

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

**PROPOSED
HIGHWAY PLANS**

F.A.P. ROUTE 782 (IL ROUTE 1)
SECTION 1151-2
PROJECT: ACBHF-0702(012)
P.P.C. DECK BEAM REPLACEMENT
HARDIN COUNTY

C-99-040-10

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
782	1151-2	HARDIN	8	1
ILLINOIS			CONTRACT NO. 78183	

INDEX OF SHEETS

SHEET	DESCRIPTION
1	COVER SHEET, INDEX OF SHEETS, STANDARDS
2	GENERAL NOTES, HOT-MIX ASPHALT DESIGN, PAVEMENT MARKING, SIGNATURES
3	SUMMARY OF QUANTITIES
4	PLAN AND ELEVATION
5, 6	BEAM DETAILS
7	REPAIR DETAILS
8	TEMPORARY CONCRETE BARRIER

STANDARDS

- 701201-03 LANE CLOSURE, 2L, 2W, DAY ONLY, FOR SPEEDS >= 45 MPH
- 701321-10 LANE CLOSURE, 2L, 2W, BRIDGE REPAIR WITH BARRIER
- 701901-01 TRAFFIC CONTROL DEVICES
- 704001-06 TEMPORARY CONCRETE BARRIER

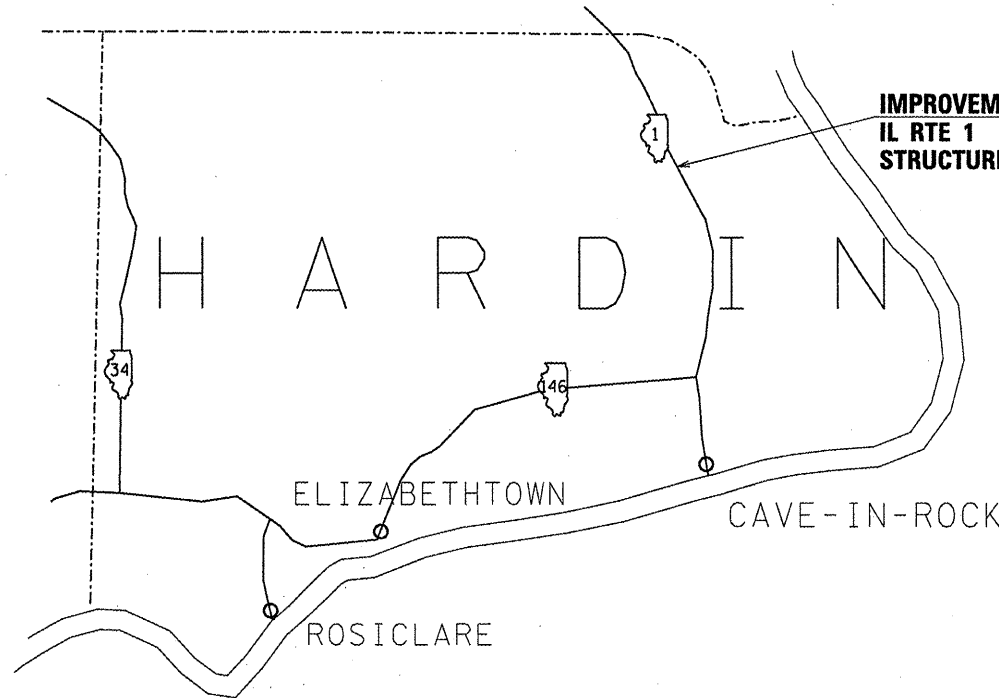
ILLINOIS TOWNSHIP: ROCK CREEK
2009 ADT = 1300
TRUCKS = 22%
POSTED SPEED = 55 MPH

INVENTORY RATING: 16.6
OPERATING RATING: 17.7

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

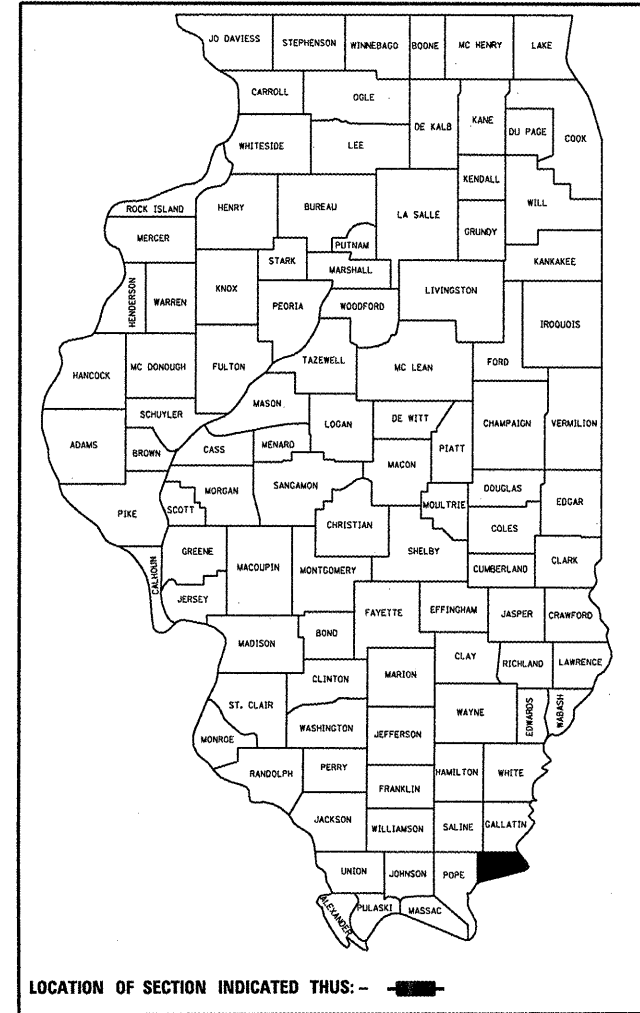
PROJECT ENGINEER Dennis Hillebrenner
PROJECT MANAGER Richard Brasel

CONTRACT NO. 78183



IMPROVEMENT LOCATION
IL RTE 1
STRUCTURE 035-0002

D-99-040-10



LOCATION OF SECTION INDICATED THUS: - [thick bar] -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

SUBMITTED Feb 1, 2010
Maria C. Lane
DEPUTY DIRECTOR OF HIGHWAYS, REGION ENGINEER

March 19, 2010
Scott E. Still, P.E.
ENGINEER OF DESIGN AND ENVIRONMENT

March 10, 2010
Christine M. Reed
DIRECTOR OF HIGHWAYS, CHIEF ENGINEER

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OF THE STATE OF ILLINOIS

MAP NOT TO SCALE
NET LENGTH = 70 FT.

GENERAL NOTES

THE THICKNESS OF HOT-MIX ASPHALT MIXTURE SHOWN ON THE PLANS IS THE NOMINAL THICKNESS. DEVIATIONS FROM THE NOMINAL THICKNESS WILL BE PERMITTED WHEN SUCH DEVIATIONS OCCUR DUE TO IRREGULARITIES IN THE EXISTING SURFACE OR BASE ON WHICH THE HOT-MIX ASPHALT MIXTURE IS PLACED.

THE ADVANCE DETECTOR LOOPS ARE TYPICALLY LOCATED 275 FEET IN ADVANCE OF THE STOP BAR. THE BUREAU OF OPERATIONS SHOULD APPROVE THE LOOP LOCATIONS PRIOR TO INSTALLATION.

THE CENTERLINE PAVEMENT MARKING SHOULD BE REMOVED FROM THE STOP BAR TO THE SAND ATTENUATORS OR DRUMS.

ANY TIME THE CONCRETE BARRIER IS NOT IN THE PROPER POSITION, FLAGGERS SHALL BE IN PLACE TO CONTROL TRAFFIC, AND THE TEMPORARY TRAFFIC SIGNALS SHALL BE SET TO FLASH ALL RED.

TRAFFIC CONTROL SIGNS SHALL BE PLACED SO THAT THEY DO NOT INTERFERE WITH EXISTING SIGNS THE DIMENSIONS BETWEEN SIGNS MAY BE MODIFIED SLIGHTLY SO AS TO AVOID CONFLICTS WITH EXISTING SIDEROADS, COMMERCIAL ENTRANCES, AND PRIVATE ENTRANCES. THE BUREAU OF OPERATIONS SHOULD APPROVE FINAL PLACEMENT OF TRAFFIC CONTROL SIGNING.

WHILE SIGNAL HEADS ARE MOUNTED IN PLACE, BUT NOT YET IN OPERATION, THEY SHALL BE SECURELY COVERED IN WHITE PLASTIC.

FACTORS USED FOR ESTIMATING PLAN QUANTITIES ARE AS FOLLOWS AND SHALL NOT BE USED FOR THE BASIS OF FINAL QUANTITIES:

ALL HOT-MIX ASPHALT	2.016 TONS/CU. YD.
ALL AGGREGATE	2.05 TONS/CU. YD.
BITUMINOUS MATERIALS:	
ON PAVEMENT	0.09 GAL./SQ. YD.
INTERMEDIATE LIFTS (FOG COAT)	0.04 GAL./SQ. YD.
ON AGGREGATE SURFACE	0.32 GAL./SQ. YD.
AGGREGATE (PRIME COAT)	0.0015 TONS/SQ. YD.

HOT-MIX ASPHALT MIX DESIGN

LOCATION:	HOT MIX ASPHALT SURFACE COURSE
MIXTURE USE(S):	HOT-MIX ASPHALT SURFACE COURSE, MIX C, N90
AC/PG:	PG64-22
RAP % (MAX):	10
DESIGN AIR VOIDS:	4.0%, 90 GYRATION DESIGN
MIXTURE COMPOSITION: (GRADATION MIXTURE)	IL - 9.5 mm OR IL - 12.5
FRICITION AGGREGATE:	C SURFACE

PAINT PAVEMENT MARKING - LINE 4"

YELLOW	913 FT.
--------	---------

Prepared By:	<i>Joe Mansueto</i> DISTRICT STUDIES & PLANS ENGINEER
Examined By:	<i>Leslie</i> DISTRICT LAND ACQUISITION ENGINEER
Examined By:	<i>Carrie</i> DISTRICT PROGRAM DEVELOPMENT ENGINEER
Examined By:	<i>Keith</i> DISTRICT OPERATIONS ENGINEER
Examined By:	<i>Joe</i> DISTRICT CONSTRUCTION ENGINEER
Examined By:	<i>Bruce W. Peckley</i> DISTRICT MATERIALS ENGINEER
Examined By:	<i>Joe</i> DISTRICT PROJECT IMPLEMENTATION ENGINEER
Examined By:	<i>Tommy</i> ASSISTANT REGIONAL ENGINEER
Approved By:	<i>Mary C. Lamsie</i> DEPUTY DIRECTOR OF HIGHWAYS, REGION 5 ENGINEER
	FEB 1 2010 DATE

SUMMARY OF QUANTITIES

*80% FED.
20% STATE*

CONSTRUCTION TYPE CODE:		SFTY-2A	
		HARDIN COUNTY	
CODE NO.	ITEM DESCRIPTION	UNIT	QUANTITY
40603320	HOT-MIX ASPHALT SURFACE COURSE, MIX "C", N90	TON	7.0
44001005	HOT-MIX ASPHALT SURFACE REMOVAL	SQ YD	8.0
50400605	PRECAST PRESTRESSED CONCRETE DECK BEAMS (33" DEPTH)	SQ FT	203
58100200	WATERPROOFING MEMBRANE SYSTEM	SQ YD	31.1
58300100	PORTLAND CEMENT MORTAR FAIRING COURSE	FOOT	139
67100100	MOBILIZATION	L SUM	1
70100405	TRAFFIC CONTROL AND PROTECTION, STANDARD 701321	EACH	1
70100450	TRAFFIC CONTROL AND PROTECTION, STANDARD 701201	L SUM	1
70106500	TEMPORARY BRIDGE TRAFFIC SIGNALS	EACH	1
70106705	TEMPORARY RUMBLE STRIP	FOOT	180
70106800	CHANGEABLE MESSAGE SIGN	CAL MO	2
70301000	WORK ZONE PAVEMENT MARKING REMOVAL	SQ FT	188
70400100	TEMPORARY CONCRETE BARRIER	FOOT	280
* 78001110	PAINT PAVEMENT MARKING - LINE 4"	FOOT	913
X0320047	REMOVAL OF EXISTING PRECAST PRESTRESSED CONCRETE DECK BEAMS	SQ FT	208
Z0001900	ASBESTOS BEARING PAD REMOVAL	EACH	1
Z0030250	IMPACT ATTENUATORS, TEMPORARY (NON-REDIRECTIVE), TEST LEVEL 3	EACH	2

**Specialty Items*

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

GENERAL NOTES

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

Plan dimensions and details relative to existing plans are subject to nominal construction 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 at the unit price bid for the work.

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.

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.

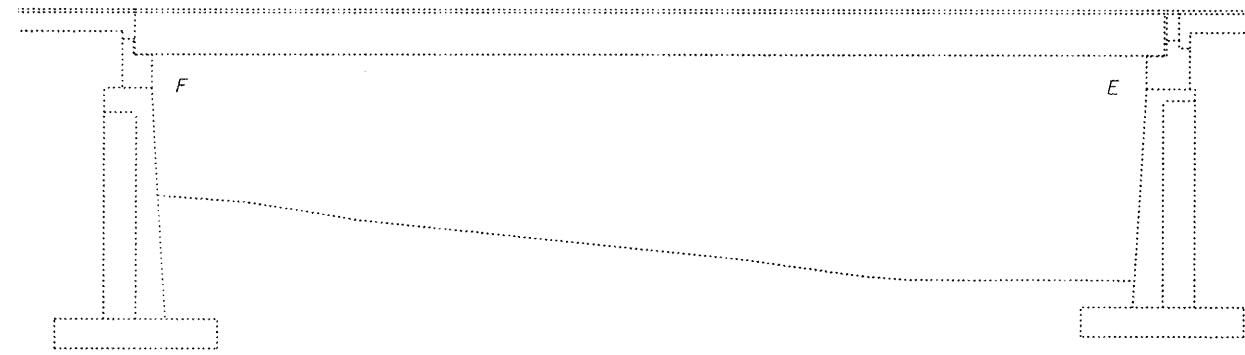
Any damage done to the bridge during beam removal shall be repaired by the Contractor. Cost to be included in the cost of Removal of Existing PPC Deck Beams.

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

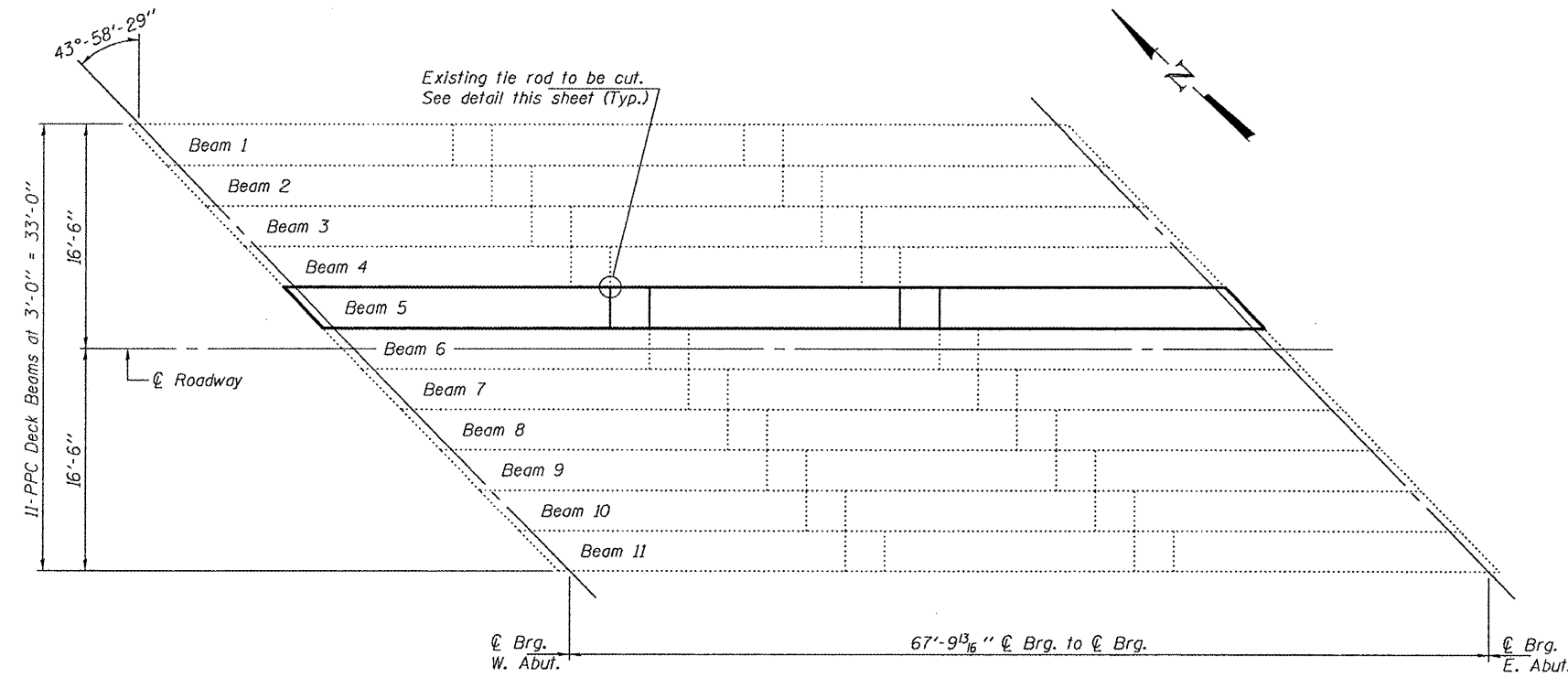
Temporary concrete barrier shall only be anchored into the overlay and not into the PPC Deck Beams.

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

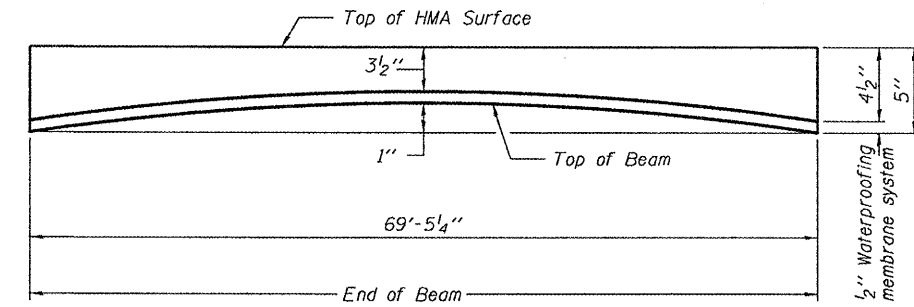
Reinforcement bars designated (E) shall be epoxy coated.



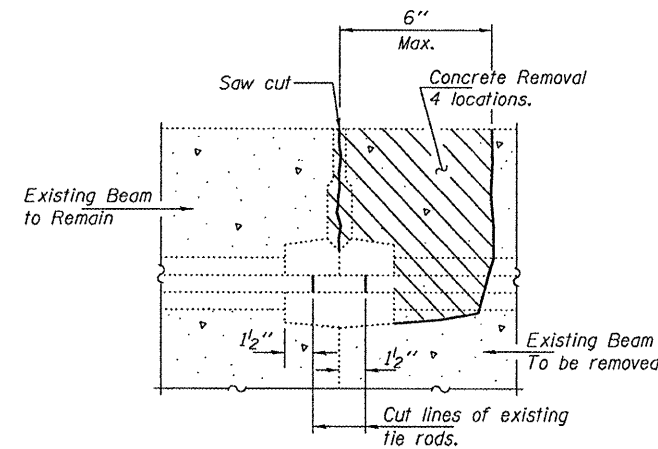
ELEVATION



PLAN



ANTICIPATED INITIAL CAMBER DIAGRAM



BEAM REMOVAL DETAIL
AT TRANSVERSE TIES

DESIGN STRESSES

PRECAST PRESTRESSED UNITS
 $f'_c = 6,000$ psi
 $f'_{ci} = 5,000$ psi
 $f'_s = 270,000$ psi ($1/2$ " ϕ low lax strands)
 $f'_{si} = 201,960$ psi ($1/2$ " ϕ low lax strands)
 $f_y = 60,000$ psi (Reinforcement)

TOTAL BILL OF MATERIAL

ITEM	UNIT	QUANTITY
Removal of Existing PPC Deck Beams	Sq. Ft.	208
Precast Prestressed Concrete Deck Beams (33" Depth)	Sq. Ft.	203
Hot-Mix Asphalt Surface Removal	Sq. Yd.	8.0
HMA Surface Course Mix "C" N90	Tons	7.0
PC Mortar Fairing Course	Foot	139
Waterproofing Membrane System	Sq. Yd.	31.1
Asbestos Bearing Pad Removal	Each	1

PLAN & ELEVATION
IL ROUTE 1 OVER ROCK CREEK
SN 035-0002

DESIGNED	<i>Alvin J. Holloway</i>
CHECKED	<i>[Signature]</i>
DRAWN	Kyle M. Steffen
CHECKED	<i>ATH</i>

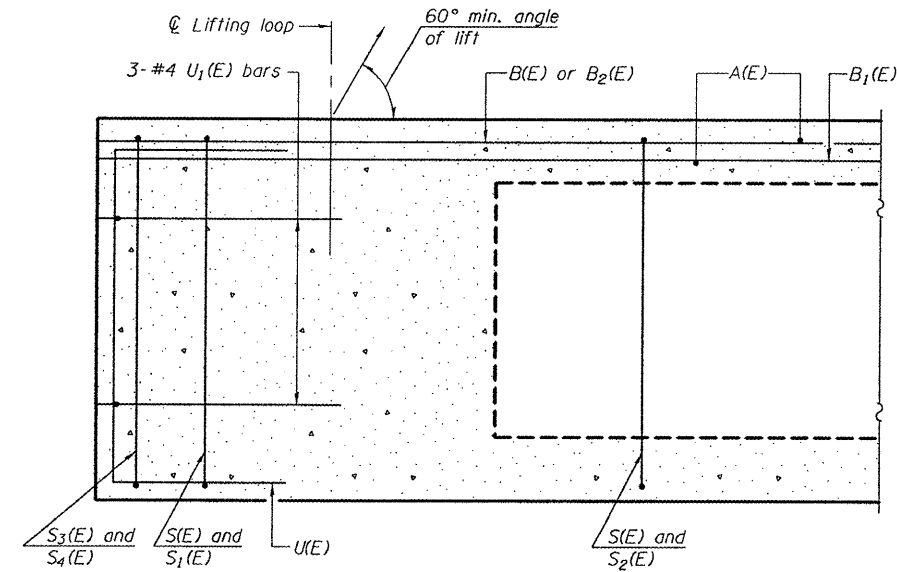
EXAMINED	<i>[Signature]</i>	FEBRUARY 11, 2010
PASSED	<i>Ralph E. Anderson</i>	ENGINEER OF BRIDGES AND STRUCTURES



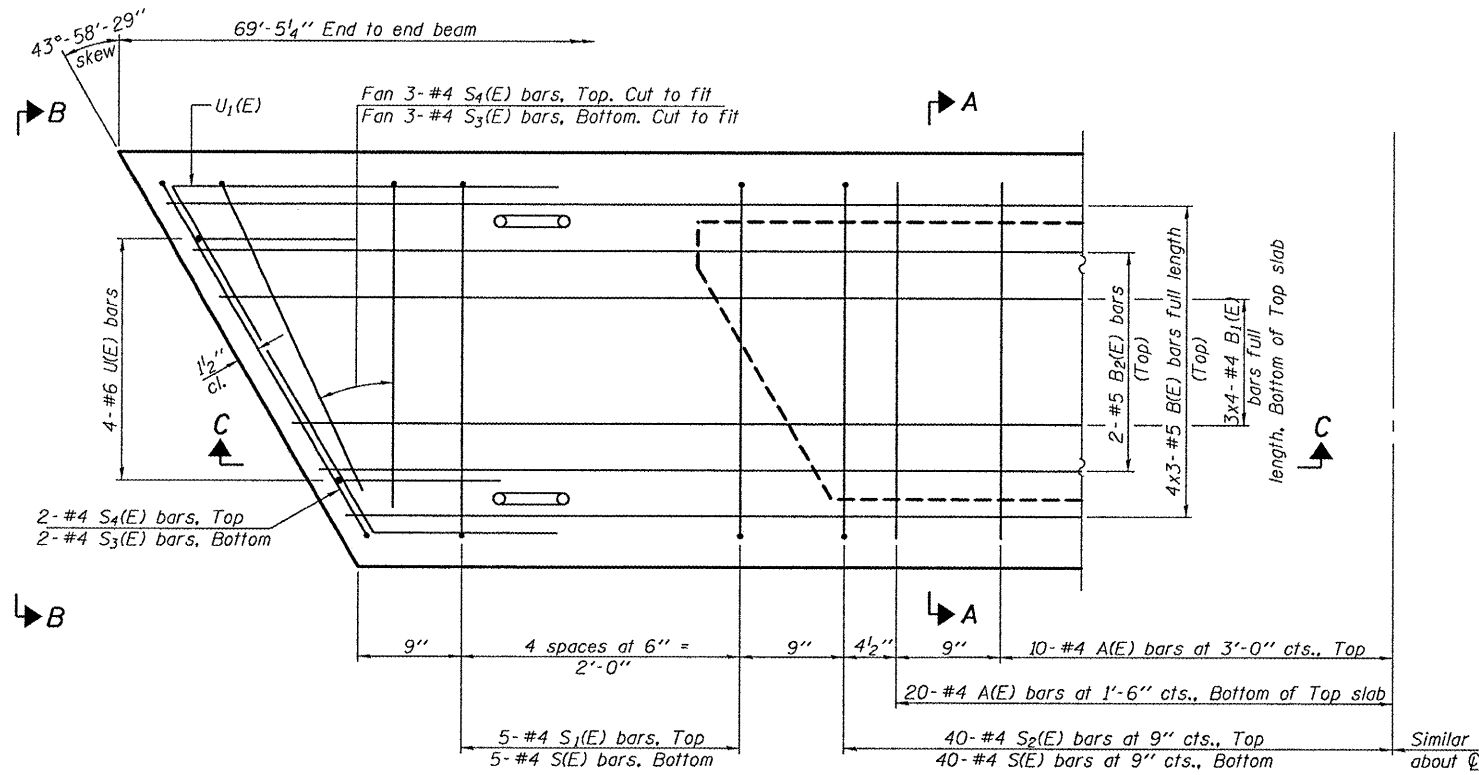
Expires: November 30, 2010

SHEET NO. 1 4 SHEETS	F.A.P. RTE. 782	SECTION 1151-2	COUNTY HARDIN	TOTAL SHEETS 8	SHEET NO. 4
	CONTRACT NO.				
FED. ROAD DIST. NO.		ILLINOIS	FED. AID PROJECT		

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

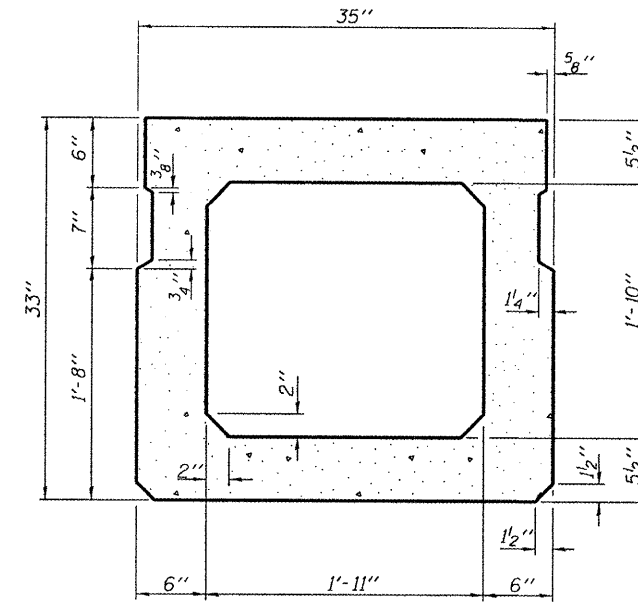


SECTION C-C

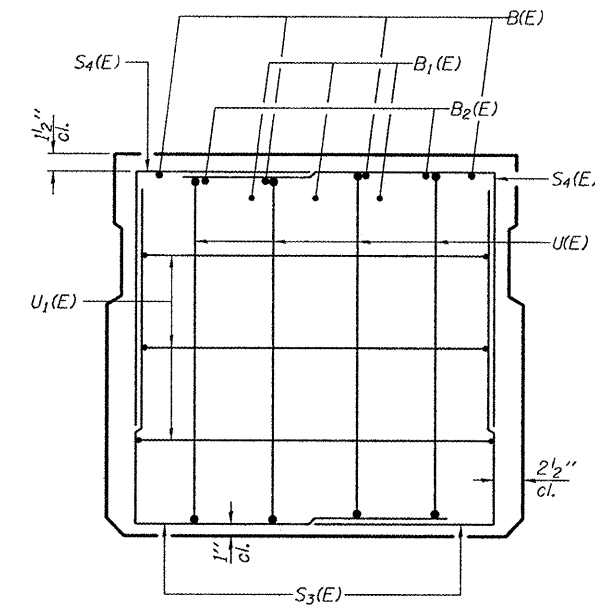


PLAN VIEW

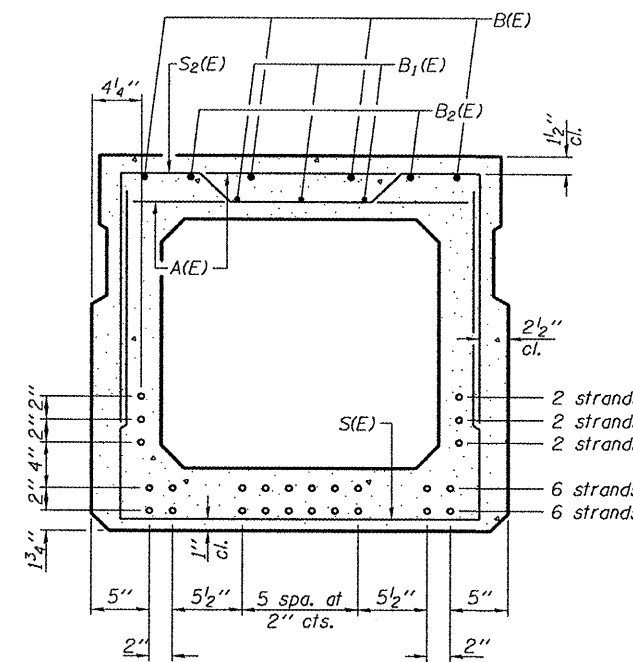
Note: Spacing of S(E) and S₂(E) bars may be adjusted up to 4" in the immediate area of the transverse tie diaphragms to miss the block outs for the transverse ties.



SECTION A-A
(Showing dimensions)



VIEW B-B



SECTION A-A
(Showing reinforcement and permissible strand locations)

Note: Place the number of strands specified in each row symmetrically about the centerline of beam in the permissible strand locations shown.

MIN. BAR LAPS

#4 = 1'-8"
#5 = 2'-2"

BAR LIST
ONE BEAM ONLY
(For information only)

Bar	No.	Size	Length	Shape
A(E)	60	#4	2'-6"	—
B(E)	12	#5	24'-7"	—
B ₁ (E)	12	#4	18'-7"	—
B ₂ (E)	4	#5	14'-0"	—
S(E)	90	#4	7'-4"	┌
S ₁ (E)	10	#4	6'-2"	┌
S ₂ (E)	80	#4	6'-5"	┌
S ₃ (E)	10	#4	5'-10"	┌
S ₄ (E)	10	#4	5'-3"	┌
U(E)	8	#6	4'-11"	┌
U ₁ (E)	6	#4	8'-2"	┌

Note: See sheet 3 of 4 for additional details and Bill of Material.
Bars indicated thus 4 x 3-#5 etc. indicates 4 lines of bars with 3 lengths per line.

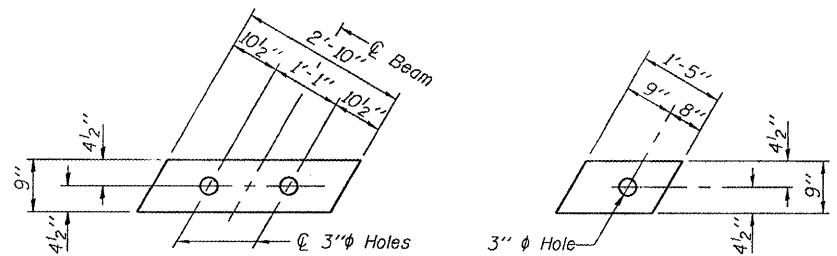
BEAM DETAILS
IL ROUTE 1 OVER ROCK CREEK
SN 035-0002

DESIGNED	ATH
CHECKED	GGE
DRAWN	Kyle M. Steffen
CHECKED	ATH GGE

FEBRUARY 11, 2010
EXAMINED *Carl P. ...*
ENGINEER OF STRUCTURAL SERVICES
PASSED *Ralph E. Anderson*
ENGINEER OF BRIDGES AND STRUCTURES

SHEET NO. 2	F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
	782	1151-2	HARDIN	8	5
4 SHEETS	CONTRACT NO.				
FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT					

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



FABRIC BEARING PAD

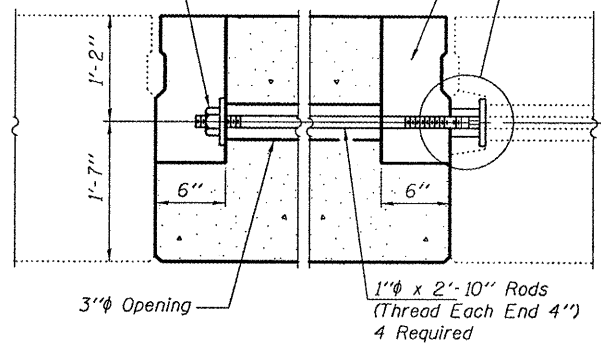
FABRIC ADJUSTING SHIM

FIXED

Note: Omit holes when using expansion bearings.

6" x 6" x 16 1/2" Blockouts to be filled with non-shrink grout as specified in the special provision Concrete Deck Beams (Min. compressive strength at 7 days = 6,000 psi) after beams have been installed. Cost shall be included in the cost of Precast Prestressed Concrete Deck Beams (33" Depth). (Typ.)

Nut for 1" Rod with 4" x 4" x 1/2" Washer (4 Required) See Detail A this sheet



TYPICAL TRANSVERSE TIE ASSEMBLY

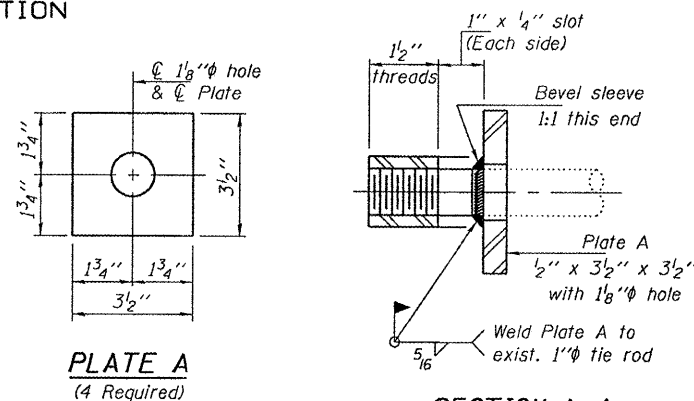
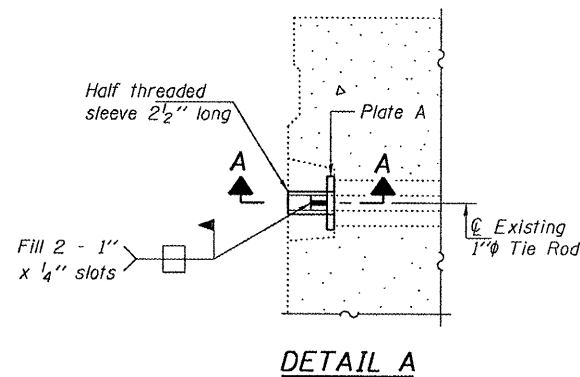


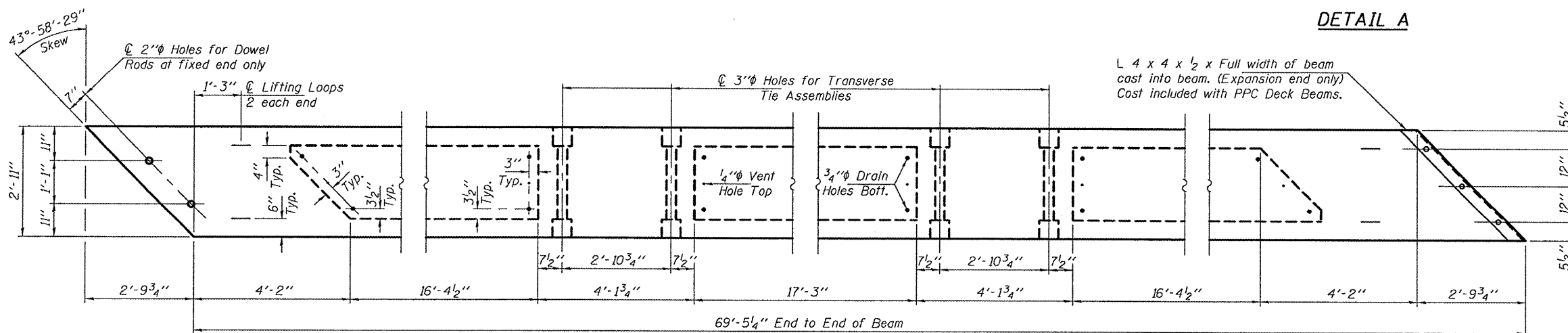
PLATE A
(4 Required)

SECTION A-A
(4 Required)



DETAIL A

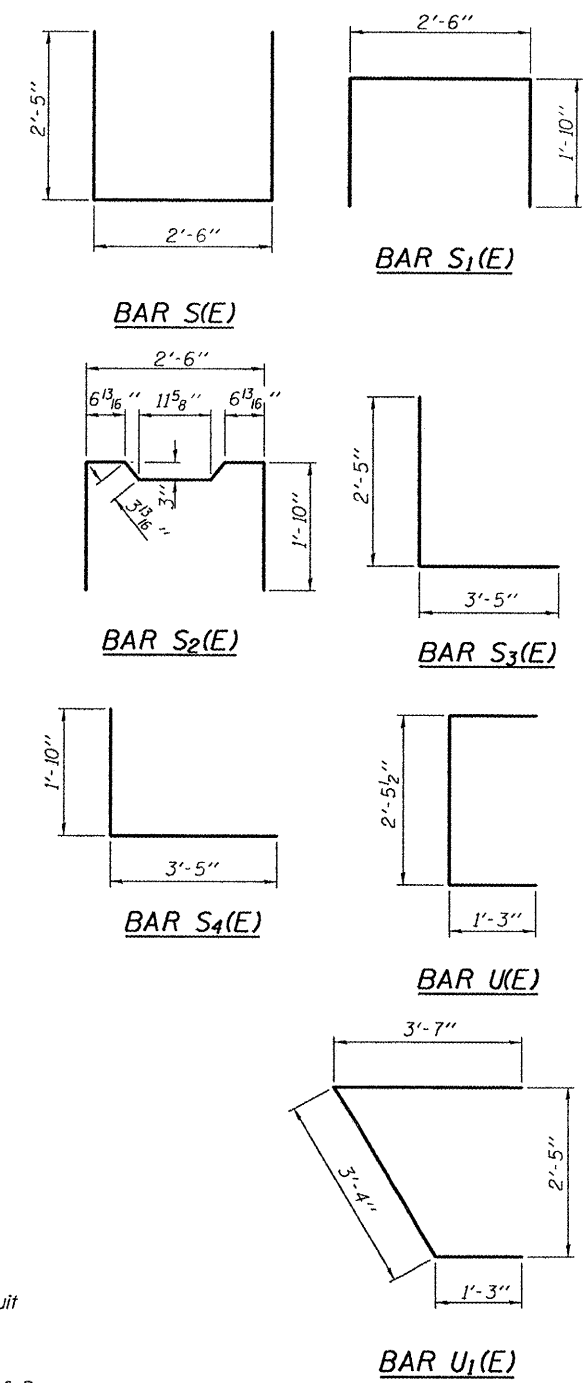
L 4 x 4 x 1/2 x Full width of beam cast into beam. (Expansion end only) Cost included with PPC Deck Beams.



BEAM PLAN

NOTES

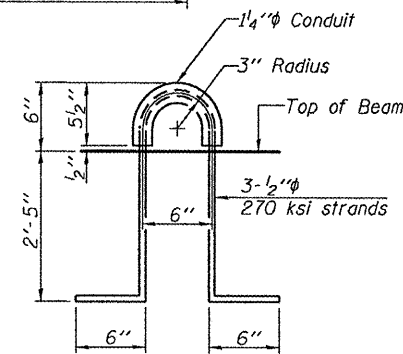
Prestressing steel shall be uncoated high strength, low relaxation 7-wire strand, Grade 270. The nominal diameter shall be 1/2" and the nominal cross-sectional area shall be 0.153 sq. in. The 1" rods in the transverse tie assembly shall be tightened to a snug fit and the threads set. Pockets on exterior faces of bridge shall be filled with grout after transverse tie assembly is in place. Reinforcement bars shall conform to ASTM A 706, Grade 60. (See Special Provisions). Two 1/8" fabric adjusting shims of the dimensions shown shall be provided for each bearing pad location. A minimum 2 1/2" lifting pin shall be used to engage the lifting loops during handling. Corrosion Inhibitor, per Article 1020.05(b)(12) and 1021.06 of the Standard Specifications, shall be used in the concrete for precast prestressed concrete deck beams. Compressive strength of prestressed concrete, f'c, shall be 6000 psi. Compressive strength of prestressed concrete at release, f'ci, shall be 5000 psi.



BILL OF MATERIAL

Precast Prestressed Conc. Deck Bms. (33" depth)	Sq. Ft.	203
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**BEAM DETAILS
IL ROUTE 1 OVER ROCK CREEK
SN 035-0002**



LIFTING LOOP DETAIL

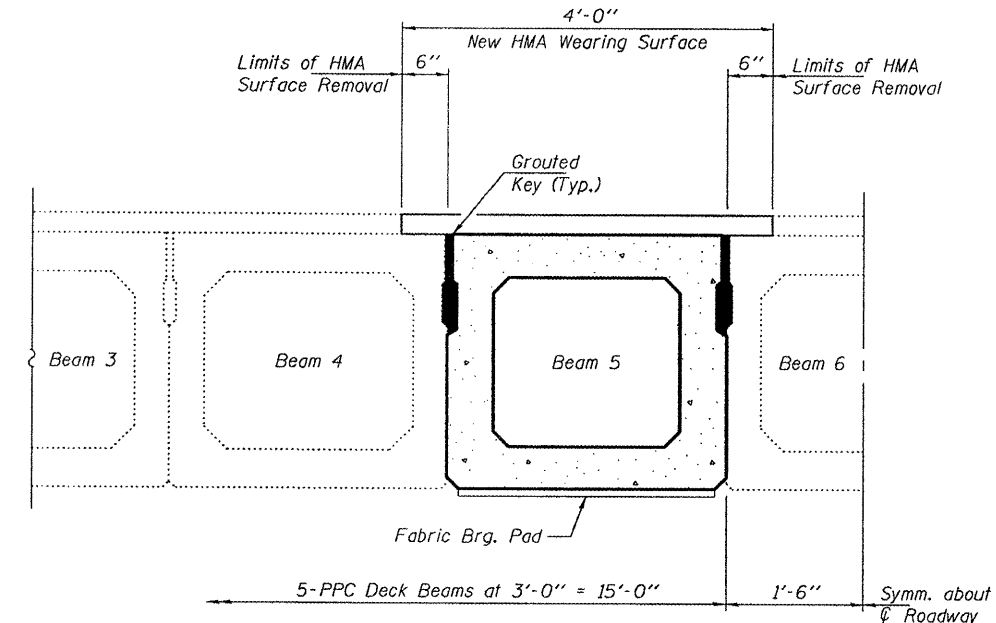
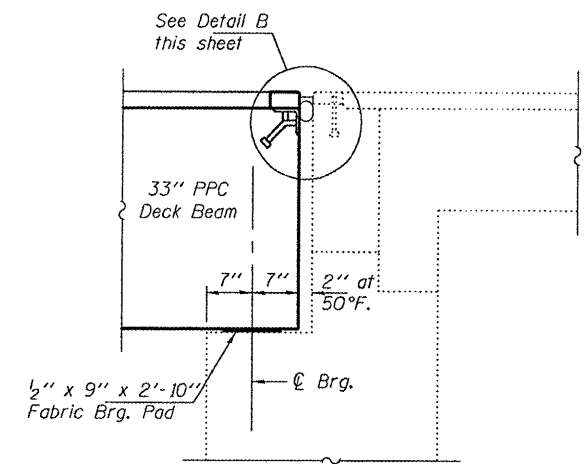
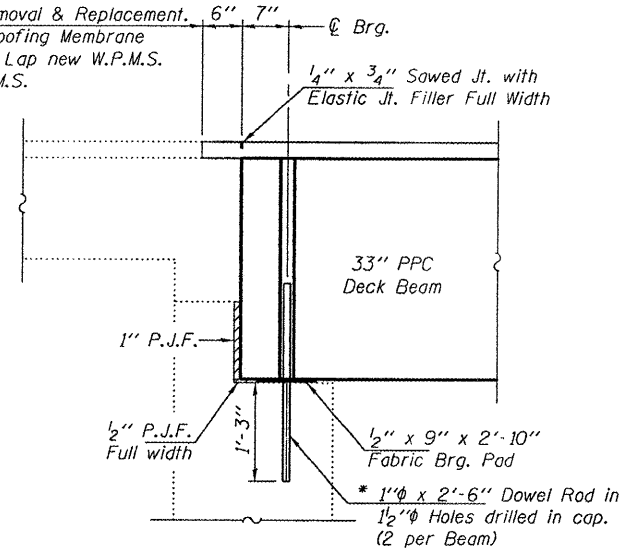
DESIGNED	ATH
CHECKED	GGE
DRAWN	Kyle M. Steffen
CHECKED	ATH GGE

FEBRUARY 11, 2010	
EXAMINED	<i>Carl Perry</i> ENGINEER OF STRUCTURAL SERVICES
PASSED	<i>Ralph E. Anderson</i> ENGINEER OF BRIDGES AND STRUCTURES

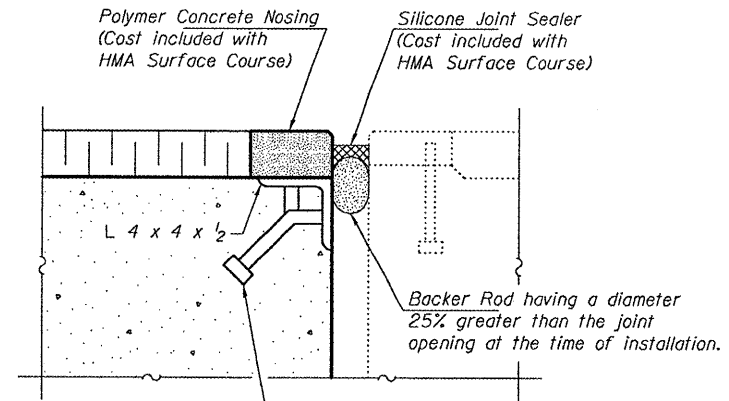
SHEET NO. 3 4 SHEETS	F.A.P. RTE. 782	SECTION 1151-2	COUNTY HARDIN	TOTAL SHEETS 8	SHEET NO. 6
	CONTRACT NO.				
FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT					

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

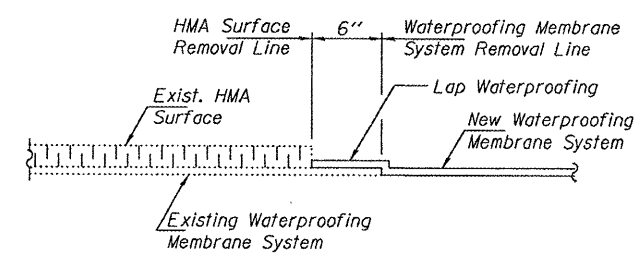
Limits of HMA Removal & Replacement. 6" 7" ϕ Brg.
Existing Water-Proofing Membrane System to remain. Lap new W.P.M.S. with existing W.P.M.S.



* 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.



$\frac{3}{4}$ " ϕ X 8" Granular or solid flux filled headed studs conforming to Article 1006.32 of the Std. Specs., automatically end welded. See sheet 3 of 4 for spacing.

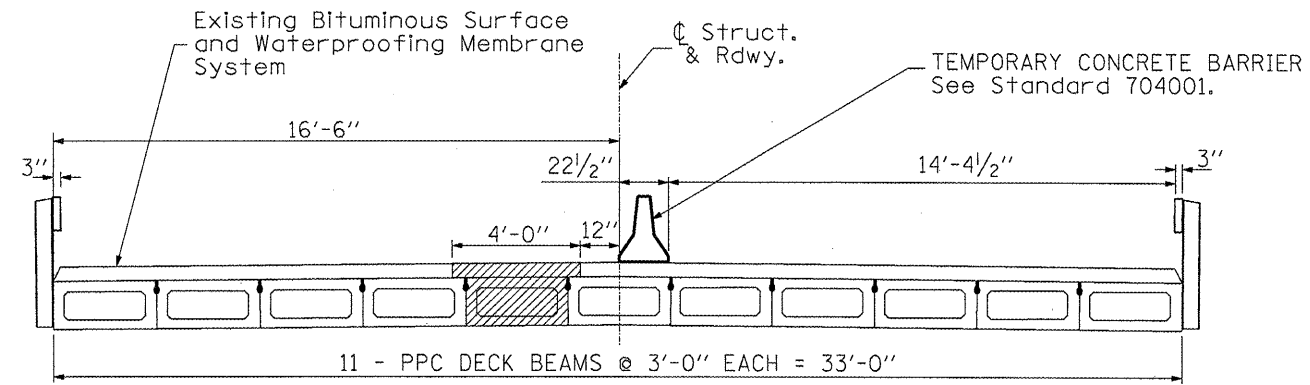


DESIGNED	ATH	FEBRUARY 11, 2010
CHECKED	GGE	EXAMINED <i>R. Carl Proyer</i> ENGINEER OF STRUCTURAL SERVICES
DRAWN	Kyle M. Steffen	PASSED <i>Ralph E. Anderson</i> ENGINEER OF BRIDGES AND STRUCTURES
CHECKED	ATH GGE	

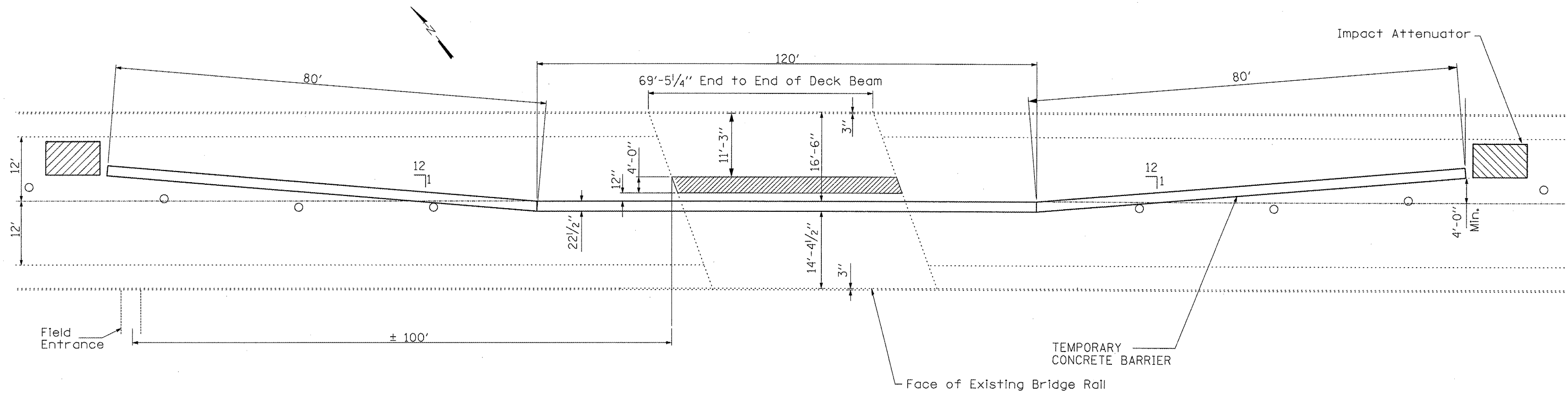
REPAIR DETAILS
IL ROUTE 1 OVER ROCK CREEK
SN 035-0002

SHEET NO. 4 4 SHEETS	F.A.P. RTE. 782	SECTION 115I-2	COUNTY HARDIN	TOTAL SHEETS 8	SHEET NO. 7
	CONTRACT NO.				
FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT					

SEE TRAFFIC CONTROL AND PROTECTION STANDARD 701321 FOR DETAILS NOT SHOWN.



**TEMPORARY CONCRETE BARRIER
LOOKING EAST**



PLAN - TEMPORARY CONCRETE BARRIER

P.P.C. Deck Beam Replacement

FILE NAME =	USER NAME = gautneyrk	DESIGNED -	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	SCALE: _____ SHEET NO. ____ OF ____ SHEETS STA. _____ TO STA. _____	F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
c:\p\work\p\WIDOT\GAUTNEYRK\d01579137883-sht-plan.dgn	DRAWN -	REVISED -	782			1151-2	HARDIN	8	8	
PLOT SCALE = 100.0000' / IN.	CHECKED -	REVISED -	CONTRACT NO. 78183							
PLOT DATE = 12/15/2009	DATE -	REVISED -	ILLINOIS FED. AID PROJECT							