

INSIDE ELEVATION OF PARAPET SPAN 23 AND 24

North parapet - Shown
South parapet - Similar

* Field cut bars when needed to keep 2" clear concrete cover.

MINIMUM BAR LAP

#4 bar - 2'-5"

Note:

See sheet 86 of 292 for parapet joint details and notes.

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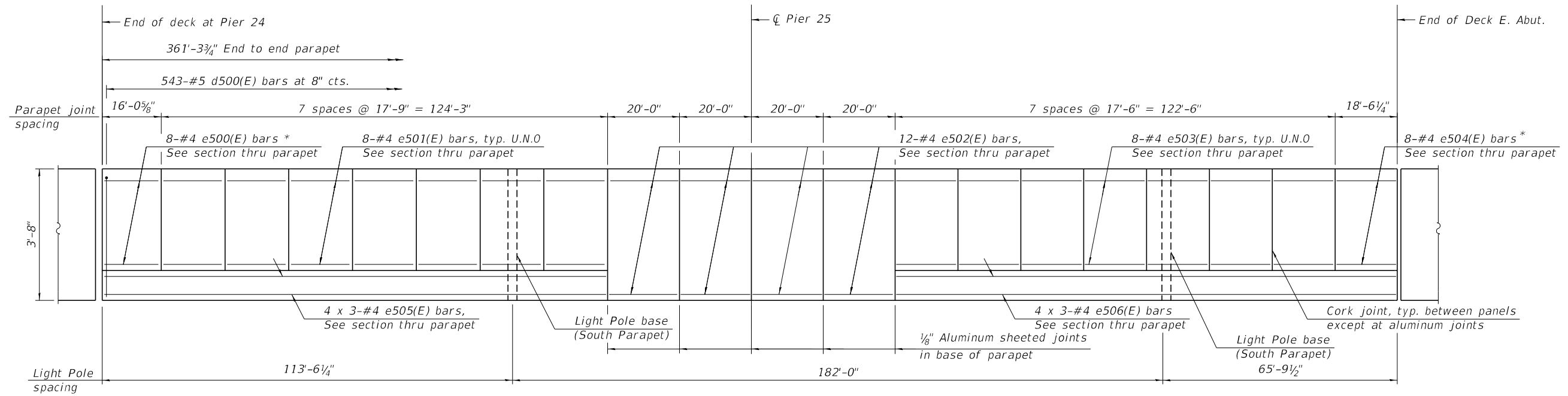
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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PARAPET ELEVATION UNIT 4 - 3
STRUCTURE NO. 060-0350 (EB)

SHEET 88 OF 292 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	301
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				



* Field cuts bars when needed to keep 2" clear concrete cover.

INSIDE ELEVATION OF PARAPET SPAN 25 AND 26

North parapet - Shown
South parapet - Similar

MINIMUM BAR LAP

#4 bar = 2'-5"

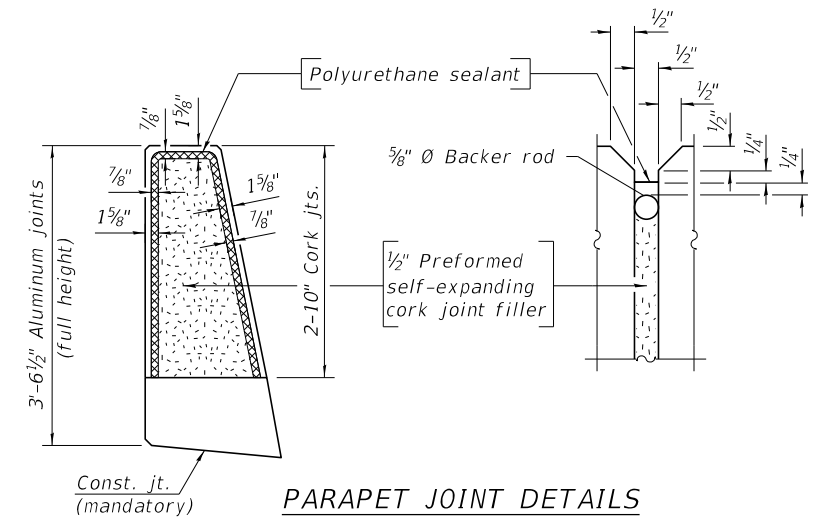
Notes:

Dimensions are along inside face of parapet at gutter line.

Bars indicated thus 4 x 3-#4 etc. indicate 4 lines of bars with 3 lengths per line.

The 1/8" aluminum sheet shall be ASTM B 209 alloy 3003-H14 and coated to minimize reaction with wet concrete. Cost included with Concrete Superstructure.

The polyurethane sealant shall be according to Article 1050.04 of the Std. Spec. and the color shall be gray.



PARAPET JOINT DETAILS

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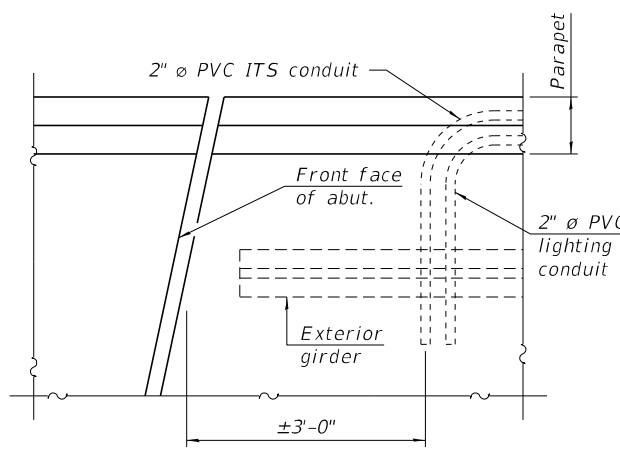
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**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

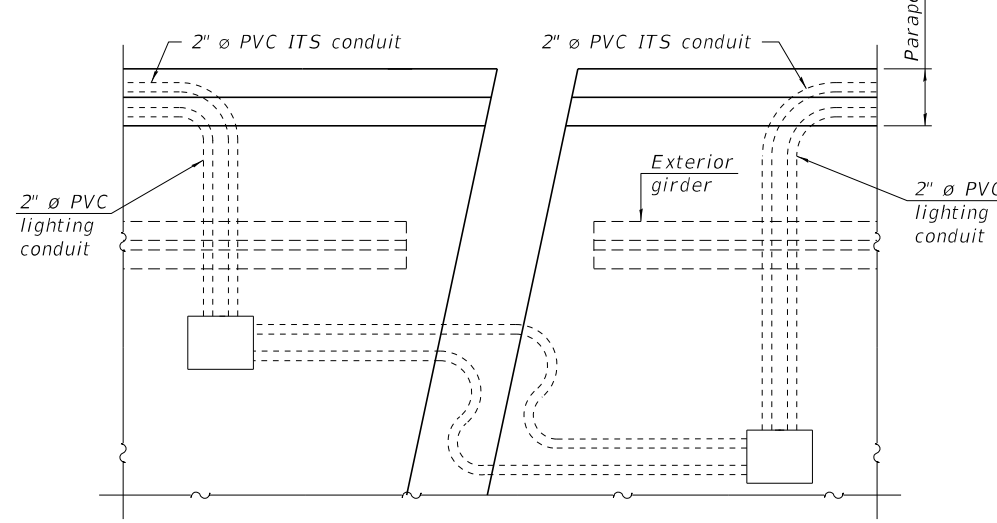
**PARAPET ELEVATION UNIT 5
STRUCTURE NO. 060-0350 (EB)**

SHEET 89 OF 292 SHEETS

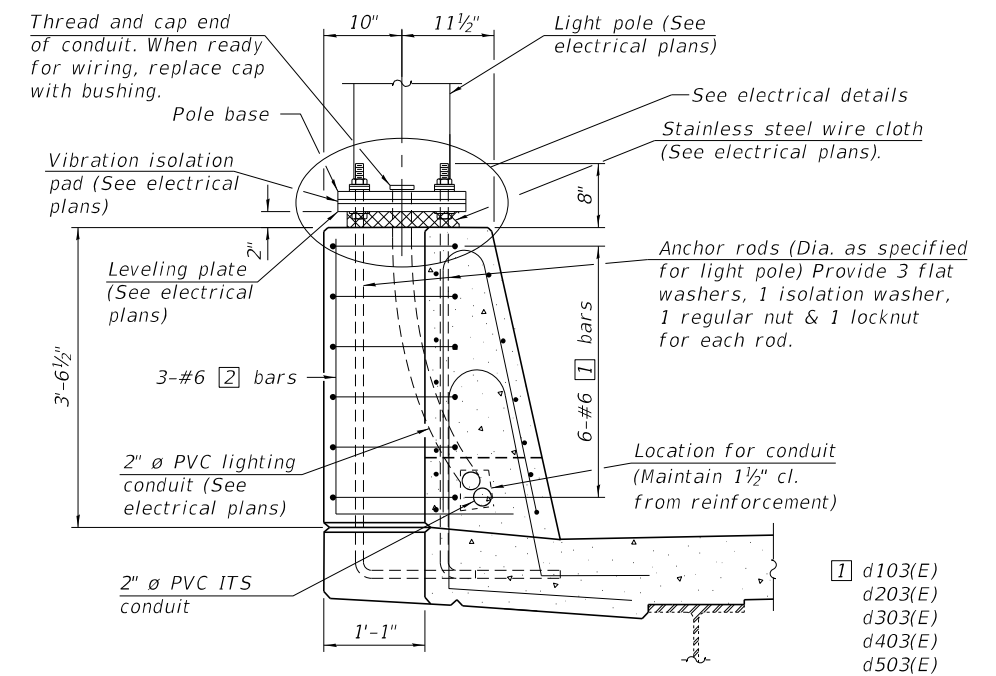
F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	302
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				



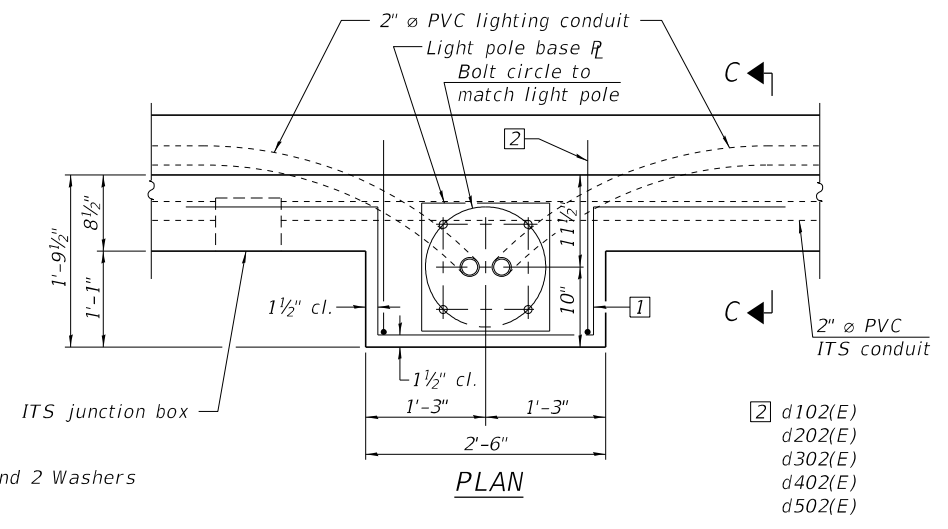
TYPICAL PLAN OF CONDUITS AT ABUTMENT
(West abutment shown, east abutment similar)



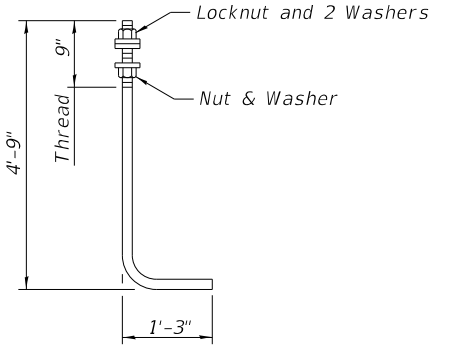
Part Plan at Pier



SECTION C-C
MINIMUM BAR LAP
#4 bar = 2'-5"

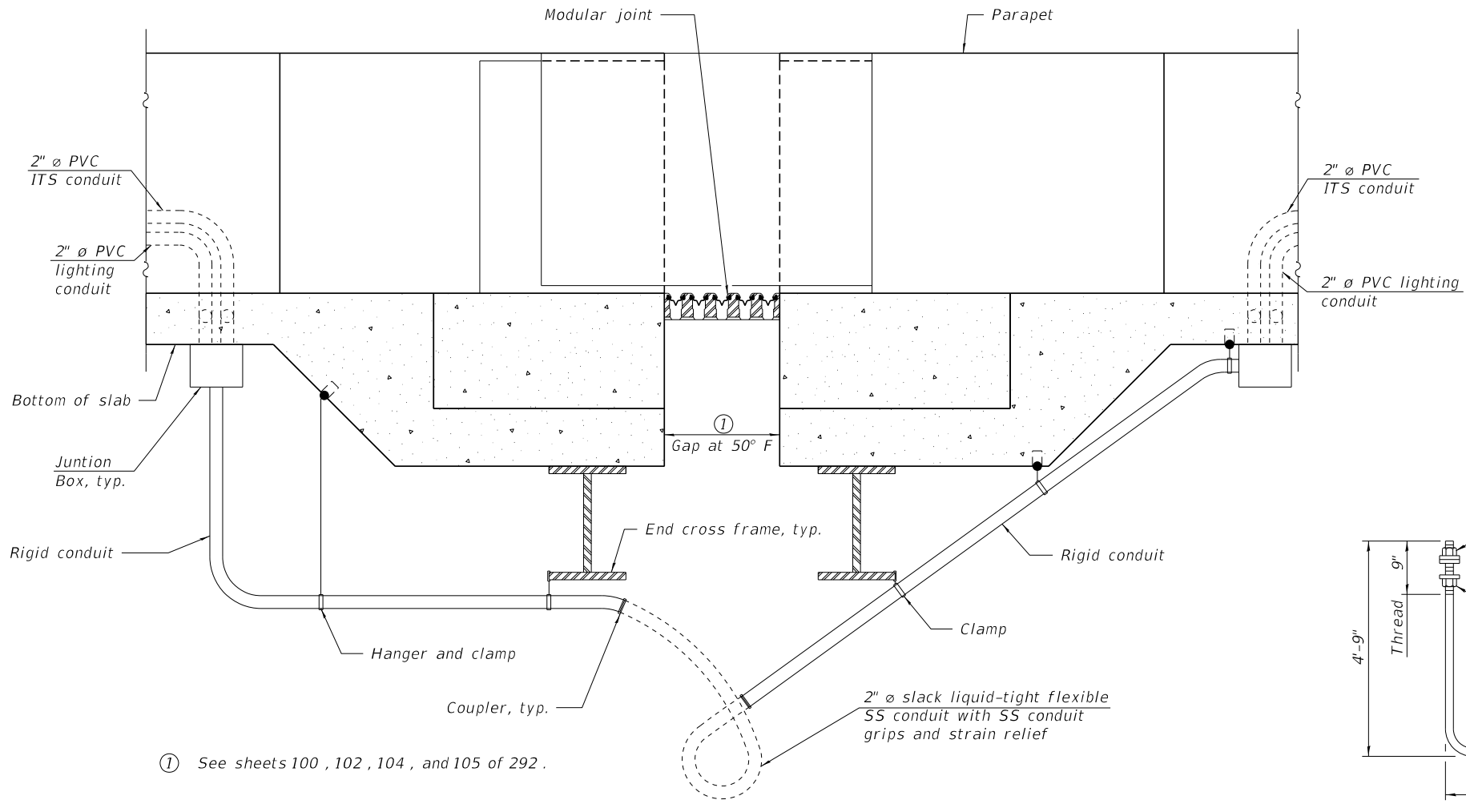


PLAN



ANCHOR ROD
Diameter as specified for light poles.
(ASTM F 1554 Grade 105)

Notes:
Cost of anchor rods and conduit is included with Concrete Superstructure.
See Electrical Plans and specifications for locations and frequency of conduit supports.



PART ELEVATION OF PARAPET AT PIER 3, 10, 17 AND 24

① See sheets 100, 102, 104, and 105 of 292.

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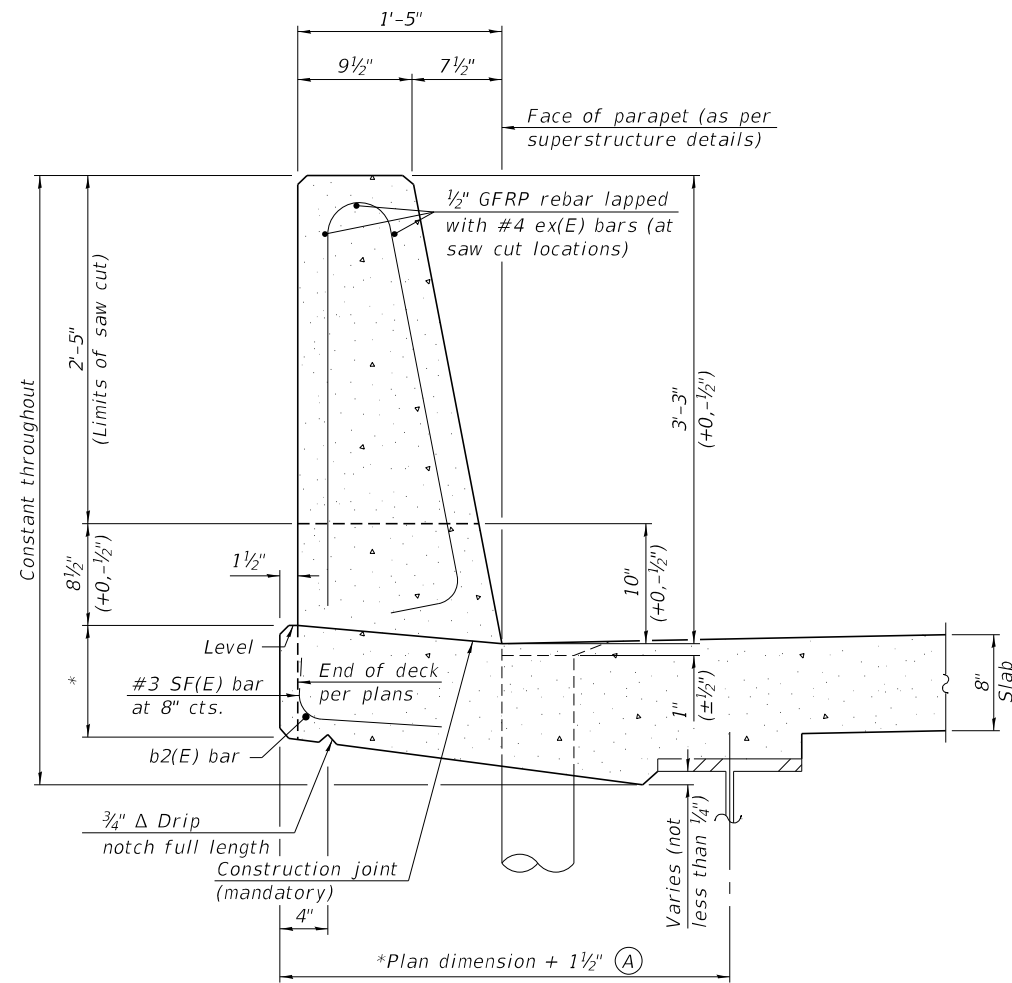
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

LIGHT POLE BASE DETAILS
STRUCTURE NO. 060-0350 (EB)

SHEET 90 OF 292 SHEETS

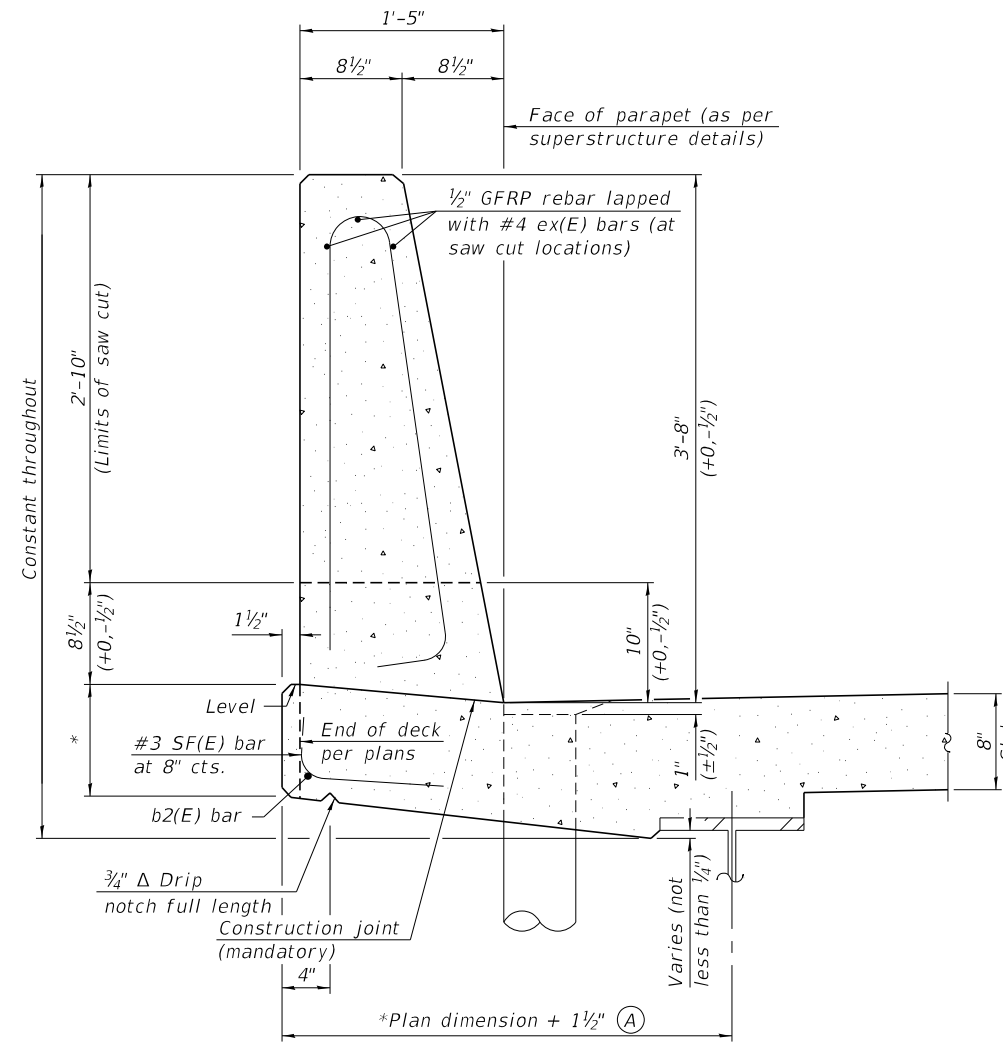
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270	60B-1	MADISON	875	303
CONTRACT NO. 76190				

ILLINOIS FED. AID PROJECT



**39" CONSTANT-SLOPE
PARAPET SECTION**

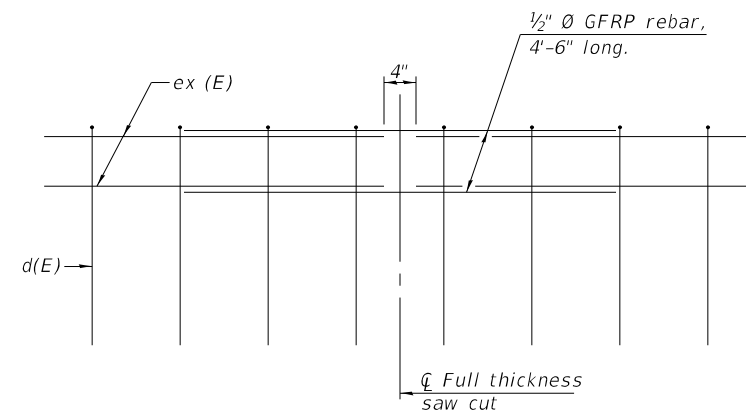
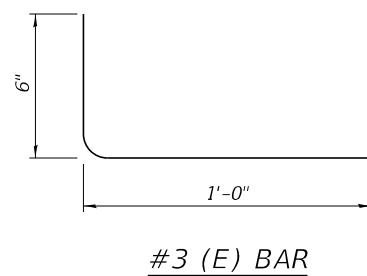
(Showing dimensions, d(E), and 1/2" Ø GFRP rebar)



**44" CONSTANT-SLOPE
PARAPET SECTION**

(Showing dimensions, d(E), and 1/2" Ø GFRP rebar)

*See Superstructure Details.



GFRP REBAR STIFFENING DETAIL

(Place as shown in parapet section at each parapet joint location.)

Notes:
All dimensions shall remain the same as shown on superstructure details, except dimension A which is to be revised as shown. Additional concrete needed to revise dimension A = 0.00348 cu. yds./ft. for 39" and 44" parapets.
Place full depth aluminum sheets as shown on superstructure details.
Replace all cork joint filler locations with a full thickness saw cut.
Steel superstructure shown. Other superstructure types similar.

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SFP 39-44

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**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

**CONCRETE PARAPET SLIPFORMING OPTION
STRUCTURE NO. 060-0350 (EB)**

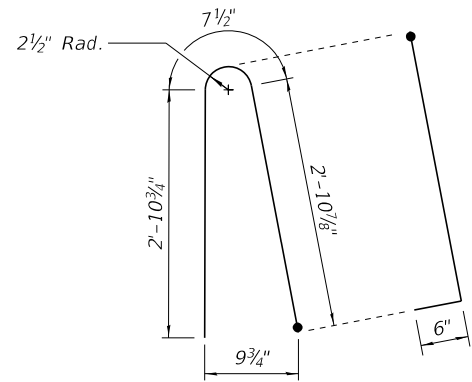
SHEET 91 OF 292 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				

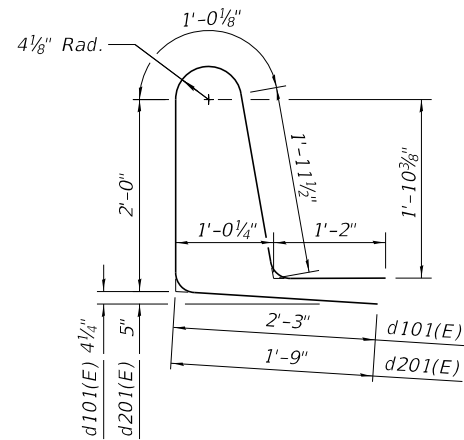
**UNIT 1
SUPERSTRUCTURE
BILL OF MATERIAL**

Bar	No.	Size	Length	Shape
a100(E)	2040	#5	35'-1"	—
a101(E)	1968	#5	24'-7"	—
a102(E)	2040	#6	8'-4"	—
a103(E)	30	#7	9'-11"	—
a104(E)	15	#7	25'-10"	—
a105(E)	24	#7	36'-5"	—
a106(E)	96	#5	1'-6"	—
b100(E)	1065	#5	28'-10"	—
b101(E)	1152	#5	27'-3"	—
b102(E)	256	#6	43'-10"	—
d100(E)	1150	#5	6'-11"	—
d101(E)	1150	#5	8'-5"	—
d102(E)	6	#6	5'-3"	—
d103(E)	12	#6	8'-11"	—
e100(E)	16	#4	19'-5"	—
e101(E)	128	#4	19'-4"	—
e102(E)	96	#4	19'-8"	—
e103(E)	112	#4	14'-11"	—
e104(E)	16	#4	18'-10"	—
e105(E)	64	#4	26'-5"	—
e106(E)	32	#4	28'-5"	—
x100(E)	65	#5	6'-5"	—
x101(E)	65	#5	10'-4"	—
x102(E)	65	#5	6'-6"	—
Reinforcement Bars, Epoxy Coated		Lbs.	261,950	
Concrete Superstructure		Cu. Yds.	1,049.6	

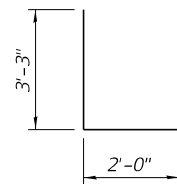
Bars indicated thus 1 x 2-#4 etc. indicates 1 line of bars with 2 lengths per line.



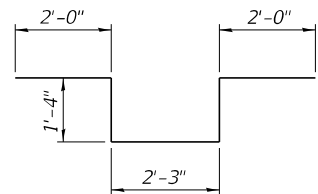
BAR d100(E) AND d200(E)



BAR d101(E) AND d201(E)



BAR d102(E) AND d202(E)

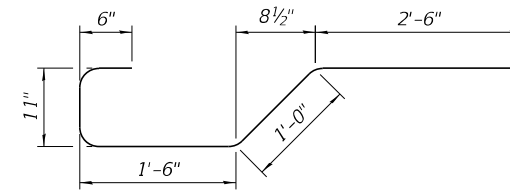


BAR d103(E) AND d203(E)

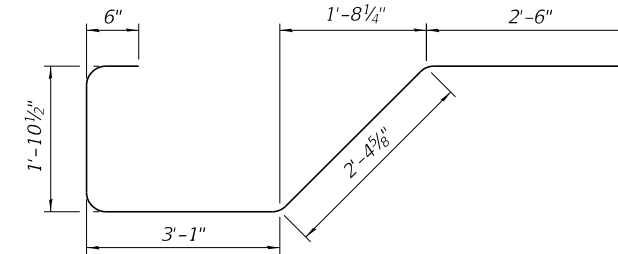
**UNIT 2
SUPERSTRUCTURE
BILL OF MATERIAL**

Bar	No.	Size	Length	Shape
a200(E)	2696	#5	35'-1"	—
a201(E)	2799	#5	24'-7"	—
a202(E)	8440	#6	8'-4"	—
a203(E)	4859	#5	58'-6"	—
a204(E)	12	#7	25'-10"	—
a205(E)	16	#7	36'-5"	—
a206(E)	18	#7	10'-4"	—
a207(E)	4	#7	9'-1"	—
a208(E)	4	#7	59'-10"	—
a209(E)	10	#7	57'-6"	—
a210(E)	216	#5	1'-6"	—
b200(E)	3848	#5	30'-0"	—
b201(E)	4432	#5	27'-10"	—
b202(E)	1600	#6	60'-0"	—
d200(E)	4748	#5	6'-11"	—
d201(E)	4748	#5	7'-11"	—
d202(E)	27	#6	5'-3"	—
d203(E)	54	#6	8'-11"	—
e200(E)	144	#4	18'-5"	—
e201(E)	576	#4	17'-0"	—
e202(E)	144	#4	16'-9"	—
e203(E)	576	#4	19'-8"	—
e204(E)	56	#4	26'-3"	—
e205(E)	240	#4	28'-3"	—
e206(E)	48	#4	27'-7"	—
e207(E)	64	#4	16'-7"	—
e208(E)	56	#4	17'-9"	—
e209(E)	8	#4	20'-8"	—
e210(E)	16	#4	14'-10"	—
x200(E)	123	#5	10'-4"	—
x201(E)	123	#5	7'-8"	—
Reinforcement Bars, Epoxy Coated		Lbs.	1,072,270	
Concrete Superstructure		Cu. Yds.	3,166.9	

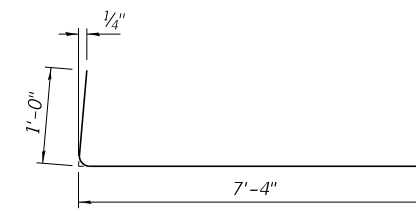
Bars indicated thus 1 x 2-#4 etc. indicates 1 line of bars with 2 lengths per line.



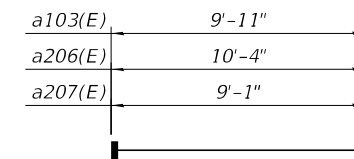
BAR x100(E)



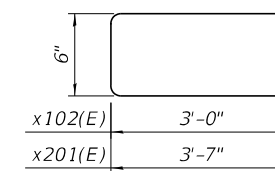
BAR x101(E) AND x200(E)



BAR a102(E) AND a202(E)

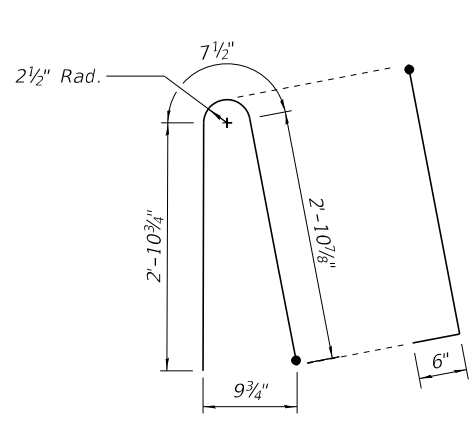


**BAR a103(E), a206(E), AND a207(E)
(Headed)**

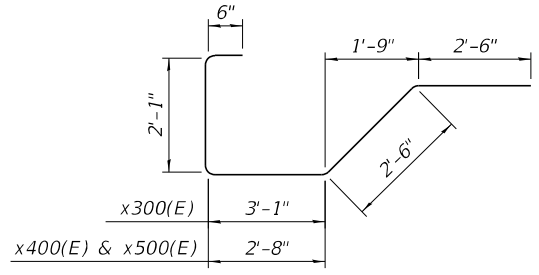


BAR x102(E) AND x201(E)

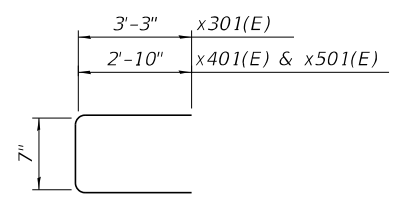
Notes:
Headed bars shall conform to ASTM A970 with threaded attachment; Class HA; and reinforcement bars conforming to ASTM A706. Cost included with Reinforcement Bars, Epoxy Coated.



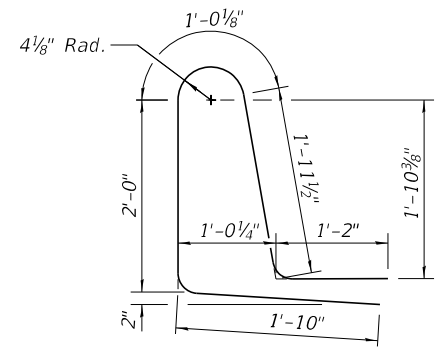
BAR d300(E), d400(E) AND d500(E)



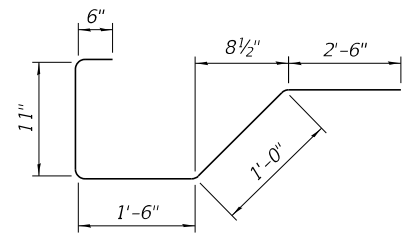
BAR x300(E), x400(E) AND x500(E)



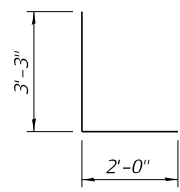
BAR x301(E), x401(E) AND x501(E)



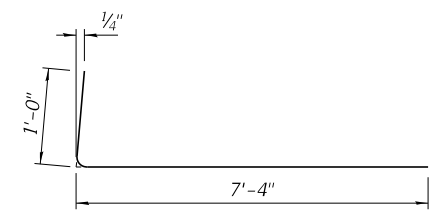
BAR d301(E), d401(E) AND d501(E)



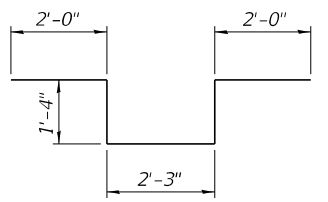
BAR x502(E)



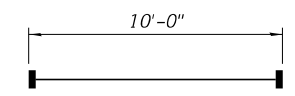
BAR d302(E), d402(E) AND d502(E)



BAR a302(E), a402(E) AND a502(E)



BAR d303(E), d403(E) AND d503(E)



BAR a304(E), a404(E) AND a504(E)
(Headed)

Notes:
Headed bars shall conform to ASTM A970 with threaded attachment; Class HA; and reinforcement bars conforming to ASTM A706. Cost included with Reinforcement Bars, Epoxy Coated.

UNIT 3
SUPERSTRUCTURE
BILL OF MATERIAL

Bar	No.	Size	Length	Shape
a300(E)	4176	#5	58'-6"	—
a301(E)	2891	#5	58'-6"	—
a302(E)	8352	#6	8'-4"	L
a303(E)	240	#5	1'-6"	—
a304(E)	30	#5	10'-0"	—
a305(E)	30	#7	59'-9"	—
b300(E)	2046	#5	50'-11"	—
b301(E)	2244	#5	49'-6"	—
b302(E)	1650	#6	48'-7"	—
d300(E)	4700	#5	7'-0"	U
d301(E)	4700	#5	8'-0"	U
d302(E)	24	#6	5'-3"	L
d303(E)	48	#6	8'-11"	U
e300(E)	32	#4	17'-8"	—
e301(E)	224	#4	19'-0"	—
e302(E)	576	#4	19'-8"	—
e303(E)	720	#4	17'-0"	—
e304(E)	24	#4	52'-9"	—
e305(E)	60	#4	53'-6"	—
x300(E)	116	#5	10'-8"	U
x301(E)	116	#5	7'-1"	U
Reinforcement Bars, Epoxy Coated		Pound	983,470	
Concrete Superstructure		Cu. Yd.	3,022.6	

UNIT 4
SUPERSTRUCTURE
BILL OF MATERIAL

Bar	No.	Size	Length	Shape
a400(E)	4132	#5	58'-6"	—
a401(E)	2860	#5	58'-6"	—
a402(E)	8264	#6	8'-4"	L
a403(E)	160	#5	1'-6"	—
a404(E)	30	#5	10'-0"	—
a405(E)	30	#7	59'-9"	—
b400(E)	2046	#5	50'-5"	—
b401(E)	2244	#5	49'-0"	—
b402(E)	1650	#6	48'-7"	—
d400(E)	4650	#5	7'-0"	U
d401(E)	4650	#5	8'-0"	U
d402(E)	27	#6	5'-3"	L
d403(E)	54	#6	8'-11"	U
e400(E)	16	#4	16'-10"	—
e401(E)	224	#4	17'-11"	—
e402(E)	576	#4	19'-8"	—
e403(E)	720	#4	17'-0"	—
e404(E)	24	#4	49'-11"	—
e405(E)	120	#4	53'-6"	—
e406(E)	16	#4	17'-3"	—
e407(E)	24	#4	50'-0"	—
x400(E)	116	#5	10'-3"	U
x401(E)	116	#5	6'-3"	U
Reinforcement Bars, Epoxy Coated		Pound	977,340	
Concrete Superstructure		Cu. Yd.	2,994.3	

UNIT 5
SUPERSTRUCTURE
BILL OF MATERIAL

Bar	No.	Size	Length	Shape
a500(E)	963	#5	58'-6"	—
a501(E)	665	#5	58'-6"	—
a502(E)	1926	#6	8'-4"	L
a503(E)	64	#5	1'-6"	—
a504(E)	30	#5	10'-0"	—
a505(E)	20	#7	59'-9"	—
b500(E)	496	#5	48'-3"	—
b501(E)	594	#5	43'-3"	—
b502(E)	165	#6	45'-9"	—
d500(E)	1086	#5	7'-0"	U
d501(E)	1086	#5	8'-0"	U
d502(E)	6	#6	5'-3"	L
d503(E)	12	#6	8'-11"	U
e500(E)	16	#4	15'-8"	—
e501(E)	112	#4	17'-5"	—
e502(E)	96	#4	19'-8"	—
e503(E)	112	#4	17'-2"	—
e504(E)	16	#4	18'-5"	—
e505(E)	24	#4	48'-3"	—
e506(E)	24	#4	48'-9"	—
x500(E)	58	#5	10'-3"	U
x501(E)	58	#5	6'-3"	U
x502(E)	58	#5	6'-5"	U
Reinforcement Bars, Epoxy Coated		Pound	213,750	
Concrete Superstructure		Cu. Yd.	714.8	

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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SUPERSTRUCTURE BILL OF MATERIAL - 2
STRUCTURE NO. 060-0350 (EB)

SHEET 93 OF 292 SHEETS

F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	306
CONTRACT NO. 76J90				
ILLINOIS FED. AID PROJECT				

**TOP AND BOTTOM ELEVATIONS
FOR APPROACH FOOTING**

Point	West Approach	
	Top	Bottom
A	451.36	450.53
B	451.78	450.95
C	450.89	450.06
D	451.31	450.48
E	451.73	450.90
F	450.84	450.01

* 1/2" Preformed Expansion Joint Filler according to Article 1051.09 of the Standard Specifications; full depth of slab, full length of parapet. Typ. each parapet.

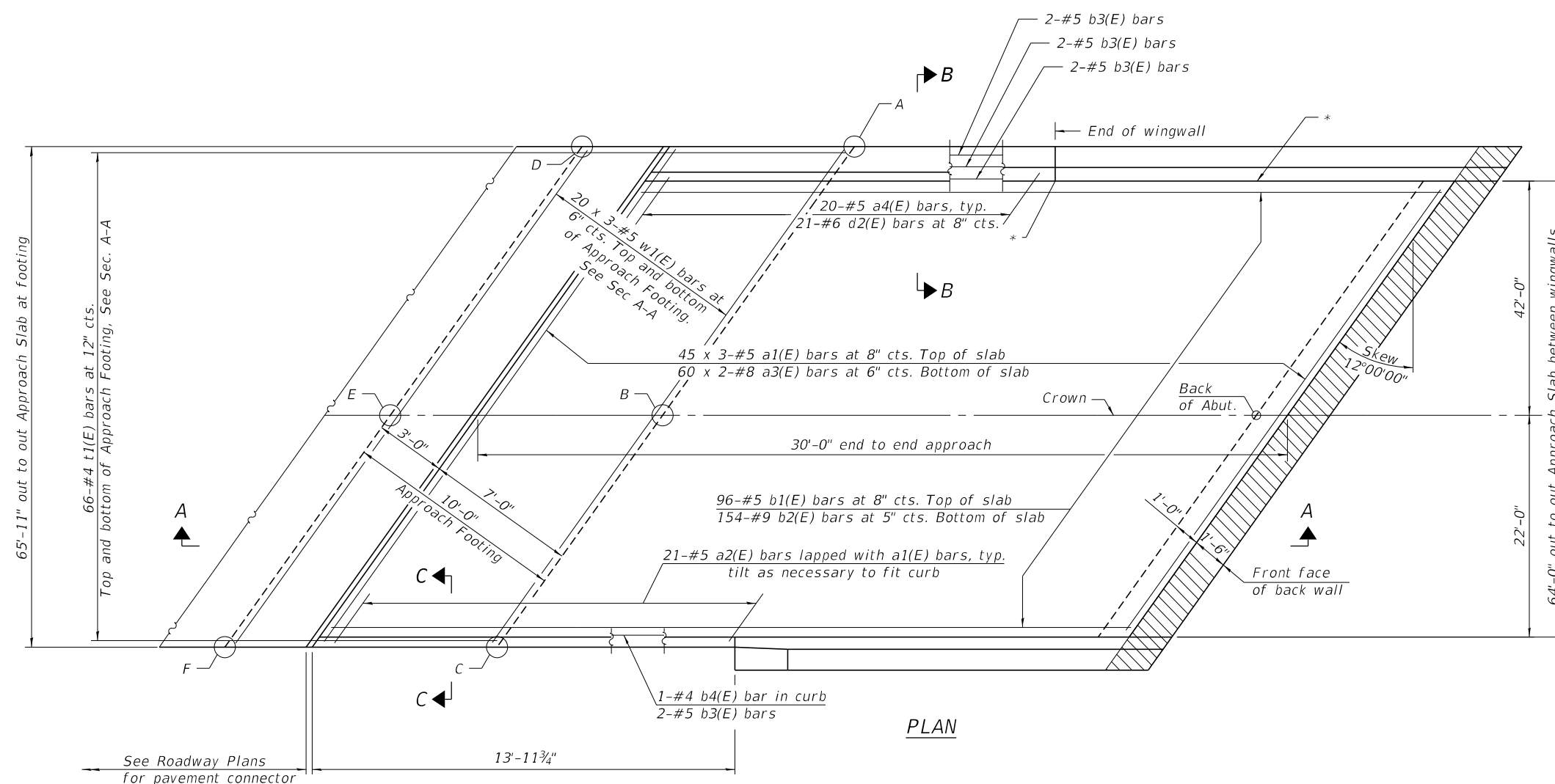
** Prior to grinding.



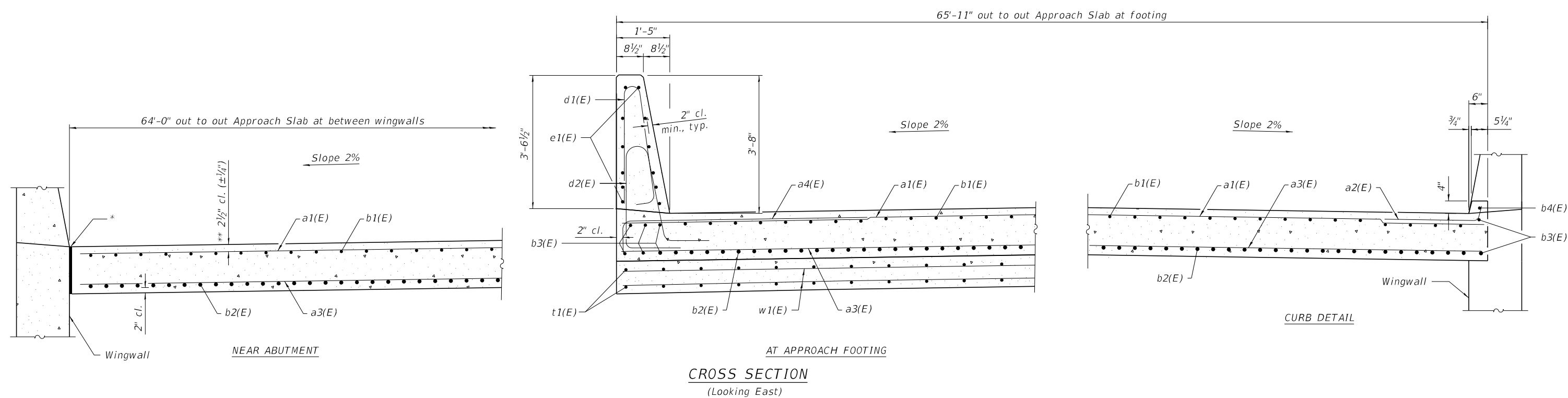
MINIMUM BAR LAP

#5 bar = 3'-4"
#8 bar = 4'-9"

Notes:
For pavement cross slopes, see sheet 56 of 292.
Bars indicated thus 20 x 3-#5 etc. indicates 20 lines of bars with 3 lengths per line.
Parapet concrete is included with Concrete Superstructure.



PLAN



CROSS SECTION
(Looking East)

CURB DETAIL

(Sheet 1 of 2)

MODEL: Default
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	CHECKED - GLC	REVISED -

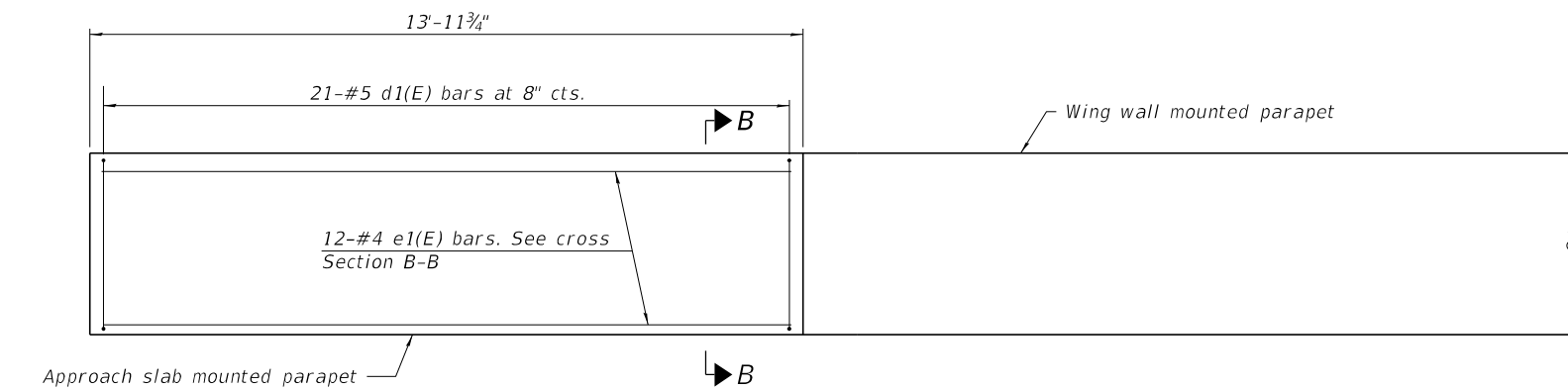
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

WEST APPROACH SLAB PLAN
STRUCTURE NO. 060-0350 (EB)

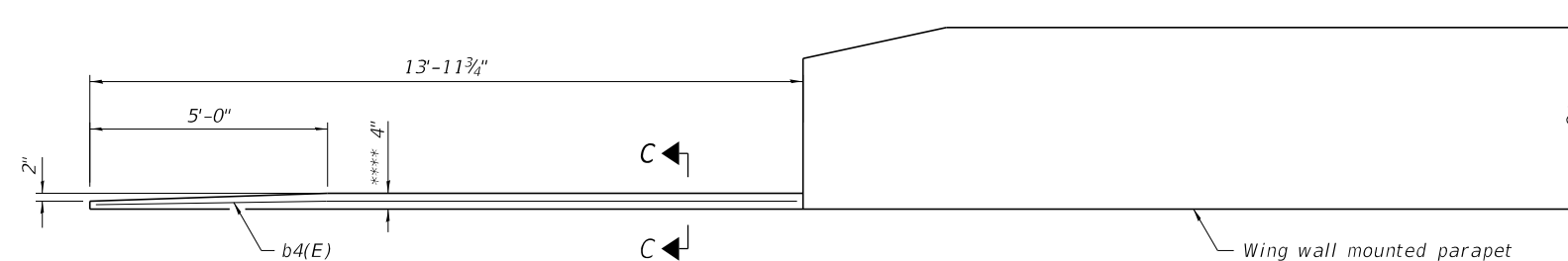
SHEET 94 OF 292 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	307
CONTRACT NO. 76190				

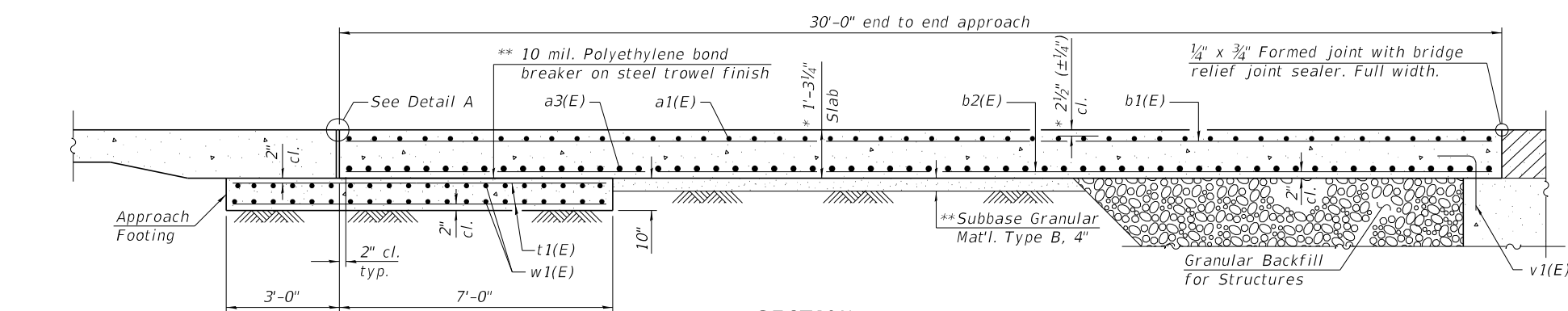
ILLINOIS FED. AID PROJECT



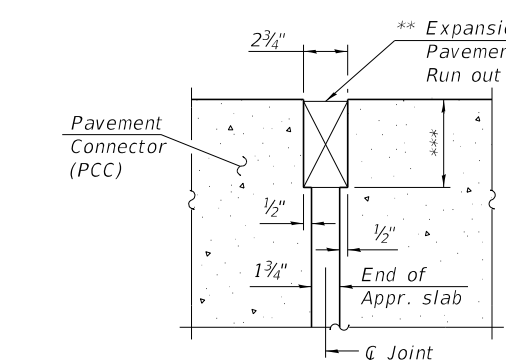
INSIDE ELEVATION OF LEFT PARAPET



OUTSIDE ELEVATION OF RIGHT PARAPET AND CURB

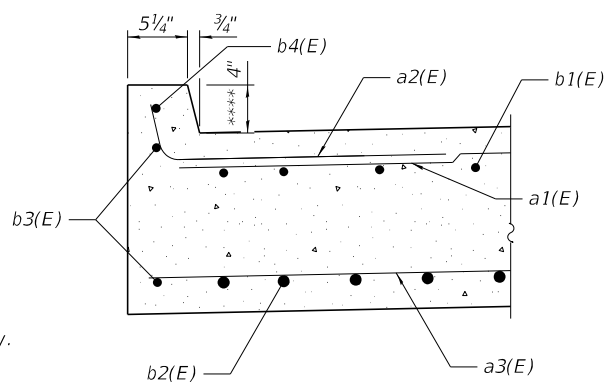


SECTION A-A

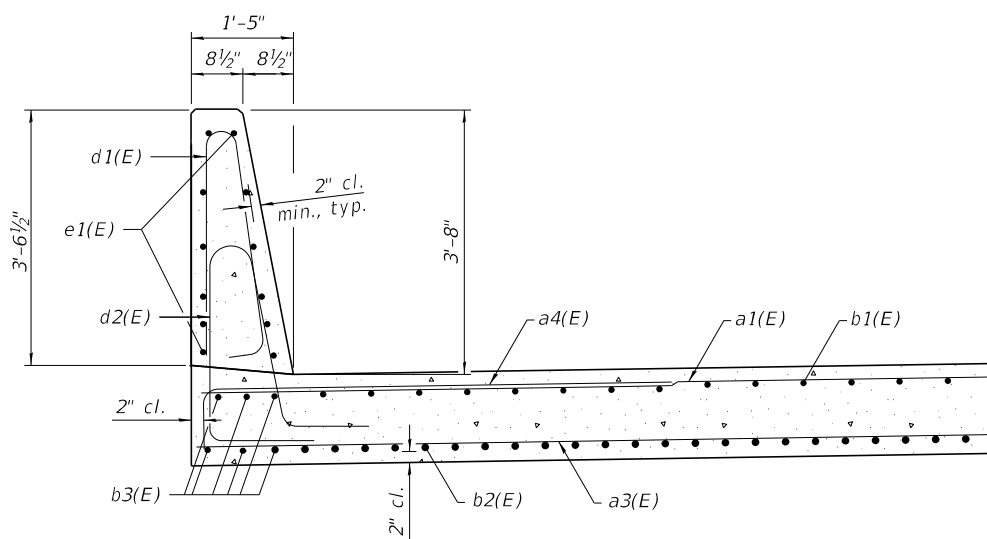


DETAIL A

(Detail A shown, applies to Highway Standard 420401 only. Detail A for pavement connector (HMA) may be found on Highway Standard 420406.)



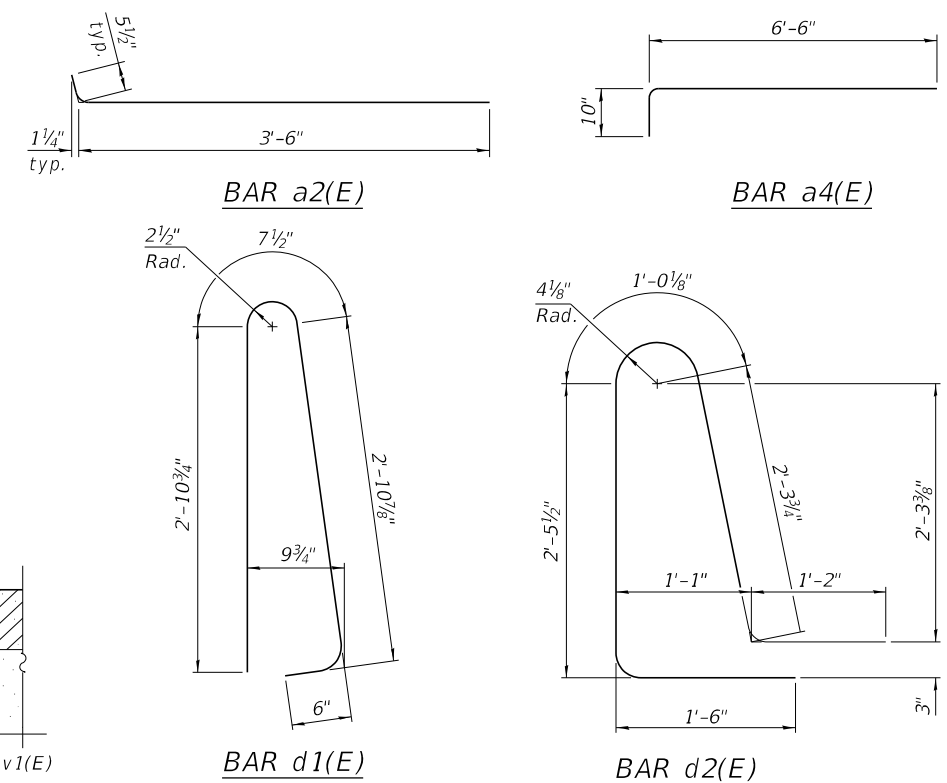
SECTION C-C



SECTION B-B

Notes:
 Approach slab shall be paid for as Concrete Superstructure (Approach Slab).
 Approach footing concrete shall be paid for as Concrete Structures.
 The approach footing maximum applied service bearing pressure (Qmax) = 2.0 ksf.
 Cost of excavation for approach footing included with Concrete Structures.
 For Granular Backfill for Structures and drainage treatment details, see sheet 10 of 292.
 Parapet concrete is included with Concrete Superstructure.

- * Prior to grinding.
- ** Cost included with Concrete Superstructure (Approach Slab).
- *** Per manufacturer recommendations
- **** After grinding.



WEST APPROACH BILL OF MATERIAL

Bar	No.	Size	Length	Shape	
a1(E)	135	#5	24'-7"	—	
a2(E)	21	#5	4'-0"	—	
a3(E)	120	#8	35'-11"	—	
a4(E)	20	#5	7'-4"	—	
b1(E)	96	#5	29'-8"	—	
b2(E)	154	#9	29'-8"	—	
b3(E)	8	#5	13'-7"	—	
b4(E)	1	#4	13'-7"	—	
d1(E)	21	#5	7'-0"	—	
d2(E)	21	#5	8'-6"	—	
e1(E)	12	#4	13'-7"	—	
t1(E)	132	#4	9'-11"	—	
w1(E)	120	#5	24'-7"	—	
Concrete Superstructure (Approach Slab)				Cu. Yd.	93.2
Concrete Structures				Cu. Yd.	20.8
Reinforcement Bars, Epoxy Coated				Pound	38,240

(Sheet 2 of 2)

STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION

WEST APPROACH SLAB DETAILS
 STRUCTURE NO. 060-0350 (EB)

F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	308

CONTRACT NO. 76190

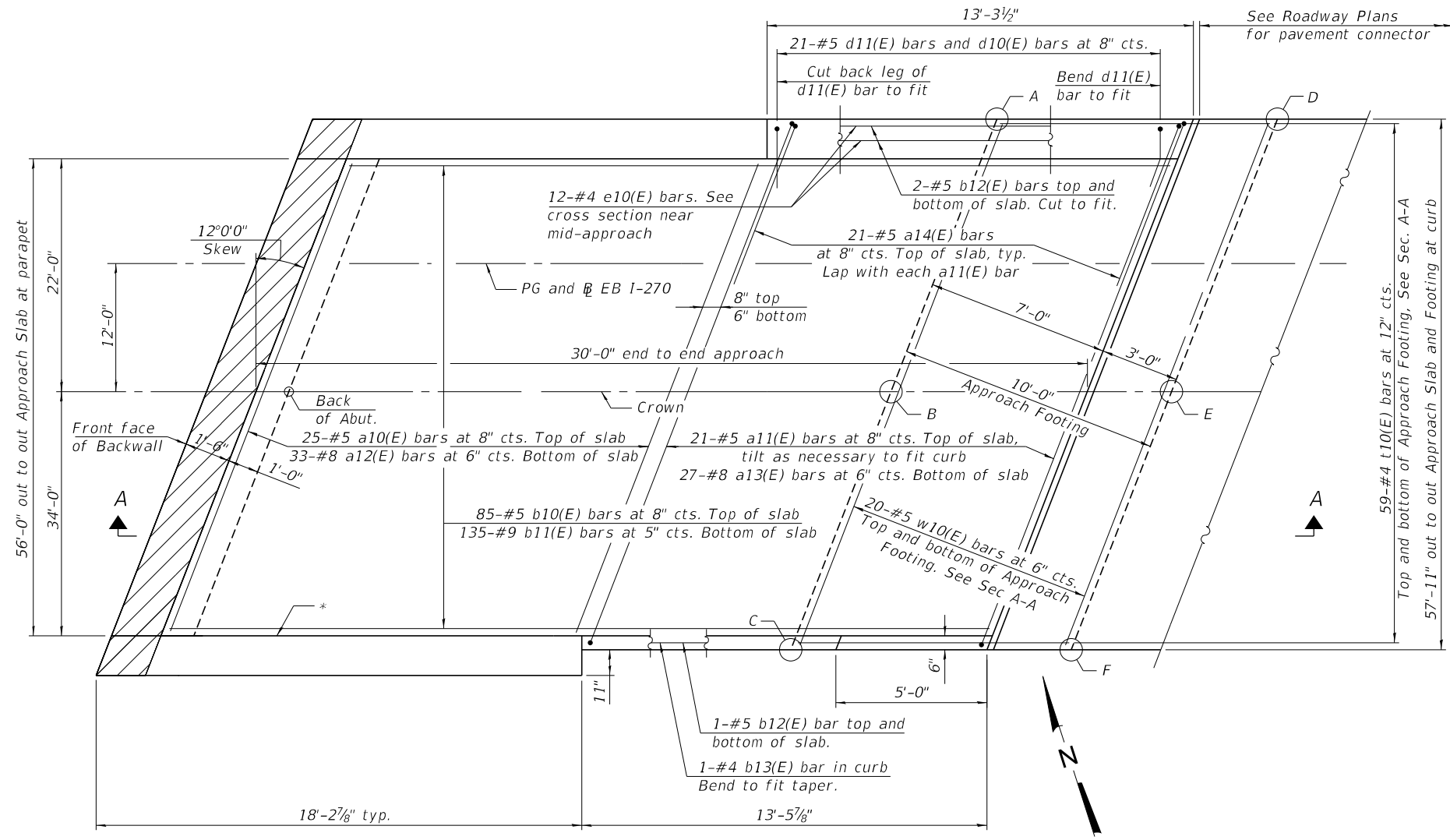
SHEET 95 OF 292 SHEETS

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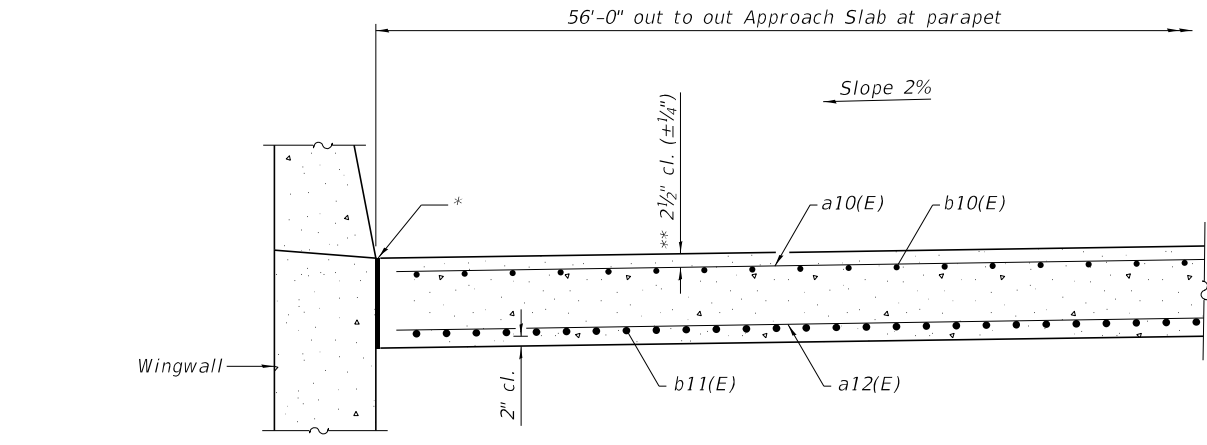


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GLC	GLC	

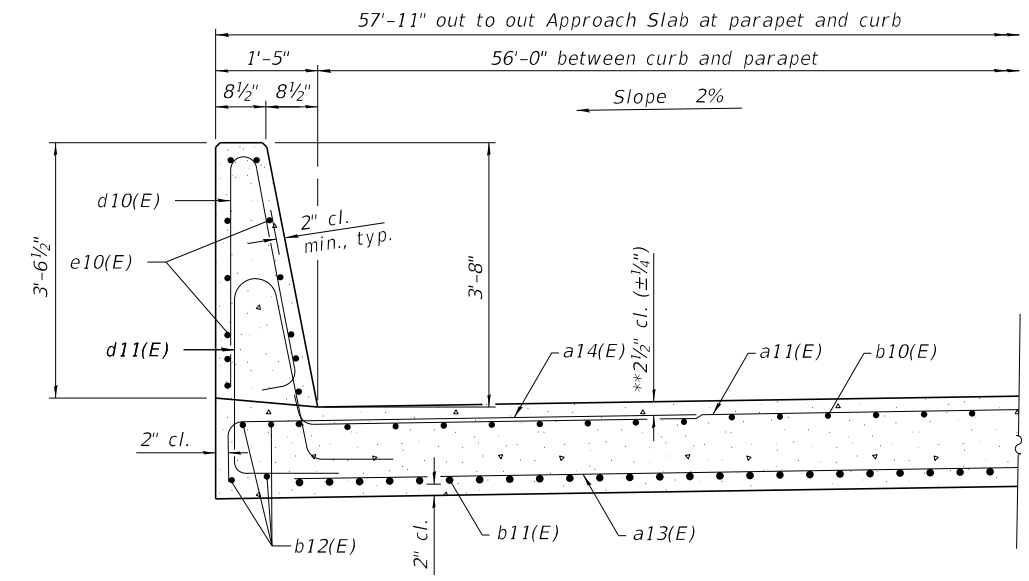
ILLINOIS FED. AID PROJECT



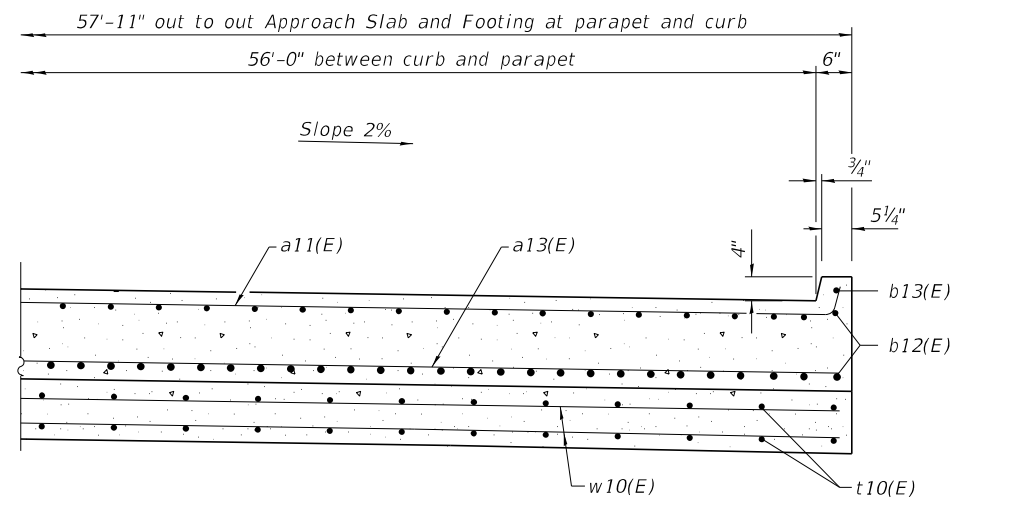
PLAN



NEAR ABUTMENT



NEAR MID-APPROACH



AT APPROACH FOOTING

CROSS SECTION
(Looking East)

TOP AND BOTTOM ELEVATIONS
FOR APPROACH FOOTING

Point	East Approach	
	Top	Bottom
A	450.51	449.67
B	450.97	450.14
C	450.33	449.50
D	450.46	449.62
E	450.92	450.09
F	450.28	449.44

* 1/2" Preformed Expansion Joint Filler according to Article 1051.09 of the Standard Specifications: full depth of slab, full length of parapet. Typ. each parapet.
** Prior to grinding.

For Section A-A, see sheet 97 of 292.

(Sheet 1 of 2)

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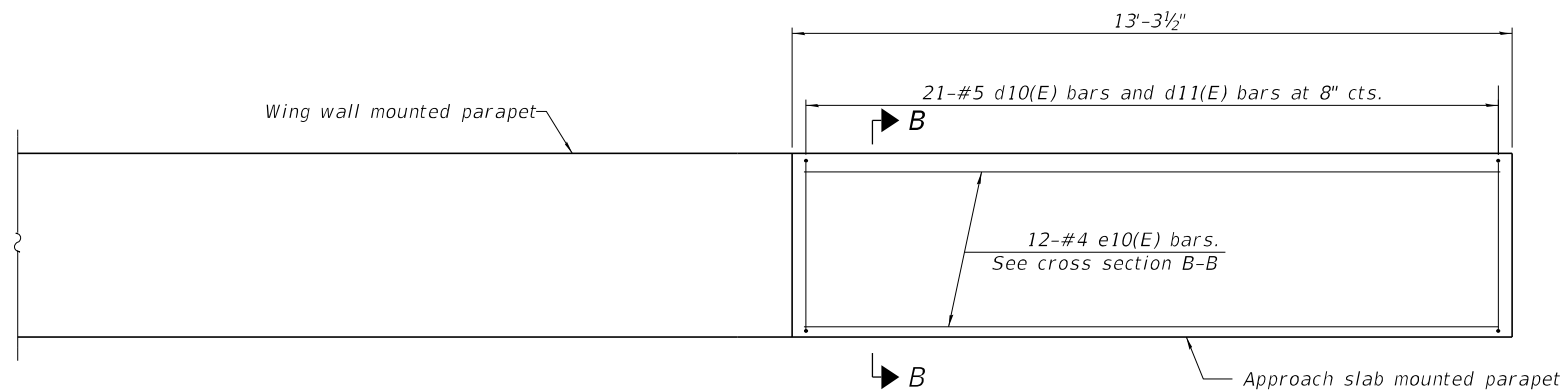
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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

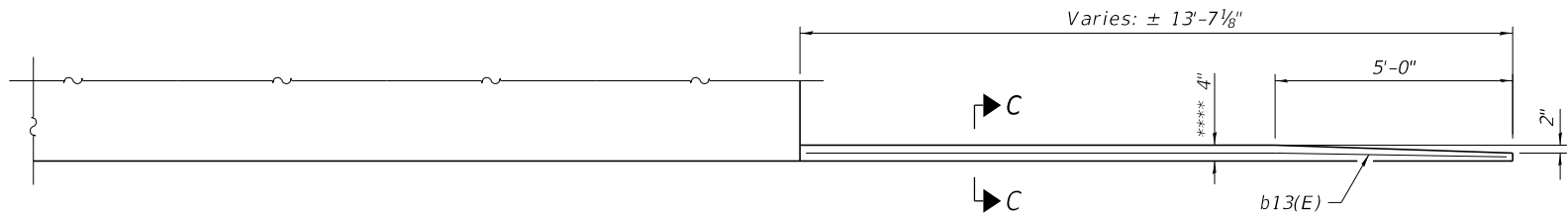
EAST APPROACH SLAB PLAN
STRUCTURE NO. 060-0350 (EB)

SHEET 96 OF 292 SHEETS

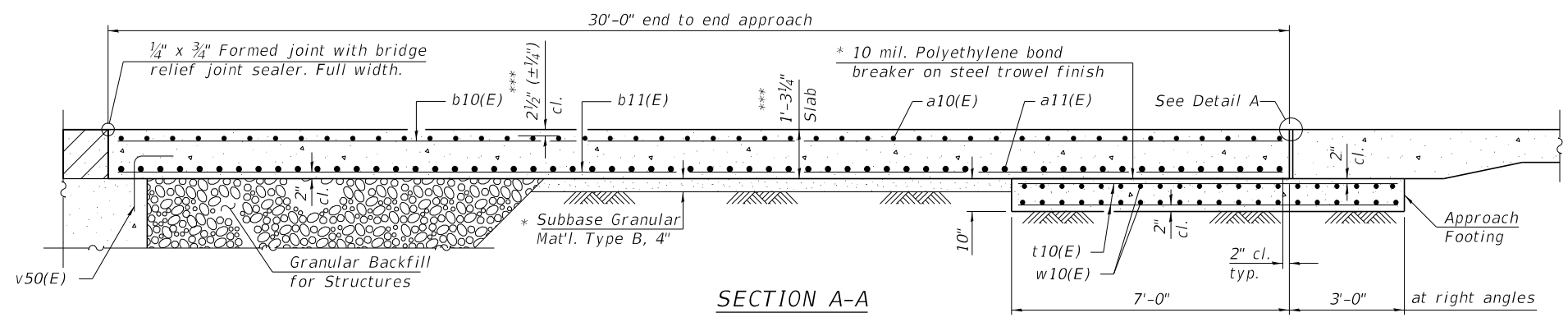
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	309
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				



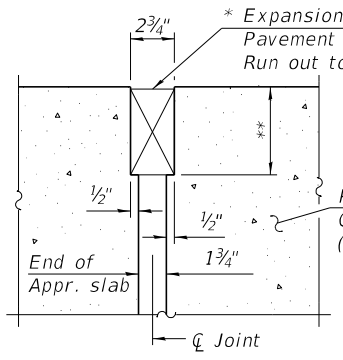
INSIDE ELEVATION OF NORTH PARAPET



OUTSIDE ELEVATION OF SOUTH PARAPET AND CURB



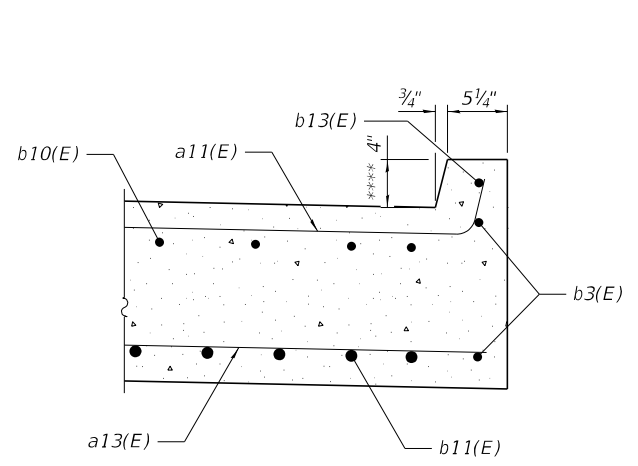
SECTION A-A



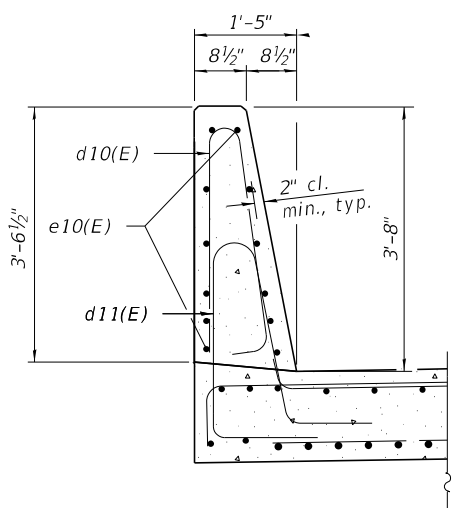
DETAIL A

(Detail A shown, applies to Highway Standard 420401 only. Detail A for pavement connector (HMA) may be found on Highway Standard 420406.)

- * Cost included with Concrete Superstructure (Approach Slab).
- ** Per manufacturer recommendations
- *** Prior to grinding
- **** After grinding.



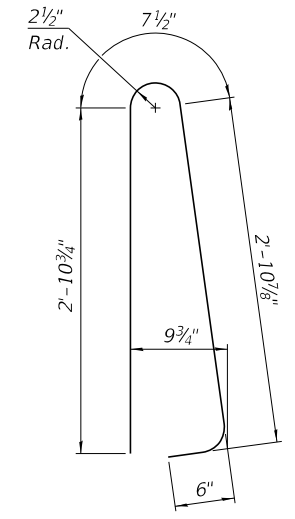
SECTION C-C



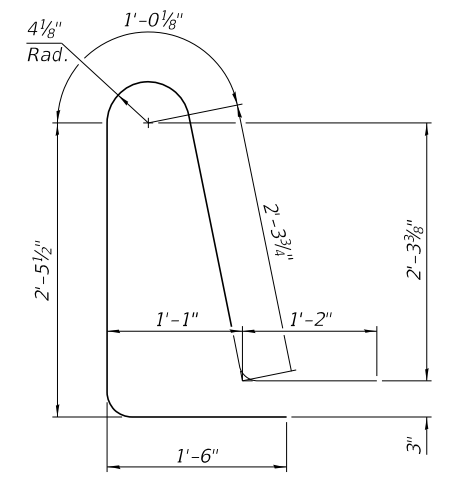
SECTION B-B

Notes:

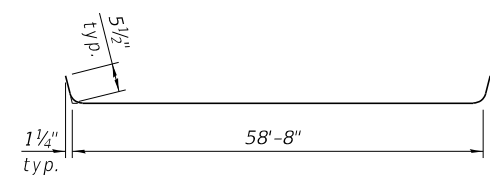
Parapet concrete shall be paid for as Concrete Superstructure. This quantity is included on sheet 93
 Approach slab shall be paid for as Concrete Superstructure (Approach Slab).
 Approach footing concrete shall be paid for as Concrete Structures.
 The approach footing maximum applied service bearing pressure (Qmax) = 2.0 ksf.
 Cost of excavation for approach footing included with Concrete Structures.
 For Granular Backfill for Structures and drainage treatment details, see sheet 10 of 292.
 See sheets 166 thru 168 of 292 for hatched block details.



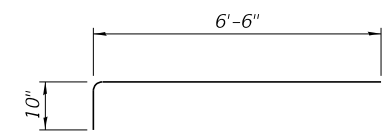
BAR d10(E)



BAR d11(E)



BAR a11(E)



BAR a14(E)

EAST APPROACH
BILL OF MATERIAL

Bar	No.	Size	Length	Shape
a10(E)	25	#5	56'-11"	—
a11(E)	21	#5	59'-7"	—
a12(E)	33	#8	56'-11"	—
a13(E)	27	#8	58'-10"	—
a14(E)	21	#5	7'-4"	—
b10(E)	85	#5	29'-8"	—
b11(E)	135	#9	29'-8"	—
b12(E)	6	#5	12'-8"	—
b13(E)	1	#4	12'-8"	—
d10(E)	21	#5	7'-0"	—
d11(E)	21	#5	8'-6"	—
e10(E)	12	#4	12'-8"	—
t10(E)	118	#4	9'-10"	—
w10(E)	40	#5	58'-10"	—
Concrete Structures			Cu. Yd.	18.3
Concrete Superstructure (Approach Slab)			Cu. Yd.	80.3
Reinforcement Bars, Epoxy Coated			Pound	32,220

(Sheet 2 of 2)

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

EAST APPROACH SLAB DETAILS
STRUCTURE NO. 060-0350 (EB)

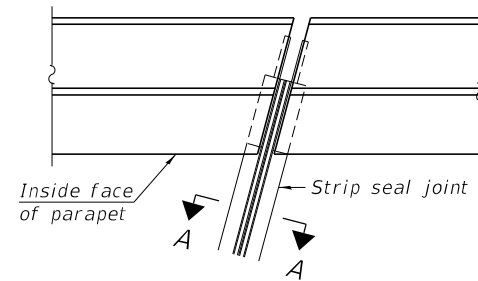
SHEET 97 OF 292 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	310
CONTRACT NO. 76J90				
ILLINOIS FED. AID PROJECT				

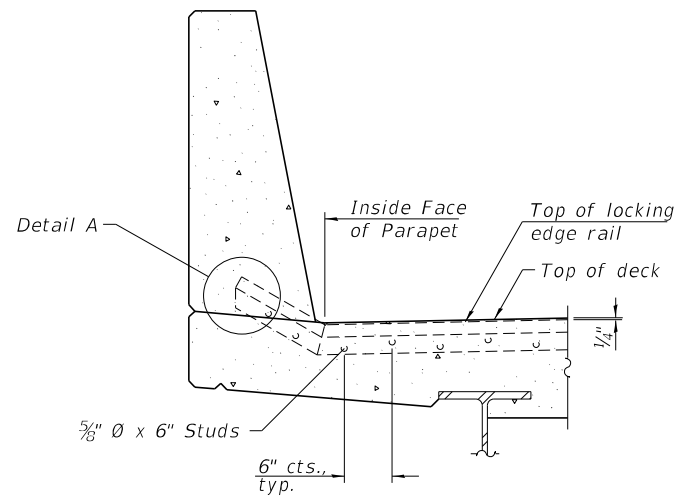
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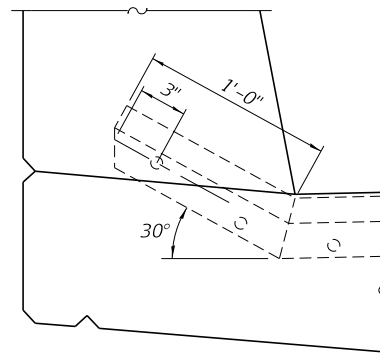
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=	JDS	-



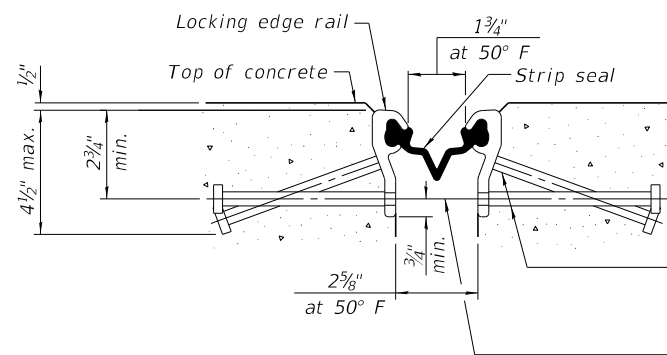
PLAN AT PARAPET



SECTION AT PARAPET



DETAIL A



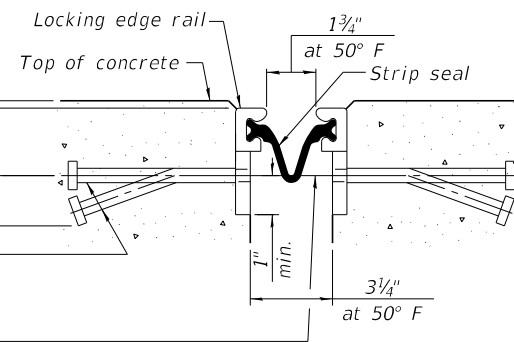
SHOWING ROLLED RAIL JOINT

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

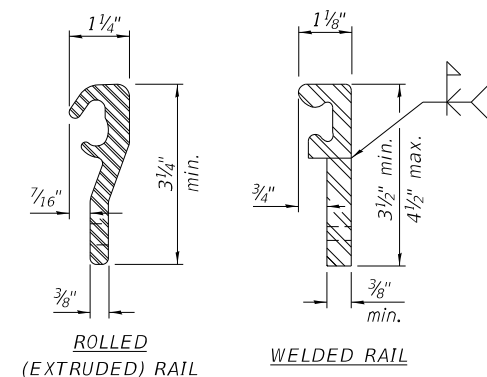
3/8" ϕ threaded rods in 7/16" ϕ holes at ± 4 -0" cts. for holding the proper joint opening based on the temperature during the deck pour. Place to miss studs. All rods shall be burned, or sawed off flush with the plates after concrete is set.

SECTION A-A

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

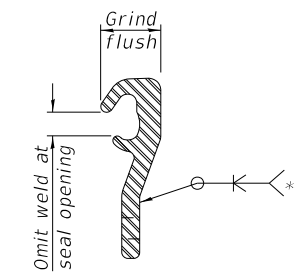


SHOWING WELDED RAIL JOINT



LOCKING EDGE RAILS

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



LOCKING EDGE RAIL SPLICE

The inside of the locking edge rail groove shall be free of weld residue. Rolled rail shown, welded rail similar.

BILL OF MATERIAL

Item	Unit	Total
Preformed Joint Strip Seal	Foot	67.5

Notes:

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

The locking edge rails depicted are configured for typical applications and are conceptual only. The actual configuration of the locking edge rails and matching strip seal may vary from manufacturer to manufacturer provided they fit the application and meet the minimum anchorage shown. Flanged edge rails, however, will not be allowed. Locking edge rails may exceed the 4 1/2" maximum depth provided the anchorage system is revised according to the manufacturer's recommendation.

The manufacturer's recommended installation methods shall be followed.

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

The Maximum space between locking edge rail segments shall be 3/16" and sealed with a suitable sealant; however, any rail joint within 10' measured perpendicular to the face of the curb or parapet shall be welded as shown in the locking edge rail splice detail.

The concrete opening below the strip seal will vary based on the locking edge rail chosen by the Contractor. Deck and parapet lengths shown elsewhere in the plans are dimensioned to the concrete opening, not the joint opening, and are based on the rolled locking edge rail. If the Contractor elects to use a different locking edge rail, dimensional adjustments may be required.

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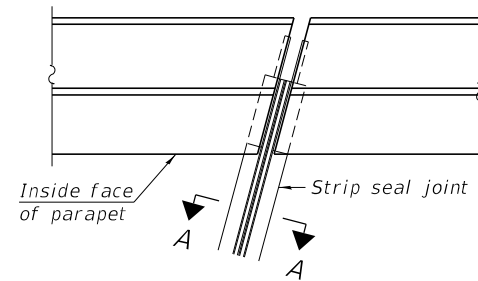
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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

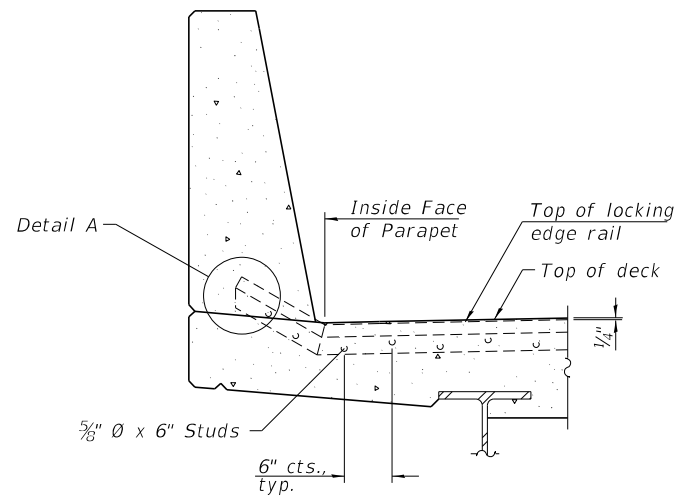
PREFORMED JOINT STRIP SEAL - WEST ABUTMENT
STRUCTURE NO. 060-0350 (EB)

SHEET 98 OF 292 SHEETS

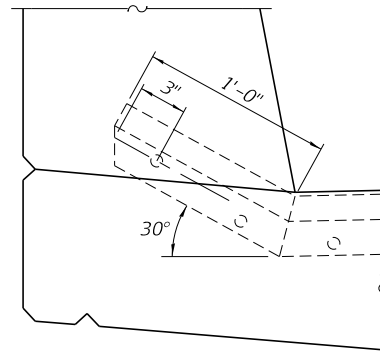
F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	311
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				



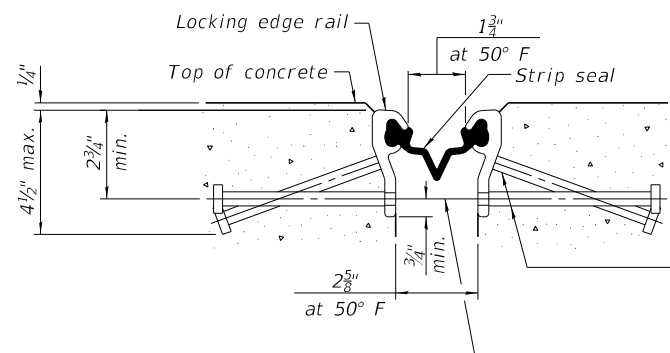
PLAN AT PARAPET



SECTION AT PARAPET



DETAIL A



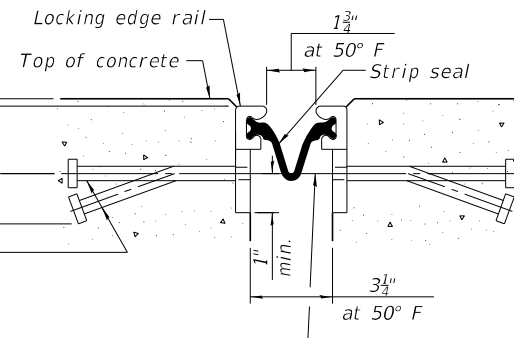
SHOWING ROLLED RAIL JOINT

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

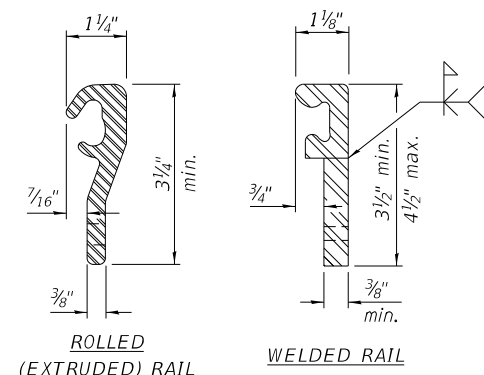
3/8" ϕ threaded rods in 7/16" ϕ holes at $\pm 4'-0"$ cts. for holding the proper joint opening based on the temperature during the deck pour. Place to miss studs. All rods shall be burned, or sawed off flush with the plates after concrete is set.

SECTION A-A

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

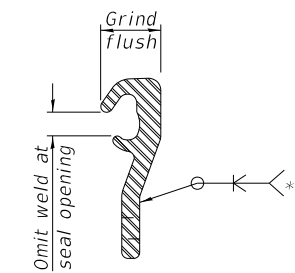


SHOWING WELDED RAIL JOINT



LOCKING EDGE RAILS

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



LOCKING EDGE RAIL SPLICE

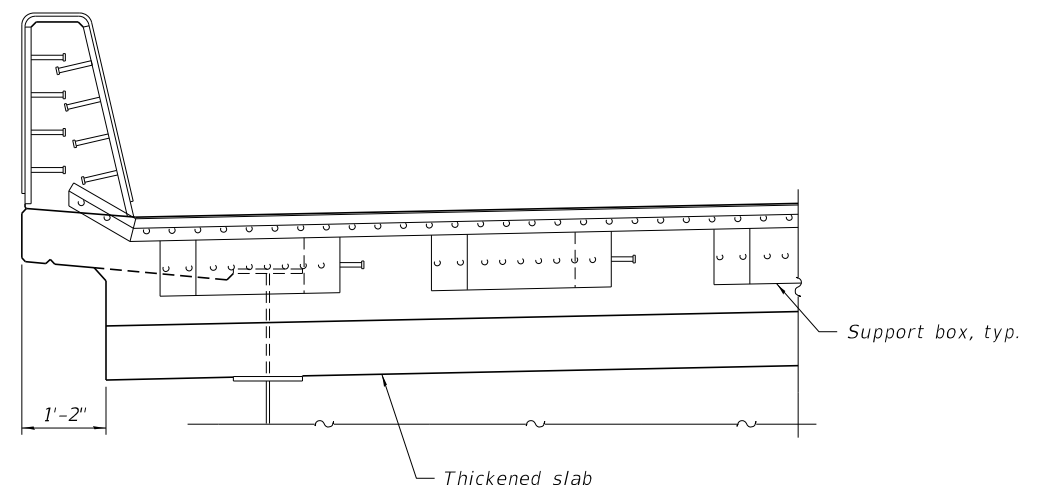
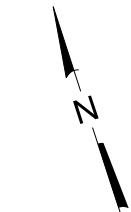
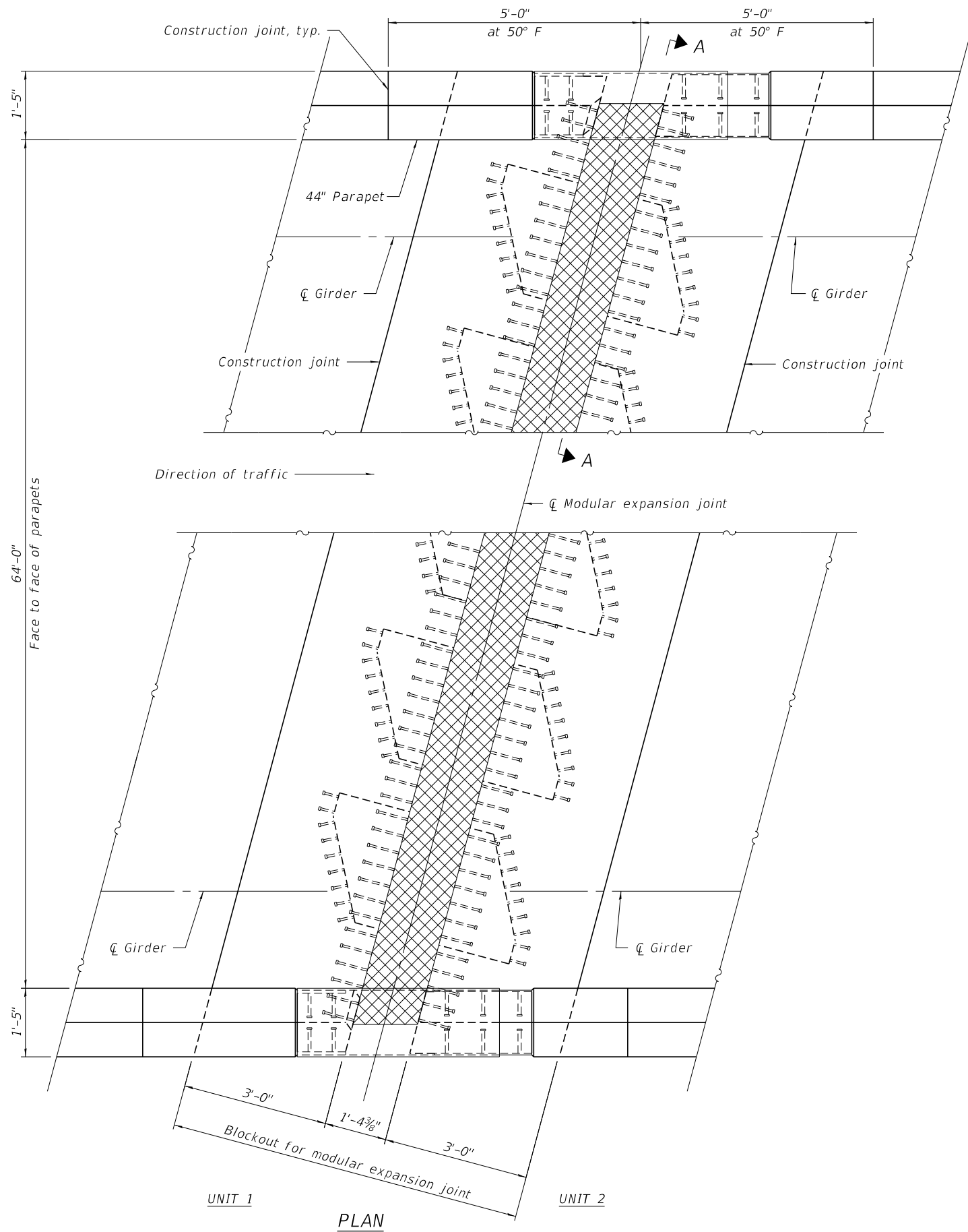
The inside of the locking edge rail groove shall be free of weld residue. Rolled rail shown, welded rail similar.

BILL OF MATERIAL

Item	Unit	Total
Preformed Joint Strip Seal	Foot	60.0

Notes:
 The strip seal shall be made continuous and shall have a minimum thickness of 1/4". The configuration of the strip seal shall match the configuration of the locking edge rails. Open or "webbed" strip seal gland configurations are not permitted. The gland shall be sized for a maximum rated movement of 4 inches.
 The locking edge rails depicted are configured for typical applications and are conceptual only. The actual configuration of the locking edge rails and matching strip seal may vary from manufacturer to manufacturer provided they fit the application and meet the minimum anchorage shown. Flanged edge rails, however, will not be allowed. Locking edge rails may exceed the 4 1/2" maximum depth provided the anchorage system is revised according to the manufacturer's recommendation.
 The manufacturer's recommended installation methods shall be followed.
 All steel components shall be galvanized after fabrication according to Article 520.03 of the Standard Specifications.
 The Maximum space between locking edge rail segments shall be 3/16" and sealed with a suitable sealant; however, any rail joint within 10' measured perpendicular to the face of the curb or parapet shall be welded as shown in the locking edge rail splice detail.
 The concrete opening below the strip seal will vary based on the locking edge rail chosen by the Contractor. Deck and parapet lengths shown elsewhere in the plans are dimensioned to the concrete opening, not the joint opening, and are based on the rolled locking edge rail. If the Contractor elects to use a different locking edge rail, dimensional adjustments may be required.

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SECTION A-A

Note:
 For location of crown and cross slopes,
 see sheets 57 and 61 of 292.
 For Bill of Material, see sheet 92 of 292.

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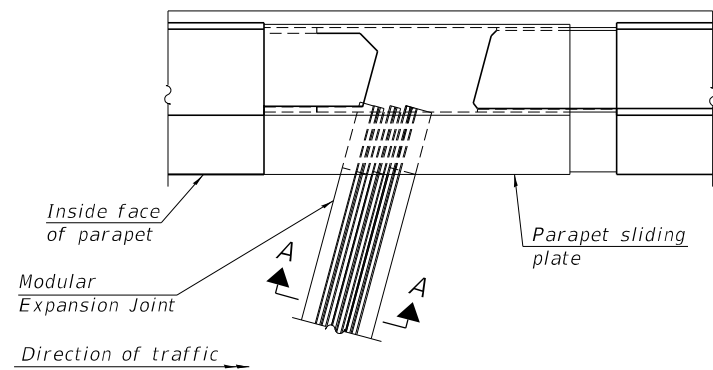
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STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION

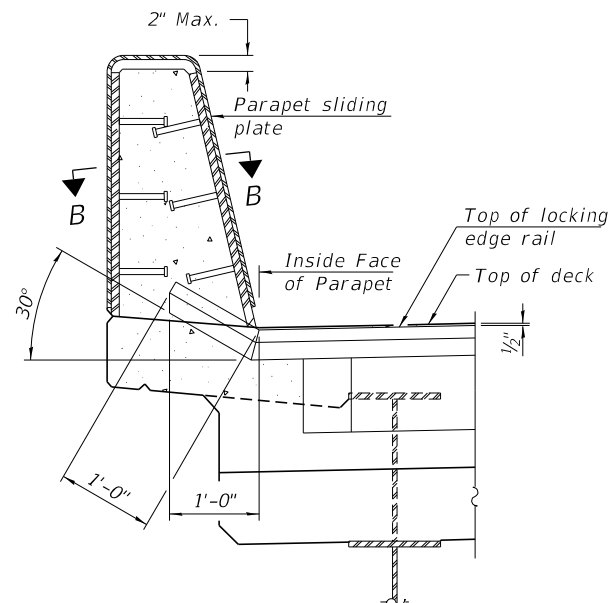
MODULAR EXPANSION JOINT - PIER 3 - 1
 STRUCTURE NO. 060-0350 (EB)

SHEET 100 OF 292 SHEETS

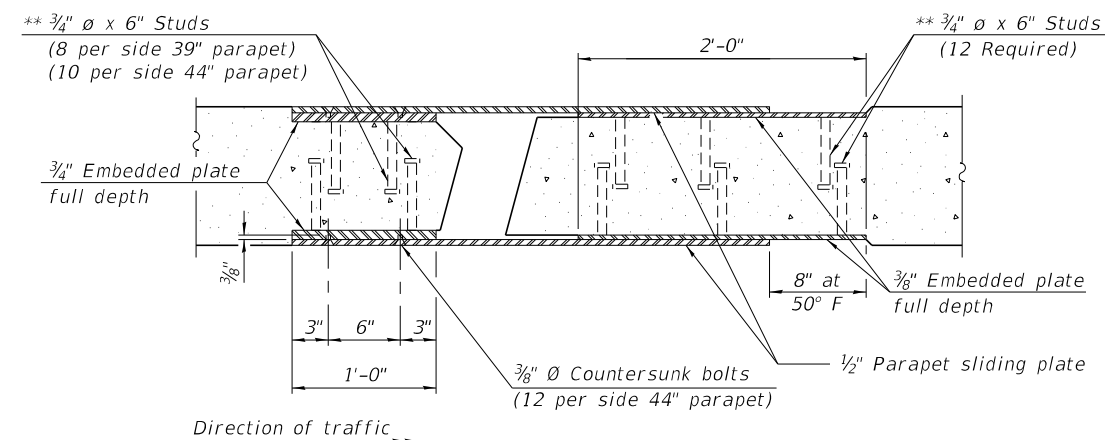
F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	313
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				



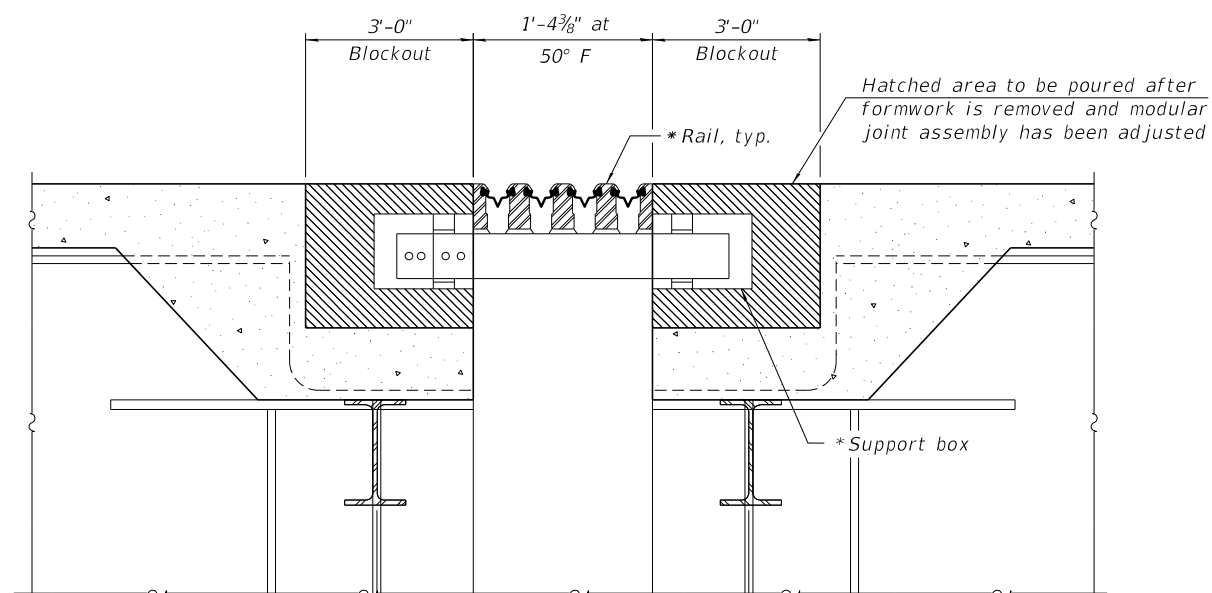
PLAN AT PARAPET



ELEVATION AT PARAPET



SECTION B-B

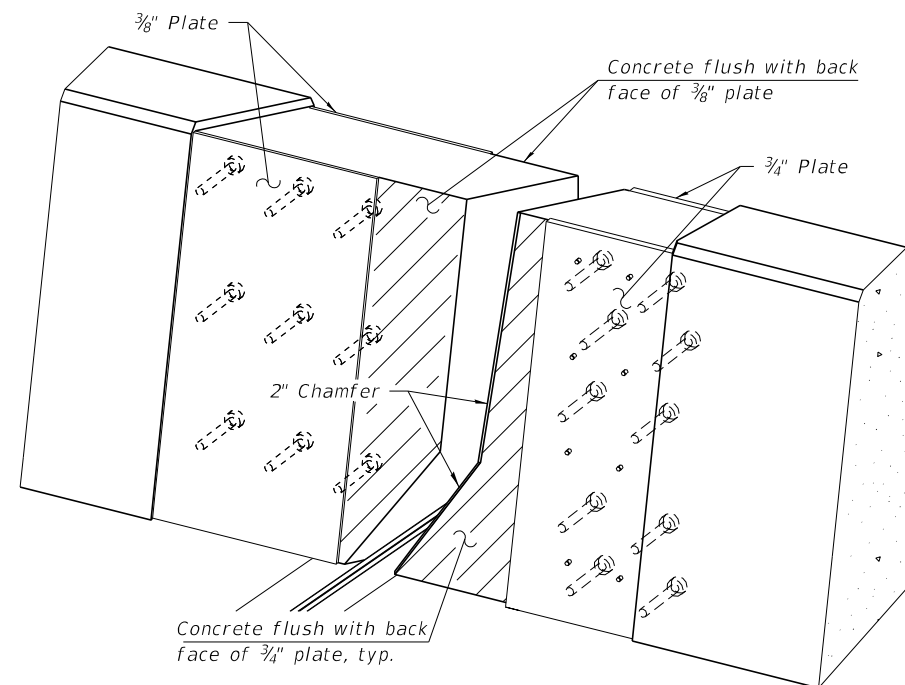


SECTION A-A

(Horiz. dim. at rt. angles.)
(Reinforcement not shown for clarity)

* Number of rails determined by manufacturer

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



TRIMETRIC VIEW
(Showing embedded plates only)

Notes:
The manufacturer's recommended installation methods shall be followed.
All steel components shall be galvanized after fabrication according to Article 520.03 of the Standard Specifications.
Parapet plates and anchorage studs included in the cost of "Modular Expansion Joint 12".
Support boxes shall be supported in blockout by adjustable brackets, stools, or shims. Cost of brackets, stools, or shims included in "Modular Expansion Joint 12".
The number, location and orientation of support boxes shall be determined by the manufacturer.
Modular expansion joints shall be assembled in their final relative position with the ends in place for shop inspection and acceptance.
Prior to the placement of the joint block-out, the Contractor shall coordinate with the Modular Joint Manufacturer to ensure that the joint will be properly supported and that the reinforcement bars will not interfere with the joint components. Any necessary adjustments to the reinforcement layout shall be submitted to the Engineer for approval.

BILL OF MATERIAL

Item	Unit	Total
Modular Expansion Joint 12"	Foot	66.0

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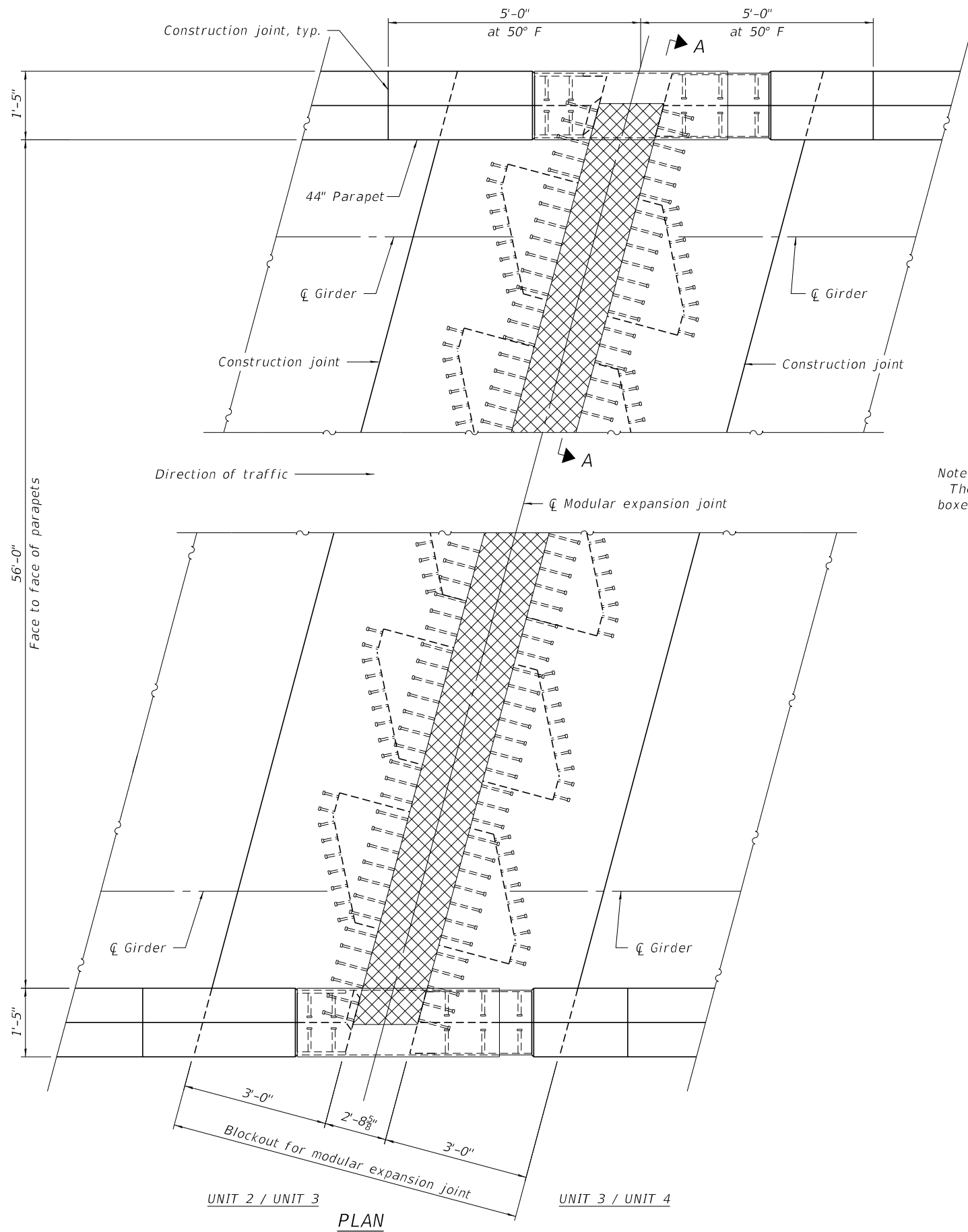
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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

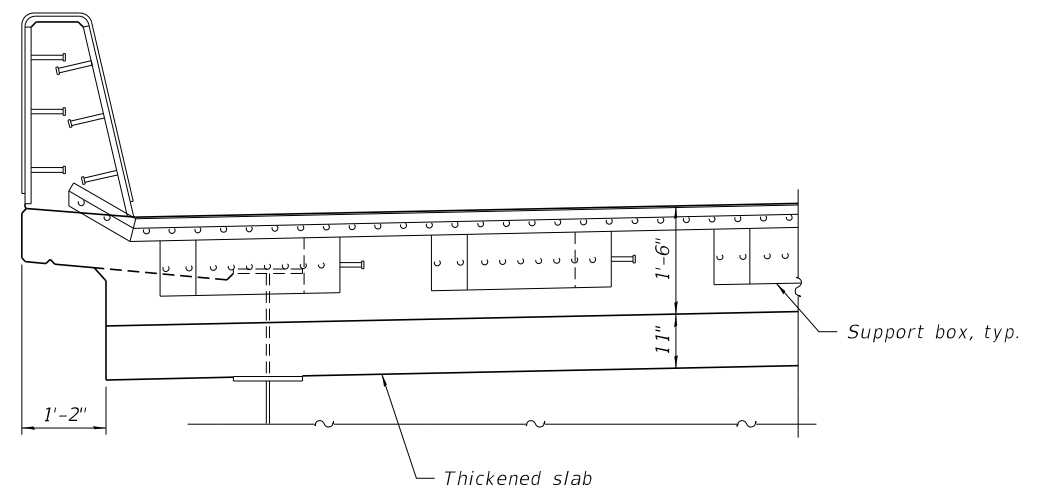
MODULAR EXPANSION JOINT - PIER 3 - 2
STRUCTURE NO. 060-0350 (EB)

SHEET 101 OF 292 SHEETS

F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	314
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				



Note:
The number, location and orientation of the support boxes shall be determined by the manufacturer.



Note:
For location of crown and cross slopes, see sheets 67 and 73 of 292.

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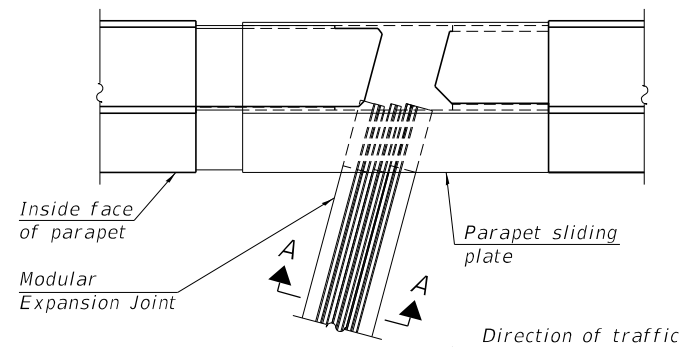
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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

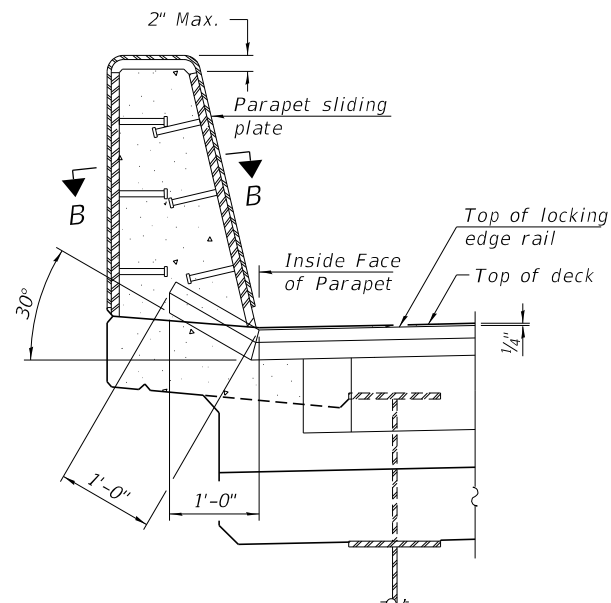
MODULAR EXPANSION JOINT - PIERS 10 & 17 - 1
STRUCTURE NO. 060-0350 (EB)

SHEET 102 OF 292 SHEETS

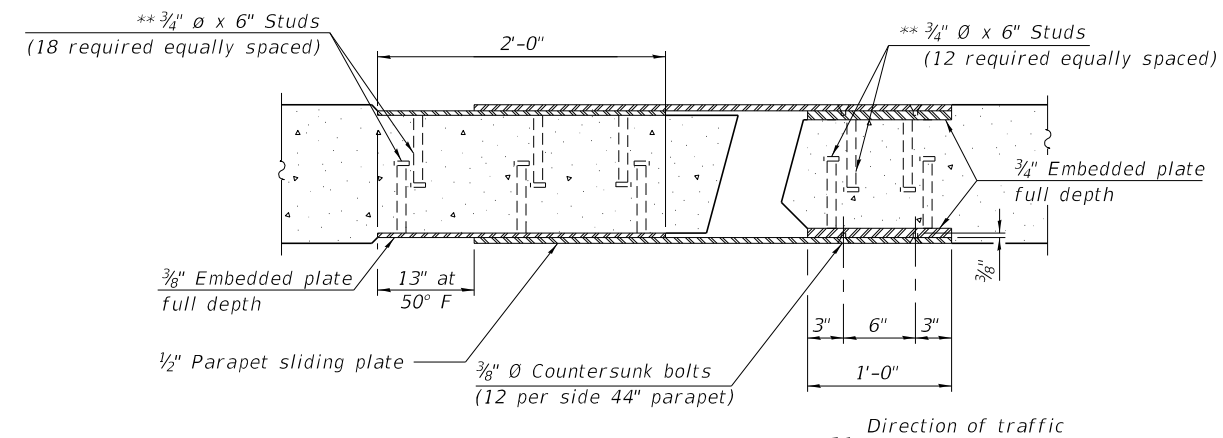
F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	315
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				



FOR SKEWS < 30°
PLAN AT PARAPET

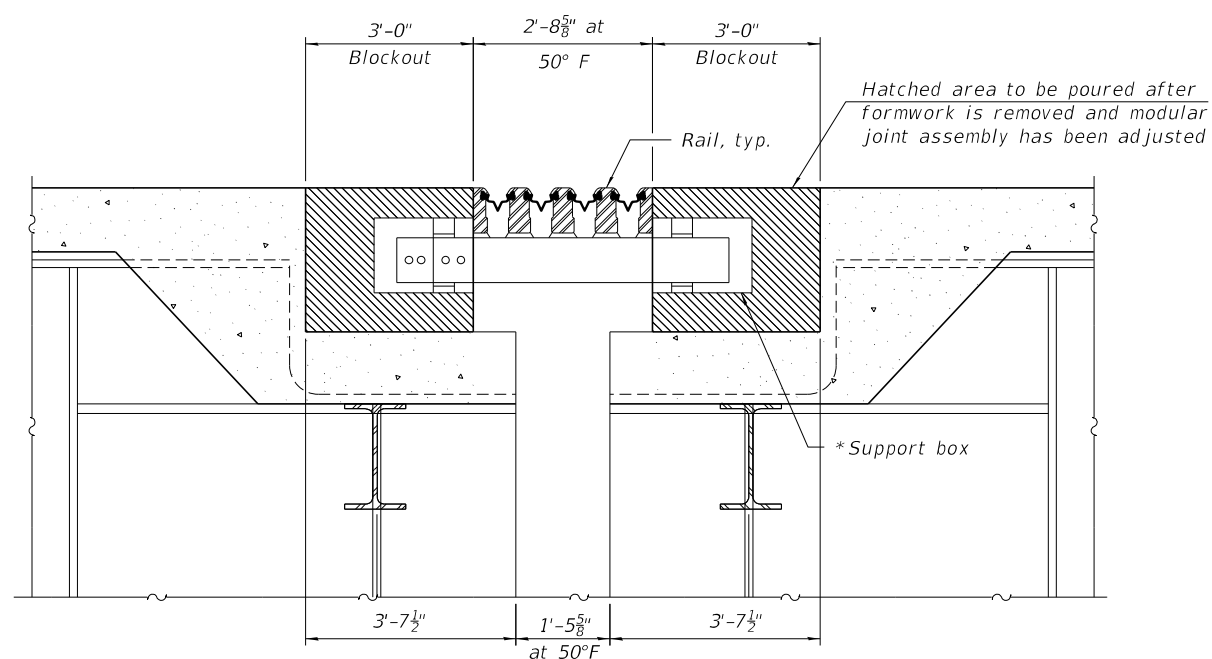


ELEVATION AT PARAPET



SECTION B-B

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

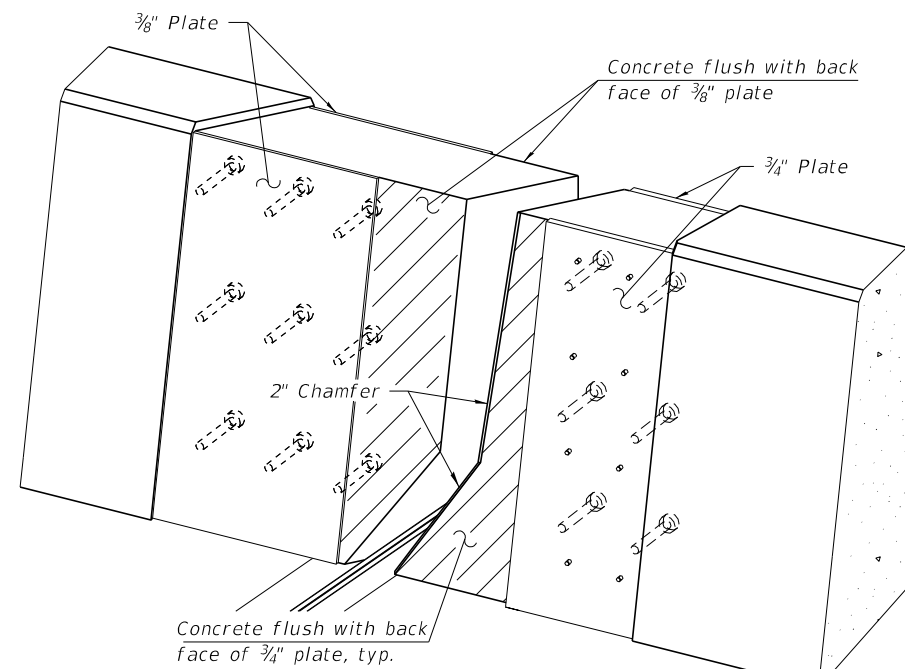


SECTION A-A

(Horiz. dim. at rt. angles.)
(Reinforcement not shown for clarity)

* Number of rails determined by manufacturer

Increase opening 1/8" per 100' of expansion for every 15°F temp. change above the normal temp. of 50°F.
Decrease opening 1/8" per 100' of expansion for every 15°F temp. change below the normal temp. of 50°F.



TRIMETRIC VIEW
(Showing embedded plates only)

Notes:
The manufacturer's recommended installation methods shall be followed.
All steel components shall be galvanized after fabrication according to Article 520.03 of the Standard Specifications.
Parapet plates and anchorage studs included in the cost of "Modular Expansion Joint 27".
Support boxes shall be supported in blockout by adjustable brackets, stools, or shims. Cost of brackets, stools, or shims included in "Modular Expansion Joint 27".
The number, location and orientation of support boxes shall be determined by the manufacturer.
Modular expansion joints shall be assembled in their final relative position with the ends in place for shop inspection and acceptance.
Prior to the placement of the joint block-out, the Contractor shall coordinate with the Modular Joint Manufacturer to ensure that the joint will be properly supported and that the reinforcement bars will not interfere with the joint components. Any necessary adjustments to the reinforcement layout shall be submitted to the Engineer for approval.
Joint longitudinal opening shall be adjusted according to Article 520.04 of the Standard Specifications when the end of deck is cast at an ambient temperature other than 50°F.
The modular expansion joint shall accommodate 25.2" total longitudinal movement (Service I combination).

BILL OF MATERIAL

Item	Unit	Pier 10	Pier 17	Total
Modular Expansion Joint 27"	Foot	58	58	116

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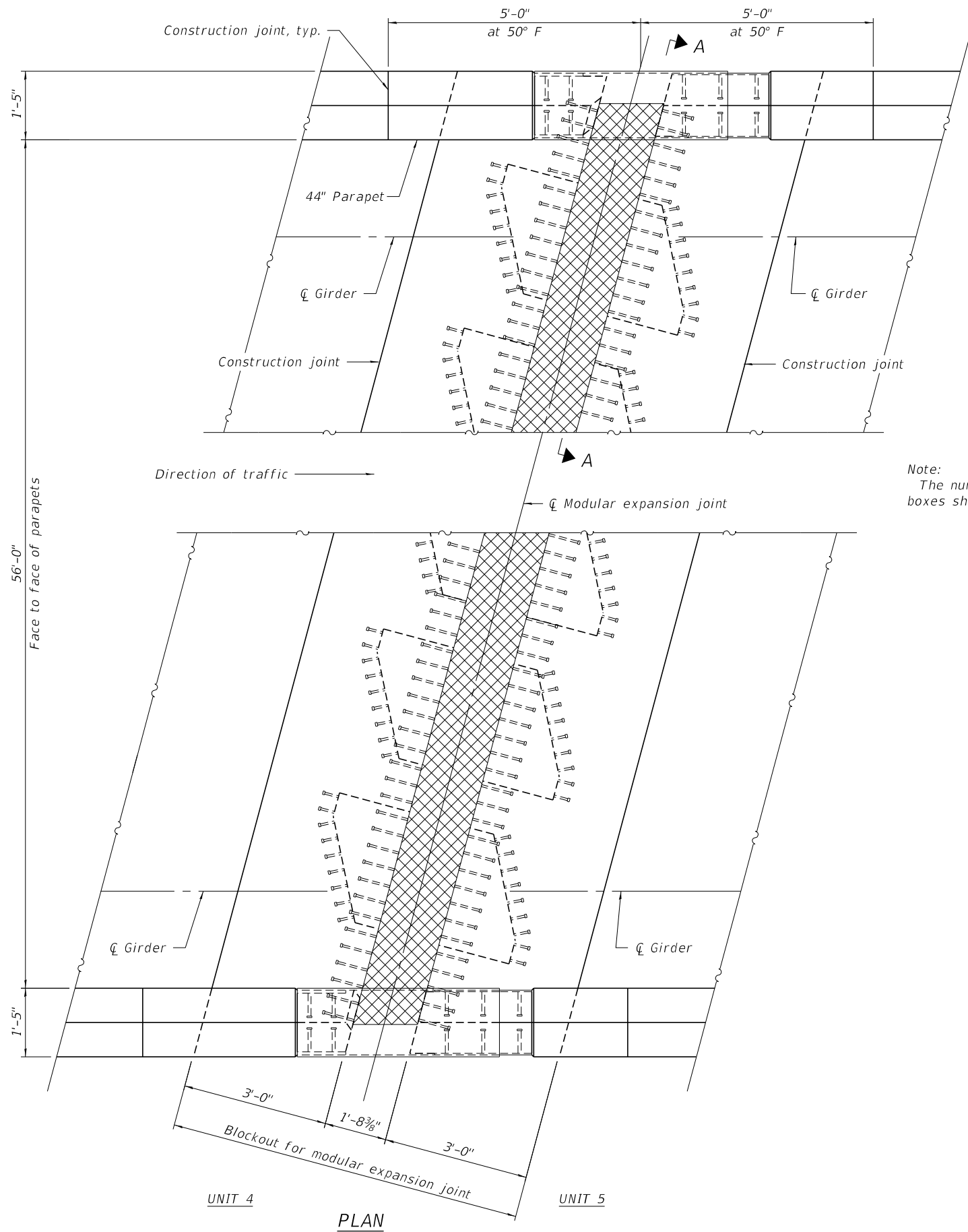
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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

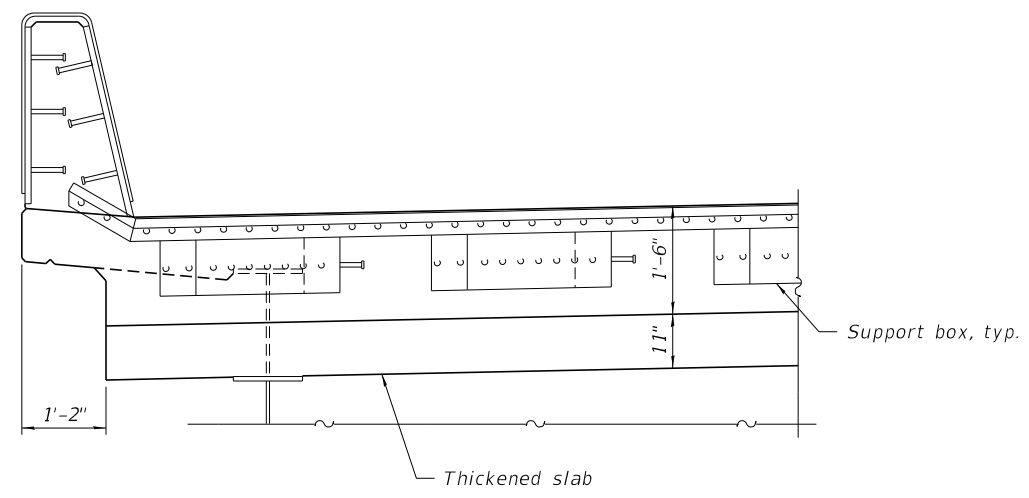
MODULAR EXPANSION JOINT - PIERS 10 & 17 - 2
STRUCTURE NO. 060-0350 (EB)

SHEET 103 OF 292 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	316
CONTRACT NO. 76J90				
ILLINOIS FED. AID PROJECT				



Note:
The number, location and orientation of the support boxes shall be determined by the manufacturer.



SECTION A-A

Note:
For location of crown and cross slopes, see sheets 73 and 76 of 292.

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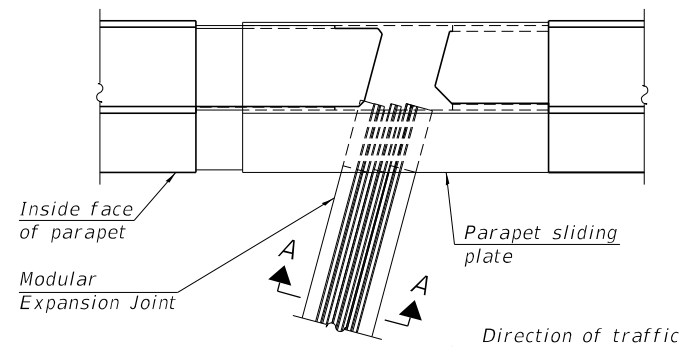
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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

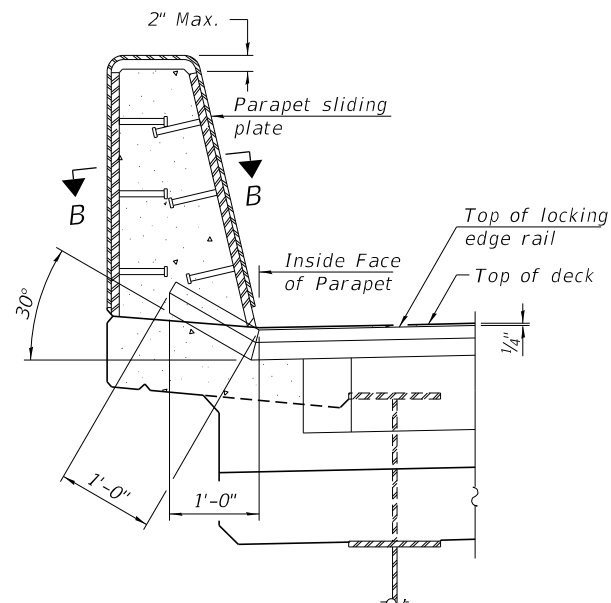
MODULAR EXPANSION JOINT - PIER 24 - 1
STRUCTURE NO. 060-0350 (EB)

SHEET 104 OF 292 SHEETS

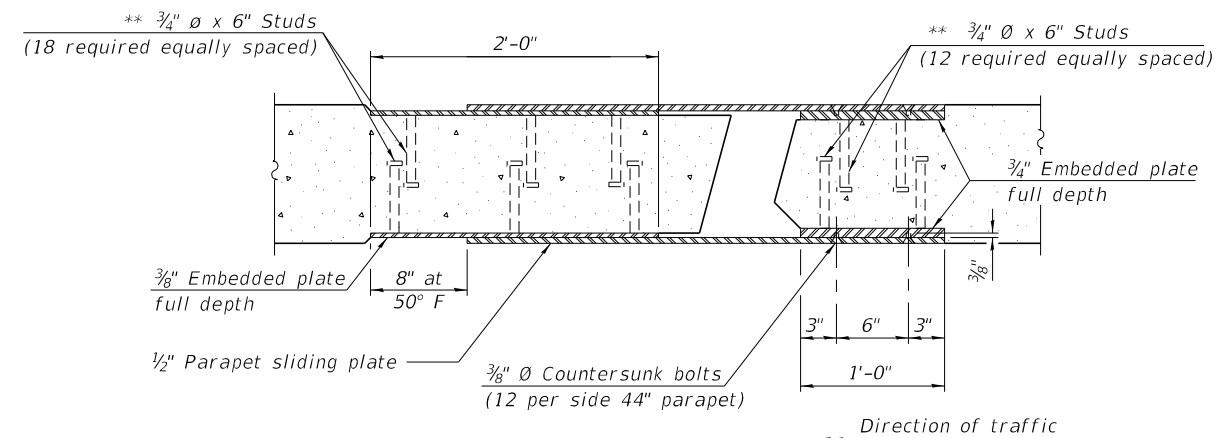
F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	317
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				



FOR SKEWS < 30°
PLAN AT PARAPET

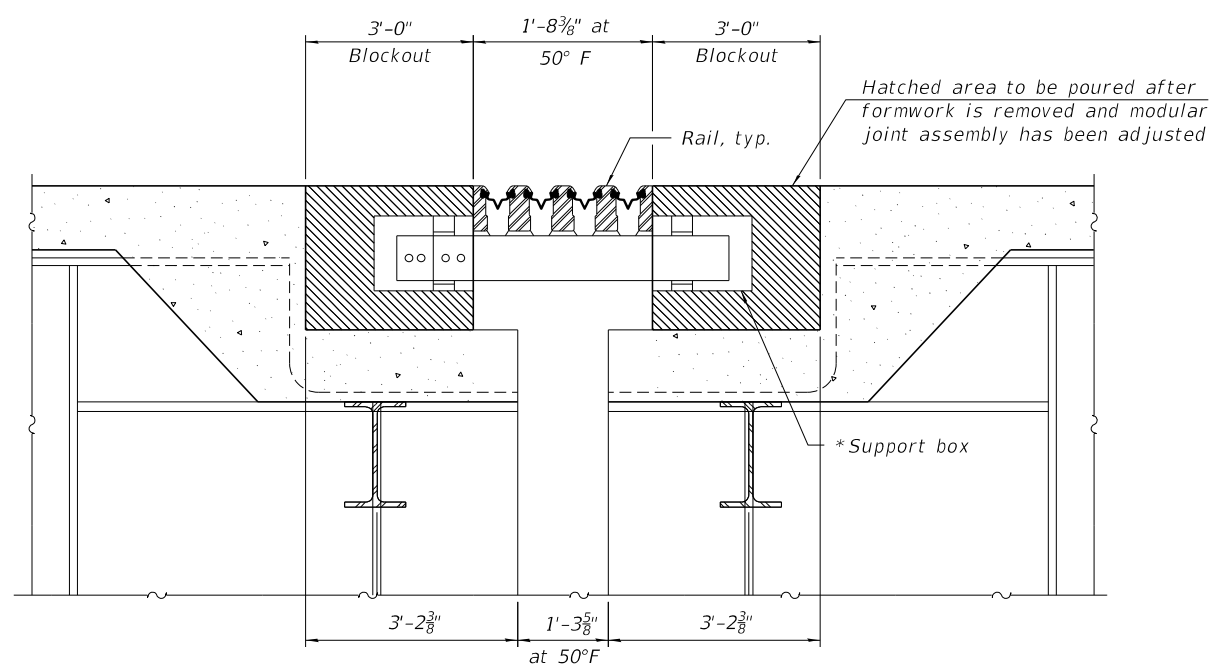


ELEVATION AT PARAPET



SECTION B-B

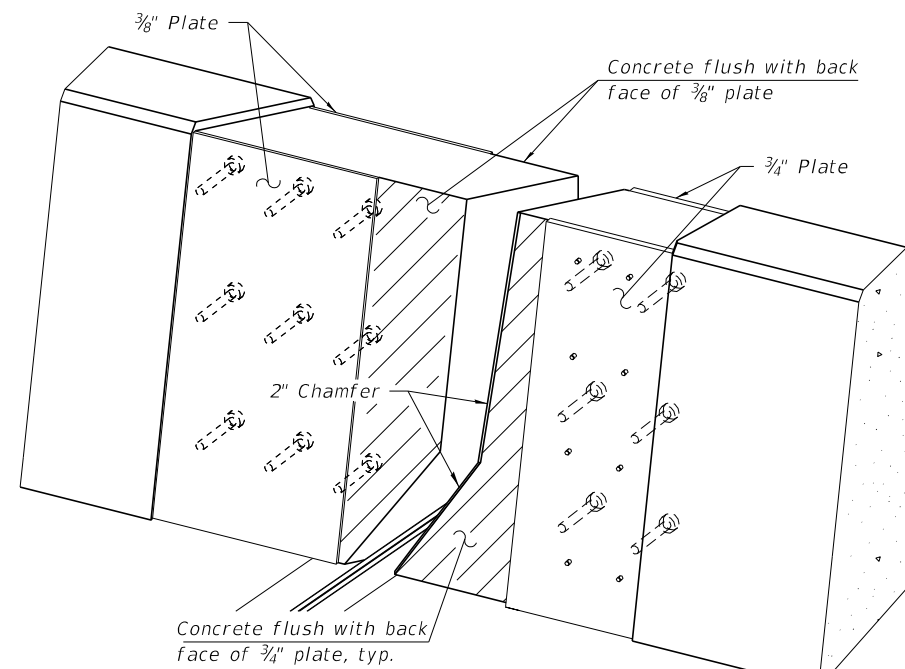
** Granular or solid flux filled headed studs conforming to Article 1006.32 of the Std. Specs., automatically end welded.



SECTION A-A

(Horiz. dim. at rt. angles.)
(Reinforcement not shown for clarity)

* Number of rails determined by manufacturer



TRIMETRIC VIEW
(Showing embedded plates only)

Notes:
The manufacturer's recommended installation methods shall be followed.
All steel components shall be galvanized after fabrication according to Article 520.03 of the Standard Specifications.
Parapet plates and anchorage studs included in the cost of "Modular Expansion Joint 18".
Support boxes shall be supported in blockout by adjustable brackets, stools, or shims. Cost of brackets, stools, or shims included in "Modular Expansion Joint 18".
The number, location and orientation of support boxes shall be determined by the manufacturer.
Modular expansion joints shall be assembled in their final relative position with the ends in place for shop inspection and acceptance.
Prior to the placement of the joint block-out, the Contractor shall coordinate with the Modular Joint Manufacturer to ensure that the joint will be properly supported and that the reinforcement bars will not interfere with the joint components. Any necessary adjustments to the reinforcement layout shall be submitted to the Engineer for approval.
Joint longitudinal opening shall be adjusted according to Article 520.04 of the Standard Specifications when the end of deck is cast at an ambient temperature other than 50°F.
The modular expansion joint shall accommodate 15.75" total longitudinal movement (Service I combination).

BILL OF MATERIAL

Item	Unit	Total
Modular Expansion Joint 18"	Foot	58

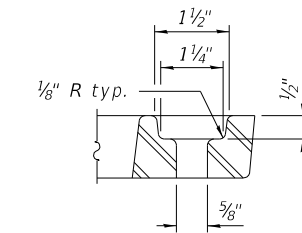
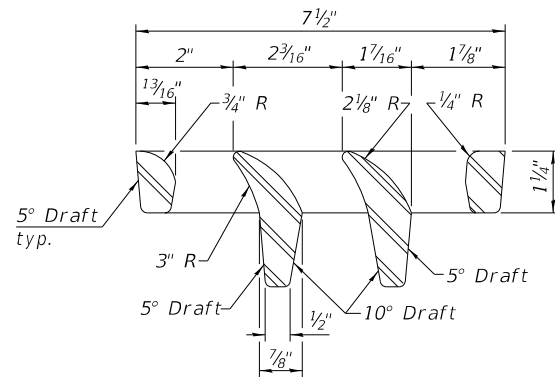
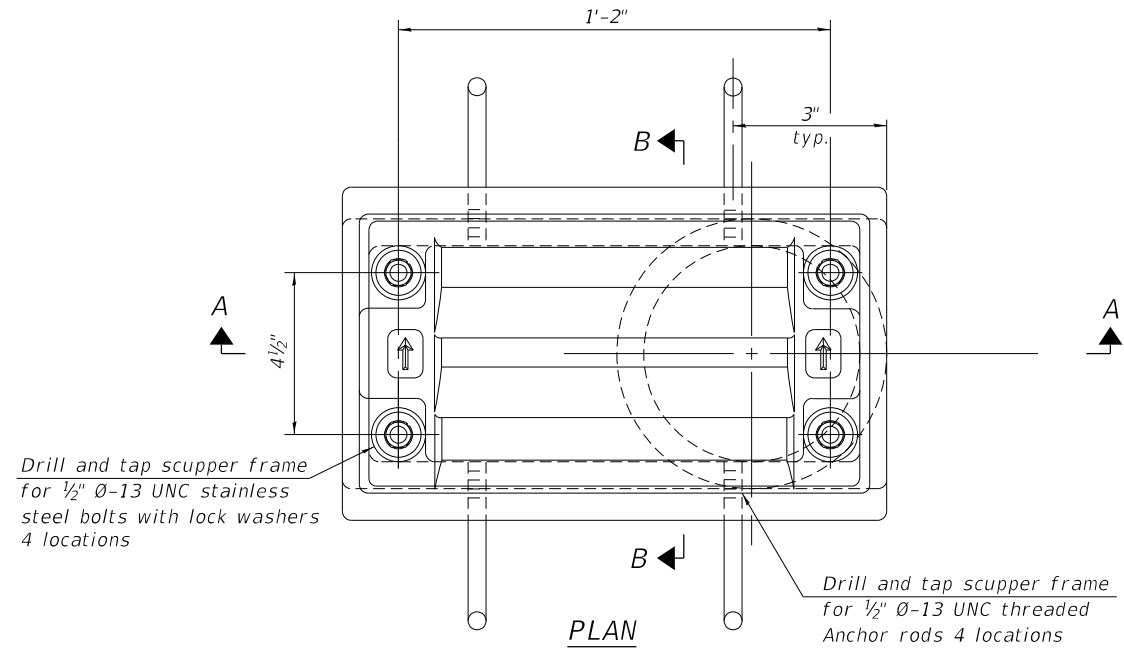
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

MODULAR EXPANSION JOINT - PIER 24 - 2
STRUCTURE NO. 060-0350 (EB)

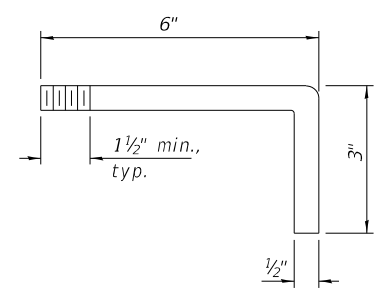
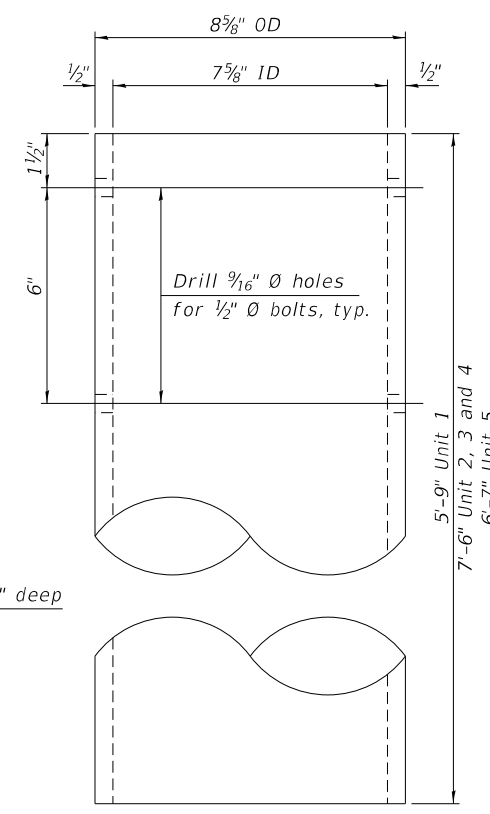
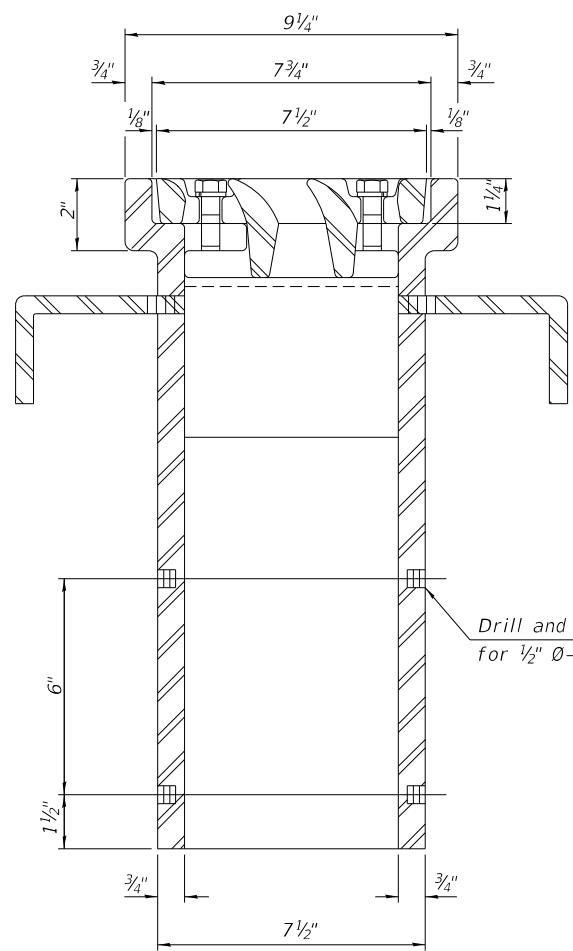
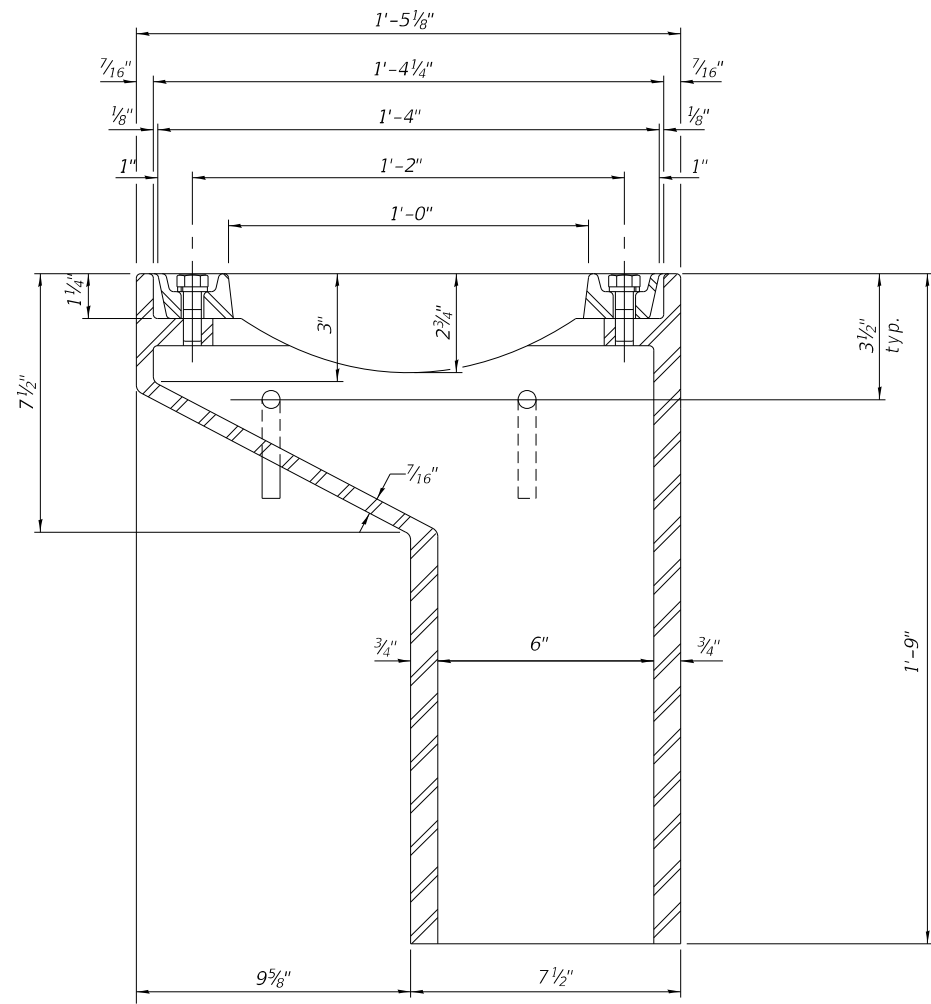
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	318
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				

SHEET 105 OF 292 SHEETS

USER NAME =	DESIGNED - TBS	REVISED -
PLOT SCALE =	CHECKED - VMC	REVISED -
PLOT DATE =	DRAWN - RF	REVISED -
	CHECKED - VMC	REVISED -



Notes:
 All cast iron parts shall be gray iron conforming to the requirements of AASHTO M105, Class 35B and AASHTO M306.
 Bolts, anchor rods, nuts and washers shall be according to ASTM A307 and shall be galvanized according to AASHTO M232. As an alternate stainless steel may be used.
 Stainless steel hardware shall be according to Article 1006.29(d) of the Standard Specifications.
 Structural steel weldments of equal sections and of the same configuration may be substituted for the cast iron scupper frames and downspouts; however, the scupper grates shall remain cast iron. Fillet or full penetration welds shall be used for the weldments. Details shall be submitted to the Engineer for approval.
 Structural steel scupper frames and downspouts, when utilized, shall be galvanized according to AASHTO M111.
 As an alternate, fiberglass may be used for downspouts according to ASTM D2996 with a short-time rupture strength hoop tensile stress of 30,000 psi min. in lieu of the cast iron or structural steel.
 Exterior surfaces of downspouts and exterior exposed surfaces of the scupper frame below deck shall be treated as specified on sheet 8 of 292.
 The Contractor shall take appropriate measures to assure that Protective Coat is not applied to the scupper.
 Cost of the grate, frame, downspout, anchor rods, nuts and washers including complete installation of the scupper shall be paid for at the contract unit price for Drainage Scupper, DS-11.



See sheet 77 of 292 for scupper location relative to parapet.

Drill and tap 4 holes 1/2" deep for 1/2" Ø-13 UNC bolts.

DOWNSPOUT

BILL OF MATERIAL

LOCATION	ITEM	UNIT	QUANTITY
Unit 1	Drainage Scupper, DS-11	Each	12
Unit 2	Drainage Scupper, DS-11	Each	27
Unit 3	Drainage Scupper, DS-11	Each	18
Unit 4	Drainage Scupper, DS-11	Each	20
Unit 5	Drainage Scupper, DS-11	Each	8
Total			85

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DS-11

1-1-2020



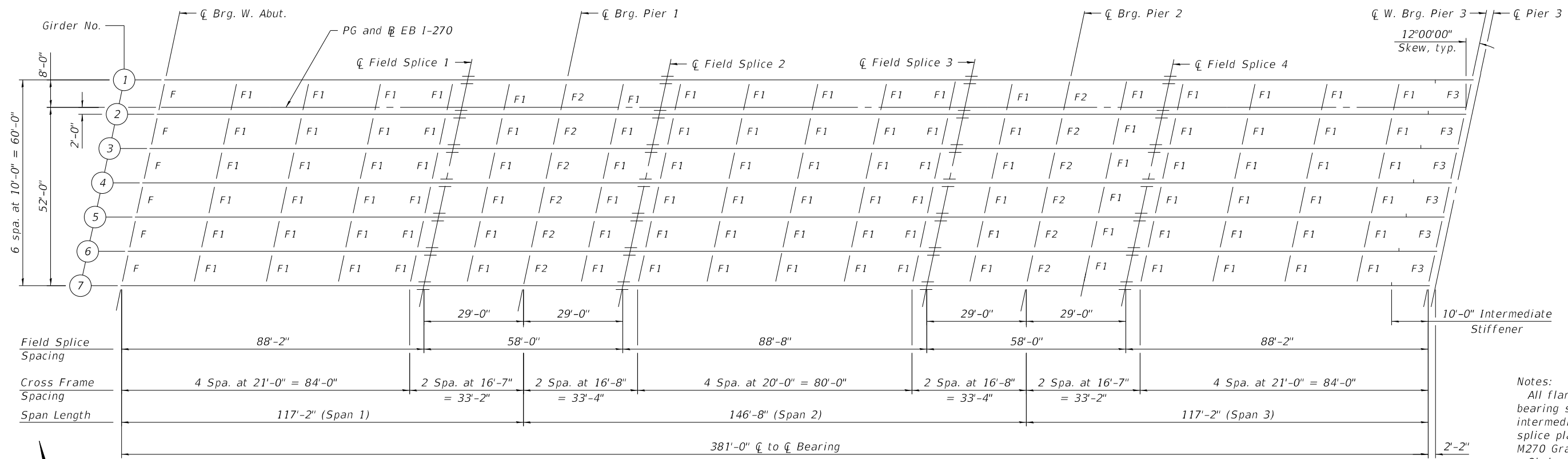
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**STATE OF ILLINOIS
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**DRAINAGE SCUPPER, DS-11
 STRUCTURE NO. 060-0350 (EB)**

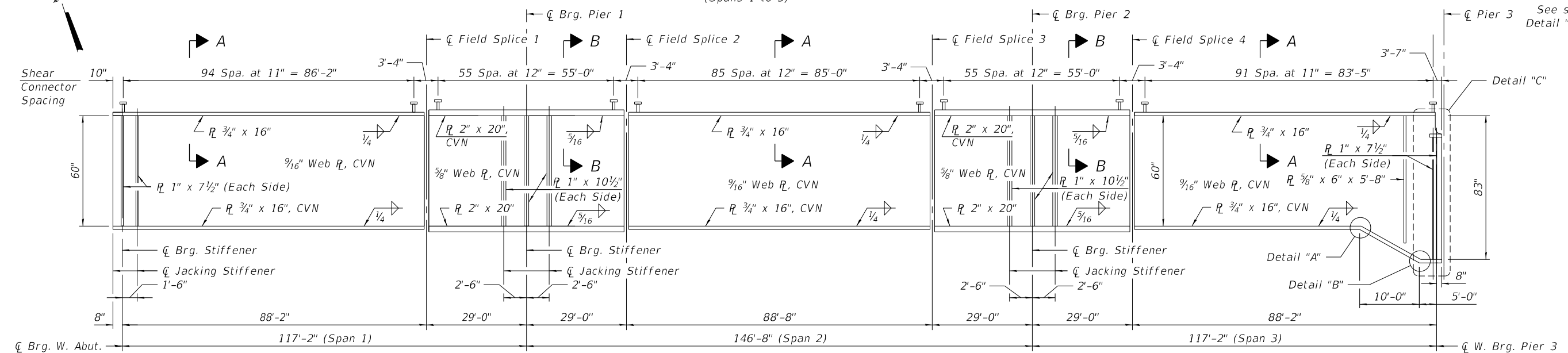
SHEET 106 OF 292 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	319
CONTRACT NO. 76J90				
ILLINOIS FED. AID PROJECT				

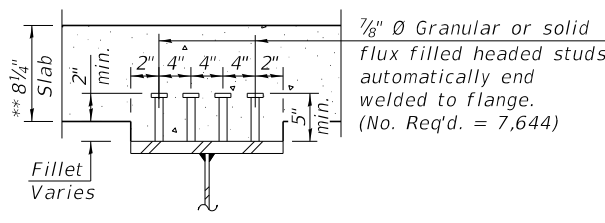


FRAMING PLAN - UNIT 1
(Spans 1 to 3)

Notes:
All flanges, web plates, bearing stiffeners, intermediate stiffeners, and splice plates shall be AASHTO M270 Grade 50.
Girder ends and bearing stiffeners at W. Abut. and Pier 3 shall be fabricated vertically on its final position.
See sheet 109 of 292 for Detail "C".

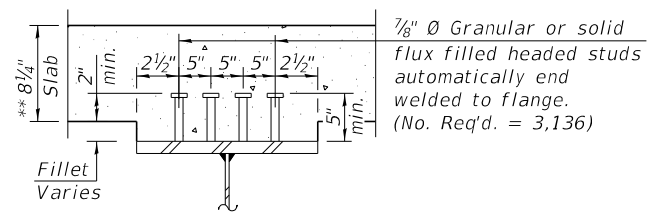


GIRDER ELEVATION
"CVN" denotes Charpy-V-Notch impact energy requirements, zone 2.

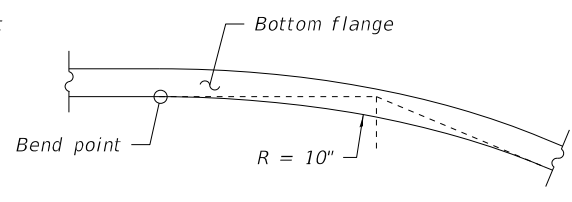


SECTION A-A

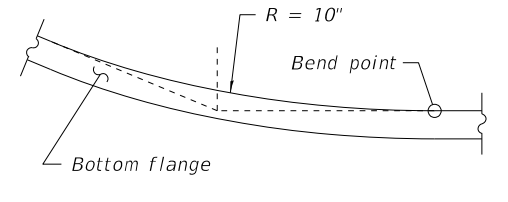
** Prior to grinding



SECTION B-B



DETAIL "A"



DETAIL "B"

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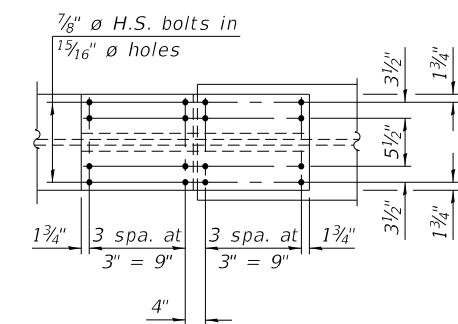
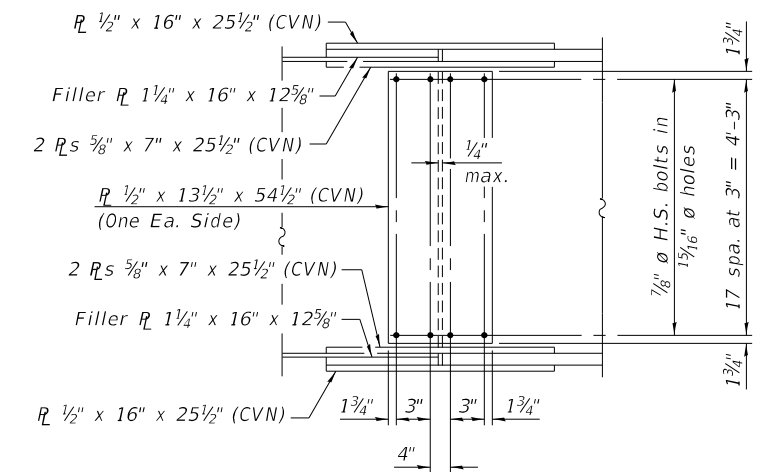
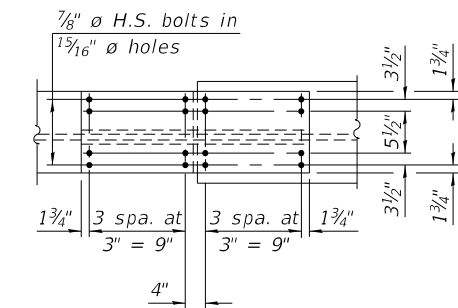
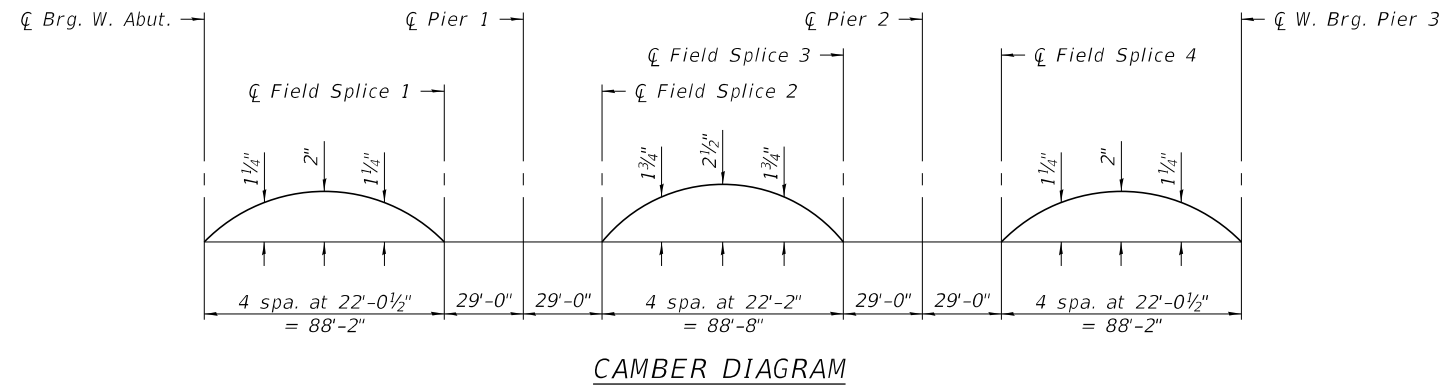
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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

FRAMING PLAN UNIT 1
STRUCTURE NO. 060-0350 (EB)

SHEET 107 OF 292 SHEETS

F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	320
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				



FIELD SPLICE 1, 2, 3, AND 4 DETAIL
(28 Required)

*** TOP OF WEB ELEVATIONS

Location	☐ Brg. W. Abut.	☐ Field Splice 1	☐ Pier 1	☐ Field Splice 2	☐ Field Splice 3	☐ Pier 2	☐ Field Splice 4	*☐ W. Brg. Pier 3
Girder 1	451.97	452.28	452.41	452.54	452.98	453.14	453.30	453.88
Girder 2	452.16	452.47	452.60	452.73	453.18	453.34	453.50	454.06
Girder 3	452.35	452.66	452.79	452.92	453.37	453.53	453.69	454.25
Girder 4	452.14	452.45	452.58	452.71	453.15	453.32	453.48	454.04
Girder 5	451.93	452.24	452.37	452.50	452.94	453.10	453.27	453.83
Girder 6	451.72	452.03	452.16	452.29	452.73	452.89	453.05	453.62
Girder 7	451.51	451.81	451.94	452.08	452.52	452.68	452.84	453.41

*** For Fabrication only.

*Elevation given at theoretical top of web prior to coping of web.

Notes:
See sheet 107 of 292 for additional notes.
"CVN" denotes Charp V-Notch impact requirements, zone 2.

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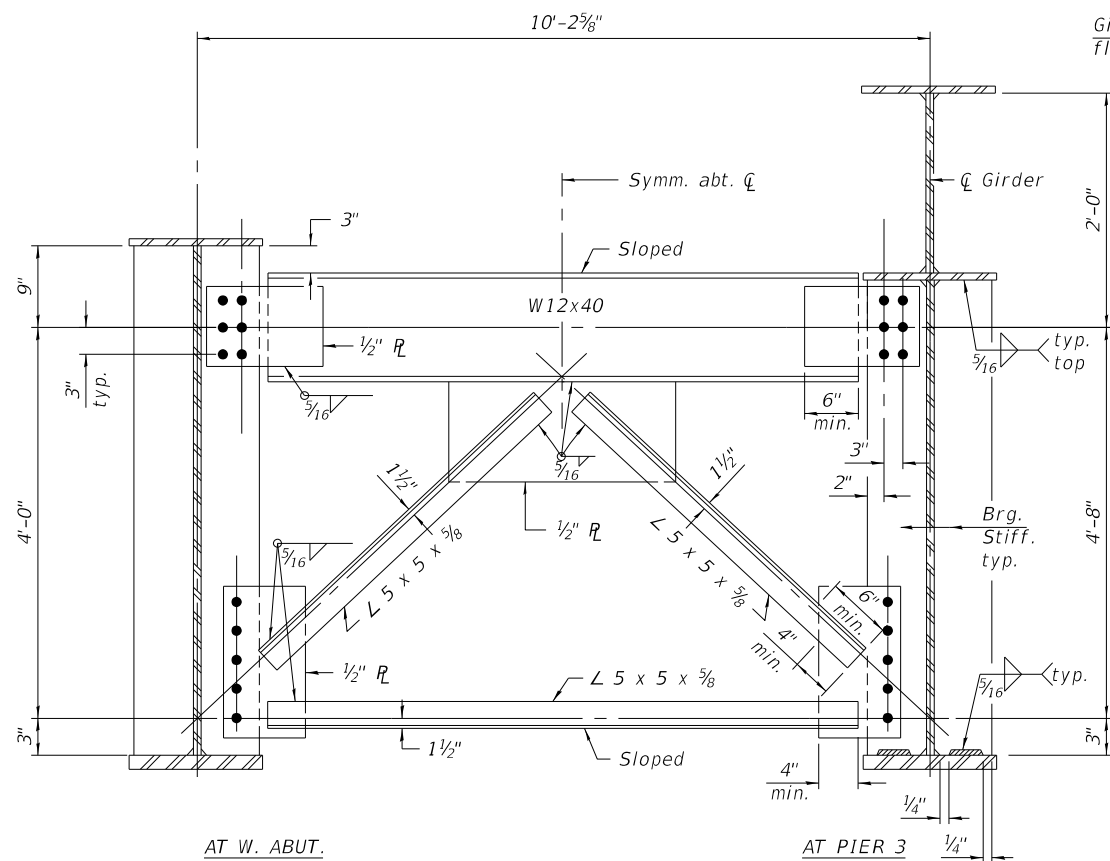
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**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

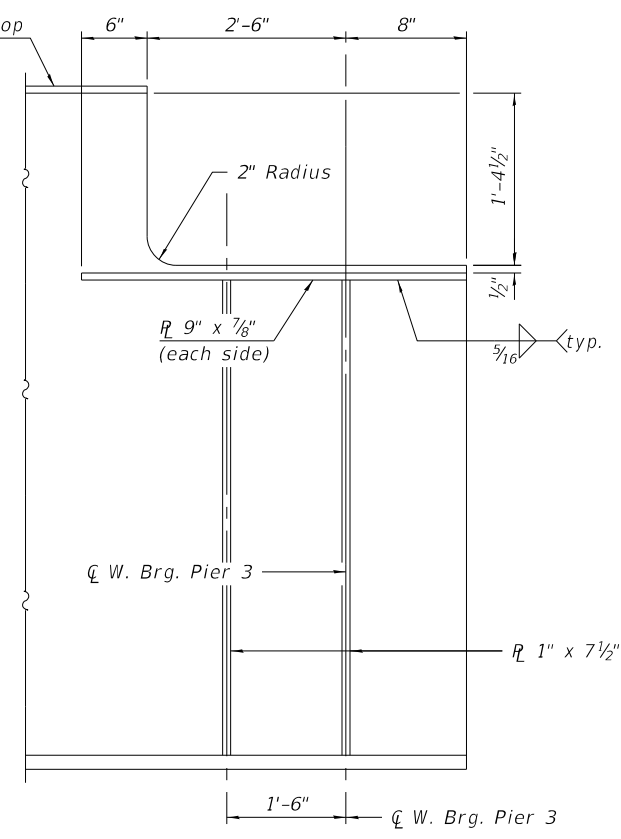
**STEEL DETAILS UNIT 1 - 1
STRUCTURE NO. 060-0350 (EB)**

SHEET 108 OF 292 SHEETS

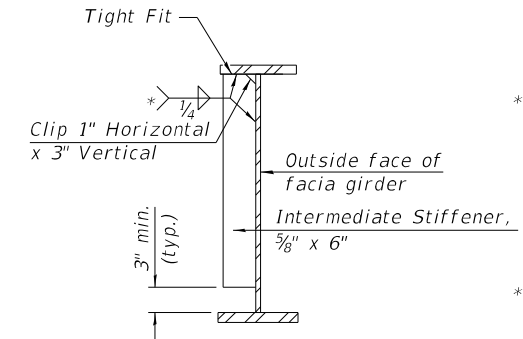
F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	321
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				



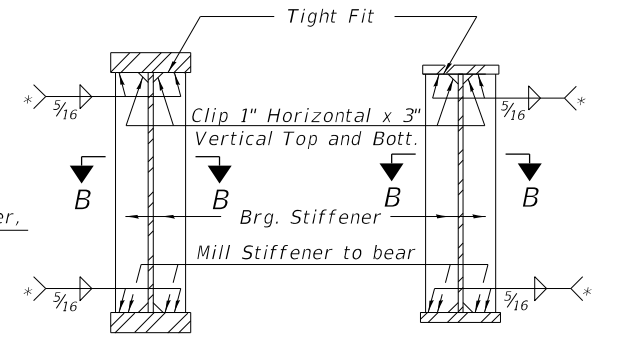
CROSS FRAME F AND F3
(6 F Required)
(6 F3 Required)



DETAIL C

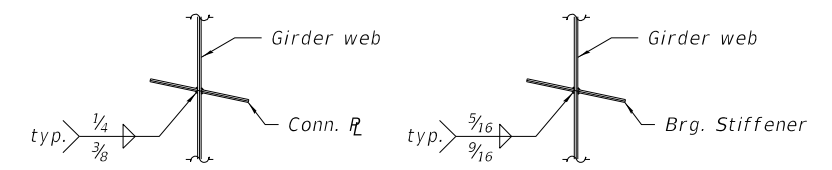


SECTION AT INT. STIFFENER
(Facia girders shown, interior girders similar)



SECTION AT PIER **SECTION AT ABUTMENT**

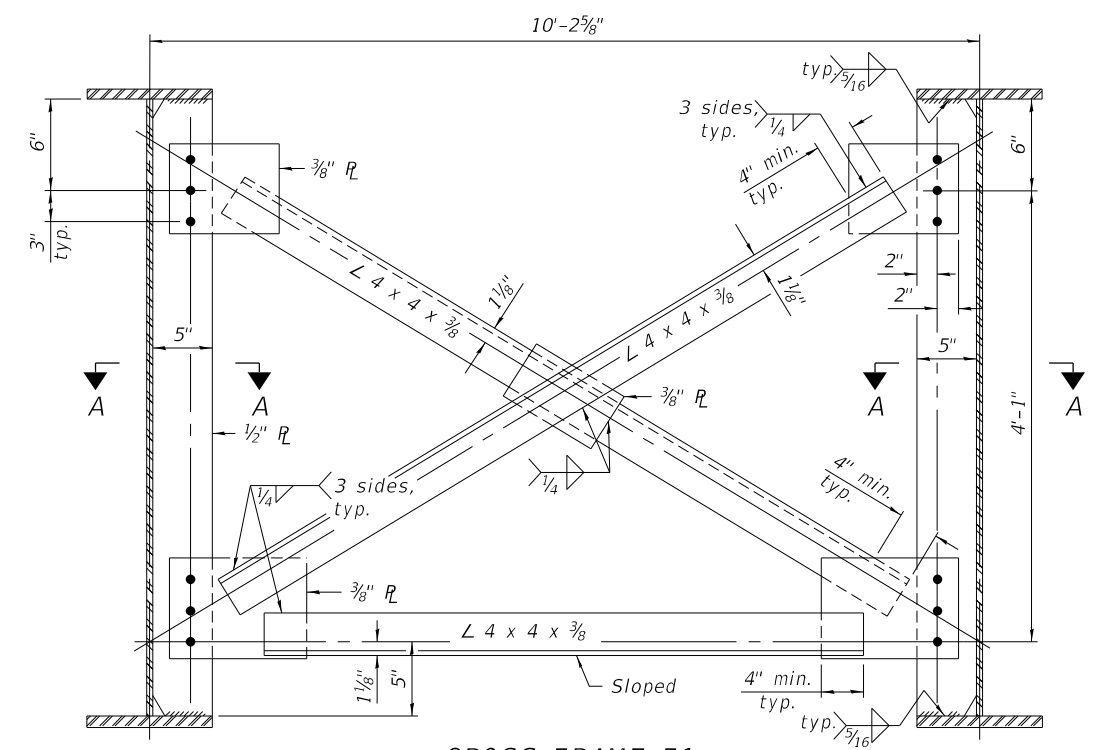
* Terminate 1/4" (±1/8") from the end of plate intersects.



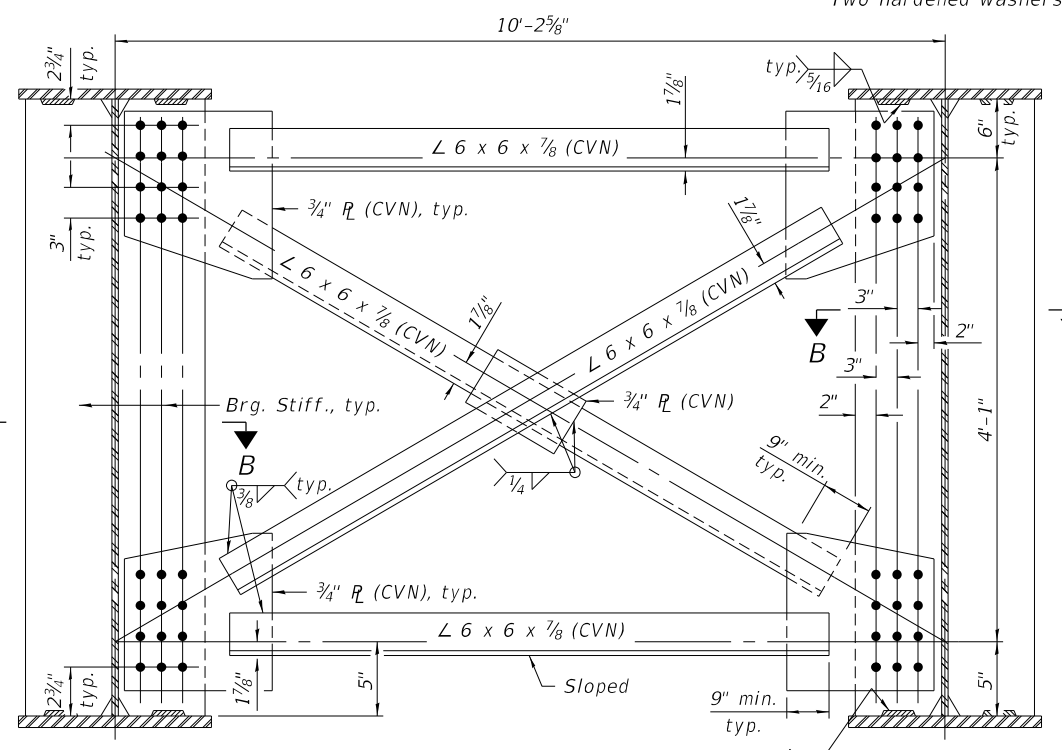
SECTION A-A

SECTION B-B

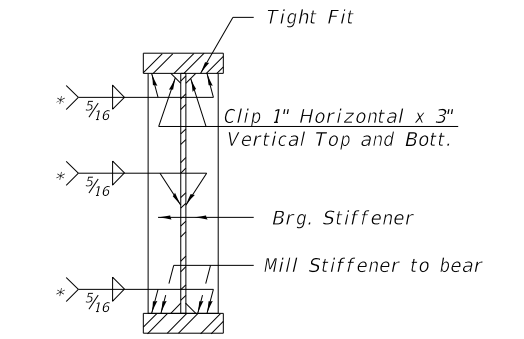
Notes:
All cross frames or diaphragms between beams or girders shall be installed with erection pins and bolts in accordance with the erection plan approved by the Engineer. Individual cross frames or diaphragms at supports may be temporarily disconnected to install bearing anchor rods.
All structural steel shall be AASHTO M270 Grade 50.
All bolts in cross frames F, F2 and F3 shall be 1" ø in 1 3/16" ø holes.
All bolts in cross frames F1 shall be 7/8" ø in 1 1/16" ø holes.
Two hardened washers shall be required for each set of oversized holes.



CROSS FRAME F1
(102 Required)



CROSS FRAME F2
(12 required)



SECTION AT JACKING STIFFENER

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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

STEEL DETAILS UNIT 1 - 2
STRUCTURE NO. 060-0350 (EB)

SHEET 109 OF 292 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	322
CONTRACT NO. 76J90				

ILLINOIS FED. AID PROJECT

INTERIOR GIRDER MOMENT TABLE						
		0.4 Sp. 1	Pier 1	0.5 Sp. 2	Pier 2	0.6 Sp. 3
I_s	(in ⁴)	32,270	88,157	32,270	88,157	32,270
$I_c(n)$	(in ⁴)	87,942	173,150	87,942	173,150	87,942
$I_c(3n)$	(in ⁴)	66,594	---	66,594	---	66,594
$I_c(cr)$	(in ⁴)	---	101,383	---	101,383	---
S_s	(in ³)	1,049	2,755	1,049	2,755	1,049
$S_c(n)$	(in ³)	1,558	---	1,558	---	1,558
$S_c(3n)$	(in ³)	1,427	---	1,427	---	1,427
$S_c(cr)$	(in ³)	---	2,893	---	2,893	---
DC1	(k/')	1.254	1.478	1.254	1.478	1.254
MDC1	(k)	1,022	2,837	718	2,832	1,026
DC2	(k/')	0.163	0.163	0.163	0.163	0.163
MDC2	(k)	136	331	107	331	136
DW	(k/')	0.457	0.457	0.457	0.457	0.457
MDW	(k)	384	935	303	934	384
LLDF		0.713	0.744	0.671	0.744	0.713
$M_{\ell + IM}$	(k)	1,975	2,803	1,783	2,803	1,976
$\eta_1 M_u$ (Strength I)	(k)	5,753	---	4,835	---	5,761
$\phi_r M_n$	(k)	7,545	---	7,803	---	7,541
f_s DC1	(ksi)	11.69	12.36	8.21	12.34	11.74
f_s DC2	(ksi)	1.14	1.37	0.90	1.37	1.14
f_s DW	(ksi)	3.23	3.38	2.55	3.87	3.23
f_s ($\ell + IM$)	(ksi)	15.21	11.63	13.73	11.63	15.22
f_s (Service II)	(ksi)	35.83	32.72	29.50	32.70	35.90
$0.95R_n F_{yt}$	(ksi)	47.50	47.50	47.50	47.50	47.50
$\eta_1 f_s$ (Total) (Strength I) (ksi)		---	45.49	---	45.46	---
$\phi_r F_n$	(ksi)	---	50.00	---	50.00	---
V_r	(k)	59.7	92.2	65.0	92.2	59.7

GIRDER REACTION TABLE									
	W. Abut.		Pier 1		Pier 2		W. Brg. Pier 3		
	Interior	Exterior	Interior	Exterior	Interior	Exterior	Interior	Exterior	
LLDF	0.952	0.840	0.952	0.840	0.952	0.840	0.952	0.840	
OCF	---	1.04	---	---	---	---	---	1.04	
R_{DC1}	(k)	51.9	50.3	205.9	200.1	205.9	200.1	52.2	50.7
R_{DC2}	(k)	6.7	6.7	24.4	24.4	24.4	24.4	6.7	6.7
R_{DW}	(k)	19.0	19.0	68.6	68.6	68.6	68.6	19.0	19.0
R_{ℓ}	(k)	93.6	85.9	197.2	174.0	197.2	174.0	93.6	85.9
R_{IM}	(k)	20.3	18.6	35.9	31.7	35.9	31.7	20.3	18.6
R_{Total}	(k)	191.5	180.5	532.0	498.8	532.0	498.8	191.8	180.9

I_s, S_s : Non-composite moment of inertia and section modulus of the steel section used for computing f_s (Total-Strength I, and Service II) due to non-composite dead loads (in.4 and in.3).

$I_c(n), S_c(n)$: Composite moment of inertia and section modulus of the steel and deck based upon the modular ratio, "n", used for computing f_s (Total-Strength I, and Service II) in uncracked sections due to short-term composite live loads (in.4 and in.3).

$I_c(3n), S_c(3n)$: Composite moment of inertia and section modulus of the steel and deck based upon 3 times the modular ratio, "3n", used for computing f_s (Total-Strength I, and Service II) in uncracked sections, due to long-term composite (superimposed) dead loads (in.4 and in.3).

$I_c(cr), S_c(cr)$: Composite moment of inertia and section modulus of the steel and longitudinal deck reinforcement, used for computing f_s (Total-Strength I and Service II) in cracked sections, due to both short-term composite live loads and long-term composite (superimposed) dead loads (in.4 and in.3).

DC1: Un-factored non-composite dead load (kips/ft.).
MDC1: Un-factored moment due to non-composite dead load (kip-ft.).
DC2: Un-factored long-term composite (superimposed excluding future wearing surface) dead load (kips/ft.).
MDC2: Un-factored moment due to long-term composite (superimposed excluding future wearing surface) dead load (kip-ft.).
DW: Un-factored long-term composite (superimposed future wearing surface only) dead load (kips/ft.).
MDW: Un-factored moment due to long-term composite (superimposed future wearing surface only) dead load (kip-ft.).
LLDF: Live Load Distribution Factor
 $M_{\ell + IM}$: Un-factored live load moment plus dynamic load allowance (impact) (kip-ft.).
 $\eta_1 M_u$ (Strength I): Factored design moment (kip-ft.).
 $1.05 [1.25 (MDC1 + MDC2) + 1.5 MDW + 1.75 M_{\ell + IM}]$
 $\phi_r M_n$: Compact composite positive moment capacity computed according to Article 6.10.7.1 or non-slender negative moment capacity according to Article A6.1.1 or A6.1.2 (kip-ft.).
 f_s DC1: Un-factored stress at edge of flange for controlling steel flange due to vertical non-composite dead loads as calculated below (ksi).
MDC1/ Snc
 f_s DC2: Un-factored stress at edge of flange for controlling steel flange due to vertical composite dead loads as calculated below (ksi).
MDC2/ $S_c(3n)$ or MDC2/ $S_c(cr)$ as applicable.
 f_s DW: Un-factored stress at edge of flange for controlling steel flange due to vertical composite future wearing surface loads as calculated below (ksi).
MDW/ $S_c(3n)$ or MDW/ $S_c(cr)$ as applicable.
 f_s ($\ell + IM$): Un-factored stress at edge of flange for controlling steel flange due to vertical composite live load plus impact loads as calculated below (ksi).
 $M_{\ell + IM} / S_c(n)$ or $M_{\ell + IM} / S_c(cr)$ as applicable.
 f_s (Service II): Sum of stresses as computed below (ksi).
 $f_s DC1 + f_s DC2 + f_s DW + 1.3 f_s (\ell + IM)$
 $0.95R_n F_{yt}$: Composite stress capacity for Service II loading according to Article 6.10.4.2 (ksi).
 $\eta_1 f_s$ (Total) (Strength I): Sum of stresses as computed below on non-compact section (ksi).
 $1.05 [1.25 (f_s DC1 + f_s DC2) + 1.5 f_s DW + 1.75 f_s (\ell + IM)]$
 $\phi_r F_n$: Non-Compact composite positive or negative stress capacity for Strength I loading according to Article 6.10.7 or 6.10.8 (ksi).
 V_r : Maximum factored shear range in span computed according to Article 6.10.10.
OCF: Obtuse Correction Factor

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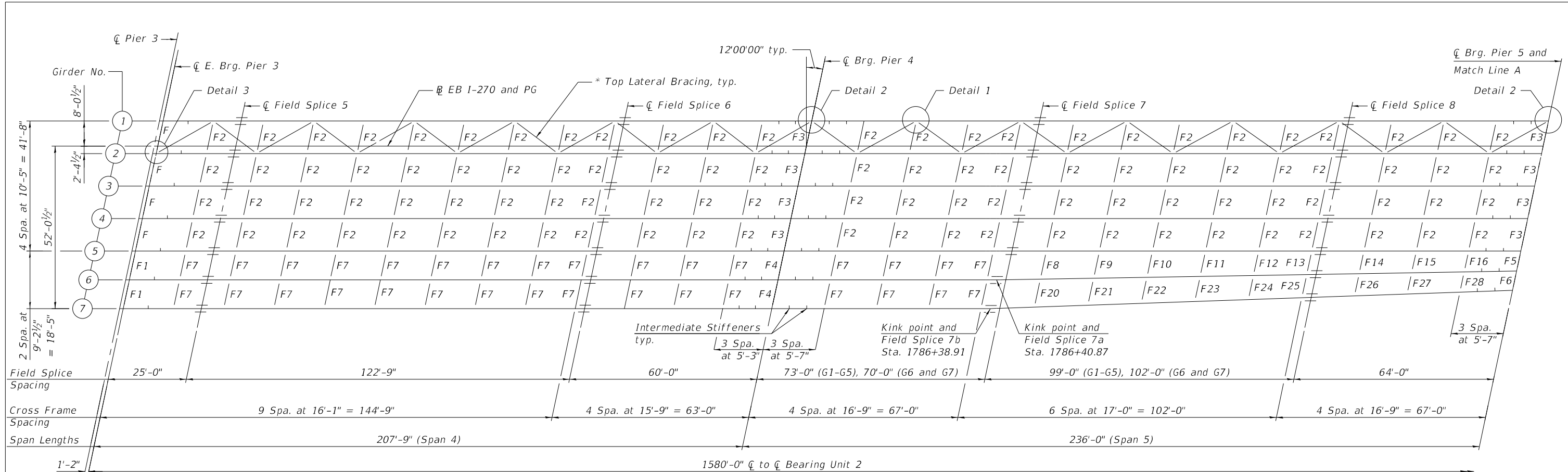
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DEPARTMENT OF TRANSPORTATION

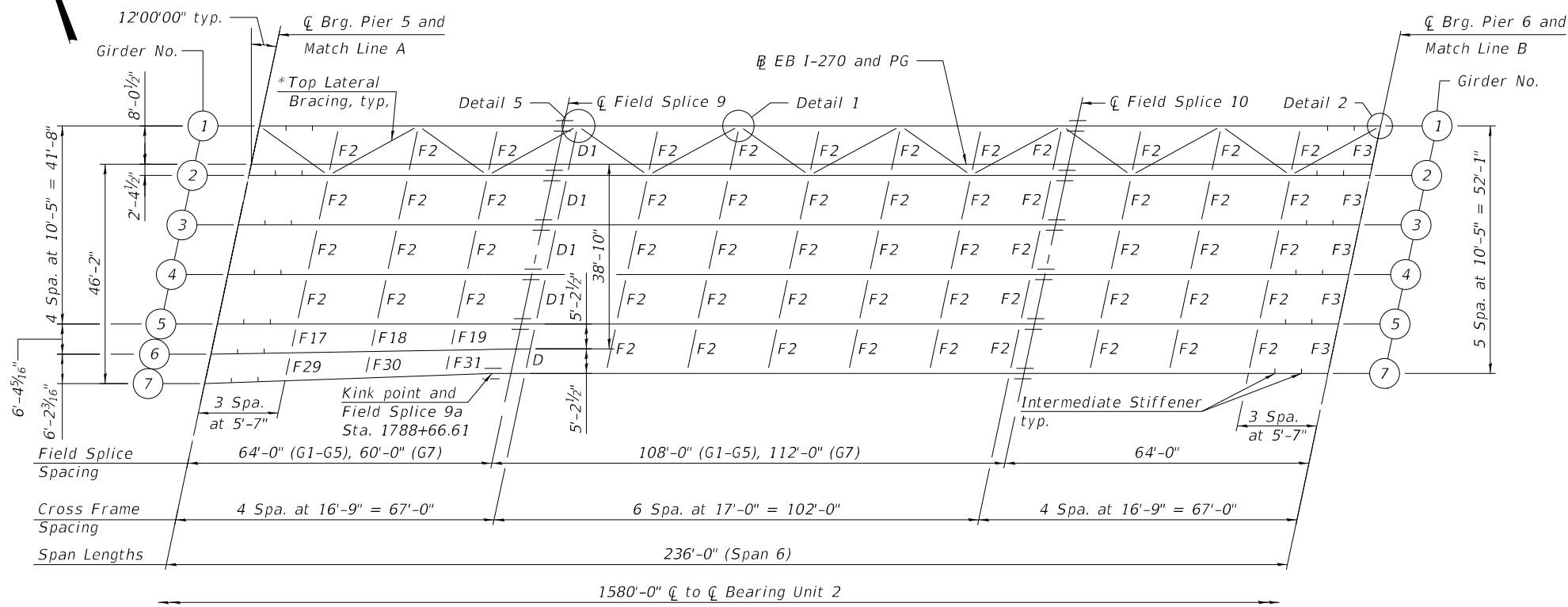
STRESS TABLES UNIT 1
STRUCTURE NO. 060-0350 (EB)

SHEET 110 OF 292 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	323
CONTRACT NO. 76J90				
ILLINOIS FED. AID PROJECT				



FRAMING PLAN - UNIT 2
(Spans 4 and 5)



FRAMING PLAN - UNIT 2
(Span 6)

* Top lateral bracing to be installed between the first and next adjacent girders erected. All lateral bracing to be in the same girder bay for full length of Unit 2.

Notes:
All lengths are along EB I-270 and PG.
For Match Line B, see sheet 112 of 292.
For field splice details, see sheet 117 of 292.
For cross frame details, see sheet 118 of 292.
For Details 1, 2, 3, and 5, see sheet 120 of 292.

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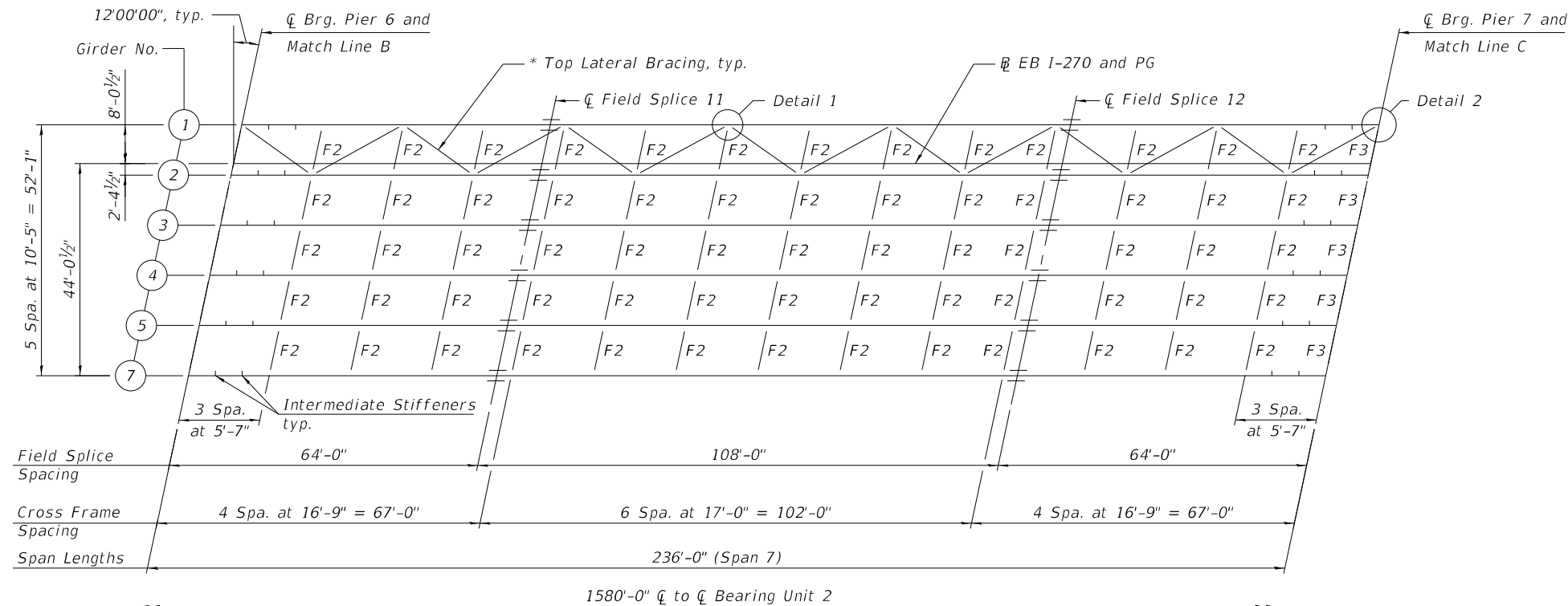
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

FRAMING PLAN UNIT 2 - 1
STRUCTURE NO. 060-0350 (EB)

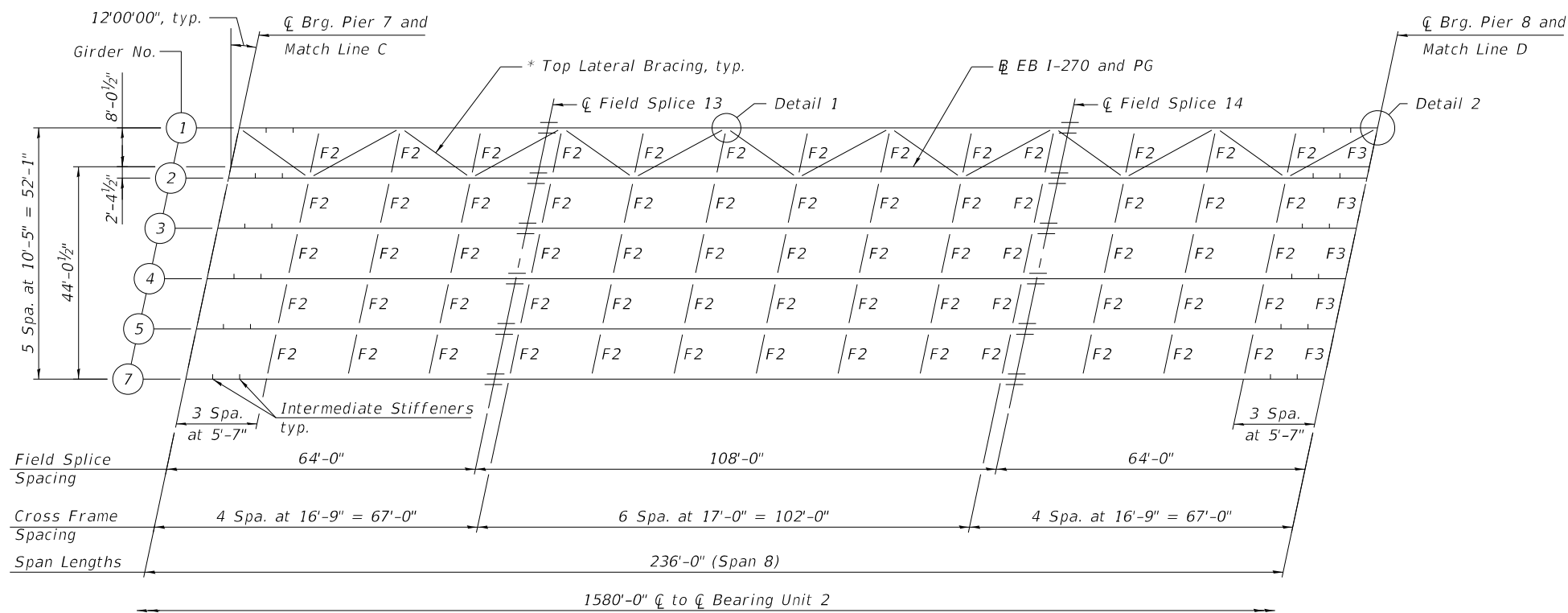
SHEET 111 OF 292 SHEETS

F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	324
CONTRACT NO. 76190				

ILLINOIS FED. AID PROJECT



FRAMING PLAN - UNIT 2
(Span 7)



FRAMING PLAN - UNIT 2
(Span 8)

* Top lateral bracing to be installed between the first and next adjacent girders erected. All lateral bracing to be in the same girder bay for full length of Unit 2.

Notes:
 All lengths are along \bar{E} .B. I-270 and PG.
 For Match Line B, see sheet 111 of 292.
 For Match Line D, see sheet 113 of 292.
 For field splice details, see sheet 117 of 292.
 For cross frame details, see sheet 118 of 292.
 For Details 1 and 2, see sheet 120 of 292.

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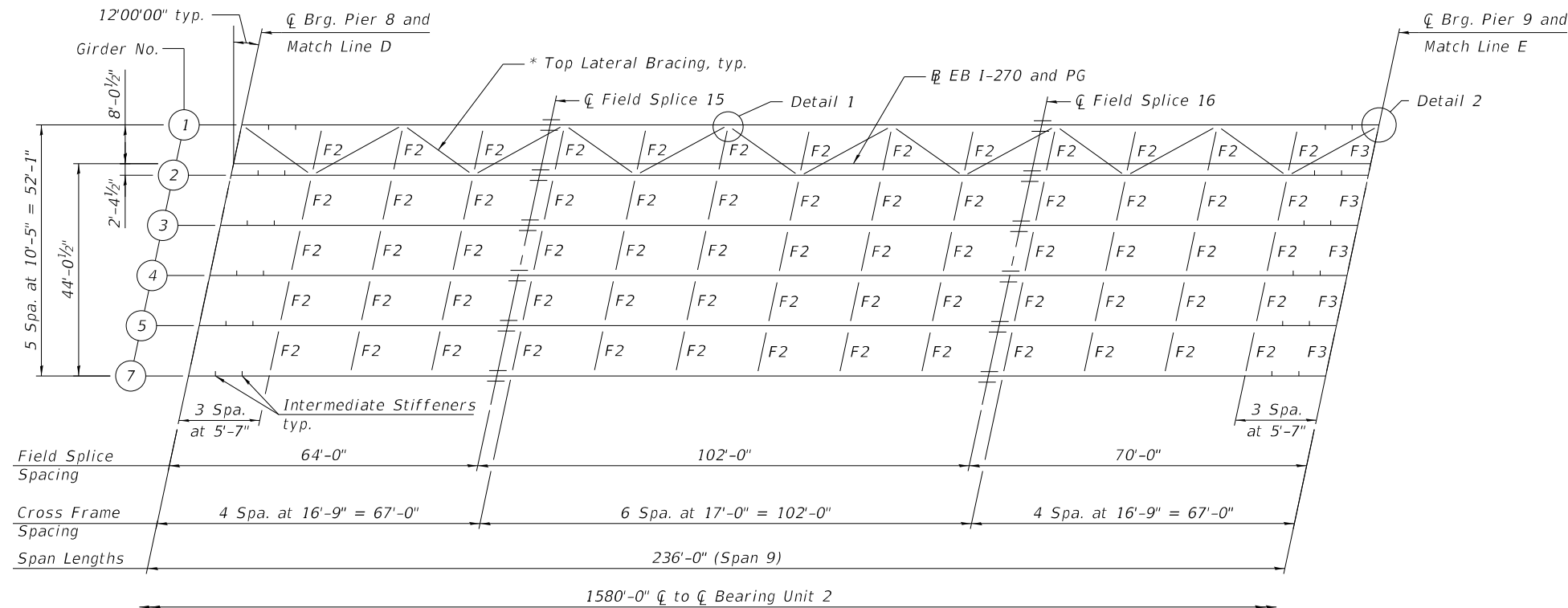
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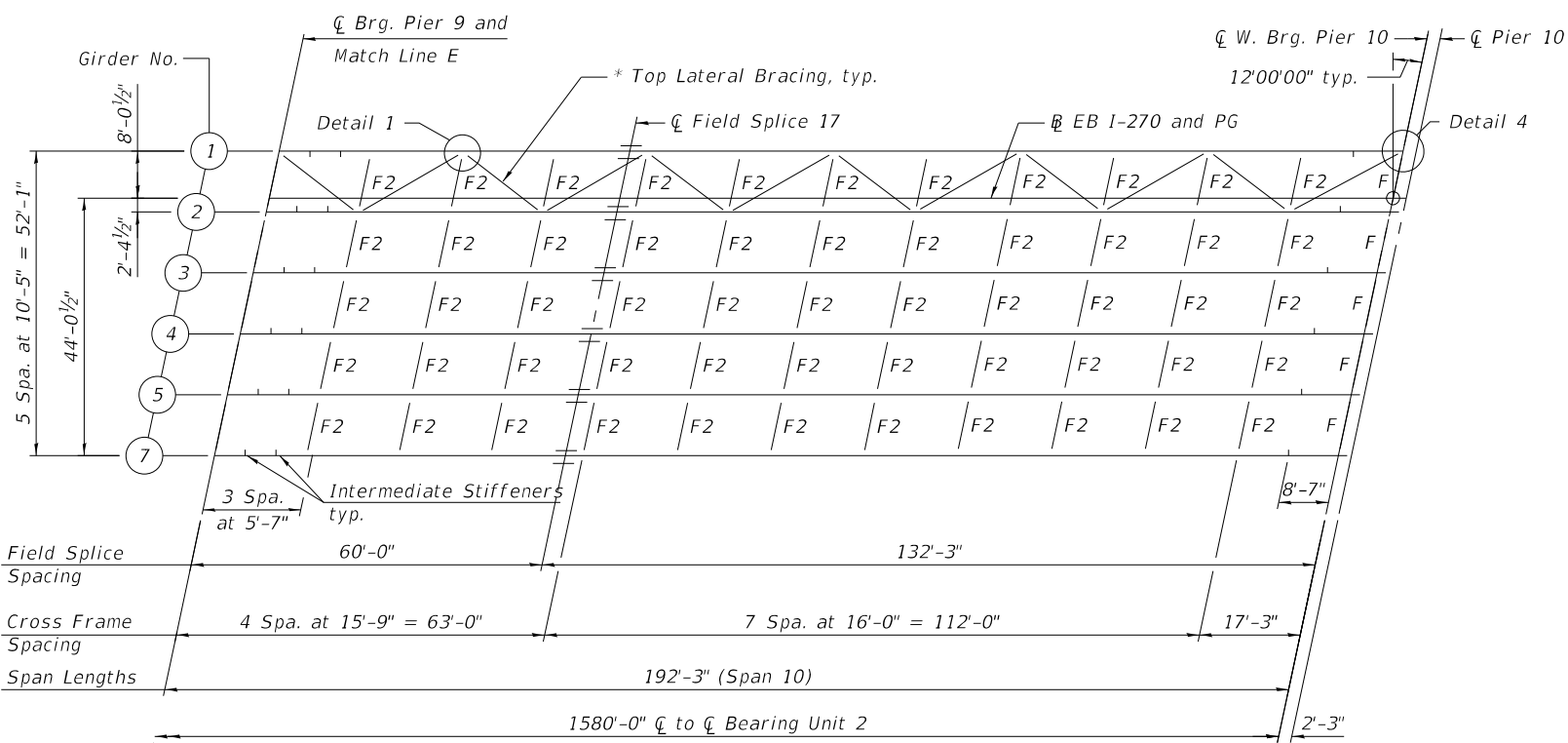
FRAMING PLAN UNIT 2 - 2
STRUCTURE NO. 060-0350 (EB)

SHEET 112 OF 292 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	325
CONTRACT NO. 76J90				
ILLINOIS FED. AID PROJECT				



FRAMING PLAN - UNIT 2
(Span 9)



FRAMING PLAN - UNIT 2
(Span 10)

* Top lateral bracing to be installed between the first and next adjacent girders erected. All lateral bracing to be in the same girder bay for full length of Unit 2.

Notes:
All lengths are along EB I-270 and PG.
For Match Line D, see sheet 112 of 292.
For field splice details, see sheet 117 of 292.
For cross frame details, see sheet 118 of 292.
For Details 1, 2, and 4, see sheet 120 of 292.

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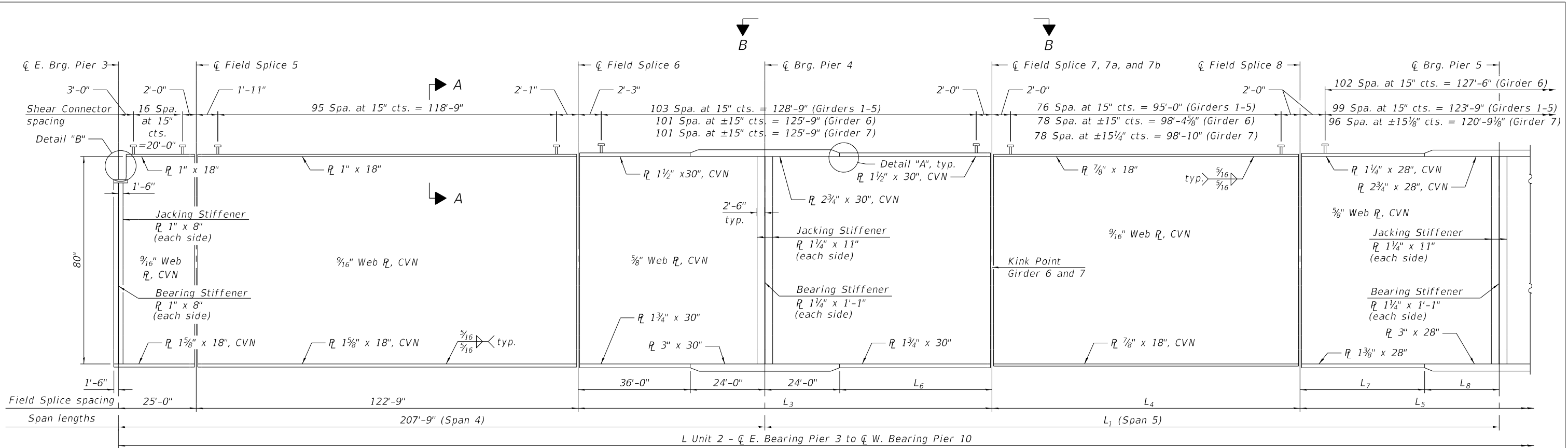
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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

FRAMING PLAN UNIT 2 - 3
STRUCTURE NO. 060-0350 (EB)

F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	326
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				

SHEET 113 OF 292 SHEETS

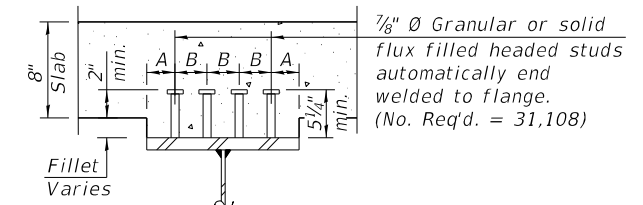


GIRDER ELEVATION - UNIT 2

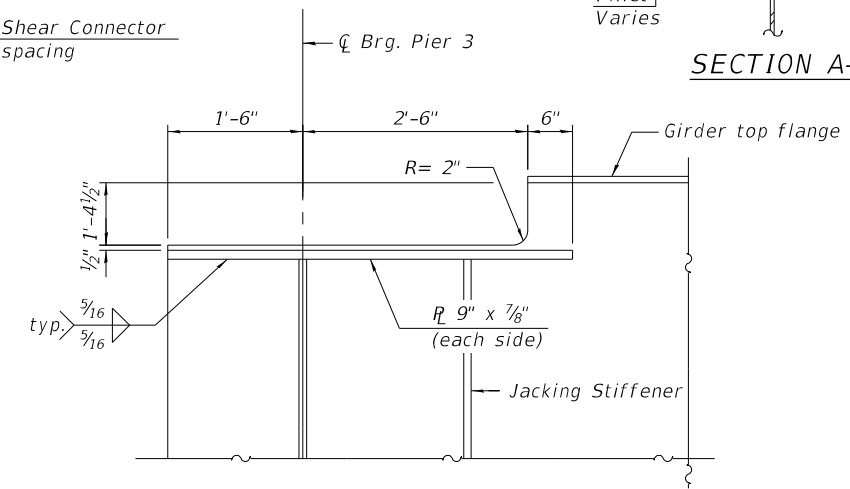
(Spans 4 and 5)

"CVN" denotes Charpy-V-Notch impact energy requirements, zone 2.

Flange Width	A	B
18"	2 1/4"	4 1/2"
28"	2"	8"
30"	3"	8"

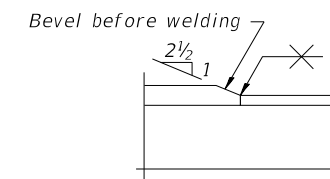


SECTION A-A



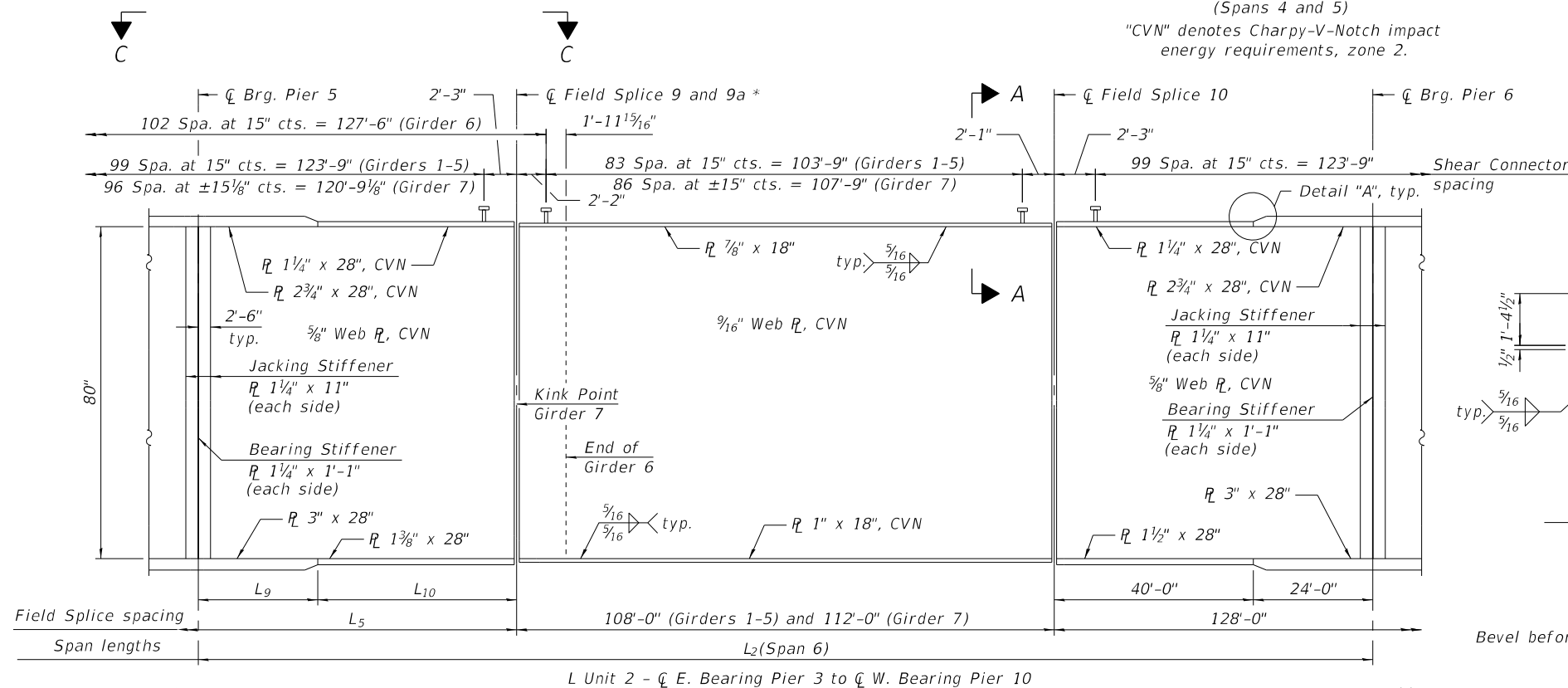
DETAIL "B"

☐ Pier 3 shown, ☐ Pier 10 mirrored



DETAIL "A"

Notes:
 All flanges, web plates, bearing stiffeners, intermediate stiffeners, and splice plates shall be AASHTO M270 Grade 50.
 Girder ends and bearing stiffeners at Pier 3 and Pier 10 shall be fabricated vertically on its final position.
 For Views B-B and C-C, see sheet 116 of 292.
 For Table of "L" Dimensions, see sheet 116 of 292.



GIRDER ELEVATION - UNIT 2

(Span 6)

*No splice on Girder 6, see View C-C on sheet 116 of 292.

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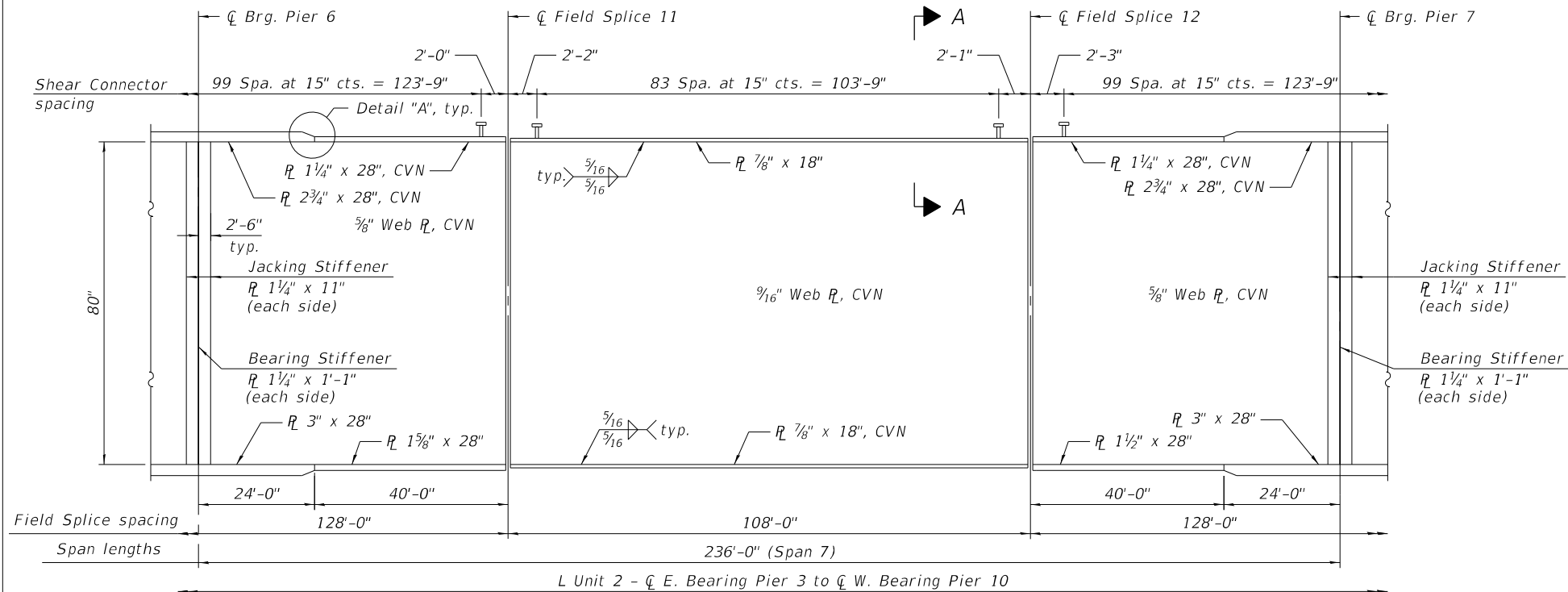
**STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION**

**GIRDER ELEVATION UNIT 2 - 1
 STRUCTURE NO. 060-0350 (EB)**

SHEET 114 OF 292 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	327
CONTRACT NO. 76J90				

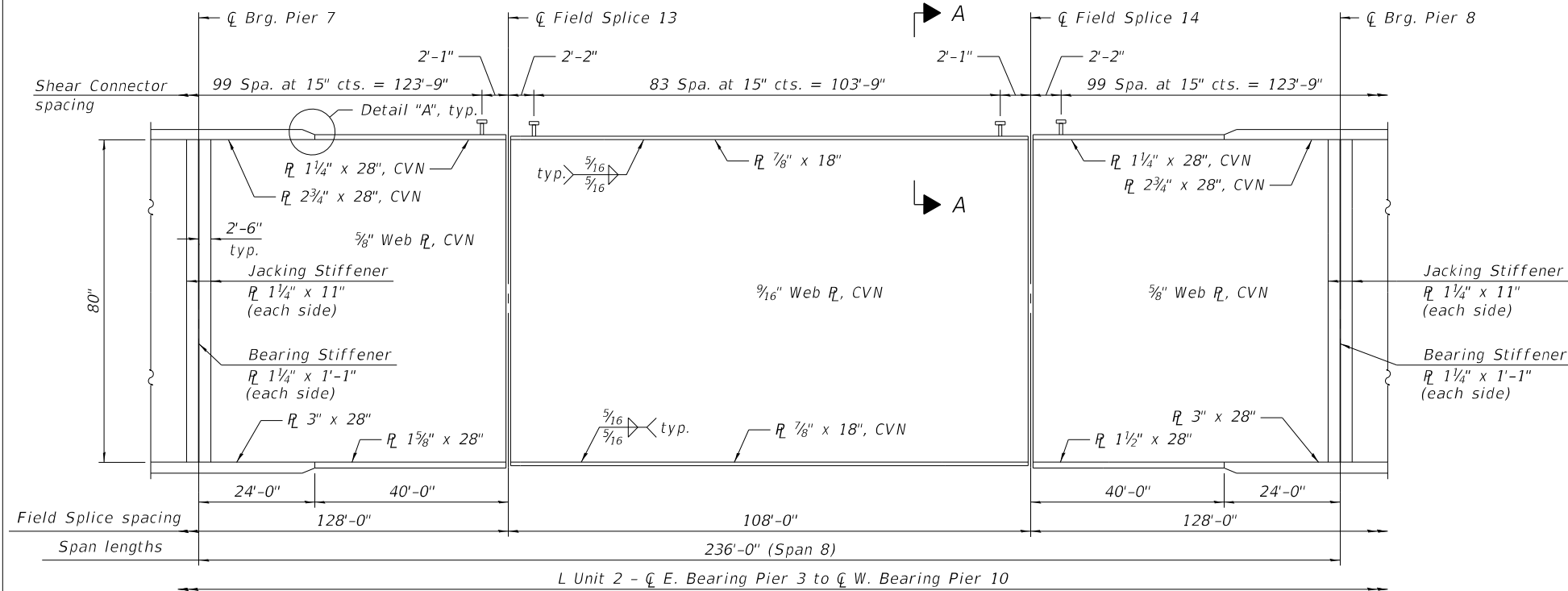
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GIRDER ELEVATION - UNIT 2

(Span 7)

"CVN" denotes Charpy-V-Notch impact energy requirements, zone 2.



GIRDER ELEVATION - UNIT 2

(Span 8)

Notes:
 All flanges, web plates, bearing stiffeners, intermediate stiffeners, and splice plates shall be AASHTO M270 Grade 50.
 For Section A-A and Detail A, see sheet 114 of 292.
 For Table of "L" Dimensions, see sheet 116 of 292.

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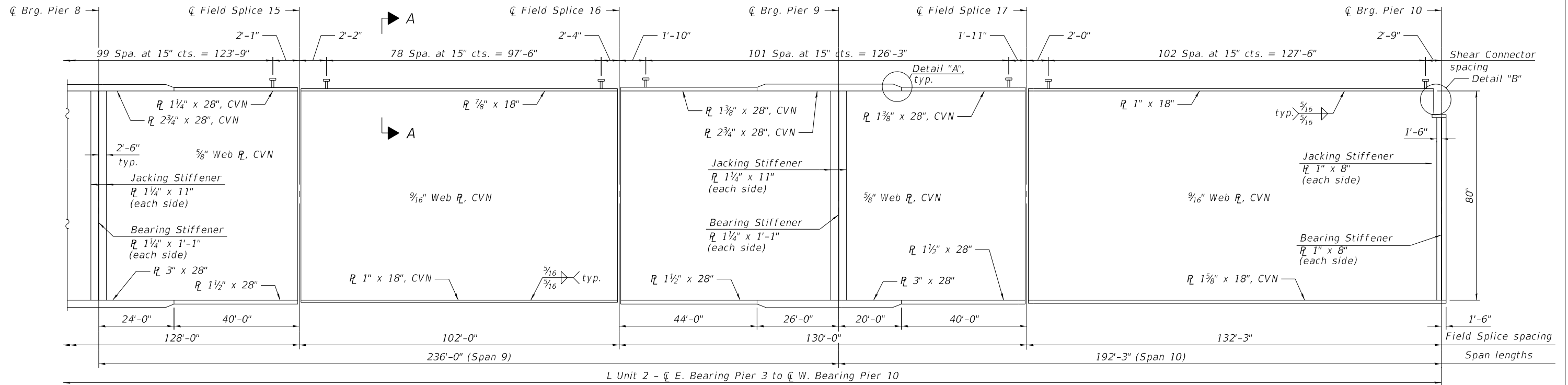
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STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION

GIRDER ELEVATION UNIT 2 - 2
 STRUCTURE NO. 060-0350 (EB)

SHEET 115 OF 292 SHEETS

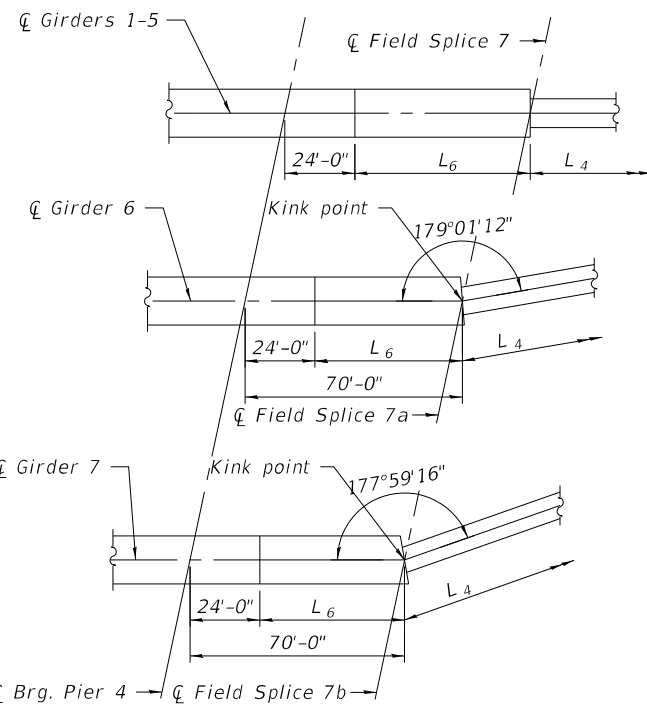
F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	328
CONTRACT NO. 76J90				
ILLINOIS FED. AID PROJECT				



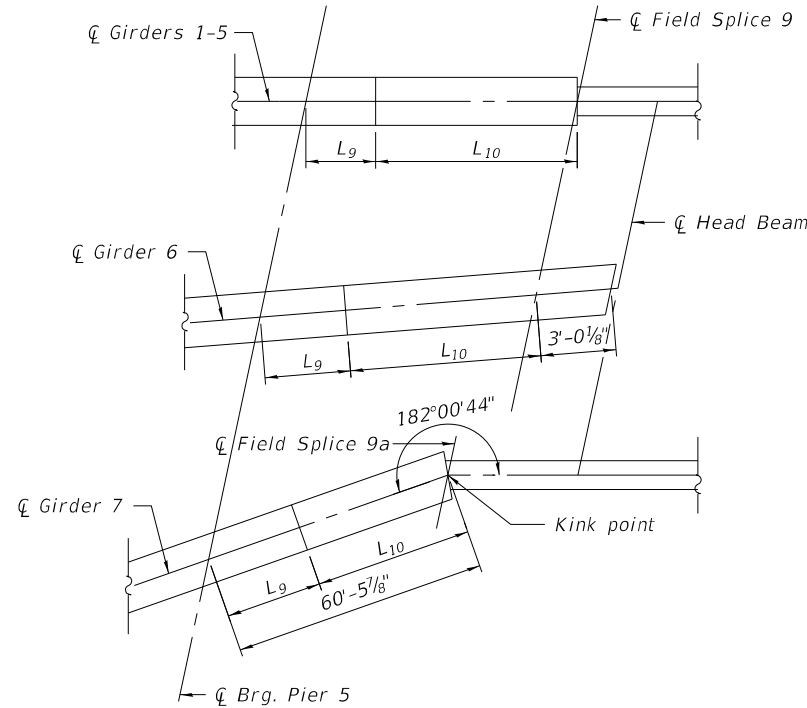
GIRDER ELEVATION - UNIT 2

(Spans 9 and 10)

"CVN" denotes Charpy-V-Notch impact energy requirements, zone 2.



VIEW B-B



VIEW C-C

TABLE OF "L" DIMENSIONS

Girder No.	L	L ₁	L ₂	L ₃	L ₄	L ₅	L ₆	L ₇	L ₈	L ₉	L ₁₀
1	1,580'-0"	236'-0"	236'-0"	133'-0"	99'-0"	128'-0"	49'-0"	40'-0"	24'-0"	24'-0"	40'-0"
2	1,580'-0"	236'-0"	236'-0"	133'-0"	99'-0"	128'-0"	49'-0"	40'-0"	24'-0"	24'-0"	40'-0"
3	1,580'-0"	236'-0"	236'-0"	133'-0"	99'-0"	128'-0"	49'-0"	40'-0"	24'-0"	24'-0"	40'-0"
4	1,580'-0"	236'-0"	236'-0"	133'-0"	99'-0"	128'-0"	49'-0"	40'-0"	24'-0"	24'-0"	40'-0"
5	1,580'-0"	236'-0"	236'-0"	133'-0"	99'-0"	128'-0"	49'-0"	40'-0"	24'-0"	24'-0"	40'-0"
6	511'-7 3/8"	236'-7 3/16"	-	130'-0"	102'-4 3/8"	128'-5 3/4"	46'-0"	40'-1 3/16"	24'-1 1/16"	24'-1 1/16"	40'-1 3/16"
7	1,581'-10 1/16"	237'-4 1/4"	236'-5 7/8"	130'-0"	102'-10"	125'-0 1/8"	46'-0"	40'-3 1/16"	24'-2 3/8"	24'-2 3/8"	36'-3 1/2"

Notes:
 All flanges, web plates, bearing stiffeners, intermediate stiffeners, and splice plates shall be AASHTO M270 Grade 50.
 Girder ends and bearing stiffeners at Pier 3 and Pier 10 shall be fabricated vertically on its final position.
 For Section A-A and Detail A and Detail B, see sheet 114 of 292.

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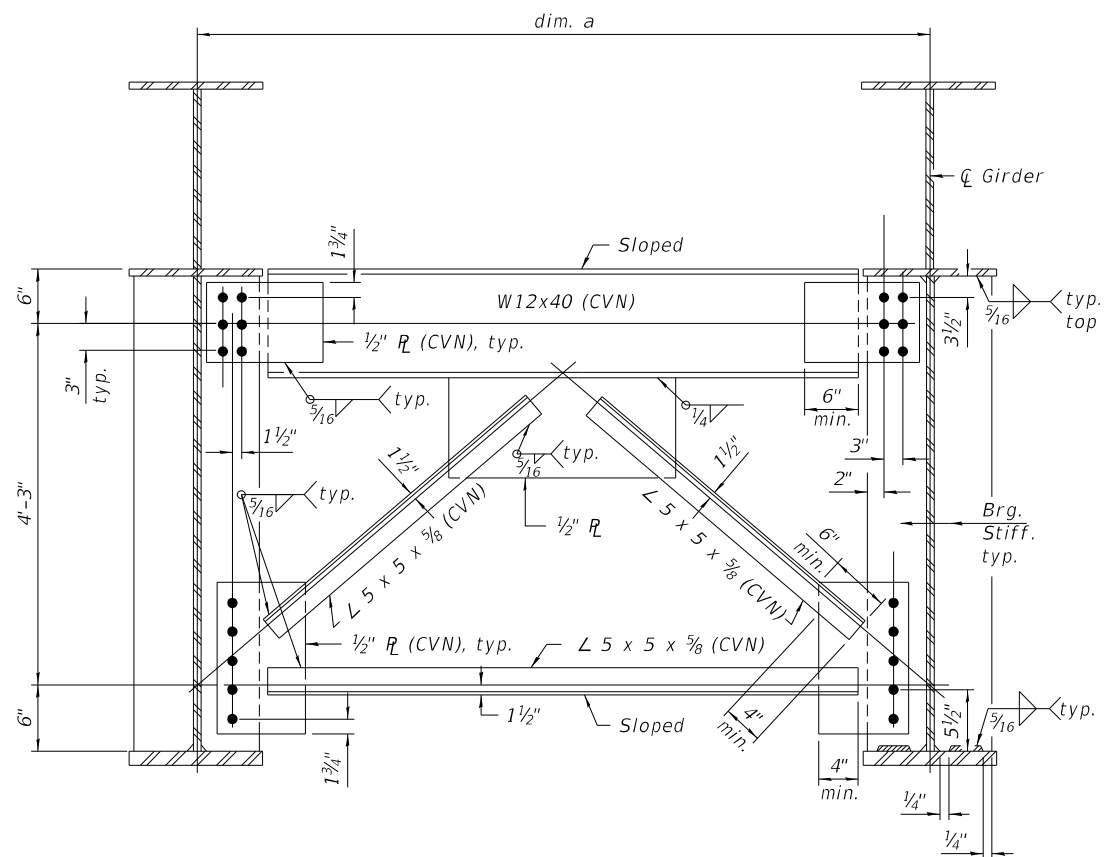
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STATE OF ILLINOIS
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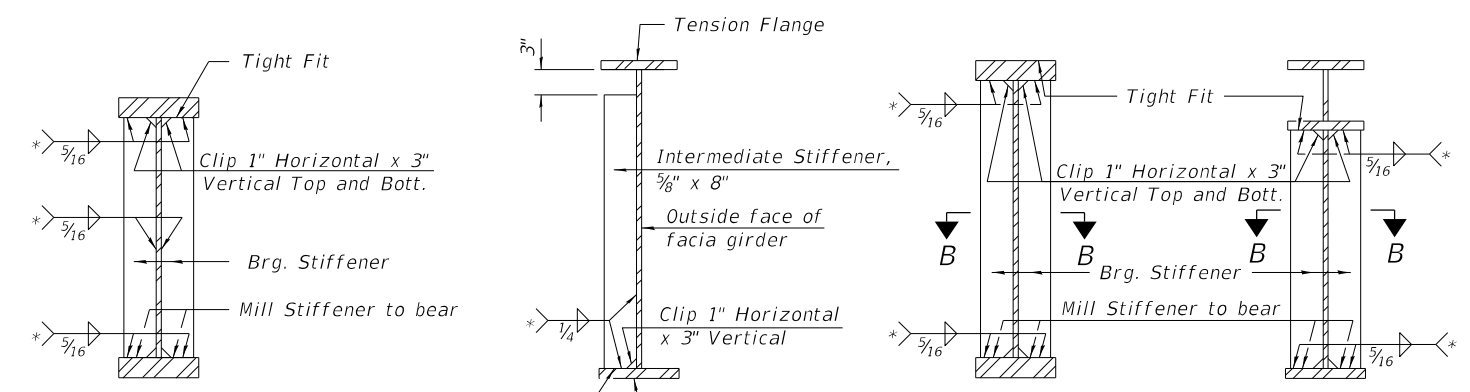
GIRDER ELEVATION UNIT 2 - 3
 STRUCTURE NO. 060-0350 (EB)

SHEET 116 OF 292 SHEETS

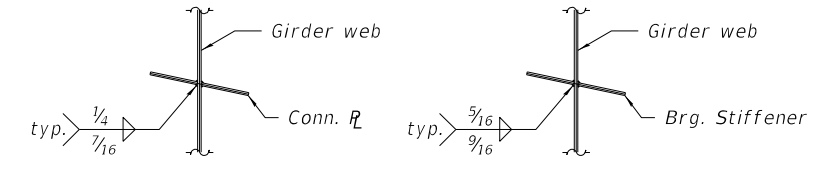
F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	329
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				



CROSS FRAME F AND F1

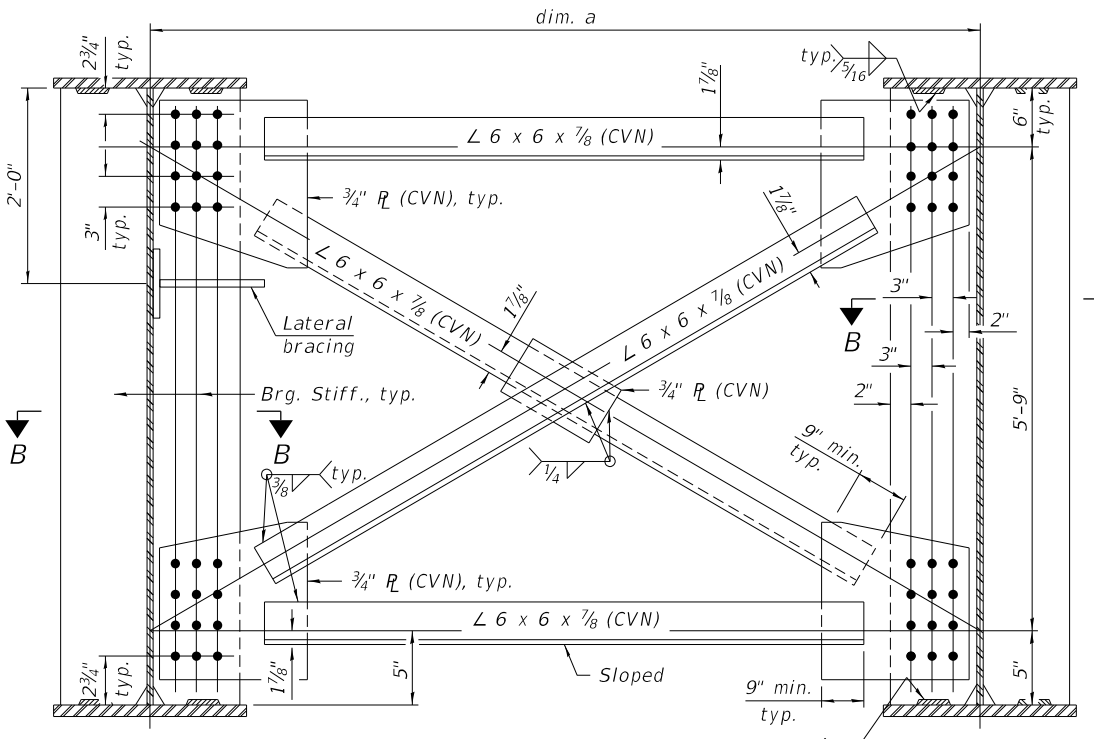


SECTION AT JACKING STIFFENER
SECTION AT INT. STIFFENER
SECTION AT PIER
SECTION AT GIRDER END
(Facia girders shown, interior girders similar) * Terminate 1/4" (±1/8") from the end of plate intersects.

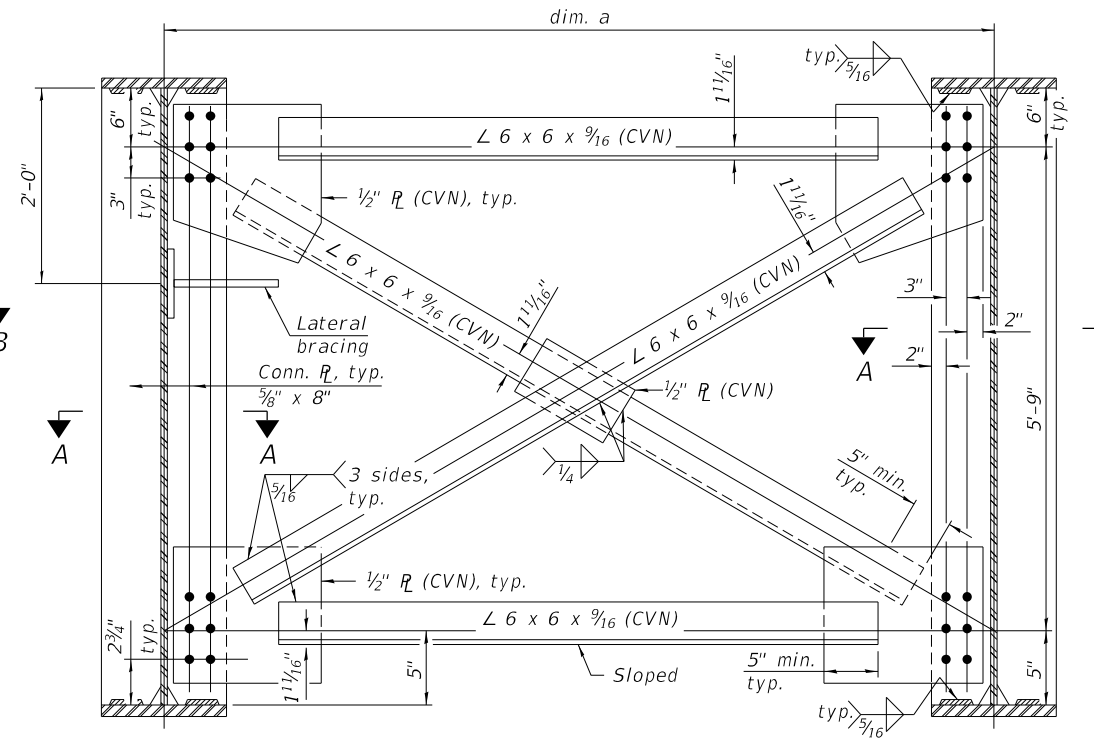


SECTION A-A SECTION B-B

Notes:
All cross frames or diaphragms between beams or girders shall be installed with erection pins and bolts in accordance with the erection plan approved by the Engineer. Individual cross frames or diaphragms at supports may be temporarily disconnected to install bearing anchor rods.
All structural steel shall be AASHTO M270 Grade 50.
All bolts in cross frames shall be 1" ø in 1 3/16" ø holes.
Two hardened washers shall be required for each set of oversized holes.
"CVN" denotes Charpy-V-Notch impact energy requirements, zone 2.



CROSS FRAMES F3 THRU F6



CROSS FRAMES F2, F7 THRU F31

CROSS FRAME DIM. a TABLE

Cross Frame	Dim. a	No. Required
F	10'-7 3/16"	9
F1	9'-4 1/16"	2
F2	10'-7 3/16"	407
F3	10'-7 3/16"	28
F4	9'-4 1/16"	2
F5	6'-6"	1
F6	6'-3 3/16"	1
F7	9'-4 1/16"	32
F8	9'-2"	1
F9	8'-10 1/16"	1
F10	8'-6 7/16"	1
F11	8'-3 1/4"	1
F12	7'-11 1/16"	1
F13	7'-8 1/16"	1
F14	7'-4 9/16"	1
F15	7'-1 1/16"	1
F16	6'-9 9/16"	1
F17	6'-2 1/2"	1
F18	5'-10 1/16"	1
F19	5'-7 1/16"	1
F20	9'-1 3/16"	1
F21	8'-10 1/16"	1
F22	8'-6 1/4"	1
F23	8'-2 1/16"	1
F24	7'-10 3/8"	1
F25	7'-6 1/16"	1
F26	7'-3 1/16"	1
F27	6'-11 3/16"	1
F28	6'-7 1/16"	1
F29	6'-0 1/16"	1
F30	5'-8 3/8"	1
F31	5'-4 3/8"	1

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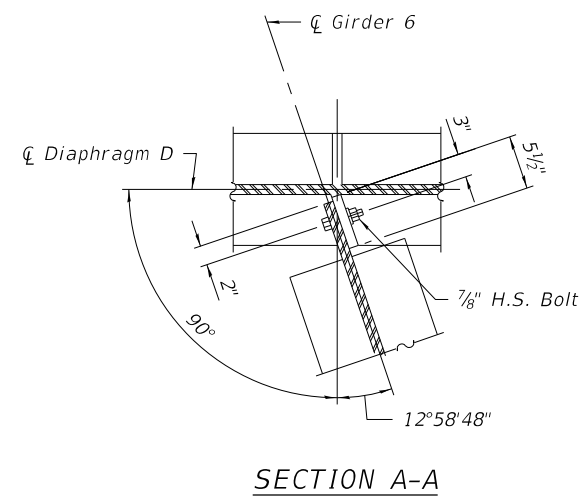
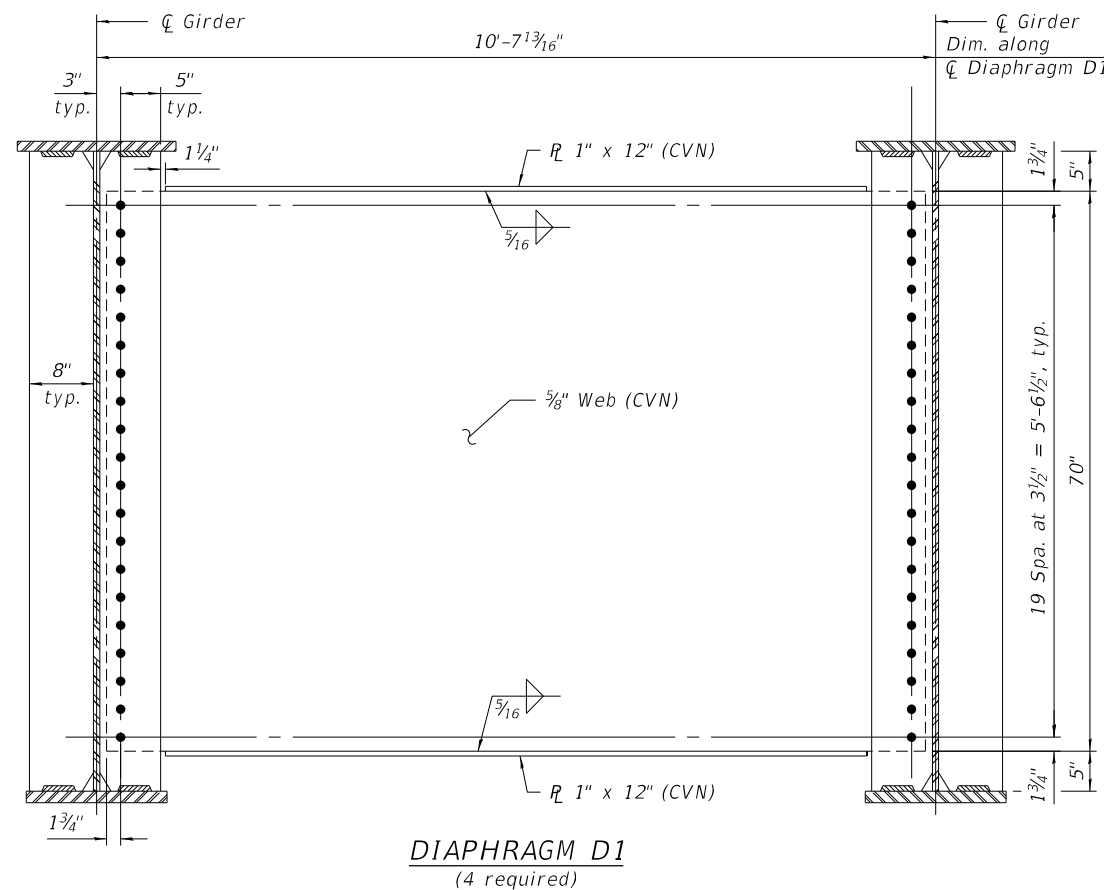
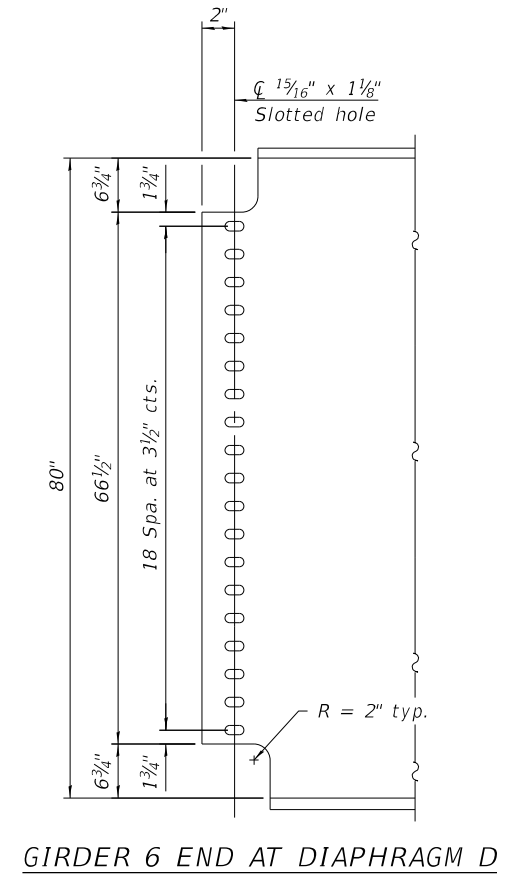
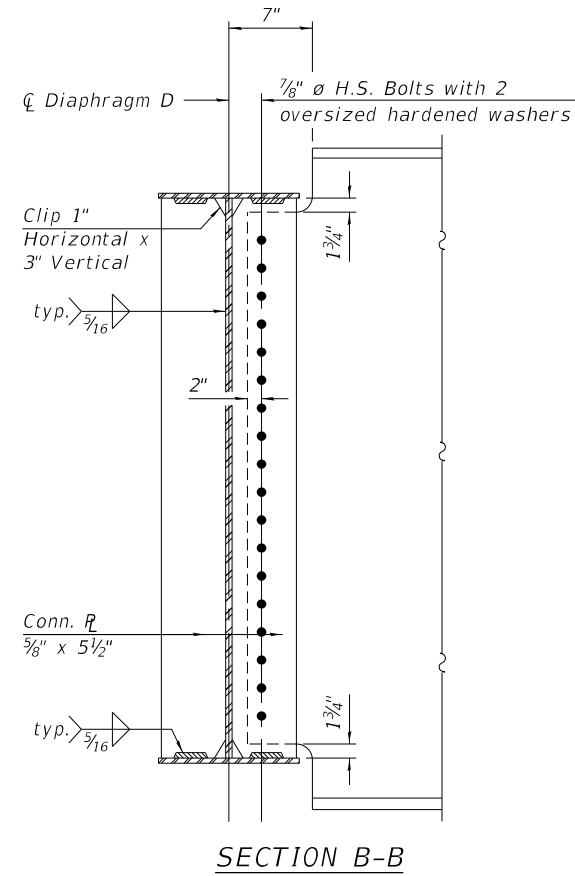
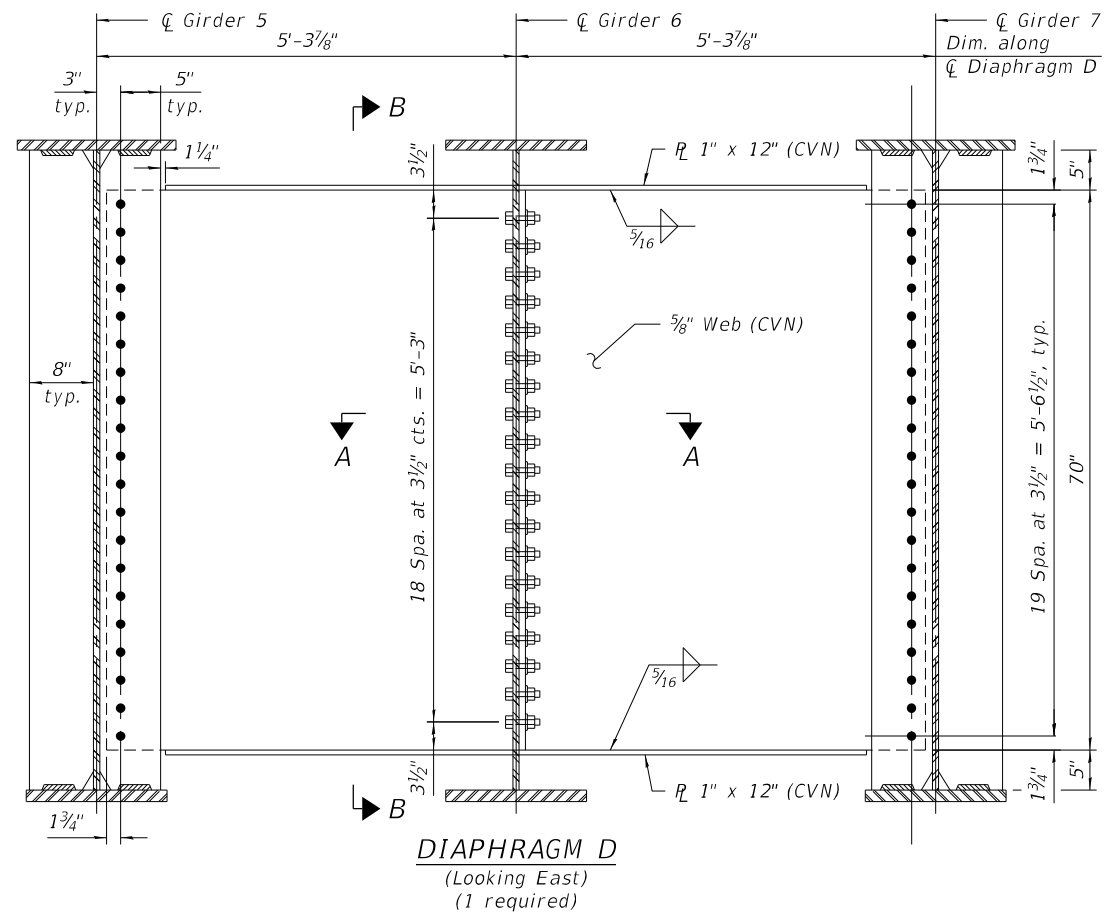
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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

STEEL DETAILS UNIT 2 - 2
STRUCTURE NO. 060-0350 (EB)

SHEET 118 OF 292 SHEETS

F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	331
CONTRACT NO. 76J90				
ILLINOIS FED. AID PROJECT				

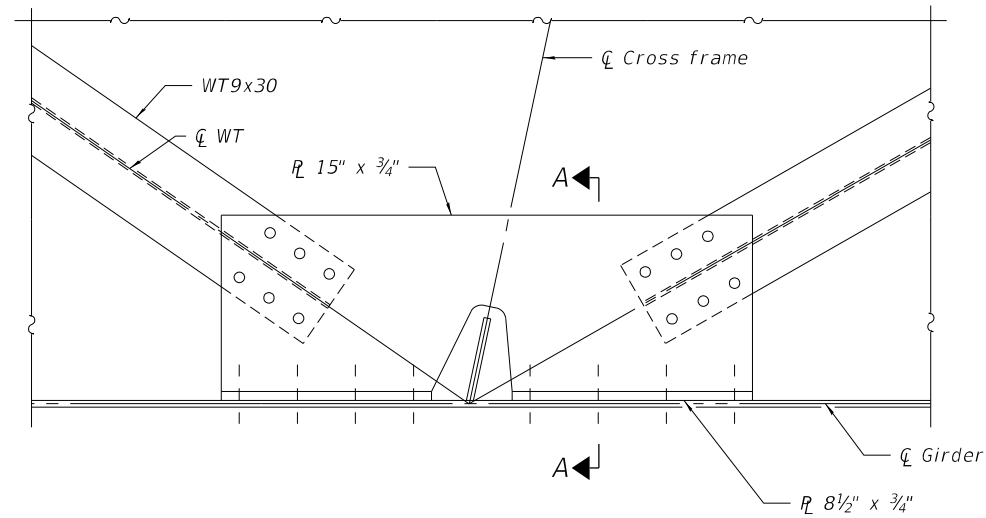


Notes:
 All bolts in diaphragms are 7/8" ϕ in 1 5/16" ϕ holes unless noted otherwise.
 All structural steel shall be AASHTO M270 Grade 50.
 "CVN" denotes Charpy-V-Notch impact energy requirements, zone 2.
 Two hardened washers shall be required for each set of slotted holes.

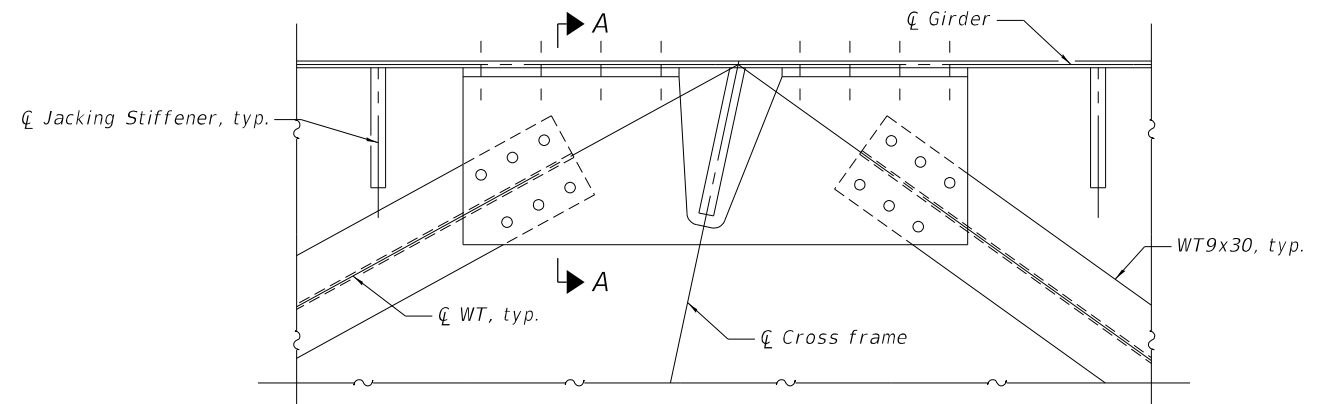
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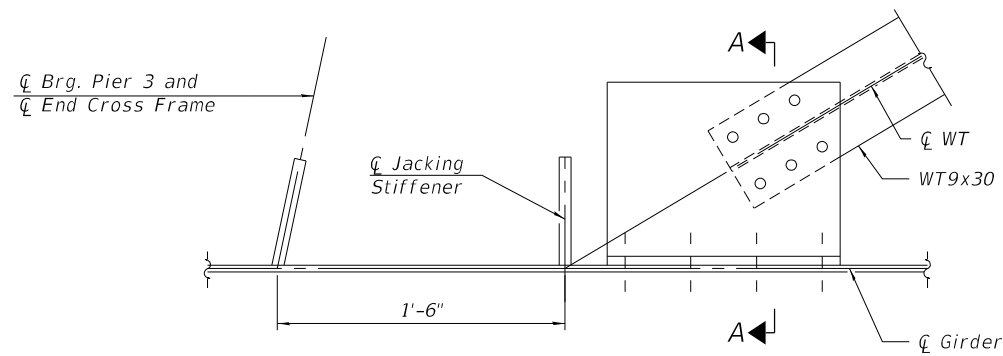
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	332
CONTRACT NO. 76J90				
ILLINOIS FED. AID PROJECT				



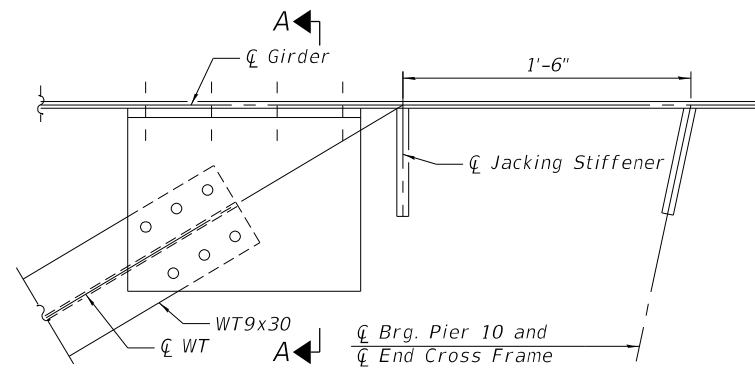
DETAIL 1
(Lateral bracing connection at cross frame)
(See connection detail)



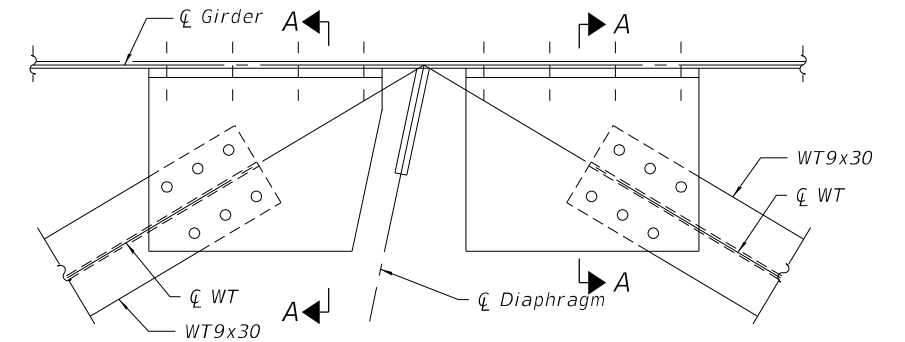
DETAIL 2
(Lateral bracing connection at pier cross frame)
(See connection detail)



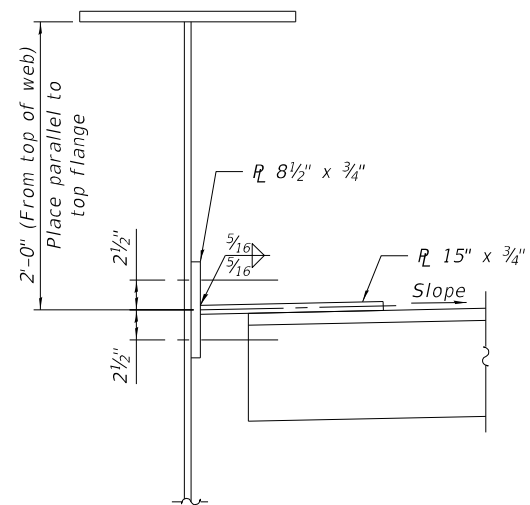
DETAIL 3
(Lateral bracing connection at Pier 3)
(See connection detail)



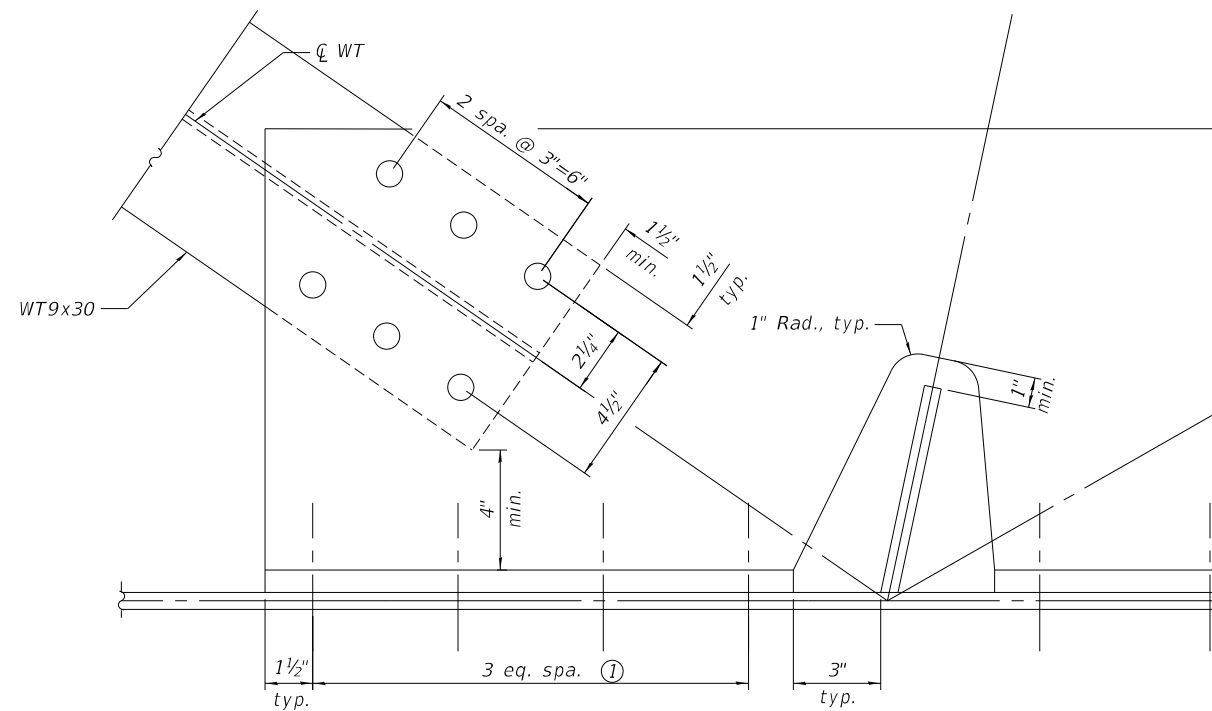
DETAIL 4
(Lateral bracing connection at Pier 10)
(See connection detail)



DETAIL 5
(Lateral bracing connection at Diaphragm)
(See connection detail)



SECTION A-A
(Cross frame and stiffener not shown)



CONNECTION DETAIL

Notes:
All bolts are 7/8" Ø in 1 1/16" Ø holes.
Provide 1 1/2" min. from center of bolt to edge of connected element in any direction.
Two hardened washers required for each set of oversized holes.

① Provide additional bolts as required to limit maximum spacing to 6".

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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

STEEL DETAILS UNIT 2 - 4
STRUCTURE NO. 060-0350 (EB)

SHEET 120 OF 292 SHEETS

F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	333
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				

GIRDER 1 MOMENT TABLE														
	0.4 Sp. 4	Pier 4	0.5 Sp. 5	Pier 5	0.5 Sp. 6	Pier 6	0.5 Sp. 7	Pier 7	0.5 Sp. 8	Pier 8	0.5 Sp. 9	Pier 9	0.6 Sp. 10	
Is	(in ⁴)	99,934	322,555	75,532	302,836	79,195	302,836	75,532	302,836	75,532	302,836	79,195	302,836	99,934
Ic(n)	(in ⁴)	238,249	499,337	177,040	476,274	187,623	476,274	177,040	476,274	177,040	476,274	187,623	476,274	238,249
Ic(3n)	(in ⁴)	172,696	---	131,592	---	138,627	---	131,592	---	131,592	---	138,627	---	172,696
Ic(cr)	(in ⁴)	---	343,871	---	324,084	---	324,084	---	324,084	---	324,084	---	324,084	---
Ss	(in ³)	2,731	7,762	1,848	7,284	1,988	7,284	1,848	7,284	1,848	7,284	1,988	7,284	2,731
Sc(n)	(in ³)	3,651	---	2,569	---	2,749	---	2,569	---	2,569	---	2,749	---	3,651
Sc(3n)	(in ³)	3,340	---	2,333	---	2,501	---	2,333	---	2,333	---	2,501	---	3,340
Sc(cr)	(in ³)	---	7,898	---	7,422	---	7,422	---	7,422	---	7,422	---	7,422	---
DC1	(k/')	1.226	1.520	1.170	1.455	1.178	1.467	1.170	1.467	1.170	1.463	1.178	1.464	1.226
MDC1	(k)	3,948	9,657	1,756	7,860	2,323	8,328	2,043	8,049	2,102	7,968	2,064	8,421	3,194
DC2	(k/')	0.174	0.213	0.165	0.220	0.195	0.235	0.178	0.225	0.180	0.232	0.182	0.228	0.192
MDC2	(k)	474	1,272	234	1,134	316	1,240	283	1,164	283	1,223	298	1,210	432
DW	(k/')	0.477	0.477	0.464	0.434	0.490	0.490	0.490	0.490	0.490	0.490	0.490	0.490	0.490
MDW	(k)	1,259	2,713	683	2,352	772	2,349	722	2,293	720	2,352	752	2,367	1,013
LLDF		0.706	0.683	0.607	0.689	0.490	0.651	0.468	0.654	0.483	0.692	0.615	0.691	0.717
M _l + IM	(k)	4,590	5,830	3,274	5,856	2,845	5,735	2,656	5,752	2,719	5,947	3,394	5,455	4,240
η _i M _u (Strength I)	(k)	16,220	---	9,704	---	9,906	---	9,071	---	9,258	---	10,519	---	14,146
Φ M _n	(k)	17,315	---	12,628	---	13,247	---	12,430	---	12,393	---	13,415	---	17,778
fs DC1	(ksi)	17.35	14.93	11.40	12.95	14.02	13.72	13.27	13.26	13.65	13.13	12.46	13.87	14.04
fs DC2	(ksi)	1.70	1.93	1.20	1.83	1.52	2.00	1.45	1.88	1.45	1.98	1.43	1.96	1.55
fs DW	(ksi)	4.52	4.12	3.51	3.80	3.70	3.80	3.71	3.71	3.70	3.80	3.61	3.83	3.64
fs (l+IM)	(ksi)	15.09	8.86	15.30	9.47	12.42	9.27	12.41	9.30	12.70	9.62	14.81	8.82	13.94
fs (Service II)	(ksi)	43.18	32.50	36.00	30.89	35.38	31.58	34.57	30.94	35.31	31.41	36.75	31.12	37.35
0.95R _n F _{yt}	(ksi)	47.50	47.50	47.50	47.50	47.50	47.50	47.50	47.50	47.50	47.50	47.50	47.50	47.50
η _i f _s (Total)(Strength I)(ksi)		---	44.90	---	42.79	---	43.66	---	42.80	---	43.48	---	43.01	---
Φ F _n	(ksi)	---	50.00	---	49.67	---	49.67	---	49.67	---	49.67	---	50.00	---
V _r	(k)	67.3	88.9	66.3	99.7	61.1	103.0	62.1	103.1	62.9	102.0	66.8	98.6	61.9

Is, Ss: Non-composite moment of inertia and section modulus of the steel section used for computing fs(Total-Strength I, and Service II) due to non-composite dead loads (in.4 and in.3).

Ic(n), Sc(n): Composite moment of inertia and section modulus of the steel and deck based upon the modular ratio, "n", used for computing fs(Total-Strength I, and Service II) in uncracked sections due to short-term composite live loads (in.4 and in.3).

Ic(3n), Sc(3n): Composite moment of inertia and section modulus of the steel and deck based upon 3 times the modular ratio, "3n", used for computing fs(Total-Strength I, and Service II) in uncracked sections, due to long-term composite (superimposed) dead loads (in.4 and in.3).

Ic(cr), Sc(cr): Composite moment of inertia and section modulus of the steel and longitudinal deck reinforcement, used for computing fs (Total-Strength I and Service II) in cracked sections, due to both short-term composite live loads and long-term composite (superimposed) dead loads (in.4 and in.3).

DC1: Un-factored non-composite dead load (kips/ft.).

MDC1: Un-factored moment due to non-composite dead load (kip-ft.).

DC2: Un-factored long-term composite (superimposed excluding future wearing surface) dead load (kips/ft.).

MDC2: Un-factored moment due to long-term composite (superimposed excluding future wearing surface) dead load (kip-ft.).

DW: Un-factored long-term composite (superimposed future wearing surface only) dead load (kips/ft.).

MDW: Un-factored moment due to long-term composite (superimposed future wearing surface only) dead load (kip-ft.).

LLDF: Live Load Distribution Factor

M_l + IM: Un-factored live load moment plus dynamic load allowance (impact) (kip-ft.).

η_iM_u(Strength I): Factored design moment (kip-ft.).

1.05 [1.25 (MDC1 + MDC2) + 1.5 MDW + 1.75 M_l + IM]

Φ M_n: Compact composite positive moment capacity computed according to Article 6.10.7.1 or non-slender negative moment capacity according to Article A6.1.1 or A6.1.2 (kip-ft.).

fs DC1: Un-factored stress at edge of flange for controlling steel flange due to vertical non-composite dead loads as calculated below (ksi).

MDC1/ Snc

fs DC2: Un-factored stress at edge of flange for controlling steel flange due to vertical composite dead loads as calculated below (ksi).

MDC2/ Sc(3n) or MDC2/ Sc(cr) as applicable.

fs DW: Un-factored stress at edge of flange for controlling steel flange due to vertical composite future wearing surface loads as calculated below (ksi).

MDW/ Sc(3n) or MDW/ Sc(cr) as applicable.

fs (l+IM): Un-factored stress at edge of flange for controlling steel flange due to vertical composite live load plus impact loads as calculated below (ksi).

M_l + IM / Sc(n) or M_l + IM / Sc(cr) as applicable.

fs (Service II): Sum of stresses as computed below (ksi).

fsDC1 + fsDC2 + fsDW + 1.3 fs(l + IM)

0.95R_nF_{yt}: Composite stress capacity for Service II loading according to Article 6.10.4.2 (ksi).

η_if_s(Total)(Strength I): Sum of stresses as computed below on non-compact section (ksi).

1.05 [1.25 (fsDC1 + fsDC2) + 1.5 fsDW + 1.75 fs(l + IM)]

Φ F_n: Non-Compact composite positive or negative stress capacity for Strength I loading according to Article 6.10.7 or 6.10.8 (ksi).

V_r: Maximum factored shear range in span computed according to Article 6.10.10.

OCF: Obtuse Correction Factor

GIRDER 2 MOMENT TABLE														
	0.4 Sp. 4	Pier 4	0.5 Sp. 5	Pier 5	0.5 Sp. 6	Pier 6	0.5 Sp. 7	Pier 7	0.5 Sp. 8	Pier 8	0.5 Sp. 9	Pier 9	0.6 Sp. 10	
Is	(in ⁴)	99,934	322,555	75,532	302,836	79,195	302,836	75,532	302,836	75,532	302,836	79,195	302,836	99,934
Ic(n)	(in ⁴)	250,193	522,726	184,877	498,756	196,142	498,756	184,877	498,756	184,877	498,756	196,142	498,756	250,193
Ic(3n)	(in ⁴)	183,096	---	139,098	---	146,669	---	139,098	---	139,098	---	146,669	---	183,096
Ic(cr)	(in ⁴)	---	348,199	---	328,387	---	328,387	---	328,387	---	328,387	---	328,387	---
Ss	(in ³)	2,731	7,762	1,848	7,284	1,988	7,284	1,848	7,284	1,848	7,284	1,988	7,284	2,731
Sc(n)	(in ³)	3,694	---	2,601	---	2,784	---	2,601	---	2,601	---	2,784	---	3,694
Sc(3n)	(in ³)	3,400	---	2,379	---	2,549	---	2,379	---	2,379	---	2,549	---	3,400
Sc(cr)	(in ³)	---	7,924	---	7,449	---	7,449	---	7,449	---	7,449	---	7,449	---
DC1	(k/')	1.409	1.703	1.353	1.638	1.361	1.650	1.353	1.650	1.353	1.646	1.353	1.648	1.409
MDC1	(k)	3,902	9,635	1,733	7,657	2,246	8,268	2,056	8,047	2,100	8,012	2,065	8,458	3,200
DC2	(k/')	0.175	0.167	0.181	0.174	0.206	0.184	0.200	0.184	0.201	0.184	0.201	0.184	0.193
MDC2	(k)	478	996	256	898	334	973	316	953	315	967	329	978	433
DW	(k/')	0.477	0.477	0.464	0.434	0.490	0.490	0.490	0.490	0.490	0.490	0.490	0.490	0.490
MDW	(k)	1,319	2,838	703	2,405	791	2,459	759	2,453	753	2,492	789	2,507	1,075
LLDF		0.621	0.594	0.541	0.600	0.429	0.557	0.412	0.536	0.424	0.598	0.541	0.595	0.628
M _l + IM	(k)	4,040	5,065	2,914	5,100	2,487	4,905	2,338	4,713	2,389	5,138	2,985	4,699	3,715
η _i M _u (Strength I)	(k)	15,250	---	9,073	---	9,202	---	8,604	---	8,745	---	9,870	---	13,288
Φ M _n	(k)	17,485	---	12,775	---	13,427	---	12,542	---	12,514	---	13,546	---	17,934
fs DC1	(ksi)	17.15	14.90	11.26	12.61	13.56	13.62	13.35	13.26	13.64	13.20	12.46	13.93	14.06
fs DC2	(ksi)	1.69	1.51	1.29	1.45	1.57	1.57	1.60	1.54	1.59	1.56	1.55	1.58	1.53
fs DW	(ksi)	4.66	4.30	3.55	3.87	3.72	3.96	3.83	3.95	3.80	4.01	3.72	4.04	3.80
fs (l+IM)	(ksi)	13.12	7.67	13.44	8.22	10.72	7.90	10.78	7.59	11.02	8.28	12.87	7.57	12.07
fs (Service II)	(ksi)	40.55	30.67	33.57	28.61	32.79	29.42	32.79	28.62	33.35	29.53	34.45	29.39	35.07
0.95R _n F _{yt}	(ksi)	47.50	47.50	47.50	47.50	47.50	47.50	47.50	47.50	47.50	47.50	47.50	47.50	47.50
η _i f _s (Total)(Strength I)(ksi)		---	42.39	---	39.65	---	40.69	---	39.59	---	40.90	---	40.63	---
Φ F _n	(ksi)	---	50.00	---	49.67	---	49.67	---	49.67	---	49.67	---	50.00	---
V _r	(k)	56.5	71.9	56.4	74.7	54.0	78.9	68.1	76.0	53.3	76.1	59.4	71.8	55.6

fs DC1: Un-factored stress at edge of flange for controlling steel flange due to vertical non-composite dead loads as calculated below (ksi).

MDC1/ Snc

fs DC2: Un-factored stress at edge of flange for controlling steel flange due to vertical composite dead loads as calculated below (ksi).

MDC2/ Sc(3n) or MDC2/ Sc(cr) as applicable.

fs DW: Un-factored stress at edge of flange for controlling steel flange due to vertical composite future wearing surface loads as calculated below (ksi).

MDW/ Sc(3n) or MDW/ Sc(cr) as applicable.

fs (l+IM): Un-factored stress at edge of flange for controlling steel flange due to vertical composite live load plus impact loads as calculated below (ksi).

M_l + IM / Sc(n) or M_l + IM / Sc(cr) as applicable.

fs (Service II): Sum of stresses as computed below (ksi).

fsDC1 + fsDC2 + fsDW + 1.3 fs(l + IM)

0.95R_nF_{yt}: Composite stress capacity for Service II loading according to Article 6.10.4.2 (ksi).

η_if_s(Total)(Strength I): Sum of stresses as computed below on non-compact section (ksi).

1.05 [1.25 (fsDC1 + fsDC2) + 1.5 fsDW + 1.75 fs(l + IM)]

Φ F_n: Non-Compact composite positive or negative stress capacity for Strength I loading according to Article 6.10.7 or 6.10.8 (ksi).

V_r: Maximum factored shear range in span computed according to Article 6.10.10.

OCF: Obtuse Correction Factor

GIRDER 1 REACTION TABLE								
	Pier 3	Pier 4	Pier 5	Pier 6	Pier 7	Pier 8	Pier 9	Pier 10
LLDF	0.861	0.758	0.772	0.739	0.741	0.794	0.804	0.716
OCF	---	---	---	---	---	---	---	---
R _{DC1}	(k)	107.7	417.2	369.2	375.7	369.5	387.5	96.7
R _{DC2}	(k)	23.4	74.1	72.4	73.1	72.7	74.6	21.2
R _{DW}	(k)	36.4	107.7	102.2	100.2	99.7	98.3	29.1
R _l	(k)	111.1	218.5	222.7	216.9	216.8	229.6	89.7
R _{IM}	(k)	19.2	31.2	31.7	30.3	30.4	32.6	15.9
R _{Total}	(k)	297.8	848.7	798.2	796.2	789.1	800.9	252.6

GIRDER 2 REACTION TABLE								
	Pier 3	Pier 4	Pier 5	Pier 6	Pier 7	Pier 8	Pier 9	Pier 10
LLDF	0.724	0.723	0.712	0.696	0.697	0.722	0.720	0.813
OCF	---	---	---	---	---	---	---	---
R _{DC1}	(k)	109.8	415.1	362.2	375.0	371.4	369.1	99.0
R _{DC2}	(k)	9.1	37.1	34.0	36.1	35.6	35.7	8.8
R _{DW}	(k)	35.4	123.6	111.8	113.9	113.4	113.4	32.4
R _l	(k)	93.4	208.5	205.6	204.4	204.2	208.8	101.9
R _{IM}	(k)	16.2	29.8	29.2	28.6	28.6	29.6	18.1
R _{Total}	(k)	263.9	814.1	742.8	758.0	753.2	756.6	260.2

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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

STRESS TABLES UNIT 2 - 1
STRUCTURE NO. 060-0350 (EB)

SHEET 121 OF 292 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	334
CONTRACT NO. 76J90				
ILLINOIS FED. AID PROJECT				

GIRDER 3 MOMENT TABLE														
	0.4 Sp. 4	Pier 4	0.5 Sp. 5	Pier 5	0.5 Sp. 6	Pier 6	0.5 Sp. 7	Pier 7	0.5 Sp. 8	Pier 8	0.5 Sp. 9	Pier 9	0.6 Sp. 10	
Is	(in ⁴)	99,934	322,555	75,532	302,836	79,195	302,836	75,532	302,836	75,532	302,836	79,195	302,836	99,934
Ic(n)	(in ⁴)	250,190	522,720	184,875	498,750	196,140	498,750	184,875	498,750	184,875	498,750	196,140	498,750	250,190
Ic(3n)	(in ⁴)	183,093	---	139,096	---	146,667	---	139,096	---	139,096	---	146,667	---	183,093
Ic(cr)	(in ⁴)	---	348,198	---	328,386	---	328,386	---	328,386	---	328,386	---	328,386	---
Ss	(in ³)	2,731	7,762	1,848	7,284	1,988	7,284	1,848	7,284	1,848	7,284	1,988	7,284	2,731
Sc(n)	(in ³)	3,694	---	2,601	---	2,784	---	2,601	---	2,601	---	2,784	---	3,694
Sc(3n)	(in ³)	3,400	---	2,379	---	2,549	---	2,379	---	2,379	---	2,549	---	3,400
Sc(cr)	(in ³)	---	7,924	---	7,449	---	7,449	---	7,449	---	7,449	---	7,449	---
DC1	(k/')	1.409	1.703	1.353	1.638	1.361	1.650	1.353	1.650	1.353	1.646	1.353	1.648	1.409
MDC1	(k)	3,856	9,490	1,712	7,441	2,174	8,186	2,069	8,101	2,099	8,033	2,067	8,464	3,208
DC2	(k/')	0.164	0.137	0.164	0.145	0.189	0.158	0.191	0.160	0.191	0.160	0.191	0.160	0.186
MDC2	(k)	447	815	233	746	306	836	302	831	300	842	312	851	418
DW	(k/')	0.477	0.477	0.464	0.434	0.490	0.490	0.490	0.490	0.490	0.490	0.490	0.490	0.490
MDW	(k)	1,307	2,827	692	2,345	772	2,464	762	2,495	755	2,528	791	2,538	1,078
LLDF		0.498	0.481	0.453	0.492	0.354	0.475	0.336	0.450	0.356	0.519	0.466	0.496	0.522
M _l + IM	(k)	3,237	4,102	2,441	4,180	2,057	4,181	1,910	3,960	2,007	4,457	2,572	3,920	3,087
η _i M _u (Strength I)	(k)	13,653	---	8,126	---	8,251	---	7,821	---	8,024	---	9,094	---	12,129
Φ M _n	(k)	17,518	---	12,795	---	13,481	---	12,535	---	12,517	---	13,547	---	17,932
f _s DC1	(ksi)	16.94	14.67	11.12	12.26	13.12	13.49	13.43	13.35	13.63	13.23	12.48	13.94	14.10
f _s DC2	(ksi)	1.58	1.23	1.17	1.20	1.44	1.35	1.52	1.34	1.51	1.36	1.47	1.37	1.48
f _s DW	(ksi)	4.61	4.28	3.49	3.78	3.63	3.97	3.85	4.02	3.81	4.07	3.72	4.09	3.81
f _s (l+IM)	(ksi)	10.51	6.21	11.26	6.73	8.87	6.73	8.81	6.38	9.26	7.18	11.09	6.31	10.03
f _s (Service II)	(ksi)	36.80	28.26	30.42	25.99	29.72	27.56	30.25	27.00	30.98	28.00	32.08	27.61	32.41
0.95R _n F _{yt}	(ksi)	47.50	47.50	47.50	47.50	47.50	47.50	47.50	47.50	47.50	47.50	47.50	47.50	47.50
η _i f _s (Total)(Strength I)(ksi)		---	39.03	---	35.99	---	38.10	---	37.32	---	38.76	---	38.14	---
Φ F _n	(ksi)	---	50.00	---	49.67	---	49.67	---	49.67	---	49.67	---	50.00	---
V _r	(k)	54.6	58.7	59.5	68.6	64.9	71.2	53.5	74.2	62.1	73.3	68.4	71.4	54.9

Is, Ss: Non-composite moment of inertia and section modulus of the steel section used for computing fs(Total-Strength I, and Service II) due to non-composite dead loads (in.4 and in.3).

Ic(n), Sc(n): Composite moment of inertia and section modulus of the steel and deck based upon the modular ratio, "n", used for computing fs(Total-Strength I, and Service II) in uncracked sections due to short-term composite live loads (in.4 and in.3).

Ic(3n), Sc(3n): Composite moment of inertia and section modulus of the steel and deck based upon 3 times the modular ratio, "3n", used for computing fs(Total-Strength I, and Service II) in uncracked sections, due to long-term composite (superimposed) dead loads (in.4 and in.3).

Ic(cr), Sc(cr): Composite moment of inertia and section modulus of the steel and longitudinal deck reinforcement, used for computing fs (Total-Strength I and Service II) in cracked sections, due to both short-term composite live loads and long-term composite (superimposed) dead loads (in.4 and in.3).

DC1: Un-factored non-composite dead load (kips/ft.).

MDC1: Un-factored moment due to non-composite dead load (kip-ft.).

DC2: Un-factored long-term composite (superimposed) excluding future wearing surface) dead load (kips/ft.).

MDC2: Un-factored moment due to long-term composite (superimposed) excluding future wearing surface) dead load (kip-ft.).

DW: Un-factored long-term composite (superimposed future wearing surface only) dead load (kips/ft.).

MDW: Un-factored moment due to long-term composite (superimposed future wearing surface only) dead load (kip-ft.).

LLDF: Live Load Distribution Factor

M_l + IM: Un-factored live load moment plus dynamic load allowance (impact) (kip-ft.).

η_iM_u(Strength I): Factored design moment (kip-ft.).

1.05 [1.25 (MDC1 + MDC2) + 1.5 MDW + 1.75 M_l + IM]

Φ M_n: Compact composite positive moment capacity computed according to Article 6.10.7.1 or non-slender negative moment capacity according to Article A6.1.1 or A6.1.2 (kip-ft.).

f_s DC1: Un-factored stress at edge of flange for controlling steel flange due to vertical non-composite dead loads as calculated below (ksi).

MDC1/ Snc

f_s DC2: Un-factored stress at edge of flange for controlling steel flange due to vertical composite dead loads as calculated below (ksi).

MDC2/ Sc(3n) or MDC2/ Sc(cr) as applicable.

f_s DW: Un-factored stress at edge of flange for controlling steel flange due to vertical composite future wearing surface loads as calculated below (ksi).

MDW/ Sc(3n) or MDW/ Sc(cr) as applicable.

f_s (l+IM): Un-factored stress at edge of flange for controlling steel flange due to vertical composite live load plus impact loads as calculated below (ksi).

M_l + IM / Sc(n) or M_l + IM / Sc(cr) as applicable.

f_s (Service II): Sum of stresses as computed below (ksi).

f_sDC1 + f_sDC2 + f_sDW + 1.3 f_s(l + IM)

0.95R_nF_{yt}: Composite stress capacity for Service II loading according to Article 6.10.4.2 (ksi).

η_if_s(Total)(Strength I): Sum of stresses as computed below on non-compact section (ksi).

1.05 [1.25 (f_sDC1 + f_sDC2) + 1.5 f_sDW + 1.75 f_s(l + IM)]

Φ F_n: Non-Compact composite positive or negative stress capacity for Strength I loading according to Article 6.10.7 or 6.10.8 (ksi).

V_r: Maximum factored shear range in span computed according to Article 6.10.10.

OCF: Obtuse Correction Factor

GIRDER 4 MOMENT TABLE														
	0.4 Sp. 4	Pier 4	0.5 Sp. 5	Pier 5	0.5 Sp. 6	Pier 6	0.5 Sp. 7	Pier 7	0.5 Sp. 8	Pier 8	0.5 Sp. 9	Pier 9	0.6 Sp. 10	
Is	(in ⁴)	99,934	322,555	75,532	302,836	79,195	302,836	75,532	302,836	75,532	302,836	79,195	302,836	99,934
Ic(n)	(in ⁴)	250,190	522,720	184,875	498,750	196,140	498,750	184,875	498,750	184,875	498,750	196,140	498,750	250,190
Ic(3n)	(in ⁴)	183,093	---	139,096	---	146,667	---	139,096	---	139,096	---	146,667	---	183,093
Ic(cr)	(in ⁴)	---	348,198	---	328,386	---	328,386	---	328,386	---	328,386	---	328,386	---
Ss	(in ³)	2,731	7,762	1,848	7,284	1,988	7,284	1,848	7,284	1,848	7,284	1,988	7,284	2,731
Sc(n)	(in ³)	3,694	---	2,601	---	2,784	---	2,601	---	2,601	---	2,784	---	3,694
Sc(3n)	(in ³)	3,400	---	2,379	---	2,549	---	2,379	---	2,379	---	2,549	---	3,400
Sc(cr)	(in ³)	---	7,924	---	7,449	---	7,449	---	7,449	---	7,449	---	7,449	---
DC1	(k/')	1.409	1.703	1.353	1.638	1.361	1.650	1.353	1.650	1.353	1.646	1.353	1.648	1.409
MDC1	(k)	3,805	9,472	1,689	7,105	2,109	8,082	2,081	8,124	2,097	8,025	2,069	8,472	3,209
DC2	(k/')	0.159	0.128	0.162	0.135	0.184	0.156	0.191	0.160	0.191	0.158	0.190	0.160	0.186
MDC2	(k)	433	763	229	698	299	826	303	827	300	835	311	849	419
DW	(k/')	0.477	0.477	0.464	0.434	0.490	0.490	0.490	0.490	0.490	0.490	0.490	0.490	0.490
MDW	(k)	1,293	2,811	679	2,238	753	2,475	765	2,496	754	2,523	791	2,538	1,079
LLDF		0.466	0.456	0.431	0.480	0.373	0.476	0.360	0.480	0.376	0.551	0.497	0.529	0.558
M _l + IM	(k)	3,030	3,889	2,323	4,085	2,166	4,191	2,046	4,225	2,115	4,738	2,740	4,176	3,299
η _i M _u (Strength I)	(k)	13,166	---	7,854	---	8,326	---	8,091	---	8,221	---	9,404	---	12,522
Φ M _n	(k)	17,551	---	12,813	---	13,529	---	12,527	---	12,518	---	13,546	---	17,931
f _s DC1	(ksi)	16.72	14.64	10.97	11.71	12.73	13.32	13.51	13.38	13.62	13.22	12.49	13.96	14.10
f _s DC2	(ksi)	1.53	1.15	1.15	1.12	1.41	1.33	1.53	1.33	1.51	1.34	1.46	1.37	1.48
f _s DW	(ksi)	4.56	4.26	3.42	3.61	3.54	3.99	3.86	4.02	3.81	4.06	3.72	4.09	3.81
f _s (l+IM)	(ksi)	9.84	5.89	10.72	6.58	9.34	6.75	9.44	6.81	9.76	7.63	11.81	6.73	10.71
f _s (Service II)	(ksi)	35.61	27.71	29.48	24.99	29.82	27.41	31.16	27.59	31.62	28.55	33.03	28.16	33.32
0.95R _n F _{yt}	(ksi)	47.50	47.50	47.50	47.50	47.50	47.50	47.50	47.50	47.50	47.50	47.50	47.50	47.50
η _i f _s (Total)(Strength I)(ksi)		---	38.26	---	34.61	---	37.91	---	38.16	---	39.54	---	38.92	---
Φ F _n	(ksi)	---	50.00	---	49.67	---	49.67	---	49.67	---	49.67	---	49.67	---
V _r	(k)	54.6	58.7	59.5	68.6	64.9	73.3	53.5	74.2	62.1	73.3	68.4	71.4	54.9

Is, Ss: Non-composite moment of inertia and section modulus of the steel section used for computing fs(Total-Strength I, and Service II) due to non-composite dead loads (in.4 and in.3).

Ic(n), Sc(n): Composite moment of inertia and section modulus of the steel and deck based upon the modular ratio, "n", used for computing fs(Total-Strength I, and Service II) in uncracked sections due to short-term composite live loads (in.4 and in.3).

Ic(3n), Sc(3n): Composite moment of inertia and section modulus of the steel and deck based upon 3 times the modular ratio, "3n", used for computing fs(Total-Strength I, and Service II) in uncracked sections, due to long-term composite (superimposed) dead loads (in.4 and in.3).

Ic(cr), Sc(cr): Composite moment of inertia and section modulus of the steel and longitudinal deck reinforcement, used for computing fs (Total-Strength I and Service II) in cracked sections, due to both short-term composite live loads and long-term composite (superimposed) dead loads (in.4 and in.3).

DC1: Un-factored non-composite dead load (kips/ft.).

MDC1: Un-factored moment due to non-composite dead load (kip-ft.).

DC2: Un-factored long-term composite (superimposed) excluding future wearing surface) dead load (kips/ft.).

MDC2: Un-factored moment due to long-term composite (superimposed) excluding future wearing surface) dead load (kip-ft.).

DW: Un-factored long-term composite (superimposed future wearing surface only) dead load (kips/ft.).

MDW: Un-factored moment due to long-term composite (superimposed future wearing surface only) dead load (kip-ft.).

LLDF: Live Load Distribution Factor

M_l + IM: Un-factored live load moment plus dynamic load allowance (impact) (kip-ft.).

η_iM_u(Strength I): Factored design moment (kip-ft.).

1.05 [1.25 (MDC1 + MDC2) + 1.5 MDW + 1.75 M_l + IM]

Φ M_n: Compact composite positive moment capacity computed according to Article 6.10.7.1 or non-slender negative moment capacity according to Article A6.1.1 or A6.1.2 (kip-ft.).

f_s DC1: Un-factored stress at edge of flange for controlling steel flange due to vertical non-composite dead loads as calculated below (ksi).

MDC1/ Snc

f_s DC2: Un-factored stress at edge of flange for controlling steel flange due to vertical composite dead loads as calculated below (ksi).

MDC2/ Sc(3n) or MDC2/ Sc(cr) as applicable.

f_s DW: Un-factored stress at edge of flange for controlling steel flange due to vertical composite future wearing surface loads as calculated below (ksi).

MDW/ Sc(3n) or MDW/ Sc(cr) as applicable.

f_s (l+IM): Un-factored stress at edge of flange for controlling steel flange due to vertical composite live load plus impact loads as calculated below (ksi).

M_l + IM / Sc(n) or M_l + IM / Sc(cr) as applicable.

f_s (Service II): Sum of stresses as computed below (ksi).

f_sDC1 + f_sDC2 + f_sDW + 1.3 f_s(l + IM)

0.95R_nF_{yt}: Composite stress capacity for Service II loading according to Article 6.10.4.2 (ksi).

η_if_s(Total)(Strength I): Sum of stresses as computed below on non-compact section (ksi).

1.05 [1.25 (f_sDC1 + f_sDC2) + 1.5 f_sDW + 1.75 f_s(l + IM)]

Φ F_n: Non-Compact composite positive or negative stress capacity for Strength I loading according to Article 6.10.7 or 6.10.8 (ksi).

V_r: Maximum factored shear range in span computed according to Article 6.10.10.

OCF: Obtuse Correction Factor

GIRDER 3 REACTION TABLE									
	Pier 3	Pier 4	Pier 5	Pier 6	Pier 7	Pier 8	Pier 9	Pier 10	
LLDF	0.678	0.644	0.641	0.627	0.630	0.646	0.645	0.737	
OCF	---	---	---	---	---	---	---	---	
R _{DC1}	(k)	108.0	415.2	353.6	375.2	373.7	371.1	390.5	98.9
R _{DC2}	(k)	7.6	24.7	22.8	26.2	26.1	26.1	27.7	8.4
R _{DW}	(k)	35.4	126.1	111.0	116.8	117.0	116.9	120.4	32.5
R _l	(k)	87.4	185.9	185.1	184.2	184.3	186.8	181.5	92.4
R _{IM}	(k)	15.2	26.5	26.3	25.7	25.9	26.5	26.4	16.4
R _{Total}	(k)	253.6	778.4	698.8	728.1	727.0	727.4	746.5	248.6

GIRDER 4 REACTION TABLE									
	Pier 3	Pier 4	Pier 5	Pier 6	Pier 7	Pier 8	Pier 9	Pier 10	
LLDF	0.609	0.590	0.578	0.626	0.626	0.647	0.644	0.674	
OCF	---	---	---	---	---	---	---	---	
R _{DC1}	(k)	106.7	410.9	340.1	373.5	374.2	371.1	390.3	99.1
R _{DC2}	(k)	6.9	21.1	19.5	26.0	26.1	26.0	27.6	7.9
R _{DW}	(k)	35.2	124.6	105.8	116.3	117.0	116.9	120.4	32.5
R _l	(k)	78.6	170.3	167.0	183.9	183.3	187.2	181.4	84.4
R _{IM}	(k)	13.6	24.3	23.7	25.7	25.7	26.5	26.4	15.0
R _{Total}	(k								

GIRDER 5 MOMENT TABLE														
	0.4 Sp. 4	Pier 4	0.5 Sp. 5	Pier 5	0.5 Sp. 6	Pier 6	0.5 Sp. 7	Pier 7	0.5 Sp. 8	Pier 8	0.5 Sp. 9	Pier 9	0.6 Sp. 10	
Is	(in ⁴)	99,934	322,555	75,532	302,836	79,195	302,836	75,532	302,836	75,532	302,836	79,195	302,836	99,934
Ic(n)	(in ⁴)	246,540	515,368	180,762	473,528	196,142	498,756	184,877	498,756	184,877	498,756	196,142	498,756	250,193
Ic(3n)	(in ⁴)	179,804	---	135,063	---	146,669	---	139,098	---	139,098	---	146,669	---	183,096
Ic(cr)	(in ⁴)	---	346,780	---	323,594	---	328,387	---	328,387	---	328,387	---	328,387	---
Ss	(in ³)	2,731	7,762	1,848	7,284	1,988	7,284	1,848	7,284	1,848	7,284	1,988	7,284	2,731
Sc(n)	(in ³)	3,681	---	2,584	---	2,784	---	2,601	---	2,601	---	2,784	---	3,694
Sc(3n)	(in ³)	3,382	---	2,355	---	2,549	---	2,379	---	2,379	---	2,549	---	3,400
Sc(cr)	(in ³)	---	7,916	---	7,419	---	7,449	---	7,449	---	7,449	---	7,449	---
DC1	(k/')	1.349	1.643	1.250	1.434	1.361	1.650	1.353	1.650	1.353	1.646	1.353	1.648	1.409
MDC1	(k)	3,750	9,310	1,667	6,687	2,047	8,005	2,091	8,128	2,094	7,995	2,069	8,456	3,206
DC2	(k/')	0.157	0.136	0.159	0.140	0.192	0.179	0.201	0.184	0.201	0.182	0.199	0.183	0.192
MDC2	(k)	427	811	225	722	312	945	319	954	315	959	326	973	431
DW	(k/')	0.477	0.477	0.464	0.434	0.490	0.490	0.490	0.490	0.490	0.490	0.490	0.490	0.490
MDW	(k)	1,254	2,717	645	2,012	732	2,427	766	2,469	753	2,490	790	2,505	1,078
LLDF		0.489	0.472	0.446	0.508	0.470	0.603	0.465	0.612	0.483	0.679	0.612	0.671	0.713
M _l + IM	(k)	3,179	4,028	2,405	4,322	2,727	5,316	2,641	5,388	2,718	5,838	3,374	5,297	4,216
η _i M _v (Strength I)	(k)	13,298	---	7,918	---	9,260	---	9,223	---	9,341	---	10,588	---	14,217
Φ _i M _n	(k)	17,542	---	12,761	---	13,571	---	12,517	---	12,518	---	13,544	---	17,931
fs DC1	(ksi)	16.48	14.39	10.82	11.02	12.35	13.19	13.58	13.39	13.60	13.17	12.49	13.93	14.09
fs DC2	(ksi)	1.52	1.23	1.15	1.17	1.47	1.52	1.61	1.54	1.59	1.54	1.53	1.57	1.52
fs DW	(ksi)	4.45	4.12	3.29	3.25	3.45	3.91	3.86	3.98	3.80	4.01	3.72	4.04	3.80
fs (l+IM)	(ksi)	10.36	6.11	11.17	6.99	11.75	8.56	12.18	8.68	12.54	9.40	14.54	8.53	13.70
fs (Service II)	(ksi)	35.91	27.68	29.77	24.53	32.55	29.75	34.89	30.19	35.28	30.95	36.65	30.63	37.21
0.95R _n F _{yr}	(ksi)	47.50	47.50	47.50	47.50	47.50	47.50	47.50	47.50	47.50	47.50	47.50	47.50	47.50
η _i f _s (Total)(Strength I)(ksi)		---	38.21	---	33.96	---	41.20	---	41.81	---	42.91	---	42.38	---
Φ _i F _n	(ksi)	---	50.00	---	49.67	---	49.67	---	49.67	---	49.67	---	49.67	---
V _r	(k)	54.6	62.8	59.5	68.6	64.9	73.3	53.5	74.2	62.1	73.3	68.4	68.4	54.9

Is, Ss: Non-composite moment of inertia and section modulus of the steel section used for computing fs(Total-Strength I, and Service II) due to non-composite dead loads (in.4 and in.3).

Ic(n), Sc(n): Composite moment of inertia and section modulus of the steel and deck based upon the modular ratio, "n", used for computing fs(Total-Strength I, and Service II) in uncracked sections due to short-term composite live loads (in.4 and in.3).

Ic(3n), Sc(3n): Composite moment of inertia and section modulus of the steel and deck based upon 3 times the modular ratio, "3n", used for computing fs(Total-Strength I, and Service II) in uncracked sections, due to long-term composite (superimposed) dead loads (in.4 and in.3).

Ic(cr), Sc(cr): Composite moment of inertia and section modulus of the steel and longitudinal deck reinforcement, used for computing fs (Total-Strength I and Service II) in cracked sections, due to both short-term composite live loads and long-term composite (superimposed) dead loads (in.4 and in.3).

DC1: Un-factored non-composite dead load (kips/ft.).

MDC1: Un-factored moment due to non-composite dead load (kip-ft.).

DC2: Un-factored long-term composite (superimposed excluding future wearing surface) dead load (kips/ft.).

MDC2: Un-factored moment due to long-term composite (superimposed excluding future wearing surface) dead load (kip-ft.).

DW: Un-factored long-term composite (superimposed future wearing surface only) dead load (kips/ft.).

MDW: Un-factored moment due to long-term composite (superimposed future wearing surface only) dead load (kip-ft.).

LLDF: Live Load Distribution Factor

M_l + IM: Un-factored live load moment plus dynamic load allowance (impact) (kip-ft.).

η_iM_v (Strength I): Factored design moment (kip-ft.).

1.05 [1.25 (MDC1 + MDC2) + 1.5 MDW + 1.75 M_l + IM]

Φ_iM_n: Compact composite positive moment capacity computed according to Article 6.10.7.1 or non-slender negative moment capacity according to Article A6.1.1 or A6.1.2 (kip-ft.).

fs DC1: Un-factored stress at edge of flange for controlling steel flange due to vertical non-composite dead loads as calculated below (ksi).

MDC1/ Snc

fs DC2: Un-factored stress at edge of flange for controlling steel flange due to vertical composite dead loads as calculated below (ksi).

MDC2/ Sc(3n) or MDC2/ Sc(cr) as applicable.

fs DW: Un-factored stress at edge of flange for controlling steel flange due to vertical composite future wearing surface loads as calculated below (ksi).

MDW/ Sc(3n) or MDW/ Sc(cr) as applicable.

fs (l+IM): Un-factored stress at edge of flange for controlling steel flange due to vertical composite live load plus impact loads as calculated below (ksi).

M_l + IM / Sc(n) or M_l + IM / Sc(cr) as applicable.

fs (Service II): Sum of stresses as computed below (ksi).

fsDC1 + fsDC2 + fsDW + 1.3 fs(l + IM)

0.95R_nF_{yr}: Composite stress capacity for Service II loading according to Article 6.10.4.2 (ksi).

η_if_s (Total)(Strength I): Sum of stresses as computed below on non-compact section (ksi).

1.05 [1.25 (fsDC1 + fsDC2) + 1.5 fsDW + 1.75 fs(l + IM)]

Φ_iF_n: Non-Compact composite positive or negative stress capacity for Strength I loading according to Article 6.10.7 or 6.10.8 (ksi).

V_r: Maximum factored shear range in span computed according to Article 6.10.10.

OCF: Obtuse Correction Factor

GIRDER 6 MOMENT TABLE						
	0.4 Sp. 4	Pier 4	0.5 Sp. 5	Pier 5	0.2 Sp. 6	
Is	(in ⁴)	99,934	322,555	75,532	302,836	148,007
Ic(n)	(in ⁴)	242,621	507,677	175,941	442,252	254,067
Ic(3n)	(in ⁴)	176,383	---	130,598	---	---
Ic(cr)	(in ⁴)	---	345,355	---	318,480	161,347
Ss	(in ³)	2,731	7,762	1,848	7,284	3,681
Sc(n)	(in ³)	3,667	---	2,564	---	4,383
Sc(3n)	(in ³)	3,362	---	2,327	---	4,055
Sc(cr)	(in ³)	---	7,907	---	7,470	3,801
DC1	(k/')	1.288	1.583	1.144	1.221	0.998
MDC1	(k)	3,697	9,173	1,626	6,429	1,398
DC2	(k/')	0.158	0.159	0.163	0.148	-0.179
MDC2	(k)	430	948	230	763	150
DW	(k/')	0.477	0.477	0.464	0.434	0.420
MDW	(k)	1,216	2,610	606	1,834	399
LLDF		0.581	0.564	0.513	0.542	0.161
M _l + IM	(k)	3,777	4,815	2,767	4,607	932
η _i M _v (Strength I)	(k)	14,273	---	8,474	---	---
Φ _i M _n	(k)	17,526	---	12,706	---	---
fs DC1	(ksi)	16.25	14.18	10.56	10.59	4.56
fs DC2	(ksi)	1.54	1.44	1.19	1.23	0.44
fs DW	(ksi)	4.34	3.96	3.13	2.95	1.18
fs (l+IM)	(ksi)	12.36	7.31	12.95	7.40	2.55
fs (Service II)	(ksi)	38.19	29.08	31.70	24.38	9.50
0.95R _n F _{yr}	(ksi)	47.50	47.50	47.50	47.50	47.50
η _i f _s (Total)(Strength I)(ksi)		---	40.17	---	33.75	12.49
Φ _i F _n	(ksi)	---	50.00	---	49.65	47.78
V _r	(k)	52.7	64.8	51.2	63.5	43.6

GIRDER 5 REACTION TABLE									
	Pier 3	Pier 4	Pier 5	Pier 6	Pier 7	Pier 8	Pier 9	Pier 10	
LLDF	0.689	0.628	0.593	0.751	0.756	0.783	0.787	0.751	
OCF	---	---	---	---	---	---	---	---	
R _{DC1}	(k)	104.7	403.3	313.2	369.4	372.5	369.0	388.3	99.9
R _{DC2}	(k)	8.0	24.8	23.6	35.4	35.8	35.6	37.4	9.1
R _{DW}	(k)	34.0	120.2	94.2	112.3	113.6	113.5	116.8	32.3
R _l	(k)	89.0	181.1	171.1	220.7	221.2	226.4	221.7	94.1
R _{IM}	(k)	15.4	25.9	24.3	30.8	31.0	32.1	32.2	16.7
R _{Total}	(k)	251.1	755.3	626.4	768.6	774.1	776.6	796.4	252.1

GIRDER 6 REACTION TABLE				
	Pier 3	Pier 4	Pier 5	
LLDF	0.702	0.665	0.614	
OCF	---	---	---	
R _{DC1}	(k)	102.3	394.9	297.0
R _{DC2}	(k)	9.2	36.5	31.0
R _{DW}	(k)	32.8	114.0	83.0
R _l	(k)	90.6	191.7	177.4
R _{IM}	(k)	15.7	27.4	25.2
R _{Total}	(k)	250.6	764.5	613.6

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**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

**STRESS TABLES UNIT 2 - 3
STRUCTURE NO. 060-0350 (EB)**

SHEET 123 OF 292 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	336
CONTRACT NO. 76J90				
ILLINOIS FED. AID PROJECT				

GIRDER 7 MOMENT TABLE														
	0.4 Sp. 4	Pier 4	0.5 Sp. 5	Pier 5	0.5 Sp. 6	Pier 6	0.5 Sp. 7	Pier 7	0.5 Sp. 8	Pier 8	0.5 Sp. 9	Pier 9	0.6 Sp. 10	
I_s	(in ⁴)	99,934	322,555	75,532	302,836	79,195	302,836	75,532	302,836	75,532	302,836	79,195	302,836	99,934
$I_c(n)$	(in ⁴)	233,681	490,880	171,582	446,155	187,623	476,274	177,040	476,274	177,040	476,274	187,623	476,274	238,249
$I_c(3n)$	(in ⁴)	168,983	---	126,786	---	138,627	---	131,592	---	131,592	---	138,627	---	172,696
$I_c(cr)$	(in ⁴)	---	342,428	---	318,976	---	324,084	---	324,084	---	324,084	---	324,084	---
S_s	(in ³)	2,731	7,762	1,848	7,284	1,988	7,284	1,848	7,284	7,284	1,988	7,284	2,731	
$S_c(n)$	(in ³)	3,633	---	2,545	---	2,749	---	2,569	---	2,569	---	2,749	---	3,651
$S_c(3n)$	(in ³)	3,318	---	2,302	---	2,501	---	2,333	---	2,333	---	2,501	---	3,340
$S_c(cr)$	(in ³)	---	7,889	---	7,490	---	7,422	---	7,422	---	7,422	---	7,422	---
DC1	(k/')	1.288	1.583	1.095	1.242	1.178	1.467	1.170	1.467	1.170	1.463	1.170	1.464	1.226
MDC1	(k)	3,644	9,001	1,601	6,189	1,983	7,900	2,103	8,103	2,092	7,937	2,070	8,409	3,201
DC2	(k/')	0.154	0.199	0.146	0.178	0.174	0.227	0.179	0.227	0.177	0.224	0.176	0.226	0.191
MDC2	(k)	421	1,187	207	919	282	1,195	283	1,177	279	1,179	288	1,203	430
DW	(k/')	0.477	0.477	0.464	0.434	0.490	0.490	0.490	0.490	0.490	0.490	0.490	0.490	0.490
MDW	(k)	1,153	2,448	580	1,747	679	2,274	734	2,329	720	2,342	755	2,364	1,015
LLDF		0.650	0.641	0.571	0.608	0.572	0.757	0.566	0.751	0.586	0.816	0.735	0.825	0.869
$M_{\ell+IM}$	(k)	4,229	5,466	3,077	5,174	3,319	6,672	3,214	6,605	3,300	7,011	4,054	6,515	5,140
$\eta_1 M_u$ (Strength I)	(k)	14,923	---	8,941	---	10,140	---	10,193	---	10,308	---	11,732	---	15,808
ΦM_n	(k)	17,445	---	12,648	---	13,482	---	12,390	---	12,400	---	13,412	---	17,775
f_s DC1	(ksi)	16.01	13.92	10.40	10.20	11.97	13.01	13.65	13.35	13.58	13.08	12.49	13.85	14.06
f_s DC2	(ksi)	1.52	1.80	1.08	1.47	1.35	1.93	1.46	1.90	1.43	1.91	1.38	1.94	1.54
f_s DW	(ksi)	4.17	3.72	3.02	2.80	3.26	3.68	3.78	3.77	3.70	3.79	3.62	3.82	3.65
f_s ($\ell+IM$)	(ksi)	13.97	8.31	14.51	8.29	14.48	10.79	15.01	10.68	15.42	11.34	17.69	10.53	16.90
f_s (Service II)	(ksi)	39.86	30.25	33.36	25.25	35.41	32.65	38.41	32.90	38.76	33.50	40.50	33.31	41.22
$0.95R_n F_y$	(ksi)	47.50	47.50	47.50	47.50	47.50	47.50	47.50	47.50	47.50	47.50	47.50	47.50	47.50
$\eta_1 f_s$ (Total)(Strength I)(ksi)		---	41.77	---	34.96	---	45.23	---	45.57	---	46.45	---	46.11	---
ΦF_n	(ksi)	---	50.00	---	49.63	---	49.67	---	49.67	---	49.67	---	49.67	---
V_r	(k)	56.3	91.9	68.2	105.4	81.0	121.9	79.8	126.6	83.7	123.4	83.7	110.3	84.7

GIRDER 7 REACTION TABLE									
	Pier 3	Pier 4	Pier 5	Pier 6	Pier 7	Pier 8	Pier 9	Pier 10	
LLDF	0.674	0.744	0.804	0.929	0.943	0.980	0.990	1.114	
OCF	---	---	---	---	---	---	---	---	
R_{DC1}	(k)	100.5	390.8	291.8	366.2	371.4	367.4	387.2	96.4
R_{DC2}	(k)	20.7	73.1	61.2	72.4	72.5	72.5	72.3	22.0
R_{DW}	(k)	30.0	100.9	68.1	98.2	99.3	100.2	101.1	31.4
R_{ℓ}	(k)	86.9	214.6	232.1	272.9	276.0	283.4	278.7	139.6
R_{IM}	(k)	15.1	30.6	33.0	38.1	38.7	40.2	40.5	24.8
R_{Total}	(k)	253.2	810.0	686.2	847.8	857.9	863.7	879.8	314.2

I_s, S_s : Non-composite moment of inertia and section modulus of the steel section used for computing f_s (Total-Strength I, and Service II) due to non-composite dead loads (in.4 and in.3).

$I_c(n), S_c(n)$: Composite moment of inertia and section modulus of the steel and deck based upon the modular ratio, "n", used for computing f_s (Total-Strength I, and Service II) in uncracked sections due to short-term composite live loads (in.4 and in.3).

$I_c(3n), S_c(3n)$: Composite moment of inertia and section modulus of the steel and deck based upon 3 times the modular ratio, "3n", used for computing f_s (Total-Strength I, and Service II) in uncracked sections, due to long-term composite (superimposed) dead loads (in.4 and in.3).

$I_c(cr), S_c(cr)$: Composite moment of inertia and section modulus of the steel and longitudinal deck reinforcement, used for computing f_s (Total-Strength I and Service II) in cracked sections, due to both short-term composite live loads and long-term composite (superimposed) dead loads (in.4 and in.3).

DC1: Un-factored non-composite dead load (kips/ft.).

MDC1: Un-factored moment due to non-composite dead load (kip-ft.).

DC2: Un-factored long-term composite (superimposed excluding future wearing surface) dead load (kips/ft.).

MDC2: Un-factored moment due to long-term composite (superimposed excluding future wearing surface) dead load (kip-ft.).

DW: Un-factored long-term composite (superimposed future wearing surface only) dead load (kips/ft.).

MDW: Un-factored moment due to long-term composite (superimposed future wearing surface only) dead load (kip-ft.).

LLDF: Live Load Distribution Factor

$M_{\ell+IM}$: Un-factored live load moment plus dynamic load allowance (impact) (kip-ft.).

$\eta_1 M_u$ (Strength I): Factored design moment (kip-ft.).

1.05 [1.25 (MDC1 + MDC2) + 1.5 MDW + 1.75 $M_{\ell+IM}$]

ΦM_n : Compact composite positive moment capacity computed according to Article 6.10.7.1 or non-slender negative moment capacity according to Article A6.1.1 or A6.1.2 (kip-ft.).

f_s DC1: Un-factored stress at edge of flange for controlling steel flange due to vertical non-composite dead loads as calculated below (ksi).

MDC1/ S_{nc}

f_s DC2: Un-factored stress at edge of flange for controlling steel flange due to vertical composite dead loads as calculated below (ksi).

MDC2/ $S_c(3n)$ or MDC2/ $S_c(cr)$ as applicable.

f_s DW: Un-factored stress at edge of flange for controlling steel flange due to vertical composite future wearing surface loads as calculated below (ksi).

MDW/ $S_c(3n)$ or MDW/ $S_c(cr)$ as applicable.

f_s ($\ell+IM$): Un-factored stress at edge of flange for controlling steel flange due to vertical composite live load plus impact loads as calculated below (ksi).

$M_{\ell+IM} / S_c(n)$ or $M_{\ell+IM} / S_c(cr)$ as applicable.

f_s (Service II): Sum of stresses as computed below (ksi).

$f_s DC1 + f_s DC2 + f_s DW + 1.3 f_s(\ell+IM)$

$0.95R_n F_y$: Composite stress capacity for Service II loading according to Article 6.10.4.2 (ksi).

$\eta_1 f_s$ (Total)(Strength I): Sum of stresses as computed below on non-compact section (ksi).

1.05 [1.25 ($f_s DC1 + f_s DC2$) + 1.5 $f_s DW + 1.75 f_s(\ell+IM)$]

ΦF_n : Non-Compact composite positive or negative stress capacity for Strength I loading according to Article 6.10.7 or 6.10.8 (ksi).

V_r : Maximum factored shear range in span computed according to Article 6.10.10.

OCF: Obtuse Correction Factor

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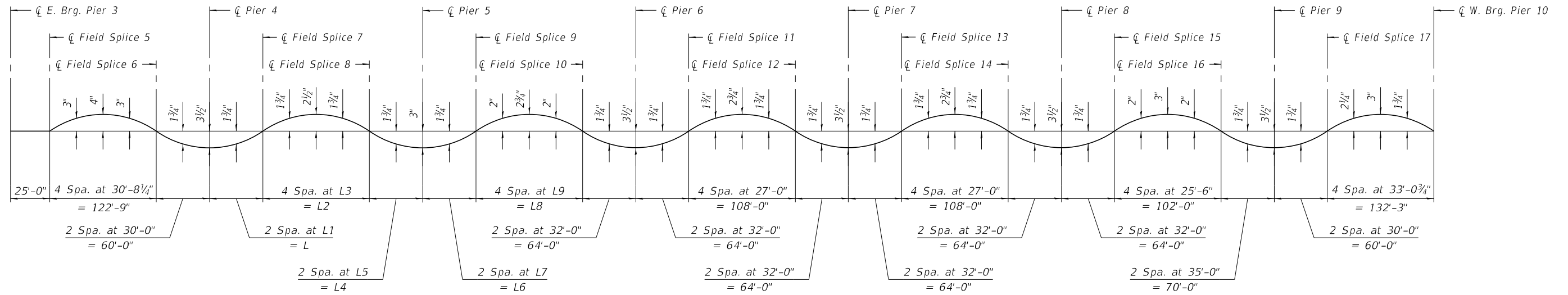


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STRESS TABLES UNIT 2 - 4
STRUCTURE NO. 060-0350 (EB)

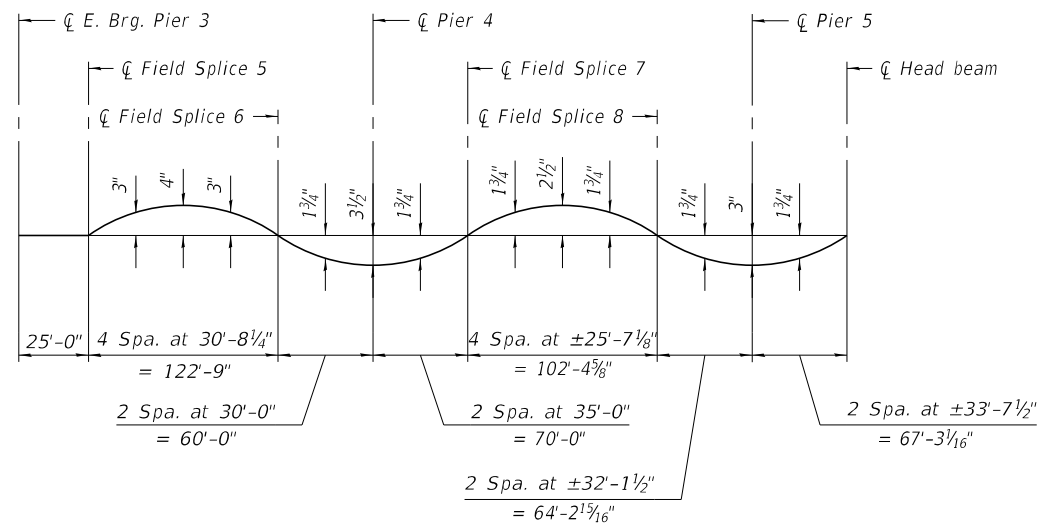
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	337
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				



CAMBER DIAGRAM
(Girders 1 thru 5 and 7)

TABLE OF "L" DIMENSIONS

Location	L	L1	L2	L3	L4	L5	L6	L7	L8	L9
Girder 1	73'-0"	36'-6"	99'-0"	24'-9"	64'-0"	32'-0"	64'-0"	32'-0"	108'-0"	27'-0"
Girder 2	73'-0"	36'-6"	99'-0"	24'-9"	64'-0"	32'-0"	64'-0"	32'-0"	108'-0"	27'-0"
Girder 3	73'-0"	36'-6"	99'-0"	24'-9"	64'-0"	32'-0"	64'-0"	32'-0"	108'-0"	27'-0"
Girder 4	73'-0"	36'-6"	99'-0"	24'-9"	64'-0"	32'-0"	64'-0"	32'-0"	108'-0"	27'-0"
Girder 5	73'-0"	36'-6"	99'-0"	24'-9"	64'-0"	32'-0"	64'-0"	32'-0"	108'-0"	27'-0"
Girder 7	70'-0"	35'-0"	102'-10"	25'-8 1/2"	64'-6 1/4"	32'-3 1/8"	60'-5 1/8"	30'-2 1/16"	112'-0"	28'-0"



CAMBER DIAGRAM
(Girder 6)

***** TOP OF WEB ELEVATIONS**

Location	☐ E. Brg. Pier 3	☐ Field Splice 5	☐ Field Splice 6	☐ Pier 4	☐ Field Splice 7	☐ Field Splice 8	☐ Pier 5	☐ Field Splice 9	☐ Field Splice 10	☐ Pier 6	☐ Field Splice 11	☐ Field Splice 12	☐ Pier 7	☐ Field Splice 13	☐ Field Splice 14	☐ Pier 8	☐ Field Splice 15	☐ Field Splice 16	☐ Pier 9	☐ Field Splice 17	☐ W. Brg. Pier 10
Girder 1	453.87	454.18	454.81	451.53	455.29	455.81	453.18	456.54	457.07	453.87	457.67	458.24	455.05	458.87	459.43	456.22	460.01	460.54	457.40	461.20	461.77
Girder 2	454.07	454.36	455.01	451.72	455.49	456.01	453.37	456.73	457.26	454.07	457.88	458.43	455.26	459.08	459.63	456.42	460.22	460.74	457.60	461.40	461.97
Girder 3	454.23	454.54	455.17	451.89	455.65	456.18	453.53	456.87	457.41	454.23	458.05	458.60	455.42	459.24	459.79	456.59	460.38	460.91	457.76	461.57	462.15
Girder 4	454.01	454.30	454.95	451.67	455.43	455.97	453.30	456.64	457.18	454.01	457.84	458.39	455.21	459.03	459.57	456.37	460.17	460.69	457.54	461.34	461.92
Girder 5	453.79	454.09	454.72	451.44	455.21	455.75	453.07	456.40	456.96	453.79	457.62	458.18	454.99	458.80	459.36	456.15	459.94	460.47	457.33	461.13	461.72
Girder 7	453.41	453.69	454.32	451.05	454.79	455.44	452.80	456.14	456.70	453.57	457.41	457.93	454.77	458.58	459.11	455.93	459.73	460.23	457.10	460.91	461.48

Location	☐ E. Brg. Pier 3	☐ Field Splice 5	☐ Field Splice 6	☐ Pier 4	☐ Field Splice 7	☐ Field Splice 8	☐ Pier 5	☐ Head beam
Girder 6	453.60	453.89	454.52	451.24	454.98	455.60	452.94	456.29

*** For Fabrication only.

Note:
At ☐ E. Brg. Pier 3 and at ☐ W. Brg. Pier 10, the elevation given at theoretical top of web is prior to coping of web.

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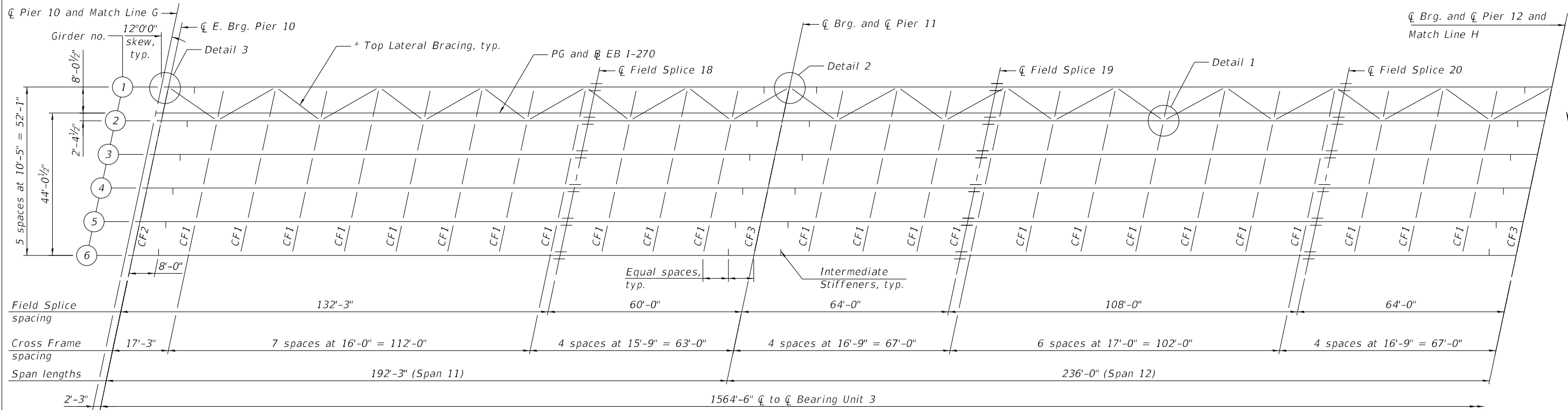
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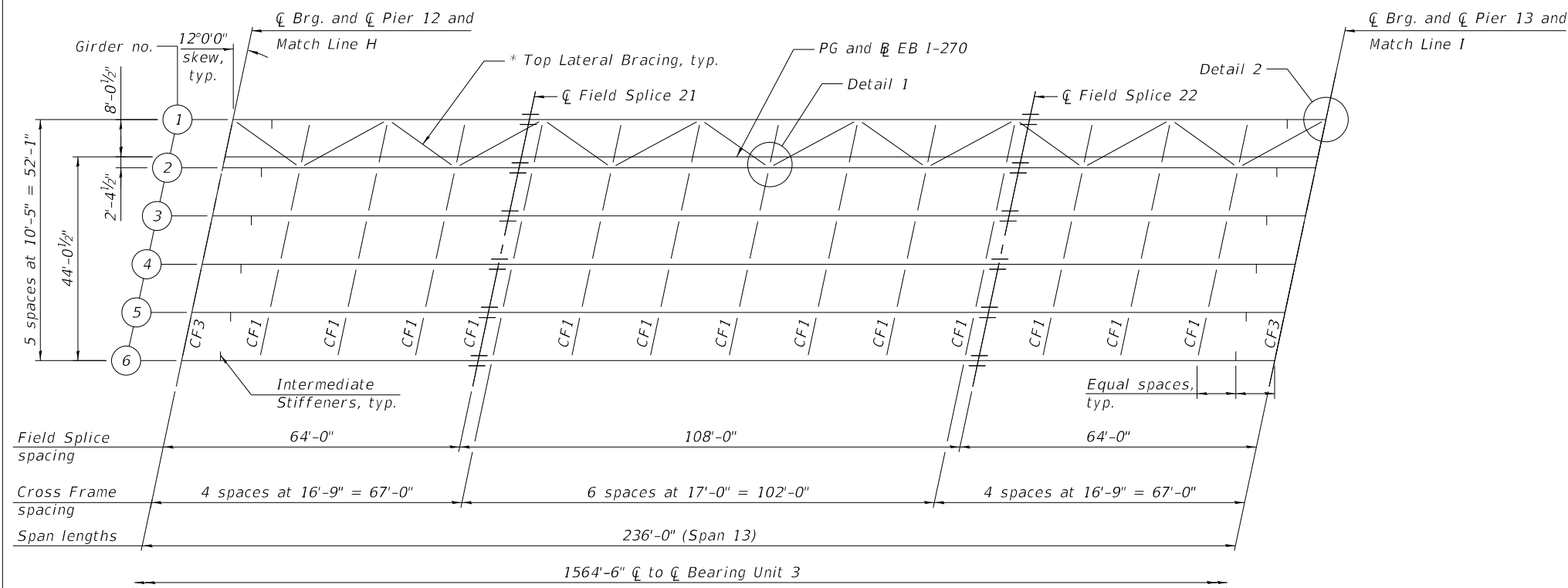
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SHEET 125 OF 292 SHEETS

F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	338
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				



FRAMING PLAN - UNIT 3
(Spans 11 and 12)



FRAMING PLAN - UNIT 3
(Span 13)

* Top Lateral Bracing to be installed between the first and next adjacent girders erected. All Lateral Bracing to be in the same girder bay for full length of Unit 3.

Notes:
For Field Splice Details, see sheet 132 of 292.
For Cross Frame Details, see sheet 133 of 292.
For Details 1, 2 and 3, see sheet 134 of 292.

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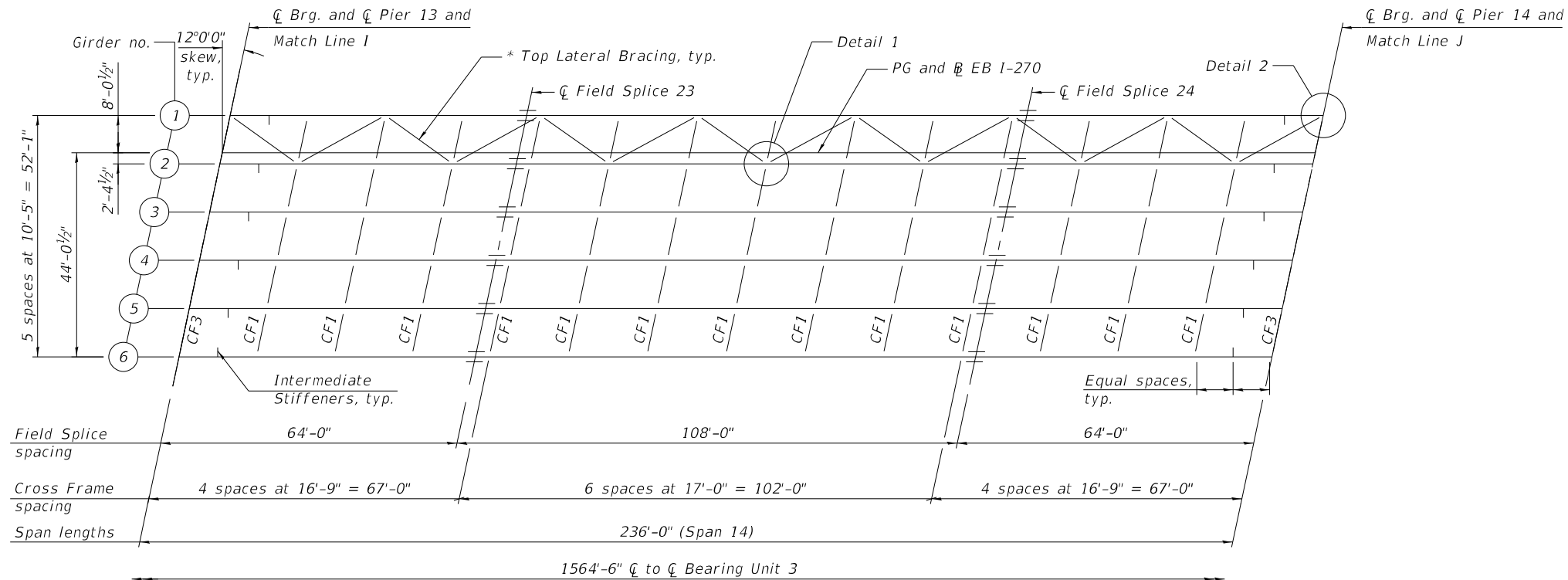
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STATE OF ILLINOIS
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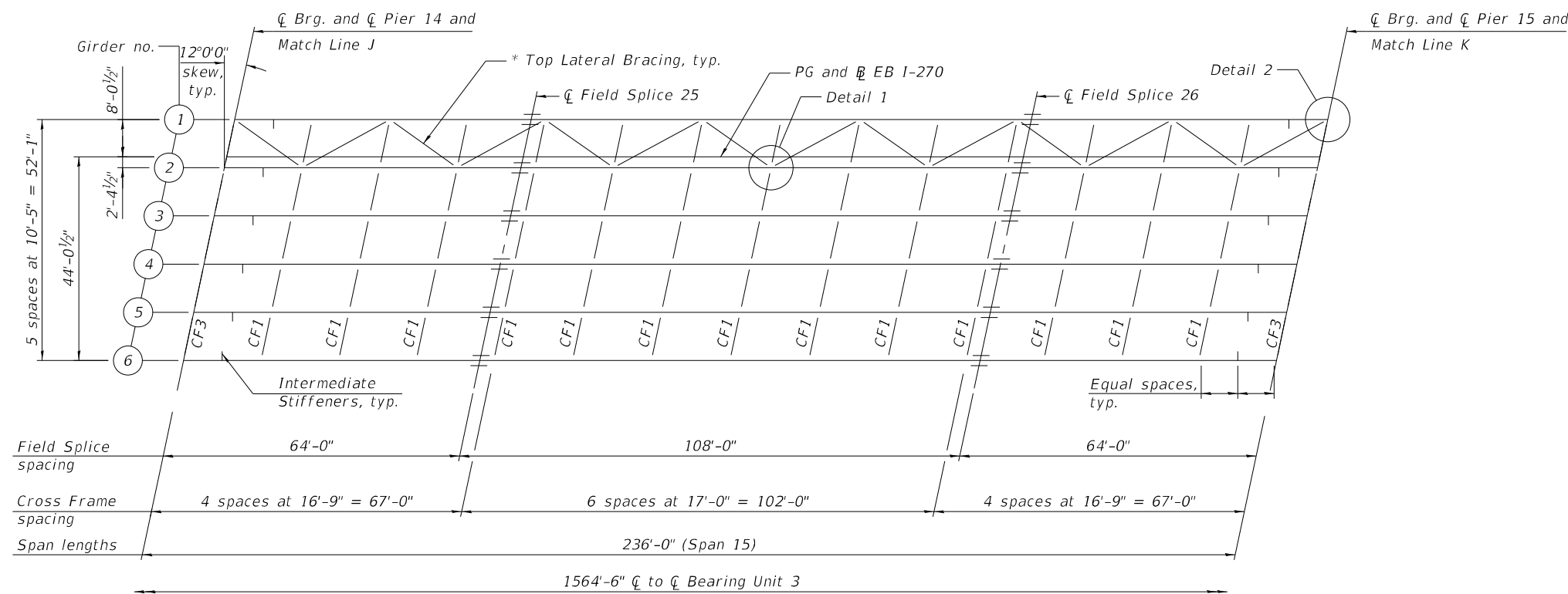
FRAMING PLAN UNIT 3 - 1
STRUCTURE NO. 060-0350 (EB)

SHEET 126 OF 292 SHEETS

F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	339
CONTRACT NO. 76J90				
ILLINOIS FED. AID PROJECT				



FRAMING PLAN - UNIT 3
(Span 14)



FRAMING PLAN - UNIT 3
(Span 15)

* Top Lateral Bracing to be installed between the first and next adjacent girders erected. All Lateral Bracing to be in the same girder bay for full length of Unit 3.

Notes:
For Field Splice Details, see sheet 132 of 292.
For Cross Frame Details, see sheet 133 of 292.
For Details 1, 2 and 3, see sheet 134 of 292.

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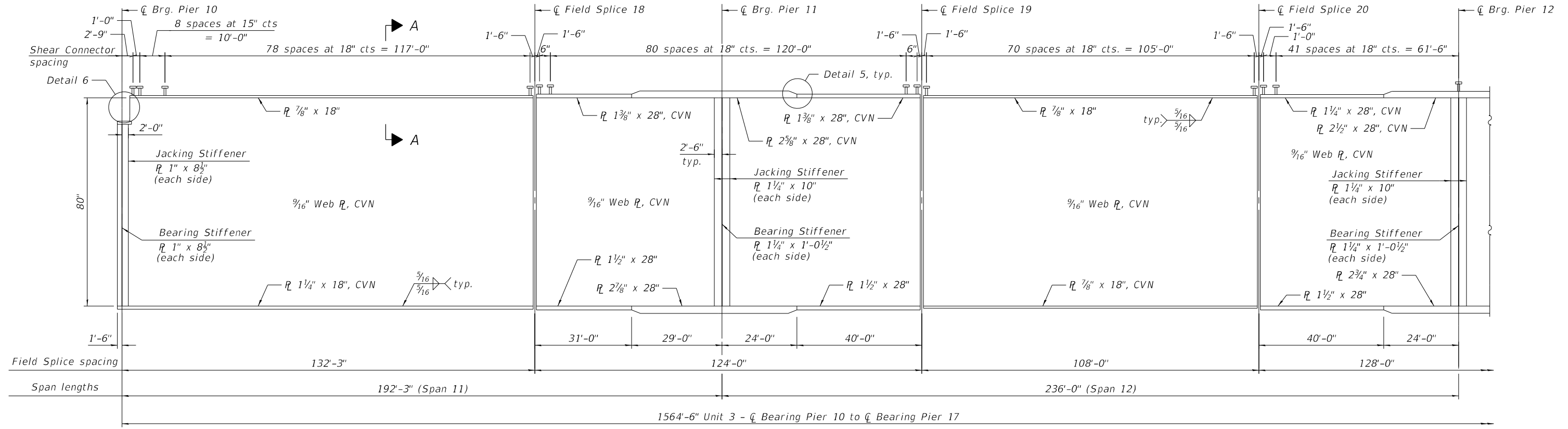
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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

FRAMING PLAN UNIT 3 - 2
STRUCTURE NO. 060-0350 (EB)

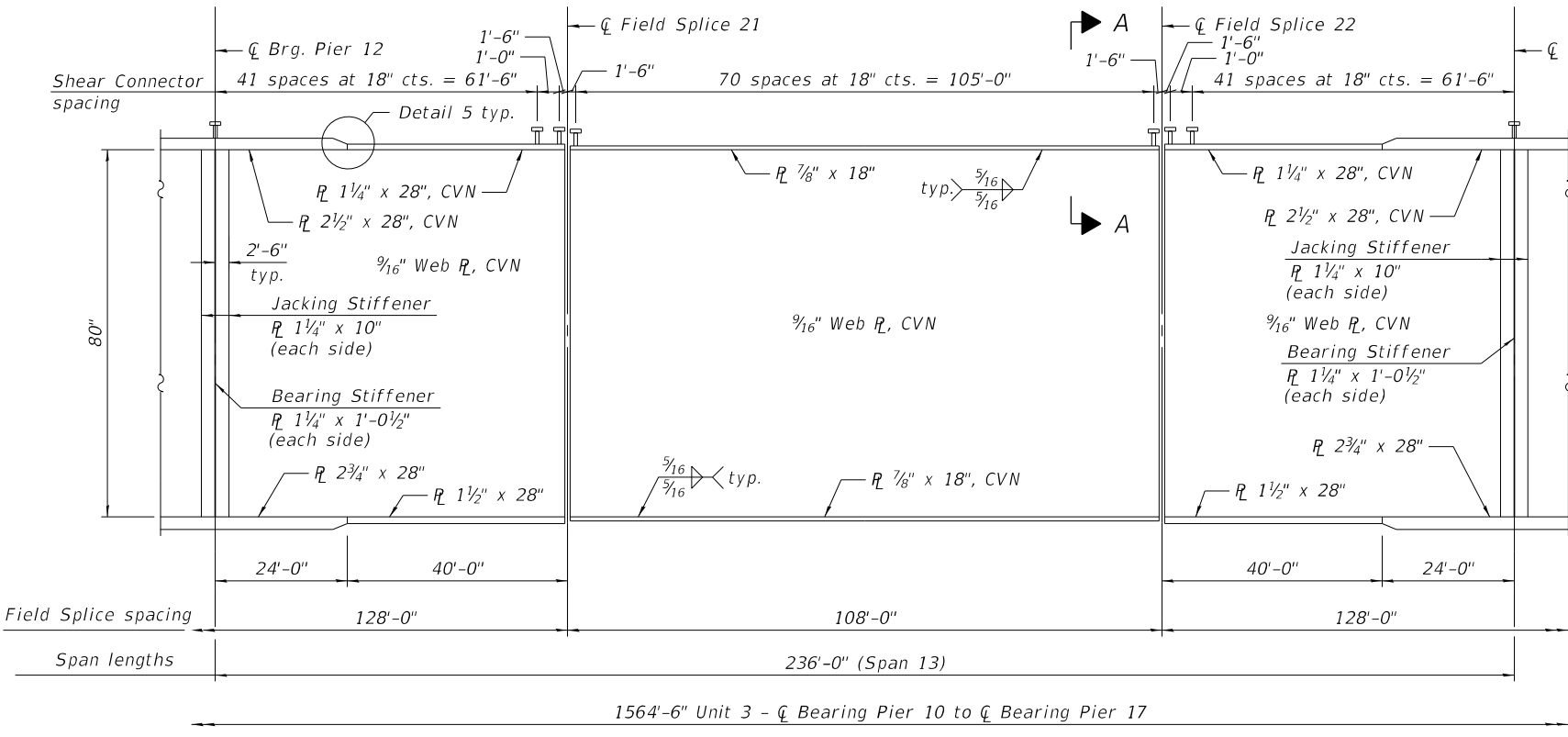
SHEET 127 OF 292 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	340
CONTRACT NO. 76J90				
ILLINOIS FED. AID PROJECT				

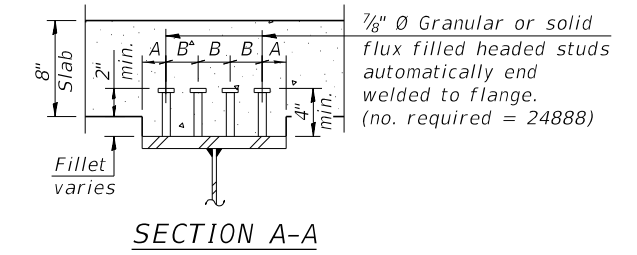


GIRDER ELEVATION - UNIT 3
(Spans 11 and 12)

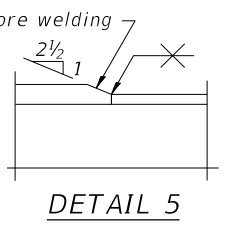
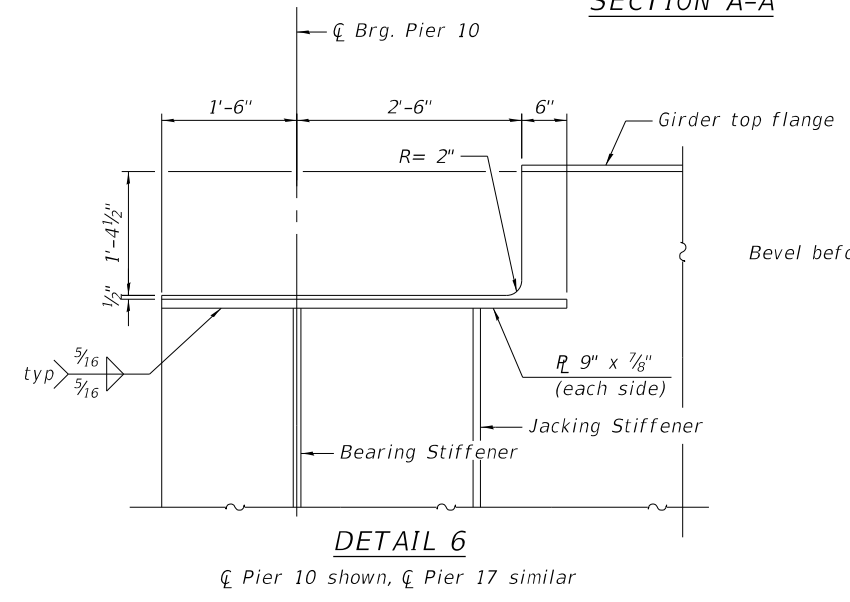
"CVN" denotes Charpy-V-Notch impact energy requirements, zone 2.



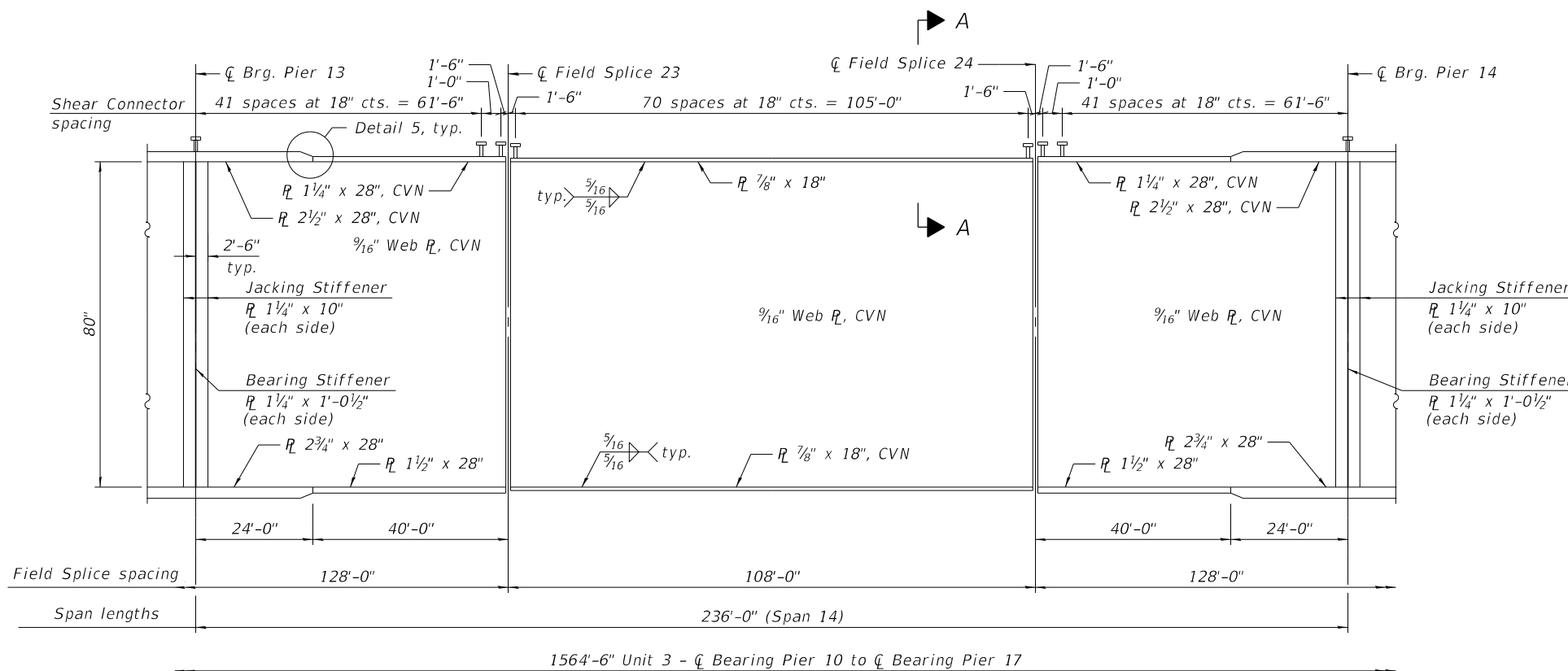
GIRDER ELEVATION - UNIT 3
(Span 13)



Flange Width	A	B
18"	1 1/2"	5"
28"	2"	8"

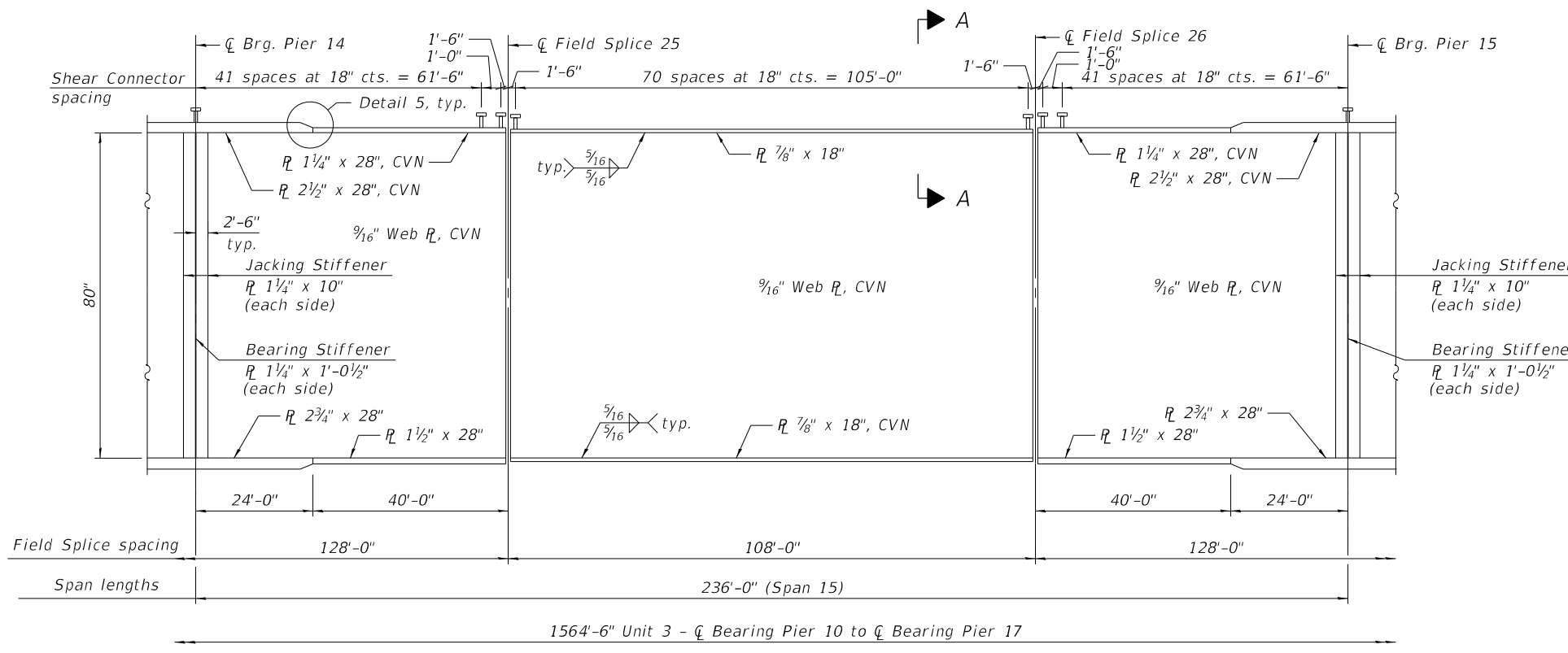


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GIRDER ELEVATION - UNIT 3
(Span 14)

"CVN" denotes Charpy-V-Notch impact energy requirements, zone 2.



GIRDER ELEVATION - UNIT 3
(Span 15)

Note:
For section A-A and Detail 5, see sheet 129.

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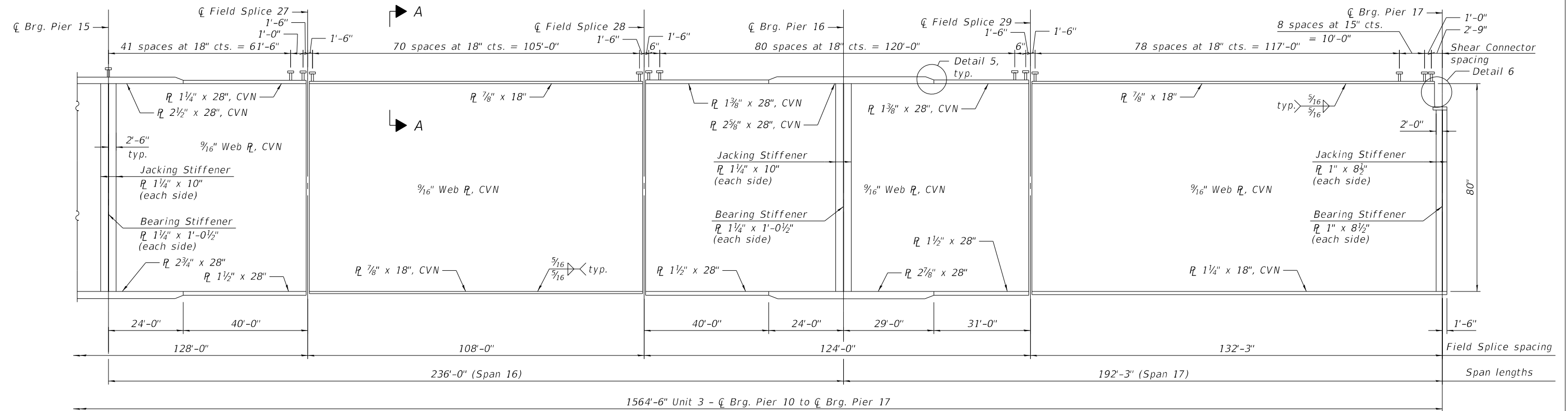
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

GIRDER ELEVATION UNIT 3 - 2
STRUCTURE NO. 060-0350 (EB)

SHEET 130 OF 292 SHEETS

F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	343
CONTRACT NO. 76190				

ILLINOIS FED. AID PROJECT



GIRDER ELEVATION - UNIT 3
(Spans 16 and 17)

"CVN" denotes Charpy-V-Notch impact energy requirements, zone 2.

Note:
For section A-A, Detail 5 and Detail 6, see sheet 129

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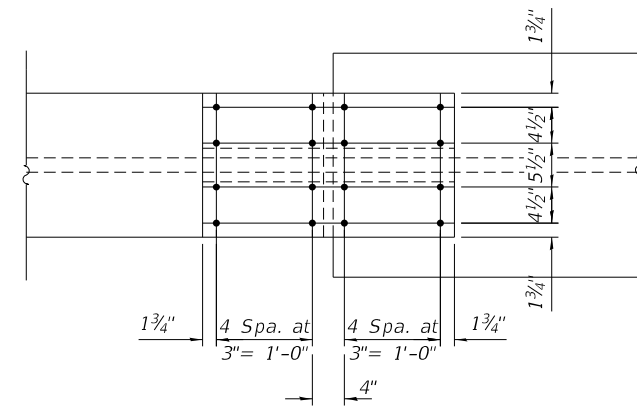
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**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

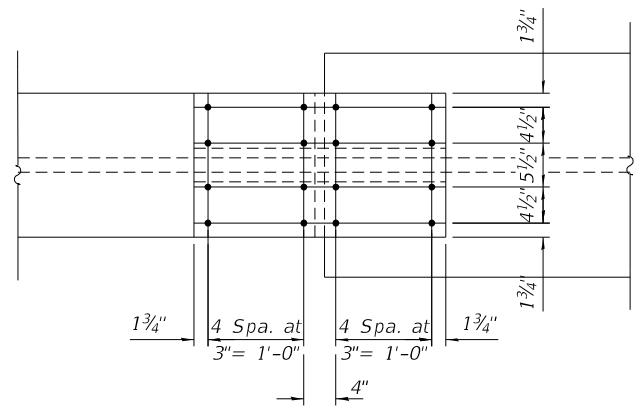
**GIRDER ELEVATION UNIT 3 - 3
STRUCTURE NO. 060-0350 (EB)**

SHEET 131 OF 292 SHEETS

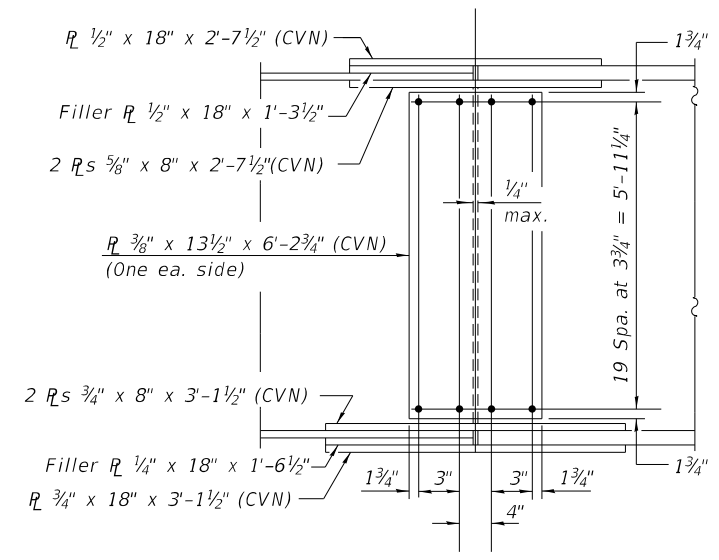
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	344
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				



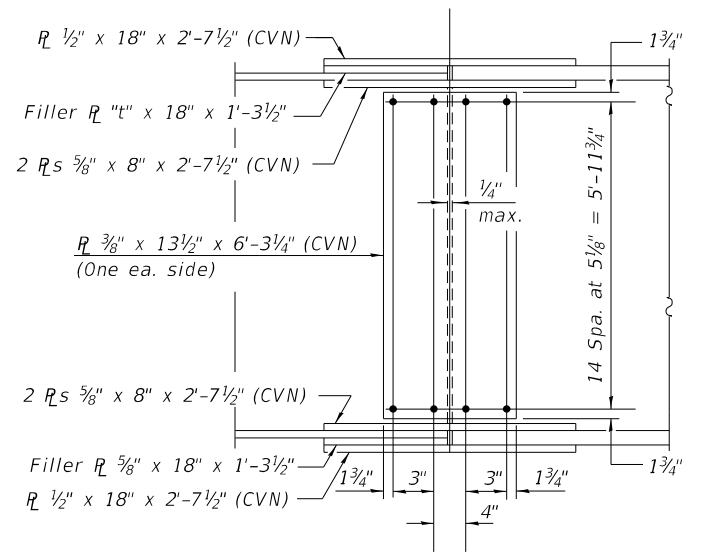
TOP FLANGE



TOP FLANGE

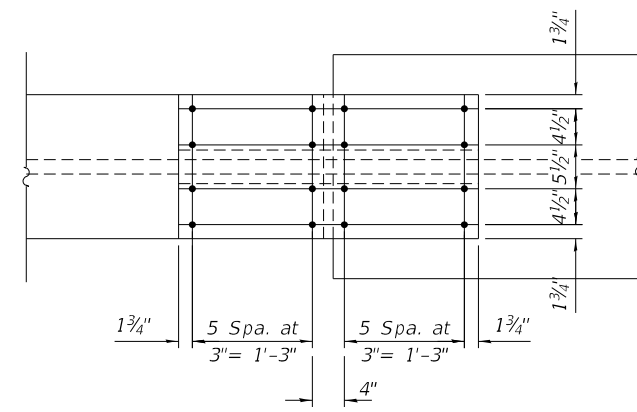


ELEVATION



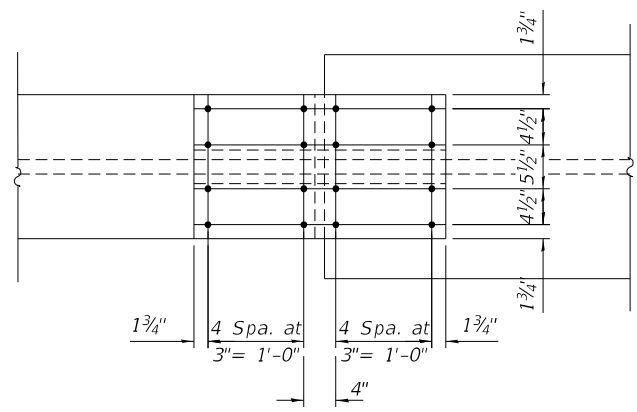
ELEVATION

Filler R "t"	
1/2"	FS-19 & FS-28
3/8"	FS-20 to FS-27



BOTTOM FLANGE

FIELD SPLICE 18 & 29 DETAIL



BOTTOM FLANGE

FIELD SPLICE 19 to 28 DETAIL

Notes:
 All Structural Steel shall be AASHTO M270 Grade 50.
 "CVN" denotes Charpy-V-Notch impact energy requirements, zone 2.

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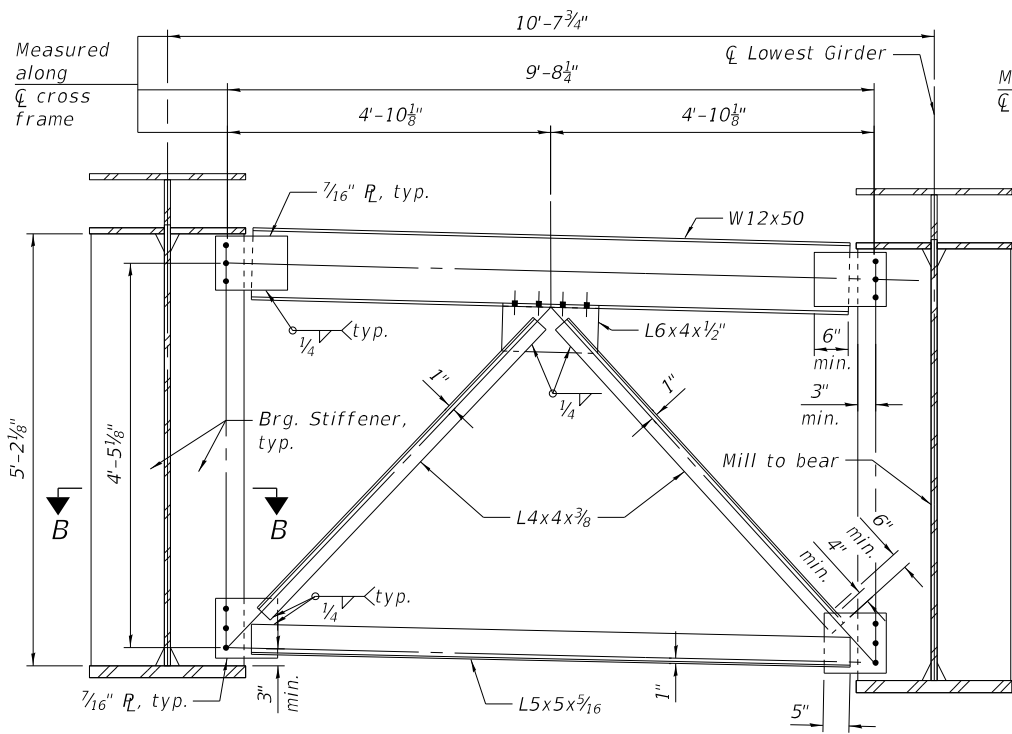
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STATE OF ILLINOIS
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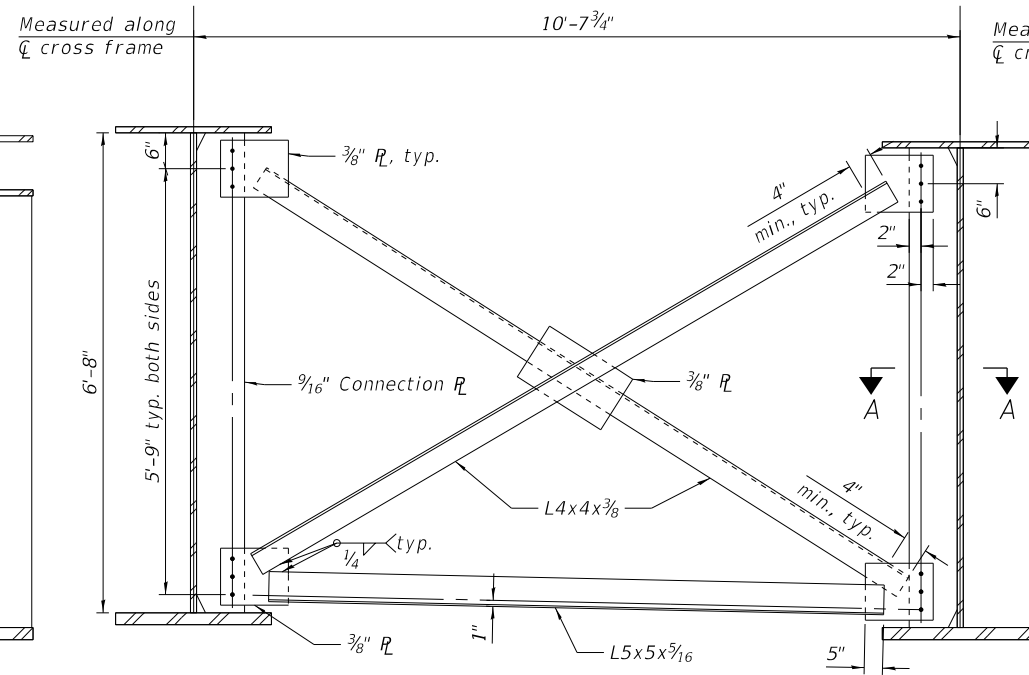
STEEL DETAILS UNIT 3 - 1
 STRUCTURE NO. 060-0350 (EB)

SHEET 132 OF 292 SHEETS

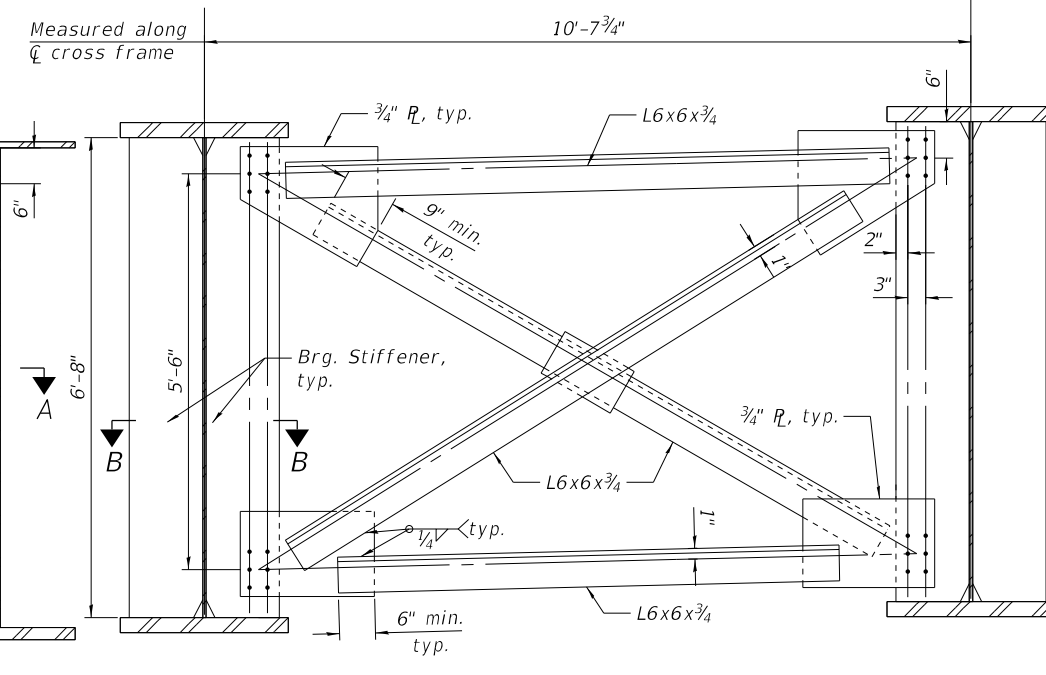
F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	345
CONTRACT NO. 76J90				
ILLINOIS FED. AID PROJECT				



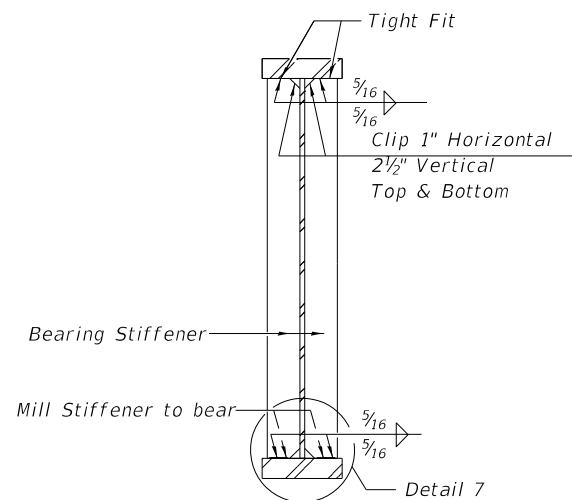
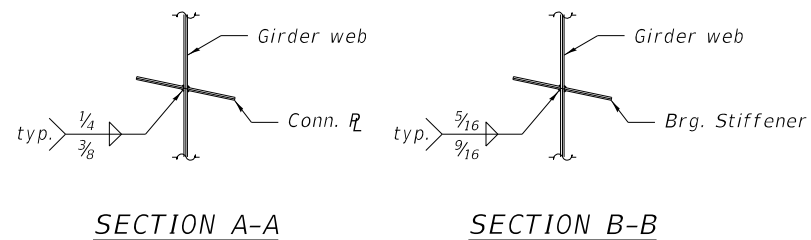
END CROSS FRAME (CF2)
(10 Required)



INTERIOR CROSS FRAME (CF1)
(435 Required)

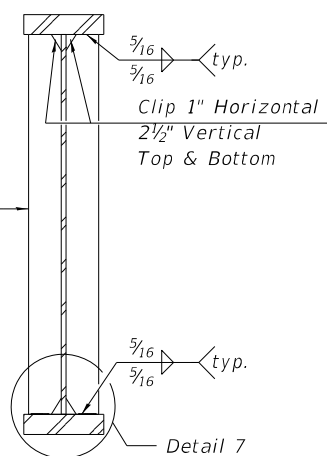


PIER CROSS FRAME (CF3)
(30 Required)

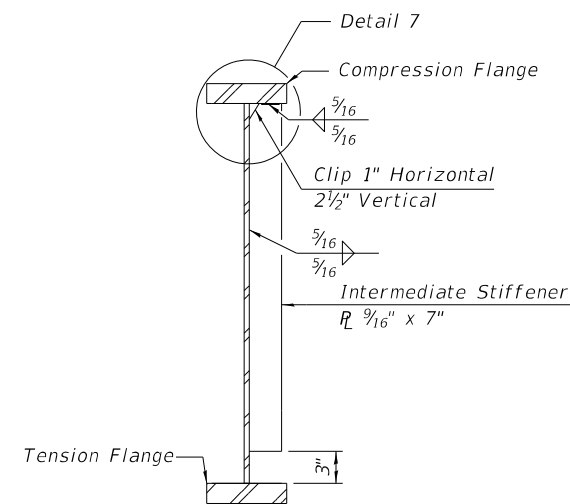


BEARING AND JACKING STIFFENER DETAILS

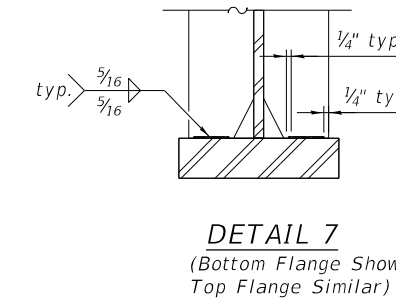
Connection R 5/16" x 7"
(Each side at Girder 2 thru 5
One side at Girder 1 and 6)



CONNECTION PLATE DETAILS



INTERMEDIATE STIFFENER DETAIL

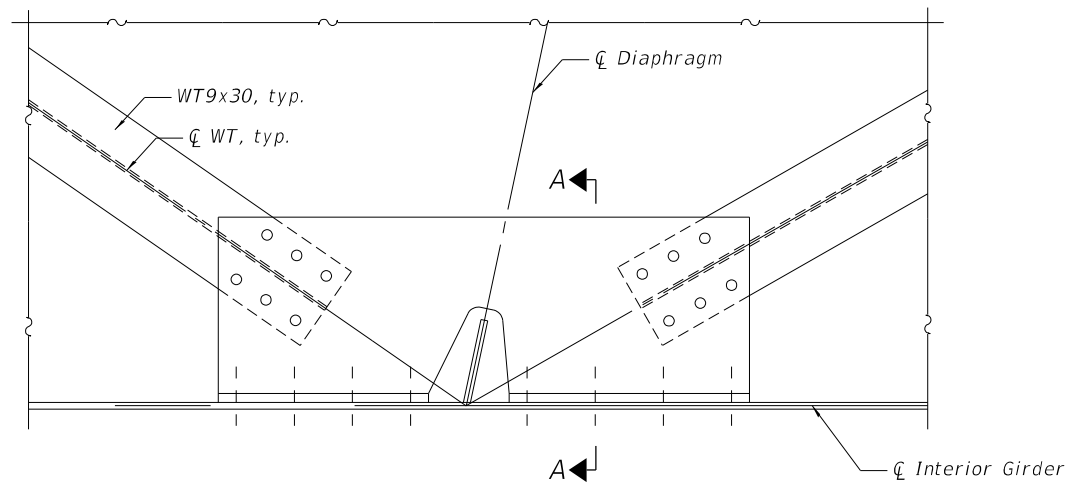


Notes:
All Structural Steel shall be AASHTO M 270 Grade 50.
Provide 1 1/16" \bar{O} holes for all 7/8" \bar{O} HS bolts.
Two hardened washers required for each set of oversized holes.
All cross frames shall be installed as steel is erected and secured with erection pins and bolts. Individual cross frames at supports may be temporarily disconnected to install bearing anchor rods.

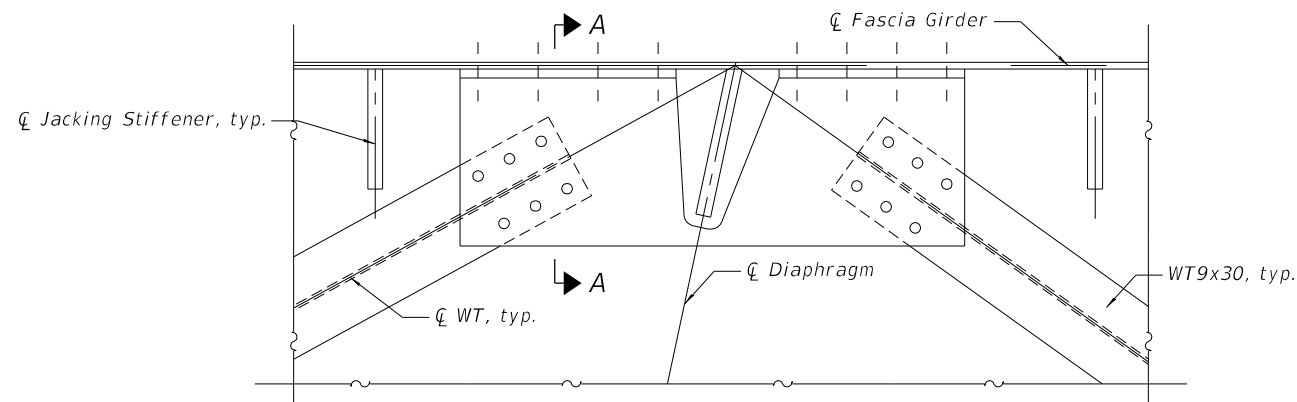
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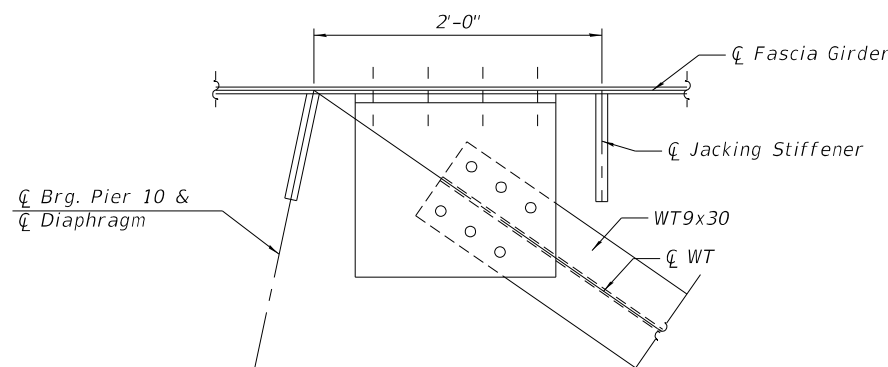
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	346
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				



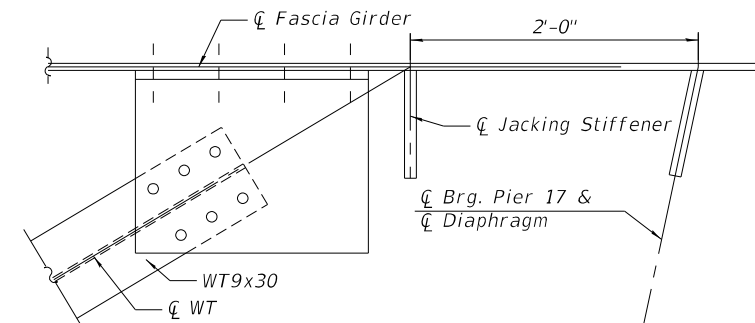
DETAIL 1
(Lateral bracing connection at intermediate diaphragm)
(See connection detail)



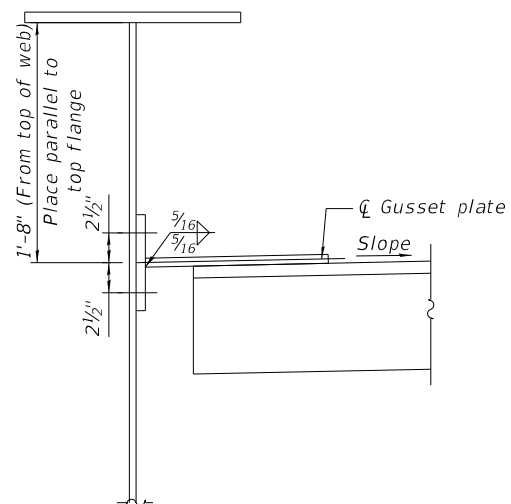
DETAIL 2
(Lateral bracing connection at pier diaphragm)
(See connection detail)



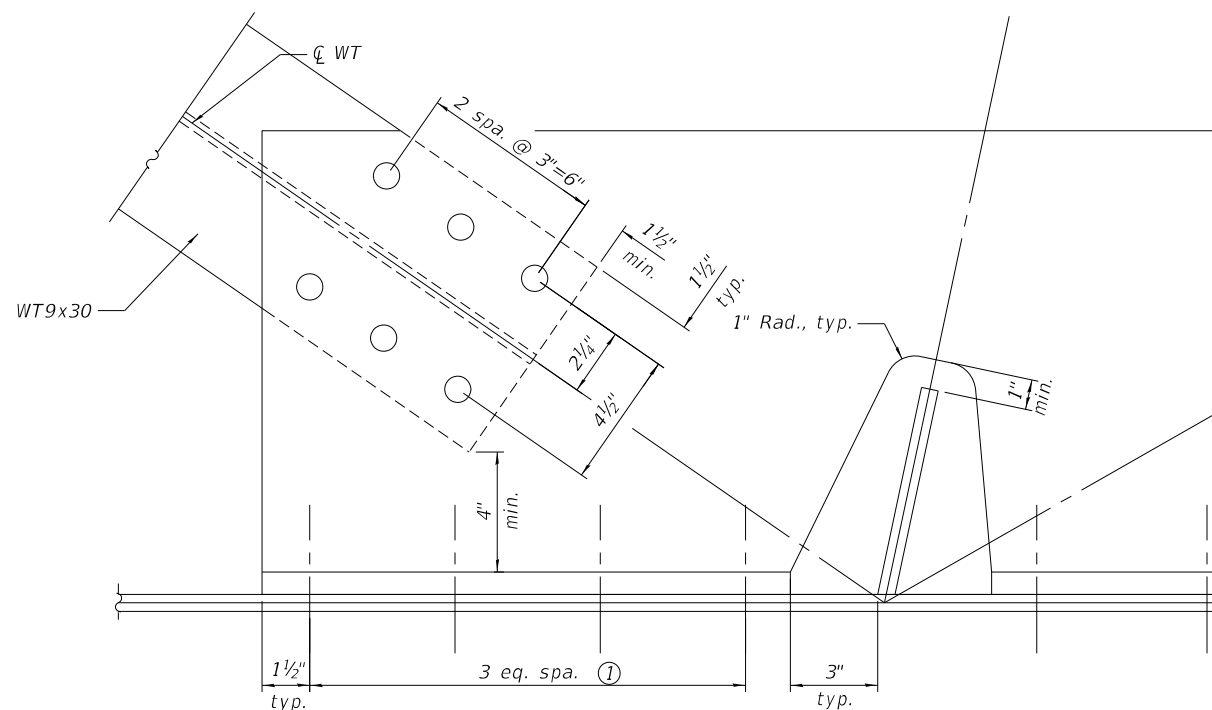
DETAIL 3
(Lateral bracing connection at pier 10)
(See connection detail)



DETAIL 4
(Lateral bracing connection at pier 17)
(See connection detail)



SECTION A-A
(Cross frame and stiffener not shown)



CONNECTION DETAIL

- Notes:
- All plates to be 3/4".
 - Detail 1 1/16" dia. holes for all 7/8" dia. bolts.
 - Provide 1 1/2" min. from center of bolt to edge of connected element in any direction
 - Two hardened washers required for each set of oversized holes.
 - ① Provide additional bolts as required to limit maximum spacing to 6".

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HORNER SHIFRIN
Teaming with **PARSONS**

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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

STEEL DETAILS UNIT 3 - 3
STRUCTURE NO. 060-0350 (EB)

SHEET 134 OF 292 SHEETS

F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	347
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				

INTERIOR GIRDER MOMENT TABLE														
		0.4 Sp. 11	Pier 11	0.5 Sp. 12	Pier 12	0.5 Sp. 13	Pier 13	0.5 Sp. 14	Pier 14	0.5 Sp. 15	Pier 15	0.5 Sp. 16	Pier 16	0.6 Sp. 17
I_s	(in ⁴)	85,969	287,316	75,511	274,546	75,511	274,546	75,511	274,546	75,511	274,546	75,511	287,316	85,969
$I_c(n)$	(in ⁴)	208,849	475,179	177,142	459,255	177,142	459,255	177,142	459,255	177,142	459,255	177,142	475,179	208,849
$I_c(3n)$	(in ⁴)	154,106	-	133,122	-	133,122	-	133,122	-	133,122	-	133,122	-	154,106
$I_c(cr)$	(in ⁴)	-	311,004	-	298,123	-	298,123	-	298,123	-	298,123	-	311,004	-
S_s	(in ³)	2,267	6,945	1,847	6,664	1,847	6,664	1,847	6,664	1,847	6,664	1,847	6,945	2,267
$S_c(n)$	(in ³)	3,089	-	2,549	-	2,549	-	2,549	-	2,549	-	2,549	-	3,089
$S_c(3n)$	(in ³)	2,832	-	2,330	-	2,330	-	2,330	-	2,330	-	2,330	-	2,832
$S_c(cr)$	(in ³)	-	7,107	-	6,828	-	6,828	-	6,828	-	6,828	-	7,107	-
DC1	(k/')	1.505	1.985	1.478	1.957	1.478	1.957	1.478	1.957	1.478	1.957	1.478	1.985	1.505
M_{DC1}	(k)	3,186	8,874	2,070	8,161	2,303	8,374	2,194	8,374	2,303	8,161	2,070	8,874	3,186
DC2	(k/')	0.190	0.190	0.190	0.190	0.190	0.190	0.190	0.190	0.190	0.190	0.190	0.190	0.190
M_{DC2}	(k)	423	1,048	297	1,002	316	1,012	310	1,012	316	1,002	297	1,048	423
DW	(k/')	0.467	0.467	0.467	0.467	0.467	0.467	0.467	0.467	0.467	0.467	0.467	0.467	0.467
M_{DW}	(k)	1,047	2,593	736	2,479	781	2,503	767	2,503	781	2,479	736	2,593	1,047
LLDF		0.706	0.749	0.657	0.727	0.657	0.727	0.657	0.727	0.657	0.727	0.657	0.749	0.706
M_{LL+IM}	(k)	4,154	6,067	3,567	6,225	3,743	6,368	3,770	6,368	3,743	6,225	3,567	6,067	4,154
ηM_u (Strength I)	(k)	13,351	-	10,305	-	10,996	-	10,878	-	10,996	-	10,305	-	13,351
ϕM_n	(k)	14,502	-	12,277	-	12,114	-	12,188	-	12,114	-	12,277	-	14,502
f_s DC1	(ksi)	16.9	15.3	13.4	14.7	15.0	15.1	14.3	15.1	15.0	14.7	13.4	15.3	16.9
f_s DC2	(ksi)	1.8	1.8	1.5	1.8	1.6	1.8	1.6	1.8	1.6	1.8	1.5	1.8	1.8
f_s DW	(ksi)	4.4	4.4	3.8	4.4	4.0	4.4	4.0	4.4	4.0	4.4	3.8	4.4	4.4
f_s (LL+IM)	(ksi)	16.1	10.2	16.8	10.9	17.6	11.2	17.7	11.2	17.6	10.9	16.8	10.2	16.1
f_s (Service II)	(ksi)	44.1	34.8	40.6	35.0	43.5	35.8	42.9	35.8	43.5	35.0	40.6	34.8	44.1
0.95R _y F _{yf}	(ksi)	47.5	47.5	47.5	47.5	47.5	47.5	47.5	47.5	47.5	47.5	47.5	47.5	47.5
ηf_s (Total)(Strength I)	(ksi)	-	45.9	-	46.3	-	47.3	-	47.3	-	46.3	-	45.9	-
ϕF_n	(ksi)	-	49.8	-	49.8	-	49.8	-	49.8	-	49.8	-	49.8	-
V _f	(k)	-	91.0	-	97.3	-	98.9	-	99.1	-	99.2	-	99.7	-

GIRDER REACTION TABLE																	
	Pier 10		Pier 11		Pier 12		Pier 13		Pier 14		Pier 15		Pier 16		Pier 17		
	Interior	Exterior	Interior	Exterior	Interior	Exterior	Interior	Exterior	Interior	Exterior	Interior	Exterior	Interior	Exterior	Interior	Exterior	
LLDF	1.01	0.89	0.98	0.86	0.98	0.86	0.98	0.86	0.98	0.86	0.98	0.86	0.98	0.86	1.01	0.89	
OCF	-----	1.04	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	1.04	
R _{DC1}	(k)	99.3	89.9	401.4	366.1	379.7	346.2	384.4	350.5	384.4	350.5	379.7	346.2	401.4	366.1	99.3	89.9
R _{DC2}	(k)	12.8	12.8	46.3	46.3	44.6	44.6	44.9	44.9	44.9	44.9	44.6	44.6	46.3	46.3	12.8	12.8
R _{DW}	(k)	31.7	31.7	114.6	114.6	110.3	110.3	111.0	111.0	111.0	111.0	110.3	114.6	114.6	31.7	31.7	
R _{LL}	(k)	126.9	111.8	276.0	242.2	282.4	247.8	286.3	251.2	286.3	251.2	282.4	247.8	276.0	242.2	126.9	111.8
R _{IM}	(k)	22.6	19.9	39.9	35.0	39.9	35.0	39.9	35.0	39.9	35.0	39.9	35.0	39.9	35.0	22.6	19.9
R _{Total}	(k)	293.3	266.1	878.3	804.2	856.9	783.9	866.5	792.6	866.5	792.6	856.9	783.9	878.3	804.2	293.3	266.1

I_s , S_s : Non-composite moment of inertia and section modulus of the steel section used for computing f_s (Total-Strength I, and Service II) due to non-composite dead loads (in.4 and in.3).

$I_c(n)$, $S_c(n)$: Composite moment of inertia and section modulus of the steel and deck based upon the modular ratio, "n", used for computing f_s (Total-Strength I, and Service II) in uncracked sections due to short-term composite live loads (in.4 and in.3).

$I_c(3n)$, $S_c(3n)$: Composite moment of inertia and section modulus of the steel and deck based upon 3 times the modular ratio, "3n", used for computing f_s (Total-Strength I, and Service II) in uncracked sections, due to long-term composite (superimposed) dead loads (in.4 and in.3).

$I_c(cr)$, $S_c(cr)$: Composite moment of inertia and section modulus of the steel and longitudinal deck reinforcement, used for computing f_s (Total-Strength I and Service II) in cracked sections, due to both short-term composite live loads and long-term composite (superimposed) dead loads (in.4 and in.3).

DC1: Un-factored non-composite dead load (kips/ft.).

MDC1: Un-factored moment due to non-composite dead load (kip-ft.).

DC2: Un-factored long-term composite (superimposed excluding future wearing surface) dead load (kips/ft.).

MDC2: Un-factored moment due to long-term composite (superimposed excluding future wearing surface) dead load (kip-ft.).

DW: Un-factored long-term composite (superimposed future wearing surface only) dead load (kips/ft.).

M_{DW}: Un-factored moment due to long-term composite (superimposed future wearing surface only) dead load (kip-ft.).

LLDF: Live Load Distribution Factor

M_{LL+IM}: Un-factored live load moment plus dynamic load allowance (impact) (kip-ft.).

ηM_u (Strength I): Factored design moment (kip-ft.).

1.05[1.25 (MDC1 + MDC2) + 1.5 M_{DW} + 1.75 M_{LL+IM}]

ϕF_n : Compact composite positive moment capacity computed according to Article 6.10.7.1 or non-slender negative moment capacity according to Article A6.1.1 or A6.1.2 (kip-ft.).

f_s DC1: Un-factored stress at edge of flange for controlling steel flange due to vertical non-composite dead loads as calculated below (ksi).

MDC1 / S_{nc}

f_s DC2: Un-factored stress at edge of flange for controlling steel flange due to vertical composite dead loads as calculated below (ksi).

MDC2 / S_c(3n) or MDC2 / S_c(cr) as applicable.

f_s DW: Un-factored stress at edge of flange for controlling steel flange due to vertical composite future wearing surface loads as calculated below (ksi).

M_{DW} / S_c(3n) or M_{DW} / S_c(cr) as applicable.

f_s (LL+IM): Un-factored stress at edge of flange for controlling steel flange due to vertical composite live load plus impact loads as calculated below (ksi).

M_{LL+IM} / S_c(n) or M_{LL+IM} / S_c(cr) as applicable.

f_s (Service II): Sum of stresses as computed below (ksi).

f_s DC1 + f_s DC2 + f_s DW + 1.3 f_s (LL+IM)

0.95R_yF_{yf}: Composite stress capacity for Service II loading according to Article 6.10.4.2 (ksi).

ηf_s (Total)(Strength I): Sum of stresses as computed below on non-compact section (ksi).

1.05[1.25 (f_s DC1 + f_s DC2) + 1.5 f_s DW + 1.75 f_s (LL+IM)]

ϕF_n : Non-Compact composite positive or negative stress capacity for Strength I loading according to Article 6.10.7 or 6.10.8 (ksi).

V_f: Maximum factored shear range in span computed according to Article 6.10.10.

OCF: Obtuse Correction Factor

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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

STRESS TABLES UNIT 3
STRUCTURE NO. 060-0350 (EB)

SHEET 135 OF 292 SHEETS

F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	348
CONTRACT NO. 76J90				
ILLINOIS FED. AID PROJECT				

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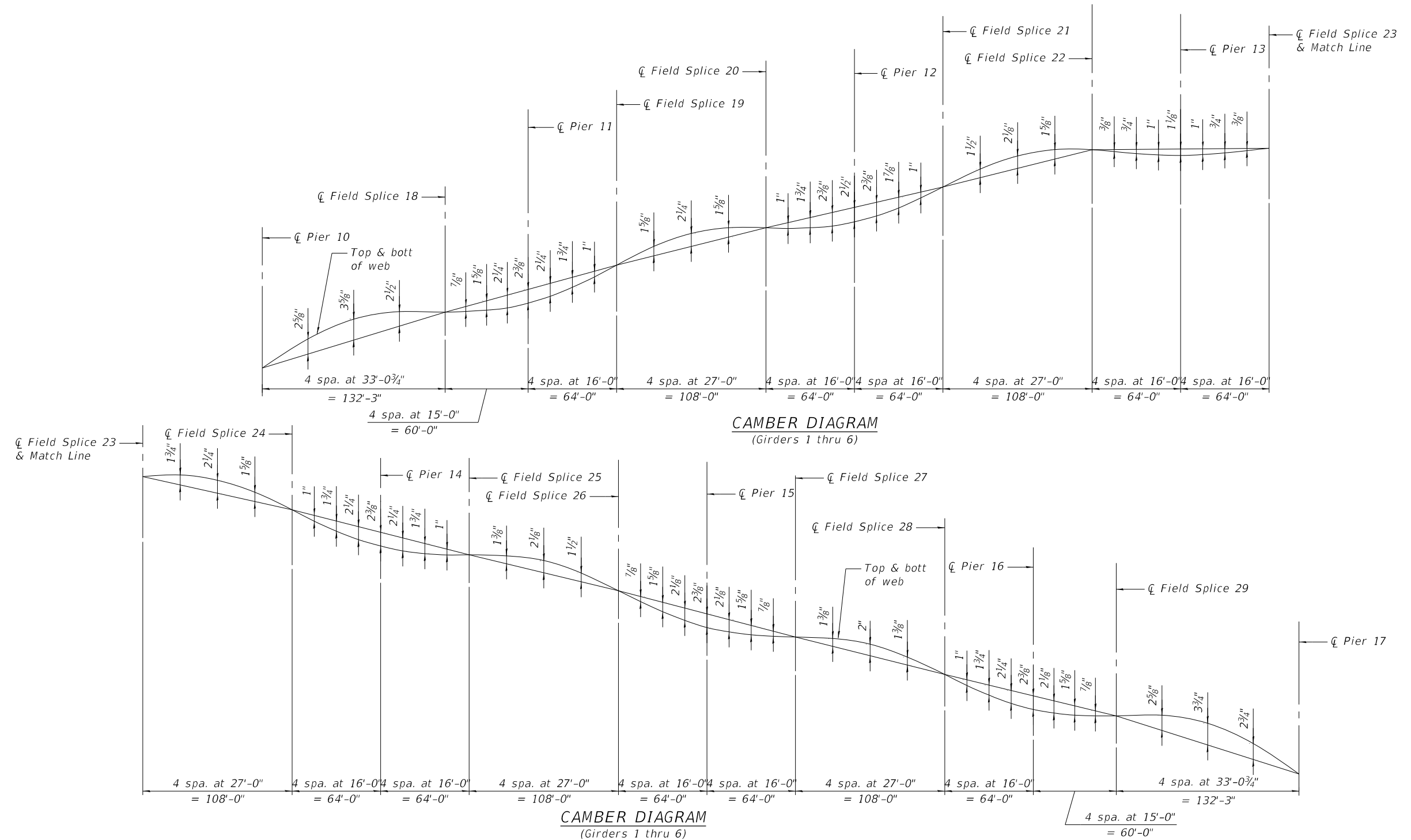
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**STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION**

**CAMBER DATA UNIT 3
 STRUCTURE NO. 060-0350 (EB)**

SHEET 136 OF 292 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	349
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				



TOP OF WEB ELEVATIONS (FOR FABRICATION ONLY)

LOCATION	Girder 1	Girder 2	Girder 3	Girder 4	Girder 5	Girder 6
☐ Brg. Pier 10	461.62	461.82	461.99	461.77	461.55	461.33
☐ Field Splice 18	462.51	462.72	462.89	462.67	462.45	462.22
☐ Brg. Pier 11	462.58	462.78	462.94	462.73	462.51	462.29
☐ Field Splice 19	463.14	463.37	463.53	463.31	463.10	462.85
☐ Field Splice 20	463.70	463.92	464.09	463.87	463.65	463.40
☐ Brg. Pier 12	463.76	463.96	464.12	463.90	463.68	463.47
☐ Field Splice 21	464.31	464.52	464.68	464.47	464.25	464.01
☐ Field Splice 22	464.85	465.07	465.24	465.02	464.81	464.57
☐ Brg. Pier 13	464.72	464.93	465.11	464.90	464.69	464.48

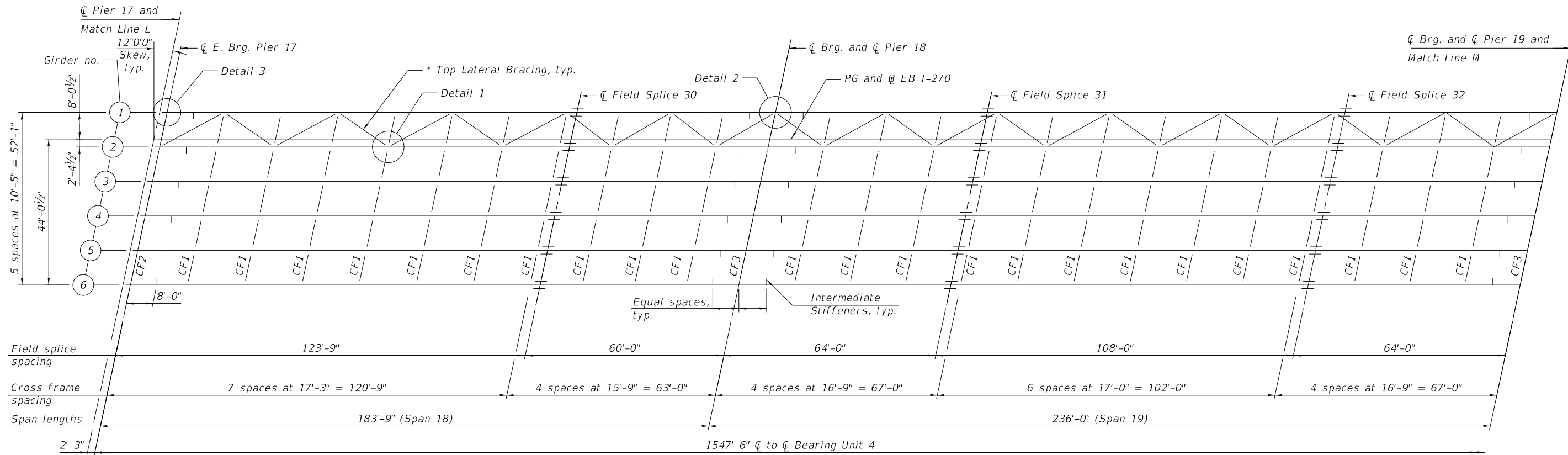
TOP OF WEB ELEVATIONS (FOR FABRICATION ONLY)

LOCATION	Girder 1	Girder 2	Girder 3	Girder 4	Girder 5	Girder 6
☐ Field Splice 23	464.86	465.09	465.27	465.07	464.87	464.65
☐ Field Splice 24	464.38	464.62	464.81	464.61	464.41	464.19
☐ Brg. Pier 14	463.82	464.04	464.23	464.03	463.83	463.64
☐ Field Splice 25	463.73	463.97	464.16	463.96	463.76	463.55
☐ Field Splice 26	463.22	463.46	463.65	463.45	463.25	463.03
☐ Brg. Pier 15	462.64	462.86	463.05	462.85	462.65	462.46
☐ Field Splice 27	462.52	462.76	462.94	462.75	462.55	462.34
☐ Field Splice 28	461.98	462.22	462.41	462.21	462.01	461.80
☐ Brg. Pier 16	461.46	461.68	461.87	461.67	461.47	461.28

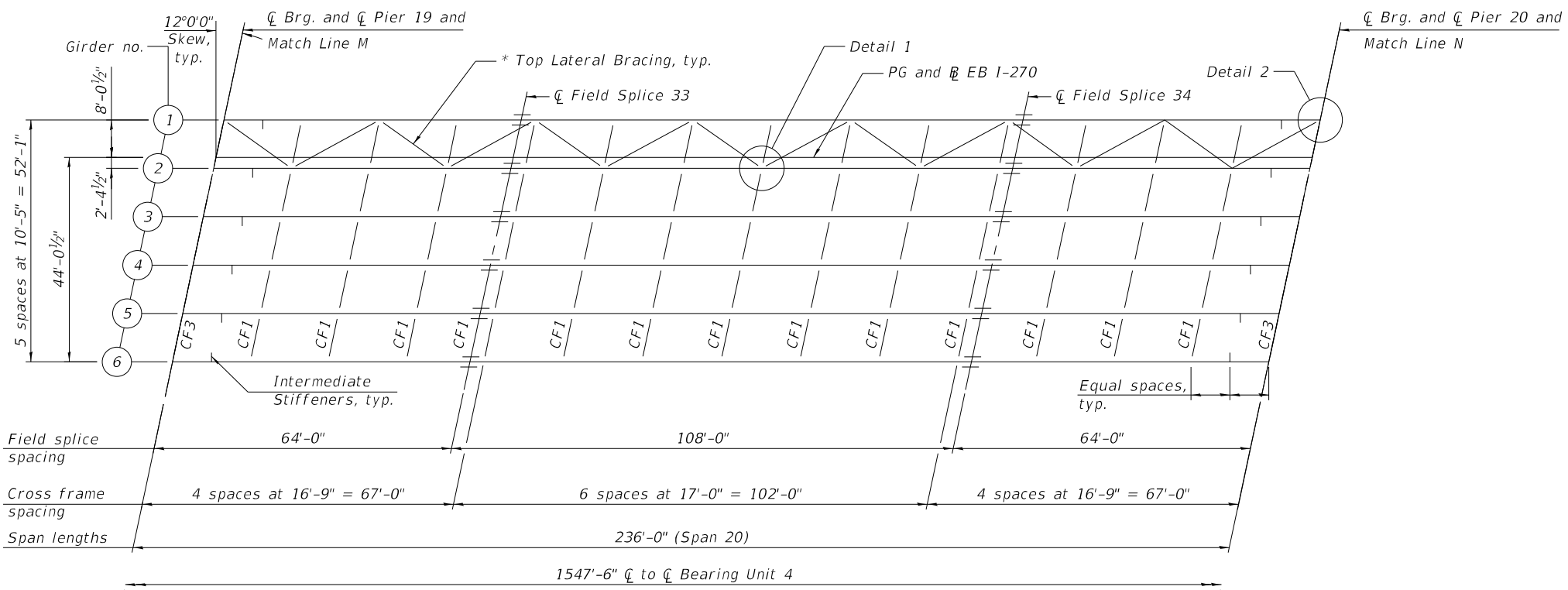
TOP OF WEB ELEVATIONS (FOR FABRICATION ONLY)

LOCATION	Girder 1	Girder 2	Girder 3	Girder 4	Girder 5	Girder 6
☐ Field Splice 29	461.42	461.65	461.84	461.64	461.45	461.23
☐ Brg. Pier 17	460.50	460.72	460.91	460.71	460.51	460.32

Note:
 At ☐ Brg. Pier 10 and at ☐ Brg. Pier 17, the elevation given at theoretical top of web is prior to coping of web.



FRAMING PLAN - UNIT 4
(Spans 18 and 19)



FRAMING PLAN - UNIT 4
(Span 20)

* Top Lateral Bracing to be installed between the first and next adjacent girders erected. All Lateral Bracing to be in the same girder bay for full length of Unit 4.

Notes:
For Field Splice Details, see sheet 143 of 292.
For Cross Frame Details, see sheet 144 of 292.
For Details 1, 2 and 3, see sheet 145 of 292.

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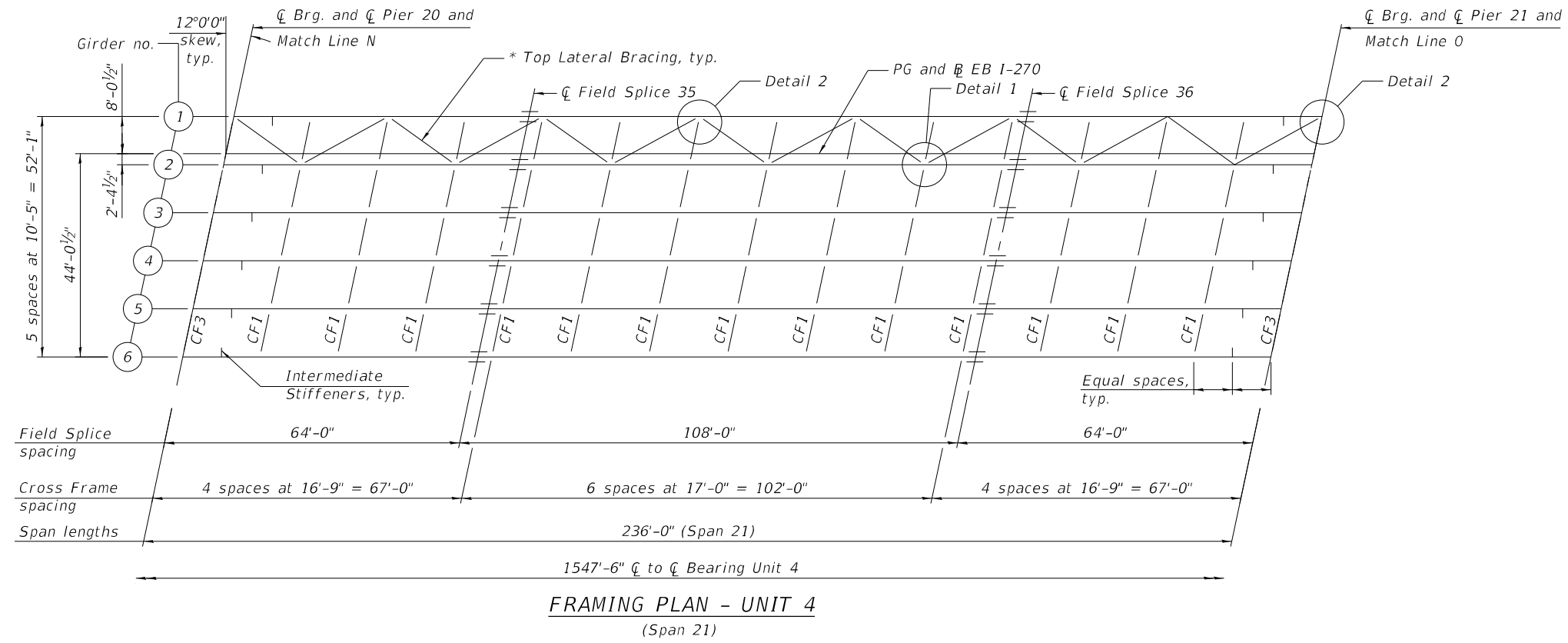
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

FRAMING PLAN UNIT 4 - 1
STRUCTURE NO. 060-0350 (EB)

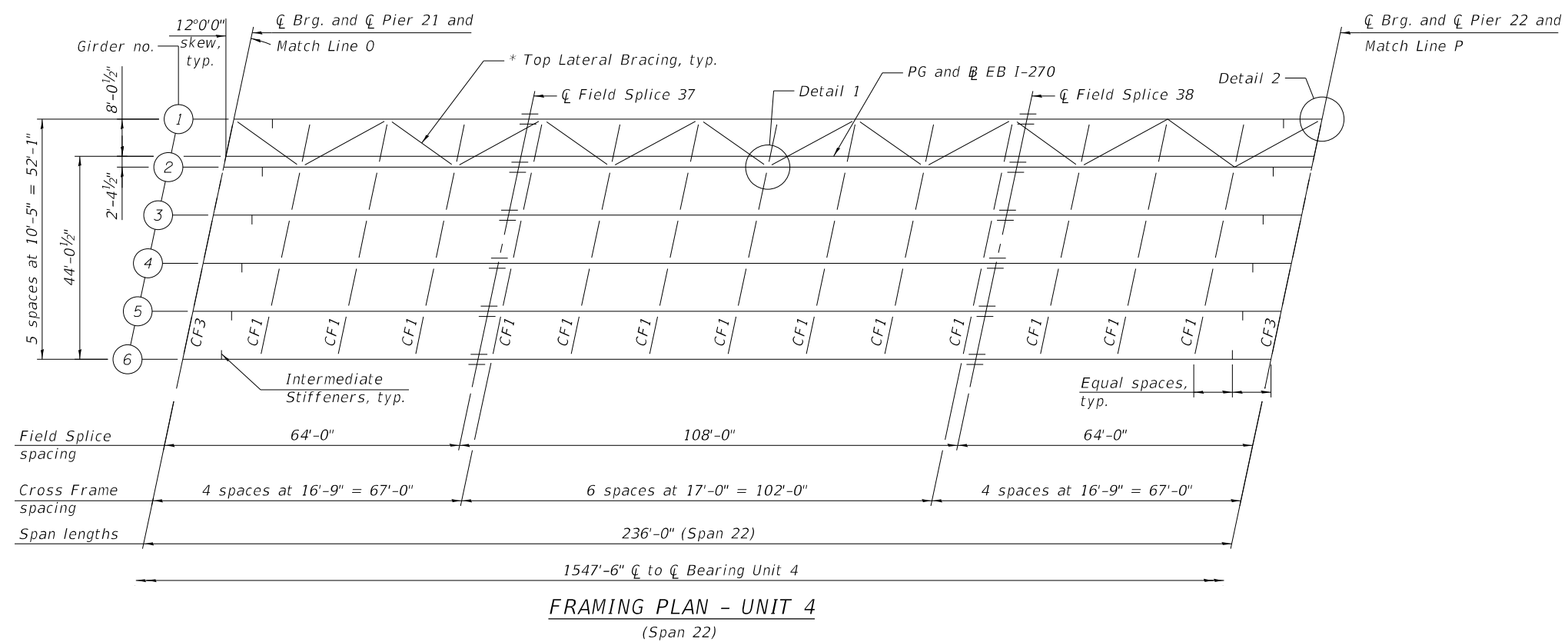
SHEET 137 OF 292 SHEETS

F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	350
CONTRACT NO. 76J90				

ILLINOIS FED. AID PROJECT



FRAMING PLAN - UNIT 4
(Span 21)



FRAMING PLAN - UNIT 4
(Span 22)

* Top Lateral Bracing to be installed between the first and next adjacent girders erected. All Lateral Bracing to be in the same girder bay for full length of Unit 4.

Notes:
For Field Splice Details, see sheet 143 of 292.
For Cross Frame Details, see sheet 144 of 292.
For Details 1 and 2, see sheet 145 of 292.

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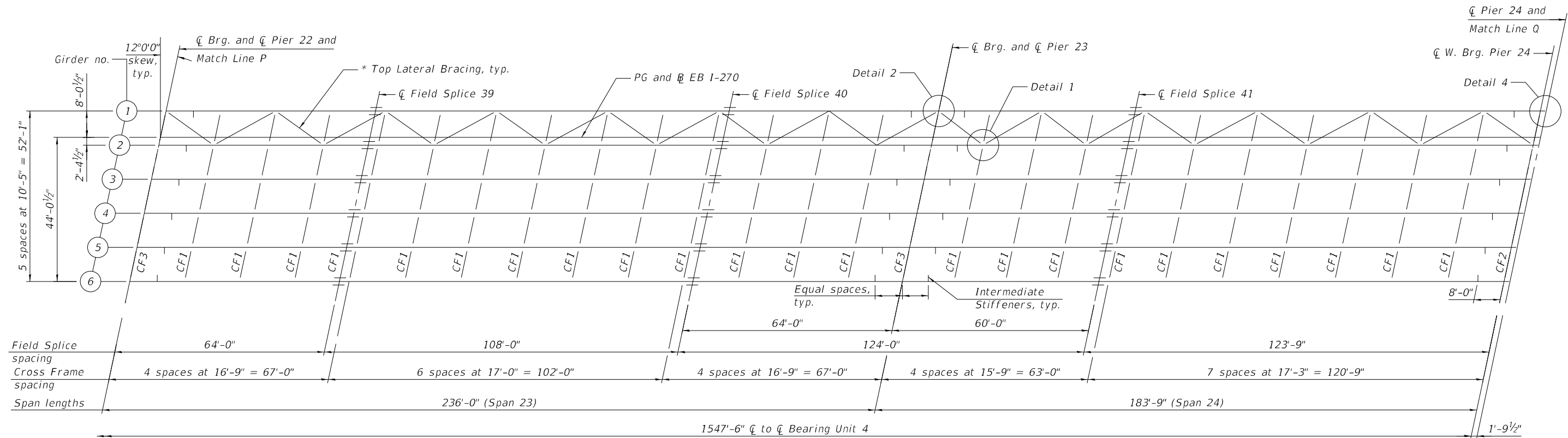
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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

FRAMING PLAN UNIT 4 - 2
STRUCTURE NO. 060-0350 (EB)

SHEET 138 OF 292 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	351
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				



FRAMING PLAN - UNIT 4
 (Spans 23 and 24)

* Top Lateral Bracing to be installed between the first and next adjacent girders erected. All Lateral Bracing to be in the same girder bay for full length of Unit 4.

Notes:
 For Field Splice Details, see sheet 143 of 292.
 For Cross Frame Details, see sheet 144 of 292.
 For Details 1, 2 and 4, see sheet 145 of 292.

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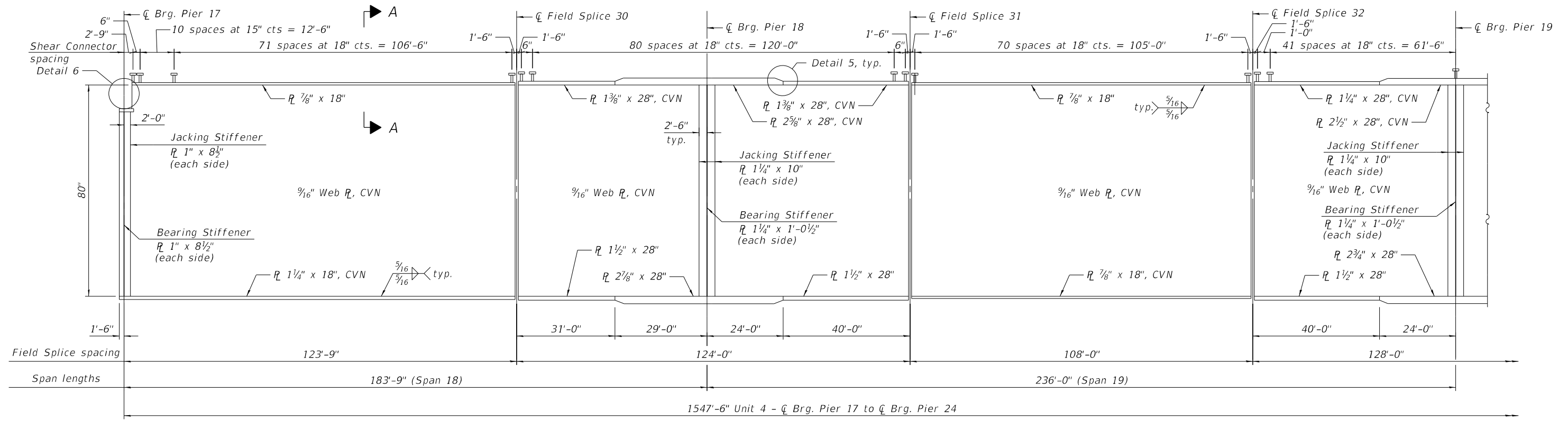
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PLOT DATE =	CHECKED - TBS	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

FRAMING PLAN UNIT 4 - 3
STRUCTURE NO. 060-0350 (EB)

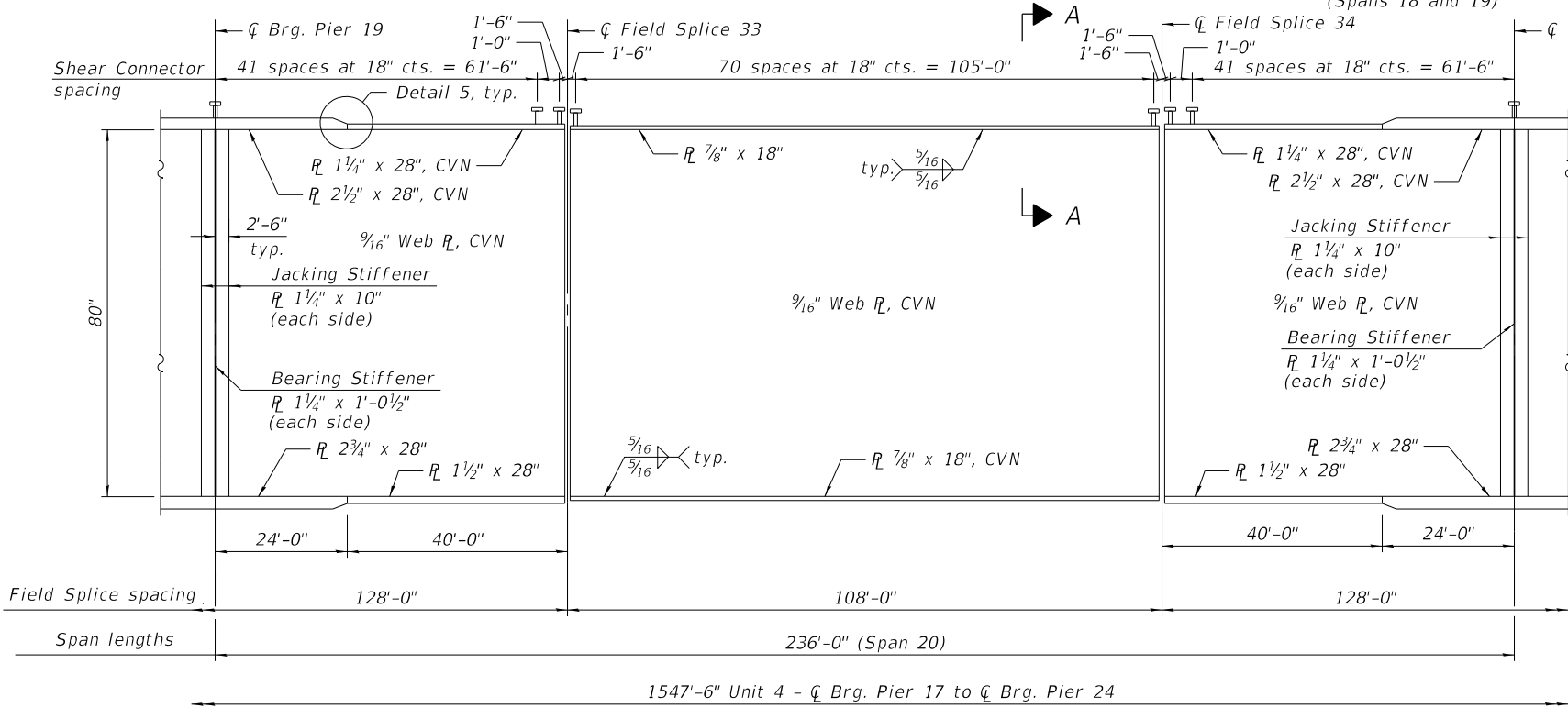
SHEET 139 OF 292 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	352
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				

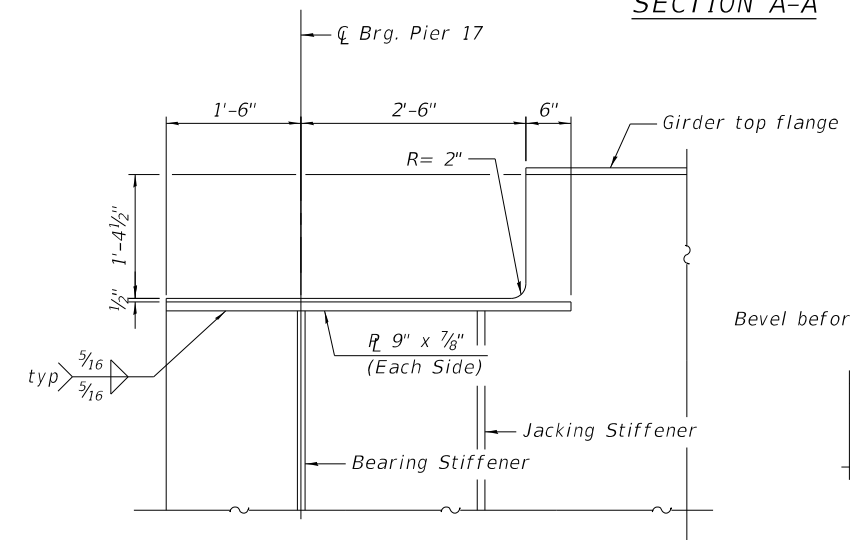
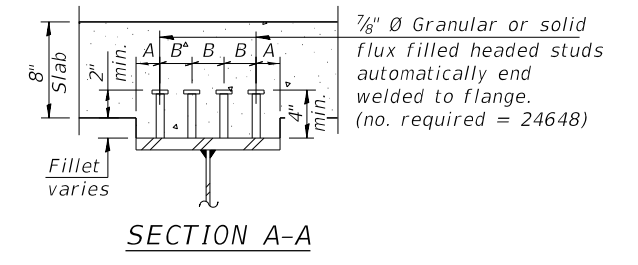


GIRDER ELEVATION - UNIT 4
(Spans 18 and 19)

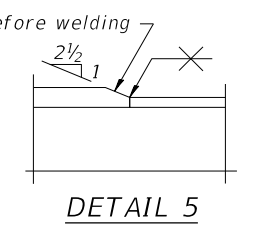
"CVN" denotes Charpy-V-Notch impact energy requirements, zone 2.



GIRDER ELEVATION - UNIT 4
(Span 20)



Flange Width	A	B
18"	1 1/2"	5"
28"	2"	8"

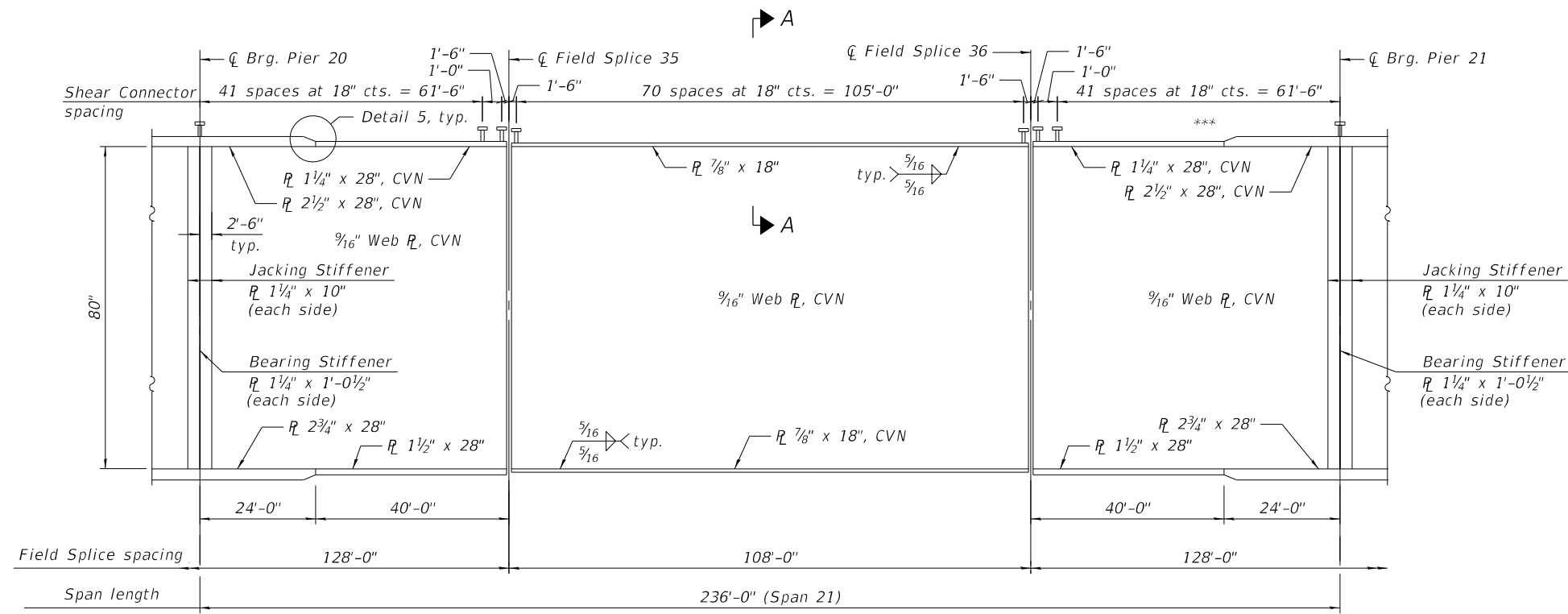


DETAIL 6
☐ Pier 17 shown, ☐ Pier 24 similar

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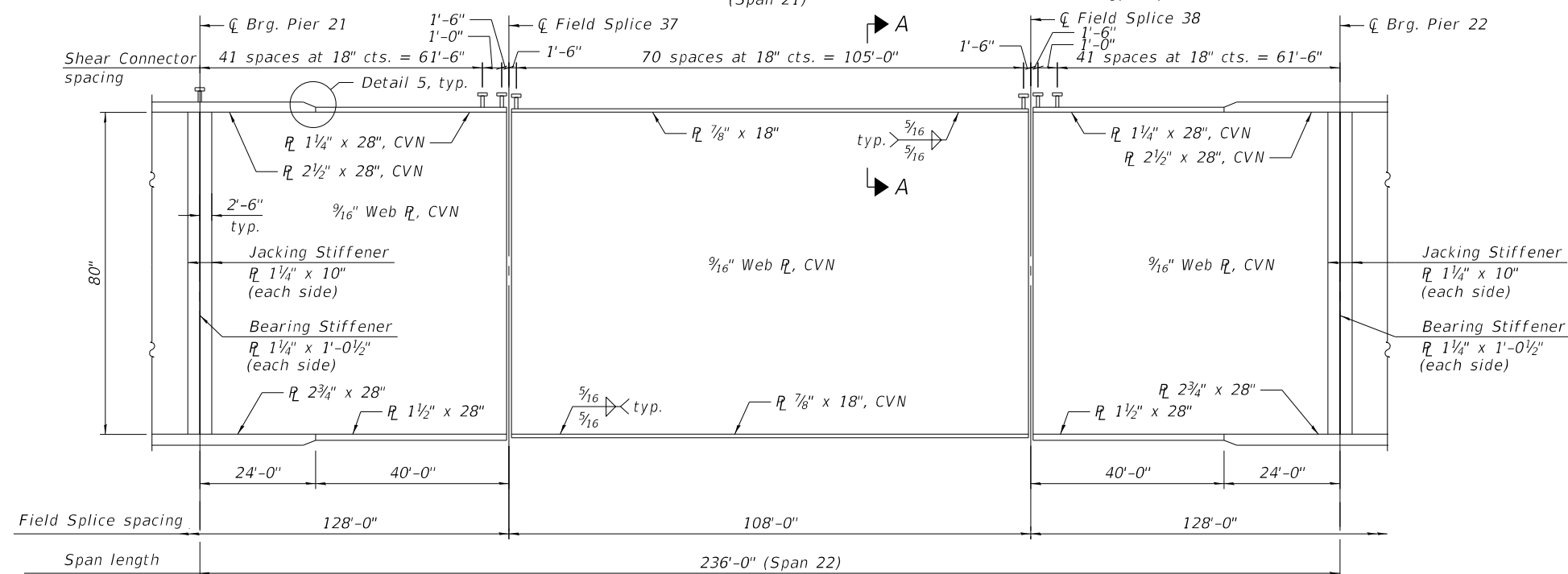
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F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	353
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				



GIRDER ELEVATION - UNIT 4
(Span 21)

"CVN" denotes Charpy-V-Notch impact energy requirements, zone 2.



GIRDER ELEVATION - UNIT 4
(Span 22)

Note:
For section A-A and Detail 5, See sheet 140.

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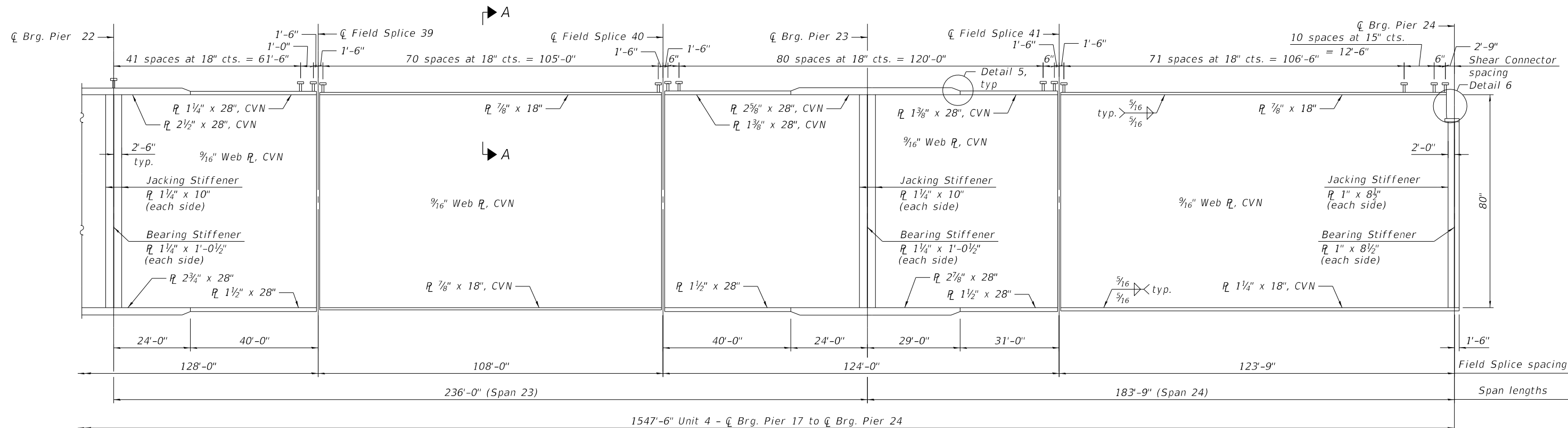
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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

GIRDER ELEVATION UNIT 4 - 2
STRUCTURE NO. 060-0350 (EB)

F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	354
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				

SHEET 141 OF 292 SHEETS



GIRDER ELEVATION - UNIT 4
(Spans 23 and 24)

"CVN" denotes Charpy-V-Notch impact energy requirements, zone 2.

Note:
For section A-A, Detail 5 and Detail 6, See sheet 140.

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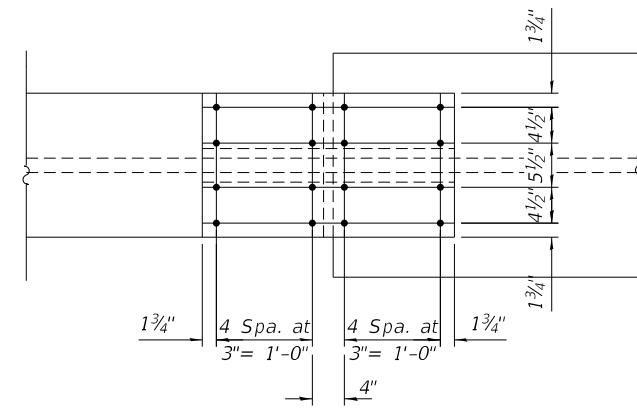
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**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

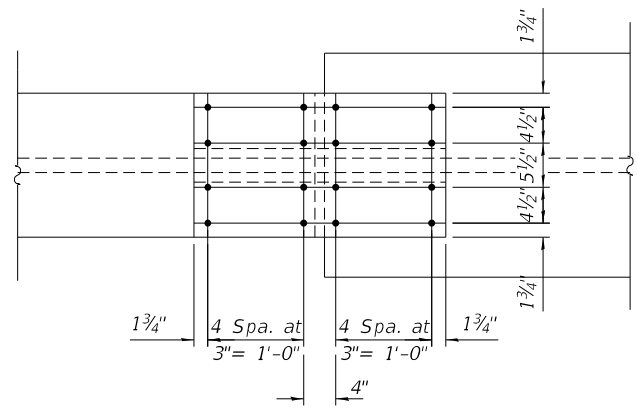
**GIRDER ELEVATION UNIT 4 - 3
STRUCTURE NO. 060-0350 (EB)**

SHEET 142 OF 292 SHEETS

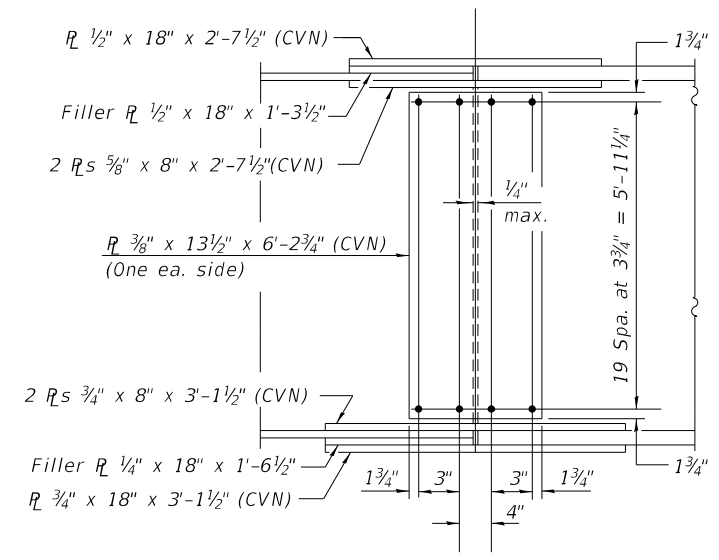
F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	355
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				



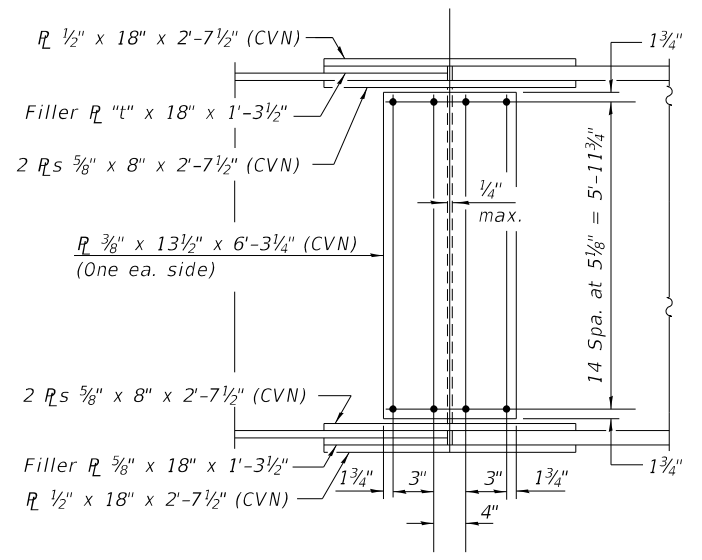
TOP FLANGE



TOP FLANGE

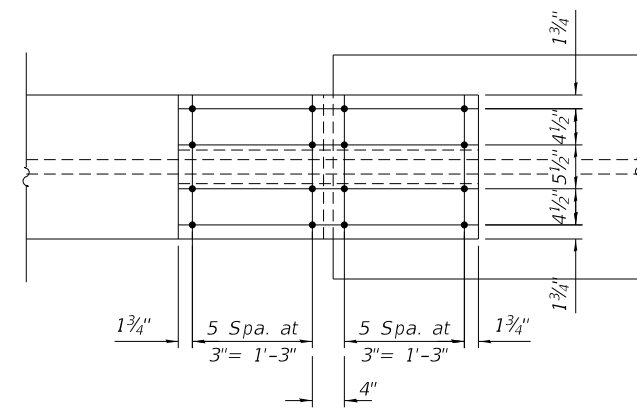


ELEVATION



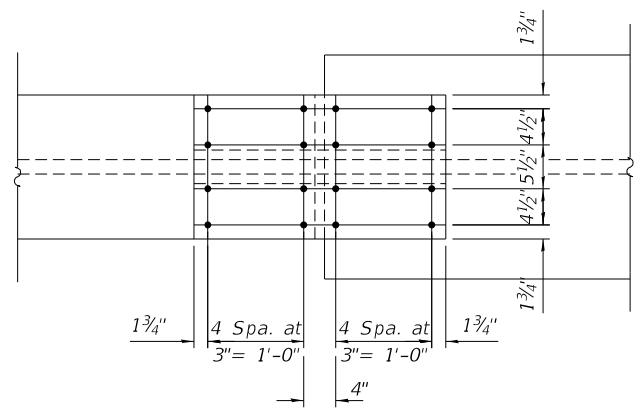
ELEVATION

Filler R "t"	
1/2"	FS-31 & FS-40
3/8"	FS-32 to FS-39



BOTTOM FLANGE

FIELD SPLICE 30 & 41 DETAIL



BOTTOM FLANGE

FIELD SPLICE 31 to 40 DETAIL

Notes:
 All Structural Steel shall be AASHTO M270 Grade 50.
 "CVN" denotes Charpy-V-Notch impact energy requirements, zone 2.

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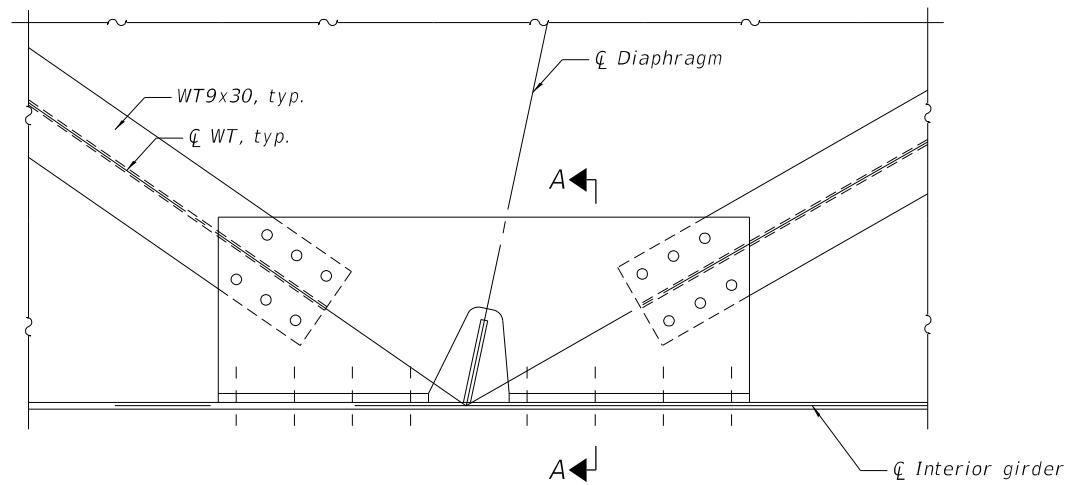
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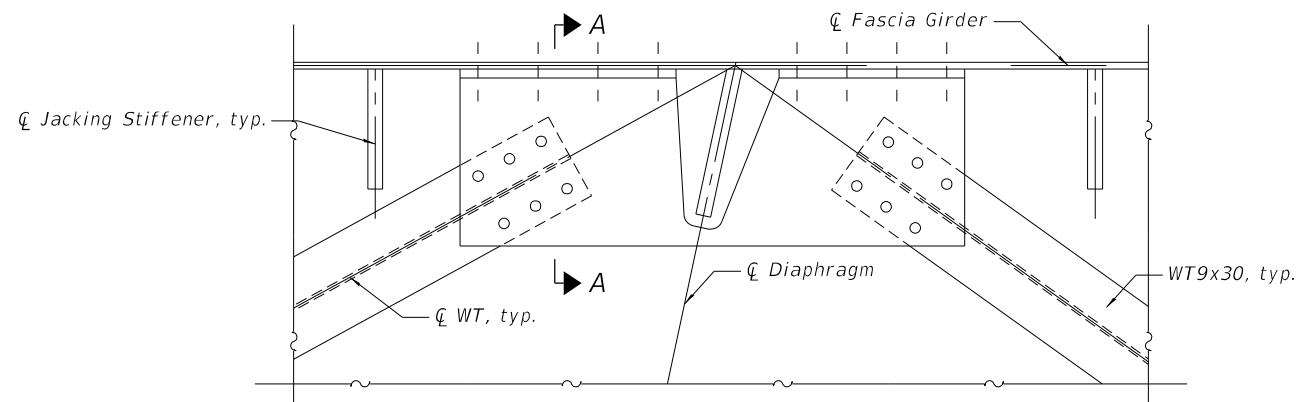
STEEL DETAILS UNIT 4 - 1
 STRUCTURE NO. 060-0350 (EB)

SHEET 143 OF 292 SHEETS

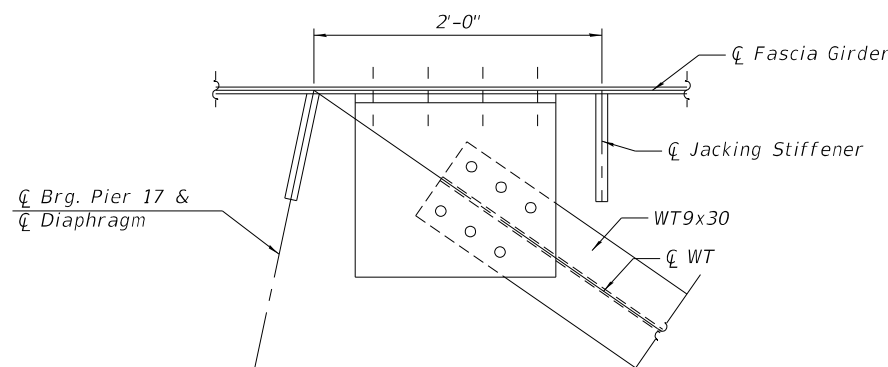
F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	356
CONTRACT NO. 76J90				
ILLINOIS FED. AID PROJECT				



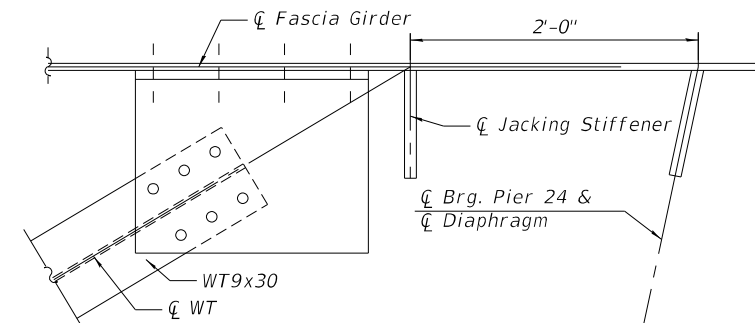
DETAIL 1
(Lateral bracing connection at intermediate diaphragm)
(See connection detail)



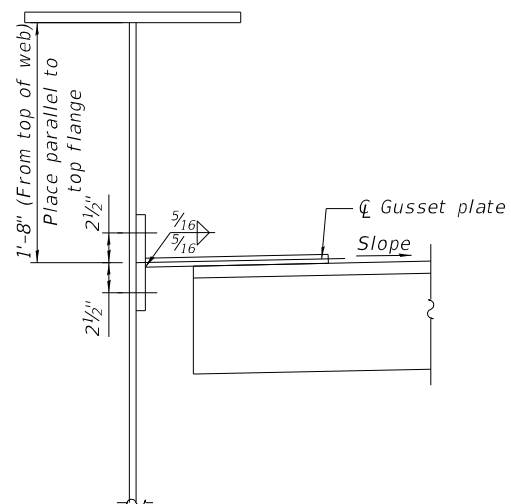
DETAIL 2
(Lateral bracing connection at pier diaphragm)
(See connection detail)



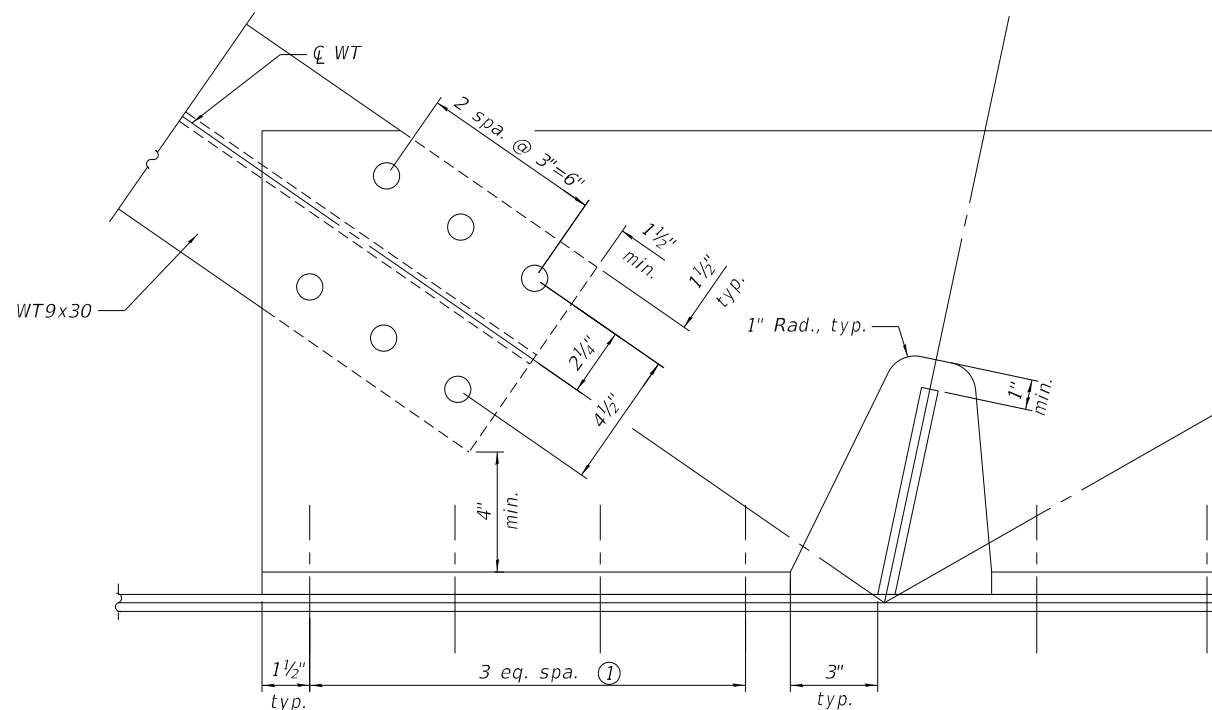
DETAIL 3
(Lateral bracing connection at pier 10)
(See connection detail)



DETAIL 4
(Lateral bracing connection at pier 17)
(See connection detail)



SECTION A-A
(Cross frame and stiffener not shown)



CONNECTION DETAIL

- Notes:
- All plates to be 3/4".
 - Detail 1 1/16" dia. holes for all 7/8" dia. bolts.
 - Provide 1 1/2" min. from center of bolt to edge of connected element in any direction
 - Two hardened washers required for each set of oversized holes.
 - ① Provide additional bolts as required to limit maximum spacing to 6".

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F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	358
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				

INTERIOR GIRDER MOMENT TABLE														
		0.4 Sp. 18	Pier 18	0.5 Sp. 19	Pier 19	0.5 Sp. 20	Pier 20	0.5 Sp. 21	Pier 21	0.5 Sp. 22	Pier 22	0.5 Sp. 23	Pier 23	0.6 Sp. 24
I_s	(in ⁴)	85,969	287,316	75,511	274,546	75,511	274,546	75,511	274,546	75,511	274,546	75,511	287,316	85,969
$I_c(n)$	(in ⁴)	208,849	475,179	177,142	459,255	177,142	459,255	177,142	459,255	177,142	459,255	177,142	475,179	208,849
$I_c(3n)$	(in ⁴)	154,106	-	133,122	-	133,122	-	133,122	-	133,122	-	133,122	-	154,106
$I_c(cr)$	(in ⁴)	-	311,004	-	298,123	-	298,123	-	298,123	-	298,123	-	311,004	-
S_s	(in ³)	2,267	6,945	1,847	6,664	1,847	6,664	1,847	6,664	1,847	6,664	1,847	6,945	2,267
$S_c(n)$	(in ³)	3,089	-	2,549	-	2,549	-	2,549	-	2,549	-	2,549	-	3,089
$S_c(3n)$	(in ³)	2,832	-	2,330	-	2,330	-	2,330	-	2,330	-	2,330	-	2,832
$S_c(cr)$	(in ³)	-	7,107	-	6,828	-	6,828	-	6,828	-	6,828	-	7,107	-
DC1	(k/')	1.505	1.985	1.478	1.957	1.478	1.957	1.478	1.957	1.478	1.957	1.478	1.985	1.505
M_{DC1}	(k)	2,755	8,495	2,191	8,297	2,251	8,341	2,228	8,341	2,251	8,297	2,191	8,495	2,755
DC2	(k/')	0.190	0.190	0.190	0.190	0.190	0.190	0.190	0.190	0.190	0.190	0.190	0.190	0.190
M_{DC2}	(k)	368	1,005	312	1,017	310	1,008	314	1,008	310	1,017	312	1,005	368
DW	(k/')	0.467	0.467	0.467	0.467	0.467	0.467	0.467	0.467	0.467	0.467	0.467	0.467	0.467
M_{DW}	(k)	910	2,485	772	2,516	767	2,494	776	2,494	767	2,516	772	2,485	910
LLDF		0.715	0.753	0.657	0.727	0.657	0.727	0.657	0.727	0.657	0.727	0.657	0.753	0.715
M_{LL+IM}	(k)	3,983	5,960	3,543	6,210	3,725	6,350	3,766	6,350	3,725	6,210	3,543	5,960	3,983
ηM_u (Strength I)	(k)	12,239	-	10,487	-	10,871	-	10,932	-	10,871	-	10,487	-	12,239
ϕM_n	(k)	14,802	-	12,189	-	12,151	-	12,164	-	12,151	-	12,189	-	14,802
f_s DC1	(ksi)	14.6	14.7	14.2	14.9	14.6	15.0	14.5	15.0	14.6	14.9	14.2	14.7	14.6
f_s DC2	(ksi)	1.6	1.7	1.6	1.8	1.6	1.8	1.6	1.8	1.6	1.8	1.6	1.7	1.6
f_s DW	(ksi)	3.9	4.2	4.0	4.4	4.0	4.4	4.0	4.4	4.0	4.4	4.0	4.2	3.9
f_s (LL+IM)	(ksi)	15.5	10.1	16.7	10.9	17.5	11.2	17.7	11.2	17.5	10.9	16.7	10.1	15.5
f_s (Service II)	(ksi)	40.1	33.7	41.5	35.3	43.0	35.7	43.1	35.7	43.0	35.3	41.5	33.7	40.1
0.95R _{FyF}	(ksi)	47.5	47.5	47.5	47.5	47.5	47.5	47.5	47.5	47.5	47.5	47.5	47.5	47.5
ηf_s (Total)(Strength I)	(ksi)	-	44.4	-	46.6	-	47.1	-	47.1	-	46.6	-	44.4	-
ϕF_n	(ksi)	-	49.8	-	49.8	-	49.8	-	49.8	-	49.8	-	49.8	-
V_f	(k)	-	90.5	-	96.5	-	98.8	-	99.1	-	99.2	-	100.0	-

GIRDER REACTION TABLE																	
	Pier 17		Pier 18		Pier 19		Pier 20		Pier 21		Pier 22		Pier 23		Pier 24		
	Interior	Exterior	Interior	Exterior	Interior	Exterior	Interior	Exterior	Interior	Exterior	Interior	Exterior	Interior	Exterior	Interior	Exterior	
LLDF	1.01	0.89	0.98	0.86	0.98	0.86	0.98	0.86	0.98	0.86	0.98	0.86	0.98	0.86	1.01	0.89	
OCF	-----	1.04	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	1.04	
R_{DC1}	(k)	92.9	84.7	392.3	361.2	382.6	352.2	383.7	353.2	383.7	353.2	382.6	352.2	392.3	361.2	92.9	84.7
R_{DC2}	(k)	12.0	12.0	45.3	45.3	44.9	44.9	44.8	44.8	44.8	44.8	44.9	44.9	45.3	45.3	12.0	12.0
R_{DW}	(k)	29.7	29.7	112.0	112.0	111.1	111.1	110.8	110.8	110.8	110.8	111.1	111.1	112.0	112.0	29.7	29.7
R_{LL}	(k)	124.9	110.1	273.2	239.7	282.1	247.6	285.8	250.8	285.8	250.8	282.1	247.6	273.2	239.7	124.9	110.1
R_{IM}	(k)	22.5	19.8	39.8	34.9	39.9	35.0	39.9	35.0	39.9	35.0	39.9	35.0	39.8	34.9	22.5	19.8
R_{Total}	(k)	281.9	256.3	862.6	793.1	860.6	790.8	865.0	794.6	865.0	794.6	860.6	790.8	862.6	793.1	281.9	256.3

I_s, S_s : Non-composite moment of inertia and section modulus of the steel section used for computing f_s (Total-Strength I, and Service II) due to non-composite dead loads (in.4 and in.3).

$I_c(n), S_c(n)$: Composite moment of inertia and section modulus of the steel and deck based upon the modular ratio, "n", used for computing f_s (Total-Strength I, and Service II) in uncracked sections due to short-term composite live loads (in.4 and in.3).

$I_c(3n), S_c(3n)$: Composite moment of inertia and section modulus of the steel and deck based upon 3 times the modular ratio, "3n", used for computing f_s (Total-Strength I, and Service II) in uncracked sections, due to long-term composite (superimposed) dead loads (in.4 and in.3).

$I_c(cr), S_c(cr)$: Composite moment of inertia and section modulus of the steel and longitudinal deck reinforcement, used for computing f_s (Total-Strength I and Service II) in cracked sections, due to both short-term composite live loads and long-term composite (superimposed) dead loads (in.4 and in.3).

DC1: Un-factored non-composite dead load (kips/ft.).

M_{DC1} : Un-factored moment due to non-composite dead load (kip-ft.).

DC2: Un-factored long-term composite (superimposed excluding future wearing surface) dead load (kips/ft.).

M_{DC2} : Un-factored moment due to long-term composite (superimposed excluding future wearing surface) dead load (kip-ft.).

DW: Un-factored long-term composite (superimposed future wearing surface only) dead load (kips/ft.).

M_{DW} : Un-factored moment due to long-term composite (superimposed future wearing surface only) dead load (kip-ft.).

LLDF: Live Load Distribution Factor

M_{LL+IM} : Un-factored live load moment plus dynamic load allowance (impact) (kip-ft.).

ηM_u (Strength I): Factored design moment (kip-ft.).

$1.05[1.25(M_{DC1} + M_{DC2}) + 1.5 M_{DW} + 1.75 M_{LL+IM}]$

ϕF_n : Compact composite positive moment capacity computed according to Article 6.10.7.1 or non-slender negative moment capacity according to Article A6.1.1 or A6.1.2 (kip-ft.).

$f_s DC1$: Un-factored stress at edge of flange for controlling steel flange due to vertical non-composite dead loads as calculated below (ksi).

M_{DC1} / S_c

$f_s DC2$: Un-factored stress at edge of flange for controlling steel flange due to vertical composite dead loads as calculated below (ksi).

$M_{DC2} / S_c(3n)$ or $M_{DC2} / S_c(cr)$ as applicable.

$f_s DW$: Un-factored stress at edge of flange for controlling steel flange due to vertical composite future wearing surface loads as calculated below (ksi).

$M_{DW} / S_c(3n)$ or $M_{DW} / S_c(cr)$ as applicable.

f_s (LL+IM): Un-factored stress at edge of flange for controlling steel flange due to vertical composite live load plus impact loads as calculated below (ksi).

$M_{LL+IM} / S_c(n)$ or $M_{LL+IM} / S_c(cr)$ as applicable.

f_s (Service II): Sum of stresses as computed below (ksi).

$f_s DC1 + f_s DC2 + f_s DW + 1.3 f_s(LL+IM)$

0.95R_{FyF}: Composite stress capacity for Service II loading according to Article 6.10.4.2 (ksi).

ηf_s (Total)(Strength I): Sum of stresses as computed below on non-compact section (ksi).

$1.05[1.25(f_s DC1 + f_s DC2) + 1.5 f_s DW + 1.75 f_s(LL+IM)]$

ϕF_n : Non-Compact composite positive or negative stress capacity for Strength I loading according to Article 6.10.7 or 6.10.8 (ksi).

V_f : Maximum factored shear range in span computed according to Article 6.10.10.

OCF: Obtuse Correction Factor

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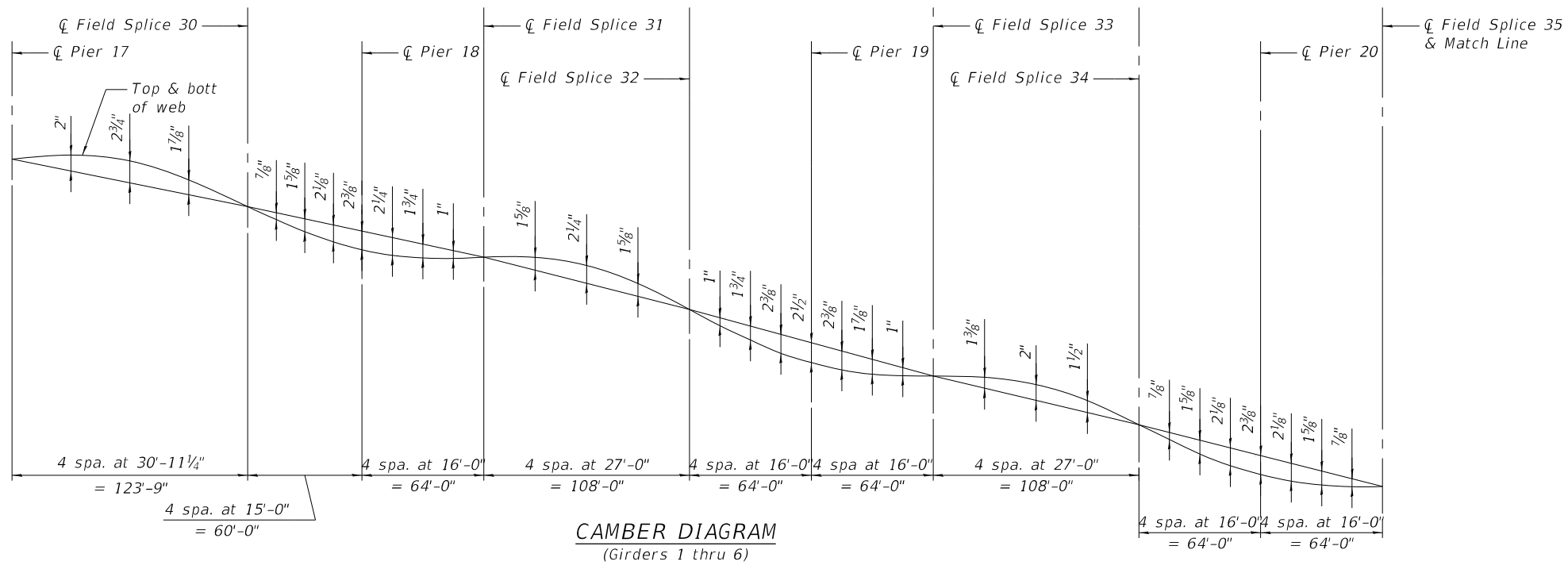
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

STRESS TABLES UNIT 4
STRUCTURE NO. 060-0350 (EB)

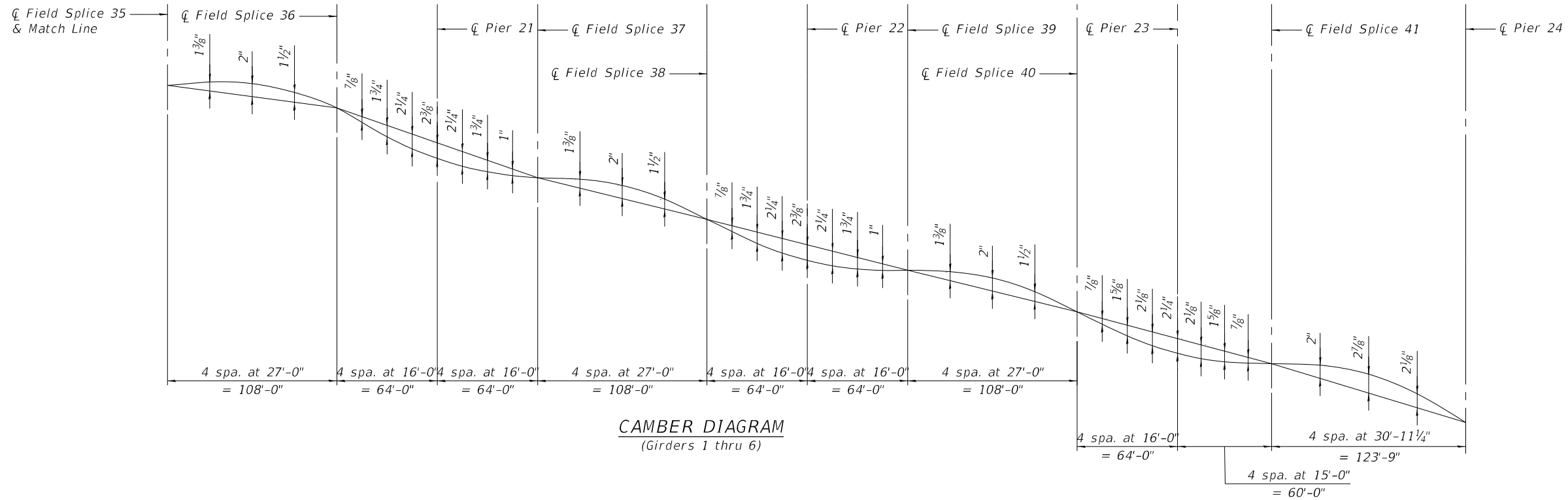
SHEET 146 OF 292 SHEETS

F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	359
CONTRACT NO. 76J90				

ILLINOIS FED. AID PROJECT



CAMBER DIAGRAM
(Girders 1 thru 6)



CAMBER DIAGRAM
(Girders 1 thru 6)

TOP OF WEB ELEVATIONS (FOR FABRICATION ONLY)

LOCATION	Girder 1	Girder 2	Girder 3	Girder 4	Girder 5	Girder 6
☐ Brg. Pier 17	460.48	460.70	460.89	460.69	460.49	460.30
☐ Field Splice 30	460.04	460.27	460.46	460.26	460.06	459.86
☐ Brg. Pier 18	459.56	459.78	459.97	459.77	459.57	459.37
☐ Field Splice 31	459.51	459.76	459.95	459.75	459.55	459.33
☐ Field Splice 32	458.97	459.22	459.41	459.21	459.01	458.79
☐ Brg. Pier 19	458.38	458.60	458.78	458.59	458.39	458.19
☐ Field Splice 33	458.28	458.51	458.69	458.50	458.30	458.09
☐ Field Splice 34	457.76	458.00	458.18	457.99	457.79	457.57
☐ Brg. Pier 20	457.20	457.42	457.60	457.41	457.21	457.01

TOP OF WEB ELEVATIONS (FOR FABRICATION ONLY)

LOCATION	Girder 1	Girder 2	Girder 3	Girder 4	Girder 5	Girder 6
☐ Field Splice 35	457.11	457.34	457.53	457.33	457.14	456.92
☐ Field Splice 36	456.58	456.82	457.01	456.81	456.62	456.40
☐ Brg. Pier 21	456.02	456.24	456.42	456.23	456.03	455.83
☐ Field Splice 37	455.93	456.16	456.35	456.16	455.96	455.74
☐ Field Splice 38	455.40	455.64	455.83	455.63	455.44	455.22
☐ Brg. Pier 22	454.84	455.06	455.24	455.05	454.85	454.65
☐ Field Splice 39	454.75	454.98	455.17	454.97	454.78	454.56
☐ Field Splice 40	454.22	454.46	454.64	454.45	454.25	454.03
☐ Brg. Pier 23	453.66	453.88	454.07	453.87	453.67	453.48

TOP OF WEB ELEVATIONS (FOR FABRICATION ONLY)

LOCATION	Girder 1	Girder 2	Girder 3	Girder 4	Girder 5	Girder 6
☐ Field Splice 41	453.56	453.79	453.98	453.78	453.59	453.38
☐ Brg. Pier 24	452.74	452.96	453.15	452.95	452.76	452.56

Note:
At ☐ Brg. Pier 17 and at ☐ Brg. Pier 24, the elevation given at theoretical top of web is prior to coping of web.

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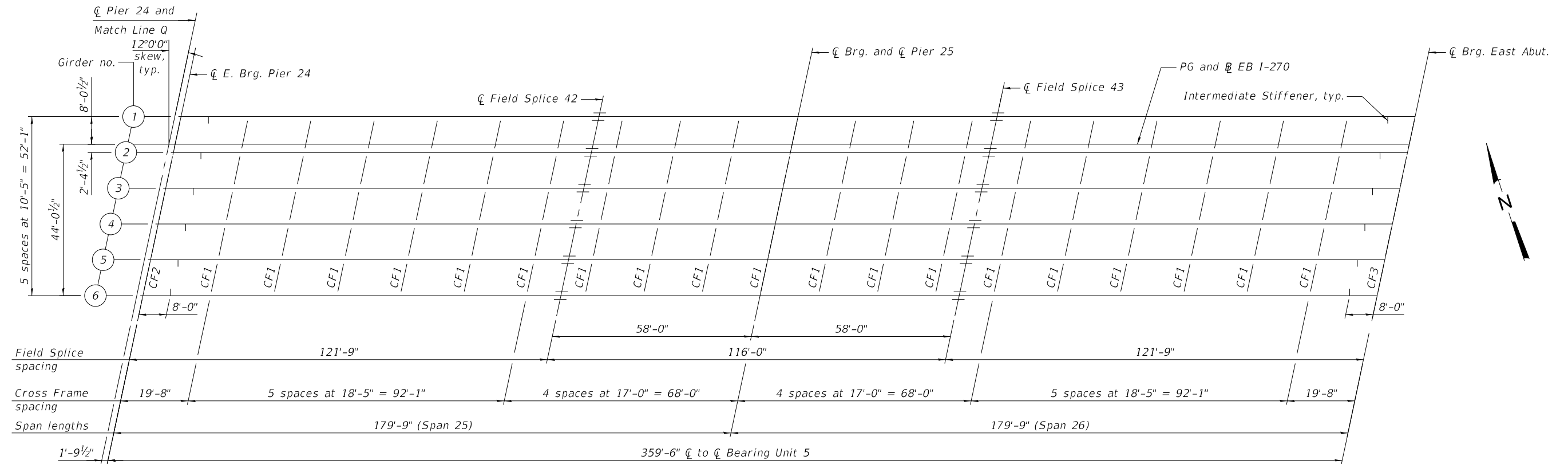
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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

CAMBER DATA UNIT 4
STRUCTURE NO. 060-0350 (EB)

SHEET 147 OF 292 SHEETS

F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	360
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				



FRAMING PLAN - UNIT 5
(Spans 25 and 26)

Notes:
For field splice details, see sheet 143 of 292 .
For cross frame details, see sheet 144 of 292 .

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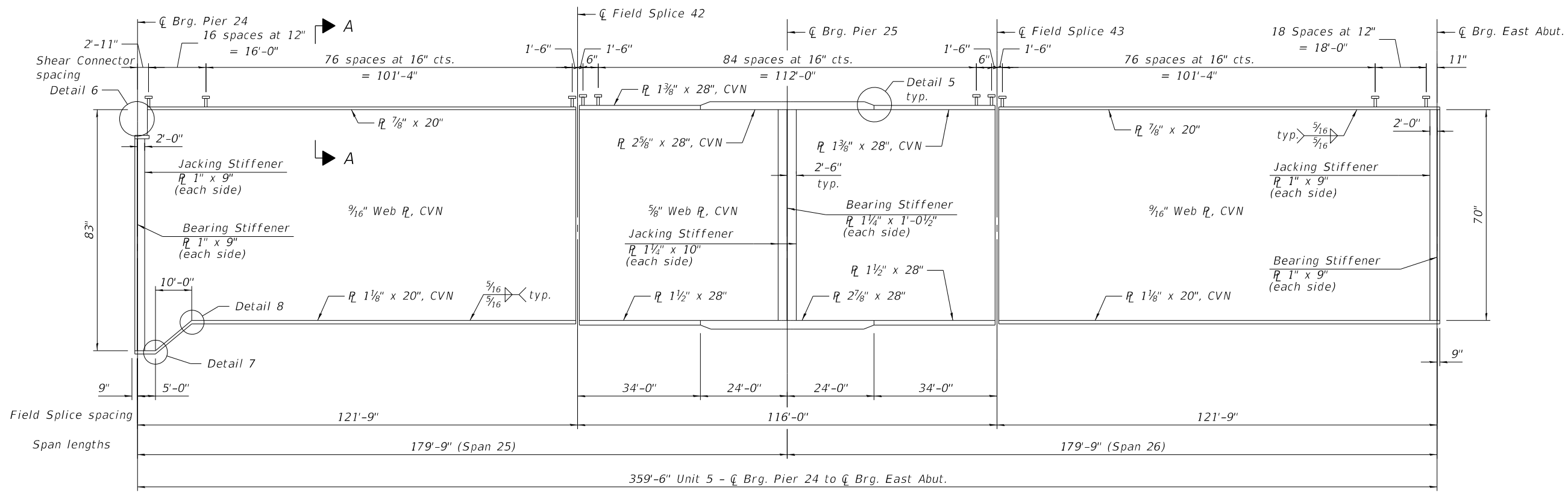
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DEPARTMENT OF TRANSPORTATION

FRAMING PLAN UNIT 5
STRUCTURE NO. 060-0350 (EB)

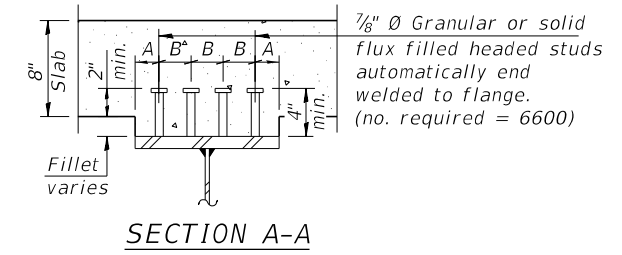
SHEET 148 OF 292 SHEETS

F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	361
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				

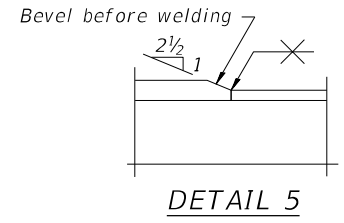
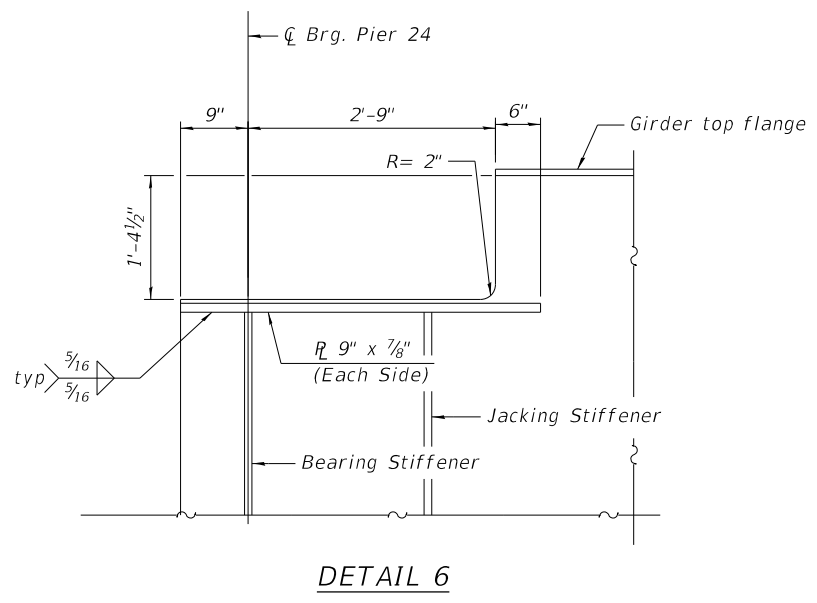
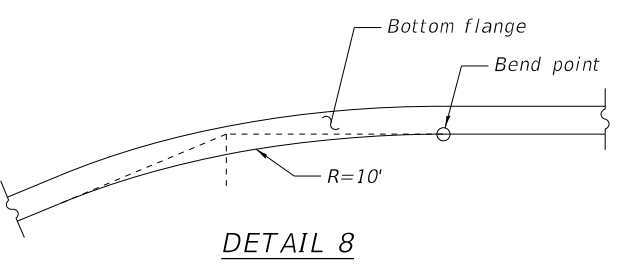
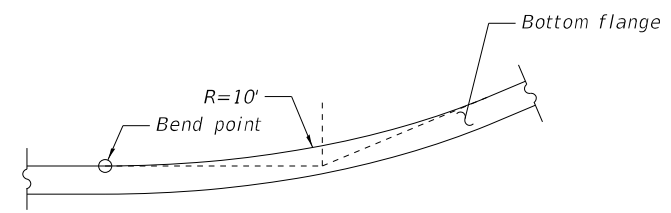


GIRDER ELEVATION - UNIT 5
(Spans 25 and 26)

"CVN" denotes Charpy-V-Notch impact energy requirements, zone 2.



Flange Width	A	B
20"	2 1/2"	5"
28"	2"	8"



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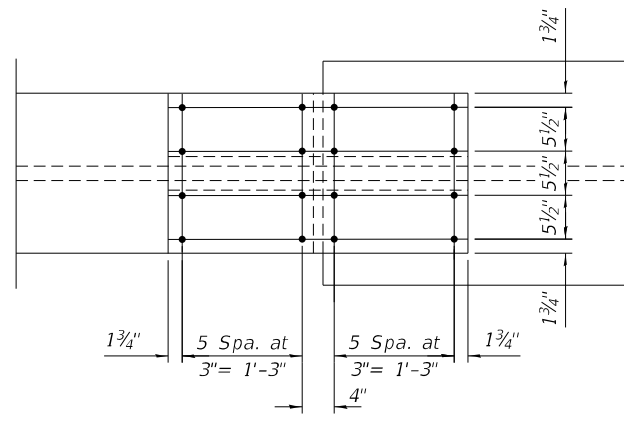
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DEPARTMENT OF TRANSPORTATION

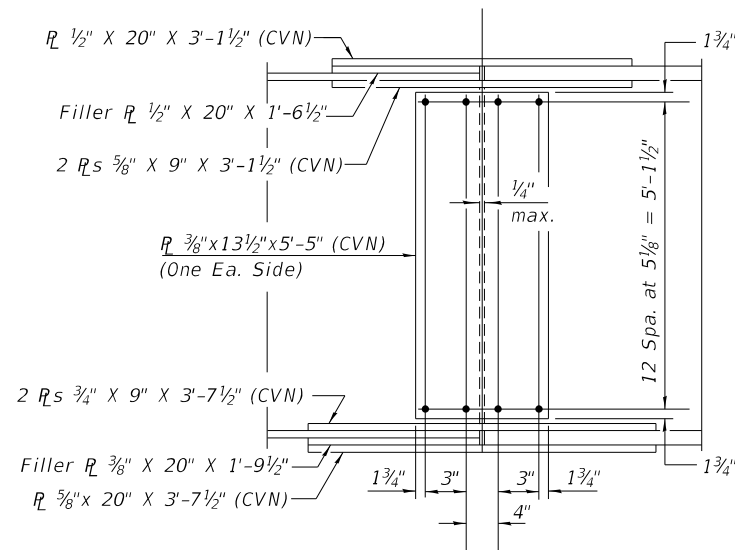
GIRDER ELEVATION UNIT 5
STRUCTURE NO. 060-0350 (EB)

SHEET 149 OF 292 SHEETS

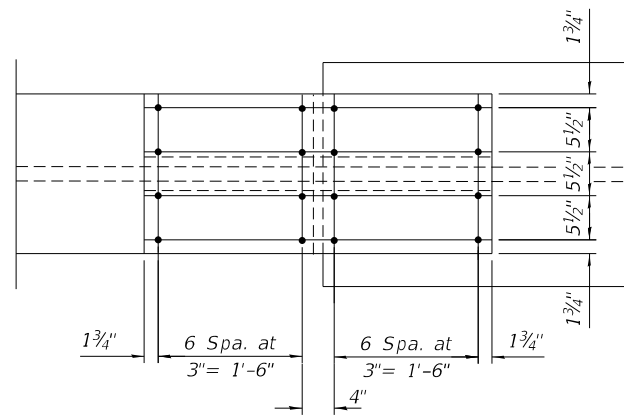
F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	362
CONTRACT NO. 76J90				
ILLINOIS FED. AID PROJECT				



TOP FLANGE



ELEVATION



BOTTOM FLANGE

FIELD SPLICE 42 & 43 DETAIL

Notes:
 All Structural Steel shall be AASHTO M270 Grade 50.
 "CVN" denotes Charpy-V-Notch impact energy requirements, Zone 2.

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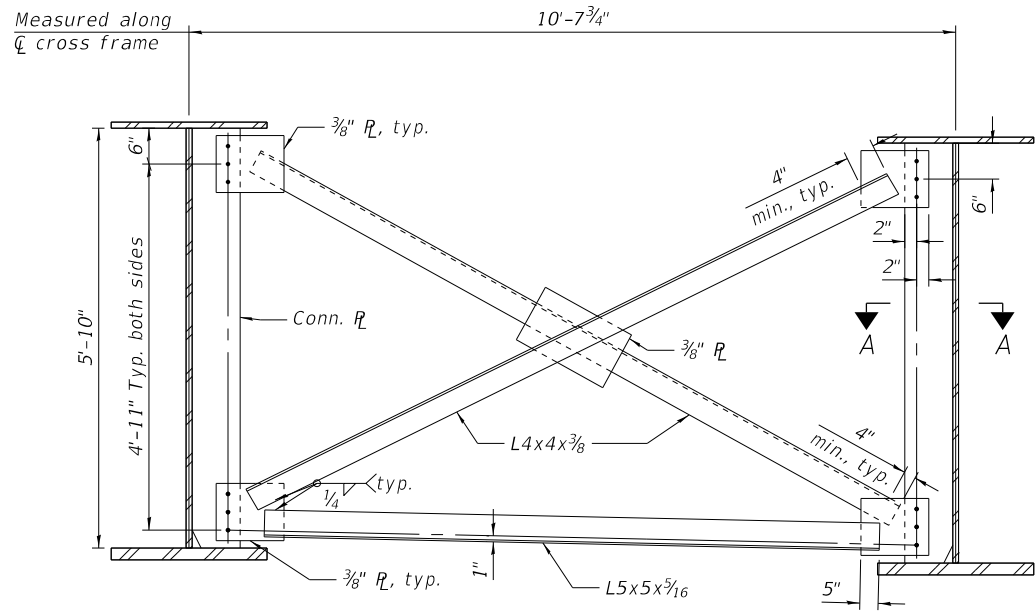
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STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION

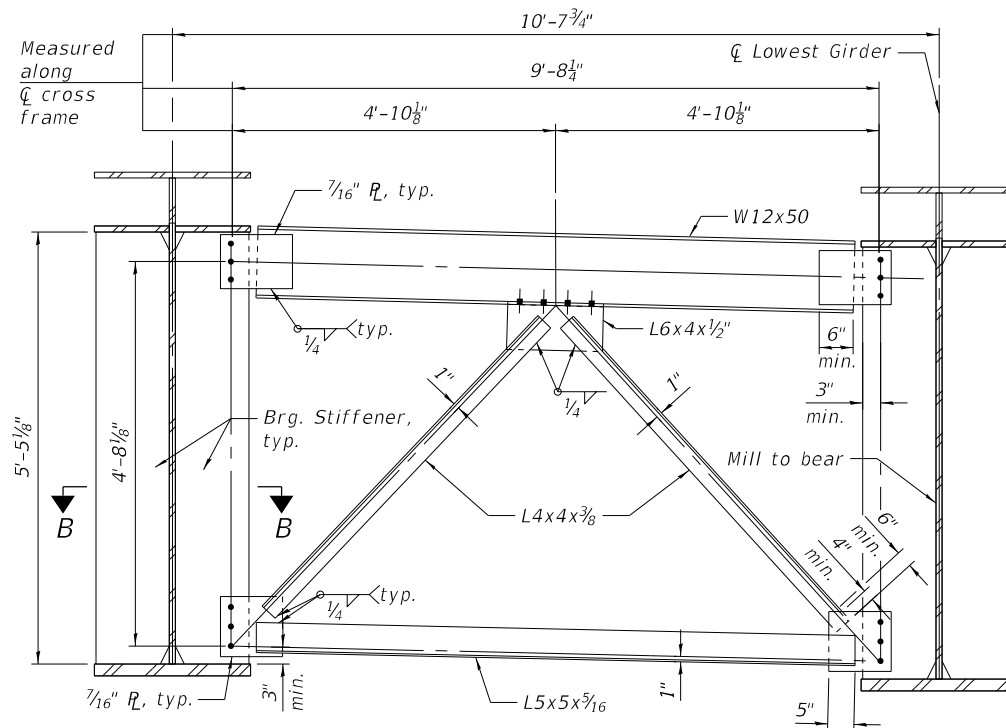
STEEL DETAILS UNIT 5 - 1
 STRUCTURE NO. 060-0350 (EB)

SHEET 150 OF 292 SHEETS

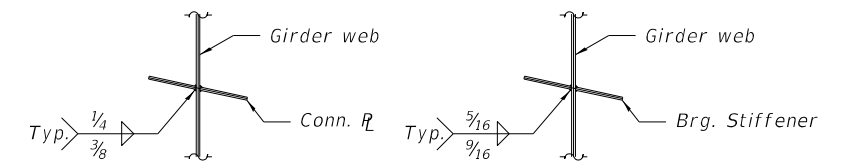
F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	363
CONTRACT NO. 76J90				
ILLINOIS FED. AID PROJECT				



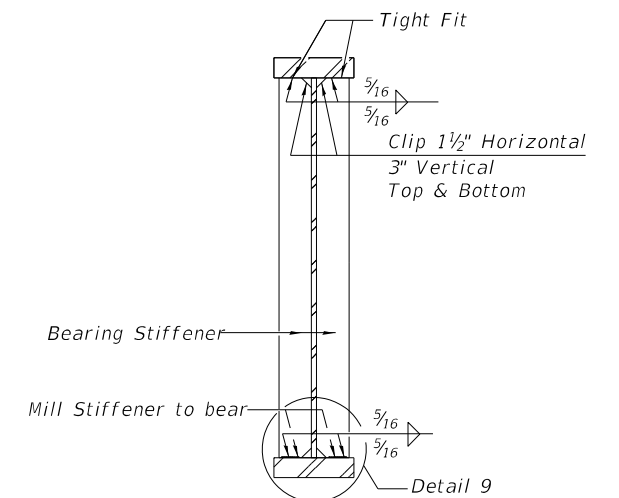
INTERIOR CROSS FRAME (CF1)
(95 Required)



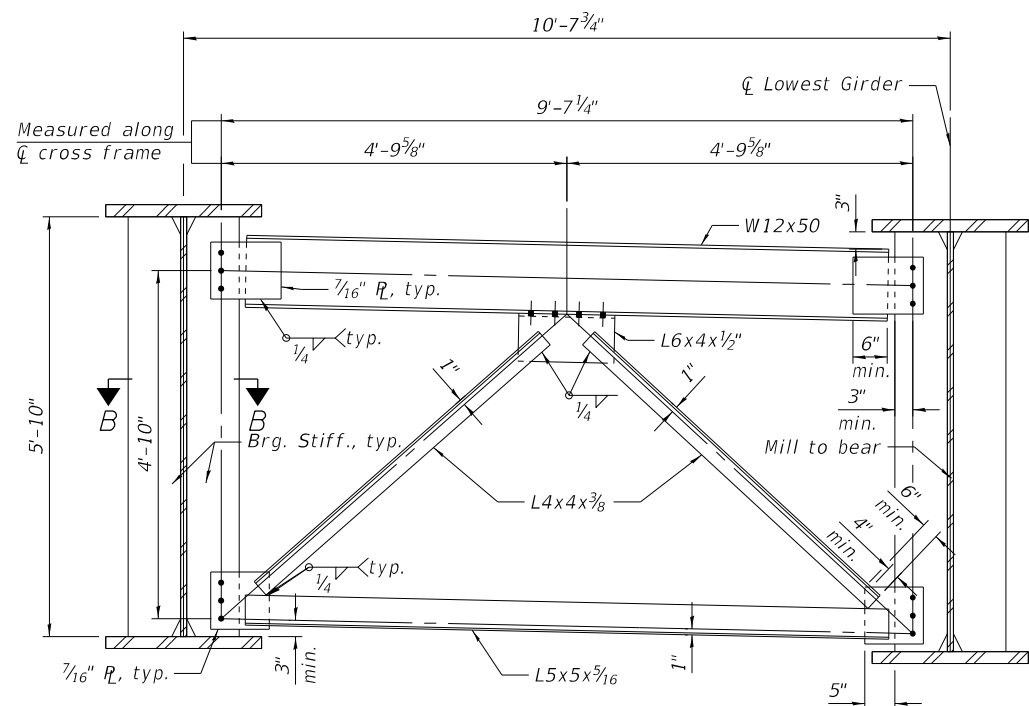
END CROSS FRAME (CF2)
(5 Required)



SECTION A-A **SECTION B-B**

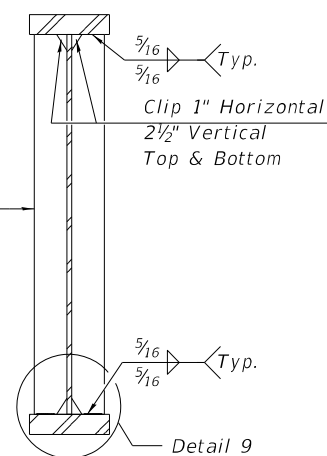


BEARING AND JACKING STIFFENER DETAILS

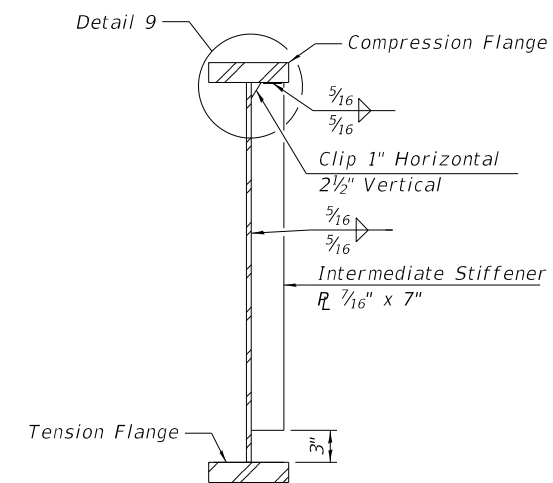


END CROSS FRAME (CF3)
(5 Required)

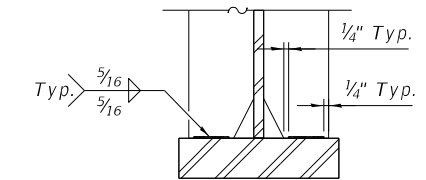
Connection PL 7/16" x 7"
(Each side at Girder 2 thru 5
One side at Girder 1 and 6)



CONNECTION PLATE DETAILS



INTERMEDIATE STIFFENER DETAIL



DETAIL 9
(Bottom Flange Shown,
Top Flange Similar)

Notes:
All Structural Steel shall be AASHTO M 270 Grade 50.
Provide 1 1/16" O holes for all 7/8" O HS bolts.
Two hardened washers required for each set of oversized holes.
All cross frames shall be installed as steel is erected and secured with erection pins and bolts. Individual cross frames at supports may be temporarily disconnected to install bearing anchor rods.

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F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	364
CONTRACT NO. 76190				

INTERIOR GIRDER MOMENT TABLE				
		0.4 Sp. 25	Pier 25	0.6 Sp. 26
I_s	(in ⁴)	66,106	221,404	66,106
$I_c(n)$	(in ⁴)	158,184	371,771	158,184
$I_c(3n)$	(in ⁴)	117,776	-	117,776
$I_c(cr)$	(in ⁴)	-	240,432	-
S_s	(in ³)	1,952	6,059	1,952
$S_c(n)$	(in ³)	2,619	-	2,619
$S_c(3n)$	(in ³)	2,414	-	2,414
$S_c(cr)$	(in ³)	-	6,214	-
DC1	(k/')	1.487	1.961	1.487
M_{DC1}	('k)	2,601	8,023	2,601
DC2	(k/')	0.190	0.190	0.190
M_{DC2}	('k)	358	948	358
DW	(k/')	0.467	0.467	0.467
M_{DW}	('k)	879	2,329	879
LLDF		0.700	0.768	0.700
M_{LL+IM}	('k)	3,435	4,963	3,435
ηM_u (Strength I)	('k)	11,029	-	11,029
$\phi_f M_n$	('k)	12,467	-	12,467
f_s DC1	(ksi)	16.0	15.9	16.0
f_s DC2	(ksi)	1.8	1.8	1.8
f_s DW	(ksi)	4.4	4.5	4.4
f_s (LL+IM)	(ksi)	15.7	9.6	15.7
f_s (Service II)	(ksi)	42.6	34.7	42.6
$0.95R_h F_{yf}$	(ksi)	47.5	47.5	47.5
ηf_s (Total)(Strength I)	(ksi)	-	45.7	-
ϕF_n	(ksi)	-	50.0	-
V_f	(k)	-	86.2	-

GIRDER REACTION TABLE						
	Pier 24		Pier 25		E. Abut.	
	Interior	Exterior	Interior	Exterior	Interior	Exterior
LLDF	1.01	0.89	0.98	0.86	1.01	0.89
OCF	-----	1.04	-----	-----	-----	1.04
R_{DC1} (k)	89.8	81.9	383.3	352.8	89.8	81.9
R_{DC2} (k)	11.8	11.8	44.7	44.7	11.8	11.8
R_{DW} (k)	29.0	29.0	109.9	109.9	29.0	29.0
R_{LL} (k)	117.4	103.5	252.3	221.4	117.4	103.5
R_{IM} (k)	22.4	19.7	39.6	34.8	22.4	19.7
R_{Total} (k)	270.4	245.9	829.8	763.6	270.4	245.9

I_s, S_s : Non-composite moment of inertia and section modulus of the steel section used for computing f_s (Total-Strength I, and Service II) due to non-composite dead loads (in.4 and in.3).

$I_c(n), S_c(n)$: Composite moment of inertia and section modulus of the steel and deck based upon the modular ratio, "n", used for computing f_s (Total-Strength I, and Service II) in uncracked sections due to short-term composite live loads (in.4 and in.3).

$I_c(3n), S_c(3n)$: Composite moment of inertia and section modulus of the steel and deck based upon 3 times the modular ratio, "3n", used for computing f_s (Total-Strength I, and Service II) in uncracked sections, due to long-term composite (superimposed) dead loads (in.4 and in.3).

$I_c(cr), S_c(cr)$: Composite moment of inertia and section modulus of the steel and longitudinal deck reinforcement, used for computing f_s (Total-Strength I and Service II) in cracked sections, due to both short-term composite live loads and long-term composite (superimposed) dead loads (in.4 and in.3).

DC1: Un-factored non-composite dead load (kips/ft.).

M_{DC1} : Un-factored moment due to non-composite dead load (kip-ft.).

DC2: Un-factored long-term composite (superimposed excluding future wearing surface) dead load (kips/ft.).

M_{DC2} : Un-factored moment due to long-term composite (superimposed excluding future wearing surface) dead load (kip-ft.).

DW: Un-factored long-term composite (superimposed future wearing surface only) dead load (kips/ft.).

M_{DW} : Un-factored moment due to long-term composite (superimposed future wearing surface only) dead load (kip-ft.).

LLDF: Live Load Distribution Factor

M_{LL+IM} : Un-factored live load moment plus dynamic load allowance (impact) (kip-ft.).

ηM_u (Strength I): Factored design moment (kip-ft.).

$1.05[1.25(M_{DC1} + M_{DC2}) + 1.5 M_{DW} + 1.75 M_{LL+IM}]$

$\phi_f M_n$: Compact composite positive moment capacity computed according to Article 6.10.7.1 or non-slender negative moment capacity according to Article A6.1.1 or A6.1.2 (kip-ft.).

$f_s DC1$: Un-factored stress at edge of flange for controlling steel flange due to vertical non-composite dead loads as calculated below (ksi).

M_{DC1} / S_{nc}

$f_s DC2$: Un-factored stress at edge of flange for controlling steel flange due to vertical composite dead loads as calculated below (ksi).

$M_{DC2} / S_c(3n)$ or $M_{DC2} / S_c(cr)$ as applicable.

$f_s DW$: Un-factored stress at edge of flange for controlling steel flange due to vertical composite future wearing surface loads as calculated below (ksi).

$M_{DW} / S_c(3n)$ or $M_{DW} / S_c(cr)$ as applicable.

$f_s (LL+IM)$: Un-factored stress at edge of flange for controlling steel flange due to vertical composite live load plus impact loads as calculated below (ksi).

$M_{LL+IM} / S_c(n)$ or $M_{LL+IM} / S_c(cr)$ as applicable.

f_s (Service II): Sum of stresses as computed below (ksi).

$0.95R_h F_{yf}$: Composite stress capacity for Service II loading according to Article 6.10.4.2 (ksi).

ηf_s (Total)(Strength I): Sum of stresses as computed below on non-compact section (ksi).

$1.05[1.25(f_s DC1 + f_s DC2) + 1.5 f_s DW + 1.75 f_s (LL+IM)]$

$\phi_f F_n$: Non-Compact composite positive or negative stress capacity for Strength I loading according to Article 6.10.7 or 6.10.8 (ksi).

V_f : Maximum factored shear range in span computed according to Article 6.10.10.

OCF: Obtuse Correction Factor

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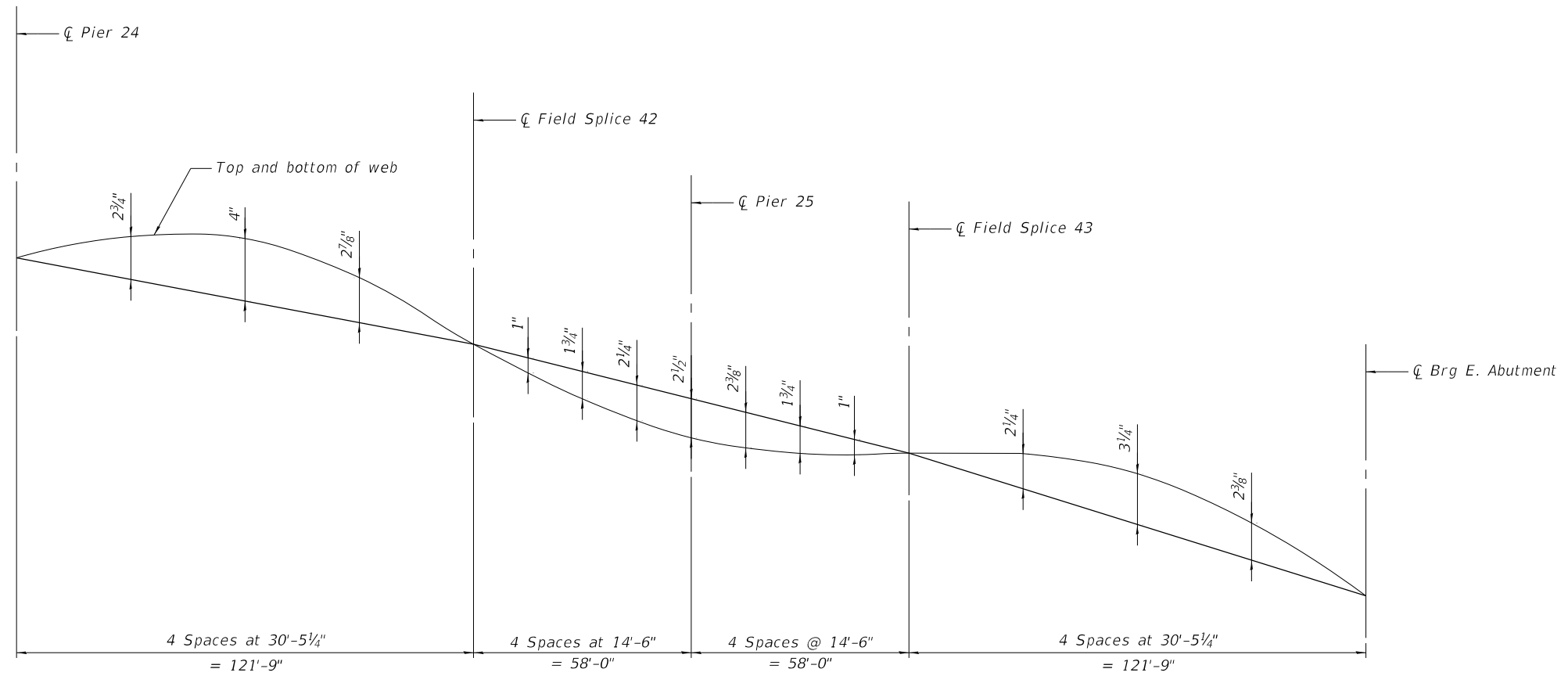
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DEPARTMENT OF TRANSPORTATION

STRESS TABLES UNIT 5
STRUCTURE NO. 060-0350 (EB)

SHEET 152 OF 292 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	365
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				



CAMBER DIAGRAM
(Girders 1 thru 6)

TOP OF WEB ELEVATIONS (FOR FABRICATION ONLY)

LOCATION	Girder 1	Girder 2	Girder 3	Girder 4	Girder 5	Girder 6
☐ Brg. Pier 24	452.73	452.95	453.13	452.94	452.74	452.54
☐ Field Splice 1	452.36	452.60	452.79	452.60	452.40	452.17
☐ Brg. Pier 25	451.83	452.05	452.24	452.04	451.84	451.64
☐ Field Splice 2	451.68	451.91	452.10	451.90	451.70	451.50
☐ Brg. E. Abut.	450.93	451.15	451.34	451.14	450.94	450.74

Note: At ☐ Brg. Pier 24 and at ☐ Brg. East Abutment the elevation given at the theoretical top of the web is prior to coping of web.

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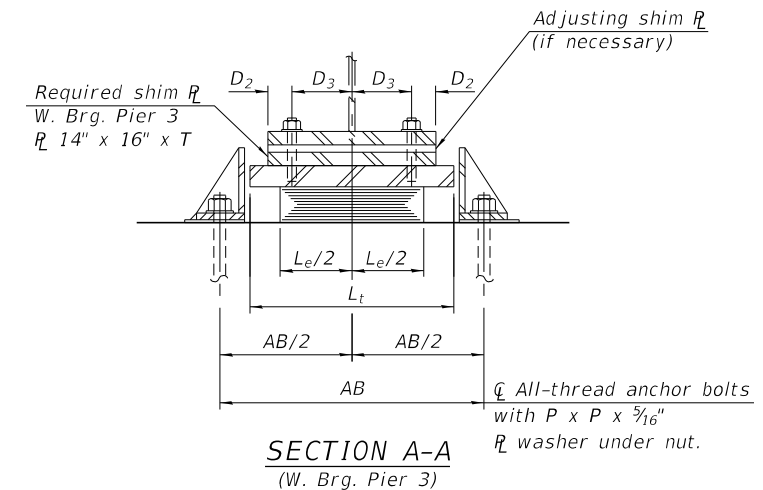
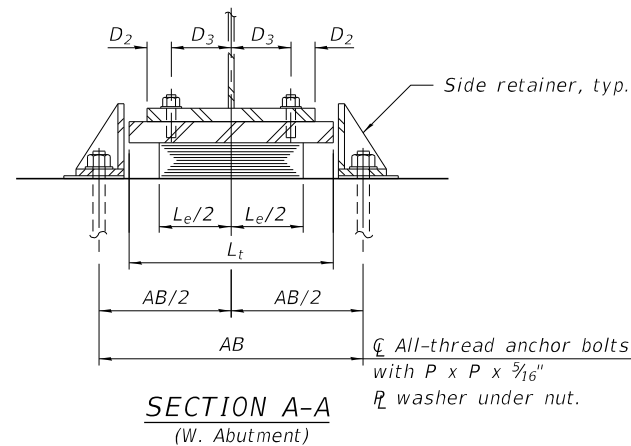
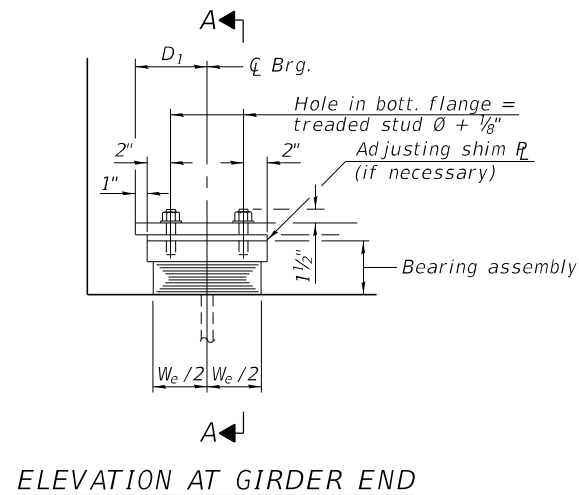
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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

CAMBER DATA UNIT 5
STRUCTURE NO. 060-0350 (EB)

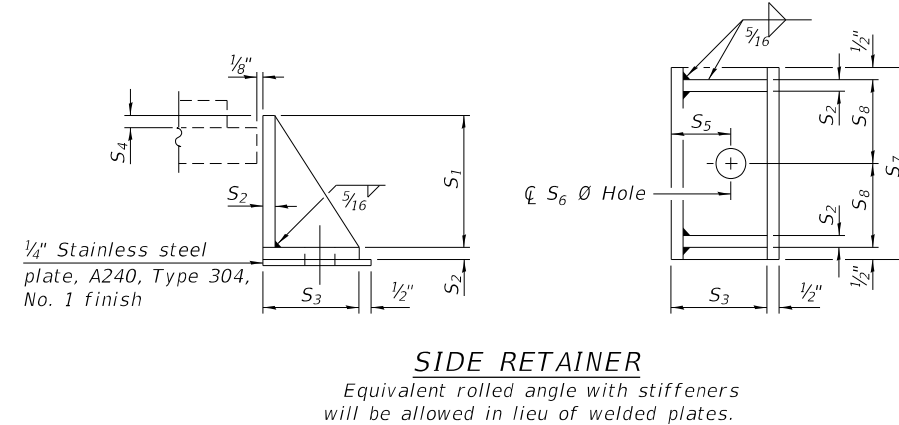
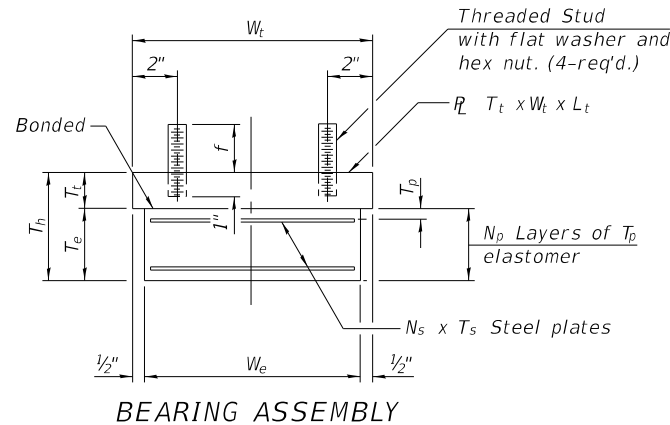
SHEET 153 OF 292 SHEETS

F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	366
CONTRACT NO. 76J90				
ILLINOIS FED. AID PROJECT				



TYPE I ELASTOMERIC EXP. BRG.

Assumed contributing expansion length = 191 ft. for W. Abut. and W. Brg. Pier 3.



SHIM R

Girder	T
1	1/4"
2	1/8"
3	1/2"
4	1/2"
5	3/8"
6	1/2"
7	1/4"

Note: Shim plates shall not be placed under bearing assembly.

Notes:
 The structural steel plates of the Bearing Assembly shall conform to the requirements of AASHTO M270 Grade 50.
 Two 1/8 in. adjusting shims shall be provided for each bearing in addition to all other plates or shims and placed as shown on bearing details.
 All bearing plates, side retainers, anchor bolts, nuts, and washers shall be galvanized according to AASHTO M111 or M232 as applicable.
 The anchor bolt sizes and grades shown constitute a calculated seismic structural fuse. Substitution of higher diameter and/or grade anchor bolts will not be allowed.
 Side retainers and stainless steel plates shall be included in the cost of Elastomeric Bearing Assembly, Type I.
 Anchor bolts and side retainers at all supports shall be installed as each member is erected unless an equivalent temporary means of lateral restraint is used.
 The required shim plate at W. Brg. Pier 3 shall be fabricated to the specified thickness. Welding thinner plates together to the thickness in the table is not permitted.

GIRDER DIMENSIONS

Location	D1	D2	D3	AB
W. Abut.	8"	2"	6"	27 3/4"
W. Brg. Pier 3	8"	2"	6"	27 3/4"

SIDE RETAINER DIMENSIONS

Location	S1	S2	S3	S4	S5	S6	S7	S8
W. Abut.	6 3/4"	5/8"	7 7/8"	1 1/16"	2 3/4"	1 3/4"	12"	5 1/2"
W. Brg. Pier 3	6 3/4"	5/8"	7 7/8"	1 1/16"	2 3/4"	1 3/4"	12"	5 1/2"

ELASTOMERIC BEARING ASSEMBLIES TYPE I

Location	Le	We	Tp	Np	Ts	Ns	Te	Wt	Lt	Tt	Th	f	Anchor Bolt	Anchor Bolt Grade	p	Threaded Stud
W. Abut.	20"	13"	5/8"	6	3/16"	5	4 1/16"	14"	22"	2 1/4"	6 1 5/16"	2 1/2"	1 1/2" ø x 18"	105	3"	3/4" ø
W. Brg. Pier 3	20"	13"	5/8"	6	3/16"	5	4 1/16"	14"	22"	2 1/4"	6 1 5/16"	3 1/8"	1 1/2" ø x 18"	105	3"	3/4" ø

BILL OF MATERIAL

Item	Unit	Total
Elastomeric Bearing Assembly Type I	Each	14
Anchor Bolts, 1 1/2"	Each	28

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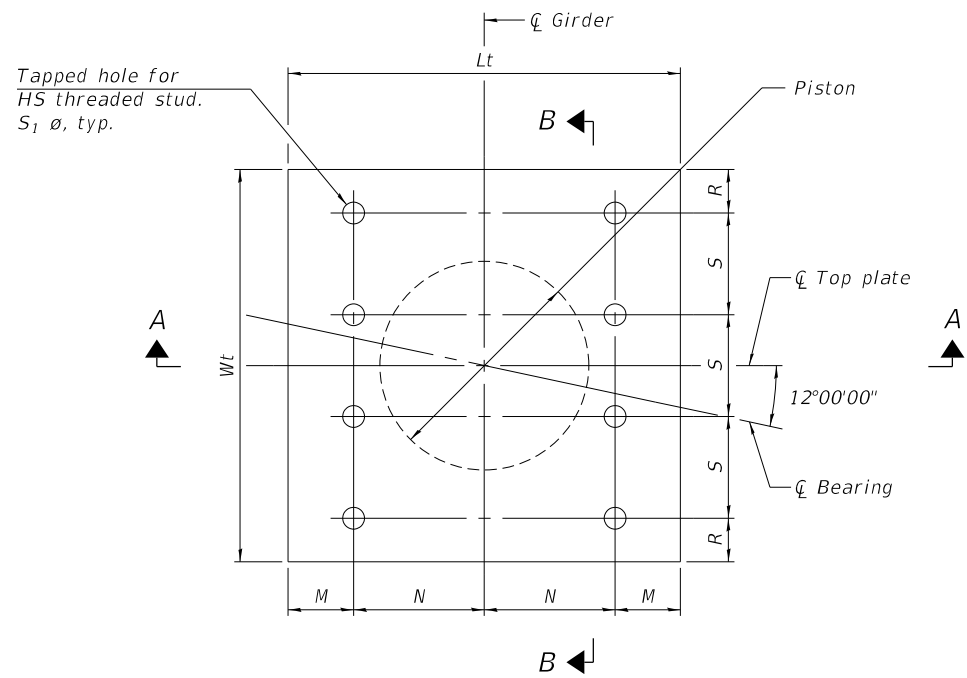
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STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION

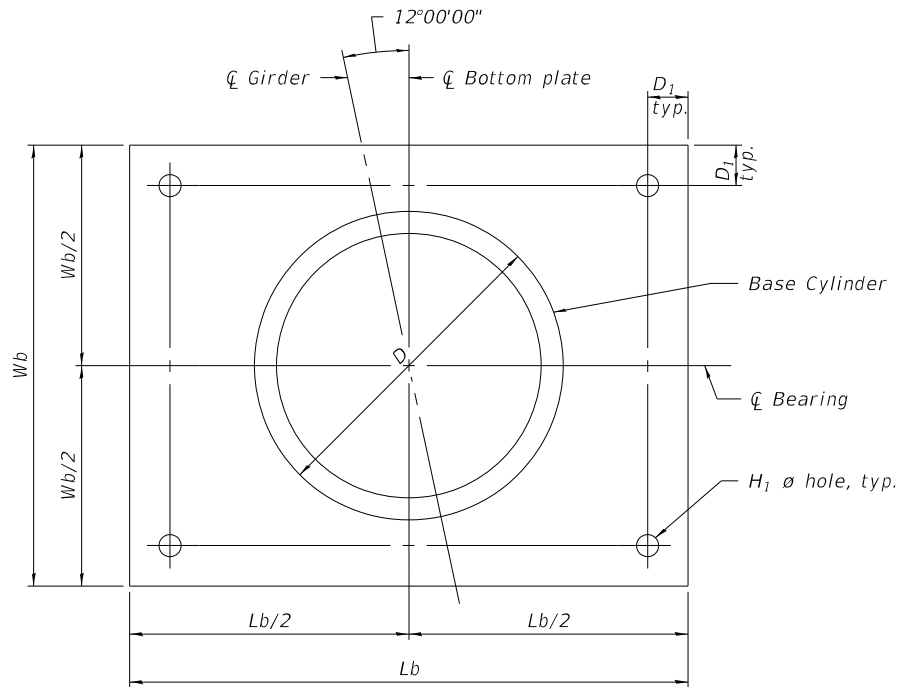
BEARING DETAILS UNIT 1 - 1
 STRUCTURE NO. 060-0350 (EB)

SHEET 154 OF 292 SHEETS

F.AJ RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	367
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				

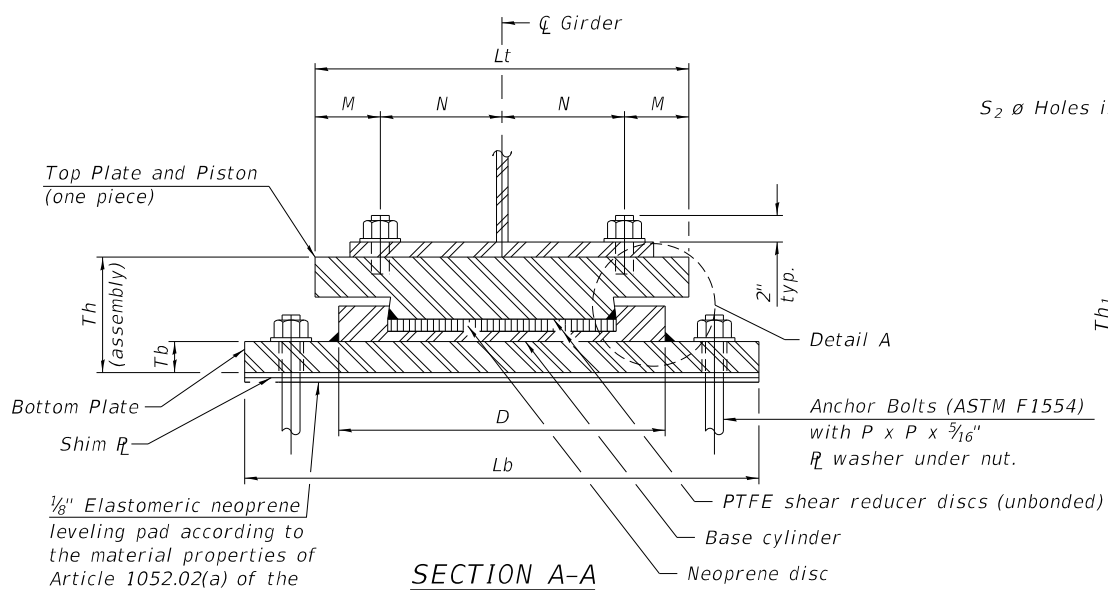


TOP BEARING P AND PISTON PLAN

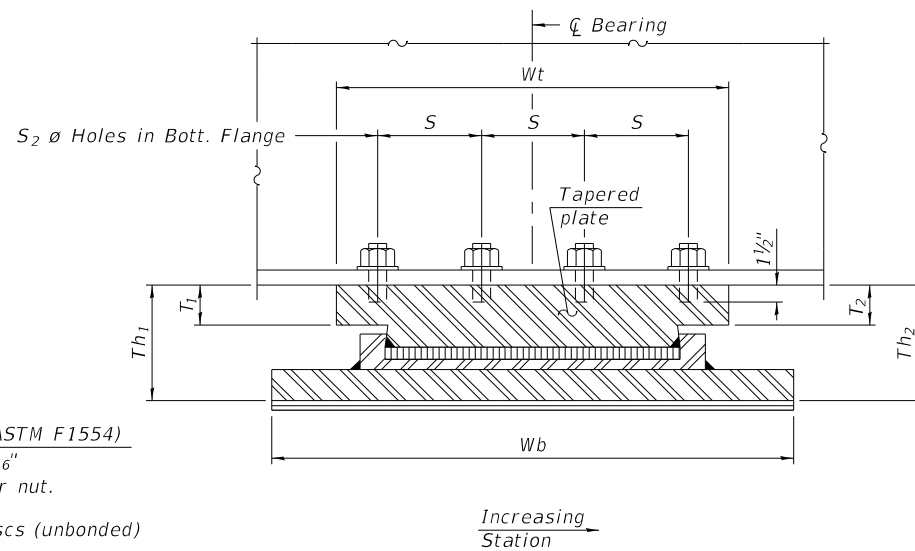


BOTTOM BEARING P AND BASE CYLINDER PLAN
(Piers 1 & 2)

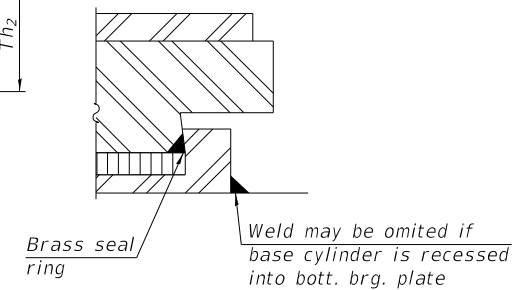
Notes:
 The structural steel plates of the Bearing Assembly shall conform to the requirements of AASHTO M270 Grade 50.
 Two 1/8 in. adjusting shims shall be provided for each bearing in addition to all other plates or shims and placed as shown on bearing details.
 Anchor bolts shall be ASTM F1554 all-thread (or an Engineer-approved alternate material) of the grade(s) and diameter(s) specified. The corresponding specified grade of AASHTO M314 anchor bolts may be used in lieu of ASTM F1554.
 Anchor bolts at fixed bearings may be either cast in place or installed in holes drilled after the supported member is in place.
 Drilled and set anchor bolts shall be installed according to Article 521.06 of the Standard Specifications.
 All bearing plates, side retainers, anchor bolts, nuts, and washers shall be galvanized according to AASHTO M111 or M232 as applicable.
 The anchor bolt sizes and grades shown constitute a calculated seismic structural fuse. Substitution of higher diameter and/or grade anchor bolts will not be allowed.



SECTION A-A



SECTION B-B



DETAIL A

BILL OF MATERIAL

Item	Unit	Total
High Load Multi-Rotation Bearings, Fixed 550k	Each	14
Anchor Bolts, 1 1/2"	Each	56

FIXED BEARING DIMENSION TABLE

Brg. Location	Service I Factored			Bottom Bearing Plate					Top Bearing Plate								Th	Th1	Th2	D	S2	Anchor Bolt	Anchor Bolt Grade	P	
	Vertical Design Load (kips)	Lateral Design Load (kips)	Design Rotation (Radians)	Tb	Lb	Wb	H1	D1	T1	T2	Lt	Wt	M	N	R	S									S1
Pier 1	496	148.8	0.0023	2 3/8"	32"	20"	2"	2 3/4"	2 3/8"	2 3/8"	21"	20"	5 1/2"	5"	2 1/2"	5"	3/4"	12 1/2"	12 1/2"	12 1/2"	18 1/4"	7/8"	1 1/2" ø x 18"	55	3"
Pier 2	496	148.8	0.0023	2 3/8"	32"	20"	2"	2 3/4"	2 3/8"	2 3/8"	21"	20"	5 1/2"	5"	2 1/2"	5"	3/4"	12 1/2"	12 1/2"	12 1/2"	18 1/4"	7/8"	1 1/2" ø x 18"	55	3"

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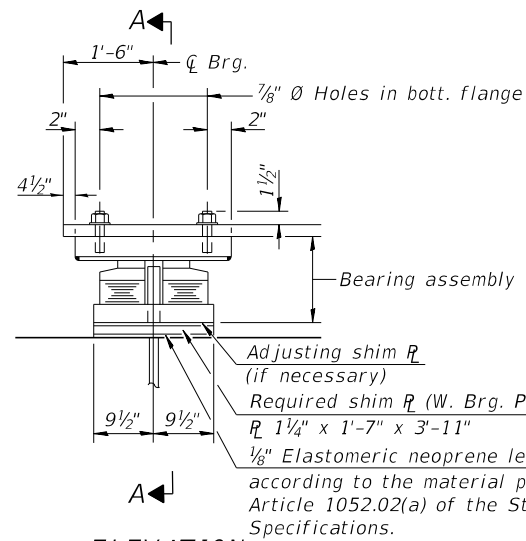
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**STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION**

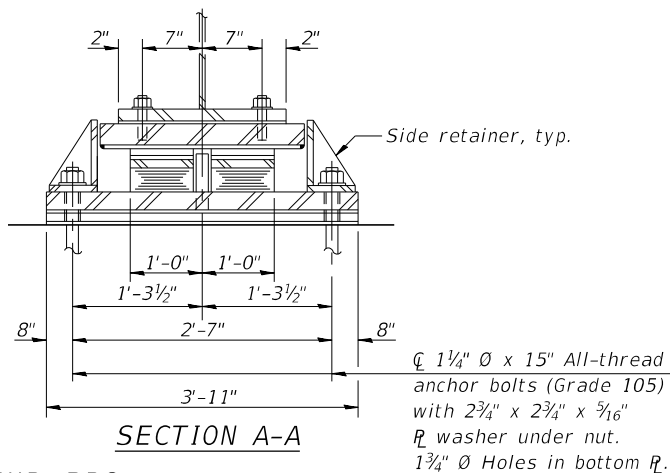
**BEARING DETAILS UNIT 1 - 2
 STRUCTURE NO. 060-0350 (EB)**

SHEET 155 OF 292 SHEETS

F.A.1 RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	368
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				



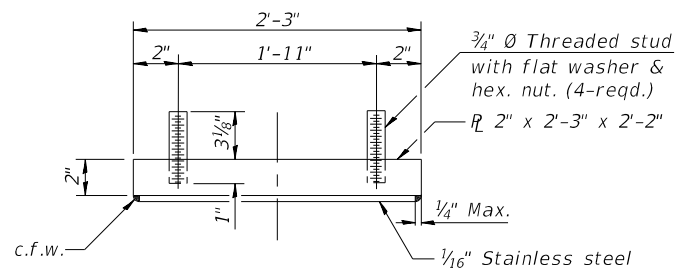
ELEVATION



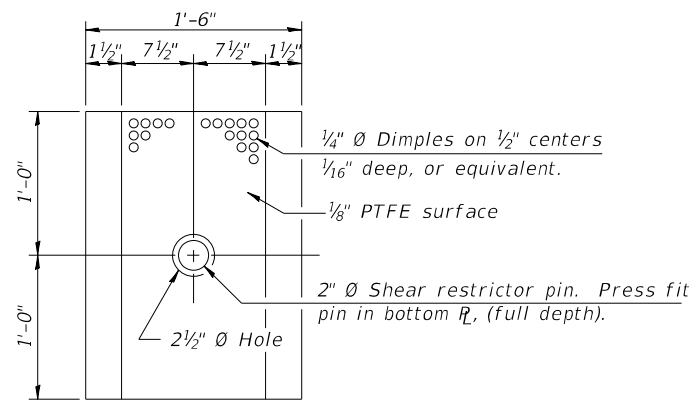
SECTION A-A

TYPE III ELASTOMERIC EXP. BRG.

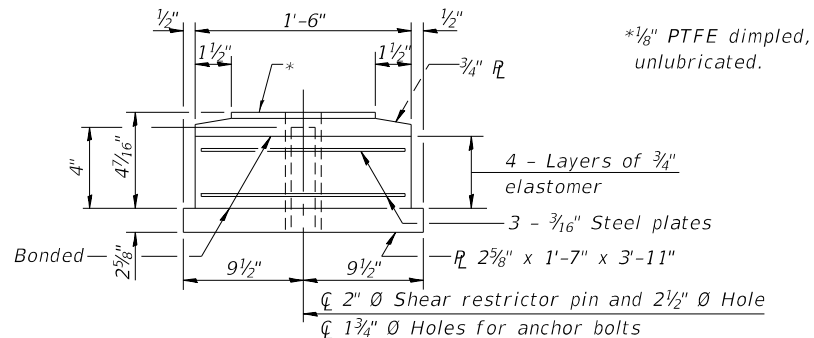
(Girders 1 thru 7 Unit 2 at Pier 3.
Girders 1 thru 5 and 7 Unit 2 at Pier 10)



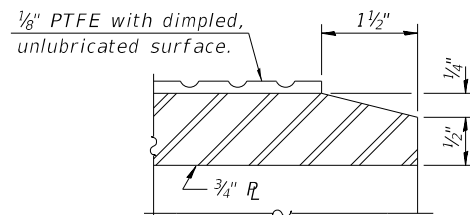
TOP BEARING ASSEMBLY



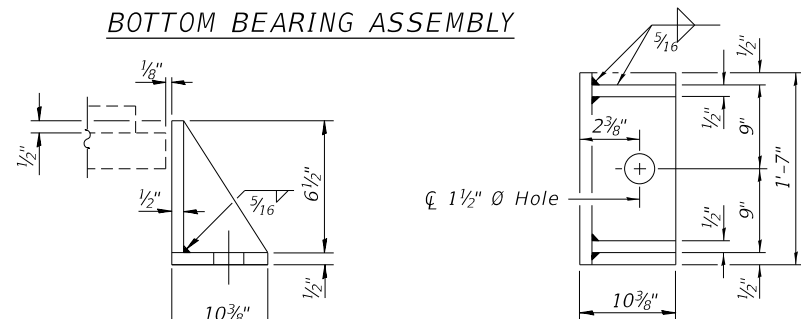
PLAN-PTFE ELASTOMERIC BRG.



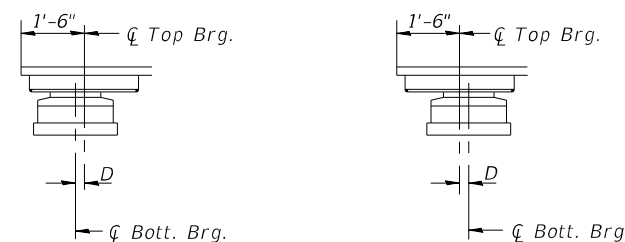
BOTTOM BEARING ASSEMBLY



SECTION THRU PTFE



SIDE RETAINER



EXPANSION BEARING ORIENTATION
The above diagrams are for informational purposes only to show the amount of expected offset "D" for the current temperature in the field.

Notes:

- The 1/8" PTFE sheet shall be bonded directly to the top steel plate with a two-component, medium viscosity epoxy resin, conforming to the requirements of the Federal Specification MMM-A-134, Type I. The bond agent shall be applied on the full area of the contact surfaces.
- Bonding of 1/8" PTFE sheet during vulcanizing process will be permitted provided the process and method of adjusting assembly height is approved by the Engineer.
- The structural steel plates of the Bearing Assembly shall conform to the requirements of AASHTO M270 Grade 50.
- Two 1/8 in. adjusting shims shall be provided for each bearing in addition to all other plates or shims and placed as shown on bearing details.
- All bearing plates, side retainers, anchor bolts, nuts, and washers shall be galvanized according to AASHTO M111 or M232 as applicable.
- The anchor bolt sizes and grades shown constitute a calculated seismic structural fuse. Substitution of higher diameter and/or grade anchor bolts will not be allowed.
- Side retainers shall be included in the cost of Elastomeric Bearing Assembly, Type III.
- Anchor bolts and side retainers at all supports shall be installed as each member is erected unless an equivalent temporary means of lateral restraint is used.
- The required shim plate at W. Brg. Pier 3 shall be fabricated to the specified thickness. Welding thinner plates together to the thickness in the table is not permitted.

BILL OF MATERIAL

Item	Unit	Total
Elastomeric Bearing Assembly Type III	Each	13
Anchor Bolts, 1 1/4"	Each	26

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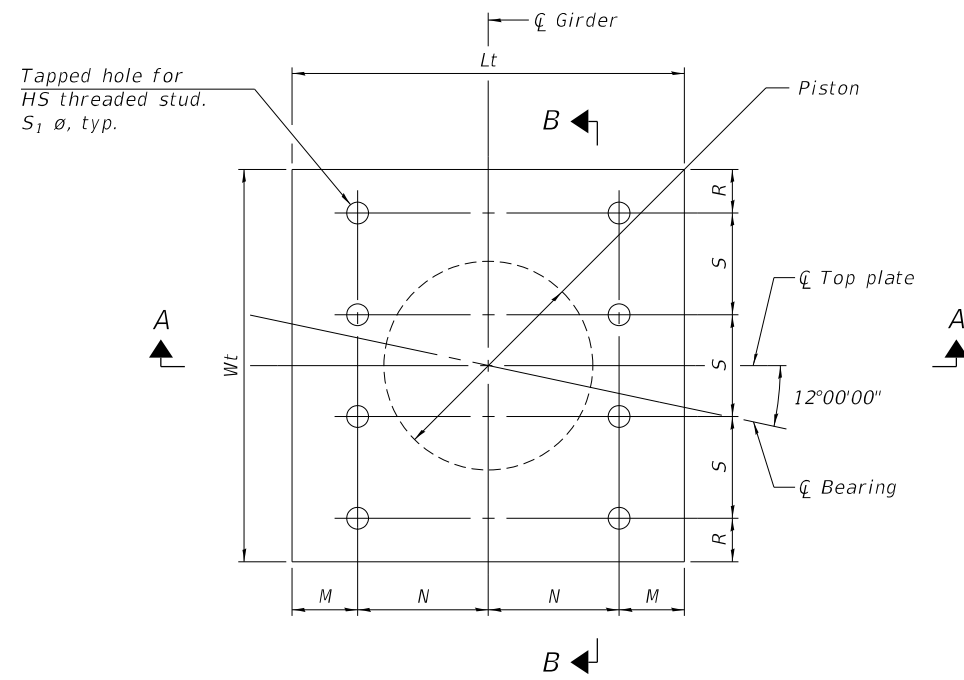
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**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

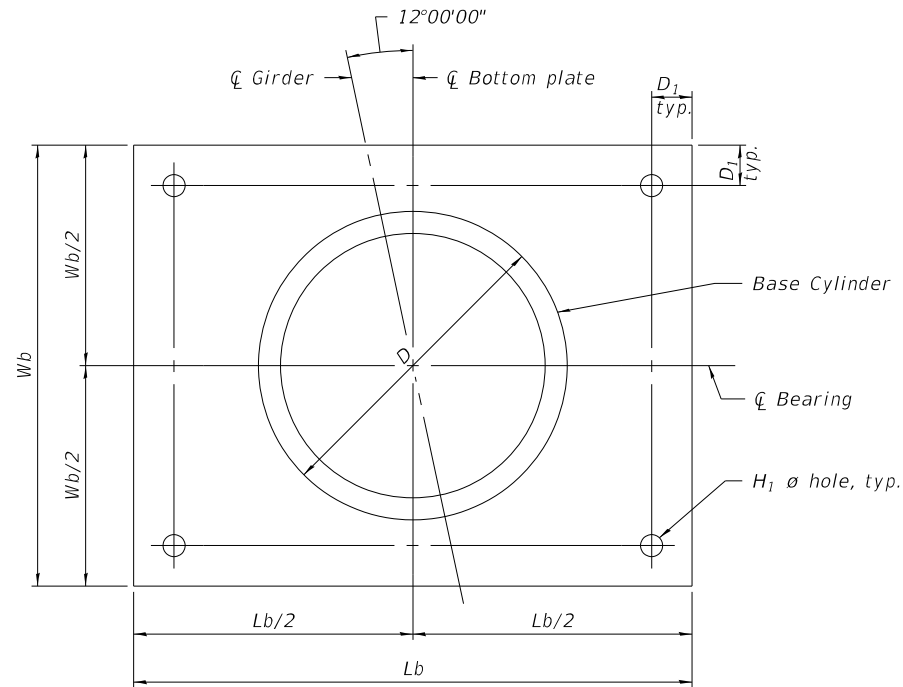
**BEARING DETAILS UNIT 2 - 1
STRUCTURE NO. 060-0350 (EB)**

F.AJ RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	369
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				

SHEET 156 OF 292 SHEETS



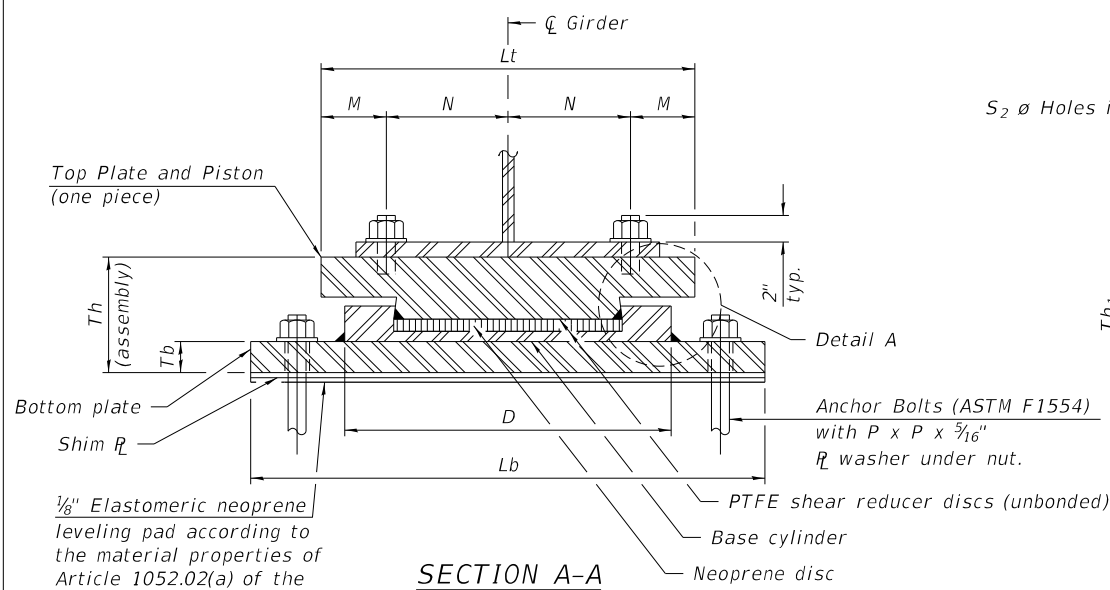
TOP BEARING P AND PISTON PLAN



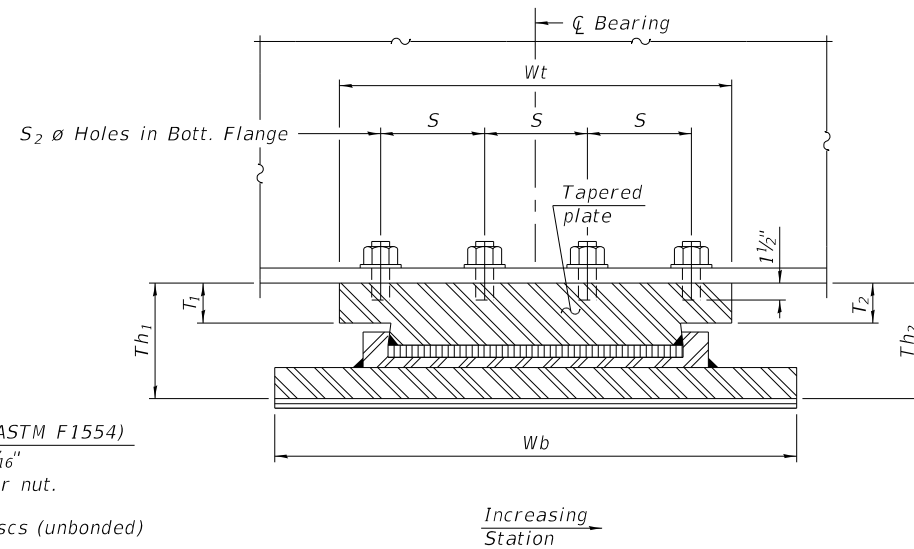
BOTTOM BEARING P AND BASE CYLINDER PLAN

Same as on Unit 1 (Piers 5 thru 8)

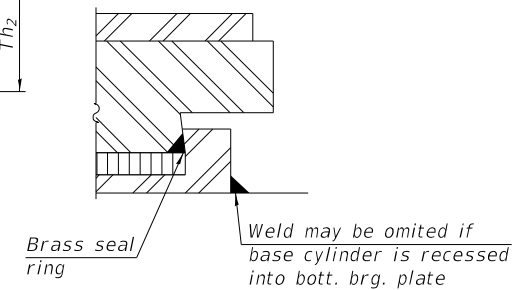
Notes:
 The structural steel plates of the Bearing Assembly shall conform to the requirements of AASHTO M 270 Grade 50.
 Two 1/8 in. adjusting shims shall be provided for each bearing in addition to all other plates or shims and placed as shown on bearing details.
 Anchor bolts shall be ASTM F1554 all-thread (or an Engineer-approved alternate material) of the grade(s) and diameter(s) specified. The corresponding specified grade of AASHTO M314 anchor bolts may be used in lieu of ASTM F1554.
 Anchor bolts at fixed bearings may be either cast in place or installed in holes drilled after the supported member is in place.
 Drilled and set anchor bolts shall be installed according to Article 521.06 of the Standard Specifications.
 All bearing plates, side retainers, anchor bolts, nuts, and washers shall be galvanized according to AASHTO M111 or M232 as applicable.
 The anchor bolt sizes and grades shown constitute a calculated seismic structural fuse. Substitution of higher diameter and/or grade anchor bolts will not be allowed.



SECTION A-A



SECTION B-B



DETAIL A

BILL OF MATERIAL

Item	Unit	Total
High Load Multi-Rotation Bearings, Fixed 900k	Each	25
Anchor Bolts, 2"	Each	100

FIXED BEARING DIMENSION TABLE

Brg. Location	Service I Factored			Bottom Bearing Plate					Top Bearing Plate									Th	Th1	Th2	D	S2	Anchor Bolt	Anchor Bolt Grade	P
	Vertical Design Load (kips)	Lateral Design Load (kips)	Design Rotation (Radians)	Tb	Lb	Wb	H1	D1	T1	T2	Lt	Wt	M	N	R	S	S1								
Pier 5	765	229.4	0.0021	3 1/4"	49"	36"	2 1/2"	3 1/4"	3"	3"	36"	30"	10"	8"	6"	6"	1"	15"	15"	15"	24"	1 1/8"	2" ø x 24"	36	3 1/2"
Pier 6	808	242.4	0.0025	3 1/4"	49"	36"	2 1/2"	3 1/4"	3"	3"	36"	30"	10"	8"	6"	6"	1"	15"	15"	15"	24"	1 1/8"	2" ø x 24"	36	3 1/2"
Pier 7	805	241.6	0.0031	3 1/4"	49"	36"	2 1/2"	3 1/4"	3"	3"	36"	30"	10"	8"	6"	6"	1"	15"	15"	15"	24"	1 1/8"	2" ø x 24"	36	3 1/2"
Pier 8	810	242.9	0.0027	3 1/4"	49"	36"	2 1/2"	3 1/4"	3"	3"	36"	30"	10"	8"	6"	6"	1"	15"	15"	15"	24"	1 1/8"	2" ø x 24"	36	3 1/2"

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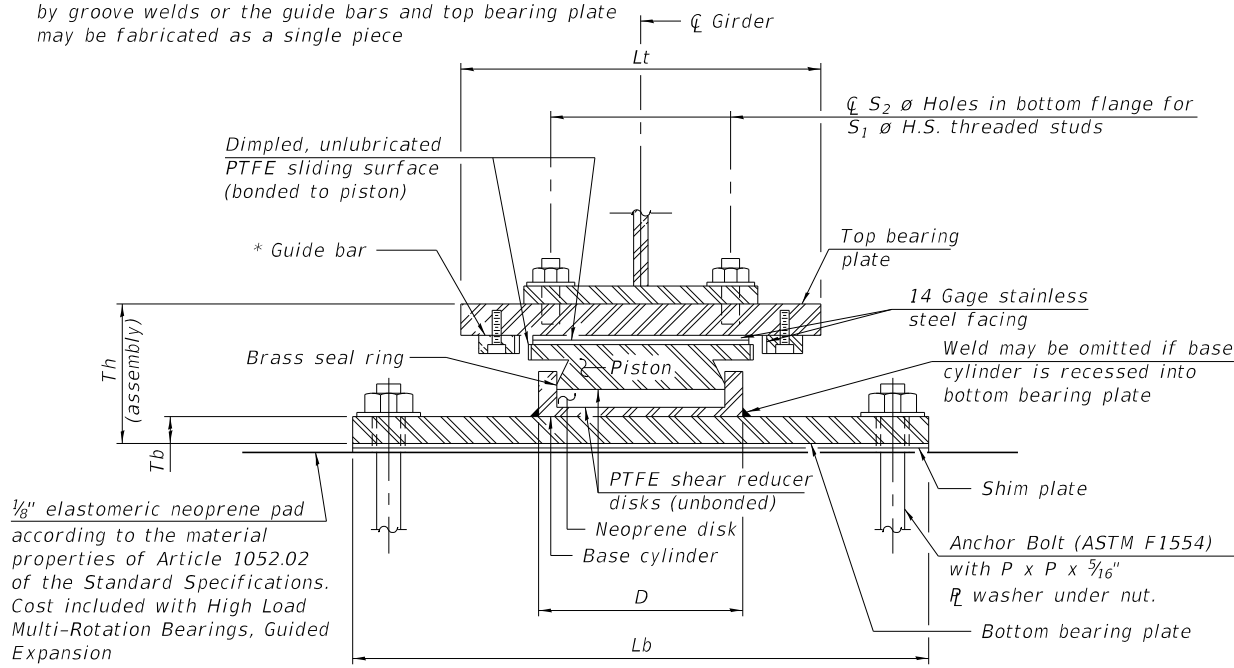
**STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION**

**BEARING DETAILS UNIT 2 - 2
 STRUCTURE NO. 060-0350 (EB)**

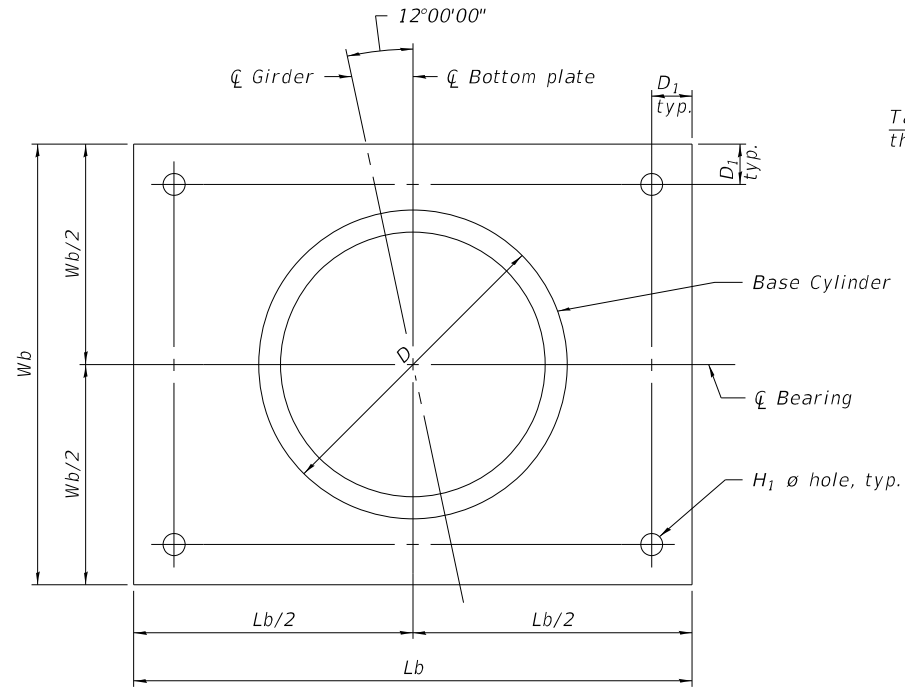
F.AJ RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	370
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				

SHEET 157 OF 292 SHEETS

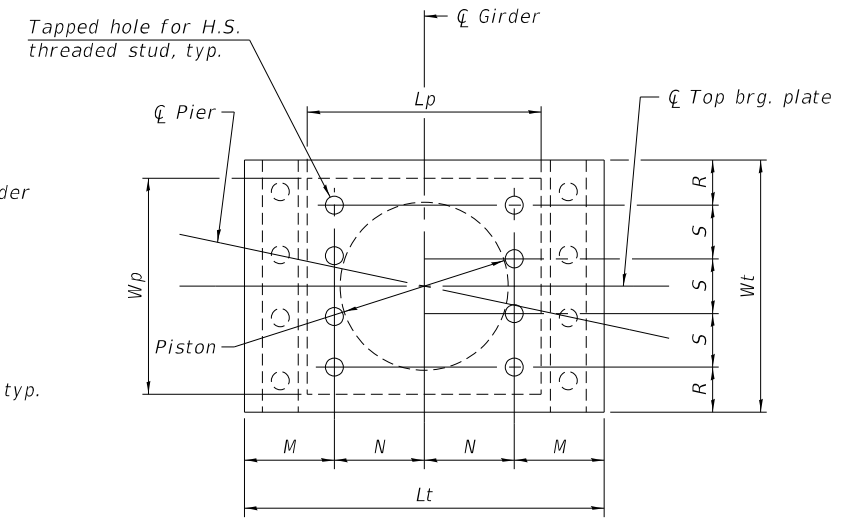
* As alternates to the bolted connection shown, the guide bars may be connected to the top bearing plate by groove welds or the guide bars and top bearing plate may be fabricated as a single piece



GUIDED EXPANSION BEARING



BOTTOM BEARING ϕ AND BASE CYLINDER PLAN



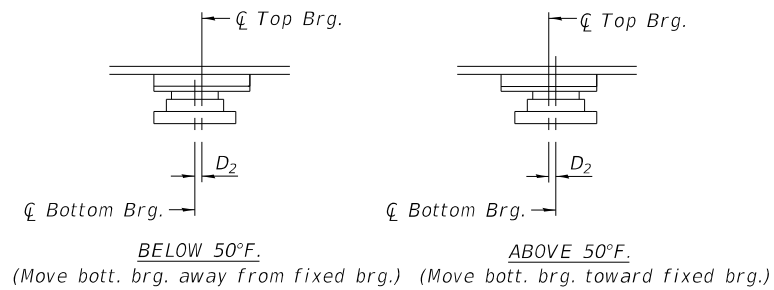
TOP BEARING ϕ AND PISTON PLAN

Notes:

The structural steel plates of the Bearing Assembly shall conform to the requirements of AASHTO M270 Grade 50.
 Two $\frac{1}{8}$ in. adjusting shims shall be provided for each bearing in addition to all other plates or shims and placed as shown on bearing details.
 Anchor bolts shall be ASTM F1554 all-thread (or an Engineer-approved alternate material) of the grade(s) and diameter(s) specified. The corresponding specified grade of AASHTO M314 anchor bolts may be used in lieu of ASTM F1554.
 Anchor bolts at fixed bearings may be either cast in place or installed in holes drilled after the supported member is in place.
 Drilled and set anchor bolts shall be installed according to Article 521.06 of the Standard Specifications.
 All bearing plates, side retainers, anchor bolts, nuts, and washers shall be galvanized according to AASHTO M111 or M232 as applicable.
 The anchor bolt sizes and grades shown constitute a calculated seismic structural fuse. Substitution of higher diameter and/or grade anchor bolts will not be allowed.

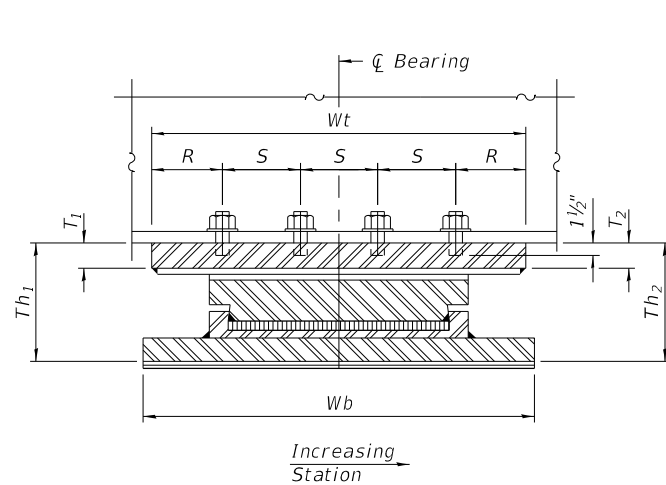
BILL OF MATERIAL

Item	Unit	Total
High Load Multi-Rotational Bearings, Guided Expansion, 900k	Each	13
Anchor Bolts, 2"	Each	52

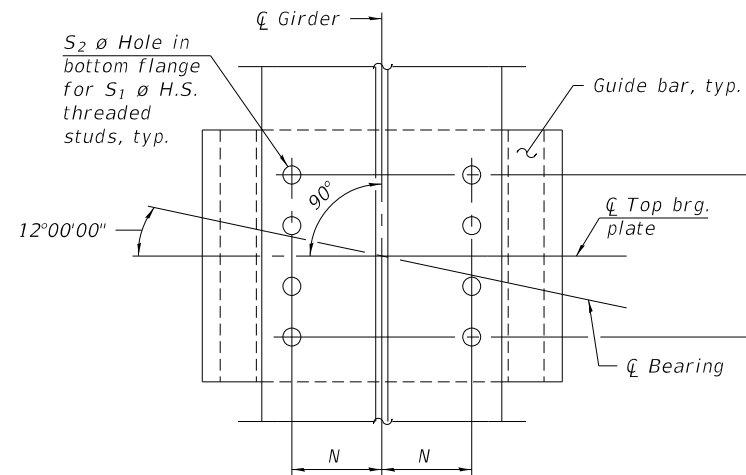


SETTING ANCHOR BOLTS AT EXP. BRG.

$D_2 = \frac{1}{8}$ " per each 100' of expansion for every 15° temp. change from the normal temp. of 50°F.
 Contributing expansion length to Pier 4 = 535 and to Pier 9 = 646'.



TOP PLATE TAPER DETAIL



BEARING ALIGNMENT

GUIDED EXPANSION BEARING DIMENSION TABLE

Brg. Location	Service / Factored			Bottom Bearing Plate					Top Bearing Plate										Th	Th ₁	Th ₂	D	S ₂	Anchor Bolt	Anchor Bolt Grade	P	
	Vertical Design Load (kips)	Lateral Design Load (kips)	Design Rotation (Radians)	T _b	L _b	W _b	H ₁	D ₁	T ₁	T ₂	L _t	W _t	M	N	R	S	S ₁	W _p									L _p
Pier 4	807.1	242.1	0.0025	3 1/4"	49"	36"	2 1/2"	3 1/4"	3"	3"	36"	40"	10"	8"	11"	6"	1"	28 1/2"	28 1/2"	15"	15"	15"	24"	1 1/8"	2" ϕ x 24"	36	3 1/2"
Pier 9	833.2	250.0	0.0028	3 1/4"	49"	36"	2 1/2"	3 1/4"	3"	3"	36"	40"	10"	8"	11"	6"	1"	28 1/2"	28 1/2"	15"	15"	15"	24"	1 1/8"	2" ϕ x 24"	36	3 1/2"

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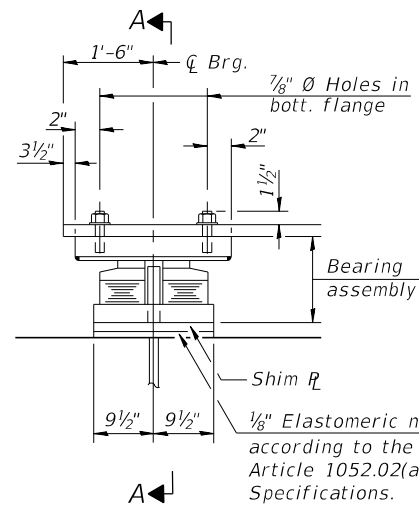
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**STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION**

**BEARING DETAILS UNIT 2 - 3
 STRUCTURE NO. 060-0350 (EB)**

SHEET 158 OF 292 SHEETS

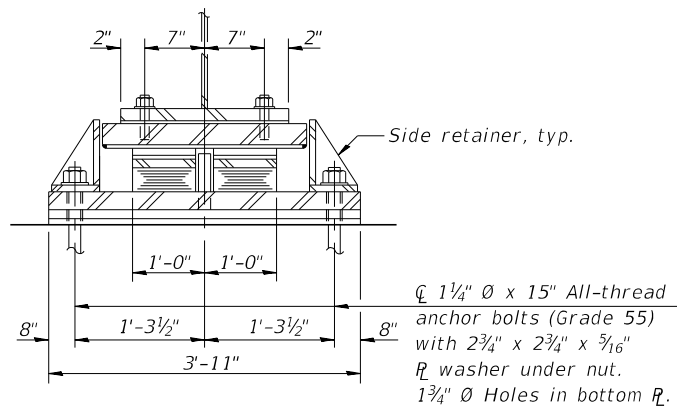
F.AJ RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	371
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				



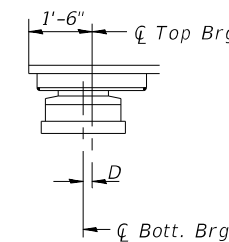
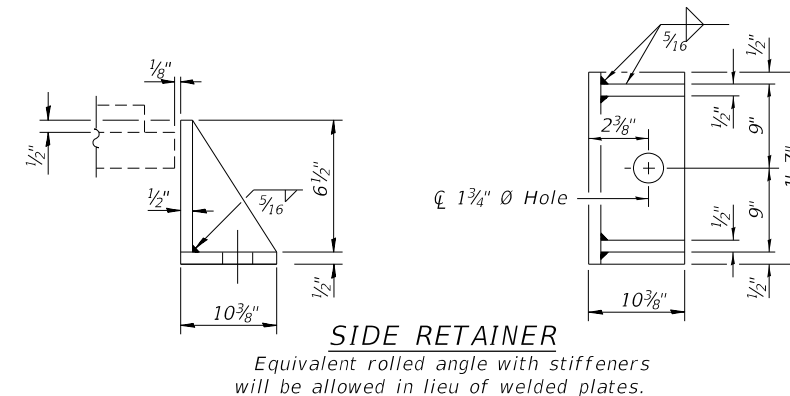
ELEVATION

SHIM PLATE THICKNESS

Unit	Pier	Girder	Shim Plate Thickness
3	17	1-6	1/4"
4	24	1-6	7/8"

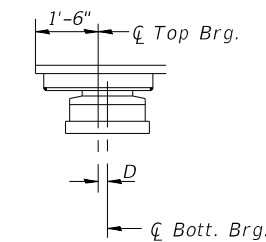


SECTION A-A



BELOW 50° F.

$D = \frac{1}{8}$ " per each 100' of expansion for every 15° temp. change from the normal temp. of 50° F.



ABOVE 50° F.

Assumed contributing expansion length = 860 ft. for Unit 3 Pier 10 and 17
 Assumed contributing expansion length = 790 ft. for Unit 4 Pier 17 and 24

EXPANSION BEARING ORIENTATION

The above diagrams are for informational purposes only to show the amount of expected offset "D" for the current temperature in the field.

Notes:

Side retainers and leveling pad required for the elastomeric bearing assembly shall be included in the cost of Elastomeric Bearing Assembly, Type III.

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

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

Anchor bolts and side retainers at all supports shall be installed as each member is erected unless an equivalent temporary means of lateral restraint is used.

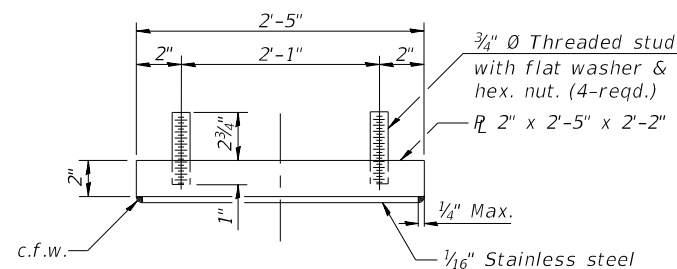
The structural steel plates of the Bearing Assembly shall conform to the requirements of AASHTO M270 Grade 50.

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

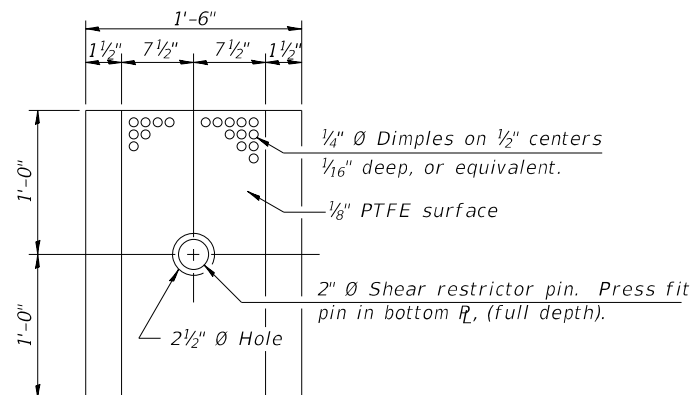
The anchor bolt sizes and grades shown constitute a calculated seismic structural fuse. Substitution of higher diameter and/or grade anchor bolts will not be allowed.

TYPE III ELASTOMERIC EXP. BRG.

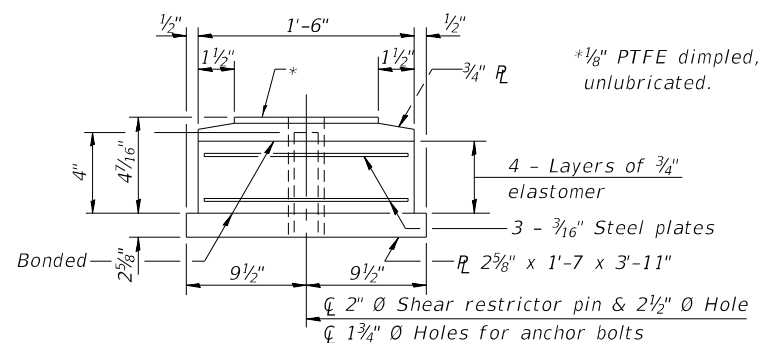
(Girders 1 thru 6 Unit 3 at Pier 10
 Girders 1 thru 6 Unit 3 at Pier 17
 Girders 1 thru 6 Unit 4 at Pier 17
 Girders 1 thru 6 Unit 4 at Pier 24)



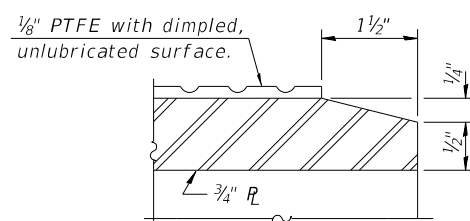
TOP BEARING ASSEMBLY



PLAN-PTFE ELASTOMERIC BRG.



BOTTOM BEARING ASSEMBLY



SECTION THRU PTFE

BILL OF MATERIAL

Item	Unit	Total
Elastomeric Bearing Assembly Type III	Each	24
Anchor Bolts, 1 1/4"	Each	48

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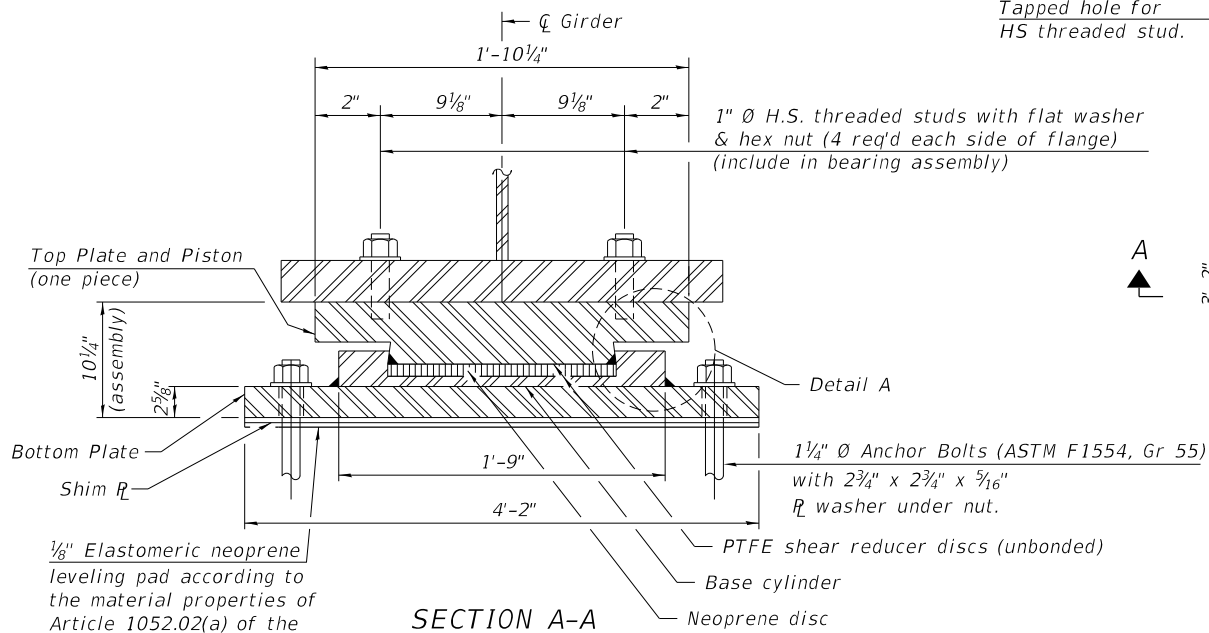
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STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION

BEARING DETAILS UNITS 3, 4 & 5 - 1
 STRUCTURE NO. 060-0350 (EB)

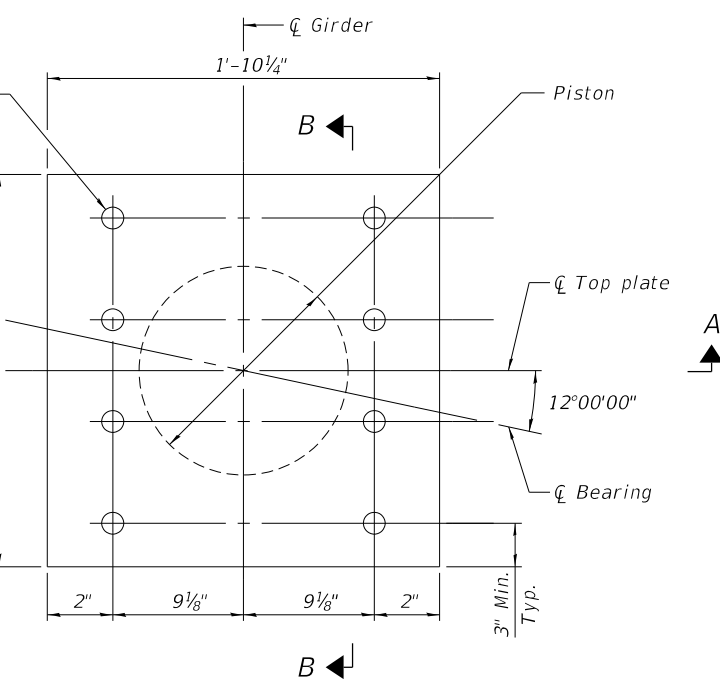
SHEET 159 OF 292 SHEETS

F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	372
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				

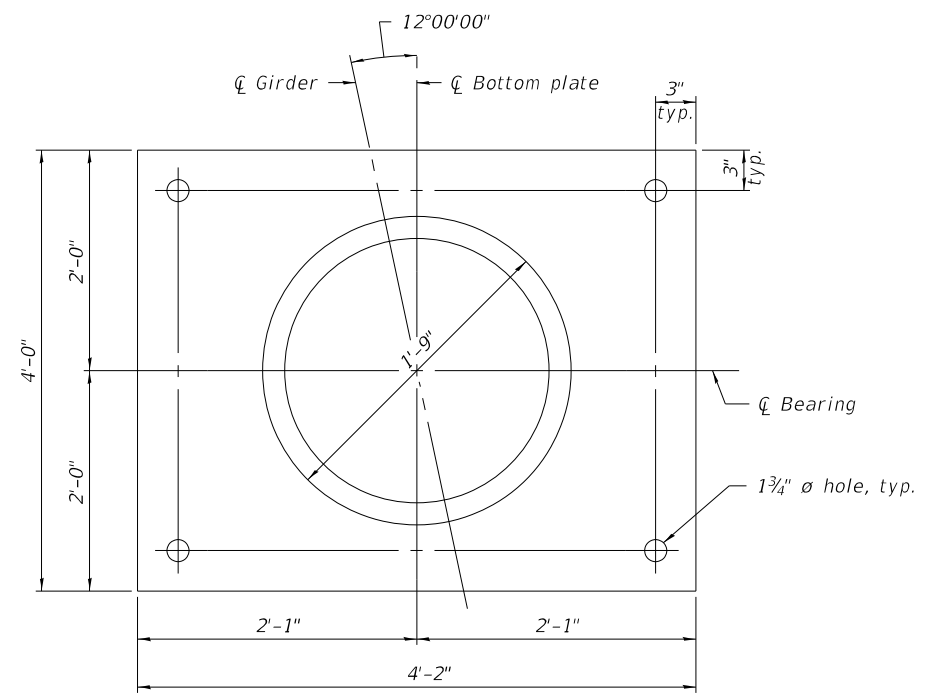


1/8" Elastomeric neoprene leveling pad according to the material properties of Article 1052.02(a) of the Standard Specifications. Cost included with High Load Multi-Rotation Bearings, Fixed.

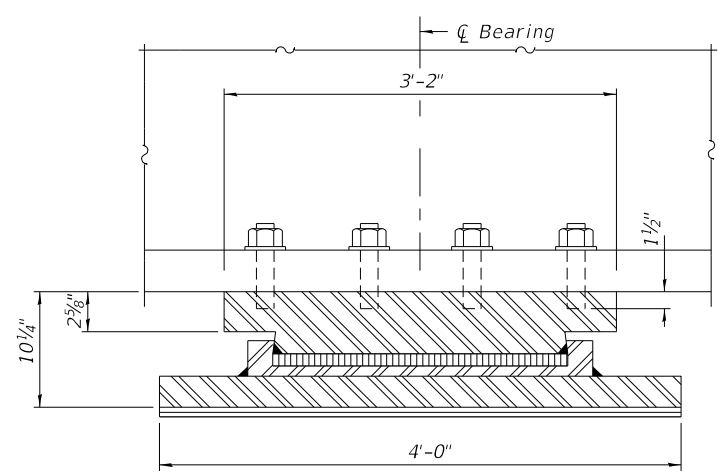
SECTION A-A



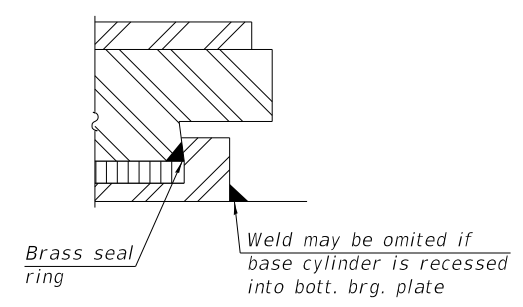
TOP BEARING PLATE AND PISTON PLAN



BOTTOM BEARING PLATE AND BASE CYLINDER PLAN



SECTION B-B



DETAIL A

Brg. Location	Service Vert. (kips)	Factored Lat. (kips)	Factored Rotation (rad.)
Pier 12 & 15	817	238	0.01
Pier 13 & 14	827	241	0.01
Pier 19 & 22	821	239	0.01
Pier 20 & 21	825	240	0.01
Pier 25	790	228	0.01

FIXED HLMR BEARINGS

(Girders 1 thru 6 Unit 3 at Piers 12 thru 15
Girders 1 thru 6 Unit 4 at Piers 19 thru 22
Girders 1 thru 6 Unit 5 at Pier 25)

Notes:
 The structural steel plates of the Bearing Assembly shall conform to the requirements of AASHTO M 270 Grade 50.
 Two 1/8 in. adjusting shims shall be provided for each bearing in addition to all other plates or shims and placed as shown on bearing details.
 Anchor bolts shall be ASTM F1554 all-thread (or an Engineer-approved alternate material) of the grade(s) and diameter(s) specified. The corresponding specified grade of AASHTO M314 anchor bolts may be used in lieu of ASTM F1554.
 All bearing plates, side retainers, anchor bolts, nuts, and washers shall be galvanized according to AASHTO M111 or M232 as applicable.
 Anchor bolts at fixed bearings may be either cast in place or installed in holes drilled after the supported member is in place.
 Drilled and set anchor bolts shall be installed according to Article 521.06 of the Standard Specifications.
 The anchor bolt sizes and grades shown constitute a calculated seismic structural fuse. Substitution of higher diameter and/or grade anchor bolts will not be allowed.
 If the base cylinder is recessed into the bottom bearing plate, the thickness of the bottom plate shall be T_b plus the depth of the recess.
 The cost of the elastomeric neoprene leveling pads, shim plates and threaded studs shall be included in the cost of High Load Multi-Rotational Bearings, Fixed.

BILL OF MATERIAL

Item	Unit	Total
High Load Multi-Rotation Bearings, Fixed 850k	Each	54
Anchor Bolts, 1 1/4"	Each	216

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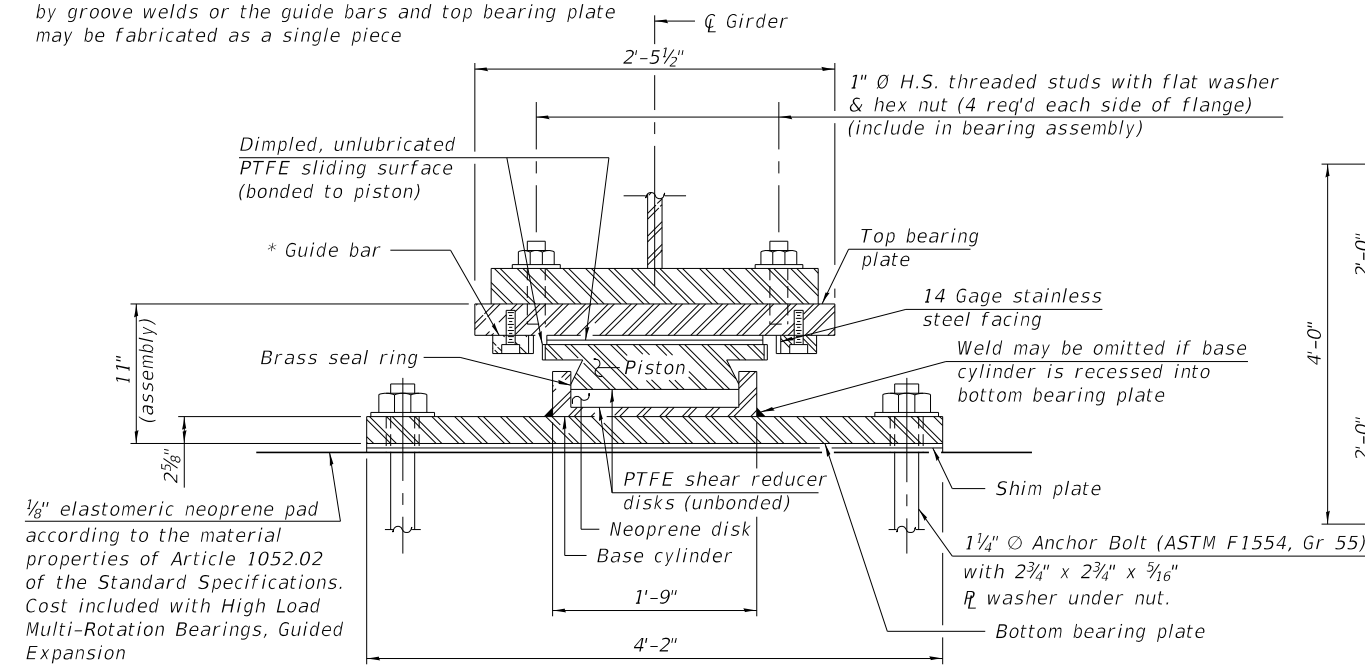
**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

**BEARING DETAILS UNITS 3, 4 & 5 - 2
STRUCTURE NO. 060-0350 (EB)**

SHEET 160 OF 292 SHEETS

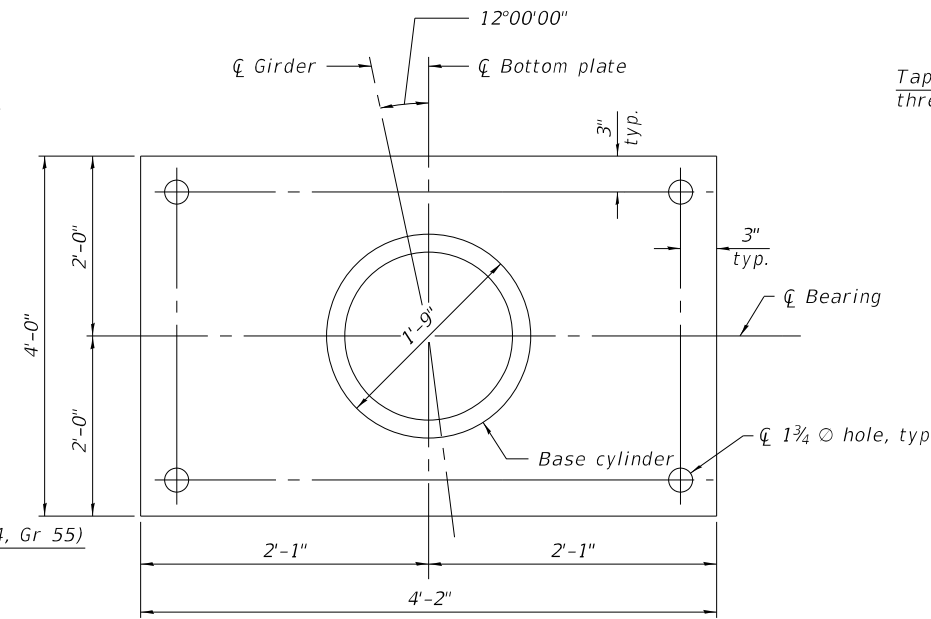
F.A.1 RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	373
CONTRACT NO. 76J90				
ILLINOIS FED. AID PROJECT				

* As alternates to the bolted connection shown, the guide bars may be connected to the top bearing plate by groove welds or the guide bars and top bearing plate may be fabricated as a single piece

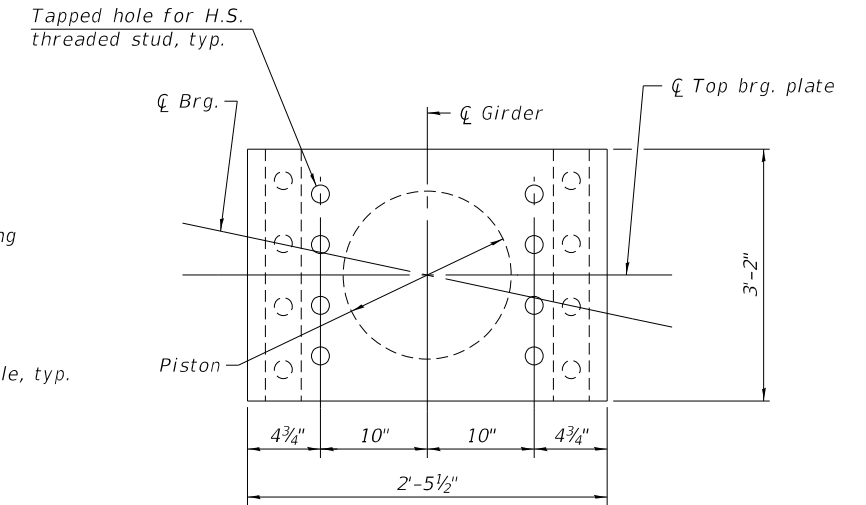


GUIDED EXPANSION BEARING

(Girders 1 thru 6 Unit 3 at Piers 11 & 16
Girders 1 thru 6 Unit 4 at Piers 18 & 23)



BOTTOM BEARING R AND BASE CYLINDER PLAN



TOP BEARING R AND PISTON PLAN

Notes:
Anchor bolts shall be ASTM F1554 all-thread (or an Engineer-approved alternate material) of the grade(s) and diameter(s) specified. The corresponding specified grade of AASHTO M314 anchor bolts may be used in lieu of ASTM F1554.

All bearing plates, side retainers, anchor bolts, nuts, and washers shall be galvanized according to AASHTO M111 or M232 as applicable.

Anchor bolts for HLMR bearings shall be placed in holes drilled in the concrete through holes in the bottom bearing plate after members are in place.

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

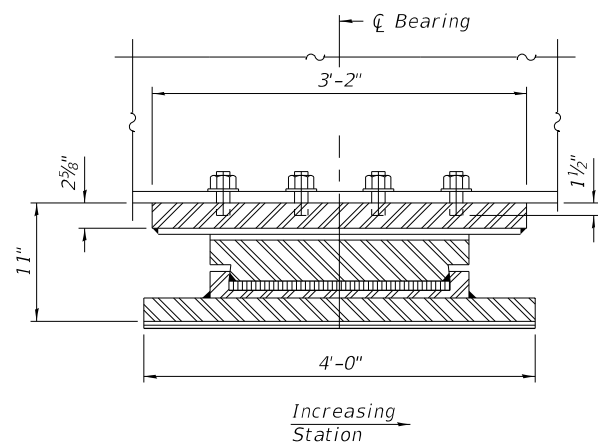
The structural steel plates of the Bearing Assembly shall conform to the requirements of ASHTO M 270 Grade 50.

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

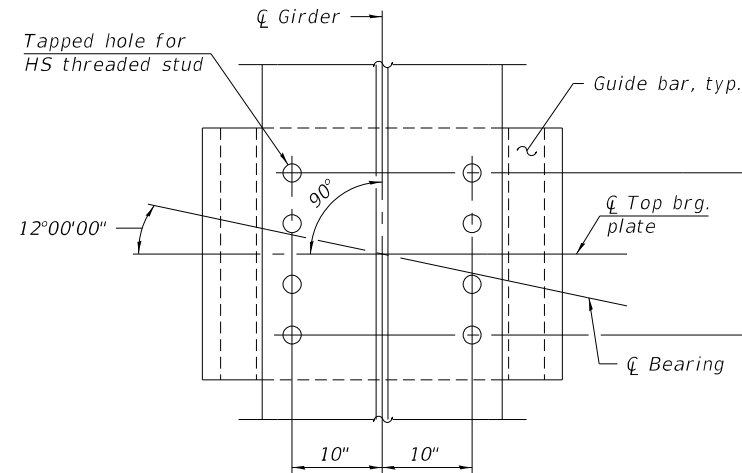
The anchor bolt sizes and grades shown constitute a calculated seismic structural fuse. Substitution of higher diameter and/or grade anchor bolts will not be allowed.

If the base cylinder is recessed into the bottom bearing plate, the thickness of the bottom plate shall be T_b plus the depth of the recess.

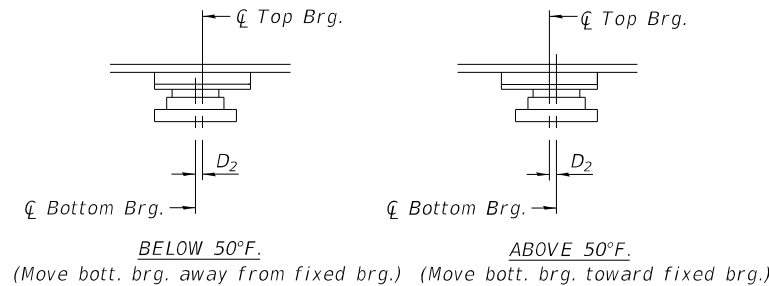
The cost of the elastomeric neoprene leveling pads, shim plates and threaded studs shall be included in the cost of High Load Multi-Rotational Bearings, Guided Expansion.



TOP PLATE DETAIL



BEARING ALIGNMENT



Assumed contributing expansion length = 662 ft. for Unit 3 Pier 11 and 16.
Assumed contributing expansion length = 604 ft. for Unit 4 Pier 18 and 23.

SETTING ANCHOR BOLTS AT EXP. BRG.

$D_2 = 1/8"$ per each 100' of expansion for every 15° temp. change from the normal temp. of 50°F.

BILL OF MATERIAL

Item	Unit	Total
High Load Multi-Rotational Bearings, Guided Expansion, 850k	Each	24
Anchor Bolts, 1 1/4"	Each	96

Brg. Location	Service Vert. (kip)	Factored Lat. (kip)	Req'd Mvmt. (in.)	Factored Rotation (rad.)
Pier 11 & 16	838	243	8.7	0.01
Pier 18 & 23	823	239	7.9	0.01

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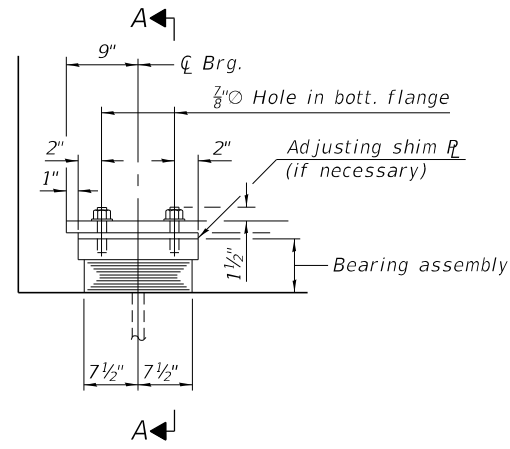
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STATE OF ILLINOIS
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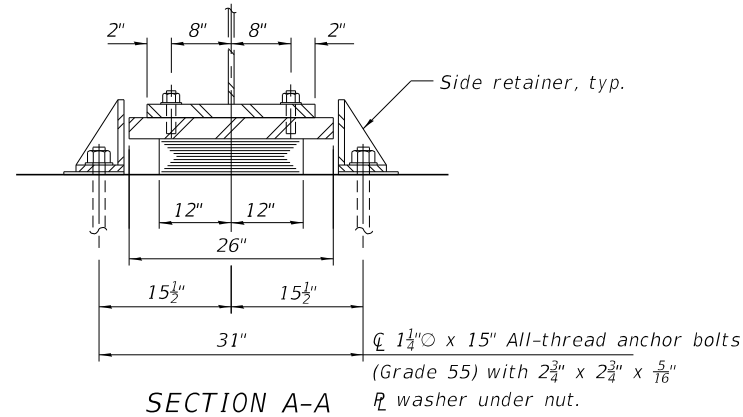
BEARING DETAILS UNITS 3, 4 & 5 - 3
STRUCTURE NO. 060-0350 (EB)

SHEET 161 OF 292 SHEETS

F.AJ RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	374
CONTRACT NO. 76J90				
ILLINOIS FED. AID PROJECT				



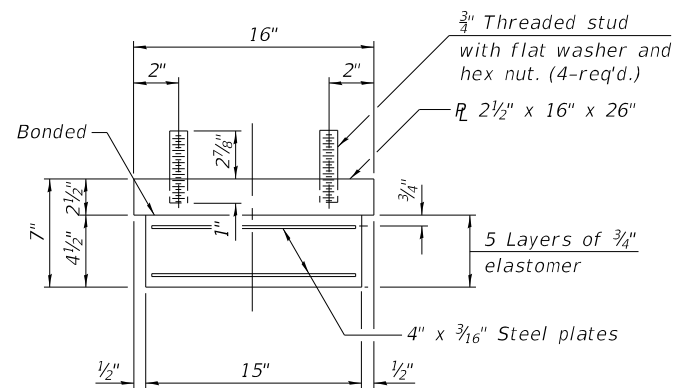
ELEVATION AT GIRDER END



SECTION A-A

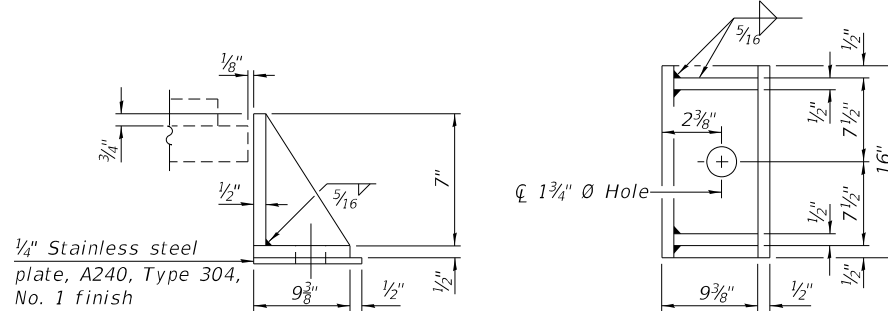
TYPE I ELASTOMERIC EXP. BRG.
 (Girders 1 thru 6 Unit 5 at Pier 24
 Girders 1 thru 6 Unit 5 at E. Abut.)

Assumed contributing expansion length = 181 ft. for Unit 5 Pier 24 and E. Abut.



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.

Notes:
 Side retainers and stainless steel plates shall be included in the cost of Elastomeric Bearing Assembly, Type I.
 Anchor bolts and side retainers at all supports shall be installed as each member is erected unless an equivalent temporary means of lateral restraint is used.
 The structural steel plates of the Bearing Assembly shall conform to the requirements of AASHTO M 270 Grade 50.
 Two 1/8" adjusting shims shall be provided for each bearing in addition to all other plates or shims and placed as shown on bearing details.
 The anchor bolt sizes and grades shown constitute a calculated seismic structural fuse. Substitution of higher diameter and/or grade anchor bolts will not be allowed.

BILL OF MATERIAL

Item	Unit	Total
Elastomeric Bearing Assembly Type I	Each	12
Anchor Bolts, 1 1/4"	Each	24

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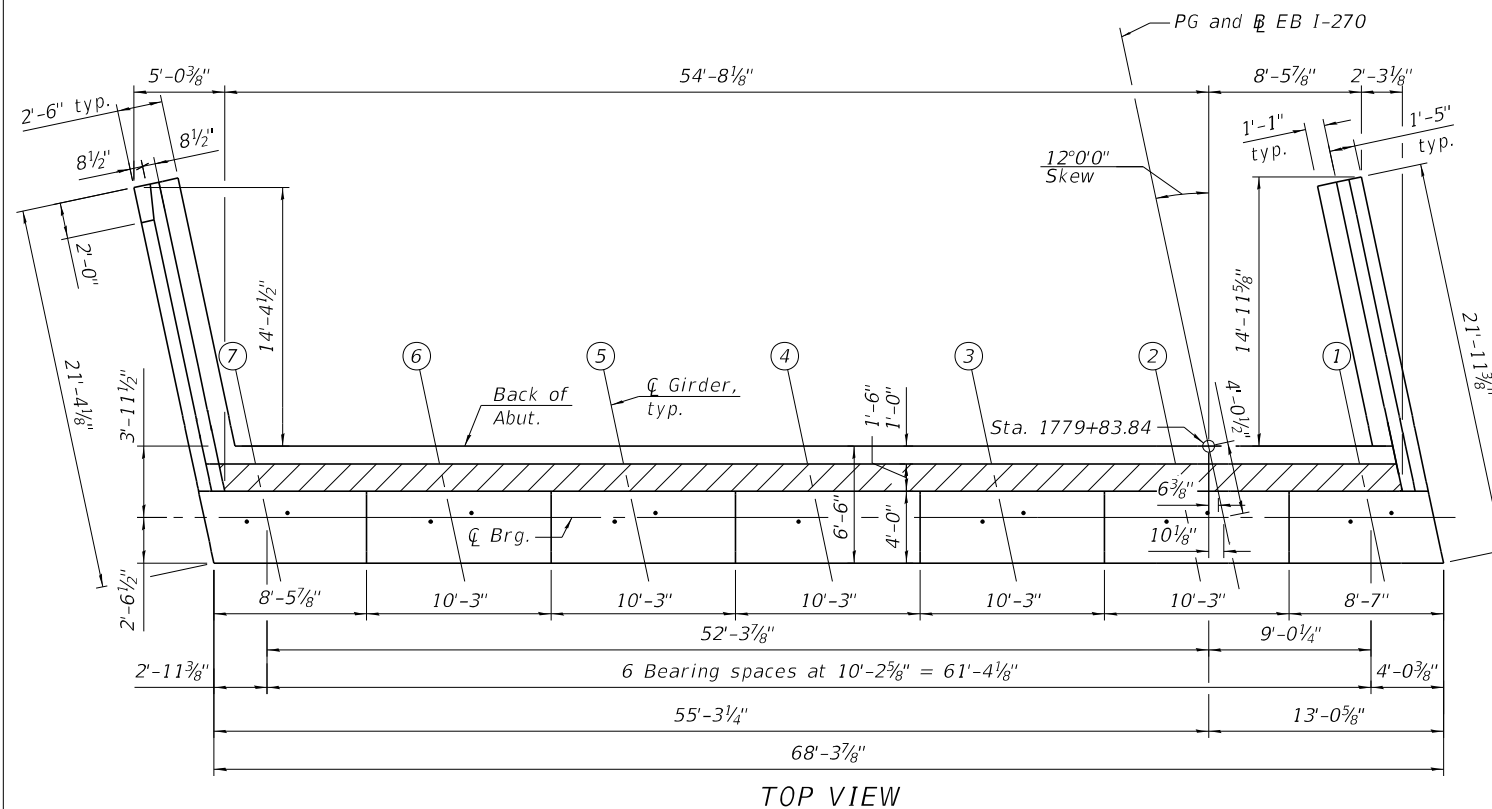
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STATE OF ILLINOIS
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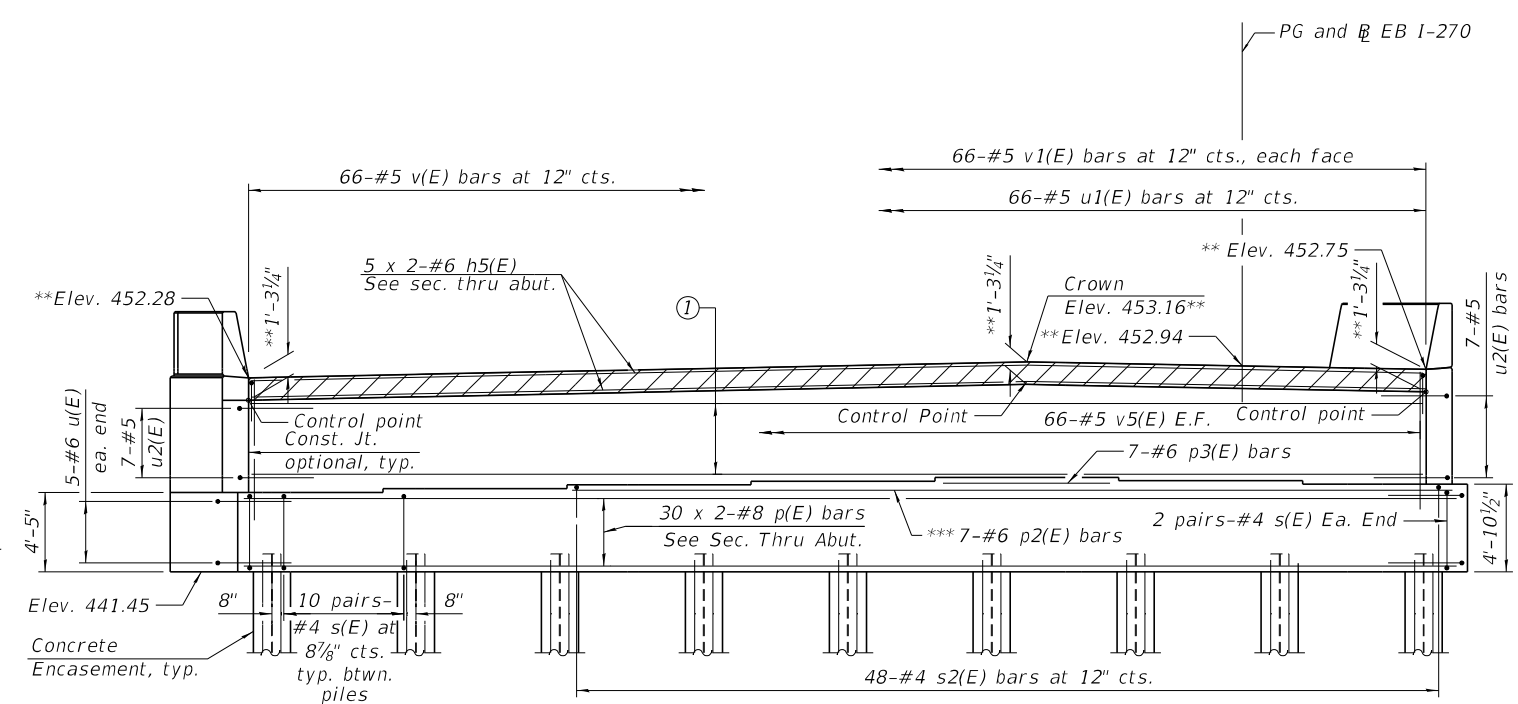
BEARING DETAILS UNITS 3, 4 & 5 - 4
 STRUCTURE NO. 060-0350 (EB)

SHEET 162 OF 292 SHEETS

F.AJ RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	375
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				

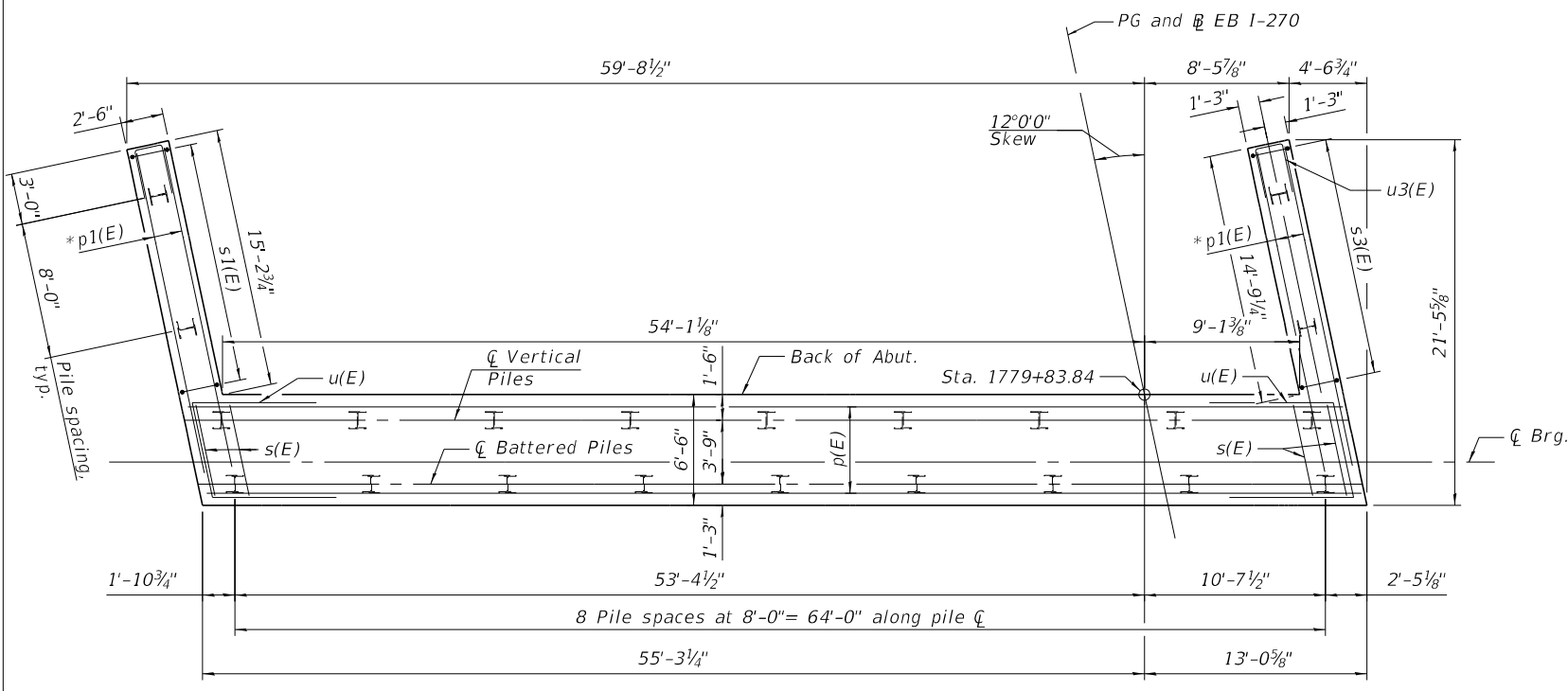


TOP VIEW



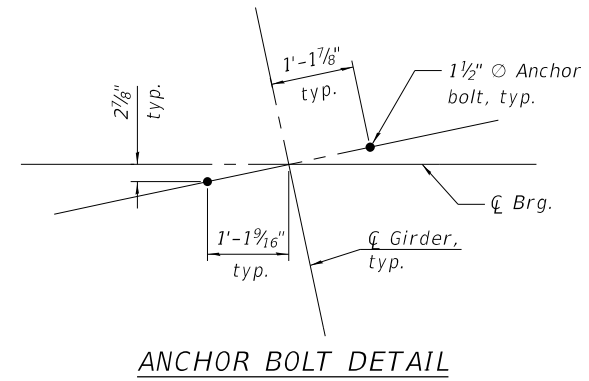
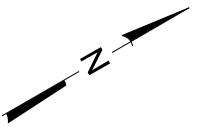
ELEVATION

** Prior to Grinding
 *** Field cut to fit skew
 ① 7 x 2-#5 h(E) bars, each face



PLAN-PILE CAP

* Field bend #7 p1(E) to clear pile.



ANCHOR BOLT DETAIL

MINIMUM BAR LAP

- #5 bar = 3'-4"
- #6 bar = 4'-0"
- #8 bar = 6'-9"

STEP HEIGHT

GIRDER	STEP HT.
1-2	2 1/4"
2-3	2 1/4"
3-4	-2 1/2"
4-5	-2 1/2"
5-6	-2 1/2"
6-7	-2 1/2"

BEARING SEAT ELEVATIONS

GIRDER	ELEVATION
1	446.33
2	446.52
3	446.71
4	446.50
5	446.29
6	446.08
7	445.87

Notes:
 Bars indicated thus 5 x 2-#5 etc. indicates 5 lines of bars with 2 lengths per line.
 For Sect. thru Abut., see sheet 164 of 292.

PILE DATA

Type: HP 12X84
 Nominal Required Bearing: 638 kips
 Factored Resistance Available: 178 kips
 Est. Length: 57 ft
 No. Production Piles: 20
 No. Test Piles: 2

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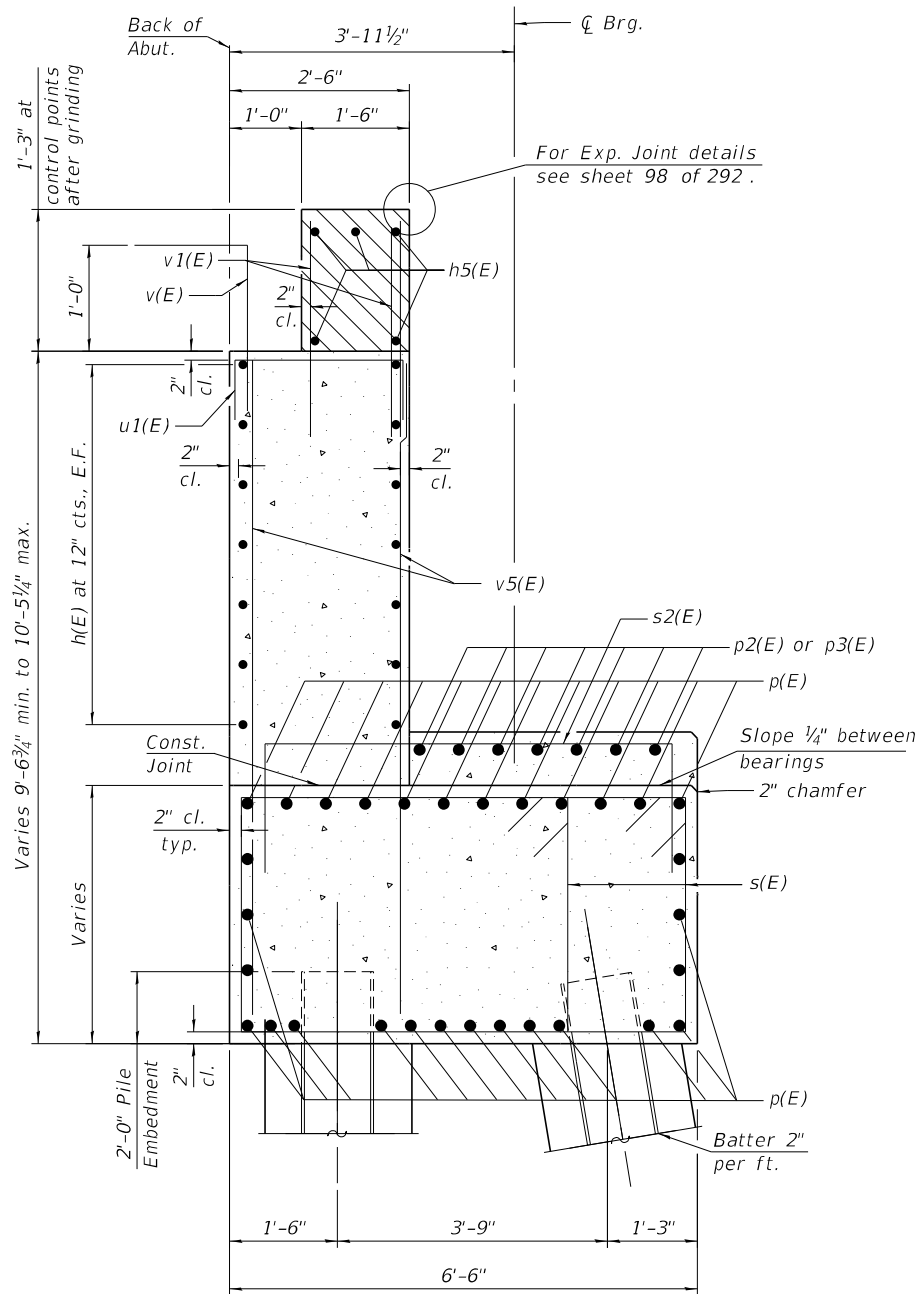
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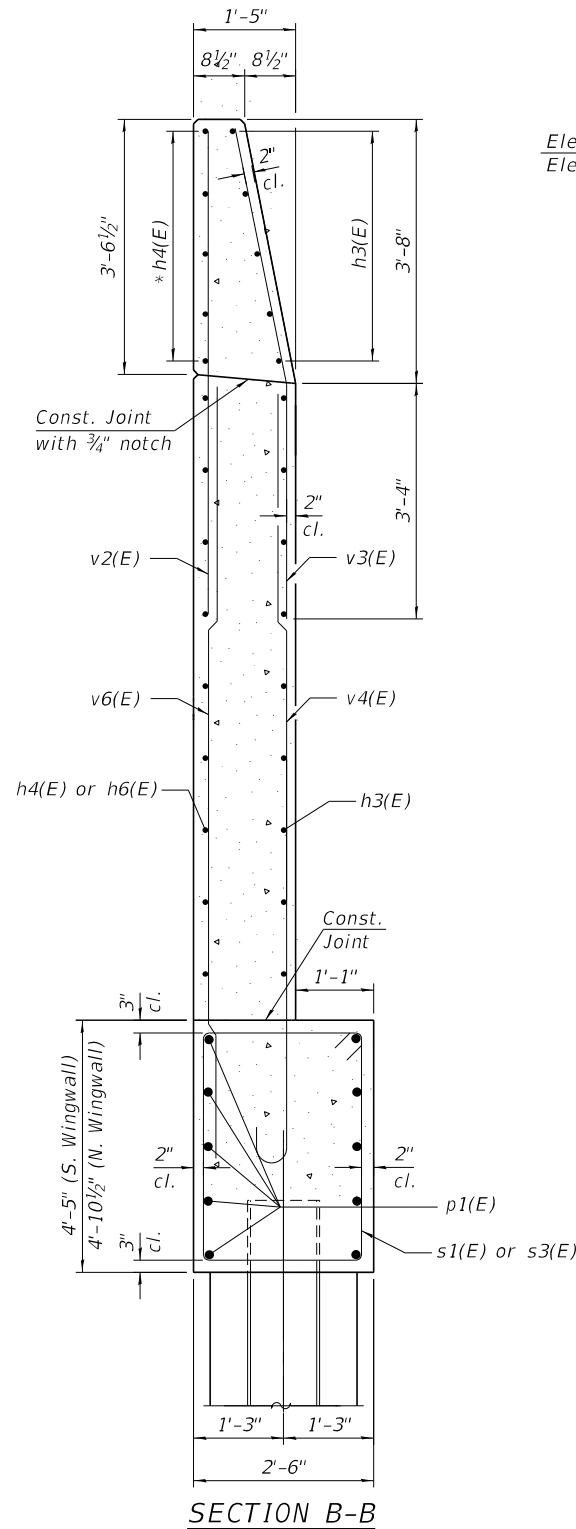
WEST ABUTMENT PLAN AND ELEVATION
 STRUCTURE NO. 060-0350 (EB)

SHEET 163 OF 292 SHEETS

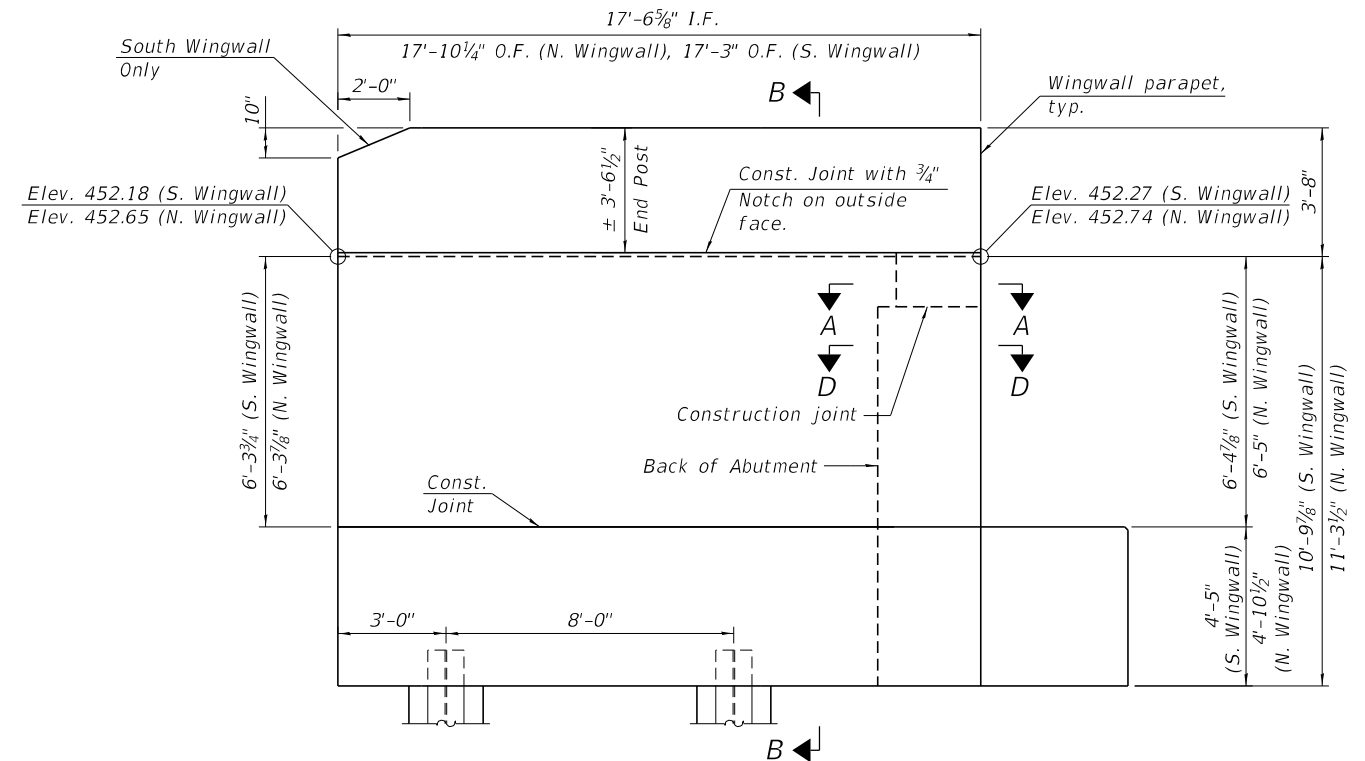
F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	376
CONTRACT NO. 76J90				
ILLINOIS FED. AID PROJECT				



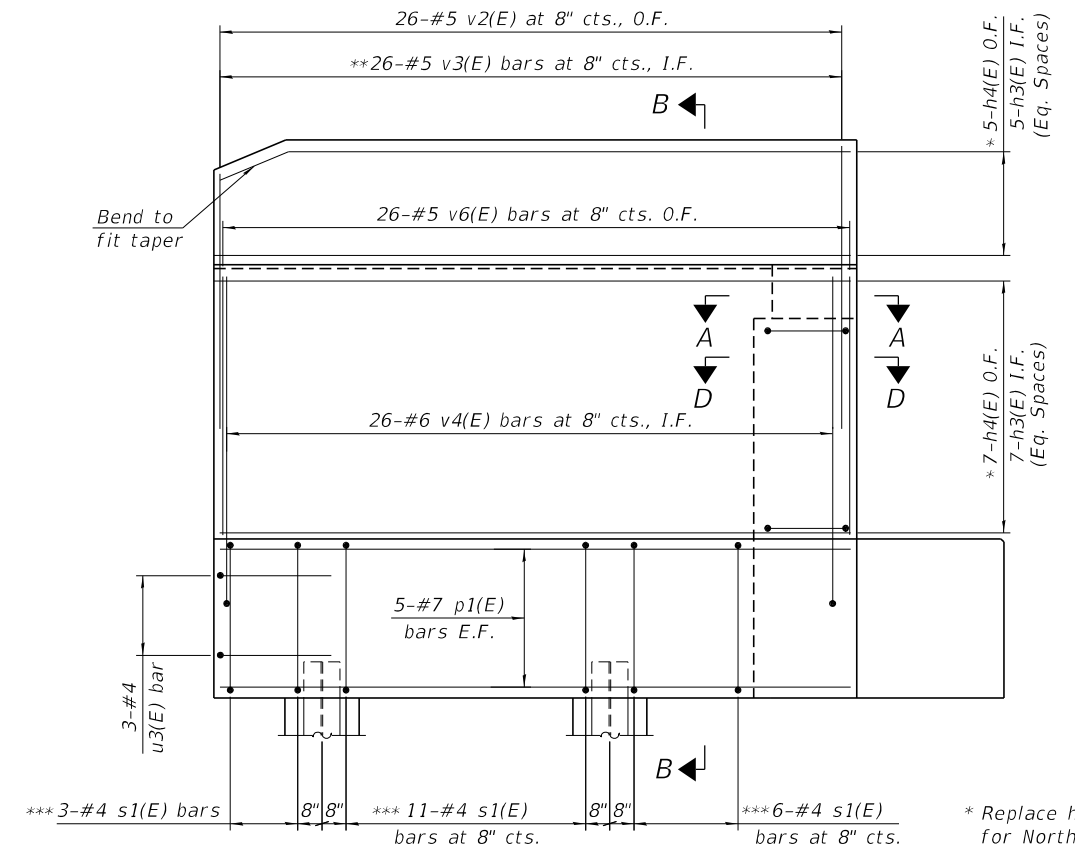
SECT. THRU ABUT.



SECTION B-B



WINGWALL ELEVATION
Showing Dimensions
(South shown, North wingwall similar)



WINGWALL ELEVATION
Showing Reinforcement
(South shown, North wingwall similar)

* Replace h4(E) with h6(E) for North Wingwall
** Field cut at taper
*** Replace s1(E) with s3(E) for North Wingwall

Notes:

Hatched area to be poured after superstructure false work has been removed. Quantity of concrete included with Concrete Superstructure. Space reinforcement in cap to miss anchor bolts. Pour steps monolithically with cap. Quantity of concrete end post included Concrete Superstructure on sheet 92 of 292. For Concrete Encasement details, see sheet 247 of 292. Abutments under deck joints shall have all exposed surfaces of backwalls, bridge seats, and front faces of pile caps treated with Concrete Sealer. For Section A-A and D-D, see Sheet 165 of 292.

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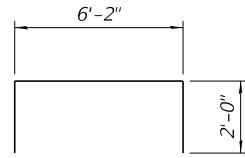
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

WEST ABUTMENT WINGWALL DETAILS
STRUCTURE NO. 060-0350 (EB)

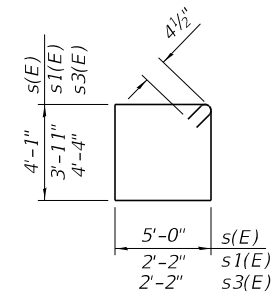
SHEET 164 OF 292 SHEETS

F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	377
CONTRACT NO. 76J90				

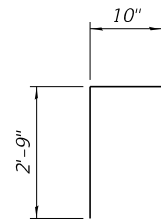
ILLINOIS FED. AID PROJECT



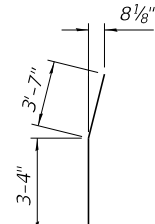
BAR s2(E)



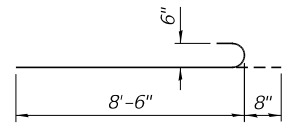
BARS s(E), s1(E) AND s3(E)



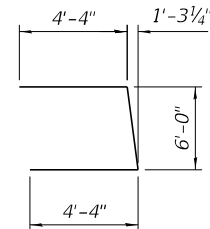
BAR v(E)



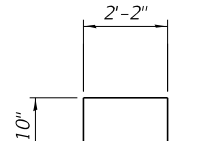
BAR v3(E)



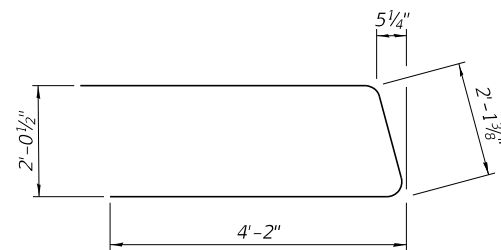
BAR v4(E)



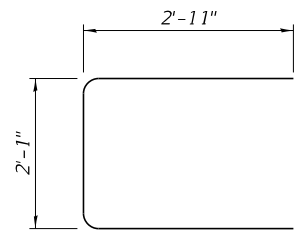
BAR u(E)



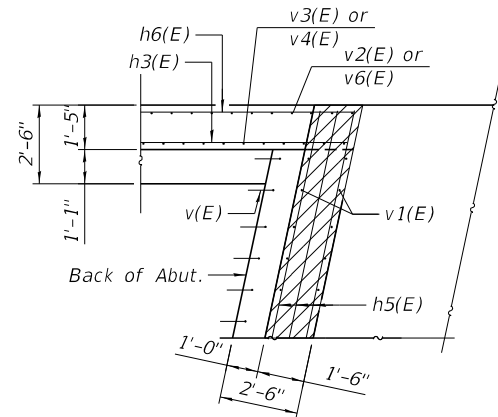
BAR u1(E)



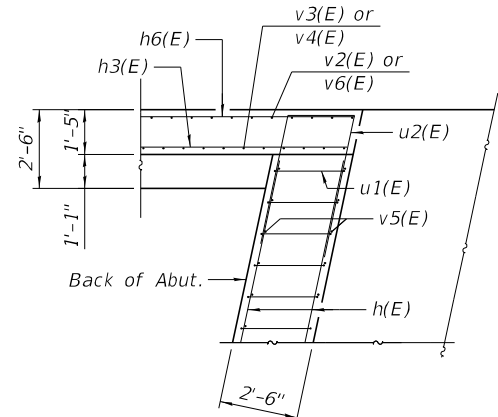
BAR u2(E)



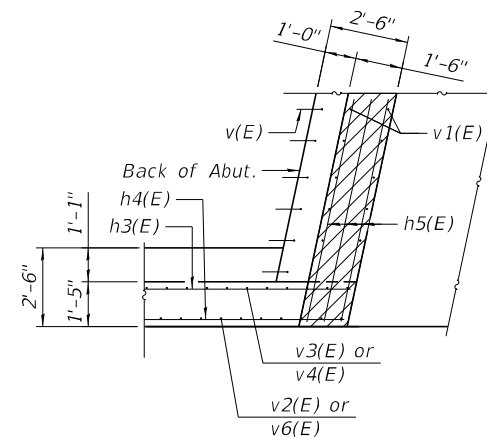
BAR u3(E)



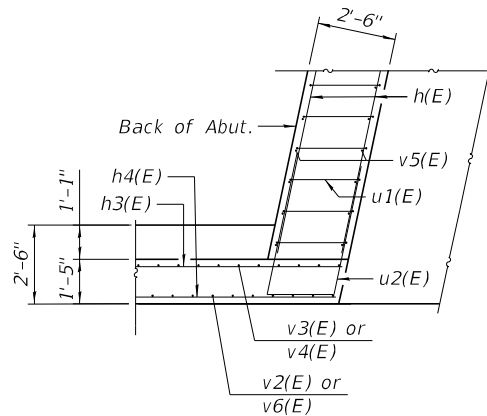
SECTION A-A: NORTH WING



SECTION D-D: NORTH WING



SECTION A-A: SOUTH WING



SECTION D-D: SOUTH WING

WEST ABUTMENT
BILL OF MATERIAL

Bar	No.	Size	Length	Shape
h(E)	28	#5	35'-9"	—
h3(E)	24	#4	17'-2"	—
h4(E)	12	#4	16'-11"	—
h5(E)	10	#6	36'-0"	—
h6(E)	12	#4	17'-6"	—
p(E)	60	#8	37'-5"	—
p1(E)	20	#7	20'-0"	—
p2(E)	7	#6	49'-0"	—
p3(E)	7	#6	9'-11"	—
s(E)	168	#4	18'-11"	□
s1(E)	20	#4	12'-11"	□
s2(E)	48	#4	10'-2"	□
s3(E)	20	#4	13'-9"	□
u(E)	10	#6	14'-9"	⌋
u1(E)	66	#5	3'-10"	⌋
u2(E)	14	#5	10'-6"	⌋
u3(E)	6	#4	7'-11"	⌋
v(E)	66	#5	3'-7"	⌋
v1(E)	132	#5	3'-0"	—
v2(E)	52	#5	6'-9"	—
v3(E)	52	#5	6'-11"	—
v4(E)	52	#6	9'-2"	—
v5(E)	132	#5	9'-2"	—
v6(E)	52	#5	10'-5"	—
Structure Excavation			Cu. Yd.	273
Concrete Structures			Cu. Yd.	133.3
Concrete Encasement			Cu. Yd.	7.7
Reinforcement Bars, Epoxy Coated			Pound	16,990
Furnishing Steel Piles HP 12x84			Foot	1,140
Driving Piles			Foot	1,140
Test Pile Steel HP 12X84			Each	2
Pile Shoes			Each	22
Concrete Sealer			Sq. Ft.	1,047

* Field cut to fit skew.
For details of HP Piles and Concrete Encasement, see sheet 247 of 292.

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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

WEST ABUTMENT DETAILS AND BOM
STRUCTURE NO. 060-0350 (EB)

SHEET 165 OF 292 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	378
			CONTRACT NO. 76190	
ILLINOIS FED. AID PROJECT				

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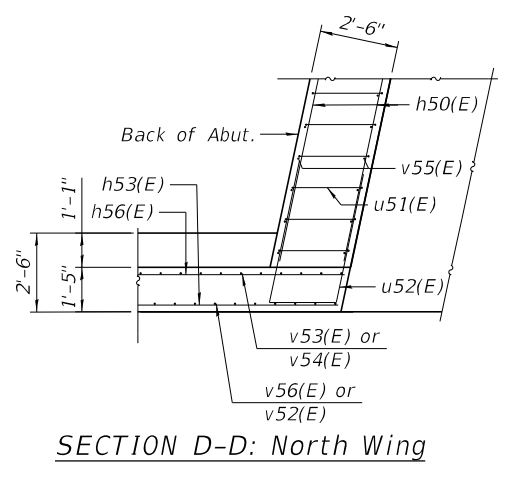
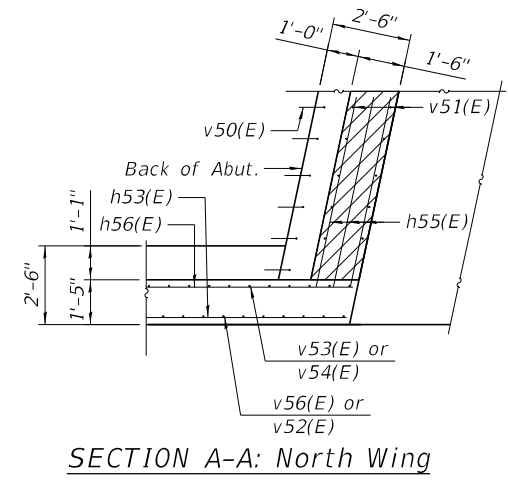
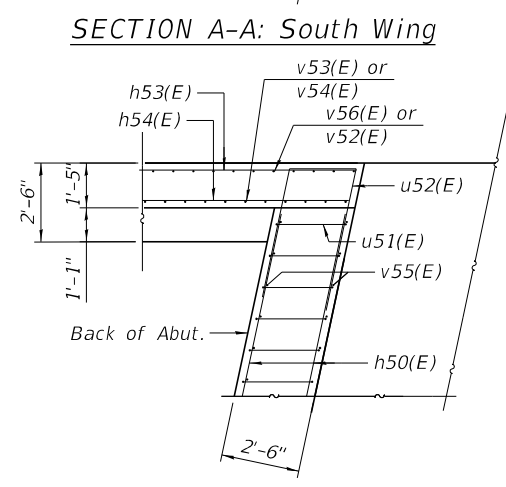
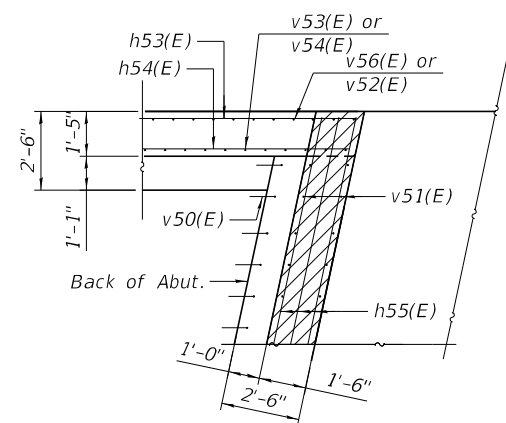
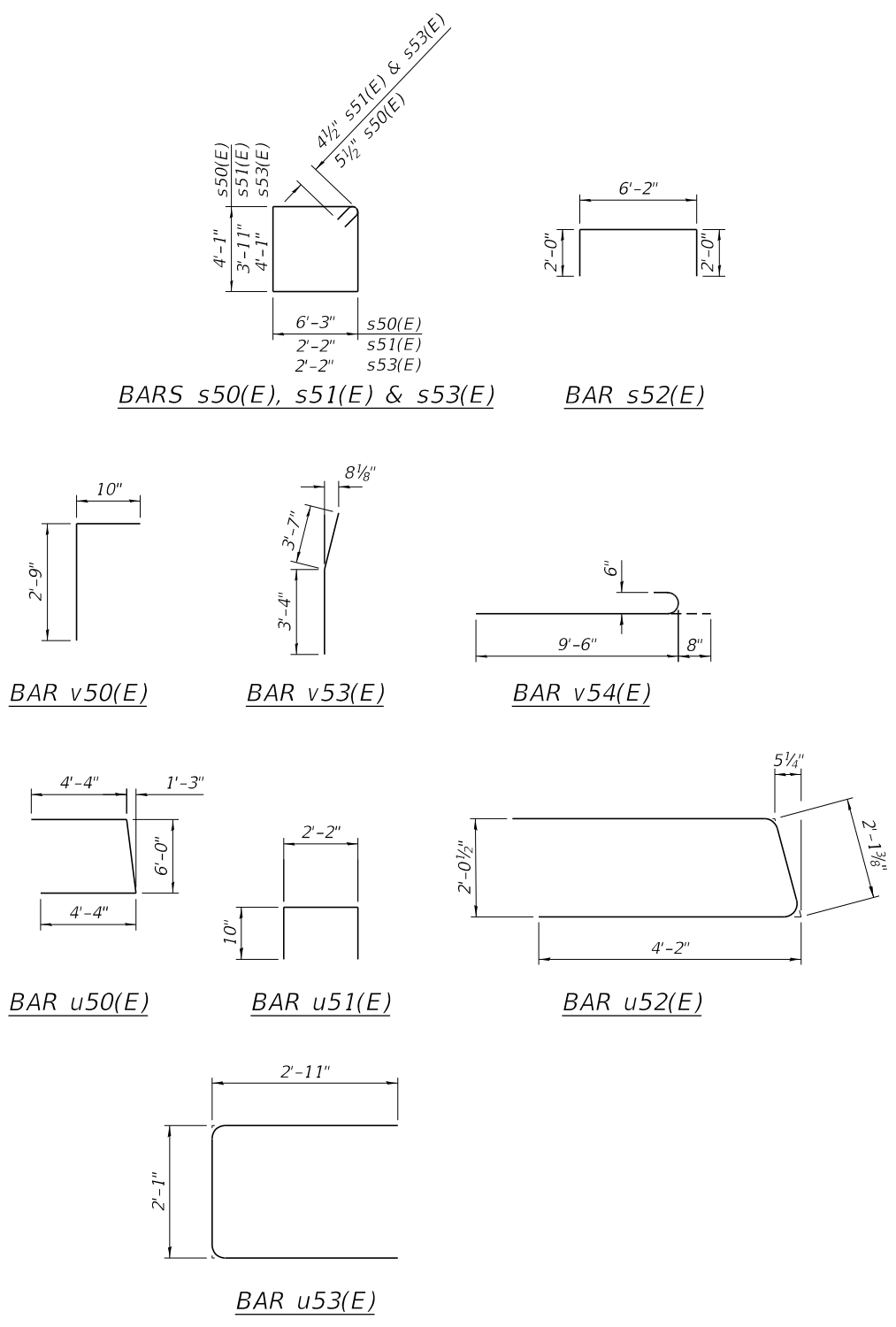
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**STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION**

**EAST ABUTMENT DETAILS AND BOM
 STRUCTURE NO. 060-0350 (EB)**

SHEET 168 OF 292 SHEETS

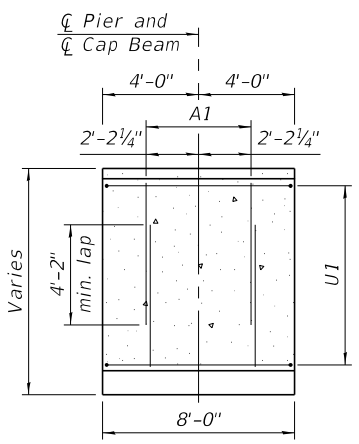
F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	381
			CONTRACT NO. 76190	
ILLINOIS FED. AID PROJECT				



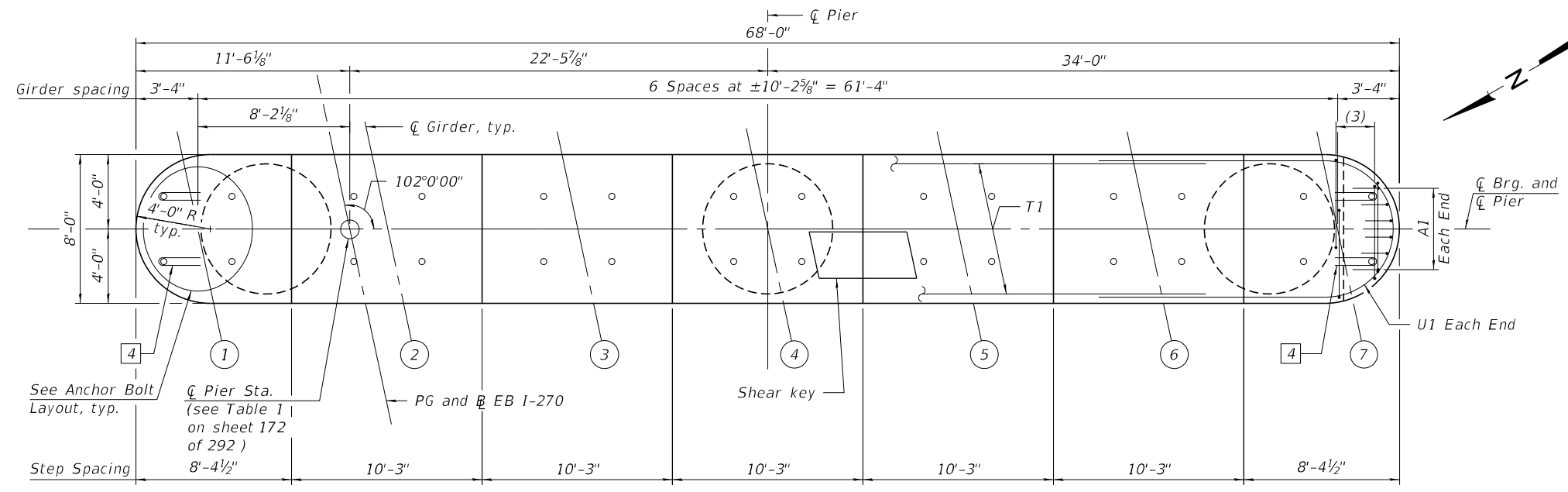
**EAST ABUTMENT
 BILL OF MATERIAL**

Bar	No.	Size	Length	Shape
h50(E)	12	#5	56'-11"	—
h53(E)	30	#4	17'-11"	—
h54(E)	15	#4	17'-7"	—
h55(E)	5	#6	59'-9"	—
h56(E)	15	#4	18'-2"	—
p50(E)	18	#7	59'-9"	—
p51(E)	20	#7	21'-6"	—
p52(E)	4	#7	31'-7"	—
s50(E)	60	#5	21'-7"	□
s51(E)	23	#4	12'-11"	□
s52(E)	32	#4	10'-2"	┌
s53(E)	23	#4	13'-3"	□
u50(E)	10	#6	14'-10"	┌
u51(E)	58	#5	3'-10"	┌
u52(E)	12	#5	10'-6"	┌
u53(E)	6	#4	7'-11"	┌
v50(E)	58	#5	3'-7"	L
v51(E)	116	#5	3'-0"	—
v52(E)	56	#5	6'-9"	—
v53(E)	56	#5	6'-11"	—
v54(E)	56	#6	10'-2"	—
v55(E)	116	#5	10'-2"	—
v56(E)	56	#5	11'-6"	—
Structure Excavation		Cu. Yd.	17	
Concrete Structures		Cu. Yd.	134.4	
Reinforcement bars, Epoxy Coated		Pound	11,950	
Furnishing Steel Piles HP 12x63		Foot	2,097	
Driving Piles		Foot	2,097	
Test Pile Steel HP 12x63		Each	1	
Pile Shoes		Each	20	
Temporary Sheet Piling		Sq. Ft.	5,910	
Concrete Sealer		Sq. Ft.	1,071	
Concrete Encasement		Cu. Yd.	7.0	

Note:
 For details of HP Piles and Concrete Encasement, see sheet 247 of 292.

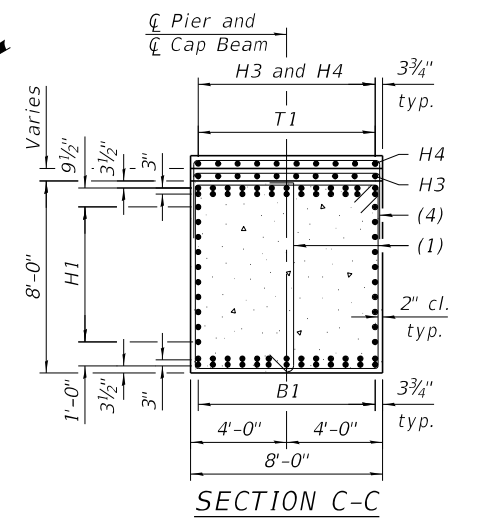


VIEW A-A
(T1 and (3) bars not shown for clarity)

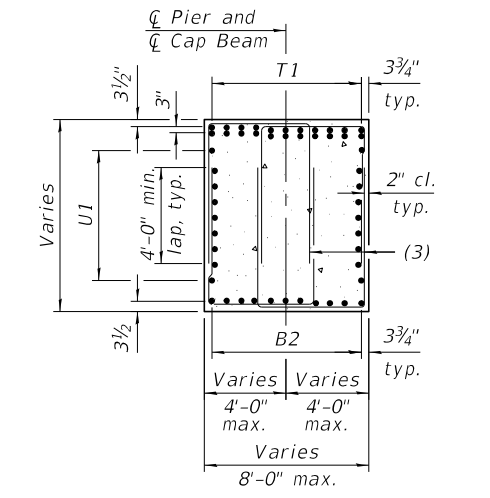


TOP PLAN

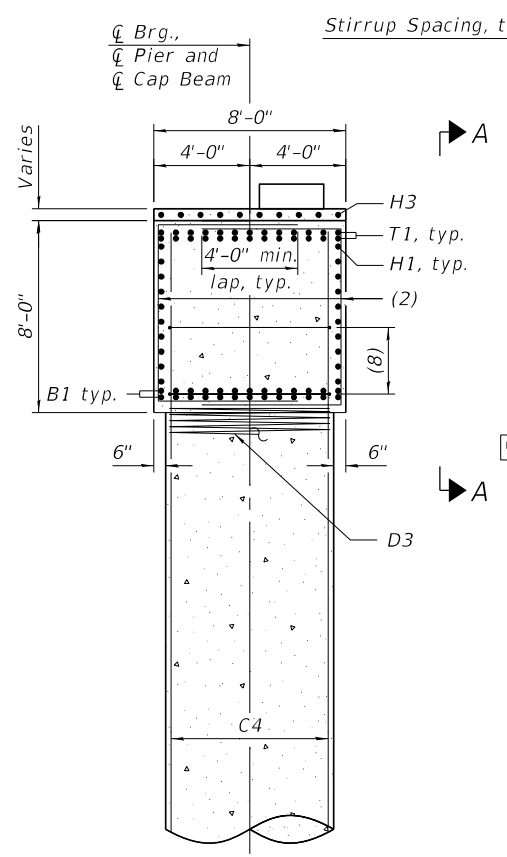
Note:
Space reinforcement in cap to miss anchor bolts. Pour steps monolithically with cap.



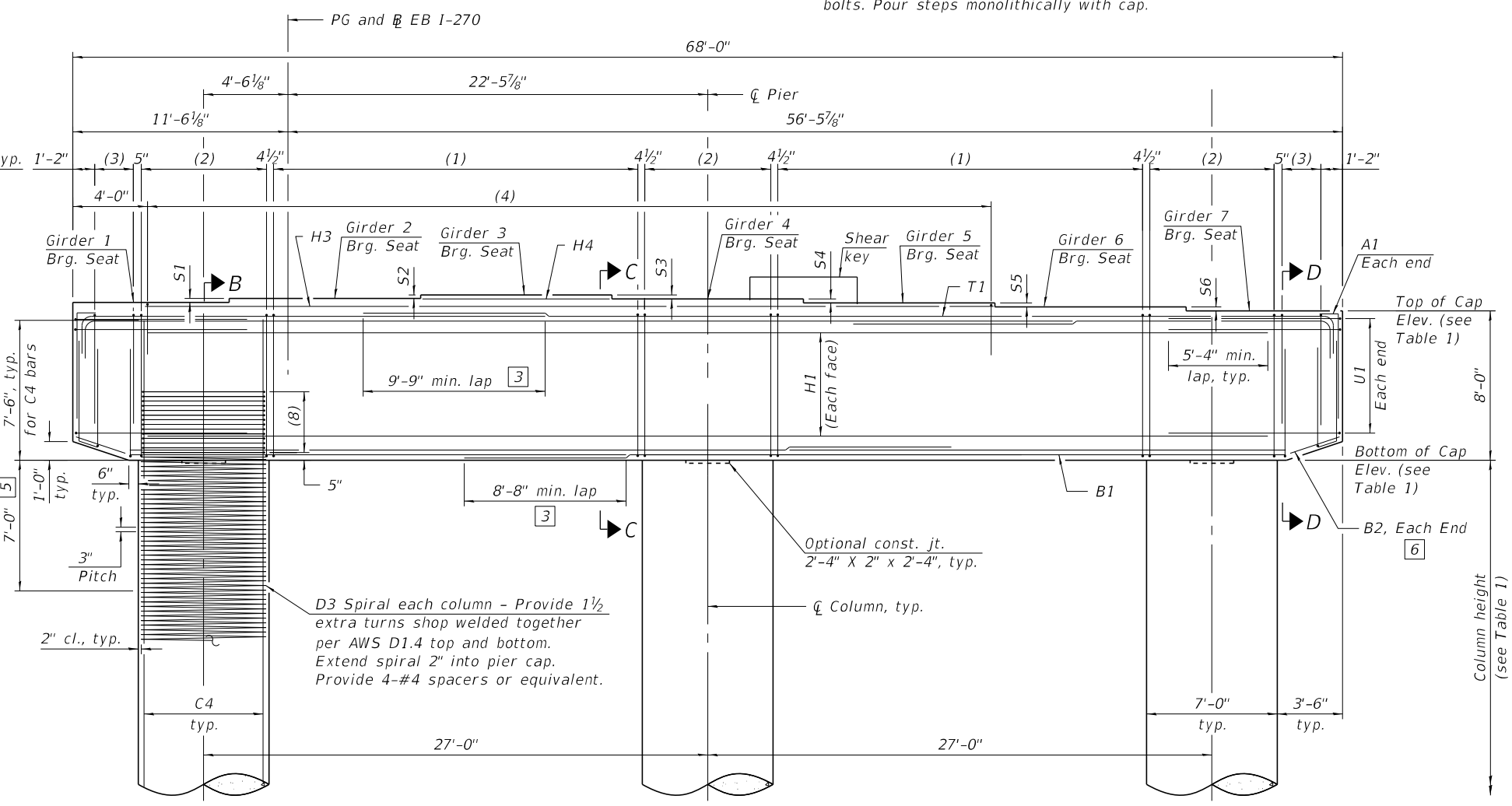
SECTION C-C



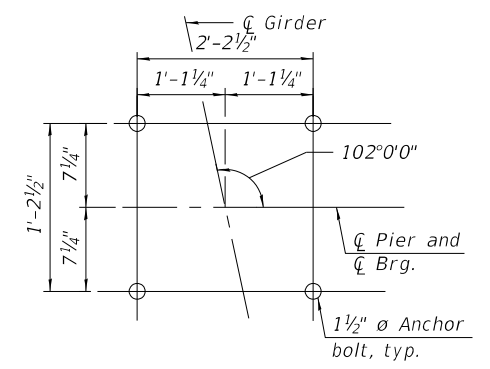
SECTION D-D



SECTION B-B



PART ELEVATION
(Looking East)



ANCHOR BOLT LAYOUT

- [3] Alternate placement cap top rebars to stagger the laps top and bottom
- [4] Provide 2 - R bar at each anchor shown. Place first R bar with top mat reinforcement and second R bar 6" below top U bar
- [5] No splicing of bars allowed in this region.
- [6] Field cut bars when needed to keep 2" clear concrete cover.

Notes:
For bar details and Bill of Materials, see sheets 173 and 174 of 292.
For column height, step height and all elevations, see Table 1 on sheet 172 of 292.
For bearing details, see sheet 156 of 292.
For bar callouts and shear key details, see sheet 172 of 292.

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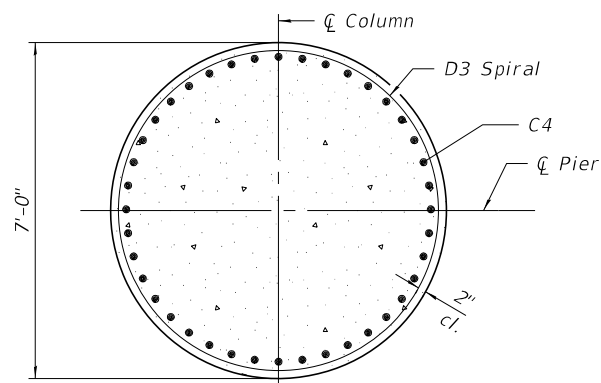
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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

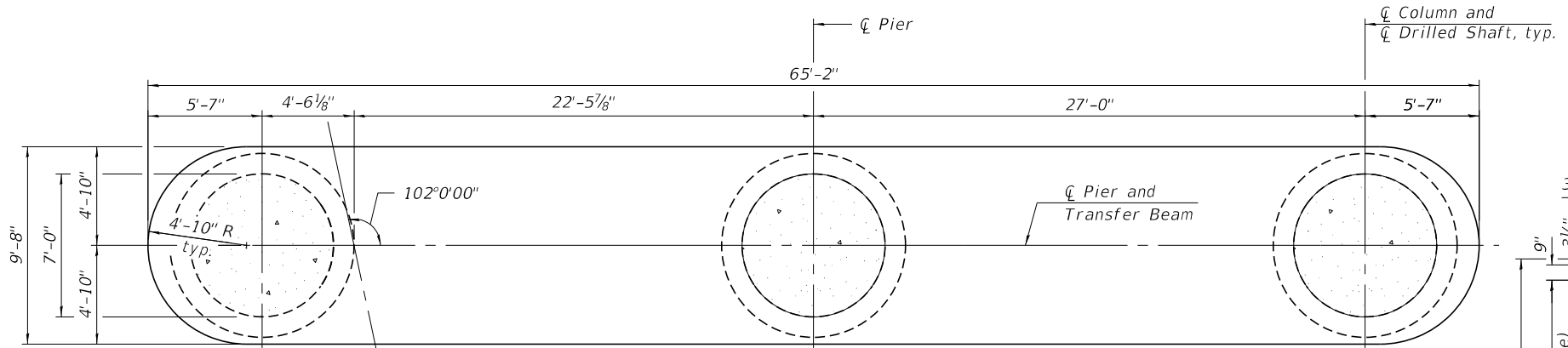
PIER 1 AND 2 PLAN AND ELEVATION - 1
STRUCTURE NO. 060-0350 (EB)

SHEET 169 OF 292 SHEETS

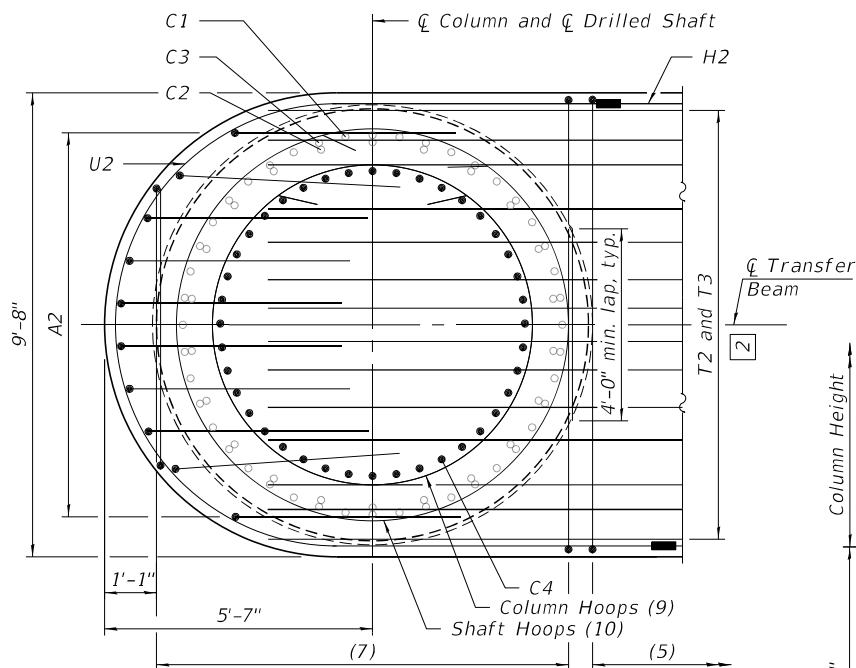
F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	382
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				



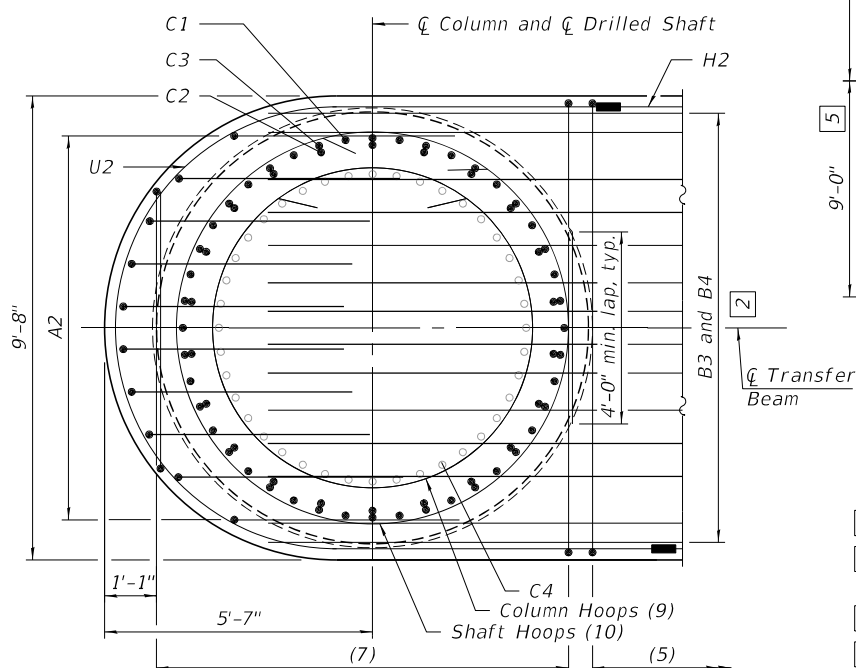
SECTION E-E



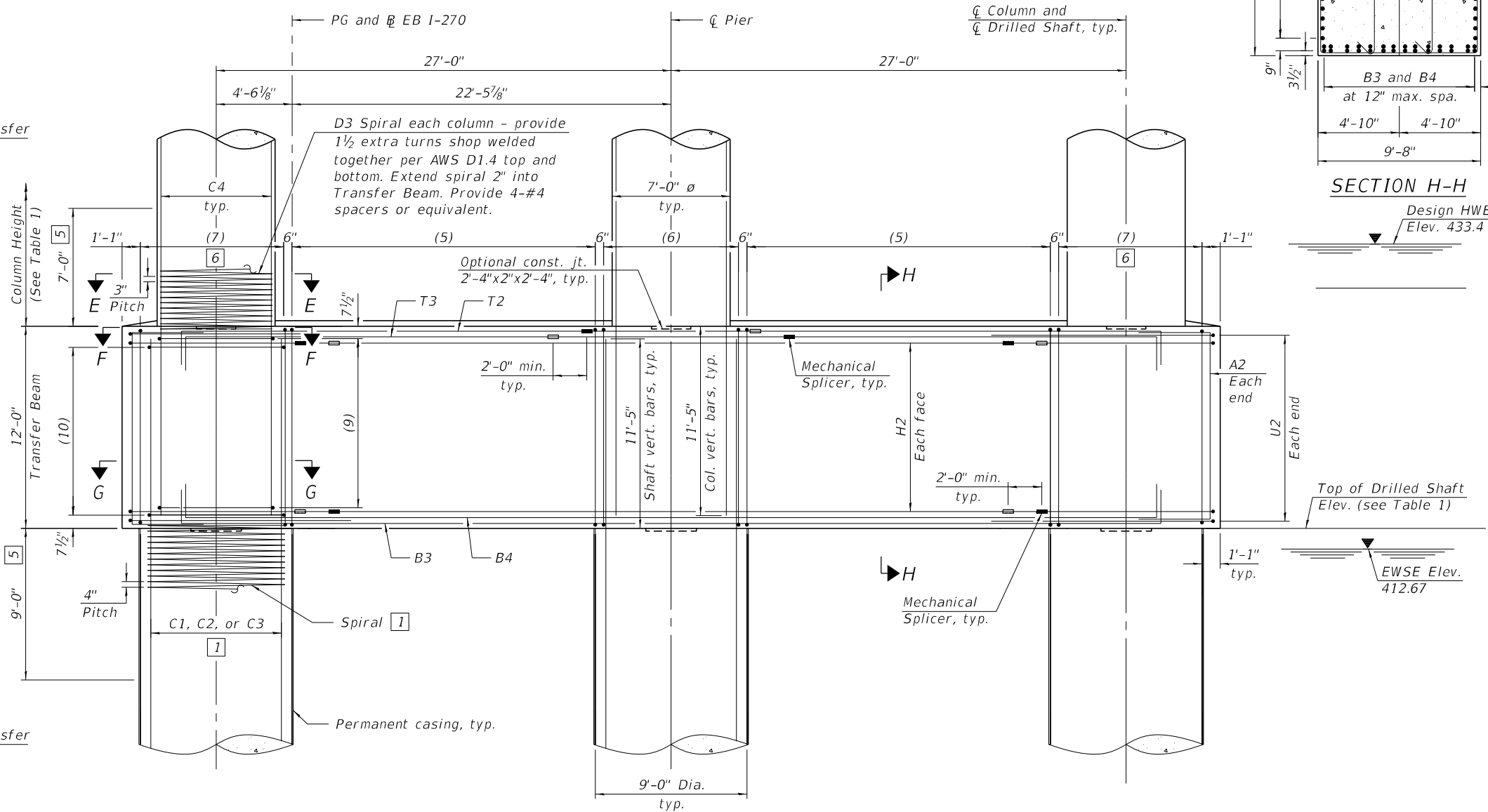
PLAN - TRANSFER BEAM



SECTION F-F



SECTION G-G



PART ELEVATION - TRANSFER BEAM
(Looking East)

SECTION H-H

- 1 See sheet 171 of 292 for additional rebar placement.
- 2 Adjust transfer beam rebar slightly when conflict with column or shaft vertical bar.
- 5 No splicing of bars allowed in this region.
- 6 Field cut bars when needed to keep 2" clear concrete cover.

Notes:
 For Top Plan and Part elevation, see sheet 169 of 292.
 For Drilled Shaft details, see sheet 171 of 292.
 For additional notes, bar details, and Bill of Material, see sheets 173 and 174 of 292.
 For Table 1, see sheet 172 of 292.
 For Mechanical Splicer details, see sheet 248 of 292.

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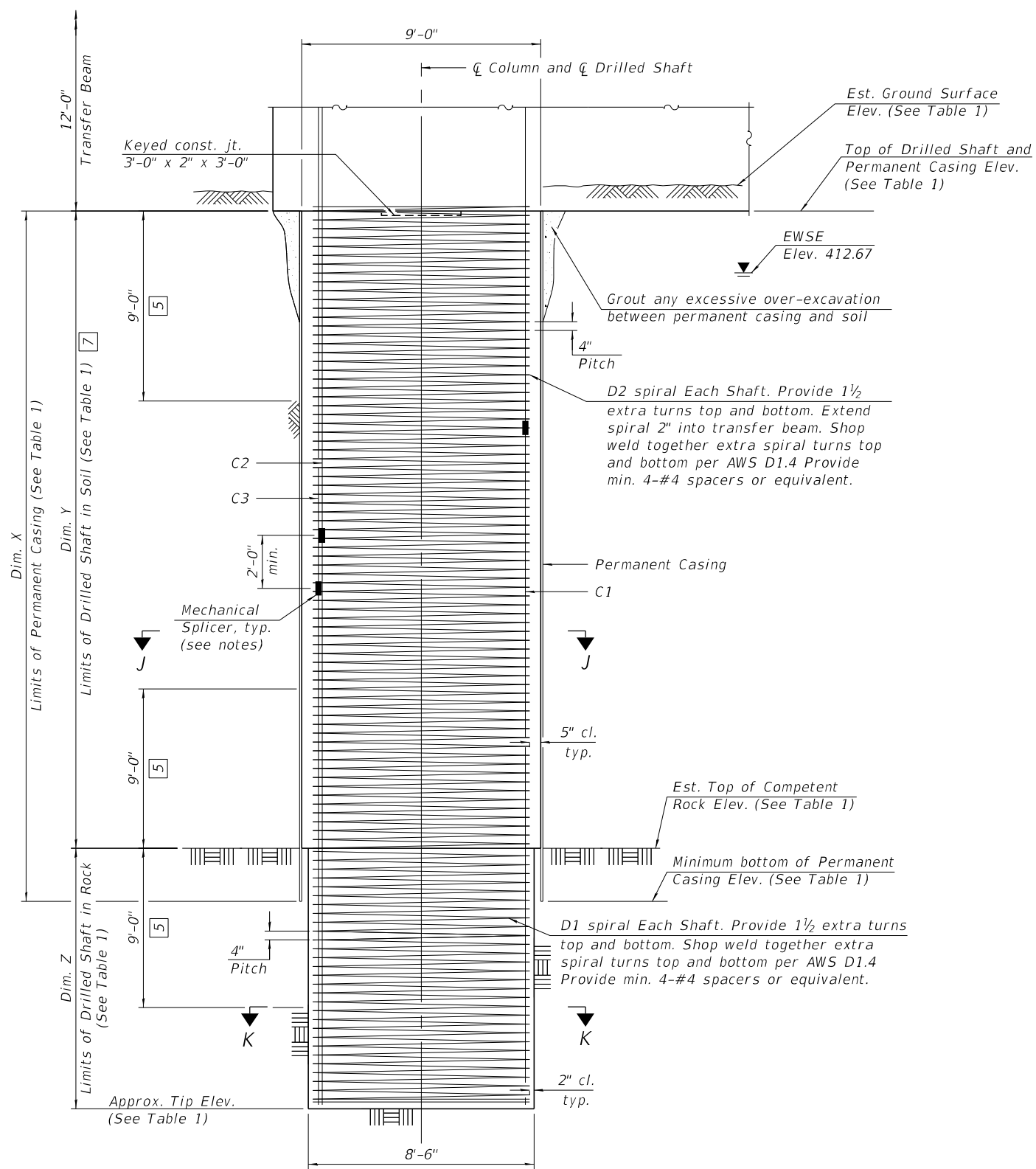
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STATE OF ILLINOIS
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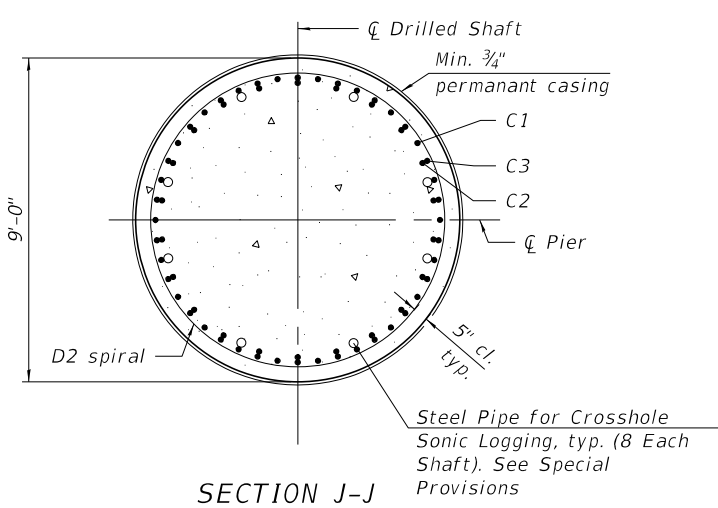
PIER 1 AND 2 PLAN AND ELEVATION - 2
 STRUCTURE NO. 060-0350 (EB)

SHEET 170 OF 292 SHEETS

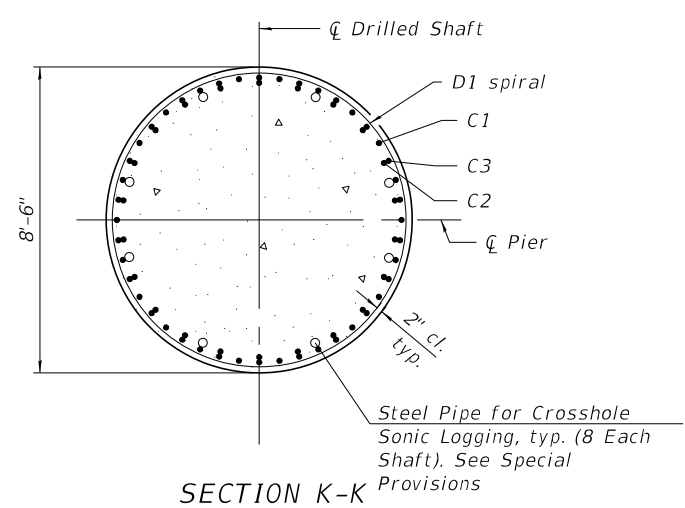
F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	383
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				



DRILLED SHAFT DETAIL
 (One shaft shown, three shafts required,
 one under each column)



SECTION J-J



SECTION K-K

- 5 No splicing of bars allowed in this region.
- 7 If the prevailing water surface elevation during construction is consistently different than estimated on the plans, the contractor may propose an adjustment to the top of the drilled shaft elevation as part of their installation procedure. The top of all drilled shafts within a substructure unit shall be constructed to the same elevation and extend above the prevailing water surface. The quantities and reinforcement detailing are based on the top of shaft and the estimated elevations shown and may change based on the actual elevations encountered at each shaft and the final top of shaft elevation.

Notes:
 The Contractor may propose a construction joint in the drilled shaft so separate pours can be made, if the shaft can be poured in the dry, subject to approval from the Engineer.
 The Permanent Casing is shown embedded 2 ft. into rock for estimate of quantities. Pay Limits for the Permanent Casing shall be based on the minimum length shown.
 Alternate every other Mechanical Splicer 2'-0" min.
 When splicing of spiral reinforcement is necessary, the spirals shall be provided with 1 1/2 extra turns at the ends to be spliced. These additional turns shall either be welded together according to AWS D1.4, or shall both terminate with a 135° standard hook.
 The Contractor is responsible for determining the casing thickness and the actual tip elevation to be used. See Article 516.06(d) of the Standard Specifications. Pay limits for the Permanent Casing shall be based on minimum length shown.
 Wet construction methods within the permanent casing may be required. The Contractor's installation procedure shall clearly address cleaning and inspection methods proposed for use with wet construction methods which ensure adequate end bearing on rock is achieved.
 For Top Plan and Part elevation, see sheet 169 of 292.
 For Transfer Beam details, see sheet 170 of 292.
 For additional notes, bar details, and Bill of Material, see sheets 173 and 174 of 292.
 For Table 1, see sheet 172 of 292.
 For Mechanical Splicer details, see sheet 248 of 292.

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**STATE OF ILLINOIS
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**PIER 1 AND 2 PLAN AND ELEVATION - 3
 STRUCTURE NO. 060-0350 (EB)**

SHEET 171 OF 292 SHEETS

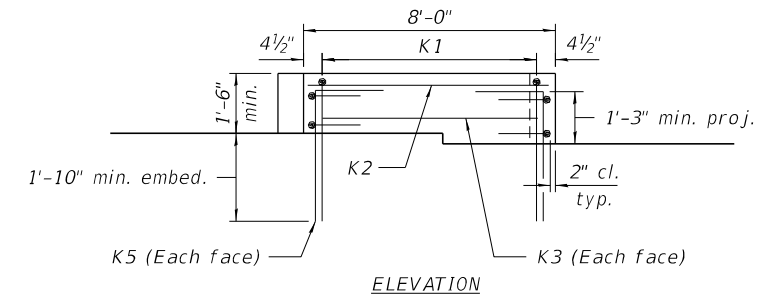
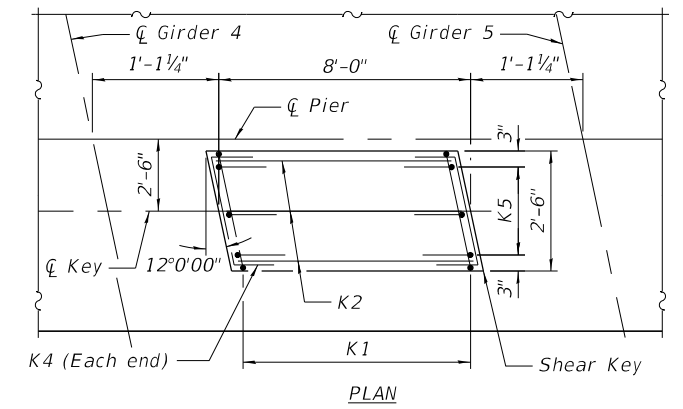
F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	384
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				

TABLE 1

	Pier 1	Pier 2	
Center Pier Station	1781+05.05	1782+51.72	
Bearing Seat Elevation	Girder 1	446.19	446.92
	Girder 2	446.38	447.12
	Girder 3	446.57	447.31
	Girder 4	446.36	447.10
	Girder 5	446.15	446.89
	Girder 6	445.94	446.68
	Girder 7	445.73	446.46
Top of Cap Elevation	445.73	446.46	
Bottom of Cap Elevation	437.73	438.46	
Column Height	7'-2 3/4"	5'-5 1/2"	
Top of Shaft Elevation	418.50	421.00	
Approx. Tip Elevation	360.50	359.50	
Est. Ground Surface Elevation	419.50	422.00	
Est. Top of Rock Elevation	386.00	385.00	
Min. bott. of Permanent Casing Elev.	384.00	383.00	
Dim. X	34'-6"	38'-0"	
Dim. Y	32'-6"	36'-0"	
Dim. Z	25'-6"	25'-6"	

TABLE 1 (CONT.)

Step Height	Pier 1	Pier 2
S1	2 3/8"	2 3/8"
S2	2 1/4"	2 1/4"
S3	2 1/2"	2 1/2"
S4	2 1/2"	2 1/2"
S5	2 1/2"	2 1/2"
S6	2 3/8"	2 3/8"



SHEAR KEY DETAILS

PIER 1

PIER 2

Mark	Bar Callouts	Bar Callouts
(1)	48 sets of 1-#6 s101(E) and 1-#6 s105(E) at 5" cts.	48 sets of 1-#6 s201(E) and 1-#6 s205(E) at 5" cts.
(2)	11 sets of 2-#6 s102(E) at 8" cts.	11 sets of 2-#6 s202(E) at 8" cts.
(3)	6 sets of 4-#6 s107(E) at 5" cts.	6 sets of 4-#6 s207(E) at 5" cts.
(4)	68-#6 s108(E) at abt. 8" cts.	68-#6 s208(E) at abt. 8" cts.
(5)	38 sets of 1-#6 s103(E) and 2-#6 s106(E) at 6" cts.	38 sets of 1-#6 s203(E) and 2-#6 s206(E) at 6" cts.
(6)	17 sets of 2-#6 s104(E) at 6" cts.	17 sets of 2-#6 s204(E) at 6" cts.
(7)	17 sets of 2-#6 s104(E) at 6" cts.	17 sets of 2-#6 s204(E) at 6" cts.
(8)	14-#7 hp102(E) hoops at 3" cts.	14-#7 hp202(E) hoops at 3" cts.
(9)	44-#7 hp102(E) hoops at 3" cts.	44-#7 hp202(E) hoops at 3" cts.
(10)	33-#7 hp101(E) hoops at 4" cts.	33-#7 hp201(E) hoops at 4" cts.
T1	2 layers of 13-#11 p101(E) or p102(E) at 7 3/8" cts.	2 layers of 13-#11 p201(E) or p202(E) at 7 3/8" cts.
T2	14 sets of 1-#11 p105(E) and 1-#11 p106(E) at 12" max.	14 sets of 1-#11 p205(E) and 1-#11 p206(E) at 12" max.
T3	14 sets of 1-#11 p107(E) and 1-#11 p108(E) at 12" max.	14 sets of 1-#11 p207(E) and 1-#11 p208(E) at 12" max.
B1	2 layers of 13-#11 p103(E) or p109(E) at 7 3/8" cts.	2 layers of 13-#11 p203(E) or p209(E) at 7 3/8" cts.
B2	13-#7 p104(E) at 7 3/8" cts.	13-#7 p204(E) at 7 3/8" cts.
B3	14 sets of 1-#11 p105(E) and 1-#11 p106(E) at 12" max.	14 sets of 1-#11 p205(E) and 1-#11 p206(E) at 12" max.
B4	14 sets of 1-#11 p107(E) and 1-#11 p108(E) at 12" max.	14 sets of 1-#11 p207(E) and 1-#11 p208(E) at 12" max.
H1	10-#8 h101(E) at 7 1/2" cts.	10-#8 h201(E) at 7 1/2" cts.
H2	18-#9 h102(E) at 7" cts.	18-#9 h202(E) at 7" cts.
H3	13-#6 h103(E) at abt. 7 3/8" cts.	13-#6 h203(E) at abt. 7 3/8" cts.
H4	13-#6 h104(E) at abt. 7 3/8" cts.	13-#6 h204(E) at abt. 7 3/8" cts.
A1	6 sets of 1-#7 u103(E) and 1-#7 u104(E) at 10 1/2" cts.	6 sets of 1-#7 u203(E) and 1-#7 u204(E) at 10 1/2" cts.
A2	10-#7 u105(E) at 10 3/4" cts.	10-#7 u205(E) at 10 3/4" cts.
U1	11-#8 u101(E) spaced with h101(E) and p101(E)	11-#8 u201(E) spaced with h201(E) and p201(E)
U2	20-#9 u102(E) splice with h102(E) and space with p105(E)	20-#9 u202(E) splice with h202(E) and space with p205(E)
C1	22 sets of 1-#14 v101(E) and 1-#14 v102(E) (top)	22 sets of 1-#14 v201(E) and 1-#14 v202(E) (top)
C2	22 sets of 1-#14 v103(E) and 1-#14 v104(E) (Top) Bundle w/C3	22 sets of 1-#14 v203(E) and 1-#14 v204(E) Bundled w/C3
C3	22 sets of 1-#14 v105(E) and 1-#14 v106(E) (Top) Bundle w/C2	22 sets of 1-#14 v205(E) and 1-#14 v206(E) (Top) Bundle w/C2
C4	40-#11 v107(E) equally spaced	40-#11 v207(E) equally spaced
D1	#7 sp101(E) at 4" pitch	#7 sp201(E) at 4" pitch
D2	#7 sp102(E) at 4" pitch	#7 sp202(E) at 4" pitch
D3	#7 sp103(E) at 3" pitch	#7 sp203(E) at 3" pitch
K1	15-#5 s109(E) spaced at 6" cts.	15-#5 s209(E) spaced at 6" cts.
K2	3-#5 h105(E) spaced with n101(E)	3-#5 h205(E) spaced with n201(E)
K3	1-#5 h105(E) each face	1-#5 h205(E) each face
K4	2-#5 h106(E) each face	2-#5 h206(E) each face
K5	3-#5 n101(E) at 12" cts., each face	3-#5 n201(E) at 12" cts., each face
R1	#5 r101(E)	#5 r201(E)

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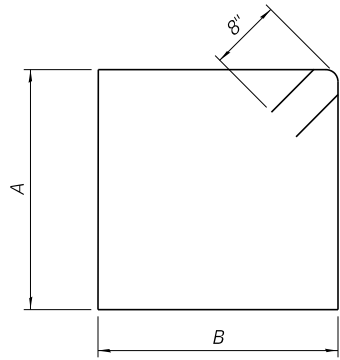
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STATE OF ILLINOIS
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PIER 1 AND 2 REINFORCEMENT TABLES - 1
STRUCTURE NO. 060-0350 (EB)

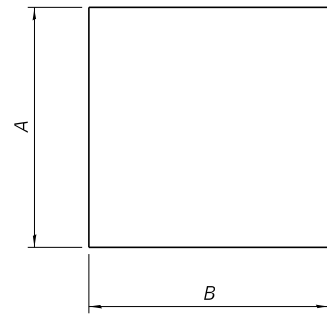
SHEET 172 OF 292 SHEETS

F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	385
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				



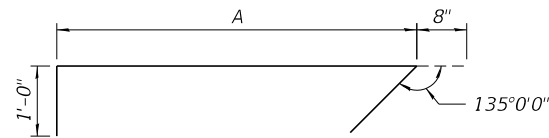
BARS s101(E) & s103(E)
BARS s201(E) & s203(E)

Bars	A	B
s101(E) & s201(E)	7'-8"	7'-8"
s103(E) & s203(E)	11'-8"	9'-4"



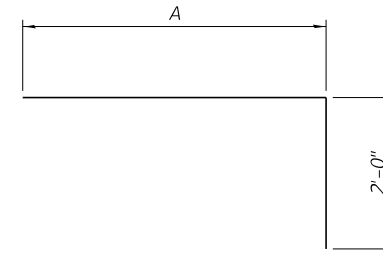
BARS s102(E), s104(E), AND s107(E)
BARS s202(E), s204(E), AND s207(E)

Bars	A	B
s102(E) & s202(E)	7'-8"	5'-10"
s104(E) & s204(E)	11'-8"	6'-8"
s107(E) & s207(E)	4'-10"	5'-10"



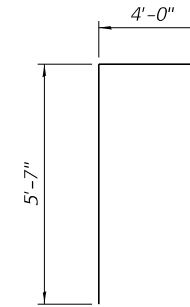
BARS s105(E) & s106(E)
BARS s205(E) & s206(E)

Bars	A
s105(E) & s205(E)	7'-8"
s106(E) & s206(E)	11'-8"

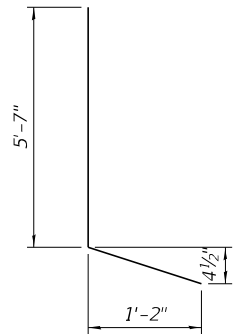


BARS p101(E) & p102(E)
BARS p105(E) & p106(E)
BARS p107(E) & p108(E)
BARS p201(E) & p202(E)
BARS p205(E) & p206(E)
BARS p207(E) & p208(E)

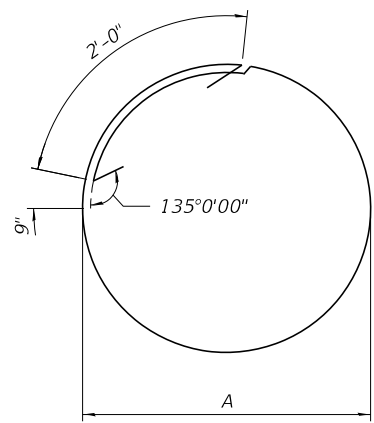
Bars	A
p101(E) & p201(E)	24'-0"
p102(E) & p202(E)	53'-0"
p105(E) & p205(E)	34'-3"
p106(E) & p206(E)	23'-3"
p107(E) & p207(E)	33'-9"
p108(E) & p208(E)	22'-9"



BARS u103(E)
BARS u203(E)

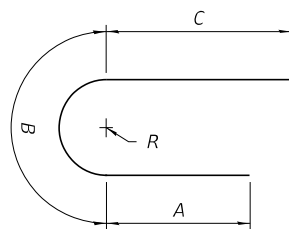


BARS u104(E)
BARS u204(E)



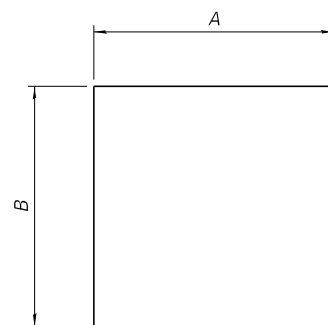
BARS hp101(E) & hp102(E)
BARS hp201(E) & hp202(E)

Bars	A
hp101(E) & hp201(E)	8'-2"
hp102(E) & hp202(E)	6'-8"



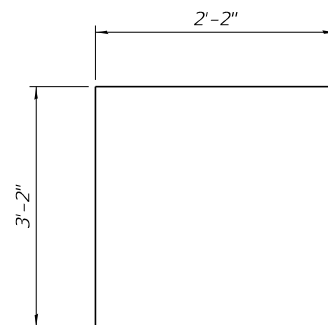
BARS u101(E) & u102(E)
BARS u201(E) & u202(E)

Bars	A	B	C	R
u101(E) & u201(E)	5'-4"	11'-9 3/8"	5'-4"	3'-9"
u102(E) & u202(E)	5'-9"	14'-5"	7'-9"	4'-7"

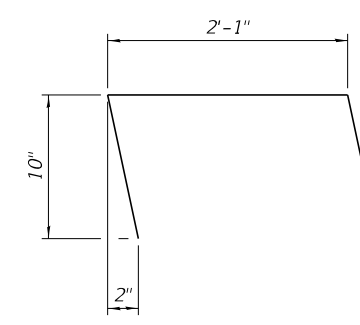


BARS u105(E) & u205(E)
BARS s108(E) & s208(E)

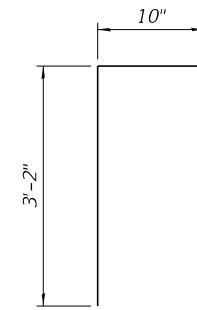
Bars	A	B
u105(E) & u205(E)	11'-6"	4'-7"
s108(E) & s208(E)	7'-8"	2'-9"



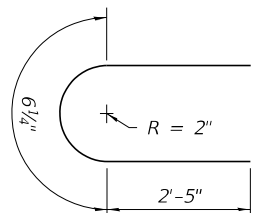
BARS s109(E)
BARS s209(E)



BARS h106(E)
BARS h206(E)



BARS n101(E)
BARS n201(E)



BARS r101(E)
BARS r201(E)

**PIER 1
BILL OF MATERIAL**

Bar	No.	Size	Length	Shape
h101(E)	20	#8	60'-0"	————
h102(E)	36	#9	42'-0"	————
h103(E)	13	#6	45'-0"	————
h104(E)	13	#6	9'-11"	————
h105(E)	5	#5	7'-8"	————
h106(E)	4	#5	3'-9"	┌┐
hp101(E)	99	#7	29'-2"	○
hp102(E)	174	#7	24'-5"	○
n101(E)	6	#5	4'-0"	┌
p101(E)	26	#11	26'-0"	┌
p102(E)	26	#11	55'-0"	┌
p103(E)	26	#11	44'-6"	————
p104(E)	26	#7	3'-0"	————
p105(E)	28	#11	36'-3"	┌
p106(E)	28	#11	25'-3"	┌
p107(E)	28	#11	35'-9"	┌
p108(E)	28	#11	24'-9"	┌
p109(E)	26	#11	26'-2"	————
r101(E)	8	#5	5'-4"	└
s101(E)	96	#6	32'-0"	□
s102(E)	66	#6	19'-4"	□
s103(E)	76	#6	43'-4"	□
s104(E)	102	#6	25'-0"	□
s105(E)	96	#6	9'-4"	┌
s106(E)	152	#6	13'-4"	┌
s107(E)	48	#6	16'-6"	□
s108(E)	68	#6	13'-2"	□
s109(E)	13	#5	8'-6"	□
** sp101(E)	3	#7	25'-4"	ㄨㄨㄨ
** sp102(E)	3	#7	37'-8"	ㄨㄨㄨ
** sp103(E)	3	#7	7'-7"	ㄨㄨㄨ
u101(E)	22	#8	22'-5"	└
u102(E)	40	#9	27'-11"	└
u103(E)	12	#7	9'-7"	┌
u104(E)	12	#7	6'-10"	└
u105(E)	20	#7	20'-8"	□
v101(E)	66	#14	45'-0"	————
v102(E)	66	#14	29'-3"	————
v103(E)	66	#14	42'-6"	————
v104(E)	66	#14	31'-9"	————
v105(E)	66	#14	40'-0"	————
v106(E)	66	#14	34'-3"	————
v107(E)	120	#11	26'-3"	————

** Length is height of spiral.

Note:

An additional 5'-0" was added to sp102(E), v102(E), v104(E), and v106(E) for possible change in drilled shaft or rock socket length if required. The additional length shall be cut off.

**PIER 1
BILL OF MATERIAL (CONT.)**

Structural Excavation	Cu. Yd.	35
Concrete Structures	Cu. Yd.	470.4
Reinforcement Bars, Epoxy Coated	Pound	254,930
Permanent Casing	Foot	104
Drilled Shaft in Soil	Cu. Yd.	230
Drilled Shaft in Rock	Cu. Yd.	161
Crosshole Sonic Logging Access Ducts	Foot	174
Crosshole Sonic Logging Testing	Each	3
Thermal Integrity Profile Testing	Each	0
Thermal Integrity Profile Data Collection	Foot	174

**PIER 2
BILL OF MATERIAL**

Bar	No.	Size	Length	Shape
h201(E)	20	#8	60'-0"	————
h202(E)	36	#9	42'-0"	————
h203(E)	13	#6	45'-0"	————
h204(E)	13	#6	9'-11"	————
h205(E)	5	#5	7'-8"	————
h206(E)	4	#5	3'-9"	┌┐
hp201(E)	99	#7	29'-2"	○
hp202(E)	174	#7	24'-5"	○
n201(E)	6	#5	4'-0"	┌
p201(E)	26	#11	26'-0"	┌
p202(E)	26	#11	55'-0"	┌
p203(E)	26	#11	44'-6"	————
p204(E)	26	#7	3'-0"	————
p205(E)	28	#11	36'-3"	┌
p206(E)	28	#11	25'-3"	┌
p207(E)	28	#11	35'-9"	┌
p208(E)	28	#11	24'-9"	┌
p209(E)	26	#11	26'-2"	————
r201(E)	8	#5	5'-4"	└
s201(E)	96	#6	32'-0"	□
s202(E)	66	#6	19'-4"	□
s203(E)	76	#6	43'-4"	□
s204(E)	102	#6	25'-0"	□
s205(E)	96	#6	9'-4"	┌
s206(E)	152	#6	13'-4"	┌
s207(E)	48	#6	16'-6"	□
s208(E)	68	#6	13'-2"	□
s209(E)	13	#5	8'-6"	□
** sp201(E)	3	#7	25'-4"	ㄨㄨㄨ
** sp202(E)	3	#7	41'-2"	ㄨㄨㄨ
** sp203(E)	3	#7	5'-10"	ㄨㄨㄨ
u201(E)	22	#8	22'-5"	└
u202(E)	40	#9	27'-11"	└
u203(E)	12	#7	9'-7"	┌
u204(E)	12	#7	6'-10"	└
u205(E)	20	#7	20'-8"	□
v201(E)	66	#14	45'-0"	————
v202(E)	66	#14	32'-9"	————
v203(E)	66	#14	42'-6"	————
v204(E)	66	#14	35'-3"	————
v205(E)	66	#14	40'-0"	————
v206(E)	66	#14	37'-9"	————
v207(E)	120	#11	24'-5"	————

** Length is height of spiral.

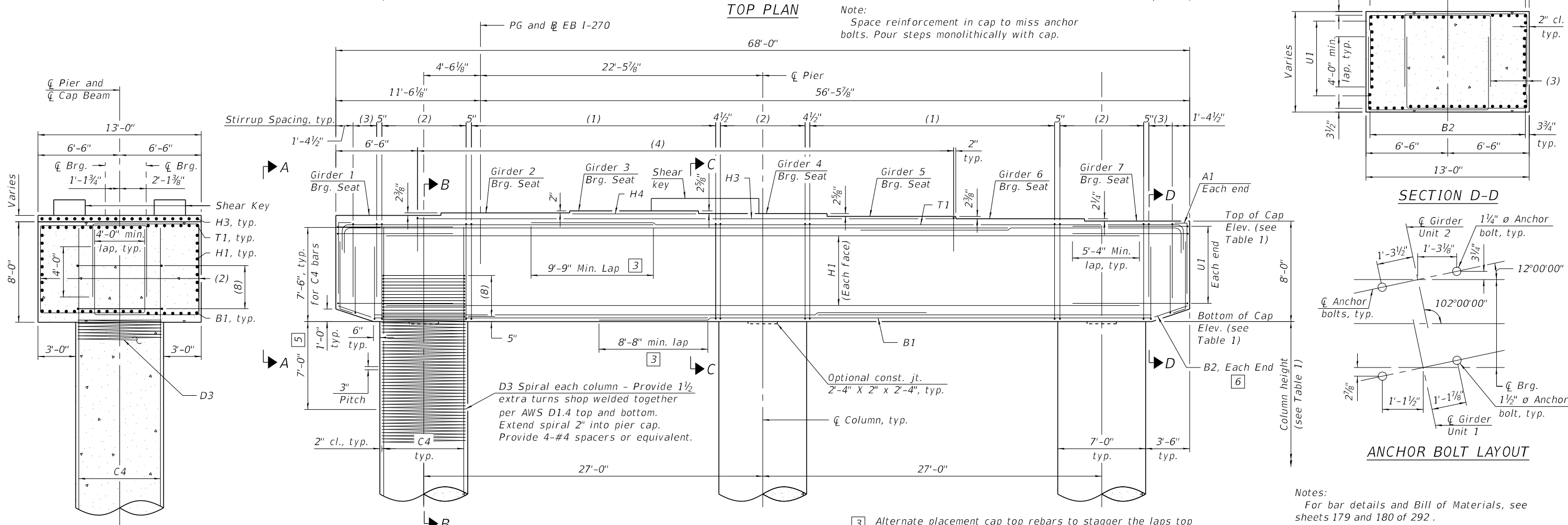
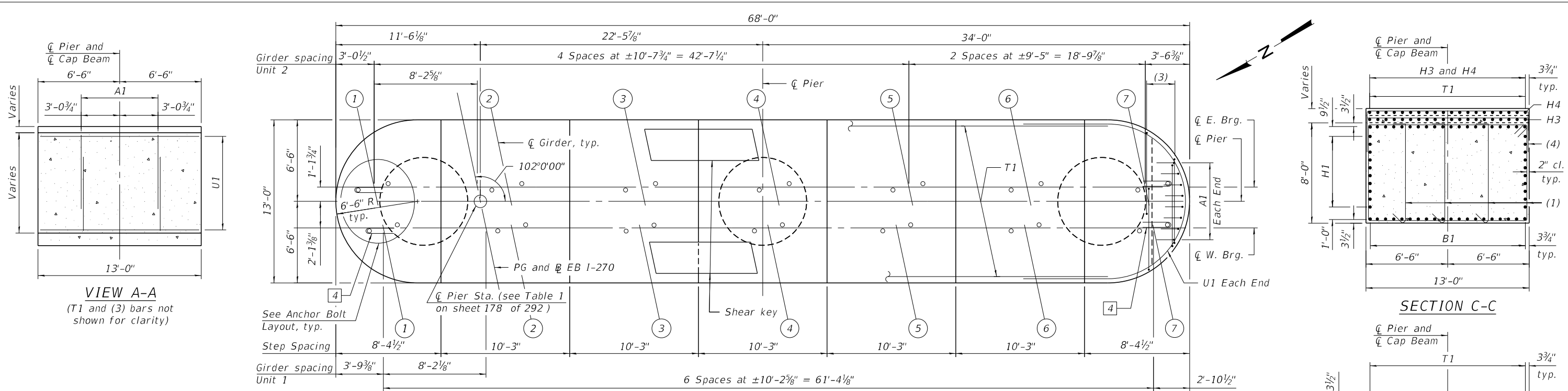
Note:

An additional 5'-0" was added to sp202(E), v202(E), v204(E), and v206(E) for possible change in drilled shaft or rock socket length if required. The additional length shall be cut off.

**PIER 2
BILL OF MATERIAL (CONT.)**

Structural Excavation	Cu. Yd.	35
Concrete Structures	Cu. Yd.	462.9
Reinforcement Bars, Epoxy Coated	Pound	259,820
Permanent Casing	Foot	114
Drilled Shaft in Soil	Cu. Yd.	255
Drilled Shaft in Rock	Cu. Yd.	161
Crosshole Sonic Logging Access Ducts	Foot	185
Crosshole Sonic Logging Testing	Each	3
Thermal Integrity Profile Testing	Each	1
Thermal Integrity Profile Data Collection	Foot	185

Note:
For bar details, see sheet 173 of 292.



- [3] Alternate placement cap top rebars to stagger the laps top and bottom
- [4] Provide 2 - R bar at each anchor shown. Place first R bar with top mat reinforcement and second R bar 6" below top U bar
- [5] No splicing of bars allowed in this region.
- [6] Field cut bars when needed to keep 2" clear concrete cover.

Notes:
 For bar details and Bill of Materials, see sheets 179 and 180 of 292.
 For column height, step height and all elevations, see Table 1 on sheet 178 of 292.
 For Unit 1 bearing details, see sheet 154 of 292.
 For Unit 2 bearing details, see sheet 156 of 292.
 For bar callouts and shear key details, see sheet 178 of 292.

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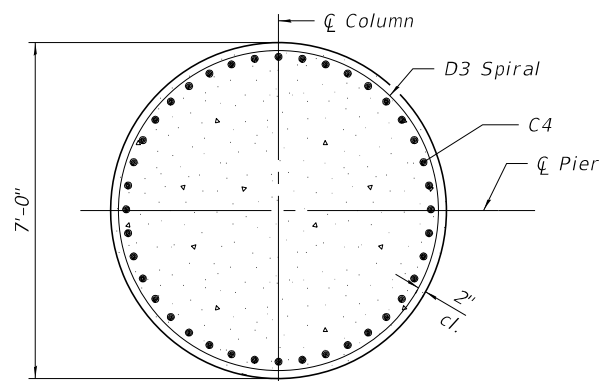
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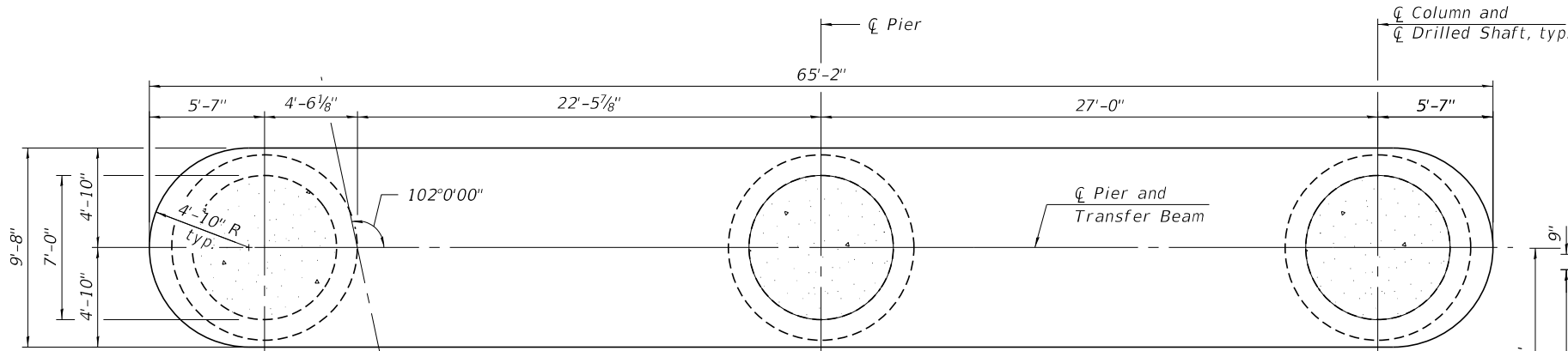
PIER 3 PLAN AND ELEVATION - 1
STRUCTURE NO. 060-0350 (EB)

SHEET 175 OF 292 SHEETS

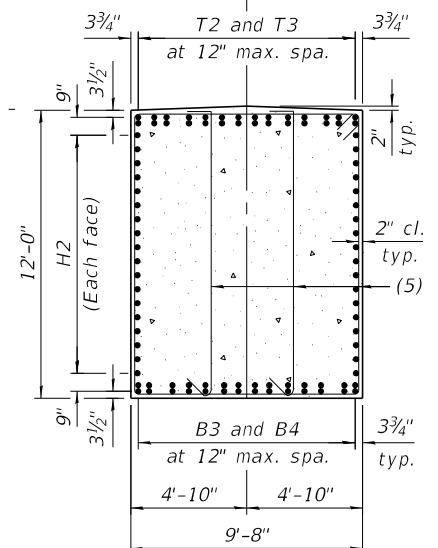
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	388
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				



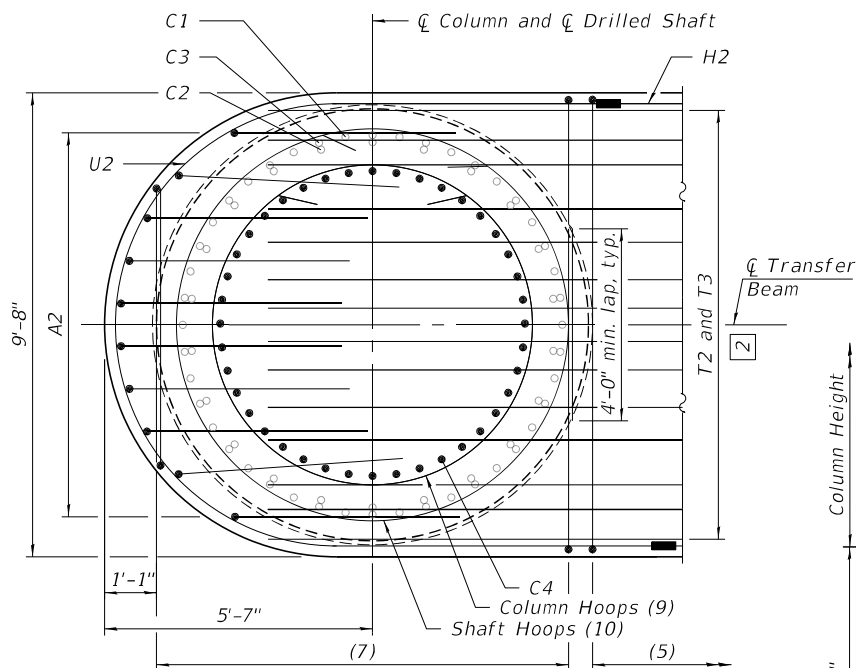
SECTION E-E



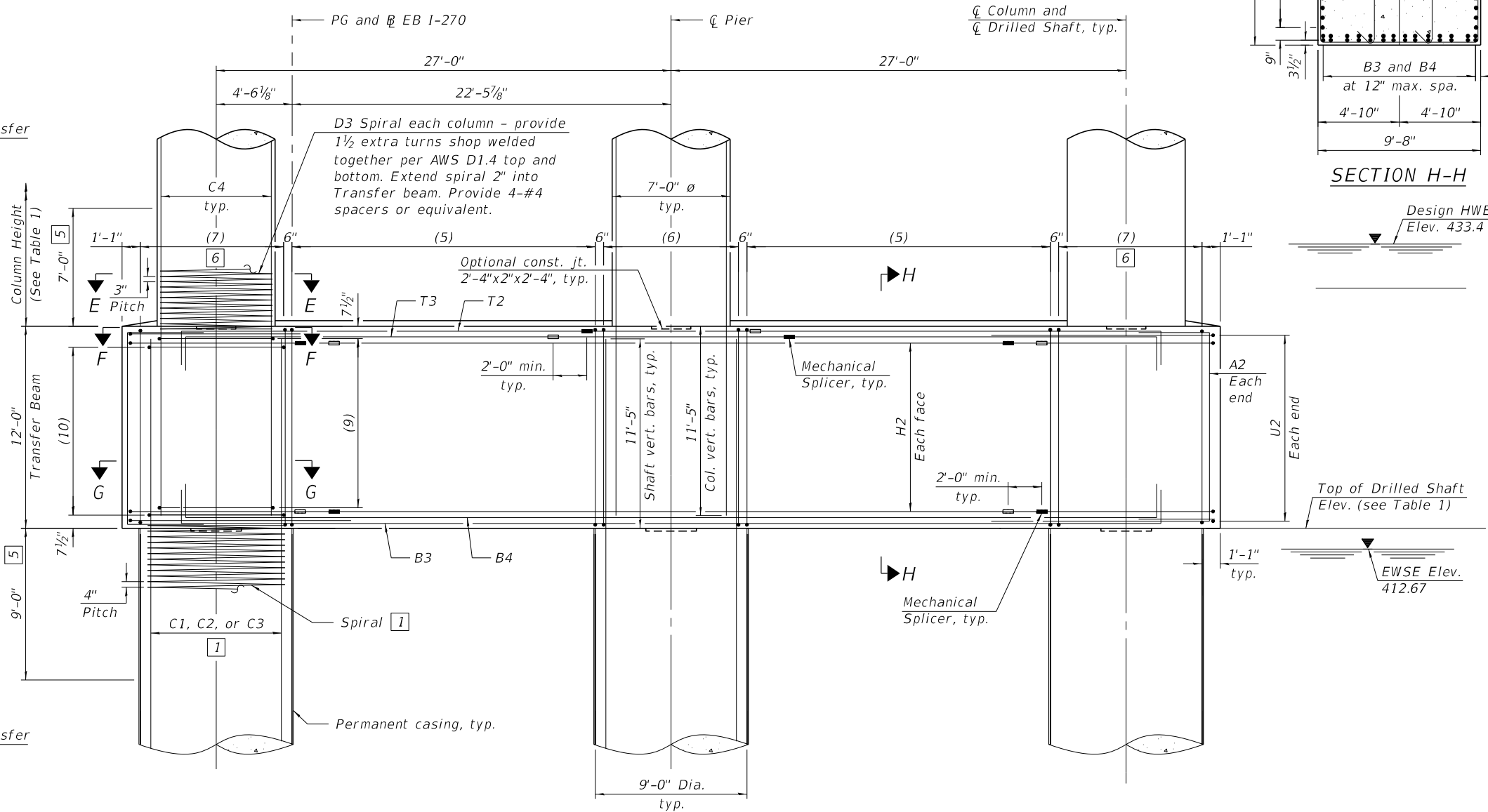
PLAN - TRANSFER BEAM



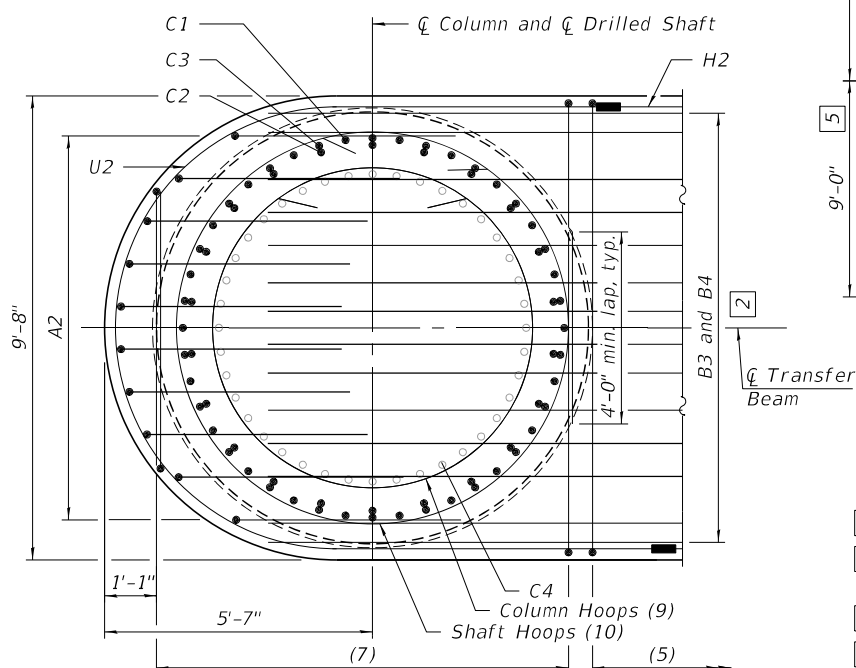
SECTION H-H



SECTION F-F



PART ELEVATION - TRANSFER BEAM
(Looking East)



SECTION G-G

- 1 See sheet 177 of 292 for additional rebar placement.
- 2 Adjust transfer beam rebar slightly when conflict with column or shaft vertical bar.
- 5 No splicing of bars allowed in this region.
- 6 Field cut bars when needed to keep 2" clear concrete cover.

Notes:
 For Top Plan and Part elevation, see sheet 175 of 292.
 For Drilled Shaft details, see sheet 171 of 292.
 For additional notes, bar details, and Bill of Material, see sheets 179 and 180 of 292.
 For Table 1, see sheet 178 of 292.
 For Mechanical Splicer details, see sheet 248 of 292.

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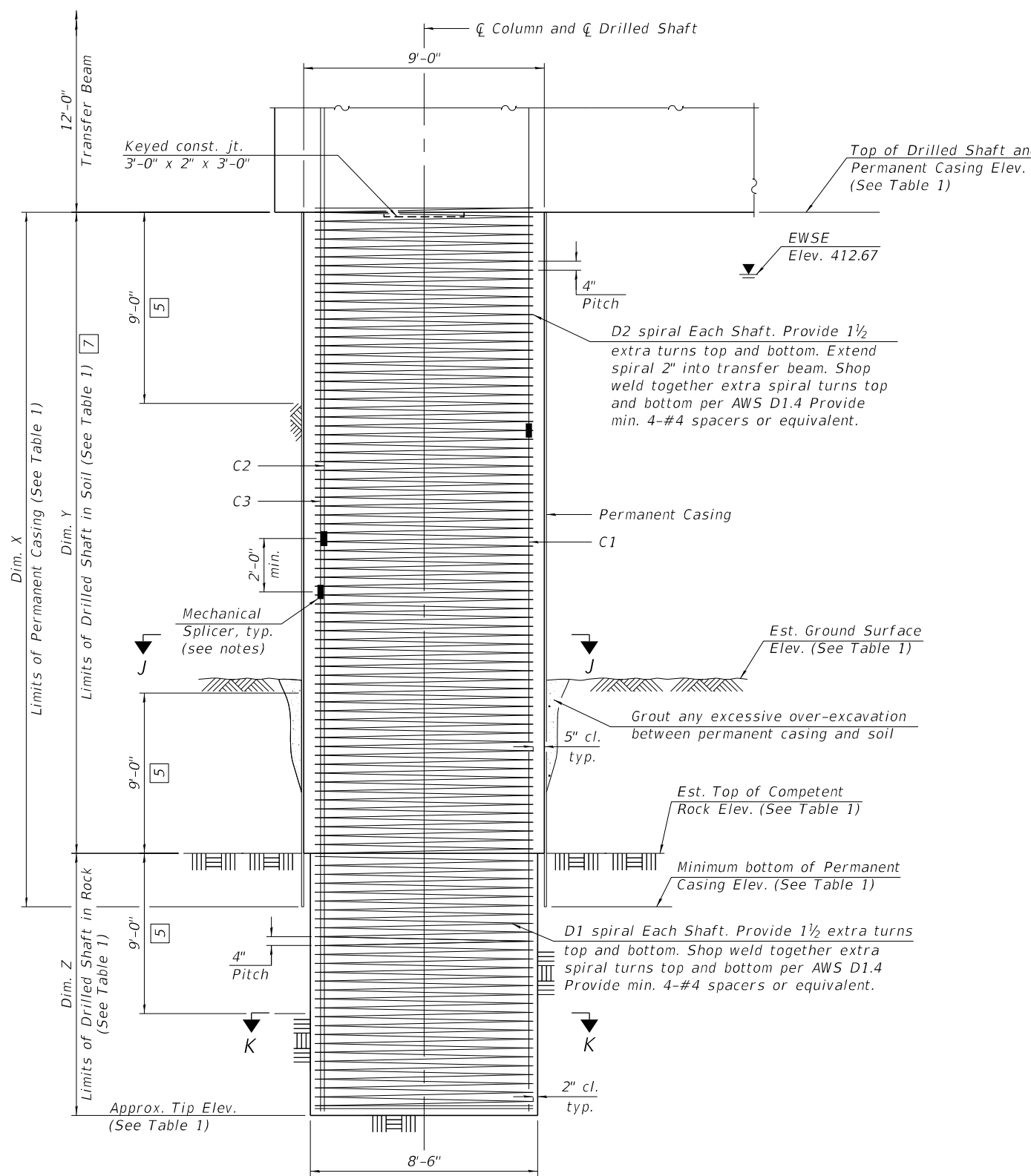
STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION

PIER 3 PLAN AND ELEVATION - 2
 STRUCTURE NO. 060-0350 (EB)

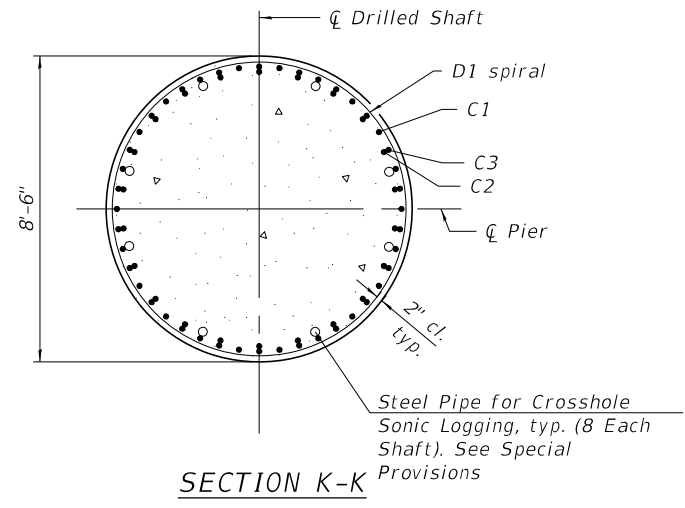
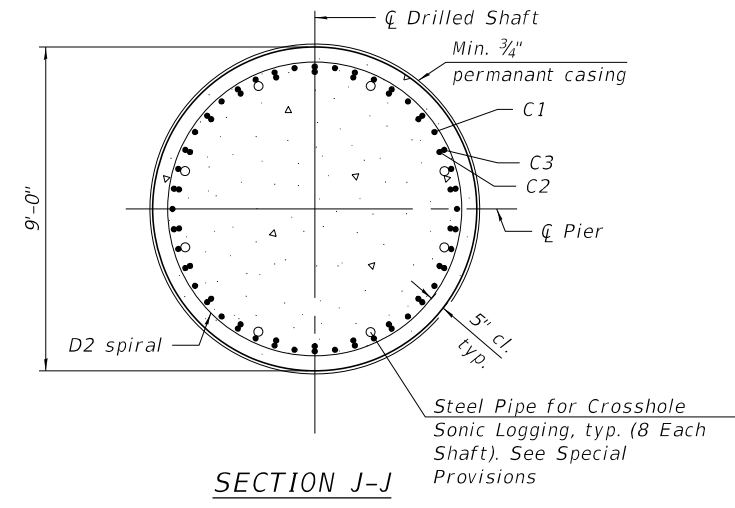
SHEET 176 OF 292 SHEETS

F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	389
CONTRACT NO. 76190				

ILLINOIS FED. AID PROJECT



DRILLED SHAFT DETAIL
(One shaft shown, three shafts required, one under each column)



- 5 No splicing of bars allowed in this region.
- 7 If the prevailing water surface elevation during construction is consistently different than estimated on the plans, the contractor may propose an adjustment to the top of the drilled shaft elevation as part of their installation procedure. The top of all drilled shafts within a substructure unit shall be constructed to the same elevation and extend above the prevailing water surface. The quantities and reinforcement detailing are based on the top of shaft and the estimated elevations shown and may change based on the actual elevations encountered at each shaft and the final top of shaft elevation.

Notes:
 The Contractor may propose a construction joint in the drilled shaft so separate pours can be made, if the shaft can be poured in the dry, subject to approval from the Engineer.
 The Permanent Casing is shown embedded 2 ft. into rock for estimate of quantities. Pay Limits for the Permanent Casing shall be based on the minimum length shown.
 Alternate every other Mechanical Splicer 2'-0" min.
 When splicing of spiral reinforcement is necessary, the spirals shall be provided with 1 1/2 extra turns at the ends to be spliced. These additional turns shall either be welded together according to AWS D1.4, or shall both terminate with a 135° standard hook.
 The Contractor is responsible for determining the casing thickness and the actual tip elevation to be used. See Article 516.06(d) of the Standard Specifications. Pay limits for the Permanent Casing shall be based on minimum length shown.
 Wet construction methods within the permanent casing may be required. The Contractor's installation procedure shall clearly address cleaning and inspection methods proposed for use with wet construction methods which ensure adequate end bearing on rock is achieved.
 For Top Plan and Part elevation, see sheet 175 of 292.
 For Transfer Beam details, see sheet 176 of 292.
 For additional notes, bar details, and Bill of Material, see sheets 179 and 180 of 292.
 For Table 1, see sheet 178 of 292.
 For Mechanical Splicer details, see sheet 248 of 292.

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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PIER 3 PLAN AND ELEVATION - 3
STRUCTURE NO. 060-0350 (EB)

SHEET 177 OF 292 SHEETS

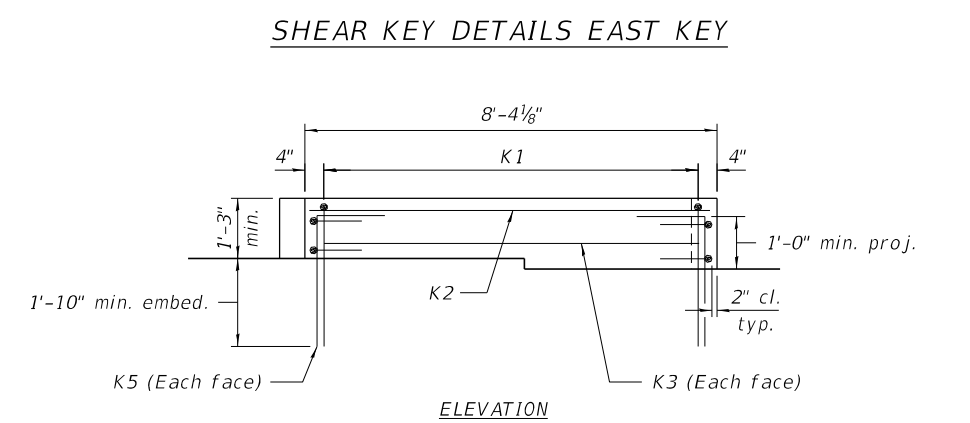
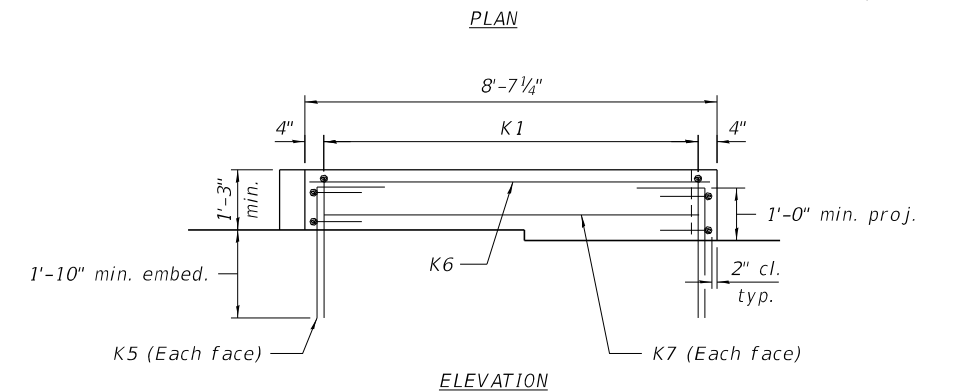
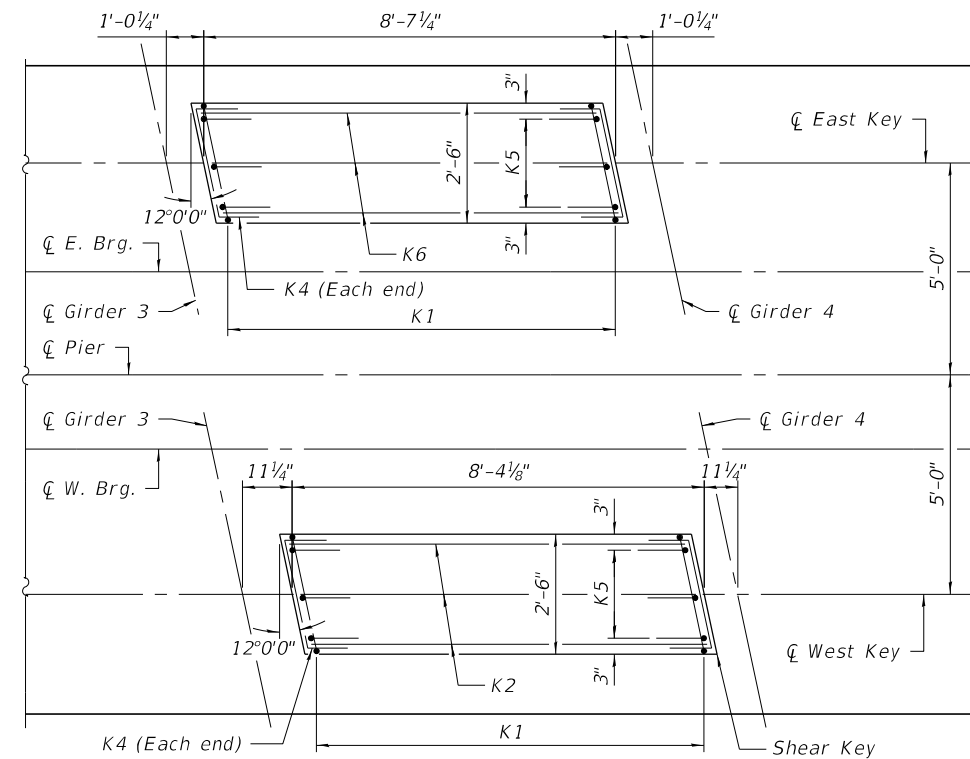
F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	390
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				

TABLE 1

		Pier 3
☐ Pier Station		1783+71.06
Bearing Seat Elevation	Girder 1	446.30
	Girder 2	446.49
	Girder 3	446.66
	Girder 4	446.44
	Girder 5	446.22
	Girder 6	446.03
	Girder 7	445.83
Top of Cap Elevation		445.83
Bottom of Cap Elevation		437.83
Column Height		10'-10"
Top of Shaft Elevation		415.00
Approx. Tip Elevation		366.00
Est. Ground Surface Elevation		398.30
Est. Top of Rock Elevation		391.50
Min. bott. of Permanent Casing Elev.		389.50
Dim. X		25'-6"
Dim. Y		23'-6"
Dim. Z		25'-6"

PIER 3

Mark	Bar Callouts
(1)	48 sets of 1-#6 s301 (E) and 3-#6 s305(E) at 5" cts.
(2)	14 sets of 4-#6 s302(E) at 6" cts.
(3)	6 sets of 4-#6 s307(E) at 5" cts.
(4)	64-#6 s308(E) at abt. 8" cts.
(5)	38 sets of 1-#6 s303(E) and 2-#6 s306(E) at 6" cts.
(6)	17 sets of 2-#6 s304(E) at 6" cts.
(7)	17 sets of 2-#6 s304(E) at 6" cts.
(8)	14-#7 hp302(E) hoops at 3" cts.
(9)	44-#7 hp302(E) hoops at 3" cts.
(10)	33-#7 hp301(E) hoops at 4" cts.
T1	20-#11 p301(E) or p302(E) at 7¾" cts.
T2	14 sets of 1-#11 p305(E) and 1-#11 p306(E) at 12" max.
T3	14 sets of 1-#11 p307(E) and 1-#11 p308(E) at 12" max.
B1	20-#11 p303(E) and p109(E) at 7¾" cts.
B2	20-#7 p304(E) at 7¾" cts.
B3	14 sets of 1-#11 p305(E) and 1-#11 p306(E) at 12" max.
B4	14 sets of 1-#11 p307(E) and 1-#11 p308(E) at 12" max.
H1	10-#8 h301(E) at 7½" cts.
H2	18-#9 h302(E) at 7" cts.
H3	20-#6 h303(E) at abt. 7¾" cts.
H4	20-#6 h304(E) at abt. 7¾" cts.
A1	7 sets of 1-#7 u303(E) and 1-#7 u304(E) at 10½" cts.
A2	10-#7 u305(E) at 10¾" cts.
U1	11-#8 u301(E) spaced with h301(E) and p301(E)
U2	20-#9 u302(E) splice with h302(E) and space with p305(E) thru p308(E)
C1	22 sets of 1-#14 v301(E) and 1-#14 v302(E) (top)
C2	22 sets of 1-#14 v303(E) and 1-#14 v304(E) (top) bundle w/ C3
C3	22 sets of 1-#14 v305(E) and 1-#14 v306(E) (top) bundle w/ C2
C4	22 sets of 40-#11 v307(E) equally spaced
D1	#7 sp301(E) at 4" pitch
D2	#7 sp302(E) at 4" pitch
D3	#7 sp303(E) at 3" pitch
K1	13-#5 s309(E) spaced at 6" cts.
K2	3-#5 h305(E) spaced with n301(E)
K3	1-#5 h305(E) each face
K4	2-#5 h306(E) each face
K5	3-#5 n101(E) at 12" cts., each face
K6	3-#5 h307(E) spaced with n301(E)
K7	1-#5 h307(E) each face
R1	#5 r301(E)



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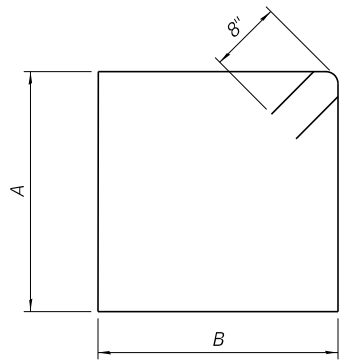
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PIER 3 REINFORCEMENT TABLE - 1
STRUCTURE NO. 060-0350 (EB)

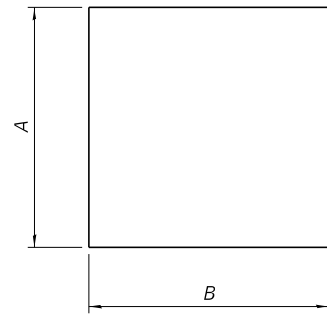
SHEET 178 OF 292 SHEETS

F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	391
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				



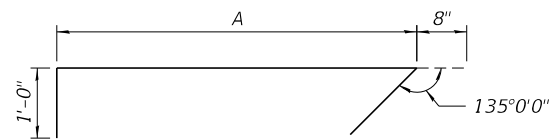
BARS s301(E) & s303(E)

Bars	A	B
s301(E)	7'-8"	12'-8"
s303(E)	11'-8"	9'-4"



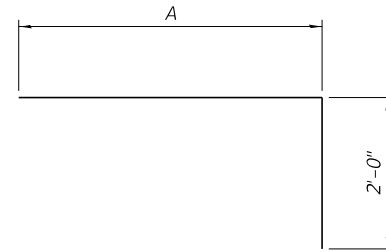
BARS s302(E), s304(E) & s307(E)

Bars	A	B
s302(E)	8'-4"	5'-10"
s304(E)	11'-8"	6'-8"
s307(E)	7'-5"	5'-10"



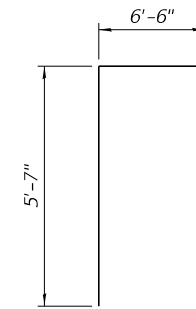
BARS s305(E) & s306(E)

Bars	A
s305(E)	7'-8"
s306(E)	11'-8"

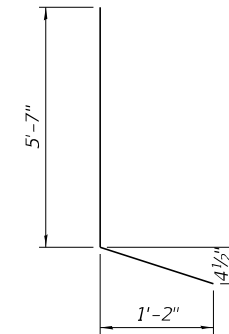


BARS p301(E) & p302(E)
BARS p305(E) & p306(E)
BARS p307(E) & p308(E)

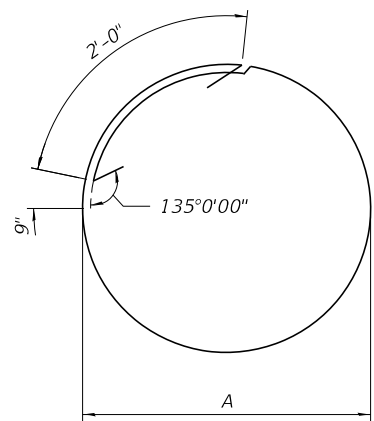
Bars	A
p301(E)	24'-0"
p302(E)	53'-0"
p305(E)	34'-3"
p306(E)	23'-3"
p307(E)	33'-9"
p308(E)	22'-9"



BARS u303(E)

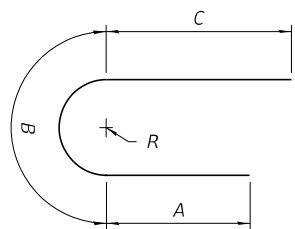


BARS u304(E)



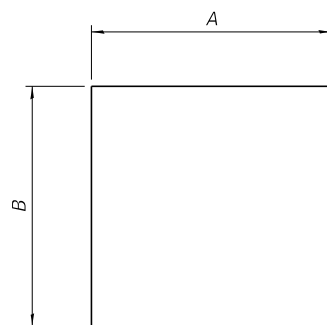
BARS hp301(E) & hp302(E)

Bars	A
hp301(E)	8'-2"
hp302(E)	6'-8"



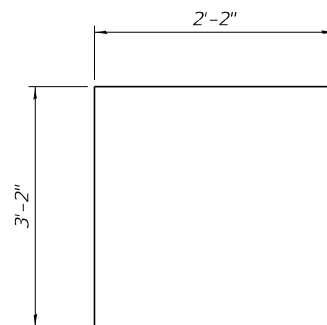
BARS u301(E) & u302(E)

Bars	A	B	C	R
u301(E)	5'-4"	19'-7 3/8"	5'-4"	6'-3"
u302(E)	5'-9"	14'-5"	7'-9"	4'-7"

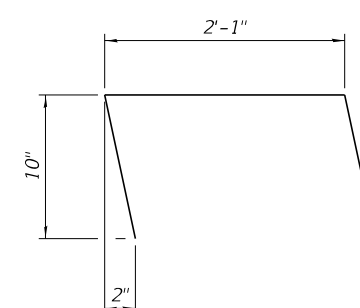


BARS u305(E) & s308(E)

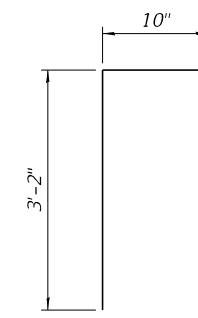
Bars	A	B
u305(E)	11'-6"	4'-7"
s308(E)	12'-8"	2'-9"



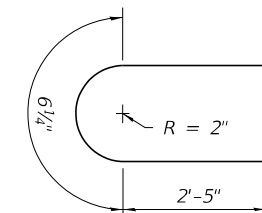
BARS s309(E)



BARS h306(E)



BARS n301(E)



BARS r301(E)

**PIER 3
BILL OF MATERIAL**

Bar	No.	Size	Length	Shape
h301(E)	20	#8	55'-0"	————
h302(E)	36	#9	42'-0"	————
h303(E)	20	#6	42'-6"	————
h304(E)	20	#6	9'-11"	————
h305(E)	5	#5	8'-0"	————
h306(E)	8	#5	3'-9"	┌┐
h307(E)	5	#5	8'-3"	————
hp301(E)	99	#7	29'-2"	○
hp302(E)	174	#7	24'-5"	○
n301(E)	12	#5	4'-0"	┌
p301(E)	20	#11	26'-0"	┌
p302(E)	20	#11	55'-0"	┌
p303(E)	20	#11	44'-6"	————
p304(E)	20	#7	3'-0"	————
p305(E)	28	#11	36'-3"	┌
p306(E)	28	#11	25'-3"	┌
p307(E)	28	#11	35'-9"	┌
p308(E)	28	#11	24'-9"	┌
p309(E)	20	#11	26'-2"	————
r301(E)	8	#5	5'-4"	⊂
s301(E)	96	#6	42'-0"	□
s302(E)	168	#6	20'-0"	□
s303(E)	76	#6	43'-4"	□
s304(E)	102	#6	25'-0"	□
s305(E)	288	#6	9'-4"	┌
s306(E)	152	#6	13'-4"	┌
s307(E)	48	#6	19'-1"	□
s308(E)	64	#6	18'-2"	□
s309(E)	34	#5	8'-6"	□
** sp301(E)	3	#7	25'-4"	〰〰〰
** sp302(E)	3	#7	23'-8"	〰〰〰
** sp303(E)	3	#7	11'-2"	〰〰〰
u301(E)	22	#8	30'-4"	⊂
u302(E)	40	#9	27'-11"	⊂
u303(E)	14	#7	12'-1"	┌
u304(E)	14	#7	6'-10"	└
u305(E)	20	#7	20'-8"	┌
v301(E)	66	#14	40'-0"	————
v302(E)	66	#14	20'-3"	————
v303(E)	66	#14	37'-6"	————
v304(E)	66	#14	22'-9"	————
v305(E)	66	#14	35'-0"	————
v306(E)	66	#14	25'-3"	————
v307(E)	120	#11	29'-9"	————

** Length is height of spiral.

**PIER 3
BILL OF MATERIAL (CONT.)**

Concrete Structures	Cu. Yd.	585.5
Reinforcement Bars, Epoxy Coated	Pound	235,280
Permanent Casing	Foot	77
Drilled Shaft in Soil	Cu. Yd.	167
Drilled Shaft in Rock	Cu. Yd.	161
Concrete Sealer	Sq. Ft.	6,049
Crosshole Sonic Logging Access Ducts	Foot	147
Crosshole Sonic Logging Testing	Each	3
Thermal Integrity Profile Testing	Each	0
Thermal Integrity Profile Data Collection	Foot	147

Note:
For bar details, see sheet 179 of 292.

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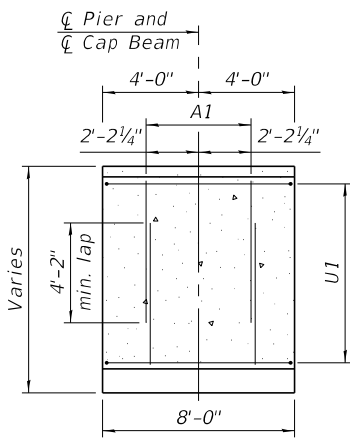
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**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

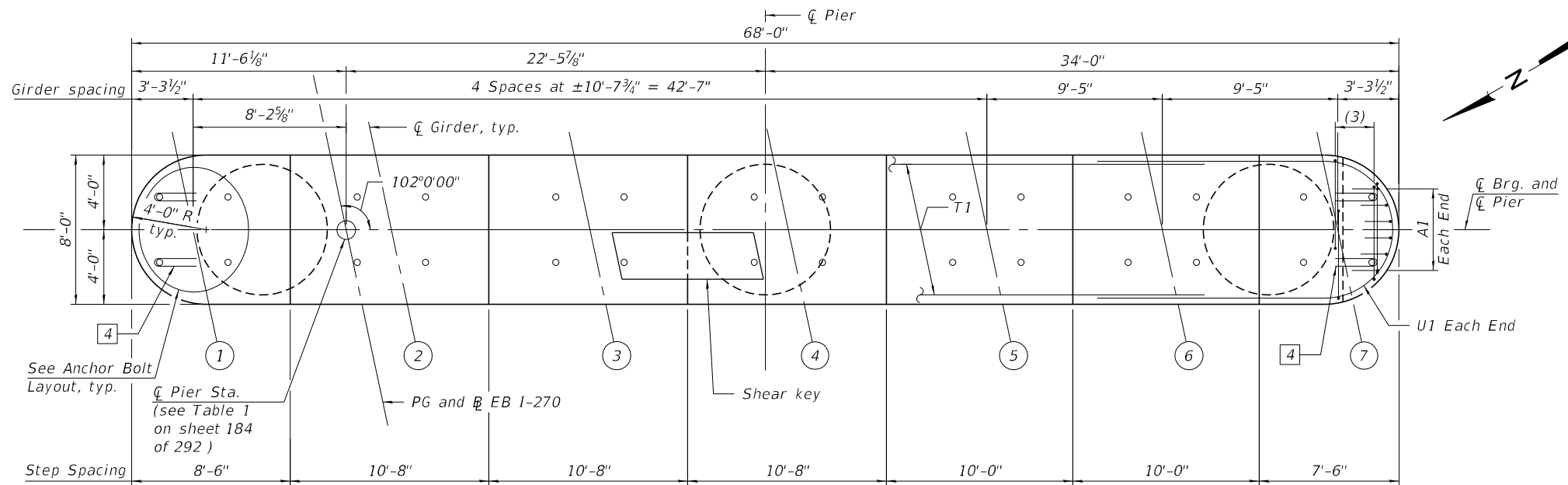
**PIER 3 BILL OF MATERIAL
STRUCTURE NO. 060-0350 (EB)**

SHEET 180 OF 292 SHEETS

F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	393
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				

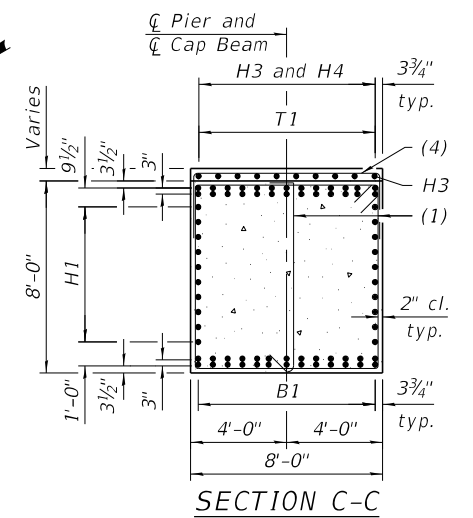


VIEW A-A
(T1 and (3) bars not shown for clarity)

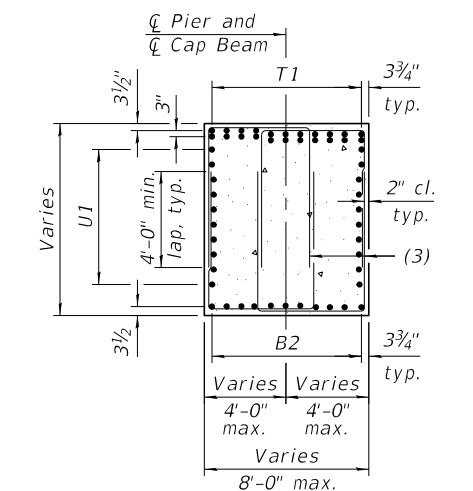


TOP PLAN

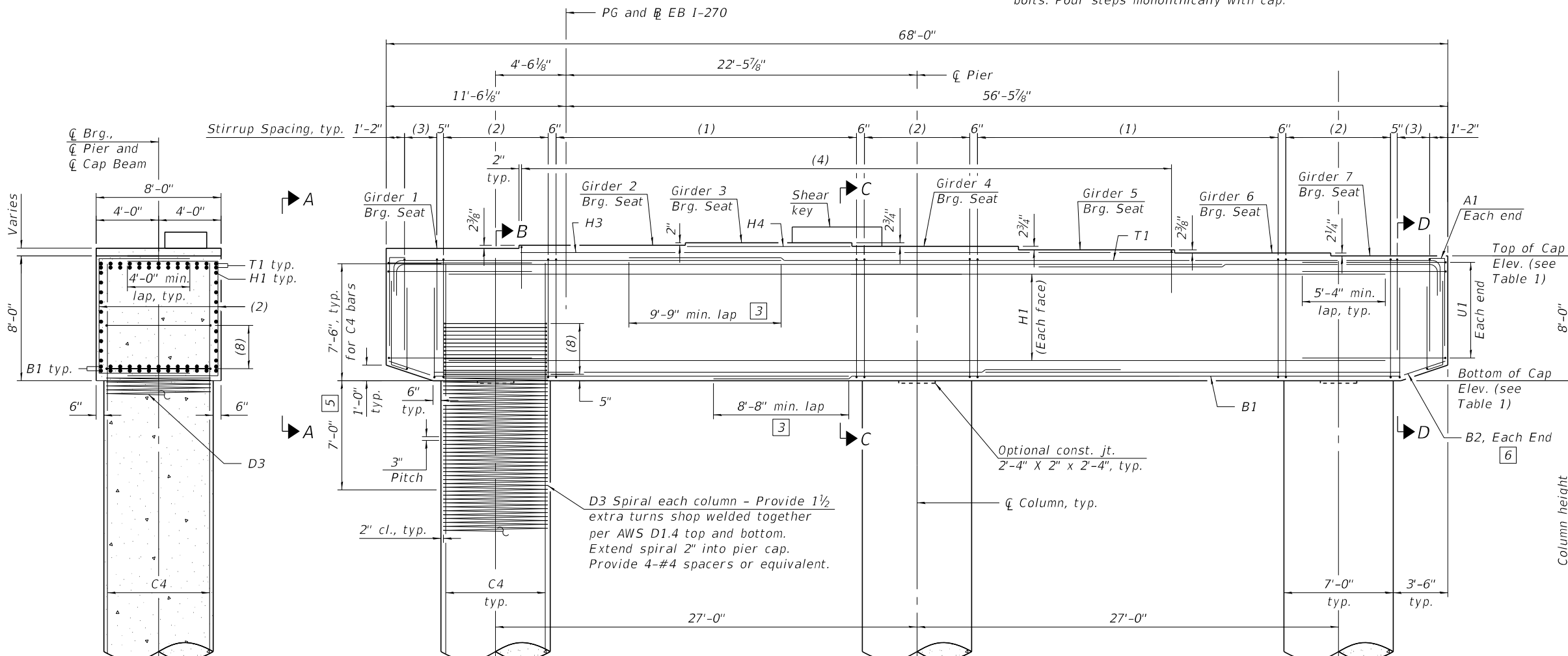
Note:
Space reinforcement in cap to miss anchor bolts. Pour steps monolithically with cap.



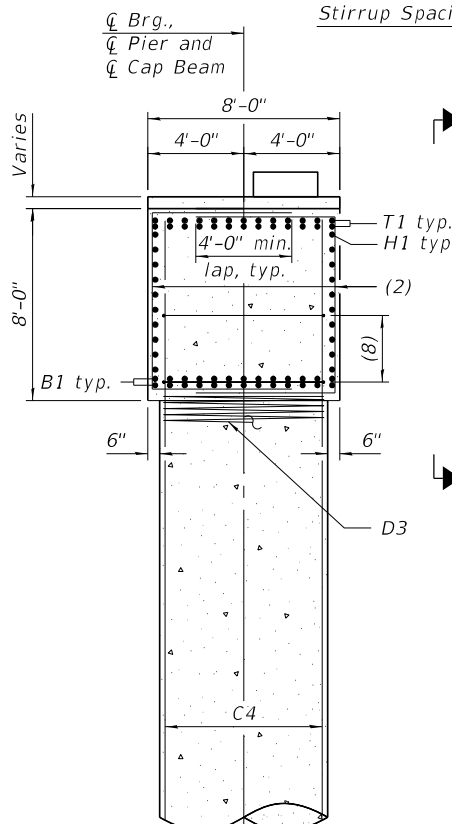
SECTION C-C



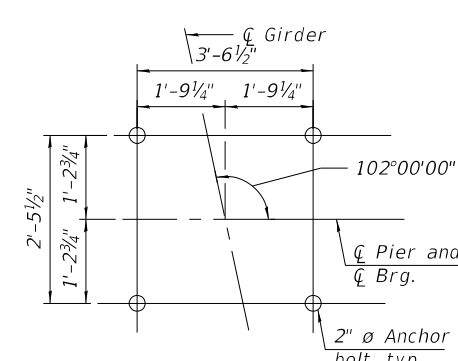
SECTION D-D



PART ELEVATION
(Looking East)



SECTION B-B



ANCHOR BOLT LAYOUT

- [3] Alternate placement cap top rebars to stagger the laps top and bottom
- [4] Provide 2 - R bar at each anchor shown. Place first R bar with top mat reinforcement and second R bar 6" below top U bar
- [5] No splicing of bars allowed in this region.
- [6] Field cut bars when needed to keep 2" clear concrete cover.

Notes:
For bar details and Bill of Materials, see sheets 185 and 186 of 292.
For column height, step height and all elevations, see Table 1 on sheet 184 of 292.
For bearing details, see sheet 158 of 292.
For bar callouts and shear key details, see sheet 184 of 292.

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HORNER SHIFRIN
PARSONS

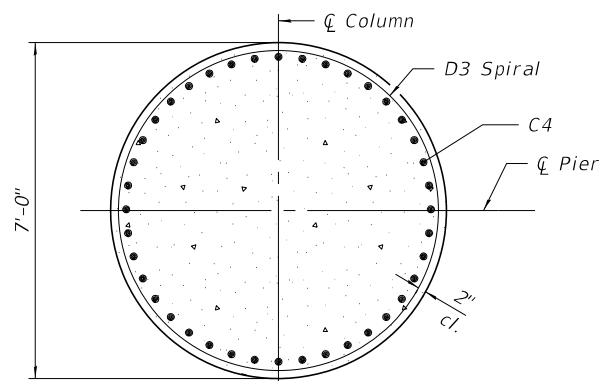
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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

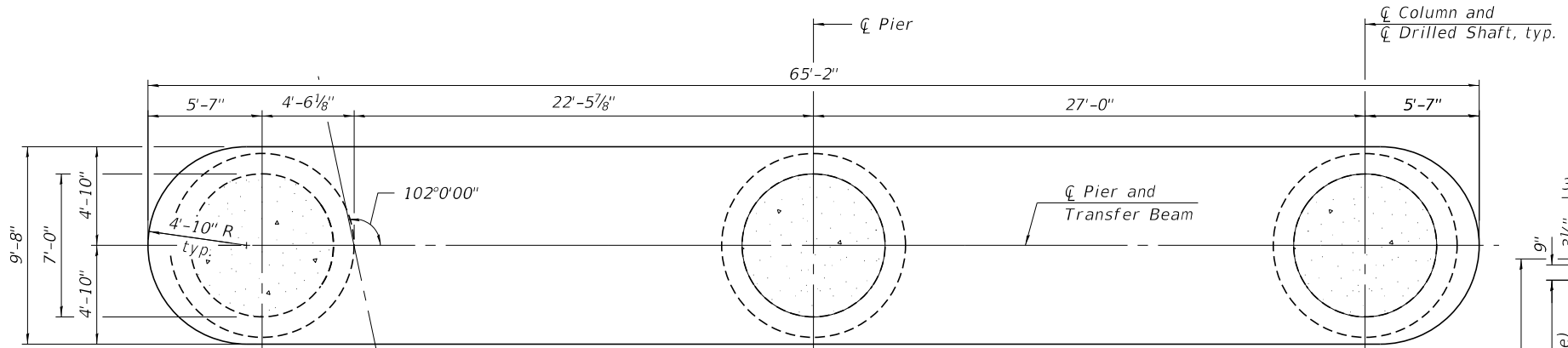
PIER 4 PLAN AND ELEVATION - 1
STRUCTURE NO. 060-0350 (EB)

SHEET 181 OF 292 SHEETS

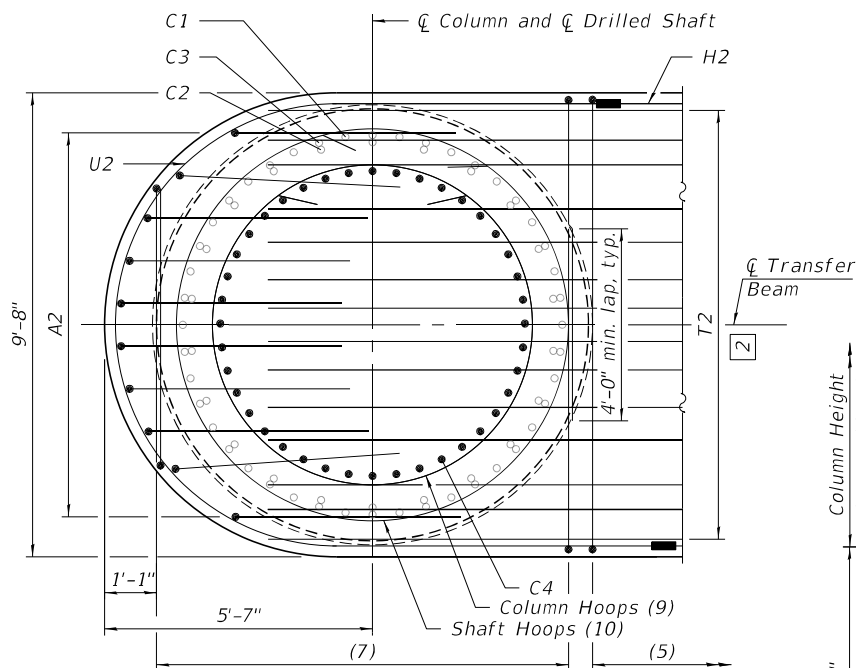
F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	394
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				



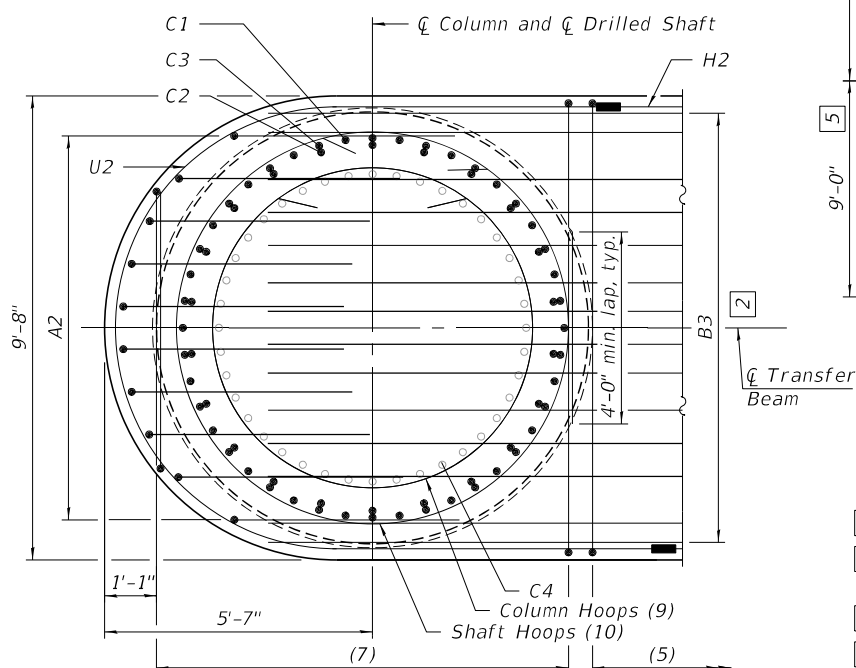
SECTION E-E



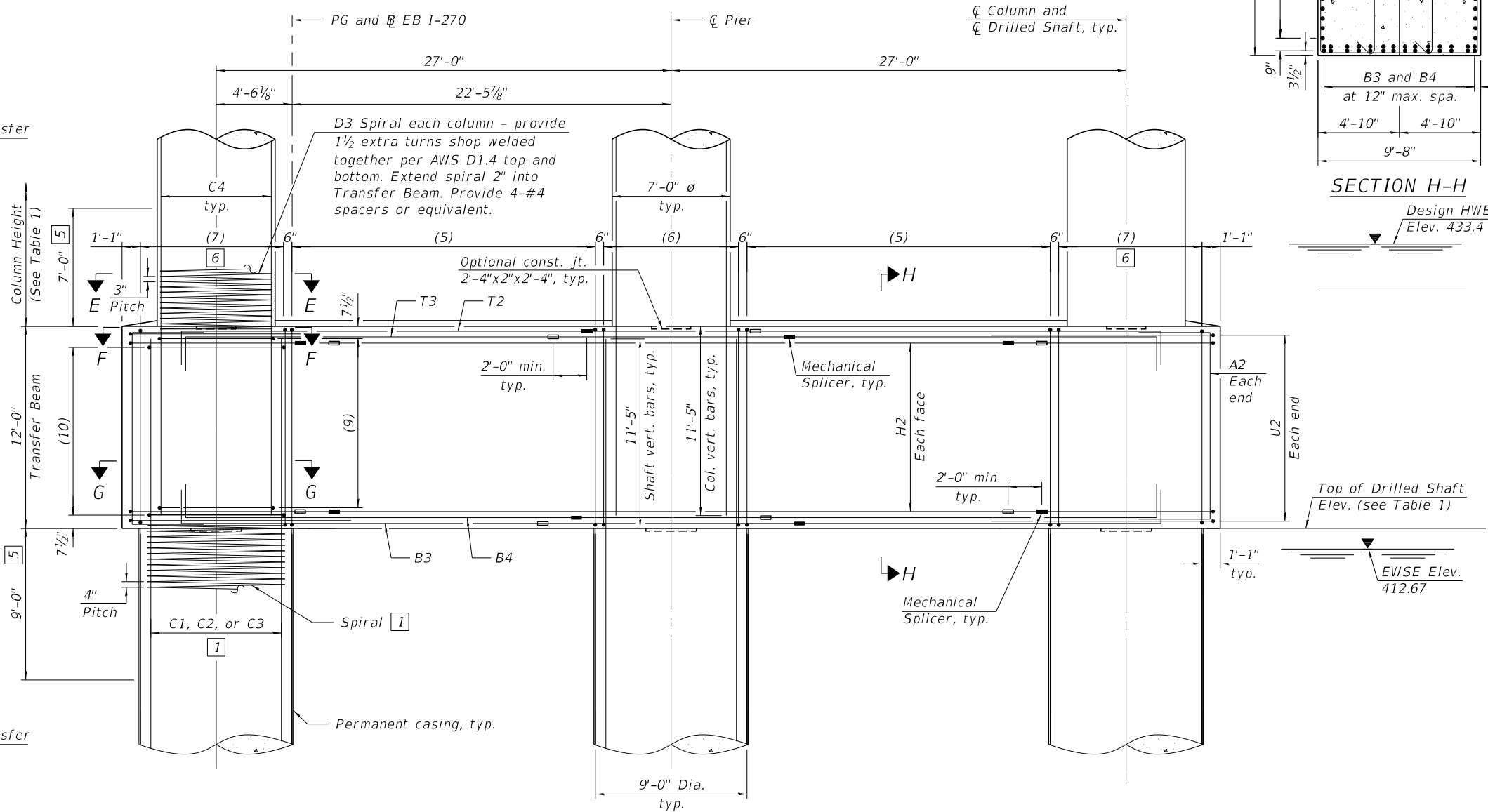
PLAN - TRANSFER BEAM



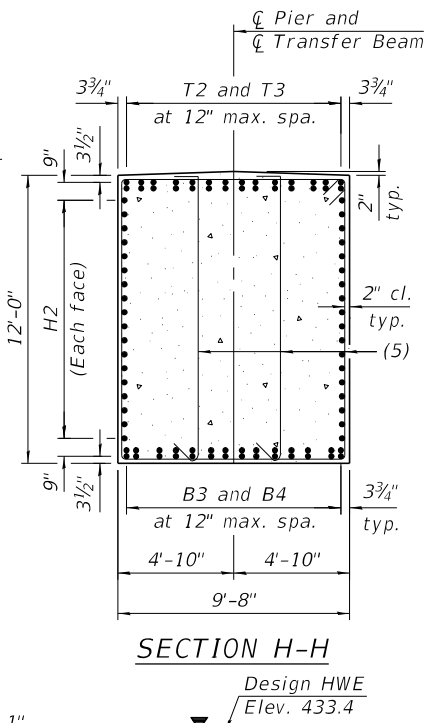
SECTION F-F



SECTION G-G



PART ELEVATION - TRANSFER BEAM
(Looking East)



SECTION H-H

- 1 See sheet 183 of 292 for additional rebar placement.
- 2 Adjust transfer beam rebar slightly when conflict with column or shaft vertical bar.
- 5 No splicing of bars allowed in this region.
- 6 Field cut bars when needed to keep 2" clear concrete cover.

Notes:
 For Top Plan and Part elevation, see sheet 181 of 292.
 For Drilled Shaft details, see sheet 183 of 292.
 For additional notes, bar details, and Bill of Material, see sheets 185 and 186 of 292.
 For Table 1, see sheet 184 of 292.
 For Mechanical Splicer details, see sheet 248 of 292.

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HORNER SHIFRIN
 PARSONS

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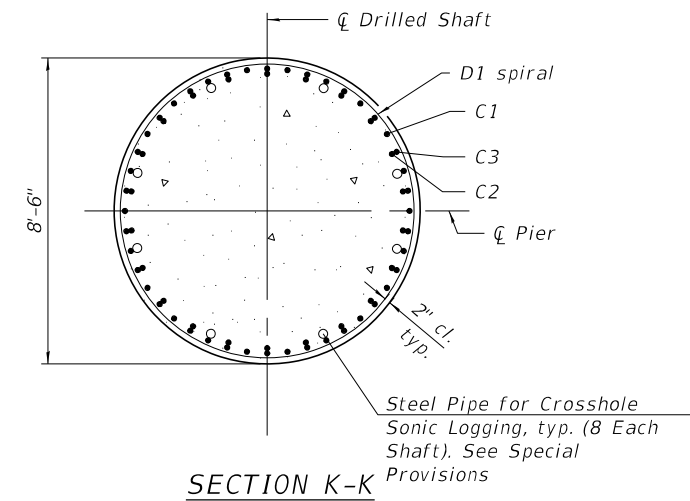
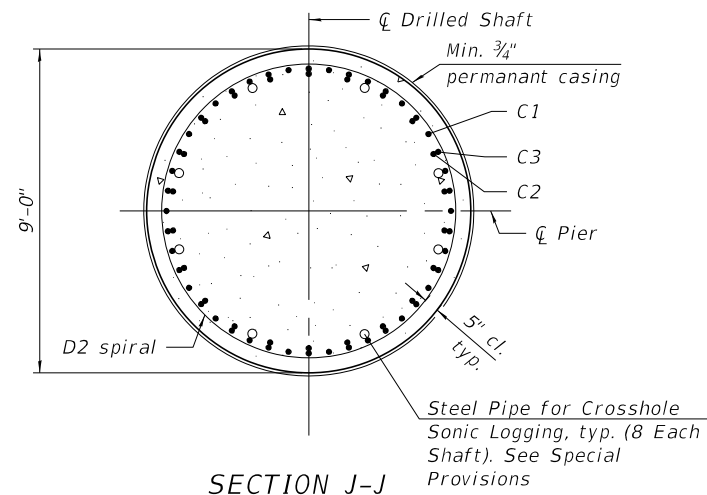
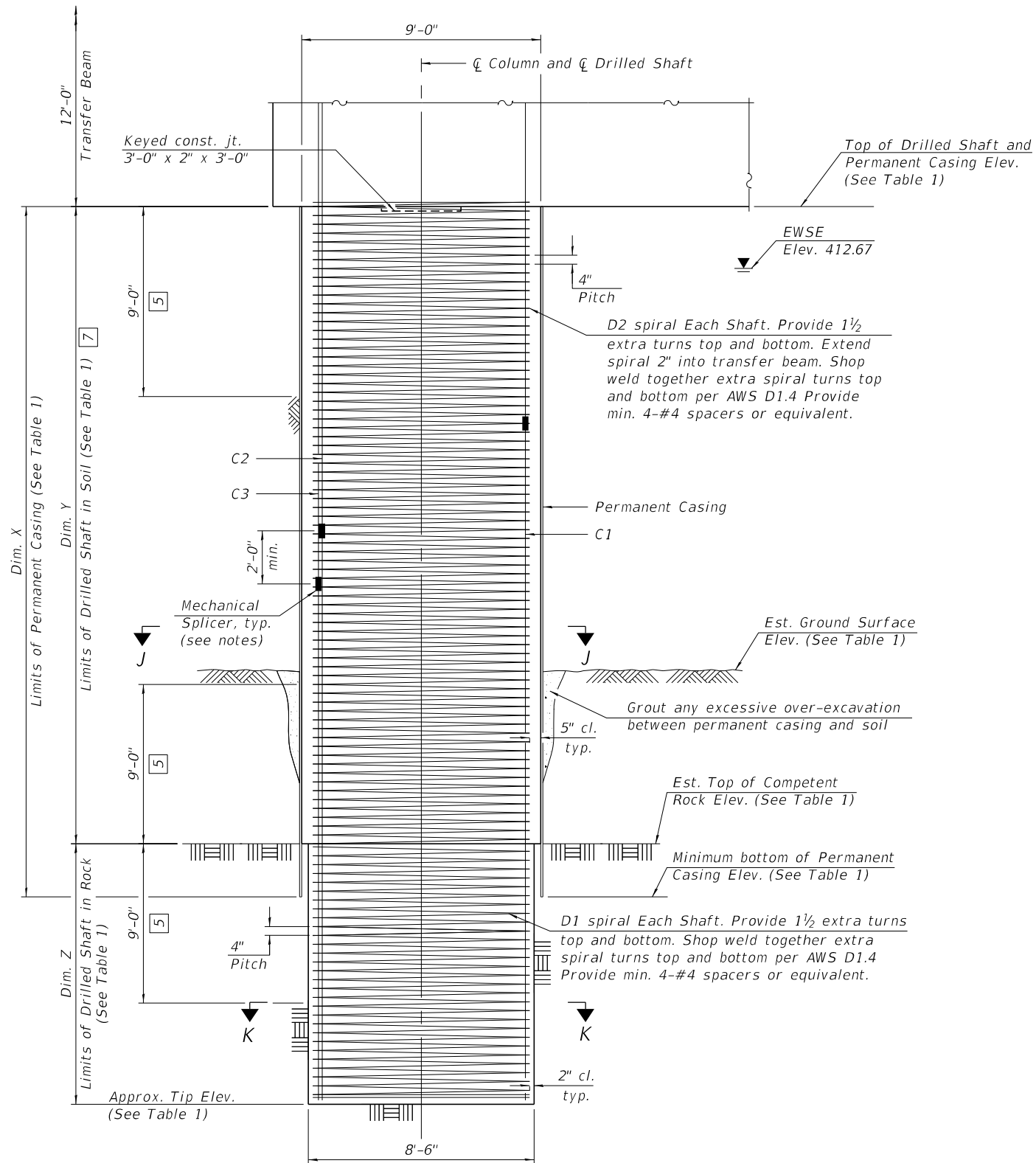
STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION

PIER 4 PLAN AND ELEVATION - 2
 STRUCTURE NO. 060-0350 (EB)

SHEET 182 OF 292 SHEETS

F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	395
CONTRACT NO. 76190				

ILLINOIS FED. AID PROJECT



- [5] No splicing of bars allowed in this region.
- [7] If the prevailing water surface elevation during construction is consistently different than estimated on the plans, the contractor may propose an adjustment to the top of the drilled shaft elevation as part of their installation procedure. The top of all drilled shafts within a substructure unit shall be constructed to the same elevation and extend above the prevailing water surface. The quantities and reinforcement detailing are based on the top of shaft and the estimated elevations shown and may change based on the actual elevations encountered at each shaft and the final top of shaft elevation.

Notes:

The Contractor may propose a construction joint in the drilled shaft so separate pours can be made, if the shaft can be poured in the dry, subject to approval from the Engineer.

The Permanent Casing is shown embedded 2 ft. into rock for estimate of quantities. Pay Limits for the Permanent Casing shall be based on the minimum length shown.

Alternate every other Mechanical Splicer 2'-0" min.

When splicing of spiral reinforcement is necessary, the spirals shall be provided with 1 1/2 extra turns at the ends to be spliced. These additional turns shall either be welded together according to AWS D1.4, or shall both terminate with a 135° standard hook.

The Contractor is responsible for determining the casing thickness and the actual tip elevation to be used. See Article 516.06(d) of the Standard Specifications. Pay limits for the Permanent Casing shall be based on minimum length shown.

Wet construction methods within the permanent casing may be required. The Contractor's installation procedure shall clearly address cleaning and inspection methods proposed for use with wet construction methods which ensure adequate end bearing on rock is achieved.

For Top Plan and Part elevation, see sheet 181 of 292.

For Transfer Beam details, see sheet 182 of 292.

For additional notes, bar details, and Bill of Material, see sheets 185 and 186 of 292.

For Table 1, see sheet 184 of 292.

For Mechanical Splicer details, see sheet 248 of 292.

USER NAME =	DESIGNED - UVK	REVISED -
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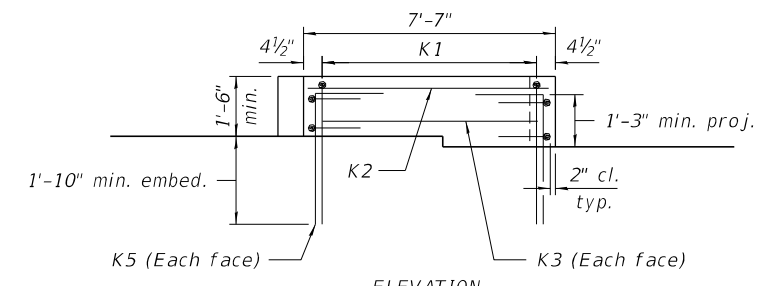
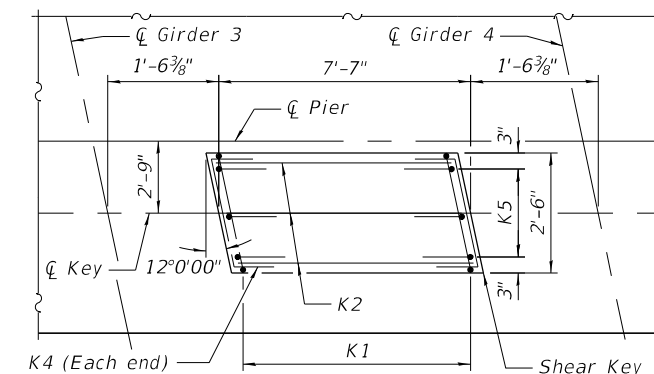
F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	396
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				

TABLE 1

		Pier 4
☐ Pier Station		1785+79.97
Bearing Seat Elevation	Girder 1	446.57
	Girder 2	446.77
	Girder 3	446.93
	Girder 4	446.71
	Girder 5	446.48
	Girder 6	446.28
	Girder 7	446.09
Top of Cap Elevation		446.09
Bottom of Cap Elevation		438.09
Column Height		11'-1 1/8"
Top of Shaft Elevation		415.00
Approx. Tip Elevation		360.10
Est. Ground Surface Elevation		386.50
Est. Top of Rock Elevation		385.60
Min. bott. of Permanent Casing Elev.		383.50
Dim. X		31'-4 3/4"
Dim. Y		29'-4 3/4"
Dim. Z		25'-6"

PIER 4

Mark	Bar Callouts
(1)	48 sets of 1-#6 s401(E) and 1-#6 s405(E) at 5" cts.
(2)	14 sets of 2-#6 s402(E) at 6" cts.
(3)	6 sets of 4-#6 s407(E) at 5" cts.
(4)	62-#6 s408(E) at abt. 8" cts.
(5)	38 sets of 1-#6 s403(E) and 2-#6 s406(E) at 6" cts.
(6)	17 sets of 2-#6 s404(E) at 6" cts.
(7)	17 sets of 2-#6 s404(E) at 6" cts.
(8)	14-#7 hp402(E) hoops at 3" cts.
(9)	44-#7 hp402(E) hoops at 3" cts.
(10)	33-#7 hp401(E) hoops at 4" cts.
T1	2 layers of 13-#11 p401(E) or p402(E) at 7 3/8" cts.
T2	14 sets of 1-#11 p405(E) and 1-#11 p406(E) at 12" max.
T3	14 sets of 1-#11 p407(E) and 1-#11 p408(E) at 12" max.
B1	2 layers of 13-#11 p403(E) or p409(E) at 7 3/8" cts.
B2	13-#7 p404(E) at 7 3/8" cts.
B3	14 sets of 1-#11 p405(E) and 1-#11 p406(E) at 12" max.
B4	14 sets of 1-#11 p407(E) and 1-#11 p408(E) at 12" max.
H1	10 x 2-#8 h401(E) at 7 1/2" cts.
H2	18-#9 h402(E) at 7" cts.
H3	13-#6 h403(E) at abt. 7 3/8" cts.
H4	13-#6 h404(E) at abt. 7 3/8" cts.
A1	6 sets of 1-#7 u403(E) and 1-#7 u404(E) at 8 5/8" cts.
A2	10-#7 u405(E) at 10 3/4" cts.
U1	11-#8 u401(E) spaced with h401(E) and p401(E)
U2	20-#9 u402(E) splice with h402(E) and space with p405(E)
C1	22 sets of 1-#14 v401(E) and 1-#14 v402(E) (top)
C2	22 sets of 1-#14 v403(E) and 1-#14 v404(E) (top) Bundle w/ C3
C3	22 sets of 1-#14 v405(E) and 1-#14 v406(E) (top) Bundle w/ C2
C4	40-#11 v407(E) equally spaced
D1	#7 sp401(E) at 4" pitch
D2	#7 sp402(E) at 4" pitch
D3	#7 sp403(E) at 3" pitch
K1	13-#5 s409(E) spaced at 6" cts.
K2	3-#5 h405(E) spaced with n401(E)
K3	1-#5 h405(E) each face
K4	2-#5 h406(E) each face
K5	3-#5 n401(E) at 12" cts., each face
R1	#5 r401(E)



SHEAR KEY DETAILS

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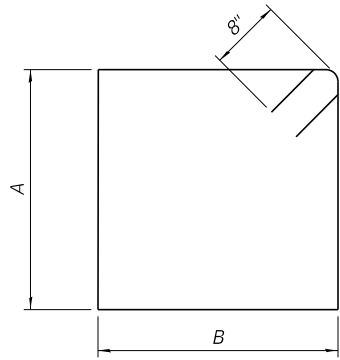
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**STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION**

**PIER 4 REINFORCEMENT TABLE - 1
 STRUCTURE NO. 060-0350 (EB)**

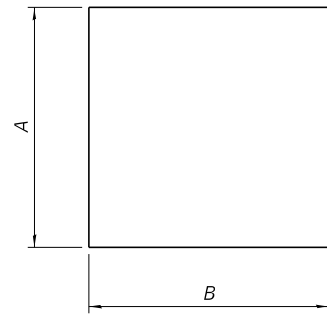
SHEET 184 OF 292 SHEETS

F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	397
			CONTRACT NO. 76J90	
			ILLINOIS FED. AID PROJECT	



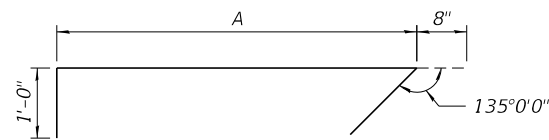
BARS s401(E) & s403(E)

Bars	A	B
s401(E)	7'-8"	7'-8"
s403(E)	11'-8"	9'-4"



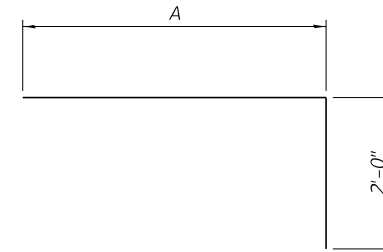
BARS s402(E) & s404(E) & s407(E)

Bars	A	B
s402(E)	7'-8"	5'-10"
s404(E)	11'-8"	6'-8"
s407(E)	4'-10"	5'-10"



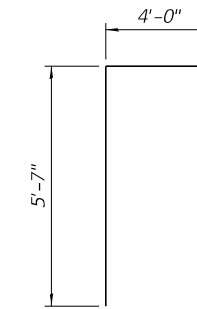
BARS s405(E) & s406(E)

Bars	A
s405(E)	7'-8"
s406(E)	11'-8"

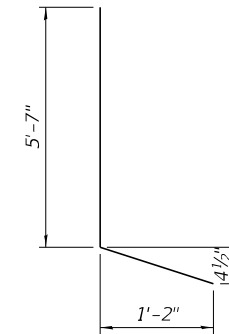


BARS p401(E) & p402(E)
BARS p405(E) & p406(E)
BARS p407(E) & p408(E)

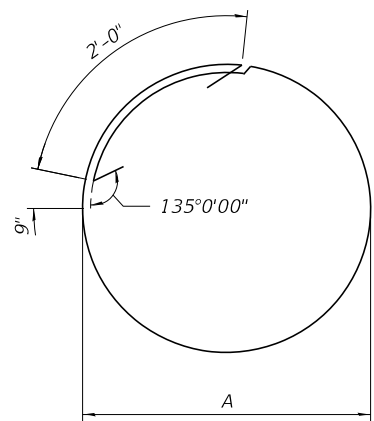
Bars	A
p401(E)	25'-9"
p402(E)	51'-6"
p405(E)	34'-3"
p406(E)	23'-3"
p407(E)	33'-9"
p408(E)	22'-9"



BARS u403(E)

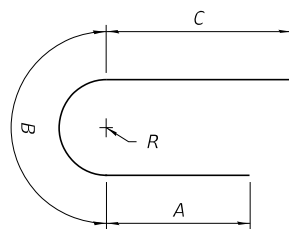


BARS u404(E)



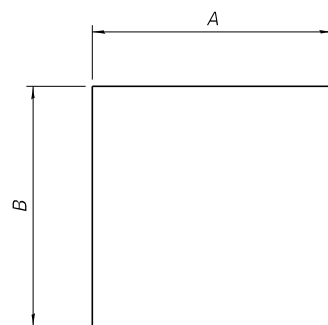
BARS hp401(E) & hp402(E)

Bars	A
hp401(E)	8'-2"
hp402(E)	6'-8"



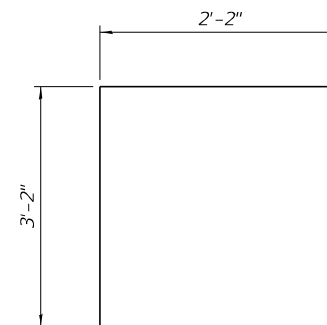
BARS u401(E) & u402(E)

Bars	A	B	C	R
u401(E)	5'-4"	11'-9 3/8"	5'-4"	3'-9"
u402(E)	5'-9"	14'-5"	7'-9"	4'-7"

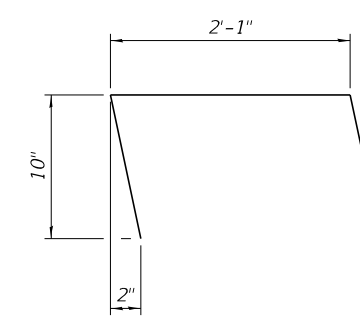


BARS u405(E) & s408(E)

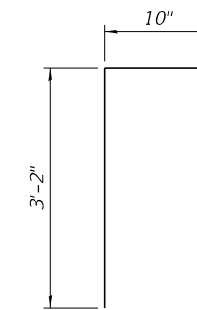
Bars	A	B
u405(E)	11'-6"	4'-7"
u408(E)	7'-8"	2'-9"



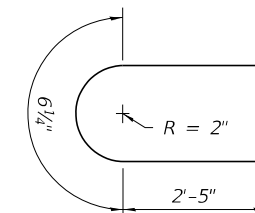
BARS s409(E)



BARS h406(E)



BARS n401(E)



BARS r401(E)

**PIER 4
BILL OF MATERIAL**

Bar	No.	Size	Length	Shape
h401(E)	20	#8	60'-0"	————
h402(E)	36	#9	42'-0"	————
h403(E)	13	#6	42'-4"	————
h404(E)	13	#6	10'-4"	————
h405(E)	5	#5	7'-3"	————
h406(E)	4	#5	3'-9"	┌┐
hp401(E)	99	#7	29'-2"	○
hp402(E)	174	#7	24'-5"	○
n401(E)	6	#5	4'-0"	┌
p401(E)	26	#11	27'-9"	┌
p402(E)	26	#11	53'-6"	┌
p403(E)	26	#11	44'-6"	————
p404(E)	26	#7	3'-0"	————
p405(E)	28	#11	36'-3"	┌
p406(E)	28	#11	25'-3"	┌
p407(E)	28	#11	35'-9"	┌
p408(E)	28	#11	24'-9"	┌
p409(E)	26	#11	26'-2"	————
r401(E)	8	#5	5'-4"	└
s401(E)	96	#6	32'-0"	□
s402(E)	66	#6	19'-4"	□
s403(E)	76	#6	43'-4"	□
s404(E)	106	#6	25'-0"	□
s405(E)	96	#6	9'-4"	┌
s406(E)	152	#6	13'-4"	┌
s407(E)	48	#6	16'-6"	□
s408(E)	62	#6	13'-2"	□
s409(E)	15	#5	8'-6"	□
** sp401(E)	3	#7	25'-4"	∩∩∩
** sp402(E)	3	#7	29'-7"	∩∩∩
** sp403(E)	3	#7	11'-5"	∩∩∩
u401(E)	20	#8	22'-5"	└
u402(E)	36	#9	27'-11"	└
u403(E)	12	#7	9'-7"	┌
u404(E)	12	#7	6'-10"	└
u405(E)	20	#7	20'-8"	□
v401(E)	66	#14	45'-0"	————
v402(E)	66	#14	21'-2"	————
v403(E)	66	#14	42'-6"	————
v404(E)	66	#14	23'-8"	————
v405(E)	66	#14	40'-0"	————
v406(E)	66	#14	26'-2"	————
v407(E)	120	#11	30'-0"	————

** Length is height of spiral.

**PIER 4
BILL OF MATERIAL (CONT.)**

Concrete Structures	Cu. Yd.	486.8
Reinforcement Bars, Epoxy Coated	Pound	242,770
Permanent Casing	Foot	95
Drilled Shaft in Soil	Cu. Yd.	208
Drilled Shaft in Rock	Cu. Yd.	161
Crosshole Sonic Logging Access Ducts	Foot	165
Crosshole Sonic Logging Testing	Each	3
Thermal Integrity Profile Testing	Each	0
Thermal Integrity Profile Data Collection	Foot	165

Note:
For bar details, see sheet 185 of 292.

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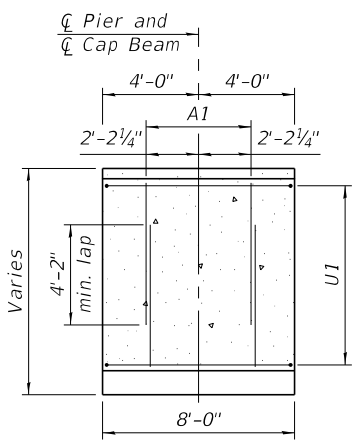
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**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

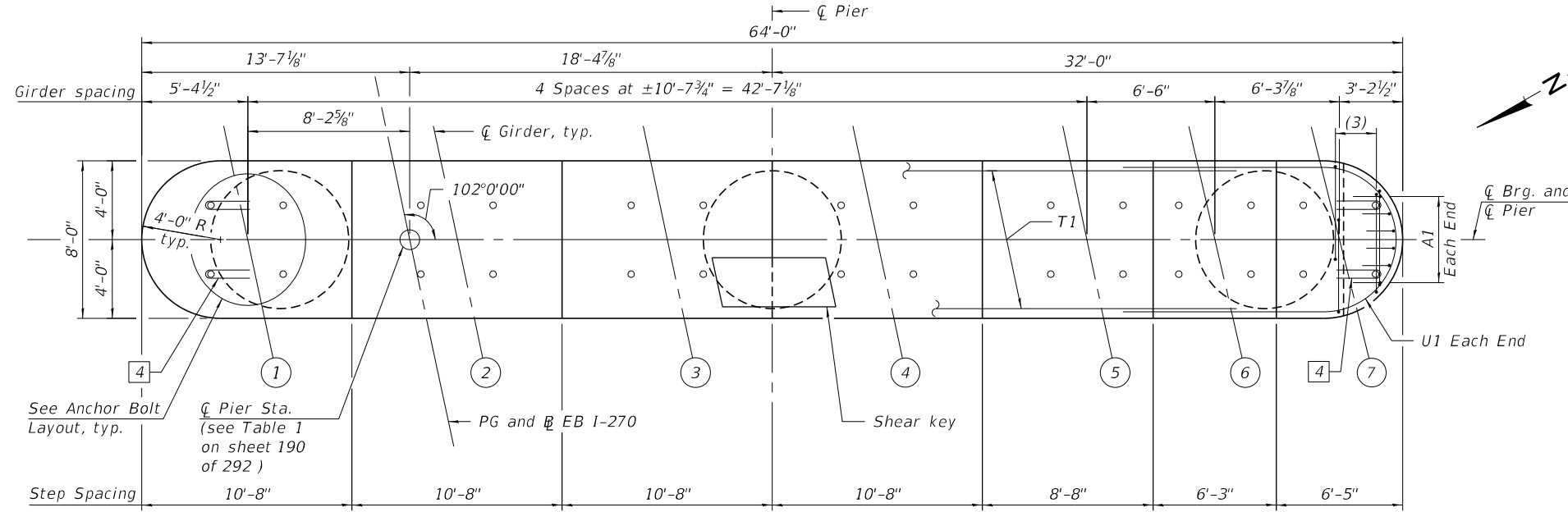
**PIER 4 BILL OF MATERIAL
STRUCTURE NO. 060-0350 (EB)**

SHEET 186 OF 292 SHEETS

F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	399
CONTRACT NO. 76J90				
ILLINOIS FED. AID PROJECT				

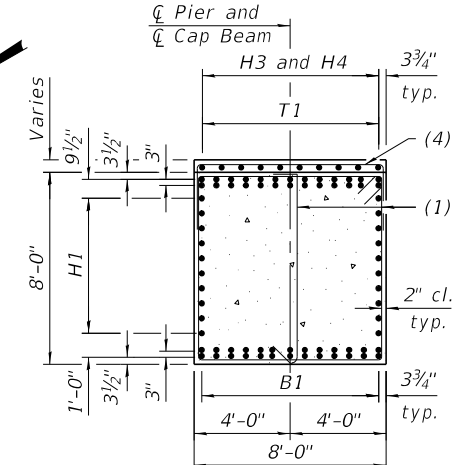


VIEW A-A
(T1 and (3) bars not shown for clarity)

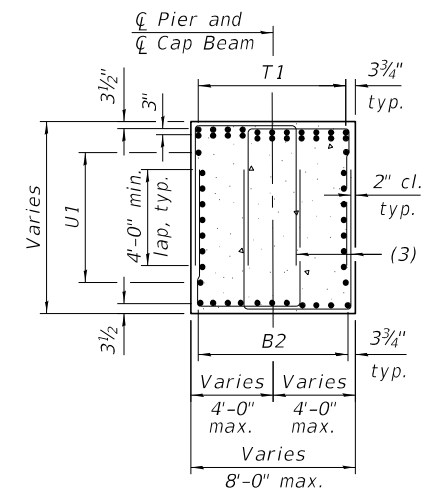


TOP PLAN

Note:
Space reinforcement in cap to miss anchor bolts. Pour steps monolithically with cap.



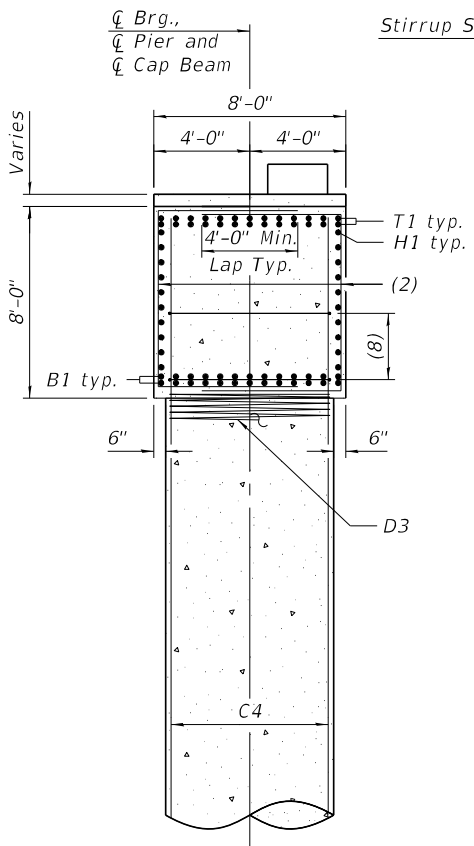
SECTION C-C



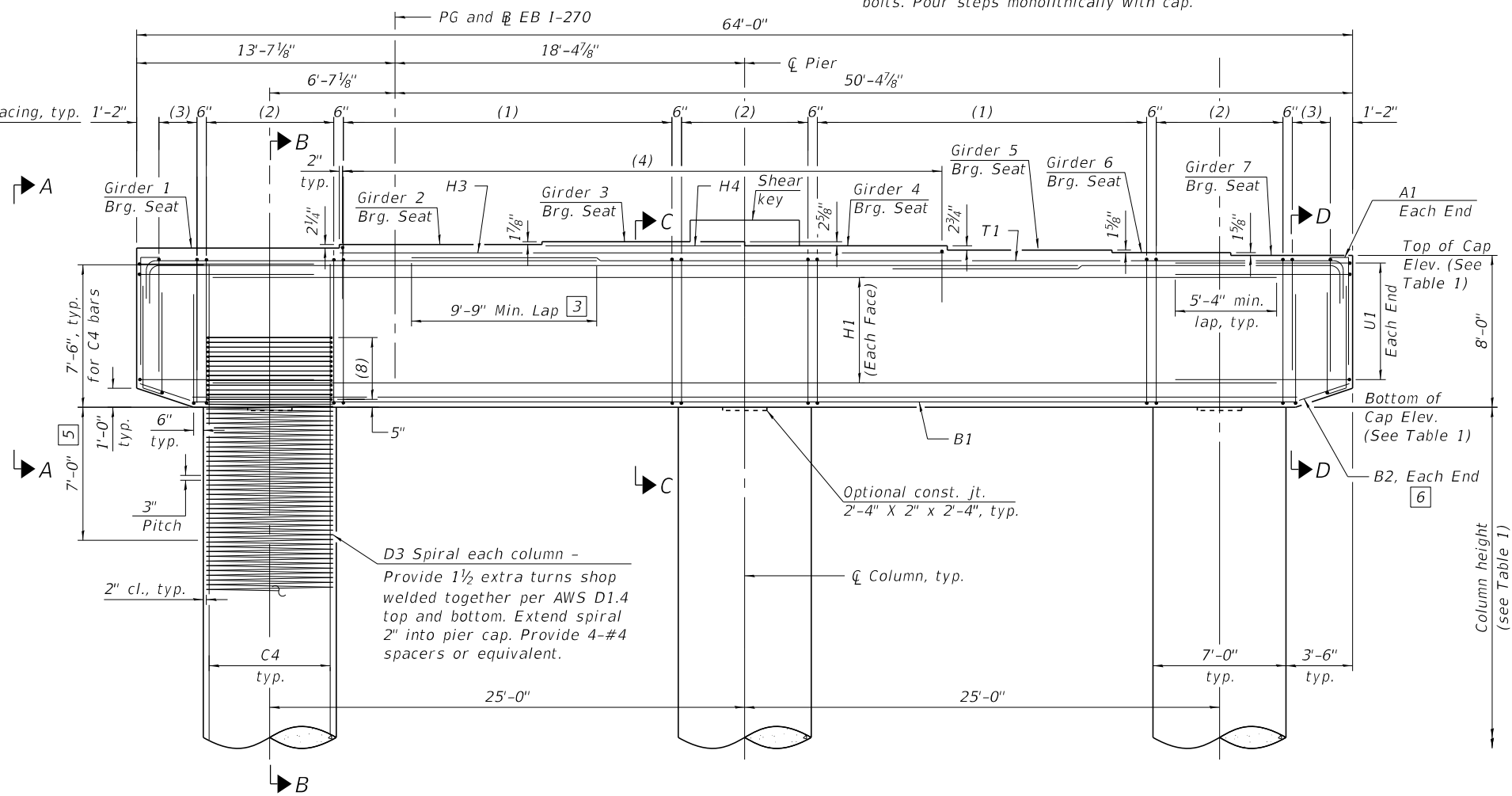
SECTION D-D

TABLE OF VARIABLE ANGLES

Location	Angle
Girder 1	102°00'00"
Girder 2	102°00'00"
Girder 3	102°00'00"
Girder 4	102°00'00"
Girder 5	102°00'00"
Girder 6	102°58'48"
Girder 7	104°00'44"



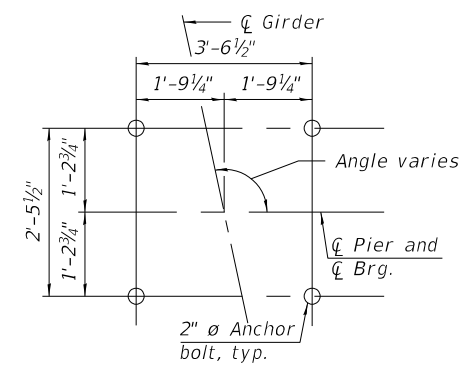
SECTION B-B



PART ELEVATION
(Looking East)

- [3] Alternate placement cap top rebars to stagger the laps top and bottom
- [4] Provide 2 - R bar at each anchor shown. Place first R bar with top mat reinforcement and second R bar 6" below top U bar
- [5] No splicing of bars allowed in this region.
- [6] Field cut bars when needed to keep 2" clear concrete cover.

Notes:
For bar details and Bill of Materials, see sheets 191 and 192 of 292.
For column height, step height and all elevations, see Table 1 on sheet 190 of 292.
For bearing details, see sheet 157 of 292.
For bar callouts and shear key details, see sheet 190 of 292.



ANCHOR BOLT LAYOUT

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PLOT DATE =	DRAWN - EAT	REVISED -
	CHECKED - JJD	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PIER 5 PLAN AND ELEVATION - 1
STRUCTURE NO. 060-0350 (EB)

SHEET 187 OF 292 SHEETS

F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				