

STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION  
 DIVISION OF HIGHWAYS

**PROPOSED  
 HIGHWAY PLANS**

FAI ROUTE 70  
 SECTION D7 MCHD BRIDGE REPAIRS 2009-1  
 EFFINGHAM COUNTY

C-97-069-08

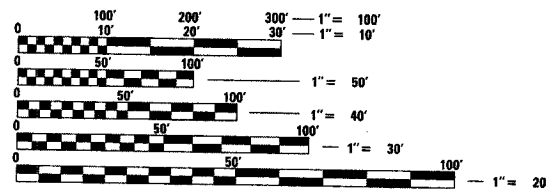
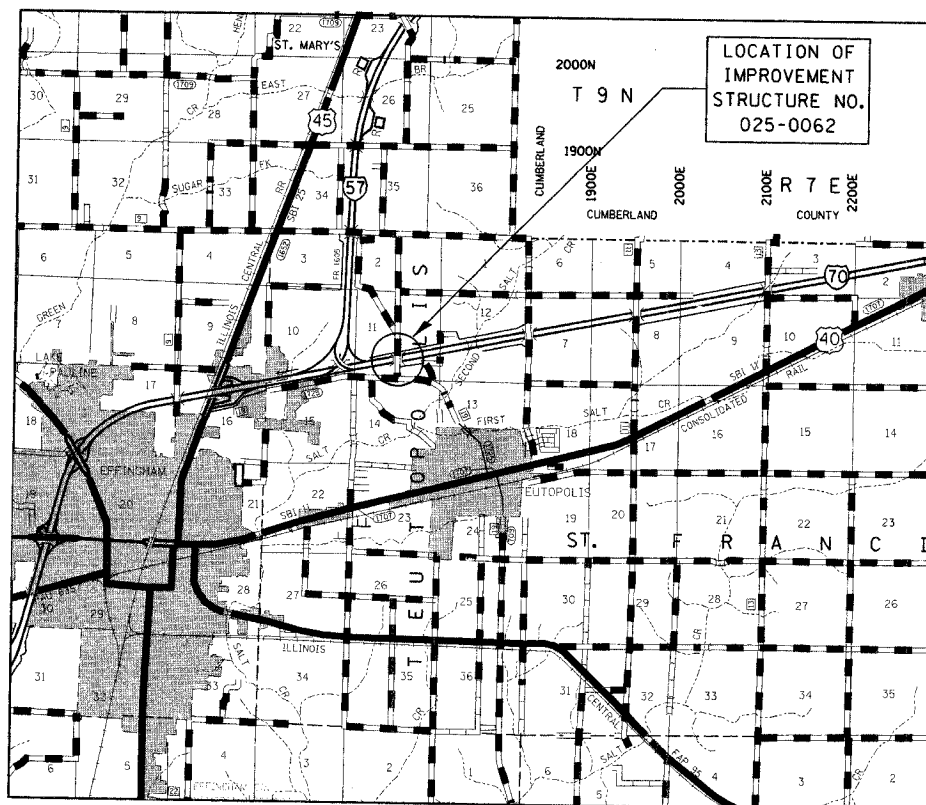
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
70		EFFINGHAM	9	1
FED. ROAD DIST. NO.		ILLINOIS	CONTRACT NO. 74311	

• D7 MCHD BRIDGE REPAIRS 2009-1

D-97-024-08



FOR INDEX OF SHEETS, SEE SHEET NO. 2

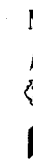


FULL SIZE PLANS HAVE BEEN PREPARED USING STANDARD ENGINEERING SCALES. REDUCED SIZED PLANS WILL NOT CONFORM TO STANDARD SCALES. IN MAKING MEASUREMENTS ON REDUCED PLANS, THE ABOVE SCALES MAY BE USED.

J.U.L.I.E.  
 JOINT UTILITY LOCATION INFORMATION FOR EXCAVATION  
 1-800-892-0123  
 OR 811

PROJECT ENGINEER: ALEC RING  
 PROJECT MANAGER

CONTRACT NO. 74311



STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION  
 DIVISION OF HIGHWAYS

SUBMITTED *March 27* 20 08

*Christine M. Reed*  
 DEPUTY DIRECTOR OF HIGHWAYS, REGION ENGINEER

*May 9, 20 08*  
*Eric E. Horn*  
 ENGINEER OF DESIGN AND ENVIRONMENT

*May 9, 20 08*  
*Christine M. Reed*  
 DIRECTOR OF HIGHWAYS, CHIEF ENGINEER

PRINTED BY THE AUTHORITY  
 OF THE STATE OF ILLINOIS

**GENERAL NOTES**

THIS SECTION SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE PLANS; THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, ADOPTED JANUARY 1, 2007; THE SUPPLEMENTAL SPECIFICATIONS AND RECURRING SPECIAL PROVISIONS INDICATED ON THE CHECKSHEET; AND THE SPECIAL PROVISIONS INCLUDED IN THE PROPOSAL.

THIS PROJECT IS LOCATED EAST OF EFFINGHAM ON I-70 IN EFFINGHAM COUNTY. THE PROJECT INCLUDES THE STRUCTURE NUMBER 025-0062 AN OVERHEAD STRUCTURE CARRYING TR258 (1650E) OVER I-70.

THE WORK INCLUDED IN THIS PROJECT CONSISTS OF REMOVAL AND REPLACEMENT OF FOUR BEAMS AND ALL OTHER WORK NECESSARY TO COMPLETE THIS SECTION.

THE EFFINGHAM COUNTY ENGINEER SHALL BE CONTACTED ONE WEEK PRIOR TO CLOSURE OF THE TOWNSHIP ROAD. GREG KOESTER AT (217)342-6550

THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING UTILITY PROPERTY FROM CONSTRUCTION OPERATION AS OUTLINED IN ARTICLE 107.31 OF THE STANDARD SPECIFICATIONS. THE J.U.L.I.E. NUMBER IS 800-892-0123. A MINIMUM OF 96 HOURS ADVANCE NOTICE IS REQUESTED.

**INDEX OF SHEETS**

SHEET NO

- 1 COVER SHEET
- 2 INDEX OF SHEETS, HIGHWAY STANDARDS AND GENERAL NOTES
- \* 3 SUMMARY OF QUANTITIES
- 4-9 BRIDGE REPAIR PLANS
- \*3A. STANDARD DETAIL

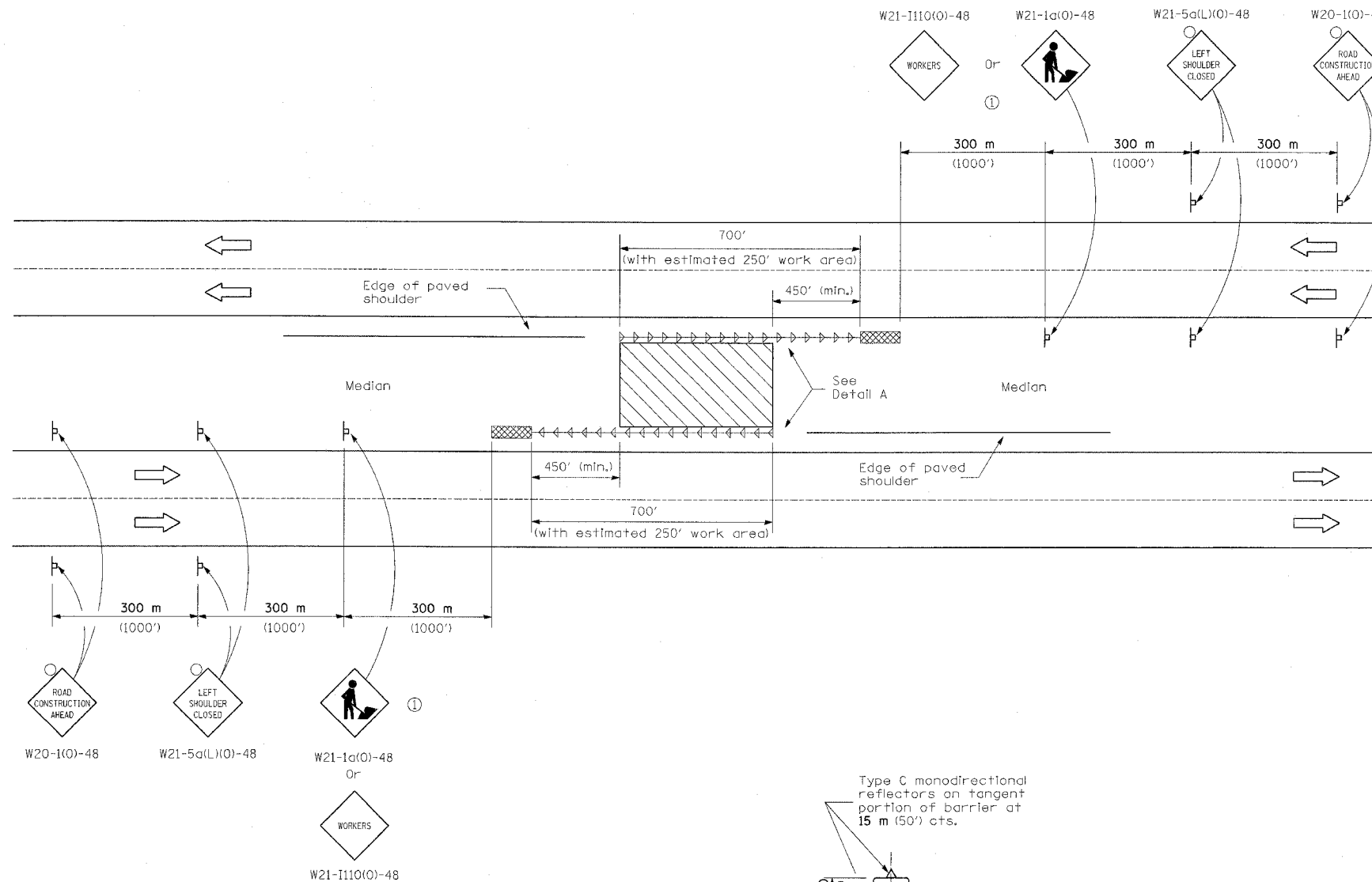
LIST OF HIGHWAY STANDARDS

- 000001-05 STANDARD SYMBOLS, ABBREVIATIONS AND PATTERNS
- 001001-01 AREAS OF REINFORCEMENT BARS
- 001006 DECIMAL OF AN INCH AND OF A FOOT
- 701101-01 OFF-ROAD OPERATIONS, MULTI-LANE, 15' to 24" FROM EDGE OF PAVEMENT
- 701106-01 OFF-ROAD OPERATIONS, MULTI-LANE, MORE THAN 15' AWAY
- 701400-02 APPROACH TO LANE CLOSURE, FREEWAY/EXPRESSWAY
- 701406-04 LANE CLOSURE, FREEWAY/EXPRESSWAY, DAYTIME ONLY
- 701901 TRAFFIC CONTROL DEVICES
- 704001-04 TEMPORARY CONCRETE BARRIER
- BLR21-7 TYPICAL APPLICATION OF TRAFFIC CONTROL DEVICES FOR CONSTRUCTION ON RURAL LOCAL HIGHWAYS

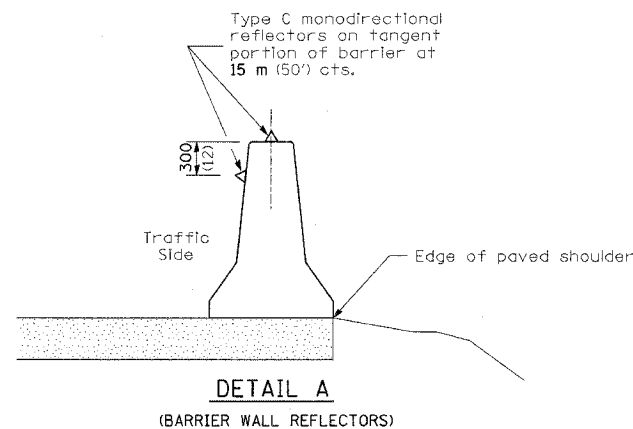
FILE NAME = c:\projects\74311d\shcover_74311.dgn	USER NAME = teasleyck	DESIGNED -	REVISED -	<b>STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION</b>	<b>GENERAL NOTES &amp; INDEX OF SHEETS</b>	F.A.I. RTE. 70	SECTION .	COUNTY EFFINGHAM	TOTAL SHEETS 9	SHEET NO. 2	<i>Rev.</i>
PLOT SCALE = 20,000 / IN.						CHECKED -	REVISED -	CONTRACT NO. 74311			
PLOT DATE = 3/27/2008						DATE -	REVISED -	ILLINOIS FED. AID PROJECT			
								SCALE: SHEET NO. OF SHEETS STA. TO STA.			* 07 MCHD BRIDGE REPAIRS 2009-1

# SUMMARY OF QUANTITIES

SUMMARY OF QUANTITIES			CONSTRUCTION TYPE CODE			
CODE NO	ITEM	UNIT	100% STATE TOTAL QUANTITIES	025-0062 SFTY-2A		
50102400	CONCRETE REMOVAL	CU YD	15.1	15.1		
50104710	REMOVAL OF EXISTING BEARINGS	EACH	5	5		
<del>50157300</del>	<del>PROTECTIVE SHIELD</del>	<del>SQ YD</del>	<del>145</del>	<del>145</del>		
50300225	CONCRETE STRUCTURES	CU YD	13.4	13.4		
50300255	CONCRETE SUPERSTRUCTURE	CU YD	2.9	2.9		
50500405	FURNISHING AND ERECTING STRUCTURAL STEEL	POUND	31,250	31,250		
50501110	STRUCTURAL STEEL REMOVAL	POUND	30,690	30,690		
50800205	REINFORCEMENT BARS, EPOXY COATED	POUND	2,530	2,530		
52100520	ANCHOR BOLTS, 1"	EACH	10	10		
70100700	TRAFFIC CONTROL AND PROTECTION, STANDARD 701406	L SUM	1	1		
70101800	TRAFFIC CONTROL AND PROTECTION, (SPECIAL)	L SUM	1	1		
70101830	TRAFFIC CONTROL AND PROTECTION, STANDARD BLR 21	L SUM	1	1		
70400100	TEMPORARY CONCRETE BARRIER	FOOT	1200	1200		
70400200	RELOCATE TEMPORARY CONCRETE BARRIER	FOOT	1200	1200		
X0325305	STRUCTURAL REPAIR OF CONCRETE (DEPTH EQUAL TO OR LESS THAN 5 INCHES)	SQ FT	87.2	87.2		
Z0030250	IMPACT ATTENUATORS, TEMPORARY (NON-REDIRECTIVE), TEST LEVEL 3	EACH	2	2		
Z0030350	IMPACT ATTENUATORS, RELOCATE (NON-REDIRECTIVE), TEST LEVEL 3	EACH	2	2		
Z0073300	TEMPORARY SHORING AND CRIBBING	L SUM	1	1		
Z0073351	TEMPORARY SLAB SUPPORT SYSTEM	L SUM	1	1		
67100100	MOBILIZATION	L SUM	1	1		



- SYMBOLS**
- Work area
  - Sign
  - Impact attenuator
  - Temporary Concrete Barrier with type C monodirectional reflector
  - Flashing light



**GENERAL NOTES**

This Standard is used where any vehicles, equipment, workers or their activities will encroach on the shoulder where temporary concrete barrier is utilized.

① When vehicles, equipment, workers or their activities encroach in the area 4.5 m (15') to the edge of pavement.

All dimensions are in millimeters (Inches) unless otherwise shown.

**SHOULDER CLOSURE, MULTILANE,  
MEDIAN PIER CONSTRUCTION  
WITH BARRIER**

**STANDARD 701101 - SPECIAL**

FILE NAME =	USER NAME = teasleyck	DESIGNED -	REVISED -	<b>STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION</b>	<b>STANDARD 701101 - SPECIAL</b>	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.	
ca:\projects\74311\shtr\off\control\74311.dgn		DRAWN -	REVISED -			70	*	EFFINGHAM	9	3A	
PLOT SCALE = 20,0000' / IN.		CHECKED -	REVISED -			CONTRACT NO. 74311					
PLOT DATE = 3/27/2008		DATE -	REVISED -			ILLINOIS FED. AID PROJECT					
						SCALE:		SHEET NO. OF SHEETS		STA. TO STA.	
						FED. ROAD DIST. NO.		ILLINOIS FED. AID PROJECT			
						• D7 MCHD BRIDGE REPAIRS 2009-1					

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	LETS	SHEET
FAI 70		EFFINGHAM	9	4
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		

SHEET NO. 1  
6 SHEETS

Contract Number: 74311

Bench Mark: Spike in 2nd power pole  
South of C Sta. 2406+00 in East  
R/W of existing north south road.  
Elev. 612.73 (U.S.G.S.) datum.

GENERAL NOTES

All structural steel shall conform to AASHTO Classification M-270 Gr. 36, unless otherwise noted.  
After the new beam is in its final position and/or beam straightening operations have been completed, the Engineer in the field shall check to see that the top flange is tight against the slab. If not, the Contractor shall inject epoxy between the existing concrete deck and the top flange of the beam. See Special Provision "Epoxy Injection".

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 scope of the work, however, the Contractor will be paid for the quantity actually furnished based upon the unit price bid for the work.

Cost of removal and 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 with Furnishing & Erecting Structural Steel.

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

Fasteners shall be high strength bolts. Flange splice holes shall be 15/16" φ for 7/8" φ bolts. Web splice holes shall be 15/16" φ for 7/8" φ bolts.

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 final finish coat for all interior steel surfaces shall be gray, Munsell No. 5B 7/1. The color of the final finish coat for the exterior and bottom flange of the fascia beams shall be Blue, Munsell No. 10B 3/6. See Special Provision "Cleaning and Painting New Metal Structures".

Reinforcement bars shall conform to the requirements of ASTM A 706 Gr 60 (IL Modified). See Special Provisions.

Reinforcement bars designated (E) shall be epoxy coated. Existing reinforcement bars extending into the removal area shall be cleaned, straightened and incorporated into the new construction. Any reinforcement bars that are damaged during concrete removal shall be replaced with an approved bar splicer or anchorage system. Cost included with Concrete Removal.

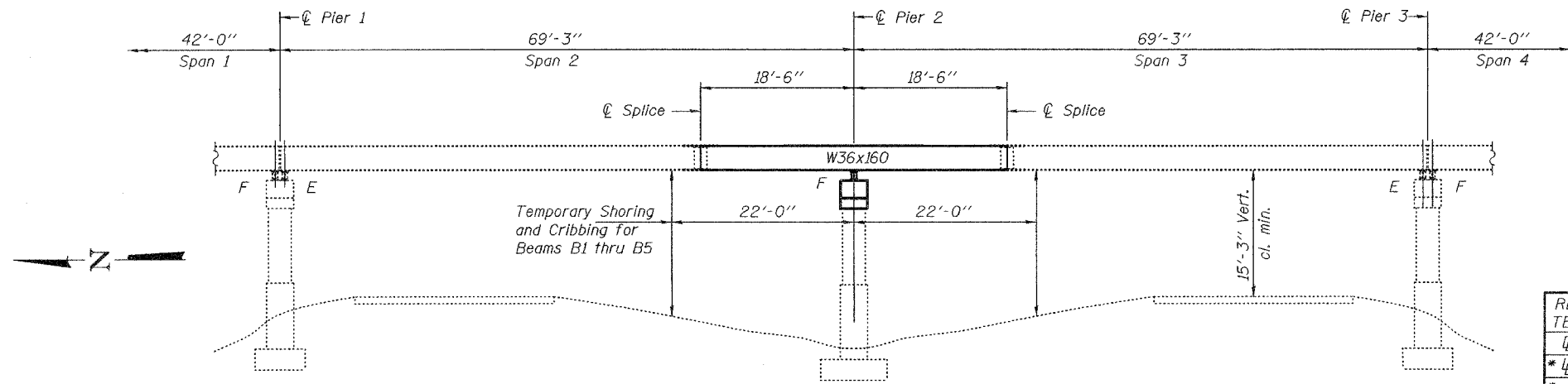
Load carrying components designated "NTR" shall conform to the Supplemental Requirements for Notch Toughness, Zone 2.

The Contractor shall provide support and/or shoring systems for the slab and beam in the area of existing beam removal. See Special Provisions "Temporary Shoring and Cribbing" and "Temporary Slab Support System."

Diaphragm connection holes shall be 15/16" φ for 3/4" φ bolts. Two hardened washers shall be required at diaphragm connections.

Prior to pouring the new concrete deck, all heavy or loose rust, loose mill scale, and other loose or potentially detrimental foreign material shall be removed from the surfaces in contact with concrete. Tightly adhered paint may remain unless otherwise noted. Removal shall be accomplished by methods that will not damage the steel and the cost will be included in the pay item covering removal of the existing concrete.

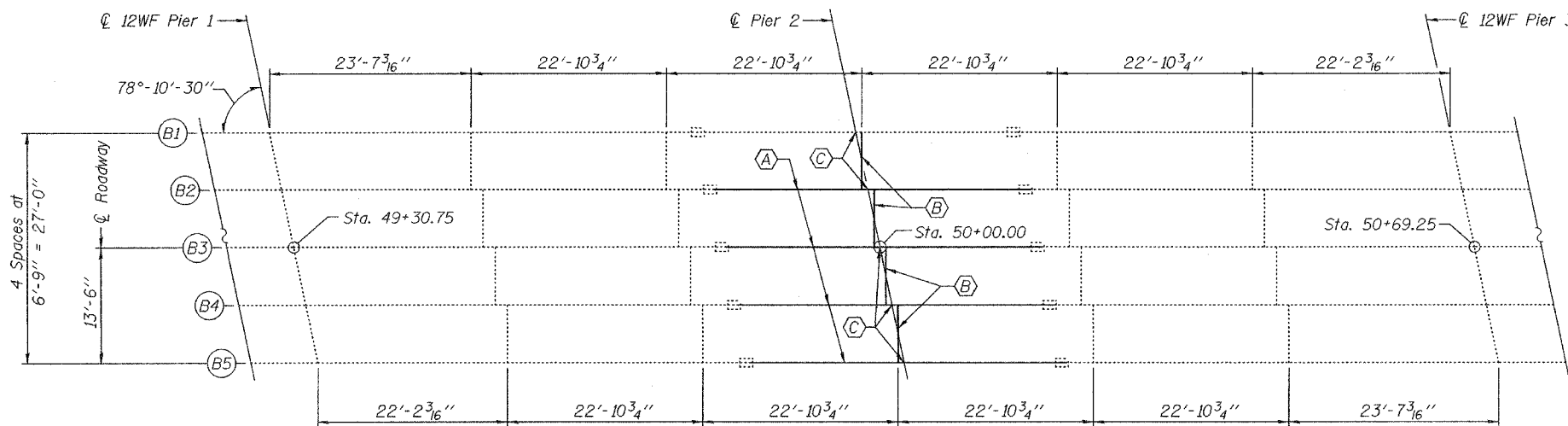
If the analysis submitted to the Contractor for the jacking/temporary support system to be used shows temporary stiffeners are required to prevent web crippling or buckling, the stiffeners shall be steel and bolted to the web. If stiffeners are not required, hardwood timbers shall be installed tightly between the top and bottom flange to prevent flange rotation.



ELEVATION

Q	(k)	47.4
* L	(k)	31.4
* Imp.	(k)	9.4
Total	(k)	88.2

\* For Information Only.  
Bridge is to be closed to traffic.



PLAN

- (A) - Remove & Replace Beam
- (B) - Remove & Replace Diaphragm and Clip L's
- (C) - Remove & Replace Bearing

CONSTRUCTION SEQUENCE

1. Place Temporary Support and Shoring for Beams
2. Place Temporary Slab Support System
3. Remove Designated Beams and Diaphragms
4. Remove Existing Bearings and Pier Cap
5. Perform Concrete Repair and Construct Pier Cap
6. Place New Beams and Diaphragms
7. Place New Bearing Assemblies

TOTAL BILL OF MATERIAL

ITEM	UNIT	QUANTITY
Furnishing and Erecting Structural Steel	Pound	31,250
Concrete Removal	Cu. Yd.	15.1
Concrete Structures	Cu. Yd.	13.4
Removal of Existing Bearings	Each	5
Structural Steel Removal	Pound	30,690
Temporary Shoring and Cribbing	L.S.	1
Temporary Slab Support System	L.S.	1
Concrete Superstructure	Cu. Yd.	2.9
Reinforcement Bars, Epoxy Coated	Pound	2530
Structural Repair of Concrete (Depth ≤ 5")	Sq. Ft.	87.2
Anchor Bolts, 1" φ	Each	10

PLAN AND ELEVATION  
TR 258 OVER FAI 70  
EFFINGHAM COUNTY  
SN 025-0062

DESIGNED	[Signature]
CHECKED	[Signature]
DRAWN	Steffen
CHECKED	AJB SJB

APRIL 16, 2008
EXAMINED [Signature]
PASSED [Signature]



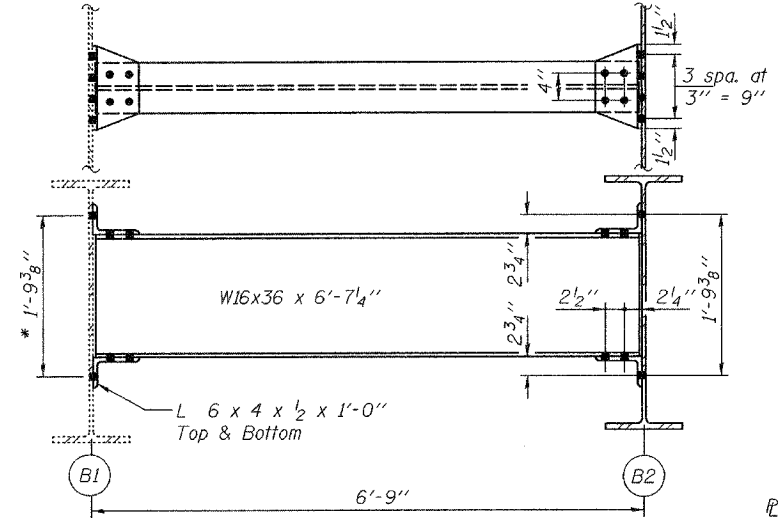
EXPIRES 11-30-2008

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
FAI 70		EFFINGHAM	9	5
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT-		

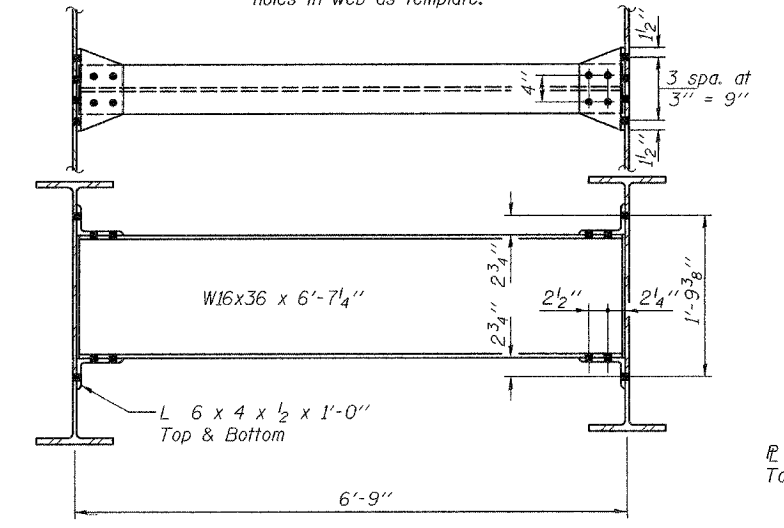
Contract Number: 74311

SHEET NO. 2  
6 SHEETS



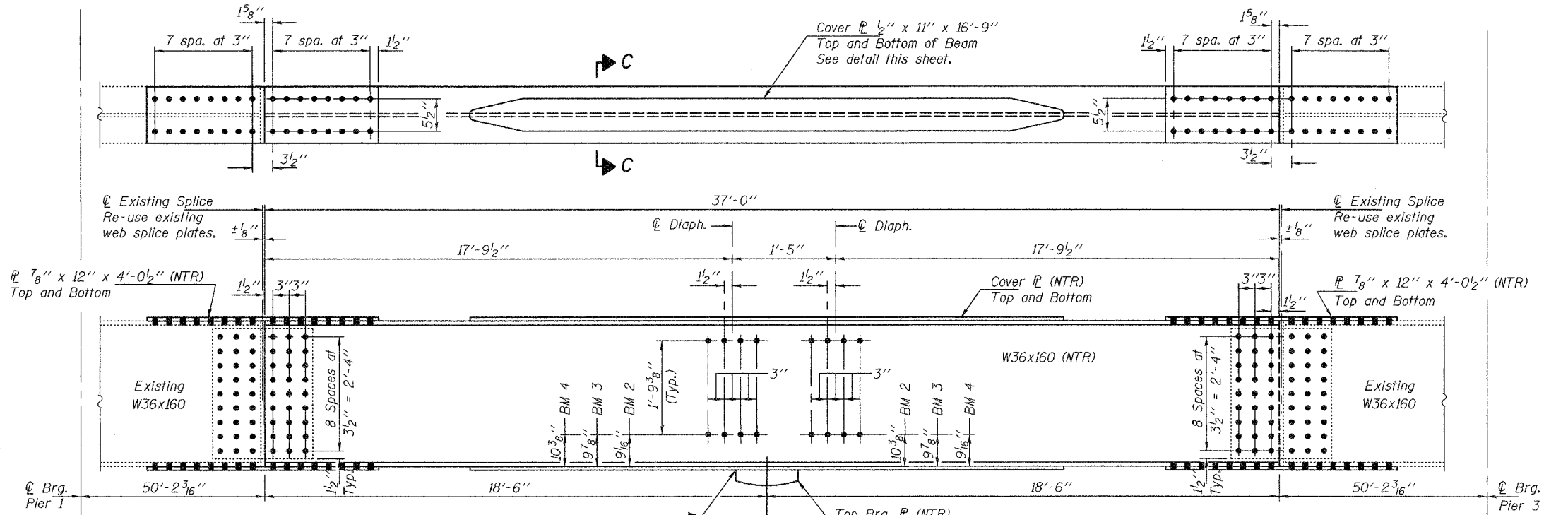
**DIAPHRAGM REPLACEMENT DETAIL**  
Between Beams 1 & 2

\* Field drill holes in angles using holes in web as template.



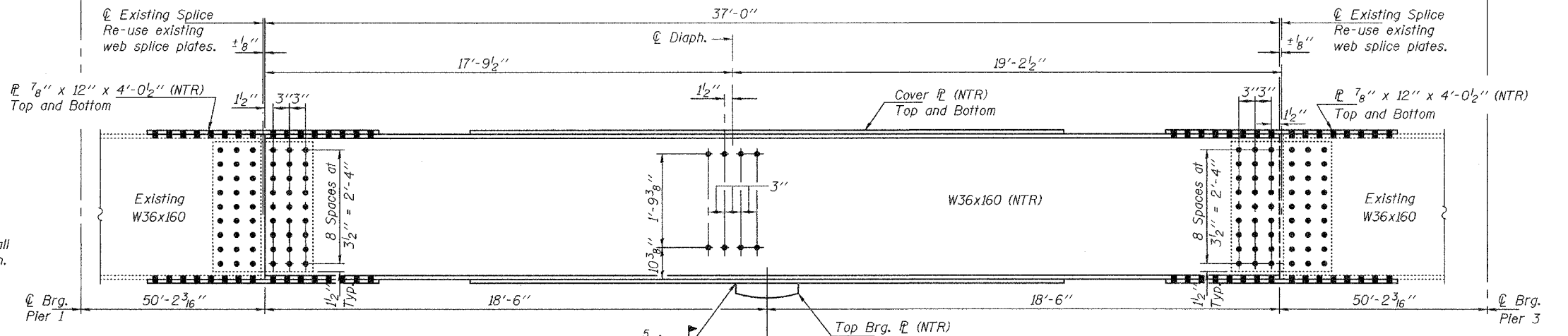
**TYPICAL DIAPHRAGM REPLACEMENT DETAIL**

Notes:  
Natural camber of new beam shall be placed upward for fabrication.

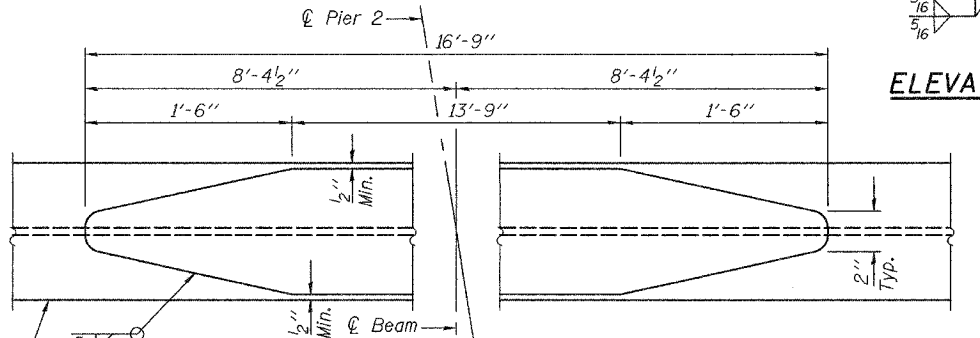


**ELEVATION - BEAMS 2 THRU 4 (INTERIOR)**

Note:  
Use existing holes in splice plates as template for drilling holes in new beam. (Typical)

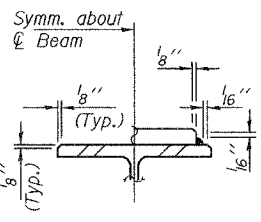


**ELEVATION - BEAM 5 (FASCIA)**



**COVER PLATE DETAILS**

1/2" x 11" x 16'-9" (8 Req'd)



**SECTION C-C**

DESIGNED	AJB
CHECKED	SJB
DRAWN	Steffen
CHECKED	AJB SJB

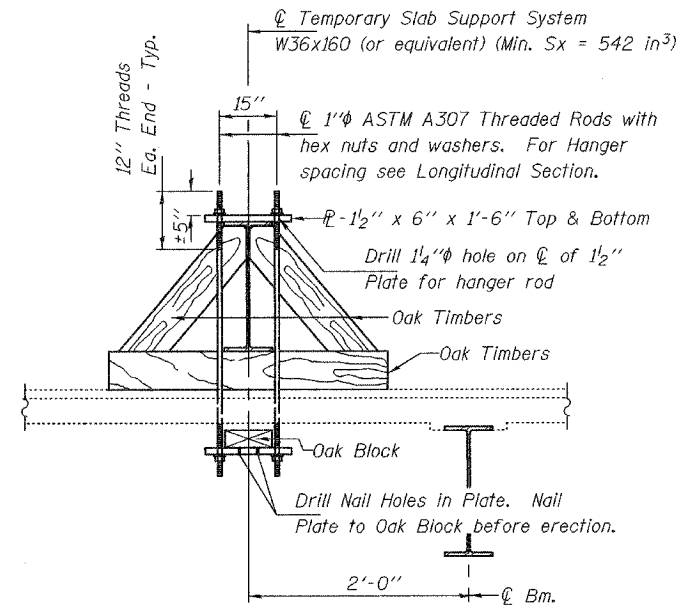
APRIL 16, 2008  
EXAMINED *Carl Perry*  
ENGINEER OF STRUCTURAL SERVICES  
PASSED *Ralph E. Anderson*  
ENGINEER OF BRIDGES AND STRUCTURES

**REPAIR DETAILS**  
TR 258 OVER FAI 70  
EFFINGHAM COUNTY  
SN 025-0062

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	SHEET NO.	SHEET NO.
FAI 70		EFFINGHAM	9	6
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT-		

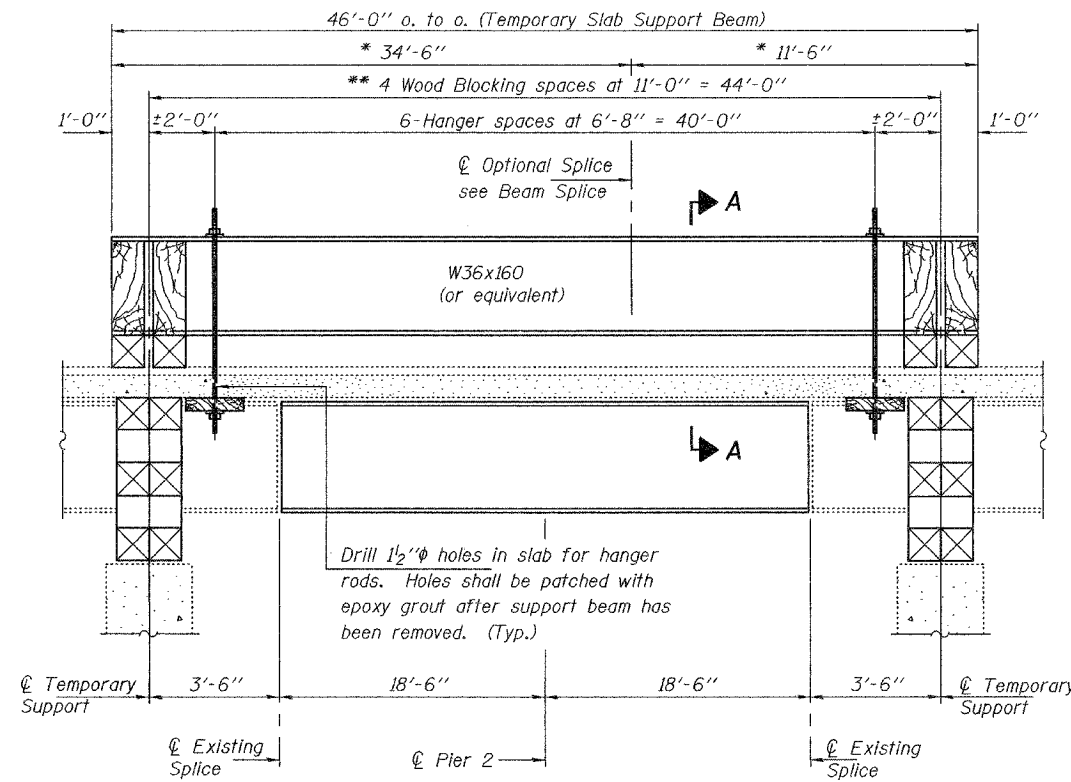
Contract Number: 74311



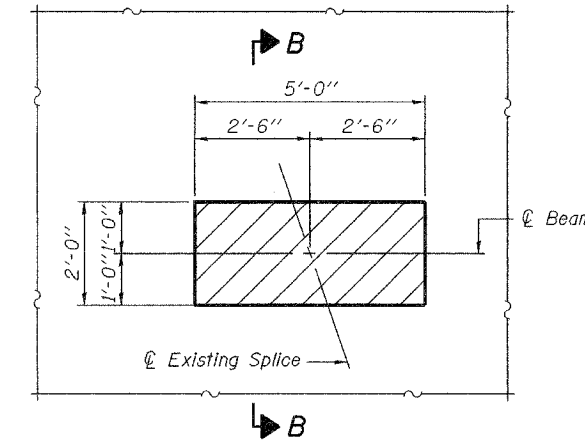
SECTION A-A

\* These dimensions may vary for available beams in stock.

\*\* Wood blocking between supports to be placed after support beam is allowed to deflect under its own weight.

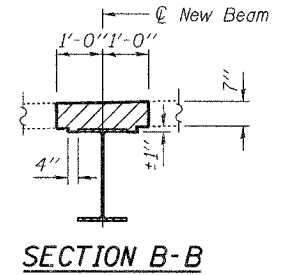


LONGITUDINAL SECTION  
SUGGESTED TEMPORARY SLAB SUPPORT SYSTEM

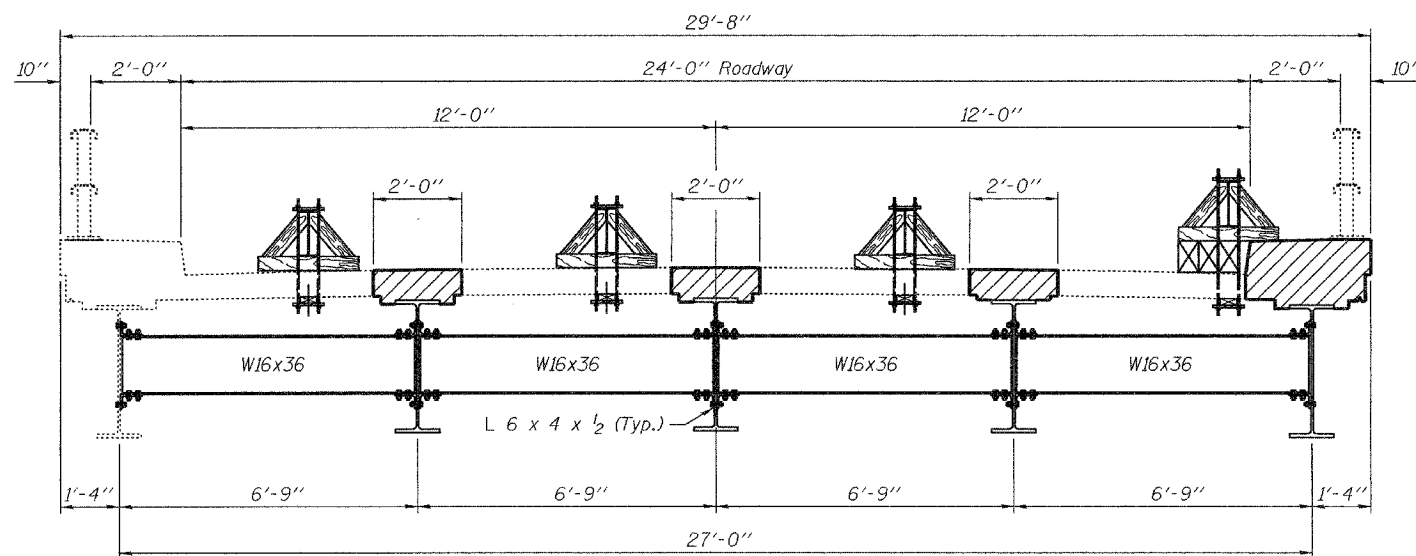


CONCRETE SURFACE REMOVAL AND REPLACEMENT FOR BEAMS B2 THRU B4

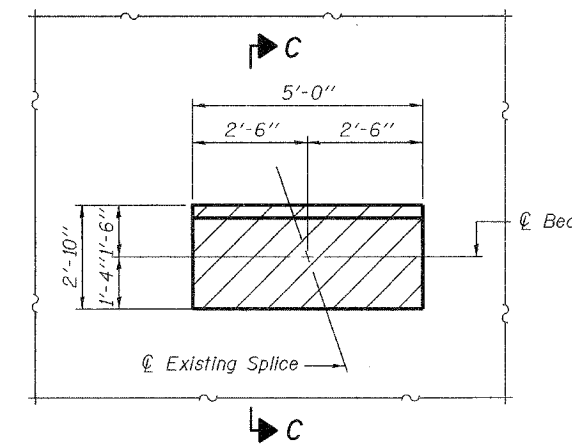
Hatched areas indicate concrete sections to be removed and replaced. Perimeters of concrete removal areas shall be saw cut 3/4 inch prior to the removal of concrete. Reinforcement shall be cut only if required for fitting bolts. Cut reinforcement shall be spliced as directed by the Engineer. Cost shall be included with Concrete Removal.



SECTION B-B

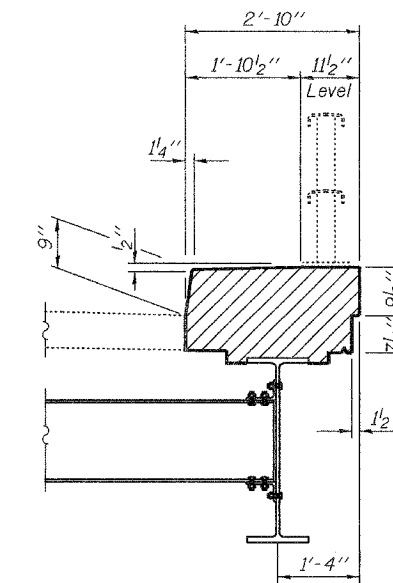


CROSS SECTION  
(Looking South)



CONCRETE REMOVAL AT CURB

Hatched areas indicate concrete sections to be removed and replaced. Perimeters of concrete removal areas shall be saw cut 3/4 inch prior to the removal of concrete. Reinforcement shall be cut only if required for fitting bolts. Cut reinforcement shall be spliced as directed by the Engineer. Cost shall be included with Concrete Removal.



SECTION C-C

Note: Existing steel bridge rail and posts in the concrete removal areas shall be removed and re-used as directed by the Engineer. Cost included with the cost of Concrete Removal.

DESIGNED	AJB
CHECKED	SJB
DRAWN	Steffen
CHECKED	AJB SJB

APRIL 16, 2008  
EXAMINED *A. Carl Perry*  
ENGINEER OF STRUCTURAL SERVICES  
PASSED *Ralph E. Anderson*  
ENGINEER OF BRIDGES AND STRUCTURES

REPAIR DETAILS  
TR 258 OVER FAI 70  
EFFINGHAM COUNTY  
SN 025-0062

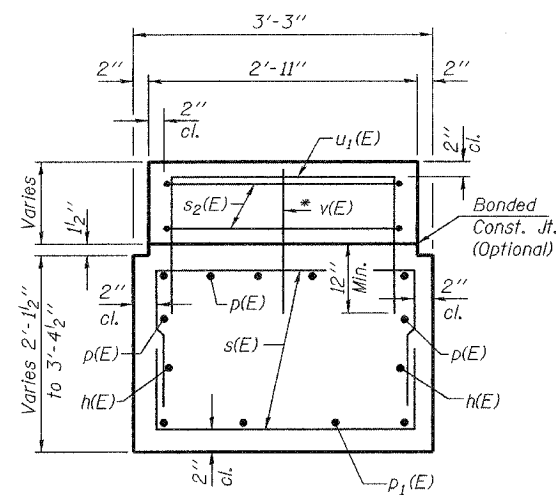
STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	SHEETS	SHEET NO.
FAI 70		EFFINGHAM	9	7
FED. ROAD DIST. NO. 7	ALLIANCE	FED. AID PROJECT-		

SHEET NO. 4

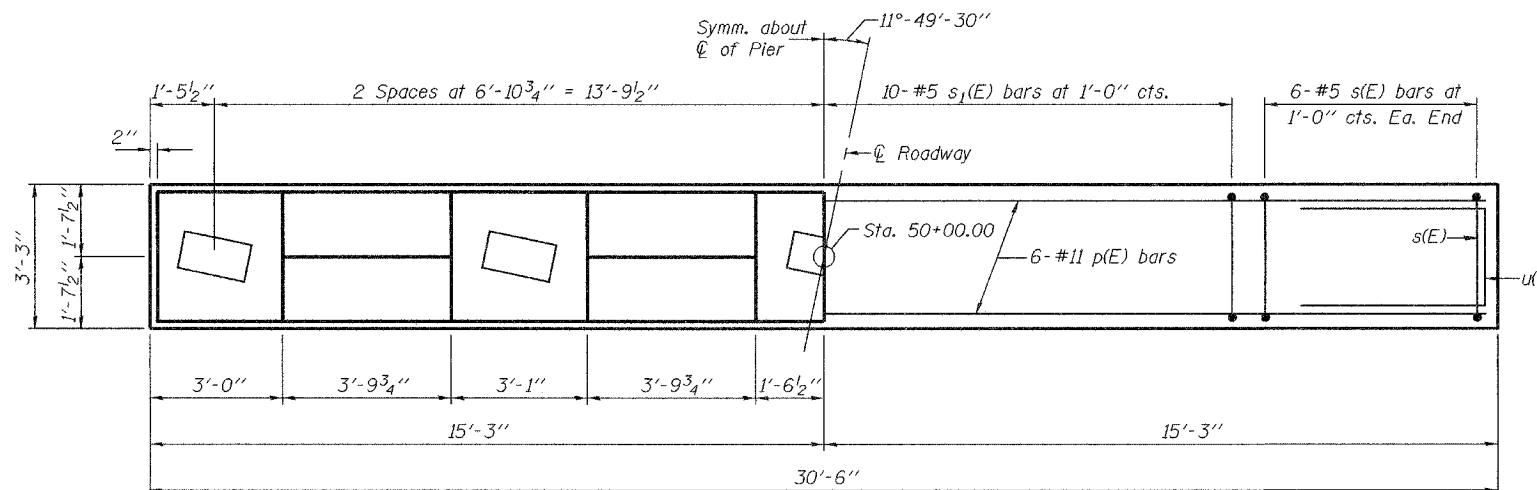
6 SHEETS

Contract Number: 74311

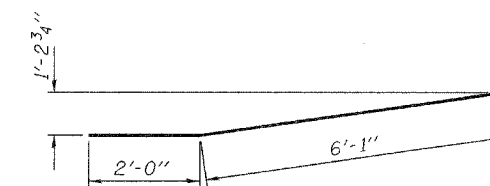


SECTION A-A

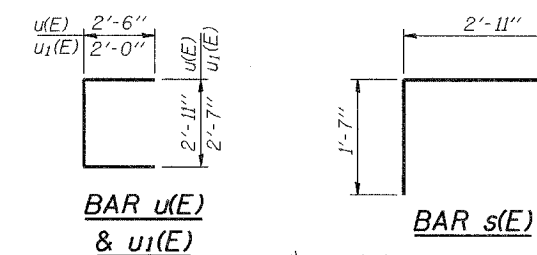
\* 2-#5 v(E) bars each side of pedestal (Typ.)



TOP PLAN

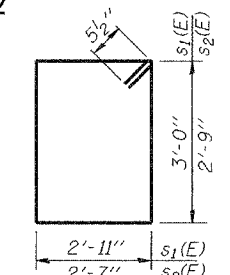


BAR p2(E)

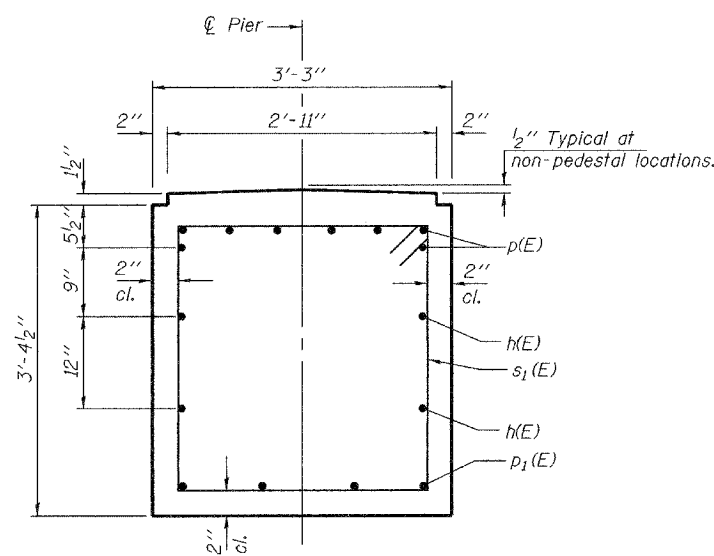


BAR u(E)  
& u1(E)

BAR s(E)

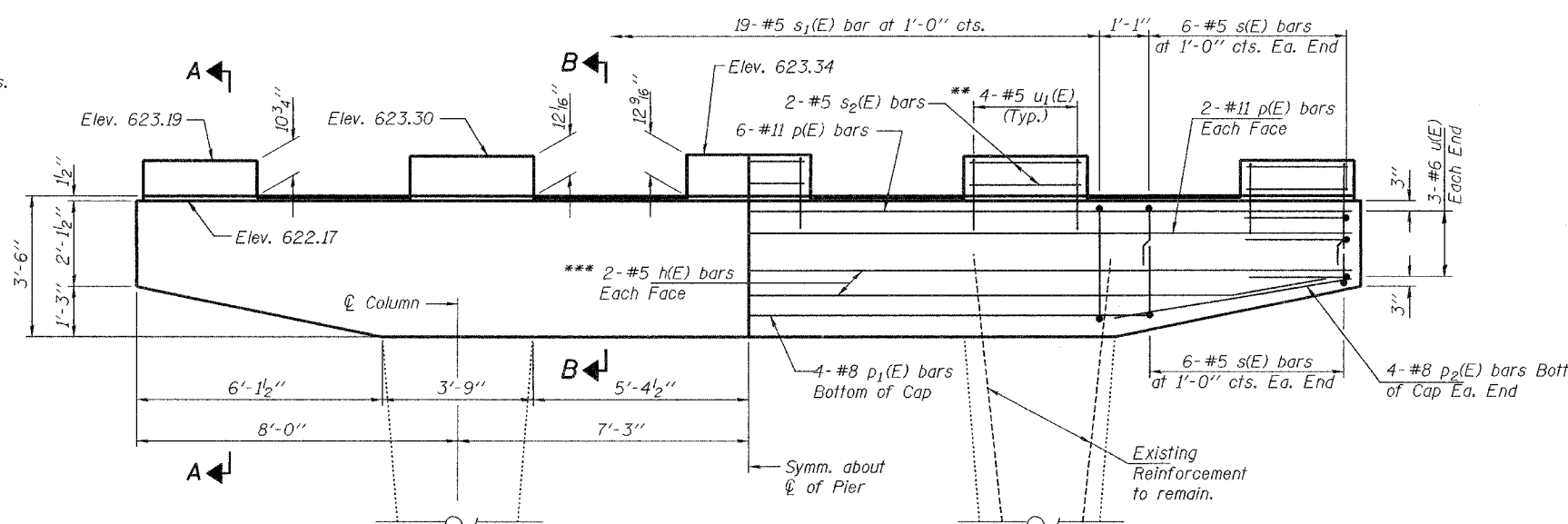


BAR s1(E) & s2(E)



SECTION B-B

(Pedestal not shown for clarity)



ELEVATION

\*\* 4-#5 u1(E) bars at 12" cts. Space to miss anchor bolts.

\*\*\* Bend h(E) bar in field to fit.

BILL OF MATERIAL

Bar	No.	Size	Length	Shape
h(E)	4	#5	30'-2"	
p(E)	8	#11	30'-2"	
p1(E)	4	#8	18'-4"	
p2(E)	8	#8	8'-1"	
s(E)	24	#5	6'-1"	
s1(E)	19	#5	12'-9"	
s2(E)	10	#5	11'-7"	
u(E)	6	#6	7'-11"	
u1(E)	20	#5	6'-7"	
v(E)	10	#5	2'-0"	
Reinforcement Bars, Epoxy Coated		Pound	2530	
Concrete Removal		Cu. Yd.	12.2	
Concrete Structures		Cu. Yd.	13.4	

DESIGNED	AJB
CHECKED	SJB
DRAWN	Steffen
CHECKED	AJB SJB

APRIL 16, 2008  
EXAMINED *A. Carl*  
ENGINEER OF STRUCTURAL SERVICES  
PASSED *Ralph E. Anderson*  
ENGINEER OF BRIDGES AND STRUCTURES

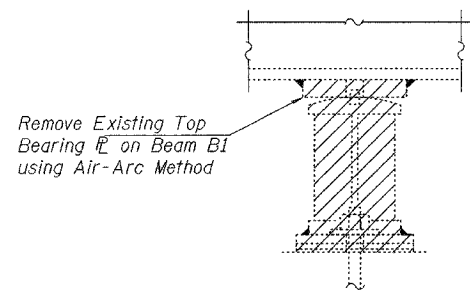
PIER 2 REPAIR DETAILS  
TR 258 OVER FAI 70  
EFFINGHAM COUNTY  
SN 025-0062



STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

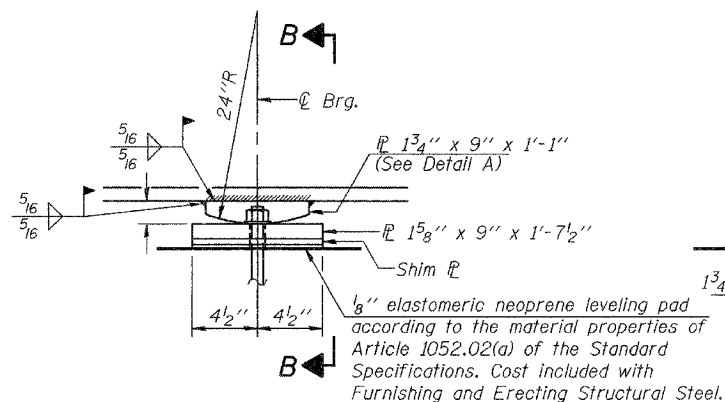
ROUTE NO.	SECTION	COUNTY	SHEET	SHEET	SHEET NO. 5 6 SHEETS
FAI 70		EFFINGHAM	9	8	
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT			

Contract Number: 74311

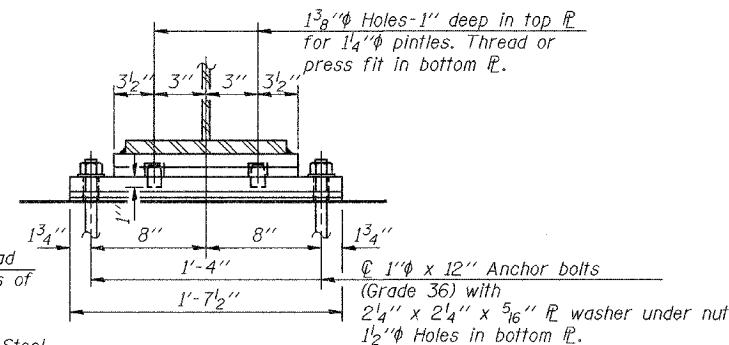


Remove Existing Top Bearing on Beam B1 using Air-Arc Method

**BEARING REMOVAL DETAIL**

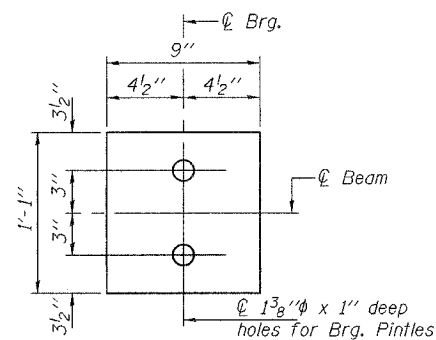


**ELEVATION AT PIER**

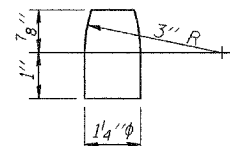


**SECTION B-B**

**FIXED BEARING**



**DETAIL A**



**PINTLE**

Notes:  
Anchor bolts shall be ASTM F1554 all-thread (or an Engineer-approved alternate material) of the grade(s) and diameter(s) specified. ASTM A307 Grade C anchor bolts may be used in lieu of ASTM F1554 Grade 36 (Fy=36ksi). The corresponding specified grade of AASHTO M314 anchor bolts may be used in lieu of ASTM F1554.  
Anchor bolts at fixed bearings will be installed in holes drilled after the supported member is in place.  
Drilled and set anchor bolts shall be installed according to Article 521.06 of the Standard Specifications.  
Steel members required for the bearing assembly shall be included in the cost of Furnishing and Erecting Structural Steel.

**BILL OF MATERIAL**

Item	Unit	Total
Furnishing and Erecting Structural Steel	Pound	750
Anchor Bolts, 1"φ	Each	10

DESIGNED	AJB
CHECKED	SJB
DRAWN	Steffen
CHECKED	AJB SJB

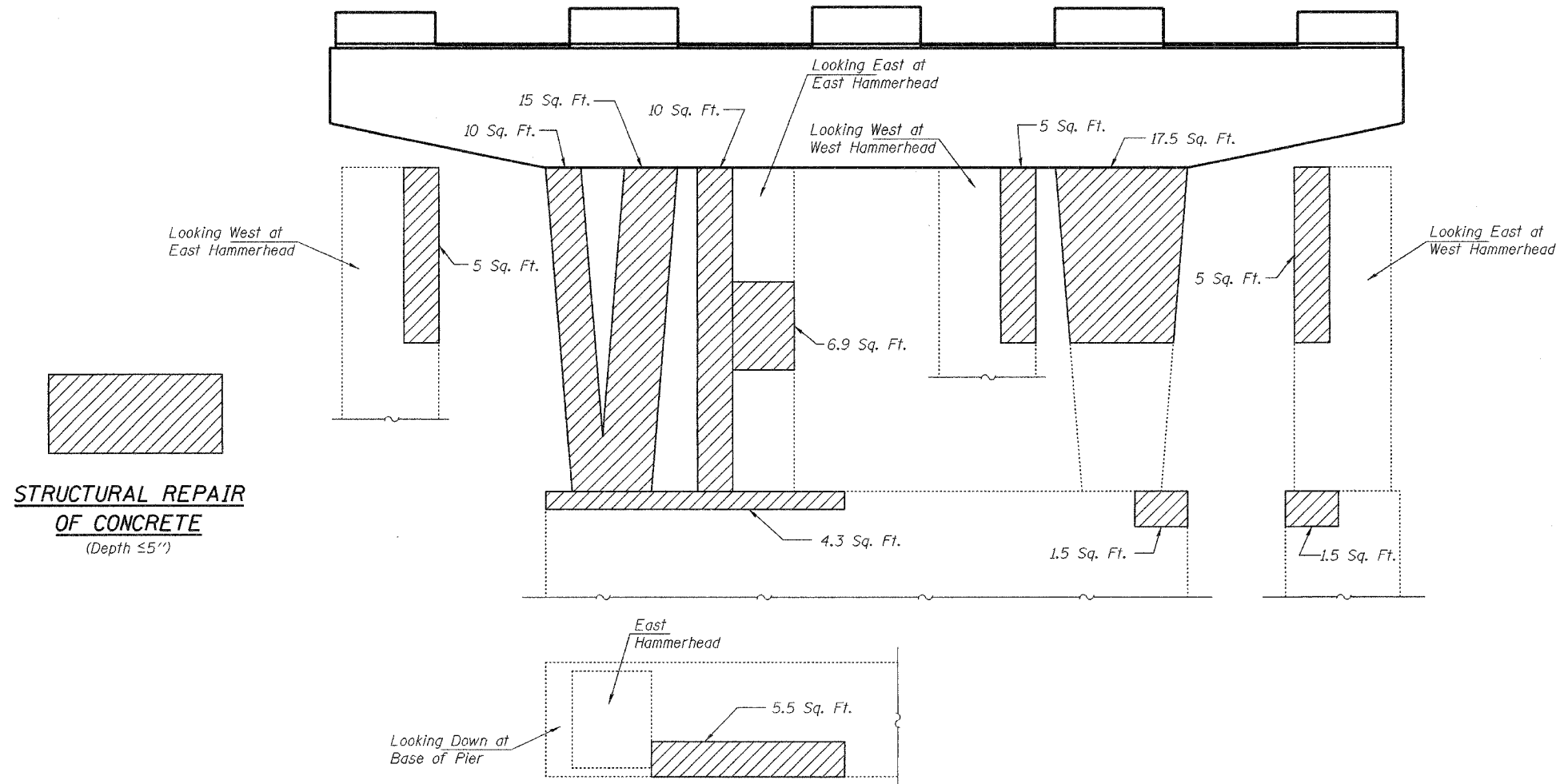
APRIL 16, 2008  
EXAMINED *A. Carl Perry*  
ENGINEER OF STRUCTURAL SERVICES  
PASSED *Ralph E. Anderson*  
ENGINEER OF BRIDGES AND STRUCTURES

**BEARING DETAILS**  
**TR 258 OVER FAI 70**  
**EFFINGHAM COUNTY**  
**SN 025-0062**

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	TOWNSHIP	SHEET NO.	SHEET NO. 6 6 SHEETS
FAI 70		EFFINGHAM	9	9	
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT			

Contract Number: 74311



**PIER 2 CONCRETE REPAIR**  
(Elevation Looking South)

**BILL OF MATERIAL**

Structural Repair of Concrete (Depth ≤ 5")	Sq. Ft.	87.2

DESIGNED	AJB
CHECKED	SJB
DRAWN	Steffen
CHECKED	AJB SJB

APRIL 16, 2008  
EXAMINED *Carl Perry*  
ENGINEER OF STRUCTURAL SERVICES  
PASSED *Ralph E. Anderson*  
ENGINEER OF BRIDGES AND STRUCTURES

**PIER 2 REPAIR DETAILS**  
**TR 258 OVER FAI 70**  
**EFFINGHAM COUNTY**  
**SN 025-0062**