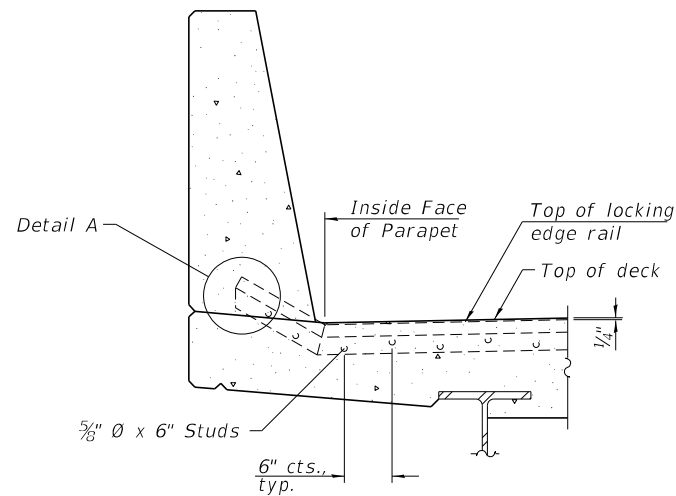
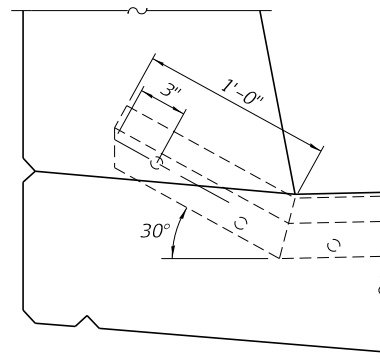


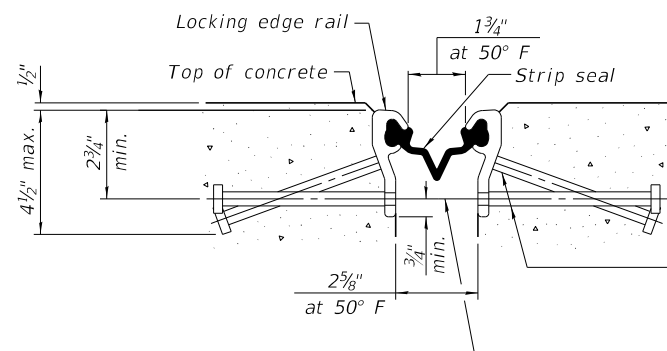
PLAN AT PARAPET



SECTION AT PARAPET



DETAIL A



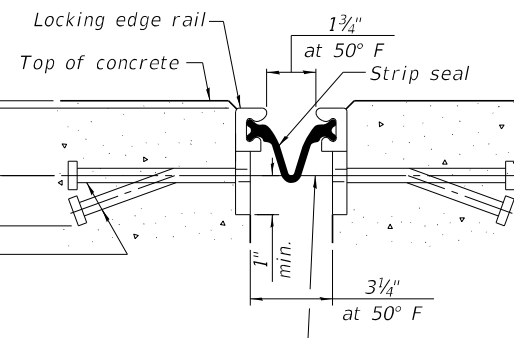
SHOWING ROLLED RAIL JOINT

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

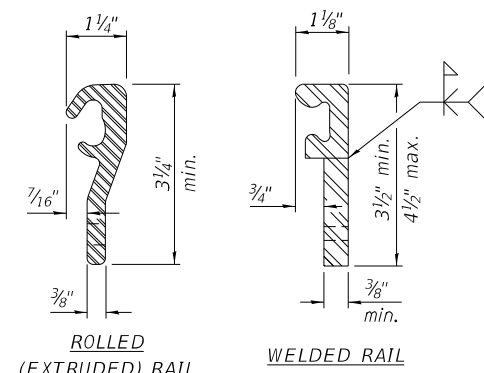
3/8" ϕ threaded rods in 7/16" ϕ holes at ± 4 -0" cts. for holding the proper joint opening based on the temperature during the deck pour. Place to miss studs. All rods shall be burned, or sawed off flush with the plates after concrete is set.

SECTION A-A

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

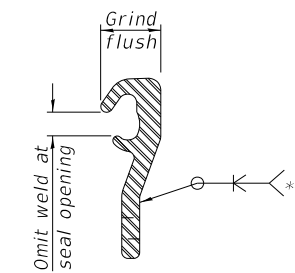


SHOWING WELDED RAIL JOINT



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.

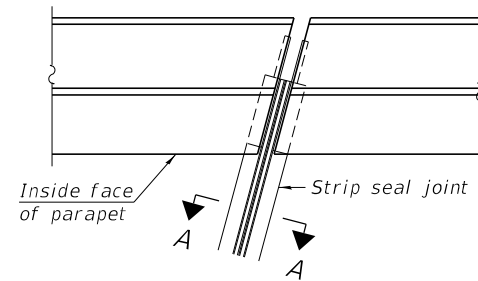
The Maximum space between locking edge rail segments shall be 3/16" and sealed with a suitable sealant; however, any rail joint within 10' measured perpendicular to the face of the curb or parapet shall be welded as shown in the locking edge rail splice detail.

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.

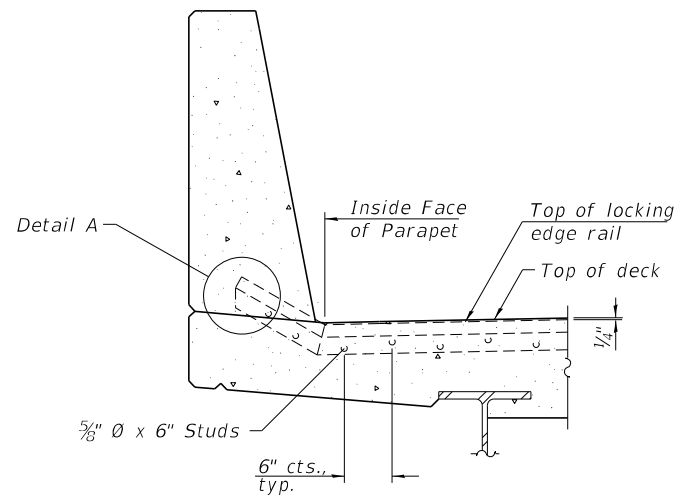
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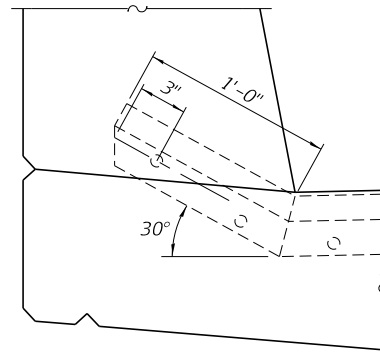
F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	601
CONTRACT NO. 76J90				
ILLINOIS FED. AID PROJECT				



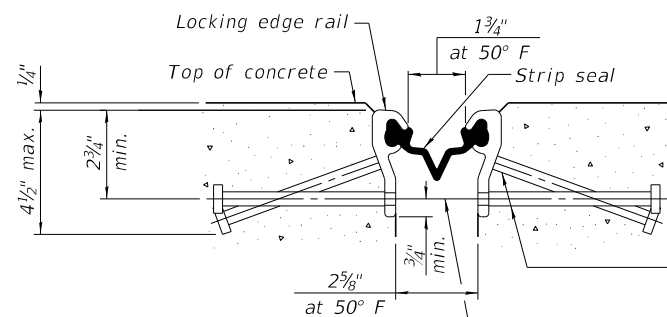
PLAN AT PARAPET



SECTION AT PARAPET



DETAIL A



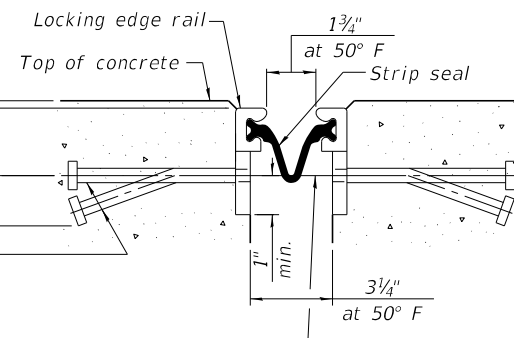
SHOWING ROLLED RAIL JOINT

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

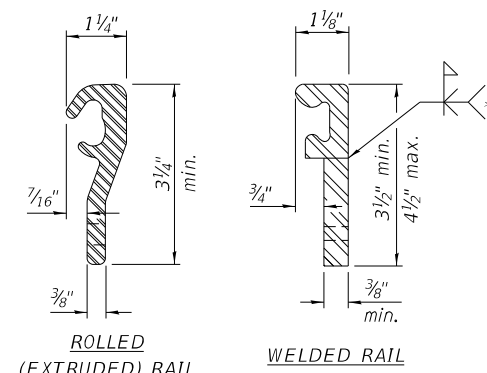
3/8" Ø threaded rods in 7/16" Ø holes at ±4'-0" cts. for holding the proper joint opening based on the temperature during the deck pour. Place to miss studs. All rods shall be burned, or sawed off flush with the plates after concrete is set.

SECTION A-A

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

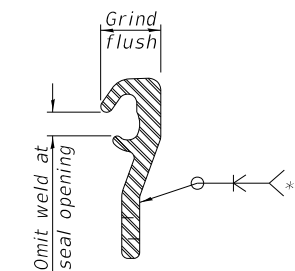


SHOWING WELDED RAIL JOINT



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	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.

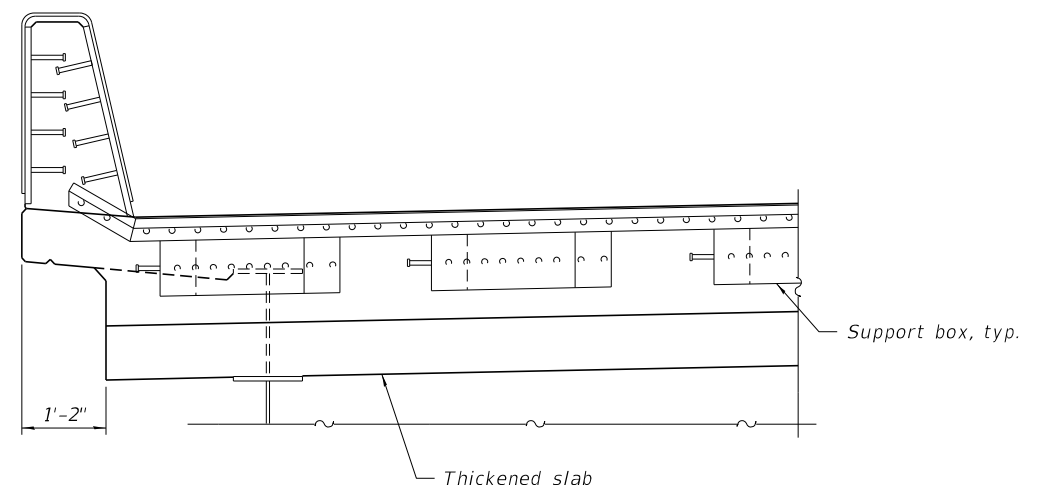
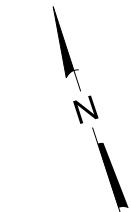
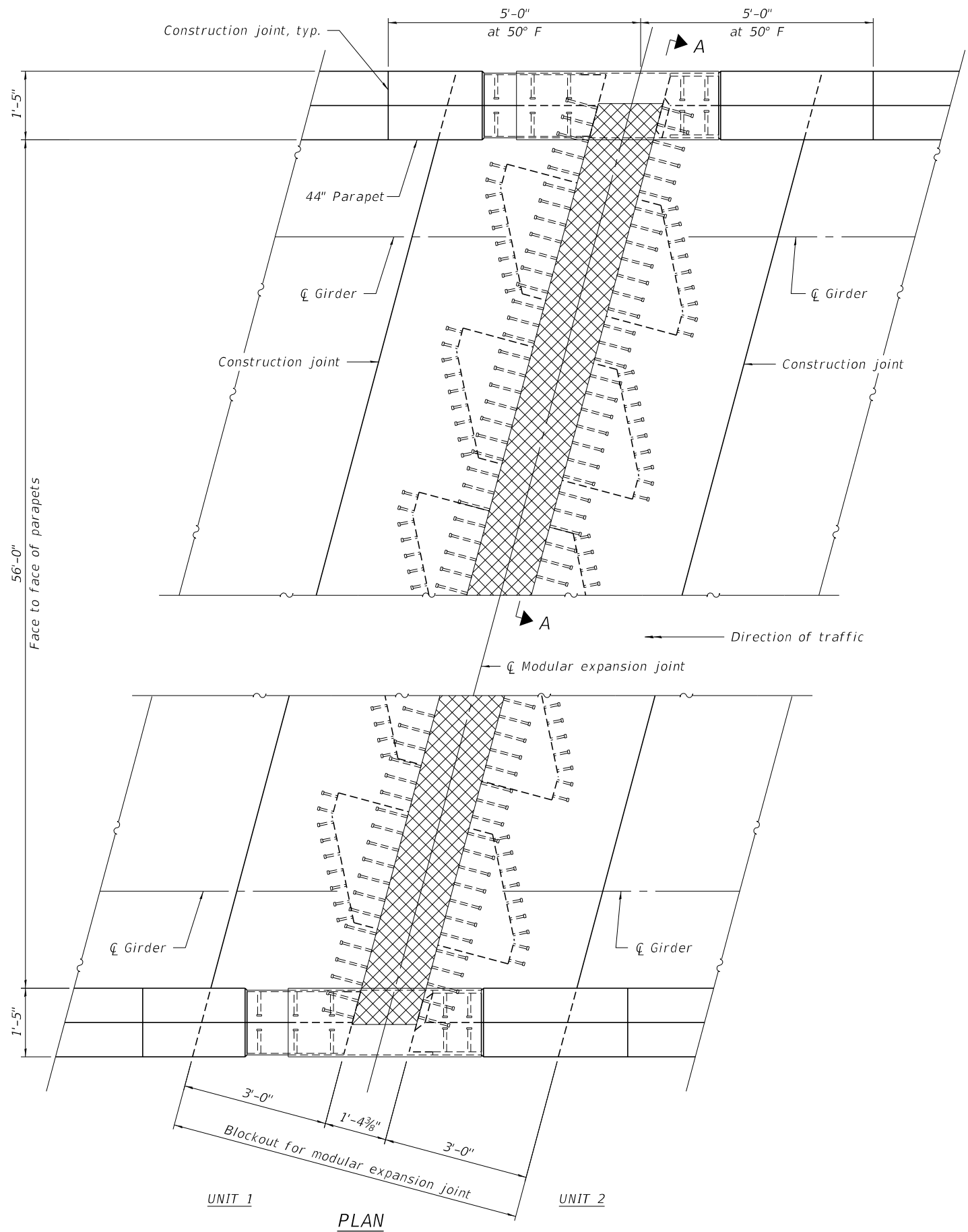
The locking edge rails depicted are configured for typical applications and are conceptual only. The actual configuration of the locking edge rails and matching strip seal may vary from manufacturer to manufacturer provided they fit the application and meet the minimum anchorage shown. Flanged edge rails, 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.



SECTION A-A

Note:
 For location of crown and cross slopes,
 see sheets 65 and 71 of 288.
 For Bill of Material, see sheet 90 of 288.

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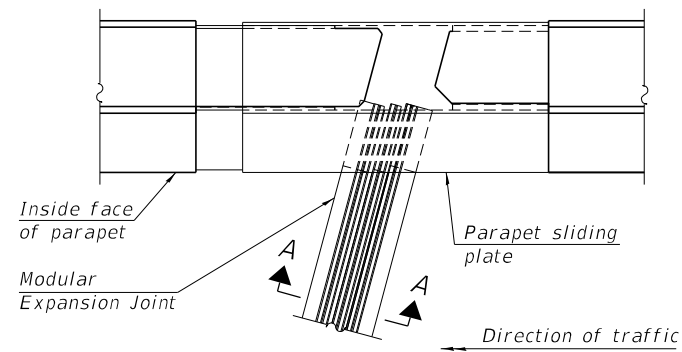
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STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION

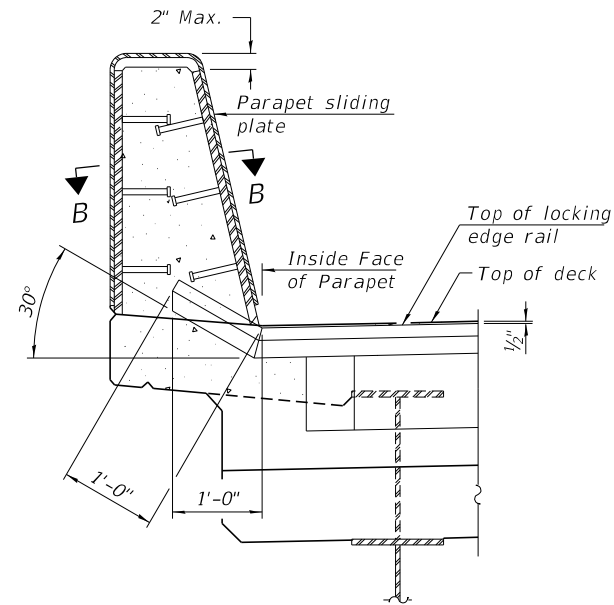
MODULAR EXPANSION JOINT - PIER 3 - 1
 STRUCTURE NO. 060-0351 (WB)

SHEET 98 OF 288 SHEETS

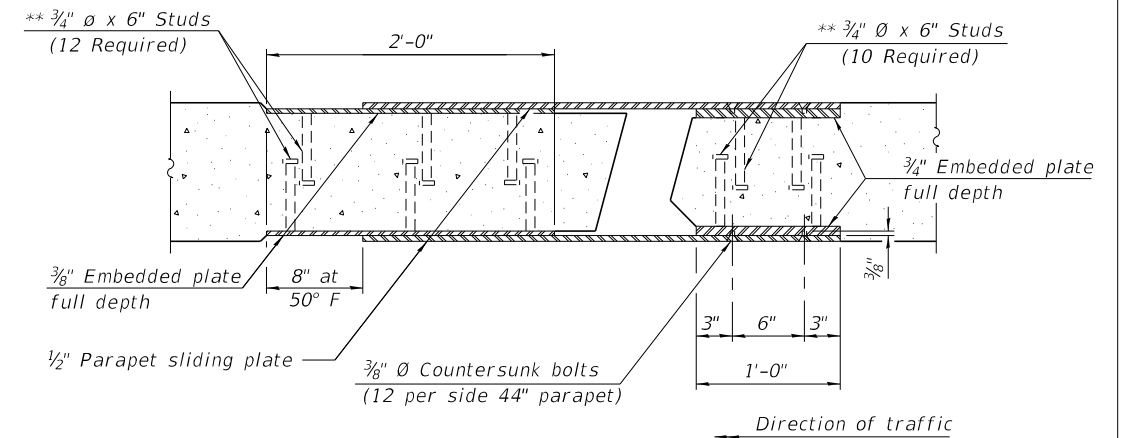
F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	603
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				



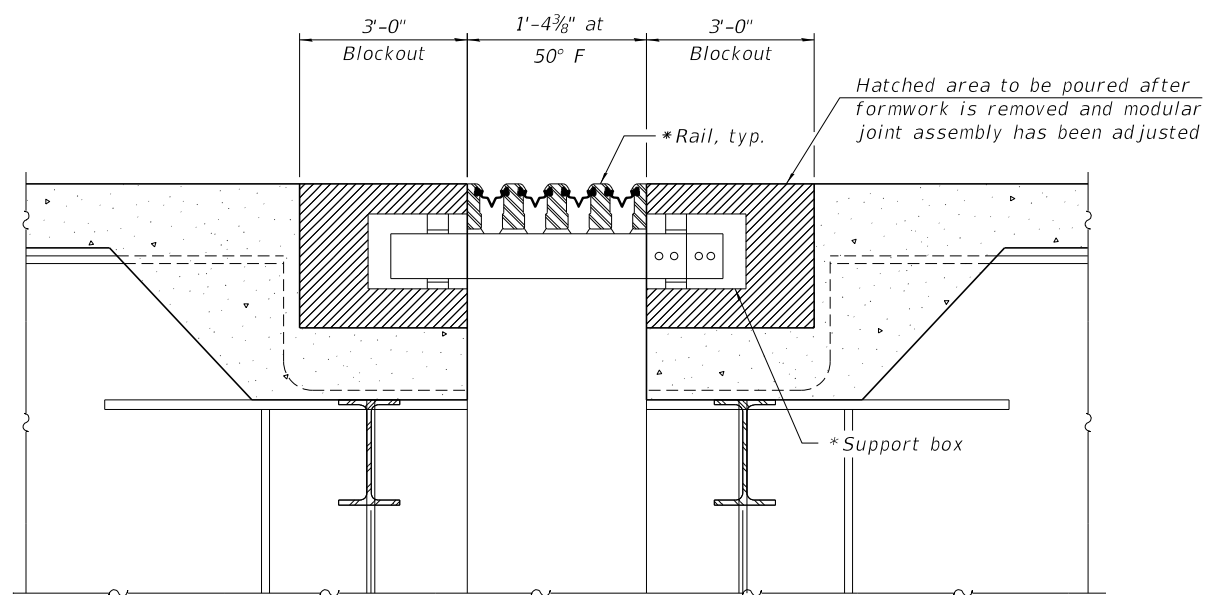
PLAN AT PARAPET



ELEVATION AT PARAPET



SECTION B-B

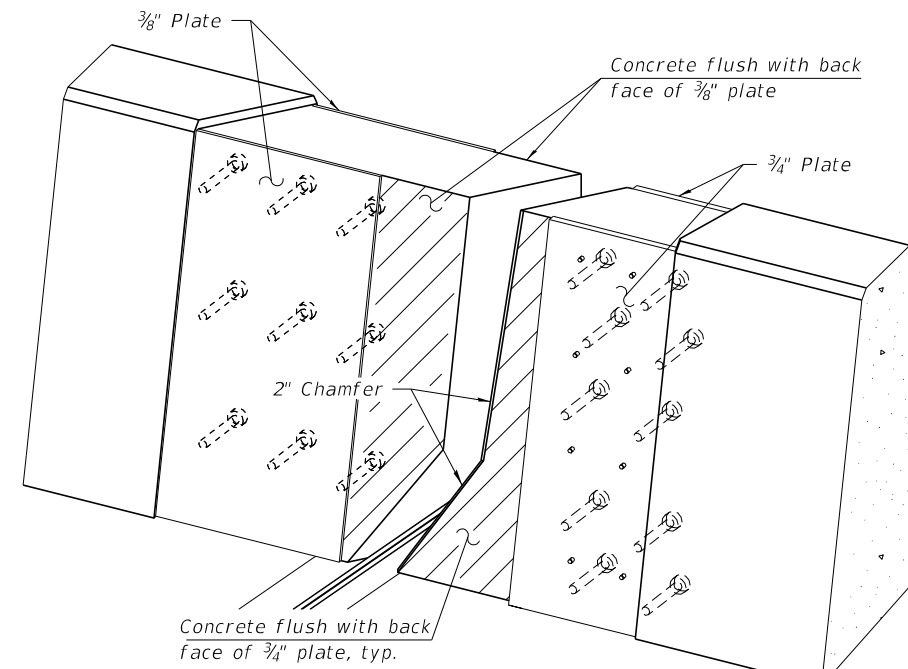


SECTION A-A

(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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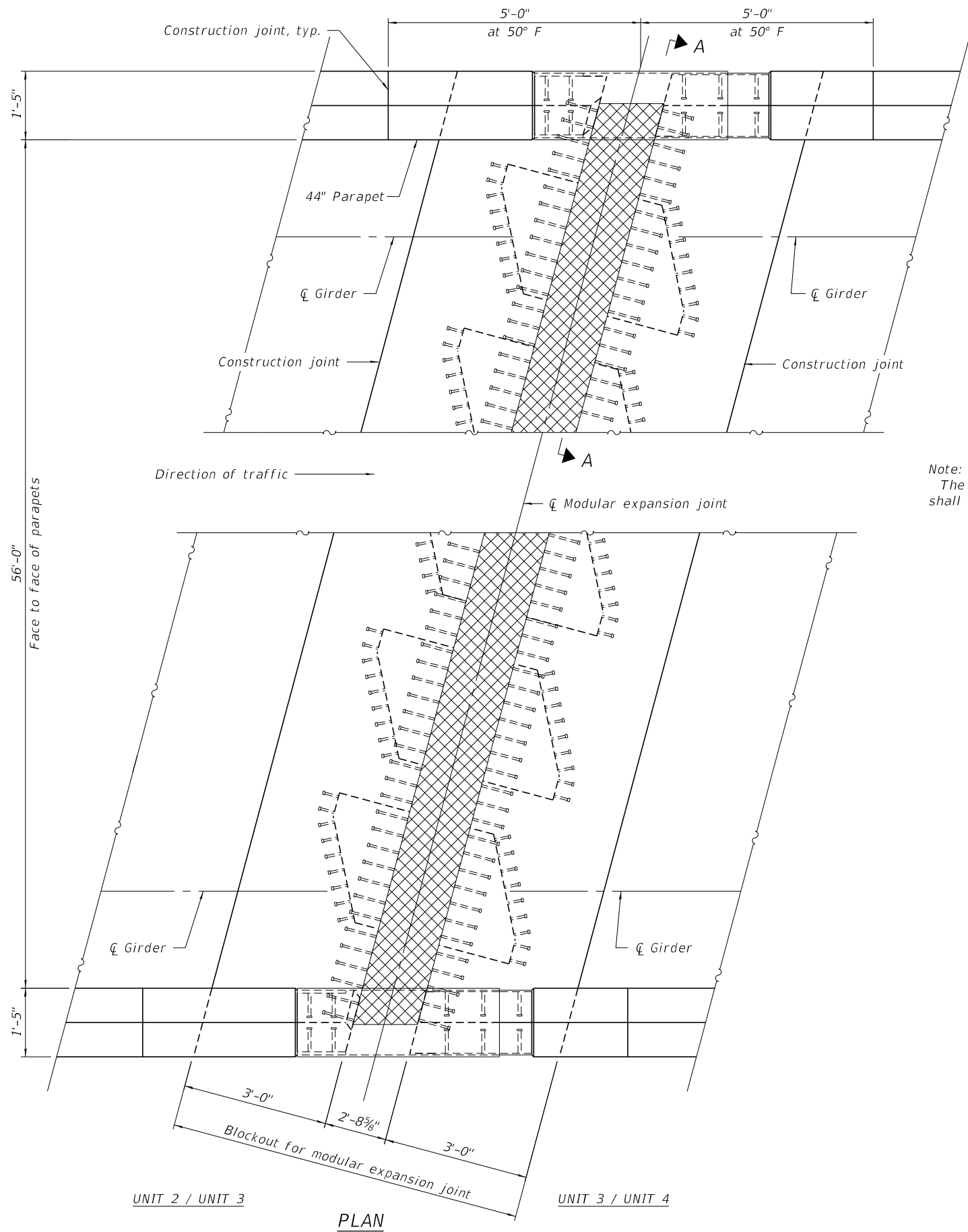
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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

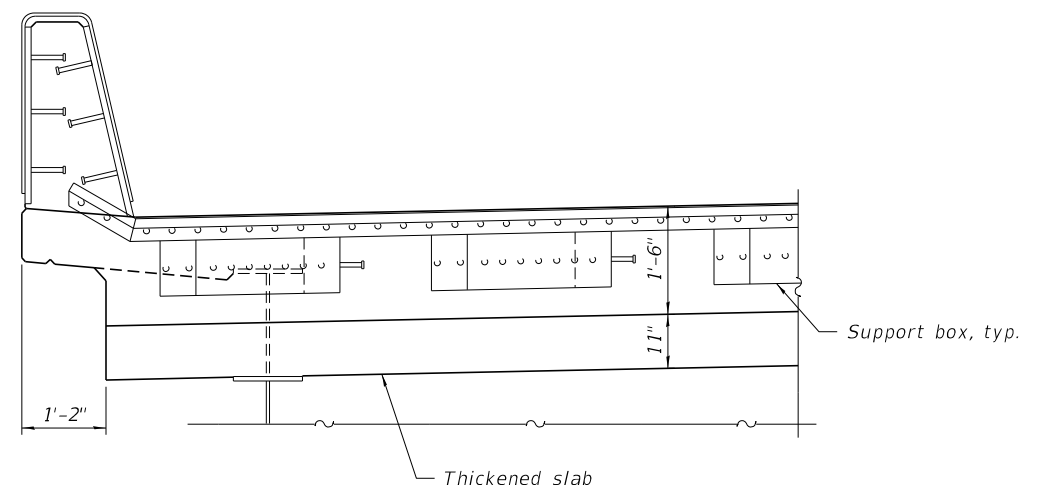
MODULAR EXPANSION JOINT - PIER 3 - 2
STRUCTURE NO. 060-0351 (WB)

SHEET 99 OF 288 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	604
CONTRACT NO. 76190				
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 65 and 71 of 288.

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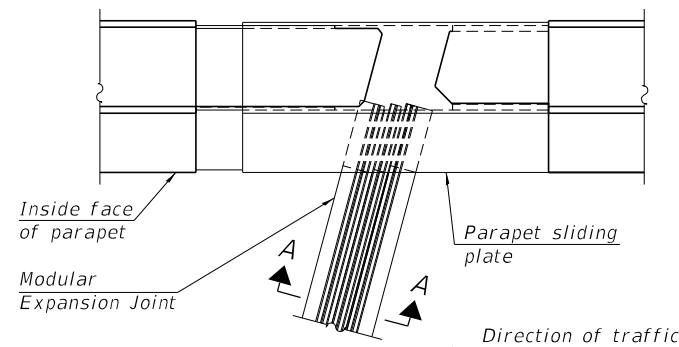
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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

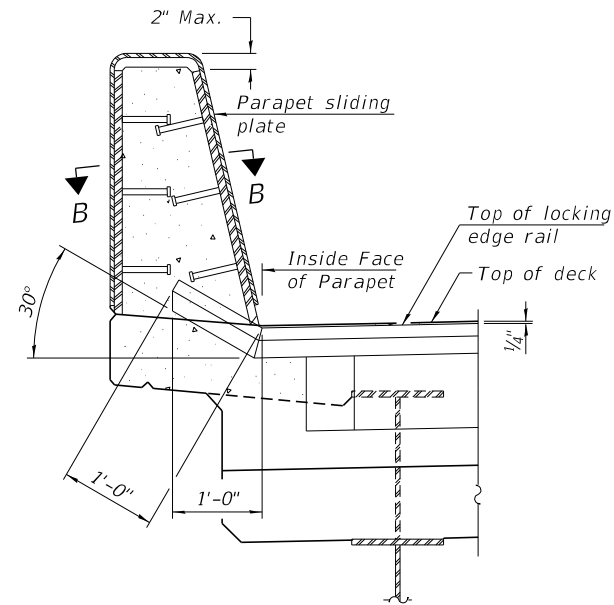
MODULAR EXPANSION JOINT - PIERS 10 & 17 - 1
STRUCTURE NO. 060-0351 (WB)

SHEET 100 OF 288 SHEETS

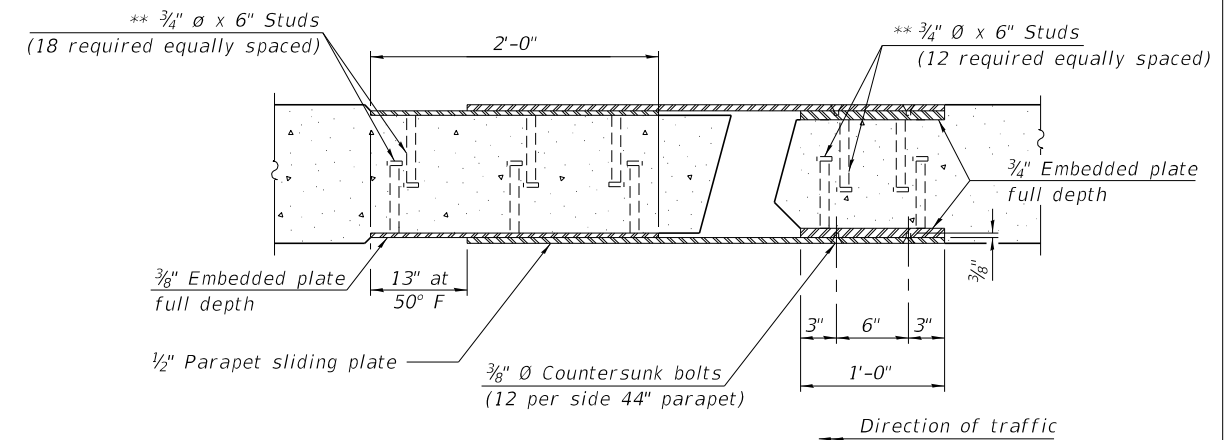
F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	605
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				



FOR SKEWS < 30°
PLAN AT PARAPET

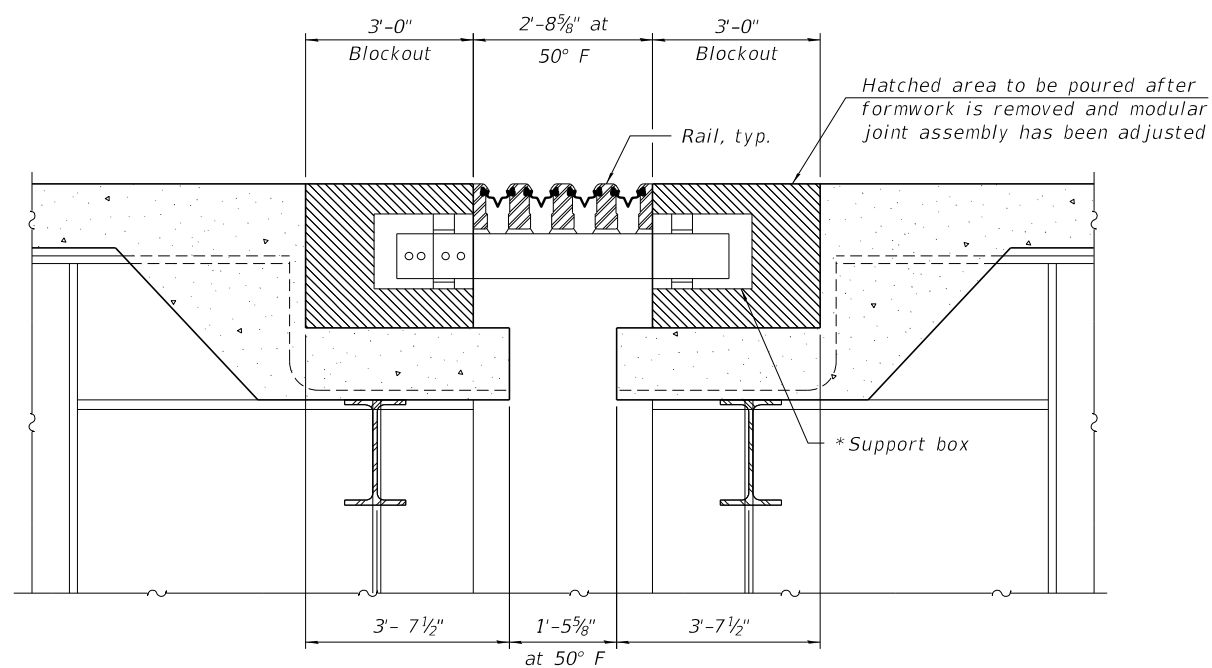


ELEVATION AT PARAPET



SECTION B-B

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

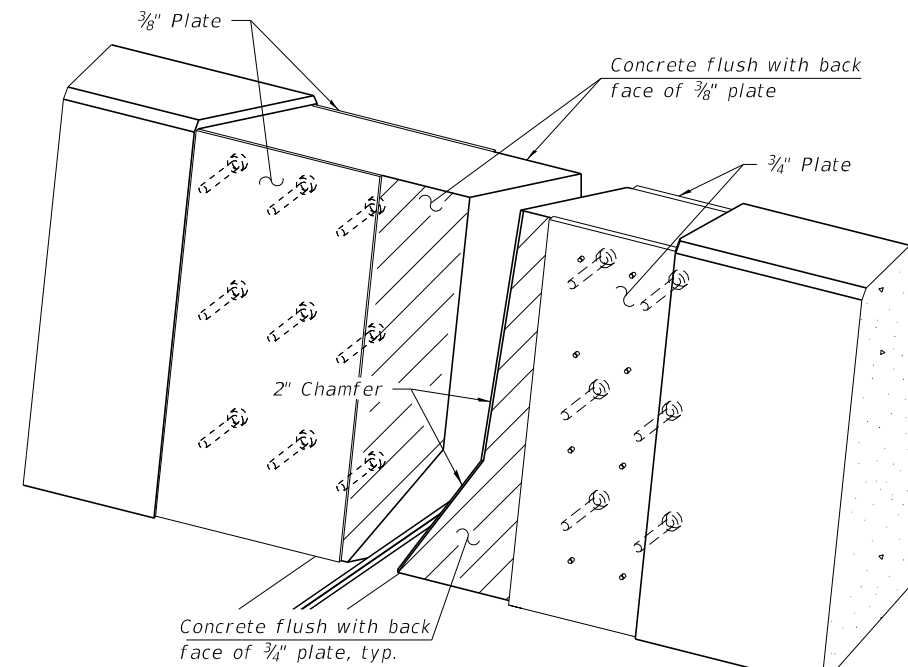


SECTION A-A

(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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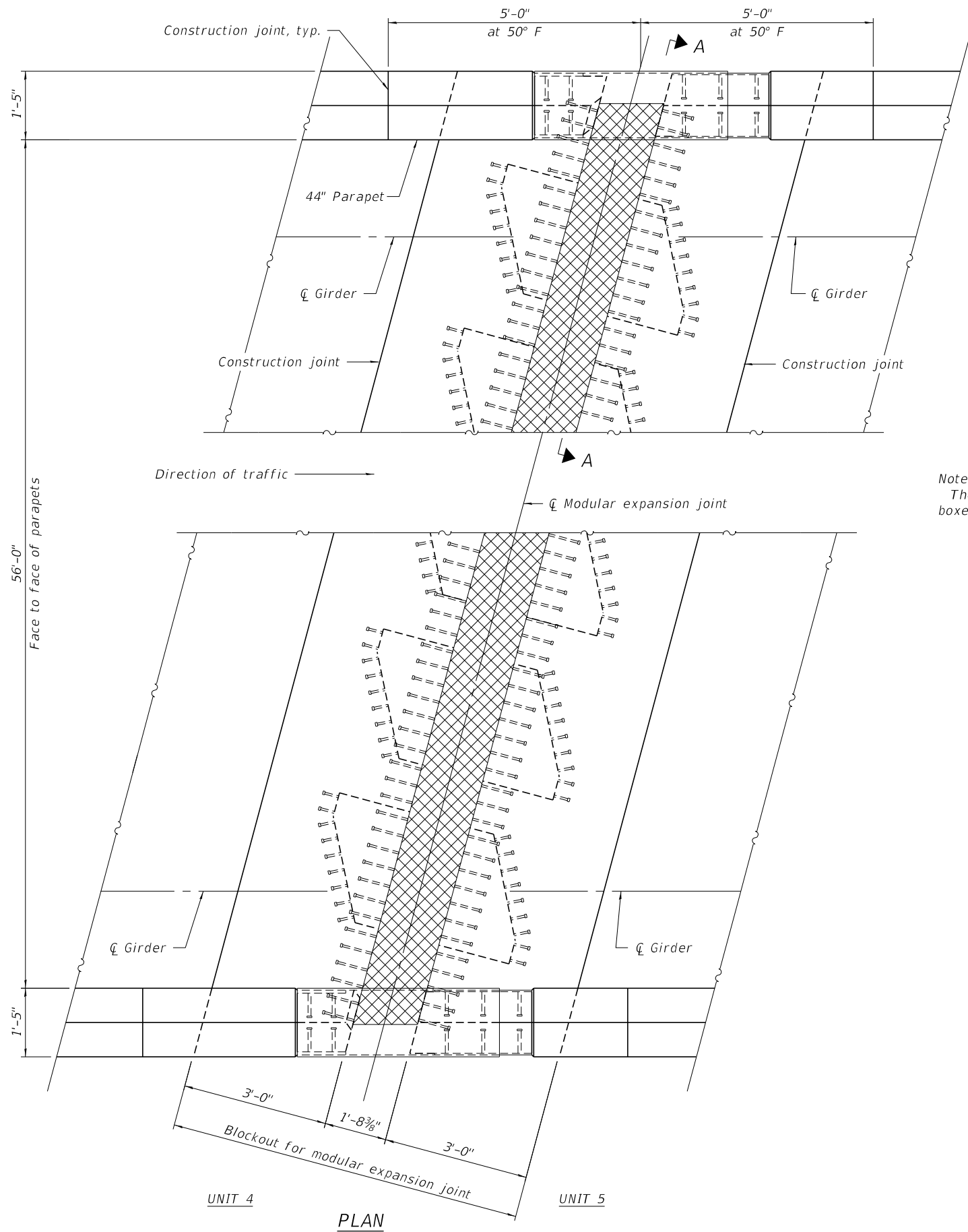
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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

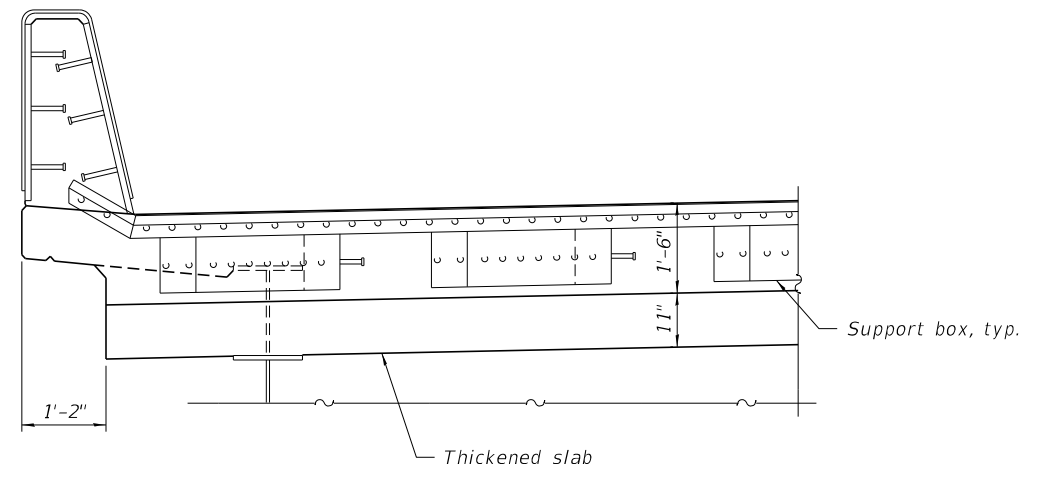
MODULAR EXPANSION JOINT - PIERS 10 & 17 - 2
STRUCTURE NO. 060-0351 (WB)

SHEET 101 OF 288 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	606
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 71 and 74 of 288.

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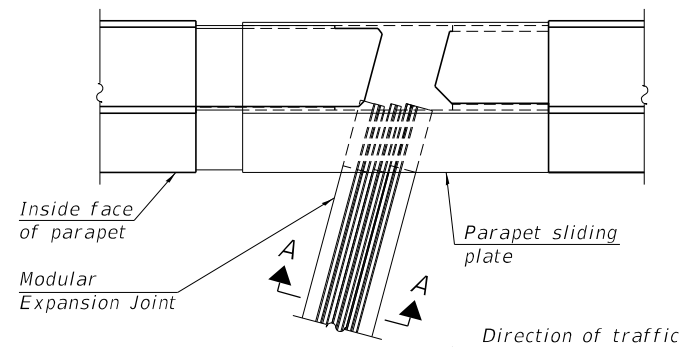
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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

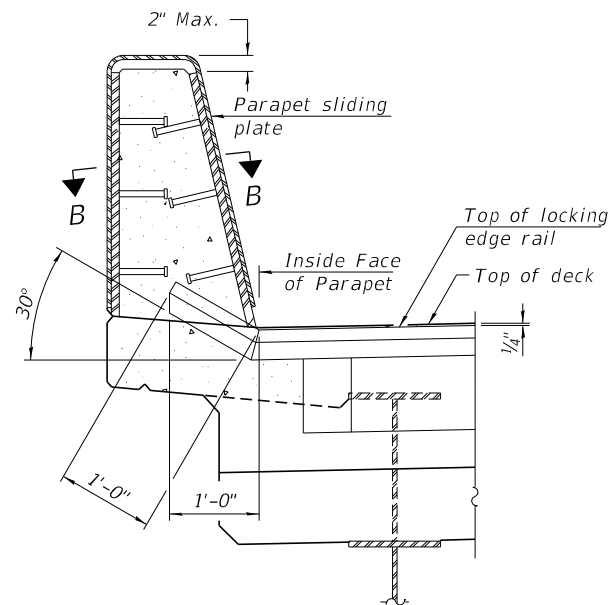
MODULAR EXPANSION JOINT - PIER 24 - 1
STRUCTURE NO. 060-0351 (WB)

SHEET 102 OF 288 SHEETS

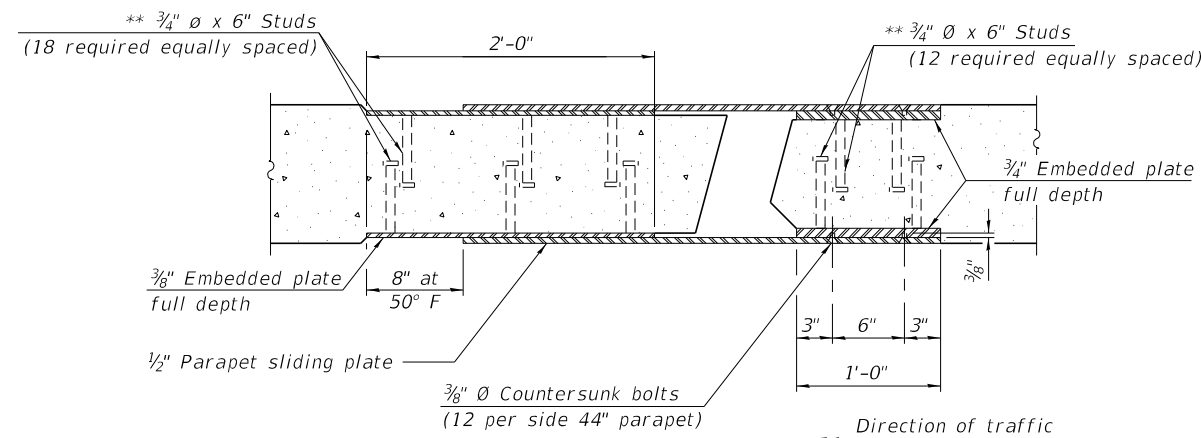
F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	607
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				



FOR SKEWS < 30°
PLAN AT PARAPET

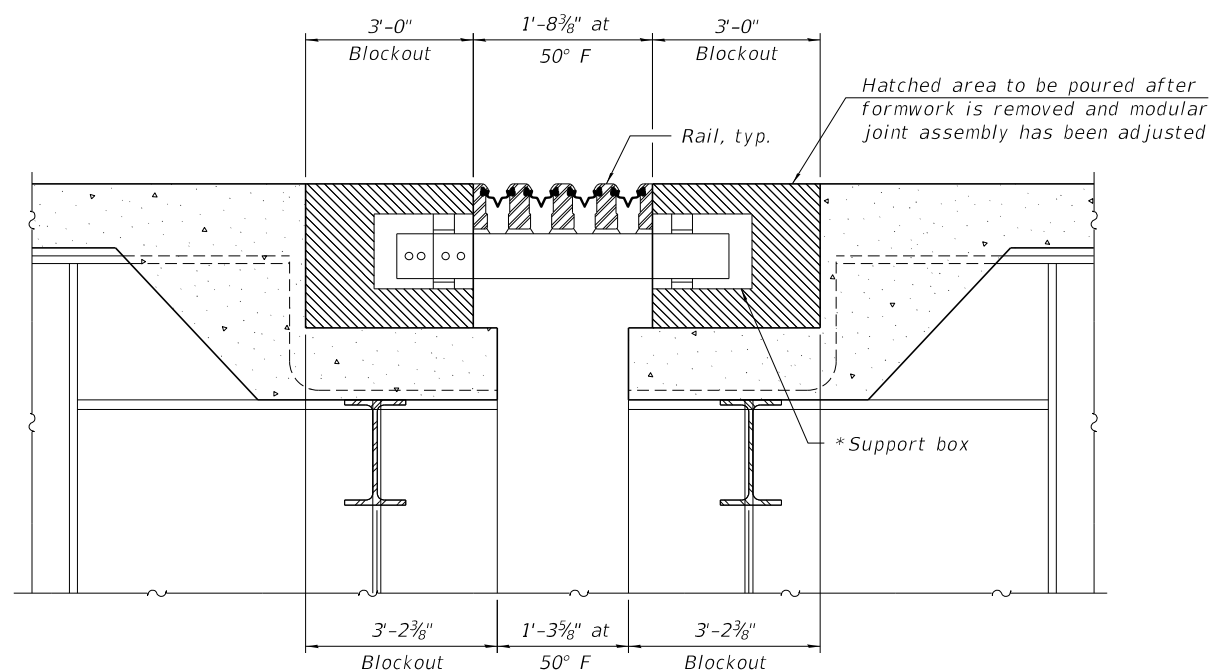


ELEVATION AT PARAPET



SECTION B-B

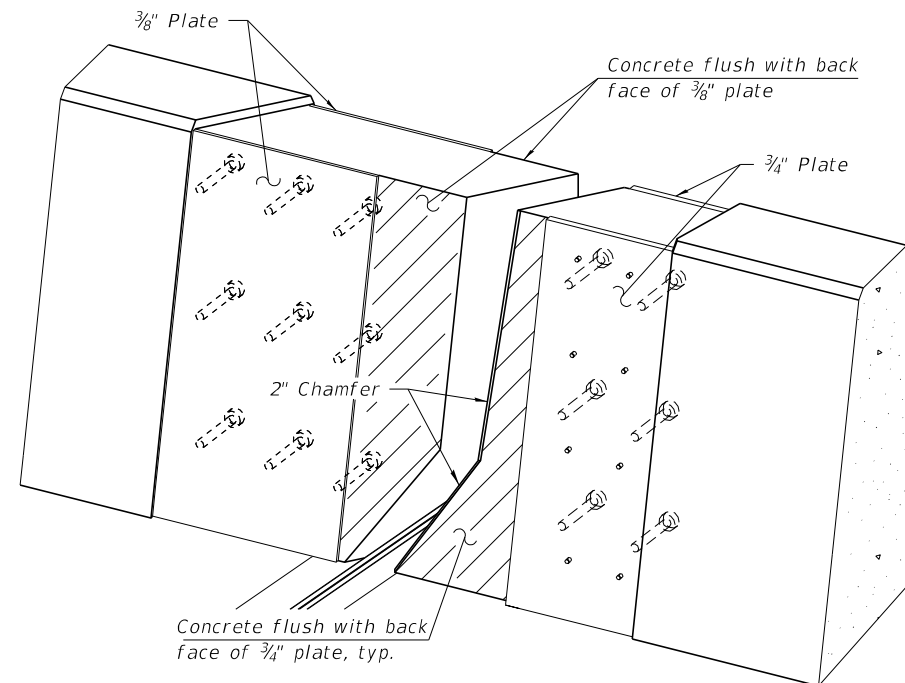
** 3/4" Ø x 6" Studs (18 required equally spaced)
** 3/4" Ø x 6" Studs (12 required equally spaced)
3/8" Embedded plate full depth
1/2" Parapet sliding plate
3/8" Ø Countersunk bolts (12 per side 44" parapet)
Direction of traffic



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

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.

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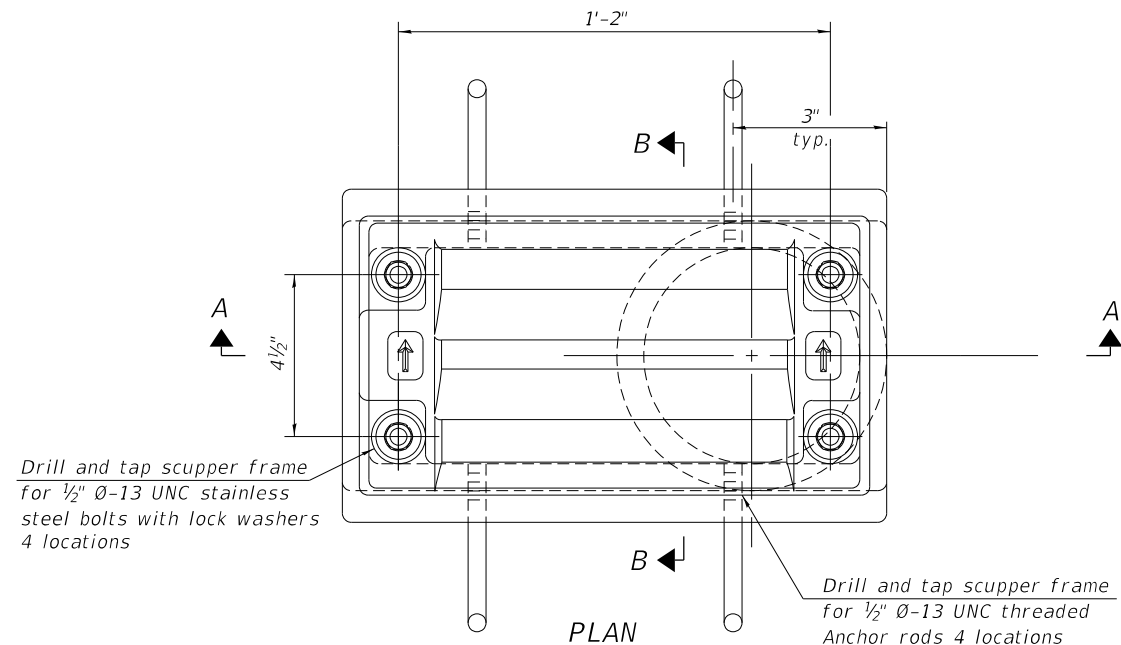
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PLOT DATE =	DRAWN - RDF	REVISED -
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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

MODULAR EXPANSION JOINT - PIER 24 - 2
STRUCTURE NO. 060-0351 (WB)

SHEET 103 OF 288 SHEETS

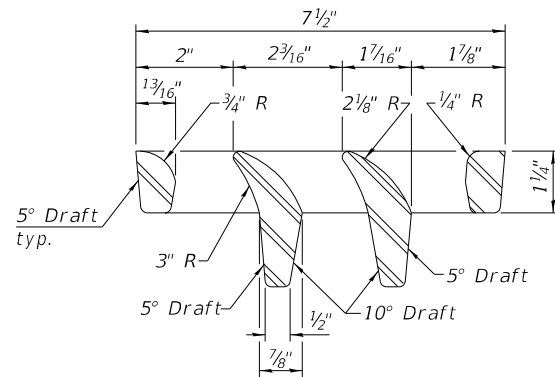
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	608
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				



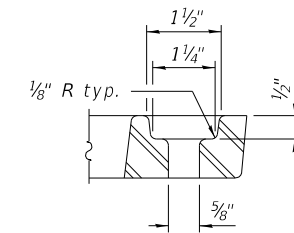
Drill and tap scupper frame for 1/2" Ø-13 UNC stainless steel bolts with lock washers 4 locations

PLAN

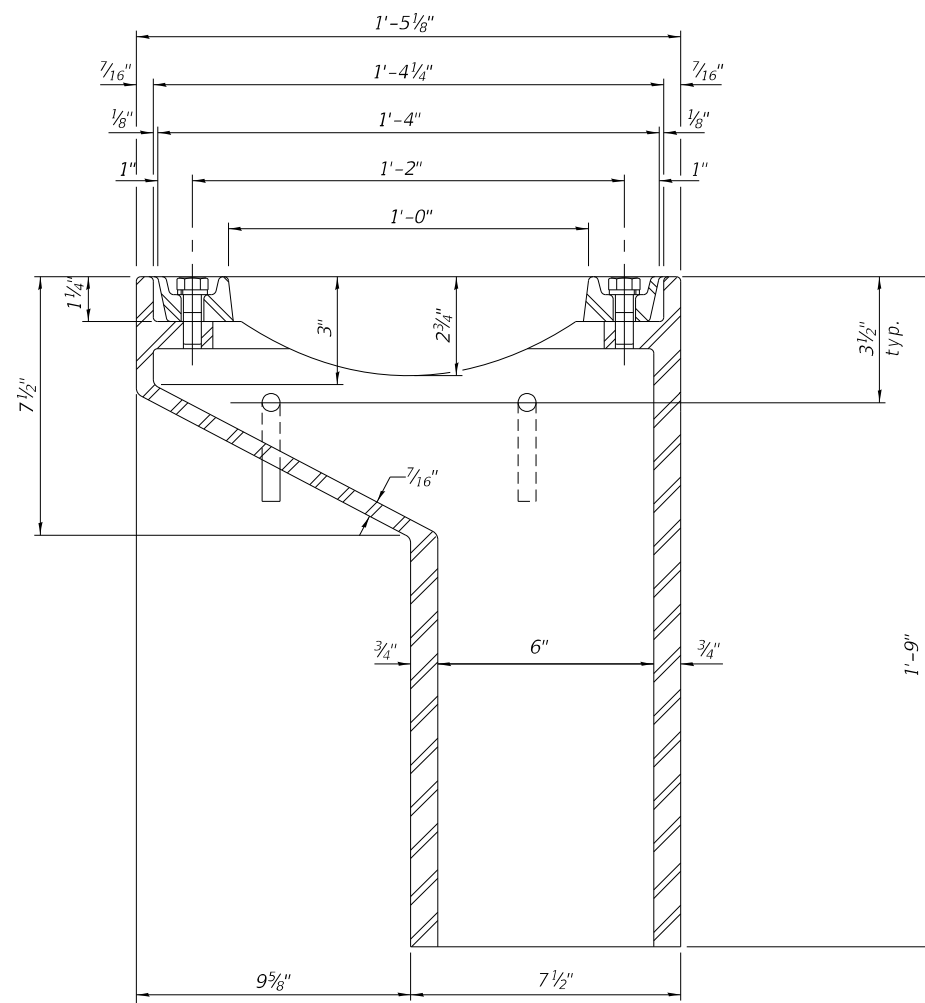
Drill and tap scupper frame for 1/2" Ø-13 UNC threaded Anchor rods 4 locations



VANE GRATE DETAIL

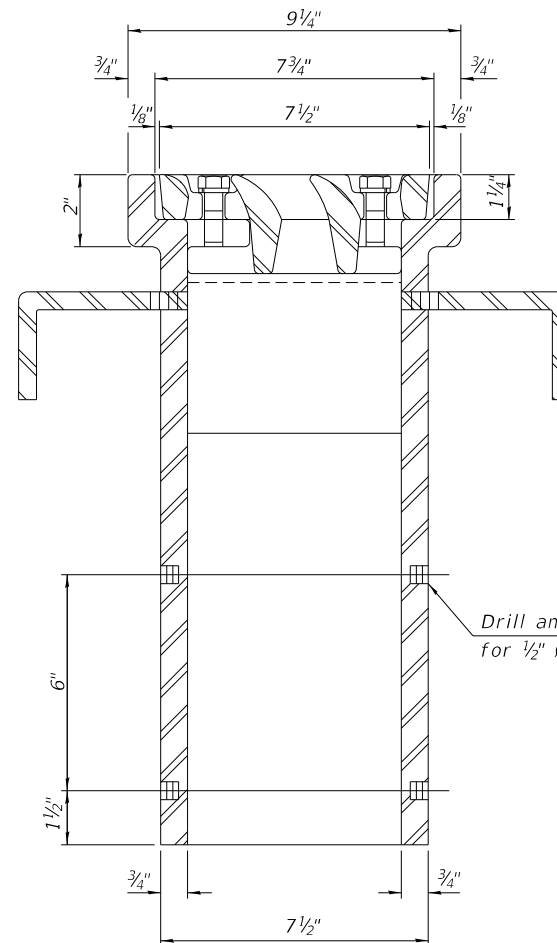


GRATE BOLT HOLE DETAIL



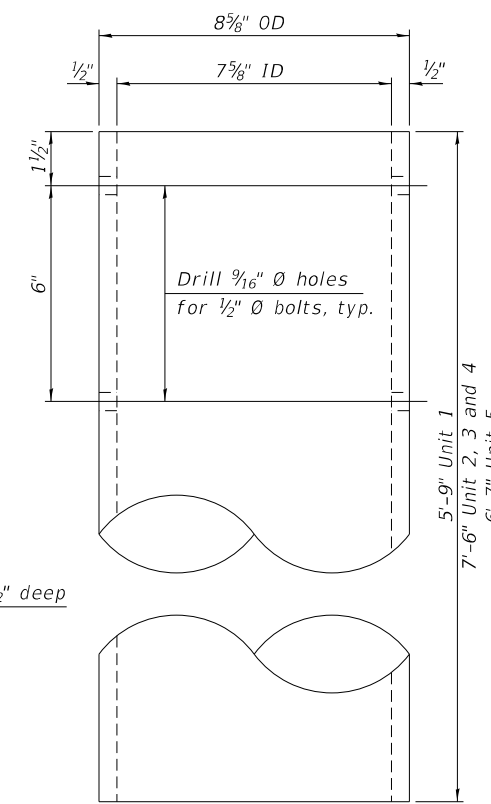
SECTION A-A

See sheet 75 of 288 for scupper location relative to parapet.

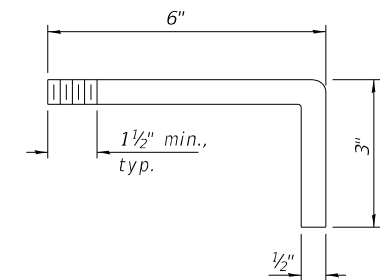


SECTION B-B

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



DOWNSPOUT



ANCHOR ROD DETAIL

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 288.
 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.

BILL OF MATERIAL

LOCATION	ITEM	UNIT	QUANTITY
Unit 1	Drainage Scupper, DS-11	Each	11
Unit 2	Drainage Scupper, DS-11	Each	24
Unit 3	Drainage Scupper, DS-11	Each	19
Unit 4	Drainage Scupper, DS-11	Each	20
Unit 5	Drainage Scupper, DS-11	Each	7
Total			81

DS-11

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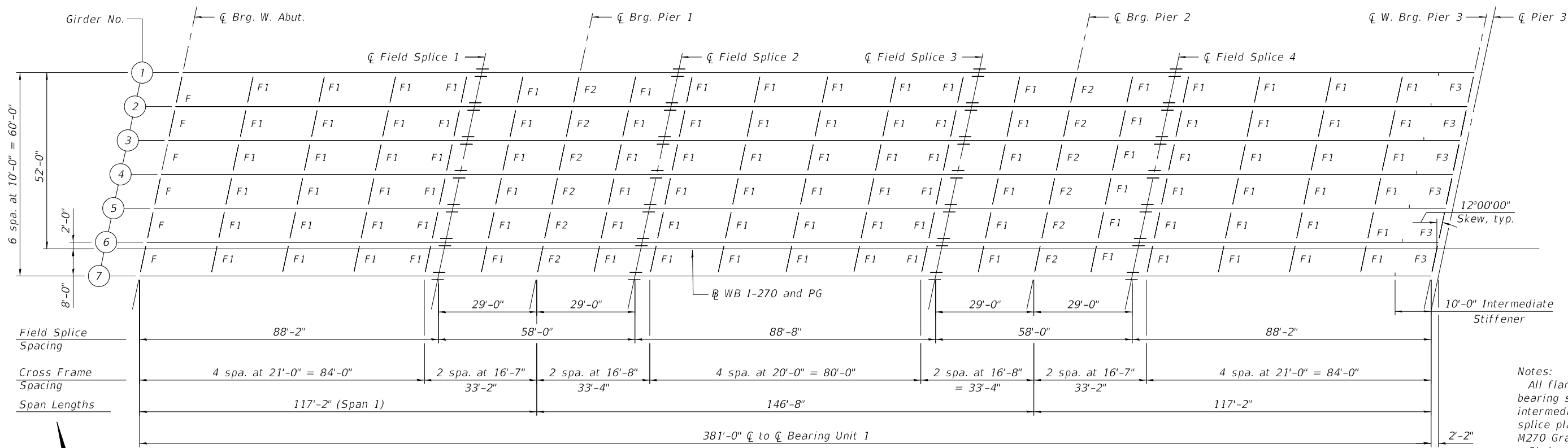
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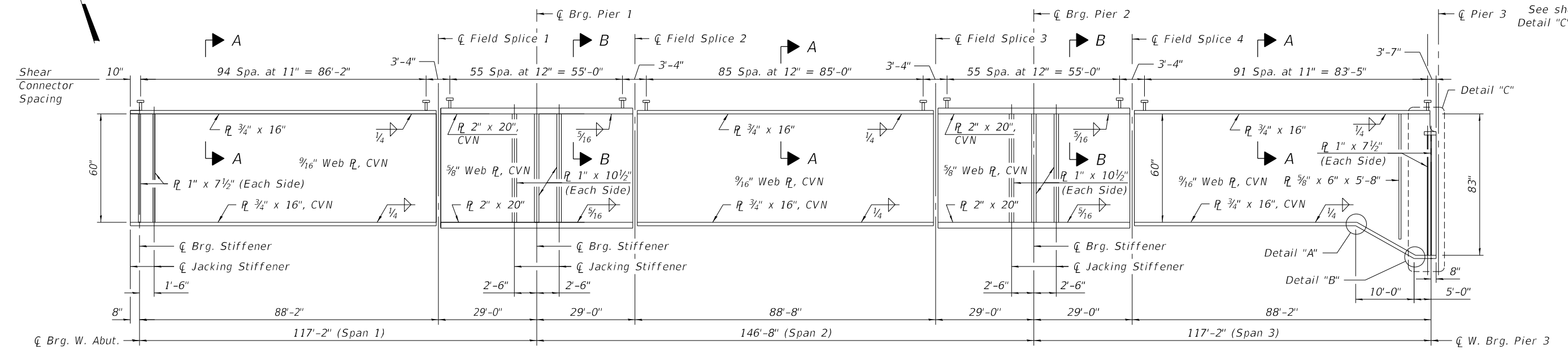
DRAINAGE SCUPPER, DS-11
 STRUCTURE NO. 060-0351 (WB)

SHEET 104 OF 288 SHEETS

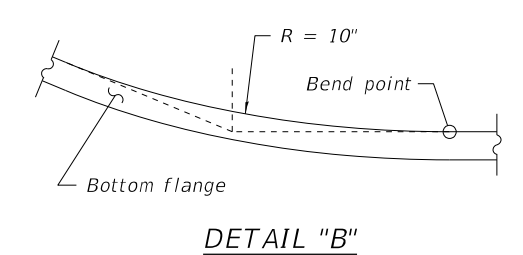
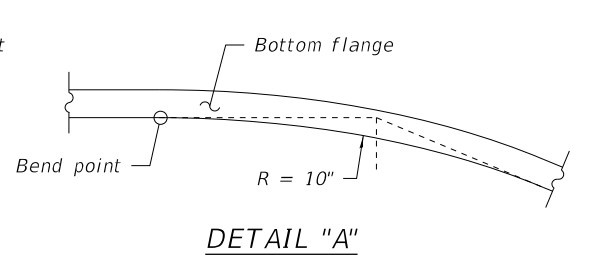
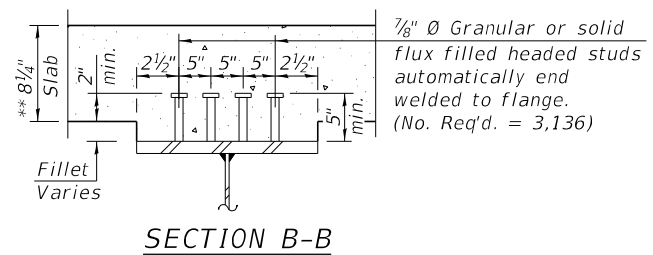
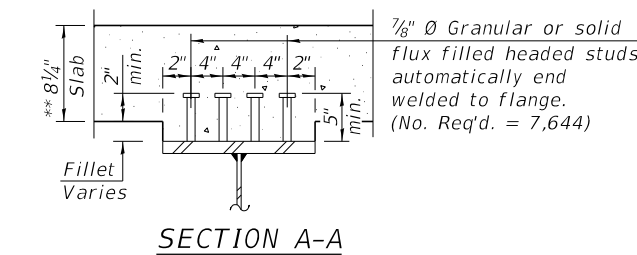
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	609
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				



FRAMING PLAN - UNIT 1
(Spans 1 to 3)



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



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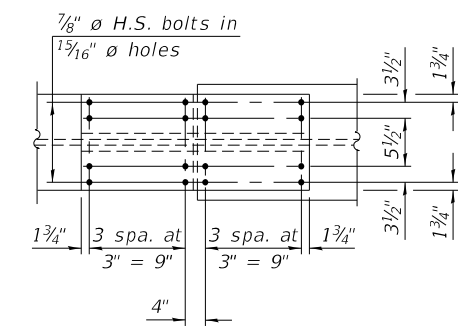
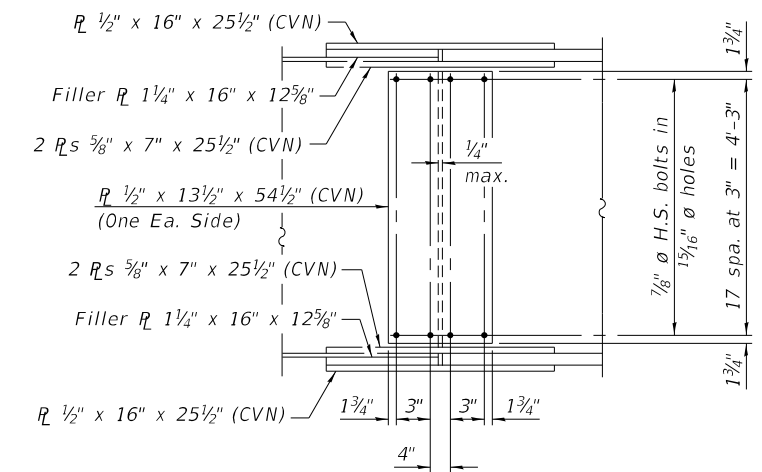
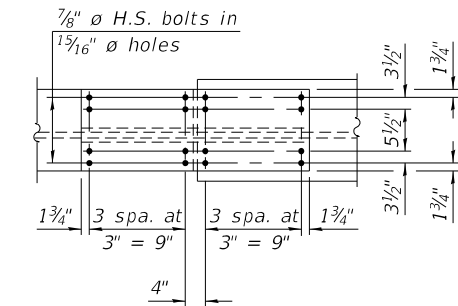
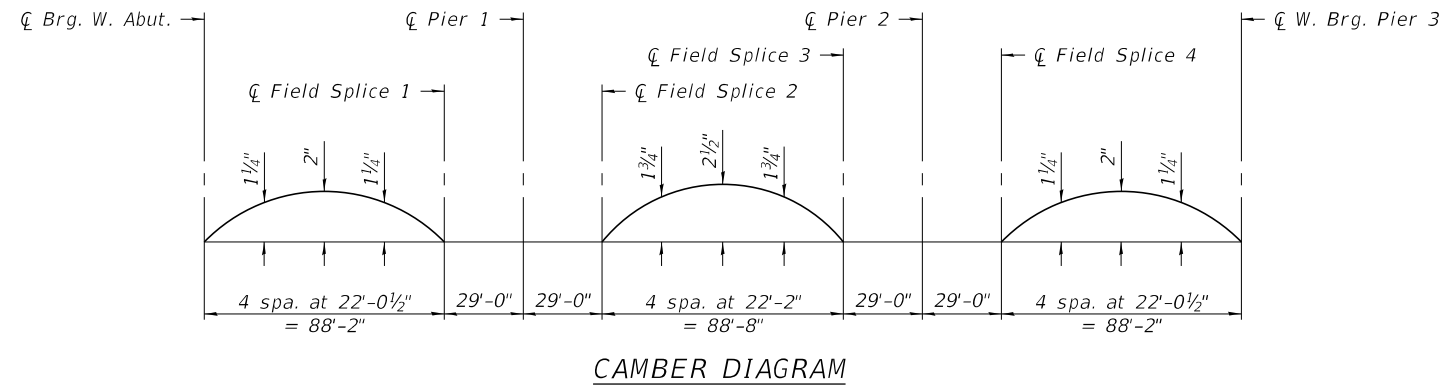
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FRAMING PLAN UNIT 1
STRUCTURE NO. 060-0351 (WB)

SHEET 105 OF 288 SHEETS

F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	610
CONTRACT NO. 76J90				
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	451.66	451.96	452.10	452.23	452.67	452.83	452.99	453.56
Girder 2	451.85	452.16	452.29	452.42	452.86	453.02	453.18	453.75
Girder 3	452.04	452.35	452.48	452.61	453.05	453.21	453.37	453.94
Girder 4	452.23	452.54	452.67	452.80	453.24	453.40	453.56	454.13
Girder 5	452.41	452.73	452.86	452.99	453.43	453.59	453.75	454.32
Girder 6	452.20	452.52	452.65	452.78	453.22	453.38	453.54	454.11
Girder 7	451.99	452.30	452.43	452.56	453.01	453.16	453.32	453.90

*** For Fabrication only.

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

Notes:
See sheet 105 of 288 for additional notes.
"CVN" denotes Chorp V-Notch impact requirements, zone 2.

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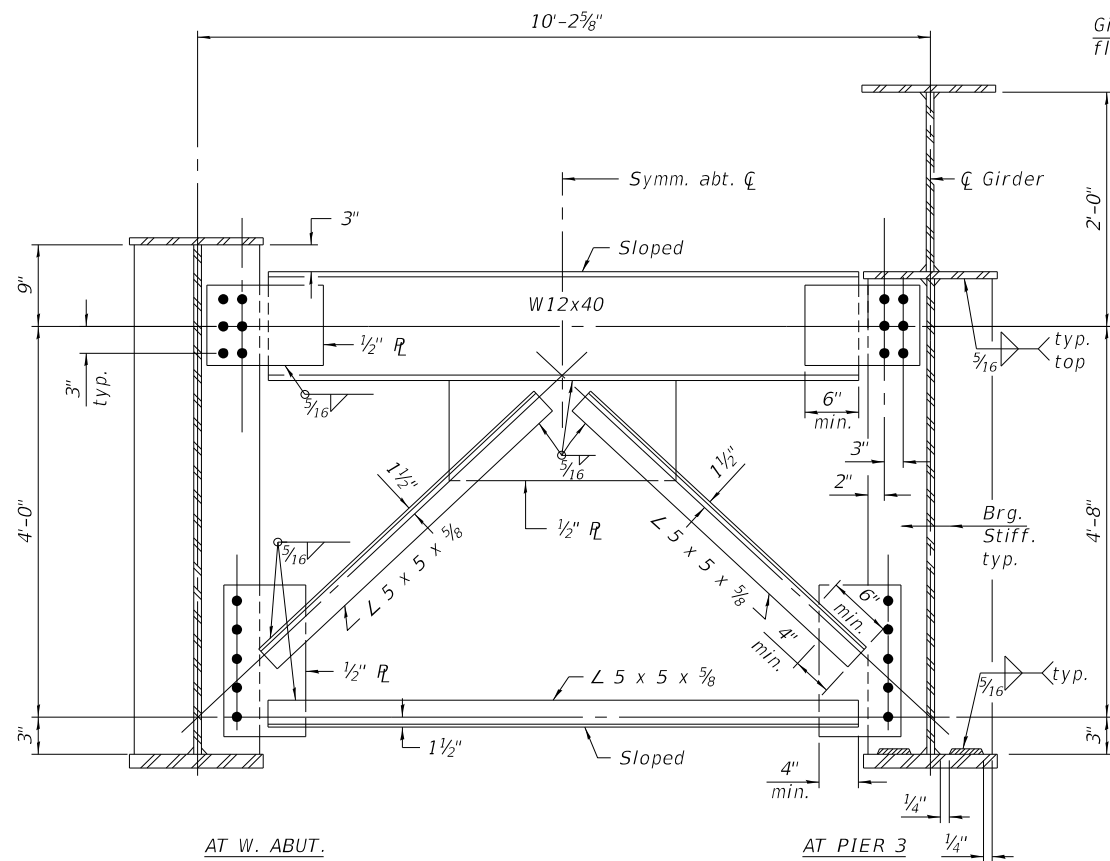
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DEPARTMENT OF TRANSPORTATION**

**STEEL DETAILS UNIT 1 - 1
STRUCTURE NO. 060-0351 (WB)**

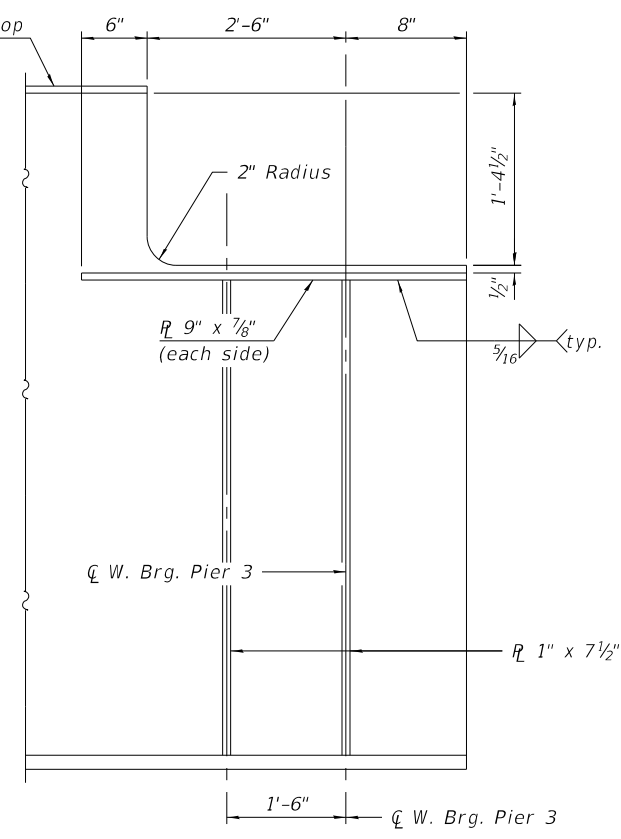
SHEET 106 OF 288 SHEETS

F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	611
CONTRACT NO. 76J90				

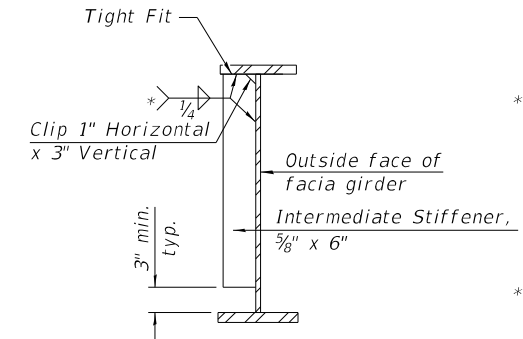
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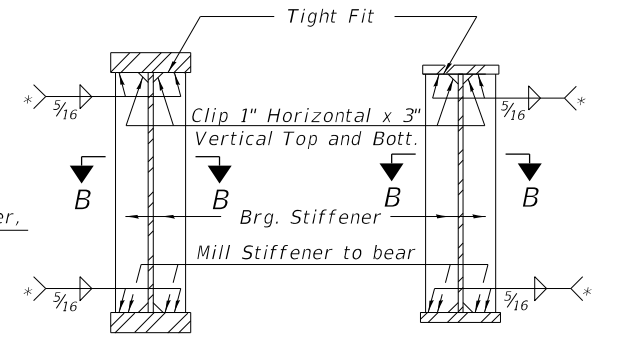
CROSS FRAME F AND F3
(6 F Required)
(6 F3 Required)



DETAIL C

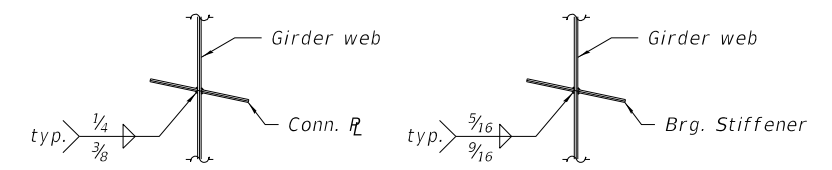


SECTION AT INT. STIFFENER
(Facia girders shown, interior girders similar)



SECTION AT PIER **SECTION AT ABUTMENT**

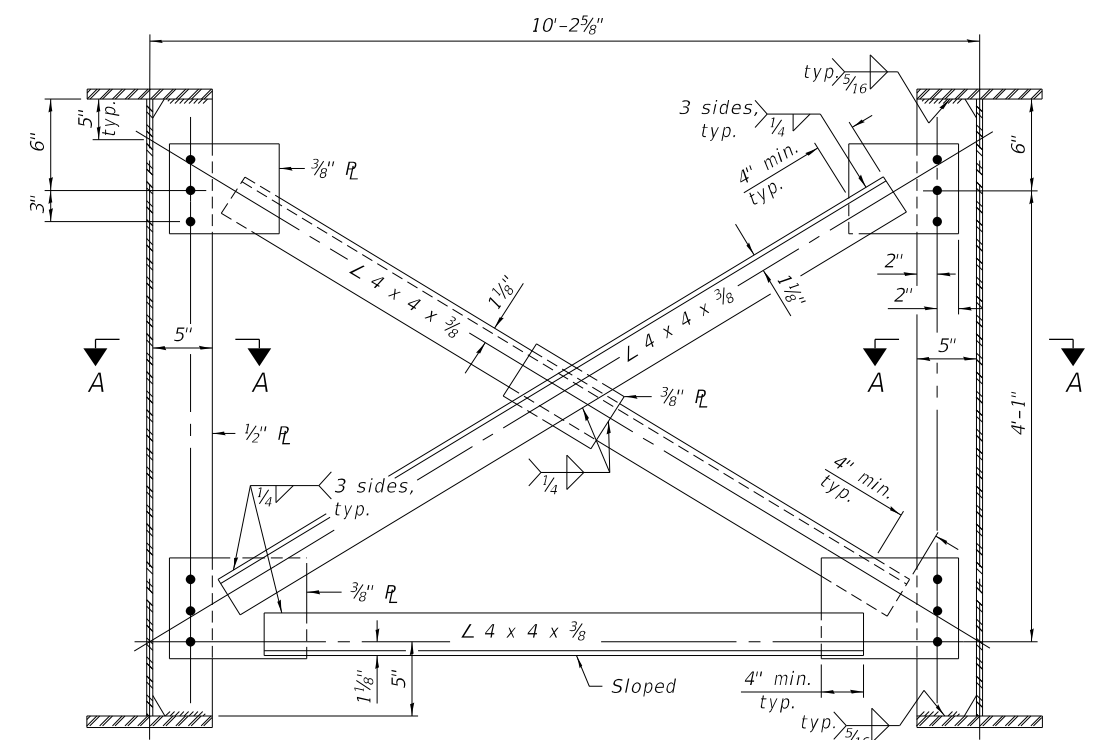
* Terminate 1/4" (±1/8") from the end of plate intersects.



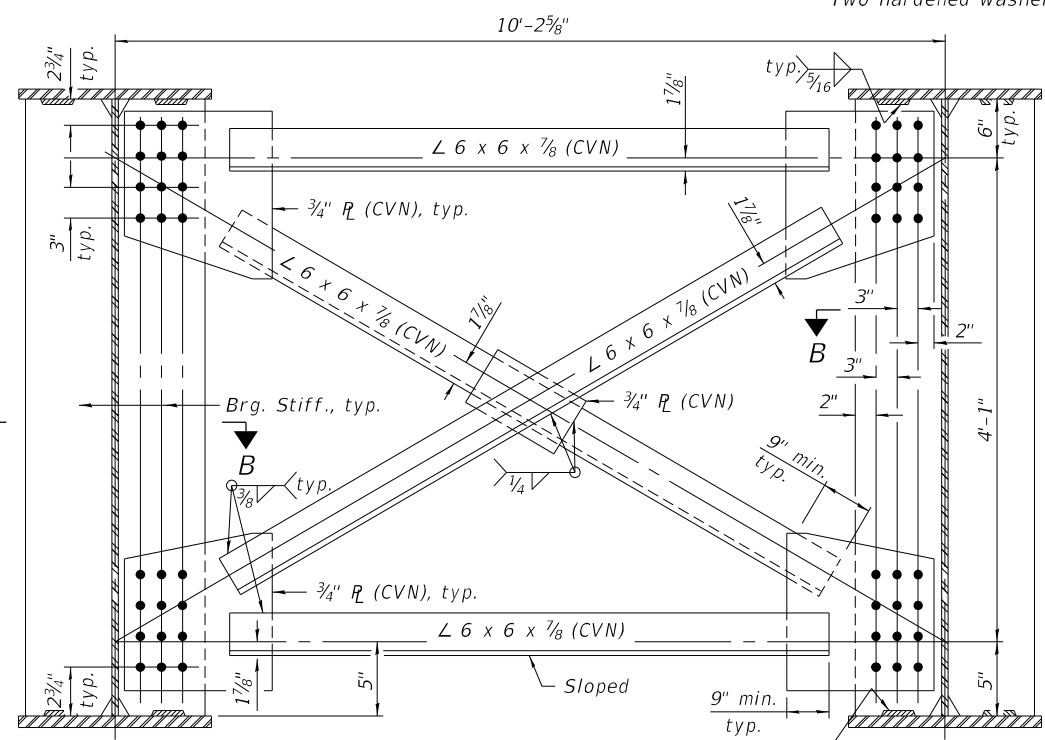
SECTION A-A

SECTION B-B

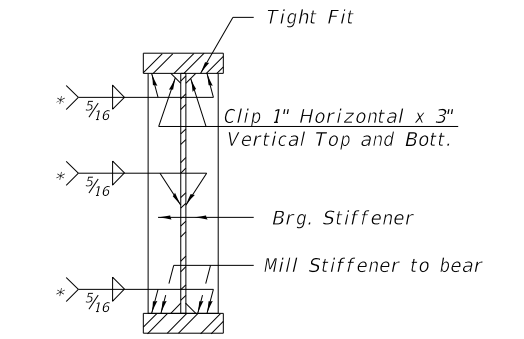
Notes:
 All cross frames or diaphragms between beams or girders shall be installed with erection pins and bolts in accordance with the erection plan approved by the Engineer. Individual cross frames or diaphragms at supports may be temporarily disconnected to install bearing anchor rods.
 All structural 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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DEPARTMENT OF TRANSPORTATION

STEEL DETAILS UNIT 1 - 2
STRUCTURE NO. 060-0351 (WB)

SHEET 107 OF 288 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	612
CONTRACT NO. 76190				
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
$\phi_r M_u$	(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	3.88	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 $M_{\ell + IM}$]
 $\phi_r M_u$: 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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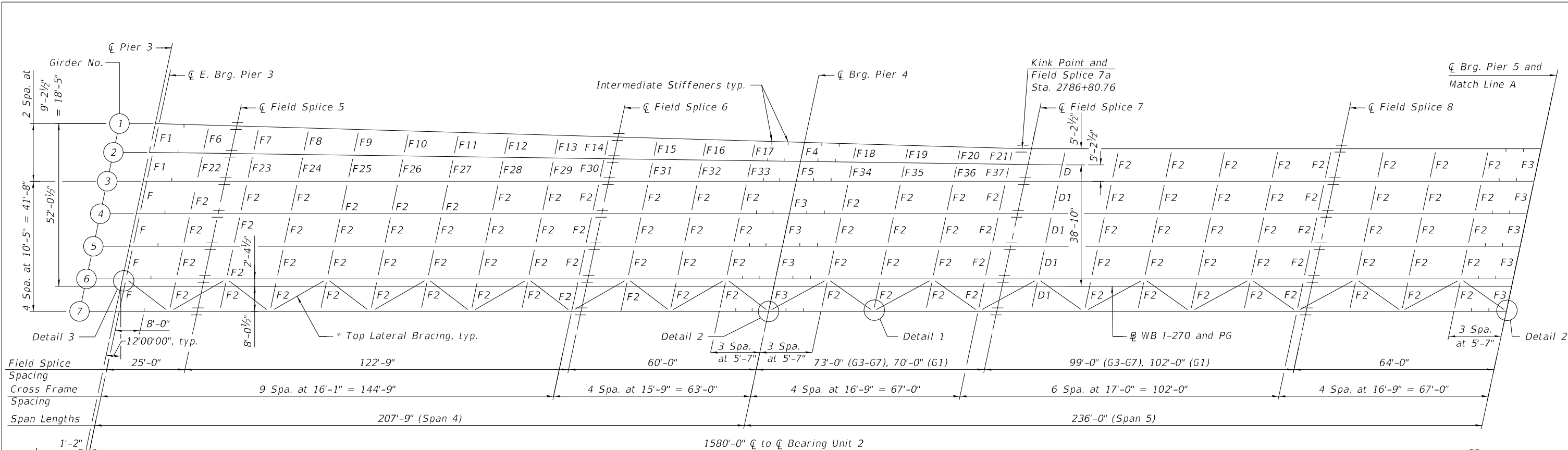
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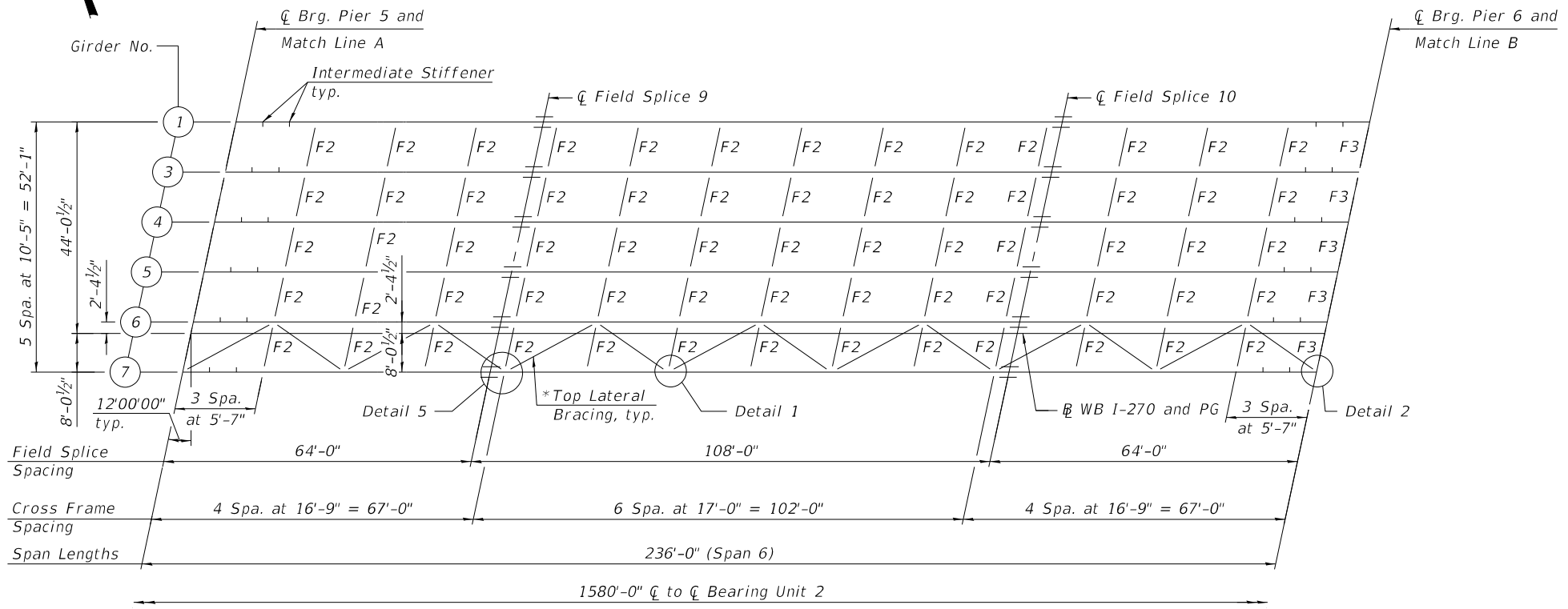
STRESS TABLES UNIT 1
STRUCTURE NO. 060-0351 (WB)

SHEET 108 OF 288 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	613
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 \perp WB I-270 and PG.
For Match Line B, see sheet 110 of 288.
For field splice details, see sheet 115 of 288.
For cross frame details, see sheet 116 of 288.
For Details 1, 2, 3, and 5, see sheet 118 of 288.

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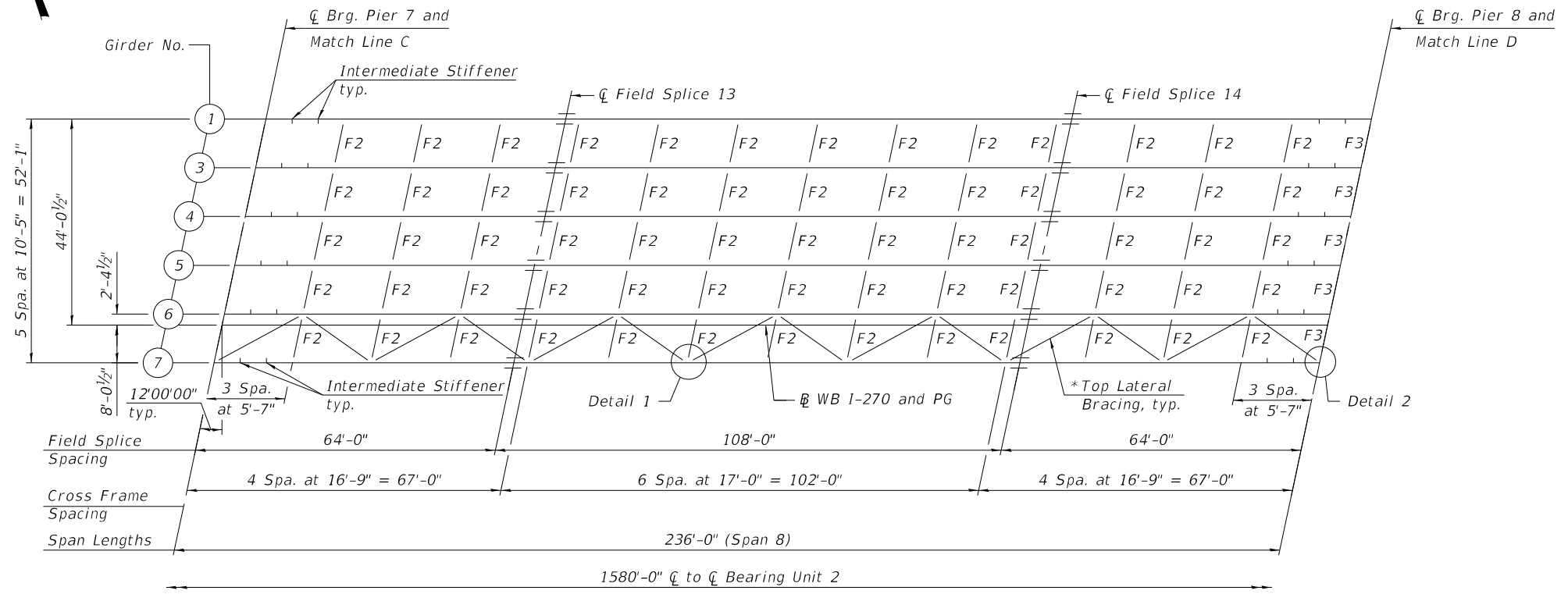
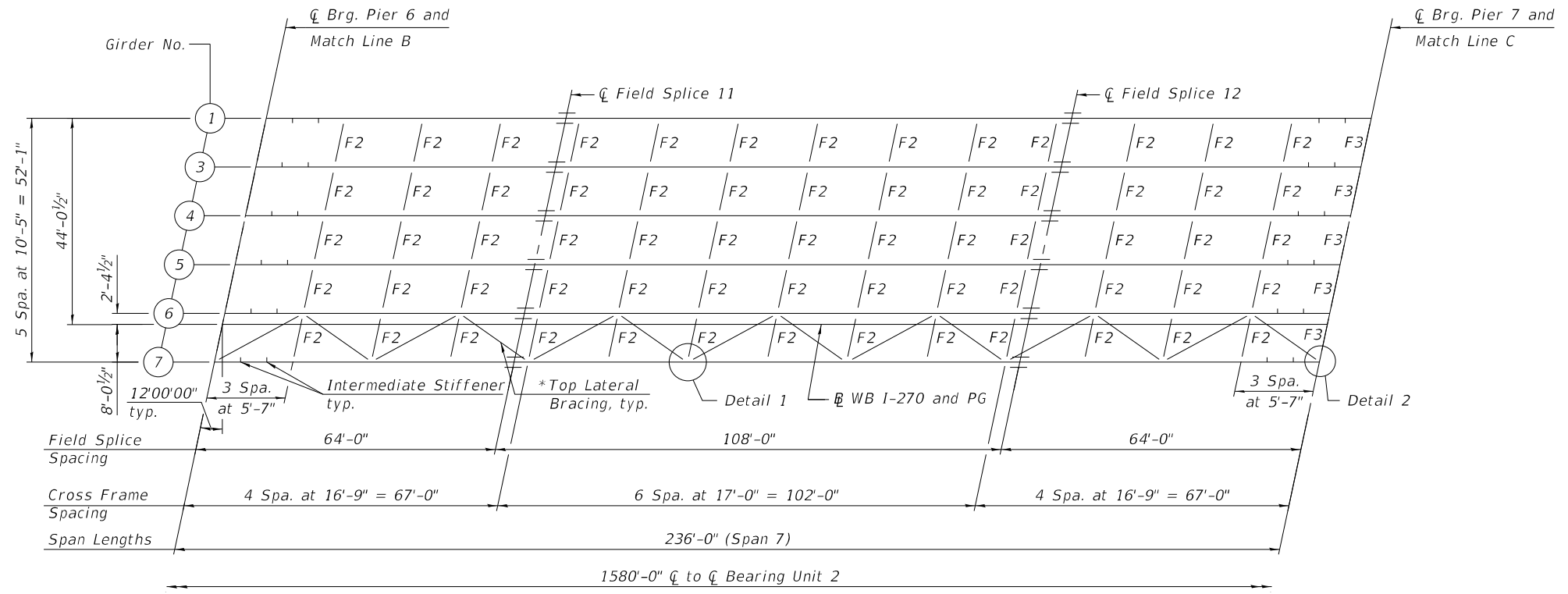
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FRAMING PLAN UNIT 2 - 1
STRUCTURE NO. 060-0351 (WB)

SHEET 109 OF 288 SHEETS

F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	614
CONTRACT NO. 76190				

ILLINOIS FED. AID PROJECT



* 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 \emptyset WB I-270 and PG.
 For Match Line B, see sheet 109 of 288.
 For Match Line D, see sheet 111 of 288.
 For field splice details, see sheet 115 of 288.
 For cross frame details, see sheet 116 of 288.
 For Details 1 and 2, see sheet 118 of 288.

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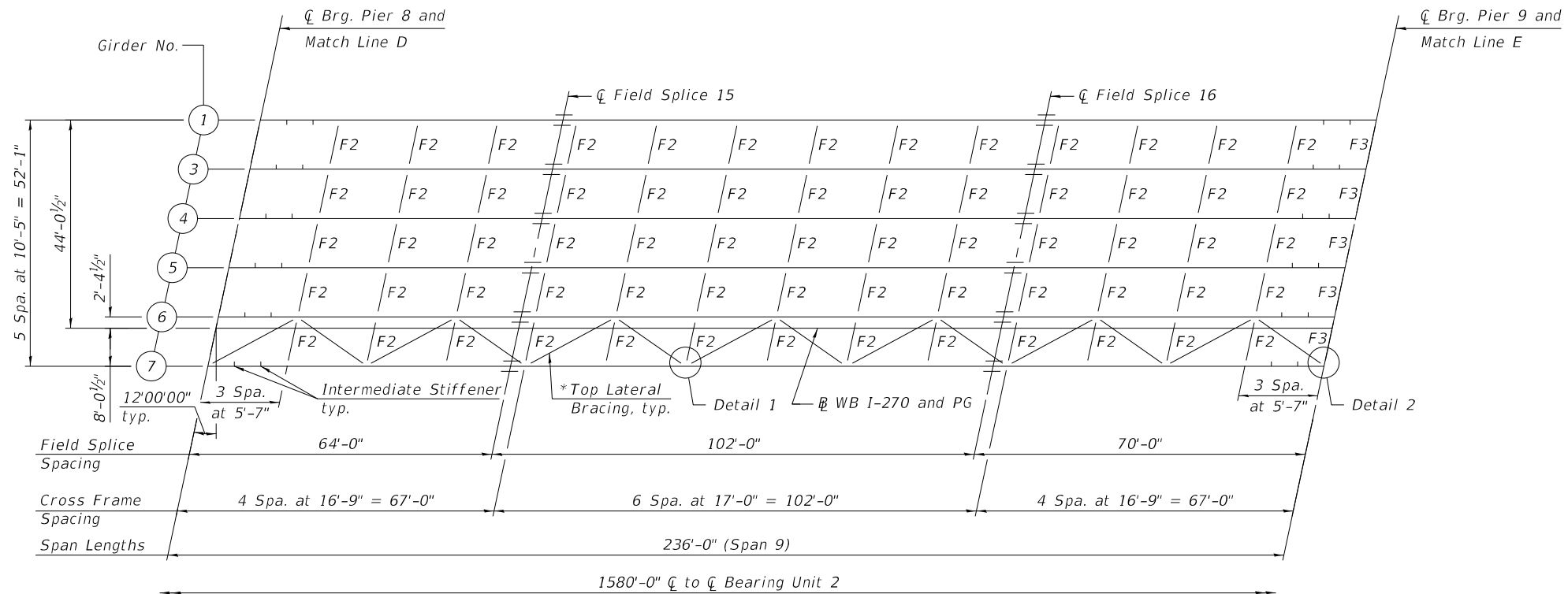
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STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION

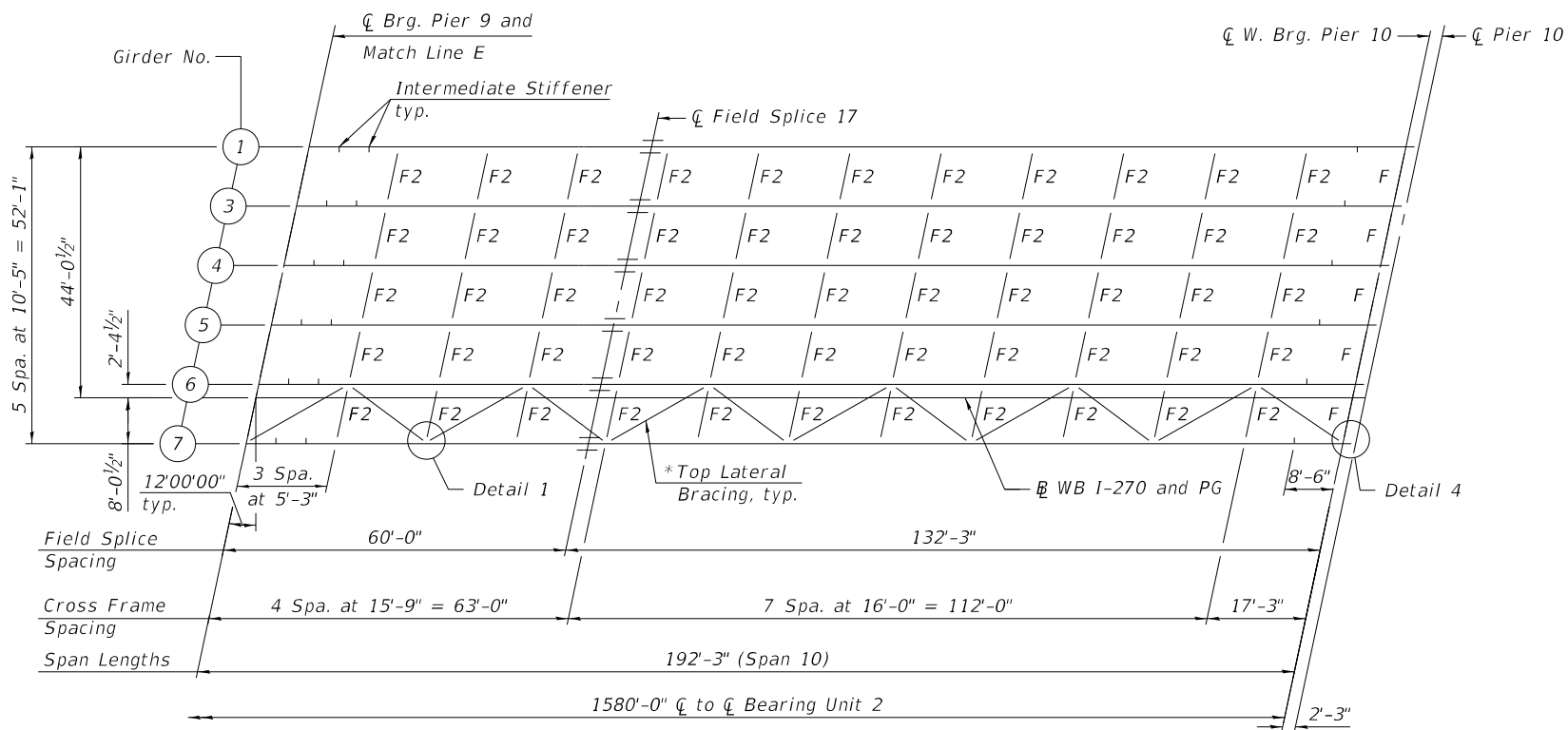
FRAMING PLAN UNIT 2 - 2
 STRUCTURE NO. 060-0351 (WB)

SHEET 110 OF 288 SHEETS

F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	615
CONTRACT NO. 76190				
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 \bar{C} WB I-270 and PG.
For Match Line D, see sheet 110 of 288.
For field splice details, see sheet 115 of 288.
For cross frame details, see sheet 116 of 288.
For Details 1, 2, and 4, see sheet 118 of 288.

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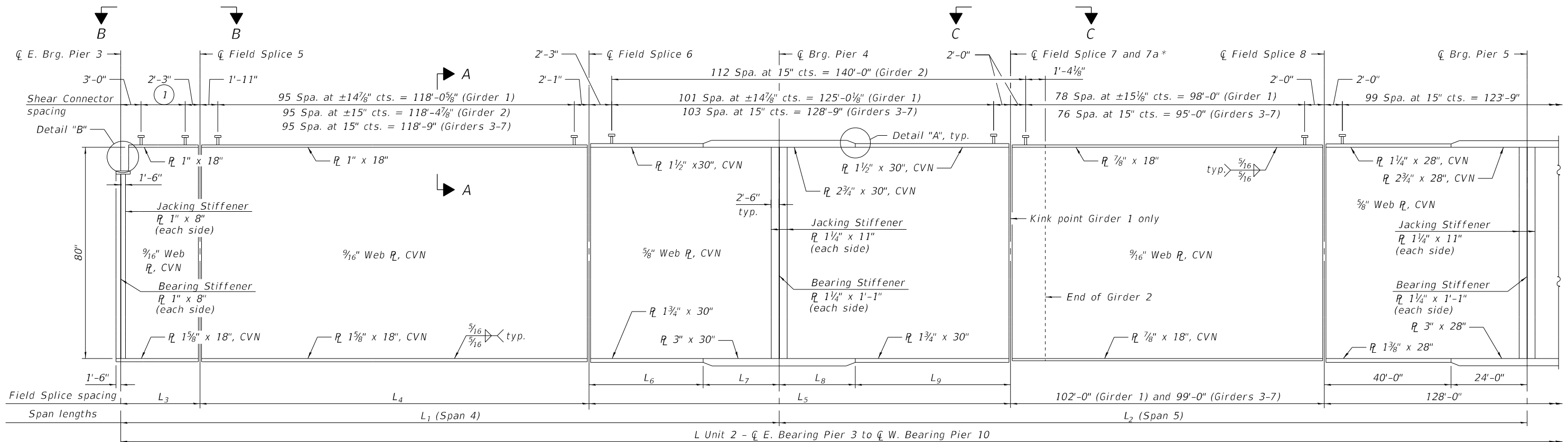
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FRAMING PLAN UNIT 2 - 3
STRUCTURE NO. 060-0351 (WB)

SHEET 111 OF 288 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	616
CONTRACT NO. 76J90				

ILLINOIS FED. AID PROJECT



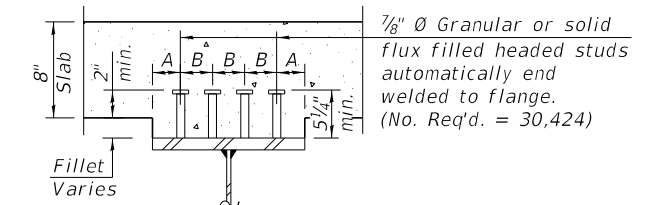
GIRDER ELEVATION - UNIT 2

(Spans 4 and 5)

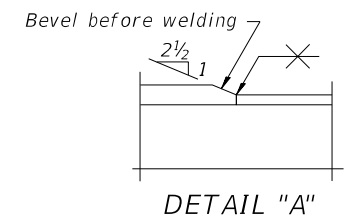
"CVN" denotes Charpy-V-Notch impact energy requirements, zone 2.

- ① 16 Spa. at $\pm 14\frac{3}{4}$ " cts. = 19'-7 $\frac{1}{4}$ " (Girder 1)
- 16 Spa. at $\pm 14\frac{3}{4}$ " cts. = 19'-8 $\frac{1}{8}$ " (Girder 2)
- 16 Spa. at $\pm 14\frac{3}{16}$ " cts. = 19'-9" (Girders 3-7)

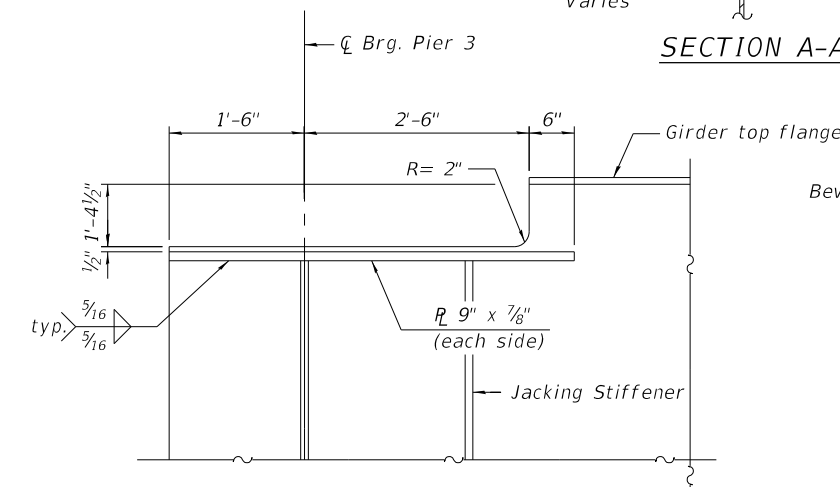
Flange Width	A	B
18"	2 $\frac{1}{4}$ "	4 $\frac{1}{2}$ "
28"	2"	8"
30"	3"	8"



SECTION A-A



DETAIL "A"

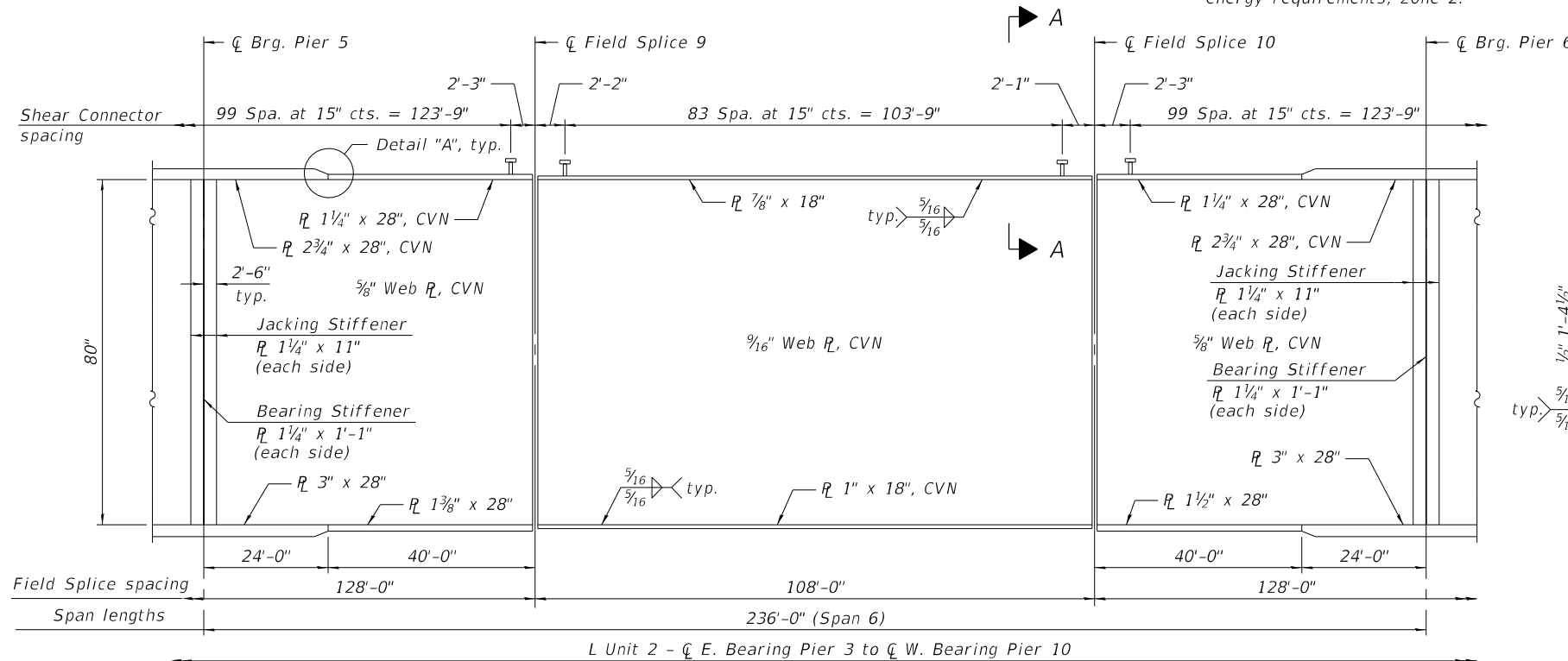


DETAIL "B"

☐ Pier 3 shown, ☐ Pier 10 mirrored

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 114 of 288.
- For Table of "L" Dimensions, see sheet 114 of 288.



GIRDER ELEVATION - UNIT 2

(Span 6)

*No splice on Girder 2, see View C-C on sheet 114 of 288.

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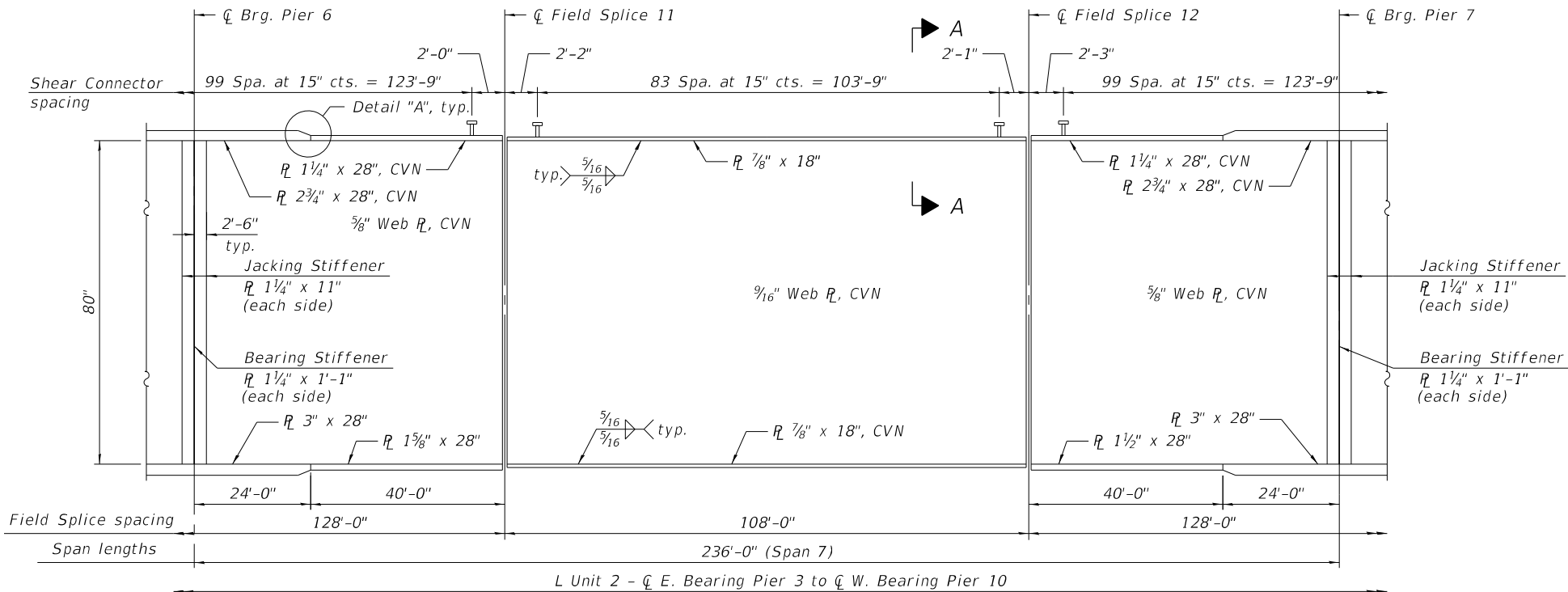
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PLOT SCALE =	CHECKED - UVK	REVISED -
PLOT DATE =	DRAWN - EAT	REVISED -
	CHECKED - SSM	REVISED -

**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

**GIRDER ELEVATION UNIT 2 - 1
STRUCTURE NO. 060-0351 (WB)**

SHEET 112 OF 288 SHEETS

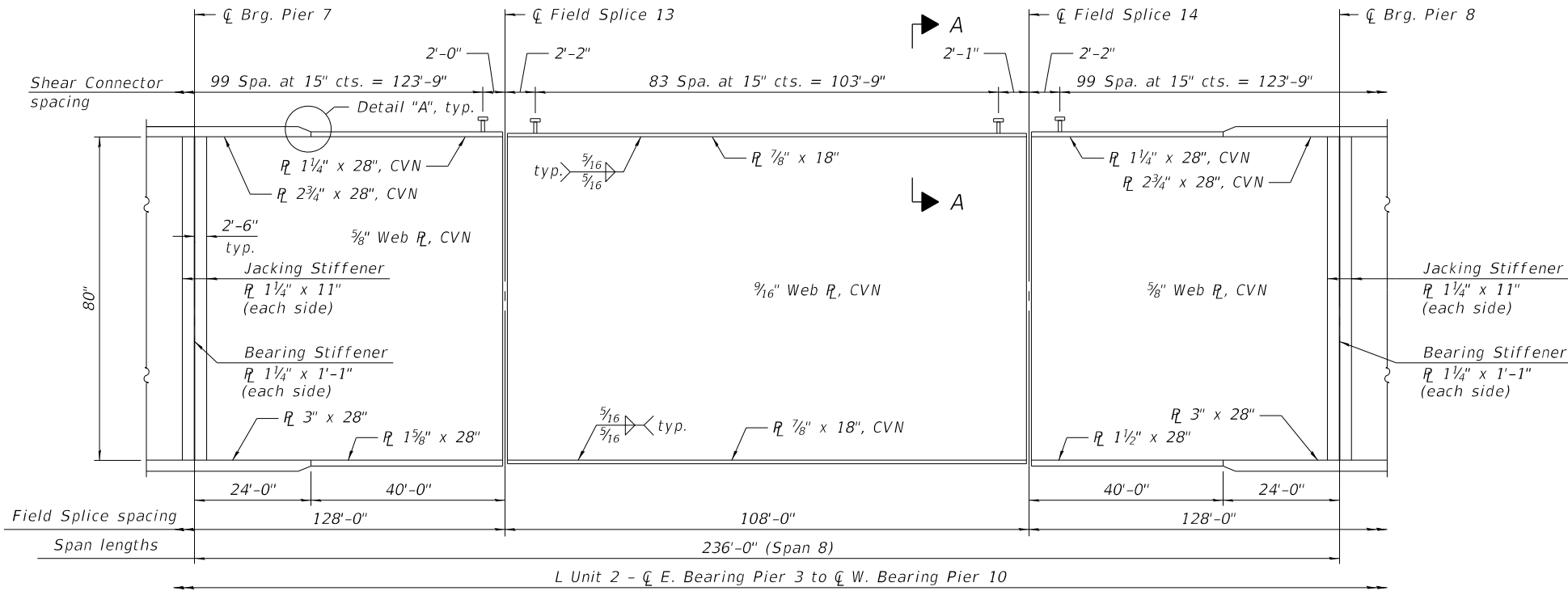
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	617
CONTRACT NO. 76J90				
ILLINOIS FED. AID PROJECT				



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 112 of 288.
 For Table of "L" Dimensions, see sheet 114 of 288.

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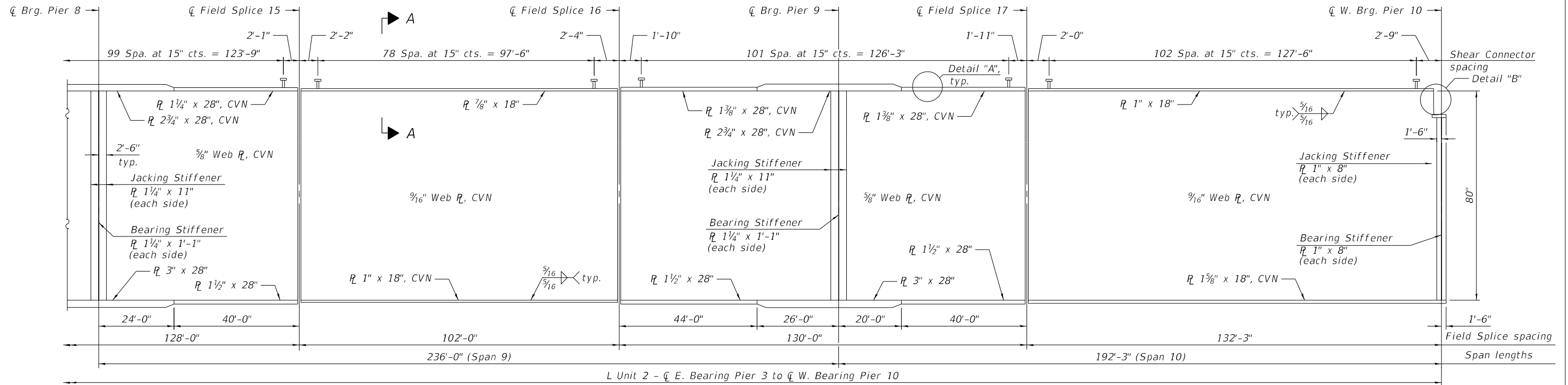
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	CHECKED - SSM	REVISED -

**STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION**

**GIRDER ELEVATION UNIT 2 - 2
 STRUCTURE NO. 060-0351 (WB)**

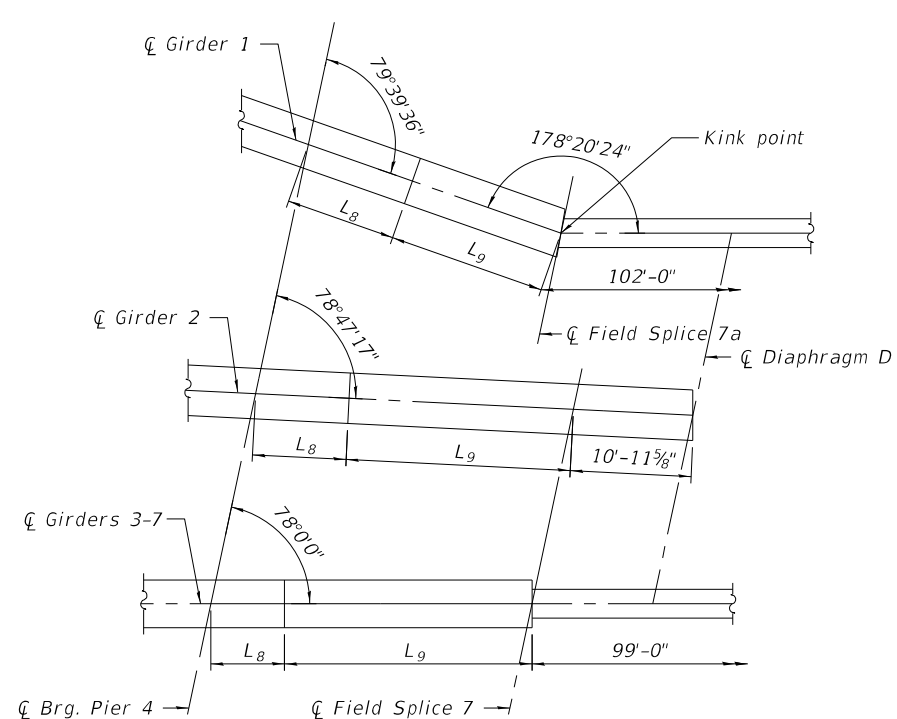
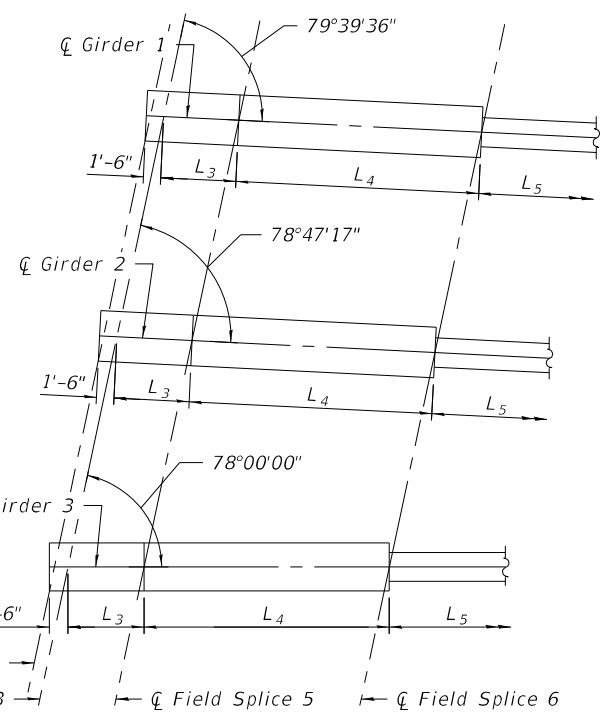
SHEET 113 OF 288 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	618
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 (Near Abutment)

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
1	1,578'-5"	206'-6 3/4"	235'-7 1/4"	24'-10 3/16"	122'-0 5/8"	129'-3 1/8"	35'-9 9/16"	23'-10 3/16"	23'-10 3/8"	45'-8 7/8"
2	290'-11 1/8"	207'-1 15/16"	- - -	24'-11 1/8"	122'-4 7/8"	132'-7 1/2"	35'-10 3/4"	23'-11 3/16"	23'-11 3/16"	48'-10 3/8"
3	1,580'-0"	207'-9"	236'-0"	25'-0"	122'-9"	133'-0"	36'-0"	24'-0"	24'-0"	49'-0"
4	1,580'-0"	207'-9"	236'-0"	25'-0"	122'-9"	133'-0"	36'-0"	24'-0"	24'-0"	49'-0"
5	1,580'-0"	207'-9"	236'-0"	25'-0"	122'-9"	133'-0"	36'-0"	24'-0"	24'-0"	49'-0"
6	1,580'-0"	207'-9"	236'-0"	25'-0"	122'-9"	133'-0"	36'-0"	24'-0"	24'-0"	49'-0"
7	1,580'-0"	207'-9"	236'-0"	25'-0"	122'-9"	133'-0"	36'-0"	24'-0"	24'-0"	49'-0"

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 112 of 288.

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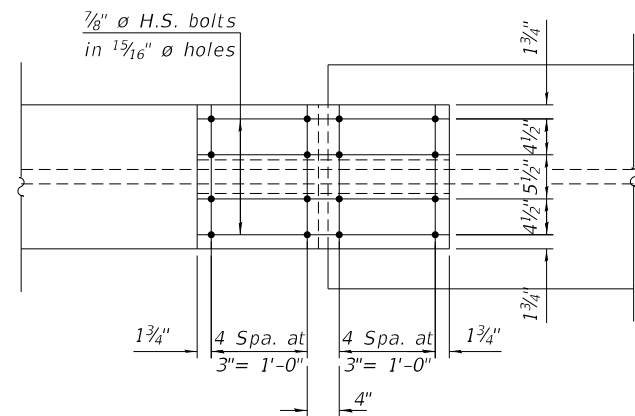
HORNER SHIFRIN
 Teaming with:
PARSONS

USER NAME =	DESIGNED - JJD	REVISED -
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	CHECKED - SSM	REVISED -

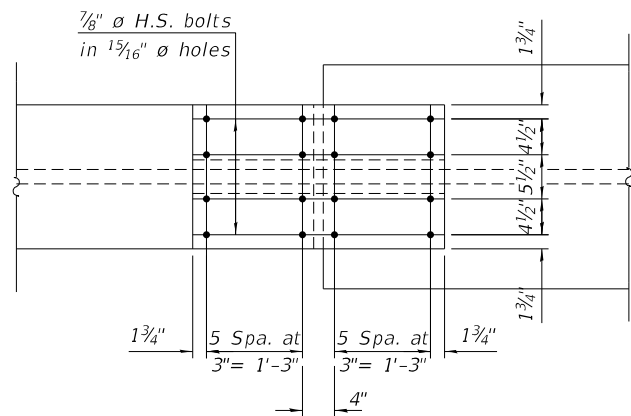
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

GIRDER ELEVATION UNIT 2 - 3
STRUCTURE NO. 060-0351 (WB)
 SHEET 114 OF 288 SHEETS

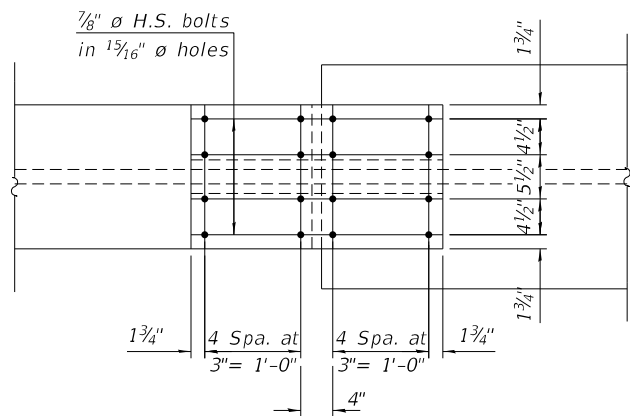
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	619
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				



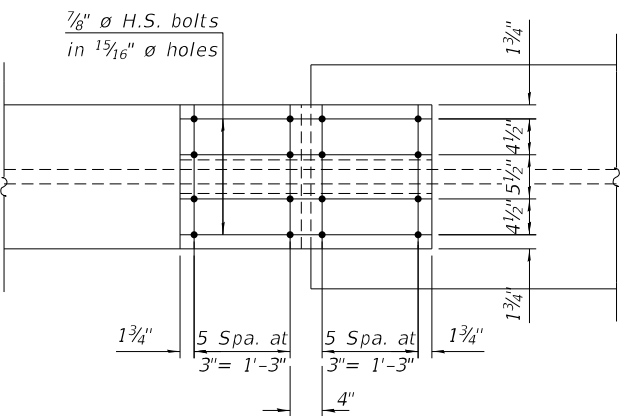
TOP FLANGE



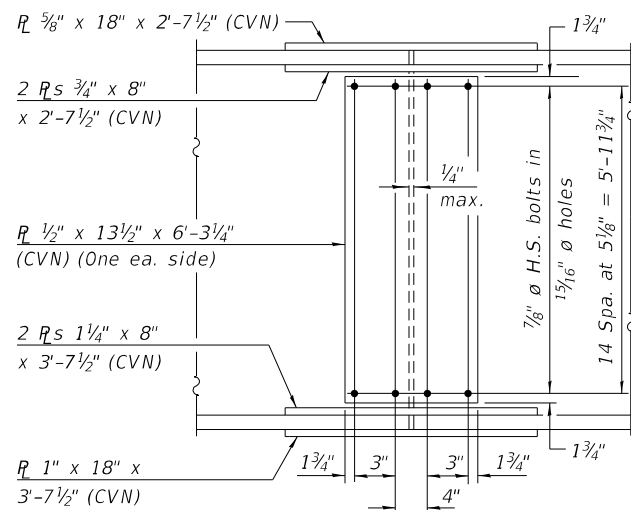
TOP FLANGE



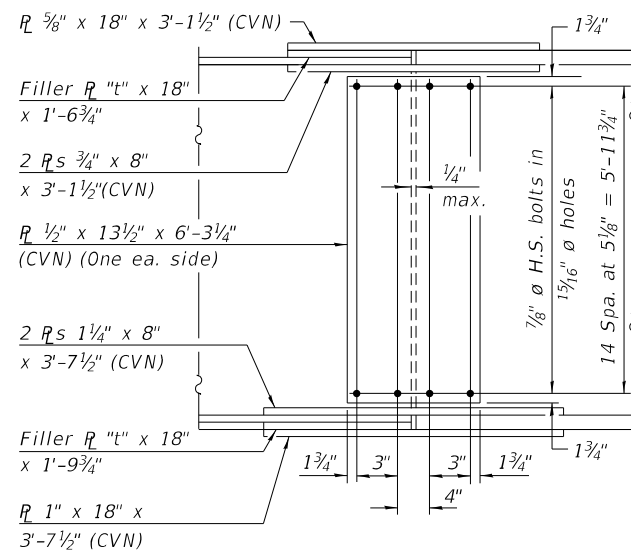
TOP FLANGE



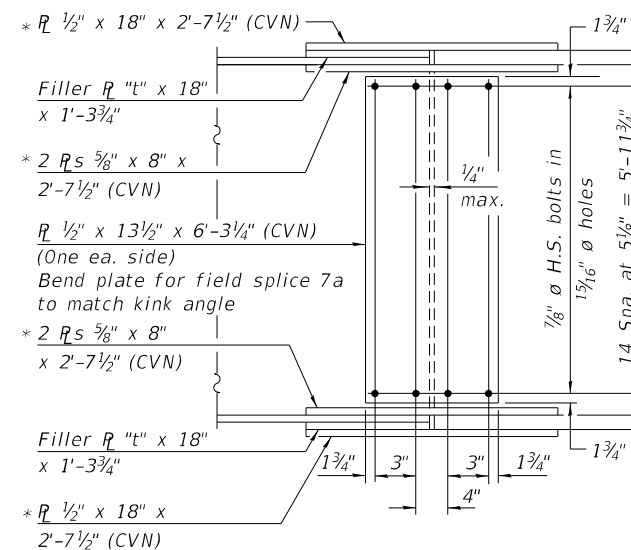
TOP FLANGE



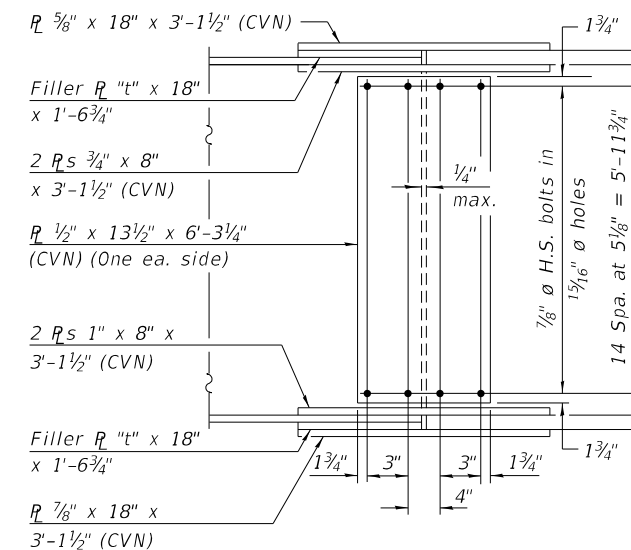
ELEVATION



ELEVATION

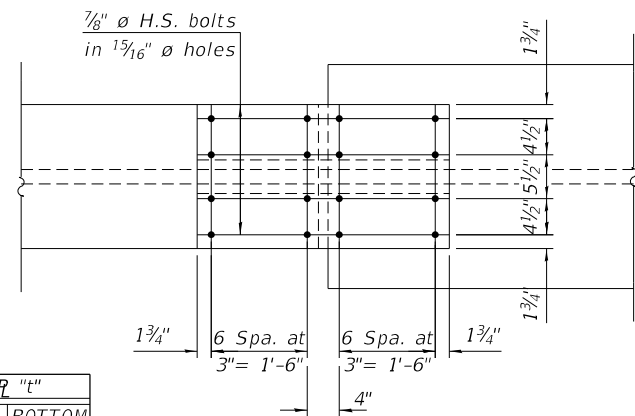


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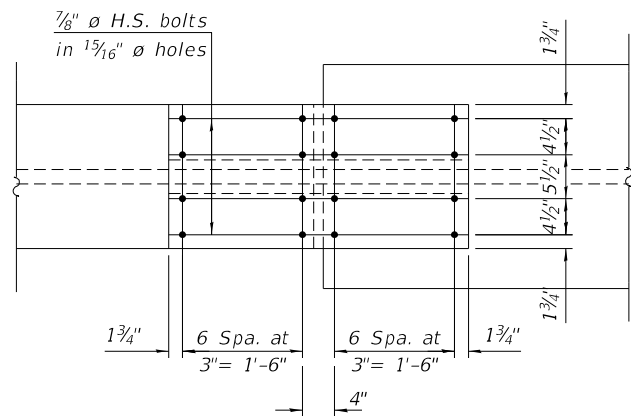


ELEVATION

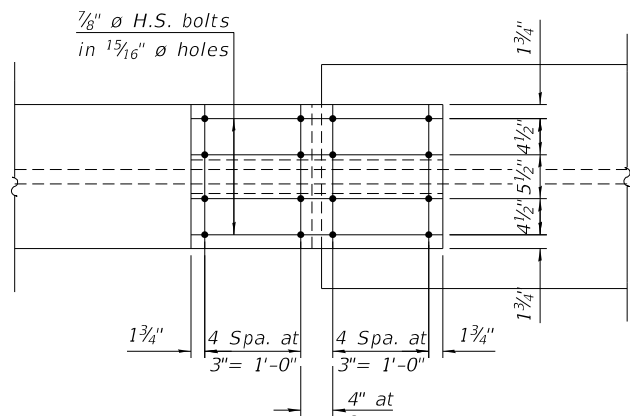
* Cut R at field splice 7a to match kink angle.



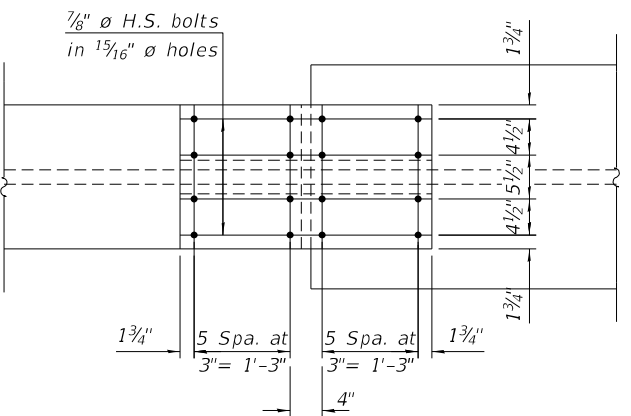
BOTTOM FLANGE



BOTTOM FLANGE



BOTTOM FLANGE



BOTTOM FLANGE

FIELD SPLICE 5 DETAIL

FIELD SPLICE 6 AND 17 DETAIL

FIELD SPLICE 7, 8, 11 TO 14 DETAIL
FIELD SPLICE 7a DETAIL SIMILAR

FIELD SPLICE 9, 10, 15 AND 16 DETAIL

Filler R "t"		
FS	TOP	BOTTOM
6	1/2"	1/8"
7	5/8"	1/8"
8	3/8"	1/2"
9	3/8"	3/8"
10	3/8"	1/2"
11	3/8"	3/4"
12	3/8"	5/8"
13	3/8"	3/4"
14	3/8"	5/8"
15	3/8"	1/2"
16	1/2"	1/2"
17	3/8"	1/8"

Notes:
All Structural Steel shall be AASHTO M270 Grade 50.
"CVN" denotes Charpy-V-Notch impact energy requirements, zone 2.
For kink angle on field splices 7a, 7b, and 9a, see Sheet 114 of 288.

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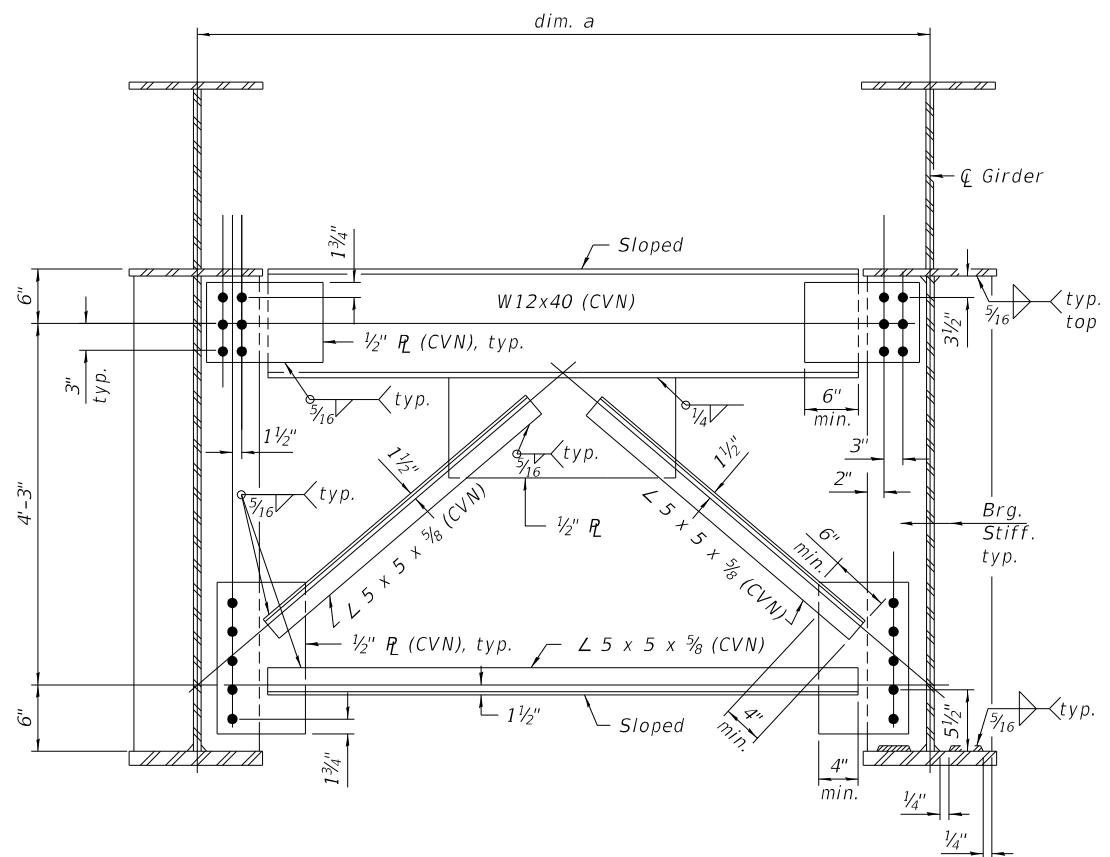
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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

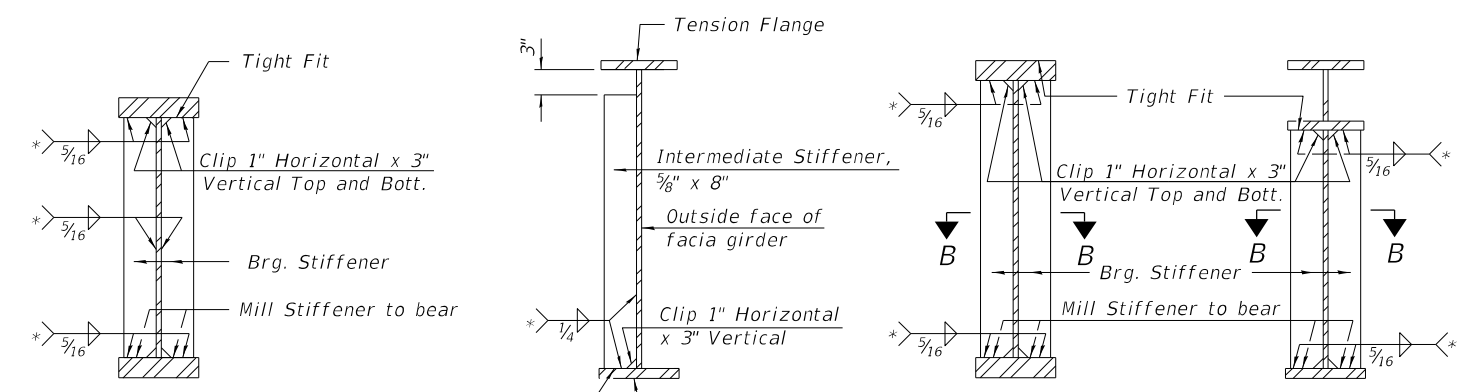
STEEL DETAILS UNIT 2 - 1
STRUCTURE NO. 060-0351 (WB)

SHEET 115 OF 288 SHEETS

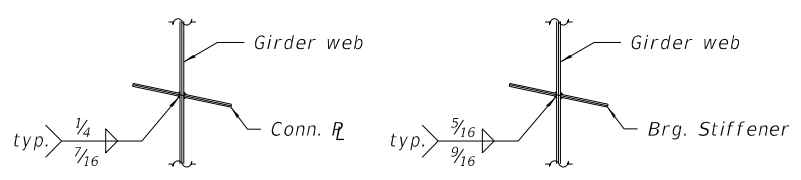
F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	620
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				



CROSS FRAME F AND F1



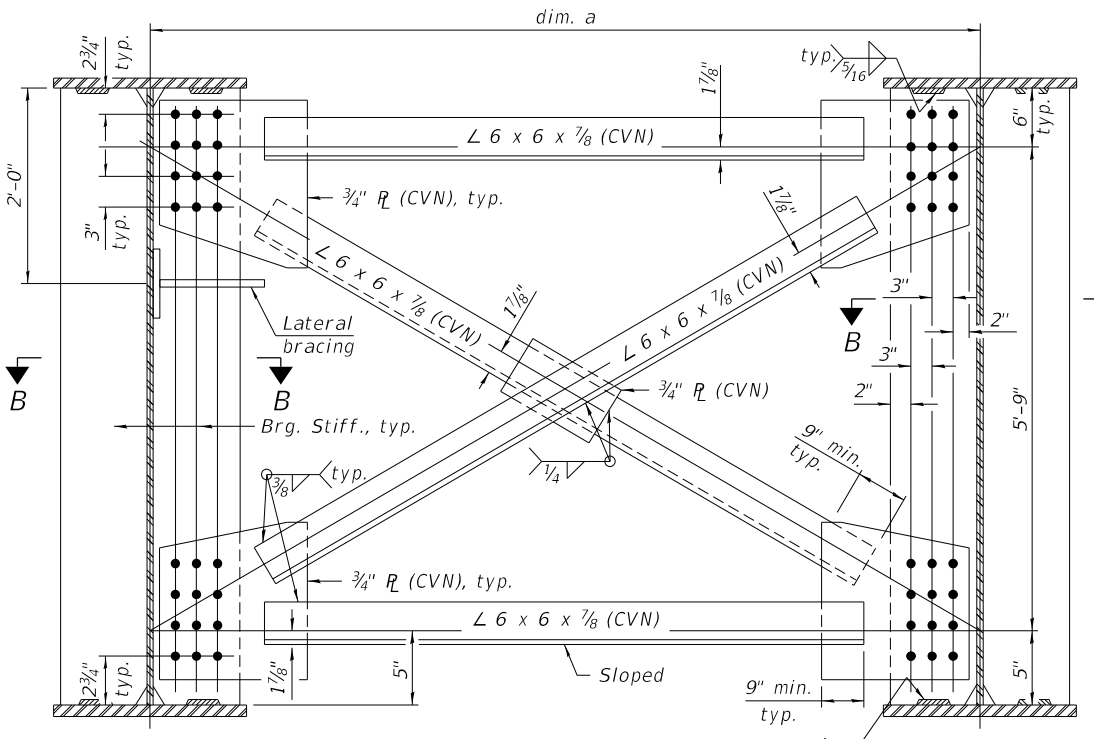
SECTION AT JACKING STIFFENER
SECTION AT INT. STIFFENER
SECTION AT PIER
SECTION AT GIRDER END
(Facia girders shown, interior girders similar) * Terminate 1/4" (±1/8") from the end of plate intersects.



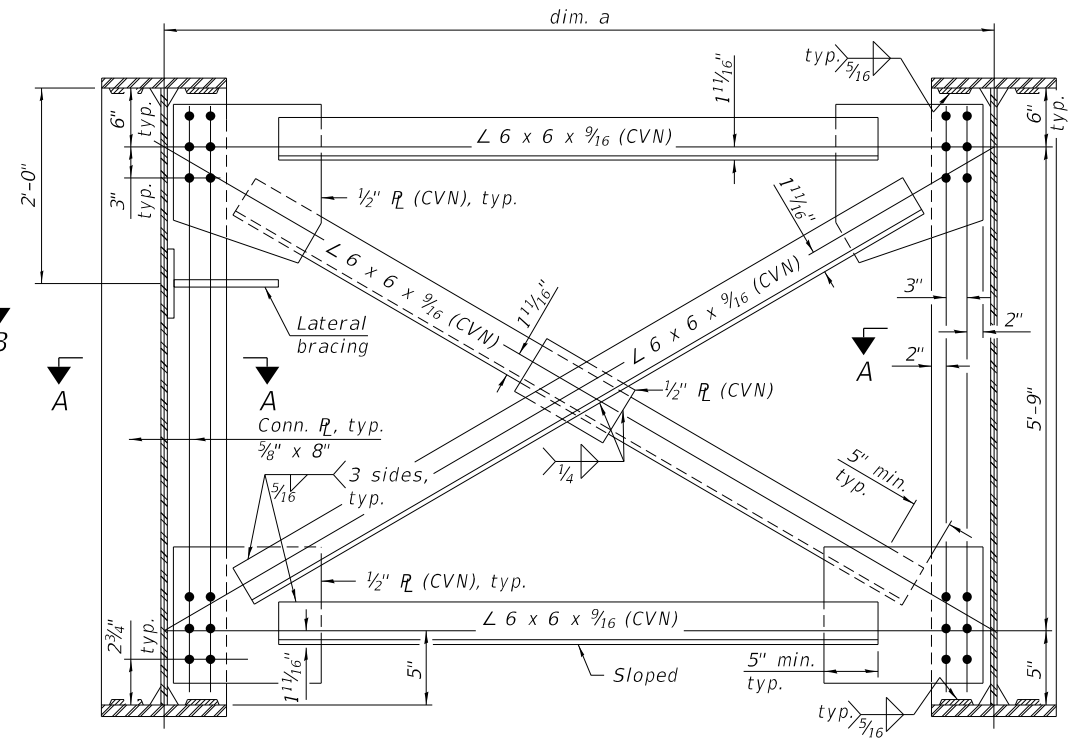
SECTION A-A SECTION B-B

CROSS FRAME DIM. a TABLE

Cross Frame	Dim. a	# Req
F	10'-7 ³ / ₁₆ "	9
F1	9'-4 ¹ / ₁₆ "	2
F2	10'-7 ³ / ₁₆ "	419
F3	10'-7 ³ / ₁₆ "	29
F4	6'-2 ¹ / ₂ "	1
F5	6'-6"	1
F6	9'-2"	1
F7	8'-11"	1
F8	8'-8"	1
F9	8'-5 ¹ / ₁₆ "	1
F10	8'-2 ¹ / ₁₆ "	1
F11	7'-11 ¹ / ₁₆ "	1
F12	7'-8 ¹ / ₁₆ "	1
F13	7'-5 ¹ / ₈ "	1
F14	7'-2 ³ / ₁₆ "	1
F15	6'-11 ¹ / ₄ "	1
F16	6'-8 ³ / ₁₆ "	1
F17	6'-5 ¹ / ₁₆ "	1
F18	5'-11 ³ / ₈ "	1
F19	5'-8 ¹ / ₂ "	1
F20	5'-5 ¹ / ₁₆ "	1
F21	5'-2 ¹ / ₈ "	1
F22	9'-2 ¹ / ₄ "	1
F23	8'-11 ⁹ / ₁₆ "	1
F24	8'-8 ¹ / ₈ "	1
F25	8'-6 ³ / ₁₆ "	1
F26	8'-3 ¹ / ₁₆ "	1
F27	8'-0 ³ / ₄ "	1
F28	7'-10 ¹ / ₁₆ "	1
F29	7'-7 ⁵ / ₁₆ "	1
F30	7'-4 ⁵ / ₈ "	1
F31	7'-2"	1
F32	6'-11 ³ / ₁₆ "	1
F33	6'-8 ¹ / ₁₆ "	1
F34	6'-3 ¹ / ₁₆ "	1
F35	6'-0 ⁹ / ₁₆ "	1
F36	5'-9 ³ / ₄ "	1
F37	5'-6 ³ / ₄ "	1



CROSS FRAMES F3 THRU F6



CROSS FRAMES F2, F7 THRU F31

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 1³/₁₆" ø holes.
 Two hardened washers shall be required for each set of oversized holes.
 "CVN" denotes Charpy-V-Notch impact energy requirements, zone 2.

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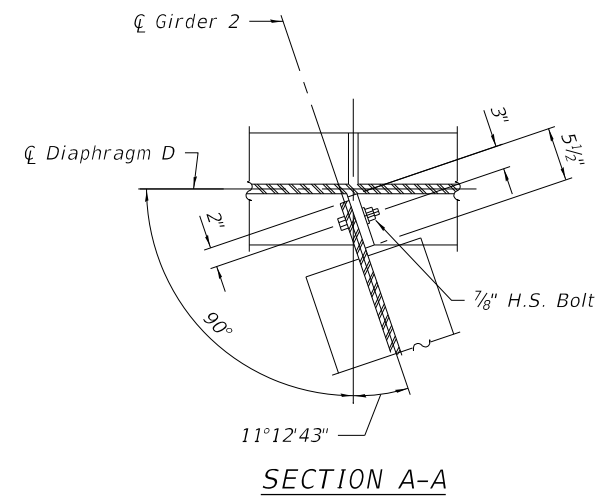
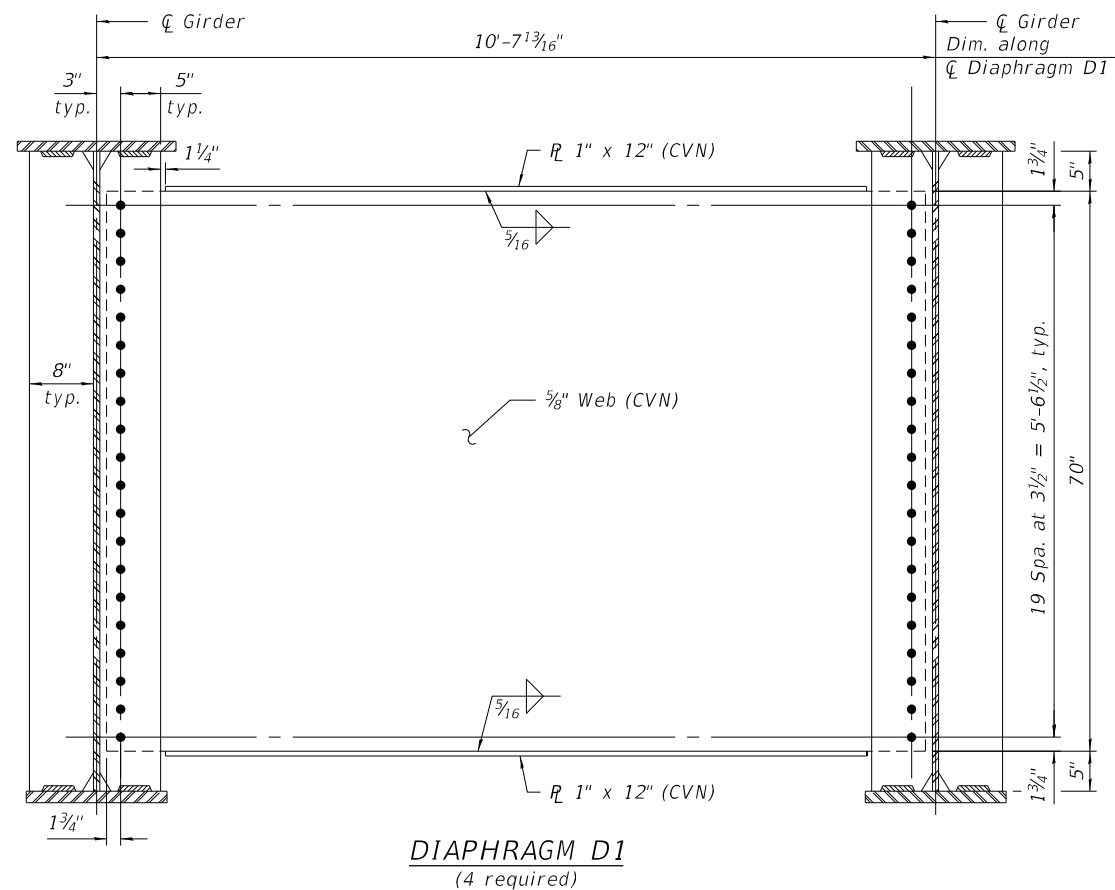
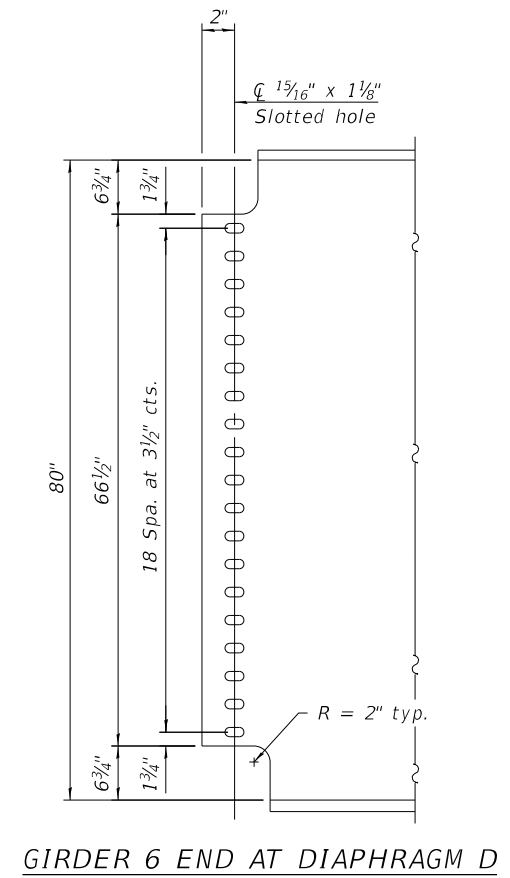
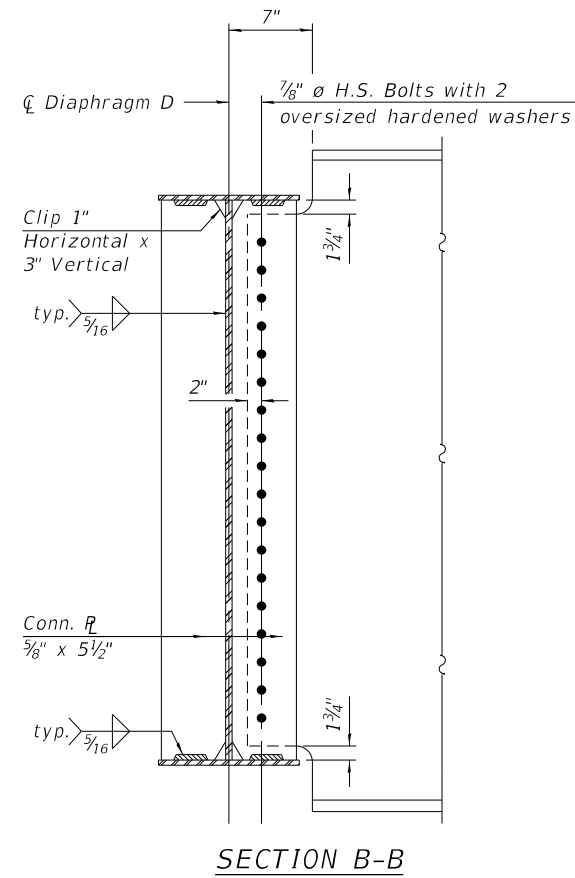
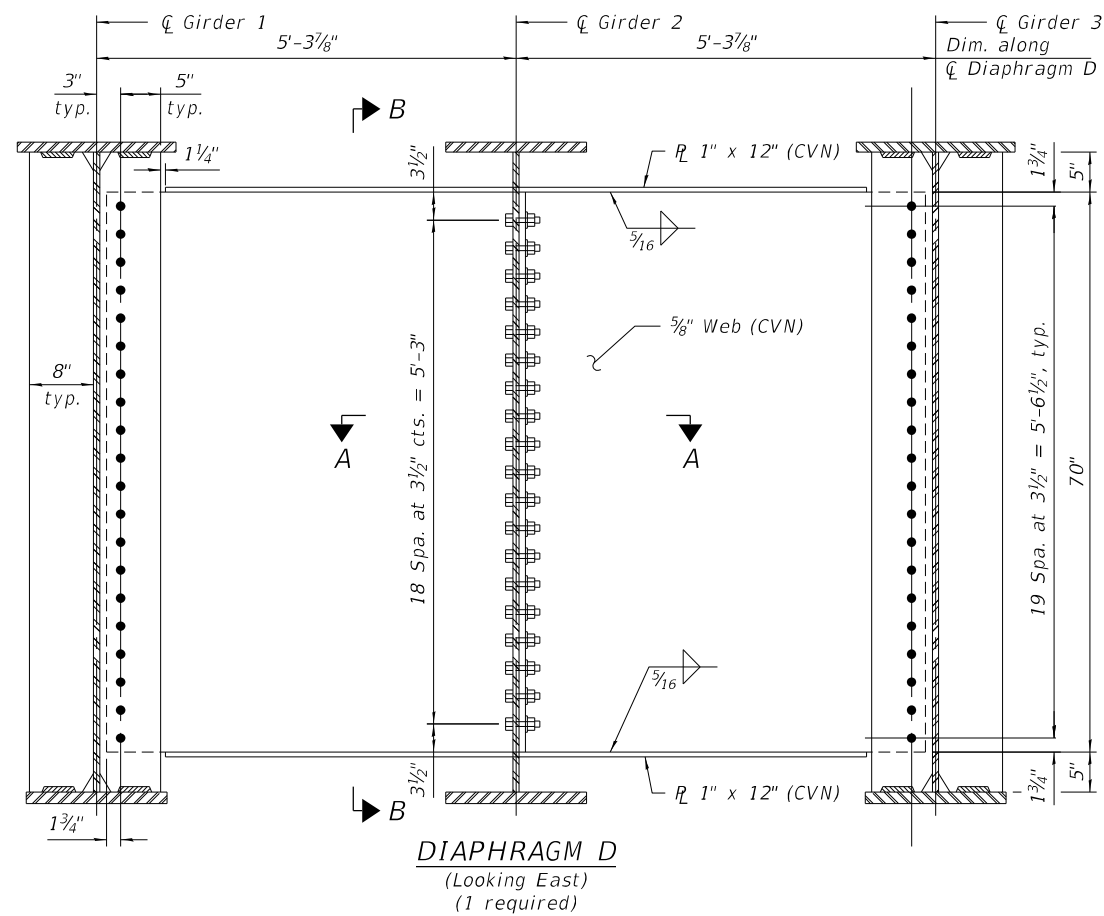
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	CHECKED - SSM	REVISED -

STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION

STEEL DETAILS UNIT 2 - 2
 STRUCTURE NO. 060-0351 (WB)

SHEET 116 OF 288 SHEETS

F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	621
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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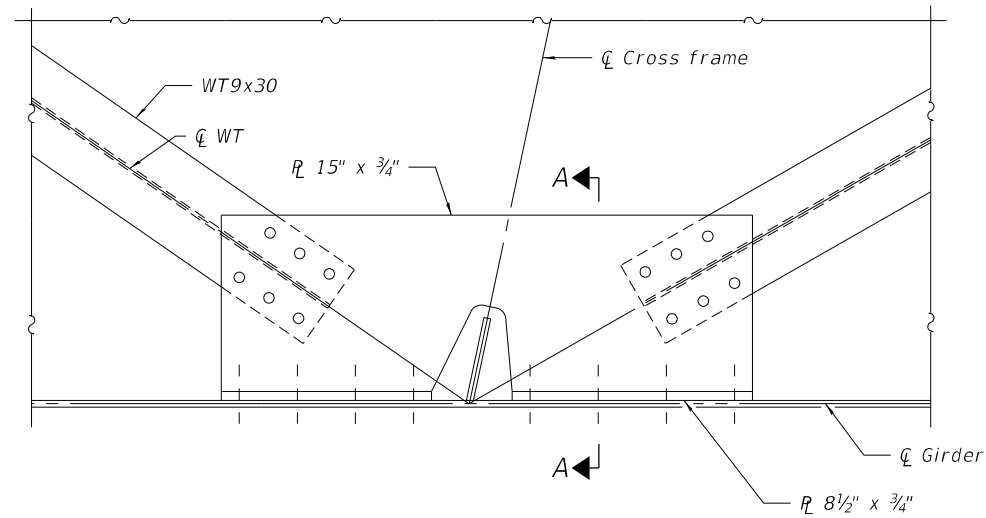
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STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION

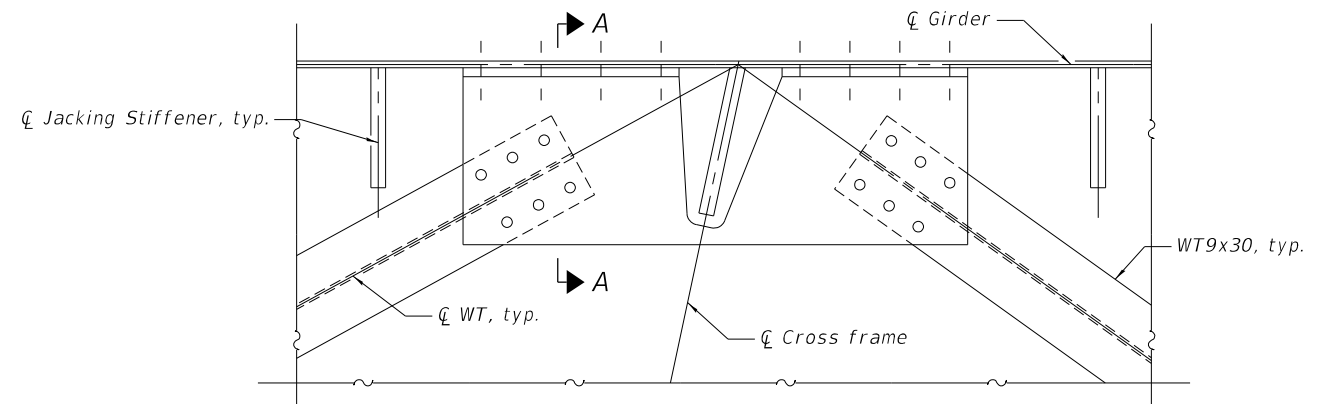
STEEL DETAILS UNIT 2 - 3
 STRUCTURE NO. 060-0351 (WB)

SHEET 117 OF 288 SHEETS

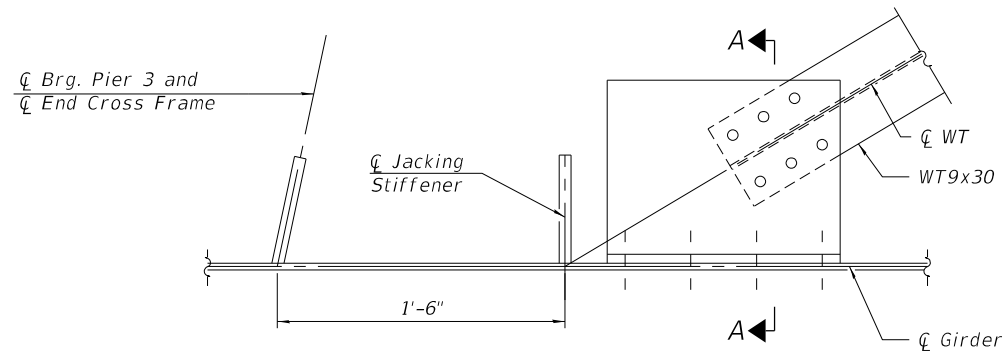
F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	622
CONTRACT NO. 76J90				
ILLINOIS FED. AID PROJECT				



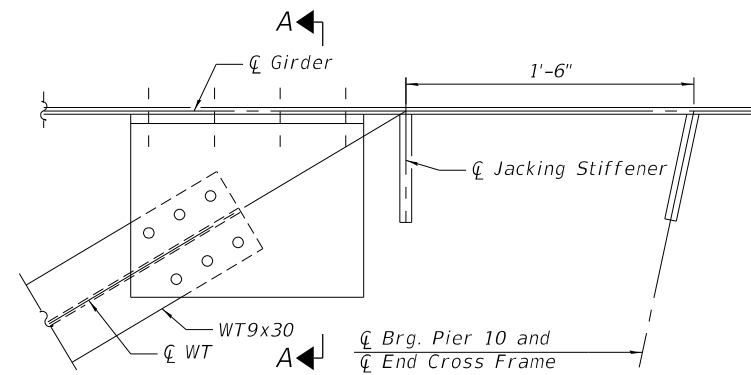
DETAIL 1
(Lateral bracing connection at cross frame)
(See connection detail)



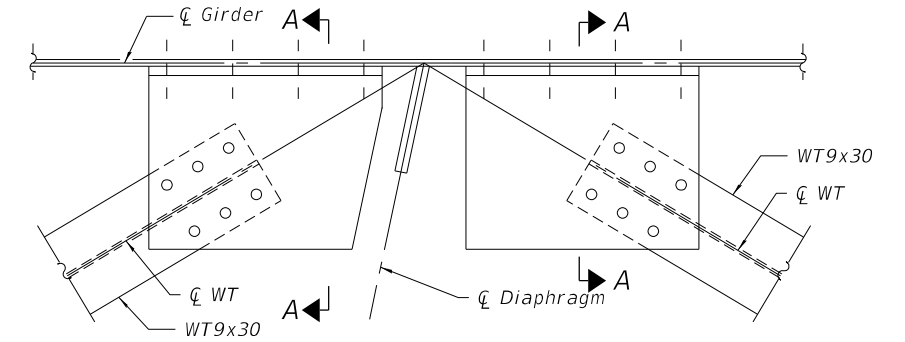
DETAIL 2
(Lateral bracing connection at pier cross frame)
(See connection detail)



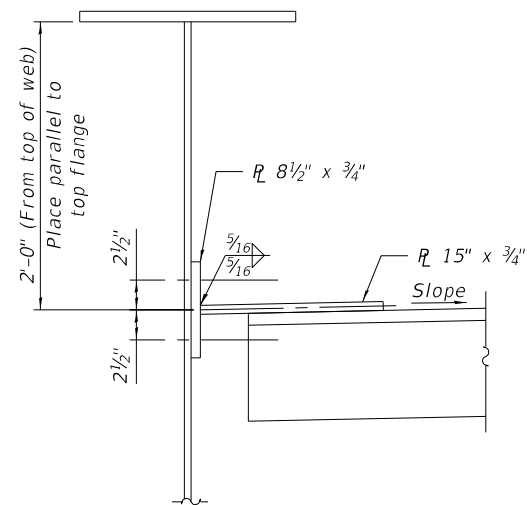
DETAIL 3
(Lateral bracing connection at Pier 3)
(See connection detail)



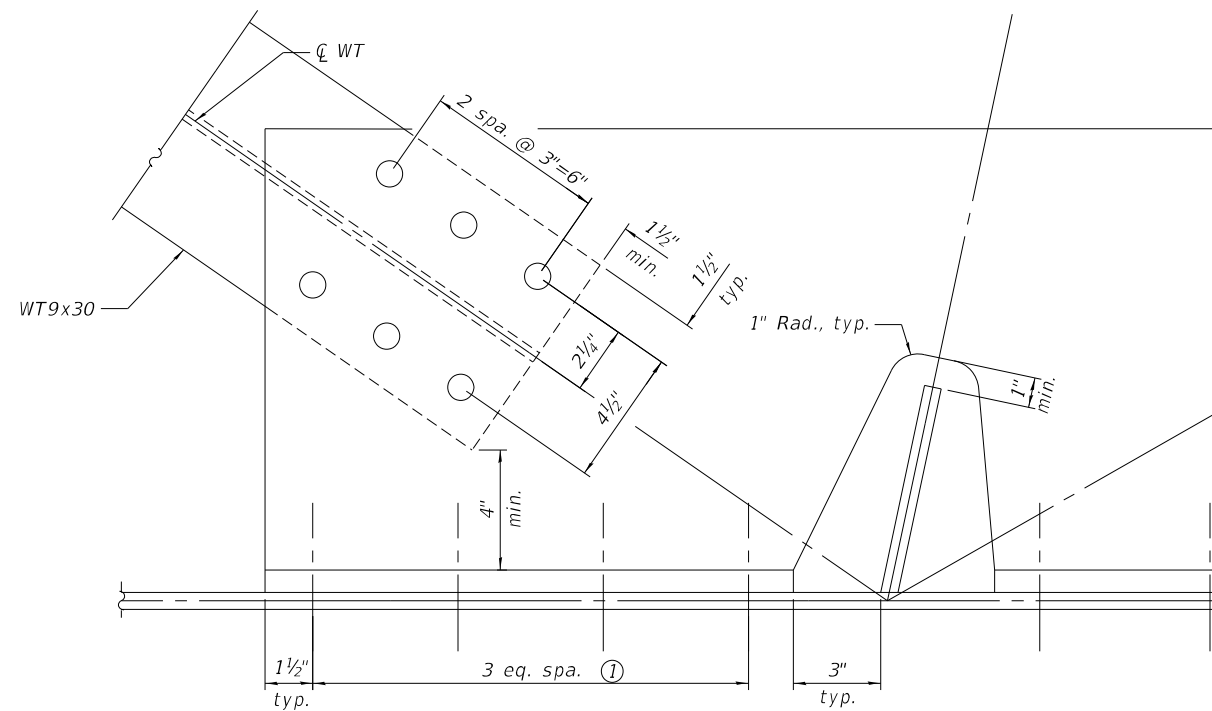
DETAIL 4
(Lateral bracing connection at Pier 10)
(See connection detail)



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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F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	623
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)	228,734	466,920	177,038	476,267	187,620	476,267	177,038	476,267	177,038	476,267	187,620	476,267	238,245
Ic(3n)	(in ⁴)	165,114	---	131,590	---	138,625	---	131,590	---	131,590	---	138,625	---	172,693
Ic(cr)	(in ⁴)	---	338,649	---	324,083	---	324,083	---	324,083	---	324,083	---	324,083	---
Ss	(in ³)	2,731	7,298	1,848	6,856	1,988	6,856	1,848	6,856	6,856	1,988	6,856	2,731	
Sc(n)	(in ³)	3,613	---	2,569	---	2,749	---	2,569	---	2,569	---	2,749	---	3,650
Sc(3n)	(in ³)	3,294	---	2,333	---	2,501	---	2,333	---	2,333	---	2,501	---	3,340
Sc(cr)	(in ³)	---	7,933	---	7,700	---	7,700	---	7,700	---	7,700	---	7,700	---
DC1	(k/')	1.105	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)	3,996	8,678	1,563	7,794	2,589	9,303	2,291	8,851	2,355	8,845	2,310	9,346	3,564
DC2	(k/')	0.151	0.172	0.162	0.226	0.180	0.233	0.177	0.232	0.177	0.232	0.180	0.227	0.192
MDC2	(k)	405	1,034	231	1,096	298	1,221	279	1,205	278	1,223	294	1,207	432
DW	(k/')	0.462	0.437	0.420	0.420	0.490	0.490	0.490	0.490	0.490	0.490	0.490	0.490	0.490
MDW	(k)	1,101	2,087	548	1,994	775	2,355	722	2,302	720	2,352	753	2,367	1,013
LLDF		0.680	0.608	0.712	0.825	0.589	0.777	0.574	0.758	0.582	0.825	0.731	0.829	0.859
M _l + IM	(k)	4,425	5,187	3,838	7,018	3,416	6,846	3,259	6,670	3,279	7,086	4,034	6,551	5,081
η _i M _v (Strength I)	(k)	15,640	---	10,270	---	11,287	---	10,499	---	10,615	---	12,015	---	16,175
Φ _i M _n	(k)	17,203	---	12,777	---	13,083	---	12,273	---	12,233	---	13,262	---	17,576
fs DC1	(ksi)	17.56	14.27	10.15	13.64	15.63	16.28	14.88	15.49	15.29	15.48	13.94	16.36	15.66
fs DC2	(ksi)	1.47	1.56	1.19	1.71	1.43	1.90	1.44	1.88	1.43	1.91	1.41	1.88	1.55
fs DW	(ksi)	4.01	3.16	2.82	3.11	3.72	3.67	3.71	3.59	3.70	3.66	3.61	3.69	3.64
fs (l+IM)	(ksi)	14.70	7.85	17.93	10.94	14.91	10.67	15.22	10.40	15.32	11.04	17.61	10.21	16.70
fs (Service II)	(ksi)	42.15	29.19	37.46	32.68	40.16	35.72	39.82	34.47	40.34	35.41	41.85	35.20	42.56
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)		---	40.17	---	45.14	---	49.25	---	47.55	---	48.88	---	48.51	---
Φ _i F _n	(ksi)	---	50.00	---	49.67	---	49.67	---	49.67	---	49.67	---	49.67	---
V _r	(k)	67.0	97.1	82.6	127.8	81.2	123.2	80.7	126.2	80.7	125.0	83.8	113.2	83.0

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 2 MOMENT TABLE				
	0.4 Sp. 4	Pier 4	0.3 Sp. 5	
Is	(in ⁴)	99,934	322,555	188,468
Ic(n)	(in ⁴)	234,147	463,980	302,254
Ic(3n)	(in ⁴)	169,356	---	---
Ic(cr)	(in ⁴)	---	338,214	201,861
Ss	(in ³)	2,731	7,762	4,755
Sc(n)	(in ³)	3,635	---	5,467
Sc(3n)	(in ³)	3,320	---	5,115
Sc(cr)	(in ³)	---	7,863	4,833
DC1	(k/')	1.176	1.285	0.832
MDC1	(k)	4,052	9,070	106
DC2	(k/')	0.153	0.147	0.106
MDC2	(k)	412	882	19
DW	(k/')	0.462	0.437	0.420
MDW	(k)	1,138	2,185	116
LLDF		0.591	0.533	0.261
M _l + IM	(k)	3,842	4,543	1,407
η _i M _v (Strength I)	(k)	14,711	---	---
Φ _i M _n	(k)	17,237	---	---
fs DC1	(ksi)	17.80	14.02	0.27
fs DC2	(ksi)	1.49	1.35	0.04
fs DW	(ksi)	4.11	3.33	0.27
fs (l+IM)	(ksi)	12.68	6.93	3.09
fs (Service II)	(ksi)	39.90	27.71	4.60
0.95R _n F _{yr}	(ksi)	47.50	47.50	47.50
η _i f _s (Total)(Strength I)(ksi)		---	38.16	6.51
Φ _i F _n	(ksi)	---	50.00	50.00
V _r	(k)	53.0	62.3	53.4

GIRDER 1 REACTION TABLE								
	Pier 3	Pier 4	Pier 5	Pier 6	Pier 7	Pier 8	Pier 9	Pier 10
LLDF	0.805	0.768	0.973	0.941	0.943	1.004	1.022	0.962
OCF	---	---	---	---	---	---	---	---
R _{DC1}	(k)	97.2	341.6	350.0	376.0	369.6	387.5	96.7
R _{DC2}	(k)	21.7	62.3	71.3	72.6	72.6	74.6	21.2
R _{DW}	(k)	31.6	75.3	96.6	99.6	99.4	105.0	29.1
R _l	(k)	103.9	221.7	280.8	276.4	276.0	290.5	120.6
R _{IM}	(k)	18.0	31.6	39.9	38.6	38.7	41.2	21.4
R _{Total}	(k)	272.4	732.5	838.6	863.2	856.3	870.3	289.0

GIRDER 2 REACTION TABLE			
	Pier 3	Pier 4	
LLDF	0.667	0.623	
OCF	---	---	
R _{DC1}	(k)	101.6	346.4
R _{DC2}	(k)	8.4	34.9
R _{DW}	(k)	30.9	92.5
R _l	(k)	86.1	179.8
R _{IM}	(k)	14.9	25.7
R _{Total}	(k)	241.9	679.3

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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

STRESS TABLES UNIT 2 - 1
STRUCTURE NO. 060-0351 (WB)

SHEET 119 OF 288 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	624
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)	242,979	496,772	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)	176,691	---	139,096	---	146,667	---	139,096	---	139,096	---	146,667	---	183,093
Ic(cr)	(in ⁴)	---	343,427	---	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)	3,668	---	2,601	---	2,784	---	2,601	---	2,601	---	2,784	---	3,694
Sc(3n)	(in ³)	3,364	---	2,379	---	2,549	---	2,379	---	2,379	---	2,549	---	3,400
Sc(cr)	(in ³)	---	7,896	---	7,449	---	7,449	---	7,449	---	7,449	---	7,449	---
DC1	(k/')	1.294	1.502	1.353	1.638	1.361	1.650	1.353	1.650	1.353	1.646	1.361	1.648	1.409
MDC1	(k)	4,106	9,350	1,655	8,025	2,568	9,363	2,294	8,972	2,354	8,953	2,310	9,443	3,575
DC2	(k/')	0.156	0.138	0.185	0.177	0.202	0.184	0.200	0.183	0.201	0.184	0.202	0.184	0.193
MDC2	(k)	419	827	263	858	334	964	316	952	315	967	329	976	433
DW	(k/')	0.462	0.437	0.420	0.420	0.490	0.490	0.490	0.490	0.490	0.490	0.490	0.490	0.490
MDW	(k)	1,200	2,367	601	2,172	807	2,491	756	2,446	753	2,492	789	2,507	1,075
LLDF		0.503	0.489	0.599	0.655	0.486	0.626	0.467	0.605	0.483	0.671	0.607	0.673	0.711
M _l + IM	(k)	3,269	4,168	3,230	5,572	2,821	5,512	2,649	5,322	2,722	5,765	3,350	5,312	4,203
η _i M _v (Strength I)	(k)	13,835	---	9,399	---	10,262	---	9,484	---	9,692	---	10,863	---	14,677
Φ M _n	(k)	17,307	---	12,845	---	13,215	---	12,385	---	12,346	---	13,386	---	17,720
f _s DC1	(ksi)	18.04	14.45	10.75	13.22	15.50	15.43	14.90	14.78	15.29	14.75	13.95	15.56	15.71
f _s DC2	(ksi)	1.49	1.26	1.32	1.38	1.57	1.55	1.59	1.53	1.59	1.56	1.55	1.57	1.53
f _s DW	(ksi)	4.28	3.60	3.03	3.50	3.80	4.01	3.82	3.94	3.80	4.01	3.72	4.04	3.79
f _s (l+IM)	(ksi)	10.69	6.33	14.90	8.98	12.16	8.88	12.22	8.57	12.56	9.29	14.44	8.56	13.65
f _s (Service II)	(ksi)	37.72	27.54	34.48	29.77	36.68	32.54	36.19	31.40	37.00	32.40	37.98	32.29	38.78
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
η _i f _s (Total)(Strength I)(ksi)		---	37.92	---	41.17	---	44.92	---	43.37	---	44.79	---	44.57	---
Φ F _n	(ksi)	---	50.00	---	49.67	---	49.67	---	49.67	---	49.67	---	49.65	---
V _r	(k)	49.5	53.7	55.5	78.8	53.7	72.3	54.1	70.5	70.7	75.3	56.9	69.3	55.1

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 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/ 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/ 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_y: 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)	250,193	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	1.361	1.648	1.409
MDC1	(k)	4,201	9,932	1,749	8,202	2,550	9,373	2,301	9,038	2,356	9,010	2,314	9,478	3,587
DC2	(k/')	0.161	0.135	0.180	0.155	0.192	0.160	0.191	0.159	0.191	0.160	0.191	0.160	0.186
MDC2	(k)	434	813	256	752	317	838	301	829	300	842	313	851	418
DW	(k/')	0.462	0.437	0.420	0.420	0.490	0.490	0.490	0.490	0.490	0.490	0.490	0.490	0.490
MDW	(k)	1,269	2,617	629	2,250	804	2,522	758	2,485	755	2,529	791	2,539	1,078
LLDF		0.472	0.466	0.484	0.504	0.384	0.503	0.362	0.478	0.375	0.547	0.495	0.529	0.560
M _l + IM	(k)	3,070	3,971	2,606	4,284	2,228	4,432	2,058	4,203	2,110	4,703	2,730	4,177	3,313
η _i M _v (Strength I)	(k)	13,723	---	8,411	---	9,122	---	8,390	---	8,552	---	9,708	---	13,043
Φ M _n	(k)	17,328	---	12,778	---	13,230	---	12,382	---	12,346	---	13,386	---	17,714
f _s DC1	(ksi)	18.46	15.35	11.36	13.51	15.39	15.44	14.94	14.89	15.30	14.84	13.97	15.61	15.76
f _s DC2	(ksi)	1.53	1.23	1.29	1.21	1.49	1.35	1.52	1.33	1.51	1.36	1.47	1.37	1.48
f _s DW	(ksi)	4.48	3.96	3.17	3.62	3.78	4.06	3.83	4.00	3.81	4.07	3.72	4.09	3.81
f _s (l+IM)	(ksi)	9.97	6.01	12.02	6.90	9.60	7.14	9.49	6.77	9.74	7.58	11.77	6.73	10.76
f _s (Service II)	(ksi)	37.43	28.37	31.45	27.32	33.15	30.14	32.63	29.03	33.28	30.12	34.46	29.82	35.03
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
η _i f _s (Total)(Strength I)(ksi)		---	39.06	---	37.72	---	41.56	---	40.04	---	41.60	---	41.10	---
Φ F _n	(ksi)	---	50.00	---	49.67	---	49.67	---	49.67	---	49.67	---	49.67	---
V _r	(k)	50.1	57.8	54.1	64.9	50.9	68.8	50.9	63.9	52.0	63.0	51.1	64.8	52.7

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/ 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_y: 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	0.640	0.589	0.641	0.755	0.757	0.780	0.779	0.854	
OCF	---	---	---	---	---	---	---	---	
R _{DC1}	(k)	102.7	364.1	354.1	376.5	371.2	369.1	388.8	99.0
R _{DC2}	(k)	7.3	27.2	34.2	36.0	35.6	35.7	37.8	8.8
R _{DW}	(k)	31.0	104.2	109.0	114.4	113.3	113.4	117.3	32.4
R _l	(k)	82.6	170.0	185.0	221.7	221.7	225.7	219.2	107.1
R _{IM}	(k)	14.3	24.3	26.3	31.0	31.1	32.0	31.9	19.0
R _{Total}	(k)	237.9	689.8	708.6	779.6	772.9	775.9	795.0	266.3

GIRDER 4 REACTION TABLE									
	Pier 3	Pier 4	Pier 5	Pier 6	Pier 7	Pier 8	Pier 9	Pier 10	
LLDF	0.616	0.578	0.642	0.627	0.627	0.647	0.645	0.721	
OCF	---	---	---	---	---	---	---	---	
R _{DC1}	(k)	105.9	390.7	358.1	378.0	373.2	371.2	390.5	98.9
R _{DC2}	(k)	6.9	23.1	24.8	26.3	26.0	26.1	27.7	8.4
R _{DW}	(k)	31.5	116.4	112.9	117.7	116.7	116.9	120.4	32.5
R _l	(k)	79.4	166.8	185.4	184.1	183.6	187.2	181.6	90.3
R _{IM}	(k)	13.8	23.8	26.4	25.7	25.7	26.5	26.4	16.1
R _{Total}	(k)	237.5	720.8	707.6	731.8	725.2	727.9	746.6	246.2

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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

STRESS TABLES UNIT 2 - 2
STRUCTURE NO. 060-0351 (WB)

SHEET 120 OF 288 SHEETS

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)	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	1.361	1.648	1.409
MDC1	(k)	4,285	10,404	1,846	8,317	2,528	9,316	2,304	9,039	2,356	9,002	2,316	9,477	3,588
DC2	(k/')	0.166	0.147	0.188	0.158	0.190	0.158	0.191	0.158	0.191	0.158	0.190	0.160	0.186
MDC2	(k)	447	883	268	764	315	829	301	823	300	835	311	849	419
DW	(k/')	0.462	0.437	0.420	0.420	0.490	0.490	0.490	0.490	0.490	0.490	0.490	0.490	0.490
MDW	(k)	1,293	2,737	659	2,287	799	2,512	760	2,484	755	2,524	791	2,538	1,079
LLDF		0.494	0.478	0.463	0.476	0.357	0.475	0.339	0.449	0.354	0.519	0.465	0.496	0.522
M _l + IM	(k)	3,214	4,078	2,497	4,048	2,074	4,185	1,927	3,954	1,991	4,457	2,567	3,916	3,091
η _l M _u (Strength I)	(k)	14,153	---	8,399	---	8,800	---	8,156	---	8,333	---	9,409	---	12,637
Φ _l M _n	(k)	17,274	---	12,707	---	13,245	---	12,380	---	12,347	---	13,385	---	17,713
fs DC1	(ksi)	18.83	16.08	11.99	13.70	15.26	15.35	14.96	14.89	15.30	14.83	13.98	15.61	15.77
fs DC2	(ksi)	1.58	1.34	1.35	1.23	1.48	1.34	1.52	1.33	1.51	1.46	1.37	1.48	1.48
fs DW	(ksi)	4.56	4.14	3.32	3.68	3.76	4.05	3.83	4.00	3.81	4.07	3.72	4.09	3.81
fs (l+IM)	(ksi)	10.44	6.18	11.52	6.52	8.94	6.74	8.89	6.37	9.19	7.18	11.06	6.31	10.04
fs (Service II)	(ksi)	38.54	29.59	31.63	27.09	32.12	29.50	31.87	28.50	32.56	29.58	33.55	29.27	34.10
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 _l f _s (Total)(Strength I)(ksi)		---	40.74	---	37.48	---	40.66	---	39.29	---	40.83	---	40.32	---
Φ _l F _n	(ksi)	---	50.00	---	49.67	---	49.67	---	49.67	---	49.67	---	49.67	---
V _l	(k)	45.0	62.7	52.2	68.1	55.3	63.0	60.9	67.0	50.9	65.8	53.4	58.6	51.8

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

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

Φ_lM_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_lf_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_lF_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_l: 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	0.5 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	1.361	1.648	1.409
MDC1	(k)	4,363	10,774	1,952	8,384	2,504	9,215	2,304	8,994	2,352	8,948	2,314	9,434	3,582
DC2	(k/')	0.176	0.177	0.208	0.187	0.197	0.182	0.199	0.183	0.199	0.182	0.198	0.183	0.192
MDC2	(k)	474	1,064	296	907	326	953	314	950	313	959	323	973	431
DW	(k/')	0.462	0.437	0.420	0.420	0.490	0.490	0.490	0.490	0.490	0.490	0.490	0.490	0.490
MDW	(k)	1,315	2,813	689	2,294	794	2,476	760	2,455	755	2,492	791	2,505	1,078
LLDF		0.610	0.590	0.543	0.589	0.424	0.555	0.404	0.533	0.422	0.597	0.537	0.584	0.625
M _l + IM	(k)	3,964	5,032	2,926	5,010	2,461	4,889	2,295	4,690	2,374	5,126	2,962	4,616	3,698
η _l M _u (Strength I)	(k)	15,701	---	9,411	---	9,488	---	8,852	---	9,048	---	10,148	---	13,759
Φ _l M _n	(k)	17,222	---	12,627	---	13,260	---	12,377	---	12,347	---	13,385	---	17,716
fs DC1	(ksi)	19.17	16.66	12.68	13.81	15.11	15.18	14.96	14.82	15.28	14.74	13.97	15.54	15.74
fs DC2	(ksi)	1.67	1.61	1.49	1.46	1.54	1.54	1.59	1.53	1.58	1.55	1.52	1.57	1.52
fs DW	(ksi)	4.64	4.26	3.47	3.70	3.74	3.99	3.84	3.96	3.81	4.01	3.72	4.04	3.80
fs (l+IM)	(ksi)	12.88	7.62	13.50	8.07	10.61	7.88	10.59	7.56	10.95	8.26	12.77	7.44	12.01
fs (Service II)	(ksi)	42.22	32.43	35.19	29.46	34.18	30.94	34.15	30.12	34.90	31.04	35.80	30.81	36.68
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 _l f _s (Total)(Strength I)(ksi)		---	44.69	---	40.70	---	42.69	---	41.57	---	42.87	---	42.47	---
Φ _l F _n	(ksi)	---	50.00	---	49.67	---	49.67	---	49.67	---	49.67	---	49.67	---
V _l	(k)	55.3	69.3	70.4	78.6	54.8	74.0	53.4	73.3	66.0	77.7	56.5	68.8	57.1

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_lf_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_lF_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_l: Maximum factored shear range in span computed according to Article 6.10.10.

OCF: Obtuse Correction Factor

GIRDER 5 REACTION TABLE								
	Pier 3	Pier 4	Pier 5	Pier 6	Pier 7	Pier 8	Pier 9	Pier 10
LLDF	0.709	0.639	0.642	0.628	0.630	0.639	0.646	0.691
OCF	---	---	---	---	---	---	---	---
R _{DC1}	(k)	107.5	407.2	360.4	377.4	373.4	371.3	99.1
R _{DC2}	(k)	8.2	26.8	25.1	26.3	26.1	26.0	7.9
R _{DW}	(k)	31.1	122.5	113.7	117.6	116.8	117.0	32.5
R _l	(k)	91.4	184.3	185.4	184.5	184.3	184.7	86.6
R _{IM}	(k)	15.9	26.3	26.4	25.8	25.9	26.2	15.4
R _{Total}	(k)	254.1	767.1	711.0	731.6	726.5	725.2	241.5

GIRDER 6 REACTION TABLE								
	Pier 3	Pier 4	Pier 5	Pier 6	Pier 7	Pier 8	Pier 9	Pier 10
LLDF	0.761	0.711	0.709	0.687	0.688	0.709	0.714	0.732
OCF	---	---	---	---	---	---	---	---
R _{DC1}	(k)	108.8	418.1	360.3	374.7	371.3	369.2	99.9
R _{DC2}	(k)	10.1	39.3	35.0	35.9	35.7	35.6	9.1
R _{DW}	(k)	30.6	124.0	110.9	114.1	113.4	113.5	32.3
R _l	(k)	98.2	205.0	204.6	201.6	201.5	205.2	91.8
R _{IM}	(k)	17.0	29.3	29.1	28.2	28.3	29.1	16.3
R _{Total}	(k)	264.7	815.7	739.9	754.5	750.2	752.6	249.4

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STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION

STRESS TABLES UNIT 2 - 3
 STRUCTURE NO. 060-0351 (WB)

SHEET 121 OF 288 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	626
CONTRACT NO. 76190				
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)	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
$I_c(3n)$	(in ⁴)	172,696	---	131,592	---	138,627	---	131,592	---	131,592	---	138,627	---	172,696
$I_c(cr)$	(in ⁴)	---	343,871	---	324,084	---	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)	3,651	---	2,569	---	2,749	---	2,569	---	2,569	---	2,749	---	3,651
$S_c(3n)$	(in ³)	3,340	---	2,333	---	2,501	---	2,333	---	2,333	---	2,501	---	3,340
$S_c(cr)$	(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)	4,437	11,024	2,065	8,390	2,482	9,049	2,308	8,886	2,352	8,829	2,315	9,324	3,572
DC2	(k/')	0.176	0.224	0.204	0.237	0.178	0.224	0.181	0.225	0.180	0.224	0.179	0.226	0.191
MDC2	(k)	474	1,343	290	1,147	295	1,173	285	1,172	283	1,180	292	1,203	430
DW	(k/')	0.462	0.437	0.420	0.420	0.490	0.490	0.490	0.490	0.490	0.490	0.490	0.490	0.490
MDW	(k)	1,262	2,758	685	2,189	753	2,329	726	2,314	720	2,344	754	2,364	1,015
LLDF		0.686	0.677	0.605	0.682	0.478	0.628	0.459	0.607	0.472	0.668	0.601	0.666	0.703
$M_{\ell+IM}$	(k)	4,460	5,776	3,262	5,799	2,774	5,536	2,609	5,341	2,656	5,743	3,317	5,257	4,156
$\eta_1 M_u$ (Strength I)	(k)	16,628	---	10,163	---	9,927	---	9,339	---	9,472	---	10,703	---	14,487
ΦM_n	(k)	17,047	---	12,422	---	13,155	---	12,261	---	12,235	---	13,259	---	17,572
f_s DC1	(ksi)	19.50	17.04	13.41	13.82	14.98	14.91	14.99	14.64	15.27	14.55	13.97	15.36	15.69
f_s DC2	(ksi)	1.70	2.04	1.49	1.85	1.41	1.90	1.46	1.89	1.45	1.91	1.40	1.94	1.54
f_s DW	(ksi)	4.53	4.19	3.52	3.54	3.61	3.77	3.74	3.74	3.70	3.79	3.62	3.82	3.65
f_s ($\ell+IM$)	(ksi)	14.66	8.78	15.24	9.38	12.11	8.95	12.18	8.64	12.41	9.29	14.48	8.50	13.66
f_s (Service II)	(ksi)	44.79	34.68	38.23	31.40	35.75	32.21	36.02	31.50	36.56	32.31	37.81	32.18	38.64
$0.95R_n F_y$	(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)		---	47.77	---	43.38	---	44.43	---	43.46	---	44.63	---	44.35	---
ΦF_n	(ksi)	---	50.00	---	49.67	---	49.67	---	49.67	---	49.67	---	49.67	---
V_r	(k)	58.3	95.6	64.1	103.3	60.6	98.0	60.6	98.2	60.0	101.5	64.4	89.1	64.8

GIRDER 7 REACTION TABLE									
	Pier 3	Pier 4	Pier 5	Pier 6	Pier 7	Pier 8	Pier 9	Pier 10	
LLDF	0.699	0.768	0.757	0.704	0.705	0.738	0.740	0.840	
OCF	---	---	---	---	---	---	---	---	
R_{DC1}	(k)	108.1	426.6	361.1	372.6	370.0	367.6	387.1	96.4
R_{DC2}	(k)	21.8	78.2	72.0	73.1	72.5	72.5	72.3	22.0
R_{DW}	(k)	29.3	115.3	95.7	101.1	99.3	100.1	101.1	31.4
R_{ℓ}	(k)	90.3	221.6	218.5	206.7	206.3	213.3	208.4	105.2
R_{IM}	(k)	15.6	31.6	31.1	28.9	28.9	30.3	30.3	18.7
R_{Total}	(k)	265.1	873.3	778.4	782.4	777.0	783.8	799.2	273.7

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_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).

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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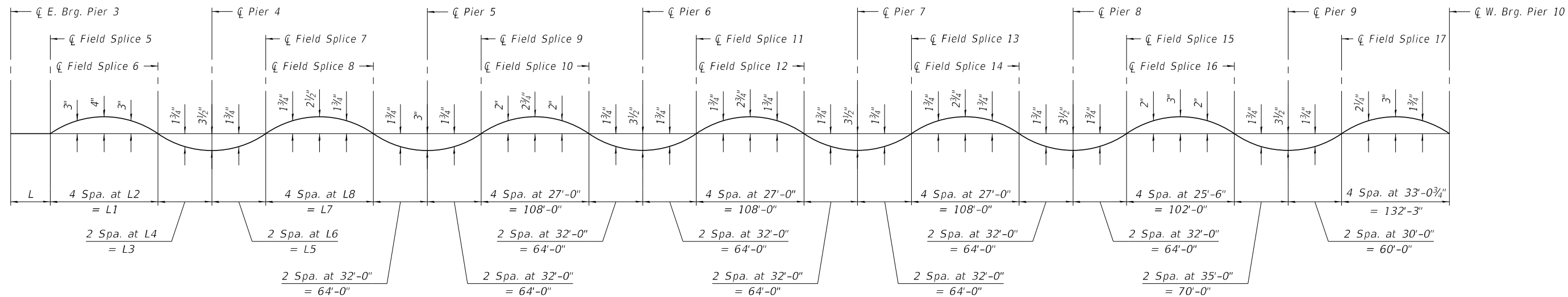


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STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION

STRESS TABLES UNIT 2 - 4
 STRUCTURE NO. 060-0351 (WB)

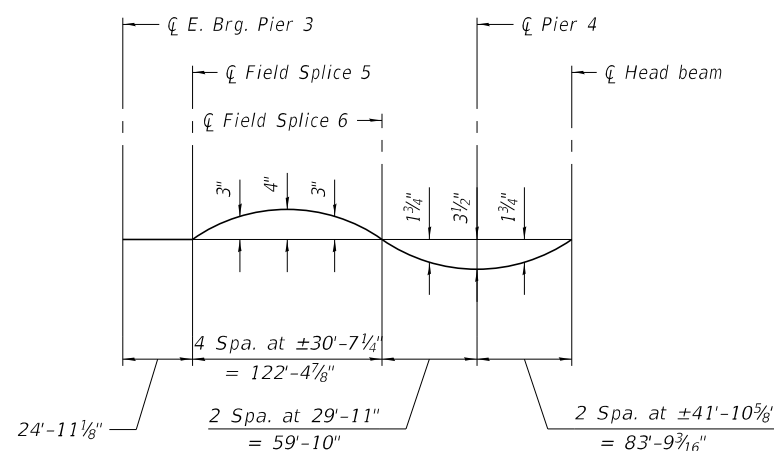
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	627
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				



CAMBER DIAGRAM
(Girders 1 and 3 thru 7)

TABLE OF "L" DIMENSIONS

Location	L	L1	L2	L3	L4	L5	L6	L7	L8
Girder 1	24'-10 ¹ / ₄ "	122'-0 ⁵ / ₈ "	±30'-6 ¹ / ₈ "	59'-7 ¹ / ₈ "	±29'-9 ⁵ / ₁₆ "	69'-7 ¹ / ₄ "	34'-9 ⁵ / ₈ "	102'-0"	25'-6"
Girder 3	25'-0"	122'-9"	30'-8 ¹ / ₄ "	60'-0"	30'-0"	73'-0"	36'-6"	99'-0"	24'-9"
Girder 4	25'-0"	122'-9"	30'-8 ¹ / ₄ "	60'-0"	30'-0"	73'-0"	36'-6"	99'-0"	24'-9"
Girder 5	25'-0"	122'-9"	30'-8 ¹ / ₄ "	60'-0"	30'-0"	73'-0"	36'-6"	99'-0"	24'-9"
Girder 6	25'-0"	122'-9"	30'-8 ¹ / ₄ "	60'-0"	30'-0"	73'-0"	36'-6"	99'-0"	24'-9"
Girder 7	25'-0"	122'-9"	30'-8 ¹ / ₄ "	60'-0"	30'-0"	73'-0"	36'-6"	99'-0"	24'-9"



CAMBER DIAGRAM
(Girder 2)

***** 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	453.56	453.85	454.57	451.28	455.02	455.60	452.99	456.38	456.91	453.71	457.51	458.07	454.89	458.71	459.27	456.06	459.85	460.38	457.24	461.04	461.62
Girder 3	453.91	454.20	454.84	451.53	455.26	455.81	453.20	456.58	457.10	453.91	457.72	458.27	455.09	458.92	459.46	456.26	460.06	460.58	457.43	461.24	461.81
Girder 4	454.10	454.40	455.04	451.74	455.49	456.03	453.40	456.77	457.30	454.11	457.92	458.47	455.29	459.11	459.66	456.46	460.25	460.78	457.63	461.44	462.02
Girder 5	454.30	454.60	455.24	451.95	455.70	456.24	453.60	456.97	457.49	454.31	458.12	458.67	455.49	459.31	459.86	456.66	460.45	460.97	457.83	461.63	462.20
Girder 6	454.11	454.42	455.05	451.77	455.54	456.07	453.42	456.77	457.31	454.12	457.93	458.49	455.31	459.12	459.68	456.47	460.26	460.79	457.64	461.45	462.03
Girder 7	453.89	454.20	454.83	451.56	455.33	455.86	453.20	456.54	457.08	453.90	457.71	458.26	455.08	458.90	459.45	456.25	460.04	460.57	457.42	461.22	461.80

Location	☐ E. Brg. Pier 3	☐ Field Splice 5	☐ Field Splice 6	☐ Pier 4	☐ Head beam
Girder 2	453.73	454.01	454.70	451.42	455.21

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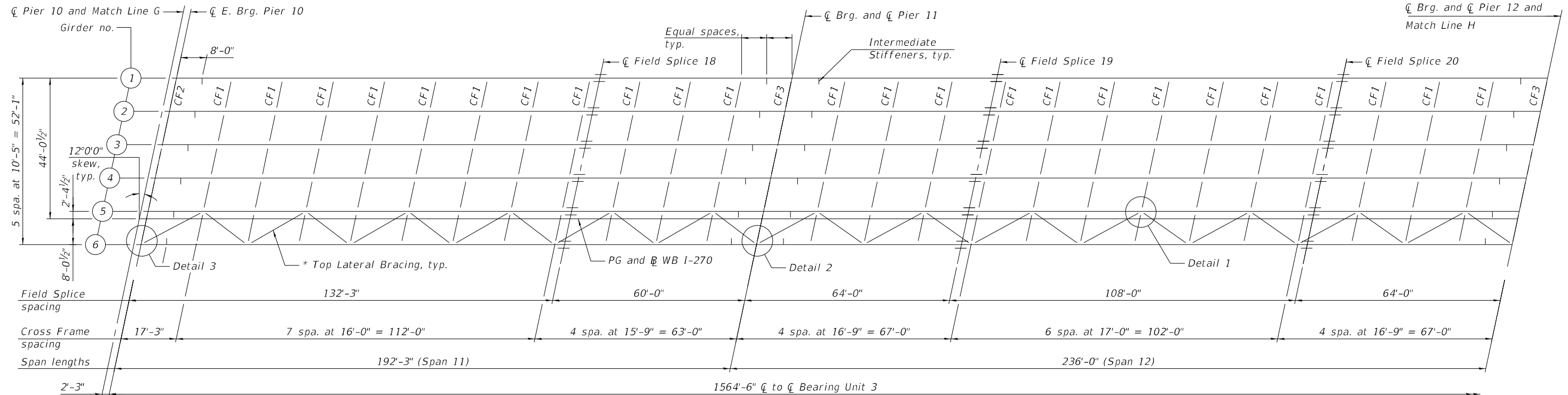
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**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

**CAMBER DATA UNIT 2
STRUCTURE NO. 060-0351 (WB)**

SHEET 123 OF 288 SHEETS

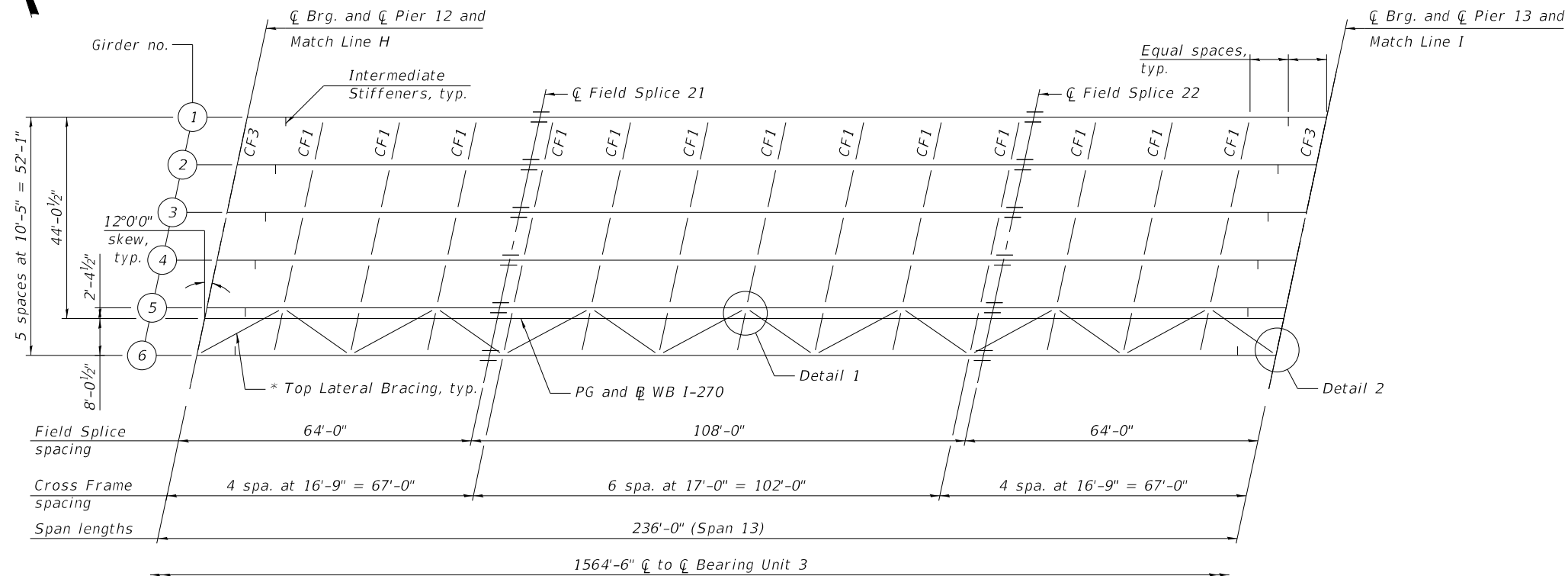
F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	628
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				



FRAMING PLAN - UNIT 3
(Spans 11 and 12)



* 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.



FRAMING PLAN - UNIT 3
(Span 13)

Note:
For field splice details, see sheet 130 of 288.
For cross frame details, see sheet 131 of 288.
For Details 1, 2 and 3, see sheet 132 of 288.

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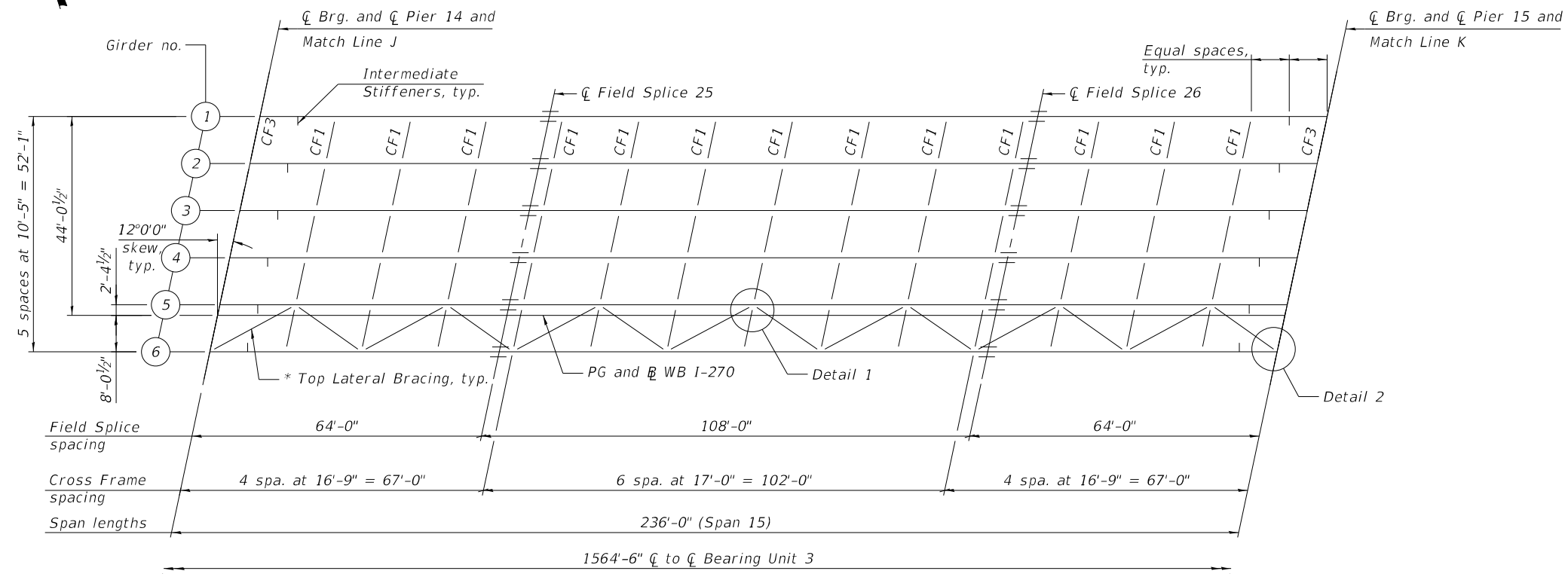
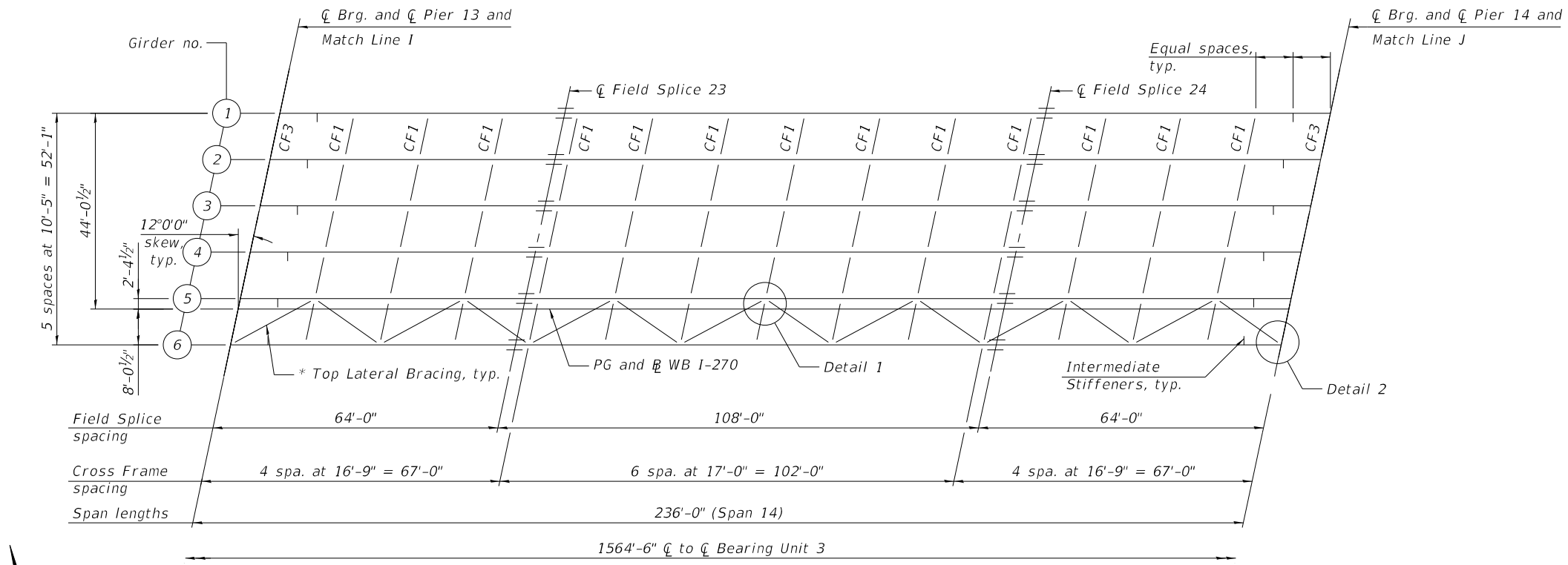
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

FRAMING PLAN - UNIT 3 - 1
STRUCTURE NO. 060-0351 (WB)

SHEET 124 OF 288 SHEETS

F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	629
CONTRACT NO. 76190				

ILLINOIS FED. AID PROJECT



* 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.

Note:
For field splice details, see sheet 130 of 288.
For cross frame details, see sheet 131 of 288.
For Details 1 and 2, see sheet 132 of 288.

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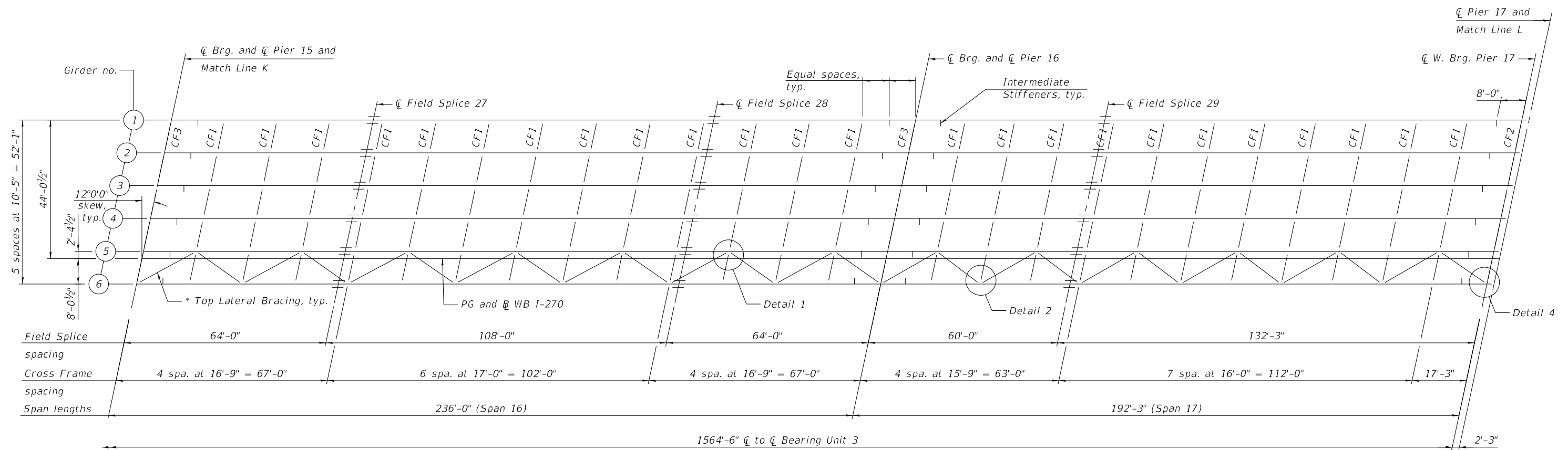
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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

FRAMING PLAN - UNIT 3 - 2
STRUCTURE NO. 060-0351 (WB)

SHEET 125 OF 288 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	630
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				



FRAMING PLAN - UNIT 3
(Spans 16 and 17)

* 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.

Note:
For field splice details, see sheet 130 of 288.
For cross frame details, see sheet 131 of 288.
For Details 1, 2 and 4, see sheet 132 of 288.

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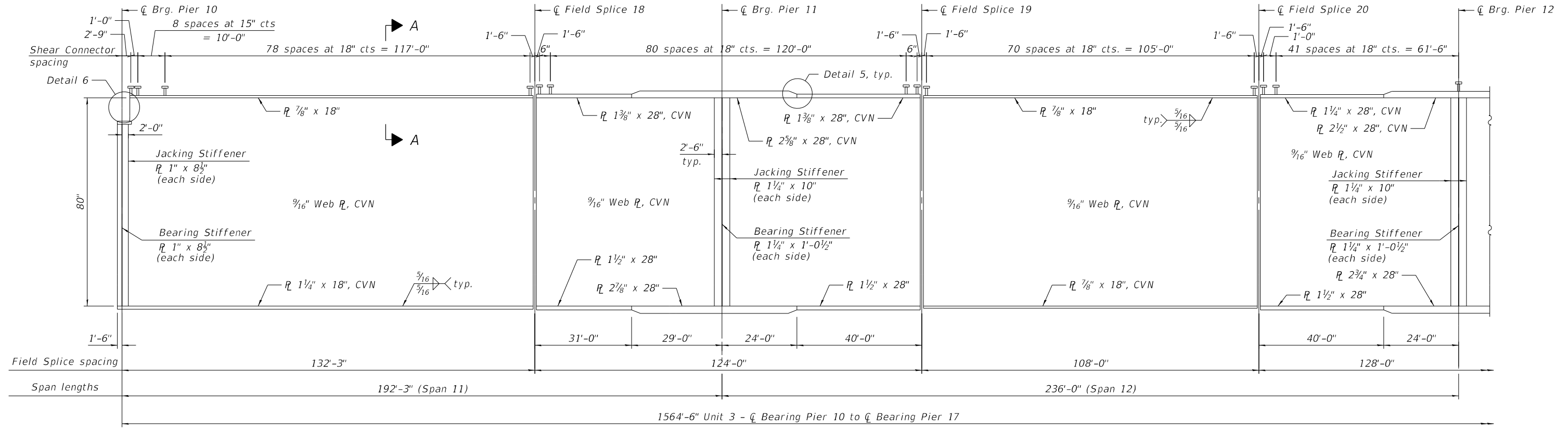
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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

FRAMING PLAN - UNIT 3 - 3
STRUCTURE NO. 060-0351 (WB)

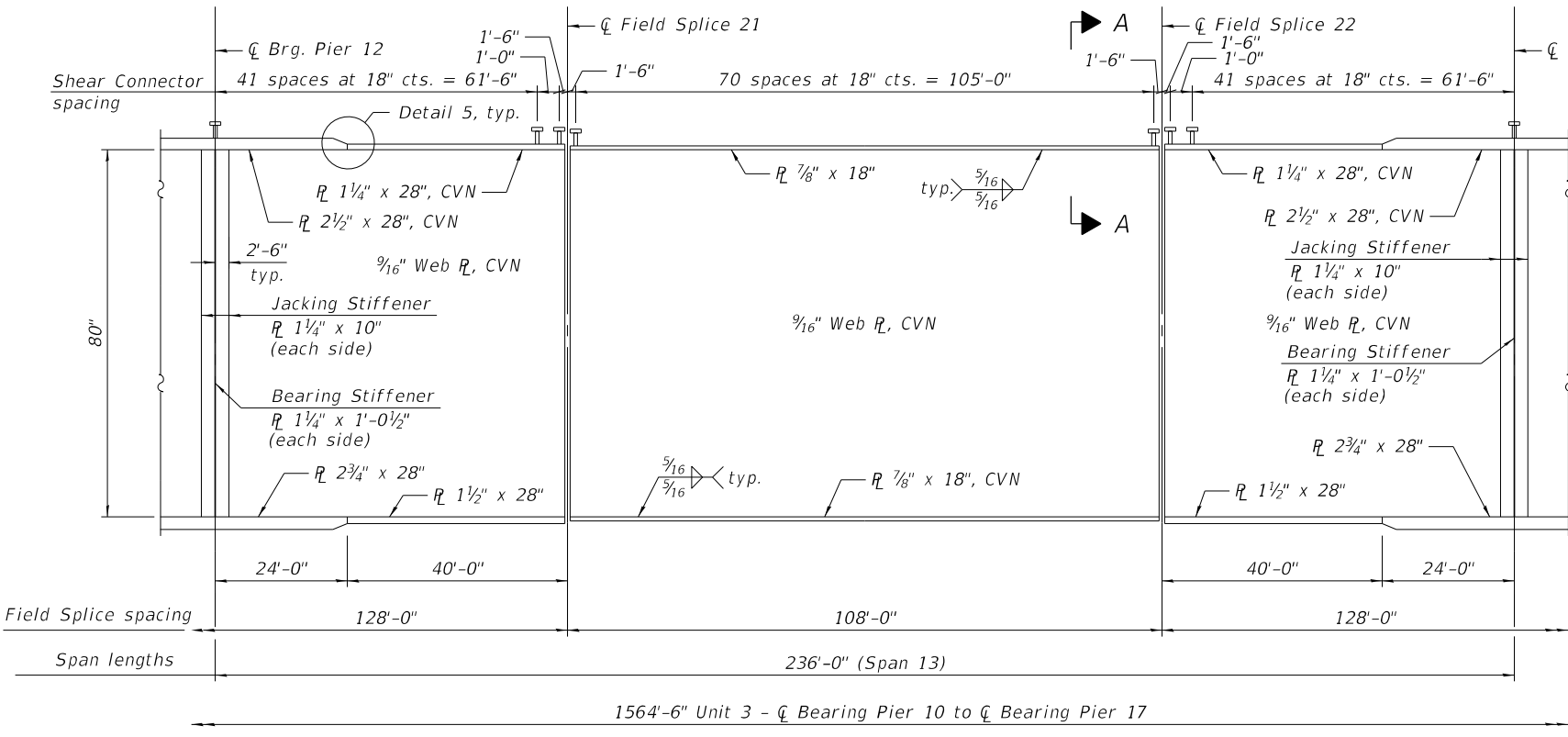
SHEET 126 OF 288 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	631
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				

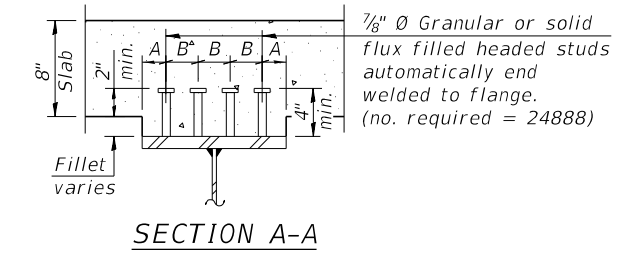


GIRDER ELEVATION - UNIT 3
(Spans 11 and 12)

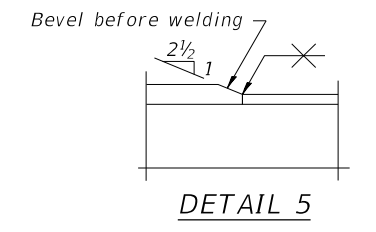
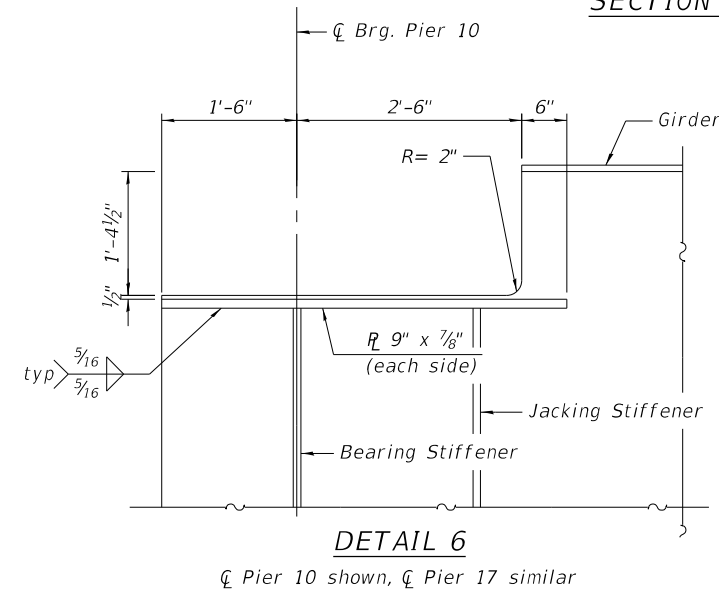
"CVN" denotes Charpy-V-Notch impact energy requirements, zone 2.



GIRDER ELEVATION - UNIT 3
(Span 13)



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



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DEPARTMENT OF TRANSPORTATION

GIRDER ELEVATION UNIT 3 - 1
STRUCTURE NO. 060-0351 (WB)

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	632
CONTRACT NO. 76190				

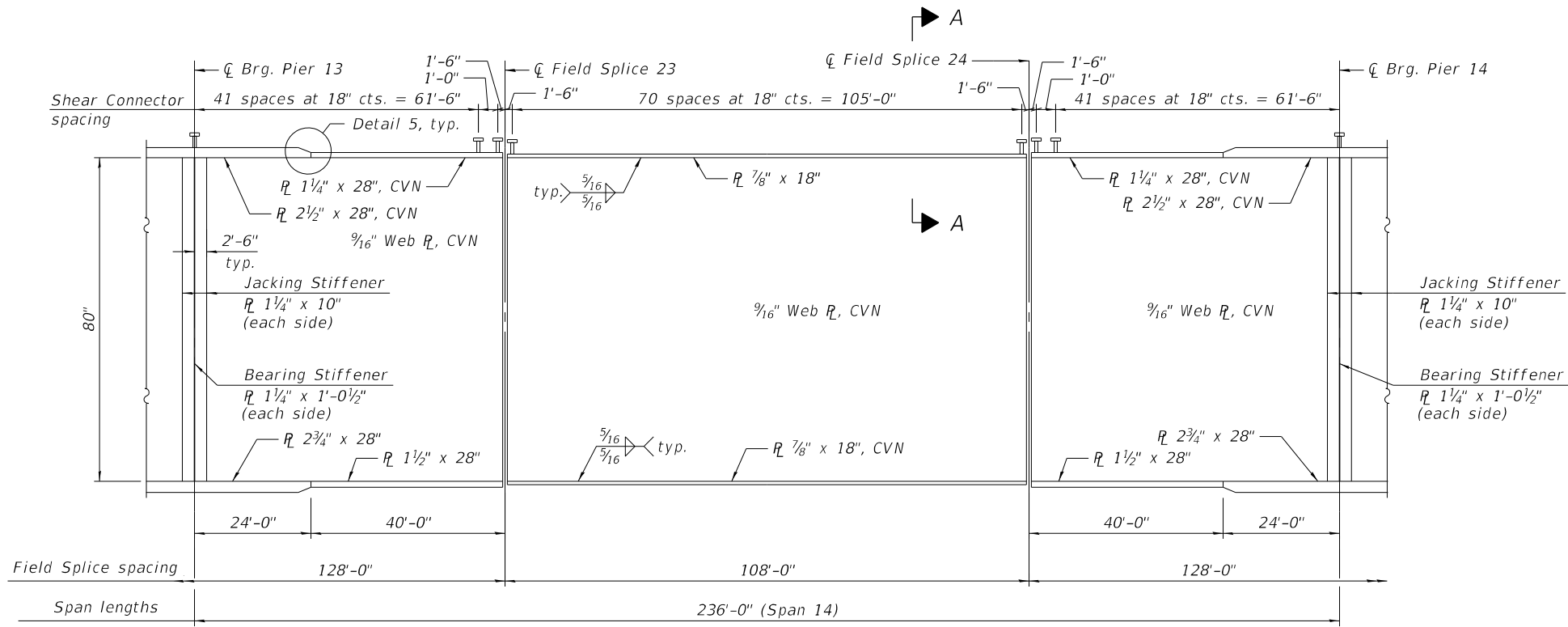
SHEET 127 OF 288 SHEETS

ILLINOIS FED. AID PROJECT

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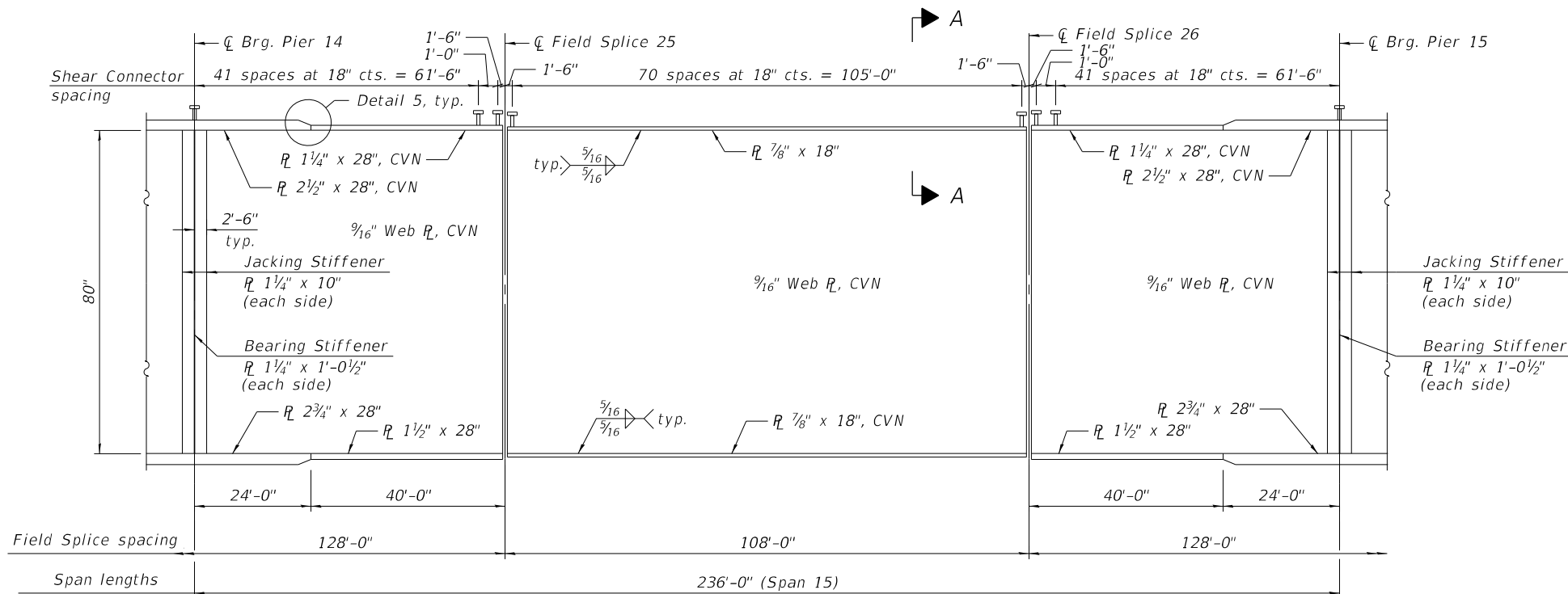
HORNER SHIFRIN
PARSONS

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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 127.

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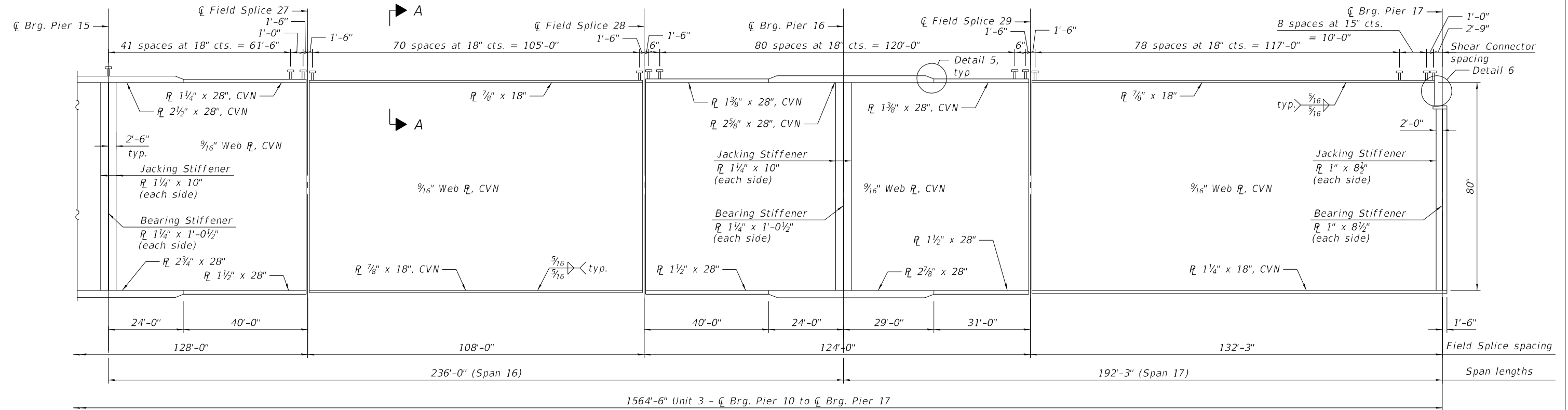
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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

GIRDER ELEVATION UNIT 3 - 2
STRUCTURE NO. 060-0351 (WB)

SHEET 128 OF 288 SHEETS

F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	633
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 127.

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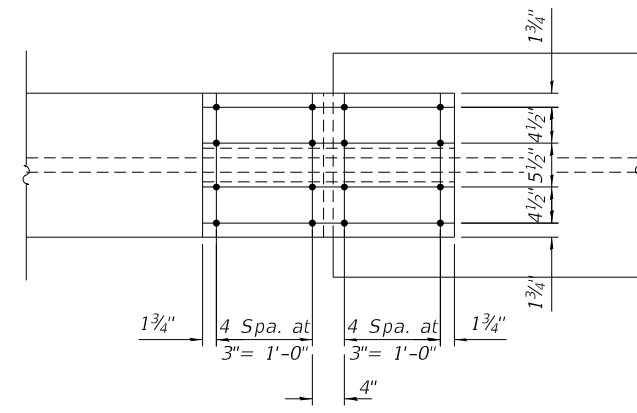
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**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

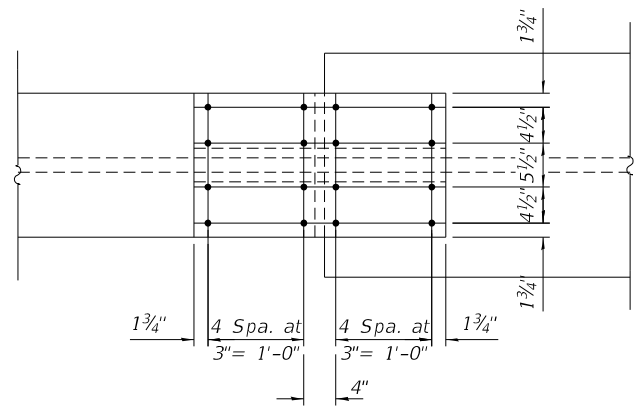
**GIRDER ELEVATION UNIT 3 - 3
STRUCTURE NO. 060-0351 (WB)**

SHEET 129 OF 288 SHEETS

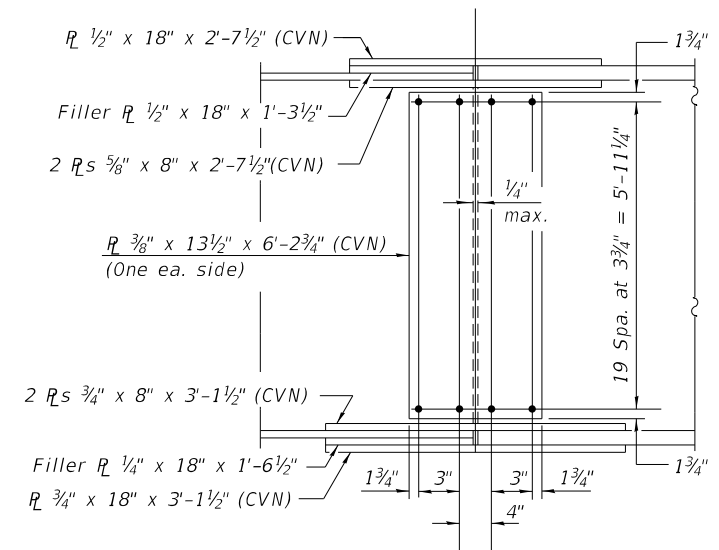
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270	60B-1	MADISON	875	634
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				



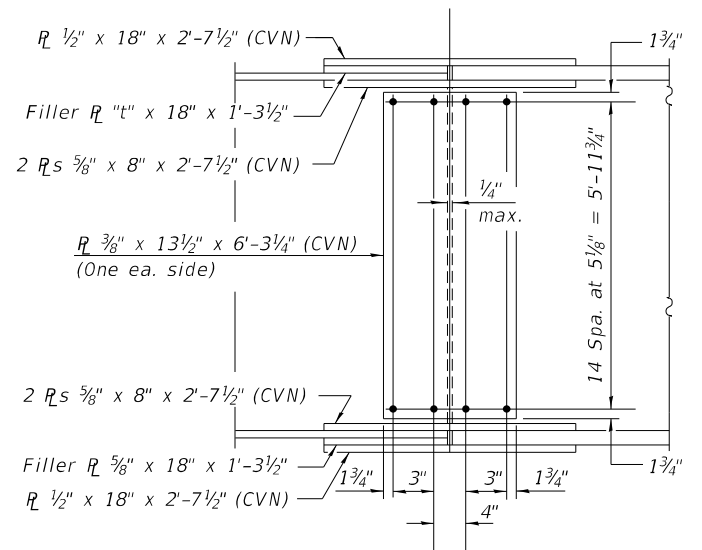
TOP FLANGE



TOP FLANGE

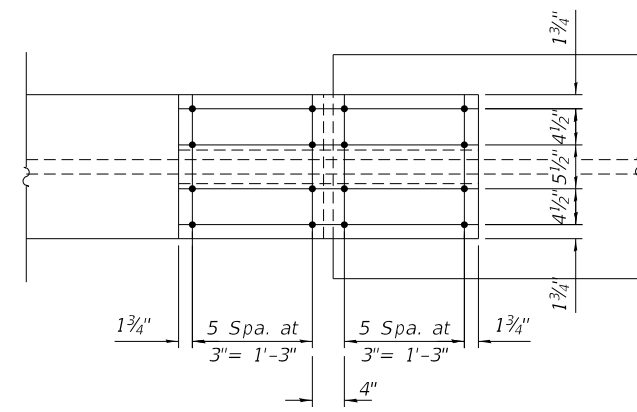


ELEVATION



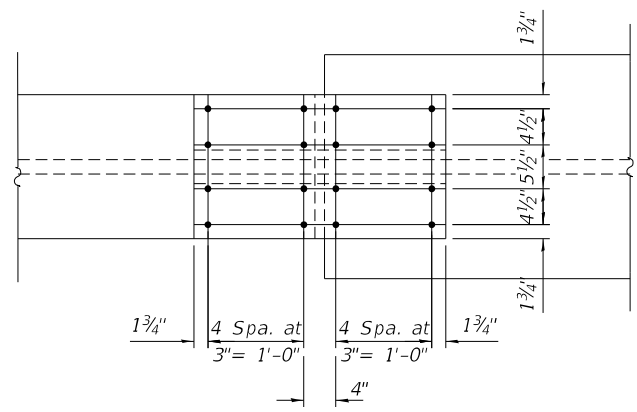
ELEVATION

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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HORNER SHIFRIN
 Teaming with: **PARSONS**

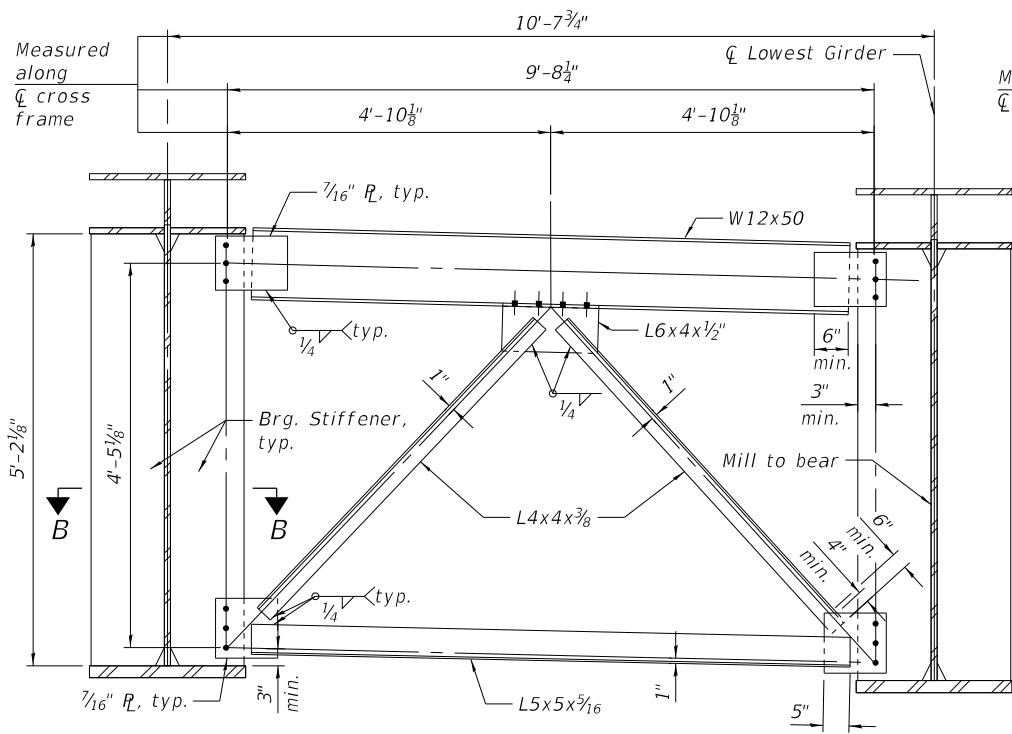
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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

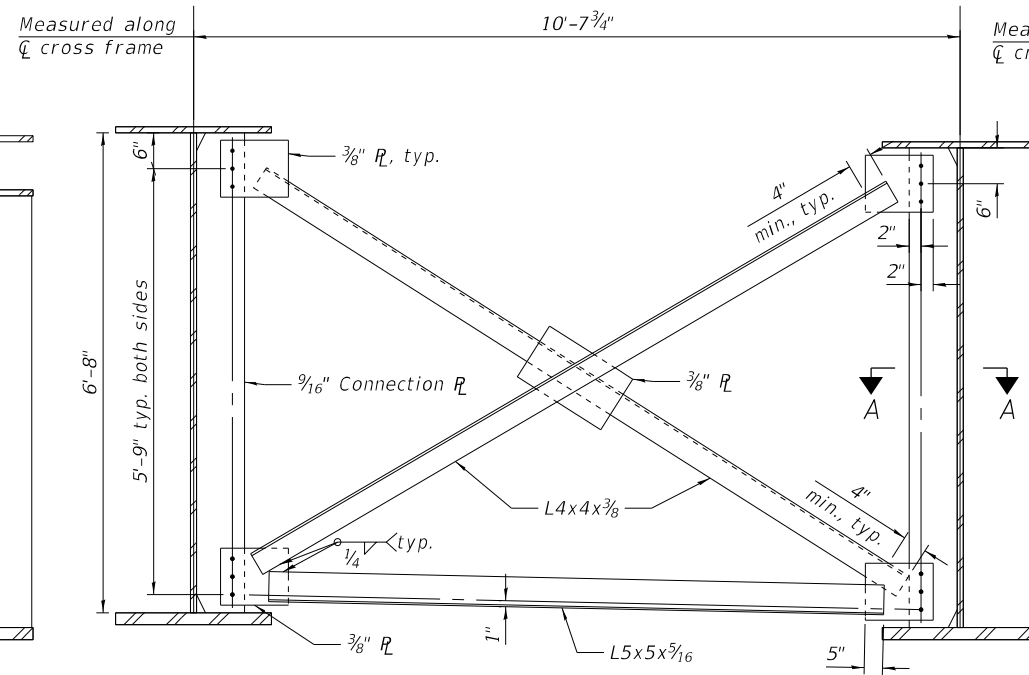
STEEL DETAILS UNITS 3 - 1
STRUCTURE NO. 060-0351 (WB)

SHEET 130 OF 288 SHEETS

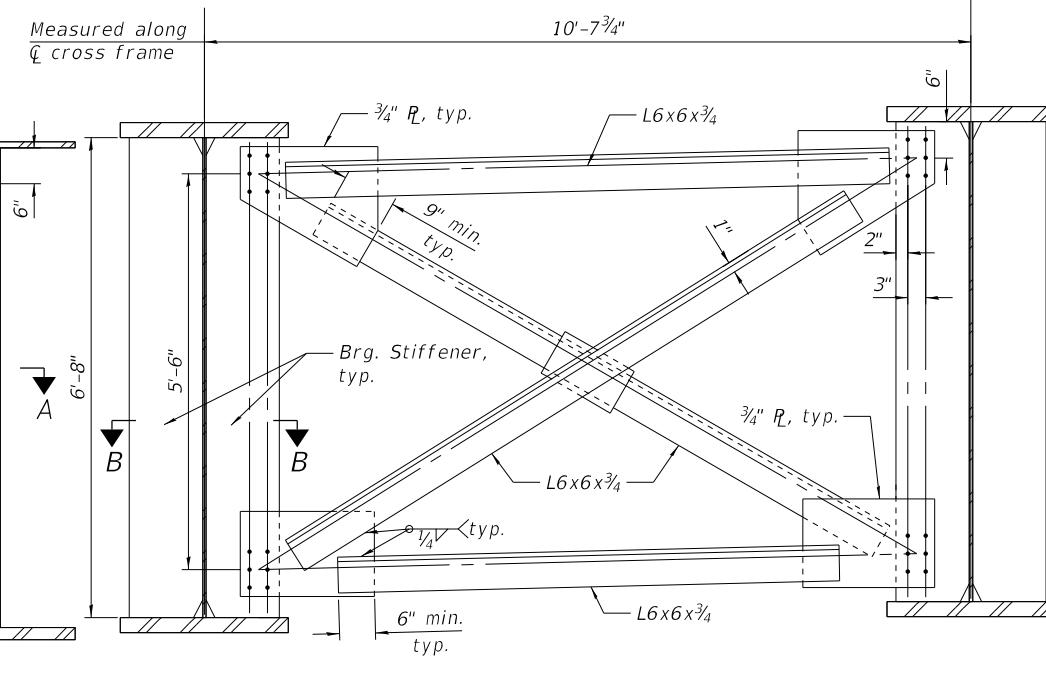
F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	635
CONTRACT NO. 76J90				
ILLINOIS FED. AID PROJECT				



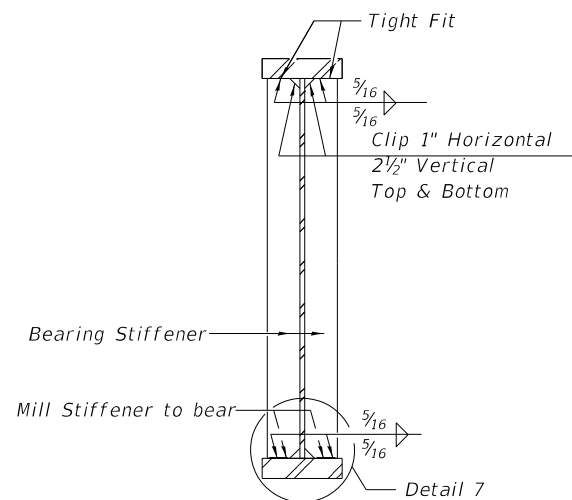
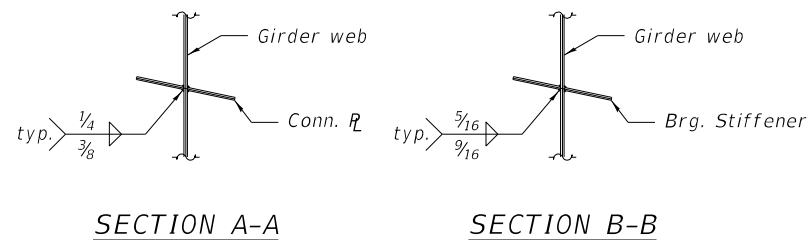
END CROSS FRAME (CF2)
(10 Required)



INTERIOR CROSS FRAME (CF1)
(435 Required)

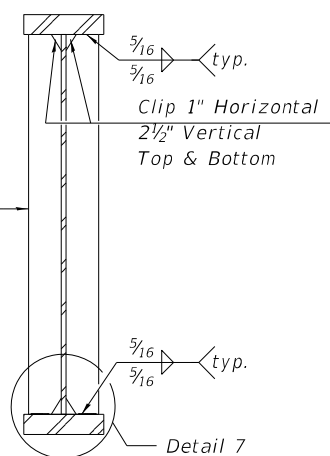


PIER CROSS FRAME (CF3)
(30 Required)

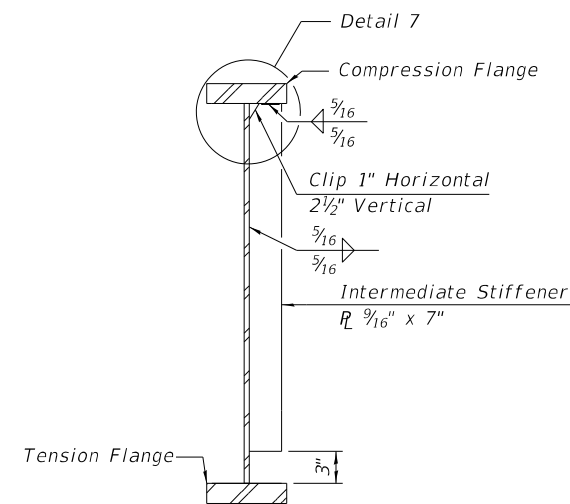


BEARING AND JACKING STIFFENER DETAILS

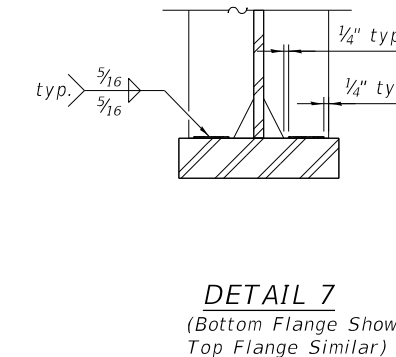
Connection R 9/16" x 7"
(Each side at Girder 2 thru 5
One side at Girder 1 and 6)



CONNECTION PLATE DETAILS



INTERMEDIATE STIFFENER DETAIL



Notes:
All Structural Steel shall be AASHTO M 270 Grade 50.
Provide 1 1/8" \circ holes for all 7/8" \circ 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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HORNER SHIFRIN
Teaming with: **PARSONS**

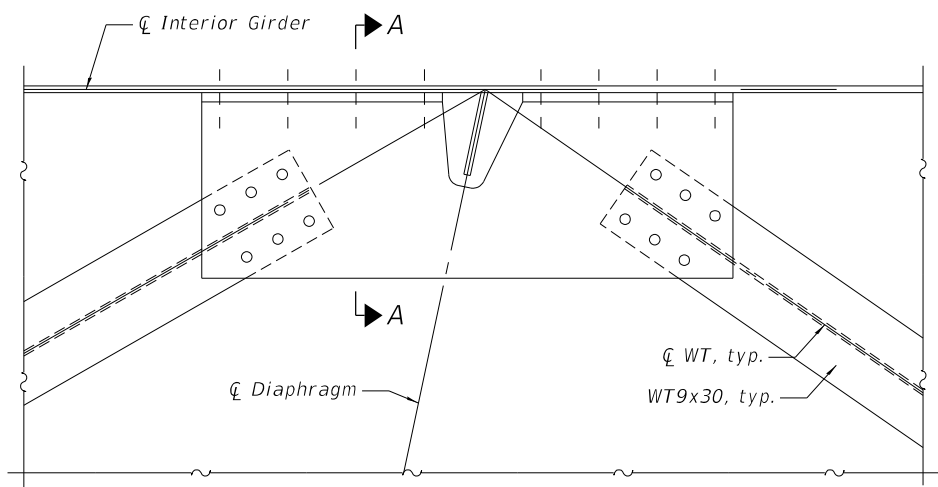
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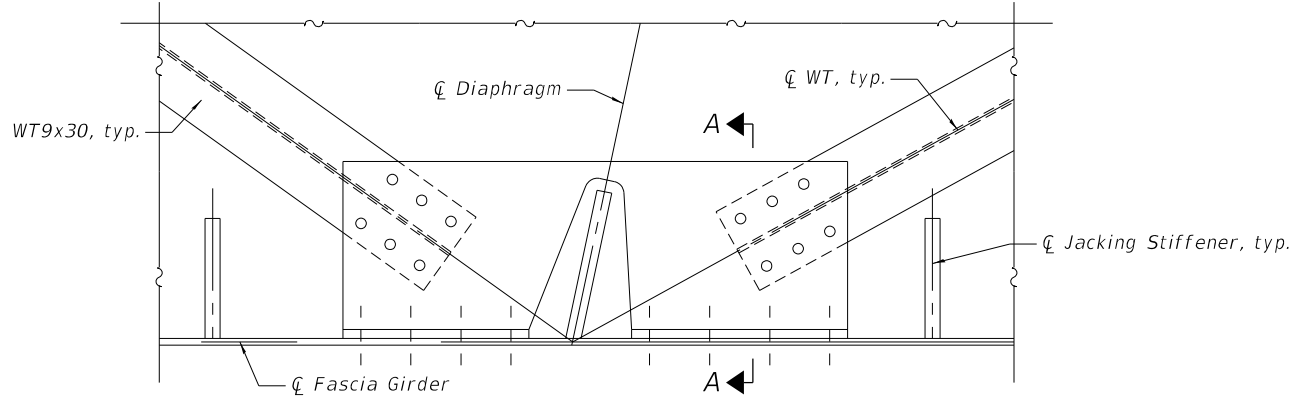
STEEL DETAILS UNITS 3 - 2
STRUCTURE NO. 060-0351 (WB)

SHEET 131 OF 288 SHEETS

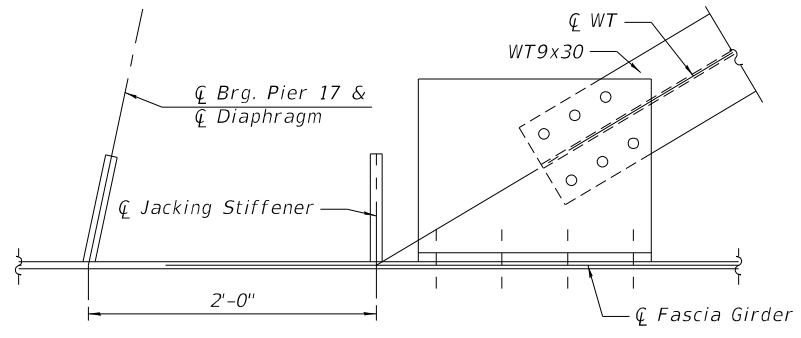
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	636
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				



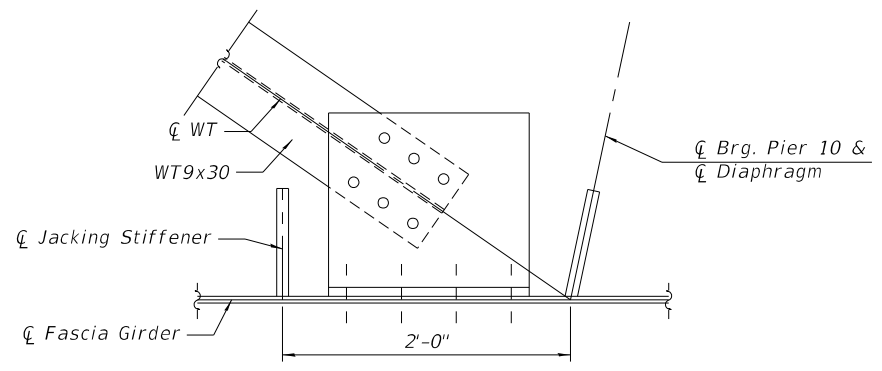
DETAIL 1
(Lateral bracing connection at intermediate diaphragm)
(See connection detail)



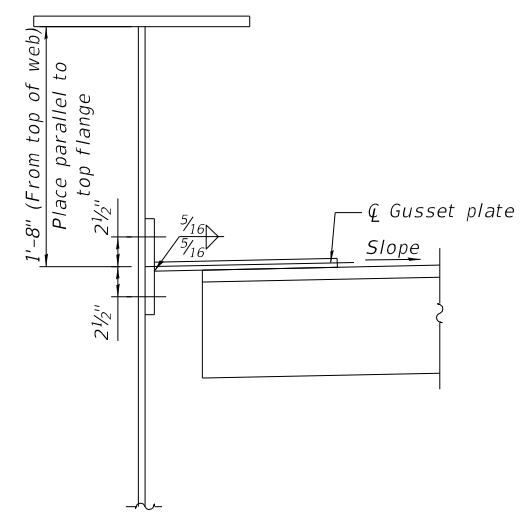
DETAIL 2
(Lateral bracing connection at pier diaphragm)
(See connection detail)



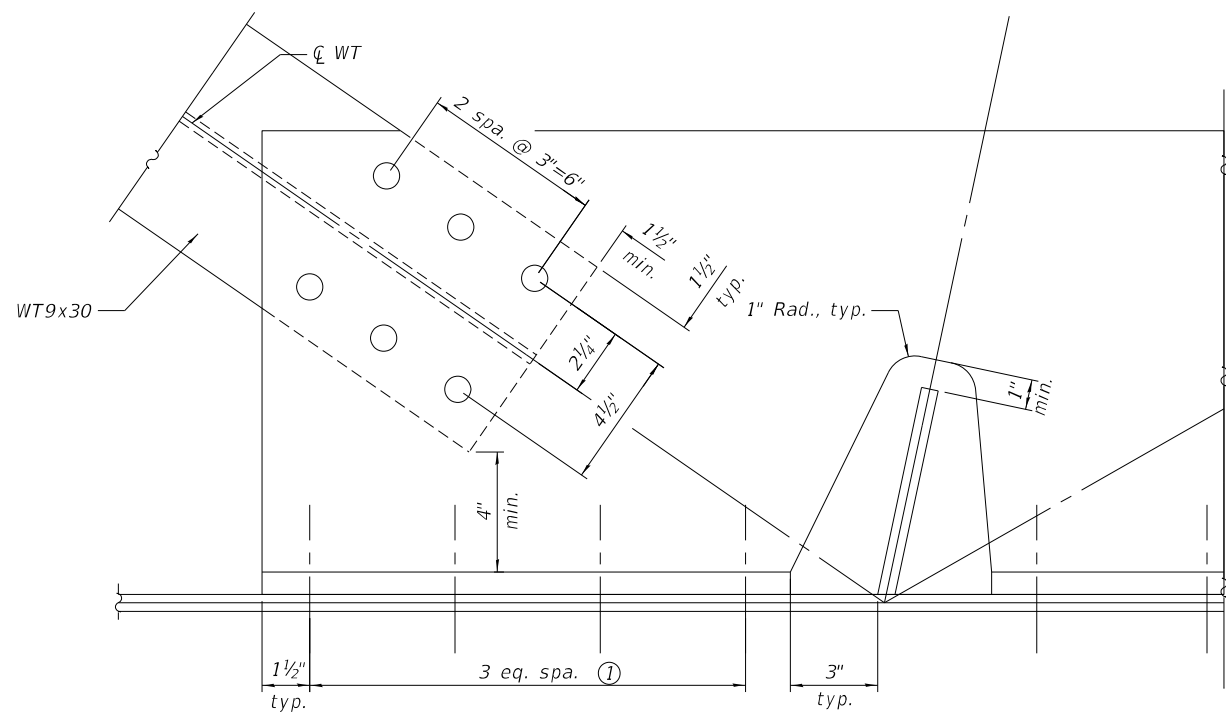
DETAIL 3
(Lateral bracing connection at pier 10)
(See connection detail)



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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DEPARTMENT OF TRANSPORTATION

STEEL DETAILS UNITS 3 - 3
STRUCTURE NO. 060-0351 (WB)

SHEET 132 OF 288 SHEETS

F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	637
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				

INTERIOR GIRDER MOMENT TABLE														
		0.4 Sp. 1	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 _{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)	-	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	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	19.6	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.).

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).

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

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 $f_s (LL+IM)$]

$\phi_f F_n$: 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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DEPARTMENT OF TRANSPORTATION

STRESS TABLES UNIT 3
STRUCTURE NO. 060-0351 (WB)

SHEET 133 OF 288 SHEETS

F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	638
CONTRACT NO. 76J90				
ILLINOIS FED. AID PROJECT				

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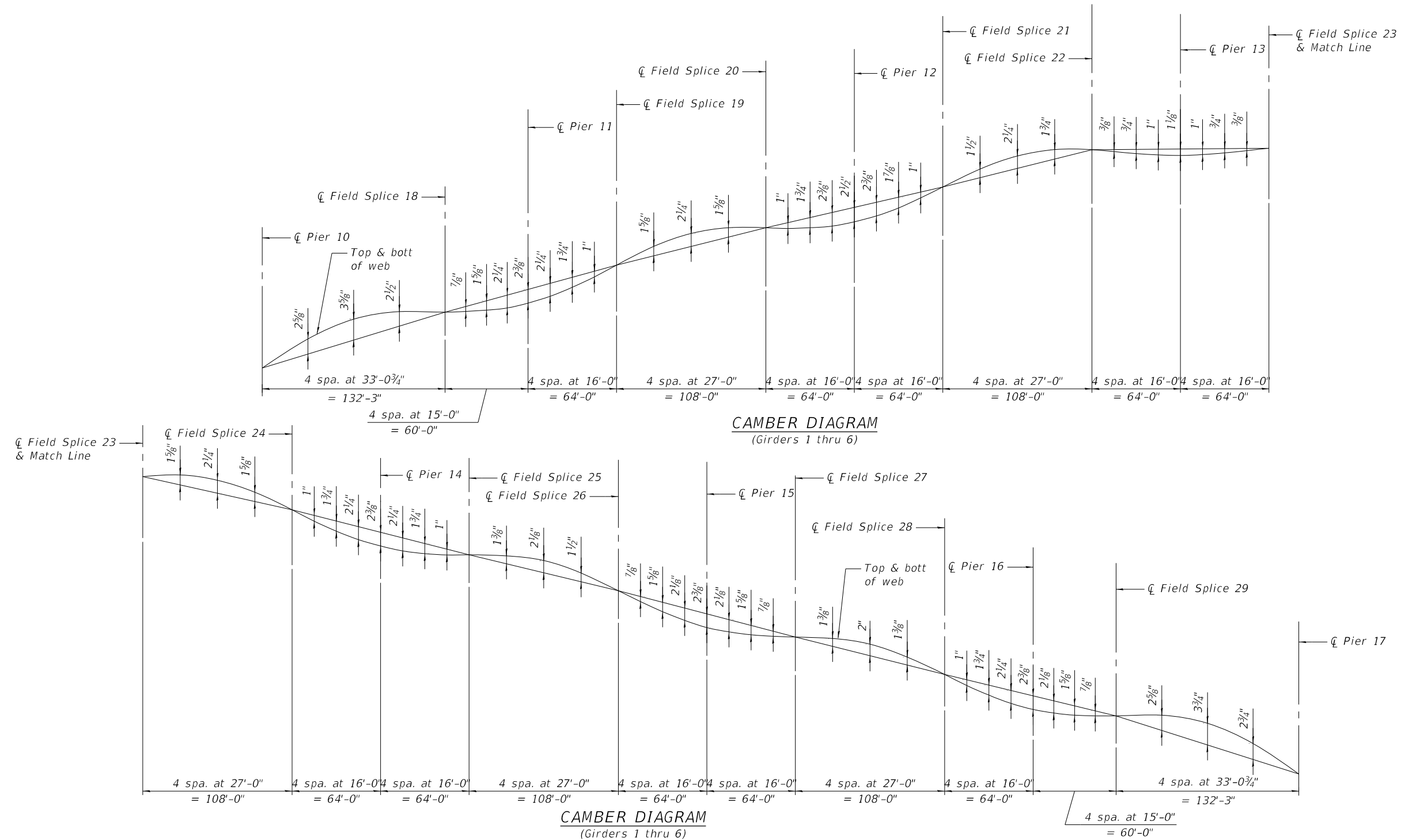
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**STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION**

**CAMBER DATA UNIT 3
 STRUCTURE NO. 060-0351 (WB)**

SHEET 134 OF 288 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	639
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	461.46	461.66	461.86	462.05	461.87	461.65
☐ Field Splice 18	462.35	462.56	462.76	462.95	462.76	462.54
☐ Brg. Pier 11	462.42	462.62	462.81	463.01	462.82	462.61
☐ Field Splice 19	462.98	463.21	463.40	463.60	463.41	463.17
☐ Field Splice 20	463.54	463.76	463.96	464.16	463.97	463.72
☐ Brg. Pier 12	463.60	463.80	463.99	464.19	464.00	463.78
☐ Field Splice 21	464.15	464.36	464.55	464.75	464.56	464.33
☐ Field Splice 22	464.66	464.88	465.08	465.28	465.10	464.87
☐ Brg. Pier 13	464.48	464.69	464.90	465.11	464.93	464.72

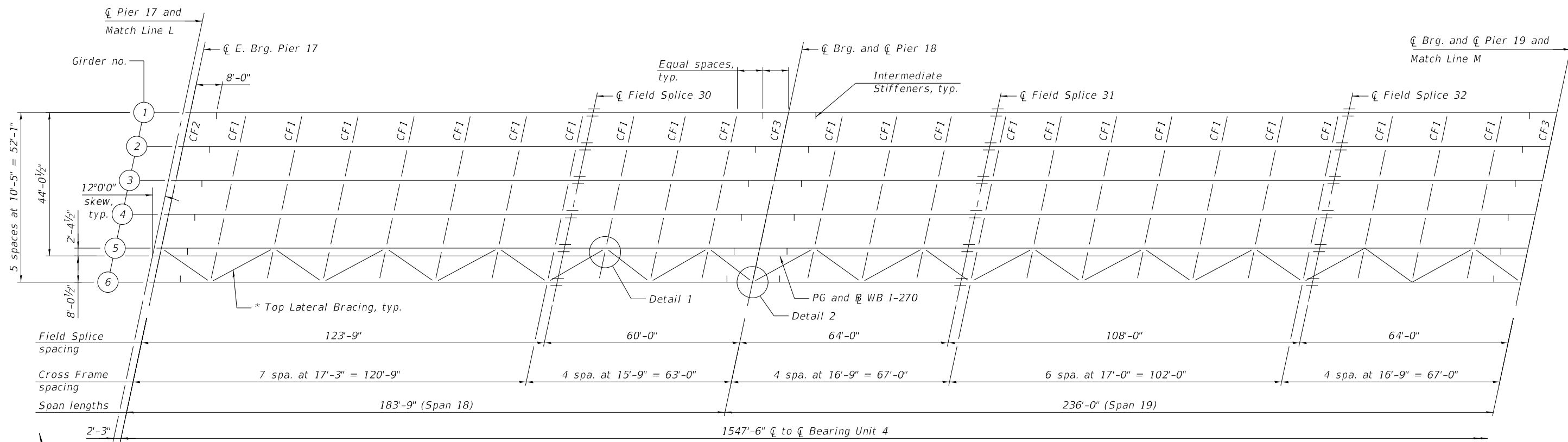
TOP OF WEB ELEVATIONS (FOR FABRICATION ONLY)

LOCATION	Girder 1	Girder 2	Girder 3	Girder 4	Girder 5	Girder 6
☐ Field Splice 23	464.56	464.80	465.01	465.23	465.06	464.84
☐ Field Splice 24	464.06	464.30	464.52	464.74	464.57	464.35
☐ Brg. Pier 14	463.50	463.72	463.94	464.16	463.99	463.80
☐ Field Splice 25	463.41	463.65	463.87	464.09	463.92	463.71
☐ Field Splice 26	462.90	463.14	463.36	463.58	463.41	463.19
☐ Brg. Pier 15	462.32	462.54	462.76	462.98	462.81	462.62
☐ Field Splice 27	462.20	462.44	462.66	462.88	462.71	462.50
☐ Field Splice 28	461.67	461.90	462.12	462.34	462.18	461.96
☐ Brg. Pier 16	461.14	461.36	461.58	461.80	461.64	461.44

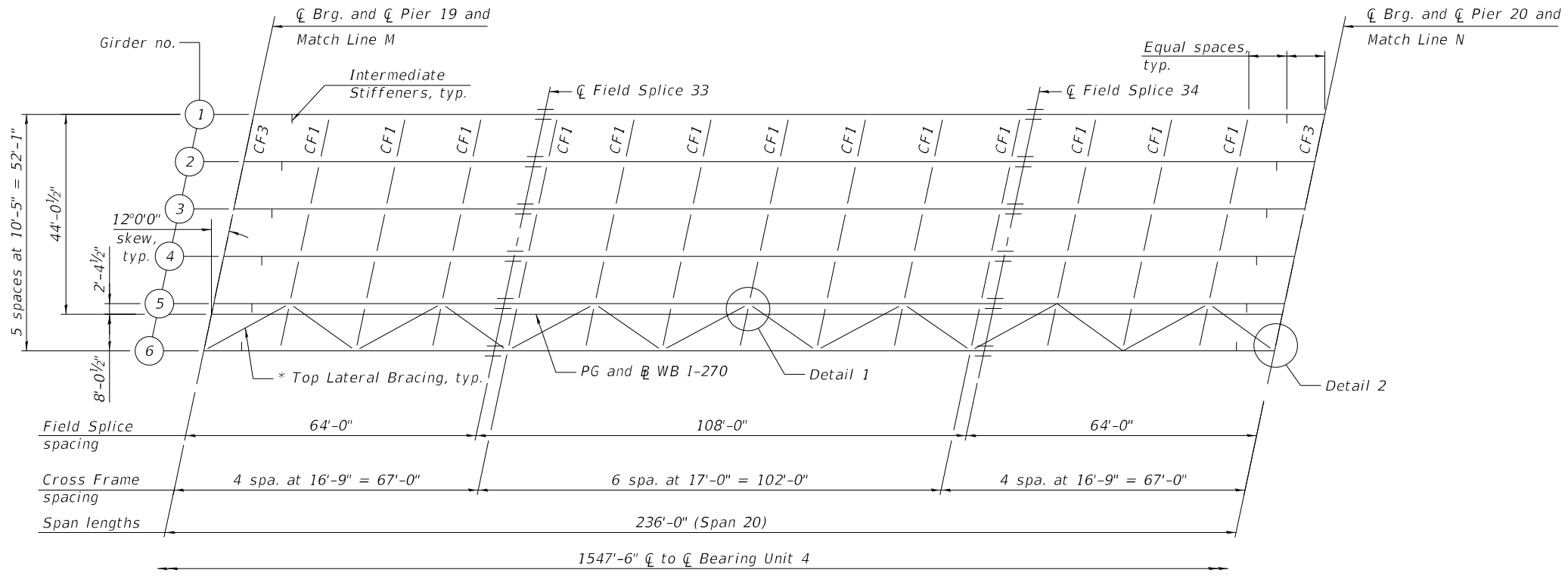
TOP OF WEB ELEVATIONS (FOR FABRICATION ONLY)

LOCATION	Girder 1	Girder 2	Girder 3	Girder 4	Girder 5	Girder 6
☐ Field Splice 29	461.10	461.33	461.55	461.77	461.61	461.39
☐ Brg. Pier 17	460.18	460.40	460.62	460.84	460.68	460.48

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.

Note:
For field splice details, see sheet 141 of 288.
For cross frame details, see sheet 142 of 288.
For Details 1 and 2, see sheet 143 of 288.

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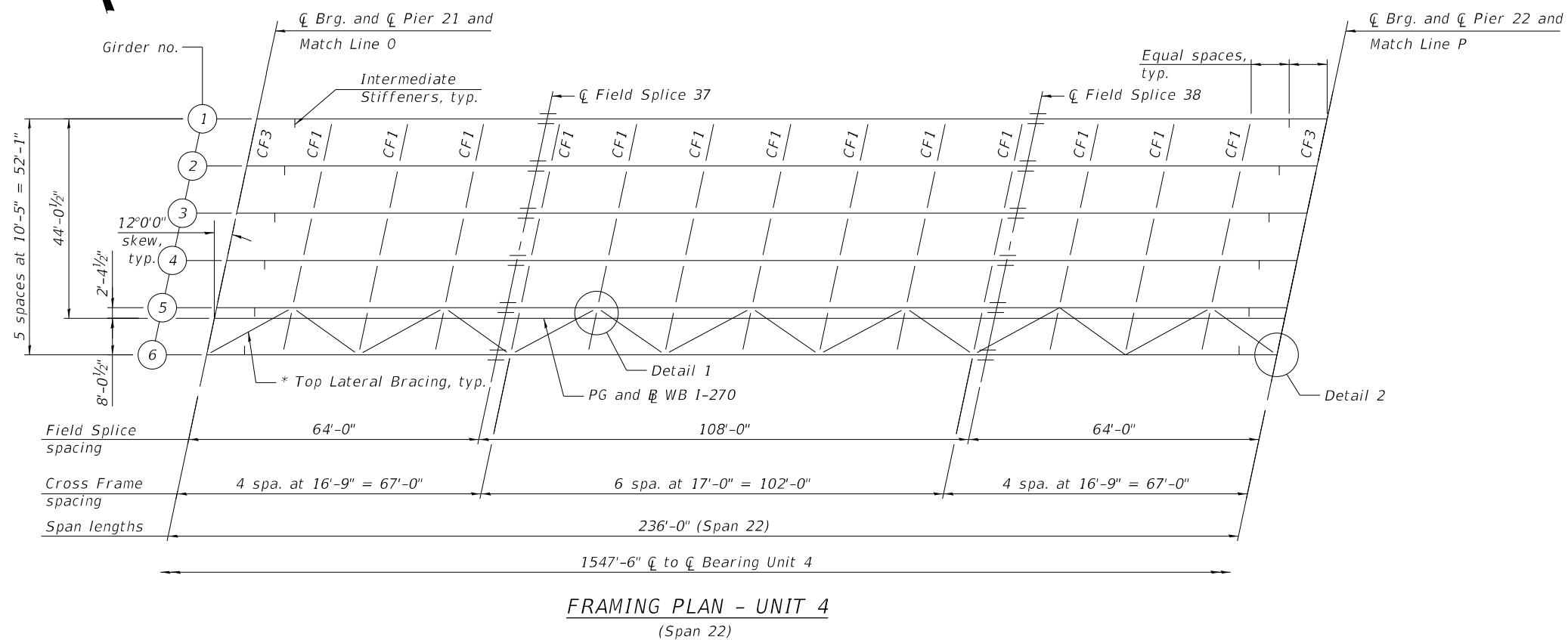
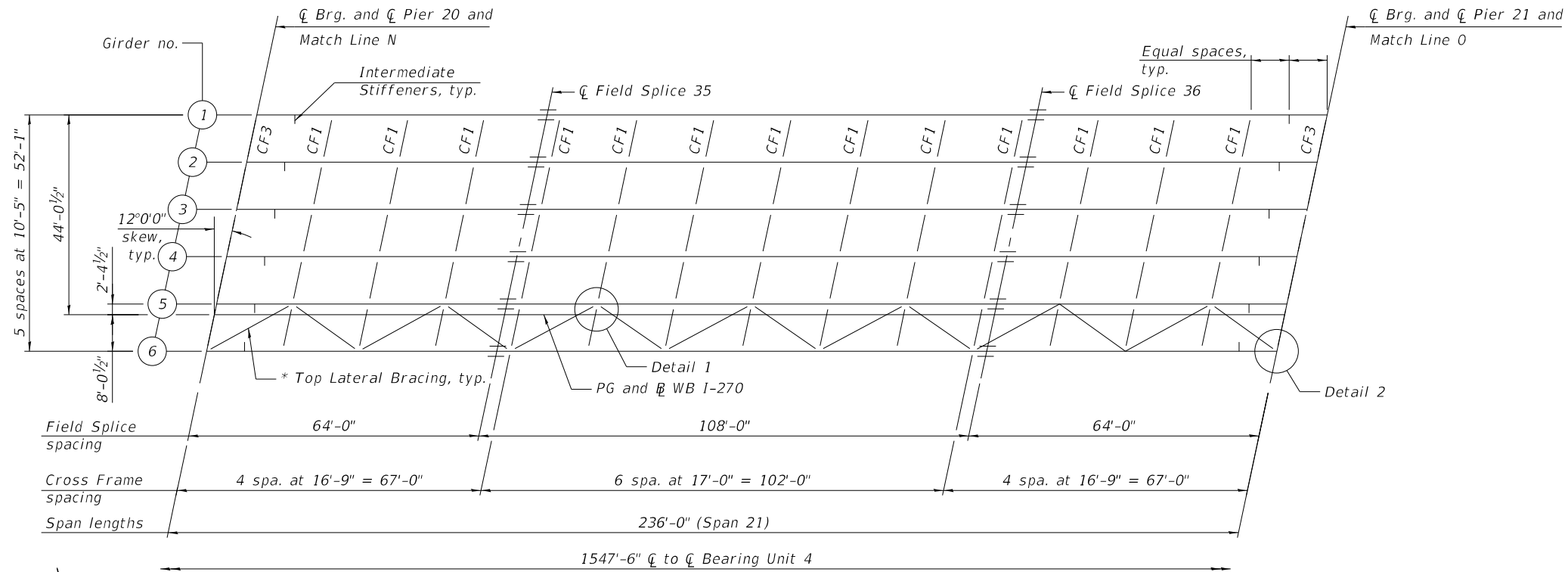
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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

FRAMING PLAN - UNIT 4 - 1
STRUCTURE NO. 060-0351 (WB)

SHEET 135 OF 288 SHEETS

F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	640
CONTRACT NO. 76J90				
ILLINOIS FED. AID PROJECT				



* 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.

Note:
For field splice details, see sheet 141 of 288.
For cross frame details, see sheet 142 of 288.
For Details 1 and 2, see sheet 143 of 288.

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HORNER SHIFRIN
PARSONS

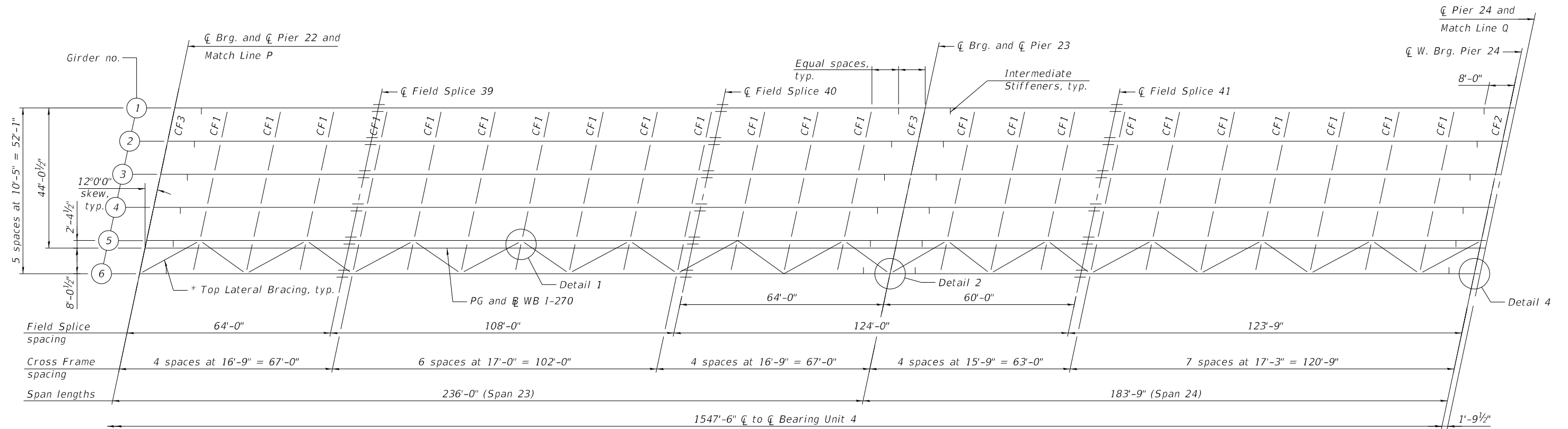
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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

FRAMING PLAN - UNIT 4 - 2
STRUCTURE NO. 060-0351 (WB)

SHEET 136 OF 288 SHEETS

F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	641
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.

Note:
For field splice details, see sheet 141 of 288.
For cross frame details, see sheet 142 of 288.
For Details 1, 2 and 4, see sheet 143 of 288.

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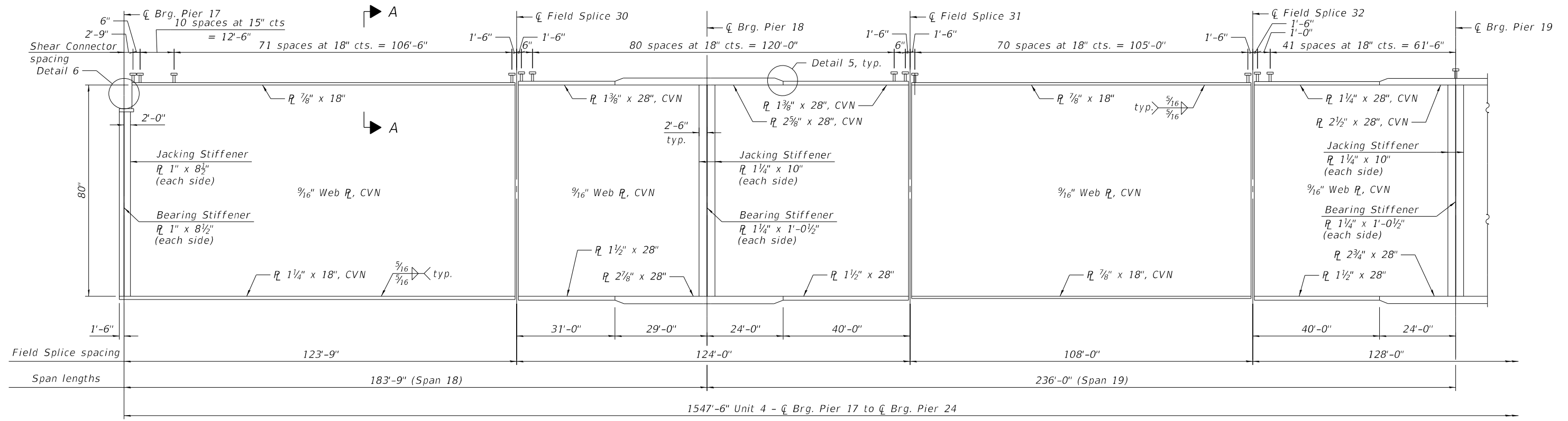
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**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

**FRAMING PLAN - UNIT 4 - 3
STRUCTURE NO. 060-0351 (WB)**

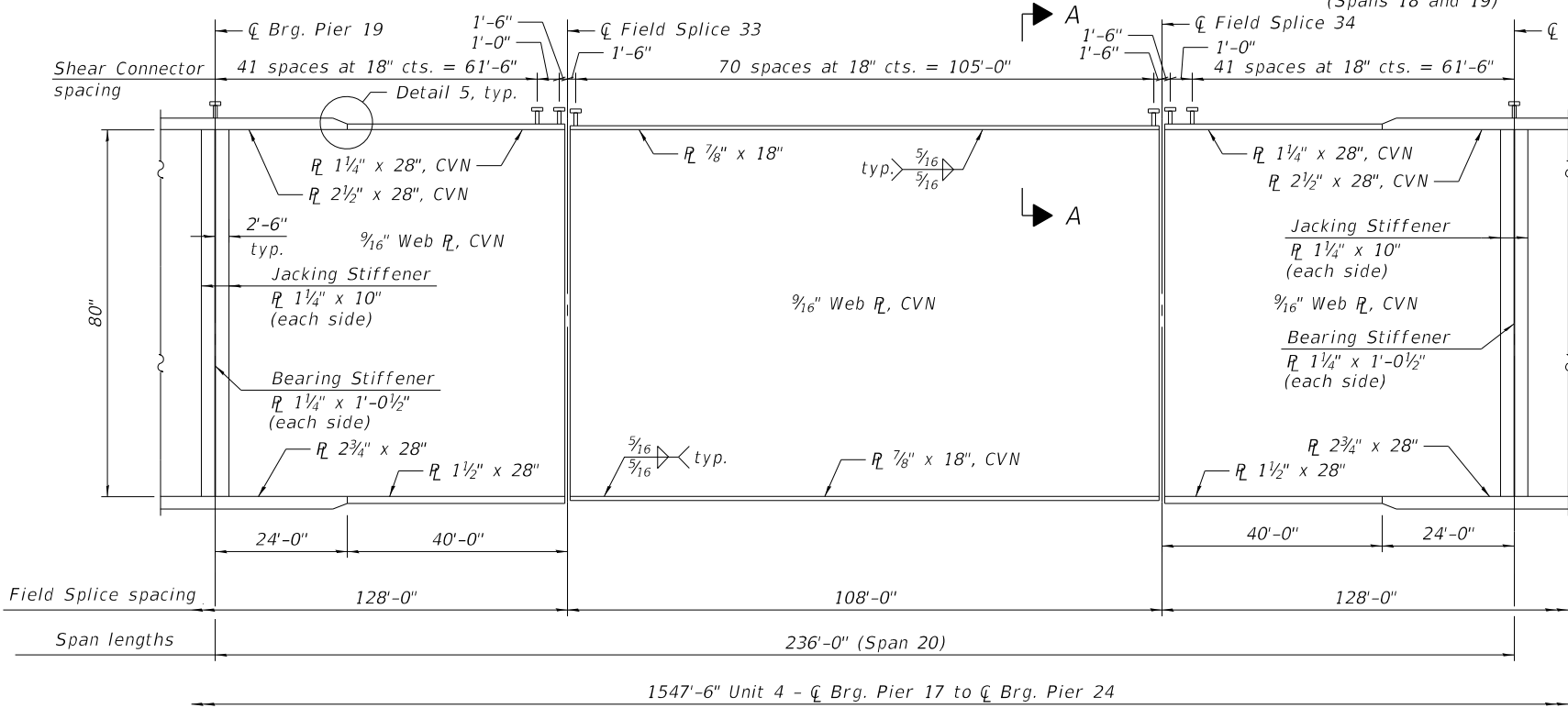
SHEET 137 OF 288 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	642
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				

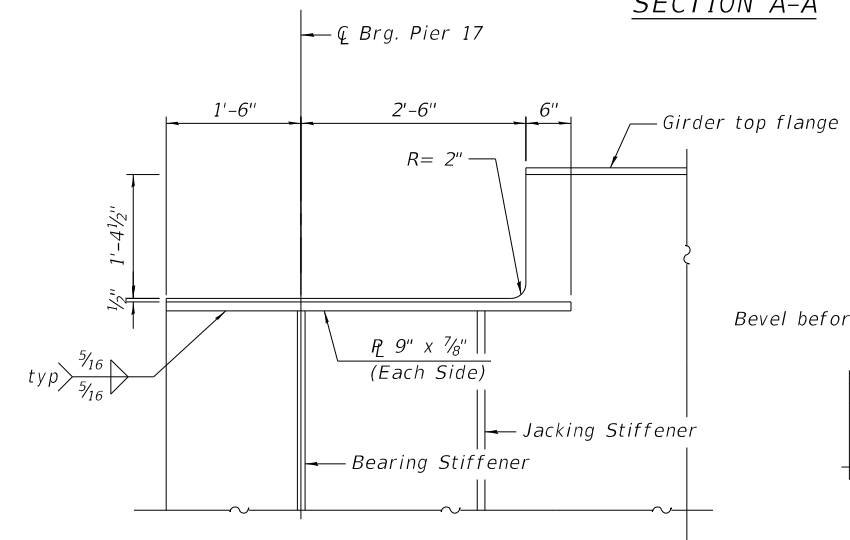
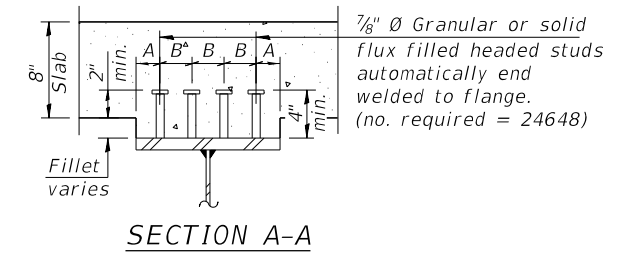


GIRDER ELEVATION - UNIT 4
(Spans 18 and 19)

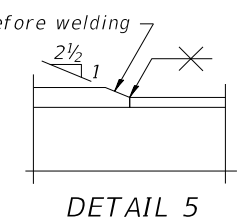
"CVN" denotes Charpy-V-Notch impact energy requirements, zone 2.



GIRDER ELEVATION - UNIT 4
(Span 20)



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



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HORNER SHIFRIN
PARSONS

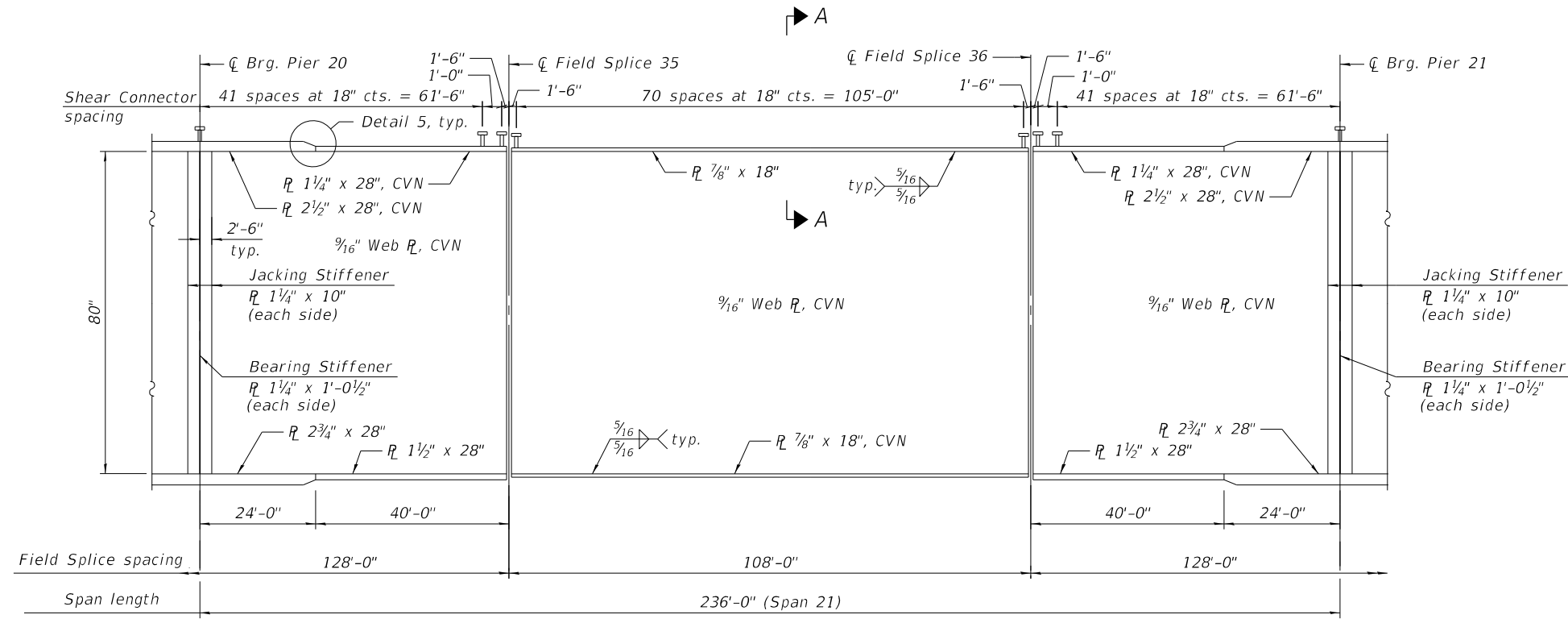
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	CHECKED - TBS	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

GIRDER ELEVATION UNIT 4 - 1
STRUCTURE NO. 060-0351 (WB)

SHEET 138 OF 288 SHEETS

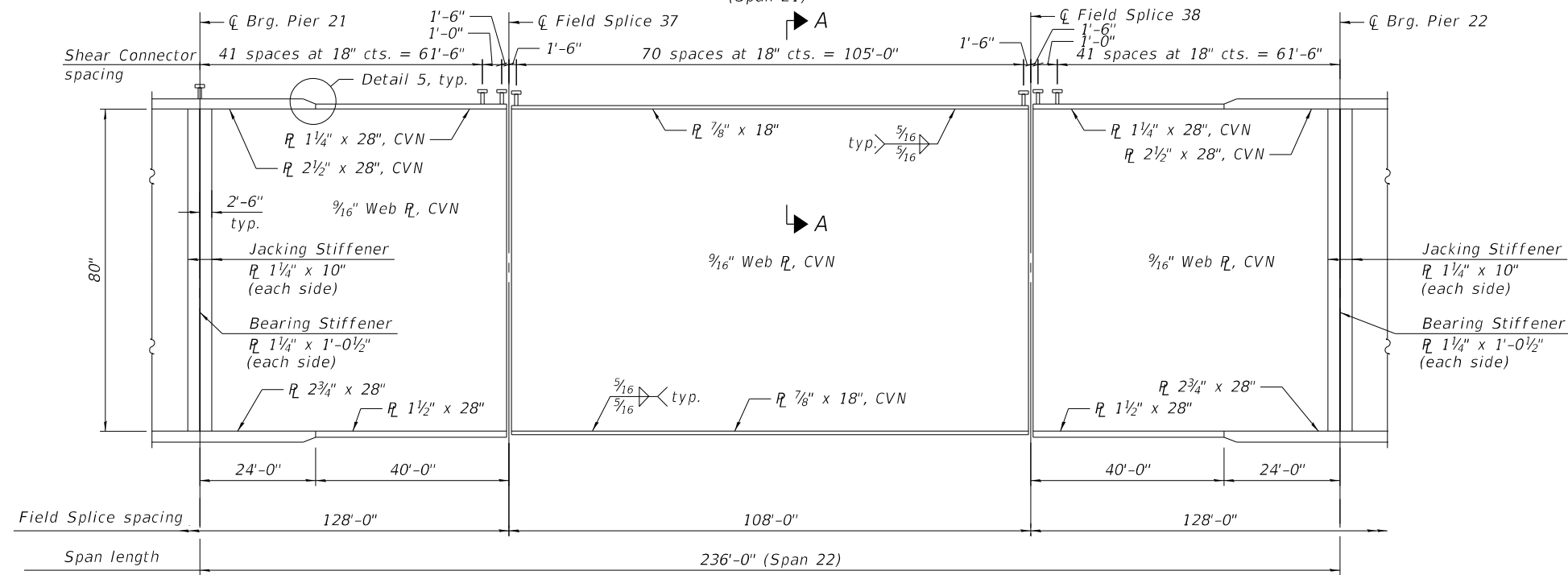
F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	643
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				



1547'-6" Unit 4 - C Brg. Pier 17 to C Brg. Pier 24

GIRDER ELEVATION - UNIT 4
(Span 21)

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



1547'-6" Unit 4 - C Brg. Pier 17 to C Brg. Pier 24

GIRDER ELEVATION - UNIT 4
(Span 22)

Note:
For section A-A and Detail 5, See sheet 138.

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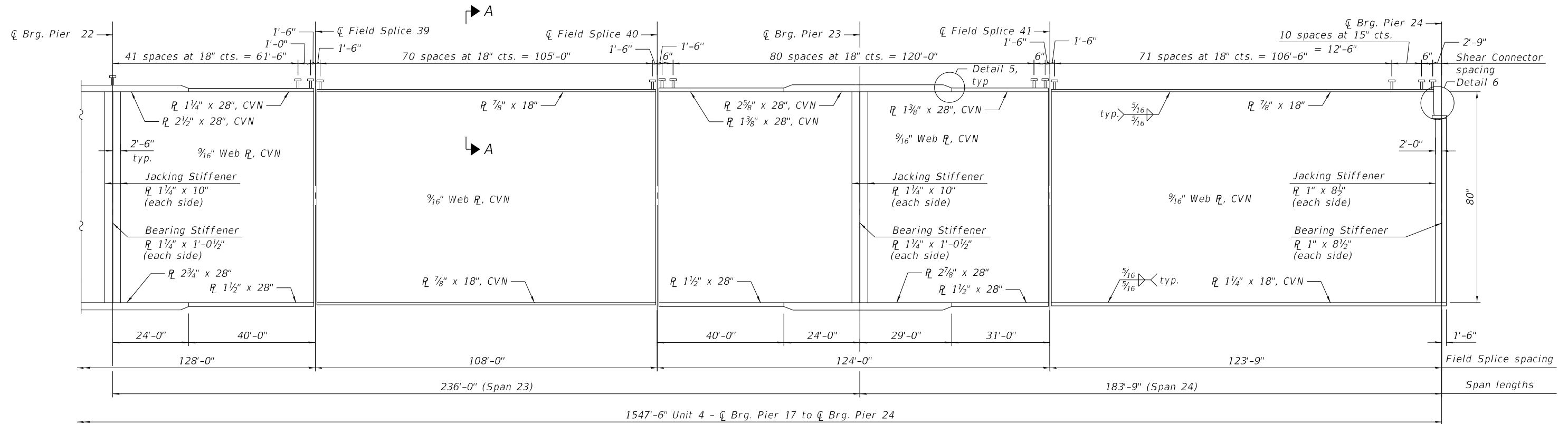


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**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

**GIRDER ELEVATION UNIT 4 - 2
STRUCTURE NO. 060-0351 (WB)**

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	644
CONTRACT NO. 76190				
SHEET 139 OF 288 SHEETS				
ILLINOIS FED. AID PROJECT				



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 138

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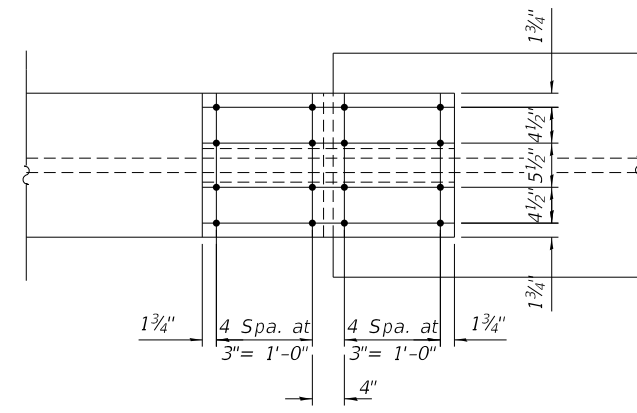
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PLOT DATE =	CHECKED - TBS	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

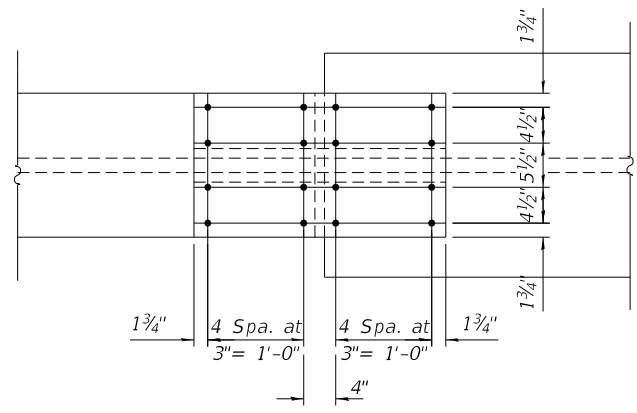
GIRDER ELEVATION UNIT 4 - 3
STRUCTURE NO. 060-0351 (WB)

SHEET 140 OF 288 SHEETS

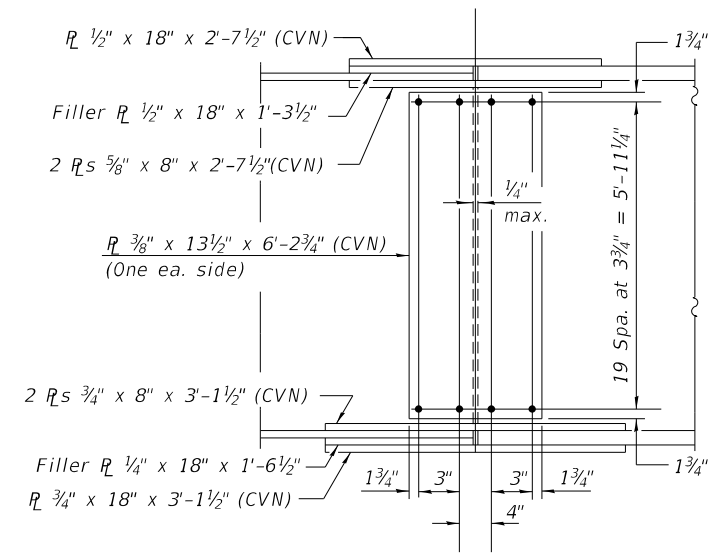
F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	645
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				



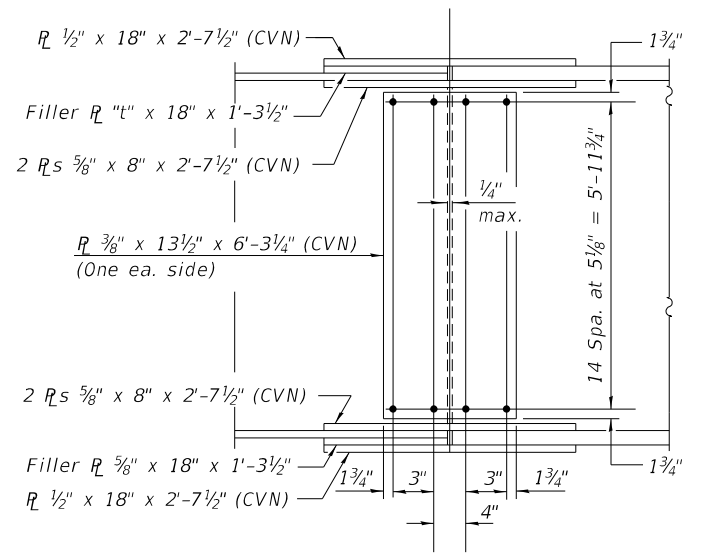
TOP FLANGE



TOP FLANGE

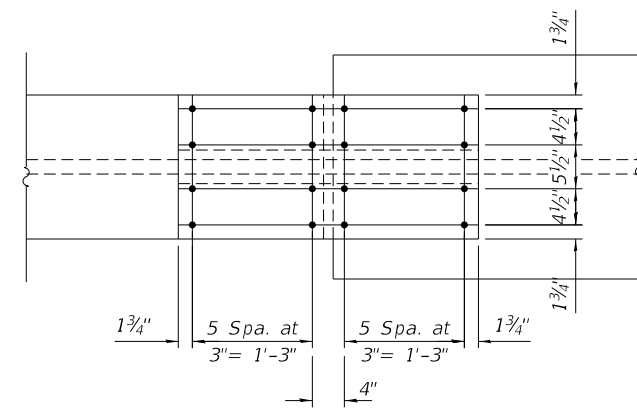


ELEVATION



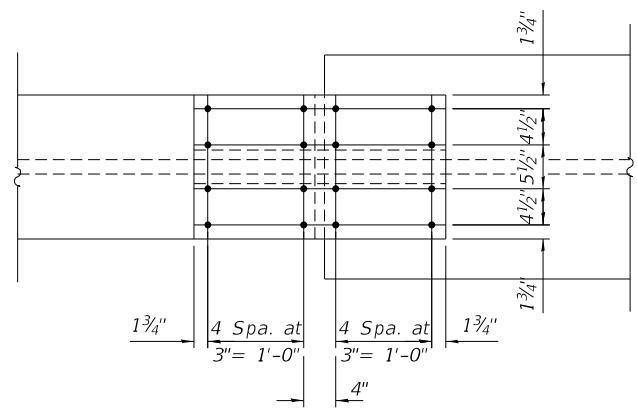
ELEVATION

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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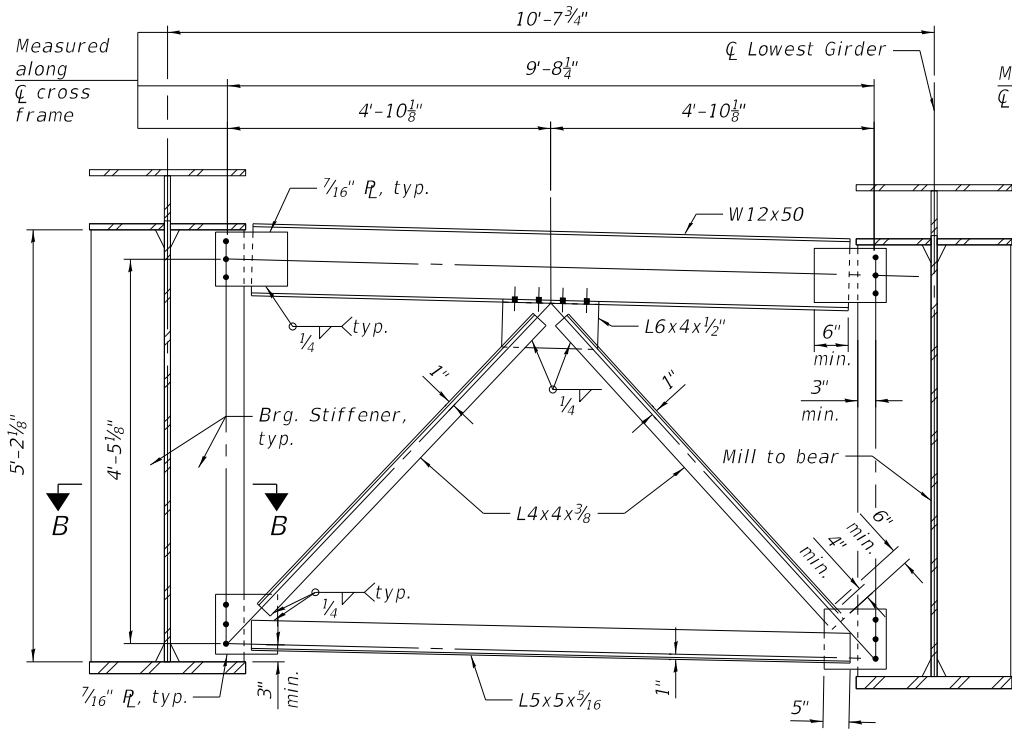
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STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION

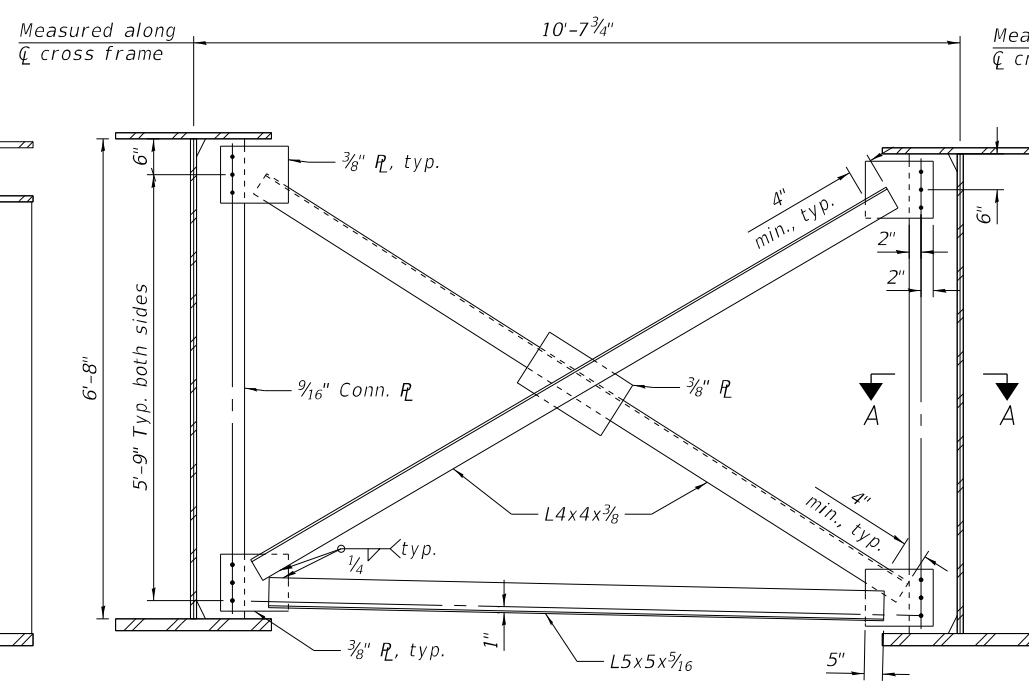
STEEL DETAILS UNITS 4 - 1
 STRUCTURE NO. 060-0351 (WB)

SHEET 141 OF 288 SHEETS

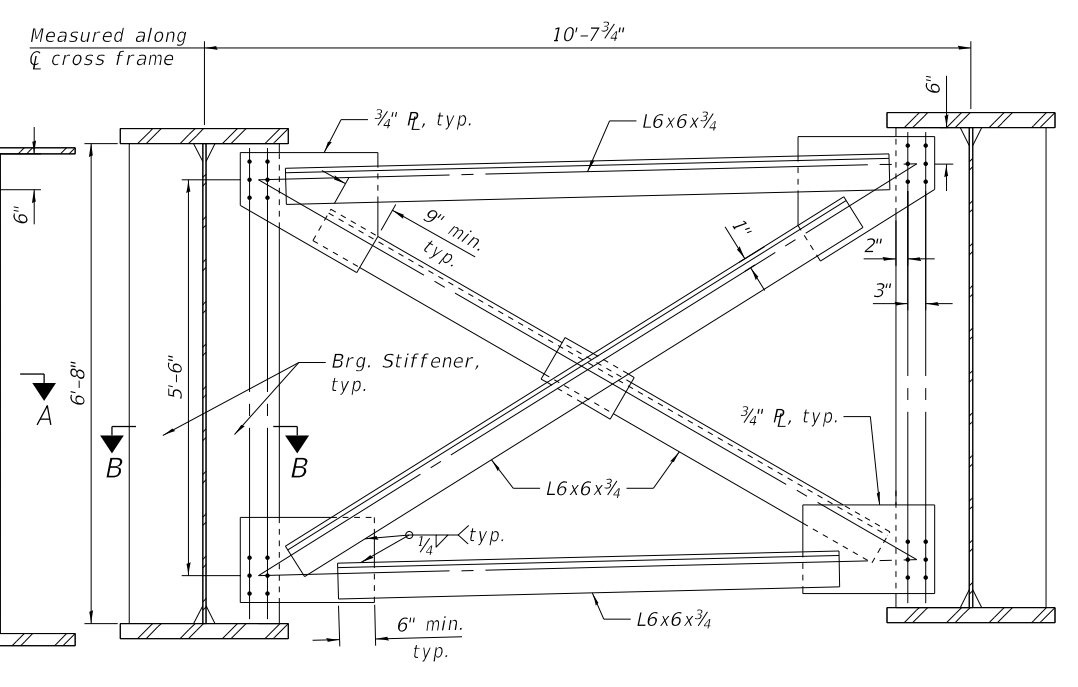
F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	646
CONTRACT NO. 76J90				
ILLINOIS FED. AID PROJECT				



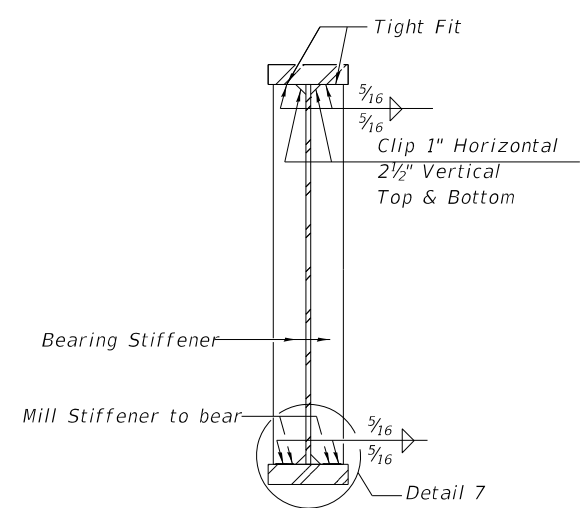
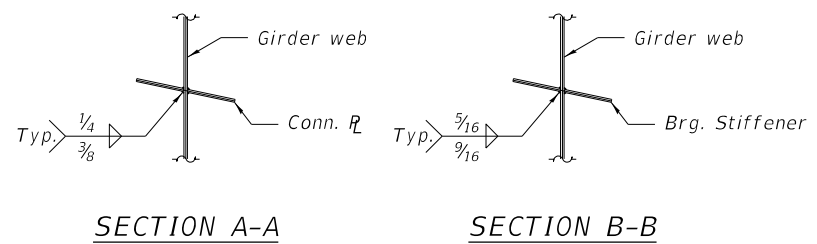
END CROSS FRAME (CF2)
(10 Required)



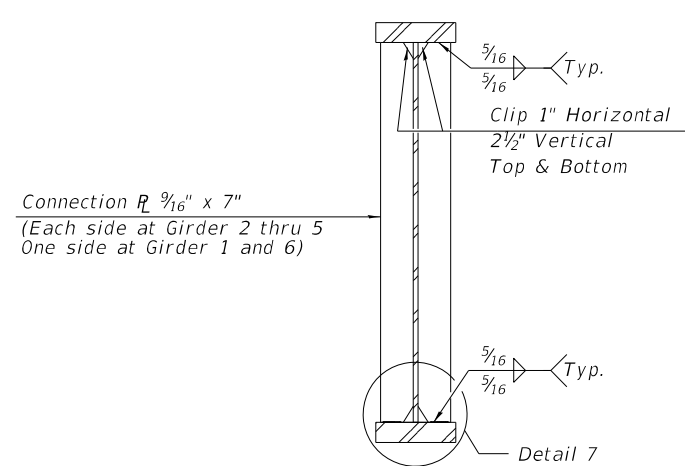
INTERIOR CROSS FRAME (CF1)
(425 Required)



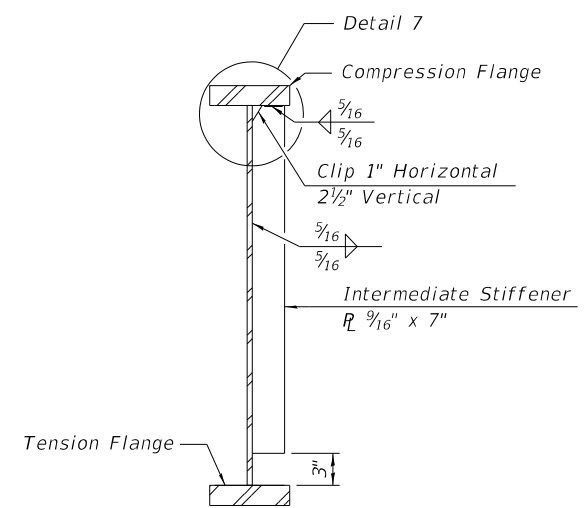
PIER CROSS FRAME (CF3)
(30 Required)



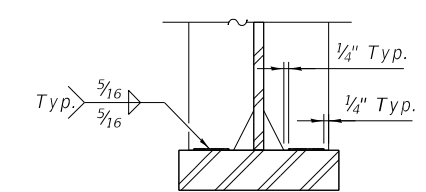
BEARING AND JACKING STIFFENER DETAILS



CONNECTION PLATE DETAILS



INTERMEDIATE STIFFENER DETAIL



DETAIL 7
(Bottom Flange Shown,
Top Flange Similar)

Notes:
All Structural Steel shall be AASHTO M 270 Grade 50.
Provide 1 1/16" \circ holes for all 7/8" \circ 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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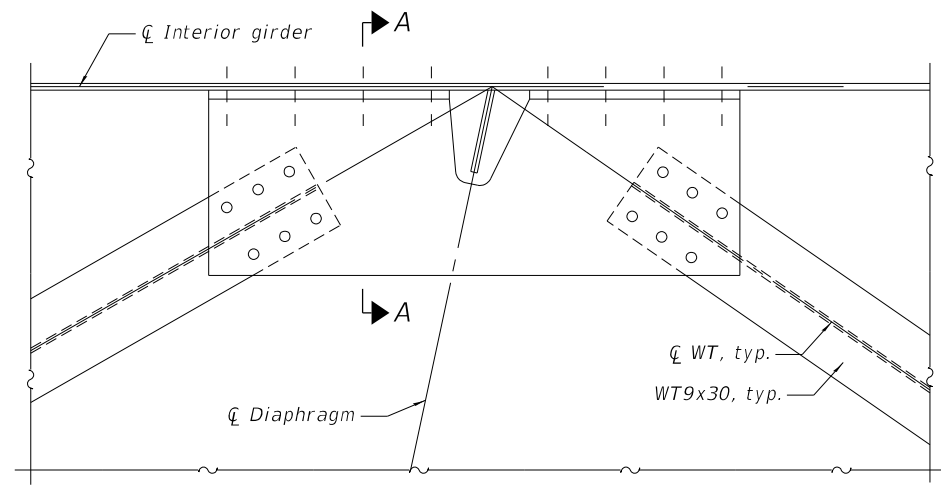
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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

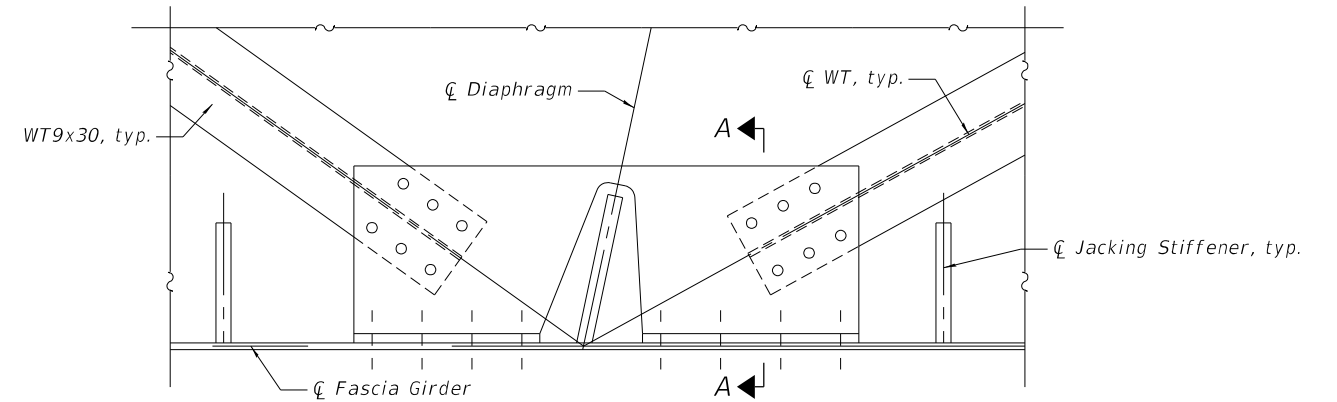
STEEL DETAILS UNITS 4 - 2
STRUCTURE NO. 060-0351 (WB)

SHEET 142 OF 288 SHEETS

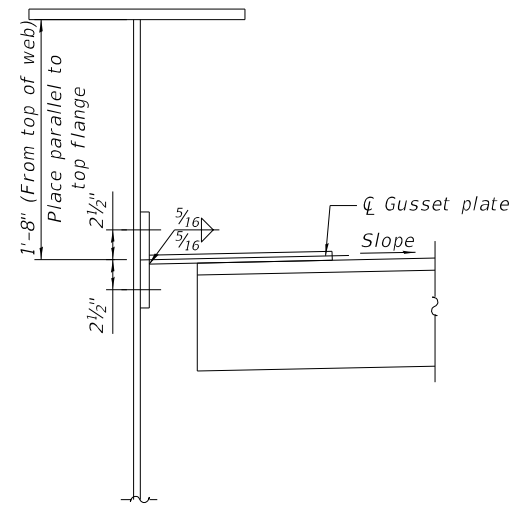
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	647
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				



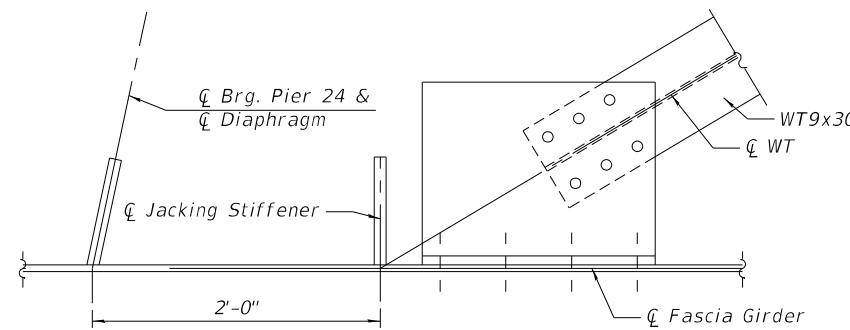
DETAIL 1
(Lateral bracing connection at intermediate diaphragm)
(See connection detail)



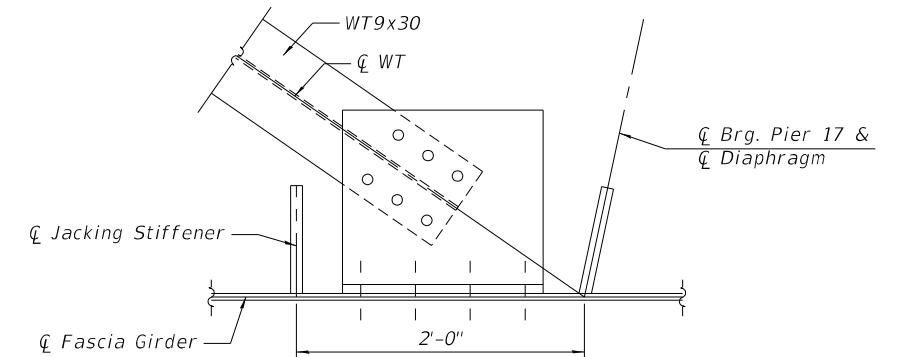
DETAIL 2
(Lateral bracing connection at pier diaphragm)
(See connection detail)



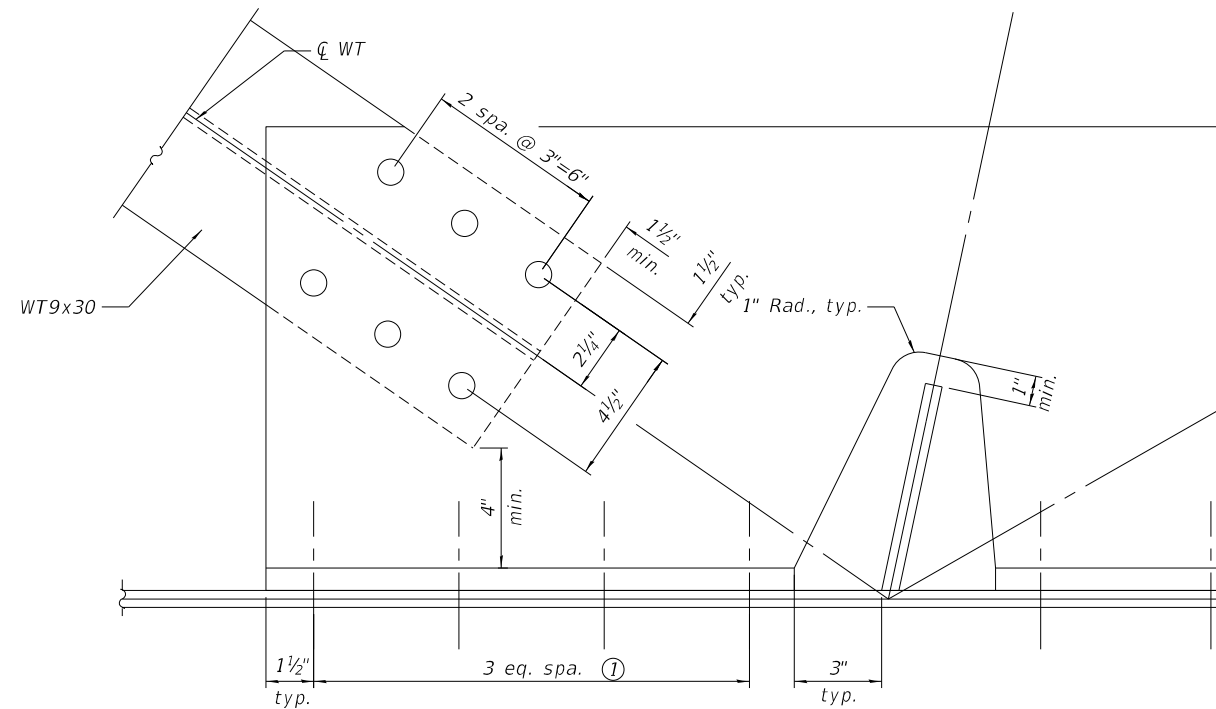
SECTION A-A
(Cross frame and stiffener not shown)



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



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



CONNECTION DETAIL

- Notes:
- All plates to be $\frac{3}{4}$ ".
 - Detail $\frac{1}{16}$ " dia. holes for all $\frac{7}{8}$ " dia. bolts.
 - Provide $\frac{1}{2}$ " 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	648
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 _{Fy}	(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_{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).

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

0.95R_{Fy}: 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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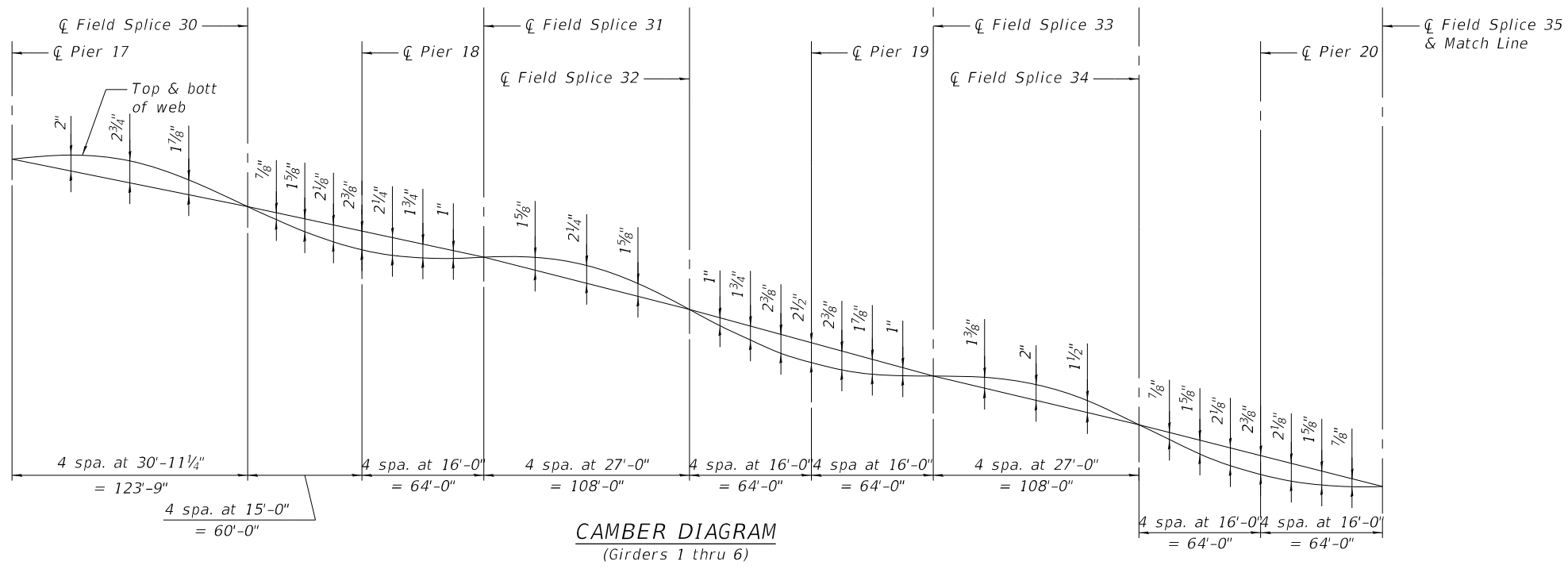
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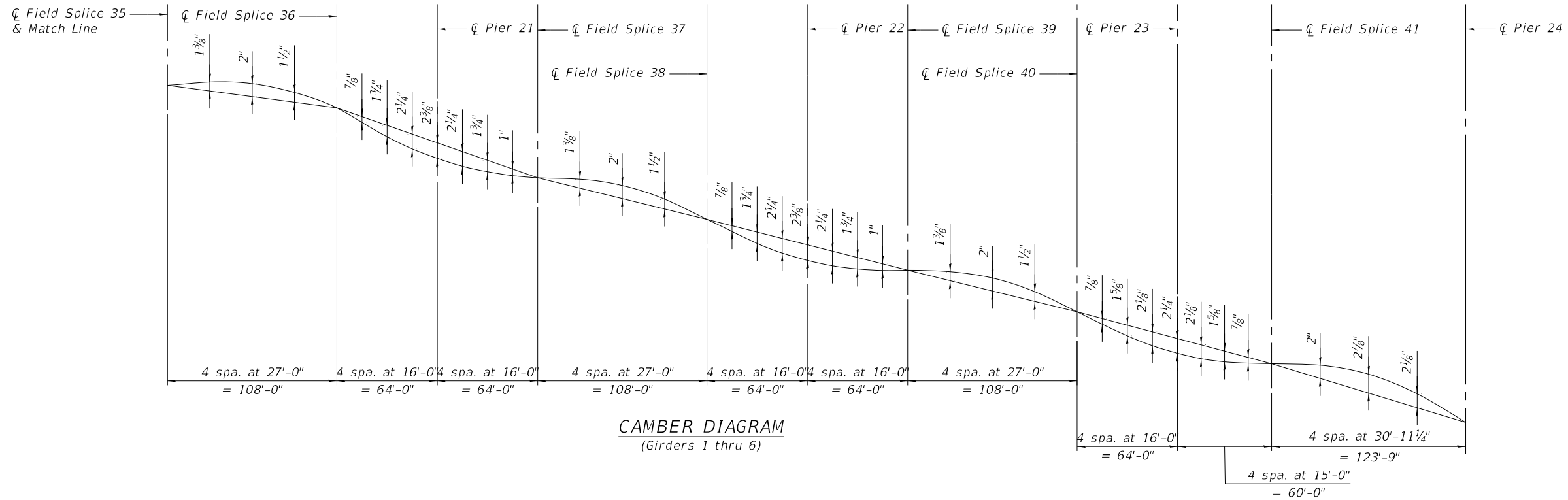
STRESS TABLES UNIT 4
STRUCTURE NO. 060-0351 (WB)

SHEET 144 OF 288 SHEETS

F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	649
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	460.16	460.38	460.60	460.82	460.65	460.46
☐ Field Splice 30	459.72	459.95	460.17	460.39	460.22	460.02
☐ Brg. Pier 18	459.24	459.46	459.68	459.90	459.73	459.54
☐ Field Splice 31	459.19	459.44	459.66	459.88	459.71	459.49
☐ Field Splice 32	458.65	458.90	459.12	459.34	459.17	458.95
☐ Brg. Pier 19	458.06	458.28	458.50	458.72	458.55	458.35
☐ Field Splice 33	457.96	458.19	458.41	458.63	458.46	458.25
☐ Field Splice 34	457.44	457.68	457.90	458.12	457.95	457.73
☐ Brg. Pier 20	456.88	457.10	457.32	457.54	457.37	457.18

TOP OF WEB ELEVATIONS (FOR FABRICATION ONLY)

LOCATION	Girder 1	Girder 2	Girder 3	Girder 4	Girder 5	Girder 6
☐ Field Splice 35	456.79	457.03	457.24	457.46	457.30	457.08
☐ Field Splice 36	456.26	456.50	456.72	456.94	456.78	456.56
☐ Brg. Pier 21	455.70	455.92	456.14	456.36	456.19	456.00
☐ Field Splice 37	455.61	455.85	456.07	456.29	456.12	455.91
☐ Field Splice 38	455.09	455.32	455.54	455.76	455.60	455.38
☐ Brg. Pier 22	454.52	454.74	454.96	455.18	455.01	454.82
☐ Field Splice 39	454.43	454.67	454.88	455.10	454.94	454.73
☐ Field Splice 40	453.90	454.14	454.36	454.58	454.41	454.19
☐ Brg. Pier 23	453.34	453.56	453.78	454.00	453.83	453.64

TOP OF WEB ELEVATIONS (FOR FABRICATION ONLY)

LOCATION	Girder 1	Girder 2	Girder 3	Girder 4	Girder 5	Girder 6
☐ Field Splice 41	453.24	453.47	453.69	453.91	453.75	453.54
☐ Brg. Pier 24	452.42	452.64	452.86	453.08	452.92	452.72

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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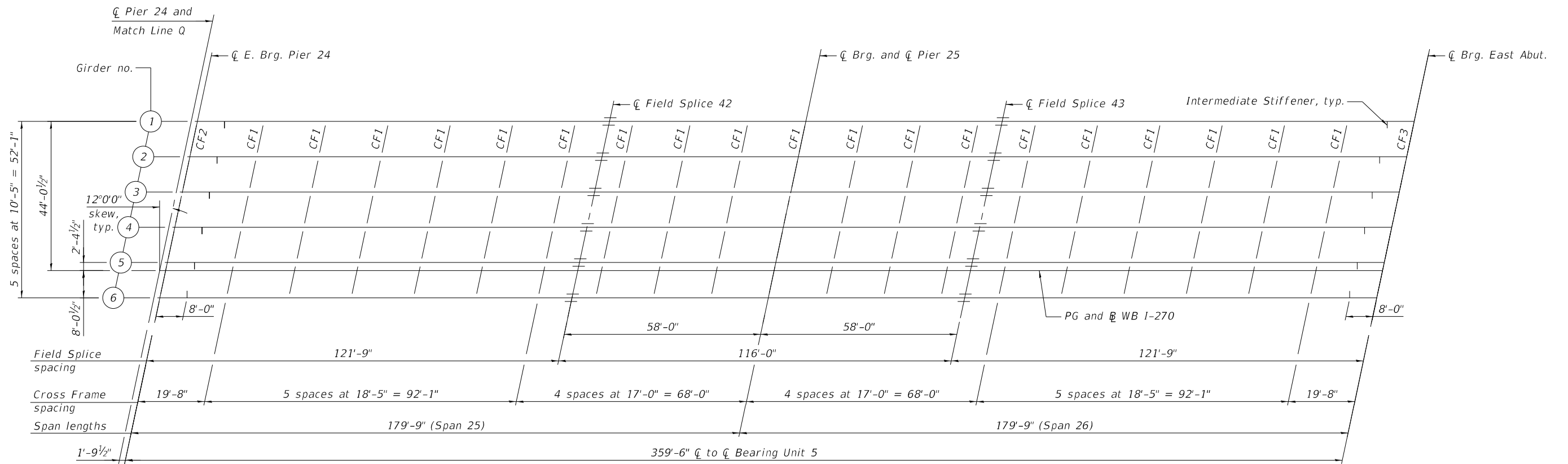
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CAMBER DATA UNIT 4
STRUCTURE NO. 060-0351 (WB)

SHEET 145 OF 288 SHEETS

F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	650
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				



FRAMING PLAN - UNIT 5
(Spans 25 and 26)

Notes:
 For field splice details, see sheet 148 of 288.
 For cross frame details, see sheet 149 of 288.

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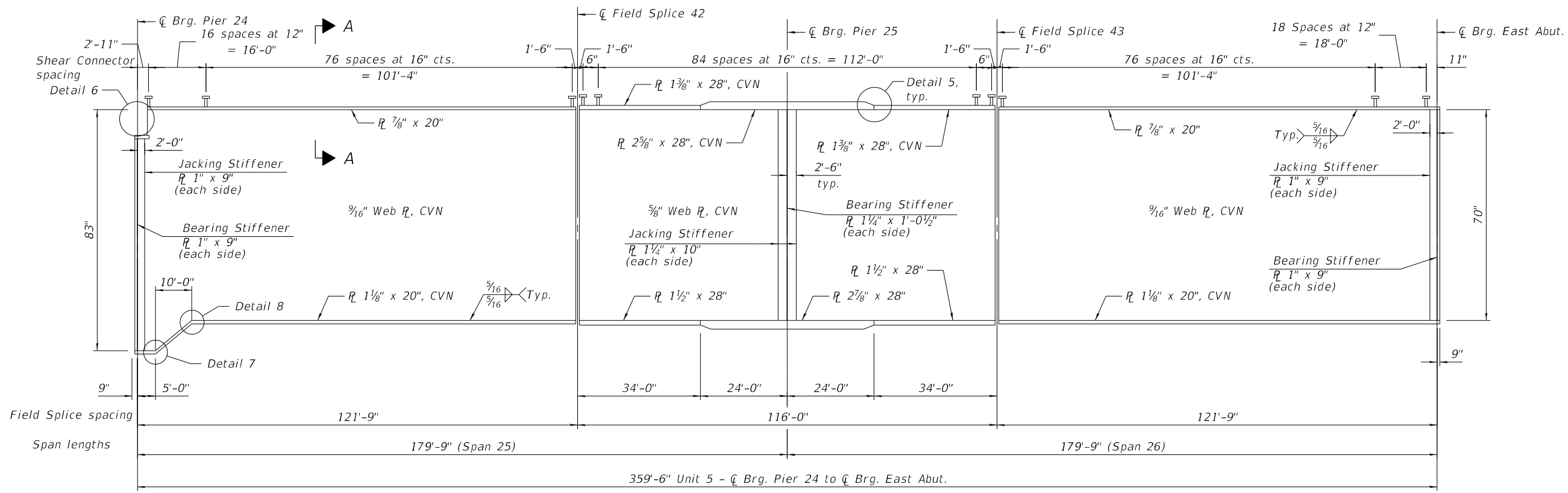
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STATE OF ILLINOIS
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FRAMING PLAN - UNIT 5
STRUCTURE NO. 060-0351 (WB)

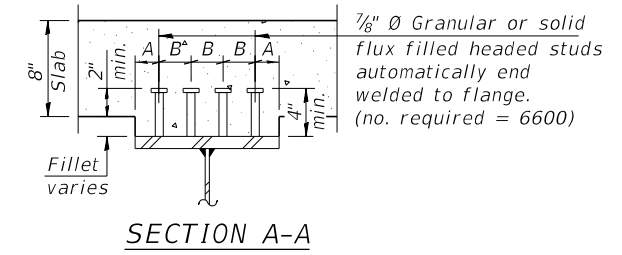
SHEET 146 OF 288 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	651
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				

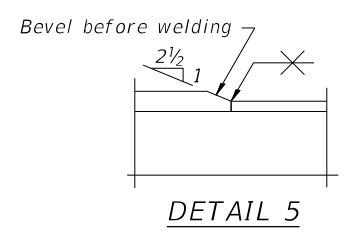
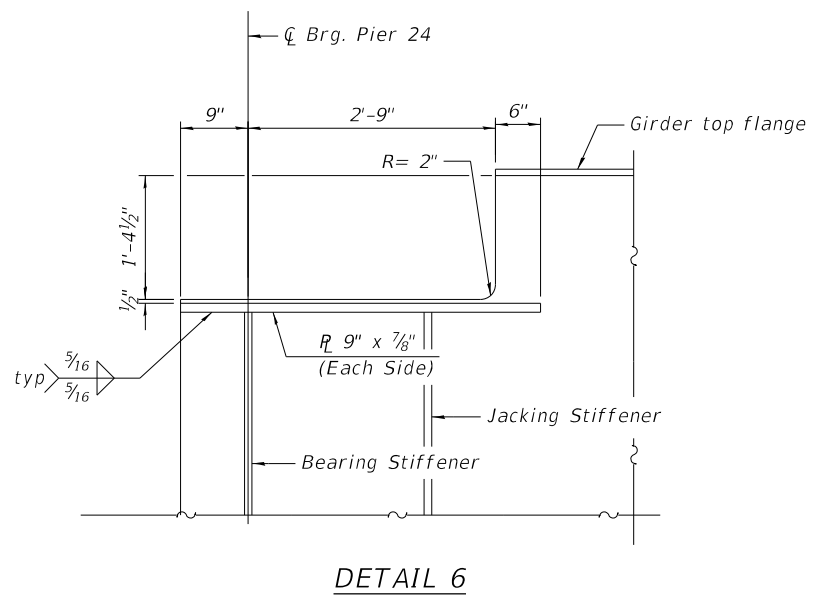
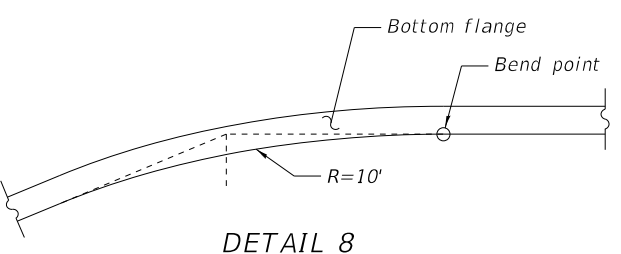
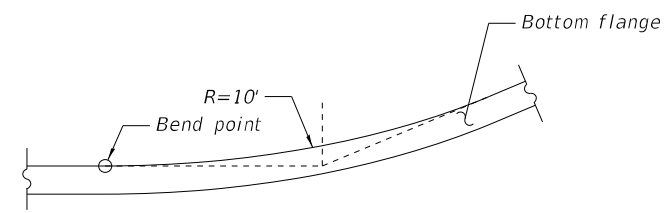


GIRDER ELEVATION - UNIT 5
(Spans 25 and 26)

"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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HORNER SHIFRIN
PARSONS

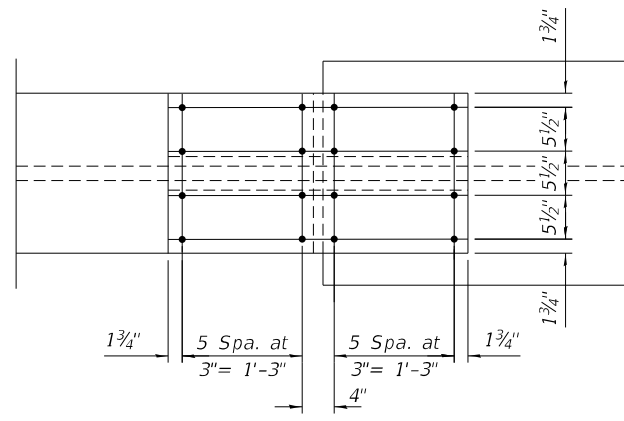
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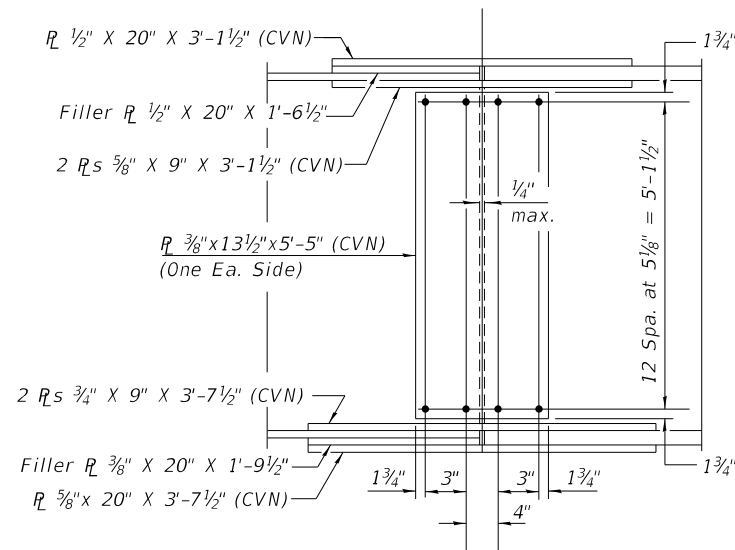
GIRDER ELEVATION UNIT 5
STRUCTURE NO. 060-0351 (WB)

SHEET 147 OF 288 SHEETS

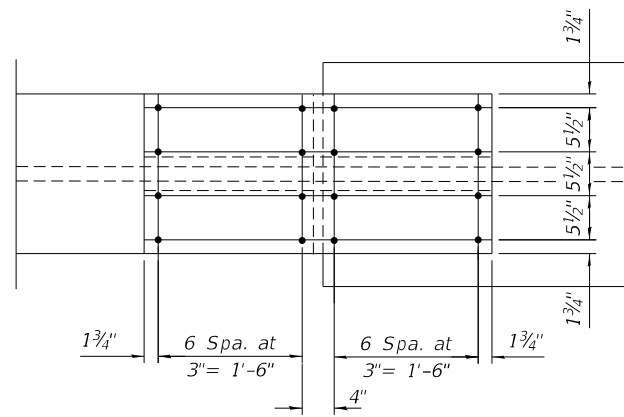
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	652
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				



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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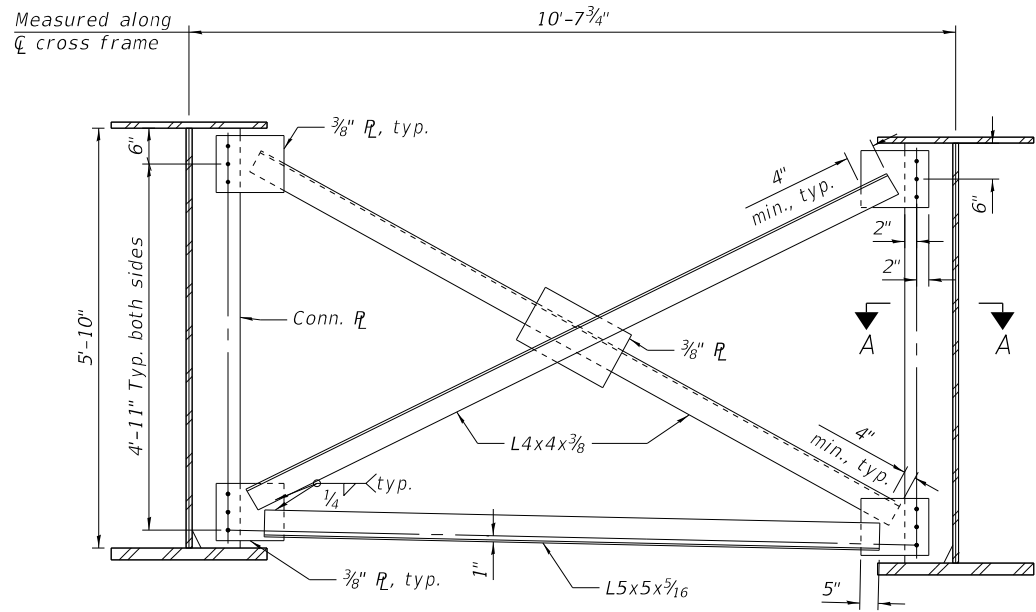
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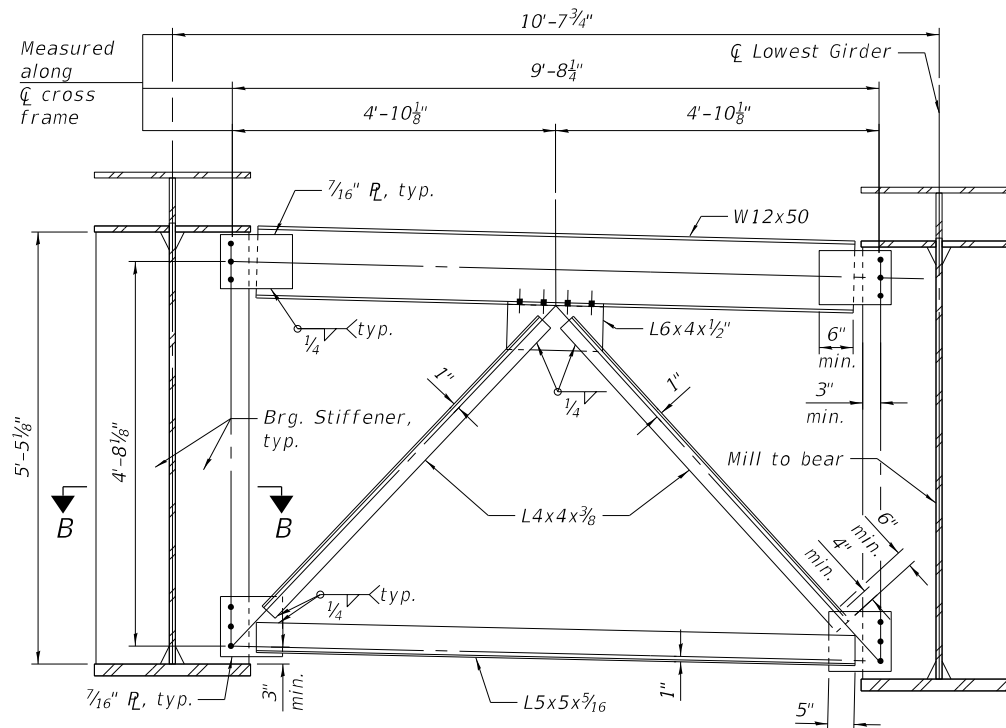
STEEL DETAILS UNIT 5 - 1
 STRUCTURE NO. 060-0351 (WB)

SHEET 148 OF 288 SHEETS

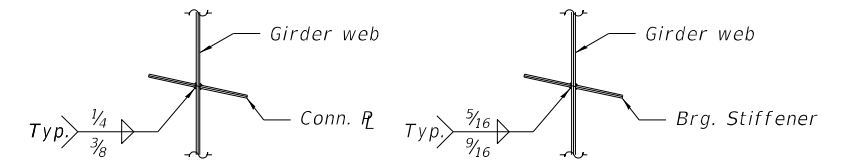
F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	653
CONTRACT NO. 76J90				
ILLINOIS FED. AID PROJECT				



INTERIOR CROSS FRAME (CF1)
(95 Required)

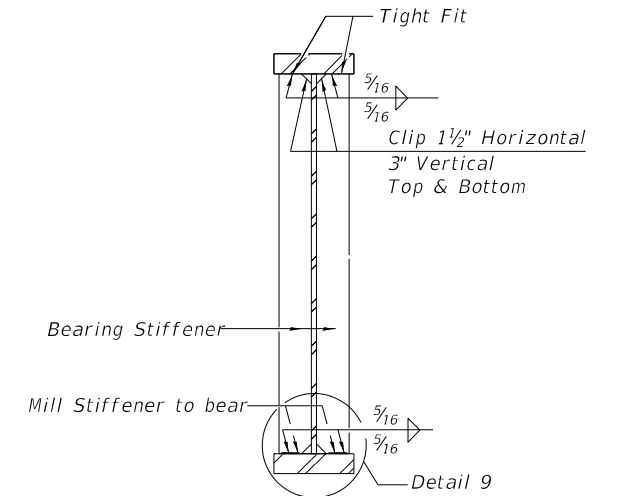


END CROSS FRAME (CF2)
(5 Required)

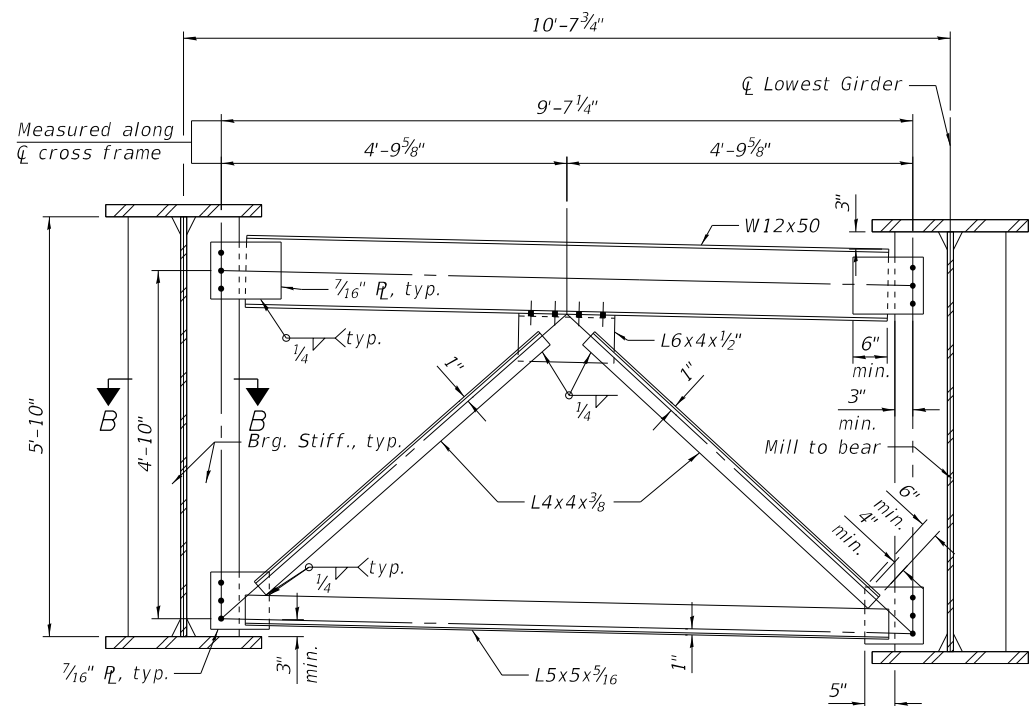


SECTION A-A

SECTION B-B

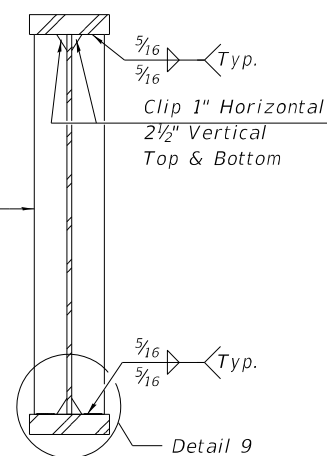


BEARING AND JACKING STIFFENER DETAILS

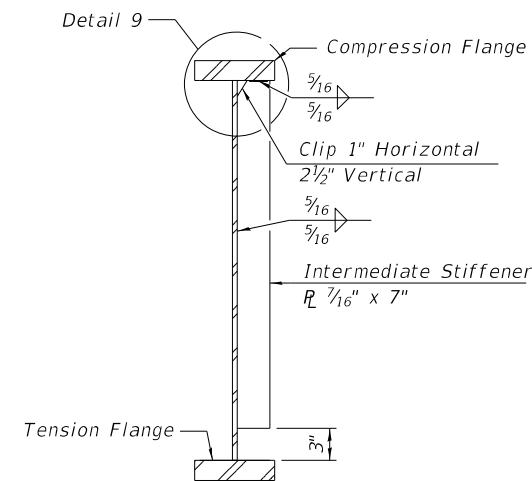


END CROSS FRAME (CF3)
(5 Required)

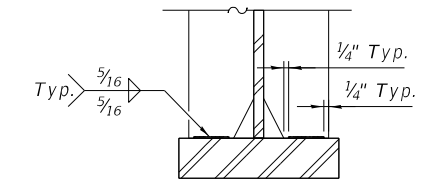
Connection PL 7/16" x 7"
(Each side at Girder 2 thru 5
One side at Girder 1 and 6)



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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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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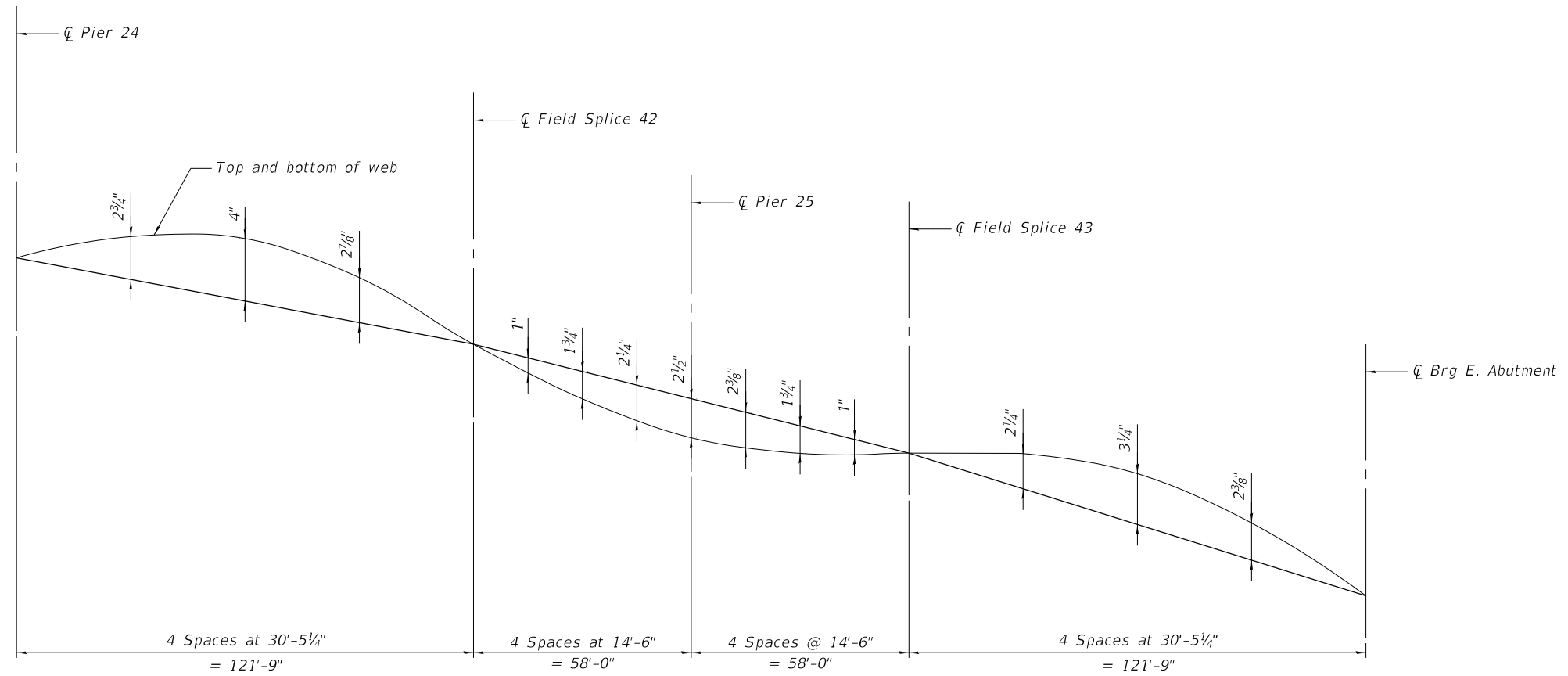
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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

STRESS TABLES UNIT 5
STRUCTURE NO. 060-0351 (WB)

SHEET 150 OF 288 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	655
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	452.41	452.63	452.85	453.07	452.90	452.70
☐ Field Splice 1	452.04	452.29	452.51	452.73	452.56	452.34
☐ Brg. Pier 25	451.51	451.73	451.95	452.17	452.00	451.81
☐ Field Splice 2	451.36	451.59	451.81	452.03	451.86	451.66
☐ Brg. E. Abut.	450.61	450.83	451.05	451.27	451.10	450.91

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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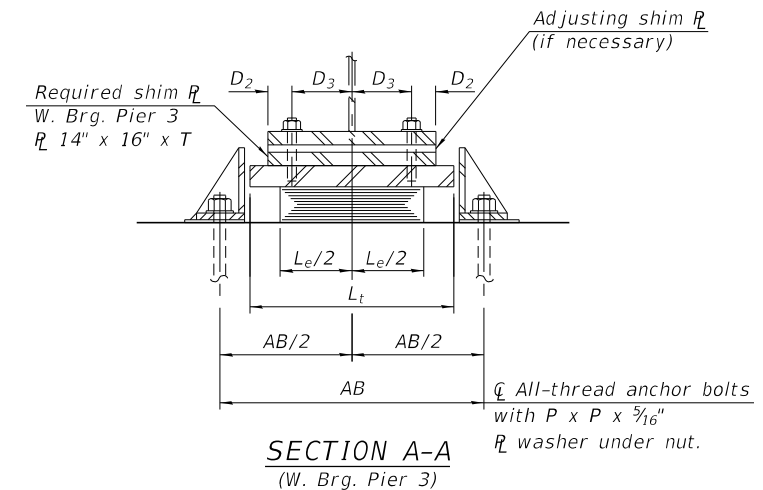
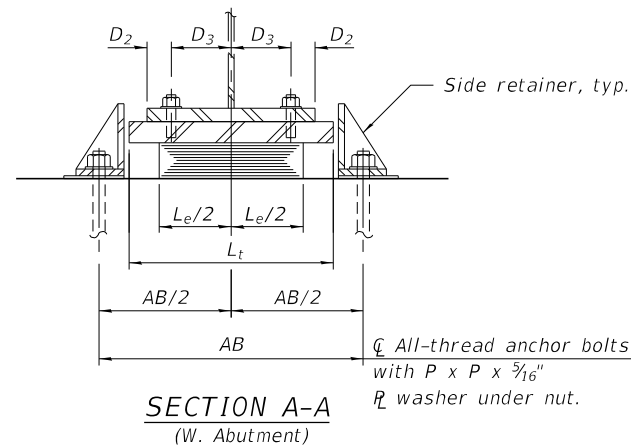
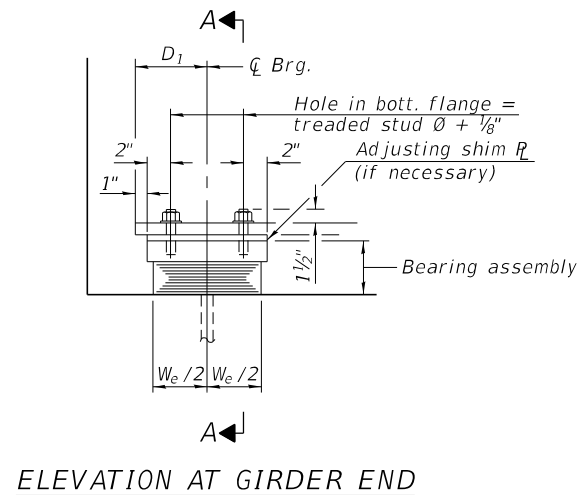
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CAMBER DATA UNIT 5
STRUCTURE NO. 060-0351 (WB)

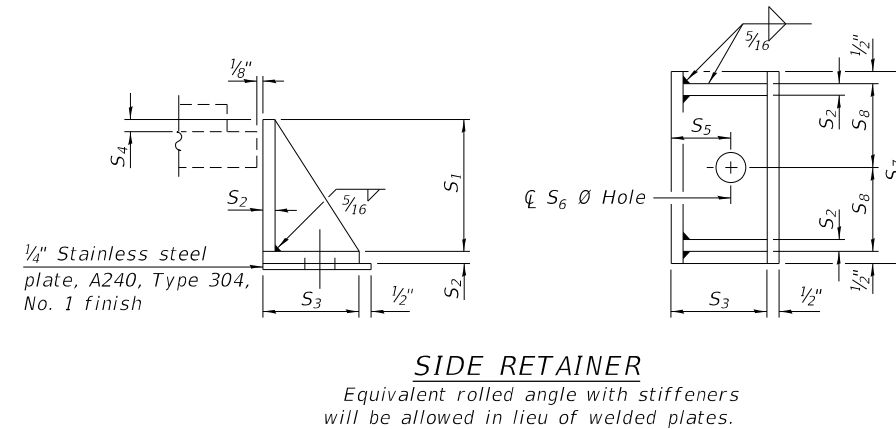
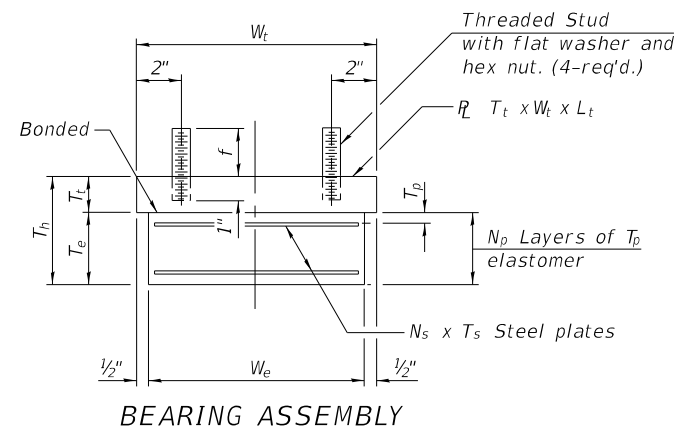
SHEET 151 OF 288 SHEETS

F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	656
CONTRACT NO. 76J90				
ILLINOIS FED. AID PROJECT				



TYPE I ELASTOMERIC EXP. BRG.

Assumed contributing expansion length = 190 ft. for W. Abut. and W. Brg. Pier 3.



SHIM R

Girder	T
1	1/4"
2	3/8"
3	3/8"
4	1/2"
5	3/8"
6	1/8"
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 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 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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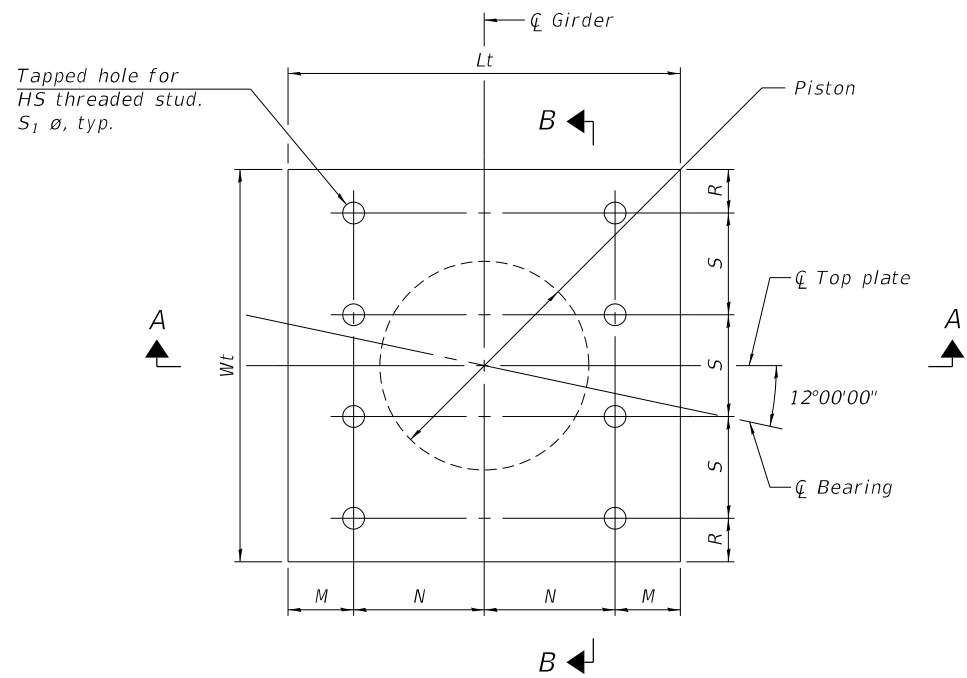
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STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION

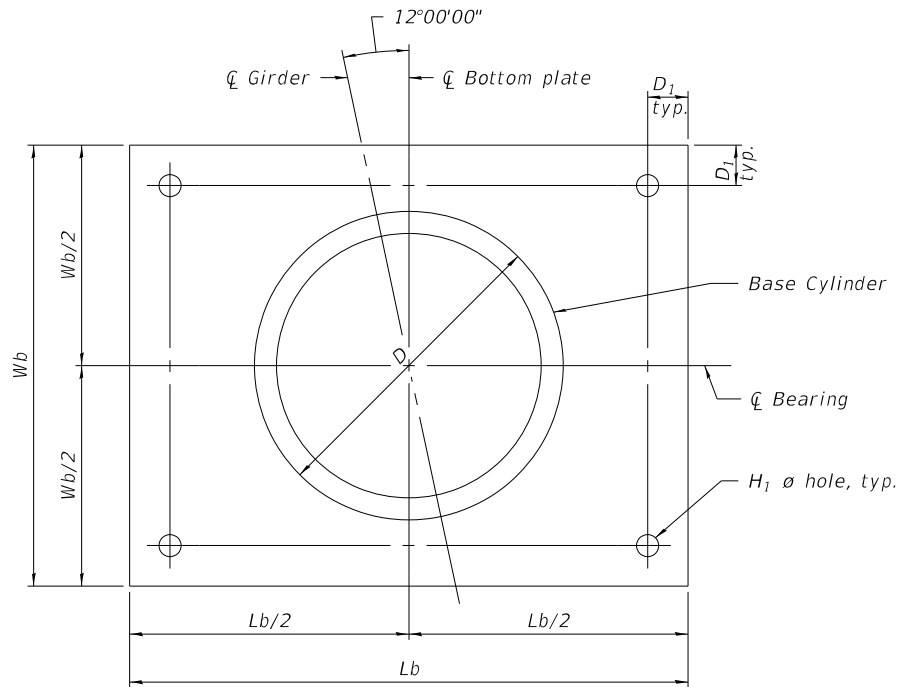
BEARING DETAILS UNIT 1 - 1
 STRUCTURE NO. 060-0351 (WB)

SHEET 152 OF 288 SHEETS

F.AJ RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	657
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				



TOP BEARING R AND PISTON PLAN



BOTTOM BEARING R 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.

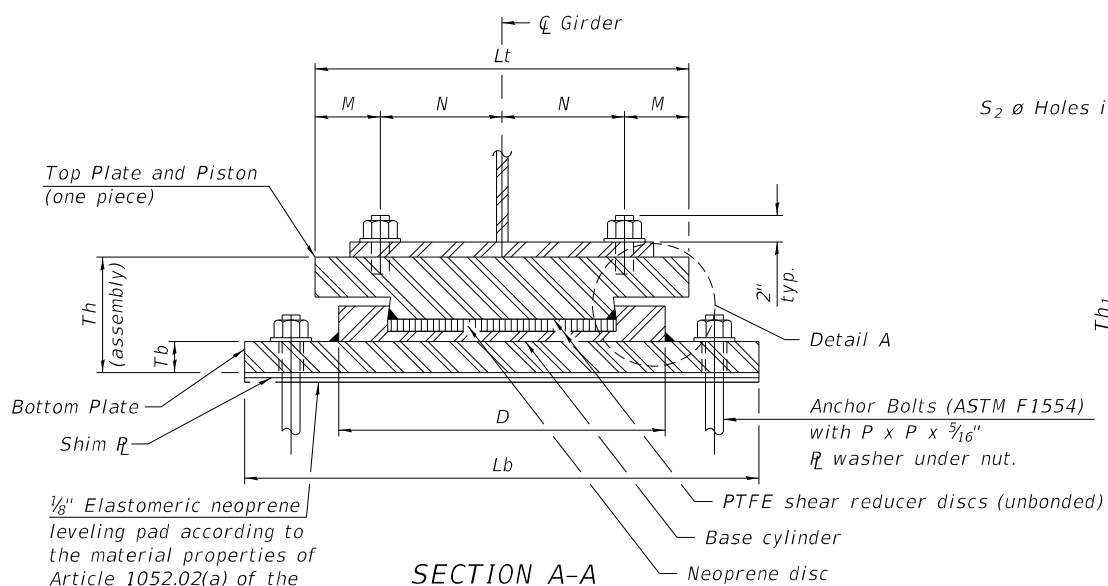
Anchor bolts shall be ASTM F1554 all-thread (or an Engineer-approved alternate material) of the grade(s) and diameter(s) specified. The corresponding specified grade of AASHTO M314 anchor bolts may be used in lieu of ASTM F1554.

Anchor bolts at fixed bearings may be either cast in place or installed in holes drilled after the supported member is in place.

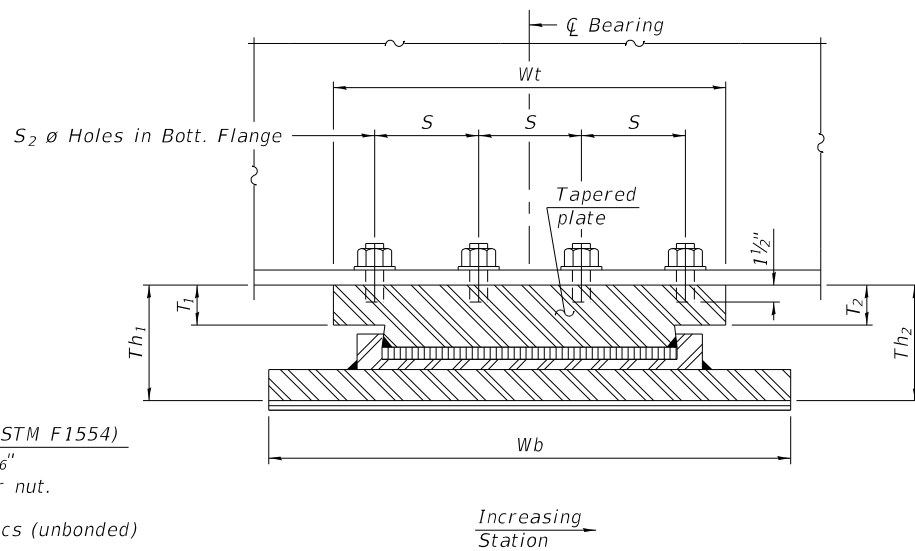
Drilled and set anchor bolts shall be installed according to Article 521.06 of the Standard Specifications.

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

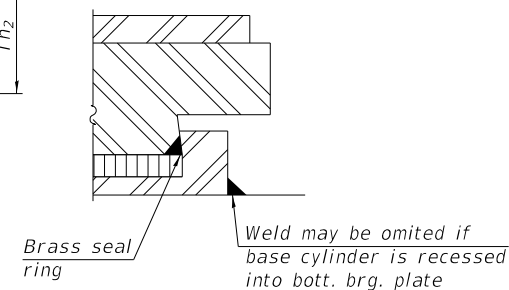
The anchor bolt sizes and grades shown constitute a calculated seismic structural fuse. Substitution of higher diameter and/or grade anchor bolts will not be allowed.



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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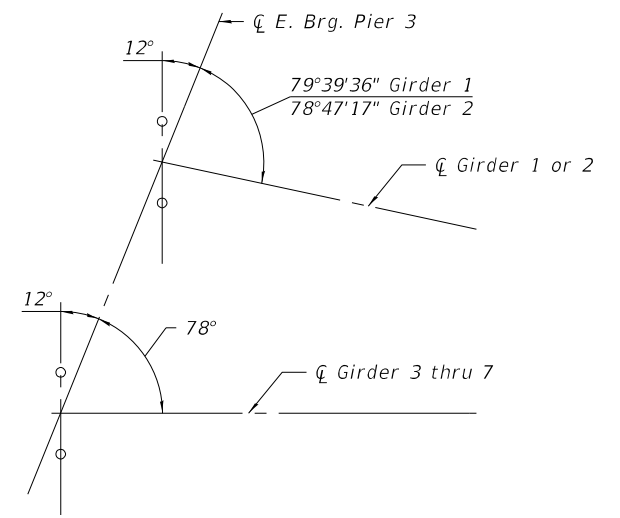
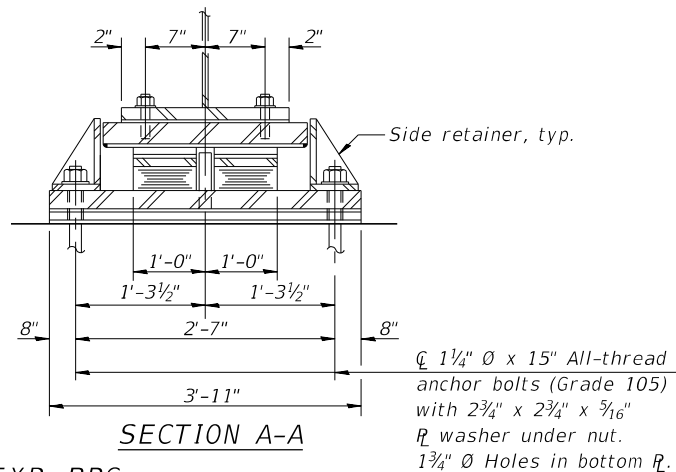
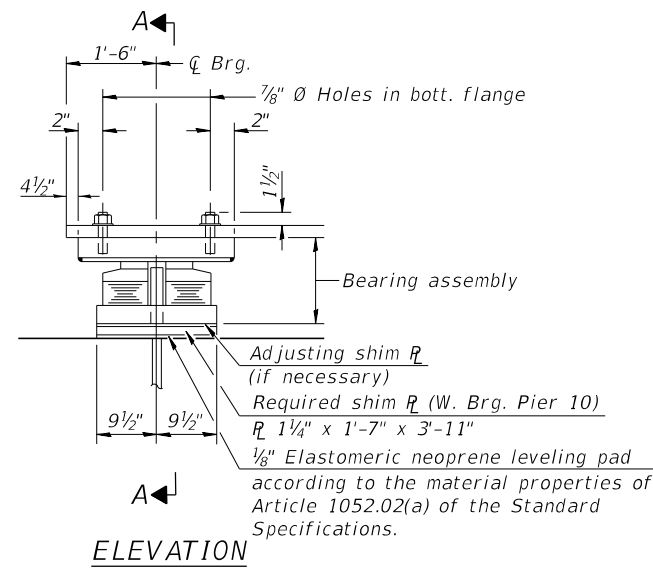
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**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

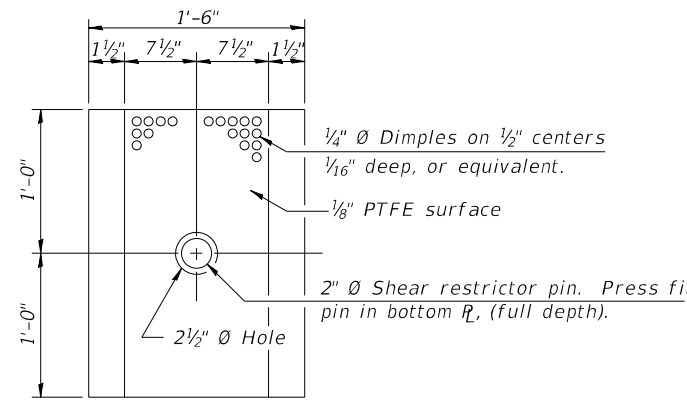
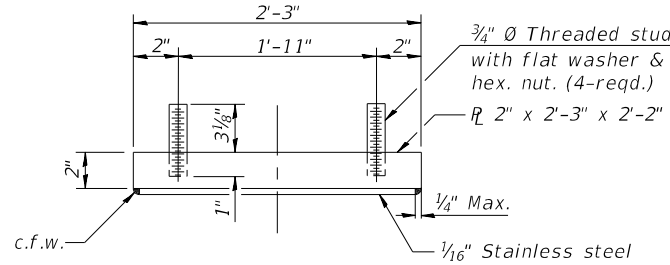
**BEARING DETAILS UNIT 1 - 2
STRUCTURE NO. 060-0351 (WB)**

SHEET 153 OF 288 SHEETS

F.A.1 RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	658
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				



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)



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.

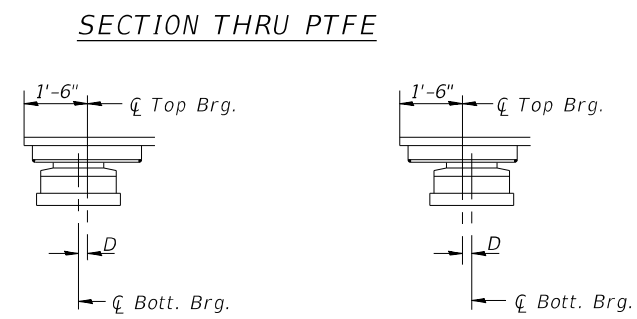
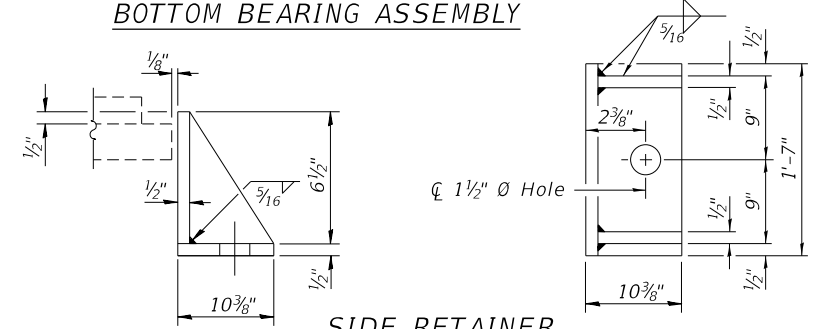
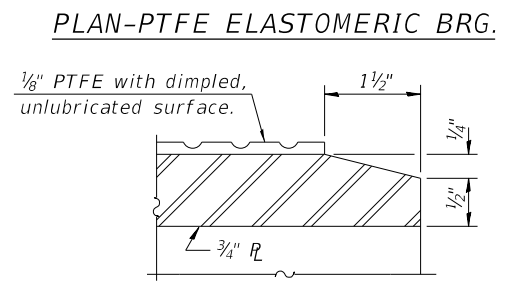
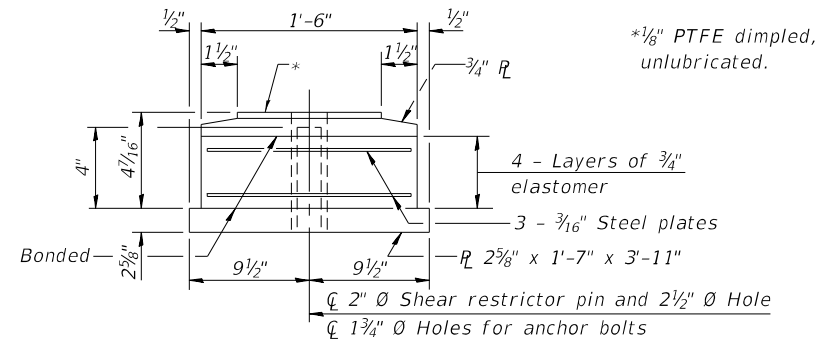
All bearing plates, side retainers, anchor bolts, nuts, and washers shall be galvanized according to AASHTO M111 or M232 as applicable.

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.



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.

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

Contributing expansion length to Pier 3 = 742' and to Pier 10 = 838'.

BILL OF MATERIAL

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

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 Teaming with: PARSONS

HORNER SHIFRIN
PARSONS

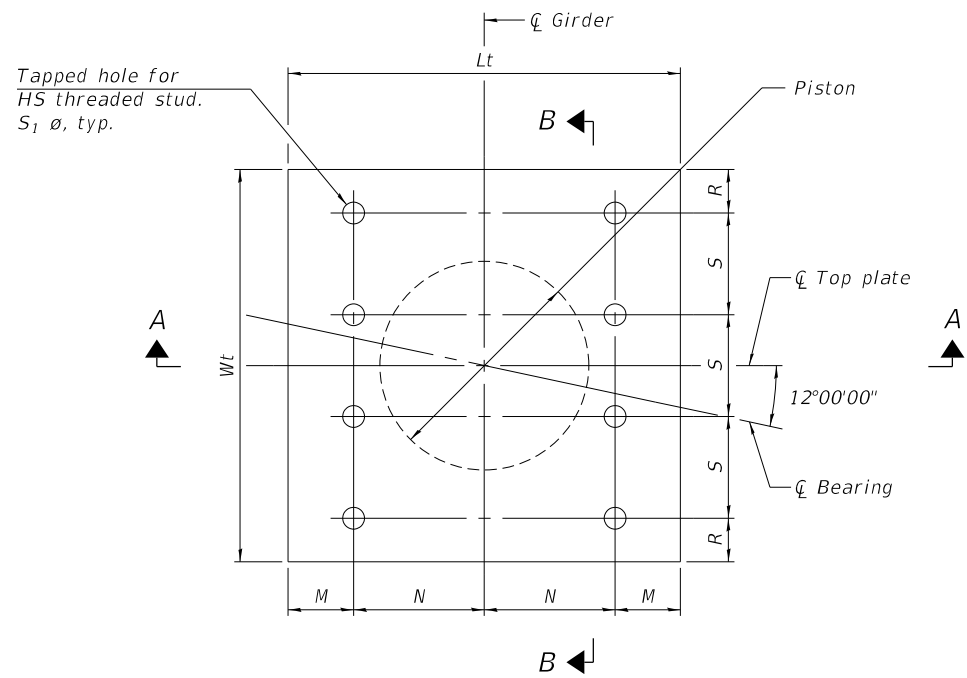
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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

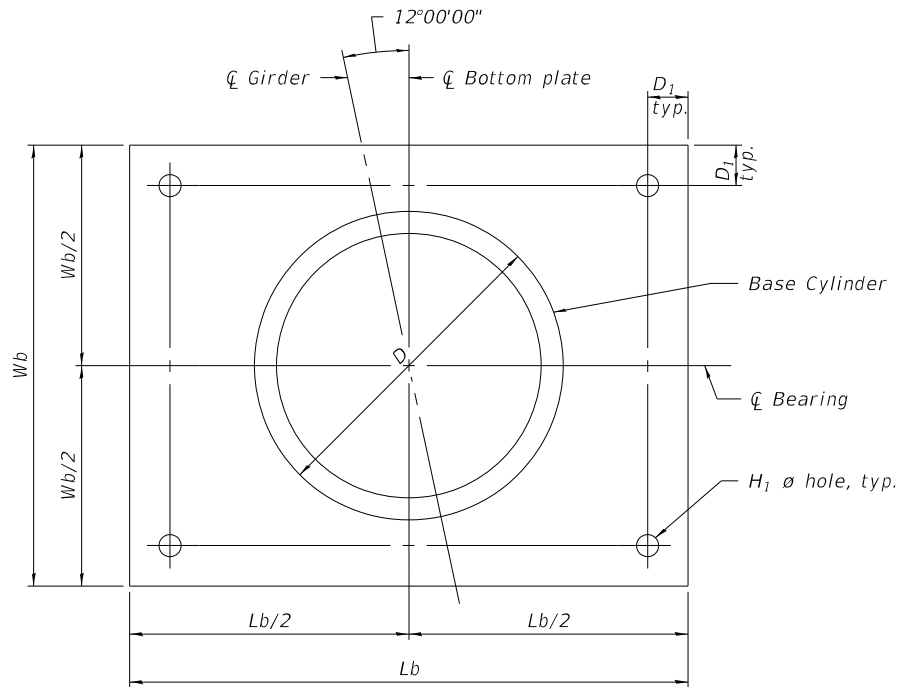
BEARING DETAILS UNIT 2 - 1
STRUCTURE NO. 060-0351 (WB)

SHEET 154 OF 288 SHEETS

F.AJ RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	659
CONTRACT NO. 76J90				
ILLINOIS FED. AID PROJECT				

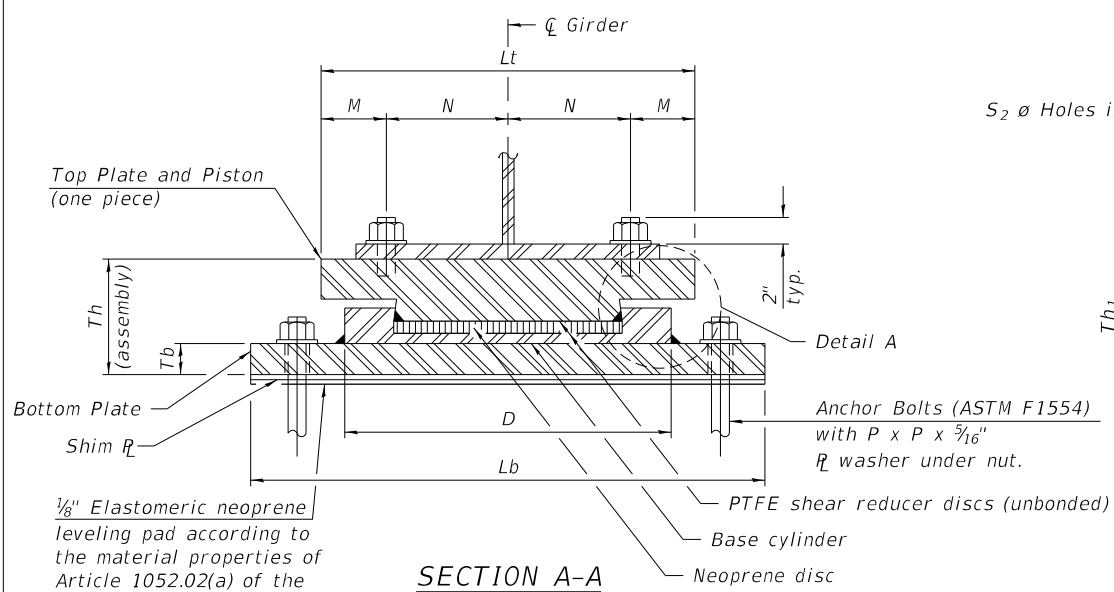


TOP BEARING P AND PISTON PLAN

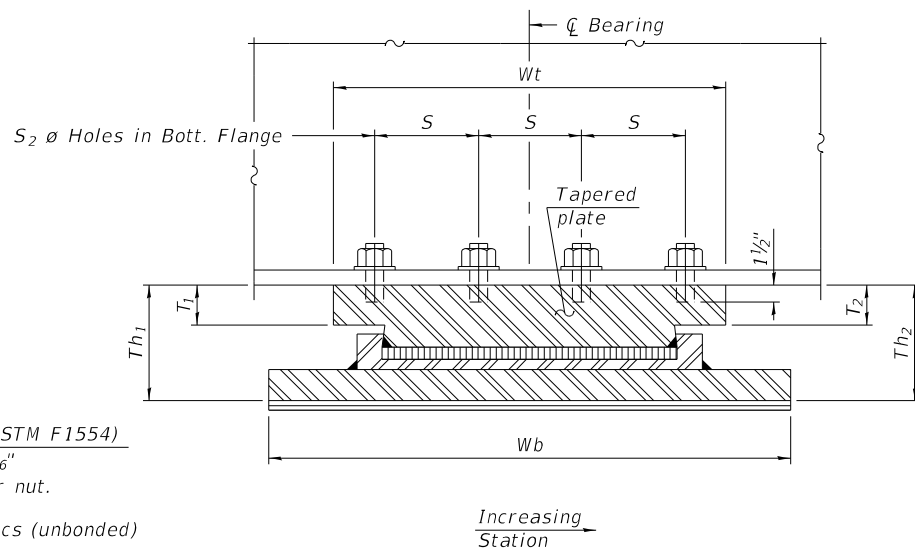


BOTTOM BEARING P AND BASE CYLINDER PLAN
Same as on Unit 1 (Piers 5 thru 8)

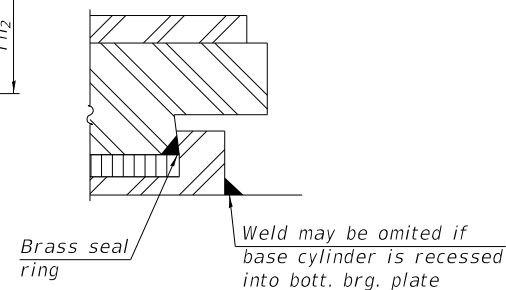
Notes:
 The structural steel plates of the Bearing Assembly shall conform to the requirements of AASHTO M270 Grade 50.
 Two 1/8 in. adjusting shims shall be provided for each bearing in addition to all other plates or shims and placed as shown on bearing details.
 Anchor bolts shall be ASTM F1554 all-thread (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 900k	Each	24
Anchor Bolts, 2"	Each	96

FIXED BEARING DIMENSION TABLE

Brg. Location	Service I 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								
Pier 5	796.2	238.9	0.0042	3 1/4"	49"	36"	2 1/2"	3 1/4"	2 15/16"	3 1/16"	36"	30"	10"	8"	6"	6"	1"	15"	14 15/16"	15 1/16"	24"	1 1/8"	2" ø x 24"	36	3 1/2"
Pier 6	810.7	243.2	0.0022	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	804.1	241.2	0.0030	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	816.7	245.0	0.0023	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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 Teaming with: PARSONS

HORNER SHIFRIN
PARSONS

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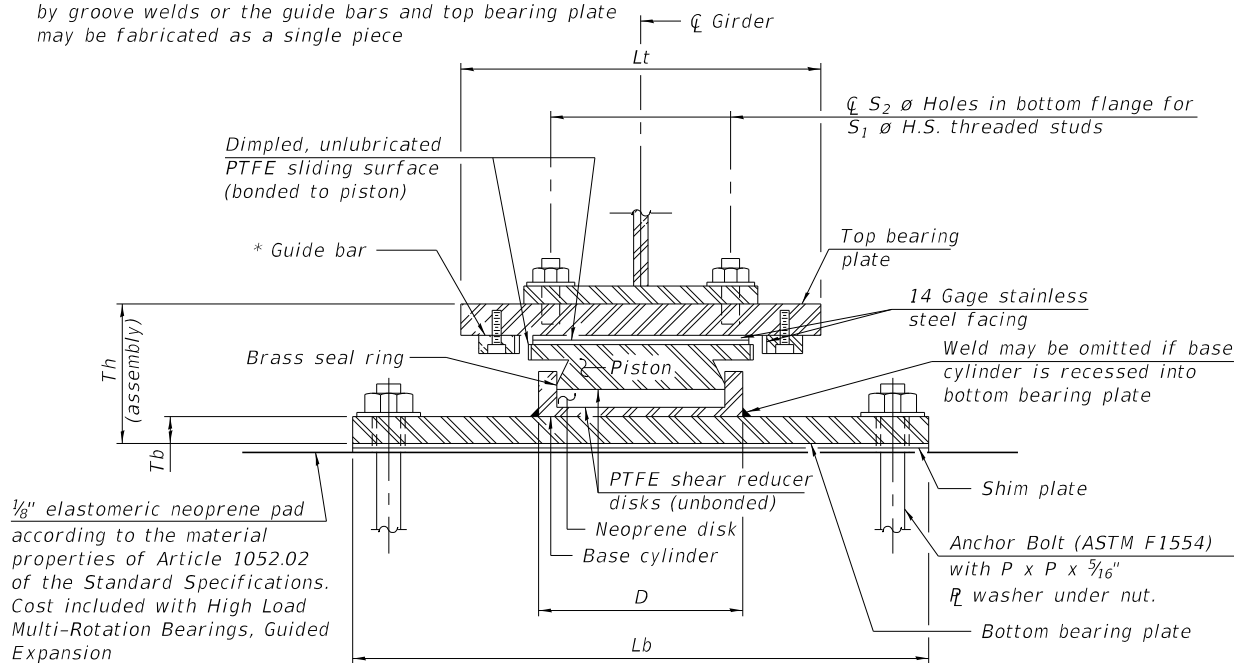
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

BEARING DETAILS UNIT 2 - 2
STRUCTURE NO. 060-0351 (WB)

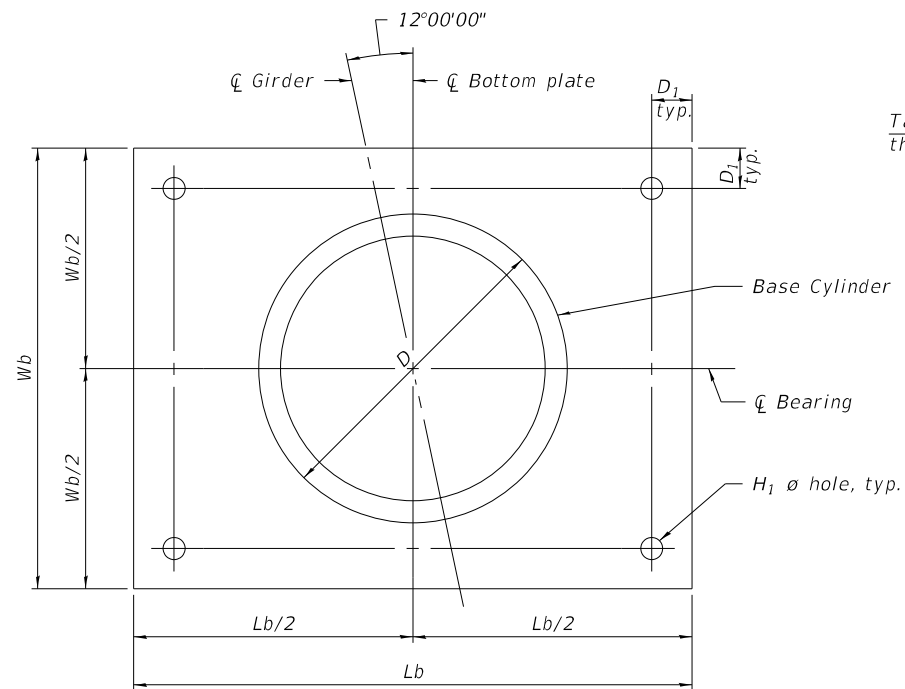
SHEET 155 OF 288 SHEETS

F.AJ RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	660
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				

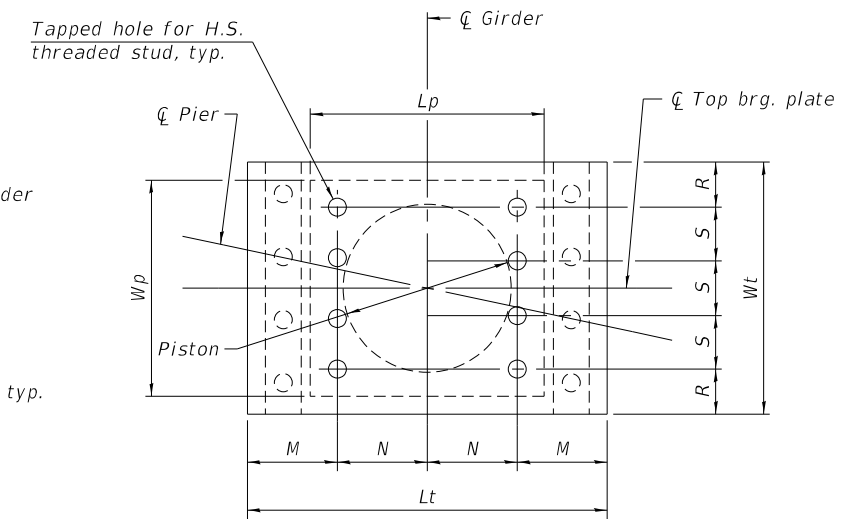
* As alternates to the bolted connection shown, the guide bars may be connected to the top bearing plate by groove welds or the guide bars and top bearing plate may be fabricated as a single piece



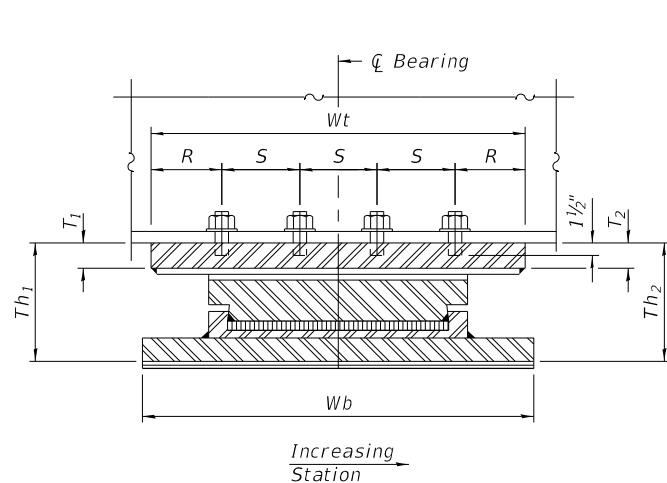
GUIDED EXPANSION BEARING



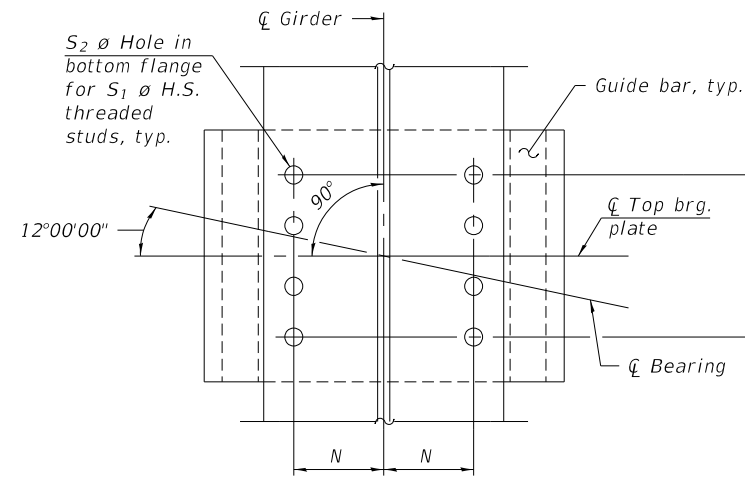
BOTTOM BEARING ϕ AND BASE CYLINDER PLAN



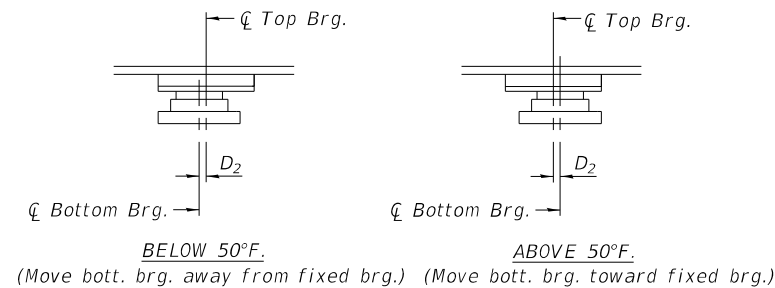
TOP BEARING ϕ AND PISTON PLAN



TOP PLATE TAPER DETAIL



BEARING ALIGNMENT



SETTING ANCHOR BOLTS AT EXP. BRG.

D₂ = $\frac{1}{8}$ " 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'.

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

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	831.2	249.4	0.0039	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	841.9	252.6	0.0015	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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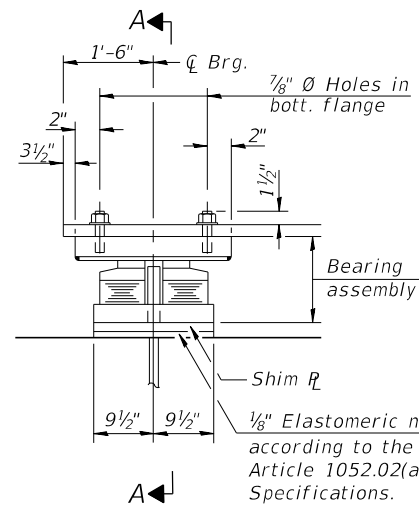
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**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

**BEARING DETAILS UNIT 2 - 3
STRUCTURE NO. 060-0351 (WB)**

SHEET 156 OF 288 SHEETS

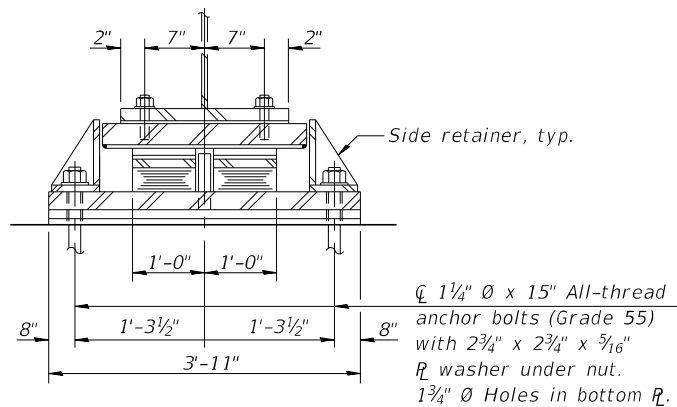
F.AJ RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	661
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				



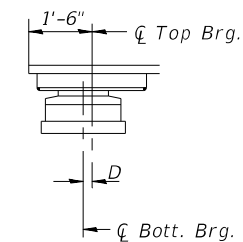
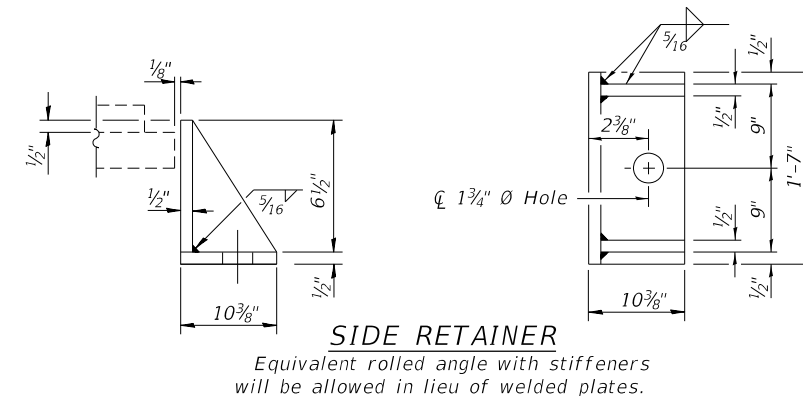
ELEVATION

SHIM PLATE THICKNESS

Unit	Pier	Girder	Shim Plate Thickness
3	10	1-6	1/4"
3	17	1-3	3/8"
3	17	4-6	1/4"
4	24	1-6	7/8"

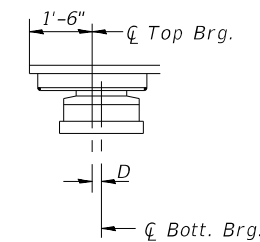


SECTION A-A



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.

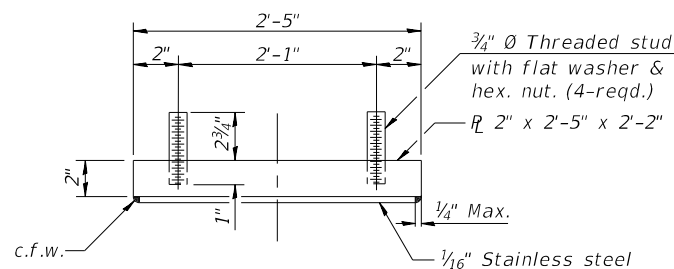
The anchor bolt sizes and grades shown constitute a calculated seismic structural fuse. Substitution of higher diameter and/or grade anchor bolts will not be allowed.

BILL OF MATERIAL

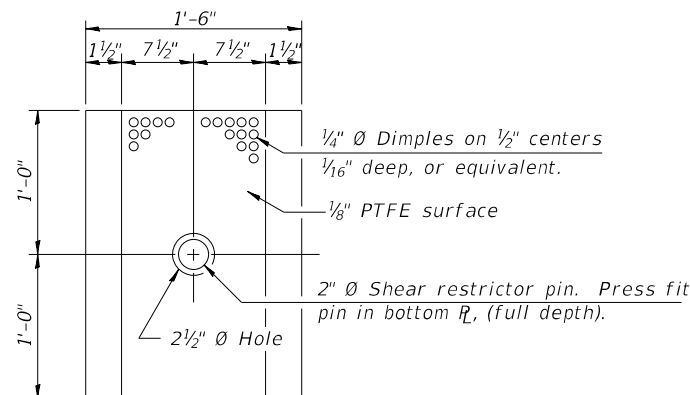
Item	Unit	Total
Elastomeric Bearing Assembly Type III	Each	24
Anchor Bolts, 1 1/4"	Each	48

TYPE III ELASTOMERIC EXP. BRG.

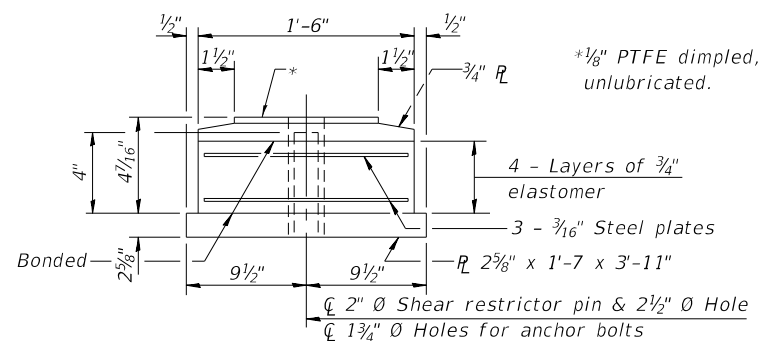
(Girders 1 thru 6 Unit 3 at Pier 10
 Girders 1 thru 6 Unit 3 at Pier 17
 Girders 1 thru 6 Unit 4 at Pier 17
 Girders 1 thru 6 Unit 4 at Pier 24)



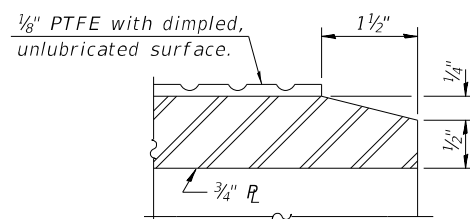
TOP BEARING ASSEMBLY



PLAN-PTFE ELASTOMERIC BRG.

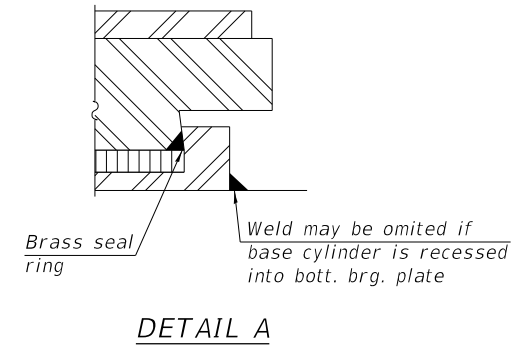
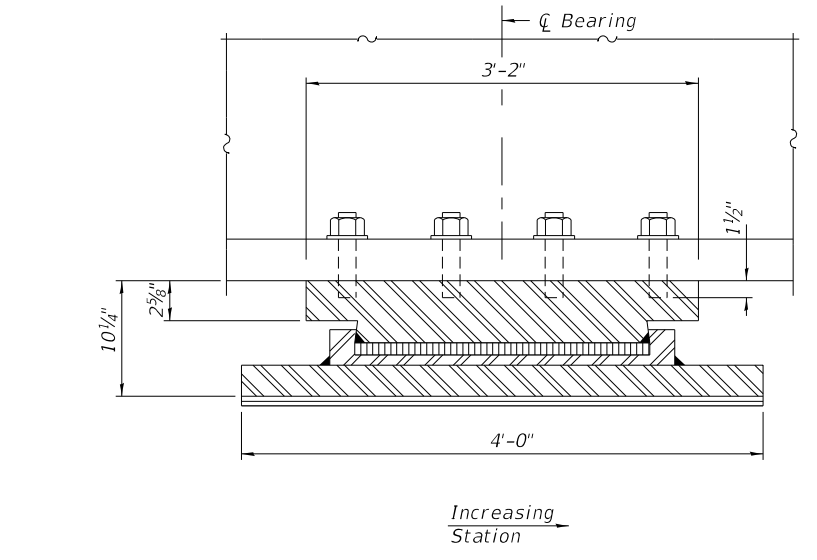
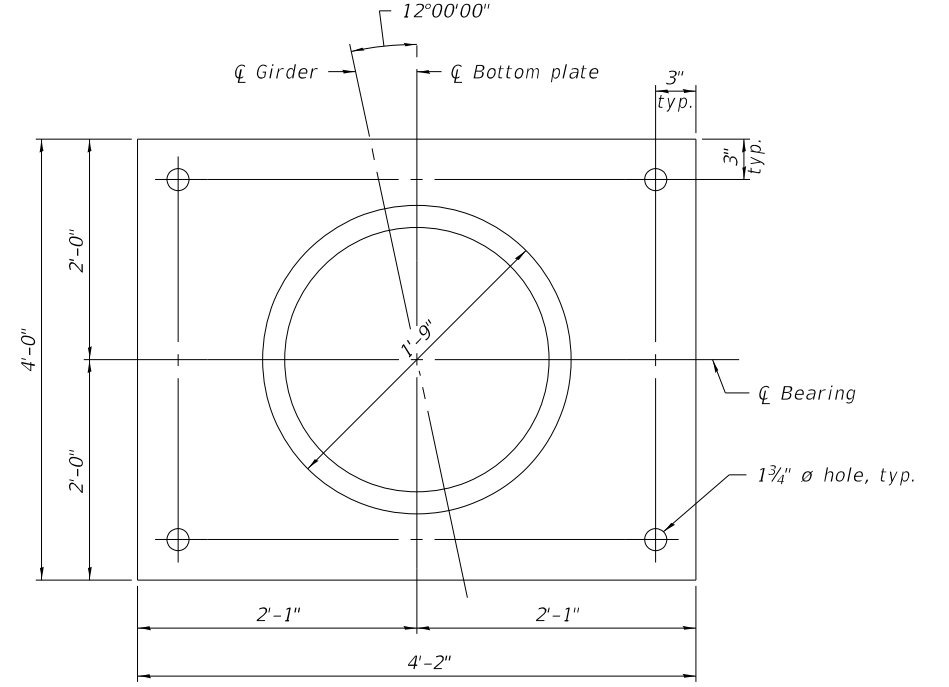
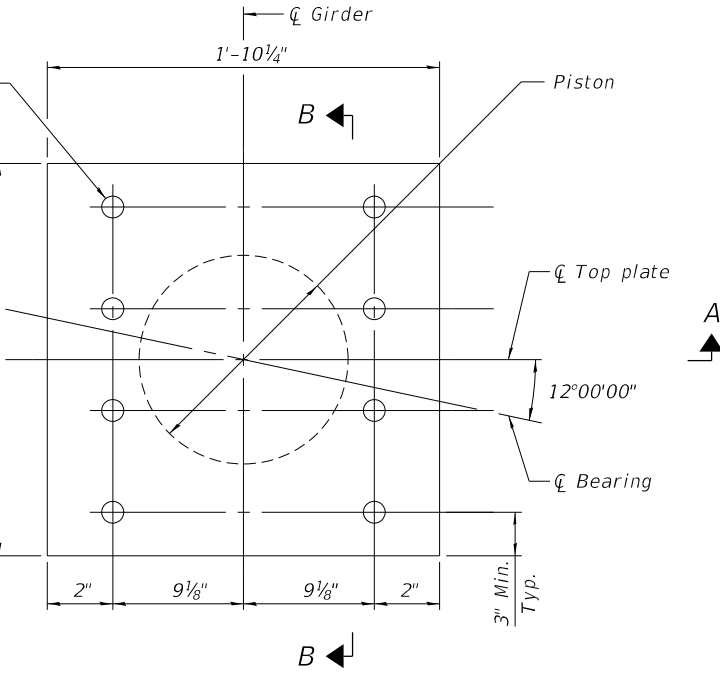
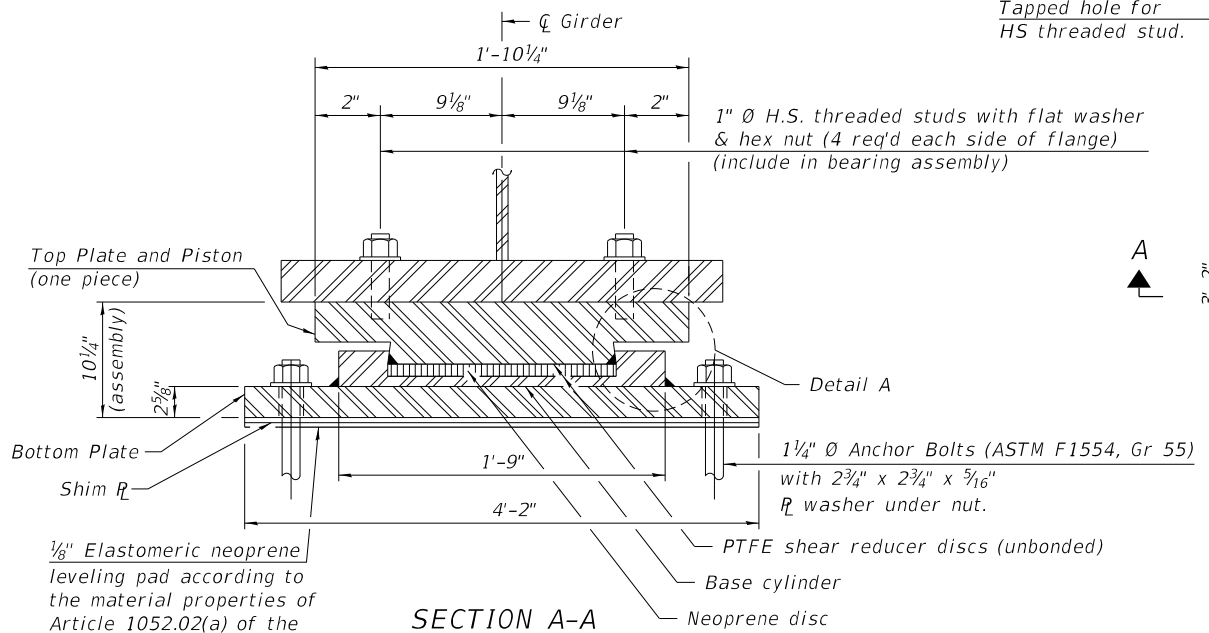


BOTTOM BEARING ASSEMBLY



SECTION THRU PTFE

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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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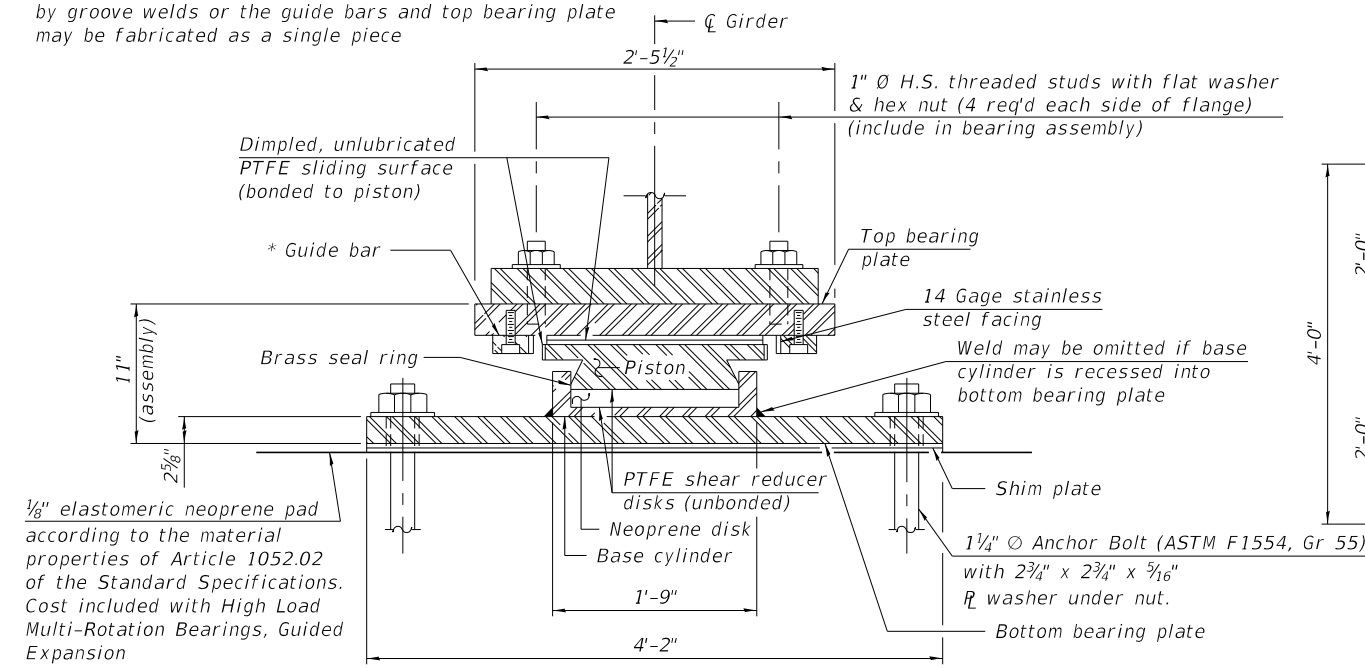
**STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION**

**BEARING DETAILS UNITS 3, 4 & 5 - 2
 STRUCTURE NO. 060-0351 (WB)**

SHEET 158 OF 288 SHEETS

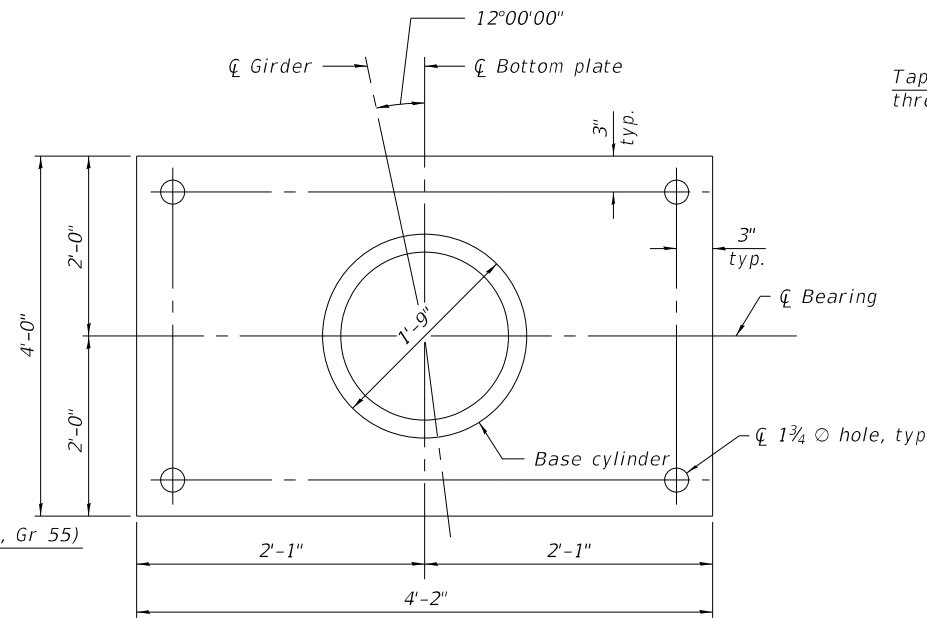
F.A.1 RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	663
CONTRACT NO. 76J90				
ILLINOIS FED. AID PROJECT				

* 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

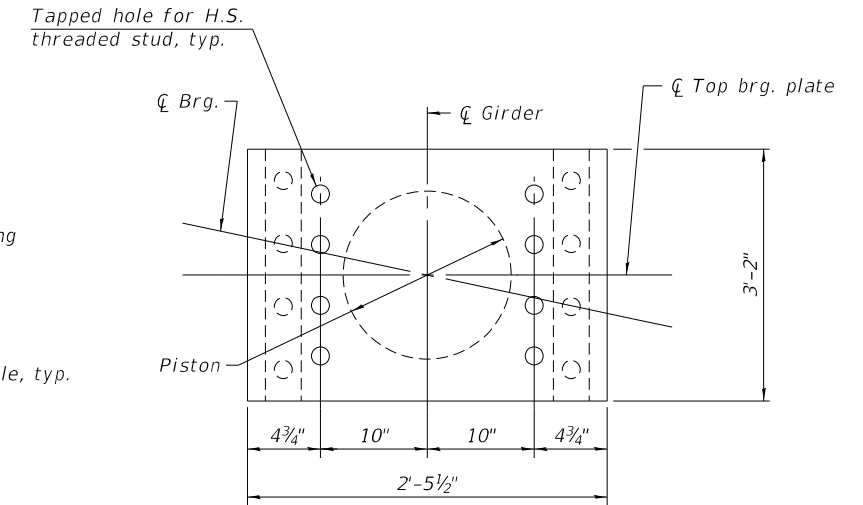


GUIDED EXPANSION BEARING

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



BOTTOM BEARING PLATE AND BASE CYLINDER PLAN



TOP BEARING PLATE 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.

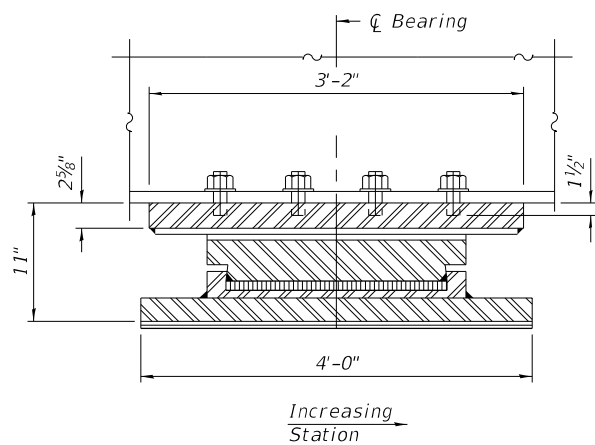
The structural steel plates of the Bearing Assembly shall conform to the requirements of ASHTO M 270 Grade 50.

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.

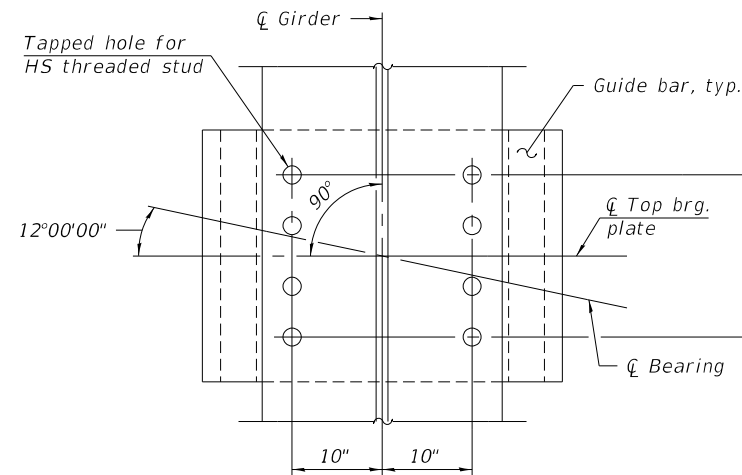
The anchor bolt sizes and grades shown constitute a calculated seismic structural fuse. Substitution of higher diameter and/or grade anchor bolts will not be allowed.

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.

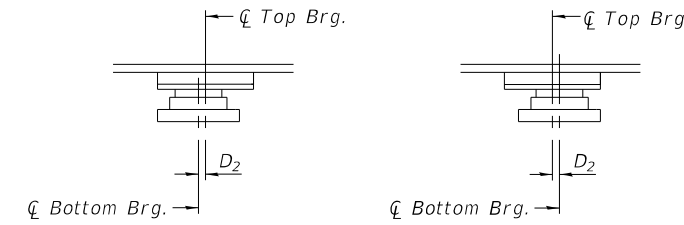
The cost of the elastomeric neoprene leveling pads, shim plates and threaded studs shall be included in the cost of High Load Multi-Rotational Bearings, Guided Expansion.



TOP PLATE DETAIL



BEARING ALIGNMENT



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.
 (Move bott. brg. away from fixed brg.) (Move bott. brg. toward fixed brg.)
 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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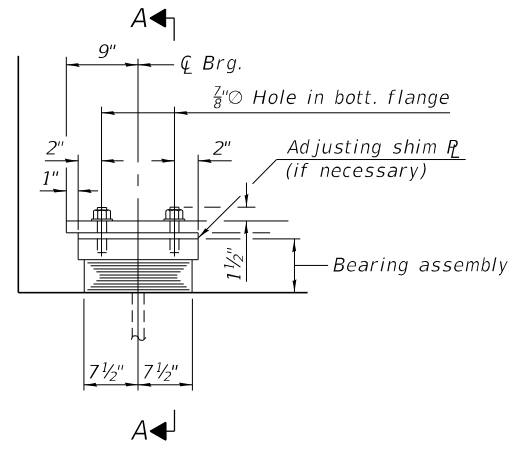
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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

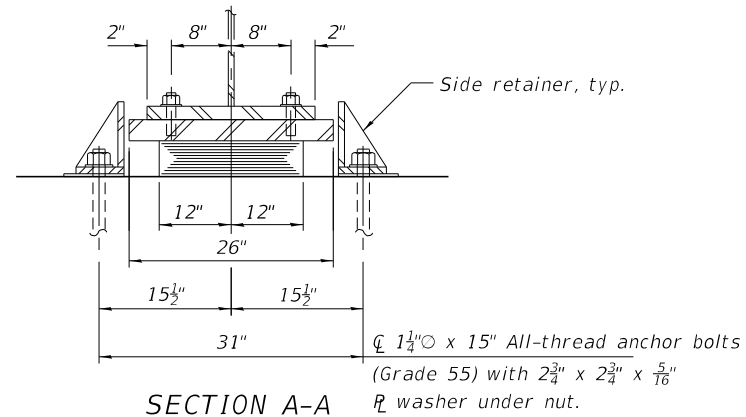
BEARING DETAILS UNITS 3, 4 & 5 - 3
STRUCTURE NO. 060-0351 (WB)

SHEET 159 OF 288 SHEETS

F.AJ RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	664
CONTRACT NO. 76J90				
ILLINOIS FED. AID PROJECT				



ELEVATION AT GIRDER END

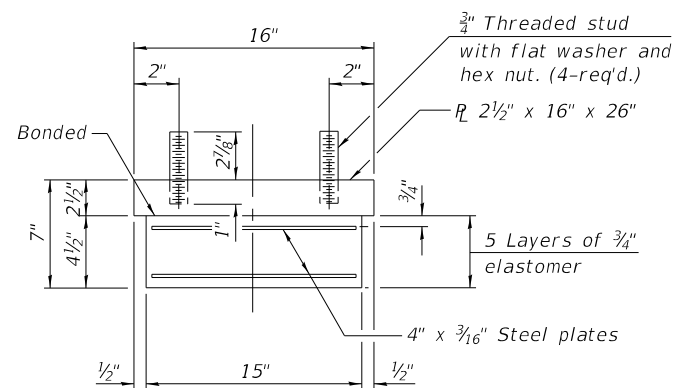


SECTION A-A

TYPE I ELASTOMERIC EXP. BRG.

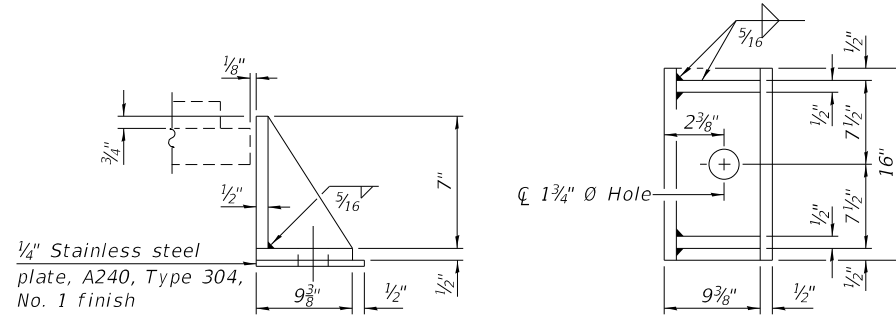
(Girders 1 thru 6 Unit 5 at Pier 24
Girders 1 thru 6 Unit 5 at E. Abut.)

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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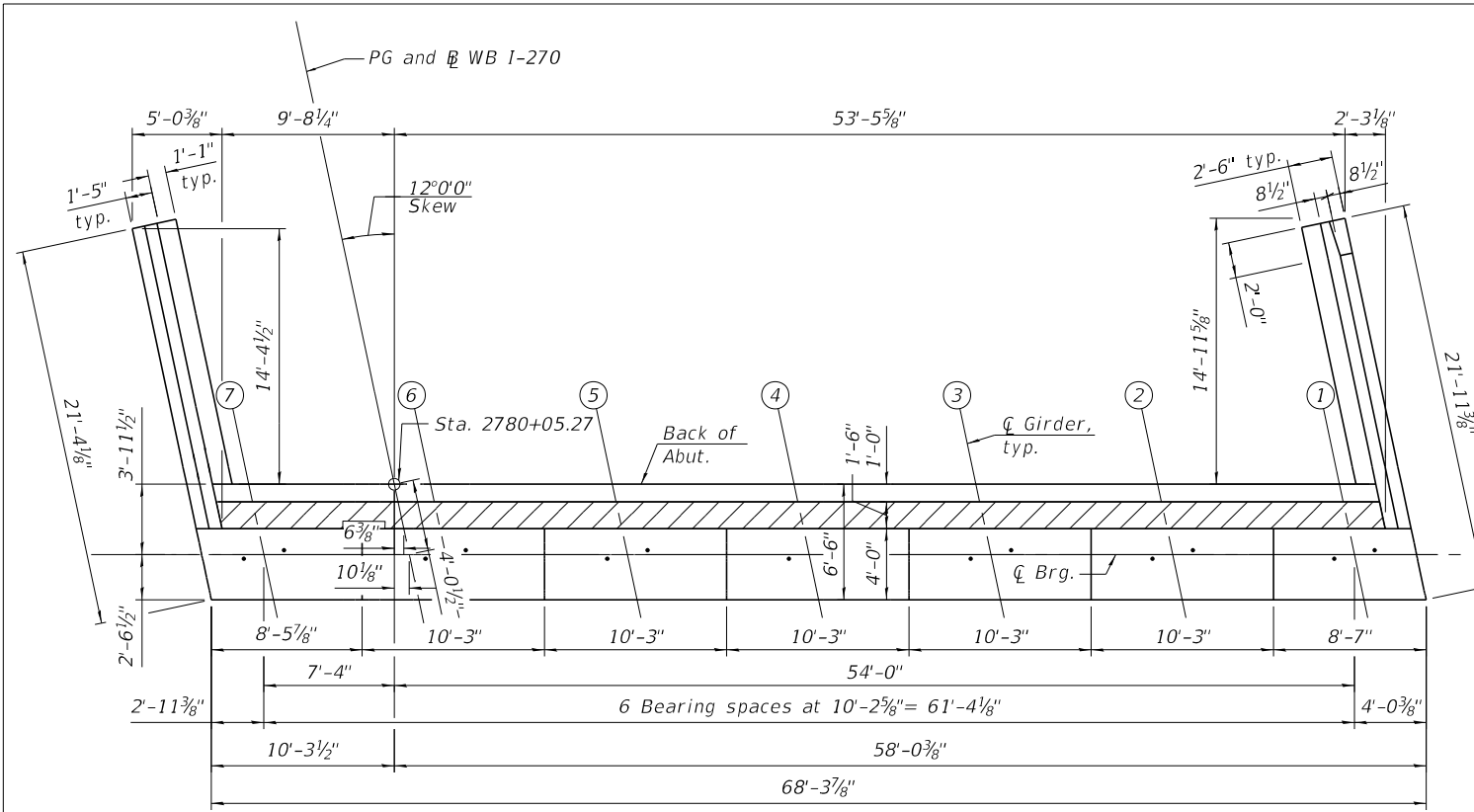
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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

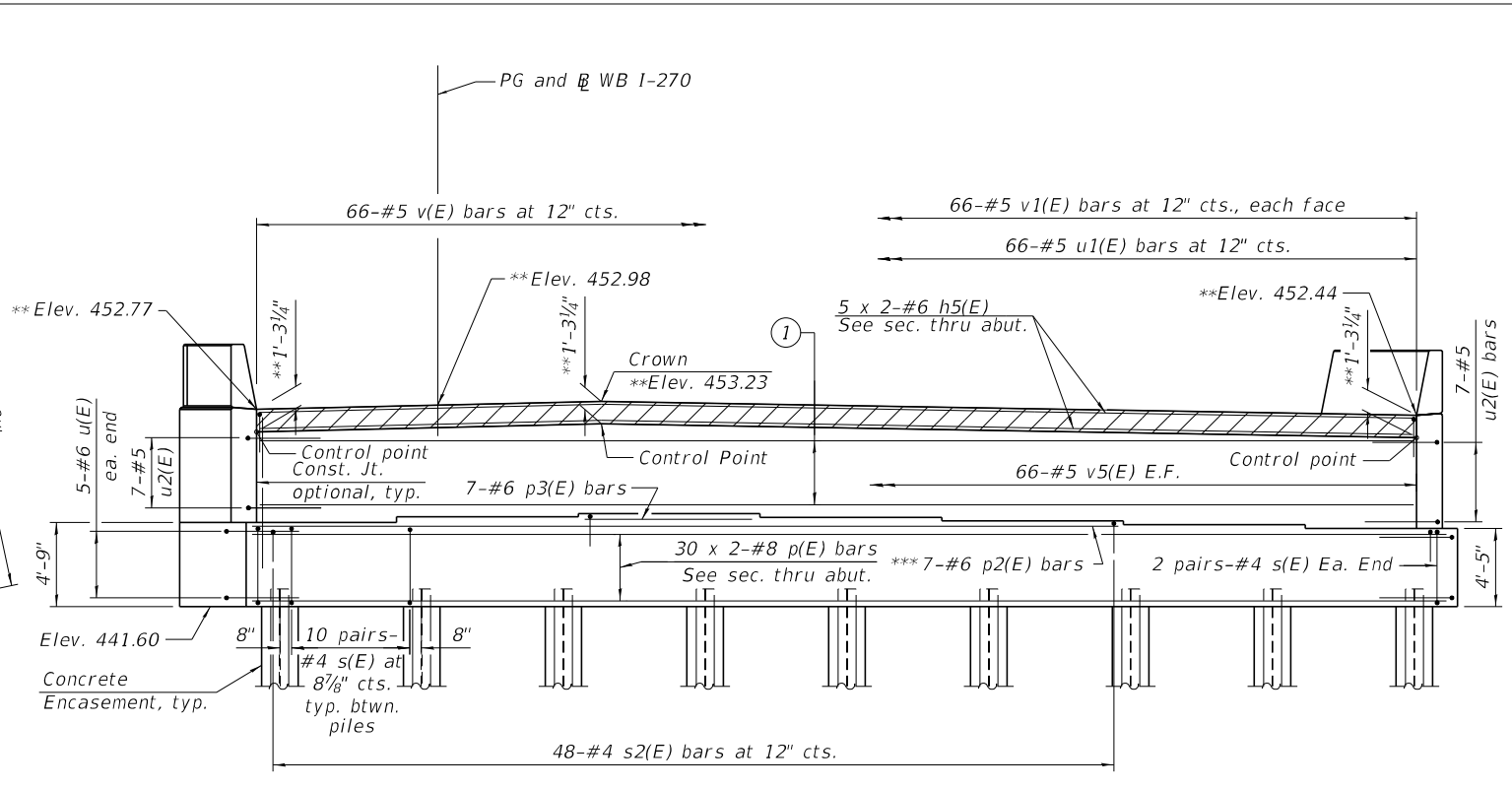
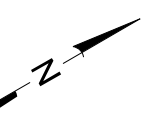
BEARING DETAILS UNITS 3, 4 & 5 - 4
STRUCTURE NO. 060-0351 (WB)

SHEET 160 OF 288 SHEETS

F.AJ RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	665
CONTRACT NO. 76J90				
ILLINOIS FED. AID PROJECT				

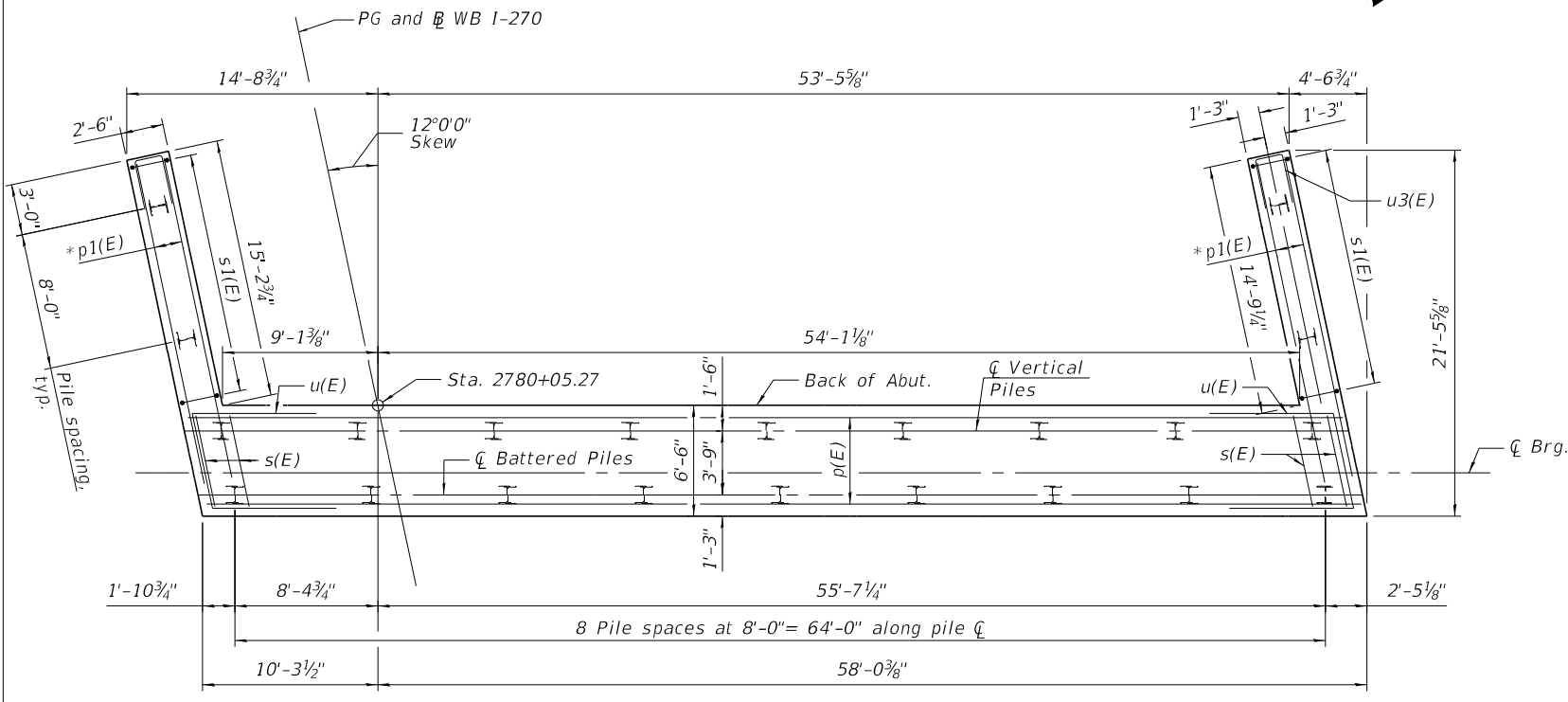


TOP VIEW



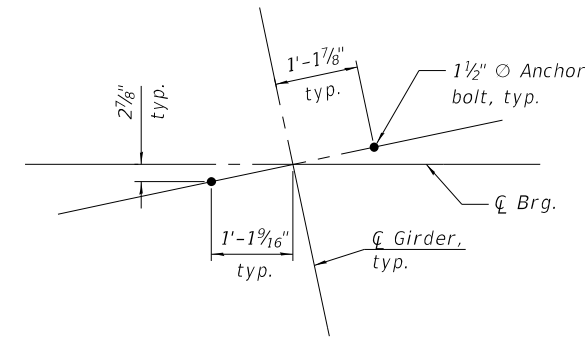
ELEVATION

** 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 1/4"
4-5	2 1/4"
5-6	-2 1/2"
6-7	-2 1/2"

BEARING SEAT ELEVATIONS

GIRDER	ELEVATION
1	446.02
2	446.21
3	446.40
4	446.58
5	446.77
6	446.56
7	446.35

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 162 of 288.

PILE DATA

Type: HP 12X84
 Nominal Required Bearing: 634 kips
 Factored Resistance Available: 278 kips
 Est. Length: 56 ft
 No. Production Piles: 20
 No. Test Piles: 2

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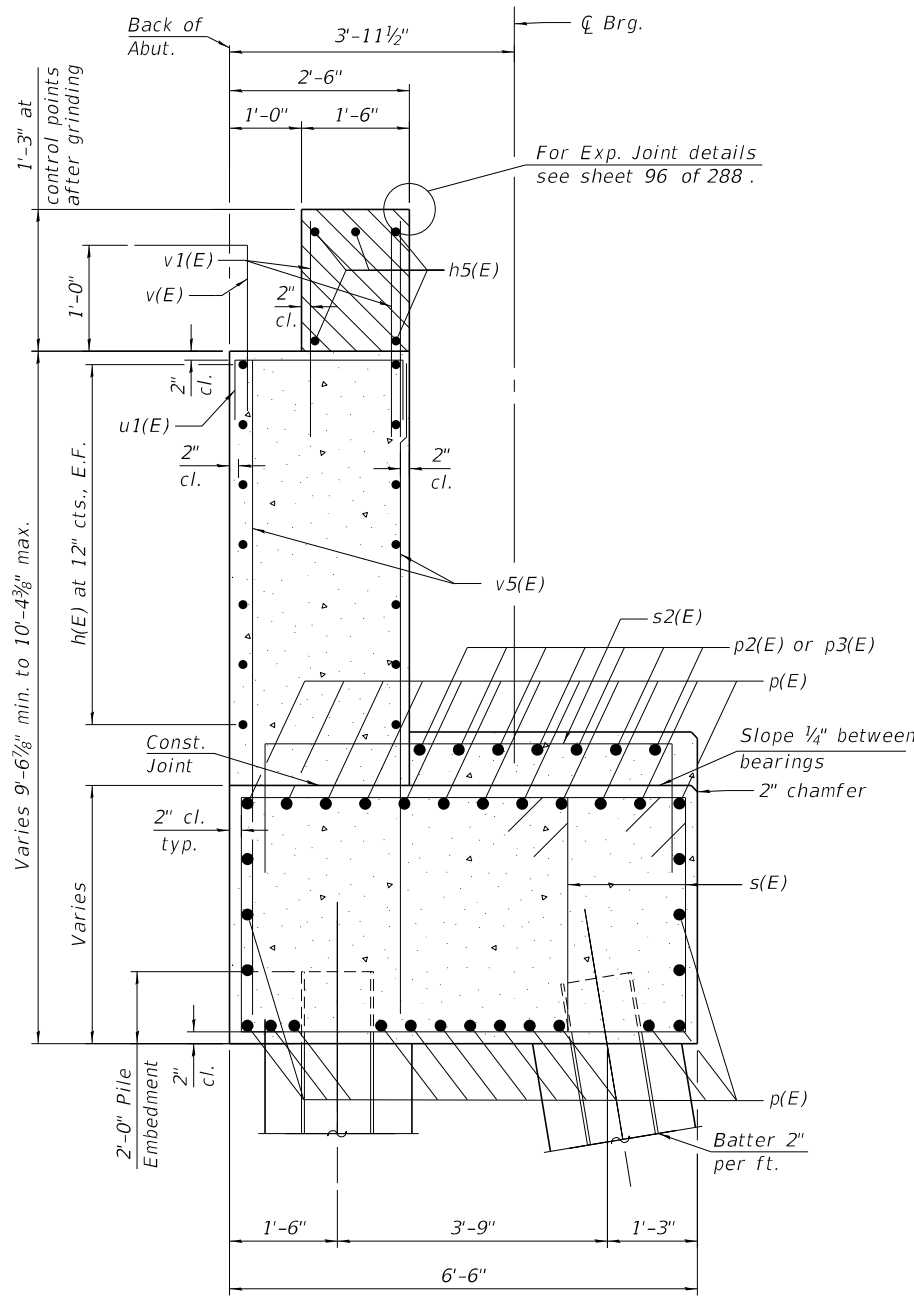
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STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION

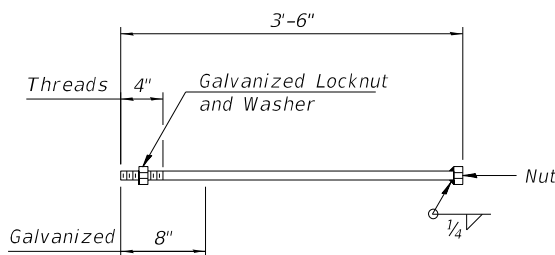
WEST ABUTMENT PLAN AND ELEVATION
 STRUCTURE NO. 060-0351 (WB)

SHEET 161 OF 288 SHEETS

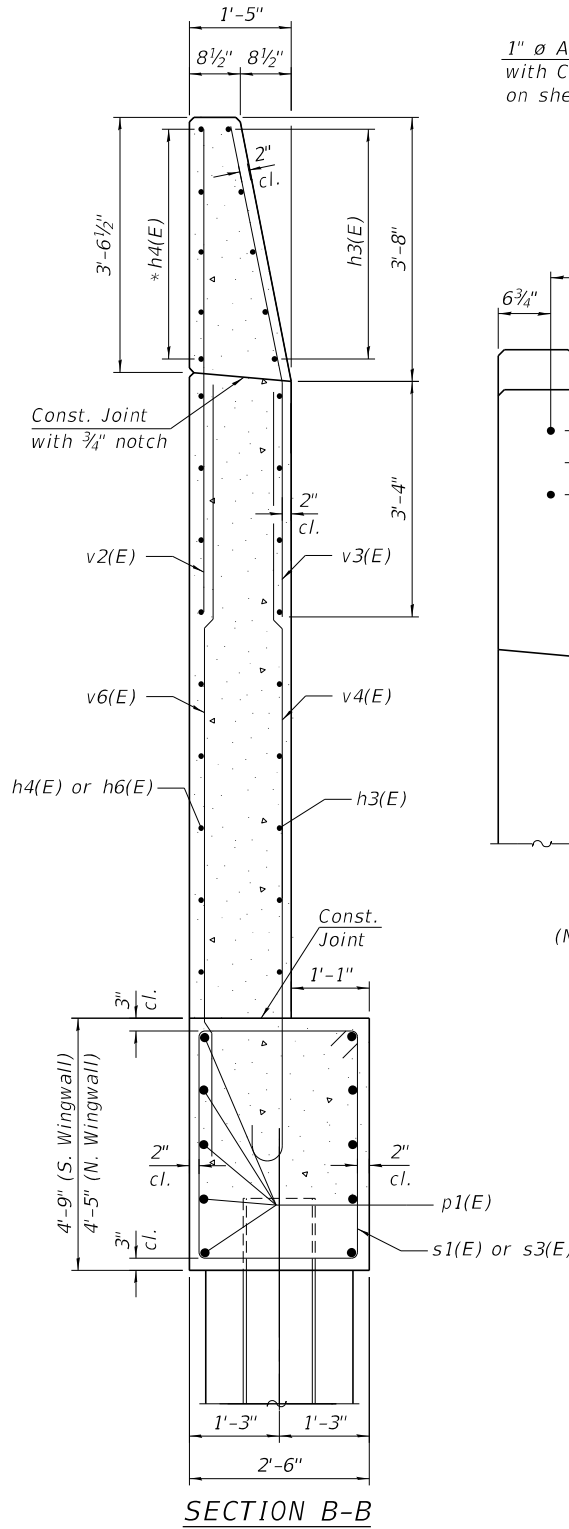
F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	666
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				



SECT. THRU ABUT.

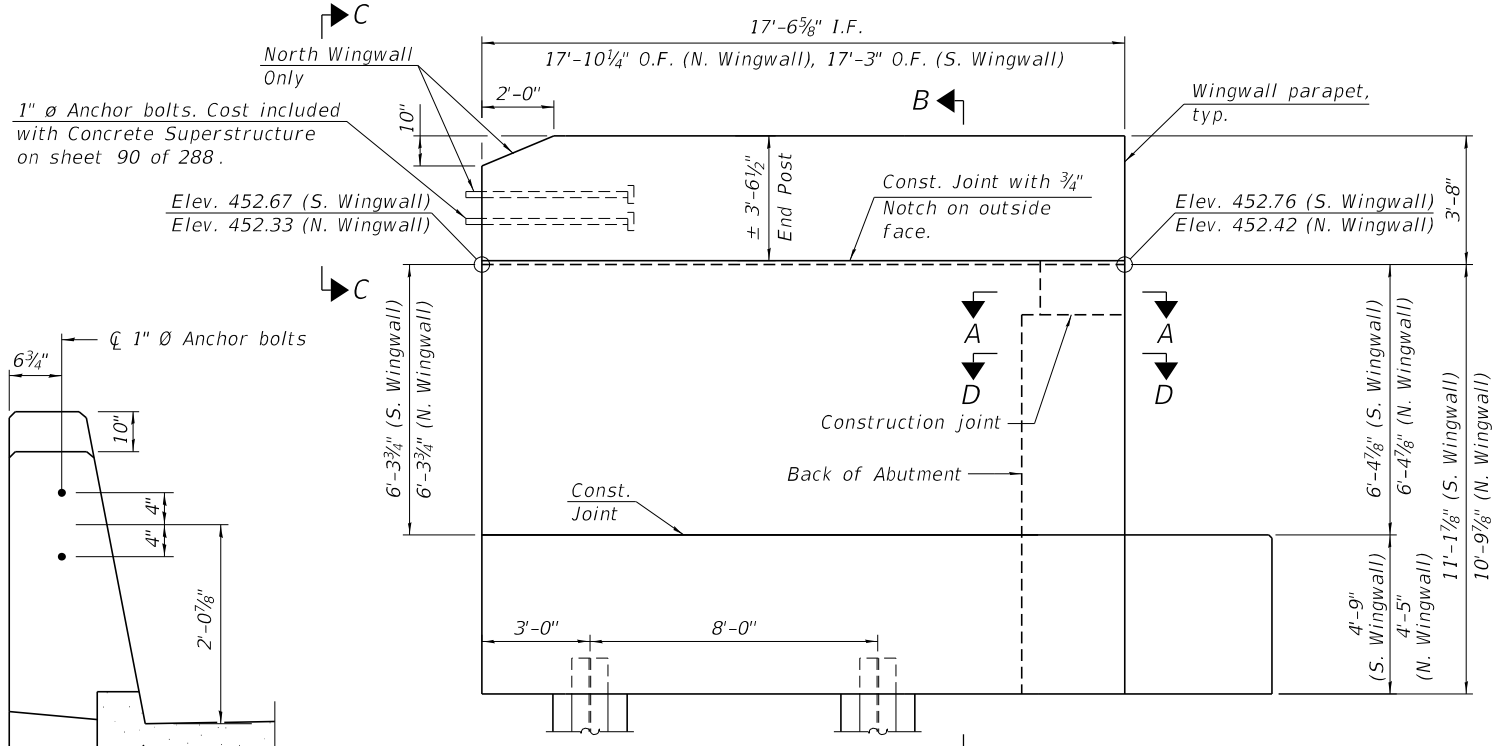


1" Ø ANCHOR BOLT



SECTION B-B

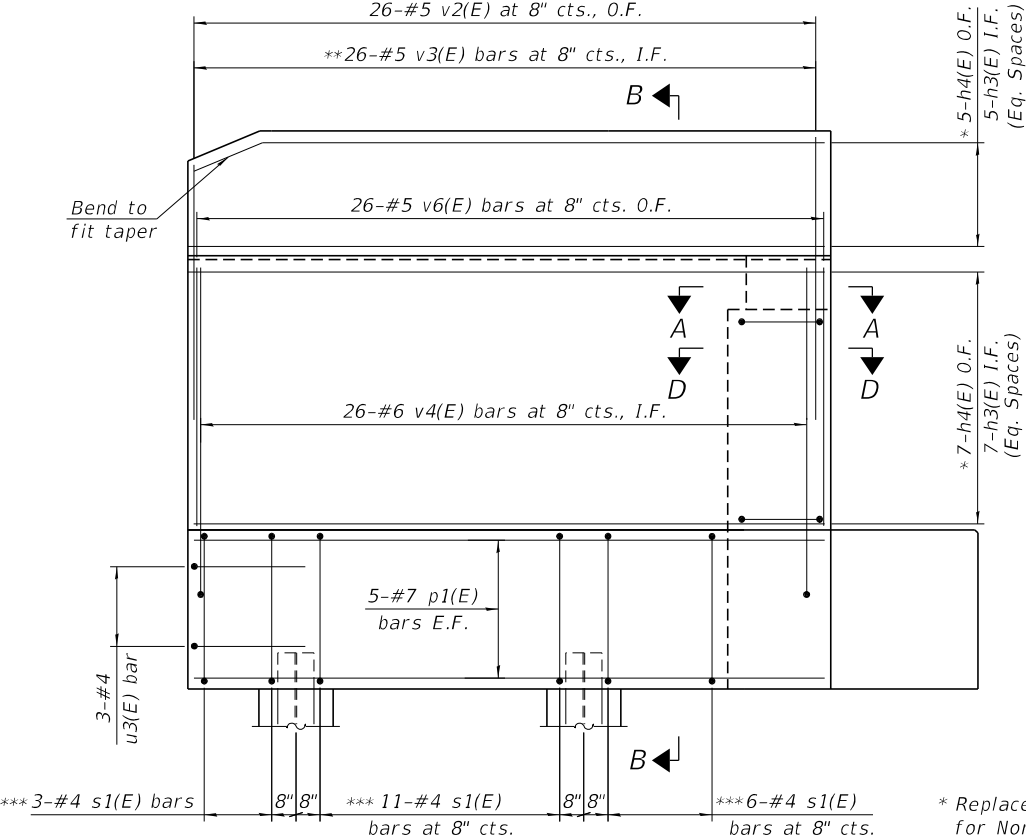
Notes:
 Hatched area to be poured after superstructure false work has been removed. Quantity of concrete included with Concrete Superstructure. Space reinforcement in cap to miss anchor bolts. Pour steps monolithically with cap. Quantity of concrete end post included Concrete Superstructure on sheet 90 of 288. For Concrete Encasement details, see sheet 241 of 288. 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 163 of 288.



WINGWALL ELEVATION

Showing Dimensions (South shown, North wingwall similar)

VIEW C-C (North Wingwall Only)



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

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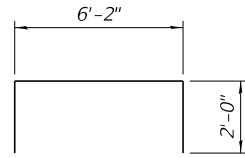
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STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION

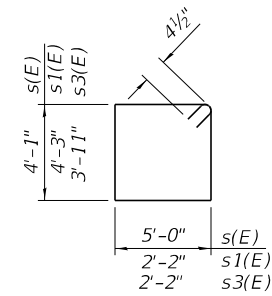
WEST ABUTMENT WINGWALL DETAILS
 STRUCTURE NO. 060-0351 (WB)

SHEET 162 OF 288 SHEETS

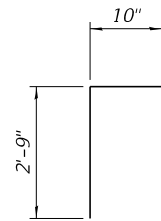
F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	667
CONTRACT NO. 76J90				
ILLINOIS FED. AID PROJECT				



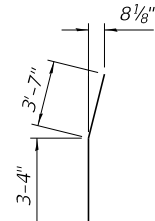
BAR s2(E)



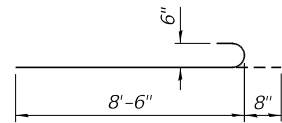
BARS s(E), s1(E) AND s3(E)



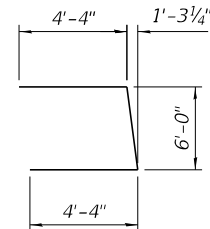
BAR v(E)



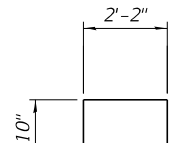
BAR v3(E)



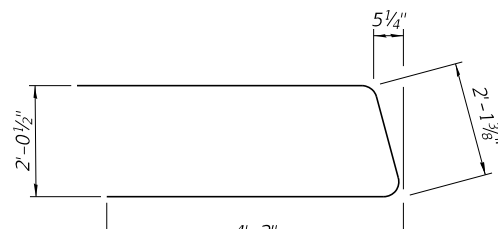
BAR v4(E)



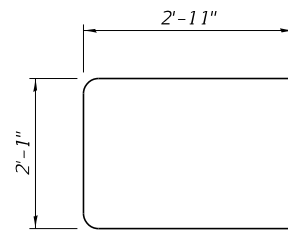
BAR u(E)



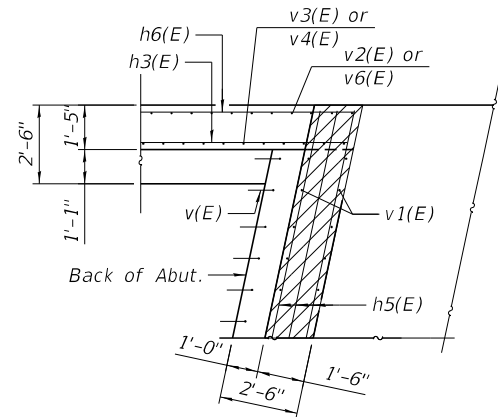
BAR u1(E)



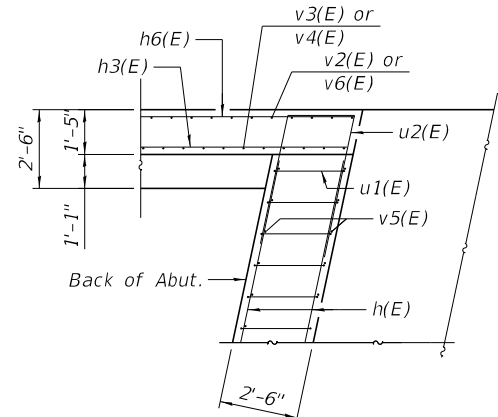
BAR u2(E)



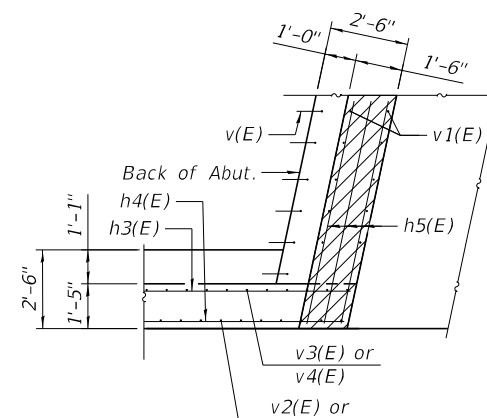
BAR u3(E)



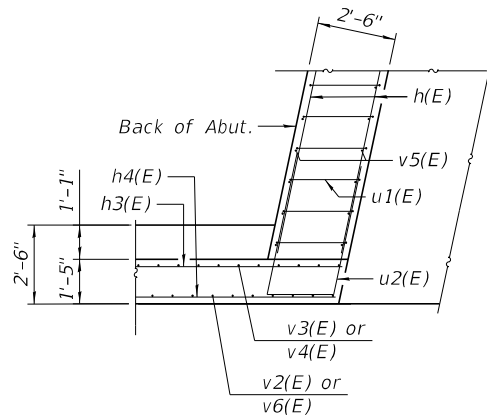
SECTION A-A: NORTH WING



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	13'-7"	□
s2(E)	48	#4	10'-2"	□
s3(E)	20	#4	12'-11"	□
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.	132.6
Concrete Encasement			Cu. Yd.	7.7
Reinforcement Bars, Epoxy Coated			Pound	16,990
Furnishing Steel Piles HP 12x84			Foot	1,120
Driving Piles			Foot	1,120
Test Pile Steel HP 12X84			Each	2
Pile Shoes			Each	22
Concrete Sealer			Sq. Ft.	1,042

*Field cut to fit skew.
For details of HP Piles and Concrete Encasement, see sheet 241 of 288.

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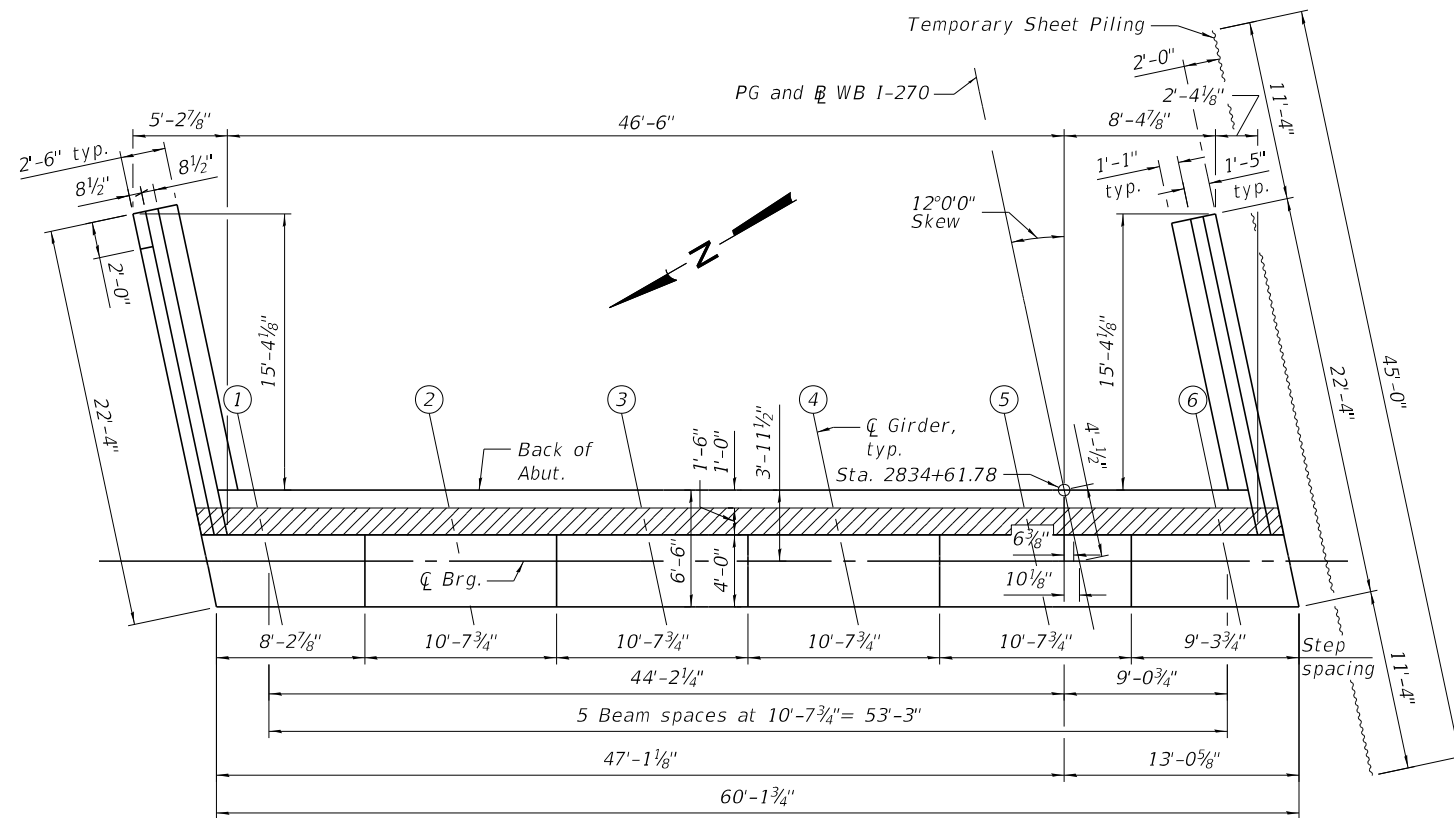
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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

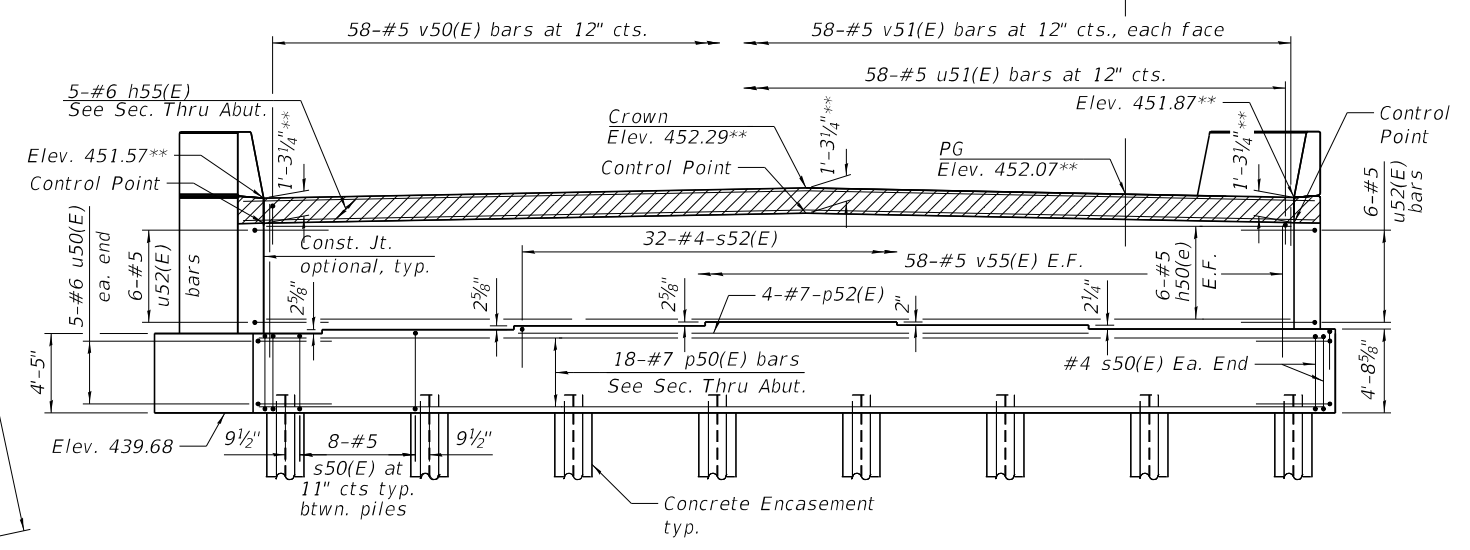
WEST ABUTMENT DETAILS AND BOM
STRUCTURE NO. 060-0351 (WB)

SHEET 163 OF 288 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	668
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				

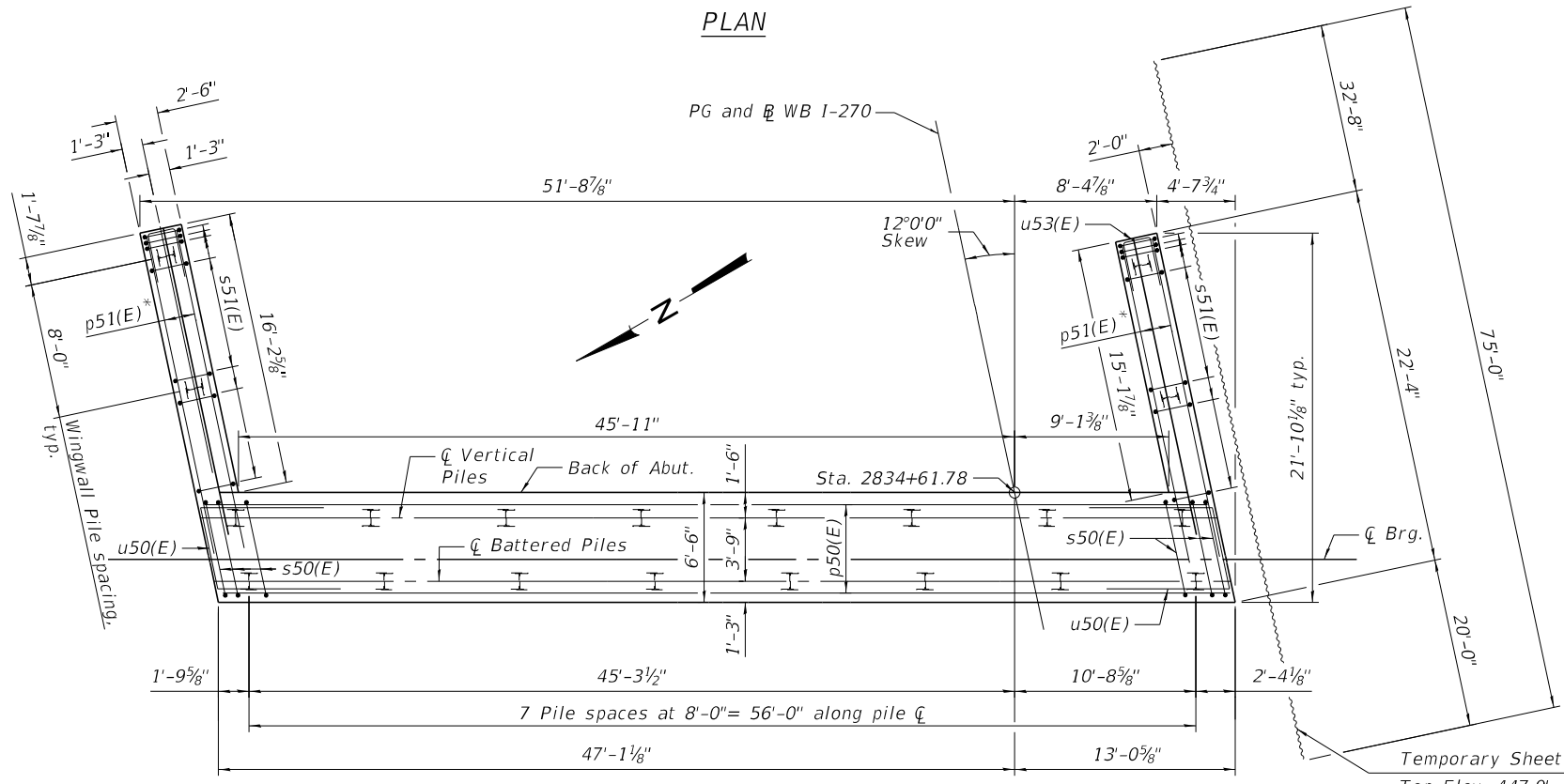


PLAN



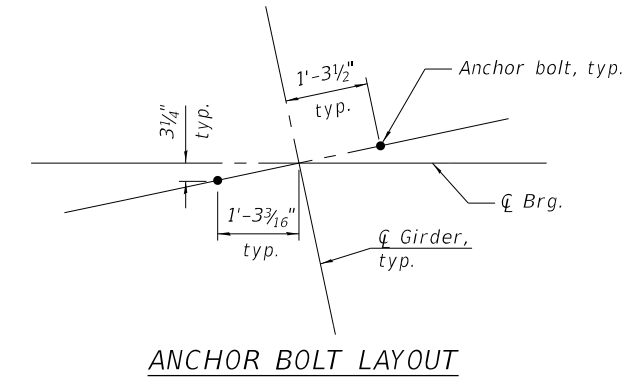
ELEVATION

** Prior to Grinding at Back of Abutment
Temporary Sheet Piling not shown in elevation.



PILE CAP PLAN

*Field bend #7-p51(E) to clear pile.



ANCHOR BOLT LAYOUT

BEARING SEAT ELEVATIONS

GIRDER	ELEVATION
1	444.10
2	444.32
3	444.54
4	444.76
5	444.59
6	444.40

PILE DATA

Type: HP 12X63
Nominal Required Bearing: 402 kips
Factored Resistance Available: 221 kips
Est. Length: 110 ft
No. Production Piles: 19
No. Test Piles: 1

TEMPORARY SHEET PILING AT ABUTMENT

Minimum section modulus for sheet piling = 8.2 in.³ / ft.
If the Contractor chooses to alter the temporary cantilevered sheet piling design requirements shown on the plans, a design submittal including plan details and calculations will be required for review and acceptance by the Engineer.

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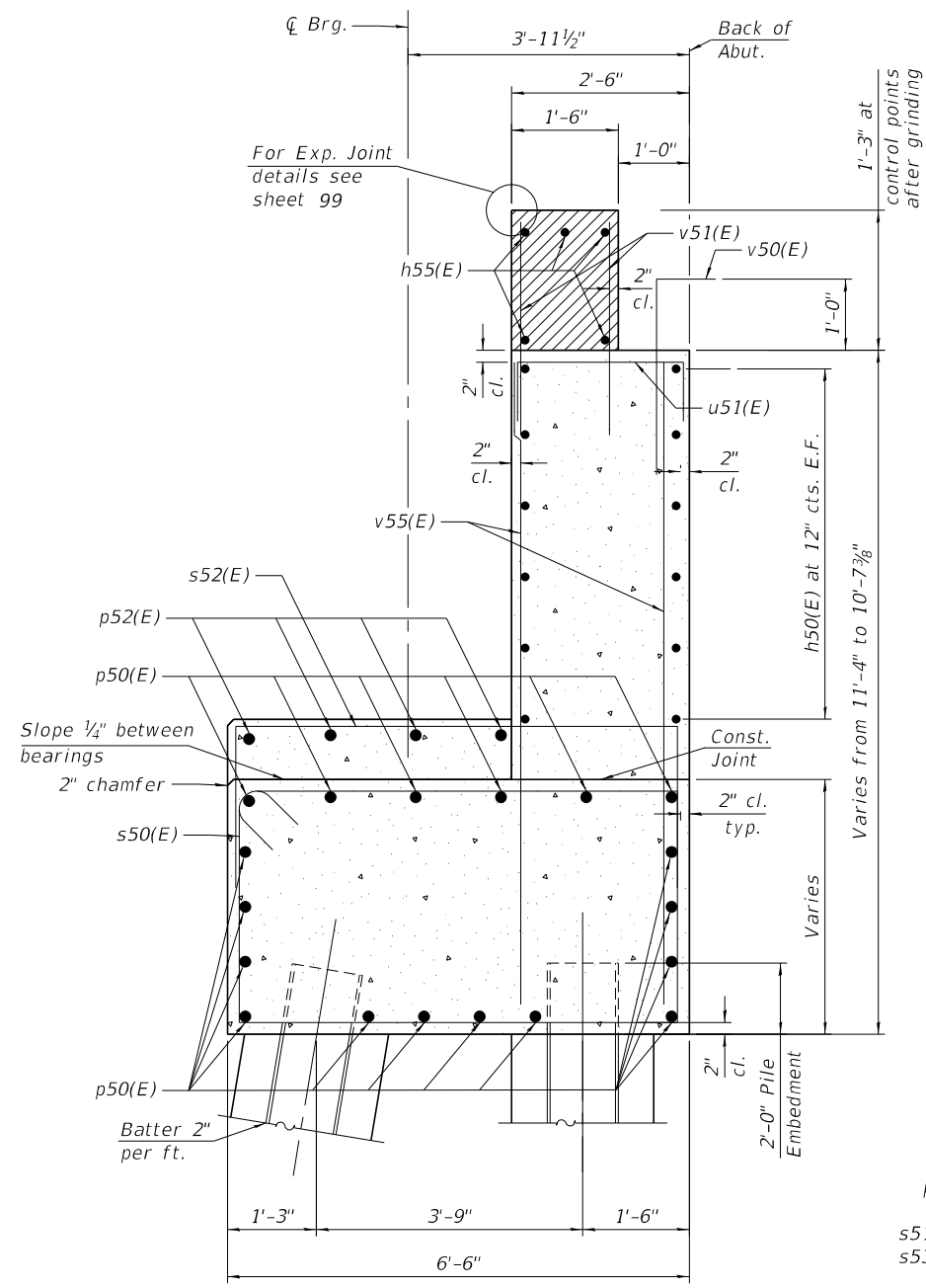
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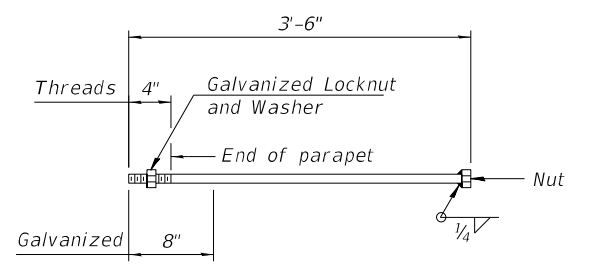
EAST ABUTMENT PLAN AND ELEVATION
STRUCTURE NO. 060-0351 (WB)

SHEET 164 OF 288 SHEETS

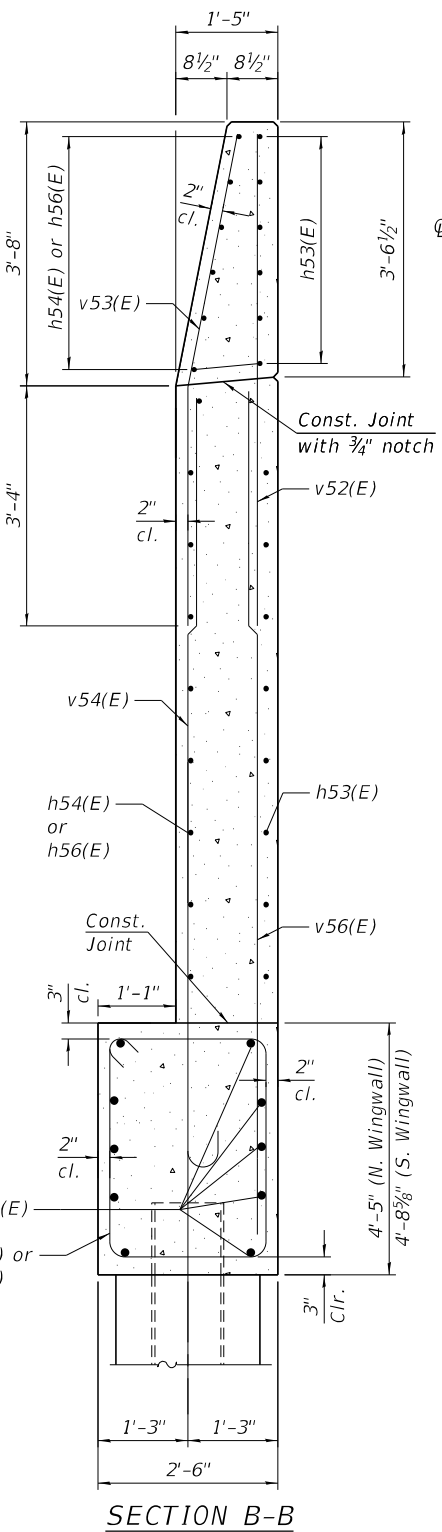
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	669
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				



SECT. THRU ABUT.

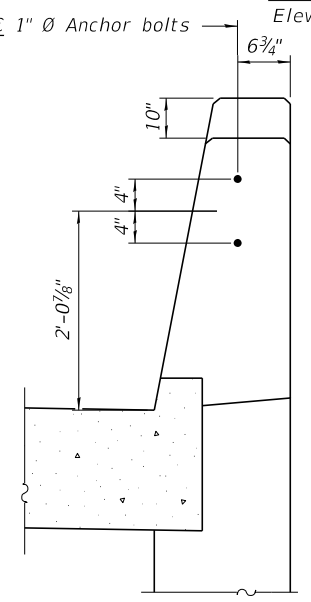


1" Ø ANCHOR BOLT
Anchor bolt assemblies shall be according to Article 1006.09 of the Standard Specifications. Cost included with Concrete Superstructure.

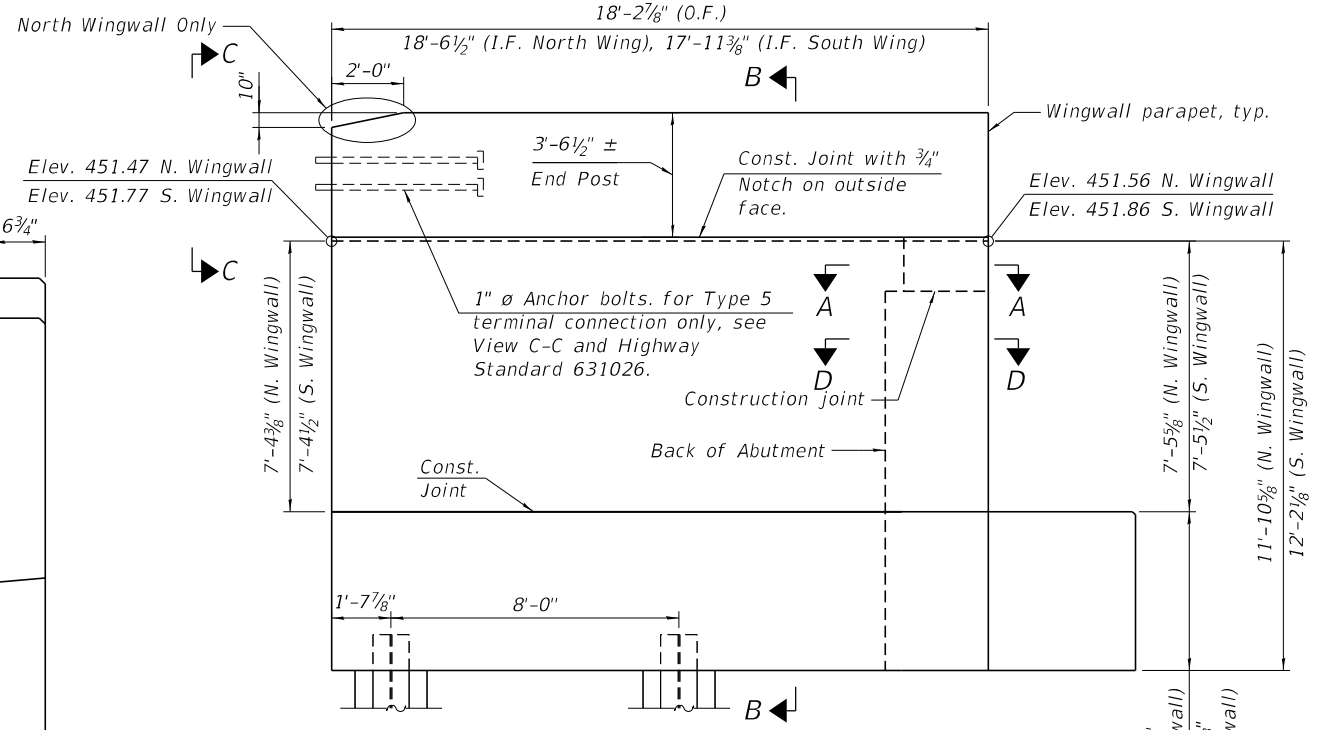


SECTION B-B

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 in end post is included with Concrete Superstructure on sheet 91 of 288.
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, see sheet 166 of 288.

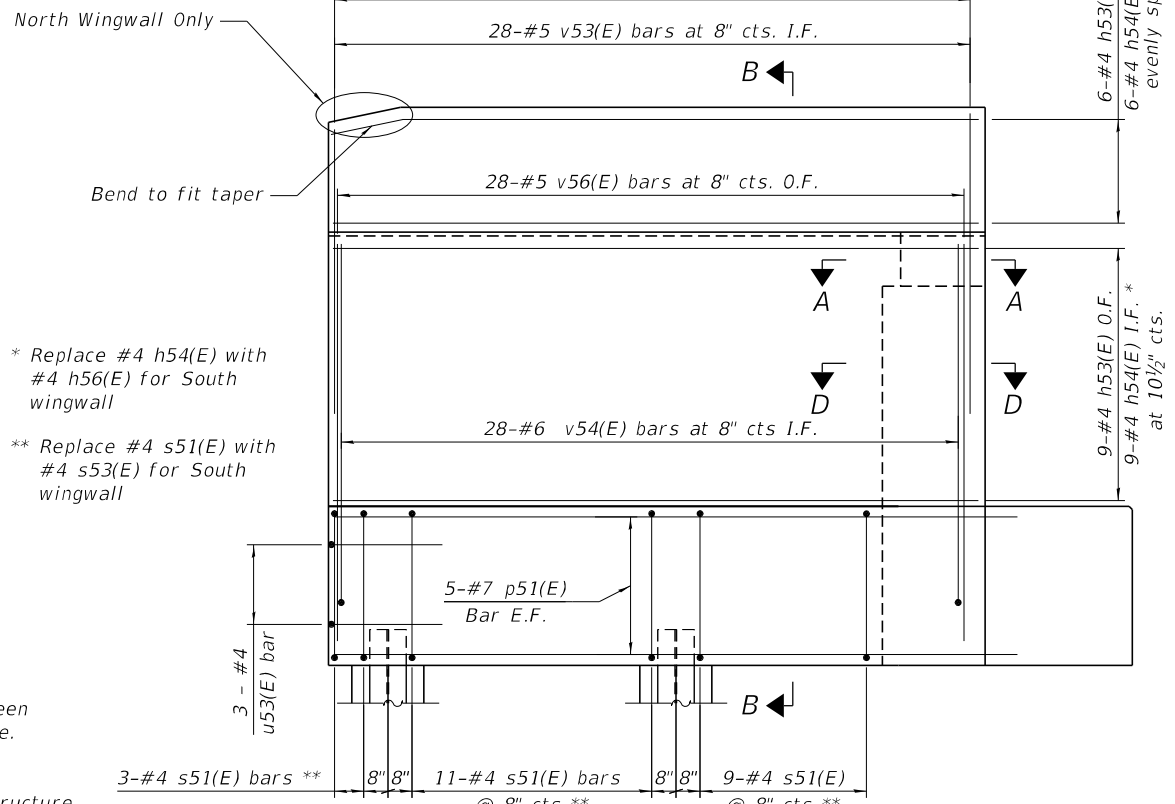


VIEW C-C
(North Wingwall Only)



WINGWALL ELEVATION

Showing Dimensions
(North shown, South wingwall similar)



WING WALL ELEVATION

Showing Reinforcement
(North shown, South wingwall similar)

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**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

**EAST ABUTMENT WINGWALL DETAILS
STRUCTURE NO. 060-0351 (WB)**

SHEET 165 OF 288 SHEETS

F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	670
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				

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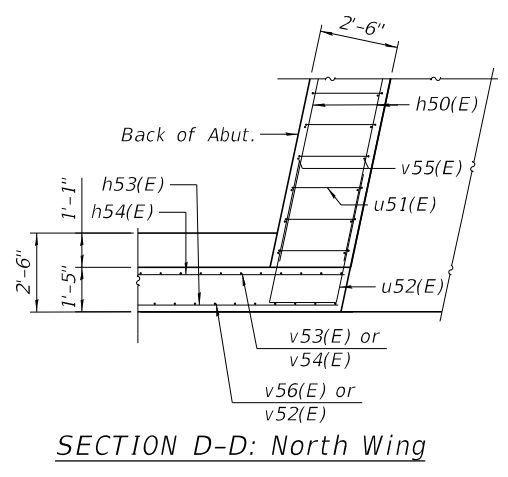
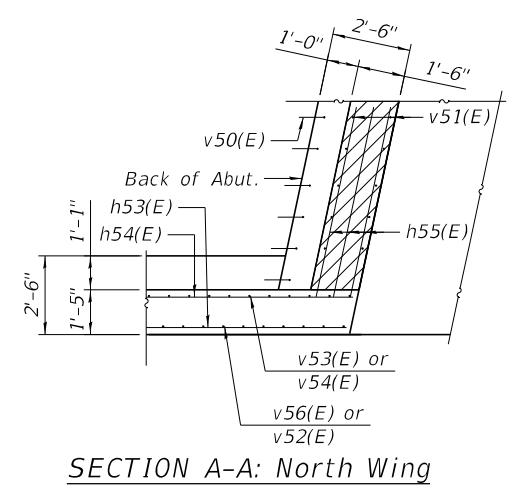
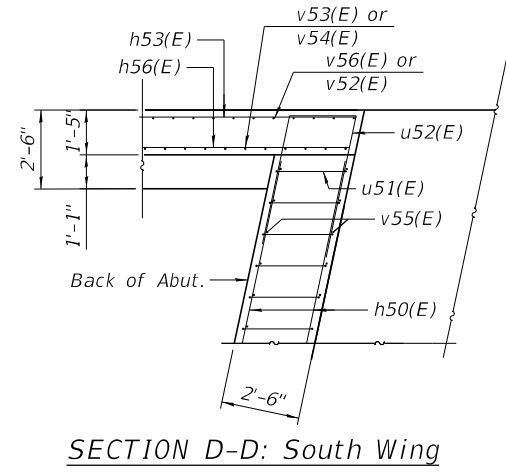
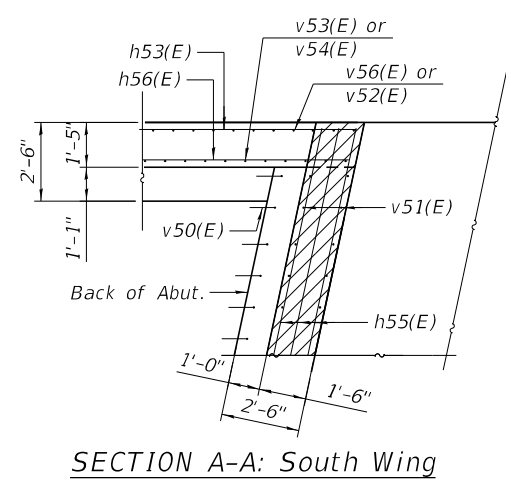
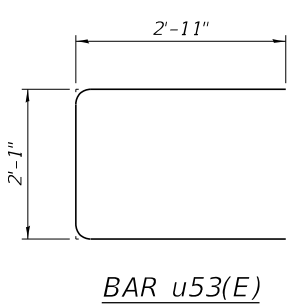
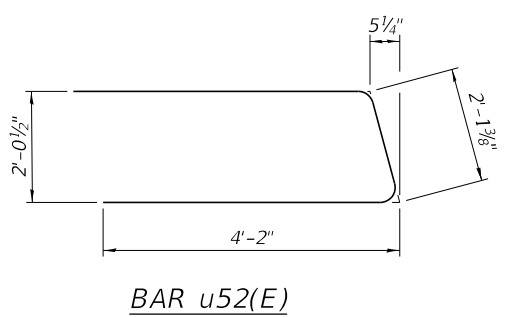
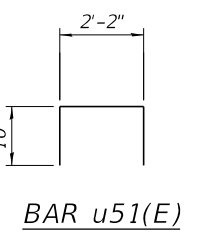
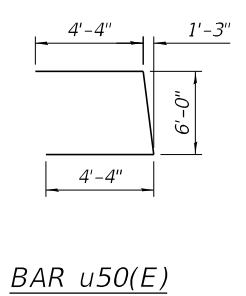
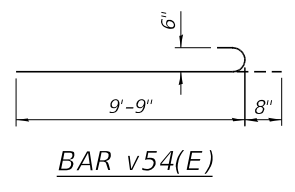
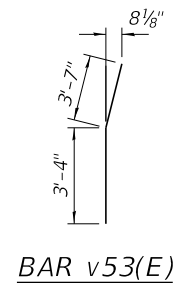
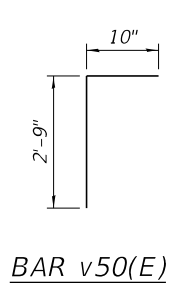
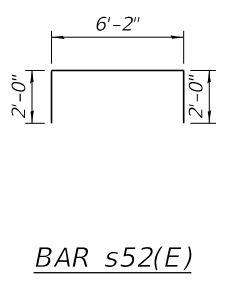
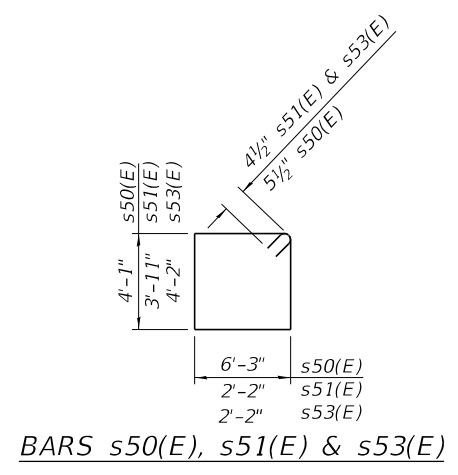
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**STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION**

**EAST ABUTMENT DETAILS AND BOM
 STRUCTURE NO. 060-0351 (WB)**

SHEET 166 OF 288 SHEETS

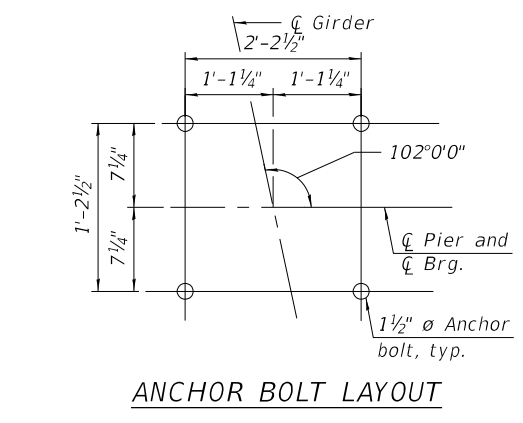
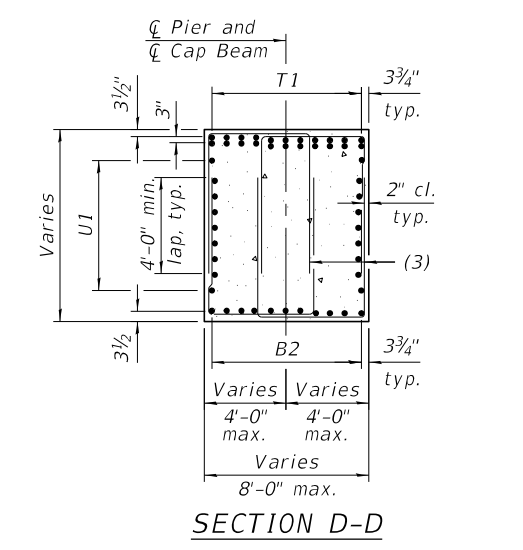
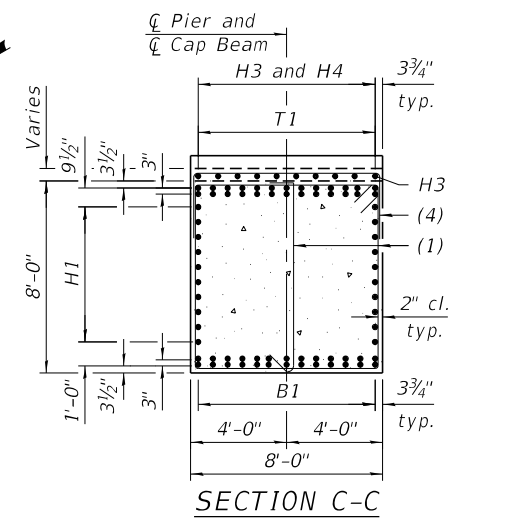
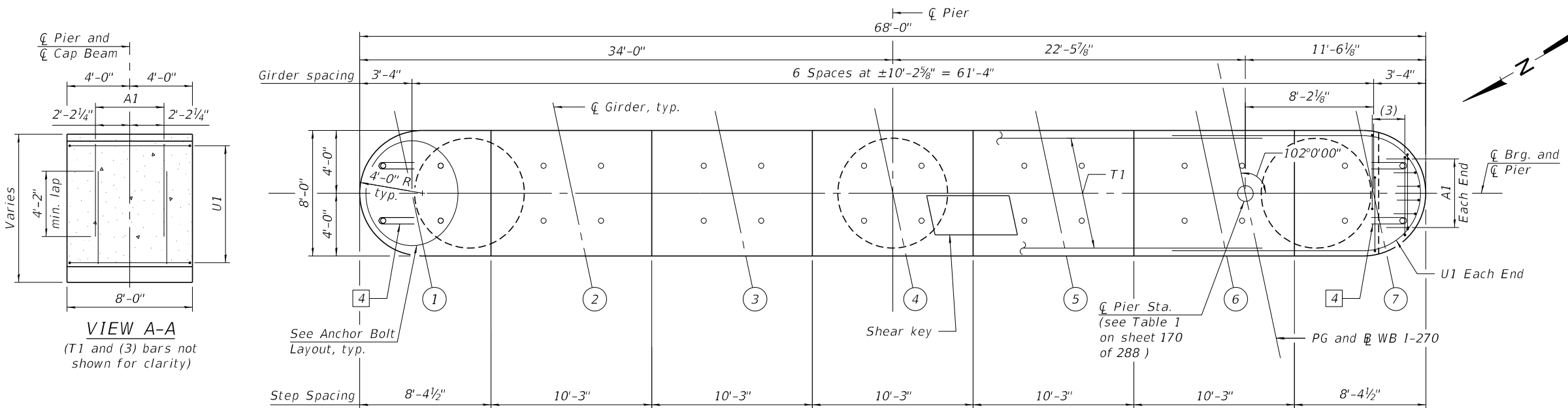
F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	671
			CONTRACT NO. 76190	
			ILLINOIS FED. AID PROJECT	



**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	18'-2"	—
h55(E)	5	#6	59'-9"	—
h56(E)	15	#4	17'-7"	—
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'-5"	□
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'-5"	—
v55(E)	116	#5	10'-2"	—
v56(E)	56	#5	11'-4"	—
Structure Excavation		Cu. Yd.	80	
Concrete Structures		Cu. Yd.	134.6	
Reinforcement bars, Epoxy Coated		Pound	11,970	
Furnishing Steel Piles HP 12x63		Foot	2,100	
Driving Piles		Foot	2,100	
Test Pile Steel HP 12x63		Each	1	
Pile Shoes		Each	20	
Temporary Sheet Piling		Sq. Ft.	1,575	
Concrete Sealer		Sq. Ft.	1,072	
Concrete Encasement		Cu. Yd.	7.0	

Note:
 For details of HP Piles and Concrete Encasement, see sheet 241 of 288.



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

TOP PLAN

PART ELEVATION
(Looking East)

SECTION B-B

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

- [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 171 and 172 of 288.
For column height, step height and all elevations, see Table 1 on sheet 170 of 288.
For bearing details, see sheet 154 of 288.
For bar callouts and shear key details, see sheet 170 of 288.

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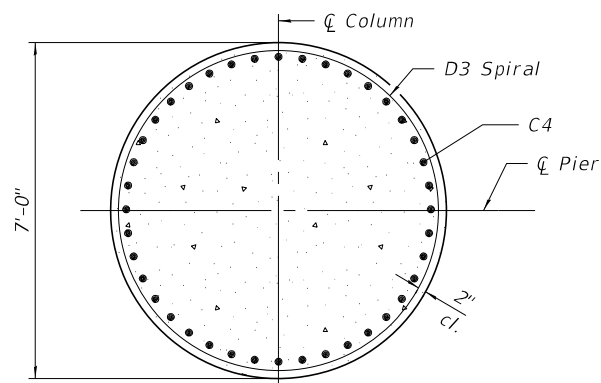
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PIER 1 AND 2 PLAN AND ELEVATION - 1
STRUCTURE NO. 060-0351 (WB)

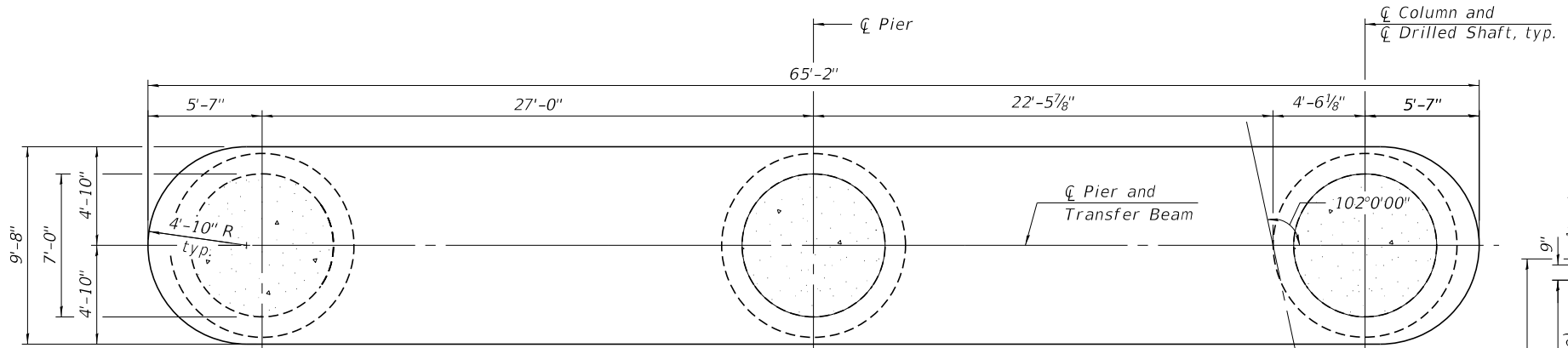
SHEET 167 OF 288 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	672
CONTRACT NO. 76190				

ILLINOIS FED. AID PROJECT

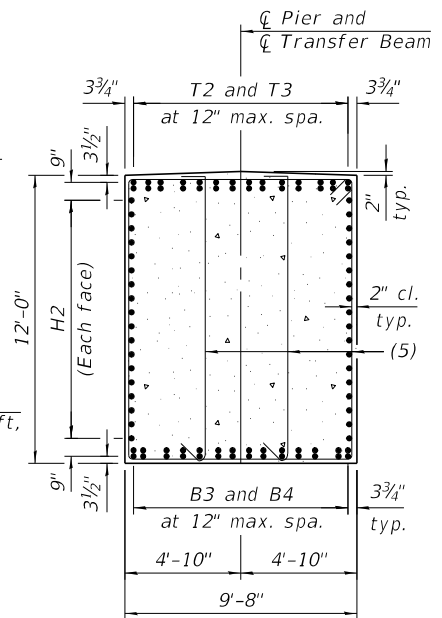
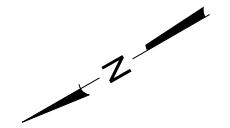


SECTION E-E



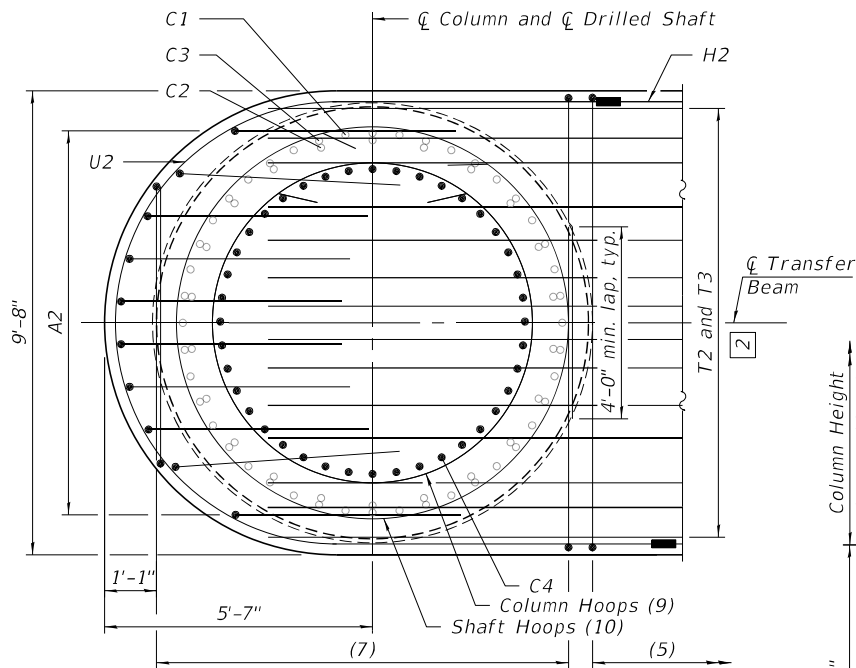
PLAN - TRANSFER BEAM

PG and WB 1-270

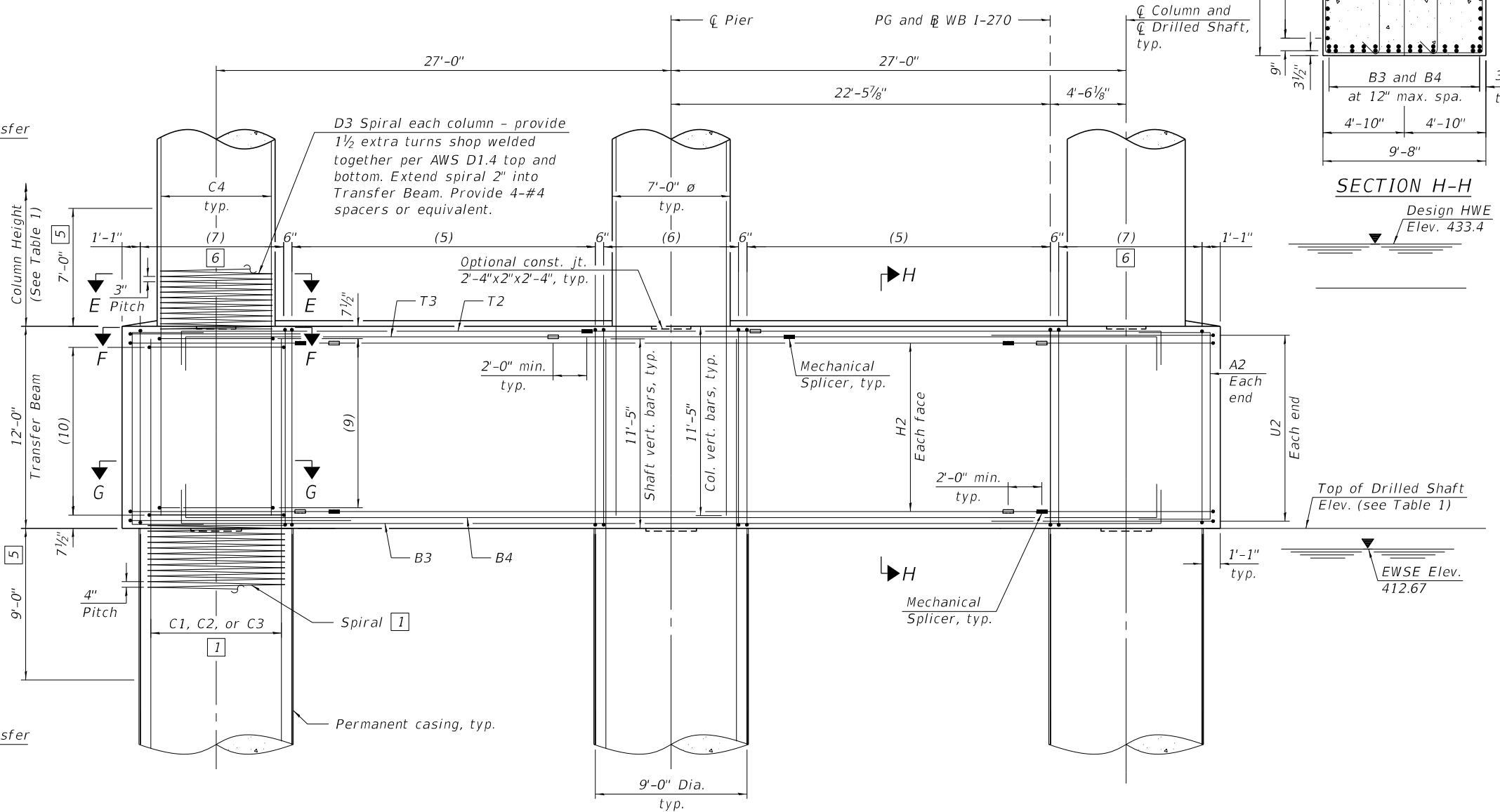


SECTION H-H

Design HWE
Elev. 433.4

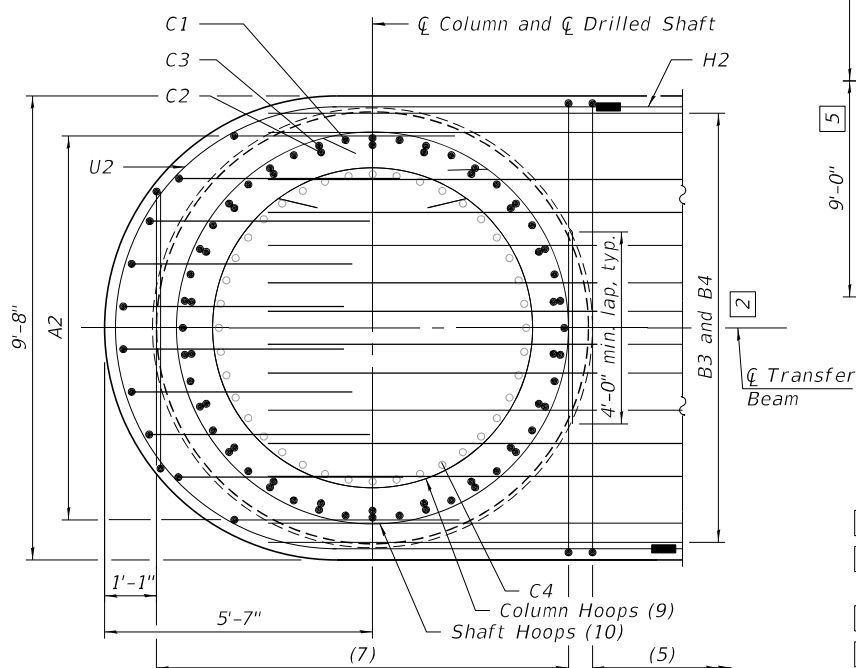


SECTION F-F



PART ELEVATION - TRANSFER BEAM

(Looking East)



SECTION G-G

- 1 See sheet 169 of 288 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 167 of 288.
For Drilled Shaft details, see sheet 169 of 288.
For additional notes, bar details, and Bill of Material, see sheets 171 and 172 of 288.
For Table 1, see sheet 170 of 288.
For Mechanical Splicer details, see sheet 242 of 288.

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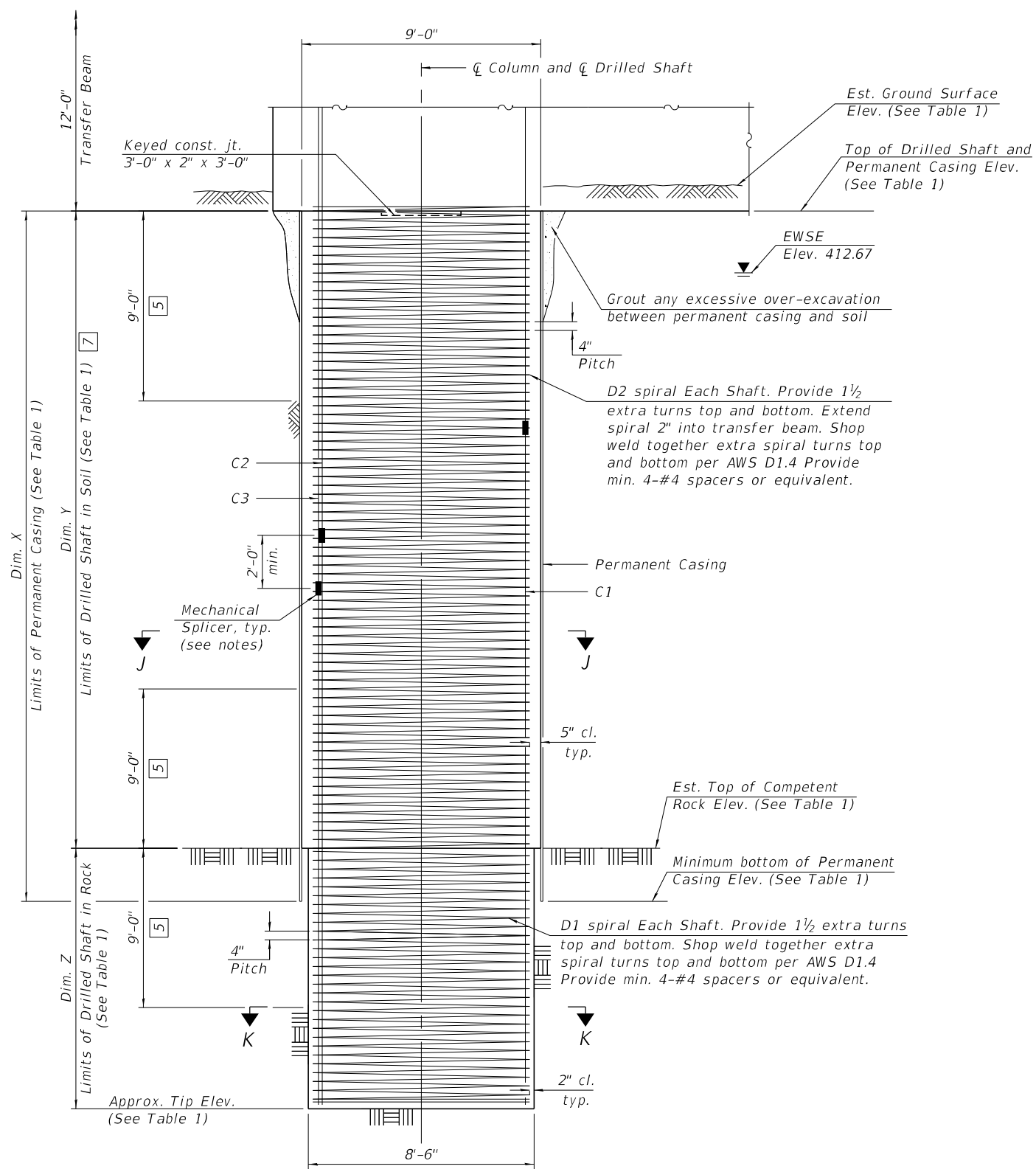
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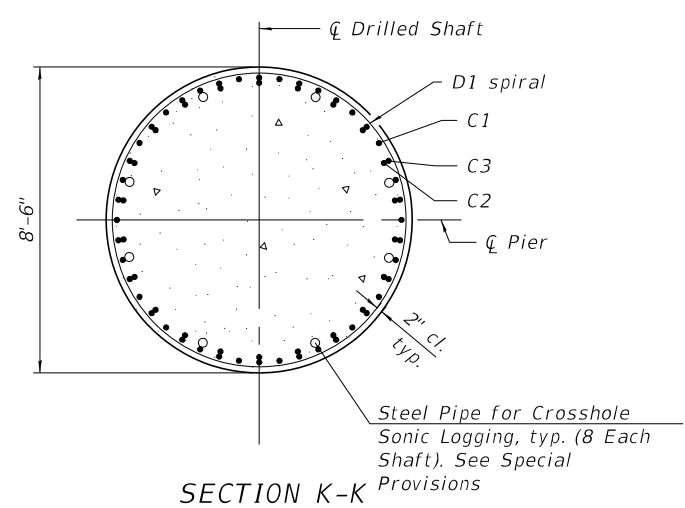
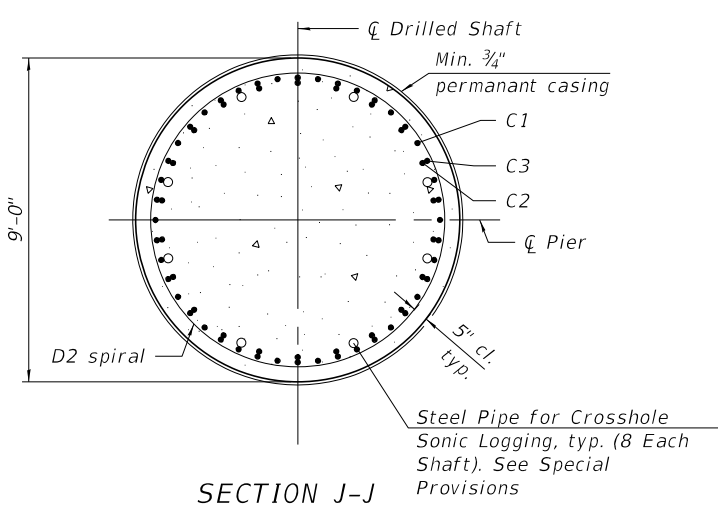
PIER 1 AND 2 PLAN AND ELEVATION - 2
STRUCTURE NO. 060-0351 (WB)

SHEET 168 OF 288 SHEETS

F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	673
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 167 of 288.
 For Transfer Beam details, see sheet 168 of 288.
 For additional notes, bar details, and Bill of Material, see sheets 171 and 172 of 288.
 For Table 1, see sheet 170 of 288.
 For Mechanical Splicer details, see sheet 242 of 288.

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**STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION**

**PIER 1 AND 2 PLAN AND ELEVATION - 3
 STRUCTURE NO. 060-0351 (WB)**

SHEET 169 OF 288 SHEETS

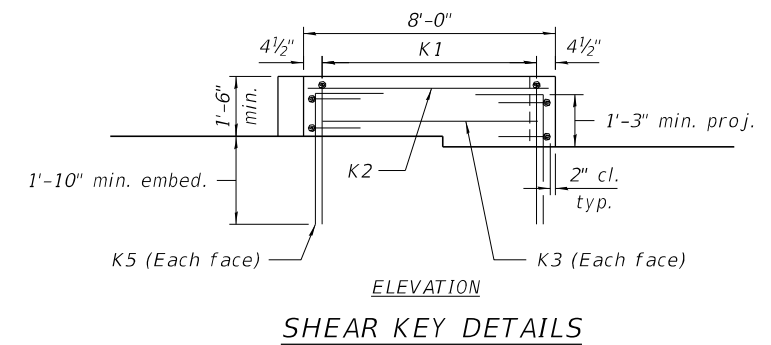
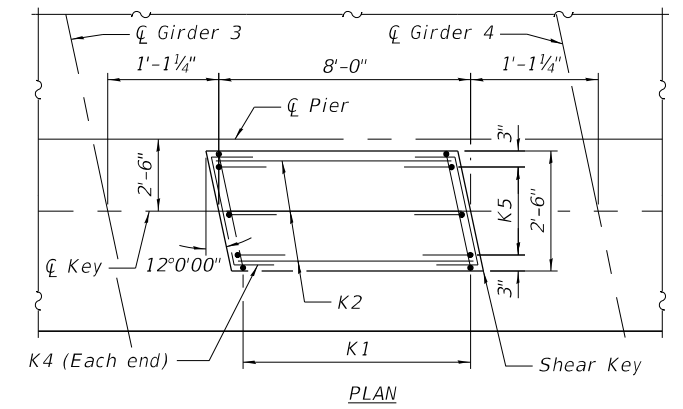
F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	674
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				

TABLE 1

	Pier 1	Pier 2	
☐ Pier Station	2781+26.48	2782+73.15	
Bearing Seat Elevation	Girder 1	445.88	446.61
	Girder 2	446.07	446.80
	Girder 3	446.26	446.99
	Girder 4	446.45	447.18
	Girder 5	446.64	447.37
	Girder 6	446.43	447.16
	Girder 7	446.21	446.95
Top of Cap Elevation	445.88	446.61	
Bottom of Cap Elevation	437.88	438.61	
Column Height	7'-5 ³ / ₈ "	5'-2 ¹ / ₂ "	
Top of Shaft Elevation	418.40	421.40	
Approx. Tip Elevation	360.10	357.90	
Est. Ground Surface Elevation	419.40	422.40	
Est. Top of Rock Elevation	385.60	383.40	
Min. bott. of Permanent Casing Elev.	383.60	381.40	
Dim. X	34'-9 ⁵ / ₈ "	40'-0"	
Dim. Y	32'-9 ⁵ / ₈ "	38'-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 / ₄ "	2 ¹ / ₄ "
S4	2 ¹ / ₄ "	2 ¹ / ₄ "
S5	2 ¹ / ₂ "	2 ¹ / ₂ "
S6	2 ⁵ / ₈ "	2 ⁵ / ₈ "



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) (top) Bundle 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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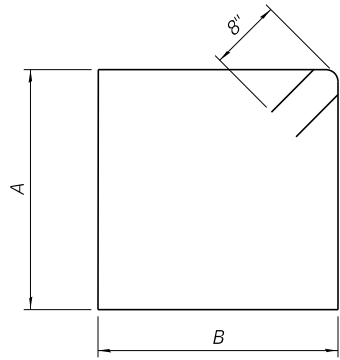
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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

PIER 1 AND 2 REINFORCEMENT TABLES - 1
STRUCTURE NO. 060-0351 (WB)

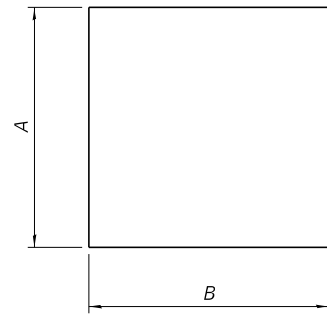
SHEET 170 OF 288 SHEETS

F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	675
CONTRACT NO. 76J90				
ILLINOIS FED. AID PROJECT				



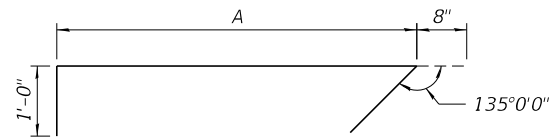
BARS s101(E) & s103(E)
BARS s201(E) & s203(E)

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



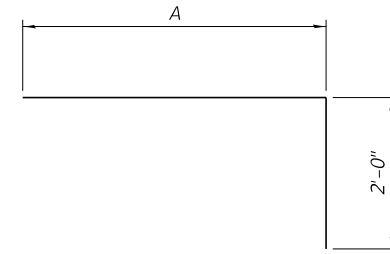
BARS s102(E), s104(E), AND s107(E)
BARS s202(E), s204(E), AND s207(E)

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"



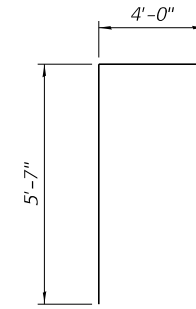
BARS s105(E) & s106(E)
BARS s205(E) & s206(E)

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

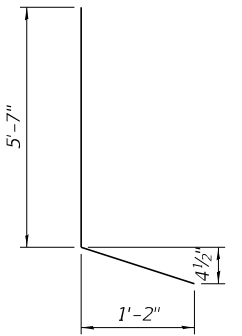


BARS p101(E) & p102(E)
BARS p105(E) & p106(E)
BARS p107(E) & p108(E)
BARS p201(E) & p202(E)
BARS p205(E) & p206(E)
BARS p207(E) & p208(E)

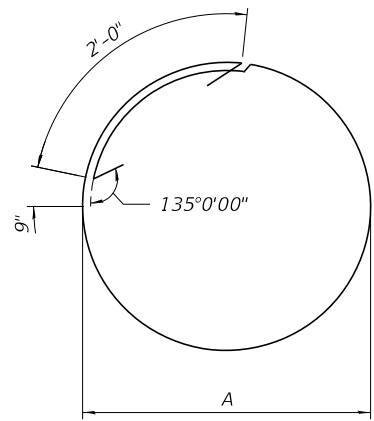
Bars	A
p101(E) & p201(E)	24'-0"
p102(E) & p202(E)	53'-0"
p105(E) & p205(E)	34'-3"
p106(E) & p206(E)	23'-3"
p107(E) & p207(E)	33'-9"
p108(E) & p208(E)	22'-9"



BARS u103(E)
BARS u203(E)

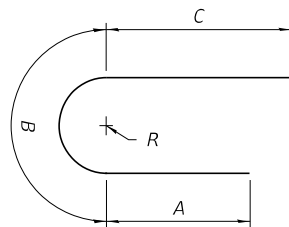


BARS u104(E)
BARS u204(E)



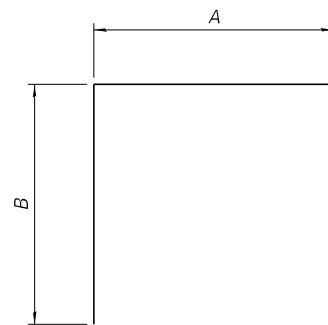
BARS hp101(E) & hp102(E)
BARS hp201(E) & hp202(E)

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



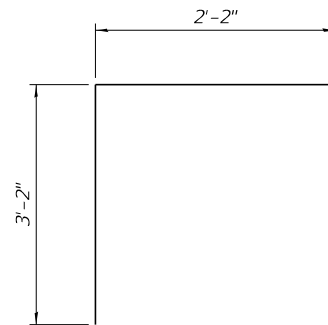
BARS u101(E) & u102(E)
BARS u201(E) & u202(E)

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"

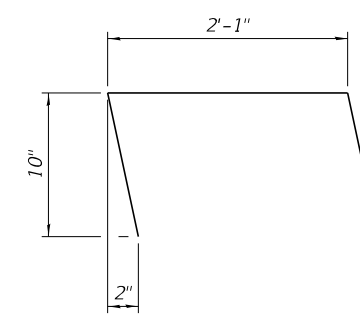


BARS u105(E) & u205(E)
BARS s108(E) & s208(E)

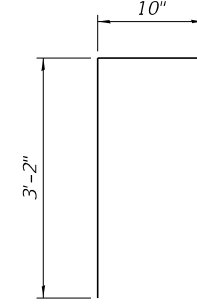
Bars	A	B
u105(E) & u205(E)	11'-6"	4'-7"
s108(E) & s208(E)	7'-8"	2'-9"



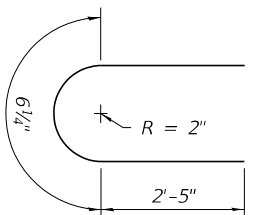
BARS s109(E)
BARS s209(E)



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	33'-0"	ㄨㄨㄨ
** sp103(E)	3	#7	7'-10"	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	24'-7"	————
v103(E)	66	#14	42'-6"	————
v104(E)	66	#14	27'-1"	————
v105(E)	66	#14	40'-0"	————
v106(E)	66	#14	29'-7"	————
v107(E)	120	#11	26'-5"	————

** Length is height of spiral.

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

Structure Excavation	Cu. Yd.	35
Concrete Structures	Cu. Yd.	470.2
Reinforcement Bars, Epoxy Coated	Pound	245,890
Permanent Casing	Foot	105
Drilled Shaft in Soil	Cu. Yd.	232
Drilled Shaft in Rock	Cu. Yd.	161
Crosshole Sonic Logging Access Ducts	Foot	175
Crosshole Sonic Logging Testing	Each	3
Thermal Integrity Profile Testing	Each	0
Thermal Integrity Profile Data Collection	Foot	175

**PIER 2
BILL OF MATERIAL**

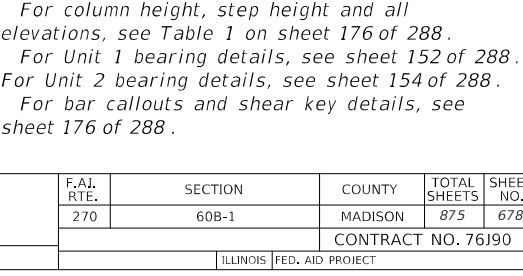
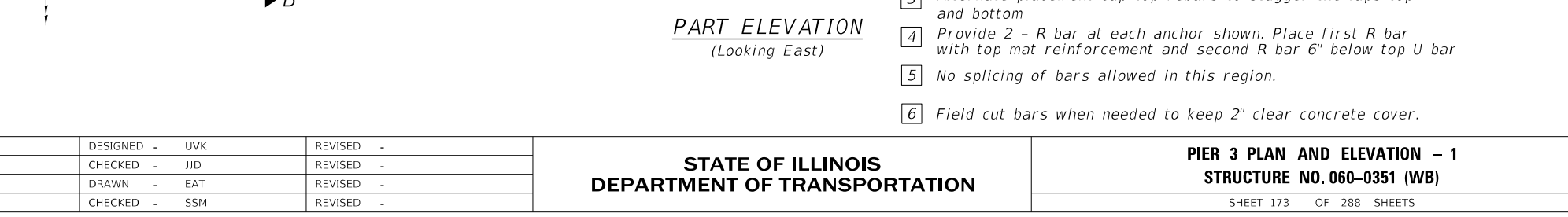
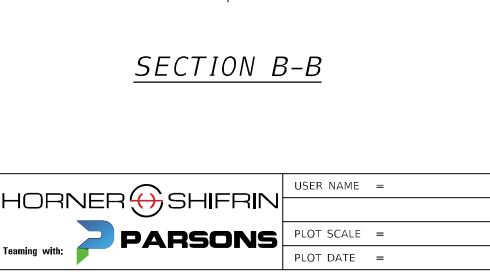
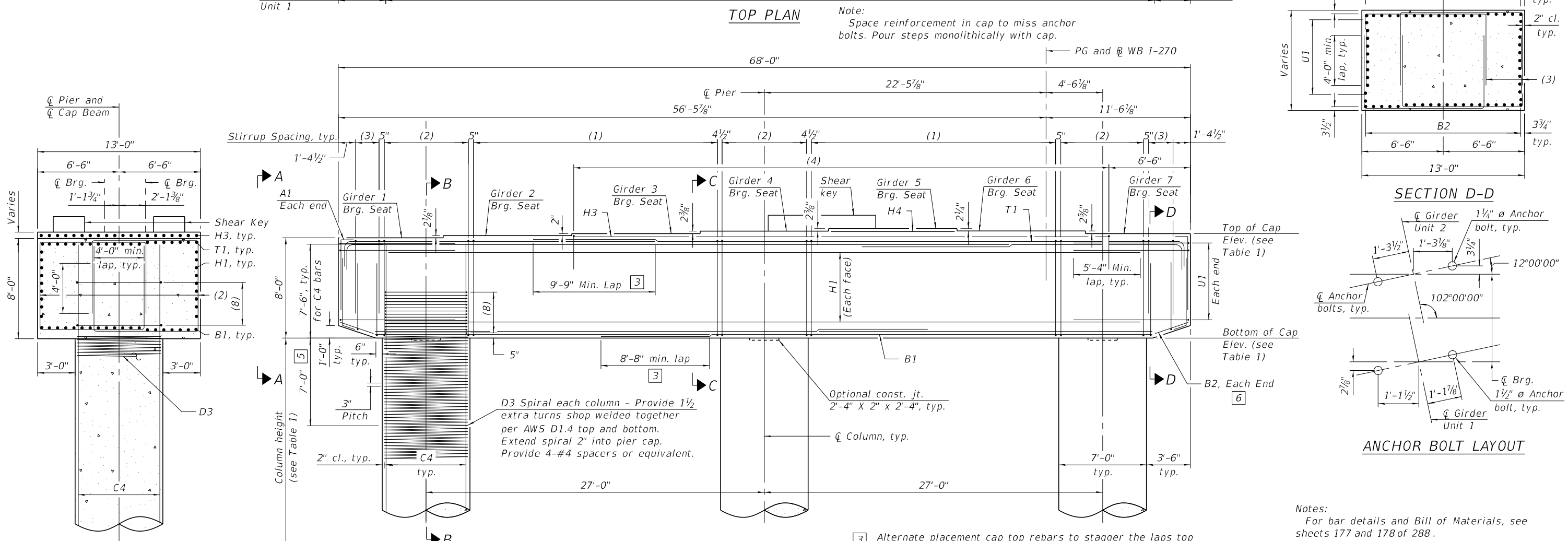
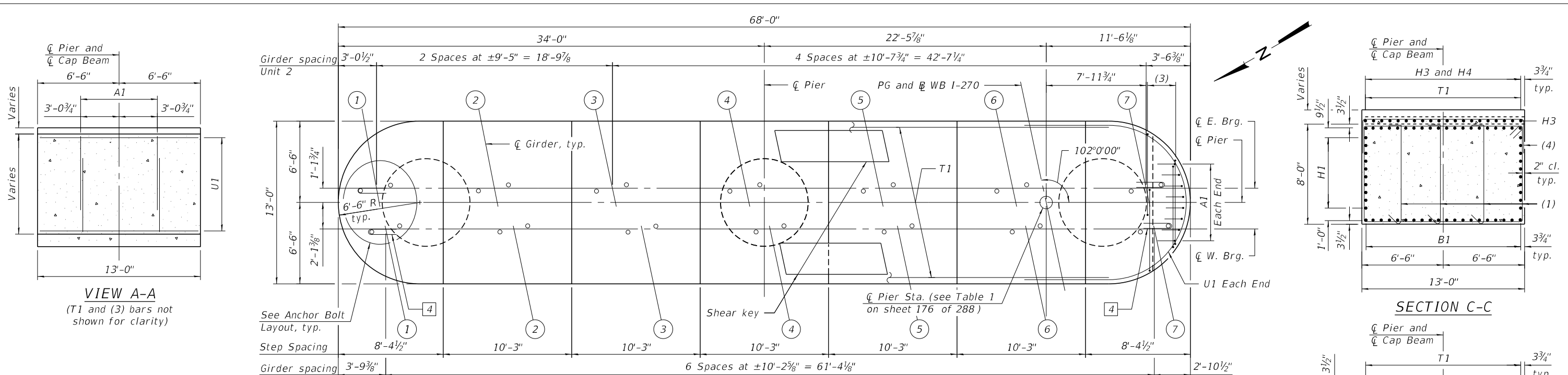
Bar	No.	Size	Length	Shape
h201(E)	20	#8	60'-0"	————
h202(E)	36	#9	42'-0"	————
h203(E)	13	#6	45'-0"	————
h204(E)	13	#6	9'-11"	————
h205(E)	5	#5	7'-8"	————
h206(E)	4	#5	3'-9"	┌┐
hp201(E)	99	#7	29'-2"	○
hp202(E)	174	#7	24'-5"	○
n201(E)	6	#5	4'-0"	┌
p201(E)	26	#11	26'-0"	┌
p202(E)	26	#11	55'-0"	┌
p203(E)	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	38'-2"	ㄨㄨㄨ
** sp203(E)	3	#7	5'-7"	ㄨㄨㄨ
u201(E)	22	#8	22'-5"	└
u202(E)	36	#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	29'-9"	————
v203(E)	66	#14	42'-6"	————
v204(E)	66	#14	32'-3"	————
v205(E)	66	#14	40'-0"	————
v206(E)	66	#14	34'-9"	————
v207(E)	120	#11	24'-2"	————

** Length is height of spiral.

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

Structure Excavation	Cu. Yd.	35
Concrete Structures	Cu. Yd.	460.6
Reinforcement Bars, Epoxy Coated	Pound	253,190
Permanent Casing	Foot	120
Drilled Shaft in Soil	Cu. Yd.	269
Drilled Shaft in Rock	Cu. Yd.	161
Crosshole Sonic Logging Access Ducts	Foot	191
Crosshole Sonic Logging Testing	Each	3
Thermal Integrity Profile Testing	Each	1
Thermal Integrity Profile Data Collection	Foot	191

Note:
For bar details, see sheet 171 of 288.



Notes:
 For bar details and Bill of Materials, see sheets 177 and 178 of 288.
 For column height, step height and all elevations, see Table 1 on sheet 176 of 288.
 For Unit 1 bearing details, see sheet 152 of 288.
 For Unit 2 bearing details, see sheet 154 of 288.
 For bar callouts and shear key details, see sheet 176 of 288.

- 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.

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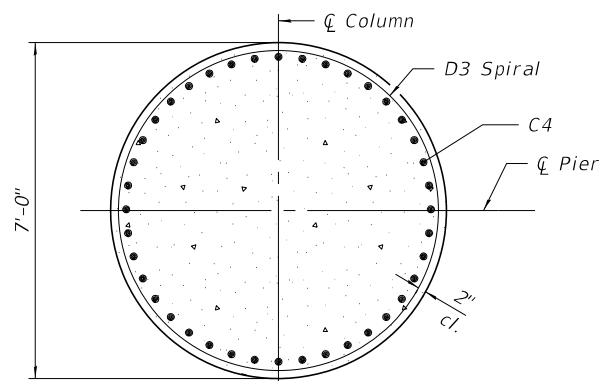
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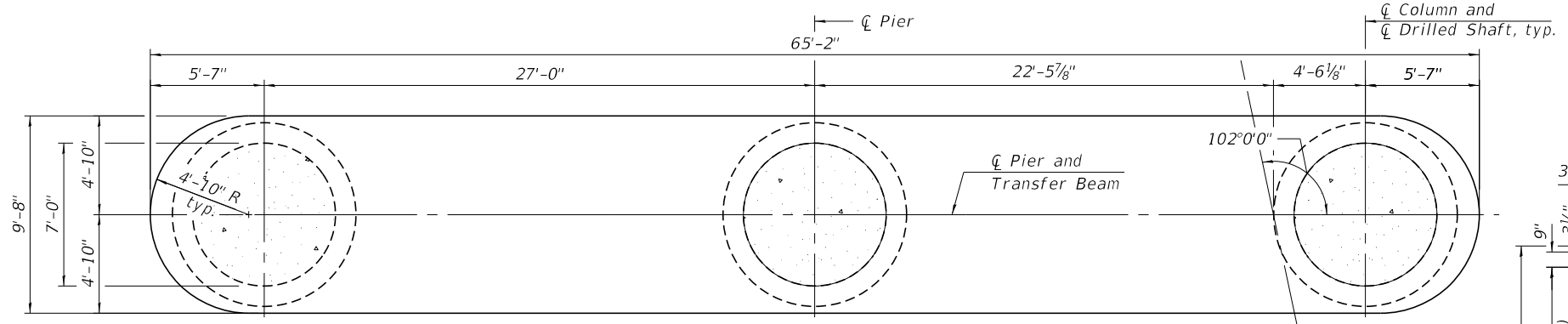
**PIER 3 PLAN AND ELEVATION - 1
STRUCTURE NO. 060-0351 (WB)**

SHEET 173 OF 288 SHEETS

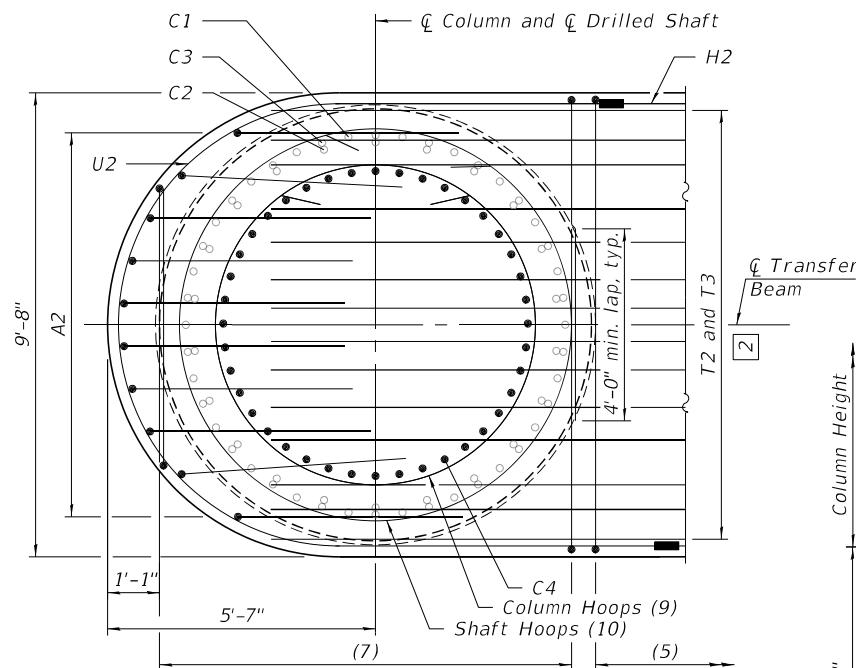
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	678
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				



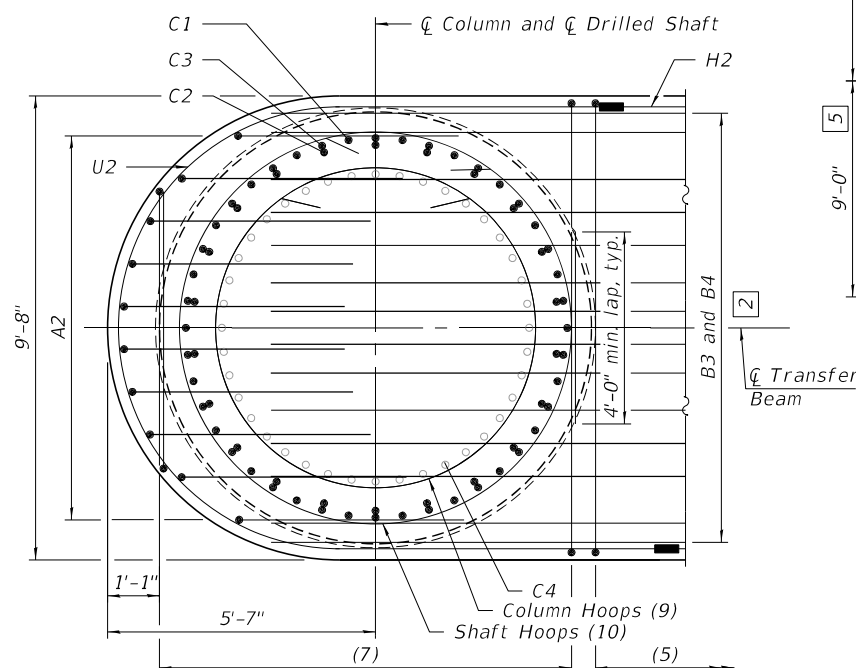
SECTION E-E



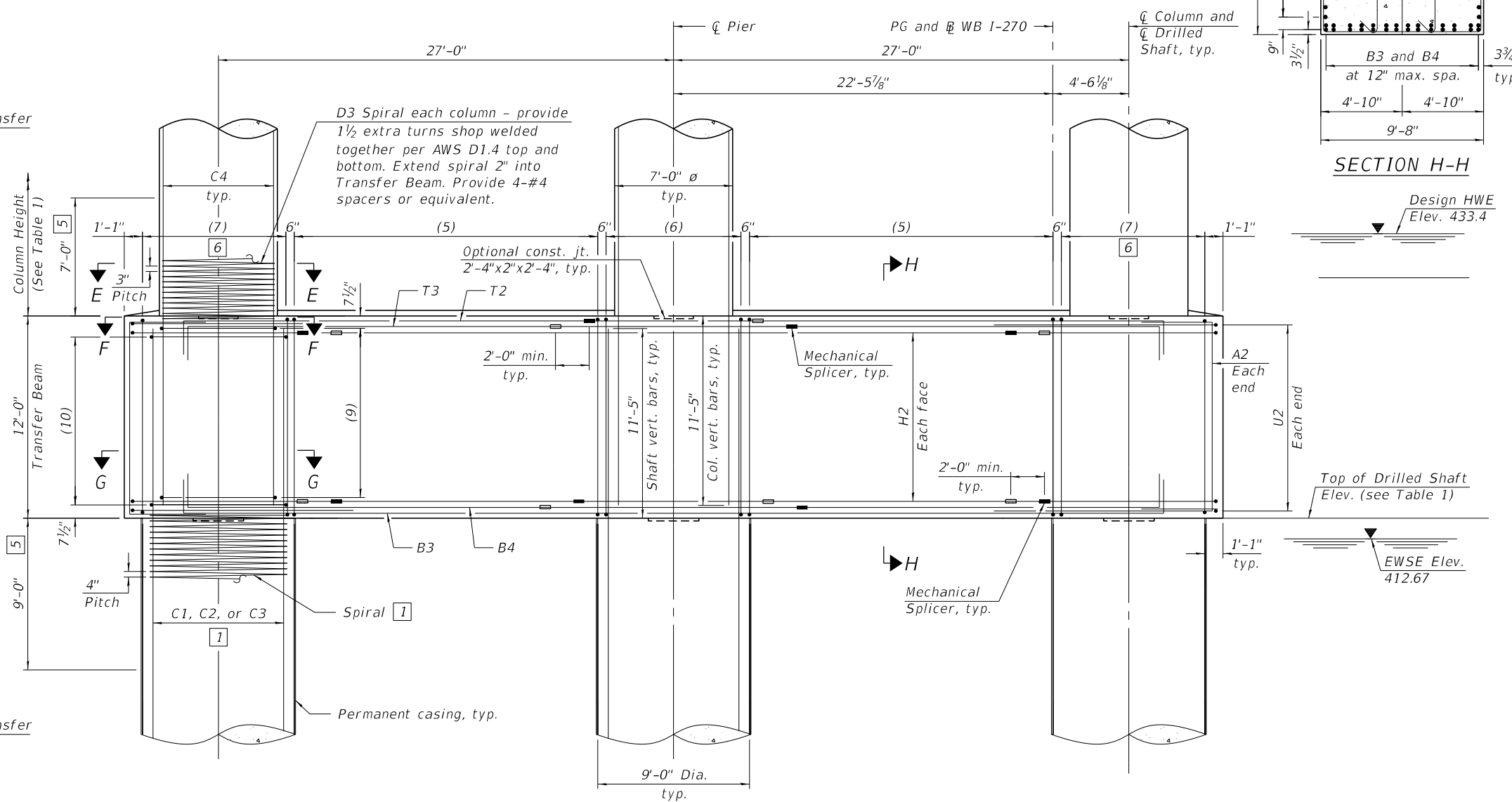
PLAN - TRANSFER BEAM



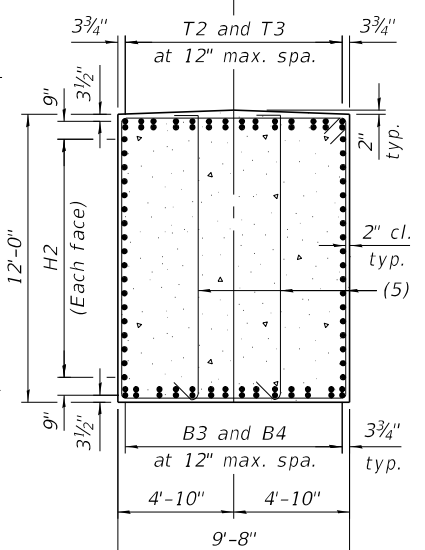
SECTION F-F



SECTION G-G



PART ELEVATION - TRANSFER BEAM
(Looking East)



SECTION H-H

- 1 See sheet 175 of 288 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 173 of 288.
 For Drilled Shaft details, see sheet 169 of 288.
 For additional notes, bar details, and Bill of Material, see sheets 177 and 178 of 288.
 For Table 1, see sheet 176 of 288.
 For Mechanical Splicer details, see sheet 242 of 288.

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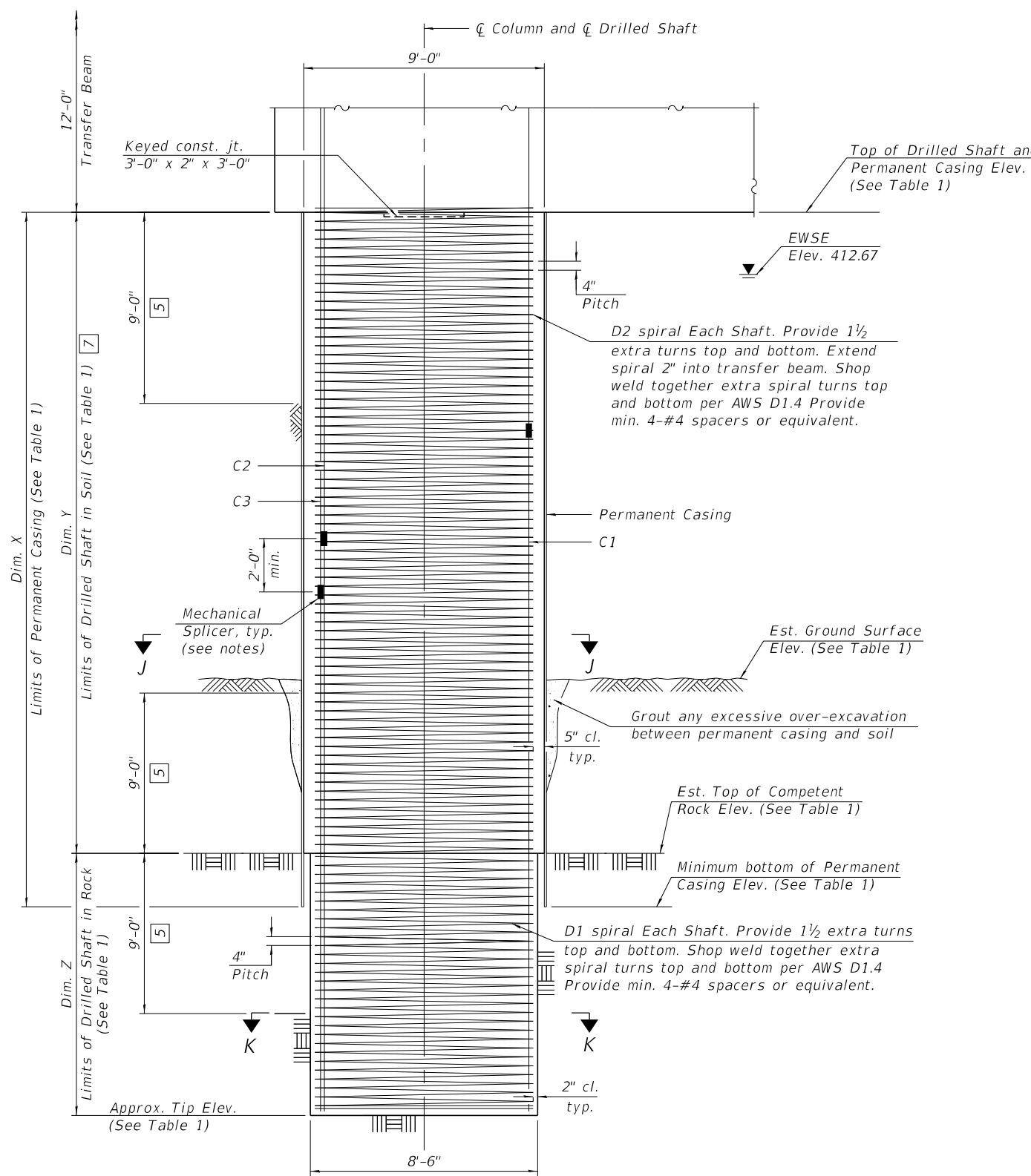
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STATE OF ILLINOIS
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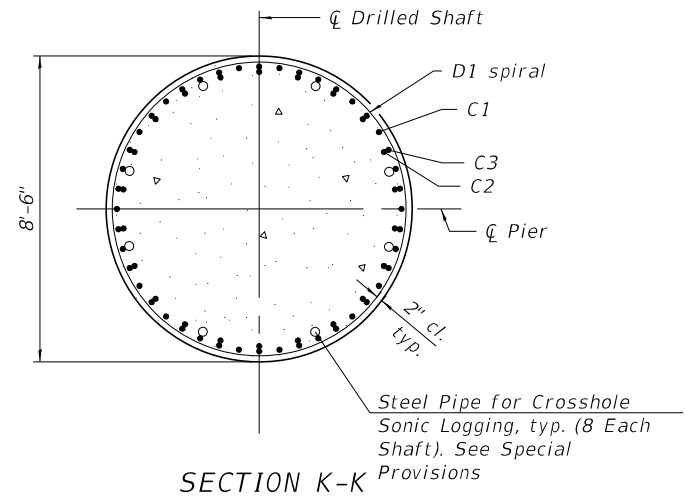
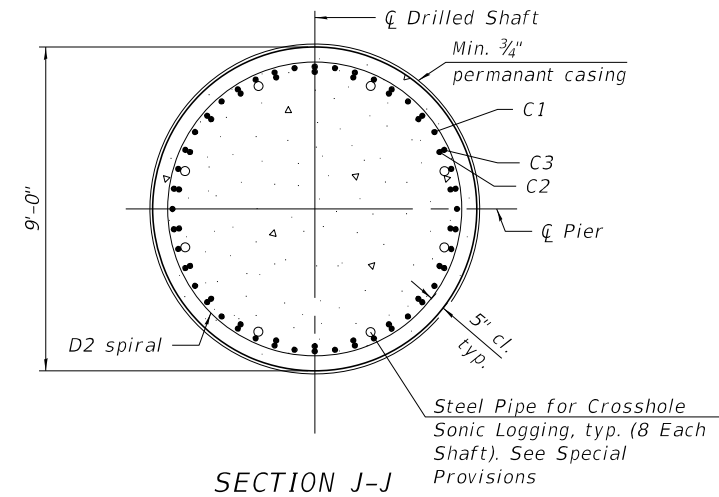
PIER 3 PLAN AND ELEVATION - 2
 STRUCTURE NO. 060-0351 (WB)

SHEET 174 OF 288 SHEETS

F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	679
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 173 of 288.
- For Transfer Beam details, see sheet 174 of 288.
- For additional notes, bar details, and Bill of Material, see sheets 177 and 178 of 288.
- For Table 1, see sheet 176 of 288.
- For Mechanical Splicer details, see sheet 242 of 288.

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PIER 3 PLAN AND ELEVATION - 3
STRUCTURE NO. 060-0351 (WB)

SHEET 175 OF 288 SHEETS

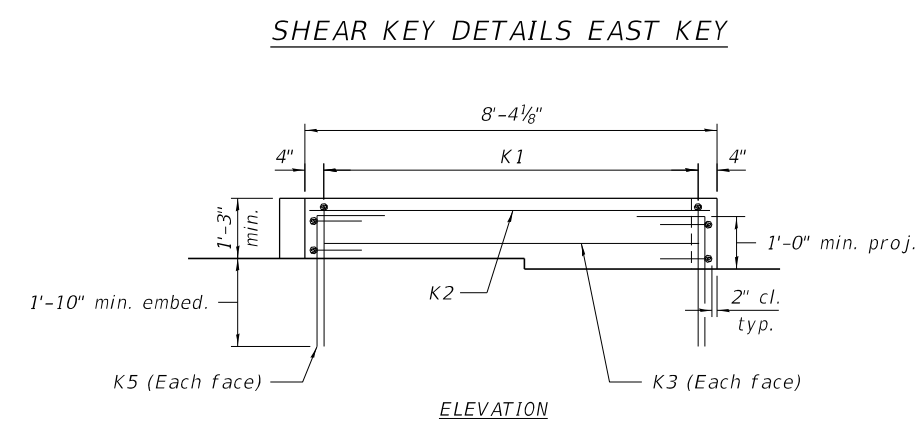
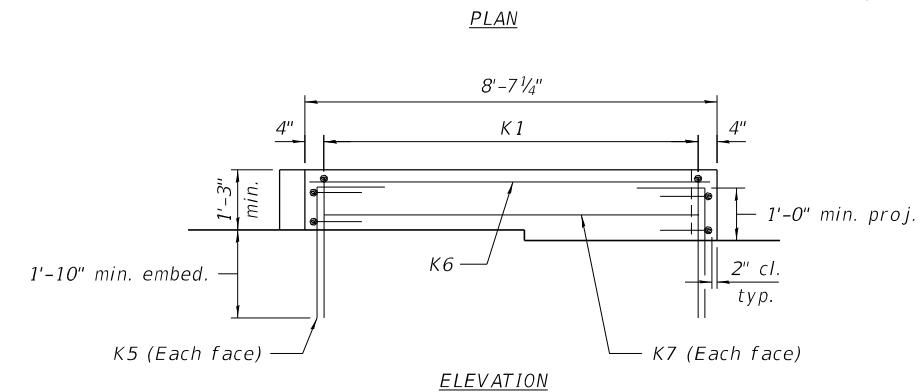
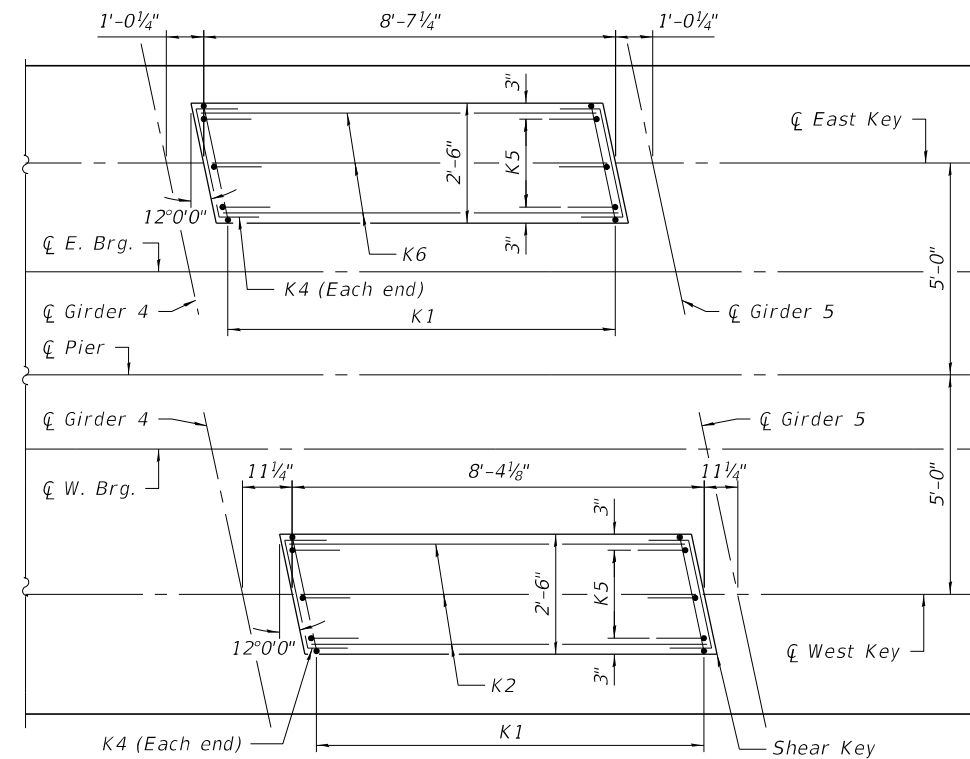
F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	680
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				

TABLE 1

		Pier 3
☐ Pier Station		2783+92.48
Bearing Seat Elevation	Girder 1	445.98
	Girder 2	446.16
	Girder 3	446.33
	Girder 4	446.53
	Girder 5	446.73
	Girder 6	446.54
	Girder 7	446.32
Top of Cap Elevation		445.98
Bottom of Cap Elevation		437.98
Column Height		10'-11 ³ / ₄ "
Top of Shaft Elevation		415.00
Approx. Tip Elevation		363.60
Est. Ground Surface Elevation		395.00
Est. Top of Rock Elevation		389.10
Min. bott. of Permanent Casing Elev.		387.10
Dim. X		27'-10 ³ / ₄ "
Dim. Y		25'-10 ³ / ₄ "
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 7 ³ / ₄ " cts.
T2	14 bundles of 1-#11 p305(E) and 1-#11 p306(E) at 12" max.
T3	14 bundles of 1-#11 p307(E) and 1-#11 p308(E) at 12" max.
B1	20-#11 p303(E) and p309(E) at 7 ³ / ₄ " cts.
B2	20-#7 p304(E) at 7 ³ / ₄ " cts.
B3	14 bundles of 1-#11 p305(E) and 1-#11 p306(E) at 12" max.
B4	14 bundles of 1-#11 p307(E) and 1-#11 p308(E) at 12" max.
H1	10-#8 h301(E) at 7 ¹ / ₂ " cts.
H2	18-#9 h302(E) at 7" cts.
H3	20-#6 h303(E) at abt. 7 ³ / ₄ " cts.
H4	20-#6 h304(E) at abt. 7 ³ / ₄ " cts.
A1	7 sets of 1-#7 u303(E) and 1-#7 u304(E) at 10 ¹ / ₂ " cts.
A2	10-#7 u305(E) at 10 ³ / ₄ " cts.
U1	11-#8 u301(E) spaced with h301(E) and p301(E)
U2	20-#9 u302(E) splice with h302(E) and space w/ 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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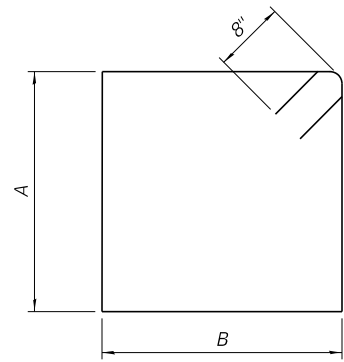
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	CHECKED - SSM	REVISED -

**STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION**

**PIER 3 REINFORCEMENT TABLE - 1
 STRUCTURE NO. 060-0351 (WB)**

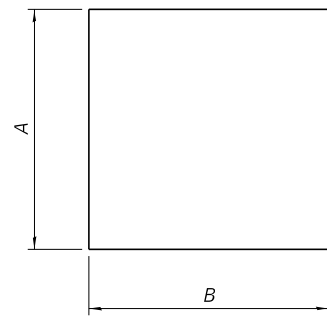
SHEET 176 OF 288 SHEETS

F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	681
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				



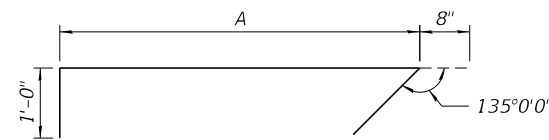
BARS s301(E) & s303(E)

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



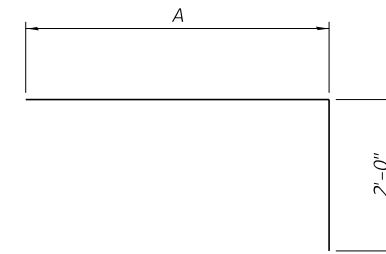
BARS s302(E), s304(E) & s307(E)

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



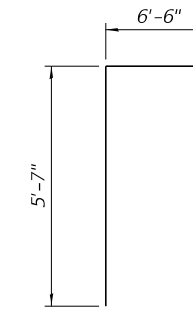
BARS s305(E) & s306(E)

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

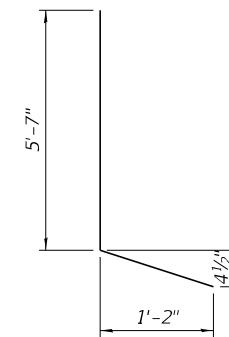


BARS p301(E) & p302(E)
BARS p305(E) & p306(E)
BARS p307(E) & p308(E)

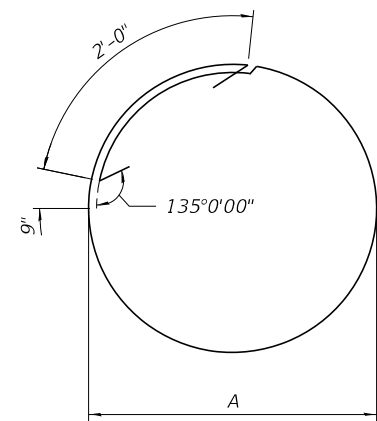
Bars	A
p301(E)	24'-0"
p302(E)	53'-0"
p305(E)	34'-3"
p306(E)	23'-3"
p307(E)	33'-9"
p308(E)	22'-9"



BARS u303(E)

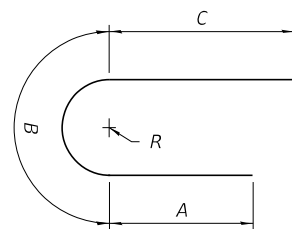


BARS u304(E)



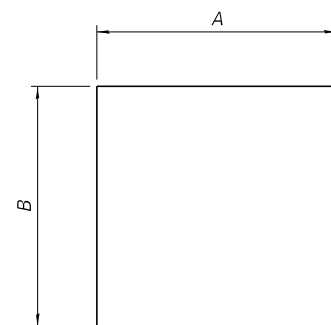
BARS hp301(E) & hp302(E)

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



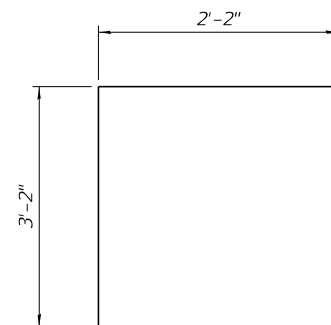
BARS u301(E) & u302(E)

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"

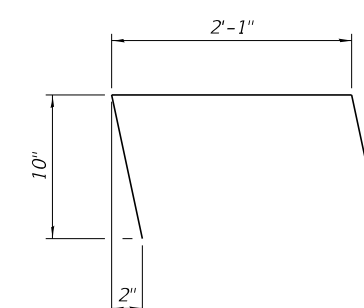


BARS u305(E) & s308(E)

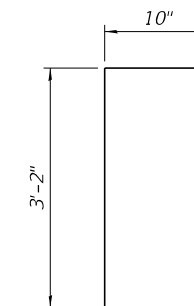
Bars	A	B
u305(E)	11'-6"	4'-7"
s308(E)	12'-8"	2'-9"



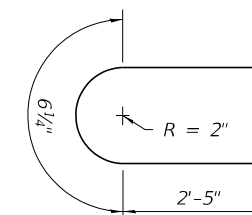
BARS s309(E)



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	45'-0"	————
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	26'-1"	∩∩∩
** sp303(E)	3	#7	11'-4"	∩∩∩
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	22'-8"	————
v303(E)	66	#14	37'-6"	————
v304(E)	66	#14	25'-2"	————
v305(E)	66	#14	35'-0"	————
v306(E)	66	#14	27'-8"	————
v307(E)	120	#11	29'-11"	————

** Length is height of spiral.

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

Concrete Structures	Cu. Yd.	584.2
Reinforcement Bars, Epoxy Coated	Pound	240,350
Permanent Casing	Foot	84
Drilled Shaft in Soil	Cu. Yd.	184
Drilled Shaft in Rock	Cu. Yd.	161
Concrete Sealer	Sq. Ft.	6,071
Crosshole Sonic Logging Access Ducts	Foot	155
Crosshole Sonic Logging Testing	Each	3
Thermal Integrity Profile Testing	Each	0
Thermal Integrity Profile Data Collection	Foot	155

Note:
For bar details, see sheet 177 of 288.

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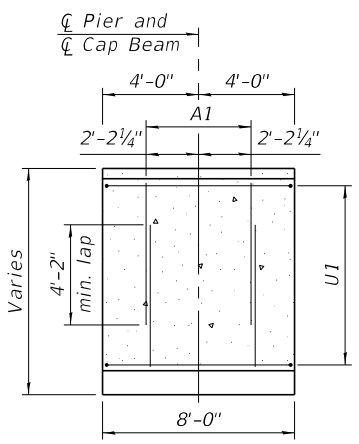
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**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

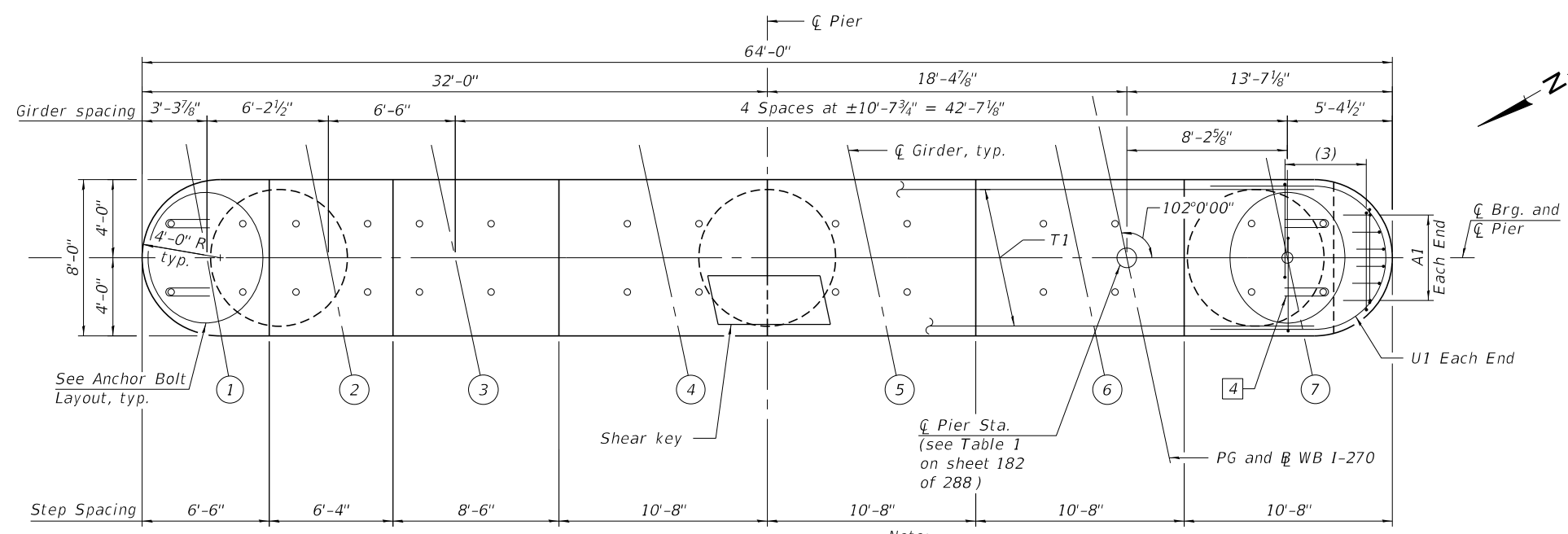
**PIER 3 BILL OF MATERIAL
STRUCTURE NO. 060-0351 (WB)**

SHEET 178 OF 288 SHEETS

F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	683
			CONTRACT NO. 76190	
			ILLINOIS FED. AID PROJECT	

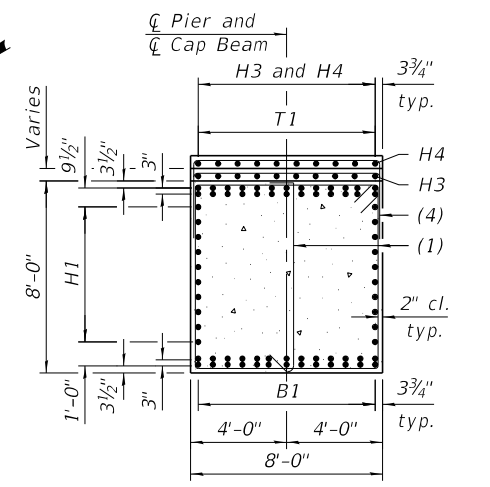


VIEW A-A
(T1 and (3) bars not shown for clarity)

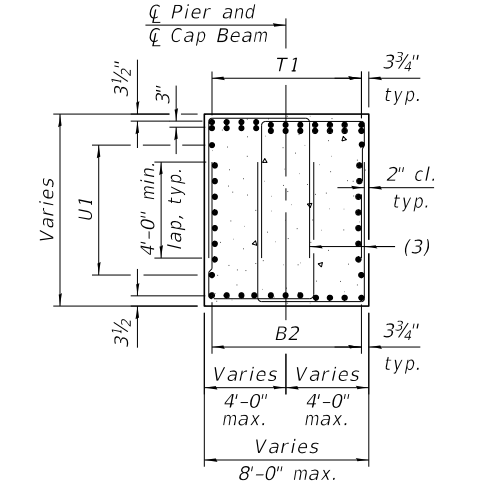


TOP PLAN

Note:
Space reinforcement in cap to miss anchor bolts. Pour steps monolithically with cap.
PG and \emptyset WB I-270



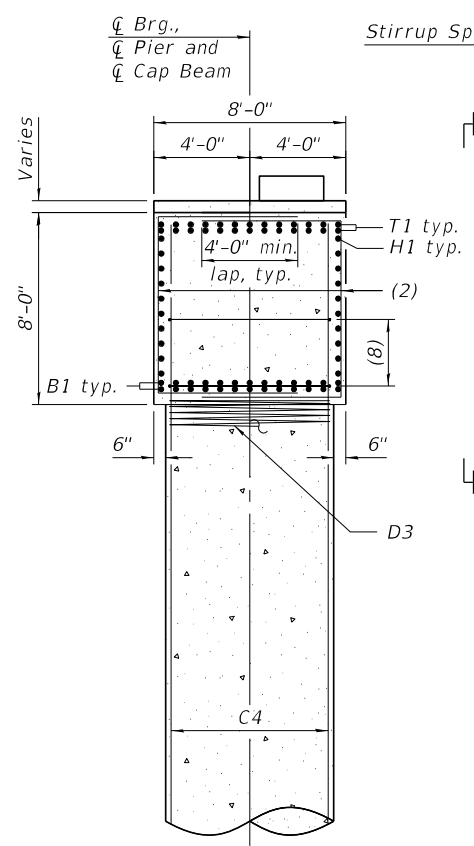
SECTION C-C



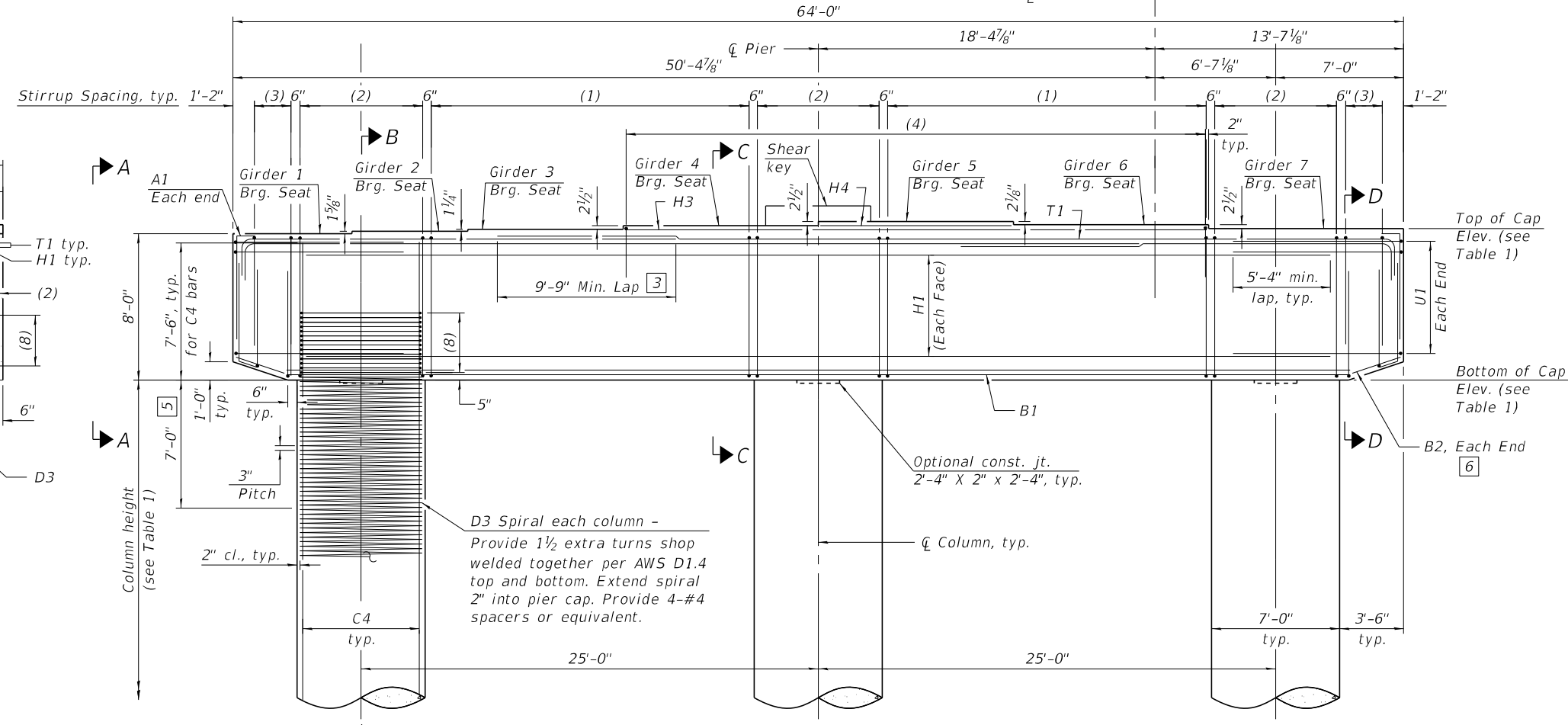
SECTION D-D

TABLE OF VARIABLE ANGLES

Location	Angle
Girder 1	100°20'24"
Girder 2	101°12'43"
Girder 3	102°00'00"
Girder 4	102°00'00"
Girder 5	102°00'00"
Girder 6	102°00'00"
Girder 7	102°00'00"



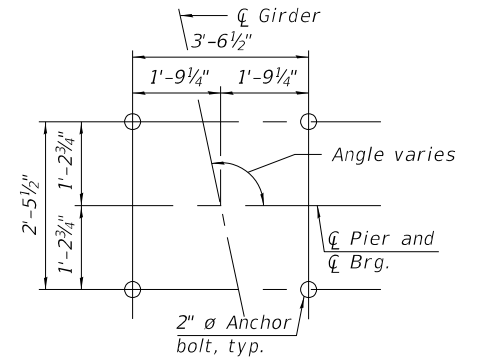
SECTION B-B



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 183 and 184 of 288.
For column height, step height and all elevations, see Table 1 on sheet 182 of 288.
For bearing details, see sheet 156 of 288.
For bar callouts and shear key details, see sheet 182 of 288.



ANCHOR BOLT LAYOUT

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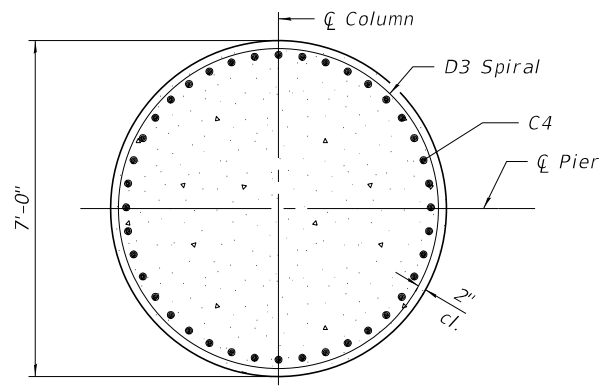
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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

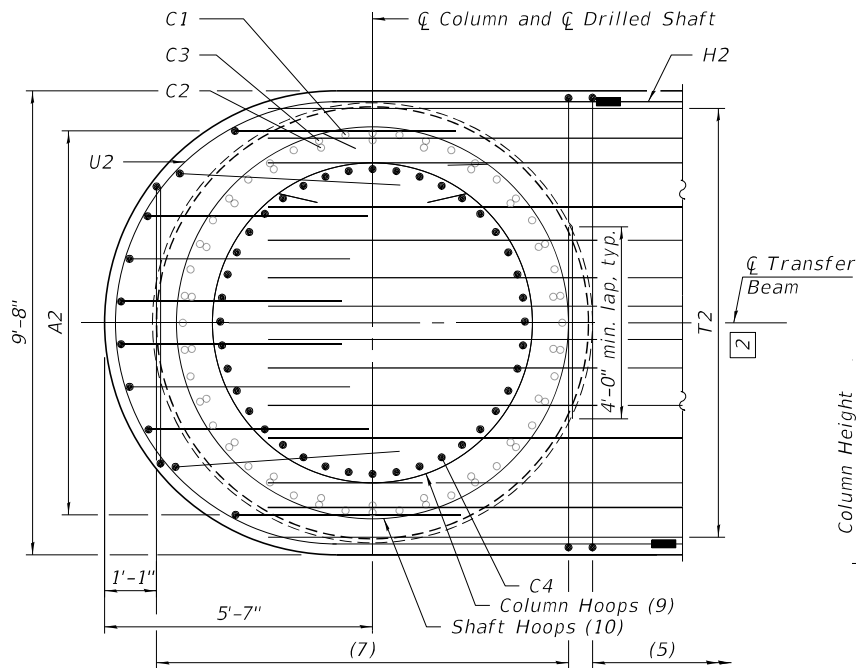
PIER 4 PLAN AND ELEVATION - 1
STRUCTURE NO. 060-0351 (WB)

SHEET 179 OF 288 SHEETS

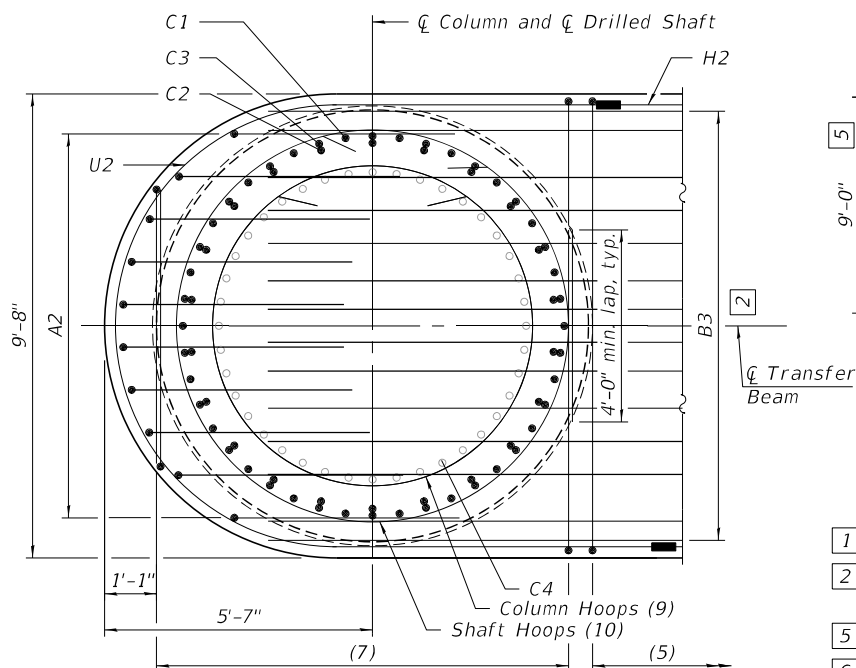
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	684
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				



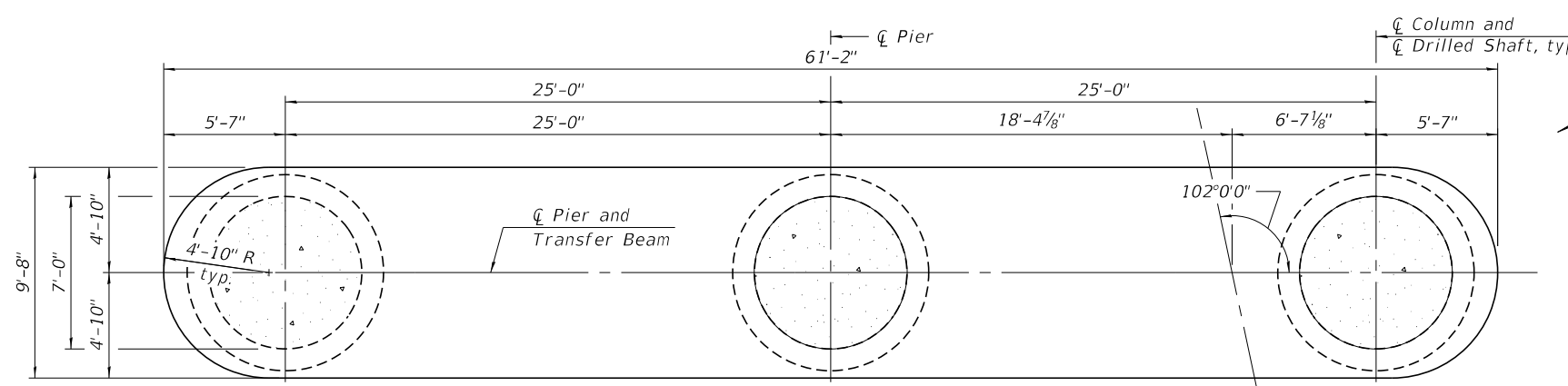
SECTION E-E



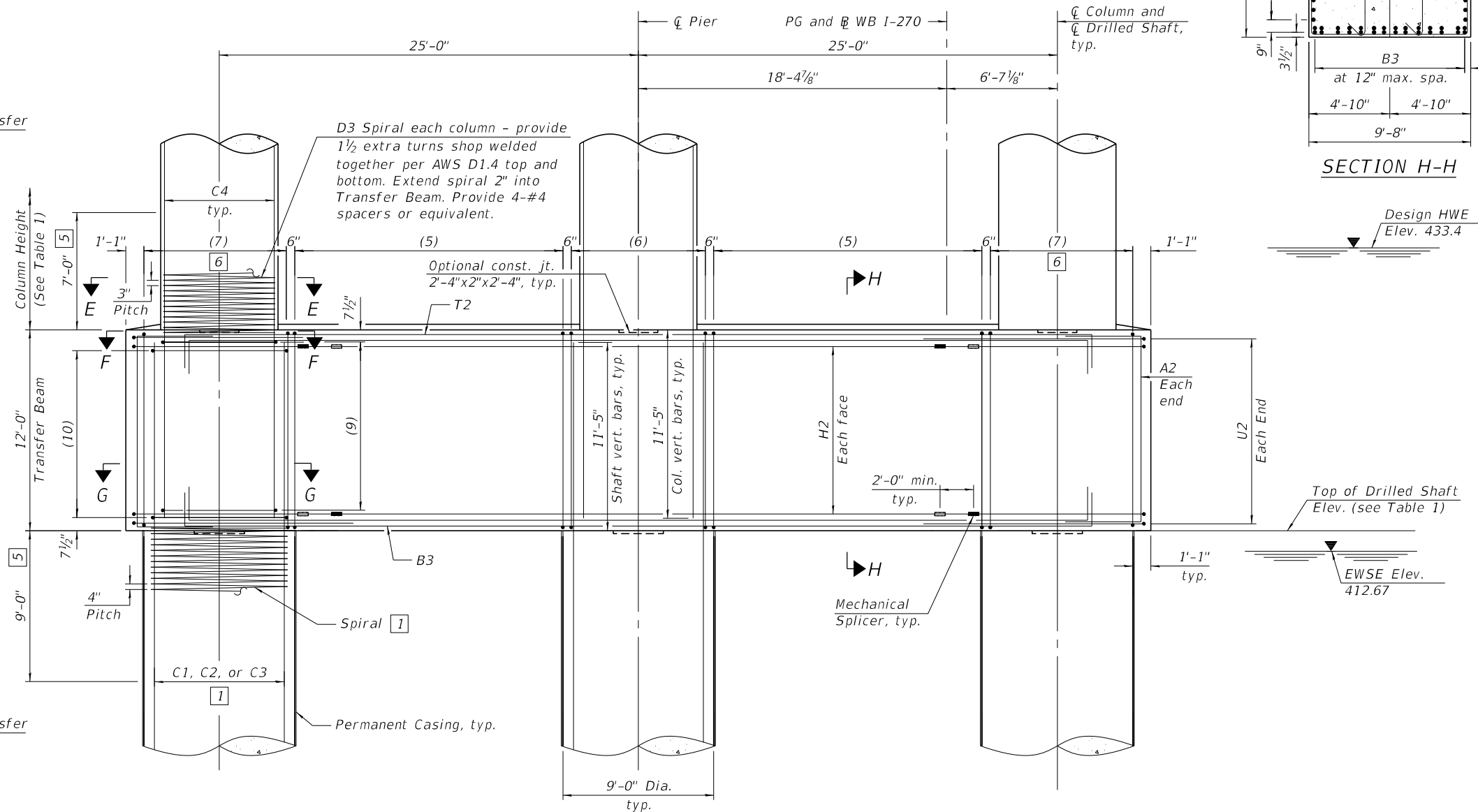
SECTION F-F



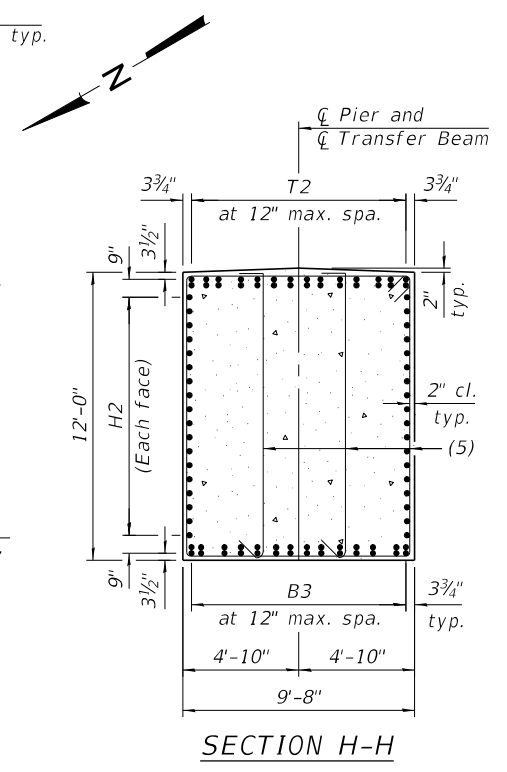
SECTION G-G



PLAN - TRANSFER BEAM



PART ELEVATION - TRANSFER BEAM
(Looking East)



SECTION H-H

- 1 See sheet 181 of 288 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 179 of 288.
 For Drilled Shaft details, see sheet 181 of 288.
 For additional notes, bar details, and Bill of Material, see sheets 183 and 184 of 288.
 For Table 1, see sheet 182 of 288.
 For Mechanical Splicer details, see sheet 242 of 288.

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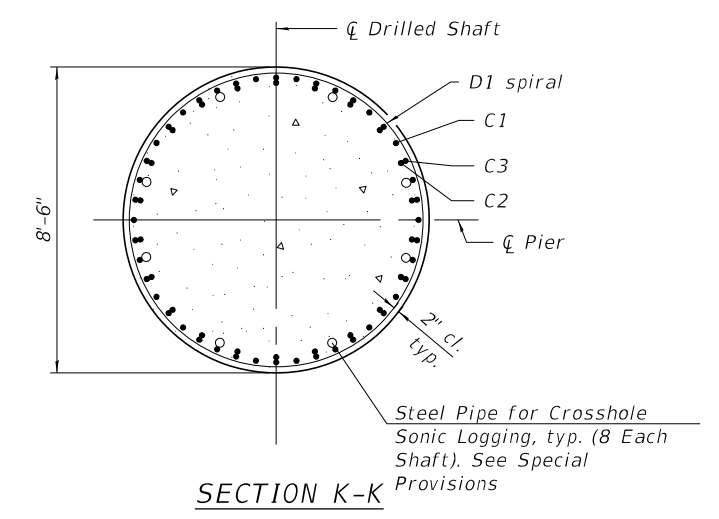
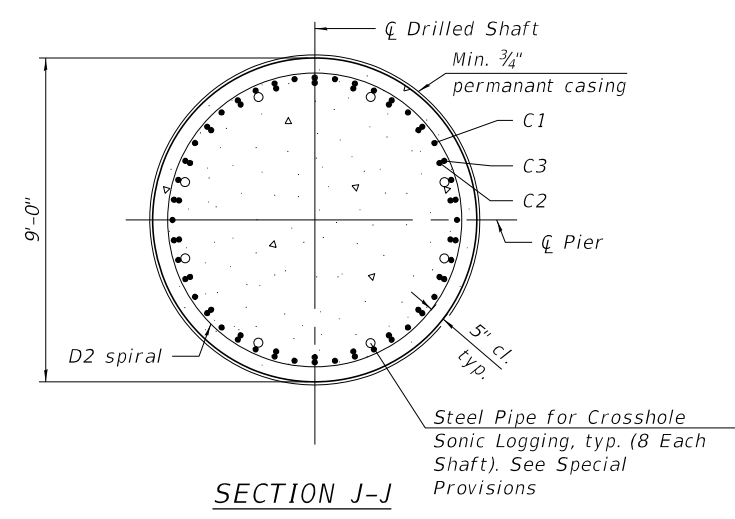
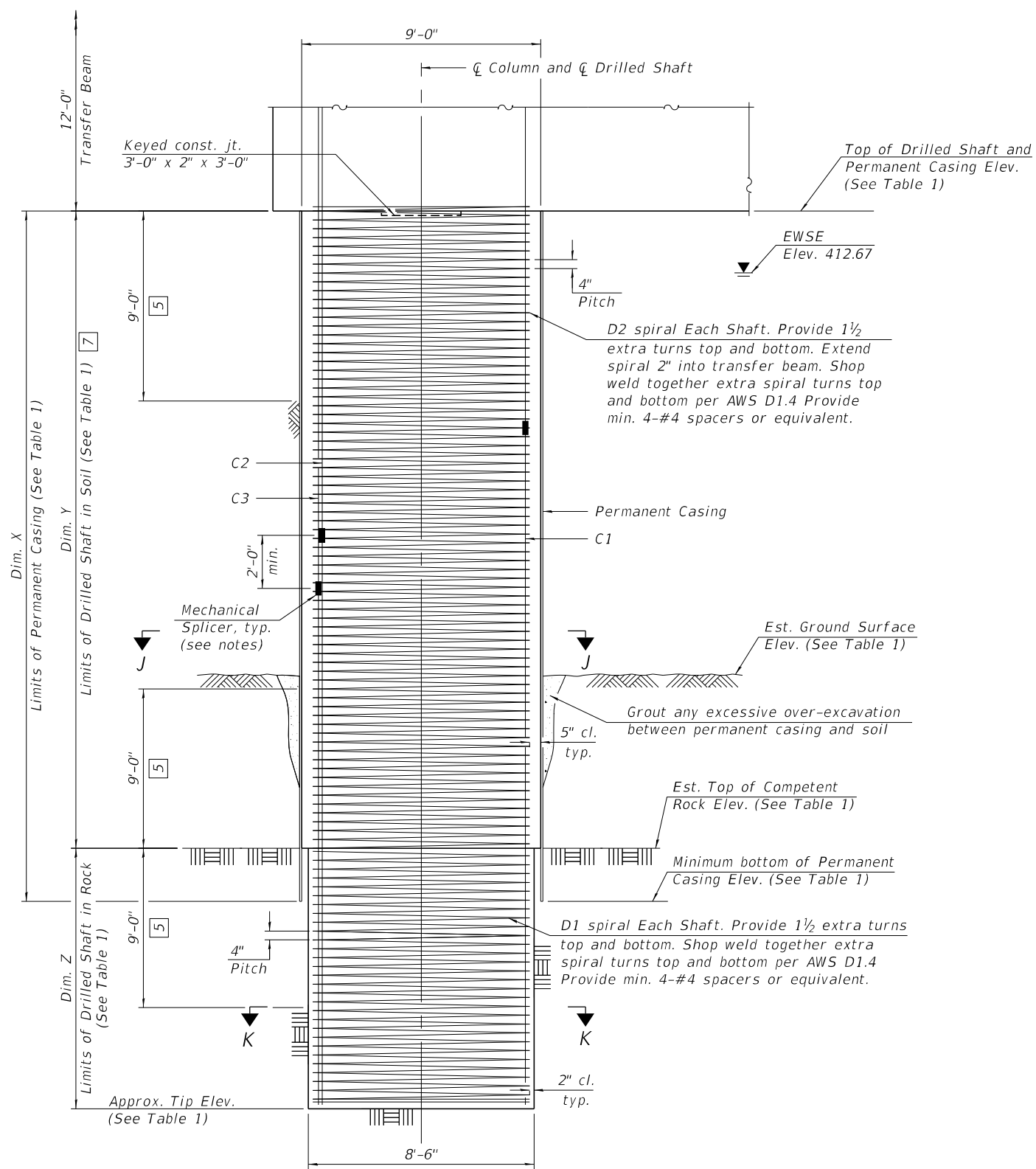
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STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION

PIER 4 PLAN AND ELEVATION - 2
 STRUCTURE NO. 060-0351 (WB)

SHEET 180 OF 288 SHEETS

F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	685
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 179 of 288.

For Transfer Beam details, see sheet 180 of 288.

For additional notes, bar details, and Bill of Material, see sheets 183 and 184 of 288.

For Table 1, see sheet 182 of 288.

For Mechanical Splicer details, see sheet 242 of 288.

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	CHECKED - JSR	REVISED -

**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

**PIER 4 PLAN AND ELEVATION - 3
STRUCTURE NO. 060-0351 (WB)**

SHEET 181 OF 288 SHEETS

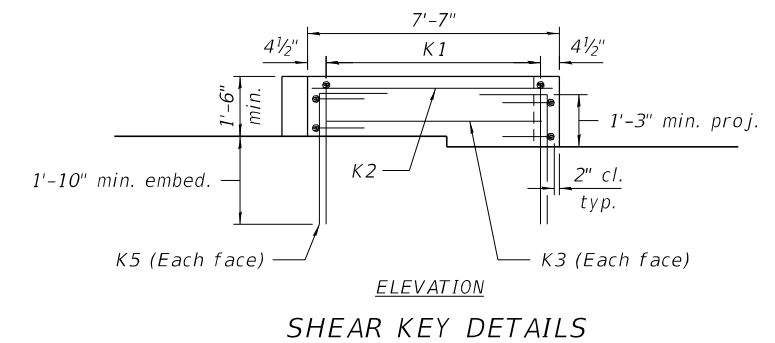
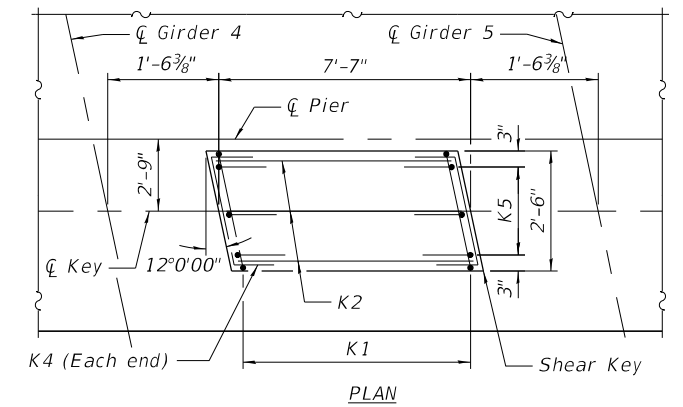
F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	686
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				

TABLE 1

		Pier 4
☐ Pier Station		2786+01.40
Bearing Seat Elevation	Girder 1	446.33
	Girder 2	446.46
	Girder 3	446.57
	Girder 4	446.78
	Girder 5	446.99
	Girder 6	446.81
	Girder 7	446.60
Top of Cap Elevation		446.33
Bottom of Cap Elevation		438.33
Column Height		11'-4"
Top of Shaft Elevation		415.00
Approx. Tip Elevation		355.50
Est. Ground Surface Elevation		381.00
Est. Top of Rock Elevation		381.00
Min. bott. of Permanent Casing Elev.		379.00
Dim. X		36'-0"
Dim. Y		34'-0"
Dim. Z		25'-6"

PIER 4

Mark	Bar Callouts
(1)	43 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)	48-#6 s408(E) at abt. 8" cts.
(5)	33 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)	18 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 bundles of 1-#11 p405(E) and 1-#11 p406(E) at 12" max.
B1	2 layers of 13-#11 p403(E) at 7 ³ / ₈ " cts.
B2	13-#7 p404(E) at 7 ³ / ₈ " cts.
B3	14 bundles of 1-#11 p405(E) and 1-#11 p406(E) at 12" max.
H1	10-#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 10 ¹ / ₂ " 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	15-#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)



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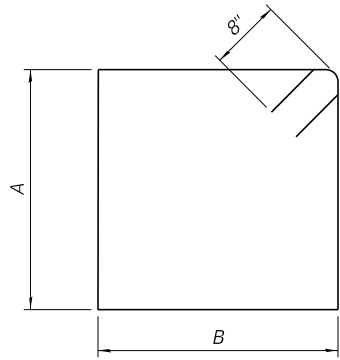
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**STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION**

**PIER 4 REINFORCEMENT TABLE - 1
 STRUCTURE NO. 060-0351 (WB)**

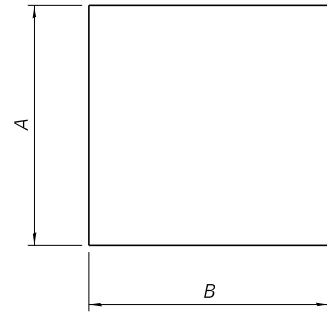
SHEET 182 OF 288 SHEETS

F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	687
CONTRACT NO. 76J90				
ILLINOIS FED. AID PROJECT				



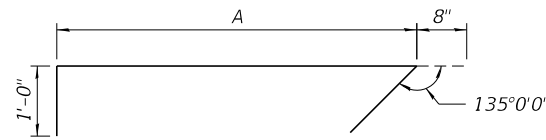
BARS s401(E) & s403(E)

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



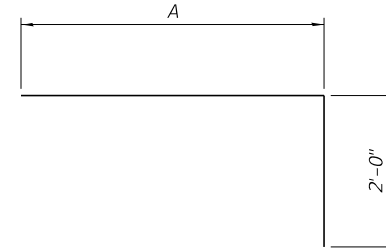
BARS s402(E), s404(E) & s407(E)

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



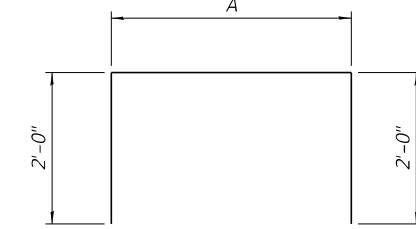
BARS s405(E) & s406(E)

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



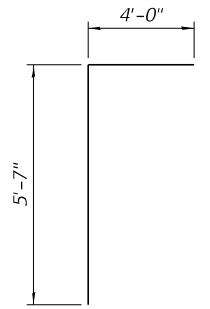
BARS p401(E) & p402(E)

Bars	A
p401(E)	22'-5"
p402(E)	51'-0"

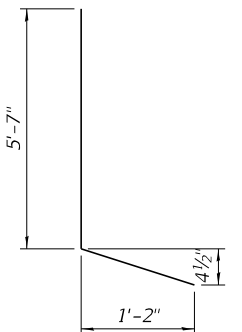


BARS p405(E) & p406(E)

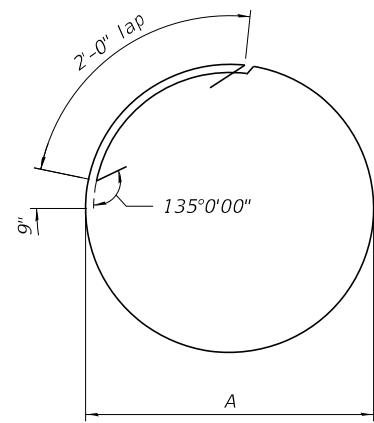
Bars	A
p405(E)	54'-0"
p406(E)	53'-6"



BARS u403(E)

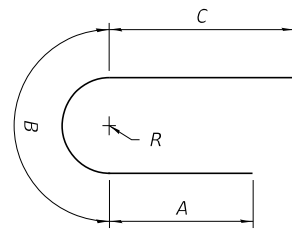


BARS u404(E)



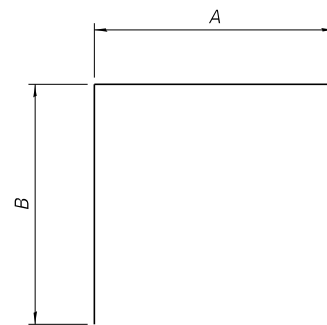
BARS hp401(E) & hp402(E)

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



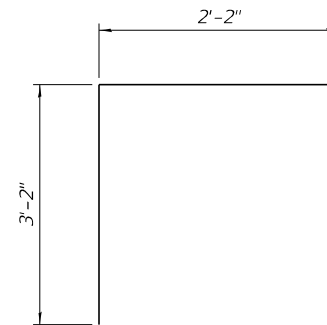
BARS u401(E) & u402(E)

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"

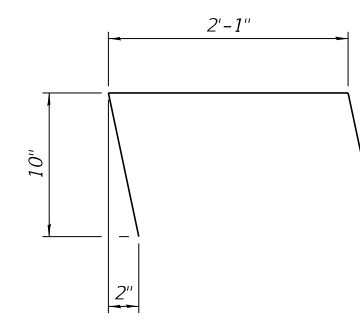


BARS u405(E) & s408(E)

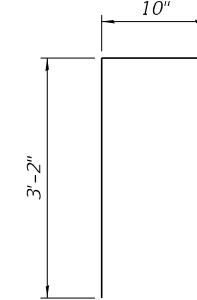
Bars	A	B
u405(E)	11'-6"	4'-7"
s408(E)	7'-8"	2'-9"



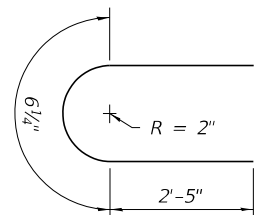
BARS s409(E)



BARS h406(E)



BARS n401(E)



BARS r401(E)

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**PIER 4
BILL OF MATERIAL**

Bar	No.	Size	Length	Shape
h401(E)	20	#8	56'-0"	————
h402(E)	36	#9	38'-0"	————
h403(E)	13	#6	31'-8"	————
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	24'-5"	┌
p402(E)	26	#11	53'-0"	┌
p403(E)	26	#11	57'-8"	————
p404(E)	26	#7	3'-0"	————
p405(E)	28	#11	58'-0"	┌
p406(E)	28	#11	57'-6"	┌
r401(E)	8	#5	5'-4"	└
s401(E)	86	#6	32'-0"	□
s402(E)	84	#6	19'-4"	□
s403(E)	66	#6	43'-4"	□
s404(E)	106	#6	25'-0"	□
s405(E)	86	#6	9'-4"	┌
s406(E)	132	#6	13'-4"	┌
s407(E)	48	#6	16'-6"	□
s408(E)	48	#6	13'-2"	□
s409(E)	15	#5	8'-6"	□
** sp401(E)	3	#7	25'-4"	∩∩∩
** sp402(E)	3	#7	34'-2"	∩∩∩
** sp403(E)	3	#7	11'-8"	∩∩∩
u401(E)	22	#8	22'-5"	└
u402(E)	40	#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	25'-9"	————
v403(E)	66	#14	42'-6"	————
v404(E)	66	#14	28'-3"	————
v405(E)	66	#14	40'-0"	————
v406(E)	66	#14	30'-9"	————
v407(E)	120	#11	30'-3"	————

** Length is height of spiral.

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

Concrete Structures	Cu. Yd.	458.2
Reinforcement Bars, Epoxy Coated	Pound	247,040
Permanent Casing	Foot	108
Drilled Shaft in Soil	Cu. Yd.	241
Drilled Shaft in Rock	Cu. Yd.	161
Crosshole Sonic Logging Access Ducts	Foot	179
Crosshole Sonic Logging Testing	Each	3
Thermal Integrity Profile Testing	Each	0
Thermal Integrity Profile Data Collection	Foot	179

Note:
For bar details, see sheet 183 of 288.

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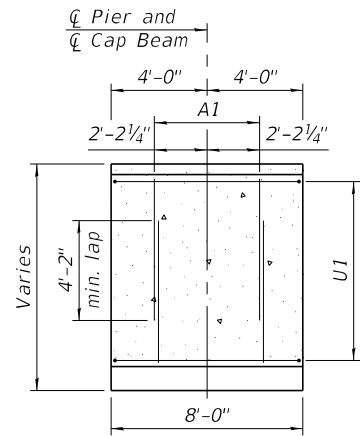
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**STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION**

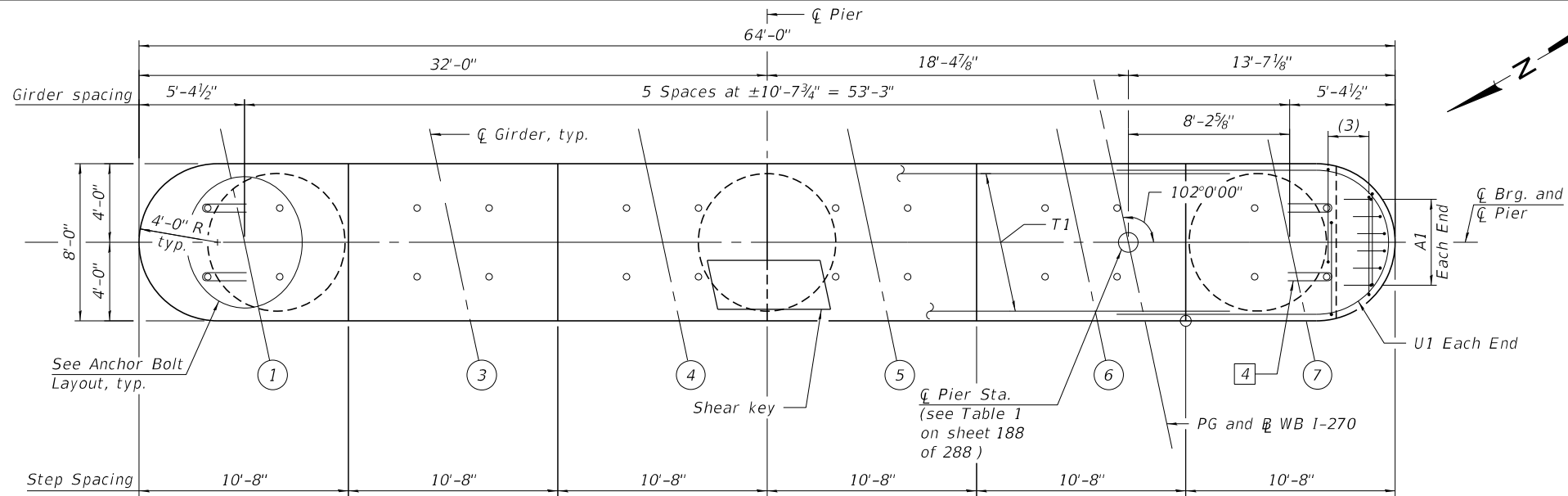
**PIER 4 BILL OF MATERIAL
STRUCTURE NO. 060-0351 (WB)**

SHEET 184 OF 288 SHEETS

F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	689
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				

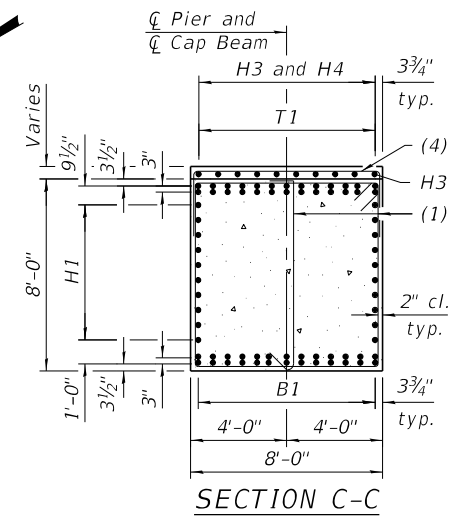


VIEW A-A
(T1 and (3) bars not shown for clarity)

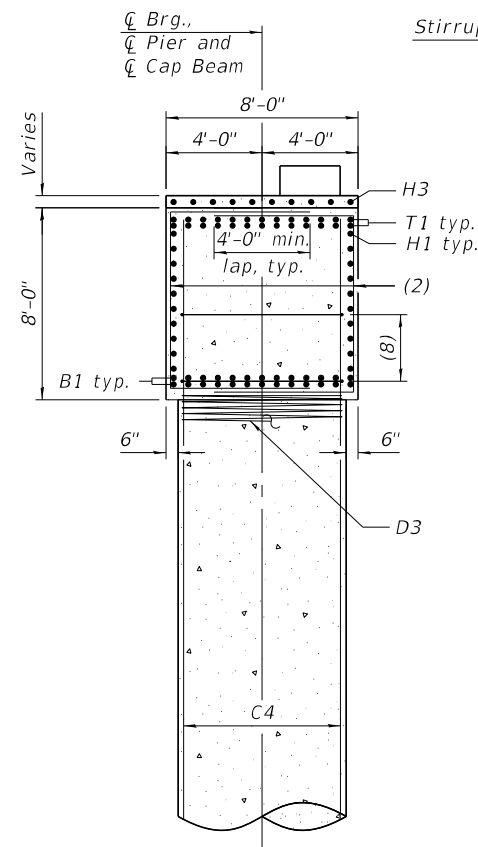


TOP PLAN

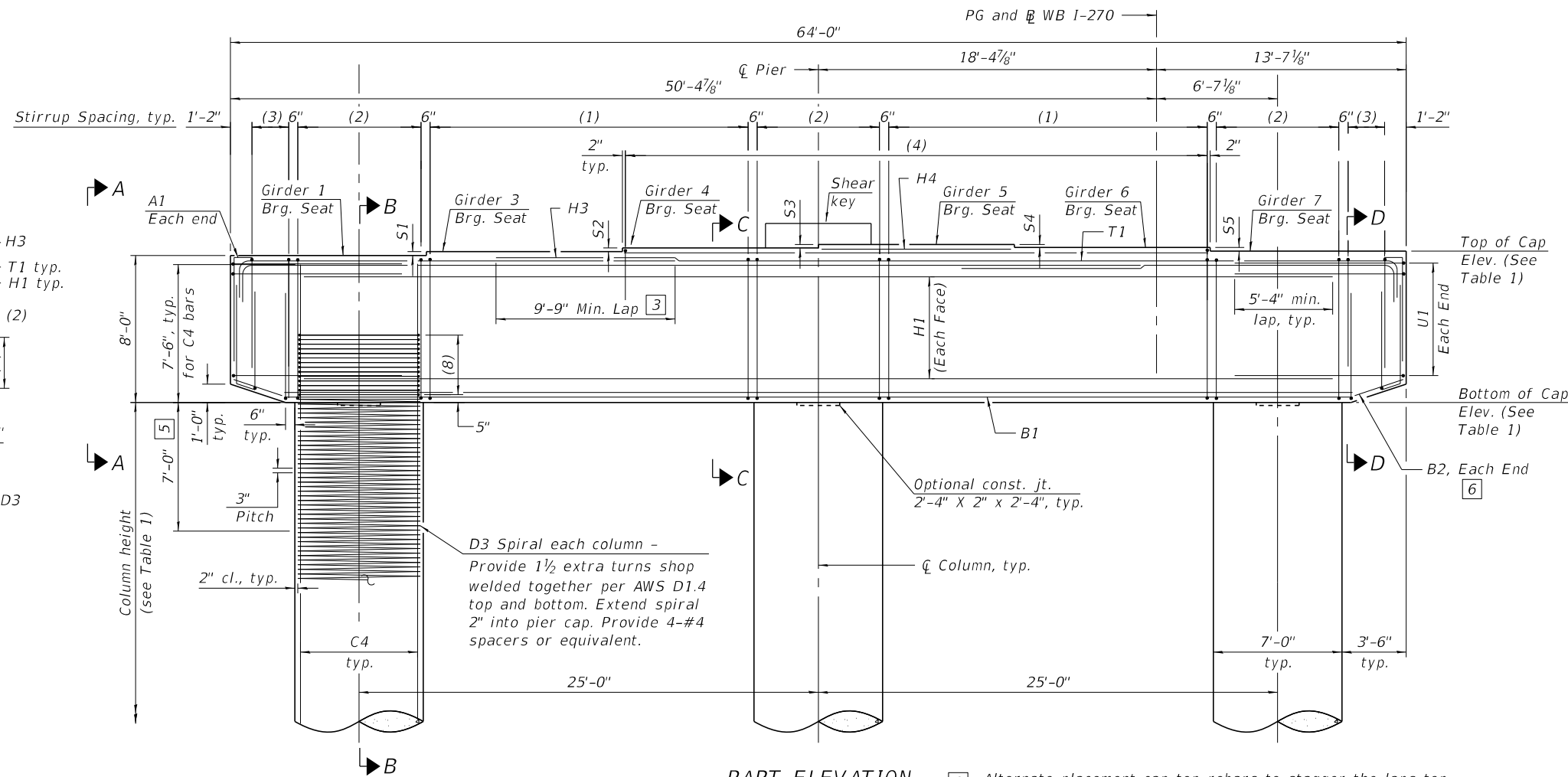
Note:
Space reinforcement in cap to miss anchor bolts. Pour steps monolithically with cap.



SECTION C-C

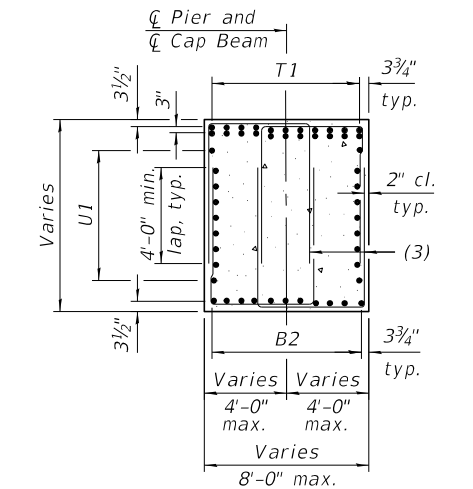


SECTION B-B

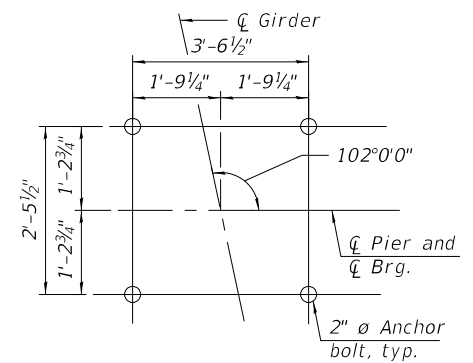


PART ELEVATION
(Looking East)

- [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.



SECTION D-D



ANCHOR BOLT LAYOUT

Notes:
For bar details and Bill of Materials, see sheets 189 and 190 of 288.
For column height, step height and all elevations, see Table 1 on sheet 188 of 288.
For bearing details, see sheet 155 of 288.
For bar callouts and shear key details, see sheet 188 of 288.

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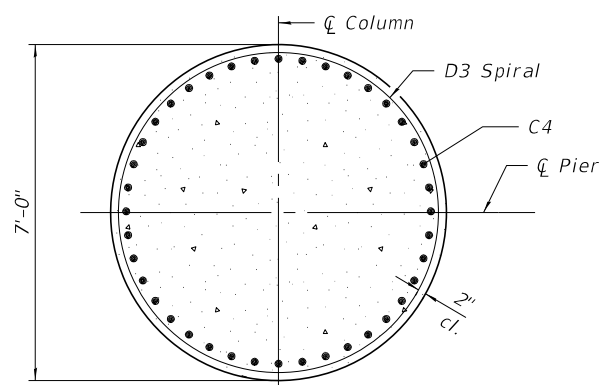
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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

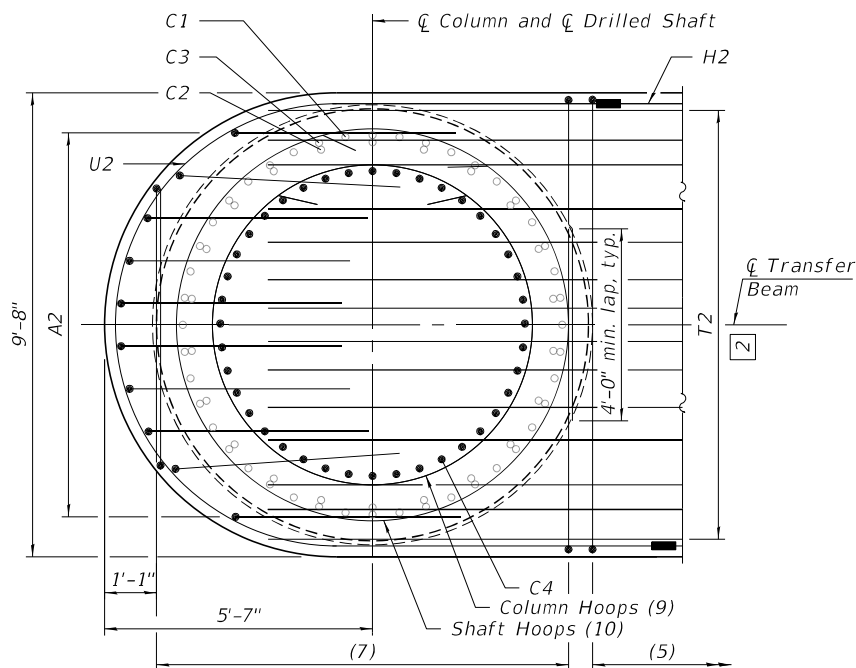
PIER 5 THRU 8 PLAN AND ELEVATION - 1
STRUCTURE NO. 060-0351 (WB)

SHEET 185 OF 288 SHEETS

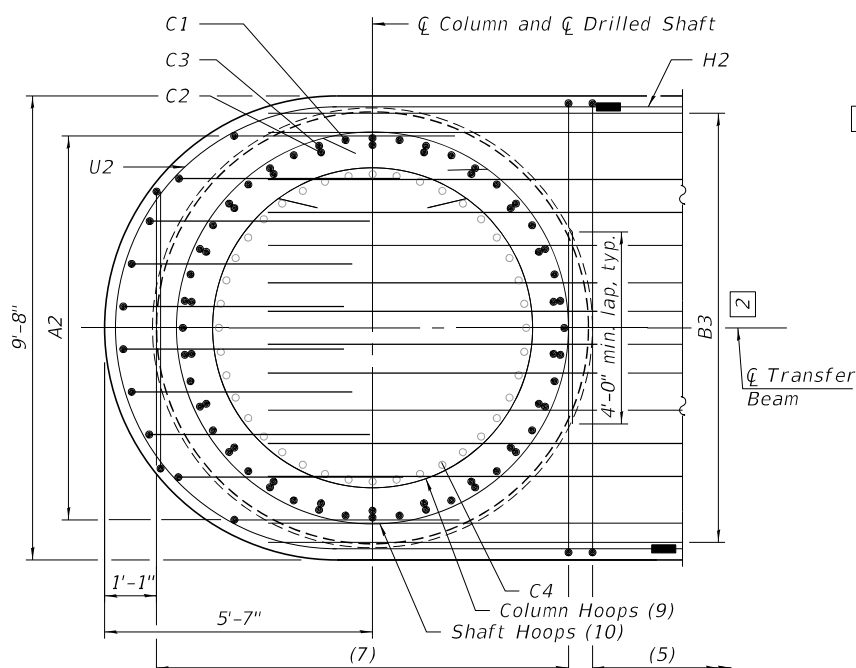
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	690
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				



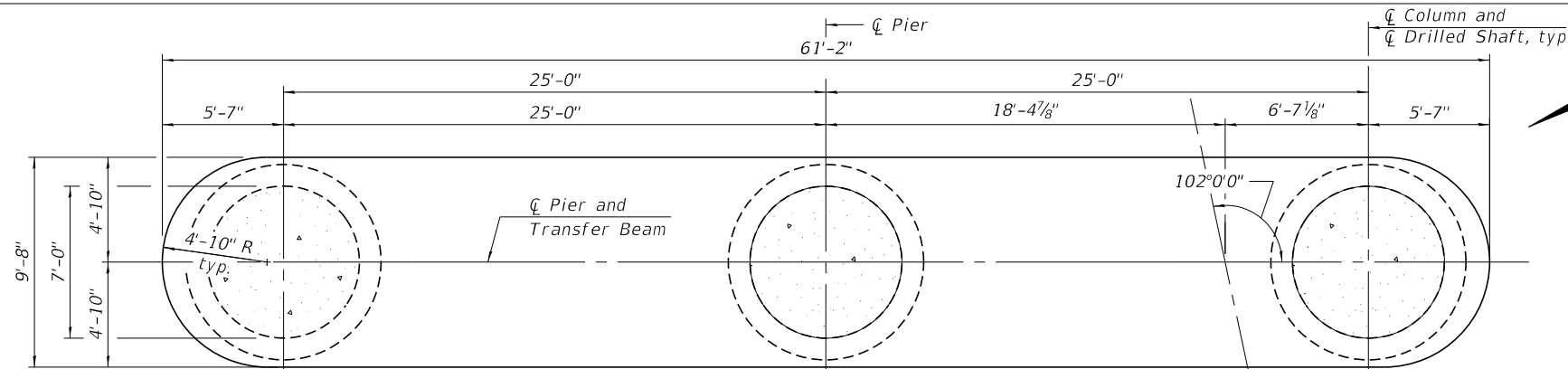
SECTION E-E



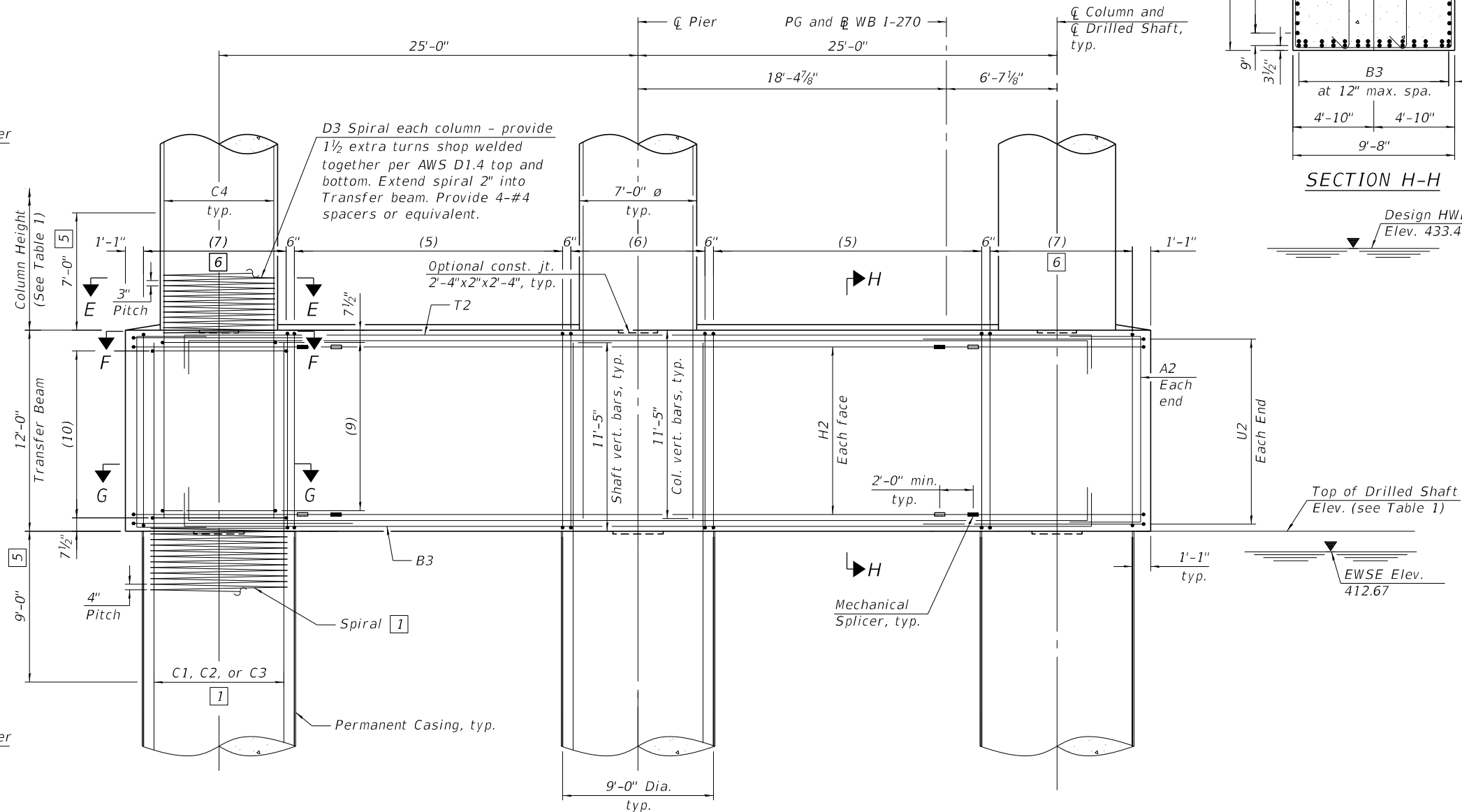
SECTION F-F



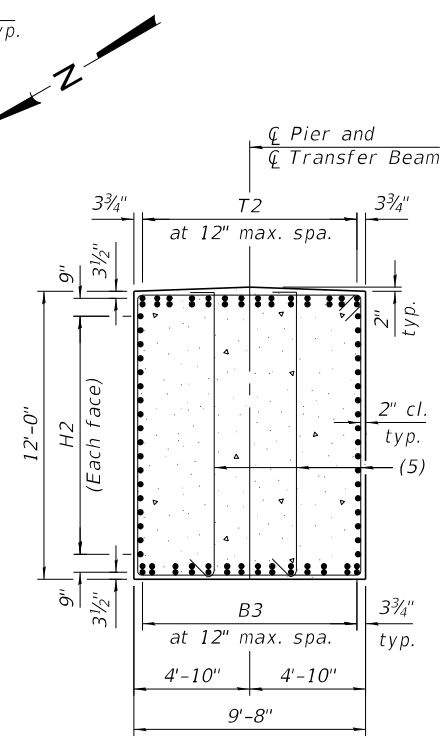
SECTION G-G



PLAN - TRANSFER BEAM



PART ELEVATION - TRANSFER BEAM
(Looking East)



SECTION H-H

- 1 See sheet 187 of 288 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 185 of 288.
 For Drilled Shaft details, see sheet 187 of 288.
 For additional notes, bar details, and Bill of Material, see sheets 189, 190, and 191 of 288.
 For Table 1, see sheet 188 of 288.
 For Mechanical Splicer details, see sheet 242 of 288.

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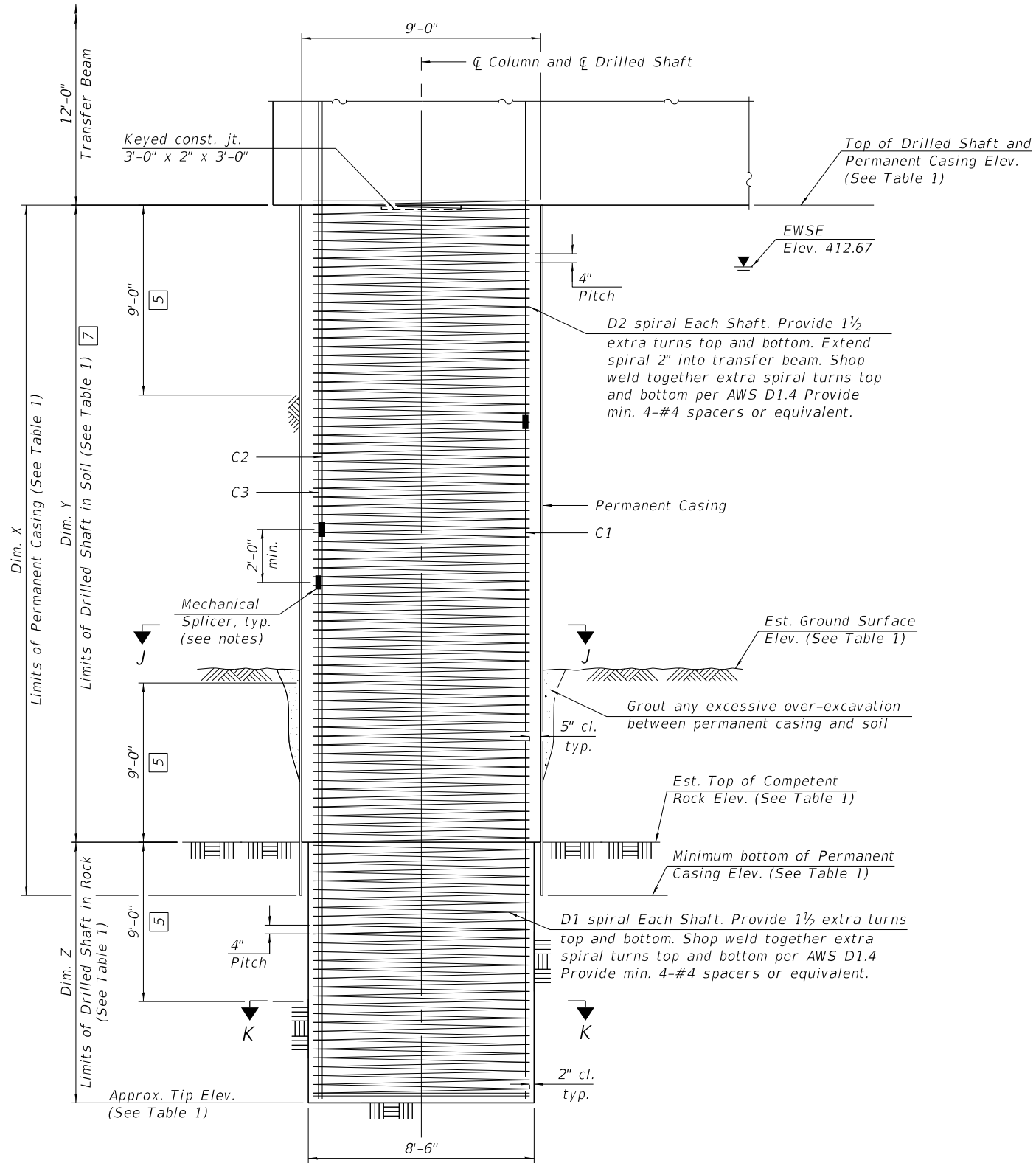
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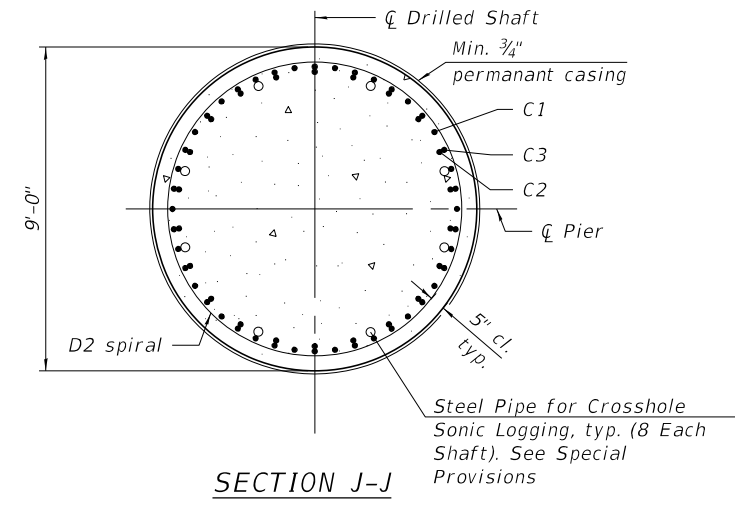
PIER 5 THRU 8 PLAN AND ELEVATION - 2
 STRUCTURE NO. 060-0351 (WB)

SHEET 186 OF 288 SHEETS

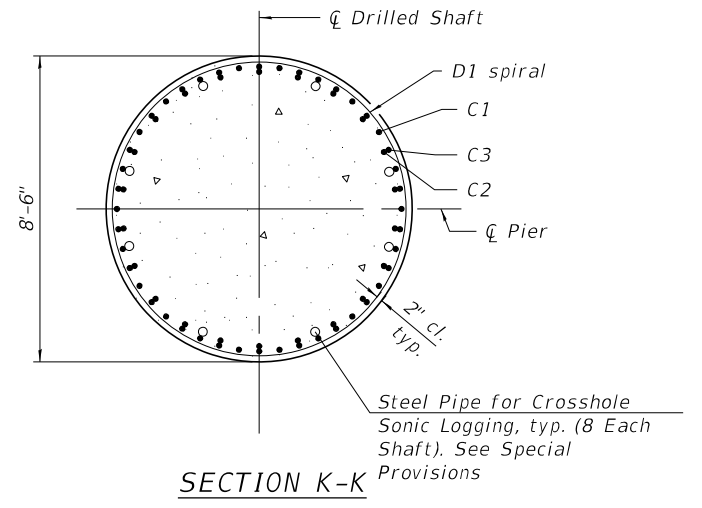
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	691
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				



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 185 of 288.
 For Transfer Beam details, see sheet 186 of 288.
 For additional notes, bar details, and Bill of Material, see sheets 189, 190, and 191 of 288.
 For Table 1, see sheet 188 of 288.
 For Mechanical Splicer details, see sheet 242 of 288.

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**STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION**

**PIER 5 THRU 8 PLAN AND ELEVATION - 3
 STRUCTURE NO. 060-0351 (WB)**

SHEET 187 OF 288 SHEETS

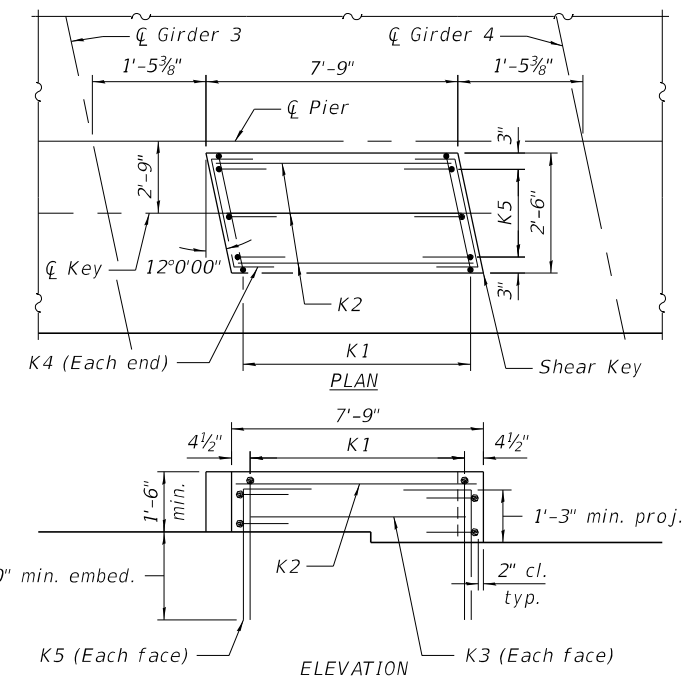
F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	692
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				

TABLE 1

	Pier 5	Pier 6	Pier 7	Pier 8	
℄ Pier Station	2788+37.40	2790+73.40	2793+09.40	2795+45.40	
Bearing Seat Elevation	Girder 1	447.58	448.75	449.93	451.10
	Girder 3	447.78	448.95	450.14	451.30
	Girder 4	447.98	449.15	450.33	451.50
	Girder 5	448.19	449.35	450.53	451.70
	Girder 6	448.00	449.16	450.35	451.51
Girder 7	447.78	448.94	450.13	451.29	
Top of Cap Elevation	447.58	448.75	449.93	451.10	
Bottom of Cap Elevation	439.58	440.75	441.93	443.10	
Column Height	12'-6 ⁵ / ₈ "	13'-9"	14'-11 ¹ / ₈ "	16'-1 ¹ / ₄ "	
Top of Shaft Elevation	415.00	415.00	415.00	415.00	
Approx. Tip Elevation	360.20	359.70	356.90	348.80	
Est. Ground Surface Elevation	387.60	394.70	400.90	387.50	
Est. Top of Rock Elevation	385.70	385.20	382.40	374.30	
Min. bott. of Permanent Casing Elev.	383.70	383.20	380.40	372.30	
Dim. X	31'-3 ⁵ / ₈ "	31'-9 ⁵ / ₈ "	34'-7 ¹ / ₄ "	42'-8 ³ / ₈ "	
Dim. Y	29'-3 ⁵ / ₈ "	29'-9 ⁵ / ₈ "	32'-7 ¹ / ₄ "	40'-8 ³ / ₈ "	
Dim. Z	25'-6"	25'-6"	25'-6"	25'-6"	

TABLE 1 (CONT.)

Step Height	Pier 5	Pier 6	Pier 7	Pier 8
S1	2 ¹ / ₂ "	2 ³ / ₈ "	2 ¹ / ₂ "	2 ³ / ₈ "
S2	2 ³ / ₈ "	2 ³ / ₈ "	2 ¹ / ₄ "	2 ³ / ₈ "
S3	2 ¹ / ₂ "	2 ³ / ₈ "	2 ³ / ₈ "	2 ³ / ₈ "
S4	2 ¹ / ₄ "	2 ¹ / ₄ "	2 ¹ / ₈ "	2 ¹ / ₄ "
S5	2 ³ / ₈ "	2 ³ / ₈ "	2 ³ / ₈ "	2 ³ / ₈ "



SHEAR KEY DETAILS

PIER 5

PIER 6

PIER 7

PIER 8

Mark	Bar Callouts	Bar Callouts	Bar Callouts	Bar Callouts
(1)	43 sets of 1-#6 s501(E) and 1-#6 s505(E) at 5" cts.	43 sets of 1-#6 s601(E) and 1-#6 s605(E) at 5" cts.	43 sets of 1-#6 s701(E) and 1-#6 s705(E) at 5" cts.	43 sets of 1-#6 s801(E) and 1-#6 s805(E) at 5" cts.
(2)	14 sets of 2-#6 s502(E) at 6" cts.	14 sets of 2-#6 s602(E) at 6" cts.	14 sets of 2-#6 s702(E) at 6" cts.	14 sets of 2-#6 s802(E) at 6" cts.
(3)	6 sets of 4-#6 s507(E) at 5" cts.	6 sets of 4-#6 s607(E) at 5" cts.	6 sets of 4-#6 s707(E) at 5" cts.	6 sets of 4-#6 s807(E) at 5" cts.
(4)	48-#6 s508(E) at abt. 8" cts.	48-#6 s608(E) at abt. 8" cts.	48-#6 s708(E) at abt. 8" cts.	48-#6 s808(E) at abt. 8" cts.
(5)	33 sets of 1-#6 s503(E) and 2-#6 s506(E) at 6" cts.	33 sets of 1-#6 s603(E) and 2-#6 s606(E) at 6" cts.	33 sets of 1-#6 s703(E) and 2-#6 s706(E) at 6" cts.	33 sets of 1-#6 s803(E) and 2-#6 s806(E) at 6" cts.
(6)	17 sets of 2-#6 s504(E) at 6" cts.	17 sets of 2-#6 s604(E) at 6" cts.	17 sets of 2-#6 s704(E) at 6" cts.	17 sets of 2-#6 s804(E) at 6" cts.
(7)	18 sets of 2-#6 s504(E) at 6" cts.	18 sets of 2-#6 s604(E) at 6" cts.	18 sets of 2-#6 s704(E) at 6" cts.	18 sets of 2-#6 s804(E) at 6" cts.
(8)	14-#7 hp502(E) hoops at 3" cts.	14-#7 hp602(E) hoops at 3" cts.	14-#7 hp702(E) hoops at 3" cts.	14-#7 hp802(E) hoops at 3" cts.
(9)	44-#7 hp502(E) hoops at 3" cts.	44-#7 hp602(E) hoops at 3" cts.	44-#7 hp702(E) hoops at 3" cts.	44-#7 hp802(E) hoops at 3" cts.
(10)	33-#7 hp501(E) hoops at 4" cts.	33-#7 hp601(E) hoops at 4" cts.	33-#7 hp701(E) hoops at 4" cts.	33-#7 hp801(E) hoops at 4" cts.
T1	2 layers of 13-#11 p501(E) or p502(E) at 7 ³ / ₈ " cts.	2 layers of 13-#11 p601(E) or p602(E) at 7 ³ / ₈ " cts.	2 layers of 13-#11 p701(E) or p702(E) at 7 ³ / ₈ " cts.	2 layers of 13-#11 p801(E) or p802(E) at 7 ³ / ₈ " cts.
T2	14 sets of 1-#11 p505(E) and 1-#11 p506(E) at 12" max.	14 sets of 1-#11 p605(E) and 1-#11 p606(E) at 12" max.	14 sets of 1-#11 p705(E) and 1-#11 p706(E) at 12" max.	14 sets of 1-#11 p805(E) and 1-#11 p806(E) at 12" max.
B1	2 layers of 13-#11 p503(E) at 7 ³ / ₈ " cts.	2 layers of 13-#11 p603(E) at 7 ³ / ₈ " cts.	2 layers of 13-#11 p703(E) at 7 ³ / ₈ " cts.	2 layers of 13-#11 p803(E) at 7 ³ / ₈ " cts.
B2	13-#7 p504(E) at 7 ³ / ₈ " cts.	13-#7 p604(E) at 7 ³ / ₈ " cts.	13-#7 p704(E) at 7 ³ / ₈ " cts.	13-#7 p804(E) at 7 ³ / ₈ " cts.
B3	14 sets of 1-#11 p505(E) and 1-#11 p506(E) at 12" max.	14 sets of 1-#11 p605(E) and 1-#11 p606(E) at 12" max.	14 sets of 1-#11 p705(E) and 1-#11 p706(E) at 12" max.	14 sets of 1-#11 p805(E) and 1-#11 p806(E) at 12" max.
H1	10-#8 h501(E) at 7 ¹ / ₂ " cts.	10-#8 h601(E) at 7 ¹ / ₂ " cts.	10-#8 h701(E) at 7 ¹ / ₂ " cts.	10-#8 h801(E) at 7 ¹ / ₂ " cts.
H2	18-#9 h502(E) at 7" cts.	18-#9 h602(E) at 7" cts.	18-#9 h702(E) at 7" cts.	18-#9 h802(E) at 7" cts.
H3	13-#6 h503(E) at abt. 7 ³ / ₈ " cts.	13-#6 h603(E) at abt. 7 ³ / ₈ " cts.	13-#6 h703(E) at abt. 7 ³ / ₈ " cts.	13-#6 h803(E) at abt. 7 ³ / ₈ " cts.
H4	13-#6 h504(E) at abt. 7 ³ / ₈ " cts.	13-#6 h604(E) at abt. 7 ³ / ₈ " cts.	13-#6 h704(E) at abt. 7 ³ / ₈ " cts.	13-#6 h804(E) at abt. 7 ³ / ₈ " cts.
A1	6 sets of 1-#7 u503(E) and 1-#7 u504(E) at 10 ¹ / ₂ " cts.	6 sets of 1-#7 u603(E) and 1-#7 u604(E) at 10 ¹ / ₂ " cts.	6 sets of 1-#7 u703(E) and 1-#7 u704(E) at 10 ¹ / ₂ " cts.	6 sets of 1-#7 u803(E) and 1-#7 u804(E) at 10 ¹ / ₂ " cts.
A2	10-#7 u505(E) at 10 ³ / ₄ " cts.	10-#7 u605(E) at 10 ³ / ₄ " cts.	10-#7 u705(E) at 10 ³ / ₄ " cts.	10-#7 u805(E) at 10 ³ / ₄ " cts.
U1	11-#8 u501(E) spaced with h501(E) and p501(E)	11-#8 u601(E) spaced with h601(E) and p601(E)	11-#8 u701(E) spaced with h701(E) and p701(E)	11-#8 u801(E) spaced with h801(E) and p801(E)
U2	20-#9 u502(E) splice with h502(E) and space with p505(E)	20-#9 u602(E) splice with h602(E) and space with p605(E)	20-#9 u702(E) splice with h702(E) and space with p705(E)	20-#9 u802(E) splice with h802(E) and space with p805(E)
C1	22 sets of 1-#14 v501(E) and 1-#14 v502(E) (top)	22 sets of 1-#14 v601(E) and 1-#14 v602(E) (top)	22 sets of 1-#14 v701(E) and 1-#14 v702(E) (top)	22 sets of 1-#14 v801(E) and 1-#14 v802(E) (top)
C2	22 sets of 1-#14 v503(E) and 1-#14 v504(E) (top) Bundle w/ C3	22 sets of 1-#14 v603(E) and 1-#14 v604(E) (top) Bundle w/ C3	22 sets of 1-#14 v703(E) and 1-#14 v704(E) (top) Bundle w/ C3	22 sets of 1-#14 v803(E) and 1-#14 v804(E) (top) Bundle w/ C3
C3	22 sets of 1-#14 v505(E) and 1-#14 v506(E) (top) Bundle w/ C2	22 sets of 1-#14 v605(E) and 1-#14 v606(E) (top) Bundle w/ C2	22 sets of 1-#14 v705(E) and 1-#14 v706(E) (top) Bundle w/ C2	22 sets of 1-#14 v805(E) and 1-#14 v806(E) (top) Bundle w/ C2
C4	40-#11 v507(E) equally spaced	40-#11 v607(E) equally spaced	40-#11 v707(E) equally spaced	40-#11 v807(E) equally spaced
D1	#7 sp501(E) at 4" pitch	#7 sp601(E) at 4" pitch	#7 sp701(E) at 4" pitch	#7 sp801(E) at 4" pitch
D2	#7 sp502(E) at 4" pitch	#7 sp602(E) at 4" pitch	#7 sp702(E) at 4" pitch	#7 sp802(E) at 4" pitch
D3	#7 sp503(E) at 3" pitch	#7 sp603(E) at 3" pitch	#7 sp703(E) at 3" pitch	#7 sp803(E) at 3" pitch
K1	15-#5 s509(E) spaced at 6" cts.	15-#5 s609(E) spaced at 6" cts.	15-#5 s709(E) spaced at 6" cts.	15-#5 s809(E) spaced at 6" cts.
K2	3-#5 h505(E) spaced with n501(E)	3-#5 h605(E) spaced with n601(E)	3-#5 h705(E) spaced with n701(E)	3-#5 h805(E) spaced with n801(E)
K3	1-#5 h505(E) each face	1-#5 h605(E) each face	1-#5 h705(E) each face	1-#5 h805(E) each face
K4	2-#5 h506(E) each face	2-#5 h606(E) each face	2-#5 h706(E) each face	2-#5 h806(E) each face
K5	3-#5 n501(E) at 12" cts., each face	3-#5 n601(E) at 12" cts., each face	3-#5 n701(E) at 12" cts., each face	3-#5 n801(E) at 12" cts., each face
R1	#5 r501(E)	#5 r601(E)	#5 r701(E)	#5 r801(E)

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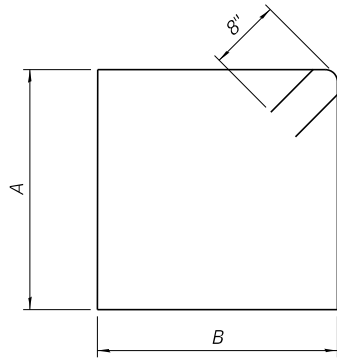
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	CHECKED - NHP	REVISED -

STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION

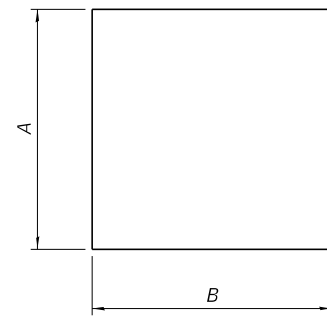
PIER 5 THRU 8 REINFORCEMENT TABLES - 1
 STRUCTURE NO. 060-0351 (WB)

SHEET 188 OF 288 SHEETS

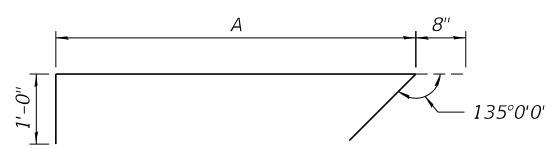
F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	693
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				



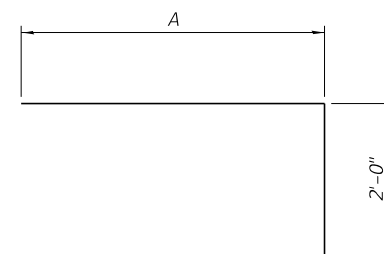
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BARS s601(E) & s603(E)
BARS s701(E) & s703(E)
BARS s801(E) & s803(E)



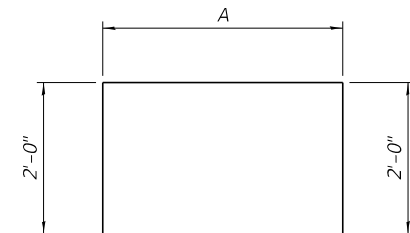
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BARS s702(E), s704(E) & s707(E)
BARS s802(E), s804(E) & s807(E)



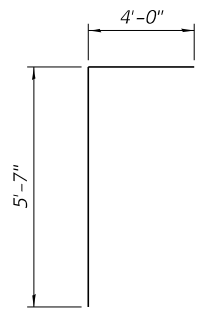
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BARS s605(E) & s606(E)
BARS s705(E) & s706(E)
BARS s805(E) & s806(E)



BARS p501(E) & p502(E)
BARS p601(E) & p602(E)
BARS p701(E) & p702(E)
BARS p801(E) & p802(E)



BARS p505(E) & p506(E)
BARS p605(E) & p606(E)
BARS p705(E) & p706(E)
BARS p805(E) & p806(E)



BARS u503(E)
BARS u603(E)
BARS u703(E)
BARS u803(E)

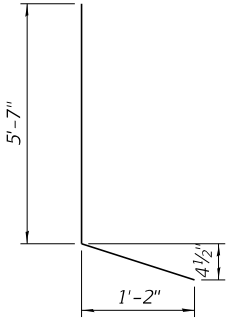
Bars	A	B
s501(E), s601(E), s701(E), and s801(E)	7'-8"	7'-8"
s503(E), s603(E), s703(E), and s803(E)	11'-8"	9'-4"

Bars	A	B
s502(E), s602(E), s702(E), and s802(E)	7'-8"	5'-10"
s504(E), s604(E), s704(E), and s804(E)	11'-8"	6'-8"
s507(E), s607(E), s707(E), and s807(E)	4'-10"	5'-10"

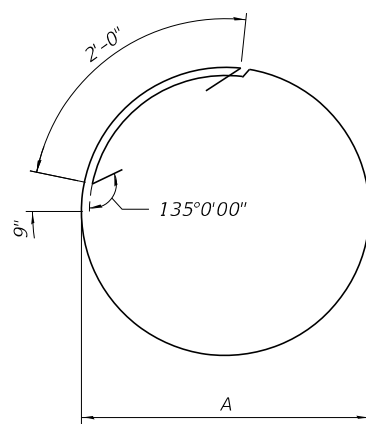
Bars	A
s505(E), s605(E), s705(E), and s805(E)	7'-8"
s506(E), s606(E), s706(E), and s806(E)	11'-8"

Bars	A
p501(E), p601(E), p701(E), and p801(E)	22'-5"
p502(E), p602(E), p702(E), and p802(E)	51'-0"

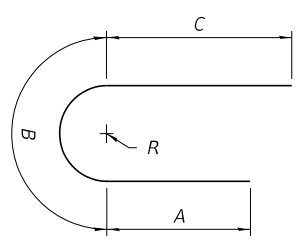
Bars	A
p505(E), p605(E), p705(E), and p805(E)	54'-0"
p506(E), p606(E), p706(E), and p806(E)	53'-6"



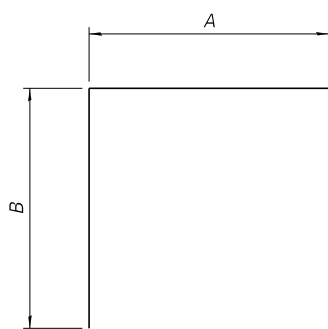
BARS u504(E)
BARS u604(E)
BARS u704(E)
BARS u804(E)



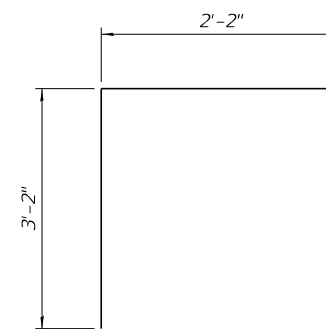
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BARS hp701(E) & hp702(E)
BARS hp801(E) & hp802(E)



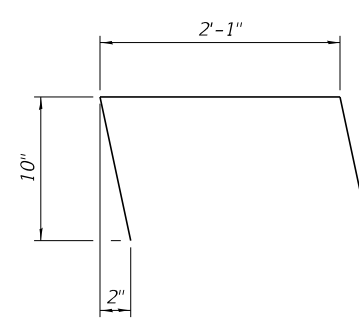
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BARS u801(E) & u802(E)



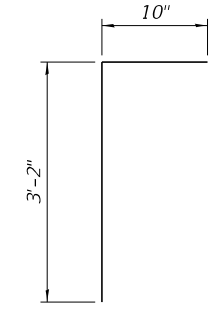
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BARS u605(E) & u608(E)
BARS u705(E) & u708(E)
BARS u805(E) & u808(E)



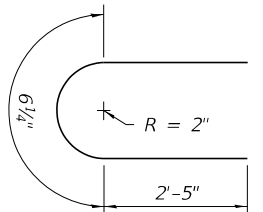
BARS s509(E)
BARS s609(E)
BARS s709(E)
BARS s809(E)



BARS h506(E)
BARS h606(E)
BARS h706(E)
BARS h806(E)



BARS n501(E)
BARS n601(E)
BARS n701(E)
BARS n801(E)



BARS r501(E)
BARS r601(E)
BARS r701(E)
BARS r801(E)

Bars	A
hp501(E), hp601(E), hp701(E), and hp801(E)	8'-2"
hp502(E), hp602(E), hp702(E), and hp802(E)	6'-8"

Bars	A	B	C	R
u501(E), u601(E), u701(E), and u801(E)	5'-4"	11'-9 3/8"	5'-4"	3'-9"
u502(E), u602(E), u702(E), and u802(E)	5'-9"	14'-5"	7'-9"	4'-7"

Bars	A	B
u505(E), u605(E), u705(E), and u805(E)	11'-6"	4'-7"
u508(E), u608(E), u708(E), and u808(E)	7'-8"	2'-9"

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PIER 5 THRU 8 REINFORCEMENT TABLES - 2
 STRUCTURE NO. 060-0351 (WB)

SHEET 189 OF 288 SHEETS

F.A.J. RTE. 270	SECTION 60B-1	COUNTY MADISON	TOTAL SHEETS 875	SHEET NO. 694
CONTRACT NO. 76J90			ILLINOIS FED. AID PROJECT	

**PIER 5
BILL OF MATERIAL**

Bar	No.	Size	Length	Shape
h501(E)	20	#8	56'-0"	————
h502(E)	36	#9	38'-0"	————
h503(E)	13	#6	31'-8"	————
h504(E)	13	#6	10'-4"	————
h505(E)	5	#5	7'-5"	————
h506(E)	4	#5	3'-9"	┌┐
hp501(E)	99	#7	29'-2"	○
hp502(E)	174	#7	24'-5"	○
n501(E)	6	#5	4'-0"	┌
p501(E)	26	#11	24'-5"	┌
p502(E)	26	#11	53'-0"	┌
p503(E)	26	#11	57'-10"	————
p504(E)	26	#7	3'-0"	————
p505(E)	28	#11	58'-0"	┌
p506(E)	28	#11	57'-6"	┌
r501(E)	8	#5	5'-4"	└
s501(E)	86	#6	32'-0"	□
s502(E)	84	#6	19'-4"	□
s503(E)	66	#6	43'-4"	□
s504(E)	106	#6	25'-0"	□
s505(E)	86	#6	9'-4"	┌
s506(E)	132	#6	13'-4"	┌
s507(E)	48	#6	16'-6"	□
s508(E)	48	#6	13'-2"	□
s509(E)	15	#5	8'-6"	□
** sp501(E)	3	#7	25'-4"	〰〰〰
** sp502(E)	3	#7	29'-6"	〰〰〰
** sp503(E)	3	#7	12'-11"	〰〰〰
u501(E)	22	#8	22'-5"	└
u502(E)	40	#9	27'-11"	└
u503(E)	12	#7	9'-7"	┌
u504(E)	12	#7	6'-10"	└
u505(E)	20	#7	20'-8"	□
v501(E)	66	#14	45'-0"	————
v502(E)	66	#14	21'-1"	————
v503(E)	66	#14	42'-6"	————
v504(E)	66	#14	23'-7"	————
v505(E)	66	#14	40'-0"	————
v506(E)	66	#14	26'-1"	————
v507(E)	120	#11	31'-6"	————

** Length is height of spiral.

**PIER 5
BILL OF MATERIAL (CONT.)**

Concrete Structures	Cu. Yd.	462.6
Reinforcement Bars, Epoxy Coated	Pound	239,220
Permanent Casing	Foot	94
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	1
Thermal Integrity Profile Data Collection	Foot	165

**PIER 6
BILL OF MATERIAL**

Bar	No.	Size	Length	Shape
h601(E)	20	#8	56'-0"	————
h602(E)	36	#9	38'-0"	————
h603(E)	13	#6	31'-8"	————
h604(E)	13	#6	10'-4"	————
h605(E)	5	#5	7'-5"	————
h606(E)	4	#5	3'-9"	┌┐
hp601(E)	99	#7	29'-2"	○
hp602(E)	174	#7	24'-5"	○
n601(E)	6	#5	4'-0"	┌
p601(E)	26	#11	24'-5"	┌
p602(E)	26	#11	53'-0"	┌
p603(E)	26	#11	57'-10"	————
p604(E)	26	#7	3'-0"	————
p605(E)	28	#11	58'-0"	┌
p606(E)	28	#11	57'-6"	┌
r601(E)	8	#5	5'-4"	└
s601(E)	86	#6	32'-0"	□
s602(E)	84	#6	19'-4"	□
s603(E)	66	#6	43'-4"	□
s604(E)	106	#6	25'-0"	□
s605(E)	86	#6	9'-4"	┌
s606(E)	132	#6	13'-4"	┌
s607(E)	48	#6	16'-6"	□
s608(E)	48	#6	13'-2"	□
s609(E)	15	#5	8'-6"	□
** sp601(E)	3	#7	25'-4"	〰〰〰
** sp602(E)	3	#7	30'-0"	〰〰〰
** sp603(E)	3	#7	14'-2"	〰〰〰
u601(E)	22	#8	22'-5"	└
u602(E)	40	#9	27'-11"	└
u603(E)	12	#7	9'-7"	┌
u604(E)	12	#7	6'-10"	└
u605(E)	20	#7	20'-8"	□
v601(E)	66	#14	45'-0"	————
v602(E)	66	#14	21'-7"	————
v603(E)	66	#14	42'-6"	————
v604(E)	66	#14	24'-1"	————
v605(E)	66	#14	40'-0"	————
v606(E)	66	#14	26'-7"	————
v607(E)	120	#11	32'-8"	————

** Length is height of spiral.

**PIER 6
BILL OF MATERIAL (CONT.)**

Concrete Structures	Cu. Yd.	467.5
Reinforcement Bars, Epoxy Coated	Pound	241,600
Permanent Casing	Foot	96
Drilled Shaft in Soil	Cu. Yd.	211
Drilled Shaft in Rock	Cu. Yd.	161
Crosshole Sonic Logging Access Ducts	Foot	166
Crosshole Sonic Logging Testing	Each	3
Thermal Integrity Profile Testing	Each	0
Thermal Integrity Profile Data Collection	Foot	166

Note:
For bar details, see sheet 189 of 288.

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**STATE OF ILLINOIS
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**PIER 5 AND 6 BILL OF MATERIAL
STRUCTURE NO. 060-0351 (WB)**

SHEET 190 OF 288 SHEETS

F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	695
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				

**PIER 7
BILL OF MATERIAL**

Bar	No.	Size	Length	Shape
h701(E)	20	#8	56'-0"	————
h702(E)	36	#9	38'-0"	————
h703(E)	13	#6	31'-8"	————
h704(E)	13	#6	10'-4"	————
h705(E)	5	#5	7'-5"	————
h706(E)	4	#5	3'-9"	┌┐
hp701(E)	99	#7	29'-2"	○
hp702(E)	174	#7	24'-5"	○
n701(E)	6	#5	4'-0"	┌
p701(E)	26	#11	24'-5"	┌
p702(E)	26	#11	53'-0"	┌
p703(E)	26	#11	57'-10"	————
p704(E)	26	#7	3'-0"	————
p705(E)	28	#11	58'-0"	┌
p706(E)	28	#11	57'-6"	┌
r701(E)	8	#5	5'-4"	└
s701(E)	86	#6	32'-0"	□
s702(E)	84	#6	19'-4"	□
s703(E)	66	#6	43'-4"	□
s704(E)	106	#6	25'-0"	□
s705(E)	86	#6	9'-4"	┌
s706(E)	132	#6	13'-4"	┌
s707(E)	48	#6	16'-6"	□
s708(E)	48	#6	13'-2"	□
s709(E)	15	#5	8'-6"	□
** sp701(E)	3	#7	25'-4"	ㄨㄨㄨ
** sp702(E)	3	#7	32'-9"	ㄨㄨㄨ
** sp703(E)	3	#7	15'-3"	ㄨㄨㄨ
u701(E)	22	#8	22'-5"	└
u702(E)	40	#9	27'-11"	└
u703(E)	12	#7	9'-7"	┌
u704(E)	12	#7	6'-10"	└
u705(E)	20	#7	20'-8"	□
v701(E)	66	#14	45'-0"	————
v702(E)	66	#14	24'-4"	————
v703(E)	66	#14	42'-6"	————
v704(E)	66	#14	26'-10"	————
v705(E)	66	#14	40'-0"	————
v706(E)	66	#14	29'-4"	————
v707(E)	120	#11	33'-10"	————

** Length is height of spiral.

**PIER 7
BILL OF MATERIAL (CONT.)**

Concrete Structures	Cu. Yd.	472.6
Reinforcement Bars, Epoxy Coated	Pound	248,360
Permanent Casing	Foot	104
Drilled Shaft in Soil	Cu. Yd.	231
Drilled Shaft in Rock	Cu. Yd.	161
Crosshole Sonic Logging Access Ducts	Foot	175
Crosshole Sonic Logging Testing	Each	3
Thermal Integrity Profile Testing	Each	0
Thermal Integrity Profile Data Collection	Foot	175

**PIER 8
BILL OF MATERIAL**

Bar	No.	Size	Length	Shape
h801(E)	20	#8	56'-0"	————
h802(E)	36	#9	38'-0"	————
h803(E)	13	#6	31'-8"	————
h804(E)	13	#6	10'-4"	————
h805(E)	5	#5	7'-5"	————
h806(E)	4	#5	3'-9"	┌┐
hp801(E)	99	#7	29'-2"	○
hp802(E)	174	#7	24'-5"	○
n801(E)	6	#5	4'-0"	┌
p801(E)	26	#11	24'-5"	┌
p802(E)	26	#11	53'-0"	┌
p803(E)	26	#11	57'-10"	————
p804(E)	26	#7	3'-0"	————
p805(E)	28	#11	58'-0"	┌
p806(E)	28	#11	57'-6"	┌
r801(E)	8	#5	5'-4"	└
s801(E)	86	#6	32'-0"	□
s802(E)	84	#6	19'-4"	□
s803(E)	66	#6	43'-4"	□
s804(E)	106	#6	25'-0"	□
s805(E)	86	#6	9'-4"	┌
s806(E)	132	#6	13'-4"	┌
s807(E)	48	#6	16'-6"	□
s808(E)	48	#6	13'-2"	□
s809(E)	15	#5	8'-6"	□
** sp801(E)	3	#7	25'-4"	ㄨㄨㄨ
** sp802(E)	3	#7	40'-10"	ㄨㄨㄨ
** sp803(E)	3	#7	16'-5"	ㄨㄨㄨ
u801(E)	22	#8	22'-5"	└
u802(E)	40	#9	27'-11"	└
u803(E)	12	#7	9'-7"	┌
u804(E)	12	#7	6'-10"	└
u805(E)	20	#7	20'-8"	□
v801(E)	66	#14	45'-0"	————
v802(E)	66	#14	32'-5"	————
v803(E)	66	#14	42'-6"	————
v804(E)	66	#14	34'-11"	————
v805(E)	66	#14	40'-0"	————
v806(E)	66	#14	37'-5"	————
v807(E)	120	#11	35'-0"	————

** Length is height of spiral.

**PIER 8
BILL OF MATERIAL (CONT.)**

Concrete Structures	Cu. Yd.	477.6
Reinforcement Bars, Epoxy Coated	Pound	265,770
Permanent Casing	Foot	129
Drilled Shaft in Soil	Cu. Yd.	288
Drilled Shaft in Rock	Cu. Yd.	161
Crosshole Sonic Logging Access Ducts	Foot	199
Crosshole Sonic Logging Testing	Each	3
Thermal Integrity Profile Testing	Each	1
Thermal Integrity Profile Data Collection	Foot	199

Note:
For bar details, see sheet 189 of 288.

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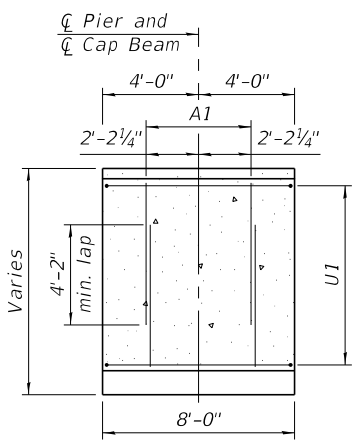
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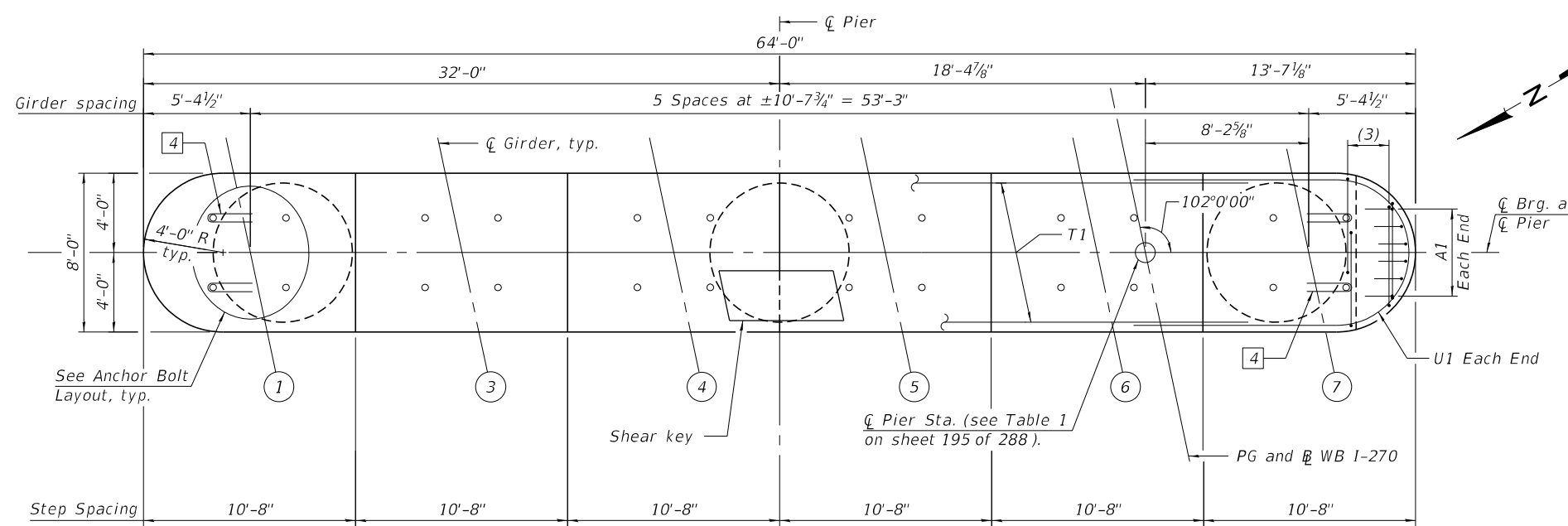
**PIER 7 AND 8 BILL OF MATERIAL
STRUCTURE NO. 060-0351 (WB)**

SHEET 191 OF 288 SHEETS

F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	696
				CONTRACT NO. 76190
ILLINOIS FED. AID PROJECT				

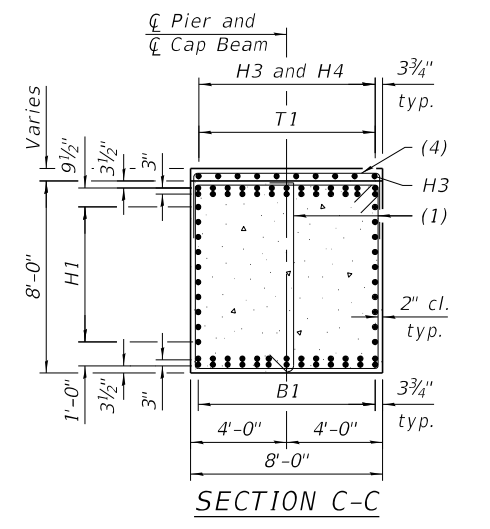


VIEW A-A
(T1 and (3) bars not shown for clarity)

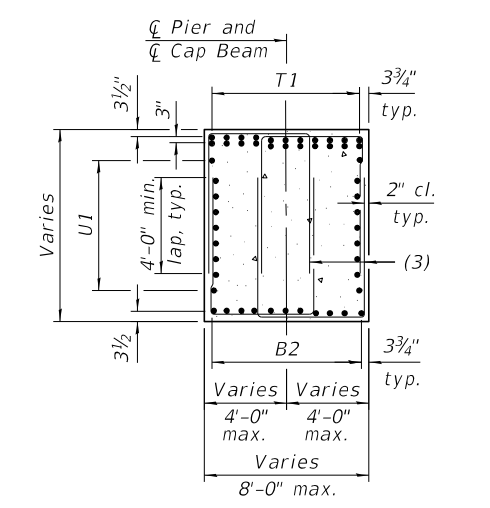


TOP PLAN

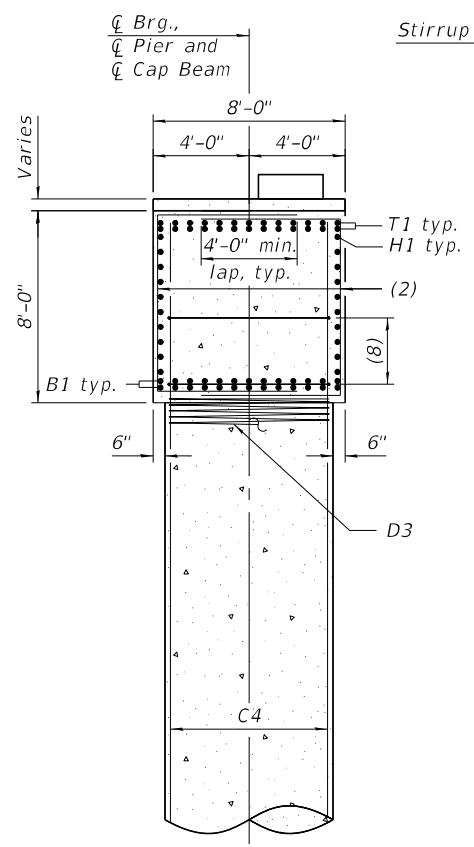
Note:
Space reinforcement in cap to miss anchor bolts. Pour steps monolithically with cap.
PG and #4 WB I-270



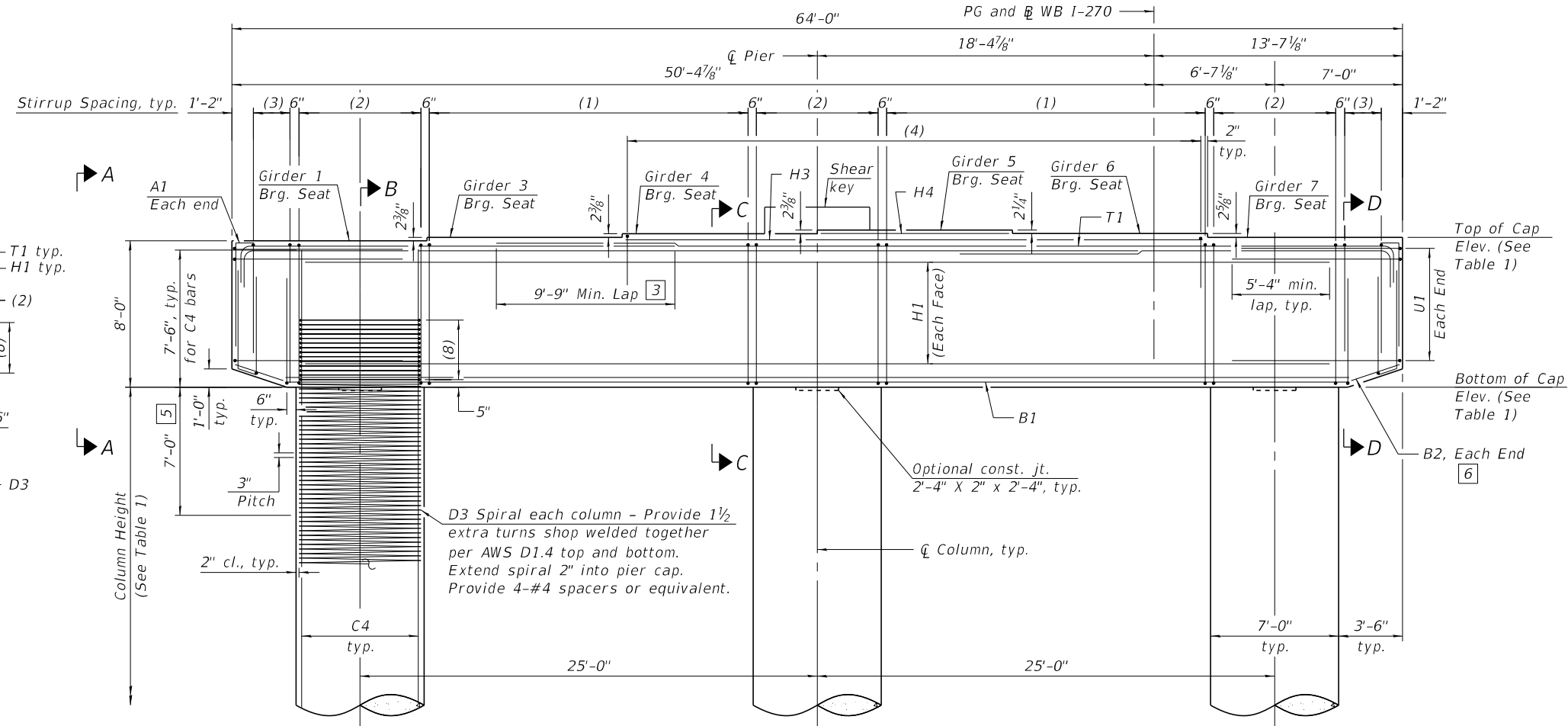
SECTION C-C



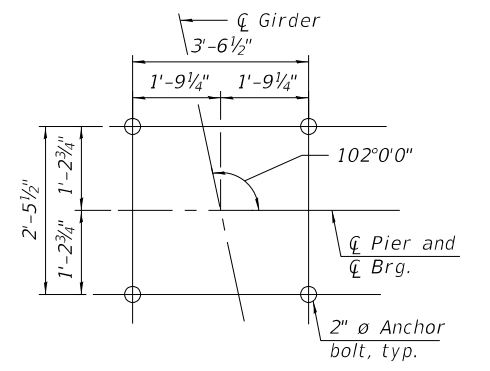
SECTION D-D



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 196 and 197 of 288.
For column height, step height and all elevations, see Table 1 on sheet 195 of 288.
For bearing details, see sheet 156 of 288.
For bar callouts and shear key details, see sheet 195 of 288.

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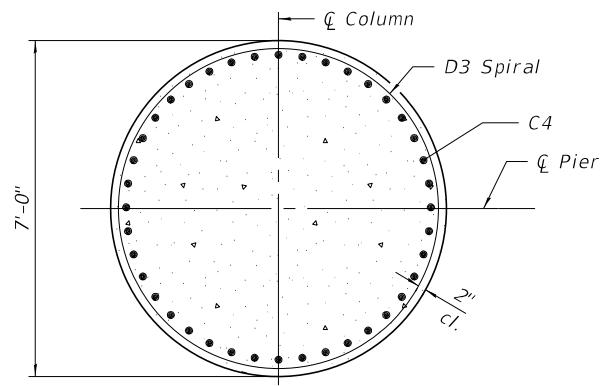
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DEPARTMENT OF TRANSPORTATION

PIER 9 PLAN AND ELEVATION - 1
STRUCTURE NO. 060-0351 (WB)

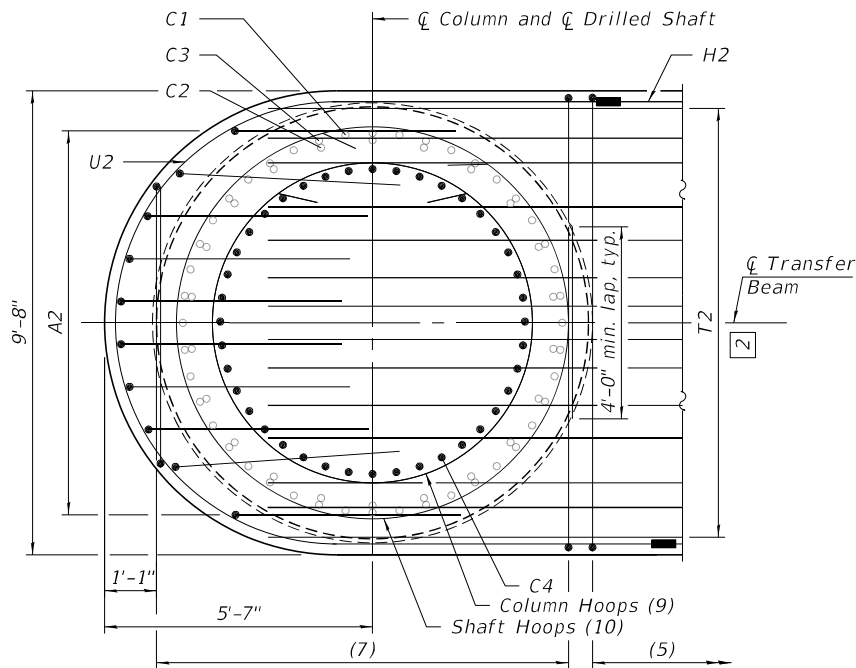
SHEET 192 OF 288 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	697
CONTRACT NO. 76190				

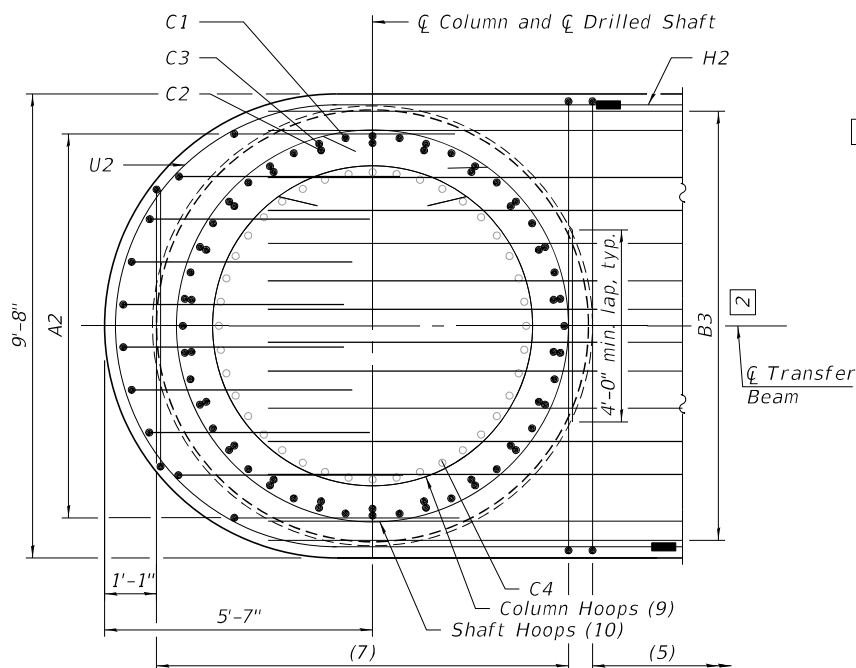
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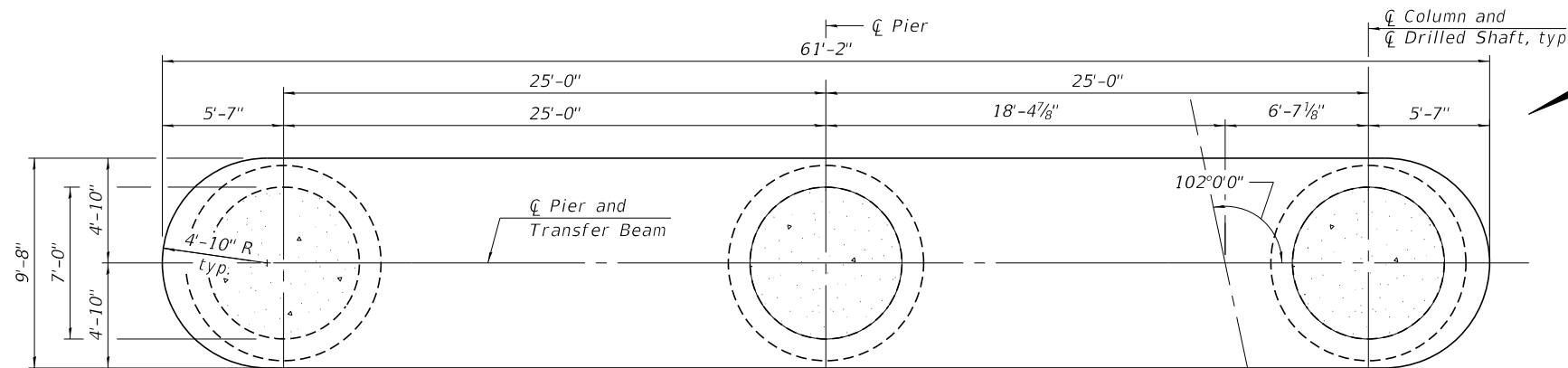
SECTION E-E



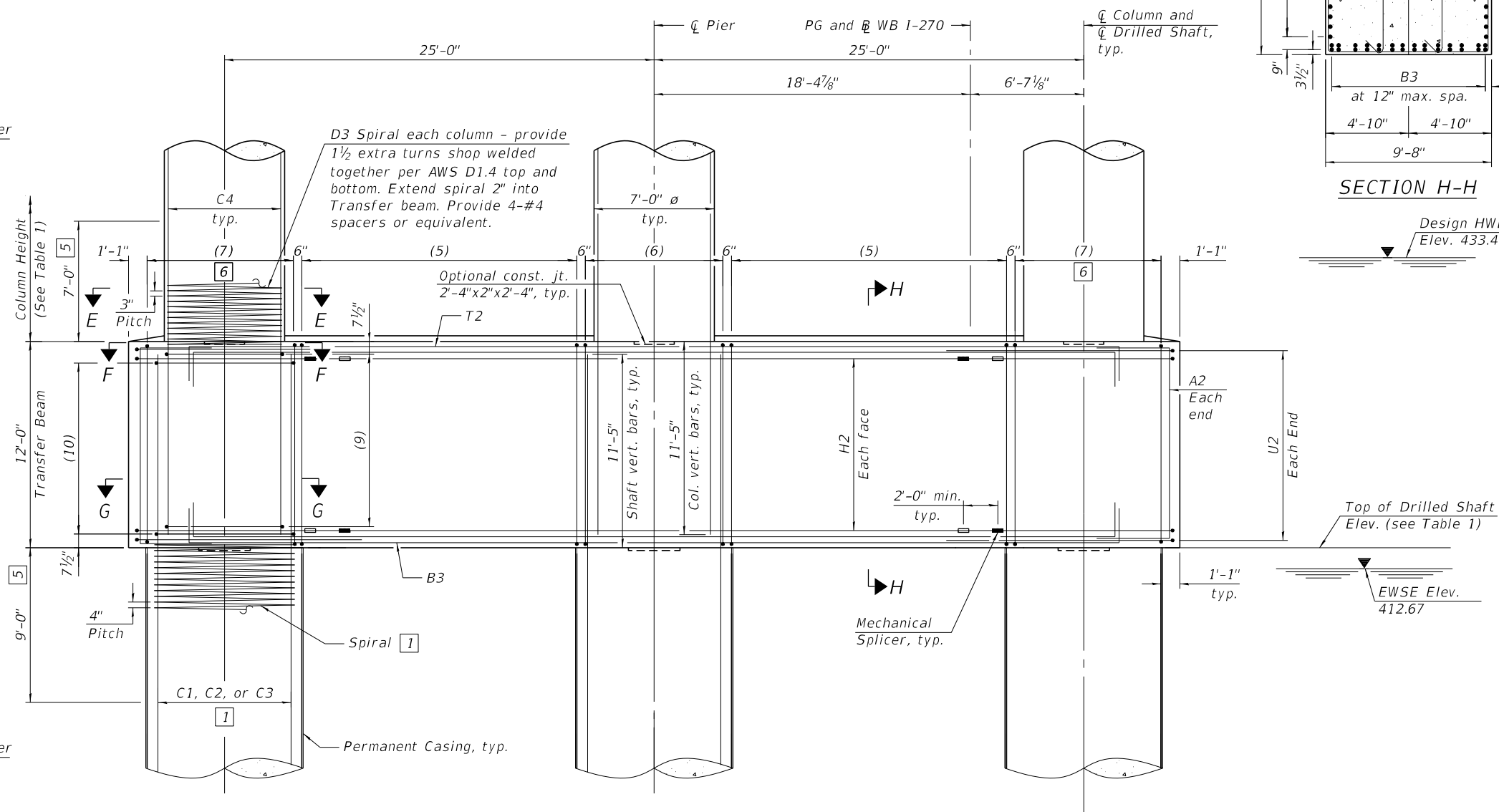
SECTION F-F



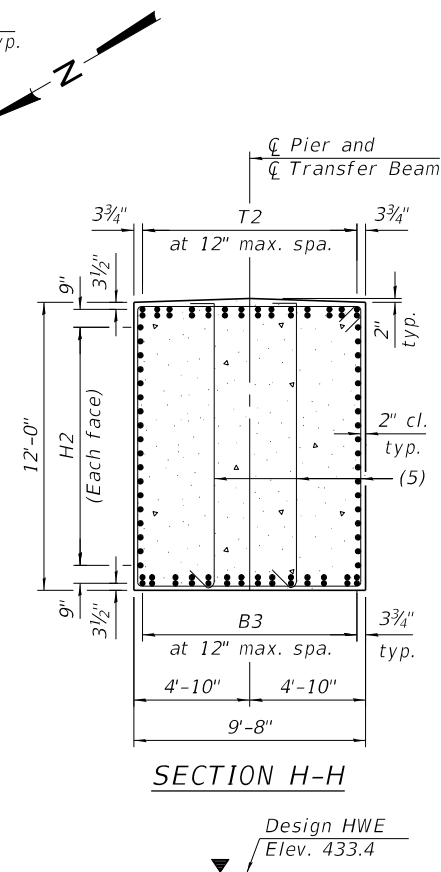
SECTION G-G



PLAN - TRANSFER BEAM



PART ELEVATION - TRANSFER BEAM
(Looking East)



SECTION H-H

- 1 See sheet 194 of 288 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 192 of 288.
 For Drilled Shaft details, see sheet 193 of 288.
 For additional notes, bar details, and Bill of Material, see sheets 196 and 197 of 288.
 For Table 1, see sheet 195 of 288.
 For Mechanical Splicer details, see sheet 242 of 288.

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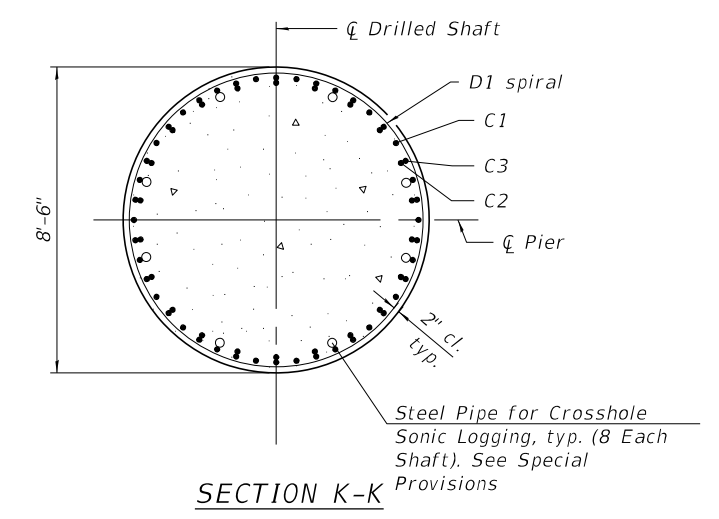
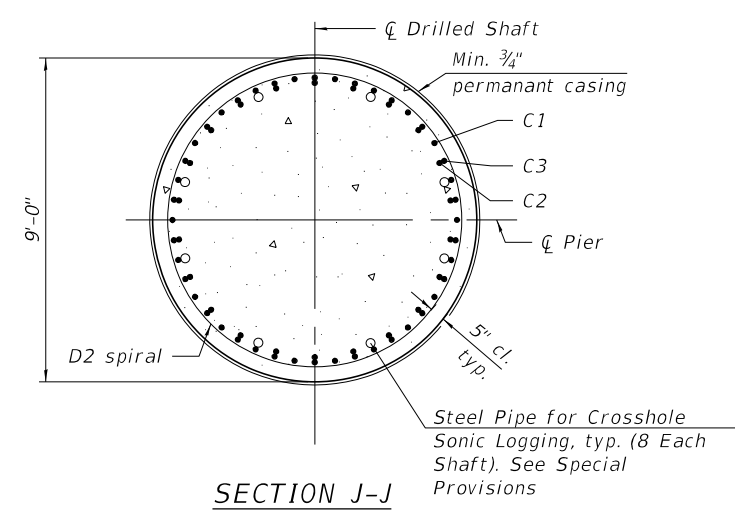
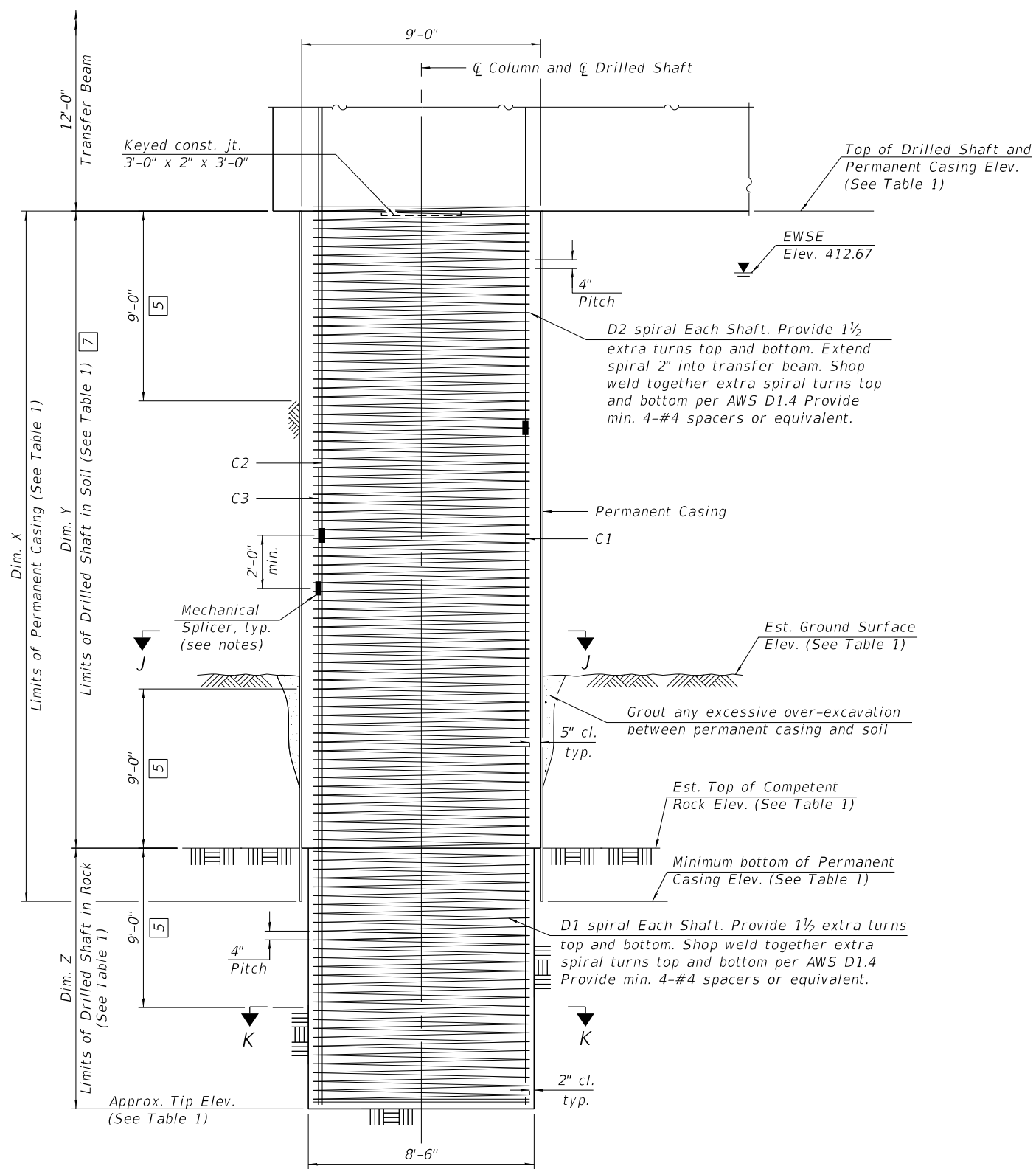
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PIER 9 PLAN AND ELEVATION - 2
 STRUCTURE NO. 060-0351 (WB)

SHEET 193 OF 288 SHEETS

F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	698
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 192 of 288.
 For Transfer Beam details, see sheet 193 of 288.
 For additional notes, bar details, and Bill of Material, see sheets 196 and 197 of 288.
 For Table 1, see sheet 195 of 288.
 For Mechanical Splicer details, see sheet 242 of 288.

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

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**STATE OF ILLINOIS
 DEPARTMENT OF TRANSPORTATION**

**PIER 9 PLAN AND ELEVATION - 3
 STRUCTURE NO. 060-0351 (WB)**

SHEET 194 OF 288 SHEETS

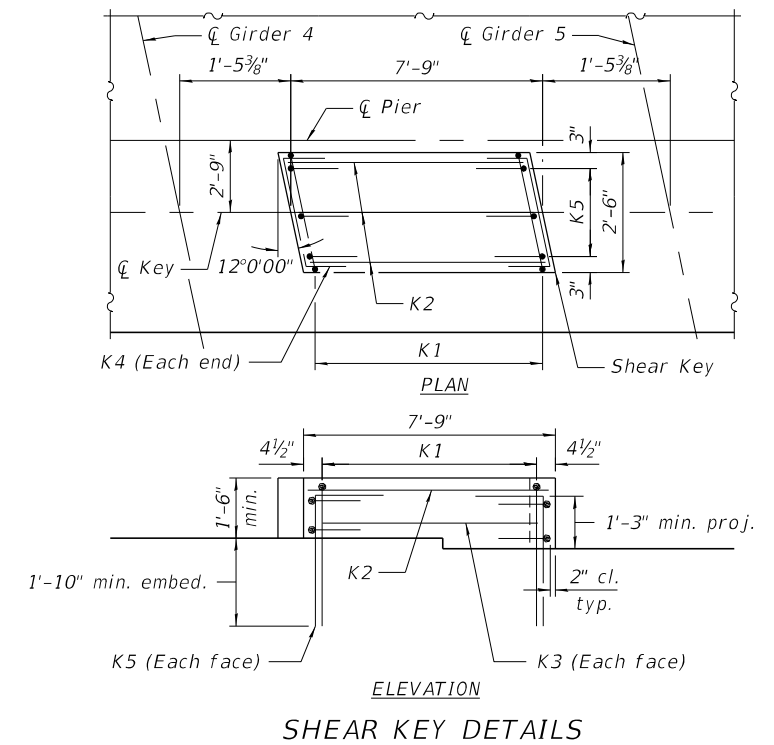
F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	699
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				

TABLE 1

		Pier 9
C Pier Station		2797+81.40
Bearing Seat Elevation	Girder 1	452.28
	Girder 3	452.48
	Girder 4	452.67
	Girder 5	452.87
	Girder 6	452.69
Girder 7		452.46
Top of Cap Elevation		452.28
Bottom of Cap Elevation		444.28
Column Height		17'-3 ³ / ₈ "
Top of Shaft Elevation		415.00
Approx. Tip Elevation		343.40
Est. Ground Surface Elevation		372.60
Est. Top of Rock Elevation		368.90
Min. bott. of Permanent Casing Elev.		366.90
Dim. X		48'-1 ¹ / ₄ "
Dim. Y		46'-1 ¹ / ₄ "
Dim. Z		25'-6"

PIER 9

Mark	Bar Callouts
(1)	43 sets of 1-#6 s901(E) and 1-#6 s905(E) at 5" cts.
(2)	14 sets of 2-#6 s902(E) at 6" cts.
(3)	6 sets of 4-#6 s907(E) at 5" cts.
(4)	48-#6 s908(E) at abt. 8" cts.
(5)	33 sets of 1-#6 s903(E) and 2-#6 s906(E) at 6" cts.
(6)	17 sets of 2-#6 s904(E) at 6" cts.
(7)	18 sets of 2-#6 s904(E) at 6" cts.
(8)	14-#7 hp902(E) hoops at 3" cts.
(9)	44-#7 hp902(E) hoops at 3" cts.
(10)	33-#7 hp901(E) hoops at 4" cts.
T1	2 layers of 13-#11 p901(E) or p902(E) at 7 ³ / ₈ " cts.
T2	14 bundles of 1-#11 p905(E) and 1-#11 p906(E) at 12" max.
B1	2 layers of 13-#11 p903(E) at 7 ³ / ₈ " cts.
B2	13-#7 p904(E) at 7 ³ / ₈ " cts.
B3	14 bundles of 1-#11 p905(E) and 1-#11 p906(E) at 12" max.
H1	10-#8 h901(E) at 7 ¹ / ₂ " cts.
H2	18-#9 h902(E) at 7" cts.
H3	13-#6 h903(E) at abt. 7 ³ / ₈ " cts.
H4	13-#6 h904(E) at abt. 7 ³ / ₈ " cts.
A1	6 sets of 1-#7 u903(E) and 1-#7 u904(E) at 10 ¹ / ₂ " cts.
A2	10-#7 u905(E) at 10 ³ / ₄ " cts.
U1	11-#8 u901(E) spaced with h901(E) and p901(E)
U2	20-#9 u902(E) splice with h902(E) and space with p905(E)
C1	22 sets of 1-#14 v901(E) and 1-#14 v902(E) (top)
C2	22 sets of 1-#14 v903(E) and 1-#14 v904(E) (top) Bundle w/ C3
C3	22 sets of 1-#14 v905(E) and 1-#14 v906(E) (top) Bundle w/ C2
C4	40-#11 v907(E) equally spaced
D1	#7 sp901(E) at 4" pitch
D2	#7 sp902(E) at 4" pitch
D3	#7 sp903(E) at 3" pitch
K1	15-#5 s909(E) spaced at 6" cts.
K2	3-#5 h905(E) spaced with n901(E)
K3	1-#5 h905(E) each face
K4	2-#5 h906(E) each face
K5	3-#5 n901(E) at 12" cts., each face
R1	#5 r901(E)



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**PIER 9 REINFORCEMENT TABLES - 1
STRUCTURE NO. 060-0351 (WB)**

SHEET 195 OF 288 SHEETS

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
270	60B-1	MADISON	875	700
CONTRACT NO. 76190				
ILLINOIS FED. AID PROJECT				