

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
F.A.I. 70	*	ST. CLAIR	103	4
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT- IM-70		
* 82-3HVB-3R-4			SHEET S-1 OF S-28	
CONTRACT NO. 76947				

**SET 1 OF  
4 SETS**

ENCOMPASSING THE FOLLOWING ROADWAYS  
 • SN-082-0141 (RAMP A)

**LOADING HS20-44**

**SEISMIC DATA**

Seismic Performance Category (SPC) = B  
 Bedrock Acceleration Coefficient (A) = 0.12g  
 Site Coefficient (S) = 1

**DESIGN STRESSES**

**FIELD UNITS (ORIGINAL)**

$f_c$  = 1,400 psi  
 (Super-, and Sub-structures)  
 $f_s$  = 20,000 psi (A36 Structural Steel)  
 $f_s$  = 20,000 psi (Reinforcement)  
 $f_y$  = 40,000 psi (Reinforcement)

**DESIGN SPECIFICATIONS**

2002 AASHTO  
 1995 Seismic Retrofitting Manual for  
 Highway Bridges FHWA-RD-94-052

**FIELD UNITS (Previous Repair)**

$f_c$  = 3,500 psi  
 $f_y$  = Varies, 36,000 - 50,000 psi  
 (Structural Steel)  
 $f_y$  = 60,000 psi (Reinforcement)

**HIGHWAY CLASSIFICATION**

F.A.I. Route 70 - Poplar Street Complex  
 Functional Class: Collector - Distributor  
 Roadways  
 A.D.T.: 4,300 (2005)  
 D.H.V.: 100  
 Design Speed: 50 mph  
 Posted Speed: 50 mph

**FIELD UNITS (NEW)**

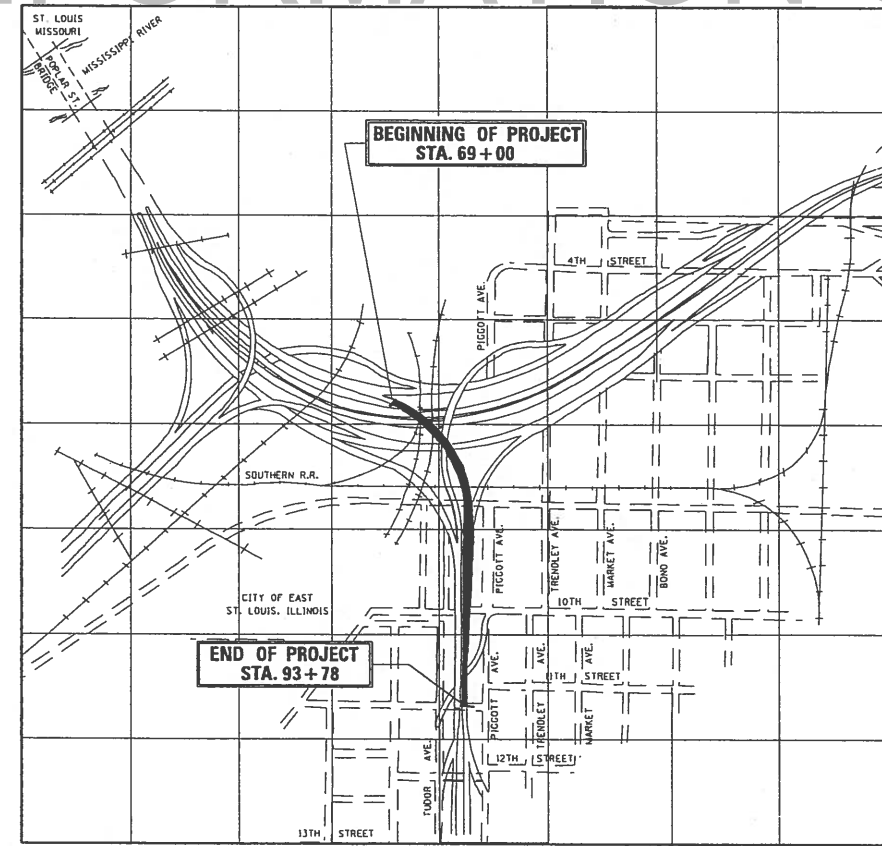
$f_c$  = 4,000 psi  
 $f_y$  = 36,000 psi (M270 Grade 36)  
 $f_y$  = 50,000 psi (M270 Grade 50)  
 $f_y$  = 70,000 psi (M270 Grade HPS 70W)  
 $f_y$  = 60,000 psi (Reinforcement)

**STATE OF ILLINOIS**  
**DEPARTMENT OF TRANSPORTATION**  
**DIVISION OF HIGHWAYS**  
**FAI ROUTE 70 (I-55/70)**  
**POPLAR STREET BRIDGE APPROACHES**  
**SECTION 82-3HVB-3R-4**  
**PROJECT IM-70**  
**PLANS FOR PROPOSED**  
**SEISMIC AND REDUNDANCY**  
**RETROFIT REPAIRS**  
**ST. CLAIR COUNTY**  
**C-98-113-05**

FOR INFORMATION ONLY

**INDEX OF DRAWINGS**

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S2	GENERAL NOTES AND TOTAL BILL OF MATERIAL
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S4	KEY PLAN
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S26 - S27	SUBSTRUCTURE SEISMIC RETROFIT DETAILS
S28	SPECIAL RETROFIT DETAILS, PIER A43



LOCATION PLAN



**STATE OF ILLINOIS**  
**DEPARTMENT OF TRANSPORTATION**  
**DIVISION OF HIGHWAYS**

SUBMITTED \_\_\_\_\_ 20 \_\_\_\_\_

DISTRICT ENGINEER

\_\_\_\_\_ 20 \_\_\_\_\_

ENGINEER OF PROJECT DEVELOPMENT AND IMPLEMENTATION

\_\_\_\_\_ 20 \_\_\_\_\_

ENGINEER OF DESIGN AND ENVIRONMENT

\_\_\_\_\_ 20 \_\_\_\_\_

DIRECTOR, DIVISION OF HIGHWAYS

DRAFT

**CONTRACT NO. 76947**

Howard J. Hill, Ph.D. SE  
 Illinois Licensed Structural Engineer  
 License No. 081-004819  
 License Expires: 11/30/08

**WJE** MISS, JANNEY, ELSTNER ASSOCIATES, INC.  
 Engineers, Architects, Material Scientists  
 330 PINGSTEN ROAD  
 NORTHBROOK, ILLINOIS 60062  
 (847) 272-7400 FAX: (847) 291-4613

DATE: 7/29/2008 FILENAME: P:\2001\1201-1300\2001.1240\Drafting\SeismicRedundancyRamp A\A Title-2.dgn

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
F.A.I. 70	*	ST. CLAIR	103	5
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT	11-78	
* 82-3HVB-3R-4		SHEET S-2 OF S-2B		
CONTRACT NO. 76947				

**GENERAL NOTES:**

1. Plan dimensions and details relative to 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 the scope of the work, however, the Contractor will be paid for the quantity actually furnished based upon the unit price bid for the work.
2. Contractor shall be responsible for furnishing and installing all parts and materials necessary to complete the repairs indicated herein. Contractor shall also provide any tools, equipment, and machinery as necessary to complete the repairs indicated herein.
3. Contractor shall locate all active and abandoned utilities, traffic signs, traffic observation cameras, and other traffic control devices and appurtenances that may interfere with the installation of repairs. The contractor shall either protect or temporarily relocate and restore all active utilities, signs, cameras, and other devices to the satisfaction of the Engineer. If abandoned utilities interfere with installation of repairs, contractor shall coordinate with Engineer, and shall remove and dispose of such utilities if so directed by Engineer.
4. All structural steel shall be AASHTO M270 Grade 36W, unless noted otherwise.
5. Calculated weight of Structural Steel, Grade 50W: 2,440 Lbs.  
Calculated weight of Structural Steel, Grade 36W: 25,990 Lbs.
6. Unless noted otherwise, fasteners shall be high strength bolts. All threaded rods and dowels shall conform to the mechanical properties and thread configuration of AASHTO M164 bolts. In bolted applications, threads shall not be permitted in shear planes, unless noted otherwise.
7. Threads on all bolts, rods, and dowels not installed per AISC specifications shall be peened with a hammer.
8. Welding electrodes shall be low hydrogen E70XX, unless noted otherwise. Weld metal shall have a minimum CVN of 25 Ft.-Lb. at 20°F.
9. All turnbuckles, clevises, and pins shall be galvanized and capable of developing the ultimate strengths of the corresponding assemblies.
10. All wire ropes shall be galvanized and shall have a minimum effective modulus of elasticity of 10,000 ksi. All wire rope fittings shall be capable of developing the ultimate strength of the rope.
11. Turnbuckles located in cross-frame retrofits shall be tightened to achieve a torque of 1000 foot-pounds in the turnbuckle.
12. All threaded rods with upset ends shall have a maximum yield strength of 45 ksi.
13. No field welding is permitted except as specified in the contract documents.
14. 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 final finish coat shall be Interstate Green, Munsell No. 7.5 G 4/B. See Special Provision for "Cleaning and Painting New Metal Structures."
15. 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 Area of Existing Steel Structure".
16. The existing structural steel coating contains lead. The contractor shall take appropriate precautions to deal with the presence of lead on this project.
17. Reinforcement bars shall conform to the requirements of ASTM A706 Grade 60 (II Modified). See Special Provisions.
18. Reinforcement bars designated (E) shall be epoxy coated
19. Load carrying components designated "NTR" shall conform to the Supplemental Requirements for Notch Toughness, Zone 2.

TOTAL BILL OF MATERIAL				
ITEM	UNIT	SUPERSTRUCTURE	SUBSTRUCTURE	TOTAL
Concrete Structures	CU YD	---	5.0	5.0
Reinforcement Bars, Epoxy coated	POUND	---	1,610	1,610
Epoxy Crack Sealing	FOOT	---	163	163
Structural Repair of Concrete (Depth Equal to or Less Than 5")	SO FT	---	536	536
Slab/Floor Beam Connections--Roadway A	L SUM	1	---	1
Furnishing and Erecting Structural Steel	L SUM	0.3	---	0.3
Column Wrap	SO FT	---	1,344	1,344
Foundation Wall Dowel Modification	EACH	---	52	52
Steel Girder Web Reinforcement Plate	POUND	452,600	---	452,600
Vertical Web Stiffener Removal	EACH	1,136	---	1,136
Horizontal Web Stiffener Removal	FOOT	773	---	773
Mechanical Splice	EACH	36	---	36

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REVISIONS	
NAME	DATE

**GENERAL NOTES AND BILL OF MATERIAL**

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION  
SEISMIC AND REDUNDANCY RETROFIT REPAIRS  
FAI ROUTE 70  
POPLAR STREET BRIDGE APPROACHES  
ST. CLAIR COUNTY

STRUCTURE NO. 082-0141 (ROADWAY A)  
SCALE: N.T.S.  
DATE: 08/01/2008

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
F.A.I. 70	*	ST. CLAIR	103	6
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT- 1M-78		
B2-3HVB-3R-4			SHEET S-3 OF S-28	
CONTRACT NO. 76947				

**SEISMIC RETROFIT:**

1. Install column wraps at the following piers (7 locations):  
A22 A23 A34  
A36 A37 A39  
A40
2. Install tie beam wraps at the following piers, excluding piers with cross frames (2 locations):  
A30 A31
3. Install cross frame assembly including: tie beam wraps, column bands, and slab/floor beam connections at the following piers (2 locations):  
A22 A34
4. Install floor beam/column connection assembly at the following piers (3 locations):  
A37 A39 A40
5. Install slab/floor beam connections assembly at the following piers, excluding piers with cross-frames (17 locations):  
A23 A24 A25 A26 A27 A28  
A30 A31 A32 A33 A36  
A37 A39 A40 A42 A44 A45
6. Install bumper assembly at the following piers (2 locations):  
A23 A34
7. Install bumper column bands at the following pier (1 location):  
A23
8. Install foundation dowel modifications at the following piers (4 locations):  
A22 A34 A36 A40
9. Install new concrete collars at the following pier (1 location):  
A43
10. Install new tension links between girders at the following piers (5 locations):  
A25 A29 A38 A41 A43

**REDUNDANCY RETROFIT:**

1. Perform horizontal stiffener removal at the following piers (5 piers):  
A26 A27 A28 A36 A37
2. Perform vertical stiffener removal at the following spans (22 spans):  
Spans A21 through A42
3. Install redundancy web plates on the following spans (22 spans):  
Spans A21 through A42
4. Install redundancy beams at the following pier (1 pier):  
A43 (east floor beam)

**SUBSTRUCTURE REHABILITATION:**

1. Remove spalled and delaminated concrete from piers and restore per section with Formed Concrete Repairs and Epoxy Crack Sealing as indicated on the plans and as directed by the Engineer.

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**SCOPE OF WORK**

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION  
SEISMIC AND REDUNDANCY RETROFIT REPAIRS  
FAI ROUTE 70  
POPLAR STREET BRIDGE APPROACHES  
ST. CLAIR COUNTY

STRUCTURE NO. 082-0141 (ROADWAY A)

SCALE: N.T.S.

DATE: 08/01/2008

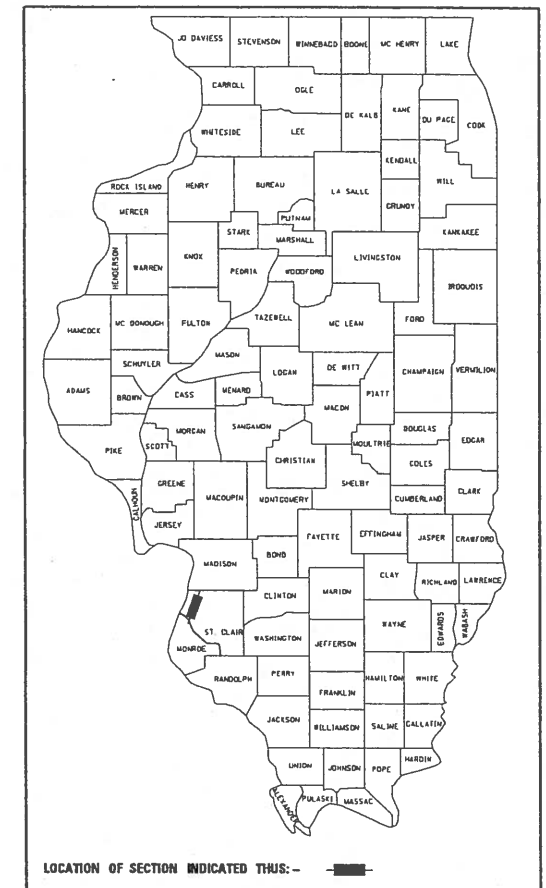
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NAME	DATE

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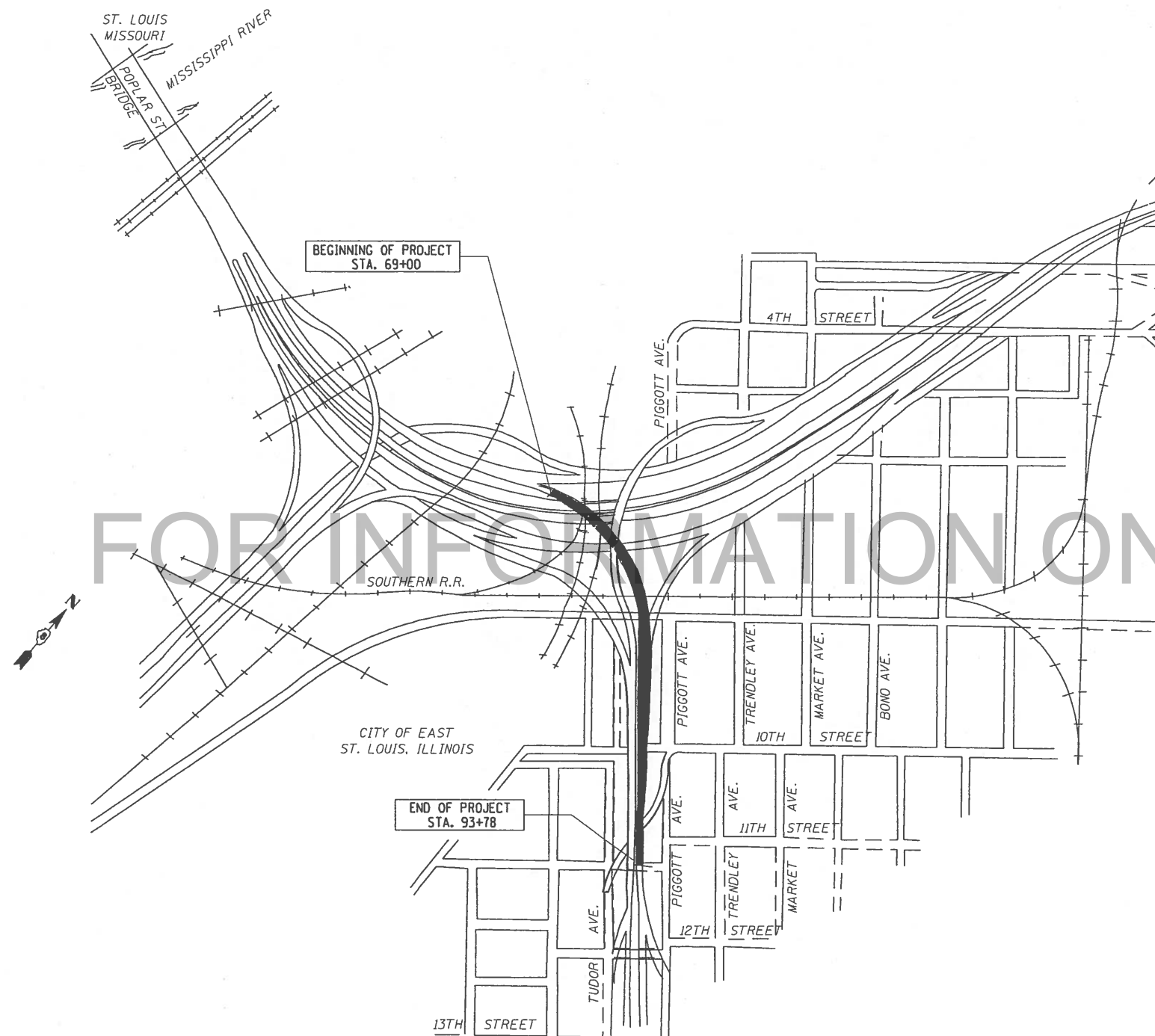
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ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
F.A.I. 70	*	ST. CLAIR	103	7
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT- 1H-78		
* 82-3HVB-3R-4			SHEET S-4 OF S-28	
CONTRACT NO. 76947				

D-98-014-00



LOCATION SKETCH



OVERALL PROJECT PLAN

Roadway / Ramp	Segment / Pier No.	Structure No.	Year / Structure Type
A	A21-A43	082-0141	1967 Two Girder System
A	A43-A46	082-0141	1967 Multi-Beam System

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KEY PLAN

REVISIONS	
NAME	DATE

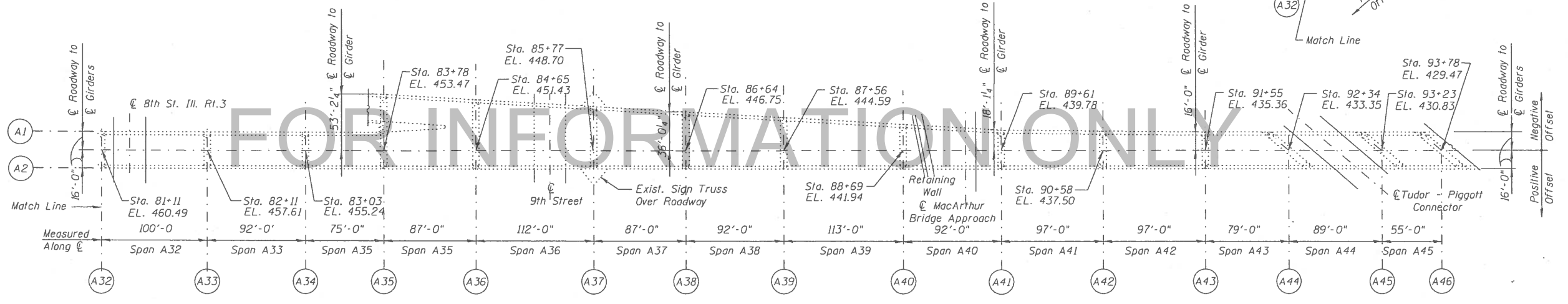
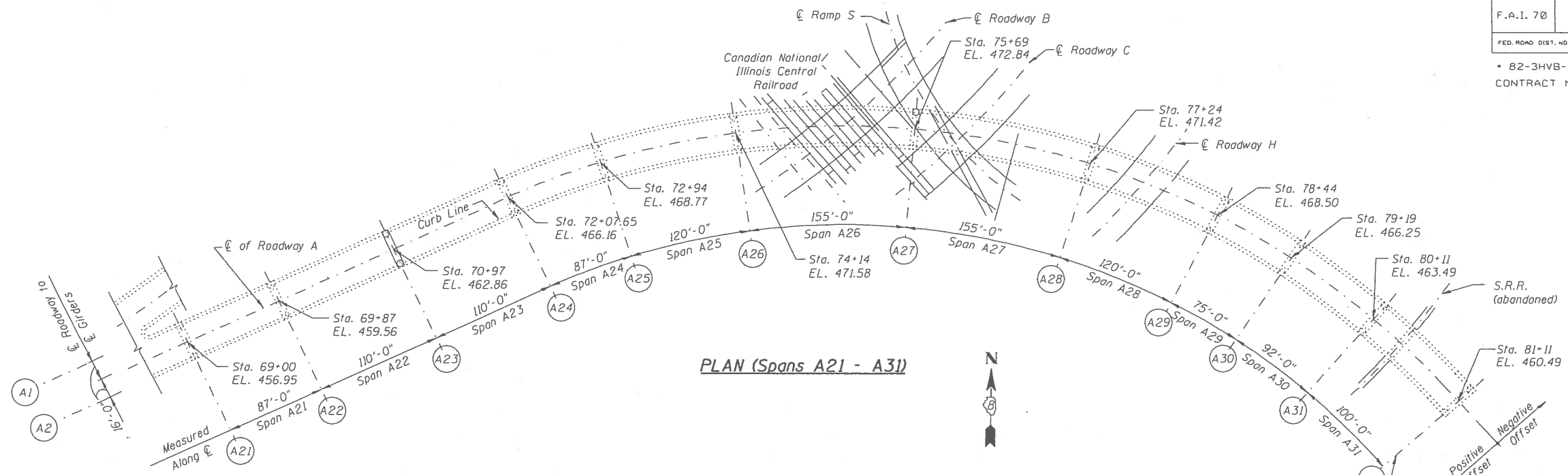
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DEPARTMENT OF TRANSPORTATION  
SEISMIC AND REDUNDANCY RETROFIT REPAIRS  
FAI ROUTE 70  
POPLAR STREET BRIDGE APPROACHES  
ST. CLAIR COUNTY

STRUCTURE NO. 082-0141 (ROADWAY A)  
SCALE: N.T.S.  
DATE: 08/01/2008

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F.A.I. 70	*	ST. CLAIR	103	8
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT- 1M-78		
* 82-3HVB-3R-4			SHEET S-5 OF S-28	
CONTRACT NO. 76947				



Note: Elevations are theoretical top of existing wearing course.

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**PROJECT PLAN**

STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION  
 SEISMIC AND REDUNDANCY RETROFIT REPAIRS  
 FAI ROUTE 70  
 POPLAR STREET BRIDGE APPROACHES  
 ST. CLAIR COUNTY

STRUCTURE NO. 082-0141 (ROADWAY A)  
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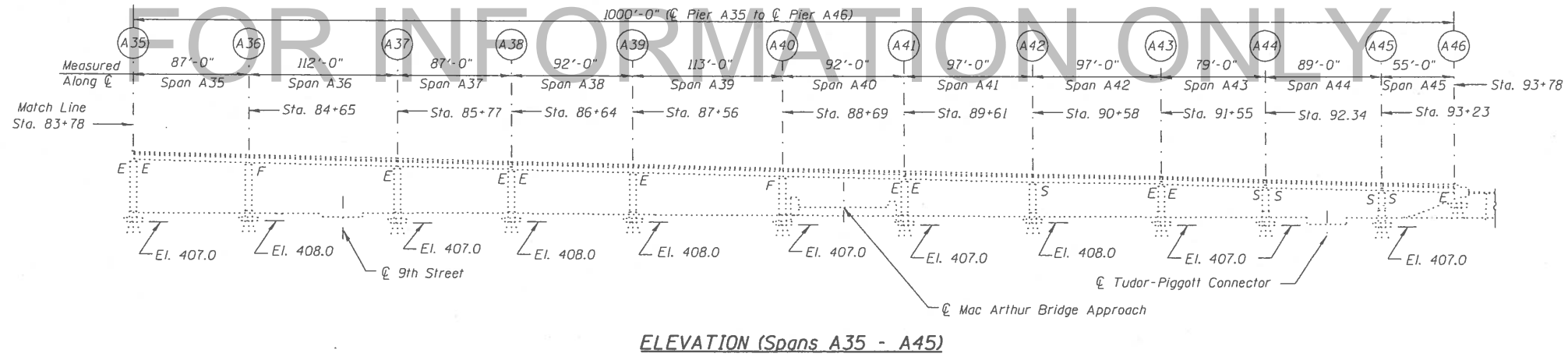
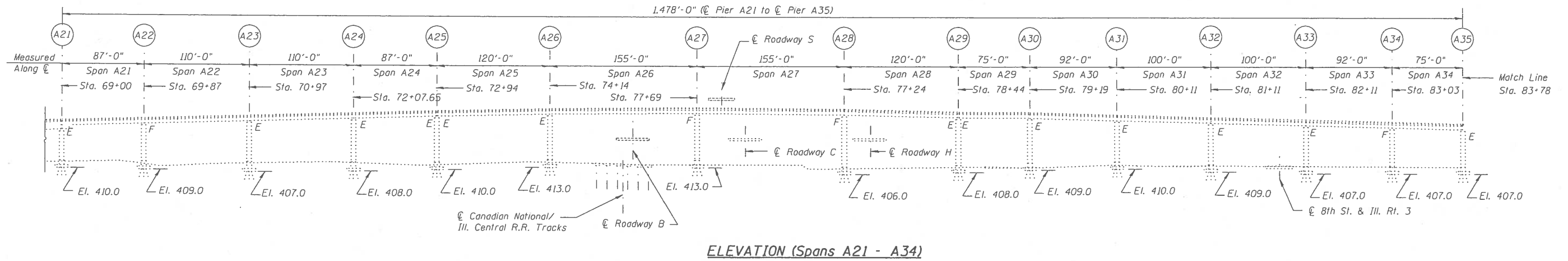
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ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
F.A.I. 70	*	ST. CLAIR	103	9

FED. ROAD DIST. NO. 7 ILLINOIS FED. AID PROJECT- 111-78  
 \* 82-3HVB-3R-4 SHEET S-6 OF S-28  
 CONTRACT NO. 76947



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**PROJECT ELEVATION**

STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION  
 SEISMIC AND REDUNDANCY RETROFIT REPAIRS  
 FAI ROUTE 70  
 POPLAR STREET BRIDGE APPROACHES  
 ST. CLAIR COUNTY

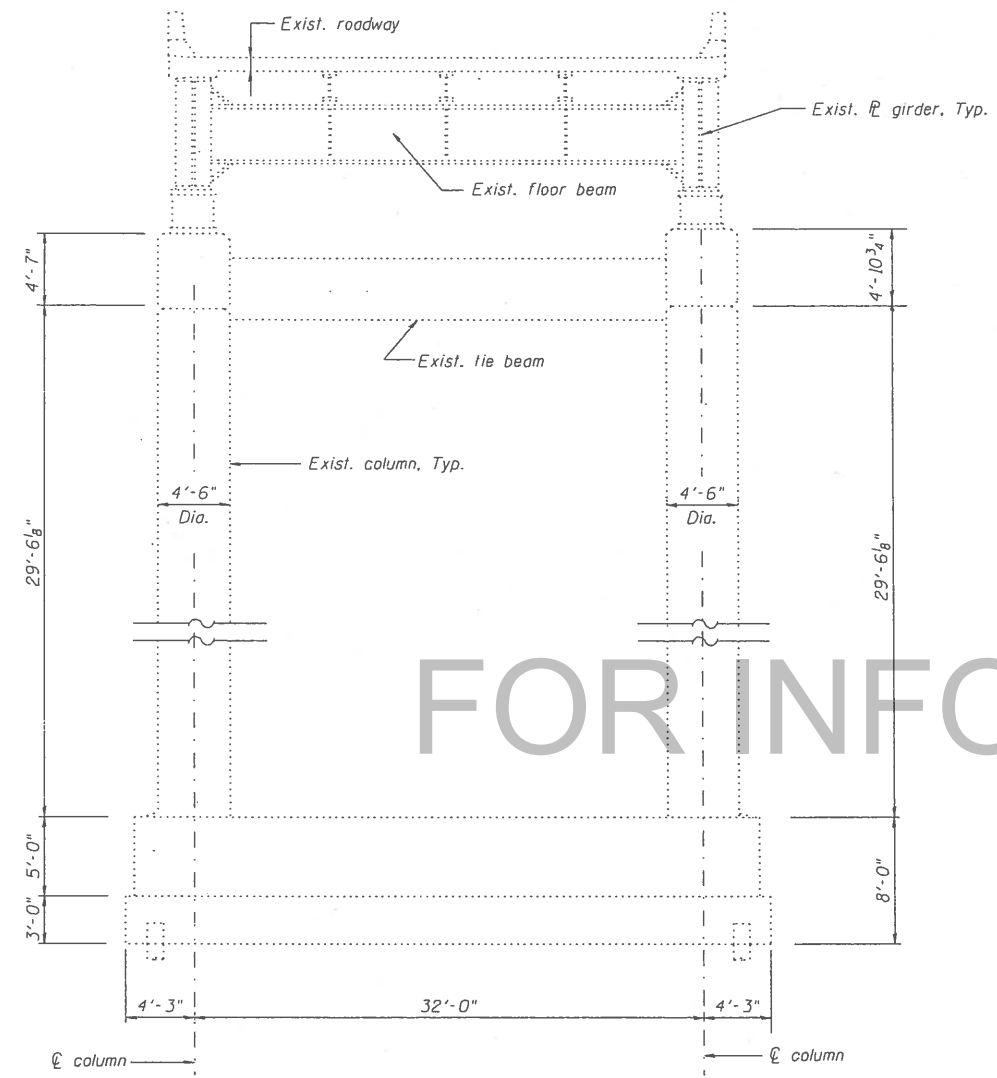
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 DATE: 08/01/2008

REVISIONS	
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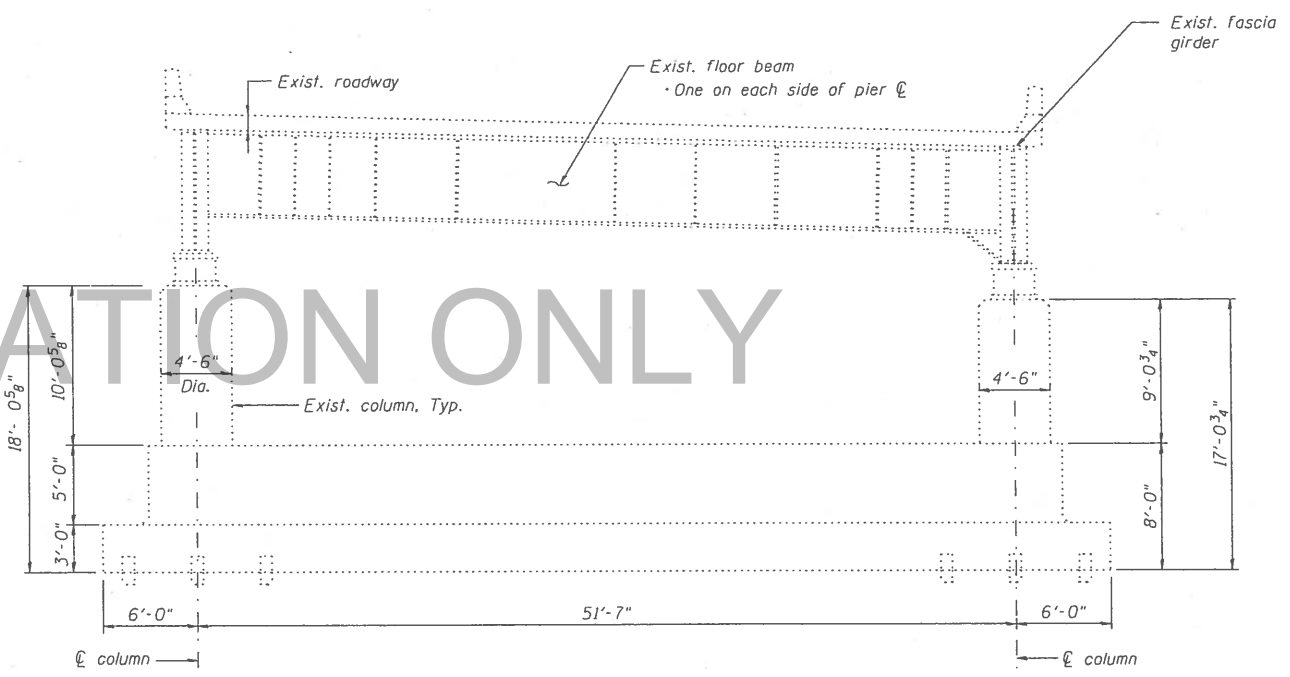
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ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
F.A.I. 70	*	ST. CLAIR	103	10
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT - 14-78		
• 82-3HVB-3R-4			SHEET S-7 OF S-28	
CONTRACT NO. 76947				



TYPICAL SECTION THROUGH TWO - GIRDER ROADWAY (PIER A22 SHOWN)



TYPICAL SECTION THROUGH TWO - GIRDER ROADWAY (PIER A44 SHOWN)

FOR INFORMATION ONLY

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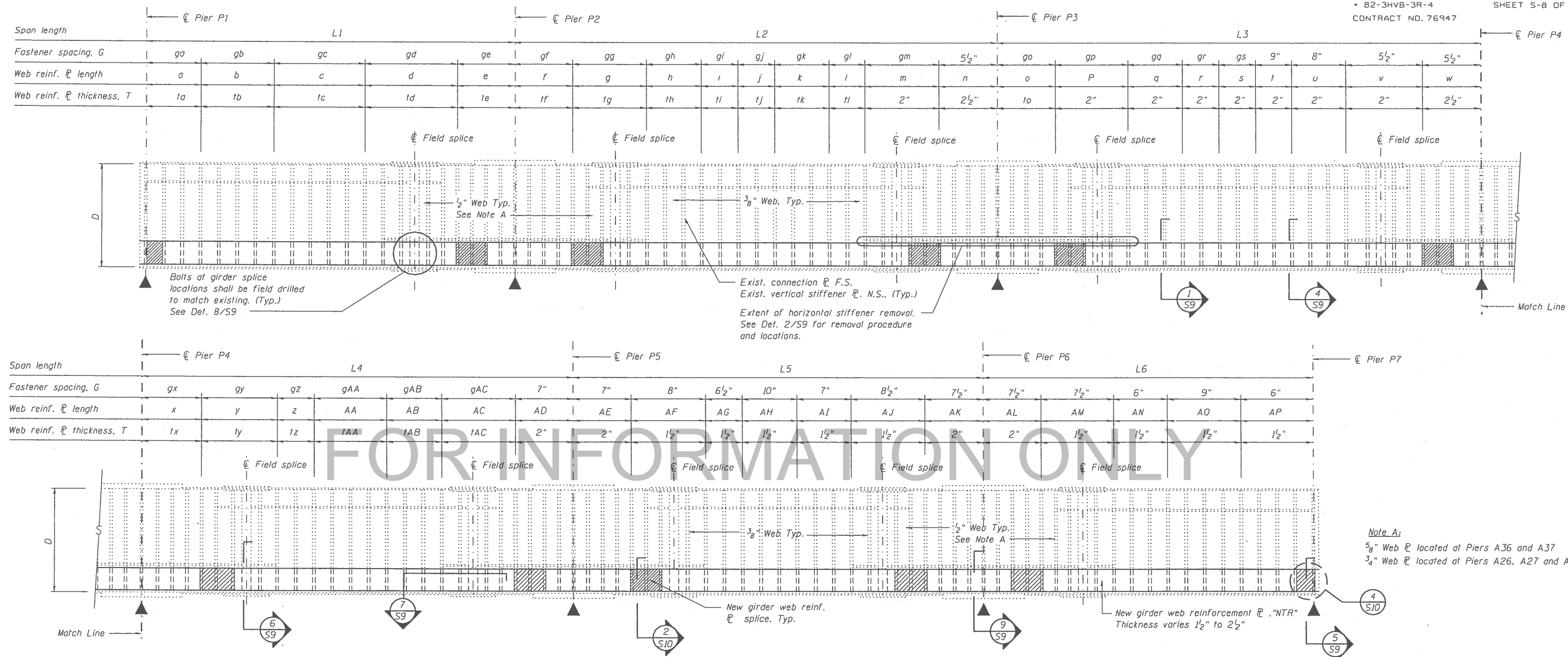
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 TYPICAL STRUCTURAL DETAILS

REVISIONS	
NAME	DATE

STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION  
 SEISMIC AND REDUNDANCY RETROFIT REPAIRS  
 FAI ROUTE 70  
 POPLAR STREET BRIDGE APPROACHES  
 ST. CLAIR COUNTY

STRUCTURE NO. 082-0141 (ROADWAY A)  
 SCALE: N.T.S.  
 DATE: 08/01/2008

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
F.A.I. 70	*	ST. CLAIR	103	11
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT - 14-78		
* B2-3HVB-3R-4			SHEET S-8 OF S-28	
CONTRACT NO. 76947				



1 GIRDER 2 ELEVATION INDICATING TYPICAL REDUNDANCY RETROFIT LOCATIONS FOR SIX-SPAN CONTINUOUS UNIT  
 S8 GIRDER 1 - OPPOSITE HAND

Note B:  
 Redundancy retrofit locations also apply to two, three, and four-span continuous units  
 Note C:  
 See table of web reinforcement plate parameters Sheet S11.

Roadway Spans	WEB REINFORCEMENT PLATE							
	D	D1	s1	s2	h	h1	Gmin (in.)	
	in.	in.	in.	in.	in.	in.	3/8" webs	1/2", 5/8" or 3/4" webs
A21 to A24	66	10	2 1/2	5	11	13	4 1/2	5 1/2
A25 to A28	66	14	4	6	15	13	4 1/2	5 1/2
A29 to A34	66	10	2 1/2	5	11	13	4 1/2	5 1/2
A35 to A37	72	14	4	6	15	15	4 1/2	5 1/2
A38 to A40	72	12	3	6	13	15	4 1/2	5 1/2
A41 to A42	72	12	3	6	13	15	4 1/2	5 1/2

Bolt Diameter	Girder Web Plate	MINIMUM BOLT LENGTH					
		Total Reinforcement Plate and Splice Plate Thickness					
in.	in.	1 1/2	2	2 1/2	3	4	5
1 1/4	3/8	4	4 1/2	5	5 1/2	6 1/2	na
1 1/2	1/2	4 1/4	4 3/4	na	5 3/4	6 3/4	na
1 1/2	5/8	na	5	na	na	7	na
1 1/2	3/4	na	5 1/4	5 3/4	na	7 1/4	na

Note D:  
 Includes (1) 3/32" hardened washer, each end.  
 Except at 3/4" webs where (1) 5/16" ℓ washer provided on girder side and  
 (1) 3/32" hardened washer on reinforcement ℓ side.

BILL OF MATERIAL		
ITEM	UNIT	QUANTITY
Steel girder web reinforcement plate	Lbs.	452,600
Vertical web stiffener removal	Ea.	1,136
Horizontal web stiffener removal	Fi.	773

REVISIONS	
NAME	DATE

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**REDUNDANCY RETROFIT**

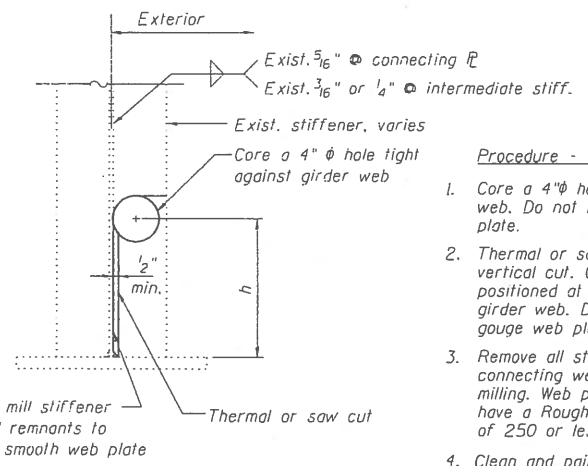
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 FAI ROUTE 70  
 POPLAR STREET BRIDGE APPROACHES  
 ST. CLAIR COUNTY

STRUCTURE NO. 082-0141 (ROADWAY A)  
 SCALE: N.T.S.  
 DATE: 08/01/2008

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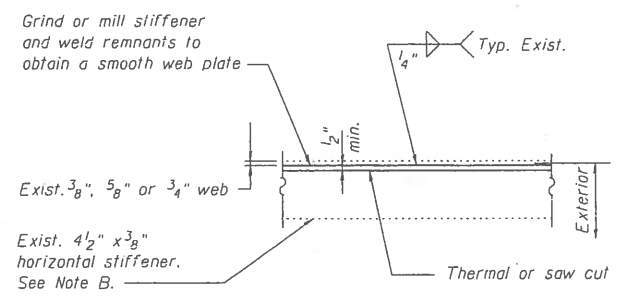




- Procedure - Detail 1/S9:**
1. Core a 4"  $\phi$  hole tight against girder web. Do not notch or gouge web plate.
  2. Thermal or saw cut horizontal cut and vertical cut. Cut nearest web shall be positioned at least 1/2" away from girder web. Do not notch or gouge web plate.
  3. Remove all stiffener remnants and connecting welds by grinding or milling. Web plate surface shall have a Roughness Average (Ra) of 250 or less.
  4. Clean and paint steel surfaces adjacent to the repair in accordance with the Special Provisions.

**Note A:**  
New web reinforcement  $\bar{r}$  not shown for clarity

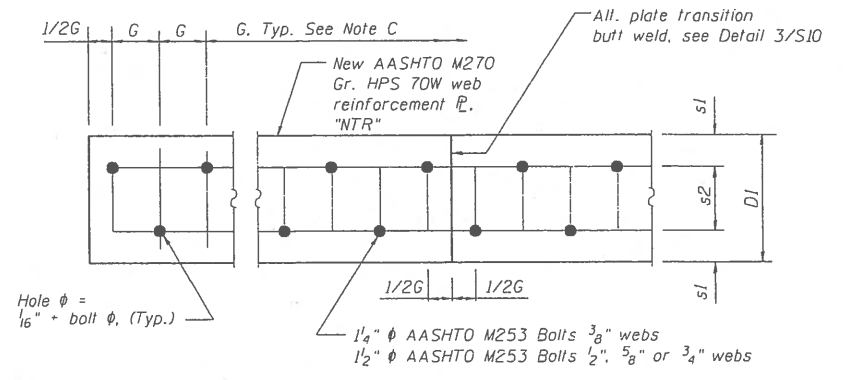
**1 VERTICAL STIFFENER MODIFICATION**  
S9



**Note B:**  
Horizontal stiffener removal required at Piers A26, A27, A28, A36 and A37.  
Plan view, bottom flange not shown for clarity

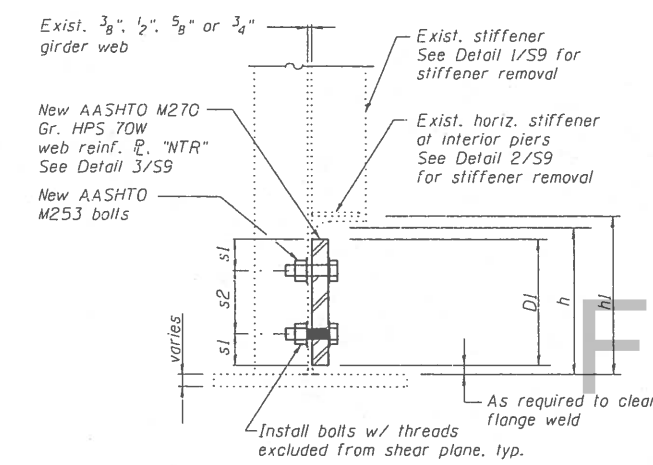
**2 HORIZONTAL STIFFENER REMOVAL**  
S9

- Procedure - Detail 2/S9:**
1. Thermal or saw cut horizontal cut along length of stiffener. Cut nearest web shall be positioned at least 1/2" away from girder web. Do not notch or gouge web plate.
  2. Remove all stiffener remnants and connecting welds by grinding or milling. Web plate surface shall have a Roughness Average (Ra) of 250 or less.
  3. Clean and paint steel surfaces adjacent to the repair in accordance with the Special Provisions.



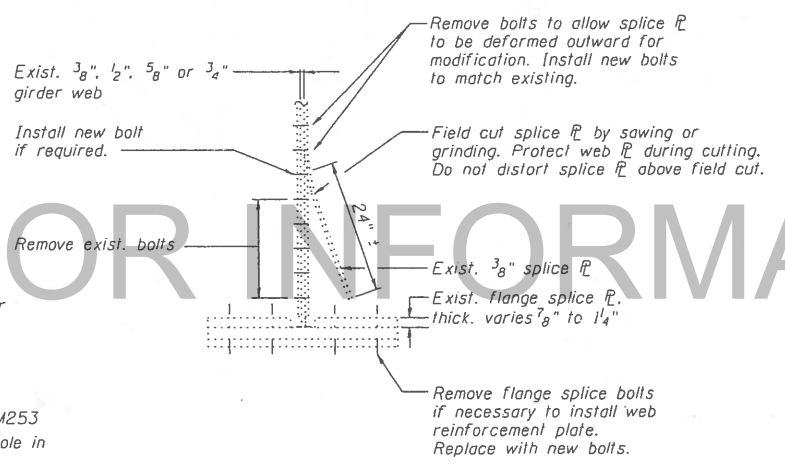
**Note C:**  
Bolt hole locations must be field verified. Longitudinal hole positions will require adjustments in the vicinity of floor beam connections, interior stiffener plates, and web splices. Equally space bolts between interior stiffener  $\bar{r}$  using nominal bolt spacing, G provided. Reduce spacing as necessary to avoid interferences. Do not space less than min. bolt spacing, Gmin

**3 WEB REINFORCEMENT PLATE ELEVATION**  
S9

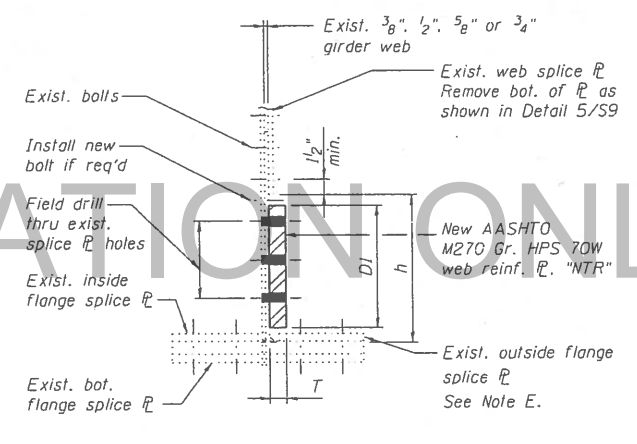


**Note D:**  
At 3/4" webs, provide 3"  $\phi$  x 5/16"  $\bar{r}$  washer meeting AASHTO M253 requirements on girder web  $\bar{r}$  side. Provide 2"  $\phi$  oversized hole in 3/4" girder web only. 2"  $\phi$  holes shall be concentric with web reinforcement  $\bar{r}$  holes,  $\pm 1/16$ ".

**4 TYPICAL WEB REINFORCEMENT PLATE**  
S9

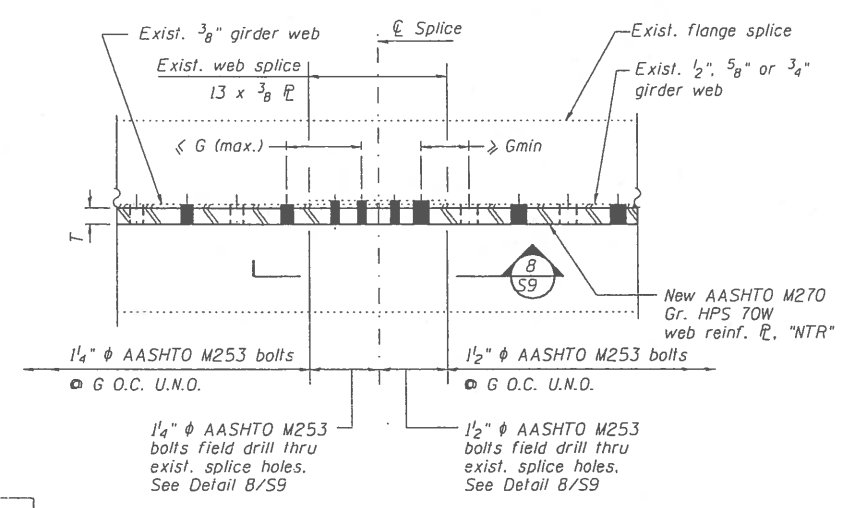


**5 GIRDER SPICE PLATE MODIFICATION**  
S9

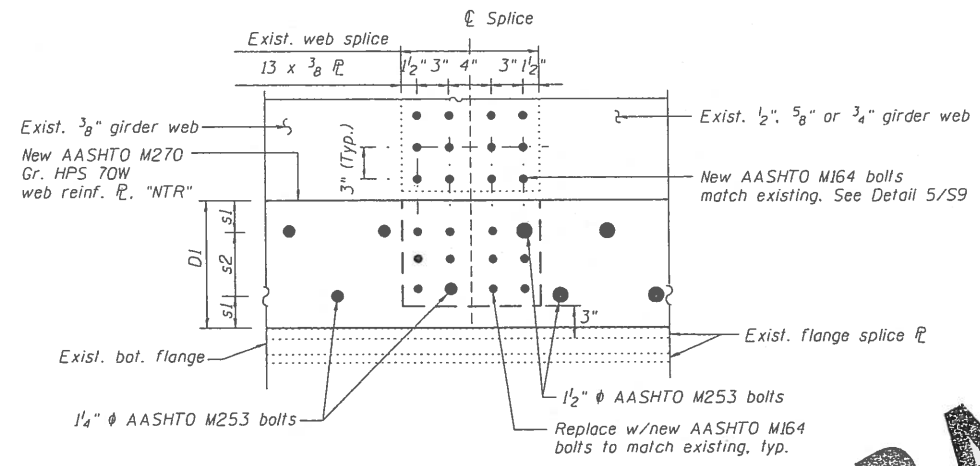


**6 WEB REINFORCEMENT PLATE AT GIRDER WEB SPICE**  
S9

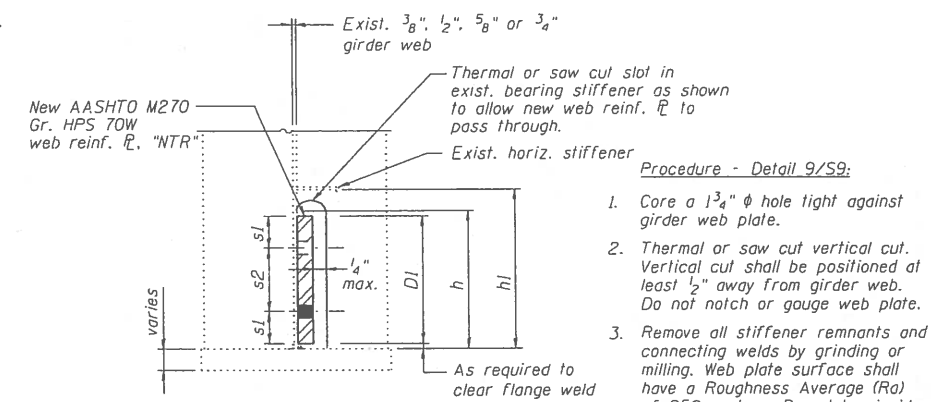
**Note E:**  
At splice locations where the exist. outside bot. flange splice  $\bar{r}$  interferes with web reinforcement  $\bar{r}$  installation, the outside splice  $\bar{r}$  may be removed and replaced with a new 1/2" thick AASHTO M270 Gr. HPS 70W  $\bar{r}$  of identical length and width. Install with new AASHTO M164 bolts. (Cost included with steel girder web reinforcement  $\bar{r}$  installation). Removal of outside splice  $\bar{r}$  permitted provided all inside splice  $\bar{r}$  fasteners are installed.



**7 WEB REINFORCEMENT PLATE AT GIRDER WEB SPICE**  
S9



**8 ELEVATION AT GIRDER WEB SPICE**  
S9



**9 WEB REINFORCEMENT PLATE AT INT. PIERS**  
S9

**REDUNDANCY RETROFIT DETAILS**

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION  
SEISMIC AND REDUNDANCY RETROFIT REPAIRS  
FAI ROUTE 70  
POPLAR STREET BRIDGE APPROACHES  
ST. CLAIR COUNTY

STRUCTURE NO. 082-0141 IROADWAY A;  
SCALE: N.T.S.  
DATE: 08/01/2008

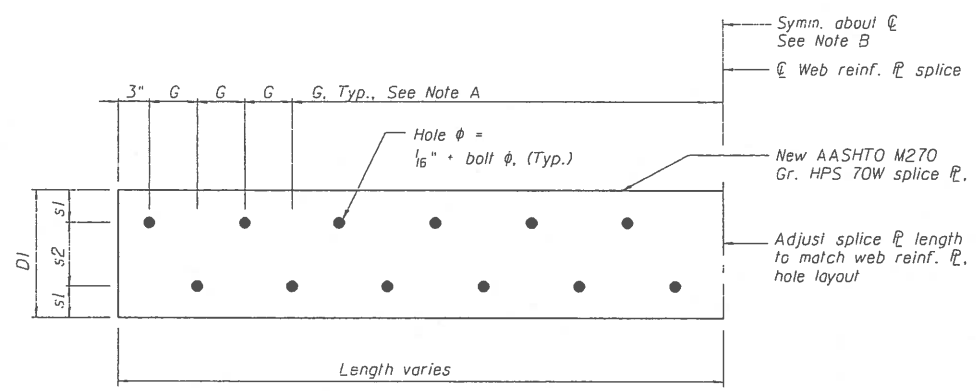
REVISIONS	
NAME	DATE

**DRAFT**

DATE: 8/8/2008 FILENAME: P:\2001\1201-1300\1201.1240\Drafting\SeismicRedundancy\Ramp A\Redund\A-REDUD02.dgn

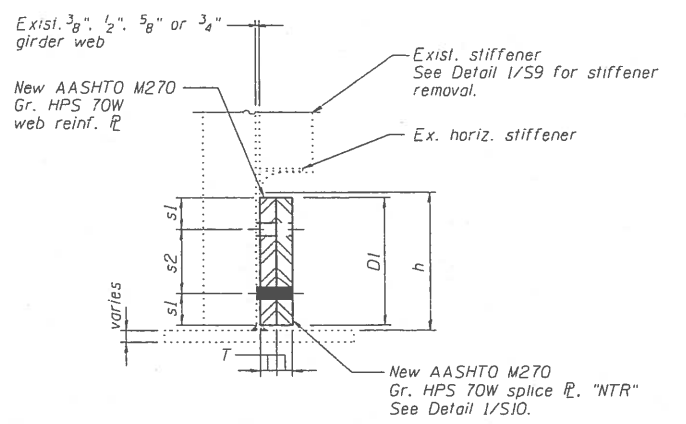
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CHECKED	JCM
DRAWN	CLK
CHECKED	DDC

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
F.A.I. 70	#	ST. CLAIR	103	13
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT: 1H-78		
B-2-3HVB-3R-4		SHEET S-10 OF S-28		
CONTRACT NO. 76947				

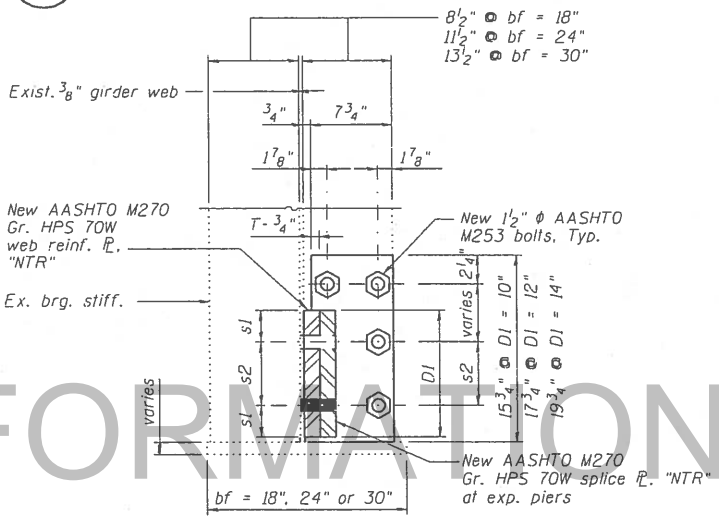


**1** TYPICAL WEB REINFORCEMENT SPLICE PLATE  
S10

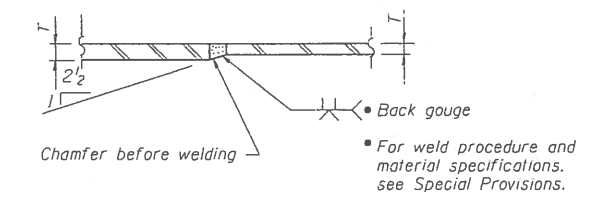
- Note A:** For splice locations other than at exp. piers
- Hole size and spacing to match new web reinf. R.
  - Splice R thickness to match greater web reinf. R thickness.
  - Min. no. fasteners = 12 when splice located outside girder web splices (positive moment) per side = 6 when splice located inside girder web splices (negative moment)
  - See Detail 3/S10 for all. butt weld splice.
  - Max. separation between abutting ends of web reinf. R = 1"
- Note B:** Layered R's can be used in lieu of splice R's. Develop each R layer beyond cut-off per Note A.



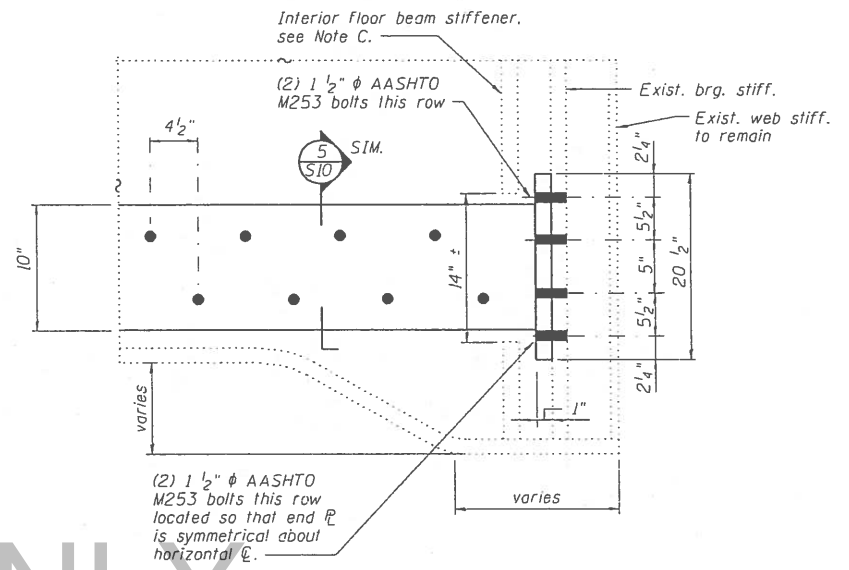
**2** TYPICAL WEB REINFORCEMENT SPLICE PLATE  
S10



**5** WEB REINFORCEMENT PLATE AT EXP. PIERS  
S10

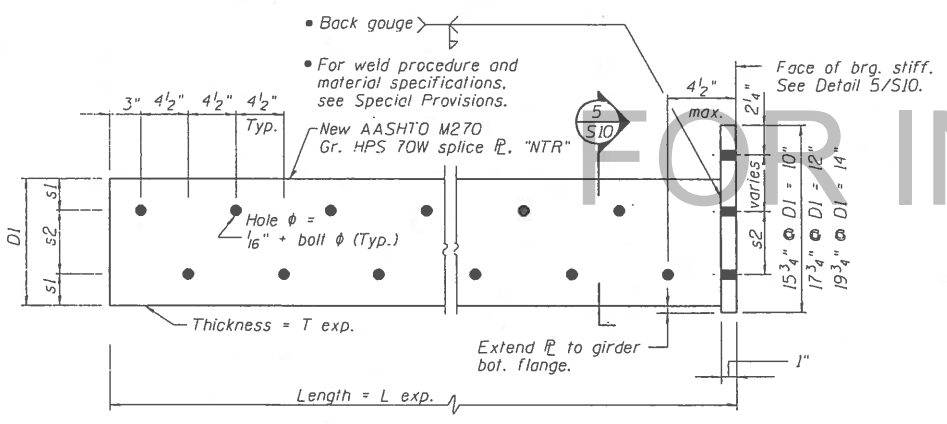


**3** ALT. BUTT WELD SPLICE AT WEB REINF. PLATE TRANSITION  
S10



**6** WEB REINFORCEMENT SPLICE PLATE AT HAUNCH  
S10

**Note C:** Remove vertical stiffener to permit installation of web reinforcement splice R. See Detail 1/S9. Two core holes through stiffener will be required for stiffener removal.

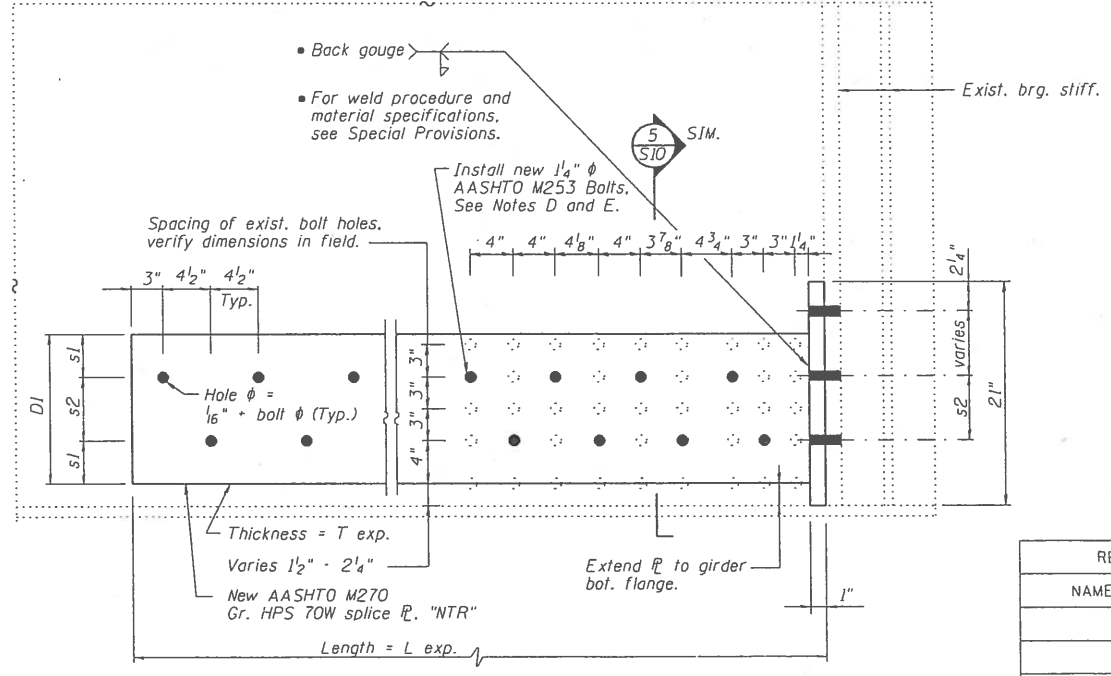


**4** TYPICAL WEB REINFORCEMENT SPLICE PLATE AT EXP. PIERS  
S10

WEB REINF. SPLICE PLATE AT EXP. PIERS			
Roadway Spans	Pier(s)	T exp.	L exp.
		in.	in.
A21 to A24	A21 and A25	1	75
A25 to A28	A25 and A29	1	66
A29 to A34	A29 and A35	1 1/2	75
A35 to A37	A35	1	66
A35 to A37	A38	1	66
A38 to A40	A38	1 1/4	93
A38 to A40	A41	1	75
A41 to A42	A41 and A43	1	66

**Note D:** At Span A25, Pier A25, Girder 1, remove exist. steel plate and angle assembly from the lower portion of the girder web (both sides, bolt pattern shown). Install new web reinf. R and exp. pier splice R reusing exist. bolt holes as shown. Enlarge reused holes in girder web if necessary. Verify all dimensions prior to fabrication of web reinf. and splice R's.

**Note E:** For other girders on Piers A25 and A26, exist. bolt pattern consists of only 4 holes. Adjust bolt spacing of exp. pier splice R, not less than Gmin, in order to reuse one exist. lower bolt hole and the opposite upper bolt hole. Enlarge holes if necessary. Do not reuse the remaining two holes. Verify dimensions of reused holes prior to fabrication of web reinf. and splice R's.



**7** WEB REINFORCEMENT SPLICE PLATE AT EXP. PIERS A25 AND A26  
S10

**DRAFT**

- Notes:**
- 1 1/4" phi AASHTO M253 bolts in all 3/8" girder webs, threads excluded from shear plane.
  - 1 1/2" phi AASHTO M253 bolts in all 1/2", 5/8" or 3/4" girder webs, threads excluded from shear plane.
  - Preload 1 1/4" phi AASHTO M253 bolts to proof load.
  - Preload 1 1/2" phi AASHTO M253 bolts to proof load.

REVISIONS	
NAME	DATE

**REDUNDANCY RETROFIT DETAILS**

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION  
SEISMIC AND REDUNDANCY RETROFIT REPAIRS  
FAI ROUTE 70  
POPLAR STREET BRIDGE APPROACHES  
ST. CLAIR COUNTY

STRUCTURE NO. 082-0141 (ROADWAY A)  
SCALE: N.T.S.  
DATE: 08/01/2008

DATE: 8/6/2008  
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DRAWN	CLK
CHECKED	DDC



ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
F.A.I. 70	*	ST. CLAIR	103	15
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT- 14-78		
* B2-3HVB-3R-4			SHEET S-12 OF S-28	
CONTRACT NO. 76947				

VOID  
FOR INFORMATION ONLY

DATE: 8/18/2008  
FILENAME: P:\2001\1201-1300\2001.1240\Drafting\SeismicRedundancy\Ramp\_A\Typ\A-TYP101\_VOID.dgn

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CHECKED	MJS
DRAWN	CLK
CHECKED	JEL

**DRAFT**

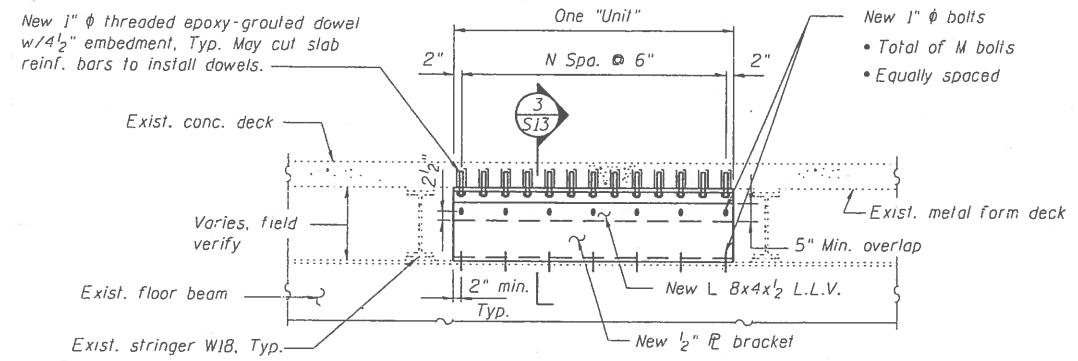
REVISIONS	
NAME	DATE

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION  
SEISMIC AND REDUNDANCY RETROFIT REPAIRS  
FAI ROUTE 70  
POPLAR STREET BRIDGE APPROACHES  
ST. CLAIR COUNTY

STRUCTURE NO. 082-0141 (ROADWAY A)

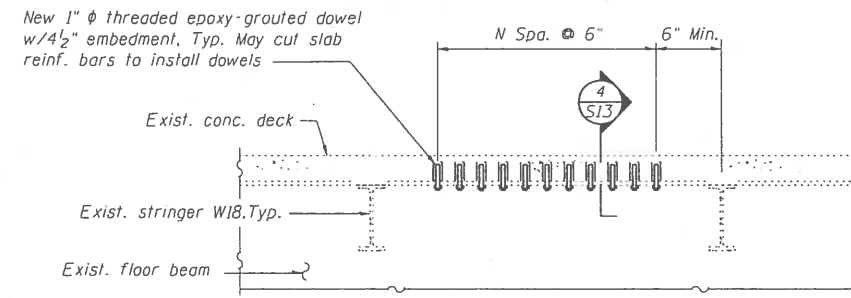
SCALE: N.T.S.

DATE: 08/01/2008



Notes: • See table for number of "units" per pier.  
• See table for N and M.

1 ELEVATION - SLAB FLOOR BEAM CONNECTION  
S13



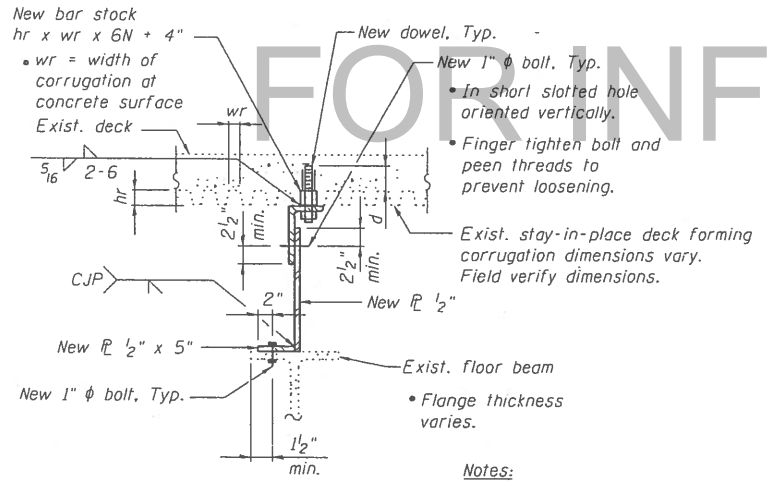
Note: See table for N.

2 ELEVATION - SLAB FLOOR BEAM CONNECTION  
S13

**TABLE OF SLAB/FLOOR BEAM CONNECTION**

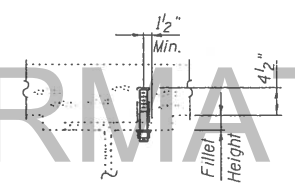
Pier	Units	N Per Unit	M Per Unit	Ref. Detail	Comments
A22	2	8	6	1	
A23	1	6	6	1	
A24	1	8	6	1	
A25	1	5		2	See Note 1
A26	1	10	7	1	
A27	1	10	7	1	
A28	1	10	7	1	
A30	1	8	6	1	
A31	1	8	6	1	
A32	1	10	7	1	
A33	1	6	6	1	
A34	2	8	6	1	
A36	2	6	6	1	See Note 2
A37	3	8	6	1	See Note 2
A39	2	8	6	1	See Note 2
A40	3	6	6	1	See Note 2
A42	2	6	6	1	See Note 2

Notes:  
1. Span A25 side of pier only.  
2. Avoid placing connection where floor beam top flange changes thickness.



Notes:  
• Orientation of angle and/or plate assembly may be opposite hand to that shown.  
• Epoxy grouted dowel embedment length (d) shall be measured from the embedded end of the bolt to the top of the corrugation (excludes rib height).  
• If significant sagging of stay-in-place forms is encountered, as directed by Engineer, Contractor may replace configurations where N=12 or N=10 with two (2) N=6, M=6 configurations.

3 SECTION  
S13



Notes:  
Epoxy grouted dowel embedment length shall be measured from the bottom of the concrete slab to the end of the dowel excluding the fillet height.

4 SECTION  
S13

**SUPERSTRUCTURE BILL OF MATERIAL**

Item	Unit	Quantity
Slab Floor Beam Connections - Roadway A	L SUM	1

**ESTIMATED QUANTITIES FOR INFORMATION PURPOSES ONLY**

Item	Unit	Connection Type				
		N=12 M=8	N=10 M=7	N=8 M=6	N=6 M=5	N=4 M=4
Furnishing and Erecting Structural Steel	Pound	500	420	340	270	190
Epoxy-grouted Dowels	Each	13	11	9	7	5

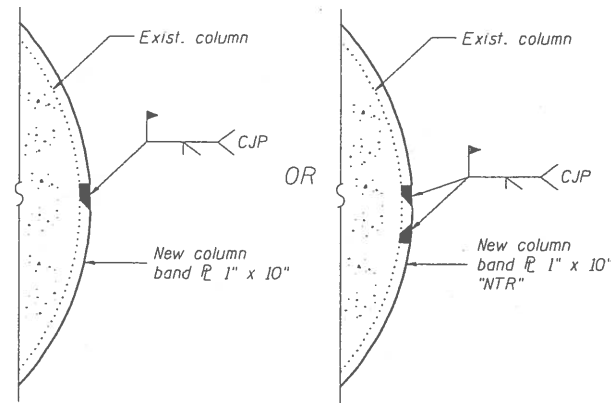
**DRAFT**

**SEISMIC RETROFIT DETAILS**

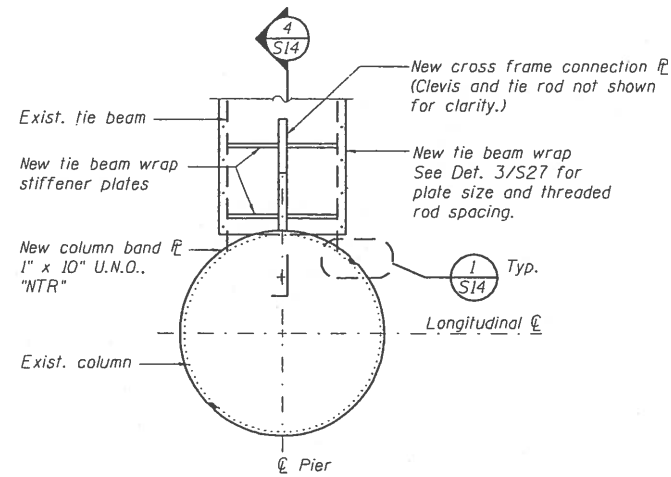
REVISIONS		STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION SEISMIC AND REDUNDANCY RETROFIT REPAIRS FAI ROUTE 70 POPLAR STREET BRIDGE APPROACHES ST. CLAIR COUNTY
NAME	DATE	
		STRUCTURE NO. 082-0141 (ROADWAY A) SCALE: N.T.S. DATE: 08/01/2008

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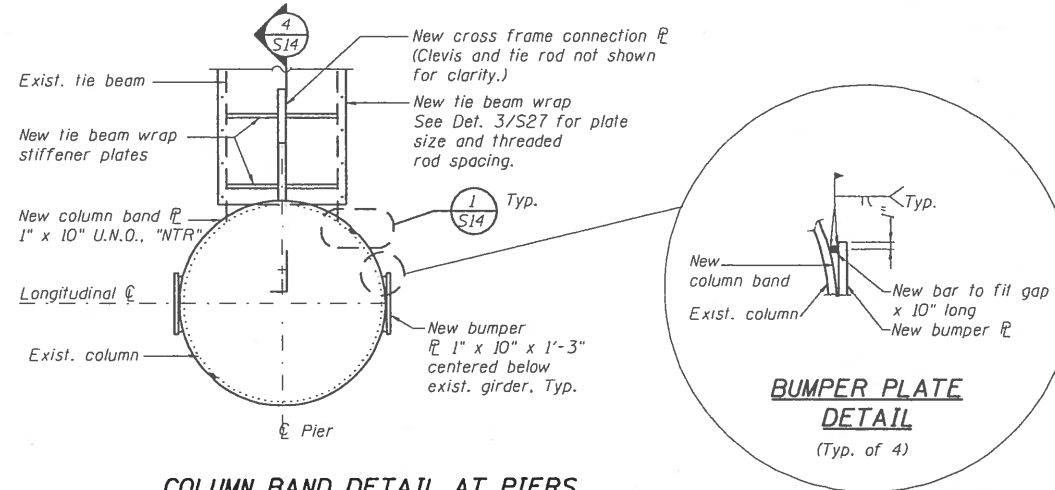
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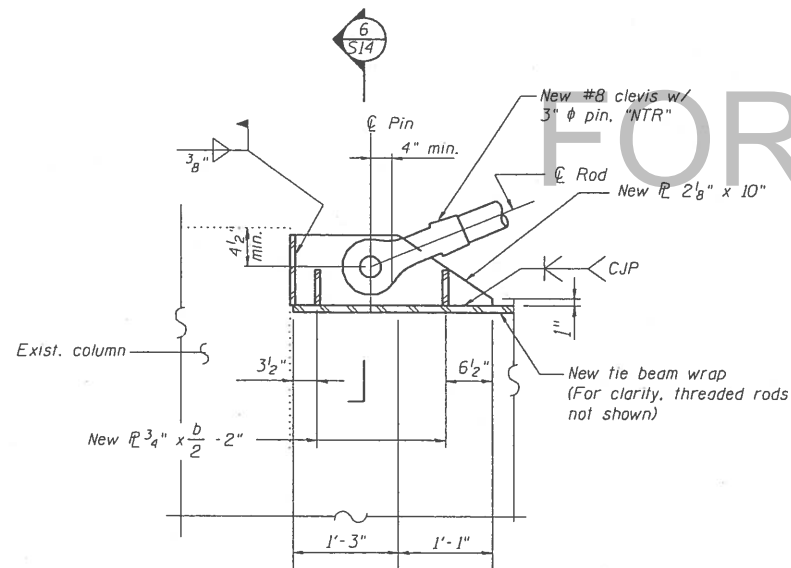
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S14 COLUMN BAND CONNECTION OPTIONS



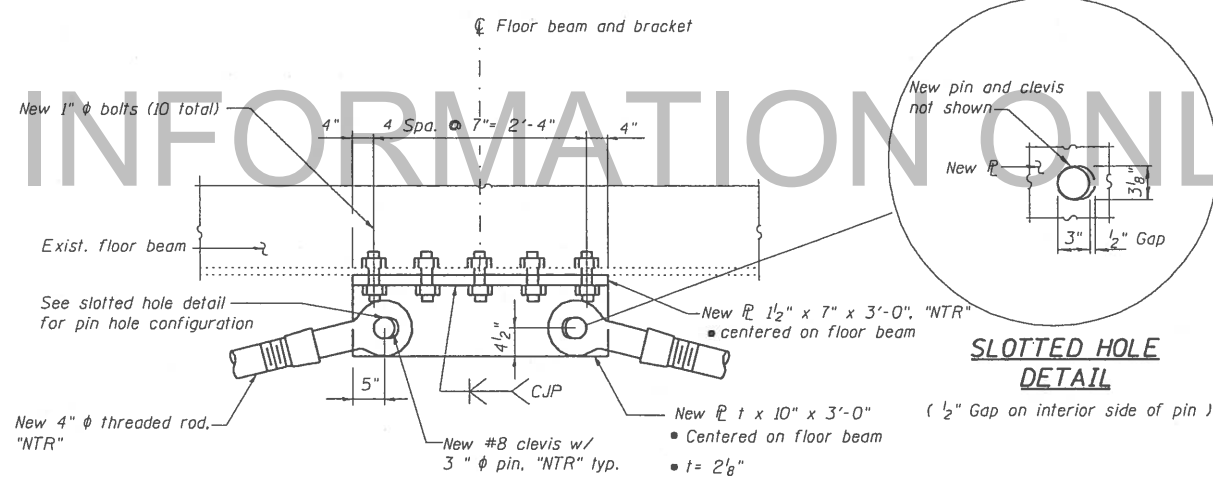
2  
S14 CROSS FRAME COLUMN BAND DETAIL



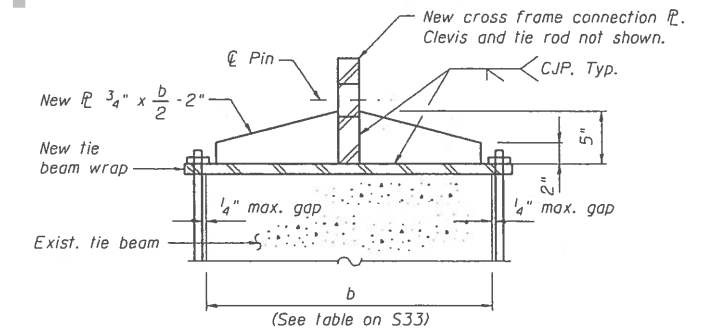
3  
S14 COLUMN BAND DETAIL AT PIERS WITH BUMPERS & CROSS FRAMES



4  
S14 TIE ROD CONNECTION TO PIER



5  
S14 TIE ROD CONNECTION TO FLOOR BEAM



6  
S14 SECTION

FOR INFORMATION ONLY

DATE: 7/29/2008  
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**DRAFT**

SEISMIC RETROFIT DETAILS

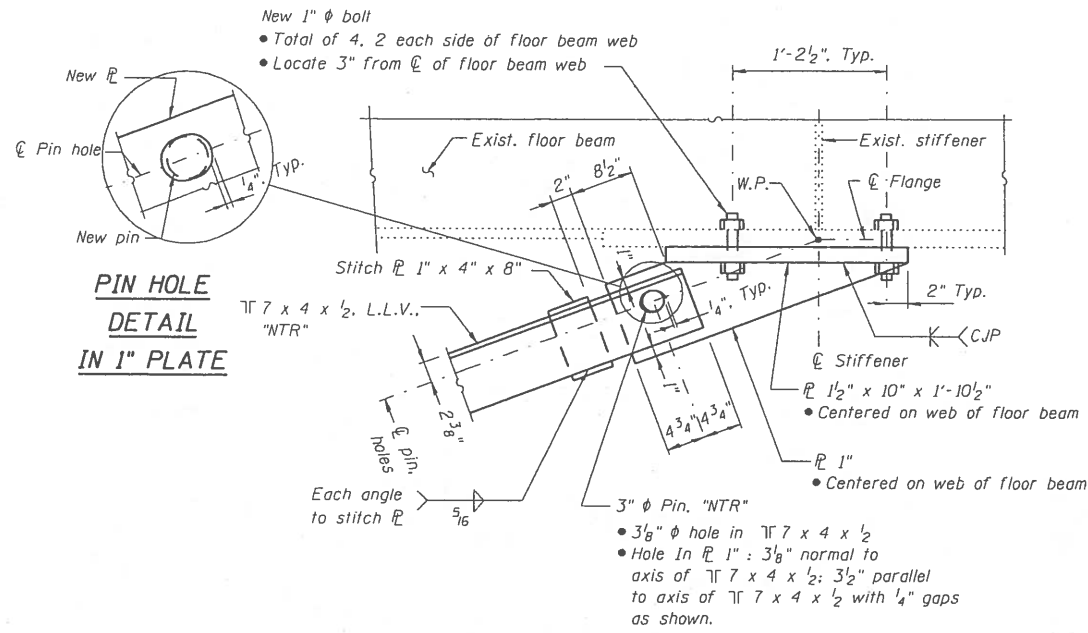
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DEPARTMENT OF TRANSPORTATION  
SEISMIC AND REDUNDANCY RETROFIT REPAIRS  
FAI ROUTE 70  
POPLAR STREET BRIDGE APPROACHES  
ST. CLAIR COUNTY

STRUCTURE NO. 082-0141 (ROADWAY A)

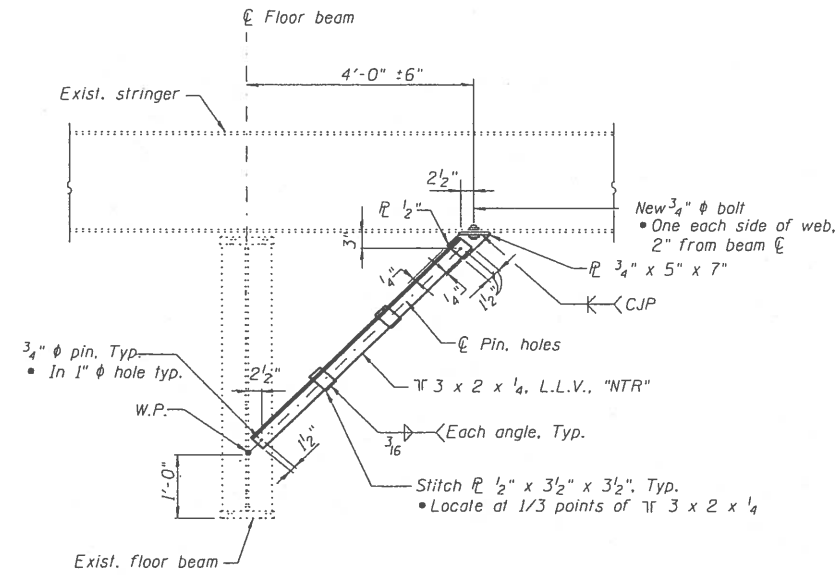
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DATE: 08/01/2008

REVISIONS	
NAME	DATE



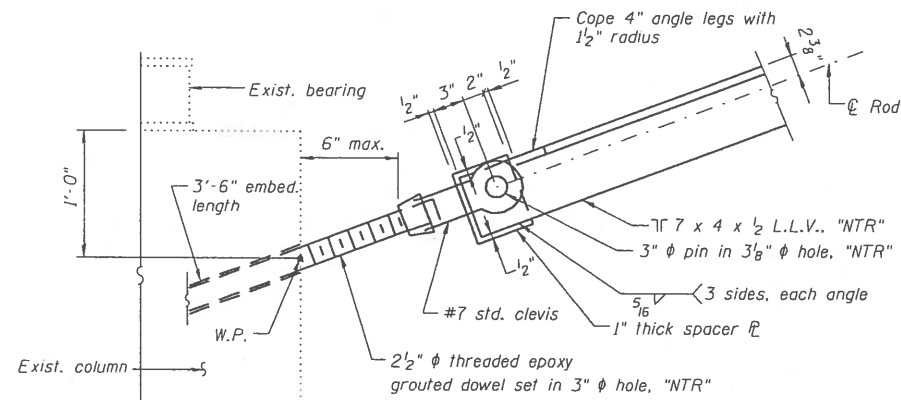
**PIN HOLE  
DETAIL  
IN 1" PLATE**



**1 STRUT CONNECTION TO FLOOR BEAM**  
S15

**3 SECTION**  
S15

FOR INFORMATION ONLY



**2 STRUT CONNECTION TO EXISTING PIER**  
S15

**DRAFT**

**SEISMIC RETROFIT DETAILS**

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION  
SEISMIC AND REDUNDANCY RETROFIT REPAIRS  
FAI ROUTE 70  
POPLAR STREET BRIDGE APPROACHES  
ST. CLAIR COUNTY

STRUCTURE NO. 082-0141 (ROADWAY A)

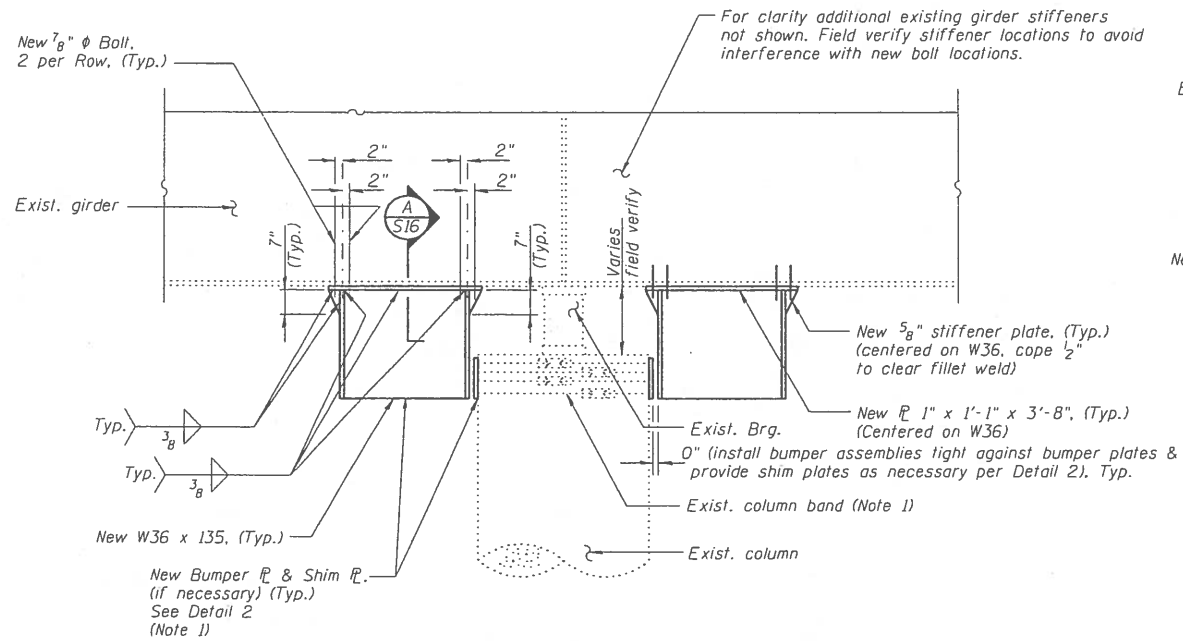
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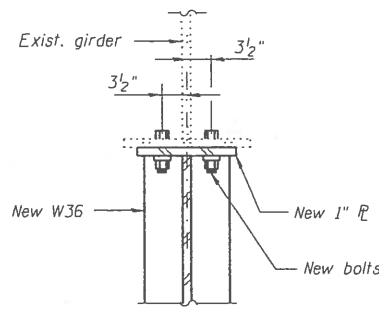
REVISIONS	
NAME	DATE

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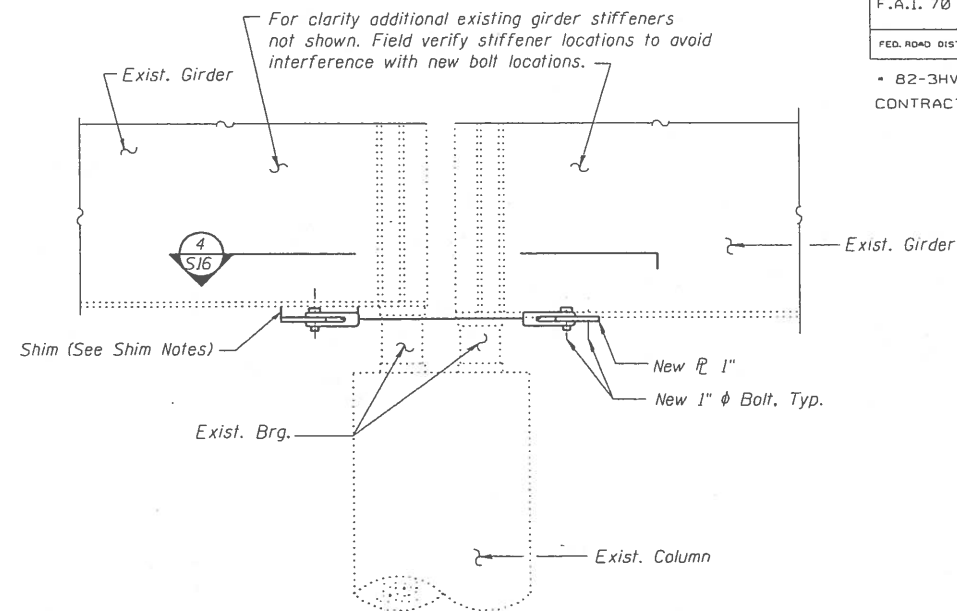
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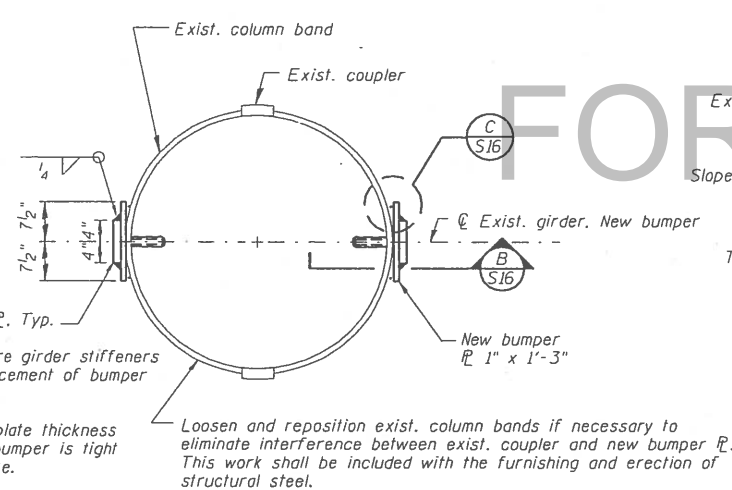
**1 ELEVATION: BUMPERS**  
S16 See Notes this Sheet.



**A SECTION**  
S16

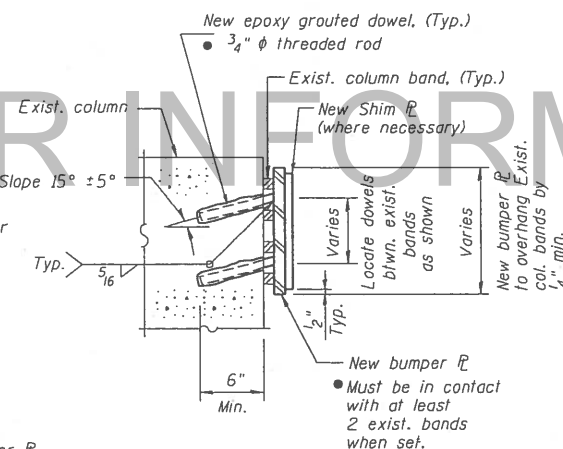


**3 ELEVATION: TIE ASSEMBLY (2 PER PIER)**  
S16 Install at Piers A25, A29, A38, A41 and A43

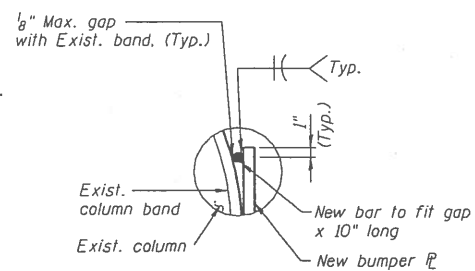


- Loosened bands shall be reinstalled from bottom up. The repositioned bands shall be evenly spaced as possible and be located with a space of 10" vertically. The top of the top band shall not be closer than 3 1/4" nor farther than 4" from the top of the column.
- The bolts shall be tightened in 55 Ft.-Lb. increments in a clockwise direction, to a final torque of 220 Ft.-Lbs.
- All of the threads in each of the four nuts shall be fully engaged upon final tightening.
- Once a final torque of 220 Ft.-Lbs. is reached in each nut, the band threads shall be peened to the nut to prevent loosening.

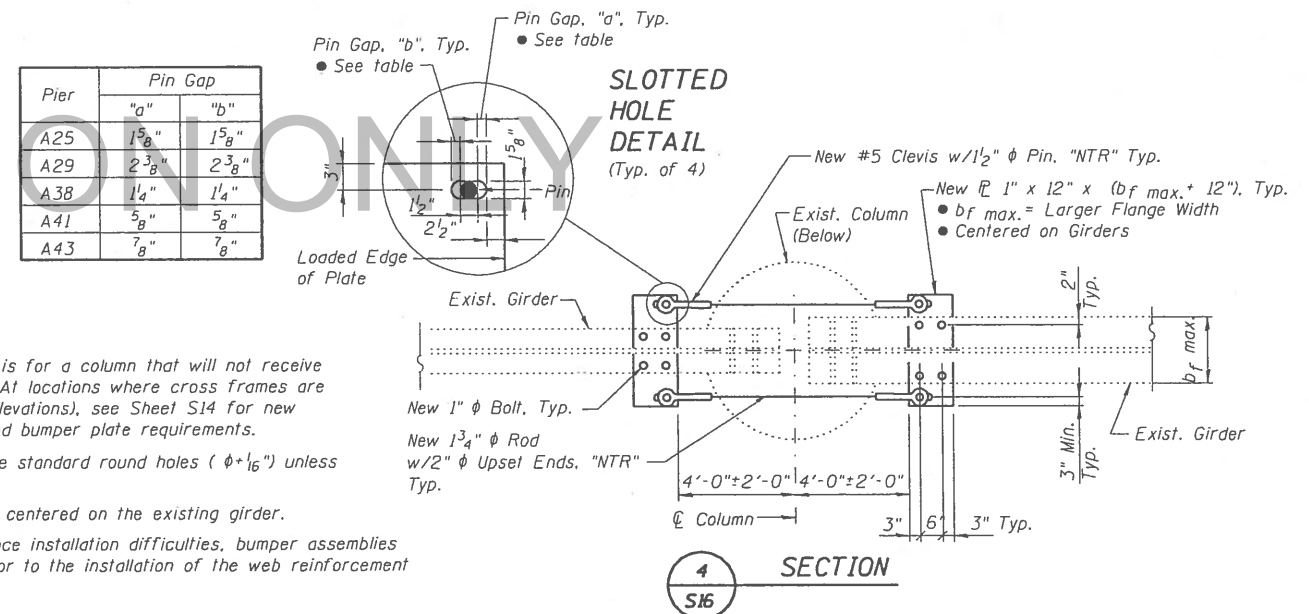
**2 BUMPER PLATE DETAIL**  
S16



**B SECTION**  
S16



**C DETAIL**  
S16



**BUMPER NOTES:**

- The condition shown is for a column that will not receive a new cross frame. At locations where cross frames are specified (see pier elevations), see Sheet S14 for new column band plate and bumper plate requirements.
- All bolt holes shall be standard round holes ( $\phi + 1/16"$ ) unless noted otherwise.
- All bumpers shall be centered on the existing girder.
- To avoid bolt clearance installation difficulties, bumper assemblies shall be installed prior to the installation of the web reinforcement plates.

**SHIM NOTES:**

- Shim higher flange so that elevation difference between ends of rod is no more than 1/2".
- Shim Plate length shall match the smaller length of the plates being shimmed, and shim plate width shall match the smaller width of the plates being shimmed.
- Field verify shim requirements.

**TIE ROD NOTES:**

- All tie rod connection plates shall be centered on the existing girder.
- Tie Rods may be multiple bar sections with turnbuckles or single rods without turnbuckles.
- The total length of the unthreaded portion of each tie rod assembly shall not be less than 1'-8".
- Tie rods may extend 0" min. to 3/4" max. into clevis and turnbuckle openings U.N.O.

**DRAFT**

**SEISMIC RETROFIT DETAILS**

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION  
SEISMIC AND REDUNDANCY RETROFIT REPAIRS  
FAI ROUTE 70  
POPLAR STREET BRIDGE APPROACHES  
ST. CLAIR COUNTY

STRUCTURE NO. 082-0141 (ROADWAY A)

SCALE: N.T.S.

DATE: 08/01/2008

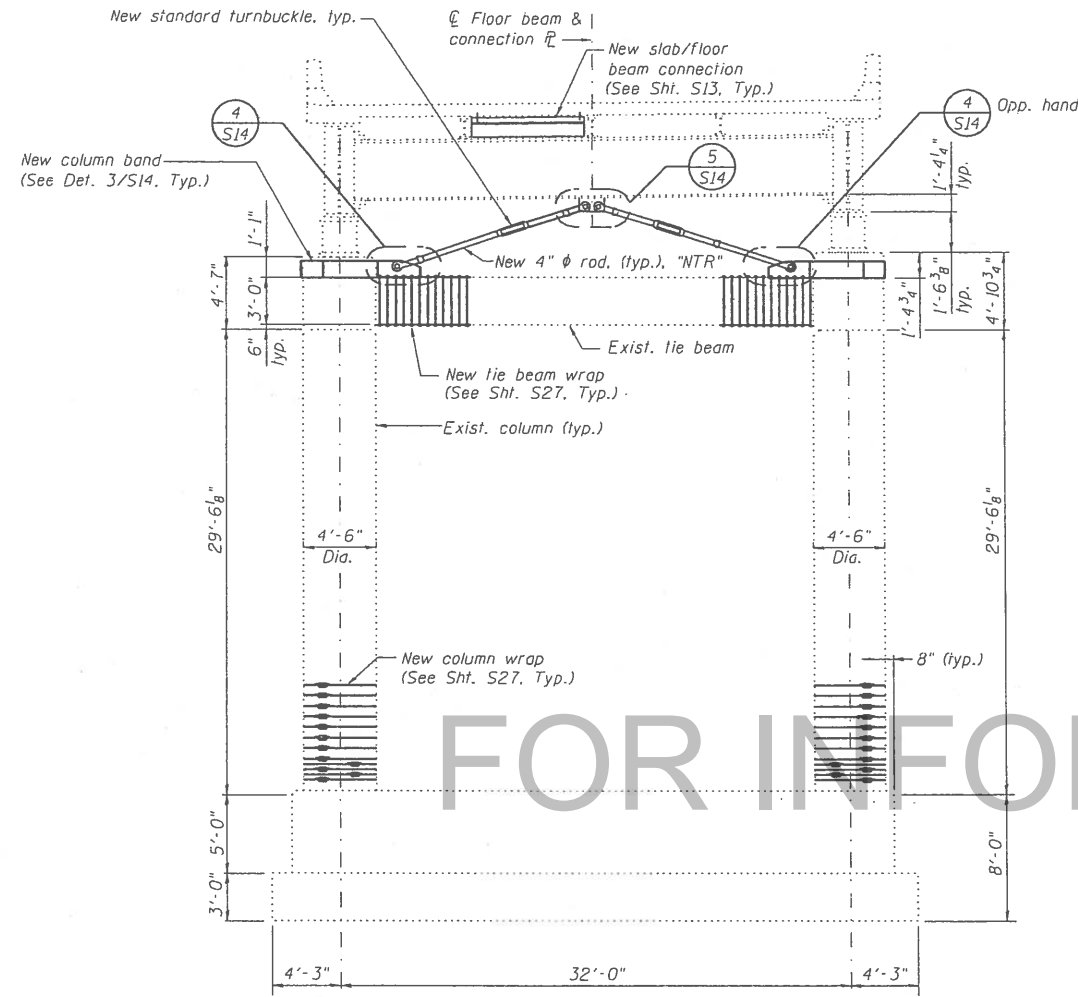
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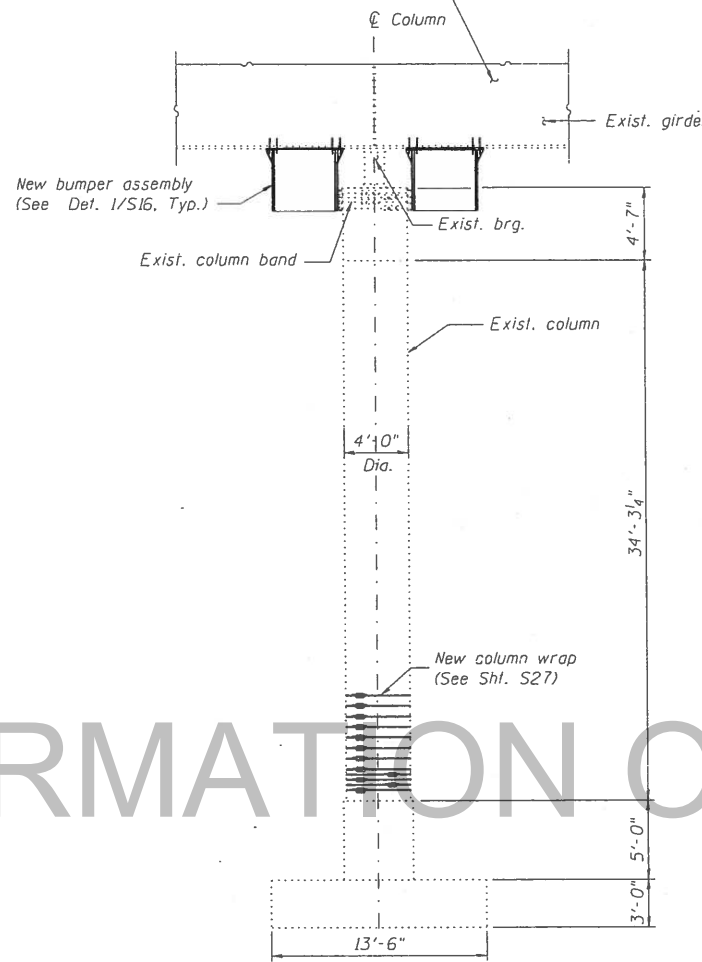


ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
F.A.1. 70	*	ST. CLAIR	103	20
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT - 144-7E		
- B2-3HVB-3R-4			SHEET S-17 OF S-28	
CONTRACT NO. 76947				



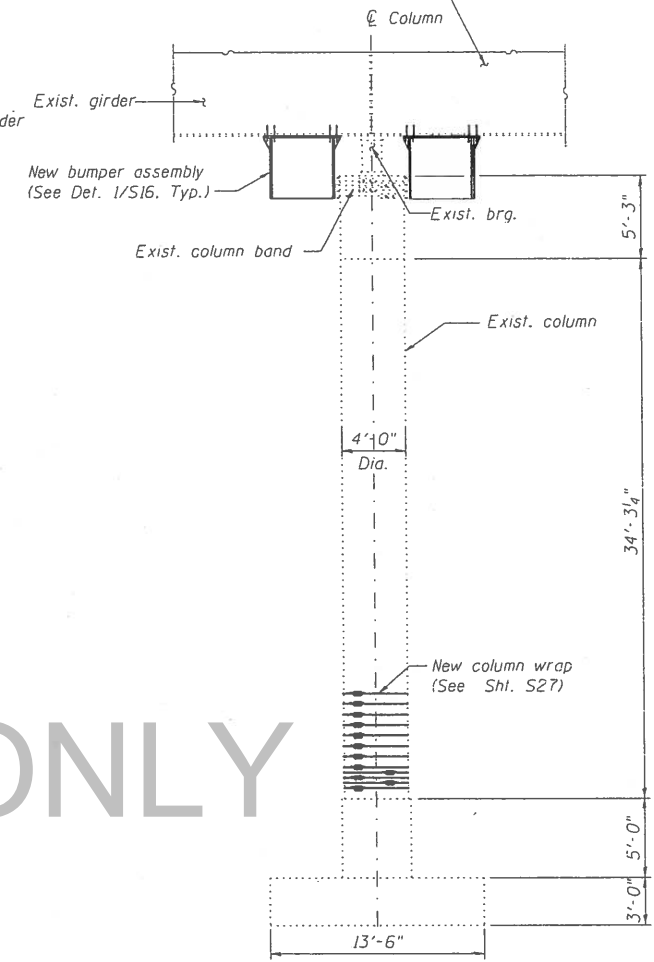
WEST ELEVATION PIER A22

For clarity additional existing girder stiffeners not shown. Field verify stiffener locations to avoid interference with new bolt locations.



NORTH

For clarity additional existing girder stiffeners not shown. Field verify stiffener locations to avoid interference with new bolt locations.



SOUTH

ELEVATION PIER A23

BILL OF MATERIAL - PIER A22		
SUBSTRUCTURE		
ITEM	UNIT	QUANTITY
Column wrap	Sq. Ft.	203
Foundation wall dowel modification	Ea.	16

Structural repair of concrete, depth equal to or less than 5". see Note

Epoxy crack sealing, see Note

Note  
Concrete repair areas and epoxy crack sealing quantities are based upon most recent survey data from Sept. 2000.

BILL OF MATERIAL - PIER A23		
SUBSTRUCTURE		
ITEM	UNIT	QUANTITY
Column wrap	Sq. Ft.	163

**DRAFT**

PIER ELEVATIONS

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION  
SEISMIC AND REDUNDANCY RETROFIT REPAIRS  
FAI ROUTE 70  
POPLAR STREET BRIDGE APPROACHES  
ST. CLAIR COUNTY

STRUCTURE NO. 082-0141 (ROADWAY A)

SCALE: N.T.S.

DATE: 08/01/2008

REVISIONS	
NAME	DATE

DATE: 08/2008  
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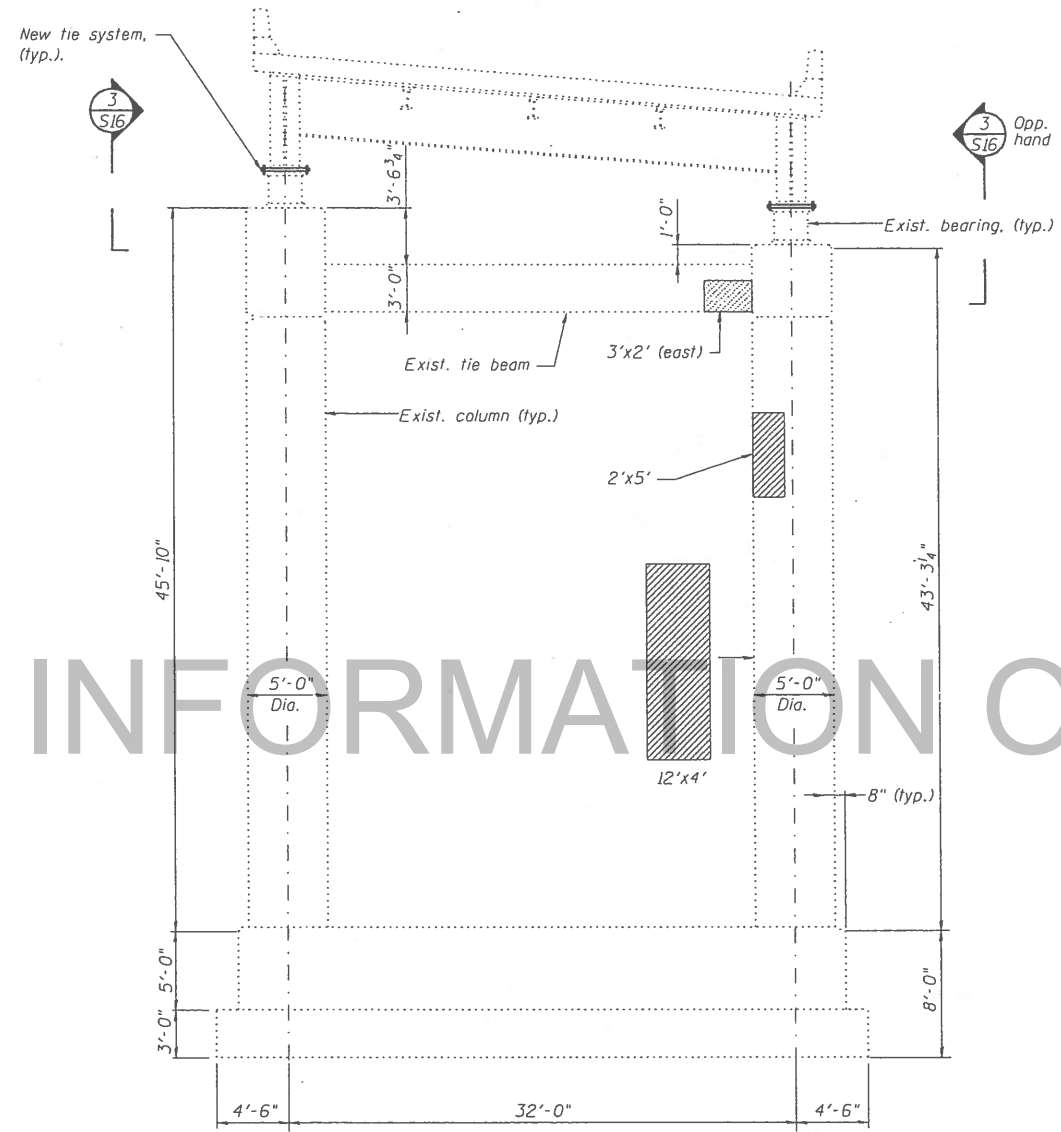
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BILL OF MATERIAL- PIER A21*		
SUBSTRUCTURE		
ITEM	UNIT	QUANTITY
Epoxy crack sealing	Foot	18
Structural repair of concrete, (depth equal to or less than 5")	Sq. Ft.	29

\* Elevation not shown

BILL OF MATERIAL- PIER A25*		
SUBSTRUCTURE		
ITEM	UNIT	QUANTITY
Epoxy crack sealing	Foot	6
Structural repair of concrete, (depth equal to or less than 5")	Sq. Ft.	21

\* Elevation not shown



WEST ELEVATION PIER A29

BILL OF MATERIAL- PIER A29		
SUBSTRUCTURE		
ITEM	UNIT	QUANTITY
Structural repair of concrete, (depth equal to or less than 5")	Sq. Ft.	112

Structural repair of concrete (depth equal to or less than 5"). see Note  
 Epoxy crack sealing, see Note

Note  
Concrete repair areas and epoxy crack sealing quantities are based upon most recent survey data from Sept. 2000

**DRAFT**

PIER ELEVATIONS

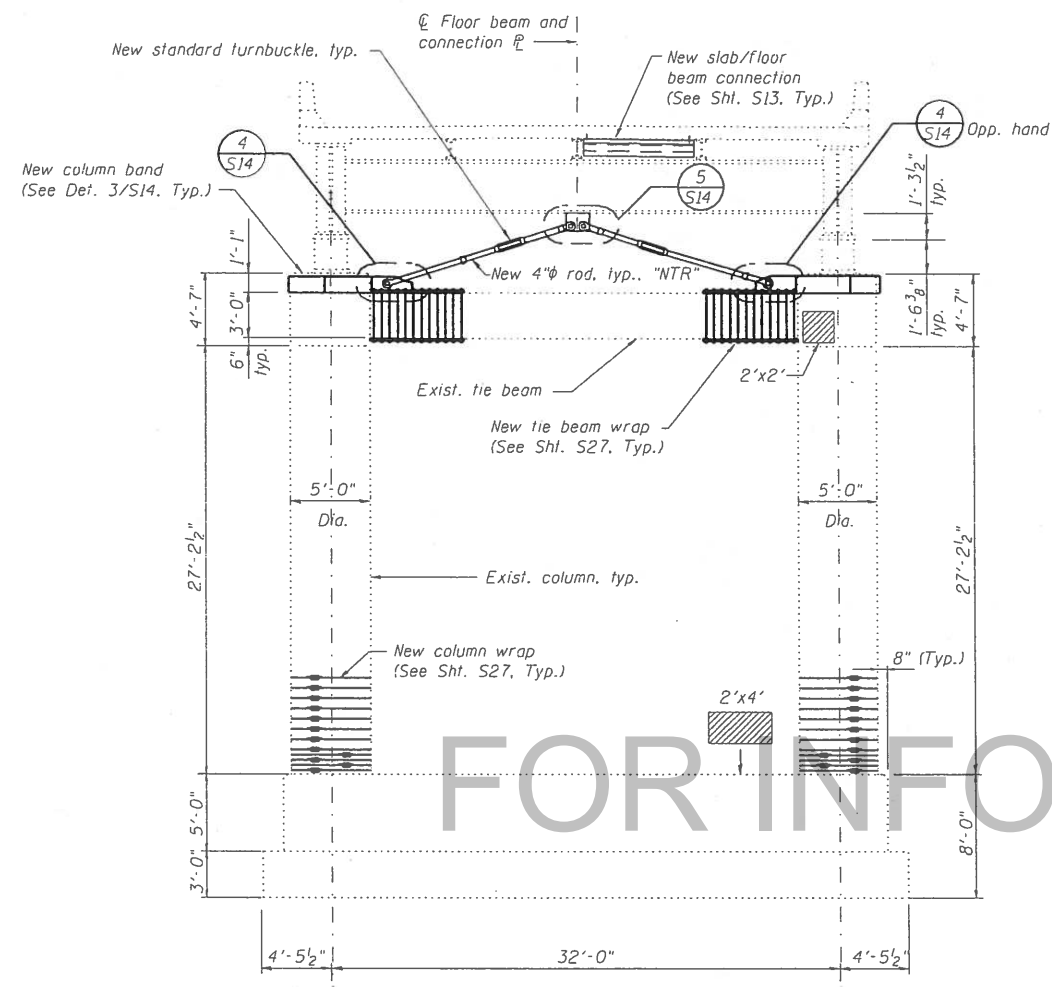
STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION  
SEISMIC AND REDUNDANCY RETROFIT REPAIRS  
FAI ROUTE 70  
POPLAR STREET BRIDGE APPROACHES  
ST. CLAIR COUNTY

REVISIONS	
NAME	DATE

STRUCTURE NO. 082-0141 (ROADWAY A)  
SCALE: N.T.S.  
DATE: 08/01/2008

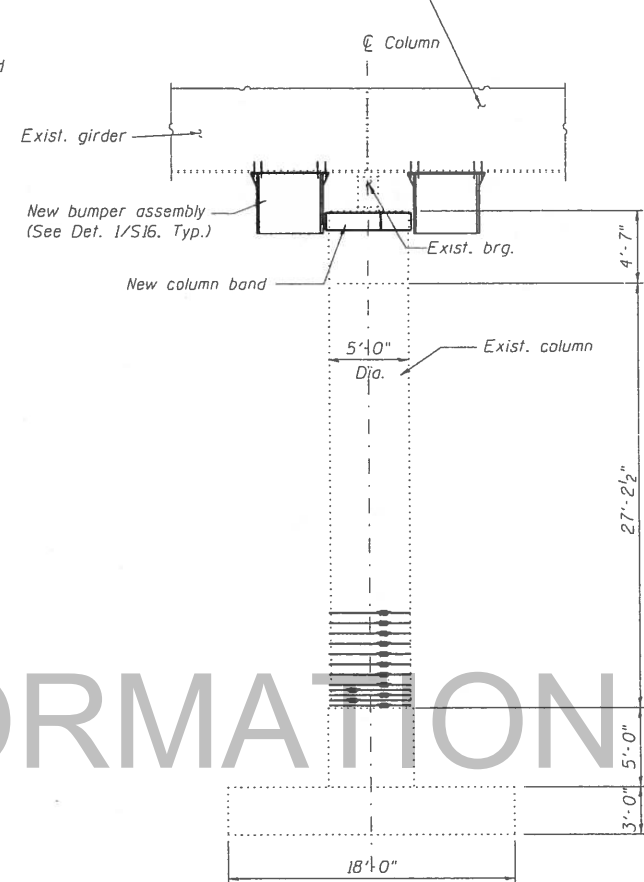
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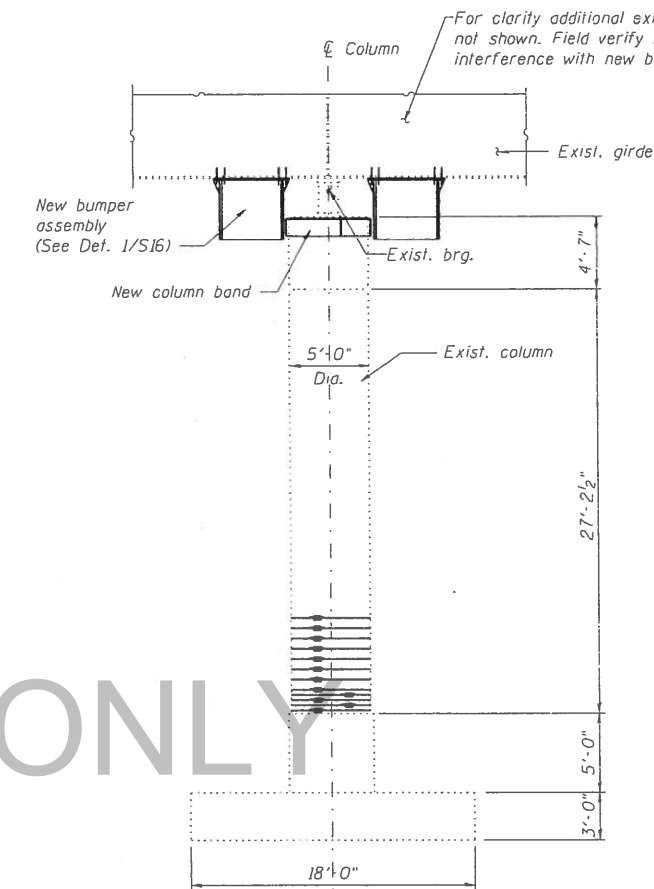
FOR INFORMATION ONLY

For clarity additional existing girder stiffeners not shown. Field verify stiffener locations to avoid interference with new bolt locations.



NORTH

For clarity additional existing girder stiffeners not shown. Field verify stiffener locations to avoid interference with new bolt locations.



SOUTH

ELEVATION PIER A34

ELEVATION PIER A34

Structural repair of concrete, depth equal to or less than 5". see Note

Epoxy crack sealing. see Note

*Note*  
Concrete repair areas and epoxy crack sealing quantities are based upon most recent survey data from Sept. 2000.

BILL OF MATERIAL- PIER A34		
SUBSTRUCTURE		
ITEM	UNIT	QUANTITY
Formed concrete repair, depth equal to or less than 5"	Sq. Ft.	19
Column wrap	Sq. Ft.	246
Foundation wall dowel modification	Ea.	20

**PIER ELEVATIONS**

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION  
SEISMIC AND REDUNDANCY RETROFIT REPAIRS  
FAI ROUTE 70  
POPLAR STREET BRIDGE APPROACHES  
ST. CLAIR COUNTY

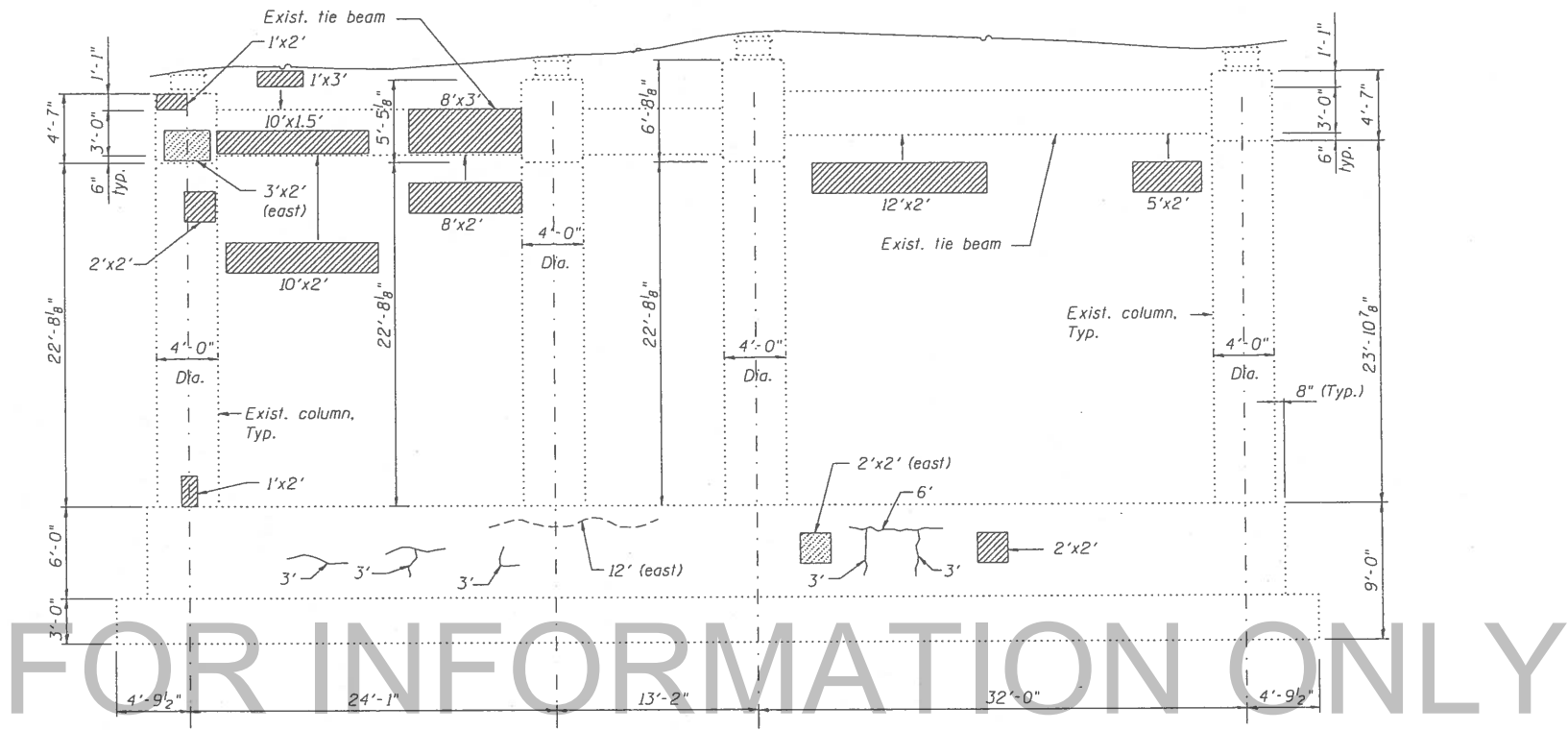
REVISIONS	
NAME	DATE

STRUCTURE NO. 082-0141 (ROADWAY A)  
SCALE: N.T.S.  
DATE: 08/01/2008

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CHECKED	JEL



FOR INFORMATION ONLY

**WEST ELEVATION PIER A35**

*Note: Roadway not shown*

BILL OF MATERIAL - PIER A35		
SUBSTRUCTURE		
ITEM	UNIT	QUANTITY
Epoxy crack sealing	Foot	48
Structural repair of concrete, depth equal to or less than 5"	Sq. Ft.	213

Structural repair of concrete, depth equal to or less than 5"; see Note

Epoxy crack sealing, see Note

*Note*  
Concrete repair areas and epoxy crack sealing quantities are based upon most recent survey data from Sept. 2000.

**PIER ELEVATIONS**

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION  
SEISMIC AND REDUNDANCY RETROFIT REPAIRS  
FAI ROUTE 70  
POPLAR STREET BRIDGE APPROACHES  
ST. CLAIR COUNTY

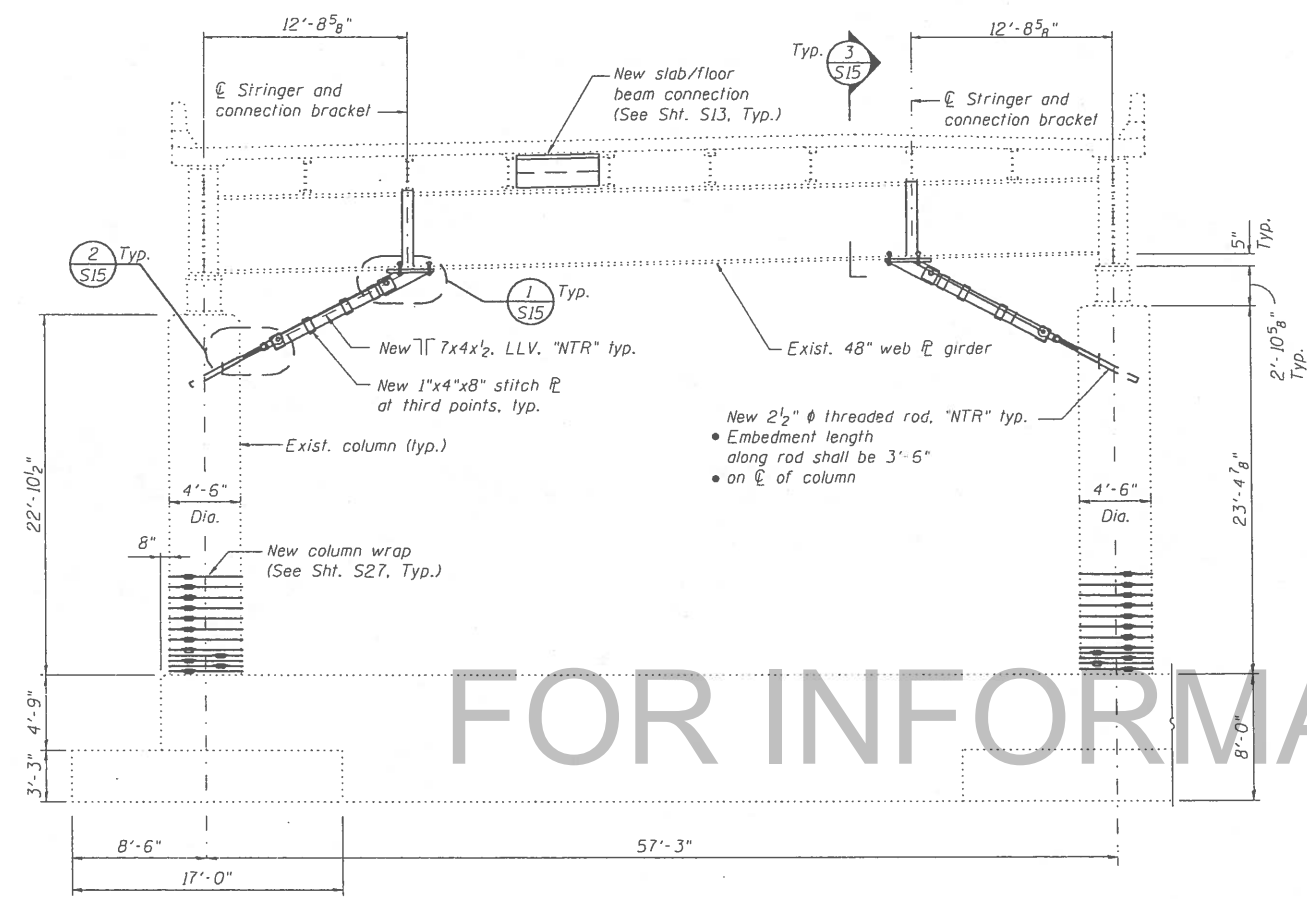
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SCALE: N.T.S.  
DATE: 08/01/2008

REVISIONS	
NAME	DATE

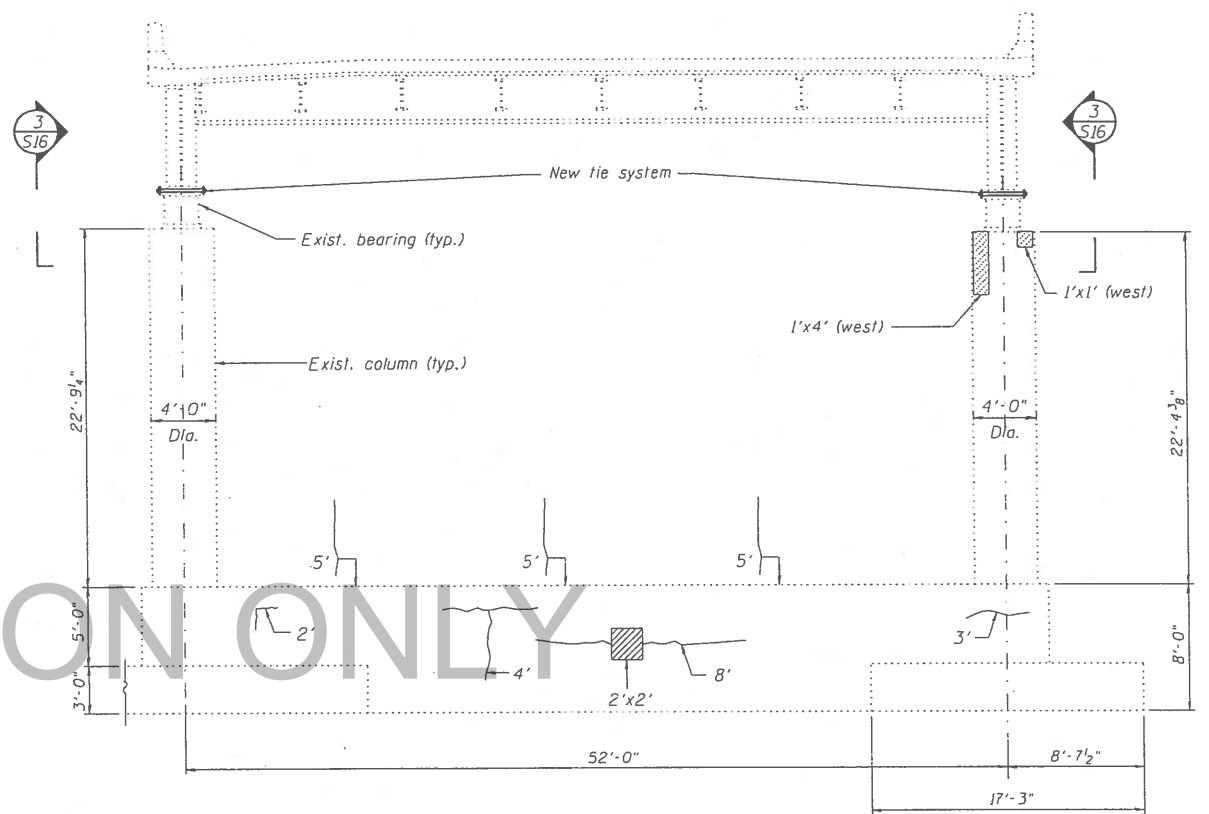
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CHECKED	JEL



FOR INFORMATION ONLY



**WEST ELEVATION PIER A37**

**EAST ELEVATION PIER A38**

BILL OF MATERIAL - PIER A37		
SUBSTRUCTURE		
ITEM	UNIT	QUANTITY
Structural repair of concrete, depth equal to or less than 5"	Sq. Ft.	10
Column wrap	Sq. Ft.	203

Structural repair of concrete, depth equal to or less than 5"; see Note

Epoxy crack sealing, see Note

**Note**  
Concrete repair areas and epoxy crack sealing quantities are based upon most recent survey data from Sept. 2000.

BILL OF MATERIAL - PIER A38		
SUBSTRUCTURE		
ITEM	UNIT	QUANTITY
Epoxy crack sealing	Ft.	51
Structural repair of concrete, depth equal to or less than 5"	Sq. Ft.	14

DATE: 08/2008 FILENAME: P:\2001\1201-1300\2001.1240\Drafting\SeismicRedundancy\Ramp A\pier A\_P83758.dgn

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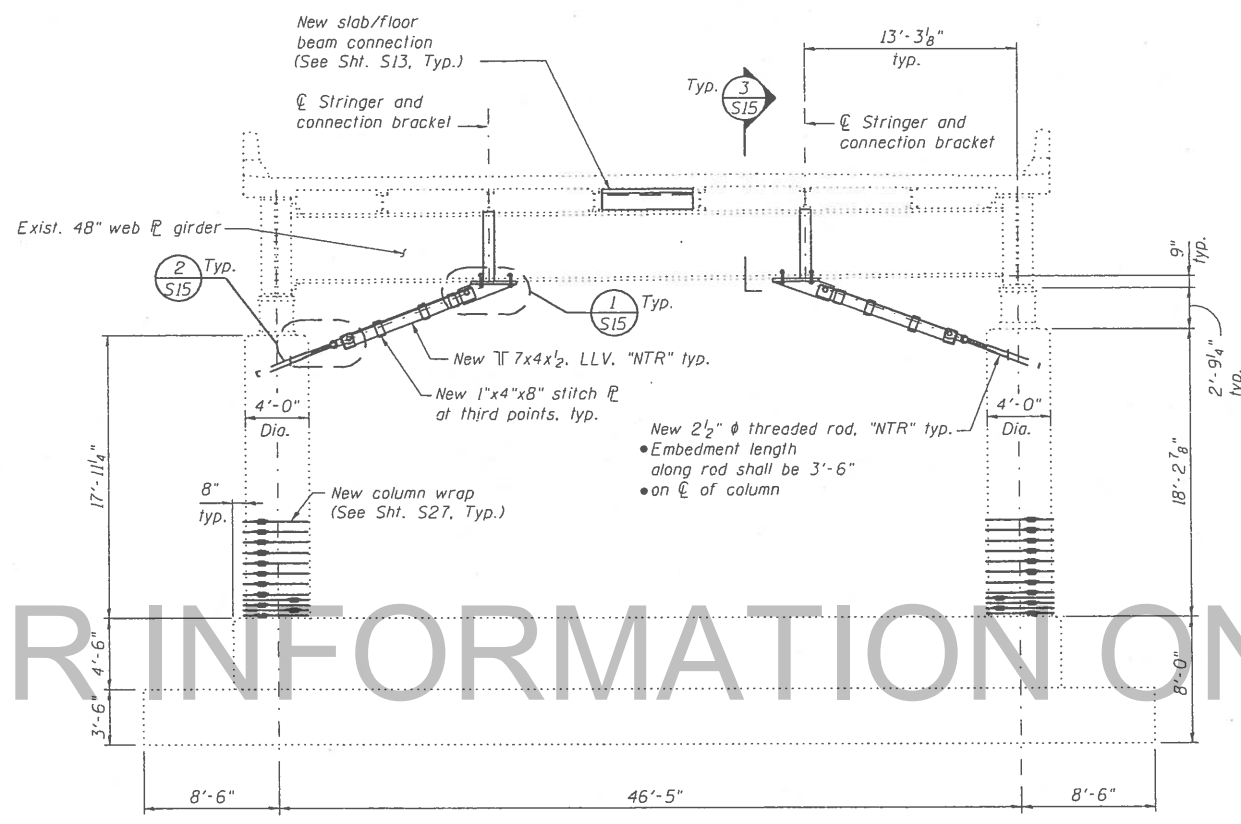
REVISIONS	
NAME	DATE

**PIER ELEVATIONS**

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION  
SEISMIC AND REDUNDANCY RETROFIT REPAIRS  
FAI ROUTE 70  
POPLAR STREET BRIDGE APPROACHES  
ST. CLAIR COUNTY

STRUCTURE NO. 082-0141 (ROADWAY A)  
SCALE: N.T.S.  
DATE: 08/01/2008

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
F.A.I. 70	*	ST. CLAIR	103	25
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT - JH-70		
* 82-3HV8-3R-4			SHEET S-22 OF S-28	
CONTRACT NO. 76947				



WEST ELEVATION PIER A39

BILL OF MATERIAL - PIER A39		
SUBSTRUCTURE		
ITEM	UNIT	QUANTITY
Column wrap	Sq. Ft.	163

Structural repair of concrete, depth equal to or less than 5". see Note

Epoxy crack sealing, see Note

**Note**  
Concrete repair areas and epoxy crack sealing quantities are based upon most recent survey data from Sept. 2000.

PIER ELEVATIONS

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION  
SEISMIC AND REDUNDANCY RETROFIT REPAIRS  
FAI ROUTE 70  
POPLAR STREET BRIDGE APPROACHES  
ST. CLAIR COUNTY

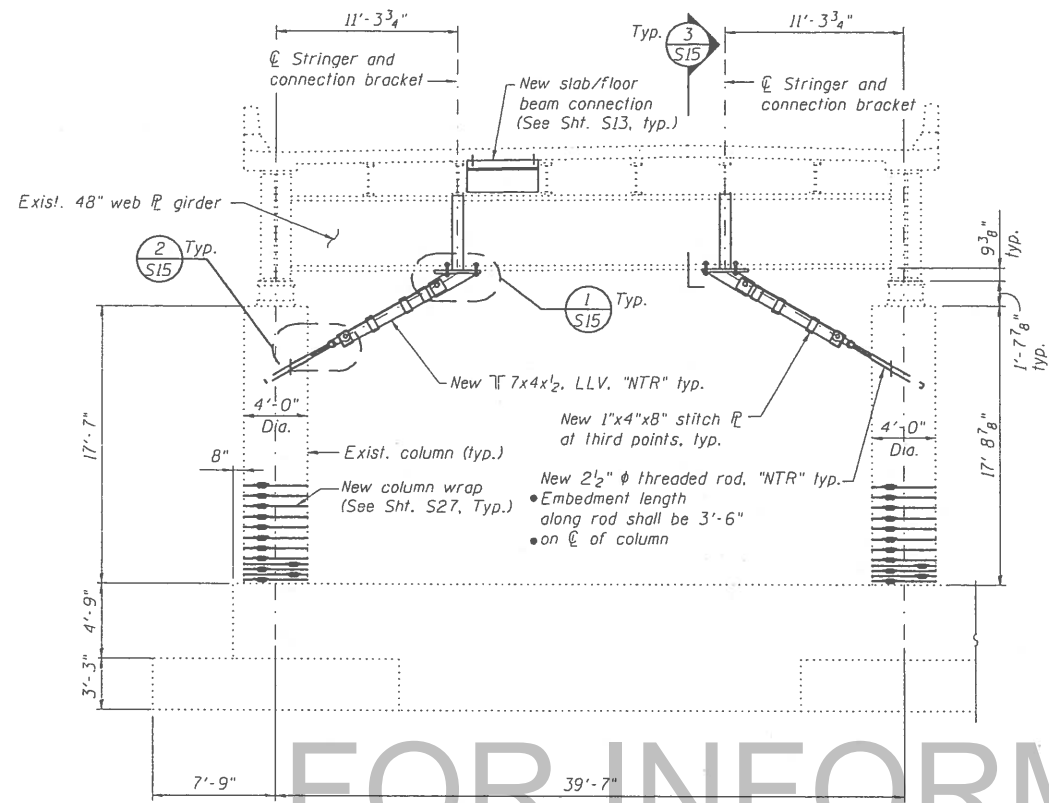
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SCALE: N.T.S.  
DATE: 08/01/2008

REVISIONS	
NAME	DATE

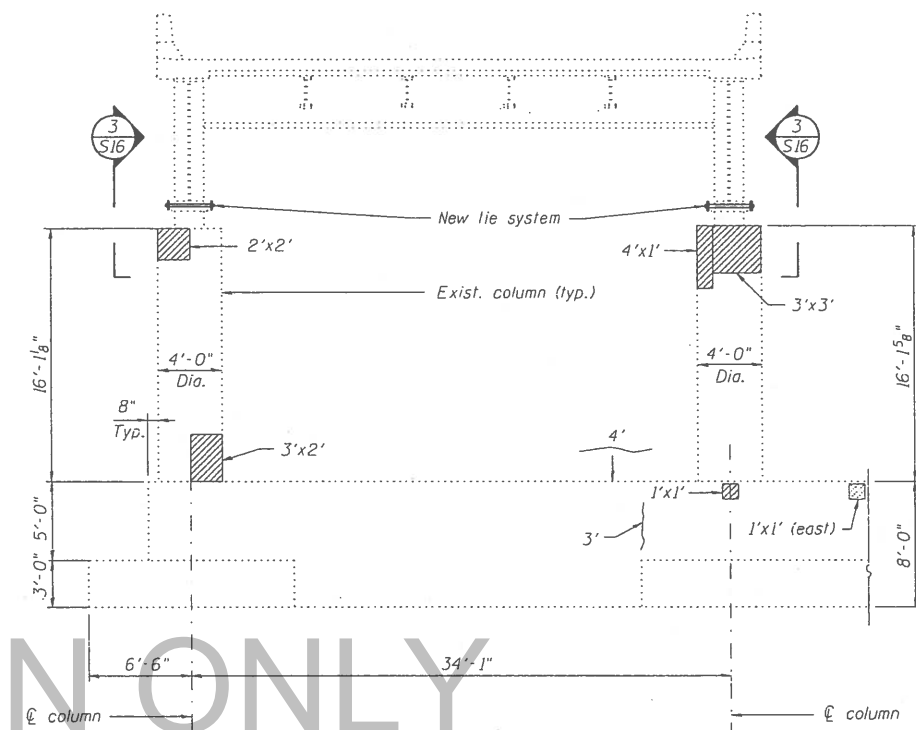
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CHECKED	JEL



WEST ELEVATION PIER A40



WEST ELEVATION PIER A41

BILL OF MATERIAL - PIER A40		
SUBSTRUCTURE		
ITEM	UNIT	QUANTITY
Column wrap	Sq. Ft.	163
Foundation wall dowel modification	Ea.	8

Structural repair of concrete, depth equal to or less than 5", see Note

Epoxy crack sealing, see Note

**Note**  
Concrete repair areas and epoxy crack sealing quantities are based upon most recent survey data from Sept. 2000.

BILL OF MATERIAL - PIER A41		
SUBSTRUCTURE		
ITEM	UNIT	QUANTITY
Epoxy crack sealing	Foot	11
Structural repair of concrete, depth equal to or less than 5"	Sq. Ft.	37

**DRAFT**

PIER ELEVATIONS

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION  
SEISMIC AND REDUNDANCY RETROFIT REPAIRS  
FAI ROUTE 70  
POPLAR STREET BRIDGE APPROACHES  
ST. CLAIR COUNTY

STRUCTURE NO. 082-0141 (ROADWAY A)  
SCALE: N.T.S.  
DATE: 08/01/2008

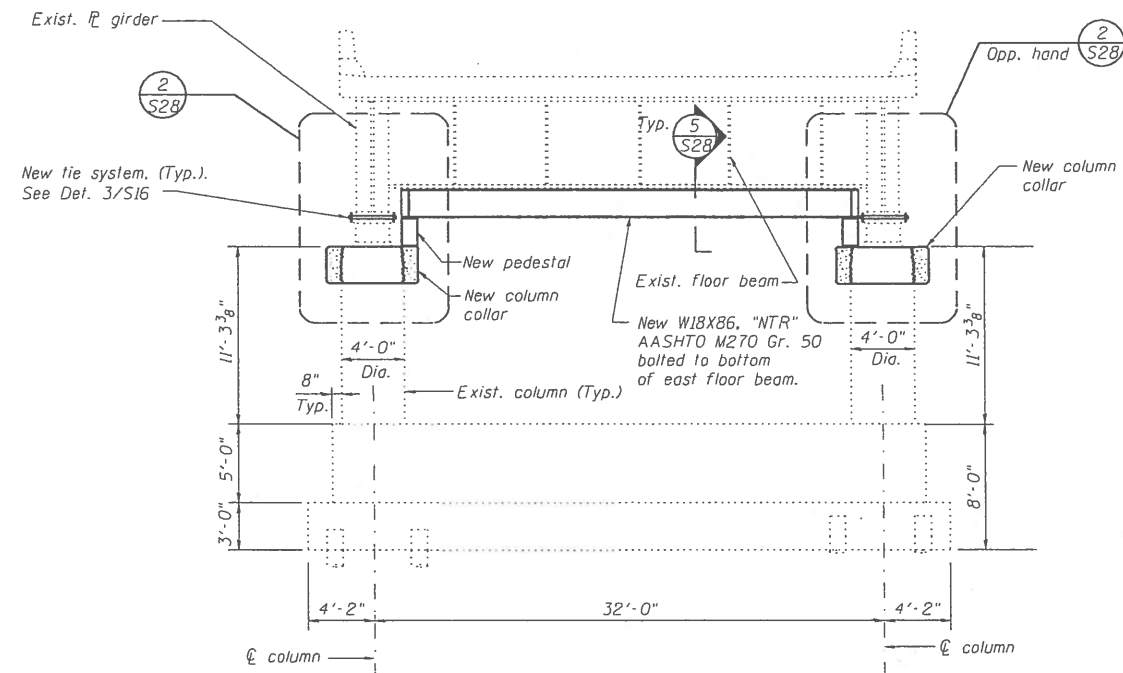
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ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
F.A.I. 70	*	ST. CLAIR	103	27
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT- 141-78		

\* 82-3HVB-3R-4 SHEET S-24 OF S-28  
CONTRACT NO. 76947



FOR INFORMATION ONLY EAST ELEVATION PIER A43

BILL OF MATERIAL - PIER A43				
SUBSTRUCTURE				
BAR	NO.	SIZE	LENGTH	SHAPE
s <sub>1</sub> (E)	34	#6	5'-2"	
s <sub>3</sub> (E)	36	#10	8'-8"	
ITEM			UNIT	QUANTITY
Reinforcing bars, epoxy coated			Pound	1,610
Concrete structures			Cu. Yd.	5
Mechanical Splice			Each	36

Structural repair of concrete, depth equal to or less than 5". see Note

Epoxy crack sealing, see Note

**Note**  
Concrete repair areas and epoxy crack sealing quantities are based upon most recent survey data from Sept. 2000.

**DRAFT**

**PIER ELEVATIONS**

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION  
SEISMIC AND REDUNDANCY RETROFIT REPAIRS  
FAI ROUTE 70  
POPLAR STREET BRIDGE APPROACHES  
ST. CLAIR COUNTY

STRUCTURE NO. 082-0141 (ROADWAY A)

SCALE: N.T.S.

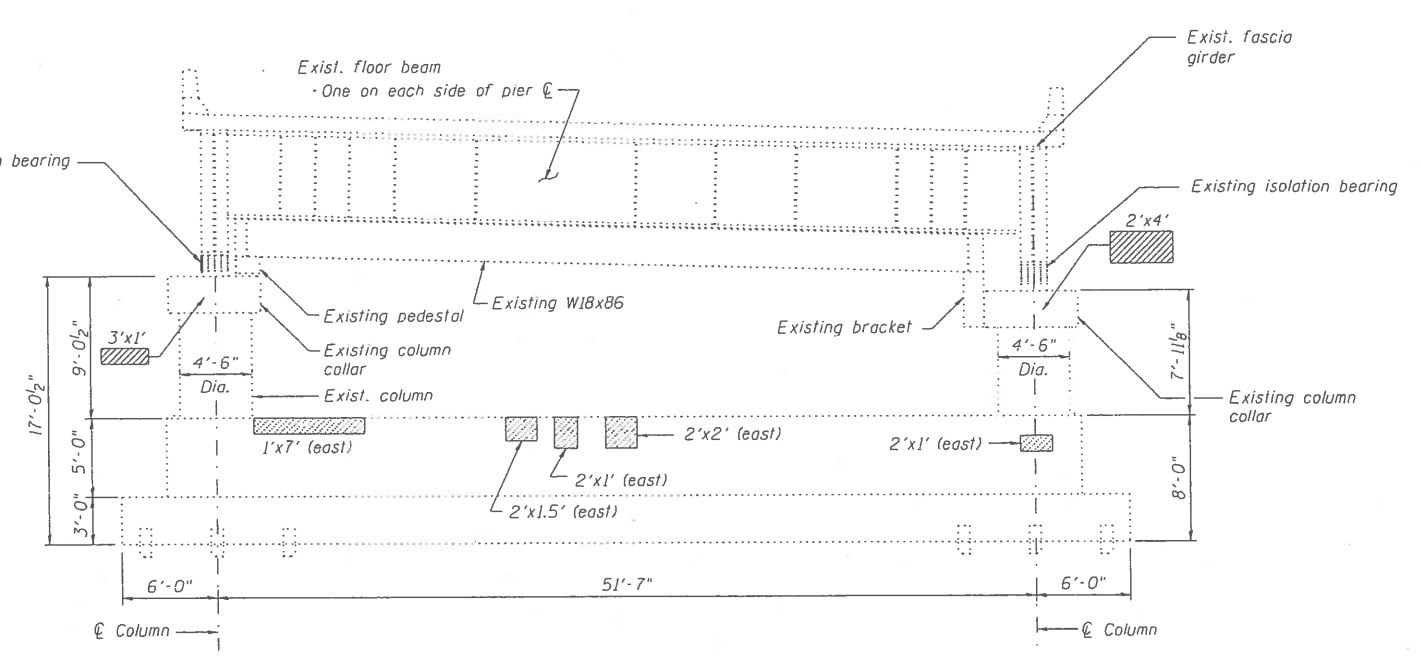
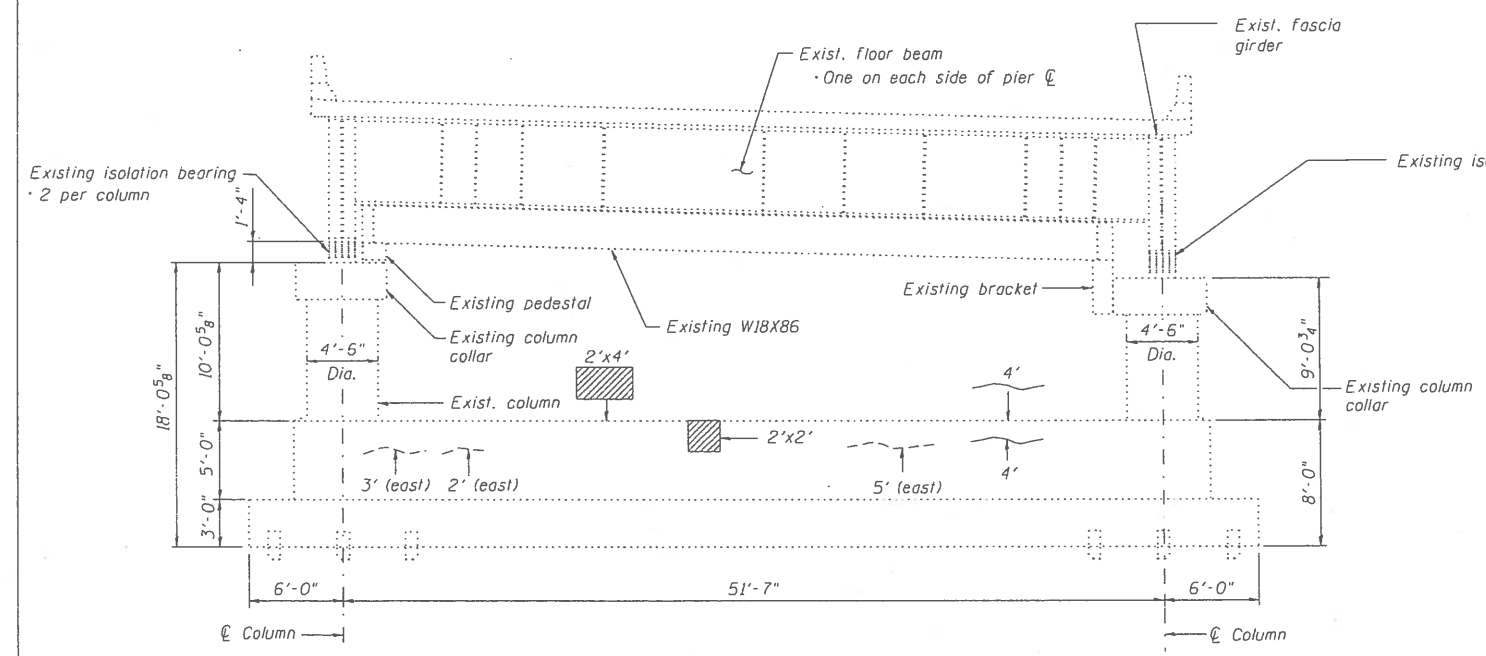
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REVISIONS	
NAME	DATE

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DRAWN	CLK
CHECKED	JEL





WEST ELEVATION PIER A44

WEST ELEVATION PIER A45

BILL OF MATERIAL - PIER A44		
SUBSTRUCTURE		
ITEM	UNIT	QUANTITY
Epoxy crack sealing	Foot	29
Structural repair of concrete, depth equal to or less than 5"	Sq. Ft.	19

BILL OF MATERIAL - PIER A45		
SUBSTRUCTURE		
ITEM	UNIT	QUANTITY
Structural repair of concrete, depth equal to or less than 5"	Sq. Ft.	51

Structural repair of concrete, depth equal to or less than 5", see Note

Epoxy crack sealing, see Note

**Note**  
Concrete repair areas and epoxy crack sealing quantities are based upon most recent survey data from Sept. 2000.

**DRAFT**

**PIER ELEVATIONS**

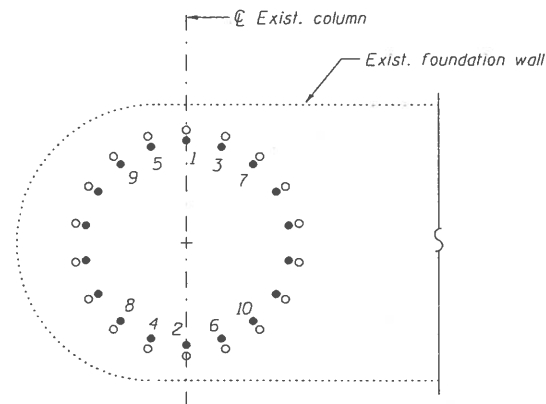
STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION  
SEISMIC AND REDUNDANCY RETROFIT REPAIRS  
FAI ROUTE 70  
POPLAR STREET BRIDGE APPROACHES  
ST. CLAIR COUNTY

STRUCTURE NO. 082-0141 (ROADWAY A)  
SCALE: N.T.S.  
DATE: 08/01/2008

REVISIONS	
NAME	DATE

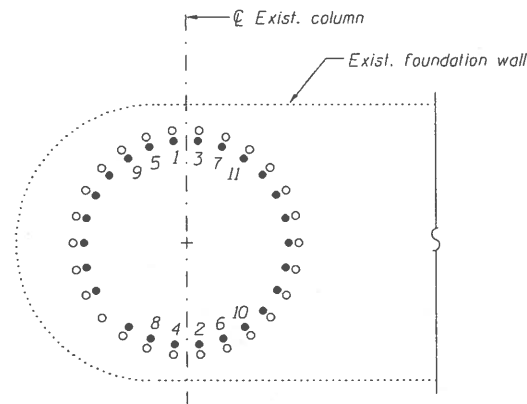
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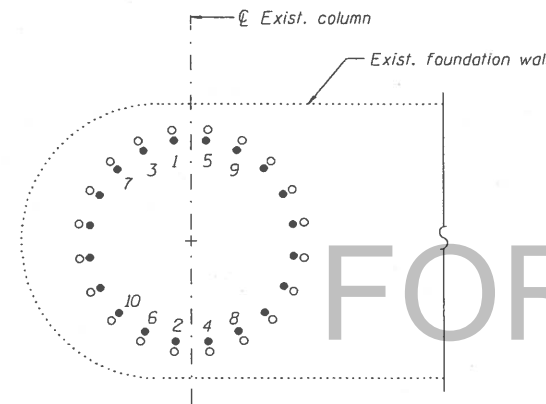
- Foundation wall dowel bar (#10 or #11 bar)
- Outline of column bar

**1 SECTION - FOUNDATION WALL DOWELS**  
S26 (18 Bar Layout)



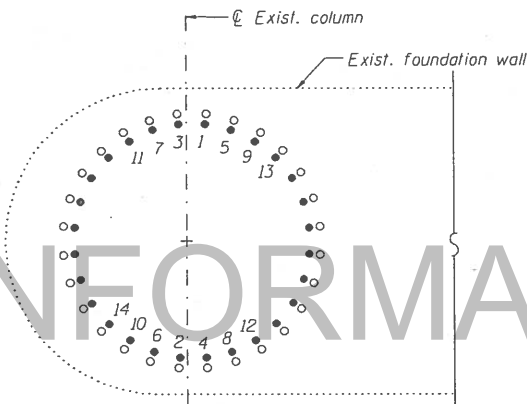
- Foundation wall dowel bar (#11 bar)
- Outline of column bar

**4 SECTION - FOUNDATION WALL DOWELS**  
S26 (26 Bar Layout)



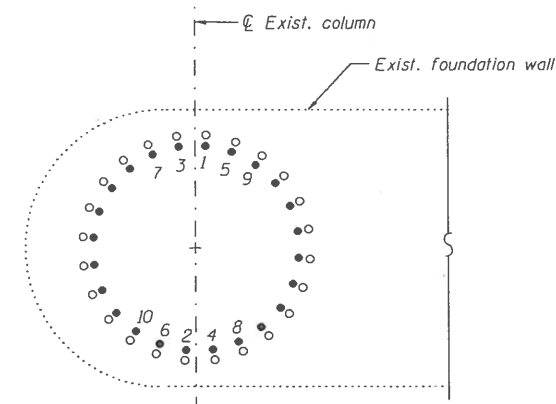
- Foundation wall dowel bar (#9, #10 or #11 bar)
- Outline of column bar

**2 SECTION - FOUNDATION WALL DOWELS**  
S26 (20 Bar Layout)



- Foundation wall dowel bar (#11 bar)
- Outline of column bar

**5 SECTION - FOUNDATION WALL DOWELS**  
S26 (28 Bar Layout)



- Foundation wall dowel bar (#11 bar)
- Outline of column bar

**3 SECTION - FOUNDATION WALL DOWELS**  
S26 (24 Bar Layout)

**FOUNDATION WALL DOWEL MODIFICATION TABLE**

Pier	No. of Columns	Ref. Detail	No. Bars Cut Per Column	Comments
A22	2	3	8	
A34	2	5	10	
A36	2	1	4	
A40	2	2	4	

**Notes:**

- Cut number of foundation dowel bars indicated. To determine which bars to cut, see reference detail and cut bars starting with number 1 and finishing with the number shown in the table.  
Example: Pier A22 cut dowel bars 1, 2, 3, 4, 5, 6, 7, and 8 as labelled in detail 3/S26
- The contractor shall positively discern between column longitudinal reinforcing bars and foundation wall dowel bars prior to cutting any bars.
- Dowel bars to be cut must be cut within 2" of top of foundation wall. Corresponding column bars may also be cut at the same location.
- Concrete removal areas shall be limited to 1'-6" in height and shall be no deeper than 1/2" clear inside the vertical bars.
- Concrete removal and repair costs shall be included with foundation wall dowel modification. All unsound concrete caused by bar cutting shall be removed prior to concrete repair. Concrete removal and repair shall be according to the special provisions for "Formed Concrete Repair".

FOR INFORMATION ONLY

See table for dimensions not shown and additional notes.

**DRAFT**

**SEISMIC RETROFIT DETAILS**

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION  
SEISMIC AND REDUNDANCY RETROFIT REPAIRS  
FAI ROUTE 70  
POPLAR STREET BRIDGE APPROACHES  
ST. CLAIR COUNTY

STRUCTURE NO. 082-0141 (ROADWAY A)

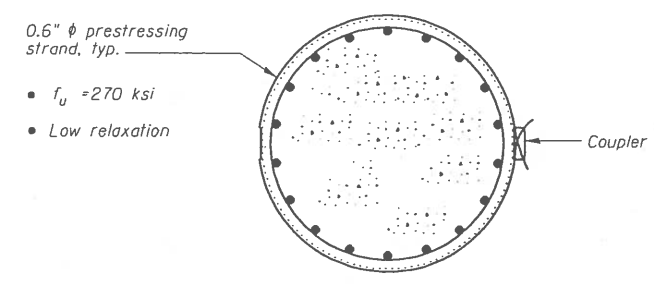
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REVISIONS	
NAME	DATE

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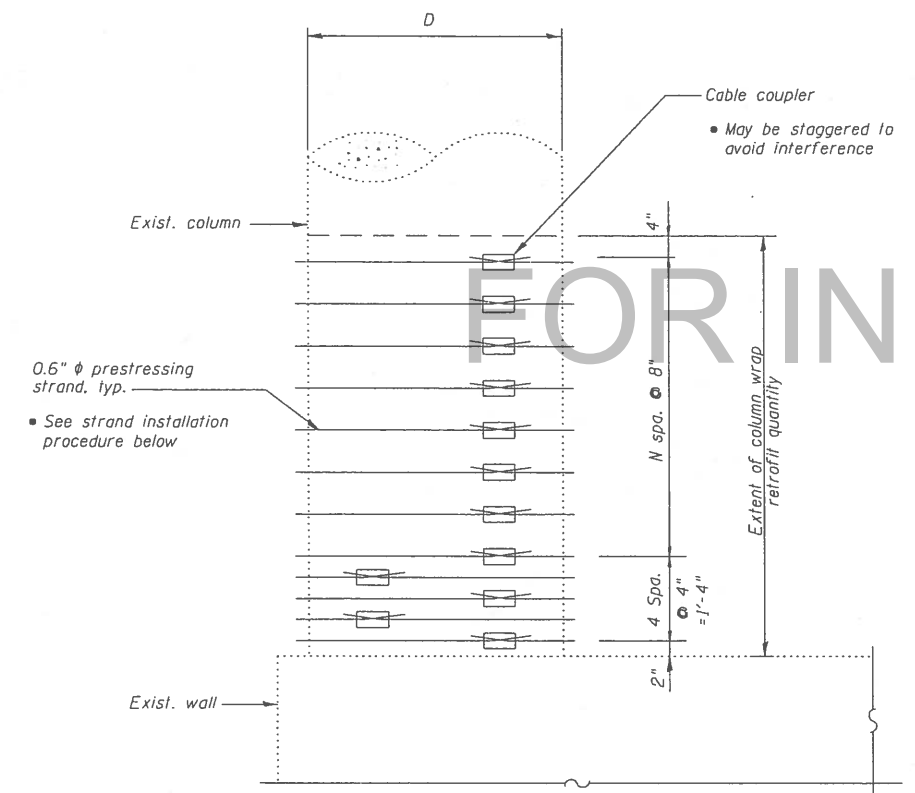
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CHECKED	JEL



1 PLAN  
S27

TABLE OF COLUMN WRAP AND TIE BEAM WRAP PARAMETERS

Pier	No. Columns	D(in)	N	M	b(in.)	d(in.)	Comments
A22	2	54	8	9	1'-3"	3'-0"	Note 4
A23	2	48	7	—	—	—	
A30	—	—	—	9	1'-3"	3'-0"	
A31	—	—	—	9	1'-3"	3'-0"	
A34	2	60	9	9	1'-3"	3'-0"	Note 4
A36	2	54	8	—	—	—	
A37	2	54	8	—	—	—	
A39	2	48	7	—	—	—	
A40	2	48	7	—	—	—	



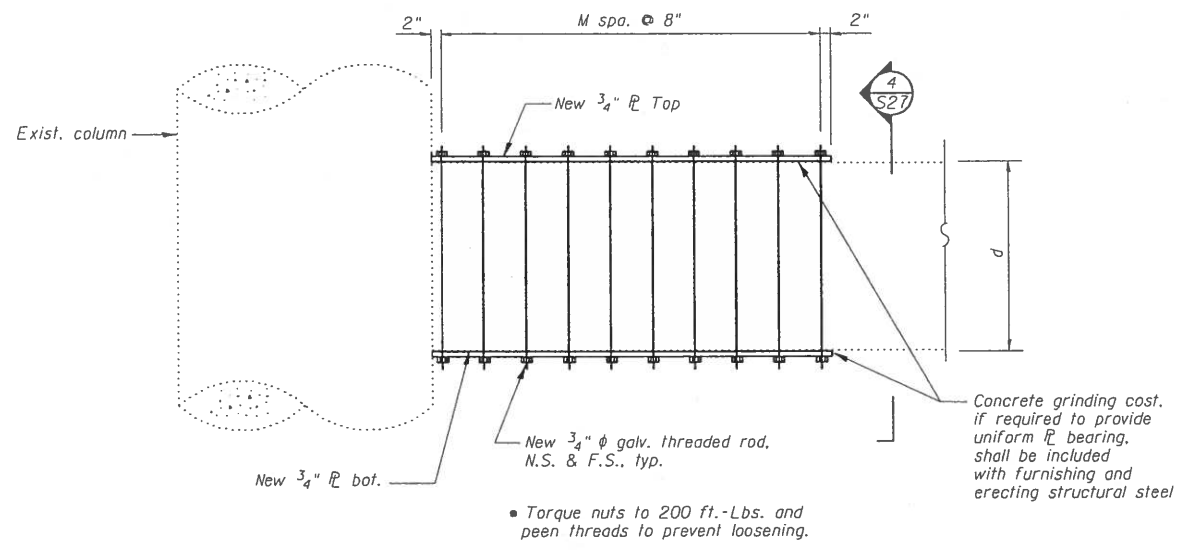
- Notes:
- See table for dimensions not shown and additional notes.
  - Alternative column wraps may be used. See Special Provisions.

2 ELEVATION - TYPICAL COLUMN WRAP  
S27

- Strand installation procedure:
- Put each strand into final position with maximum preload of 2 kips.
  - Load one end of strand and seat with a net elongation of  $[3/8 * (d-48)/96]$ .
  - Load other end of strand and seat with a net elongation of  $[3/8 * (d-48)/96]$ .

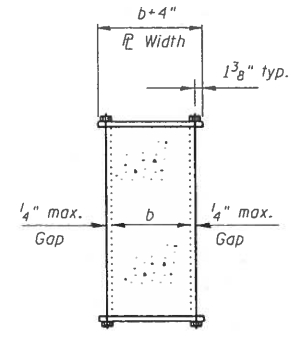
- Notes:
- Complete all specified dowel bar modifications and concrete repairs at least 3 days before wrapping any member.
  - See Def. 2/S27 for column wrap U.N.O.
  - See Def. 3/S27 for tie beam wrap U.N.O.
  - See Def. 2/S14 for modifications to the tie beam wrap.

FOR INFORMATION ONLY



- Notes:
- See table for dimensions not shown and additional notes.
  - Wrap each end as shown.
  - Existing column bands may interfere at locations. Loosen and raise column bands as necessary per 2/S16.

3 ELEVATION - TYPICAL TIE BEAM WRAP  
S27



4 SECTION  
S27

**DRAFT**

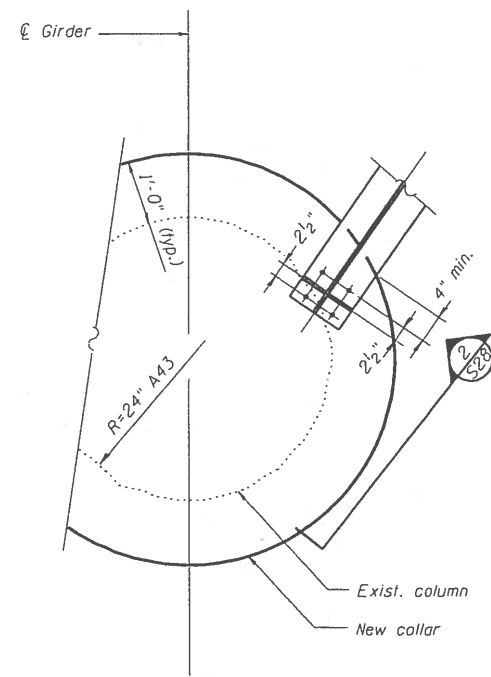
SEISMIC RETROFIT DETAILS  
STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION  
SEISMIC AND REDUNDANCY RETROFIT REPAIRS  
FAI ROUTE 70  
POPLAR STREET BRIDGE APPROACHES  
ST. CLAIR COUNTY

REVISIONS	
NAME	DATE

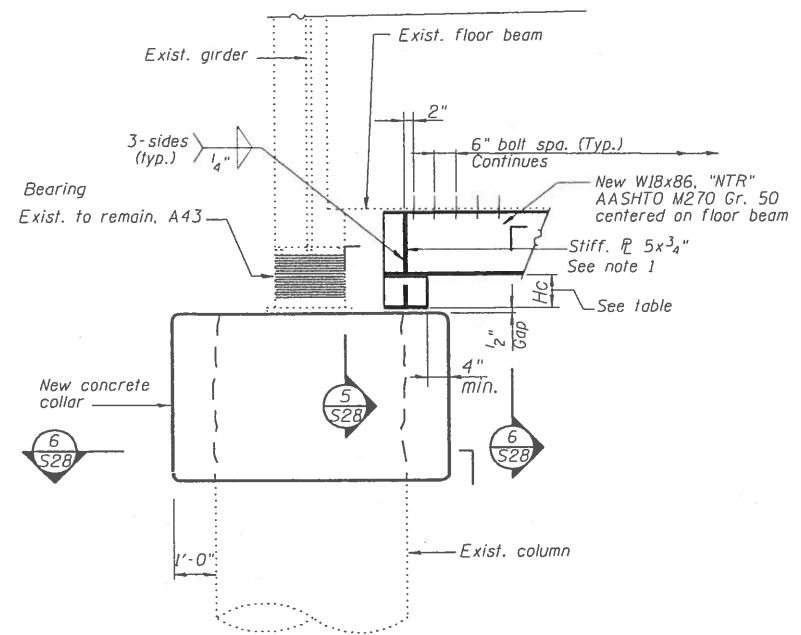
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DATE: 08/01/2008

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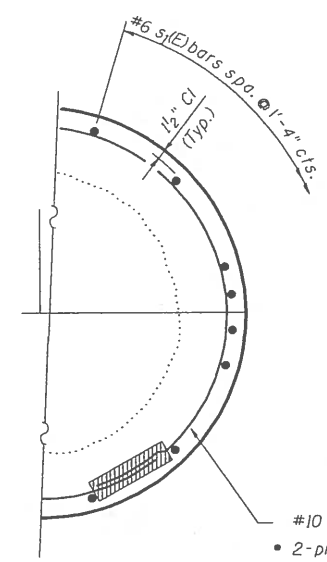
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**1 SECTION**  
S28



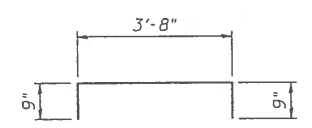
**2 ELEVATION**  
S28



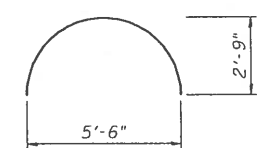
**3 SECTION**  
S28

FOR INFORMATION ONLY

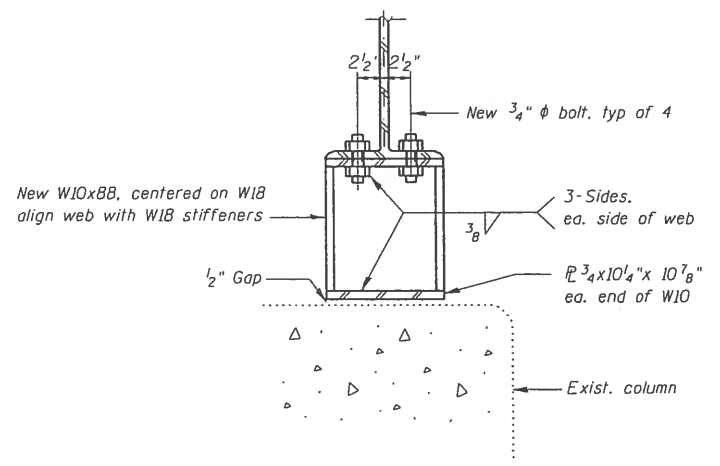
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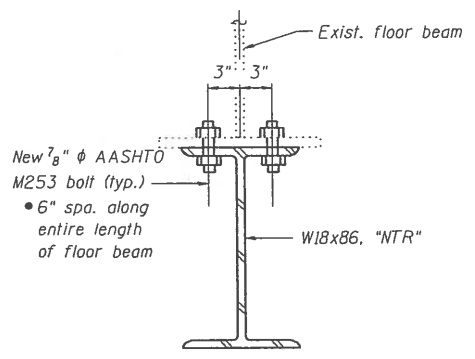
Bar s1(E)



Bar s3(E)



**4 SECTION**  
S28



**5 SECTION**  
S28

**APPROXIMATE CLEARANCES**  
(Hc, Wc)

Pier	Floor Beam	Hc (in.)
A43	East	16

Notes:  
• Hc applies at both ends of floor beam

- Notes:
1. Full height stiffener; each side of web; cope 3/4" max to clear beam fillets.
  2. Roughen existing column surface to 1/4" min. amplitude prior to placing collar.
  3. Remove any deteriorated concrete at location of new column collar.
  4. Align with end most stiffener on floor beam above.
  5. Remove existing column wraps at area of new collar

DRAFT

REVISIONS	
NAME	DATE

**REDUNDANCY RETROFIT**  
STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION  
SEISMIC AND REDUNDANCY RETROFIT REPAIRS  
FAI ROUTE 70  
POPLAR STREET BRIDGE APPROACHES  
ST. CLAIR COUNTY  
STRUCTURE NO. 082-0141 (ROADWAY A)  
SCALE: N.T.S.  
DATE: 08/01/2008

DATE: 7/29/2008  
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