

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
180	(06-3,78-1)I-2	PUTNAM	12	1
FED. ROAD DIST. NO.	ILLINOIS	CONTRACT NO. 66734		

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
**PROPOSED  
HIGHWAY PLANS**

FAI ROUTE 180 (I-180)  
SECTION (06-3,78-1)I-2

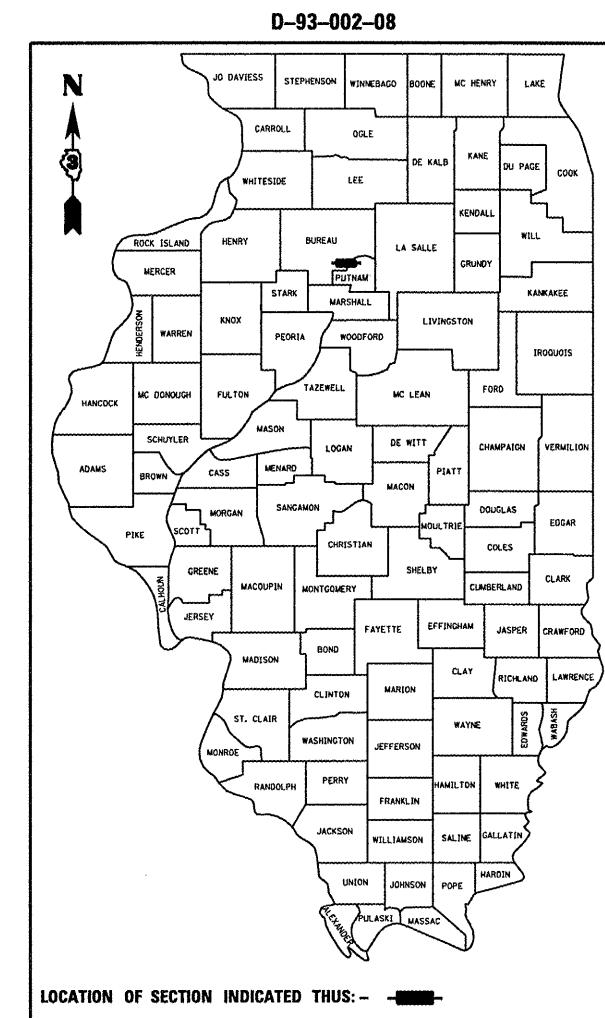
**PUTNAM**  
C-93-006-08  
**STRUCTURAL STEEL REPAIR**

INDEX OF SHEETS

1. COVER SHEET
2. GENERAL NOTES
3. SUMMARY OF QUANTITIES
4. TYPICAL SECTION
5. GENERAL PLAN AND ELEVATION
6. BATTEN PLATE REPAIR DETAILS
7. LACING BAR REPAIR DETAILS
8. BRACING REPAIR DETAILS

STANDARDS

- |           |   |
|-----------|---|
| 000001-05 | STANDARD SYMBOLS, ABBREVIATIONS AND PATTERNS                                  |
| 001001-01 | AREAS OF REINFORCEMENT BARS   |
| 001006    | DECIMAL OF AN INCH AND OF A FOOT  |
| 701001-01 | OFF-ROAD OPERATIONS 2L, 2W, MORE THAN 4.5 m (15') AWAY                        |
| 701006-02 | OFF-ROAD OPERATIONS 2L, 2W, 4.5 m (15') TO 600 mm (24") FROM PAVEMENT EDGE    |
| 701101-01 | OFF-ROAD OPERATIONS MULTILANE, 4.5 m (15') TO 600 mm (24") FROM PAVEMENT EDGE |
| 701401-04 | LANE CLOSURE, FREEWAY/EXPRESSWAY  |
| 701301-02 | LANE CLOSURE, 2L, 2W, SHORT TIME OPERATIONS                                   |
| 701901    | TRAFFIC CONTROL DEVICES   |



FUNCTIONAL CLASSIFICATION  
RURAL INTERSTATE  
F.A.I. ROUTE 180 (I-180)  
2005 ADT = 2750  
P.V = 80.9%    M.U. = 13.6%    S.U. = 5.5%

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS

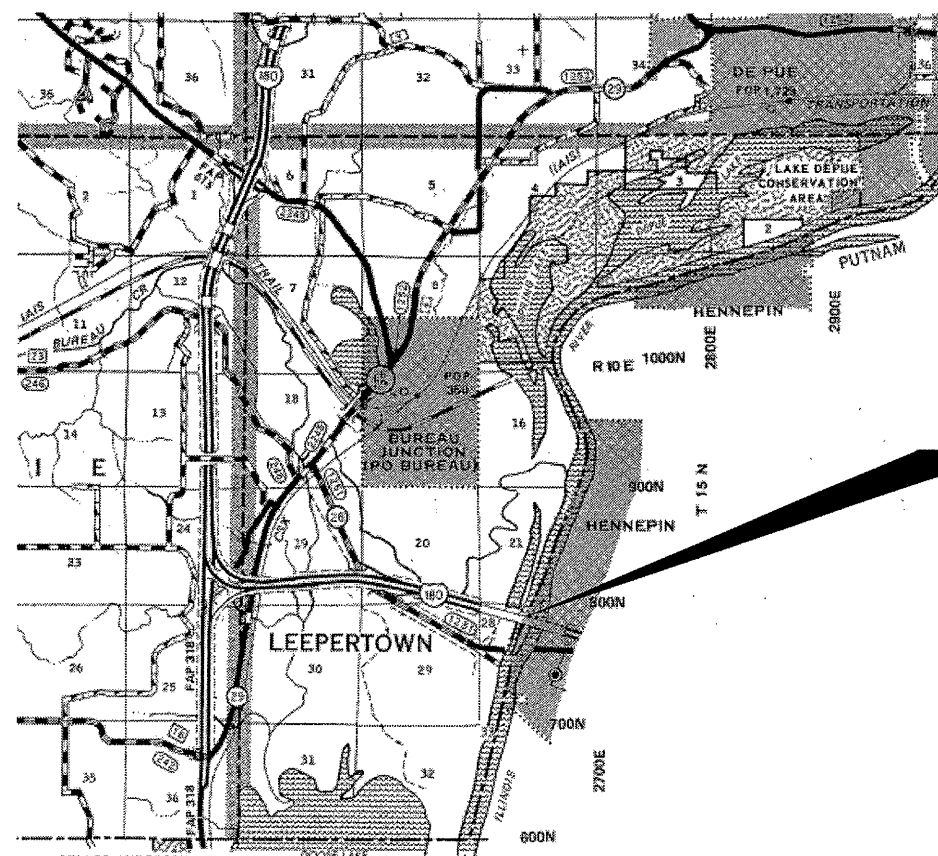
SUBMITTED **3/25/08**

*George A. Ryan*  
DEPUTY DIRECTOR OF HIGHWAYS, REGION ENGINEER

*Eric E. Hamm*  
Interim ENGINEER OF DESIGN AND ENVIRONMENT

*Christine M. Reed*  
DIRECTOR OF HIGHWAYS, CHIEF ENGINEER

**PRINTED BY THE AUTHORITY  
OF THE STATE OF ILLINOIS**



**PROJECT LOCATION**  
SN 078-0001  
FAI 180 (I-180) OVER THE ILLINOIS RIVER  
JUST WEST OF I-180/L 71  
INTERCHANGE (HENNEPIN)

**LOCATION MAP**  
NOT TO SCALE  
POINT LOCATION

MICROFILMED \_\_\_\_\_  
REEL NUMBER \_\_\_\_\_  
AWARDED \_\_\_\_\_  
RESIDENT ENGINEER \_\_\_\_\_  
AS BUILT CHANGES WERE MADE  
ON THE FOLLOWING SHEETS \_\_\_\_\_

J.U.L.I.E.  
JOINT UTILITY LOCATION INFORMATION FOR EXCAVATION  
1-800-892-0123

DISTRICT 3 NO. (815) 434-6131

PROJECT ENGINEER: JOE KANNEL  
UNIT CHIEF: RON WOODSHANK

CONTRACT NO. 66734

GENERAL NOTES

ANY REFERENCE TO A STANDARD IN THESE PLANS SHALL BE INTERPRETED TO MEAN THE EDITION AS INDICATED BY THE SUBNUMBER LISTED ON THE INDEX OF SHEETS OR THE COPY OF THE STANDARD INCLUDED IN THESE PLANS.

FOR STABILIZATION, ALL TYPE III BARRICADES SHALL REQUIRE A MINIMUM OF FOUR SAND BAGS PER BARRICADE.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING UTILITY PROPERTY FROM CONSTRUCTION OPERATIONS AS OUTLINED IN ARTICLE 107.31 OF THE STANDARD SPECIFICATIONS. THE "JULIE" NUMBER IS 1-800-892-0123. A MINIMUM OF FORTY-EIGHT (48) HOURS ADVANCE NOTICE IS REQUIRED.

WHERE SECTION OR SUBSECTION MONUMENTS ARE ENCOUNTERED, THE ENGINEER SHALL BE NOTIFIED BEFORE SUCH MONUMENTS ARE REMOVED. THE CONTRACTOR SHALL PROTECT AND CAREFULLY PRESERVE ALL MONUMENTS UNTIL AN AUTHORIZED SURVEYOR OR AGENT HAS WITNESSED OR OTHERWISE REFERENCED THEIR LOCATION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR HAVING AN AUTHORIZED SURVEYOR REESTABLISH ANY SECTION OR SUBSECTION MONUMENTS DESTROYED BY HIS OPERATIONS.

DATE: 3-25-08

PREPARED BY: [Signature]  
DISTRICT STUDIES & PLANS ENGINEER

EXAMINED BY: [Signature]  
DISTRICT CONSTRUCTION ENGINEER

[Signature]  
DISTRICT MATERIALS ENGINEER

[Signature]  
DISTRICT OPERATIONS ENGINEER

FILE NAME =	USER NAME = woodshankr1	DESIGNED - RW	REVISED - ---
ct:\projects\cmain09\cm301\details.dgn		DRAWN - RW	REVISED - ---
		CHECKED - ---	REVISED - ---
		DATE - -----	REVISED - ---

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**GENERAL NOTES**

SCALE: \_\_\_\_\_ SHEET NO. 1 OF 1 SHEETS STA. 50+15.58 TO STA. 80+98.75

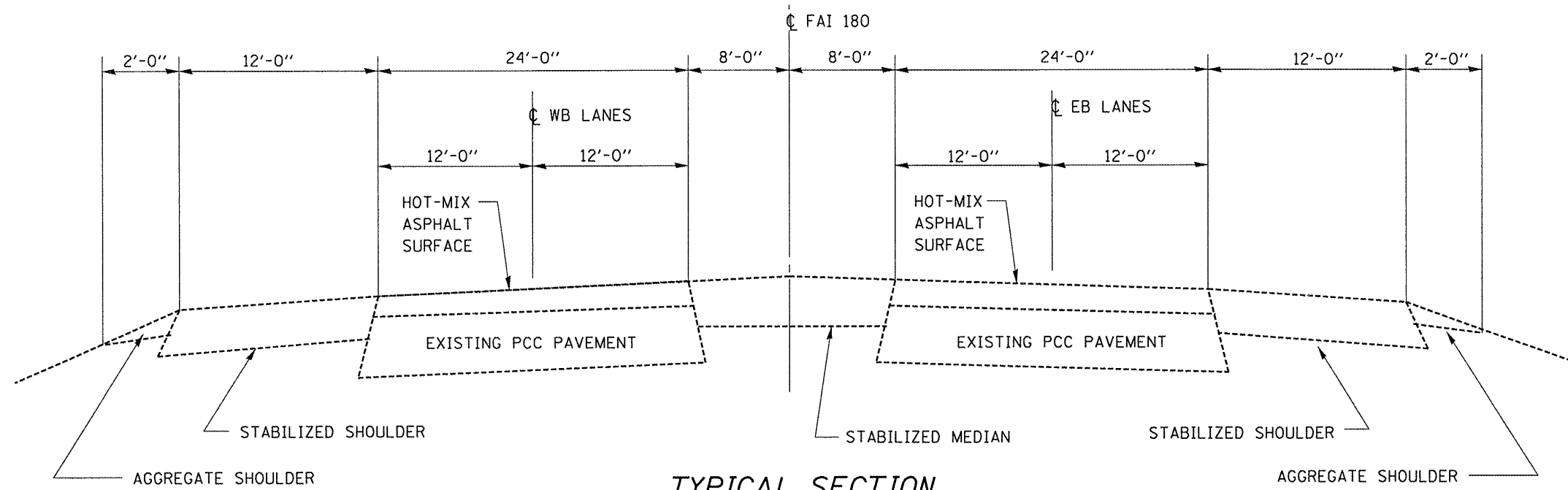
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
180	(06-3,78-1)-2	BUREAU/PUTNAM	12	2
CONTRACT NO. 66734				
FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT				

## SUMMARY OF QUANTITIES

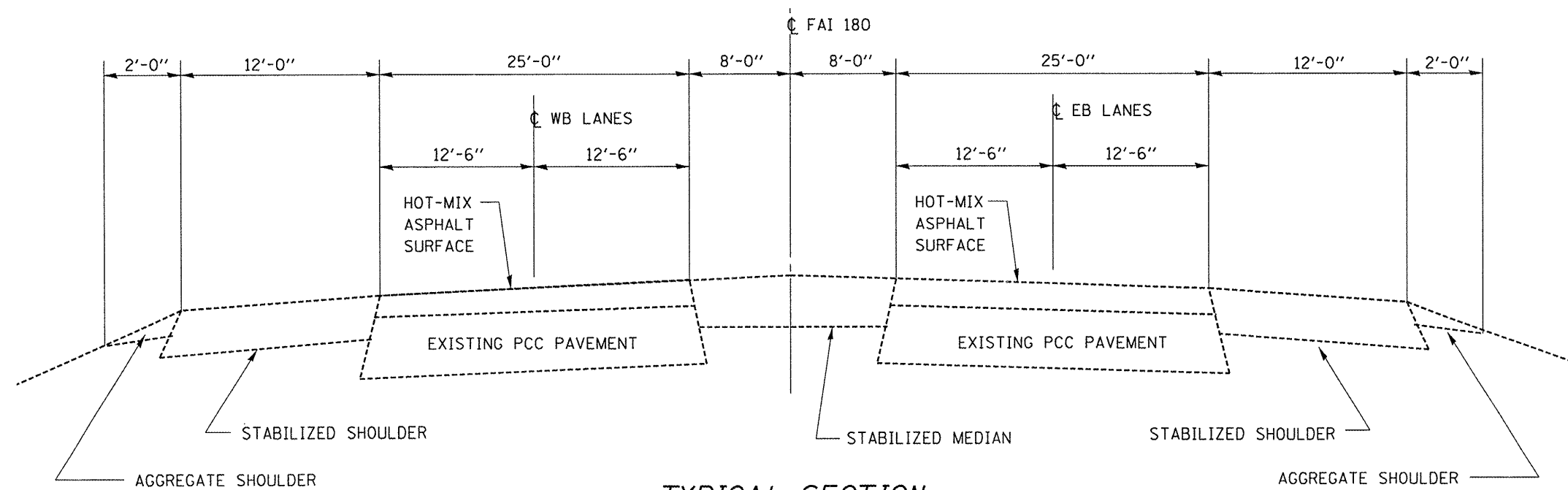
CONSTRUCTION CODE TYPE:

SFTY-2A  
100% STATE

CODE NO.	ITEM	UNIT	TOTAL QUANTITY
50501130	STRUCTURAL STEEL REPAIR	POUND	640
67100100	MOBILIZATION	L SUM	1
70100800	TRAFFIC CONTROL AND PROTECTION, STANDARD 701401	L SUM	1



**TYPICAL SECTION  
EAST OF ILLINOIS RIVER**



**TYPICAL SECTION  
WEST OF ILLINOIS RIVER**

FILE NAME = c:\projects\main\09\cm381\details.dgn	USER NAME = woodshankr1	DESIGNED - RW	REVISED - ---
		DRAWN - RW	REVISED - ---
		CHECKED - ---	REVISED - ---
		DATE - ---	REVISED - ---

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**TYPICAL SECTIONS**

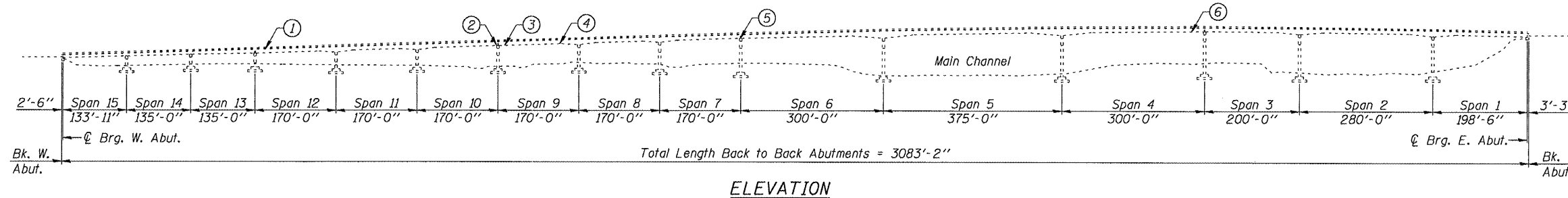
SCALE: \_\_\_\_\_ SHEET NO. 1 OF 1 SHEETS

F.A.I. RTE. 180	SECTION 106-3,78-1J-2	COUNTY BUREAU/PUTNAM	TOTAL SHEETS 12	SHEET NO. 4
FED. ROAD DIST. NO. - ILLINOIS		FED. AID PROJECT CONTRACT NO. 66734		

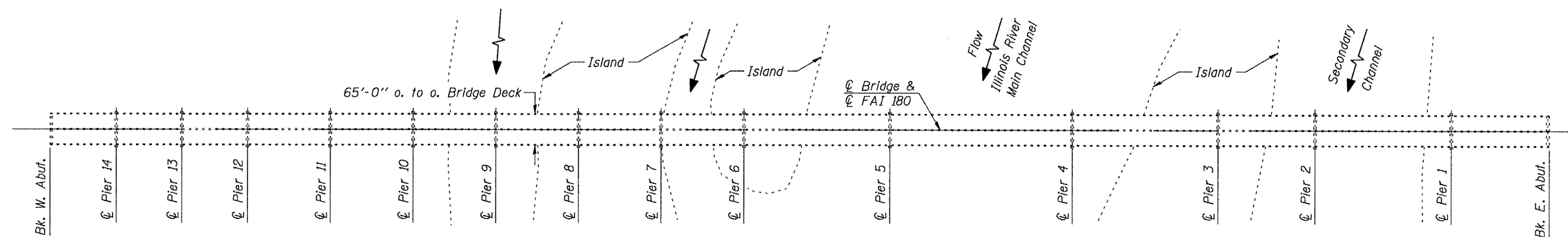
STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
FAI-180	06-3,78-1I-2	BUREAU/PUTNAM	12	5
FED. ROAD DIST. NO. 7	ILLINOIS	CONTRACT NO. 66734		

Note: "Repair Legend" shown on sheet 2 of 8.



ELEVATION



PLAN

GENERAL NOTES

All structural steel shall conform to AASHTO Classification M-270 Gr. 36, unless otherwise noted.

Plan dimensions and details relative to the existing plans are subject to routine variations. The Contractor shall field verify existing dimensions and details affecting new construction and make necessary approved adjustments prior to construction or ordering of materials. Such variations shall not be cause for additional compensation for a change in scope of the work, however, the Contractor will be paid for the quantity actually furnished based upon the unit price bid for the work.

Existing structural steel that will be in contact with new structural steel shall be cleaned and painted prior to erection as required by the Special Provision "Cleaning and Painting Contact Surface Areas of Existing Steel Structures".

The inorganic zinc rich primer / acrylic / acrylic paint system shall be used for shop and field painting of new structural steel except where otherwise noted. The color of the acrylic finish coat shall be Grey, Munsell No. 5B 7/1. See Special Provision "Cleaning and Painting New Metal Structures".

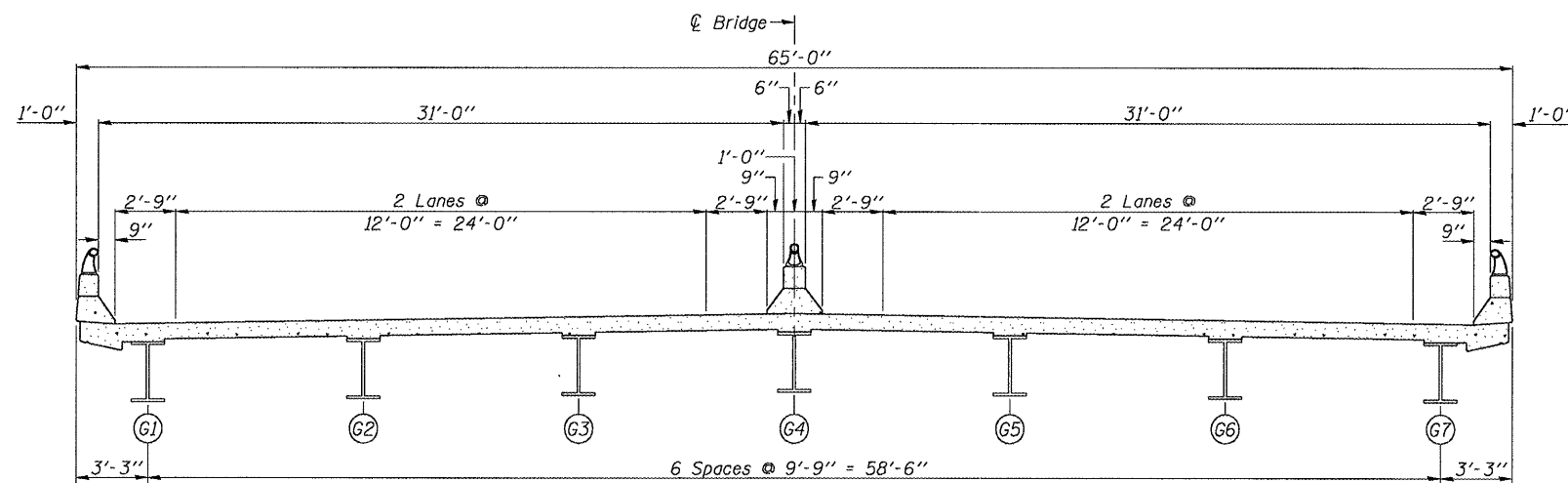
Cost of removal and/or re-installation of all members necessary to complete the work as detailed on the plans and as specified in the Special Provisions shall be included in the cost of Structural Steel Repair.

All new fasteners shall be 7/8" dia., 3/4" dia., or 1" dia. High Strength Bolts.

No field welding permitted.

Traffic control shall be determined by the District.

The existing structural steel coating contains lead. The Contractor shall take appropriate precautions to deal with the presence of lead on this project.



TYPICAL CROSS SECTION

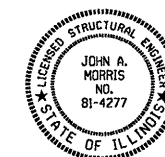
(Looking East)

TOTAL BILL OF MATERIAL

ITEM	UNIT	QUANTITY
Structural Steel Repair	Pound	640
Traffic Control AND PROTECTION, STANDARD 201A01	L. Sum	1

DESIGNED	J.A.M.	200
CHECKED	A.R.K.	EXAMINED
DRAWN	S.A.P.	PASSED
CHECKED	A.R.K. & J.A.M.	ENGINEER OF BRIDGES AND STRUCTURES

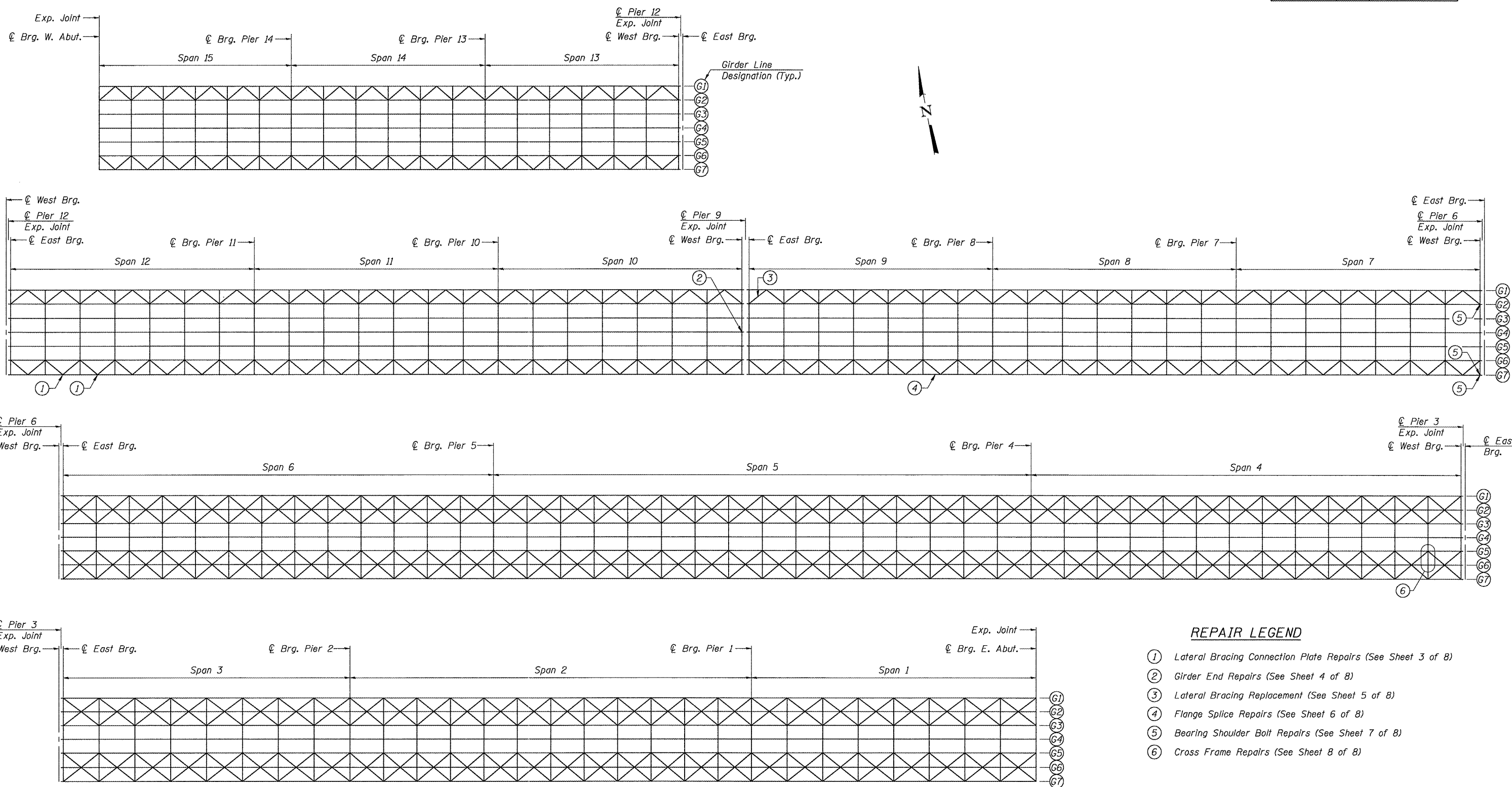
John A. Morris 4/8/08  
ILLINOIS STRUCTURAL NO. 4277 (Expires 11/30/08)



GENERAL PLAN AND ELEVATION  
FAI ROUTE 180 OVER ILLINOIS RIVER  
SECTION (06-3,78-1I-2  
BUREAU/PUTNAM COUNTIES  
S.N. 078-0001

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
FAI-180	06-3,78-11-2	BUREAU/ PUTNAM	12	6
FED. ROAD DIST. NO. 7	ILLINOIS	CONTRACT NO. 66734		



**REPAIR LEGEND**

- ① Lateral Bracing Connection Plate Repairs (See Sheet 3 of 8)
- ② Girder End Repairs (See Sheet 4 of 8)
- ③ Lateral Bracing Replacement (See Sheet 5 of 8)
- ④ Flange Splice Repairs (See Sheet 6 of 8)
- ⑤ Bearing Shoulder Bolt Repairs (See Sheet 7 of 8)
- ⑥ Cross Frame Repairs (See Sheet 8 of 8)

DESIGNED	J.A.M.	200
CHECKED	A.R.K.	EXAMINED
DRAWN	S.A.P.	PASSED
CHECKED	A.R.K. & J.A.M.	ENGINEER OF BRIDGES AND STRUCTURES

FRAMING PLAN  
FAI ROUTE 180 OVER ILLINOIS RIVER  
SECTION (06-3,78-11)-2  
BUREAU/PUTNAM COUNTIES  
S.N. 078-0001

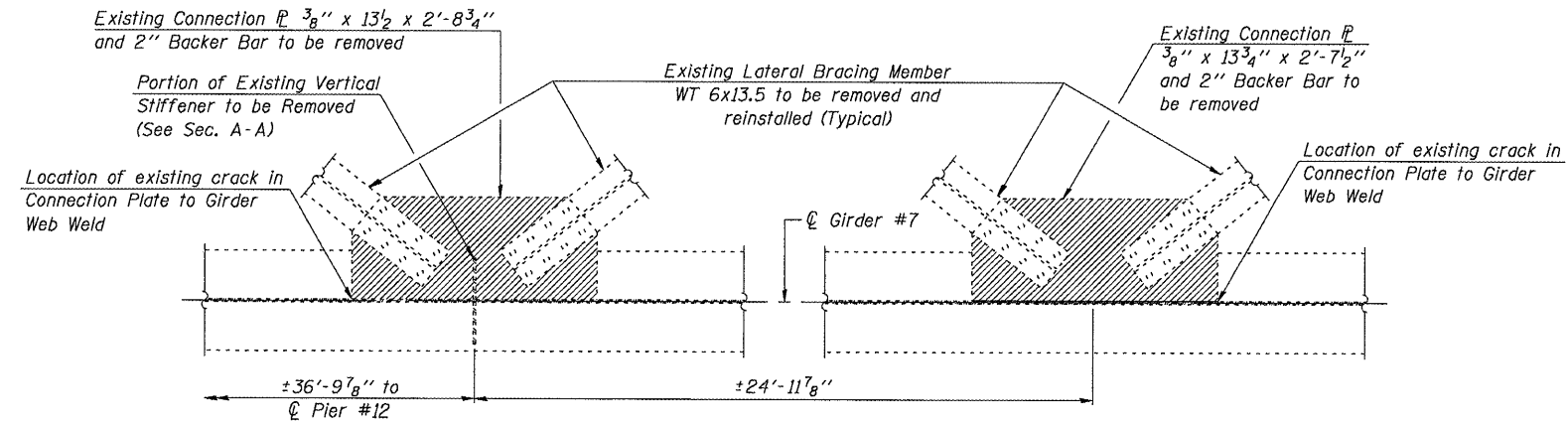
STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
FAJ-180	06-3,78-1I-2	BUREAU/PUTNAM	12	7
FED. ROAD DIST. NO. 7	ILLINOIS	CONTRACT NO. 66734		

Note: The cost of removal of lateral bracing connection plates, backer bars and vertical stiffener plates is included in the cost of Structural Steel Repair.

**PROCEDURES FOR LATERAL BRACING CONNECTION PLATE REMOVAL:**

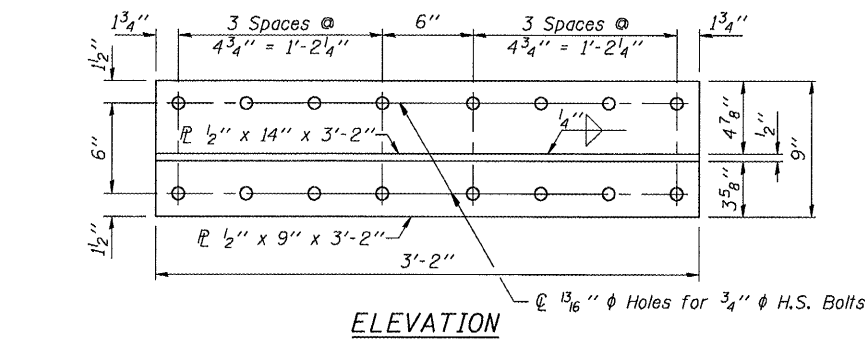
1. Remove existing  $\frac{3}{8}$ " lateral bracing connection plates and backer bars. The minimum distance from cut in connection plate to face of web shall be  $\frac{1}{4}$ " or the web to connection plate weld size. Remove portion of existing vertical stiffener. The minimum distance for cut in vertical stiffener shall be  $\frac{1}{4}$ " or web to stiffener plate weld size. Material remaining on web, after removal of connection plates, backer bars and vertical stiffener, shall be removed by grinding as described below. Cuts shall be made parallel to the surface of the web without angling the cut towards the surface of the web. Equipment and method of cutting shall be approved by the Engineer. Any method of removal to be used shall ensure that no damage is done to the web. Cutting shall be done in a manner such that the paint on the opposite face of the web is not damaged. If damage occurs, the damaged area shall be repainted at the contractor's expense and procedures shall be modified to prevent damage at subsequent removal locations.
2. After cutting operations have been completed, remove material remaining on web by grinding. Grinding shall remove material to provide a smooth web surface. Web plate surfaces shall have a roughness average (Ra) or 250u in. or less. Grinding equipment shall be approved by the Engineer. The grinding operation should not gouge the girder web plate.
3. After grinding, the web surface at the repair locations shall be inspected using magnetic particle testing methods. Any cracks found shall be identified and reported to the Bureau of Bridges and Structures for further disposition.



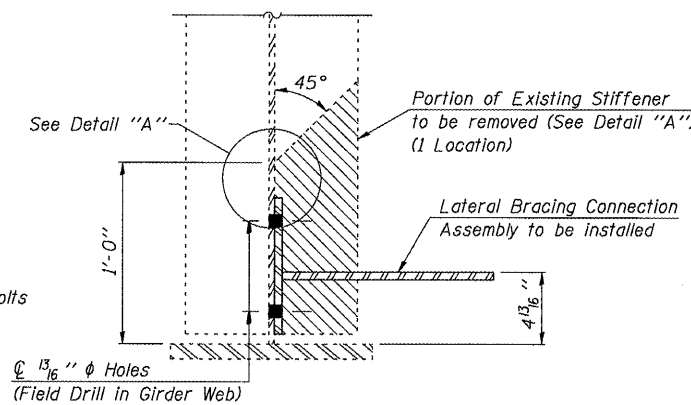
**EXISTING LATERAL BRACING CONNECTION PLATE REMOVAL PLAN**

(Span #12)

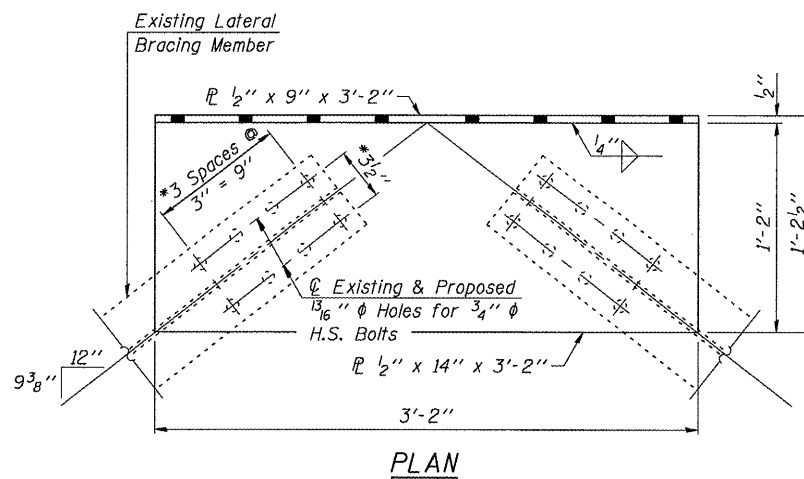
Note: Prior to the removal of the existing connection plates, lateral bracing members at the affected connections shall be removed and stored for later reinstallation. Cost shall be included with Structural Steel Repair.



**ELEVATION**



**SECTION A-A**

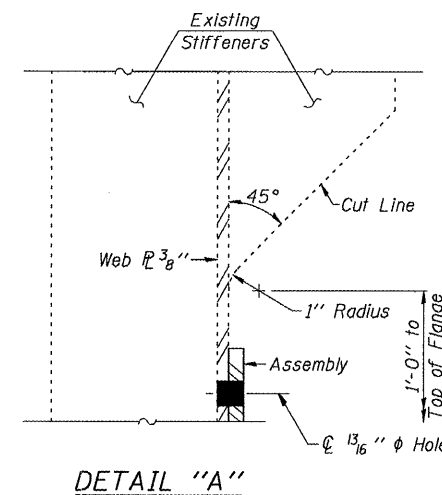


**PLAN**

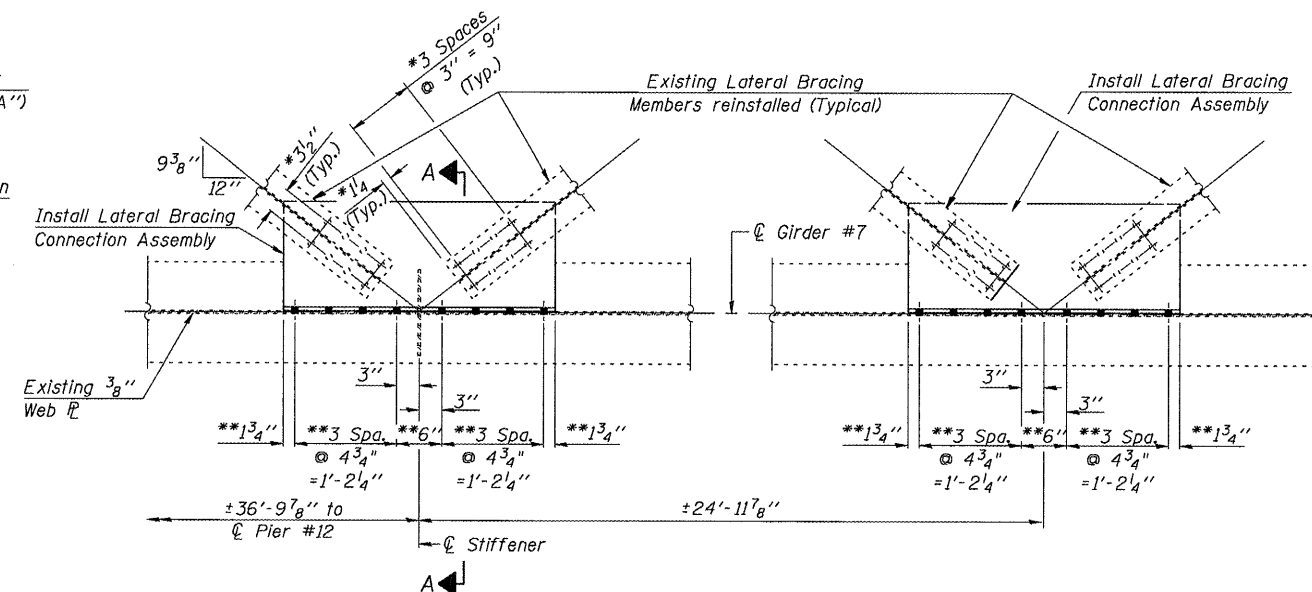
**LATERAL BRACING CONNECTION ASSEMBLY**

(2- Required)

DESIGNED	J.A.M.	200
CHECKED	A.R.K.	EXAMINED
DRAWN	S.A.P.	PASSED
CHECKED	A.R.K. & J.A.M.	ENGINEER OF BRIDGES AND STRUCTURES



**DETAIL "A"**



**LATERAL BRACING CONNECTION ASSEMBLY INSTALLATION PLAN**

(Span #12)

\*Use holes in existing lateral bracing members as a template for drilling holes in new Lateral Bracing Connection Assembly.

\*\*Use holes in new Lateral Bracing Connection Assembly as a template for drilling holes in web of existing girder.

**BILL OF MATERIAL**

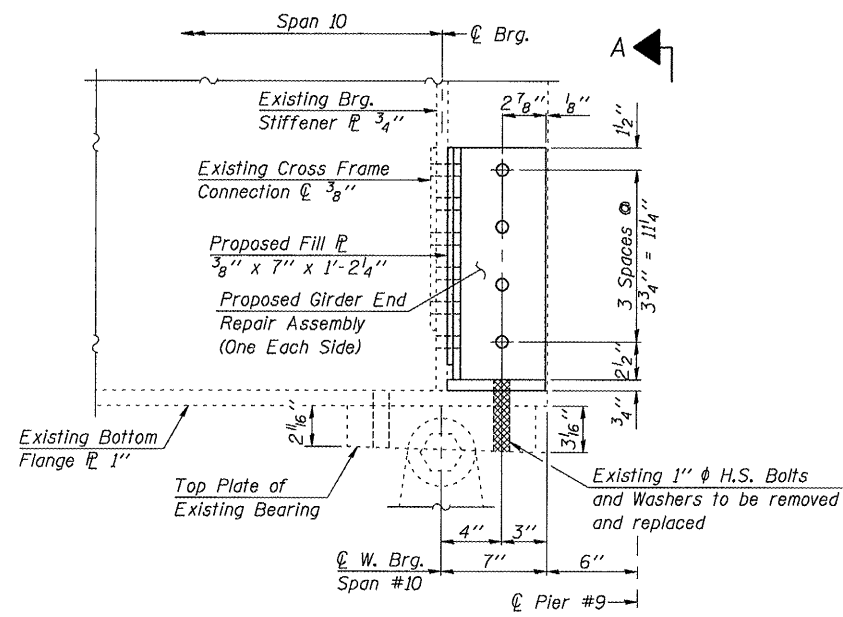
ITEM	UNIT	QUANTITY
Structural Steel Repair	Pound	280

**LATERAL BRACING CONNECTION PLATE  
REPAIR DETAILS  
FAI ROUTE 180 OVER ILLINOIS RIVER  
SECTION (06-3,78-1I-2  
BUREAU/PUTNAM COUNTIES  
S.N. 078-0001**

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

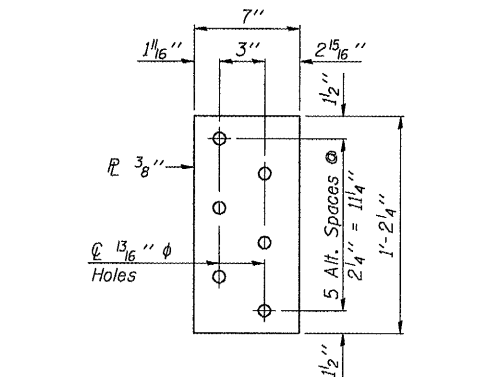
ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
FAI-180	06-3.78-1 1-2	BUREAU/ PUTNAM	12	8
FED. ROAD DIST. NO. 7	ILLINOIS	CONTRACT NO. 66734		

SHEET NO. 4  
OF 8 SHEETS



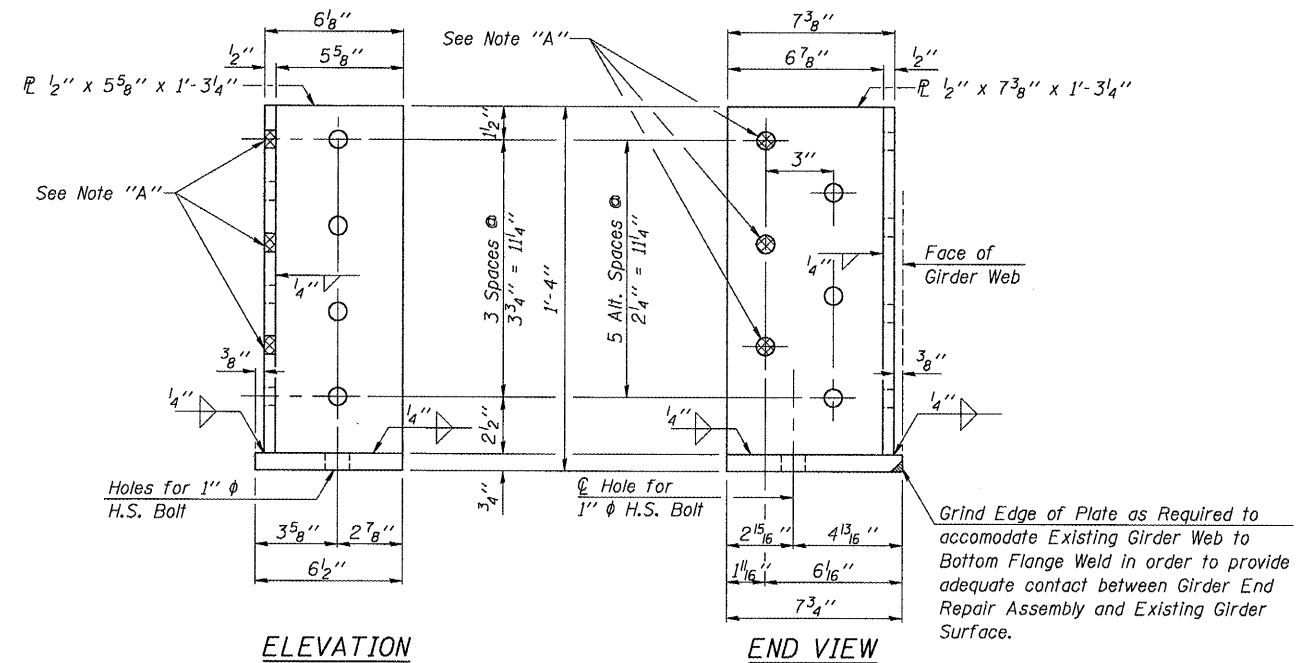
**END OF GIRDER ELEVATION**

(Looking North @ Girder Line #4 in Span #10)  
(Cross Frame Members not shown for clarity.)



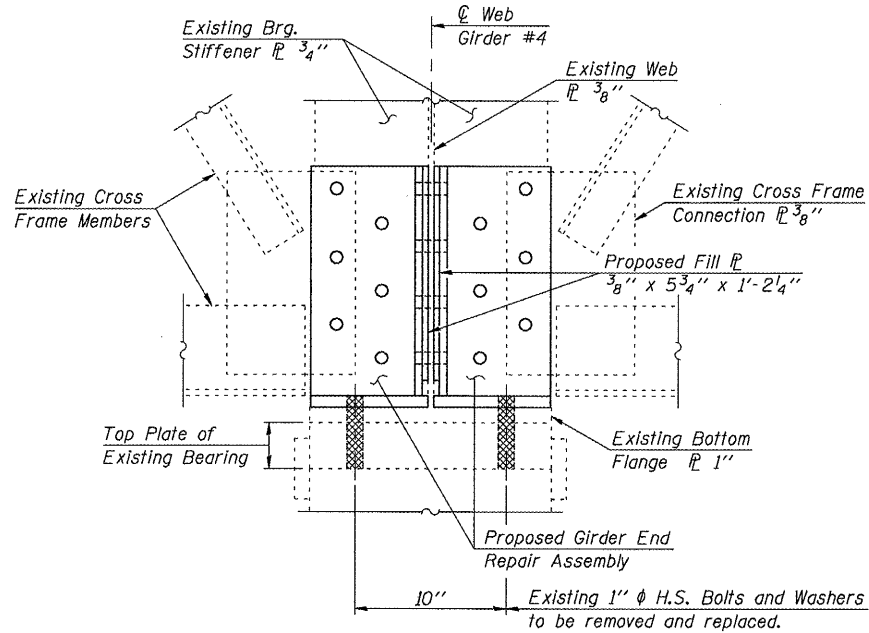
**STIFFENER/ASSEMBLY FILL PLATE**

(2-Required)



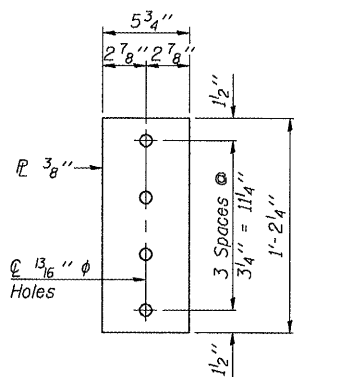
**ELEVATION**

**END VIEW**



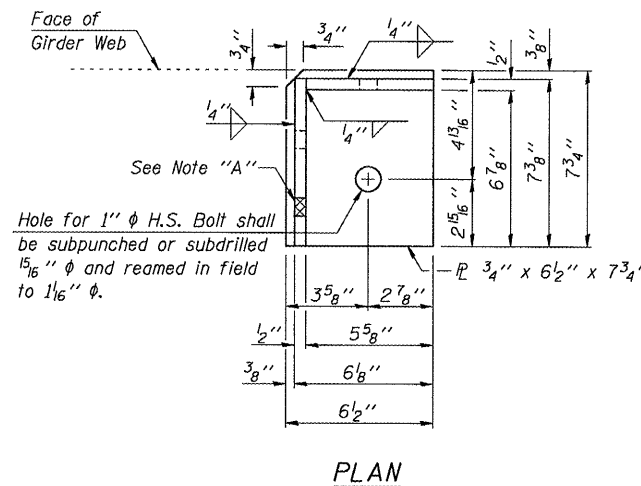
**VIEW A-A**

(Looking West)



**WEB/ASSEMBLY FILL PLATE**

(2-Required)



**PLAN**

Note "A": Except as noted, all holes are for 3/4"  $\phi$  H.S. Bolts. Holes shown as cross-hatched are to match existing bolt location and shall be subpunched or subdrilled 1/16"  $\phi$  and reamed in the field to 13/16"  $\phi$ . All other holes for 3/4"  $\phi$  H.S. Bolts shall be provided 13/16"  $\phi$ . The assembly shall be used as a template for drilling holes in the existing girder web and bearing stiffener.

**GIRDER END REPAIR ASSEMBLY**

2-Required; Details shown are for repair on South Side of Girder end. Assembly for North side of Girder End shall be opposite-hand of details shown.

**BILL OF MATERIAL**

ITEM	UNIT	QUANTITY
Structural Steel Repair	Pound	140

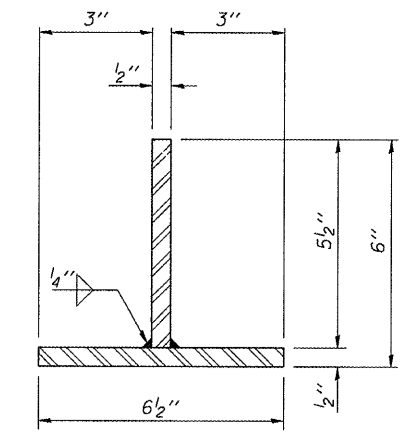
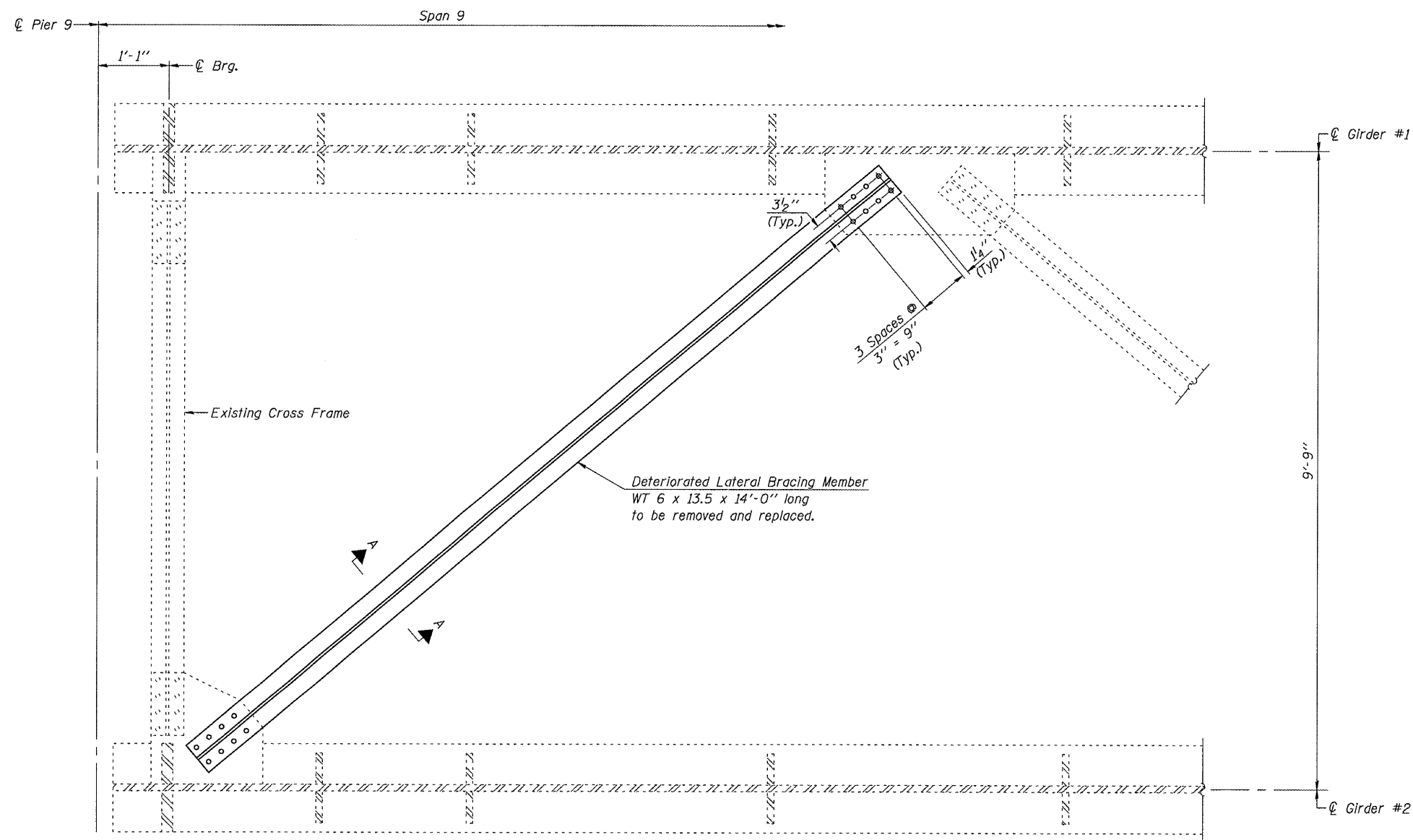
**GIRDER END REPAIR DETAILS**  
FAI ROUTE 180 OVER ILLINOIS RIVER  
SECTION (06-3.78-1)I-2  
BUREAU/PUTNAM COUNTIES  
S.N. 078-0001

DESIGNED	J.A.M.	200
CHECKED	A.R.K.	EXAMINED
DRAWN	S.A.P.	PASSED
CHECKED	A.R.K. & J.A.M.	ENGINEER OF BRIDGES AND STRUCTURES



STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.	SHEET NO. 5 OF 8 SHEETS
FAI-180	06-3,78-11-2	BUREAU/ PUTNAM	12	9	
FED. ROAD DIST. NO. 7	ILLINOIS	CONTRACT NO. 66734			



**SECTION A-A**  
(Showing Alternate Welded  
Lateral Bracing Member)

LATERAL BRACING REPAIR PLAN

Notes: Lateral Bracing Member may be replaced in-kind utilizing a WT section or a fabricated section providing equal or greater capacity as approved by the Engineer. All new fasteners shall be provided and shall be 3/4" φ H.S. Bolts. Holes in new Lateral Bracing Member shall be subpunched or subdrilled 1/16" φ and reamed in the field to 13/16" φ for 3/4" φ bolts.

BILL OF MATERIAL

ITEM	UNIT	QUANTITY
Structural Steel Repair	Pound	200

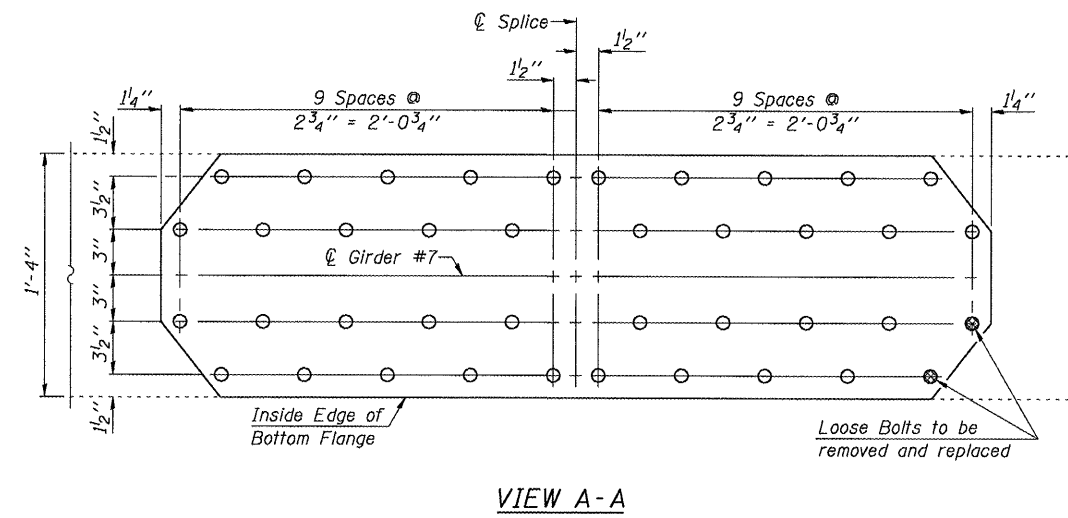
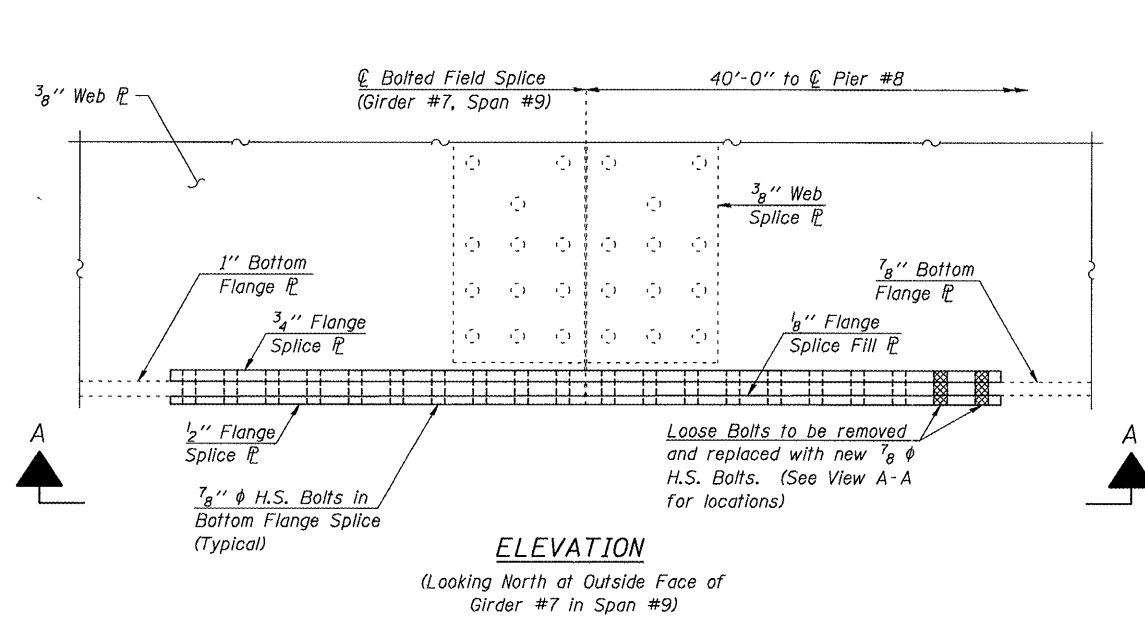
LATERAL BRACING REPLACEMENT DETAILS  
FAI ROUTE 180 OVER ILLINOIS RIVER  
SECTION (06-3,78-11-2  
BUREAU/PUTNAM COUNTIES  
S.N. 078-0001

DESIGNED	J.A.M.	200
CHECKED	A.R.K.	EXAMINED
DRAWN	S.A.P.	PASSED
CHECKED	A.R.K. & J.A.M.	ENGINEER OF BRIDGES AND STRUCTURES

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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FED. ROAD DIST. NO. 7	ILLINOIS	CONTRACT NO. 66734		

SHEET NO. 6  
OF 8 SHEETS



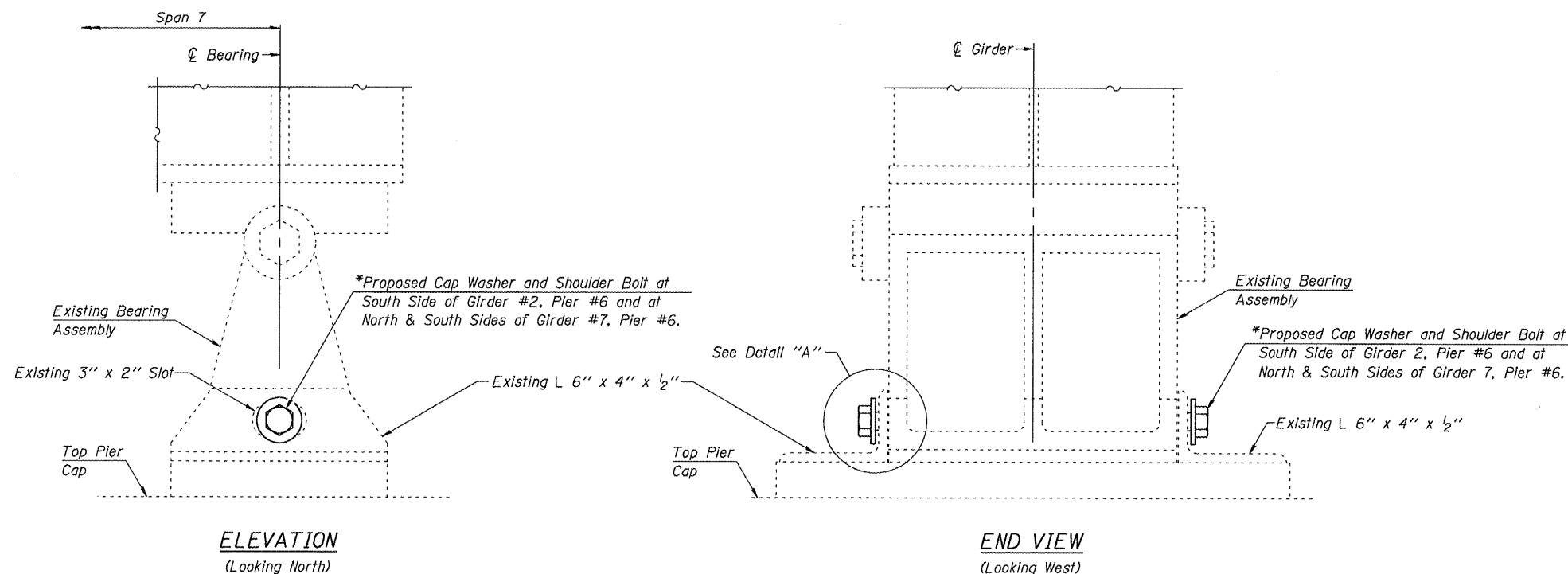
DESIGNED	J.A.M.	200
CHECKED	A.R.K.	EXAMINED
DRAWN	S.A.P.	PASSED
CHECKED	A.R.K. & J.A.M.	ENGINEER OF BRIDGES AND STRUCTURES

FLANGE SPLICE DETAILS  
FAI ROUTE 180 OVER ILLINOIS RIVER  
SECTION (06-3,78-1I-2  
BUREAU/PUTNAM COUNTIES  
S.N. 078-0001

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
FAI-180	06-3,78-1I-2	BUREAU/ PUTNAM	12	11
FED. ROAD DIST. NO. 7	ILLINOIS	CONTRACT NO. 66734		

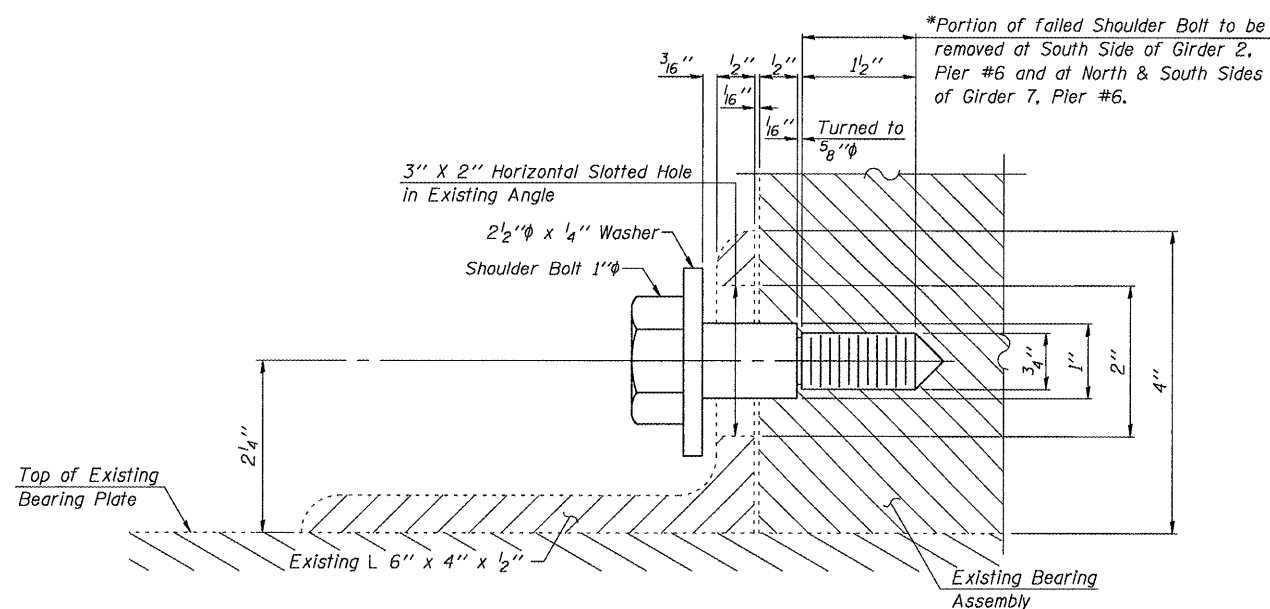
SHEET NO. 7  
OF 8 SHEETS



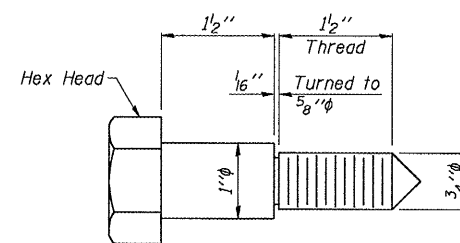
EXISTING BEARING AT PIER 6

**\*Notes:**  
The Existing Shoulder Bolts at the designated locations have failed. The threaded portions of the failed Shoulder Bolts are embedded in the Existing Bearing Assemblies and are to be removed to allow installation of new Shoulder Bolts. The cost for tapping holes for new Shoulder Bolts, if required, and removing the embedded portions of the failed Shoulder Bolts in the Existing Bearing Assemblies is included in Structural Steel Repair.

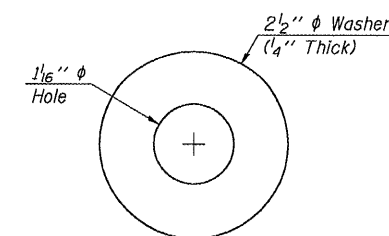
After the embedded portions of the failed Shoulder Bolts have been removed from the Existing Bearing Assemblies, the Contractor shall examine the removed portions of the bolts and the holes in the Existing Bearing Assemblies to determine thread requirements for the new Shoulder Bolts. If bolt removal operations damage the threaded holes in the Existing Bearing Assemblies, holes shall be re-tapped as needed to accept new Shoulder Bolts.



DETAIL "A"  
(3- Locations)



SHOULDER BOLT DETAIL  
(3 Required)  
New Shoulder Bolts shall be  
AASHTO M164 High Strength Bolts



WASHER DETAIL  
(3 Required)

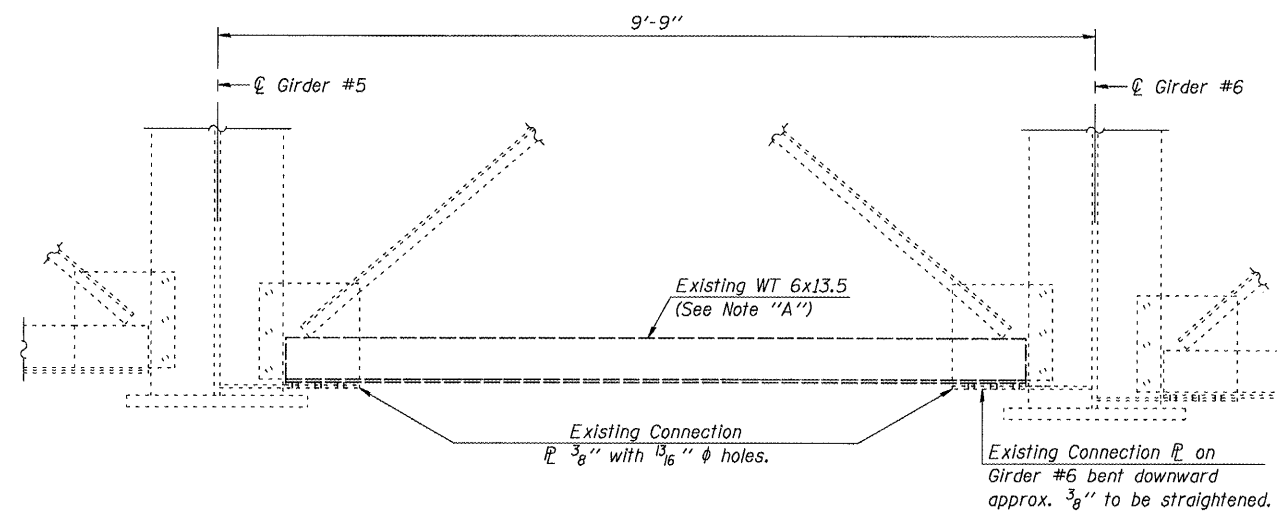
DESIGNED	J.A.M.	200
CHECKED	A.R.K.	EXAMINED ENGINEER OF BRIDGE DESIGN
DRAWN	S.A.P.	PASSED ENGINEER OF BRIDGES AND STRUCTURES
CHECKED	A.R.K. & J.A.M.	

BEARING SHOULDER BOLT REPAIR DETAILS  
FAI ROUTE 180 OVER ILLINOIS RIVER  
SECTION (06-3,78-1I)-2  
BUREAU/PUTNAM COUNTIES  
S.N. 078-0001

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
FAI-180	06-3,78-1I-2	BUREAU/ PUTNAM	12	12
FED. ROAD DIST. NO. 7	ILLINOIS	CONTRACT NO. 66734		

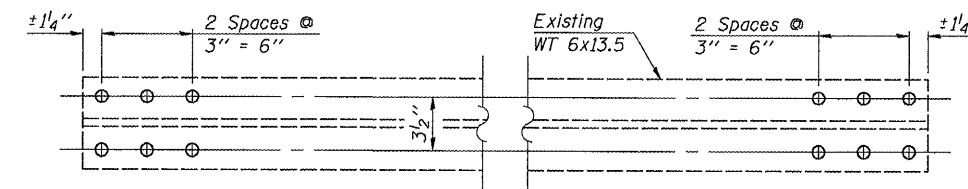
SHEET NO. 8  
OF 8 SHEETS



**CROSS FRAME ELEVATION**

(Looking East)

Note "A": Using the holes in the existing  $\frac{3}{8}$ " thick connection plates as a template, drill  $\frac{13}{16}$ " dia. holes in each end of the existing WT 6x13.5 and install  $\frac{3}{4}$ " dia. H.S. Bolts. See Detail "A" for anticipated hole pattern. The cost of drilling holes, straightening connection plates and installing bolts included with Structural Steel Repair.



**PLAN**

**DETAIL "A"**

(Showing Anticipated Pattern for Drilling Holes)

DESIGNED	J.A.M.	200
CHECKED	A.R.K.	EXAMINED
DRAWN	S.A.P.	PASSED
CHECKED	A.R.K. & J.A.M.	ENGINEER OF BRIDGES AND STRUCTURES

CROSS FRAME REPAIR DETAILS  
FAI ROUTE 180 OVER ILLINOIS RIVER  
SECTION (06-3,78-1I)-2  
BUREAU/PUTNAM COUNTIES  
S.N. 078-0001