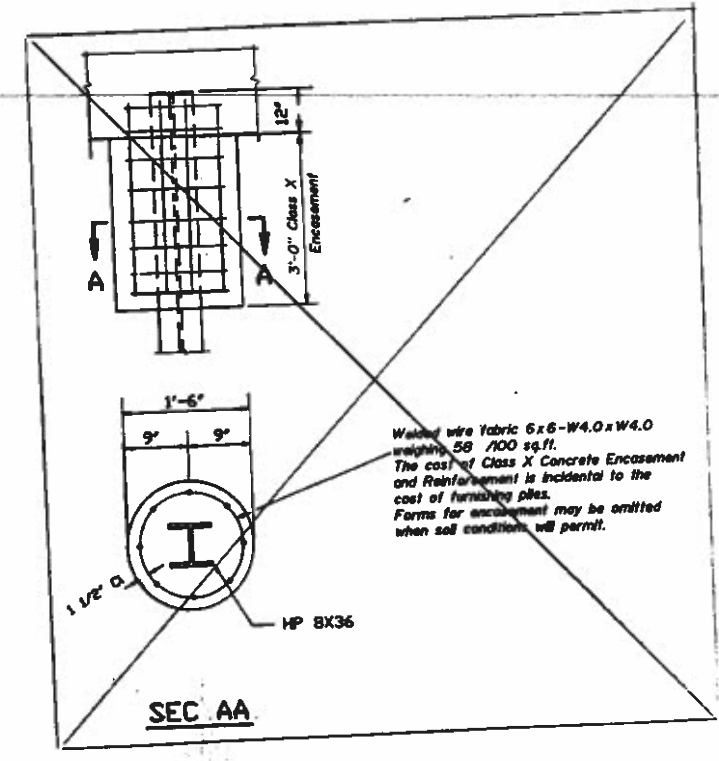
STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION



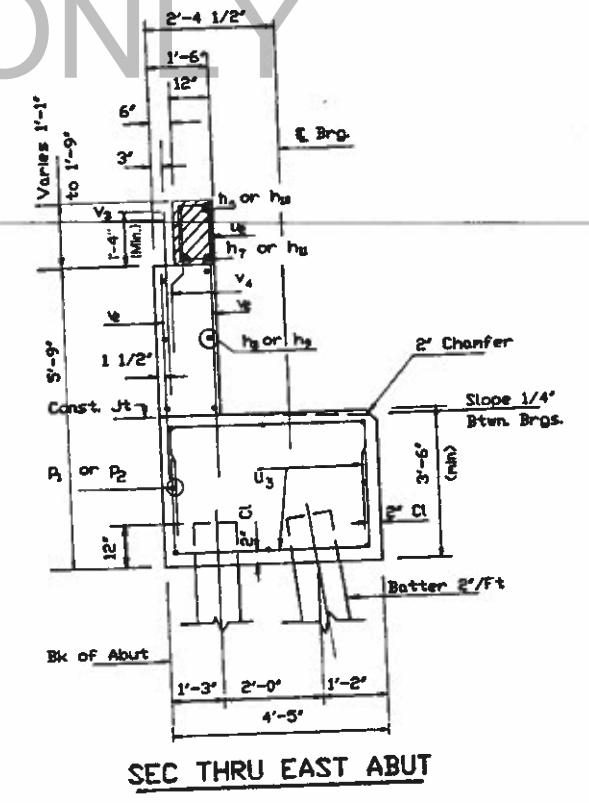
CORNER DETAILS

Hatched portion to be poured after Superstructure forms are removed. Class X Concrete Included with Superstructure.

FOR INFORMATION ONLY



SEC THRU WEST ABUT



SEC THRU EAST ABUT

ABUTMENT DETAILS

FA RTE SEC 113BR-3  
JEFFERSON COUNTY  
STA 118+07.81

GREENE & BRADFORD, LTD.  
Consulting Engineers  
200 Westmore Dr. 617/299-6685 Springfield, IL

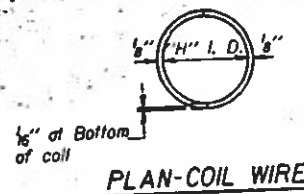
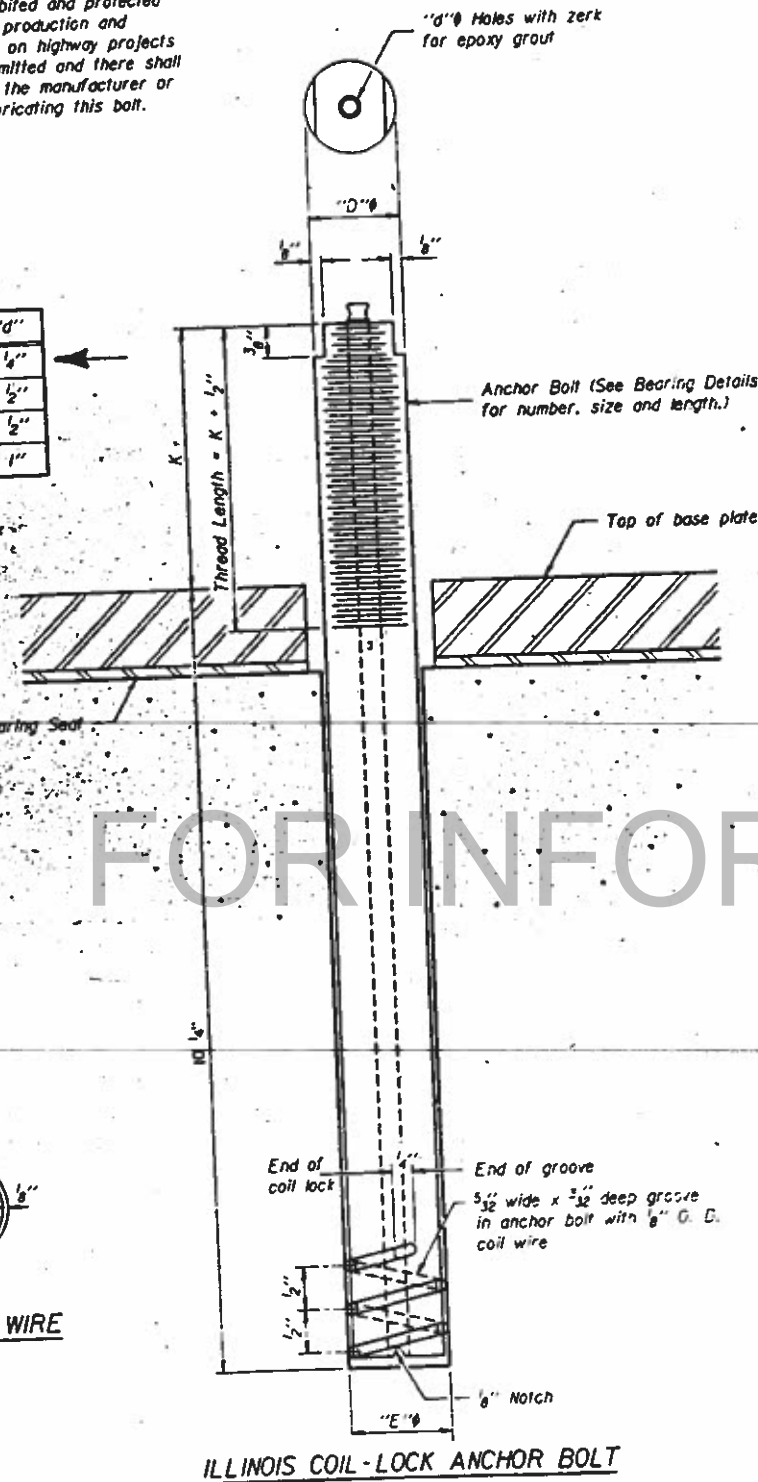
STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

STATE NO.	SECTION	PROJECT	SHEET	SHEET NO.
849	13BR-3	JEFFERSON	22	19
PROJECT DESCRIPTION		SHEETS		

BRIDGE SHEET 15 OF 17

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	"d"
1"	1 1/8"	3 1/2"	1 3/4"	1/4"
1 1/2"	1 5/8"	4 1/2"	2 1/8"	1/2"
2"	2 1/8"	5 1/2"	2 7/8"	1/2"
2 1/2"	2 5/8"	6 1/2"	3 3/8"	1"



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 I and of a Class suitable for the temperature at 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 fitting 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".

Anchor bolts, nuts and washers shall be completely coated by either the hot-dipped process conforming with AASHTO M232 or the mechanical plating method conforming to ASTM B695, Class 50. Zinc coated nuts shall be tapped oversize in accordance with the requirements of AASHTO M291 and shall meet the supplementary requirements S1.1 thru S1.2.1 of the same specifications for lubricant and testing.

FOR INFORMATION ONLY

ANCHOR BOLT DETAILS FOR BEARINGS

FA RTE 849 SECTION 13BR-3  
JEFFERSON CO.  
STATION 18+07.81  
S.N. 041-0041



BRIDGE FOUNDATION BORING LOGS

JOB NO. P-97-016-84 BRIDGE CASEY FORK OVERFLOW Date SEPTEMBER 12, 1985  
 ROUTE FA 849 (ILL. 142) - Bored By R. D. METREYET  
 STA. 118+09 Checked By J. J. KLAT  
 COUNTY JEFFERSON  
 Boring No. 2, H. ABUT.  
 Station 118+09  
 Elevation 873.52

Station	Blows	Q <sub>u</sub> /1/2	Q <sub>u</sub> /1	Q <sub>u</sub> /1/2	Q <sub>u</sub> /1	Q <sub>u</sub> /1/2	Q <sub>u</sub> /1	Q <sub>u</sub> /1/2	Q <sub>u</sub> /1	Q <sub>u</sub> /1/2
430.60										
437.72										
438.6	6	0.7	23							
439.7	7	0.9	21							
440.7										
440.6	6	0.7	23							
424.6	5	0.3	26							
420.6	4	0.4	24							
418.7										
416.6	3	0.3	26							

REMARKS:  
 ORIGINAL BORING LOCATION FOR THE NORTH ABUTMENT AREA WAS AT STATION 117+33, 6.5' RIGHT OF CENTERLINE. THE BORING DATA FROM ELEVATION 438.6 TO ELEVATION 420.1 SHOWN ON THE LOG IS FROM THIS LOCATION. HOWEVER, CONCRETE WAS ENCOUNTERED AT ELEVATION 420.1 AND THE BORING LOCATION WAS MOVED TO STATION 117+47, 8.5' RIGHT OF CENTERLINE. THE BORING DATA FROM ELEVATION 420.1 TO ELEVATION 387.1 SHOWN ON THE LOG IS FROM THE SECOND LOCATION.

BORING NO. 1

JOB NO. P-97-016-84 BRIDGE CASEY FORK OVERFLOW Date SEPTEMBER 12, 1985  
 ROUTE FA 849 (ILL. 142) - Bored By R. D. METREYET  
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Station	Blows	Q <sub>u</sub> /1/2	Q <sub>u</sub> /1	Q <sub>u</sub> /1/2	Q <sub>u</sub> /1	Q <sub>u</sub> /1/2	Q <sub>u</sub> /1	Q <sub>u</sub> /1/2	Q <sub>u</sub> /1	Q <sub>u</sub> /1/2
438.6										
437.2										
435.0	5	0.6	28							
434.0	6	0.7	28							
429.4	6	0.9	26							
428.7										
426.0	6	0.9	26							
423.7										
423.7	2	0.2	28							
420.1	2	0.3	21							
417.1	4	0.7	25							

REMARKS:  
 \* 3-1/4" PENETRATION FOR 100 BLOWS  
 \*\* 2" PENETRATION FOR 100 BLOWS

BORING NO. 2

N - Standard Penetration Test Blows per foot to drive 2" O.D. Split Spoon Sampler 12" with 140 lb. hammer falling 30"  
 Qu - Unconfined Compressive Strength - 1/sf  
 w - Water Content - percentage of oven dry weight - %  
 Type failure:  
 B - Budge Failure  
 S - Shear Failure  
 E - Estimated Value  
 P - Penetrometer

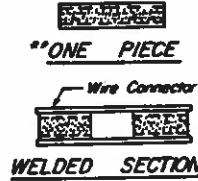
BORING LOGS  
 FA RTE 849 SECTION E3BR-3  
 JEFFERSON CO. STATION 88+07.81  
 S.A. 041-0041

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

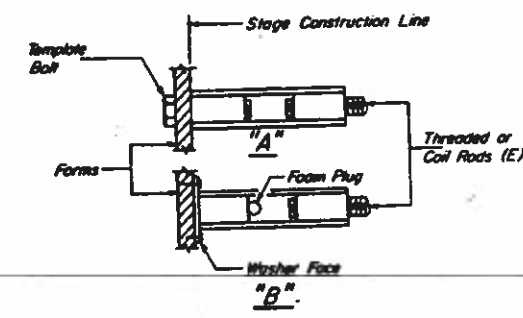
The diameter of this part of splicer is the same diameter of the bar spliced.



Roller Thread Dowel Bar

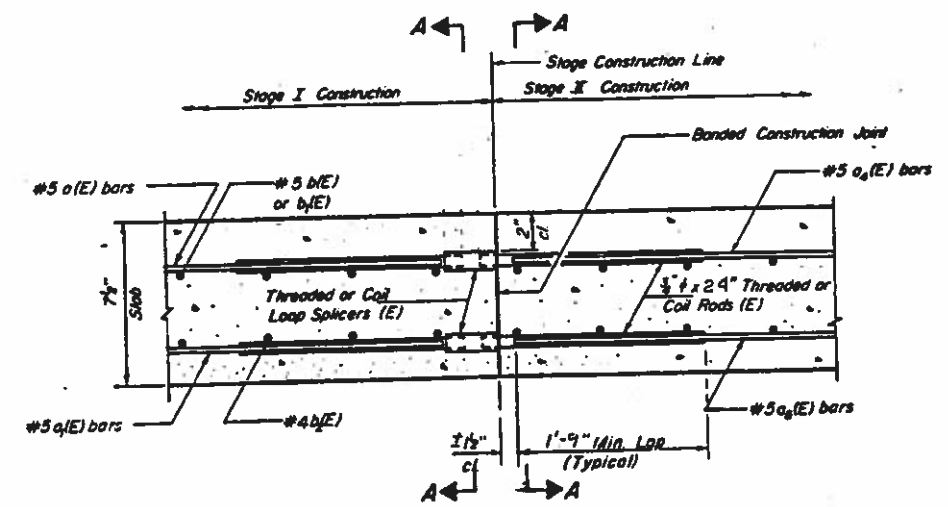


SPLICER ALTERNATIVES  
\*\* Heavy Hex Nuts conforming to ASTM A 563, Grade C, D or DH may be used

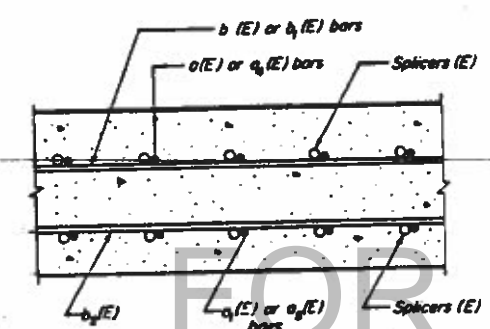


INSTALLATION AND SETTING METHODS

- "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.



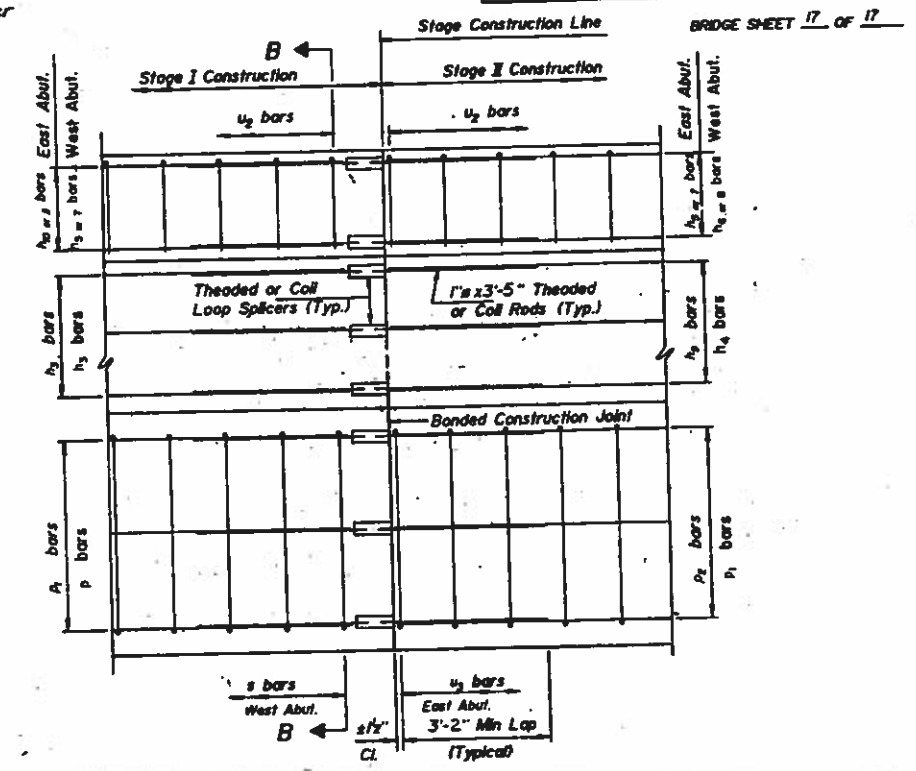
SECTION THRU SLAB



SECTION A-A

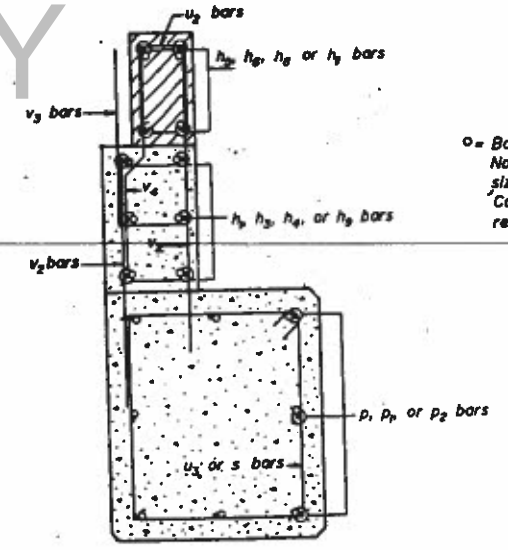
SPLICER DETAILS  
(No Req'd 356)

Cost incidental to reinforcement bars (Epoxy Coated).



SECTION THRU ABUTMENTS

No Epoxy Coating Required



SECTION B-B  
SPLICER DETAILS  
(No. Required 361)

o = Bar Splicer - See Notes for appropriate sizes. Cost incidental to reinforcement bars.

**NOTES**  
Steel Splicer (Coupler) assembly shall be of an approved type and shall develop in tension or 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 coiled full length and have effective tensile stress area equal or greater than that of the lapped reinforcement bars.

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 =  $1.25 \times f_y \times A_l$   
(Tension in kips)
- Minimum Pull-out Strength =  $1.25 \times f_{stc} \times A_l$   
(Tension in kips)

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

Typical Splicer (Coupler) Assembly Sizes:

#5 bar lap with $\frac{3}{8}$ " Splicer (Coupler) x 2'-0" Splicer Rods	Minimum Capacity = 23.0 kips-tension Minimum Pull-out Strength = 9.2 kips-tension
#7 bar lap with 1" Splicer (Coupler) x 3'-5" Splicer Rods	Minimum Capacity = 45.1 kips-tension Minimum Pull-out Strength = 18.0 kips-tension
#6 bar lap with $\frac{7}{8}$ " Splicer (Coupler) x 2'-6" Splicer Rods	Minimum Capacity = 33.1 kips-tension Minimum Pull-out Strength = 13.3 kips-tension

BAR SPLICER (COUPLER) DETAILS  
AT STAGE CONSTRUCTION  
FA RTE 849 SECTION 13BR-3  
JEFFERSON CO.  
STATION 118+07.81