

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS

**PROPOSED  
HIGHWAY PLANS**

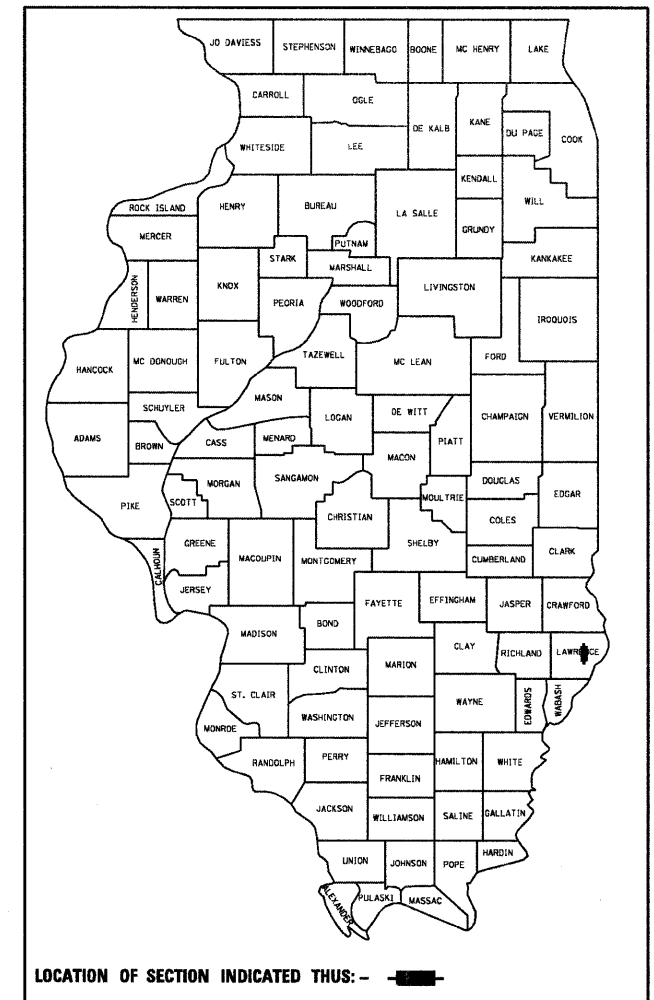
FAP ROUTE 332 (IL. 1)  
SECTION D7 BEAM REPAIR 2008-2  
LAWRENCE COUNTY  
C-97-035-08

FOR INDEX OF SHEETS, SEE SHEET NO. 2

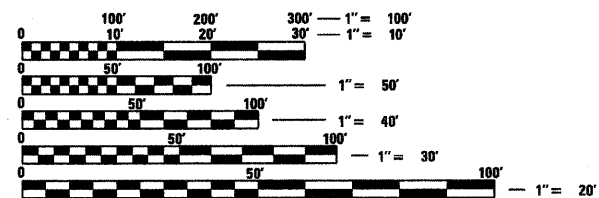
2007 ADT = 4150

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
322	D7 BEAM REPAIR 2008-2	LAWRENCE	11	1
FED. ROAD DIST. NO.	ILLINOIS	CONTRACT NO.	74290	

D-97-008-08



PROJECT LOCATION:  
SECTION: D7 BEAM REPAIR 2008-2  
S.N. 051-0006  
STA. 13 + 85



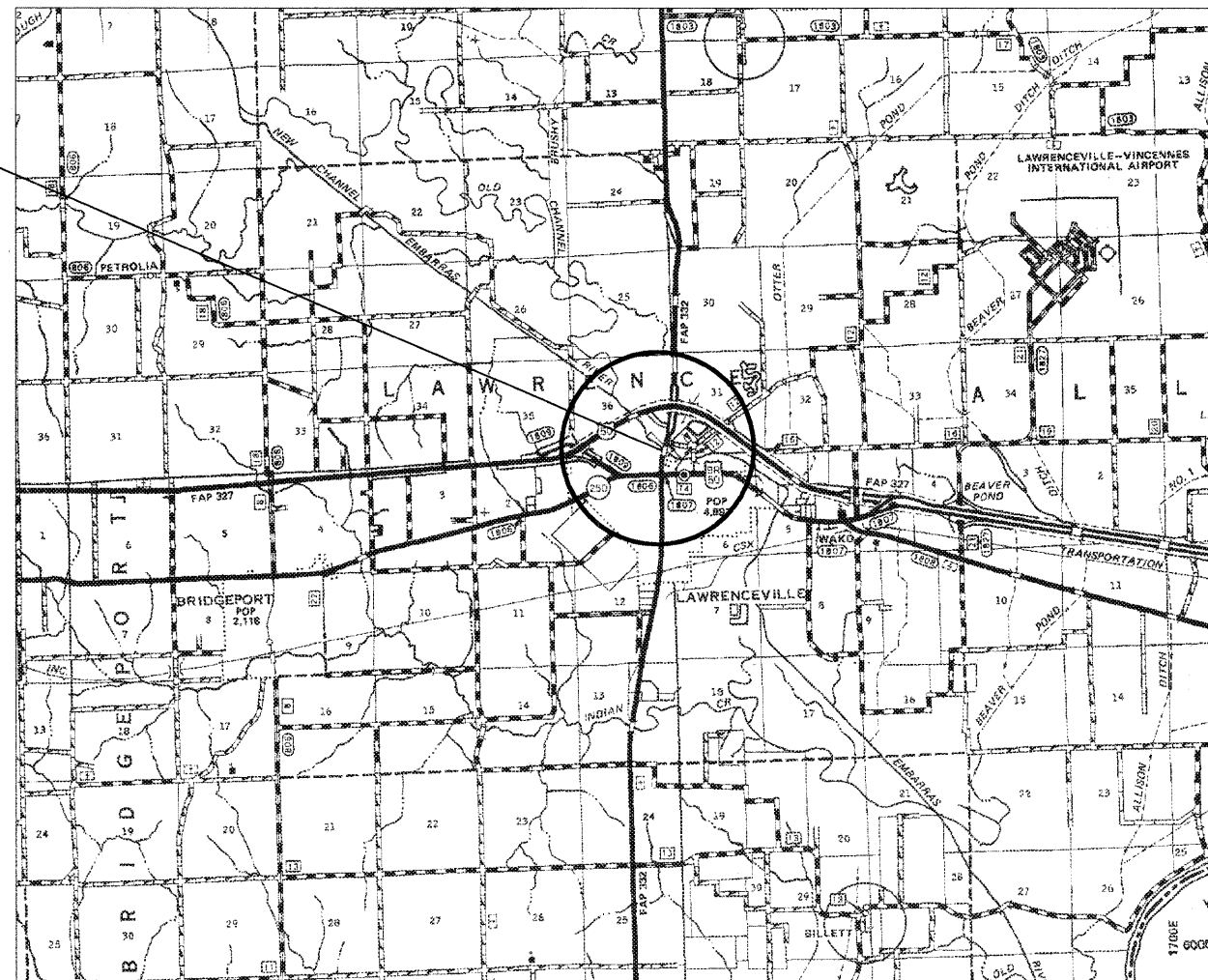
FULL SIZE PLANS HAVE BEEN PREPARED USING STANDARD ENGINEERING SCALES. REDUCED SIZED PLANS WILL NOT CONFORM TO STANDARD SCALES. IN MAKING MEASUREMENTS ON REDUCED PLANS, THE ABOVE SCALES MAY BE USED.

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

TOWNSHIP: LAWRENCE

PROJECT ENGINEER: GARY WELTON  
PROJECT MANAGER: JENNIFER WENTHE

CONTRACT NO 74290



STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS

SUBMITTED February 5 20 08

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

March 21, 20 08  
*Eric E. Harrel*  
Interim ENGINEER OF DESIGN AND ENVIRONMENT

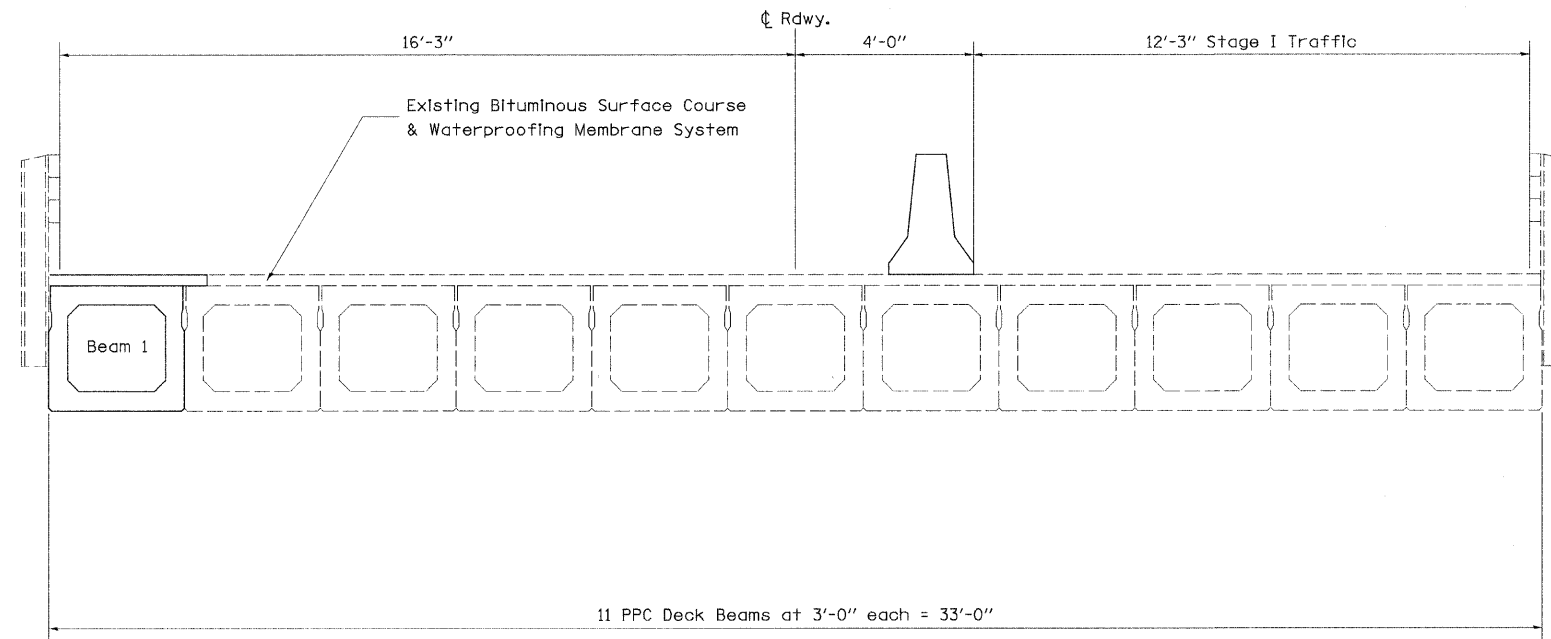
March 21, 20 08  
*Christine M. Reed*  
DIRECTOR OF HIGHWAYS, CHIEF ENGINEER

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

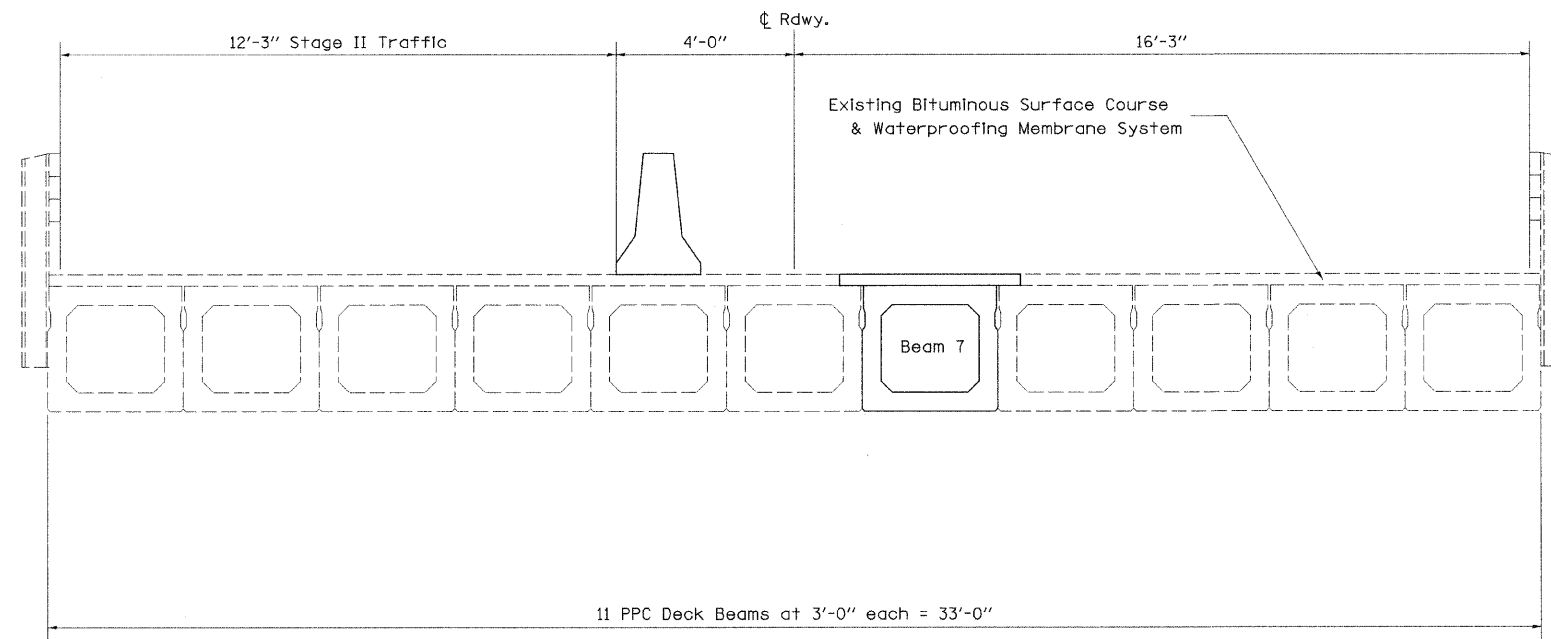


SUMMARY OF QUANTITIES			TOTAL QUANTITIES	CONSTRUCTION TYPE CODE
CODE NO	ITEM	UNIT		100% STATE SFTY-2A
35650700	BASE COURSE WIDENING	SQ YD	177	177
40603310	HOT-MIX ASPHALT SURFACE COURSE, MIX "C", N50	TON	23	23
44001005	HOT-MIX ASPHALT SURFACE REMOVAL	SQ YD	30.2	30.2
50400605	PRECAST PRESTRESSED CONCRETE DECK BEAMS (33" DEPTH)	SQ FT	1354	1354
50900905	REMOVING AND RE-ERECTING EXISTING RAILING	FOOT	378	378
58100200	WATERPROOFING MEMBRANE SYSTEM	SQ YD	181	181
58300100	PORTLAND CEMENT MORTAR FAIRING COURSE	FOOT	529	529
67100100	MOBILIZATION	L SUM	1	1
70100405	TRAFFIC CONTROL AND PROTECTION, STANDARD 701321	EACH	1	1
70100500	TRAFFIC CONTROL AND PROTECTION, STANDARD 701326	L SUM	1	1
70106500	TEMPORARY BRIDGE TRAFFIC SIGNALS	EACH	1	1
70301000	WORK ZONE PAVEMENT MARKING REMOVAL	SQ FT	1011	1011
70400100	TEMPORARY CONCRETE BARRIER	FOOT	637.5	637.5
70400200	RELOCATE TEMPORARY CONCRETE BARRIER	FOOT	637.5	637.5
* 78001110	PAINT PAVEMENT MARKING - LINE 4"	FOOT	2318	2318
78300100	PAVEMENT MARKING REMOVAL	SQ FT	430	430
X0320047	REMOVAL OF EXISTING PRECAST PRESTRESSED CONCRETE DECK BEAMS	SQ FT	1360	1360
Z0030250	IMPACT ATTENUATORS, TEMPORARY (NON- REDIRECTIVE), TEST LEVEL 3	EACH	2	2
Z0030350	IMPACT ATTENUATORS, RELOCATE (NON- REDIRECTIVE), TEST LEVEL 3	EACH	2	2

\* SPECIALTY ITEMS



STAGE I TYPICAL

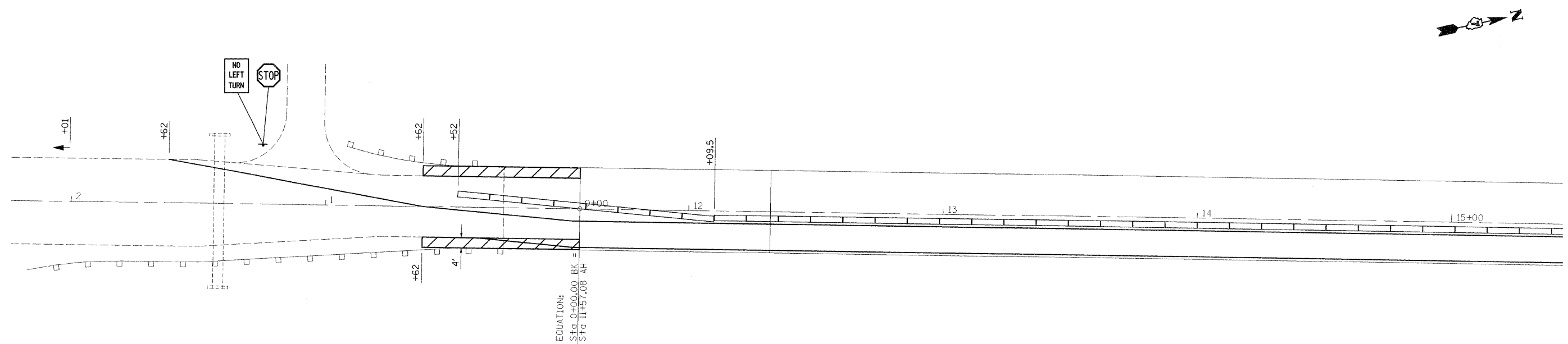
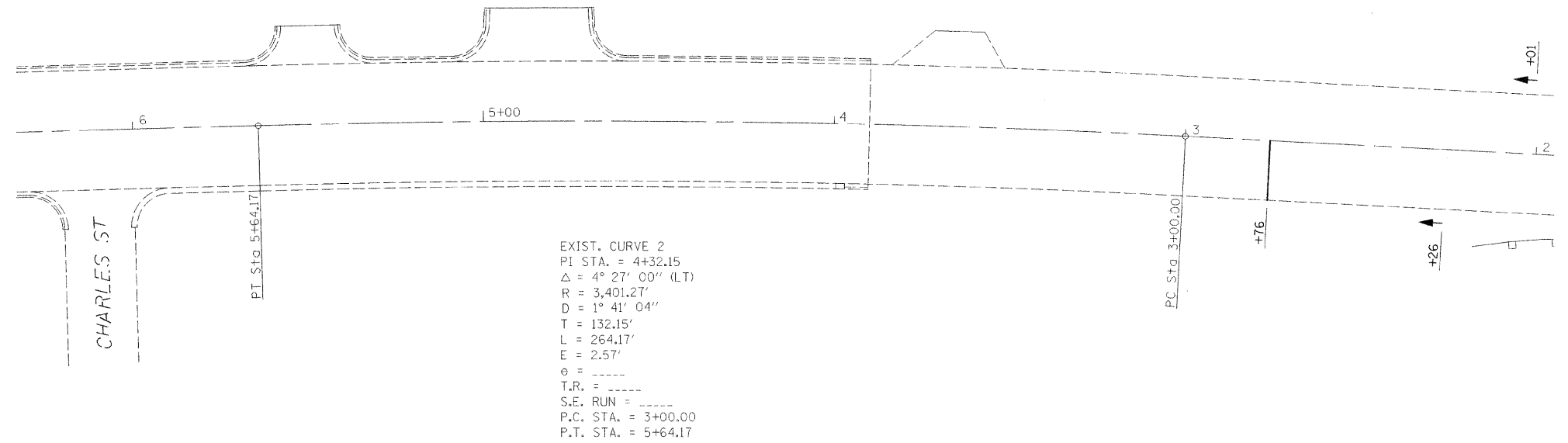


STAGE II TYPICAL

FILE NAME = c:\projects\74290\d\shhtypcra.74290.dgn	USER NAME = swartzw	DESIGNED - JDW	REVISED -	<b>STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION</b>	<b>TYPICAL CROSS SECTION</b>			F.A.P. RTE. 332	SECTION D7 BEAM REPAIR 2008-2	COUNTY LAWRENCE	TOTAL SHEETS 11	SHEET NO. 4
PLOT SCALE = 20.0000 1/ IN.	CHECKED - RWS	DATE - 01-08	REVISED -		SCALE: N/A	SHEET NO. OF	SHEETS	STA. TO STA.	CONTRACT NO. 74290			
PLOT DATE = 2/5/2008	DATE - 01-08	REVISED -	REVISED -		FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT							

SUGGESTED SEQUENCE OF OPERATION

1. CONSTRUCT BASE COURSE WIDENING USING TRAFFIC CONTROL STANDARD 701326.
2. ERECT SIGNS, TRAFFIC SIGNALS, TEMPORARY BARRIERS, ECT. ACCORDING TO TRAFFIC CONTROL STANDARD 701321.
3. PLACE TEMPORARY PAVEMENT MARKING ACCORDING TO TRAFFIC CONTROL STANDARD 701321.
4. REMOVE THE EXISTING DECK BEAMS FOR STAGE I CONSTRUCTION.
5. PLACE NEW DECK BEAMS FOR STAGE I.



BASE COURSE WIDENING

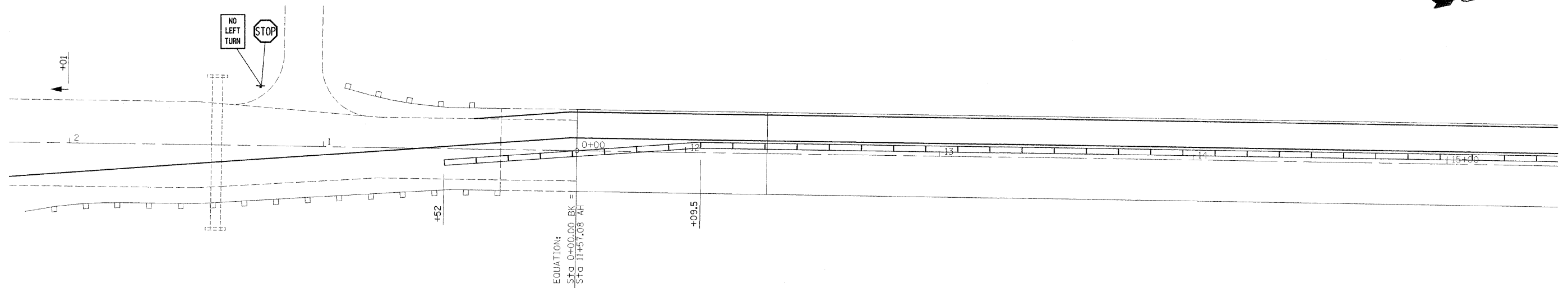
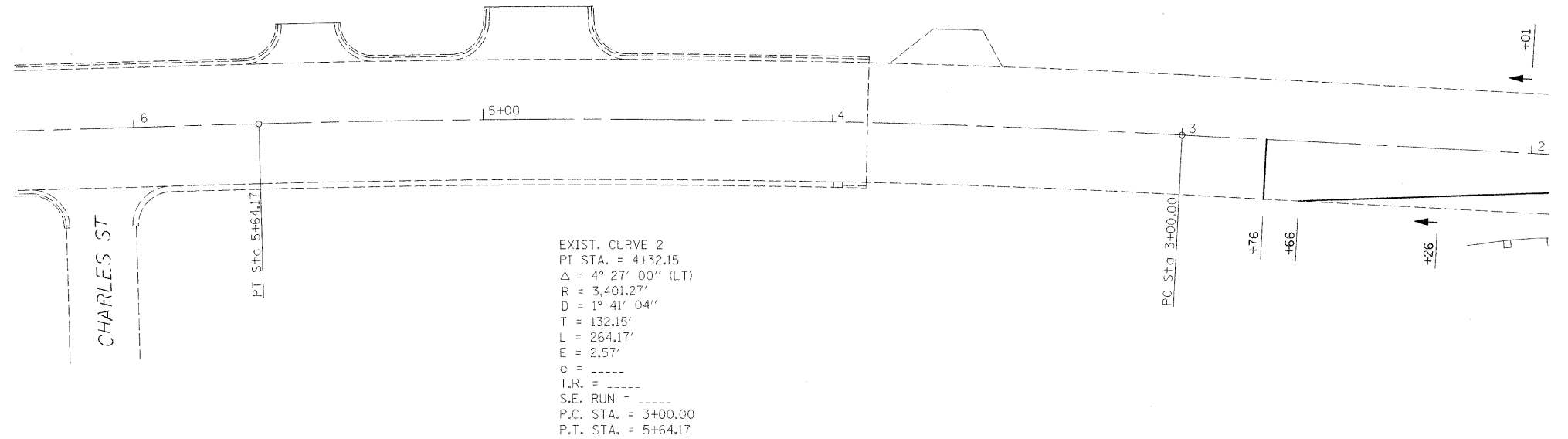
EQUATION:  
Sta. 0+00.00 BK =  
Sta. 11+51.08 AH

FILE NAME = c:\projects\74290d\shp1en_74290.dgn	USER NAME = swartzw	DESIGNED - JDW	REVISED -	<b>STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION</b>	<b>STAGE I CONSTRUCTION</b>	F.A.P. RTE. 332	SECTION D7 BEAM REPAIR 2008-2	COUNTY LAWRENCE	TOTAL SHEETS 11	SHEET NO. 5
PLOT SCALE = 20.0000' / IN.				SCALE: 20		SHEET NO. OF SHEETS		CONTRACT NO. 74290		
PLOT DATE = 2/5/2008				DATE		STA. 8+00 TO STA. 15+00		FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT		

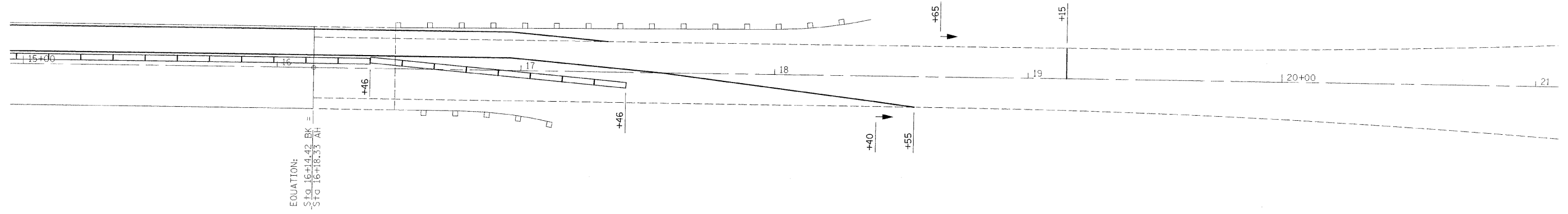


SUGGESTED SEQUENCE OF OPERATION

1. ERECT SIGNS, TRAFFIC SIGNALS, TEMPORARY BARRIERS, ECT. ACCORDING TO TRAFFIC CONTROL STANDARD 701321.
2. PLACE TEMPORARY PAVEMENT MARKING ACCORDING TO TRAFFIC CONTROL STANDARD 701321.
3. REMOVE THE EXISTING DECK BEAMS FOR STAGE II CONSTRUCTION.
4. PLACE NEW DECK BEAMS FOR STAGE II.



FILE NAME = c:\projects\74290d\stage2_74290.dgn	USER NAME = swartzw	DESIGNED - JDW	REVISED -	<b>STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION</b>	<b>STAGE II CONSTRUCTION</b>			F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
PLOT SCALE = 20.0000' / IN.	CHECKED -	DRAWN - RWS	REVISED -					332	D7 BEAM REPAIR 2008-2	LAWRENCE	11	7
PLOT DATE = 2/5/2008	DATE -	CHECKED -	REVISED -		SCALE: 20 SHEET NO. OF SHEETS STA. 8+00 TO STA. 15+00			CONTRACT NO. 74290				
		DATE -	REVISED -					FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT				



EQUATION:  
Sta 16+14.42 BVC =  
Sta 18+33.33 EVC

RELOCATE TEMPORARY CONCRETE BARRIER

0+52 TO 17+46      637.5 FOOT  
TOTAL =              637.5 FOOT

IMPACT ATTENUATORS, RELOCATE  
(NON-REDIRECTIVE), TEST LEVEL 3

0+52            1.0 EACH  
17+46            1.0 EACH  
TOTAL =            2.0 EACH

WORK ZONE PAVEMENT MARKING REMOVAL

2+66 TO 18+55      300.7 SQ FT  
0+41 TO 17+34      204.7 SQ FT  
TOTAL =              505.4 SQ FT

PAVEMENT MARKING REMOVAL

0+40 TO 17+34      204.3 SQ FT  
TOTAL =              204.3 SQ FT

PAINT PAVEMENT MARKING - LINE 4"

2+76 TO 0+00            621.0 FOOT  
11+57 TO 16+14            1028.3 FOOT  
16+18 TO 19+15            668.3 FOOT  
TOTAL =                  2317.5 FOOT

FILE NAME = c:\projects\74290d\stage2_74290.dgn	USER NAME = swartzw	DESIGNED - JDW	REVISED -
		DRAWN - RWS	REVISED -
	PLOT SCALE = 20.0000 1/1 IN.	CHECKED -	REVISED -
	PLOT DATE = 2/5/2008	DATE -	REVISED -

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

**STAGE II CONSTRUCTION**

SCALE: 20 SHEET NO. OF SHEETS STA. 15+00 TO STA. 27+00

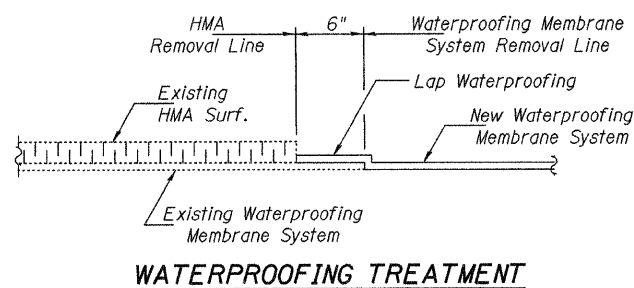
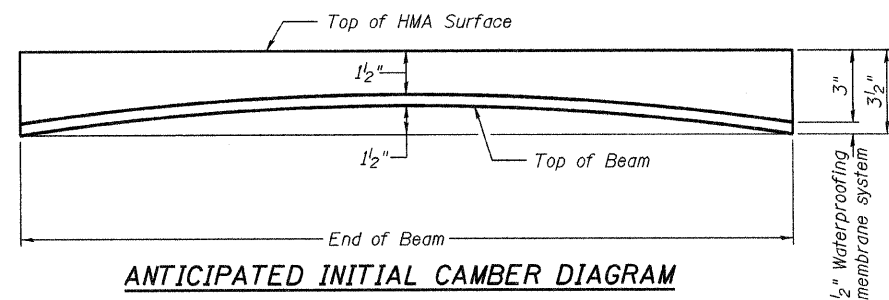
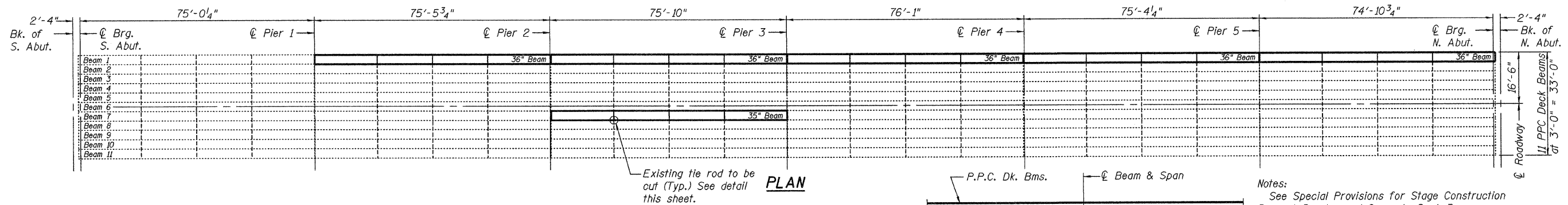
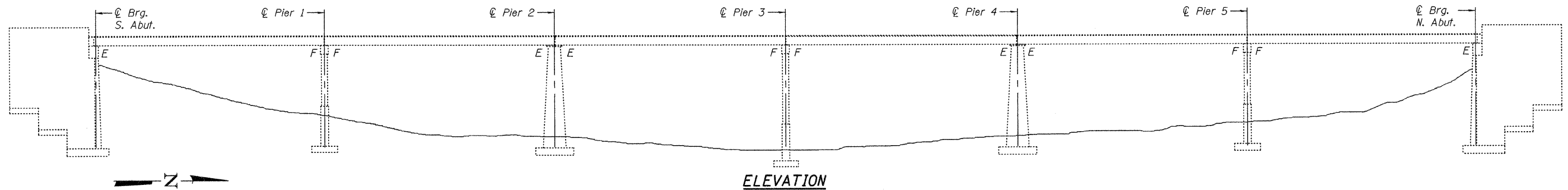
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
332	D7 BEAM REPAIR 2008-2	LAWRENCE	11	8
FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT			CONTRACT NO. 74290	



STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
		Lawrence	11	9
Contract Number: 74290				

SHEET NO. 1  
3 SHEETS



**GENERAL NOTES**

The contractor is advised that the existing PPC Deck Beams are in a deteriorated condition with reduced load carrying capacity. It is the contractor's responsibility to account for the condition of the beams when developing construction procedures.

Any damage done to the bridge during beam removal shall be repaired by the Contractor. Cost to be included in the cost of Removal of Existing PPC Deck Beams.

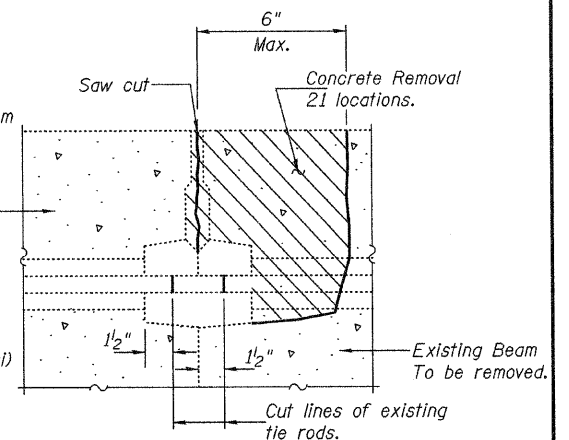
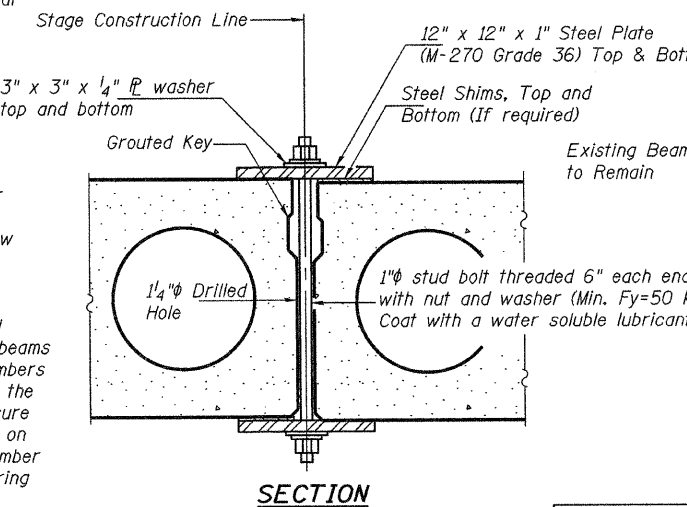
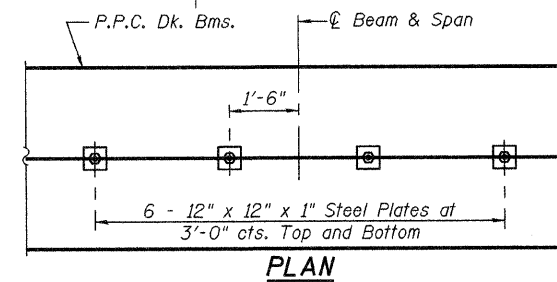
The top surface of the beams shall be finished according to the IDOT Manual for Fabrication of Precast Prestressed Concrete Products.

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.

All structural steel shall be shop painted with the inorganic zinc rich primer per AASHTO M300, Type 1. Cost included with PPC Deck Beams.

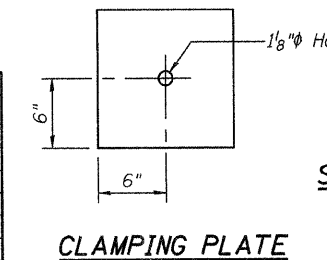
If the contractor's procedure for existing beam removal or placement of new beams involves placement of cranes or other heavy equipment on the bridge, a detailed procedure shall be submitted to the Engineer for approval. The procedure shall include calculations, prepared and sealed by an Illinois Licensed Structural Engineer, verifying that the equipment and procedure used will not overstress the new or existing beams. To distribute load to multiple beams and protect the existing surface, in all cases a double layer mat of heavy timbers shall be used at all times under crane tracks or wheels and any outriggers in the down position. If necessary, shims shall be used under the crane mat to ensure uniform contact with the underlying beams. If heavy equipment will be placed on new PPC deck beams, the following shall be done prior to placement of the timber mats: placement and tightening of transverse tie assemblies, grouting and curing the dowel rods 24 hours minimum and grouting and curing the shear keys.

Temporary Concrete barrier shall only be anchored into the overlay and not into the PPC Deck Beams.



**TOTAL BILL OF MATERIAL**

ITEM	UNIT	QUANTITY
Removal of Existing PPC Deck Beams	Sq. Ft.	1360
Hot Mix Asphalt Surface Removal	Sq. Yd.	30.2
PPC Deck Beams 33" Depth	Sq. Ft.	1354
Hot Mix Asphalt Surface Course Mix "C" N50	Ton	23.0
Waterproofing Membrane System	Sq. Yd.	181
PC Mortar Fairing Course	Foot	529
Removing and Re-erecting Existing Railing	Foot	378



**DESIGN STRESSES  
PRECAST UNITS**

$f'c = 5,000$  psi  
 $f'ci = 4,000$  psi  
 $f's = 270,000$  psi ( $1/2$ "  $\phi$  low lax strands)  
 $f'si = 201,960$  psi ( $1/2$ "  $\phi$  low lax strands)

DESIGNED	Adrian T. Holloway	February 22, 2008
CHECKED	[Signature]	EXAMINED [Signature]
DRAWN	[Signature]	PASSED [Signature]
CHECKED	ATH	ABB



Expires: November 30, 2008

**PLAN AND ELEVATION  
S.B.I. RT. 1 / EMBARRAS RIVER  
LAWRENCE COUNTY  
SN 051-0006**

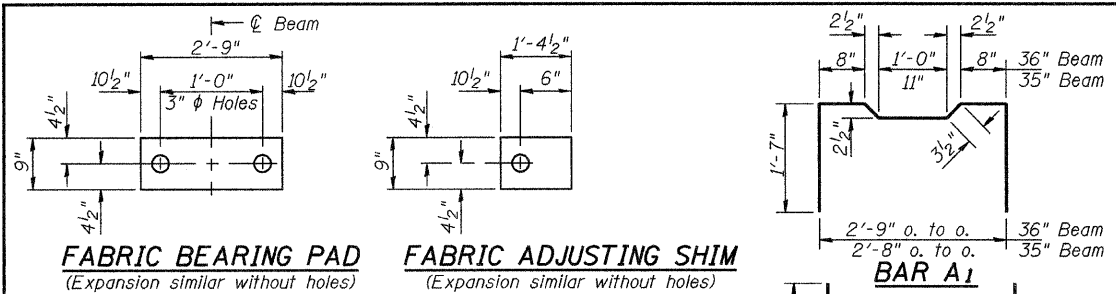
STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

\*\*Limits of HMA removal.

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
		Lawrence	11	10
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT-		

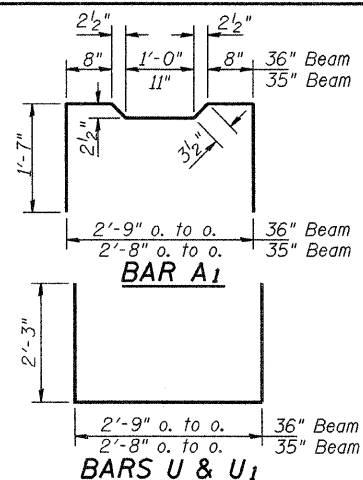
SHEET NO. 2  
3 SHEETS

Contract Number: 74290



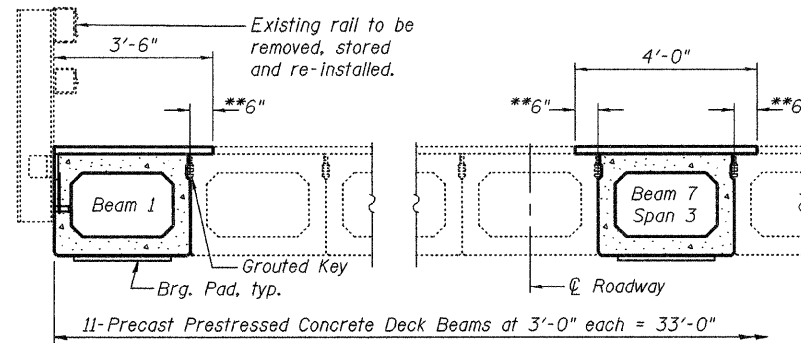
**FABRIC BEARING PAD**  
(Expansion similar without holes)

**FABRIC ADJUSTING SHIM**  
(Expansion similar without holes)



**BAR A1**

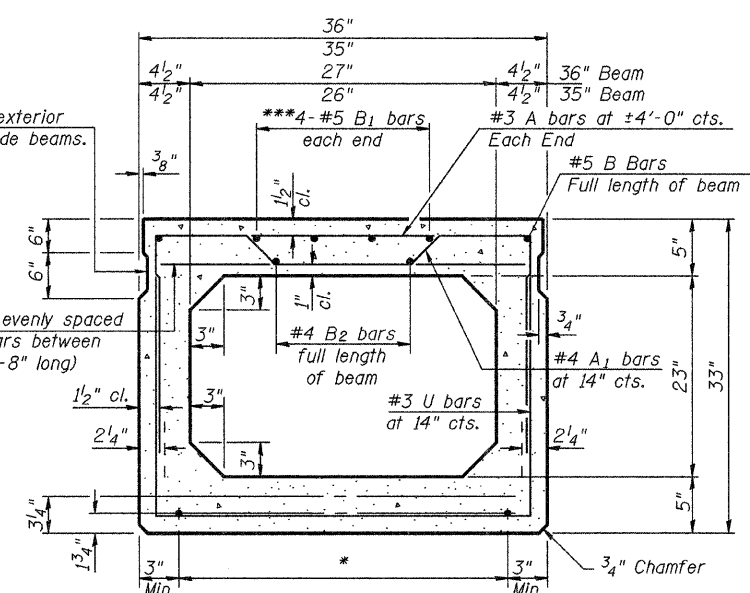
**BARS U & U1**



**HALF CROSS SECTION**

Omit key on exterior face of outside beams.

2-#3 A bars evenly spaced between A1 bars between end blocks (2'-8" long)



**TYPICAL SECTION**

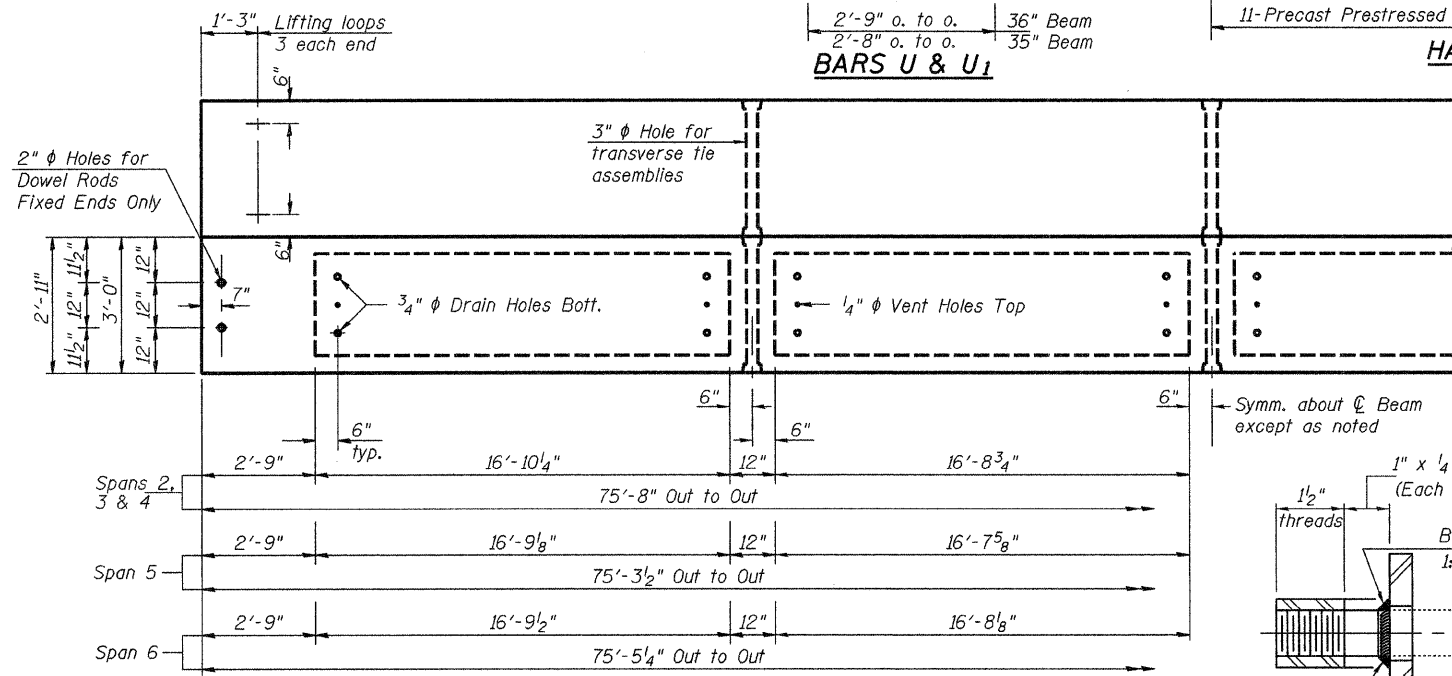
1/2"  $\phi$  Strands, Each Strand Stressed to 30,900 Lbs.  
8-Strands 1 3/4" up, 5-Strands 3/4" up, 2-Strands 6" up, 2-Strands 9" up

6" x 6" x 16 1/2" Blockout to be filled with Class BS Concrete after Beams have been installed. Cost shall be included in the cost of PPC Deck Beams.

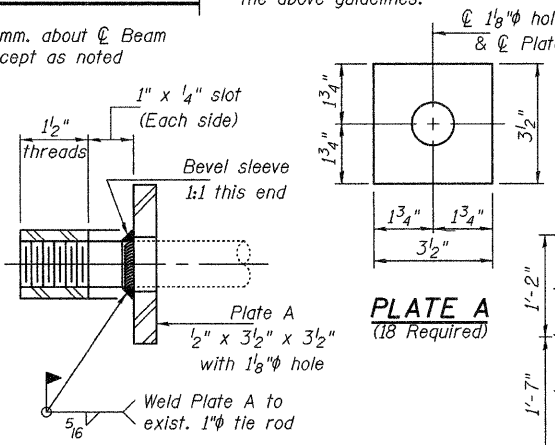
**\* TRANSVERSE PLACEMENT GUIDELINES**

1. Place strands symmetrically about centerline of beam.
2. The minimum distance from center to center of strands in all directions shall be 2".
3. The minimum clearance from strand to dowel hole shall be 1/2".
4. The minimum clearance from strand to void shall be 1/2".

Vertical placement of strands shall not be adjusted to satisfy the above guidelines.



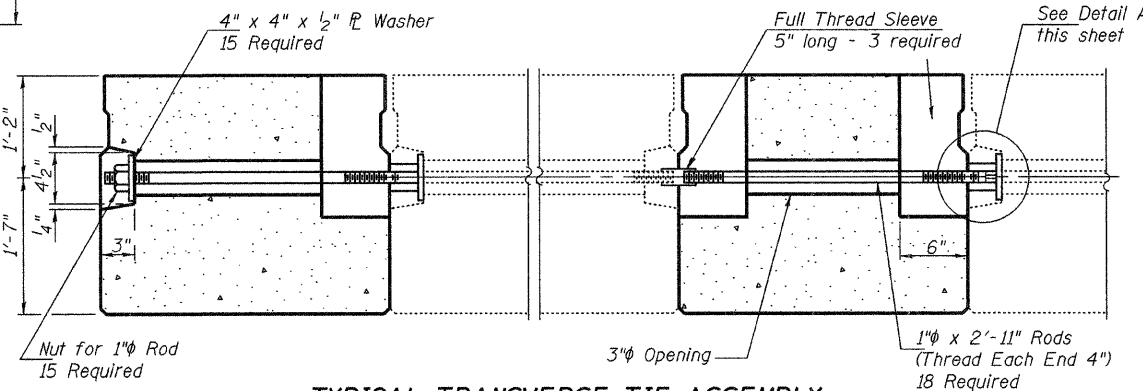
**PLAN**



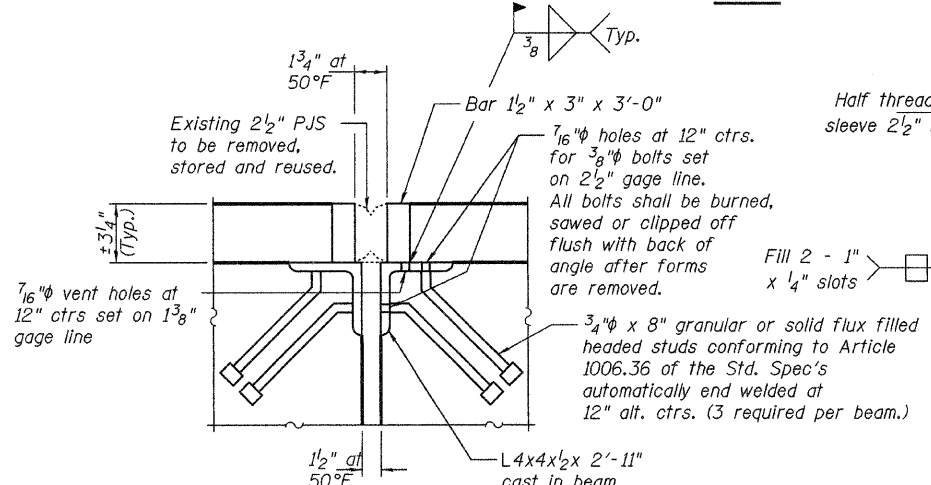
**SECTION A-A**

**ELEVATION NEW JOINT R TO EXISTING JOINT R**

Cost included with PPC Deck Beams.



**TYPICAL TRANSVERSE TIE ASSEMBLY**



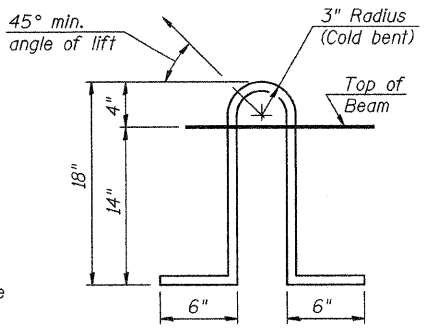
**JOINT DETAIL - PIERS 2 & 4**

(Cost included with PPC Deck Beams)

**DETAIL A**

**NOTES**

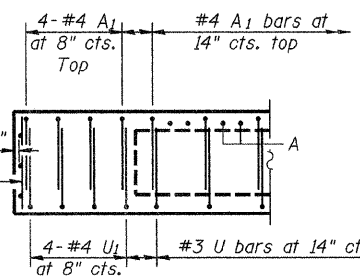
Prestressing steel shall be uncoated high strength, low relaxation 7-wire strand, Grade 270. The nominal diameter shall be 1/2" and the nominal cross-sectional area shall be 0.153 sq. in. Lifting loops shall be 3 - 1/2"  $\phi$  - 270 ksi strands, as shown. The 1"  $\phi$  rods in the transverse tie assembly shall be tightened to a snug fit and the threads set. Pockets that receive transverse tie bar on outside shall be filled with grout after transverse tie assembly is in place. Non prestressing steel shall conform to ASTM A 706 (IL MOD), Grade 60. The bearing seat surfaces shall be adjusted by shimming to assure firm and even bearing. Two 1/8" fabric adjusting shims of the dimensions shown shall be provided for each bearing. Keyway surfaces shall be cleaned to remove form oil or other bond breaking material prior to shipment of the beams. Cleaning shall be done by sandblasting the keyway areas between top of the beam and the bottom edge of the key. Corrosion Inhibitor, per Article 1020.05(b)(12) of the Standard Specifications, shall be used in the concrete for precast prestressed concrete deck beams. Required Release Strength, f'cl, shall be 4,000 p.s.i.



**LIFTING LOOP DETAIL**

**BILL OF MATERIAL**

Precast Prestressed Conc. Deck Bms.	Sq. Ft.	1354
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**END ELEVATION**

**BEAM DETAILS**

**S.B.I. RT. 1 / EMBARRAS RIVER  
LAWRENCE COUNTY  
SN 051-0006**

DESIGNED	A.T.H.
CHECKED	A.J.B.
DRAWN	Drew Christopher
CHECKED	A.T.H. A.J.B.

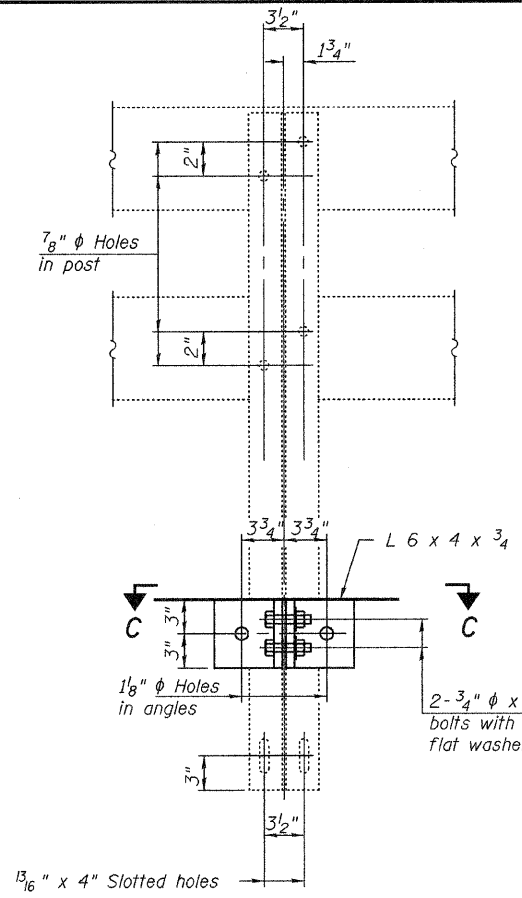
February 22, 2008  
EXAMINED *Carl Ramsey*  
REPAIR PLANS UNIT CHIEF  
PASSED *Ralph E. Anderson*  
ENGINEER OF BRIDGES AND STRUCTURES

PD-5-S 11-1-06

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.	SHEET NO. 3 3 SHEETS
		Lawrence	11	11	
FED. ROAD DIST. NO. 7	ILLINOIS		FED. AID PROJECT-		

Contract Number: 74290



SECTION B-B

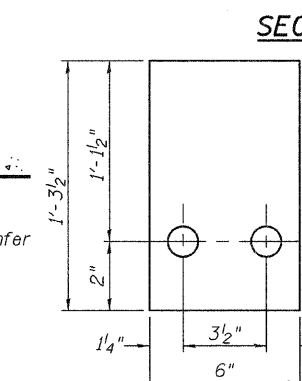
2- 3/4"  $\phi$  x 6" Round Head Bolts (With slot or approved recess in head) with locknut & flat washer. 7/8"  $\phi$  holes in hollow structural section may be drilled in the field.

2- 3/4"  $\phi$  x 3 3/4" H.S. bolts with hex nut & flat washers

2- 1"  $\phi$  x 3 3/4" AASHTO M-164 anchor bolts with flat washer and lockwasher

2- 5/8"  $\phi$  x 1 3/4" cap screws with flat washer

Cost of anchor devices and accessories are included with PPC Deck Beam (33" Depth)



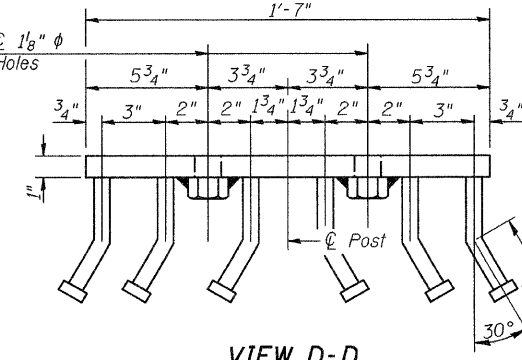
SECTION AT RAIL POST

Span	Span Length	11 Rail Post spaces at	End of Beam
Span 2	3'-4 1/2"	6'-4" = 69'-8"	2'-7 1/2"
Span 3	3'-10"	6'-3" = 68'-9"	3'-1"
Span 4	3'-1"	6'-3" = 68'-9"	3'-10"
Span 5	2'-3 1/2"	6'-4" = 69'-8"	3'-4"
Span 6	2'-11"	6'-4" = 69'-8"	2'-10 1/4"

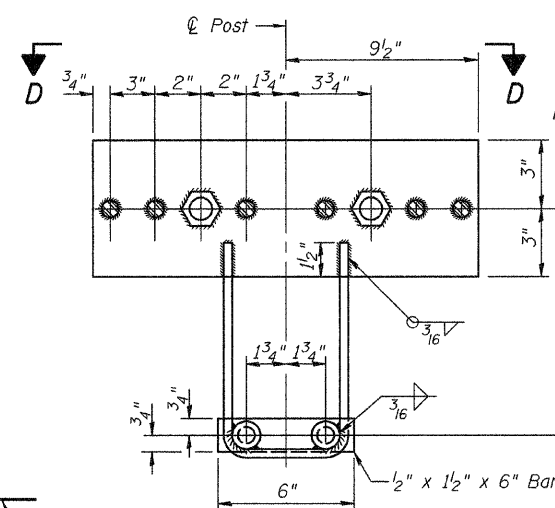
RAIL POST SPACING  
(Showing inside face of rail)

1/4" SHIM P

Notes:  
All field drilled holes shall be coated with an approved zinc rich paint before erection.  
For multi-span bridges, sufficient 1/4" x 6" x 1'-2" galvanized steel shims shall be provided to align rail between adjacent spans. Cost included with Furnishing and Erecting Structural Steel.  
All steel rail members shall be galvanized according to Article 509.05 of the Standard Specifications.  
Cost of anchor devices and accessories and the cost of removing and reinstalling rail is included with Furnishing and Erecting Structural Steel.  
\*\*\*The studs of the anchor devices shall be placed below the top reinforcement bars and the outermost longitudinal reinforcement bar shall be placed directly above the studs of the rail post anchor device.

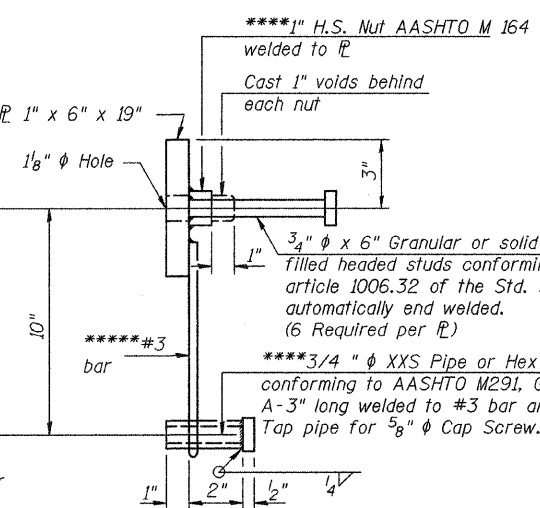


VIEW D-D

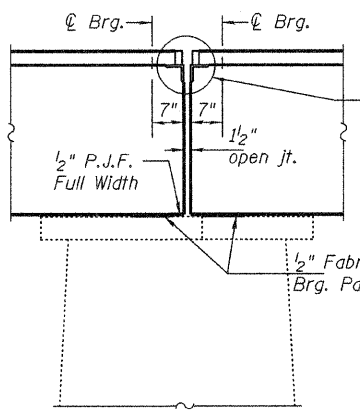


ANCHOR DEVICE

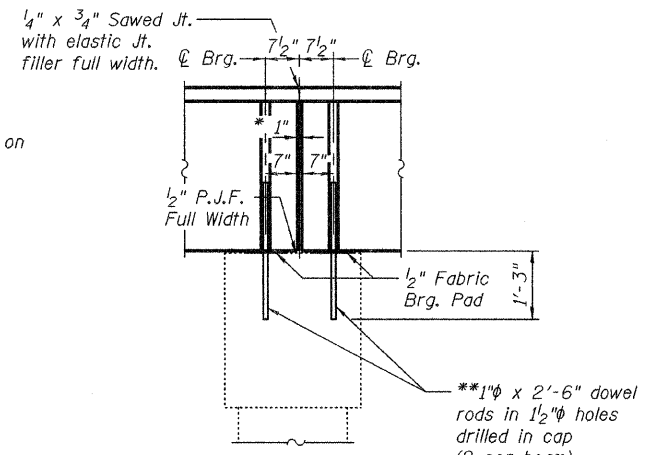
\*\*\*\*Threaded areas shall be plugged or blocked off during casting of beam. Galvanized after fabrication.



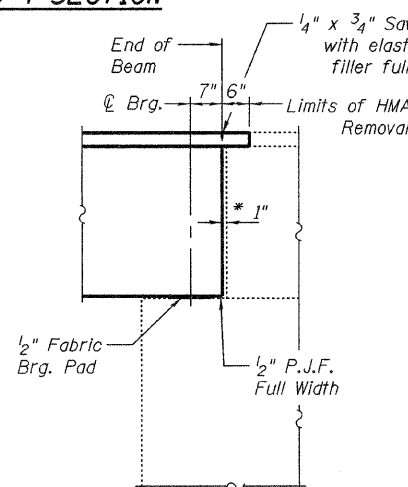
PIER 1 SECTION



PIER 2 AND 4 SECTION



PIER 3 AND 5 SECTION



TYPICAL NORTH  
ABUTMENT SECTION

\*1" Joint shall be filled with non-shrink grout. Dimension may vary to accommodate tolerance in beam lengths.  
\*\*Existing dowel rods are to be burned off, ground flush, and sealed with epoxy prior to placement of new beams. Cost included in Removal of Existing PPC Deck Beams. After beams have been erected holes shall be drilled into cap and dowel rods placed. Dowel holes shall be filled with non-shrink grout to top of beam and allowed to cure a minimum of 24 hours prior to grouting the shear keys.

BEAM AND RAIL DETAILS  
S.B.I. RT. 1 / EMBARRAS RIVER  
LAWRENCE COUNTY  
SN 051-0006

DESIGNED	A.T.H.	February 22, 2008
CHECKED	A.J.B.	EXAMINED <i>Carl Francis</i>
DRAWN	Drew Christopher	PASSED <i>Ralph E. Anderson</i>
CHECKED	A.T.H. A.J.B.	ENGINEER OF BRIDGES AND STRUCTURES