

**CONSTRUCTION CODE**  
**VERMILION**  
**STRUCTURE**  
**IMPROVEMENT**  
**F.A.P. 840**  
**S.N. 092-0101**  
**STA. 858+22.89**  
**100% STATE**

CODE NO.	ITEM	UNIT	TOTAL QUANTITY	0047 RURAL
50102400	CONCRETE REMOVAL	CU YD	26.1	26.1
50300255	CONCRETE SUPERSTRUCTURE	CU YD	26.1	26.1
50300300	PROTECTIVE COAT	SQ YD	63.0	63.0
50500405	FURNISHING AND ERECTING STRUCTURAL STEEL	POUND	9,480.0	9,480.0
50800205	REINFORCEMENT BARS, EPOXY COATED	POUND	4,420.0	4,420.0
50800515	BAR SPLICERS	EACH	40.0	40.0
52000025	PREFORMED JOINT STRIP SEAL "	FOOT	204.0	204.0
52100520	ANCHOR BOLTS, 1"	EACH	8.0	8.0
<del>52100540</del>	<del>ANCHOR BOLTS, 1 1/2"</del>	<del>EACH</del>	<del>8.0</del>	<del>8.0</del>
67100100	MOBILIZATION	L SUM	1.0	1.0
70100405	TRAFFIC CONTROL AND PROTECTION, STANDARD 701321	EACH	1.0	1.0
70100450	TRAFFIC CONTROL AND PROTECTION, STANDARD 701201	L SUM	1.0	1.0
70106500	TEMPORARY BRIDGE TRAFFIC SIGNALS	EACH	1.0	1.0
70400100	TEMPORARY CONCRETE BARRIER	FOOT	837.5	837.5
70400200	RELOCATE TEMPORARY CONCRETE BARRIER	FOOT	837.5	837.5
70600250	IMPACT ATTENUATORS, TEMPORARY (NON- REDIRECTIVE), TEST LEVEL 3	EACH	2.0	2.0



MODEL: \\MODELS\MAME5  
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USER NAME = Jeff.Sherer	DESIGNED - JMS	REVISED - _____
DRAWN - JMS	CHECKED - _____	REVISED - _____
PLOT SCALE = 40.0000 ' / in.	DATE - 11/15/2022	REVISED - _____
PLOT DATE = 12/2/2022		

**STATE OF ILLINOIS**  
**DEPARTMENT OF TRANSPORTATION**

**SUMMARY OF QUANTITIES**

SCALE: NONE SHEET 1 OF 2 SHEETS STA. \_\_\_\_\_ TO STA. \_\_\_\_\_

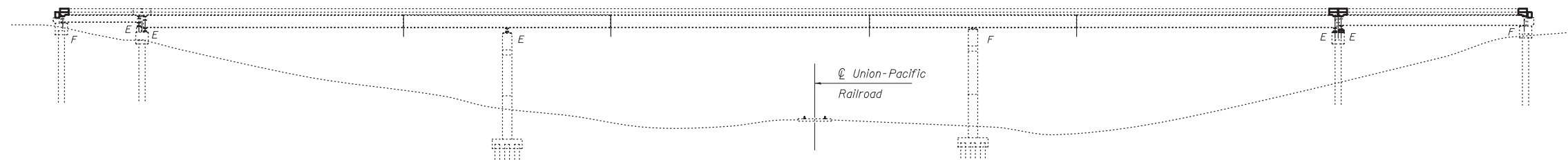
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
840	(122VB)BR	PIATT	25	3
CONTRACT NO. 70G07			ILLINOIS FED. AID PROJECT	

S.N. 092-0101 was built in 1941 as SBI 49, Section 122 VB at Station 858+18.23 in Vermilion County. It was reconstructed in 1980 as FA Route 840, Section 122VBR at Station 858+18.00. In 2008 the structure received new expansion joints and structural concrete repairs as FAP 840, Section (121,122)RS-3 and received Day Labor repairs in 2016 with DL 17FS04 consisting of new joints and steel repairs.

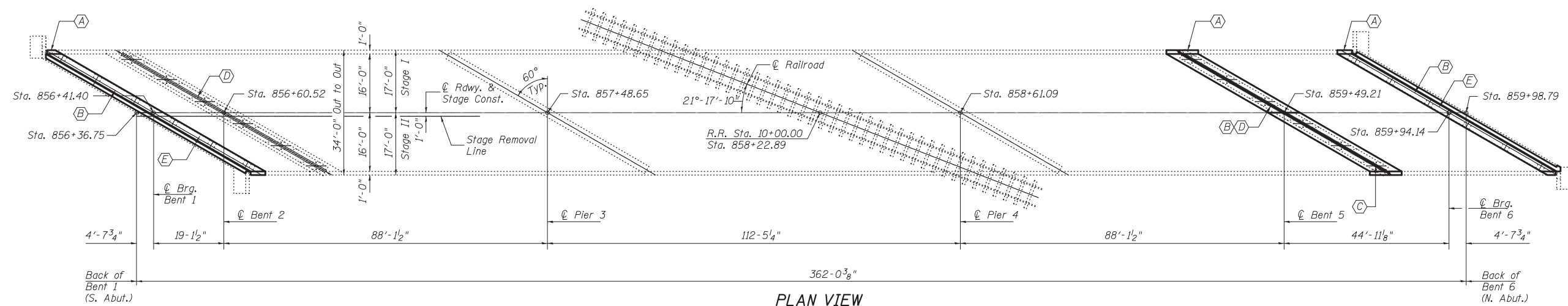
The structure has a back-to-back abutment length of 362'-0<sup>3</sup>/<sub>8</sub>", out-to-out width of 34'-0", bridge rdwy. width of 32'-0", and an approach rdwy. width of 32'-0".

See proposed improvements on this sheet.

Work shall be completed under staged construction.



ELEVATION VIEW



PLAN VIEW

- (A) - Remove existing Silicone Exp. Jt. and install Preformed Joint Strip Seal
- (B) - Remove and Replace Select Diaphragms at Bent(s) 1, 5, 6
- (C) - Remove and Replace Bearings at Bent 5
- (D) - Perform Structural Repair of Concrete (Depth Less than or Equal to 5") at Bent(s) 2 and 5
- (E) - Strengthen beam ends at bents 1 & 5

GENERAL NOTES

All structural steel shall be AASHTO M 270 Grade 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.

Fasteners shall be high strength bolts. Bolts 3/4"φ, open holes 13/16"φ, unless otherwise noted.

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

Reinforcement bars designated (E) shall be epoxy coated. Cost of removal and re-installation of all members necessary to complete work as detailed on the plans and as specified in the Special Provisions shall be included with furnishing and 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.

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

Existing reinforcement shall be cleaned, straightened and incorporated into the new construction. Any reinforcement bars that are damaged with during concrete removal shall be replaced with an approved bar splicer anchorage system. Cost included with Concrete Removal.

Joint openings shall be adjusted according to Article 520.04 of the Std. Specs. when the deck is poured at an ambient temperature other than 50°F.

TOTAL BILL OF MATERIAL

ITEM	UNIT	TOTAL
Concrete Removal	Cu. Yd.	26.1
Concrete Superstructure	Cu. Yd.	26.1
Protective Coat	Sq. Yd.	63.0
Furnishing & Erecting Structural Steel	Pound	9,480.0
Reinforcement Bars Epoxy Coated	Pound	4,420.0
Bar Splicers	Each	40.0
Preformed Joint Strip Seal	Foot	204.0
Jack and Remove Existing Bearing	Each	2.0
Structural Steel Removal	Pound	8,860.0
Structural Repair of Concrete (Depth Less than or Equal to 5")	Sq Ft	186.0
Structural Steel Repair	Pound	1,600.0
Anchor Bolts, 1" Diameter	Each	8.0
Temporary Shoring and Cribbing	Each	9.0



EXPIRES 11-30-2024

Jayne F. Schiff

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FILE: MAMES\_01.DWG

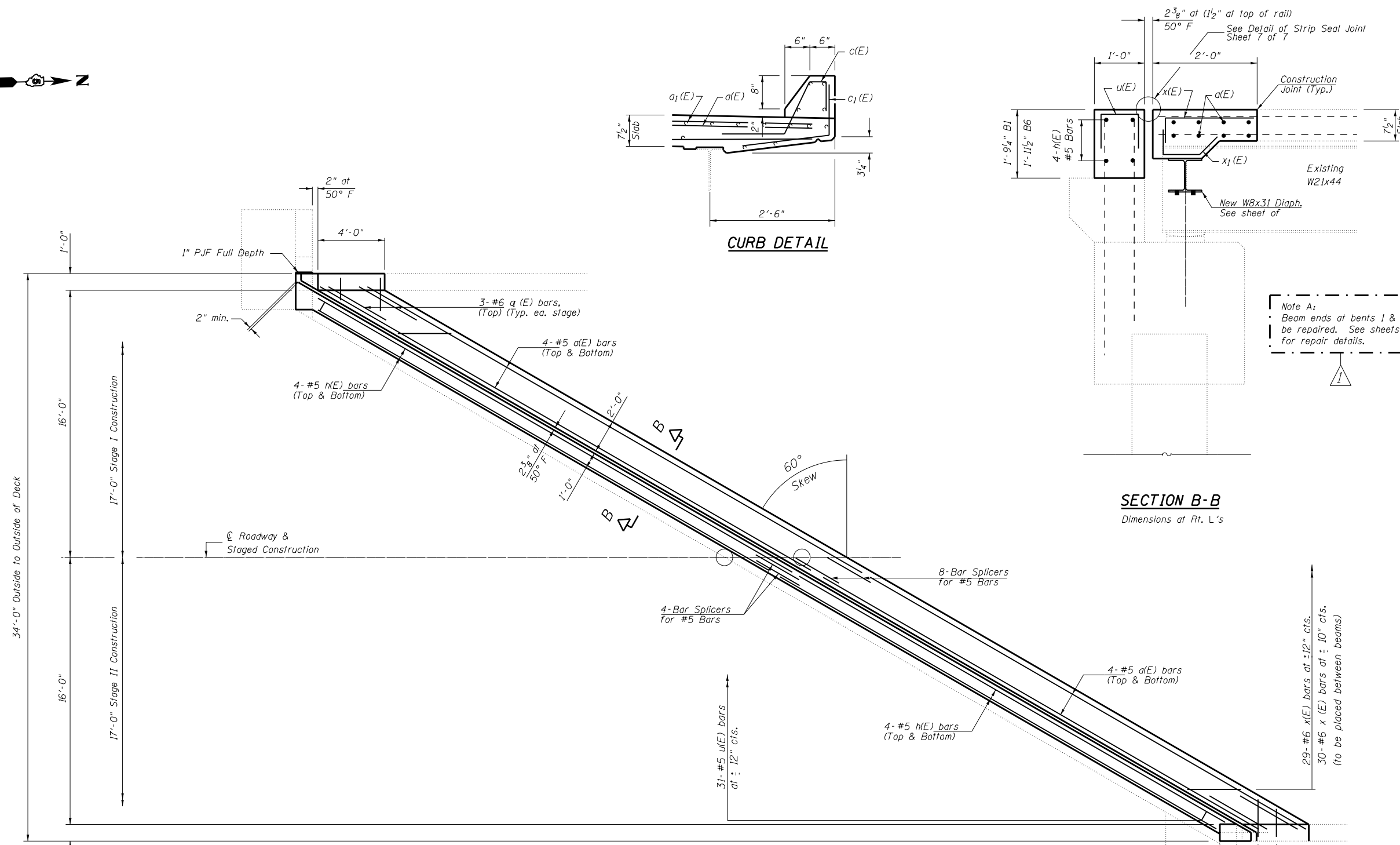
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STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

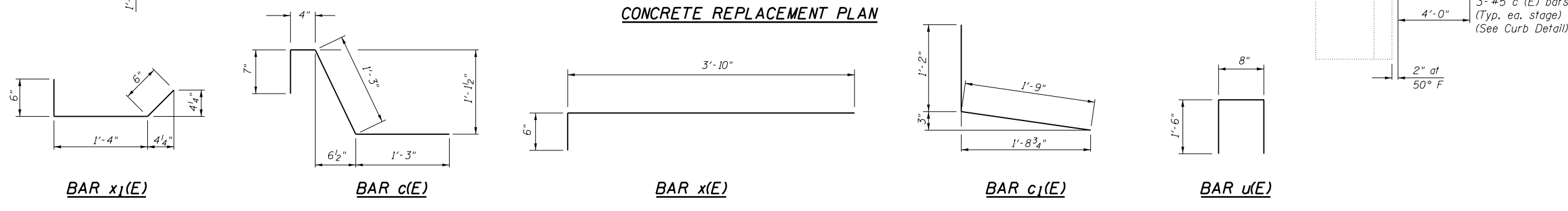
GENERAL PLAN & ELEVATION S.N. 092-0101  
ILLINOIS ROUTE 49 OVER THE UNION-PACIFIC RAILROAD

SCALE: NONE SHEET 1 OF 7 SHEETS STA. TO STA.

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
840	(122VB)BR	VERMILION	29	10
ILLINOIS FED. AID PROJECT			CONTRACT NO. 70G07	



Note A:  
 Beam ends at bents 1 & 5 to be repaired. See sheets 18 thru 21 of 29 for repair details.



**NOTES**  
 Bent 1 shown, Bent 6 similar.  
 Bent 1 shown, Bent 6 similar.

**BILL OF MATERIAL**

Bar	No.	Size	Length	Shape	
a(E)	32	#5	33'-4"	—	
a1(E)	12	#6	4'-0"	—	
c(E)	14	#5	3'-5"	└	
c1(E)	14	#5	2'-11"	└	
x(E)	58	#6	4'-4"	└	
x1(E)	60	#6	2'-4"	└	
h(E)	16	#5	30'-6"	—	
u(E)	62	#5	3'-8"	□	
Reinforcement Bars, Epoxy Coated				Pound	2,555.0
Bar Splicers				Each	24.0
Concrete Superstructures				Cu Yd	17.4

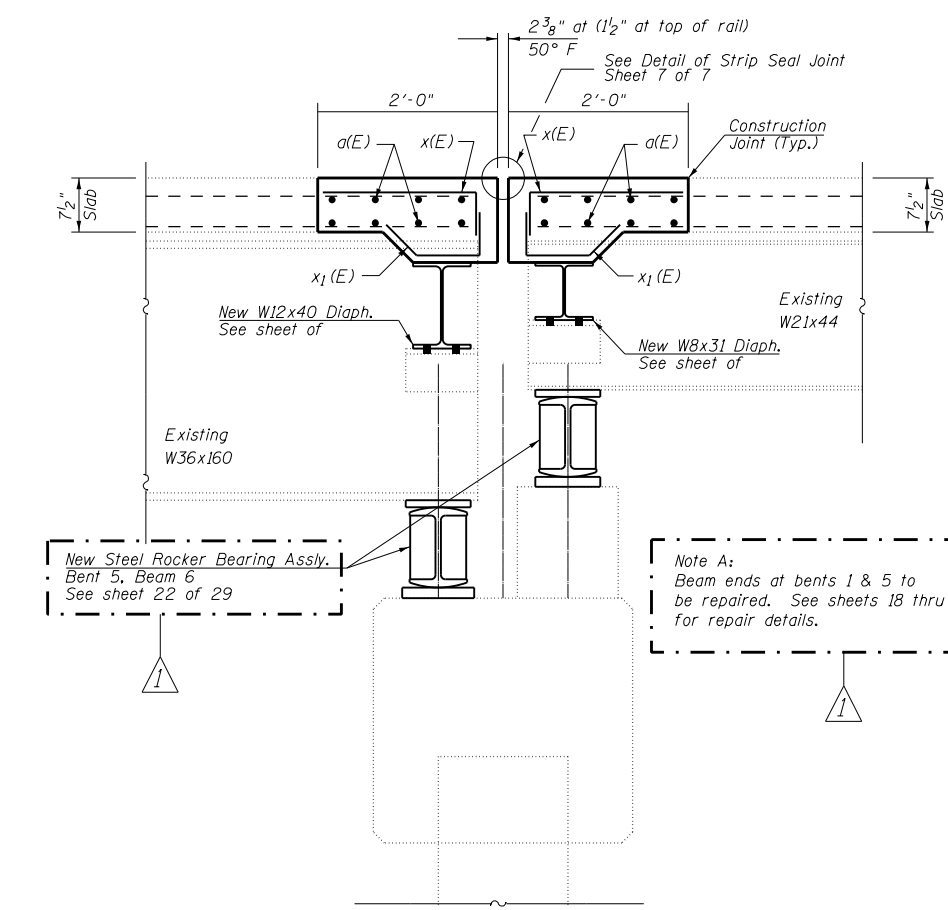
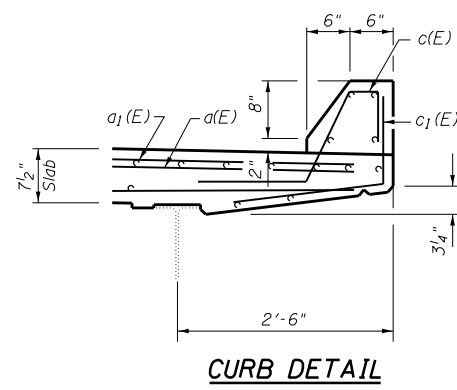
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USER NAME = Jeff.Sherer	DESIGNED - JMS	REVISED - JMS 02232023
DRAWN - JMS	CHECKED -	REVISIED -
PLOT SCALE = 40.0000 ' / in.	DATE - 04112022	REVISIED -
PLOT DATE = 2/23/2023		

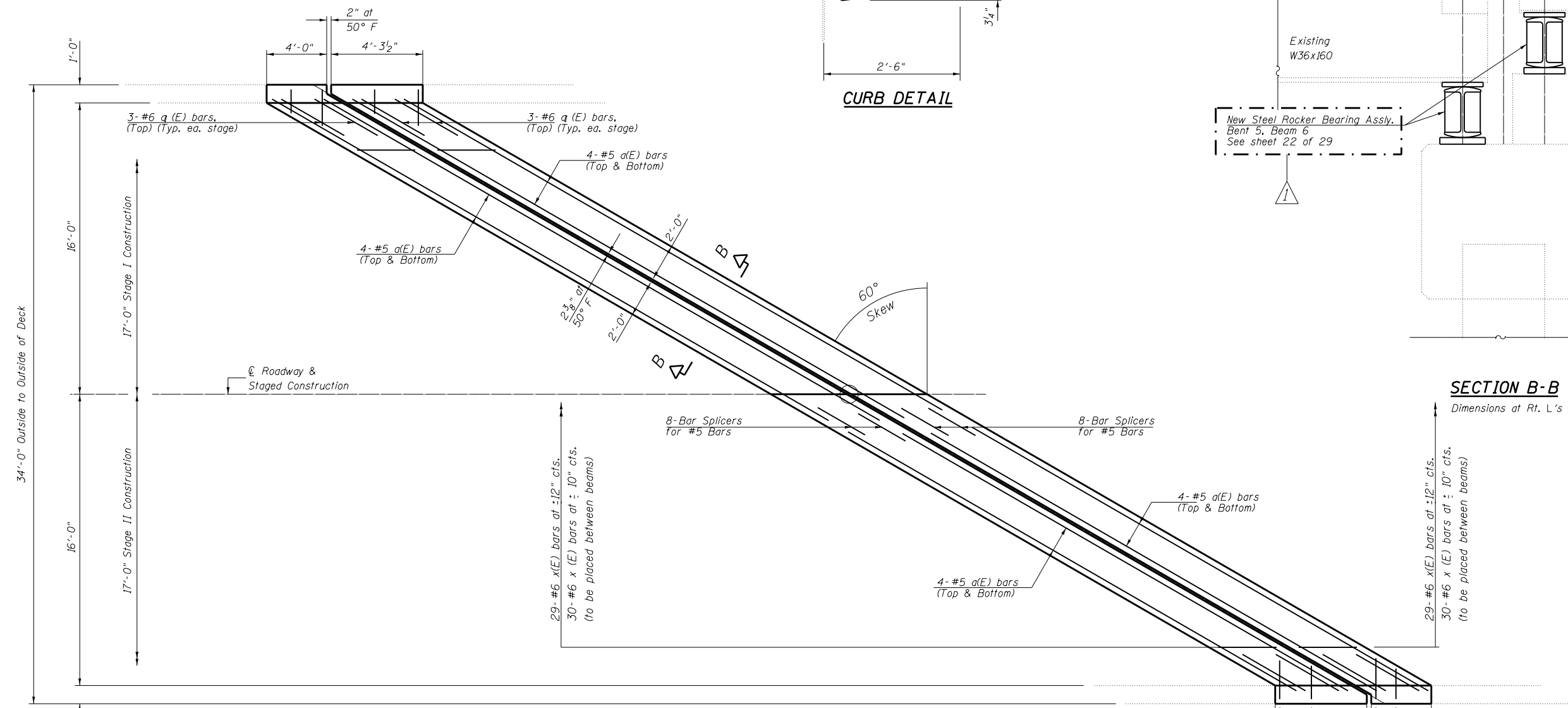
**STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION**

**BENT 1 & 6 REPLACEMENT DETAILS  
 S.N. 092-0101**  
 SCALE: NONE SHEET 4 OF 7 SHEETS STA. TO STA.

F.A.P. RTE. 840	SECTION (122VB)BR	COUNTY VERMILION	TOTAL SHEETS 29	SHEET NO. 13
		CONTRACT NO. 70G07		
		ILLINOIS		FED. AID PROJECT

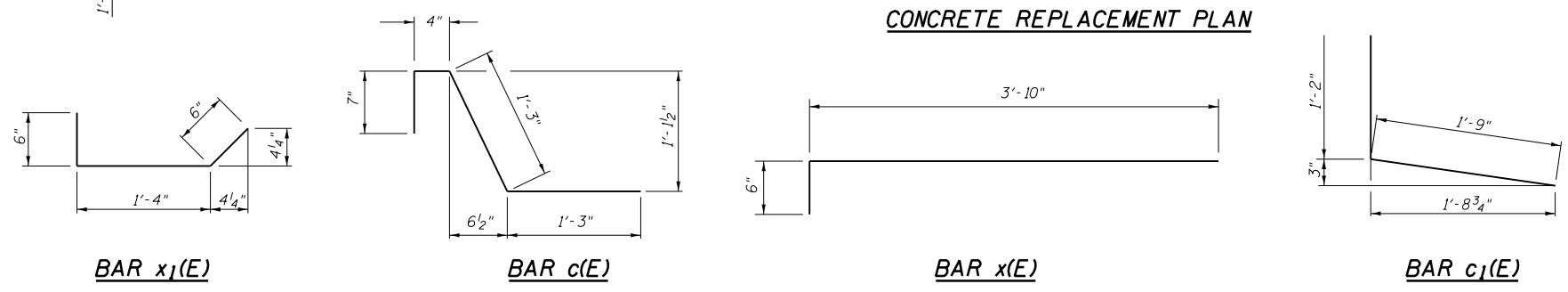


Note A:  
Beam ends at bents 1 & 5 to be repaired. See sheets 18 thru 21 of 29 for repair details.



SECTION B-B  
Dimensions at Rt. L's

CONCRETE REPLACEMENT PLAN



3-#5 c(E) bars  
3-#5 c(E) bars  
(Typ. ea. stage)  
(See Curb Detail)

3-#5 c(E) bars  
3-#5 c(E) bars  
(Typ. ea. stage)  
(See Curb Detail)

BILL OF MATERIAL

Bar	No.	Size	Length	Shape	
a(E)	32	#5	33'-4"	—	
a1(E)	12	#6	4'-0"	—	
c(E)	14	#5	3'-5"	└	
c1(E)	14	#5	2'-11"	└	
x(E)	58	#6	4'-4"	—	
x1(E)	60	#6	2'-4"	└	
Reinforcement Bars, Epoxy Coated				Pound	1,870.0
Bar Splicers				Each	16.0
Concrete Superstructures				Cu Yd	8.8

MODEL: \\MODELFAM\F5  
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 PROJECT: \\MODELFAM\F5\Bent5\Bent5.dwg  
 DATE: 2/23/2023

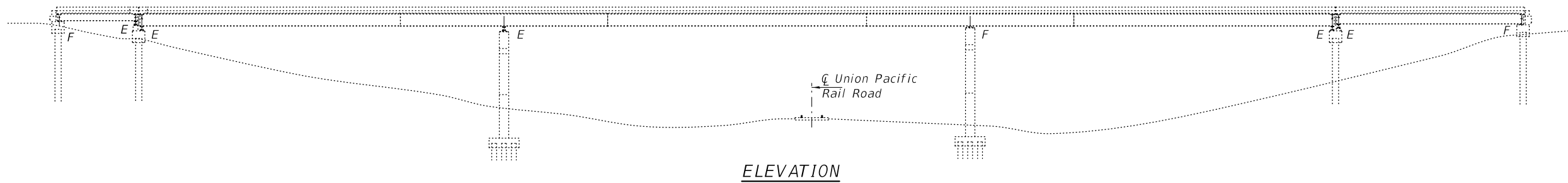
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PLOT SCALE = 40.0000 ' / in.	DRAWN - JMS	REVISED -
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	DATE - 04112022	REVISED -

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

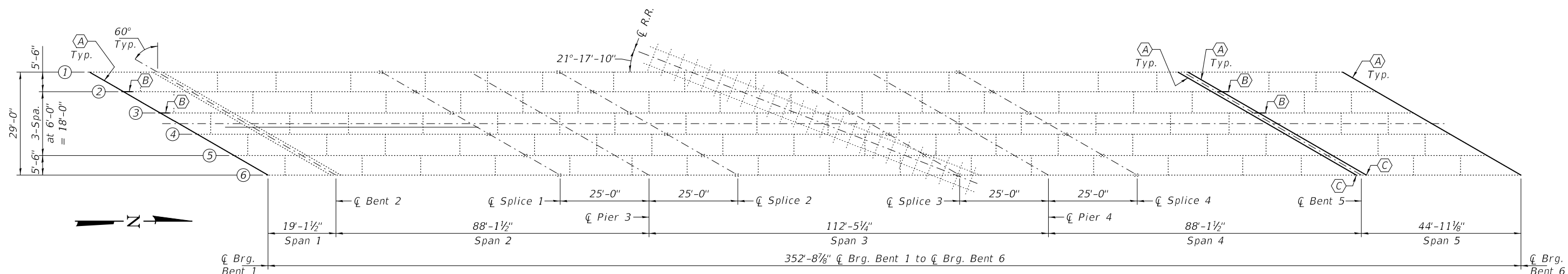
BENT 5 REPLACEMENT DETAILS  
S.N. 092-0101

SCALE: NONE SHEET 5 OF 7 SHEETS STA. TO STA.

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
840	(122VB)BR	VERMILION	29	14
CONTRACT NO. 70G07			ILLINOIS FED. AID PROJECT	



ELEVATION



FRAMING PLAN

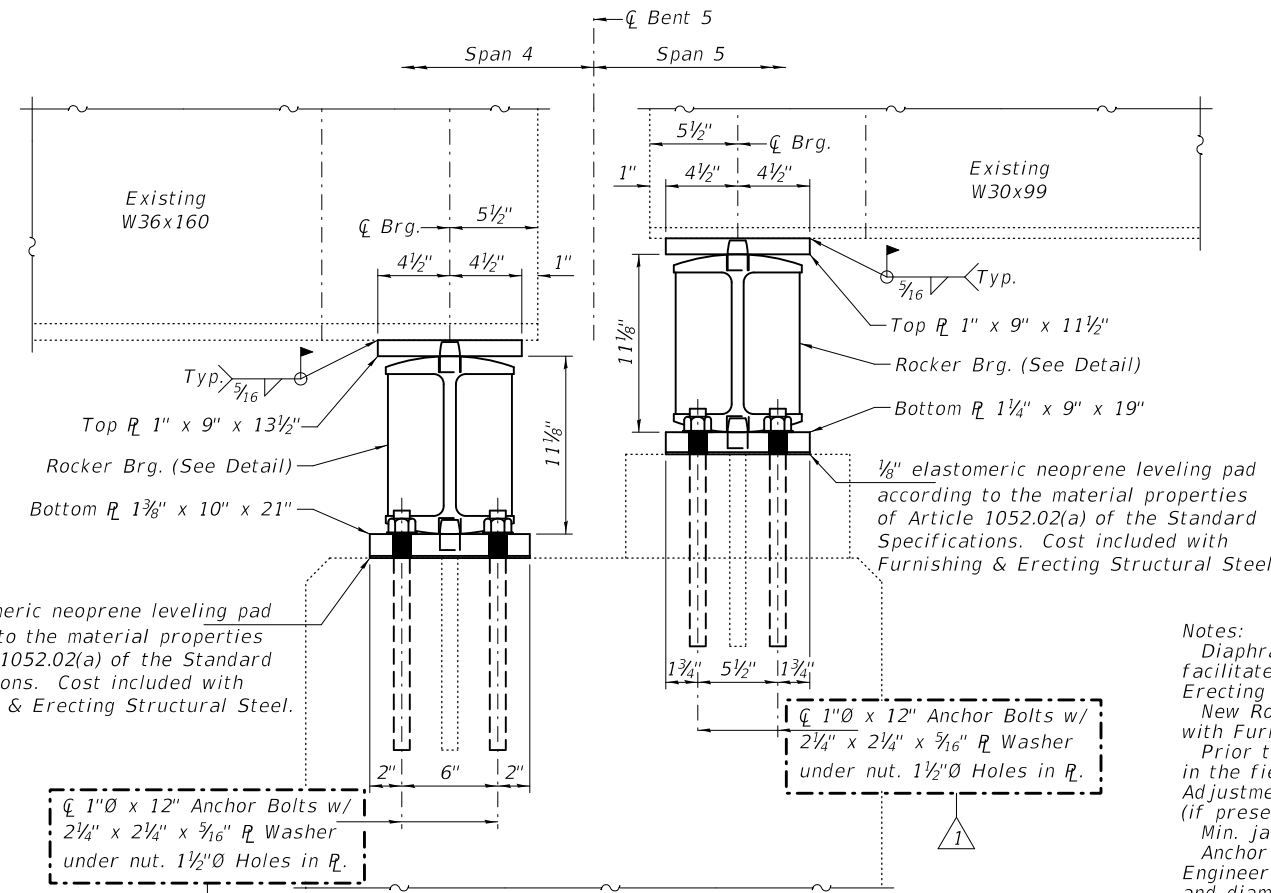
- (A) - Existing Diaphragm to be Removed & Replaced. (20-Locations)
- (B) - Existing Beam to be Strengthened.
- (C) - Existing Bearing Assembly to be Removed & Replaced. (2-Locations)

NOTES

All new structural steel and bearing assemblies shall be hot dip galvanized according to Special Provision "Hot Dip Galvanizing for Structural Steel".  
 Strengthening steel shall be included in the Structural Steel Repair quantity.  
 All other steel repairs are included in the Structural Steel Removal and Furnishing & Erecting Structural Steel quantities.

BILL OF MATERIAL

ITEM	UNIT	QUANTITY
Structural Steel Removal	Pound	8860
Structural Steel Repair	Pound	1600
Furnishing & Erecting Structural Steel	Pound	9480
Jack & Remove Existing Bearing	Each	2
Anchor Bolts, 1"Ø	Each	8



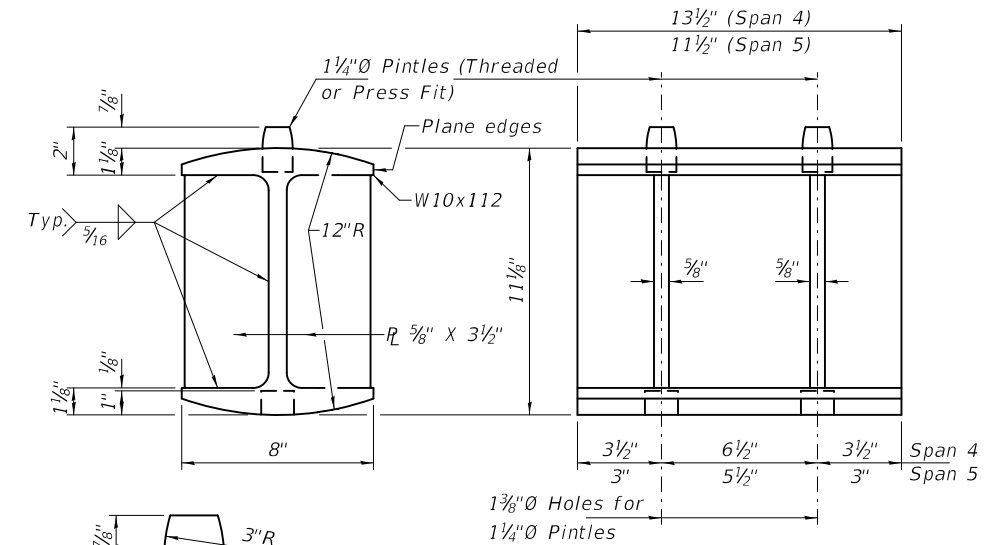
**BEAM 6 AT BENT 5 ELEVATION**  
(Looking West)

**BEAM REACTIONS FOR SPAN 4**

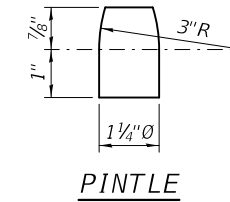
R <sub>D</sub>	(K)	30.7
R <sub>L</sub>	(K)	37.9
Imp.	(K)	9.0
R (Total)	(K)	77.6

**BEAM REACTIONS FOR SPAN 5**

R <sub>D</sub>	(K)	19.4
R <sub>L</sub>	(K)	30.9
Imp.	(K)	9.2
R (Total)	(K)	59.5



**ROCKER DETAIL**



Notes:

Diaphragm removal and reinstallation may be required to facilitate drilling holes. Cost included with Furnishing and Erecting Structural Steel.

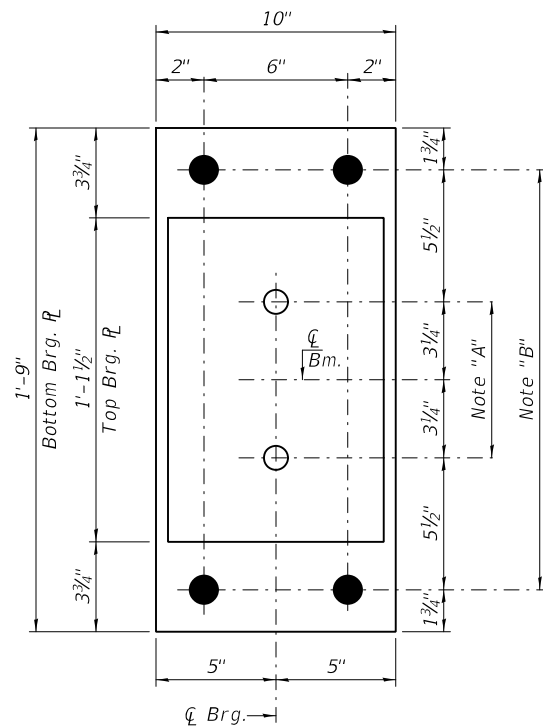
New Rocker, Top R, Bottom R and Pintles are included with Furnishing and Erecting Structural Steel.

Prior to ordering any material, the Contractor shall verify in the field all bearing height and shim thickness dimensions. Adjustment must account for deck heave due to pack rust (if present).

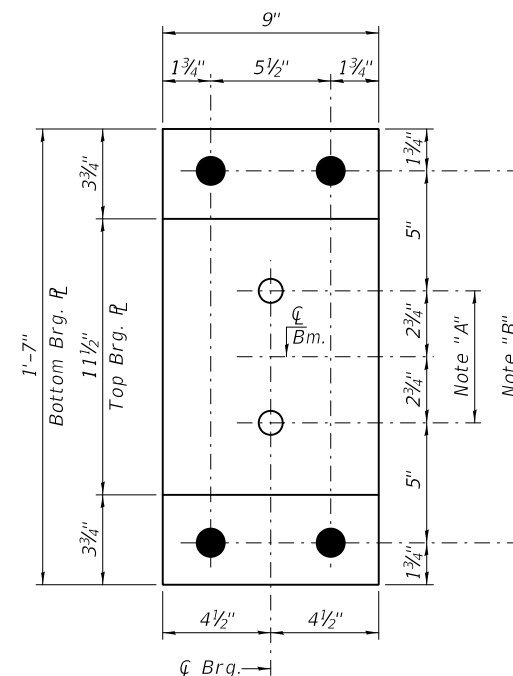
Min. jack capacity = 41 Tons.

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 (F<sub>y</sub>=36ksi). The corresponding specified grade of AASHTO M314 anchor bolts may be used in lieu of ASTM F1554.

Drilled and set anchor bolts shall be installed according to Article 521.06 of the Standard Specifications.



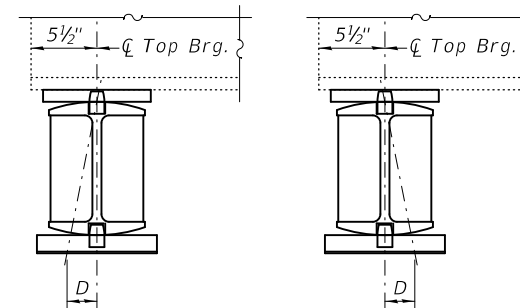
**BEARING PLAN - SPAN 4**  
Top R 1" x 9" x 1'-1 1/2" (1-Req'd)  
Bottom R 1 3/8" x 10" x 1'-9" (1-Req'd)



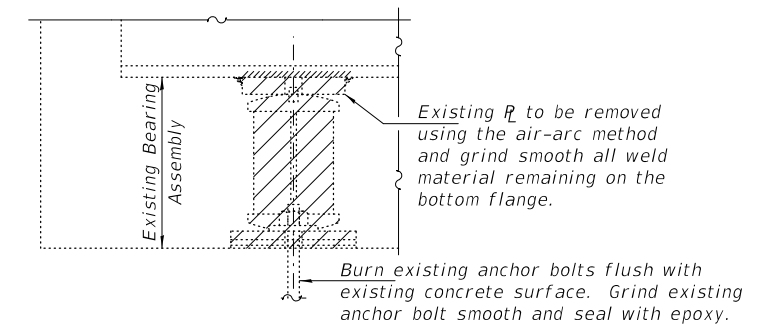
**BEARING PLAN - SPAN 5**  
Top R 1" x 9" x 11 1/2" (1-Req'd)  
Bottom R 1 1/4" x 9" x 1'-7" (1-Req'd)

Note "A":  
1 3/8"Ø Holes, 1" deep in Top R for 1 1/4"Ø Pintles. Thread or Press fit Pintles into Bottom R.

Note "B":  
1 1/2"Ø Holes for 1"Ø Anchor Bolts with 2 1/4" x 2 1/4" x 5/16" R Washers under nuts.



**SETTING ANCHOR BOLTS AT EXP. BRG.**  
D = 1/8" per each 100' of expansion for every 15° temp. change from the normal temp. of 50°F.



**EXISTING BEARING REMOVAL DETAIL**

Cost included with Jack and Remove Existing Bearings.

**BILL OF MATERIAL**

Item	Unit	Total
Jack and Remove Existing Bearings	Each	2
Furnishing and Erecting Structural Steel	Pound	520
Anchor Bolts 1"Ø	Each	8

DESIGNED - SMR  
CHECKED - CCC  
DRAWN - STEFFEN  
CHECKED - SMR CCC

PASSED

*Jaime F. Joffe*  
ENGINEER OF BRIDGES AND STRUCTURES

DATE - JANUARY 20, 2023

REVISED - ATH 02/23/2023

REVISED -

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

BEARING REPLACEMENT DETAILS - BENT 5 - BEAM 6  
SN 092-0101

SHEET NO. 6 OF 6 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
840	(122VB)BR	VERMILION	29	22
CONTRACT NO. 70G07				
ILLINOIS FED. AID PROJECT				