04-26-13 LETTING ITEM 163

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
I-24	BSMART 2013-1	MASSAC	23	1
	ILLINOIS	CONTRACT NO. 78293		

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROPOSED
HIGHWAY PLANS

FAI ROUTE 24 (I-24)
SECTION BSMART 2013-1

MISC. BRIDGE REPAIR AND HMA OVERLAY
MASSAC COUNTY

C-99-021-12

FOR INDEX OF SHEETS, SEE SHEET NO. 2

FOR SUMMARY OF QUANTITIES, SEE SHEET NO. 3-5

TRAFFIC DATA

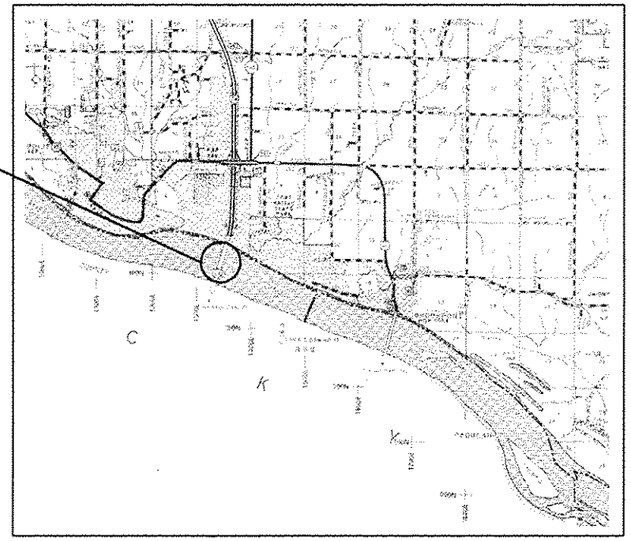
I-24 TRAFFIC DATA

2012 ADT = 24,900 (TWO WAY)
17% TRUCKS

TOWNSHIPS:

COUNTY UNIT ROAD DISTRICT

EXISTING STRUCTURE NO. 064-0035
FAI 24 OVER THE OHIO RIVER



N

D-99-017-12

LOCATION OF SECTION INDICATED THUS: -

100' 200' 300' — 1" = 100'
0 10' 20' 30' — 1" = 10'
0 50' 100' — 1" = 50'
0 50' 100' — 1" = 40'
0 50' 100' — 1" = 30'
0 50' 100' — 1" = 20'

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

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

SUBMITTED January 30 20 13
DEPUTY DIRECTOR OF HIGHWAYS, REGION ENGINEER
March 22 20 13
John D. Baranzelli, P.E. by
ENGINEER OF DESIGN AND ENVIRONMENT
March 22 20 13
Omer Osman, P.E. by
DIRECTOR OF HIGHWAYS, CHIEF ENGINEER

PROJECT ENGINEER: T. WAYNE HALSTEAD (618) 351-5228
PROJECT MANAGER: DAVID PICHE (618) 351-5227

CONTRACT NO. 78293

PRINTED BY THE AUTHORITY OF THE STATE OF ILLINOIS

GENERAL NOTES

1) 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.

2) 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

3) PRIOR TO PLACEMENT OF THE FINAL PAVEMENT MARKINGS THE RESIDENT ENGINEER SHOULD CONTACT THE BUREAU OF OPERATIONS AND ARRANGE FOR INSPECTION AND APPROVAL OF THE PAVEMENT MARKING LAYOUT.

4) IN ADDITION TO THE REQUIREMENTS OF ARTICLE 107.16 THE CONTRACTOR SHALL PROTECT THE SURFACE OF ALL BRIDGE DECKS AND BRIDGE APPROACH PAVEMENTS IN A MANNER SATISFACTORY TO THE ENGINEER BEFORE ANY EQUIPMENT IS ALLOWED TO CROSS THE STRUCTURE. PROTECTION SHALL BE PROVIDED FOR ALL EQUIPMENT AS DEFINED IN ARTICLE 101.16 REGARDLESS IF TRACK MOUNTED OR WHEELED.

5) THE CONTRACTOR SHALL TAKE EXTRA PRECAUTION WHEN REMOVING THE EXISTING 1.5'' OF HMA SURFACE AS NOT TO DAMAGE THE EXISTING WATERPROOF MEMBRANCE SYSTEM. THE CONTRACTOR SHALL REMOVE DOWN TO THE TOP OF THE EXISTING SAND BUFFER LAYER WHICH LIES OVER THE TOP OF THE EXISTING WATERPROOFING MEMBRANE SYSTEM AND NO DEEPER. ANY DAMANGE CAUSED TO THE EXISTING WMS DURING THE HMA REMOVAL WILL BE REPAIRED OR REPLACED TO THE SATISFACTION OF THE ENGINEER AT THE COST OF THE CONTRACTOR.

6) IF THE CONTRACTOR CHOOSES TO MODIFY THE SUGGESTED SEQUENCE OF CONSTRUCTION, THE CONTRACTOR SHALL SUBMIT A REVISED SEQUENCE OF CONSTRUCTION AND TRAFFIC CONTROL LAYOUT DETAILS FOR REVIEW AND ACCEPTANCE BY THE ENGINEER.

7) STAGE III AND IV SHALL BE CONSTRUCTED DURING A CONTINOUS OPERATION AND SHALL BE FINISHED PRIOR TO THE WINTER SHUTDOWN OR THE FOLLOWING YEAR, SUBJECT TO APPROVAL BY THE ENGINEER.

8) THE CONTRACTOR SHALL NOT REDUCE TRAFFIC TO ONE LANE IN EITHER DIRECTION, UNTIL A DELIVERY DATE OF STAGE I MATERIALS AND A WORK SCHEDULE HAS BEEN GIVEN TO AND APPROVED BY THE ENGINEER.

9) THE RESIDENT ENGINEER SHALL CONTACT CASEY TECKENBROCK TO ARRANGE THE PICKUP OR DELIVERY OF THE DISTRICT PROVIDED ALUMINUM HANDRAIL POSTS THAT ARE TO BE REPLACED ON THE STRUCTURE UNDER THE PAY ITEM "REPLACE HANDRAIL SUPPORT". ADDITIONAL INFORMATION AND DETAILS ARE SHOWN IN THE STRUCTURE PLANS.

10) COMMITMENTS: NONE AS OF FEBRUARY 1, 2013.

SUGGESTED SEQUENCE OF CONSTRUCTION

PRE-STAGE I: USING T.C.&P. STANDARD 701401, REMOVE THE EXISTING SOLID WHITE THERMOPLASTIC PAVEMENT MARKING LINES ADJACENT TO THE OUTSIDE DRIVING LANES.

STAGE I REMOVAL/CONSTRUCTION: SETUP T.C.&P., (SPECIAL) AS SHOWN ON SHEET 6 FOR THE ENTIRE STRUCTURE IN BOTH DIRECTIONS. PERFORM JOINT WORK, TROUGH WORK, AND ANY APPLICABLE REPAIRS AS SPECIFIED IN THE STRUCTURE PLANS. ALSO REMOVE THE EXISTING SOLID YELLOW THERMOPLASTIC PAVEMENT MARKING LINES ADJACENT TO THE INSIDE PASSING LANES.

STAGE II REMOVAL/CONSTRUCTION: SETUP T.C.&P., (SPECIAL) AS SHOWN ON SHEET 7 FOR THE ENTIRE STRUCTURE IN BOTH DIRECTIONS. PERFORM THE REMAINDER OF THE JOINT WORK, TROUGH WORK, AND APPLICABLE REPAIRS AS SPECIFIED IN THE STRUCTURE PLANS.

STAGE III REMOVAL/CONSTRUCTION: SETUP T.C.&P. STANDARD 701401 AND REMOVE THE EXISTING HMA OVERLAY FOR THE INSIDE PASSING LANES FOR THE ENTIRE STRUCTURE IN BOTH DIRECTIONS. INSTALL THE NEW HMA OVERLAY PER THE SAME LAYOUT.

STAGE IV REMOVAL/CONSTRUCTION: SETUP T.C.&P. STANDARD 701401 AND REMOVE THE REAMINDER OF THE EXISTING HMA OVERLAY FOR THE OUTSIDE DRIVING LANES FOR THE ENTIRE STRUCTURE IN BOTH DIRECTIONS. INSTALL THE NEW HMA OVERLAY PER THE SAME LAYOUT.

INDEX OF SHEETS

ILLINOIS HIGHWAY STANDARDS

000001-06	STANDARD SYMBOLS, ABBREVIATIONS AND PATTERNS
001001-02	AREAS OF REINFORCEMENT BARS
701101-03	OFF-ROAD, MULTILANE 15' TO PAVEMENT EDGE
701400-06	APPROACH TO LANE CLOSURE FREEWAY/EXPRESSWAY
701401-07	LANE CLOSURE FREEWAY/EXPRESSWAY
701402-09	LANE CLOSURE FREEWAY/EXPRESSWAY, WITH BARRIER
701426-05	LANE CLOSURE, MULTILANE, INTERMITTENT OR MOVING OPERATION, FOR SPEEDS $\geq$ 45 MPH
701901-02	TRAFFIC CONTROL DEVICES
704001-07	TEMPORARY CONCRETE BARRIER
780001-03	TYPICAL PAVEMENT MARKINGS
781001-03	TYPICAL APPLICATIONS RAISED REFLECTIVE PAVEMENT MARKERS

MIXTURE REQUIREMENTS

LOCATION(S):	HOT-MIX ASPHALT SURFACE COURSE
MIXTURE USES(S):	POLYMERIZED HOT-MIX ASPHALT SURFACE COURSE, MIX E, N90
AC/PG:	SBS PG76-22
ABR% (MAX):	10
DESIGN AIR VOIDS:	4%, 90 GYRATION DESIGN
MIXTURE COMPOSITION: (GRADATION MIXTURE)	IL-9.5 MM
FRICTION AGGREGATE:	E SURFACE

Prepared By: DISTRICT STUDIES & PLANS ENGINEER

Examined By: DISTRICT LAND ACQUISITION ENGINEER

Examined By: DISTRICT PROGRAM DEVELOPMENT ENGINEER

Examined By: DISTRICT OPERATIONS ENGINEER

Examined By: DISTRICT PROJECT IMPLEMENTATION ENGINEER

Examined By: DISTRICT CONSTRUCTION ENGINEER

Examined By: DISTRICT MATERIALS ENGINEER

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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

INDEX OF SHEETS, GENERAL NOTES, STANDARDS

SCALE: | SHEET NO. OF SHEETS | STA. TO STA.

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
24	BSMART 2013-1	MASSAC	23	2
		CONTRACT NO. 78293		
	ILLINOIS FED. AID PROJECT			

CODE NUMBER	PAY ITEM	CONSTRUCTION TYPE CODE 0014	
		UNIT	STATE FUNDING 50% ILLINOIS & 50% KENTUCKY SN 064-0035
40603570	POLYMERIZED HOT-MIX ASPHALT SURFACE COURSE, MIX "E", N90	TON	3,074
44000155	HMA SURFACE REMOVAL 1½"	SQ YD	36,600
50102400	CONCRETE REMOVAL	CU YD	143
50300255	CONCRETE SUPERSTRUCTURE	CU YD	148.3
50500405	FURNISHING AND ERECTING STRUCTURAL STEEL	POUND	14,670
50800205	REINFORCEMENT BARS, EPOXY COATED	POUND	19340
50800515	BAR SPLICERS	EACH	288
50800530	MECHANICAL SPLICERS	EACH	288
52000110	PREFORMED JOINT STRIP SEAL	FOOT	378
52000600	FABRIC REINFORCED ELASTOMERIC TROUGH	FOOT	330
67000400	ENGINEER FIELD OFFICE, TYPE A	CAL MO	12
67100100	MOBILIZATION	L SUM	1
70100205	TRAFFIC CONTROL AND PROTECTION, STANDARD 701401	EACH	4
70103815	TRAFFIC CONTROL SURVEILLANCE	CA DAY	30
70106800	CHANGEABLE MESSAGE SIGN	CAL MO	12

W/15

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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SUMMARY OF QUANTITIES

SCALE: | SHEET OF SHEETS | STA. | TO STA.

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
24	BSMART 2013-1	MASSAC	23	3
		CONTRACT NO. 78293		
	ILLINOIS FED. AID PROJECT			

	CODE NUMBER	PAY ITEM	CONSTRUCTION TYPE CODE 0014	
			UNIT	STATE FUNDING 50% ILLINOIS & 50% KENTUCKY SN 064-0035
	70400100	TEMPORARY CONCRETE BARRIER	FOOT	5125
	70400200	RELOCATE TEMPORARY CONCRETE BARRIER	FOOT	5125
	70600250	IMPACT ATTENUATORS, TEMPORARY (NON- REDIRECTIVE), TEST LEVEL 3	EACH	6
*	70600260	IMPACT ATTENUATORS, TEMPORARY (FULLY REDIRECTIVE, NARROW), TEST LEVEL 3	EACH	4
*	70600332	IMPACT ATTENUATORS, RELOCATE (FULLY REDIRECTIVE, NARROW), TEST LEVEL 3	EACH	4
	70600350	IMPACT ATTENUATORS, RELOCATE (NON- REDIRECTIVE), TEST LEVEL 3	EACH	6
*	78000200	THERMOPLASTIC PAVEMENT MARKING - LINE 4"	FOOT	26156
*	78100105	RAISED REFLECTIVE PAVEMENT MARKER (BRIDGE)	EACH	149
	78300100	PAVEMENT MARKING REMOVAL	SQ FT	8046
	78300200	RAISED REFLECTIVE PAVEMENT MARKER REMOVAL	EACH	149
	X0322556	STIFFENER INTERSECTION MODIFICATION	EACH	2
	X5090098	REPLACE HANDRAIL SUPPORT	EACH	33
	X7010216	TRAFFIC CONTROL AND PROTECTION, (SPECIAL)	L SUM	1
	Z0001903	STRUCTURAL STEEL REMOVAL	POUND	23410

*SPECIALTY ITEM

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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SUMMARY OF QUANTITIES

SCALE: | SHEET OF SHEETS | STA. | TO STA.

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
24	BSMART 2013-t	MASSAC	23	4
		CONTRACT NO. 78293		
ILLINOIS	FED. AID PROJECT			

CODE NUMBER	PAY ITEM	CONSTRUCTION TYPE CODE 0014	
		UNIT	STATE FUNDING 50% ILLINOIS & 50% KENTUCKY SN 064-0035
~~Z0004556~~	~~HMA SURFACE REMOVAL (DECK)~~	~~SQ YD~~	~~36694~~
~~Z0007122~~	~~REMOVING AND RE-ERECTING EXISTING RAILING~~	~~FOOT~~	~~200~~
Z0012754	STRUCTURAL REPAIR OF CONCRETE (DEPTH EQUAL TO OR LESS THAN 5 INCHES)	SQ FT	135
Z0034390	MODULAR EXPANSION JOINT, 6''	FOOT	66
Z0034393	MODULAR EXPANSION JOINT, 9''	FOOT	66

%3

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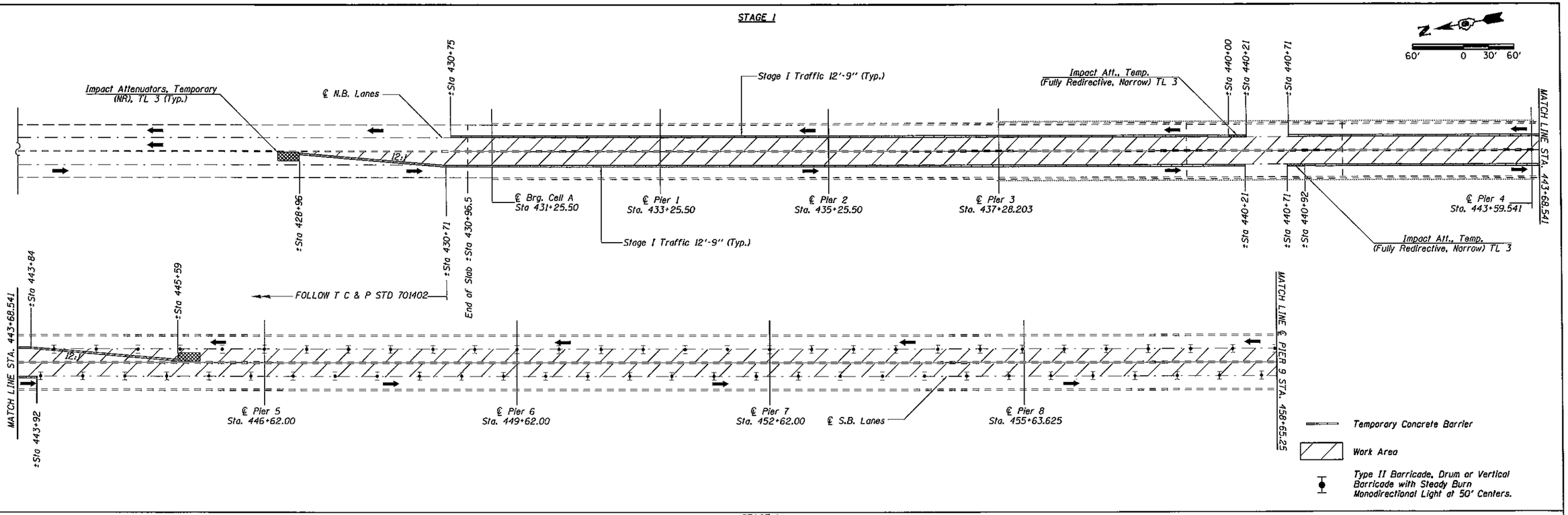
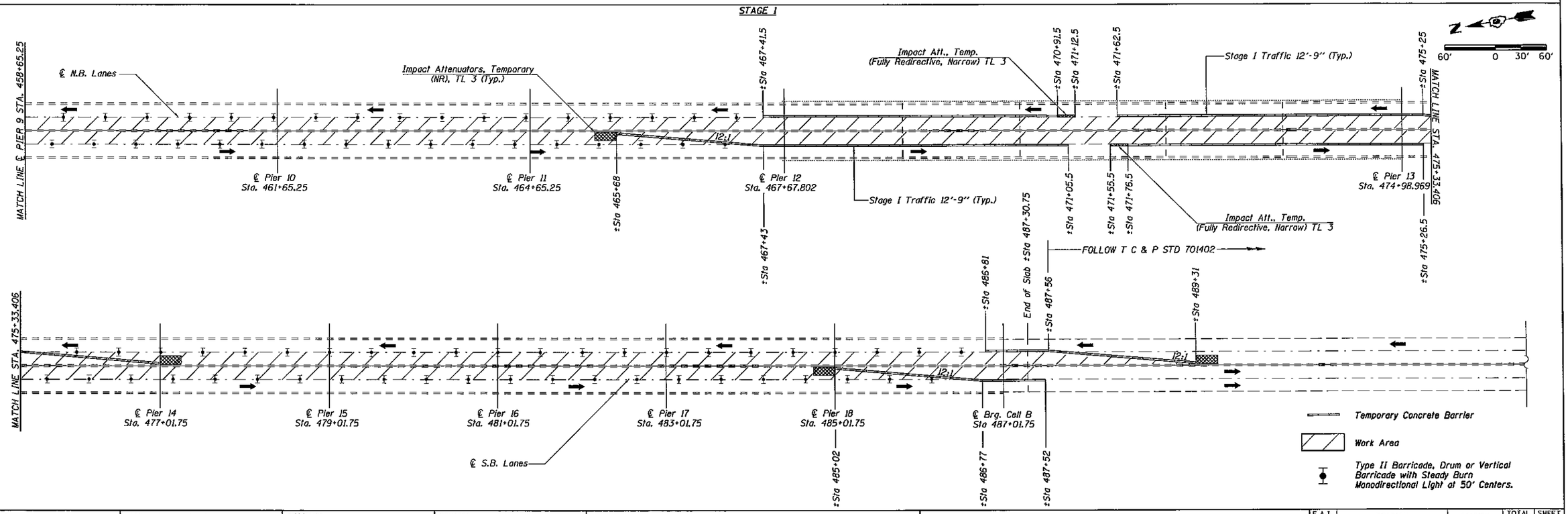
STAGE 1



STAGE 1



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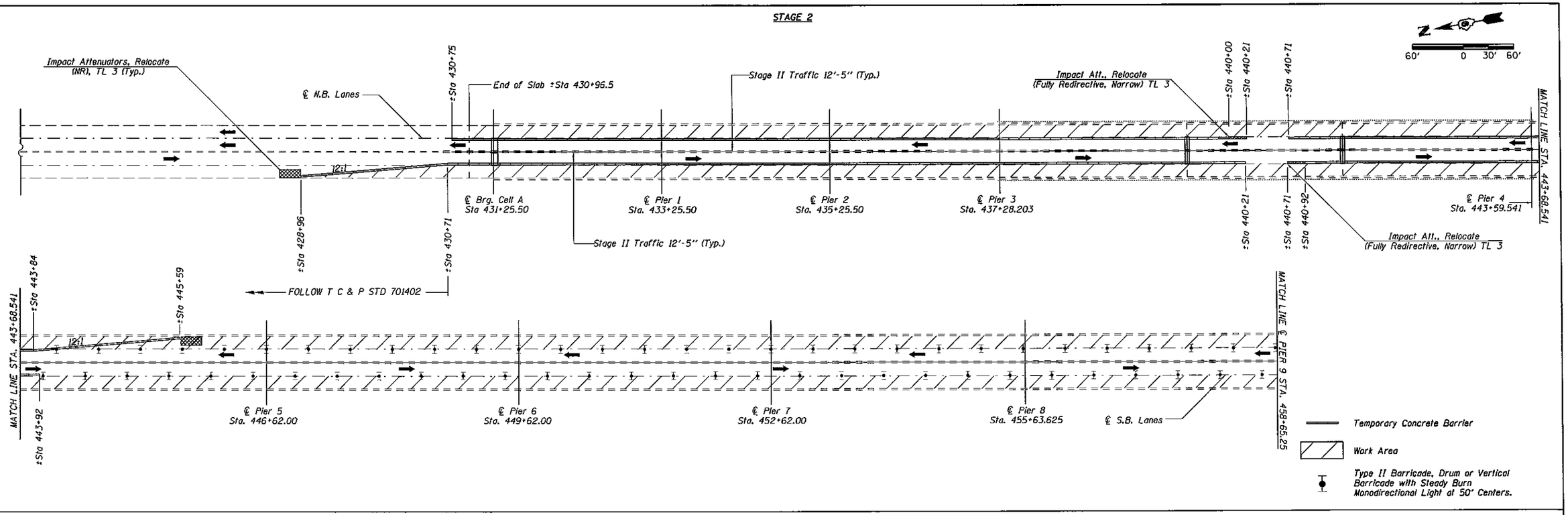
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

STAGE CONSTRUCTION
STAGE I

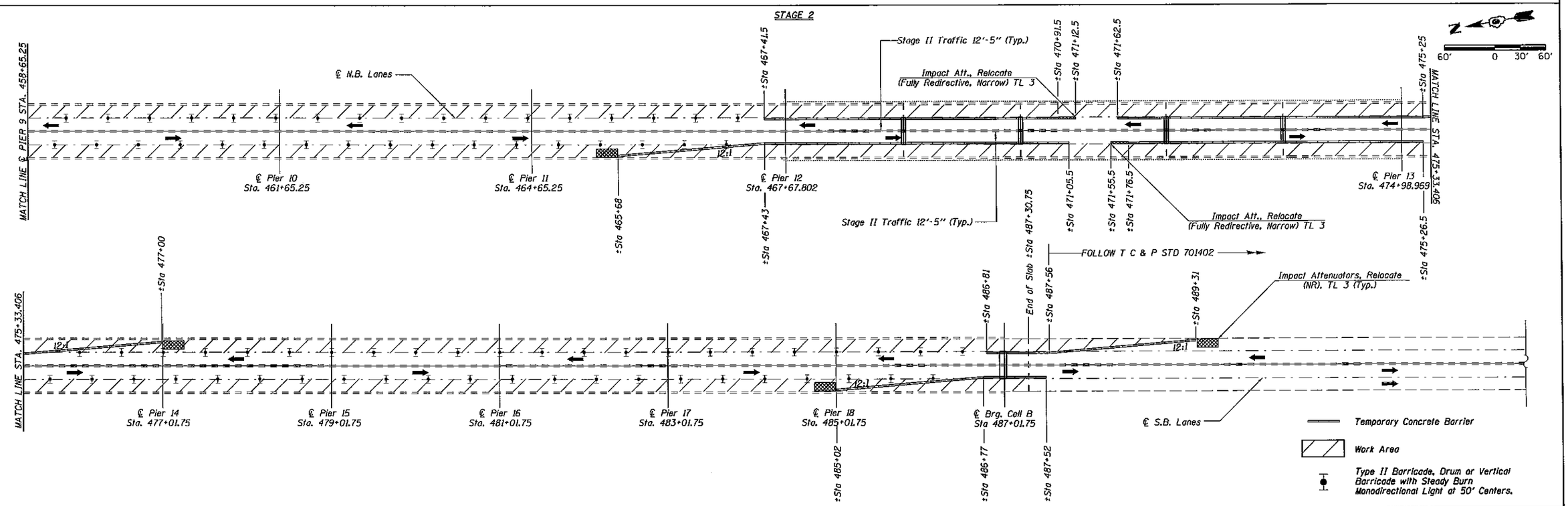
SCALE: | SHEET OF SHEETS | STA. | TO STA.

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
24	BSMART 2013-1	MASSAC	23	6
		CONTRACT NO. 78293		
		ILLINOIS FED. AID PROJECT		

STAGE 2



STAGE 2



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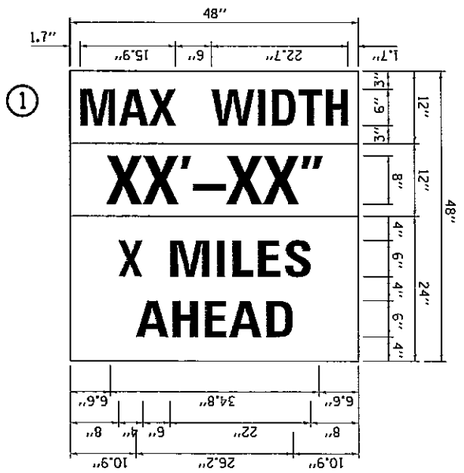
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

STAGE CONSTRUCTION
STAGE II

SCALE: | SHEET OF SHEETS | STA. | TO STA.

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
24	BSMART 2013-1	MASSAC	23	7
		CONTRACT NO. 78293		
	ILLINOIS FED. AID PROJECT			

SIGN LEGEND



W12-1103

W12-1103 (WIDTH IS 8D);
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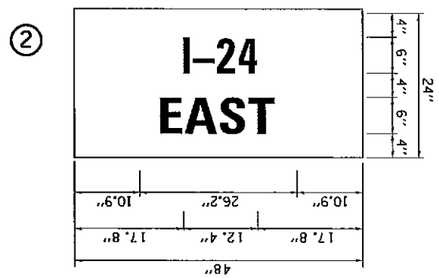
NO BORDER, BLACK ON ORANGE;
"XX'-XX"" D;
NO BORDER, BLACK ON WHITE;
"X MILES" D; "AHEAD" D



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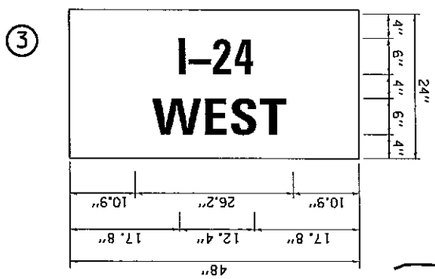
NO BORDER, BLACK ON WHITE;
"EAST" D



NO BORDER, BLACK ON WHITE;
"I-24" D;
NO BORDER, BLACK ON WHITE;
"WEST" D

WIDE LOAD SIGNING PLAN

DETOUR NOTES:

1. THE CONTRACTOR SHALL FURNISH THE POSTS AND ERECT THE SIGNS AT THE LOCATIONS AS DIRECTED BY THE ENGINEER. ALL SIGNS SHALL BE POST MOUNTED.

   THE ABOVE NOTED WORK, INCLUDING SIGNS, POSTS, HARDWARE AND LABOR SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE, EACH, FOR TRAFFIC CONTROL AND PROTECTION, (SPECIAL) AND NO OTHER COMPENSATION WILL BE ALLOWED.

   THE WIDTH SHOWN ON THE W12-1103 SIGN SHALL BE 11'-3'' FOR STAGE I AND 10'-11'' FOR STAGE II OR AS DIRECTED BY THE ENGINEER. THE "X" MILES AHEAD WILL BE DETERMINED BY THE ENGINEER.

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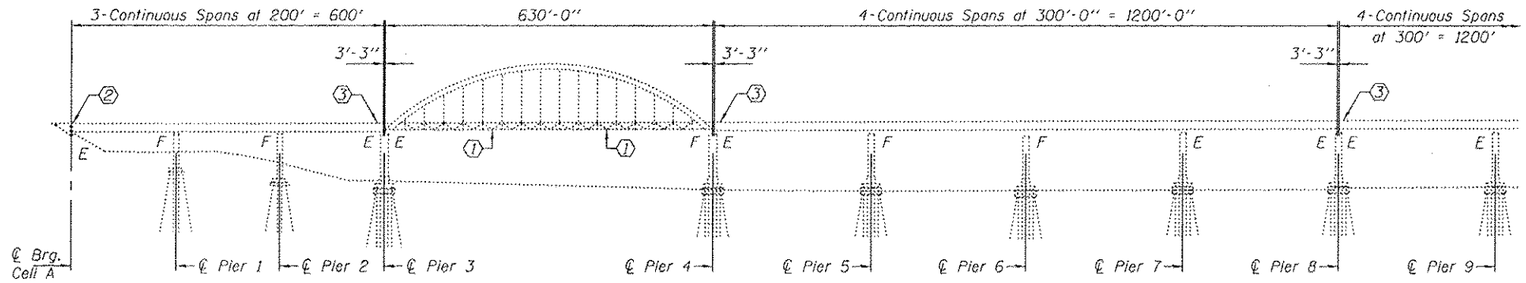
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

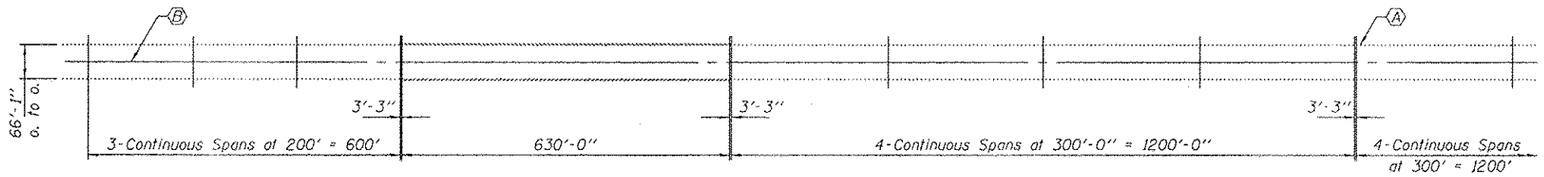
WIDE LOAD SIGNING PLAN

SCALE: | SHEET NO. OF SHEETS | STA. TO STA.

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
24	BSMART 2013-1	MASSAC	23	8
		CONTRACT NO. 78293		
	ILLINOIS FED. AID PROJECT			



PARTIAL ELEVATION - 1



PARTIAL PLAN - 1

Z

GENERAL NOTES

All structural steel shall conform to AASHTO Classification M-270 Gr. 50. unless otherwise noted.

Reinforcement bars designated (E) shall be epoxy coated.

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.

Modular Expansion Joints shall be assembled in their final relative position with the ends in place for shop inspection and acceptance.

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".

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

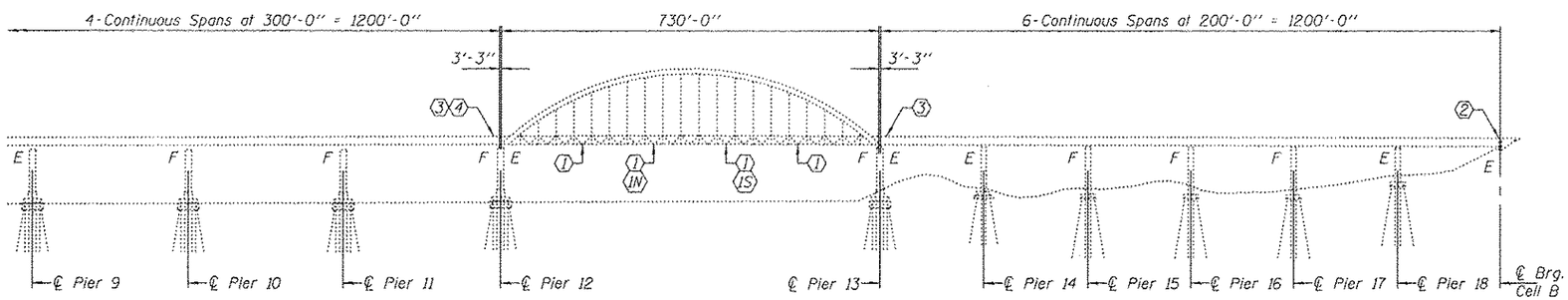
Cost of removal and re-installation of all members necessary to complete the work as detailed on the plans and as specified in the Special Provisions shall be included with Furnishing and Erecting Structural Steel.

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 Gray, Munsell No. 5B 7/1.

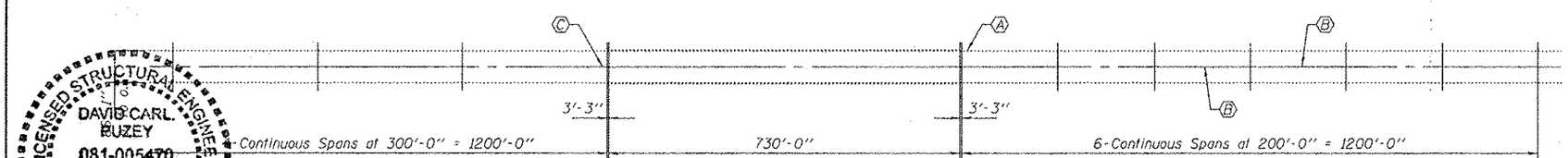
The existing structural steel coating contains lead. The Contractor shall take appropriate precautions to deal with the presence of lead on this project.

The deck surface shall have its final finish tined according to Article 420.09(e)(1) of the Standard Specifications. Cost included with Concrete Superstructure.

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.



PARTIAL ELEVATION - 2



PARTIAL PLAN - 2

SCOPE OF WORK

- (1) - Remove & Replace existing 2½" PJS Relief Joints with Preformed Joint Strip Seal.
- (1N) - Remove & Replace additional 1'-0" of top section of each parapet wall at North end of Joint.
- (1S) - Remove & Replace additional 1'-0" of top section of each parapet wall at South end of Joint.
- (2) - Remove & Replace existing Finger Plate Joints with Modular Expansion Joints.
- (3) - Remove & Replace existing Elastomeric Trough.
- (4) - Grind flush high side of existing fingers at Finger Plate Joint, Eastbound / Southbound Lanes.
- (A)(B)(C) - Structural Repair of Concrete Depth ≤ 5 inches. See Sheet 13 of 15 for details.

Note:
For framing plan and repair locations see sheets 3 thru 5 of 15.

TOTAL BILL OF MATERIAL

Item	Unit	Total
Structural Steel Removal	Pound	23,410
Furnishing & Erecting Structural Steel	Pound	14,670
Concrete Removal	Cu. Yd.	143.0
Concrete Superstructure	Cu. Yd.	148.3
Structural Repair of Concrete Depth ≤5 inches	Sq. Ft.	135
Bar Splicers	Each	288
Reinforcement Bars, Epoxy Coated	Pound	19,340
Preformed Joint Strip Seal	Foot	378
Fabric Reinforced Elastomeric Trough	Foot	330
Replace Handrail Support	Each	33
Modular Expansion Joint, 6"	Foot	66
Modular Expansion Joint, 9"	Foot	66
HMA Surface Removal, 1½"	Sq. Yd.	36,600
Polymerized HMA Surface Course, Mix "E", N90	Ton	3074
Stiffener Intersection Modification	Each	2
Mechanical Splicers	Each	288

LICENSED STRUCTURAL ENGINEER
DAVID CARL BUZEY
081-005470
SPRINGFIELD ILLINOIS
STATE OF ILLINOIS

EXPIRES 11-30-2014

DESIGNED	Adrian T. Halloway	EXAMINED	Timothy A. Sholar, ACTING ENGINEER OF STRUCTURAL SERVICES
CHECKED	Stephen M Ryan	PASSED	H. Carl Simpson, ACTING ENGINEER OF BRIDGES AND STRUCTURES
DRAWN	Kyle M. Steffen	DATE	MARCH 14, 2013
CHECKED	ATH SMR		

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

GENERAL PLAN & ELEVATION
F.A.I. 24 OVER THE OHIO RIVER
SN 064-0035
SHEET NO. 1 OF 15 SHEETS

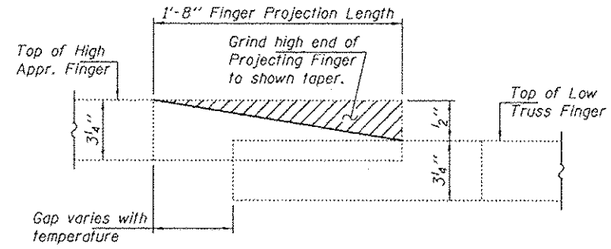
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
24	BSMART 2013-1	MASSAC	23	9
		CONTRACT NO. 78293		
		ILLINOIS FED. AID PROJECT		

TABLE OF REPAIRS

2011 NBIS REPORT ITEM NO.	SPAN	MEMBER	LOCATION	DEFICIENCY	PROPOSED REPAIR
4	3 & 4	Finger ℄ Joint	Between W. Girder & Stringer 3	Missing Bolt	Replace - $^{7}/_{8}$"ϕ x $2^{5}/_{8}$" bolt with 3" x 3" x $^{3}/_{8}$" washer (top) and standard washer (bottom)
8	4	Floorbeam 29	at West Tie	Missing Bolt	Replace (Verify bolt ϕ & length in field)
91	4	Floorbeam 30	at Stringer 5, North Face	Broken Bolt at Stringer 5 Bearing	Replace - $^{3}/_{4}$"ϕ x $4^{5}/_{16}$" long
69	4	Catwalk	Conn. ℄ of Catwalk & Lat. brace, N. of FB35	Missing Bolt	Replace - $^{3}/_{4}$"ϕ x $^{3}/_{4}$" long
98	4	Floorbeam 37	at Stringer 3, Top	Broken Bolt at Stringer 3 Bearing	Replace - $^{3}/_{4}$"ϕ x $4^{7}/_{16}$" long
102	4	Floorbeam 39	Connection ℄ at center	Missing Bolt	Replace - $^{7}/_{8}$"ϕ x $1^{15}/_{16}$" long
20	4	West Tie	W. Tie at T14, W. conn. ℄ to FB40	Missing Bolt	Replace (Verify bolt ϕ & length in field)
105	5	West Girder	at FB54 122	Missing Bolt	Replace - $^{7}/_{8}$"ϕ x $^{3}/_{4}$" long
71	7	Railing	50' N. of Pier 7, W. side, SB Lanes	Damaged Bracket (3 locations)	* Replace
72	8	Railing	50' N. of Pier 8, W. Side, SB Lanes	Damaged Bracket (6 locations)	* Replace
106	8	East Girder	3rd stiffener from Pier 8, East face	$^{1}/_{2}$" crack stiffener to web bottom	Stiffener Intersection Modification Repair
107	12	West Girder	Lower long. stiff. btwn. FB131 & 132, E. face	$^{1}/_{2}$" crack in long. stiff. to web weld	Stiffener Intersection Modification Repair
74	12	East Girder	Bott. flange splice ℄ btwn. FB131 & FB132	Bolt Loose	Replace - $^{7}/_{8}$"ϕ x $2^{11}/_{16}$" long
29	12	Finger ℄ Joint	Between Stringer 6 & East Girder	Bolt Broken	Replace - $^{7}/_{8}$"ϕ x $2^{5}/_{8}$" bolt with 3" x 3" x $^{3}/_{8}$" washer (top) and standard washer (bottom)
77	13	Railing	W. side, SB Lanes, btwn. T8 & T9	3 Damaged Brackets	* Replace
78	13	West Tie	Tie Reinforcement ℄ at T10	Missing Bolt	Replace (Verify bolt ϕ & length in field)
79	13	Railing	Throughout E. side, NB Lanes	11 Damaged Brackets	* Replace
81	13	West Tie	at T18, Bracket Conn,. FB to W. Tie	Missing Bolt	Replace (Verify bolt ϕ & length in field)
82	14	Railing	20' N. of Pier 14, W Side, SB Lanes	Damaged Bracket	* Replace
84	16	Railing	50' N. of Pier 16, E. Side, NB Lanes	2 Damaged Brackets	* Replace
62	19	Railing	Throughout, N. of S. Aut. SB Lanes, W. Side	7 Damaged Brackets	* Replace

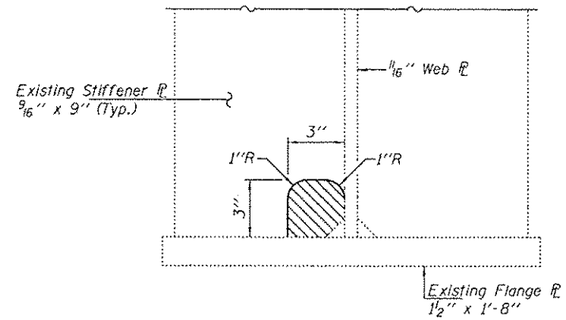
* Remove and Replace damaged Handrail Posts at locations specified. 4 New $^{3}/_{4}$"ϕ Aluminum nuts and washers shall be provided at each location at the existing anchor bolts. This work shall be paid for at the contract unit price each for Replace Handrail Support, which price shall include all labor and materials except for the Handrail Posts, which shall be provided by IDOT District 9.

Notes:
Fasteners shall be high strength bolts. Bolts $^{7}/_{8}$"ϕ with 2 standard washers, open holes $^{15}/_{16}$"ϕ, unless otherwise noted.
Length of bolts indicates total thickness of connected material excluding thickness of washers.



FINGER PLATE GRINDING DETAIL

Typical at ±90 Fingers / 30' width
(Cost included with Structural Steel Removal)



ITEM 106 REPAIR DETAIL

Remove portion of stiffener and grind flush stiffener to web weld. Care shall be taken to not remove any portion of the bottom flange to web weld.
After removal and grinding operations are complete, inspect web to bottom flange weld as outlined in #3 below.

Procedure for Stiffener Intersection Modification Repair Detail:

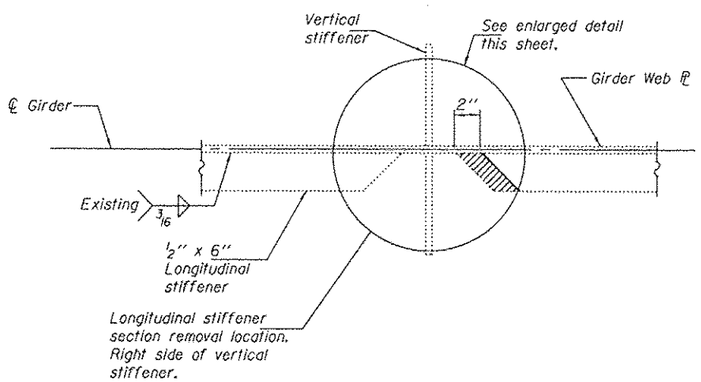
1. Cut areas of existing longitudinal stiffener and along web as shown, with a 1" R (Min) at Web. The minimum distance from cut to face of web shall be the larger of ¼" or web to plate weld size, with removal of remaining material by grinding as described below. The cut shall be made parallel to the web without angling the cut towards the web. Equipment and method of cutting shall be approved by the Engineer. Any method of removal to be used shall ensure that no damage is done to the existing web, vertical stiffener or welds connecting these elements. Cutting shall be done in a manner such that the paint on the opposite face of the web is not damaged. If damage occurs, the damaged area shall be repainted at the contractor's expense and procedures shall be modified to prevent damage at subsequent removal locations.

2. Remove material between cut and web by grinding and grind smooth at web surface and cut end of stiffener. Web ℄ surfaces and cut end of stiffener shall have a roughness average (Ra) of 250 μ in. or less. Grinding equipment shall be approved by the Engineer. The grinding operation should not gouge the girder web ℄.

3. The web and or flange surface at the modification shall be inspected using dye penetrant or magnetic particle (MT) methods. Any cracks found shall be identified and reported to the Bureau of Bridges and Structures for further disposition.

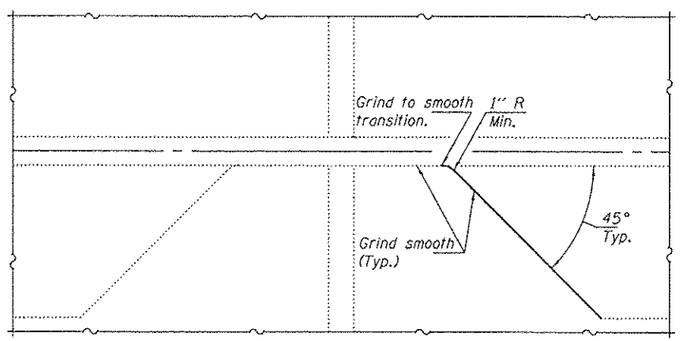
4. The exposed steel surfaces shall be cleaned and painted using an aluminum epoxy mastic primer according to Article 506.10 of the Standard Specifications.

Each stiffener removal area is to be considered as one retrofit. Accepted above referenced work will be paid for at the contract unit price each for Stiffener Intersection Modification, which price shall include all materials, equipment, labor, cleaning, testing and painting.

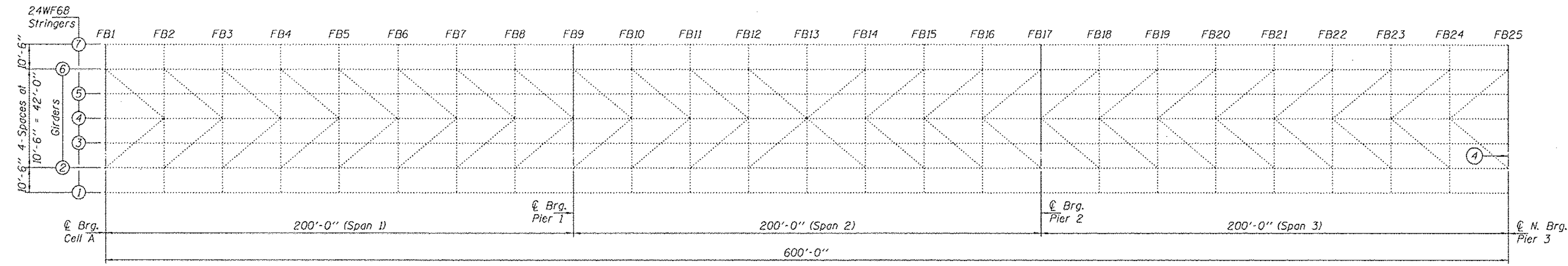


ITEM 107 REPAIR DETAIL

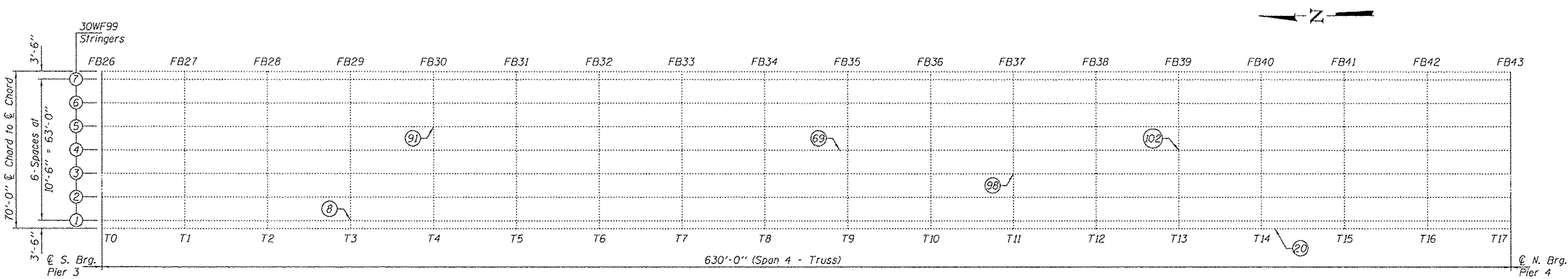
Hatched area indicates section removal.
(Showing 1 location)



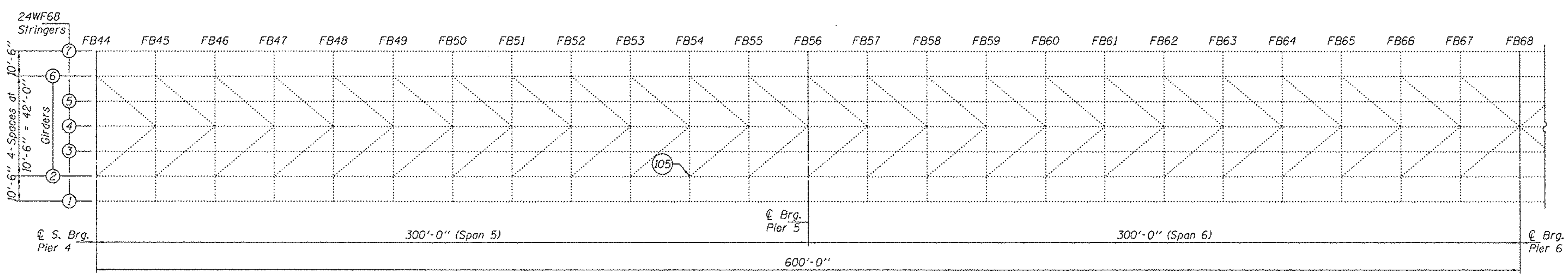
DESIGNED ATH	EXAMINED Timothy A. Bridgett ACTING ENGINEER OF STRUCTURAL SERVICES	DATE - MARCH 14, 2013	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	TABLE OF REPAIRS & STIFFENER INTERSECTION MODIFICATION DETAIL SN 064-0035	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
CHECKED SMR					24	BSMART 2013-1	MASSAC	23	10
DRAWN Kyle M. Steffen	PASSED N Carl Trigg ACTING ENGINEER OF BRIDGES AND STRUCTURES			SHEET NO. 2 OF 15 SHEETS			CONTRACT NO. 78293		
CHECKED ATH SMR							ILLINOIS FED. AID PROJECT		



PARTIAL FRAMING PLAN - SPANS 1 THRU 3



PARTIAL FRAMING PLAN - SPAN 4

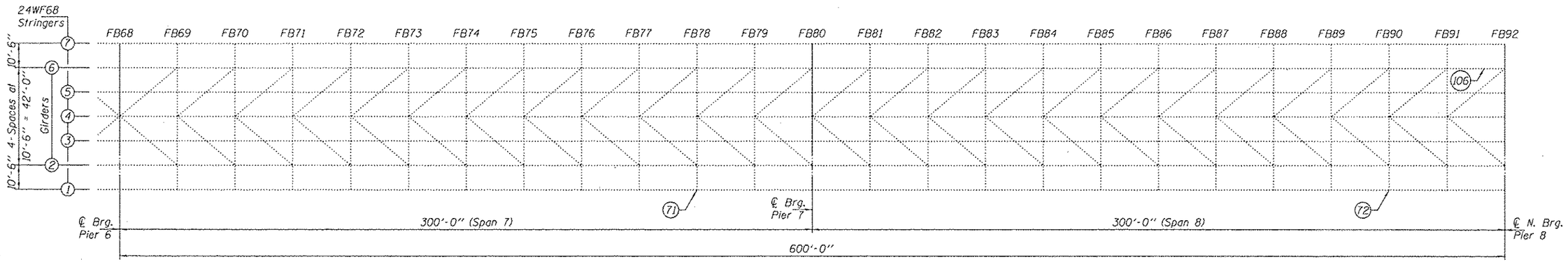


PARTIAL FRAMING PLAN - SPANS 5 & 6

DESIGNED ATH	EXAMINED [signature] ACTING ENGINEER OF STRUCTURAL SERVICES	DATE - MARCH 14, 2013	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION
CHECKED SMR	PASSED [signature] ACTING ENGINEER OF BRIDGES AND STRUCTURES		
DRAWN Kyle M. Steffen			
CHECKED ATH SMR			

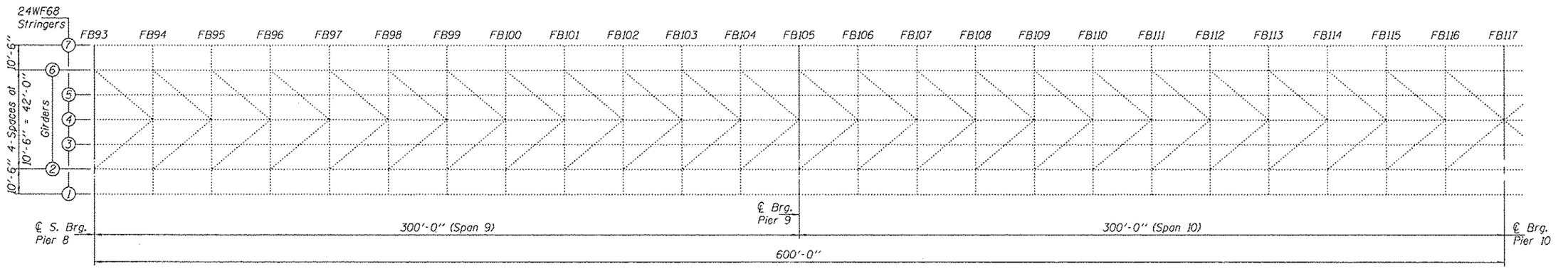
FRAMING PLANS - SPANS 1 THRU 6
SN 064-0035
SHEET NO. 3 OF 15 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
24	BSMART 2013-1	MASSAC	23	11
		CONTRACT NO. 78293		
	ILLINOIS FED. AID PROJECT			

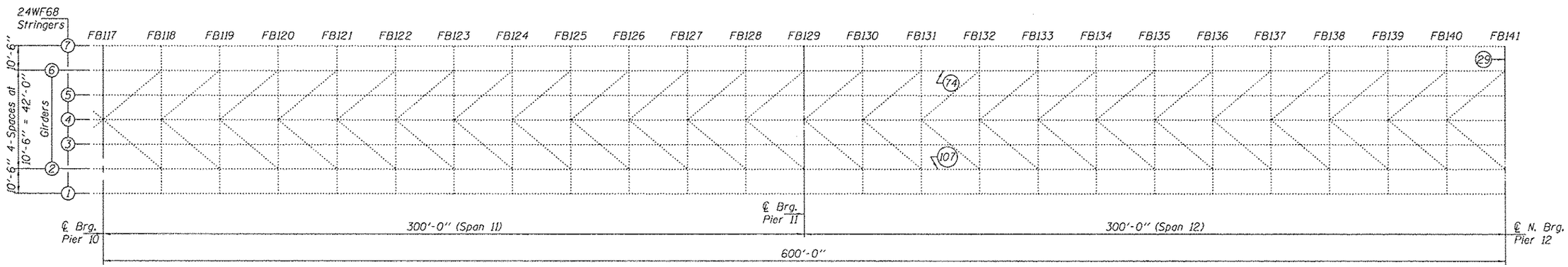


PARTIAL FRAMING PLAN - SPANS 7 & 8

N

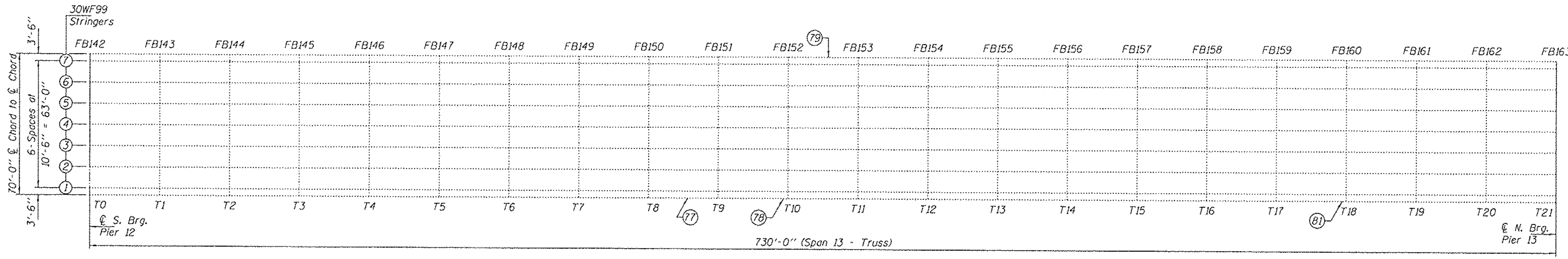


PARTIAL FRAMING PLAN - SPANS 9 & 10

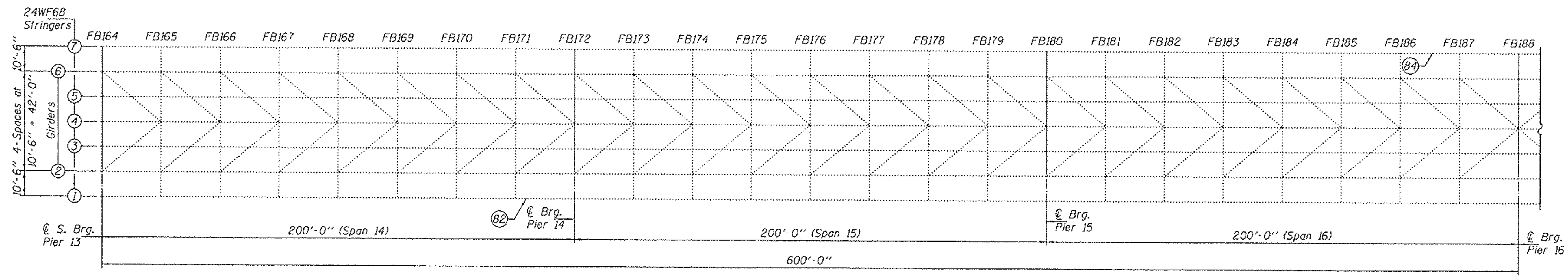


PARTIAL FRAMING PLAN - SPANS 11 & 12

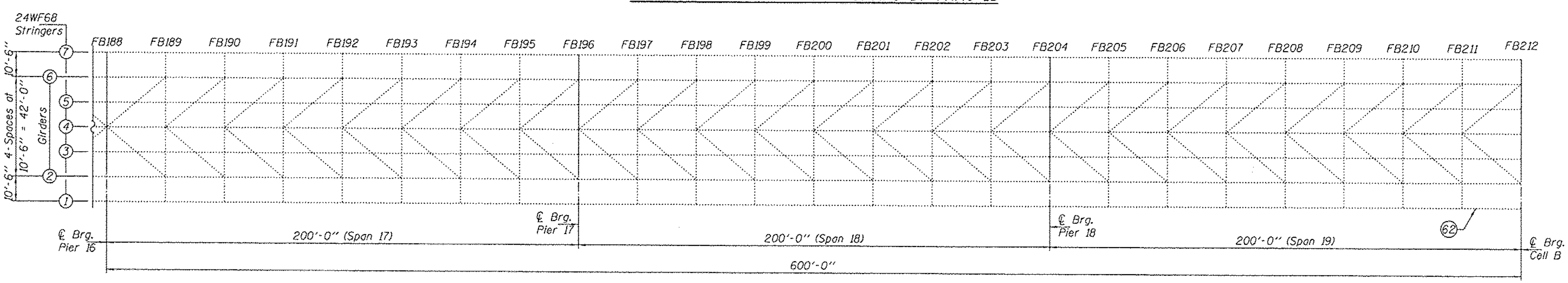
DESIGNED ATH	EXAMINED	Timothy A. Bridgett ACTING ENGINEER OF STRUCTURAL SERVICES	DATE - MARCH 14, 2013	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	FRAMING PLANS – SPANS 7 THRU 12 SN 064-0035	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
CHECKED SMR	PASSED	A. Carl Long ACTING ENGINEER OF BRIDGES AND STRUCTURES				24	BSMART 2013-1	MASSAC	23	12
DRAWN Kyle M. Steffen								CONTRACT NO. 78293		
CHECKED ATH SMR					SHEET NO. 4 OF 15 SHEETS			ILLINOIS FED. AID PROJECT		



PARTIAL FRAMING PLAN - SPAN 13



PARTIAL FRAMING PLAN - SPANS 14 THRU 16



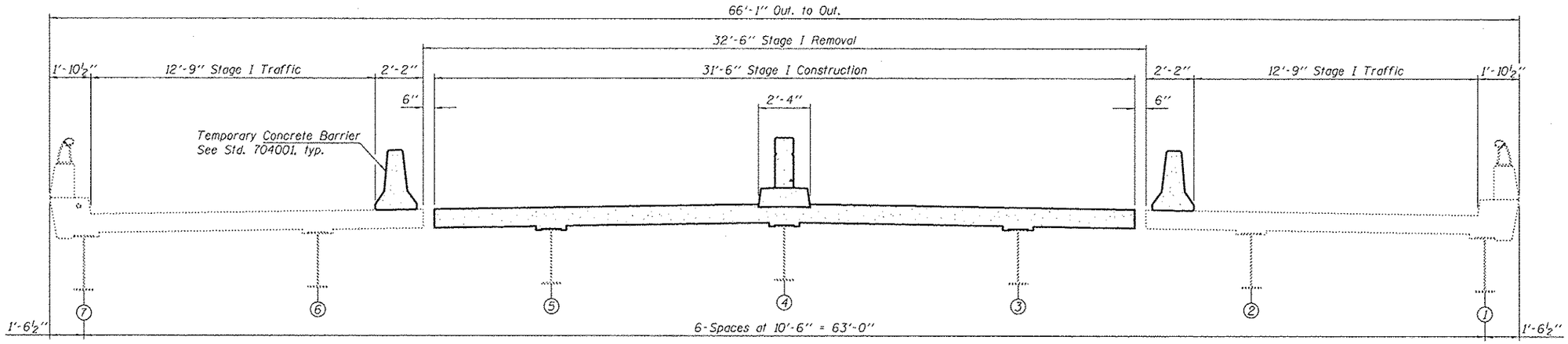
PARTIAL FRAMING PLAN - SPANS 17 THRU 19

DESIGNED ATH	EXAMINED Timothy A. Armbrecht — ACTING ENGINEER OF STRUCTURAL SERVICES	DATE - MARCH 14, 2013	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION
CHECKED SMR	PASSED D. Carl Puzey — ACTING ENGINEER OF BRIDGES AND STRUCTURES		
DRAWN Kyle M. Steffen			
CHECKED ATH SMR			

FRAMING PLANS - SPANS 13 THRU 19
SN 064-0035
SHEET NO. 5 OF 15 SHEETS

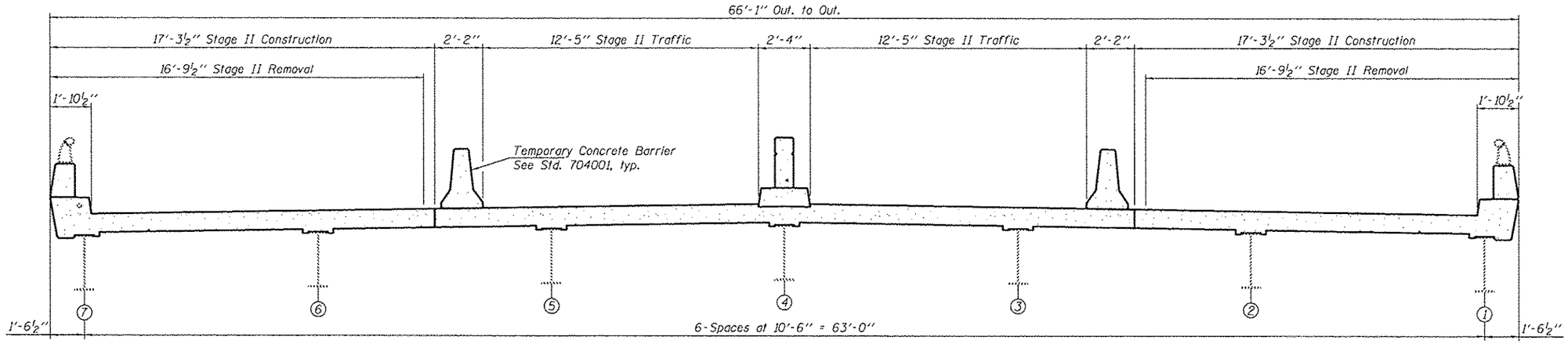
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
24	BSMART 2013-1	MASSAC	23	13

CONTRACT NO. 78293
ILLINOIS FED. AID PROJECT



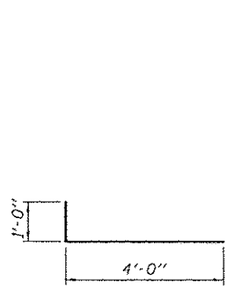
STAGE I REMOVAL & CONSTRUCTION DETAILS

(Looking South)

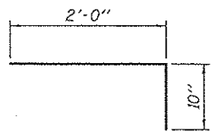


STAGE II REMOVAL & CONSTRUCTION DETAILS

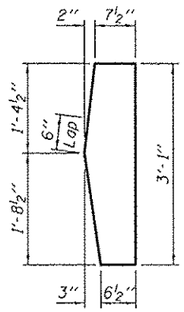
(Looking South)



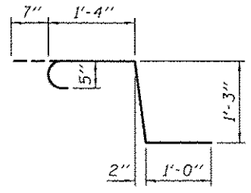
BAR a2(E)



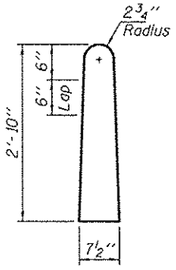
BAR b(E)



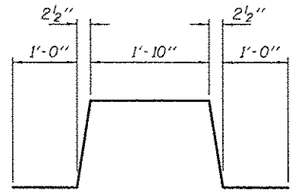
BAR s(E)



BAR s1(E)

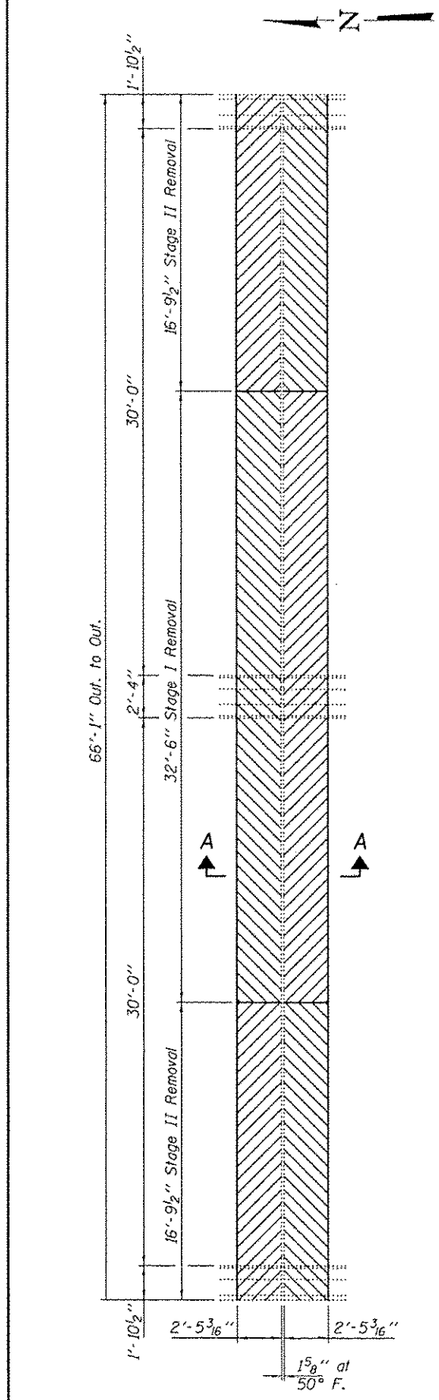


BAR s2(E)



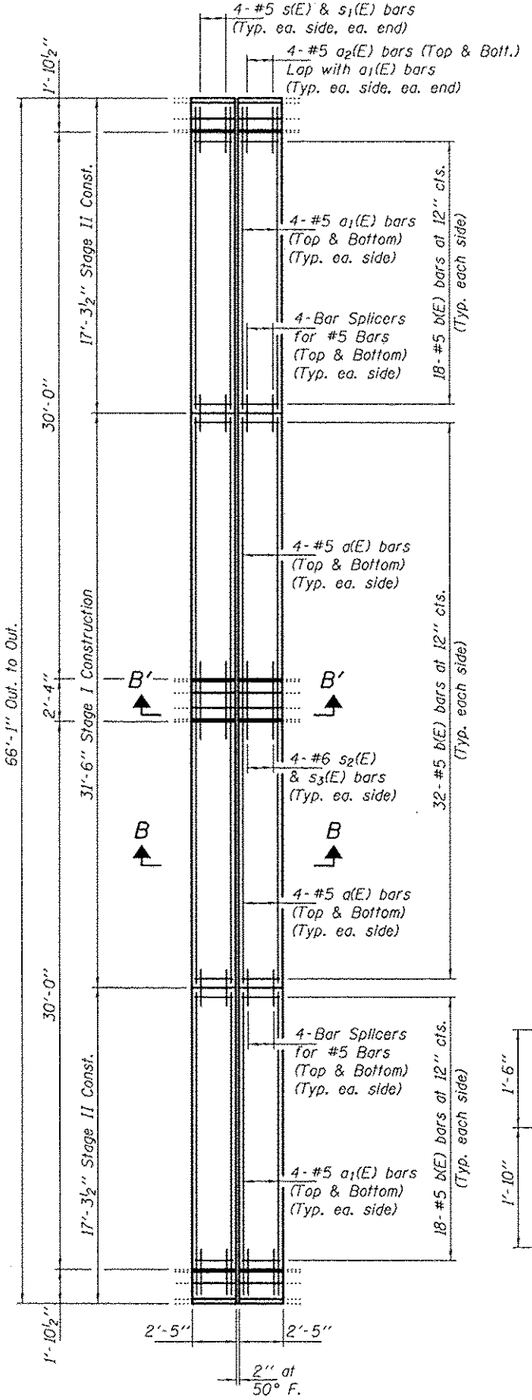
BAR s3(E)

DESIGNED ATH	EXAMINED	DATE - MARCH 14, 2013	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	STAGE CONSTRUCTION DETAILS SN 064-0035	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
CHECKED SMR					24	BSMART 2013-1	MASSAC	23	14
DRAWN Kyle M. Steffen	PASSED	ACTING ENGINEER OF STRUCTURAL SERVICES		SHEET NO. 6 OF 15 SHEETS			CONTRACT NO. 78293		
CHECKED ATH SMR		ACTING ENGINEER OF BRIDGES AND STRUCTURES					ILLINOIS FED. AID PROJECT		



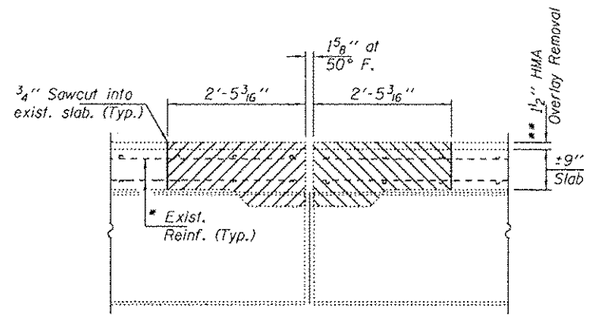
REMOVAL PLAN

(Typ. except as shown on Section C-C)

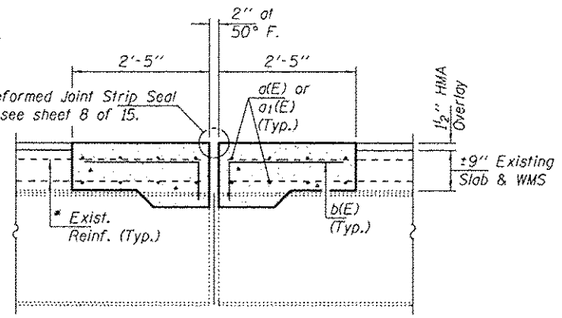


REPLACEMENT PLAN

(Typ. except as shown on Section C-C)

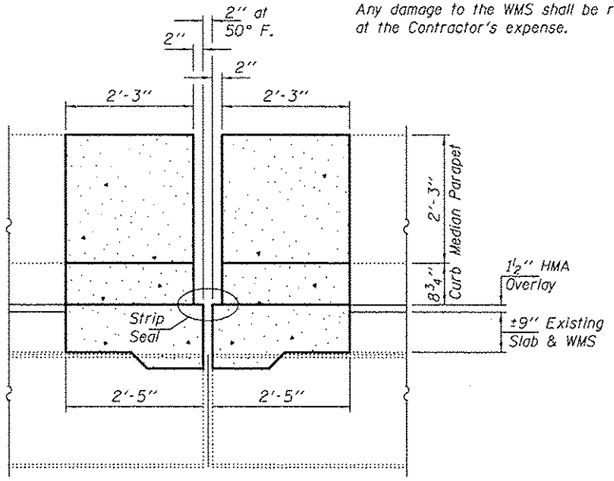


SECTION A-A



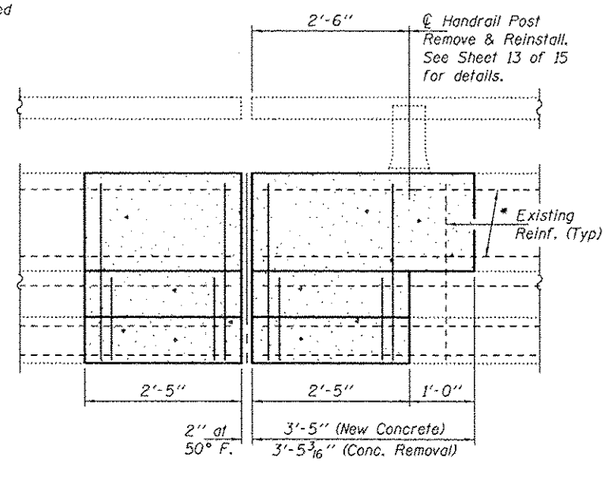
SECTION B-B

** Care shall be taken not to damage the existing Waterproofing Membrane System. Any damage to the WMS shall be repaired at the Contractor's expense.



SECTION B'-B'

(Reinforcement not shown for clarity)

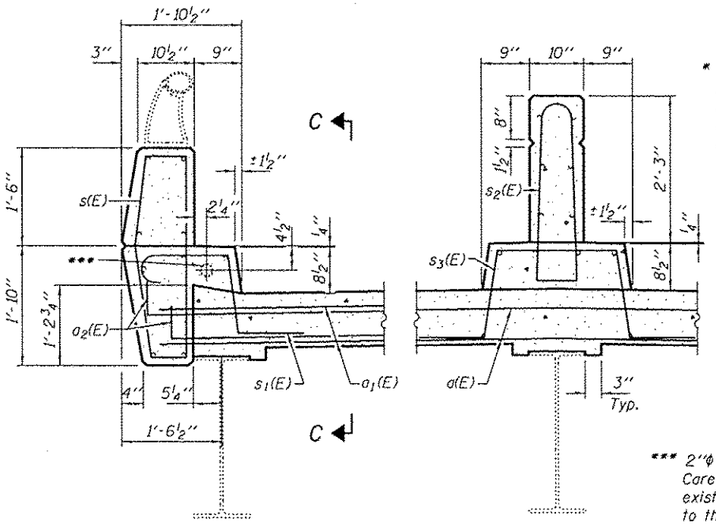


SECTION C-C

Showing Repair (IN) & (15)

(4 Locations)

(Quantity included in Total Bill of Material)



PARAPET & MEDIAN DETAILS

* 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.

*** 2"ϕ Conduit at East Curb only. Care shall be taken not to damage existing utility conduits. Any damage to the conduits shall be repaired at the Contractor's expense.

Note: For Reinforcement Bar Details see sheet 6 of 15.

BILL OF MATERIAL FOR ONE RELIEF JOINT

Bar	No.	Size	Length	Shape
a(E)	16	#5	31'-3"	
a1(E)	32	#5	18'-6"	
a2(E)	32	#5	5'-0"	
b(E)	136	#5	2'-10"	
s(E)	16	#5	7'-11"	
s1(E)	16	#5	4'-3"	
s2(E)	8	#6	7'-5"	
s3(E)	8	#6	6'-7"	
Concrete Removal			Cu. Yd.	15.2
Concrete Superstructure			Cu. Yd.	15.6
Bar Splicers			Each	32
Reinforcement Bars, Epoxy Coated			Pounds	2080

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

EXAMINED — Timothy A. Bridges, ACTING ENGINEER OF STRUCTURAL SERVICES

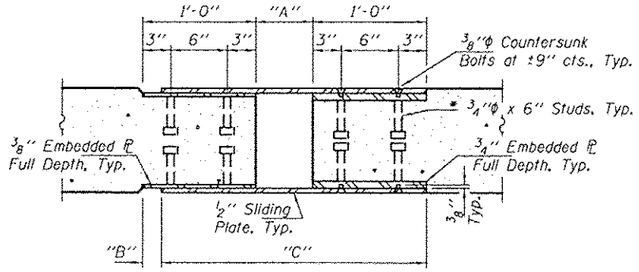
PASSED — A Carl Tripp, ACTING ENGINEER OF BRIDGES AND STRUCTURES

DATE - MARCH 14, 2013

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

RELIEF JOINT REMOVAL & REPLACEMENT DETAILS
SN 064-0035
SHEET NO. 7 OF 15 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
24	85MART 2013-1	MASSAC	23	15
		CONTRACT NO. 78293		
	ILLINOIS FED. AID PROJECT			

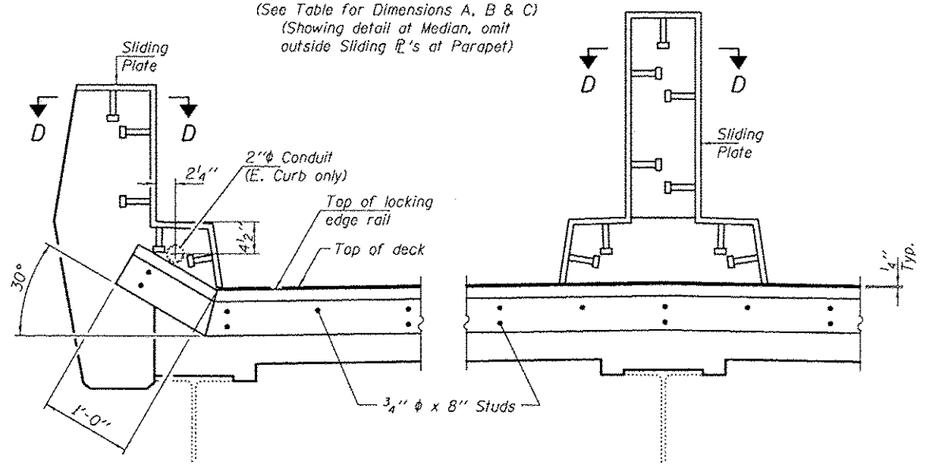


SECTION D-D

(See Table for Dimensions A, B & C)
(Showing detail at Median, omit outside Sliding ℄'s at Parapet)

SLIDING ℄ TABLE OF DIMENSIONS

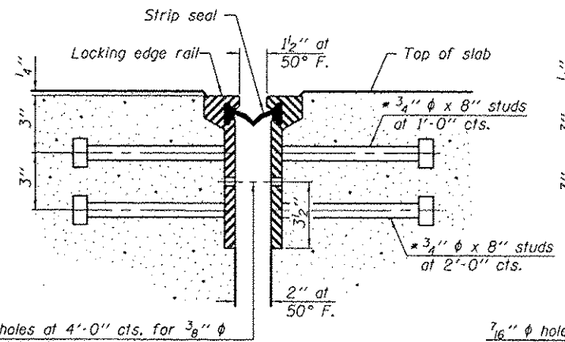
LOCATION	Dim. "A" at 50° F.	Dim. "B" at 50° F.	Dim. "C" (℄ Length)
Relief Joints	6"	2"	2'-4"
Cell A	8 1/8"	2 1/8"	2'-6"
Cell B	12 1/4"	4 1/4"	2'-8"



SHOWING SLIDING PLATES AT CELLS A & B ONLY

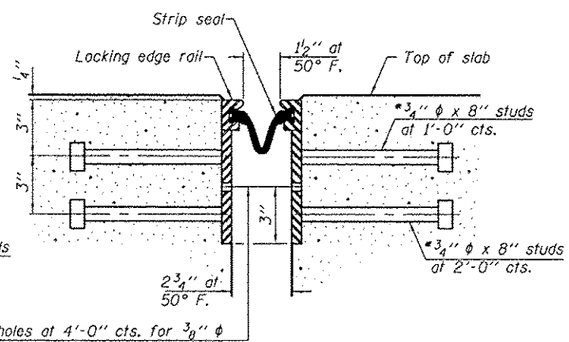
SHOWING SLIDING PLATES AT RELIEF JOINTS AND CELLS A & B

TYPICAL END TREATMENT AT PARAPET AND MEDIAN



7/16" ϕ holes at 4'-0" cts. for 3/8" ϕ bolts. All bolts shall be burned, sawed, or chipped off flush with the plates after forms are removed, typ.

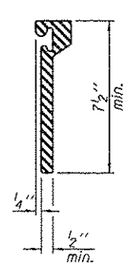
SECTION THRU ROLLED RAIL JOINT



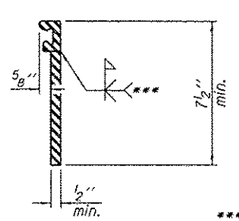
7/16" ϕ holes at 4'-0" cts. for 3/8" ϕ bolts. All bolts shall be burned, sawed, or chipped off flush with the plates after forms are removed, typ.

SECTION THRU WELDED RAIL JOINT

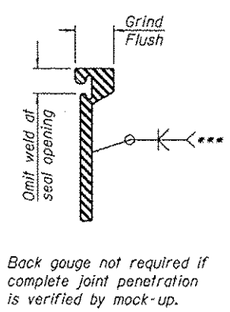
* Granular or solid flux filled headed studs conforming to Article 1006.32 of the Std. Specs., automatically end welded.



ROLLED EXTRUDED RAIL



WELDED RAIL



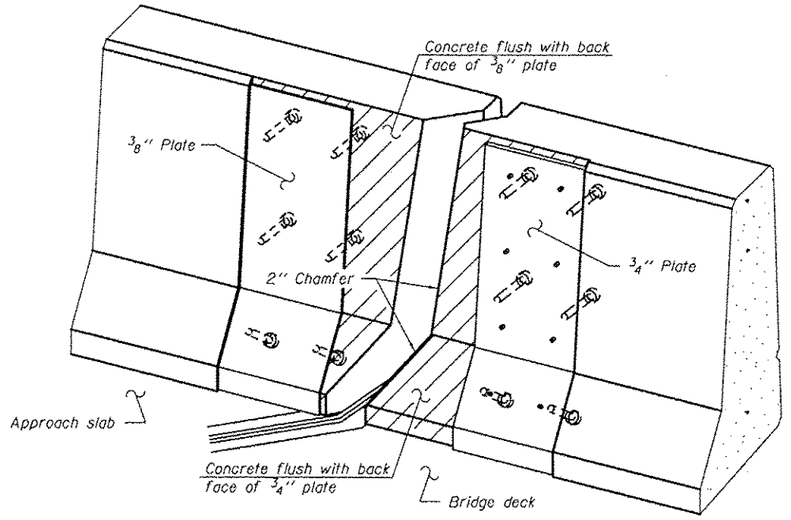
*** Back gouge not required if complete joint penetration is verified by mock-up.

LOCKING EDGE RAIL SPLICE

The inside of the locking edge rail groove shall be free of weld residue.

Rolled rail shown, welded rail similar.

LOCKING EDGE RAILS



TRIMETRIC VIEW

(Showing back plates only)

Notes:

The strip seal shall be made continuous and shall have a minimum thickness of 1/4". The configuration of the strip seal shall match the configuration of the Locking Edge Rails. Open or "webbed" strip seal gland configurations are not permitted. The gland shall be sized for a maximum rated movement of 4 inches.

The Locking Edge Rails depicted are conceptual only, except for the minimum dimensions shown. The actual configuration of the Locking Edge Rails and matching strip seal may vary from manufacturer to manufacturer. Flanged edge rails will not be allowed. Locking Edge Rails may be spliced at slope discontinuities.

The manufacturer's recommended installation methods shall be followed.

The joint opening and deck dimensions detailed on the superstructure are based on a rolled rail expansion joint. If the Contractor elects to use the welded rail expansion joint, the opening and deck dimensions shall be modified according to the dimensions detailed on this sheet. Required modifications shall be made at no additional cost to the State.

All steel components shall be galvanized after fabrication according to Article 520.03 of the Standard Specifications.

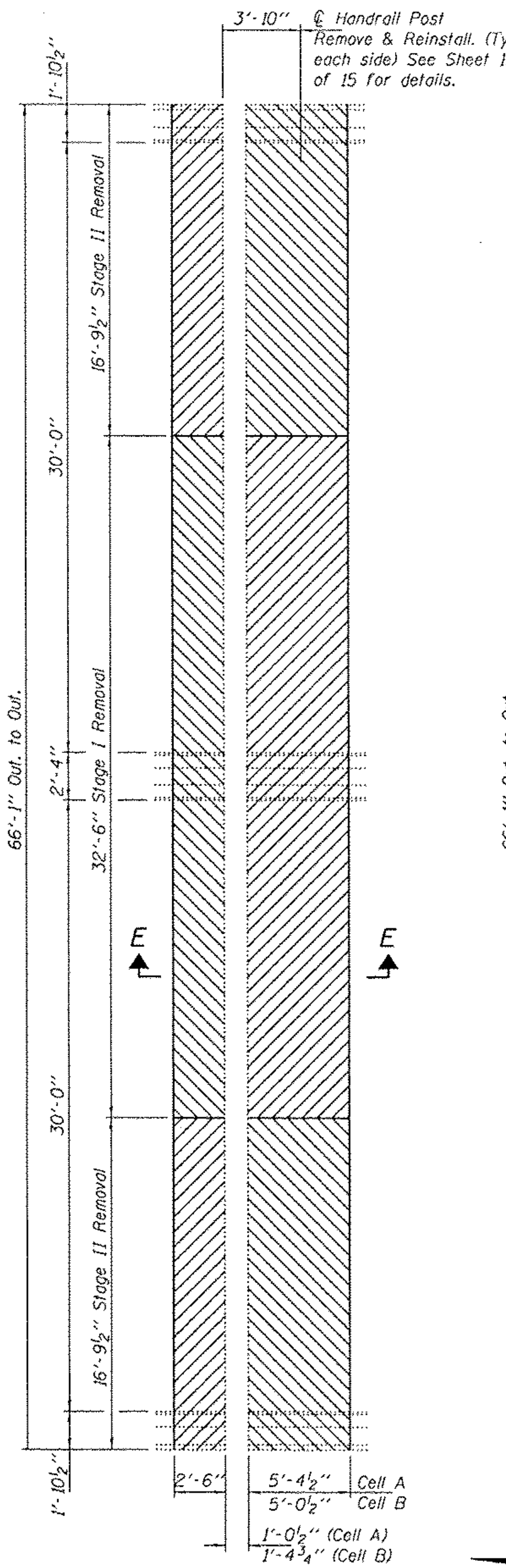
Maximum space between rail segments shall be 3/16", sealed with a suitable sealant. Joints in rails within 10 ft. of curbs shall be welded.

Parapet plates and anchorage studs included in the cost of Preformed Joint Strip Seal, Modular Expansion Joint 6" or Modular Expansion Joint 9" as applicable.

BILL OF MATERIAL

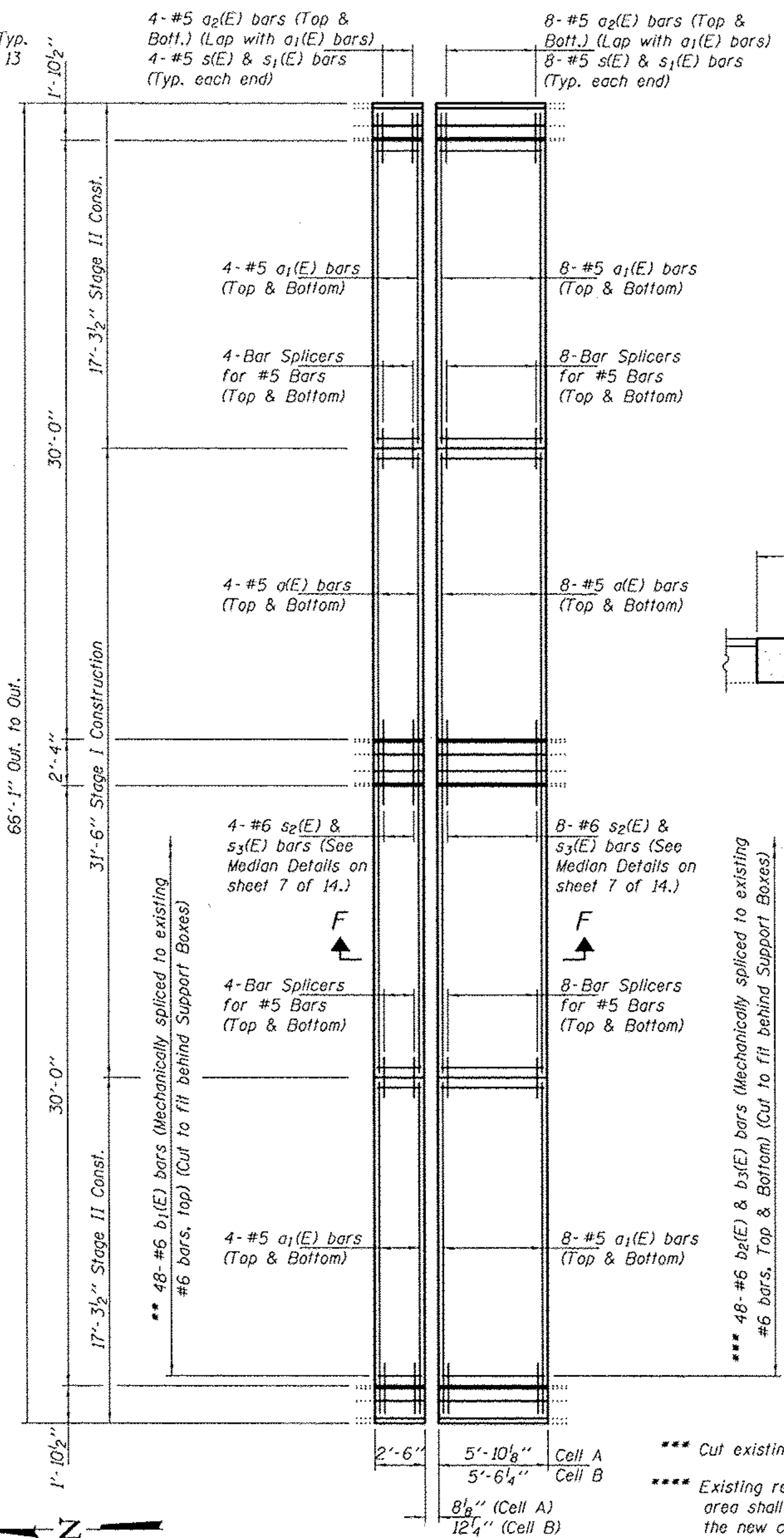
Item	Unit	Total
Preformed Joint Strip Seal	Foot	378
Modular Expansion Joint, 6"	Foot	66
Modular Expansion Joint, 9"	Foot	66

DESIGNED ATH	EXAMINED	Timothy A. Sheldahl ACTING ENGINEER OF STRUCTURAL SERVICES	DATE - MARCH 14, 2013	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	PREFORMED JOINT STRIP SEAL DETAILS SN 064-0035	F.A.I. RTE. 24 / SECTION BSMART 2013-1 / COUNTY MASSAC / TOTAL SHEETS 23 / SHEET NO. 16
CHECKED SMR	PASSED	J. Carl Puzey ACTING ENGINEER OF BRIDGES AND STRUCTURES			SHEET NO. 8 OF 15 SHEETS	CONTRACT NO. 78293
DRAWN Kyle M. Steffen						ILLINOIS FED. AID PROJECT
CHECKED ATH SMR						



REMOVAL PLAN

Cell A shown, Cell B similar by 180° rotation except as noted.



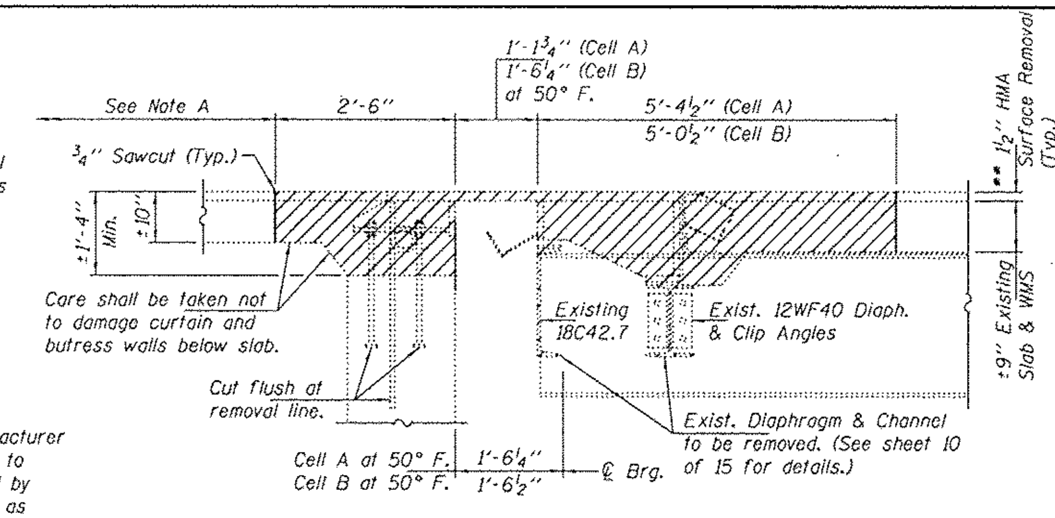
REPLACEMENT PLAN

Cell A shown, Cell B similar by 180° rotation except as noted.

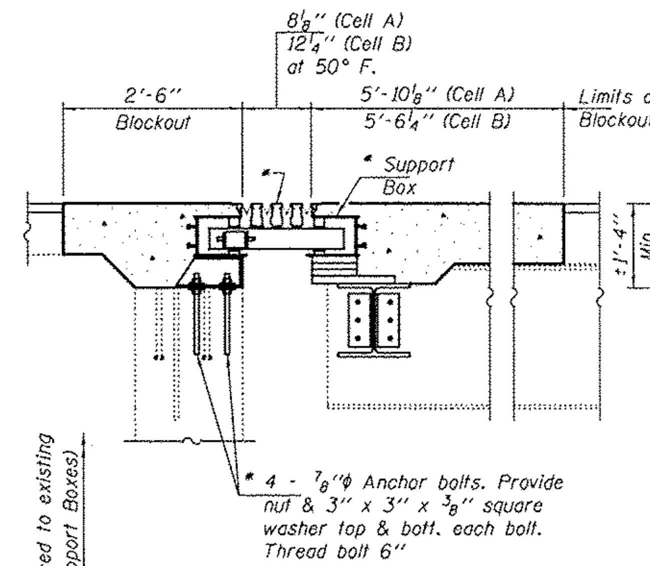
Note A:
No construction equipment or material allowed within 6' of cut after sawcut is made until new concrete pour is cured each stage.

Note:
For Parapet & Median details see sheet 7 of 15.

* Number of rails determined by manufacturer Support Boxes to be rigidly attached to diaphragms, beams and abutment wall by adjustable brackets, stools, or shims as determined by manufacturer.

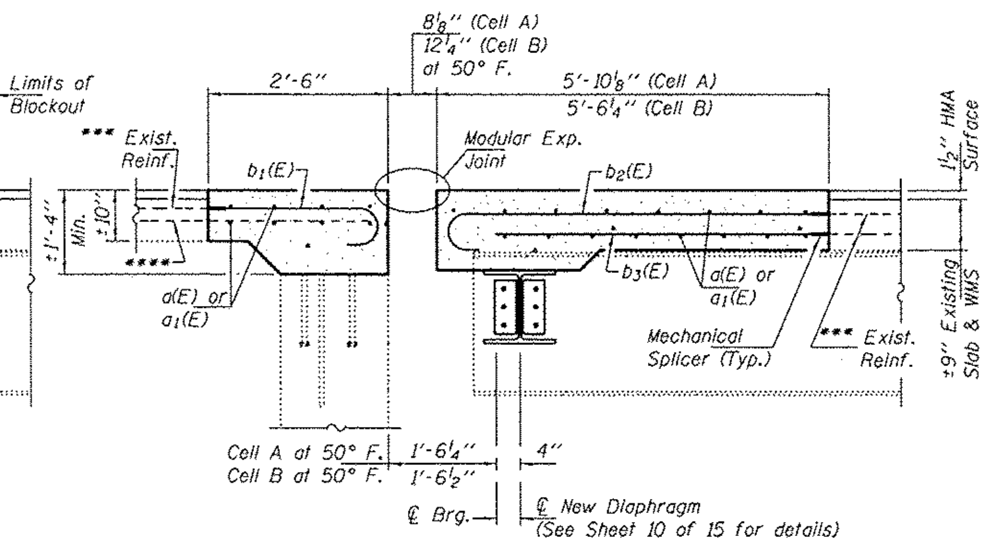


SECTION E-E



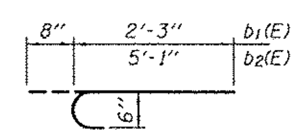
MODULAR JOINT AT CELL A & B

For Reinforcement see Section F-F.



SECTION F-F

** Care shall be taken not to damage the existing Waterproofing Membrane System. Any damage to the WMS shall be repaired at the Contractor's expense.



BARS $b_1(E)$ & $b_2(E)$

*** Cut existing reinforcement 6" from removal line.

**** 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.

BILL OF MATERIAL FOR CELL A

Bar	No.	Size	Length	Shape
a(E)	24	#5	31'-3"	
a1(E)	48	#5	18'-6"	
a2(E)	48	#5	5'-0"	
b1(E)	48	#6	2'-11"	
b2(E)	48	#6	5'-9"	
b3(E)	48	#6	4'-0"	
s(E)	24	#5	7'-11"	
s1(E)	24	#5	4'-3"	
s2(E)	12	#6	7'-5"	
s3(E)	12	#6	6'-7"	
Concrete Removal		Cu. Yd.	26.3	
Concrete Superstructure		Cu. Yd.	27.7	
Bar Splicers		Each	48	
Mechanical Splicers		Each	144	
Reinforcement Bars, Epoxy Coated		Pounds	3430	

BILL OF MATERIAL FOR CELL B

Bar	No.	Size	Length	Shape
a(E)	24	#5	31'-3"	
a1(E)	48	#5	18'-6"	
a2(E)	48	#5	5'-0"	
b1(E)	48	#6	2'-11"	
b2(E)	48	#6	5'-9"	
b3(E)	48	#6	4'-0"	
s(E)	24	#5	7'-11"	
s1(E)	24	#5	4'-3"	
s2(E)	12	#6	7'-5"	
s3(E)	12	#6	6'-7"	
Concrete Removal		Cu. Yd.	25.2	
Concrete Superstructure		Cu. Yd.	26.7	
Bar Splicers		Each	48	
Mechanical Splicers		Each	144	
Reinforcement Bars, Epoxy Coated		Pounds	3430	

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

EXAMINED [signature] ACTING ENGINEER OF STRUCTURAL SERVICES
PASSED [signature] ACTING ENGINEER OF BRIDGES AND STRUCTURES

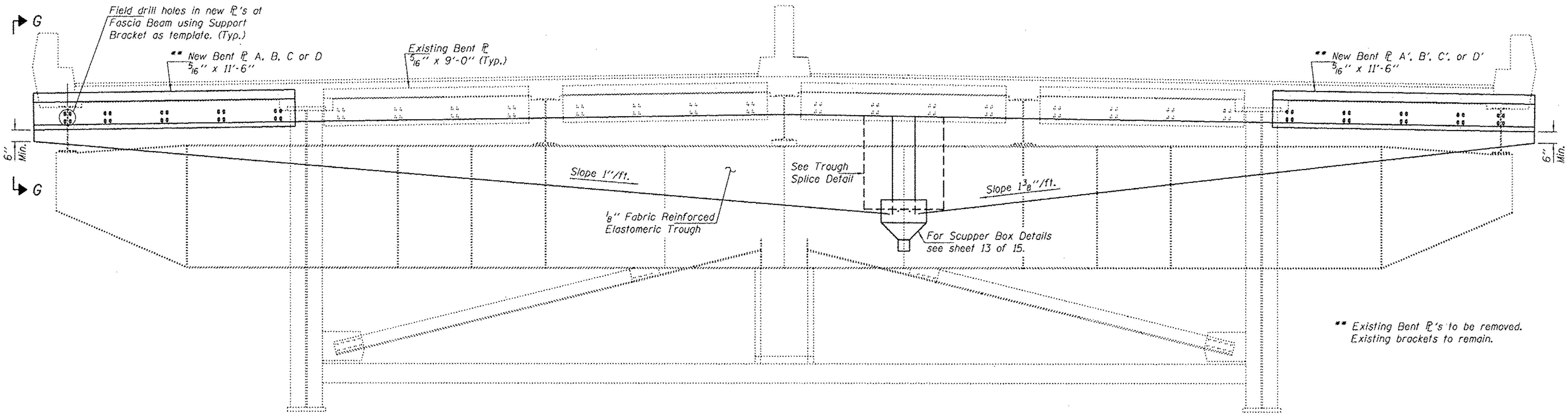
DATE - MARCH 14, 2013

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

MODULAR EXPANSION JOINT DETAILS
SN 064-0035
SHEET NO. 9 OF 15 SHEETS

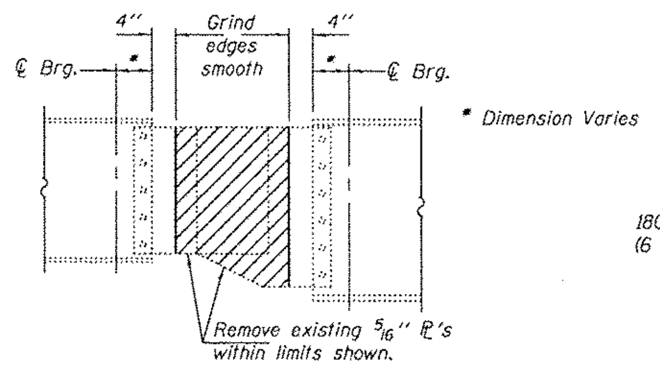
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
24	BSMART 2013-1	MASSAC	23	17

CONTRACT NO. 78293
ILLINOIS FED. AID PROJECT



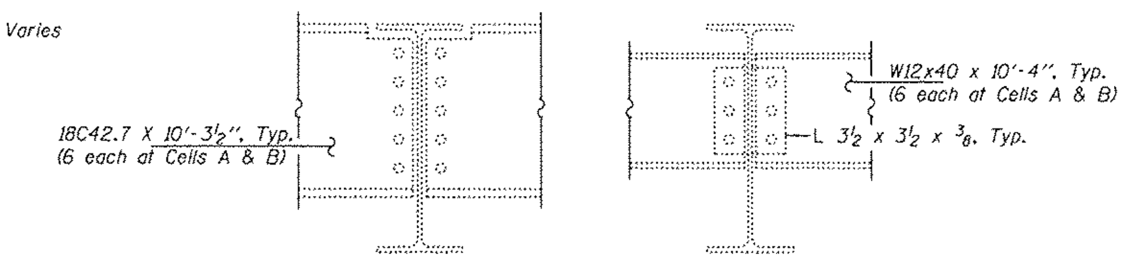
CROSS-SECTION THRU TROUGH AT PIERS 3, 4, 8, 12 & 13

(Looking Eastbound / South)



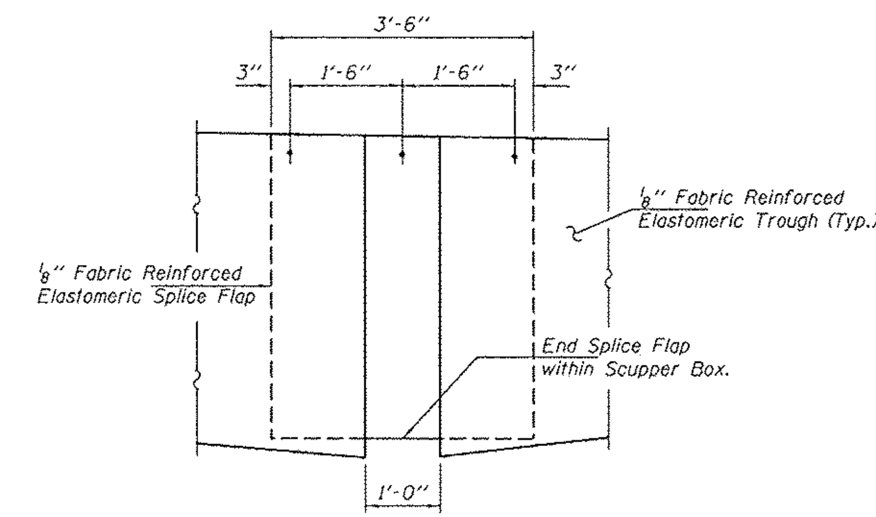
VIEW G-G

(Showing Removal. Fascia Beams only)
Plate sizes vary. Cost included
with Structural Steel Removal.



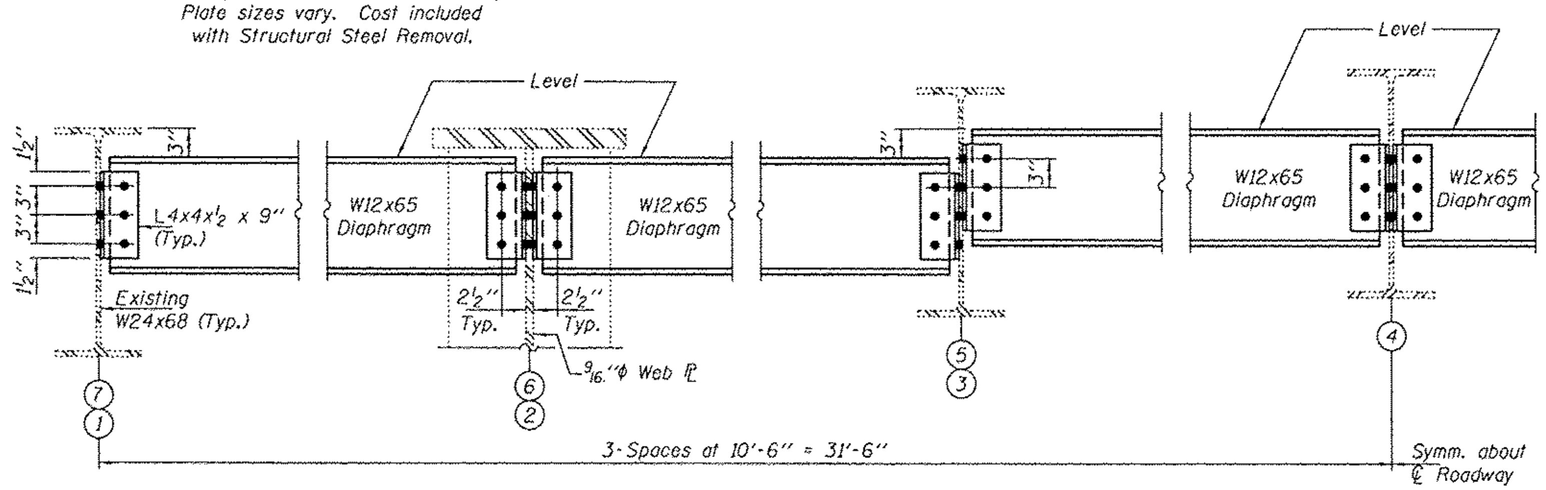
TYPICAL EXISTING DIAPHRAGM & CHANNEL REMOVAL DETAILS

Plug All Open Holes with 7/8"φ H.S. Bolts.

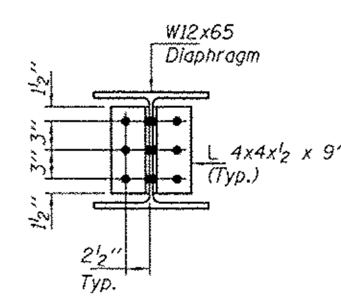


TROUGH SPLICE DETAIL

(Scupper Box not shown for clarity)



DIAPHRAGM DETAILS AT CELLS A & B

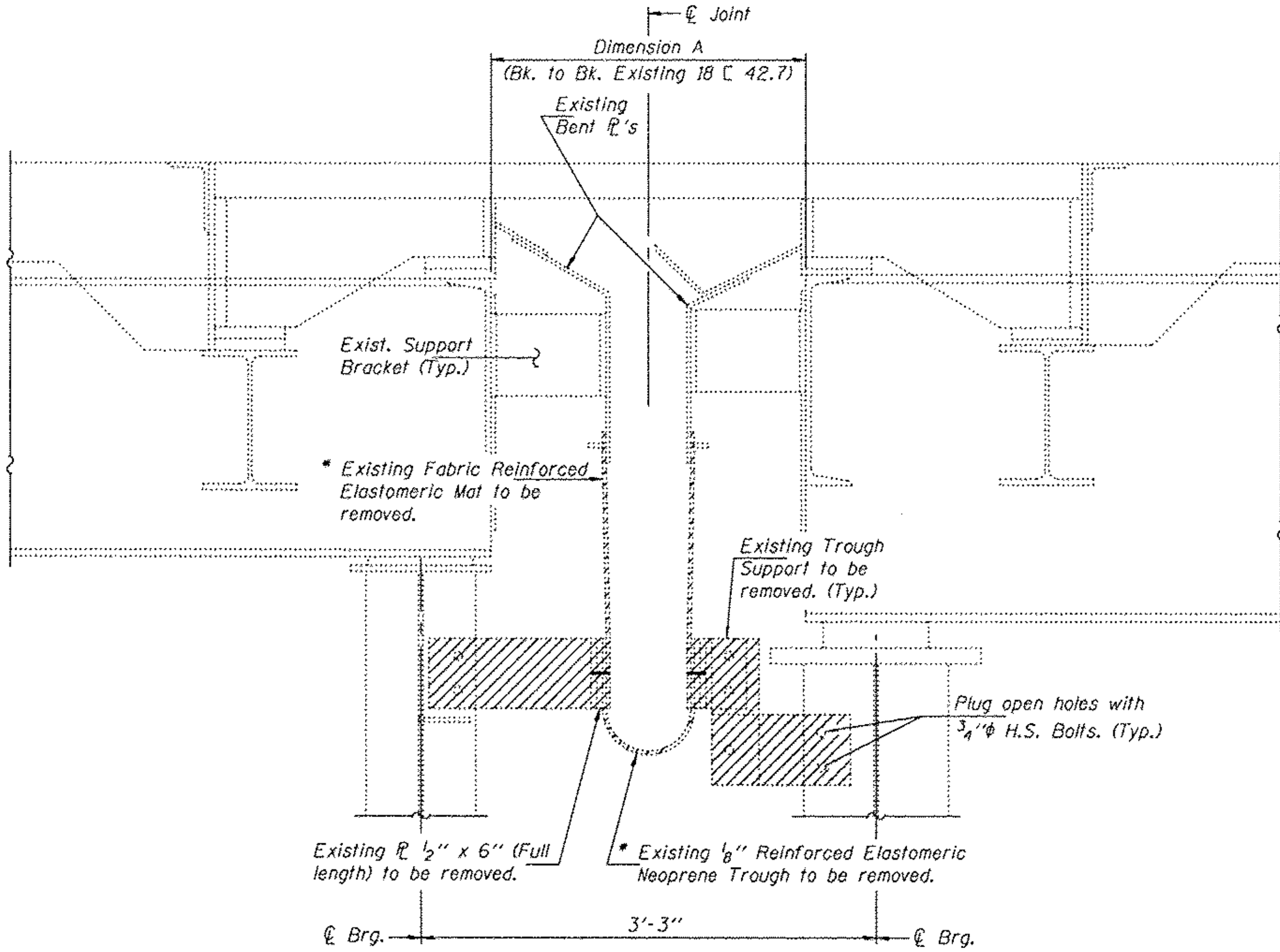


TYPICAL SECTION THRU DIAPHRAGM

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

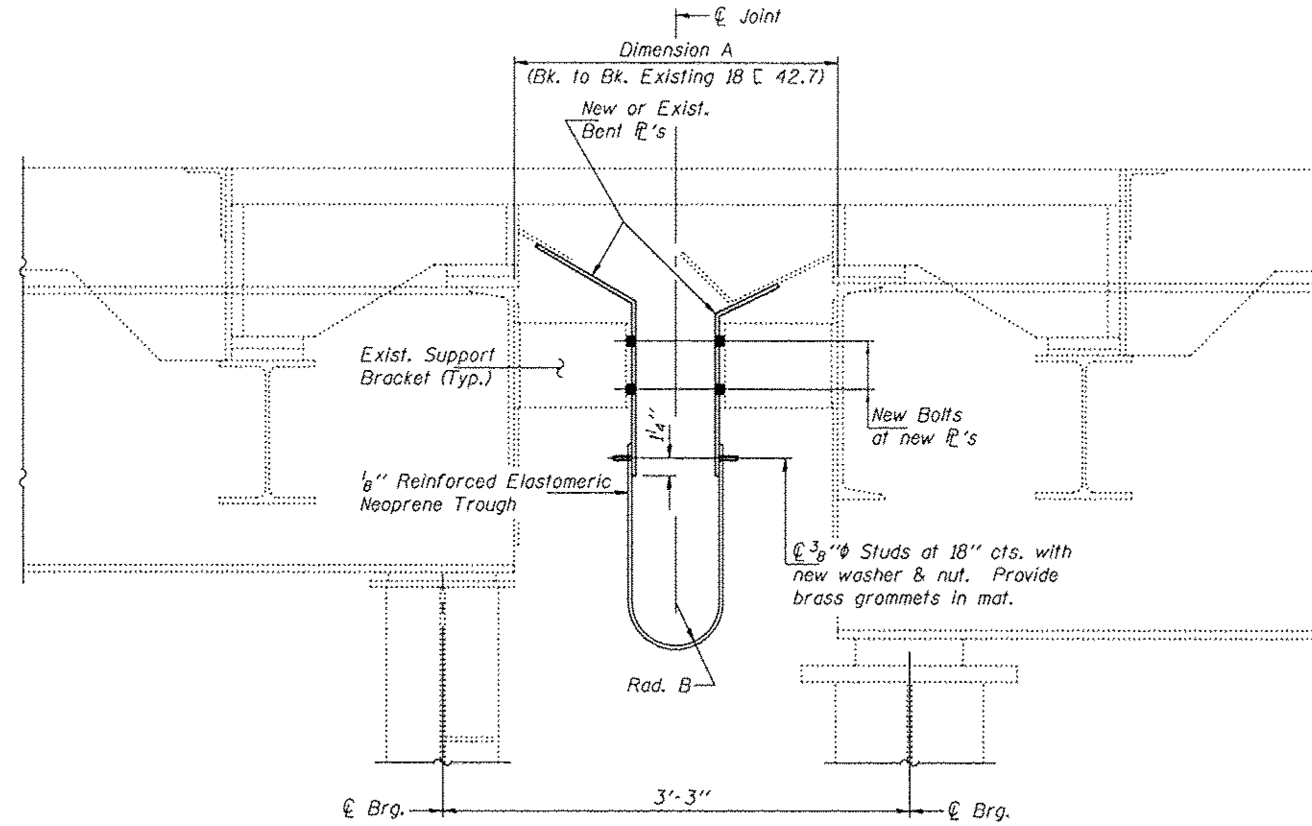
DESIGNED ATH	EXAMINED	ACTING ENGINEER OF STRUCTURAL SERVICES	DATE - MARCH 14, 2013	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	DIAPHRAGM AND TROUGH DETAILS SN 064-0035
CHECKED SMR					
DRAWN Kyle M. Steffen	PASSED	ACTING ENGINEER OF BRIDGES AND STRUCTURES			SHEET NO. 10 OF 15 SHEETS
CHECKED ATH SMR					

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
24	BSMART 2013-1	MASSAC	23	18
		CONTRACT NO. 78293		
	ILLINOIS FED. AID PROJECT			



EXISTING SECTION THRU JOINT

* Cost included with Structural Steel Removal.

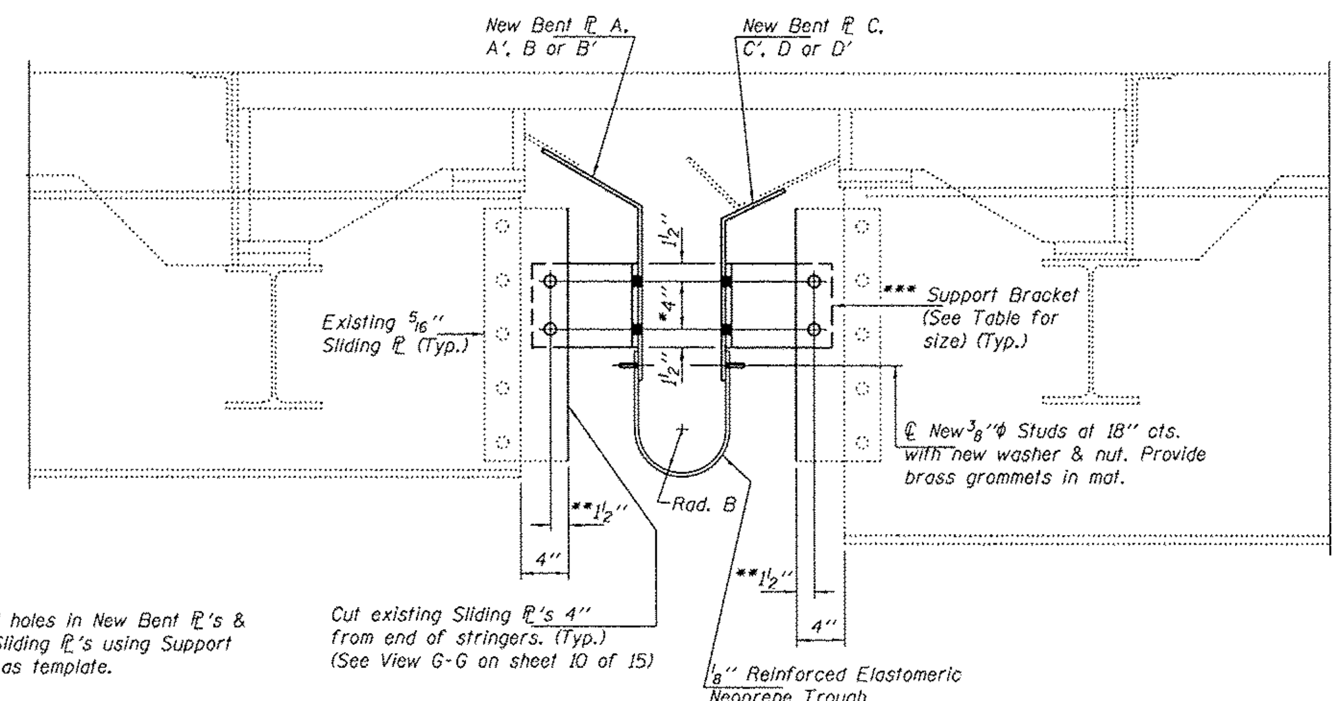


PROPOSED SECTION THRU JOINT

(Except at Fascia Beams)

TABLE OF DIMENSION

LOCATION	DIMENSION AT TEMPERATURE (F.)										***Support Bracket Cut From
	20°		40°		60°		80°		100°		
	Dim. A	Rad. B	Dim. A	Rad. B	Dim. A	Rad. B	Dim. A	Rad. B	Dim. A	Rad. B	
Pier #3	2'-7 1/8"	5 1/16"	2'-5 11/16"	4 7/8"	2'-4 1/4"	3 5/8"	2'-2 13/16"	2 15/16"	2'-1 5/16"	2 3/16"	W10x30
Pier #4	1'-7 1/8"	4 9/16"	1'-6 7/16"	4 1/4"	1'-5 3/4"	3 7/8"	1'-5 1/16"	3 9/16"	1'-4 5/16"	3 3/16"	W5x16
Pier #8	3'-2 3/4"	8 7/8"	3'-0 3/8"	7 11/16"	2'-10"	6 1/2"	2'-7 5/8"	5 5/16"	2'-5 5/16"	4 1/8"	W10x30
Pier #12	3'-0 11/16"	7 7/8"	2'-10 7/8"	6 15/16"	2'-9"	6"	2'-7 1/8"	5 1/16"	2'-5 5/16"	4 1/8"	W10x30
Pier #13	1'-9 5/8"	5 13/16"	1'-8 11/16"	5 3/8"	1'-7 3/4"	4 7/8"	1'-6 13/16"	4 7/16"	1'-5 7/8"	3 15/16"	W5x16



** Field drill holes in New Bent ℄'s & existing Sliding ℄'s using Support Brackets as template.

*** See sheet 13 of 15 for W Shape cutting details.

PROPOSED SECTION THRU JOINT AT FASCIA BEAMS

(3/4"ϕ Bolts in 13/16"ϕ Holes except as noted on Sheet 12 of 15)

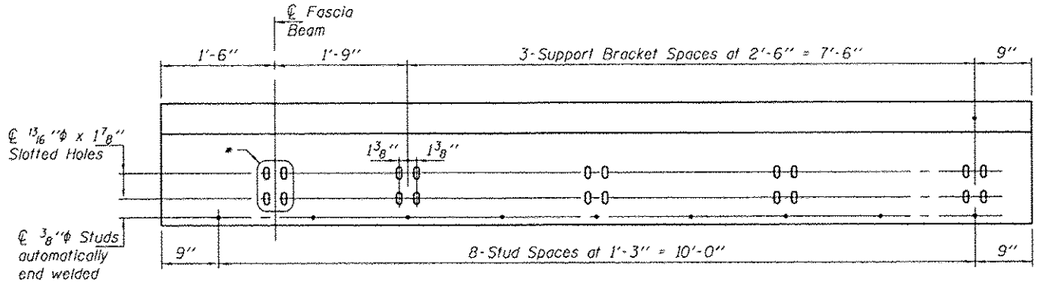
DESIGNED ATH	EXAMINED [signature] ACTING ENGINEER OF STRUCTURAL SERVICES	DATE - MARCH 14, 2013	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION
CHECKED SMR	PASSED [signature] ACTING ENGINEER OF BRIDGES AND STRUCTURES		
DRAWN Kyle M. Steffen			
CHECKED ATH SMR			

TROUGH DETAILS
SN 064-0035
SHEET NO. 11 OF 15 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
24	BSMART 2013-1	MASSAC	23	19

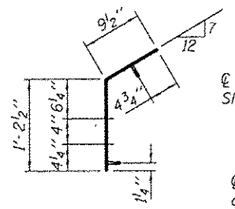
CONTRACT NO. 78293

ILLINOIS FED. AID PROJECT

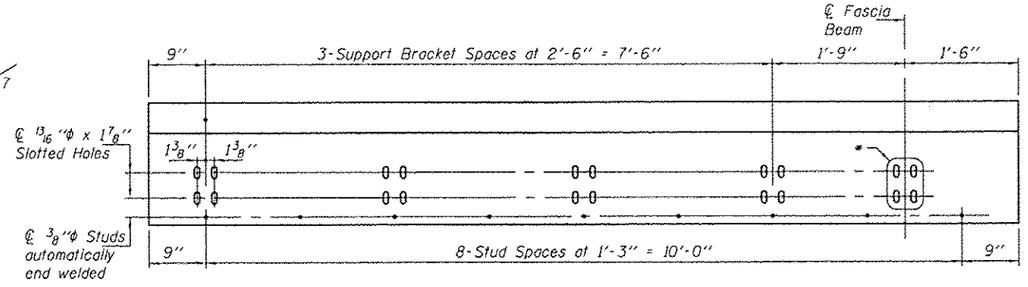


BENT PLATE A

℄ 5/16" x 2'-0" x 11'-6"
(At Piers 3, 8 & 12)
(3-Required)

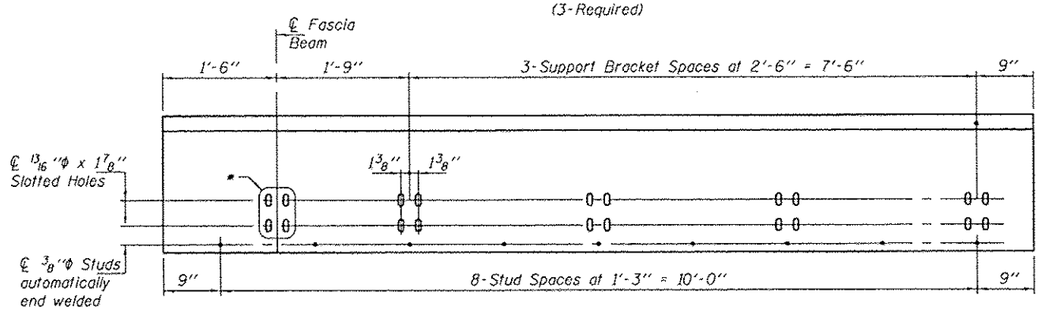


SECTION THRU BENT PLATE A & A'



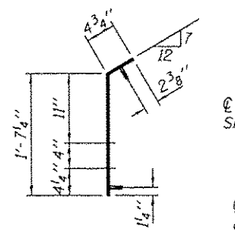
BENT PLATE A'

℄ 5/16" x 2'-0" x 11'-6"
(At Piers 3, 8 & 12)
(3-Required)

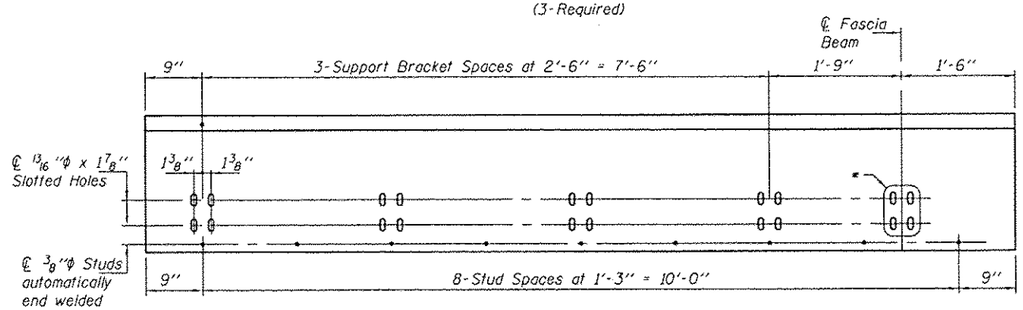


BENT PLATE B

℄ 5/16" x 2'-0" x 11'-6"
(At Piers 4 & 13)
(2-Required)

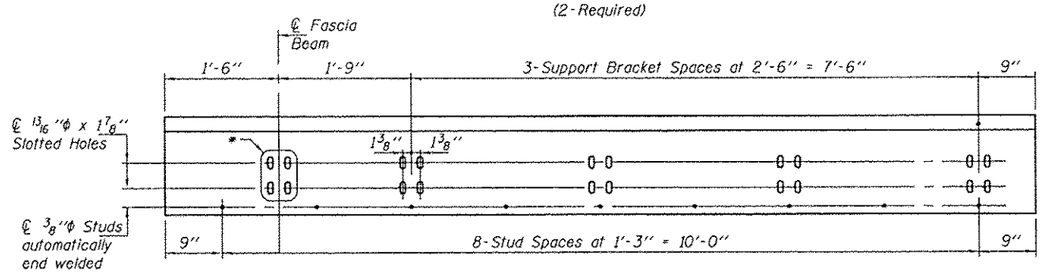


SECTION THRU BENT PLATE B & B'



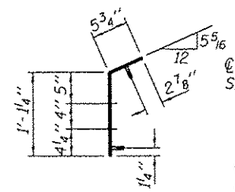
BENT PLATE B'

℄ 5/16" x 2'-0" x 11'-6"
(At Piers 4 & 13)
(2-Required)

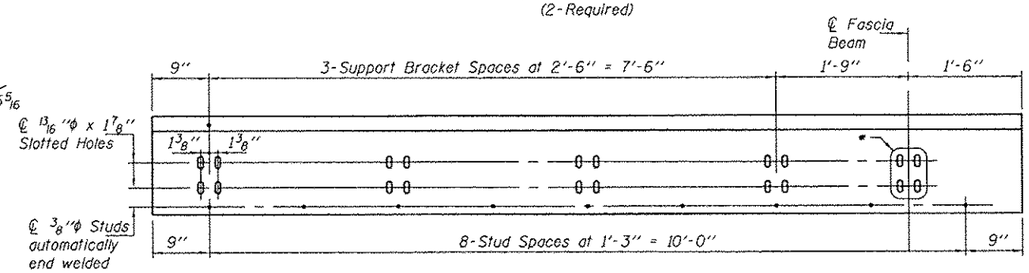


BENT PLATE C

℄ 5/16" x 1'-7" x 11'-6"
(At Piers 3, 8 & 12)
(3-Required)

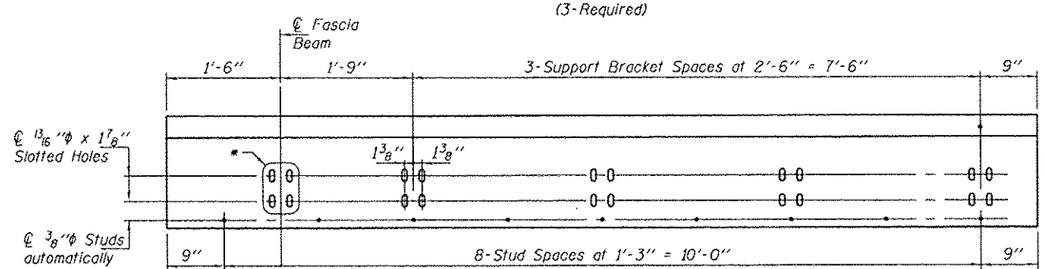


SECTION THRU BENT PLATE C & C'



BENT PLATE C'

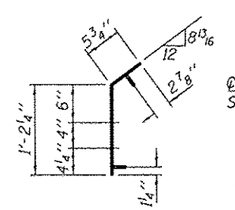
℄ 5/16" x 1'-7" x 11'-6"
(At Piers 3, 8 & 12)
(3-Required)



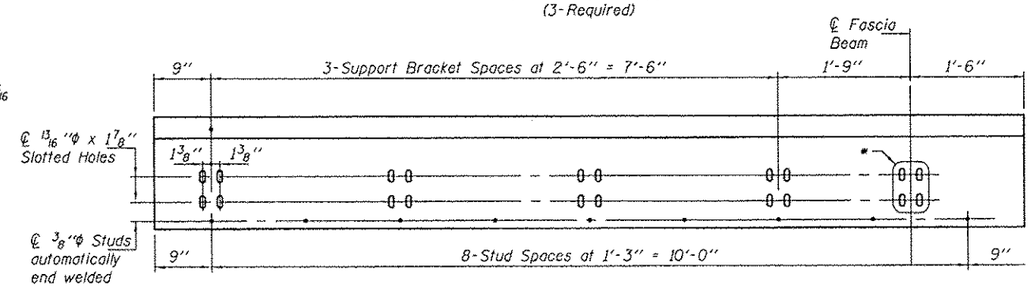
BENT PLATE D

℄ 5/16" x 1'-8" x 11'-6"
(At Piers 4 & 13)
(2-Required)

* Field drill holes using new brackets as template.



SECTION THRU BENT PLATE D & D'



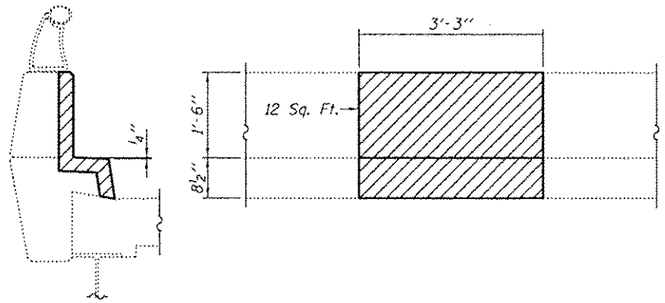
BENT PLATE D'

℄ 5/16" x 1'-8" x 11'-6"
(At Piers 4 & 13)
(2-Required)

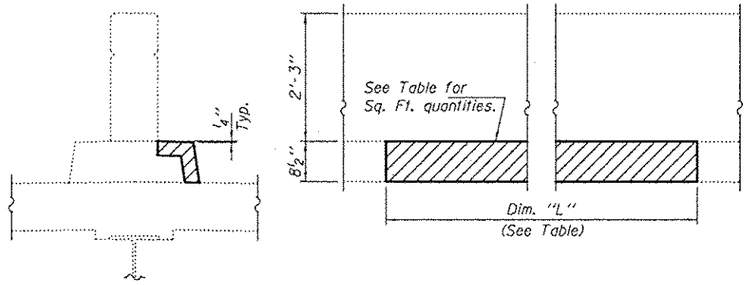
DESIGNED ATH	EXAMINED	DATE - MARCH 14, 2013	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	BENT PLATE DETAILS SN 064-0035	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
CHECKED SMR					24	BSMART 2013-1	MASSAC	23	20
DRAWN Kyle M. Steffen	PASSED						CONTRACT NO. 78293		
CHECKED ATH SMR				SHEET NO. 12 OF 15 SHEETS			ILLINOIS FED. AID PROJECT		

ACTING ENGINEER OF STRUCTURAL SERVICES

ACTING ENGINEER OF BRIDGES AND STRUCTURES

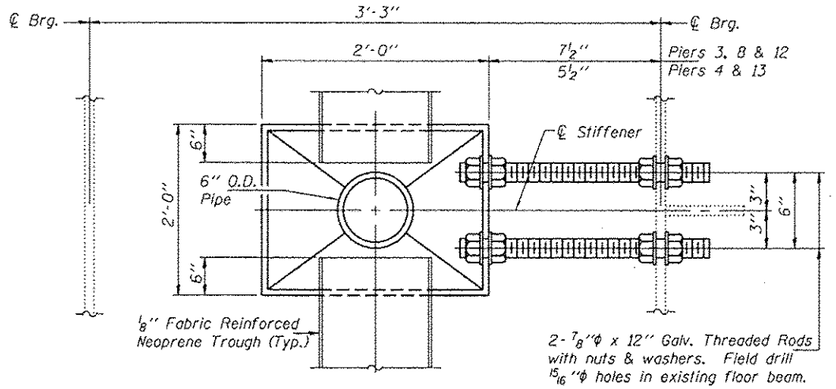


REPAIR Ⓐ - PAPAPET STRUCTURAL REPAIR OF CONCRETE

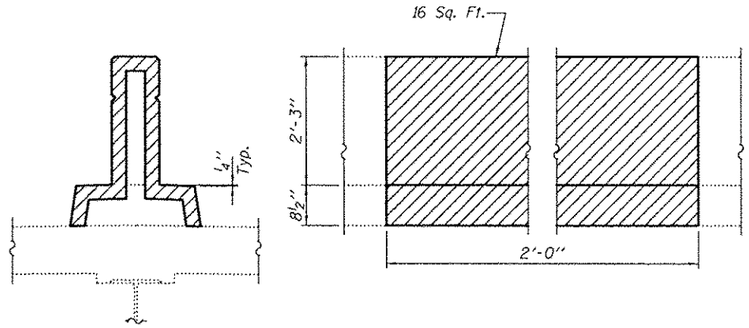


REPAIR Ⓑ - CURB STRUCTURAL REPAIR OF CONCRETE

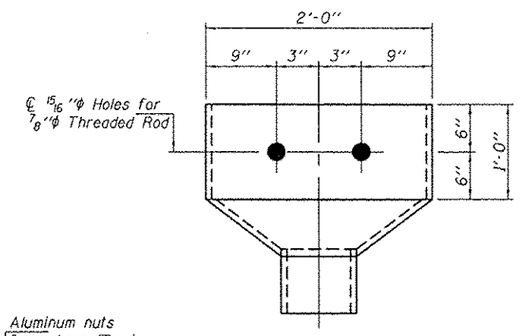
SPAN	LOCATION	Dim. "L"	QUANTITY
1	NB Median Curb	18'-6"	27 Sq. Ft.
16	SB Median Curb	28'-0"	41 Sq. Ft.
17	NB Median Curb	18'-6"	27 Sq. Ft.



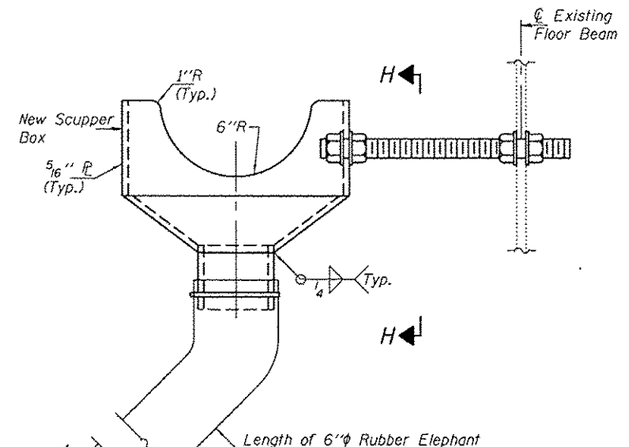
TOP VIEW



REPAIR Ⓒ - MEDIAN STRUCTURAL REPAIR OF CONCRETE

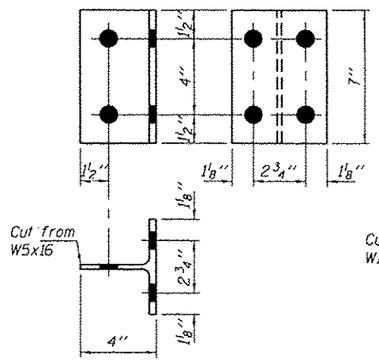


VIEW H-H

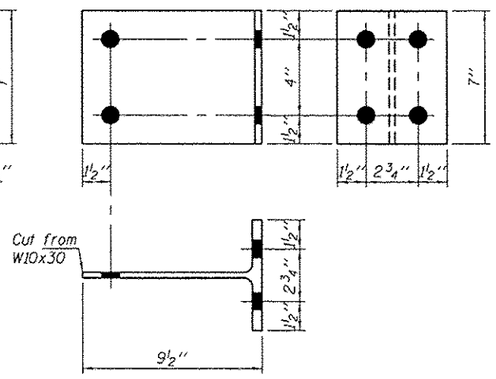


ELEVATION

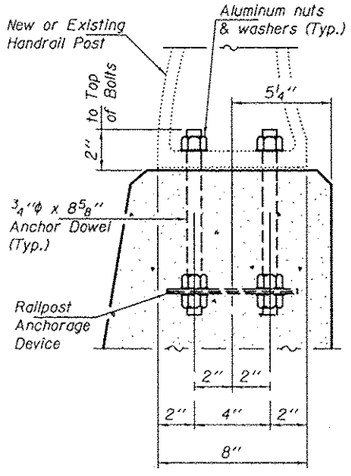
(Looking out from ℄ Bridge)
Piers 3, 4, 8, & 12 shown;
Pier 13 similar except opposite hand



SUPPORT BRACKET
CUT FROM W5X16
(8-Required)

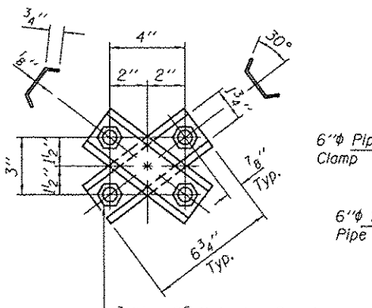


SUPPORT BRACKET
CUT FROM W10X30
(12-Required)



SECTION THRU HANDRAIL
POST (REMOVE & REINSTALL)

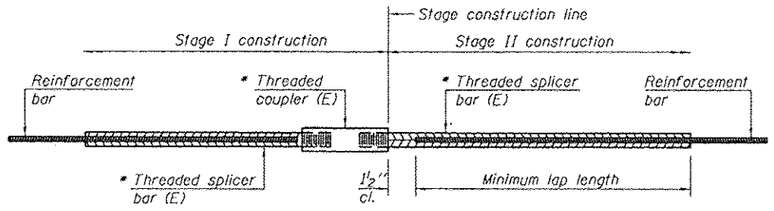
Cost of labor and materials needed to remove and reinstall Handrail Post included with Concrete Removal.



HANDRAIL POST ANCHORAGE
(6-Required)

Note:
Cost new Scupper Box, threaded rods, trunk hose, PVC drain tube and all clamps, accessories and labor necessary to install new Drainage System included with the cost of Fabric Reinforced Elastomeric Trough.

DESIGNED ATH	EXAMINED	DATE - MARCH 14, 2013	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	REPAIR DETAILS SN 064-0035	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
CHECKED SMR					24	BSMART 2013-1	MASSAC	23	21
DRAWN Kyle M. Steffen	PASSED						CONTRACT NO. 78293		
CHECKED ATH SMR	ACTING ENGINEER OF STRUCTURAL SERVICES ACTING ENGINEER OF BRIDGES AND STRUCTURES			SHEET NO. 13 OF 15 SHEETS			ILLINOIS FED. AID PROJECT		



STANDARD BAR SPLICER ASSEMBLY

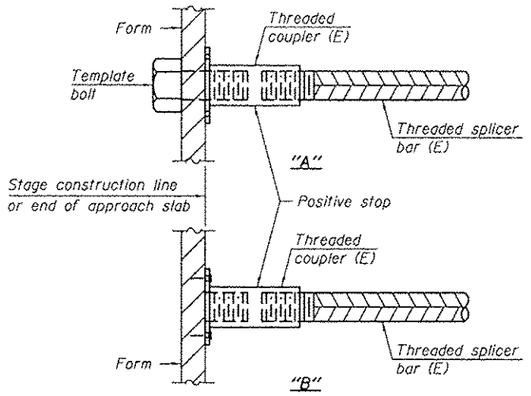
Minimum Lap Lengths						
Bar size to be spliced	Table 1	Table 2	Table 3	Table 4	Table 5	Table 6
3, 4	1'-5"	1'-11"	2'-1"	2'-4"	2'-7"	2'-11"
5	1'-9"	2'-5"	2'-7"	2'-11"	3'-3"	3'-8"
6	2'-1"	2'-11"	3'-1"	3'-6"	3'-10"	4'-5"
7	2'-9"	3'-10"	4'-2"	4'-8"	5'-2"	5'-10"
8	3'-8"	5'-1"	5'-5"	6'-2"	6'-9"	7'-8"
9	4'-7"	6'-5"	6'-10"	7'-9"	8'-7"	9'-8"

Table 1: Black bar, 0.8 Class C
Table 2: Black bar, Top bar lap, 0.8 Class C
Table 3: Epoxy bar, 0.8 Class C
Table 4: Epoxy bar, Top bar lap, 0.8 Class C
Table 5: Epoxy bar, Class C
Table 6: Epoxy bar, Top bar top, Class C

Threaded splicer bar length = min. lap length + 1½" + thread length

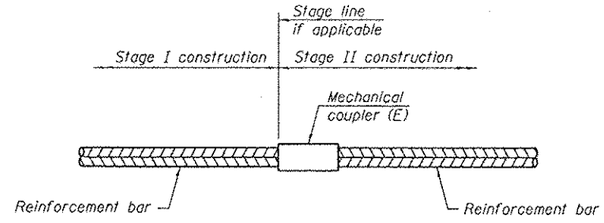
* Epoxy not required on Bar Splicer Assembly components used in conjunction with black bars.

Location	Bar size	No. assemblies required	Table for minimum lap length
Deck	#5	272	3
Abutment	#5	16	3



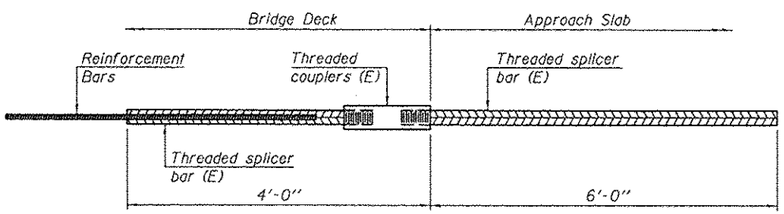
INSTALLATION AND SETTING METHODS

"A" : Set bar splicer assembly by means of a template bolt.
"B" : Set bar splicer assembly by nailing to wood forms or cementing to steel forms.
(E) : Indicates epoxy coating.



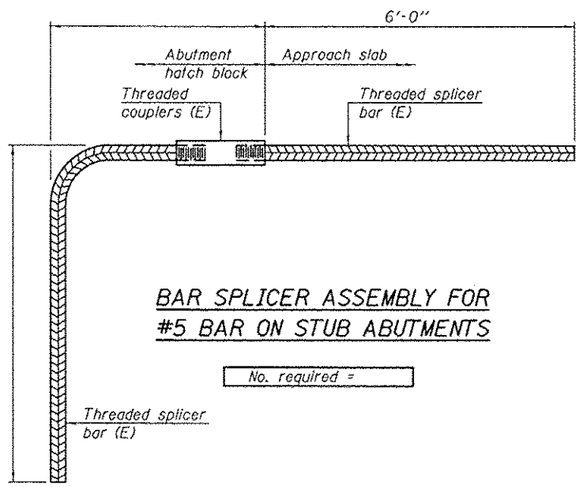
STANDARD MECHANICAL SPLICER

Location	Bar size	No. assemblies required
Deck joints	#5	288



BAR SPLICER ASSEMBLY FOR #5 BAR ON INTEGRAL OR SEMI-INTEGRAL ABUTMENTS

No. required =



BAR SPLICER ASSEMBLY FOR #5 BAR ON STUB ABUTMENTS

No. required =

NOTES

Splicer bars shall be deformed with threaded ends and have a minimum 60 ksi yield strength.

All reinforcement shall be lapped and tied to the splicer bars.

Bar splicer assemblies shall be epoxy coated according to the requirements for reinforcement bars. See Section 508 of the Standard Specifications.

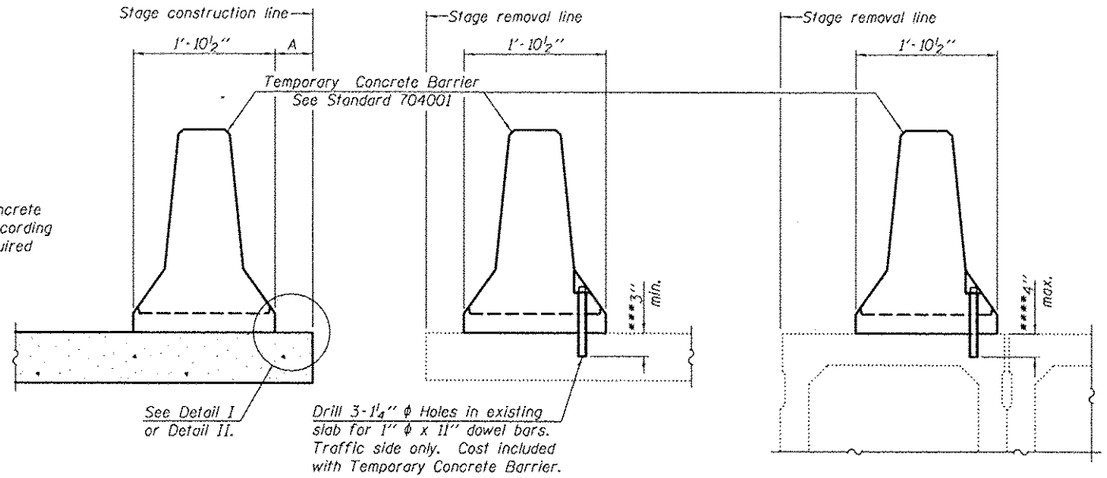
See approved list of bar splicer assemblies and mechanical splicers for alternatives.

BSD-1 1-27-12

DESIGNED ATH	EXAMINED	Timothy A. Bollini, ACTING ENGINEER OF STRUCTURAL SERVICES	DATE - MARCH 14, 2013	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	BAR SPLICER ASSEMBLY AND MECHANICAL SPLICER DETAILS SN 064-0035
CHECKED SMR	PASSED	A. Carl Preston, ACTING ENGINEER OF BRIDGES AND STRUCTURES			SHEET NO. 14 OF 15 SHEETS
DRAWN Kyle M. Steffen					
CHECKED ATH SMR					

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
24	6SMART 2013-1	MASSAC	23	22
		CONTRACT NO. 78293		
	ILLINOIS FED. AID PROJECT			

When "A" is 3'-6" or less, the temporary concrete barrier shall be anchored to the new slab according to Detail I or Detail II. No anchorage is required when "A" is greater than 3'-6".



NEW SLAB | EXISTING SLAB | EXISTING DECK BEAM

NOTES

Detail I - With Bar Splicer or Couplers:
Connect one (1) 1" x 7" x "W" steel ℄ to the top layer of couplers with 2-⅝" ϕ bolts screwed to coupler at approximate ℄ of each barrier panel.

Detail II - With Extended Reinforcement Bars:
Connect one (1) 1" x 7" x "W" steel ℄ to the concrete slab or concrete wearing surface with 2-⅝" ϕ Expansion Anchors or cast in place inserts spaced between the top layer of reinforcement at approximate ℄ of each barrier panel.

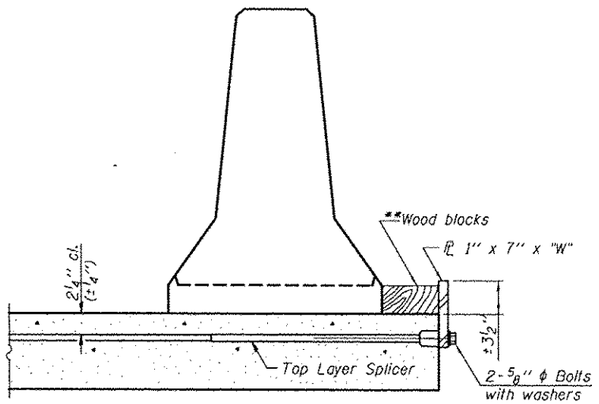
Cost of anchorage is included with Temporary Concrete Barrier.

The 1" x 7" x "W" plate shall not be removed until stage II construction forms and all reinforcement bars are in place and the concrete is ready to be placed.

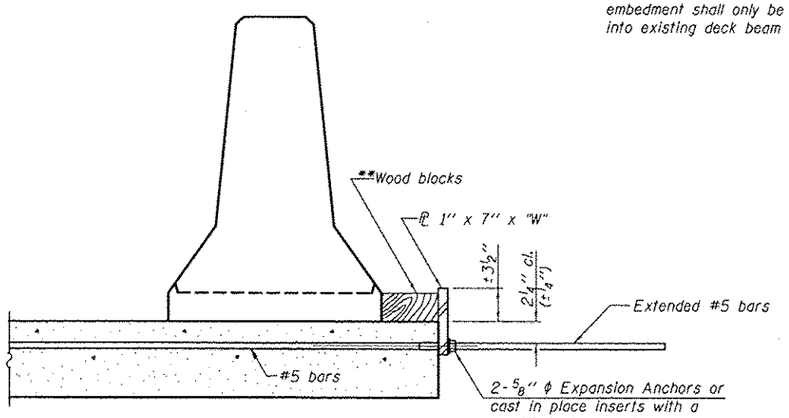
SECTIONS THRU SLAB OR DECK BEAM

*** Dimension shown is minimum required embedment into concrete. If hot-mix asphalt wearing surface is present, minimum embedment shall be in addition to wearing surface depth.

**** If existing deck beam is to remain in place after stage construction, embedment shall only be into wearing surface and not into existing deck beam concrete.



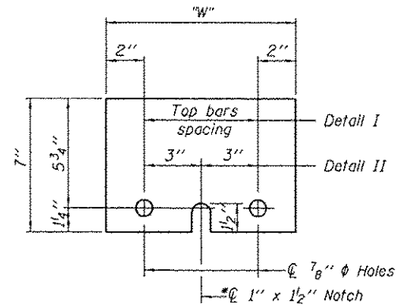
DETAIL I



DETAIL II

** Wood blocks may be omitted when required to provide minimum stage traffic lane width. When the wood blocks are omitted, the concrete barrier shall be in direct contact with the steel retainer plate.

"W" = Top bars spacing + 4"



STEEL RETAINER ℄ 1" x 7" x "W"

* Required only with Detail II

R-27 7-1-10

DESIGNED ATH	EXAMINED	Timothy A. Anderson ACTING ENGINEER OF STRUCTURAL SERVICES	DATE - MARCH 14, 2013	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	TEMPORARY CONCRETE BARRIER FOR STAGE CONSTRUCTION SN 064-0035	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
CHECKED SMR	PASSED	Carl Puzey ACTING ENGINEER OF BRIDGES AND STRUCTURES				24	85MART 2013-1	MASSAC	23	23
DRAWN Kyle M. Steffen								CONTRACT NO. 78293		
CHECKED ATH SMR					SHEET NO. 15 OF 15 SHEETS			ILLINOIS FED. AID PROJECT		