3-6-09 Letting, Item 170

| F.A.S. RTE. | SECTION | COUNTY | TOTAL SHEETS | SHEET NO. |
|---|---|---|---|---|
| 815 | D9 CM BRIDGE REPAIR FY 09-1 | WHITE | 16 | 1 |
| FED. ROAD DIST. NO. 7 | ILLINOIS | CONTRACT NO. 78094 | | |

## INDEX OF SHEETS

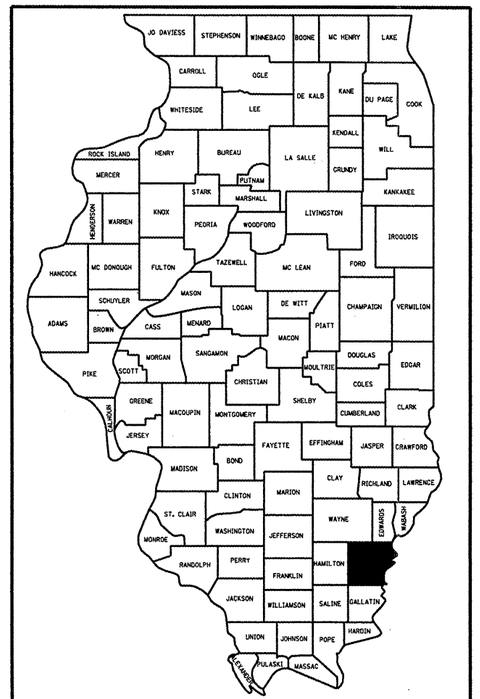


# STATE OF ILLINOIS
# DEPARTMENT OF TRANSPORTATION
# DIVISION OF HIGHWAYS

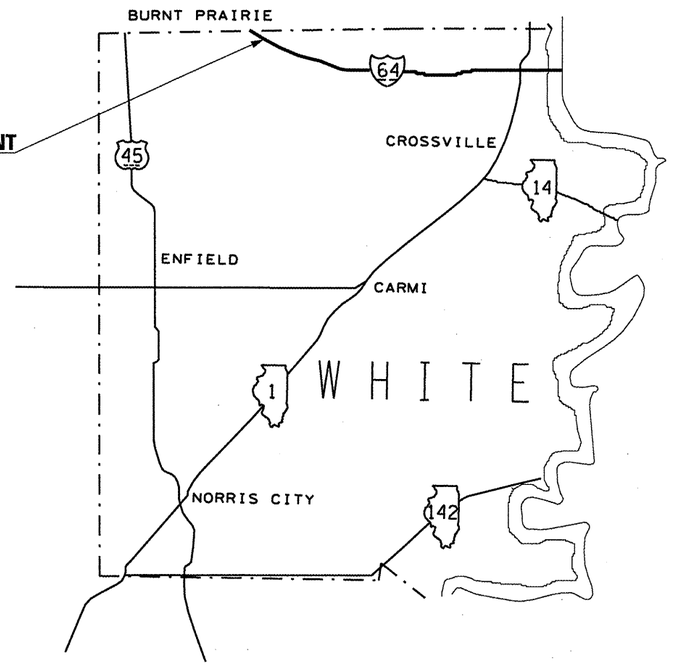
# PROPOSED HIGHWAY PLANS

## F.A.S. ROUTE 815 (CH 20) OVER I-64
## SECTION D9 CM BRIDGE REPAIR FY 09-1
## WHITE COUNTY

**C-99-004-09**




LOCATION OF SECTION INDICATED THUS: -




**PROPOSED IMPROVEMENT**
**S.N. 097-0044**
**I-64 MILEPOST 117**
**EXPANSION JOINT**
**BEARINGS**
**HOT-MIX OVERLAY**

**ILLINOIS TOWNSHIP: BURNT PRAIRIE**
**2005 ADT = 950**
**TRUCKS = 11% ADT**
**POSTED SPEED = 55 MPH**
**INVENTORY RATING HS 16.7**
**OPERATING RATING HS 31.1**

## STANDARDS

| | |
|---|---|
| 701201-03 | LANE CLOSURE, 2L, 2W, DAY ONLY |
| 701301-03 | LANE CLOSURE, 2L, 2W, SHORT TIME OPERATIONS |
| 701316-04 | LANE CLOSURE, 2L, 2W, BRIDGE REPAIR |
| 701400-03 | LANE CLOSURE, FREEWAY/EXPRESSWAY |
| 701406-05 | LANE CLOSURE, FREEWAY/EXPRESSWAY, DAY ONLY |
| 701901-01 | TRAFFIC CONTROL DEVICES |

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

**MAP NOT TO SCALE**

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

SUBMITTED Dec 5 20 08
Mary C Lamie
DEPUTY DIRECTOR OF HIGHWAYS, REGION ENGINEER
January 30, 20 09
Charles J. Ingersoll /KS
ENGINEER OF DESIGN AND ENVIRONMENT
January 30, 20 09
Christine M. Reed /KS
DIRECTOR OF HIGHWAYS, CHIEF ENGINEER

**PRINTED BY THE AUTHORITY OF THE STATE OF ILLINOIS**

**CONTRACT NO. 78094**

PROJECT ENGINEER: CASEY N. TECKENBROCK (618) 549-2171 CENTREX: 782-4554
SQUAD LEADER: RITA GAUTNEY

| F.A.S. RTE. | SECTION | COUNTY | TOTAL SHEETS | SHEET NO. |
|---|---|---|---|---|
| 815 | 09 CM BRIDGE REPAIR FY 09-1 | WHITE | 16 | 2 |
| FED. ROAD DIST. NO. 7 | ILLINOIS | CONTRACT NO. 78094 | | |

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

# GENERAL NOTES

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

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.

ANY TIME THAT HOLES AT EXPANSION JOINTS ARE OPEN, THEY SHALL BE COVERED WITH METAL PLATES CAPABLE OF CARRYING THE FULL WEIGHT OF AN ERRANT VEHICLE. PLATES SHALL BE PLACED DIRECTLY ON THE CONCRETE DECK. PROJECTIONS ABOVE THE ROADWAY SURFACE GREATER THAN 1" ARE NOT PERMITTED EXCEPT FOR HEADS OF BOLTS.

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

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

THE TRAFFIC BARRIER TERMINAL AT THE SOUTHEAST CORNER OF THE STRUCTURE SHALL BE REMOVED AND REPLACED.

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.

PLACEMENT OF FINAL PAVEMENT MARKINGS IS NOT INCLUDED IN THIS CONTRACT.

AFTER A LIFT OF HOT-MIX ASPHALT HAS BEEN PLACED ON A LANE, THAT LANE SHALL REMAIN CLOSED TO TRAFFIC UNTIL THE NEW MAT HAS COOLED TO 150°.

AT ALL LOCATIONS WHERE THE PROPOSED HOT MIX ASPHALT OR CONCRETE PAVEMENT JOINS AN EXISTING HOT MIX ASPHALT OR CONCRETE PAVEMENT, A SAWED JOINT SHALL BE CONSTRUCTED. THE COST OF THIS JOINT WILL BE INCLUDED IN THE COST OF THE HOT MIX ASPHALT SURFACE ITEMS.

THE THICKNESS OF HOT-MIX ASPHALT MIXTURE SHOWN ON THE PLANS IS THE NOMINAL THICKNESS BASED ON VISUAL INSPECTION.

NO DECK PATCHING IS ANTICIPATED BASED ON A VISUAL INSPECTION PERFORMED IN NOVEMBER, 2008. THE ENGINEER WILL PERFORM A DECK SURVEY AFTER REMOVAL OF THE EXISTING HOT-MIX ASPHALT SURFACE IS COMPLETED, AND MAY DETERMINE PATCHING LOCATIONS AND QUANTITIES. PATCHING WILL BE PAID FOR ACCORDING TO ARTICLE 109.04. THE ENGINEER SHALL MARK PATCHES IN THE AS-BUILT PLANS.

COMMITMENTS: NONE

Prepared By: _____
DISTRICT STUDIES & PLANS ENGINEER

Examined By: _____
DISTRICT LAND ACQUISITION ENGINEER

Examined By: _____
DISTRICT PROGRAM DEVELOPMENT ENGINEER

Examined By: _____
DISTRICT OPERATIONS ENGINEER

Examined By: _____
DISTRICT CONSTRUCTION ENGINEER

Examined By: _____
DISTRICT MATERIALS ENGINEER

Examined By: _____
DISTRICT PROJECT IMPLEMENTATION ENGINEER

Examined By: _____
ASSISTANT REGIONAL ENGINEER

Approved By: _____
DEPUTY DIRECTOR OF HIGHWAYS, REGION 5 ENGINEER

Dec 5 2008
DATE

| F.A.S. RTE. | SECTION | COUNTY | TOTAL SHEETS | SHEET NO. |
|---|---|---|---|---|
| 815 | 09 CM BRIDGE REPAIR FY 09-1 | WHITE | 16 | 3 |
| FED. ROAD DIST. NO. 7 | ILLINOIS | CONTRACT NO. 78094 | | |

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

# SUMMARY OF QUANTITIES

| | CONSTRUCTION TYPE CODE: SFTY-2A | 100% STATE | |
|---|---|---|---|
| CODE NO. | ITEM DESCRIPTION | UNIT | TOTAL QUANTITY |
| 40300100 | BITUMINOUS MATERIALS (PRIME COAT) | GALLON | 5 |
| 40600300 | AGGREGATE (PRIME COAT) | TON | 1 |
| 44001005 | HOT-MIX ASPHALT SURFACE REMOVAL | SQ YD | 835.3 |
| 40600990 | TEMPORARY RAMP | SQ YD | 57 |
| 40603320 | HOT-MIX ASPHALT SURFACE COURSE, MIX "C", N90 | TON | 93 |
| 50102400 | CONCRETE REMOVAL | CU YD | 8.1 |
| 50300255 | CONCRETE SUPERSTRUCTURE | CU YD | 7.9 |
| 50500405 | FURNISHING AND ERECTING STRUCTURAL STEEL | POUND | 1690 |
| 50800515 | BAR SPLICERS | EACH | 14 |
| 50500715 | JACK AND REMOVE EXISTING BEARINGS | EACH | 10 |
| 50800205 | REINFORCEMENT BARS, EPOXY COATED | POUND | 1030 |
| 52000110 | PREFORMED JOINT STRIP SEAL | FOOT | 65 |
| 52100010 | ELASTOMERIC BEARING ASSEMBLY, TYPE I | EACH | 10 |
| 52100520 | ANCHOR BOLTS, 1" | EACH | 20 |
| 59000200 | EPOXY CRACK INJECTION | FOOT | 57.5 |
| 58100200 | WATERPROOFING MEMBRANE SYSTEM | SQ YD | 803 |
| 63304385 | TRAFFIC BARRIER TERMINAL REMOVAL, TYPE 1 | EACH | 1 |
| 67100100 | MOBILIZATION | L SUM | 1 |
| 70100100 | TRAFFIC CONTROL AND PROTECTION, STANDARD 701316 | EACH | 1 |
| 70100450 | TRAFFIC CONTROL AND PROTECTION, STANDARD 701201 | L SUM | 1 |
| 70106500 | TEMPORARY BRIDGE TRAFFIC SIGNALS | EACH | 1 |
| * 63100167 | TRAFFIC BARRIER TERMINAL, TYPE 1 (SPECIAL) TANGENT | EACH | 1 |
| X0325305 | STRUCTURAL REPAIR OF CONCRETE (DEPTH EQUAL TO OR LESS THAN 5 INCHES) | SQ FT | 96.4 |

REV. 12/8/08 RKG ADDED TRAFFIC BARRIER TERMINAL

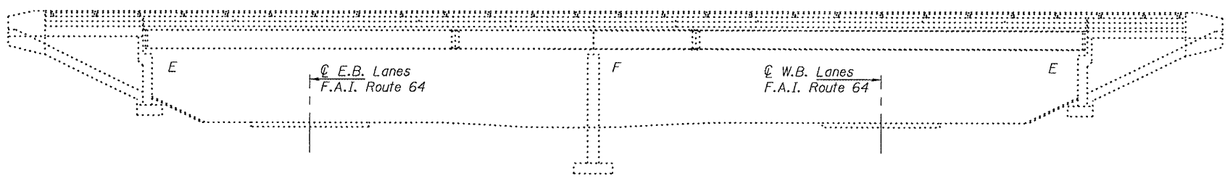
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

| F.A.S. RTE. | SECTION | COUNTY | TOTAL SHEETS | SHEET NO. |
|---|---|---|---|---|
| 815 | 09 CM BRIDGE REPAIR FY 09-1 | WHITE | 16 | 4 |
| FED. ROAD DIST. NO. 7 | ILLINOIS | CONTRACT NO. 78094 | | |

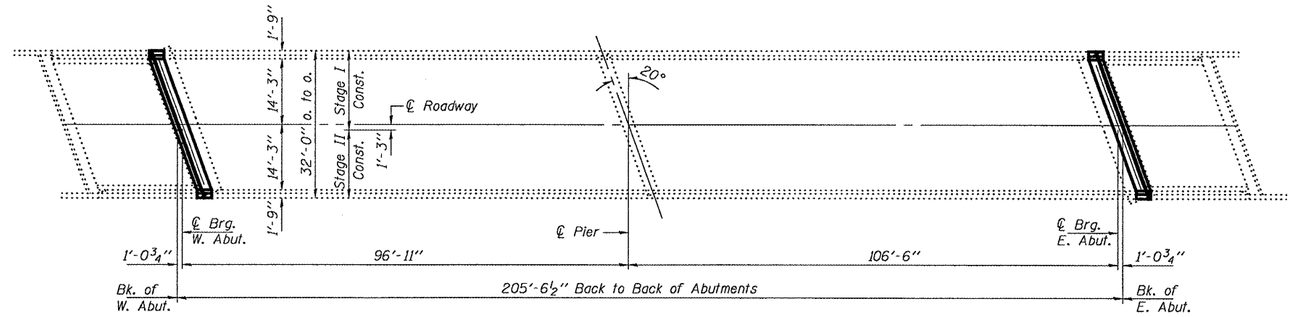
## HOT-MIX ASPHALT MIX DESIGN

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

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION




## ELEVATION




## PLAN

Remove and Replace Bearings at Abutments
Remove Preformed Joint Sealer and Install Preformed Joint Strip Seal

## GENERAL NOTES

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

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, 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.

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

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

All structural steel shall be shop painted with the inorganic zinc rich primer per AASHTO M300, Type 1. Cost included with Furnishing and Erecting Structural Steel.

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.

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

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.

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 |
|---|---|---|
| Furnishing and Erecting Structural Steel | Pound | 1690 |
| Anchor Bolts, 1"ϕ | Each | 20 |
| Elastomeric Bearing Assembly, Type I | Each | 10 |
| Jack and Remove Existing Bearings | Each | 10 |
| Concrete Removal | Cu. Yd. | 8.1 |
| Concrete Superstructure | Cu. Yd. | 7.9 |
| Preformed Joint Strip Seal | Foot | 65 |
| Reinforcement Bars, Epoxy Coated | Pound | 1030 |
| Bar Splicers | Each | 14 |

| | |
|---|---|
| DESIGNED | |
| CHECKED | Adrian T. Hallowell |
| DRAWN | Kyle M. Steffen |
| CHECKED | AJB ATH |

JANUARY 13, 2009

EXAMINED _____ ENGINEER OF STRUCTURAL SOURCES

PASSED _____ ENGINEER OF BRIDGES AND STRUCTURES

STATE OF ILLINOIS
RALPH E. ANDERSON
081-004625
SPRINGFIELD
LICENSED STRUCTURAL ENGINEER

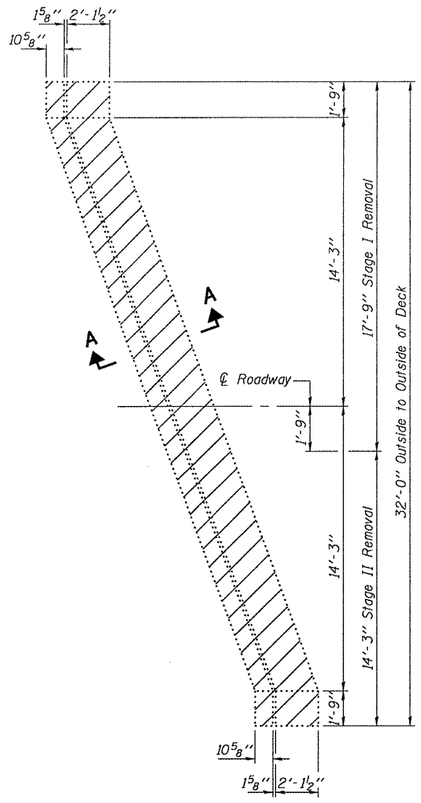
Expires: November 30, 2010

**PLAN & ELEVATION**
**F.A.S. 815 (CH-20)**
**OVER F.A.I. 64**
**SN 097-0044**

| SHEET NO. 1 | F.A.S. RTE. | SECTION | COUNTY | TOTAL SHEETS | SHEET NO. |
|---|---|---|---|---|---|
| 5 SHEETS | 815 | D9 CM BRIDGE REPAIR FY09-1 | WHITE | 16 | 5 |
| | | | CONTRACT NO. 78094 | | |
| | FED. ROAD DIST. NO. | ILLINOIS | FED. AID PROJECT | | |

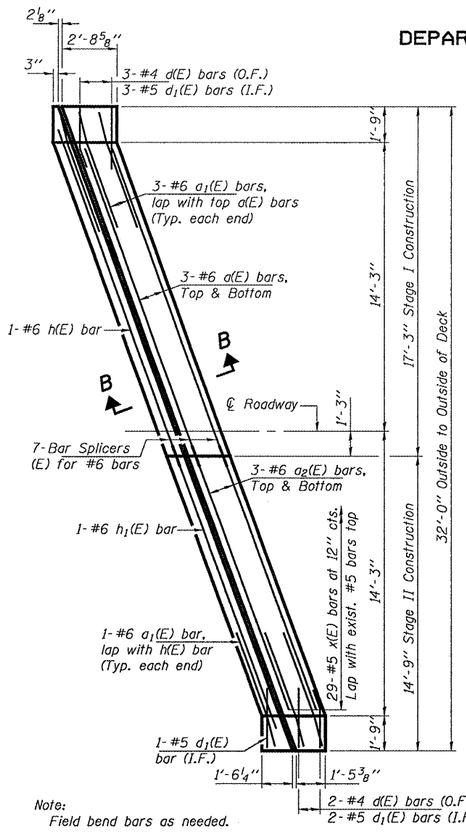
0970044.dgn 13-Jan-09 11:29:32

# STATE OF ILLINOIS
# DEPARTMENT OF TRANSPORTATION




## PARTIAL PLAN AT W. ABUT.

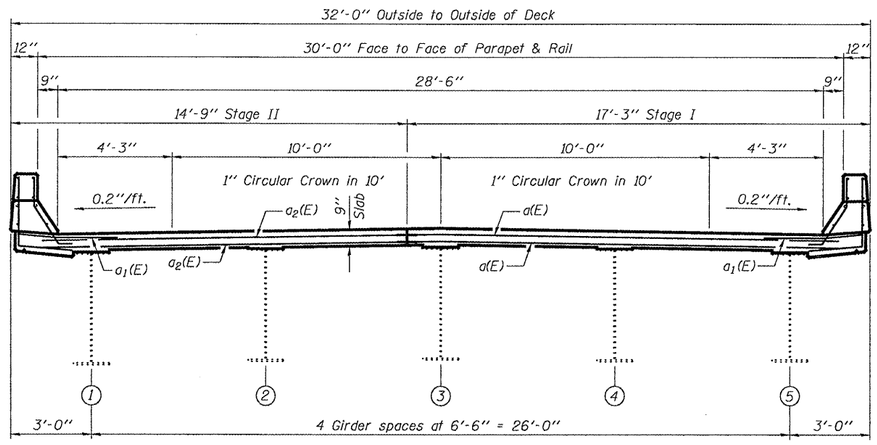
(Showing Concrete Removal)
E. Abut. similar by 180° rotation




Note:
Field bend bars as needed.

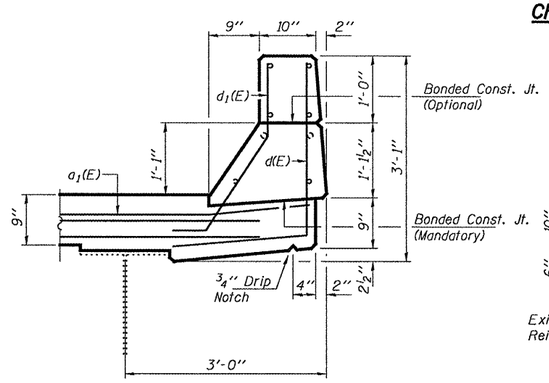
## PARTIAL PLAN AT W. ABUT.

(Showing Reinforcement)
E. Abut. similar by 180° rotation



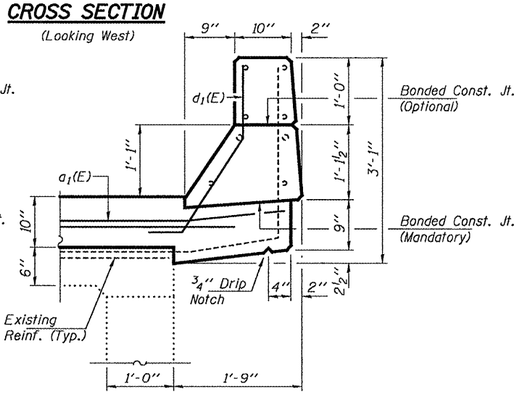

## CROSS SECTION

(Looking West)



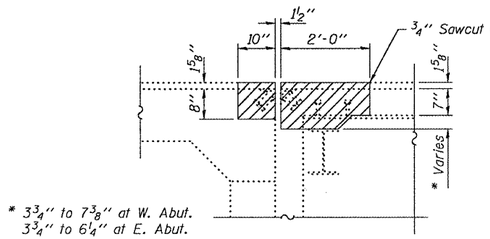

## SECTION THRU PARAPET

(Bridge Side)

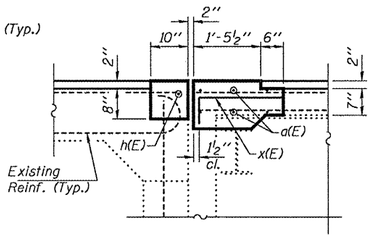



## SECTION THRU PARAPET

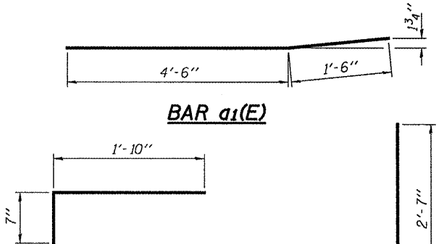
(Approach Side)




## SECTION A-A



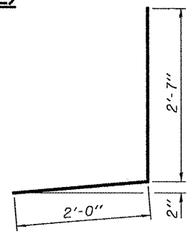

## SECTION B-B



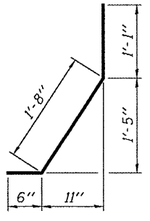

## BAR a1(E)




## BAR x(E)




## BAR d(E)




## BAR d1(E)

Note:
Dimensions are based on a Rolled Rail Strip Seal Joint. If the Contractor elects to use the Weld Rail Strip Seal Joint, deck dimensions may require adjustments to satisfy the details on sheet 4 of 5.

## BILL OF MATERIAL

| Bar | No. | Size | Length | Shape |
|---|---|---|---|---|
| a(E) | 12 | #6 | 17'-1" | |
| a1(E) | 16 | #6 | 6'-0" | |
| a2(E) | 12 | #6 | 14'-6" | |
| | | | | |
| d(E) | 10 | #4 | 4'-7" | |
| d1(E) | 12 | #5 | 3'-3" | |
| | | | | |
| h(E) | 2 | #6 | 17'-1" | |
| h1(E) | 2 | #6 | 14'-6" | |
| | | | | |
| x(E) | 58 | #5 | 2'-5" | |
| | | | | |
| Concrete Removal | | Cu. Yd. | 8.1 | |
| Concrete Superstructure | | Cu. Yd. | 7.9 | |
| Reinforcement Bars, Epoxy Coated | | Pound | 1030 | |

## REPAIR DETAILS
## F.A.S. 815 (CH-20)
## OVER F.A.I. 64
## SN 097-0044

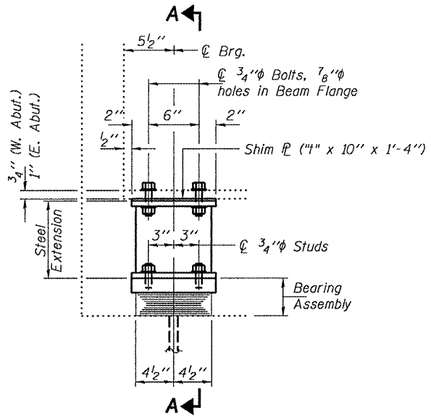
| | |
|---|---|
| DESIGNED | AJB |
| CHECKED | ATH |
| DRAWN | Kyle M. Steffen |
| CHECKED | AJB ATH |

JANUARY 13, 2009
EXAMINED — ENGINEER OF STRUCTURAL SERVICES
PASSED — ENGINEER OF BRIDGES AND STRUCTURES

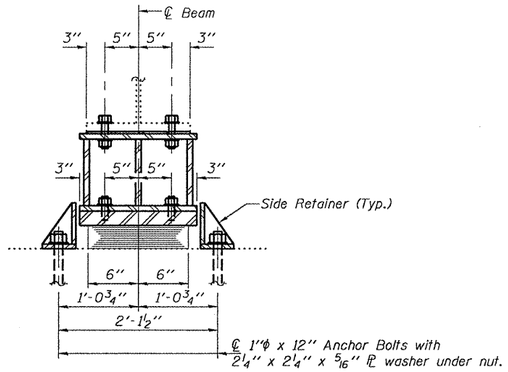
| SHEET NO. 2 | F.A.S. RTE. | SECTION | COUNTY | TOTAL SHEETS | SHEET NO. |
|---|---|---|---|---|---|
| 5 SHEETS | 815 | D9 CM BRIDGE REPAIR FY09-1 | WHITE | 16 | 6 |
| | | | CONTRACT NO. 78094 | | |
| | FED. ROAD DIST. NO. | ILLINOIS | FED. AID PROJECT | | |

0970044.dgn 13-Jan-09 11:29:33

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION




## ELEVATION AT ABUTMENT



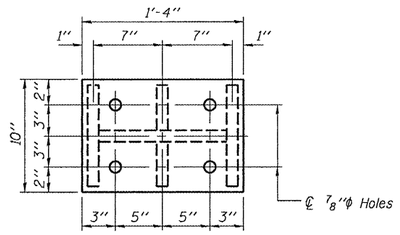

## SECTION A-A

## TYPE I ELASTOMERIC EXP. BRG.

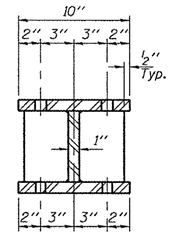
## BEAM REACTIONS

| | | W. Abut. | E. Abut. |
|---|---|---|---|
| RP | (K) | 37.15 | 43.83 |
| RL | (K) | 28.11 | 28.59 |
| Imp. | (K) | 6.35 | 6.18 |
| R (Total) | (K) | 71.61 | 78.60 |

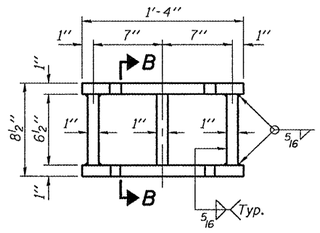
Notes:
Diaphragm removal and reinstallation may be required to facilitate drilling holes. Cost included with Furnishing and Erecting Structural Steel.
New steel extensions, shim plates and connection bolts are included with Furnishing and Erecting Structural Steel.
Prior to ordering any material, the Contractor shall verify in the field all bearing height and shim thickness dimensions.
Min. jack capacity = 50 Tons E. Abut., 45 Tons W. Abut.
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 shall be included in the cost of Elastomeric Bearing Assembly, Type I.



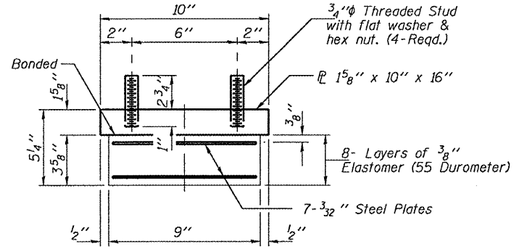

## PLAN TOP AND BOTTOM PLATE




## SECTION B-B

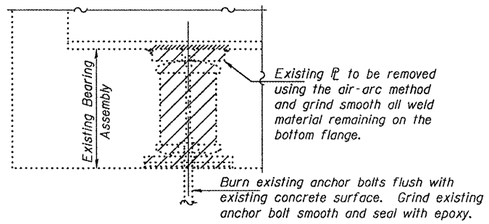



## STEEL EXTENSION DETAIL




## BEARING ASSEMBLY

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




## EXISTING BEARING REMOVAL DETAIL

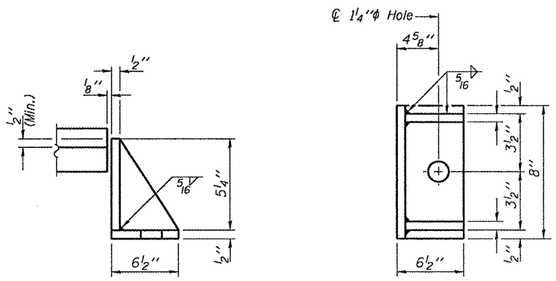
Cost included with Jack and Remove Existing Bearings.

## SHIM PLATES

| Girder | Abut. | Thickness |
|---|---|---|
| 2 | West | ⅜" |
| | | |

## BILL OF MATERIAL

| Item | Unit | Total |
|---|---|---|
| Elastomeric Bearing Assembly Type I | Each | 10 |
| Jack and Remove Existing Bearings | Each | 10 |
| Furnishing and Erecting Structural Steel | Pound | 1690 |
| Anchor Bolts, 1"ϕ | Each | 20 |




## SIDE RETAINER

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

| | |
|---|---|
| DESIGNED | AJB |
| CHECKED | ATH |
| DRAWN | Kyle M. Steffen |
| CHECKED | AJB ATH |

JANUARY 13, 2009
EXAMINED — ENGINEER OF STRUCTURAL SERVICES
PASSED — ENGINEER OF BRIDGES AND STRUCTURES

TYI/REPS 11-01-2006

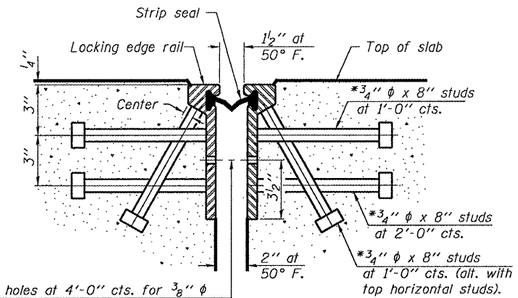
# BEARING REPLACEMENT DETAILS F.A.S. 815 (CH-20) OVER F.A.I. 64 SN 097-0044

| SHEET NO. 3 | F.A.S. RTE. | SECTION | COUNTY | TOTAL SHEETS | SHEET NO. |
|---|---|---|---|---|---|
| 5 SHEETS | 815 | D9 CM BRIDGE REPAIR FY09-1 | WHITE | 16 | 7 |
| | | | CONTRACT NO. 78094 | | |
| | FED. ROAD DIST. NO. | ILLINOIS | FED. AID PROJECT | | |

0970044.dgn 13-Jan-09 11:29:33

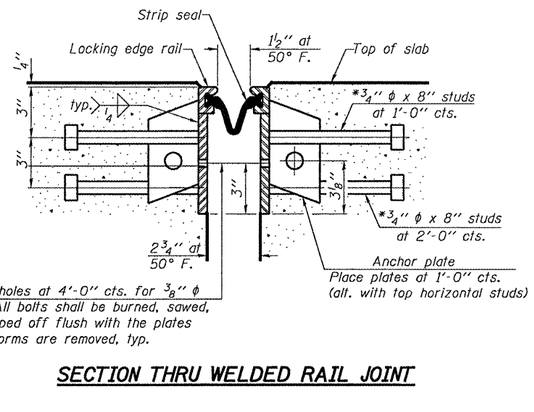
*Granular or solid flux filled headed studs conforming to Article 1006.32 of the Std. Specs., automatically end welded.

# STATE OF ILLINOIS
# DEPARTMENT OF TRANSPORTATION




7/16" ϕ holes at 4'-0" cts. for ⅜" ϕ bolts. All bolts shall be burned, sawed, or chipped off flush with the plates after forms are removed, typ.

## SECTION THRU ROLLED RAIL JOINT




7/16" ϕ holes at 4'-0" cts. for ⅜" ϕ bolts. All bolts shall be burned, sawed, or chipped off flush with the plates after forms are removed, typ.

## SECTION THRU WELDED RAIL JOINT

*Notes:*

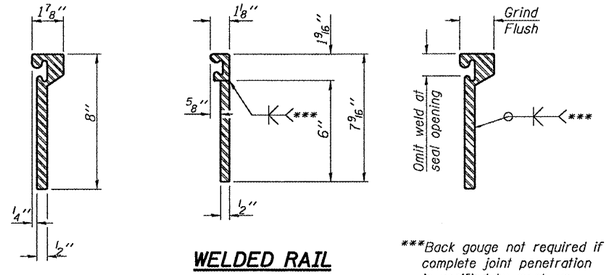
*The strip seal shall be made continuous and shall have a minimum thickness of ¼". The configuration of the strip seal shall match the configuration of the Locking Edge Rails. Open or "webbed" strip seal gland configurations are not permitted. The gland shall be sized for a maximum rated movement of 4 inches.*

*The 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. Locking Edge Rails may be spliced at slope discontinuities and stage construction joints.*

*The manufacturer's recommended installation methods shall be followed.*

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

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



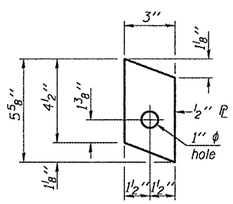

## ROLLED EXTRUDED RAIL



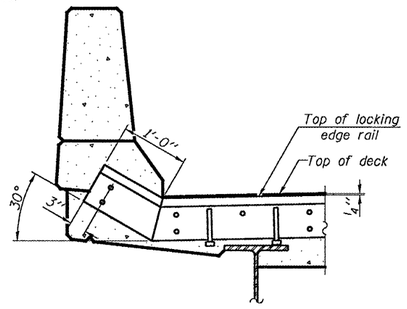

## WELDED RAIL



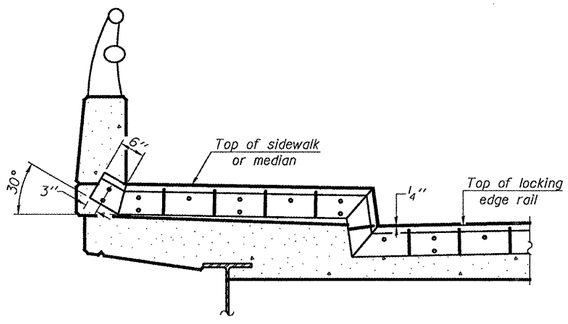

***Back gouge not required if complete joint penetration is verified by mock-up.




## ANCHOR ℙ
(for welded rail)




## AT PARAPET



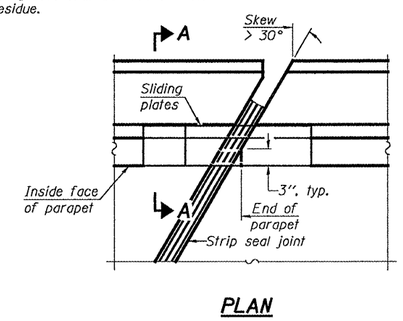

## AT SIDEWALK OR MEDIAN

*Shorter plates with a single row of studs at 12" cts. may be necessary on medians which are shallower than 9". See manufacturer's recommendation.*

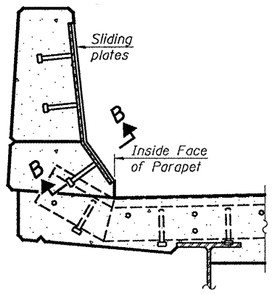
## LOCKING EDGE RAIL SPLICE

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

## LOCKING EDGE RAILS



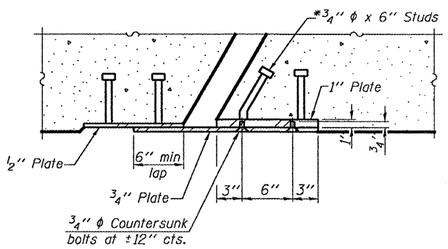

## PLAN




## SECTION A-A

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

## TYPICAL END TREATMENTS




## SECTION B-B

## BILL OF MATERIAL

| Item | Unit | Total |
|---|---|---|
| Preformed Joint Strip Seal | Foot | 65 |
| | | |

## PREFORMED JOINT STRIP SEAL
## F.A.S. 815 (CH-20) OVER F.A.I. 64
## SN 097-0044

| | |
|---|---|
| DESIGNED | AJB |
| CHECKED | ATH |
| DRAWN | Kyle M. Steffen |
| CHECKED | AJB ATH |

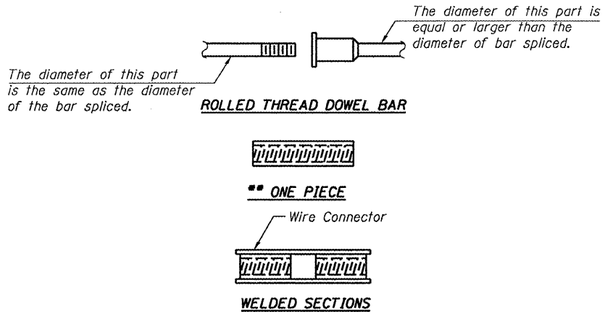
JANUARY 13, 2009
EXAMINED — ENGINEER OF STRUCTURAL SERVICES
PASSED — ENGINEER OF BRIDGES AND STRUCTURES

EJ-SSJ 5-16-08

| SHEET NO. 4 | F.A.S. RTE. | SECTION | COUNTY | TOTAL SHEETS | SHEET NO. |
|---|---|---|---|---|---|
| 5 SHEETS | 815 | D9 CM BRIDGE REPAIR FY09-1 | WHITE | 16 | 8 |
| | | | CONTRACT NO. 78094 | | |
| | FED. ROAD DIST. NO. | ILLINOIS | FED. AID PROJECT | | |

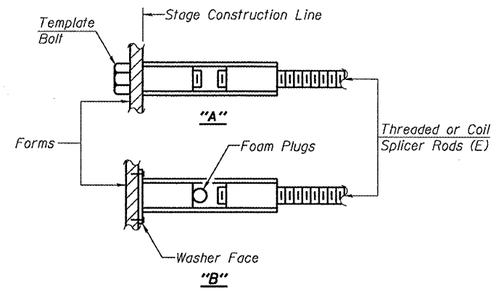
0970044.dgn 13-Jan-09 11:29:34

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION




## 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.

## 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.

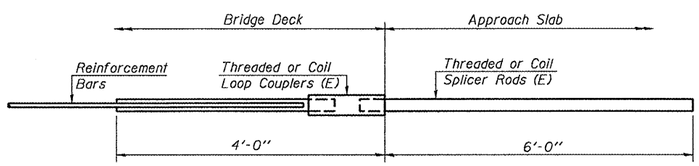
Other systems of similar design may be submitted to the Engineer for approval. Approval shall be based on certified test results from an approved testing laboratory that the proposed bar splicer assembly satisfies the following requirements:

① Minimum Capacity (Tension in kips) = $1.25 \times fy \times A_t$

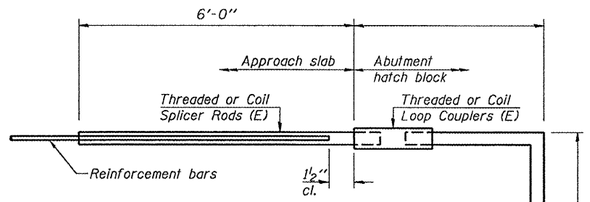
② Minimum *Pull-out Strength (Tension in kips) = $0.66 \times fy \times A_t$

Where fy = Yield strength of lapped reinforcement bars in ksi.
$A_t$ = Tensile stress area of lapped reinforcement bars.
* = 28 day concrete

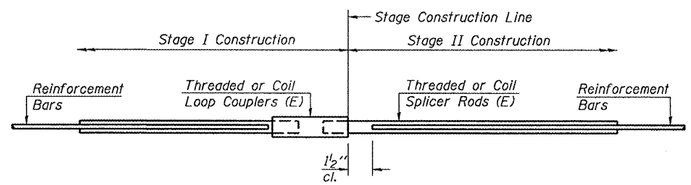
| BAR SPLICER ASSEMBLIES | | | |
|---|---|---|---|
| Bar Size to be Spliced | Splicer Rod or Dowel Bar Length | Strength Requirements | |
| | | Min. Capacity kips - tension | Min. Pull-Out Strength kips - tension |
| #4 | 1'-8" | 14.7 | 7.9 |
| #5 | 2'-0" | 23.0 | 12.3 |
| #6 | 2'-7" | 33.1 | 17.4 |
| #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 |




## FOR INTEGRAL OR SEMI-INTEGRAL ABUTMENTS




## FOR STUB ABUTMENTS




## STANDARD

| Bar Size | No. Assemblies Required | Location |
|---|---|---|
| #6 | 14 | Abutments |
| | | |
| | | |
| | | |
| | | |

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

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

| | |
|---|---|
| DESIGNED | AJB |
| CHECKED | ATH |
| DRAWN | Kyle M. Steffen |
| CHECKED | AJB ATH |

JANUARY 13, 2009
EXAMINED — ENGINEER OF STRUCTURAL SERVICES
PASSED — ENGINEER OF BRIDGES AND STRUCTURES

BSD-1 5-16-08

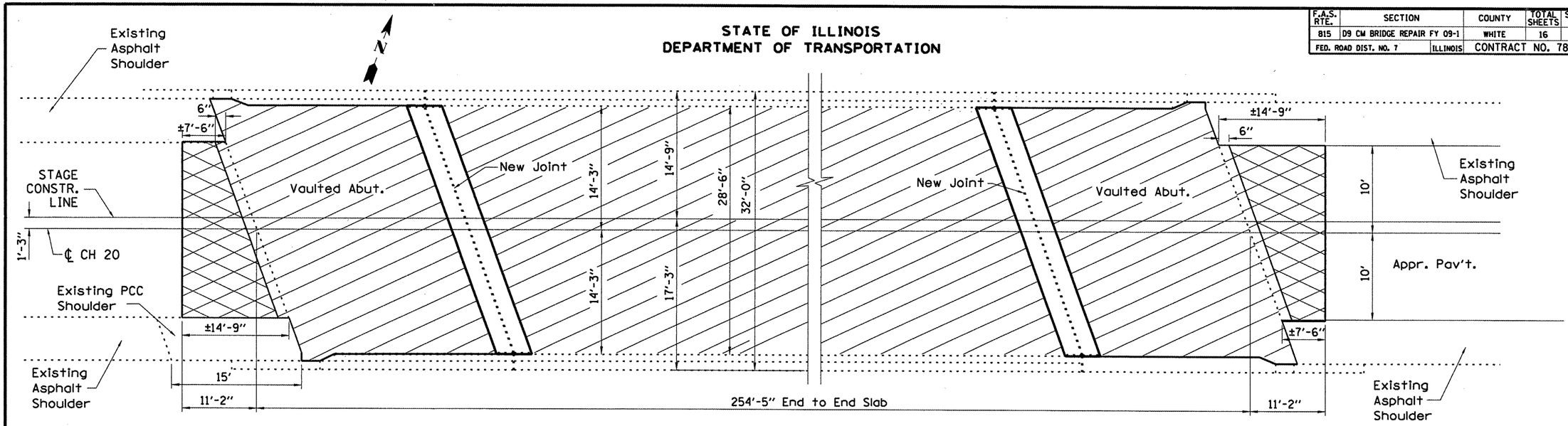
# BAR SPLICER ASSEMBLY DETAILS
# F.A.S. 815 (CH-20) OVER F.A.I. 64
# SN 097-0044

| SHEET NO. 5 | F.A.S. RTE. | SECTION | COUNTY | TOTAL SHEETS | SHEET NO. |
|---|---|---|---|---|---|
| 5 SHEETS | 815 | D9 CM BRIDGE REPAIR FY09-1 | WHITE | 16 | 9 |
| | | | CONTRACT NO. 78094 | | |
| | FED. ROAD DIST. NO. | ILLINOIS | FED. AID PROJECT | | |

0970044.dgn 13-Jan-09 11:29:34

| F.A.S. RTE. | SECTION | COUNTY | TOTAL SHEETS | SHEET NO. |
|---|---|---|---|---|
| 815 | 09 CM BRIDGE REPAIR FY 09-1 | WHITE | 16 | 10 |
| FED. ROAD DIST. NO. 7 | ILLINOIS | CONTRACT NO. 78094 | | |

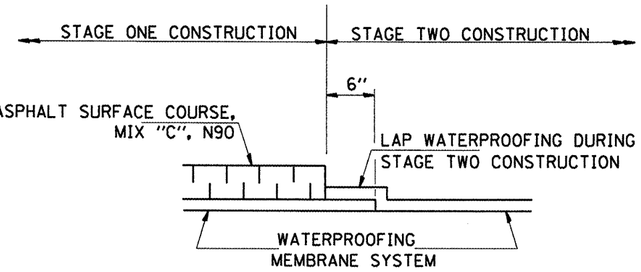
**STATE OF ILLINOIS**
**DEPARTMENT OF TRANSPORTATION**



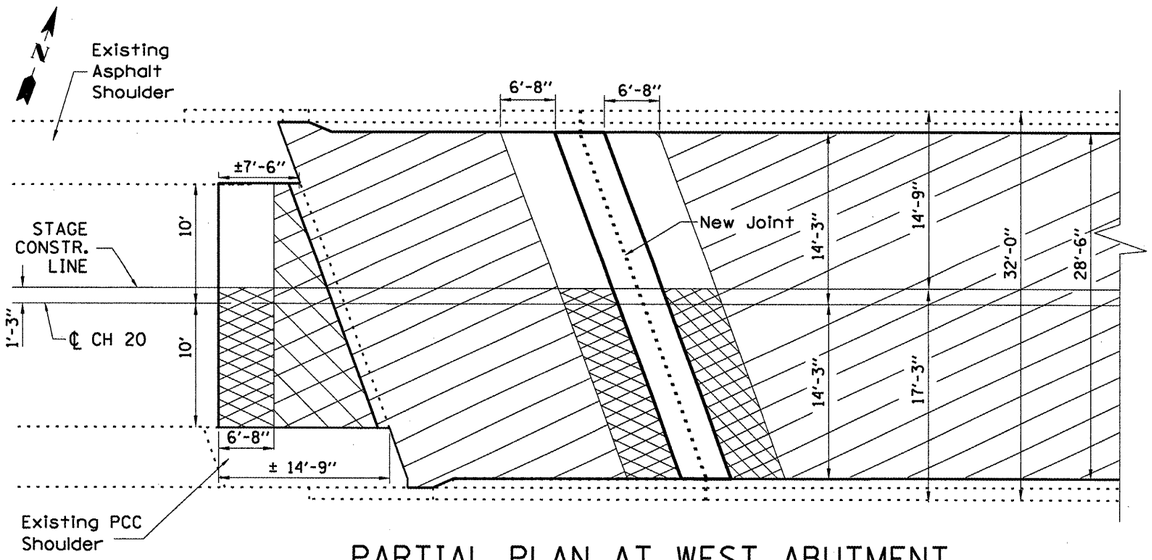

HOT-MIX ASPHALT SURFACE REMOVAL
HOT-MIX ASPHALT SURFACE COURSE, MIX "C", N90
BITUMINOUS MATERIALS, PRIME COAT
AGGREGATE (PRIME COAT)

HOT-MIX ASPHALT SURFACE REMOVAL
HOT-MIX ASPHALT SURFACE COURSE, MIX "C", N90
WATERPROOFING MEMBRANE SYSTEM

## PLAN SHOWING WEARING SURFACE



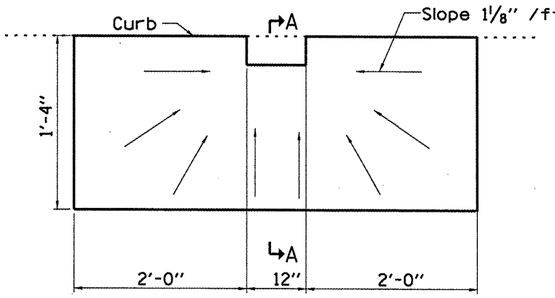

## WATERPROOFING TREATMENT AT STAGE CONSTRUCTION



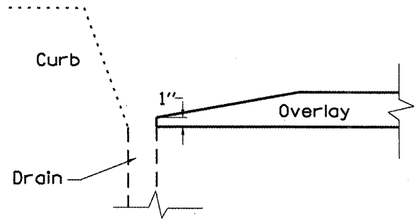

TEMPORARY RAMP

## PARTIAL PLAN AT WEST ABUTMENT

(SHOWING TEMPORARY RAMPS)
EAST ABUTMENT SIMILAR BY 180° ROTATION



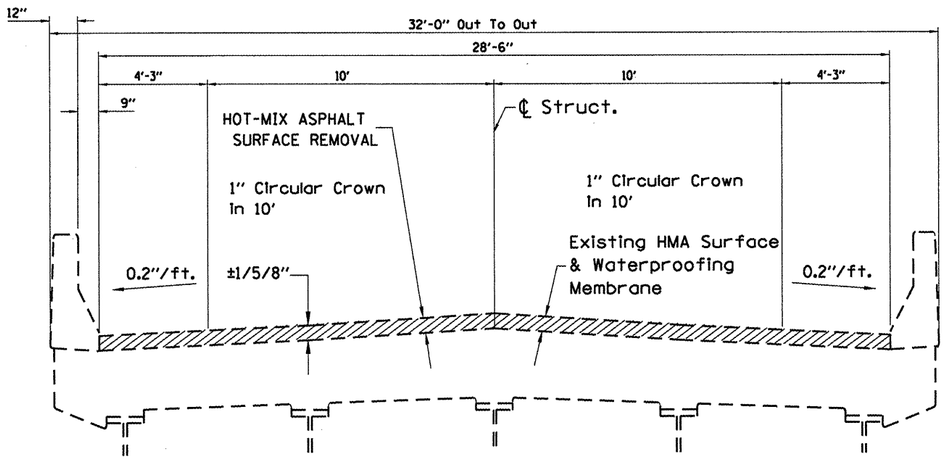

## OVERLAY TREATMENT AT DECK DRAIN LOCATION



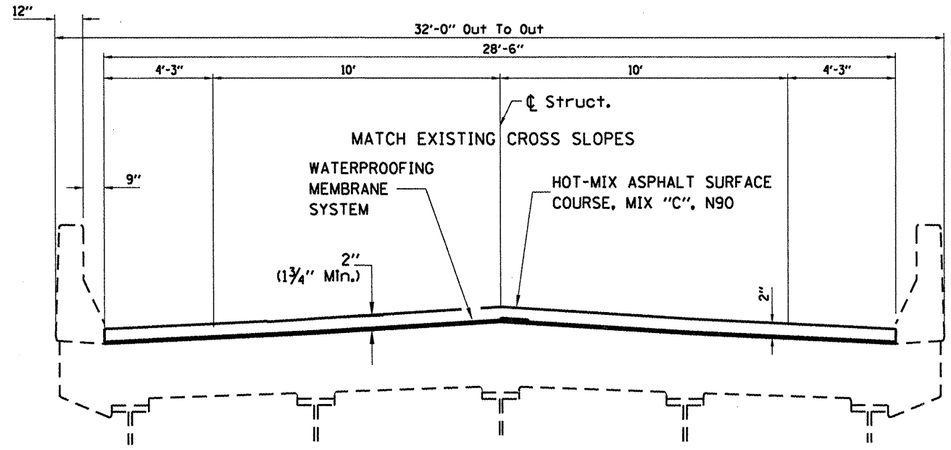

## SECTION A-A

| F.A.S. RTE. | SECTION | | COUNTY | TOTAL SHEETS | SHEET NO. |
|---|---|---|---|---|---|
| 815 | D9 CM BRIDGE REPAIR FY 09-1 | | WHITE | 16 | 11 |
| FED. ROAD DIST. NO. 7 | | ILLINOIS | CONTRACT NO. 78094 | | |

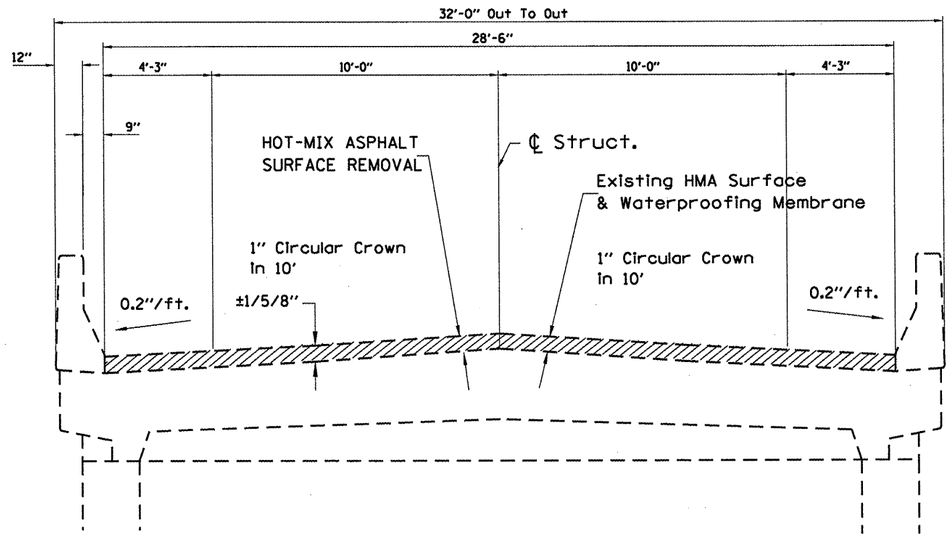
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



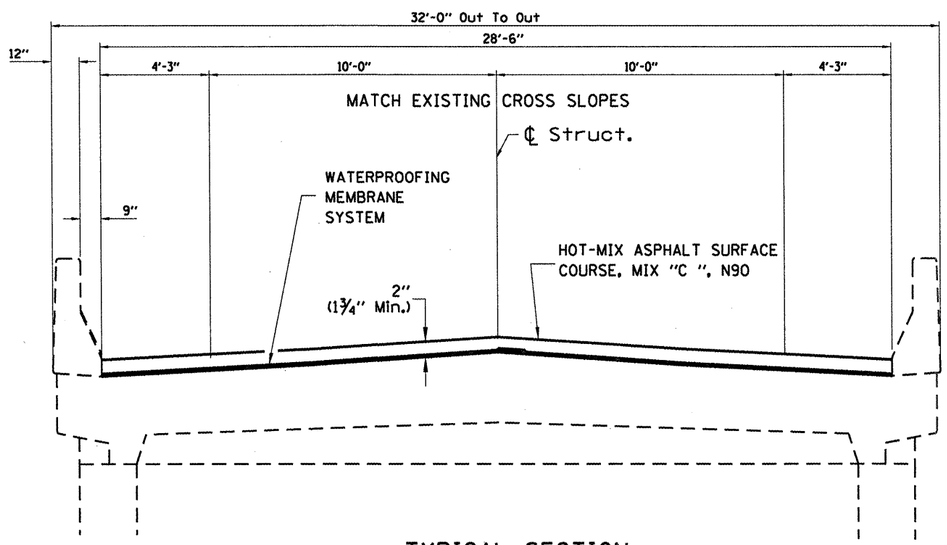

TYPICAL SECTION MID-SPAN
EXISTING BRIDGE DECK SURFACE




TYPICAL SECTION
PROPOSED BRIDGE DECK SURFACE



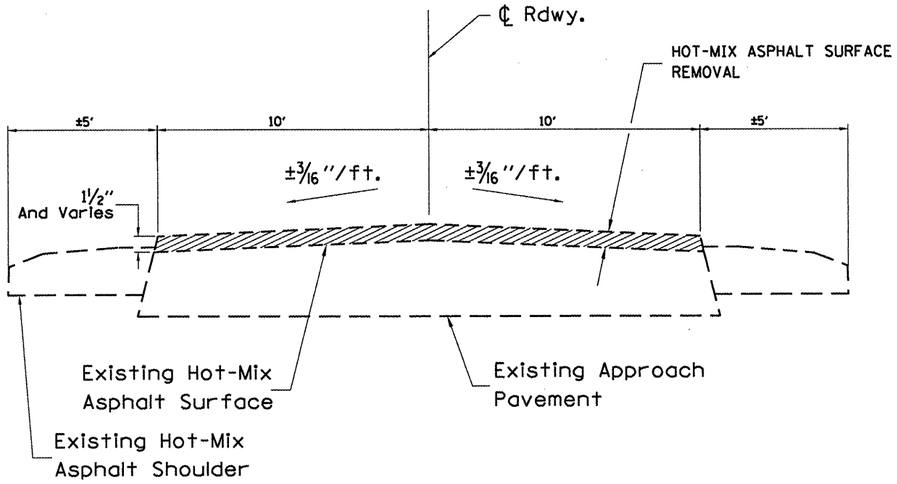

TYPICAL SECTION
EXISTING VAULTED ABUTMENT SURFACE



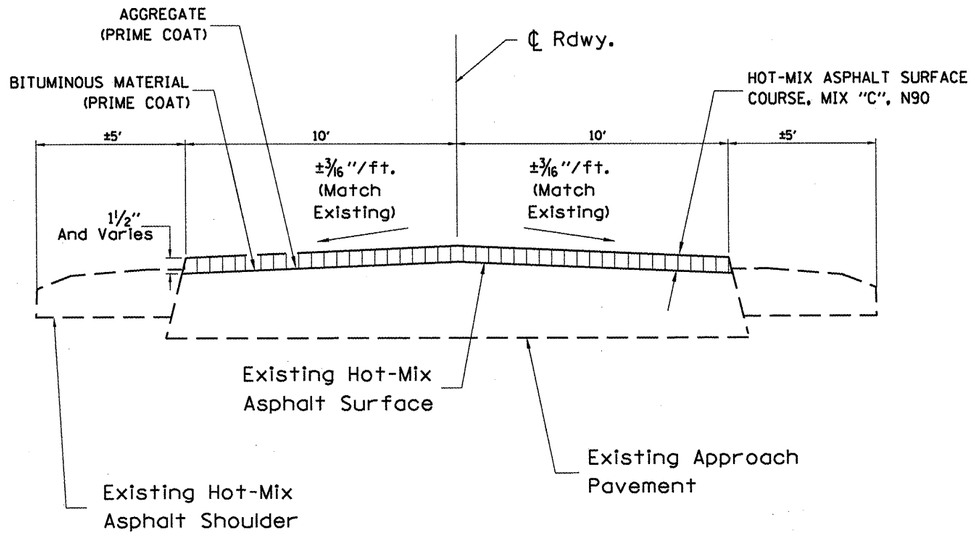

TYPICAL SECTION
PROPOSED VAULTED ABUTMENT SURFACE

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

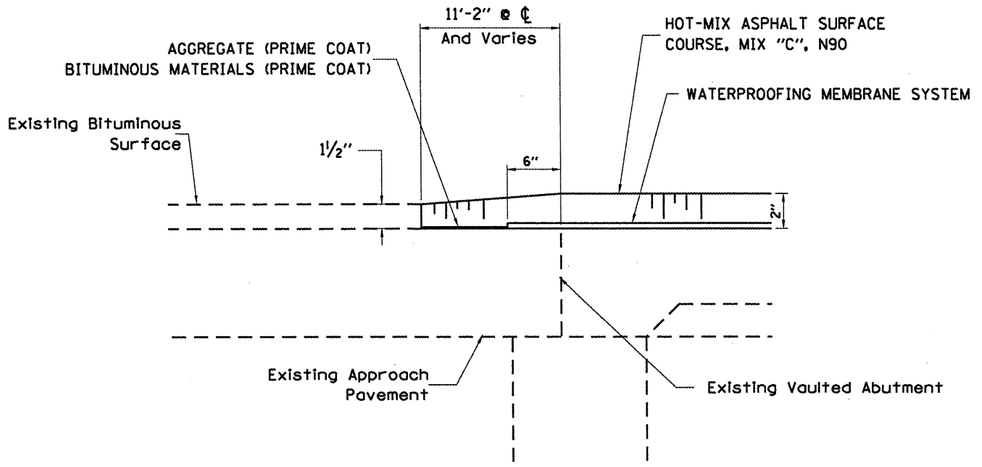
| F.A.S. RTE. | SECTION | COUNTY | TOTAL SHEETS | SHEET NO. |
|---|---|---|---|---|
| 815 | 09 CM BRIDGE REPAIR FY 09-1 | WHITE | 16 | 12 |
| FED. ROAD DIST. NO. 7 | ILLINOIS | CONTRACT NO. 78094 | | |




APPROACH PAVEMENT
EXISTING SURFACE



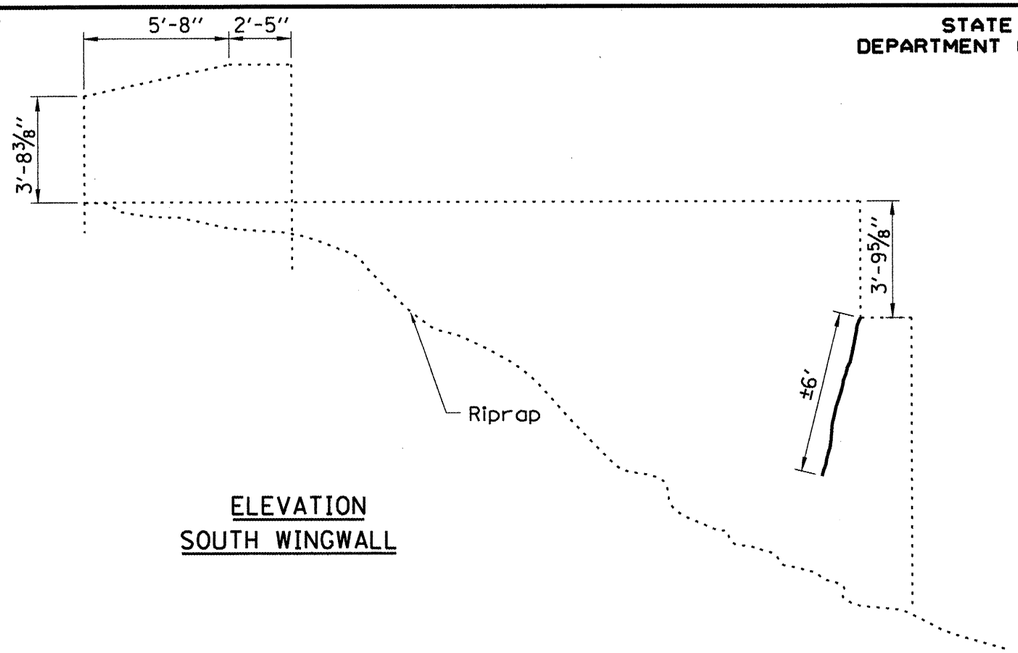

APPROACH PAVEMENT
PROPOSED SURFACE



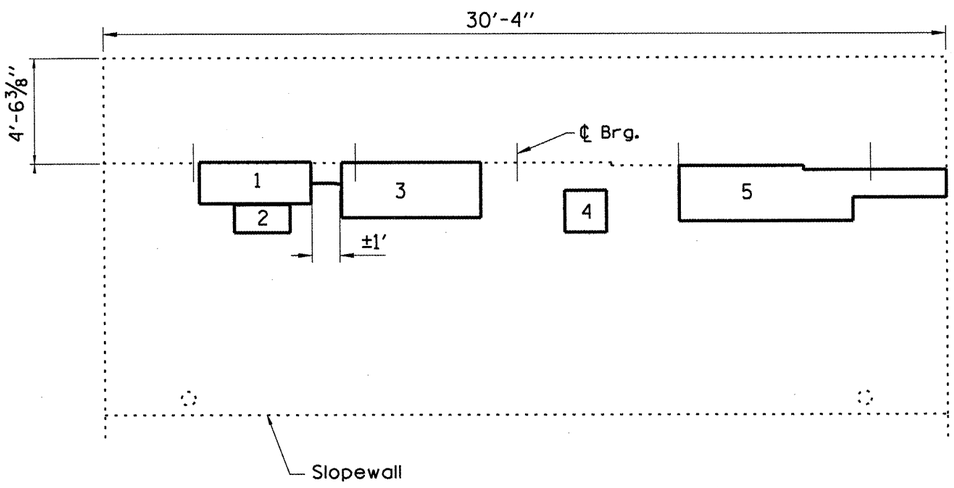

SECTION THRU ABUTMENT

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

| F.A.S. RTE. | SECTION | COUNTY | TOTAL SHEETS | SHEET NO. |
|---|---|---|---|---|
| 815 | D9 CM BRIDGE REPAIR FY 09-1 | WHITE | 16 | 13 |
| FED. ROAD DIST. NO. 7 | ILLINOIS | CONTRACT NO. 78094 | | |



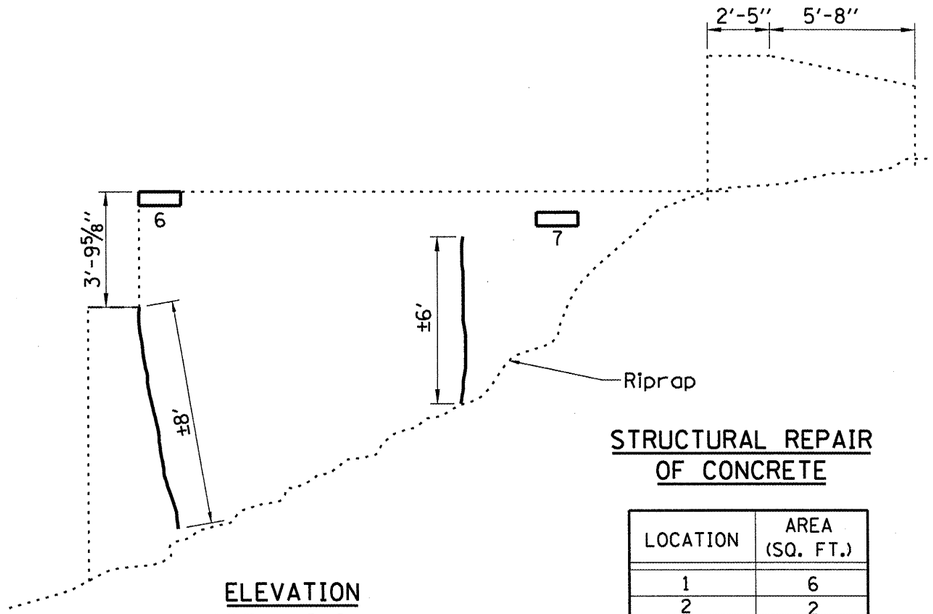

ELEVATION
SOUTH WINGWALL




WEST ABUTMENT
ELEVATION

STRUCTURAL REPAIR OF CONCRETE, DEPTH LESS THAN OR EQUAL TO 5"

EPOXY CRACK INJECTION




ELEVATION
NORTH WINGWALL

STRUCTURAL REPAIR
OF CONCRETE

| LOCATION | AREA (SQ. FT.) |
|---|---|
| 1 | 6 |
| 2 | 2 |
| 3 | 10 |
| 4 | 2.3 |
| 5 | 12.5 |
| 6 | 0.8 |
| 7 | 1 |
| TOTAL | 34.6 |

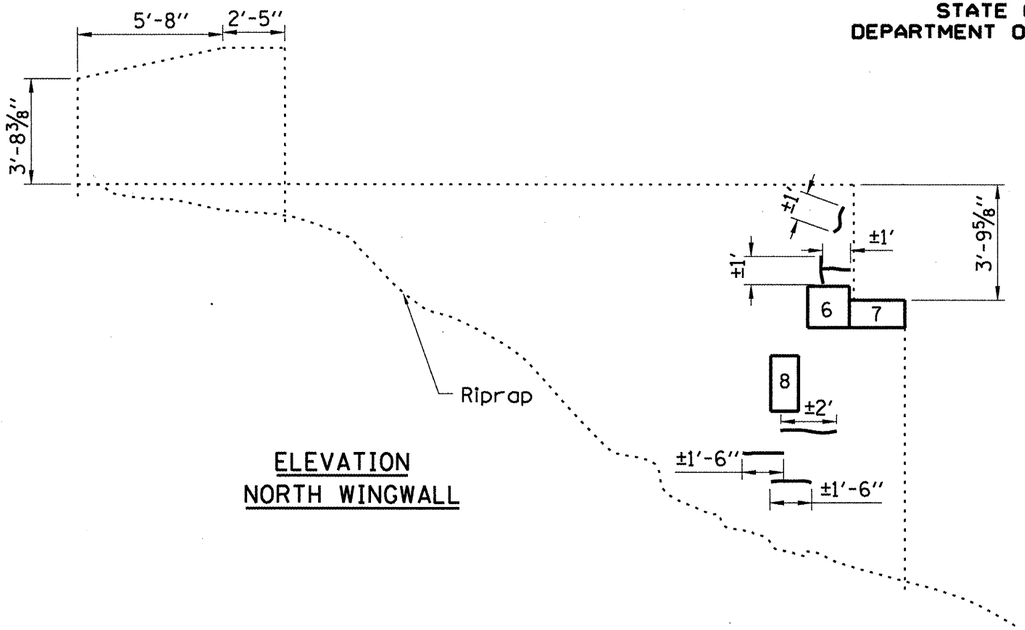
EPOXY CRACK INJECTION

| | |
|---|---|
| WEST ABUTMENT | 21 FOOT |

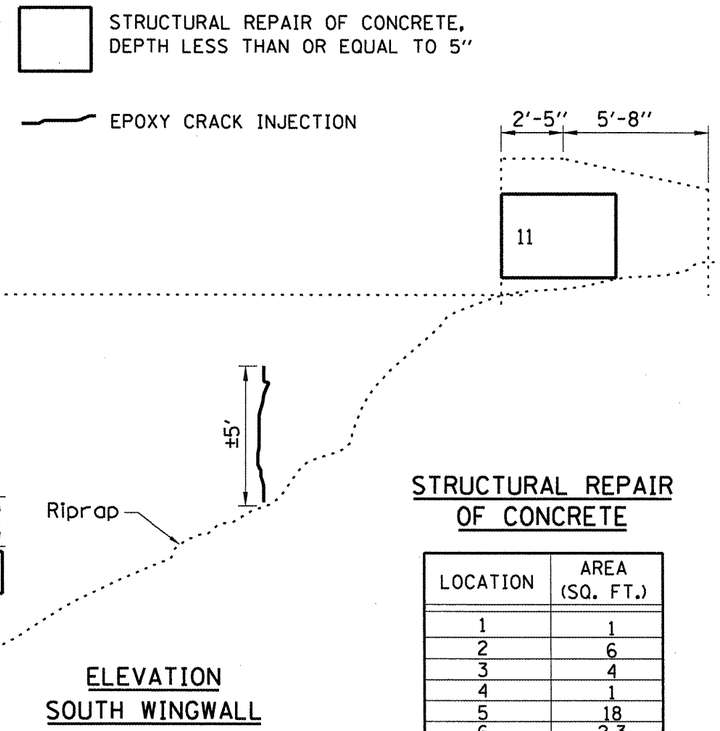
WEST ABUTMENT
CONCRETE REPAIR

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

| F.A.S. RTE. | SECTION | COUNTY | TOTAL SHEETS | SHEET NO. |
|---|---|---|---|---|
| 815 | D9 CM BRIDGE REPAIR FY 09-1 | WHITE | 16 | 14 |
| FED. ROAD DIST. NO. 7 | ILLINOIS | CONTRACT NO. 78094 | | |




ELEVATION
NORTH WINGWALL



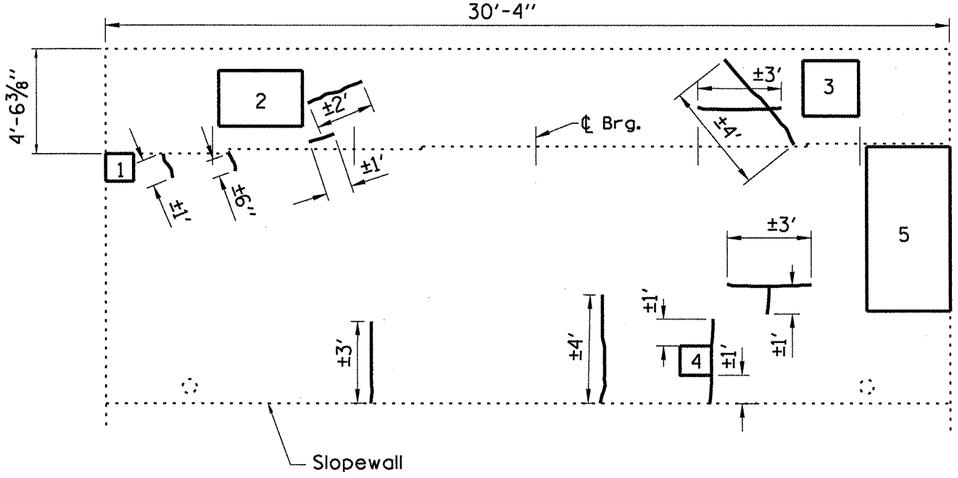

ELEVATION
SOUTH WINGWALL

STRUCTURAL REPAIR
OF CONCRETE

| LOCATION | AREA (SQ. FT.) |
|---|---|
| 1 | 1 |
| 2 | 6 |
| 3 | 4 |
| 4 | 1 |
| 5 | 18 |
| 6 | 2.3 |
| 7 | 2 |
| 8 | 2 |
| 9 | 3 |
| 10 | 4.5 |
| 11 | 18 |
| | |
| TOTAL | 61.8 |

EPOXY CRACK INJECTION

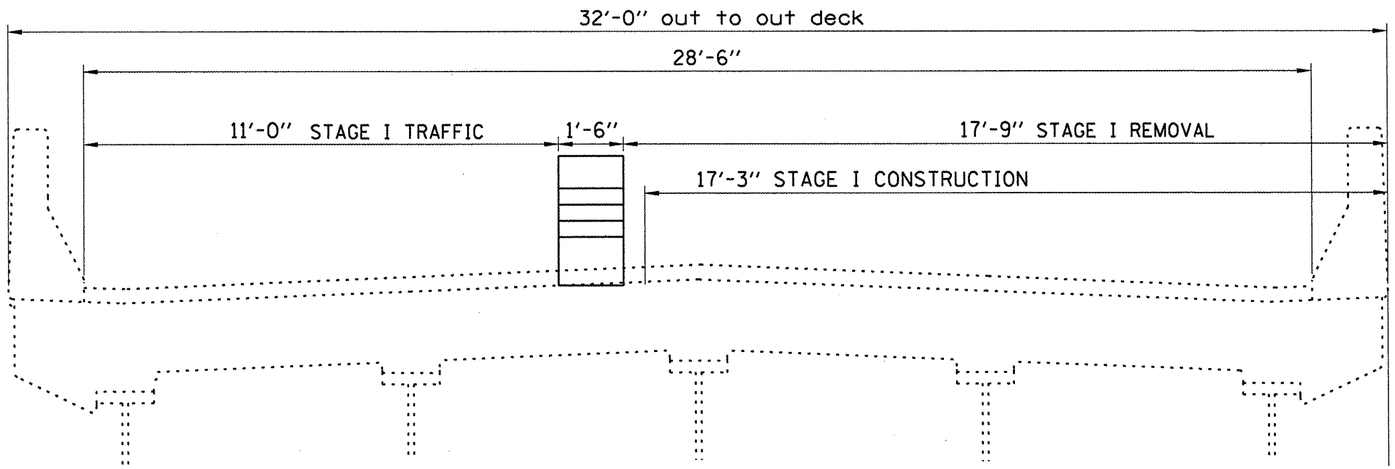
| | |
|---|---|
| EAST ABUTMENT | 36.5 FOOT |

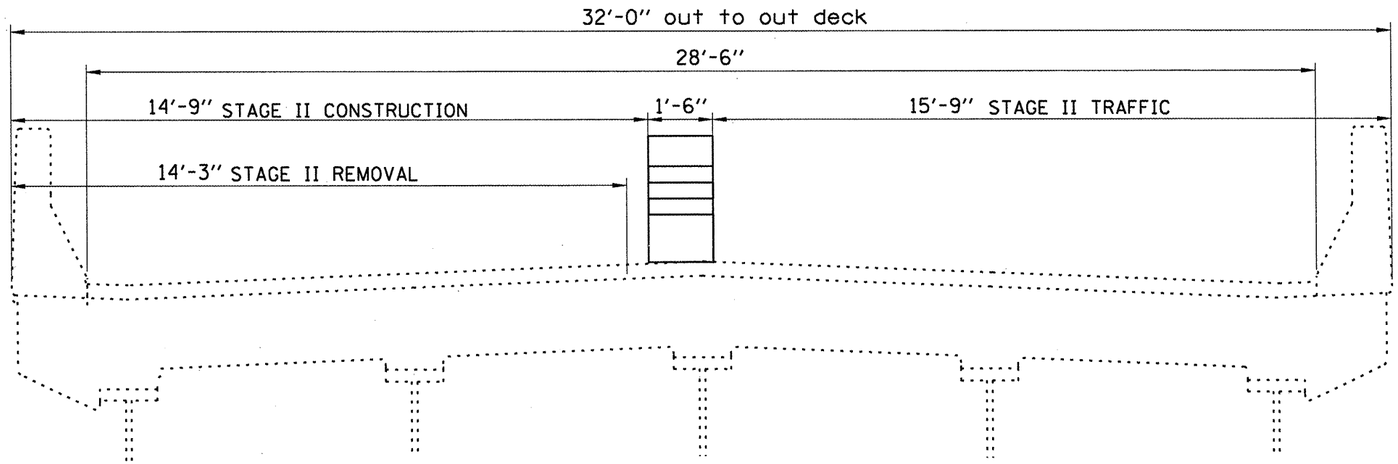



EAST ABUTMENT
ELEVATION

EAST ABUTMENT
CONCRETE REPAIR

| F.A.S. RTE. | SECTION | COUNTY | TOTAL SHEETS | SHEET NO. |
|---|---|---|---|---|
| 815 | 09 CM BRIDGE REPAIR FY 09-1 | WHITE | 16 | 15 |
| FED. ROAD DIST. NO. 7 | ILLINOIS | CONTRACT NO. 78094 | | |




## STAGES OF CONSTRUCTION

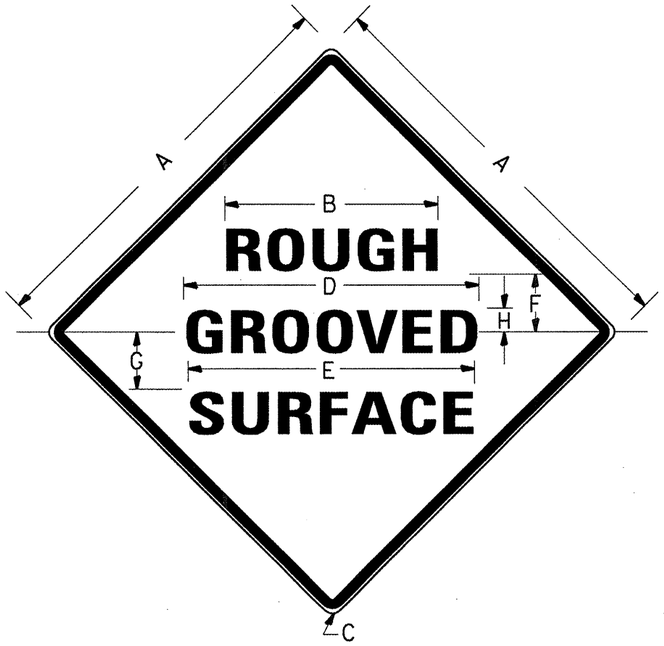
LOOKING WEST

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

| F.A.S. RTE. | SECTION | COUNTY | TOTAL SHEETS | SHEET NO. |
|---|---|---|---|---|
| 815 | D9 CM BRIDGE REPAIR FY 09-1 | WHITE | 16 | 16 |
| FED. ROAD DIST. NO. 7 | ILLINOIS | CONTRACT NO. 78094 | | |

# ILLINOIS STANDARD

W8-I106




## COLORS:

LEGEND AND BORDER- BLACK NON-REFLECTORIZED
BACKGROUND- ORANGE REFLECTORIZED

| SIGN SIZE | DIMENSIONS | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | G | H |
| 48X48 | 48.0 | 24.1 | 3.0 | 34.0 | 33.0 | 6.0 | 13.0 | 3.5 |

| SIGN SIZE | SERIES LINES | | | MAR-GIN | BOR-DER | BLANK STD. |
|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | | | |
| 48X48 | 7C | 7C | 7C | 0.8 | 1.2 | B4-48D |

ALL DIMENSIONS IN INCHES

## NOTES:

PRIOR TO ALLOWING TRAFFIC ON ANY PORTION OF THE ROADWAY THAT HAS BEEN COLDMILLED, THE CONTRACTOR SHALL HAVE ERECTED "ROUGH GROOVED SURFACE" SIGNS THAT CONFORM TO THE ABOVE DETAILS. A MINIMUM OF ONE SIGN AT EACH END OF THE IMPROVEMENT WILL BE REQUIRED. THE CONTRACTOR SHALL MAINTAIN THE "ROUGH GROOVED SURFACE" SIGNS UNTIL THE COLDMILLED SURFACE IS COVERED WITH LEVELING BINDER OR SURFACE COURSE.

IF AT ANY TIME THE SIGNS ARE IN PLACE BUT NOT APPLICABLE, THEY SHALL BE TURNED FROM THE VIEW OF MOTORISTS OR COVERED AS DIRECTED BY THE ENGINEER.

THE COST OF FURNISHING, ERECTING, MAINTAINING, AND REMOVING THE REQUIRED SIGNS SHALL BE INCLUDED IN THE CONTRACT.

| REVISIONS | |
|---|---|
| REDRAWN | 2-15-89 |
| REVISED | 4-6-93 |
| REVISED | 3-27-08 |
| REVISED | |

STD. 9-39