

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS

**PROPOSED  
HIGHWAY PLANS**

FAI 57 (I-57) AND

FAI 24 (I-24)

SECTION D9 BSMART FY09-1  
PULASKI/JOHNSON COUNTY  
MICROSILICA OVERLAY AND MISC. REPAIRS  
OVER I 57 & US 51 AND I 24  
C-99-005-09  
PROJECT NO. IM-0005 (678)

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
24/57	D9 BSMART FY09-1	JOHNSON/PULASKI	20	1
FED. ROAD DIST. NO.	ILLINOIS	CONTRACT NO. 78095		

FOR INDEX OF SHEETS, SEE SHEET NO. 2

**TRAFFIC DATA**

**PULASKI**

2007 ADT = 2300  
7% TRUCKS

**JOHNSON**

2007 ADT = 4100  
12% TRUCKS

**TOWNSHIPS:**

MOUND CITY

GOREVILLE

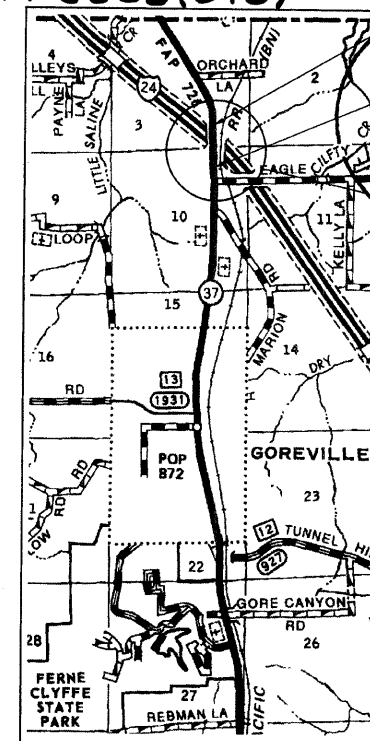
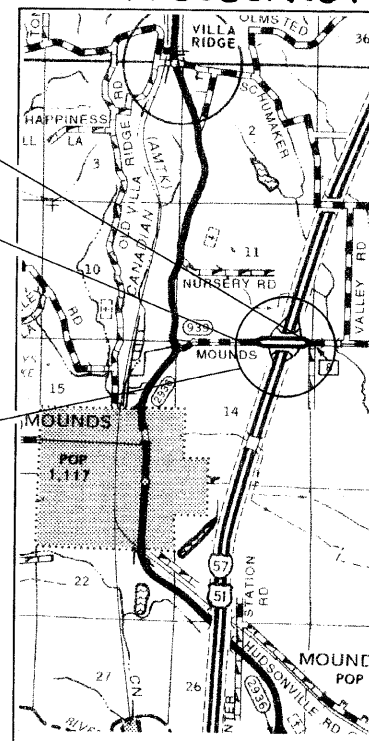
D-99-002-09



PROPOSED PROJECT BEGINS  
STA 106+31.11

PROPOSED PROJECT ENDS  
STA 109+70.78

PROPOSED MICROSILICA OVERLAY  
AND MISC REPAIRS  
OVER I-57 AND US 51  
STRUCTURE NO. 077-0027  
CENTERLINE STRUCTURE STA 108+00.95

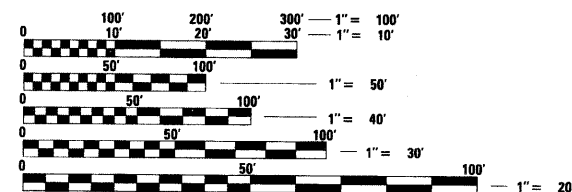


PROPOSED PROJECT BEGINS  
STA 584+42.99

PROPOSED PROJECT ENDS  
STA 588+61.65

PROPOSED MICROSILICA OVERLAY  
AND MISC REPAIRS  
OVER I-24  
STRUCTURE NO. 044-0031  
CENTERLINE STRUCTURE STA 586+52.32

GROSS LENGTH OF PROJECT = 758'-4"



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

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

CONTRACT NO. 78095

SN 077-0027

BRIDGE LENGTH = 251'-8"

ROADWAY LENGTH = 88'-0"

NET LENGTH = 339'-8"

SN 044-0031

BRIDGE LENGTH = 328'-8"

ROADWAY LENGTH = 90'-0"

NET LENGTH = 418'-8"

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS

SUBMITTED March 11, 2009  
Ma O'Connell  
DEPUTY DIRECTOR OF HIGHWAYS, REGION ENGINEER

May 8, 2009  
Charles G. Ingersoll  
ENGINEER OF DESIGN AND ENVIRONMENT

May 8, 2009  
Christine M. Reed  
DIRECTOR OF HIGHWAYS, CHIEF ENGINEER

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OF THE STATE OF ILLINOIS**

**GENERAL NOTES**

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.

TRIM EDGES OF EXISTING HOT-MIX ASPHALT SURFACE FLUSH WITH EXISTING PAVEMENT PRIOR TO CONSTRUCTING NEW BASE COURSE WIDENING.

IF THE CONTRACTOR ELECTS TO USE P.C.C. BASE COURSE WIDENING, SUCH WIDENING SHALL BE ACCORDING TO ARTICLE 406.02, EXCEPT THIS WORK WILL NOT BE PAID FOR SEPARATELY BUT SHALL BE INCLUDED IN THE COST OF THE WIDENING.

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.

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

THE CENTERLINE PAVEMENT MARKING SHOULD BE REMOVED FROM THE STOP BAR TO THE SAND ATTENUATORS OR DRUMS. EDGE LINE PAVEMENT MARKING SHOULD BE REMOVED IF A 10 FOOT LANE WIDTH CANNOT BE MAINTAINED. TEMPORARY EDGE LINES SHOULD BE INSTALLED WHEN THE EDGE LINES ARE REMOVED.

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

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.

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.

COMMITMENTS: NONE

**MIXTURE REQUIREMENTS**

LOCATION(S):	SN 044-0031
MIXTURE USE(S):	HOT-MIX ASPHALT BASE COURSE WIDENING, 10"
AC/PG:	PG 64-22
RAP% (MAX):	10%
DESIGN AIR VOIDS:	4% @ NDES 90
MIXTURE COMPOSITION: (GRADATION MIXTURE)	IL 19.0
FRICTION AGGREGATE:	NONE

LOCATION(S):	SN 077-0027 SN 044-0031
MIXTURE USE(S):	HOT-MIX ASPHALT SURFACE COURSE
AC/PG:	PG 64-22
RAP% (MAX):	10%
DESIGN AIR VOIDS:	4% @ NDES 90
MIXTURE COMPOSITION: (GRADATION MIXTURE)	IL 9.5 OR IL 12.5
FRICTION AGGREGATE:	MIXTURE C

**STANDARDS**

- 000001-05 STANDARD SYMBOLS, ABBREVIATIONS AND PATTERNS
- 001001-02 AREAS OF REINFORCEMENT BARS
- 701001-02 OFF-ROAD OPERATIONS 2L, 2W, MORE THAN 15' AWAY
- 701006-03 OFF-ROAD OPERATIONS 2L, 2W, 15' TO PAVEMENT EDGE FOR SPEEDS  $\geq$  45 MPH
- 701011-02 OFF-ROAD MOVING OPERATIONS 2L, 2W, DAY ONLY FOR SPEEDS  $\geq$  45 MPH
- 701101-02 OFF-ROAD, MULTILANE < 15' TO PAVEMENT EDGE
- 701201-03 LANE CLOSURE, 2L, 2W, DAY ONLY ON-ROAD TO 24" OFF-ROAD FOR SPEEDS  $\geq$  45 MPH
- 701311-03 LANE CLOSURE, 2L, 2W, MOVING OPERATIONS - DAY ONLY
- 701321-10 LANE CLOSURE, 2L, 2W, BRIDGE REPAIR WITH BARRIER
- 701326-03 LANE CLOSURE, 2L, 2W, PAVEMENT WIDENING, FOR SPEEDS > 45 MPH
- 701406-05 LANE CLOSURE, FREEWAY/EXPRESSWAY - DAY ONLY
- 701901-01 TRAFFIC CONTROL DEVICES
- 704001-05 TEMPORARY CONCRETE BARRIER
- 780001-02 TYPICAL PAVEMENT MARKINGS

BLR 21-08

**INDEX OF SHEETS**

- 1 COVER SHEET
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- 17 PREFORMED STRIP SEAL DETAIL
- 18 SUBSTRUCTURE REPAIRS
- 19 BAR SPLICER ASSEMBLY DETAILS
- 20 TEMPORARY CONCRETE BARRIER

Prepared By: *Joe Polanski*  
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DISTRICT OPERATIONS ENGINEER

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DISTRICT CONSTRUCTION ENGINEER

Examined By: *Bruce W. Peckles*  
DISTRICT MATERIALS ENGINEER

Examined By: *Jim Smother*  
DISTRICT PROJECT IMPLEMENTATION ENGINEER

Examined By: *Samuel Clayton*  
ASSISTANT REGIONAL ENGINEER

Approved By: *Ma. Cami*  
DEPUTY DIRECTOR OF HIGHWAYS, REGION 5 ENGINEER

March 11 20 09  
DATE

**SUMMARY OF QUANTITIES**

CODE NUMBER	ITEM DESCRIPTION	UNIT	TOTAL		
			90% FEDERAL; 10% STATE CONSTRUCTION TYPE CODE SFTY-2A		
			JOHNSON	PULASKI	
			SN 044-0031	SN 077-0027	
QUANTITY	QUANTITY	QUANTITY			
35600716	HOT-MIX ASPHALT BASE COURSE WIDENING, 10"	SQ YD	193	193	
40600982	HOT-MIX ASPHALT SURFACE REMOVAL - BUTT JOINT	SQ YD	252		252
40600985	PORTLAND CEMENT CONCRETE SURFACE REMOVAL - BUTT JOINT	SQ YD	188	188	
40600990	TEMPORARY RAMP	SQ YD	42	42	
40603320	HOT-MIX ASPHALT SURFACE COURSE, MIX "C", N90	TON	61	29	32
42001300	PROTECTIVE COAT	SQ YD	2708	1552	1156
50102400	CONCRETE REMOVAL	CU YD	32.7	13.3	19.4
50157300	PROTECTIVE SHIELD	SQ YD	442	360	482
50300100	FLOOR DRAINS	EACH	20		20
50300255	CONCRETE SUPERSTRUCTURE	CU YD	35	14.2	20.8
50300260	BRIDGE DECK GROOVING	SQ YD	2462	1444	1018
50500405	FURNISHING AND ERECTING STRUCTURAL STEEL	POUND	4270	2350	1920
50500715	JACK AND REMOVE EXISTING BEARINGS	EACH	30	12	18
50800205	REINFORCEMENT BARS, EPOXY COATED	POUND	4190	1640	2550
50800515	BAR SPLICERS	EACH	20	20	
52000110	PREFORMED JOINT STRIP SEAL	FOOT	115	115	
52100010	ELASTOMERIC BEARING ASSEMBLY, TYPE I	EACH	12	12	
52100020	ELASTOMERIC BEARING ASSEMBLY, TYPE II	EACH	18		18
52100520	ANCHOR BOLTS, 1"	EACH	84	48	36
59300100	CONTROLLED LOW-STRENGTH MATERIAL	CU YD	6.7		6.7
67000400	ENGINEER'S FIELD OFFICE, TYPE A	CAL MO	4		4
67100100	MOBILIZATION	L SUM	1	0.5	0.5
70100405	TRAFFIC CONTROL AND PROTECTION, STANDARD 701321	EACH	1	1	
70100450	TRAFFIC CONTROL AND PROTECTION, STANDARD 701201	L SUM	1	1	
70100500	TRAFFIC CONTROL AND PROTECTION, STANDARD 701326	L SUM	1	1	
70100700	TRAFFIC CONTROL AND PROTECTION, STANDARD 701406	L SUM	1		1
70101830	TRAFFIC CONTROL AND PROTECTION, STANDARD BLR 21	L SUM	1		1
70103815	TRAFFIC CONTROL SURVEILLANCE	CAL DA	2	2	
70106500	TEMPORARY BRIDGE TRAFFIC SIGNALS	EACH	1	1	
70106700	TEMPORARY RUMBLE STRIP	EACH	3	3	
70106800	CHANGEABLE MESSAGE SIGN	CAL MO	14	6	8
70300100	SHORT-TERM PAVEMENT MARKING	FOOT	160	90	70
70300220	TEMPORARY PAVEMENT MARKING - LINE 4"	FOOT	2780	1304	1476

CODE NUMBER	ITEM DESCRIPTION	UNIT	TOTAL		
			90% FEDERAL; 10% STATE CONSTRUCTION TYPE CODE SFTY-2A		
			JOHNSON	PULASKI	
			SN 044-0031	SN 077-0027	
QUANTITY	QUANTITY	QUANTITY			
70301000	WORK ZONE PAVEMENT MARKING REMOVAL	SQ FT	980	465	515
70400100	TEMPORARY CONCRETE BARRIER	FOOT	575	575	
70400200	RELOCATE TEMPORARY CONCRETE BARRIER	FOOT	550	550	
* 78001110	PAINT PAVEMENT MARKING - LINE 4"	FOOT	2780	1304	1476
78300100	PAVEMENT MARKING REMOVAL	SQ FT	497	497	
* 86200300	UNINTERRUPTIBLE POWER SUPPLY, EXTENDED	EACH	1	1	
X0301245	SHOULDER REMOVAL	SQ YD	193	193	
X0301424	SILICONE JOINT SEALER	FOOT	127		127
X0320887	POLYMER CONCRETE	CU FT	9.9		9.9
X0325305	STRUCTURAL REPAIR OF CONCRETE (DEPTH EQUAL TO OR LESS THAN 5 INCHES)	SQ FT	235	235	
XZ193500	BRIDGE DECK MICROSILICA CONCRETE OVERLAY 2 1/4"	SQ YD	2643	1516	1127
Z0006204	BRIDGE DECK HYDRO-SCARIFICATION 1/2"	SQ YD	2643	1516	1127
Z0016001	DECK SLAB REPAIR (FULL DEPTH, TYPE I)	SQ YD	36	2	34
Z0030250	IMPACT ATTENUATORS, TEMPORARY (NON-REDIRECTIVE), TEST LEVEL 3	EACH	2	2	
Z0030350	IMPACT ATTENUATORS, RELOCATE (NON-REDIRECTIVE), TEST LEVEL 3	EACH	2	2	

\*Specialty Items

**GENERAL NOTES**

Fasteners shall be AASHTO M164 Type 1, mechanically galvanized bolts. Bolts - 3/4" φ, holes - 15/16" φ, unless otherwise noted.

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 shall conform to the requirements of ASTM A 706 Gr 60. See Special Provisions.

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.

As directed by the Engineer, existing construction accessories welded to the top flange of beams and girders shall be removed. The weld areas shall be ground flush and inspected for cracks using magnetic particle testing (MT) or dye penetrant testing (PT) by qualified personnel approved by the Engineer.

Any cracks that cannot be removed by grinding 1/4 inch deep shall be identified and reported to the Bureau of Bridges and Structures for further disposition. The cost of removing welded accessories, grinding and inspecting weld areas and grinding cracks will be paid for according to Article 109.04 of the Standard Specifications.

Plan dimensions and details relative to existing plans are subject to nominal construction variations. The Contractor shall field verify existing dimensions and details affecting new construction and make necessary approved adjustments prior to construction or ordering of materials. Such variations shall not be cause for additional compensation for a change in scope of the work, however, the Contractor will be paid for the quantity actually furnished at the unit price bid for the work.

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

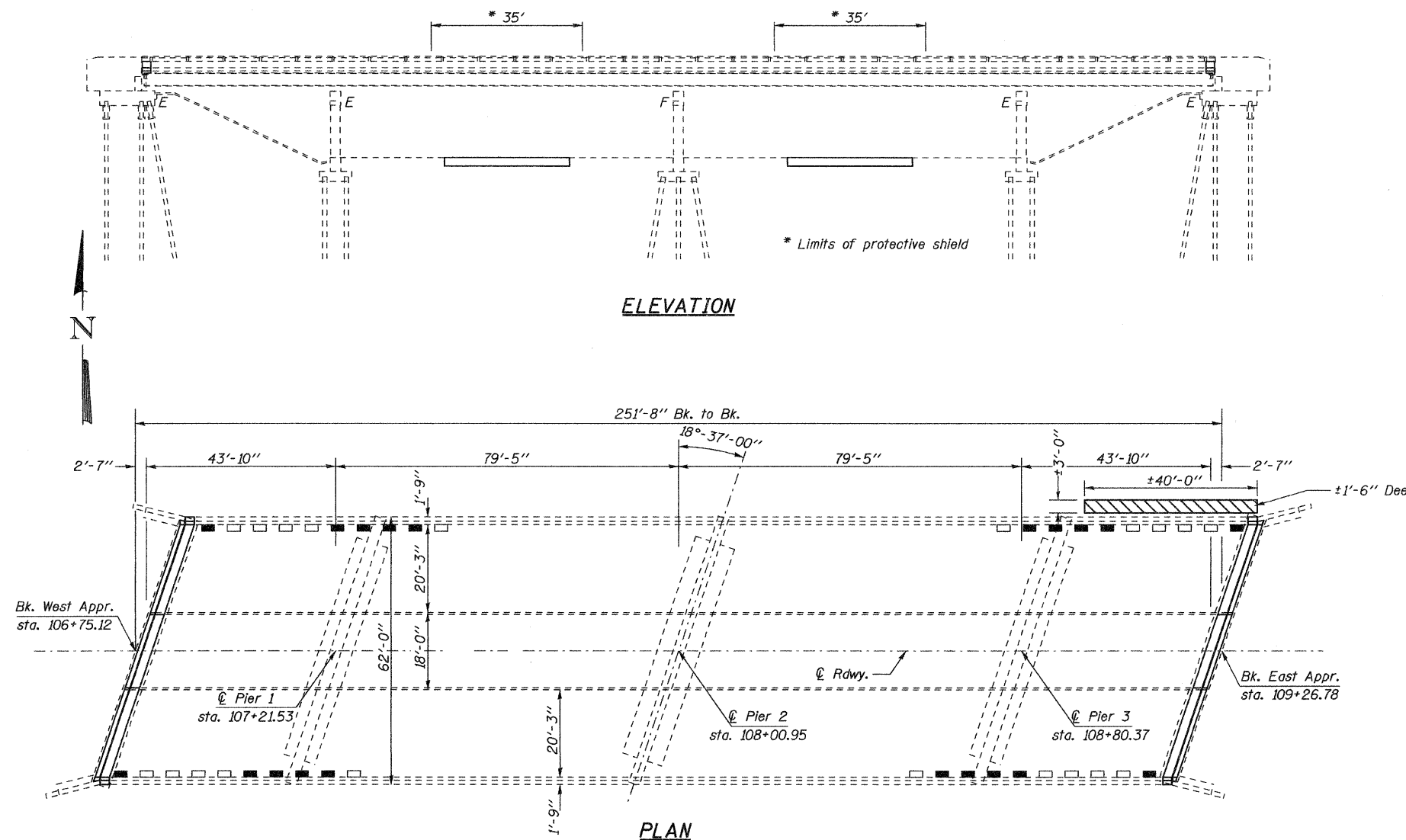
Existing reinforcement bars extending into the removal area shall be cleaned, straightened and incorporated into the new construction. Any reinforcement bars that are damaged during concrete removal shall be replaced with an approved bar splicer or anchorage system. Cost included with Concrete Removal.

Existing structural steel shall only be cleaned and painted as required by the Special Provision "Cleaning and Painting Adjacent Areas of Existing Steel Structures".

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 Acrylic finish coat shall be Interstate Green, Munsell No. 7.5G 4/8. See Special Provisions for "Cleaning and Painting New Metal Structures".

Deck Slab Repair (Partial Depth) quantity is estimated at 139.4 Sq. Yd. (info only).

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



**TOTAL BILL OF MATERIAL**

ITEM	UNIT	QUANTITY
Concrete Removal	Cu. Yd.	19.4
Concrete Superstructures	Cu. Yd.	20.8
Bridge Deck Grooving	Sq. Yd.	1018
Furnishing and Erecting Structural Steel	Pound	1920
Jack and Remove Existing Bearings	Each	18
Reinforcement Bars, Epoxy Coated	Pound	2550
Protective Shield	Sq. Yd.	482
Silicone Joint Sealer	Foot	127
Elastomeric Bearing Assembly, Type II	Each	18
Anchor Bolts, 1"	Each	36
Controlled Low-Strength Material	Cu. Yd.	6.7
Bridge Deck Microsilica Concrete Overlay 2 1/4"	Sq. Yd.	1127
Bridge Deck Hydro-Scarification 1/2"	Sq. Yd.	1127
Deck Slab Repair (Full Depth, Type I)	Sq. Yd.	34
Floor Drains	Each	20
Protective Coat	Sq. Yd.	1156
Polymer Concrete	Cu. Ft.	9.9

**Design Stresses**

**FIELD UNITS (New Construction)**  
 f'c = 3,500 psi  
 fy = 60,000 psi (reinforcement)  
 fy = 36,000 psi (AASHTO M270 Gr. 36)

**FIELD UNITS (Existing Construction)**  
 f'c = 1,400 psi  
 fy = 20,000 psi (reinforcement)

Controlled Low-Strength Material



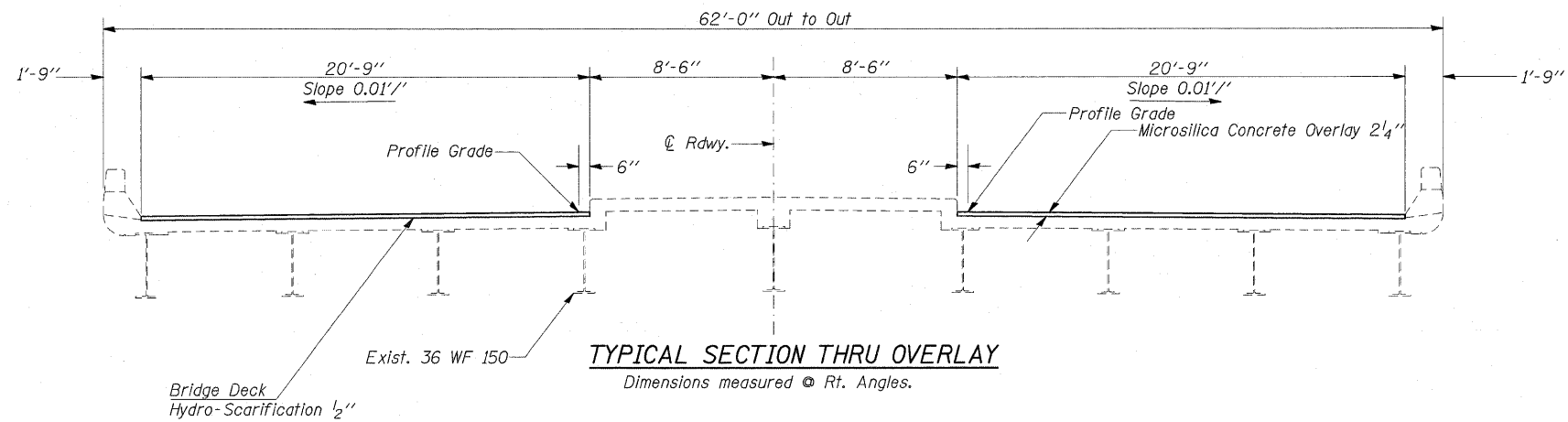
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**GENERAL PLAN AND ELEVATION**  
**SN 077-0027**

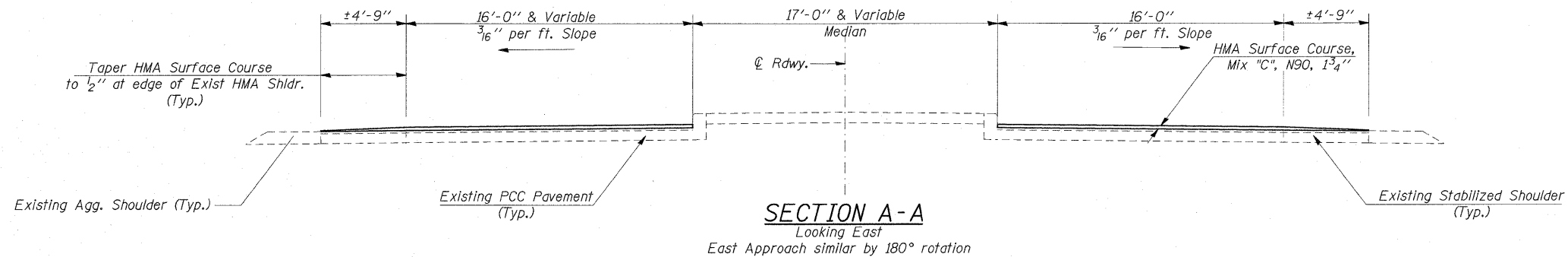
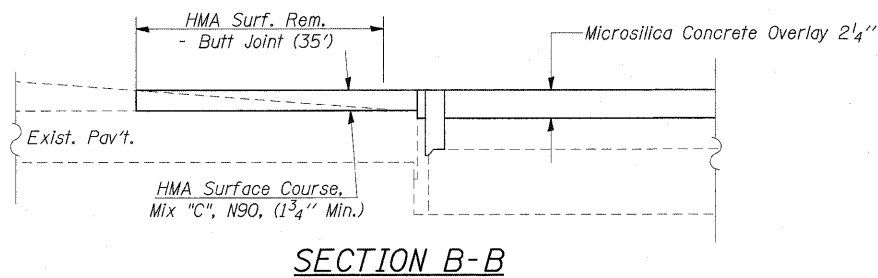
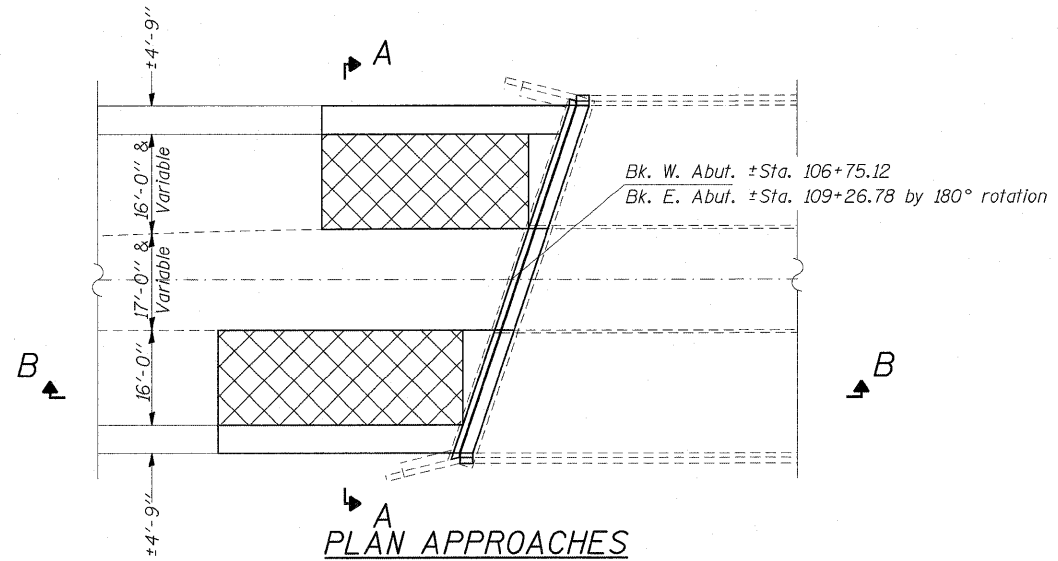
**STATE OF ILLINOIS**  
**DEPARTMENT OF TRANSPORTATION**

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	PLOT SCALE = #SCALE#	CHECKED -	REVISED -			CONTRACT NO. 78095					
	PLOT DATE = #DATE#	DATE -	REVISED -			FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT					

**BRIDGE REPAIRS**  
**F.A.S. ROUTE 939 OVER FAI 57**  
**PULASKI COUNTY**  
**STA. 108+00.95**  
**S.N. 077-0027**



HMA Surface Removal - Butt Joint



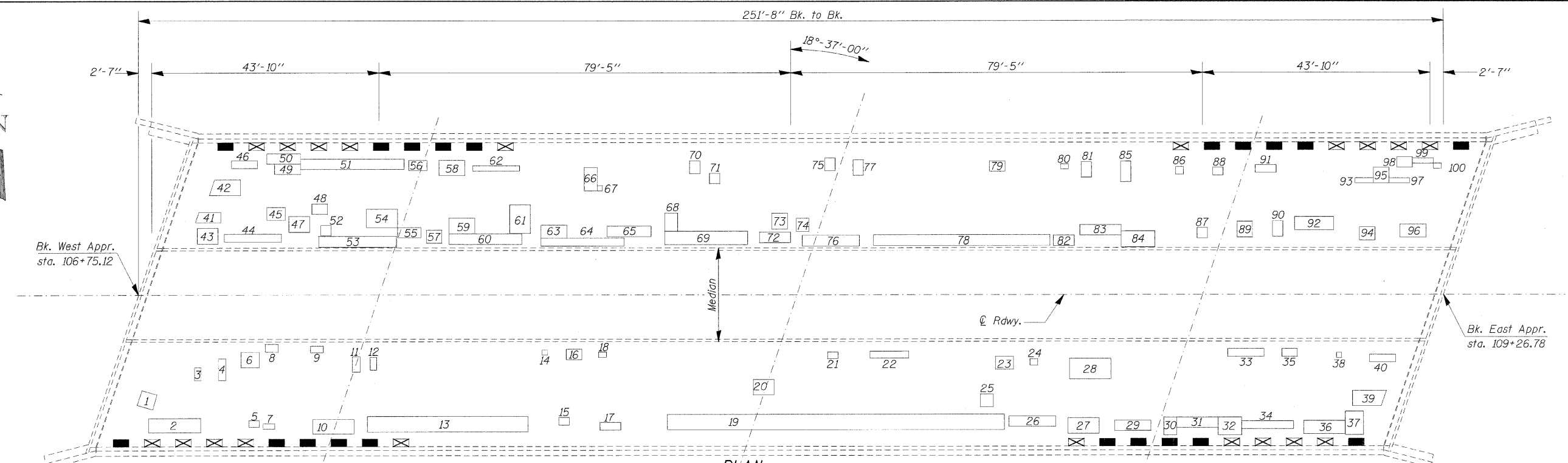
**TYPICAL SECTION  
AND BUTT JOINT DETAILS  
SN 077-0027  
PULASKI COUNTY**

FILE NAME =	USER NAME = kelleykd	DESIGNED -	REVISED -
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		CHECKED -	REVISED -
		DATE -	REVISED -

**STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION**

<b>TYPICAL SECTION AND BUTT JOINT DETAILS SN 077-0027</b>			
SCALE:	SHEET NO. OF SHEETS	STA. TO STA.	

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
24/57	D9 BSMART FY09-1	JOHNSON/PULASKI	20	5
FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT			CONTRACT NO. 78095	



PLAN

NUMBER	LENGTH (FT)	WIDTH (FT)	AREA (SQ YD)
* 1	3	3	1.0
2	10	2.75	3.1
3	1.25	2.5	0.3
4	1.5	4.25	0.7
5	2	1.25	0.3
6	3.5	3	1.2
7	2.25	1	0.3
8	2.5	1.5	0.4
9	2.5	1.25	0.3
10	8	2.75	2.4
11	1.5	3	0.5
12	1.25	2.5	0.3
13	31	3	10.3
14	1	1	0.1
15	2	1.5	0.3
16	3	2	0.7
17	4	1.5	0.7
18	1.5	1	0.2
19	65	3	21.7
20	4	3	1.3
21	2	1.25	0.3
22	7.5	1.25	1.0
23	3.5	2.5	1.0
24	1.5	1.25	0.2
25	2.5	2.5	0.7
26	9	2	2.0
27	6	3	2.0
28	8	4	3.6
29	7	2	1.6
30	2.5	3.5	1.0
31	8	2	1.8
32	4.5	3.5	1.8
33	7	1.5	1.2
34	10	1.5	1.7
35	3	1.5	0.5
36	8	2.5	2.2
* 37	4.5	3.5	1.8
38	1	1	0.1
39	8	3	2.7
40	5	1.5	0.8

NUMBER	LENGTH (FT)	WIDTH (FT)	AREA (SQ YD)
* 41	4.5	2	1.0
42	5	3	1.7
43	4	3	1.3
44	11	1.5	1.8
* 45	3.5	2.5	1.0
46	5	1.5	0.8
47	4	3	1.3
* 48	3	2	0.7
49	5	2	1.1
50	6.5	2	1.4
51	20	2	4.4
52	2	2	0.4
53	15	2	3.3
54	6	3.5	2.3
55	4.5	2	1.0
56	3.5	2	0.8
57	3	2.5	0.8
* 58	5	3	1.7
59	5	3	1.7
60	14	2	3.1
* 61	5.5	4	2.4
62	9	1	1.0
63	5	2.5	1.4
64	16	1.5	2.7
65	8.5	2	1.9
66	2.5	4.5	1.3
67	1	1	0.1
68	2.5	3.5	1.0
69	16	2.5	4.4
70	2	2.5	0.6
71	2	2	0.4
72	6	2	1.3
* 73	3	3	1.0
74	2.5	2.5	0.7
75	2	2.5	0.6
76	11	2	2.4
77	2	3	0.7
78	34	2	7.6
79	3	2	0.7
80	1.5	1	0.2

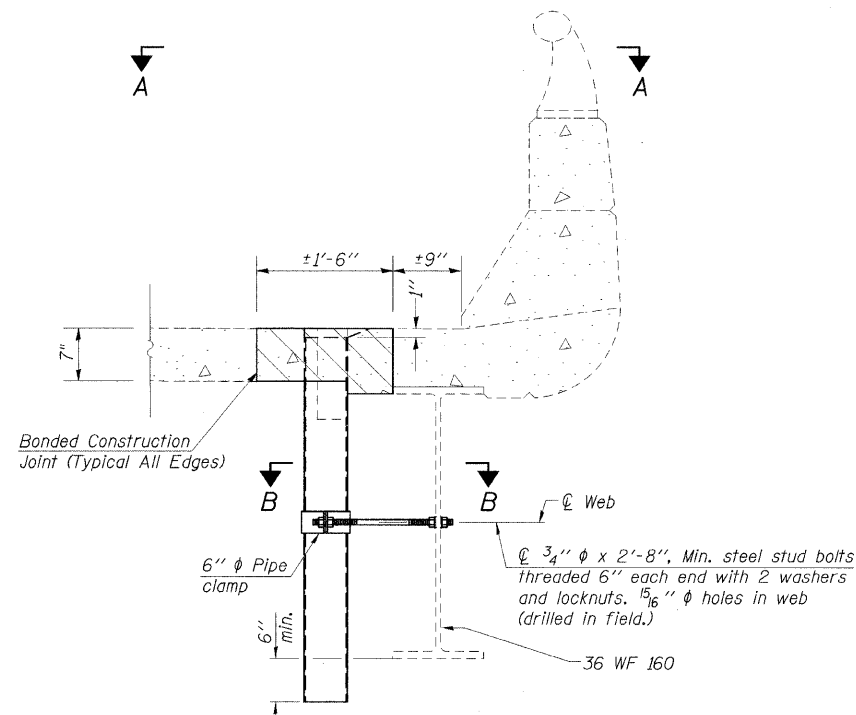
NUMBER	LENGTH (FT)	WIDTH (FT)	AREA (SQ YD)
81	2	3	0.7
* 82	4	2.5	1.1
83	8	2	1.8
* 84	6.5	3	2.2
85	2	4	0.9
86	1.5	1.5	0.3
87	2	2	0.4
88	2	1.5	0.3
89	3	3	1.0
90	2	3	0.7
91	4	1.5	0.7
* 92	7.5	2.5	2.1
93	3.5	1	0.4
94	3	2.5	1.0
95	3	3	1.0
96	5	2.5	1.4
97	4	1	0.4
98	3	2	0.7
* 99	5.5	2.5	1.5
100	1.5	1	0.2
** 40 Floor Drains	2.5 Each	1.5 Each	16.7 Total for Drains

Notes:  
 Deck sounding was performed in September 2008. The Resident Engineer will determine final patch locations and quantities in the field before bridge deck patching operations begin.  
 \* denotes Deck Slab Repair (Full Depth, Type I).  
 \*\* denotes Deck Slab Repair (Full Depth, Type I) at all existing drain locations.  
 See Sheet 7 of 20 for drain details.  
 Deck Slab Repair (Partial Depth) quantity estimated at 139.4 Sq Yd (info only).  
 ■ Eliminate existing drain with Deck Slab Repair (Full Depth, Type I) patch  
 ☒ Replace existing drain with new Floor Drain utilizing Deck Slab Repair (Full Depth, Type I) patch  
 □ Deck slab repair (Full & Partial depth) at other deck areas. (See notes above)

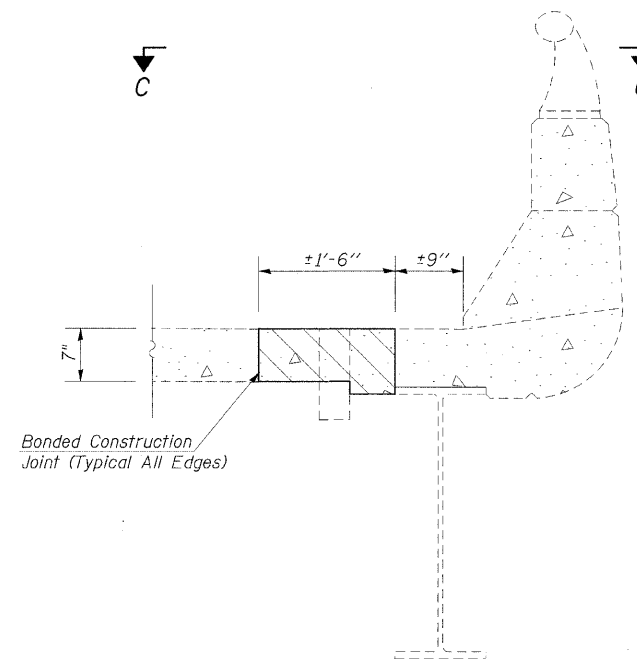
**BILL OF MATERIAL**

Item	Unit	Total
Deck Slab Repair (Full Depth, Type I)	Sq Yd	34.2

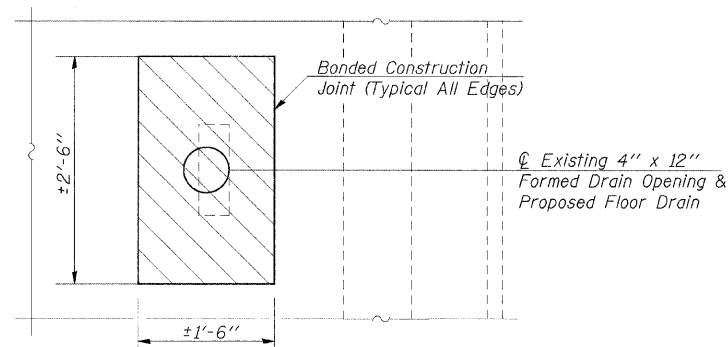
**DECK SLAB REPAIRS  
STRUCTURE NO. 077-0027**



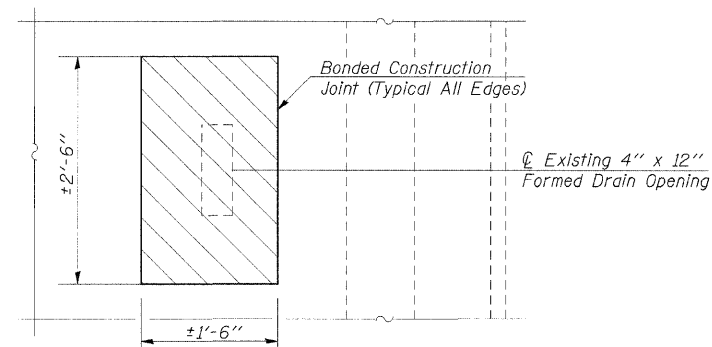
**SECTION AT FLOOR DRAIN REPLACEMENT**  
(20 Locations)



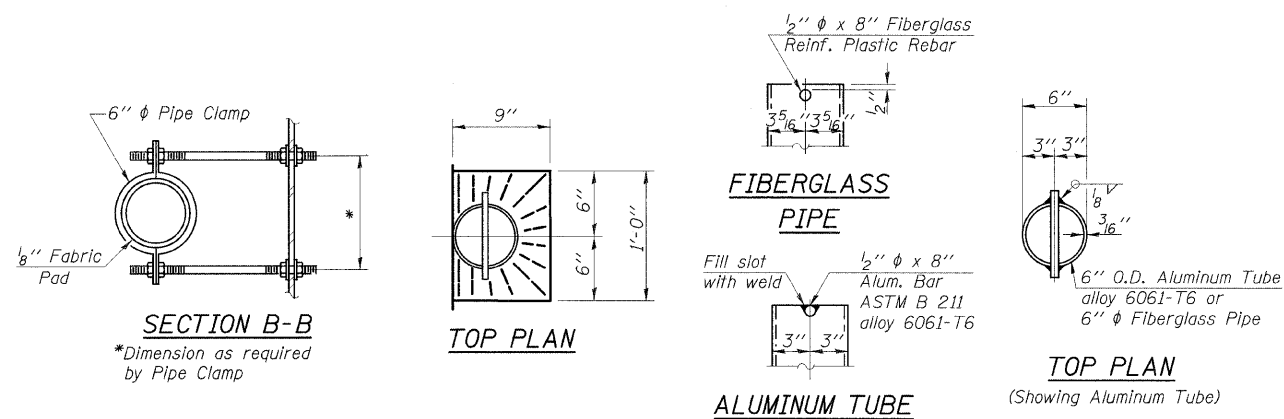
**SECTION AT DRAIN ELIMINATION**  
(20 Locations)



**VIEW A-A**



**VIEW C-C**



**Notes:**

Hatched areas indicate concrete sections to be removed and replaced at new Floor Drains and Drain Elimination locations. Perimeters of concrete removal areas shall be saw cut 3/4" prior to the removal of concrete. Cost of concrete removal and concrete placement included in Deck Slab Repair (Full Depth, Type I).

See sheet 6 of 20 for locations of new Floor Drains and Drain Elimination. The exterior surfaces of the floor drains shall be painted with the finish coat as specified in the special provisions for Cleaning and Painting New Metal Structures. The exterior surfaces of the drains shall be cleaned according to Society of Protective Coatings Spec. SSPC-SP1 prior to painting. Fiberglass pipe shall conform to ASTM D 2996, with short-time rupture strength hoop tensile stress of 30,000 p.s.i. minimum.

**BILL OF MATERIAL**

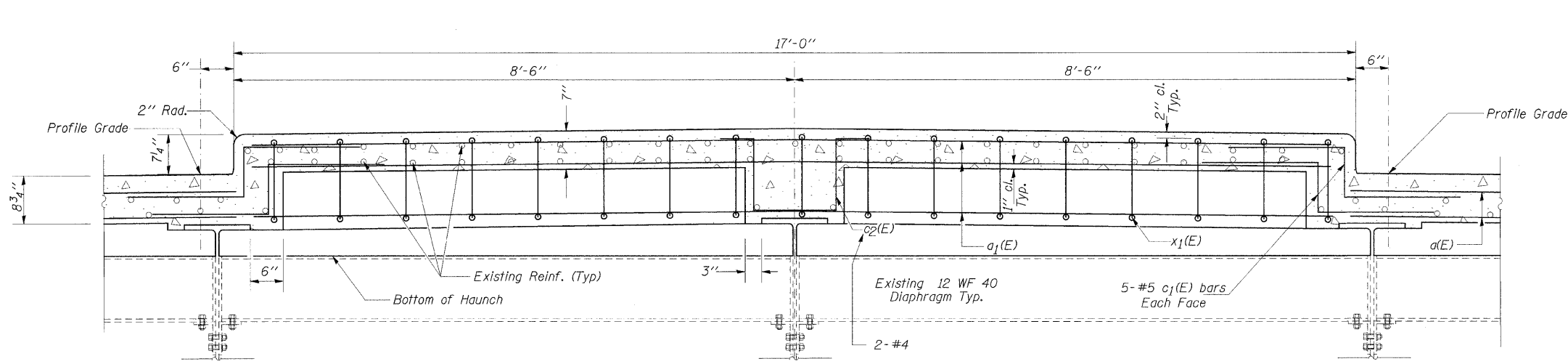
Item	Unit	Total
Floor Drains	Each	20

**FLOOR DRAIN DETAILS**  
**STRUCTURE NO. 077-0027**

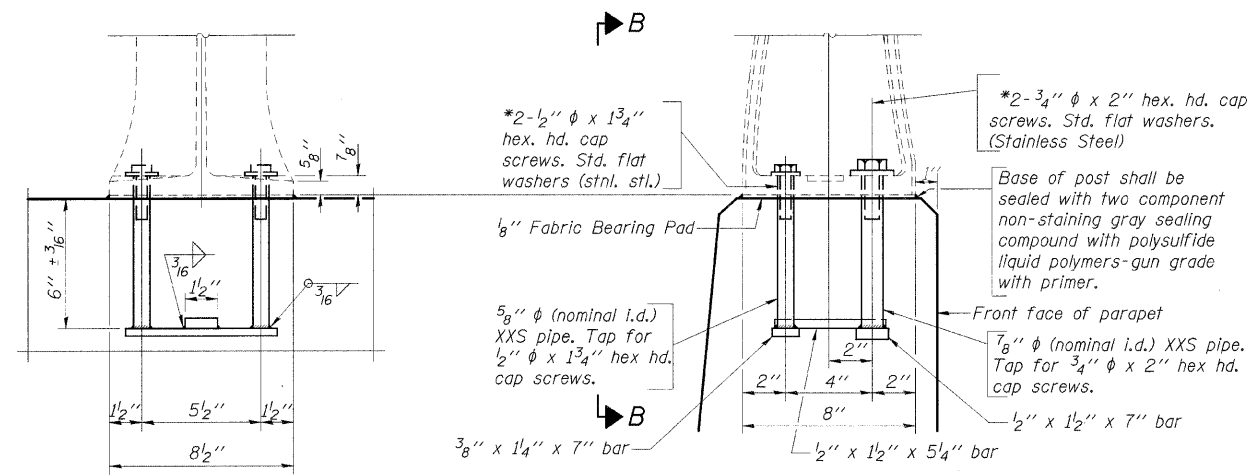
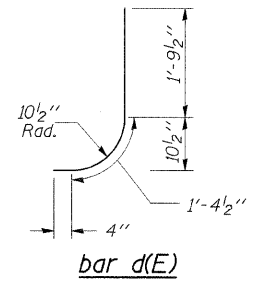
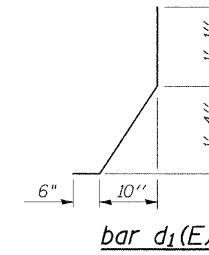
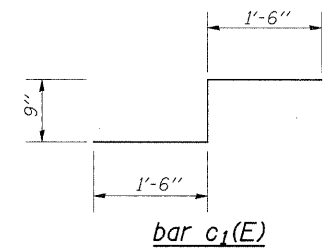
FILE NAME =	USER NAME = cornellm	DESIGNED -	REVISED -	<b>STATE OF ILLINOIS</b> <b>DEPARTMENT OF TRANSPORTATION</b>	<b>FLOOR DRAIN DETAILS</b> <b>SN 077-0027</b>	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.	
c:\pwork\p\WIDOT\CORNELLM\dms47925\04-0031-bsmart.dgn	PLOT SCALE = 4.0000' / IN.	DRAWN -	REVISED -			24/57	D9 BSMART FY09-1	JOHNSON/PULASKI	20	7	
	PLOT DATE = 2/27/2009	CHECKED -	REVISED -			CONTRACT NO. 78095					
		DATE -	REVISED -			SCALE:	SHEET NO. OF SHEETS	STA. TO STA.	FED. ROAD DIST. NO. [ILLINOIS] FED. AID PROJECT		





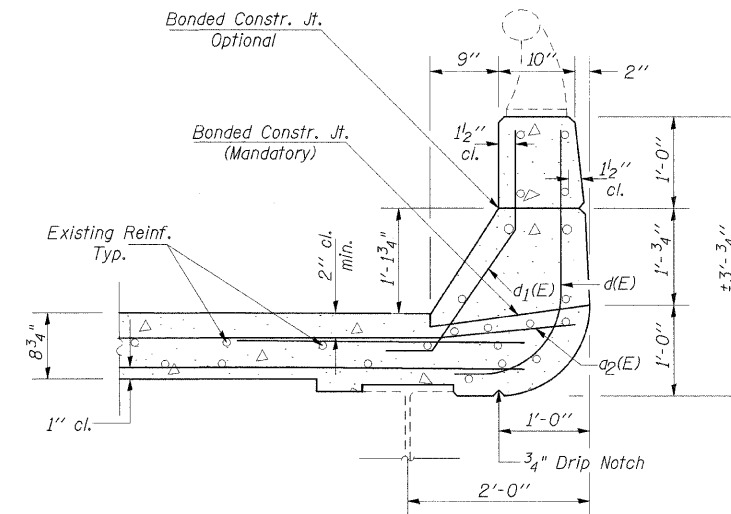


**SECTION THRU MEDIAN**  
Dimensions measured @  
Right Angles

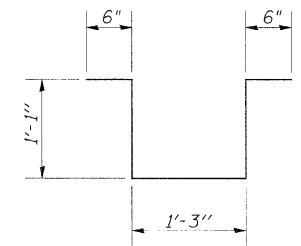


**VIEW B-B**

**RAIL POST DETAILS**



**SECTION THRU PARAPET**



**bar c2(E)**

**Notes:**

- Work this sheet with sheet 8 of 20.
- Post shall be normal to parapet.
- In lieu of the cast-in-place anchor device shown, the Contractor has the option of drilling and setting stainless 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.
- Removal and re-erection of the existing aluminum handrail, rail post, and all new applicable hardware, including labor and installation shall be included in the cost of Concrete Removal.

**MEDIAN AND PARAPET  
DETAILS  
PULASKI COUNTY  
SN 077-0027**

FILE NAME =	USER NAME = cornellm	DESIGNED -	REVISED -	<b>STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION</b>	<b>MEDIAN AND PARAPET DETAILS SN 077-0027</b>				F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
ct:\pw_work\p\IDOT\CORNELLM\dms47925\04-0031-bmart.dgn	4-0031-bmart.dgn	DRAWN -	REVISED -		24/57	D9 BSMART FY09-1	JOHNSON/PULASKI	20	9				
PLOT SCALE = 1:5000 1/4" = 1'		CHECKED -	REVISED -		CONTRACT NO. 78095								
PLOT DATE = 2/27/2009		DATE -	REVISED -		SCALE:	SHEET NO. OF SHEETS STA.	TO STA.	FED. ROAD DIST. NO.	ILLINOIS FED. AID PROJECT				

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.

Anchor bolts for Type II bearings shall be placed in holes drilled in the concrete through holes in the bottom bearing plate after members are in place. Side retainers shall be placed after bolts are installed.

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

Side retainers and other steel members required for the bearing assembly shall be included in the cost of Elastomeric Bearing Assembly, Type II.

The 1/8" PTFE sheet shall be bonded directly to the top steel plate with a two-component, medium viscosity epoxy resin, conforming to the requirements of the Federal Specification MMM-A-134, Type I. The bond agent shall be applied on the full area of the contact surfaces.

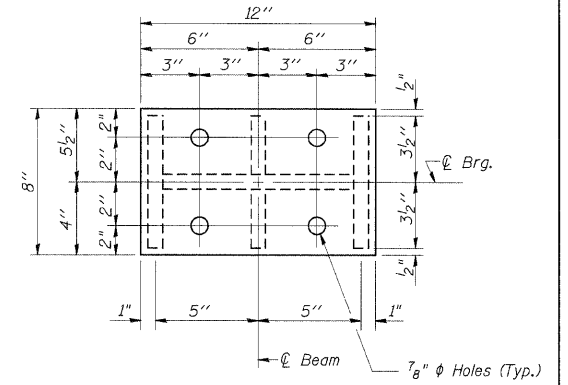
Bonding of 1/8" PTFE sheet during vulcanizing process will be permitted provided the process and method of adjusting assembly height is approved by the Engineer.

The minimum Jack capacity required is 30 Tons.

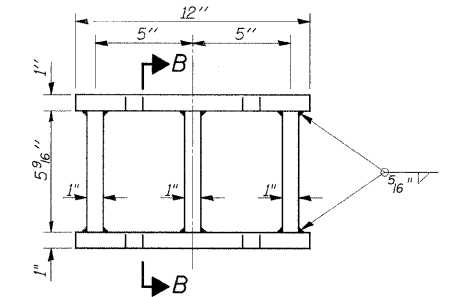
Existing cross frame removal and reinstallation may be required to facilitate drilling holes, cost to be included with "Jack and Remove Existing Bearings".

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.

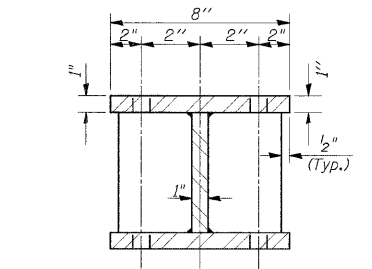
New steel extensions, connection bolts, Fill P's and Shim P's are included in "Furnishing and Erecting Structural Steel".



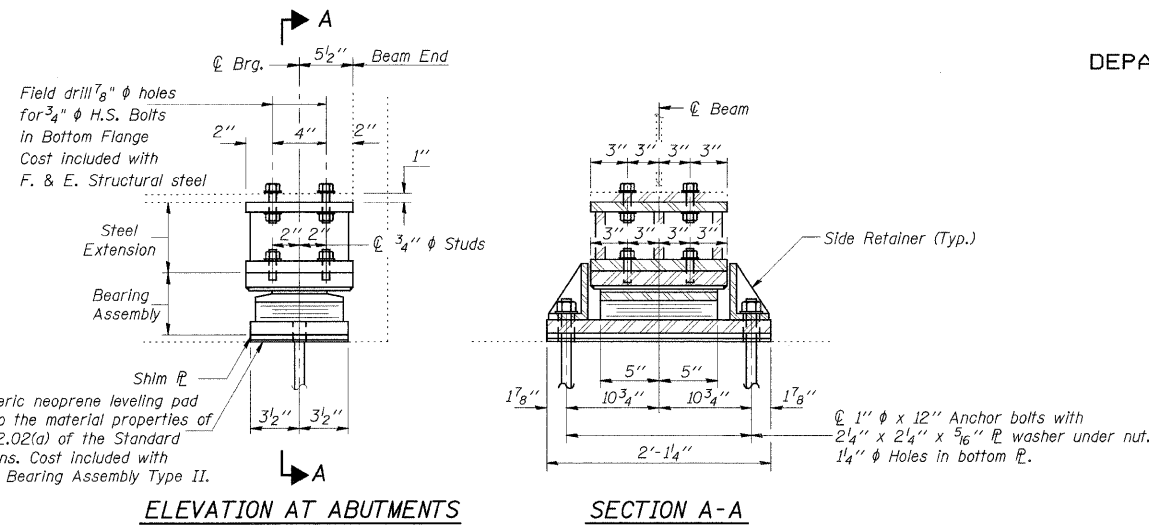
PLAN-TOP & BOTTOM PLATE



STEEL EXTENSION DETAIL



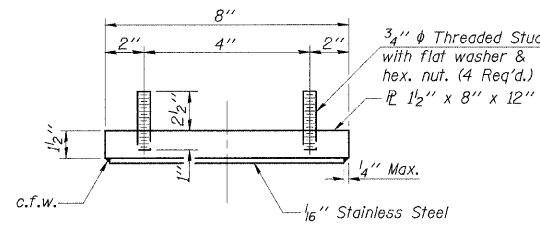
SECTION B-B



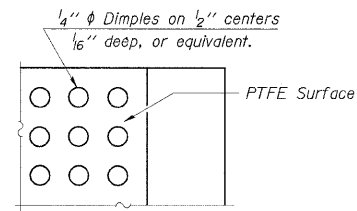
ELEVATION AT ABUTMENTS

SECTION A-A

TYPE II ELASTOMERIC EXP. BRG.

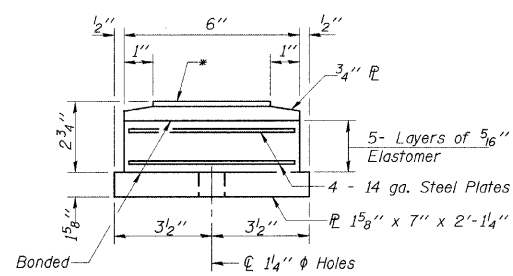


TOP BEARING ASSEMBLY

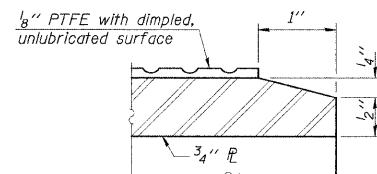


PLAN-PTFE SURFACE

\*1/8" PTFE dimpled, unlubricated



BOTTOM BEARING ASSEMBLY



SECTION THRU PTFE

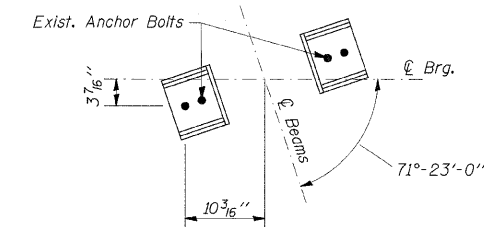
Existing Plate to be removed using the air-arc method and grind smooth all weld material remaining on the bottom flange.

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

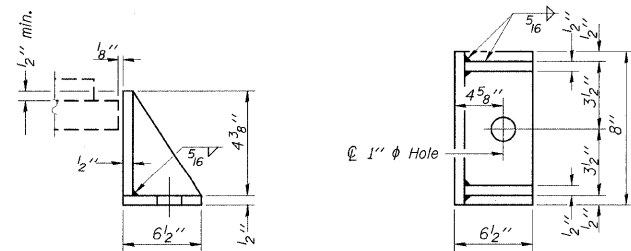
ABUTS

EXISTING BEARING REMOVAL DETAIL

Cost is included with Jack and Remove Existing Bearings

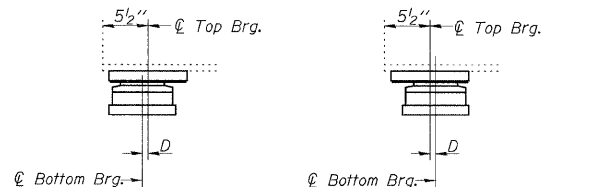


ANCHOR BOLT LAYOUT



SIDE RETAINER

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



SETTING ANCHOR BOLTS AT EXP. BRG.

D=1/8" per each 100' of expansion for every 15° temp. change from the normal temp. of 50°F.

GIRDER REACTIONS

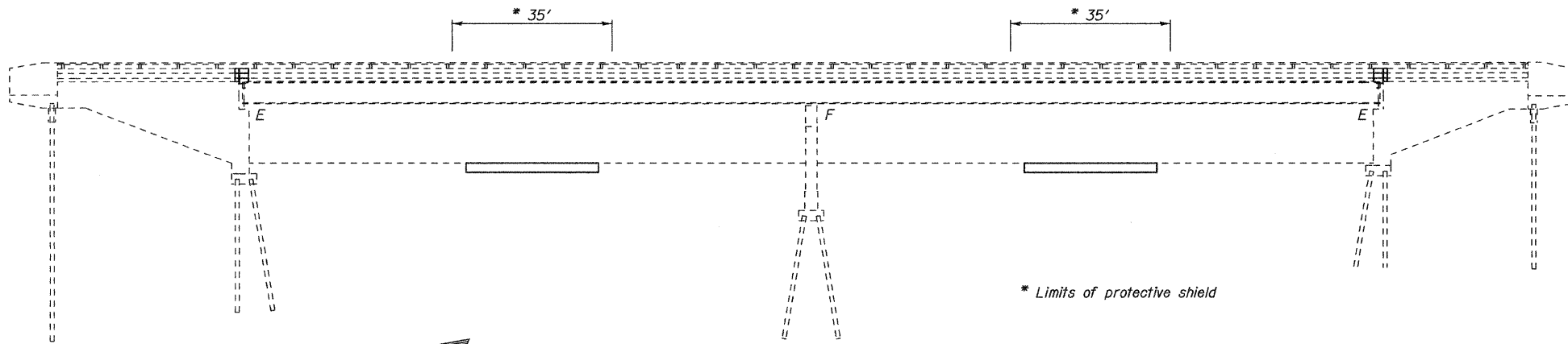
R <sub>D</sub>	(K)	14.8
R <sub>L</sub>	(K)	33.2
Imp.	(K)	10
R (Total)	(K)	58

BILL OF MATERIAL (Both Abuts.)

Item	Unit	Total
Elastomeric Bearing Assembly Type II	Each	18
Anchor Bolts, 1"	Each	36
Jack and Remove Existing Bearings	Each	18

BEARING DETAILS  
STRUCTURE NO. 077-0027

FILE NAME =	USER NAME = cornell1m	DESIGNED -	REVISED -	<b>STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION</b>	<b>BEARING DETAILS SN 077-0027</b>	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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PLOT SCALE = 1:0000 / IN.	CHECKED -	REVISED -	CONTRACT NO. 78095							
PLOT DATE = 2/27/2009	DATE -	REVISED -	SCALE:			SHEET NO. OF SHEETS STA. TO STA.	FED. ROAD DIST. NO. [ILLINOIS] FED. AID PROJECT			



**ELEVATION**

\* Limits of protective shield

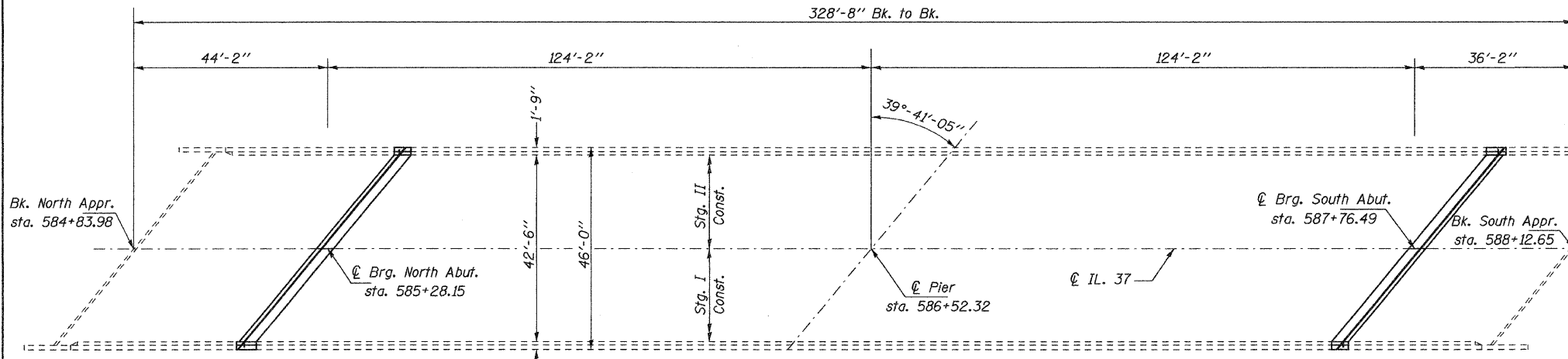
**GENERAL NOTES**

Fasteners shall be AASHTO M164 Type 1, mechanically galvanized bolts. Bolts - 3/4" φ, holes - 15/16" φ, unless otherwise noted.  
 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 shall conform to the requirements of ASTM A 706 Gr 60. See Special Provisions.  
 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.  
 As directed by the Engineer, existing construction accessories welded to the top flange of beams and girders shall be removed. The weld areas shall be ground flush and inspected for cracks using magnetic particle testing (MT) or dye penetrant testing (PT) by qualified personnel approved by the Engineer.  
 Any cracks that cannot be removed by grinding 1/4 inch deep shall be identified and reported to the Bureau of Bridges and Structures for further disposition. The cost of removing welded accessories, grinding and inspecting weld areas and grinding cracks will be paid for according to Article 109.04 of the Standard Specifications.  
 Plan dimensions and details relative to existing plans are subject to nominal construction variations. The Contractor shall field verify existing dimensions and details affecting new construction and make necessary approved adjustments prior to construction or ordering of materials. Such variations shall not be cause for additional compensation for a change in scope of the work, however, the Contractor will be paid for the quantity actually furnished at the unit price bid for the work.  
 The existing structural steel coating contains lead. The Contractor shall take appropriate precautions to deal with the presence of lead on this project.  
 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".  
 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 Acrylic finish coat shall be Interstate Green, Munsell No. 7.5G 4/8. See Special Provisions for "Cleaning and Painting New Metal 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.  
 Deck Slab Repair (Partial Depth) quantity is estimated at 59.7 Sq. Yd. (info only).

**TOTAL BILL OF MATERIAL**

ITEM	UNIT	QUANTITY
Concrete Removal	Cu. Yd.	13.3
Concrete Superstructures	Cu. Yd.	14.2
Bridge Deck Grooving	Sq. Yd.	1444
Furnishing and Erecting Structural Steel	Pound	2350
Jack and Remove Existing Bearings	Each	12
Reinforcement Bars, Epoxy Coated	Pound	1640
Bar Splicers	Each	20
Preformed Joint Strip Seal	Foot	115
Elastomeric Bearing Assembly, Type I	Each	12
Anchor Bolts, 1"	Each	48
Structural Repair of Concrete (Depth < 5")	Sq. Ft.	235
Bridge Deck Microsilica Concrete Overlay 2 1/4"	Sq. Yd.	1516
Bridge Deck Hydro-Scarification 1/2"	Sq. Yd.	1516
Deck Slab Repair (Full Depth, Type I)	Sq. Yd.	2
Protective Coat	Sq. Yd.	1552
Protective Shield	Sq. Yd.	360



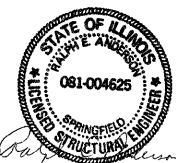
**PLAN**

If the analysis submitted to the Contractor for the jacking/temporary support system to be used shows temporary stiffeners are required to prevent web crippling or buckling, the stiffeners shall be steel and bolted to the web. If stiffeners are not required, hardwood timbers shall be installed tightly between the top and bottom flange to prevent flange rotation.

**Design Stresses**

**FIELD UNITS (New Construction)**  
 $f'_c = 3,500$  psi  
 $f_y = 60,000$  psi (reinforcement)  
 $f_y = 36,000$  psi (AASHTO M270 Gr. 36))

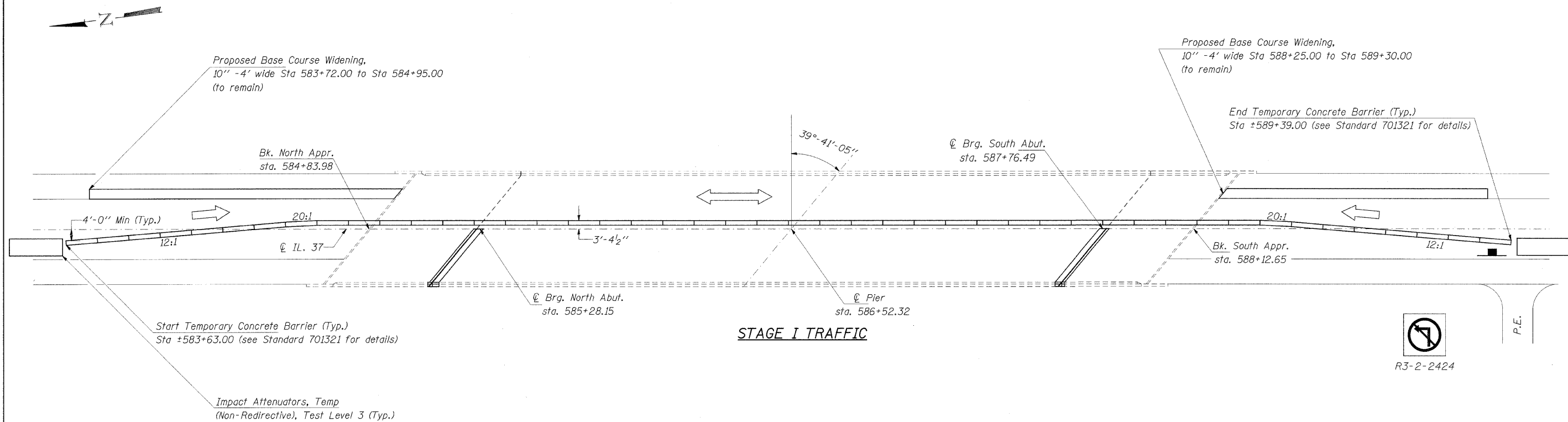
**FIELD UNITS (Existing Construction)**  
 $f'_c = 1,200$  psi (deck slab)  
 $f'_c = 1,400$  psi (curb, parapet, sub.)  
 $f_y = 20,000$  psi (structural steel)  
 $f_y = 20,000$  psi (reinforcement)  
 $n = 10$



Expires 11-30-2010

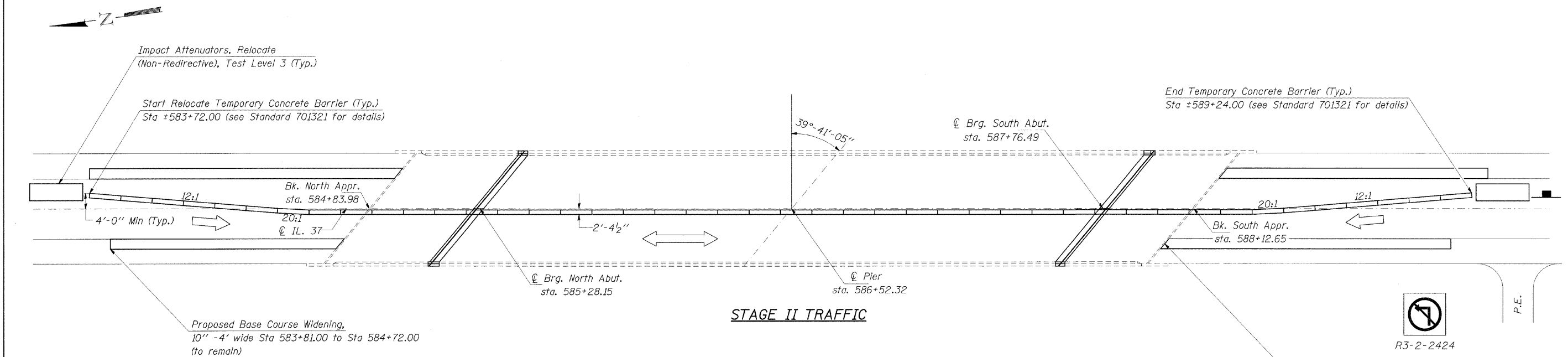
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#FILEL#		DRAWN -	REVISED -		SCALE:	SHEET NO.	OF	SHEETS	STA.	TO STA.	24/57	D9 BSMART FY09-1	JOHNSON/PULASKI	20	11
		CHECKED -	REVISED -												
		DATE -	REVISED -												
												CONTRACT NO. 78095			
												ILLINOIS FED. AID PROJECT			

**BRIDGE REPAIRS  
 IL. ROUTE 37 OVER FAI 24  
 JOHNSON COUNTY  
 STA. 203+80.86  
 S.N. 044-0031**



P.E.

R3-2-2424



P.E.

R3-2-2424

Notes:  
 See Standard 701321 for additional details.  
 Rumble Strips will be needed on the north end of the project and should follow details shown in Standard 701321, final locations should be determined by the Engineer.

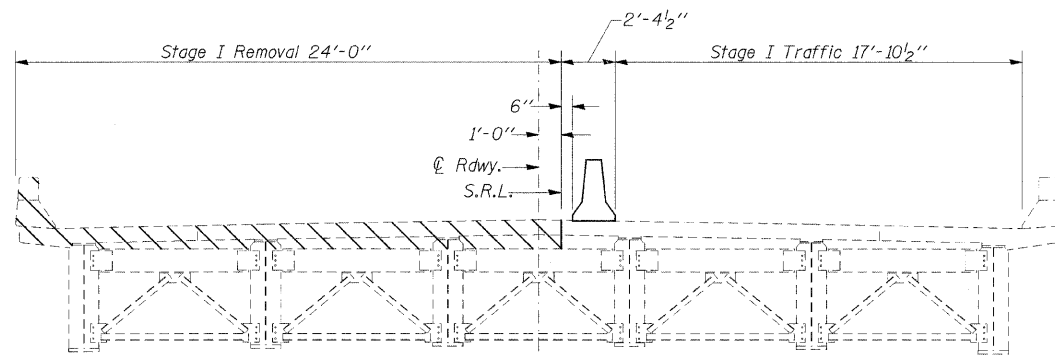
Proposed Base Course Widening,  
 10'' - 4' wide Sta 588+02.00 to Sta 589+16.00  
 (to remain)

**STAGE CONSTRUCTION  
 DETAILS  
 SN 044-0031**

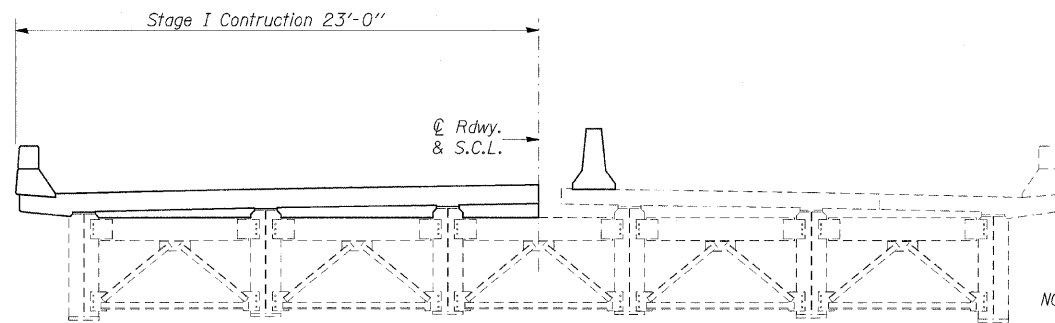
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		CHECKED -	REVISED -									CONTRACT NO. 78095	
		DATE -	REVISED -									ILLINOIS FED. AID PROJECT	

# SECTIONS AT JOINTS

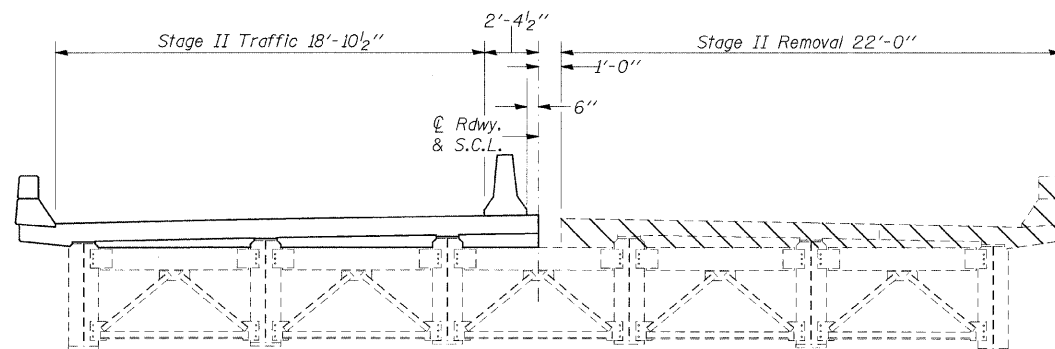
All Sections Looking North



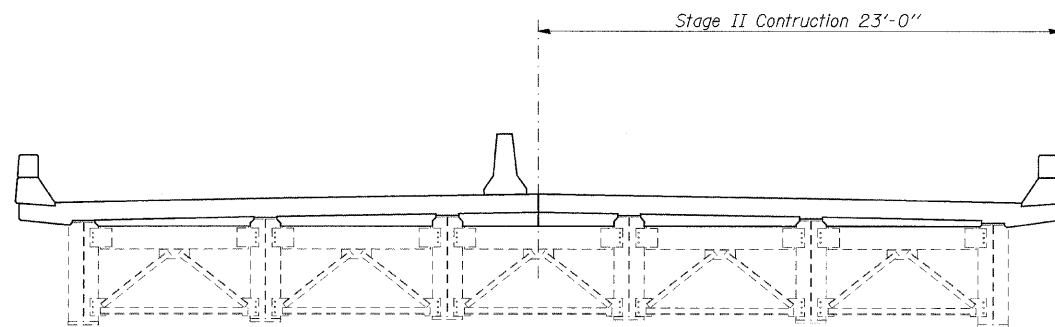
**STAGE I REMOVAL**



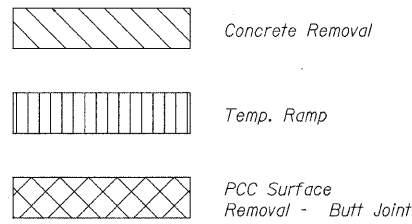
**STAGE I CONSTRUCTION**



**STAGE II REMOVAL**

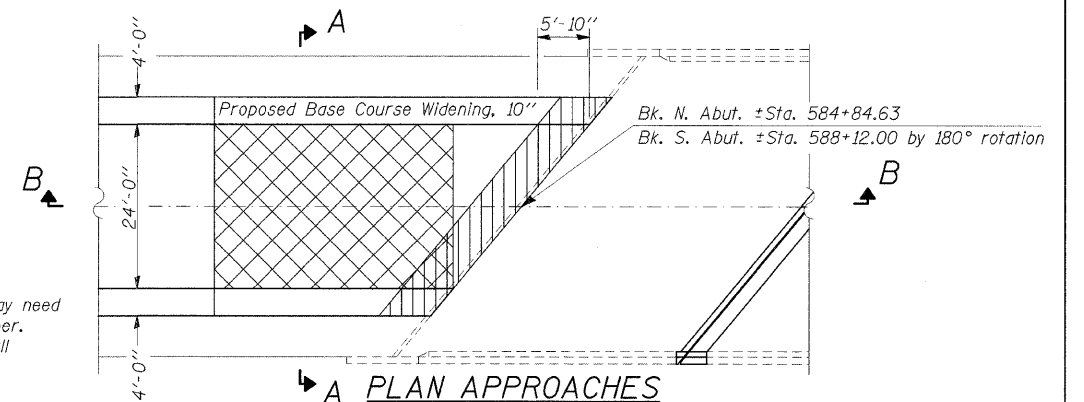
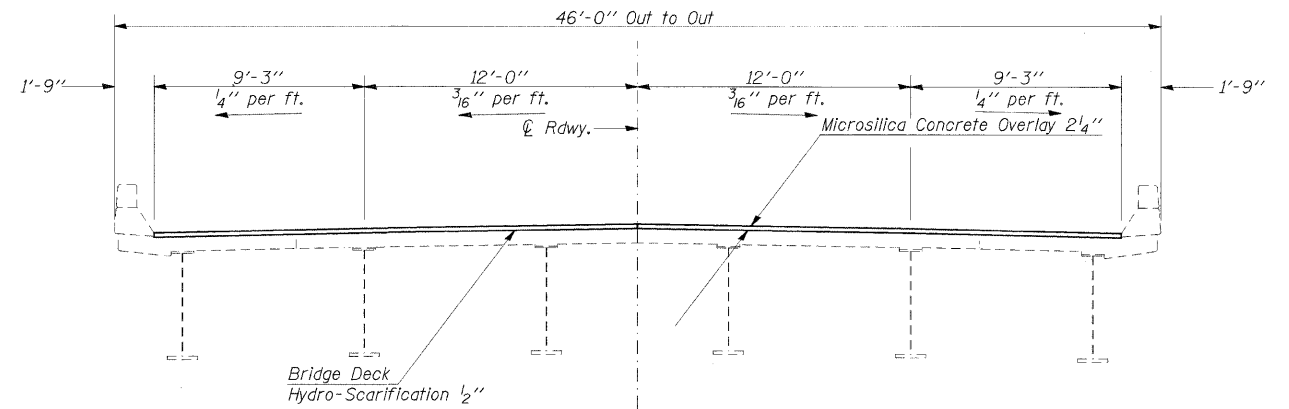


**STAGE II CONSTRUCTION**

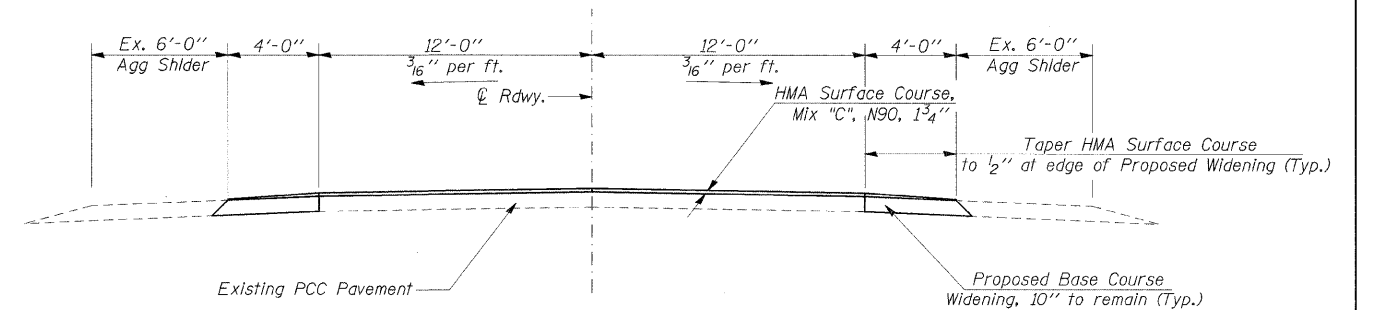


NOTES:  
 \* The length of transition to the butt joint may need to be lengthened to maintain a 240:1 minimum taper.  
 \*\* The transition of the Temporary Ramp shall be 40:1 minimum taper.  
 Dimensions measured @ Rt. angles.

# SECTION THRU OVERLAY



**SECTION B-B**



**SECTION A-A**

Looking South  
 South Approach similar by 180° rotation.

**STAGE CONSTRUCTION  
 AND BUTT JOINT DETAILS**  
 SN 044-0031  
 JOHNSON COUNTY

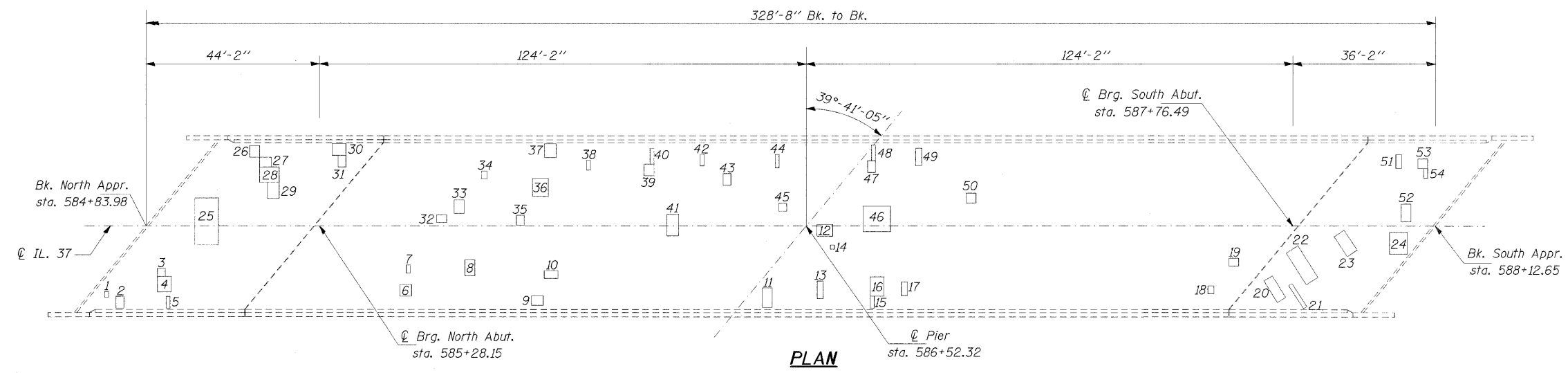
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PLOT SCALE = 4.0000' / 1"		CHECKED -	REVISED -
PLOT DATE = 2/27/2009		DATE -	REVISED -

**STATE OF ILLINOIS  
 DEPARTMENT OF TRANSPORTATION**

**STAGE CONSTRUCTION AND BUTT JOINT DETAILS**  
 SN 044-0031

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

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
24/57	D9 BSMART FY09-1	JOHNSON/PULASKI	20	13
CONTRACT NO. 78095				
FED. ROAD DIST. NO. [ILLINOIS] FED. AID PROJECT				



NUMBER	LENGTH (FT)	WIDTH (FT)	AREA (SQ YD)
1	1	1.5	0.2
2	2	3	0.7
3	2	2	0.4
4	3.5	4	1.6
5	1	3	0.3
6	3	3	1.0
7	1	2	0.2
8	2.5	4	1.1
9	3	2.5	0.8
10	3.5	2	0.8
11	2.5	5	1.4
12	4	3	1.3
13	1.5	4.5	0.8
14	1	1	0.1
15	1	3	0.3
16	3.5	5	1.9
17	1.5	3.5	0.6
18	1.5	2	0.3
19	2.5	2	0.6
20	2.5	6.5	1.8
21	1	7	0.8
22	3.5	9.5	3.7
23	3	6	2.0
24	4.5	5.5	2.8
25	6	12	8.0
26	2.5	3	0.8
27	3	2.5	0.8
28	5	4	2.2
29	3	4	1.3
30	3.5	3	1.2
31	2	3	0.7
32	2.5	2	0.6
33	2.5	3.5	1.0
34	1.5	2	0.3
35	2	2.5	0.6
* 36	4	4.5	2.0
37	3	3.5	1.2
38	1	2.5	0.3
39	2.5	3	0.8
40	1	4	0.4

NUMBER	LENGTH (FT)	WIDTH (FT)	AREA (SQ YD)
41	3	5.5	1.8
42	1	3	0.3
43	2	3	0.7
44	1	3	0.3
45	2	2	0.4
46	7	6.5	5.1
47	2	3	0.7
48	1	4	0.4
49	1.5	4.5	0.8
50	2.5	2.5	0.7
51	1.5	3.5	0.6
52	2.5	4.5	1.3
53	2.5	2.5	0.7
54	1	2.5	0.3

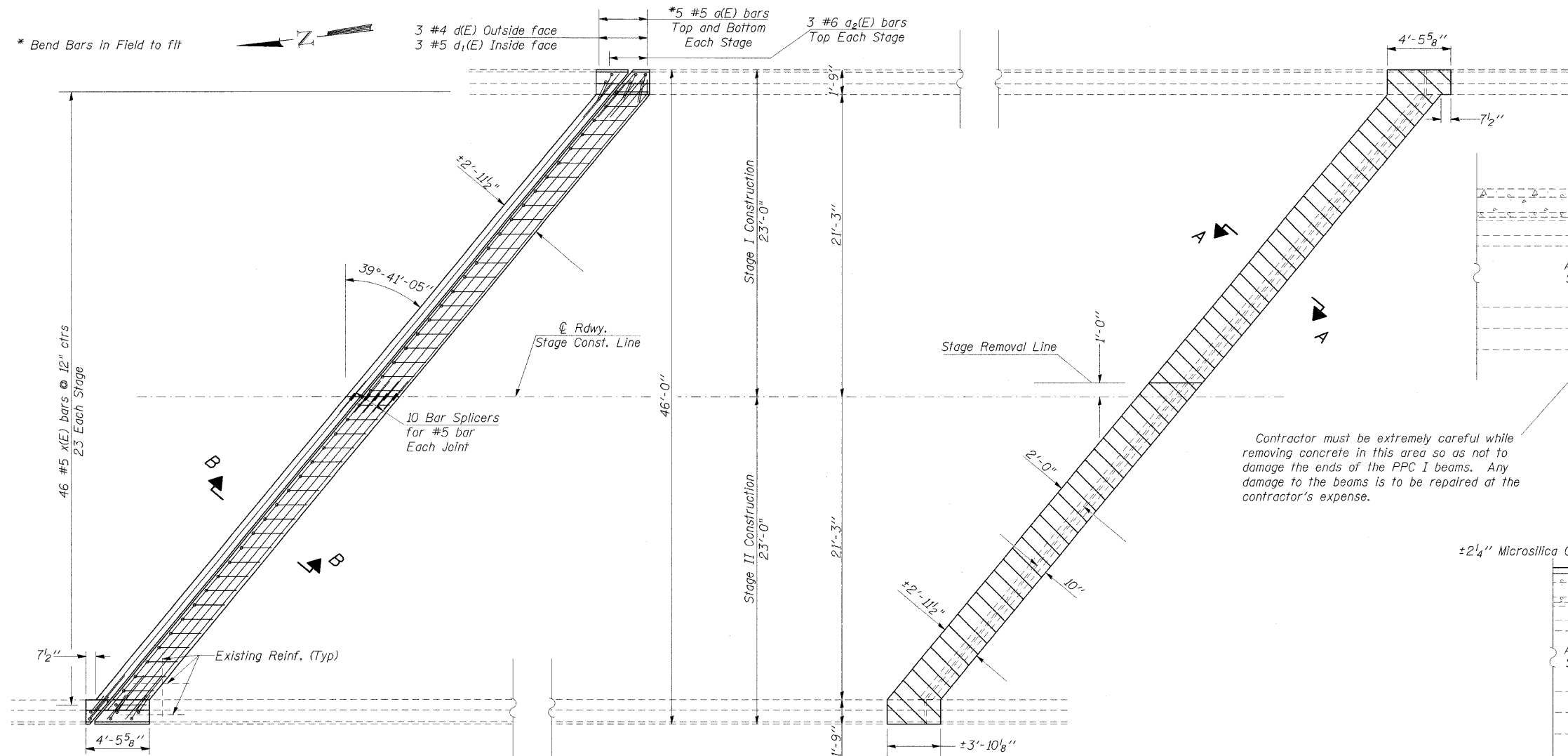
Notes: Deck sounding was performed in November 2008. The Resident Engineer will determine final patch locations and quantities in the field before bridge deck patching operations begin.  
 \* denotes Deck Slab Repair (Full Depth, Type I).  
 Deck Slab Repair (Partial Depth) quantity estimated at 59.7 Sq Yd (Info only).

**BILL OF MATERIAL**

Item	Unit	Total
Deck Slab Repair (Full Depth)	Sq Yd	2.0

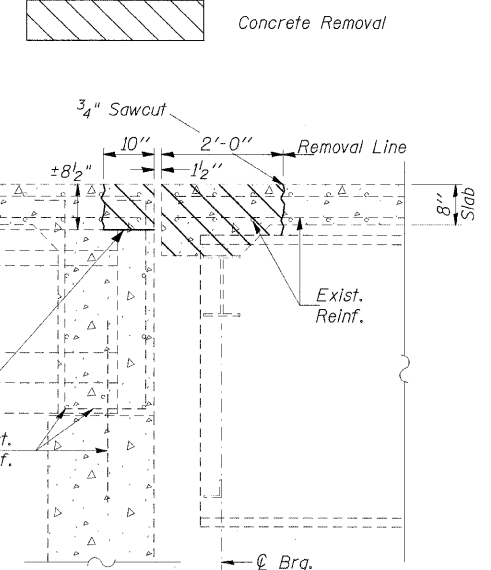
**DECK SLAB REPAIRS  
STRUCTURE NO. 044-0031**

\* Bend Bars in Field to fit



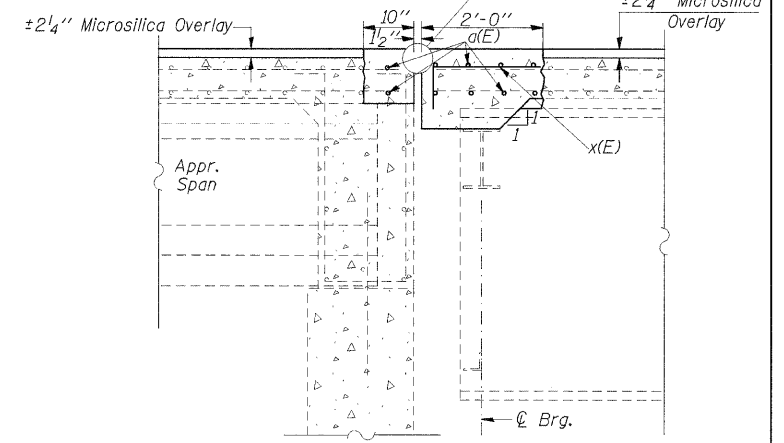
**NORTH ABUT. PLAN**  
SHOWING NEW CONCRETE  
South Abut. similar by 180° rotation

**SOUTH ABUT. PLAN**  
SHOWING CONCRETE REMOVAL  
North Abut. similar by 180° rotation



**SECTION A-A**

Dimensions measured @ Right Angles  
See Sheet 17 of 20



**SECTION B-B**

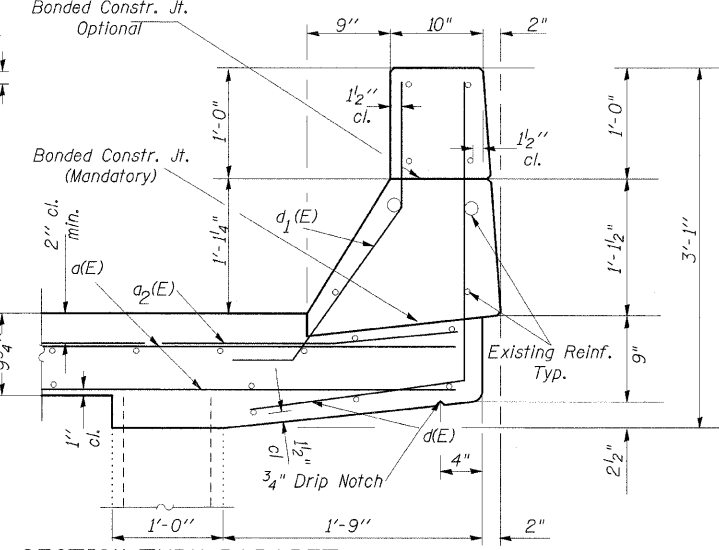
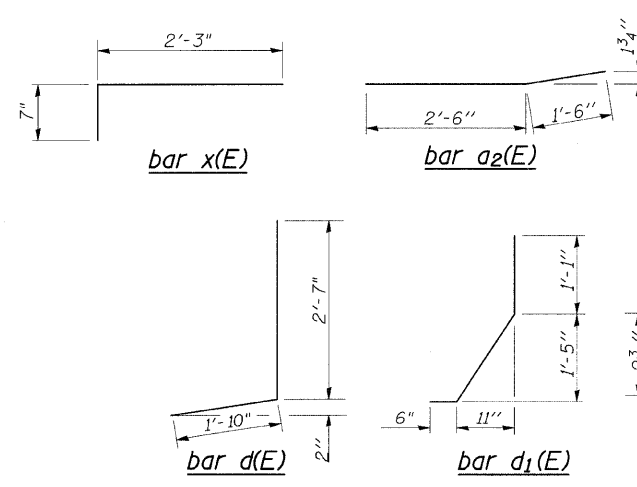
Dimensions measured @ Right Angles

**BILL OF MATERIAL (BOTH ABUTS)**

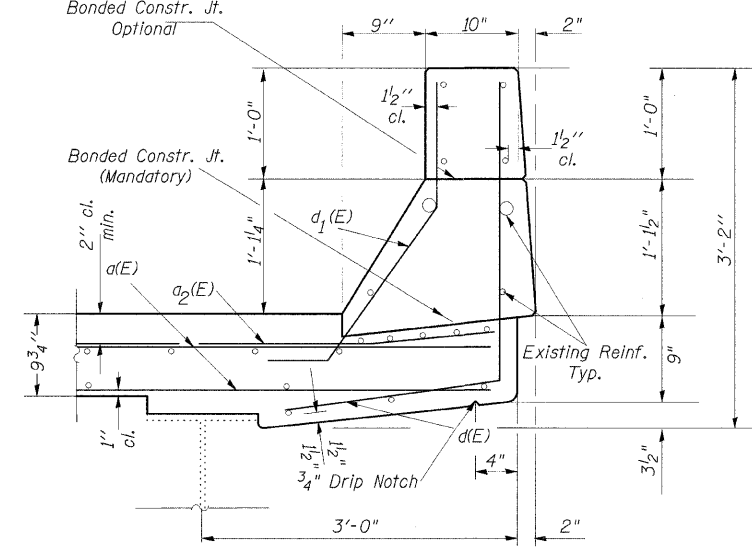
Bar No.	Size	Length	Shape
a(E)	40 #5	29'-3"	—
a2(E)	12 #6	4'-0"	—
d(E)	12 #4	4'-5"	J
d1(E)	12 #5	3'-3"	J
x(E)	92 #5	2'-10"	—
Concrete Superstructure		Cu. Yd.	14.2
Concrete Removal		Cu. Yd.	13.3
Reinforcement Bars, Epoxy Coated		Pound	1640

Reinforcement bars designated (E) shall be epoxy coated.

**JOINT REPLACEMENT DETAILS**  
JOHNSON COUNTY  
SN 044-0031



**SECTION THRU PARAPET**  
Approach Section



**SECTION THRU PARAPET**  
Deck Section

FILE NAME =	USER NAME = cornellm	DESIGNED -	REVISED -
c:\pw\work\p\100T\CORNELLM\dms47925\044-0031-bsmart.dgn		DRAWN -	REVISED -
PLOT SCALE = 1:5000 / IN.		CHECKED -	REVISED -
PLOT DATE = 2/27/2009		DATE -	REVISED -

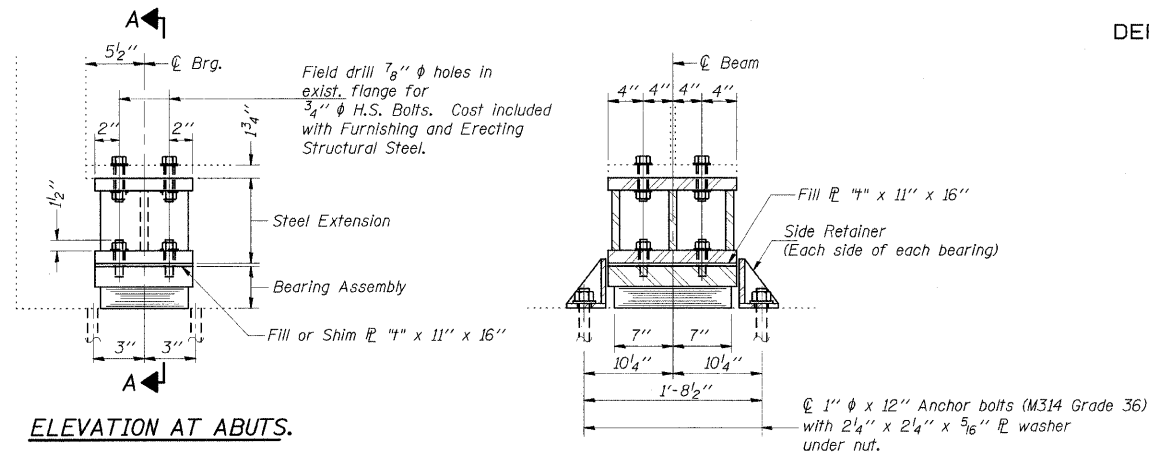
**STATE OF ILLINOIS**  
**DEPARTMENT OF TRANSPORTATION**

**JOINT REPLACEMENT DETAILS**  
SN 044-0031

SCALE:	SHEET NO.	OF	SHEETS	STA.	TO STA.
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F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
24/57	D9 BSMART FY09-1	JOHNSON/PULASKI	20	15
CONTRACT NO. 78095				
FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT				

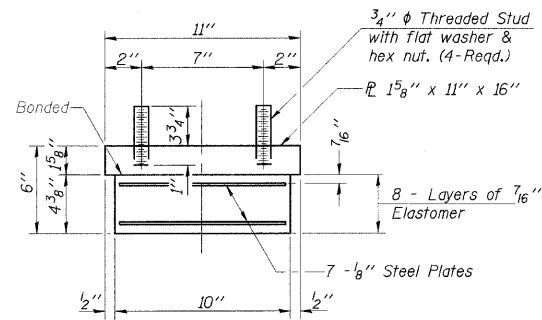
STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION



**TYPE I ELASTOMERIC EXP. BRG.**

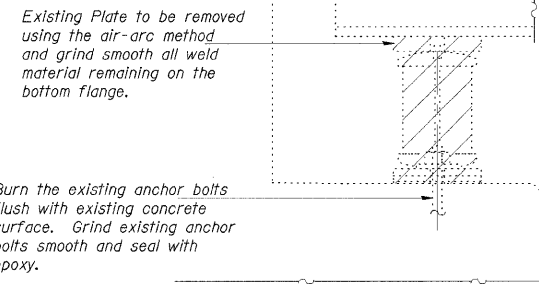
**GIRDER REACTIONS**

R $\phi$	(K)	61
R $\epsilon$	(K)	49
Imp.	(K)	10
R (Total)	(K)	120



**BEARING ASSEMBLY**

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



**EXISTING BEARING REMOVAL DETAIL**

Cost is included with Jack and Remove Existing Bearings

**DIMENSION "4"**

	SN. 044-0031					
Beam #	1	2	3	4	5	6
N. Abut.	0	0	1/4"	0	0	0
S. Abut.	0	0	1"	1/2"	0	0

**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.

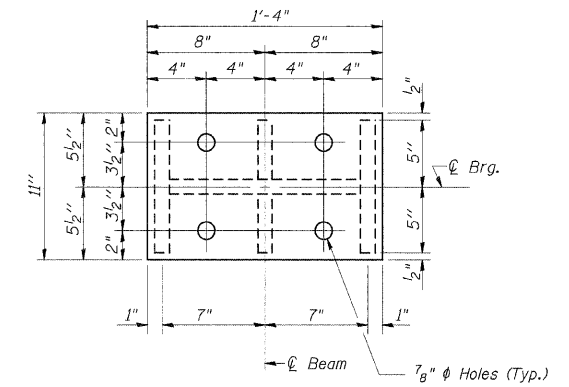
Side retainers and other steel members required for the bearing assembly shall be included in the cost of Elastomeric Bearing Assembly, Type I.

The minimum jack capacity required is 70 Tons.

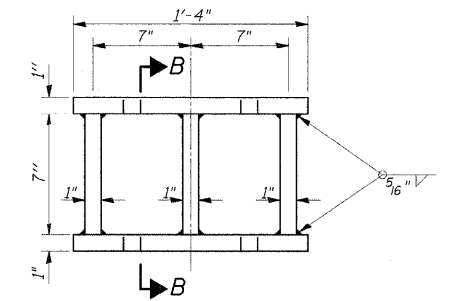
Existing cross frame removal and reinstallation may be required to facilitate drilling holes, cost to be included with "Jack and Remove Existing Bearings".

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.

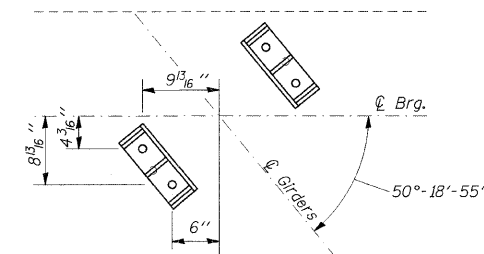
New steel extensions, connection bolts, Fill  $\epsilon$ 's and Shim  $\epsilon$ 's are included in "Furnishing and Erecting Structural Steel".



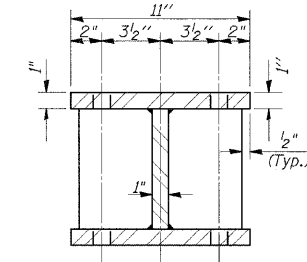
**PLAN-TOP & BOTTOM PLATE**



**STEEL EXTENSION DETAIL**



**ANCHOR BOLT LAYOUT**



**SECTION B-B**

**BILL OF MATERIAL (Both Abuts.)**

Item	Unit	Total
Elastomeric Bearing Assembly Type I	Each	12
Anchor Bolts, 1"	Each	48
Jack and Remove Existing Bearings	Each	12

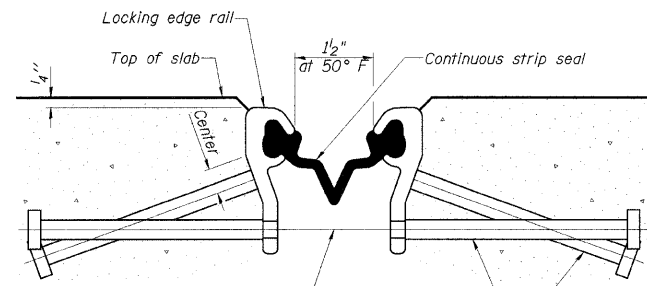
**BEARING DETAILS  
STRUCTURE NO. 044-0031**

FILE NAME =	USER NAME = cornell11m	DESIGNED =	REVISED =	<b>STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION</b>	<b>BEARING DETAILS SN 044-0031</b>	F.A.T. SECTION COUNTY TOTAL SHEET	FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT
es:\pwork\FW\DOT\CORNELL11M\dms47925\084-0031-bsmar.t.dgn	PLOT SCALE = 1:0000 "/> <td>CHECKED =</td> <td>REVISED =</td> <td>24/57 D9 BSMART FY09-1 JOHNSON/PULASKI 20 16</td> <td>CONTRACT NO. 78095</td>	CHECKED =	REVISED =			24/57 D9 BSMART FY09-1 JOHNSON/PULASKI 20 16	CONTRACT NO. 78095
PLOT DATE = 2/27/2009	DATE =	REVISED =	SCALE: SHEET NO. OF SHEETS STA. TO STA.				



STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

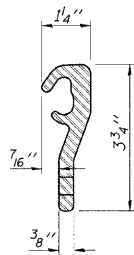
\*Omit weld at seal opening.  
\*\*When joint is fixed, dimension is set at 1 1/2".



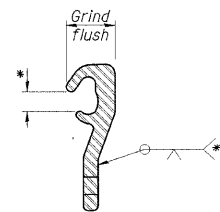
7/16"  $\phi$  holes at 4'-0" cts. for 3/8"  $\phi$  bolts. All bolts shall be burned, sawed, or chipped off flush with the plates after forms are removed, typ.

Place 1/2"  $\phi$  x 6" granular or solid flux filled headed studs conforming to Article 1006.32 of the Std. Specs., automatically end welded at 1'-0" alt. cts.

**SECTION THRU STRIP SEAL JOINT  
FOR OVERLAY OVER DECK BEAMS**

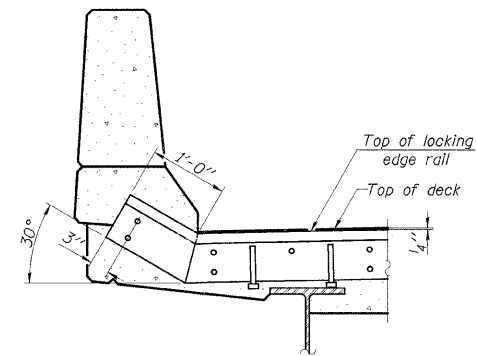


**LOCKING EDGE RAIL**

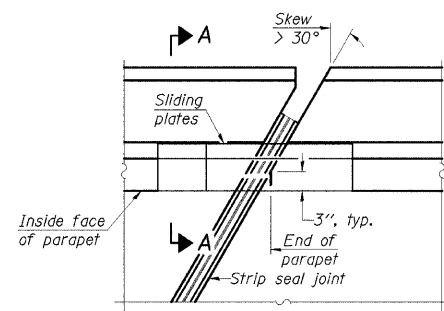


**LOCKING EDGE RAIL SPLICE**

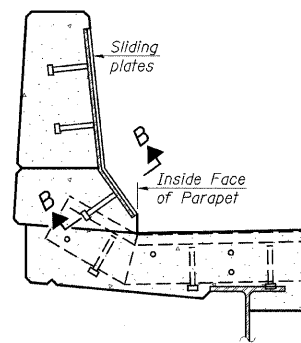
Notes:  
The strip seal shall be made continuous and shall have a minimum thickness of 1/4". The configuration of the strip seal shall match the configuration of the Locking Edge Rails.  
The height and thickness of the Locking Edge Rails shown are minimum dimensions. The actual configuration of the Locking Edge Rails and matching strip seal may vary from manufacturer to manufacturer. Flanged edge rails will not be allowed.  
The inside of the Locking Edge Rail groove shall be free of weld residue.  
Locking Edge Rails may be spliced at slope discontinuities and stage construction joints.  
The manufacturer's recommended installation methods shall be followed.



**TYPICAL END TREATMENT  
AT PARAPET**

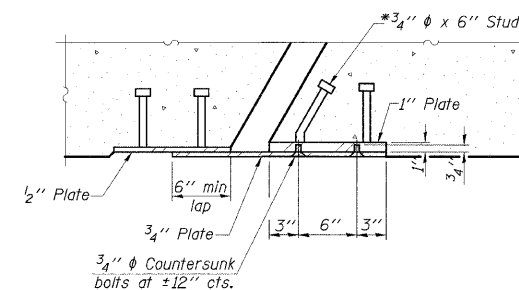


**PLAN**



**SECTION A-A**

**POINT BLOCK DETAILS  
(for skews > 30°)**



**SECTION B-B**

**BILL OF MATERIAL (BOTH JOINTS)**

Item	Unit	Total
Preformed Joint Strip Seal	Foot	115

**PREFORMED JOINT STRIP SEAL  
STRUCTURE NO. 044-0031**

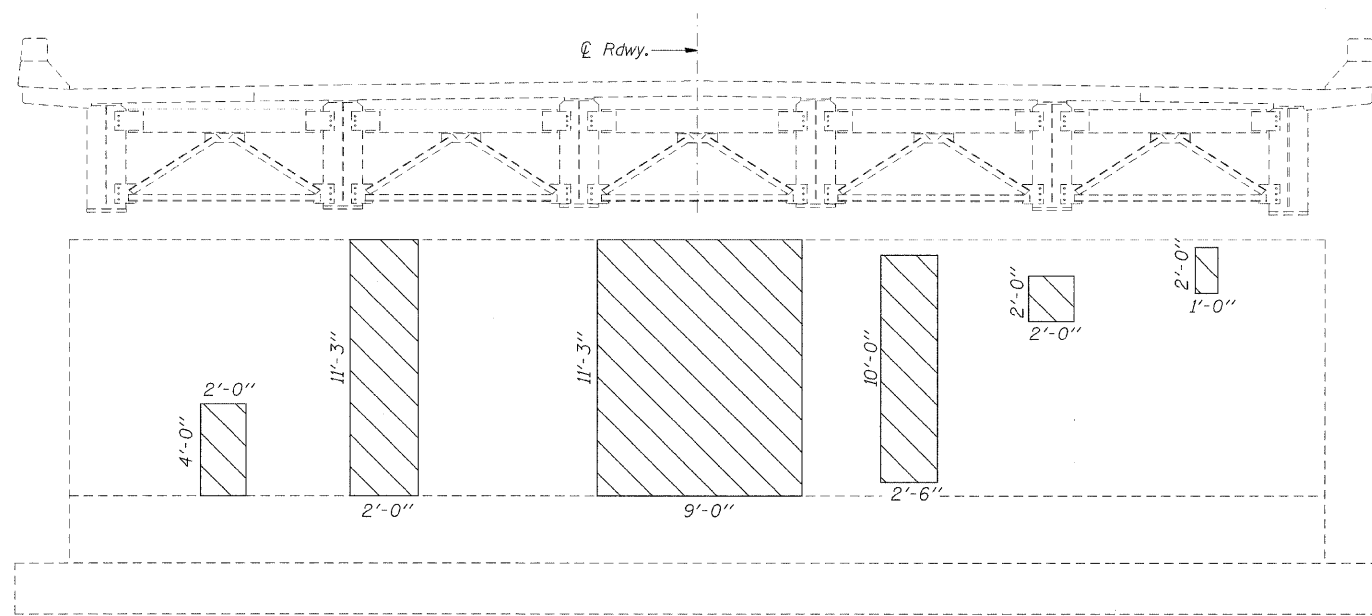
FILE NAME =	USER NAME = cornellm	DESIGNED -	REVISED -
c:\pw\work\FW1001\CORNELLM\dms47925\044-0031-bsmart.dgn		DRAWN -	REVISED -
	PLOT SCALE = 1.0000 / IN.	CHECKED -	REVISED -
	PLOT DATE = 2/27/2009	DATE -	REVISED -

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

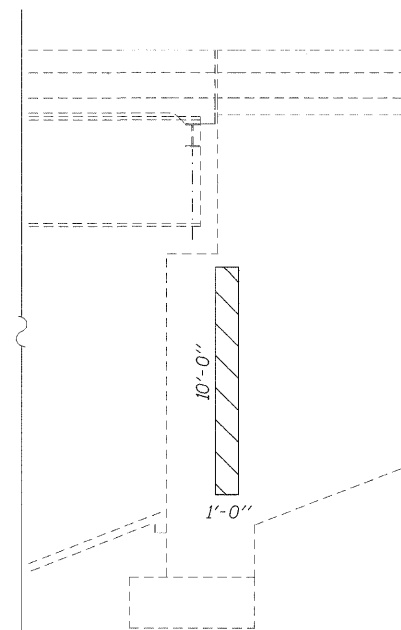
PREFORMED JOINT STRIP SEAL DETAILS  
SN 044-0031

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

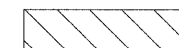
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEET NO.
24/57	D9 BSMART FY09-1	JOHNSON/PULASKI	20 / 17
FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT			CONTRACT NO. 78095



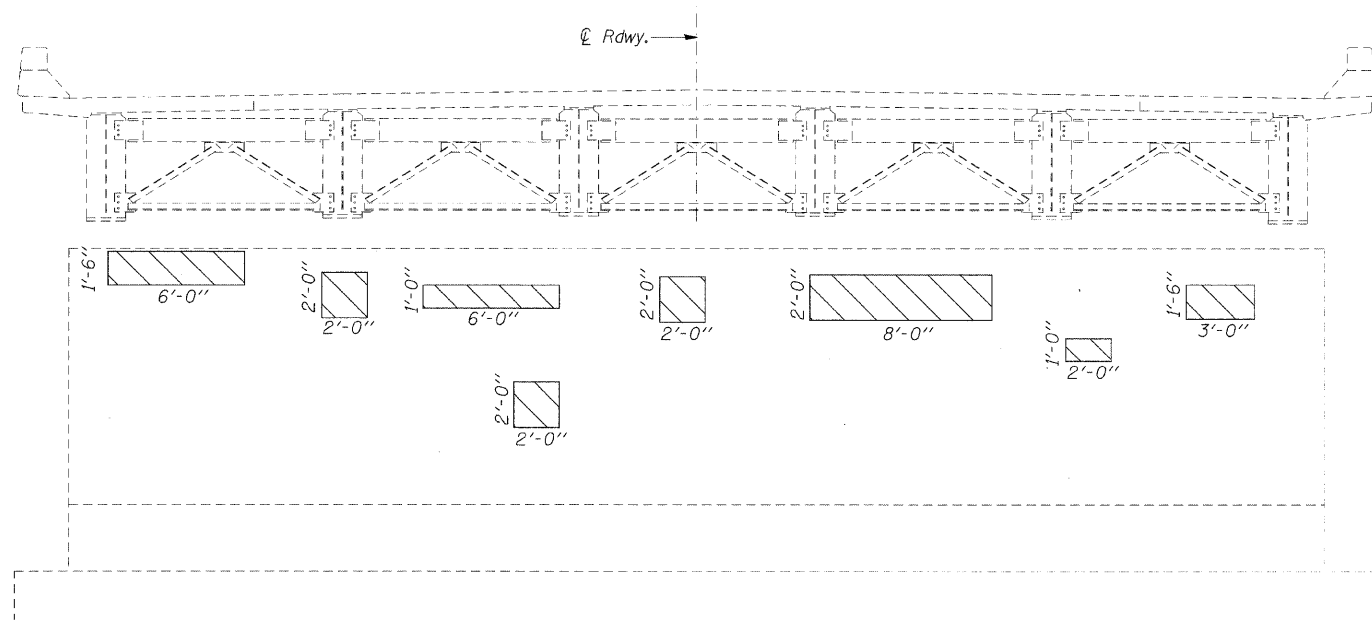
**NORTH ABUTMENT**  
Looking North



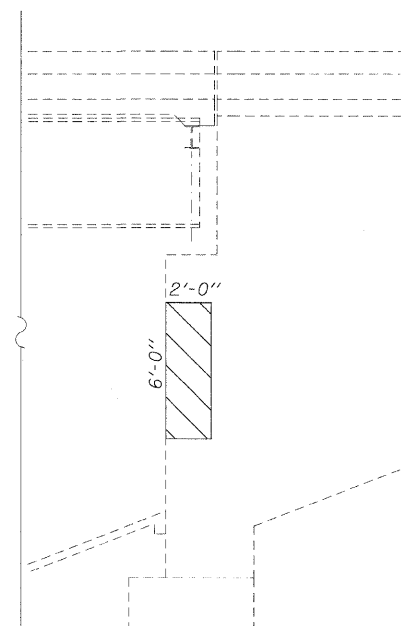
**NORTH EAST CORNER**  
Looking West



Structural Repair of Concrete ≤ 5"



**SOUTH ABUTMENT**  
Looking South

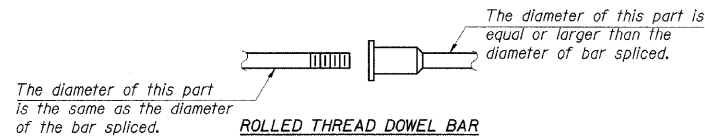


**SOUTH WEST CORNER**  
Looking East

**SUBSTRUCTURE REPAIRS**  
**SN 044-0031**  
**JOHNSON COUNTY**

FILE NAME =	USER NAME = cornellm	DESIGNED -	REVISED -	<b>STATE OF ILLINOIS</b> <b>DEPARTMENT OF TRANSPORTATION</b>	<b>SUBSTRUCTURE REPAIRS</b> <b>SN 044-0031</b>	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.	
c:\pwork\pwork\cornellm\dms47925\044-0031-bsmart.dgn		DRAWN -	REVISED -			24/57	D9 BSMART FY09-1	JOHNSON/PULASKI	20	18	
PLOT SCALE = 4.0000 "/> <td></td> <td>CHECKED -</td> <td>REVISED -</td> <td colspan="6" style="text-align: center;">CONTRACT NO. 78095</td>		CHECKED -	REVISED -			CONTRACT NO. 78095					
PLOT DATE = 2/27/2009		DATE -	REVISED -			FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT					

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

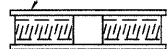


ROLLED THREAD DOWEL BAR



\*\* ONE PIECE

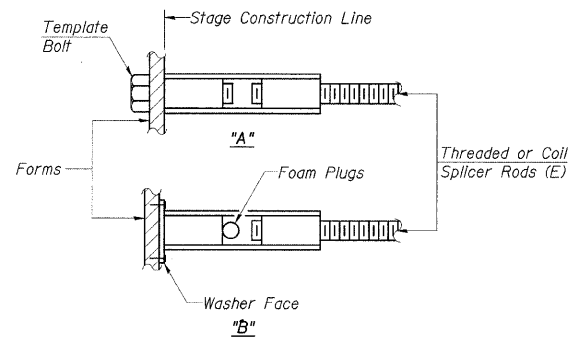
Wire Connector



WELDED SECTIONS

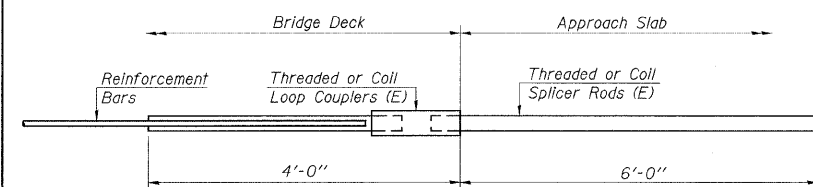
**BAR SPLICER ASSEMBLY ALTERNATIVES**

\*\*Heavy Hex Nuts conforming to ASTM A 563, Grade C, D or DH may be used.



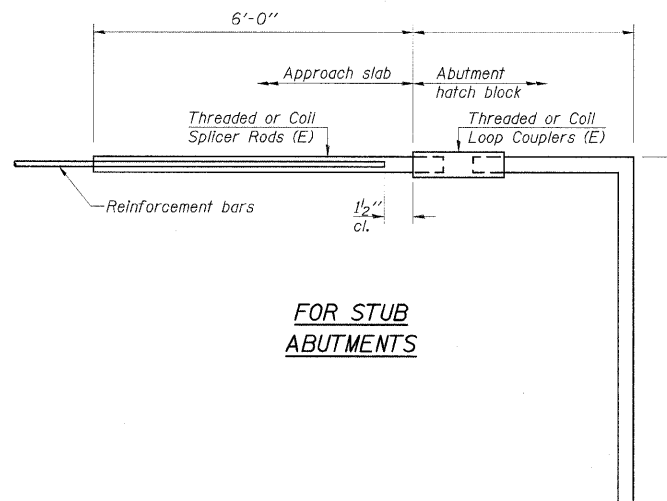
**INSTALLATION AND SETTING METHODS**

"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.



**FOR INTEGRAL OR SEMI-INTEGRAL ABUTMENTS**

Bar Splicer for #5 bar		
Min. Capacity =	23.0 kips - tension	
Min. Pull-out Strength =	12.3 kips - tension	
No. Required =		



**FOR STUB ABUTMENTS**

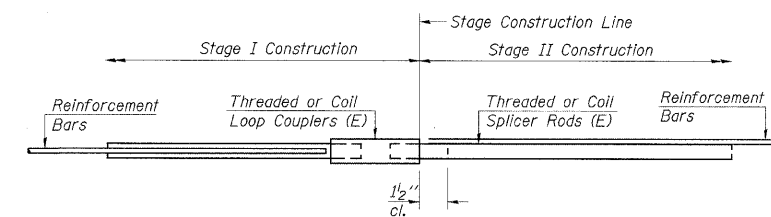
Bar Splicer for #5 bar		
Min. Capacity =	23.0 kips - tension	
Min. Pull-out Strength =	12.3 kips - tension	
No. Required =		

**NOTES**  
Bar splicer assemblies shall be of an approved type and shall develop in tension at least 125 percent of the yield strength of the lapped reinforcement bars.  
Splicer rods shall be of minimum 60 ksi yield strength, threaded or coiled full length.  
All reinforcement bars shall be lapped and tied to the splicer rods or dowel bars.  
Bar splicer assemblies shall be epoxy coated according to the requirements for reinforcement bars.  
Other systems of similar design may be submitted to the Engineer for approval. Approval shall be based on certified test results from an approved testing laboratory that the proposed bar splicer assembly satisfies the following requirements:

- ① Minimum Capacity =  $1.25 \times f_y \times A_s$   
(Tension in kips)
- ② Minimum \*Pull-out Strength =  $0.66 \times f_y \times A_s$   
(Tension in kips)

Where  $f_y$  = Yield strength of lapped reinforcement bars in ksi.  
 $A_s$  = Tensile stress area of lapped reinforcement bars.  
\* = 28 day concrete

BAR SPLICER ASSEMBLIES			
Bar Size to be Spliced	Splicer Rod or Dowel Bar Length	Strength Requirements	
		Min. Capacity kips - tension	Min. Pull-Out Strength kips - tension
#4	1'-8"	14.7	7.9
#5	2'-2"	23.0	12.3
#6	2'-7"	33.1	17.4
#7	3'-5"	45.1	23.8
#8	4'-6"	58.9	31.3
#9	5'-9"	75.0	39.6
#10	7'-3"	95.0	50.3
#11	9'-0"	117.4	61.8



**STANDARD**

Bar Size	No. Assemblies Required	Location
#5	20	Deck

**BAR SPLICER ASSEMBLY DETAILS  
STRUCTURE NO. 044-0031**

BSD-1

10-1-08

FILE NAME =	USER NAME = cornellm	DESIGNED -	REVISED -	<b>STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION</b>	<b>BAR SPLICER ASSEMBLY DETAILS SN 044-0031</b>				F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
c:\pwork\p\10DOT\CORNELLM\dms47925\044-0031-bsmart.dgn	4-0031-bsmart.dgn	DRAWN -	REVISED -						24/57	D9 BSMART FY09-1	JOHNSON/PULASKI	20	19
PLOT SCALE = 1:0000 1/4 IN.		CHECKED -	REVISED -						CONTRACT NO. 78095				
PLOT DATE = 2/27/2009		DATE -	REVISED -						FED. ROAD DIST. NO. ILLINOIS FED. AID PROJECT				
					SCALE:	SHEET NO.	OF SHEETS	STA.	TO STA.				

STATE OF ILLINOIS  
DEPARTMENT OF TRANSPORTATION

**NOTES**

Detail I - With Bar Splicer or Couplers:

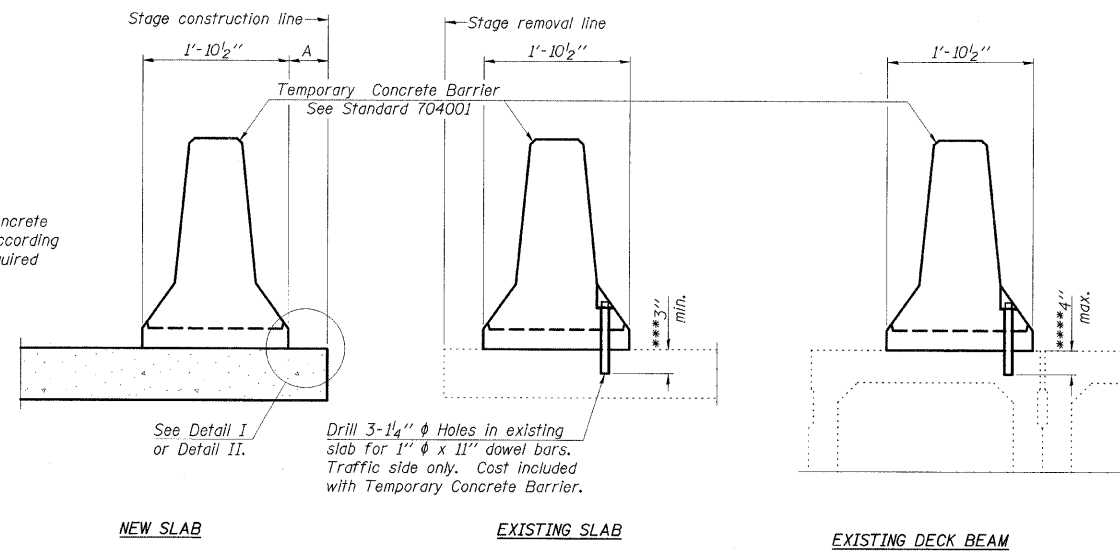
Connect one (1) 1"x7"x10" steel  $\bar{L}$  to the top layer of couplers with 2-5/8"  $\phi$  bolts screwed to coupler at approximate  $\bar{C}$  of each barrier panel.

Detail II - With Extended Reinforcement Bars:

Connect one (1) 1"x7"x10" steel  $\bar{L}$  to the concrete slab or concrete wearing surface with 2-5/8"  $\phi$  Expansion Anchors or cast in place inserts spaced between the top layer of reinforcement at approximate  $\bar{C}$  of each barrier panel.

Cost of anchorage is included with Temporary Concrete Barrier. The 1" x 7" x 10" 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.

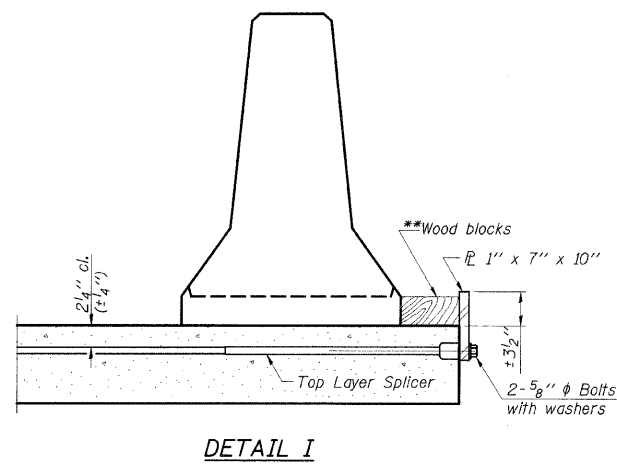
When "A" is 3'-6" or less, the temporary concrete barrier shall be anchored to the new slab according to Detail I or Detail II. No anchorage is required when "A" is greater than 3'-6".



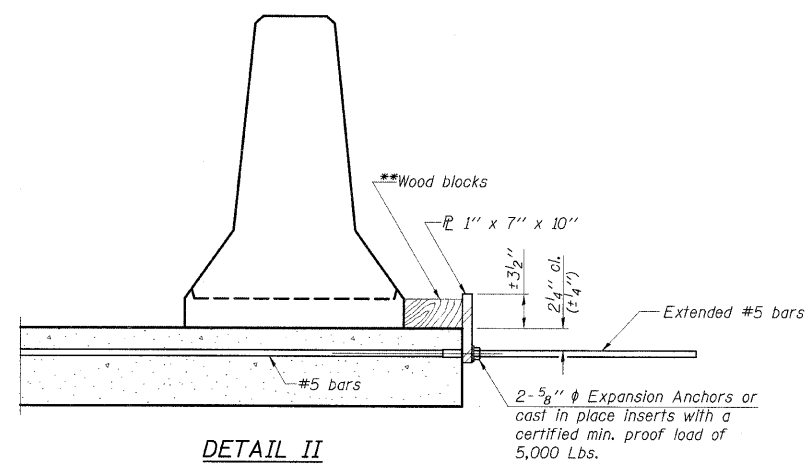
**SECTIONS THRU SLAB OR DECK BEAM**

\*\*\* 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.

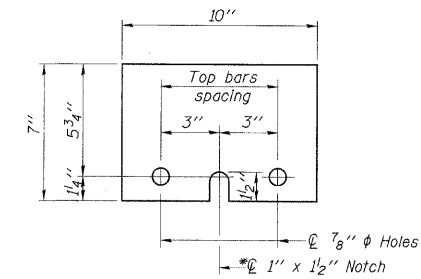


**DETAIL I**



**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.



**STEEL RETAINER 1" x 7" x 10"**

\* Required only with Detail II

**TEMPORARY CONCRETE BARRIER  
FOR STAGE CONSTRUCTION  
STRUCTURE NO. 044-0031**

R-27

10-1-08

FILE NAME =	USER NAME = cornellm	DESIGNED -	REVISED -	<b>STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION</b>	<b>TEMPORARY CONCRETE BARRIER SN 044-0031</b>	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEET NO.	
c:\pwork\pwork\DOT\CORNELLM\dms47925\044-0031-bsmart.dgn	4-0031-bsmart.dgn	DRAWN -	REVISED -			24/57	D9 BSMART FY09-1	JOHNSON/PULASKI	20	20
PLOT SCALE = 1:8000 1/2 IN.		CHECKED -	REVISED -			CONTRACT NO. 78095				
PLOT DATE = 2/27/2009		DATE -	REVISED -			FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		
				SCALE:	SHEET NO.	OF	SHEETS	STA.	TO STA.	