

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
24	D9 BRIDGE REPAIR 2019-1	MASSAC	30	1
		ILLINOIS	CONTRACT NO. 78623	

D-99-010-18

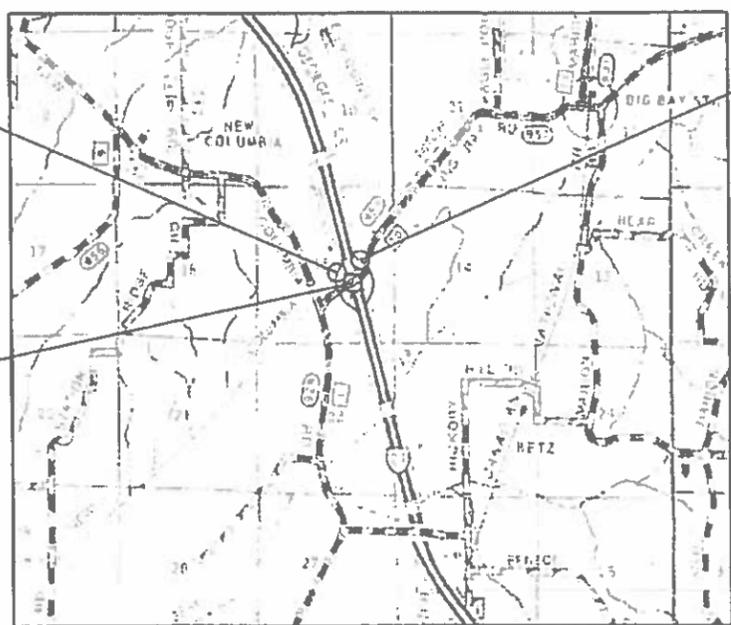


**PROPOSED
HIGHWAY PLANS**

**BIG BAY ROAD OVER I-24
AND RAMPS OVER NEW COLUMBIA DITCH
PROJECT NHPP-XD9Z(971)
D9 BRIDGE REPAIR 2019-1
MASSAC COUNTY**

C-99-018-18

R 4 E



BRIDGE NO. 2
SN 064-0038
EB RAMP CROSSING
NEW COLUMBIA DITCH

BRIDGE NO. 3
SN 064-0037
WB RAMP CROSSING
NEW COLUMBIA DITCH

BRIDGE NO. 1
SN 064-0016
BIG BAY ROAD
CROSSING I-24

TRAFFIC DATA

BRIDGE NO. 1	BRIDGE NO. 3
064-0016	064-0038
2015 ADT: 600	2015 ADT: 250
10% TRUCK	20% TRUCK

BRIDGE NO. 2
064-0037
2015 ADT: 250
20% TRUCK

TOWNSHIPS
CO UNIT ROAD DIST

DESIGN DESIGNATION : N/A
COORDINATE SYSTEM : ILLINOIS COORDINATE SYSTEM, EAST ZONE
POSTED SPEED: VARIES

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

PROJECT ENGINEER: DAVID PICHE
PROJECT DESIGNER: BILL PORTER

CONTRACT NO. 78623

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SUBMITTED 03-15-2019
[Signature] REGION FIVE ENGINEER

May 10 2019
[Signature] ENGINEER OF DESIGN AND ENVIRONMENT

May 10 2019
[Signature] DIRECTOR OF HIGHWAYS PROJECT IMPLEMENTATION

PRINTED BY THE AUTHORITY
OF THE STATE OF ILLINOIS

SUMMARY OF QUANTITIES

0013

COUNTY:	COUNTY:	MASSAC COUNTY		
ROUTE:	ROUTE:	CH 10 OVER I-24	I-24 WB ON-RAMP	I-24 EB OFF-RAMP
FUNDING:	FUNDING:	80% FEDERAL/ 20% STATE	80% FEDERAL/ 20% STATE	80% FEDERAL/ 20% STATE
LOCATION:	LOCATION:	RURAL	RURAL	RURAL
		064-0016	064-0037	064-0038

CODE NUMBER	ITEM DESCRIPTION	UNIT	TOTAL QUANTITY	064-0016	064-0037	064-0038
50102400	CONCRETE REMOVAL	CU YD	16.1	3.6	4.1	8.4
50300255	CONCRETE SUPERSTRUCTURE	CU YD	16.1	3.6	4.1	8.4
50300300	PROTECTIVE COAT	SQ YD	58	15	14	29
50500405	FURNISHING AND ERECTING STRUCTURAL STEEL	POUND	3,210	1,840	190	1,180
50800205	REINFORCEMENT BARS, EPOXY COATED	POUND	1,780	360	460	960
50800515	BAR SPLICERS	EACH	8	8	0	0
52000110	PREFORMED JOINT STRIP SEAL	FOOT	153	63	30	60
52100010	ELASTOMERIC BEARING ASSEMBLY, TYPE I	EACH	18	10	0	8
52100520	ANCHOR BOLTS, 1"	EACH	52	20	16	16
58100200	WATERPROOFING MEMBRANE SYSTEM	SQ YD	1,363	804	216	343
67000400	ENGINEER'S FIELD OFFICE, TYPE A	CAL MO	6	2	2	2
67100100	MOBILIZATION	L SUM	1	0.4	0.3	0.3
70100100	TRAFFIC CONTROL AND PROTECTION, STANDARD 701316	EACH	1	1	0	0

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	DRAWN -	REVISED -
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PLOT DATE = 3/21/2019	DATE -	REVISED -

**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	D9 BRIDGE REPAIR 2019-1	MASSAC	30	3
CONTRACT NO. 78623				
ILLINOIS FED. AID PROJECT				

SUMMARY OF QUANTITIES - CON

0013

COUNTY:	COUNTY:	MASSAC COUNTY		
ROUTE:	ROUTE:	CH 10 OVER I-24	I-24 WB ON-RAMP	I-24 EB OFF-RAMP
FUNDING:	FUNDING:	80% FEDERAL/ 20% STATE	80% FEDERAL/ 20% STATE	80% FEDERAL/ 20% STATE
LOCATION:	LOCATION:	RURAL	RURAL	RURAL
		064-0016	064-0037	064-0038

CODE NUMBER	ITEM DESCRIPTION	UNIT	TOTAL QUANTITY	064-0016	064-0037	064-0038
70100450	TRAFFIC CONTROL AND PROTECTION, STANDARD 701201	L SUM	1	1	0	0
70100820	TRAFFIC CONTROL AND PROTECTION, STANDARD 701451	L SUM	1	0.0	0.5	0.5
70103815	TRAFFIC CONTROL SURVEILLANCE	CAL DA	4	4	0	0
70106500	TEMPORARY BRIDGE TRAFFIC SIGNALS	EACH	1	1	0	0
70107025	CHANGEABLE MESSAGE SIGN	CAL DA	28	28	0	0
70300100	SHORT TERM PAVEMENT MARKING	FOOT	107	107	0	0
70300150	SHORT TERM PAVEMENT MARKING REMOVAL	SQ FT	36	36	0	0
70300220	TEMPORARY PAVEMENT MARKING - LINE 4"	FOOT	2,324	1,952	162	210
* 78001110	PAINT PAVEMENT MARKING - LINE 4"	FOOT	2,324	1,952	162	210
* 86200300	UNINTERRUPTABLE POWER SUPPLY, EXTENDED	EACH	1	1	0	0
X0300002	HOT-MIX ASPHALT SURFACE COURSE, IL-9.5FG, N70	TON	115	68	18	29
X0327979	PAVEMENT MARKING REMOVAL - GRINDING	SQ FT	391	391	0	0
X7030005	TEMPORARY PAVEMENT MARKING REMOVAL	SQ FT	775	651	54	70

* SPECIALTY ITEM

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	DATE -	REVISED -		ILLINOIS FED. AID PROJECT								

SUMMARY OF QUANTITIES - CON

0013

COUNTY:	COUNTY:	MASSAC COUNTY		
ROUTE:	ROUTE:	CH 10 OVER I-24	I-24 WB ON-RAMP	I-24 EB OFF-RAMP
FUNDING:	FUNDING:	80% FEDERAL/ 20% STATE	80% FEDERAL/ 20% STATE	80% FEDERAL/ 20% STATE
LOCATION:	LOCATION:	RURAL	RURAL	RURAL
		064-0016	064-0037	064-0038

CODE NUMBER	ITEM DESCRIPTION	UNIT	TOTAL QUANTITY	064-0016	064-0037	064-0038
Z0001899	JACK AND REMOVE EXISTING BEARINGS	EACH	18	10	0	8
Z0004556	HOT-MIX ASPHALT SURFACE REMOVAL (DECK)	SQ YD	1,363	804	216	343
Z0012754	STRUCTURAL REPAIR OF CONCRETE (DEPTH EQUAL TO OR LESS THAN 5 INCHES)	SQ FT	95	80	7	8
Z0015802	PLUG EXISTING DECK DRAINS	EACH	22	12	4	6
Z0016200	DECK SLAB REPAIR (PARTIAL)	SQ YD	20	13	3	4

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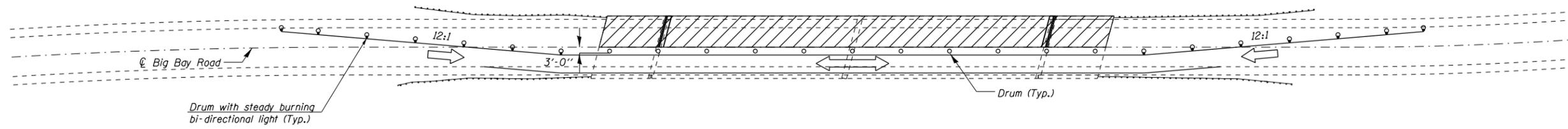
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PLOT SCALE = 110.0000' / in.	CHECKED -	REVISED -
PLOT DATE = 3/20/2019	DATE -	REVISED -

**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

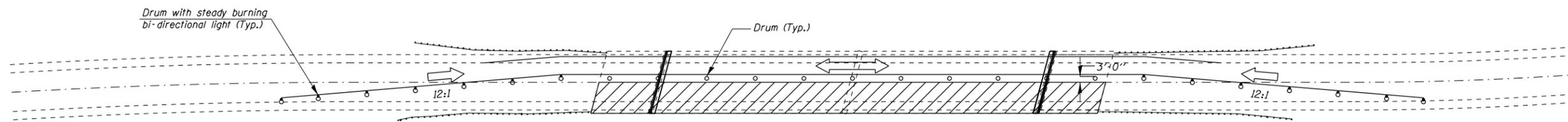
SUMMARY OF QUANTITIES

SCALE: SHEET OF SHEETS STA. TO STA.

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
24	D9 BRIDGE REPAIR 2019-1	MASSAC	30	5
CONTRACT NO. 78623			ILLINOIS FED. AID PROJECT	

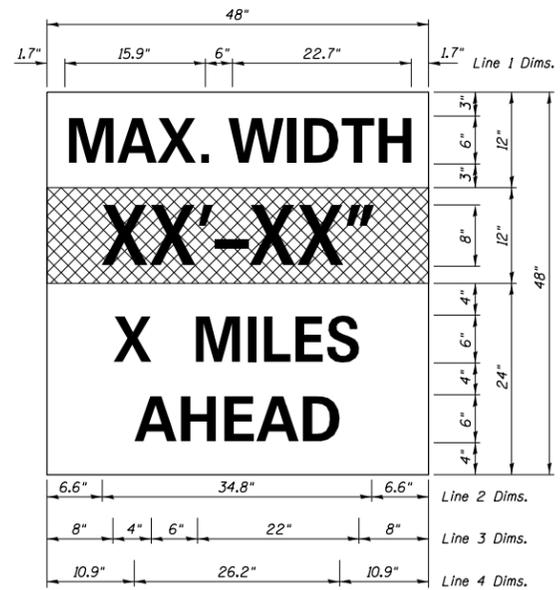


STAGE I TRAFFIC



STAGE II TRAFFIC

Notes: See standard 701316 for additional details.



Notes for Max Width Sign:

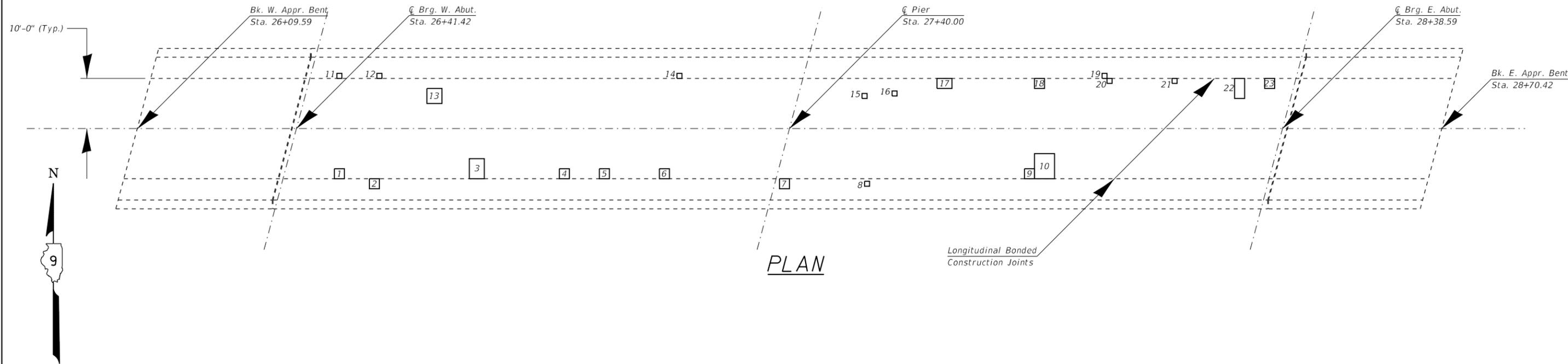
1. Install a max width sign each direction on Big Bay Road to give traffic approaching work zone notice to change routes if needed. Exact locations as directed by engineer.
2. The contractor shall furnish the posts and erect the signs at the locations directed by the engineer, all signs shall be post mounted.
3. The noted work, including signs, posts, hardware and labor shall be included in the contract unit price, Each, for Traffic Control and Protection, Std. 701316. No other compensation will be allowed.
4. The width shown on the W12-I103 sign shall be 9'-9" for both Stage I and Stage II.
5. The "X" Miles Ahead will be determined by the engineer.

W12-I103

W12-I103, No Border
 "MAX WIDTH" 6D, No Border, Black on White
 "XX'-XX"" 8D, No Border, Black on Orange
 "X MILES" 6D, No Border, Black on White
 "AHEAD" 6D, No Border, Black on White

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USER NAME = porterc	DESIGNED - _____	REVISED - _____	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	STAGING DETAILS SN 064-0016				F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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PLOT DATE = 3/20/2019	DATE - _____	REVISED - _____		CONTRACT NO. 78623				ILLINOIS FED. AID PROJECT				
				SCALE:	SHEET	OF	SHEETS	STA.	TO	STA.		



Patch Number	Station	Offset From ζ	Width	Length	Area (Sq. Ft.)	Area (Sq. Yd.)
1	26+50	9.0	2.0	2.0	4.0	0.5
2	26+57	11.0	2.0	2.0	4.0	0.5
3	26+77	8.0	4.0	3.0	12.0	1.4
4	26+95	9.0	2.0	2.0	4.0	0.5
5	27+03	9.0	2.0	2.0	4.0	0.5
6	27+15	9.0	2.0	2.0	4.0	0.5
7	27+39	11.0	2.0	2.0	4.0	0.5
8	27+56	11.0	1.0	1.0	2.0	0.2
9	27+88	9.0	2.0	2.0	4.0	0.5
10	27+91	7.5	5.0	4.0	20.0	2.3
Eastbound Total						7.4

Patch Number	Station	Offset From ζ	Width	Length	Area (Sq. Ft.)	Area (Sq. Yd.)
11	26+50	9.0	2.0	2.0	4.0	0.2
12	26+58	11.0	2.0	2.0	4.0	0.2
13	26+69	8.0	4.0	3.0	12.0	1.0
14	27+18	9.0	2.0	2.0	4.0	0.2
15	27+55	9.0	2.0	2.0	4.0	0.2
16	27+61	9.0	2.0	2.0	4.0	0.2
17	27+71	11.0	2.0	2.0	4.0	0.7
18	27+90	11.0	1.0	1.0	2.0	0.5
19	28+03	9.0	2.0	2.0	4.0	0.2
20	28+04	7.5	5.0	4.0	20.0	0.2
21	28+17	7.5	5.0	4.0	20.0	0.5
22	28+30	7.5	5.0	4.0	20.0	1.0
23	28+36	7.5	5.0	4.0	20.0	0.5
Westbound Total						5.6

Note: The Resident Engineer will determine final patch locations and quantities in the field before bridge deck patching operations begin and mark on as-built plans.

BILL OF MATERIAL

Item	Unit	Total
Deck Slab Repair (Partial Depth)	Sq. Yd.	13

PARTIAL DEPTH DECK SLAB REPAIRS
F.A.S. 957 OVER F.A.I. RTE 24
F.A.I. RTE 24 - D9 BRIDGE REPAIR 2019-1
MASSAC COUNTY
STATION 204+27
STRUCTURE NO. 064-0016

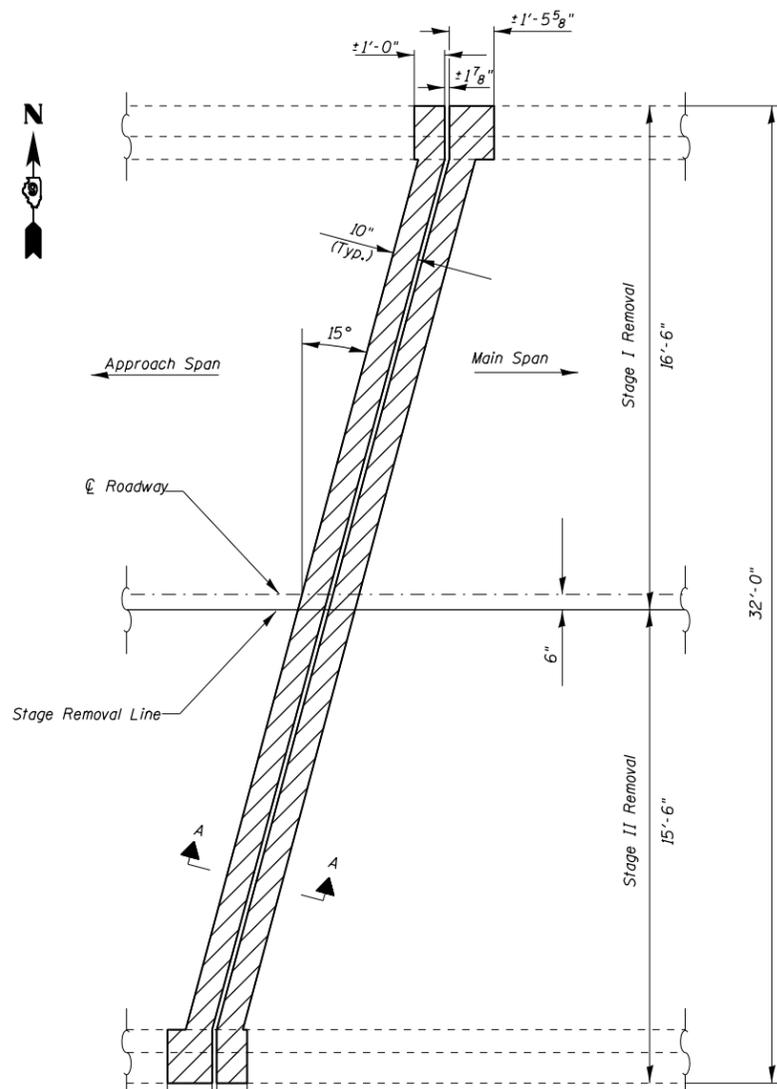
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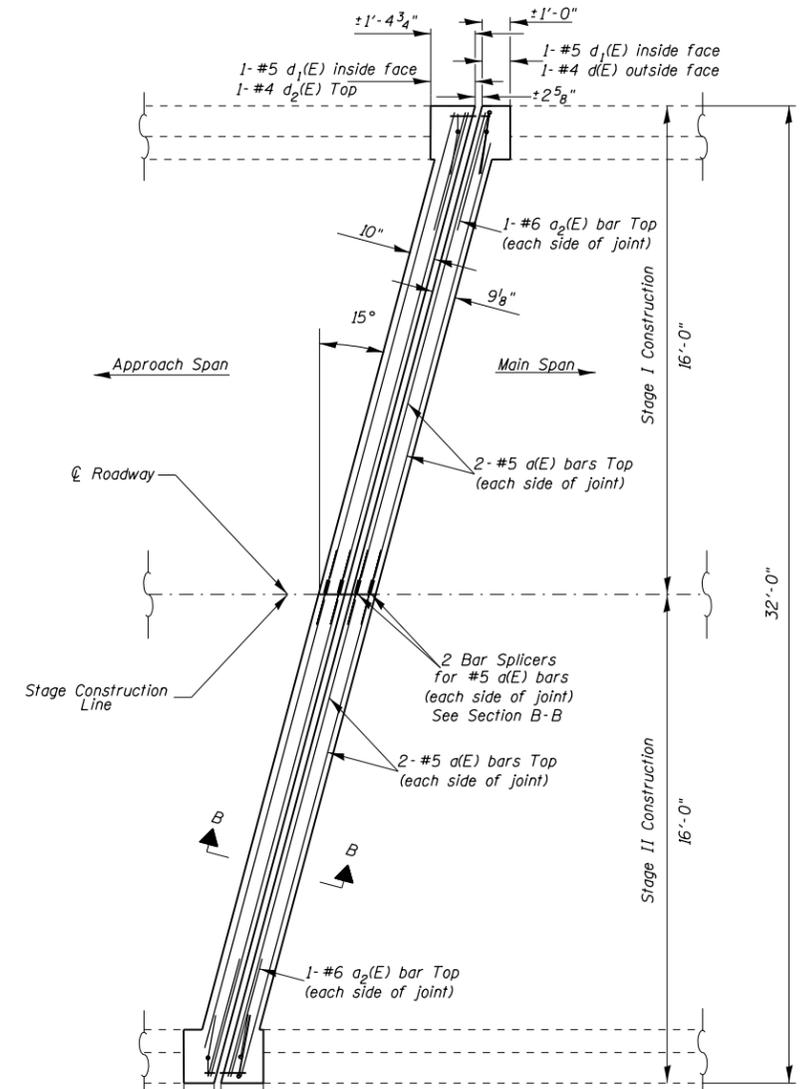
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PARTIAL DEPTH DECK SLAB REPAIRS			
SN 064-0016			
SCALE:	SHEET	OF SHEETS	STA. TO STA.

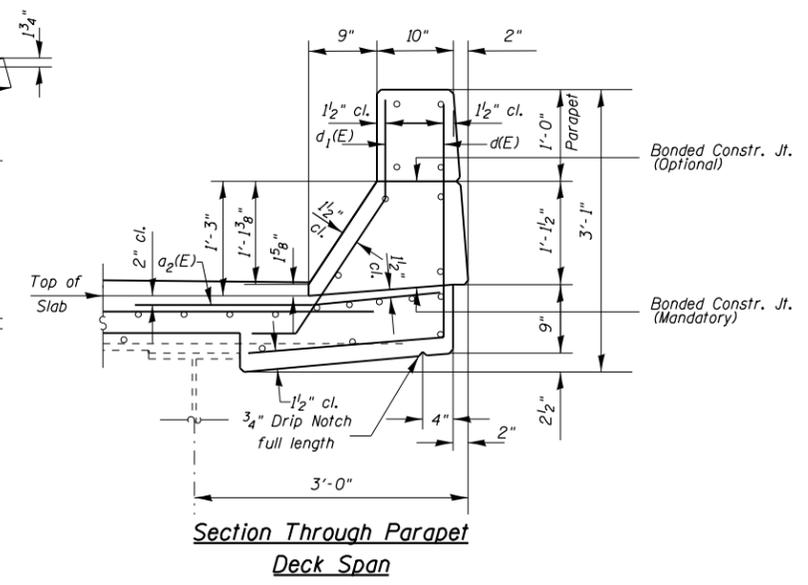
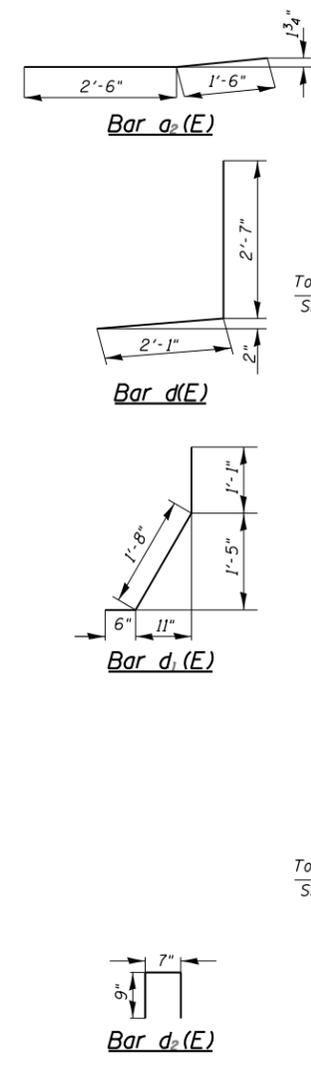
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24	D9 BRIDGE REPAIR 2019-1	MASSAC	30	9
CONTRACT NO. 78623				
ILLINOIS FED. AID PROJECT				



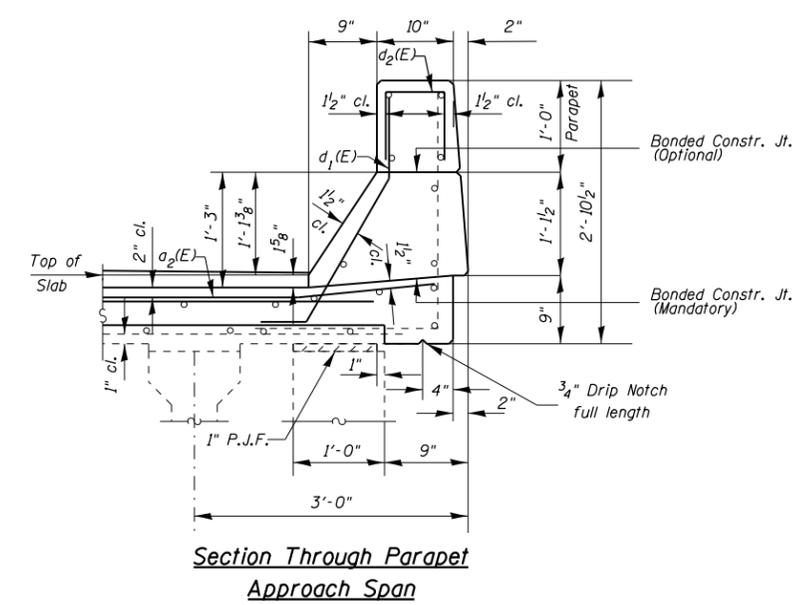
West Abut. Plan
Showing Concrete Removal
East Abut. Similar By 180° Rotation



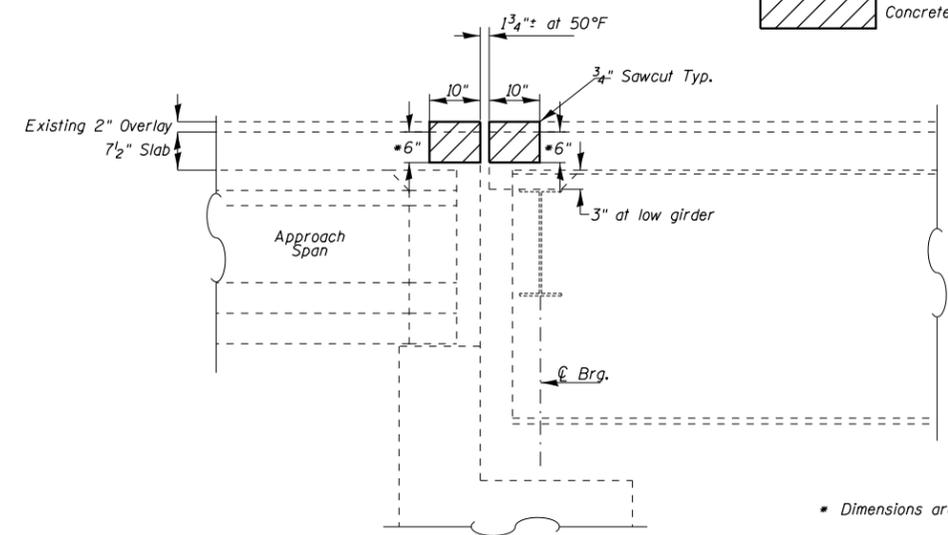
West Abut. Plan
Showing New Concrete
East Abut. Similar By 180° Rotation



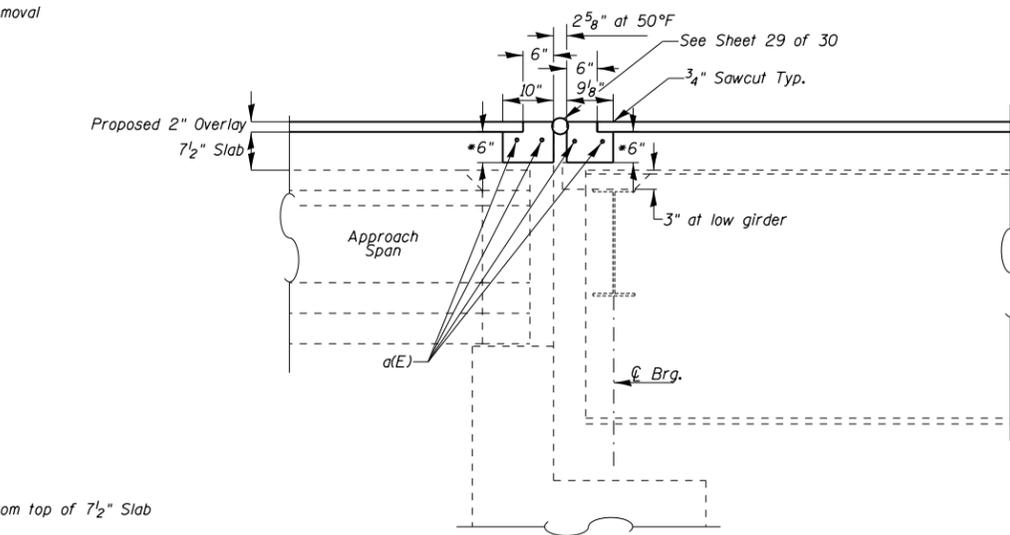
Section Through Parapet Deck Span



Section Through Parapet Approach Span



Section A-A
Dimensions measured @ Right Angles



Section B-B
Dimensions measured @ Right Angles

* Dimensions are from top of 7 1/2" Slab

BILL OF MATERIAL (BOTH ABUTS)

Bar	No.	Size	Length	Shape
a(E)	16	#5	16'-2"	—
ap(E)	8	#6	4'-0"	—
d(E)	4	#4	4'-8"	J
d1(E)	8	#5	3'-3"	J
dp(E)	4	#4	2'-1"	n
Bar Splicer		Each	8	
Concrete Superstructure		Cu. Yd.	3.6	
Concrete Removal		Cu. Yd.	3.6	
Reinforcement Bars, Epoxy Coated		Pound	360	

-Reinforcement bars designated (E) shall be epoxy coated.
-Removal of the portion of HMA that will be poured back as Concrete Superstructure paid for as Concrete Removal

JOINT RECONSTRUCTION DETAILS AT ABUTMENTS
MASSAC COUNTY
SN 064-0016

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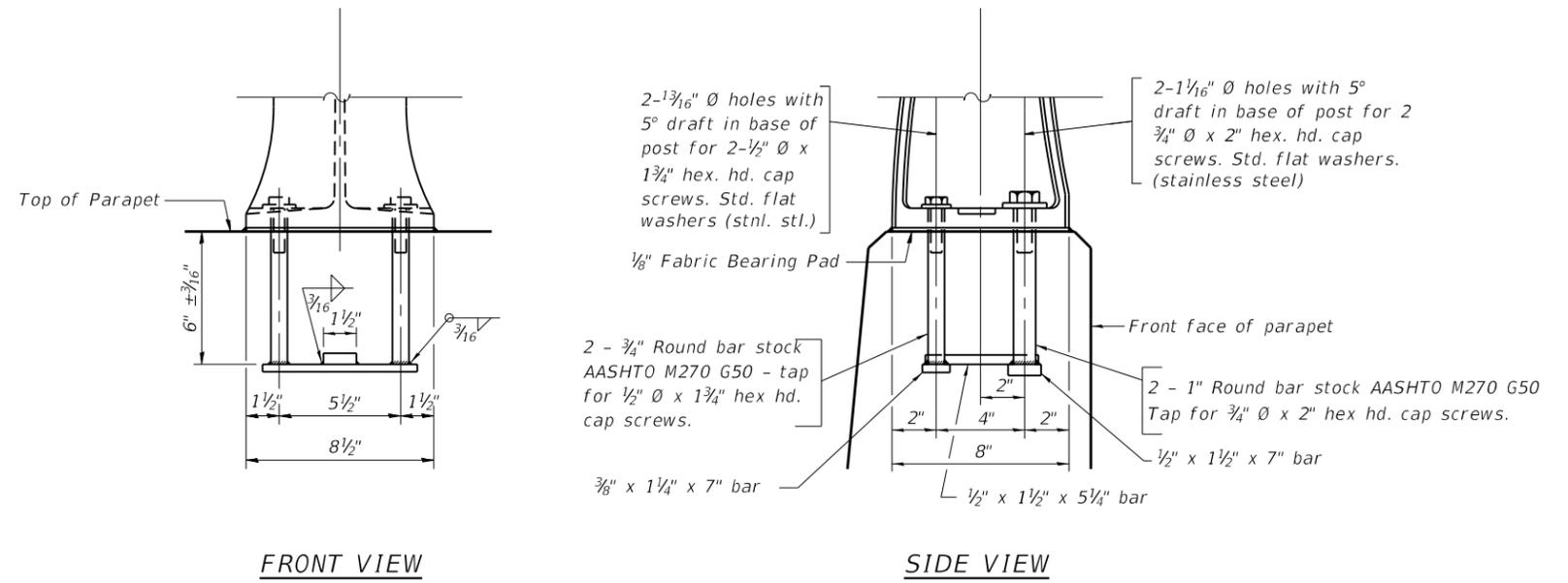
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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

JOINT RECONSTRUCTION DETAILS AT ABUTMENTS
SN 064-0016

SCALE: SHEET OF SHEETS STA. TO STA.

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
24	D9 BRIDGE REPAIR 2019-1	MASSAC	30	10
ILLINOIS FED. AID PROJECT			CONTRACT NO. 78623	



RAIL POST ANCHOR ASSEMBLY DETAILS

Notes:

1) The rail on the parapet is to remain in place. In the areas where the anchor assembly will be removed, a new anchor assembly shall be provided. The cost of new anchor assemblies and any removal and re-erection of railings or posts shall be included in the cost of Concrete Removal and no other compensation will be allowed.

2) In lieu of the cast-in-place anchor device shown, the Contractor has the option of drilling and setting steel anchor rods of the same diameter and grade as the specified cap screws according to Article 509.06 of the Standard Specifications. Embedment shall be according to the manufacturer's specifications.

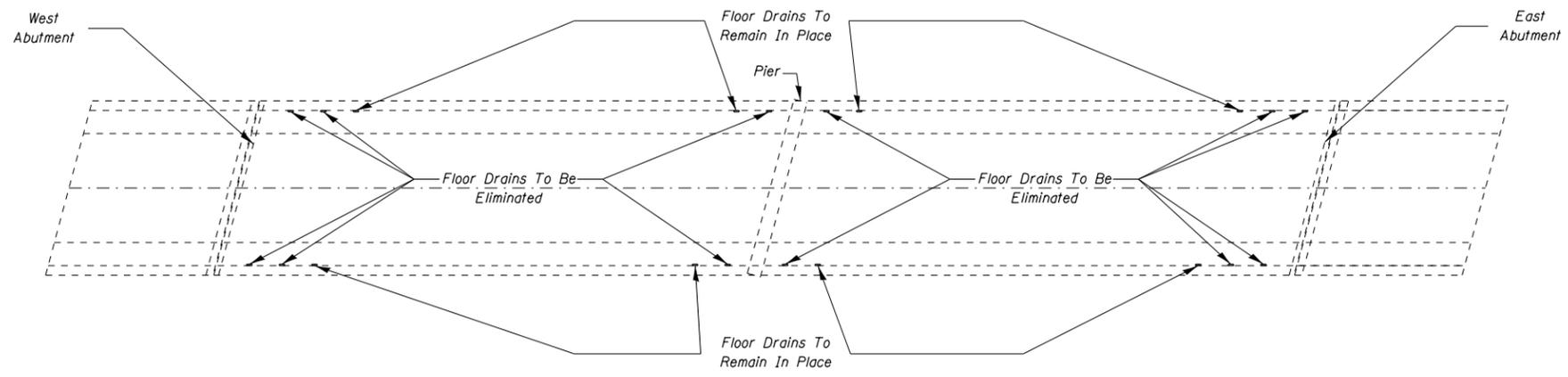
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	DATE - 09/10/18	REVISED -

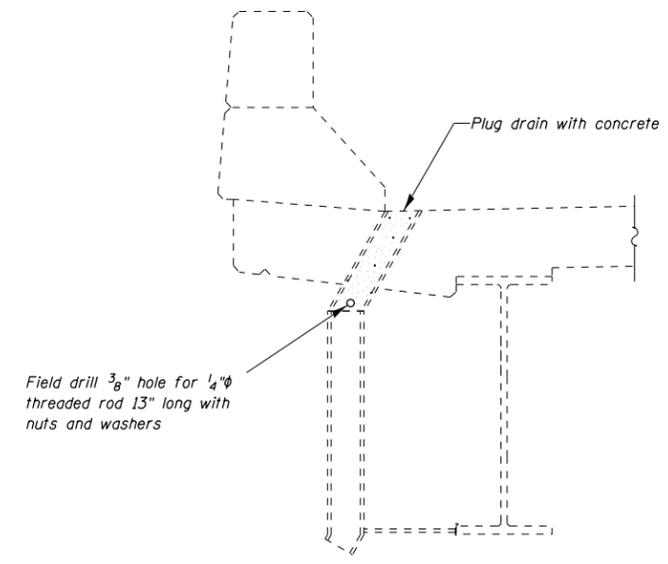
**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

PARAPET RAILING DETAILS SN 064-0016			
SCALE:	SHEET	OF SHEETS	STA. TO STA.

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
24	D9 BRIDGE REPAIR 2019-1	MASSAC	30	11
CONTRACT NO. 78623				
ILLINOIS FED. AID PROJECT				



PLAN VIEW



DRAIN ELIMINATION DETAIL
(12 LOCATIONS)

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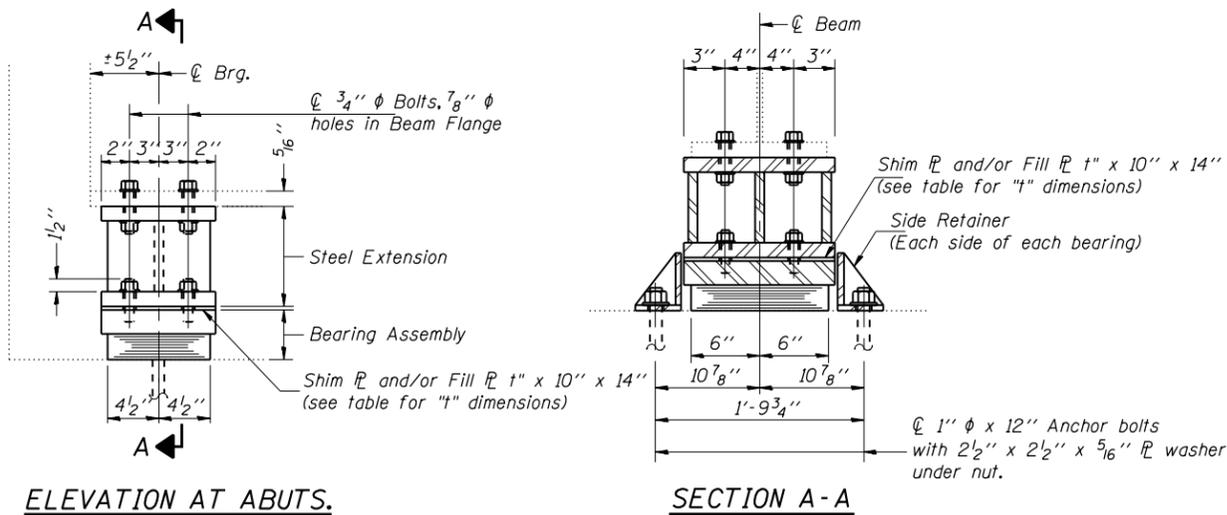
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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

DRAIN ELIMINATION DETAILS SN 064-0016				
SCALE:	SHEET	OF	SHEETS	STA. TO STA.

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
24	D9 BRIDGE REPAIR 2019-1	MASSAC	30	12
CONTRACT NO. 78623				
ILLINOIS FED. AID PROJECT				

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



ELEVATION AT ABUTS.

SECTION A-A

TYPE I ELASTOMERIC EXP. BRG.

Notes:

Anchor bolts shall be ASTM F1554 all-thread (or an Engineer-approved alternate material) of the grade(s) and diameter(s) specified. ASTM A307 Grade C anchor bolts may be used in lieu of ASTM F1554 Grade 36 (Fy=36ksi). The corresponding specified grade of AASHTO M314 anchor bolts may be used in lieu of ASTM F1554.

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

Side retainers and 1/4" stainless steel plates required for the bearing assembly shall be included in the cost of Elastomeric Bearing Assembly, Type I.

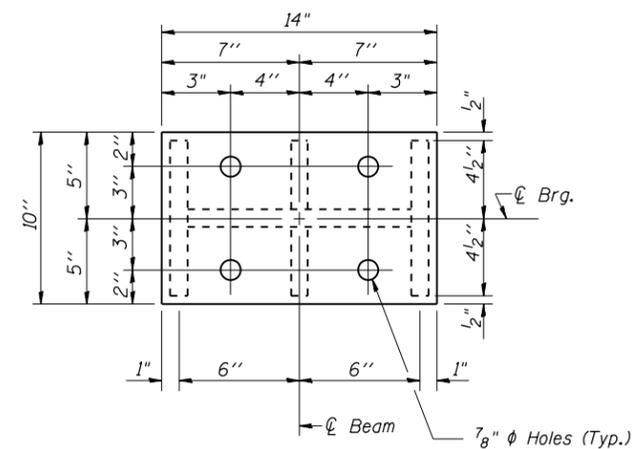
The minimum jack capacity required is 50 Tons.

Existing diaphragm removal and reinstallation may be required to facilitate drilling holes, cost to be included with "Jack and Remove Existing Bearings".

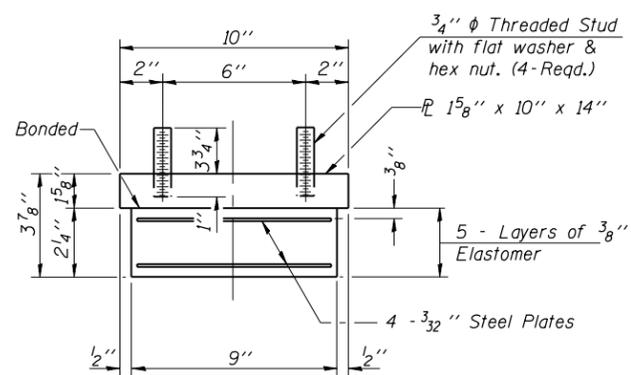
Prior to ordering any material, the Contractor shall verify in the field all bearing height and shim thickness dimensions.

Two 1/8 in. adjusting shims shall be provided for each bearing in addition to all other plates or shims and placed as shown on bearing details.

New steel extensions, connection bolts, Fill t's and Shim t's are included in "Furnishing and Erecting Structural Steel".



PLAN-TOP & BOTTOM PLATE



BEARING ASSEMBLY

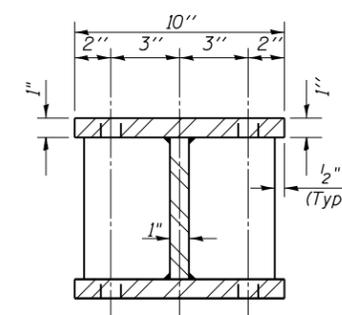
Note: Shim plates shall not be placed under Bearing Assembly.

GIRDER REACTIONS

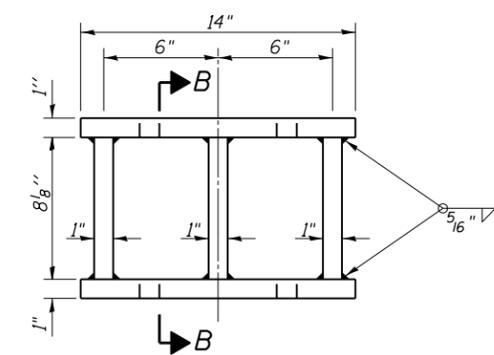
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Rl	(K)	37.4
Imp.	(K)	8.4
R (Total)	(K)	85.4

FILL t "t" DIMENSIONS

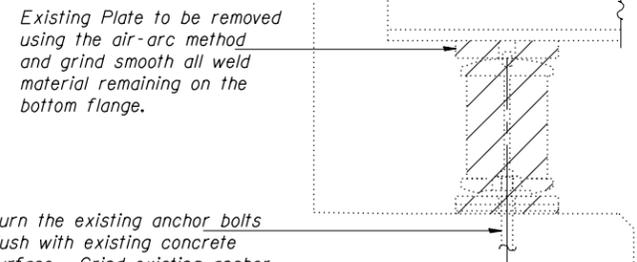
	SN 064-0016				
Beams	1	2	3	4	5
W. Abut.	-	-	1/2"	-	-
E. Abut.	-	-	1/2"	-	-



SECTION B-B

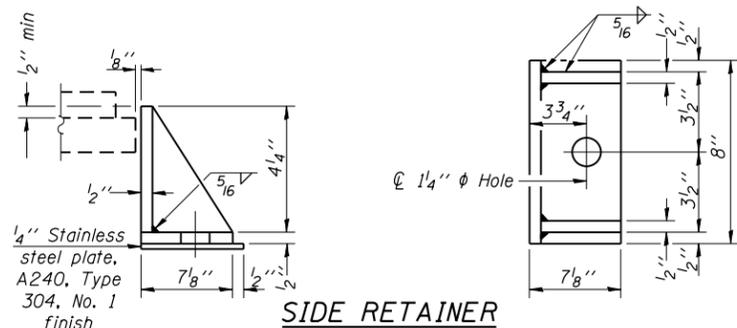


STEEL EXTENSION DETAIL



EXISTING BEARING REMOVAL DETAIL

Cost is included with Jack and Remove Existing Bearings



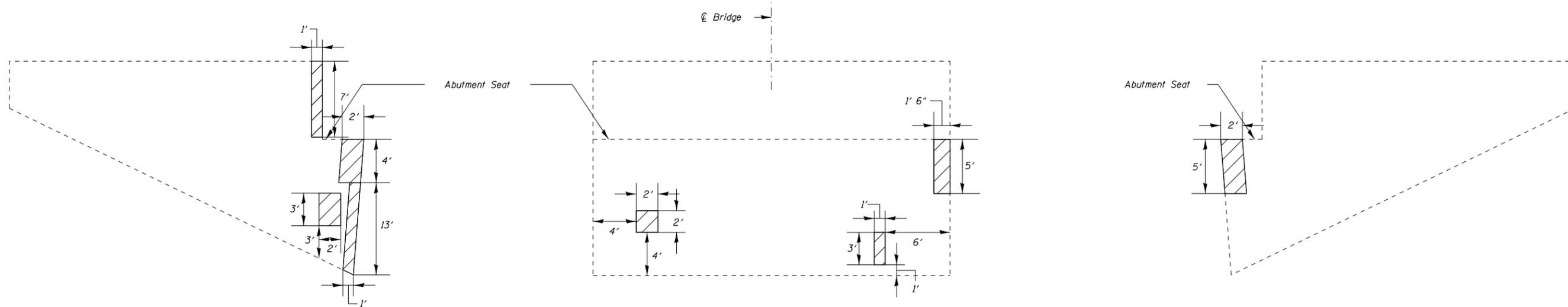
SIDE RETAINER

Equivalent rolled angle with stiffeners will be allowed in lieu of welded plates.

BILL OF MATERIAL

Item	Unit	Total
Elastomeric Bearing Assembly Type I	Each	10
Anchor Bolts, 1"	Each	20
Jack and Remove Existing Bearings	Each	10
Furnishing and Erecting Structural Steel	Pound	1840

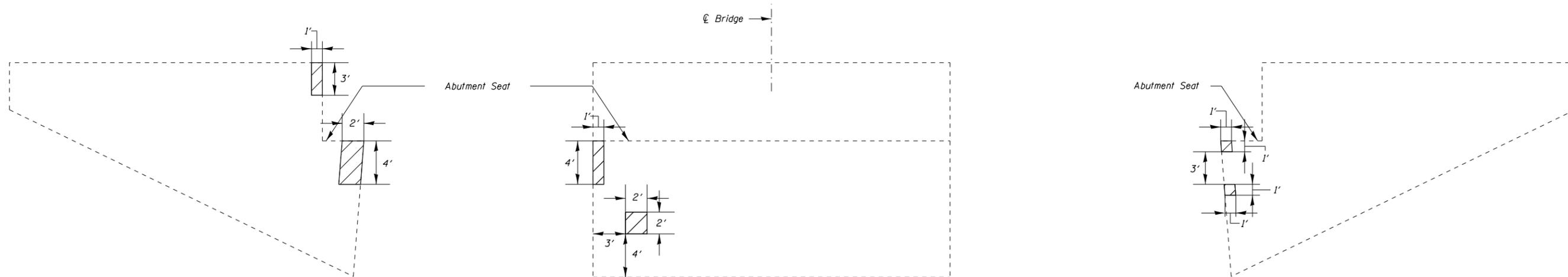
ABUTMENT
BEARING DETAILS
STRUCTURE NO. 064-0016



EAST ABUTMENT
LOOKING SOUTH

EAST ABUTMENT
LOOKING EAST

EAST ABUTMENT
LOOKING NORTH



WEST ABUTMENT
LOOKING NORTH

WEST ABUTMENT
LOOKING WEST

WEST ABUTMENT
LOOKING SOUTH

BILL OF MATERIAL

ITEM	UNIT	TOTAL
Structural repair of concrete (Depth < 5 Inches)	Sq. Ft.	80



Structural repair of concrete < 5"

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PLOT DATE = 3/20/2019		

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

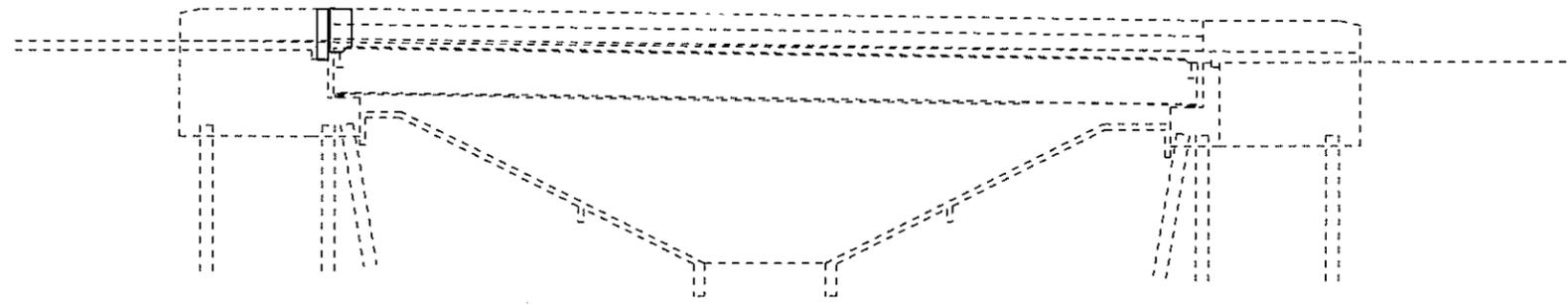
ABUTMENT SUBSTRUCTURE REPAIRS
SN 064-0016

SCALE: SHEET OF SHEETS STA. TO STA.

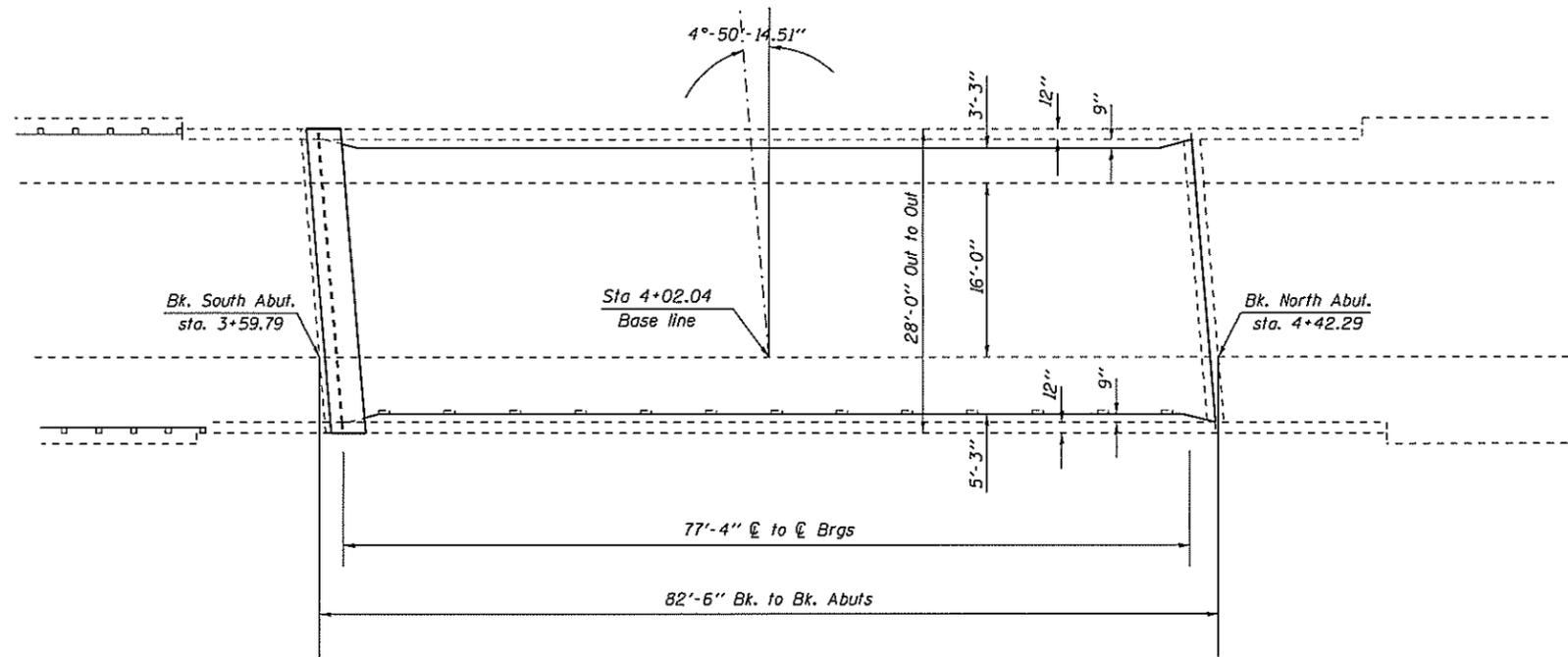
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
24	D9 BRIDGE REPAIR 2019-1	MASSAC	30	14
ILLINOIS FED. AID PROJECT			CONTRACT NO. 78623	

GENERAL NOTES

All structural steel shall be AASHTO M 270 Grade 36 unless otherwise noted. No field welding is permitted except as specified in the contract documents. Reinforcement bars designated (E) shall be epoxy coated. Prior to pouring the new concrete deck section, 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. 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. 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. Existing structural steel shall only be cleaned and painted as required by the Special Provision "Cleaning and Painting Adjacent Areas of Existing Steel Structures". 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. All new Structural Steel shall be hot-dip galvanized. See Special Provision for "Hot Dip Galvanizing for Structural Steel".



ELEVATION



PLAN

TOTAL BILL OF MATERIAL

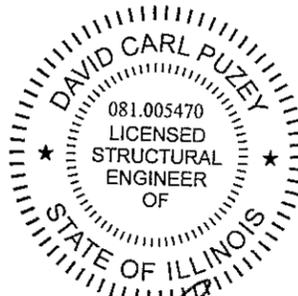
ITEM	UNIT	QUANTITY
Concrete Removal	Cu. Yd.	4.1
Concrete Superstructure	Cu. Yd.	4.1
Protective Coat	Sq. Yd.	14
Furnishing and Erecting Structural Steel	Pound	190
Reinforcement Bars, Epoxy Coated	Pound	460
Preformed Joint Strip Seal	Foot	30
Anchor Bolts, 1"	Each	16
Structural Repair of Concrete (Depth < 5")	Sq. Ft.	7
HMA Surface Course	Ton	18
Waterproofing Membrane System	Sq. Yd.	216
Deck Slab Repair (Partial Depth)	Sq. Yd.	3
HMA Surface Removal (Deck)	Sq. Yd.	216
Plug Existing Deck Drains	Each	4

Design Stresses

FIELD UNITS (Existing Construction)
 $f'_c = 1,200$ psi (deck slab)
 $f'_c = 1,400$ psi (curb, parapet, sub.)
 $f_y = 20,000$ psi (structural steel)
 $f_y = 20,000$ psi (reinforcement)
 $n = 10$

SCOPE OF WORK

1. Setup Traffic Control with complete closure
2. Remove existing hma and wms
3. Perform deck repairs and joint reconstruction
4. Install wms and hma overlay
5. Perform side retainer replacements at south abutment
6. Perform substructure repairs
7. Open to traffic



David Carl Puzey 4/30/19
 Expires 4/30/20

BRIDGE REPAIRS
I-24 WB ON RAMP OVER NEW COLUMBIA DITCH
MASSAC COUNTY
S.N. 064-0037

MODEL: D:\dwg\... FILE NAME: ...

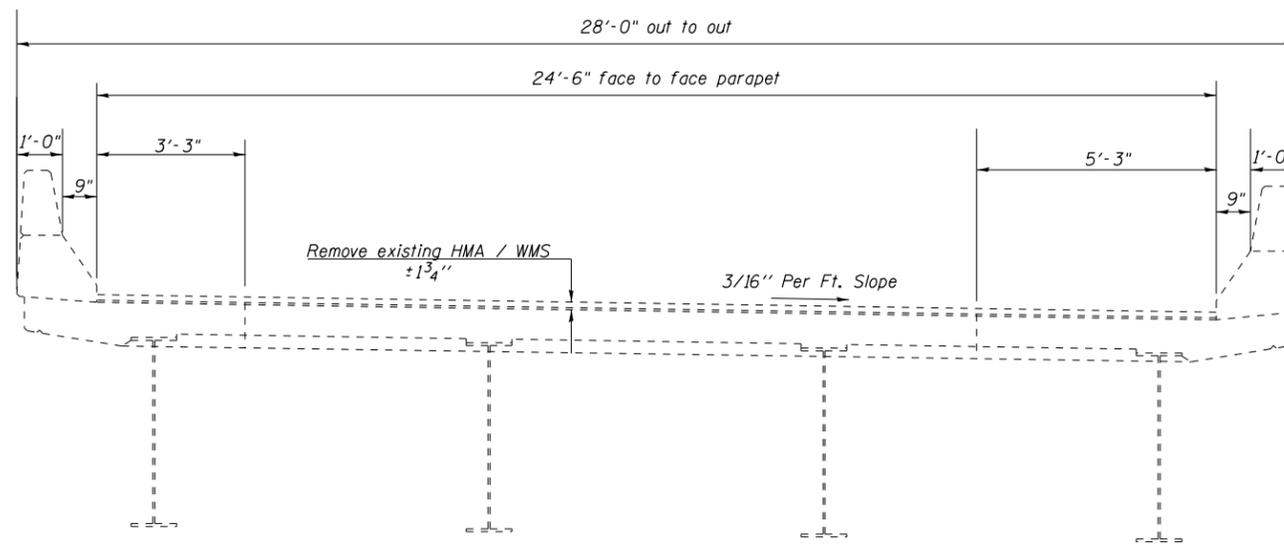
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		DATE	-	REVISED	-

STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION

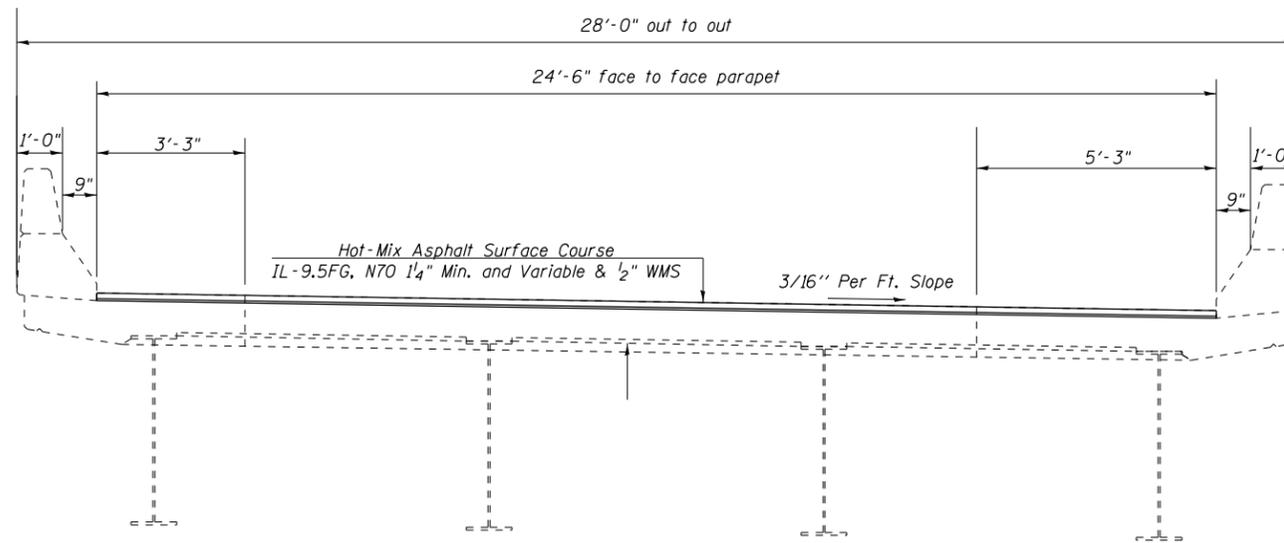
GENERAL PLAN AND ELEVATION
 SN 064-0037

SCALE: SHEET OF SHEETS STA. TO STA.

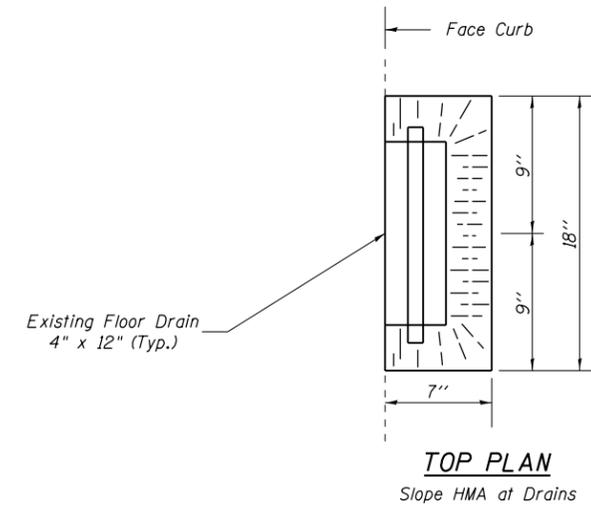
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
24	D9 BRIDGE REPAIR 2019-1	MASSAC	30	15
CONTRACT NO. 78623				
ILLINOIS FED. AID PROJECT				



TYPICAL BRIDGE SECTION - EXISTING



TYPICAL BRIDGE SECTION - PROPOSED



All Sections looking North

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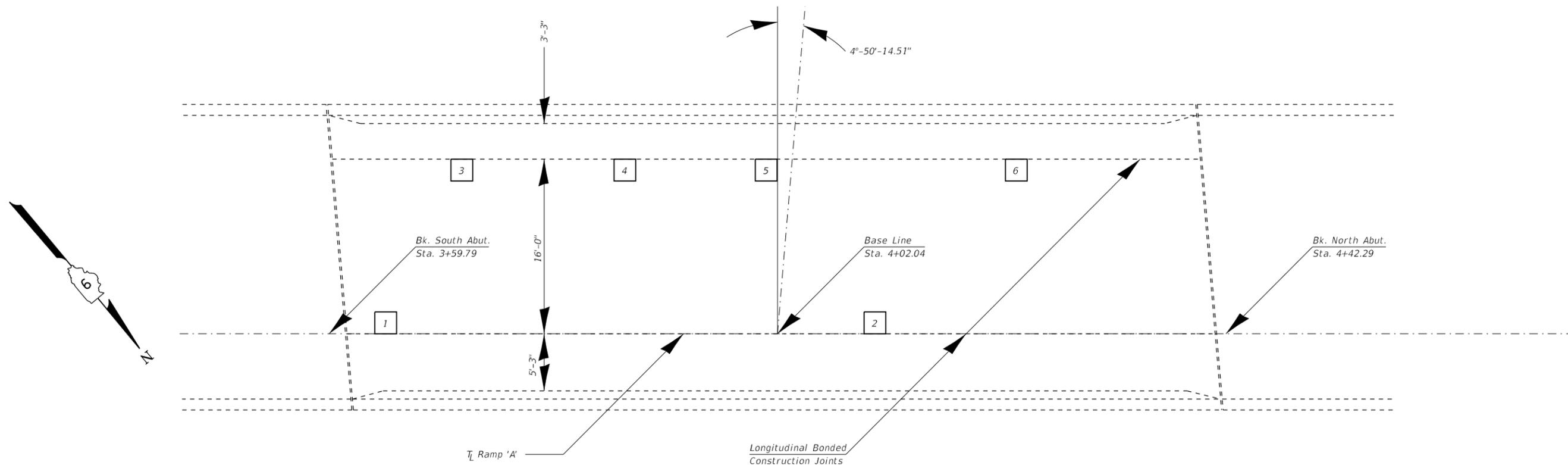
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**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

**TYPICAL SECTIONS
SN 064-0037**

SCALE: SHEET OF SHEETS STA. TO STA.

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
24	D9 BRIDGE REPAIR 2019-1	MASSAC	30	16
CONTRACT NO. 78623				
ILLINOIS		FED. AID PROJECT		



PLAN

Patch Number	Station	Offset From \bar{l}	Width	Length	Area (Sq. Ft.)	Area (Sq. Yd.)
1	3+65	1.0	2.0	2.0	4.0	0.5
2	4+10	1.0	2.0	2.0	4.0	0.5
3	3+72	15.0	2.0	2.0	4.0	0.5
4	3+87	15.0	2.0	2.0	4.0	0.5
5	4+00	15.0	2.0	2.0	4.0	0.5
6	4+23	15.0	2.0	2.0	4.0	0.5
<i>Ramp A Total</i>						3.0

Note: The Resident Engineer will determine final patch locations and quantities in the field before bridge deck patching operations begin and mark on as-built plans.

BILL OF MATERIAL

Item	Unit	Total
Deck Slab Repair (Partial Depth)	Sq. Yd.	3

PARTIAL DEPTH DECK SLAB REPAIRS
F.A.S. 957 OVER F.A.I. RTE 24
F.A.I. RTE 24 - RAMP 'A' - D9 BRIDGE REPAIR 2019-1
MASSAC COUNTY
STATION 4+02.04
STRUCTURE NO. 064-0037

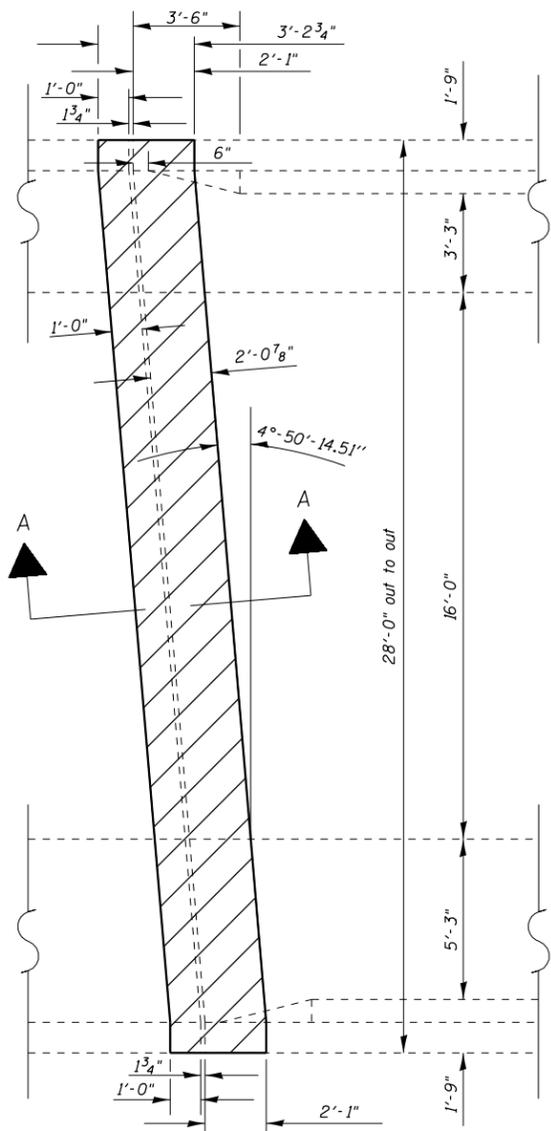
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	DATE -	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

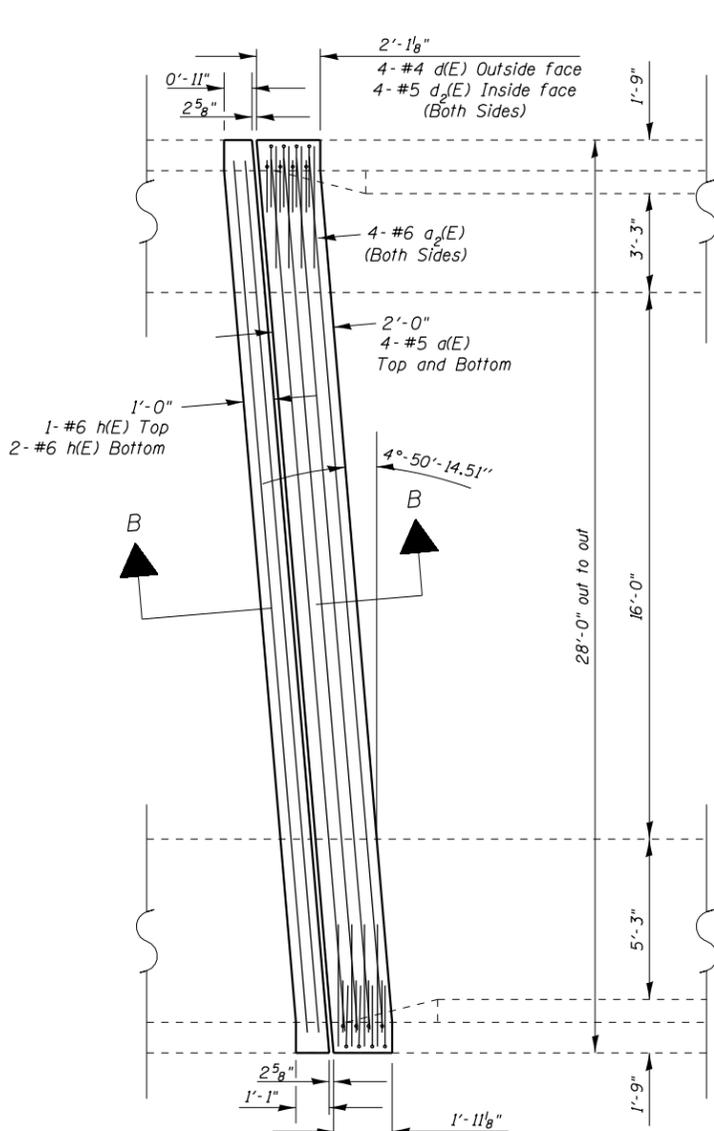
PARTIAL DEPTH DECK SLAB REPAIRS			
SN 064-0037			
SCALE:	SHEET	OF SHEETS	STA. TO STA.

F.A.I. RTE:	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
24	D9 BRIDGE REPAIR 2019-1	MASSAC	30	17
CONTRACT NO. 78623				
ILLINOIS FED. AID PROJECT				

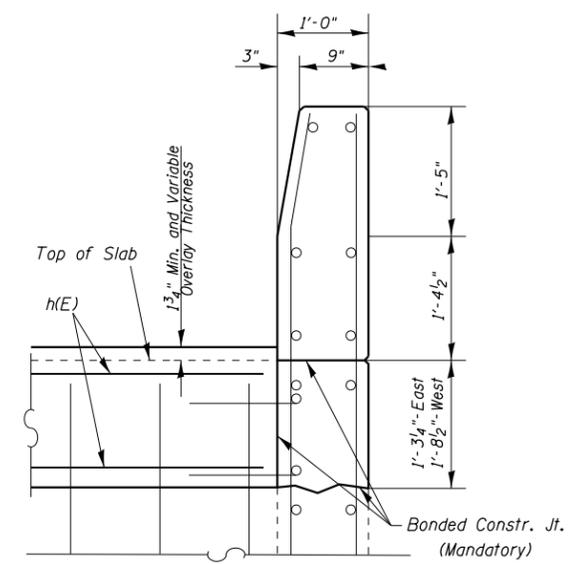


South Abut. Plan
Showing Concrete Removal
No Joint At North Abutment

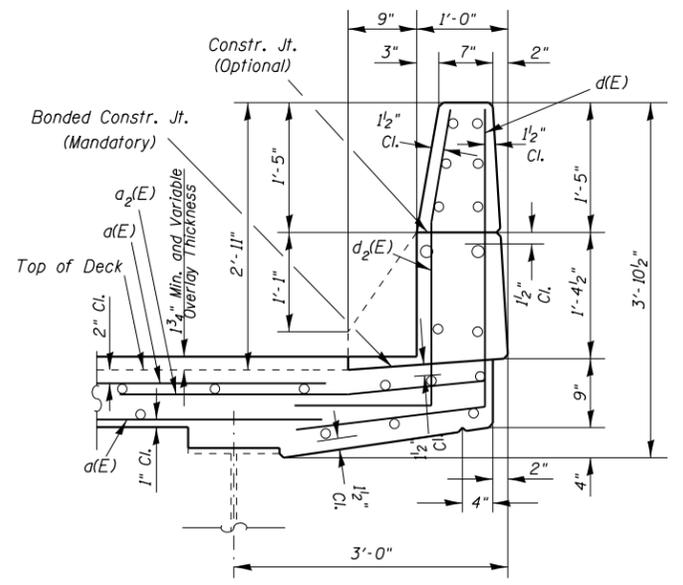
Concrete Removal



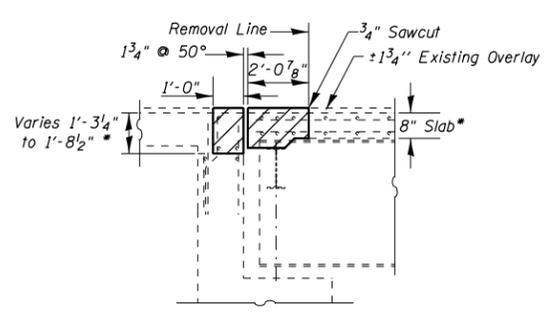
South Abut. Plan
Showing New Concrete
No Joint At North Abutment



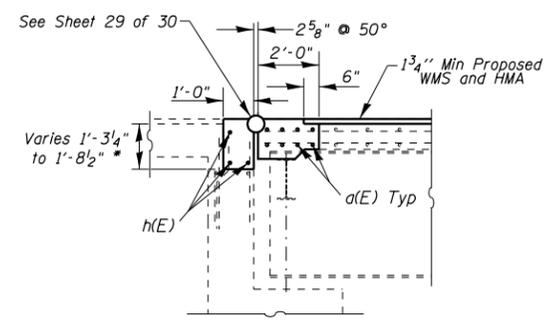
Section Through Wingwall



Section Through Parapet

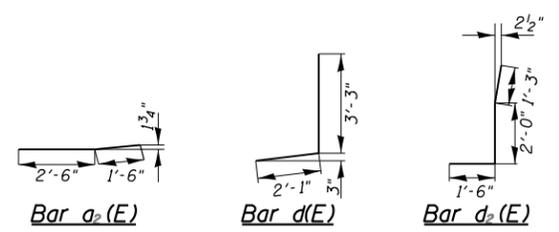


Section A-A
South Abutment
Dimensions measured @ Right Angles



Section B-B
South Abutment
Dimensions measured @ Right Angles

* Dimensions are from top of deck



Bar a₂(E)

Bar d(E)

Bar d₂(E)

BILL OF MATERIAL (SOUTH ABUT)

Bar	No.	Size	Length	Shape
a(E)	8	#5	27'-1"	—
a ₂ (E)	8	#6	4'-0"	—
d(E)	8	#4	5'-4"	J
d ₂ (E)	8	#5	4'-9"	J
h(E)	3	#6	27'-1"	—

Material	Quantity	Unit
Concrete Superstructure	Cu Yd	4.1
Concrete Removal	Cu Yd	4.1
Reinforcement Bars, Epoxy Coated	Pound	460

- Reinforcement bars designated (E) shall be epoxy coated.
- Removal of the portion of HMA that will be poured back as Concrete Superstructure paid for as Concrete Removal

JOINT RECONSTRUCTION DETAILS
MASSAC COUNTY
SN 064-0037

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DRAWN	-	REVIS
CHECKED	-	REVIS
DATE	-	REVIS

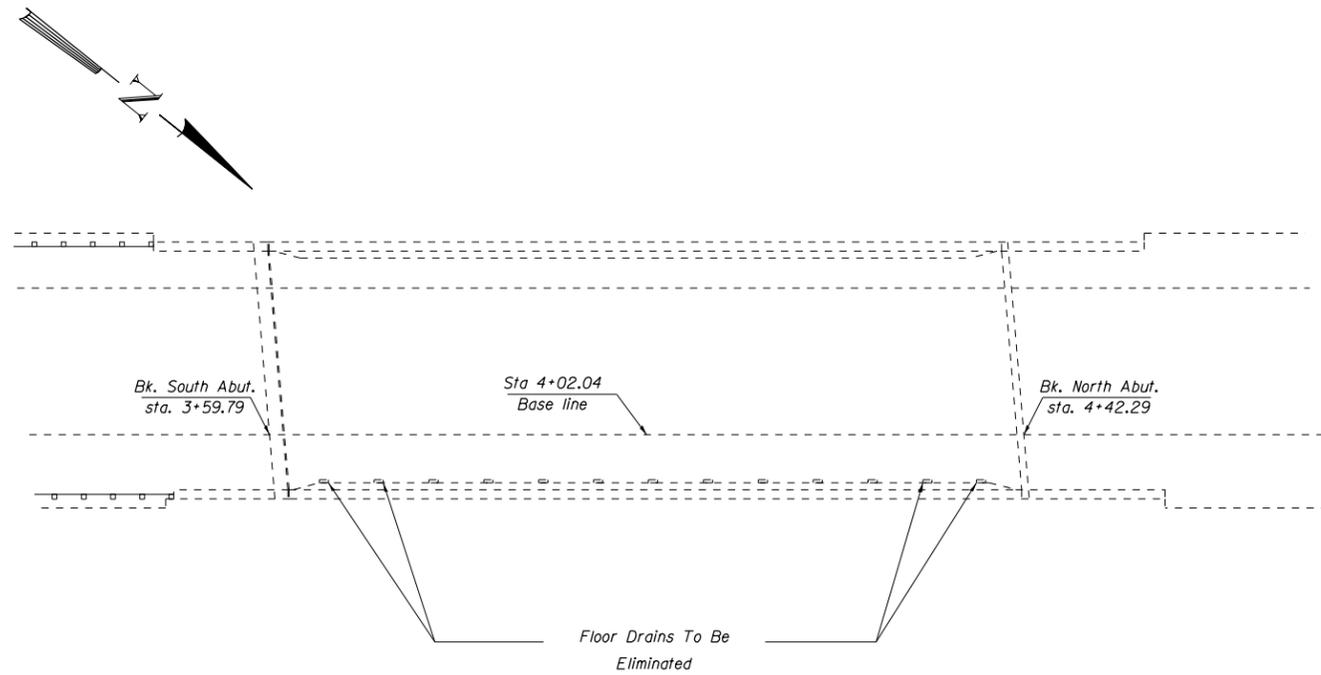
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

JOINT RECONSTRUCTION DETAILS AT SOUTH ABUTMENT
SN 064-0037

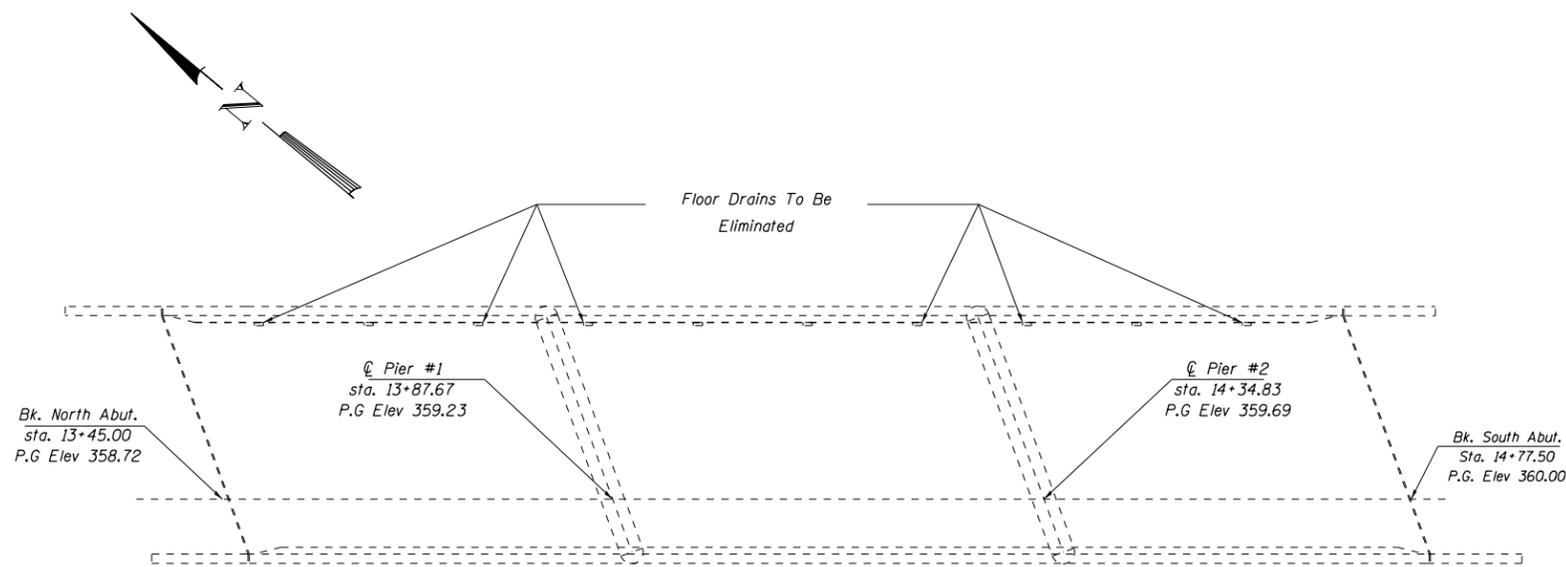
SCALE: SHEET OF SHEETS STA. TO STA.

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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				CONTRACT NO. 78623
		ILLINOIS	FED. AID PROJECT	

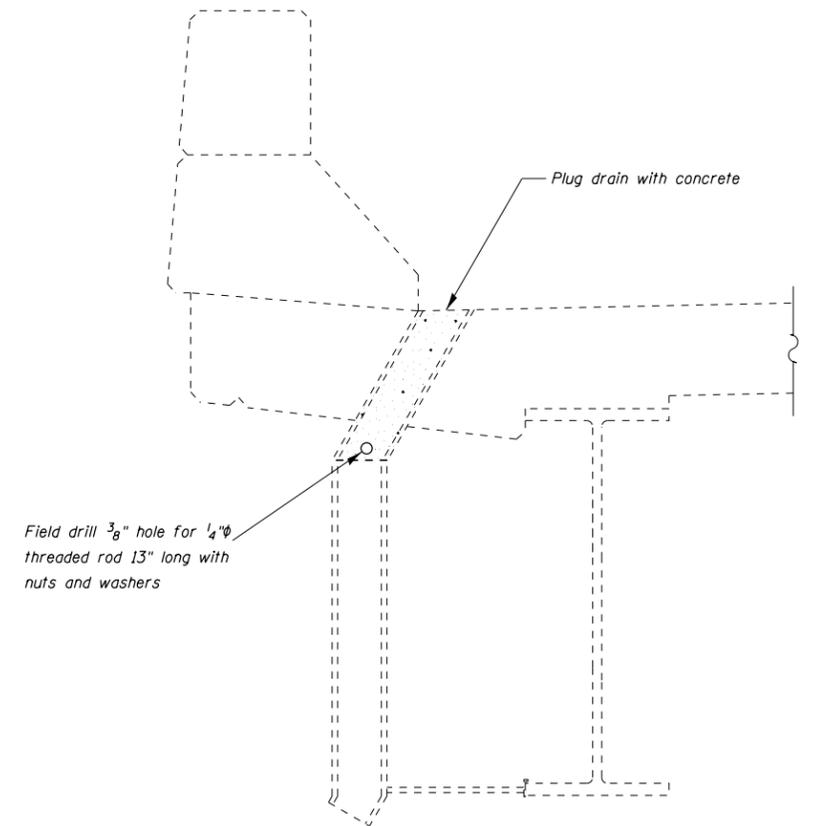
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DRAIN ELIMINATION DETAIL
4 TOTAL (SN 064-0037)



DRAIN ELIMINATION DETAIL
6 TOTAL (SN 064-0038)



DRAIN ELIMINATION DETAIL
(10 LOCATIONS)

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**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

**DRAIN ELIMINATION DETAILS
SN 064-0037 & SN 064-0038**

SCALE: SHEET OF SHEETS STA. TO STA.

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
24	D9 BRIDGE REPAIR 2019-1	MASSAC	30	20
ILLINOIS FED. AID PROJECT			CONTRACT NO. 78623	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

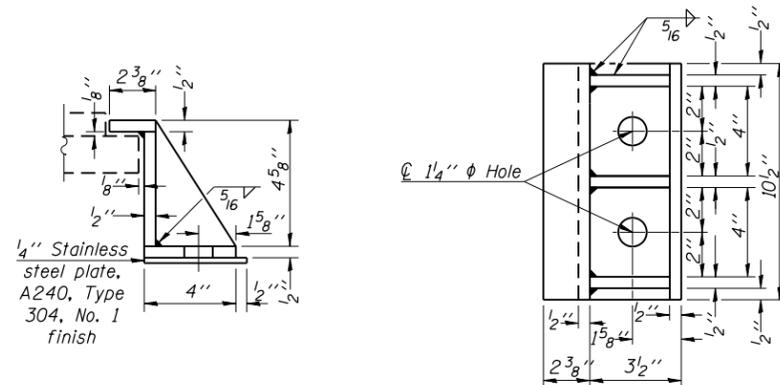
Notes:

Anchor bolts shall be ASTM F1554 all-thread (or an Engineer-approved alternate material) of the grade(s) and diameter(s) specified. ASTM A307 Grade C anchor bolts may be used in lieu of ASTM F1554 Grade 36 (Fy=36ksi). The corresponding specified grade of AASHTO M314 anchor bolts may be used in lieu of ASTM F1554.

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

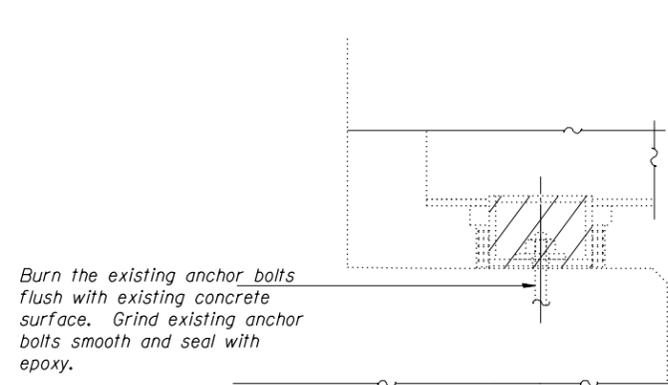
Side retainers and 1/4 in. stainless steel plates shall be included in the cost of "Furnishing and Erecting Structural Steel".

Existing diaphragm removal and reinstallation may be required to facilitate drilling holes, cost to be included with "Furnishing and Erecting Structural Steel".



SIDE RETAINER

Equivalent rolled angle with stiffeners will be allowed in lieu of welded plates.



EXISTING SIDE RETAINER REMOVAL DETAIL

Cost is included with Furnishing and Erecting Structural Steel

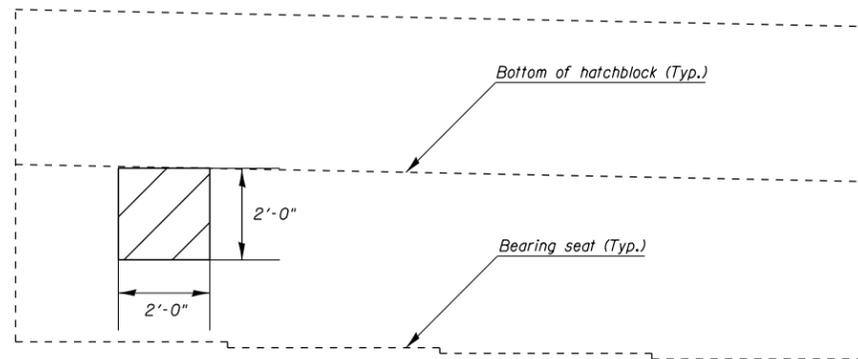
SOUTH ABUTMENT

BILL OF MATERIAL

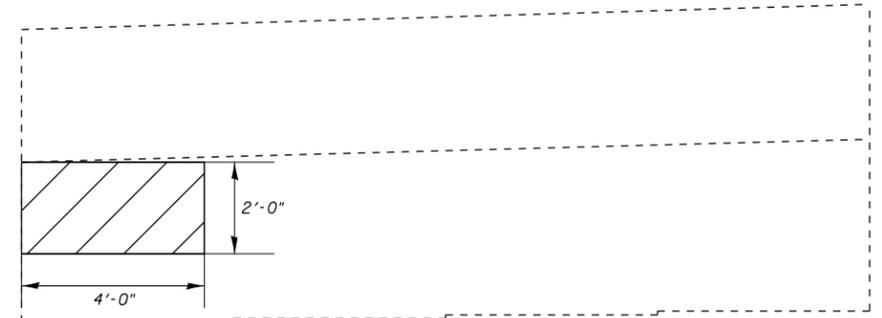
Item	Unit	Total
Anchor Bolts, 1"	Each	16
Furnishing and Erecting Structural Steel	Pound	190

**SOUTH ABUTMENT
SIDE RETAINER DETAILS
STRUCTURE NO. 064-0037**

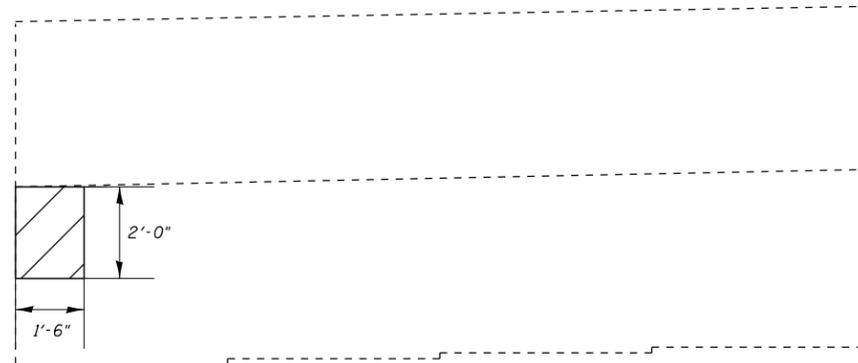
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		CHECKED - MAS	REVISED -			24	D9 BRIDGE REPAIR 2019-1	MASSAC	30	21	
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PLOT DATE =		CHECKED - MAS	REVISED -			ILLINOIS FED. AID PROJECT					
						SHEET NO. x OF x SHEETS					



SN 064-0037
NORTH ABUTMENT BACKWALL
 Looking North



SN 064-0038
NORTH ABUTMENT BACKWALL
 Looking North



SN 064-0037
SOUTH ABUTMENT BACKWALL
 Looking South

BILL OF MATERIAL

ITEM	UNIT	0037	0038	TOTAL
Structural repair of concrete (Depth < 5 Inches)	Sq. Ft.	7	8	15



Structural repair of concrete < 5"

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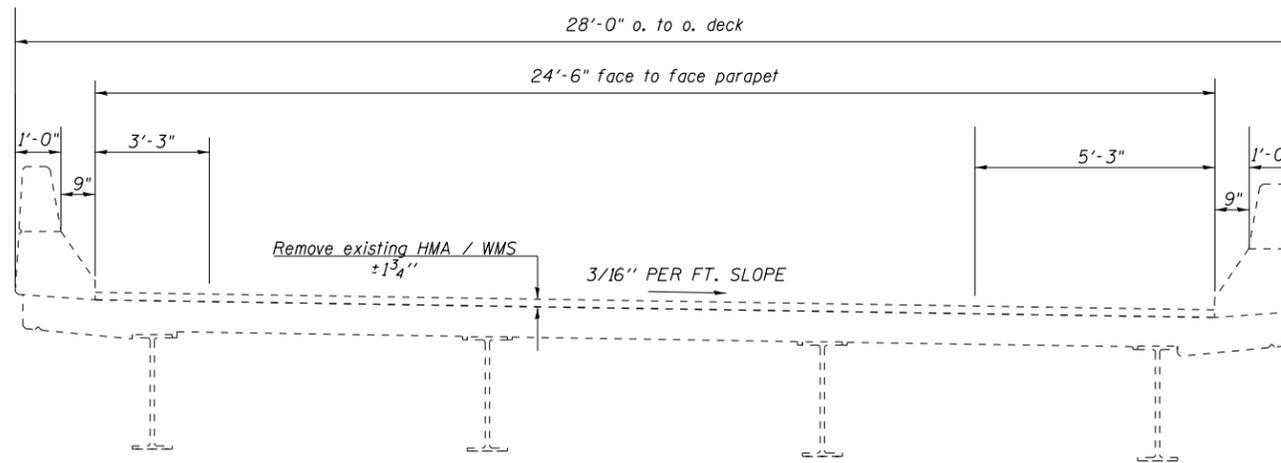
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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

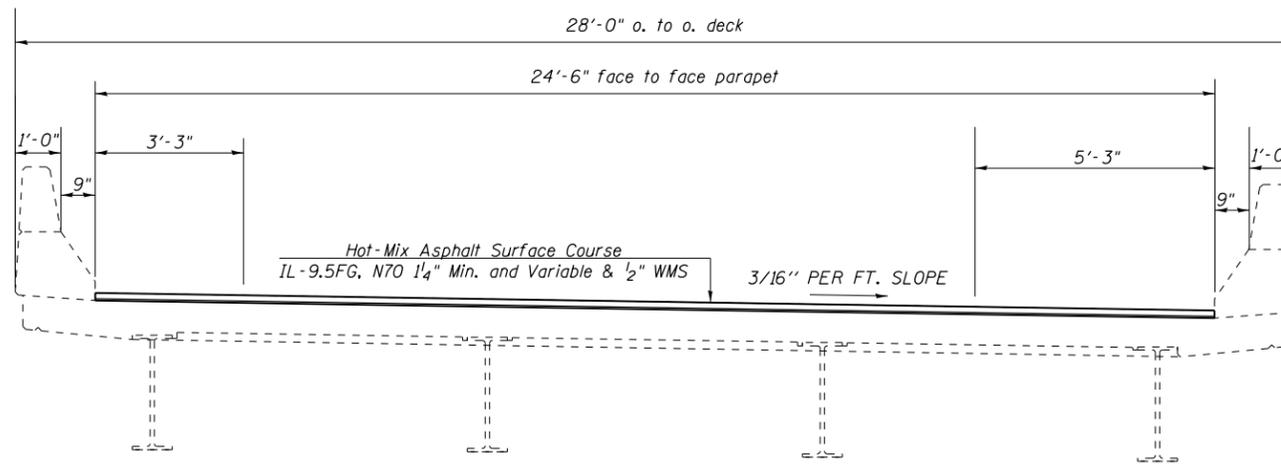
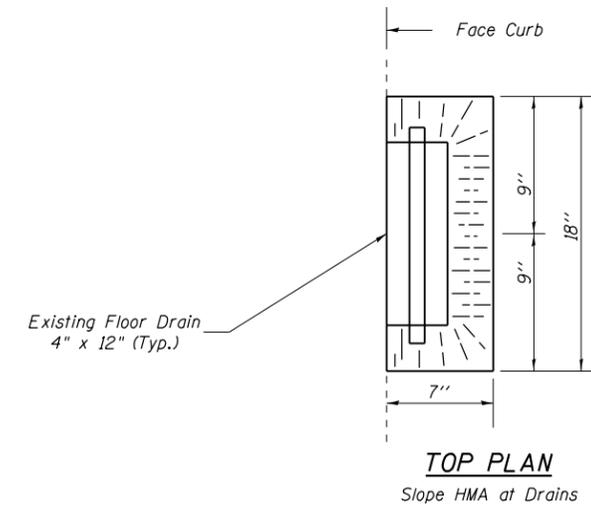
ABUTMENT SUBSTRUCTURE REPAIRS
SN 064-0037 & SN 064-0038

SCALE: SHEET OF SHEETS STA. TO STA.

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
24	D9 BRIDGE REPAIR 2019-1	MASSAC	30	22
ILLINOIS FED. AID PROJECT			CONTRACT NO. 78623	



TYPICAL BRIDGE SECTION EXISTING



TYPICAL BRIDGE SECTION PROPOSED

All Sections looking South

MODEL: Default
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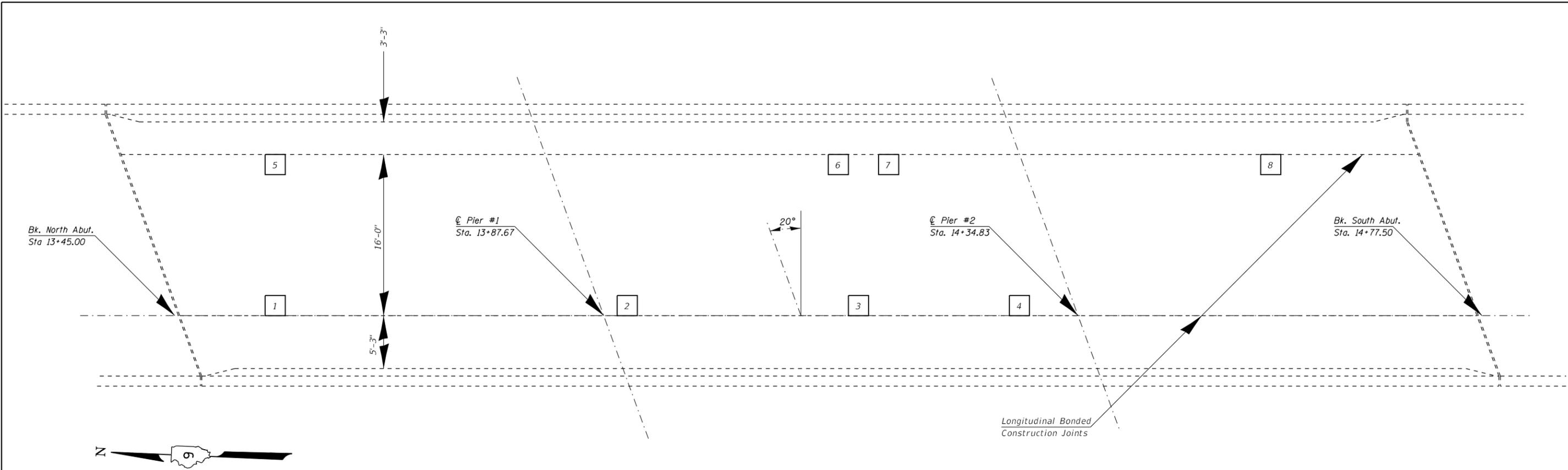
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	DATE -	REVISED -

**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

**TYPICAL SECTION
SN 064-0038**

SCALE: SHEET OF SHEETS STA. TO STA.

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
24	D9 BRIDGE REPAIR 2019-1	MASSAC	30	24
CONTRACT NO. 78623				
ILLINOIS FED. AID PROJECT				



PLAN

Patch Number	Station	Offset From TL	Width	Length	Area (Sq. Ft.)	Area (Sq. Yd.)
1	13+55	1.0	2.0	2.0	4.0	0.5
2	13+90	1.0	2.0	2.0	4.0	0.5
3	14+13	1.0	2.0	2.0	4.0	0.5
4	14+29	1.0	2.0	2.0	4.0	0.5
5	13+55	15.0	2.0	2.0	4.0	0.5
6	14+11	15.0	2.0	2.0	4.0	0.5
7	14+16	15.0	2.0	2.0	4.0	0.5
8	14+54	15.0	2.0	2.0	4.0	0.5
Ramp D Total						4.0

Note: The Resident Engineer will determine final patch locations and quantities in the field before bridge deck patching operations begin and mark on as-built plans.

BILL OF MATERIAL

Item	Unit	Total
Deck Slab Repair (Partial Depth)	Sq. Yd.	4

PARTIAL DEPTH DECK SLAB REPAIRS
F.A.S. 957 OVER F.A.I. RTE 24
F.A.I. RTE 24 - RAMP 'D' - D9 BRIDGE REPAIR 2019-1
MASSAC COUNTY
STATION 14+10
STRUCTURE NO. 064-0038

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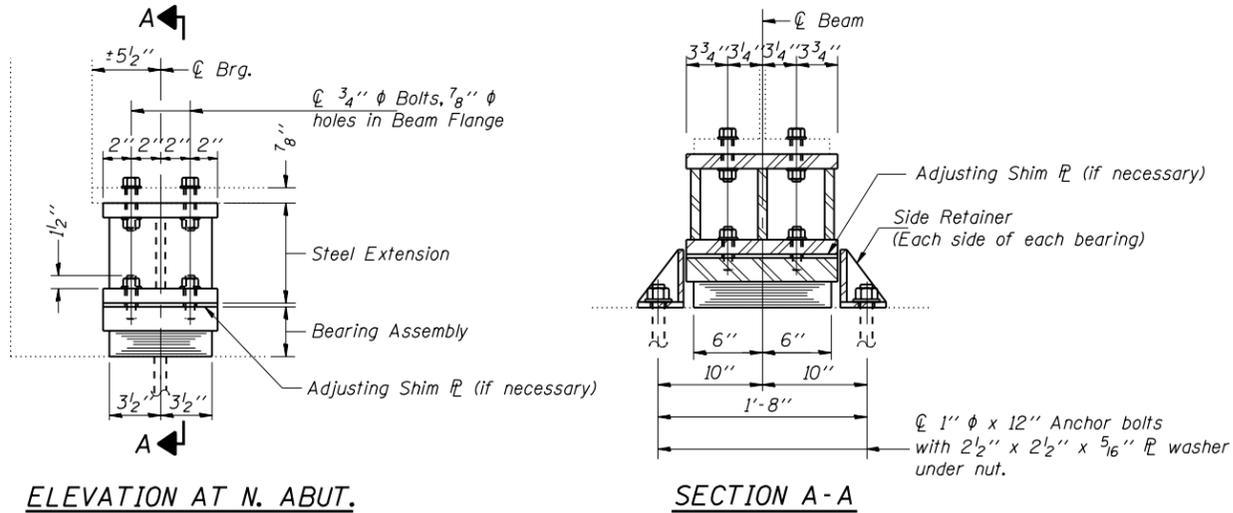
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	DATE -	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PARTIAL DEPTH DECK SLAB REPAIRS			
SN 064-0038			
SCALE:	SHEET	OF	SHEETS
	STA.	TO	STA.

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
24	D9 BRIDGE REPAIR 2019-1	MASSAC	30	25
CONTRACT NO. 78623				
		ILLINOIS	FED. AID PROJECT	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



ELEVATION AT N. ABUT.

SECTION A-A

TYPE I ELASTOMERIC EXP. BRG.

Notes:

Anchor bolts shall be ASTM F1554 all-thread (or an Engineer-approved alternate material) of the grade(s) and diameter(s) specified. ASTM A307 Grade C anchor bolts may be used in lieu of ASTM F1554 Grade 36 (Fy=36ksi). The corresponding specified grade of AASHTO M314 anchor bolts may be used in lieu of ASTM F1554.

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

Side retainers and 1/4 in. stainless steel plates required for the bearing assembly shall be included in the cost of Elastomeric Bearing Assembly, Type I.

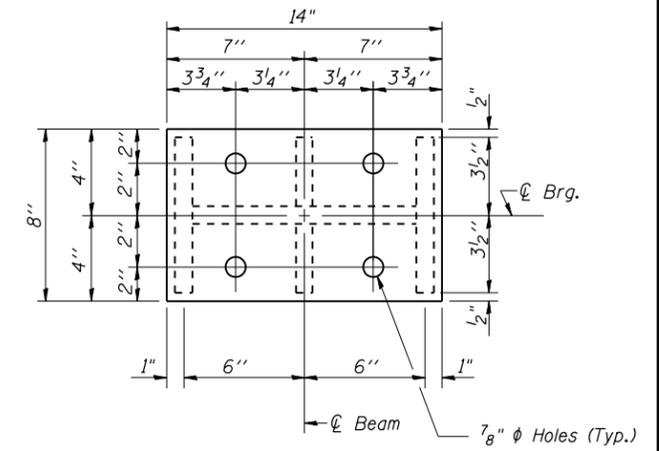
The minimum jack capacity required is 15 Tons.

Existing diaphragm removal and reinstallation may be required to facilitate drilling holes, cost to be included with "Jack and Remove Existing Bearings".

Prior to ordering any material, the Contractor shall verify in the field all bearing height and shim thickness dimensions.

Two 1/8 in. adjusting shims shall be provided for each bearing in addition to all other plates or shims and placed as shown on bearing details.

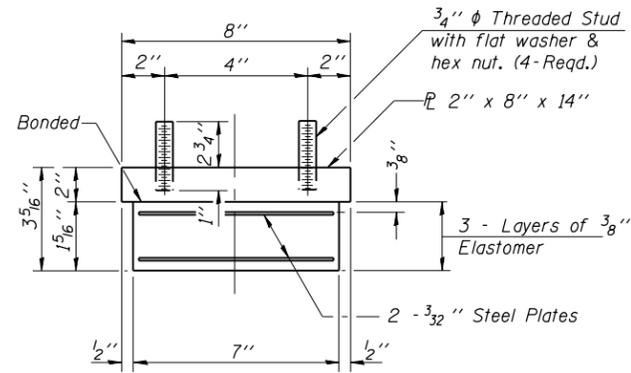
New steel extensions, connection bolts, Fill P's and Shim P's are included in "Furnishing and Erecting Structural Steel".



PLAN-TOP & BOTTOM PLATE

GIRDER REACTIONS

R _P	(K)	19.5
R _L	(K)	34.7
Imp.	(K)	10.4
R (Total)	(K)	64.6



BEARING ASSEMBLY

Note: Shim plates shall not be placed under Bearing Assembly.

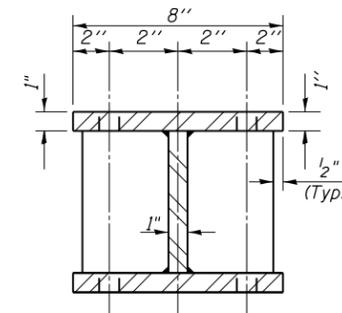
Existing Plate to be removed using the air-arc method and grind smooth all weld material remaining on the bottom flange.

Burn the existing anchor bolts flush with existing concrete surface. Grind existing anchor bolts smooth and seal with epoxy.

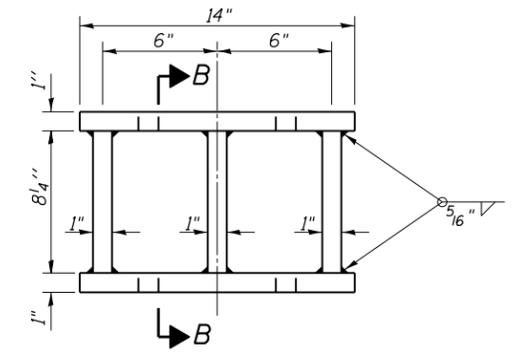
ABUTS

EXISTING BEARING REMOVAL DETAIL

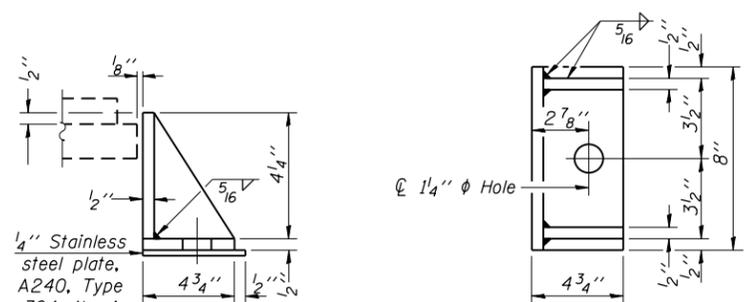
Cost is included with Jack and Remove Existing Bearings



SECTION B-B



STEEL EXTENSION DETAIL



SIDE RETAINER

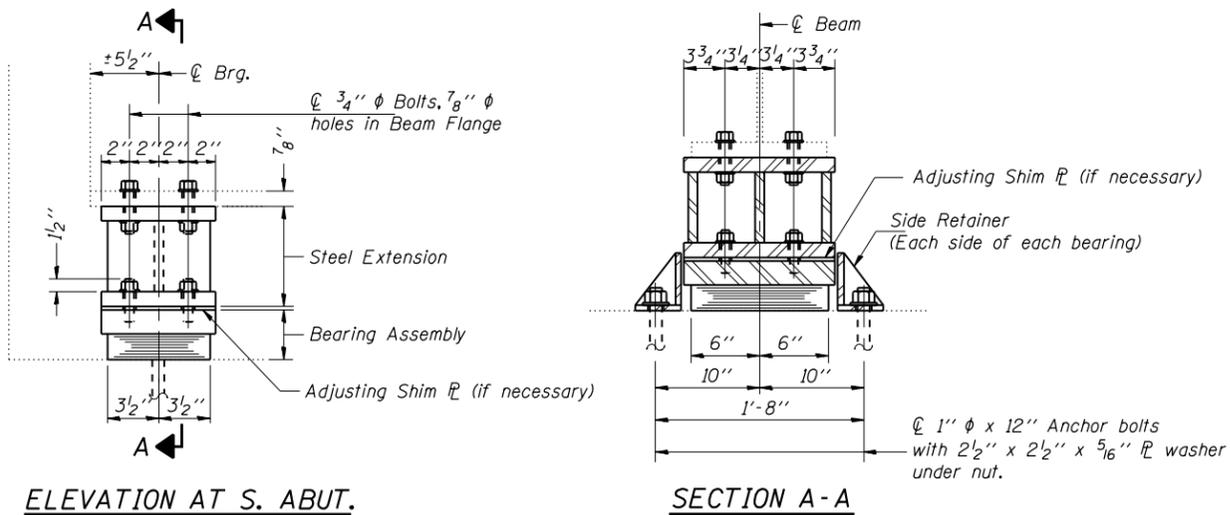
Equivalent rolled angle with stiffeners will be allowed in lieu of welded plates.

BILL OF MATERIAL

Item	Unit	Total
Elastomeric Bearing Assembly Type I	Each	4
Anchor Bolts, 1"	Each	8
Jack and Remove Existing Bearings	Each	4
Furnishing and Erecting Structural Steel	Pound	600

NORTH ABUTMENT
BEARING DETAILS
STRUCTURE NO. 064-0038

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



ELEVATION AT S. ABUT.

SECTION A-A

TYPE I ELASTOMERIC EXP. BRG.

Notes:

Anchor bolts shall be ASTM F1554 all-thread (or an Engineer-approved alternate material) of the grade(s) and diameter(s) specified. ASTM A307 Grade C anchor bolts may be used in lieu of ASTM F1554 Grade 36 (Fy=36ksi). The corresponding specified grade of AASHTO M314 anchor bolts may be used in lieu of ASTM F1554.

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

Side retainers and 1/4 in. stainless steel plates required for the bearing assembly shall be included in the cost of Elastomeric Bearing Assembly, Type I.

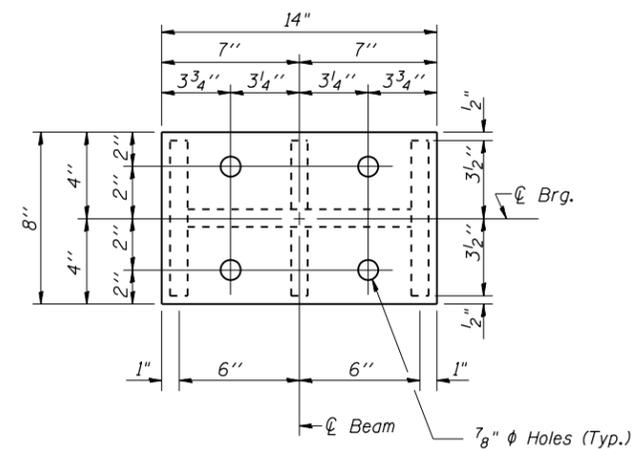
The minimum jack capacity required is 15 Tons.

Existing diaphragm removal and reinstallation may be required to facilitate drilling holes, cost to be included with "Jack and Remove Existing Bearings".

Prior to ordering any material, the Contractor shall verify in the field all bearing height and shim thickness dimensions.

Two 3/8 in. adjusting shims shall be provided for each bearing in addition to all other plates or shims and placed as shown on bearing details.

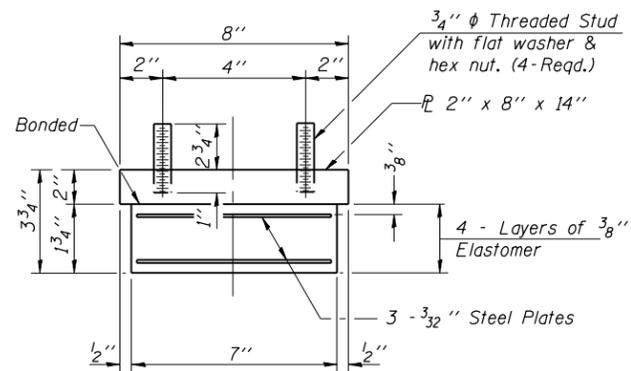
New steel extensions, connection bolts, Fill (if necessary) and Shim (if necessary) are included in "Furnishing and Erecting Structural Steel".



PLAN-TOP & BOTTOM PLATE

GIRDER REACTIONS

R _l	(K)	19.5
R _t	(K)	34.7
Imp.	(K)	10.4
R (Total)	(K)	64.6



BEARING ASSEMBLY

Note: Shim plates shall not be placed under Bearing Assembly.

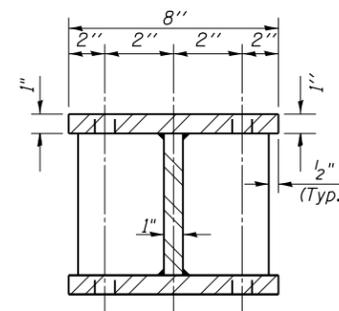
Existing Plate to be removed using the air-arc method and grind smooth all weld material remaining on the bottom flange.

Burn the existing anchor bolts flush with existing concrete surface. Grind existing anchor bolts smooth and seal with epoxy.

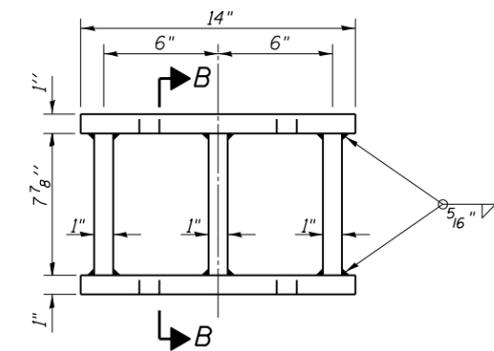
ABUTS

EXISTING BEARING REMOVAL DETAIL

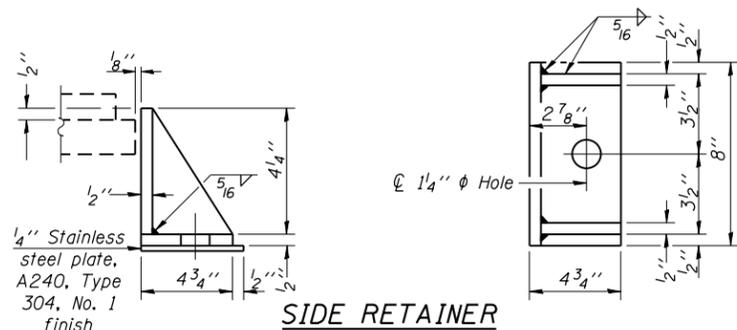
Cost is included with Jack and Remove Existing Bearings



SECTION B-B



STEEL EXTENSION DETAIL



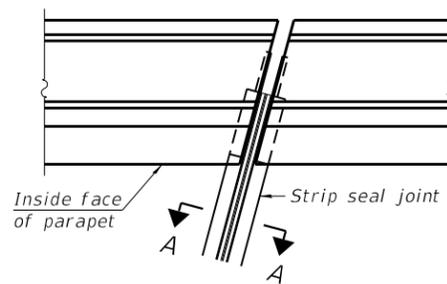
SIDE RETAINER

Equivalent rolled angle with stiffeners will be allowed in lieu of welded plates.

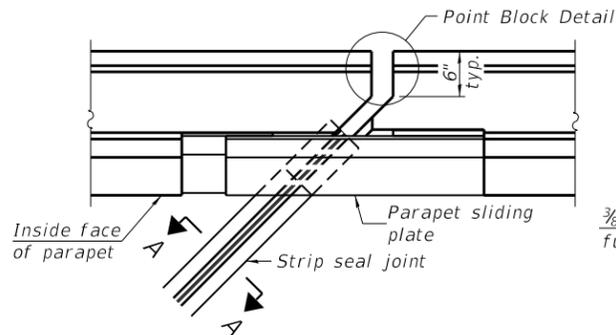
BILL OF MATERIAL

Item	Unit	Total
Elastomeric Bearing Assembly Type I	Each	4
Anchor Bolts, 1"	Each	8
Jack and Remove Existing Bearings	Each	4
Furnishing and Erecting Structural Steel	Pound	580

**SOUTH ABUTMENT
BEARING DETAILS
STRUCTURE NO. 064-0038**

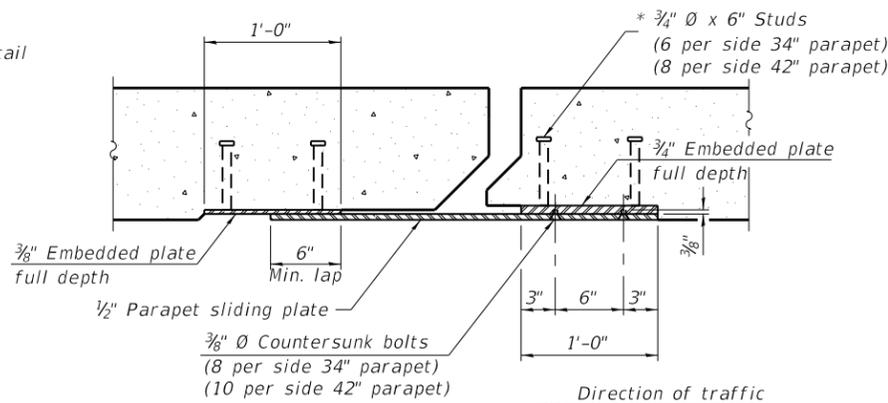


FOR SKEWS $\leq 30^\circ$



FOR SKEWS $> 30^\circ$

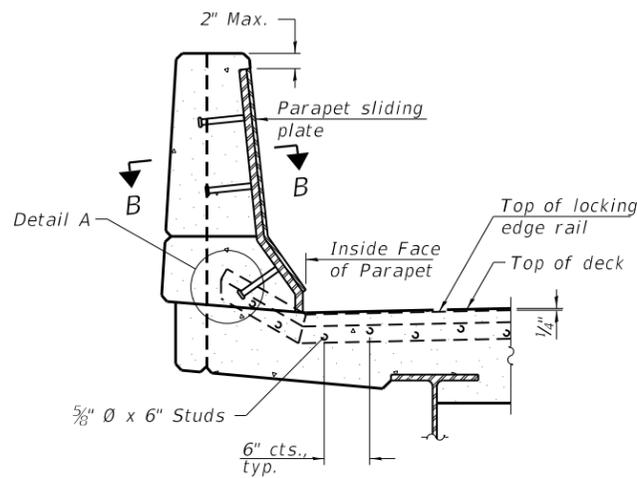
PLAN AT PARAPET



SECTION B-B

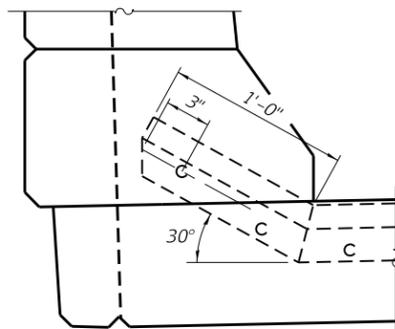
Notes:
 The strip seal shall be made continuous and shall have a minimum thickness of 1/4". The configuration of the strip seal shall match the configuration of the locking edge rails. Open or "webbed" strip seal gland configurations are not permitted. The gland shall be sized for a maximum rated movement of 4 inches.
 The locking edge rails depicted are configured for typical applications and are conceptual only. The actual configuration of the locking edge rails and matching strip seal may vary from manufacturer to manufacturer provided they fit the application and meet the minimum anchorage shown. Flanged edge rails, however, will not be allowed.
 The manufacturer's recommended installation methods shall be followed.

All steel components shall be galvanized after fabrication according to Article 520.03 of the Standard Specifications.
 The Maximum space between locking edge rail segments shall be 3/16" and sealed with a suitable sealant; however, any rail joint within 10' measured perpendicular to the face of the curb or parapet shall be welded as shown in the locking edge rail splice detail.
 Cost of parapet sliding plates, embedded plates, and anchorage studs included with Preformed Joint Strip Seal.
 34" F-shape barrier shown, 42" F-shape similar as noted.
 The concrete opening below the strip seal will vary based on the locking edge rail chosen by the Contractor. Deck and parapet lengths shown elsewhere in the plans are dimensioned to the concrete opening, not the joint opening, and are based on the rolled locking edge rail. If the Contractor elects to use a different locking edge rail, dimensional adjustments may be required. Such adjustments shall be at no additional cost to the State.

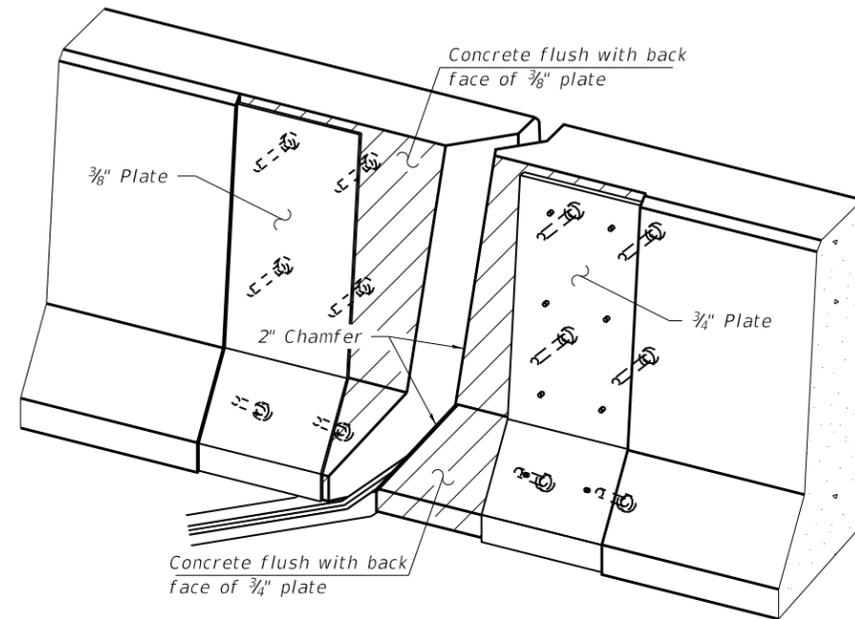


ELEVATION AT PARAPET

(Skews $> 30^\circ$ shown. Skews $\leq 30^\circ$ similar except as shown in plan view.)

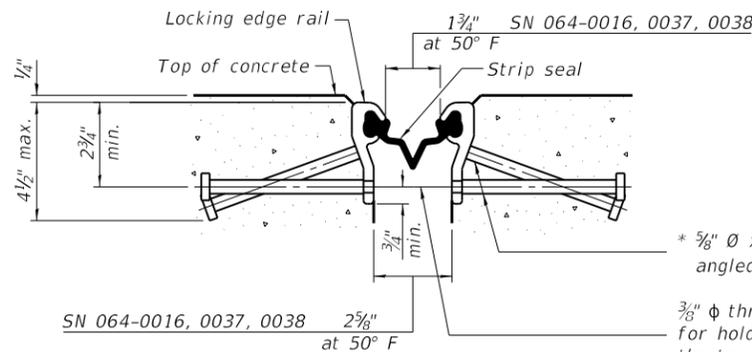


DETAIL A



TRIMETRIC VIEW

(Showing embedded plates only)



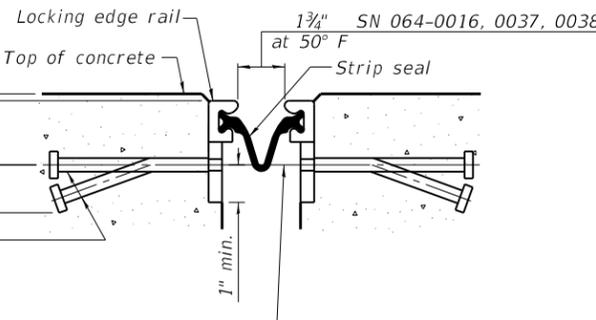
SHOWING ROLLED RAIL JOINT

* 5/8" ϕ x 6" studs @ 6" cts. (alternate angled/bent studs with horizontal studs)

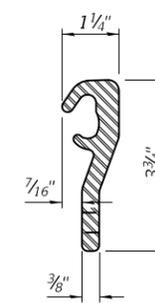
3/8" ϕ threaded rods in 7/16" ϕ holes at $\pm 4'-0"$ cts. for holding the proper joint opening based on the temperature during the deck pour. Place to miss studs. All rods shall be burned, or sawed off flush with the plates after concrete is set.

SECTION A-A

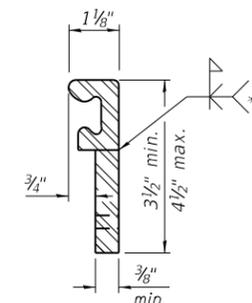
* Granular or solid flux filled headed studs conforming to Article 1006.32 of the Std. Specs., automatically end welded.



SHOWING WELDED RAIL JOINT



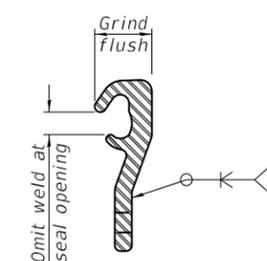
ROLLED (EXTRUDED) RAIL



WELDED RAIL

LOCKING EDGE RAILS

** 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.

BILL OF MATERIAL

Item	Unit	Structure No.			Total
		064-0016	064-0037	064-0038	
Preformed Joint Strip Seal	Foot	63	30	60	153

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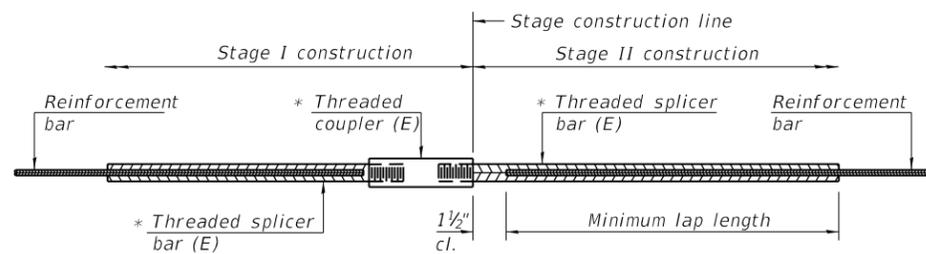
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DRAWN - CPL	REVISED -	
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**STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION**

**PREFORMED JOINT STRIP SEAL
 SN 064-0016, 0037, 0038**

SCALE: SHEET OF SHEETS STA. TO STA.

F.A.I. R.T.E.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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CONTRACT NO. 78623				
ILLINOIS FED. AID PROJECT				

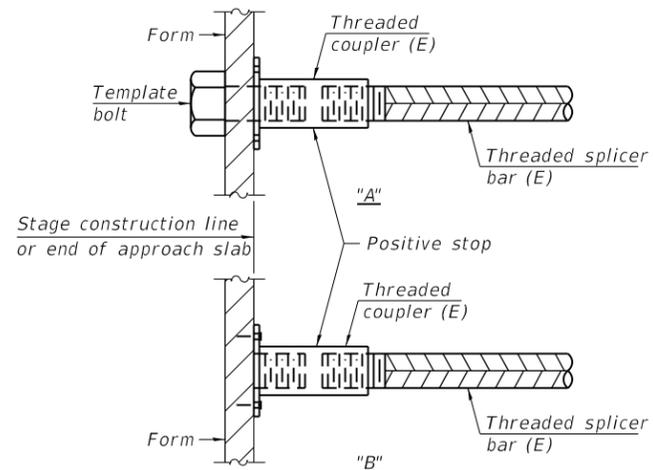


STANDARD BAR SPLICER ASSEMBLY

Threaded splicer bar length = min. lap length + 1 1/2" + thread length

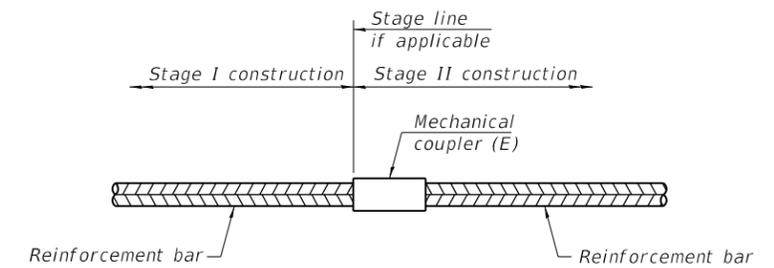
* Epoxy not required on Bar Splicer Assembly components used in conjunction with black bars.

Location	Bar size	No. assemblies required	Minimum lap length
at Joint Repairs	#5	8	3'-0"



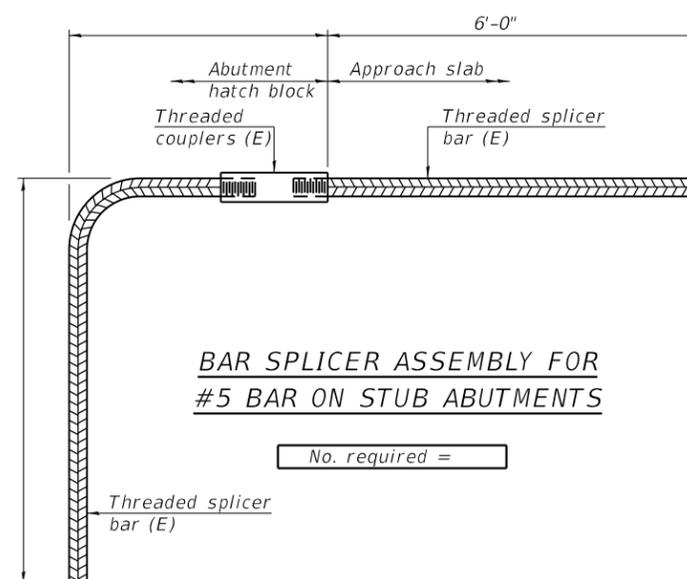
INSTALLATION AND SETTING METHODS

"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



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.

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 DATE: 3/20/2019

BSD-1

2-17-2017

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PLOT DATE = 3/20/2019	DATE - 06/11/18	REVISED -

**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

**BAR SPLICER ASSEMBLY AND MECHANICAL SPLICER DETAILS
SN 064-0016**

SCALE: SHEET OF SHEETS STA. TO STA.

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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ILLINOIS			FED. AID PROJECT	

CONTRACT NO. 78623