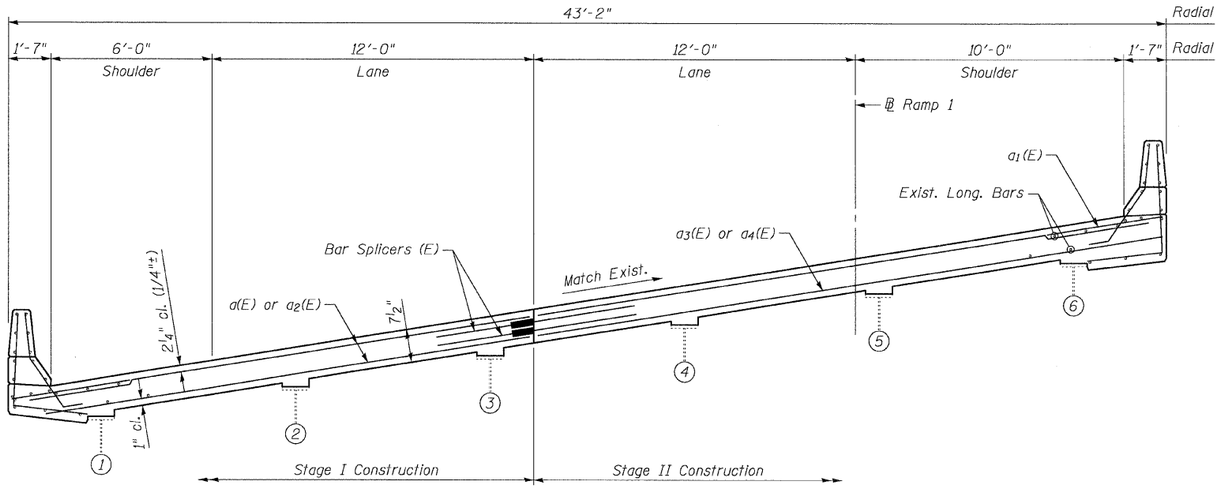
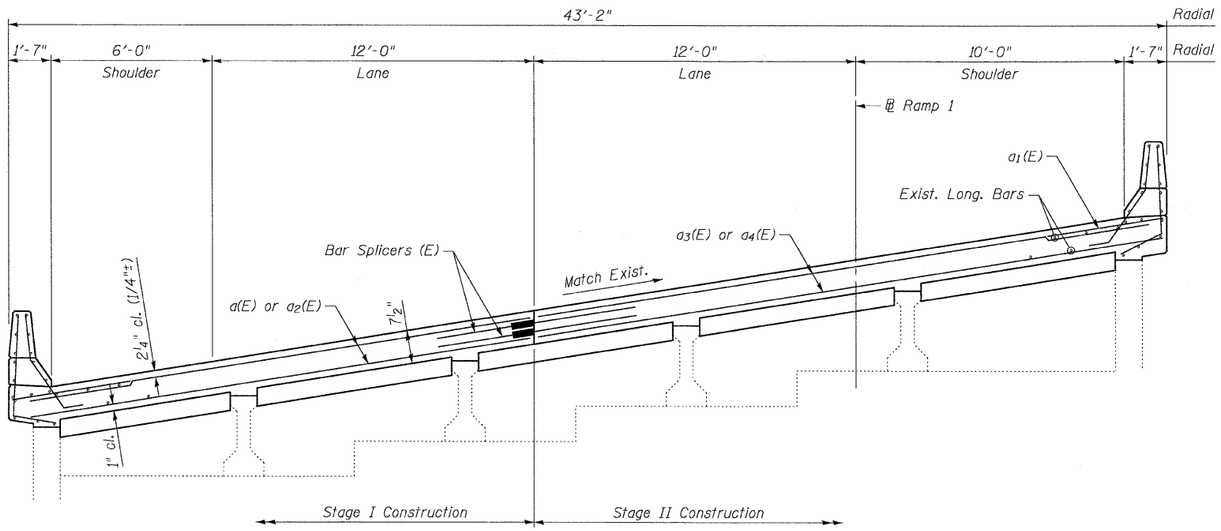


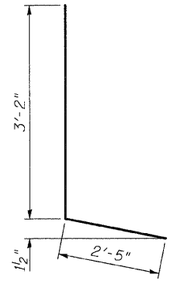
CROSS SECTION THRU SPANS 2 & 3 AT ABUTMENT

(Looking South)

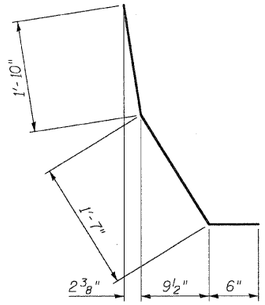


CROSS SECTION THRU SPANS 1 & 4 AT ABUTMENT

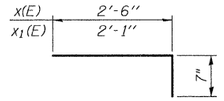
(Looking South)



BAR d(E)



BAR d_1(E)



BAR x(E) & x_1(E)

BILL OF MATERIAL

Bar	No.	Size	Length	Shape
d(E)	24	#7	23'-11"	——
a_1(E)	28	#6	4'-0"	——
a_2(E)	24	#6	20'-2"	——
a_3(E)	24	#6	24'-8"	——
a_4(E)	24	#7	28'-8"	——
d(E)	37	#4	5'-7"	⌟
d_1(E)	37	#5	3'-11"	⌡
x(E)	41	#5	3'-1"	⌐
x_1(E)	41	#5	2'-8"	⌐
Reinforcement Bars, Epoxy Coated			Pound	4900
Concrete Superstructure			Cu. Yd.	23.5
Bar Splicers			Each	48

SUPERSTRUCTURE DETAILS
STRUCTURE NO. 060-0205

Coombe-Bloxdorf P.C.
-CIVIL ENGINEERS-
-STRUCTURAL ENGINEERS-
-LAND SURVEYORS-
Design Firm License No. 184-002703

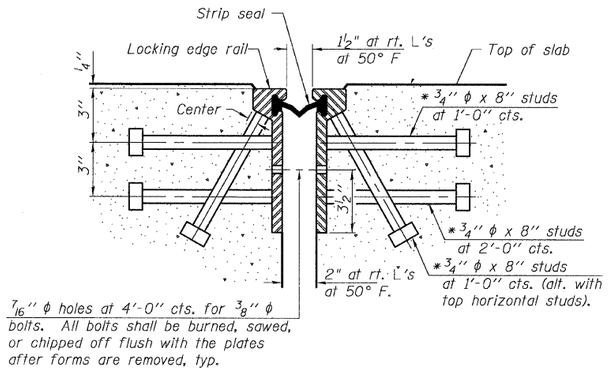
PROJECT NO. 05027-13
SCALE
DATE 4/24/09
DESIGN BY MCB
DRAWN BY CFC
CHECKED BY MCB

SHEET NO. 5
9 SHEETS

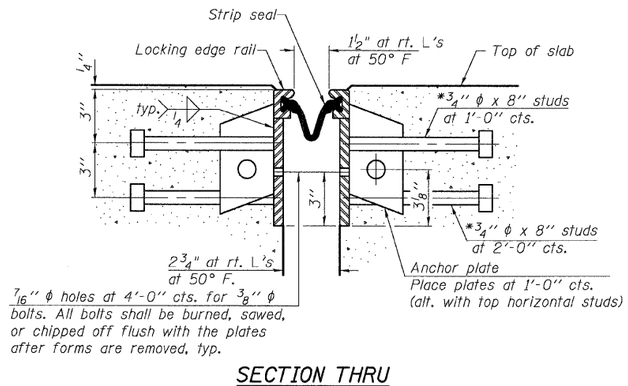
F.A.I RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
70	60-(5,6,7)RS, 60-(6,7)BR	MADISON	185	101
		CONTRACT NO. 76C56		
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

PLOT DATE = 09/14/2009
FILE NAME = ...\060205-76c56-005-superstructure-details-2.dgn
PLOT SCALE = 217.999543 '/" / IN.
USER NAME = CFC.

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



SECTION THRU ROLLED RAIL JOINT



SECTION THRU WELDED RAIL JOINT

Notes:

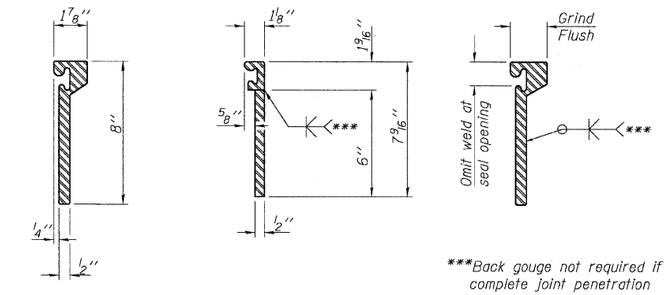
The strip seal shall be made continuous and shall have a minimum thickness of ¼". The configuration of the strip seal shall match the configuration of the Locking Edge Rails. Open or "webbed" strip seal gland configurations are not permitted. The gland shall be sized for a maximum rated movement of 4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



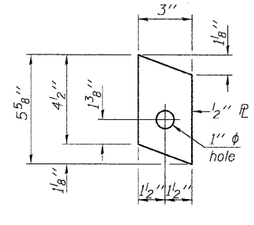
ROLLED EXTRUDED RAIL

WELDED RAIL

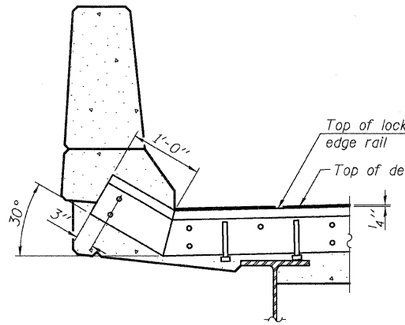
***Back gouge not required if complete joint penetration is verified by mock-up.

LOCKING EDGE RAIL SPLICE

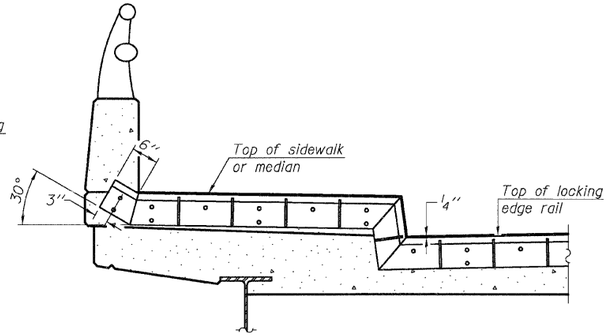
The inside of the locking edge rail groove shall be free of weld residue.



ANCHOR ℄ (for welded rail)



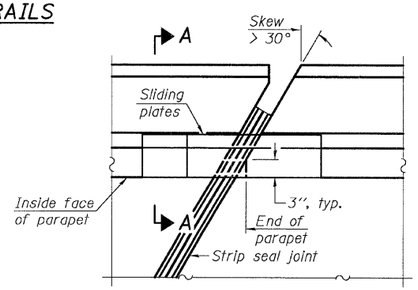
AT PARAPET



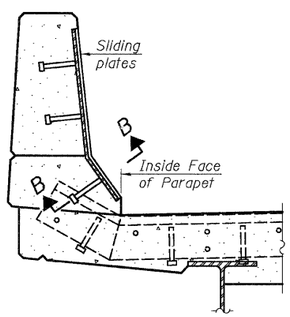
AT SIDEWALK OR MEDIAN

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 RAILS



PLAN

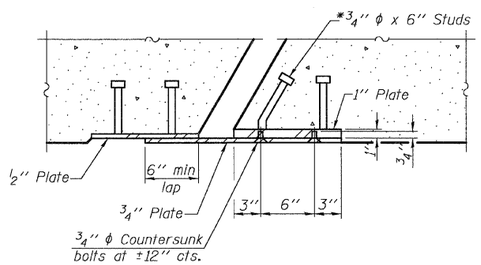


SECTION A-A

POINT BLOCK DETAILS

(for skews > 30°)

TYPICAL END TREATMENTS



SECTION B-B

BILL OF MATERIAL

Item	Unit	Total
Preformed Joint Strip Seal	Foot	99

PREFORMED JOINT STRIP SEAL STRUCTURE NO. 060-0205

Coombe-Bloxdorf P.C.
-CIVIL ENGINEERS-
-STRUCTURAL ENGINEERS-
-LAND SURVEYORS-
Design Firm License No. 184-002703

PROJECT NO. 05027-13
SCALE
DATE 4/24/09
DESIGN BY
DRAWN BY
CHECKED BY MCB

SHEET NO. 6
9 SHEETS

F.A.I RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
70	60-(5,6,7)RS, 60-(6,7)BR	MADISON	185	102
		CONTRACT NO. 76C56		
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

EJ-SSJ 10-1-08

PLOT DATE = 09/14/2009
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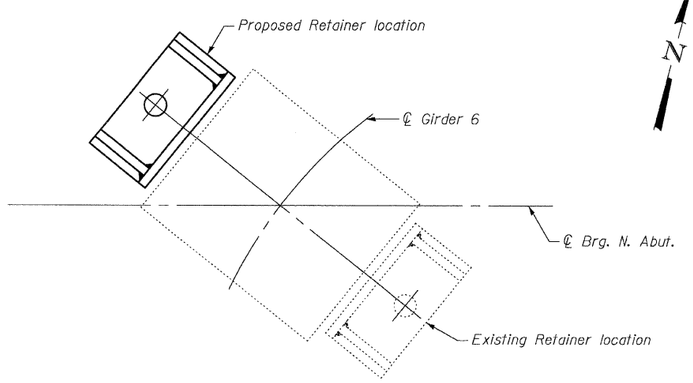
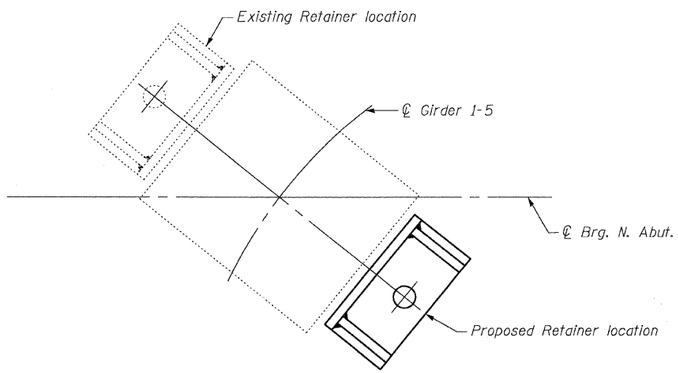
USER NAME = CFC_



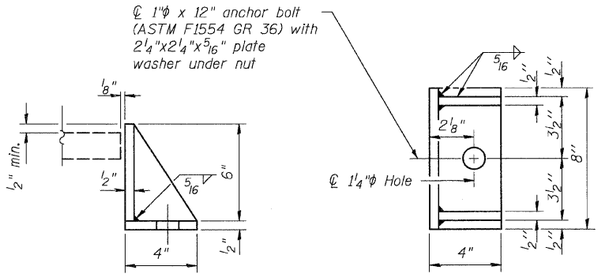
NORTH ABUTMENT RETAINER LAYOUT DETAIL

Plan at Girder 6



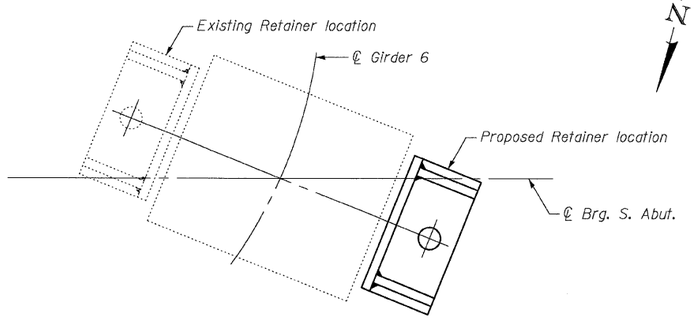
NORTH ABUTMENT RETAINER LAYOUT DETAIL

Plan at Girders 1-5



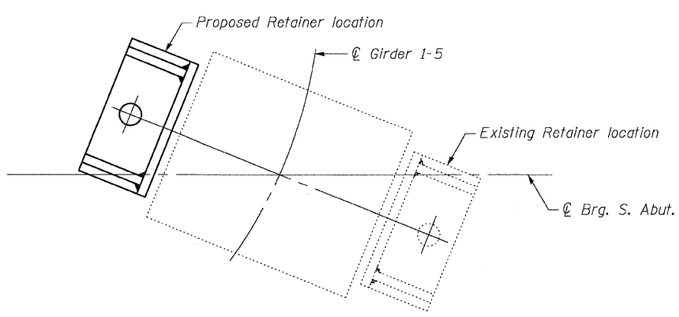
SIDE RETAINER DETAILS

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



SOUTH ABUTMENT RETAINER LAYOUT DETAIL

Plan at Girder 6



SOUTH ABUTMENT RETAINER LAYOUT DETAIL

Plan at Girders 1-5

BILL OF MATERIAL

Item	Unit	Total
Furnishing and Erecting Structural Steel	Pound	175
Anchor Bolts, 1" ϕ	Each	12

Note:
Structural Steel for retainer angles shall be AASHTO M270, Grade 36

SIDE RETAINER DETAILS
STRUCTURE NO. 060-0205

Coombe-Bloxdorf P.C.
-CIVIL ENGINEERS-
-STRUCTURAL ENGINEERS-
-LAND SURVEYORS-
Design Firm License No. 184-002703

PROJECT NO. 05027-13
SCALE
DATE 4/24/09
DESIGN BY MCB
DRAWN BY CFC
CHECKED BY MCB

SHEET NO. 7
9 SHEETS

F.A.I RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
70	60-(5,6,7)RS, 60-(6,7)BR	MADISON	185	103
		CONTRACT NO. 76C56		
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

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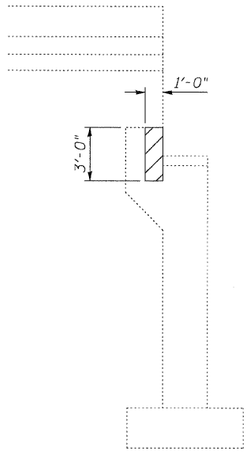
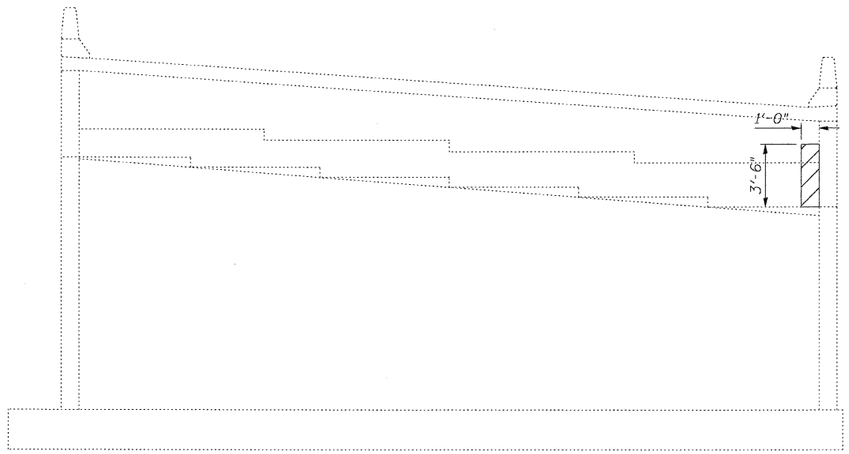
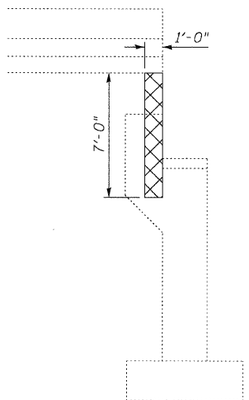


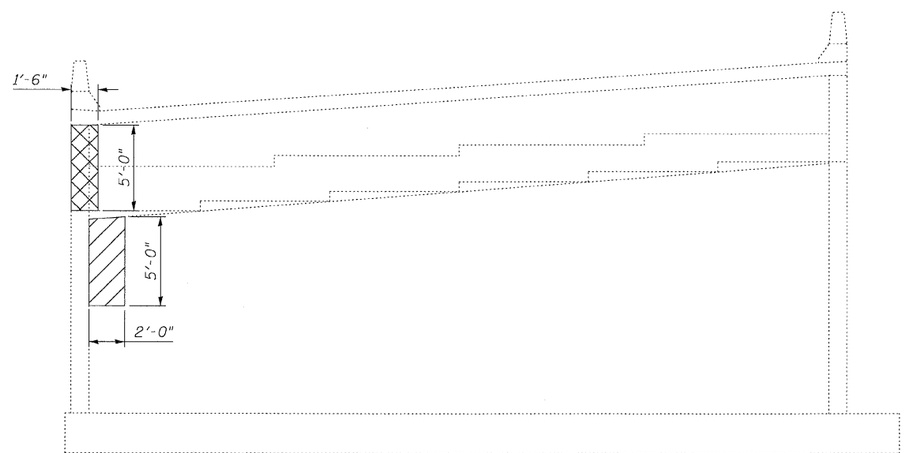
WEST END VIEW
NORTH ABUTMENT



NORTH ABUTMENT ELEVATION
(Looking North)



EAST END VIEW
SOUTH ABUTMENT



SOUTH ABUTMENT ELEVATION
(Looking South)

BILL OF MATERIAL
TWO ABUTMENTS

Structural Repair of Concrete (Depth Equal to or Less Than 5 In.)	Sq. Ft.	17
Structural Repair of Concrete (Depth Greater Than 5 In.)	Sq. Ft.	15

LEGEND

Denotes Structural Repair of Concrete (Depth Equal to or Less Than 5")

Denotes Structural Repair of Concrete (Depth Greater Than 5")

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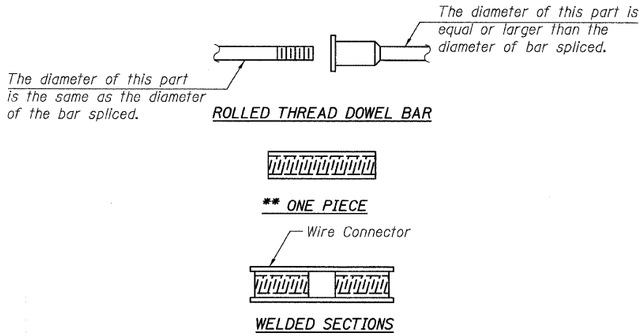
ABUTMENT REPAIR DETAILS
STRUCTURE NO. 060-0205

Coombe-Bloxdorf P.C.
-CIVIL ENGINEERS-
-STRUCTURAL ENGINEERS-
-LAND SURVEYORS-
Design Firm License No. 184-002703

PROJECT NO. 05027-13
SCALE
DATE 4/24/09
DESIGN BY MCB
DRAWN BY CFC
CHECKED BY MCB

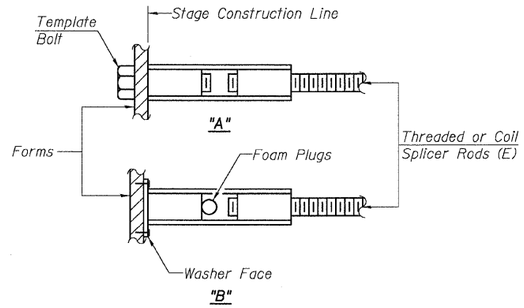
SHEET NO. 8
9 SHEETS

F.A.I RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
70	60-(5,6,7)RS, 60-(6,7)BR	MADISON	185	104
		CONTRACT NO. 76C56		
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		



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.

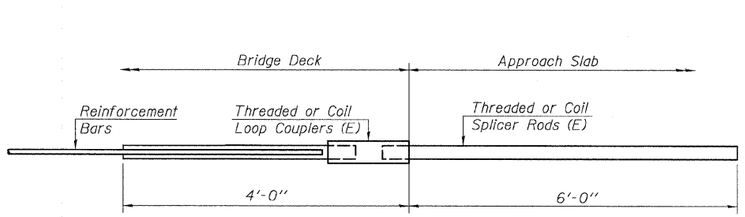
Other systems of similar design may be submitted to the Engineer for approval. Approval shall be based on certified test results from an approved testing laboratory that the proposed bar splicer assembly satisfies the following requirements:

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

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

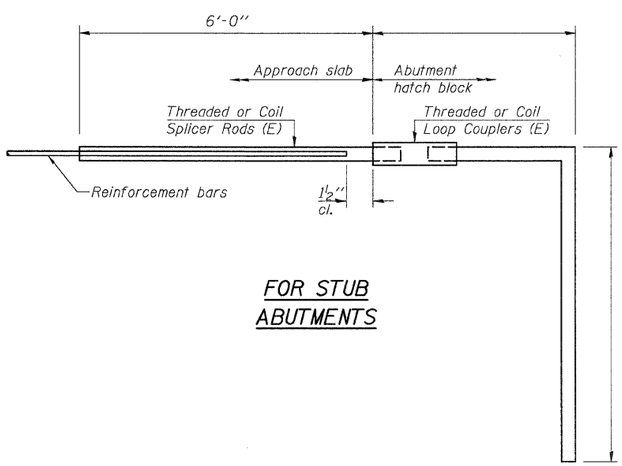
Where f_y = Yield strength of lapped reinforcement bars in ksi.
A_t = Tensile stress area of lapped reinforcement bars.
* = 28 day concrete

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'-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



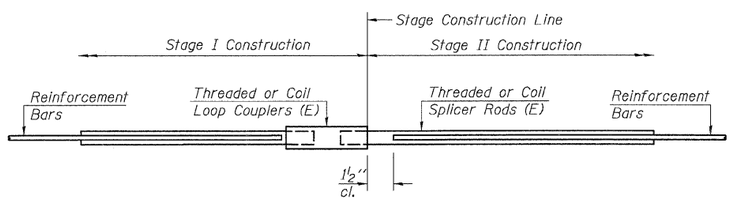
FOR INTEGRAL OR SEMI-INTEGRAL ABUTMENTS

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 =



STANDARD

Bar Size	No. Assemblies Required	Location
#6	24	South Abutment
#7	24	North Abutment

BAR SPLICER ASSEMBLY DETAILS
STRUCTURE NO. 060-0205

Coombe-Bloxdorf P.C.
-CIVIL ENGINEERS-
-STRUCTURAL ENGINEERS-
-LAND SURVEYORS-
Design Firm License No. 184-002703

PROJECT NO. 05027-13
SCALE
DATE 4/23/09
DESIGN BY
DRAWN BY
CHECKED BY MCB

SHEET NO. 9
9 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
70	60-(5,6)RS, 60-(6,7)BR	MADISON	185	105
		CONTRACT NO. 76C56		
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		

BSD-1

10-1-08

PLOT DATE = 08/14/2009
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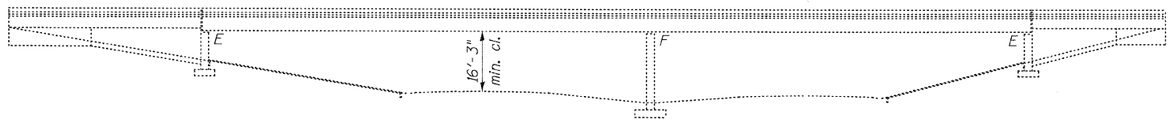
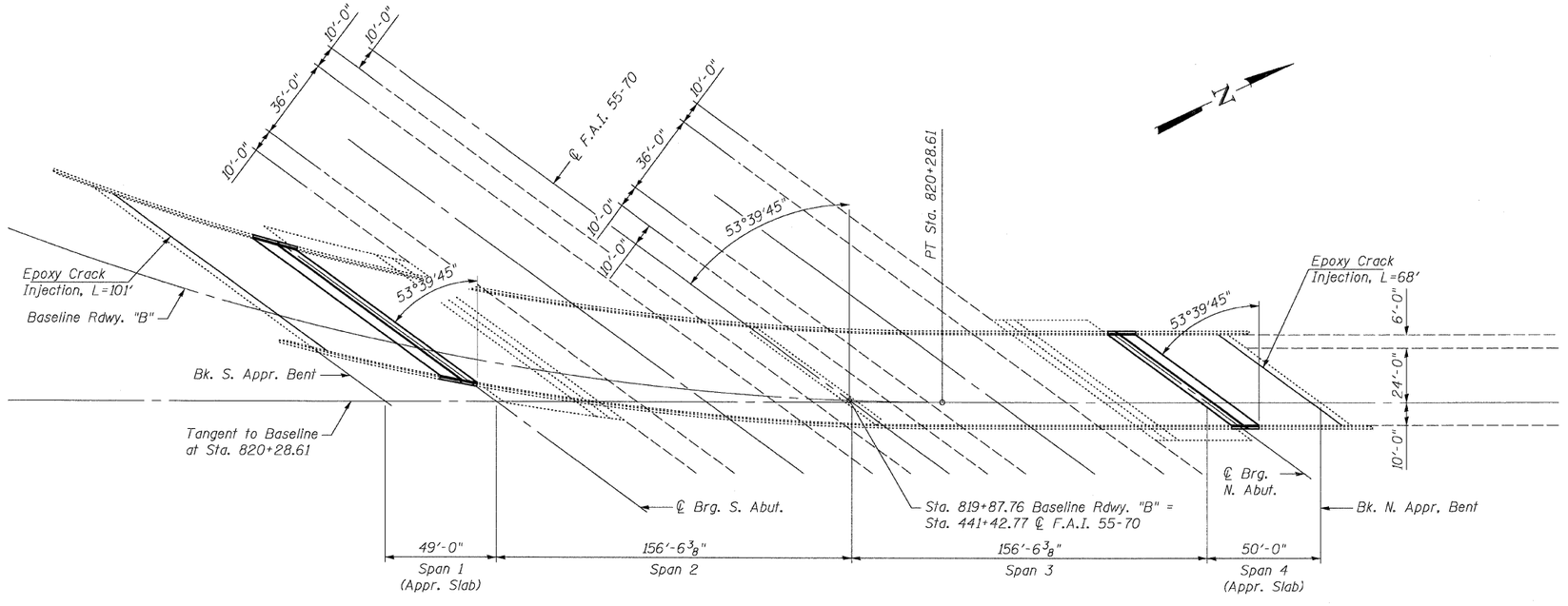
PLOT SCALE = 0x0.399986 '/' / IN.
USER NAME = CFC_

SCOPE OF WORK

1) Replace expansion joints
2) Seal joint between approach pavement & approach slab
3) Bridge washing on decks, parapets and abutment seats
4) Seal deck and parapets with concrete sealer
5) Seal abutment seats with concrete sealer
6) Install new anchor bolts, retainer and bumper angles at pier bearings



ELEVATION

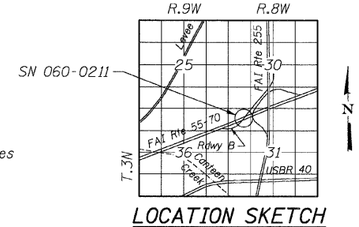


PLAN

INDEX OF SHEETS

DESIGN SPECIFICATIONS

1995 Seismic Retrofitting Manual for Highway Bridges



LOCATION SKETCH

GENERAL NOTES

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, 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 $\frac{1}{4}$ 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.

Bridge washing shall be performed on the deck, parapets and abutment seats according to Article 592.00 of the Standard Specifications.

Concrete Sealer shall be applied to the abutment seats.

Concrete Sealer shall also be applied to the surfaces of the bridge deck and parapets including wings. See Special Provision for "Bridge Deck Concrete Sealer".

New structural steel shall be cleaned and painted according to the special provision for "Cleaning and Painting New Metal Structures". New structural steel shall be fully shop painted with the Organic Zinc Rich Primer/Epoxy/Urethane paint system, final finish coat shall be Gray, Munsell No. 5B/7/1.

The concrete for bridge decks finished according to Article 503.16(a) of the Standard Specifications shall be placed and compacted parallel to the skew in uniform increments along centerline of bridge. The machine used for finishing shall be set parallel to the skew for striking off and screeding the concrete.

All new fasteners shall be AASHTO M 164 Type 1, mechanically galvanized bolts. Holes shall be subpunched or subdrilled $\frac{13}{16}$"ϕ and reamed in the field to $\frac{15}{16}$"ϕ for $\frac{7}{8}$"ϕ bolts, unless otherwised noted.

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

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

TOTAL BILL OF MATERIAL

ITEM	UNIT	SUPER	SUB	TOTAL
Concrete Removal	Cu. Yd.	46.4		46.4
Concrete Superstructure	Cu. Yd.	46.6		46.6
Reinforcement Bars, Epoxy Coated	Pound	8310		8310
Bar Splicers	Each	37		37
Preformed Joint Strip Seal	Foot	70		70
Neoprene Expansion Joint 2"	Foot	105		105
Concrete Sealer	Sq. Ft.	26692	543	27235
Bridge Washing No. 5	Each			1
Furnishing & Erecting Structural Steel	Pound	1412		1412
Anchor Bolts, $1\frac{1}{4}$" dia.	Each		24	24
Epoxy Crack Injection	Foot	169		169

LICENSED STRUCTURAL ENGINEER
MARY COOMBE BLOXDORF
4859
SPRINGFIELD
STATE OF ILLINOIS

ILLINOIS STRUCTURAL NO. 4859
EXPIRES 11/30/10
DATE: 9/14/09

GENERAL PLAN
F.A.I. RTE. 255 ROADWAY B OVER F.A.I. RTE. 55-70
STATION 819+87.76
STRUCTURE NO. 060-0211

Coombe-Bloxdorf P.C.
-CIVIL ENGINEERS-
-STRUCTURAL ENGINEERS-
-LAND SURVEYORS-
Design Firm License No. 184-002703

PROJECT NO. 05027-13
SCALE
DATE 4/24/09
DESIGN BY MCB
DRAWN BY CFC
CHECKED BY MCB

SHEET NO. 1
9 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
70	60-(5,6,7)RS, 60-(6,7)BR	MADISON	185	106
		CONTRACT NO. 76C56		
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		

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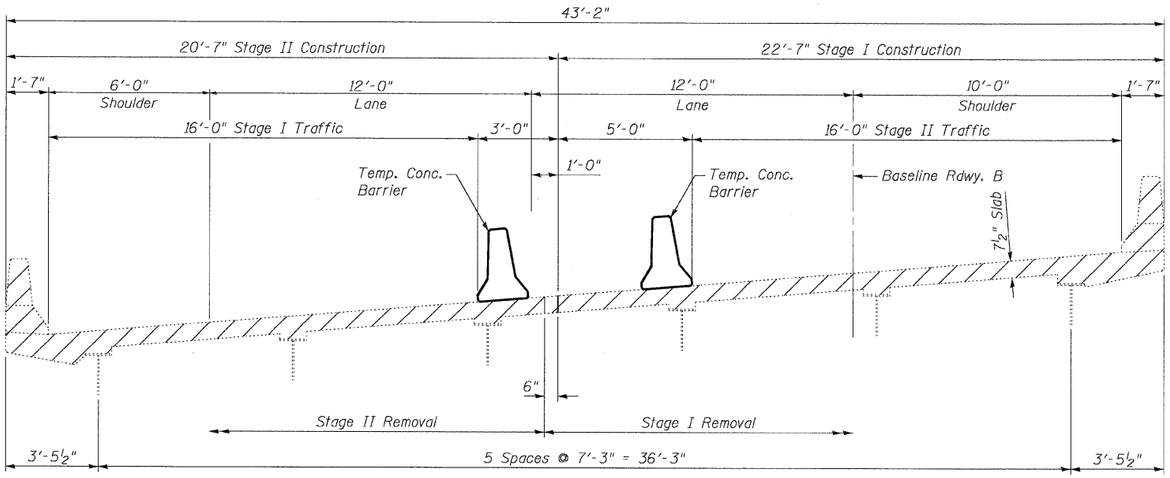
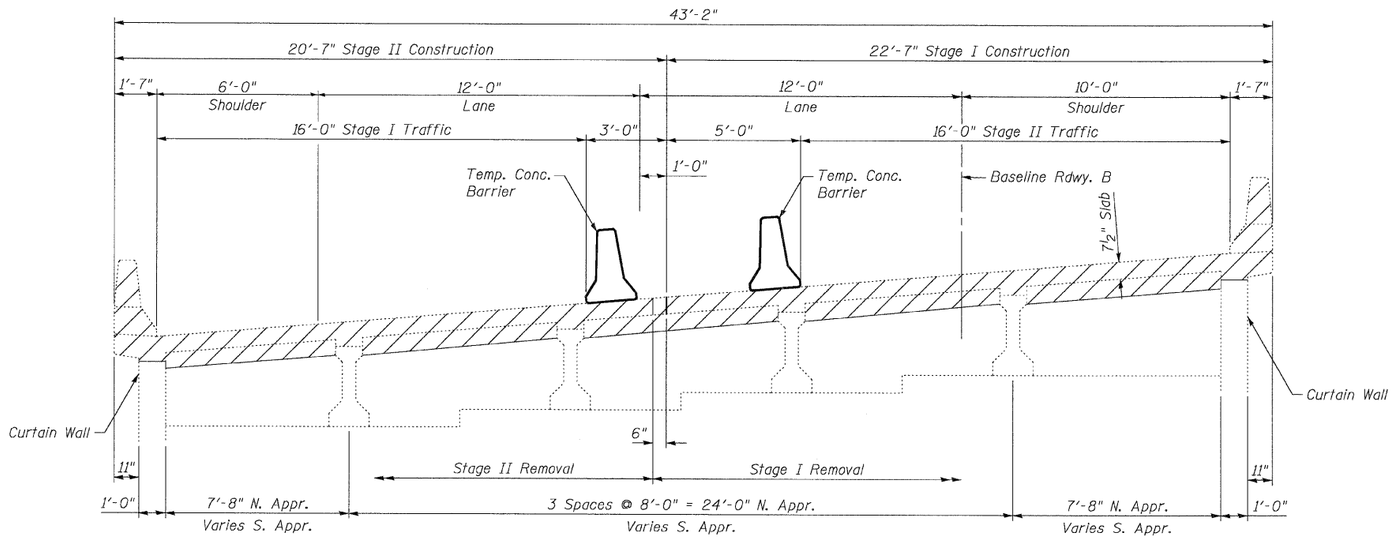


CROSS SECTION THRU SPANS 2 & 3 AT ABUTMENT

(Looking North)



CROSS SECTION THRU SPANS 1 & 4 AT ABUTMENT

(Looking North)

Notes:
All cross section dimensions are radial at horizontal curve.
Hatched areas indicate Concrete Removal.
See roadway plans for Temporary Concrete Barrier details.

STAGE CONSTRUCTION & DETAILS
STRUCTURE NO. 060-0211

Coombe-Bloxdorf P.C.
-CIVIL ENGINEERS-
-STRUCTURAL ENGINEERS-
-LAND SURVEYORS-
Design Firm License No. 184-002703

PROJECT NO.	05027-13
SCALE	
DATE	4/24/09
DESIGN BY	MCB
DRAWN BY	CFC
CHECKED BY	MCB

SHEET NO. 2
9 SHEETS

F.A.I RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
70	60-(5,6,7)RS, 60-(6,7)BR	MADISON	185	107
		CONTRACT NO. 76C56		
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

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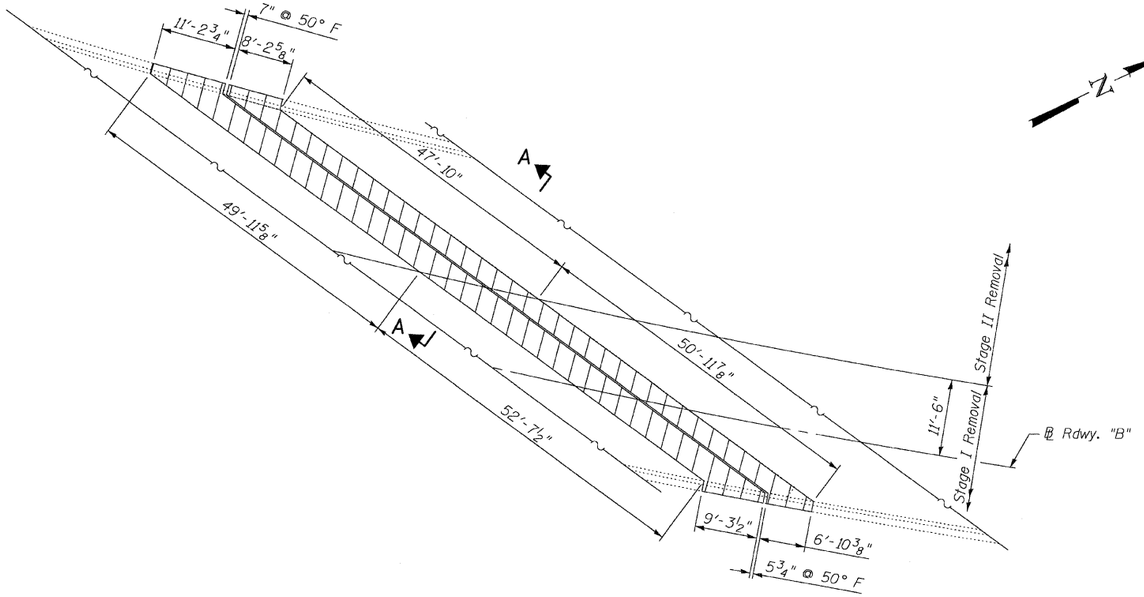
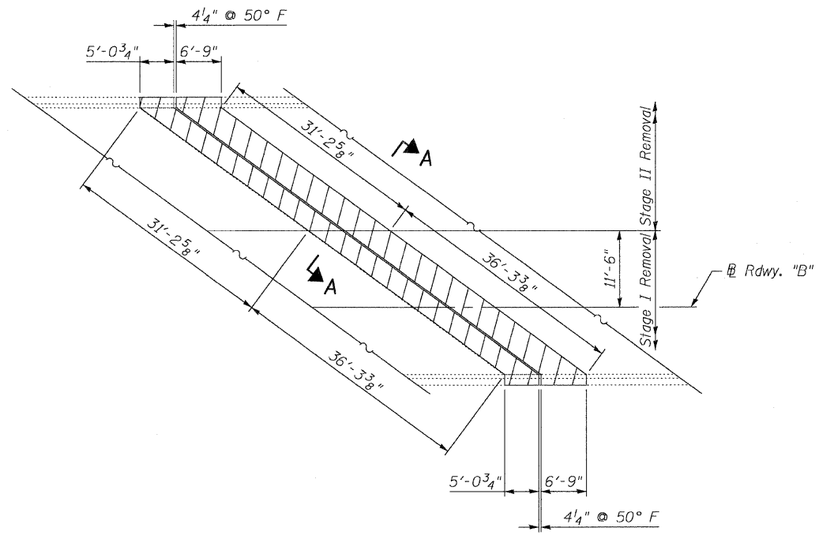
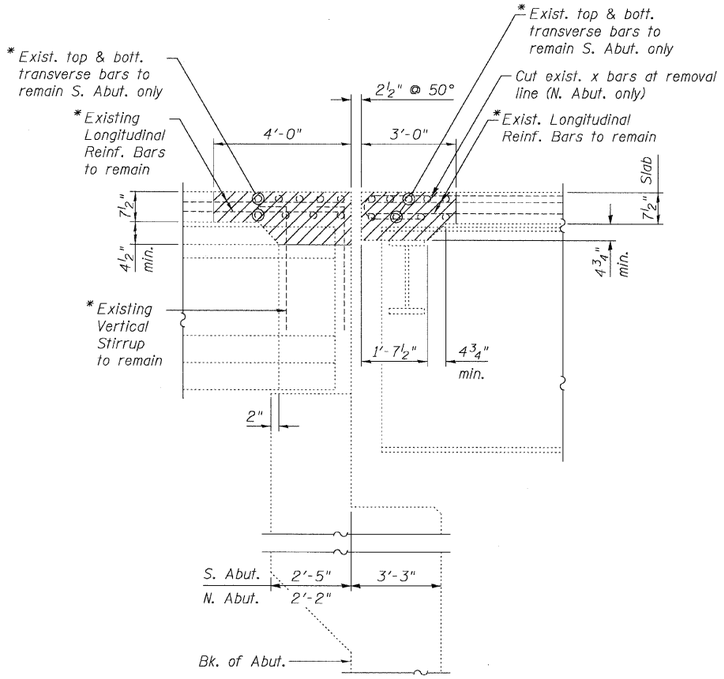
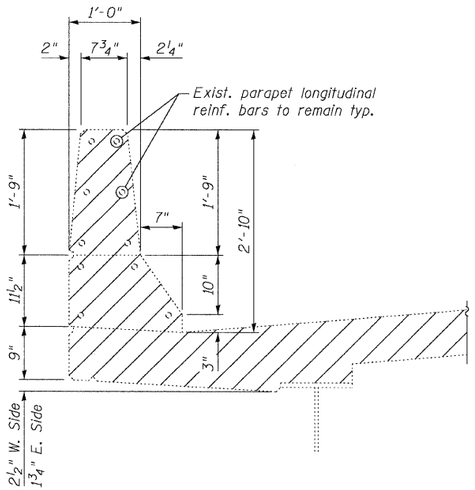




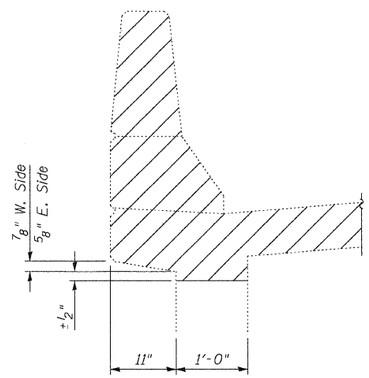
PLAN
(Showing concrete removal)



SECTION A-A
(Dim at right angles)



SECTION THRU PARAPET
(Spans 2 & 3; Spans 1 & 4 Similar except as shown in Detail A)



DETAIL A
(Spans 1 & 4)

BILL OF MATERIAL

Item	Unit	Total
Concrete Removal	Cu. Yd.	46.4

Notes:
Extreme care is required for Concrete Removal around the PPC I-Beams so as to avoid damage to the beam.
Hatched areas Indicate "Concrete Removal".
* *Existing longitudinal reinforcement bars, transverse bars as noted and stirrups extending into the new construction shall be cleaned, straightened and incorporated into the new construction. Any reinforcement bars damaged during concrete removal shall be replaced with an approved bar splicer or anchorage system. Cost included with "Concrete Removal".*

CONCRETE REMOVAL DETAILS
STRUCTURE NO. 060-0211

Coombe-Bloxdorf P.C.
-CIVIL ENGINEERS-
-STRUCTURAL ENGINEERS-
-LAND SURVEYORS-
Design Firm License No. 184-002703

PROJECT NO.	05027-13
SCALE	
DATE	4/24/09
DESIGN BY	MCB
DRAWN BY	CFC
CHECKED BY	MCB

SHEET NO. 3
9 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
70	60,(5,6,7)RS, 60-(6,7)BR	MADISON	185	108
		CONTRACT NO. 76C56		
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		

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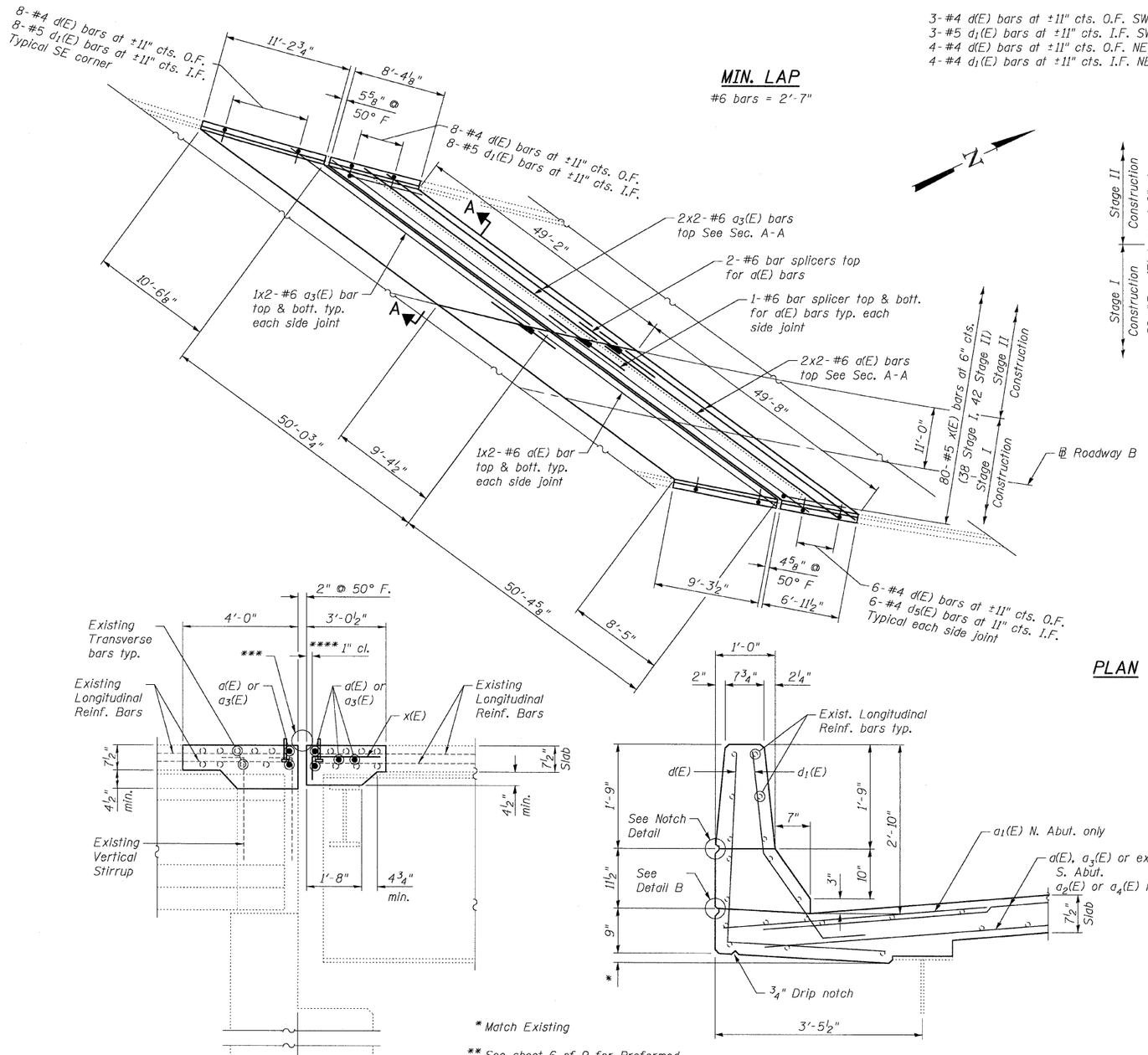

* Match Existing

** See sheet 6 of 9 for Preformed Joint Strip Seal at North Abutment

*** See sheet 7 of 9 for Neoprene Expansion Joint at South Abutment

**** Place d(E) or a_3(E) bars in back of anchor bolt as shown if required to maintain 1" cl. (+0-1/8"). Anchor bolts should be tied to d(E) or a_3(E) bars. typ. each side joint.

O.F. = Outside Face
I.F. = Inside Face

Note:
For cross sections, Notch Detail, Detail B, Bar Details and Bill of Material see sheet 5 of 9.

SUPERSTRUCTURE DETAILS
STRUCTURE NO. 060-0211

Coombe-Bloxdorf P.C.
-CIVIL ENGINEERS-
-STRUCTURAL ENGINEERS-
-LAND SURVEYORS-
Design Firm License No. 184-002703

PROJECT NO. 05027-13
SCALE
DATE / /
DESIGN BY MCB
DRAWN BY CFC
CHECKED BY MCB

SHEET NO. 4
9 SHEETS

F.A.I RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
70	60-(5,6,7)RS, 60-(6,7)BR	MADISON	185	109
		CONTRACT NO. 76C56		
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

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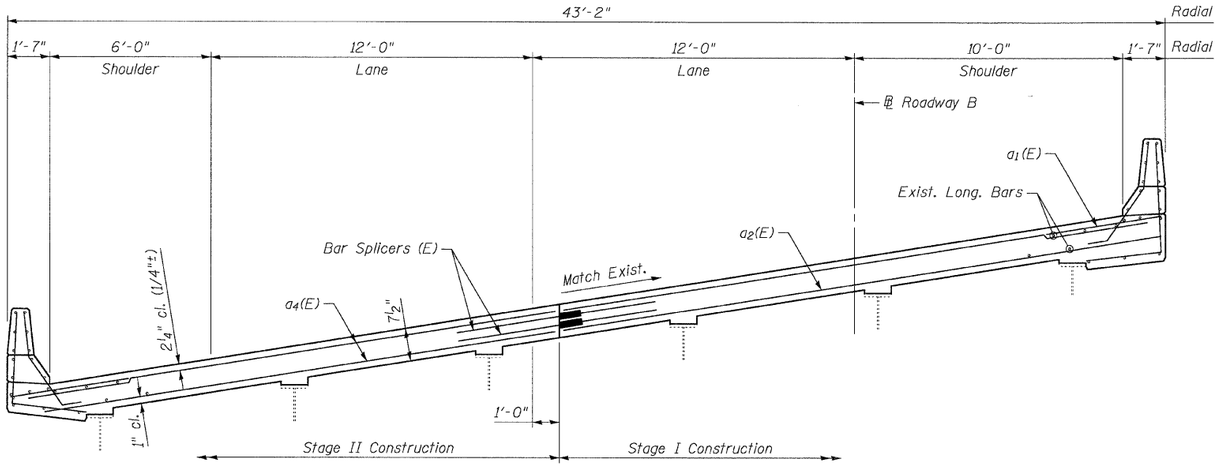
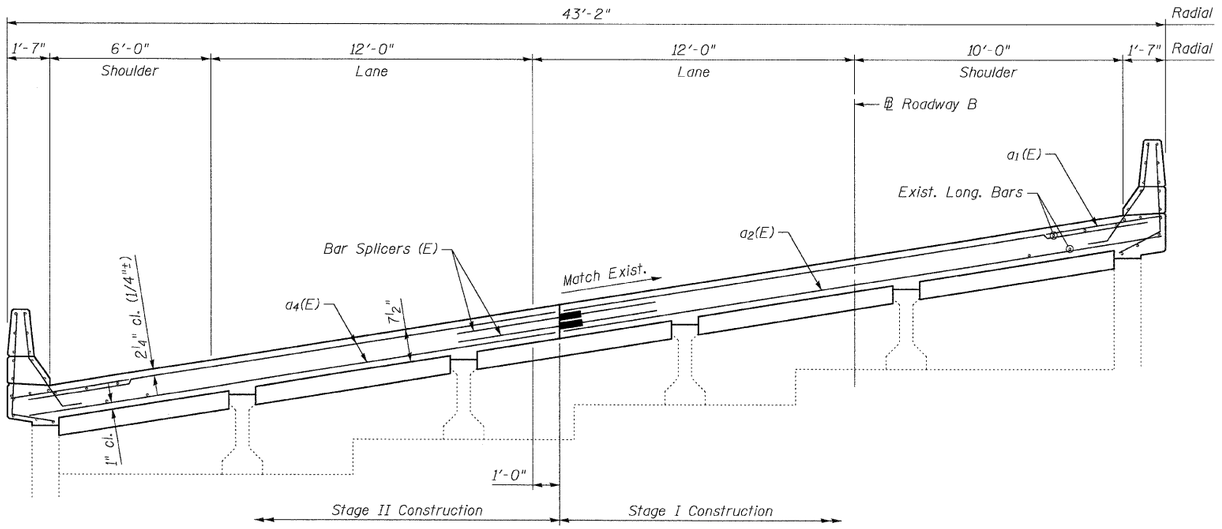


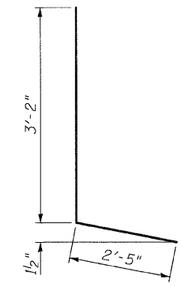
CROSS SECTION THRU SPAN 3 AT N. ABUTMENT

(Looking North Showing proposed reinforcement at North Abutment)

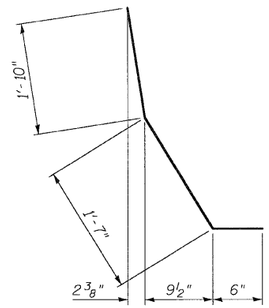


CROSS SECTION THRU SPAN 4 AT N. ABUTMENT

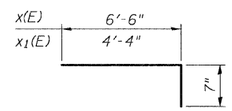
(Looking North Showing proposed reinforcement at North Abutment)



BAR d(E)



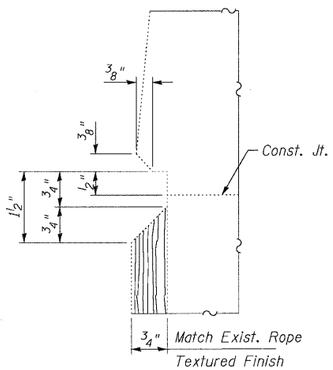
BAR d_1(E)



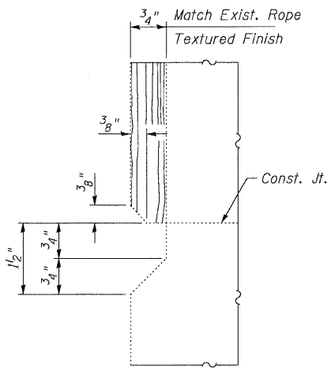
BAR x(E) or x_1(E)

BILL OF MATERIAL

Bar	No.	Size	Length	Shape
a(E)	12	#6	28'-3"	———
a_1(E)	20	#6	4'-0"	———
a_2(E)	31	#8	36'-7"	———
a_3(E)	12	#6	28'-1"	———
a_4(E)	31	#8	33'-2"	———
d(E)	51	#4	5'-7"	⌟
d_1(E)	51	#5	3'-11"	⌟
x(E)	80	#5	7'-1"	⌐
x_1(E)	80	#5	4'-11"	⌐
Reinforcement Bars, Epoxy Coated			Pound	8310
Concrete Superstructure			Cu. Yd.	46.6
Bar Splicers			Each	37



NOTCH DETAIL



DETAIL B

SUPERSTRUCTURE DETAILS
STRUCTURE NO. 060-0211

Coombe-Bloxdorf P.C.
-CIVIL ENGINEERS-
-STRUCTURAL ENGINEERS-
-LAND SURVEYORS-
Design Firm License No. 184-002703

PROJECT NO. 05027-13
SCALE
DATE / /
DESIGN BY MCB
DRAWN BY CFC
CHECKED BY MCB

SHEET NO. 5
9 SHEETS

F.A.I RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
70	60-(5,6,7)RS, 60-(6,7)BR	MADISON	185	110
		CONTRACT NO. 76C56		
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

PLOT DATE = 09/14/2009
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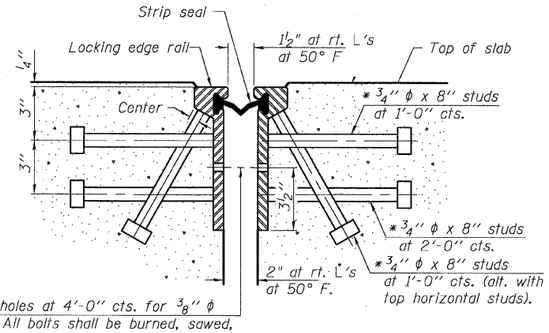
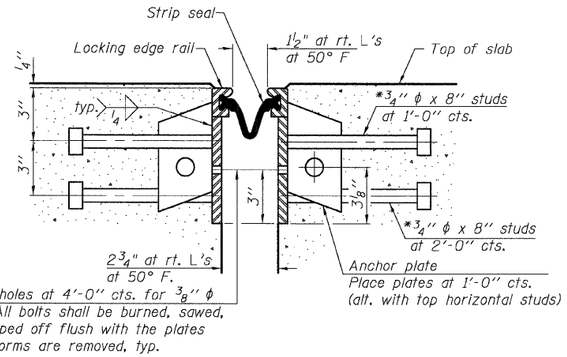
USER NAME = CFC.

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



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:

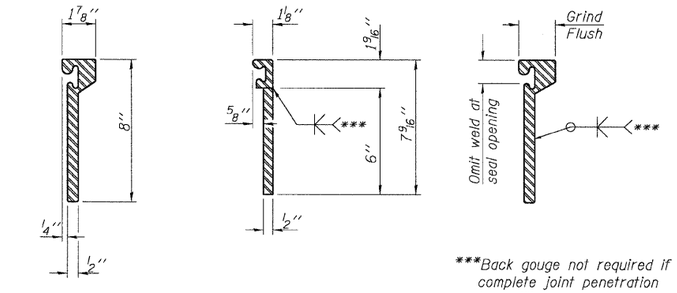
The strip seal shall be made continuous and shall have a minimum thickness of ¼". The configuration of the strip seal shall match the configuration of the Locking Edge Rails. Open or "webbed" strip seal gland configurations are not permitted. The gland shall be sized for a maximum rated movement of 4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

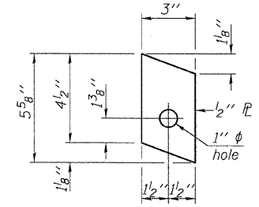
All steel components shall be galvanized after fabrication according to Article 520.03 of the Standard Specifications.



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

ROLLED EXTRUDED RAIL

WELDED RAIL

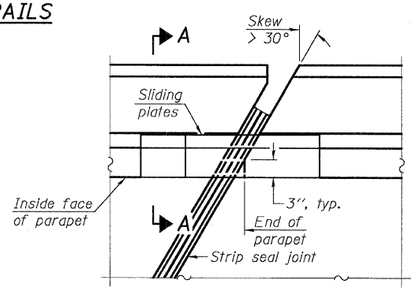


ANCHOR ℄ (for welded rail)

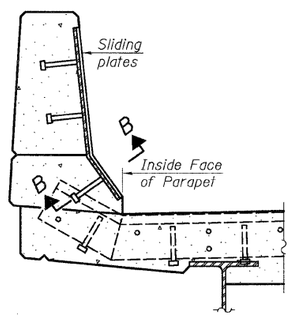
LOCKING EDGE RAIL SPLICE

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

LOCKING EDGE RAILS

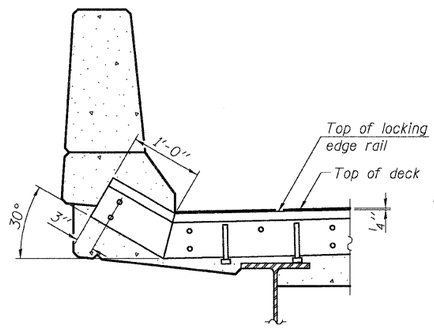


PLAN

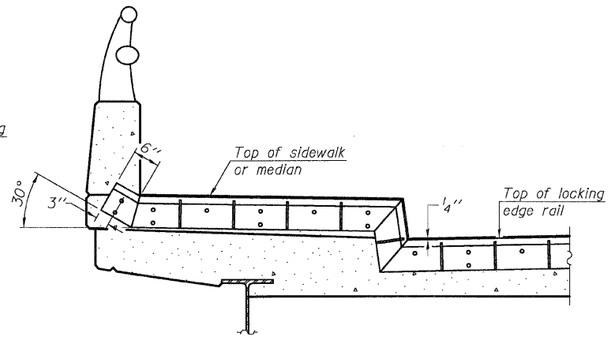


SECTION A-A

POINT BLOCK DETAILS (for skews > 30°)



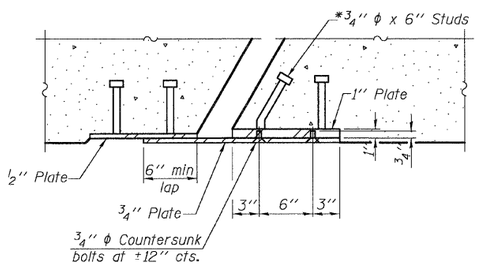
AT PARAPET



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.

TYPICAL END TREATMENTS



SECTION B-B

BILL OF MATERIAL

Item	Unit	Total
Preformed Joint Strip Seal	Foot	70

PREFORMED JOINT STRIP SEAL STRUCTURE NO. 060-0211

PLOT DATE = 03/14/2009
FILE NAME = c:\projects\05027-13\06-preformed-joint-strip-seal.dgn
PLOT SCALE = 0.999986 ' / IN.
USER NAME = CFC.

EJ-SSJ 10-1-08

Coombe-Bloxdorf P.C.
-CIVIL ENGINEERS-
-STRUCTURAL ENGINEERS-
-LAND SURVEYORS-
Design Firm License No. 184-002703

PROJECT NO. 05027-13
SCALE
DATE / /
DESIGN BY
DRAWN BY
CHECKED BY

SHEET NO. 6
9 SHEETS

F.A.I RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
70	60-(5,6,7)RS, 60-(6,7)BR	MADISON	185	111
		CONTRACT NO. 76C56		
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

Joint Size	"C" at 50°F	"D" at 50°F
2"	2"	1½" Min.
2½"	2½"	1¾" Min.
4"	3"	2½" Min.

INSTALLATION NOTES

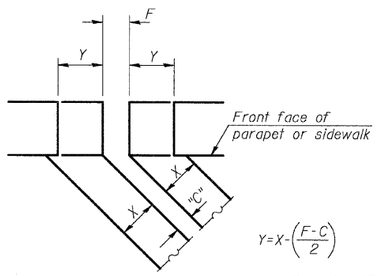
1. Install continuous seal in roadway, parapet, curb, and sidewalk.
2. Install anchor blocks as indicated.

Note A:
Maximum spacing of anchor bolts shall be 12" centers.

SKEW LIMITATIONS

The details of the anchor blocks and the elastomeric membrane in the parapet, as shown, are for up to 50° skews.

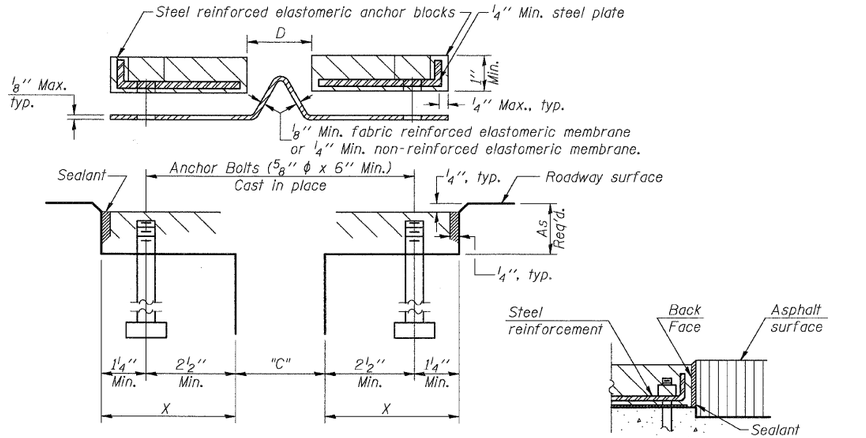
For skews greater than 50°, the anchor blocks and the elastomeric membrane, installed according to dimension "D", might require modifications to insure a minimum clearance of 1½" from centerline of anchor studs to edge of parapet opening. The anchor blocks and the elastomeric membrane shall also be installed to the top of the parapet with the anchor studs spaced at ±12" cts.



$Y = X - \left(\frac{F-C}{2}\right)$

For dimension "F" see sheet # 4 of 9

FORMING BLOCKOUT SKETCH



CROSS SECTION

ANCHOR BLOCK WITH ASPHALT SURFACE

GENERAL NOTES

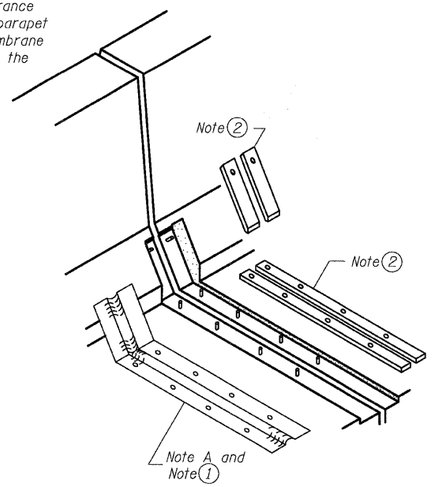
Continuous Seal Neoprene Expansion Joint shall consist of molded anchor blocks of elastomer and steel, field assembled over continuous lengths of elastomeric membrane.

The elastomeric membrane shall be premolded with a single or a double upward convolution that will have a "memory" to return to its molded position upon joint closure.

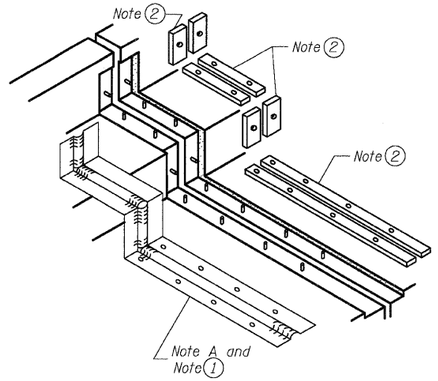
The convolution length shall be such that the extended length will not be greater than the manufactured length when the joint is fully expanded in its design range and will not protrude above the anchor blocks when the joint is fully compressed.

Joint openings shall be adjusted according to Article 503.10(c) of the Standard Specifications when the deck is poured at an ambient temperature other than 50° F.

The parapet and roadway membrane shall be made continuous by an approved vulcanizing process. Lapping will not be permitted.

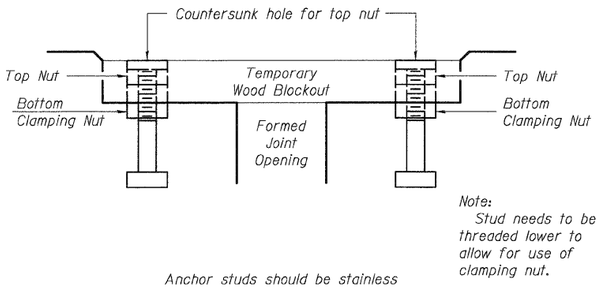


AT PARAPET



AT SIDEWALK OR MEDIAN

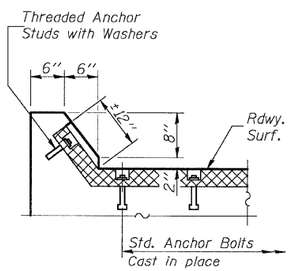
AT WALL



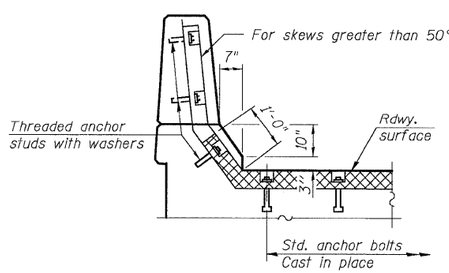
Note:
Stud needs to be threaded lower to allow for use of clamping nut.

Anchor studs should be stainless

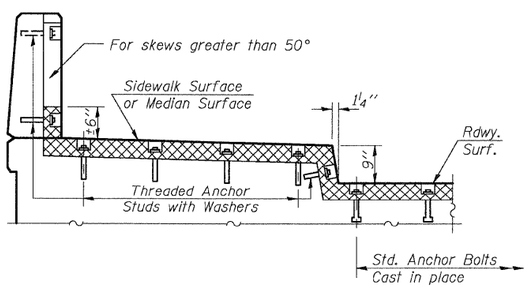
RECOMMENDED BLOCKOUT DETAIL



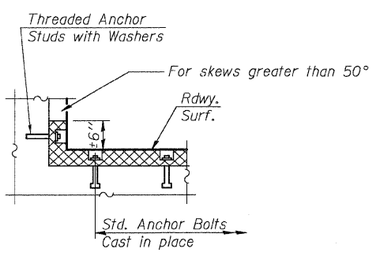
AT CURB



AT PARAPET



AT SIDEWALK OR MEDIAN
TYPICAL END TREATMENTS



AT WALL

BILL OF MATERIAL

Item	Unit	Total
Neoprene Expansion Joint, 2"	Foot	105

CONTINUOUS SEAL TYPE NEOPRENE EXPANSION JOINTS STRUCTURE NO. 060-0211

PLOT DATE = 09/14/2005
FILE NAME = M:\05027\07-007-neoprene-expansion-joint.dgn
PLOT SCALE = 100.399986 '/' / IN.
USER NAME = CFC.

EJ-CS

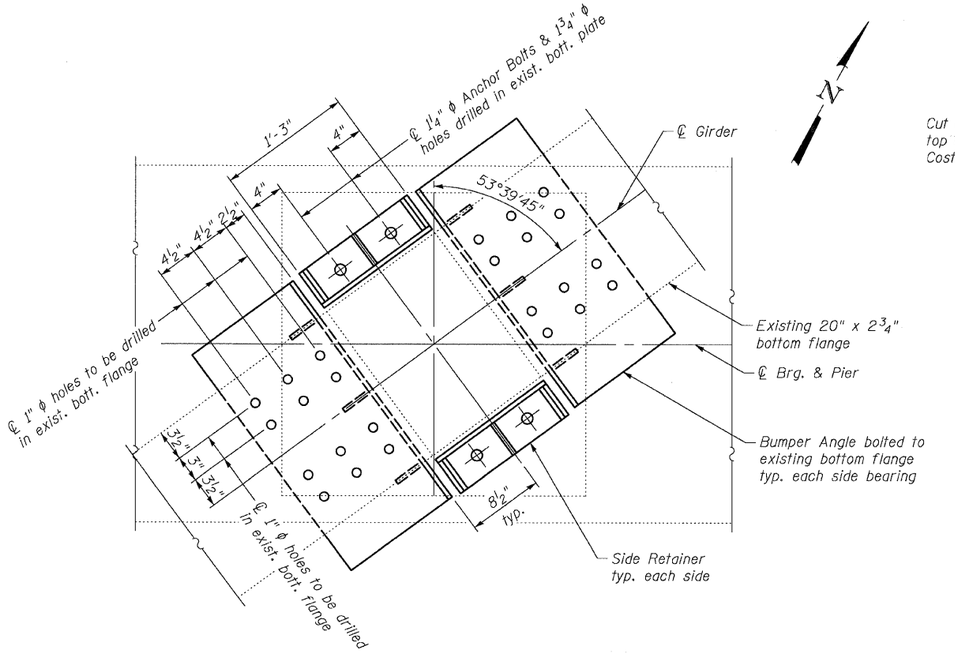
10-22-04

Coombe-Bloxdorf P.C.
-CIVIL ENGINEERS-
-STRUCTURAL ENGINEERS-
-LAND SURVEYORS-
Design Firm License No. 184-002703

PROJECT NO. 05027-13
SCALE
DATE / /
DESIGN BY
DRAWN BY
CHECKED BY

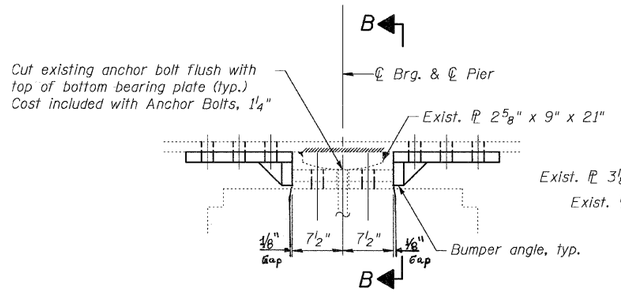
SHEET NO. 7
9 SHEETS

F.A.I RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
70	60-(5,6,7)RS, 60-(6,7)BR	MADISON	185	112
		CONTRACT NO. 76C56		
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

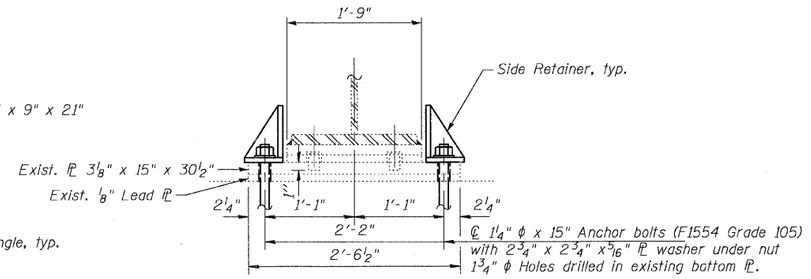


PLAN AT PIER BRG.

Typical each girder



ELEVATION AT PIER



SECTION B-B

FIXED BEARING

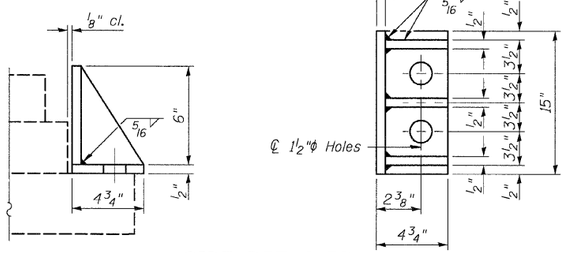
Notes:

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

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.

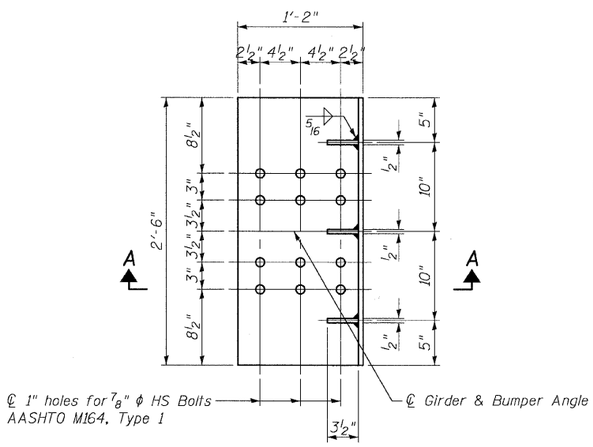
Cost of drilling holes in existing bearing plates shall be included with Anchor Bolts, 1¼"

Cost of drilling holes in bottom flange of existing girder shall be included in Furnishing and Erecting Structural Steel

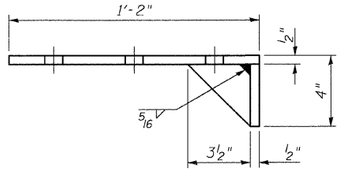


SIDE RETAINER

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



BUMPER ANGLE



SECTION A-A

BILL OF MATERIAL

Item	Unit	Total
Furnishing and Erecting Structural Steel	Pound	1412
Anchor Bolts, 1¼"	Each	24

SIDE RETAINER DETAILS
STRUCTURE NO. 060-0211

Coombe-Bloxdorf P.C.
-CIVIL ENGINEERS-
-STRUCTURAL ENGINEERS-
-LAND SURVEYORS-
Design Firm License No. 184-002703

PROJECT NO. 05027-13
SCALE
DATE / /
DESIGN BY
DRAWN BY
CHECKED BY

SHEET NO. 8
9 SHEETS

F.A.I RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
70	60-(5,6,7)RS, 60-(6,7)BR	MADISON	185	113
		CONTRACT NO. 76C56		
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

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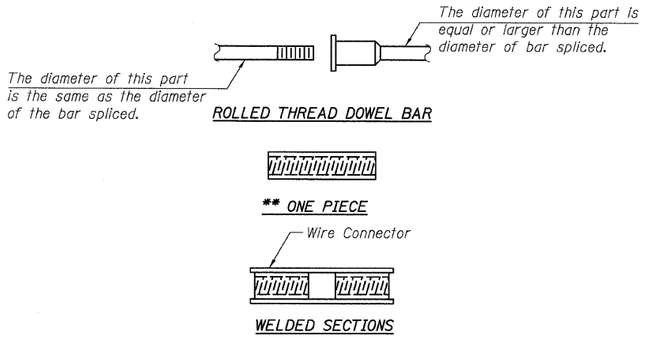
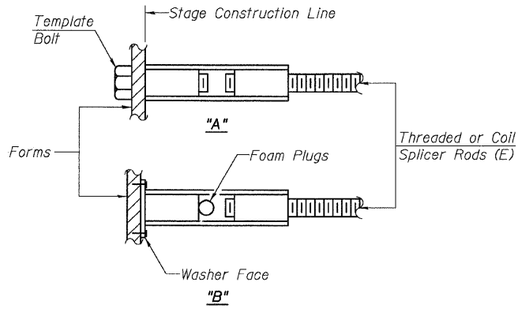


BAR SPLICER ASSEMBLY ALTERNATIVES

**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.

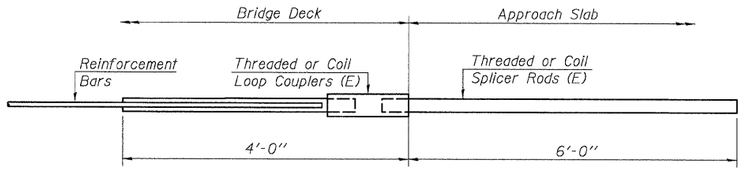
Other systems of similar design may be submitted to the Engineer for approval. Approval shall be based on certified test results from an approved testing laboratory that the proposed bar splicer assembly satisfies the following requirements:

① Minimum Capacity (Tension in kips) = 1.25 x fy x A_t

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

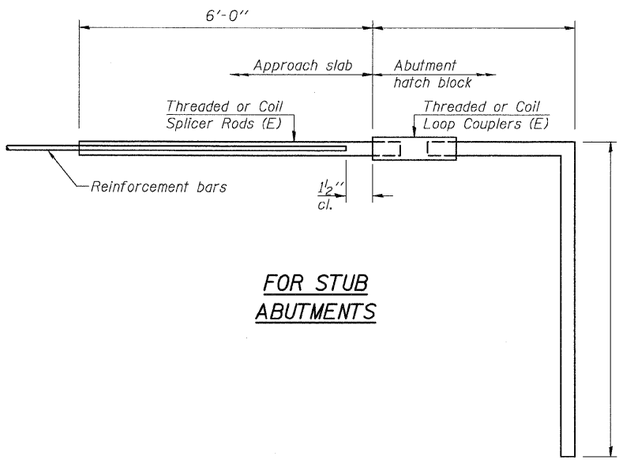
Where fy = Yield strength of lapped reinforcement bars in ksi.
A_t = Tensile stress area of lapped reinforcement bars.
* = 28 day concrete

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'-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



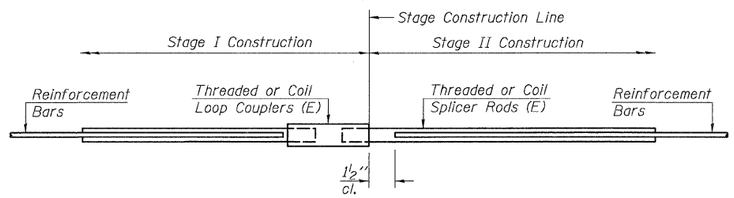
FOR INTEGRAL OR SEMI-INTEGRAL ABUTMENTS

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 =



STANDARD

Bar Size	No. Assemblies Required	Location
#6	6	Deck S. Abut.
#8	31	Deck N. Abut.

BAR SPLICER ASSEMBLY DETAILS
STRUCTURE NO. 060-0211

BSD-1

10-1-08

PLOT DATE = 09/14/2009
FILE NAME = M:\60\2011-009-bar-splicer-details.dgn
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USER NAME = CFC_

Coombe-Bloxdorf P.C.
-CIVIL ENGINEERS-
-STRUCTURAL ENGINEERS-
-LAND SURVEYORS-
Design Firm License No. 184-002703

PROJECT NO. 05027-13
SCALE
DATE / /
DESIGN BY
DRAWN BY
CHECKED BY

SHEET NO. 9
9 SHEETS

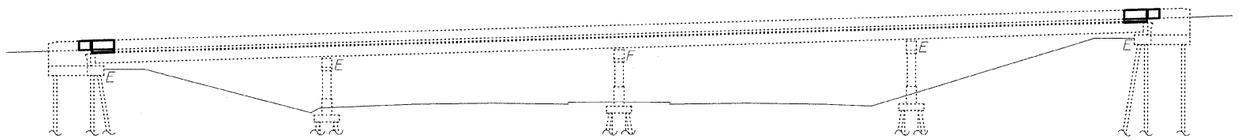
F.A.I RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
70	60-(5,6,7)RS, 60-(6,7)BR	MADISON	185	114
		CONTRACT NO. 76C56		
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

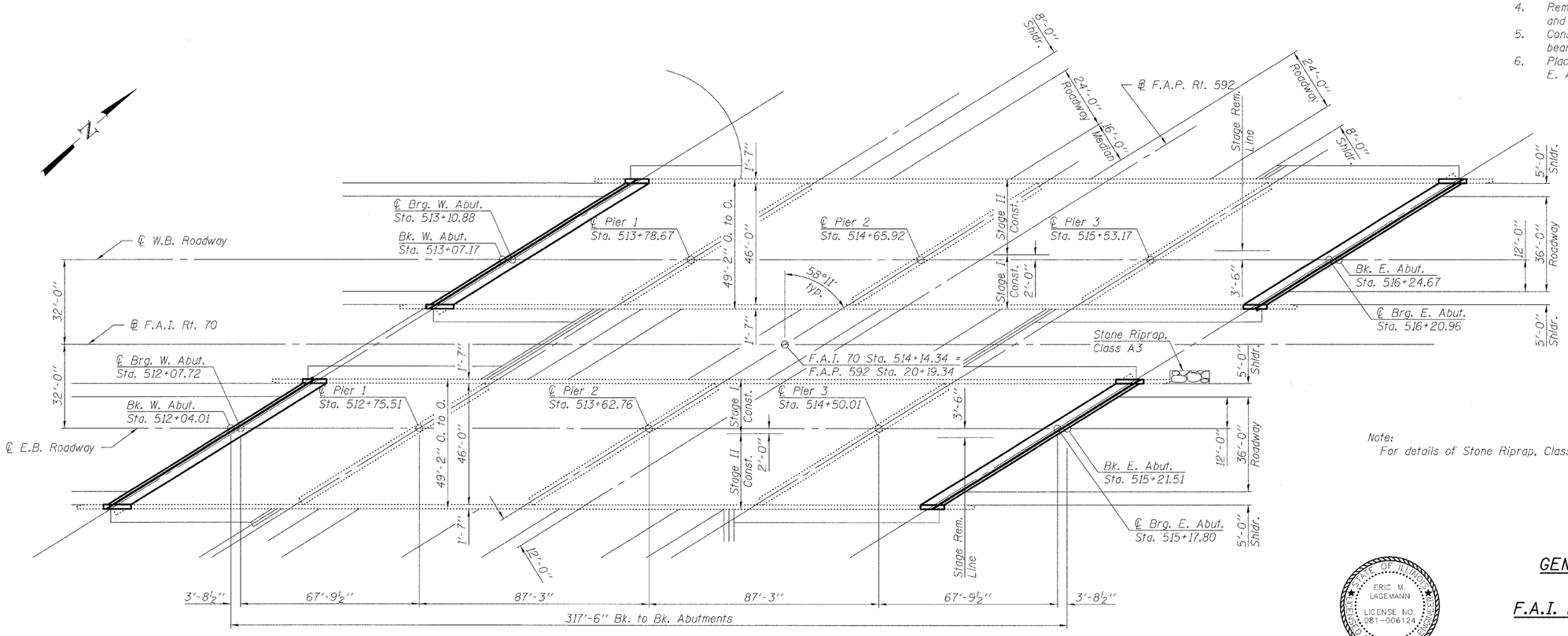
INDEX OF SHEETS

SCOPE OF WORK

1. Replace expansion joints.
2. Wash bridge deck, parapets and abutment seats.
3. Seal deck, parapets, and abutment seats with "Concrete Sealer".
4. Remove and replace bearings at both abutments and Piers 1 and 3.
5. Construct concrete pedestals around existing bearings at Pier 2.
6. Place riprap at the northeast corner of the E. Appr. Pavement of the E.B. Roadway.



ELEVATION



PLAN

Note:
For details of Stone Riprap, Class A3, see sheet 2 of 14.

DESIGNED	EML
CHECKED	JJD
DRAWN	EML
CHECKED	JJD

STATE OF ILLINOIS
ERIC M. LAGEMANN
LICENSE NO. 081-006124
REGISTERED STRUCTURAL ENGINEER

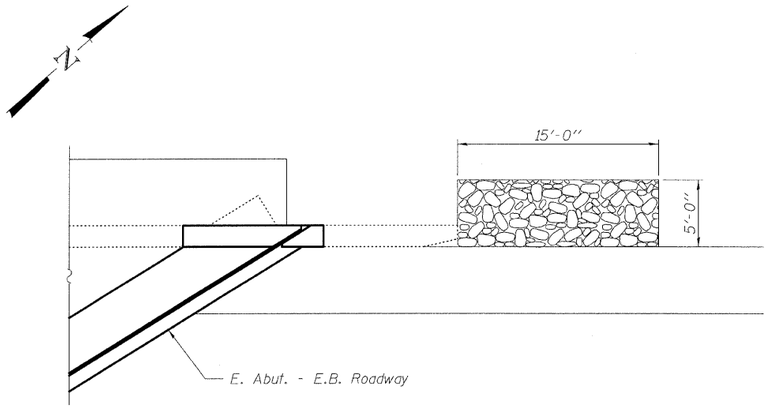
Eric Lagemann 9/15/09
Expires 11/30/2010

HORNER & SHIFRIN, INC.
ENGINEERS

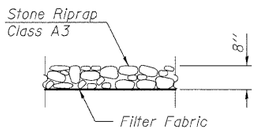
GENERAL PLAN & ELEVATION
I-70 OVER IL 157
F.A.I. RT. 70 - SECTION 60-(6,7)BR
MADISON COUNTY
STA. 514+14.34
STRUCTURE NO. 060-0012 (E.B.)
STRUCTURE NO. 060-0013 (W.B.)

SHEET NO. 1	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
14 SHEETS	70	60-(5,6,7)RS, 60-(6,7)BR	MADISON	185	115
			CONTRACT NO. 76C56		
	FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



PLAN OF RIPRAP



SECTION THRU RIPRAP

GENERAL NOTES

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.

Concrete Sealer shall be applied to the designated areas of the abutments.

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

Fasteners shall be high strength bolts. Bolts $^{3}/_{4}$" ϕ, open holes $^{13}/_{16}$" ϕ, or Bolts $^{7}/_{8}$" ϕ, open holes $^{15}/_{16}$" ϕ, unless otherwise noted.

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".

The bridge deck, parapets, and abutment seals shall be washed according to Article 592.00 of the Standard Specifications. Cost is included with Bridge Washing No. 2.

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

The Organic Zinc Rich Primer / Epoxy / Urethane Paint System shall be used for painting of new structural steel except where otherwise noted. The entire system shall be shop applied, with the exception that masked off connection surfaces, field installed fasteners and damaged areas shall be touched up in the field. The color of the final finish coat shall be Gray, Munsell No. 5B 7/1. See Special Provision for "Cleaning and Painting New Metal Structures".

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 shal be replaced with an approved bar splicer or anchorage system. Cost included with "Concrete Removal".

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 Standard Specifications when the deck is poured at an ambient temperature other than 50° F.

Concrete Sealer shall be applied to the surfaces of the bridge deck and parapets, including wings. See Special Provision "Bridge Deck Concrete Sealer".

TOTAL BILL OF MATERIAL
TWO STRUCTURES

ITEM	UNIT	SUPER	SUB	TOTAL
Stone Riprap, Class A3	Sq. Yd.		9	9
Filter Fabric	Sq. Yd.		9	9
Concrete Removal	Cu. Yd.	88.2	2.3	90.5
Structure Excavation	Cu. Yd.		15	15
Concrete Structures	Cu. Yd.		12.6	12.6
Concrete Superstructure	Cu. Yd.	88.9		88.9
Furnishing and Erecting Structural Steel	Pound	17,610		17,610
Jack and Remove Existing Bearings	Each	64		64
Reinforcement Bars, Epoxy Coated	Pound	12,610	3,780	16,390
Bar Splicers	Each	52		52
Preformed Joint Strip Seal	Foot	357.0		357.0
Elastomeric Bearing Assembly, Type I	Each	32		32
Elastomeric Bearing Assembly, Type II	Each	32		32
Anchor Bolts, 1"	Each	64		64
Anchor Bolts, $1^{1}/_{2}$"	Each	64		64
Concrete Sealer	Sq. Ft.	33,810	1,435	35,245
Bridge Washing No. 2	Each			2

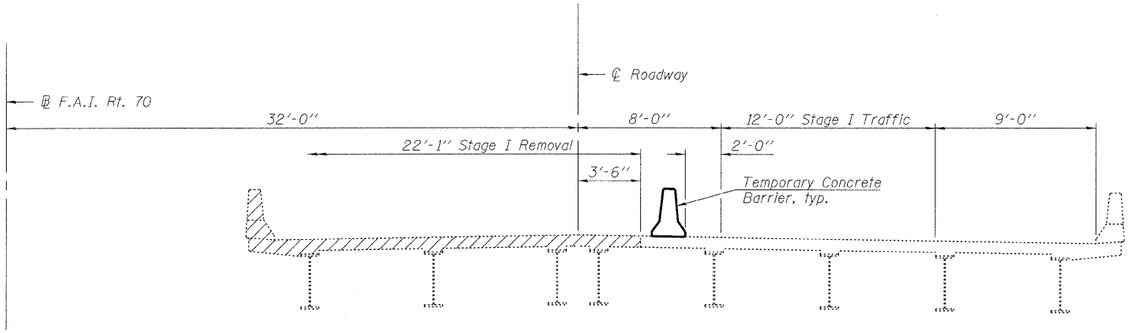
DESIGNED	EML
CHECKED	JJD
DRAWN	EML
CHECKED	JJD

HORNER & SHIFRIN, INC.
ENGINEERS

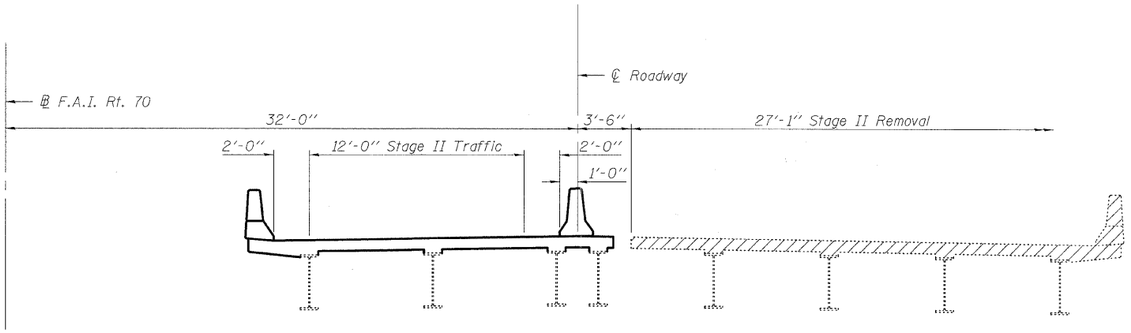
GENERAL DATA
STRUCTURE NO. 060-0012 (E.B.)
STRUCTURE NO. 060-0013 (W.B.)

SHEET NO. 2	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
14 SHEETS	70	60-(5,6,7)RS, 60-(6,7)BR	MADISON	185	116
			CONTRACT NO. 76C56		
	FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

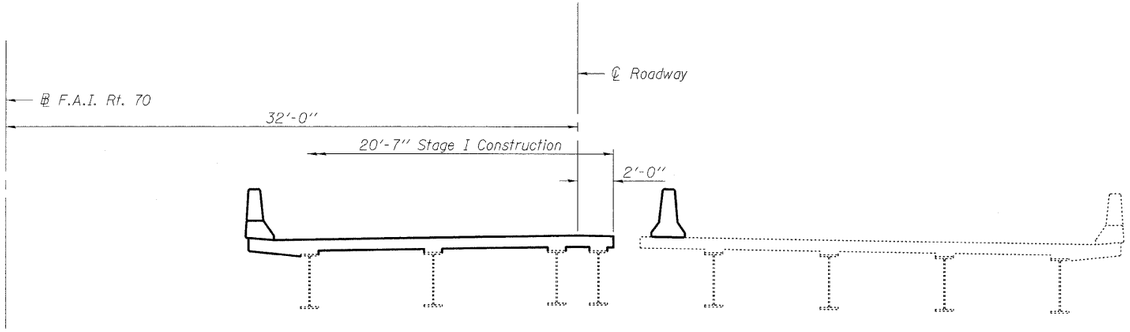
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



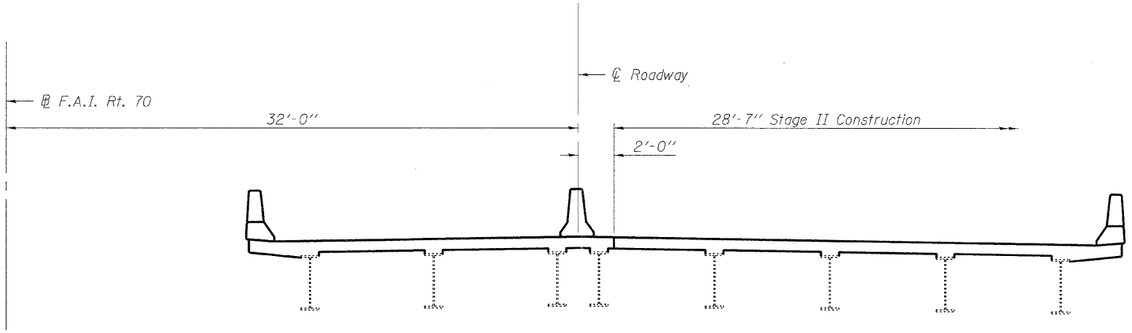
STAGE I REMOVAL



STAGE II REMOVAL



STAGE I CONSTRUCTION



STAGE II CONSTRUCTION

Notes:
All sections are looking east for E.B. Roadway, and west for W.B. Roadway.
For quantity of Temporary Concrete Barrier, see roadway plans.
Hatched area indicates Concrete Removal.
Stage removal and construction shown in sections is limited to expansion joint end blocks.

STAGE CONSTRUCTION DETAILS
STRUCTURE NO. 060-0012 (E.B.)
STRUCTURE NO. 060-0013 (W.B.)

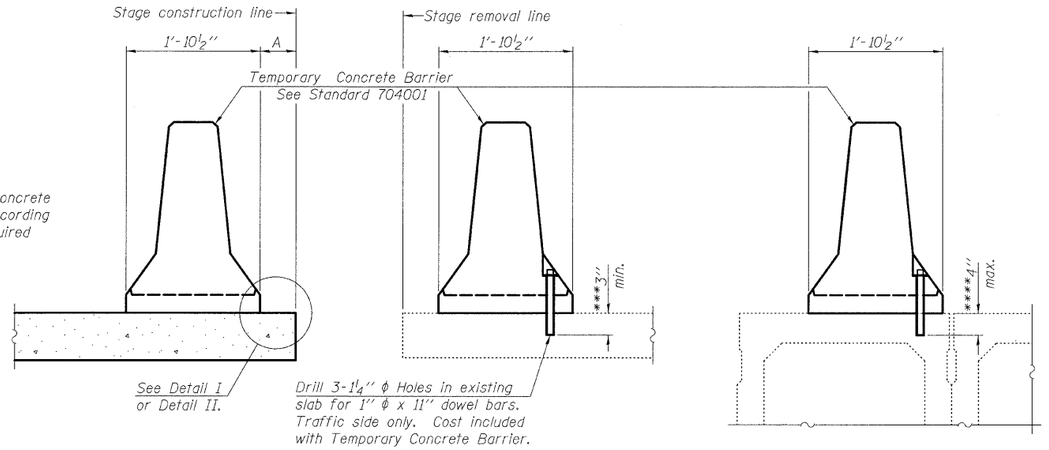
DESIGNED	EML
CHECKED	JJD
DRAWN	EML
CHECKED	JJD

HORNER & SHIFRIN, INC.
ENGINEERS

SHEET NO. 3	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
14 SHEETS	70	60-(5,6,7)RS, 60-(6,7)BR	MADISON	185	117
			CONTRACT NO. 76C56		
	FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

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



NEW SLAB | EXISTING SLAB | EXISTING DECK BEAM

SECTIONS THRU SLAB OR DECK BEAM

NOTES

Detail I - With Bar Splicer or Couplers:
Connect one (1) 1"x7"x10" steel ℙ to the top layer of couplers with 2-⅝" ϕ bolts screwed to coupler at approximate ℄ of each barrier panel.

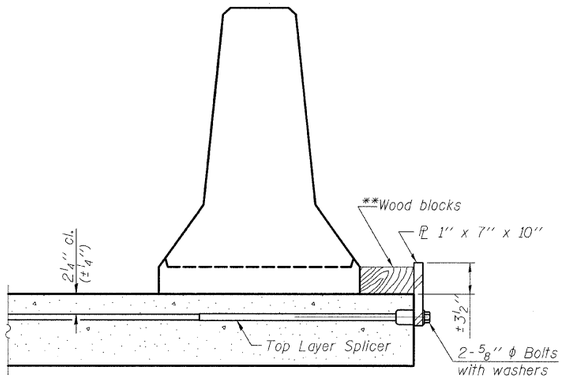
Detail II - With Extended Reinforcement Bars:
Connect one (1) 1"x7"x 10" steel ℙ to the concrete slab or concrete wearing surface with 2-⅝" ϕ Expansion Anchors or cast in place inserts spaced between the top layer of reinforcement at approximate ℄ of each barrier panel.

Cost of anchorage is included with Temporary Concrete Barrier.

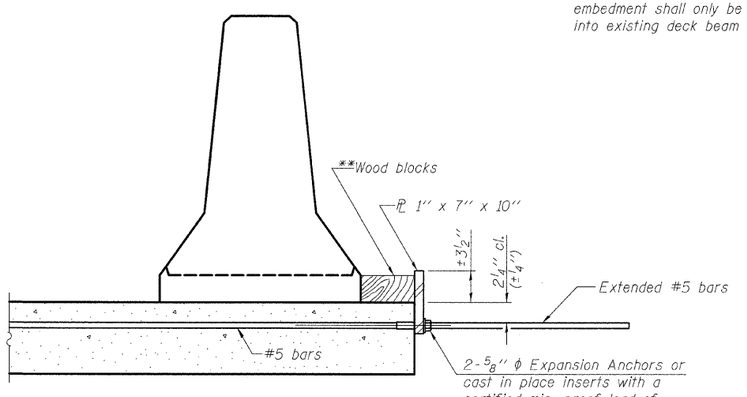
The 1" x 7" x 10" plate shall not be removed until stage II construction forms and all reinforcement bars are in place and the concrete is ready to be placed.

*** 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.

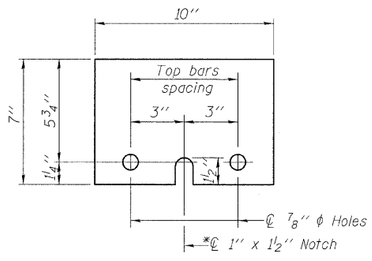


DETAIL I



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 ℙ 1" x 7" x 10"

* Required only with Detail II

TEMPORARY CONCRETE BARRIER
FOR STAGE CONSTRUCTION
STRUCTURE NO. 060-0012 (E.B.)
STRUCTURE NO. 060-0013 (W.B.)

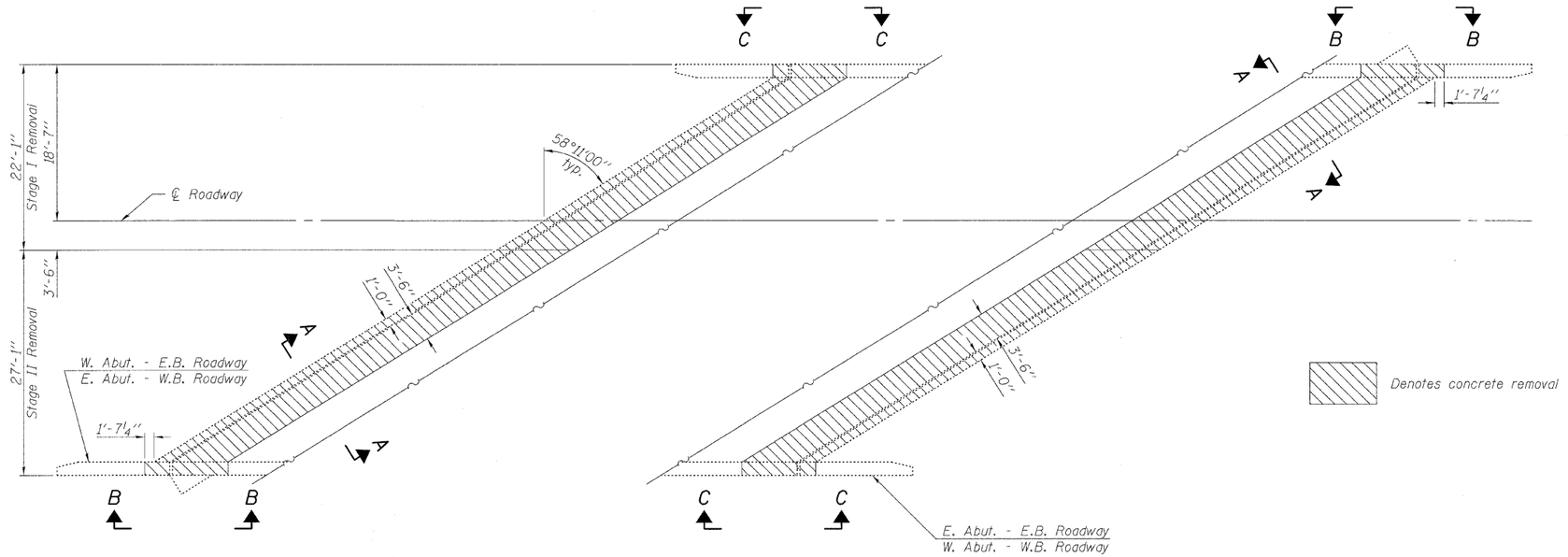
DESIGNED	EML
CHECKED	JJD
DRAWN	EML
CHECKED	JJD

R-27 10-1-08

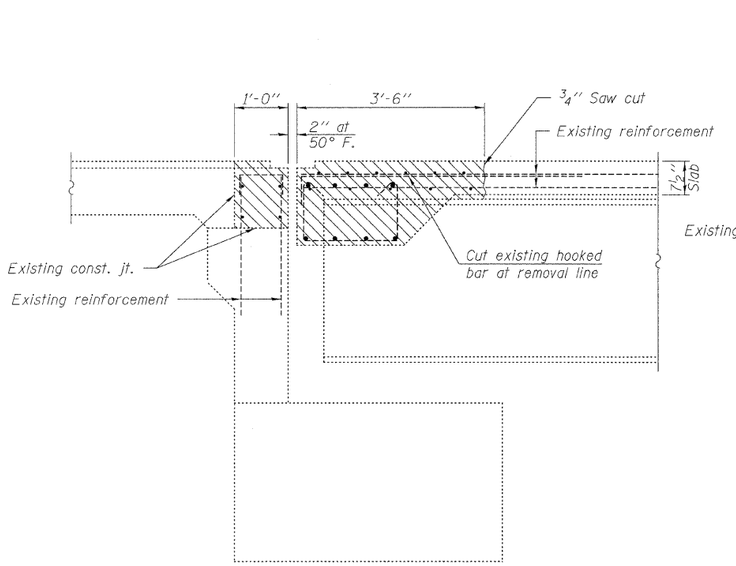
HORNER & SHIFRIN, INC. ENGINEERS

SHEET NO. 4	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
14 SHEETS	70	60-(5,6,7)RS, 60-(6,7)BR	MADISON	185	118
			CONTRACT NO. 76C56		
	FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

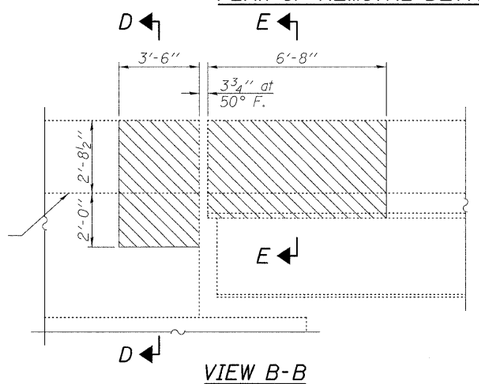


PLAN OF REMOVAL DETAIL

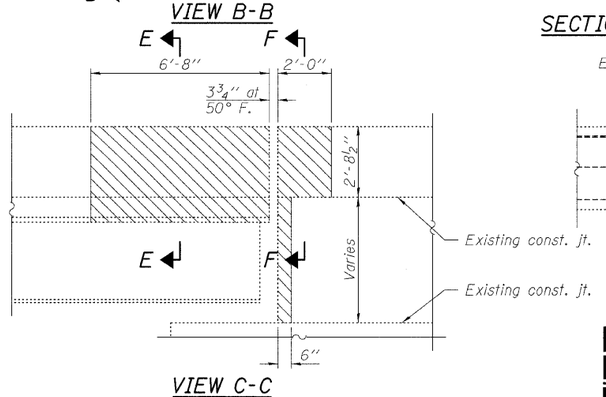


SECTION A-A

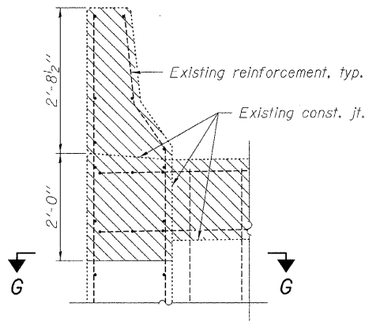
(Horz. dim. at right L's)



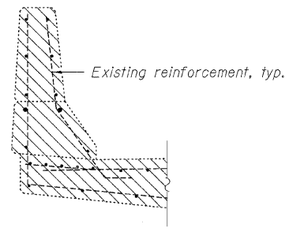
VIEW B-B



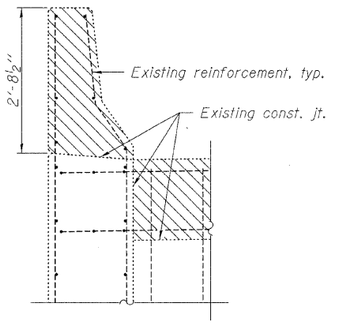
VIEW C-C



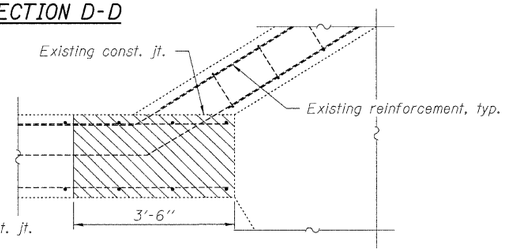
SECTION D-D



SECTION E-E



SECTION F-F



SECTION G-G

REMOVAL DETAILS
STRUCTURE NO. 060-0012 (E.B.)
STRUCTURE NO. 060-0013 (W.B.)

DESIGNED	EML
CHECKED	JJD
DRAWN	EML
CHECKED	JJD

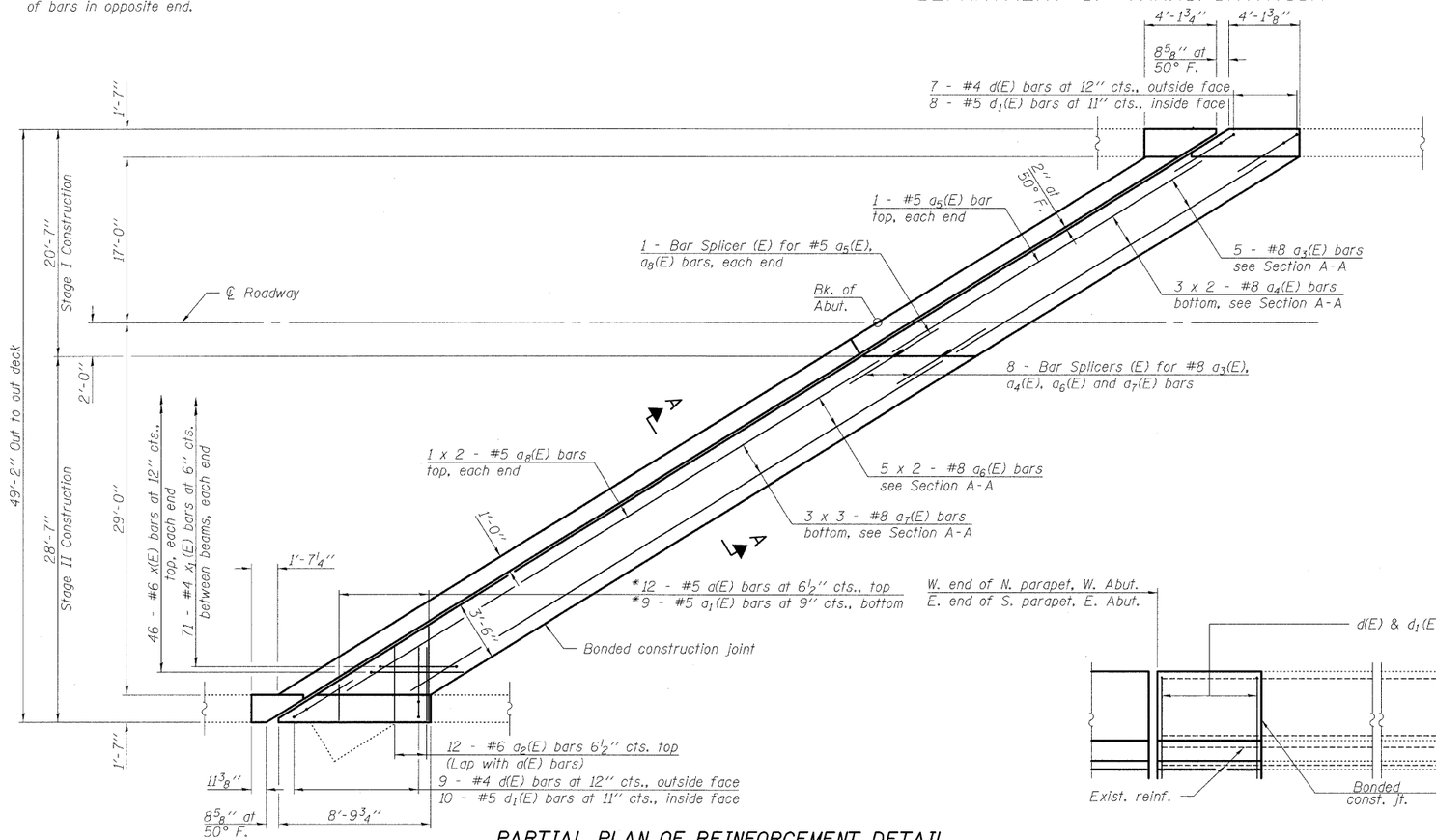
HORNER & SHIFRIN, INC.
ENGINEERS

SHEET NO. 5
14 SHEETS

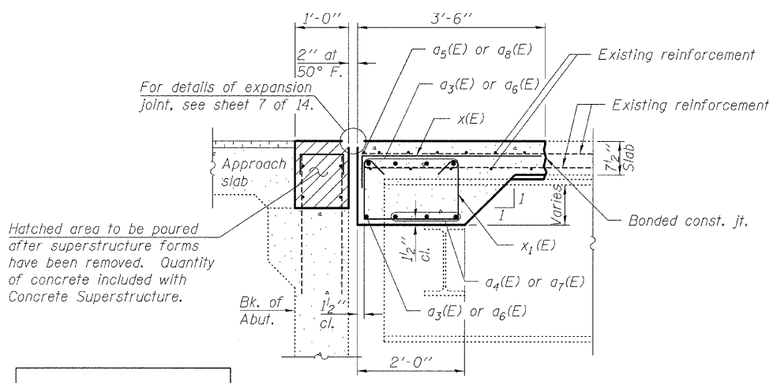
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
70	60-(5,6,7)RS, 60-(6,7)BR	MADISON	185	119
		CONTRACT NO. 76C56		
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

* Order d(E) & a_1(E) bars full length. Cut to fit skew and use remainder of bars in opposite end.

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



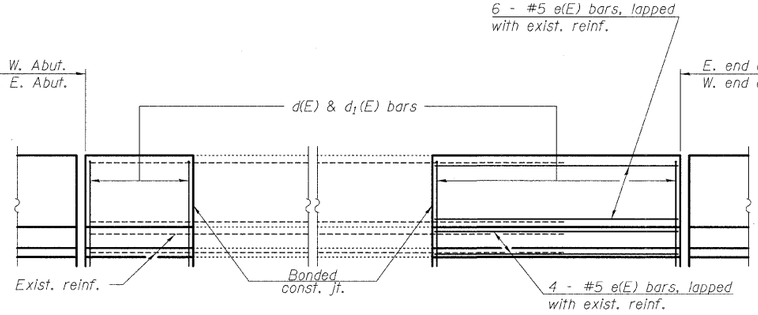
PARTIAL PLAN OF REINFORCEMENT DETAIL



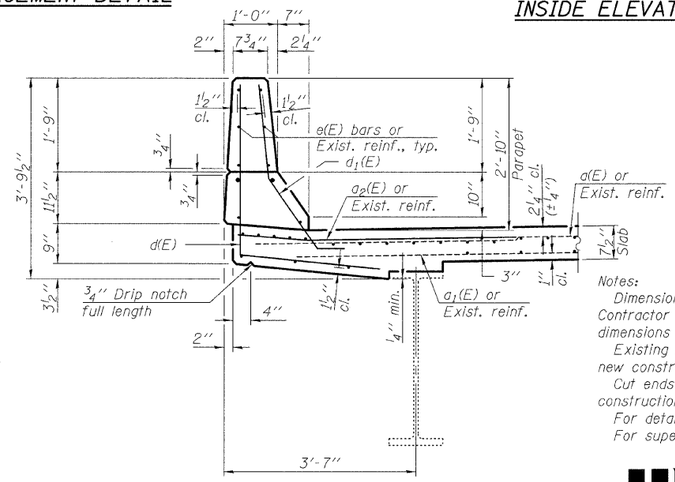
SECTION A-A

(Horz. dim. at right L's)

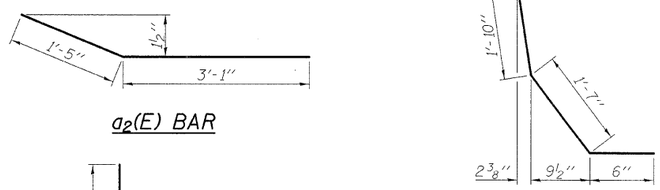
DESIGNED	EML
CHECKED	JJD
DRAWN	EML
CHECKED	JJD



INSIDE ELEVATION OF PARAPET



SECTION THRU PARAPET



MINIMUM BAR LAP

#5 bar = 3'-0"
#8 bar = 6'-4"

Notes:

Dimensions are based on a Rolled Rail Strip Seal Joint. If the Contractor elects to use the Welded Rail Strip Seal Joint, deck dimensions may require adjustments to satisfy the details on sheet 7 of 14.

Existing reinforcement shall be cleaned and incorporated into the new construction. Cost included with Concrete Removal.

Cut ends of existing reinforcement bars extending into new construction to maintain 1 1/2" minimum clearance.

For details of Bar Splicers, see sheet 14 of 14.

For superstructure Concrete Removal details, see sheet 5 of 14.

SUPERSTRUCTURE BILL OF MATERIAL TWO STRUCTURES

Bar	No.	Size	Length	Shape
d(E)	24	#5	6'-6"	—
a_1(E)	18	#5	6'-5"	—
a_2(E)	48	#6	4'-6"	—
a_3(E)	20	#8	31'-8"	—
a_4(E)	24	#8	18'-10"	—
a_5(E)	4	#5	37'-8"	—
a_8(E)	40	#8	28'-3"	—
a_7(E)	36	#8	19'-9"	—
a_8(E)	8	#5	28'-0"	—
d(E)	64	#4	5'-9"	L
d_1(E)	72	#5	3'-11"	L
e(E)	40	#5	6'-3"	—
x(E)	184	#6	6'-7"	⌐
x_1(E)	284	#4	6'-2"	⌐⌐
Concrete Removal			Cu. Yds.	88.2
Reinforcement Bars, Epoxy Coated			Pound	12,610
Concrete Superstructure			Cu. Yds.	88.9

Bars indicated thus 3 x 3 - #8 etc. indicates 3 lines of bars with 3 lengths per line.

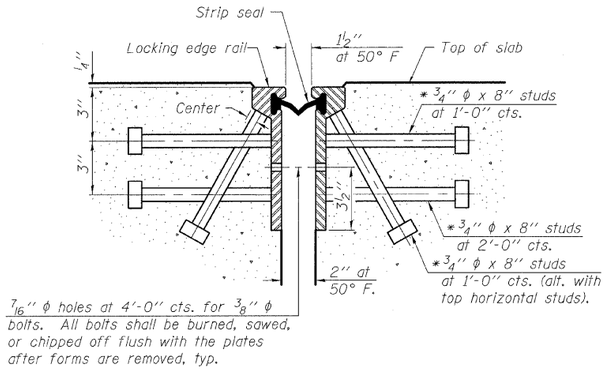
SUPERSTRUCTURE REPAIR DETAILS
STRUCTURE NO. 060-0012 (E.B.)
STRUCTURE NO. 060-0013 (W.B.)

HORNER & SHIFRIN, INC. ENGINEERS

SHEET NO. 6	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
14 SHEETS	70	60-(5,6,7)RS, 60-(6,7)BR	MADISON	185	120
			CONTRACT NO. 76C56		
	FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

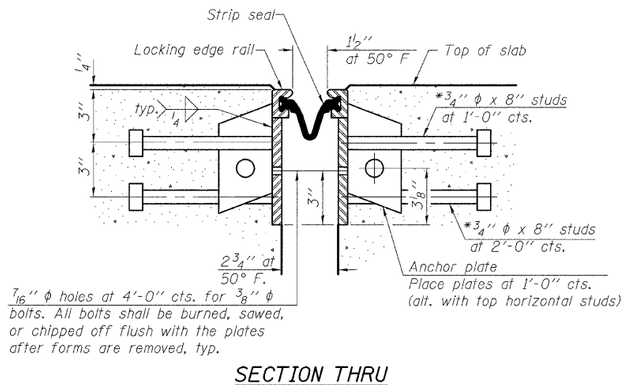
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

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



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:

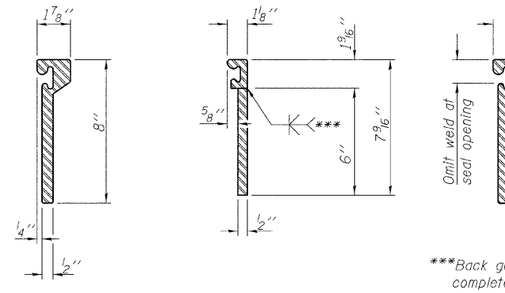
The strip seal shall be made continuous and shall have a minimum thickness of ¼". The configuration of the strip seal shall match the configuration of the Locking Edge Rails. Open or "webbed" strip seal gland configurations are not permitted. The gland shall be sized for a maximum rated movement of 4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

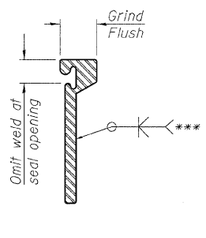
The joint opening and deck dimensions detailed on the superstructure are based on a rolled rail expansion joint. If the Contractor elects to use the welded rail expansion joint, the opening and deck dimensions shall be modified according to the dimensions detailed on this sheet. Required modifications 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

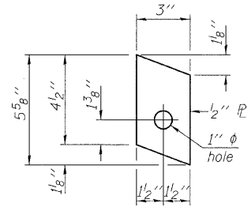
WELDED RAIL



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

LOCKING EDGE RAIL SPLICE

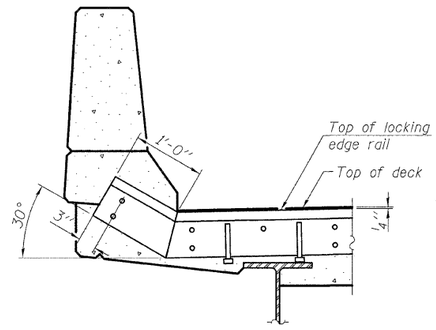
The inside of the locking edge rail groove shall be free of weld residue.



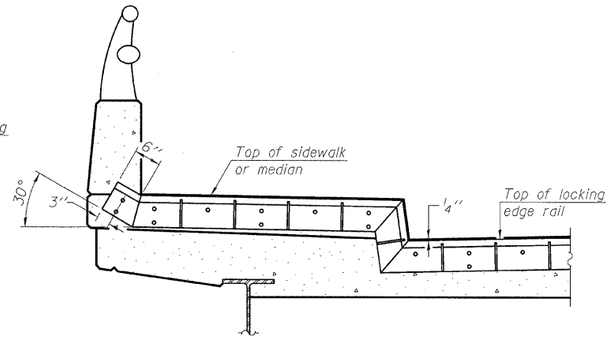
ANCHOR ℄

(for welded rail)

LOCKING EDGE RAILS



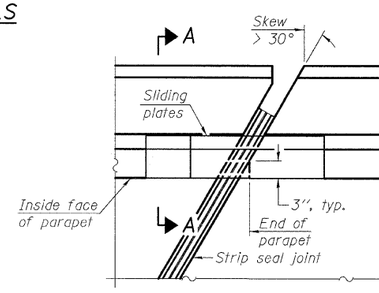
AT PARAPET



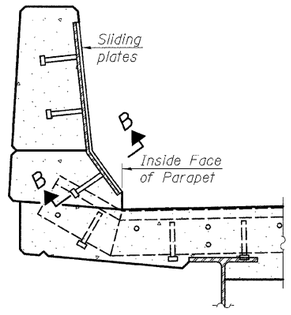
AT SIDEWALK OR MEDIAN

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.

TYPICAL END TREATMENTS



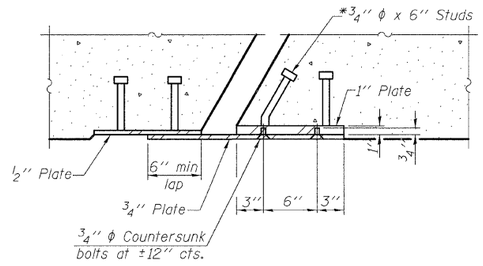
PLAN



SECTION A-A

POINT BLOCK DETAILS

(for skews > 30°)



SECTION B-B

BILL OF MATERIAL TWO STRUCTURES

Item	Unit	Total
Preformed Joint Strip Seal	Foot	357.0

PREFORMED JOINT STRIP SEAL STRUCTURE NO. 060-0012 (E.B.) STRUCTURE NO. 060-0013 (W.B.)

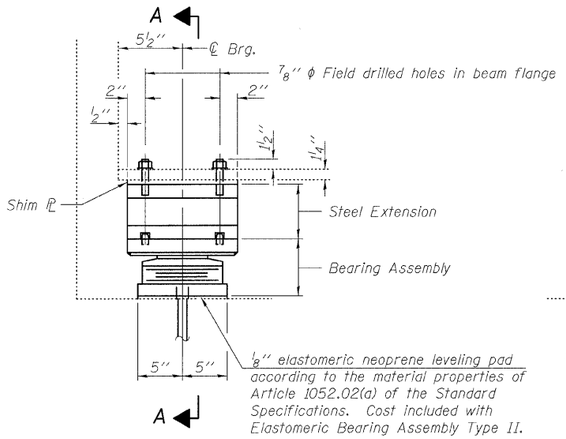
DESIGNED	EML
CHECKED	JJD
DRAWN	EML
CHECKED	JJD

EJ-SSJ 10-1-08

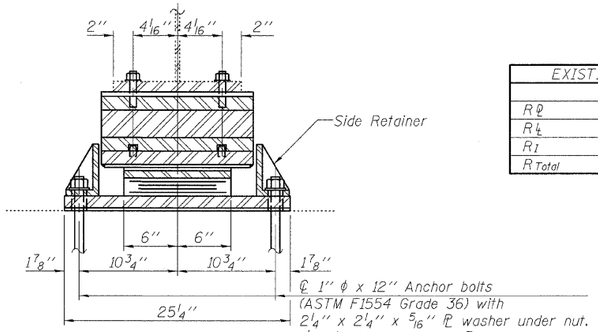
HORNER & SHIFRIN, INC. ENGINEERS

SHEET NO. 7	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
14 SHEETS	70	60-(5,6,7)RS, 60-(6,7)BR	MADISON	185	121
			CONTRACT NO. 76C56		
	FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



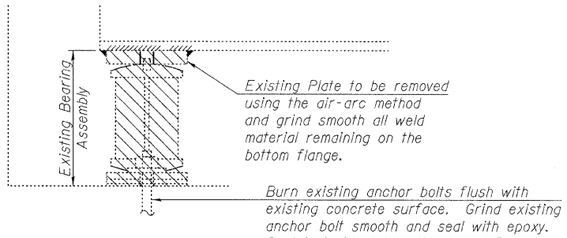
ELEVATION AT ABUT.



SECTION A-S

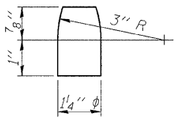
EXISTING GIRDER REACTION TABLE			
		W. or E. Abut.	Pier 1 or Pier 3
R℘	(k)	28.5	99.5
R℄	(k)	38.0	52.8
R1	(k)	9.9	13.0
R Total	(k)	76.4	165.3

** ¾" ϕ Threaded studs shall be placed in the field.

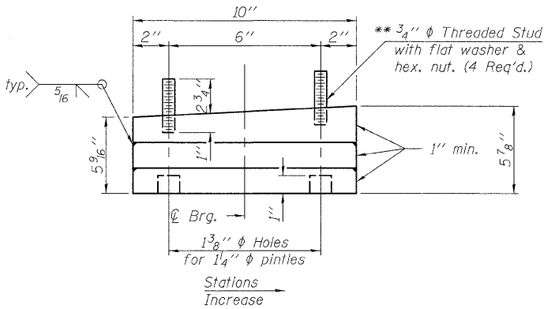


EXISTING BEARING REMOVAL DETAIL

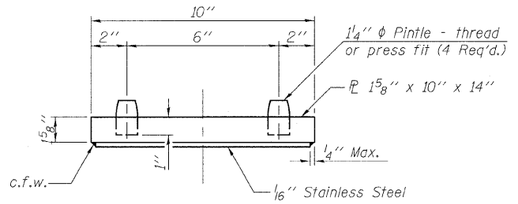
TYPE II ELASTOMERIC EXP. BRG.



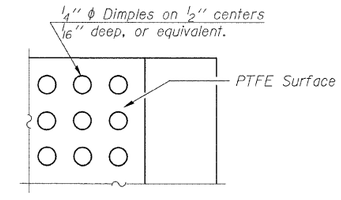
PINTLE



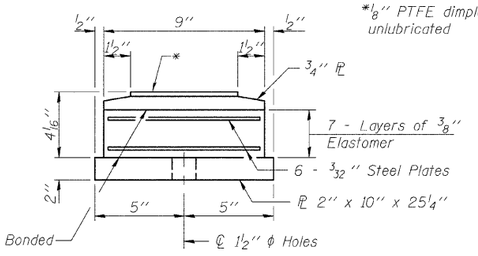
ELEVATION VIEW STEEL EXTENSION



TOP BEARING ASSEMBLY

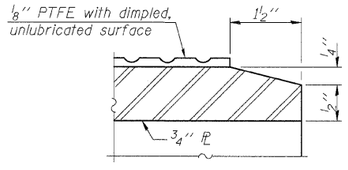


PLAN-PTFE SURFACE

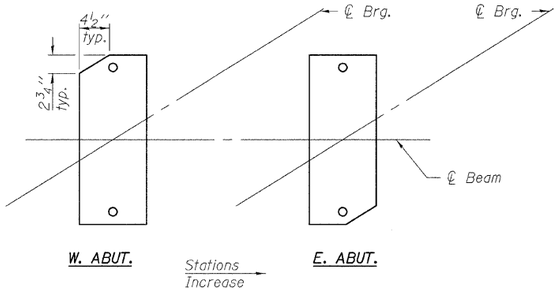


*⅛" PTFE dimpled, unlubricated

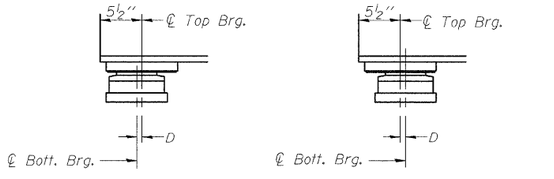
BOTTOM BEARING ASSEMBLY



SECTION THRU PTFE



BOTTOM BEARING ASSEMBLY CLIP DETAIL



SETTING ANCHOR BOLTS AT EXP. BRG.

D=⅛" per each 100' of expansion for every 15° temp. change from the normal temp. of 50°F.

Notes:

The structural steel plates of the Bearing Assembly shall conform to the requirements of AASHTO M 270 Grade 50.

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 existing beams have been reset. 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.

Steel extensions and threaded studs shall be included in the cost of Furnishing and Erecting Structural Steel.

The ⅛" 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 ⅛" PTFE sheet during vulcanizing process will be permitted provided the process and method of adjusting assembly height is approved by the Engineer.

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

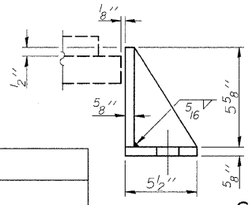
Minimum jack capacity = 60 Tons.

Existing bearings shall be removed and replaced under traffic.

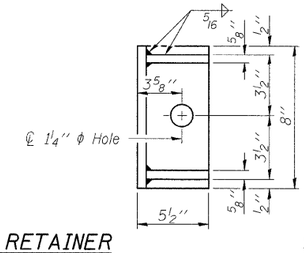
Diaphragm removal and reinstallation may be required to facilitate drilling holes. Cost included with Furnishing and Erecting Structural Steel.

BILL OF MATERIAL
TWO STRUCTURES

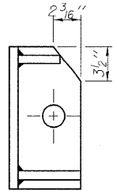
Item	Unit	Total
Furnishing and Erecting Structural Steel	Pound	7,480
Jack and Remove Existing Bearing	Each	32
Elastomeric Bearing Assembly Type II	Each	32
Anchor Bolts, 1"	Each	64



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



SIDE RETAINER CLIP DETAIL



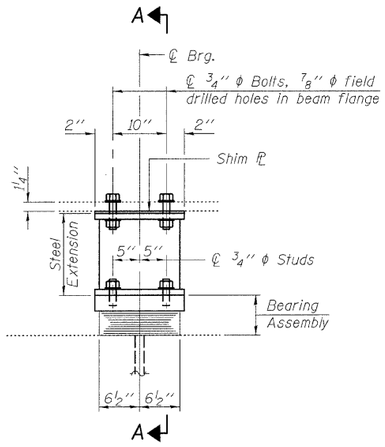
ABUTMENT BEARING DETAILS
STRUCTURE NO. 060-0012 (E.B.)
STRUCTURE NO. 060-0013 (W.B.)

DESIGNED	EML
CHECKED	JJD
DRAWN	EML
CHECKED	JJD

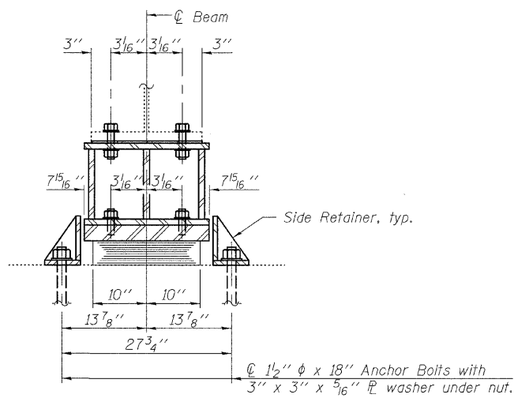
HORNER & SHIFRIN, INC.
ENGINEERS

SHEET NO. 8	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
14 SHEETS	70	60-(5,6,7)RS, 60-(6,7)BR	MADISON	185	122
			CONTRACT NO. 76C56		
	FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

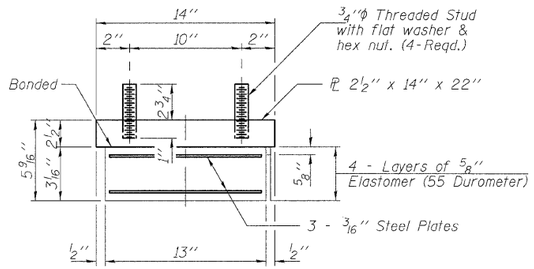


ELEVATION AT PIERS 1 & 3



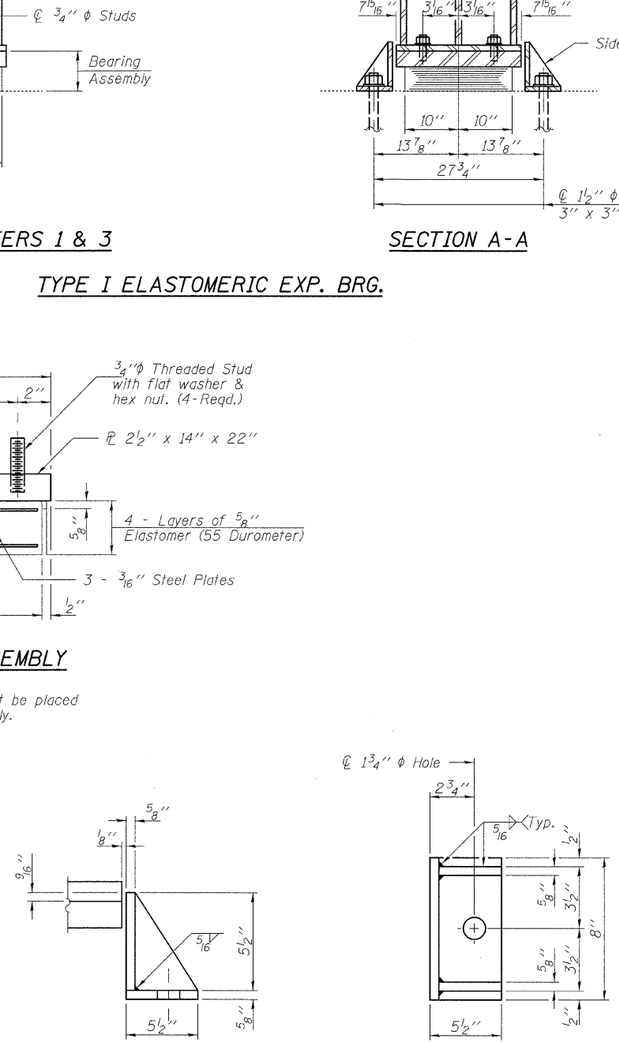
SECTION A-A

TYPE I ELASTOMERIC EXP. BRG.



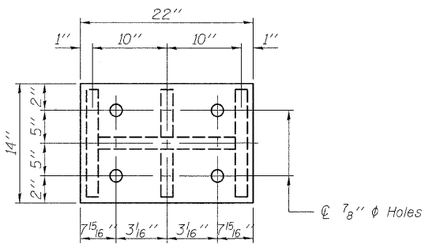
BEARING ASSEMBLY

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

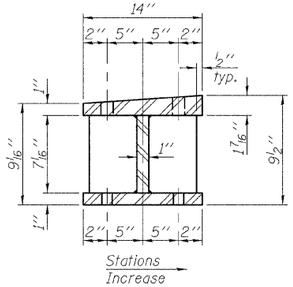


SIDE RETAINER

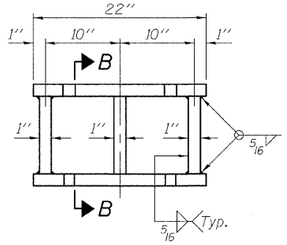
Equivalent rolled angle with stiffeners will be allowed in lieu of welded plates.



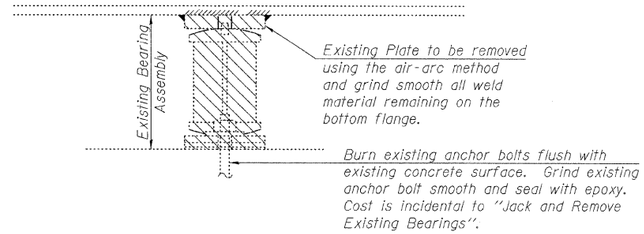
PLAN TOP AND BOTTOM PLATE



SECTION B-B



STEEL EXTENSION DETAIL



EXISTING BEARING REMOVAL DETAIL

Notes:
The structural steel plates of the Bearing Assembly shall conform to the requirements of AASHTO M 270 Grade 50.

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.

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.

Existing bearings shall be removed and replaced under traffic.

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

Minimum jack capacity = 130 Tons.

For beam reactions, see sheet 8 of 14.

BILL OF MATERIAL
TWO STRUCTURES

Item	Unit	Total
Furnishing and Erecting Structural Steel	Pound	10,130
Jack and Remove Existing Bearing	Each	32
Elastomeric Bearing Assembly Type I	Each	32
Anchor Bolts, 1 1/2"	Each	64

PIERS 1 AND 3 BEARING DETAILS
STRUCTURE NO. 060-0012 (E.B.)
STRUCTURE NO. 060-0013 (W.B.)

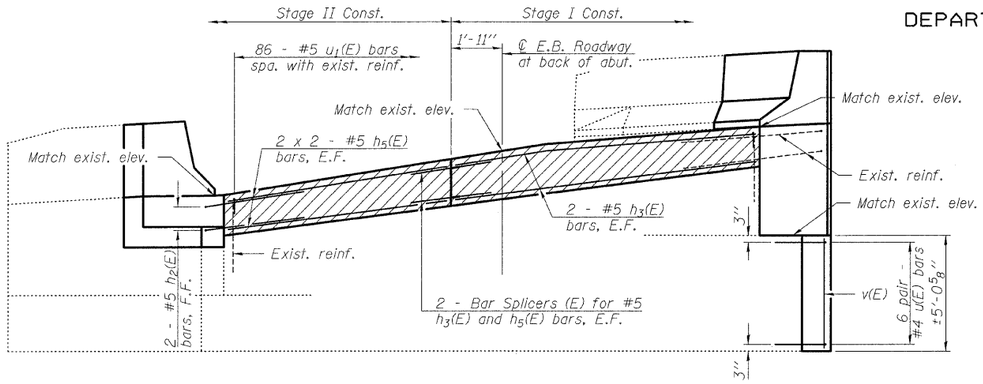
DESIGNED	EML
CHECKED	JJD
DRAWN	EML
CHECKED	JJD

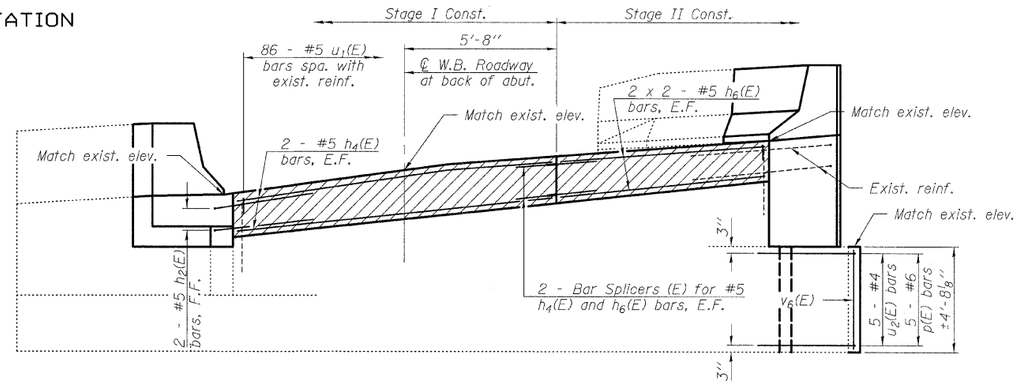
HORNER & SHIFRIN, INC.
ENGINEERS

SHEET NO. 9
14 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
70	60-(5,6,7)RS, 60-(6,7)BR	MADISON	185	123
		CONTRACT NO. 76C56		
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION





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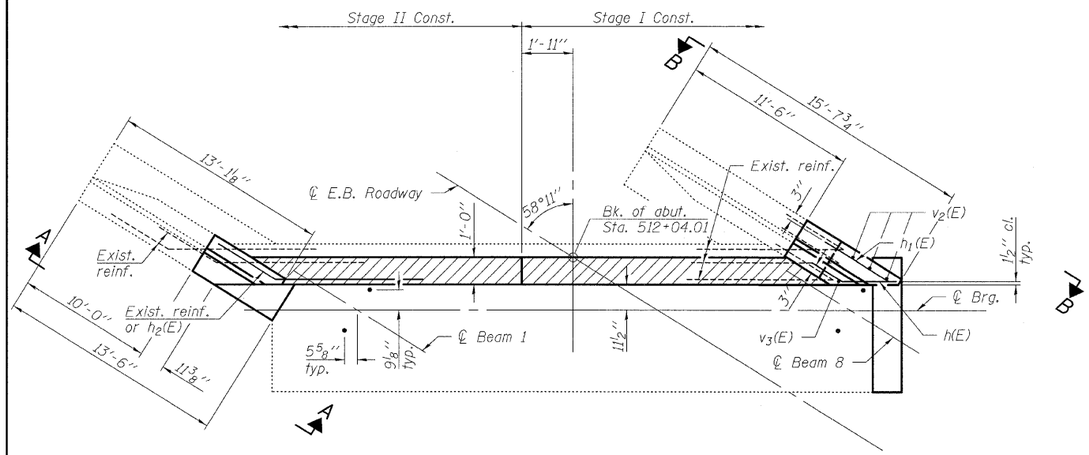
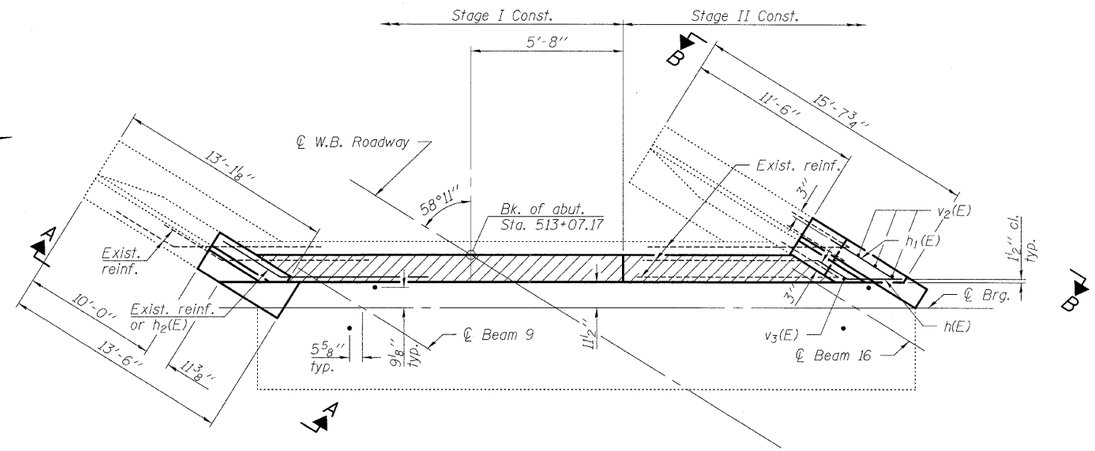
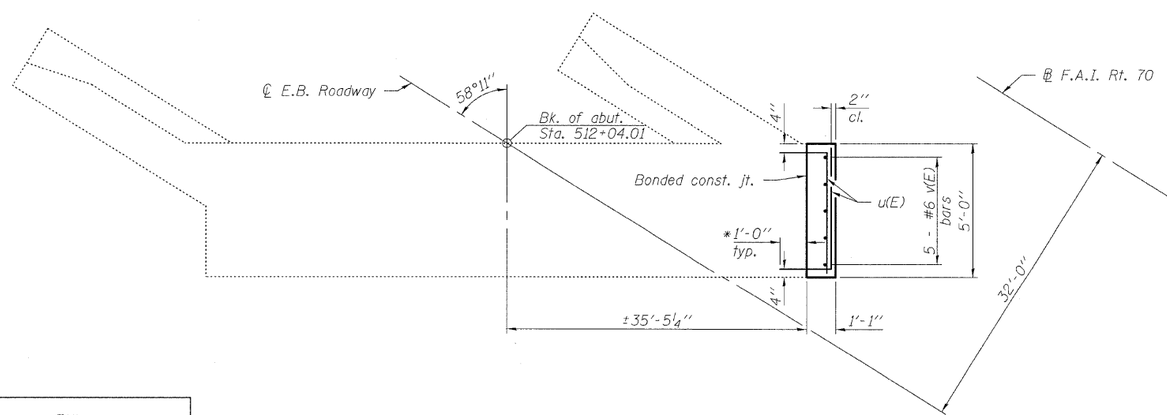
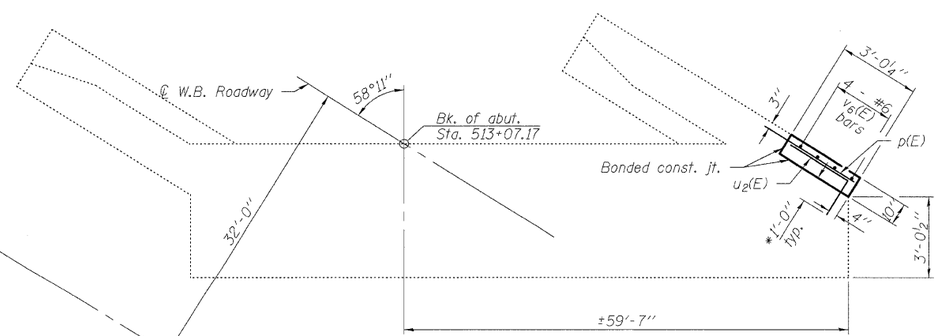




TOP VIEW





PLAN - PILE CAP

Notes:
Bars indicated thus 2 x 2 - #5 etc. indicates 2 lines of bars with 2 lengths per line.

WEST ABUTMENT DETAILS
STRUCTURE NO. 060-0012 (E.B.)
STRUCTURE NO. 060-0013 (W.B.)

DESIGNED	EML
CHECKED	JJD
DRAWN	EML
CHECKED	JJD

MINIMUM BAR LAP

#5 bar = 3'-0"

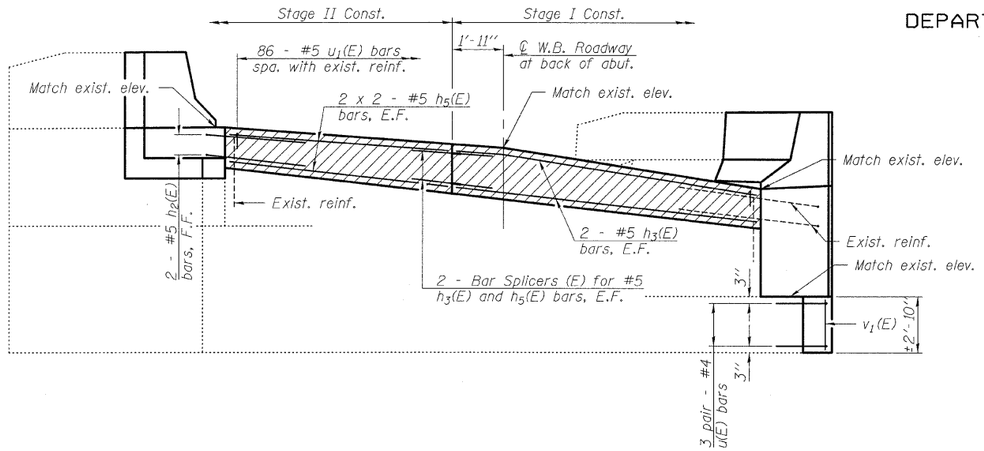
*Drill and epoxy grout reinforcement according to Section 584 of the Standard Specifications.

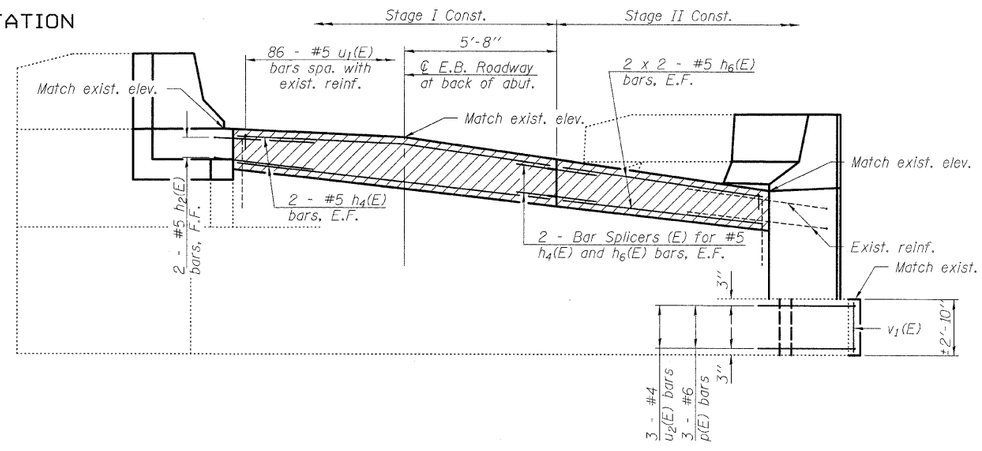
HORNER & SHIFRIN, INC.
ENGINEERS

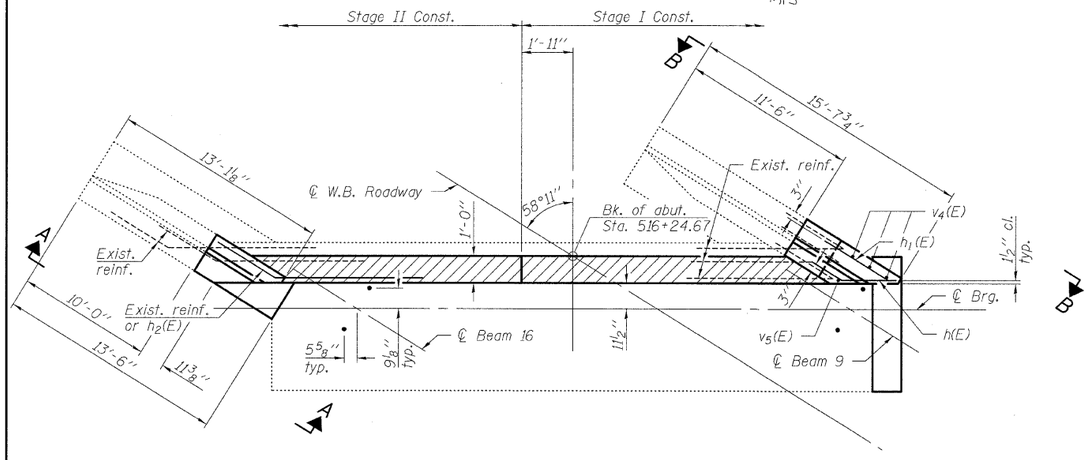
SHEET NO. 10	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
14 SHEETS	70	60-(5,6,7)RS, 60-(6,7)BR	MADISON	185	124
			CONTRACT NO. 76C56		
	FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

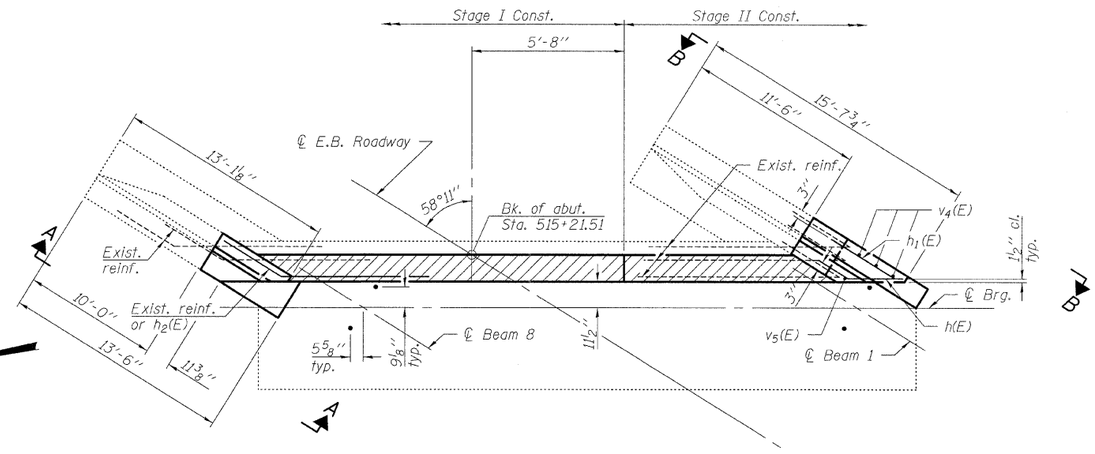
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ELEVATION

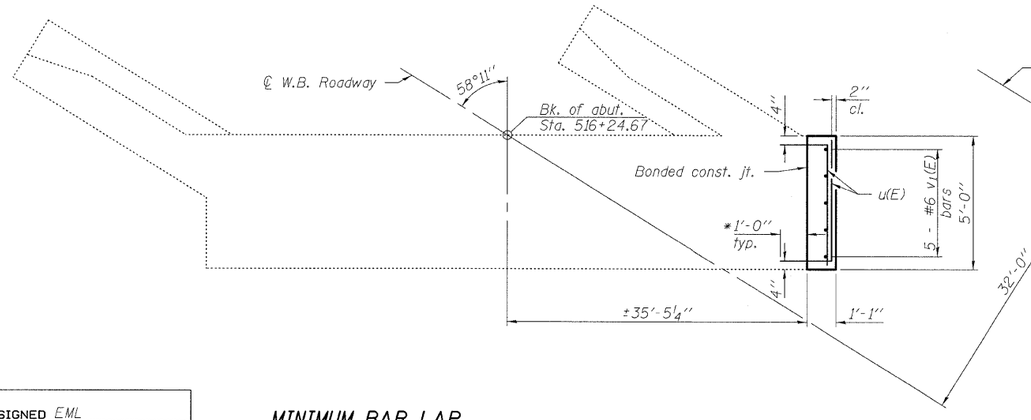


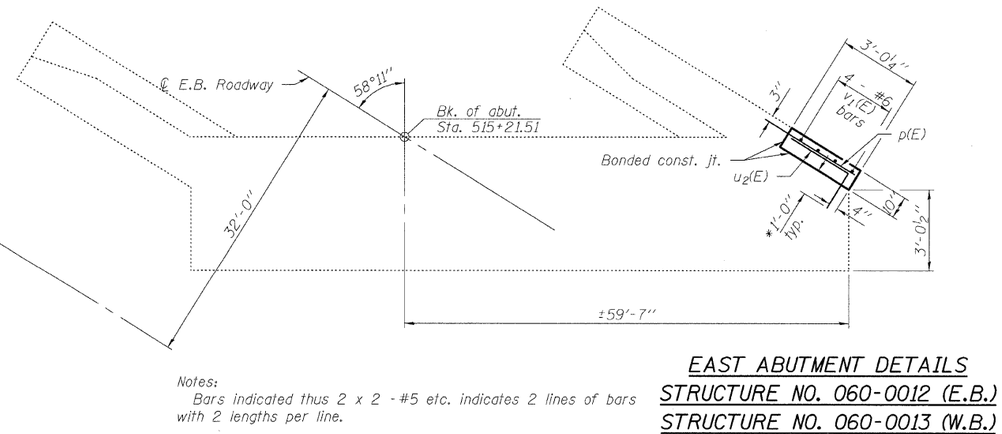






TOP VIEW





PLAN - PILE CAP

Notes:
Bars indicated thus 2 x 2 - #5 etc. indicates 2 lines of bars with 2 lengths per line.

EAST ABUTMENT DETAILS
STRUCTURE NO. 060-0012 (E.B.)
STRUCTURE NO. 060-0013 (W.B.)

DESIGNED	EML
CHECKED	JJD
DRAWN	EML
CHECKED	JJD

MINIMUM BAR LAP

#5 bar = 3'-0"

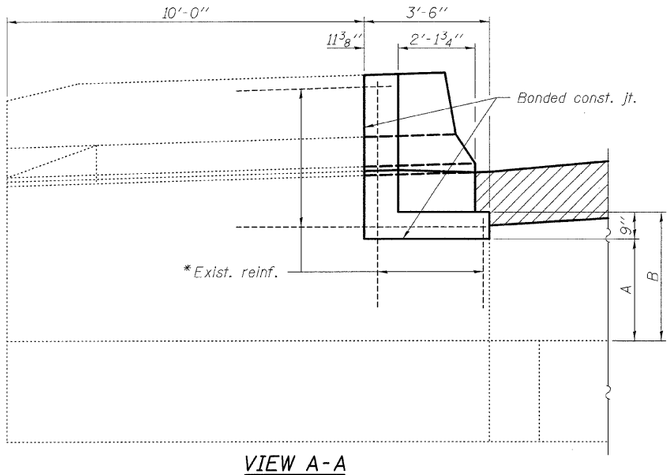
* Drill and epoxy grout reinforcement according to Section 584 of the Standard Specifications.

HORNER & SHIFRIN, INC.
ENGINEERS

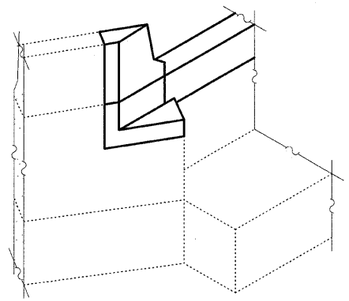
SHEET NO. 11
14 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
70	60-(5,6,7)RS, 60-(6,7)BR	MADISON	185	125
		CONTRACT NO. 76C56		
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

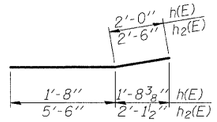
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



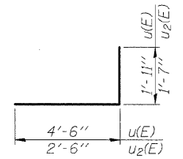
VIEW A-A



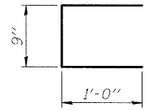
ISOMETRIC - VIEW A-A



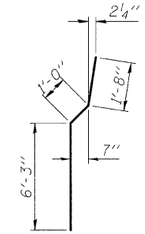
BARS h(E) & h2(E)



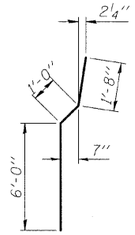
BARS u(E) & u2(E)



BAR u1(E)

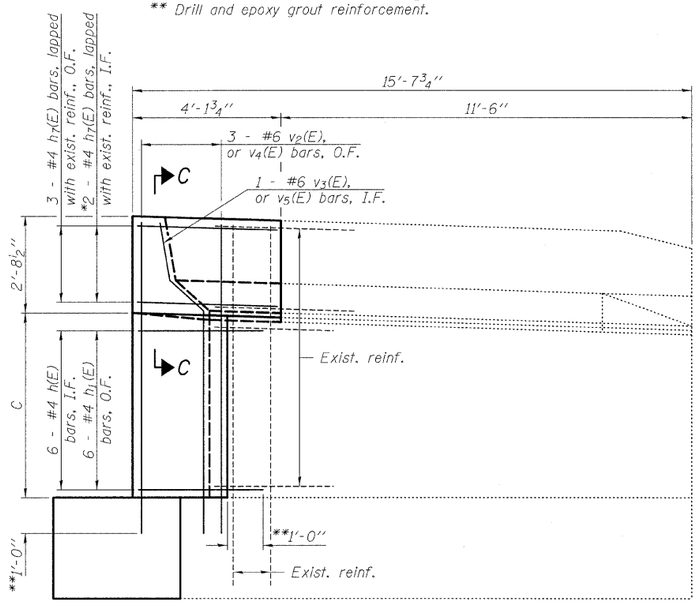


BAR v3(E)

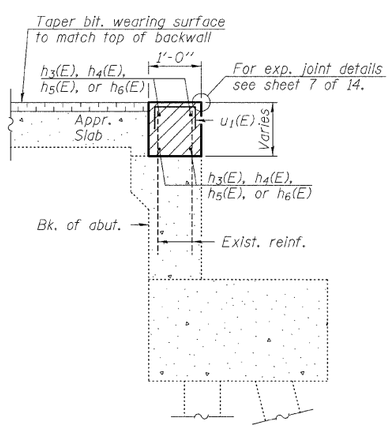


BAR v5(E)

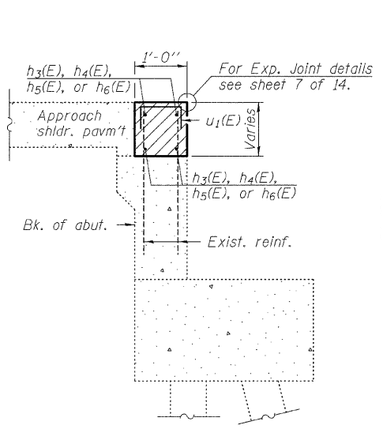
* Cut reinforcement to maintain a 1½" minimum clearance.
** Drill and epoxy grout reinforcement.



VIEW B-B

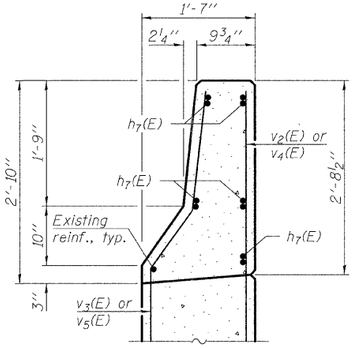


AT APPROACH SLAB



AT APPROACH SHOULDER

SECTION THRU ABUTMENT



SECTION C-C

Notes:
Hatched area to be poured after superstructure falsework has been removed. Quantity of concrete included with Concrete Superstructure.
Concrete Sealer shall be applied to the bearing seats.
Quantity of concrete in end post included with Concrete Superstructure on sheet 6 of 14.
For substructure Concrete Removal details, see sheet 5 of 14.

ABUTMENT BILL OF MATERIAL TWO STRUCTURES

Bar	No.	Size	Length	Shape
h(E)	24	#4	3'-8"	
h1(E)	24	#4	3'-5"	
h2(E)	8	#5	8'-0"	
h3(E)	8	#5	34'-0"	
h4(E)	8	#5	36'-3"	
h5(E)	16	#5	27'-3"	
h6(E)	16	#5	26'-2"	
h7(E)	20	#4	3'-11"	
p(E)	8	#6	3'-10"	
u(E)	18	#4	6'-5"	
u1(E)	344	#5	2'-9"	
u2(E)	8	#4	4'-1"	
v(E)	5	#6	4'-9"	
v1(E)	9	#6	2'-7"	
v2(E)	6	#6	8'-8"	
v3(E)	2	#6	8'-11"	
v4(E)	6	#6	8'-6"	
v5(E)	2	#6	8'-8"	
v6(E)	4	#6	4'-4"	
Concrete Removal			Cu. Yd.	2.3
Structure Excavation			Cu. Yd.	15
Concrete Structures			Cu. Yd.	7.4
Reinforcement Bars, Epoxy Coated			Pound	3.160
Concrete Sealer			Sq. Ft.	1.435

For details of Bar Splicers, see sheet 14 of 14.

ABUTMENT DETAILS
STRUCTURE NO. 060-0012 (E.B.)
STRUCTURE NO. 060-0013 (W.B.)

DESIGNED	EML
CHECKED	JJD
DRAWN	EML
CHECKED	JJD

MINIMUM BAR LAP

#5 bar = 3'-0"

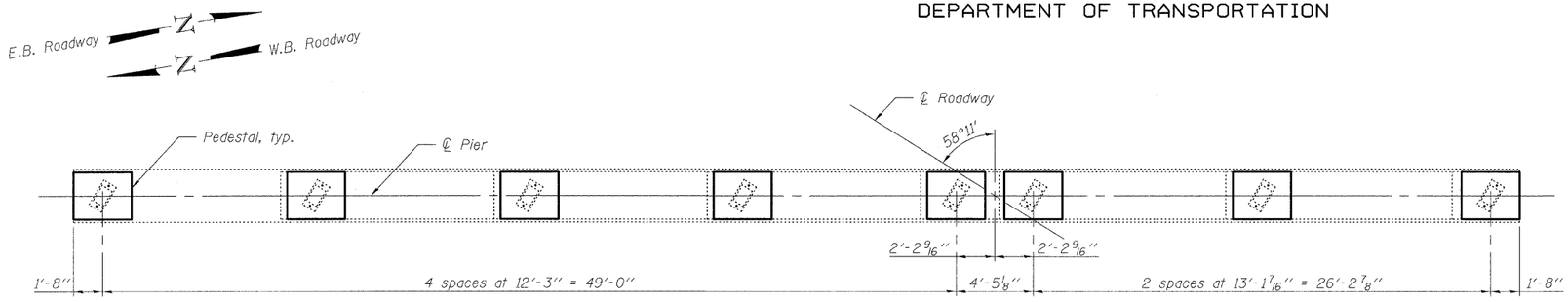
TABLE OF VARIABLE DIMENSIONS

	S.N. 060-0012		S.N. 060-0013	
	W. Abut.	E. Abut.	W. Abut.	E. Abut.
A	2'-10 1/8"	3'-2 3/8"	2'-10 3/8"	3'-2 7/8"
B	3'-7 1/8"	3'-11 3/8"	3'-7 3/8"	3'-11 7/8"
C	5'-2"	4'-11 1/4"	5'-2 1/8"	4'-11 1/8"

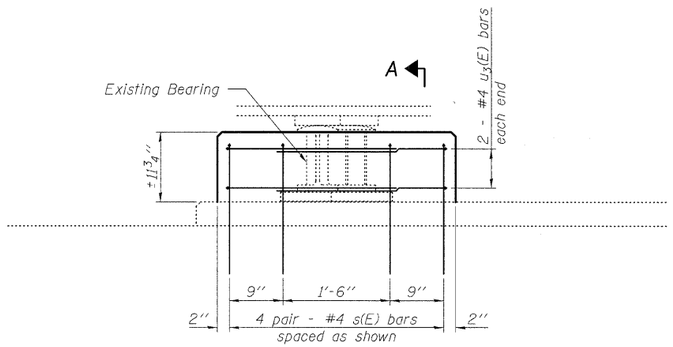
HORNER & SHIFRIN, INC.
ENGINEERS

SHEET NO. 12	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
14 SHEETS	70	60-(5,6,7)RS, 60-(6,7)BR	MADISON	185	126
			CONTRACT NO. 76C56		
	FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

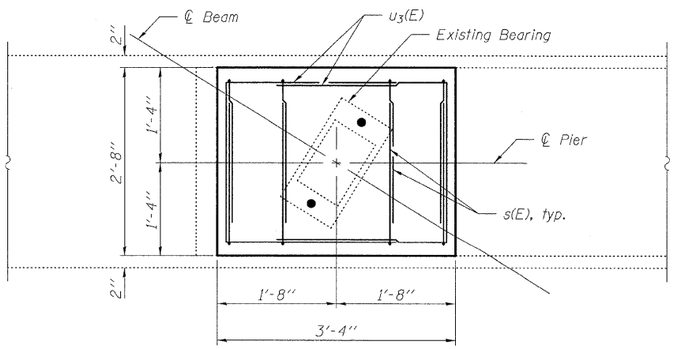
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



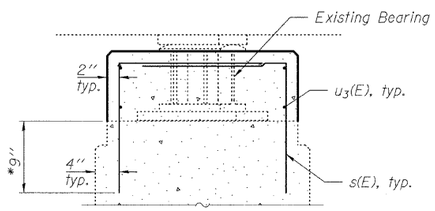
PLAN OF CAP



ELEVATION OF PEDESTAL

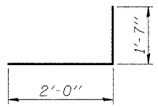


PLAN OF PEDESTAL

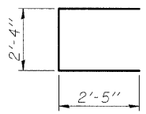


*Drill and epoxy grout reinforcement according to Section 584 of the Standard Specifications.

SECTION A-A



BARS s(E)



BAR u3(E)

BILL OF MATERIAL
TWO STRUCTURES

Bar	No.	Size	Length	Shape
s(E)	128	#4	3'-7"	⌞
u3(E)	64	#4	7'-2"	⊐
Concrete Structures			Cu. Yd.	5.2
Reinforcement Bars, Epoxy Coated			Pound	620

DESIGNED	EML
CHECKED	JJD
DRAWN	EML
CHECKED	JJD

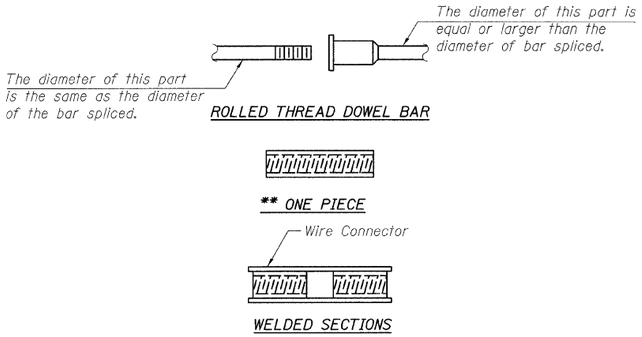
Note:
If there is difficulty placing the s(E) bar due to the existing beam as shown, the Contractor is to adjust the bar spacing as necessary keeping it as close as possible to the original location.

HORNER & SHIFRIN, INC.
ENGINEERS

PIER 2 DETAILS
STRUCTURE NO. 060-0012 (E.B.)
STRUCTURE NO. 060-0013 (W.B.)

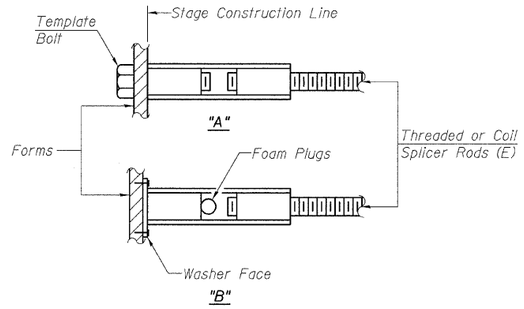
SHEET NO. 13	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
14 SHEETS	70	60-(5,6,7)RS, 60-(6,7)BR	MADISON	185	127
			CONTRACT NO. 76C56		
	FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

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.

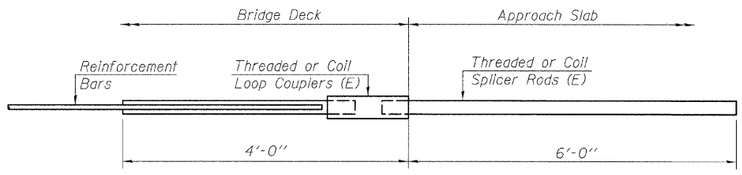
Other systems of similar design may be submitted to the Engineer for approval. Approval shall be based on certified test results from an approved testing laboratory that the proposed bar splicer assembly satisfies the following requirements:

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

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

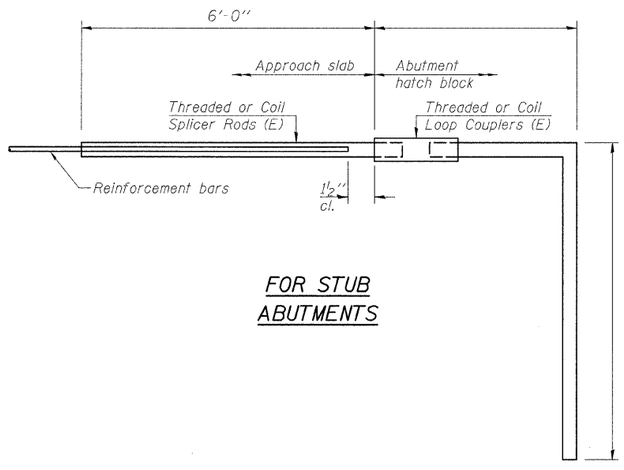
Where fy = Yield strength of lapped reinforcement bars in ksi.
A_t = Tensile stress area of lapped reinforcement bars.
* = 28 day concrete

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'-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



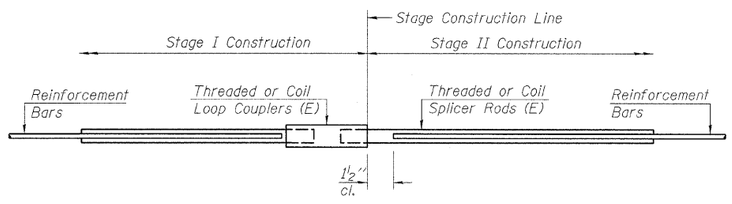
FOR INTEGRAL OR SEMI-INTEGRAL ABUTMENTS

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 =



STANDARD

Bar Size	No. Assemblies Required	Location
#5	4	Deck
#5	16	Abutment
#8	32	Deck

BAR SPLICER ASSEMBLY DETAILS
STRUCTURE NO. 060-0012 (E.B.)
STRUCTURE NO. 060-0013 (W.B.)

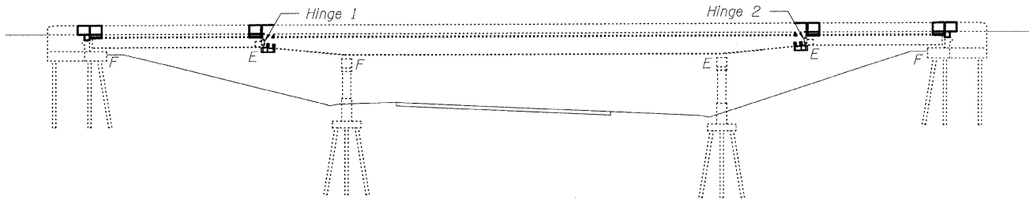
DESIGNED	EML
CHECKED	JJD
DRAWN	EML
CHECKED	JJD

BSD-1 10-1-08

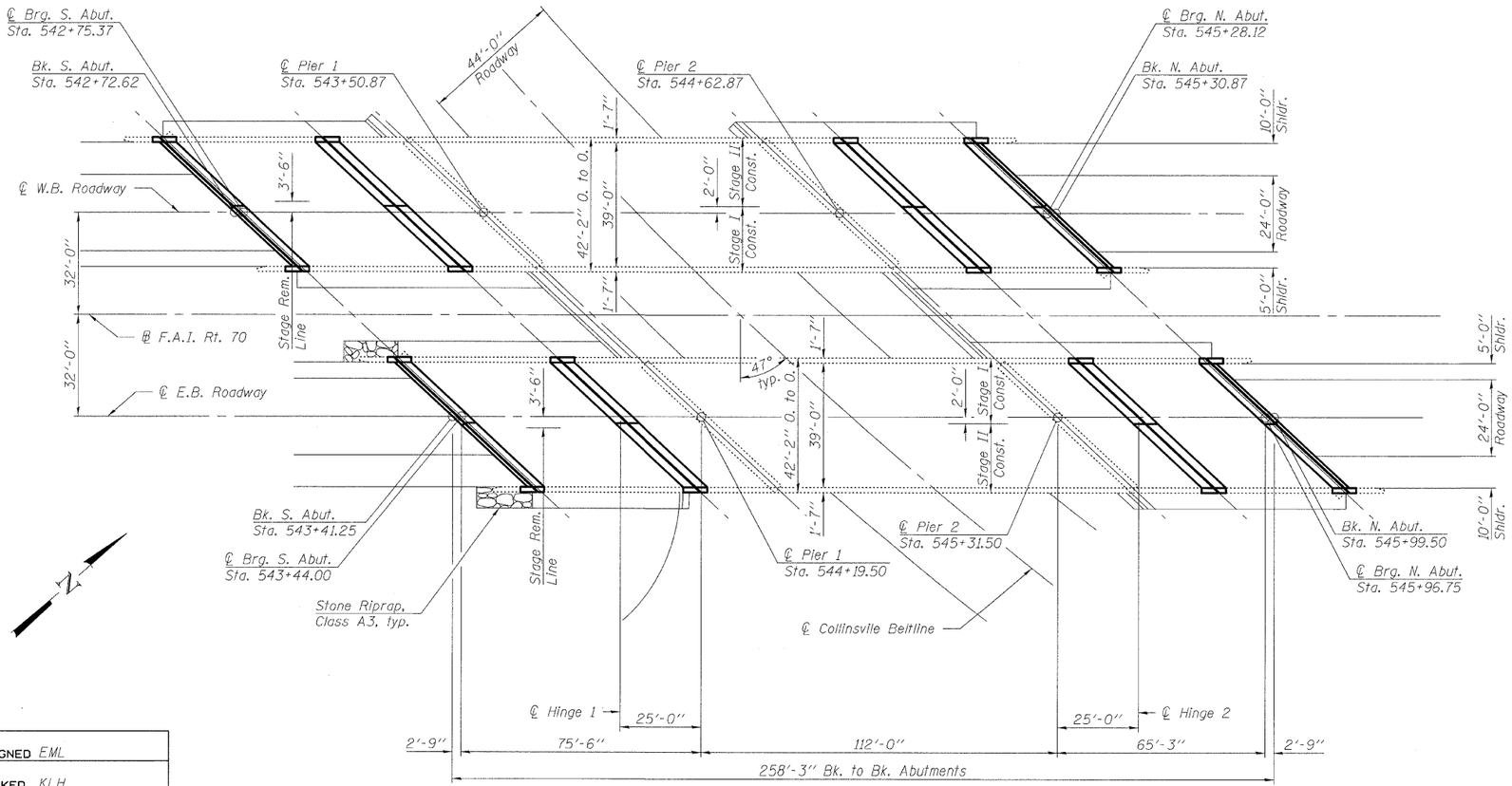
HORNER & SHIFRIN, INC. ENGINEERS

SHEET NO. 14	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
14 SHEETS	70	60-(5,6,7)RS, 60-(6,7)BR	MADISON	185	128
			CONTRACT NO. 76C56		
	FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



ELEVATION



PLAN

INDEX OF SHEETS

SCOPE OF WORK

1. Replace expansion joints.
2. Wash bridge deck, parapets and abutment seats.
3. Seal deck, parapets, and abutment seats with "Concrete Sealer".
4. Remove and replace bearings at Pier 2.
5. Construct concrete pedestals around existing bearings at both abutments and Pier 1.
6. Install steel catch beams at both hinges.
7. Place riprap at both sides of the W. Appr. Pavement of the E.B. Roadway.

LOADING HS20-44 (NEW CONSTRUCTION)

DESIGN SPECIFICATIONS (NEW CONSTRUCTION)

2002 AASHTO

DESIGN STRESSES

fy = 50,000 psi (structural steel AASHTO M270, Gr. 50)

Note:
For details of Stone Riprap, Class A3, see sheet 2 of 16.

STATE OF ILLINOIS
ERIC M. LAGEMANN
LICENSE NO. 081-006124
PROFESSIONAL ENGINEER
STRUCTURAL

Eric Lagemann 9/15/09
Expires 11/30/2010

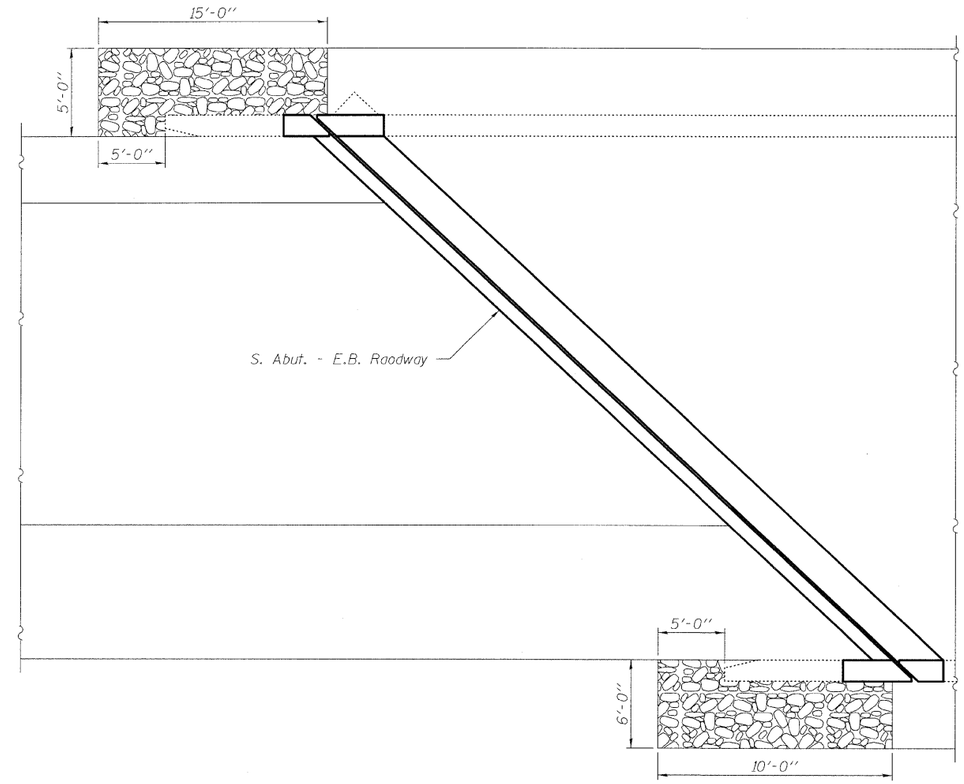
GENERAL PLAN & ELEVATION
I-70 OVER COLLINSVILLE BELTLINE
F.A.I. RT. 70 - SECTION 60-(6,7)BR
MADISON COUNTY
STA. 544+31.73
STRUCTURE NO. 060-0014 (E.B.)
STRUCTURE NO. 060-0015 (W.B.)

DESIGNED	EML
CHECKED	KLH
DRAWN	EML
CHECKED	KLH

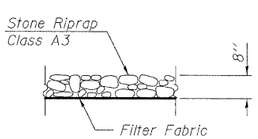
HORNER & SHIFRIN, INC.
ENGINEERS

SHEET NO. 1	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
16 SHEETS	70	60-(6,7)BR	MADISON	185	129
			CONTRACT NO. 76C56		
	FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



PLAN OF RIPRAP



SECTION THRU RIPRAP

GENERAL NOTES

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, 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.

Concrete Sealer shall be applied to the designated areas of the abutments.

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

The Organic Zinc Rich Primer / Epoxy / Urethane Paint System shall be used for painting of new structural steel except where otherwise noted. The entire system shall be shop applied, with the exception that masked off connection surfaces, field installed fasteners and damaged areas shall be touched up in the field. The color of the final finish coat shall be Gray, Munsell No. 5B 7/1. See Special Provision for "Cleaning and Painting New Metal Structures".

Fasteners shall be high strength bolts. bolts $^{3}/_{4}$"Φ, open holes $^{13}/_{16}$"Φ, or Bolts $^{7}/_{8}$"Φ, open holes $^{15}/_{16}$"Φ, unless otherwise noted.

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".

The bridge deck, parapets, and abutment seats shall be washed according to Article 592.00 of the Standard Specifications. Cost is included with Bridge Washing No. 3.

The joints between the bridge approach slab and wingwalls shall be sealed according to Article 452.00 of the Standard Specifications.

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

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".

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 revent flange rotation.

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

Concrete Sealer shall be applied to the surfaces of the bridge deck and paraets, including wings. See Special Provision "Bridge Deck Concrete Sealer".

TOTAL BILL OF MATERIAL
TWO STRUCTURES

ITEM	UNIT	SUPER	SUB	TOTAL
Stone Riprap, Class A3	Sq. Yd.		15	15
Filter Fabric	Sq. Yd.		15	15
Joint or Crack Filling	Pound			30
Concrete Removal	Cu. Yd.	87.3	2.6	89.9
Structure Excavation	Cu. Yd.		13	13
Concrete Structures	Cu. Yd.		20.4	20.4
Concrete Superstructure	Cu. Yd.	87.1		87.1
Furnishing and Erecting Structural Steel	Pound	64,530		64,530
Jack and Remove Existing Bearings	Each	12		12
Reinforcement Bars, Epoxy Coated	Pound	5,770	3,290	9,060
Bar Splicers	Each	40		40
Preformed Joint Strip Seal	Foot	473.5		473.5
Elastomeric Bearing Assembly, Type I	Each	12		12
Anchor Bolts, $1^{1}/_{2}$"	Each	24		24
Concrete Sealer	Sq. Ft.	24,005	1,210	25,215
Bridge Washing No. 3	Each			2

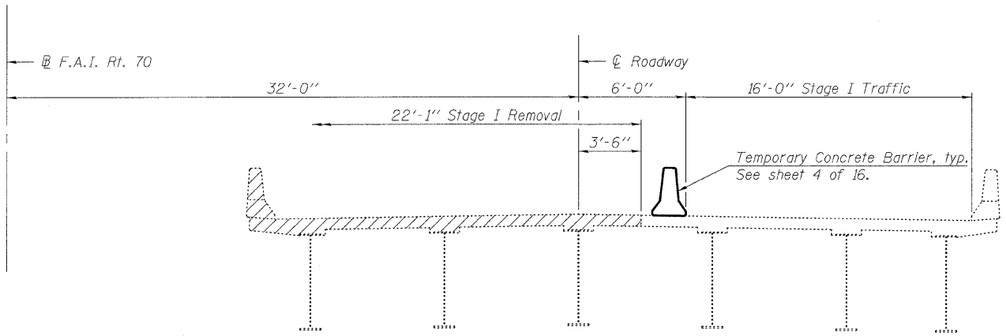
DESIGNED	EML
CHECKED	KLH
DRAWN	EML
CHECKED	KLH

HORNER & SHIFRIN, INC.
ENGINEERS

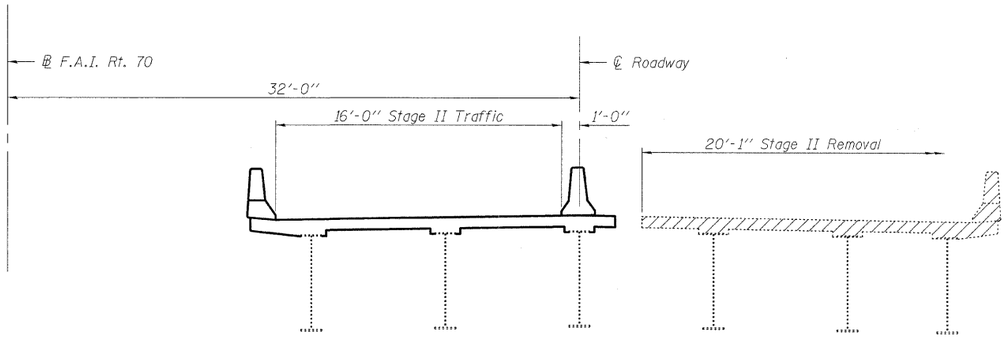
GENERAL DATA
STRUCTURE NO. 060-0014 (E.B.)
STRUCTURE NO. 060-0015 (W.B.)

SHEET NO. 2	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
16 SHEETS	70	60-(6,7)BR	MADISON	185	130
			CONTRACT NO. 76C56		
	FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

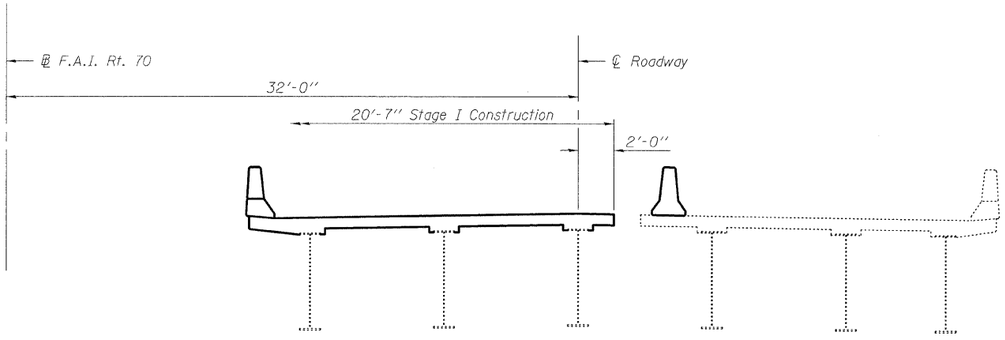
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



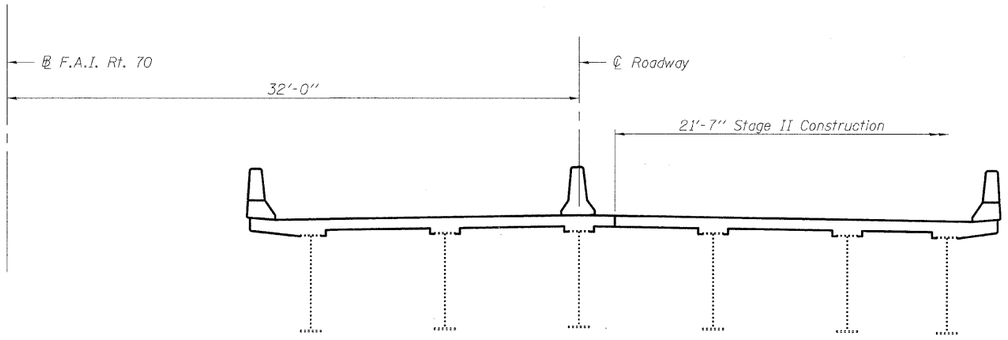
STAGE I REMOVAL



STAGE II REMOVAL



STAGE I CONSTRUCTION



STAGE II CONSTRUCTION

Notes:
All sections are looking north for E.B. Roadway, and south for W.B. Roadway.
For quantity of Temporary Concrete Barrier, see roadway plans.
Hatched area indicates Concrete Removal.
Stage removal and construction shown in sections are limited to expansion joint end blocks.

DESIGNED	EML
CHECKED	KLH
DRAWN	EML
CHECKED	KLH

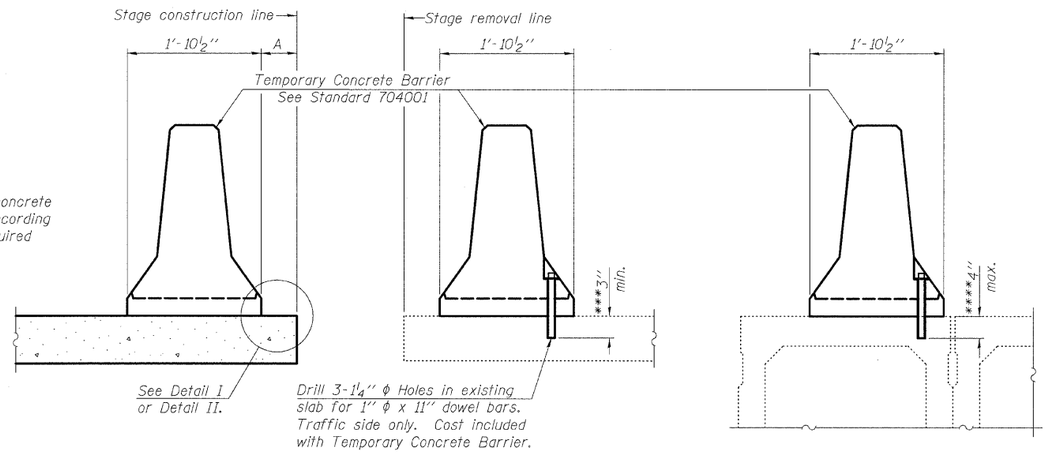
HORNER & SHIFRIN, INC.
ENGINEERS

STAGE CONSTRUCTION DETAILS
STRUCTURE NO. 060-0014 (E.B.)
STRUCTURE NO. 060-0015 (W.B.)

SHEET NO. 3	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
16 SHEETS	70	60-(6,7)BR	MADISON	185	131
			CONTRACT NO. 76C56		
	FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

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".



NOTES

Detail I - With Bar Splicer or Couplers:
Connect one (1) 1"x7"x10" steel PL to the top layer of couplers with 2-⅝" ϕ bolts screwed to coupler at approximate ℄ of each barrier panel.

Detail II - With Extended Reinforcement Bars:
Connect one (1) 1"x7"x 10" steel PL to the concrete slab or concrete wearing surface with 2-⅝" ϕ Expansion Anchors or cast in place inserts spaced between the top layer of reinforcement at approximate ℄ of each barrier panel.

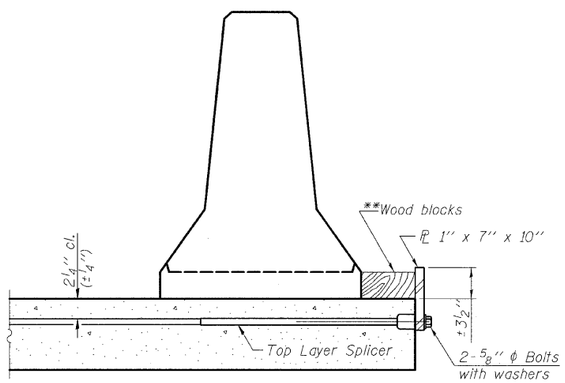
Cost of anchorage is included with Temporary Concrete Barrier.

The 1" x 7" x 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.

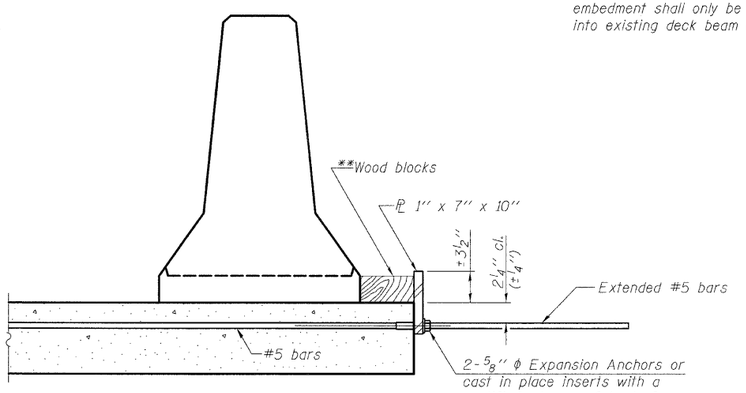
SECTIONS THRU SLAB OR DECK BEAM

*** 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.

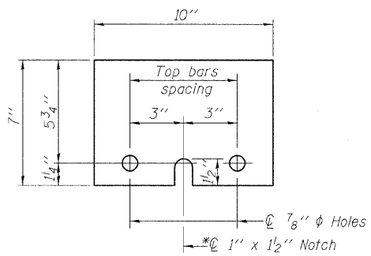
**** If existing deck beam is to remain in place after stage construction, embedment shall only be into wearing surface and not into existing deck beam concrete.



DETAIL I



DETAIL II



STEEL RETAINER PL 1" x 7" x 10"

* Required only with 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.

TEMPORARY CONCRETE BARRIER FOR STAGE CONSTRUCTION STRUCTURE NO. 060-0014 (E.B.) STRUCTURE NO. 060-0015 (W.B.)

DESIGNED	EML
CHECKED	KLH
DRAWN	EML
CHECKED	KLH

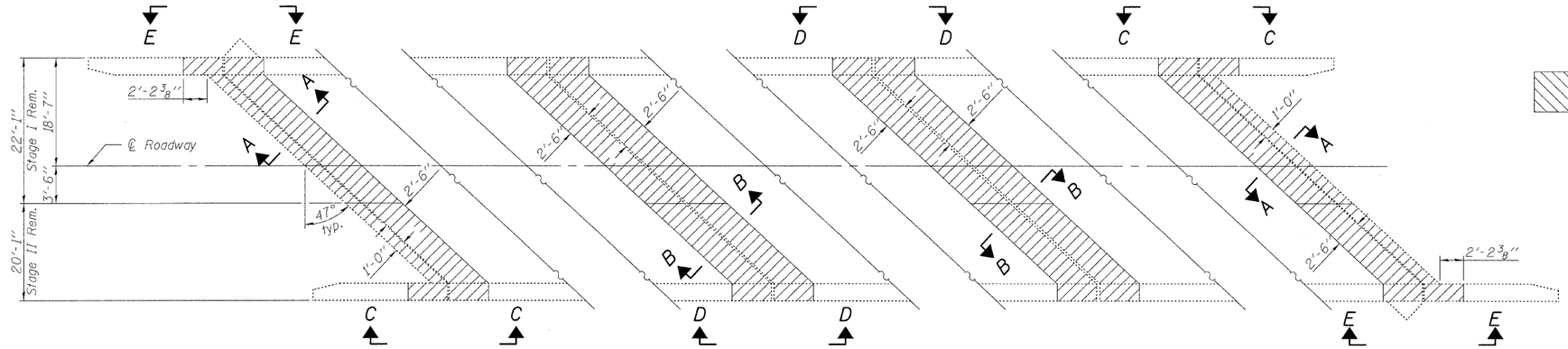
R-27 10-1-08

HORNER & SHIFRIN, INC. ENGINEERS

SHEET NO. 4
16 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
70	60-(6,7)BR	MADISON	185	132
		CONTRACT NO. 76C56		
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



Denotes concrete removal

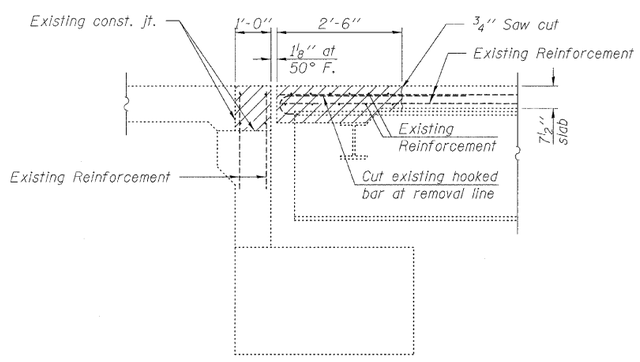
S. Abut. - E.B. Rdwy
N. Abut. - W.B. Rdwy

Hinge 1 - E.B. Rdwy
Hinge 2 - W.B. Rdwy

Hinge 2 - E.B. Rdwy
Hinge 1 - W.B. Rdwy

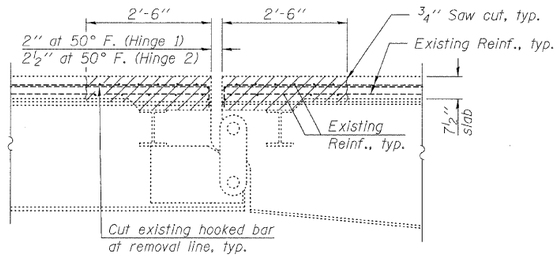
N. Abut. - E.B. Rdwy
S. Abut. - W.B. Rdwy

PLAN OF REMOVAL DETAIL



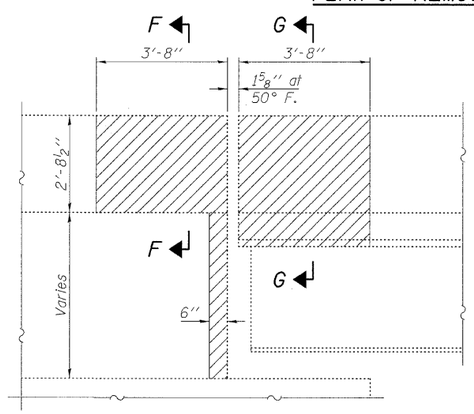
SECTION A-A

(Horz. dim. at right L's)

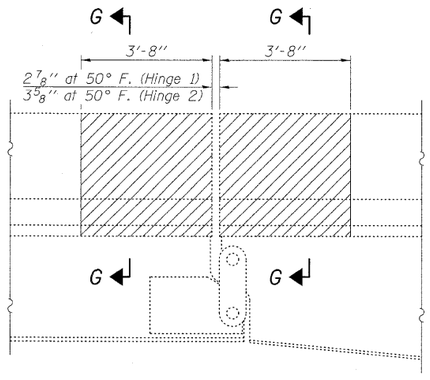


SECTION B-B

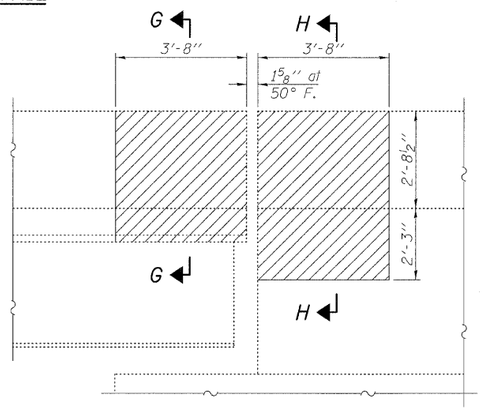
(Horz. dim. at right L's)



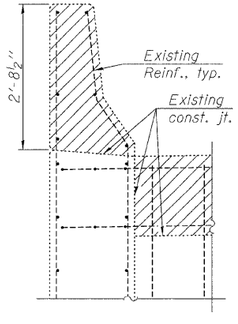
VIEW C-C



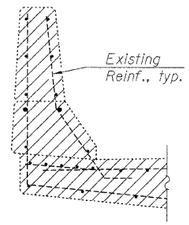
VIEW D-D



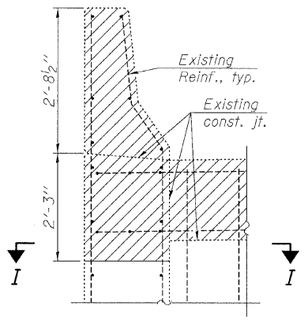
VIEW E-E



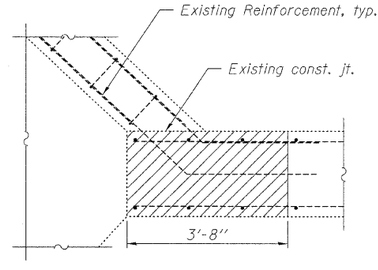
SECTION F-F



SECTION G-G



SECTION H-H



SECTION I-I

DESIGNED	EML
CHECKED	KLH
DRAWN	EML
CHECKED	KLH

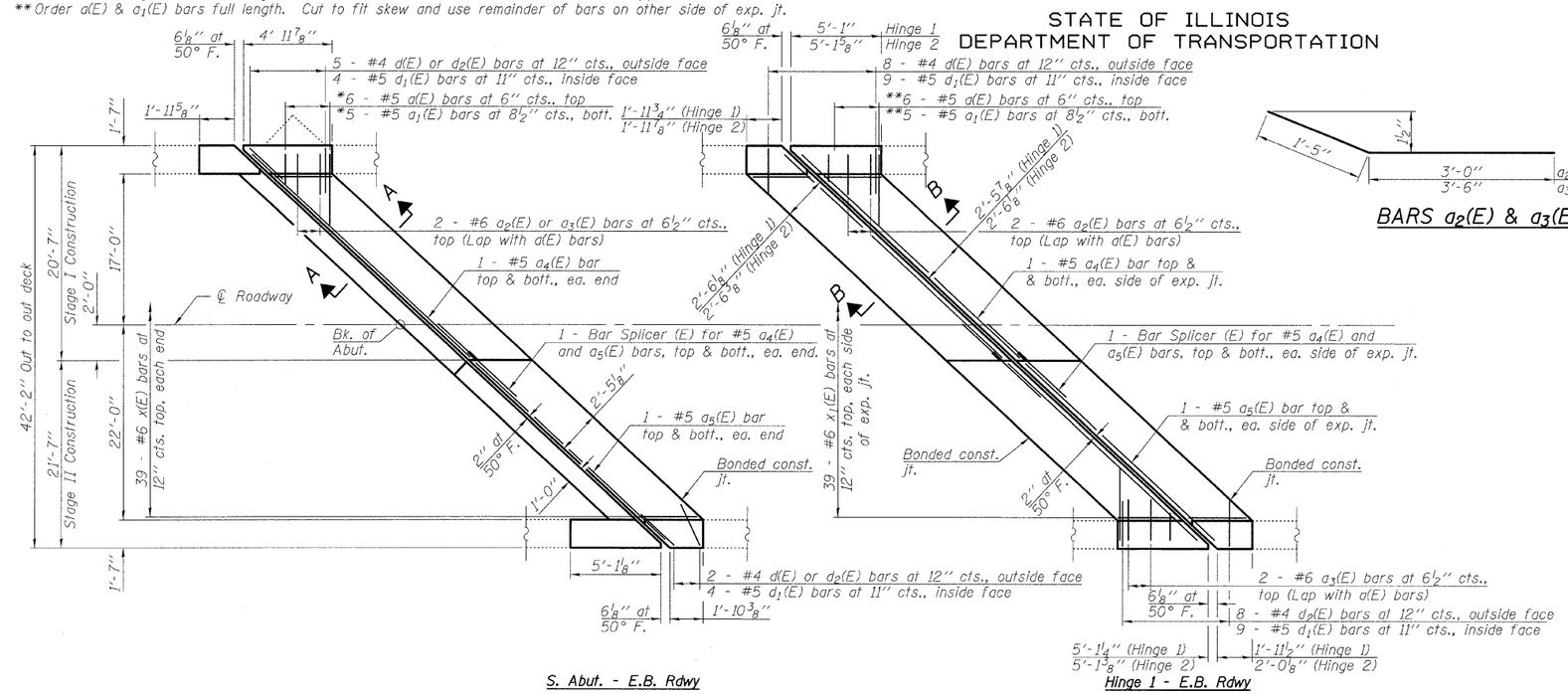
REMOVAL DETAILS
STRUCTURE NO. 060-0014 (E.B.)
STRUCTURE NO. 060-0015 (W.B.)

HORNER & SHIFRIN, INC.
ENGINEERS

SHEET NO. 5	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
16 SHEETS	70	60-(6,7)BR	MADISON	185	133
			CONTRACT NO. 76C56		
	FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

* Order a(E) & a_1(E) bars full length. Cut to fit skew and use remainder of bars in opposite end.
** Order a(E) & a_1(E) bars full length. Cut to fit skew and use remainder of bars on other side of exp. jt.

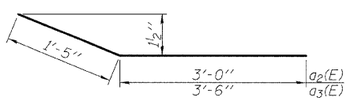
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



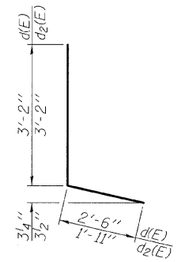
S. Abut. - E.B. Rdwy
N. Abut. - W.B. Rdwy

Hinge 1 - E.B. Rdwy
Hinge 2 - W.B. Rdwy

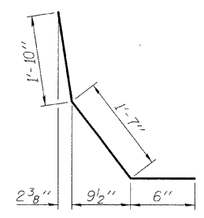
PARTIAL PLAN OF REINFORCEMENT DETAIL



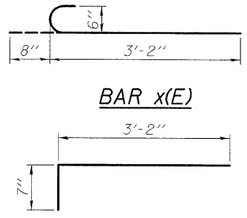
BARS a_2(E) & a_3(E)



BARS d(E) & d_2(E)

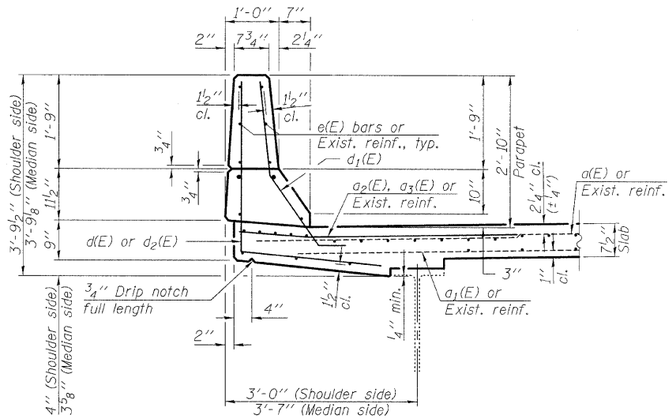


BAR d_1(E)

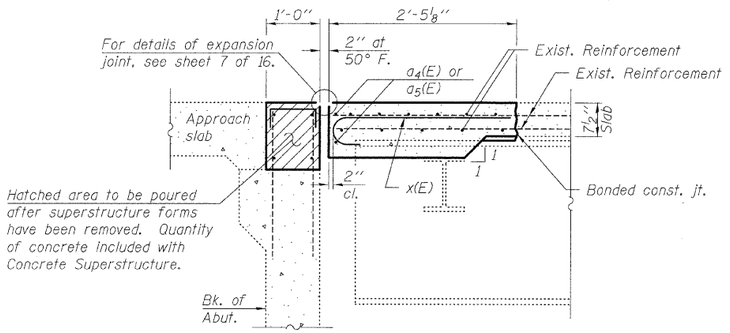


BAR x(E)

BAR x_1(E)

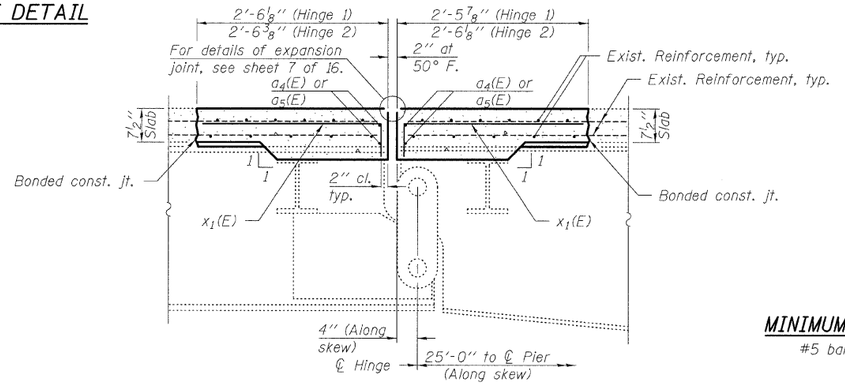


SECTION THRU PARAPET



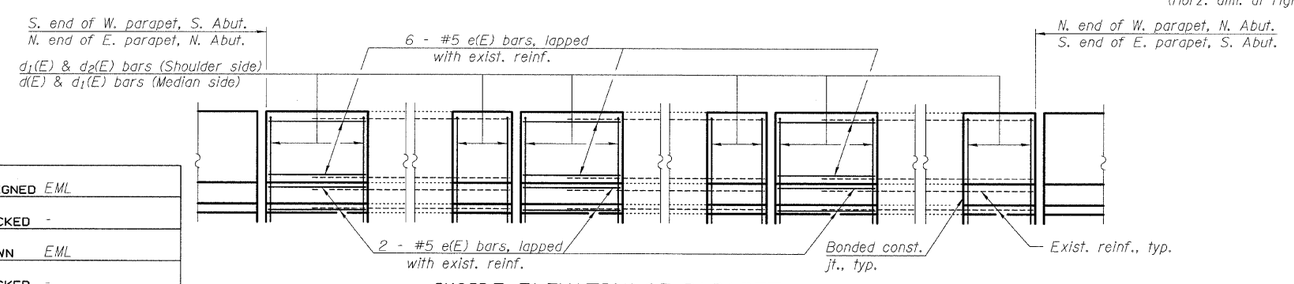
SECTION A-A

(Horz. dim. at right L's)



SECTION B-B

(Horz. dim. at right L's)



INSIDE ELEVATION OF PARAPET

MINIMUM BAR LAP

#5 bar = 3'-0"

SUPERSTRUCTURE BILL OF MATERIAL TWO STRUCTURES

Bar	No.	Size	Length	Shape
d(E)	36	#5	5'-8"	
a_1(E)	30	#5	5'-6"	
a_2(E)	12	#6	4'-5"	
a_3(E)	12	#6	4'-11"	
a_4(E)	24	#5	27'-0"	
a_5(E)	24	#5	28'-0"	
d(E)	46	#4	5'-8"	
d_1(E)	104	#5	3'-11"	
d_2(E)	46	#4	5'-1"	
e(E)	120	#5	3'-4"	
x(E)	156	#6	3'-10"	
x_1(E)	312	#6	3'-9"	
Concrete Removal			Cu. Yds.	87.3
Reinforcement Bars, Epoxy Coated			Pound	5,770
Concrete Superstructure			Cu. Yds.	87.1
Bar Splicers			Each	40

Notes:
Dimensions are based on a Rolled Rail Strip Seal Joint. If the Contractor elects to use the Welded Rail Strip Seal Joint, deck dimensions may require adjustments to satisfy the details on sheet 7 of 16.
Existing reinforcement shall be cleaned and incorporated into the new construction. Cost included with Concrete Removal.
Cut ends of existing reinforcement bars extending into new construction to maintain 1 1/2" minimum clearance.
For details of Bar Splicers, see sheet 16 of 16.
For superstructure Concrete Removal details, see sheet 5 of 16.

SUPERSTRUCTURE REPAIR DETAILS
STRUCTURE NO. 060-0014 (E.B.)
STRUCTURE NO. 060-0015 (W.B.)

DESIGNED	EML
CHECKED	-
DRAWN	EML
CHECKED	-

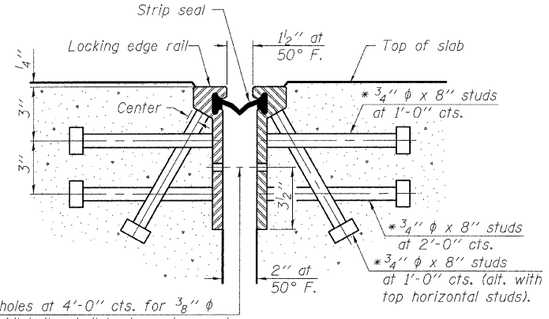
HORNER & SHIFRIN, INC. ENGINEERS

SHEET NO. 6
16 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
70	60-(6,7)BR	MADISON	185	134
		CONTRACT NO. 76C56		
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

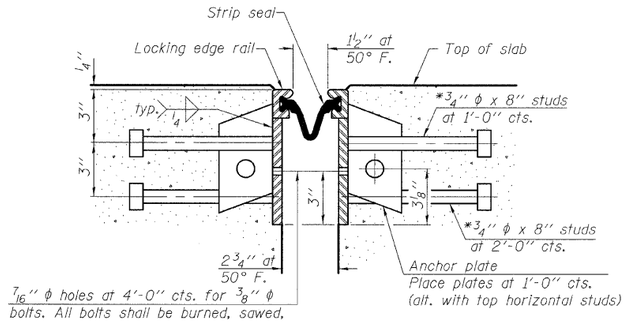
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

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



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:

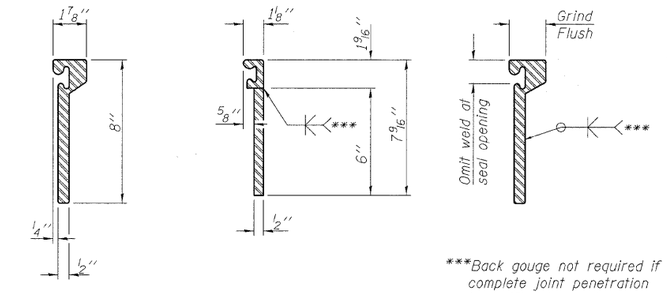
The strip seal shall be made continuous and shall have a minimum thickness of ¼". The configuration of the strip seal shall match the configuration of the Locking Edge Rails. Open or "webbed" strip seal gland configurations are not permitted. The gland shall be sized for a maximum rated movement of 4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

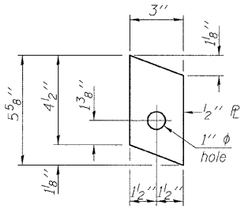
All steel components shall be galvanized after fabrication according to Article 520.03 of the Standard Specifications.



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

ROLLED EXTRUDED RAIL

WELDED RAIL

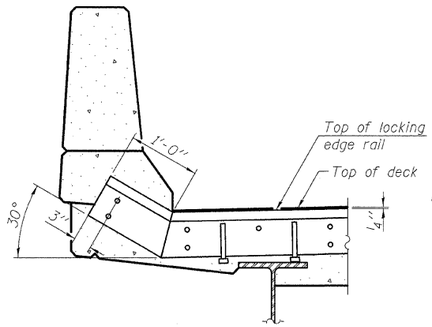


ANCHOR ℄
(for welded rail)

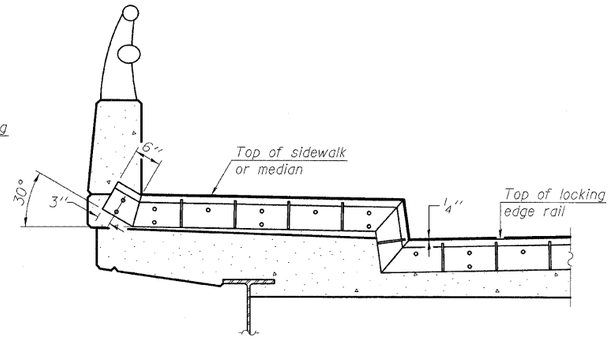
LOCKING EDGE RAIL SPLICE

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

LOCKING EDGE RAILS



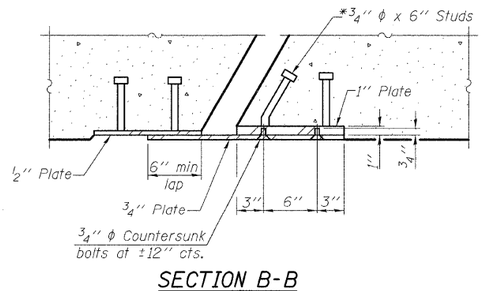
AT PARAPET



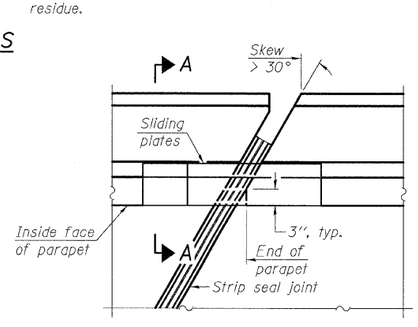
AT SIDEWALK OR MEDIAN

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.

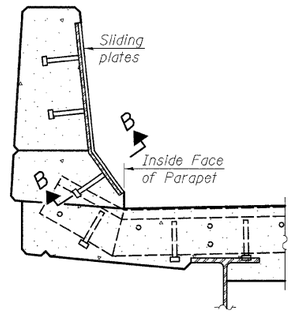
TYPICAL END TREATMENTS



SECTION B-B



PLAN



SECTION A-A

POINT BLOCK DETAILS
(for skews > 30°)

BILL OF MATERIAL

Item	Unit	Total
Preformed Joint Strip Seal	Foot	473.5

PREFORMED JOINT STRIP SEAL
STRUCTURE NO. 060-0014 (E.B.)
STRUCTURE NO. 060-0015 (W.B.)

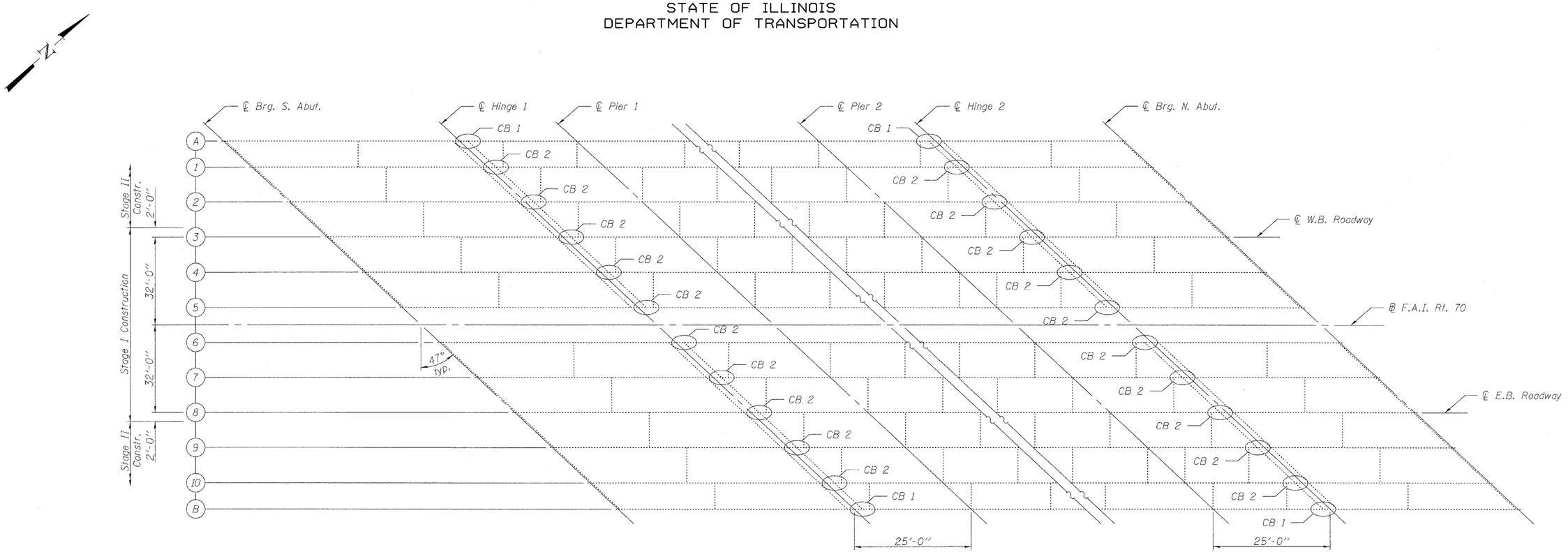
DESIGNED	EML
CHECKED	KLH
DRAWN	EML
CHECKED	KLH

EJ-SSJ 10-1-08

HORNER & SHIFRIN, INC. ENGINEERS

SHEET NO. 7	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
16 SHEETS	70	60-(6,7)BR	MADISON	185	135
			CONTRACT NO. 76C56		
	FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



PARTIAL FRAMING PLAN

Notes:
For catch beam details, see sheet 9 of 16.
For structural steel notes, see sheet 10 of 16.

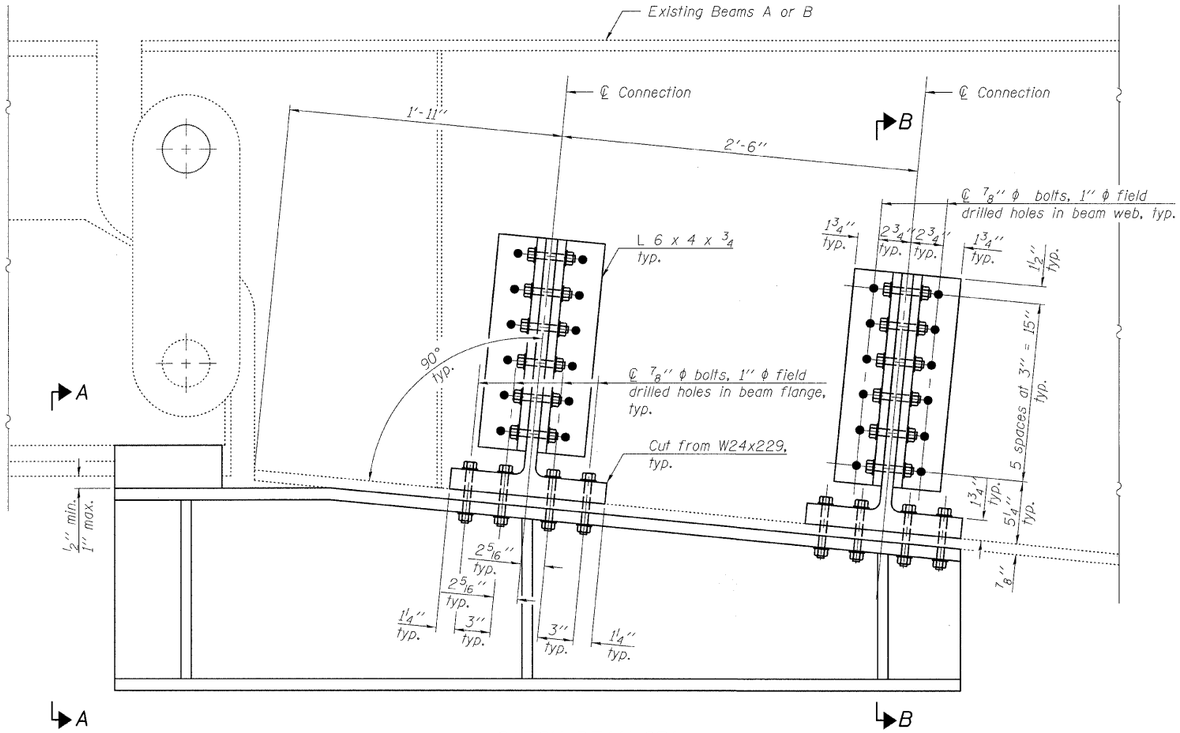
STRUCTURAL STEEL
STRUCTURE NO. 060-0014 (E.B.)
STRUCTURE NO. 060-0015 (W.B.)

DESIGNED	KLH
CHECKED	EML
DRAWN	KLH
CHECKED	EML

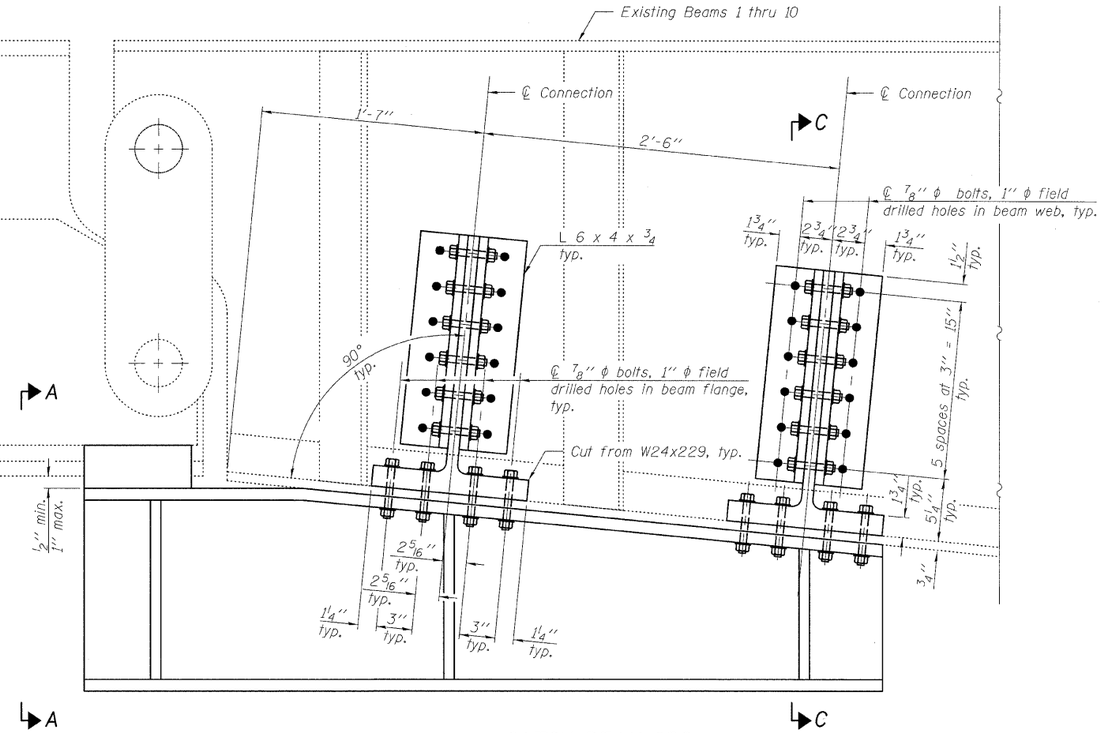
HORNER & SHIFRIN, INC.
ENGINEERS

SHEET NO. 8	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
16 SHEETS	70	60-(6,7)BR	MADISON	185	136
			CONTRACT NO. 76C56		
	FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

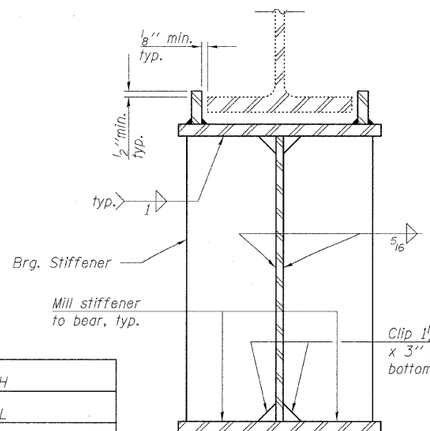
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



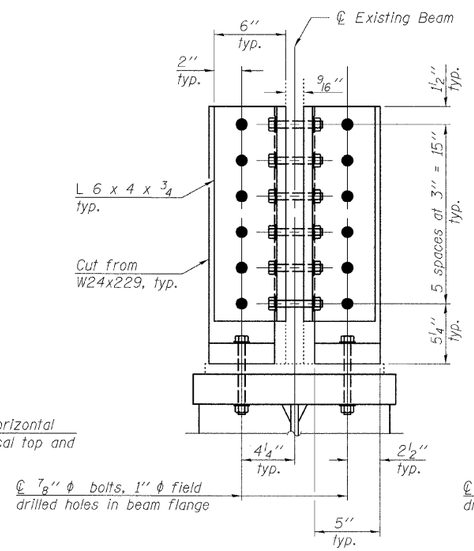
CATCH BEAM CB1



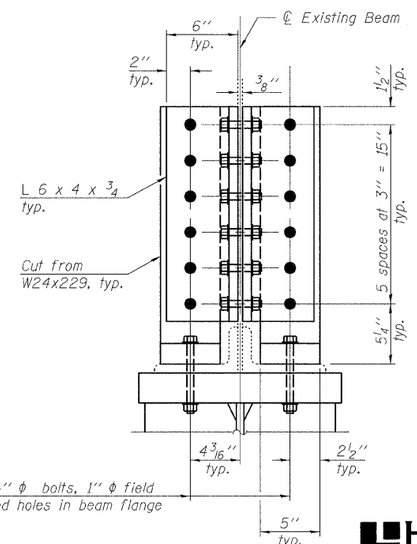
CATCH BEAM CB2



SECTION A-A



SECTION B-B



SECTION C-C

Notes:
For catch beam locations, see sheet 8 of 16.
For catch beam notes, see sheet 10 of 16.

DESIGNED	KLH
CHECKED	EML
DRAWN	KLH
CHECKED	EML

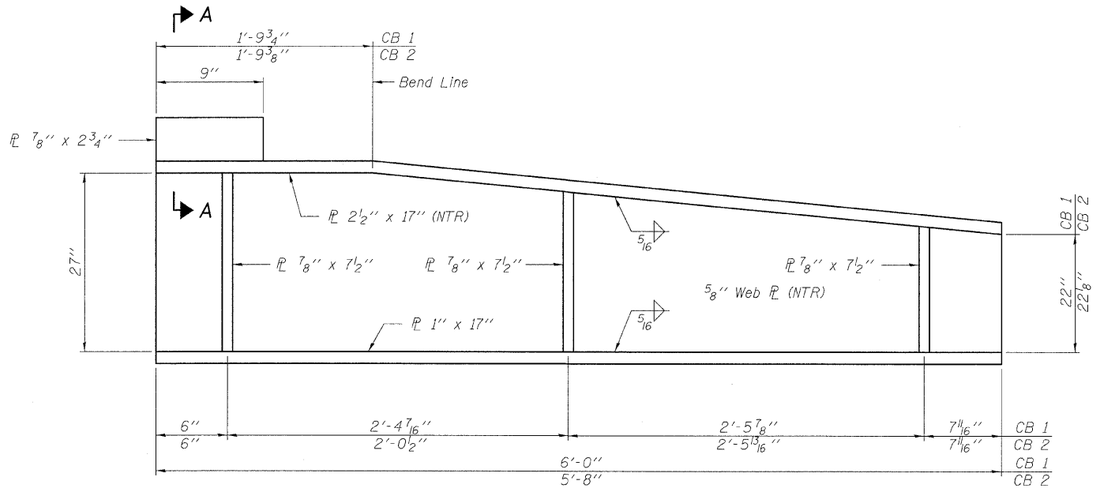
HORNER & SHIFRIN, INC.
ENGINEERS

STRUCTURAL STEEL DETAILS I
STRUCTURE NO. 060-0014 (E.B.)
STRUCTURE NO. 060-0015 (W.B.)

SHEET NO. 9
16 SHEETS

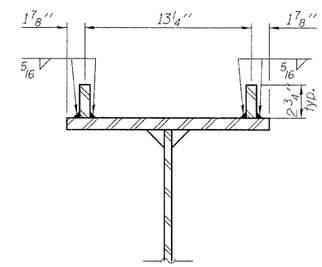
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
70	60-(6,7)BR	MADISON	185	137
		CONTRACT NO. 76C56		
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

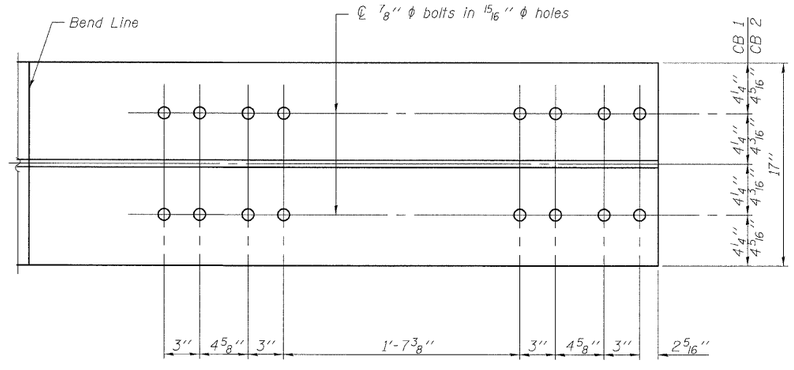


CATCH BEAM ELEVATION

"NTR" denotes plates to which notch toughness requirements are applicable.



SECTION A-A



TOP OF CATCH BEAM DETAIL

Notes:
All structural steel shall be AASHTO M270 Grade 50.
Load carrying components designated "NTR" shall conform to the Supplemental Requirements for Notch Toughness, Zone 2.
All catch beam fasteners shall be AASHTO M 253 Type 1, mechanically galvanized bolts. Bolts shall be 7/8" ϕ, holes 15/16" ϕ in all shop fabricated assemblies.

BILL OF MATERIAL
TWO STRUCTURES

Item	Unit	Total
Furnishing and Erecting Structural Steel	Pound	60,950

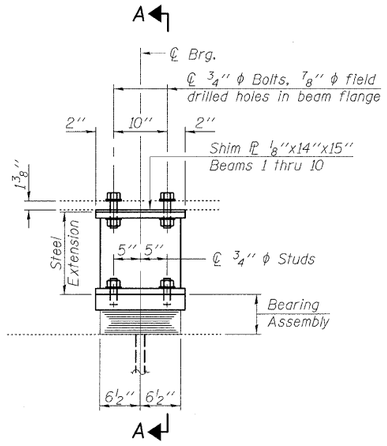
DESIGNED	KLH
CHECKED	EML
DRAWN	KLH
CHECKED	EML

HORNER & SHIFRIN, INC.
ENGINEERS

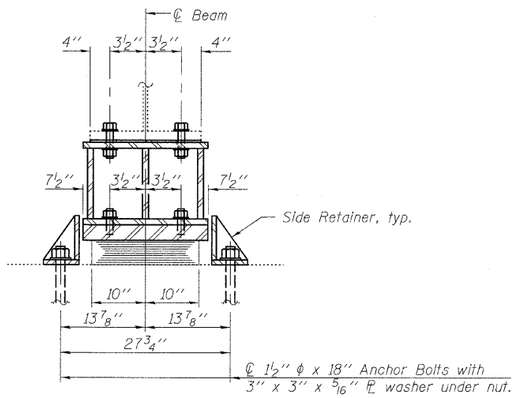
STRUCTURAL STEEL DETAILS II
STRUCTURE NO. 060-0014 (E.B.)
STRUCTURE NO. 060-0015 (W.B.)

SHEET NO. 10	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
16 SHEETS	70	60-(6,7)BR	MADISON	185	138
			CONTRACT NO. 76C56		
	FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



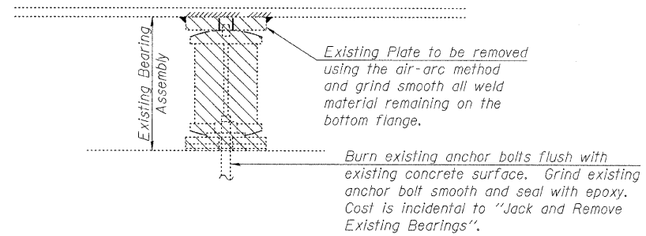
ELEVATION AT PIER 2



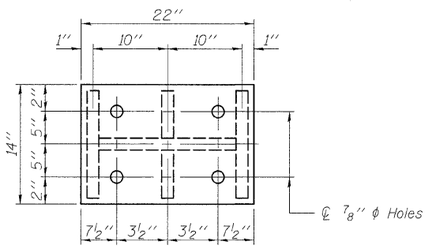
SECTION A-A

TYPE I ELASTOMERIC EXP. BRG.

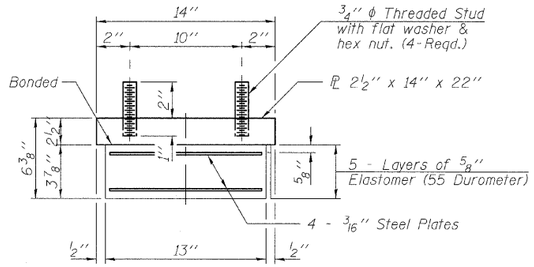
EXISTING GIRDER REACTION TABLE		
		Pier 2
R_{ℓ}	(k)	126.7
R_{L}	(k)	69.0
R_{I}	(k)	20.7
R_{Total}	(k)	216.4



EXISTING BEARING REMOVAL DETAIL

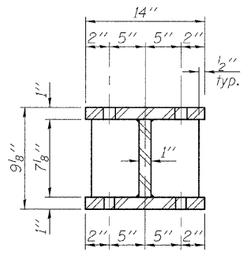


PLAN TOP AND BOTTOM PLATE

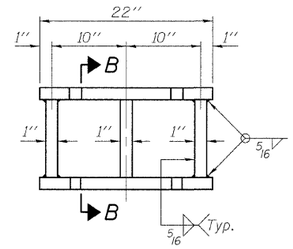


BEARING ASSEMBLY

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



SECTION B-B

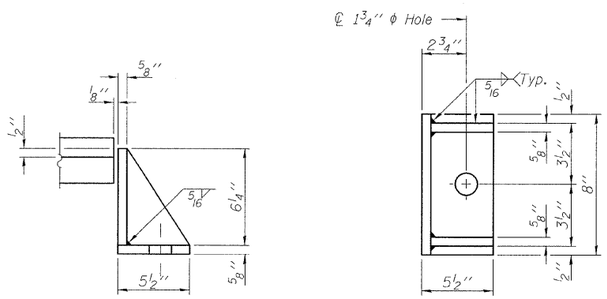


STEEL EXTENSION DETAIL

Notes:
The structural steel plates of the Bearing Assembly shall conform to the requirements of AASHTO M 270 Grade 50.
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.
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.
Minimum jack capacity = 200 Tons.
Existing bearings shall be removed and replaced under traffic.
Diaphragm removal and reinstallation may be required to facilitate drilling holes. Cost included with Furnishing and Erecting Structural Steel.

BILL OF MATERIAL
TWO STRUCTURES

Item	Unit	Total
Furnishing and Erecting Structural Steel	Pound	3,580
Jack and Remove Existing Bearing	Each	12
Elastomeric Bearing Assembly Type I	Each	12
Anchor Bolts, 1 1/2"	Each	24



SIDE RETAINER

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

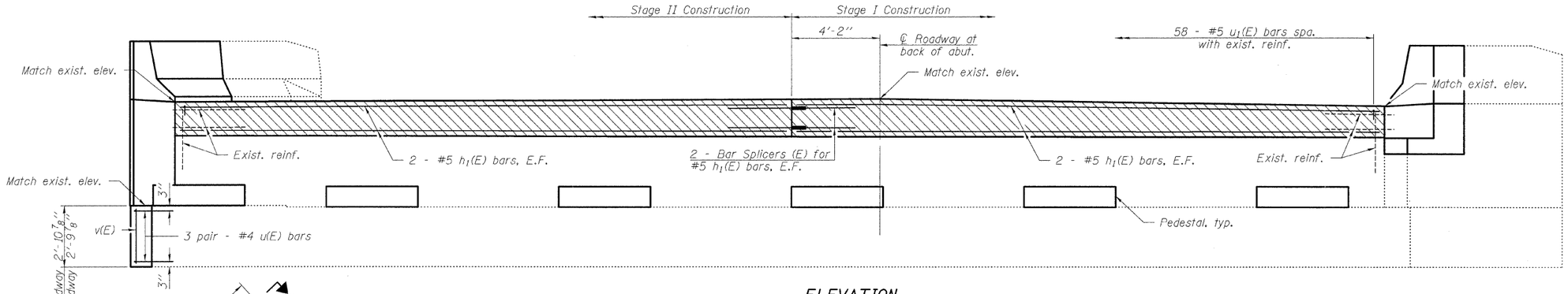
PIER BEARING DETAILS
STRUCTURE NO. 060-0014 (E.B.)
STRUCTURE NO. 060-0015 (W.B.)

DESIGNED	KLH
CHECKED	EML
DRAWN	KLH
CHECKED	EML

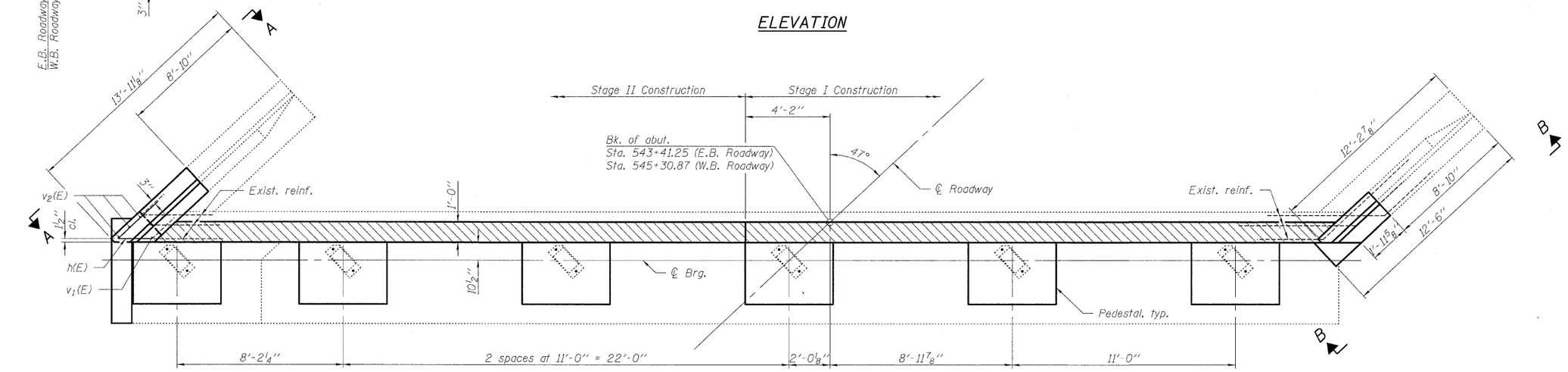
HORNER & SHIFRIN, INC.
ENGINEERS

SHEET NO. 11	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
16 SHEETS	70	60-(6,7)BR	MADISON	185	139
			CONTRACT NO. 76C56		
	FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

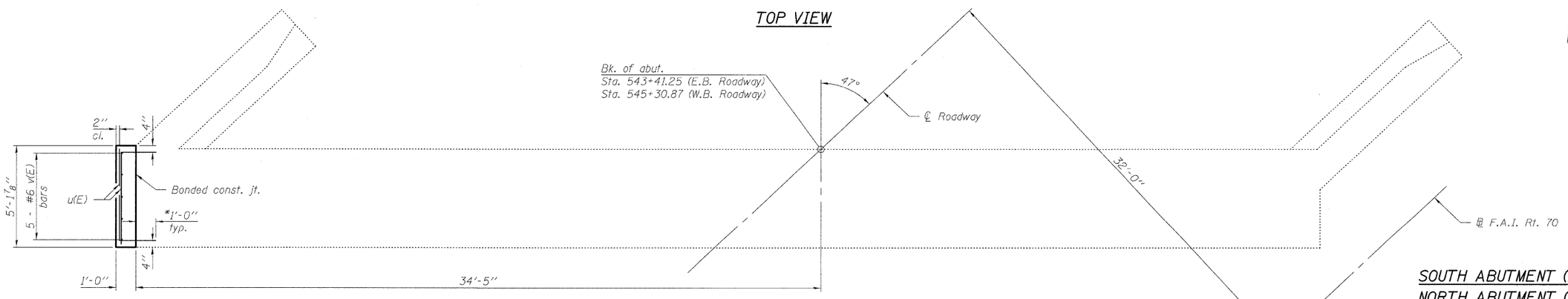
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



ELEVATION



TOP VIEW



PLAN - PILE CAP

*Drill and epoxy grout reinforcement.

Notes:
Existing reinforcement shall be cleaned and incorporated in the new construction. Cost included with Concrete Removal.
Hatched area to be poured after superstructure falsework has been removed. Quantity of concrete included with Concrete Superstructure.
For View A-A and View B-B, see sheet 14 of 16.
For pedestal details, see sheet 14 of 16.

DESIGNED	EML
CHECKED	KLH
DRAWN	EML
CHECKED	KLH

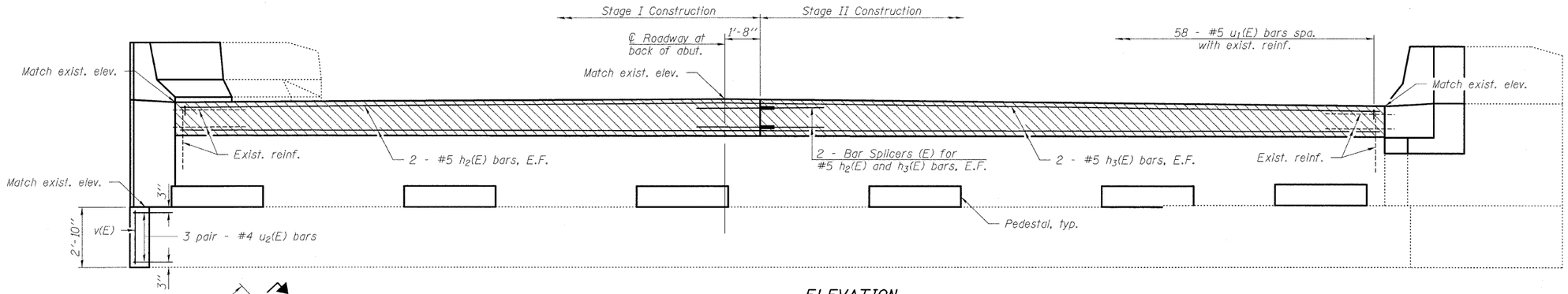
HORNER & SHIFRIN, INC.
ENGINEERS

SOUTH ABUTMENT (E.B.)
NORTH ABUTMENT (W.B.)
STRUCTURE NO. 060-0014 (E.B.)
STRUCTURE NO. 060-0015 (W.B.)

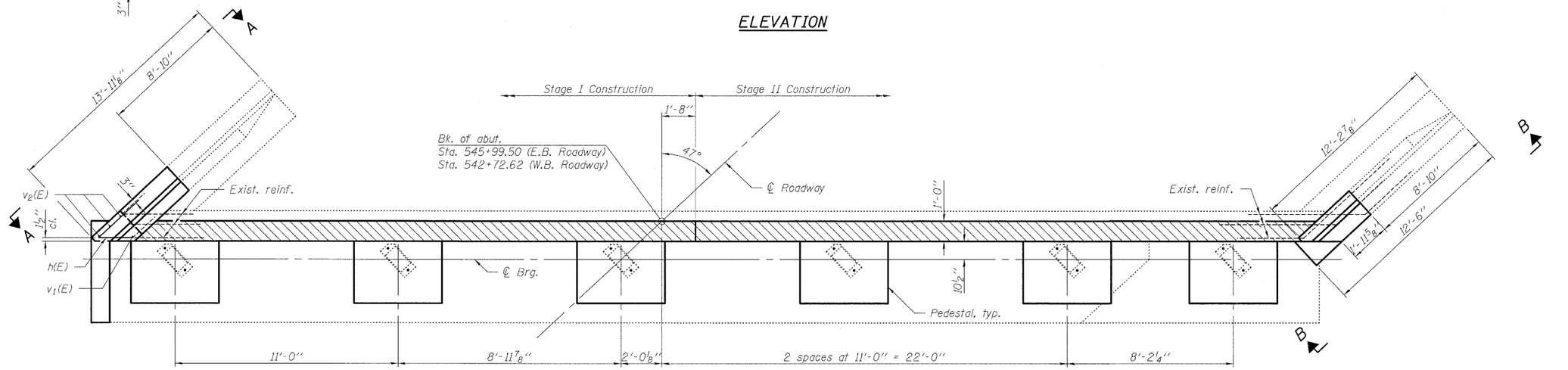
SHEET NO. 12
16 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
70	60-(6,7)BR	MADISON	185	140
		CONTRACT NO. 76C56		
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

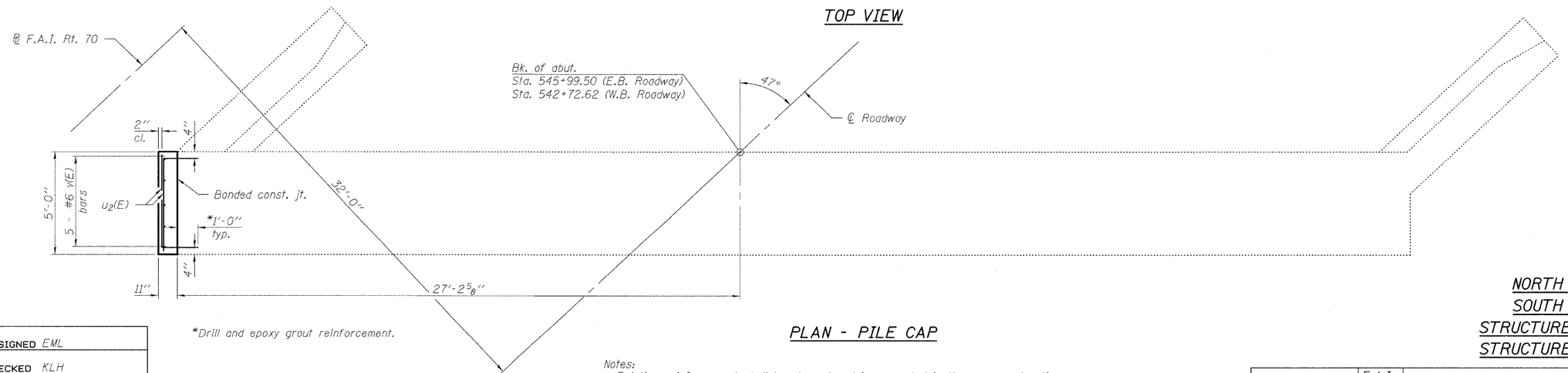
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



ELEVATION



TOP VIEW



*Drill and epoxy grout reinforcement.

W.B. Roadway
N
N
E.B. Roadway

PLAN - PILE CAP

NORTH ABUTMENT (E.B.)
SOUTH ABUTMENT (W.B.)
STRUCTURE NO. 060-0014 (E.B.)
STRUCTURE NO. 060-0015 (W.B.)

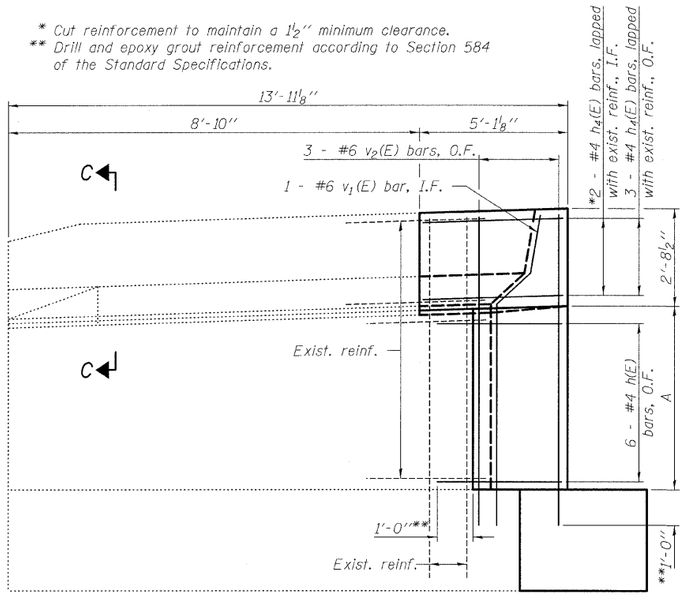
DESIGNED	EML
CHECKED	KLH
DRAWN	EML
CHECKED	KLH

Notes:
Existing reinforcement shall be cleaned and incorporated in the new construction. Cost included with Concrete Removal.
Hatched area to be poured after superstructure falsework has been removed. Quantity of concrete included with Concrete Superstructure.
For View A-A and View B-B, see sheet 14 of 16.
For pedestal details, see sheet 14 of 16.

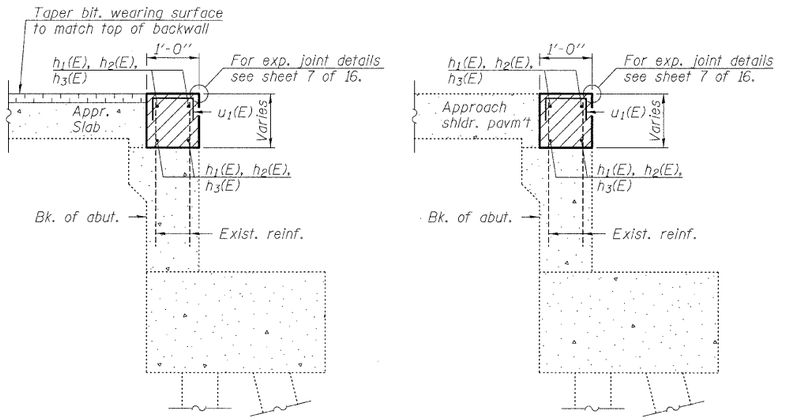
HORNER & SHIFRIN, INC.
ENGINEERS

SHEET NO. 13	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
16 SHEETS	70	60-(6,7)BR	MADISON	185	141
			CONTRACT NO. 76C56		
	FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

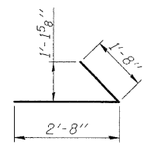


VIEW A-A

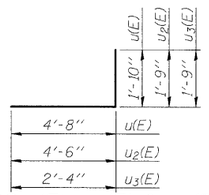


AT APPROACH SLAB AT APPROACH SHOULDER

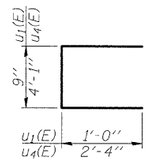
SECTION THRU ABUTMENT



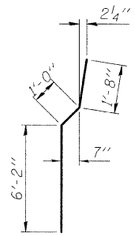
BAR h(E)



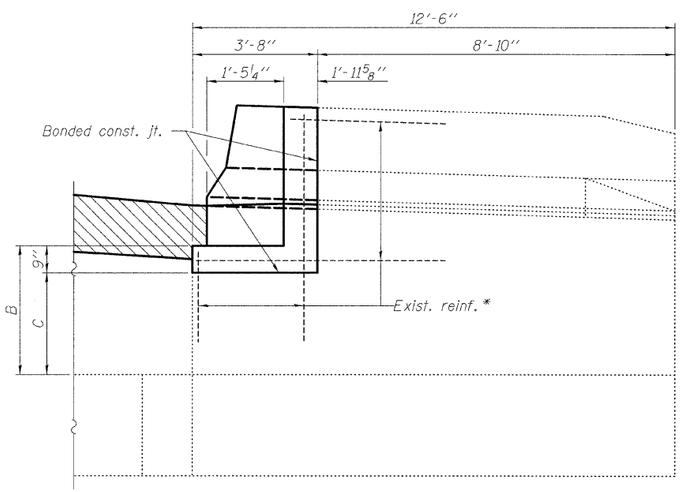
BARS u(E), u2(E) & u3(E)



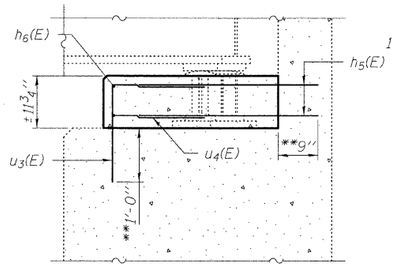
BARS u1(E) & u4(E)



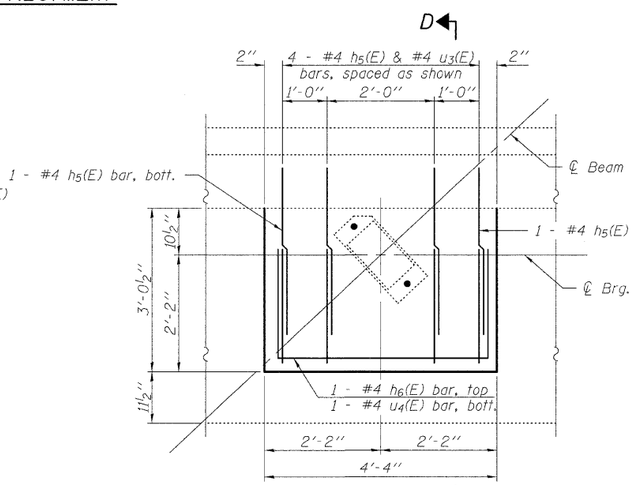
BAR v1(E)



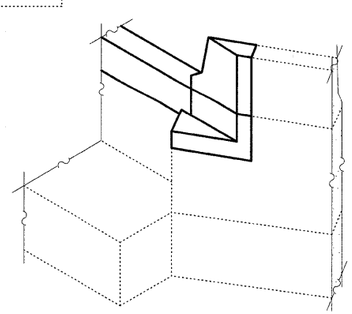
VIEW B-B



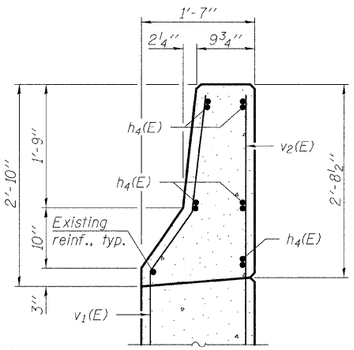
SECTION D-D



PLAN OF PEDESTAL



ISOMETRIC - VIEW B-B



SECTION C-C

MINIMUM BAR LAP

#5 bar = 3'-0"

ABUTMENT BILL OF MATERIAL TWO STRUCTURES

Bar	No.	Size	Length	Shape
h(E)	24	#4	4'-4"	∠
h1(E)	16	#5	27'-9"	—
h2(E)	8	#5	26'-3"	—
h3(E)	8	#5	29'-4"	—
h4(E)	20	#4	3'-2"	—
h5(E)	144	#4	3'-0"	—
h6(E)	24	#4	4'-1"	—
u(E)	12	#4	6'-6"	⌊
u1(E)	232	#5	2'-9"	⊐
u2(E)	12	#4	6'-3"	⌊
u3(E)	96	#4	4'-1"	⌊
u4(E)	24	#4	8'-9"	⊐
v(E)	20	#6	2'-6"	—
v1(E)	4	#6	8'-10"	⌐
v2(E)	12	#6	7'-7"	—
Concrete Removal			Cu. Yd.	2.6
Structure Excavation			Cu. Yd.	13
Concrete Structures			Cu. Yd.	16.8
Reinforcement Bars, Epoxy Coated			Pound	2,840
Concrete Sealer			Sq. Ft.	1,210

For details of Bar Splicers, see sheet 16 of 16.

TABLE OF VARIABLE DIMENSIONS

	S.N. 060-0014		S.N. 060-0015	
	S. Abut.	N. Abut.	S. Abut.	N. Abut.
A	5'-0⅜"	5'-0⅝"	5'-2⅛"	4'-11⅞"
B	3'-6⅜"	3'-6"	3'-5¾"	3'-8⅛"
C	2'-9⅜"	2'-9"	2'-8¾"	2'-11⅛"

Notes:

Existing reinforcement shall be cleaned and incorporated into the new construction. Cost included with Concrete Removal.

Hatched area to be poured after superstructure falsework has been removed. Quantity of concrete included with Concrete Superstructure.

Concrete Sealer shall be applied to the bearing seats.

Quantity of concrete in end post included with Concrete Superstructure on sheet 6 of 16.

For substructure Concrete Removal details, see sheet 5 of 16.

If there is difficulty placing the u3(E) bar due to the existing beam as shown, the Contractor is to adjust the bar spacing as necessary keeping it as close as possible to the original location.

ABUTMENT DETAILS
STRUCTURE NO. 060-0014 (E.B.)
STRUCTURE NO. 060-0015 (W.B.)

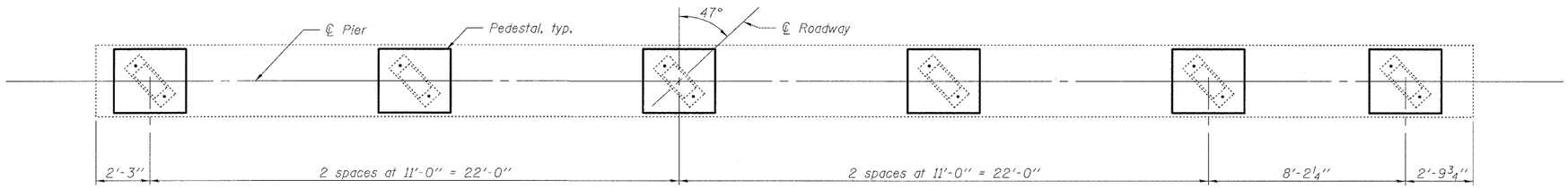
DESIGNED	EML
CHECKED	KLH
DRAWN	EML
CHECKED	KLH

HORNER & SHIFRIN, INC. ENGINEERS

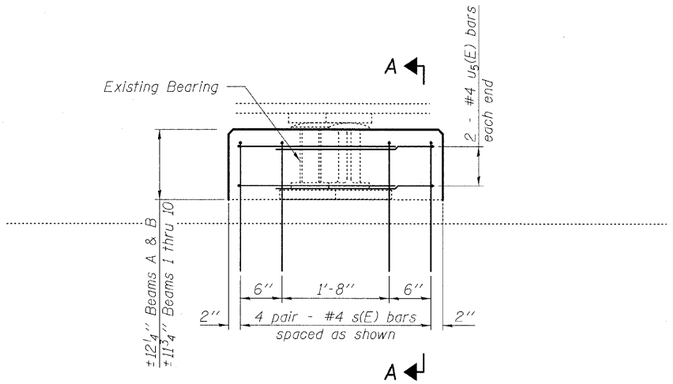
SHEET NO. 14
16 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
70	60-(6,7)BR	MADISON	185	142
		CONTRACT NO. 76C56		
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

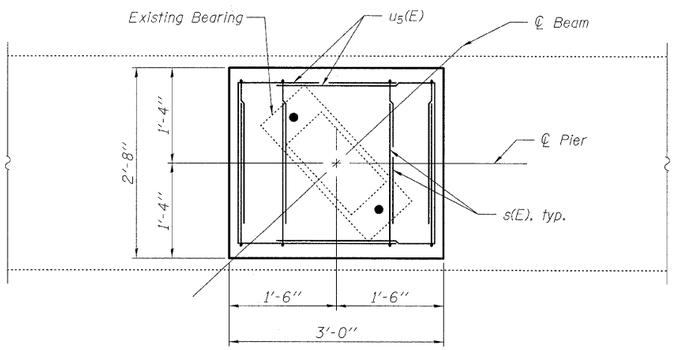
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION



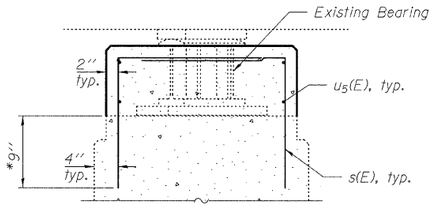
PLAN OF CAP



ELEVATION OF PEDESTAL

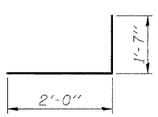


PLAN OF PEDESTAL

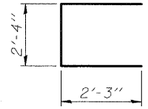


*Drill and epoxy grout reinforcement according to Section 584 of the Standard Specifications.

SECTION A-A



BARS s(E)



BAR u5(E)

BILL OF MATERIAL
TWO STRUCTURES

Bar	No.	Size	Length	Shape
s(E)	96	#4	3'-7"	⌞
u5(E)	48	#4	6'-10"	⊐
Concrete Structures			Cu. Yd.	3.6
Reinforcement Bars, Epoxy Coated			Pound	450

PIER 1 DETAILS
STRUCTURE NO. 060-0014 (E.B.)
STRUCTURE NO. 060-0015 (W.B.)

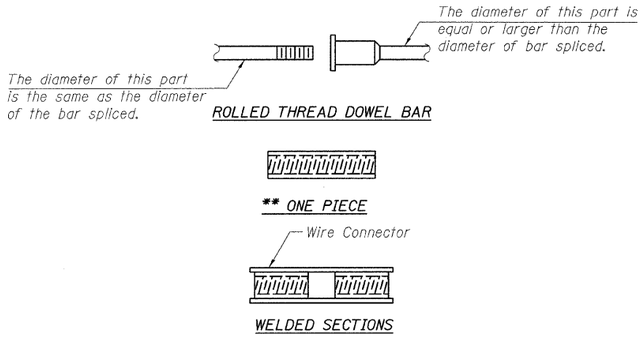
DESIGNED	KLH
CHECKED	EML
DRAWN	KLH
CHECKED	EML

Note:
If there is difficulty placing the s(E) bar due to the existing beam as shown, the Contractor is to adjust the bar spacing as necessary keeping it as close as possible to the original location.

HORNER & SHIFRIN, INC.
ENGINEERS

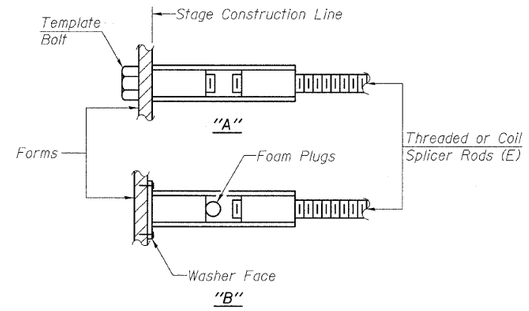
SHEET NO. 15	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
16 SHEETS	70	60-(6,7)BR	MADISON	185	143
			CONTRACT NO. 76C56		
	FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

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.

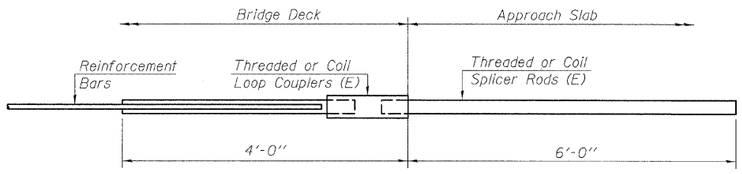
Other systems of similar design may be submitted to the Engineer for approval. Approval shall be based on certified test results from an approved testing laboratory that the proposed bar splicer assembly satisfies the following requirements:

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

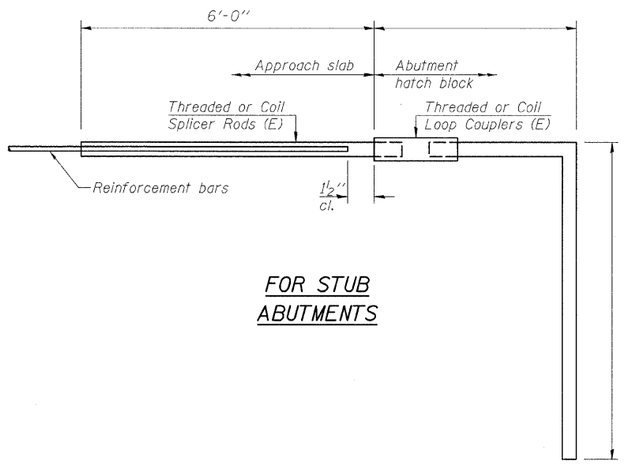
② Minimum *Pull-out Strength (Tension in kips) = $0.66 \times f_y \times A_t$

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

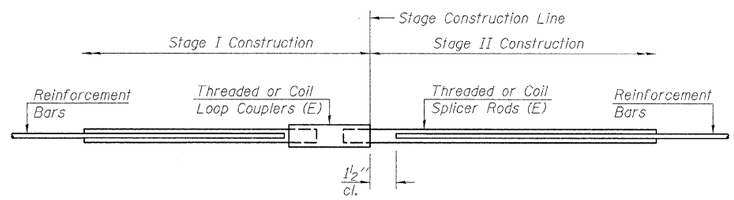
BAR SPLICER ASSEMBLIES			
Bar Size to be Spliced	Splicer Rod or Dowel Bar Length	Strength Requirements	
		Min. Capacity kips - tension	Min. Pull-Out Strength kips - tension
#4	1'-8"	14.7	7.9
#5	2'-2"	23.0	12.3
#6	2'-7"	33.1	17.4
#7	3'-5"	45.1	23.8
#8	4'-6"	58.9	31.3
#9	5'-9"	75.0	39.6
#10	7'-3"	95.0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



FOR INTEGRAL OR SEMI-INTEGRAL ABUTMENTS



FOR STUB ABUTMENTS



STANDARD

Bar Size	No. Assemblies Required	Location
#5	24	Deck
#5	16	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	EML
CHECKED	KLH
DRAWN	EML
CHECKED	KLH

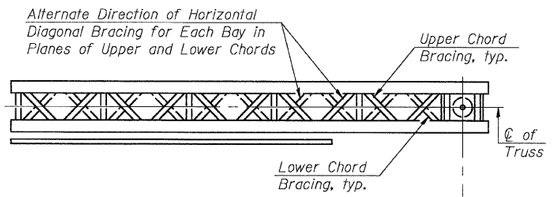
BSD-1 10-1-08

BAR SPLICER ASSEMBLY DETAILS
STRUCTURE NO. 060-0014 (E.B.)
STRUCTURE NO. 060-0015 (W.B.)

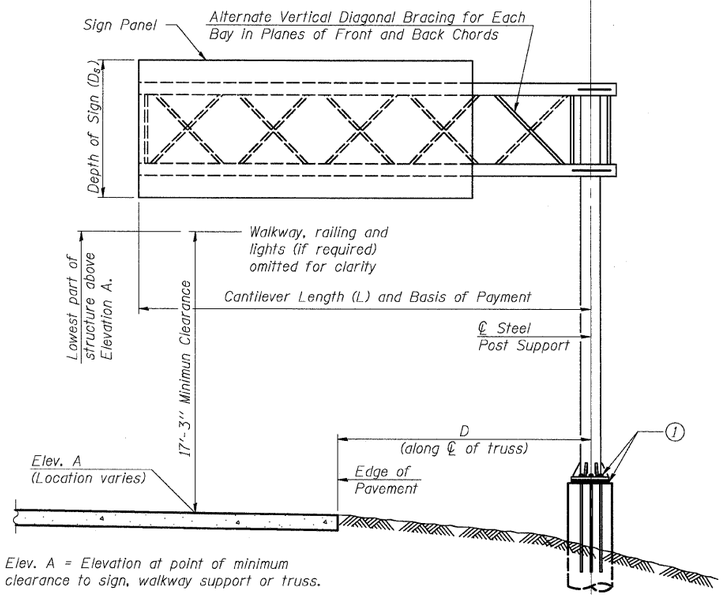
HORNER & SHIFRIN, INC. ENGINEERS

SHEET NO. 16	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
16 SHEETS	70	60-(6,7)BR	MADISON	185	144
			CONTRACT NO. 76C56		
	FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

Benchmark: Chiseled "□" N.E. corner, South concrete foundation existing sign structure over Northbound lane I-55/70 Sta. 392+10, Elev. 100.00



TYPICAL PLAN
(Walkway not shown)



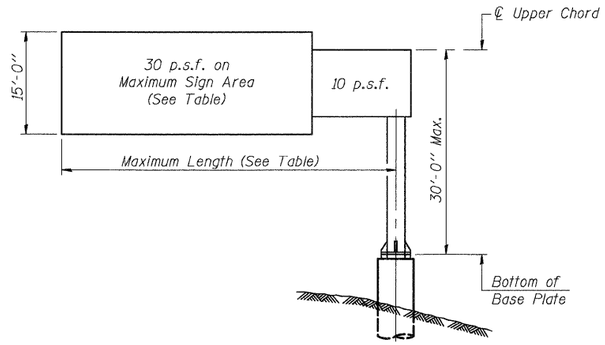
Elev. A = Elevation at point of minimum clearance to sign, walkway support or truss.

TYPICAL ELEVATION
Looking in Direction of Traffic

Sign support structures may be subject to damaging vibrations and oscillations when sign panels are not in place during erection or maintenance of the structure. To avoid these vibrations and oscillations, consideration should be given to attaching temporary blank sign panels to the structure.

Structure Number	Station	Design Truss Type	Cantilever Length (L)	Elev. A	Dim. D	D_s	Total Sign Area
8C060I055R008.8	392+25	II-C-A	30′	101.25	15.0′	8.5′	106.25 ft.²

Truss Type	Maximum Sign Area	Maximum Length
I-C-A	170 Sq. Ft.	25 Ft.
II-C-A	340 Sq. Ft.	30 Ft.
III-C-A	400 Sq. Ft.	40 Ft.



DESIGN WIND LOADING DIAGRAM
Parameters shown are basis for I.D.O.T. Standards Installations not within dimensional limits shown require special analysis for all components.

① After adjustments to level truss and insure adequate vertical clearance, all top and leveling nuts shall be tightened against the base plate with a minimum torque of 200 lb.-ft. Stainless steel mesh shall then be placed around the perimeter of the base plate. Secure to base plate with stainless steel banding.

Note:
Trusses shall be shipped individually with adequate provision to prevent detrimental motion during transport. This may require ropes between horizontals and diagonals or energy dissipating (elastic) ties to the vehicle. The contractor is responsible for maintaining the configuration and protection of the trusses.

GENERAL NOTES

DESIGN: AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals. ("AASHTO Specifications")

CONSTRUCTION: Current (at time of letting) Illinois Department of Transportation Standard Specifications for Road and Bridge Construction, Supplemental Specifications and Special Provisions. ("Standard Specifications")

LOADING: 90 M.P.H. WIND VELOCITY

WALKWAY LOADING: Dead load plus 500 lbs. concentrated live load.

DESIGN STRESSES:
Field Units
f'_c = 3,500 p.s.i.
fy = 60,000 p.s.i. (reinforcement)

WELDING: All welds to be continuous unless otherwise shown. All welding to be done in accordance with current AWS D1.1 and D1.2 Structural Welding Codes (Steel and Aluminum) and the Standard Specificiations.

MATERIALS: Aluminum Alloys as shown throughout plans. All Structural Steel Pipe shall be ASTM A53 Grade B or A500 Grade B or C. If A500 pipe is substituted for A53, then the outside diameter shall be as detailed and wall thickness greater than or equal to A53.
All Structural Steel Plates and Shapes shall conform to AASHTO M270 Gr. 36, Gr. 50 or Gr. 50W*. Stainless steel for shims, sleeves and handhole covers shall be ASTM A240, Type 302 or 304, or another alloy suitable for exterior exposure and acceptable to the Engineer.
The steel pipe and stiffening ribs at the base plate for the column shall have a minimum longitudinal Charpy V-Notch (CVN) energy of 15 lb.-ft. at 40° F. (Zone 2) before galvanizing.

FASTENERS FOR ALUMINUM TRUSSES: All bolts noted as "high strength" must satisfy the requirements of AASHTO M164 (ASTM A325), or approved alternate, and must have matching lock nuts. Threaded studs for splices (if Members interfere) must satisfy the requirements of ASTM A449, ASTM A193, Grade B7, or approved alternate, and must have matching lock nuts. Bolts and lock nuts not required to be high strength must satisfy the requirements of ASTM A307. All bolts and lock nuts must be hot dip galvanized per AASHTO M232. The lock nuts must have nylon or steel inserts. A stainless steel flat washer conforming to ASTM A240 Type 302 or 304, is required under both head and nut or under both nuts where threaded studs are used. High strength bolt installation shall conform to Article 505.04 (f) (2)d of the IDOT Standard Specifications for Road and Bridge Construction. Rotational capacity ("ROCAP") testing of bolts will not be required.

U-BOLTS AND EYEBOLTS: U-Bolts and Eyebolts must be produced from ASTM A276 Type 304, 304L, 316 or 316L, Condition A, cold finished stainless steel, or an equivalent material acceptable to the Engineer. All nuts for U-Bolts and Eyebolts must be lock nuts equivalent to ASTM A307 with nylon or steel inserts and hot dip galvanized per AASHTO M232. A stainless steel flat washer conforming to ASTM A240, Type 302 or 304, is required under each U-Bolt and Eyebolt lock nut.

GALVANIZING: All Steel Grating, Plates, Shapes and Pipe shall be Hot Dip Galvanized after fabrication in accordance with AASHTO M111. Painting is not permitted.

ANCHOR RODS: Shall conform to AASHTO M314 Gr. 105 with a minimum Charpy V-Notch (CVN) energy of 15 lb.-ft. at 10° F.

CONCRETE SURFACES: All concrete surfaces above an elevation 6" below the lowest final ground line at each foundation shall be cleaned and coated with Bridge Seat Sealer in accordance with the Standard Specifications.

REINFORCEMENT BARS: Reinforcement Bars designated (E) shall be epoxy coated in accordance with the Standard Specifications.

FOUNDATIONS: The contract unit price for Drilled Shaft Concrete Foundations shall include reinforcement bars complete in place.

* If M270 Gr. 50W (M222) steel is proposed, chemistry for plate to be used shall first be approved by the Engineer as suitable for galvanizing and welding.

TOTAL BILL OF MATERIAL

ITEM	UNIT	TOTAL
OVERHEAD SIGN STRUCTURE CANTILEVER TYPE I-C-A	Foot	
OVERHEAD SIGN STRUCTURE CANTILEVER TYPE II-C-A	Foot	30
OVERHEAD SIGN STRUCTURE CANTILEVER TYPE III-C-A	Foot	
OVERHEAD SIGN STRUCTURE WALKWAY, TYPE A	Foot	19
DRILLED SHAFT CONCRETE FOUNDATIONS	Cu. Yds.	6.9

NUMBER	REVISION	DATE

Coombe-Bloxdorf P.C.
-CIVIL ENGINEERS-
-STRUCTURAL ENGINEERS-
-LAND SURVEYORS-
Design Firm License No. 184-002703

PROJECT NO. 05027-13
SCALE
DATE / /
DESIGN BY
DRAWN BY
CHECKED BY

OSC-A-1 12-1-08

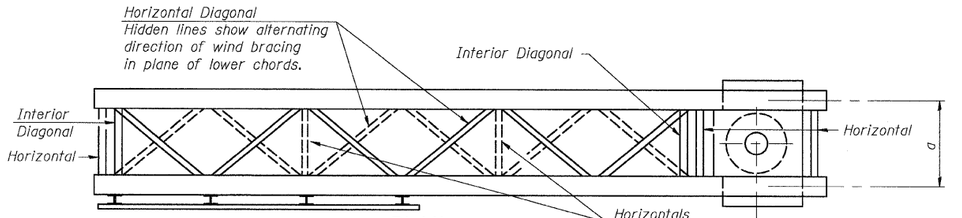
PLOT DATE = 09/14/2009
FILE NAME = I:\76c56-001-pacc01.dgn
PLOT SCALE = 040.999986 '/" / IN.
USER NAME = CFC.

CANTILEVER SIGN STRUCTURES
GENERAL PLAN & ELEVATION
ALUMINUM TRUSS & STEEL POST

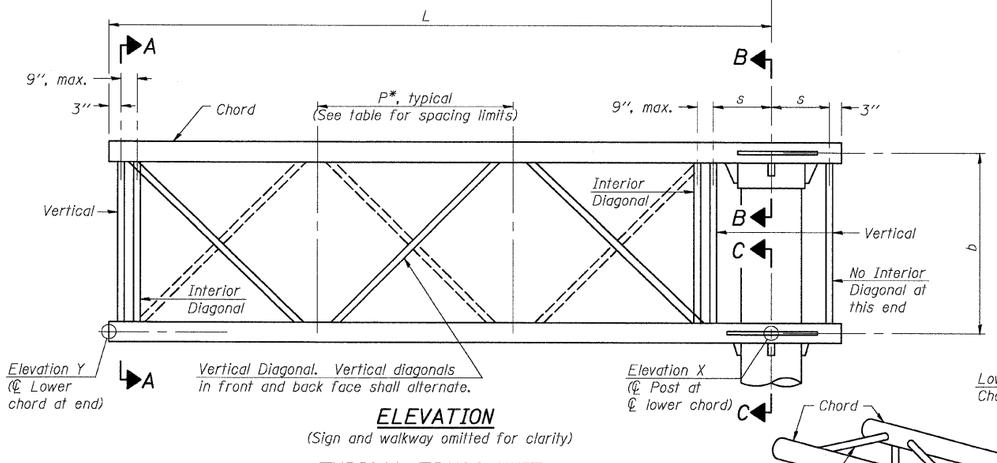
F.A.I. ROUTE 70, SEC. 60-(5,6,7)RS, 60-(6,7)BR
MADISON COUNTY

SHEET NO. 1
19 SHEETS

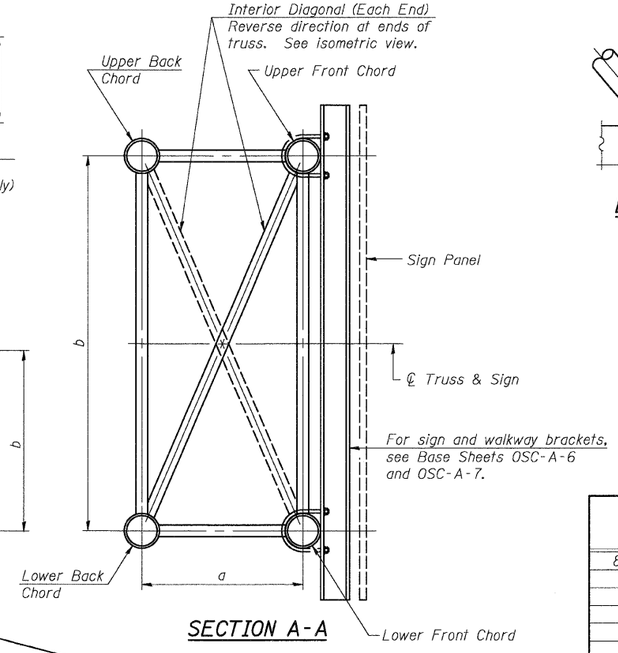
F.A.I RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
70	60-(5,6,7)RS, 60-(6,7)BR	MADISON	185	145
		CONTRACT NO. 76C56		
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		



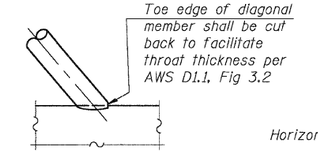
PLAN
(Walkway not shown)



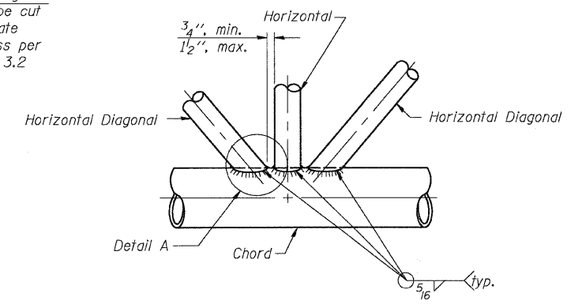
ELEVATION
(Sign and walkway omitted for clarity)



SECTION A-A



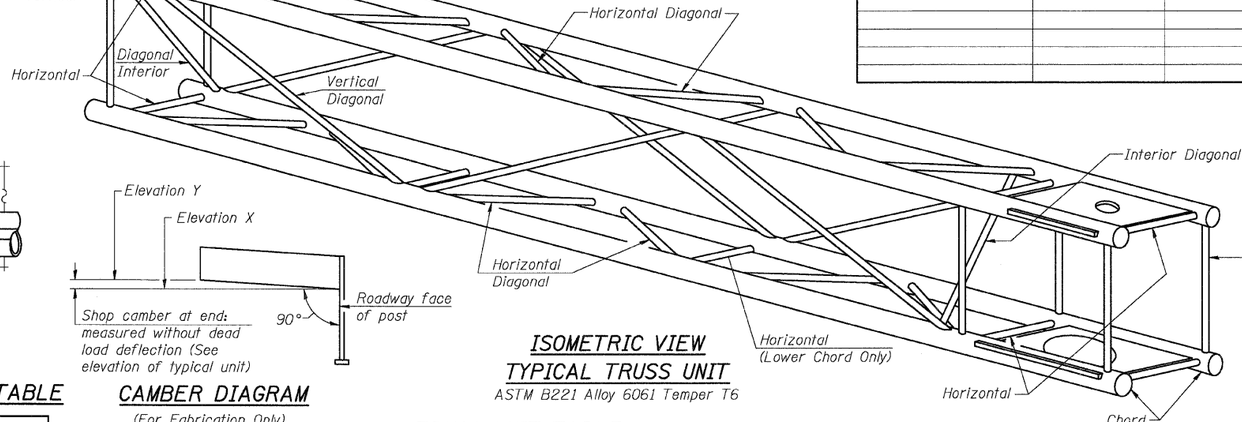
DETAIL A



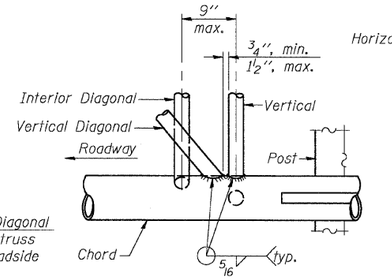
TRUSS INTERIOR JOINT DETAIL

TYPICAL TRUSS UNIT
For Section B-B and Section C-C, see Base Sheet OSC-A-3.

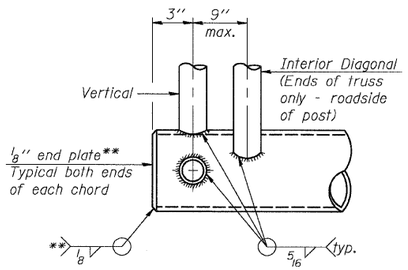
Note:
There are twice as many horizontal diagonals as there are vertical diagonals.



ISOMETRIC VIEW
TYPICAL TRUSS UNIT
ASTM B221 Alloy 6061 Temper T6



POST END JOINT DETAIL



CANTILEVER END JOINT DETAIL
** Contractor may alternatively use standard aluminum drive-fit cap to close ends.

SHOP CAMBER TABLE

Unit Length (L)	Shop Camber at End
15'	1 1/2"
16'-17'	1 3/4"
18'-20'	2"
21'-22'	2 1/4"
23'-25'	2 1/2"
26'-27'	2 3/4"
28'-30'	3"
31'-32'	3 1/4"
33'-35'	3 1/2"
36'-37'	4"
38'-40'	4 1/2"

CAMBER DIAGRAM
(For Fabrication Only)

TRUSS UNIT TABLE

Truss Type	Dimension "a"	Dimension "b"	Dimension "s"	Limits for Panel Spacing (P)*	Up. & Low. Chord		Verticals; Horizontals; Vertical, Horizontal, and Interior Diagonals	
					O.D.	Wall	O.D.	Wall
I-C-A	24"	54"	16"	36" min. to 48" max.	5"	5/16"	2 1/2"	5/16"
II-C-A	36"	66"	21"	42" min. to 54" max.	6 1/2"	5/16"	3 1/4"	5/16"
III-C-A (35' Max.)	36"	84"	21"	48" min. to 66" max.	7"	3/8"	3 1/2"	3/8"
III-C-A (>35' to 40')	36"	84"	21"	48" min. to 66" max.	8"	3/8"	3 1/2"	3/8"

$*P = \frac{L - s - 3''}{\#\ Panels}$

Structure Number	Station	Truss Type	Design Length (L)	Number of Panels Per Unit	Panel Length (P)*
8C060105SR008.8	392+25	II-C-A	30'	7	4'

NUMBER	REVISION	DATE

Coombe-Bloxdorf P.C.
-CIVIL ENGINEERS-
-STRUCTURAL ENGINEERS-
-LAND SURVEYORS-
Design Firm License No. 184-002703

PROJECT NO. 05027-13
SCALE
DATE / /
DESIGN BY
DRAWN BY
CHECKED BY

OSC-A-2 12-1-08

PLOT DATE = 09/14/2009
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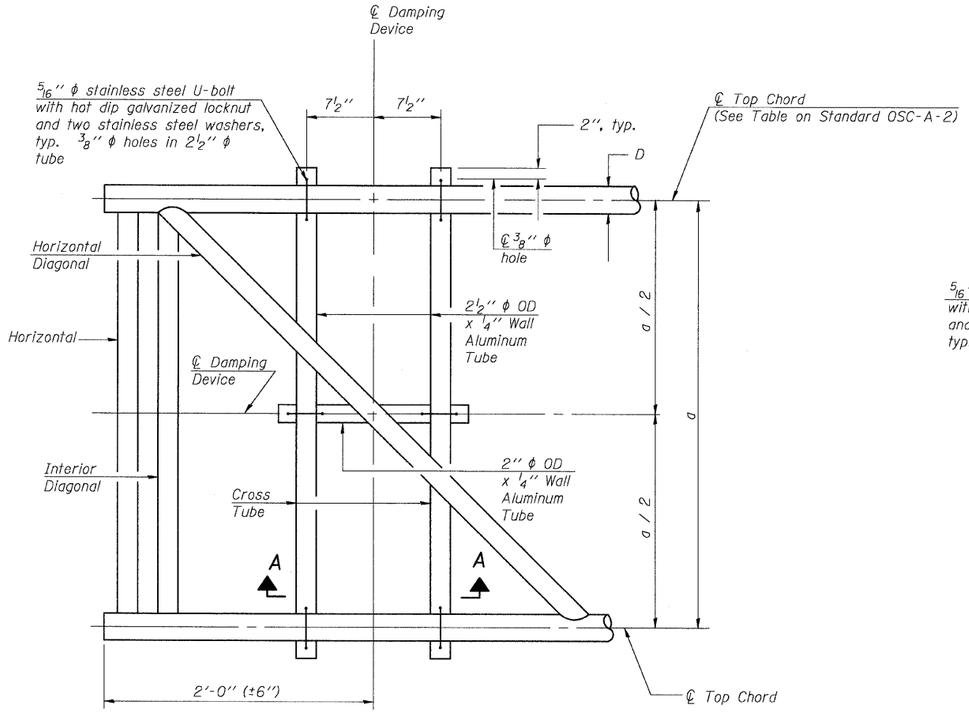
CANTILEVER SIGN STRUCTURES
TRUSS DETAILS
ALUMINUM TRUSS & STEEL POST

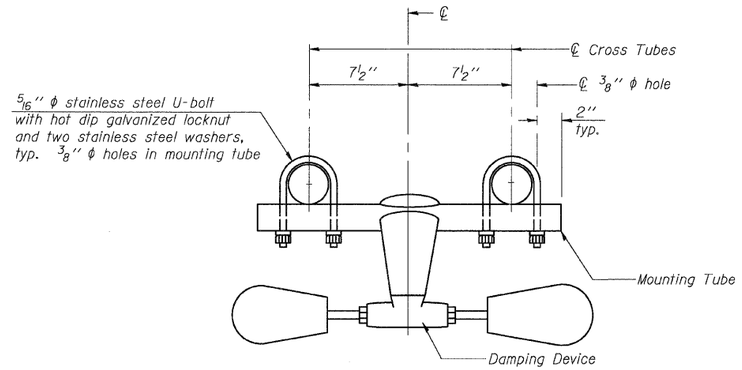
F.A.I. ROUTE 70, SEC. 60-(5,6,7)RS, 60-(6,7)BR
MADISON COUNTY

SHEET NO. 2
19 SHEETS

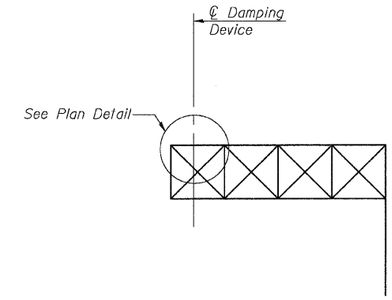
F.A.I RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
70	60-(5,6,7)RS, 60-(6,7)BR	MADISON	185	146
		CONTRACT NO. 76C56		
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		



PLAN DETAIL



TRUSS DAMPING DEVICE CONNECTION DETAIL

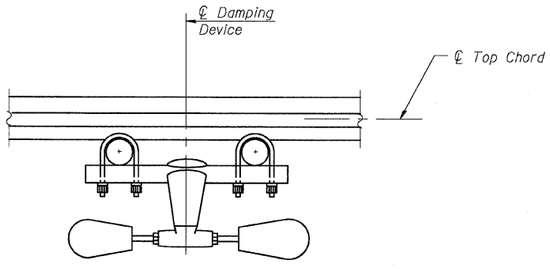


ELEVATION
Aluminum Cantilever Sign Structure

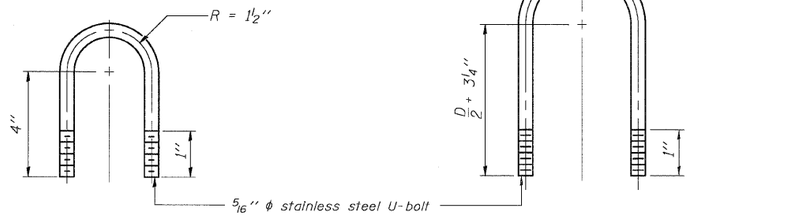
GENERAL NOTES

Damper: One damper per truss. (31 lbs. Stockbridge-Type Aluminum-29" minimum between ends of weights)

Materials: Aluminum tubes shall be ASTM B221 alloy 6061 temper T6



SECTION A-A



DAMPING DEVICE MOUNTING TUBE U-BOLT DETAIL
(Typical)

TOP CHORD TO CROSS TUBE U-BOLT DETAIL
(Typical)

Coombe-Bloxdorf P.C.
-CIVIL ENGINEERS-
-STRUCTURAL ENGINEERS-
-LAND SURVEYORS-
Design Firm License No. 184-002703

PROJECT NO.	05027-13
SCALE	
DATE	/ /
DESIGN BY	
DRAWN BY	
CHECKED BY	

OSC-A-D 12-1-08

PLOT DATE = 09/14/2009
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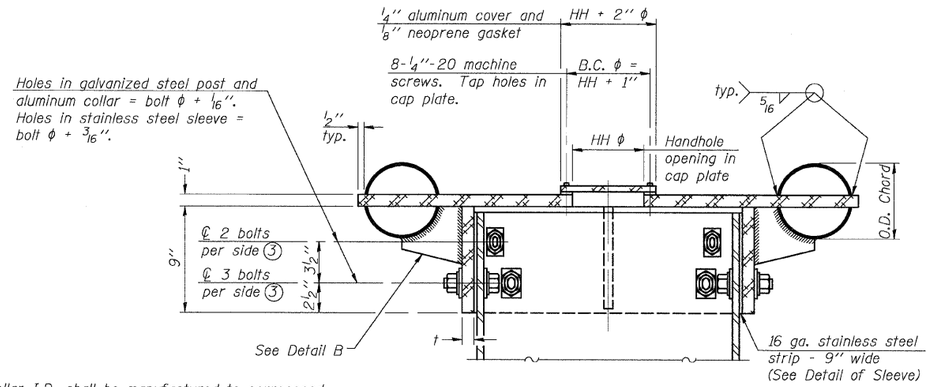
CANTILEVER SIGN STRUCTURE
DAMPING DEVICE

F.A.I. ROUTE 70, SEC. 60-(5,6,7)RS, 60-(6,7)BR
MADISON COUNTY

SHEET NO. 3
19 SHEETS

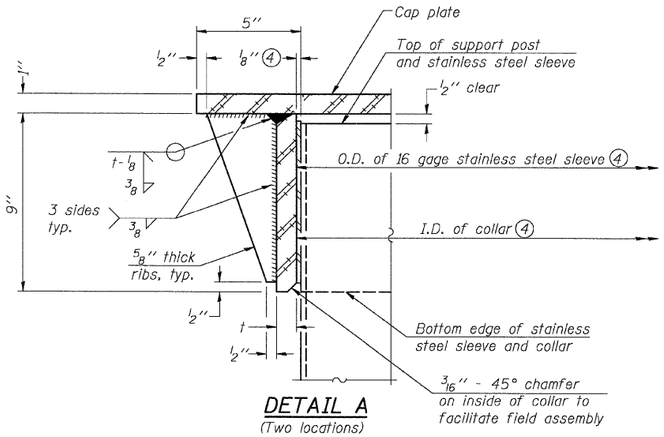
F.A.I RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
70	60-(5,6,7)RS, 60-(6,7)BR	MADISON	185	147
		CONTRACT NO. 76C56		
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		



SECTION B-B

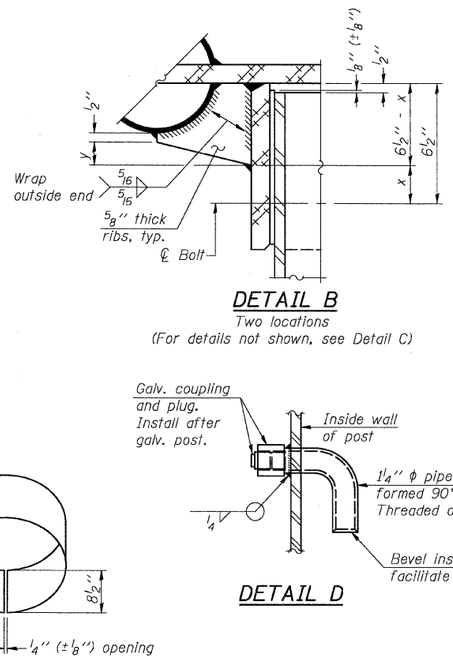
Bolts, washers (including contoured washers), and locknuts shall be stainless steel.

(4) Collar I.D. shall be manufactured to correspond to O.D. of actual galvanized post and stainless steel sleeve plus 1/8" (±1/16"). Maximum gap between post and collar at any location equals 1/8" before tightening bolts.



DETAIL A

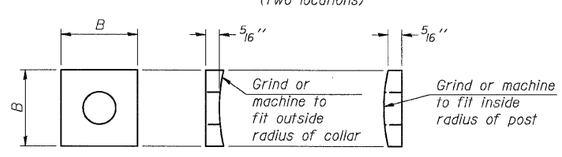
(Two locations)



DETAIL B

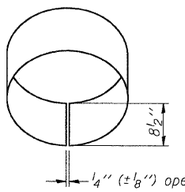
Two locations

(For details not shown, see Detail C)



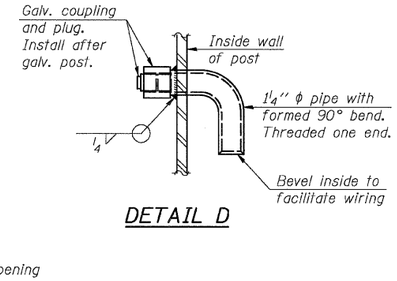
CONTOURED WASHERS

Bolt Size	Contoured Washers	
	Hole Dia.	B
7/8"	1"	2 1/2"
1"	1 1/8"	3"
1 1/4"	1 3/8"	3 1/4"

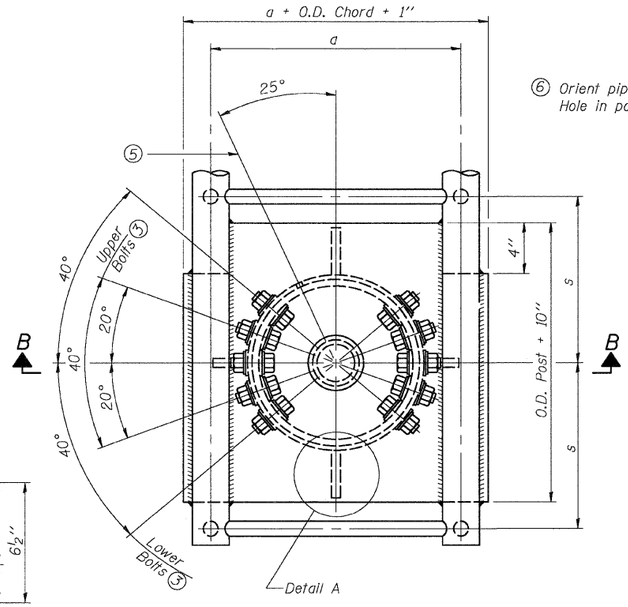


DETAIL OF STAINLESS STEEL SLEEVE

Weld to post after galvanizing.
(Prepare post surface to insure tight, uniform fit and allow welding.)
Welds to be 1 1/2" long at 6" cts. along top edge and at 1/4" opening.



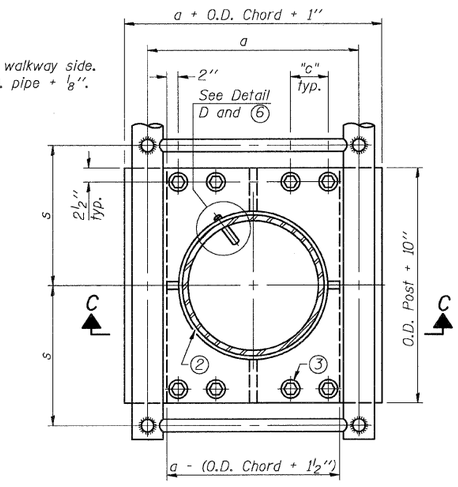
DETAIL D



PLAN VIEW - TOP OF COLUMN

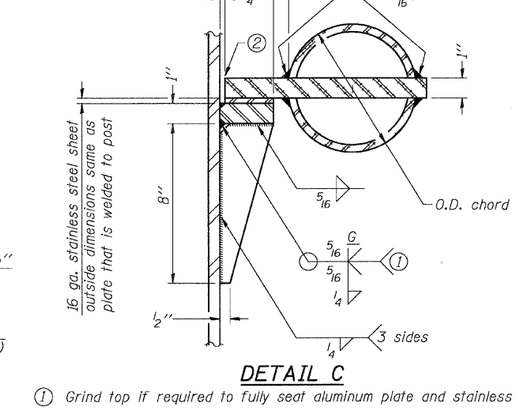
(5) Optional full penetration weld in collar.
(Two locations maximum....(180° apart)....X-ray or UT 100%)

(6) Orient pipe toward walkway side. Hole in post = O.D. pipe + 1/8".



SECTION THRU POST ABOVE LOWER CHORDS

SECTION C-C



DETAIL C

(1) Grind top if required to fully seat aluminum plate and stainless steel sheet.

(2) After tightening lower connection bolts, fill gap with non-hardening, silicone caulk suitable for exterior exposure and acceptable to the Engineer. Cost is included in Overhead Sign Structure Cantilever.

Truss Type	Post Size	Upper & Lower Connection Bolt Diameter (3)	Lower Juncture Bolt Spacing Dimension "c" (3)	Opening in Cap Plate "HH"	Collar Thickness (t)	Side Ribs	
						x	y
I-C-A	16" ϕ (83#/')	7/8"	3 1/4"	8"	5/8"	1 3/4"	2 1/4"
II-C-A	24" ϕ (125#/')	1"	3 1/2"	12"	7/8"	2"	1 1/4"
III-C-A (35' max.)	24" ϕ (125#/')	1 1/4"	3 1/2"	12"	7/8"	2"	1"
III-C-A (>35' to 40')	24" ϕ (171#/')	1 1/4"	3 1/2"	12"	7/8"	2"	1"

(3) Upper and lower connection bolts in collar and bolts at lower chord connection shall be high strength with matching locknuts. Connection bolts shall have 2 stainless steel flat washers each.

NUMBER	REVISION	DATE

Coombe-Bloxdorf P.C.
-CIVIL ENGINEERS-
-STRUCTURAL ENGINEERS-
-LAND SURVEYORS-
Design Firm License No. 184-002703

PROJECT NO. 05027-13
SCALE
DATE / /
DESIGN BY
DRAWN BY
CHECKED BY

OSC-A-3 12-1-08

CANTILEVER SIGN STRUCTURES
JUNCTURE DETAILS
ALUMINUM TRUSS & STEEL POST

F.A.I. ROUTE 70, SEC. 60-(5,6,7)RS, 60-(6,7)BR
MADISON COUNTY

SHEET NO. 4	F.A.I RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
19 SHEETS	70	60-(5,6,7)RS, 60-(6,7)BR	MADISON	185	148
			CONTRACT NO. 76C56		
	FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

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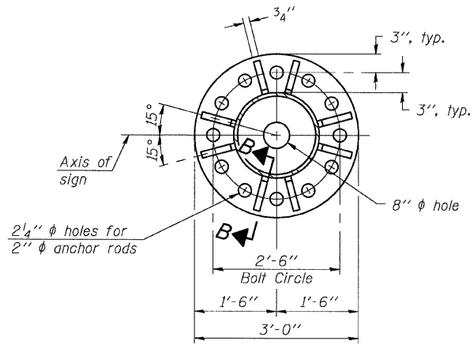
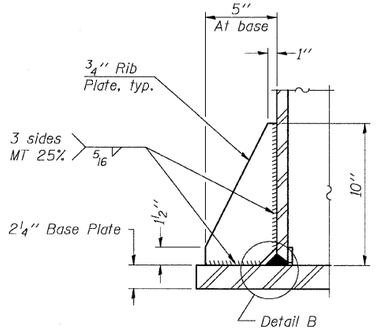
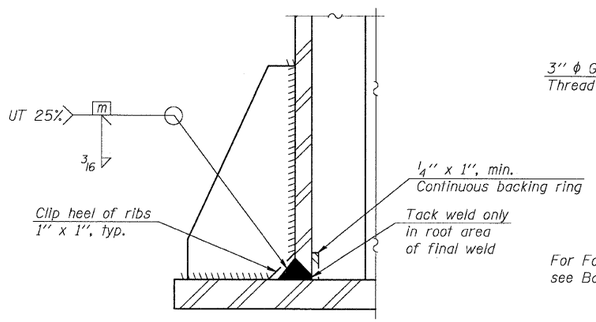


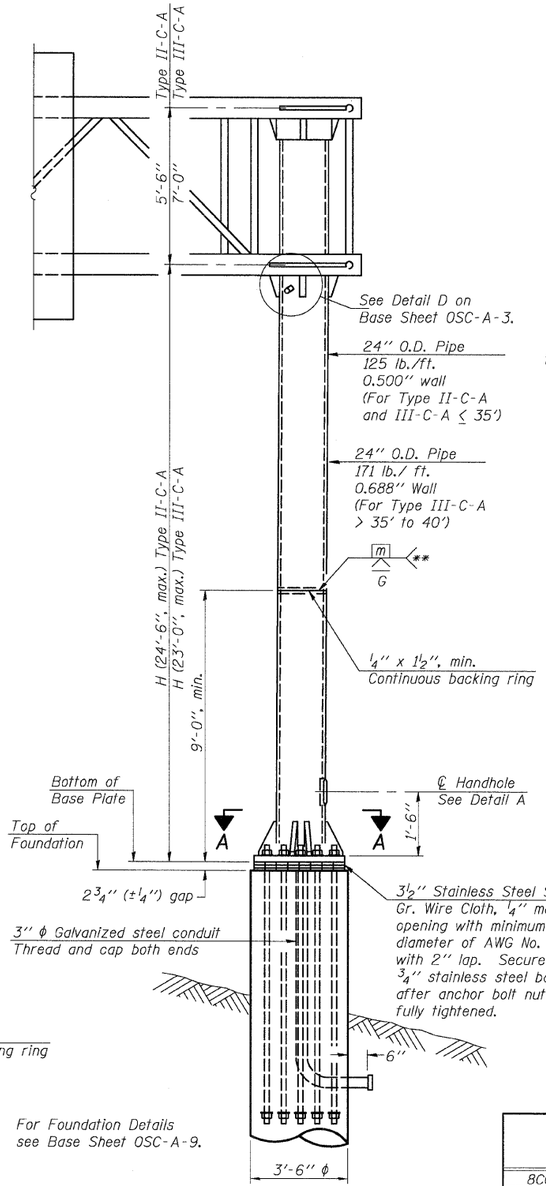
SECTION A-A



SECTION B-B

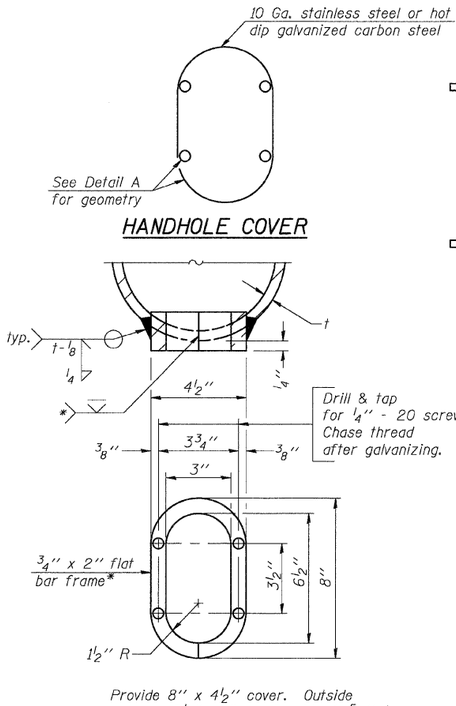


DETAIL B
(Typical rib)



For Foundation Details see Base Sheet OSC-A-9.

FRONT ELEVATION



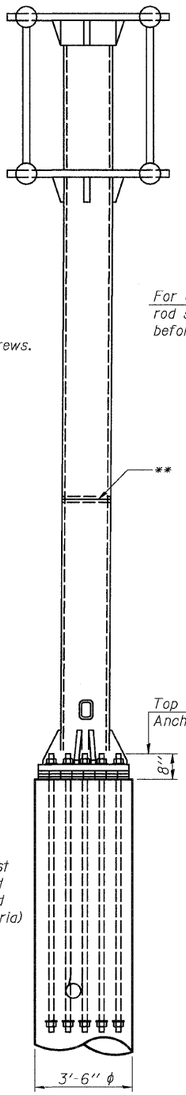
HANDHOLE COVER

Provide 8" x 4 1/2" cover. Outside corners = 2 1/4" radius. Provide 4-5/16" ϕ holes in cover for 1/4" - 20 round head hot dip galvanized or stainless steel machine screws. (See cover details.)

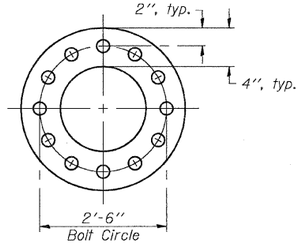
DETAIL A

* Bent bars may be butt welded top and bottom or bottom only. In lieu of fabricated handhole frame as shown, may cut from 2" plate (rolling direction vertical). All cut faces to be ground to ANSI Roughness of 500 μin or less.

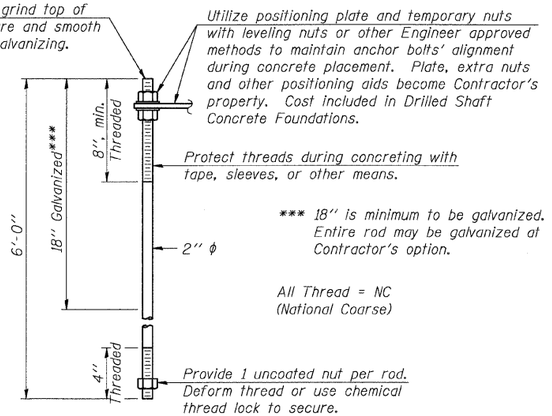
** Butt welded joint in post is only allowed for post heights (H) over 20 ft. in length. If used, weld procedure must be preapproved by Engineer and joint shall receive 100% RT or UT (tension criteria) at Contractor's expense.



SIDE ELEVATION



SUGGESTED POSITIONING PLATE



ANCHOR ROD DETAIL

Anchor rods shall conform to AASHTO M314 Grade 105 and meet Charpy V-Notch (CVN) energy of 15 lb.-ft. at 10° F. before galvanizing. Galvanize the upper 18" (minimum***) and associated M291, Grade A, C or DH heavy hex nuts and hardened washers per AASHTO M232. No welding shall be permitted on rods. Provide an unfinished nut at bottom, a hexagon locknut and washer above base plate and a leveling nut and washer below base plate. Nuts shall each be tightened with 200 lb.-ft. minimum torque against base plate. Before or after threading, but before galvanizing, each anchor rod shall be ultrasonically tested (UT) by a Level II or III inspector, qualified in accord with ANSI guidelines, using a straight beam, 1/2" ϕ 3.5 mhz. transducer, to insure no rejectable flaws exist in the upper 18" (tension criteria). Cost of testing included in Drilled Shaft Concrete Foundations.

Structure Number	Station	H
8C0601055R008.8	392+25	23'-4"

Note: "H" based on 15'-0" or actual sign height, whichever is greater.

NUMBER	REVISION	DATE

Coombe-Bloxdorf P.C.
-CIVIL ENGINEERS-
-STRUCTURAL ENGINEERS-
-LAND SURVEYORS-
Design Firm License No. 184-002703

PROJECT NO. 05027-13
SCALE
DATE / /
DESIGN BY
DRAWN BY
CHECKED BY

OSC-A-5 12-1-08

PLOT DATE = 09/14/2009
FILE NAME = c:\projects\05027-13\dgn\76c56-005-oscd.dgn
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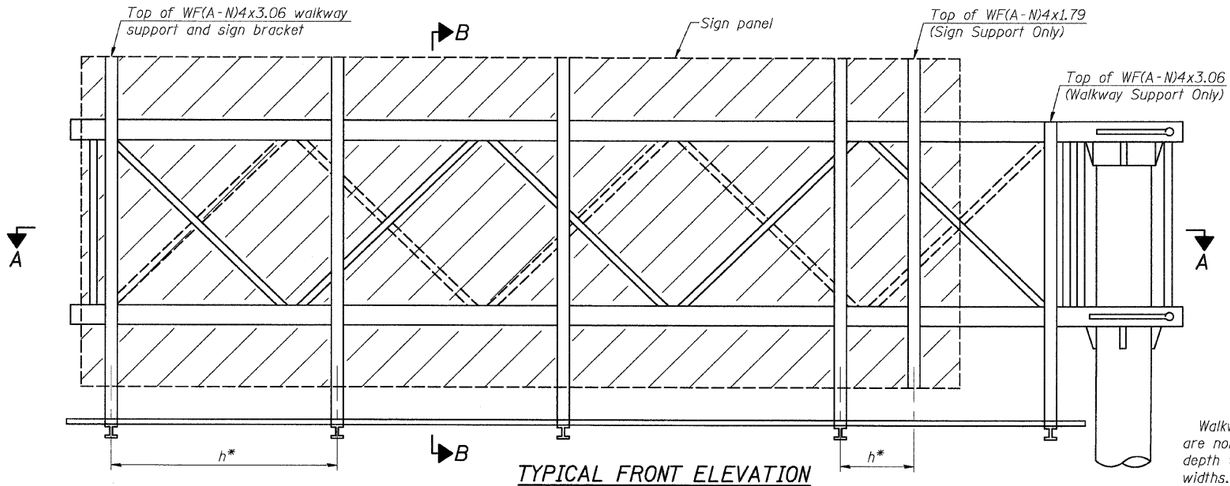
USER NAME = CFC

CANTILEVER SIGN STRUCTURES
TYPE II-C-A & III-C-A TRUSS SUPPORT POST
ALUMINUM TRUSS & STEEL POST

F.A.I. ROUTE 70, SEC. 60-(5,6,7)RS, 60-(6,7)BR
MADISON COUNTY

SHEET NO. 5
19 SHEETS

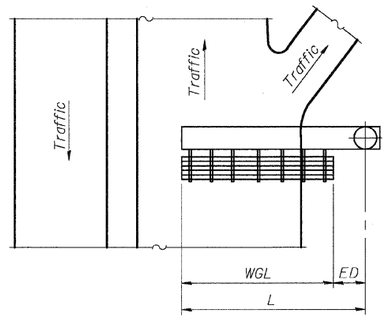
F.A.I RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
70	60-(5,6,7)RS, 60-(6,7)BR	MADISON	185	149
		CONTRACT NO. 76C56		
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		



TYPICAL FRONT ELEVATION

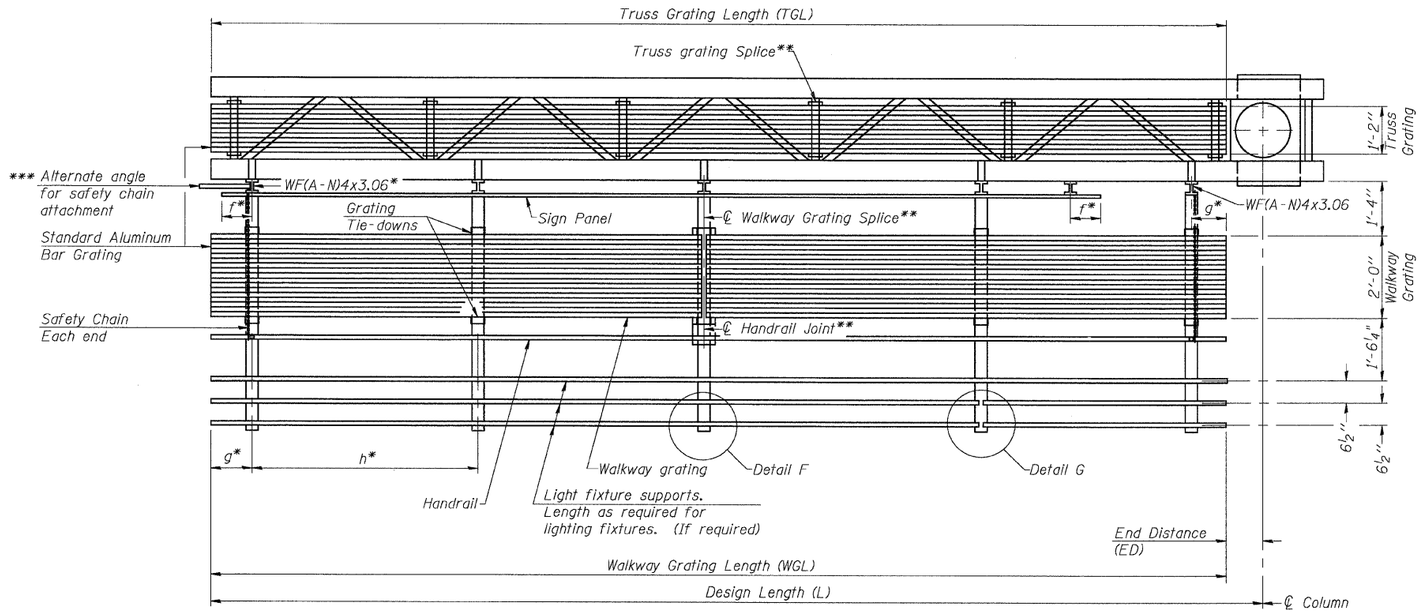
With lights and handrail omitted for clarity.

Walkway and truss grating dimensions are nominal and may vary (width ±½", depth ±½") based on available standard widths.



PLAN
WALKWAY AND HANDRAIL SKETCH

(Road plan beneath truss varies)



Structure Number	Station	WGL	ED	TGL
8C0601055R008.8	392+25	19'	11'	28'-6"

Notes:

* Space walkway brackets WF(A-N)4x3.06 and sign brackets WF(A-N)4x1.79 for efficiency and within limits shown:

f = 12" maximum, 4" minimum (End of sign to ℄ of nearest bracket)
g = 12" maximum, 4" minimum (End of walkway to ℄ of nearest bracket)
h = 6'-0" maximum (℄ to ℄ sign and/or walkway support brackets, WF(A-N)4x1.79 or WF(A-N)4x3.06)

*** If walkway bracket at safety chain location is behind sign, add angle to bracket. See alternate safety chain attachment on base sheet OSC-A-8

For details of sign placement, sign/walkway brackets, truss and walkway gratings, grating splices and Section B-B, see Base Sheet OSC-A-7.
For details of handrail, handrail joint, safety chain and Details F and G, see Base Sheet OSC-A-8.

SECTION A-A

Truss grating to facilitate inspection shall run full length of cantilevers. Cost of truss grating is included in Overhead Sign Structure Cantilever.

Handrail and walkway grating shall span a minimum of three brackets between splices.
** Use and location of handrail joints or grating splices are optional, based on lengths needed and material availability.

$$TGL = L - \left(\frac{\text{Post O.D.}}{2} + 6''\right)$$

NUMBER	REVISION	DATE

BRACKET TABLE

WF(A-N)4x1.79 or WF(A-N)4x3.06
ASTM B308, Alloy 6061-T6

Sign Width		Number Brackets Required
Greater Than	Less Than or Equal To	
	8'-0"	2
8'-0"	14'-0"	3
14'-0"	20'-0"	4
20'-0"	26'-0"	5
26'-0"	32'-0"	6

Coombe-Bloxdorf P.C.
-CIVIL ENGINEERS-
-STRUCTURAL ENGINEERS-
-LAND SURVEYORS-
Design Firm License No. 184-002703

PROJECT NO. 05027-13
SCALE
DATE / /
DESIGN BY
DRAWN BY
CHECKED BY

OSC-A-6 12-1-08

CANTILEVER SIGN STRUCTURES
ALUMINUM WALKWAY DETAILS
ALUMINUM TRUSS & STEEL POST

F.A.I. ROUTE 70, SEC. 60-(5,6,7)RS, 60-(6,7)BR
MADISON COUNTY

SHEET NO. 6
19 SHEETS

F.A.I RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
70	60-(5,6,7)RS, 60-(6,7)BR	MADISON	185	150
		CONTRACT NO. 76C56		
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

PLOT DATE = 09/14/2009
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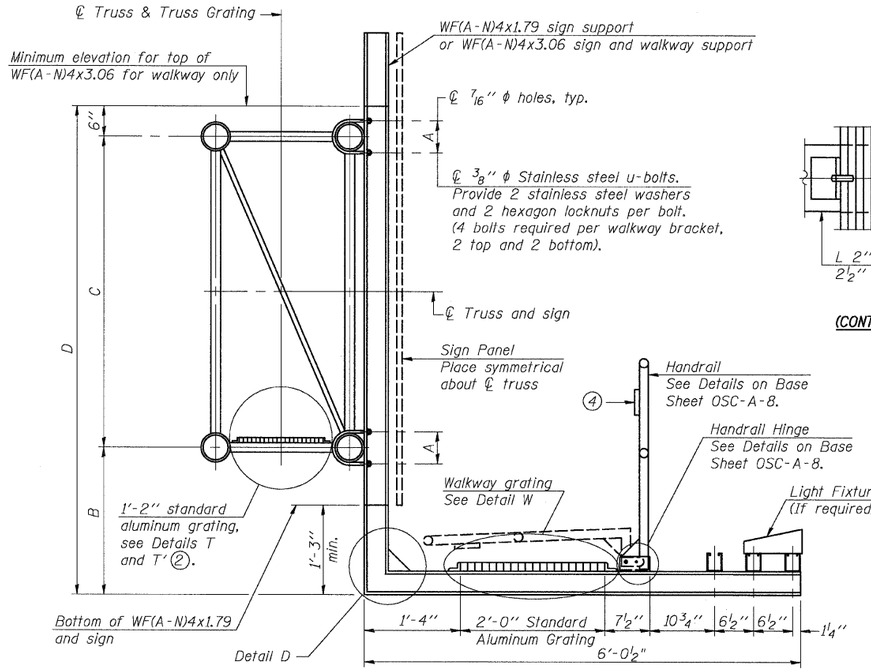
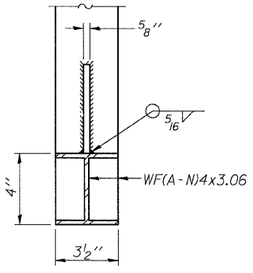
USER NAME = CFC.

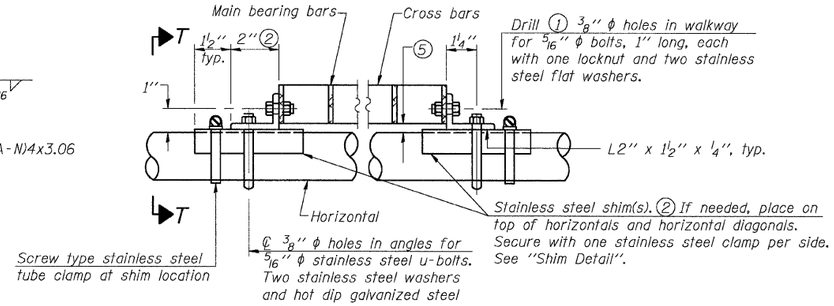


SECTION B-B

Sign shall be even with the top of the bracket, but it may extend no more than 6" above the top of the bracket for field adjustments.

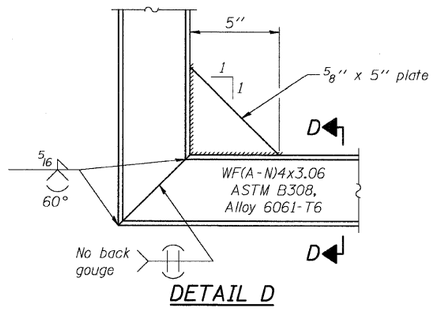


SECTION D-D

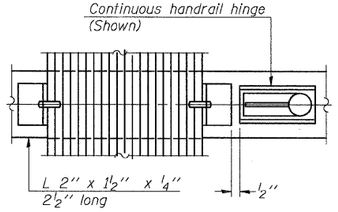


DETAIL T

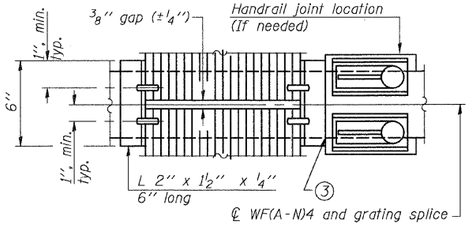
(Continuous Truss grating)



DETAIL D

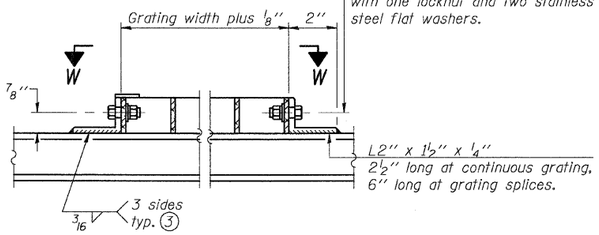


(CONTINUOUS WALKWAY GRATING)



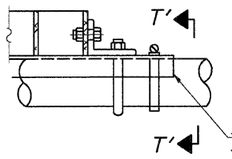
(AT WALKWAY GRATING SPLICE)

SECTION W-W



DETAIL W

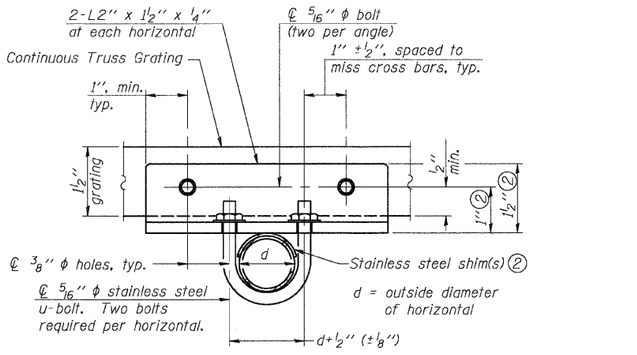
(Walkway grating)



DETAIL T'

(Truss grating splice)

Details not shown same as Detail T. Alternate materials may be used subject to the Engineer's review and approval.



SECTION T-T

SPECIFICATIONS FOR STANDARD ALUMINUM GRATING

Main Bearing Bars (MBB) shall be 3/16" x 1 1/2" on 1 3/16" centers and conform to ASTM B211 Alloy 6061-T6.

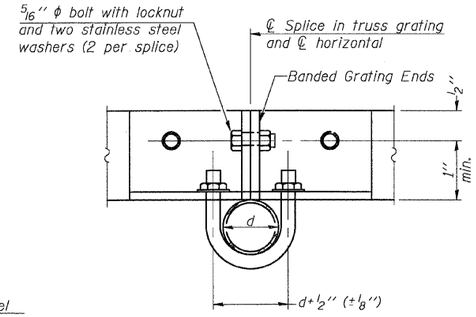
Cross bars (CB) shall be 3/16" x 1 1/2" on 4" centers and conform to ASTM B221 Alloy 6063-T5 or 6061-T6.

OR

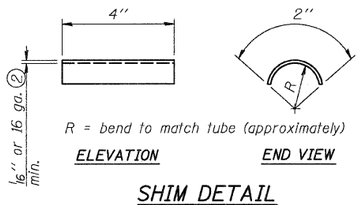
Aluminum Grating with modified "T" sections for main bearing bars shall meet the following requirements:

Main bars shall conform to ASTM B221 Alloy 6061-T6 and have a minimum section modulus equal to 0.0705 in.^{3} per bar, a depth of 1 1/2", spaced on 1 3/16" centers.

Cross bars shall conform to ASTM B221 Alloy 6063-T5 or T-42 and spaced on 4" centers.



SECTION T'-T'



SHIM DETAIL

(1) Drilling holes in grating may be done in shop or field, based on Contractor's preference and subject to accurate alignment.

(2) Stainless steel shims shall be placed as shown in Detail T if needed to compensate for alignment variations between horizontal and diagonal pipes beyond adjustment provided by angles. Thicker shims may be used subject to shims performing properly.

(3) If Handrail Joint present, weld angle to WF(A-N)4 and 1/4" extension bars. (See Base Sheet OSC-A-8.)

(4) PL 1/8" x 1/2" x 2" welded to handrail posts to protect locations that contact grating.

(5) Tube to grating gap may vary from 0 to 1/2", max. to align walkway, allow for camber, etc.

Structure Number	Station	A	B	C	D
8C060I055R008.8	392+25	7"	2'-9"	5.50'	8'-9"

NUMBER	REVISION	DATE

Coombe-Bloxdorf P.C.
-CIVIL ENGINEERS-
-STRUCTURAL ENGINEERS-
-LAND SURVEYORS-
Design Firm License No. 184-002703

PROJECT NO. 05027-13
SCALE
DATE / /
DESIGN BY
DRAWN BY
CHECKED BY

OSC-A-7 12-1-08

PLOT DATE = 09/14/2009
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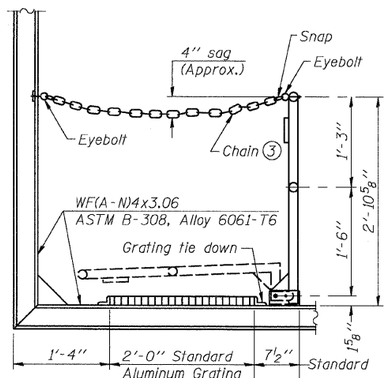
USER NAME = CFC_

CANTILEVER SIGN STRUCTURES
WALKWAY DETAILS
ALUMINUM TRUSS & STEEL POST

F.A.I. ROUTE 70, SEC. 60-(5,6,7)RS, 60-(6,7)BR
MADISON COUNTY

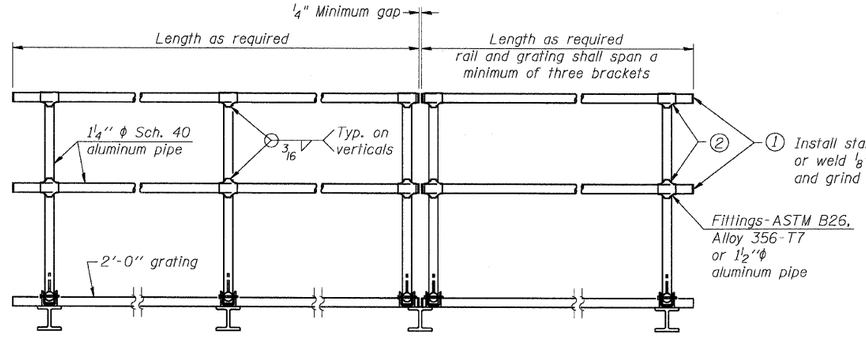
SHEET NO. 7
19 SHEETS

F.A.I RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
70	60-(5,6,7)RS, 60-(6,7)BR	MADISON	185	151
		CONTRACT NO. 76C56		
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

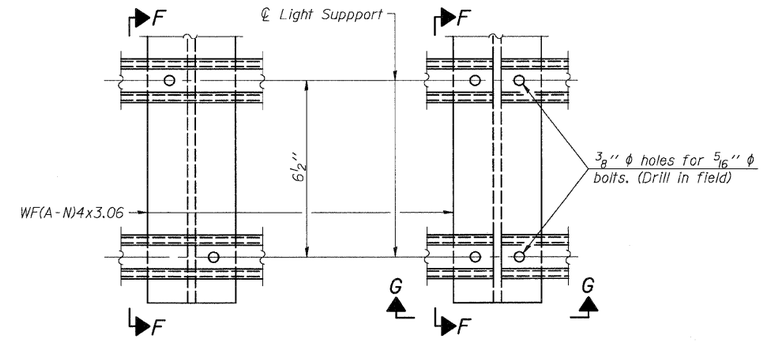


SIDE ELEVATION

(Showing Safety Chain W/O Sign)



FRONT ELEVATION

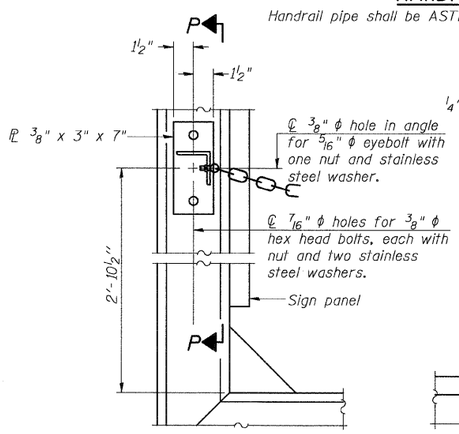


DETAIL F

DETAIL G

HANDRAIL DETAILS

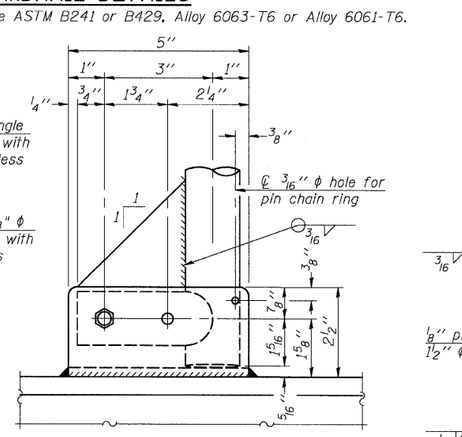
Handrail pipe shall be ASTM B241 or B429, Alloy 6063-T6 or Alloy 6061-T6.



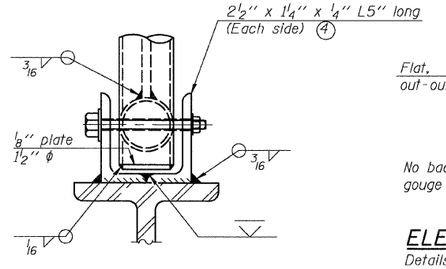
ALTERNATE SAFETY CHAIN ATTACHMENT

(With Sign Present)

Items not shown same as "Side Elevation" of "Handrail Details"

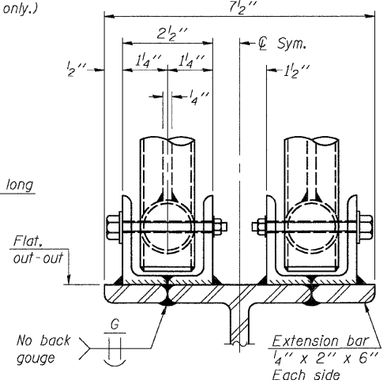


SIDE ELEVATION



FRONT ELEVATION

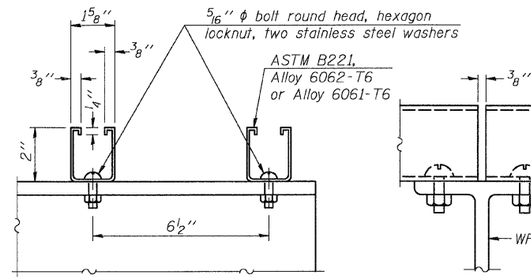
Details not shown same as "ELEVATION" at right.



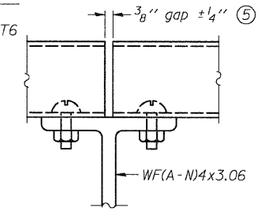
ELEVATION AT HANDRAIL JOINT (4)

Details not shown same as "FRONT ELEVATION"

(2) Horizontal handrail member shall be continuous thru fitting. Provide 7/16" ϕ hole in fitting for 3/8" ϕ bolt. Field drill 7/16" ϕ hole in horizontal rail member. Provide locknut and two stainless steel washers for bolt. (Use 5/16" eyebolts in 7/16" ϕ holes on top rail at ends only.)



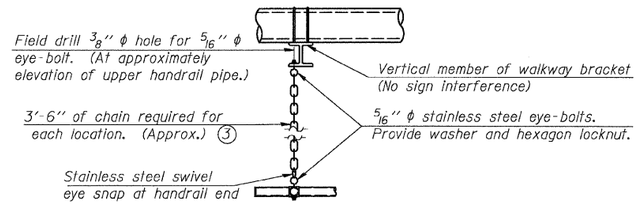
SECTION F-F



SECTION G-G

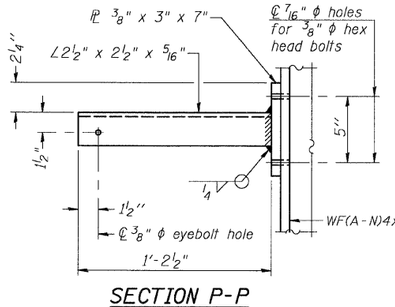
LIGHTING FIXTURE MOUNTS (IF REQUIRED)

(5) Field cut ends of light support channels shall be free of burrs or hazardous projections and coated with zinc-rich primer or equivalent.

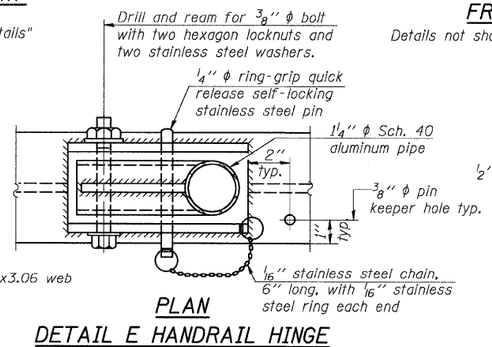


SAFETY CHAIN

One required for each end of each walkway.

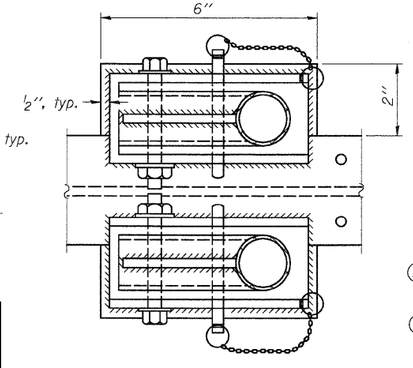


SECTION P-P



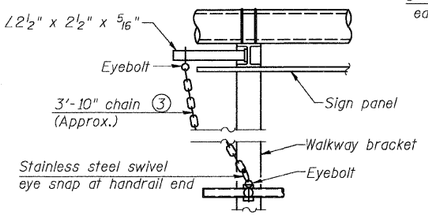
PLAN

DETAIL E HANDRAIL HINGE



PLAN AT HANDRAIL JOINT

Details not shown same as "PLAN"



ALTERNATE SAFETY CHAIN ATTACHMENT

Details not shown similar to "Safety Chain" Details
(Walkway omitted for clarity)

(3) 3/16" Type 304L stainless steel chain, approximately 12 links per foot.

(4) Extrusions may be used in lieu of the details shown, with approval of the Engineer.

NUMBER	REVISION	DATE

Coombe-Bloxdorf P.C.
-CIVIL ENGINEERS-
-STRUCTURAL ENGINEERS-
-LAND SURVEYORS-
Design Firm License No. 184-002703

PROJECT NO. 05027-13
SCALE
DATE / /
DESIGN BY
DRAWN BY
CHECKED BY

OSC-A-8 12-1-08

PLOT DATE = 09/14/2009
FILE NAME = ...\76c56-08-osca8.dgn
PLOT SCALE = 040.999986 '/' IN.
USER NAME = CFC.

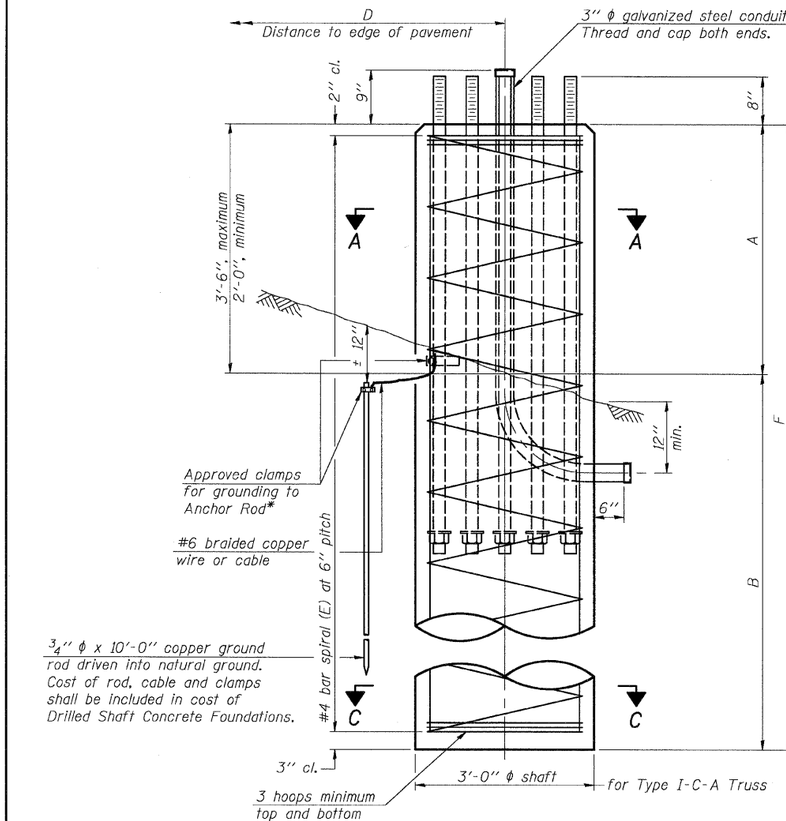
CANTILEVER SIGN STRUCTURES
HANDRAIL DETAILS
ALUMINUM TRUSS & STEEL POST

F.A.I. ROUTE 70, SEC. 60-(5,6,7)RS, 60-(6,7)BR
MADISON COUNTY

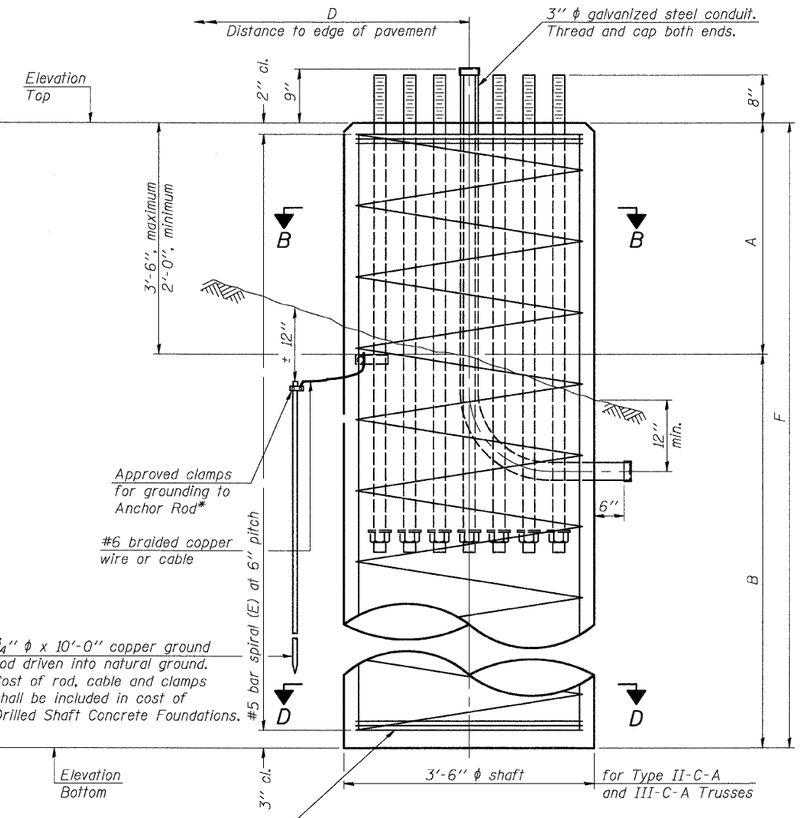
SHEET NO. 8
19 SHEETS

F.A.I RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
70	60-(5,6,7)RS, 60-(6,7)BR	MADISON	185	152
		CONTRACT NO. 76C56		
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

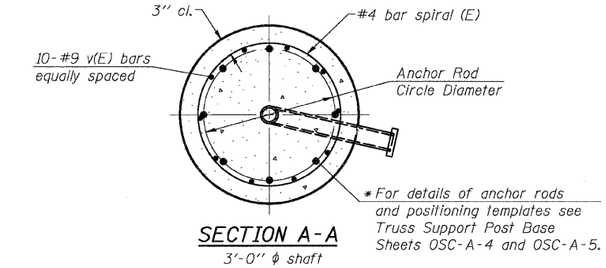
* Grind anchor rod to bright finish at ground clamp location before installing clamp.



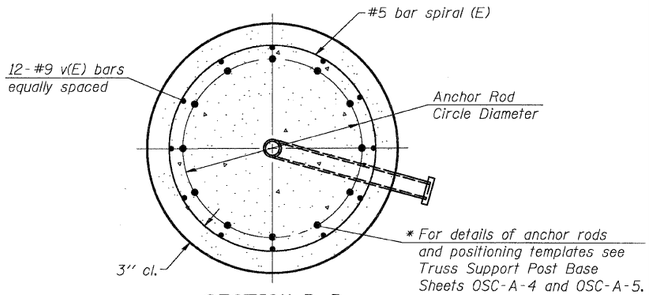
ELEVATION



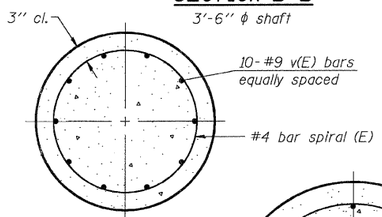
ELEVATION



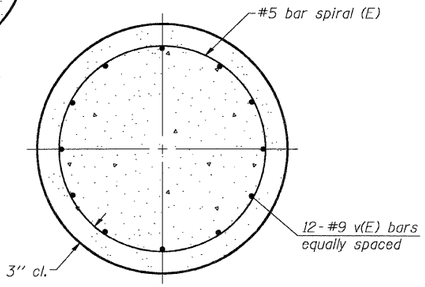
SECTION A-A
3'-0" ϕ shaft



SECTION B-B
3'-6" ϕ shaft



SECTION C-C
3'-0" ϕ shaft



SECTION D-D
3'-6" ϕ shaft

NOTES:

The foundation dimensions shown in the Foundation Design Table are based on the presence of mostly cohesive soils with an average Unconfined Compressive Strength (Qu) of at least 1.25 tsf, which must be determined by previous soil investigations at the jobsite. When other conditions are indicated, the boring data will be included in the plans and the foundation dimensions shown in the Foundation Data Table will be the result of site specific designs.

If the conditions encountered are different than those indicated, the Contractor shall notify the Engineer to determine if the foundation dimensions need to be modified. If dimensions "B" or "F" are revised by more than 12" by the Contractor, "as-built" plans shall be prepared and submitted to the District Bureau of Operations for future reference.

No sonotubes or decomposable forms shall be used below the lower conduit entrance. Permanent metal forms or other shielding may not be left in place below that elevation without the Engineer's written permission.

Concrete shall be placed monolithically, without construction joints.

Backfill shall be placed per Article 502 of Standard Specification and prior to erection of support column.

A normal surface finish followed by a Bridge Seat Sealer application will be required on concrete surfaces above the lowest elevation 6" below finished ground line. Cost included in "Drilled Shaft Concrete Foundation".

FOUNDATION DATA TABLE

Structure Number	Station	Truss Type	Shaft Diameter	Elevation Top	Elevation Bottom	Qu	A	B	F	Class DS Concrete Cubic Yards
8C060I055R008.8	392+25	II-C-A	3.5'	101.15	81.9	1.25 tsf	2.25	17.0'	19.25	6.9

FOUNDATION DESIGN TABLE

Truss Type	Post Base Sheet	Maximum CantileverLength (ft)	Maximum Total Sign Area (sq ft)	Shaft Diameter (in)	"B" Depth (ft)	Anchor Rods		Anchor Rod Circle Diameter (in)
						No.	Diameter (in)	
I-C-A	OSC-A-4	25	170	3.0	16.0	8	2	22
II-C-A	OSC-A-5	30	170	3.5	17.0	12	2	30
II-C-A	OSC-A-5	30	340	3.5	21.5	12	2	30
III-C-A	OSC-A-5	35	170	3.5	19.0	12	2	30
III-C-A	OSC-A-5	35	250	3.5	22.5	12	2	30
III-C-A	OSC-A-5	35	400	3.5	26.5	12	2	30
III-C-A	OSC-A-5	40	400	3.5	32.0	12	2	30

NUMBER	REVISION	DATE

Coombe-Bloxdorf P.C.
-CIVIL ENGINEERS-
-STRUCTURAL ENGINEERS-
-LAND SURVEYORS-
Design Firm License No. 184-002703

PROJECT NO. 05027-13
SCALE
DATE / /
DESIGN BY
DRAWN BY
CHECKED BY

OSC-A-9 12-1-08

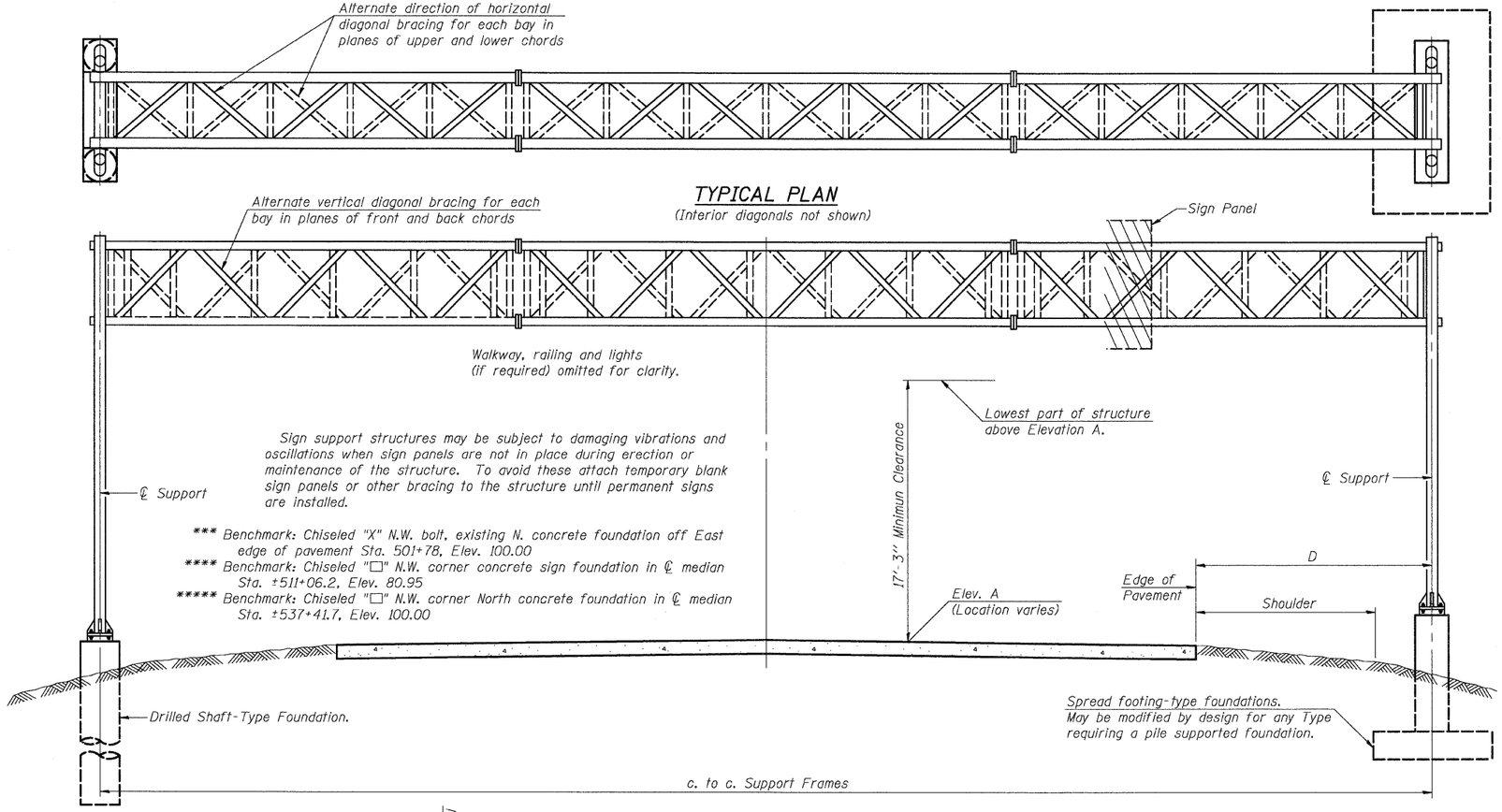
PLOT DATE = 09/14/2009
FILE NAME = I:\6c56-09-oscA9.dgn
PLOT SCALE = 0.03999986 '/' IN.
USER NAME = CFC.

CANTILEVER SIGN STRUCTURES
DRILLED SHAFT
ALUMINUM TRUSS & STEEL POST

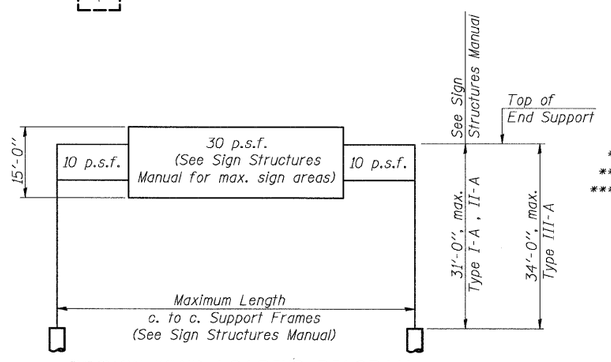
F.A.I. ROUTE 70, SEC. 60-(5,6,7)RS, 60-(6,7)BR
MADISON COUNTY

SHEET NO. 9
19 SHEETS

F.A.I RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
70	60-(5,6,7)RS, 60-(6,7)BR	MADISON	185	153
		CONTRACT NO. 76C56		
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		



TYPICAL PLAN
(Interior diagonals not shown)



DESIGN WIND LOADING DIAGRAM

Parameters shown are basis for I.D.O.T. Standards and Sign Manual Tables. Installations not within dimensional limits shown require special analysis for all components.

TYPICAL ELEVATION
(Looking at Face of Signs**)

Elev. A = Elevation at point of minimum clearance to sign, walkway support or truss.

	Structure Number	Station	Design Truss Type	c. to c. Supports	Elev. A	Dim. D	Height of Tallest Sign	Total Sign Area
***	8S060I055R010.9	502+00	I-A	70'	105.27	16.62'	16'	572 ft²
****	8S060I055L011.2	510+80	I-A	92'	80.06	18.82'	13.5'	401 ft²
*****	8S060I055L011.4	537+25	II-A	60'	100.53	15.85'	14'	642 ft²

**Looking upstation for structures with signs both sides.

TOTAL BILL OF MATERIAL

ITEM	UNIT	TOTAL
OVERHEAD SIGN STRUCTURE SPAN TYPE I-A	Foot	162
OVERHEAD SIGN STRUCTURE SPAN TYPE II-A	Foot	60
OVERHEAD SIGN STRUCTURE SPAN TYPE III-A	Foot	
OVERHEAD SIGN STRUCTURE WALKWAY TYPE A	Foot	150
CONCRETE FOUNDATIONS	Cu. Yds.	
DRILLED SHAFT CONCRETE FOUNDATIONS	Cu. Yds.	60.5

GENERAL NOTES

DESIGN: AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals. ("AASHTO Specifications")

CONSTRUCTION: Current (at time of letting) Illinois Department of Transportation Standard Specifications for Road and Bridge Construction, Supplemental Specifications and Special Provisions. ("Standard Specifications")

LOADING: 90 M.P.H. WIND VELOCITY

WALKWAY LOADING: Dead load plus 500 lbs. concentrated live load.

DESIGN STRESSES:
Field Units
f'c = 3,500 p.s.i.
fy = 60,000 p.s.i. (reinforcement)

WELDING: All welds to be continuous unless otherwise shown. All welding to be done in accordance with current AWS D1.1 and D1.2 Structural Welding Codes (Steel and Aluminum) and the Standard Specificiations.

MATERIALS: Aluminum Alloys as shown throughout plans. All Structural Steel Pipe shall be ASTM A53 Grade B or A500 Grade B or C. If A500 pipe is substituted for A53, then the outside diameter shall be as detailed and wall thickness greater than or equal to A53.
All Structural Steel Plates and Shapes shall conform to AASHTO M270 Gr. 36, Gr. 50 or Gr. 50W*. Stainless steel for shims, sleeves and handhole covers shall be ASTM A240, Type 302 or 304, or another alloy suitable for exterior exposure and acceptable to the Engineer.
The steel pipe and stiffening ribs at the base plate for the column shall have a minimum longitudinal Charpy V-Notch (CVN) energy of 15 lb.-ft. at 40° F. (Zone 2) before galvanizing.

FASTENERS FOR ALUMINUM TRUSSES: All bolts noted as "high strength" must satisfy the requirements of AASHTO M164 (ASTM A325), or approved alternate, and must have matching lock nuts. Threaded studs for splices (if Members interfere) must satisfy the requirements of ASTM A449, ASTM A193, Grade B7, or approved alternate, and must have matching lock nuts. Bolts and lock nuts not required to be high strength must satisfy the requirements of ASTM A307. All bolts and lock nuts must be hot dip galvanized per AASHTO M232. The lock nuts must have nylon or steel inserts. A stainless steel flat washer conforming to ASTM A240 Type 302 or 304, is required under both head and nut or under both nuts where threaded studs are used. High strength bolt installation shall conform to Article 505.04 (f) (2)d of the IDOT Standard Specifications for Road and Bridge Construction. Rotational capacity ("ROCAP") testing of bolts will not be required.

U-BOLTS AND EYEBOLTS: U-Bolts and Eyebolts must be produced from ASTM A276 Type 304, 304L, 316 or 316L, Condition A, cold finished stainless steel, or an equivalent material acceptable to the Engineer. All nuts for U-Bolts and Eyebolts must be lock nuts equivalent to ASTM A307 with nylon or steel inserts and hot dip galvanized per AASHTO M232. A stainless steel flat washer conforming to ASTM A240, Type 302 or 304, is required under each U-Bolt and Eyebolt lock nut.

GALVANIZING: All Steel Grating, Plates, Shapes and Pipe shall be Hot Dip Galvanized after fabrication in accordance with AASHTO M111. Painting is not permitted.

ANCHOR RODS: Shall conform to AASHTO M314 Gr. 36, 55 or 105 with a minimum Charpy V-Notch (CVN) energy of 15 lb.-ft. at 40° F.

CONCRETE SURFACES: All concrete surfaces above an elevation 6" below the lowest final ground line at each foundation shall be cleaned and coated with Bridge Seat Sealer in accordance with the Standard Specifications.

REINFORCEMENT BARS: Reinforcement Bars designated (E) shall be epoxy coated in accordance with the Standard Specifications.

FOUNDATIONS: The contract unit price for Concrete Foundations and Drilled Shaft Concrete Foundations shall include reinforcement bars complete in place.

* If M270 Gr. 50W (M222) steel is proposed, chemistry for plate to be used shall first be approved by the Engineer as suitable for galvanizing and welding.

NUMBER	REVISION	DATE

Coombe-Bloxdorf P.C.
-CIVIL ENGINEERS-
-STRUCTURAL ENGINEERS-
-LAND SURVEYORS-
Design Firm License No. 184-002703

PROJECT NO. 05027-13
SCALE
DATE / /
DESIGN BY
DRAWN BY
CHECKED BY

OS-A-1 12-1-08

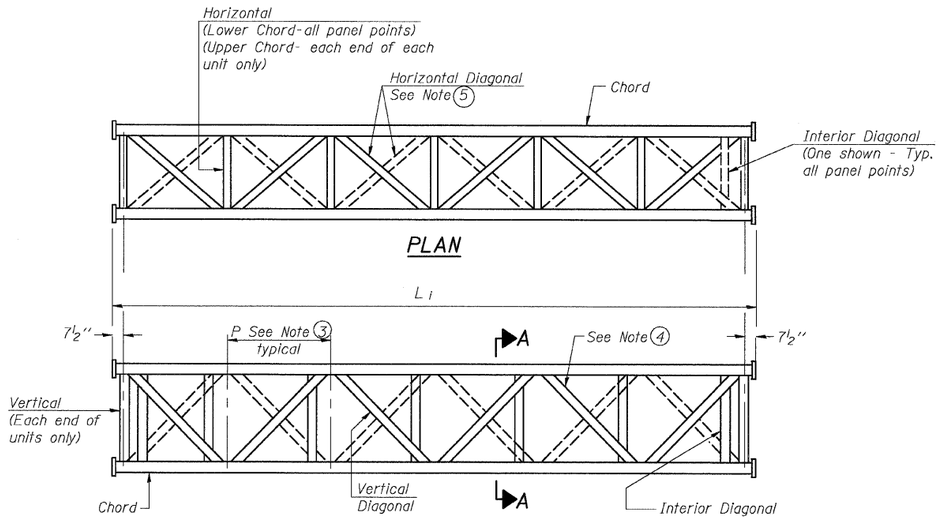
PLOT DATE = 09/14/2009
FILE NAME = d:\76c56-010-osa1.dgn
PLOT SCALE = 100.000000 '/ IN.
USER NAME = CFC

OVERHEAD SIGN STRUCTURES
GENERAL PLAN & ELEVATION
ALUMINUM TRUSS & STEEL SUPPORTS

F.A.I. ROUTE 70, SEC. 60-(5,6,7)RS, 60-(6,7)BR
MADISON COUNTY

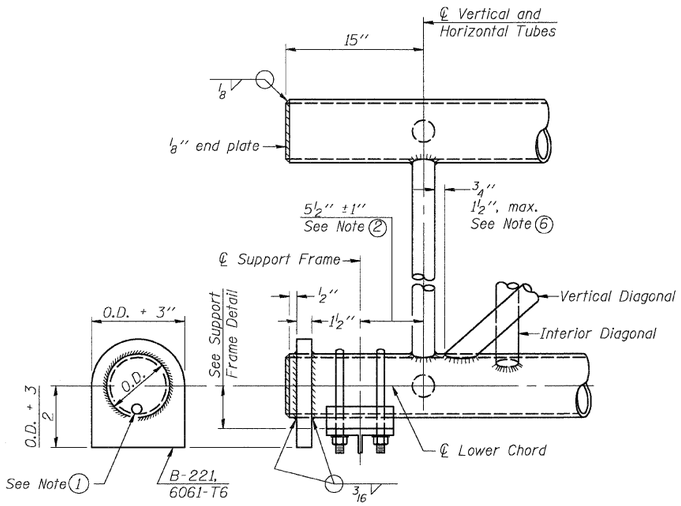
SHEET NO. 1Ø
19 SHEETS

F.A.I RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
70	60-(5,6,7)RS, 60-(6,7)BR	MADISON	185	154
		CONTRACT NO. 76C56		
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

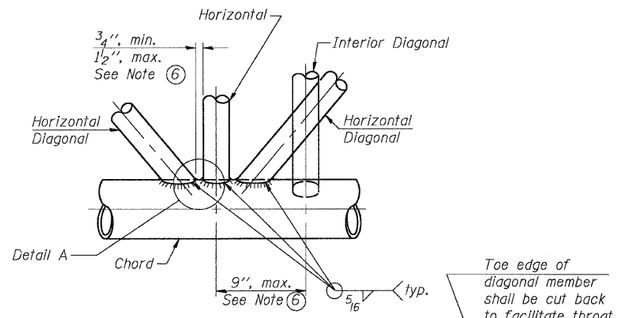


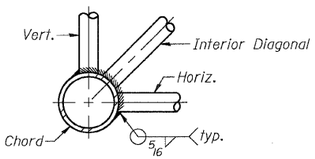
ELEVATION
TYPICAL INTERIOR UNIT

Even number of panels/interior unit required.

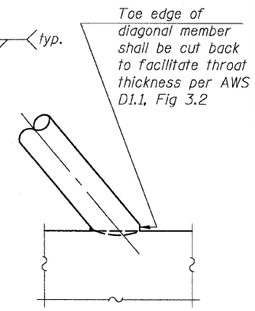


SUPPORT END DETAIL FOR EXTERIOR UNIT

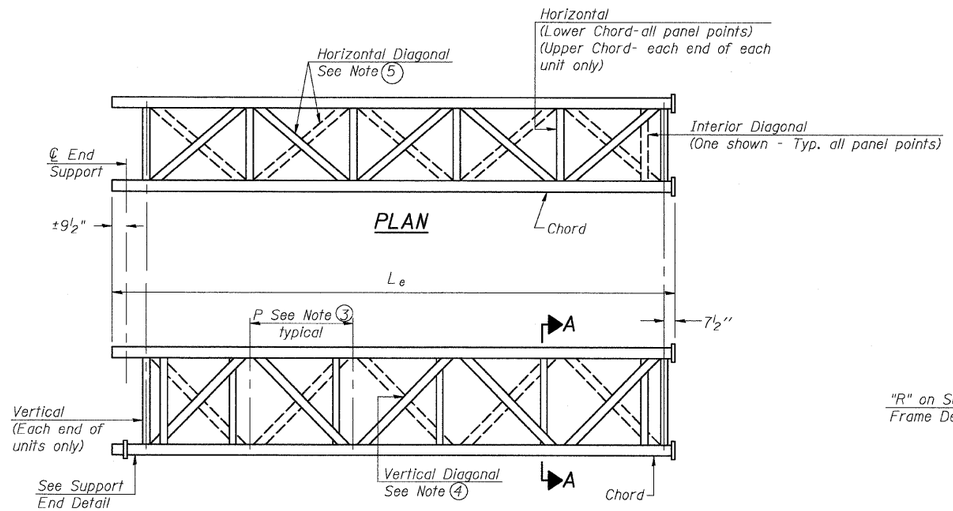




TYPICAL JOINT DETAILS

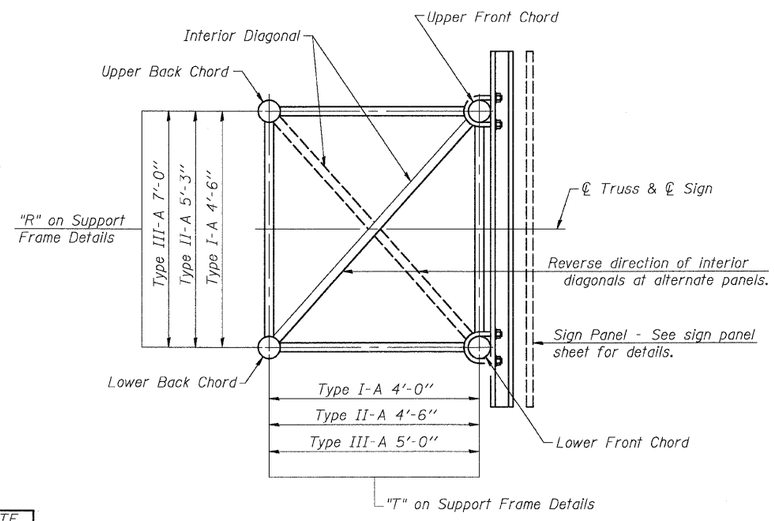


DETAIL A



ELEVATION
TYPICAL EXTERIOR UNIT

Even or odd number of panels/exterior units allowed.



SECTION A-A

1. Contractor may alternatively use standard aluminum drive-fit cap to close end. ½" ϕ drain hole in end plate/drive-fit cap. (Typ. at ends of all chords)
2. 5½" end dimension may vary by ±1" to provide uniform panel spacing (P).
3. Panel spacing (P) shall be uniform for entire truss and between 4'-0" and 5'-0" for Type I-A or 4'-0" and 5'-6" for Types II-A and III-A.
4. Vertical Diagonals in front and back face shall alternate.
5. Hidden lines show wind bracing alternates direction between planes of top and bottom chords.
6. All diagonals shall be detailed for minimum offset from the panel point based on the following: Offset shall be such as to provide a ¾" minimum to 1½" maximum clearance between any diagonal and any horizontal or vertical member, and to provide clearance for U-bolt connections of signs or walkway brackets.

Coombe-Bloxdorf P.C.
-CIVIL ENGINEERS-
-STRUCTURAL ENGINEERS-
-LAND SURVEYORS-
Design Firm License No. 184-002703

PROJECT NO. 05027-13
SCALE
DATE / /
DESIGN BY
DRAWN BY
CHECKED BY

OS-A-2 12-1-08

NUMBER	REVISION	DATE

OVERHEAD SIGN STRUCTURES
ALUMINUM TRUSS DETAILS
FOR TRUSS TYPES I-A, II-A AND III-A

F.A.I. ROUTE 70, SEC. 60-(5,6,7)RS, 60-(6,7)BR
MADISON COUNTY

SHEET NO. 11
19 SHEETS

F.A.I RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
70	60-(5,6,7)RS, 60-(6,7)BR	MADISON	185	155
		CONTRACT NO. 76C56		
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

PLOT DATE = 09/14/2009
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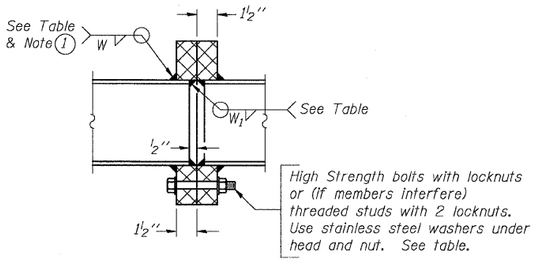
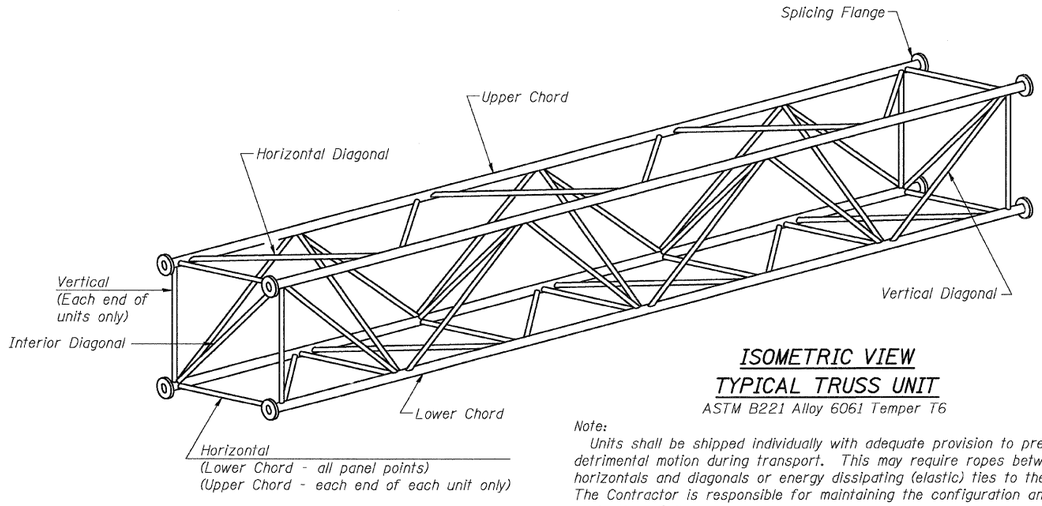
TRUSS UNIT TABLE

Structure Number	Station	Design Truss Type	Exterior Units (2)			Interior Unit				Upper & Lower Chord		Verticals; Horizontals; Vertical, Horizontal, and Interior Diagonals		Camber at Midspan	Splicing Flange					
			No. Panels per Unit	Unit Lgth.(L_e)	Panel Lgth.(P)	No. Req'd.	No. Panels per Unit	Unit Lgth.(L_I)	Panel Lgth.(P)	O.D.	Wall	O.D.	Wall		Bolts		Weld Sizes		A	B
															No./Splice	Dia.	W	W_1		
8S0601055R010.9	502+00	I-A	7	35'-8 1/2"	4'-10"	-	-	-	-	5"	5/16"	2 1/2"	5/16"	1 3/4"	6	7/8"	5/16"	1/4"	8 3/4"	11 3/4"
8S0601055L011.2	510+80	I-A	6	31'-4 1/2"	4'-11"	1	6	30'-9"	4'-11"	5 1/2"	5/16"	2 1/2"	5/16"	2 7/8"	6	7/8"	3/8"	1/4"	9 1/4"	12 1/4"
8S0601055L011.4	537+25	II-A	6	30'-10 1/2"	4'-10"	-	-	-	-	5 1/2"	5/16"	3"	5/16"	3/4"	6	7/8"	3/8"	1/4"	9 1/4"	12 1/4"



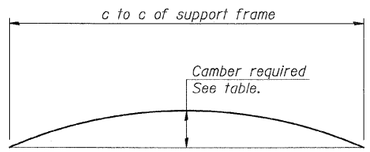
SECTION B-B

(1) Splicing Flanges shall be attached to each truss unit with the truss shop assembled to camber shown. Truss units shall be in proper alignment and flange surfaces shall be shop bolted into full contact before welding. Sufficient external welds or tacks shall be made to secure flanges until remaining welds are made after disassembly. Adjacent flanges shall be "match marked" to insure proper field assembly.



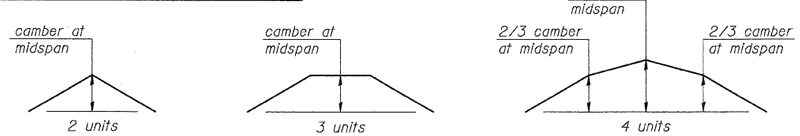
ISOMETRIC VIEW
TYPICAL TRUSS UNIT
ASTM B221 Alloy 6061 Temper T6

Note:
Units shall be shipped individually with adequate provision to prevent detrimental motion during transport. This may require ropes between horizontals and diagonals or energy dissipating (elastic) ties to the vehicle. The Contractor is responsible for maintaining the configuration and protection of the units.

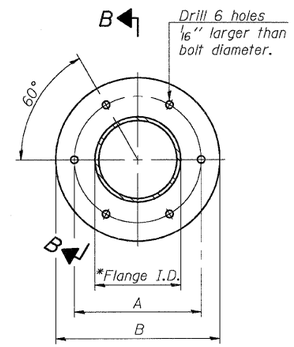


CAMBER DIAGRAM
Camber curve shown is theoretical. Actual camber attained by slope changes at splices between units.

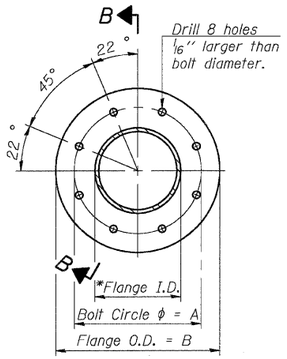
CAMBER ATTAINMENT EXAMPLES:



Camber shown is for fabrication only, measured with truss fully supported. (No-load condition)



TRUSS TYPES I-A, II-A, & III-A



TRUSS TYPES II-A & III-A

SPLICING FLANGES
ASTM B221, Alloy 6061-T6
or ASTM B209, Alloy 6061-T651
*To fit O.D. of Chord with maximum gap of 1/16".

NUMBER	REVISION	DATE

Coombe-Bloxdorf P.C.
-CIVIL ENGINEERS-
-STRUCTURAL ENGINEERS-
-LAND SURVEYORS-
Design Firm License No. 184-002703

PROJECT NO. 05027-13
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DESIGN BY
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OS4-A-2 12-1-08

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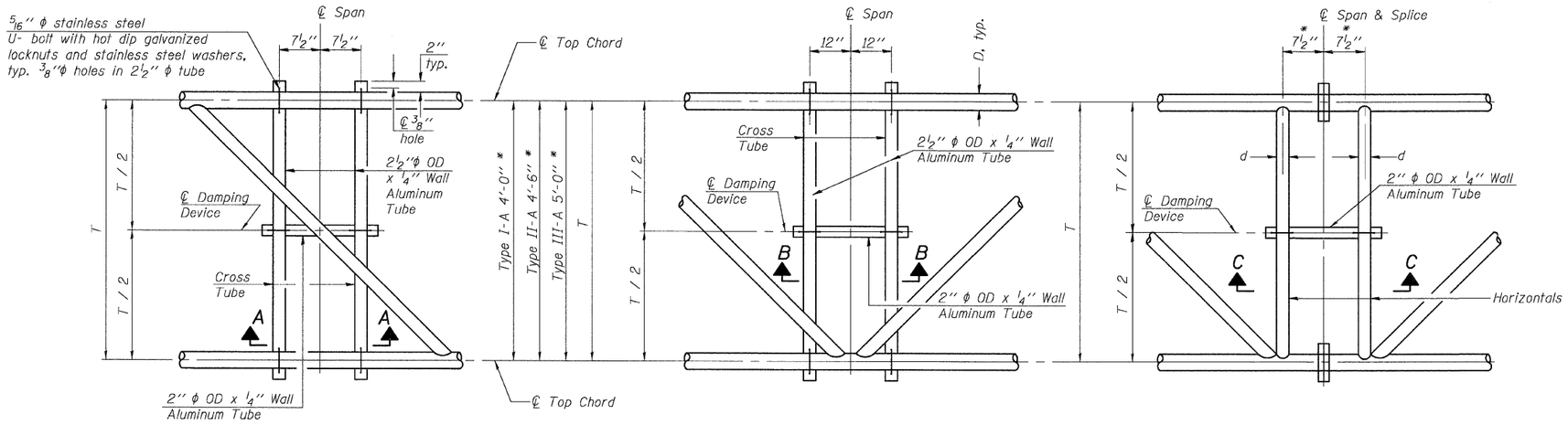
OVERHEAD SIGN STRUCTURES
ALUMINUM TRUSS DETAILS
FOR TRUSS TYPES I-A, II-A AND III-A

F.A.I. ROUTE 70, SEC. 60-(5,6,7)RS, 60-(6,7)BR
MADISON COUNTY

SHEET NO. 12
19 SHEETS

F.A.I RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
70	60-(5,6,7)RS, 60-(6,7)BR	MADISON	185	156
		CONTRACT NO. 76C56		
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

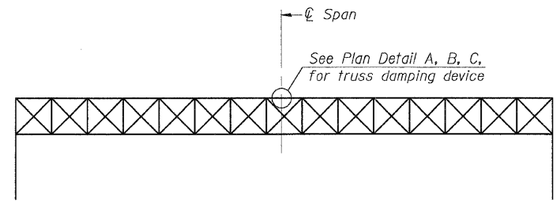
* Center of norizontal to center of splice dimension may vary. Verify before drilling holes in mounting tube.



PLAN DETAIL "A"
℄ Span between Panel Points

PLAN DETAIL "B"
℄ Span at Panel Point

PLAN DETAIL "C"
℄ Span at ℄ Chord Splice

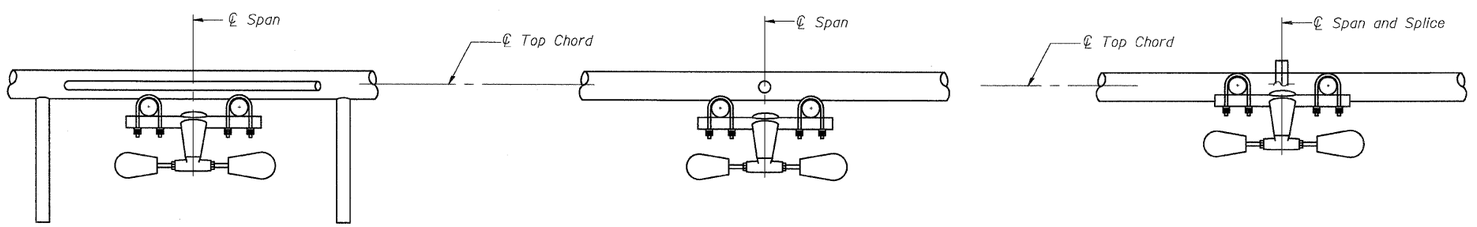


ELEVATION
Aluminum Overhead Sign Truss

NOTES

Damper: One damper per truss. (31 lbs. minimum Stockbridge-Type Aluminum - 29" minimum between ends of weights) Cost included in Overhead Sign Structure...

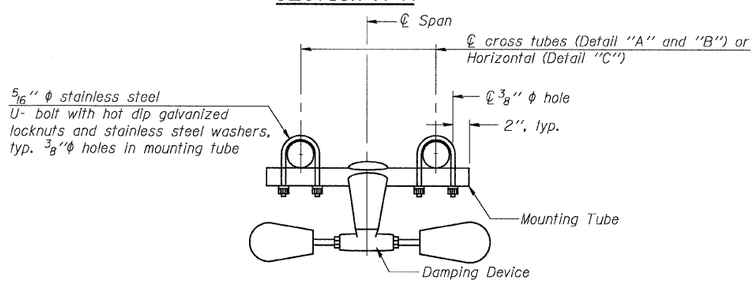
Materials: Materials: Aluminum tubes shall be ASTM B221 alloy 6061 temper T6. Cost included in Overhead Sign Structure...



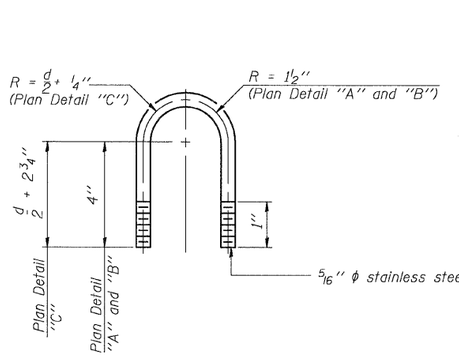
SECTION A-A

SECTION B-B

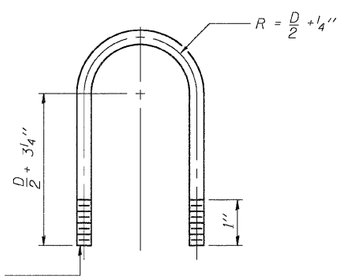
SECTION C-C



TRUSS DAMPING DEVICE CONNECTION DETAIL
(Typical)



DAMPING DEVICE MOUNTING TUBE U-BOLT DETAIL
(Typical)



TOP CHORD TO CROSS TUBE U-BOLT DETAIL
(Typical - Detail "A" and "B")

Coombe-Bloxdorf P.C.
-CIVIL ENGINEERS-
-STRUCTURAL ENGINEERS-
-LAND SURVEYORS-
Design Firm License No. 184-002703

PROJECT NO.	05027-13
SCALE	
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DESIGN BY	
DRAWN BY	
CHECKED BY	

OS-A-D 12-1-08

PLOT DATE = 09/14/2009
FILE NAME = d:\tc56c-03-osad.dgn
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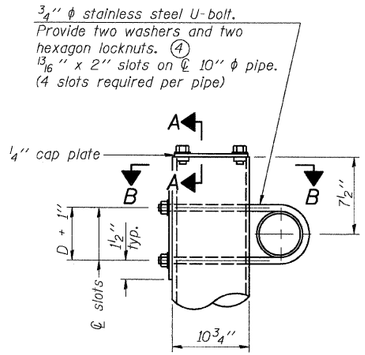
OVERHEAD SIGN STRUCTURE DAMPING DEVICE

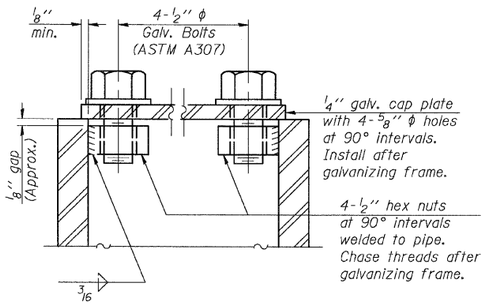
F.A.I. ROUTE 70, SEC. 60-(5,6,7)RS, 60-(6,7)BR
MADISON COUNTY

SHEET NO. 13
19 SHEETS

F.A.I RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
70	60-(5,6,7)RS, 60-(6,7)BR	MADISON	185	157
		CONTRACT NO. 76C56		
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

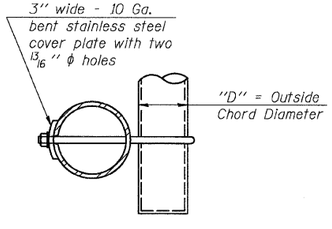


DETAIL A

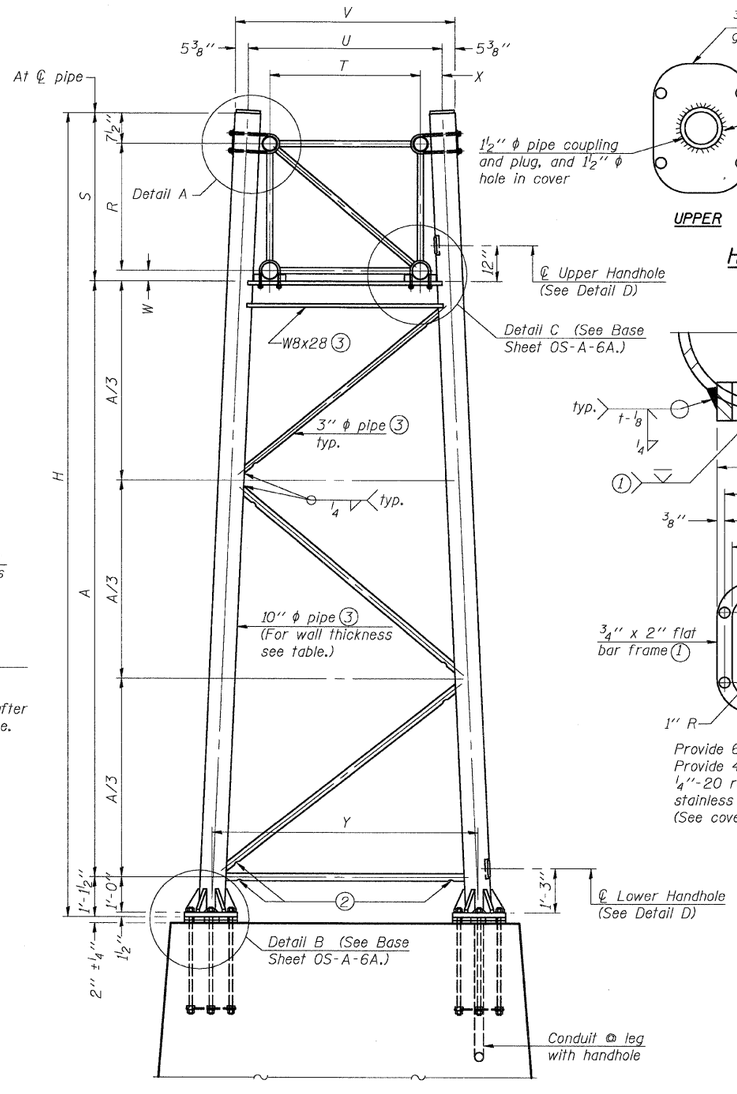


SECTION A-A

As an alternate to bolts, may use galvanized drive-fit caps installed after galvanizing frame.

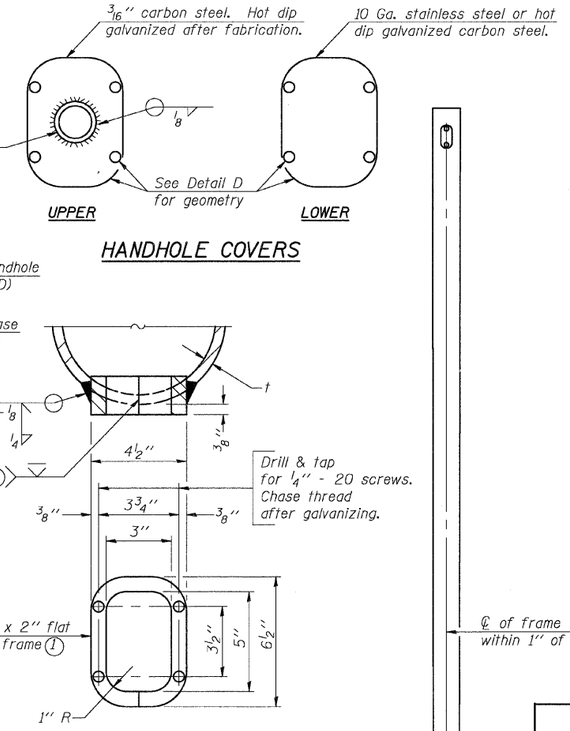


SECTION B-B

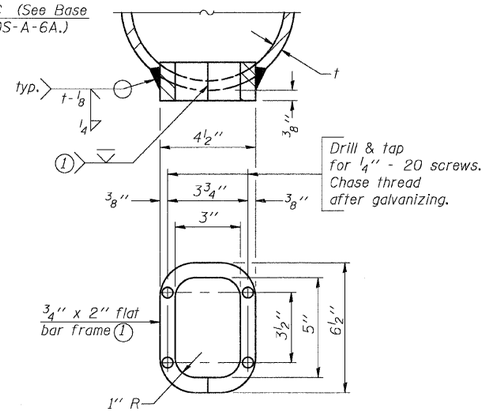


For Foundation Details, see base sheet OS-F3 (Spread Footing) or OS4-F3 (Drilled Shaft).

SIDE ELEVATION

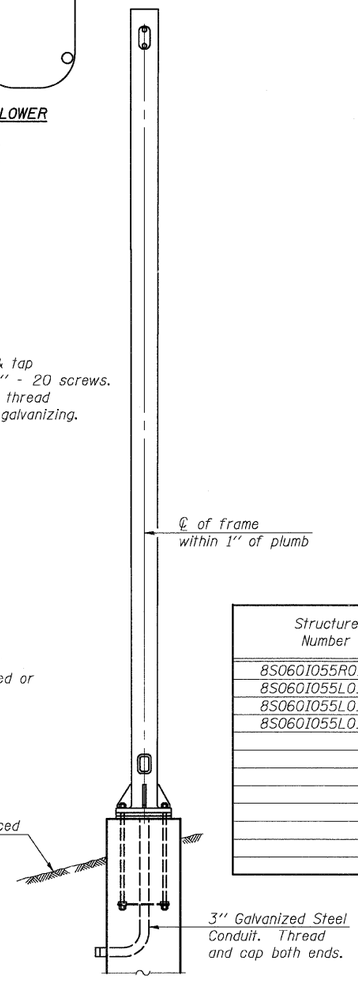


HANDHOLE COVERS



Provide $6\frac{1}{2}$" x $4\frac{1}{2}$" cover.
Provide 4-$\frac{5}{16}$" ϕ holes in cover for $\frac{1}{4}$"-20 round head hot dip galvanized or stainless steel machine screws.
(See cover details)

DETAIL D



END ELEVATION

Support Design Loads: See Base Sheet OS-A-1 for design and loading criteria.
Load combinations checked include deadload plus:
a) 100% wind normal to sign, 20% parallel to sign
b) 60% wind normal to sign, 30% parallel to sign

1. *In lieu of fabricated handhole frame as shown, may cut from 2" plate (rolling direction vertical). All cut faces to be ground to ANSI Roughness of 500 μin or less.*
2. *Galvanizing vent holes of adequate size shall be provided on underside at each end of bracing pipes. Alternately, holes may be provided in wall of pipe column. All vent holes shall be drilled and de-burred, typ.*
3. *Steel pipe, plate, carbon steel handhole covers and rolled sections shall be hot dip galvanized after fabrication. Painting is not permitted. See Base Sheet OS-A-1.*
4. *See General Notes for fasteners.*
5. *Dimensions shown are based on selection criteria in the Sign Structures Manual. Nonstandard applications must have dimensions verified or amended as appropriate.*
6. *"H" based on 15'-0" or actual sign height, whichever is greater.*

Structure Number	Station	Support Left	Support Right	Truss Type	Pipe Wall Thickness	H (6)	A
8S0601055R010.9	502+00	X	X	I-A	0.279	28'-10"	22'-3"
8S0601055L011.2	510+80	X		I-A	0.365 (Std.)	29'-2"	22'-7"
8S0601055L011.2	510+80		X	I-A	0.365 (Std.)	31'-10"	25'-3"
8S0601055L011.4	537+25	X	X	II-A	0.365 (Std.)	29'-0"	21'-7 1/4"

10" ϕ PIPE TRUSS SUPPORT FRAME

Truss Type	Dimensions R	S	T	U	V	W	X	Y
I-A	4'-6"	5'-5 1/2"	4'-0"	5'-6"	6'-4 3/4"	4"	9"	8'-3"
II-A (5)	5'-3"	6'-3 1/4"	4'-6"	6'-1"	6'-11 3/4"	4 3/4"	9 1/2"	8'-3"

NUMBER	REVISION	DATE

Coombe-Bloxdorf P.C.
-CIVIL ENGINEERS-
-STRUCTURAL ENGINEERS-
-LAND SURVEYORS-
Design Firm License No. 184-002703

PROJECT NO. 05027-13
SCALE
DATE / /
DESIGN BY
DRAWN BY
CHECKED BY

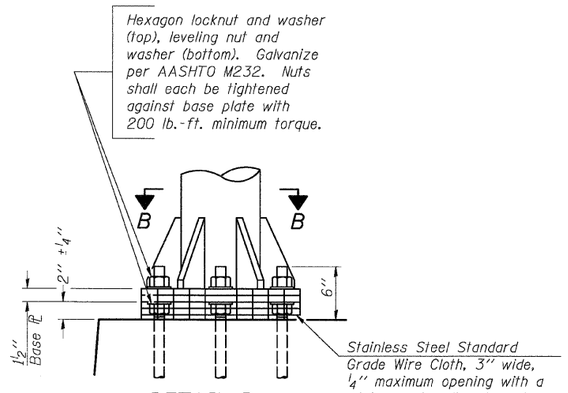
OS-A-6 12-1-08

PLOT DATE = 09/14/2009
FILE NAME = ...\76c56-014-oa06.dgn
PLOT SCALE = 0.0.999986 '=' / IN.
USER NAME = CFC.

OVERHEAD SIGN STRUCTURES
SUPPORT FRAME FOR ALUMINUM TRUSS

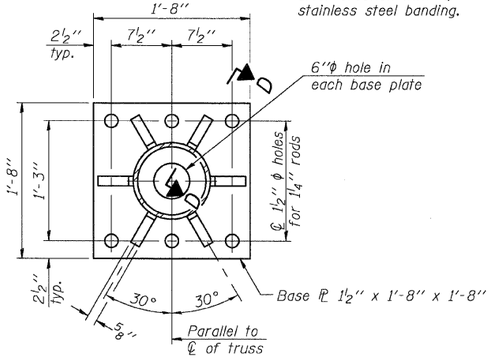
F.A.I. ROUTE 70, SEC. 60-(5,6,7)RS, 60-(6,7)BR
MADISON COUNTY

SHEET NO. 14	F.A.I RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
19 SHEETS	70	60-(5,6,7)RS, 60-(6,7)BR	MADISON	185	158
			CONTRACT NO. 76C56		
	FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

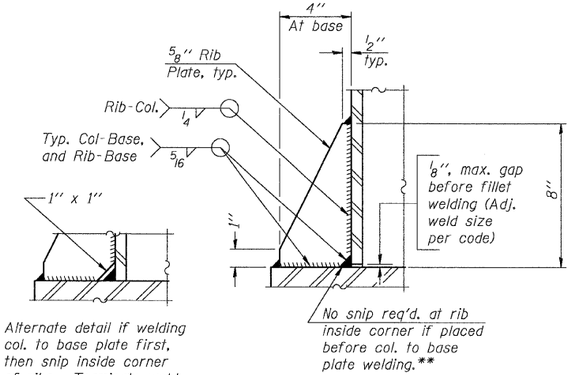


DETAIL B

Ribs shall be cut to fit slope of pipe.

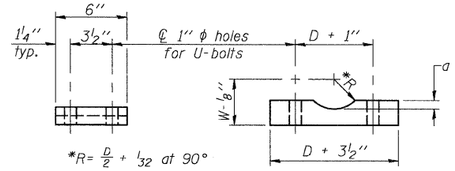


SECTION B-B



** Alternate detail if welding col. to base plate first, then snip inside corner of ribs. Terminate weld on rib 1/4" from snip.

SECTION D-D



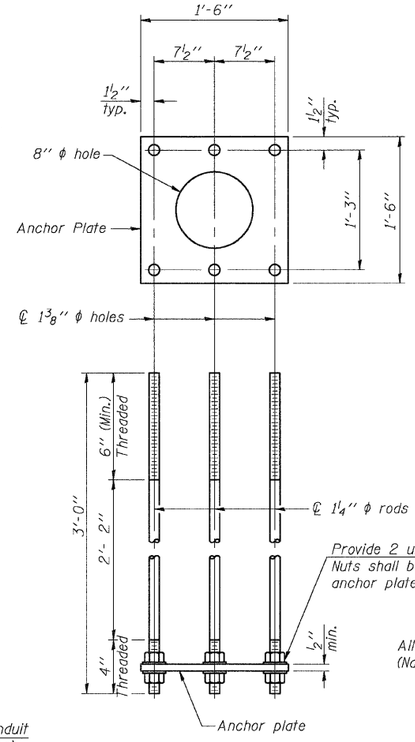
*R = D/2 + 1/32 at 90°

D = Outside Diameter of Chord.
For W, see Base Sheet OS-A-6.

SADDLE SHIM DETAIL

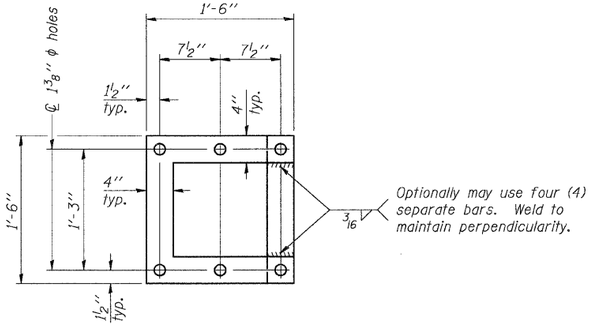
ASTM B26 Alloy 356-F
or
ASTM B209 Alloy 6061-T651
(4 required per sign truss)

Truss Chord Nominal Dia.	d
5"	3/4"
5 1/2"	13/16"
6"	7/8"
6 1/2"	15/16"
7"	1"

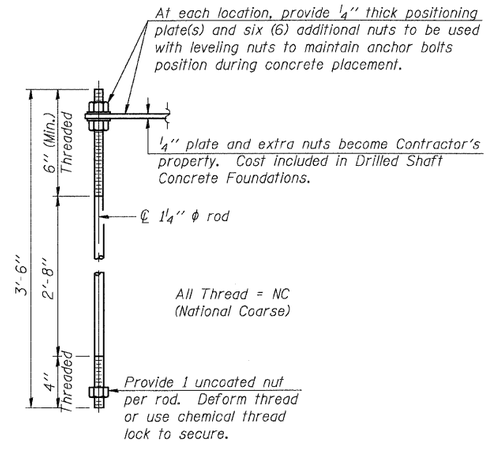


ANCHOR ROD DETAIL

Spread Footing Foundation



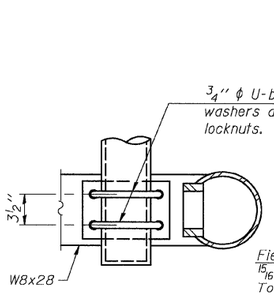
POSITIONING PLATE(S)



ANCHOR ROD DETAIL

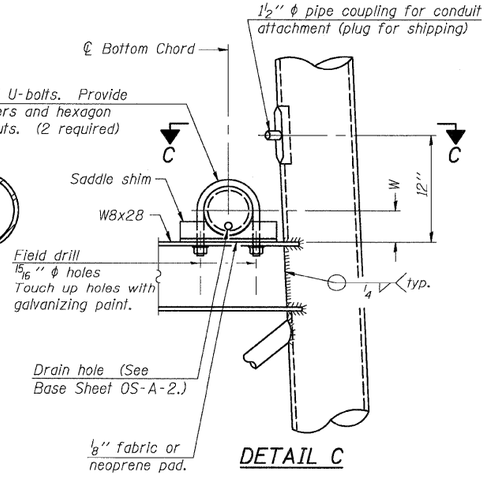
Drilled Shaft Foundation

Anchor rods shall conform to AASHTO M314 Grade 36 or 50 and meet Charpy V-Notch (CVN) energy of 15 lb.-ft. at 40° F. Galvanize upper 12" per AASHTO M232. No welding shall be permitted on rods.



SECTION C-C

(Handhole cover not shown)



DETAIL C

10" ϕ PIPE SUPPORT FRAME DETAILS

NUMBER	REVISION	DATE

Coombe-Bloxdorf P.C.
-CIVIL ENGINEERS-
-STRUCTURAL ENGINEERS-
-LAND SURVEYORS-
Design Firm License No. 184-002703

PROJECT NO. 05027-13
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CHECKED BY

OS-A-6A 12-1-08

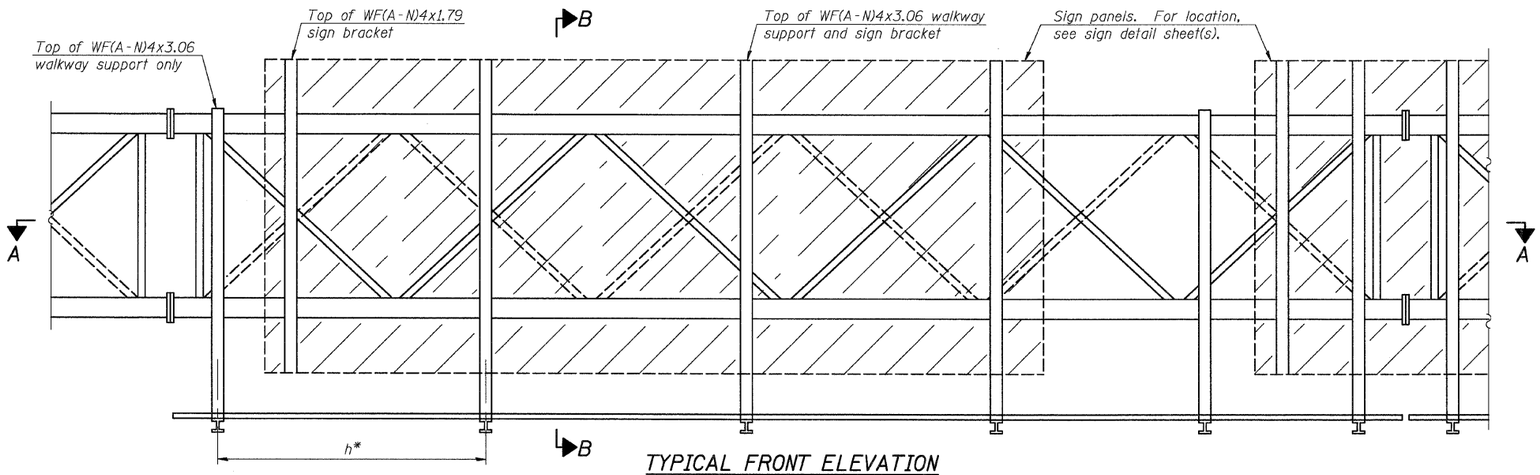
PLOT DATE = 09/14/2009
FILE NAME = ...\76c56-05-pa6c.dgn
PLOT SCALE = 0.0.999986 '/" / IN.
USER NAME = CFC.

OVERHEAD SIGN STRUCTURES
SUPPORT FRAME DETAILS ALUMINUM TRUSS

F.A.I. ROUTE 70, SEC. 60-(5,6,7)RS, 60-(6,7)BR
MADISON COUNTY

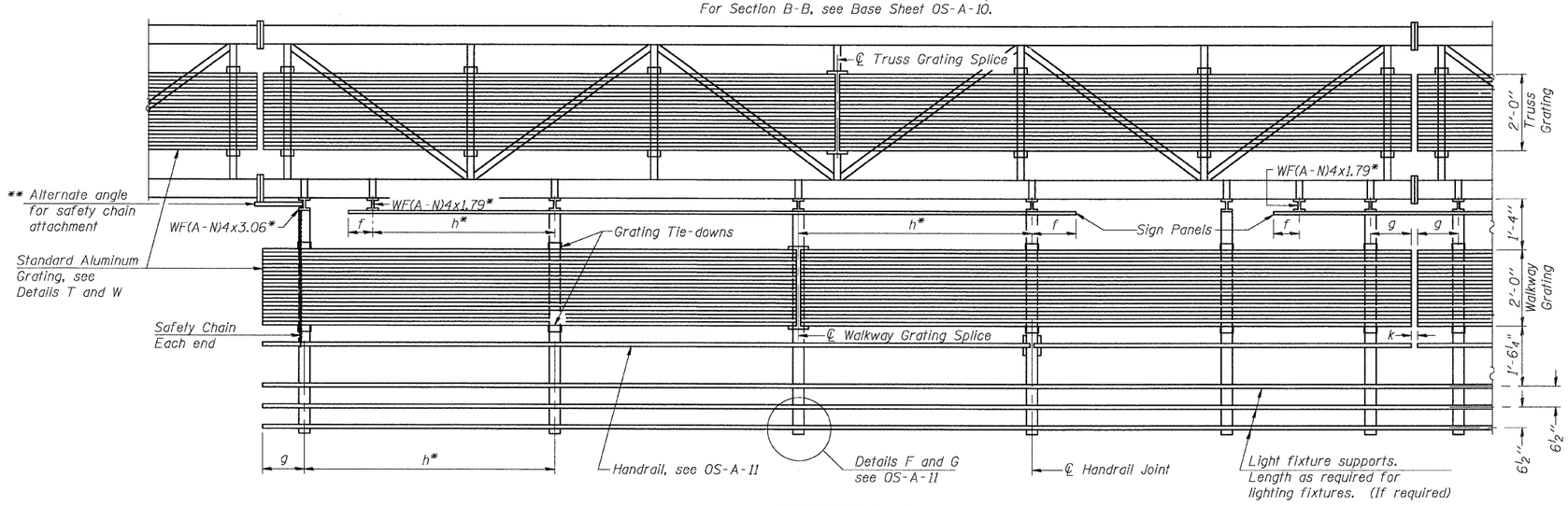
SHEET NO. 15
19 SHEETS

F.A.I RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
70	60-(5,6,7)RS, 60-(6,7)BR	MADISON	185	159
		CONTRACT NO. 76C56		
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		



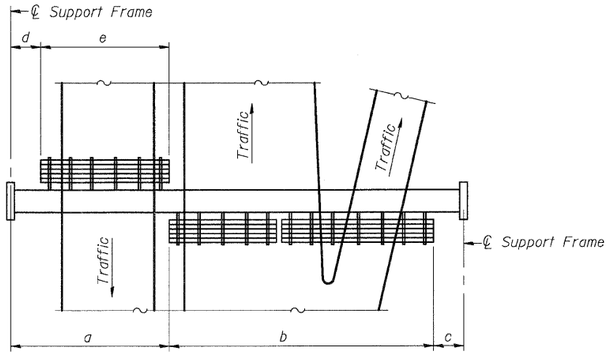
TYPICAL FRONT ELEVATION

With lights and handrail omitted for clarity.
For Section B-B, see Base Sheet OS-A-10.



SECTION A-A

Handrail and walkway shall span a minimum of three brackets between splices and/or gap joints.
Place all sign and walkway brackets as close to panel points as practical.
Handrail joints, grating, and light support splices placed as needed.



PLAN
WALKWAY AND HANDRAIL SKETCH

(Road plan beneath truss varies)

BRACKET TABLE

WF(A-N)4x1.79 or WF(A-N)4x3.06 ASTM B308, Alloy 6061-T6		
Sign Width		Number Brackets Required
Greater Than	Less Than or Equal To	
	8'-0"	2
8'-0"	14'-0"	3
14'-0"	20'-0"	4
20'-0"	26'-0"	5
26'-0"	32'-0"	6

Notes:

* Space walkway brackets WF(A-N)4x3.06 and sign brackets WF(A-N)4x1.79 for efficiency and within limits shown:

f = 12" maximum, 4" minimum (End of sign to ℄ of nearest bracket)
g = 12" maximum, 4" minimum (End of walkway grating to ℄ of nearest support bracket)
h = 6'-0" maximum (℄ to ℄ sign and/or walkway support brackets, WF(A-N)4x1.79 or WF(A-N)4x3.06)
k = 2" maximum gap between adjacent walkway grating sections and handrail ends

** If walkway bracket at safety chain location is behind sign, add angle to bracket, see Alternate Safety Chain Attachment on Base Sheet OS-A-11.

For Details T and W, Section B-B and Grating Splice Details see Base Sheet OS-A-10.
For Handrail Details see Base Sheet OS-A-11.

Truss grating to facilitate inspection shall run full length (center to center of support frames) ±12" on overhead trusses. Cost of truss grating is included in "Overhead Sign Structure".

Structure Number	Station	a	b	c	d	e	Walkway Grating and Handrail Lengths
8S0601055R010.9	502+00	11'	47'	12'	-	-	47'
8S0601055L011.2	510+80	6'	68'	18'	-	-	68'
8S0601055L011.4	537+25	14'	35'	11'	-	-	35'

Walkway and Truss Grating width dimensions are nominal and may vary ±½" based on available standard widths.

NUMBER	REVISION	DATE

Coombe-Bloxdorf P.C.
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-STRUCTURAL ENGINEERS-
-LAND SURVEYORS-
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CHECKED BY

OS-A-9 12-1-08

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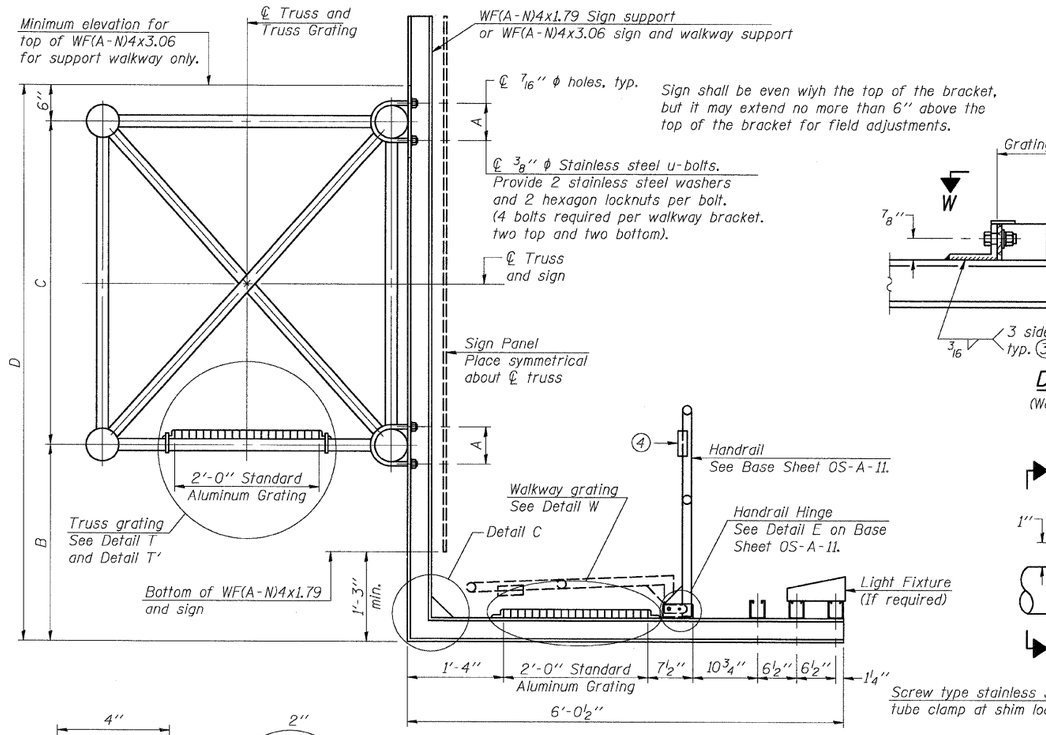
PLOT SCALE = 0x0.999996 '=' / IN.
USER NAME = CFC_

OVERHEAD SIGN STRUCTURES
ALUMINUM WALKWAY DETAILS

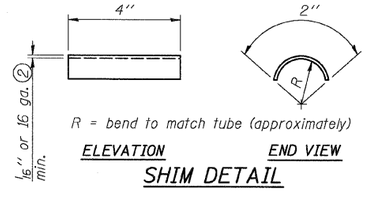
F.A.I. ROUTE 70, SEC. 60-(5,6,7)RS, 60-(6,7)BR
MADISON COUNTY

SHEET NO. 16
19 SHEETS

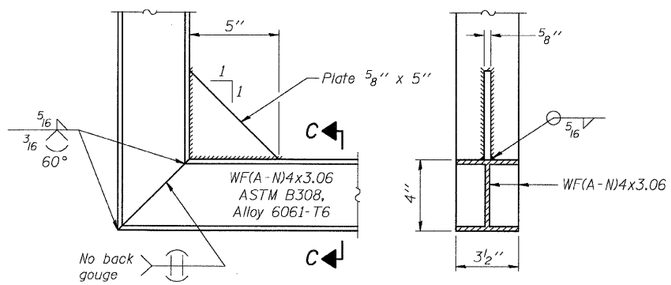
F.A.I RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
70	60-(5,6,7)RS, 60-(6,7)BR	MADISON	185	160
		CONTRACT NO. 76C56		
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		



SECTION B-B

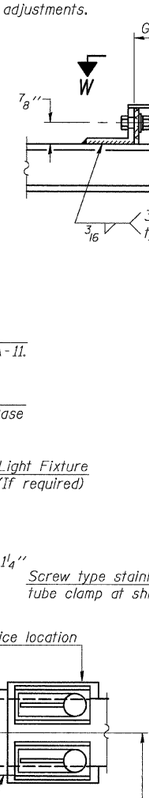


SHIM DETAIL



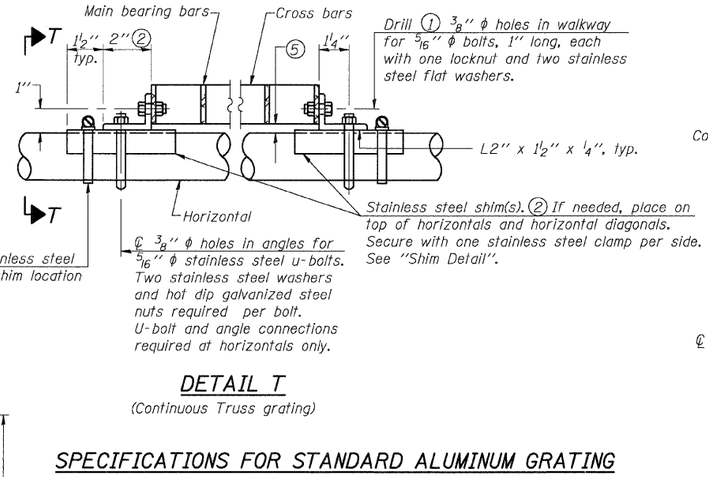
DETAIL C

SECTION C-C



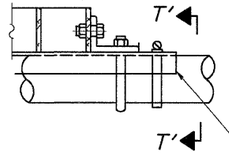
DETAIL W

(Walkway grating)



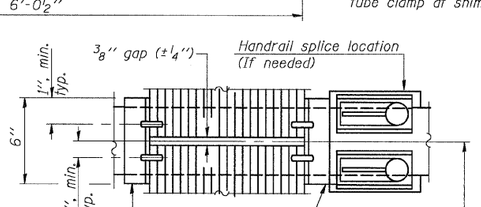
DETAIL T

(Continuous Truss grating)

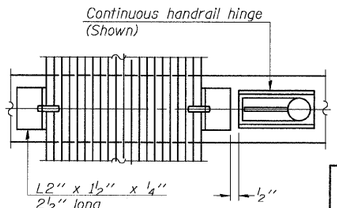


DETAIL T'

(Truss grating splice)
Details not shown same as Detail T. Alternate materials may be used subject to the Engineer's review and approval.

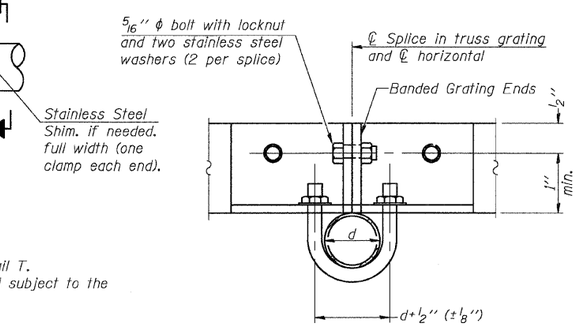


(AT WALKWAY GRATING SPLICE)

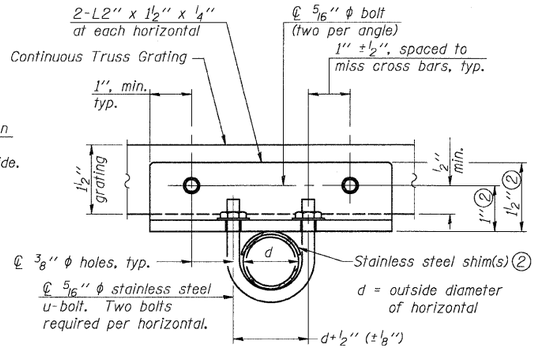


(CONTINUOUS WALKWAY GRATING)

SECTION W-W



SECTION T'-T'



SECTION T-T

SPECIFICATIONS FOR STANDARD ALUMINUM GRATING

Main Bearing Bars shall be 3/16" x 1½" on 1 3/16" centers and conform to ASTM B221 Alloy 6061-T6.

Cross bars shall be 3/16" x 1½" on 4" centers and conform to ASTM B221 Alloy 6063-T5 or 6061-T6.

OR

Aluminum Grating with modified "I" sections for main bearing bars shall meet the following requirements:

Main bars shall conform to ASTM B221 Alloy 6061-T6 and have a minimum section modulus equal to 0.0705 in.³ per bar, a depth of 1½", spaced on 1 3/16" centers.

Cross bars shall conform to ASTM B221 Alloy 6063-T5 or T-42 and spaced on 4" centers.

Structure Number	Station	A	B	C	D
8S0601055R010.9	502+00	5½"	7'	4'-6"	12'-0"
8S0601055L011.2	510+80	6"	5'-9"	4'-6"	10'-9"
8S0601055L011.4	537+25	6"	5'-7½"	5'-3"	11'-4½"

(1) Drilling holes in grating may be done in shop or field, based on Contractor's preference and subject to accurate alignment.

(2) Stainless steel shims shall be placed as shown in Detail T if needed to compensate for alignment variations between horizontal and diagonal pipes beyond adjustment provided by angles. Thicker shims may be used subject to shims performing properly.

(3) If Handrail Joint present, weld angle to WF(A-N)4 and ¼" extension bars. (See Base Sheet OS-A-11.)

(4) ℙ ⅛" x ½" x 2" welded to handrail posts to protect locations that contact grating.

(5) Tube to grating gap may vary from 0 to ½", max. to align walkway, allow for camber, etc.

NUMBER	REVISION	DATE

Coombe-Bloxdorf P.C.
-CIVIL ENGINEERS-
-STRUCTURAL ENGINEERS-
-LAND SURVEYORS-
Design Firm License No. 184-002703

PROJECT NO. 05027-13
SCALE
DATE / /
DESIGN BY
DRAWN BY
CHECKED BY

OS-A-10 12-1-08

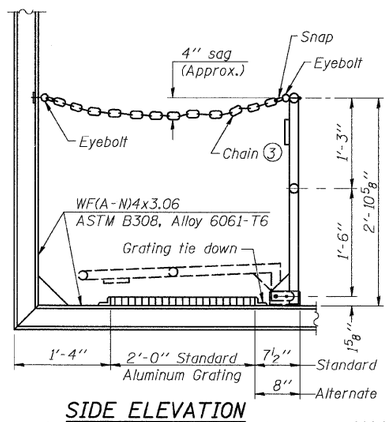
PLOT DATE = 09/14/2009
FILE NAME = ...876c56-017-oss10.dgn
PLOT SCALE = 100.000000 '=' / IN.
USER NAME = CFC.

OVERHEAD SIGN STRUCTURES ALUMINUM WALKWAY DETAILS

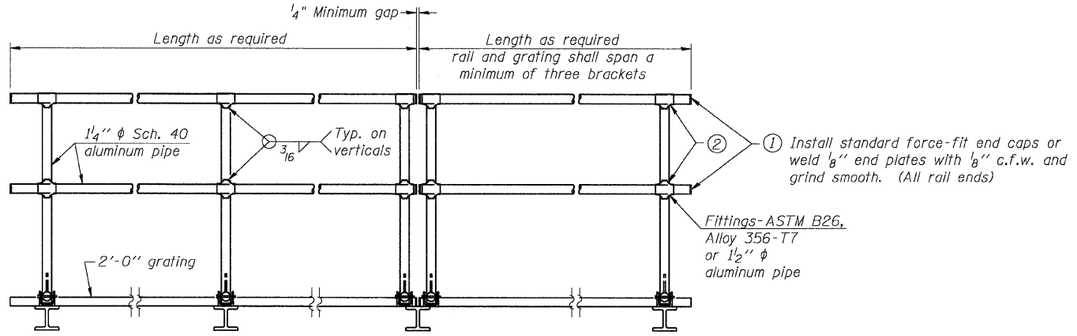
F.A.I. ROUTE 70, SEC. 60-(5,6,7)RS, 60-(6,7)BR MADISON COUNTY

SHEET NO. 17
19 SHEETS

F.A.I RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
70	60-(5,6,7)RS, 60-(6,7)BR	MADISON	185	161
		CONTRACT NO. 76C56		
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		



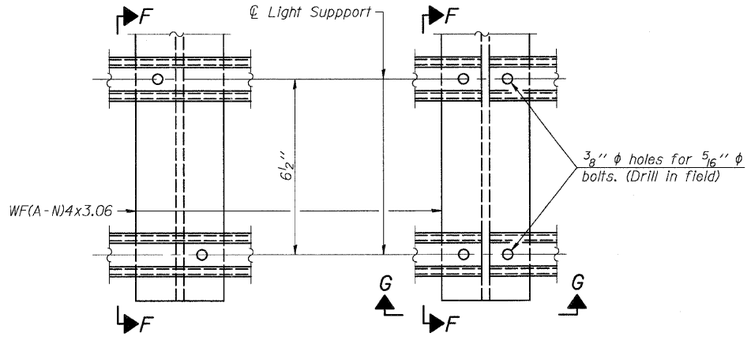
SIDE ELEVATION
(Showing safety chain w/o sign)



FRONT ELEVATION

(1) Install standard force-fit end caps or weld ⅛" end plates with ⅛" c.f.w. and grind smooth. (All rail ends)

(2) Horizontal handrail member shall be continuous thru fitting. Provide 7/16" ϕ hole in fitting for ⅜" ϕ bolt. Field drill 7/16" ϕ hole in horizontal rail member. Provide locknut and two stainless steel washers for bolt. (Use 5/16" eyebolts in 7/16"ϕ holes on top rail at ends only.)

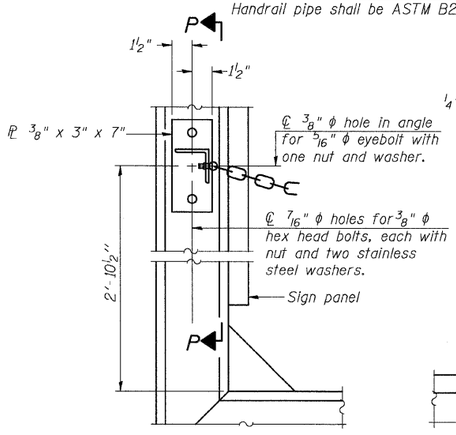


DETAIL F

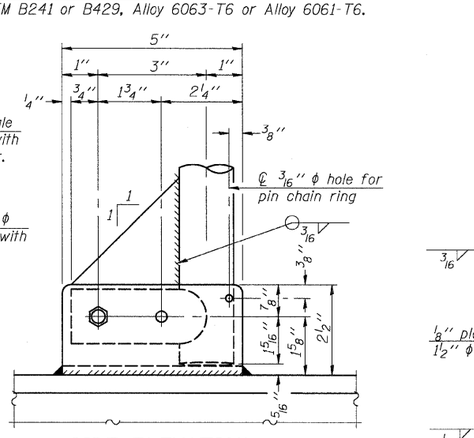
DETAIL G

HANDRAIL DETAILS

Handrail pipe shall be ASTM B241 or B429, Alloy 6063-T6 or Alloy 6061-T6.

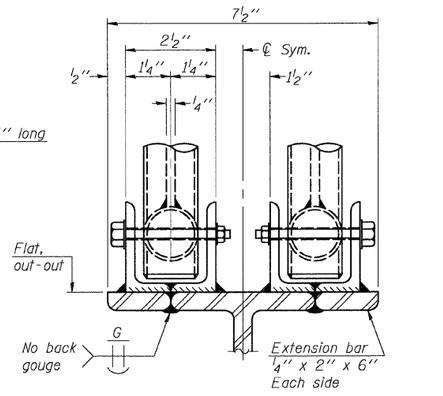


ALTERNATE SAFETY CHAIN ATTACHMENT
(With Sign Present)
Items not shown same as "Side Elevation" of "Handrail Details"

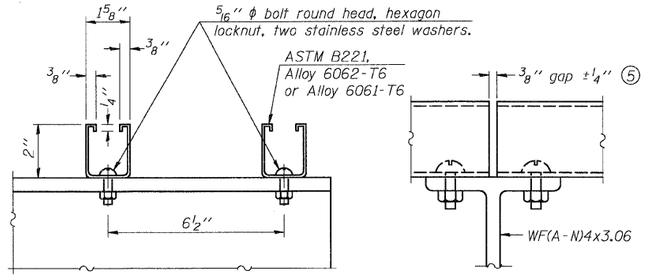


SIDE ELEVATION

FRONT ELEVATION
See "Elevation" at right for dimensions.



ELEVATION AT HANDRAIL JOINT (4)

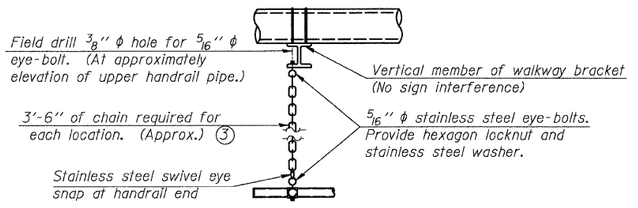


SECTION F-F

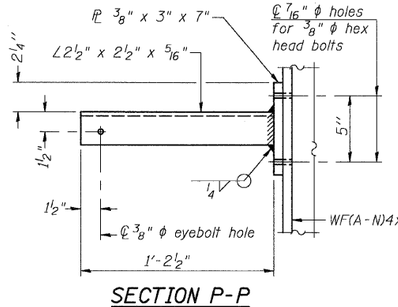
SECTION G-G

LIGHTING FIXTURE MOUNTS (IF REQUIRED)

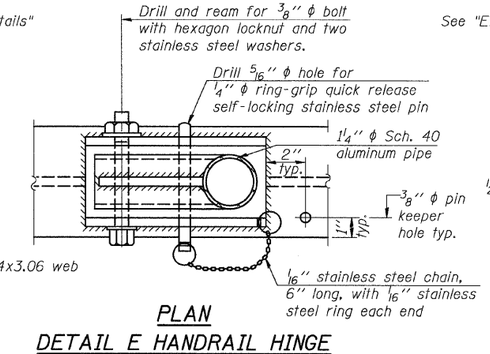
(5) Field cut ends of light support channels shall be free of burrs or hazardous projections and coated with zinc-rich primer or equivalent.



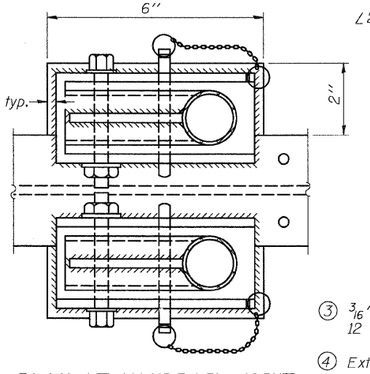
SAFETY CHAIN
One required for each end of each walkway.



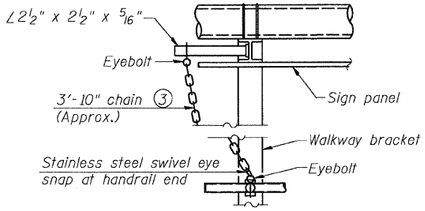
SECTION P-P



PLAN
DETAIL E HANDRAIL HINGE



PLAN AT HANDRAIL JOINT
Details not shown same as "PLAN"



ALTERNATE SAFETY CHAIN ATTACHMENT
Details not shown similar to "Safety Chain" Details
(Walkway omitted for clarity)

(3) 3/16" Type 304L stainless steel chain, approximately 12 links per foot.

(4) Extrusions may be used in lieu of the details shown, with approval of the Engineer.

NUMBER	REVISION	DATE

Coombe-Bloxdorf P.C.
-CIVIL ENGINEERS-
-STRUCTURAL ENGINEERS-
-LAND SURVEYORS-
Design Firm License No. 184-002703

PROJECT NO. 05027-13
SCALE
DATE / /
DESIGN BY
DRAWN BY
CHECKED BY

OS-A-11 12-1-08

PLOT DATE = 09/14/2009
FILE NAME = ...876c56-018-os11.dgn
PLOT SCALE = 0x0.999986 '=' / IN.
USER NAME = CFC.

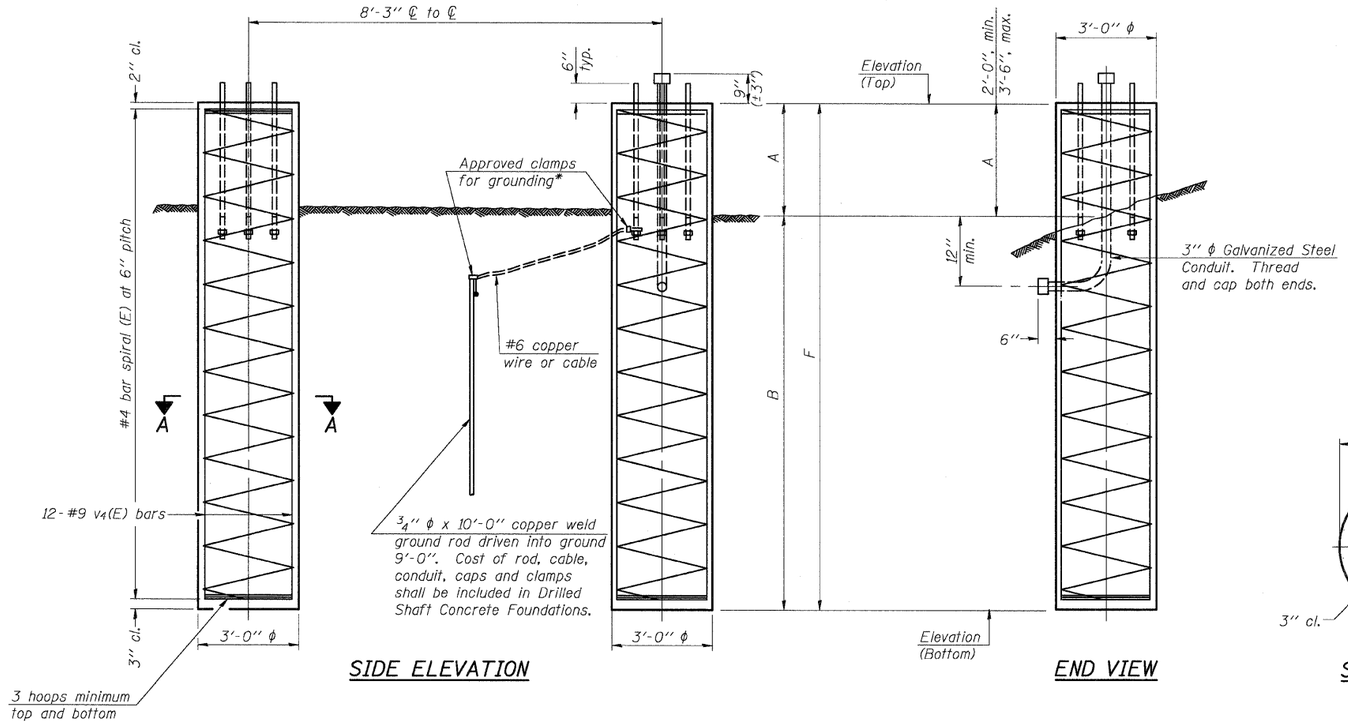
OVERHEAD SIGN STRUCTURES
ALUMINUM HANDRAIL DETAILS

F.A.I. ROUTE 70, SEC. 60-(5,6,7)RS, 60-(6,7)BR
MADISON COUNTY

SHEET NO. 18	F.A.I RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
19 SHEETS	70	60-(5,6,7)RS, 60-(6,7)BR	MADISON	185	162
			CONTRACT NO. 76C56		
	FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

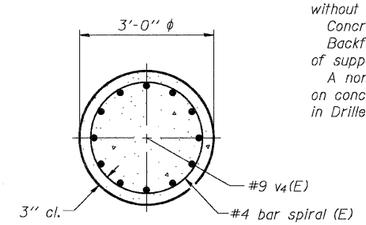
For anchor rod size and placement, see Support Frame Detail Sheet.

* Anchor rod shall be ground or filed to bright metal at clamp and cable connection location.



SIDE ELEVATION

END VIEW



SECTION A-A

BAR LIST - EACH FOUNDATION

Bar	Number	Size	Length	Shape
v4(E)	24	#9	F less 5"	———
#4 bar spiral (E) - see Side Elevation				

NOTES:

The foundation dimensions shown are based on the presence of mostly cohesive soils with an average Unconfined Compressive Strength (Qu) of at least 1.25 tsf, which must be determined by previous soil investigations at the jobsite. When other conditions are indicated, the boring data will be included in the plans and the foundation dimensions shown will be the result of site specific designs.

If the conditions encountered are different than those indicated, the Contractor shall notify the Engineer to determine if the foundation dimensions need to be modified. If dimensions "B" or "F" are revised by more than 12" by the Contractor, "as-built" plans shall be prepared and submitted to the District Bureau of Operations for future reference.

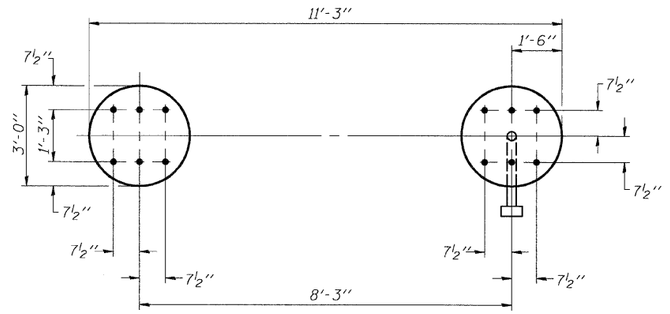
No sonotubes or decomposable forms shall be used below the lower conduit entrance.

Permanent metal forms or other shielding may not be left in place below that elevation without the Engineer's written permission.

Concrete shall be placed monolithically, without construction joints.

Backfill shall be placed per Article 502 of Standard Specification and prior to erection of support column.

A normal surface finish followed by a Bridge Seat Sealer application will be required on concrete surfaces above the lowest elevation 6" below finished ground line. Cost included in Drilled Shaft Concrete Foundation.



PLAN

Structure Number	Station	Elevation Top	Left Foundation				Right Foundation					Class DS Concrete (Cu. Yds.)
			Elevation Bottom	A	B	F	Elevation Top	Elevation Bottom	A	B	F	
8S060I055R010.9	502+00	105.80	86.40	2.9'	16.5'	19.4'	105.80	87.3	2.0'	16.5'	18.5'	19.9
8S060I055L011.2	510+80	79.8	61.0	2.3'	16.5'	18.8'	77.14	58.64	2.0'	16.5'	18.5	19.6
8S060I055L011.4	537+25	100.75	81.25	2.0'	17.5'	19.5'	100.75	80.1	3.15'	17.5'	20.65'	21.0

Coombe-Bloxdorf P.C.
-CIVIL ENGINEERS-
-STRUCTURAL ENGINEERS-
-LAND SURVEYORS-
Design Firm License No. 184-002703

PROJECT NO. 05027-13
SCALE
DATE / /
DESIGN BY
DRAWN BY
CHECKED BY

OS4-F3 12-1-08

NUMBER	REVISION	DATE

DETAILS FOR 10" ϕ SUPPORT FRAME
TYPE I-A or II-A TRUSS

OVERHEAD SIGN STRUCTURES
DRILLED SHAFT DETAILS

F.A.I. ROUTE 70, SEC. 60-(5,6,7)RS, 60-(6,7)BR
MADISON COUNTY

SHEET NO. 19
19 SHEETS

F.A.I RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
70	60-(5,6,7)RS, 60-(6,7)BR	MADISON	185	163
		CONTRACT NO. 76C56		
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

PLOT DATE = 09/14/2009
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USER NAME = CFC.

Illinois Department of Transportation
Division of Highways
Illinois Department of Transportation

SOIL BORING LOG

Page 1 of 1

Date 2/3/09

ROUTE FAI 70 DESCRIPTION Overhead Sign Foundation LOGGED BY Terra Drill

SECTION 60-(5,6,7)RS, 60-(6,7)BR LOCATION Black Lane, SEC. 36, TWP. 3N, RNG. 9W

COUNTY Madison DRILLING METHOD CME 55 LC/HSA HAMMER TYPE Automatic

STRUCT. NO. 8S0601055R008.8
Station 392+10

BORING NO. B-1
Station 392+30
Offset 94.00ft RT
Ground Surface Elev. 100.00 ft

Surface Water Elev. ft
Stream Bed Elev. ft

Groundwater Elev.:
First Encounter 84.0 ft ▼
Upon Completion – ft
After – Hrs. – ft

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
FILL: Grayish brown silty clay (A-7)			
Offset of boring in-line with structure.	6		
	7	1.1	23
97.00	8	S/10	
FILL: Brown and gray silt (A-4)	4		
	8	3.0	19
-5	20	P	
94.50			
FILL: Grayish brown, clayey silt, trace to some sand (A-4)	7		
	6	3.8	23
	6	P	
92.00			
SILT: Grayish brown and brown (A-4)	2		
	2	0.2	29
-10	2	B	
89.50			
CLAY: Gray, trace sand (A-7)	1		
	2	0.9	26
	4	S/15	
87.00			
SILTY CLAY: Grayish brown and brown, some sand (A-7)	1		
	2	0.5	30
-15	2	B	
84.50			
SILTY SAND: Grayish brown, fine (A-2) ▼	WH		
WH = Weight of Hammer	2	–	28
	1		
	WR		
WR = Weight of Rod	WH	–	30
-20	WH		

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
SILTY SAND: Grayish brown, fine (A-2) (continued)			
	3		
	3	–	29
	3		
	3		
	4	–	29
-25	5		
	3		
	4	–	28
	3		
	3		
	4	–	29
-30	3		
	3		
	4	–	29
-35	3		
63.00			
SAND: Brown, fine to medium, trace fine gravel (A-3)			
	6		
	6	–	20
-40	6		

Boring terminated at 40.0 feet.

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)
BBS, from 137 (Rev. 8-99)

Illinois Department of Transportation
Division of Highways
Illinois Department of Transportation

SOIL BORING LOG

Page 1 of 1

Date 2/3/09

ROUTE FAI 70 DESCRIPTION Overhead Sign Foundation LOGGED BY Terra Drill

SECTION 60-(5,6,7)RS, 60-(6,7)BR LOCATION IL Route 157, SEC. 29, TWP. 3N, RNG. 8W

COUNTY Madison DRILLING METHOD CME 55 LC/HSA HAMMER TYPE Automatic

STRUCT. NO. 8S0601055R010.9
Station 501+78

BORING NO. B-2
Station 501+98
Offset 88.00ft RT
Ground Surface Elev. 100.00 ft

Surface Water Elev. ft
Stream Bed Elev. ft

Groundwater Elev.:
First Encounter 61.5 ft ▼
Upon Completion – ft
After 0.25 Hrs. Dry ft

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
FILL: Brown silt, trace to some sand (A-4)	5		
	5	4.5	20
Offset of boring in-line with structure.	6	P	
97.00			
SILT: Brown, trace to some sand (A-4)	5		
	7	0.9	20
-5	6	S/10	
94.50			
SILTY CLAY: Brown (A-6)	4		
	4	2.3	22
	4	P	
92.00			
SILT: Brown (A-4)	2		
	2	3.0	15
-10	2	P	
	1		
	2	1.5	14
	1	P	
	2		
	3	0.4	21
-15	2	S/10	
	2		
	2	0.8	26
	3	P	
	1		
	2	0.2	29
-20	3	B	

DEPTH (ft)	BLOWS (/6")	UCS Qu (tsf)	MOIST (%)
79.50			
SILTY CLAY: Brown (A-6)	WR		
WR = Weight of Rod	1	0.2	31
	1	B	
77.00			
SILT: Brown (A-4)	WR		
76.00			
CLAY: Grayish brown (A-7)	WR	0.5	28
-25	1	P	
74.50			
SILTY CLAY: Grayish brown and brown (A-6)	WH		
	WH	0.6	31
WH = Weight of Hammer	WH	B	
72.00			
CLAY: Reddish brown and gray, some sand (A-7)	WR		
	2	0.9	26
-30	2	B	
68.50			
CLAYEY SILT: Grayish brown (A-4)			
	1		
	2	0.1	32
-35	2	B	
63.00			
SAND: Brown, fine (A-3) ▼			
	WR		
	WR	–	25
-40	3		

Boring terminated at 40.0 feet.

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)
The SPT (N value) is the sum of the last two blow values in each sampling zone (AASHTO T206)
BBS, from 137 (Rev. 8-99)

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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SOIL BORING LOGS

SCALE: _____ SHEET NO. __ OF ___ SHEETS STA. _____ TO STA. _____

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
70	60-(5,6,7)RS, 60-(6,7)BR	Madison	185	164
		CONTRACT NO. 96C56		
FED. ROAD DIST. NO. _	ILLINOIS	FED. AID PROJECT		

Illinois Department of Transportation
Division of Highways
Illinois Department of Transportation

SOIL BORING LOG

Page 1 of 1

Date 042409

ROUTE FAI 70 (I-70) DESCRIPTION Sign Truss Boring – Ramp 3 @ Sta. 2+65.30'R, Approx. 45 feet SW of existing sign on structure. LOGGED BY SCI

SECTION 60-(5,6,7)RS, 60-(6,7)BR LOCATION Collinsville; NE 1/4, SEC. 29, TWP. 3N, RNG. 8W

COUNTY Madison DRILLING METHOD CME 45HSA HAMMER TYPE Automatic

STRUCT. NO. 8S0601055L011.2 (existing)
Station 511+03

BORING NO. B-1
Station 510+58
Offset 95 ft Lt
Ground Surface Elev. 95.4 ft

Surface Water Elev. ___ ft
Stream Bed Elev. ___ ft

Groundwater Elev.:
First Encounter Not observed ft
Upon Completion Not observed ft
After – Hrs. – ft

DEPTH (ft)	BLOWS (6")	UCS Qu (tsf)	MOIST (%)	
				FILL: Brown, low plastic sandy silt (A-4)
	3			
	3	1.3	18	
	3	B		
92.4				
				FILL: Brown and gray, low plastic silt (A-4)
	6			
	9	2.4	19	
-5	10	S10		
	5			
	8	1.6	16	
	9	S5		
	5			
	12	4.7	15	
-10	19	S10		
				Becomes reddish brown
	5			
	9	1.8	21	
	11	S15		
				Becomes grayish brown and brown
	5			
	12	2.0	17	
-15	17	S10		
				Becomes brown and gray
	11			
	17	4.5	16	
78.4	14	P		
				FILL: Dark brown, low plastic sandy clay (A-6)
76.4				
	15			
	21	4.5	13	
-20	14	P		

DEPTH (ft)	BLOWS (6")	UCS Qu (tsf)	MOIST (%)	
74.9				FILL: Grayish brown, low plastic silt (A-4) (continued)
	2			
	4	1.9	23	SILTY CLAY: Brown, low plastic, some sand (A-6)
	6	B		
72.4				
				SILT: Reddish brown, low plastic (A-4)
	1			
	2	0.7	14	
-25	2	S10		
	2			
	3	1.3	11	
	2	P		
	1			
	3	1.0	20	With brown, low plastic silty clay deposit from about 29 to 29.5 feet.
-30	3	S5		
	2			Becomes clayey
	2	1.0	25	
-35	4	S15		
	1			
	3	0.7	25	Temporary benchmark (TBM) – chiseled square on SE pier of existing sign truss. Assumed TBM at El. 100.0.
55.4 -40	4	S15		

Boring terminated at 40.0 ft.

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)
AASHTO Classifications are based on visual classifications unless otherwise noted. BRS form 137 (Rev. 8-99)

Illinois Department of Transportation
Division of Highways
Illinois Department of Transportation

SOIL BORING LOG

Page 1 of 1

Date 042409

ROUTE FAI 70 (I-70) DESCRIPTION Sign Truss Boring – Approx. 79 feet SW of existing sign on structure. LOGGED BY SCI

SECTION 60-(5,6,7)RS, 60-(6,7)BR LOCATION Collinsville; NE 1/4, SEC. 29, TWP. 3N, RNG. 8W

COUNTY Madison DRILLING METHOD CME 45HSA HAMMER TYPE Automatic

STRUCT. NO. 8S0601055L011.4 (existing)
Station 537+45

BORING NO. B-2
Station 536+70
Offset 55 ft Lt
Ground Surface Elev. 102.1 ft

Surface Water Elev. ___ ft
Stream Bed Elev. ___ ft

Groundwater Elev.:
First Encounter 81.1 ft ▼
Upon Completion Collapse 20 ft
After – Hrs. – ft

DEPTH (ft)	BLOWS (6")	UCS Qu (tsf)	MOIST (%)	
				FILL: Brown, low plastic silt, some gravel (A-4)
	6			
100.1	8	4.5	15	
	4	P		FILL: Brown, low plastic silt (A-4)
	3			
	4	0.9	20	
-5	5	S10		
96.6				
				FILL: Grayish brown and brown, low plastic sandy silt (A-4) and Brown, low plastic sandy clay (A-6) mixture
	3			
	6	1.5	15	
	7	S10		
	4			
92.6	9	3.0	15	
	12	S10		FILL: Brown, sand, fine to medium, trace to some silt, clay (A-2)
-10				
91.6				
	2			FILL: Reddish brown, low plastic sandy clay (A-6)
90.4	2	2.6	11	
	1	S5		FILL: Brown, low plastic silt, some sand (A-4)
89.1				
	2			SILT: Grayish brown, low plastic (A-4)
	3	0.5	30	
-15	3	B		
	2			Becomes brown and gray and clayey
	1	<0.25	28	
	2	P		Sample wet
	1			Sample wet
	1	0.3	28	
-20	3	P		

DEPTH (ft)	BLOWS (6")	UCS Qu (tsf)	MOIST (%)	
				SILT: Grayish brown, low plastic (A-4) (continued)
	1			SPT sampler and sample wet
	2	0.3	29	
	2	P		
	2			
	3	0.5	26	
-25	3	P		
	1			Becomes dark brown
	2	0.5	30	
	2	B		
	1			Becomes grayish brown
	1	0.6	33	
-30	2	B		
	1			
	2	0.5	31	
-35	2	P		
65.1				
				CLAYEY SILT: Grayish brown, low plastic (A-4)
				Temporary benchmark (TBM) – chiseled square on SE pier of existing sign truss. Assumed TBM at El. 100.0.
	1			
	2	0.3	29	
62.1 -40	2	P		

Boring terminated at 40.0 ft.

The Unconfined Compressive Strength (UCS) Failure Mode is indicated by (B-Bulge, S-Shear, P-Penetrometer)
AASHTO Classifications are based on visual classifications unless otherwise noted. BRS form 137 (Rev. 8-99)

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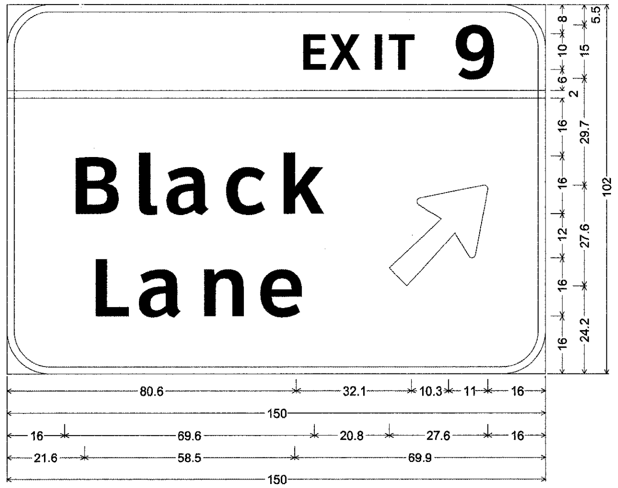
	PLOT SCALE = 1.2000 ' / IN.	CHECKED - ___	REVISED - ___		SCALE: _____ SHEET NO. __ OF ___ SHEETS STA. _____ TO STA. _____
	PLOT DATE = 10/13/2009	DATE - _____	REVISED - ___		

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
70	60-(5,6,7)RS, 60-(6,7)BR	Madison	185	165
			CONTRACT NO. 76C56	
FED. ROAD DIST. NO. _	ILLINOIS	FED. AID PROJECT		



12.0" Radius, 2.0" Border, White on Green;
[EXIT 9] ClearviewHwy-5-W; [Black] ClearviewHwy-5-W; [Lane] ClearviewHwy-5-W;
Arrow 160 - 35.0" 45°;
Table of widths and spaces.

	E		X		I		T		9	
80.6	6.3	2.2	8.7	2.7	1.9	3.0	7.3	10.3	11.0	16.0

	—	
-0.0	150.0	0.0

	B		l		a		c		k		⇗	
16.0	12.2	5.5	5.0	3.8	12.0	4.4	10.8	4.6	11.3	20.8	27.6	16.0

	L		a		n		e	
21.6	9.3	3.9	12.0	5.0	11.2	5.4	11.7	69.9

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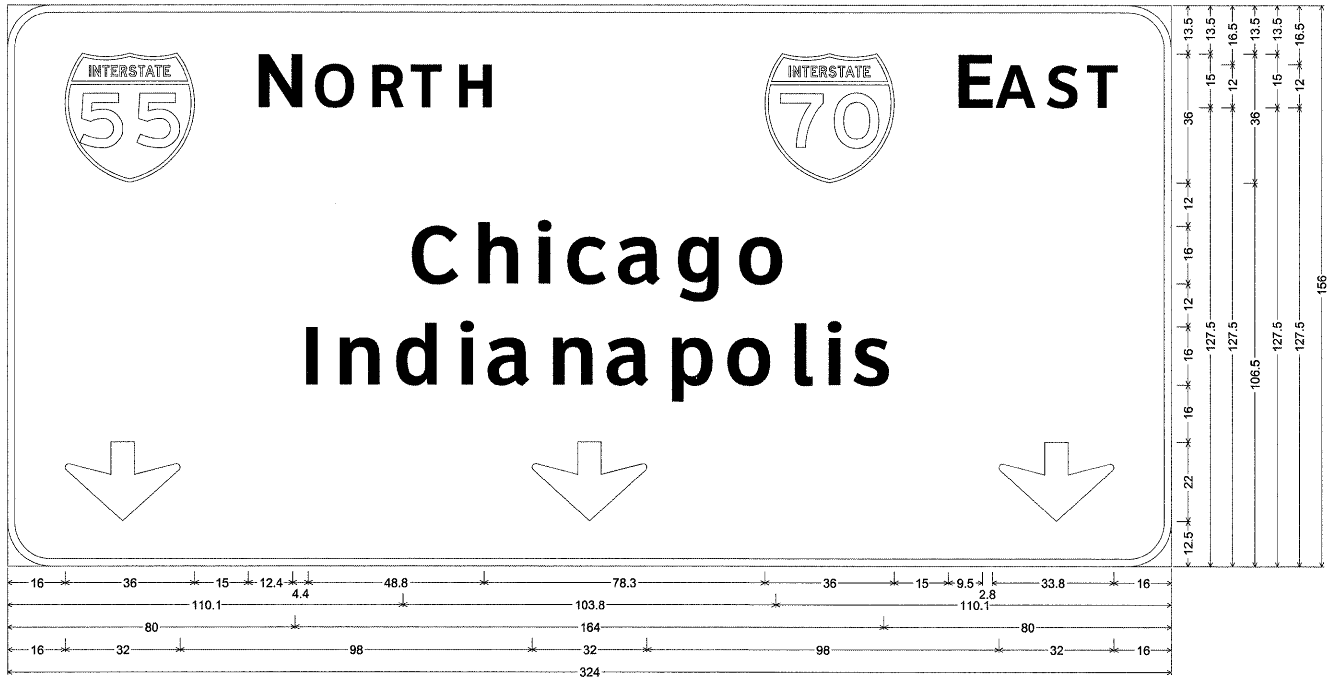

12.0" Radius, 2.0" Border, White on Green;
Interstate 55 M-5C-2; [N ORTH] ClearviewHwy-5-W; Interstate 70 M-5C-2; [E AST] ClearviewHwy-5-W; [Chicago] ClearviewHwy-5-W; [Indianapolis] ClearviewHwy-5-W; Down Arrow 22.0" 270°;
Down Arrow 22.0" 270°; Down Arrow 22.0" 270°;
Table of widths and spaces.

	55		N		O		R		T		H		70		E		A		S		T	
16.0	36.0	15.0	12.4	4.4	11.1	4.3	9.0	2.9	8.7	3.6	9.2	78.3	36.0	15.0	9.5	2.8	11.2	2.6	8.7	2.6	8.7	16.0

	C		h		i		c		a		g		o	
110.1	13.0	4.9	11.1	5.7	3.8	5.0	10.9	3.6	11.9	4.5	11.6	5.4	12.4	110.1

	I		n		d		i		a		n		a		p		o		l		i		s	
80.0	3.1	6.3	11.1	5.5	11.5	5.7	3.8	4.7	11.9	5.1	11.1	5.1	11.9	5.1	11.6	4.7	12.4	5.5	5.0	4.4	3.8	4.5	10.2	80.0

	⇩		⇩		⇩	
16.0	32.0	98.0	32.0	98.0	32.0	16.0

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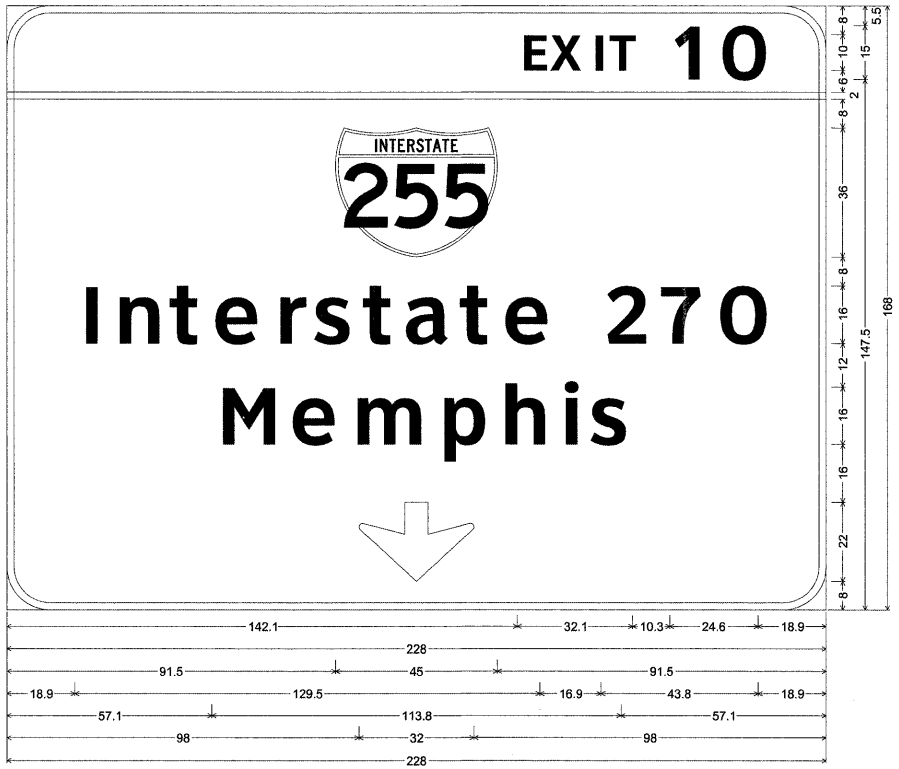


12.0" Radius, 2.0" Border, White on Green;
[EXIT 10] ClearviewHwy-5-W; [Interstate 270] ClearviewHwy-5-W; [Memphis] ClearviewHwy-5-W; Down Arrow 22.0" 270°;
Table of widths and spaces.

	E		X		I		T		1		0	
142.1	6.3	2.2	8.6	2.8	1.9	3.0	7.3	10.3	6.9	5.5	12.2	18.9

	—	
-0.0	228.0	0.0

	255	
91.5	45.0	91.5

	I		n		t		e		r		s		t		a		t		e		2		7		0	
18.9	3.1	6.3	11.1	4.5	7.8	4.2	11.7	5.5	7.3	3.4	10.2	3.5	7.9	3.8	11.9	3.5	7.8	4.2	11.8	16.9	11.1	4.1	11.3	4.3	13.0	18.9

	M		e		m		p		h		i		s	
57.1	14.7	5.6	11.7	5.5	18.0	6.1	11.6	5.4	11.1	5.7	3.8	4.4	10.2	57.1

	⇩	
98.0	32.0	98.0

FILE NAME =
$FILEL$

USER NAME = $USER$
PLOT SCALE = $SCALE$
PLOT DATE = $DATE$

DESIGNED - ___
DRAWN - ___
CHECKED - ___
DATE - ________

REVISED - ___
REVISED - ___
REVISED - ___
REVISED - ___

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

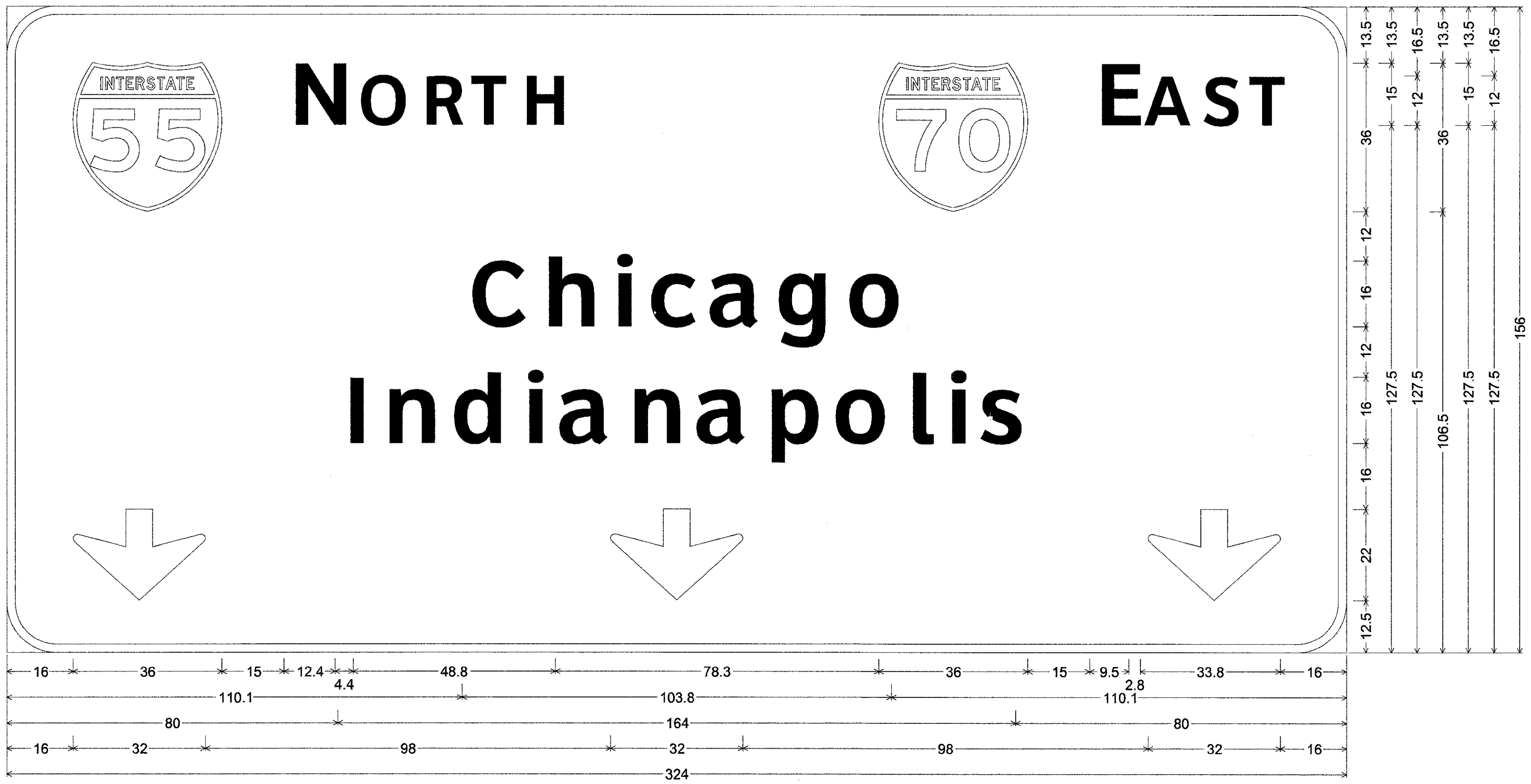
SIGN PANEL DETAILS

SCALE: ________ SHEET NO. __ OF ___ SHEETS STA. _________ TO STA. _________

F.A.I RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
55/70	60-(5,6,7)RS, 60-(6,7)BR	MADISON	185	166

CONTRACT NO. 76C56

FED. ROAD DIST. NO. _ ILLINOIS FED. AID PROJECT



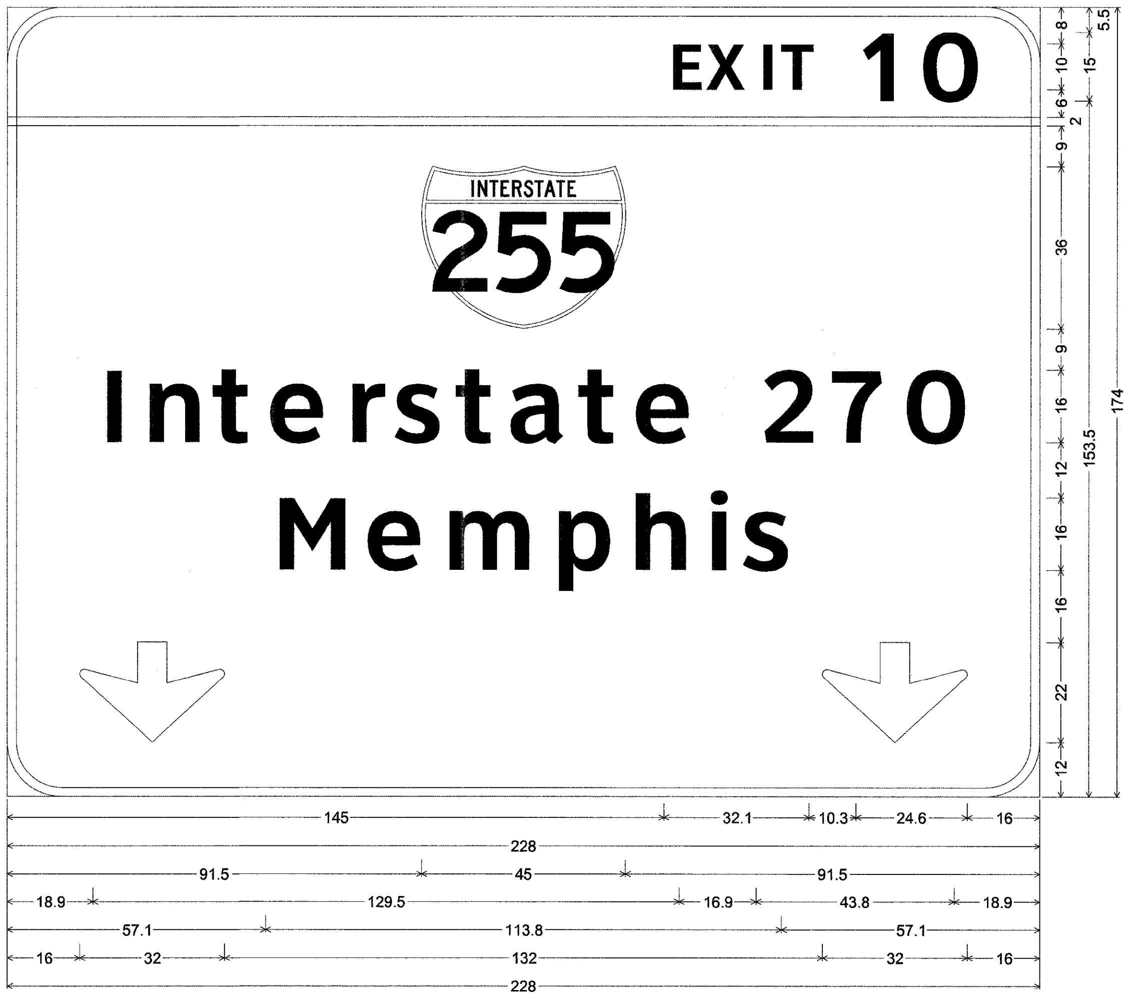
12.0" Radius, 2.0" Border, White on Green;
Interstate 55 M-5C-2; [N ORTH] ClearviewHwy-5-W; Interstate 70 M-5C-2; [E AST] ClearviewHwy-5-W; [Chicago] ClearviewHwy-5-W; [Indianapolis] ClearviewHwy-5-W; Down Arrow 22.0" 270°;
Down Arrow 22.0" 270°; Down Arrow 22.0" 270°;
Table of widths and spaces.

			N		O		R		T		H				E		A		S		T	
16.0	36.0	15.0	12.4	4.4	11.1	4.3	9.0	2.9	8.7	3.6	9.2	78.3	36.0	15.0	9.5	2.8	11.2	2.6	8.7	2.6	8.7	16.0

	C		h		i		c		a		g		o	
110.1	13.0	4.9	11.1	5.7	3.8	5.0	10.9	3.6	11.9	4.5	11.6	5.4	12.4	110.1

	I		n		d		i		a		n		a		p		o		l		i		s	
80.0	3.1	6.3	11.1	5.5	11.5	5.7	3.8	4.7	11.9	5.1	11.1	5.1	11.9	5.1	11.6	4.7	12.4	5.5	5.0	4.4	3.8	4.5	10.2	80.0

	⇩		⇩		⇩	
16.0	32.0	98.0	32.0	98.0	32.0	16.0



12.0" Radius, 2.0" Border, White on Green;
[EXIT 10] ClearviewHwy-5-W; [Interstate 270] ClearviewHwy-5-W; [Memphis] ClearviewHwy-5-W; Down Arrow 22.0" 270°;
Down Arrow 22.0" 270°;
Table of widths and spaces.

	E		X		I		T		1		0	
145.0	6.3	2.2	8.7	2.7	1.9	3.0	7.3	10.3	6.9	5.5	12.2	16.0

	—	
-0.0	228.0	0.0

91.5	45.0	91.5

	I		n		t		e		r		s		t		a		t		e		2		7		0	
18.9	3.1	6.3	11.1	4.5	7.8	4.2	11.7	5.5	7.3	3.4	10.2	3.5	7.9	3.8	11.9	3.5	7.8	4.2	11.8	16.9	11.1	4.1	11.3	4.3	13.0	18.9

	M		e		m		p		h		i		s	
57.1	14.7	5.6	11.7	5.5	18.0	6.1	11.6	5.4	11.1	5.7	3.8	4.4	10.2	57.1

	⇩		⇩	
16.0	32.0	132.0	32.0	16.0

8S060I055R009.3

FILE NAME =
$FILEL$

USER NAME = $USER$
PLOT SCALE = $SCALE$
PLOT DATE = $DATE$

DESIGNED - ___
DRAWN - ___
CHECKED - ___
DATE - ________

REVISED - ___
REVISED - ___
REVISED - ___
REVISED - ___

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

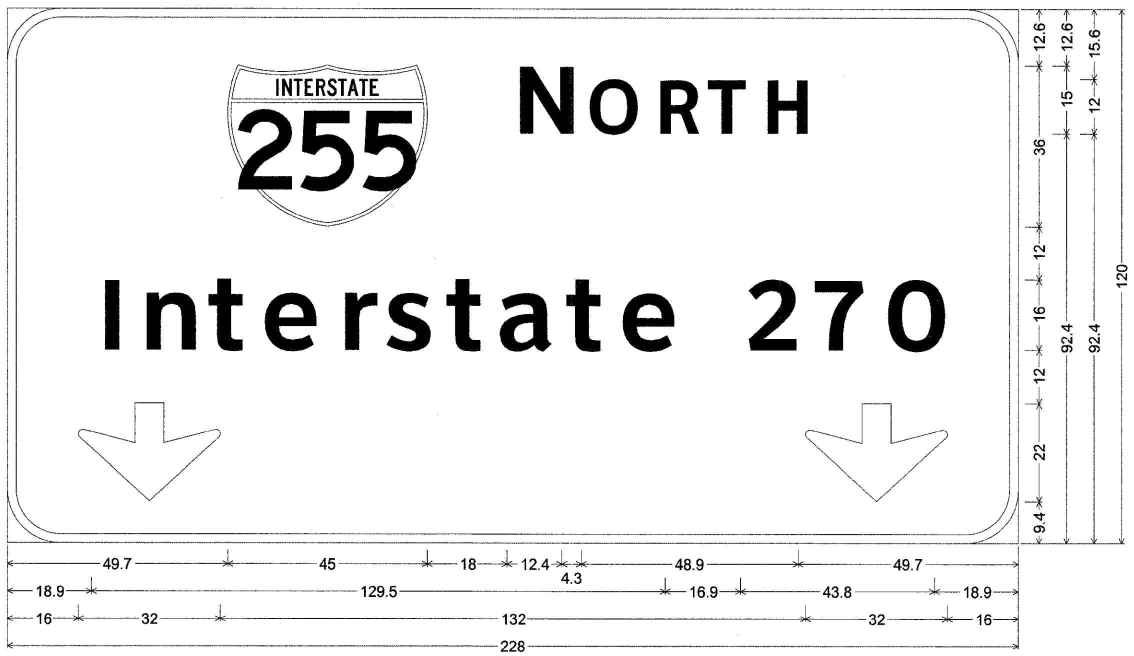
SIGN PANEL DETAILS

SCALE: ________ SHEET NO. __ OF ___ SHEETS STA. _________ TO STA. _________

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
55/70	60-(5,6,7)RS, 60-(6,7)BR	MADISON	185	167

CONTRACT NO. 76C56

FED. ROAD DIST. NO. _ ILLINOIS FED. AID PROJECT



12.0" Radius, 2.0" Border, White on Green;
[N ORTH] ClearviewHwy-5-W; [Interstate 270] ClearviewHwy-5-W; Down Arrow 22.0" 270°; Down Arrow 22.0" 270°;
Table of widths and spaces.

	255		N		O		R		T		H	
49.7	45.0	18.0	12.4	4.3	11.2	4.3	9.0	2.9	8.7	3.6	9.2	49.7

	I		n		t		e		r		s		t		a		t		e		2		7		0	
18.9	3.1	6.3	11.1	4.5	7.8	4.2	11.7	5.5	7.3	3.4	10.2	3.5	7.9	3.8	11.9	3.5	7.8	4.2	11.8	16.9	11.1	4.1	11.3	4.3	13.0	18.9

	⇩		⇩	
16.0	32.0	132.0	32.0	16.0

12.0" Radius, 2.0" Border, White on Green;
[S OUTH] ClearviewHwy-5-W; [Memphis] ClearviewHwy-5-W; Arrow 160 - 35.0" 45°;
Table of widths and spaces.

	255		S		O		U		T		H	
16.0	45.0	19.9	10.9	4.3	11.2	4.3	9.3	3.6	8.7	3.6	9.2	16.0

	M		e		m		p		h		i		s	
24.1	14.7	5.6	11.7	5.5	18.0	6.1	11.6	5.4	11.1	5.7	3.8	4.4	10.2	24.1

	⇗	
67.2	27.6	67.2

8S0601055009.5

FILE NAME =
$FILEL$
USER NAME = $USER$
PLOT SCALE = $SCALE$
PLOT DATE = $DATE$
DESIGNED - ___
DRAWN - ___
CHECKED - ___
DATE - ________
REVISED - ___
REVISED - ___
REVISED - ___
REVISED - ___

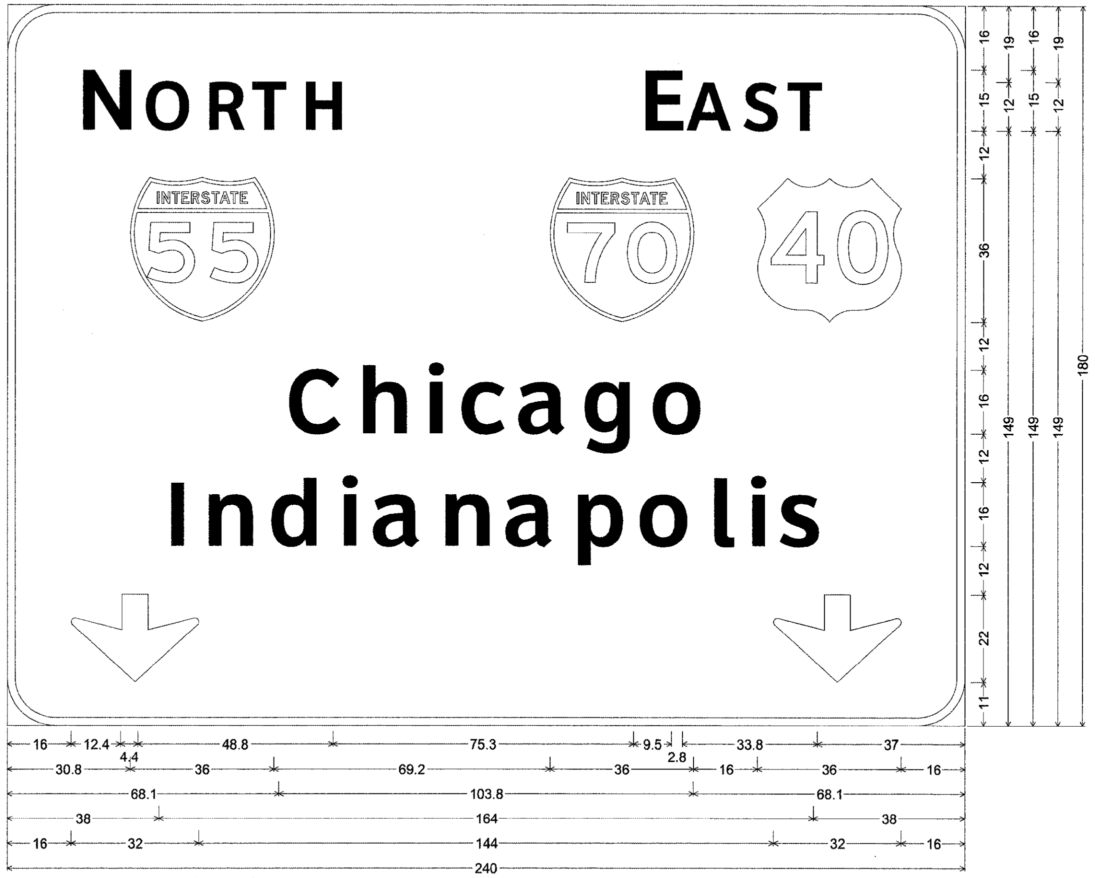
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SIGN PANEL DETAILS

SCALE: ________ SHEET NO. __ OF ___ SHEETS STA. _________ TO STA. _________

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
55/70	60-(5,6,7)RS, 60-(6,7)BR	MADISON	185	168

CONTRACT NO. 76C56
FED. ROAD DIST. NO. _ ILLINOIS FED. AID PROJECT



12.0" Radius, 2.0" Border, White on Green;
[N ORTH] ClearviewHwy-5-W; Interstate 55 M-5C-2; [E AST] ClearviewHwy-5-W; Interstate 70 M-5C-2; US 40 M-1C-36-2;
[Chicago] ClearviewHwy-5-W; [Indianapolis] ClearviewHwy-5-W; Down Arrow 22.0" 270°; Down Arrow 22.0" 270°;
Table of widths and spaces.

	N		O		R		T		H		E		A		S		T	
16.0	12.4	4.4	11.1	4.3	9.0	2.9	8.7	3.6	9.2	75.3	9.5	2.8	11.3	2.5	8.7	2.7	8.6	37.0

	55		70		40	
30.8	36.0	69.2	36.0	16.0	36.0	16.0

	C		h		i		c		a		g		o	
68.1	13.0	4.9	11.1	5.7	3.8	5.0	10.9	3.6	11.9	4.5	11.6	5.4	12.4	68.1

	I		n		d		i		a		n		a		p		o		l		i		s	
38.0	3.1	6.3	11.1	5.5	11.5	5.7	3.8	4.7	11.9	5.1	11.1	5.1	11.9	5.1	11.6	4.7	12.4	5.5	5.0	4.4	3.8	4.5	10.2	38.0

	⇩		⇩	
16.0	32.0	144.0	32.0	16.0

12.0" Radius, 2.0" Border, White on Green;
[EXIT 11] ClearviewHwy-5-W; [Collinsville] ClearviewHwy-5-W; [Edwardsville] ClearviewHwy-5-W;
12.0" Radius, 2.0" Border, Black on Yellow;
[EXIT] ClearviewHwy-5-W; Down Arrow 22.0" 270°; [ONLY] ClearviewHwy-5-W;
Table of widths and spaces.

	E		X		I		T		1		1	
124.9	6.4	2.2	8.6	2.8	1.9	3.0	7.2	10.4	6.9	4.4	6.8	18.5

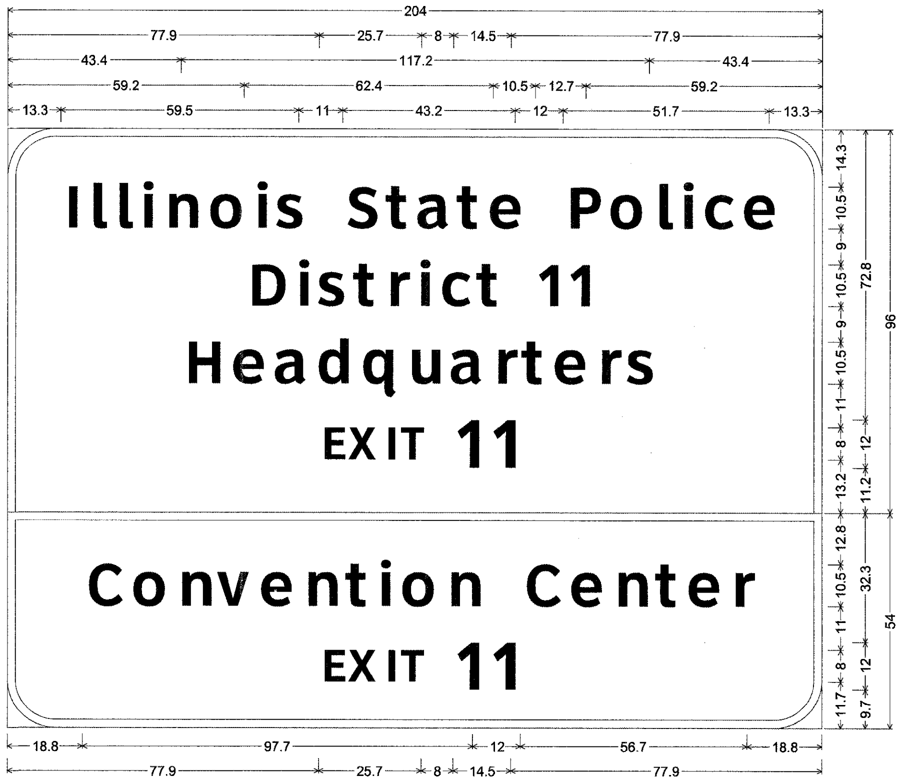
	—	
-0.0	204.0	0.0

	157	
72.0	60.0	72.0

	C		o		l		l		i		n		s		v		i		l		l		e	
27.2	13.0	4.3	12.3	5.5	5.0	4.8	5.1	4.4	3.8	5.7	11.1	4.8	10.2	3.2	12.2	3.9	3.8	5.7	5.0	4.8	5.1	4.2	11.7	27.2

	E		d		w		a		r		d		s		v		i		l		l		e	
18.5	10.1	4.7	11.6	4.2	18.5	3.4	11.9	5.1	7.3	4.1	11.5	4.8	10.3	3.1	12.2	3.9	3.8	5.7	5.1	4.8	5.0	4.2	11.7	18.5

	E		X		I		T		⇩		O		N		L		Y	
39.2	6.3	2.2	8.6	2.8	1.9	3.0	7.3	10.0	32.0	10.0	9.2	3.6	8.3	4.0	5.8	1.9	8.7	39.2



12.0" Radius, 2.0" Border, White on Blue;
[Illinois State Police] ClearviewHwy-5-W; [District 11] ClearviewHwy-5-W; [Headquarters] ClearviewHwy-5-W;
[EXIT 11] ClearviewHwy-5-W;
12.0" Radius, 2.0" Border, White on Brown;
[Convention Center] ClearviewHwy-5-W; [EXIT 11] ClearviewHwy-5-W;
Table of widths and spaces.

	I		l		l		i		n		o		i		s		S		t		a		t		e
13.3	2.0	4.2	3.3	3.1	3.4	2.9	2.5	3.7	7.3	3.6	8.1	3.3	2.5	2.9	6.7	11.0	7.6	2.3	5.2	2.4	7.9	2.2	5.2	2.7	7.7

	P		o		l		i		c		e	
12.0	7.6	2.9	8.1	3.6	3.3	2.9	2.5	3.3	7.2	2.6	7.7	13.3

	D		i		s		t		r		i		c		t		1		1	
59.2	8.5	3.5	2.4	3.0	6.7	2.3	5.1	3.2	4.8	2.8	2.5	3.3	7.2	1.9	5.2	10.5	4.8	3.1	4.8	59.2

	H		e		a		d		q		u		a		r		t		e		r		s	
43.4	8.0	3.7	7.7	2.9	7.9	2.9	7.6	3.5	8.4	3.2	7.2	3.3	7.9	3.3	4.8	2.0	5.2	2.7	7.7	3.6	4.8	2.2	6.7	43.4

	E		X		I		T		1		1	
77.9	5.1	1.8	6.9	2.2	1.5	2.4	5.8	8.0	5.5	3.5	5.5	77.9

	C		o		n		v		e		n		t		i		o		n
18.8	8.5	2.8	8.1	3.6	7.3	2.7	8.0	2.3	7.7	3.6	7.3	2.9	5.2	2.9	2.5	3.3	8.1	3.6	7.3

	C		e		n		t		e		r	
12.0	8.5	2.8	7.7	3.6	7.3	2.9	5.1	2.8	7.7	3.5	4.8	18.8

	E		X		I		T		1		1	
77.9	5.1	1.8	6.9	2.2	1.5	2.4	5.8	8.0	5.5	3.5	5.5	77.9

8S0601055R010.3

FILE NAME =
$FILEL$

USER NAME = $USER$
PLOT SCALE = $SCALE$
PLOT DATE = $DATE$

DESIGNED - ___
DRAWN - ___
CHECKED - ___
DATE - ________

REVISED - ___
REVISED - ___
REVISED - ___
REVISED - ___

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SIGN PANEL DETAILS

SCALE: ________ SHEET NO. __ OF ___ SHEETS STA. _________ TO STA. _________

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
55/70	60-(5,6,7)RS, 60-(6,7)BR	MADISON	185	169

CONTACT NO. 76C56

FED. ROAD DIST. NO. _ ILLINOIS FED. AID PROJECT

12.0" Radius, 2.0" Border, White on Green;
[EXIT 11] ClearviewHwy-5-W; [Collinsville] ClearviewHwy-5-W; [Edwardsville] ClearviewHwy-5-W;
12.0" Radius, 2.0" Border, Black on Yellow;
[EXIT] ClearviewHwy-5-W; Down Arrow 22.0" 270°; [ONLY] ClearviewHwy-5-W;
Table of widths and spaces.

124.9	E 6.4	2.2	X 8.6	2.8	I 1.9	3.0	T 7.2	10.4	1 6.9	4.4	1 6.8	18.5

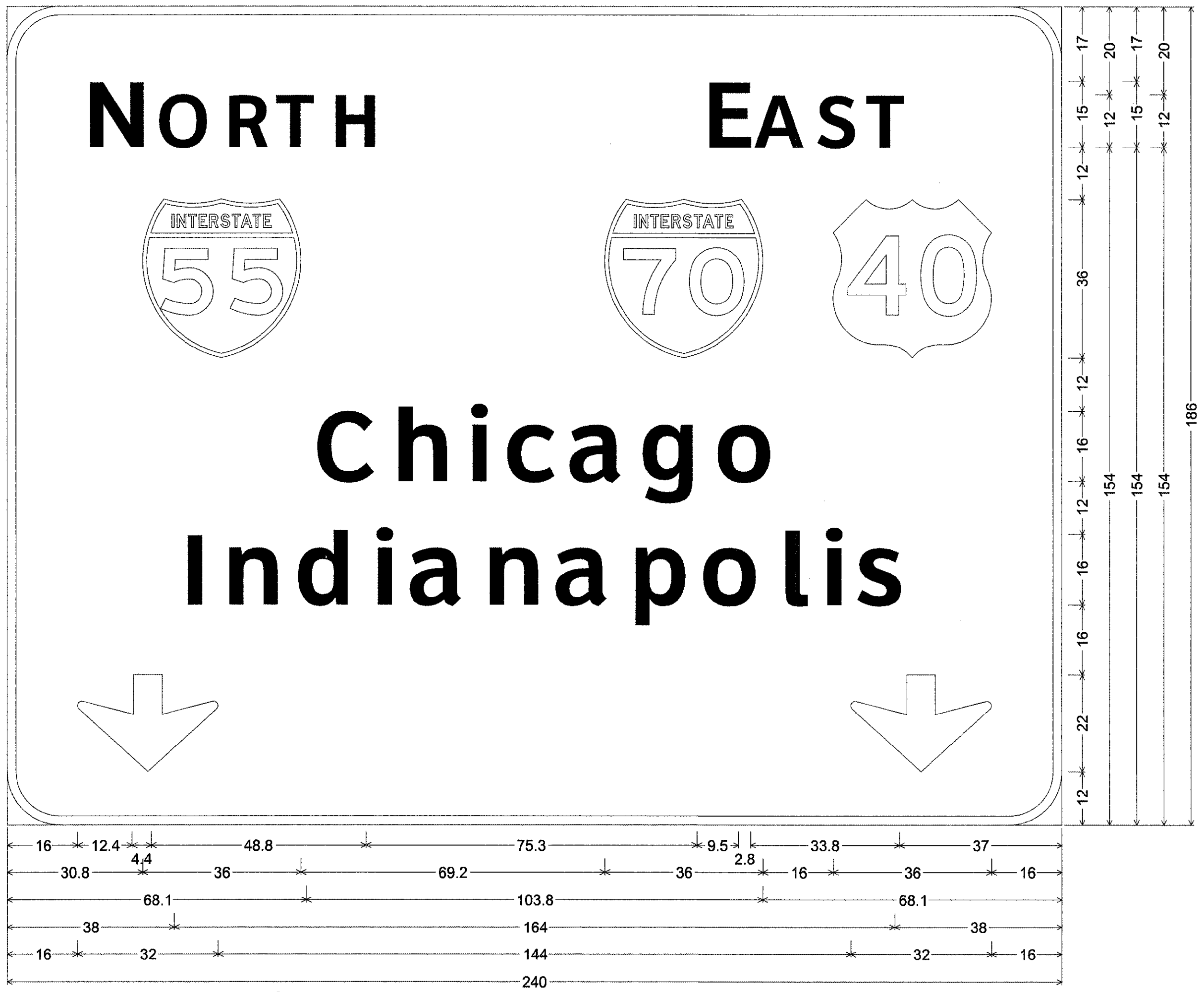
-0.0	204.0	0.0

72.0	157 60.0	72.0

27.2	C 13.0	4.3	o 12.3	5.5	l 5.0	4.8	l 5.1	4.4	i 3.8	5.7	n 11.1	4.8	s 10.2	3.2	v 12.2	3.9	i 3.8	5.7	l 5.0	4.8	l 5.1	4.2	e 11.7	27.2

18.5	E 10.1	4.7	d 11.6	4.2	w 18.5	3.4	a 11.9	5.1	r 7.3	4.1	d 11.5	4.8	s 10.3	3.1	v 12.2	3.9	i 3.8	5.7	l 5.1	4.8	l 5.0	4.2	e 11.7	18.5

39.2	E 6.3	2.2	X 8.6	2.8	I 1.9	3.0	T 7.3	10.0	⇩ 32.0	10.0	O 9.2	3.6	N 8.3	4.0	L 5.8	1.9	Y 8.7	39.2



12.0" Radius, 2.0" Border, White on Green;
[N ORTH] ClearviewHwy-5-W; Interstate 55 M-5C-2; [E AST] ClearviewHwy-5-W; Interstate 70 M-5C-2; US 40 M-1C-36-2;
[Chicago] ClearviewHwy-5-W; [Indianapolis] ClearviewHwy-5-W; Down Arrow 22.0" 270°; Down Arrow 22.0" 270°;
Table of widths and spaces.

16.0	N 12.4	4.4	O 11.1	4.3	R 9.0	2.9	T 8.7	3.6	H 9.2	75.3	E 9.5	2.8	A 11.3	2.5	S 8.7	2.7	T 8.6	37.0

30.8	55 36.0	69.2	70 36.0	16.0	40 36.0	16.0

68.1	C 13.0	4.9	h 11.1	5.7	i 3.8	5.0	c 10.9	3.6	a 11.9	4.5	g 11.6	5.4	o 12.4	68.1

38.0	I 3.1	6.3	n 11.1	5.5	d 11.5	5.7	i 3.8	4.7	a 11.9	5.1	n 11.1	5.1	a 11.9	5.1	p 11.6	4.7	o 12.4	5.5	l 5.0	4.4	i 3.8	4.5	s 10.2	38.0

16.0	⇩ 32.0	144.0	⇩ 32.0	16.0

8S0601055R010.9

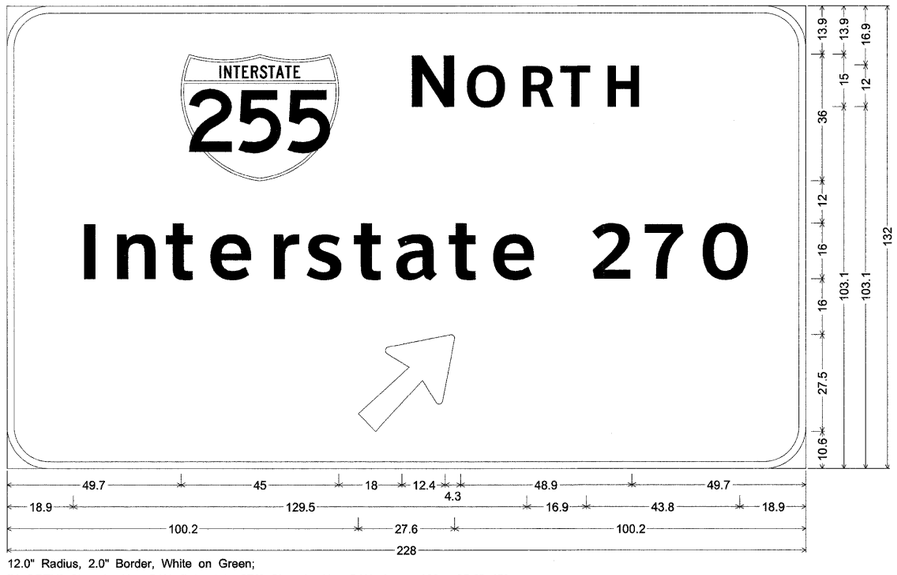
FILE NAME = $FILEL$	USER NAME = $USER$	DESIGNED - ___	REVISED - ___	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	SIGN PANEL DETAILS	F.A.I RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
		DRAWN - ___	REVISED - ___			55/70	60-(5,6,7)RS, 60-(6,7)BR	MADISON	186	170
	PLOT SCALE = $SCALE$	CHECKED - ___	REVISED - ___					CONTRACT NO. 76C56		
	PLOT DATE = $DATE$	DATE - ________	REVISED - ___		SCALE: ________ SHEET NO. __ OF ___ SHEETS STA. _________ TO STA. _________	FED. ROAD DIST. NO. _ ILLINOIS FED. AID PROJECT				

12.0" Radius, 2.0" Border, White on Green;
[S OUTH] ClearviewHwy-5-W; [Memphis] ClearviewHwy-5-W; Arrow 160 - 35.0" 45°;
Table of widths and spaces.

	255		S		O		U		T		H	
16.0	45.0	19.9	10.9	4.3	11.2	4.3	9.3	3.6	8.7	3.6	9.2	16.0

	M		e		m		p		h		i		s	
24.1	14.7	5.6	11.7	5.5	18.0	6.1	11.6	5.4	11.1	5.7	3.8	4.4	10.2	24.1

	↗	
67.2	27.6	67.2



12.0" Radius, 2.0" Border, White on Green;
[N ORTH] ClearviewHwy-5-W; [Interstate 270] ClearviewHwy-5-W; Arrow 160 - 35.0" 45°;
Table of widths and spaces.

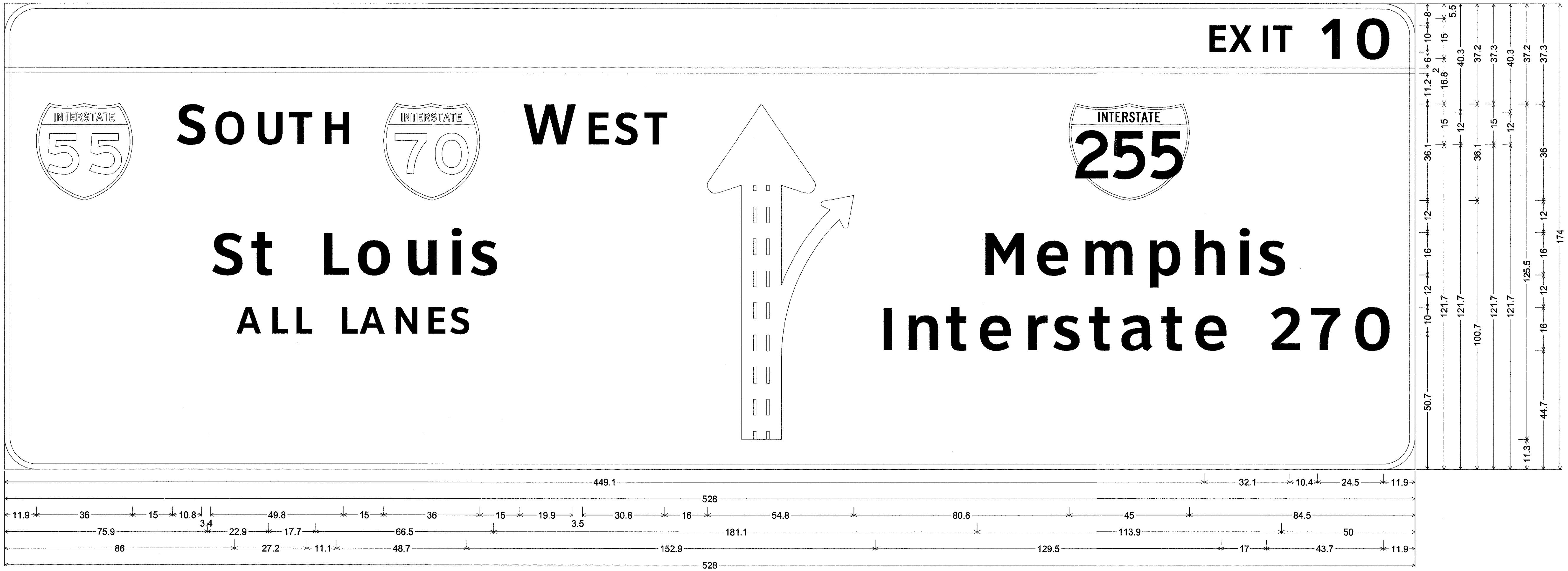
	255		N		O		R		T		H	
49.7	45.0	18.0	12.4	4.3	11.2	4.3	9.0	2.9	8.7	3.6	9.2	49.7

	I		n		t		e		r		s		t		a		t		e		2		7		0	
18.9	3.1	6.3	11.1	4.5	7.8	4.2	11.7	5.5	7.3	3.4	10.2	3.5	7.9	3.8	11.9	3.5	7.8	4.2	11.8	16.9	11.1	4.1	11.3	4.3	13.0	18.9

	↗	
100.2	27.6	100.2

8S060I055L010.1

FILE NAME = $FILEL$	USER NAME = $USER$	DESIGNED - ___	REVISED - ___	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	SIGN PANEL DETAILS	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
		DRAWN - ___	REVISED - ___			55/70	60-(5,6,7)RS, 60-(6,7)BR	MADISON	185	171
	PLOT SCALE = $SCALE$	CHECKED - ___	REVISED - ___					CONTRACT NO. 76C56		
	PLOT DATE = $DATE$	DATE - ________	REVISED - ___		SCALE: ________ SHEET NO. __ OF ___ SHEETS STA. _________ TO STA. _________	FED. ROAD DIST. NO. _	ILLINOIS	FED. AID PROJECT		



12.0" Radius, 2.0" Border, White on Green;

[EXIT 10] ClearviewHwy-5-W; Interstate 55 M-5C-2; [S OUTH] ClearviewHwy-5-W; Interstate 70 M-5C-2; [W EST] ClearviewHwy-5-W; [St Louis] ClearviewHwy-5-W; [ALL LANES] ClearviewHwy-5-W; Diagrammatic Arrow lane lines Black; [Memphis] ClearviewHwy-5-W; [Interstate 270] ClearviewHwy-5-W;

Table of widths and spaces.

	E		X		I		T		1		0	
449.1	6.3	2.3	8.6	2.8	1.9	3.0	7.2	10.4	6.8	5.5	12.2	11.9

-0.0	528.0	0.0

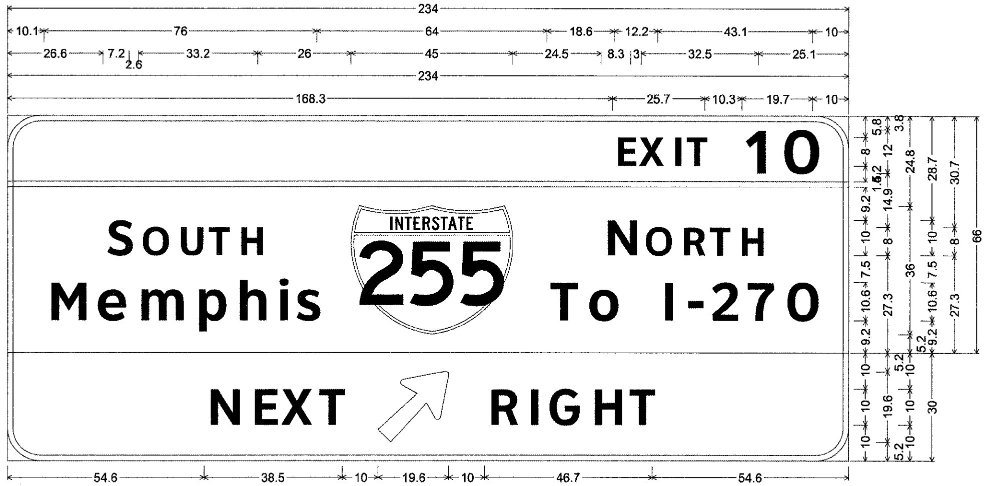
	55		S		O		U		T		H		70		W		E		S		T		↑		255	
11.9	36.0	15.0	10.8	3.4	11.1	4.3	9.3	3.6	8.7	3.6	9.2	15.0	36.0	15.0	19.9	3.5	7.6	3.2	8.7	2.6	8.7	16.0	54.8	80.6	45.0	84.5

	S		t		L		o		u		i		s		M		e		m		p		h		i		s	
75.9	11.6	3.4	7.9	17.7	9.3	4.4	12.3	5.5	10.9	5.7	3.8	4.4	10.2	181.1	14.7	5.6	11.8	5.4	18.1	6.0	11.6	5.4	11.2	5.7	3.8	4.4	10.2	50.0

	A		L		L		L		A		N		E		S		I		n		t		e		r		s		t		a		t		e		2		7		0	
86.0	9.4	2.9	5.8	3.2	5.9	11.1	5.9	2.1	9.3	2.9	8.3	4.0	6.3	2.7	7.2	152.9	3.1	6.4	11.1	4.4	7.9	4.1	11.8	5.4	7.3	3.5	10.2	3.5	7.9	3.8	11.9	3.4	7.9	4.1	11.8	17.0	11.0	4.2	11.3	4.2	13.0	11.9

8S0601055L010.3

FILE NAME = $FILEL$	USER NAME = $USER$	DESIGNED - ___	REVISED - ___	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	SIGN PANEL DETAILS	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS / SHEET NO.
		DRAWN - ___	REVISED - ___			55/70	60-(5,6,7)RS, 60-(6,7)BR	MADISON	185 / 172
	PLOT SCALE = $SCALE$	CHECKED - ___	REVISED - ___					CONTRACT NO. 76C56	
	PLOT DATE = $DATE$	DATE - ________	REVISED - ___		SCALE: ________ SHEET NO. __ OF ___ SHEETS STA. _________ TO STA. _________	FED. ROAD DIST. NO. _	ILLINOIS	FED. AID PROJECT	



9.0" Radius, 1.5" Border, White on Green;
[EXIT 10] ClearviewHwy-5-W; [S OUTH] ClearviewHwy-5-W; [Memphis] ClearviewHwy-5-W; [N ORTH] ClearviewHwy-5-W;
[To I-270] ClearviewHwy-5-W;
9.0" Radius, 1.5" Border, Black on Yellow;
[NEXT] ClearviewHwy-5-W; Arrow 80 - 25.0" 45°; [RIGHT] ClearviewHwy-5-W;
Table of widths and spaces.

	E		X		I		T		1		0	
168.3	5.1	1.7	7.0	2.2	1.5	2.4	5.8	10.3	5.5	4.4	9.8	10.0

	—	
-0.0	234.0	0.0

	S		O		U		T		H		255		N		O		R		T		H	
26.6	7.2	2.6	7.4	2.9	6.2	2.4	5.8	2.4	6.1	26.0	45.0	24.5	8.3	3.0	7.4	2.9	6.0	1.9	5.8	2.4	6.1	25.1

	M		e		m		p		h		i		s		T		o		I		-		2		7		0	
10.1	9.8	3.8	7.8	3.6	12.1	4.0	7.7	3.7	7.4	3.8	2.5	2.9	6.9	64.0	7.7	2.7	8.2	12.2	2.1	4.3	4.2	3.3	7.4	2.8	7.5	2.8	8.7	10.0

	N		E		X		T		↗		R		I		G		H		T	
54.6	8.3	4.0	6.3	2.2	8.7	1.7	7.3	10.0	19.6	10.0	7.6	3.4	1.9	3.6	8.7	3.6	7.7	2.9	7.3	54.6

EXACT SIGN LOCATION TO BE DETERMINED
BY JEFF ABEL, OPERATIONS. 346-3283

STATION	BREAK-AWAY WIDE FLANGE SCHEDULE STRUCTURAL STEEL SIGN SUPPORT - BREAKAWAY	REINFORCEMENT BARS	CONCRETE FOUNDATIONS
	POUND	POUND	CUBIC YARD
500+00	748.5	234	2.1
TOTAL	748.5	234	2.1

12.0" Radius, 2.0" Border, White on Green;
[EXIT 10] ClearviewHwy-5-W; [Memphis] ClearviewHwy-5-W; [Interstate 270] ClearviewHwy-5-W; [½ MILE] ClearviewHwy-5-W;
Table of widths and spaces.

	E		X		I		T		1		0	
142.1	6.3	2.2	8.6	2.8	1.9	3.0	7.3	10.3	6.9	5.5	12.2	18.9

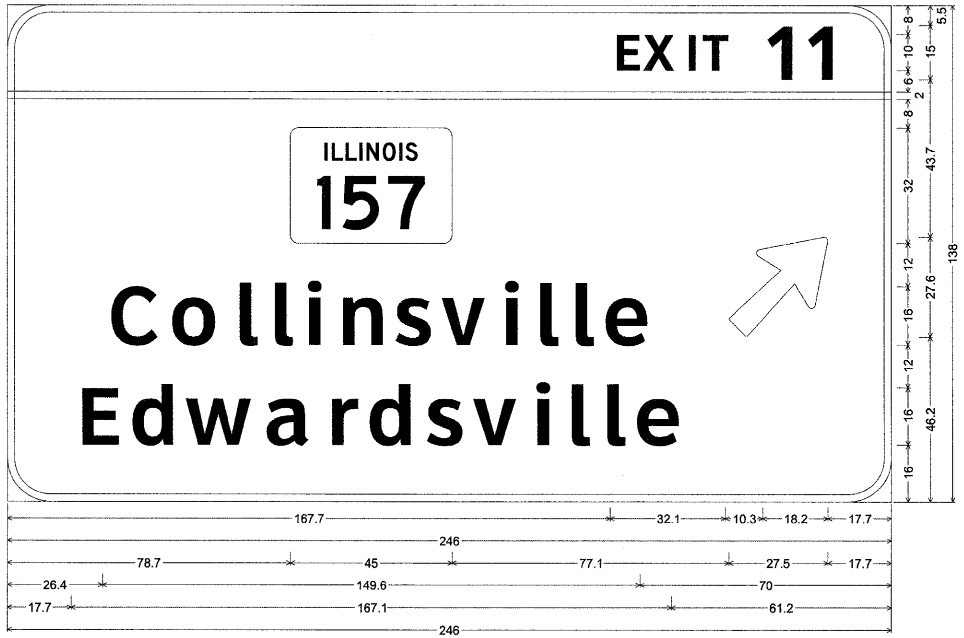
	—	
-0.0	228.0	0.0

	255	
91.5	45.0	91.5

	M		e		m		p		h		i		s	
57.1	14.7	5.6	11.7	5.5	18.0	6.1	11.6	5.4	11.1	5.7	3.8	4.4	10.2	57.1

	I		n		t		e		r		s		t		a		t		e		2		7		0	
18.9	3.1	6.3	11.1	4.5	7.8	4.2	11.7	5.5	7.3	3.4	10.2	3.5	7.9	3.8	11.9	3.5	7.8	4.2	11.8	16.9	11.1	4.1	11.3	4.3	13.0	18.9

	½		M		I		L		E	
79.2	24.7	10.4	9.2	4.0	1.9	4.0	5.9	3.2	6.3	79.2



12.0" Radius, 2.0" Border, White on Green;
[EXIT 11] ClearviewHwy-5-W; [Collinsville] ClearviewHwy-5-W; [Edwardsville] ClearviewHwy-5-W; Arrow 160 - 35.0" 45°;
Table of widths and spaces.

	E		X		I		T		1		1	
167.7	6.3	2.2	8.7	2.7	2.0	3.0	7.2	10.3	6.9	4.4	6.9	17.7

	—	
-0.0	246.0	0.0

	157		↗	
78.7	45.0	77.1	27.5	17.7

	C		o		l		l		i		n		s		v		i		l		l		e	
26.4	13.1	4.2	12.4	5.4	5.1	4.8	5.0	4.5	3.8	5.6	11.2	4.8	10.2	3.1	12.2	3.9	3.8	5.7	5.1	4.8	5.0	4.2	11.7	70.0

	E		d		w		a		r		d		s		v		i		l		l		e	
17.7	10.1	4.7	11.6	4.3	18.4	3.4	12.0	5.0	7.4	4.0	11.6	4.8	10.2	3.2	12.2	3.9	3.7	5.7	5.1	4.8	5.1	4.1	11.8	61.2

8S0601055L11.2

FILE NAME =
$FILEL$

USER NAME = $USER$
PLOT SCALE = $SCALE$
PLOT DATE = $DATE$

DESIGNED - ___
DRAWN - ___
CHECKED - ___
DATE - ________

REVISED - ___
REVISED - ___
REVISED - ___
REVISED - ___

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

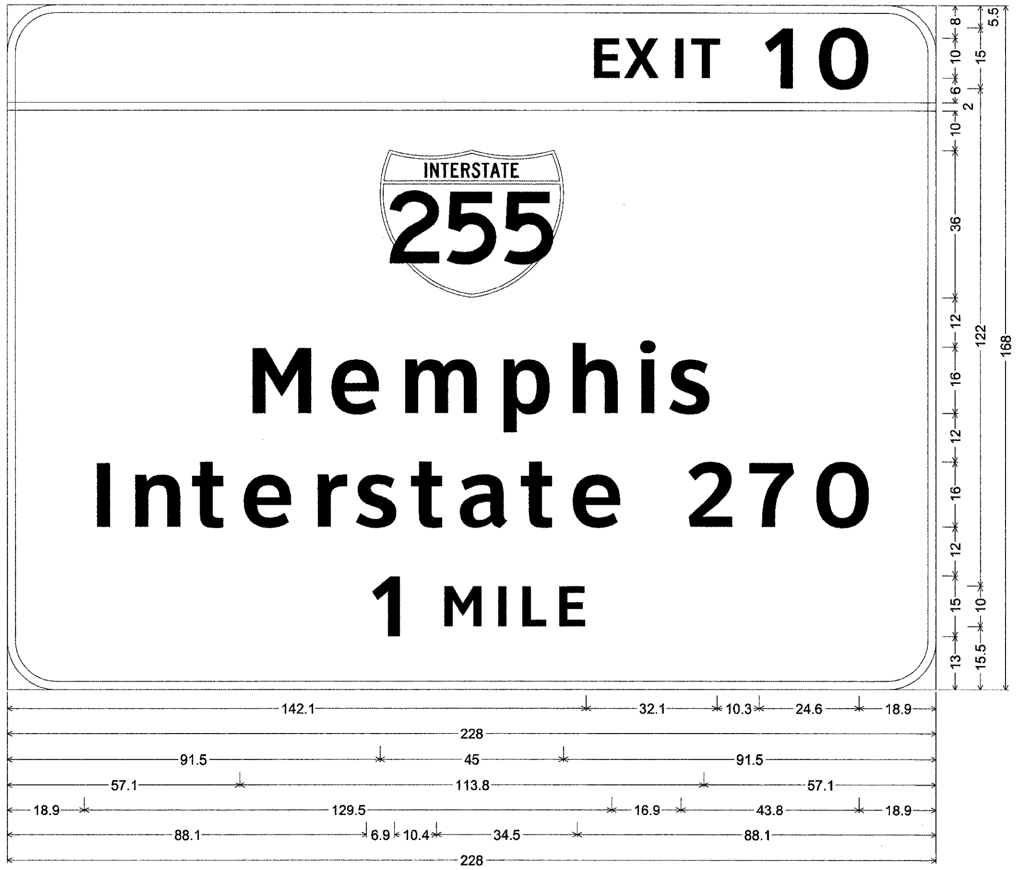
SIGN PANEL DETAILS

SCALE: ________ SHEET NO. __ OF ___ SHEETS STA. ________ TO STA. ________

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
55/70	60-(5,6,7)RS, 60-(6,7)BR	MADISON	185	173

CONRACT NO. 76C56

FED. ROAD DIST. NO. _ ILLINOIS FED. AID PROJECT



12.0" Radius, 2.0" Border, White on Green;
[EXIT 10] ClearviewHwy-5-W; [Memphis] ClearviewHwy-5-W; [Interstate 270] ClearviewHwy-5-W; [1 MILE] ClearviewHwy-5-W;
Table of widths and spaces.

	E		X		I		T		1		0	
142.1	6.3	2.2	8.6	2.8	1.9	3.0	7.3	10.3	6.9	5.5	12.2	18.9

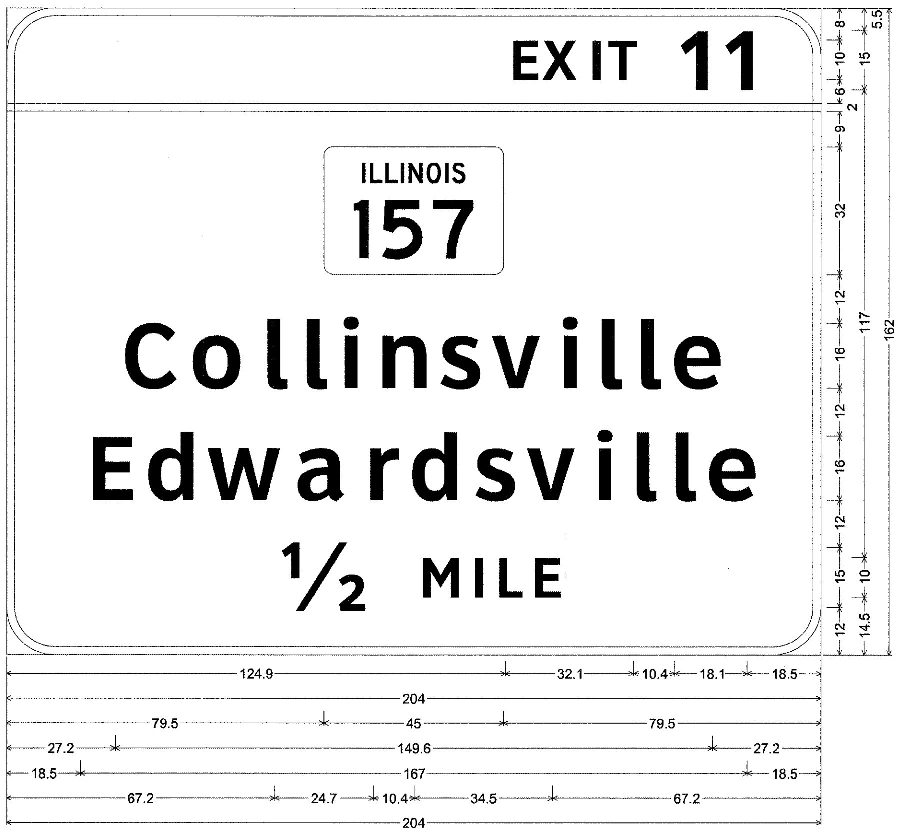
	—	
-0.0	228.0	0.0

	255	
91.5	45.0	91.5

	M		e		m		p		h		i		s	
57.1	14.7	5.6	11.7	5.5	18.0	6.1	11.6	5.4	11.1	5.7	3.8	4.4	10.2	57.1

	I		n		t		e		r		s		t		a		t		e		2		7		0	
18.9	3.1	6.3	11.1	4.5	7.8	4.2	11.7	5.5	7.3	3.4	10.2	3.5	7.9	3.8	11.9	3.5	7.8	4.2	11.8	16.9	11.1	4.1	11.3	4.3	13.0	18.9

	1		M		I		L		E	
88.1	6.9	10.4	9.2	3.9	1.9	4.1	5.8	3.2	6.4	88.1



12.0" Radius, 2.0" Border, White on Green;
[EXIT 11] ClearviewHwy-5-W; [Collinsville] ClearviewHwy-5-W; [Edwardsville] ClearviewHwy-5-W;
[½ MILE] ClearviewHwy-5-W;
Table of widths and spaces.

	E		X		I		T		1		1	
124.9	6.4	2.2	8.6	2.8	1.9	3.0	7.2	10.4	6.9	4.4	6.8	18.5

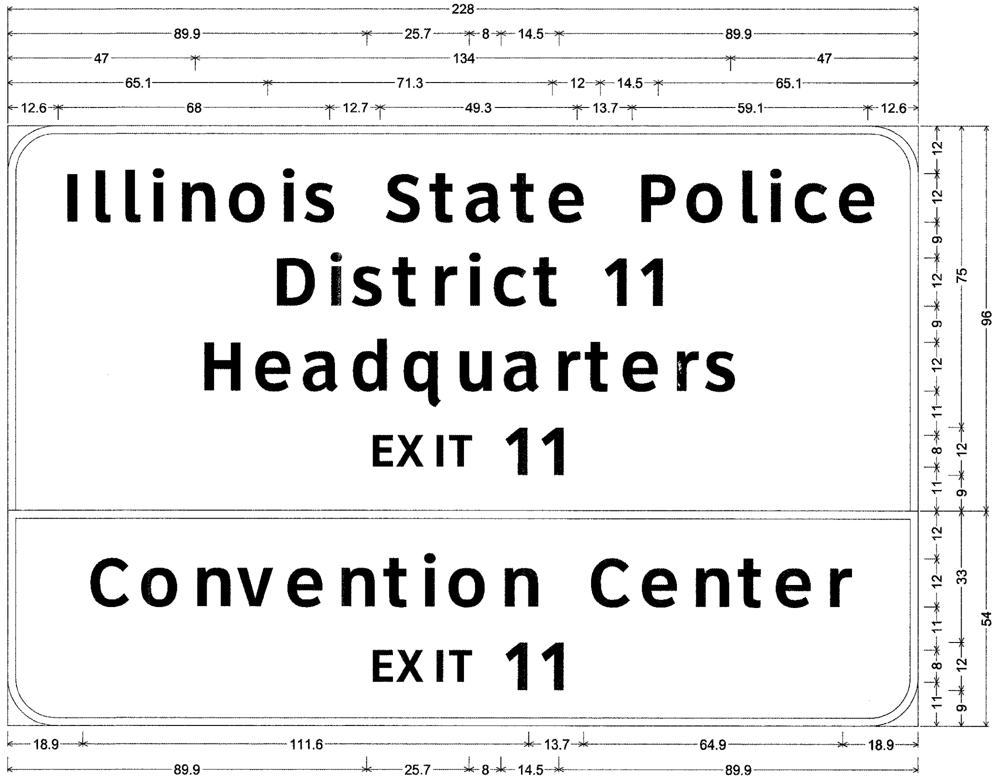
	—	
-0.0	204.0	0.0

	157	
79.5	45.0	79.5

	C		o		l		l		i		n		s		v		i		l		l		e	
27.2	13.0	4.3	12.3	5.5	5.0	4.8	5.1	4.4	3.8	5.7	11.1	4.8	10.2	3.2	12.2	3.9	3.8	5.7	5.0	4.8	5.1	4.2	11.7	27.2

	E		d		w		a		r		d		s		v		i		l		l		e	
18.5	10.1	4.7	11.6	4.2	18.5	3.4	11.9	5.1	7.3	4.1	11.5	4.8	10.3	3.1	12.2	3.9	3.8	5.7	5.1	4.8	5.0	4.2	11.7	18.5

	½		M		I		L		E	
67.2	24.7	10.4	9.2	4.0	1.9	4.0	5.9	3.2	6.3	67.2



12.0" Radius, 2.0" Border, White on Blue;
[Illinois State Police] ClearviewHwy-5-W; [District 11] ClearviewHwy-5-W; [Headquarters] ClearviewHwy-5-W;
[EXIT 11] ClearviewHwy-5-W;
12.0" Radius, 2.0" Border, White on Brown;
[Convention Center] ClearviewHwy-5-W; [EXIT 11] ClearviewHwy-5-W;
Table of widths and spaces.

	I		l		l		i		n		o		i		s		S		t		a		t		e
12.6	2.3	4.8	3.8	3.6	3.8	3.3	2.9	4.2	8.4	4.0	9.3	3.8	2.9	3.3	7.6	12.7	8.6	2.6	5.9	2.9	8.9	2.6	5.9	3.1	8.8

	P		o		l		i		c		e	
13.7	8.7	3.3	9.3	4.1	3.8	3.3	2.8	3.8	8.2	2.9	8.9	12.6

	D		i		s		t		r		i		c		t		1		1	
65.1	9.7	3.9	2.9	3.3	7.7	2.6	5.9	3.6	5.5	3.3	2.8	3.8	8.1	2.3	5.9	12.0	5.5	3.5	5.5	65.1

	H		e		a		d		q		u		a		r		t		e		r		s	
47.0	9.2	4.2	8.8	3.3	9.0	3.3	8.7	4.1	9.5	3.7	8.3	3.7	9.0	3.8	5.5	2.3	5.9	3.1	8.8	4.1	5.5	2.6	7.6	47.0

	E		X		I		T		1		1	
89.9	5.1	1.8	6.9	2.2	1.5	2.4	5.8	8.0	5.5	3.5	5.5	89.9

	C		o		n		v		e		n		t		i		o		n
18.9	9.7	3.2	9.3	4.1	8.3	3.1	9.1	2.7	8.9	4.0	8.4	3.3	5.9	3.3	2.9	3.7	9.3	4.1	8.3

	C		e		n		t		e		r	
13.7	9.8	3.2	8.8	4.1	8.3	3.3	5.9	3.1	8.9	4.0	5.5	18.9

	E		X		I		T		1		1	
89.9	5.1	1.8	6.9	2.2	1.5	2.4	5.8	8.0	5.5	3.5	5.5	89.9

8S0601055L011.4

FILE NAME =
$FILEL$
USER NAME = $USER$
PLOT SCALE = $SCALE$
PLOT DATE = $DATE$
DESIGNED - ___
DRAWN - ___
CHECKED - ___
DATE - ________
REVISED - ___
REVISED - ___
REVISED - ___
REVISED - ___

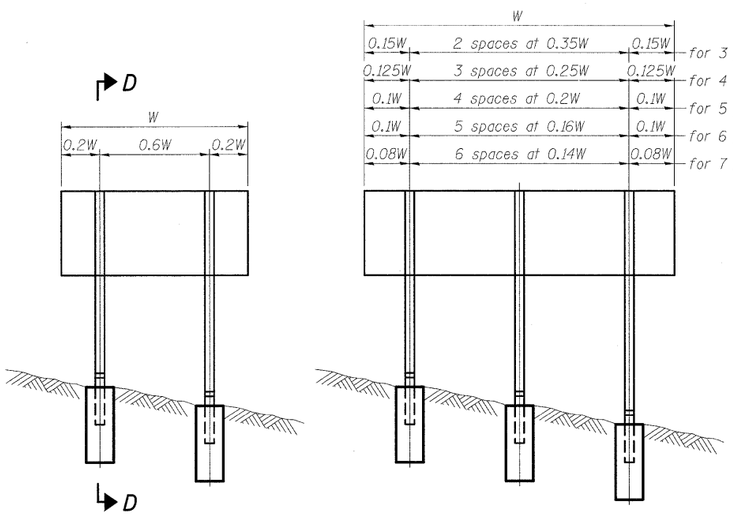
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SIGN PANEL DETAILS

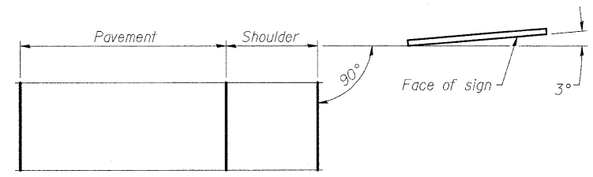
SCALE: ________ SHEET NO. __ OF ___ SHEETS STA. _________ TO STA. _________

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
55/70	60-(5,6,7)RS, 60-(6,7)BR	MADISON	185	174

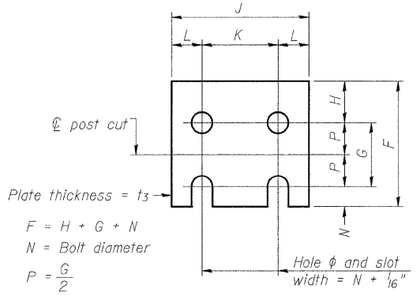
CONTRACT NO. 76C56
FED. ROAD DIST. NO. _ ILLINOIS FED. AID PROJECT



ELEVATION



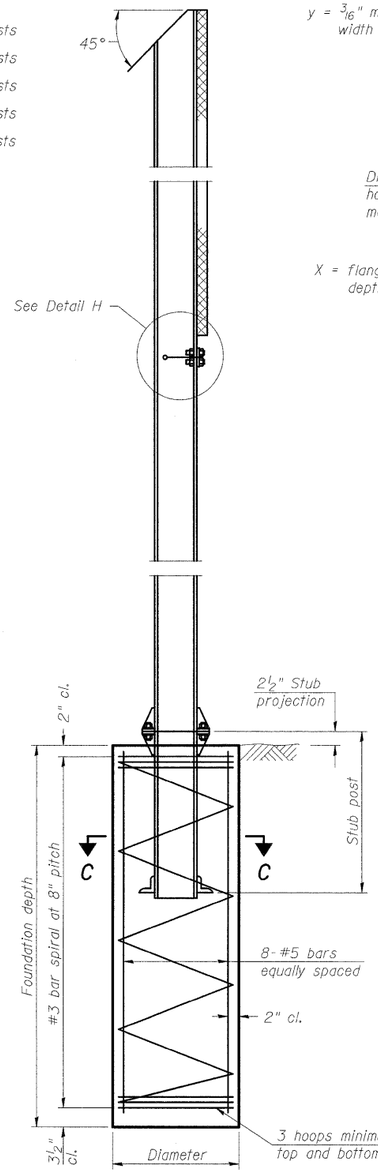
LOCATION SKETCH



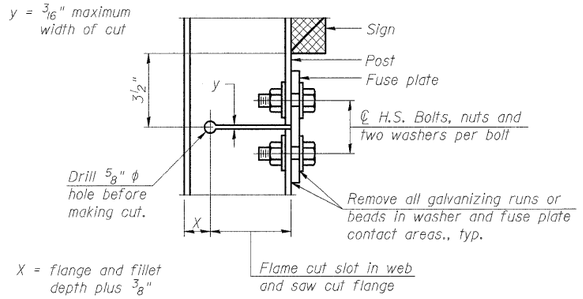
FUSE PLATE DETAIL

(Install with notches down.)

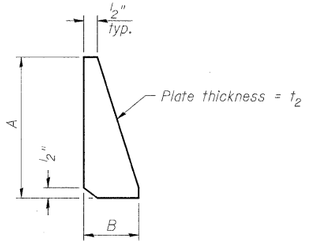
FUSE PLATE DATA		
N = Bolt Diameter	G	H
1/2"	2"	1 1/8"
5/8"	2 1/4"	1 1/4"
3/4"	2 1/2"	1 3/8"
7/8"	2 3/4"	1 1/2"
1"	3"	1 5/8"
1 1/8"	3 1/4"	1 3/4"
1 1/4"	3 1/2"	1 7/8"



SECTION D-D

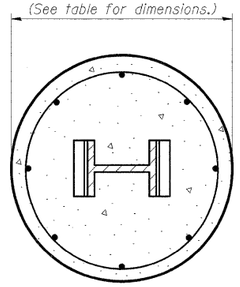


DETAIL H



STIFFENER PLATE DETAIL

Diameter



SECTION C-C

GENERAL NOTES

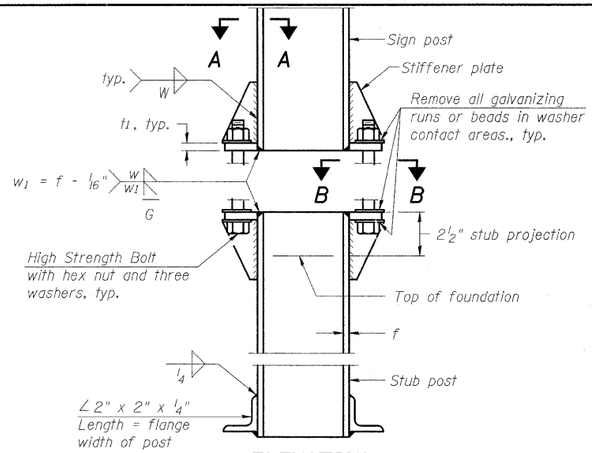
Posts shall be plumbed by using shims with post-to-stub post connection bolts snug tight only. Final tightening of all High Strength Bolts shall be in accordance with Article 727.05 and threads at the junction of the bolt and nut shall be burred or center punched to prevent the nut from loosening.

LOADING: 80 m.p.h. wind with 30% gust factor, normal to sign.

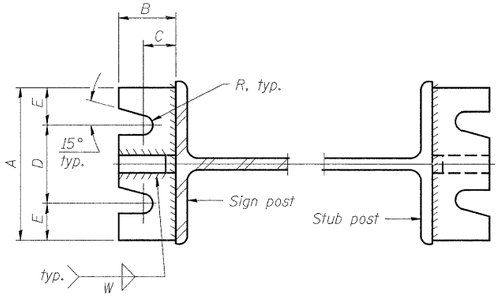
DESIGN STRESSES:
Structural steel - 20,000 p.s.i.
Reinforcing steel - 20,000 p.s.i.
Concrete - 1,400 p.s.i.
Footing soil pressure - 2,000 p.s.f.

After fabrication, the post, fuse plate and upper 6", min. of the stub post shall be hot-dip galvanized in accordance with AASHTO M111. All bolts, nuts and washers shall be hot-dip galvanized in accordance with AASHTO M232.

Work this sheet with Base Sheet BAW-A-2.

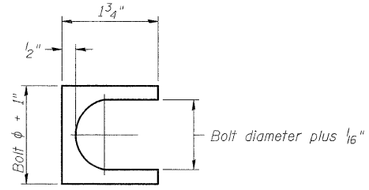


ELEVATION
SIGN POST & STUB POST



SECTION A-A

SECTION B-B



SHIM DETAIL

Furnish two 0.01" thick and two 0.03" thick stainless steel or brass (ASTM B36) shims per post.

NUMBER	REVISION	DATE

BAW-A-1 12-1-08

BREAK-AWAY WIDE FLANGE STEEL SIGN POST DETAILS

FILE NAME = $FILEL$	USER NAME = $USER$	DESIGNED - ___	REVISED - ___
		DRAWN - ___	REVISED - ___
	PLOT SCALE = $SCALE$	CHECKED - ___	REVISED - ___
	PLOT DATE = $DATE$	DATE - _____	REVISED - ___

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SIGN PANEL DETAILS

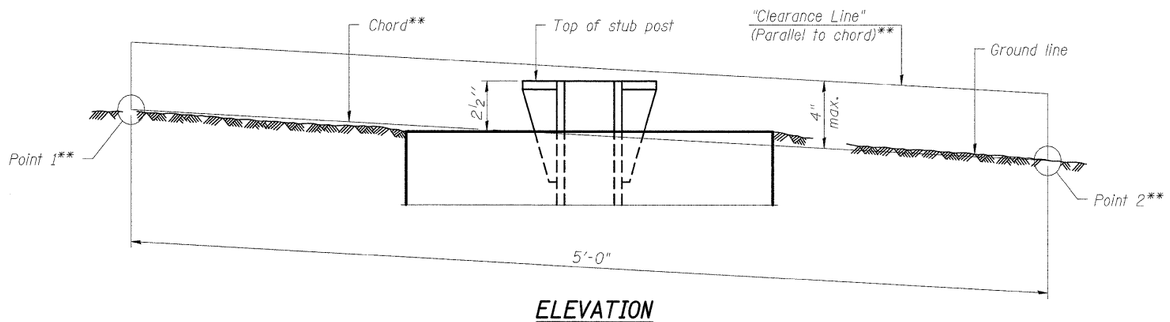
SCALE: _____ | SHEET NO. __ OF ___ SHEETS | STA. _____ TO STA. _____

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
55/70	60-(5,6,7)RS, 60-(6,7)BR	MADISON	185	175
		CONTRACT NO. 76C56		
FED. ROAD DIST. NO. _	ILLINOIS	FED. AID PROJECT		

POST	CONCRETE FOUNDATION TABLE							POST TO STUB POST CONNECTION DATA									FUSE PLATE DATA			
	Foundation			Reinforcement			Stub Post													
	Diameter	*Minimum Depth	Concrete (1) cu. yds.)	Vertical Bars Length	Bar Spirals Diameter	Bar Spirals Length	lbs. (2)	Length	Bolt Size	A	B	C	D	E	t_1	t_2	R	W	J	K	L	t_3
W6x9	2'-0"	6'-0"	0.70	5'-9"	1'-8 1/2"	79'-0"	78	2'-3"	5/8" x 3 1/4"	6"	2 1/4"	1 1/4"	3 1/2"	1 1/4"	3/4"	1/2"	11/32"	1/4"	4"	2 1/4"	7/8"	1/4"
W6x15	2'-0"	6'-0"	0.70	5'-9"	1'-8 1/2"	79'-0"	78	2'-6"	5/8" x 3 1/4"	6"	2 1/4"	1 1/4"	3 1/2"	1 1/4"	3/4"	1/2"	11/32"	1/4"	6"	3 1/2"	1 1/4"	3/8"
W8x18	2'-0"	6'-0"	0.70	5'-9"	1'-8 1/2"	79'-0"	78	2'-6"	3/4" x 3 3/4"	6"	2 1/2"	1 3/8"	3 1/4"	1 3/8"	1"	1/2"	13/32"	5/16"	5 1/4"	2 3/4"	1 1/4"	3/8"
W10x22	2'-6"	6'-6"	1.18	6'-3"	2'-2 1/2"	105'-0"	92	3'-0"	3/4" x 3 3/4"	6"	2 1/2"	1 3/8"	3 1/4"	1 3/8"	1"	1/2"	13/32"	5/16"	5 3/4"	2 3/4"	1 1/2"	1/2"
W10x26	2'-6"	7'-0"	1.27	6'-9"	2'-2 1/2"	112'-0"	98	3'-0"	7/8" x 4"	7"	2 3/4"	1 1/2"	4"	1 1/2"	1"	3/4"	15/32"	3/8"	5 3/4"	2 3/4"	1 1/2"	5/8"
W12x26	2'-6"	7'-9"	1.41	7'-6"	2'-2 1/2"	119'-0"	107	3'-0"	7/8" x 4"	7"	2 3/4"	1 1/2"	4"	1 1/2"	1"	3/4"	15/32"	3/8"	6 1/2"	3 1/2"	1 1/2"	5/8"
W14x30	3'-0"	7'-3"	1.90	7'-0"	2'-8 1/2"	145'-0"	113	3'-0"	7/8" x 4"	7"	2 3/4"	1 1/2"	4"	1 1/2"	1"	3/4"	15/32"	3/8"	6 3/4"	3 1/2"	1 5/8"	1/2"
W14x38	3'-0"	8'-0"	2.09	7'-9"	2'-8 1/2"	153'-0"	122	3'-6"	1" x 4 1/2"	7 1/2"	3"	1 3/4"	4"	1 3/4"	1 1/4"	3/4"	17/32"	3/8"	6 3/4"	3 1/2"	1 5/8"	1/2"
W16x45	3'-0"	8'-6"	2.23	8'-3"	2'-8 1/2"	162'-0"	130	3'-6"	1" x 4 1/2"	7 1/2"	3"	1 3/4"	4"	1 3/4"	1 1/4"	3/4"	17/32"	3/8"	7"	3 1/2"	1 3/4"	1/2"

*Dimensional changes required for varying site conditions shall be approved by the Engineer.

POST	FUSE PLATE BOLT SIZE — Sign Height																			
	4'-0"	5'-0"	6'-0"	7'-0"	8'-0"	9'-0"	10'-0"	11'-0"	12'-0"	13'-0"	14'-0"	15'-0"	16'-0"	17'-0"	18'-0"	19'-0"	20'-0"	21'-0"	22'-0"	23'-0"	24'-0"
W6x9	1/2" x 1 1/2"	1/2" x 1 1/2"	1/2" x 1 1/2"	1/2" x 1 1/2"	——	——	——	——	——	——	——	——	——	——	——	——	——	——	——	——	——
W6x15	1/2" x 1 3/4"	1/2" x 1 3/4"	1/2" x 1 3/4"	5/8" x 2"	5/8" x 2"	3/4" x 2"	3/4" x 2"	3/4" x 2"	3/4" x 2"	——	——	——	——	——	——	——	——	——	——	——	——
W8x18	1/2" x 1 3/4"	1/2" x 1 3/4"	1/2" x 1 3/4"	1/2" x 1 3/4"	5/8" x 2"	5/8" x 2"	3/4" x 2"	3/4" x 2"	3/4" x 2"	3/4" x 2"	——	——	——	——	——	——	——	——	——	——	——
W10x22	1/2" x 2"	1/2" x 2"	1/2" x 2"	1/2" x 2"	1/2" x 2"	5/8" x 2"	5/8" x 2"	3/4" x 2 1/4"	3/4" x 2 1/4"	3/4" x 2 1/4"	3/4" x 2 1/4"	3/4" x 2 1/4"	3/4" x 2 1/4"	——	——	——	——	——	——	——	——
W10x26	1/2" x 2"	1/2" x 2"	1/2" x 2"	1/2" x 2"	1/2" x 2"	5/8" x 2 1/4"	5/8" x 2 1/4"	3/4" x 2 1/2"	3/4" x 2 1/2"	3/4" x 2 1/2"	3/4" x 2 1/2"	3/4" x 2 1/2"	3/4" x 2 1/2"	3/4" x 2 1/2"	——	——	——	——	——	——	——
W12x26	1/2" x 2"	1/2" x 2"	1/2" x 2"	1/2" x 2"	1/2" x 2"	5/8" x 2 1/4"	5/8" x 2 1/4"	3/4" x 2 1/2"	3/4" x 2 1/2"	3/4" x 2 1/2"	3/4" x 2 1/2"	3/4" x 2 1/2"	3/4" x 2 1/2"	3/4" x 2 1/2"	3/4" x 2 1/2"	——	——	——	——	——	——
W14x30	1/2" x 2"	1/2" x 2"	1/2" x 2"	1/2" x 2"	1/2" x 2"	5/8" x 2"	5/8" x 2"	3/4" x 2 1/4"	3/4" x 2 1/4"	3/4" x 2 1/4"	3/4" x 2 1/4"	3/4" x 2 1/4"	3/4" x 2 1/4"	3/4" x 2 1/4"	3/4" x 2 1/4"	3/4" x 2 1/4"	3/4" x 2 1/4"	——	——	——	——
W14x38	1/2" x 2"	1/2" x 2"	1/2" x 2"	1/2" x 2"	1/2" x 2"	5/8" x 2 1/4"	5/8" x 2 1/4"	3/4" x 2 1/2"	3/4" x 2 1/2"	3/4" x 2 1/2"	3/4" x 2 1/2"	7/8" x 2 1/2"	7/8" x 2 1/2"	1" x 2 3/4"	1" x 2 3/4"	1" x 2 3/4"	1" x 2 3/4"	1" x 2 3/4"	1" x 2 3/4"	1" x 2 3/4"	1" x 2 3/4"
W16x45	——	1/2" x 2"	1/2" x 2"	1/2" x 2"	1/2" x 2"	1/2" x 2"	1/2" x 2"	5/8" x 2 1/4"	5/8" x 2 1/4"	5/8" x 2 1/4"	3/4" x 2 1/2"	3/4" x 2 1/2"	7/8" x 2 1/2"	7/8" x 2 1/2"	7/8" x 2 1/2"	1" x 2 3/4"	1" x 2 3/4"	1" x 2 3/4"	1" x 2 3/4"	1" x 2 3/4"	1" x 2 3/4"



ELEVATION
GROUND LINE & STUB POST

** For all "Point 1" and "Point 2" locations, "Clearance Line" must be at or above top of stub post.

(1) Quantity includes all concrete necessary for one foundation.

(2) Includes reinforcement bars and spiral hooping for one foundation.

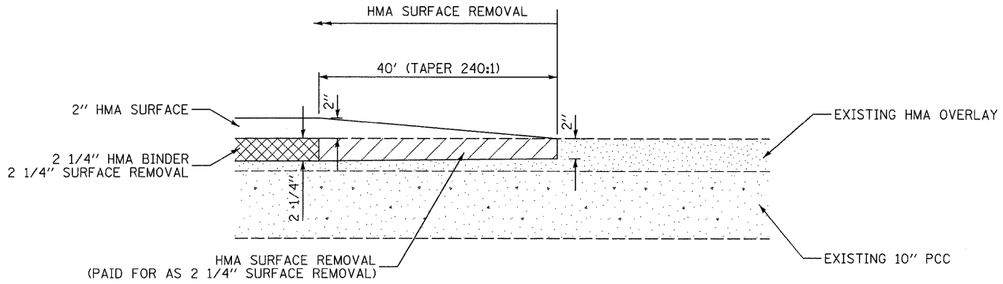
NUMBER	REVISION	DATE

BAW-A-2

12-1-08

BREAK-AWAY WIDE FLANGE STEEL SIGN POST TABLES

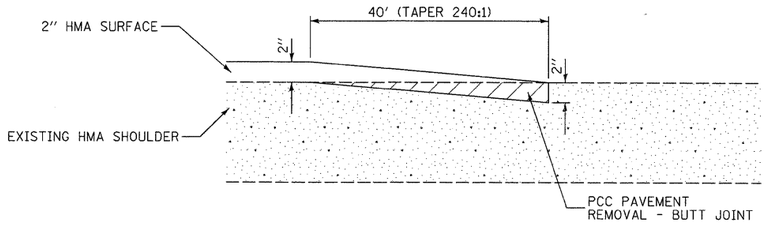
FILE NAME = $FILEL$	USER NAME = $USER$	DESIGNED - ___	REVISED - ___	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	SIGN PANEL DETAILS	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
		DRAWN - ___	REVISED - ___			55/70	60-(5,6,7)RS, 60-(6,7)BR	MADISON	185	176
	PLOT SCALE = $SCALE$	CHECKED - ___	REVISED - ___					CONTRACT NO. 76C56		
	PLOT DATE = $DATE$	DATE - _____	REVISED - ___		SCALE: _____ SHEET NO. __ OF ___ SHEETS STA. _____ TO STA. _____	FED. ROAD DIST. NO. _	ILLINOIS	FED. AID PROJECT		



1

BUTT JOINT DETAIL

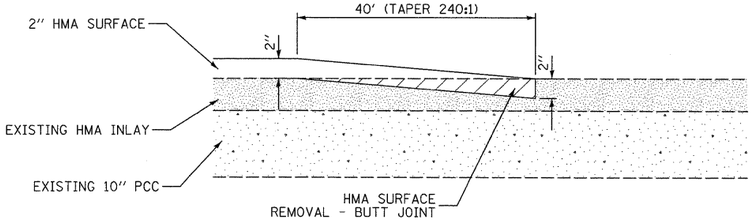
MAINLINE WITH HOT-MIX ASPHALT SURFACE REMOVAL



2

BUTT JOINT DETAIL

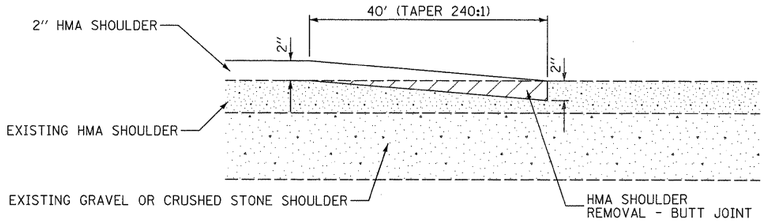
MAINLINE WITH EXISTING PCC SURFACE



3

BUTT JOINT DETAIL

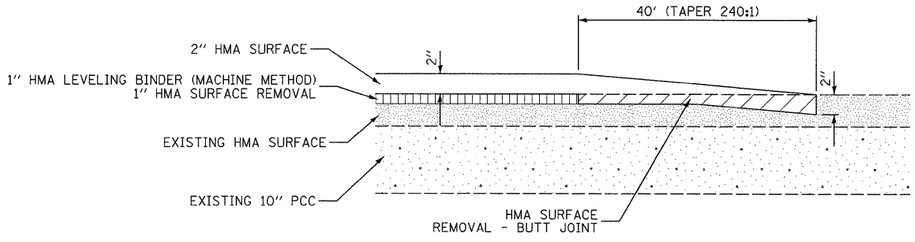
MAINLINE WITH EXISTING HMA INLAY



4

BUTT JOINT DETAIL

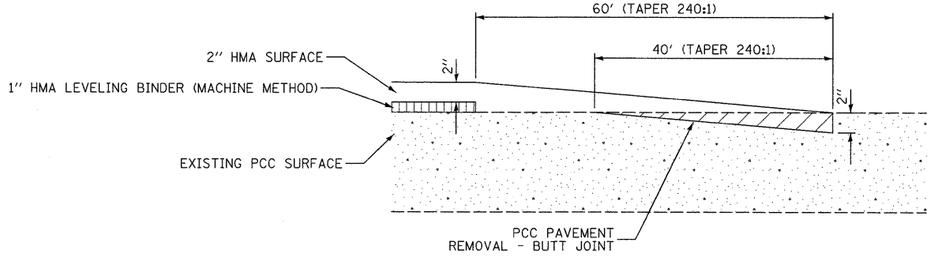
SHOULDER



5

BUTT JOINT DETAIL

RAMP WITH EXISTING HMA SURFACE



6

BUTT JOINT DETAIL

RAMP WITH EXISTING PCC SURFACE

LAST SAVED = 9/16/2009
PEN TABLE = V8.tbl
PLOT DRIVER = TR-Xerox6204-To-File.plt

FILE NAME = i:\08090\Work_Order_3\Cad\T_Plans\D8765	USER NAME = sdonahue	DESIGNED -	REVISED -
6C56-Sht-Details.dgn		DRAWN -	REVISED -
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	PLOT DATE = 9/16/2009 9:18:03 PM	DATE -	REVISED -

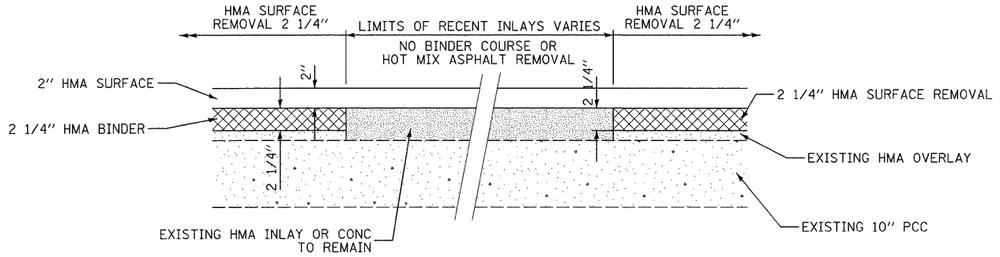
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

HORNER & SHIFRIN, INC. ENGINEERS

SPECIAL DETAILS
BUTT JOINT & PAVING TRANSITION DETAILS

SCALE: NONE | SHEET NO. 1 OF 8 SHEETS | STA. | TO STA.

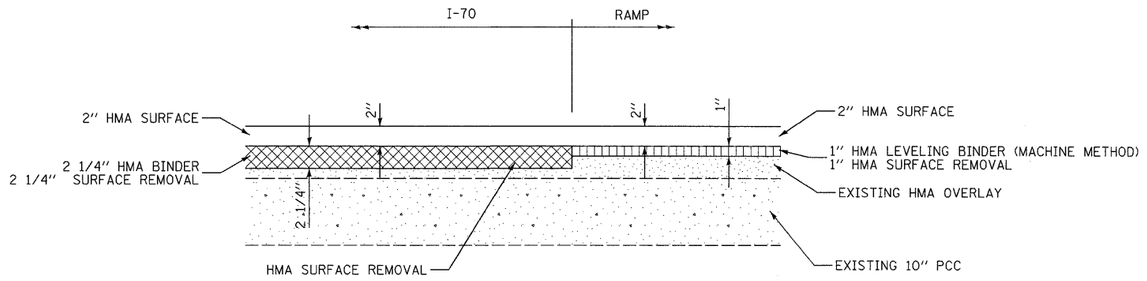
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
70	60-(5,6,7)RS, 60-(6,7)BR	MADISON	185	177
		CONTRACT NO. 76C56		
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		



7

BUTT JOINT DETAIL

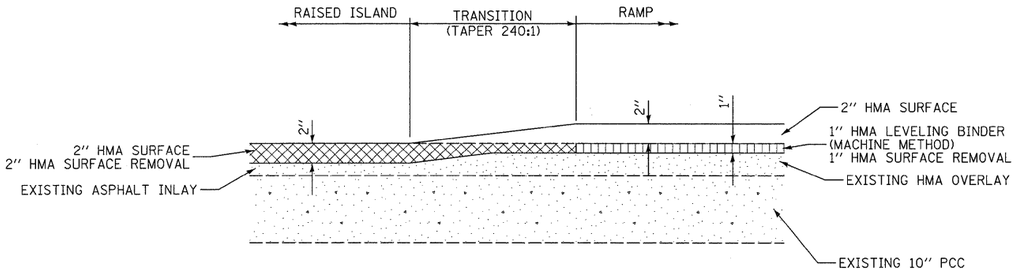
INTERFACE WITH EXISTING HMA INLAY OR EXISTING PCC PAVEMENT



8

SURFACING TRANSITION AT RAMPS

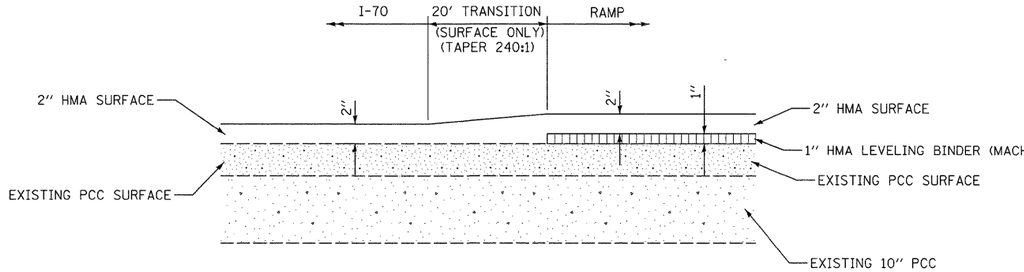
WITH HOT-MIX ASPHALT SURFACE REMOVAL



9

SURFACING TRANSITION AT RAMPS

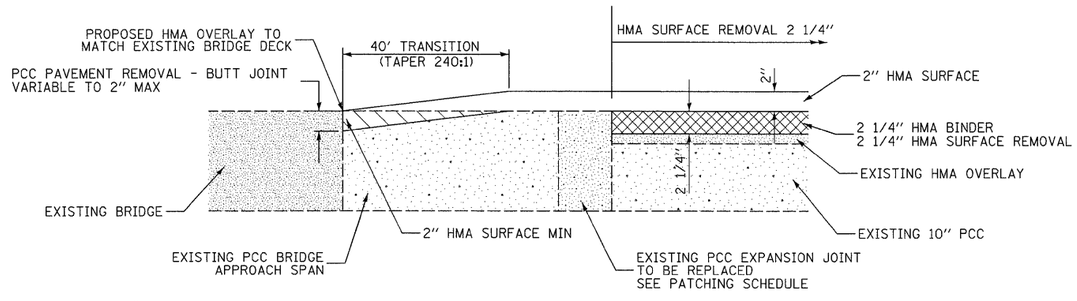
WITH RAISED ISLAND



10

SURFACING TRANSITION AT RAMPS

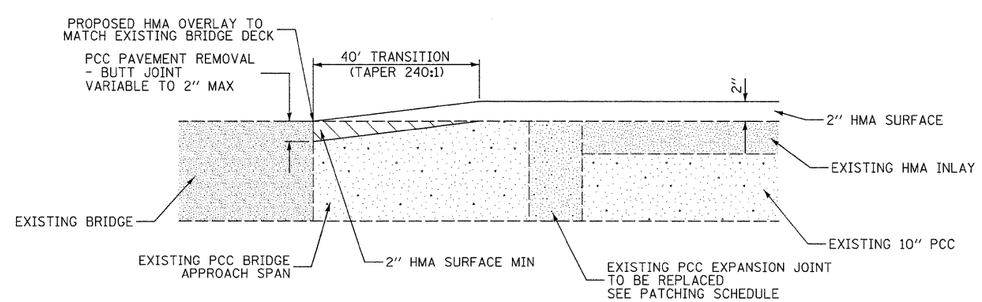
WITH PCC SURFACE



11

BUTT JOINT DETAIL

HMA REMOVAL WITH PCC BRIDGE APPROACH SPAN



12

BUTT JOINT DETAIL

INLAYED HMA WITH PCC BRIDGE APPROACH SPAN

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PLOT DRIVER = TR-Xerox6204-ToFile.plt

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	PLOT DATE = 9/16/2009 9:18:04 PM	DATE -	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

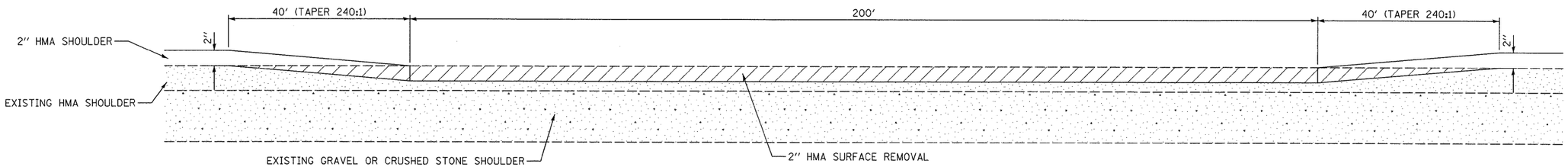
HORNER & SHIFRIN, INC. ENGINEERS

SCALE: NONE

SPECIAL DETAILS
BUTT JOINT & PAVING TRANSITION DETAILS

SHEET NO. 2 OF 8 SHEETS | STA. | TO STA.

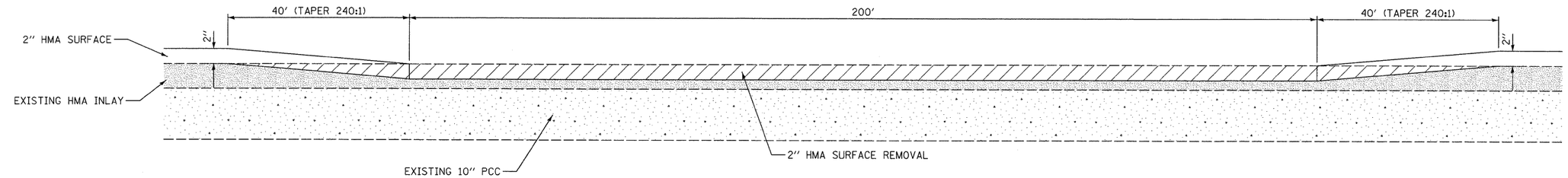
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
70	60-(5,6,7)RS, 60-(6,7)BR	MADISON	185	178
		CONTRACT NO. 76C56		
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		



DETAIL FOR RESURFACING SHOULDERS UNDER SN 060-0081

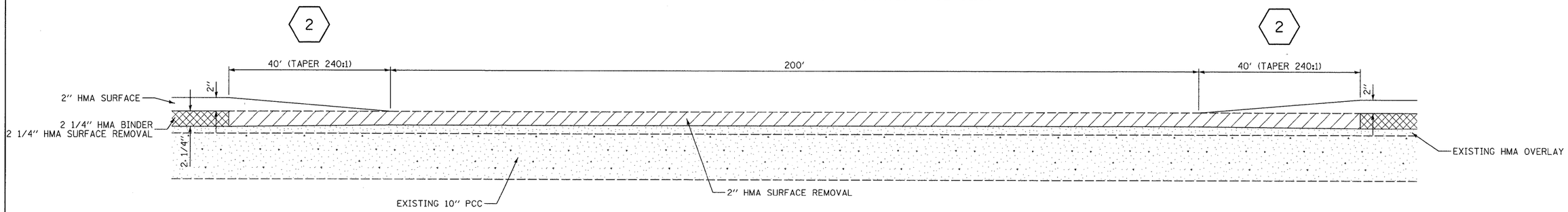
BLACK LANE

(WESTBOUND) STATION 399+21.59 TO STATION 402+01.59
(EASTBOUND) STATION 399+37.71 TO STATION 402+17.71



DETAIL FOR RESURFACING WB MAINLINE UNDER SN 060-0081

BLACK LANE
(WESTBOUND) STATION 399+21.59 TO STATION 402+01.59



2 1/4″ HMA SURFACE REMOVAL AND 2 1/4″ HMA BINDER

2″ HMA SURFACE REMOVAL AND 2″ HMA SURFACE

DETAIL FOR RESURFACING EB MAINLINE UNDER SN 060-0081

BLACK LANE
(EASTBOUND) STATION 399+37.71 TO STATION 402+17.71

NO MILLING OF PCC PAVEMENT AREAS
WITH THE EXCEPTION OF THE PCC PATCHES

LAST SAVED = 9/16/2009
PEN TABLE = V8.tbl
PLOT DRIVER = TR-Xerox6204-To-Filepilt

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	PLOT DATE = 9/16/2009 9:18:05 PM	DATE -	REVISED -

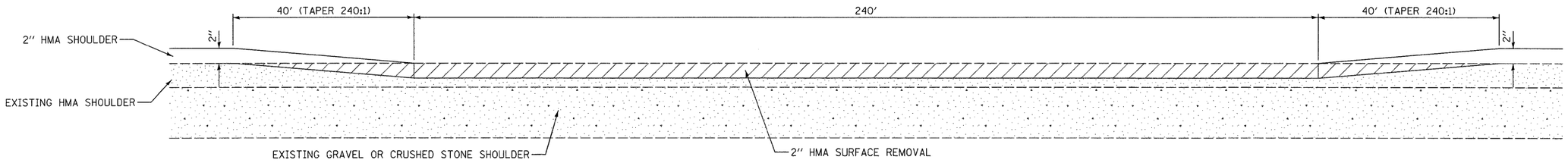
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

HORNER & SHIFRIN, INC. ENGINEERS

SPECIAL DETAILS
RESURFACING UNDER SN 060-0081 (BLACK LANE OVERPASS)

SCALE: NONE | SHEET NO. 3 OF 8 SHEETS | STA. | TO STA.

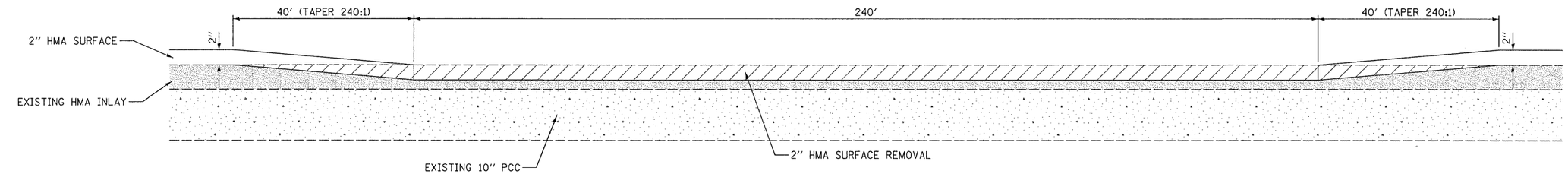
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
70	60-(5,6,7)RS, 60-(6,7)BR	MADISON	185	179
		CONTRACT NO. 76C56		
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		



DETAIL FOR RESURFACING SHOULDERS UNDER SN 060-0170

FAIRMONT LANE

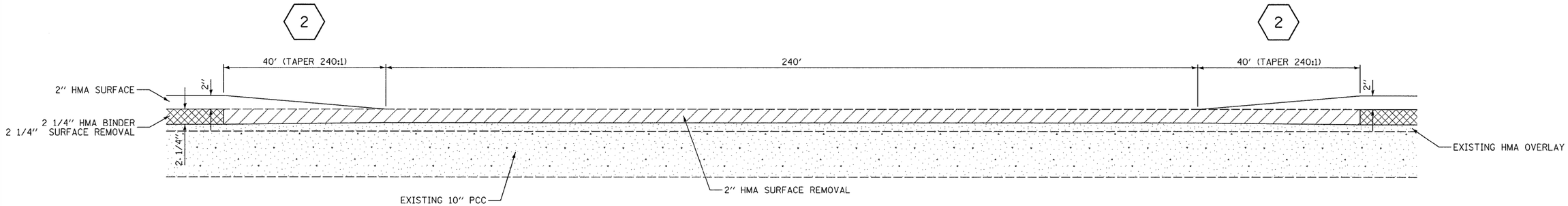
(WESTBOUND) STATION 414+98.34 TO STATION 418+18.34
(EASTBOUND) STATION 414+39.47 TO STATION 417+59.47



DETAIL FOR RESURFACING WB MAINLINE UNDER SN 060-0170

FAIRMONT LANE

(WESTBOUND) STATION 414+98.34 TO STATION 418+18.34



2 1/4" HMA SURFACE REMOVAL AND 2 1/4" HMA BINDER

2" HMA SURFACE REMOVAL AND 2" HMA SURFACE

DETAIL FOR RESURFACING EB MAINLINE UNDER SN 060-0170

FAIRMONT LANE

(EASTBOUND) STATION 414+39.47 TO STATION 417+59.47

NO MILLING OF PCC PAVEMENT AREAS
WITH THE EXCEPTION OF THE PCC PATCHES

LAST SAVED = 9/16/2009
PEN TABLE = VGLbw1
PLOT DRIVER = TR-Xerox6204-To-File.plt

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		DRAWN -	REVISED -
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	PLOT DATE = 9/16/2009 9:18:08 PM	DATE -	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

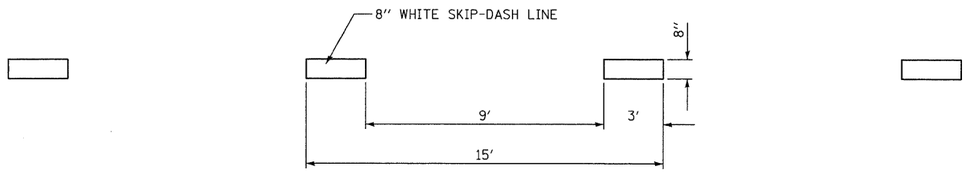
HORNER & SHIFRIN, INC ENGINEERS

SCALE: NONE

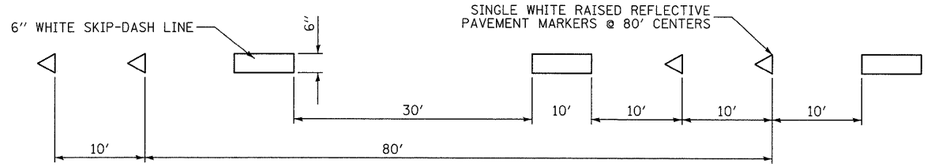
SPECIAL DETAILS
RESURFACING UNDER SN 060-0170 (FAIRMONT LANE OVERPASS)

SHEET NO. 4 OF 8 SHEETS STA. TO STA.

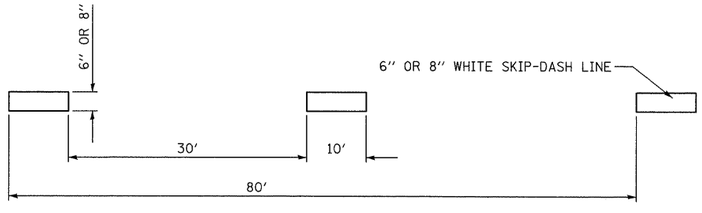
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
70	60-(5,6,7)RS, 60-(6,7)BR	MADISON	185	180
		CONTRACT NO. 76C56		
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		



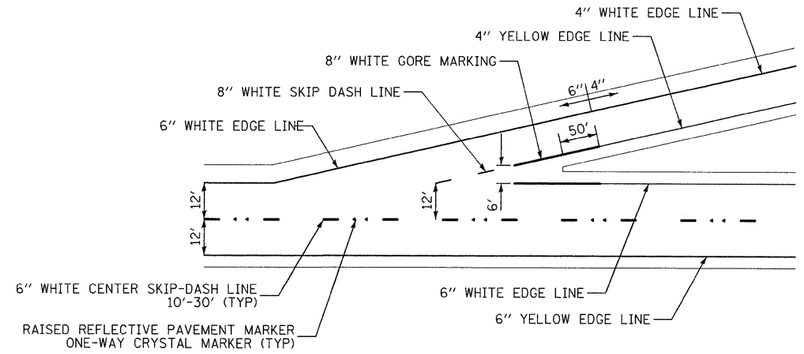
TYPICAL APPLICATION FOR WHITE SKIP-DASH AUXILIARY LANE LINE



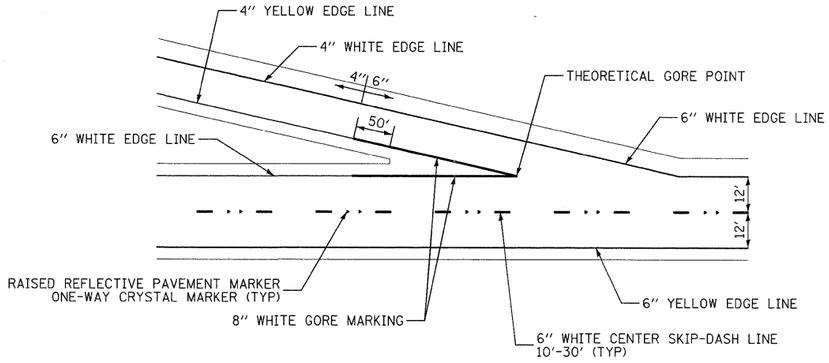
TYPICAL APPLICATION FOR WHITE SKIP-DASH LINE WITH RAISED REFLECTIVE PAVEMENT MARKERS



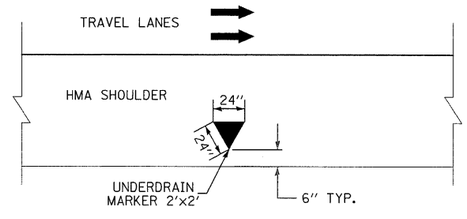
TYPICAL APPLICATION FOR WHITE SKIP-DASH LINE



TYPICAL ENTRANCE RAMP MARKINGS



TYPICAL EXIT RAMP MARKINGS



TYPICAL UNDERDRAIN HEADWALL MARKER DETAIL 24" WHITE-THERMOPLASTIC TRIANGLE

LAST SAVED = 9/16/2009
PEN TABLE = V8.tbl
PLOT DRIVER = TR-Xerox6204-To-File.plt

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	PLOT SCALE = 50.0023 ' / IN.	DRAWN -	REVISED -
	PLOT DATE = 9/16/2009 9:18:07 PM	CHECKED -	REVISED -
		DATE -	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

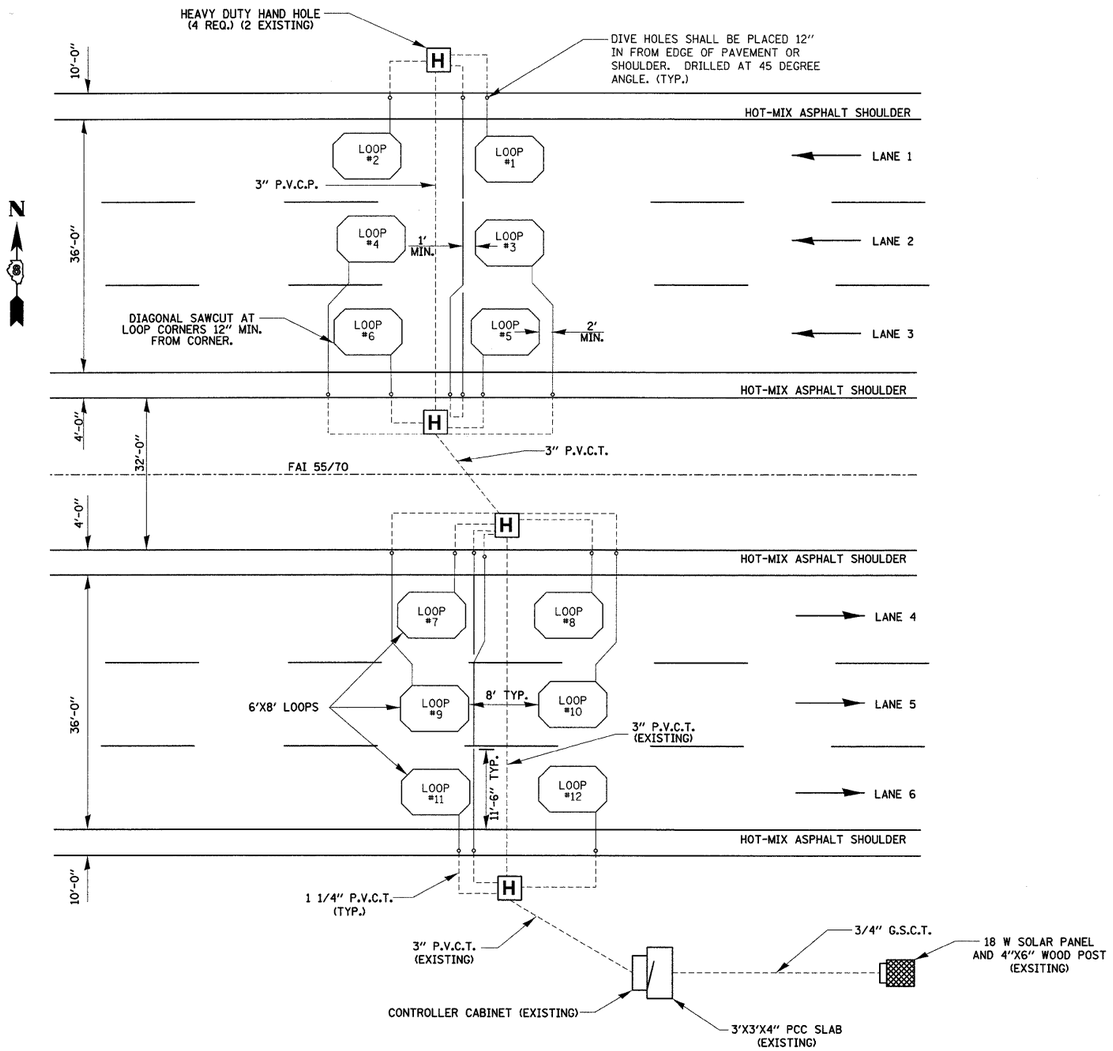
HORNER & SHIFRIN, INC. ENGINEERS

SPECIAL DETAILS
PAVEMENT MARKING DETAILS

SCALE: NONE | SHEET NO. 5 OF 8 SHEETS | STA. | TO STA.

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
70	60-(5,6,7)RS, 60-(6,7)BR	MADISON	185	181
		CONTRACT NO. 76C56		
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

LAYOUT FOR ATR 821
LOCATION: I55/70



NOTES:

599'-0" + to Black Lane structure.

Loops are 6' X 8' and are centered in the traffic lanes.

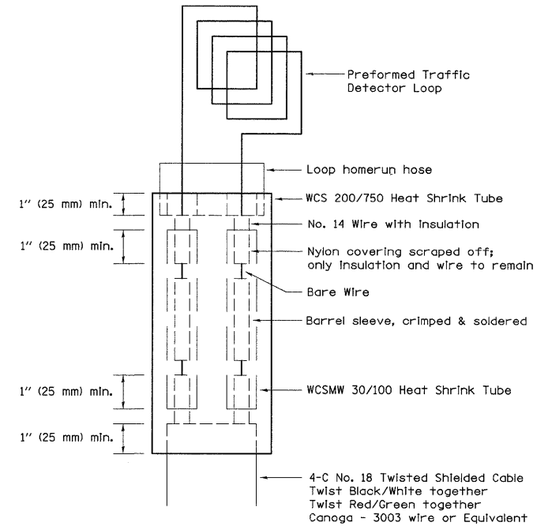
The loops shall be placed in the binder course prior to placement of HMA surface and shall be preformed (4 turns).

Not to scale.

Classification

CODE NO.	SCHEDULE OF QUANTITIES	UNIT	QUANTITY
88600100	DETECTOR LOOP, TYPE I	FOOT	438
81400200	HEAVY-DUTY HANDHOLE	EACH	2
X0323014	ELECTRIC CABLE IN CONDUIT, CONOGA- 30003	FOOT	1272
81021350	CONDUIT PUSHED, 3" PVC	FOOT	54
81900200	TRENCH AND BACKFILL FOR ELECTRICAL WORK	FOOT	140
81012800	CONDUIT IN TRENCH, 3"PVC	FOOT	24
81012400	CONDUIT IN TRENCH, 1 1/4" PVC	FOOT	140
X0323015	PIEZO ELECTRIC AXLE SENSOR, CLASS II	FOOT	69
87900200	DRILL EXISTING HANDHOLE	EACH	7

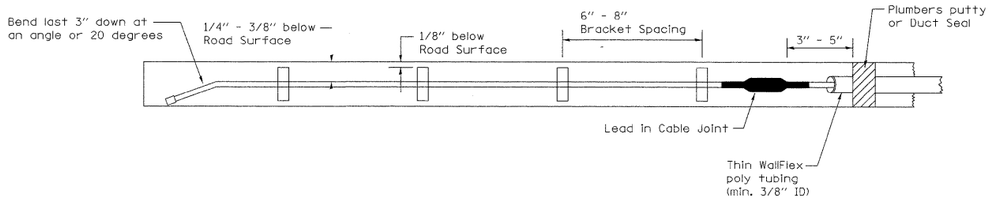
LOOP SPLICING DETAIL (CANOGA 30003)



Minimum 1" (25 mm) Heat Shrink Tube overlap on wire.
PVC & Shielded cable to form water tight seal.

Not to Scale

PIEZO DETAIL



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	PLOT DATE = 9/16/2009 9:18:08 PM	DATE -	REVISED -

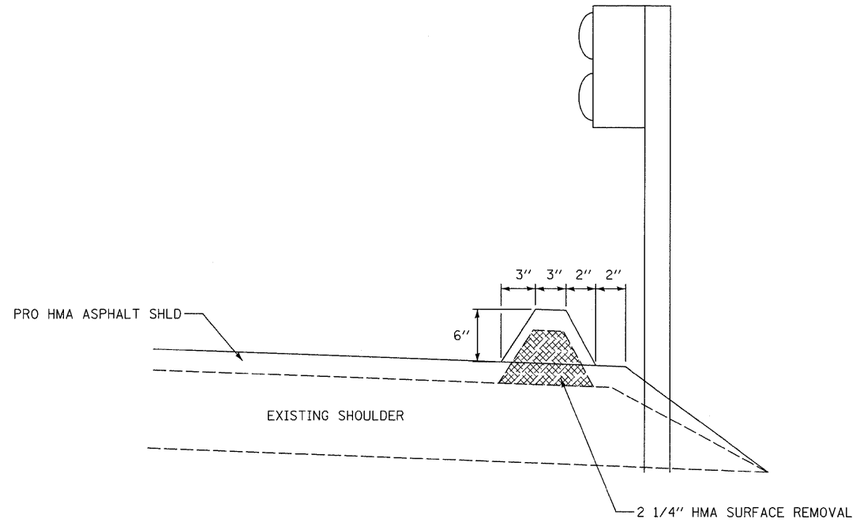
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

HORNER & SHIFRIN, INC. ENGINEERS

SPECIAL DETAILS
LOOP DETECTOR DETAILS

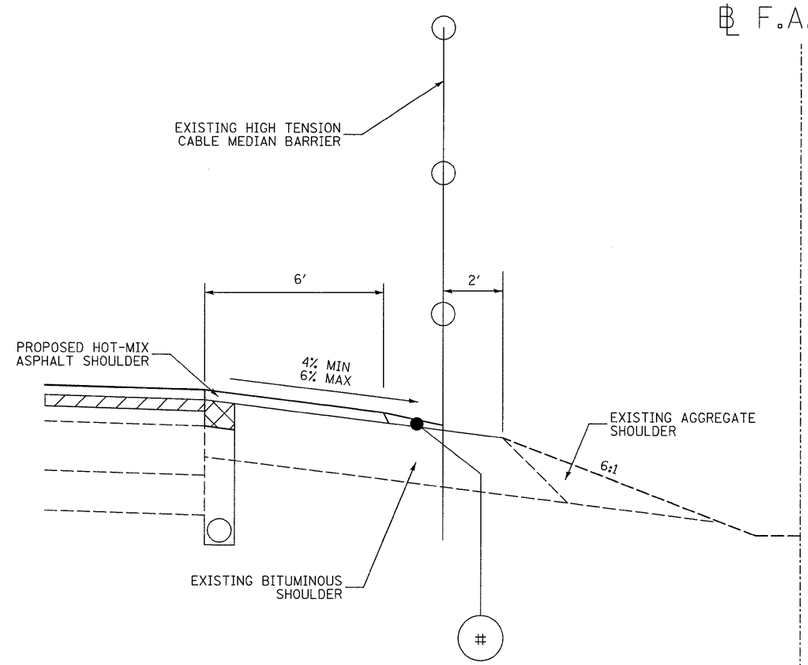
SCALE: NONE | SHEET NO. 6 OF 8 SHEETS | STA. | TO STA.

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
70	60-(5,6,7)RS, 60-(6,7)BR	MADISON	185	182
		CONTRACT NO. 76C56		
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		



EROSION CONTROL CURB DETAIL

℄ F.A.I. 70



TAPER FROM 2″ TO 3/4″ IN 2′ SLOPE VARIES

HOT-MIX ASPHALT TAPER AT CABLE MEDIAN BARRIER DETAIL

LAST SAVED = 9/16/2009
PEN TABLE = = V8.tbl
PLOT DRIVER = TR-Xerox6204-To-File.plt

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	PLOT DATE = 9/16/2009 9:18:08 PM	CHECKED -	REVISED -
		DATE -	REVISED -

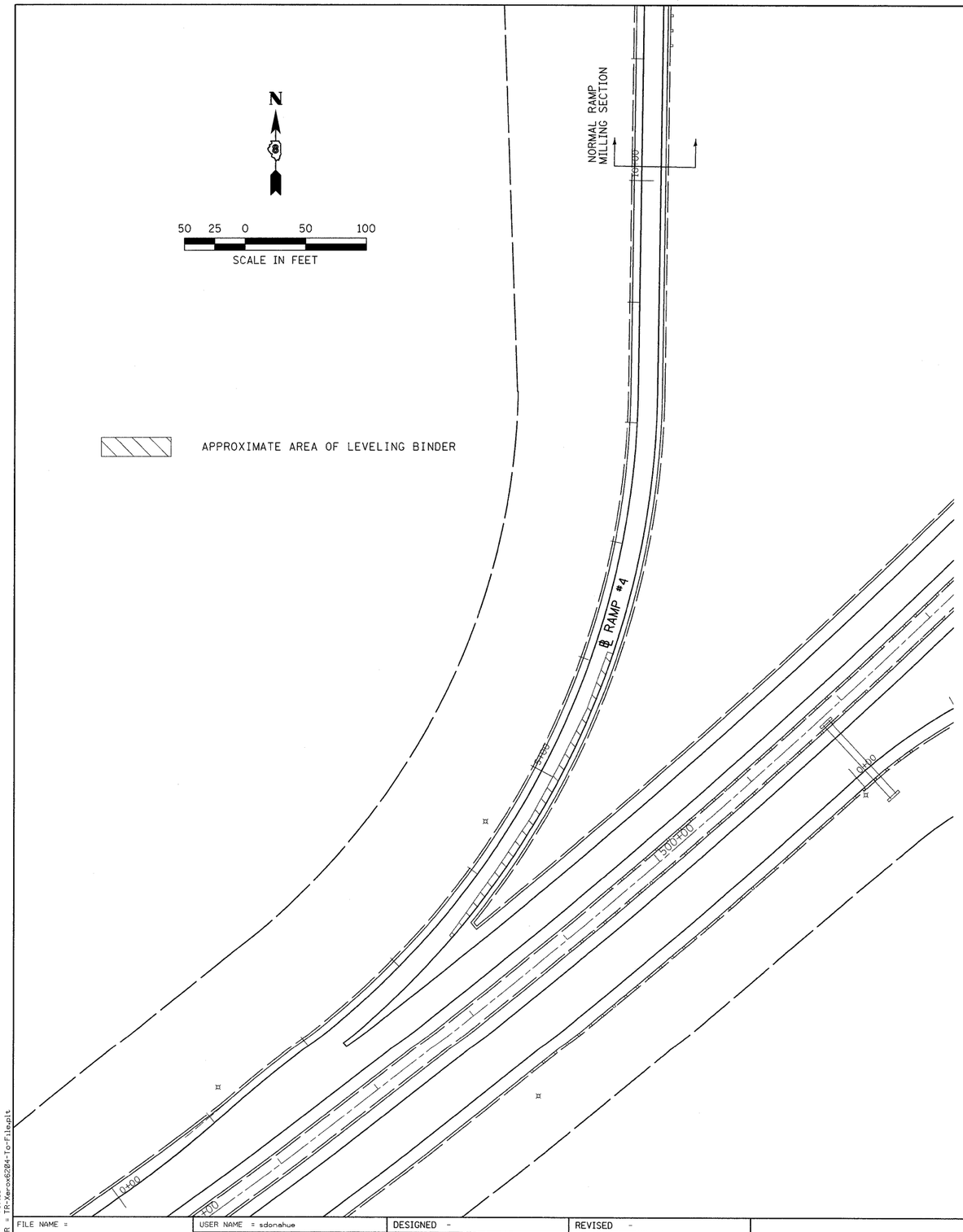
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

HORNER & SHIFRIN, INC. ENGINEERS

SPECIAL DETAILS
CURB DETAILS

SCALE: NONE | SHEET NO. 7 OF 8 SHEETS | STA. | TO STA.

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
70	60-(5,6,7)RS, 60-(6,7)BR	MADISON	185	183
		CONTRACT NO. 76C56		
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		



IL 157 / I-70 INTERCHANGE RAMP 4
SUPERELEVATION CORRECTION

STATION	EXISTING CROSS SLOPE	DESIRED CROSS SLOPE	LEFT EOP CORRECTION	MIN RIGHT EOP CORRECTION	DESIRED RIGHT EOP CORRECTION
	%	%	INCHES	INCHES	INCHES
1+07.59	2.20	2.24	0.00	-0.08	-0.08
1+11.29	2.24	2.31	0.00	-0.14	-0.14
1+60.96	1.58	3.25	0.00	-2.50	-3.21
2+01.95	1.68	4.03	0.00	-2.50	-4.51
2+11.20	1.70	4.21	0.00	-2.50	-4.81
2+57.53	2.22	5.09	0.00	-2.50	-5.51
3+11.42	2.29	6.11	0.00	-2.50	-7.34
3+31.95	2.25	8.00	0.00	-2.50	-11.04
3+46.59	2.22	8.00	0.50	-2.50	-10.60
3+60.81	1.94	8.00	0.75	-2.50	-10.89
4+10.85	1.60	8.00	1.25	-2.50	-11.04
4+61.01	3.05	8.00	1.75	-2.50	-7.75
5+10.97	5.93	8.00	1.25	-2.50	-2.73
5+61.54	7.61	8.00	0.75	0.25	0.00
6+11.02	7.57	8.00	0.25	-0.58	-0.58
6+61.17	7.35	8.00	0.00	-1.25	-1.25
7+10.43	7.73	8.00	0.00	-0.52	-0.52
7+61.59	8.20	8.00	0.00	0.38	0.38
7+92.27	7.60	8.00	0.00	-0.77	-0.77
8+11.37	7.22	7.15	0.00	0.14	0.14
8+36.32	5.56	6.04	0.00	-0.92	-0.92
8+61.48	4.11	4.92	0.00	-1.55	-1.55
9+10.87	1.90	2.72	0.00	-1.57	-1.57
9+38.27	1.40	1.50	0.00	-0.19	-0.19
9+61.01	0.99	1.50	0.00	-0.98	-0.98
10+11.17	0.90	1.50	0.00	-1.15	-1.15

POSITIVE NUMBERS REPRESENT AMOUNT OF LEVELING BINDER

NEGATIVE NUMBERS REPRESENT HMA SURFACE REMOVAL WITHOUT LEVELING BINDER REPLACEMENT

BETWEEN STATIONS 1+07.59 AND 10+11.17 TWO INCHES OF SURFACE SHOULD BE PAVED OVER THE PREPARED EXISTING SURFACE

COLUMNS LABELED "DESIRED CROSS SLOPE" AND "DESIRED EOP CORRECTION" ARE USED SINCE EXISTING DEPTH OF HMA OVERLAY WAS NOT KNOWN AT THE TIME WHEN THE PLANS WERE PREPARED. EXISTING PLANS SUGGEST THAT A MIN OF 2.5" OF HMA OVERLAY IS PRESENT. ACTUAL DEPTH OF EXISTING HMA PRESENT MAY BE GREATER THAN 2.5" BECAUSE OF OVERLAP IN PAST RESURFACING PROJECTS.

CONTRACTOR SHOULD MILL HMA DOWN TO DESIRED CROSS SLOPE OR UNTIL UNDERLYING CONCRETE PAVEMENT IS REACHED.

CARE SHOULD BE GIVEN TO INSURE THAT DRASTIC CHANGES IN SUPERELEVATION ARE NOT REALIZED BETWEEN CONSECUTIVE STATIONS.

SHOULDERS SHOULD BE MILLED TO ALLOW FOR SUFFICIENT DRAINAGE ONCE FINAL MILLING DEPTH IS ESTABLISHED.

LAST SAVED = 9/16/2009
PEN TABLE = V8.tbl
PLOT DRIVER = TR-Xerox6204-Tor-File.plt

FILE NAME = i:\08090\Work_Order_3\Cad\T_Plans\D876C56-Sht-Details.dgn	USER NAME = sdonahue	DESIGNED -	REVISED -
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	PLOT SCALE = 50.0023 ' / IN.	CHECKED -	REVISED -
	PLOT DATE = 9/16/2009 9:18:08 PM	DATE -	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

HORNER & SHIFRIN, INC. ENGINEERS

SPECIAL DETAILS
RAMP MILLING

SCALE: NONE | SHEET NO. 8 OF 8 SHEETS | STA. | TO STA.

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
70	60-(5,6,7)RS, 60-(6,7)BR	MADISON	185	184
		CONTRACT NO. 76C56		
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

1.5" Radius, 0.5" Border, White on Green;
[W EST] B 2K 43% spacing;
[MILE] C 2K; [18] C 2K; [.2] C 2K;
Table of widths and spaces.

	W		E		S		T	
2.6	4.3	0.8	2.3	0.3	2.6	0.2	2.3	2.6

	55-70	
0.9	16.2	0.9

	M		I		L		E	
1.8	4.0	1.3	0.8	1.3	3.1	0.8	3.1	1.8

	1		8	
5.2	1.7	1.4	4.5	5.2

	—	
-0.0	18.0	0.0

	.		2	
4.7	1.3	0.8	4.5	6.7

1.5" Radius, 0.5" Border, White on Green;
[E AST] B 2K 43% spacing;
[MILE] C 2K; [18] C 2K; [.2] C 2K;
Table of widths and spaces.

	E		A		S		T	
3.2	2.5	0.5	3.3	0.2	2.6	0.2	2.3	3.2

	55-70	
0.9	16.2	0.9

	M		I		L		E	
1.8	4.0	1.3	0.8	1.3	3.1	0.8	3.1	1.8

	1		8	
5.2	1.7	1.4	4.5	5.2

	—	
-0.0	18.0	0.0

	.		2	
4.7	1.3	0.8	4.5	6.7

NOTE ".2" IS CENTER ABOUT THE "2" WITH NO REGARD TO THE DECIMAL.

STATION	SIGN PANEL - TYPE 1		METAL POST - TYPE B
	EB	WB	
	SQ FT	SQ FT	FOOT
465+56	7.5	7.5	16
479+12	7.5	7.5	16
489+68	7.5	7.5	16
500+24	7.5	7.5	16
510+80	7.5	7.5	16
521+36	7.5	7.5	16
531+92	7.5	7.5	16
542+48	7.5	7.5	16
553+04	7.5	7.5	16
563+60	7.5	7.5	16
SUB-TOTAL	75	75	160
TOTALS	150		

NOTES:

THE RESIDENT ENGINEER WILL CONTACT JEFF ABEL (618-346-3283) FOR EXACT PLACEMENT OF SIGNS.

SIGNS SHALL BE PLACED IN THE CENTER OF THE MEDIAN, BACK-TO-BACK ON ONE POST.

FILE NAME = c:\pw_work\PWIDOT\CONOVERPJ\d0133026\d876c56-sht-sign.dgn	USER NAME = conoverpj	DESIGNED - ___	REVISED - ___
		DRAWN - ___	REVISED - ___
	PLOT SCALE = 50.0000 ' / IN.	CHECKED - ___	REVISED - ___
	PLOT DATE = 10/7/2009	DATE - ________	REVISED - ___

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

MILE MARKER PANEL DETAILS

SCALE: ________ SHEET NO. __ OF ___ SHEETS STA. _________ TO STA. _________

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
70	60-(5,6,7)RS, 60-(6,7)BR	MADISON	185	185

CONTRACT NO. 76C56

FED. ROAD DIST. NO. _ ILLINOIS FED. AID PROJECT