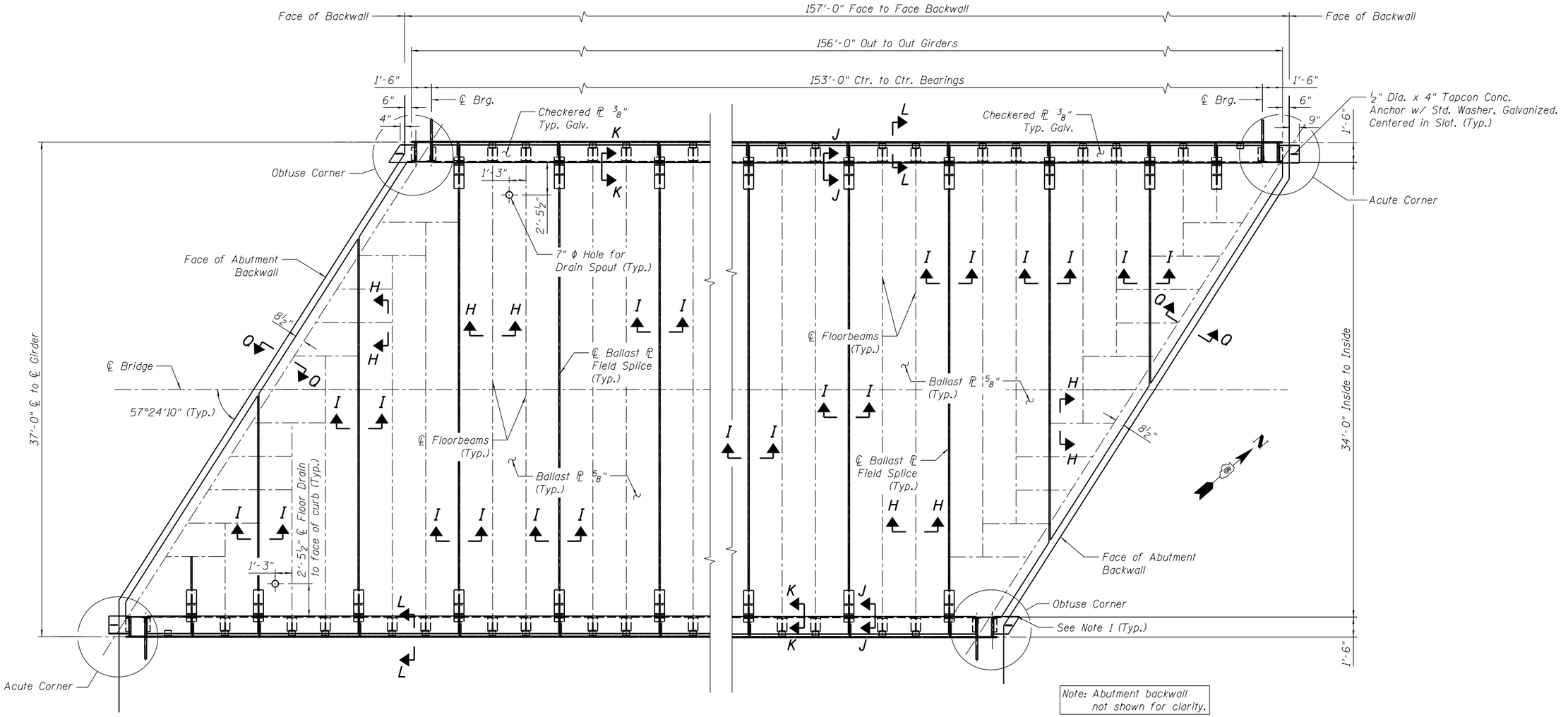
To HANNIBAL, MO
(Timetable West)

To DECATUR, IL
(Timetable East)



Note: Abutment backwall not shown for clarity.

CLOSURE PLATE & BALLAST PAN PLAN

See Sheet 15 of 29 for Section H-H, I-I, J-J, K-K, L-L, & Q-Q.

Notes:

1. Prior to Setting End Checkered PL, Build-up top of Concrete Backwall with Epoxy Grout to Support Checkered PL and Provide Sloped Surface to Eliminate Tripping Hazard. Typical All Four Corners.
2. Checkered PL Shall be ASTM A786 Gr 36 or ASTM A36. Galvanize after fabrication.

FINAL

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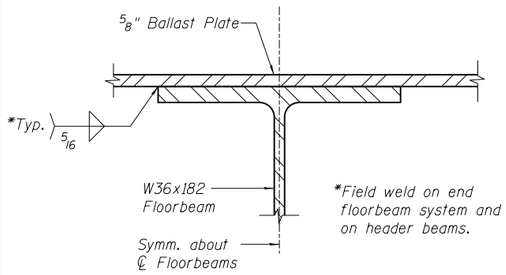
FILE NAME =	USER NAME = Pop00275	DESIGNED - MJW	REVISED -
		CHECKED - TJH/TDP	REVISED -
	PLOT SCALE = 0.2.0000 '' / in.	DRAWN - RSJ	REVISED -
	PLOT DATE = 6/26/2019	CHECKED - MJW	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

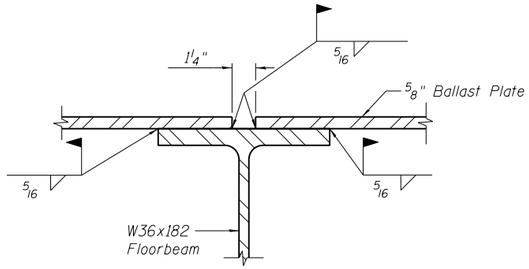
CLOSURE PLATE AND BALLAST PLATE PLAN
STRUCTURE 084-9961 - 5TH ST NSRR
SHEET NO. 14 OF 29 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
•	(109) VB,(110) VB-5	SANGAMON	382	201
		CONTRACT NO. 93733		
•666 & 666 ALT.	ILLINOIS FED. AID PROJECT			

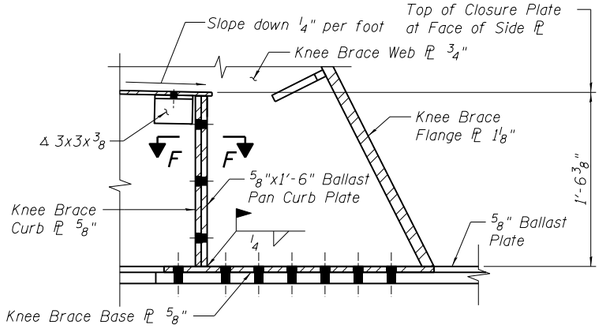


SECTION H-H BALLAST PLATE TO FLOORBEAM CONNECTION (TYP.)

Similar Detail at Header Beam

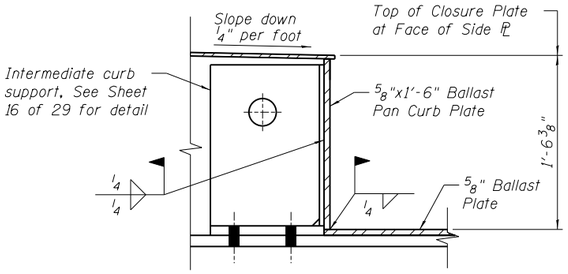


SECTION I-I

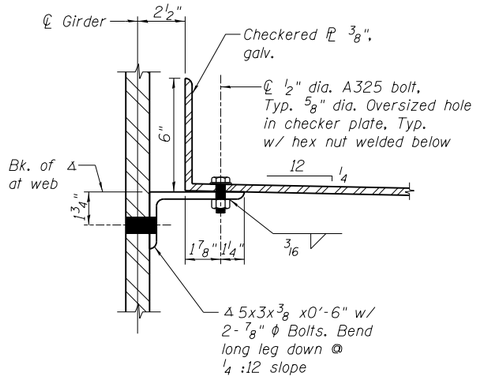


SECTION J-J

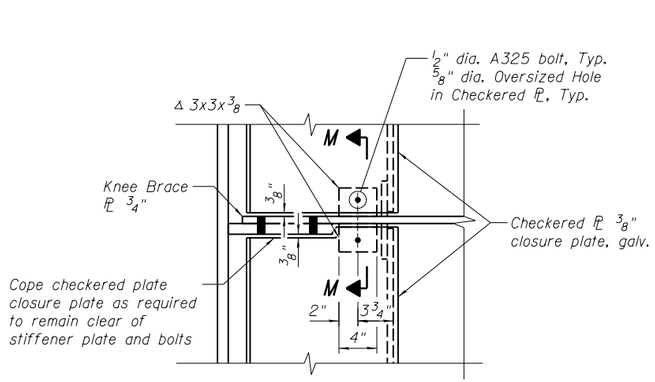
See Sheet 11 of 29 for Section F-F.



SECTION K-K

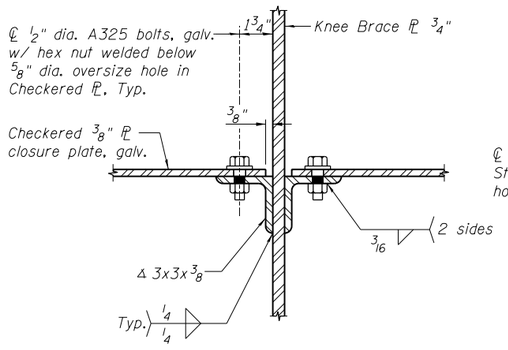


SECTION L-L

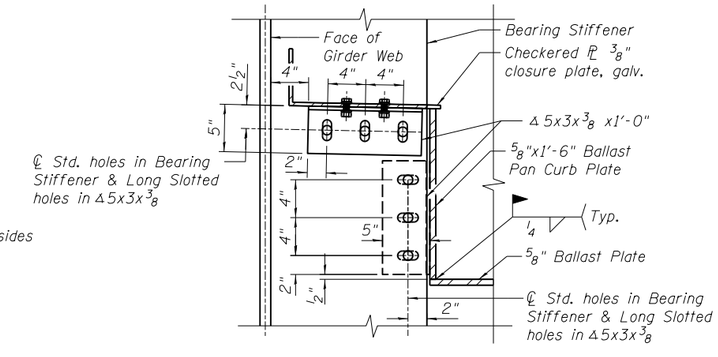


PLAN

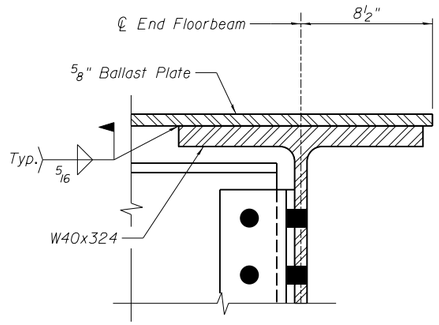
Closure Plate at Kneebrace
(Kneebrace Flange Omitted for Clarity)



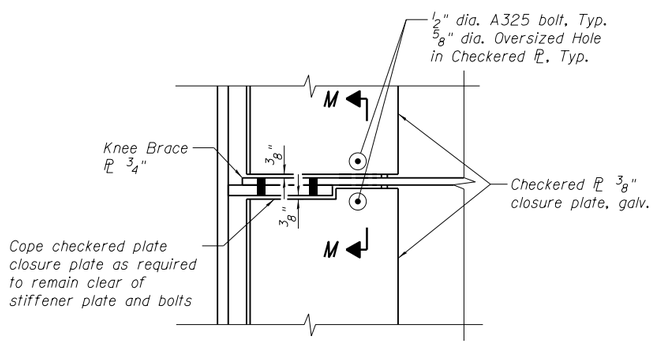
SECTION M-M



SECTION N-N

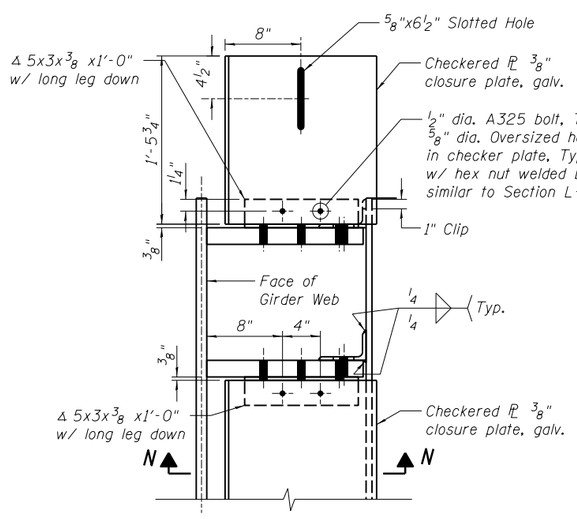


SECTION O-O



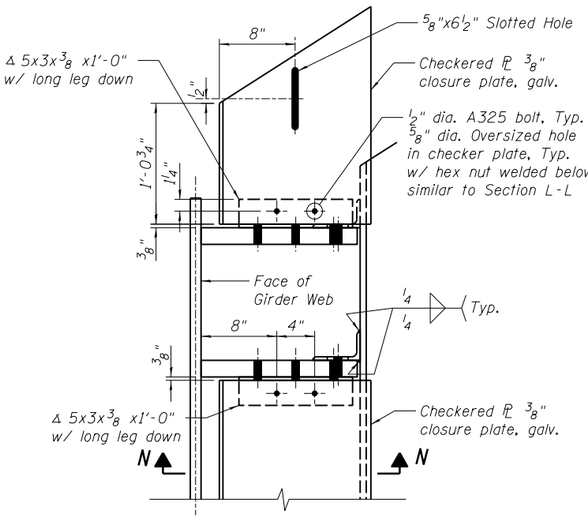
PLAN

Closure Plate at Kneebrace
(Kneebrace Flange Omitted for Clarity)



PLAN

Closure Plate at Bearing Stiffener
(Acute Corner)



PLAN

Closure Plate at Bearing Stiffener
(Obtuse Corner)

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FILE NAME =	USER NAME = Pop00275	DESIGNED - MJW	REVISED -
		CHECKED - TJH/TDP	REVISED -
	PLOT SCALE = 0x2.0000 '=' / in.	DRAWN - RSJ	REVISED -
	PLOT DATE = 6/26/2019	CHECKED - MJW	REVISED -

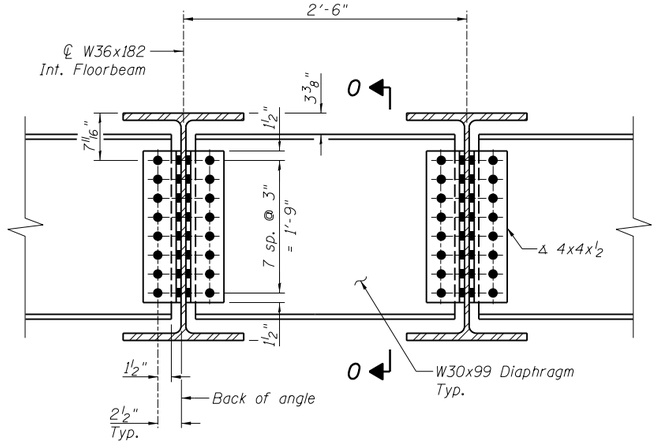
HANSON

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

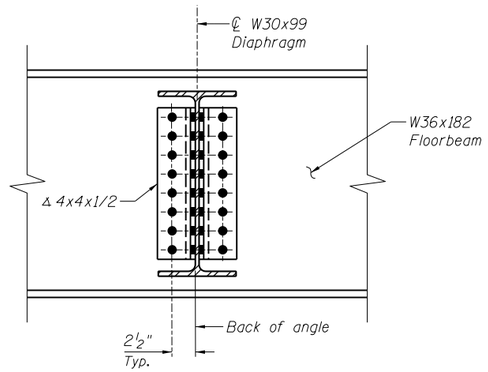
CLOSURE PLATE AND BALLAST PLATE DETAILS
STRUCTURE 084-9961 - 5TH ST NSRR

SHEET NO. 15 OF 29 SHEETS

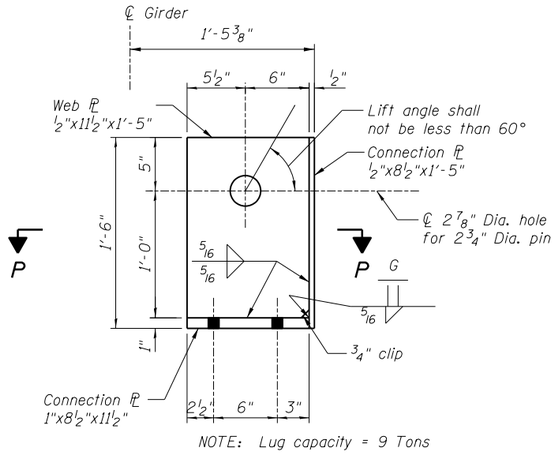
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
•	(109) VB,(110) VB-5	SANGAMON	382	202
		CONTRACT NO. 93733		
•666 & 666 ALT.	ILLINOIS FED. AID PROJECT			



LONGITUDINAL DIAPHRAGM DETAIL

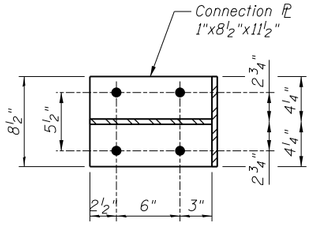


SECTION O-O

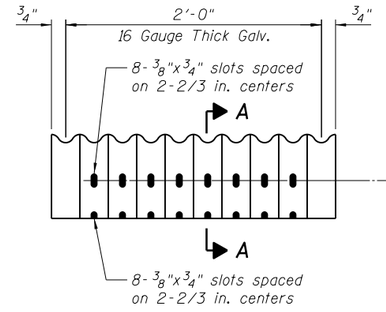


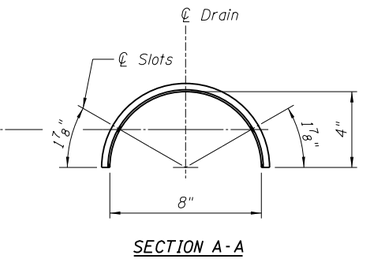
NOTE: Lug capacity = 9 Tons

INTERMEDIATE CURB SUPPORT



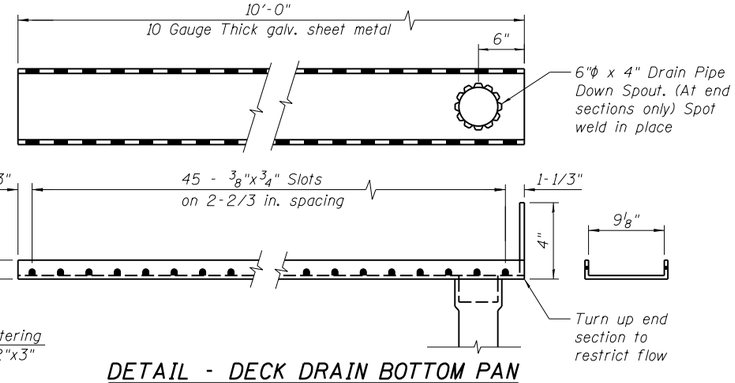
SECTION P-P



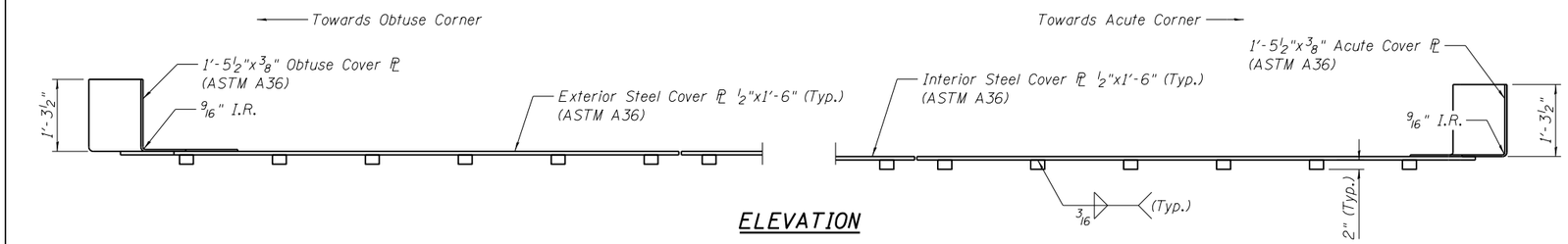


SECTION A-A

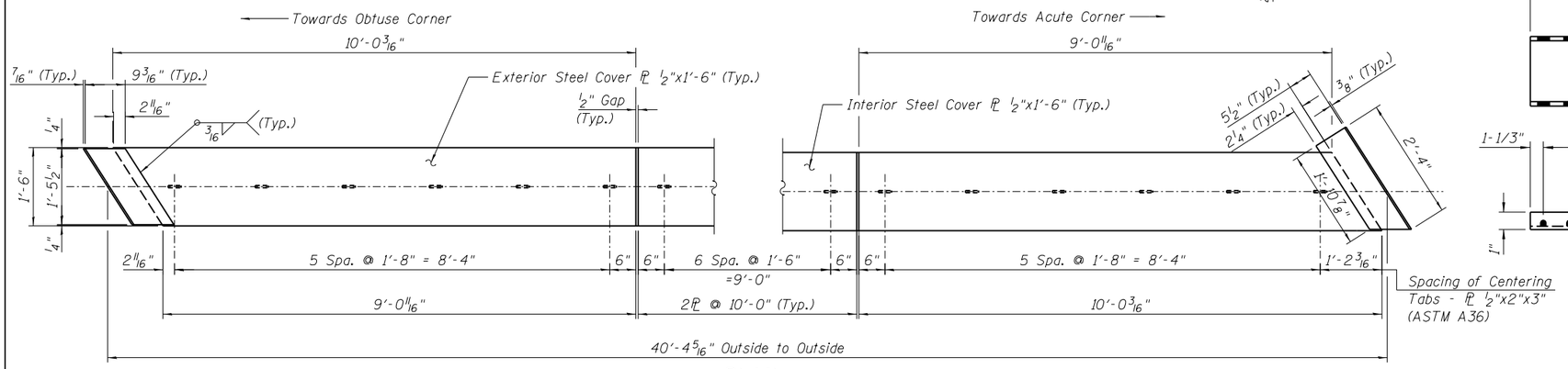
DETAIL - DECK DRAIN PIPE



DETAIL - DECK DRAIN BOTTOM PAN



ELEVATION



PLAN

COVER PLATES

(Galvanize after Fabrication)

Notes:
1. Lap Drain Pipe one corrugation at each end.
2. Coordinate outside diameter of drain pipe down spout with 6" ϕ Ductile Iron Pipe.
3. Cost for deck drain pipe and bottom pan shall be included in the cost of "Drainage System".

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FILE NAME =	USER NAME = Pop00275	DESIGNED - MJW	REVISED -
HANSON		CHECKED - TJH/TDP	REVISED -
	PLOT SCALE = 0:2.0000 '' / in.	DRAWN - RSJ	REVISED -
	PLOT DATE = 6/26/2019	CHECKED - MJW	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

MISCELLANEOUS GIRDER DETAILS – SHEET 1 OF 3
STRUCTURE 084-9961 – 5TH ST NSRR

SHEET NO. 16 OF 29 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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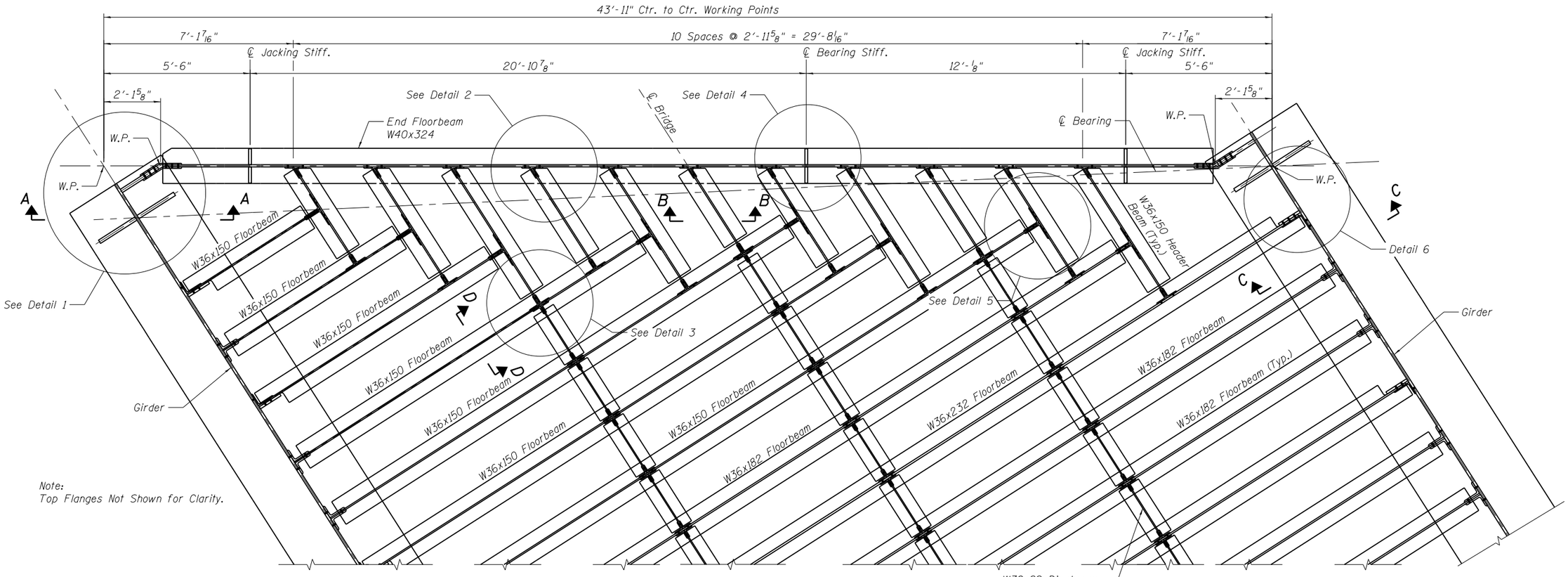
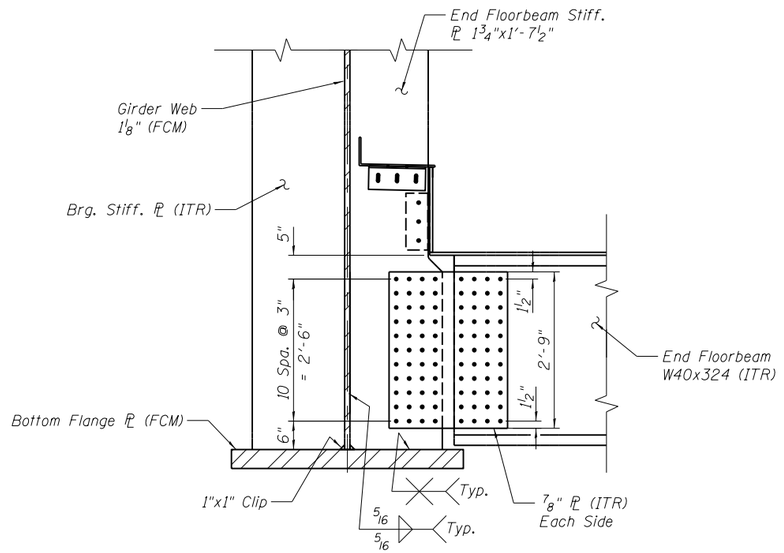
		CONTRACT NO. 93733		
•666 & 666 ALT.	ILLINOIS FED. AID PROJECT			



Note:
Top Flanges Not Shown for Clarity.

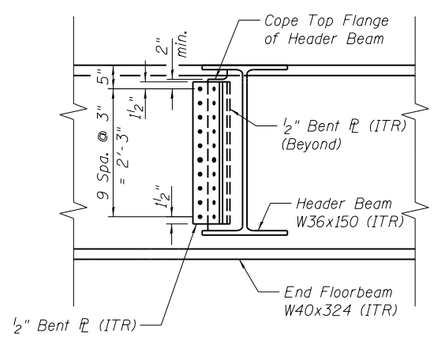
TYPICAL END FLOORBEAM PLAN

See Sheet 18 for Details



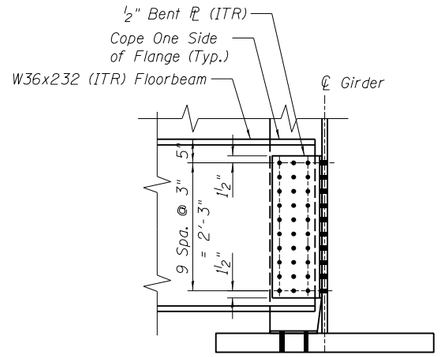
SECTION A-A

See Detail 1 on Sheet 18 for Horizontal Bolt Spacing.



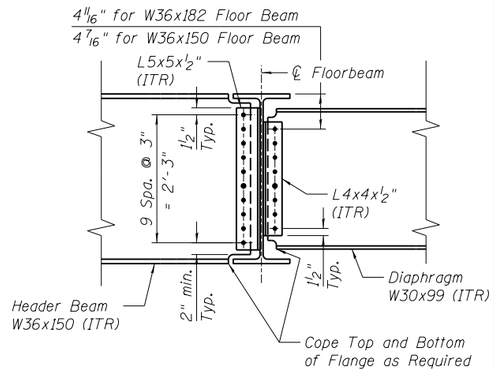
SECTION B-B

See Detail 2 on Sheet 18 for Horizontal Bolt Spacing.



SECTION C-C

See Detail 6 on Sheet 18 for Horizontal Bolt Spacing.



SECTION D-D

See Detail 3 on Sheet 18 for Horizontal Bolt Spacing.

USER NAME = Pop00275	DESIGNED - MJW	REVISED -
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PLOT SCALE = 0:2.0000 '' / in.	DRAWN - RSJ	REVISED -
PLOT DATE = 6/26/2019	CHECKED - MJW	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

MISCELLANEOUS GIRDER DETAILS – SHEET 2 OF 3
STRUCTURE 084-9961 – 5TH ST NSRR
SHEET NO. 17 OF 29 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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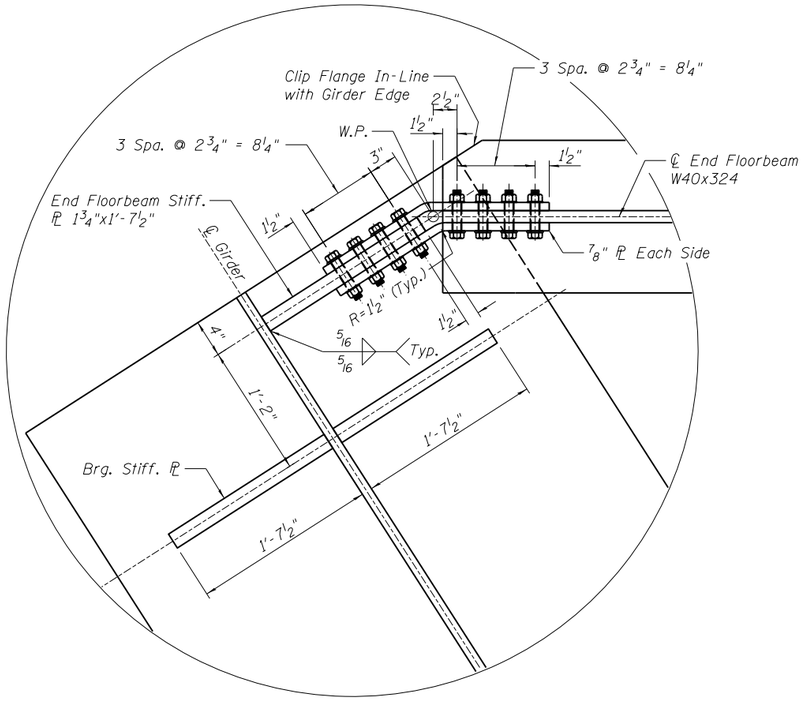
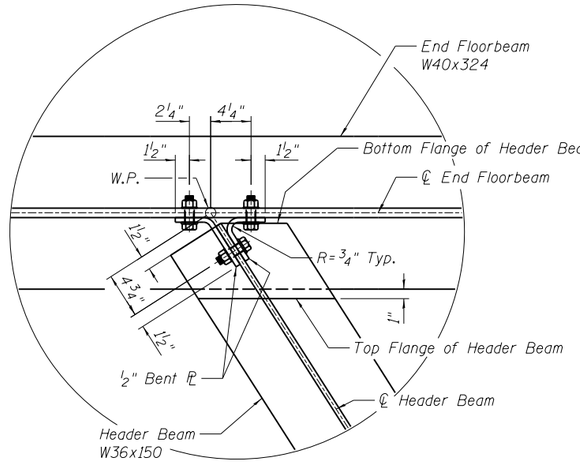
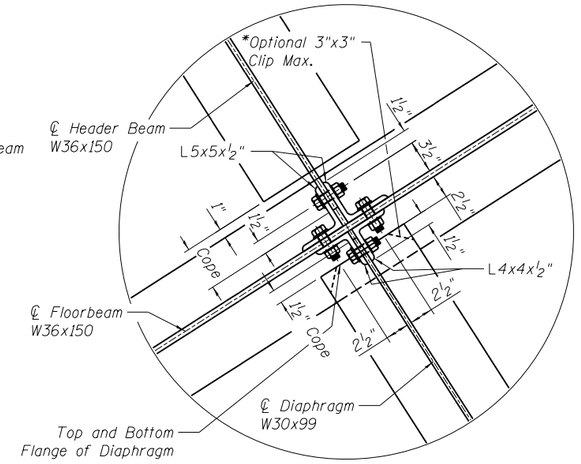
		CONTRACT NO. 93733		
•666 & 666 ALT.	ILLINOIS FED. AID PROJECT			



DETAIL 1

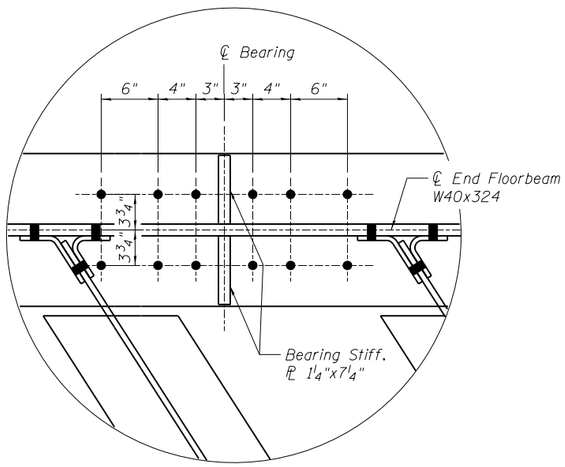


DETAIL 2

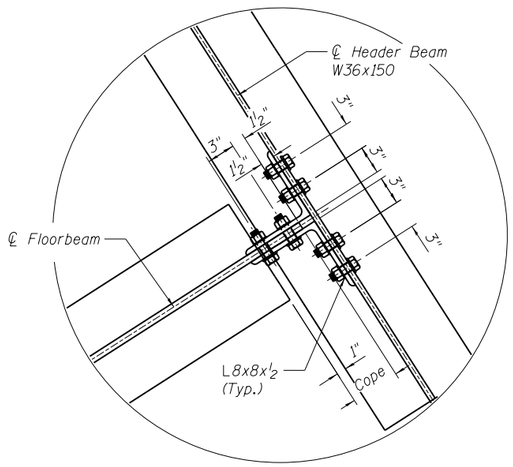


DETAIL 3

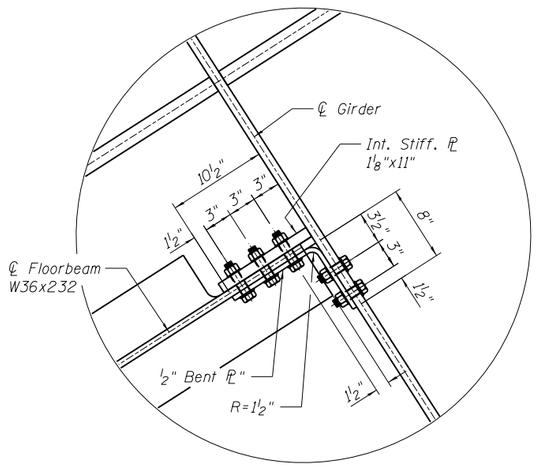
*Clipping diaphragm flanges is permitted to facilitate erection at intermediate and end floor system locations. If clipped it shall be provided at no additional cost to the Department.



DETAIL 4



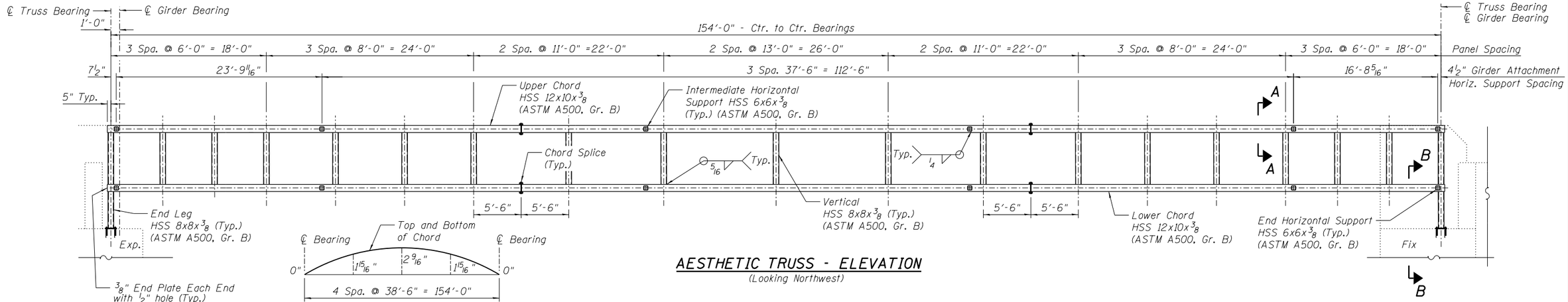
DETAIL 5



DETAIL 6

To HANNIBAL, MO
(Timetable West)

To DECATUR, IL
(Timetable East)

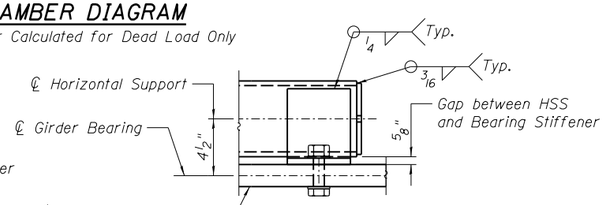


AESTHETIC TRUSS - ELEVATION

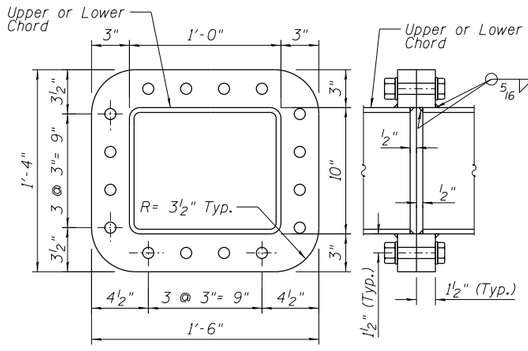
(Looking Northwest)

CAMBER DIAGRAM

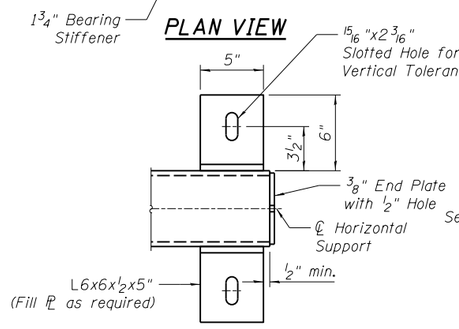
Camber Calculated for Dead Load Only



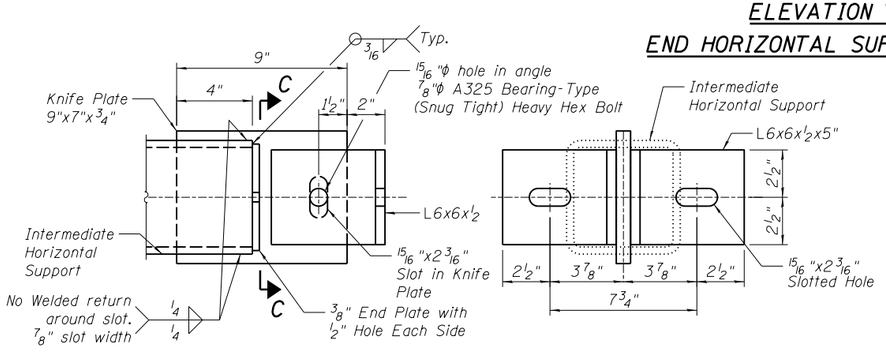
PLAN VIEW



CHORD SPLICE DETAIL

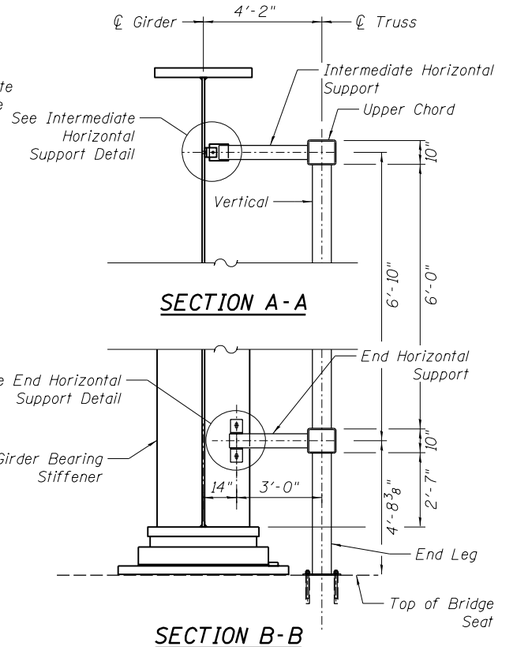


ELEVATION VIEW
END HORIZONTAL SUPPORT DETAIL



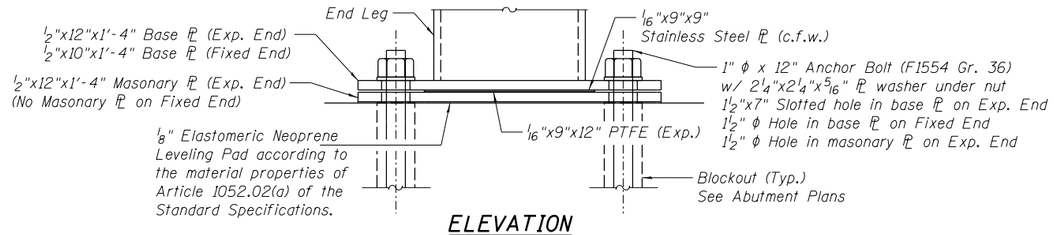
INTERMEDIATE HORIZONTAL SUPPORT DETAIL

SECTION C-C

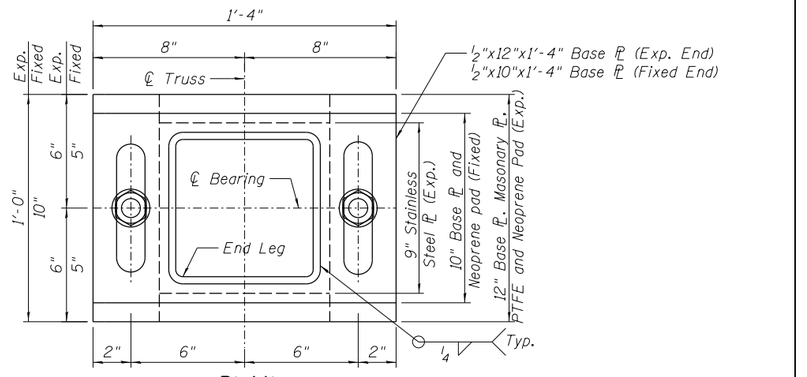


SECTION A-A

SECTION B-B



ELEVATION



PLAN
END LEG BEARING DETAIL

(Expansion Bearing Shown)

Note:

Location of Fixed and Expansion bearings shall match the girder.

Cost for elastomeric neoprene leveling pad, PTFE surface, shall be included in the cost of "Furnishing and Erecting Structural Steel, Bridge No. 2.

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 shall be installed in blockouts with non-shrink grout meeting the material requirements of Article 1024.02 of the Standard Specifications. Blockouts shall be clean prior to grouting and grout installed according to manufactures recommendations.

The PTFE shall be bonded directly to the masonry plate according to the manufacturers recommendations.

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FILE NAME =

HANSON

USER NAME = Pop00275	DESIGNED - MJW	REVISED -
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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

AESTHETIC TRUSS
STRUCTURE 084-9961 - 5TH ST NSRR
SHEET NO. 19 OF 29 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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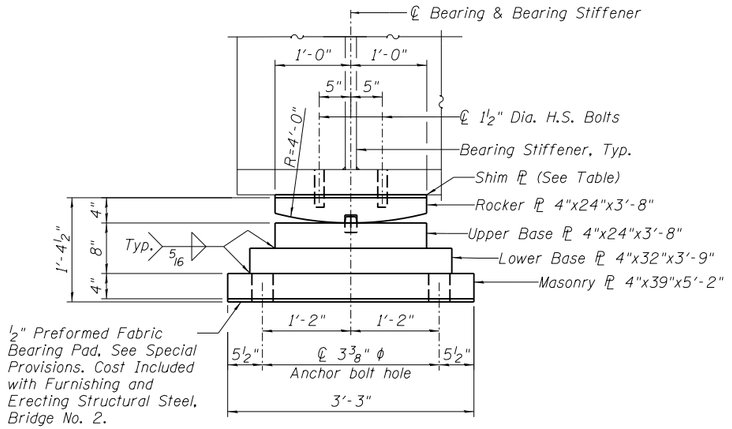
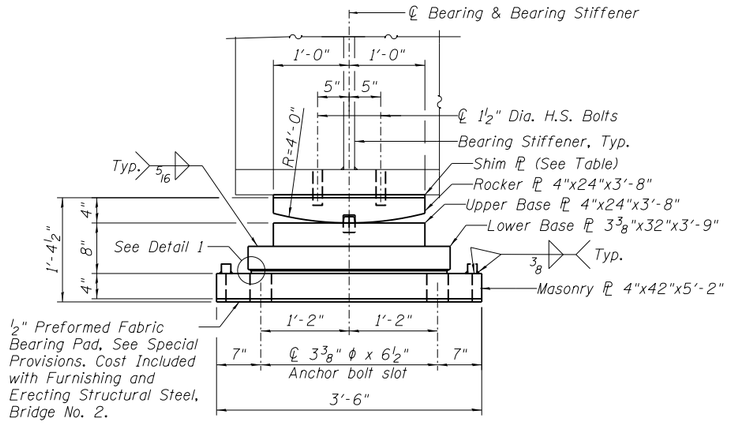
		CONTRACT NO. 93733		
•666 & 666 ALT.	ILLINOIS FED. AID PROJECT			



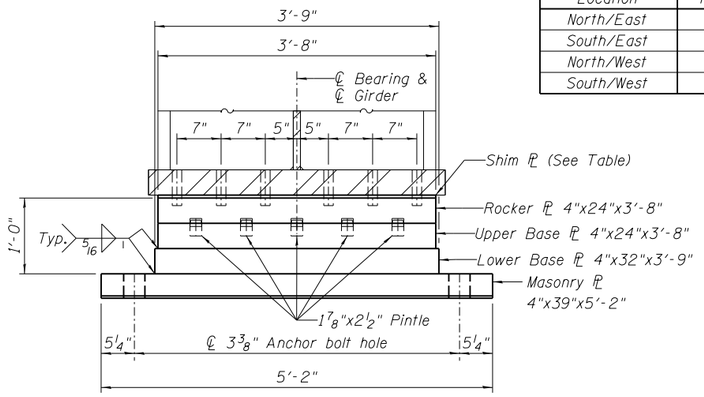
ELEVATION - FIXED BEARING



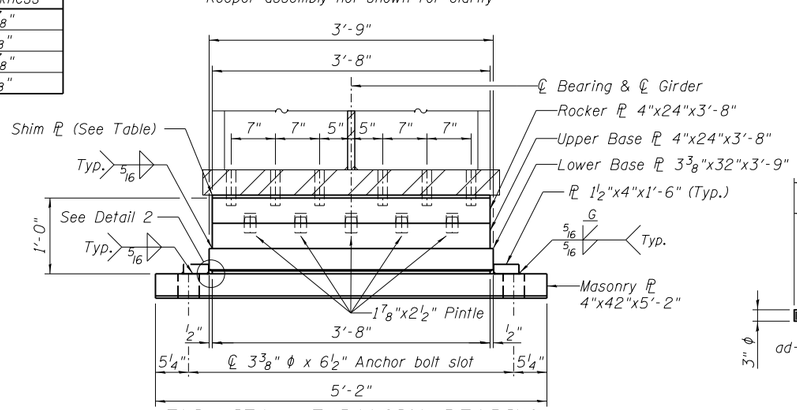
ELEVATION - EXPANSION BEARING

Keeper assembly not shown for clarity

SHIM PLATE THICKNESS	
Location	Thickness
North/East	7/8"
South/East	1/8"
North/West	7/8"
South/West	1/8"

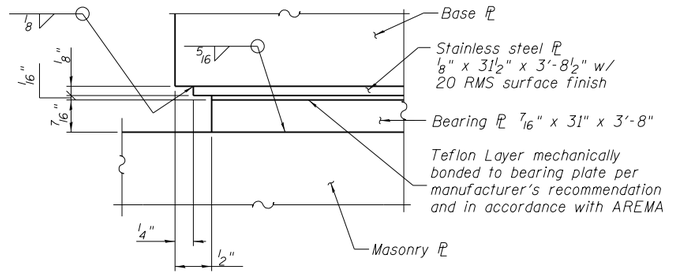


END VIEW - FIXED BEARING

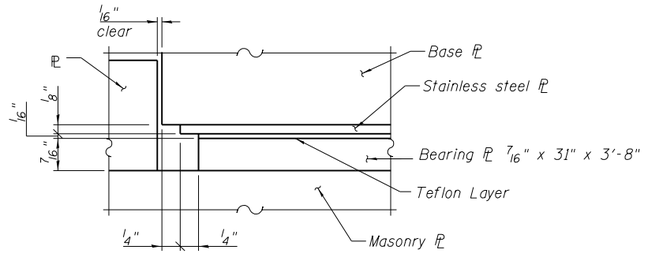


END VIEW - EXPANSION BEARING

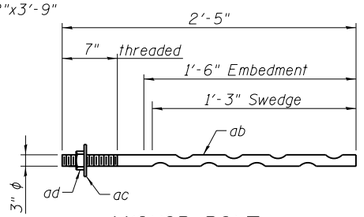
Keeper assembly not shown for clarity



DETAIL 1

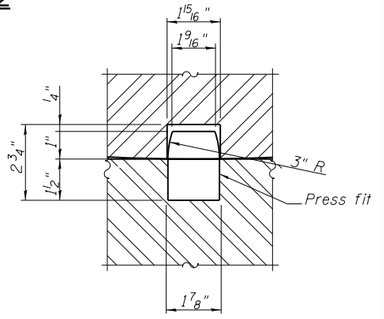


DETAIL 2

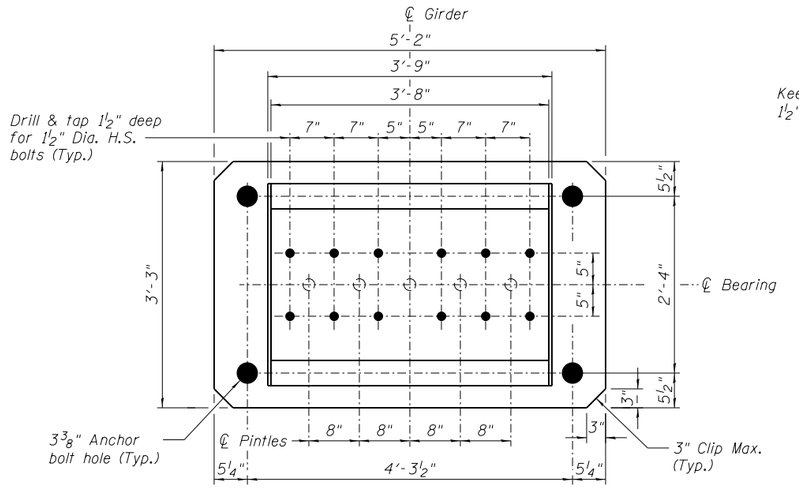


ANCHOR BOLT

1 - Bar 3" Dia. x 2'-5" - ab
1 - Bar 5½" Dia. x ¼" w/ 3⅛" Dia. hole at center - ac
1 - Heavy Hex Nut - ad
Weight = 69 lbs.
Galvanize after fabrication
(16 Required)

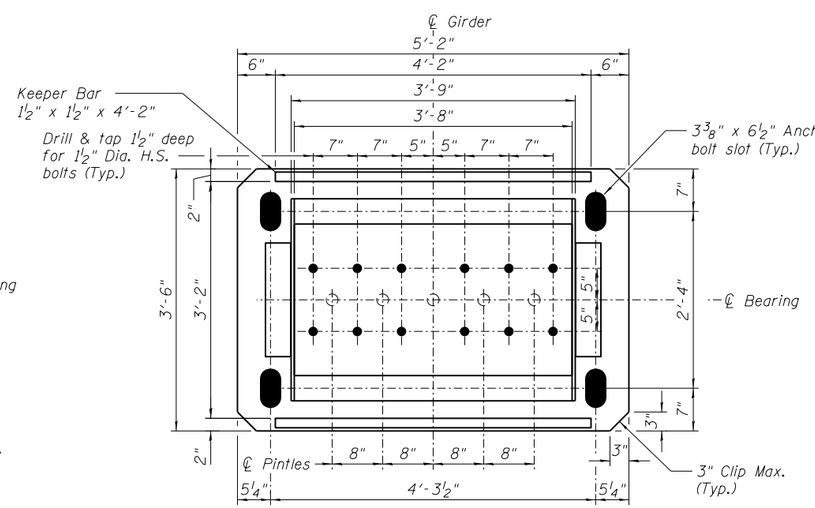


PINTLE DETAIL



PLAN VIEW - FIXED BEARING

(2 Required)



PLAN VIEW - EXPANSION BEARING

(2 Required)

NOTES:

1. Steel used for bearing assemblies shall conform to ASTM A709 GR50, unless noted otherwise. Anchor bolts shall conform to ASTM F1554 Gr 105. Cost of bearings and anchor bolts shall be included in the cost of "Furnishing and Erecting Structural Steel, Bridge No. 2".
2. Stainless steel shall conform to ASTM A480.
3. Bearing assembly weldments shall be stressed relieved by heat treating prior to finish machining, per current AWS structural welding codes.
4. Teflon Layer shall be composed of virgin unfilled TFE resin, unfilled TFE sheets or unfilled TFE fabric. Filler material, such as milled glass fibers will not be allowed. Teflon layer shall conform to the requirements of AREMA Chapter 15.
5. All surfaces in moving contact shall be finished 125√.
6. All dimensions shown are final dimensions after machining.
7. Bearings to be shop fitted to girders, match marked and assembled in units for shipping.
8. Anchor bolts, nuts and plate washers shall be galvanized in accordance with ASTM B695, Class 50.
9. Anchor bolt nuts shall be A563 Gr DH Heavy Hex & Washers shall be F436 Type 1.
10. Bolt removal and replacements to gain access to properly tighten bearing bolts is incidental to steel erection.

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FILE NAME =

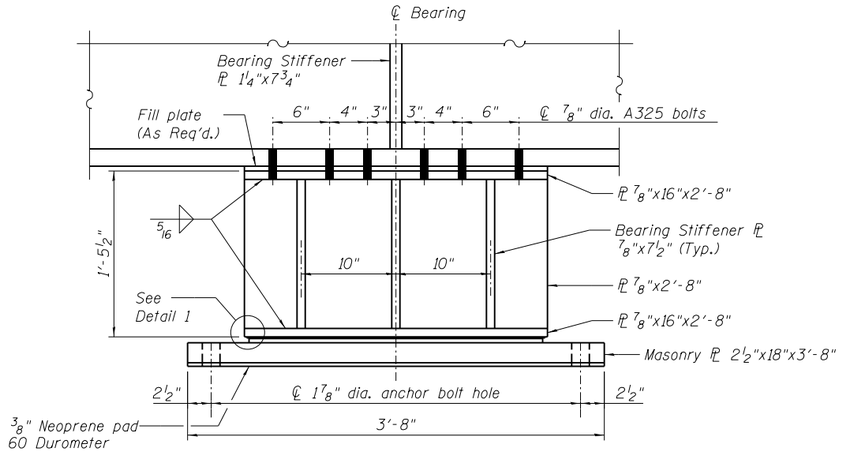
HANSON

USER NAME = Pop00275	DESIGNED - MJW	REVISED -	
	CHECKED - TJH/TDP	REVISED -	
PLOT SCALE = 0:2.0000 '' / in.	DRAWN - RSJ	REVISED -	
PLOT DATE = 6/26/2019	CHECKED - MJW	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

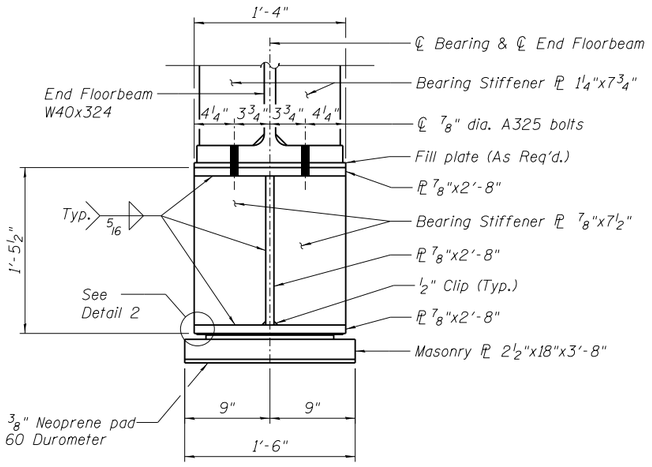
TPG BEARING DETAILS
STRUCTURE 084-9961 - 5TH ST NSRR
SHEET NO. 20 OF 29 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
•	(109) VB,(110) VB-5	SANGAMON	382	207
		CONTRACT NO. 93733		
•666 & 666 ALT.	ILLINOIS FED. AID PROJECT			



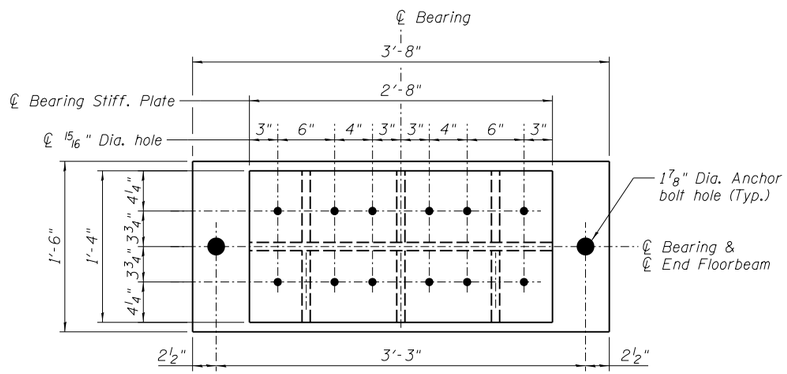
ELEVATION - END FLOORBEAM BEARING

Anchor Bolt not shown for clarity



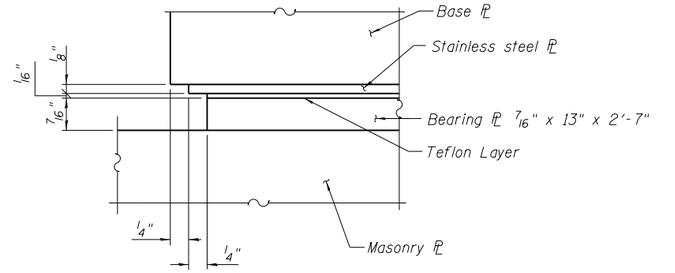
END VIEW - END FLOORBEAM BEARING

Anchor Bolt not shown for clarity

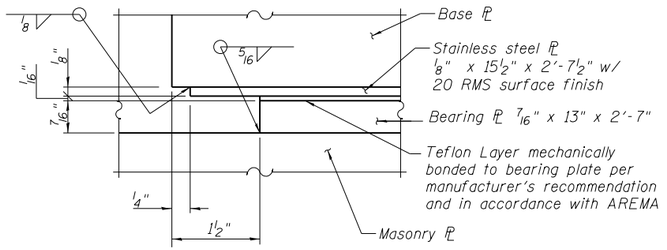


PLAN VIEW - END FLOORBEAM BEARING

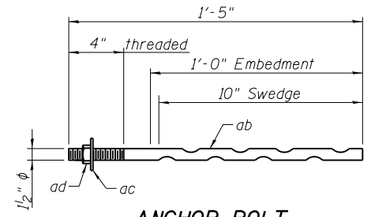
(2 Required)



DETAIL 1



DETAIL 2



ANCHOR BOLT

1 - Bar 1½" Dia. x 1'-5" - ab
1 - Bar 3" Dia. x ¼" w/ 1⅝" Dia. hole at center - ac
1 - Heavy Hex Nut - ad
Weight = 10 lbs.
Galvanize after fabrication
(4 Required)

NOTES:

1. Steel used for bearing assemblies shall conform to ASTM A709 GR50, unless noted otherwise. Anchor bolts shall conform to ASTM F1554 Gr 105. Cost of bearings and anchor bolts shall be included in the cost of "Furnishing and Erecting Structural Steel, Bridge No. 2".
2. Stainless steel shall conform to ASTM A480.
3. Bearing assembly weldments shall be stressed relieved by heat treating prior to finish machining, per current AWS structural welding codes.
4. Teflon Layer shall be composed of virgin unfilled TFE resin, unfilled TFE sheets or unfilled TFE fabric. Filler material, such as milled glass fibers will not be allowed. Teflon layer shall conform to the requirements of AREMA Chapter 15.
5. All surfaces in moving contact shall be finished 125 $\sqrt{}$.
6. All dimensions shown are final dimensions after machining.
7. Bearings to be shop fitted to girders, match marked and assembled in units for shipping.
8. Anchor bolts, nuts and plate washers shall be galvanized in accordance with ASTM B695, Class 50.
9. Anchor bolt nuts shall be A563 Gr DH Heavy Hex & Washers shall be F436 Type 1.
10. Bolt removal and replacements to gain access to properly tighten bearing bolts is incidental to steel erection.

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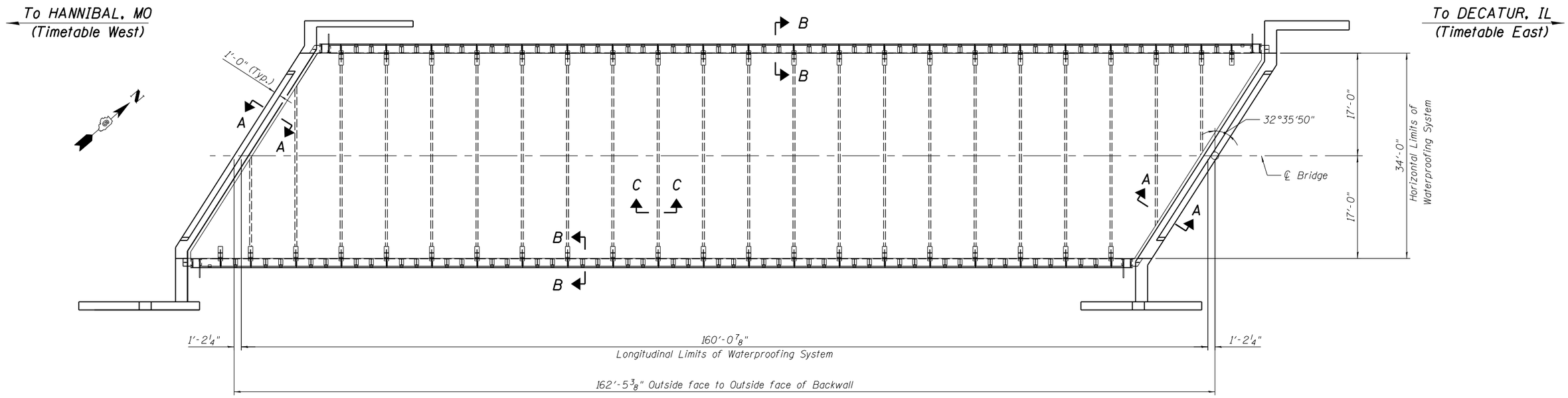
FILE NAME =	USER NAME = Pop00275	DESIGNED - MJW	REVISED -
		CHECKED - TJH/TDP	REVISED -
	PLOT SCALE = 0.2.0000 '' / in.	DRAWN - RSJ	REVISED -
	PLOT DATE = 6/26/2019	CHECKED - MJW	REVISED -

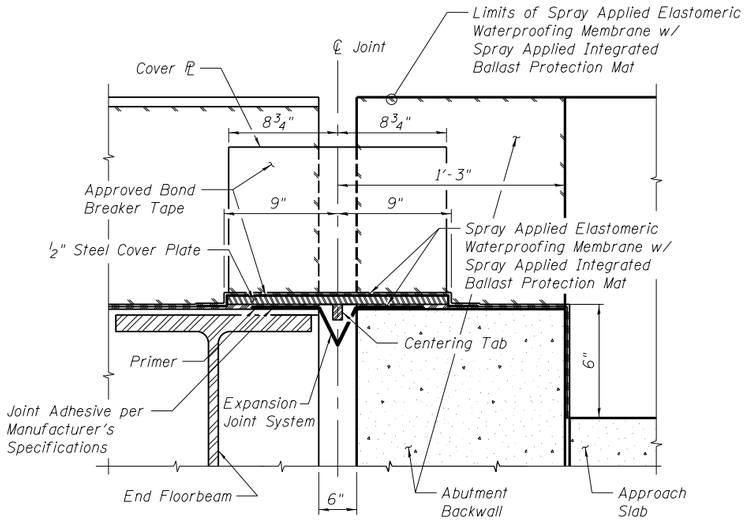
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

END FLOORBEAM BEARING DETAILS
STRUCTURE 084-9961 - 5TH ST NSRR
SHEET NO. 21 OF 29 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
•	(109) VB,(110) VB-5	SANGAMON	382	208
		CONTRACT NO. 93733		
•666 & 666 ALT.	ILLINOIS	FED. AID PROJECT		



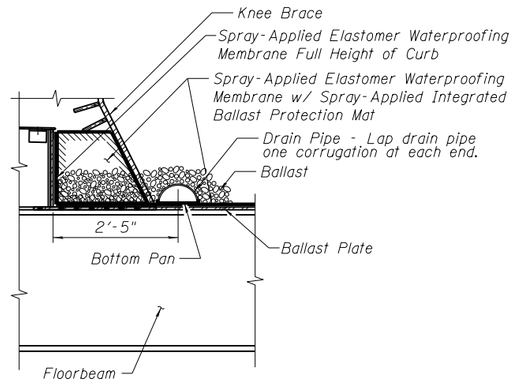
WATERPROOFING LIMITS PLAN



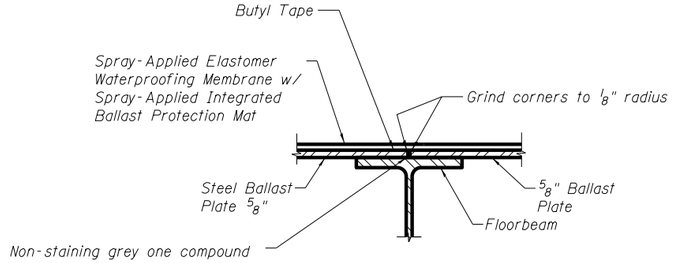
Note:
1. Bridge deck membrane continuous thru joint.
2. Typical Joint Detail shown for information only. Waterproofing installer shall determine final details in accordance with the manufacturer's recommendations.

SECTION A-A

(At Rt. 4's to Bk. of Abut.)



SECTION B-B



SECTION C-C

Notes:

1. Prepare surfaces and apply in accordance with Manufacturer's recommendations.
2. Structural steel cover plates shall be galvanized.
3. Cost of joint adhesive and bond breaker tape shall be included in the cost of "Membrane Waterproofing (Special)".
4. The cover plate is included in the weight of the Structural Steel and will be paid for as "Furnishing and Erecting Structural Steel, Bridge No. 2".
5. For cover plate details see Sheet 16 of 29.

BILL OF MATERIAL

ITEM	UNIT	TOTAL
Membrane Waterproofing (Special)	Sq. Ft.	5,957

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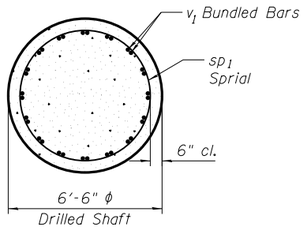
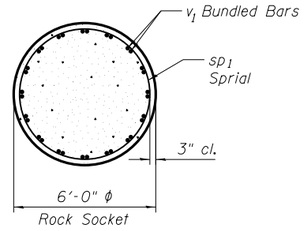
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

BRIDGE DECK WATERPROOFING
STRUCTURE 084-9961 - 5TH ST NSRR
SHEET NO. 22 OF 29 SHEETS

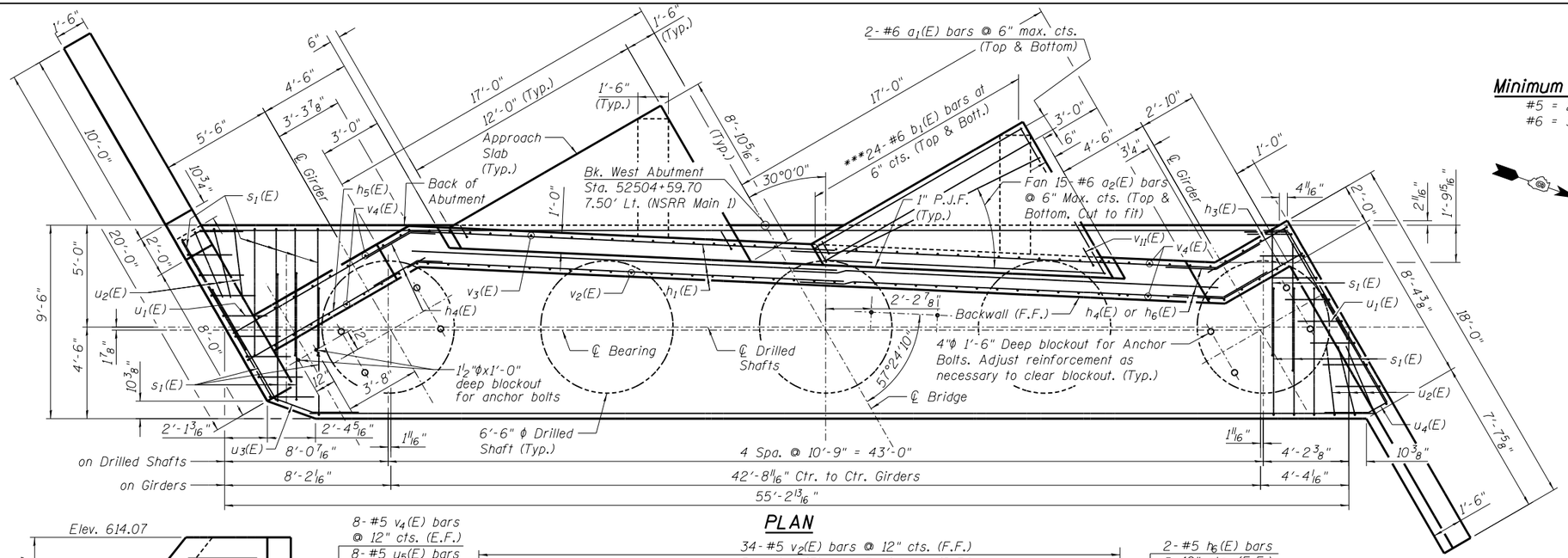
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
•	(109) VB,(110) VB-5	SANGAMON	382	209
		CONTRACT NO. 93733		
•666 & 666 ALT.	ILLINOIS FED. AID PROJECT			

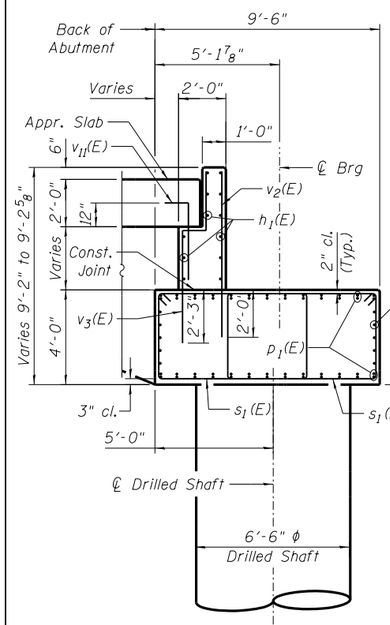


SECTION B-B



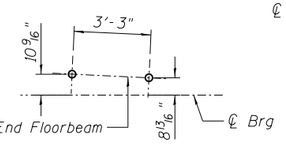
SECTION C-C





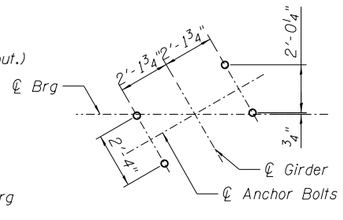
SECTION A-A

(At Rt. L's to Bk. of Abut.)



BLOCKOUT LAYOUT

(At End Floorbeam Location)



BLOCKOUT LAYOUT

(At Girders Locations)

ELEVATION - WEST ABUTMENT

(Looking West)

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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

WEST ABUTMENT
STRUCTURE 084-9961 - 5TH ST NSRR
SHEET NO. 23 OF 29 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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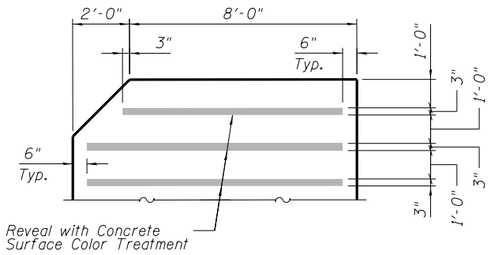
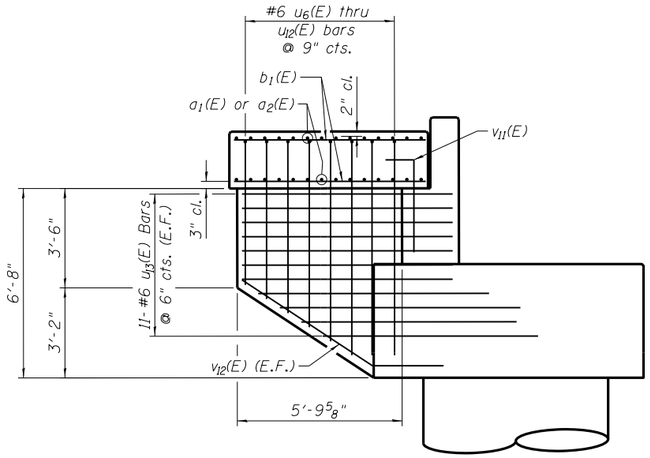
		CONTRACT NO. 93733		
•666 & 666 ALT.	ILLINOIS FED. AID PROJECT			

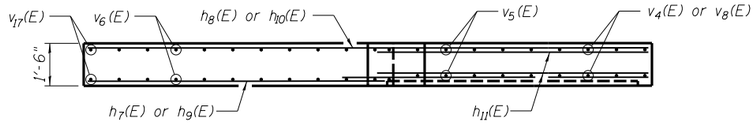


CONCRETE REVEAL DETAIL

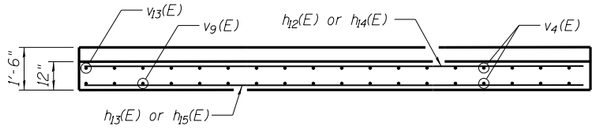


APPROACH SLAB SECTION

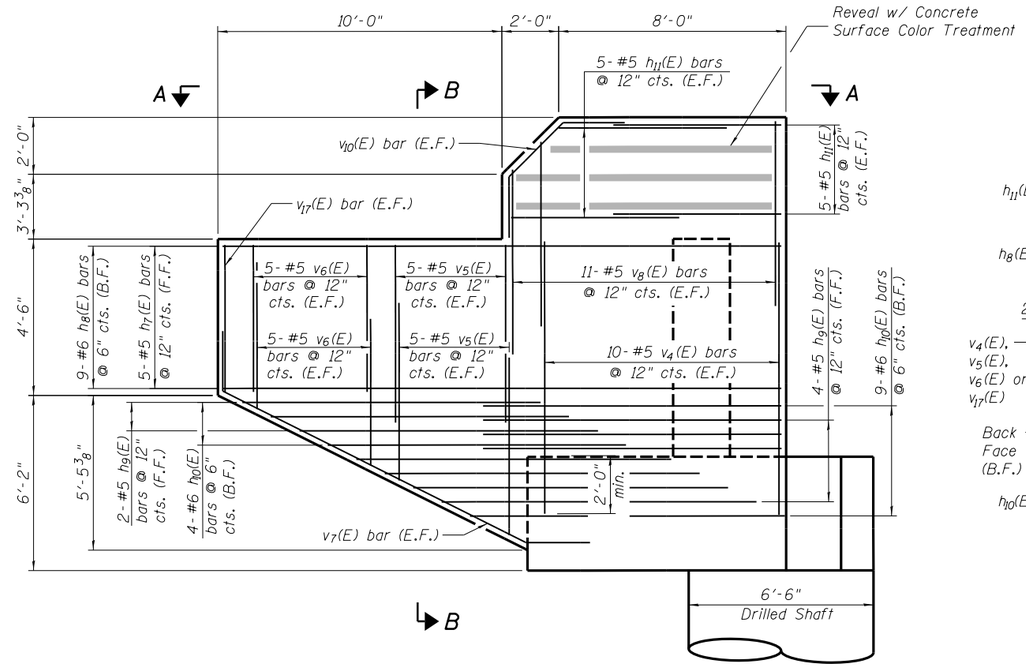
(Horizontal Dimensions at Rt. L's to back of abutment.)



SECTION A-A - PLAN VIEW

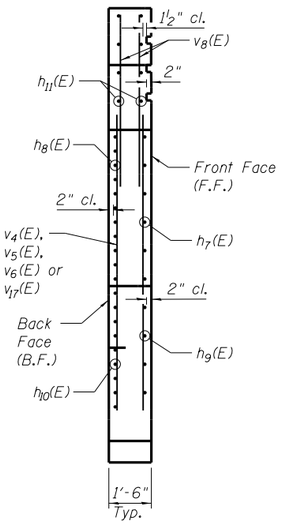


SECTION C-C - PLAN VIEW

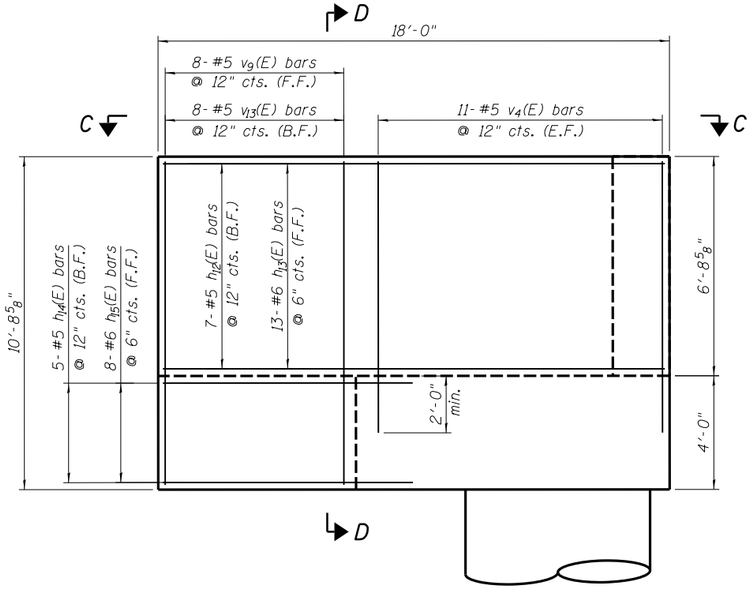


ELEVATION - SOUTH WING END VIEW

(Looking North)

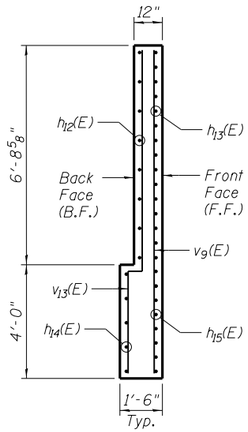


WINGWALL SECTION B-B



ELEVATION - NORTH CHEEK END VIEW

(Looking South)



CHEEK WALL SECTION D-D

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PLOT DATE = 6/26/2019	CHECKED - MJW	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

WEST ABUTMENT DETAILS
STRUCTURE 084-9961 - 5TH ST NSRR

SHEET NO. 24 OF 29 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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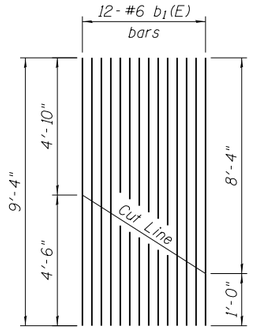
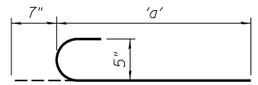
		CONTRACT NO. 93733		
•666 & 666 ALT.	ILLINOIS FED. AID PROJECT			



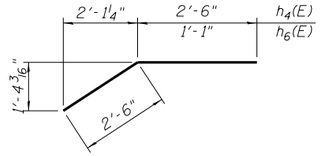
BAR CUTTING DIAGRAM FOR b_1(E)

Order b_1(E) full length. Cut as shown and use remainder of bars in opposite face.

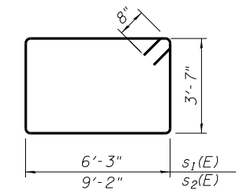


BARS h_2(E), h_3(E) & h_5(E

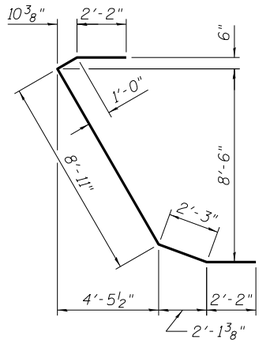
Bar	'a'
h_2(E)	10'-1"
h_3(E)	4'-6"
h_5(E)	8'-2"



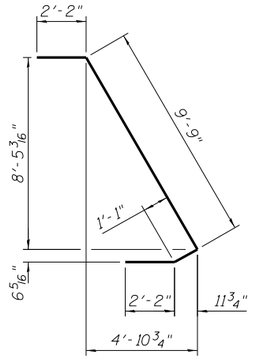
BARS h_4(E) & h_6(E)



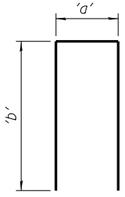
BAR s_1(E) & s_2(E)



BAR u_3(E)

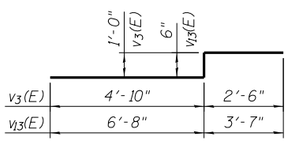


BAR u_4(E)

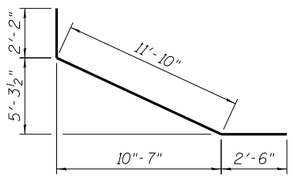


Bar	'a'	'b'
u_1(E)	3'-5"	2'-2"
u_2(E)	3'-7"	3'-6"
u_5(E)	1'-8"	0'-10"
u_6(E)	1'-0"	5'-0"
u_7(E)	1'-0"	5'-5"
u_8(E)	1'-0"	5'-11"
u_9(E)	1'-0"	6'-5"
u_{10}(E)	1'-0"	6'-11"
u_{11}(E)	1'-0"	7'-5"
u_{12}(E)	1'-0"	7'-11"

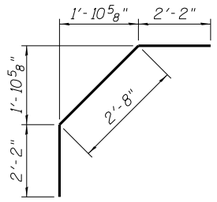
BARS u_1(E), u_2(E), u_5(E), u_6(E) u_7(E), u_8(E), u_9(E), u_{10}(E), u_{11}(E), u_{12}(E)



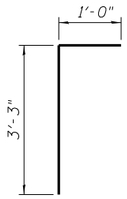
BARS v_3(E) & v_{13}(E)



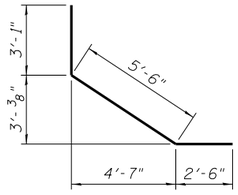
BAR v_7(E)



BARS v_{10}(E)



BAR v_{11}(E)



BARS v_{12}(E)

BILL OF MATERIAL
WEST ABUTMENT

Bar	No.	Size	Length	Shape
a_1(E)	8	#6	11'-8"	
a_2(E)	60	#6	13'-8"	
b_1(E)	48	#6	9'-4"	
h_1(E)	24	#5	20'-11"	
h_2(E)	12	#5	10'-8"	
h_3(E)	16	#5	5'-1"	
h_4(E)	24	#5	5'-0"	
h_5(E)	4	#5	8'-9"	
h_6(E)	4	#5	3'-7"	
h_7(E)	5	#5	19'-8"	
h_8(E)	9	#6	19'-8"	
h_9(E)	6	#5	10'-1"	
h_{10}(E)	13	#6	11'-1"	
h_{11}(E)	20	#5	5'-11"	
h_{12}(E)	7	#5	17'-8"	
h_{13}(E)	13	#6	17'-8"	
h_{14}(E)	5	#5	8'-11"	
h_{15}(E)	8	#6	9'-2"	
p_1(E)	52	#8	54'-9"	
p_2(E)	20	#5	28'-6"	
s_1(E)	66	#6	21'-0"	
s_2(E)	21	#6	26'-10"	
sp_1	5	#6	*34'-0"	
u_1(E)	16	#5	7'-9"	
u_2(E)	6	#5	10'-7"	
u_3(E)	5	#5	16'-6"	
u_4(E)	5	#5	15'-2"	
u_5(E)	19	#5	3'-4"	
u_6(E)	2	#6	11'-0"	
u_7(E)	2	#6	11'-10"	
u_8(E)	2	#6	12'-10"	
u_9(E)	2	#6	13'-10"	
u_{10}(E)	2	#6	14'-10"	
u_{11}(E)	2	#6	15'-10"	
u_{12}(E)	4	#6	16'-10"	
u_{13}(E)	44	#6	7'-5"	
v_1	160	#18	36'-11"	
v_2(E)	34	#5	7'-1"	
v_3(E)	34	#6	8'-4"	
v_4(E)	80	#5	8'-7"	
v_5(E)	20	#5	5'-9"	
v_6(E)	20	#5	4'-8"	
v_7(E)	2	#5	16'-6"	
v_8(E)	22	#5	7'-6"	
v_9(E)	8	#5	10'-3"	
v_{10}(E)	2	#5	7'-0"	
v_{11}(E)	28	#6	4'-3"	
v_{12}(E)	4	#6	11'-1"	
v_{13}(E)	8	#5	10'-9"	
v_{17}(E)	2	#5	4'-3"	
Structure Excavation		Cu. Yds.	114	
Concrete Structures		Cu. Yds.	127.7	
Drilled Shaft in Soil		Cu. Yds.	121.2	
Drilled Shaft in Rock		Cu. Yds.	78.5	
Reinforcement Bars		Pound	98,360	
Reinforcement Bars, Epoxy Coated		Pound	19,010	

* Length is height of spiral.

MIN. BAR LAPS FOR SPIRALS

#6 Bars = 2'-7"

pw:\\spi-svr306.hanson.dom:Hanson Projects\Documents\09Jobs\09L0179B\CAD\Struct\5th\Sheet\0849961-09L0179B-NSRR-001

FINAL

FILE NAME =

HANSON

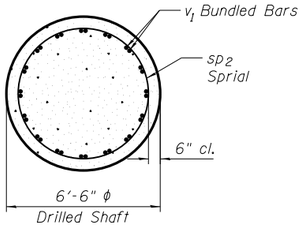
USER NAME = Pop00275	DESIGNED - MJW	REVISED -	
	CHECKED - TJH/TDP	REVISED -	
PLOT SCALE = 0:2.0000 '' / in.	DRAWN - RSJ	REVISED -	
PLOT DATE = 6/26/2019	CHECKED - MJW	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

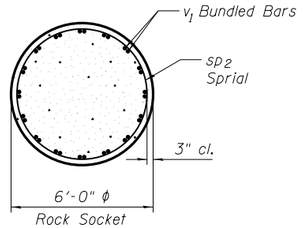
WEST ABUTMENT BILL OF MATERIAL
STRUCTURE 084-9961 - 5TH ST NSRR

SHEET NO. 25 OF 29 SHEETS

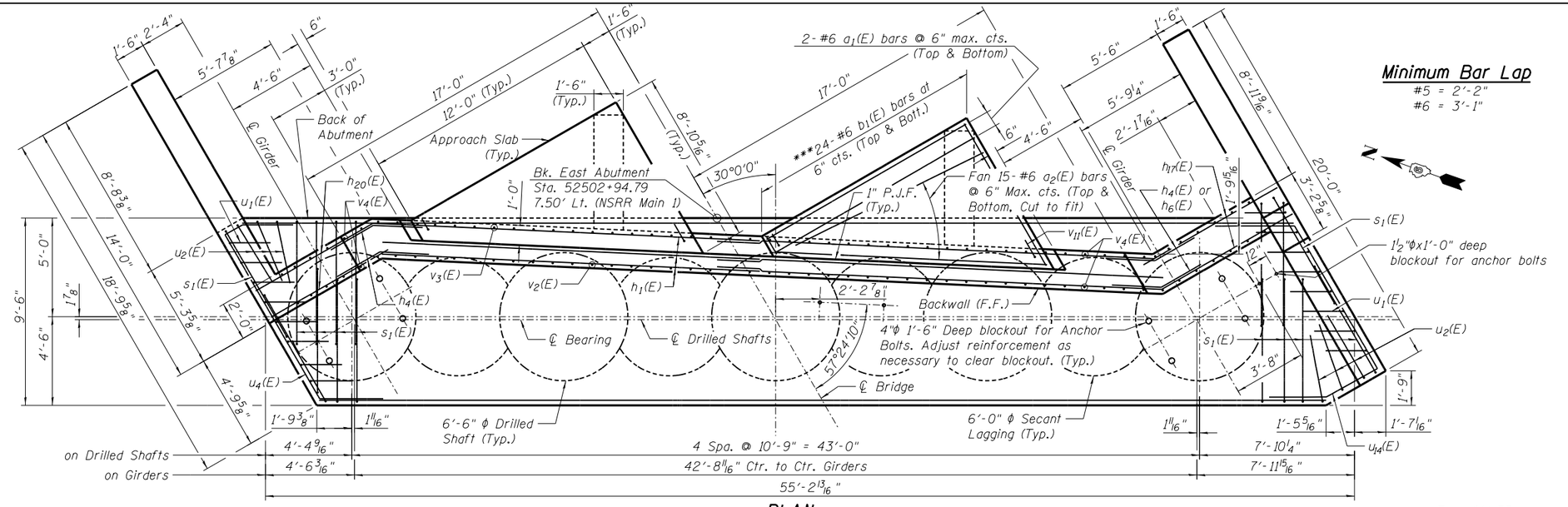
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
•	(109) VB,(110) VB-5	SANGAMON	382	212
		CONTRACT NO. 93733		
•666 & 666 ALT.	ILLINOIS FED. AID PROJECT			



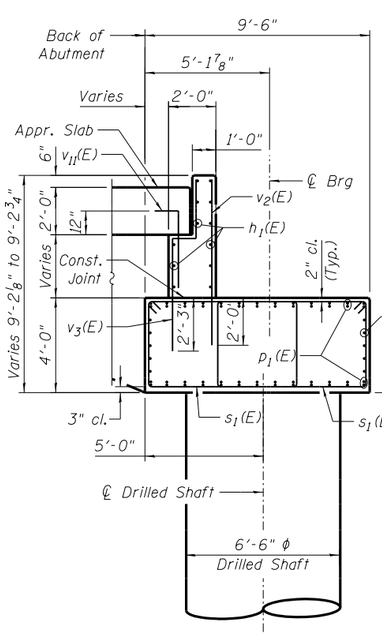
SECTION B-B



SECTION C-C

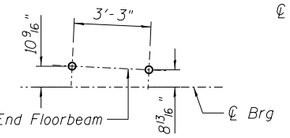


PLAN



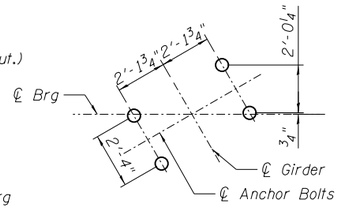
SECTION A-A

(At Rt. L's to Bk. of Abut.)



BLOCKOUT LAYOUT

(At Floorbeam Location)



BLOCKOUT LAYOUT

(At Girders Locations)

ELEVATION - EAST ABUTMENT

(Looking East)

p:\\spi-svr306.hanson.dom\Hanson Projects\Documents\09Jobs\09L01798\CAD\Struct\5th\Sheet\0849961-09L01798-NSRR-001

FINAL

FILE NAME =

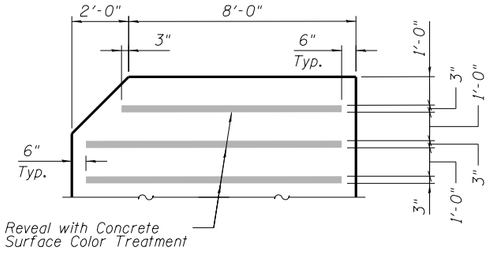
HANSON

USER NAME = Pop00275	DESIGNED - MJW	REVISED -	
	CHECKED - TJH/TDP	REVISED -	
PLOT SCALE = 0:2.0000 '' / in.	DRAWN - RSJ	REVISED -	
PLOT DATE = 6/26/2019	CHECKED - MJW	REVISED -	

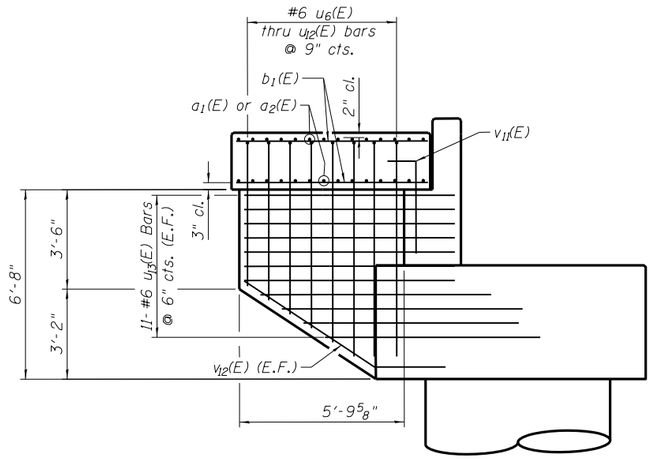
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

EAST ABUTMENT
STRUCTURE 084-9961 - 5TH ST NSRR
SHEET NO. 26 OF 29 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
•	(109) VB,(110) VB-5	SANGAMON	382	213
		CONTRACT NO. 93733		
•666 & 666 ALT.	ILLINOIS FED. AID PROJECT			

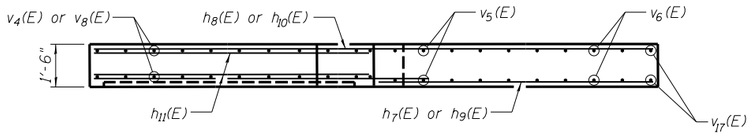


CONCRETE REVEAL DETAIL

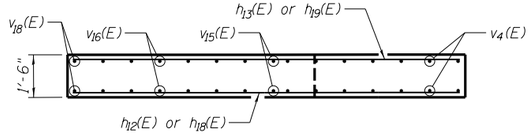


APPROACH SLAB SECTION

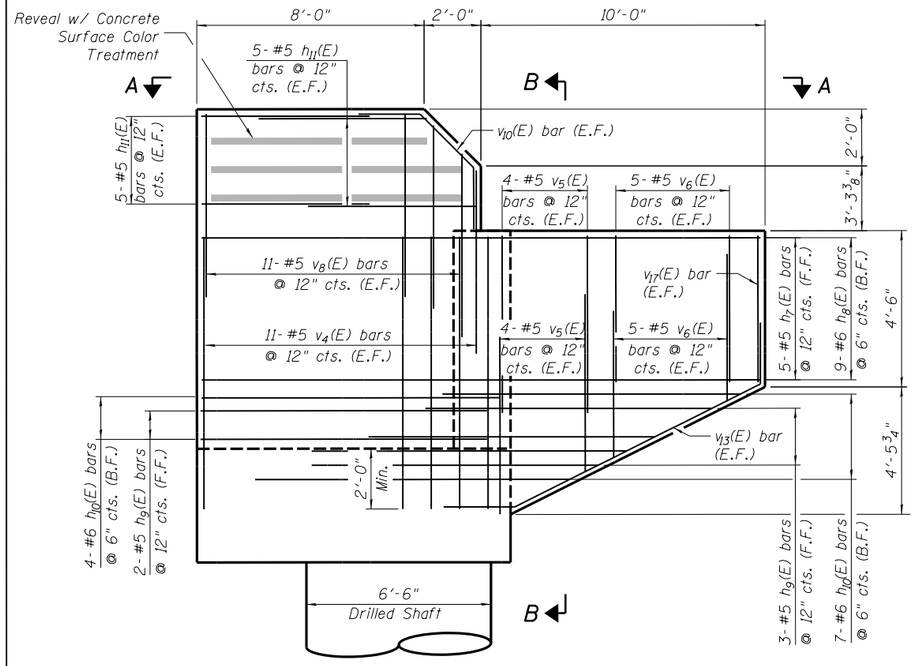
(Horizontal Dimensions at Rt. L's to back of abutment.)



SECTION A-A - PLAN VIEW

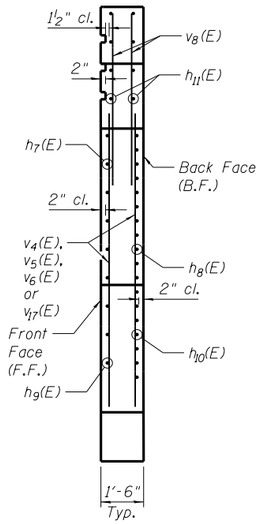


SECTION C-C - PLAN VIEW

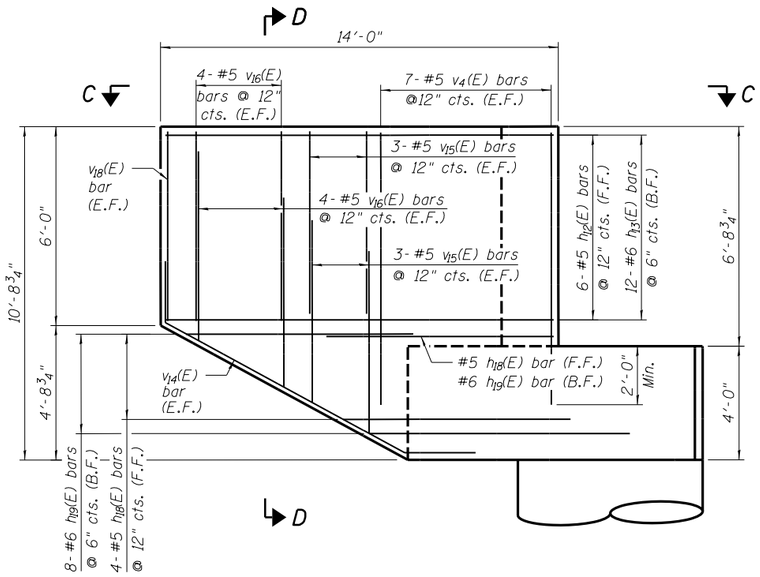


ELEVATION - SOUTH WING END VIEW

(Looking North)

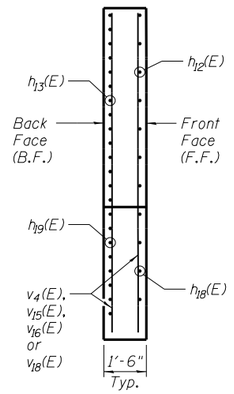


WINGWALL SECTION B-B



ELEVATION - NORTH WING END VIEW

(Looking South)



WINGWALL SECTION D-D

pw:\\spi-svr306.hanson.dom:Hanson Projects\Documents\09Jobs\09L01798\CAD\Struct\5th\Sheet\0849961-09L01798-NSRR-001

FINAL

FILE NAME =

HANSON

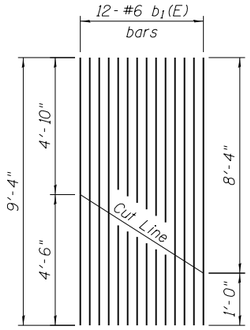
USER NAME = Pop00275	DESIGNED - MJW	REVISED -	
	CHECKED - TJH/TDP	REVISED -	
PLOT SCALE = 0:2.0000 ' / in.	DRAWN - RSJ	REVISED -	
PLOT DATE = 6/26/2019	CHECKED - MJW	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

EAST ABUTMENT DETAILS
STRUCTURE 084-9961 – 5TH ST NSRR

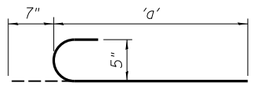
SHEET NO. 27 OF 29 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
•	(109) VB,(110) VB-5	SANGAMON	382	214
		CONTRACT NO. 93733		
•666 & 666 ALT.	ILLINOIS FED. AID PROJECT			



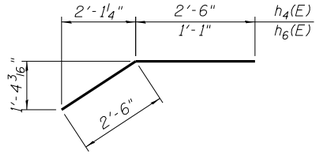
BAR CUTTING DIAGRAM FOR $b_1(E)$

Order $b_1(E)$ full length. Cut as shown and use remainder of bars in opposite face.

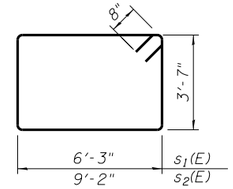


BARS $h_{16}(E)$, $h_{17}(E)$ & $h_{20}(E$

Bar	'a'
$h_{16}(E)$	6'-11"
$h_{17}(E)$	7'-7"
$h_{20}(E)$	4'-10"



BARS $h_4(E)$ & $h_6(E)$

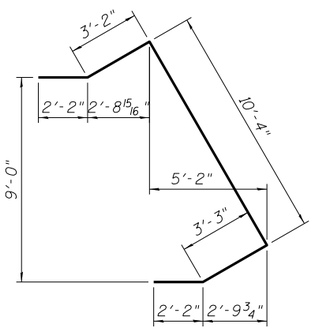


BAR $s_1(E)$ & $s_2(E)$

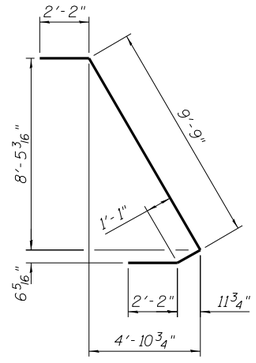
BILL OF MATERIAL
EAST ABUTMENT

Bar	No.	Size	Length	Shape
$a_1(E)$	8	#6	11'-8"	
$a_2(E)$	60	#6	13'-8"	
$b_1(E)$	48	#6	9'-4"	
$h_1(E)$	24	#5	20'-11"	
$h_4(E)$	24	#5	5'-0"	
$h_6(E)$	4	#5	3'-7"	
$h_7(E)$	5	#5	19'-8"	
$h_8(E)$	9	#6	19'-8"	
$h_9(E)$	5	#5	10'-1"	
$h_{10}(E)$	11	#6	11'-1"	
$h_{11}(E)$	20	#5	5'-11"	
$h_{12}(E)$	6	#5	13'-8"	
$h_{13}(E)$	12	#6	13'-8"	
$h_{16}(E)$	12	#5	7'-6"	
$h_{17}(E)$	16	#5	8'-2"	
$h_{18}(E)$	5	#5	8'-0"	
$h_{19}(E)$	9	#6	9'-2"	
$h_{20}(E)$	4	#5	5'-5"	
$p_1(E)$	52	#8	54'-9"	
$p_2(E)$	20	#5	28'-6"	
$s_1(E)$	66	#6	21'-0"	
$s_2(E)$	21	#6	26'-10"	
sp_2	5	#6	*34'-5"	
$u_1(E)$	16	#5	7'-9"	
$u_2(E)$	6	#5	10'-7"	
$u_4(E)$	5	#5	15'-2"	
$u_5(E)$	19	#5	3'-4"	
$u_6(E)$	2	#6	11'-0"	
$u_7(E)$	2	#6	11'-10"	
$u_8(E)$	2	#6	12'-10"	
$u_9(E)$	2	#6	13'-10"	
$u_{10}(E)$	2	#6	14'-10"	
$u_{11}(E)$	2	#6	15'-10"	
$u_{12}(E)$	4	#6	16'-10"	
$u_{13}(E)$	44	#6	7'-5"	
$u_{14}(E)$	5	#5	21'-1"	
v_1	160	#18	36'-11"	
$v_2(E)$	34	#5	7'-1"	
$v_3(E)$	34	#6	8'-4"	
$v_4(E)$	74	#5	8'-7"	
$v_5(E)$	16	#5	5'-9"	
$v_6(E)$	18	#5	4'-8"	
$v_8(E)$	22	#5	7'-6"	
$v_{10}(E)$	2	#5	7'-0"	
$v_{11}(E)$	28	#6	4'-3"	
$v_{12}(E)$	4	#6	11'-1"	
$v_{13}(E)$	2	#5	14'-4"	
$v_{14}(E)$	2	#5	14'-3"	
$v_{15}(E)$	12	#5	5'-11"	
$v_{16}(E)$	18	#5	6'-2"	
$v_{17}(E)$	2	#5	4'-3"	
$v_{18}(E)$	2	#5	5'-9"	
Structure Excavation		Cu. Yds.	114	
Concrete Structures		Cu. Yds.	127.2	
Drilled Shaft in Soil		Cu. Yds.	124.1	
Drilled Shaft in Rock		Cu. Yds.	78.5	
Secant Lagging		Cu. Ft.	2,283	
Reinforcement Bars		Pound	98,600	
Reinforcement Bars, Epoxy Coated		Pound	18,820	

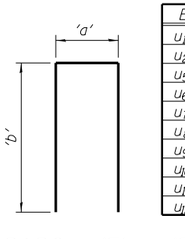
* Length is height of spiral.



BAR $u_{14}(E)$

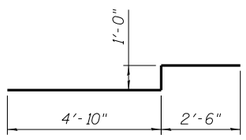


BAR $u_4(E)$

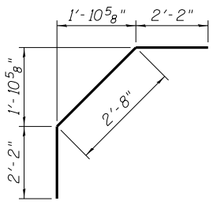


Bar	'a'	'b'
$u_1(E)$	3'-5"	2'-2"
$u_2(E)$	3'-7"	3'-6"
$u_5(E)$	1'-8"	0'-10"
$u_6(E)$	1'-0"	5'-0"
$u_7(E)$	1'-0"	5'-5"
$u_8(E)$	1'-0"	5'-11"
$u_9(E)$	1'-0"	6'-5"
$u_{10}(E)$	1'-0"	6'-11"
$u_{11}(E)$	1'-0"	7'-5"
$u_{12}(E)$	1'-0"	7'-11"

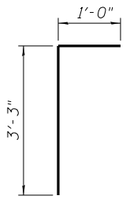
BARS $u_1(E)$, $u_2(E)$, $u_5(E)$, $u_6(E)$ $u_7(E)$, $u_8(E)$, $u_9(E)$, $u_{10}(E)$, $u_{11}(E)$, $u_{12}(E)$



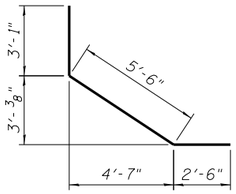
BAR $v_3(E)$



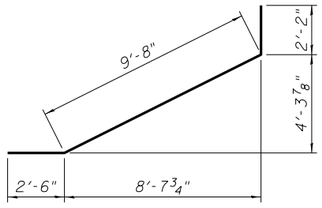
BARS $v_{10}(E)$



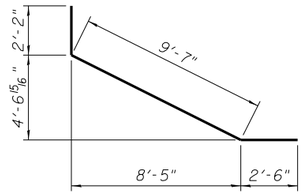
BAR $v_{11}(E)$



BARS $v_{12}(E)$



BAR $v_{13}(E)$



BAR $v_{14}(E)$

MIN. BAR LAPS FOR SPIRALS

#6 Bars = 2'-7"

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FINAL

FILE NAME =

HANSON

USER NAME = Pop00275	DESIGNED - MJW	REVISED -	
	CHECKED - TJH/TDP	REVISED -	
PLOT SCALE = 0:2.0000 '' / in.	DRAWN - RSJ	REVISED -	
PLOT DATE = 6/26/2019	CHECKED - MJW	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

EAST ABUTMENT BILL OF MATERIAL
STRUCTURE 084-9961 - 5TH ST NSRR
SHEET NO. 28 OF 29 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
•	(109) VB,(110) VB-5	SANGAMON	382	215
		CONTRACT NO. 93733		
•666 & 666 ALT.	ILLINOIS FED. AID PROJECT			

B-3
Sta. 999+30, 27' LT
5/6/58

	N	Qu	w%	
600.8				CINDER, COAL, & misc. FILL.
	18			
596.8				
	16	1.60		Brown silty CLAY.
593.8 ▽				
593.3 Oh	6	0.53		Brown & gray SILT, tr. clay.
	6	1.06		
589.8				Brown SILT, tr. clay.
	5	1.60		
	4	1.06		
584.8				Gray silty CLAY, tr. small gravel.
	4	0.85		
	4	1.06		
578.8				
	97	6.10		Brown SILT.
	100/7"	6.94		
574.8				
573.3	100/6"			Gray decomposed SHALE.
				Bottom of Hole = 27.5 feet

B-147
Sta. 100+21, 20' LT
9/10/13

	N	Qu	w%	
584.4				
583.55				ASPHALT.
583.35				AGGREGATE.
	6		5	Brown fine sandy SILT, some concrete fragments - FILL.
580.85				
	4	0.41B	22	Gray fine sandy silty CLAY, trace coarse sand and small gravel.
578.35				
	32	4.50P	14	
575.85				Brown and gray SHALE. (HIGHLY WEATHERED SHALE)
	80	4.50P	12	
	50/5"	4.50P	10	Gray SHALE.
	50/4"		8	
569.35				
	Rec. = 38%			Gray clayey SHALE, micaceous.
	RQD = 38%			
	Rec. = 96%			
	RQD = 46%			
	15.2			
	Rec. = 93% RQD = 82%			
	9.5			
	Rec. = 71% RQD = 28%			
	Rec. = 93%			
	RQD = 0%			
556.05	Rec. = 100%			
	RQD = 0%			COAL.
	Rec. = 90% RQD = 67%			
549.15				
548.35	2.5			Gray clayey SHALE, micaceous.
				Bottom of Hole = 36.0 feet

B-1
Sta. 1000+06, 27' RT
5/6/58

	N	Qu	w%	
601.8				CINDER, COAL, & misc. FILL.
	7			
598.8				Black silty CLAY.
	10	2.67		
595.8				Brown & gray SILT, tr. clay.
594.3 ▽ Oh	10	1.60		
	10	2.12		
590.3				
	7	0.53		Brown SILT, tr. clay.
	5	0.85		
585.8				Gray silty CLAY, tr. small gravel.
	5	2.67		
	5	1.60		
	6	1.39		
577.5				
	100	11.20		Brown SILT.
575.3				
573.8	100/7"			Gray decomposed SHALE.
				Bottom of Hole = 28.0 feet

LEGEND

N	Standard Penetration Test N (blows/ft)
Qu	Unconfined Strength (tsf)
w%	Natural Moisture Content (%)
DD ▽ 558.10	Water Surface Elevation Encountered in Boring DD = during drilling Oh = at completion 24h = 24 hours after completion

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FINAL

FILE NAME =

HANSON

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PLOT DATE = 6/26/2019	CHECKED - MJW	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SUBSURFACE DATA PROFILE
STRUCTURE 084-9961 - 5TH ST NSRR
SHEET NO. 29 OF 29 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
•	(109) VB,(110) VB-5	SANGAMON	382	216
		CONTRACT NO. 93733		
•666 & 666 ALT.	ILLINOIS FED. AID PROJECT			

Benchmark:
BM# D2218-07 - Chiseled 'X' on West Bolt of fire hydrant - SE Quad 5th Street and Wellesly Avenue. Elevation = 598.884

Existing Structure: SN 084-0032 - Built in 1961 under 109-15B. Steel through plate girder structure supported on closed abutments. Bk. to Bk. Abutment length is 95'-3" and ctr. to ctr. through girder width of 18'-6". Structure to be Removed and Replaced.

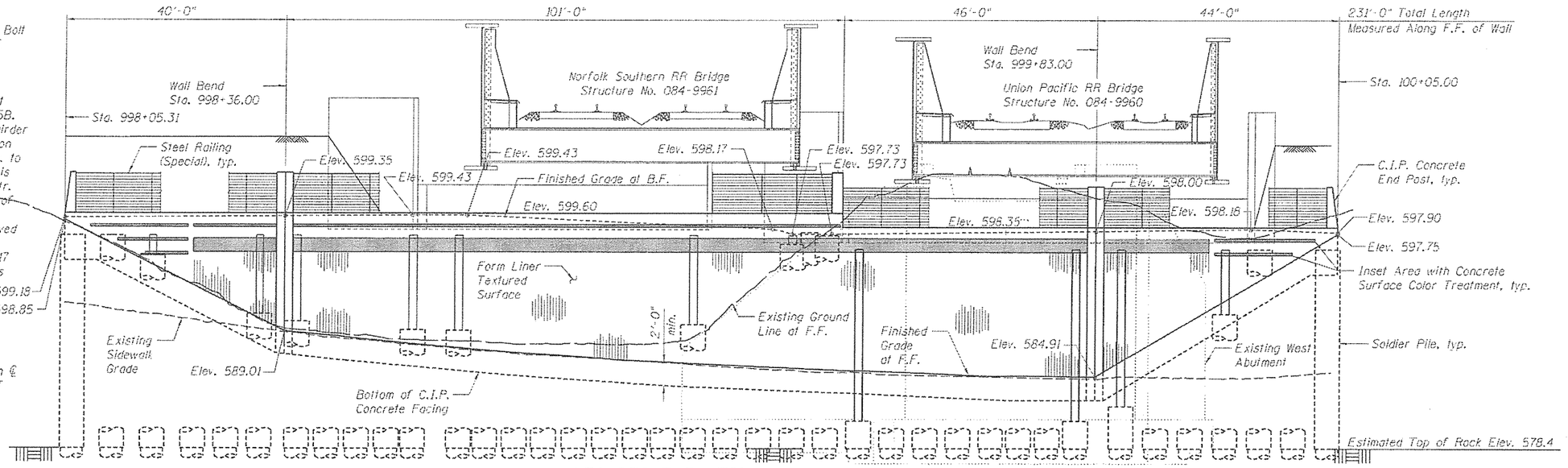
Construction Sequence: See Sheet 3 of 17

Traffic Control: Temporary Lane Closures

Salvage: None

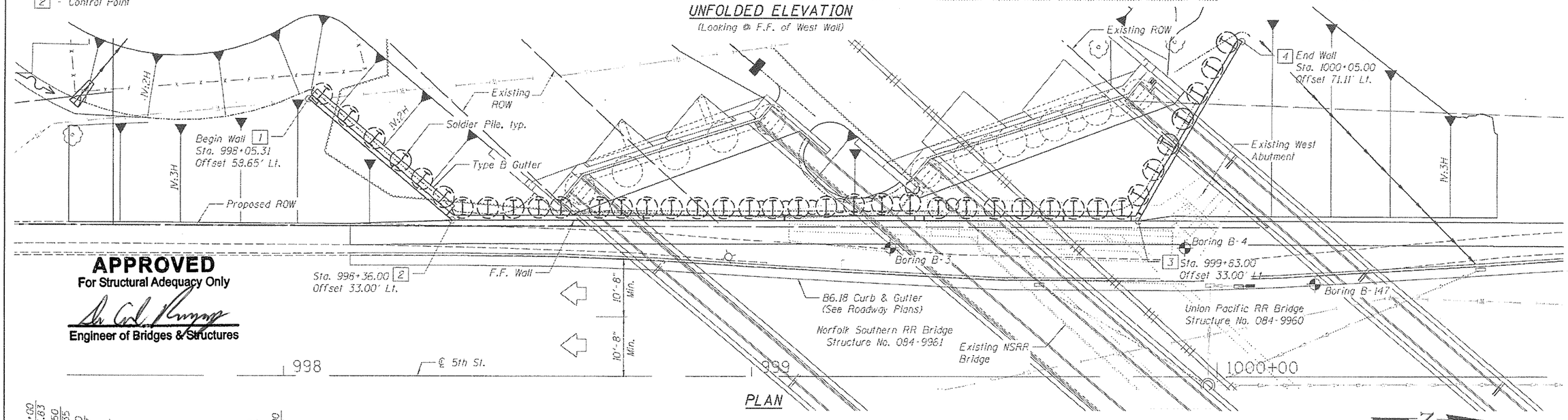
Note: Wall offsets are measured from ℄ 5th Street to the front face of C.I.P. Facing.

F.F. - Front Face
B.F. - Back Face
2 - Control Point



UNFOLDED ELEVATION

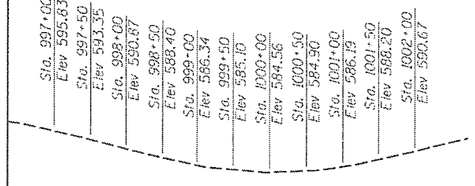
(Looking @ F.F. of West Wall)



PLAN

APPROVED
For Structural Adequacy Only

Engineer of Bridges & Structures



EXISTING PROFILE GRADE

FIFTH STREET

Along ℄ of Fifth St.

ROBERT CHARLES GUSTAFSON
062-060043
STATE OF ILLINOIS
Expires November 30, 2020

I certify that to the best of my knowledge, information and belief, this retaining wall design is structurally adequate for the design loading shown on the plans. The design is an economical one for the style of structure and complies with requirements of the current AREMA Specifications.

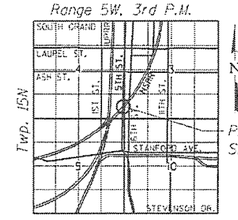
DESIGN SPECIFICATIONS

2017 AREMA Specifications

DESIGN STRESSES

FIELD UNITS

f'c = 4,000 psi
fy = 60,000 psi (Reinforcement)
fy = 50,000 psi (M270 Grade 50)



LOCATION SKETCH

WEST WALL GENERAL PLAN & ELEVATION
5TH ST. RETAINING WALLS
F.A.P. 666 ALT.-SECTION (109)VB, (110)VB-5
SANGAMON COUNTY
STATION 998+05.31 TO 1001+70.52

FINAL

HANSON

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	CHECKED - KMS	REVISED -	
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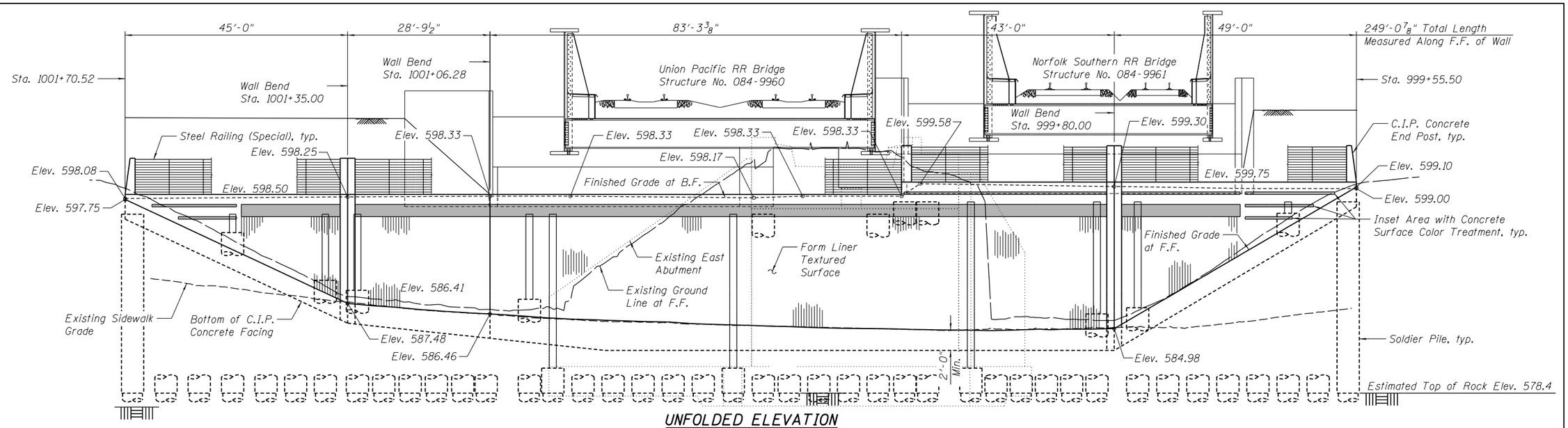
PLOT DATE = 6/25/2019	CHECKED - RGC	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

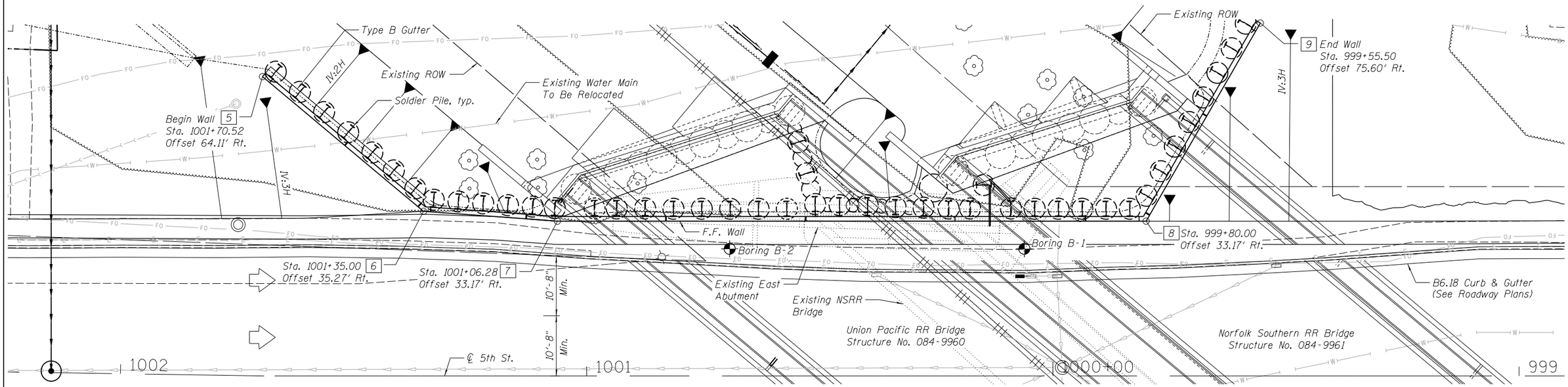
GENERAL PLAN & ELEVATION - WEST WALL
RETAINING WALLS - 5TH STREET
SHEET NO. 1 OF 17 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
*	(109) VB,(110) VB-5	SANGAMON	382	217
		CONTRACT NO. 93733		
	ILLINOIS FED. AID PROJECT			



UNFOLDED ELEVATION

(Looking @ F.F. of East Wall)



PLAN

Note: Wall offsets are measured from ℄ 5th Street to the front face of C.I.P. Facing.

F.F. - Front Face
B.F. - Back Face

6 - Control Point

EAST WALL GENERAL PLAN & ELEVATION
5TH ST. RETAINING WALLS
F.A.P. 666 ALT.-SECTION (109)VB, (110)VB-5
SANGAMON COUNTY
STATION 998+05.31 TO 1001+70.52

FINAL

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HANSON

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	CHECKED - KMS	REVISED -
PLOT SCALE = 0.1667 ' / in.	DRAWN - EJM	REVISED -
PLOT DATE = 6/26/2019	CHECKED - RGC	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

GENERAL PLAN & ELEVATION – EAST WALL
RETAINING WALLS – 5TH STREET
SHEET NO. 2 OF 17 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
•	(109) VB,(110) VB-5	SANGAMON	382	218
		CONTRACT NO. 93733		
	ILLINOIS FED. AID PROJECT			

WALL CONTROL POINTS

Control Point	Station	Offset
1	998+05.31	58.65' LT
2	998+36.00	33.00' LT
3	999+83.00	33.00' LT
4	1000+05.00	71.11' LT
5	1001+70.52	64.11' RT
6	1001+35.00	35.27' RT
7	1001+06.28	33.17' RT
8	999+80.00	33.17' RT
9	999+55.50	75.60' RT

Control Points are to Front Face of C.I.P. Facing.

GENERAL NOTES

1. Reinforcement bars designated (E) shall be epoxy coated.
2. All substructure concrete shall have a compressive strength of 4,000 psi at 14 days.
3. The Conctractor is responsible for the design and performance of the Untreated Timber Lagging using no less than a 3 in. nominal rough-sawn thickness and timber with a minimum allowable bending stress of 1000 psi.

INDEX OF SHEETS

CONSTRUCTION SEQUENCE

Stage 1: Maintain rail traffic on existing track.

Item 4: NSRR Bridge and south ends of retaining walls
a. Drill and place the Secant Lagging to existing ground surface at East Abutment and West Retaining Wall, south of Soldier Pile 24.
b. Install drilled shafts for the East Abutment, forming above existing ground as required.
c. Drill and set Temporary Soldier Pile C in front of new East Abutment.
d. Install timber lagging between Temporary Soldier Pile C and back of Existing East Abutment while excavating south wingwall. Use abutment drilled shafts and secant lagging to retain RR embankment.
e. Remove conflicting portions of the existing East Abutment's south wingwall stem.
f. Drill and set Soldier Piles 29-42 of the East Retaining Wall and Soldier Piles 1-23 of the West Retaining Wall. Drill through footings of existing wingwalls as required.
g. Install timber lagging between Temporary Soldier Pile C and Soldier Pile 29, Soldier Piles 29-42 of the West Retaining Wall, and Soldier Piles 1-18 of the West Retaining Wall while filling behind retaining walls to bottom of new abutments.
h. Install drilled shafts for the West Abutment.
i. Construct cast-in-place concrete abutments.
j. Install timber lagging while excavating in front of wall to bottom of facing.
k. Install pipe underdrain and cast-in-place concrete facing panels W1-W5 and E9-E10.
l. Place fill behind new abutments and between new abutments and retaining walls.
m. Set bridge superstructure during temporary closure of 5th Street.
n. Complete bridge construction, including roadway luminaires. Complete NSRR embankment and subballast placement.
o. NSRR places ballast and shifts tracks to Temporary NSRR Main 1 (outside position on new bridge).

Stage 4A: Maintain Rail traffic on Temporary NSRR Main 1.

Item 5: Remove Existing NSRR Bridge and construct UPRR Bridge and north ends of retaining walls
a. Remove existing bridge superstructure during weekend closure of 5th Street.
b. Drill and place the Secant Lagging to existing ground surface at both abutments and East Retaining Wall, north of Soldier Pile 26.
c. Drill and set Temporary Soldier Piles A and B, Soldier Piles 22-26 of the East Retaining Wall and Soldier Pile 24 of the West Retaining Wall. Drill through footings of existing abutments as required.
d. Install drilled shafts for the West and East Abutments, forming above existing ground as required.
e. Drill and set Soldier Piles 1-13 of the East Wall.
f. Remove conflicting portions of the existing bridge abutments. Use soldier piles, temporary soldier piles, abutment drilled shafts and secant lagging to retain RR embankment.
g. Drill and set Soldier Piles 14-21 and 27-28 of the East Wall and Soldier Piles 25-39 of the West Wall.
h. Install timber lagging while filling behind retaining walls to bottom of abutments. Abandon temporary soldier piles.
i. Construct cast-in-place concrete abutments.
j. Install timber lagging while excavating in front of wall to bottom of facing.
k. Install remainder of pipe underdrain and cast-in-place concrete facing.
l. Place fill behind new abutments and between new abutments and retaining walls.
m. Set bridge superstructure during temporary closure of 5th Street.
n. Complete bridge construction. Complete UPRR embankment and subballast placement.
n. NSRR installs tracks on NSRR Main 1 (inside position on new bridge).

Note: See Railroad Plans for stages and items not affecting these structures. See Roadway Plans and Special Provisions for 5th Street traffic control restrictions.

TOTAL BILL OF MATERIAL

ITEM	UNIT	TOTAL
Porous Granular Embankment	Cu. Yd.	1795
Structure Excavation	Cu. Yd.	477
Form Liner Textured Surface	Sq. Ft.	4364
Stud Shear Connectors	Each	739
Reinforcement Bars, Epoxy Coated	Pound	40110
Slope Wall 4 Inch	Sq. Yd.	300
Furnishing Soldier Piles (W-Section)	Foot	2923
Drilling and Setting Soldier Piles (in Soil)	Cu. Ft.	16274.9
Drilling and Setting Soldier Piles (in Rock)	Cu. Ft.	17041.0
Untreated Timber Lagging	Sq. Ft.	4032
Secant Lagging	Cu. Ft.	2219
Concrete Structures (Retaining Wall)	Cu. Yd.	254.5
Concrete Sealer	Sq. Ft.	6046
Geocomposite Wall Drain	Sq. Yd.	311
Concrete Gutter, Type B	Foot	82
Concrete Surface Color Treatment	Sq. Ft.	548
Steel Railing (Special)	Foot	456
Pipe Underdrains for Structures 4"	Foot	623

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FINAL

HANSON

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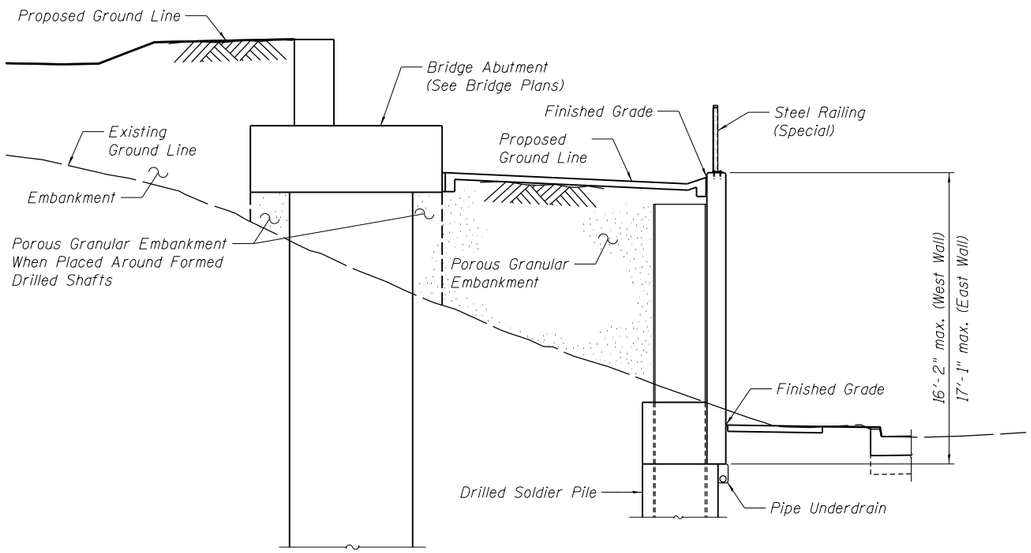
PLOT SCALE = 0.1667 ' / in.	DRAWN - EJM	REVISED -	
PLOT DATE = 6/26/2019	CHECKED - RGC	REVISED -	

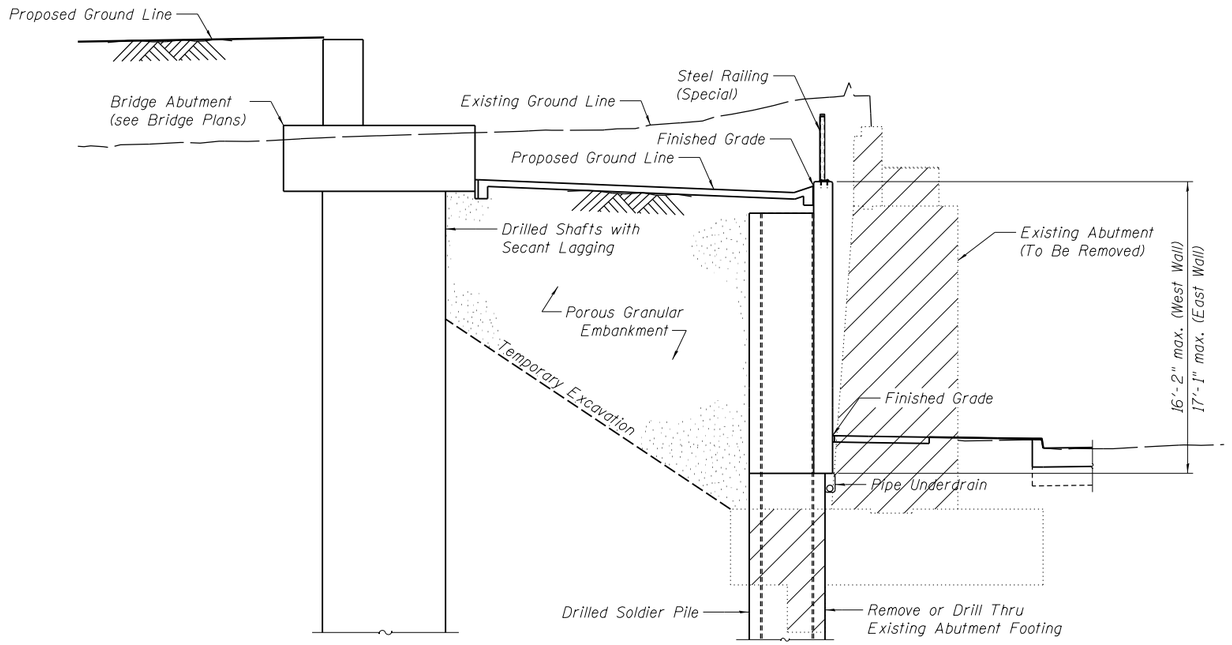
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

GENERAL DATA
RETAINING WALLS – 5TH STREET
SHEET NO. 3 OF 17 SHEETS

F.A.U. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
•	(109) VB,(110) VB-5	SANGAMON	382	219
		CONTRACT NO. 93733		
	ILLINOIS FED. AID PROJECT			

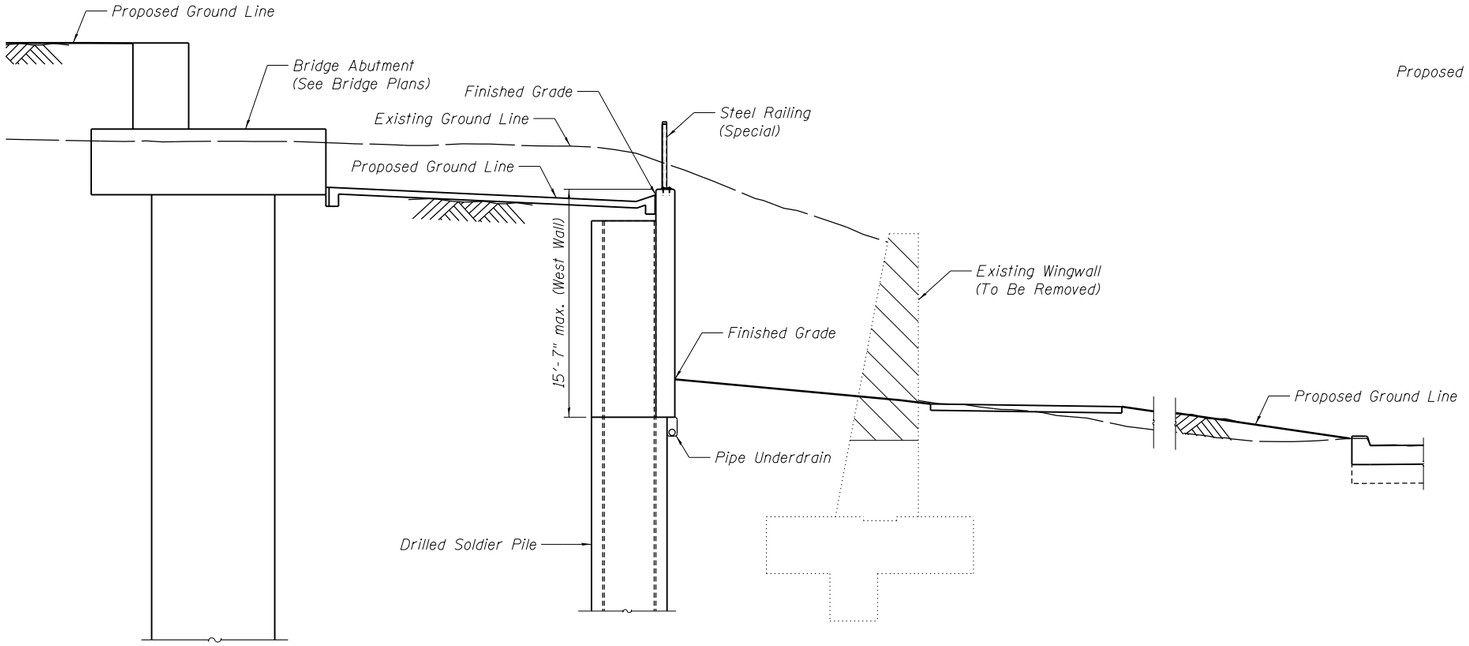


TYPICAL WALL SECTION



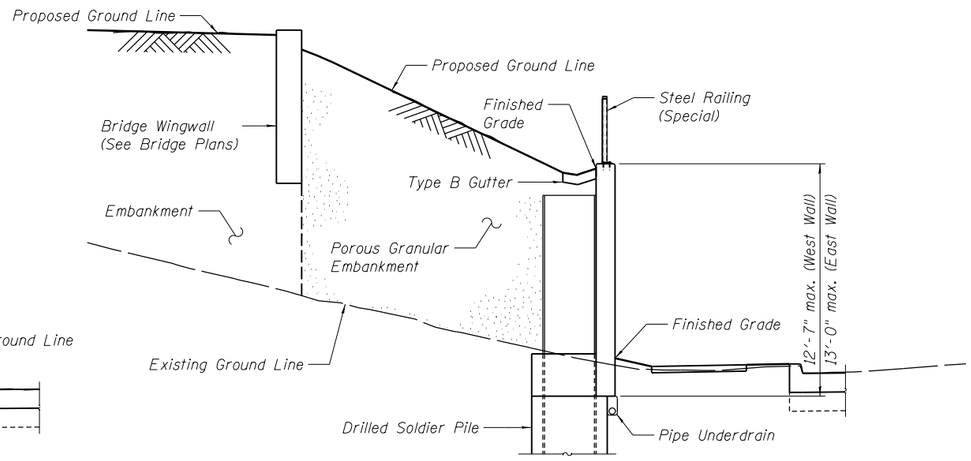
WALL SECTION WITH TEMPORARY EXCAVATION

W. Wall Sta. 999+37 to 999+83±
E. Wall Sta. 999+99 to 1001+15± and Sta. 1000+53 to 1000+94±



WALL SECTION BEHIND EXISTING WINGWALL

West Wall Sta. 999+83 to 999+93±



WALL SECTION PARALLEL TO RAILROAD

West Wall Sta. 998+05.31 to 998+36.00
East Wall Sta. 1001+35.00 to 1001+70.52

WALL SECTIONS
5TH ST. RETAINING WALLS
F.A.P. 666 ALT.-SECTION (109)VB, (110)VB-5
SANGAMON COUNTY
STATION 998+05.31 TO 1001+70.52

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FINAL

HANSON

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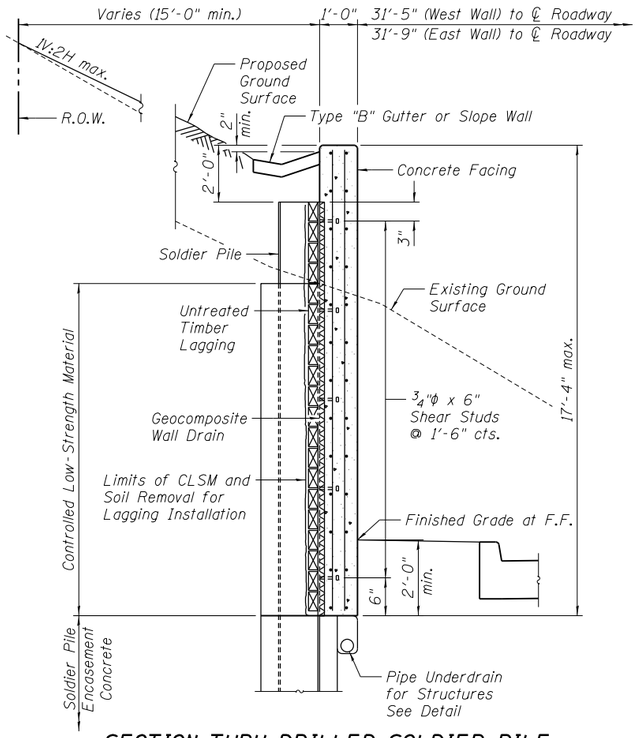
PLOT DATE = 6/26/2019	CHECKED - RGC	REVISED -

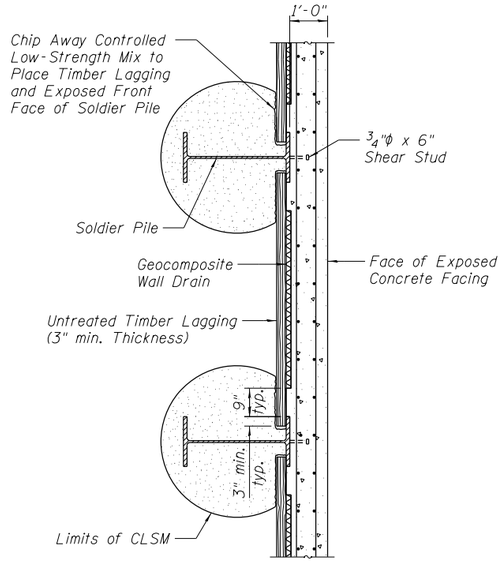
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

TYPICAL SECTIONS
RETAINING WALLS – 5TH STREET
SHEET NO. 4 OF 17 SHEETS

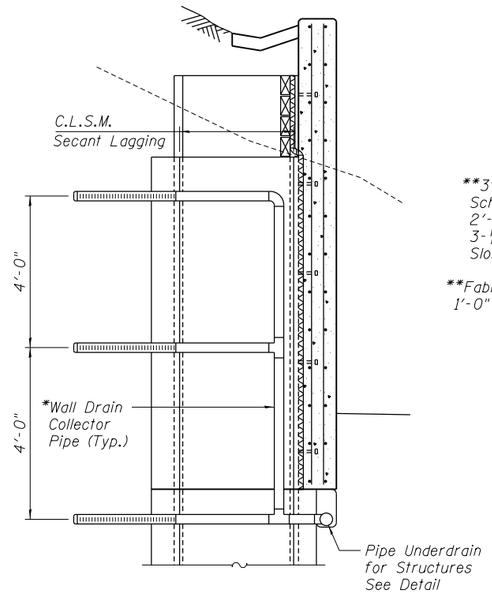
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
•	(109) VB,(110) VB-5	SANGAMON	382	220
		CONTRACT NO. 93733		
	ILLINOIS FED. AID PROJECT			



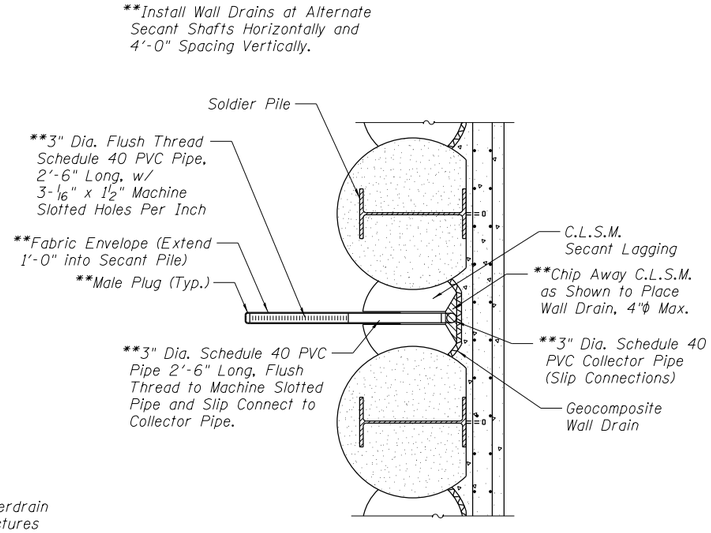
SECTION THRU DRILLED SOLDIER PILE WALL WITH ENCASEMENT AND C.I.P. FACING



SECTION THRU DRILLED SOLDIER PILE WALL

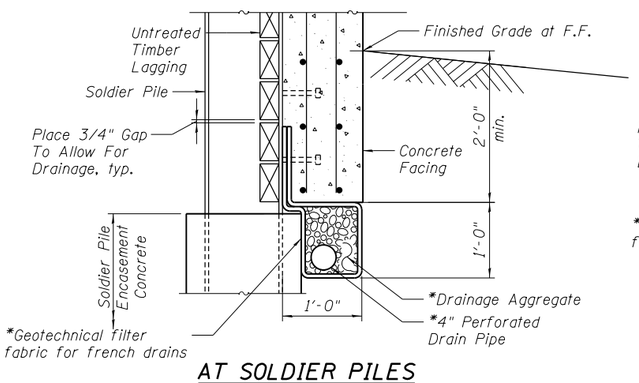


SECTION THRU DRILLED SOLDIER PILE WALL WITH SECANT LAGGING

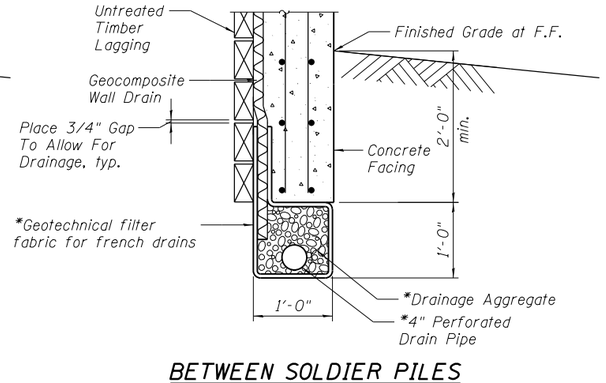


SECTION THRU SECANT LAGGING

** Included In The Cost of Secant Lagging.



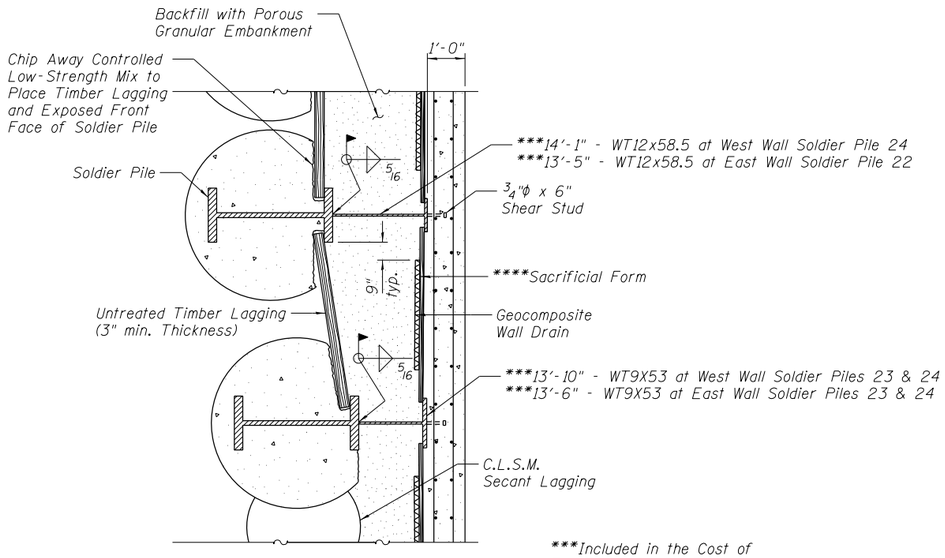
AT SOLDIER PILES



BETWEEN SOLDIER PILES

UNDERDRAIN DETAIL FOR SOLDIER PILE WALLS

*Included in the Cost of Pipe Underdrains for Structures, 4".



SECTION AT OFFSET FACING

***Included in the Cost of Furnishing Soldier Piles (W Section).

****Included in the Cost of Concrete Structures (Retaining Wall).

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FINAL

HANSON

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PLOT DATE = 6/26/2019	CHECKED - RGC	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

TYPICAL SECTIONS
RETAINING WALLS – 5TH STREET
SHEET NO. 5 OF 17 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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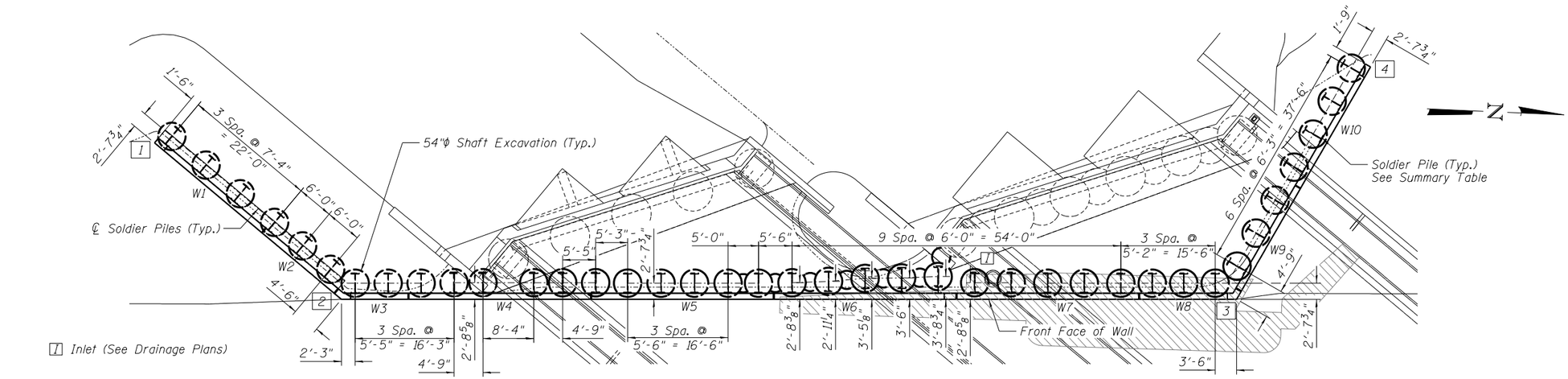
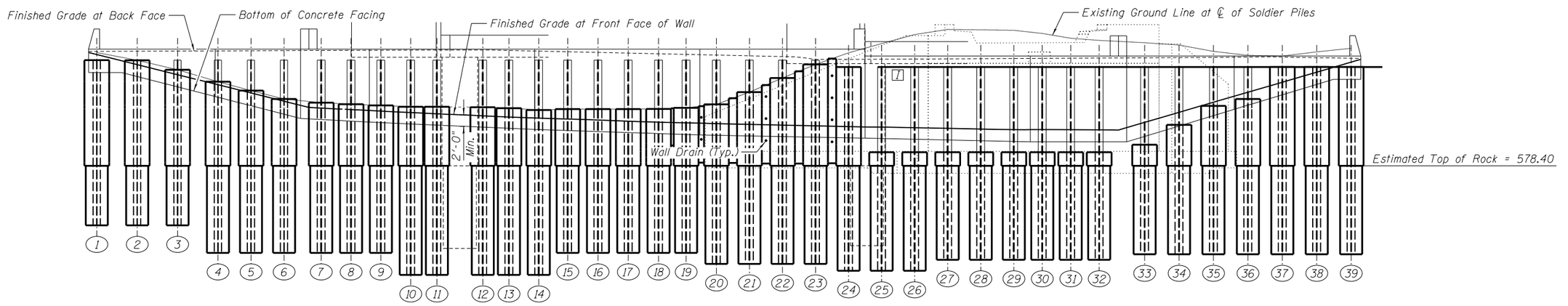
		CONTRACT NO. 93733		
	ILLINOIS FED. AID PROJECT			



PLAN

Note: All Dimensions are Measured Along Front Face of Wall



ELEVATION

Unfolded Along Face of Wall

SOLDIER PILE SUMMARY

PILE NO.	PILE SIZE	LENGTH	BOTTOM ELEV.	TOP ELEV.	PILE NO.	PILE SIZE	LENGTH	BOTTOM ELEV.	TOP ELEV.	PILE NO.	PILE SIZE	LENGTH	BOTTOM ELEV.	TOP ELEV.
1	W40x249	30'-0"	567.60	597.60	14	W40x431	39'-0"	558.60	597.60	27	W40x249	35'-0"	561.35	596.35
2	W40x249	30'-0"	567.60	597.60	15	W40x249	35'-0"	562.60	597.60	28	W40x249	35'-0"	561.35	596.35
3	W40x249	30'-0"	567.60	597.60	16	W40x249	35'-0"	562.60	597.60	29	W40x249	35'-0"	561.35	596.35
4	W40x249	35'-0"	562.60	597.60	17	W40x249	35'-0"	562.60	597.60	30	W40x249	35'-0"	561.35	596.35
5	W40x249	35'-0"	562.60	597.60	18	W40x249	35'-0"	562.60	597.60	31	W40x249	35'-0"	561.35	596.35
6	W40x249	35'-0"	562.60	597.60	19	W40x249	35'-0"	562.60	597.60	32	W40x249	35'-0"	561.35	596.35
7	W40x249	35'-0"	562.60	597.60	20	W40x249	37'-0"	560.60	597.60	33	W40x249	34'-0"	562.35	596.35
8	W40x249	35'-0"	562.60	597.60	21	W40x249	37'-0"	560.60	597.60	34	W40x249	34'-0"	562.35	596.35
9	W40x249	35'-0"	562.60	597.60	22	W40x249	37'-0"	560.60	597.60	35	W40x249	34'-0"	562.35	596.35
10	W40x431	39'-0"	558.60	597.60	23	W40x431	37'-0"	560.60	597.60	36	W40x249	34'-0"	562.35	596.35
11	W40x431	39'-0"	558.60	597.60	24	W40x431	37'-0"	559.35	596.35	37	W40x249	34'-0"	562.35	596.35
12	W40x431	39'-0"	558.60	597.60	25	W40x431	37'-0"	559.35	596.35	38	W40x249	34'-0"	562.35	596.35
13	W40x431	39'-0"	558.60	597.60	26	W40x431	37'-0"	559.35	596.35	39	W40x249	34'-0"	562.35	596.35

SECANT LAGGING SUMMARY

BETWEEN PILES NO.	DIAMETER	LENGTH	BOTTOM ELEV.	TOP ELEV.
18-19	36"	7'-11"	*580.89	588.84
19-20	36"	8'-4"	*580.89	589.25
20-21	36"	9'-9"	*580.89	590.68
21-22	36"	12'-2"	*580.89	593.07
22-23	36"	14'-8"	*580.89	595.58
23-24	36"	16'-0"	*580.89	597.87
24-BR	36"	18'-0"	578.96	596.96

* Top of existing footing

WEST WALL
STUD SHEAR CONNECTORS REQUIRED

Pile No.	Number Required on Each Pile
1	3
2	4
3	5
4	6
5	7
6	8
7-9	9
10-16	10
17-23	11
24-25	10
26-32	11
33	10
34	9
35	8
36	6
37	5
38	4
39	3

2 = Control Point

BILL OF MATERIAL

ITEM	UNIT	TOTAL
Stud Shear Connectors	Each	349
Furnishing Soldier Piles (W Section)	Foot	1377
Drilling and Setting Soldier Piles (in Soil)	Cu. Ft.	6873.7
Drilling and Setting Soldier Piles (in Rock)	Cu. Ft.	8145.6
Untreated Timber Lagging	Sq. Ft.	1921
Secant Lagging	Cu. Ft.	622

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FINAL

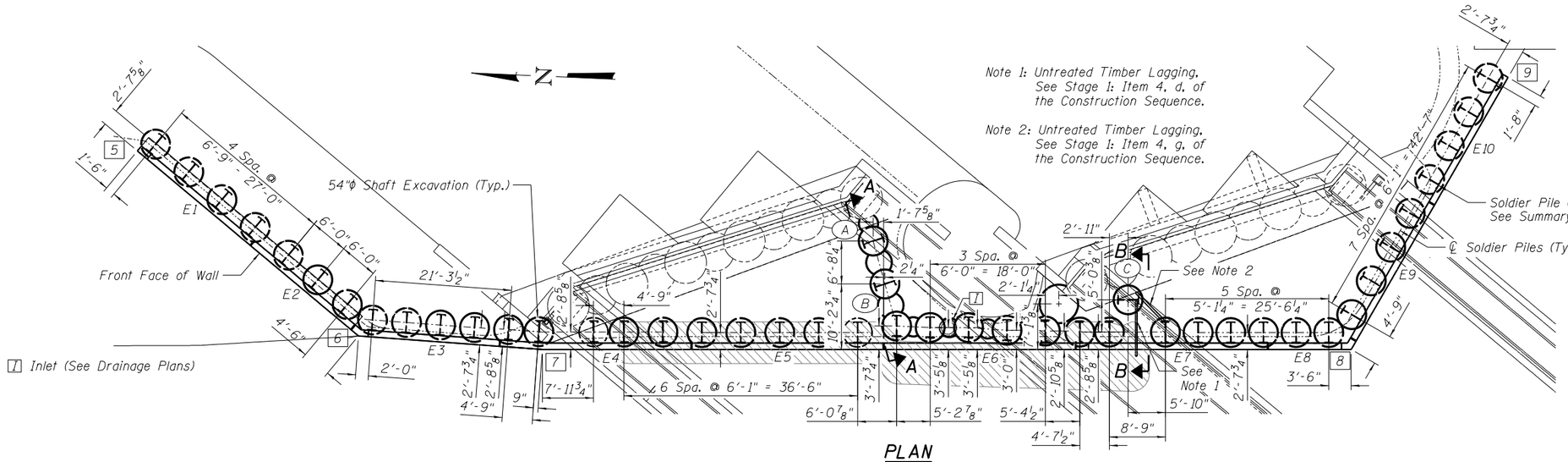
HANSON

USER NAME = Pop00275	DESIGNED - RGC	REVISED -	
	CHECKED - KMS	REVISED -	
PLOT SCALE = 0.1667 ' / in.	DRAWN - EJM	REVISED -	
PLOT DATE = 6/26/2019	CHECKED - RGC	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

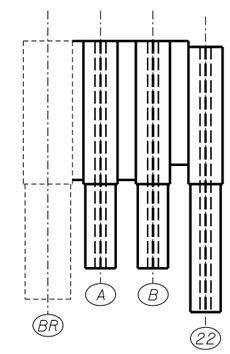
SOLDIER PILES – WEST WALL
RETAINING WALLS – 5TH STREET
SHEET NO. 6 OF 17 SHEETS

F.A.U. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
•	(109) VB,(110) VB-5	SANGAMON	382	222
		CONTRACT NO. 93733		
		ILLINOIS FED. AID PROJECT		

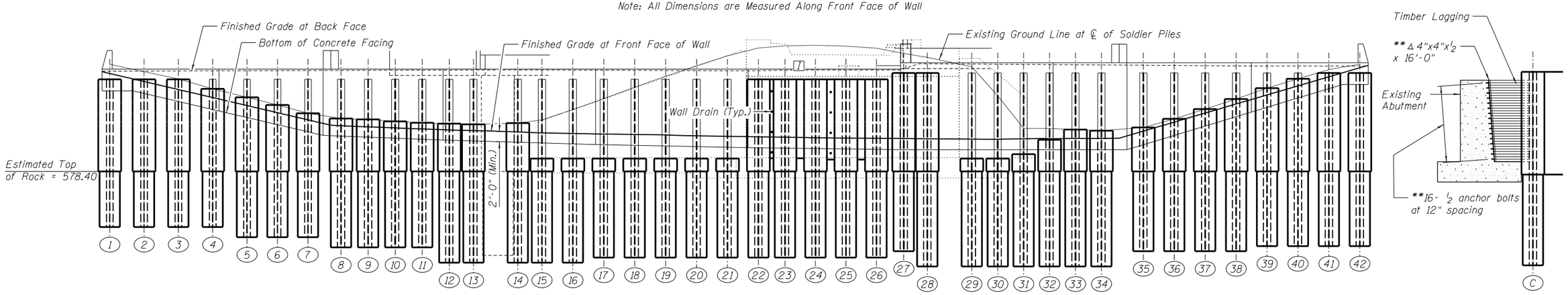


PLAN

Note: All Dimensions are Measured Along Front Face of Wall



SECTION A-A



ELEVATION

Unfolded Along Face of Wall

SECTION B-B

**Included in the Cost of Untreated Timber Lagging.

SOLDIER PILE SUMMARY

PILE NO.	PILE SIZE	LENGTH	BOTTOM ELEV.	TOP ELEV.	PILE NO.	PILE SIZE	LENGTH	BOTTOM ELEV.	TOP ELEV.	PILE NO.	PILE SIZE	LENGTH	BOTTOM ELEV.	TOP ELEV.
1	W40x249	29'-0"	567.50	596.50	16	W40x431	36'-0"	560.50	596.50	31	W40x249	38'-0"	559.75	597.75
2	W40x249	29'-0"	567.50	596.50	17	W40x249	35'-0"	561.50	596.50	32	W40x249	38'-0"	559.75	597.75
3	W40x249	29'-0"	567.50	596.50	18	W40x249	35'-0"	561.50	596.50	33	W40x249	38'-0"	559.75	597.75
4	W40x249	29'-0"	567.50	596.50	19	W40x249	35'-0"	561.50	596.50	34	W40x249	38'-0"	559.75	597.75
5	W40x249	31'-0"	565.50	596.50	20	W40x249	35'-0"	561.50	596.50	35	W40x249	35'-0"	562.75	597.75
6	W40x249	31'-0"	565.50	596.50	21	W40x249	35'-0"	561.50	596.50	36	W40x249	35'-0"	562.75	597.75
7	W40x249	31'-0"	565.50	596.50	22	W40x249	35'-0"	561.50	596.50	37	W40x249	35'-0"	562.75	597.75
8	W40x249	33'-0"	563.50	596.50	23	W40x249	35'-0"	561.50	596.50	38	W40x249	35'-0"	562.75	597.75
9	W40x249	33'-0"	563.50	596.50	24	W40x249	35'-0"	561.50	596.50	39	W40x249	34'-0"	563.75	597.75
10	W40x249	33'-0"	563.50	596.50	25	W40x249	35'-0"	561.50	596.50	40	W40x249	34'-0"	563.75	597.75
11	W40x249	33'-0"	563.50	596.50	26	W40x431	35'-0"	561.50	596.50	41	W40x249	34'-0"	563.75	597.75
12	W40x431	36'-0"	560.50	596.50	27	W40x431	35'-0"	562.75	597.75	42	W40x249	34'-0"	563.75	597.75
13	W40x431	36'-0"	560.50	596.50	28	W40x431	38'-0"	559.75	597.75	A	W40x249	30'-0"	567.27	597.27
14	W40x431	36'-0"	560.50	596.50	29	W40x431	38'-0"	559.75	597.75	B	W40x249	30'-0"	567.27	597.27
15	W40x431	36'-0"	560.50	596.50	30	W40x249	38'-0"	559.75	597.75	C	W40x249	38'-0"	560.59	598.59

SECANT LAGGING SUMMARY

BETWEEN PILES NO.	DIAMETER	LENGTH	BOTTOM ELEV.	TOP ELEV.
22-23	36"	15'-7"	*580.94	596.50
23-24	36"	15'-7"	*580.94	596.50
24-25	36"	15'-7"	*580.94	596.50
25-26	36"	15'-7"	*580.94	596.50
BR-A	36"	18'-4"	578.94	597.27
A-B	48"	18'-4"	578.94	597.27
B-22	48"	16'-4"	*580.94	597.27
26-BR	72"	20'-11"	*580.94	601.84

* Top of existing footing

EAST WALL
STUD SHEAR CONNECTORS REQUIRED

Pile No.	Number Required on Each Pile
1	3
2	4
3	5
4	6
5	7
6	8
7-9	9
10-18	10
19-26	11
27-34	12
35	11
36	10
37	9
38	8
39	6
40	5
41	4
42	3

6 = Control Point

BILL OF MATERIAL

ITEM	UNIT	TOTAL
Stud Shear Connectors	Each	390
Furnishing Soldier Piles (W Section)	Foot	1546
Drilling and Setting Soldier Piles (in Soil)	Cu. Ft.	9401.2
Drilling and Setting Soldier Piles (in Rock)	Cu. Ft.	8895.4
Untreated Timber Lagging	Sq. Ft.	2111
Secant Lagging	Cu. Ft.	1597

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FINAL

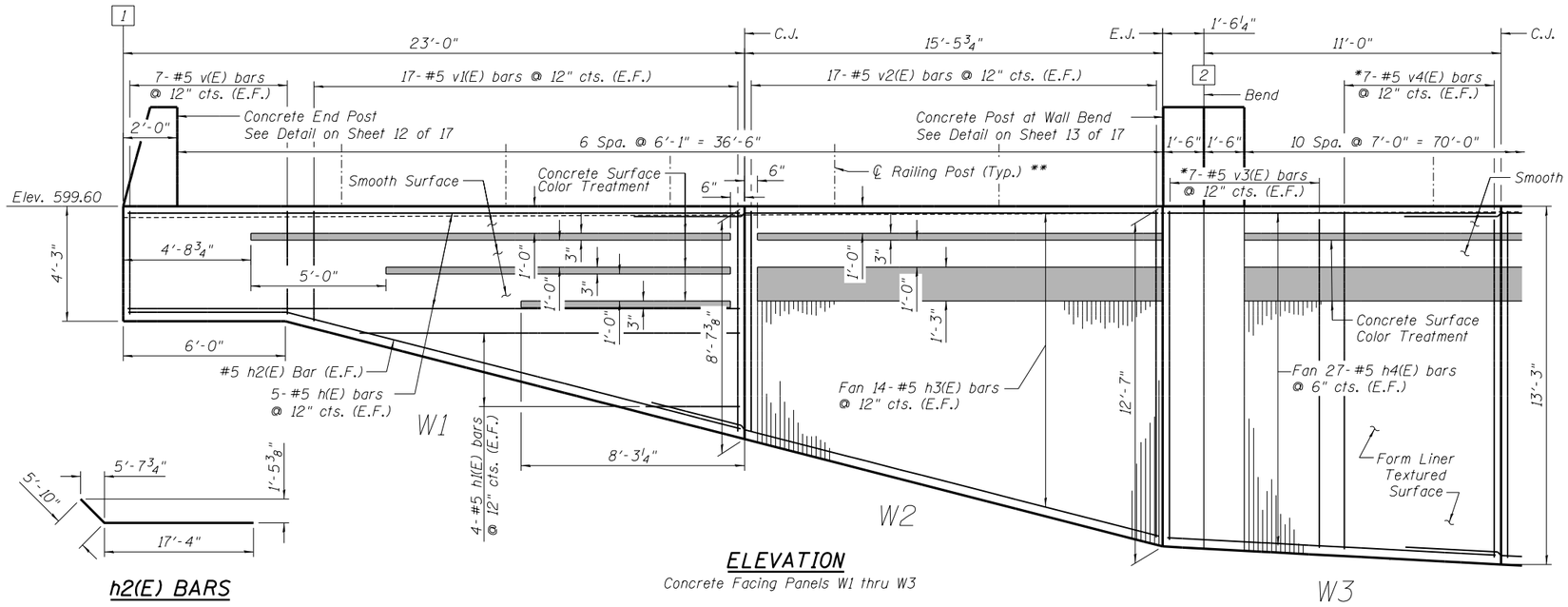
HANSON

USER NAME = Pop00275	DESIGNED - RGC	REVISED -	
	CHECKED - KMS	REVISED -	
PLOT SCALE = 0.1667 ' / in.	DRAWN - EJM	REVISED -	
PLOT DATE = 6/26/2019	CHECKED - RGC	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SOLDIER PILES – EAST WALL
RETAINING WALLS – 5TH STREET
SHEET NO. 7 OF 17 SHEETS

F.A.U. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
•	(109) VB,(110) VB-5	SANGAMON	382	223
		CONTRACT NO. 93733		
	ILLINOIS FED. AID PROJECT			



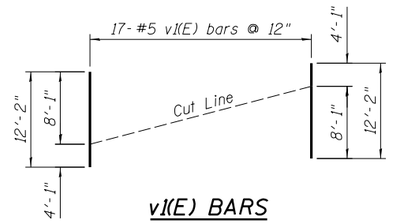
1 = Control Point

** Steel Railing (Special) All Measurements are Along Top of Wall. Adjust as Necessary to Avoid C.J.'s & E.J.'s.

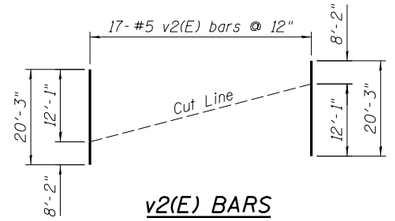
Note: E.J. = Expansion Joint
C.J. = Construction Joint
E.F. = Each Face
* = Stagger Bars

ELEVATION
Concrete Facing Panels W1 thru W3

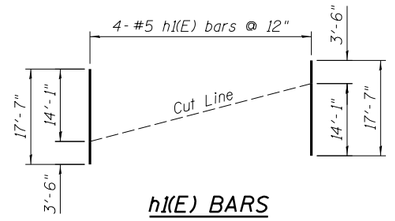
h2(E) BARS



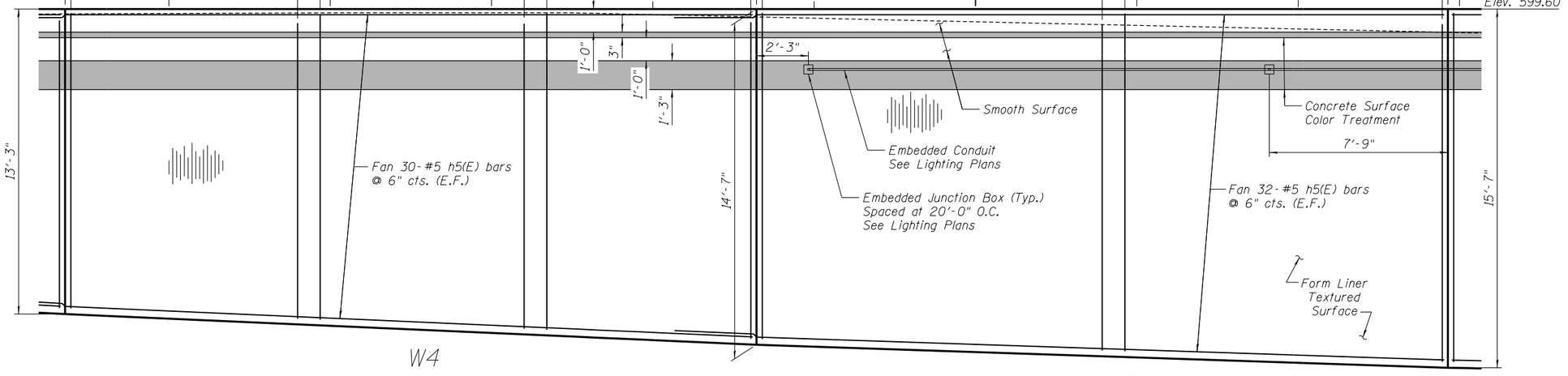
v1(E) BARS
Cut Bars to be Placed E.F.



v2(E) BARS
Cut Bars to be Placed E.F.

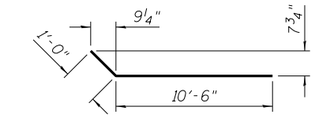


h1(E) BARS
Cut Bars to be Placed E.F.



ELEVATION
Concrete Facing Panels W4 & W5

T = Intermediate Tensioning Posts



h4(E) BARS

BILL OF MATERIAL

Bar	No.	Size	Length	Shape
h(E)	10	#5	22'-8"	
h1(E)	4	#5	17'-7"	
h2(E)	2	#5	23'-2"	
h3(E)	28	#5	19'-5"	
h4(E)	54	#5	11'-6"	
h5(E)	124	#5	33'-5"	
v(E)	14	#5	3'-10"	
v1(E)	17	#5	12'-2"	
v2(E)	17	#5	20'-3"	
v3(E)	14	#5	12'-2"	
v4(E)	14	#5	12'-5"	
v5(E)	22	#5	12'-10"	
v6(E)	20	#5	13'-3"	
v7(E)	20	#5	13'-9"	
v8(E)	32	#5	14'-2"	
v9(E)	30	#5	14'-8"	
Reinforcement Bars Epoxy Coated			Pound	8670
Concrete Structures			Cu. Yd.	54.3

MIN. BAR LAPS
#5 Bars = 3'-4"

FINAL

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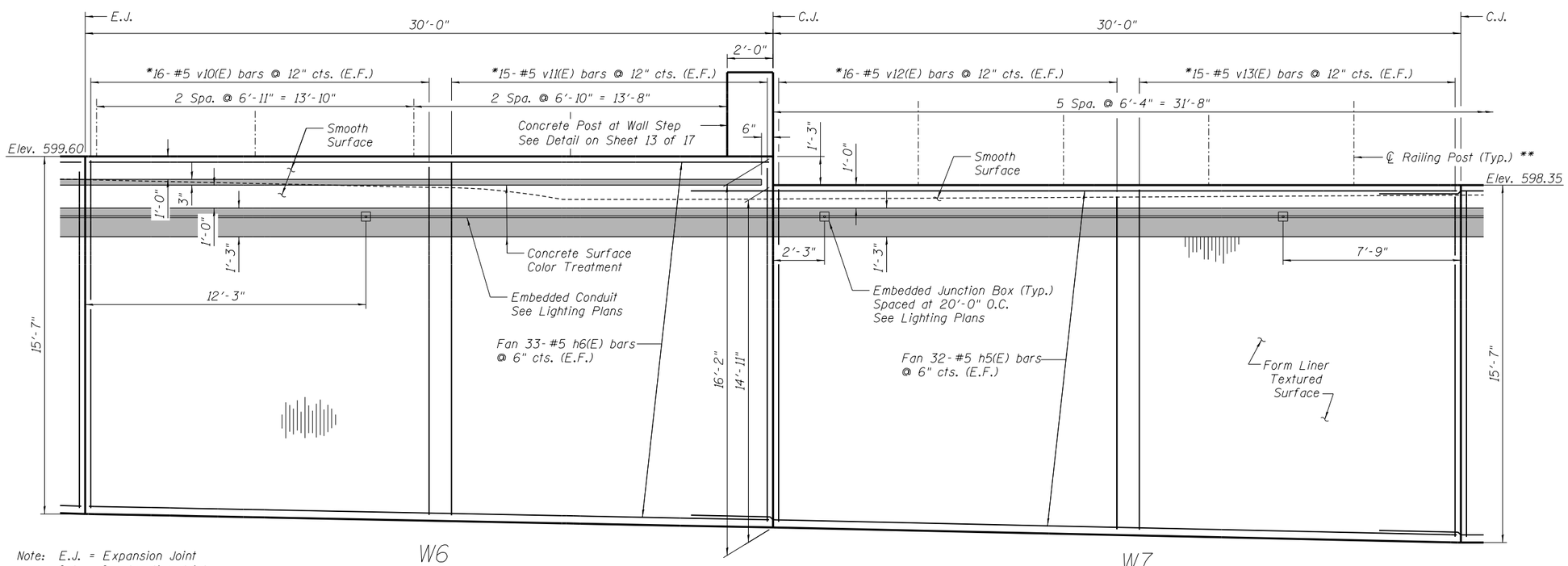
HANSON

USER NAME = Pop00275	DESIGNED - RGC	REVISED -
	CHECKED - KMS	REVISED -
PLOT SCALE = 0.1667 ' / in.	DRAWN - EJM	REVISED -
PLOT DATE = 6/26/2019	CHECKED - RGC	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

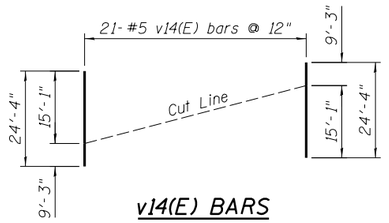
CONCRETE FACING - WEST WALL
RETAINING WALLS - 5TH STREET
SHEET NO. 8 OF 17 SHEETS

F.A.U. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
•	(109) VB,(110) VB-5	SANGAMON	382	224
		CONTRACT NO. 93733		
	ILLINOIS FED. AID PROJECT			

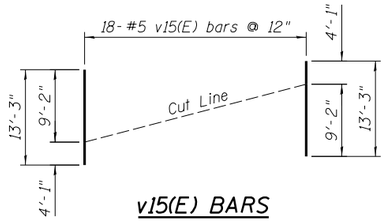


Note: E.J. = Expansion Joint
C.J. = Construction Joint
E.F. = Each Face
* = Stagger Bars

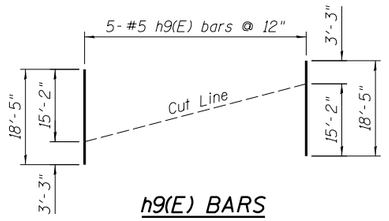
ELEVATION
Concrete Facing Panels W6 & W7



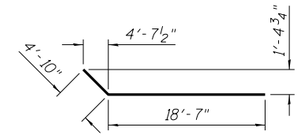
v14(E) BARS
Cut Bars to be Placed E.F.



v15(E) BARS
Cut Bars to be Placed E.F.



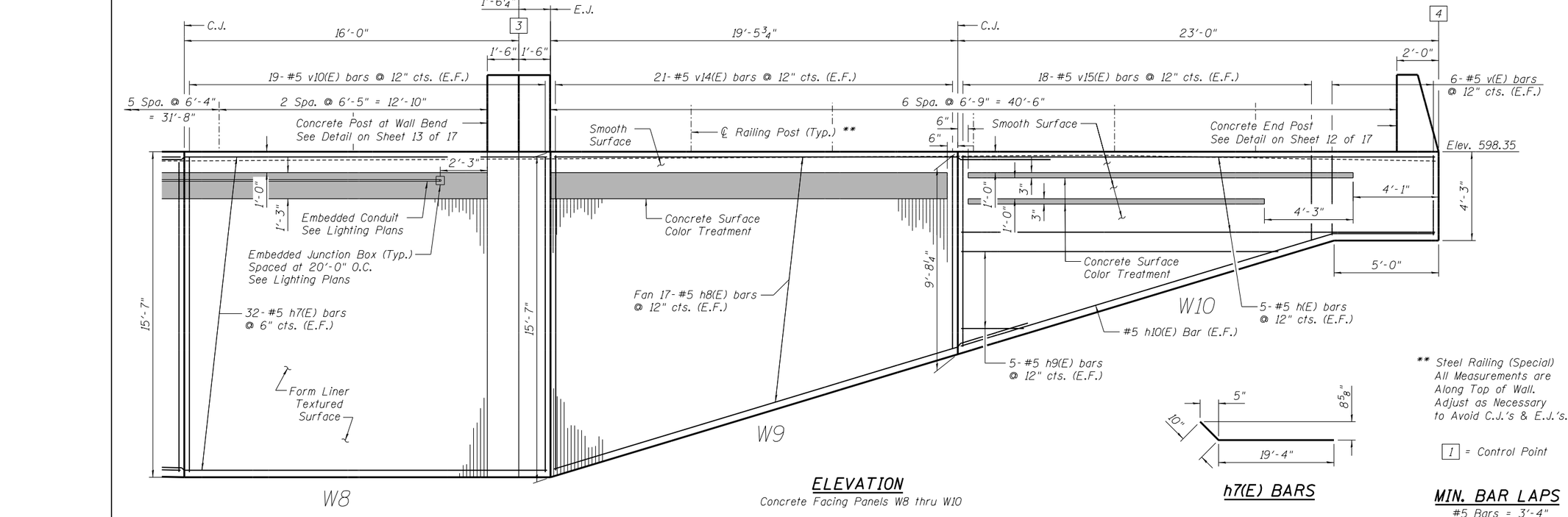
h9(E) BARS
Cut Bars to be Placed E.F.



h10(E) BARS

BILL OF MATERIAL

Bar	No.	Size	Length	Shape
h(E)	10	#5	22'-8"	———
h5(E)	64	#5	33'-5"	———
h6(E)	66	#5	29'-8"	———
h7(E)	64	#5	20'-2"	⟍——
h8(E)	34	#5	23'-9"	———
h9(E)	5	#5	18'-5"	———
h10(E)	2	#5	23'-5"	⟍——
v(E)	12	#5	3'-10"	———
v10(E)	70	#5	15'-2"	———
v11(E)	30	#5	15'-5"	———
v12(E)	32	#5	14'-6"	———
v13(E)	30	#5	14'-10"	———
v14(E)	21	#5	24'-4"	———
v15(E)	18	#5	13'-3"	———
Reinforcement Bars Epoxy Coated			Pound	10210
Concrete Structures (Retaining Wall)			Cu. Yd.	64.9



ELEVATION
Concrete Facing Panels W8 thru W10

h7(E) BARS

** Steel Railing (Special)
All Measurements are
Along Top of Wall.
Adjust as Necessary
to Avoid C.J.'s & E.J.'s.

1 = Control Point

MIN. BAR LAPS
#5 Bars = 3'-4"

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FINAL

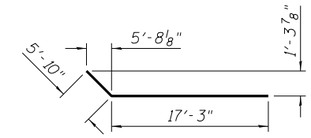
HANSON

USER NAME = Pop00275	DESIGNED - RGC	REVISED -	
	CHECKED - KMS	REVISED -	
PLOT SCALE = 0.1667 ' / in.	DRAWN - EJM	REVISED -	
PLOT DATE = 6/26/2019	CHECKED - RGC	REVISED -	

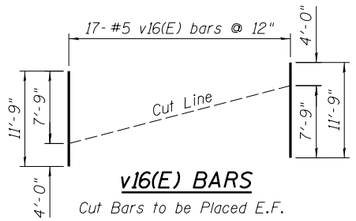
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

CONCRETE FACING – WEST WALL
RETAINING WALLS – 5TH STREET
SHEET NO. 9 OF 17 SHEETS

F.A.U. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
•	(109) VB,(110) VB-5	SANGAMON	382	225
		CONTRACT NO. 93733		
	ILLINOIS FED. AID PROJECT			

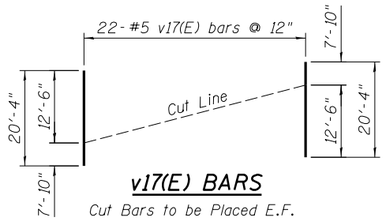


h12(E) BARS



v16(E) BARS

Cut Bars to be Placed E.F.

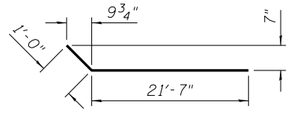


v17(E) BARS

Cut Bars to be Placed E.F.

Note: E.J. = Expansion Joint
C.J. = Construction Joint
E.F. = Each Face
* = Stagger Bars

** Steel Railing (Special) All Measurements are Along Top of Wall. Adjust as Necessary to Avoid C.J.'s & E.J.'s.

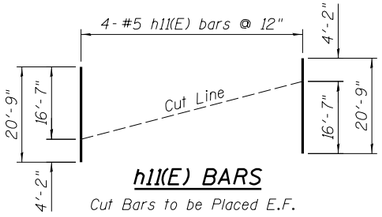


h14(E) BARS

1 = Control Point

ELEVATION

Concrete Facing Panels E1 thru E3

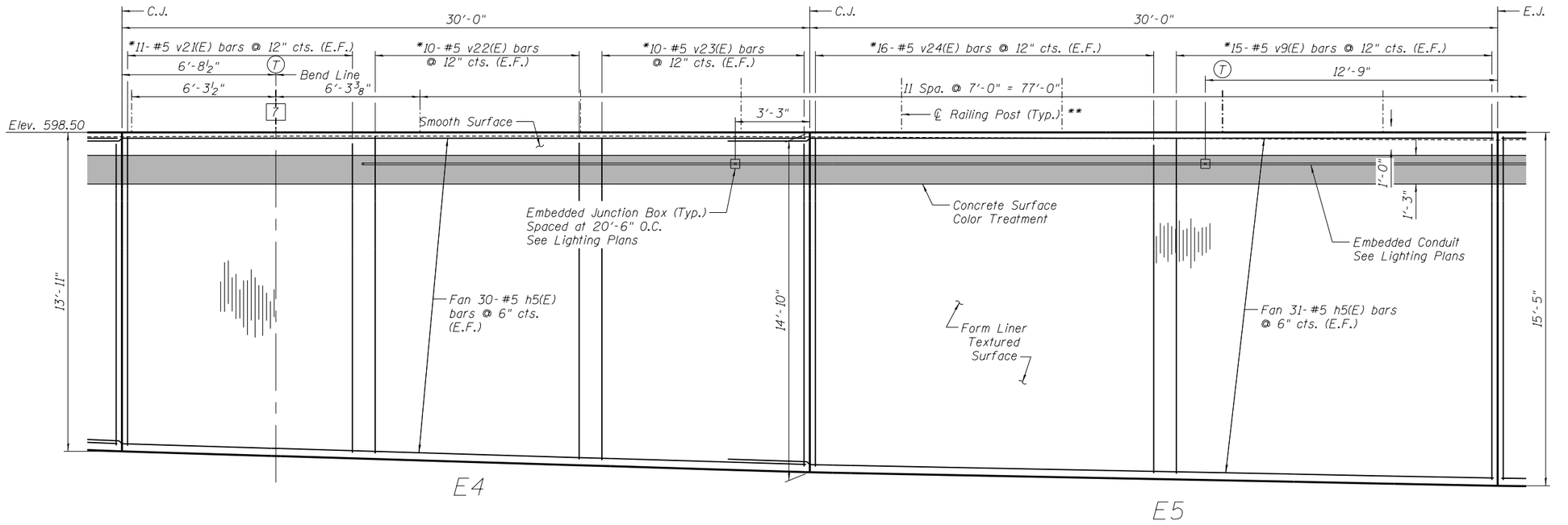


h11(E) BARS

Cut Bars to be Placed E.F.

BILL OF MATERIAL

Bar	No.	Size	Length	Shape
h(E)	8	#5	22'-8"	———
h5(E)	122	#5	33'-5"	———
h11(E)	4	#5	20'-9"	———
h12(E)	2	#5	23'-1"	⟍——
h13(E)	28	#5	24'-5"	———
h14(E)	56	#5	22'-7"	⟍——
v(E)	14	#5	3'-10"	———
v9(E)	30	#5	14'-8"	———
v16(E)	17	#5	11'-9"	———
v17(E)	22	#5	20'-4"	———
v18(E)	18	#5	12'-7"	———
v19(E)	16	#5	12'-11"	———
v20(E)	16	#5	13'-2"	———
v21(E)	22	#5	13'-6"	———
v22(E)	20	#5	13'-10"	———
v23(E)	20	#5	14'-1"	———
v24(E)	32	#5	14'-4"	———
Reinforcement Bars Epoxy Coated			Pound	9840
Concrete Structures (Retaining Wall)			Cu. Yd.	62.9



ELEVATION

Concrete Facing Panels E4 & E5

MIN. BAR LAPS

#5 Bars = 3'-4"

T = Intermediate Tensioning Posts

pw:\\spi-svr306.hanson.dom:Hanson Projects\Documents\09Jobs\09L01798\CAD\Struct\5th\Sheet\09L01798-5thRetainingWallPlans

FINAL

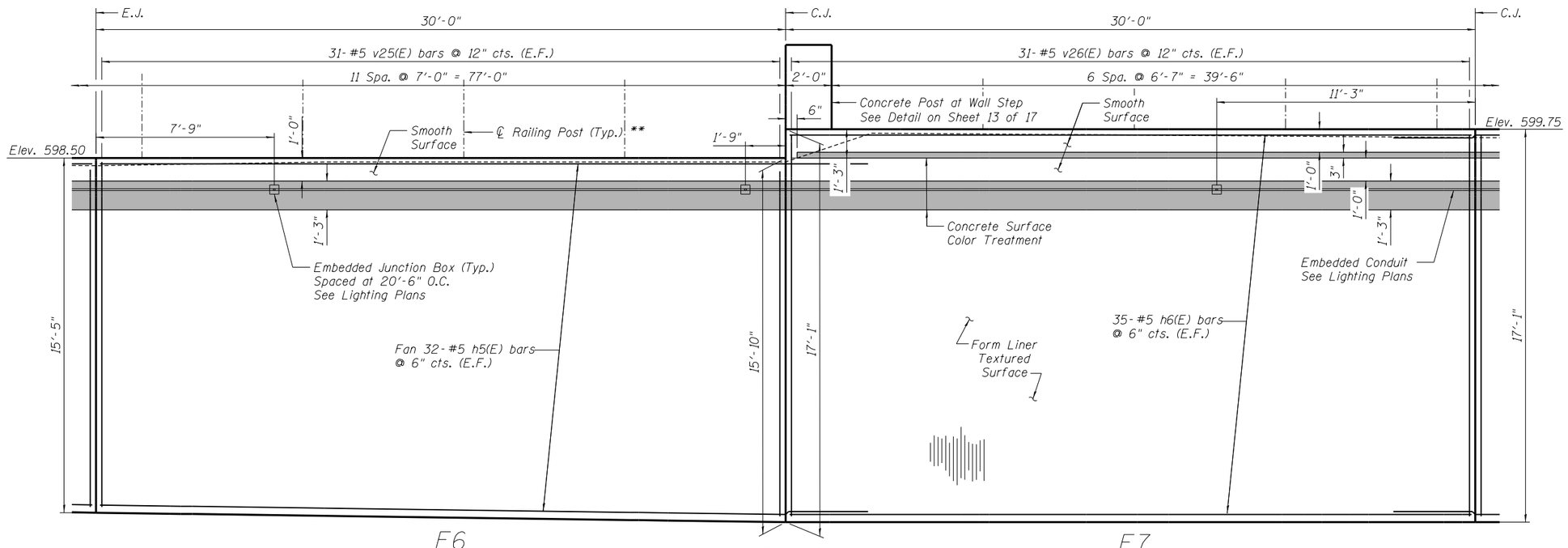
HANSON

USER NAME = Pop00275	DESIGNED - RGC	REVISED -
	CHECKED - KMS	REVISED -
PLOT SCALE = 0.1667 ' / in.	DRAWN - EJM	REVISED -
PLOT DATE = 6/26/2019	CHECKED - RGC	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

CONCRETE FACING - EAST WALL
RETAINING WALLS - 5TH STREET
SHEET NO. 10 OF 17 SHEETS

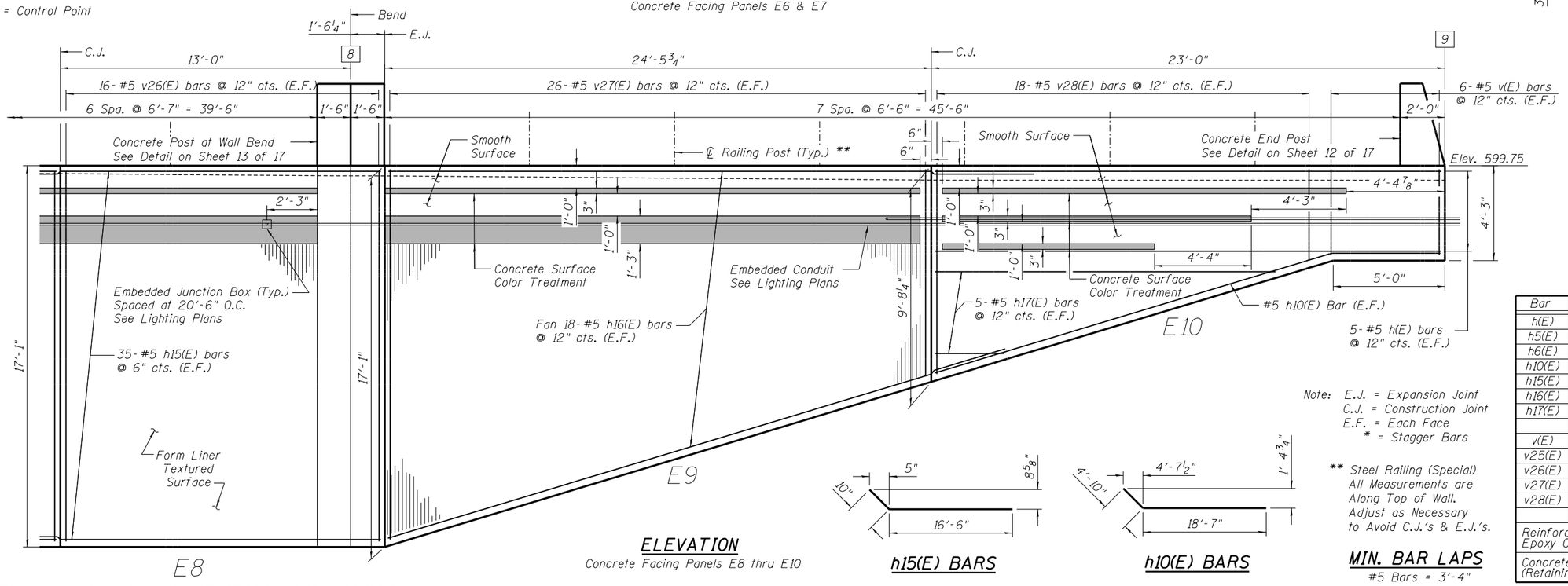
F.A.U. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
•	(109) VB,(110) VB-5	SANGAMON	382	226
		CONTRACT NO. 93733		
	ILLINOIS FED. AID PROJECT			



ELEVATION

Concrete Facing Panels E6 & E7

1 = Control Point



ELEVATION

Concrete Facing Panels E8 thru E10

h15(E) BARS

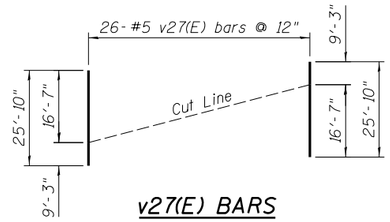
h10(E) BARS

Note: E.J. = Expansion Joint
C.J. = Construction Joint
E.F. = Each Face
* = Stagger Bars

** Steel Railing (Special)
All Measurements are
Along Top of Wall.
Adjust as Necessary
to Avoid C.J.'s & E.J.'s.

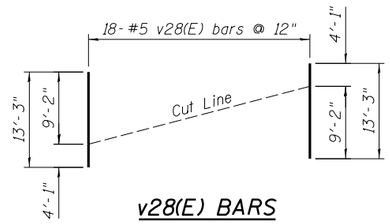
MIN. BAR LAPS

#5 Bars = 3'-4"



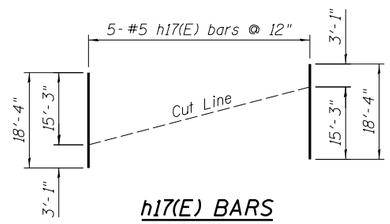
v27(E) BARS

Cut Bars to be Placed E.F.



v28(E) BARS

Cut Bars to be Placed E.F.



h17(E) BARS

Cut Bars to be Placed E.F.

BILL OF MATERIAL

Bar	No.	Size	Length	Shape
h(E)	10	#5	22'-8"	———
h5(E)	64	#5	33'-5"	———
h6(E)	70	#5	29'-8"	———
h10(E)	2	#5	23'-5"	———
h15(E)	70	#5	17'-4"	———
h16(E)	36	#5	28'-11"	———
h17(E)	5	#5	18'-4"	———
v(E)	12	#5	3'-10"	———
v25(E)	62	#5	15'-0"	———
v26(E)	94	#5	16'-7"	———
v27(E)	26	#5	25'-10"	———
v28(E)	18	#5	13'-3"	———
Reinforcement Bars Epoxy Coated			Pound	10720
Concrete Structures (Retaining Wall)			Cu. Yd.	69.6

FINAL

HANSON

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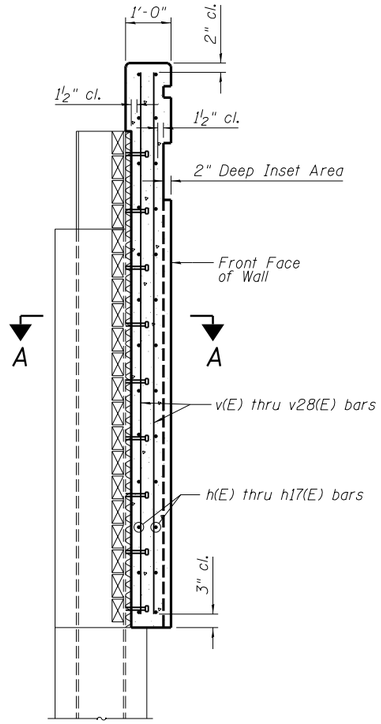
USER NAME = Pop00275	DESIGNED - RGC	REVISED -	
	CHECKED - KMS	REVISED -	
PLOT SCALE = 0.1667 ' / in.	DRAWN - EJM	REVISED -	
PLOT DATE = 6/26/2019	CHECKED - RGC	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

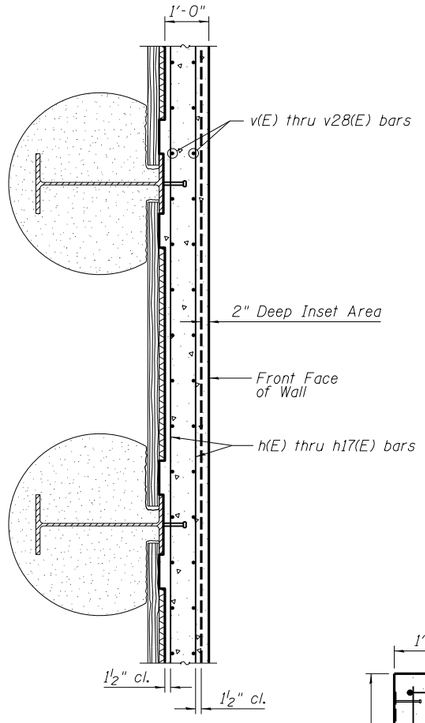
CONCRETE FACING - EAST WALL
RETAINING WALLS - 5TH STREET

SHEET NO. 11 OF 17 SHEETS

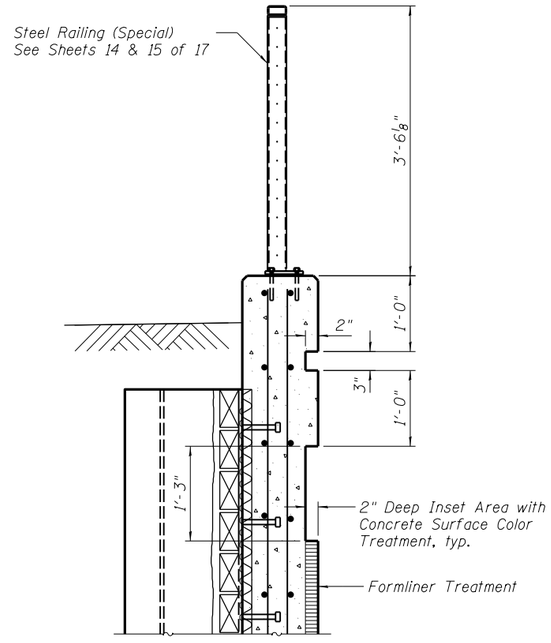
F.A.U. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
•	(109) VB,(110) VB-5	SANGAMON	382	227
		CONTRACT NO. 93733		
	ILLINOIS FED. AID PROJECT			



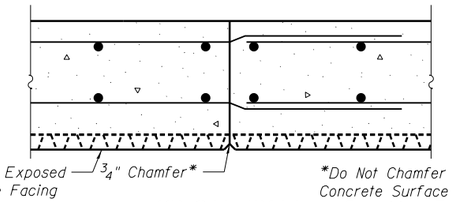
TYPICAL SECTION THRU CONCRETE FACING



SECTION A-A

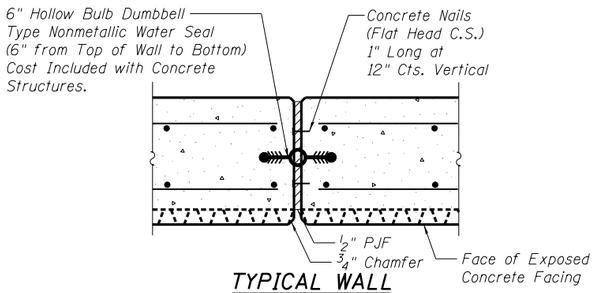


RAILING & RUSTICATION DETAIL

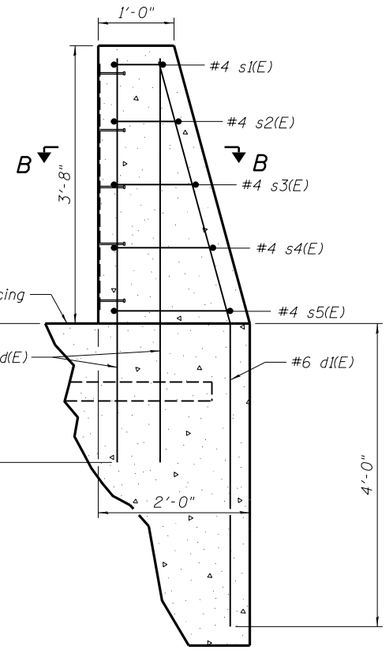


*Do Not Chamfer Areas with Concrete Surface Color Treatment or Form Liner Textured Surface

TYPICAL WALL CONSTRUCTION JOINT DETAIL

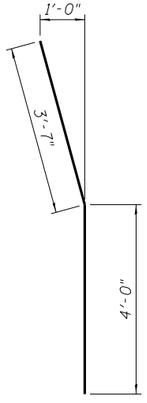


TYPICAL WALL EXPANSION JOINT DETAIL

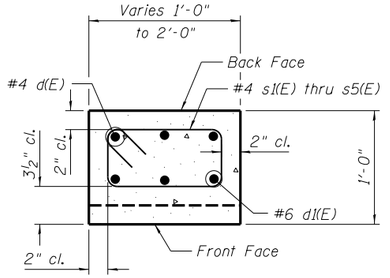


CABLE ANCHORAGE CONCRETE END POST DETAIL

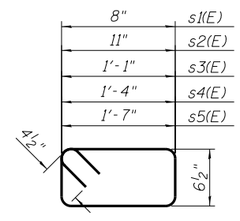
Typ. of 4 Posts on Concrete Facing
See Sheet 15 of 17 for Railing Connection Details



d1(E) BAR



SECTION B-B



s1(E) THRU s5(E) BARS

BILL OF MATERIAL

Bar	No.	Size	Length	Shape
d(E)	16	#4	5'-5"	
d1(E)	8	#6	7'-7"	
s1(E)	4	#4	3'-2"	
s2(E)	4	#4	3'-8"	
s3(E)	4	#4	4'-0"	
s4(E)	4	#4	4'-6"	
s5(E)	4	#4	5'-0"	
Reinforcement Bars Epoxy Coated			Pound	200
Concrete Structures (Retaining Wall)			Cu. Yd.	0.8

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FINAL

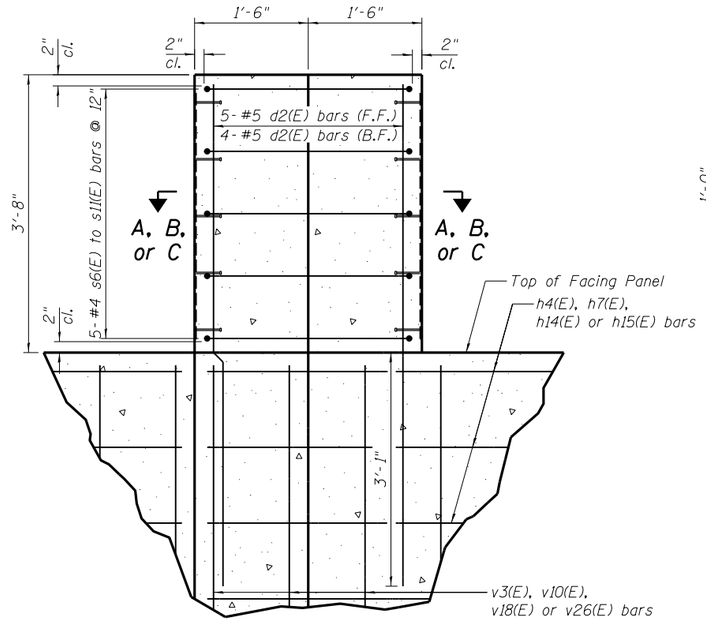
HANSON

USER NAME = Pop00275	DESIGNED - RGC	REVISED -	
	CHECKED - KMS	REVISED -	
PLOT SCALE = 0.1667 ' / in.	DRAWN - EJM	REVISED -	
PLOT DATE = 6/26/2019	CHECKED - RGC	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

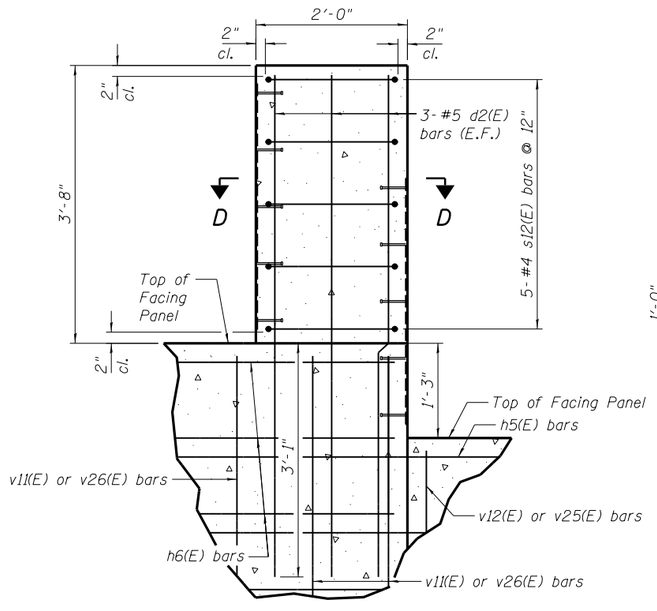
CONCRETE FACING DETAILS
RETAINING WALLS – 5TH STREET
SHEET NO. 12 OF 17 SHEETS

F.A.U. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
•	(109) VB,(110) VB-5	SANGAMON	382	228
		CONTRACT NO. 93733		
	ILLINOIS FED. AID PROJECT			



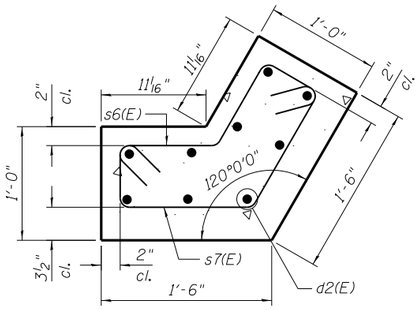
CABLE ANCHORAGE CONCRETE POST AT WALL BENDS - UNFOLDED VIEW

Typ. of 4 Posts on Concrete Facing
See Sheet 15 of 17 for Railing Connection Details



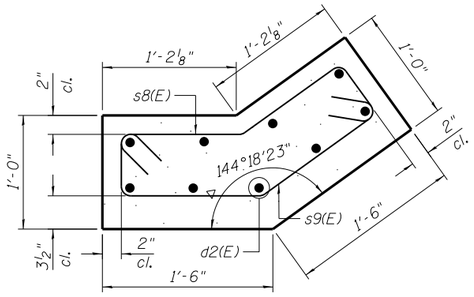
CABLE ANCHORAGE CONCRETE POST AT STEP IN WALL

Typ. of 2 Posts on Concrete Facing
See Sheet 15 of 17 for Railing Connection Details



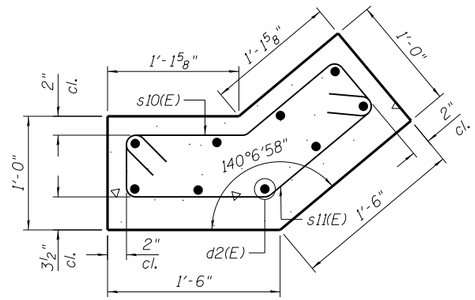
SECTION A-A

West Wall - North Bend &
East Wall - South Bend



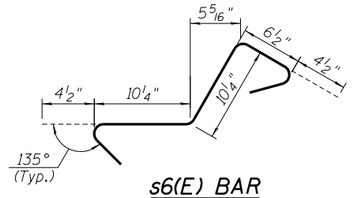
SECTION B-B

East Wall - North Bend

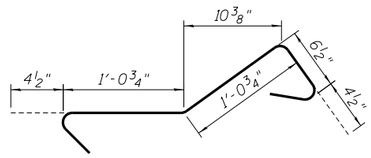


SECTION C-C

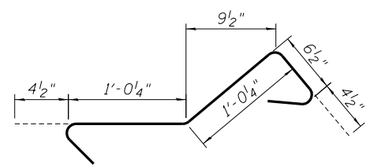
West Wall - South Bend



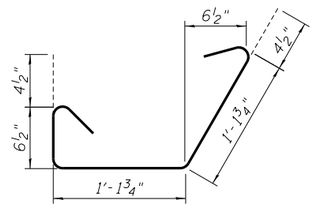
s6(E) BAR



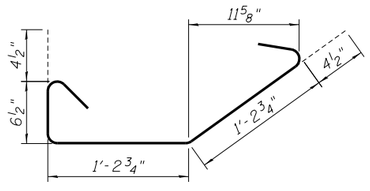
s8(E) BAR



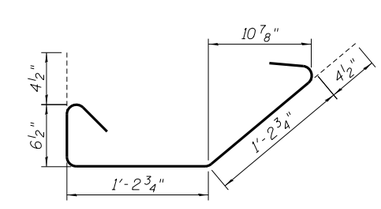
s10(E) BAR



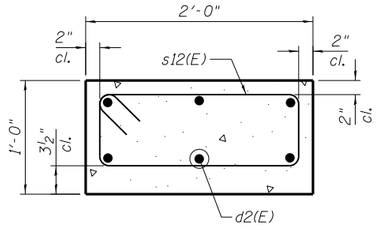
s7(E) BAR



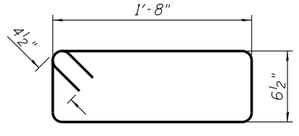
s9(E) BAR



s11(E) BAR



SECTION D-D



s12(E) BAR

BILL OF MATERIAL

Bar	No.	Size	Length	Shape
d2(E)	48	#5	6'-10"	
s6(E)	10	#4	3'-0"	
s7(E)	10	#4	3'-9"	
s8(E)	5	#4	3'-5"	
s9(E)	5	#4	3'-9"	
s10(E)	5	#4	3'-4"	
s11(E)	5	#4	3'-9"	
s12(E)	10	#4	5'-2"	
Reinforcement Bars Epoxy Coated			Pound	470
Concrete Structures (Retaining Wall)			Cu. Yd.	2.0

pw:\\spi-svr306.hanson.dom:Hanson_Projects\Documents\09Jobs\09L01798\CAD\Struct\5th\Sheet\09L01798-5thRetainingWallPlans

FINAL

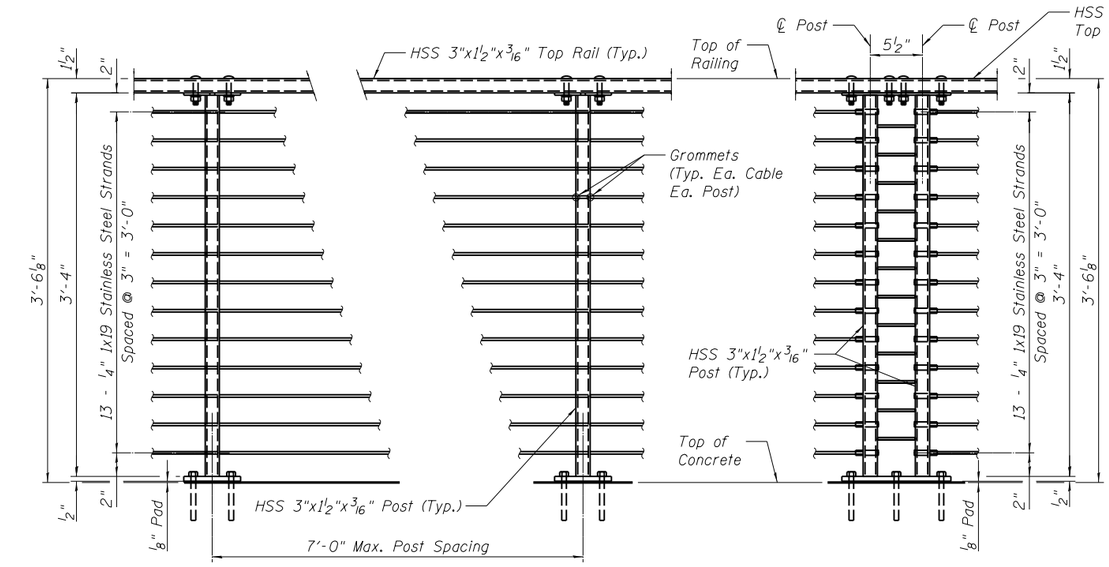
HANSON

USER NAME = Pop00275	DESIGNED - RGC	REVISED -	
	CHECKED - KMS	REVISED -	
PLOT SCALE = 0.1667 ' / in.	DRAWN - EJM	REVISED -	
PLOT DATE = 6/26/2019	CHECKED - RGC	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

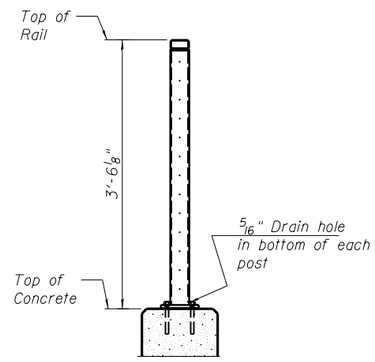
CONCRETE FACING DETAILS
RETAINING WALLS – 5TH STREET
SHEET NO. 13 OF 17 SHEETS

F.A.U. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
•	(109) VB,(110) VB-5	SANGAMON	382	229
		CONTRACT NO. 93733		
	ILLINOIS FED. AID PROJECT			



TYPICAL RAILING PANEL

INTERMEDIATE TENSIONING POSTS



POST DETAIL

Notes:

Railing posts shall be vertical.

Anchor rods shall be ASTM F1554, Gr. 55, galvanized steel all-thread (or an Engineer-approved alternate material) of the grade(s) and diameter(s) specified. The corresponding specified grade of AASHTO M314 anchor rods may be used in lieu of ASTM F1554. The anchor rods shall be hot-dipped galvanized according to AASHTO M232, Class C.

Tube segments shall have all corners ground to remove burrs or sharp projections.

All bolts, eyebolts, nuts and washers must satisfy the requirements of ASTM A307 Gr. A unless noted otherwise.

The anchor rods shall be installed according to Article 509.06 of the Standard Specifications. Embedment shall be 4'' min. or according to the manufactures specifications whatever is greater.

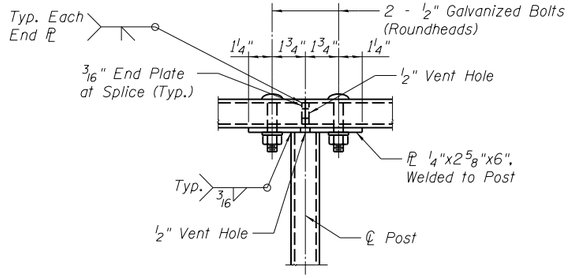
Structural steel plates and bars of the Steel Railing shall conform to the requirements of ASTM A36/36M.

Tubular steel posts shall be according to the requirements of ASTM A500, Grade B.

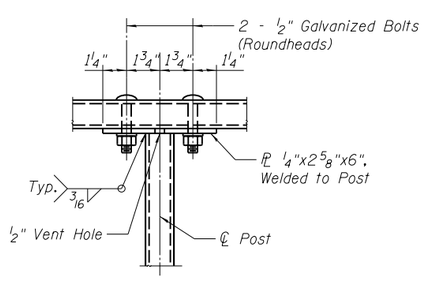
All steel rail members, with the exception of the stainless steel strand and fittings, shall be hot dipped galvanized according to 509.05 of the Standard Specifications.

All studs shall be ½"φx4" granular or solid flux filled headed studs automatically end welded to plates.

See Sheets 8 thru 11 of 17 for rail post spacing.



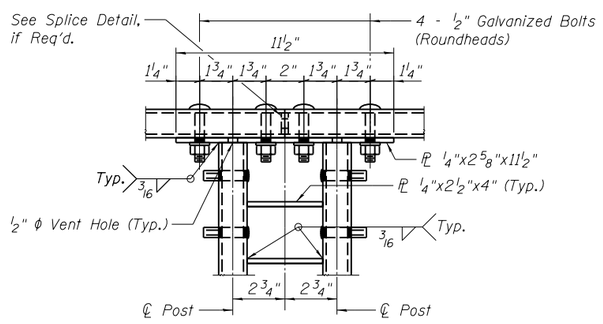
TOP RAIL - WITH SPLICE



TOP RAIL - NO SPLICE

TYPICAL RAIL/POST CONNECTION

(Strands not shown for clarity.)



TOP PLATE INTERMEDIATE TENSIONING POSTS

BILL OF MATERIAL

ITEM	UNIT	TOTAL
Steel Railing (Special)	Foot	456

pw:\\spi-svr306.hanson.dom:Hanson Projects\Documents\09Jobs\09L0179B\CAD\Struct\5th\Sheet\09L0179B-5thRetainingWallPlans

FINAL

HANSON

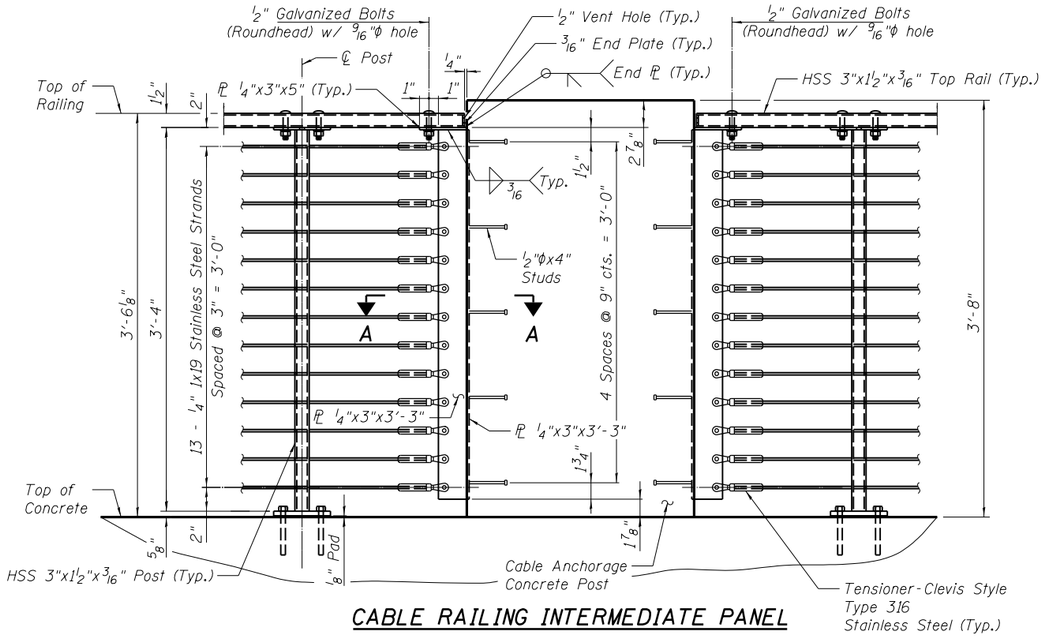
USER NAME = Pop00275	DESIGNED - RGC	REVISED -	
	CHECKED - KMS	REVISED -	
PLOT SCALE = 0.1667 ' / in.	DRAWN - EJM	REVISED -	
PLOT DATE = 6/26/2019	CHECKED - RGC	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

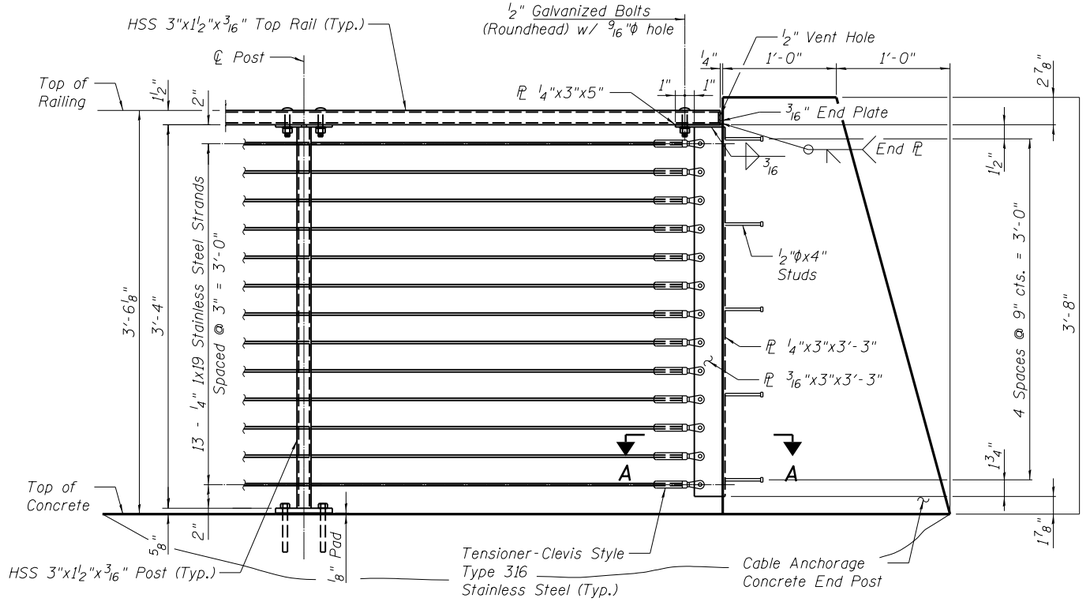
RAILING DETAILS
RETAINING WALLS – 5TH STREET

SHEET NO. 14 OF 17 SHEETS

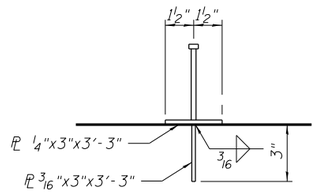
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
•	(109) VB,(110) VB-5	SANGAMON	382	230
		CONTRACT NO. 93733		
	ILLINOIS FED. AID PROJECT			



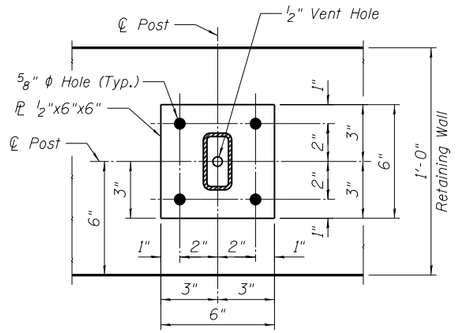
CABLE RAILING INTERMEDIATE PANEL



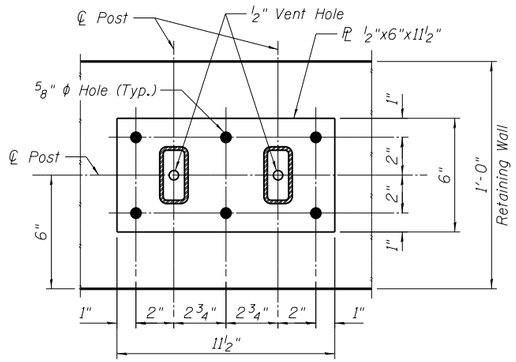
CABLE RAILING END PANEL



SECTION A-A

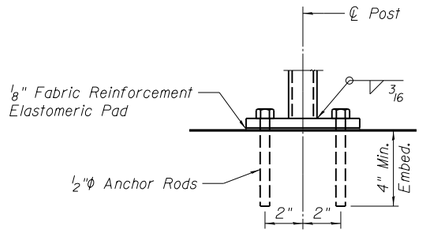


STANDARD POST



INTERMEDIATE TENSIONING POSTS

BASE PLATE DETAILS



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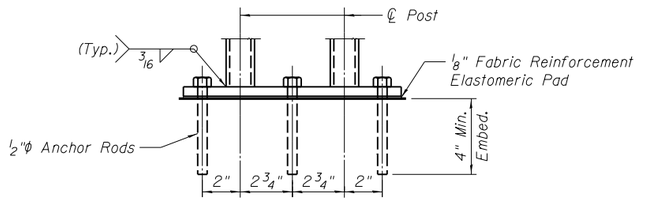

INTERMEDIATE TENSIONING POSTS

TYPICAL ANCHOR ROD DETAILS

FINAL

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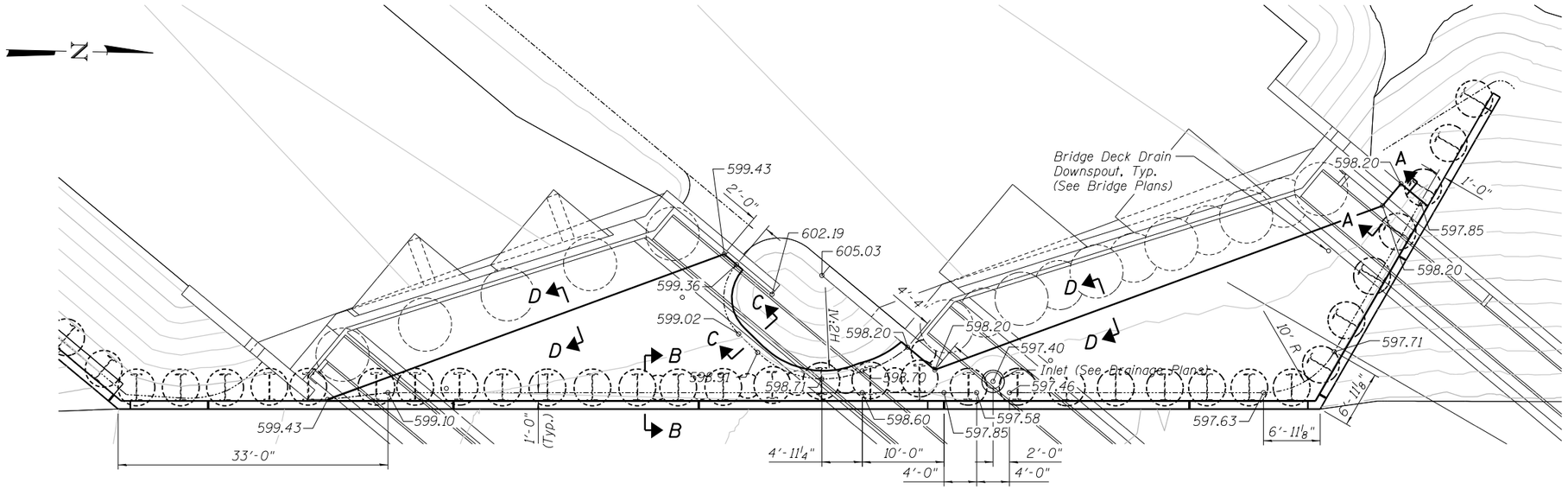
USER NAME = Pop00275	DESIGNED - RGC	REVISED -	
	CHECKED - KMS	REVISED -	
PLOT SCALE = 0.1667 ' / in.	DRAWN - EJM	REVISED -	
PLOT DATE = 6/26/2019	CHECKED - RGC	REVISED -	

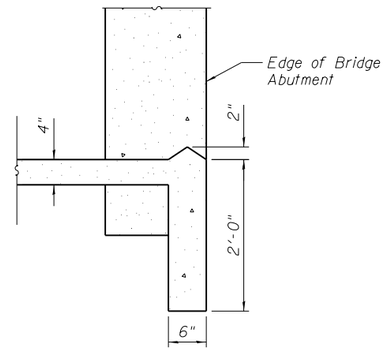
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

RAILING DETAILS
RETAINING WALLS – 5TH STREET
SHEET NO. 15 OF 17 SHEETS

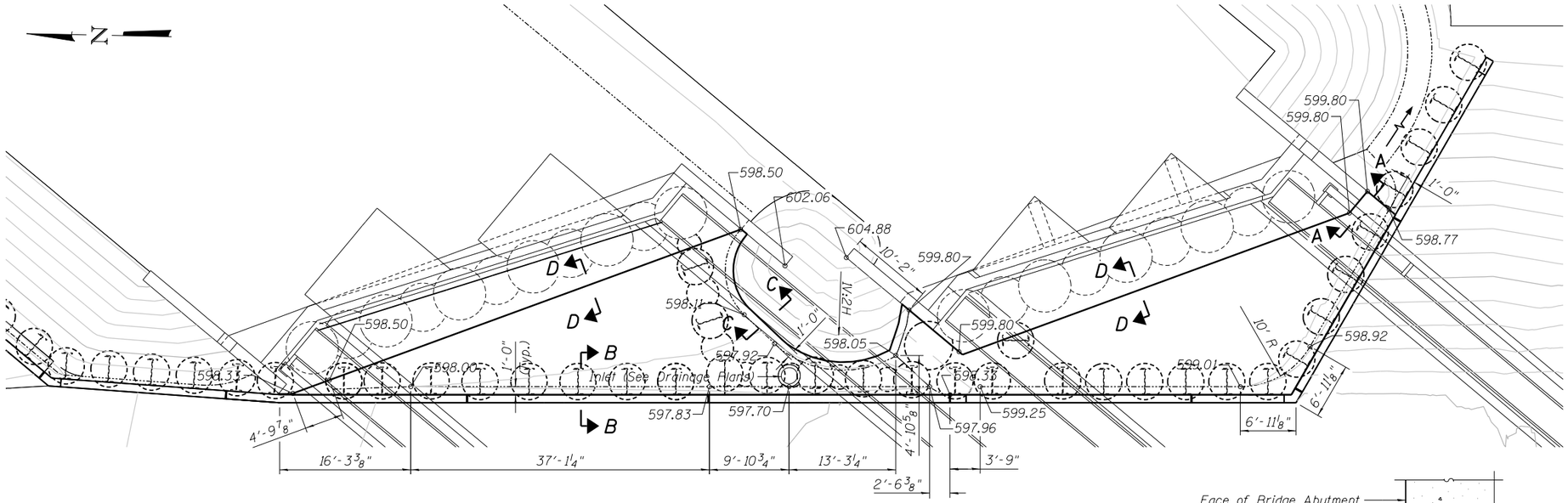
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
•	(109) VB,(110) VB-5	SANGAMON	382	231
		CONTRACT NO. 93733		
	ILLINOIS FED. AID PROJECT			



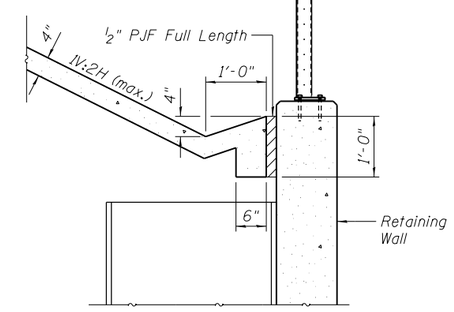
PLAN - WEST WALL



SECTION A-A



PLAN - EAST WALL

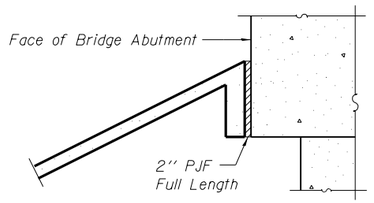


SECTION B-B

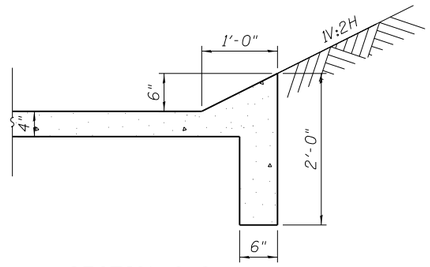
BILL OF MATERIAL

ITEM	UNIT	TOTAL
Slope Wall 4 Inch	Sq. Yd.	300

Note:
Slopewall shall be reinforced with welded wire fabric.
6'' x 6'' - W4.0 x W4.0, weighing 58 lbs. per 100 sq. ft.



SECTION D-D



SECTION C-C

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FINAL

HANSON

USER NAME = Pop00275	DESIGNED - RGC	REVISED -	
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PLOT SCALE = 0.1667 '/ in.	DRAWN - EJM	REVISED -	
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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SLOPE WALL DETAILS
RETAINING WALLS – 5TH STREET
SHEET NO. 16 OF 17 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
•	(109) VB,(110) VB-5	SANGAMON	382	232
		CONTRACT NO. 93733		
		ILLINOIS FED. AID PROJECT		

B-3
Sta. 999+30, 27' LT
5/6/58

	N	Qu	w%	
600.8				CINDER, COAL, & misc. FILL.
	18			
596.8				
	16	1.60		Brown silty CLAY.
593.8 ▽				
593.3 Oh	6	0.53		Brown & gray SILT, tr. clay.
	6	1.06		
589.8				Brown SILT, tr. clay.
	5	1.60		
	4	1.06		
584.8				Gray silty CLAY, tr. small gravel.
	4	0.85		
	4	1.06		
578.8				
	97	6.10		Brown SILT.
	100/7"	6.94		
574.8				
573.3	100/6"			Gray decomposed SHALE.
				Bottom of Hole = 27.5 feet

B-4
Sta. 999+93, 27' LT
5/6/58

	N	Qu	w%	
601.4				CINDER, COAL, & misc. FILL.
	7			
597.4				
	14	2.67		Brown silty CLAY.
594.4 ▽				
593.9 Oh	9	0.53		Brown & gray SILT, tr. clay.
	9	0.85		
589.9				Brown SILT, tr. clay.
	7	0.53		
	6	0.32		
585.4				Gray silty CLAY.
	4	0.53		
582.4				
	7	1.60		No Description.
579.4				
	39	8.54		Brown SILT.
576.4				
	100/7"	10.15		Gray decomposed SHALE.
573.5	100/5"			
				Bottom of Hole = 27.9 feet

B-147
Sta. 1000+21, 20' LT
9/10/13

	N	Qu	w%	
584.4				
583.55				ASPHALT.
583.35	6		5	AGGREGATE.
580.85				Brown fine sandy SILT, some concrete fragments - FILL.
	4	0.41B	22	
578.35				Gray fine sandy silty CLAY, trace coarse sand and small gravel.
	32	4.50P	14	
575.85				Brown and gray SHALE. (HIGHLY WEATHERED SHALE)
	80	4.50P	12	
	50/5"	4.50P	10	Gray SHALE.
569.35	50/4"		8	
	Rec. = 38% RQD = 38%			Gray clayey SHALE, micaceous.
	Rec. = 96% RQD = 46%			
	15.2			
	Rec. = 93% RQD = 82%			
	9.5			
	Rec. = 71% RQD = 28%			
	Rec. = 93% RQD = 0%			
556.05	Rec. = 100% RQD = 0%			COAL.
	Rec. = 90% RQD = 67%			
549.15				
548.35	2.5			Gray clayey SHALE, micaceous.
				Bottom of Hole = 36.0 feet

B-2
Sta. 1000+69, 27' RT
5/6/58

	N	Qu	w%	
601.4				
600.4				Black CLAY FILL.
	14			CINDER, COAL, & misc. FILL.
597.9				
	17	1.60		Brown & gray silty CLAY.
594.4 ▽				
593.9 Oh	11			Brown & gray SILT, tr. clay. Became soft at 592.9.
	3	0.53		
589.9				
	5	0.85		Brown SILT, tr. clay.
587.9				
	4	0.53		Brown & gray silty CLAY.
585.4				
	4	1.06		Gray silty CLAY.
	5	1.06		
579.4				
	34	10.15		Brown SILT, tr. clay.
575.4	100/10"	8.54		
	100/6"	8.54		Gray decomposed SHALE.
573.2				Bottom of Hole = 28.2 feet

B-1
Sta. 1000+06, 27' RT
5/6/58

	N	Qu	w%	
601.8				CINDER, COAL, & misc. FILL.
	7			
598.8				Black silty CLAY.
	10	2.67		
595.8				
594.3 Oh	10	1.60		Brown & gray SILT, tr. clay.
	10	2.12		
590.3				Brown SILT, tr. clay.
	7	0.53		
	5	0.85		
585.8				Gray silty CLAY, tr. small gravel.
	5	2.67		
	5	1.60		
	6	1.39		
577.5				
	100	11.20		Brown SILT.
575.3	100/7"			Gray decomposed SHALE.
573.8				Bottom of Hole = 28.0 feet

LEGEND

N	Standard Penetration Test N (blows/ft)
Qu	Unconfined Strength (tsf)
w%	Natural Moisture Content (%)
DD ▽ 558.10	Water Surface Elevation Encountered in Boring DD = during drilling Oh = at completion 24h = 24 hours after completion

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FINAL

HANSON

USER NAME = Pop00275	DESIGNED - RGC	REVISED -
	CHECKED - KMS	REVISED -
PLOT SCALE = 0.1667 ' / in.	DRAWN - EJM	REVISED -
PLOT DATE = 6/26/2019	CHECKED - RGC	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SUBSURFACE DATA PROFILE
RETAINING WALLS – 5TH STREET
SHEET NO. 17 OF 17 SHEETS

F.A.U. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
•	(109) VB,(110) VB-5	SANGAMON	382	233
		CONTRACT NO. 93733		
	ILLINOIS FED. AID PROJECT			

Benchmark:
BM# D2218-07 - Chiseled 'X' on West Bolt of fire hydrant - SE Quad 6th Street and Wellesly Avenue. Elevation = 598.884

Existing Structure: SN 084-9901 - Built in 1934 under 109-S-NRM. Three Span Steel through plate girder structure supported on closed abutments. Bk. to Bk. Abutment length is 116'-4" and ctr. to ctr. through girder width of 20'-0". Structure to be removed and replaced.

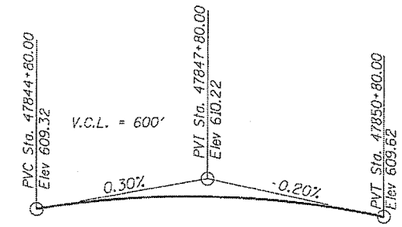
Construction Sequence: For Sequence and Details. See retaining wall General Data sheet.

Traffic Control: Temporary Lane Closures, Weekend and Ten Day Road Closures.

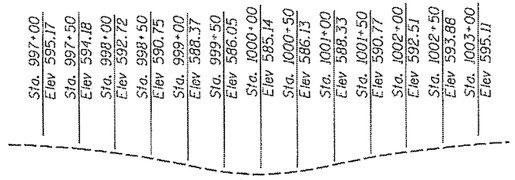
Salvage: None

Railroad utilities may exist within existing NSRR right-of-way. Prior to the start of any construction or excavation, utility relocations will have to be coordinated with the NSRR.

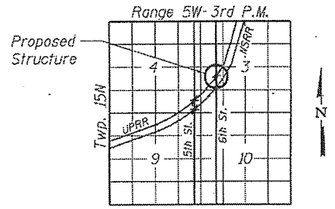
APPROVED
For Structural Adequacy Only
Engineer of Bridges & Structures



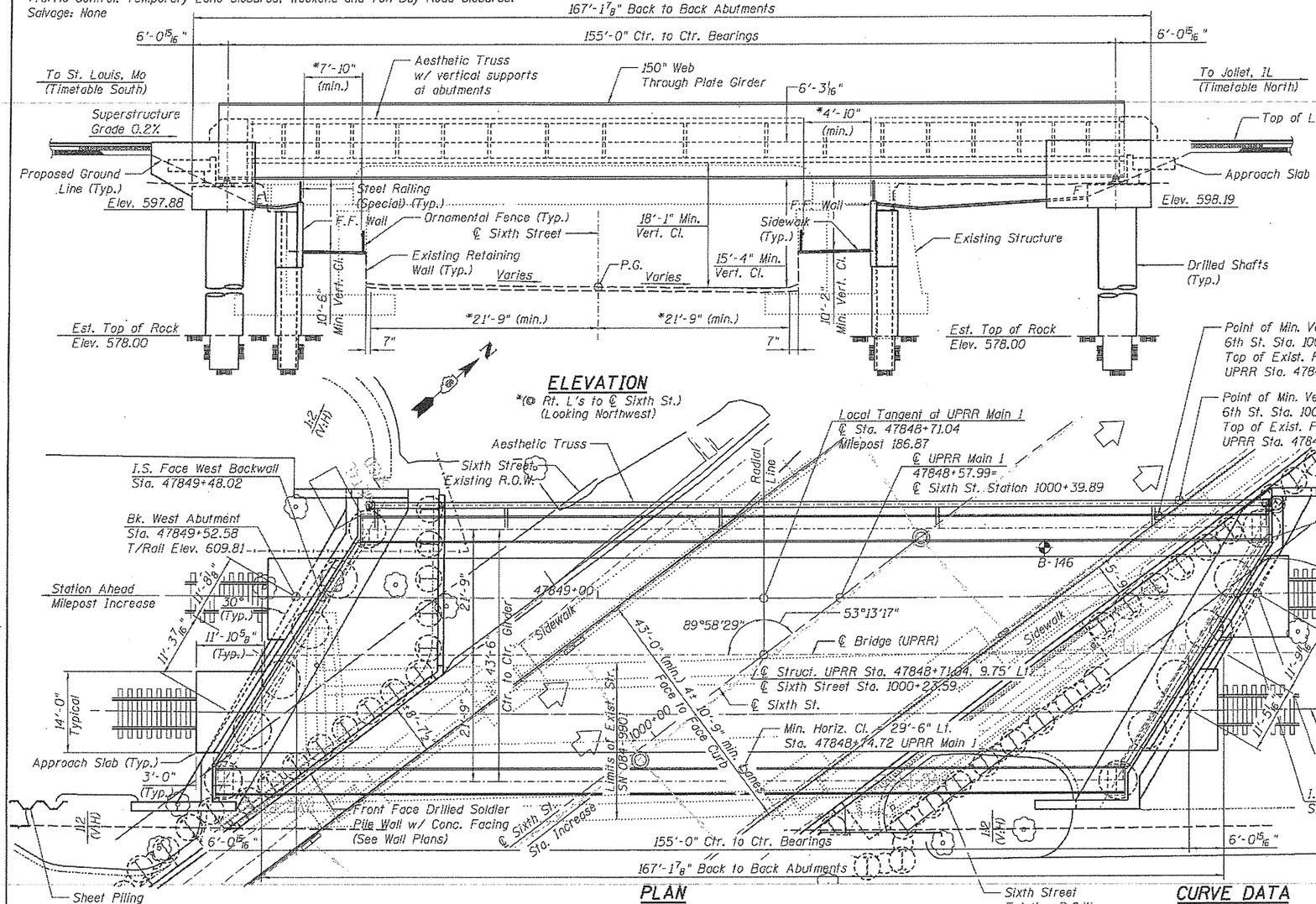
PROFILE GRADE- UPRR MAIN 1
(Along Top of Low Rail)



EXISTING PROFILE GRADE SIXTH STREET
Along ℄ of Sixth St.



LOCATION SKETCH



ELEVATION
*(@ Rt. L's to ℄ Sixth St.)
(Looking Northwest)

PLAN

Indicates Boring Location

DESIGN SPECIFICATIONS
2017 AREMA Specifications
Live Load Deflection: L/640
Composite Design for Floorbeam Defl. Req.
Design Speed: 50 m.p.h.

DESIGN STRESSES
FIELD UNITS
f'c = 4,000 psi
fy = 60,000 psi (Reinforcement)
fy = 50,000 psi (ASTM A709 Grade 50)

LOADING COOPER E-80
Impact: Diesel Impact
Allow 30" of Ballast Dead Load

SEISMIC DATA
AREMA

Ground Motion Level	PGA	S_s	S_1
Level 1 (100 Year)	0.010	0.025	0.005
Level 2 (475 Year)	0.040	0.090	0.035
Level 3 (2475 Year)	0.10	0.22	0.10

Soil Site Class = C

CURVE DATA
(UPRR Main 1)
P.I. Sta. 47824+35.33
Δ = 37°24'41" (Rt.)
D = 0°41'30"
T = 2,804.81'
L = 5,408.86'
R = 8,283.78
E = 461.96'
Long Chord = 5,313.32'
Mid. Ord. = 437.56
S.E. = 3/4"
S.C. Sta. = 47796+30.51
C.S. Sta. = 47850+39.38

I certify that to the best of my knowledge, information and belief, this bridge design is structurally adequate for the design loading shown on the plans. The design is an economical one for the style of structure and complies with requirements of the current AREMA Specifications.

LICENSED STRUCTURAL ENGINEER
MATTHEW J. WILLEY
081-006588
STATE OF ILLINOIS

Matthew J Willey
SIGNATURE
6-26-2019
DATE

LIC. EXP. DATE 11-30-2020

GENERAL PLAN & ELEVATION
UPRR (MP 186.87) OVER BUSINESS 55 (6TH ST.)
F.A.P. 666 - SECTION (109)VB, (110)VB-5
SANGAMON COUNTY
UPRR SUBDIVISION- SPRINGFIELD
STATION 47848+71.04
STRUCTURE NO. 084-9962

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FINAL

FILE NAME =	USER NAME = Pop80275	DESIGNED - MJW	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	GENERAL PLAN & ELEVATION STRUCTURE 084-9962 - 6TH ST UPRR
HANSON		CHECKED - TJH/TDP	REVISED -		SHEET NO. 1 OF 29 SHEETS
	PLOT SCALE = 012.0000 ' / in.	DRAWN - RSJ	REVISED -		
	PLOT DATE = 6/26/2019	CHECKED - MJW	REVISED -		

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
*	(109) VB,(110) VB-5	SANGAMON	382	234
		CONTRACT NO. 93733		
*666 & 666 ALT.	ILLINOIS FED. AID PROJECT			

GENERAL NOTES

1. Fasteners shall be ASTM A325 Type 1, mechanically galvanized bolts. Bolts $\frac{7}{8}$ in. ϕ, holes $\frac{15}{16}$ in. ϕ, unless otherwise noted.
2. Calculated weight of Structural Steel, ASTM A709, Gr. 50 = 1,681,926 lbs.
   ASTM A36, Gr. 36 = 31,558 lbs.
   ASTM A500, Gr. 46 = 22,194 lbs.
3. All structural steel shall be ASTM A709 Grade 50 unless otherwise noted on the plans.
4. All substructure concrete shall have a compressive strength of 4,000 psi at 14 days.
5. No field welding is permitted except as specified in the contract documents.
6. Reinforcement bars designated (E) shall be epoxy coated.
7. Bearing seat surfaces shall be constructed or adjusted to the designated elevations within a tolerance of $\frac{1}{8}$ inch (0.01 ft.). Adjustment shall be made either by grinding the surface or by shimming the bearings.
8. Concrete Sealer shall be applied to the following surfaces:
   Abutments - inside face of backwall, inside face of cheekwall, top of cap, (except surfaces coated with surface color treatment).
   Concrete Surface Color Treatment shall be applied to the following surfaces:
   Abutments - concrete facing, wingwall and cheekwall surfaces coated with concrete surface color treatment.
9. The Inorganic Zinc Rich Primer / Acrylic / Acrylic Paint System shall be used for shop and field painting of new structural steel except where otherwise noted. All coatings on faying surfaces shall satisfy RCSC requirements for Class B slip coefficient. The color of the final finish coat for girder flanges, all interior steel surfaces, bottom of deck plate, and aesthetic truss shall be gray, Munsell No. 5B 7/1. The color of the final finish coat for a 5.5 foot tall strip on the exterior face of girder web starting 4 foot down from the top flange shall be blue, Munsell No. 10B 3/6. See painting diagram for more information.
10. Waterproofing shall be applied to the backside of the abutment cap and backwall and backside of wingwalls for surfaces below ground. This shall be according to Article 503.18 of the Std. Spec. Cost included with Concrete Structures.

Drilled shaft cross-hole sonic log (CSL) testing:

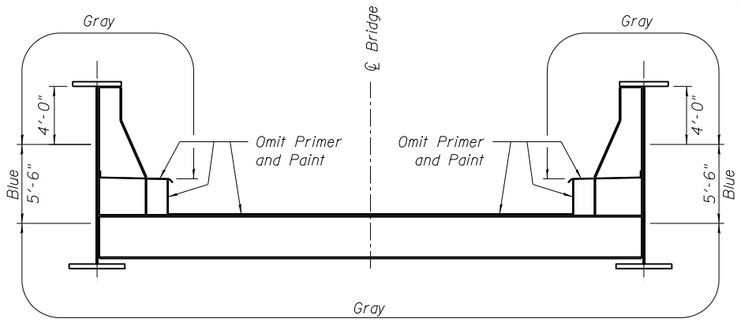
A) Drilled shafts shall be evaluated by cross-hole sonic log testing. Testing pipes shall be installed in each drilled shaft to facilitate the logging process, which will follow completion of each shaft.

B) Furnish and install six standard 2 inch nominal diameter steel pipes (ASTM A53, Grade B) for use in CSL testing of each drilled shaft. Pipes shall be equally spaced around the interior of the reinforcing steel cage.

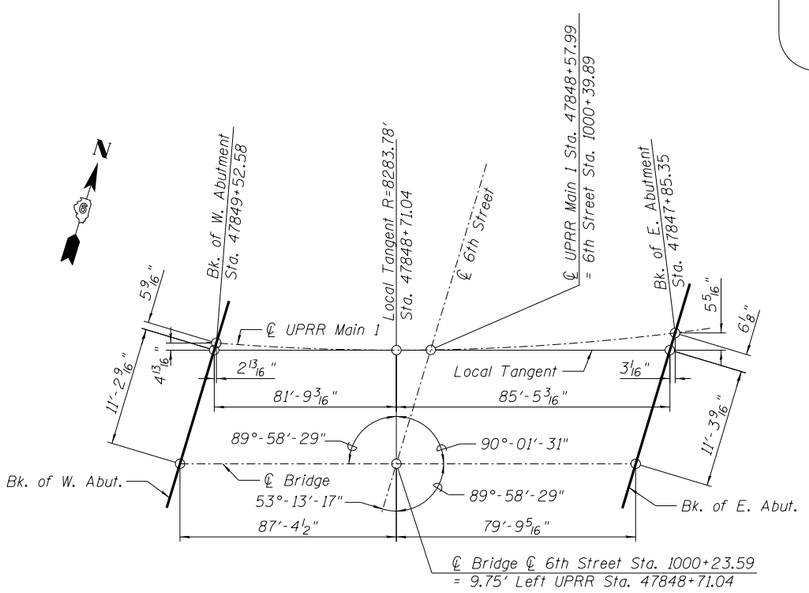
C) Pipes shall be fitted with a screw-on watertight shoe and cap and shall be securely fixed to the interior of the reinforcing steel cage. Watertight joints shall be used to achieve the required length. The pipes shall be filled with water and plugged or capped before concrete placement. The upper end of the pipe shall not be left open during or after concrete placement. The pipes shall extend at least 2'-6" above the top of the drilled shaft concrete.

D) CSL testing will be completed by the Engineer at no cost to the Contractor. If CSL test results are unsatisfactory according to the Engineer, the Contractor shall propose a method of correction including designs if required to the Engineer for approval. The correction shall be at the expense of the Contractor.

INDEX OF SHEETS



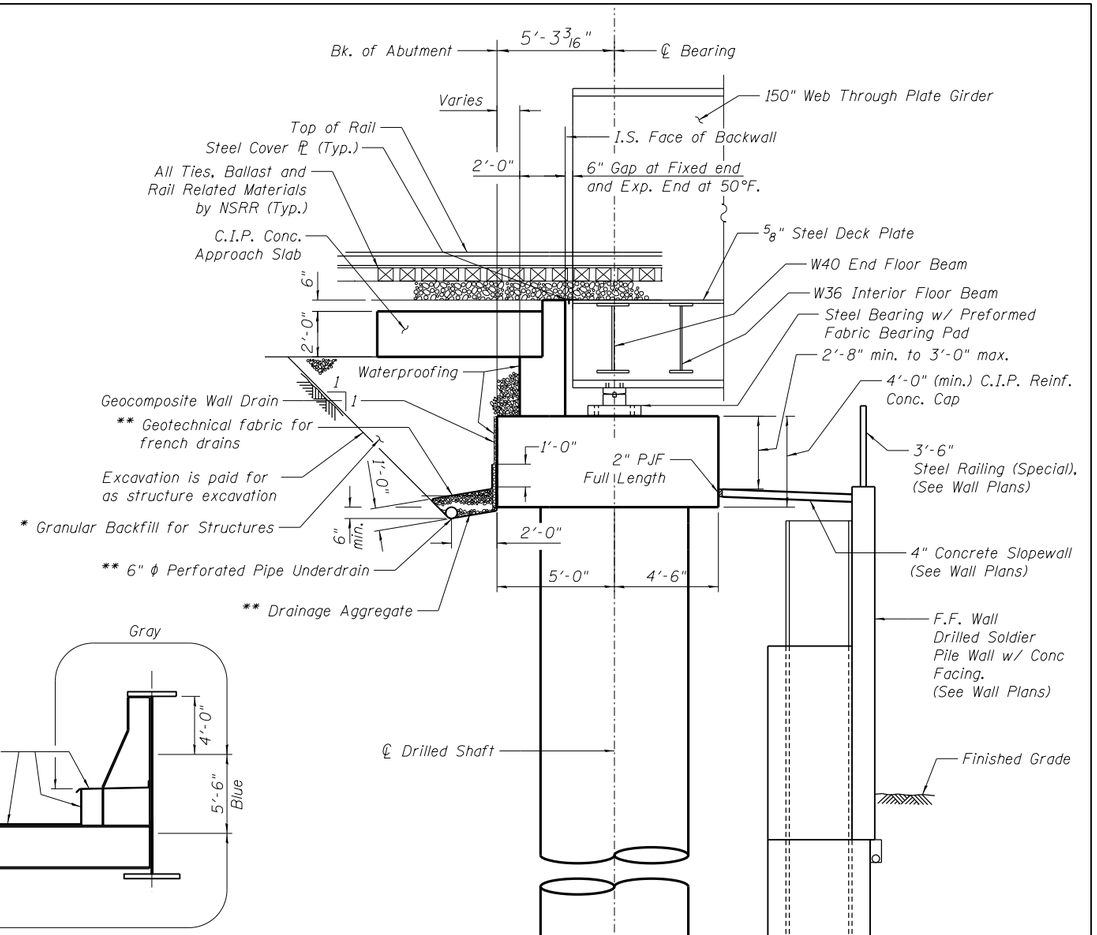
PAINTING DIAGRAM



OFFSET SKETCH

TOTAL BILL OF MATERIAL

ITEM	UNIT	SUPER	SUB	TOTAL
Structure Excavation	Cu. Yd.	-	287	287
Concrete Structures	Cu. Yd.	-	297.8	297.8
Reinforcement Bars	Pound	-	236,450	236,450
Reinforcement Bars, Epoxy Coated	Pound	-	44,350	44,350
Name Plates	Each	-	1	1
Drilled Shaft in Soil	Cu. Yd.	-	295.5	295.5
Drilled Shaft in Rock	Cu. Yd.	-	188.4	188.4
Membrane Waterproofing (Special)	Sq. Ft.	6,293	-	6,293
Concrete Sealer	Sq. Ft.	-	1,807	1,807
Geocomposite Wall Drain	Sq. Yd.	-	54	54
Drainage System, No. 3	Each	1	-	1
Crosshole Sonic Logging Access Ducts	Foot	-	2,703	2,703
Concrete Surface Color Treatment	Sq. Ft.	-	12	12
Granular Backfill for Structures	Cu. Yd.	-	188	188
Furnishing and Erecting Structural Steel, Bridge No. 3	L. Sum	1	-	1
Permanent Sheet Piling	Sq. Ft.	-	566	566
Pipe Underdrains for Structures, 6"	Foot	-	175	175



ABUTMENT SECTION

(At Rt. L's to Back of Abutment)

Notes:

West Abutment Section is Shown, East Similar.

* Granular Backfill for Structures Shall Be Placed and Compacted According to Section 502.10 of the Standard Specifications.

** Included in the cost of "Pipe Underdrains for Structures, 6". For additional drainage details see Railway Plans.

UNION PACIFIC RAILROAD
S.N. 084-9962 BUILT 20__ BY
CITY OF SPRINGFIELD
SEC. (109)VB, (110)VB-5
STATION 47848+71.04
MILE POST 186.87
LOADING COOPER E-80

NAME PLATE

See Std. 515001

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FINAL

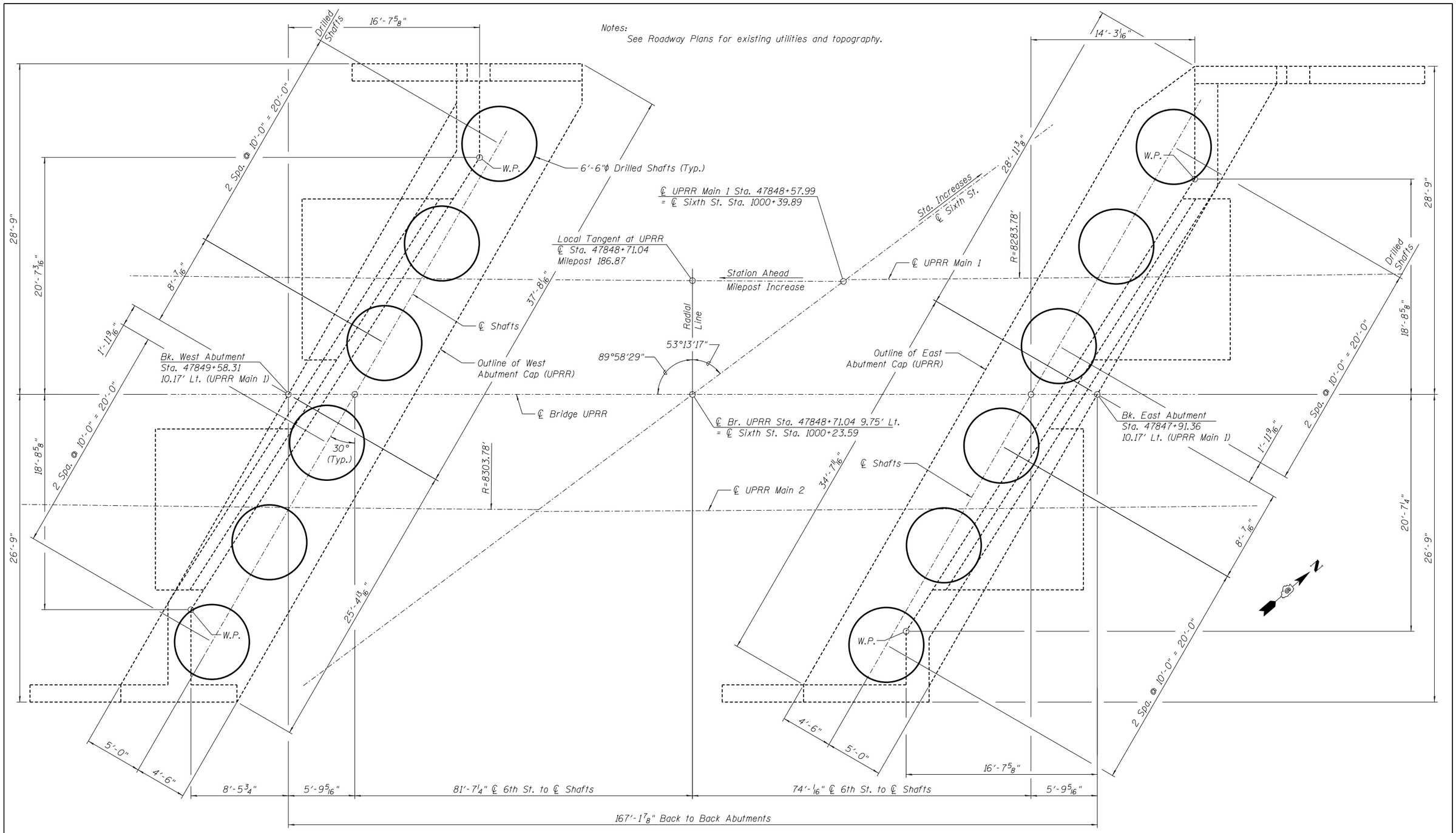
FILE NAME =	USER NAME = Pop00275	DESIGNED - MJW	REVISED -
		CHECKED - TJH/TDP	REVISED -
	PLOT SCALE = 0.2.0000 '' / in.	DRAWN - RSJ	REVISED -
	PLOT DATE = 6/26/2019	CHECKED - MJW	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

GENERAL DATA
STRUCTURE 084-9962 - 6TH ST UPRR
SHEET NO. 2 OF 29 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
•	(109) VB,(110) VB-5	SANGAMON	382	235
		CONTRACT NO. 93733		
•666 & 666 ALT.	ILLINOIS FED. AID PROJECT			

Notes:
See Roadway Plans for existing utilities and topography.



FOUNDATION LAYOUT PLAN

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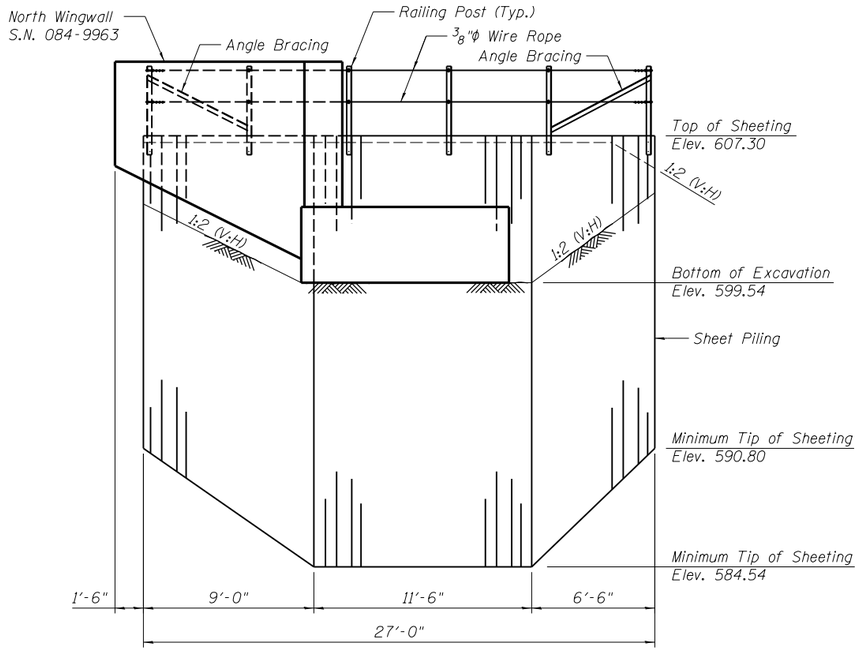
FINAL

FILE NAME =	USER NAME = Pop00275	DESIGNED - MJW	REVISED -
HANSON		CHECKED - TJH/TDP	REVISED -
	PLOT SCALE = 0:2.0000 '' / in.	DRAWN - RSJ	REVISED -
	PLOT DATE = 6/26/2019	CHECKED - MJW	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

FOUNDATION LAYOUT
STRUCTURE 084-9962 - 6TH ST UPRR
SHEET NO. 3 OF 29 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
•	(109) VB,(110) VB-5	SANGAMON	382	236
		CONTRACT NO. 93733		
•666 & 666 ALT.	ILLINOIS FED. AID PROJECT			

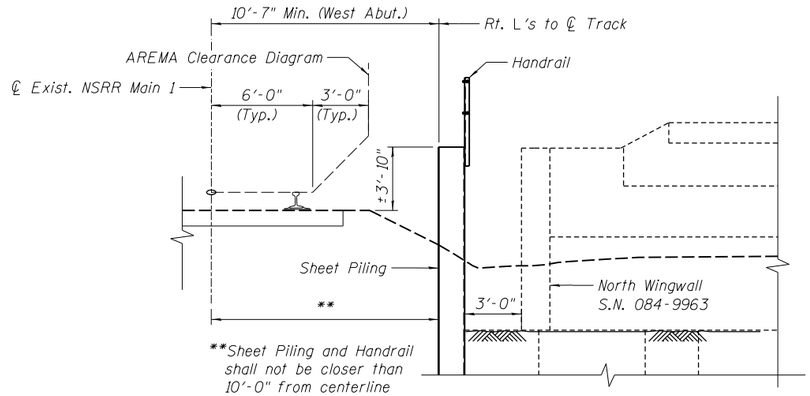


Minimum Section Modulus = 36.0 in³/ft
Minimum Moment of Inertia = 220.00 in⁴/ft

SHEET PILING

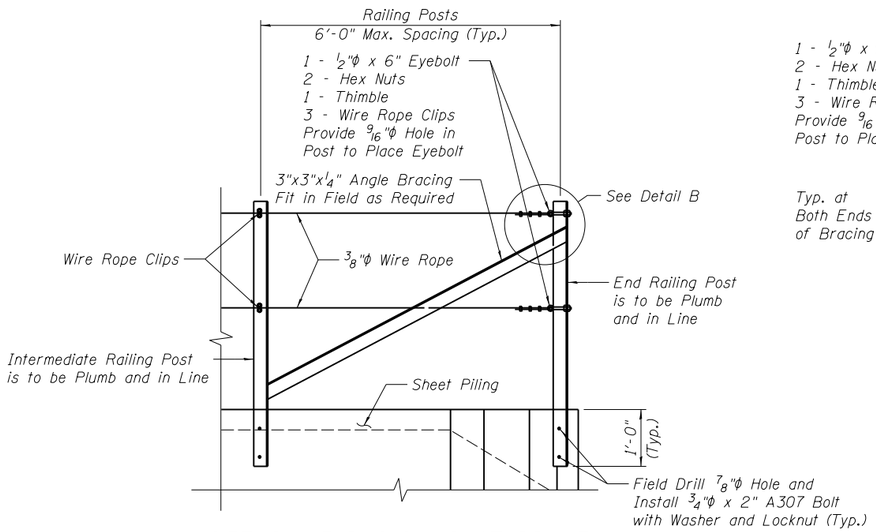
(Looking North)

See S.N. 084-9963 Sheet 3 of 29 for Plan View

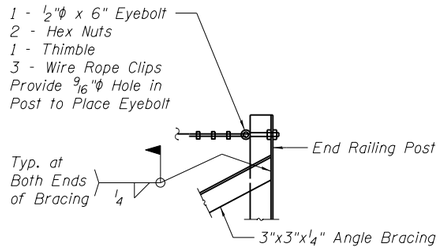


HANDRAIL DETAIL

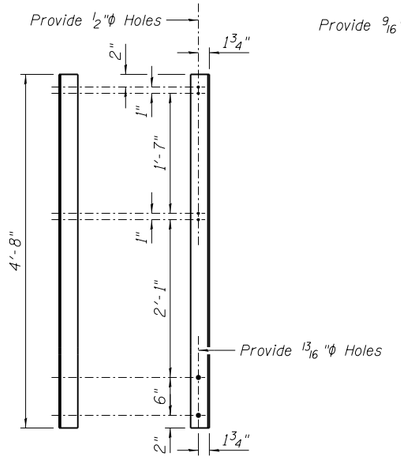
(Looking East)



DETAIL OF RAILING POST BRACE AT SHEET PILE WALL ENDS

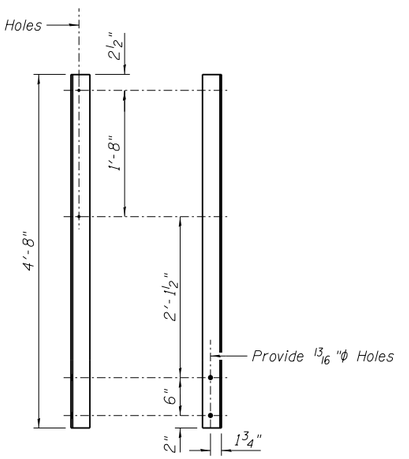


DETAIL B



∠3x3x1/4"x4'-8"
Weight = 23 lbs.
(Galvanize after Fabrication)
(4 Required)

INTERMEDIATE RAILING POST



∠3x3x1/4"x4'-8"
Weight = 23 lbs.
(Galvanize after Fabrication)
(2 Required)

END RAILING POST

Notes:

All Handrail components and hardware shall be galvanized.

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FINAL

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CHECKED - TJH/TDP | REVISED -
PLOT SCALE = 0:2.0004 '1' / in. | DRAWN - RSJ | REVISED -
PLOT DATE = 6/26/2019 | CHECKED - MJW | REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SHEET PILING
STRUCTURE 084-9962 - 6TH ST UPRR
SHEET NO. 4 OF 29 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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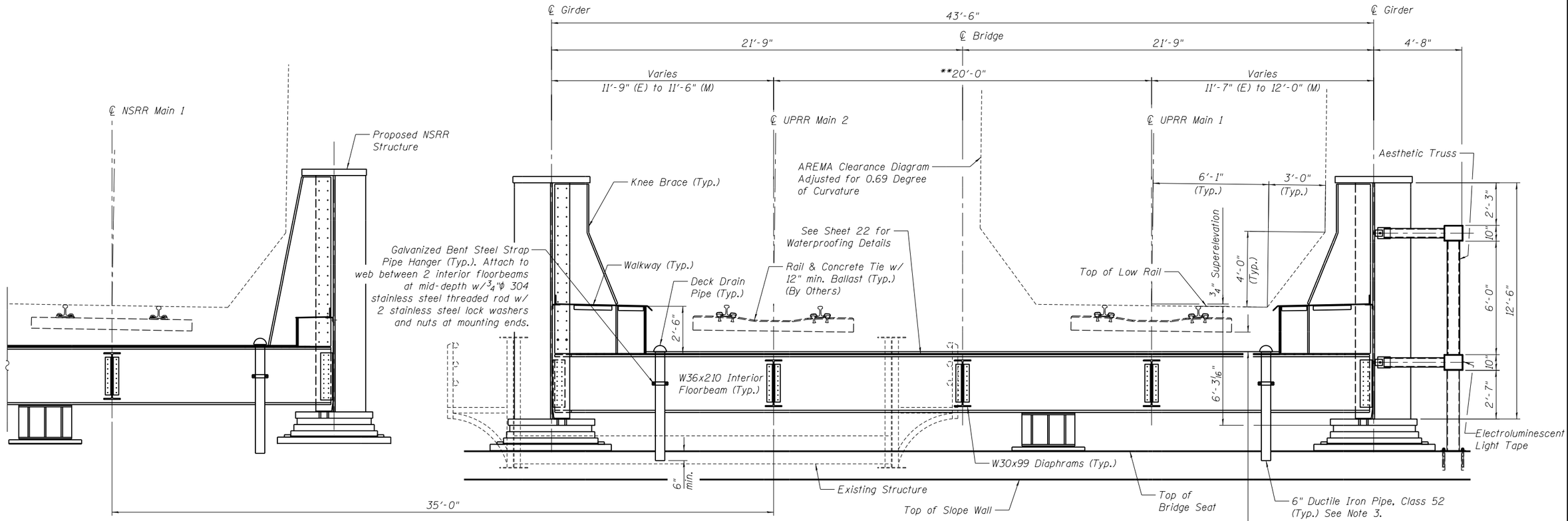
		CONTRACT NO. 93733		
•666 & 666 ALT.	ILLINOIS FED. AID PROJECT			



TYPICAL SECTION - 6TH ST. (UPRR)

(Looking West)

**Dimensions are at Rt L's to ℄ Track

Legend:
(E) End of Bridge
(M) Middle of Bridge

Notes:
1. Retaining Wall and Steel Railing not shown for clarity.
2. Drain pipe on west end only near low end of bridge deck.
3. With the ductile iron pipe fitted to the bottom of the deck drain bottom pan downspout, drill 4 holes through ductile iron pipe and downspout. Holes shall be aligned with the 4 quadrants of the pipe. Attach ductile iron pipe to downspout with 4 stainless steel carriage bolts. Rounded heads of carriage bolts shall be oriented towards the center of the pipe.
4. Cost of deck drain pipe, bottom pan, downspout, brackets and other hardware shall be included in the cost of Drainage System.

FINAL

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FILE NAME =	USER NAME = Pop00275	DESIGNED - MJW	REVISED -
		CHECKED - TJH/TDP	REVISED -
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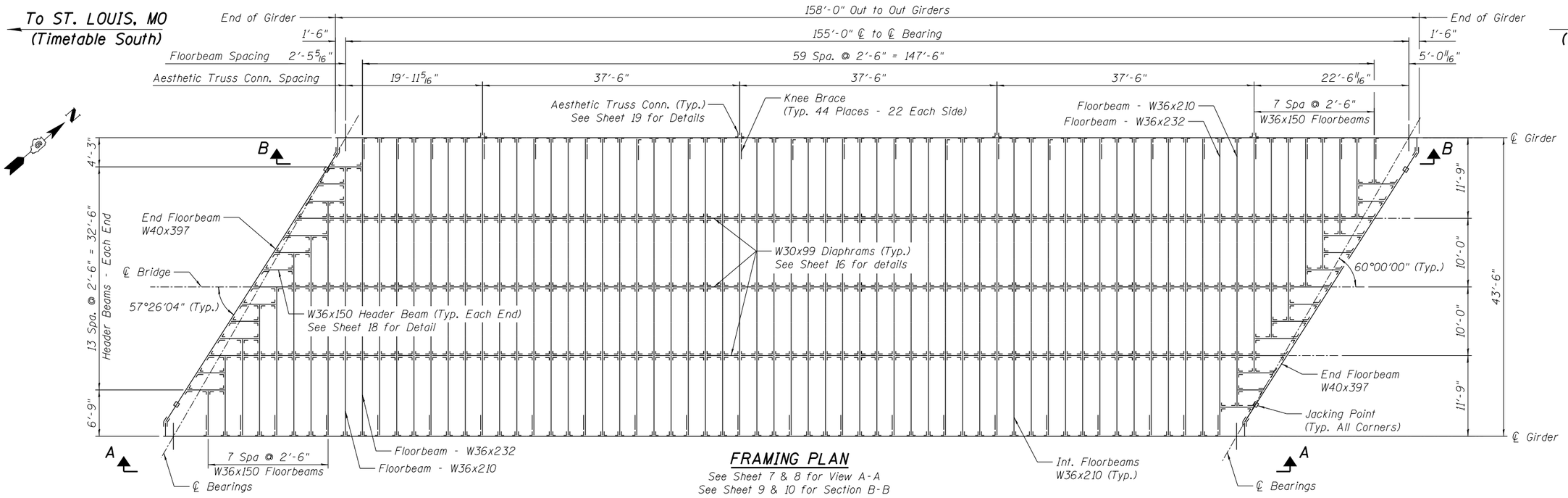
	PLOT DATE = 6/26/2019	CHECKED - MJW	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

TYPICAL SECTION
STRUCTURE 084-9962 - 6TH ST UPRR
SHEET NO. 5 OF 29 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
•	(109) VB,(110) VB-5	SANGAMON	382	238
		CONTRACT NO. 93733		
•666 & 666 ALT.	ILLINOIS	FED. AID PROJECT		



FRAMING PLAN

See Sheet 7 & 8 for View A-A
See Sheet 9 & 10 for Section B-B

STEEL NOTES

GENERAL: All materials, fabrication, and erection shall be in accordance with chapter 15 of the current AREMA Manual for Railway Engineering.

Dead Load: (assumed)	
Rail	400
Ballast (Incl. Tie)	7,800
Waterproofing	190
Future Ballast	2,510
Steel	11,000
Total	21,900 lbs. per lin ft. of track

MATERIAL: Zone 2 Conditions control for Charpy V-Notch testing.

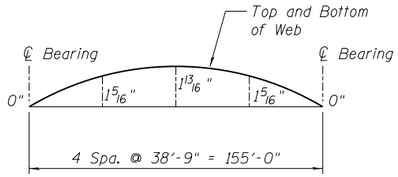
Fracture Critical Members (FCM) shall be Charpy V-Notch tested. According to AREMA Table 15-9-3, Zone 2, P frequency in accordance with ASTM A673.

Impact Test Required (ITR) members shall be Charpy V-Notch (CVN) tested, according to AREMA Table 15-9-2, Zone 2, H frequency in accordance with ASTM A673.

FABRICATION: The top surface of beams shall be adjusted to form a straight line at any transverse section throughout the span. Tolerance is plus or minus 1/8".

SPLICE NOTES:
1. No two parts or members shall be spliced by shop welding at the same location, or within the length of a bolted field splice.
2. Web splices by shop welding shall be located a minimum of 36" away from any flange splice.
3. Splices of the web or flanges shall not be permitted within the central 30'-0" or the girder span length. This requirement may be waived only by the approval of the Engineer.

TOP OF TIE	TO MASONRY	TO CLEARANCE
Tie	9 1/4"	9 1/4"
Ballast	1'-0"	1'-0"
Waterproofing	1 1/8"	1 1/8"
Ballast pan	5/8"	5/8"
Floorbeam & Flange	3'-9"	3'-9"
Flange splice plate		2 1/4"
Bolt Head		3/4"
Bearing	1'-4 3/8"	
Total	7'-0 3/8"	5'-11"



CAMBER DIAGRAM

Camber Calculated for Dead Load Only

MOMENT & SHEAR TABLE FOR STEEL THRU PLATE GIRDER

DESCRIPTION	MOMENT	SHEAR
Dead Load	32,884 ft. -k	849 k
Live Load	31,109 ft. -k	881 k
Impact	7,111 ft. -k	201 k
Total	71,104 ft. -k	1,931 k
Section	See Sheet 12 of 29	
Steel	A.S.T.M. A709, Gr. 50	
Net I	2,550,926 in⁴	
Net S (Bot.)	31,375 in³	
fst (Bot.)	27.3 ksi	
Gross I	2,777,585 in⁴	
Gross S (Top)	33,807 in³	
fsc (Top.)	25.3 ksi	

I- Moment of Inertia of the Section
S- Section Modulus
fs- Max. Unfactored Stress in the Section Due to D.L + L.L. + Impact

MOMENT & SHEAR TABLE FOR STEEL FLOORBEAMS

DESCRIPTION	MOMENT	SHEAR	MOMENT ✳	SHEAR ✳
Dead Load	255 ft. -k	21.3 k	4,667 ft. -k	849 k
Live Load	692 ft. -k	59.9 k		
Impact	219 ft. -k	21.2 k		
Total	1,166 ft. -k	102.4 k	4,667 ft. -k	849 k
Section	W36x210		W40x397	
Steel	A.S.T.M. A709, Gr. 50		A.S.T.M. A709, Gr. 50	
Net I	12,886 in⁴		28,366 in⁴	
Net S	702 in³		1384 in³	
fs	19.9 ksi		40.5 ksi	

✳ Jacking Conditions Control 50% Allowable Stress Increase is Permitted

FINAL

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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

FRAMING PLAN
STRUCTURE 084-9962 - 6TH ST UPRR
SHEET NO. 6 OF 29 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
•	(109) VB,(110) VB-5	SANGAMON	382	239
		CONTRACT NO. 93733		
•666 & 666 ALT.	ILLINOIS FED. AID PROJECT			

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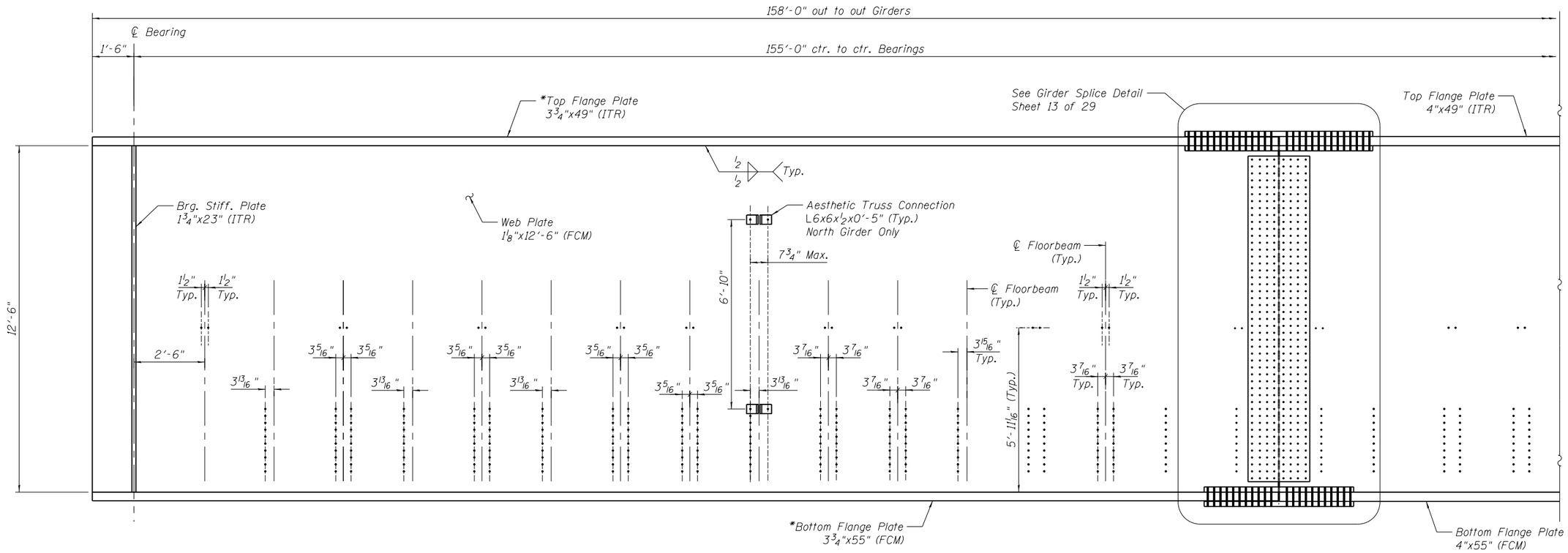
(Timetable South)

To JOLIET, IL
(Timetable North)



VIEW A-A - OUTSIDE ELEVATION OF GIRDER

Note:
1. FCM - Fracture Critical Member
2. ITR- Impact Test Required

* Alternate larger 4" flange thickness is permitted throughout to facilitate material acquisition. Calculated weight of structural steel is based on lighter section. Calculated girder stresses are based on heavier section. The alternate, if utilized, shall be provided at no additional cost to the Department.

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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

OUTSIDE ELEVATION OF GIRDER – SHEET 1 OF 2
STRUCTURE 084-9962 – 6TH ST UPRR
SHEET NO. 7 OF 29 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
•	(109) VB,(110) VB-5	SANGAMON	382	240
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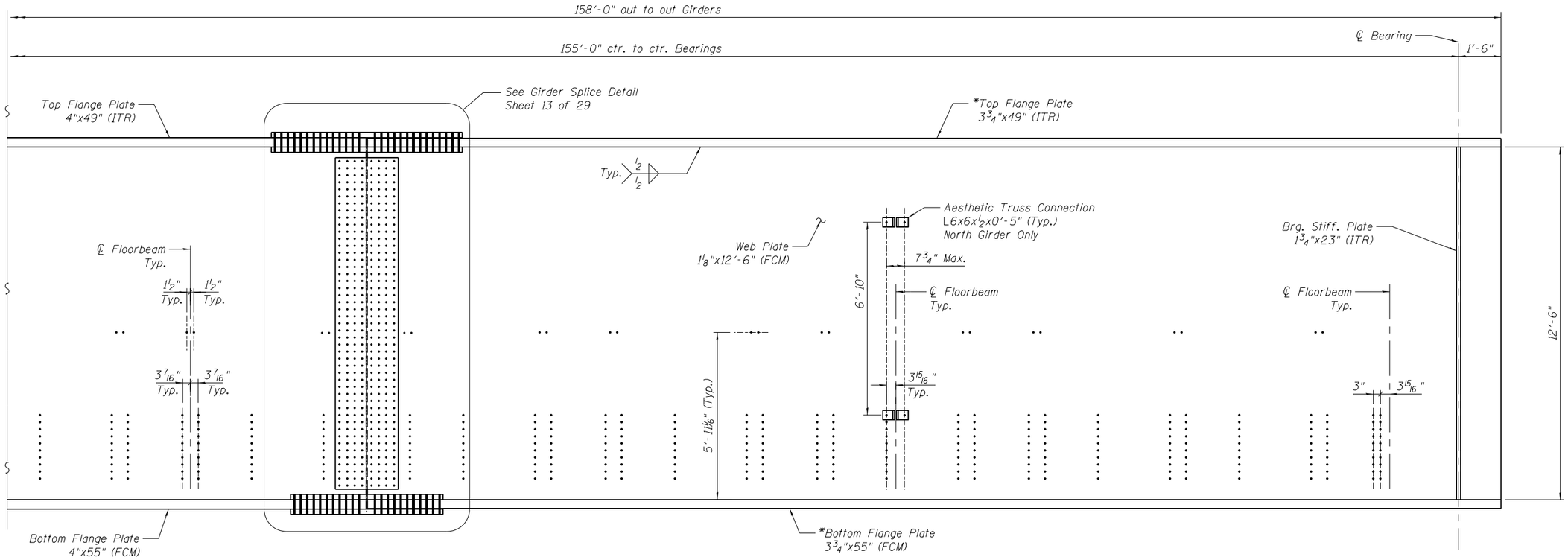
To JOLIET, IL
(Timetable North)



Note:
1. FCM - Fracture Critical Member
2. ITR- Impact Test Required

VIEW A-A - OUTSIDE ELEVATION OF GIRDER

* Alternate larger 4" flange thickness is permitted throughout to facilitate material acquisition. Calculated weight of structural steel is based on lighter section. Calculated girder stresses are based on heavier section. The alternate, if utilized, shall be provided at no additional cost to the Department.

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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

OUTSIDE ELEVATION OF GIRDER – SHEET 2 OF 2
STRUCTURE 084-9962 – 6TH ST UPRR
SHEET NO. 8 OF 29 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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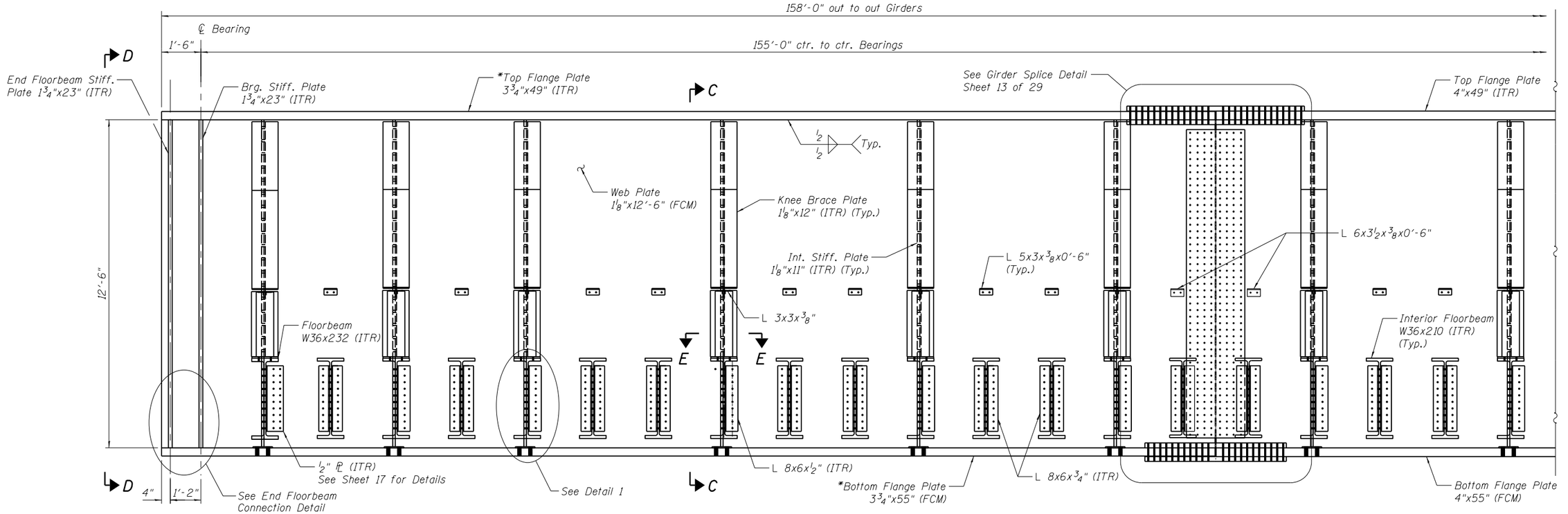
(Timetable North)

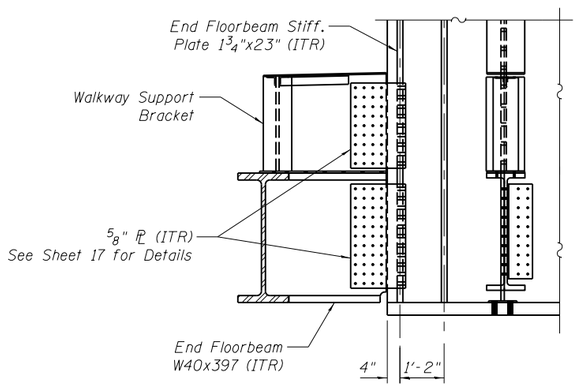


SECTION B-B - INSIDE ELEVATION OF GIRDER

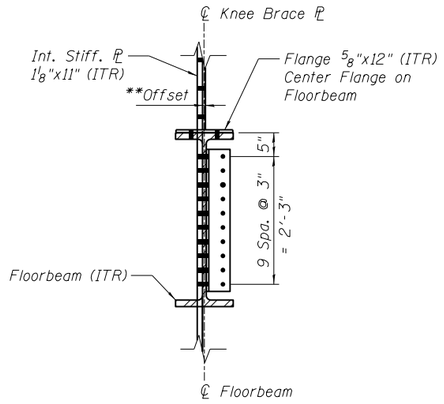
See Sheet 11 of 29 for Section C-C & D-D.

Note:
1. FCM - Fracture Critical Member
2. ITR- Impact Test Required

* Alternate larger 4" flange thickness is permitted throughout to facilitate material acquisition. Calculated weight of structural steel is based on lighter section. Calculated girder stresses are based on heavier section. The alternate, if utilized, shall be provided at no additional cost to the Department.

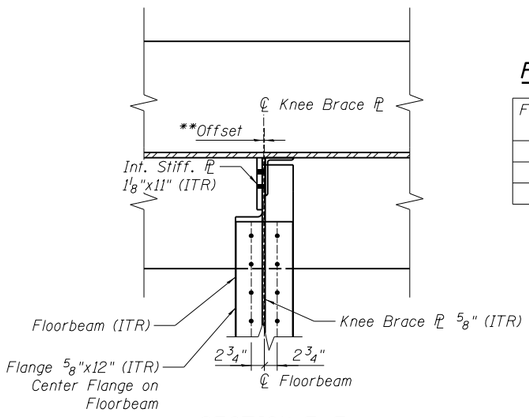


END FLOORBEAM CONNECTION



DETAIL 1

**See Table for Offset Dimension



SECTION E-E

**See Table for Offset Dimension

KNEE BRACE PLATE OFFSETS

FLOORBEAM SHAPE	OFFSET
W36x150	0"
W36x210	1/8"
W36x232	1/8"

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STATE OF ILLINOIS
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INSIDE ELEVATION OF GIRDER – SHEET 1 OF 2
STRUCTURE 084-9962 – 6TH ST UPRR
SHEET NO. 9 OF 29 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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		CONTRACT NO. 93733		
•666 & 666 ALT.	ILLINOIS FED. AID PROJECT			

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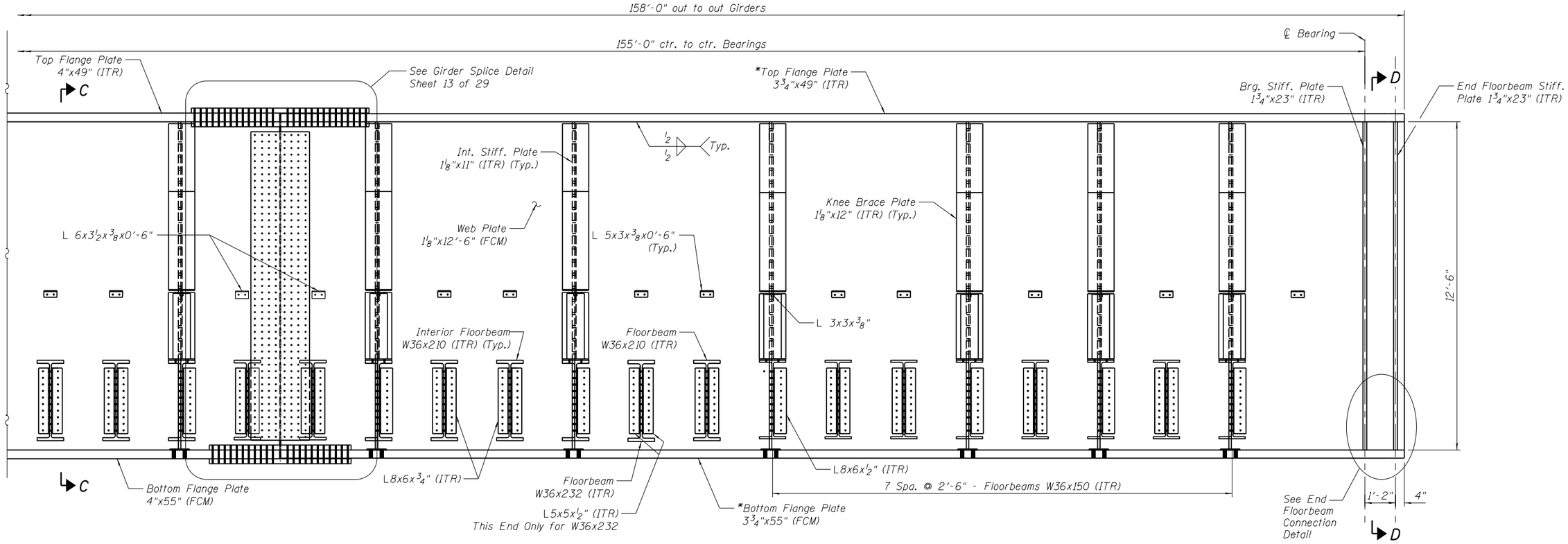
(Timetable South)

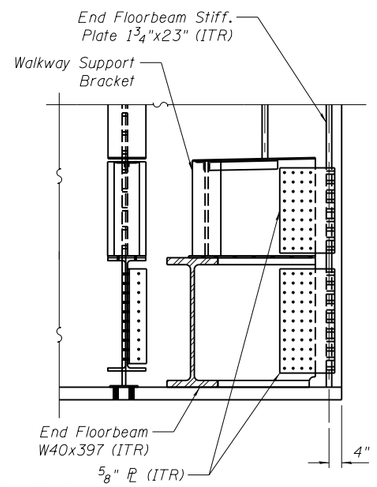
To JOLIET, IL
(Timetable North)



Note:
1. FCM - Fracture Critical Member
2. ITR- Impact Test Required

SECTION B-B - INSIDE ELEVATION OF GIRDER

See Sheet 11 of 29 for Section C-C & D-D.



END FLOORBEAM CONNECTION DETAIL

* Alternate larger 4" flange thickness is permitted throughout to facilitate material acquisition. Calculated weight of structural steel is based on lighter section. Calculated girder stresses are based on heavier section. The alternate, if utilized, shall be provided at no additional cost to the Department.

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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

INSIDE ELEVATION OF GIRDER – SHEET 2 OF 2
STRUCTURE 084-9962 – 6TH ST UPRR
SHEET NO. 10 OF 29 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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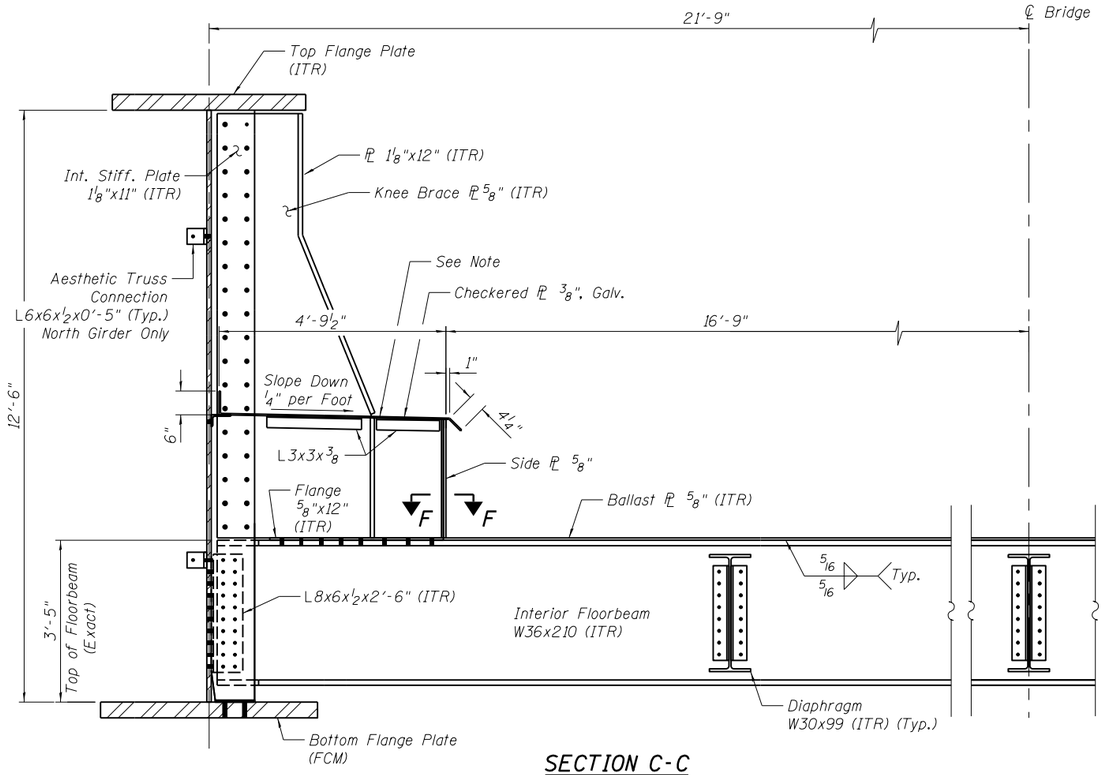
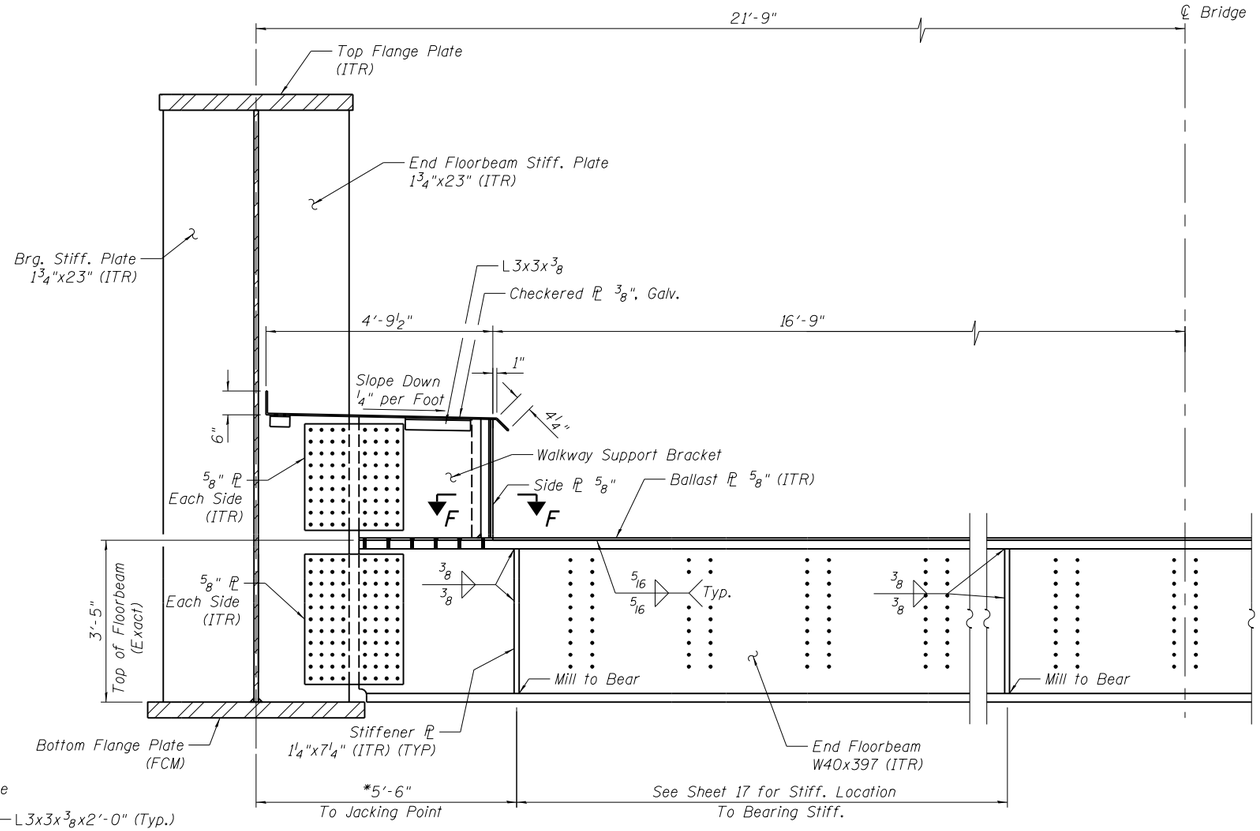
•666 & 666 ALT.	ILLINOIS FED. AID PROJECT			

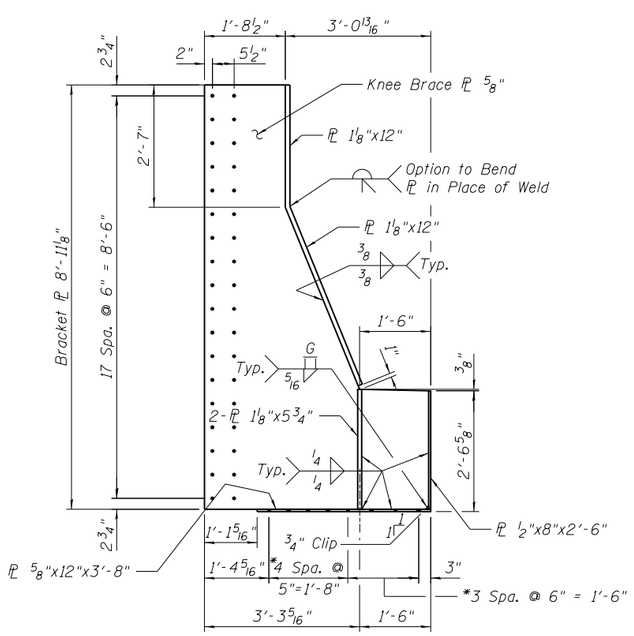


SECTION C-C



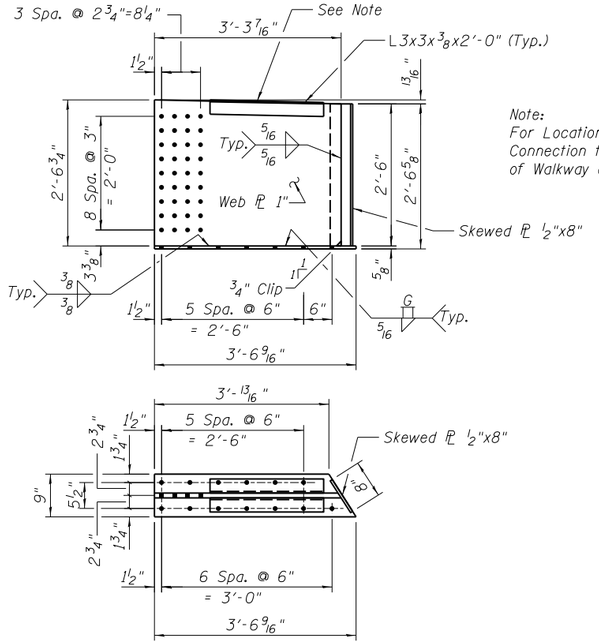
SECTION D-D

*(Along End Floorbeam ℄)



KNEE BRACE

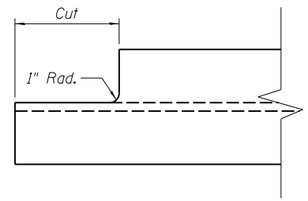
*See Detail 1 on Sheet 9 for Hole Locations.



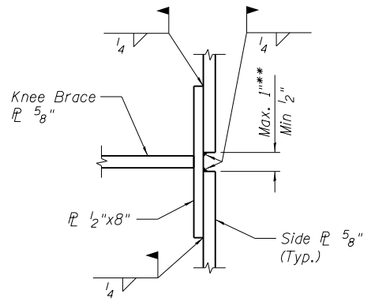
WALKWAY SUPPORT BRACKET

See Sheet 14 for Skew Angle

Note:
For Location of L3x3x3/8, Welding and Bolted Connection to Walkway Checker Plate see Plan View of Walkway at Knee Brace on Sheet 15.



FLOORBEAM COPE AT INTERIOR STIFFENER



SECTION F-F

**No Gap at Walkway Support Bracket
Provide Continuous Side ℄

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		CHECKED - TJH/TDP	REVISED -		SHEET NO. 11 OF 29 SHEETS
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FINAL	PLOT DATE = 6/26/2019	CHECKED - MJW	REVISED -		

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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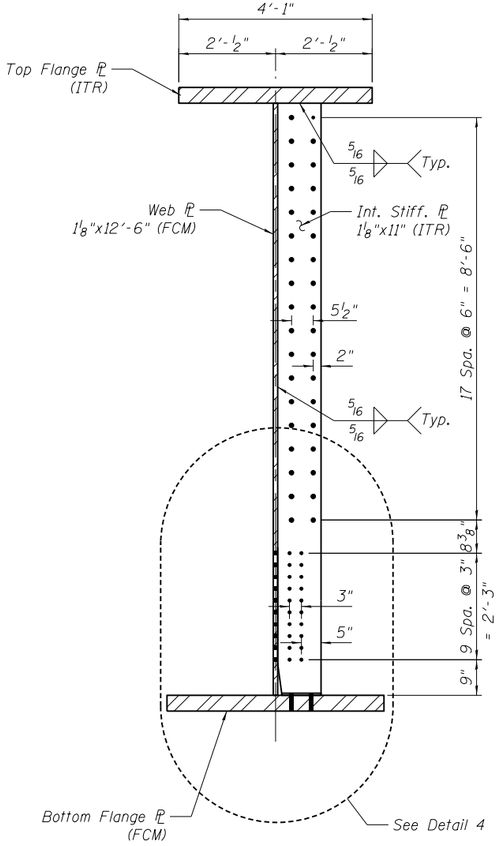
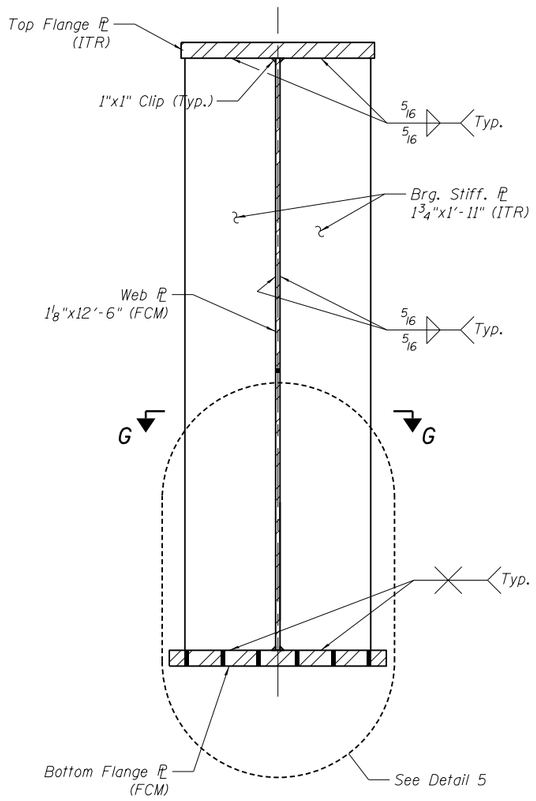
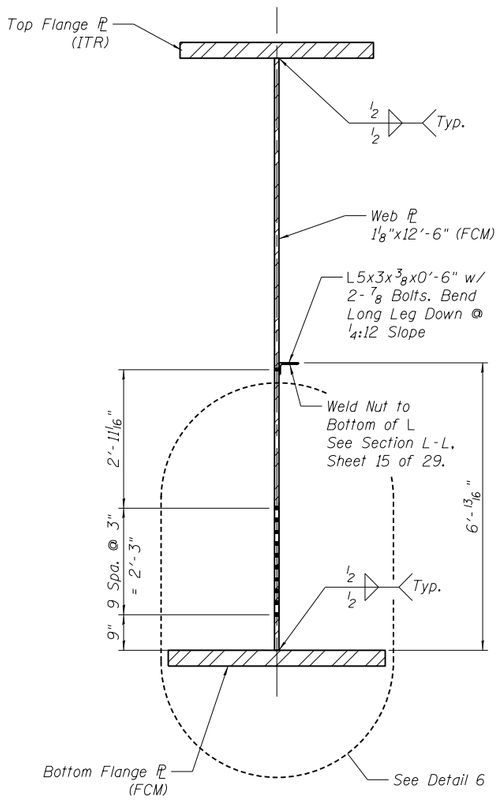


TYPICAL SECTION AT INT. STIFFENER AND KNEE BRACE

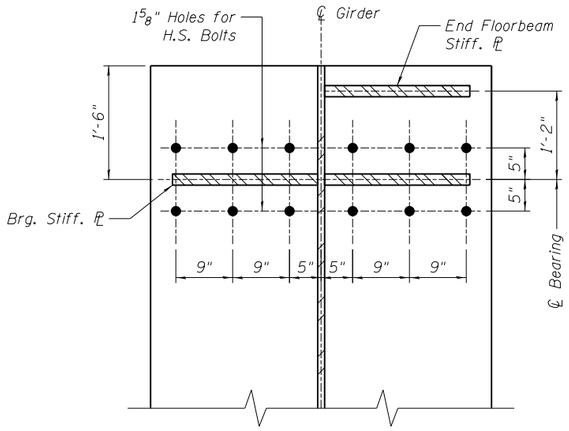
(Knee Brace Omitted for Clarity)



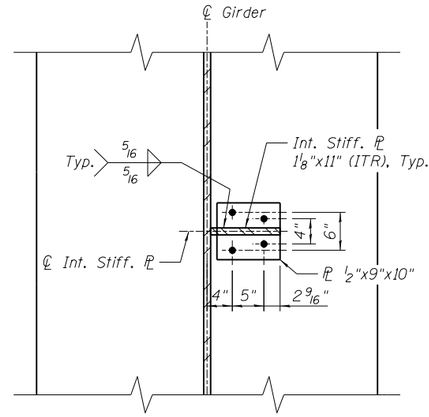
TYPICAL SECTION AT BEARING STIFFENER



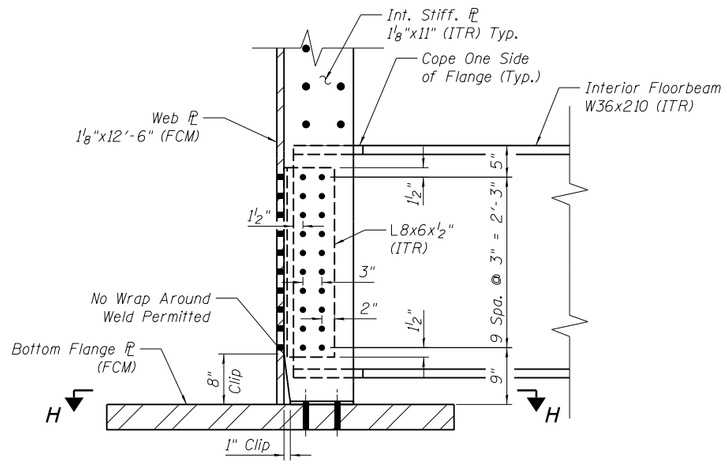
TYPICAL SECTION AT CHECKERED PLATE SUPPORT



SECTION G-G

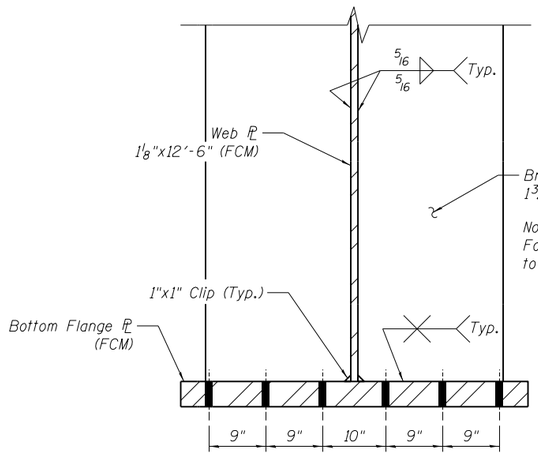


SECTION H-H



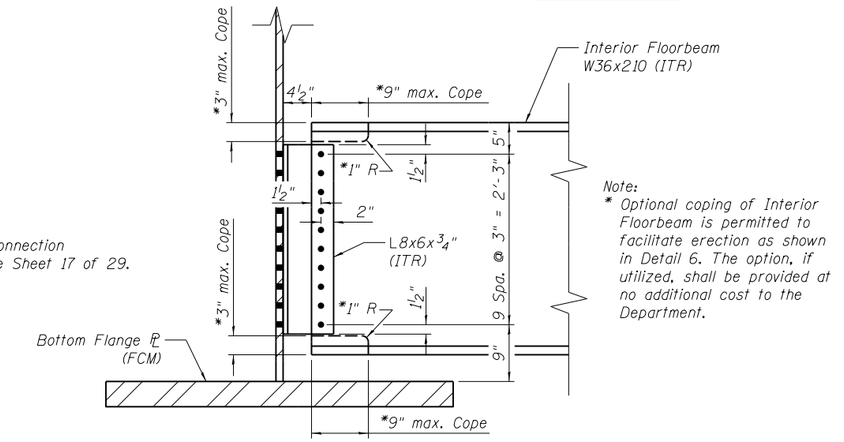
DETAIL 4

Typical for Interior Stiffener Unless Otherwise Noted
(Knee Brace Omitted for Clarity)



DETAIL 5

Typical at Bearing Stiffener



DETAIL 6

Typical Floorbeam Connection Between Interior Stiffeners

pw:\\spi-svr306.hanson.dom:Hanson Projects\Documents\89Jobs\89L01798\CAD\Struct\6th\Sheet\0849962-89L01798-UPRR-001

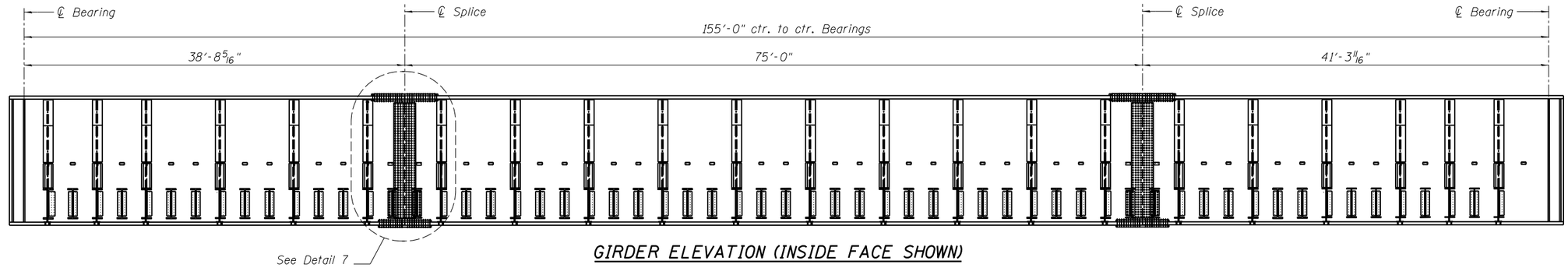
FINAL

FILE NAME =	USER NAME = Pop00275	DESIGNED - MJW	REVISED -
		CHECKED - TJH/TDP	REVISED -
	PLOT SCALE = 0:2.0000 '' / in.	DRAWN - RSJ	REVISED -
	PLOT DATE = 6/26/2019	CHECKED - MJW	REVISED -

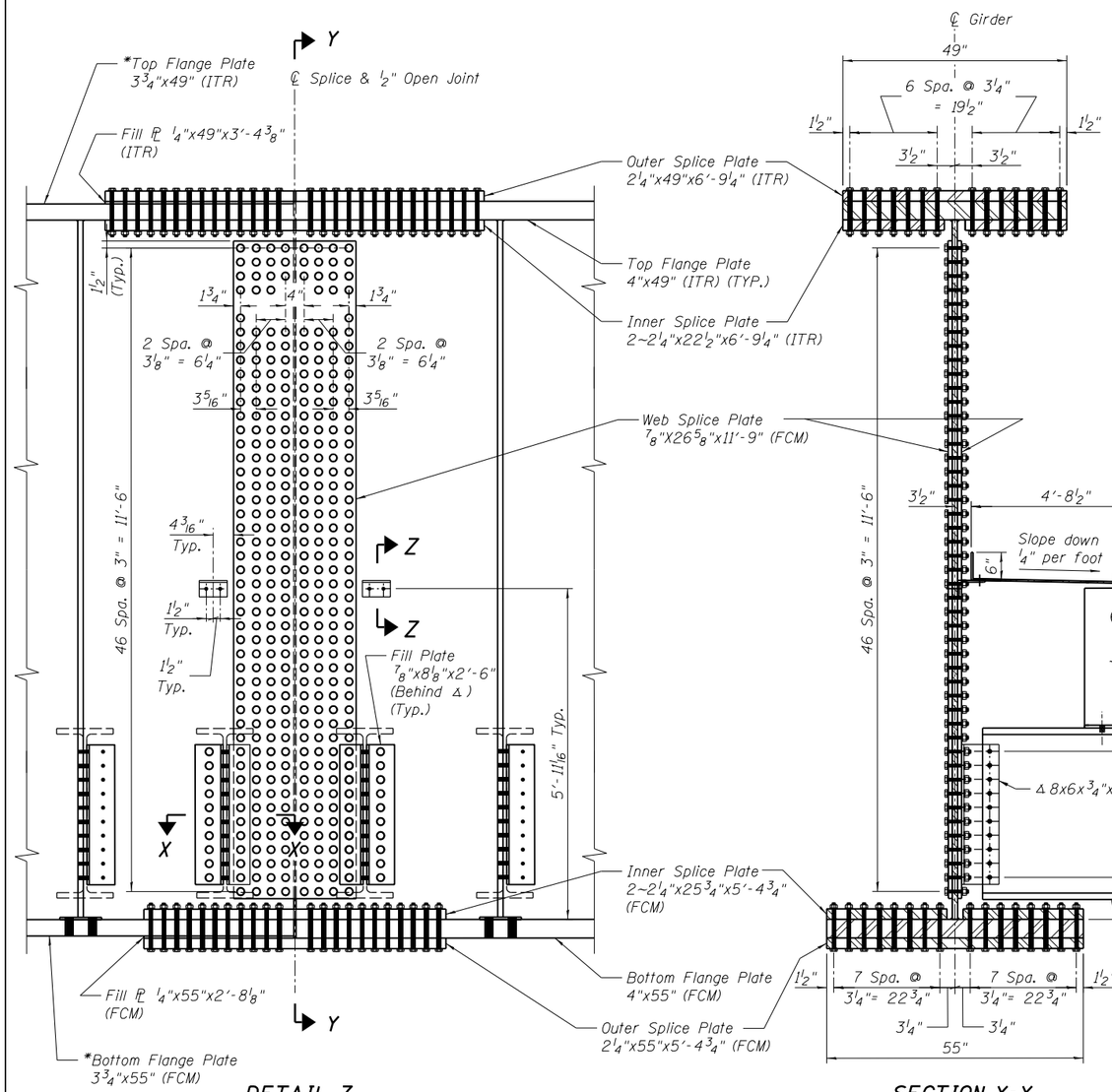
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

GIRDER SECTIONS & DETAILS
STRUCTURE 084-9962 - 6TH ST UPRR
SHEET NO. 12 OF 29 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
•	(109) VB,(110) VB-5	SANGAMON	382	245
		CONTRACT NO. 93733		
•666 & 666 ALT.	ILLINOIS FED. AID PROJECT			

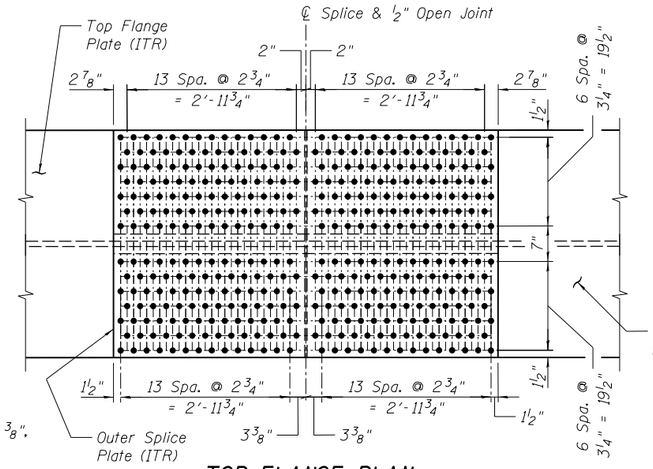


GIRDER ELEVATION (INSIDE FACE SHOWN)



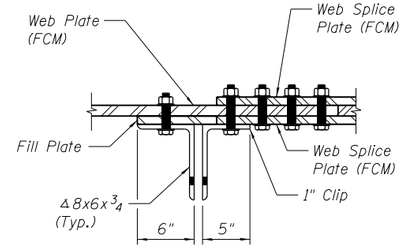
DETAIL 7

SECTION Y-Y

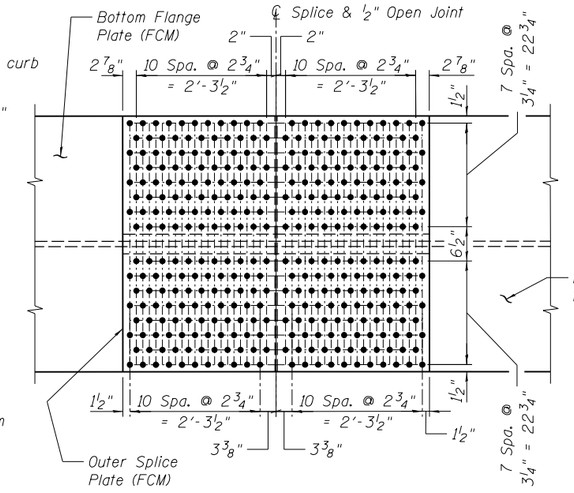


TOP FLANGE PLAN

(Looking Down)

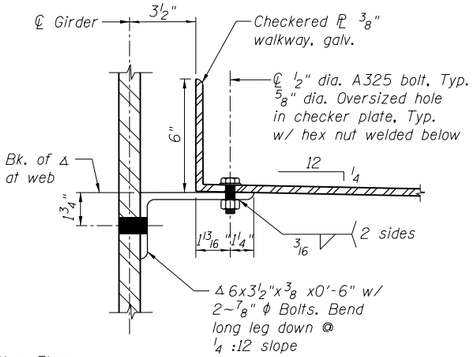


SECTION X-X



BOTTOM FLANGE PLAN

(Looking Up)



SECTION Z-Z

* Alternate larger 4" flange thickness is permitted throughout to facilitate material acquisition. Calculated weight of structural steel is based on lighter section. Calculated girder stresses are based on heavier section. The alternate, if utilized, shall be provided at no additional cost to the Department.

pw:\\spi-svr306.hanson.dom:Hanson Projects\Documents\09Jobs\09L0179B\CAD\Struct\6th\Sheet\0849962-09L0179B-UPRR-001

FINAL

FILE NAME =	USER NAME = Pop00275	DESIGNED - MJW	REVISED -
HANSON		CHECKED - TJH/TDP	REVISED -
© Copyright Hanson Professional Services Inc, 2019	PLOT SCALE = 0:2.0000 '-' / in.	DRAWN - RSJ	REVISED -
	PLOT DATE = 6/26/2019	CHECKED - MJW	REVISED -

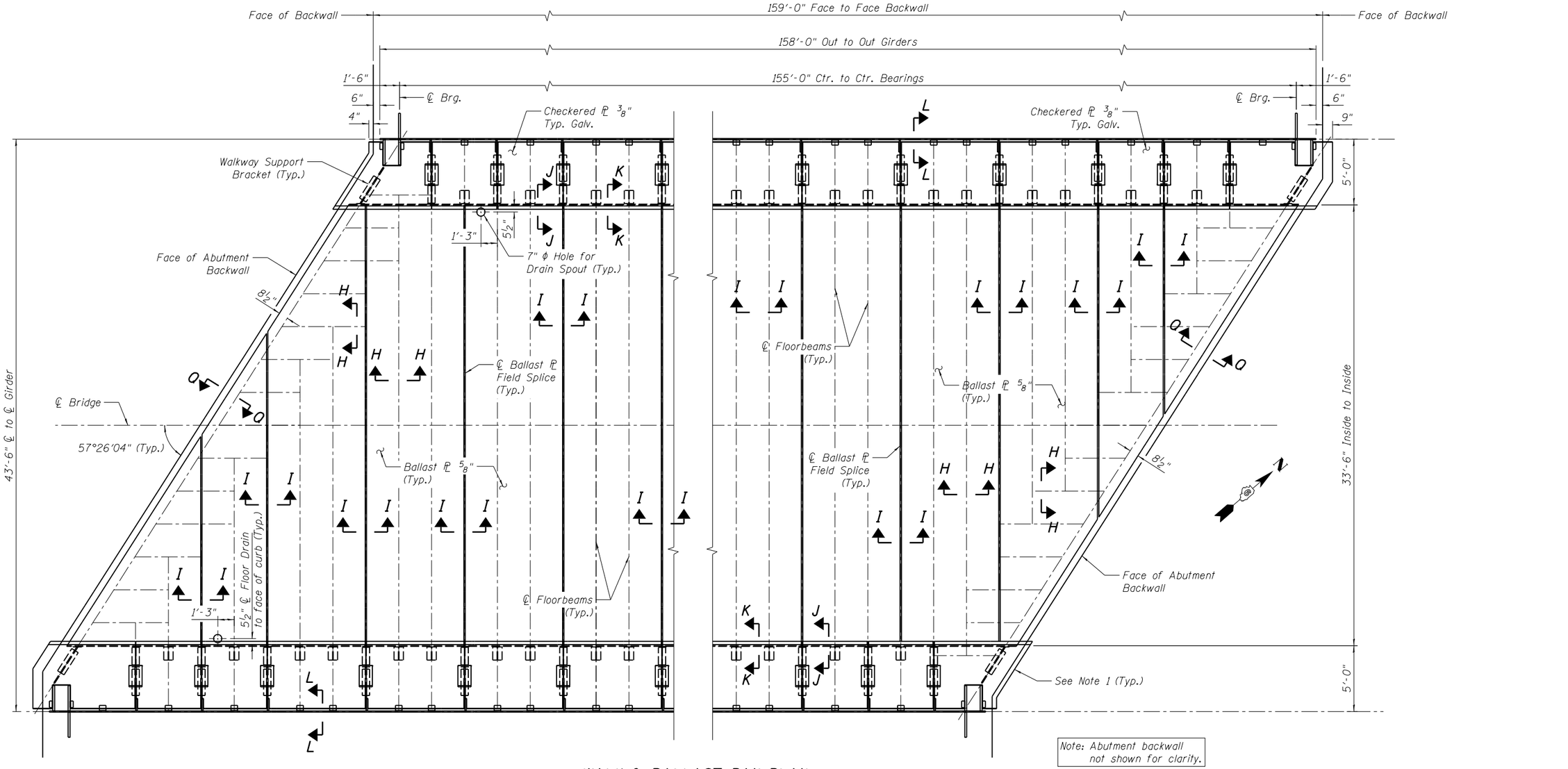
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

GIRDER SPLICE DETAILS
STRUCTURE 084-9962 - 6TH ST UPRR
SHEET NO. 13 OF 29 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
•	(109) VB,(110) VB-5	SANGAMON	382	246
		CONTRACT NO. 93733		
•666 & 666 ALT.	ILLINOIS FED. AID PROJECT			

To ST. LOUIS, MO
(Timetable South)

To JOLIET, IL
(Timetable North)



Note: Abutment backwall not shown for clarity.

WALK & BALLAST PAN PLAN

See Sheet 15 of 29 for Section H-H, I-I, J-J, K-K, L-L, & O-O.

Notes:

1. Prior to Setting End Checkered PL, Build-up top of Concrete Backwall with Epoxy Grout to Support Checkered PL and Provide Sloped Surface to Eliminate Tripping Hazard. Typical All Four Corners.
2. Checkered PL Shall be ASTM A786 Gr 36 or ASTM A36. Galvanize after fabrication.

pw:\\spi-svr306.hanson.dom:Hanson Projects\Documents\09Jobs\09L0179B\CAD\Struct\6th\Sheet\0849962-09L0179B-UPRR-001

FINAL

FILE NAME =	USER NAME = Pop00275	DESIGNED - MJW	REVISED -
		CHECKED - TJH/TDP	REVISED -
	PLOT SCALE = 0:2.0000 '' / in.	DRAWN - RSJ	REVISED -
	PLOT DATE = 6/26/2019	CHECKED - MJW	REVISED -

HANSON

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

WALKWAY AND BALLAST PLATE PLAN
STRUCTURE 084-9962 - 6TH ST UPRR
SHEET NO. 14 OF 29 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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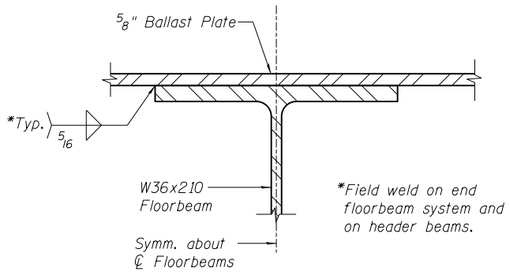
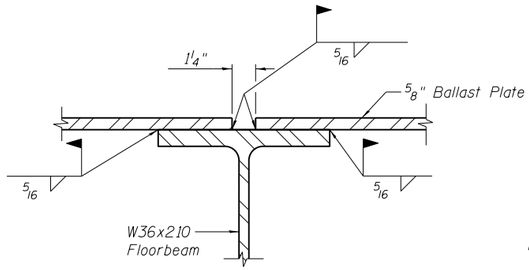
		CONTRACT NO. 93733		
•666 & 666 ALT.	ILLINOIS	FED. AID PROJECT		

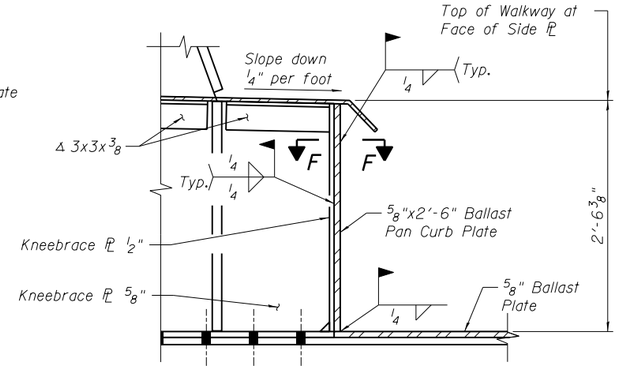


SECTION H-H BALLAST PLATE TO FLOORBEAM CONNECTION (TYP.)

Similar Detail at Header Beam

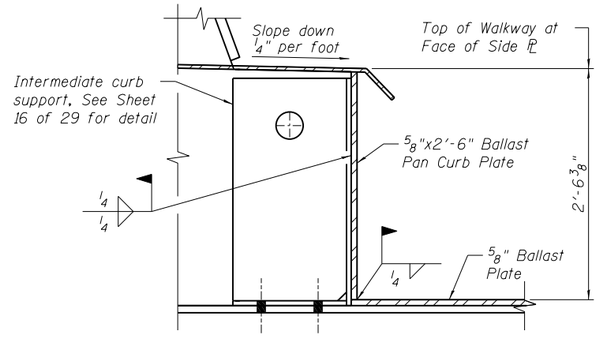


SECTION I-I

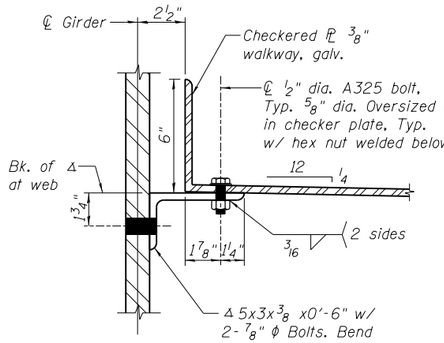


SECTION J-J

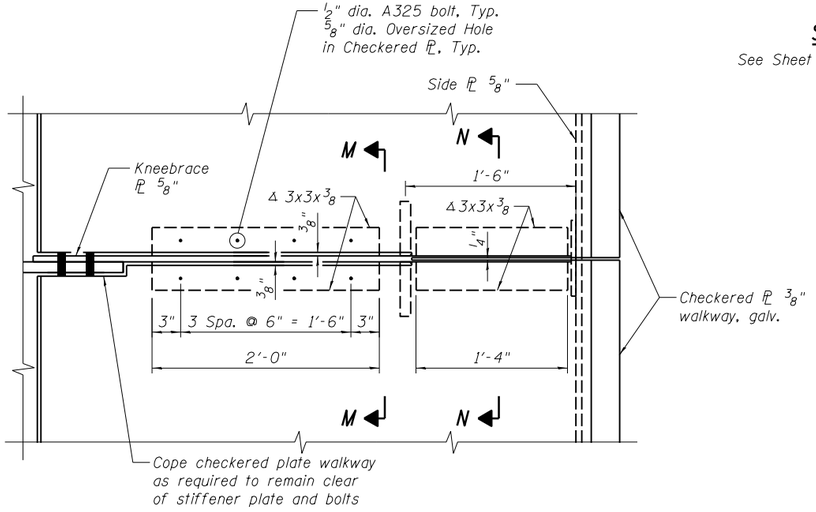
See Sheet 11 of 29 for Section F-F.



SECTION K-K

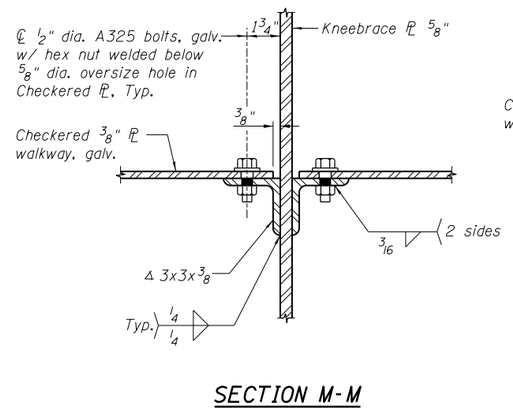


SECTION L-L

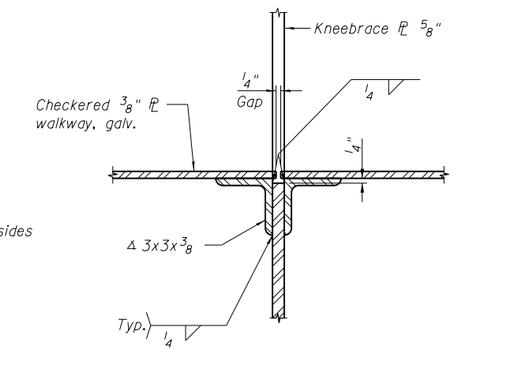


PLAN

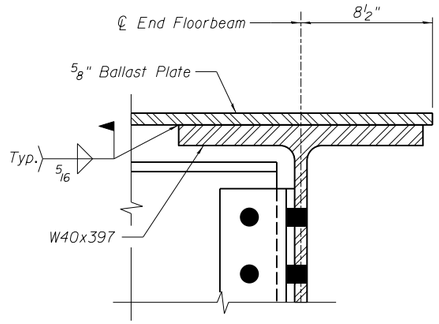
Walkway at Kneebrace



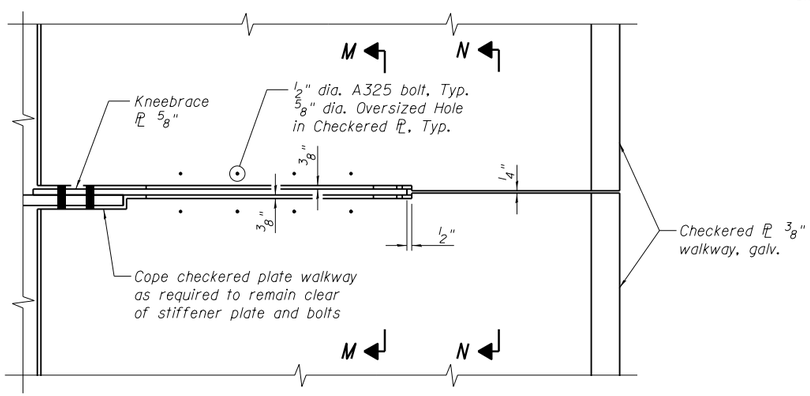
SECTION M-M



SECTION N-N

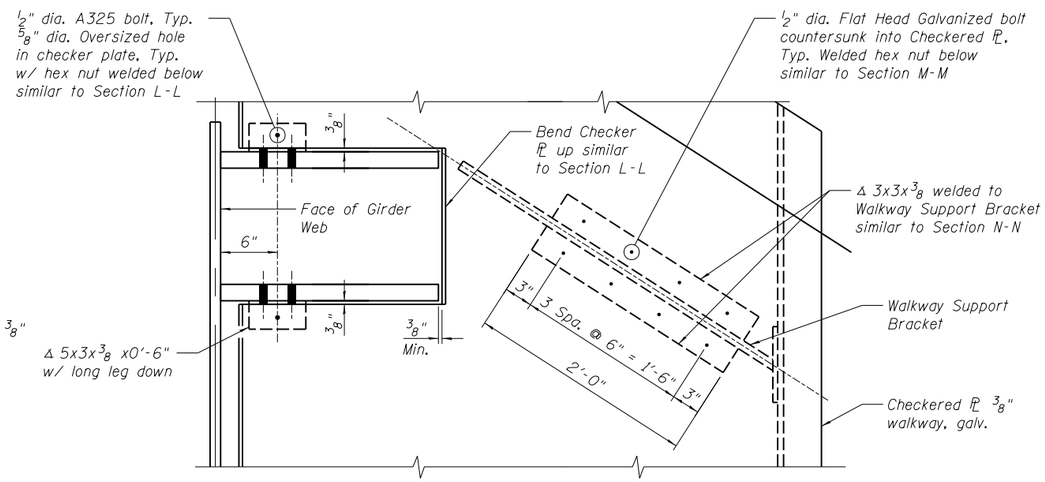


SECTION Q-Q



PLAN

Walkway at Kneebrace



PLAN

Walkway at Bearing Stiffener

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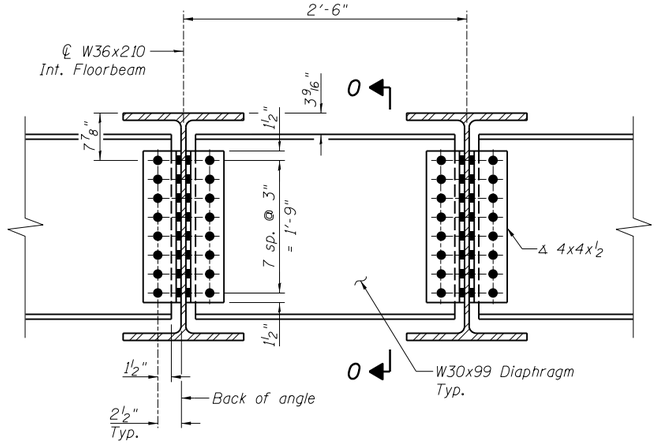
FINAL

FILE NAME =
HANSON
USER NAME = Pop00275 | DESIGNED - MJW | REVISED -
CHECKED - TJH/TDP | REVISED -
PLOT SCALE = 0:2.0000 '' / in. | DRAWN - RSJ | REVISED -
PLOT DATE = 6/26/2019 | CHECKED - MJW | REVISED -

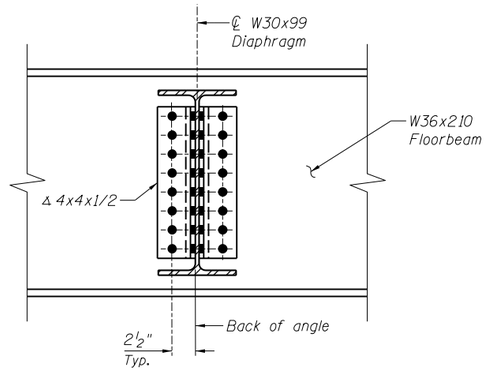
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

WALKWAY AND BALLAST PLATE DETAILS
STRUCTURE 084-9962 - 6TH ST UPRR
SHEET NO. 15 OF 29 SHEETS

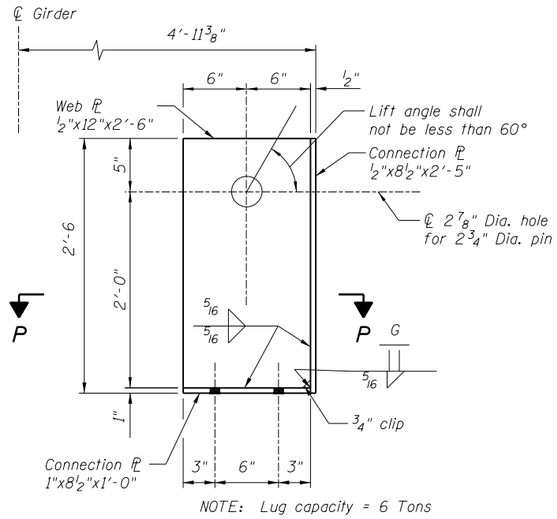
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
•	(109) VB,(110) VB-5	SANGAMON	382	248
		CONTRACT NO. 93733		
•666 & 666 ALT.	ILLINOIS	FED. AID PROJECT		



LONGITUDINAL DIAPHRAGM DETAIL

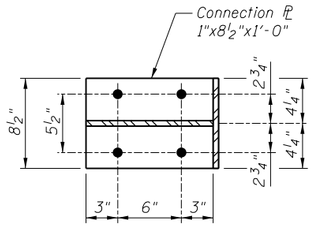


SECTION 0-0

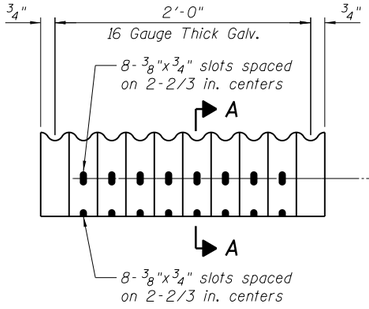


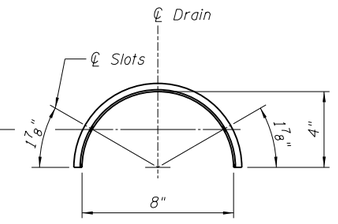
NOTE: Lug capacity = 6 Tons

INTERMEDIATE CURB SUPPORT



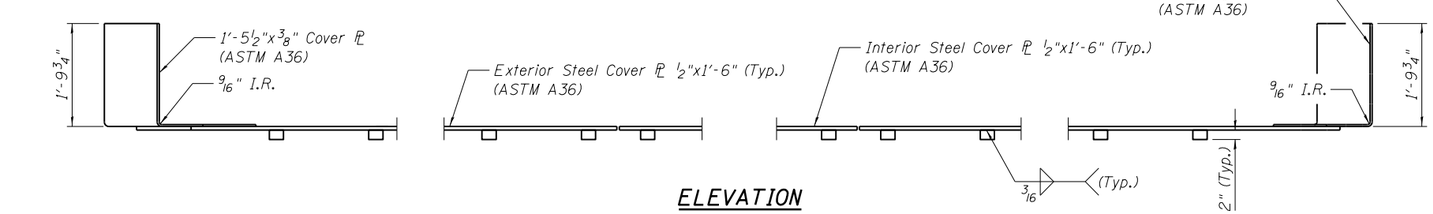
SECTION P-P



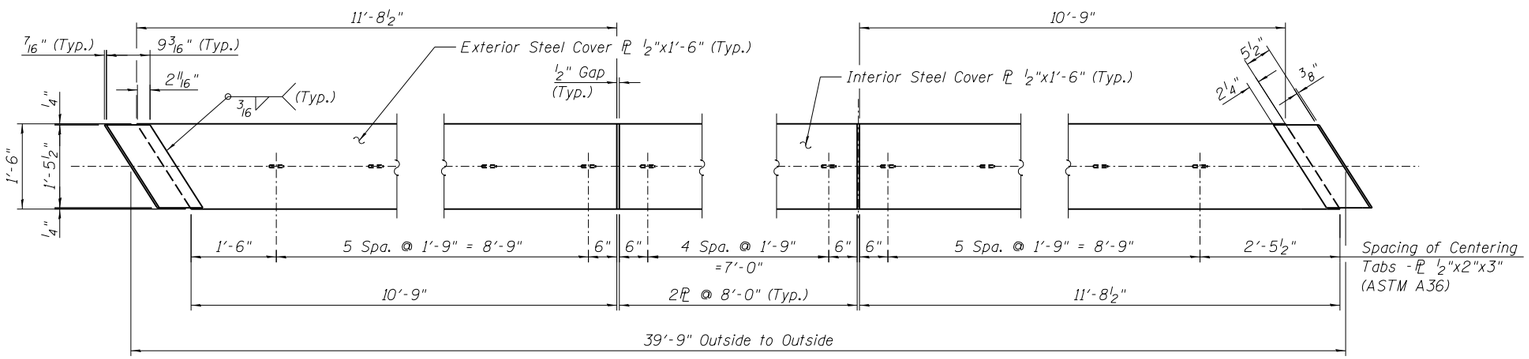


SECTION A-A

DETAIL - DECK DRAIN PIPE



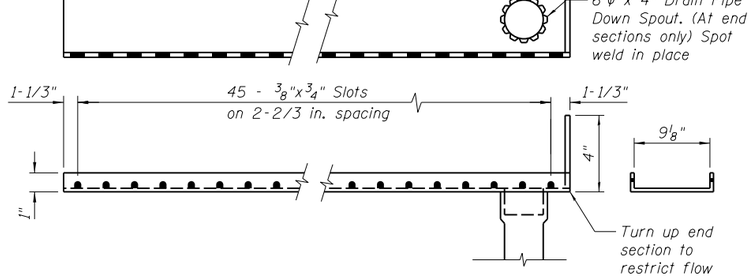
ELEVATION



PLAN

COVER PLATES

(Galvanize after Fabrication)



DETAIL - DECK DRAIN BOTTOM PAN

Notes:
1. Lap Drain Pipe one corrugation at each end.
2. Coordinate outside diameter of drain pipe down spout with 6" ϕ Ductile Iron Pipe.
3. Cost for deck drain pipe and bottom pan shall be included in the cost of "Drainage System".

FINAL

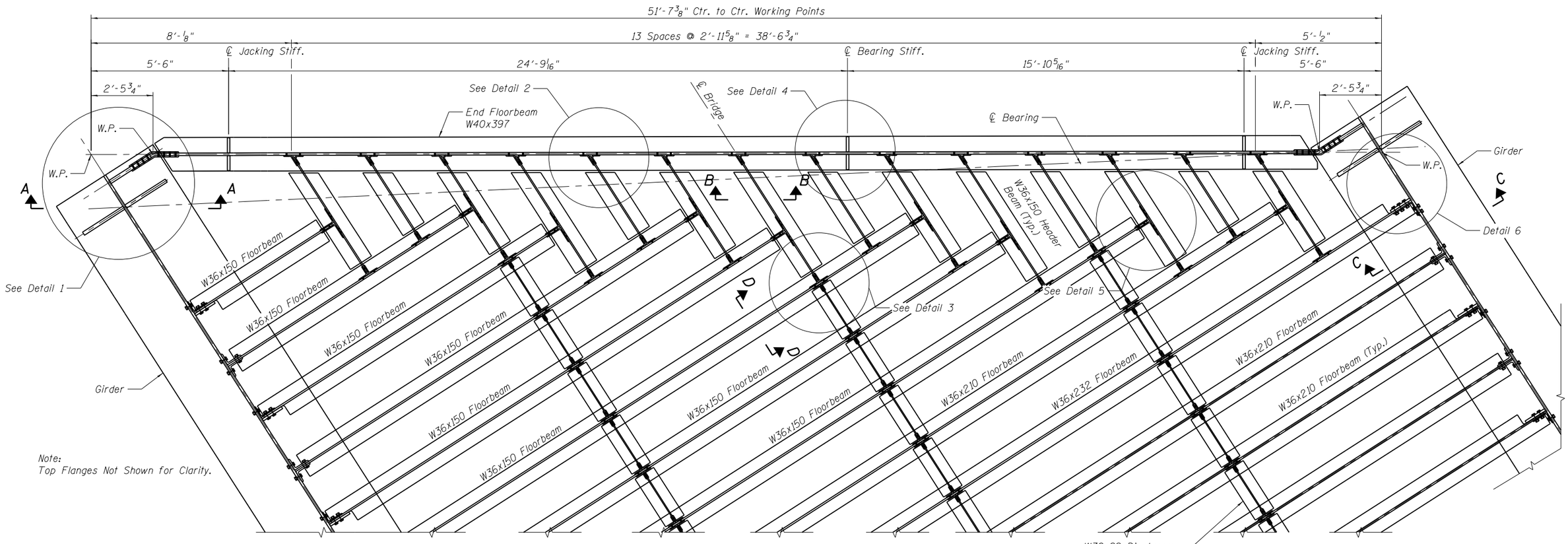
FILE NAME =	USER NAME = Pop00275	DESIGNED - MJW	REVISED -
		CHECKED - TJH/TDP	REVISED -
	PLOT SCALE = 0:2.0000 '' / in.	DRAWN - RSJ	REVISED -
	PLOT DATE = 6/26/2019	CHECKED - MJW	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

MISCELLANEOUS GIRDER DETAILS – SHEET 1 OF 3
STRUCTURE 084-9962 – 6TH ST UPRR

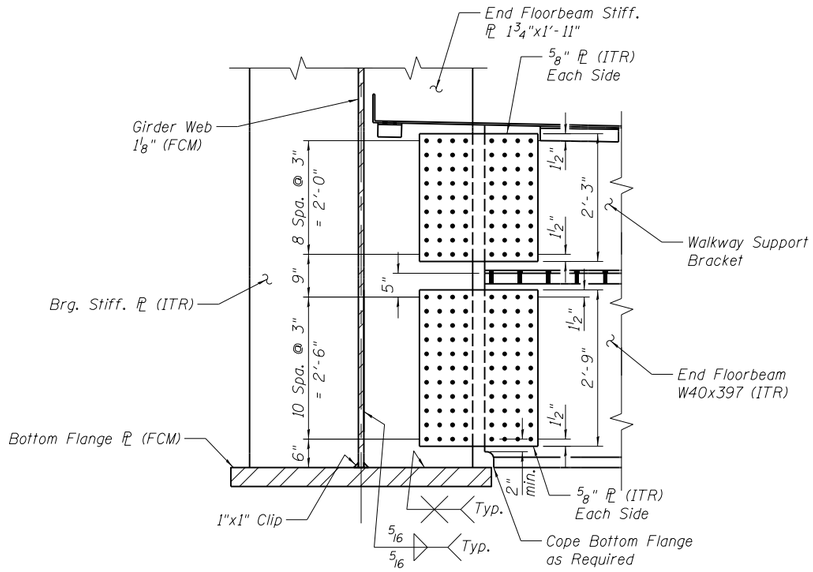
SHEET NO. 16 OF 29 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
•	(109) VB,(110) VB-5	SANGAMON	382	249
		CONTRACT NO. 93733		
•666 & 666 ALT.	ILLINOIS FED. AID PROJECT			



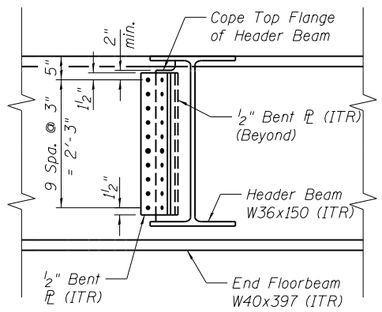
TYPICAL END FLOORBEAM PLAN

See Sheet 18 for Details



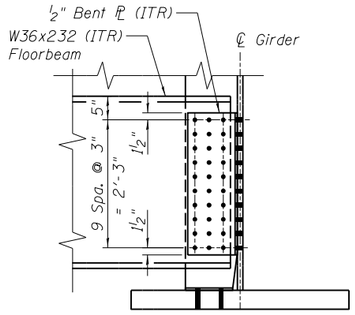
SECTION A-A

See Detail 1 on Sheet 18 for Horizontal Bolt Spacing.



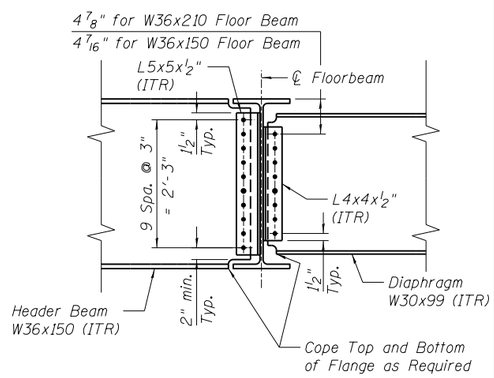
SECTION B-B

See Detail 2 on Sheet 18 for Horizontal Bolt Spacing.



SECTION C-C

See Detail 6 on Sheet 18 for Horizontal Bolt Spacing.



SECTION D-D

See Detail 3 on Sheet 18 for Horizontal Bolt Spacing.

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

MISCELLANEOUS GIRDER DETAILS – SHEET 2 OF 3
STRUCTURE 084–9962 – 6TH ST UPRR
SHEET NO. 17 OF 29 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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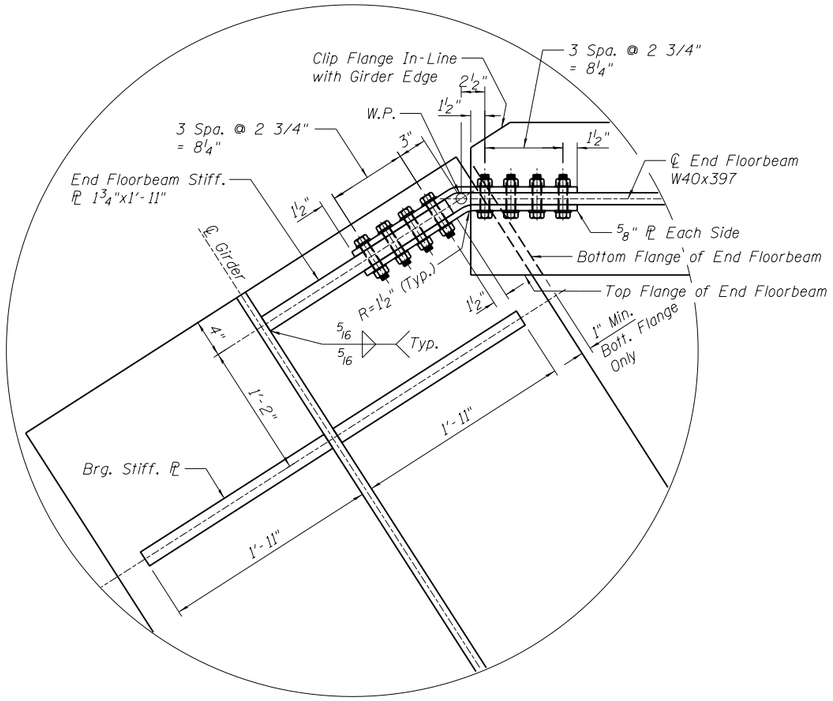
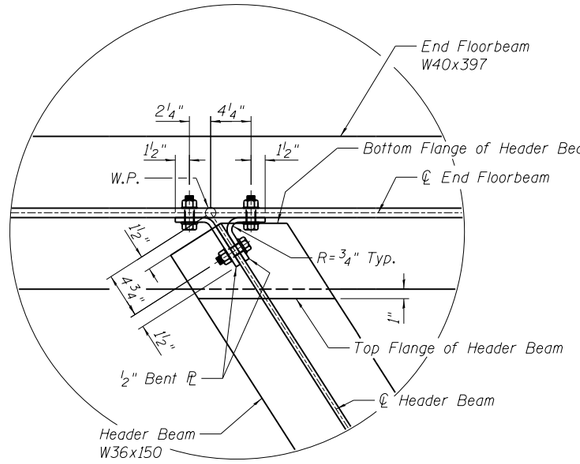
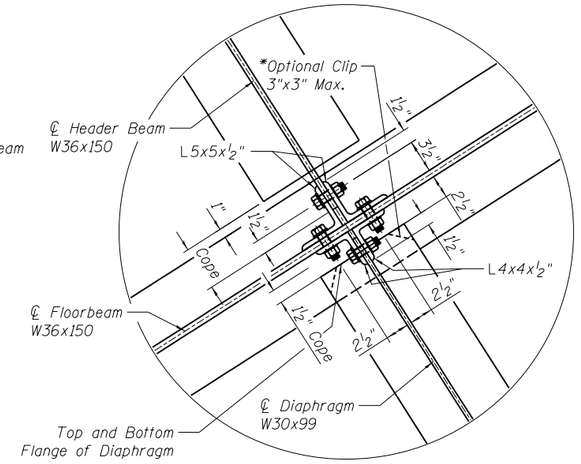
		CONTRACT NO. 93733		
•666 & 666 ALT.	ILLINOIS FED. AID PROJECT			



DETAIL 1

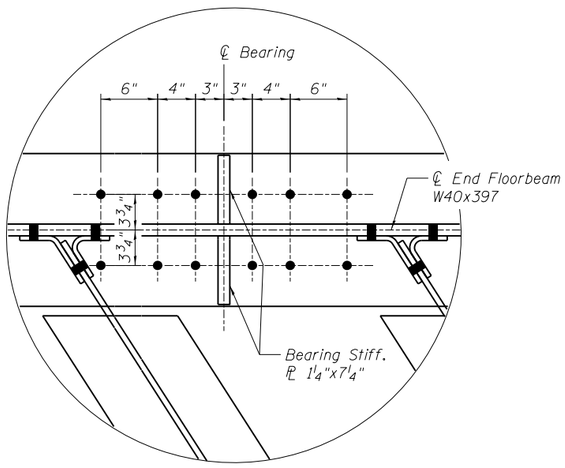


DETAIL 2

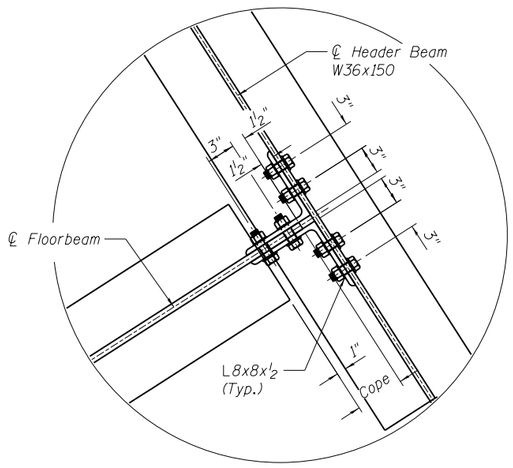


DETAIL 3

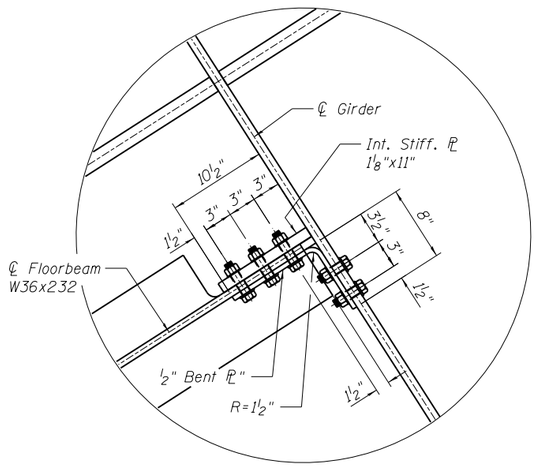
*Clipping diaphragm flanges is permitted to facilitate erection at intermediate and end floor system locations. If Clipped it shall be provided at no additional cost to the Department.



DETAIL 4



DETAIL 5



DETAIL 6

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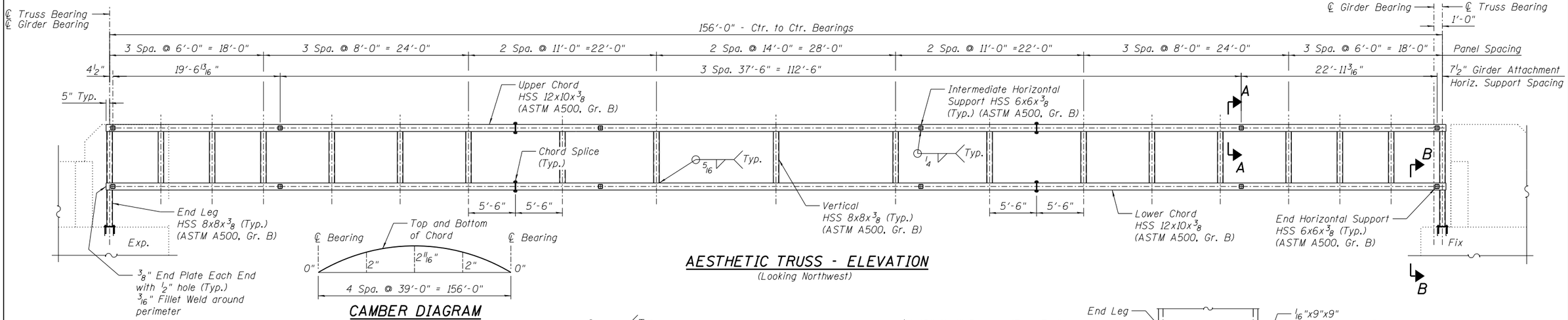
FINAL

FILE NAME =	USER NAME = Pop00275	DESIGNED - MJW	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION
HANSON		CHECKED - TJH/TDP	REVISED -	MISCELLANEOUS GIRDER DETAILS – SHEET 3 OF 3
	PLOT SCALE = 0:2.0000 ':' / in.	DRAWN - RSJ	REVISED -	STRUCTURE 084–9962 – 6TH ST UPRR
	PLOT DATE = 6/26/2019	CHECKED - MJW	REVISED -	SHEET NO. 18 OF 29 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
•	(109) VB,(110) VB-5	SANGAMON	382	251
		CONTRACT NO. 93733		
•666 & 666 ALT.	ILLINOIS FED. AID PROJECT			

To ST. LOUIS, MO
(Timetable South)

To JOLIET, IL
(Timetable North)

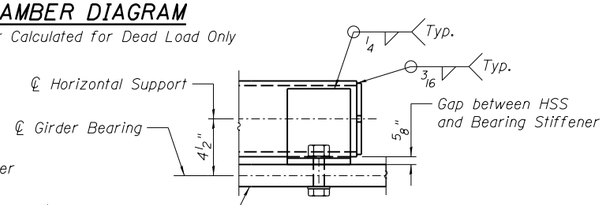


AESTHETIC TRUSS - ELEVATION

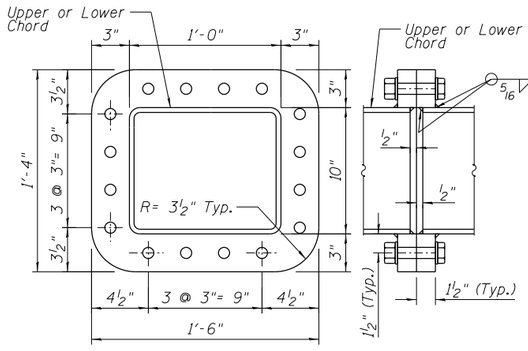
(Looking Northwest)

CAMBER DIAGRAM

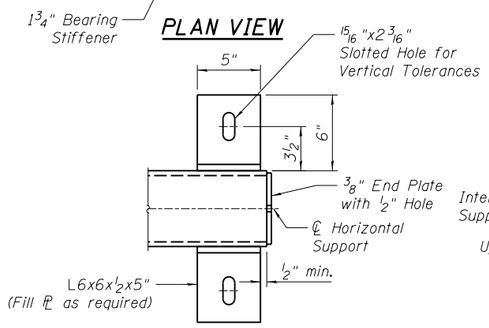
Camber Calculated for Dead Load Only



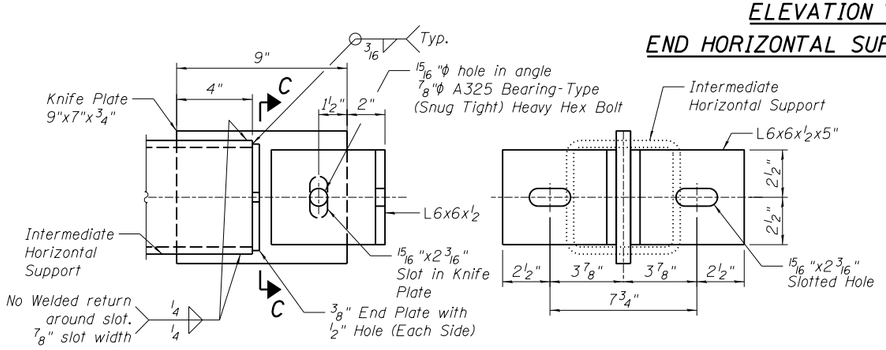
PLAN VIEW



CHORD SPLICE DETAIL

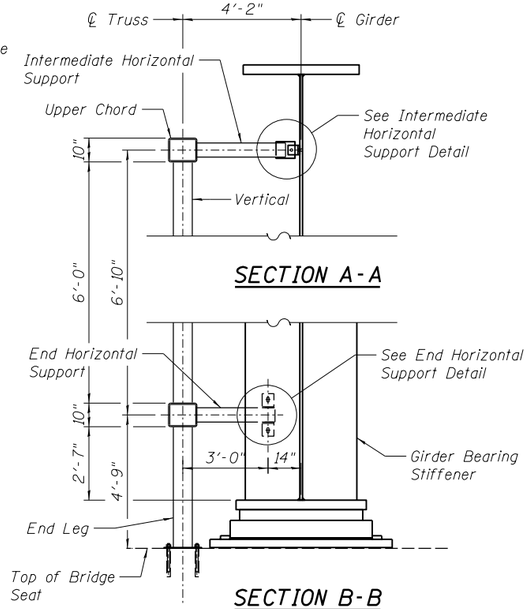


ELEVATION VIEW
END HORIZONTAL SUPPORT DETAIL



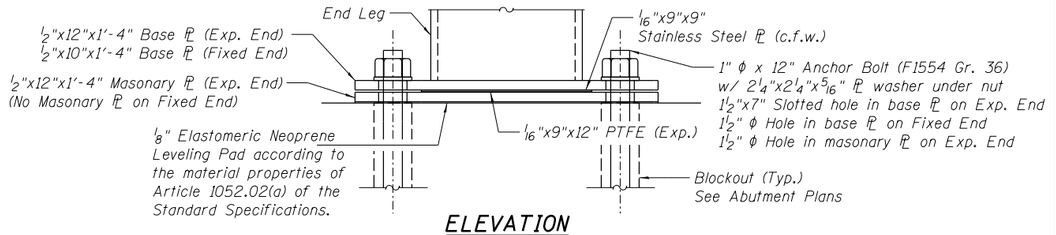
INTERMEDIATE HORIZONTAL SUPPORT DETAIL

SECTION C-C

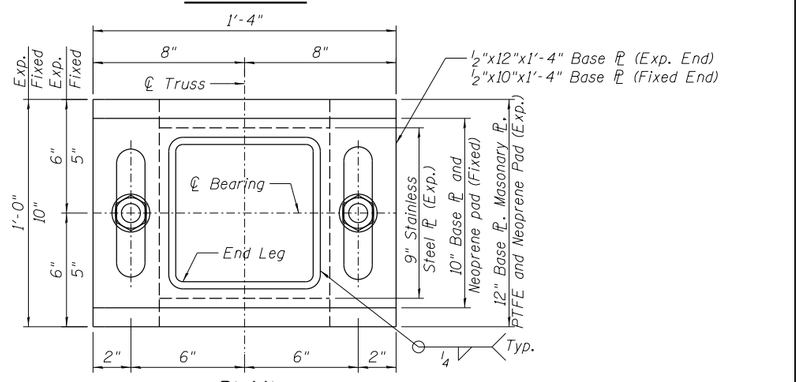


SECTION A-A

SECTION B-B



ELEVATION



PLAN
END LEG BEARING DETAIL

(Expansion Bearing Shown)

Note:

Location of Fixed and Expansion bearings shall match the girder.

Cost for elastomeric neoprene leveling pad, PTFE surface, shall be included in the cost of "Furnishing and Erecting Structural Steel, Bridge No. 3.

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 shall be installed in blockouts with non-shrink grout meeting the material requirements of Article 1024.02 of the Standard Specifications. Blockouts shall be clean prior to grouting and grout installed according to manufactures recommendations.

The PTFE shall be bonded directly to the masonry plate according to the manufacturers recommendations.

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FINAL

FILE NAME =

HANSON

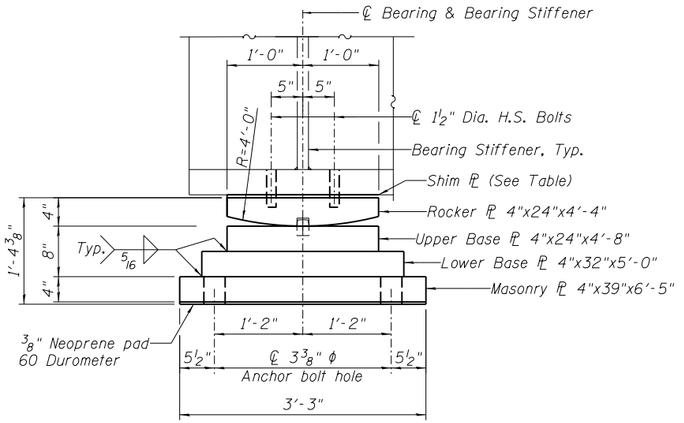
USER NAME = Pop00275	DESIGNED - MJW	REVISED -	
	CHECKED - TJH/TDP	REVISED -	
PLOT SCALE = 0:2.0000 '' / in.	DRAWN - RSJ	REVISED -	
PLOT DATE = 6/26/2019	CHECKED - MJW	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

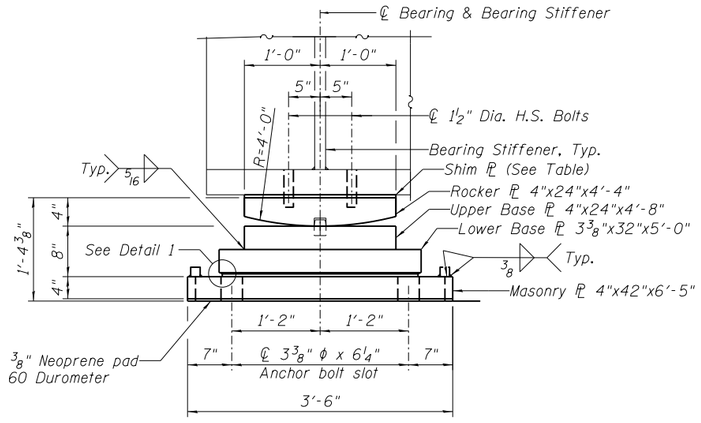
AESTHETIC TRUSS
STRUCTURE 084-9962 - 6TH ST UPRR

SHEET NO. 19 OF 29 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
•	(109) VB,(110) VB-5	SANGAMON	382	252
		CONTRACT NO. 93733		
•666 & 666 ALT.	ILLINOIS FED. AID PROJECT			



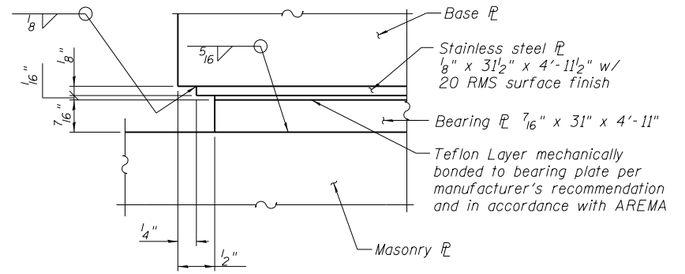
ELEVATION - FIXED BEARING



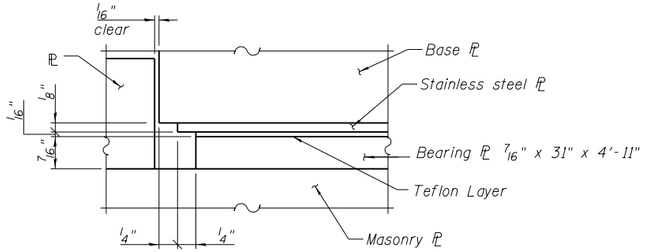
ELEVATION - EXPANSION BEARING

Keeper assembly not shown for clarity

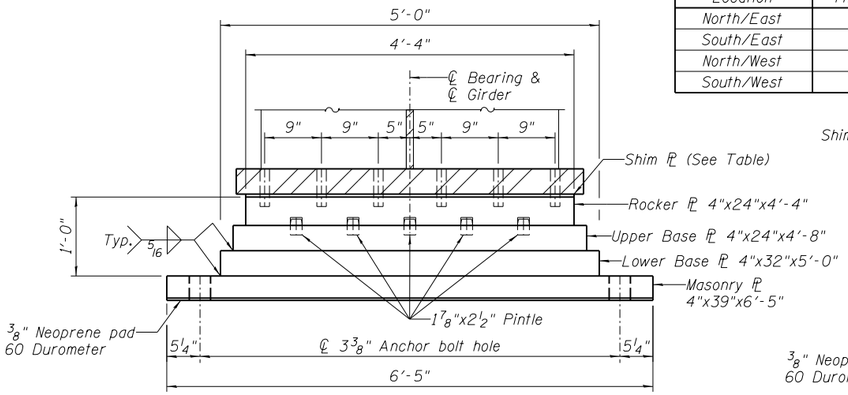
SHIM PLATE THICKNESS	
Location	Thickness
North/East	7/8"
South/East	¼"
North/West	7/8"
South/West	¼"



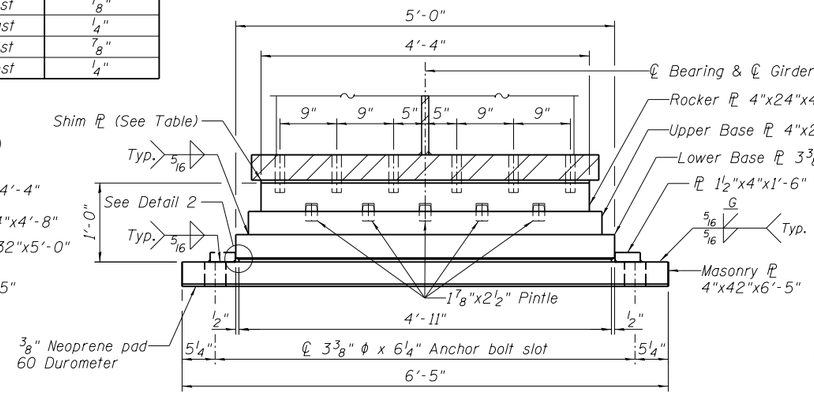
DETAIL 1



DETAIL 2

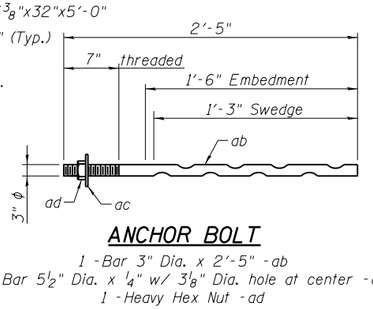


END VIEW - FIXED BEARING



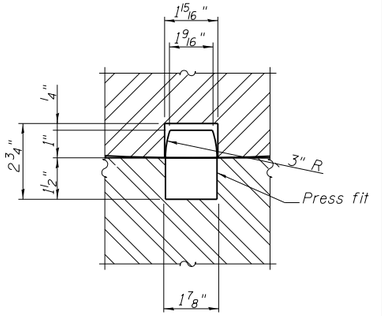
END VIEW - EXPANSION BEARING

Keeper assembly not shown for clarity

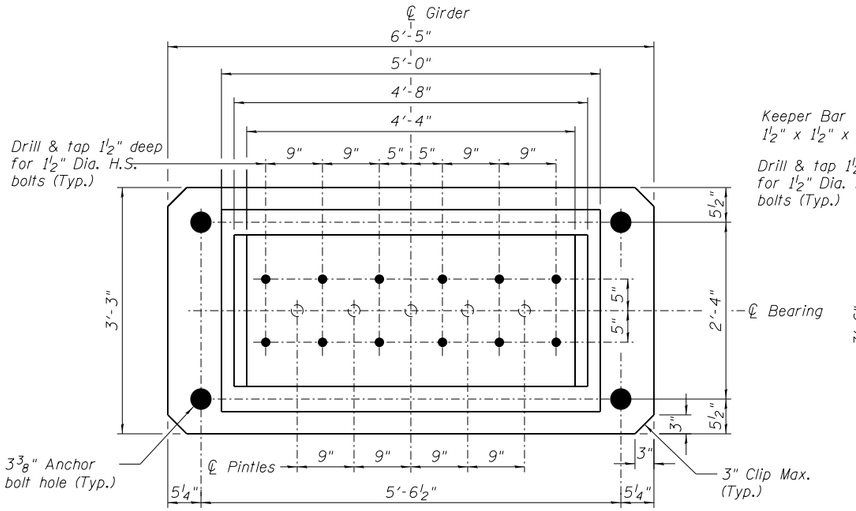


ANCHOR BOLT

1 - Bar 3" Dia. x 2'-5" - ab
1 - Bar 5½" Dia. x ¼" w/ 3/8" Dia. hole at center - ac
1 - Heavy Hex Nut - ad
Weight = 69 lbs.
Galvanize after fabrication
(16 Required)

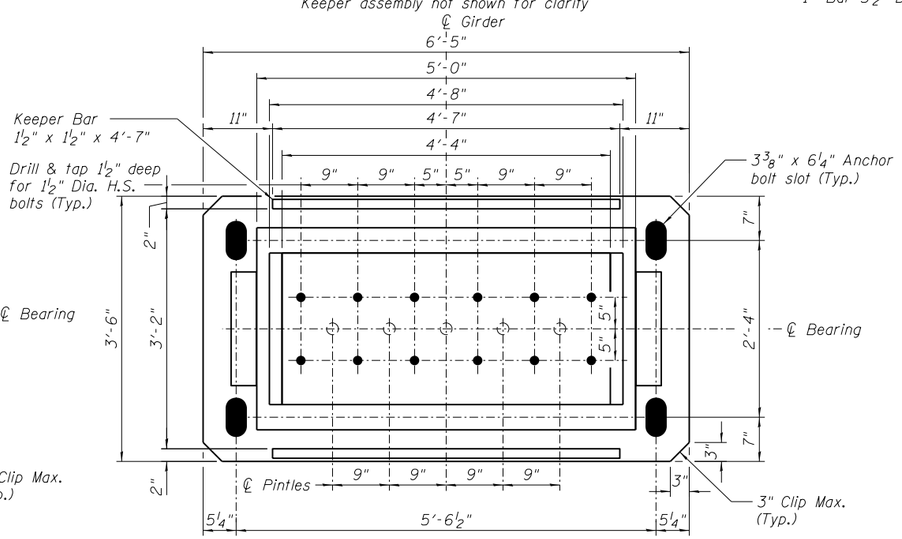


PINTLE DETAIL



PLAN VIEW - FIXED BEARING

(2 Required)



PLAN VIEW - EXPANSION BEARING

(2 Required)

NOTES:

1. Steel used for bearing assemblies shall conform to ASTM A709 GR50, unless noted otherwise. Anchor bolts shall conform to ASTM F1554 Gr 105. Cost of bearings and anchor bolts shall be included in the cost of "Furnishing and Erecting Structural Steel, Bridge No. 3".
2. Stainless steel shall conform to ASTM A480.
3. Bearing assembly weldments shall be stressed relieved by heat treating prior to finish machining, per current AWS structural welding codes.
4. Teflon Layer shall be composed of virgin unfilled TFE resin, unfilled TFE sheets or unfilled TFE fabric. Filler material, such as milled glass fibers will not be allowed. Teflon layer shall conform to the requirements of AREMA Chapter 15.
5. All surfaces in moving contact shall be finished 125 $\sqrt{}$.
6. All dimensions shown are final dimensions after machining.
7. Bearings to be shop fitted to girders, match marked and assembled in units for shipping.
8. Anchor bolts, nuts and plate washers shall be galvanized in accordance with ASTM B695, Class 50.
9. Anchor bolt nuts shall be A563 Gr DH Heavy Hex & Washers shall be F436 Type 1.
10. Bolt removal and replacements to gain access to properly tighten bearing bolts is incidental to steel erection.

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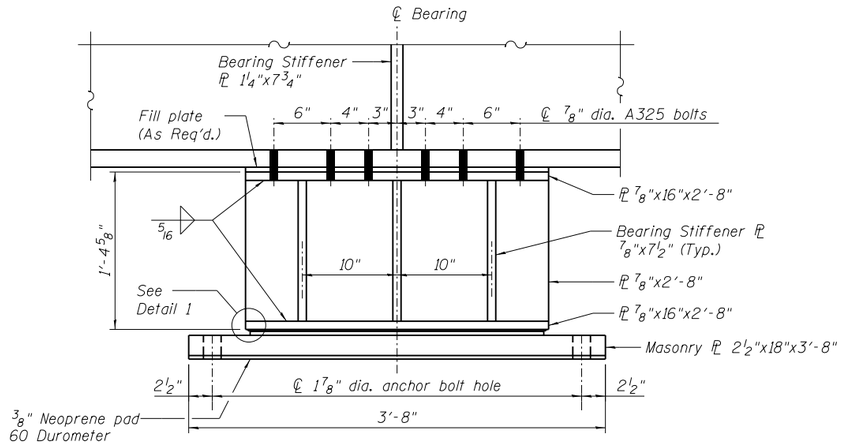
FINAL

FILE NAME =	USER NAME = Pop00275	DESIGNED - MJW	REVISED -
		CHECKED - TJH/TDP	REVISED -
	PLOT SCALE = 0:2.0000 '' / in.	DRAWN - RSJ	REVISED -
	PLOT DATE = 6/26/2019	CHECKED - MJW	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

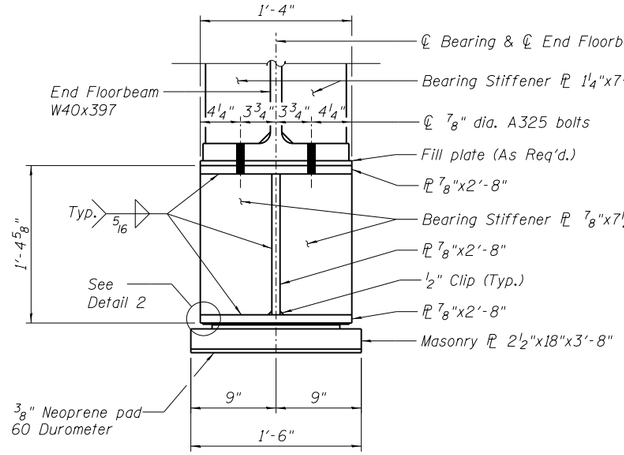
TPG BEARING DETAILS
STRUCTURE 084-9962 - 6TH ST UPRR
SHEET NO. 20 OF 29 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
•	(109) VB,(110) VB-5	SANGAMON	382	253
		CONTRACT NO. 93733		
•666 & 666 ALT.	ILLINOIS	FED. AID PROJECT		



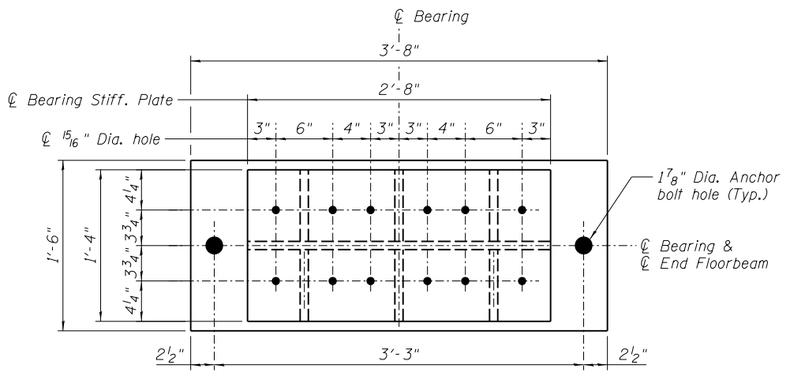
ELEVATION - END FLOORBEAM BEARING

Anchor Bolt not shown for clarity



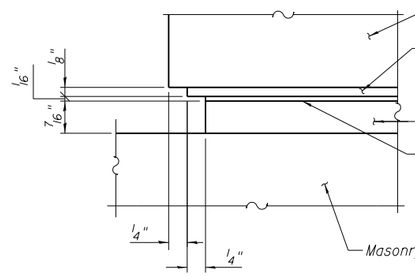
END VIEW - END FLOORBEAM BEARING

Anchor Bolt not shown for clarity

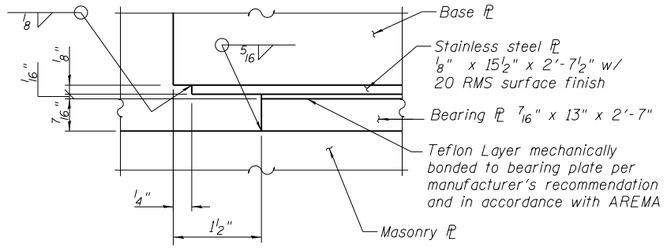


PLAN VIEW - END FLOORBEAM BEARING

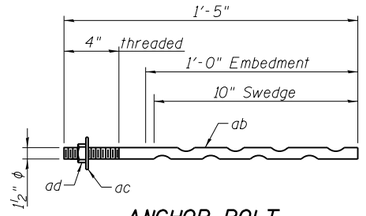
(2 Required)



DETAIL 1



DETAIL 2



ANCHOR BOLT

1 -Bar 1½" Dia. x 1'-5" -ab
1 -Bar 3" Dia. x ¼" w/ 1⅝" Dia. hole at center -ac
1 -Heavy Hex Nut -ad
Weight = 10 lbs.
Galvanize after fabrication
(4 Required)

NOTES:

1. Steel used for bearing assemblies shall conform to ASTM A709 GR50, unless noted otherwise. Anchor bolts shall conform to ASTM F1554 Gr 105. Cost of bearings and anchor bolts shall be included in the cost of "Furnishing and Erecting Structural Steel, Bridge No. 3".
2. Stainless steel shall conform to ASTM A480.
3. Bearing assembly weldments shall be stressed relieved by heat treating prior to finish machining, per current AWS structural welding codes.
4. Teflon Layer shall be composed of virgin unfilled TFE resin, unfilled TFE sheets or unfilled TFE fabric. Filler material, such as milled glass fibers will not be allowed. Teflon layer shall conform to the requirements of AREMA Chapter 15.
5. All surfaces in moving contact shall be finished 125/.
6. All dimensions shown are final dimensions after machining.
7. Bearings to be shop fitted to girders, match marked and assembled in units for shipping.
8. Anchor bolts, nuts and plate washers shall be galvanized in accordance with ASTM B695, Class 50.
9. Anchor bolt nuts shall be A563 Gr DH Heavy Hex & Washers shall be F436 Type 1.
10. Bolt removal and replacements to gain access to properly tighten bearing bolts is incidental to steel erection.

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FINAL

FILE NAME =

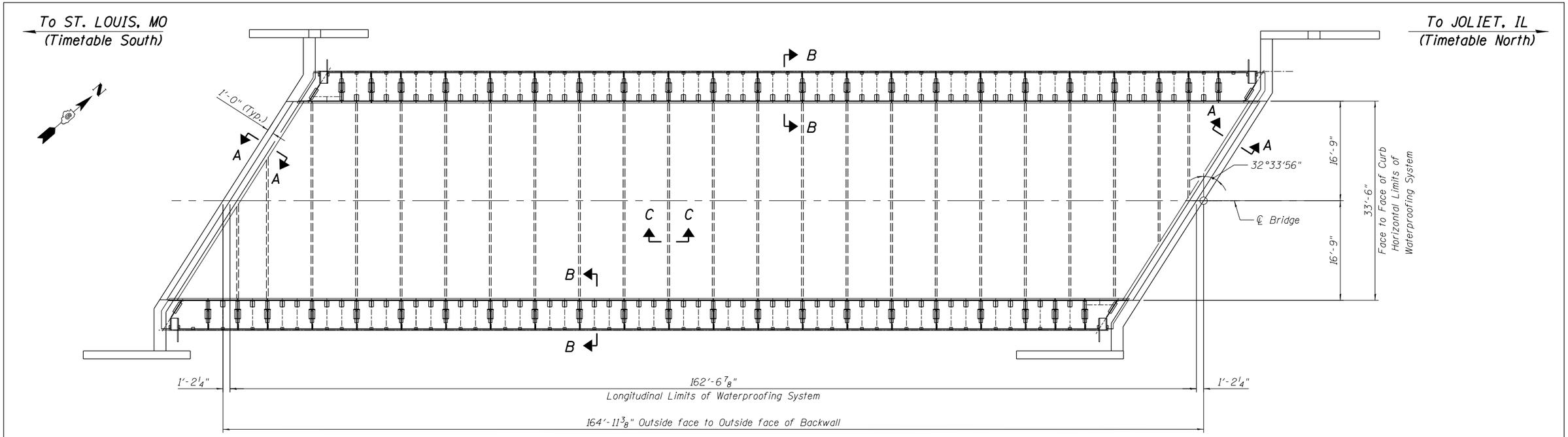
HANSON

USER NAME = Pop00275	DESIGNED - MJW	REVISED -	
	CHECKED - TJH/TDP	REVISED -	
PLOT SCALE = 0:2.0000 '' / in.	DRAWN - RSJ	REVISED -	
PLOT DATE = 6/26/2019	CHECKED - MJW	REVISED -	

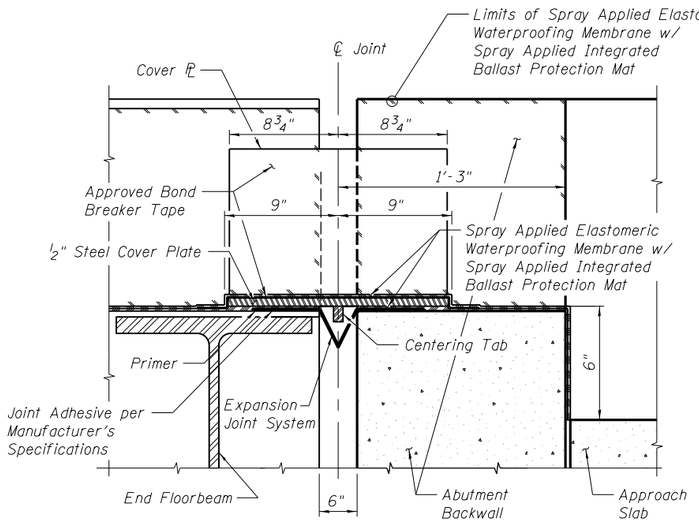
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

END FLOORBEAM BEARING DETAILS
STRUCTURE 084-9962 - 6TH ST UPRR
SHEET NO. 21 OF 29 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
•	(109) VB,(110) VB-5	SANGAMON	382	254
		CONTRACT NO. 93733		
•666 & 666 ALT.	ILLINOIS FED. AID PROJECT			

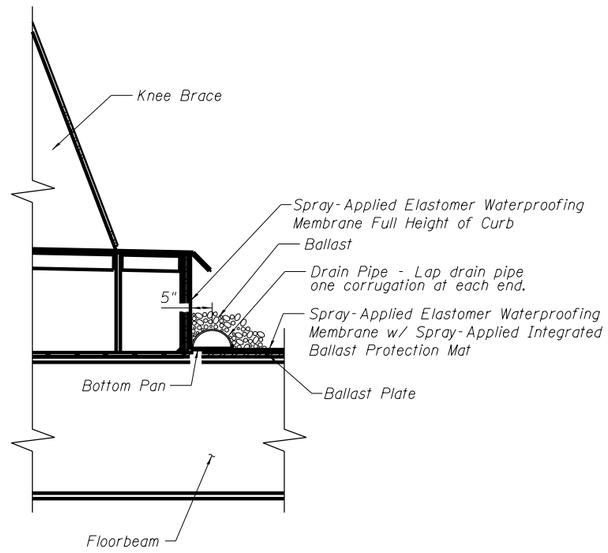


WATERPROOFING LIMITS PLAN

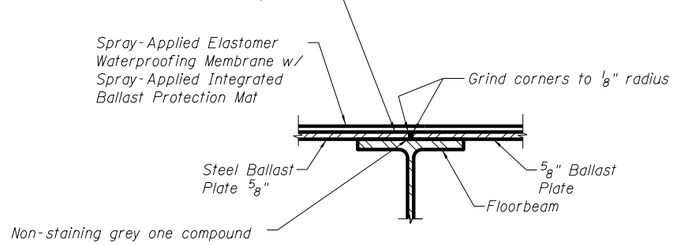


Note:
1. Bridge deck membrane continuous thru joint.
2. Typical Joint Detail shown for information only. Waterproofing installer shall determine final details in accordance with the manufacturer's recommendations.

SECTION A-A
(At Rt. ℄'s to Bk. of Abut.)



SECTION B-B



SECTION C-C

Notes:

1. Prepare surfaces and apply in accordance with Manufacturer's recommendations.
2. Structural steel cover plates shall be galvanized.
3. Cost of joint adhesive and bond breaker tape shall be included in the cost of "Membrane Waterproofing (Special)".
4. The cover plate is included in the weight of the Structural Steel and will be paid for as "Furnishing and Erecting Structural Steel, Bridge No. 3".
5. For cover plate details see Sheet 16 of 29.

BILL OF MATERIAL

ITEM	UNIT	TOTAL
Membrane Waterproofing (Special)	Sq. Ft.	6,293

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FINAL

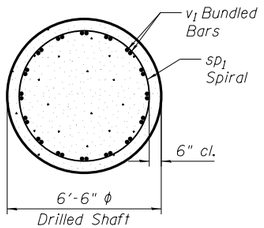
FILE NAME =
USER NAME = Pop00275
PLOT SCALE = 0:2.0000 '=' / in.
PLOT DATE = 6/26/2019

DESIGNED - MJW | REVISED -
CHECKED - TJH/TDP | REVISED -
DRAWN - RSJ | REVISED -
CHECKED - MJW | REVISED -

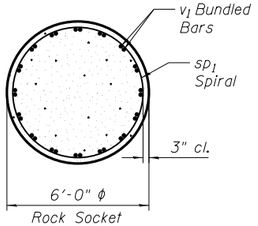
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

BRIDGE DECK WATERPROOFING
STRUCTURE 084-9962 - 6TH ST UPRR
SHEET NO. 22 OF 29 SHEETS

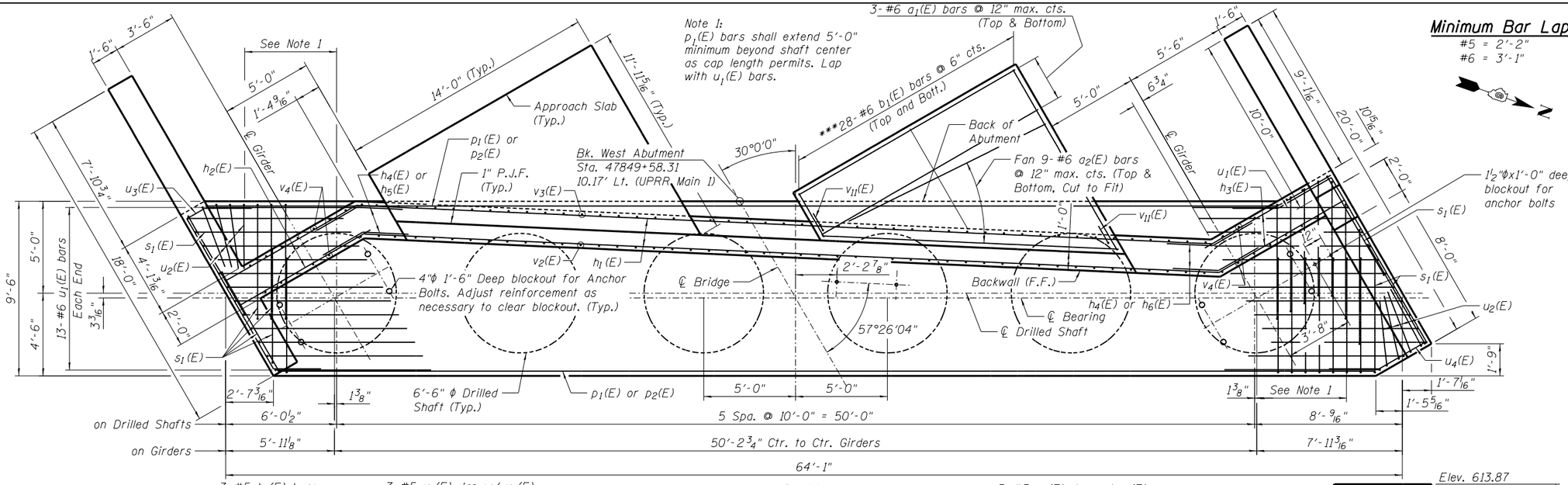
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
•	(109) VB,(110) VB-5	SANGAMON	382	255
		CONTRACT NO. 93733		
•666 & 666 ALT.	ILLINOIS	FED. AID PROJECT		



SECTION B-B



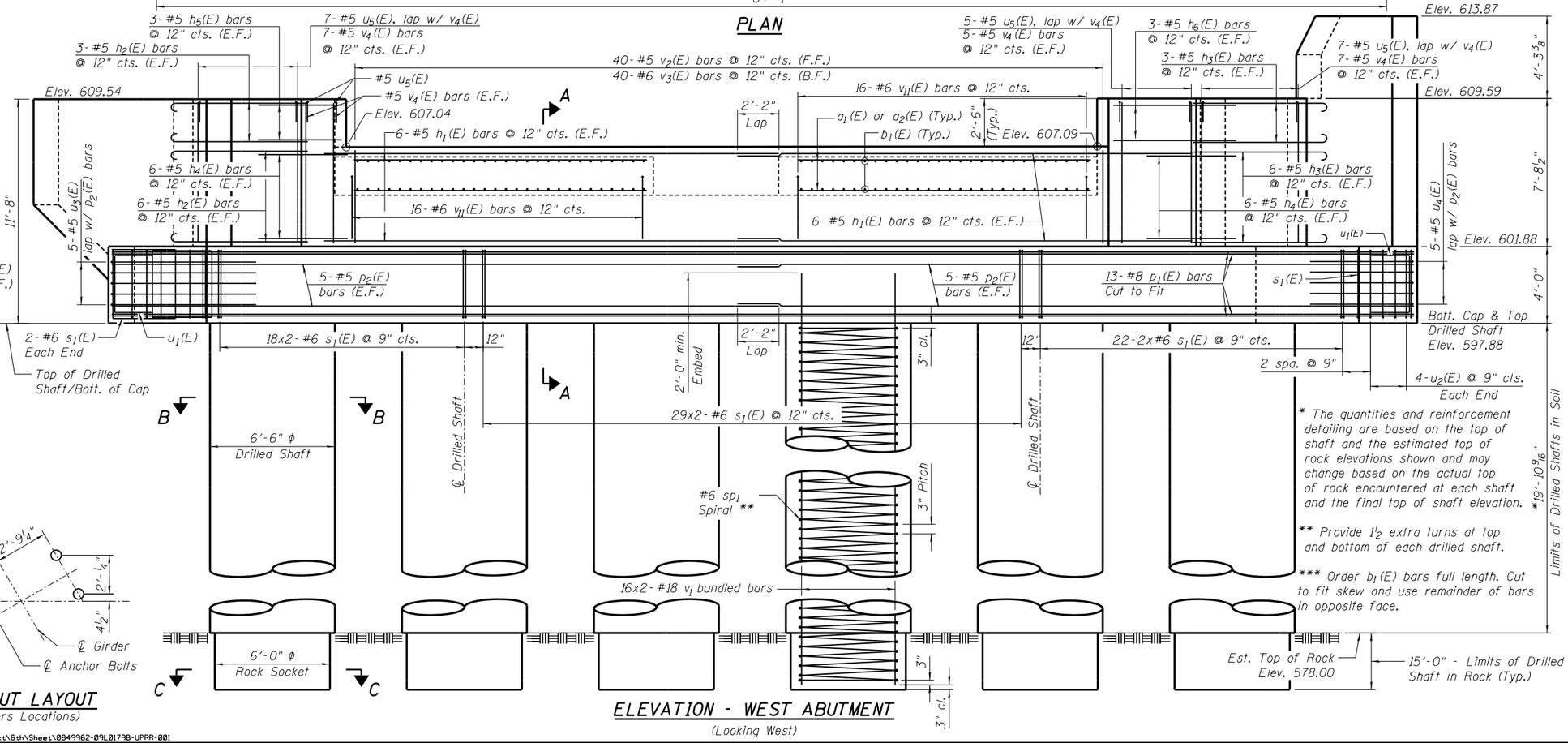
SECTION C-C



Minimum Bar Lap

#5 = 2'-2"
#6 = 3'-1"

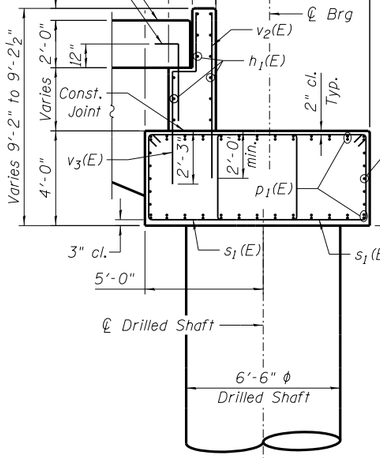
PLAN



* The quantities and reinforcement detailing are based on the top of shaft and the estimated top of rock elevations shown and may change based on the actual top of rock encountered at each shaft and the final top of shaft elevation.

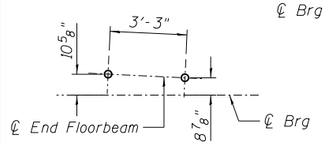
** Provide 1½ extra turns at top and bottom of each drilled shaft.

*** Order b_1(E) bars full length. Cut to fit skew and use remainder of bars in opposite face.



SECTION A-A

(At Rt. L's to Bk. of Abut.)



BLOCKOUT LAYOUT

(At End Floorbeam Location)

BLOCKOUT LAYOUT

(At Girders Locations)

ELEVATION - WEST ABUTMENT

(Looking West)

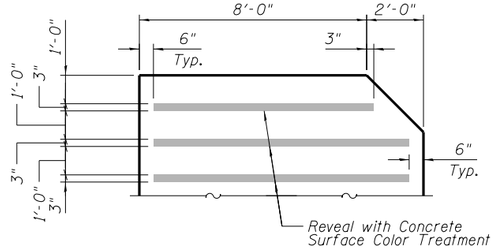
FINAL

FILE NAME =	USER NAME = Pop00275	DESIGNED - MJW	REVISED -
		CHECKED - TJH/TDP	REVISED -
	PLOT SCALE = 0:2.0000 '' / in.	DRAWN - RSJ	REVISED -
	PLOT DATE = 6/26/2019	CHECKED - MJW	REVISED -

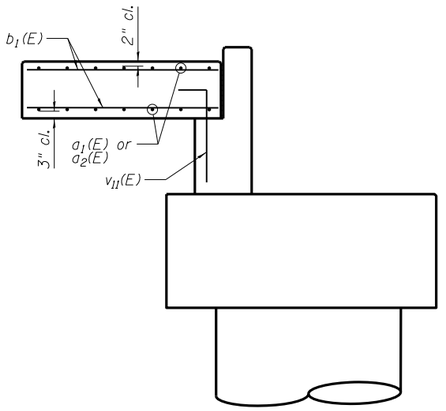
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

WEST ABUTMENT
STRUCTURE 084-9962 - 6TH ST UPRR
SHEET NO. 23 OF 29 SHEETS

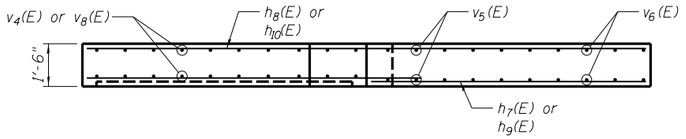
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
•	(109) VB,(110) VB-5	SANGAMON	382	256
		CONTRACT NO. 93733		
•666 & 666 ALT.	ILLINOIS FED. AID PROJECT			



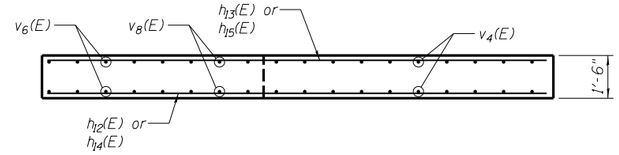
CONCRETE REVEAL DETAIL



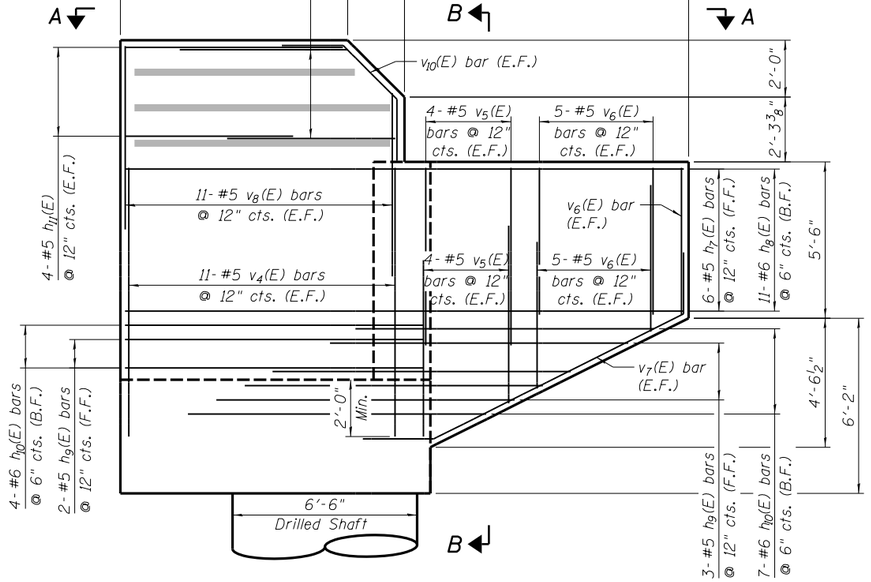
APPROACH SLAB SECTION



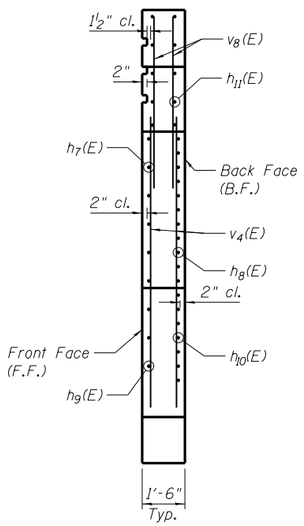
SECTION A-A - PLAN VIEW



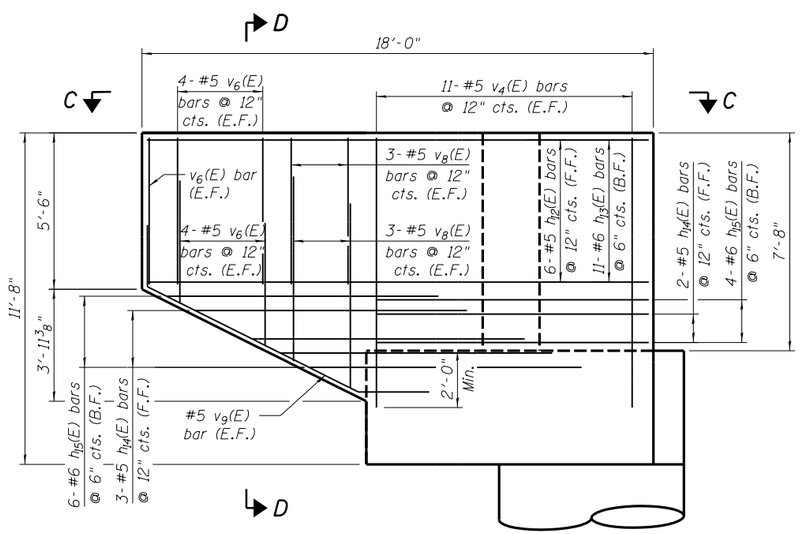
SECTION C-C - PLAN VIEW



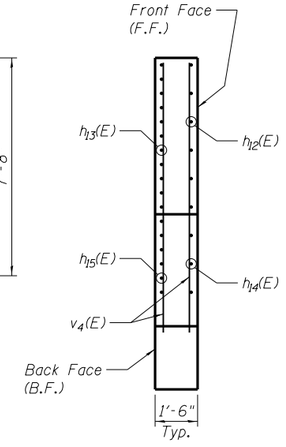
ELEVATION - NORTH WING END VIEW
(Looking South)



WINGWALL SECTION B-B



ELEVATION - SOUTH WING END VIEW
(Looking North)



WINGWALL SECTION D-D

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FINAL

FILE NAME =

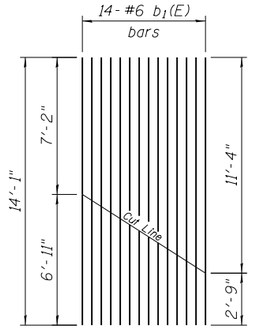
HANSON

USER NAME = Pop00275	DESIGNED - MJW	REVISED -	
	CHECKED - TJH/TDP	REVISED -	
PLOT SCALE = 0:2.0000 '' / in.	DRAWN - RSJ	REVISED -	
PLOT DATE = 6/26/2019	CHECKED - MJW	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

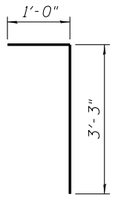
WEST ABUTMENT DETAILS
STRUCTURE 084-9962 - 6TH ST UPRR
SHEET NO. 24 OF 29 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
•	(109) VB,(110) VB-5	SANGAMON	382	257
		CONTRACT NO. 93733		
•666 & 666 ALT.	ILLINOIS FED. AID PROJECT			

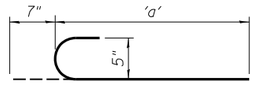


BAR CUTTING DIAGRAM FOR b_1(E)

Order b_1(E) full length. Cut as shown and use remainder of bars in opposite face.



BAR v_{11}(E)



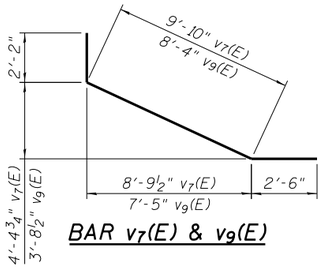
BARS h_2(E), h_3(E)

Bar	'a'
h_2(E)	8'-2"
h_3(E)	7'-11"

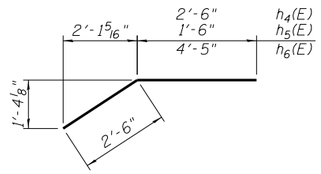
BILL OF MATERIAL
WEST ABUTMENT

Bar	No.	Size	Length	Shape
a_1(E)	12	#6	13'-8"	
a_2(E)	36	#6	16'-2"	
b_1(E)	56	#6	14'-1"	
h_1(E)	24	#5	24'-5"	
h_2(E)	18	#5	8'-9"	
h_3(E)	18	#5	8'-6"	
h_4(E)	24	#5	5'-0"	
h_5(E)	6	#5	4'-0"	
h_6(E)	6	#5	6'-11"	
h_7(E)	6	#5	19'-8"	
h_8(E)	11	#6	19'-8"	
h_9(E)	5	#5	9'-11"	
h_{10}(E)	11	#6	10'-11"	
h_{11}(E)	16	#5	5'-11"	
h_{12}(E)	6	#5	17'-8"	
h_{13}(E)	11	#6	17'-8"	
h_{14}(E)	5	#5	9'-1"	
h_{15}(E)	10	#6	10'-1"	
p_1(E)	52	#8	60'-0"	
p_2(E)	20	#5	32'-2"	
s_1(E)	146	#6	21'-0"	
sp_1	6	#6	*34'-2"	
u_1(E)	26	#6	20'-5"	
u_2(E)	8	#5	10'-7"	
u_3(E)	5	#5	15'-3"	
u_4(E)	5	#5	21'-3"	
u_5(E)	21	#5	3'-4"	
v_1	192	#18	36'-11"	
v_2(E)	40	#5	7'-1"	
v_3(E)	40	#6	8'-4"	
v_4(E)	86	#5	9'-7"	
v_5(E)	16	#5	6'-3"	
v_6(E)	40	#5	5'-2"	
v_7(E)	2	#5	14'-6"	
v_8(E)	34	#5	6'-6"	
v_9(E)	2	#5	13'-0"	
v_{10}(E)	2	#5	7'-0"	
v_{11}(E)	32	#6	4'-3"	
Structure Excavation		Cu. Yds.	179	
Concrete Structures		Cu. Yds.	147.1	
Drilled Shaft in Soil		Cu. Yds.	146.6	
Drilled Shaft in Rock		Cu. Yds.	94.2	
Reinforcement Bars		Pound	118,130	
Reinforcement Bars, Epoxy Coated		Pound	22,060	
Crosshole Sonic Logging Access Ducts		Foot	1,346	

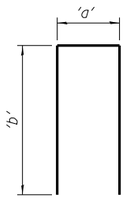
* Length is height of spiral



BAR v_7(E) & v_9(E)

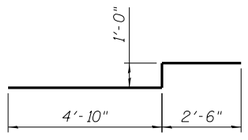


BARS h_4(E) & h_5(E) & h_6(E)

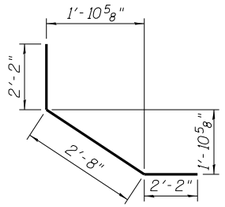


Bar	'a'	'b'
u_1(E)	3'-5"	8'-6"
u_2(E)	3'-7"	3'-6"
u_5(E)	1'-8"	0'-10"

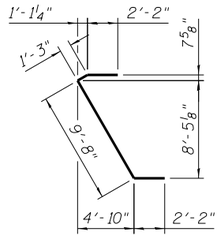
BARS u_1(E), u_2(E), u_5(E)



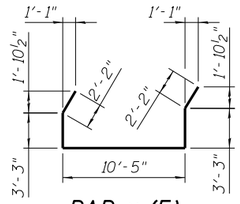
BAR v_3(E)



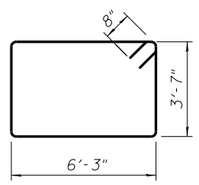
BARS v_{10}(E)



BAR u_3(E)



BAR u_4(E)



BAR s_1(E)

MIN. BAR LAPS FOR SPIRAL

#6 bars = 2'-7"

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FINAL

FILE NAME =

HANSON

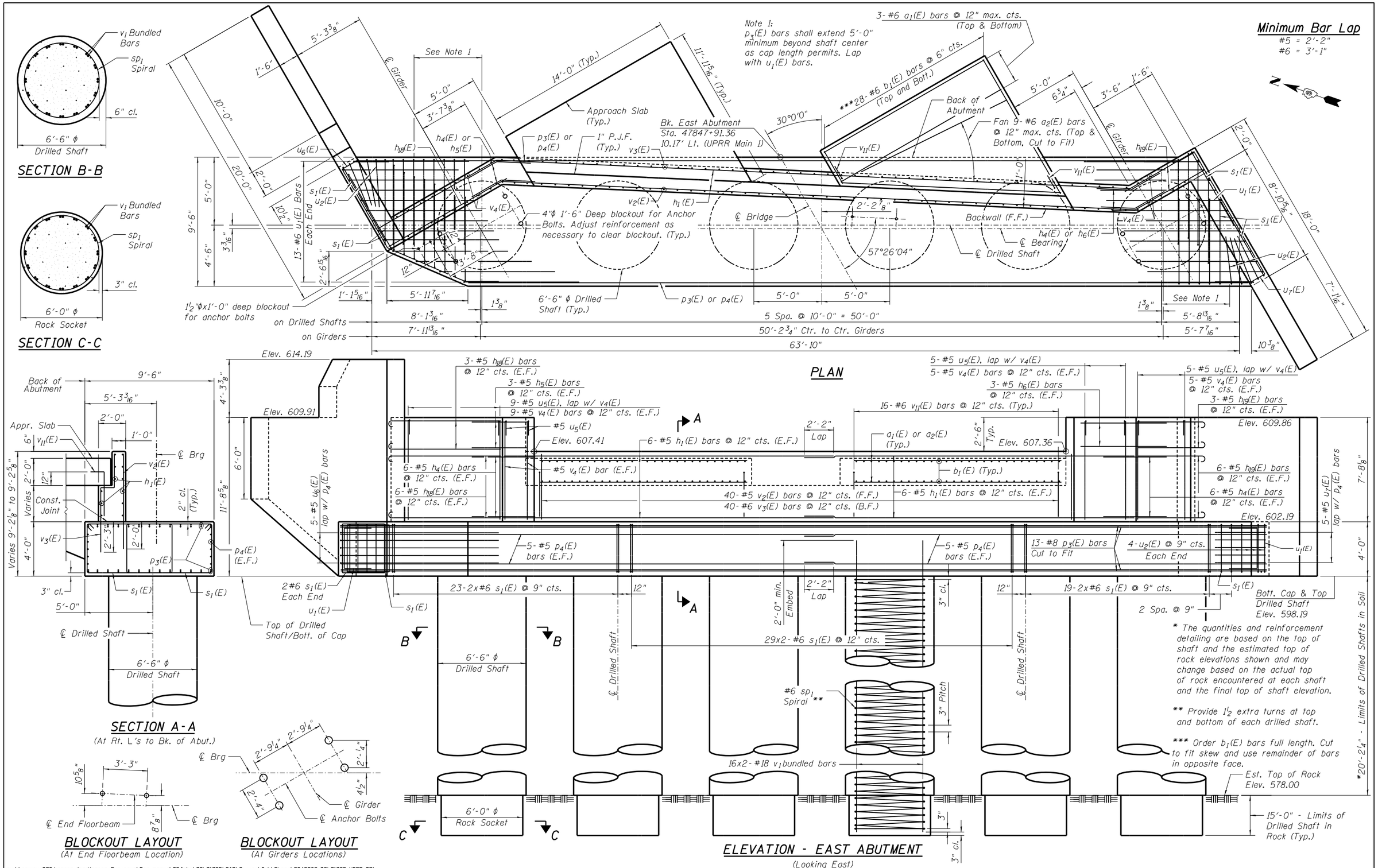
USER NAME = Pop00275	DESIGNED - MJW	REVISED -	
	CHECKED - TJH/TDP	REVISED -	
PLOT SCALE = 0:2.0000 '' / in.	DRAWN - RSJ	REVISED -	
PLOT DATE = 6/26/2019	CHECKED - MJW	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

WEST ABUTMENT BILL OF MATERIAL
STRUCTURE 084-9962 - 6TH ST UPRR

SHEET NO. 25 OF 29 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
•	(109) VB,(110) VB-5	SANGAMON	382	258
		CONTRACT NO. 93733		
•666 & 666 ALT.	ILLINOIS FED. AID PROJECT			



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FINAL

FILE NAME =

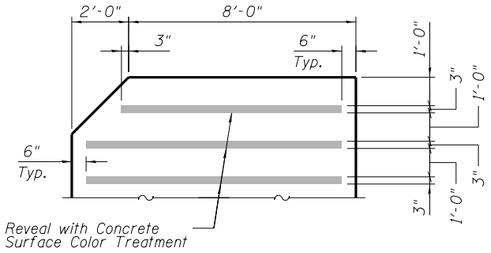
HANSON

USER NAME = Pop00275	DESIGNED - MJW	REVISED -	
	CHECKED - TJH/TDP	REVISED -	
PLOT SCALE = 0:2.0000 '' / in.	DRAWN - RSJ	REVISED -	
PLOT DATE = 6/26/2019	CHECKED - MJW	REVISED -	

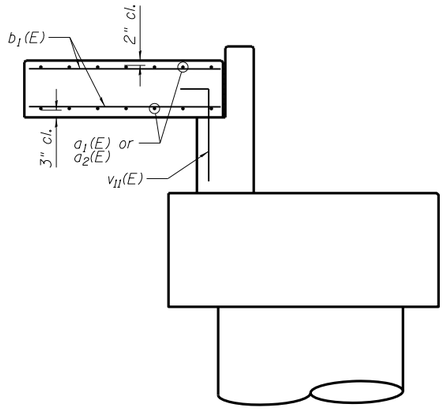
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

EAST ABUTMENT
STRUCTURE 084-9962 - 6TH ST UPRR
SHEET NO. 26 OF 29 SHEETS

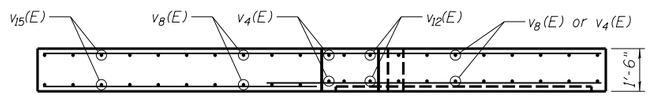
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
•	(109) VB,(110) VB-5	SANGAMON	382	259
		CONTRACT NO. 93733		
•666 & 666 ALT.	ILLINOIS FED. AID PROJECT			



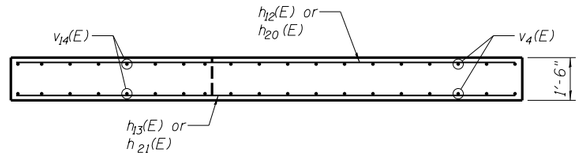
CONCRETE REVEAL DETAIL



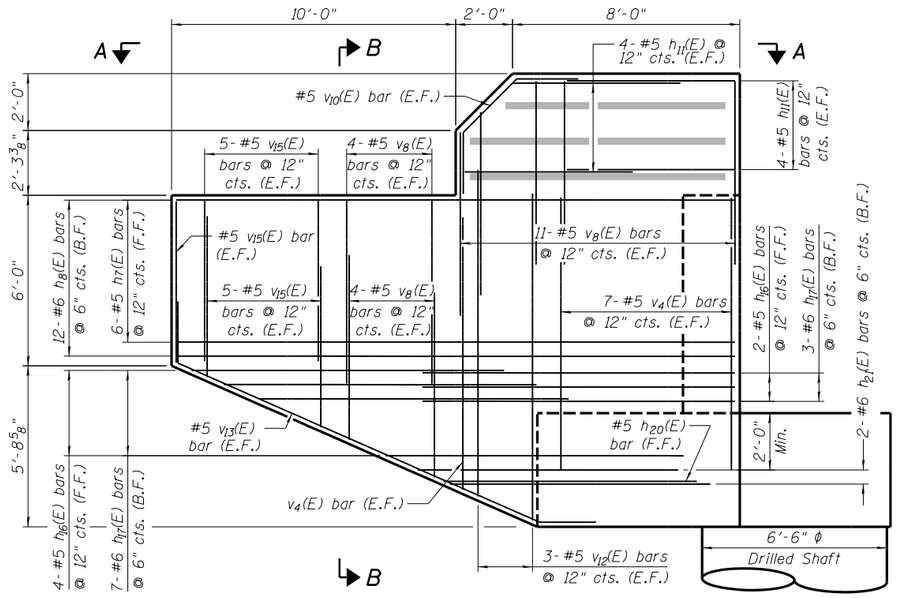
APPROACH SLAB SECTION



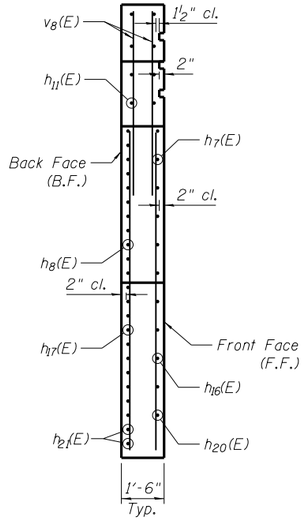
SECTION A-A - PLAN VIEW



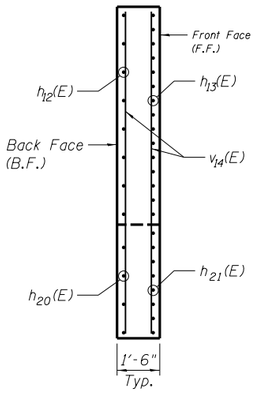
SECTION C-C - PLAN VIEW



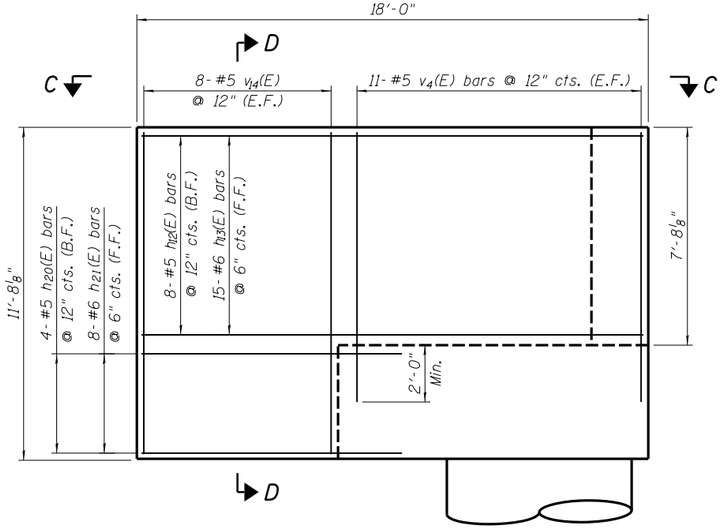
ELEVATION - NORTH WING END VIEW
(Looking South)



WINGWALL
SECTION B-B



CHEEK WALL
SECTION D-D



ELEVATION - SOUTH CHEEK END VIEW
(Looking North)

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FINAL

FILE NAME =

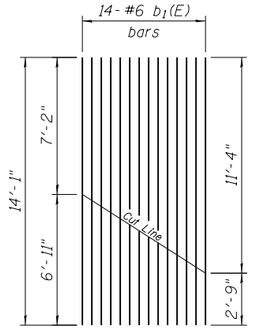
HANSON

USER NAME = Pop00275	DESIGNED - MJW	REVISED -	
	CHECKED - TJH/TDP	REVISED -	
PLOT SCALE = 0:2.0000 '' / in.	DRAWN - RSJ	REVISED -	
PLOT DATE = 6/26/2019	CHECKED - MJW	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

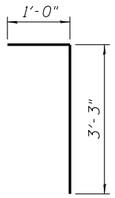
EAST ABUTMENT DETAILS
STRUCTURE 084-9962 - 6TH ST UPRR
SHEET NO. 27 OF 29 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
•	(109) VB,(110) VB-5	SANGAMON	382	260
		CONTRACT NO. 93733		
•666 & 666 ALT.	ILLINOIS FED. AID PROJECT			

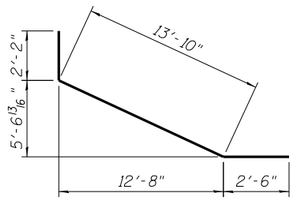


BAR CUTTING DIAGRAM FOR b_1(E)

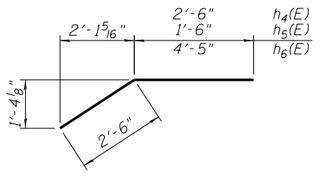
Order b_1(E) full length. Cut as shown and use remainder of bars in opposite face.



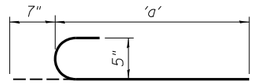
BAR v_{11}(E)



BAR v_{13}(E)

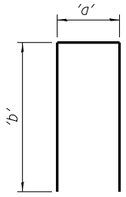


BARS h_4(E) & h_5(E) & h_6(E)



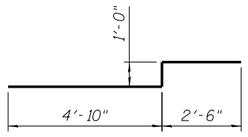
BARS h_{18}(E), h_{19}(E)

Bar	'a'
h_{18}(E)	10'-7"
h_{19}(E)	5'-11"

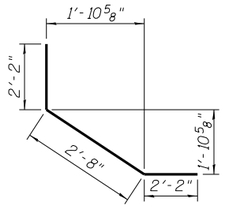


Bar	'a'	'b'
u_1(E)	3'-5"	8'-6"
u_2(E)	3'-7"	3'-6"
u_5(E)	1'-8"	0'-10"

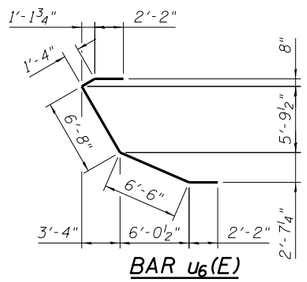
BARS u_1(E), u_2(E), u_5(E)



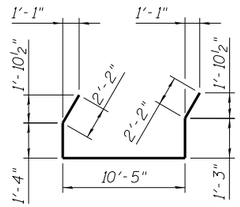
BAR v_3(E)



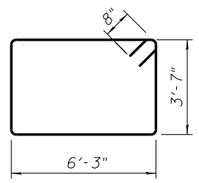
BARS v_{10}(E)



BAR u_6(E)



BAR u_7(E)



BAR s_1(E)

BILL OF MATERIAL
EAST ABUTMENT

Bar	No.	Size	Length	Shape
a_1(E)	12	#6	13'-8"	
a_2(E)	36	#6	16'-2"	
b_1(E)	56	#6	14'-1"	
h_1(E)	24	#5	24'-5"	
h_4(E)	24	#5	5'-0"	
h_5(E)	6	#5	4'-0"	
h_6(E)	6	#5	6'-11"	
h_7(E)	6	#5	19'-8"	
h_8(E)	12	#6	19'-8"	
h_{11}(E)	16	#5	5'-11"	
h_{12}(E)	8	#5	17'-8"	
h_{13}(E)	15	#6	17'-8"	
h_{16}(E)	6	#5	10'-6"	
h_{17}(E)	12	#6	11'-0"	
h_{18}(E)	18	#5	10'-8"	
h_{19}(E)	18	#5	6'-6"	
h_{20}(E)	5	#5	8'-11"	
h_{21}(E)	10	#6	9'-2"	
p_3(E)	52	#8	60'-0"	
p_4(E)	20	#5	32'-0"	
s_1(E)	148	#6	21'-0"	
sp_2	6	#6	*34'-5"	
u_1(E)	26	#6	20'-5"	
u_2(E)	8	#5	10'-7"	
u_5(E)	21	#5	3'-4"	
u_6(E)	5	#5	18'-10"	
u_7(E)	5	#5	17'-4"	
v_1	192	#18	36'-11"	
v_2(E)	40	#5	7'-1"	
v_3(E)	40	#6	8'-4"	
v_4(E)	80	#5	9'-7"	
v_8(E)	38	#5	6'-6"	
v_{10}(E)	2	#5	7'-0"	
v_{11}(E)	32	#6	4'-3"	
v_{12}(E)	6	#5	11'-6"	
v_{13}(E)	2	#5	18'-6"	
v_{14}(E)	16	#5	11'-4"	
v_{15}(E)	22	#5	5'-8"	
Structure Excavation		Cu. Yds.	108	
Concrete Structures		Cu. Yds.	150.7	
Drilled Shaft in Soil		Cu. Yds.	148.9	
Drilled Shaft in Rock		Cu. Yds.	94.2	
Reinforcement Bars		Pound	118,320	
Reinforcement Bars, Epoxy Coated		Pound	22,290	
Crosshole Sonic Logging Access Ducts		Foot	1,357	

* Length is height of spiral

MIN. BAR LAPS FOR SPIRAL

#6 bars = 2'-7"

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FILE NAME =

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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

EAST ABUTMENT BILL OF MATERIAL
STRUCTURE 084-9962 - 6TH ST UPRR
SHEET NO. 28 OF 29 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
•	(109) VB,(110) VB-5	SANGAMON	382	261
		CONTRACT NO. 93733		
•666 & 666 ALT.	ILLINOIS FED. AID PROJECT			

B-145
Sta. 998+21, 66' LT
9/5/13

	N	Qu	w%	
601.0				
600.04				TOPSOIL
	8	4.50P	15	Brown very fine sandy clayey SILT, some brick and rock fragments - FILL.
	12	4.50P	16	
595.04				
	12	3.00P	21	Brown and gray very fine sandy SILT.
	8	1.44B	23	
590.04				
	7	3.00P	24	Brown very fine sandy SILT, some clay.
587.54				
	5	0.58B	26	Dark gray very fine sandy silty CLAY.
585.04				
	5	1.03B	24	Gray very fine sandy silty CLAY, trace small gravel.
	5	0.70B	22	
577.54				
	63	4.50P	16	Brown and gray SHALE. (HIGHLY WEATHERED SHALE)
572.54				
	50/4"		9	Gray SHALE.
	50/5"		8	
566.04	Rec. = 77% RQD = 73% Rec. = 90% RQD = 56%			Gray sandy SHALE, micaceous.
562.54	11.3 Rec. = 90% RQD = 48% Rec. = 99% RQD = 68%			Gray clayey SHALE.
558.04				Gray sandy SHALE, micaceous.
556.04	Rec. = 100% RQD = 46% Rec. = 67% RQD = 0%			COAL.
551.54				Bottom of Hole = 49.5 feet

B-146
Sta. 1000+74, 15' RT
9/11/13

	N	Qu	w%	
587.0				
586.61				ASPHALT.
585.86				CONCRETE.
	4		24	Dark gray very fine sandy silty CLAY.
583.53				
	4	0.66B	25	Blue-gray very fine to fine sandy silty CLAY.
	6	2.47S	19	
578.53				
	57	4.50P	14	Brown and gray SHALE. (HIGHLY WEATHERED SHALE)
576.03				
	50	4.50P	11	Gray SHALE.
	50/5"		11	
572.03	Rec. = 81% RQD = 19% Rec. = 88% RQD = 71%			Gray clayey SHALE, micaceous.
	12.7 Rec. = 75% RQD = 44% Rec. = 85% RQD = 51%			
	21.9 Rec. = 91% RQD = 78%			
556.5	Rec. = 100% RQD = 78%			Stiff to very stiff gray shaley CLAY.
553.5				Gray sandy SHALE, micaceous.
553.0				COAL.
552.0				Bottom of Hole = 35.0 feet

LEGEND

N	Standard Penetration Test N (blows/ft)
Qu	Unconfined Strength (tsf)
w%	Natural Moisture Content (%)
DD ▽ 558.10	Water Surface Elevation Encountered in Boring DD = during drilling Oh = at completion 24h = 24 hours after completion

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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SUBSURFACE DATA PROFILE
STRUCTURE 084-9962 - 6TH ST UPRR
SHEET NO. 29 OF 29 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
•	(109) VB,(110) VB-5	SANGAMON	382	262
		CONTRACT NO. 93733		
•666 & 666 ALT.	ILLINOIS FED. AID PROJECT			

Benchmark:
BM# D2218-07 - Chiseled 'X' on West Bolt of fire hydrant - SE Quad 6th Street and Wellesly Avenue.
Elevation = 598.884

Existing Structure: SN 084-9901 - Built in 1934 under 109-S-NRM. Three Span Steel through plate girder structure supported on closed abutments. Bk. to Bk. Abutment length is 116'-4" and ctr. to ctr. through girder width of 20'-0". Structure to be removed and replaced.

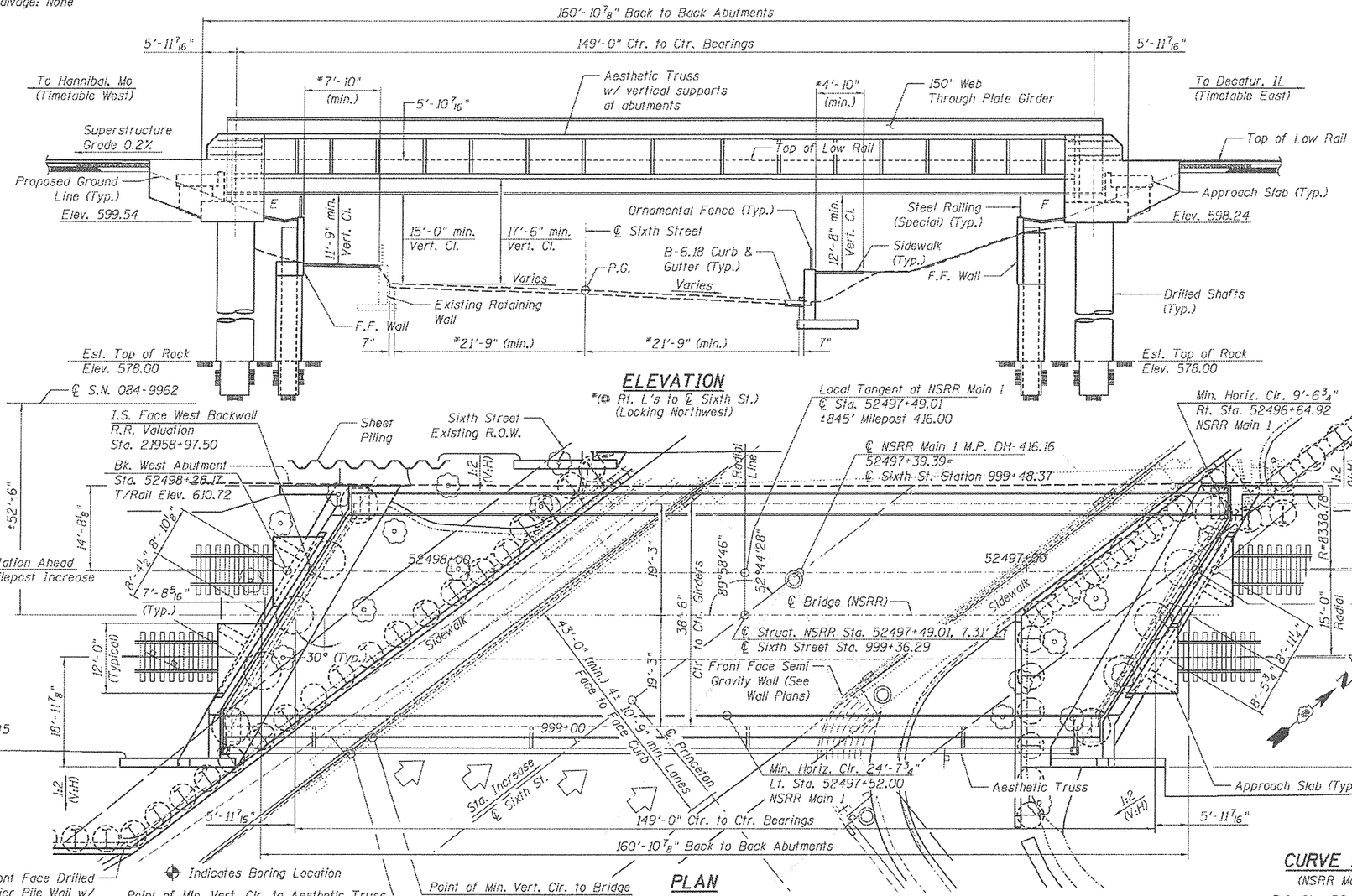
Construction Sequence: For Sequence and Details. See retaining wall General Data sheet.

Traffic Control: Temporary Lane Closures, Weekend and Ten Day Road Closures.

Salvage: None

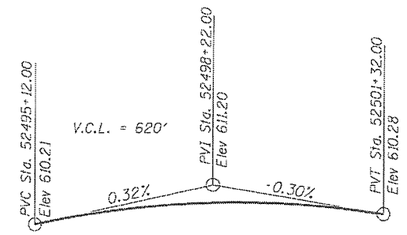
Railroad utilities may exist within existing NSRR right-of-way. Prior to the start of any construction or excavation, utility relocations will have to be coordinated with the NSRR.

APPROVED
For Structural Adequacy Only
Engineer of Bridges & Structures

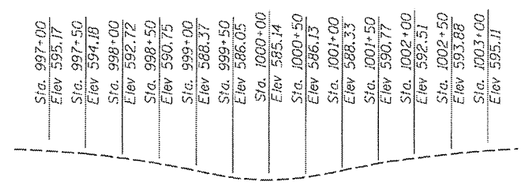


ELEVATION
*(℄ Rt. L's to ℄ Sixth St.)
(Looking Northwest)

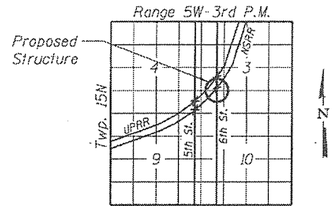
PLAN



PROFILE GRADE- NSRR MAIN 1
(Along Top of Low Rail)



EXISTING PROFILE GRADE
SIXTH STREET
Along ℄ of Sixth St.



LOCATION SKETCH

SEISMIC DATA
AREMA

Ground Motion Level	PGA	S_s	S_1
Level 1 (100 Year)	0.010	0.025	0.005
Level 2 (475 Year)	0.040	0.090	0.035
Level 3 (2475 Year)	0.10	0.22	0.10

Soil Site Class = C

LOADING COOPER E-80
Impact: Diesel Impact
Allow 6" of Future Ballast Dead Load

DESIGN SPECIFICATIONS
2017 AREMA Specifications
Live Load Deflection: L/640
Composite Design for Floorbeam Defl. Req.
Design Speed: 50 m.p.h.

DESIGN STRESSES
FIELD UNITS
f'c = 4,000 psi
fy = 60,000 psi (Reinforcement)
fy = 50,000 psi (ASTM A709 Grade 50)

CURVE DATA
(NSRR Main 1)

P.I. Sta. 52472+27.28
Δ = 37°24'51" (Rt.)
D = 0°41'14"
T = 2,823.67'
L = 5,445.19'
R = 8,338.78'
E = 465.10'
Long Chord = 5,348.99'
Mid. Ord. = 440.53'
S.E. = 1"
S.C. Sta. = 52444+03.61
C.S. Sta. = 52498+48.80

I certify that to the best of my knowledge, information and belief, this bridge design is structurally adequate for the design loading shown on the plans. The design is an economical one for the style of structure and complies with requirements of the current AREMA Specifications.

LICENSED STRUCTURAL ENGINEER
MATTHEW J. WILLEY
081-006388
STATE OF ILLINOIS

Matthew J Willey
SIGNATURE
6-26-2019
DATE
LIC. EXP. DATE 11-30-2020

GENERAL PLAN & ELEVATION
NSRR (MP DH-416.16) OVER BUSINESS 55 (6TH ST.)
F.A.P. 666-SECTION (109)VB, (110)VB-5
SANGAMON COUNTY
STATION 52497+49.01
STRUCTURE NO. 084-9963

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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

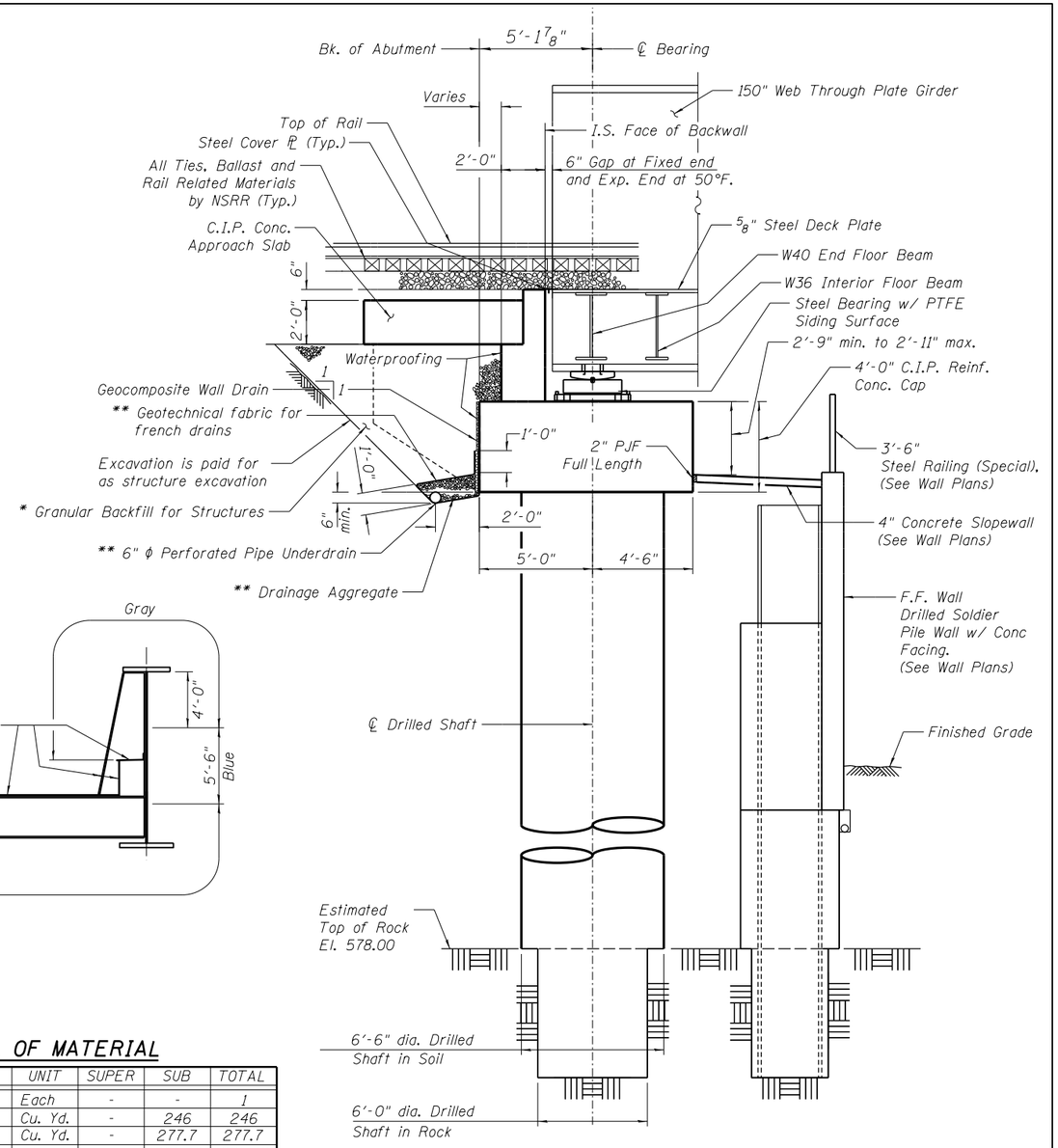
GENERAL PLAN & ELEVATION
STRUCTURE 084-9963 - 6TH ST NSRR
SHEET NO. 1 OF 29 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
*	(109) VB,(110) VB-5	SANGAMON	382	263
		CONTRACT NO. 93733		
*666 & 666 ALT.	ILLINOIS FED. AID PROJECT			

GENERAL NOTES

1. Fasteners shall be ASTM A325 Type 1, mechanically galvanized bolts. Bolts $\frac{7}{8}$in. ϕ, holes $\frac{15}{16}$in. ϕ, unless otherwise noted.
2. Calculated weight of Structural Steel, ASTM A709, Gr. 50 = 1,398,349 lbs.
   ASTM A36, Gr. 36 = 14,109 lbs.
   ASTM A500, Gr. 46 = 21,557 lbs.
3. All structural steel shall be ASTM A709 Grade 50 unless otherwise noted on the plans.
4. All substructure concrete shall have a compressive strength of 4,000 psi at 14 days.
5. No field welding is permitted except as specified in the contract documents.
6. Reinforcement bars designated (E) shall be epoxy coated.
7. Bearing seat surfaces shall be constructed or adjusted to the designated elevations within a tolerance of $\frac{1}{8}$ inch (0.01 ft.). Adjustment shall be made either by grinding the surface or by shimming the bearings.
8. Concrete Sealer shall be applied to the following surfaces:
   Abutments - inside face of backwall, inside face of cheekwall and top of cap (except surfaces coated with surface color treatment).
   Concrete Surface Color Treatment shall be applied to the following surfaces:
   Abutments - concrete facing, wingwall and cheekwall surfaces coated with concrete surface color treatment.
9. The Inorganic Zinc Rich Primer / Acrylic / Acrylic Paint System shall be used for shop and field painting of new structural steel except where otherwise noted. All coatings on faying surfaces shall satisfy RCSC requirements for Class B slip coefficient. The color of the final finish coat for girder flanges, all interior steel surfaces, bottom of deck plate, and aesthetic truss shall be gray, Munsell No. 5B 7/1. The color of the final finish coat for a 5.5 foot tall strip on the exterior face of girder web starting 4 foot down from the top flange shall be blue, Munsell No. 10B 3/6. See painting diagram for more information.
10. Waterproofing shall be applied to the backside of the abutment cap and backwall and backside of wingwalls for surfaces below ground. This shall be according to Article 503.18 of the Std. Spec. Cost included with Concrete Structures.
11. The existing stuctural steel coating contains lead. The Contractor shall take appropriate precautions to deal with the presence of lead on this project.

INDEX OF SHEETS



ABUTMENT SECTION

(At Rt. L's to Back of Abutment)

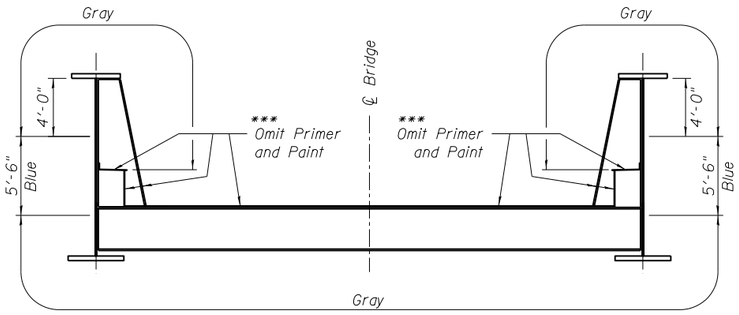
Notes:

West Abutment Section is Shown, East Similar with the Exception of a 5'-0" Deep Abutment Cap.

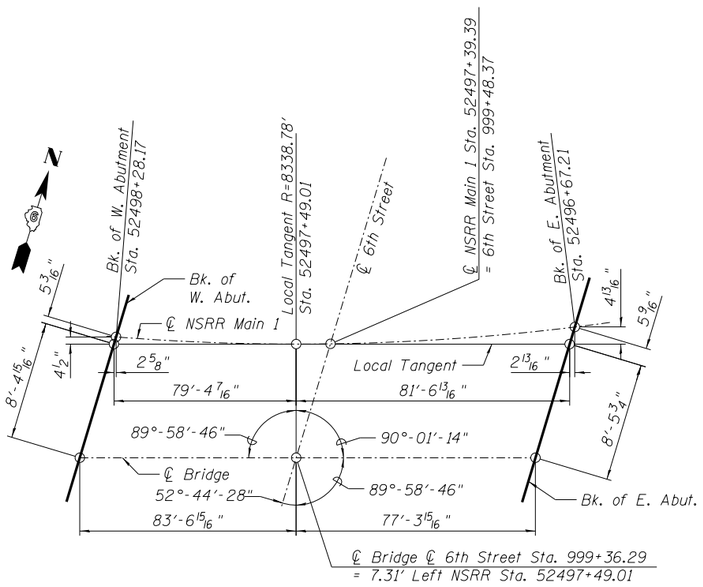
* Granular Backfill for Structures Shall Be Placed and Compacted According to Section 502.10 of the Standard Specifications.

** Included in the Cost of "Pipe Underdrains for Structures, 6". For Additional Drainage Details See Railway Plans.

*** Omit Primer and Paint only on portion of Structural Steel to receive Membrane Waterproofing



PAINTING DIAGRAM



OFFSET SKETCH

TOTAL BILL OF MATERIAL

ITEM	UNIT	SUPER	SUB	TOTAL
Removal of Existing Structures No. 4	Each	-	-	1
Structure Excavation	Cu. Yd.	-	246	246
Concrete Structures	Cu. Yd.	-	277.7	277.7
Reinforcement Bars	Pound	-	206,790	206,790
Reinforcement Bars, Epoxy Coated	Pound	-	44,530	44,530
Name Plates	Each	-	1	1
Drilled Shaft in Soil	Cu. Yd.	-	256.8	256.8
Drilled Shaft in Rock	Cu. Yd.	-	162.4	162.4
Membrane Waterproofing (Special)	Sq. Ft.	5,906	-	5,906
Concrete Sealer	Sq. Ft.	-	1,515	1,515
Geocomposite Wall Drain	Sq. Yd.	-	52	52
Drainage System, No. 4	Each	1	-	1
Concrete Surface Color Treatment	Sq. Ft.	-	12	12
Granular Backfill for Structures	Cu. Yd.	-	182	182
Furnishing and Erecting Structural Steel, Bridge No. 4	L. Sum	1	-	1
Pipe Underdrains for Structures, 6''	Foot	-	161	161

NORFOLK SOUTHERN RAILWAY
S.N. 084-9963 BUILT 20__ BY
CITY OF SPRINGFIELD
SEC. (109)VB, (110)VB-5
STATION 52497+49.01
MILE POST DH-416.16
LOADING COOPER E-80

NAME PLATE

See Std. 515001

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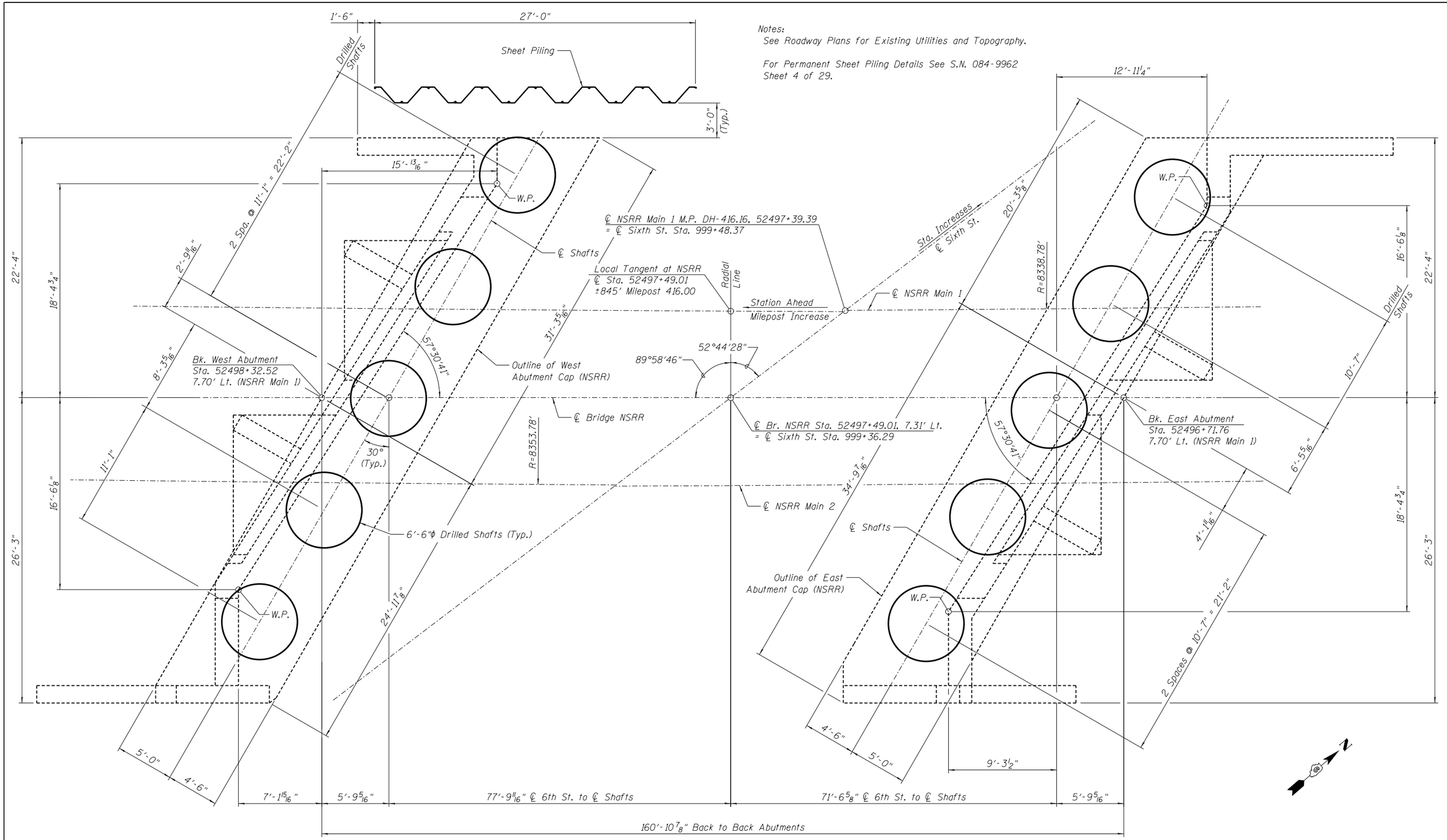
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

GENERAL DATA
STRUCTURE 084-9963 - 6TH ST NSRR
SHEET NO. 2 OF 29 SHEETS

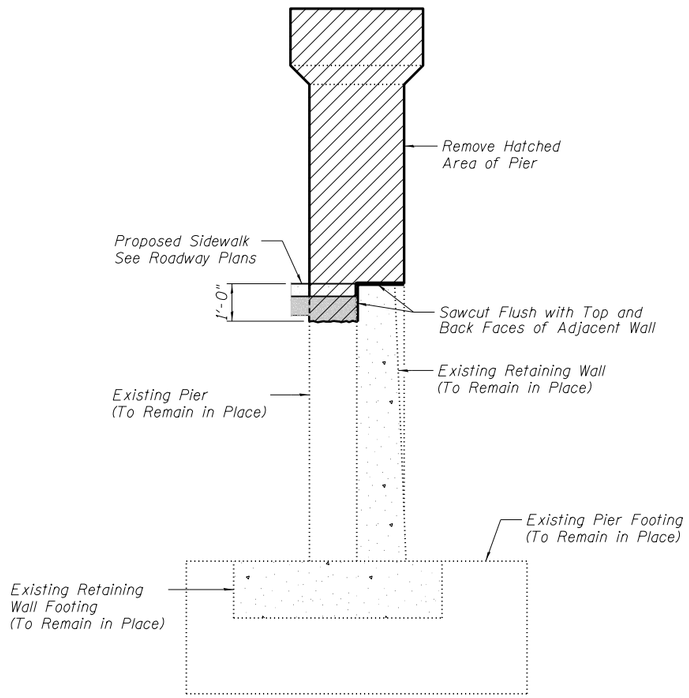
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
•	(109) VB,(110) VB-5	SANGAMON	382	264
		CONTRACT NO. 93733		
•666 & 666 ALT.	ILLINOIS FED. AID PROJECT			

Notes:
See Roadway Plans for Existing Utilities and Topography.

For Permanent Sheet Piling Details See S.N. 084-9962
Sheet 4 of 29.

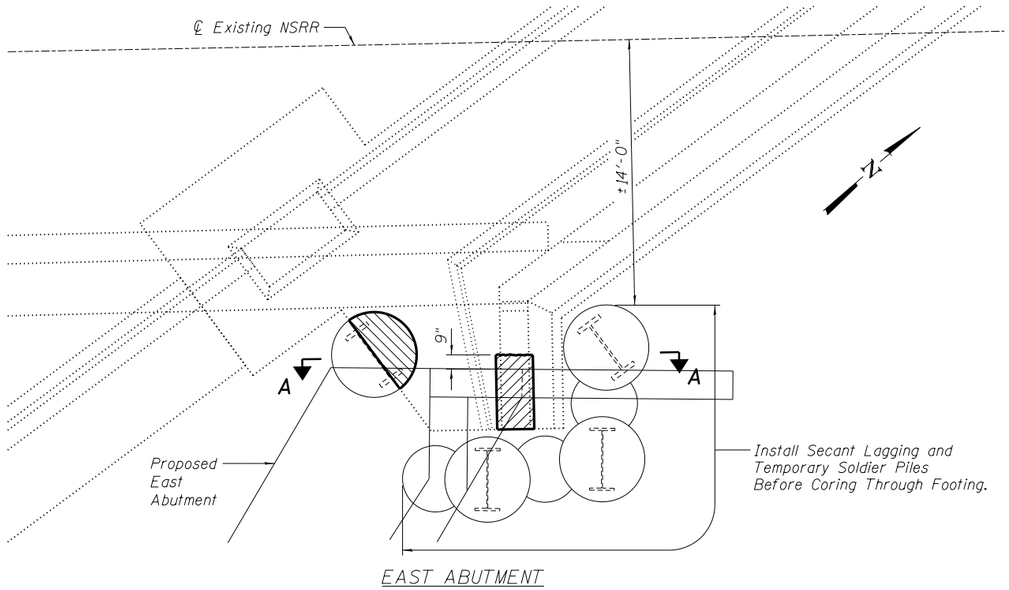


FOUNDATION LAYOUT PLAN



EXISTING STRUCTURE REMOVAL AT PIER

(Typical of 4 Locations)



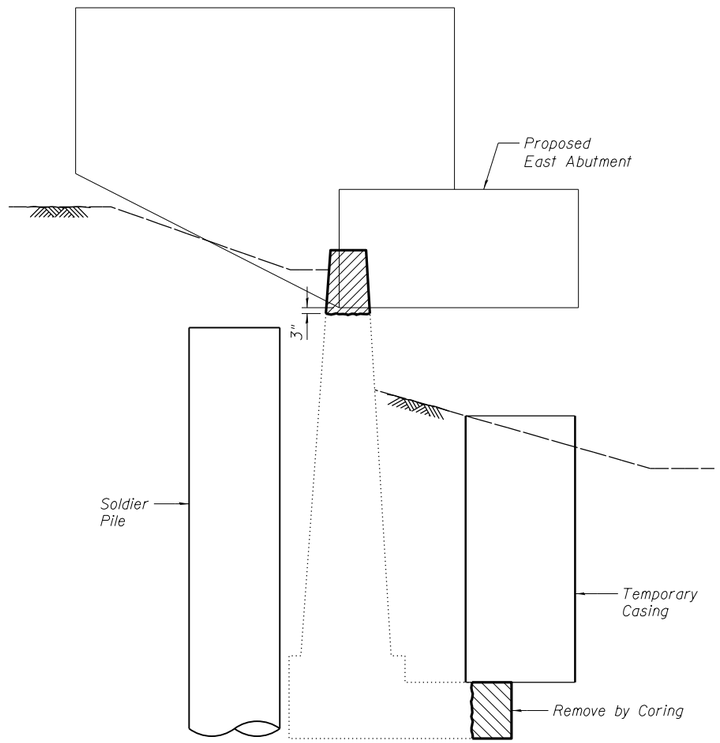
EAST ABUTMENT

STAGE 1 REMOVAL OF EXISTING STRUCTURES

LEGEND

Footing Removal

Stem Removal



SECTION A-A

Existing Structure Removal Notes:

See Retaining Wall Plans for construction staging notes and details of temporary and permanent soldier piles, and secant lagging.

During Stage 1, removal shall be limited to the areas shown. Coring of footing shall be no more than 3 inches beyond the neat perimeter of the soldier pile excavation.

The portion of existing wingwall stem that conflicts with the proposed abutment shall be removed to the limits shown in accordance with Article 501.05 of the Standard Specifications.

Removal of the remainder of existing structure shall be completed after active track has been shifted to new bridge.

Cost of staged removal shall be included with Removal of Existing Structures No. 4.

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HANSON

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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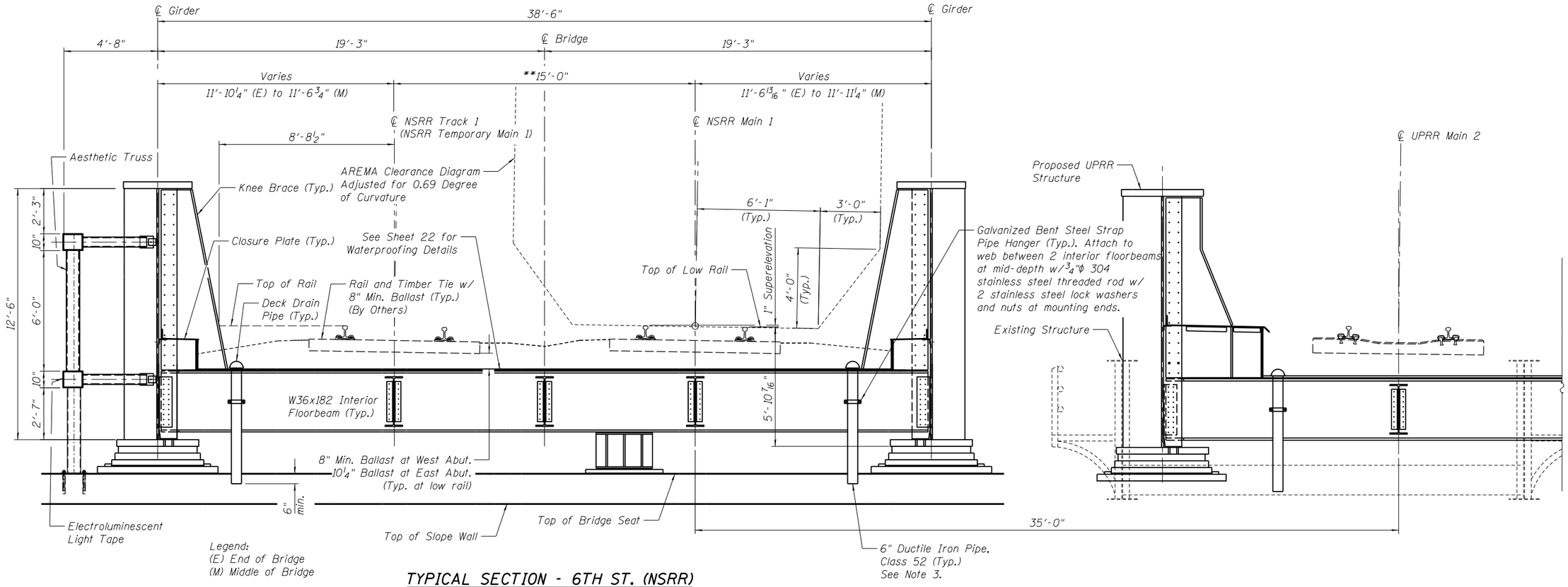
		CONTRACT NO. 93733		
•666 & 666 ALT.	ILLINOIS FED. AID PROJECT			



TYPICAL SECTION - 6TH ST. (NSRR)

(Looking West)

**Dimensions are at Rt L's to ℄ Track.

Notes:

1. Retaining Wall and Steel Railing not shown for clarity.
2. Drain pipe on east end only near low end of bridge deck.
3. With the ductile iron pipe fitted to the bottom of the deck drain bottom pan downspout, drill 4 holes through ductile iron pipe and downspout. Holes shall be aligned with the 4 quadrants of the pipe. Attach ductile iron pipe to downspout with 4 stainless steel carriage bolts. Rounded heads of carriage bolts shall be oriented towards the center of the pipe.
4. Cost of deck drain pipe, bottom pan, downspout, brackets and other hardware shall be included in the cost of Drainage System.

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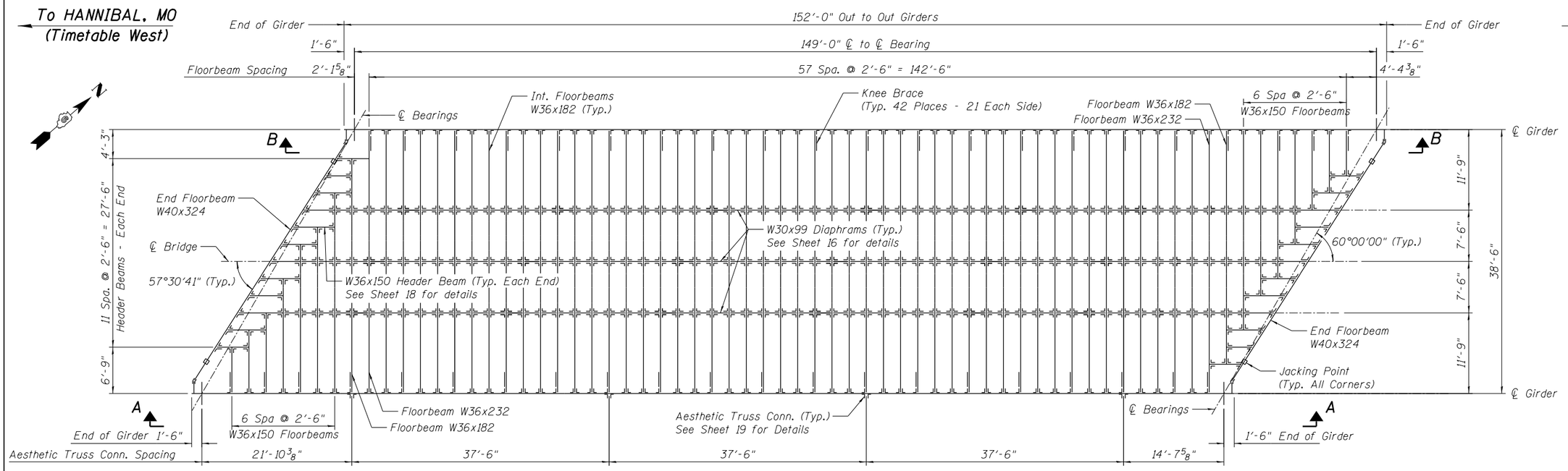
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

TYPICAL SECTION
STRUCTURE 084-9963 - 6TH ST NSRR
SHEET NO. 5 OF 29 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
•	(109) VB,(110) VB-5	SANGAMON	382	267
		CONTRACT NO. 93733		
•666 & 666 ALT.	ILLINOIS	FED. AID PROJECT		



FRAMING PLAN

See Sheet 7 & 8 for View A-A
See Sheet 9 & 10 for Section B-B

STEEL NOTES

GENERAL: All materials, fabrication, and erection shall be in accordance with chapter 15 of the current AREMA Manual for Railway Engineering.

Dead Load: (assumed)

Rail	400
Ballast (Incl. Tie)	4,760
Waterproofing	200
Future Ballast	2,590
Steel	9,450
Total	17,400 lbs. per lin ft. of track

MATERIAL: Zone 2 Conditions control for Charpy V-Notch testing.

Fracture Critical Members (FCM) shall be Charpy V-Notch tested, according to AREMA Table 15-9-3, Zone 2, P frequency in accordance with ASTM A673.

Impact Test Required (ITR) members shall be Charpy V-Notch (CVN) tested, according to AREMA Table 15-9-2, Zone 2, H frequency in accordance with ASTM A673.

FABRICATION: The top surface of beams shall be adjusted to form a straight line at any transverse section throughout the span. Tolerance is plus or minus 1/8".

SPLICE NOTES:

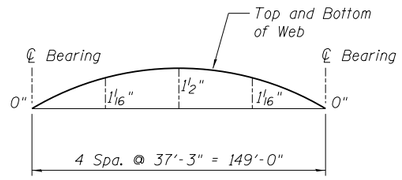
1. No two parts or members shall be spliced by shop welding at the same location, or within the length of a bolted field splice.
2. Web splices by shop welding shall be located a minimum of 36" away from any flange splice.
3. Splices of the web or flanges shall not be permitted within the central 30'-0" of the girder span length. This requirement may be waived only by the approval of the Engineer.

TOP OF TIE	TO MASONRY	TO CLEARANCE
Tie	7"	7"
Ballast	8"	8"
Waterproofing	1 1/8"	1 1/8"
Ballast pan	5/8"	5/8"
Floorbeam & Flange	3'-9"	3'-9"
Flange splice plate		2 1/4"
Bolt Head		3/4"
Bearing	1'-4 3/8"	
Total	6'-6 1/8"	5'-4 3/4"

MOMENT & SHEAR TABLE FOR STEEL THRU PLATE GIRDER

DESCRIPTION	MOMENT	SHEAR
Dead Load	24,144 ft. -k	648 k
Live Load	28,965 ft. -k	854 k
Impact	6,839 ft. -k	202 k
Total	59,948 ft. -k	1,704 k
Section	See Sheet 12 of 29	
Steel	A.S.T.M. A709, Gr. 50	
Net I	2,200,778 in⁴	
Net S (Bot.)	27,222 in³	
fst (Bot.)	26.5 ksi	
Gross I	2,397,326 in⁴	
Gross S (Top)	29,041 in³	
fsc (Top.)	24.8 ksi	

I- Moment of Inertia of the Section
S- Section Modulus
fs- Max. Unfactored Stress in the Section Due to D.L + L.L. + Impact



CAMBER DIAGRAM

Camber Calculated for Dead Load Only

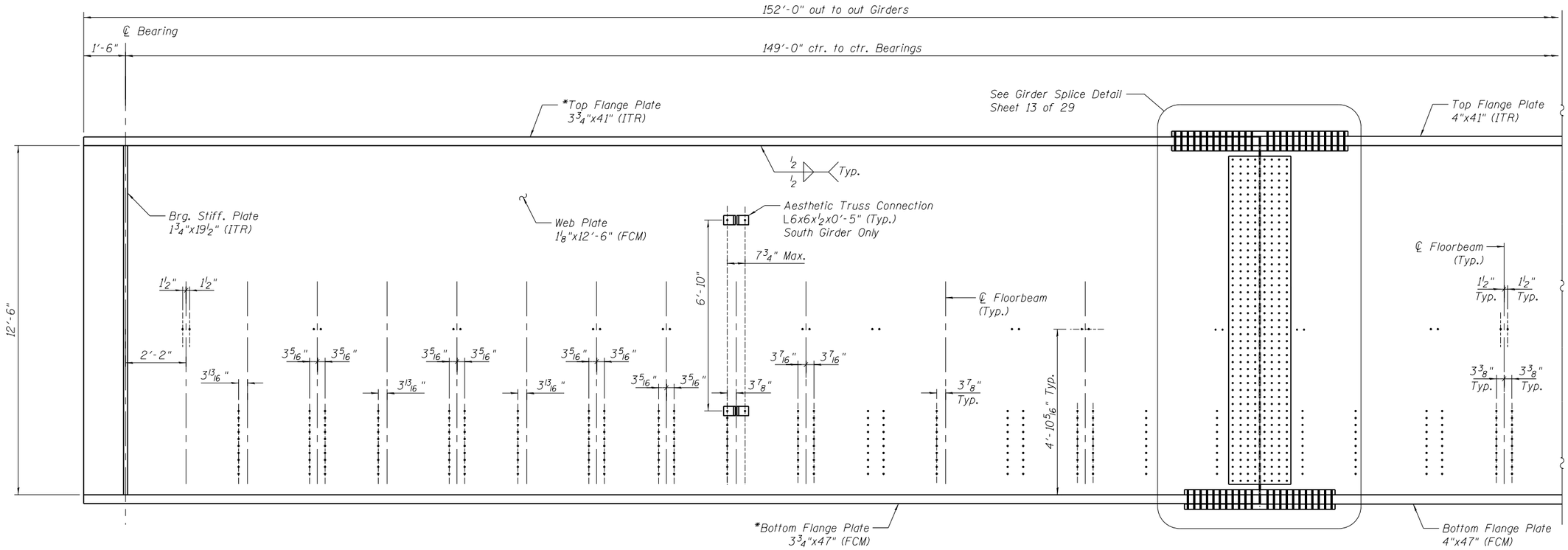
MOMENT & SHEAR TABLE FOR STEEL FLOORBEAMS

DESCRIPTION	MOMENT	SHEAR	MOMENT *	SHEAR *
Dead Load	163 ft. -k	16.1 k	3,565 ft. -k	648 k
Live Load	713 ft. -k	59.9 k		
Impact	239 ft. -k	21.4 k		
Total	1,115 ft. -k	97.4 k	3,565 ft. -k	648 k
Section	W36x182		W40x324	
Steel	A.S.T.M. A709, Gr. 50		A.S.T.M. A709, Gr. 50	
Net I	11,026 in⁴		22,636 in⁴	
Net S	607 in³		1,126 in³	
fs	22.0 ksi		38.0 ksi	

* Jacking Conditions Control 50% Allowable Stress Increase is Permitted

To HANNIBAL, MO
(Timetable West)

To DECATUR, IL
(Timetable East)



Note:
1. FCM - Fracture Critical Member
2. ITR- Impact Test Required

VIEW A-A - OUTSIDE ELEVATION OF GIRDER

* Alternate larger 4" flange thickness is permitted throughout to facilitate material acquisition. Calculated weight of structural steel is based on lighter section. Calculated girder stresses are based on heavier section. The alternate, if utilized, shall be provided at no additional cost to the Department.

FINAL

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	PLOT DATE = 6/26/2019	CHECKED - MJW	REVISED -

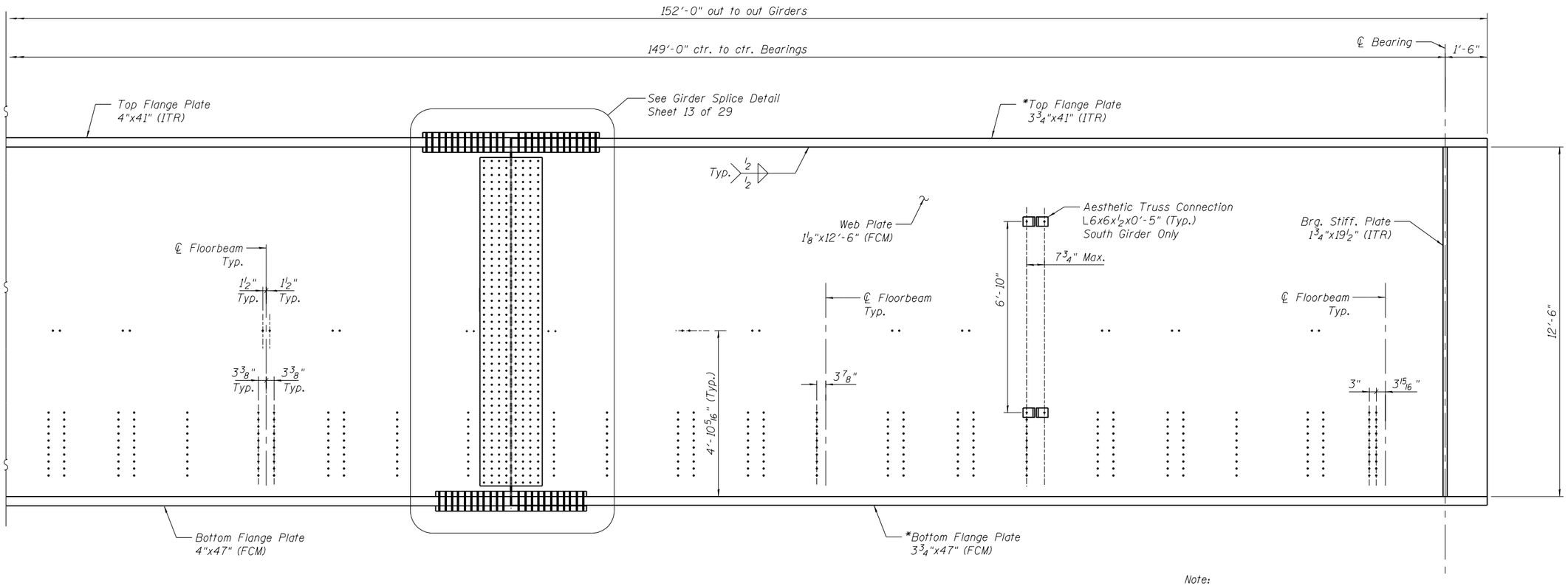
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

OUTSIDE ELEVATION OF GIRDER – SHEET 1 OF 2
STRUCTURE 084-9963 – 6TH ST NSRR
SHEET NO. 7 OF 29 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
•	(109) VB,(110) VB-5	SANGAMON	382	269
		CONTRACT NO. 93733		
•666 & 666 ALT.	ILLINOIS FED. AID PROJECT			

To HANNIBAL, MO
(Timetable West)

To DECATUR, IL
(Timetable East)



Note:
1. FCM - Fracture Critical Member
2. ITR- Impact Test Required

VIEW A-A - OUTSIDE ELEVATION OF GIRDER

* Alternate larger 4" flange thickness is permitted throughout to facilitate material acquisition. Calculated weight of structural steel is based on lighter section. Calculated girder stresses are based on heavier section. The alternate, if utilized, shall be provided at no additional cost to the Department.

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USER NAME = Pop00275	DESIGNED - MJW	REVISED -	
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PLOT DATE = 6/26/2019	CHECKED - MJW	REVISED -	

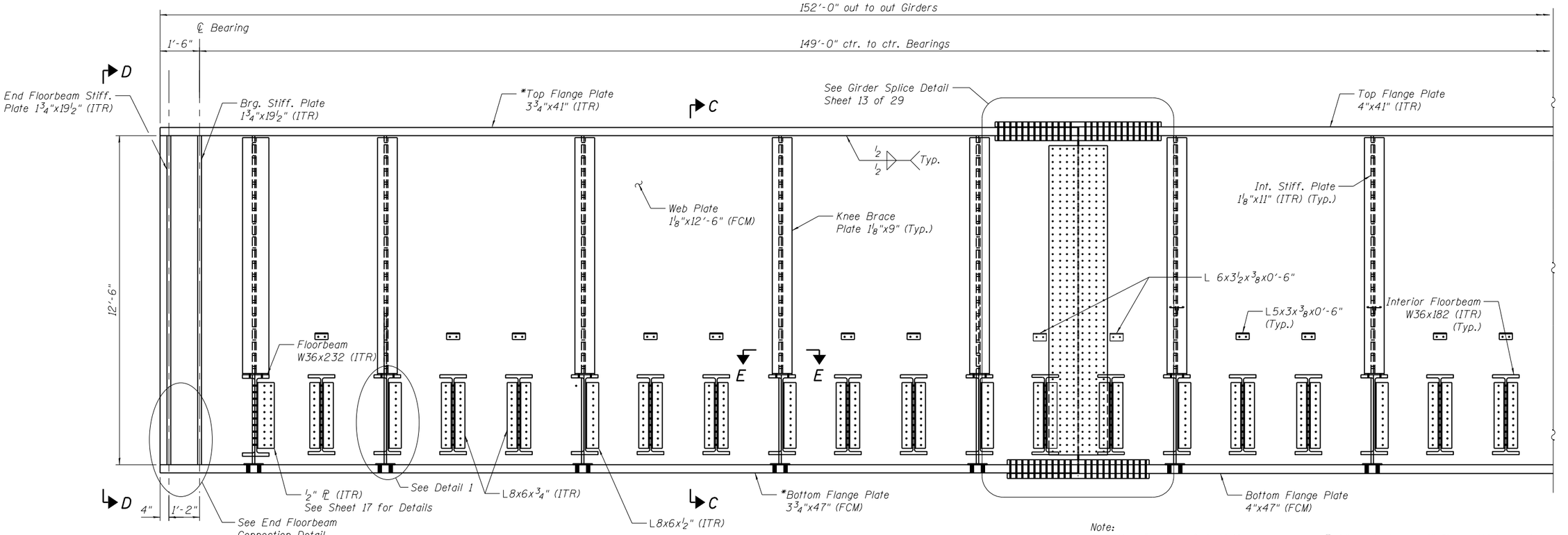
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

OUTSIDE ELEVATION OF GIRDER – SHEET 2 OF 2
STRUCTURE 084-9963 – 6TH ST NSRR
SHEET NO. 8 OF 29 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
•	(109) VB,(110) VB-5	SANGAMON	382	270
		CONTRACT NO. 93733		
•666 & 666 ALT.	ILLINOIS FED. AID PROJECT			

To HANNIBAL, MO
(Timetable West)

To DECATUR, IL
(Timetable East)

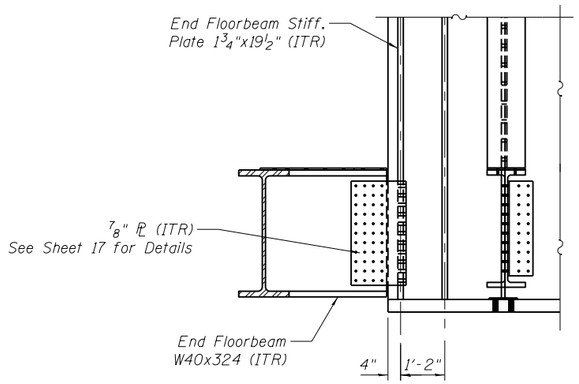


SECTION B-B - INSIDE ELEVATION OF GIRDER

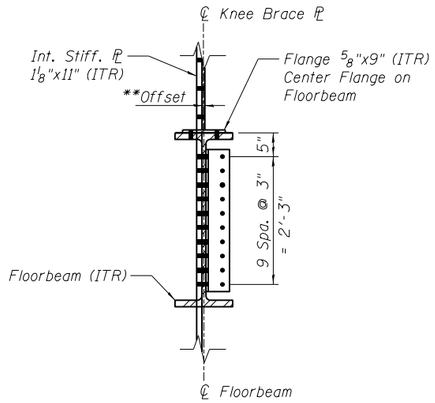
See Sheet 11 of 29 for Section C-C & D-D.

Note:
1. FCM - Fracture Critical Member
2. ITR- Impact Test Required

* Alternate larger 4" flange thickness is permitted throughout to facilitate material acquisition. Calculated weight of structural steel is based on lighter section. Calculated girder stresses are based on heavier section. The alternate, if utilized, shall be provided at no additional cost to the Department.

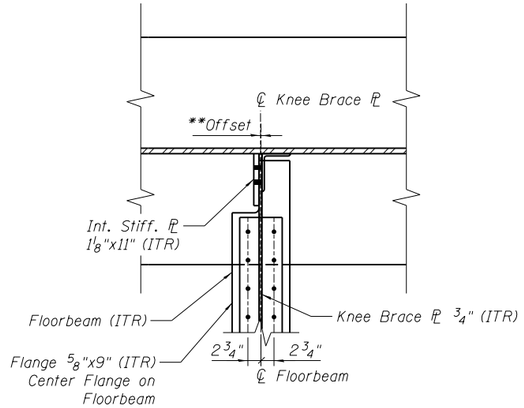


END FLOORBEAM CONNECTION



DETAIL 1

**See Table for Offset Dimension



SECTION E-E

**See Table for Offset Dimension

KNEE BRACE PLATE OFFSETS

FLOORBEAM SHAPE	OFFSET
W36x150	-1/16"
W36x182	0"
W36x232	1/16"

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PLOT DATE = 6/26/2019	CHECKED - MJW	REVISED -	

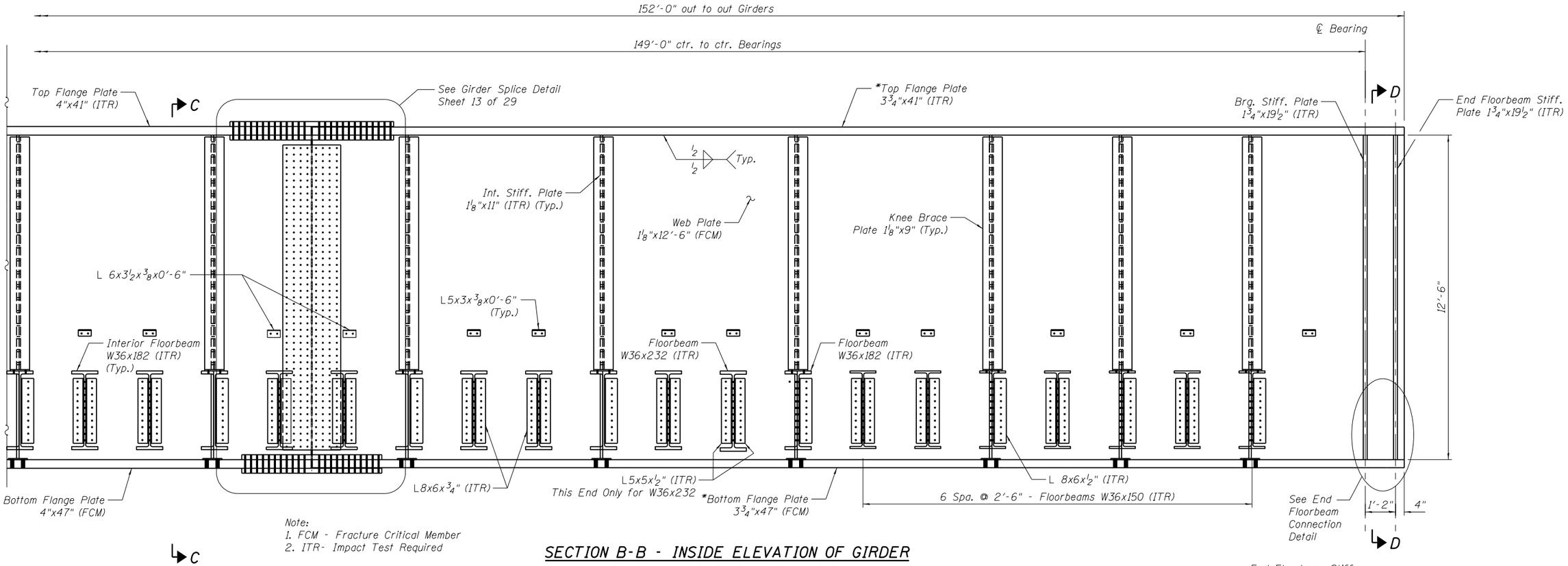
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

INSIDE ELEVATION OF GIRDER - SHEET 1 OF 2
STRUCTURE 084-9963 - 6TH ST NSRR
SHEET NO. 9 OF 29 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
•	(109) VB,(110) VB-5	SANGAMON	382	271
		CONTRACT NO. 93733		
•666 & 666 ALT.	ILLINOIS FED. AID PROJECT			

To HANNIBAL, MO
(Timetable West)

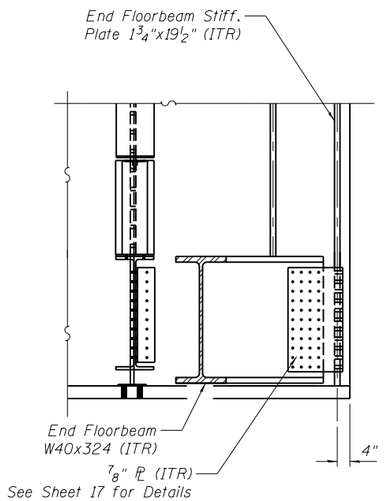
To DECATUR, IL
(Timetable East)



Note:
1. FCM - Fracture Critical Member
2. ITR- Impact Test Required

SECTION B-B - INSIDE ELEVATION OF GIRDER

See Sheet 11 of 29 for Section C-C & D-D.



END FLOORBEAM CONNECTION DETAIL

* Alternate larger 4" flange thickness is permitted throughout to facilitate material acquisition. Calculated weight of structural steel is based on lighter section. Calculated girder stresses are based on heavier section. The alternate, if utilized, shall be provided at no additional cost to the Department.

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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

INSIDE ELEVATION OF GIRDER – SHEET 2 OF 2
STRUCTURE 084-9963 – 6TH ST NSRR
SHEET NO. 10 OF 29 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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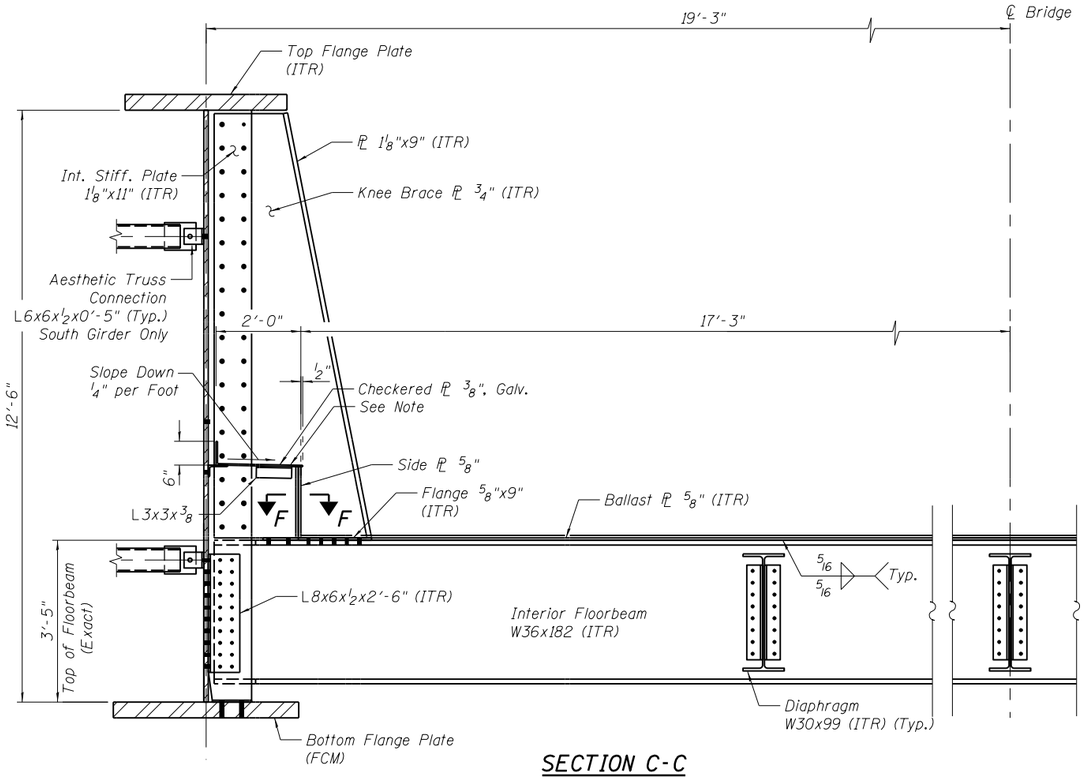
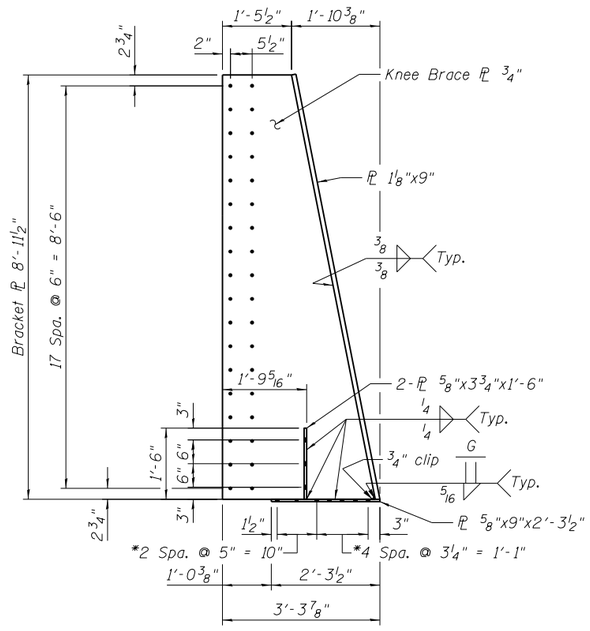
		CONTRACT NO. 93733		
•666 & 666 ALT.	ILLINOIS FED. AID PROJECT			

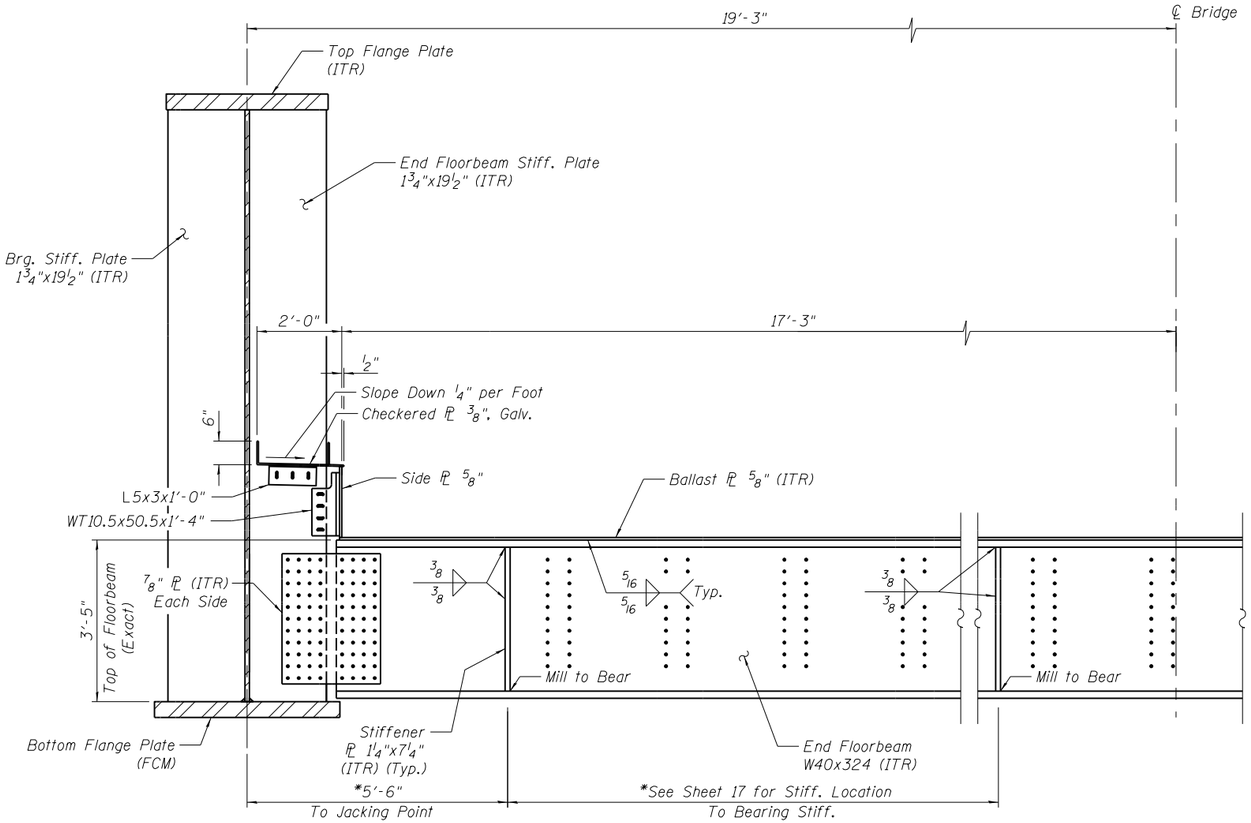


SECTION C-C



KNEE BRACE

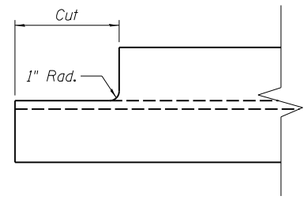
*See Detail 1 on Sheet 9 for Hole Locations.



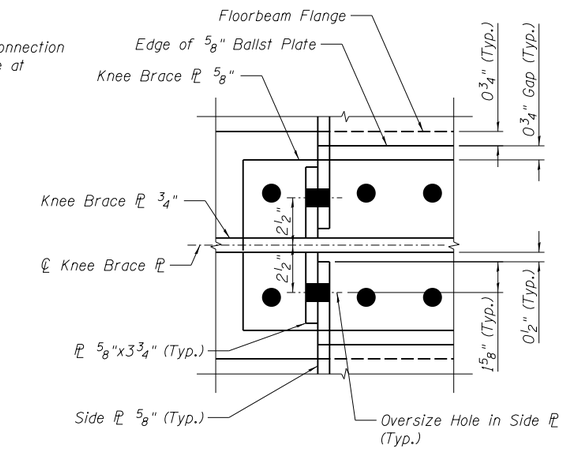
SECTION D-D

*(Along End Floorbeam ℄)

Note:
For Location of L3x3x3/8, Welding and Bolted Connection to Closure Plate See Plan View of Closure Plate at Knee Brace on Sheet 15.



FLOORBEAM COPE AT INTERIOR STIFFENER



SECTION F-F

Weld Ballast Plate to Floorbeam as shown in Section I-I on Sheet 15

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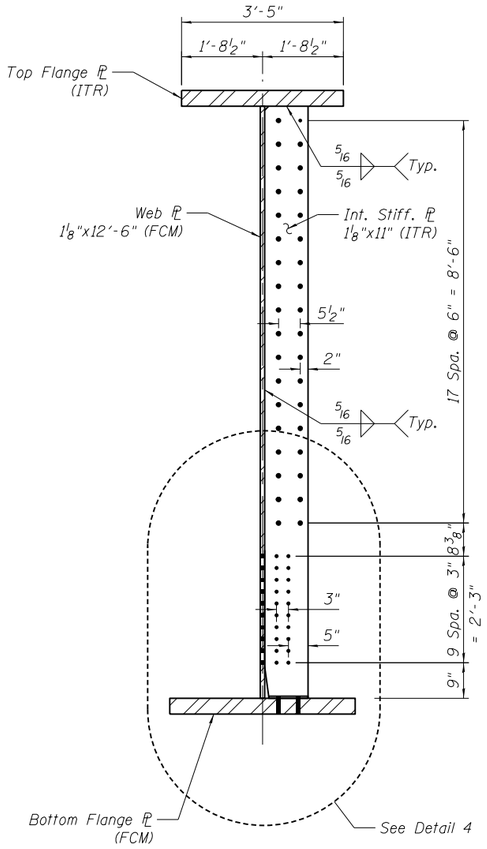
	PLOT DATE = 6/26/2019	CHECKED - MJW	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

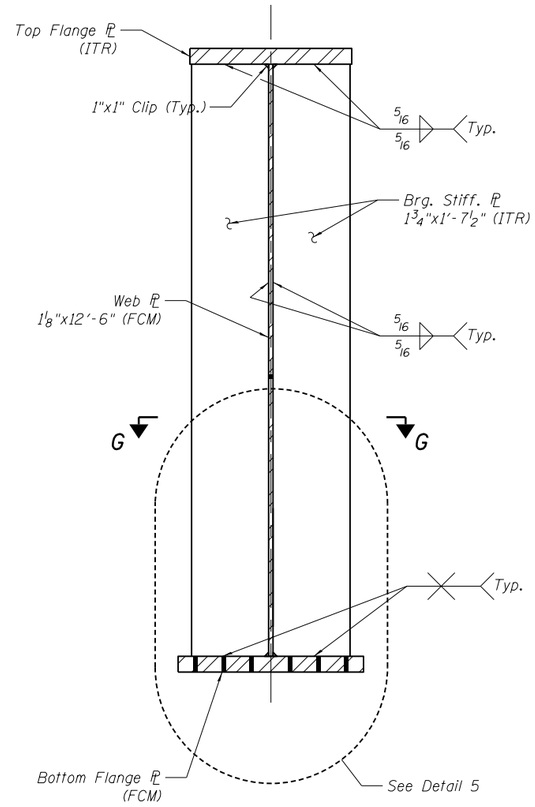
TYPICAL SECTIONS
STRUCTURE 084-9963 - 6TH ST NSRR
SHEET NO. 11 OF 29 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
•	(109) VB,(110) VB-5	SANGAMON	382	273
		CONTRACT NO. 93733		
•666 & 666 ALT.	ILLINOIS FED. AID PROJECT			

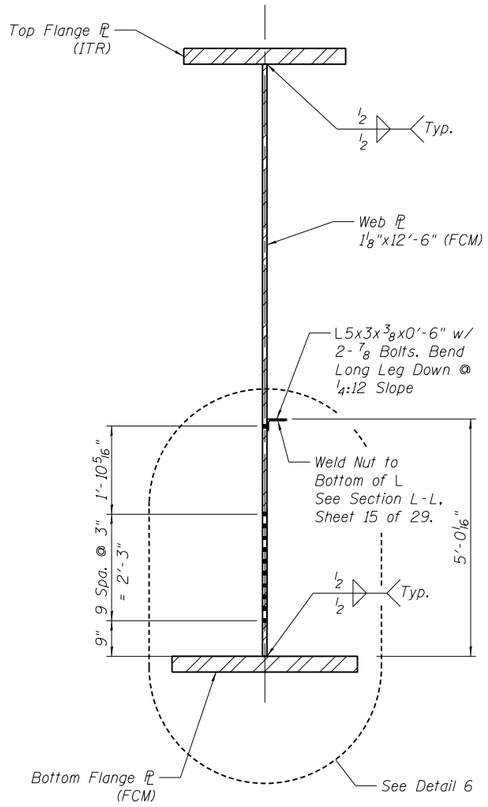


TYPICAL SECTION AT INT. STIFFENER AND KNEE BRACE

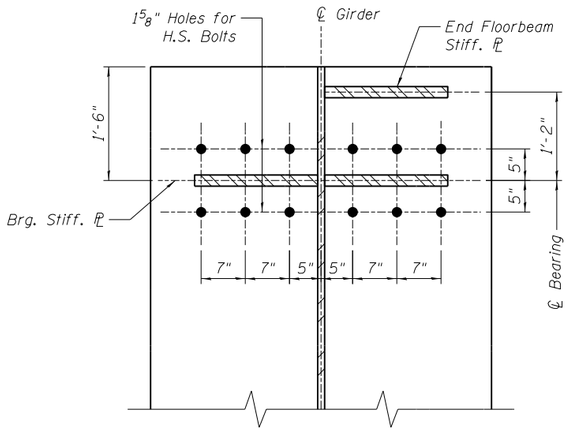
(Knee Brace Omitted for Clarity)



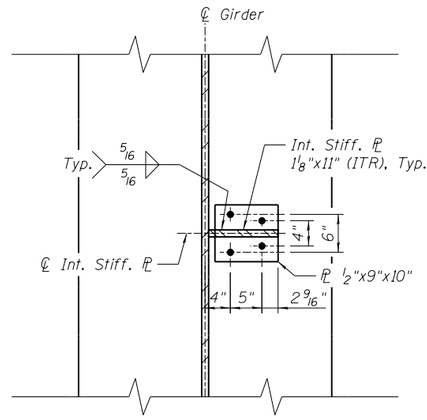
TYPICAL SECTION AT BEARING STIFFENER



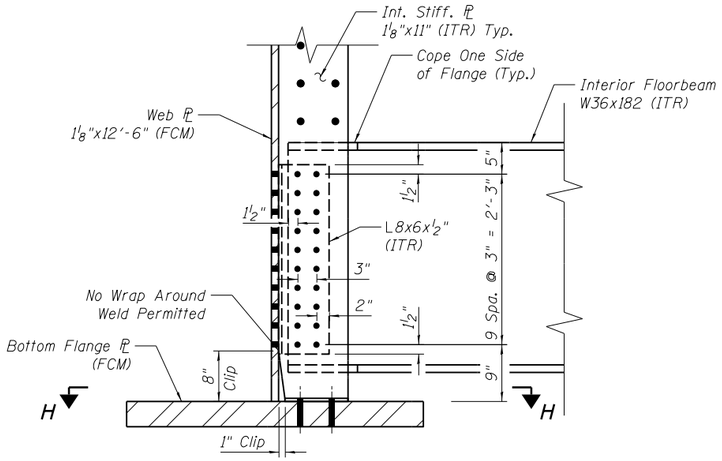
TYPICAL SECTION AT CHECKERED PLATE SUPPORT



SECTION G-G

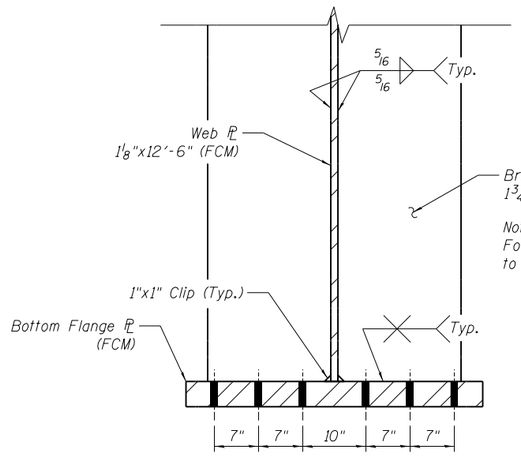


SECTION H-H



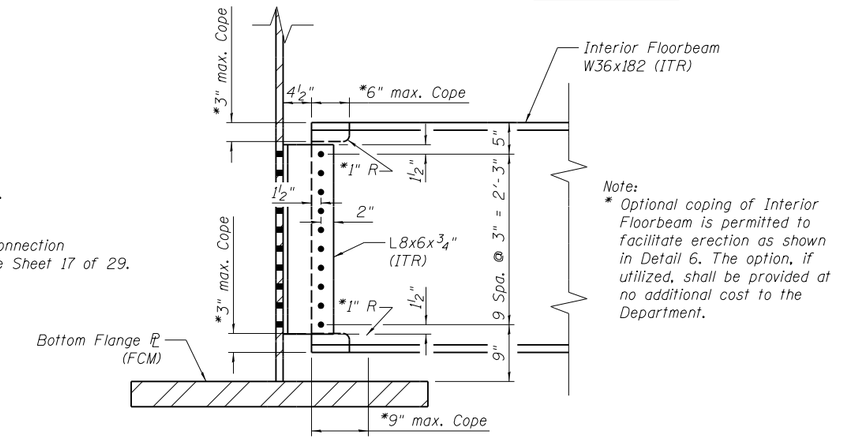
DETAIL 4

Typical for Interior Stiffener Unless Otherwise Noted (Knee Brace Omitted for Clarity)



DETAIL 5

Typical at Bearing Stiffener



DETAIL 6

Typical Floorbeam Connection Between Interior Stiffeners

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	PLOT DATE = 6/26/2019	CHECKED - MJW	REVISED -

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DEPARTMENT OF TRANSPORTATION

GIRDER SECTIONS & DETAILS
STRUCTURE 084-9963 - 6TH ST NSRR
SHEET NO. 12 OF 29 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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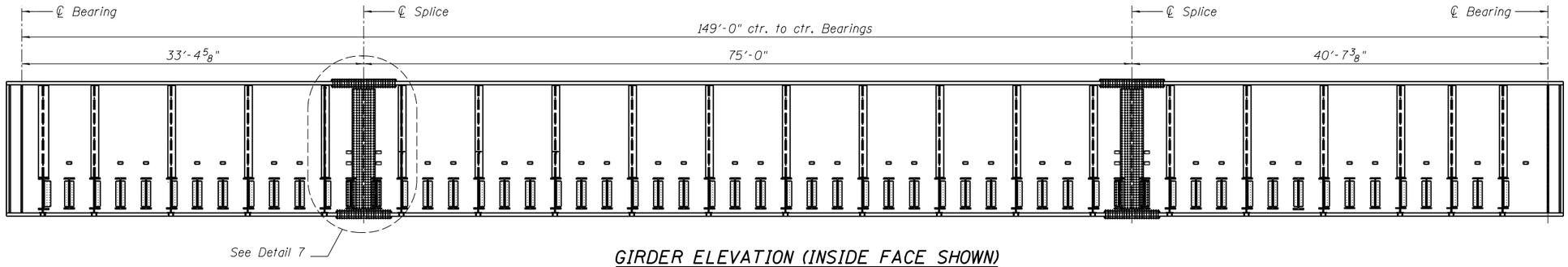
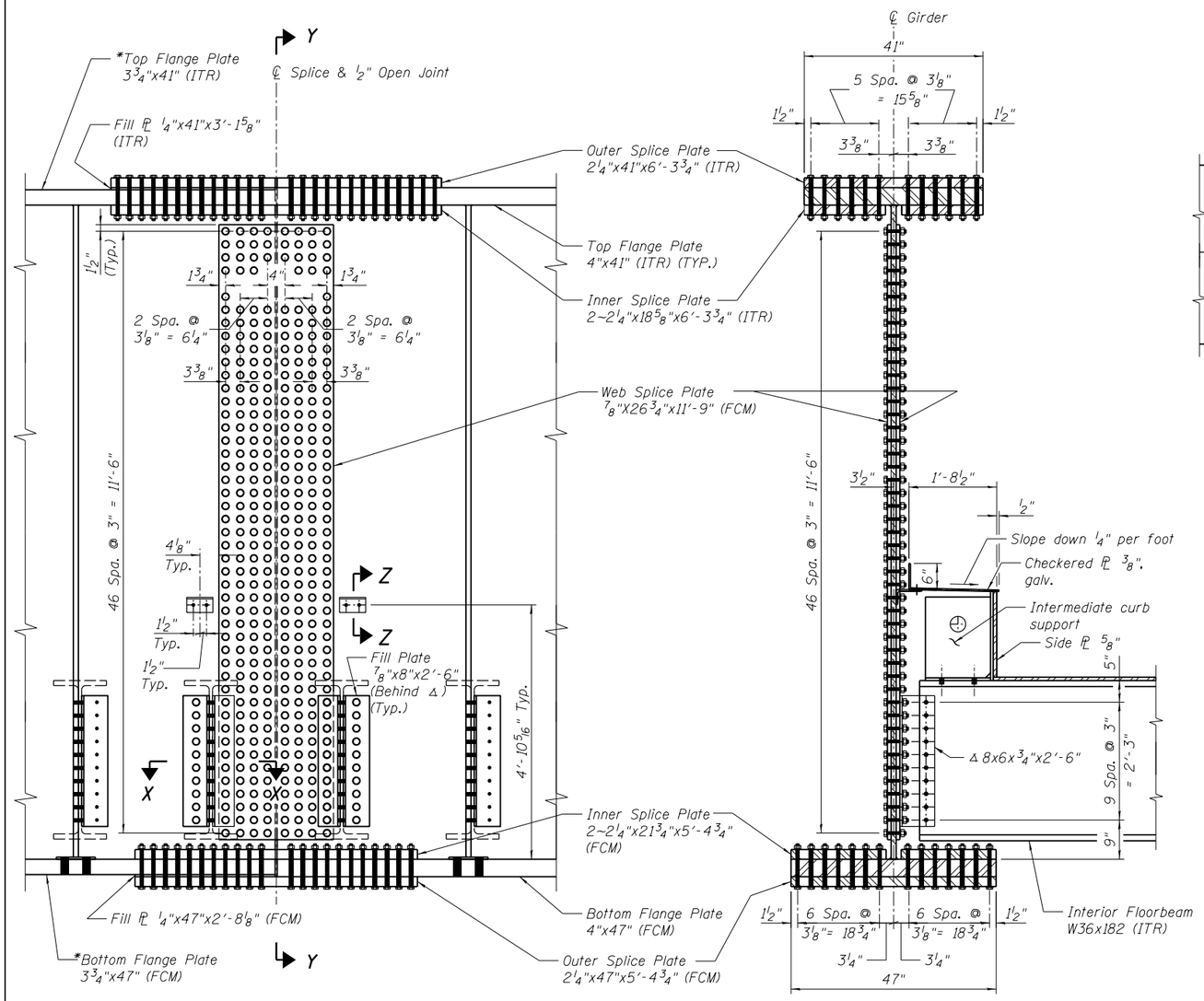
		CONTRACT NO. 93733		
•666 & 666 ALT.	ILLINOIS FED. AID PROJECT			

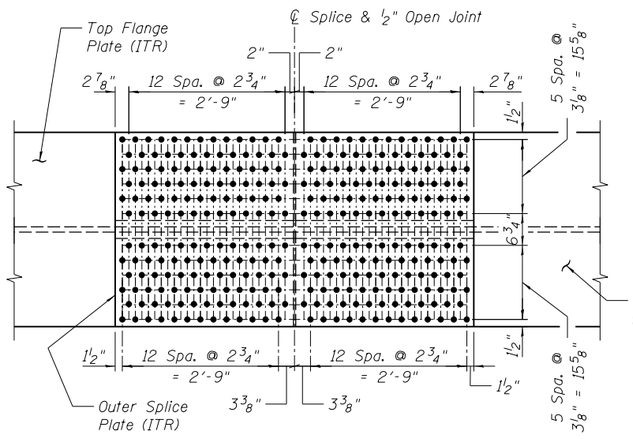


GIRDER ELEVATION (INSIDE FACE SHOWN)



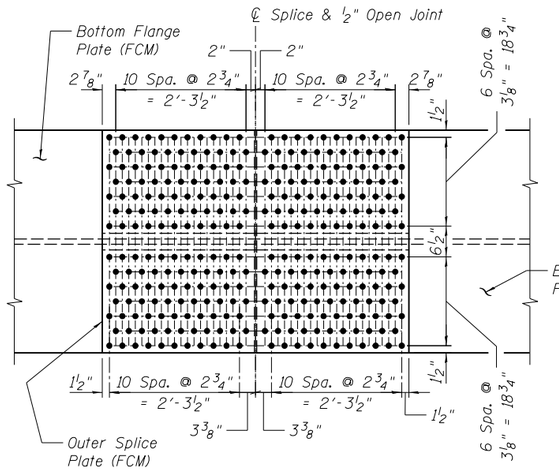
DETAIL 7

SECTION Y-Y



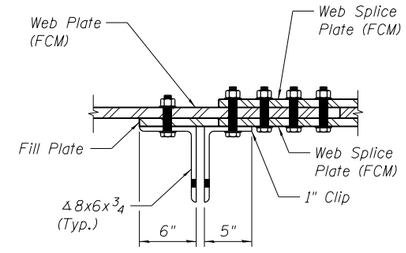
TOP FLANGE PLAN

(Looking Down)

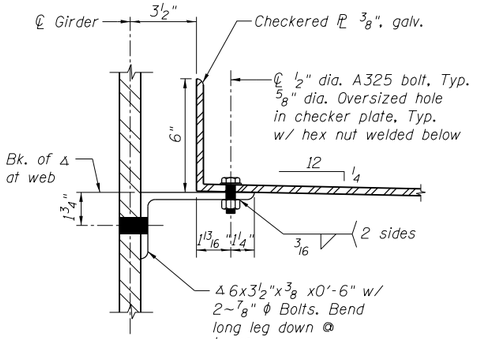


BOTTOM FLANGE PLAN

(Looking Up)



SECTION X-X



SECTION Z-Z

* Alternate larger 4" flange thickness is permitted throughout to facilitate material acquisition. Calculated weight of structural steel is based on lighter section. Calculated girder stresses are based on heavier section. The alternate, if utilized, shall be provided at no additional cost to the Department.

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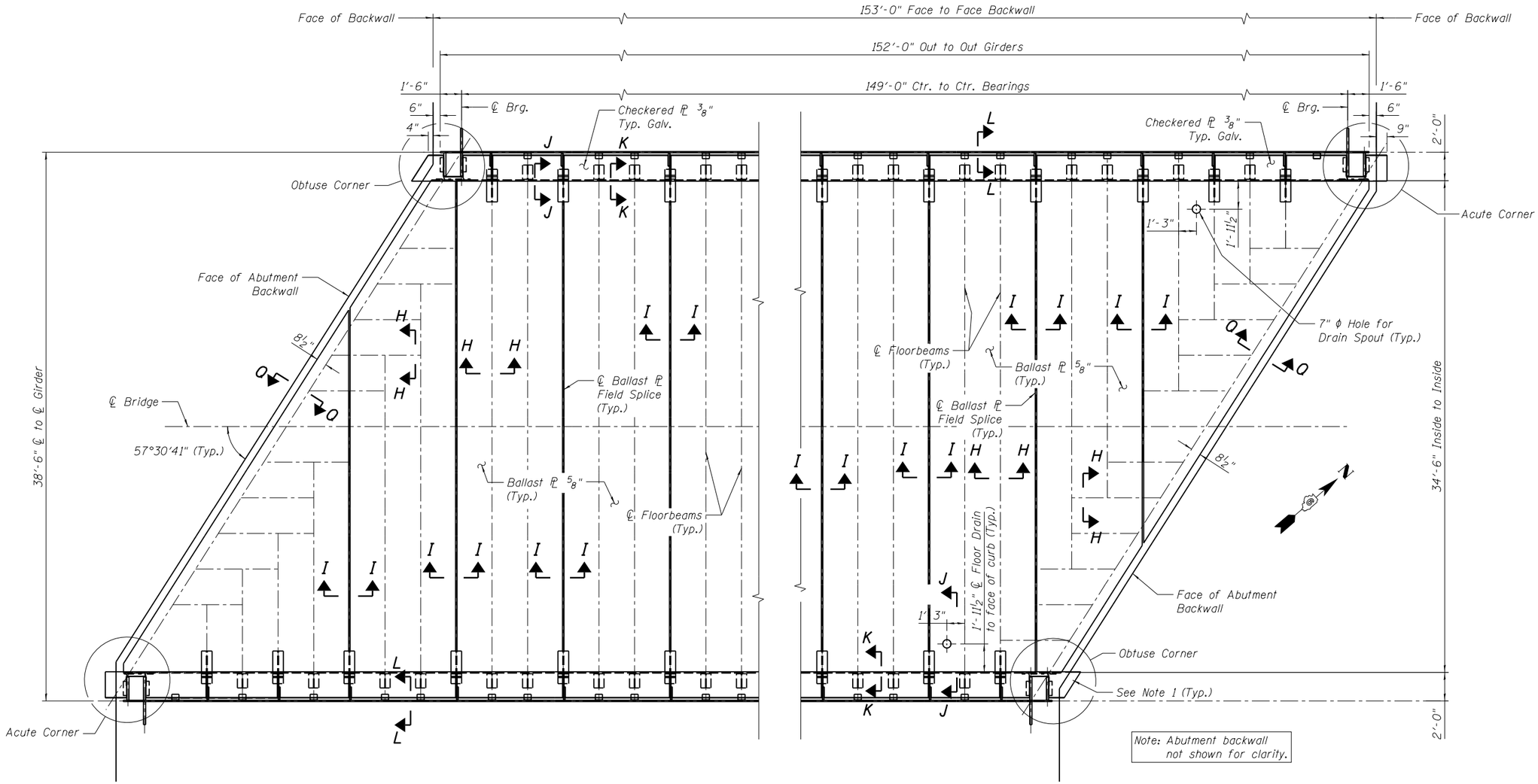
DEPARTMENT OF TRANSPORTATION

GIRDER SPLICE DETAILS
STRUCTURE 084-9963 - 6TH ST NSRR
SHEET NO. 13 OF 29 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
•	(109) VB,(110) VB-5	SANGAMON	382	275
		CONTRACT NO. 93733		
•666 & 666 ALT.	ILLINOIS FED. AID PROJECT			

To HANNIBAL, MO
(Timetable West)

To DECATUR, IL
(Timetable East)



CLOSURE PLATE & BALLAST PAN PLAN

See Sheet 15 of 29 for Section H-H, I-I, J-J, K-K, L-L, & Q-Q.

Notes:

1. Prior to Setting End Checkered PL, Build-up top of Concrete Backwall with Epoxy Grout to Support Checkered PL and Provide Sloped Surface to Eliminate Tripping Hazard. Typical All Four Corners.
2. Checkered PL Shall be ASTM A786 Gr 36 or ASTM A36. Galvanize after fabrication.

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HANSON		CHECKED - TJH/TDP	REVISED -		SHEET NO. 14 OF 29 SHEETS
	PLOT SCALE = 0:2.0000 '' / in.	DRAWN - RSJ	REVISED -		
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F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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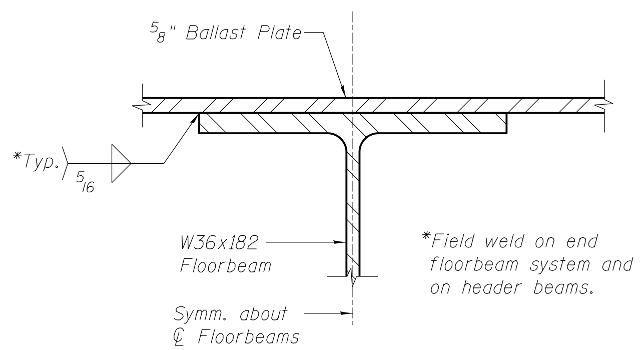
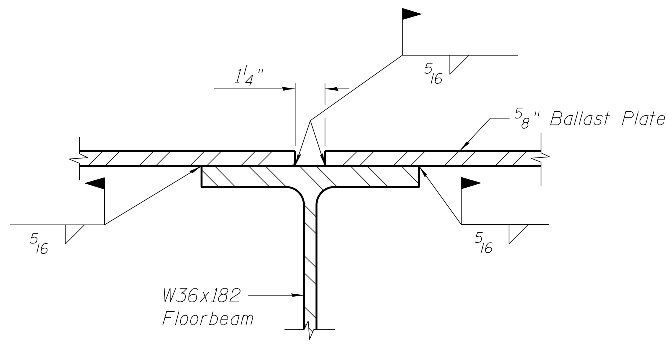
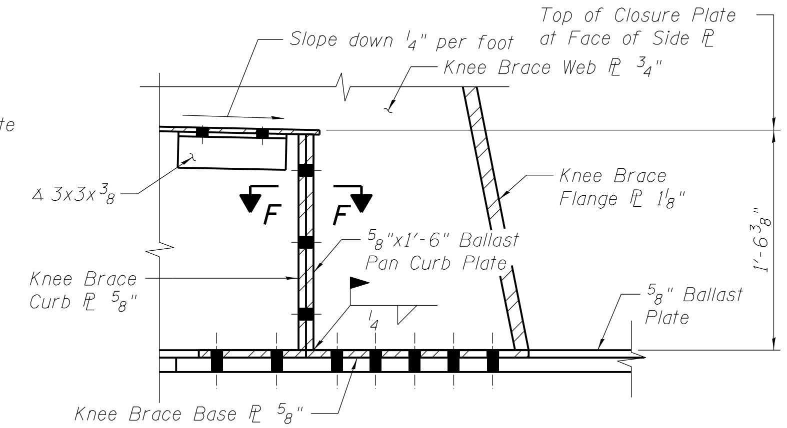


SECTION H-H BALLAST PLATE TO FLOORBEAM CONNECTION (TYP.)

Similar Detail at Header Beam

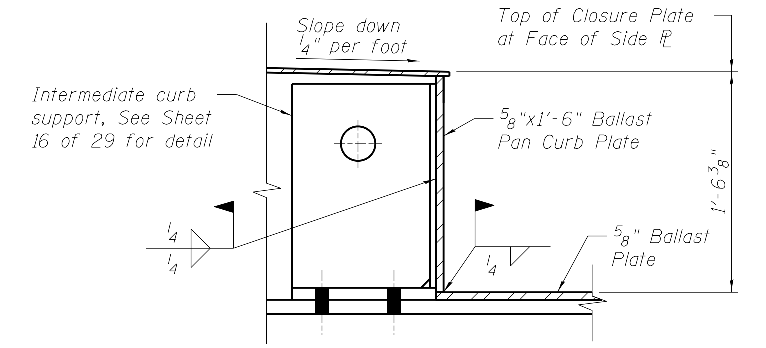


SECTION I-I

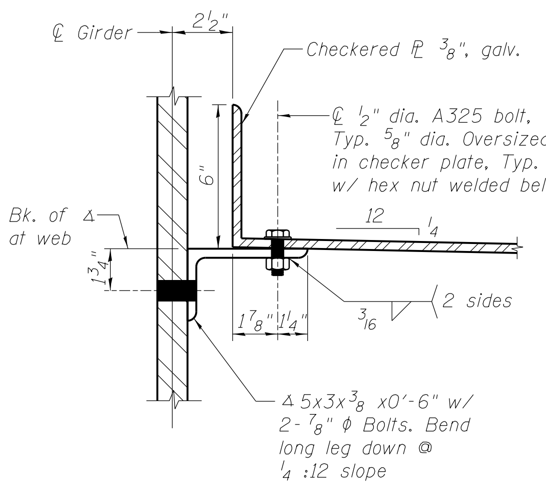


SECTION J-J

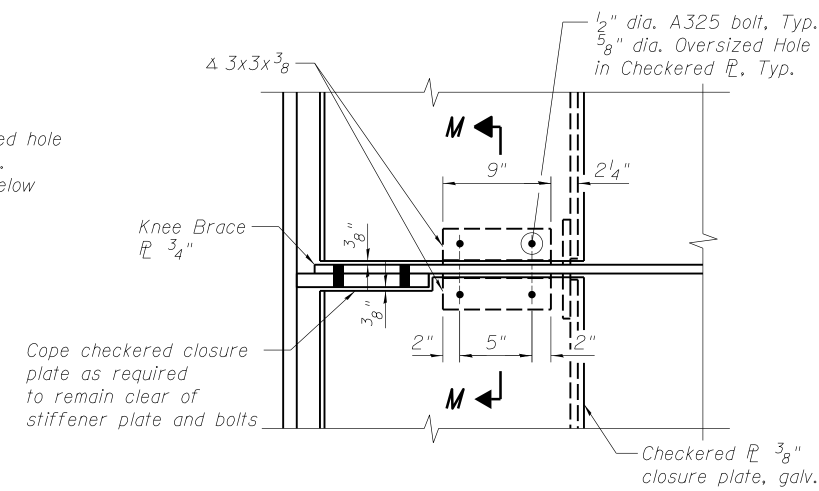
See Sheet 11 of 29 for Section F-F.



SECTION K-K

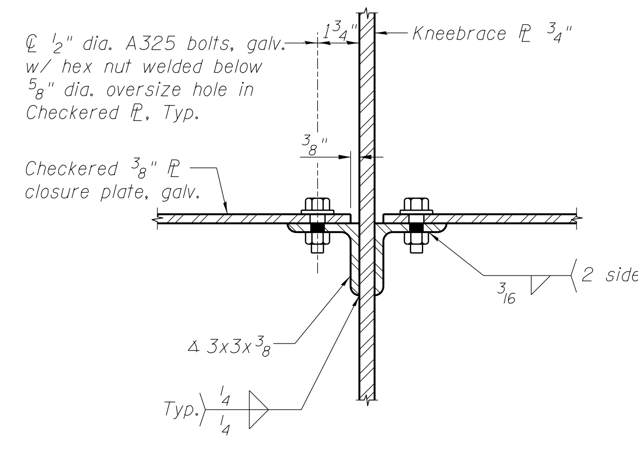


SECTION L-L

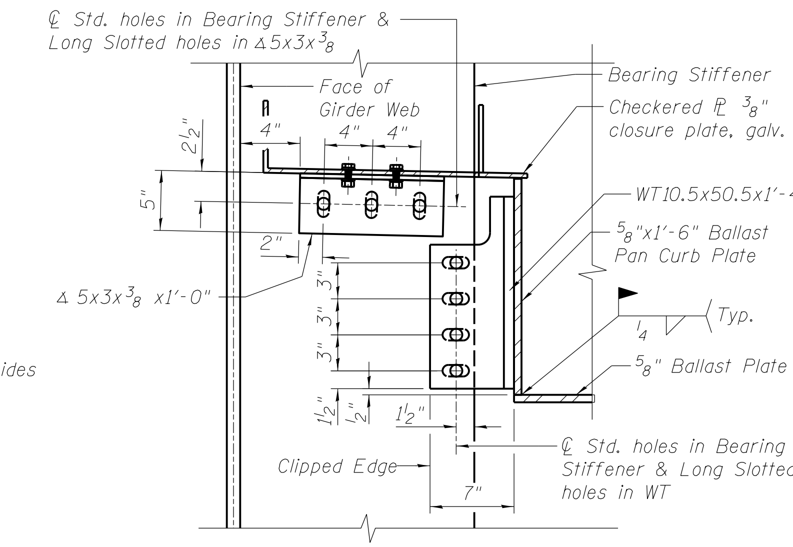


PLAN

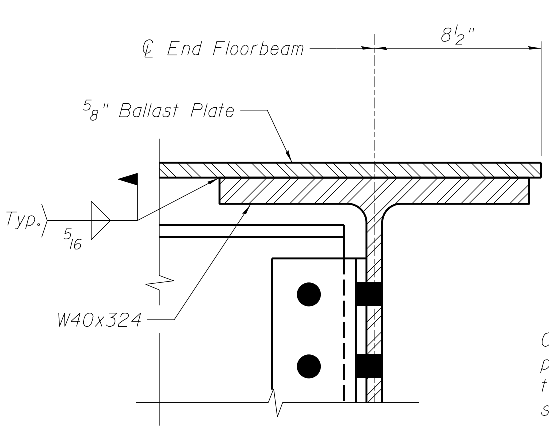
Closure Plate at Kneebrace
(Kneebrace Flange Omitted for Claity)



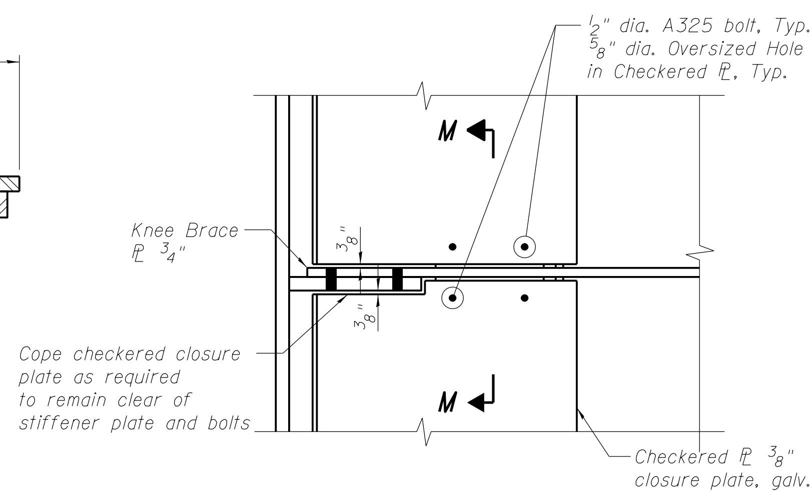
SECTION M-M



SECTION N-N

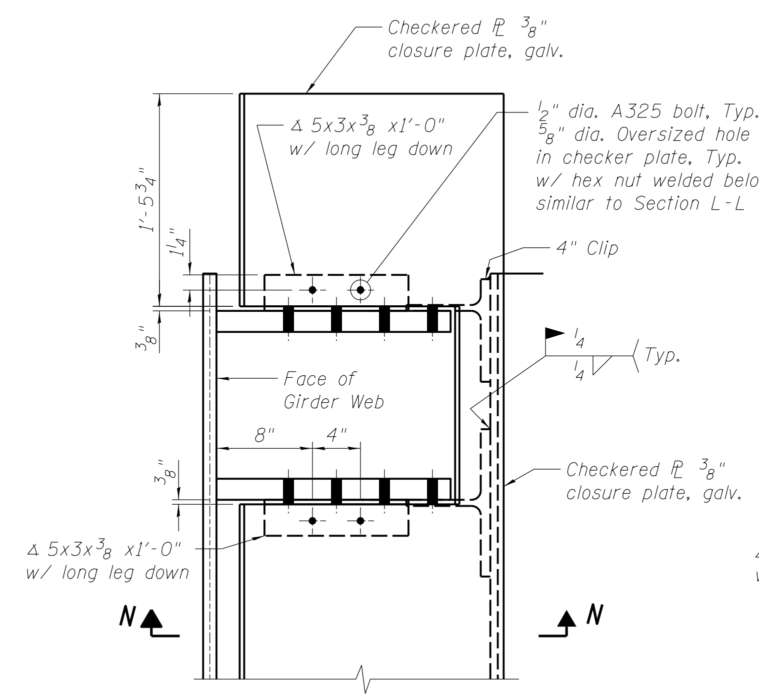


SECTION Q-Q



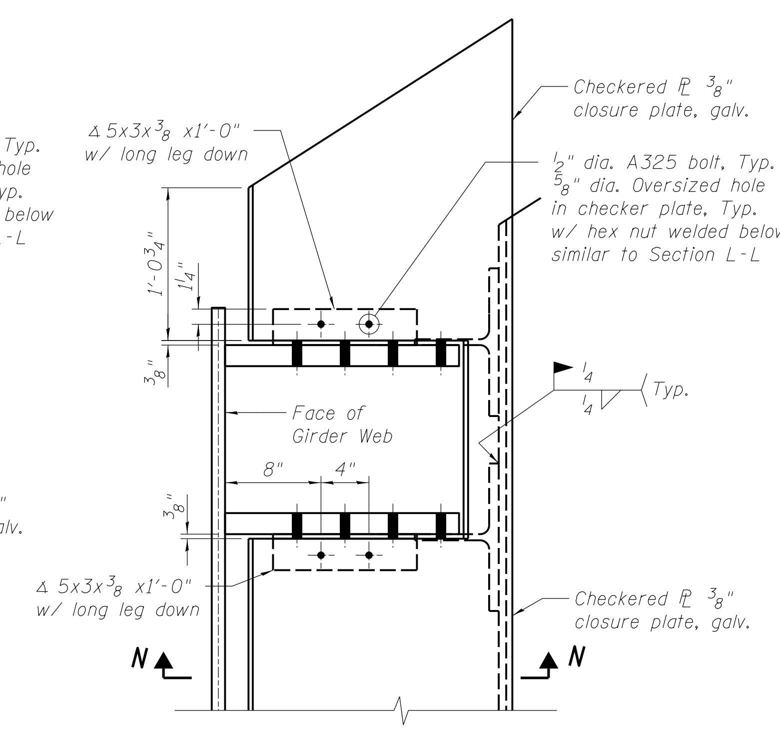
PLAN

Closure Plate at Kneebrace
(Kneebrace Flange Omitted for Claity)



PLAN

Closure Plate at Bearing Stiffener
(Acute Corner)



PLAN

Closure Plate at Bearing Stiffener
(Obtuse Corner)

FINAL

DESIGNED	DRAWN	REVIEWED
MW	RSJ	MNM

FINAL

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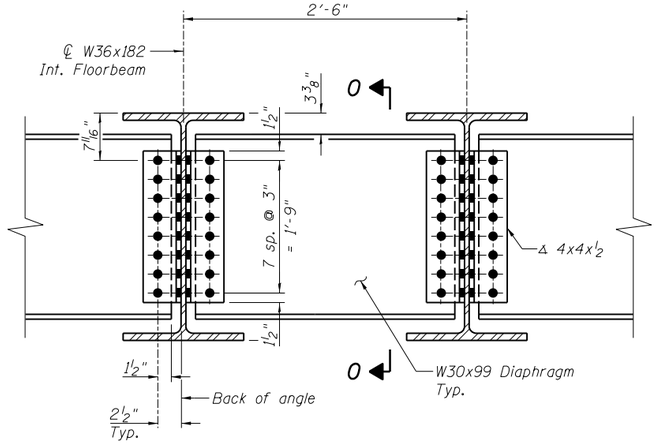
FILE NAME =	USER NAME = Pop00275	DESIGNED - MJW	REVISED -
HANSON		CHECKED - TJH/TDP	REVISED -
	PLOT SCALE = 0:2.0000 ':' / in.	DRAWN - RSJ	REVISED -
	PLOT DATE = 6/26/2019	CHECKED - MJW	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

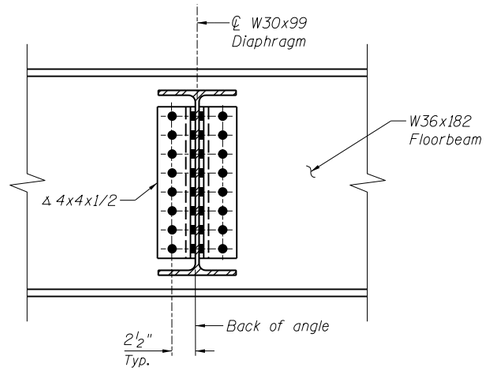
CLOSURE PLATE AND BALLAST PLATE DETAILS
STRUCTURE 084-9963 – 6TH ST NSRR

SHEET NO. 15 OF 29 SHEETS

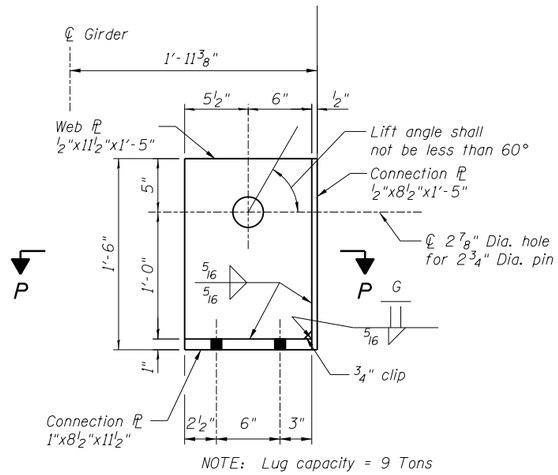
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
•	(109) VB,(110) VB-5	SANGAMON	382	277
		CONTRACT NO. 93733		
•666 & 666 ALT.	ILLINOIS FED. AID PROJECT			



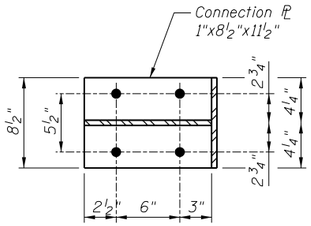
LONGITUDINAL DIAPHRAGM DETAIL



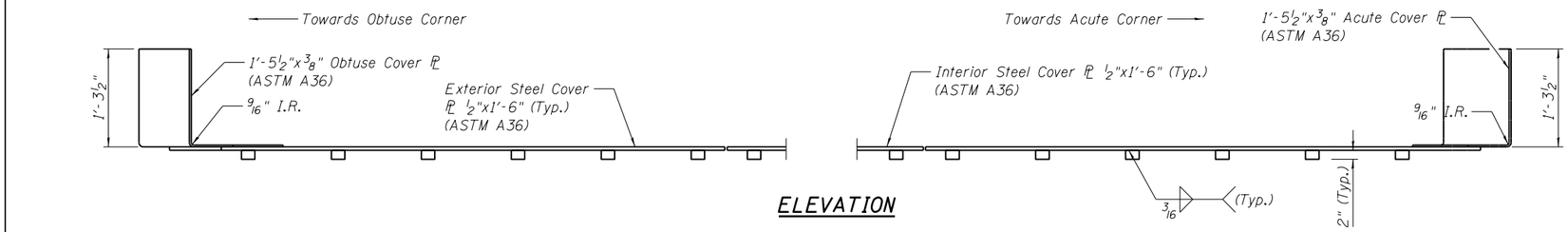
SECTION O-O



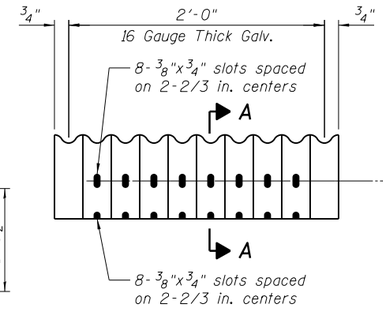
INTERMEDIATE CURB SUPPORT

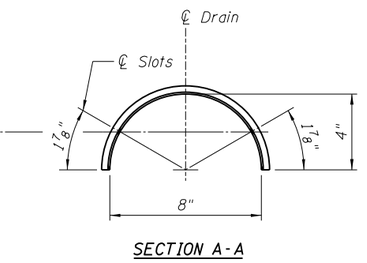


SECTION P-P



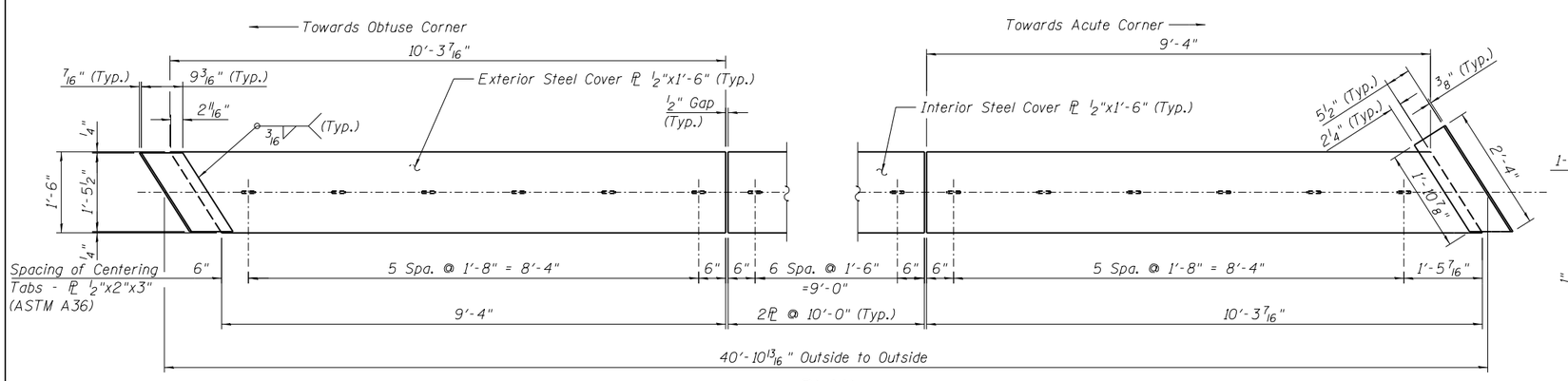
ELEVATION





SECTION A-A

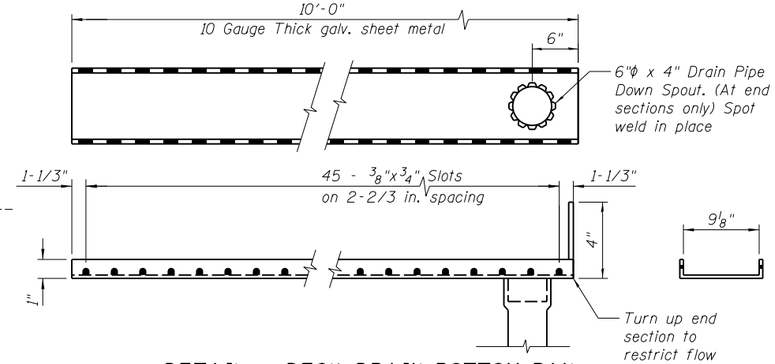
DETAIL - DECK DRAIN PIPE



PLAN

COVER PLATES

(Galvanize after Fabrication)



DETAIL - DECK DRAIN BOTTOM PAN

Notes:
1. Lap Drain Pipe one corrugation at each end.
2. Coordinate outside diameter of drain pipe down spout with 6" ϕ Ductile Iron Pipe.
3. Cost for deck drain pipe and bottom pan shall be included in the cost for "Drainage System".

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FILE NAME =

HANSON

USER NAME = Pop00275	DESIGNED - MJW	REVISED -	
	CHECKED - TJH/TDP	REVISED -	
PLOT SCALE = 0:2.0000 '' / '' in.	DRAWN - RSJ	REVISED -	
PLOT DATE = 6/26/2019	CHECKED - MJW	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

MISCELLANEOUS GIRDER DETAILS – SHEET 1 OF 3
STRUCTURE 084-9963 – 6TH ST NSRR

SHEET NO. 16 OF 29 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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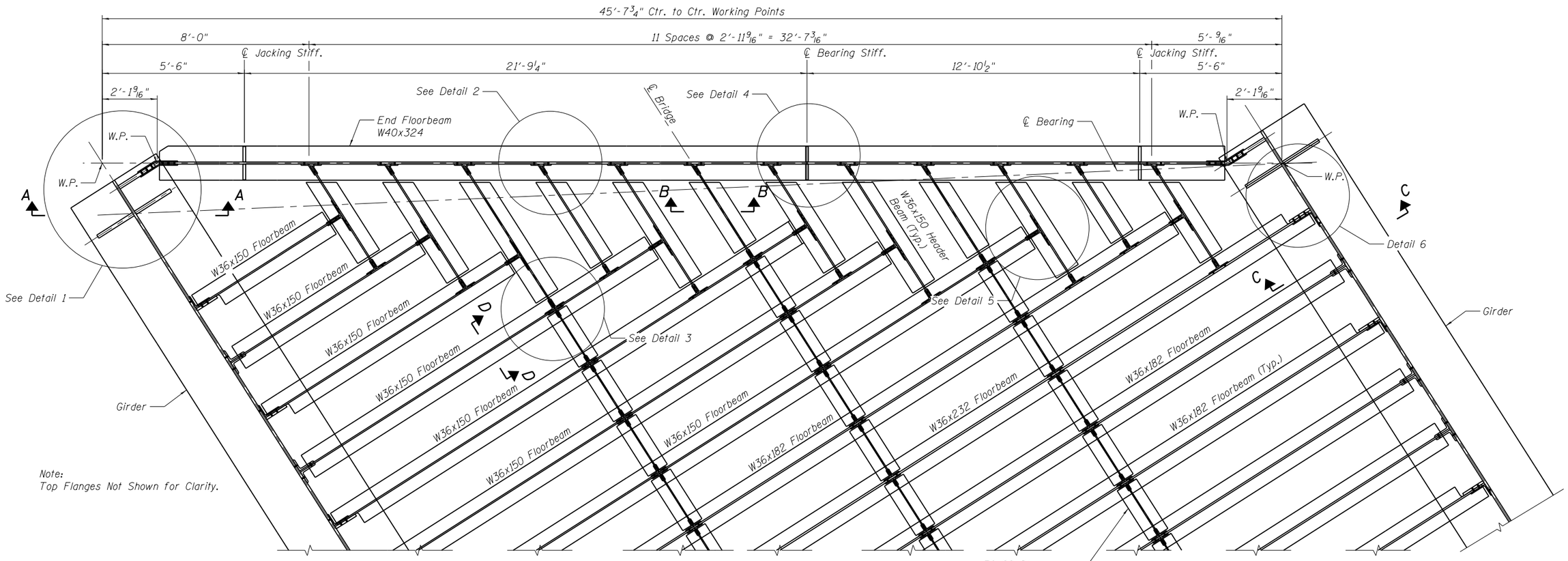
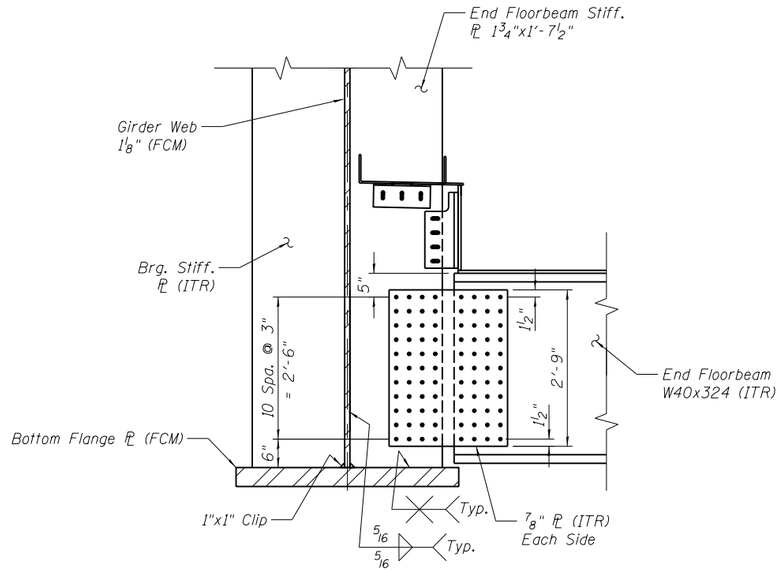
		CONTRACT NO. 93733		
•666 & 666 ALT.	ILLINOIS FED. AID PROJECT			



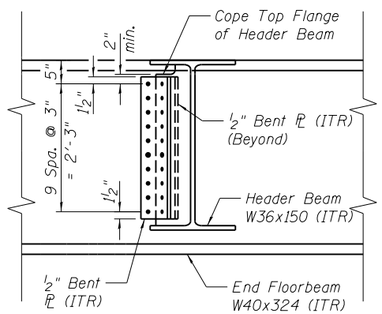
TYPICAL END FLOORBEAM PLAN

See Sheet 18 for Details



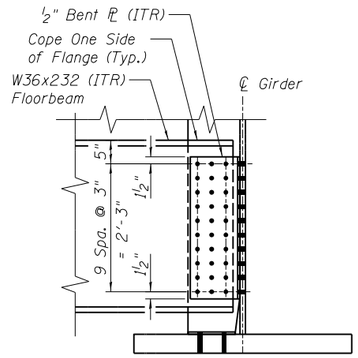
SECTION A-A

See Detail 1 on Sheet 18 for Horizontal Bolt Spacing.



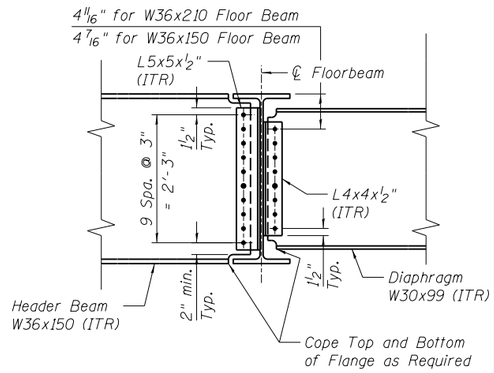
SECTION B-B

See Detail 2 on Sheet 18 for Horizontal Bolt Spacing.



SECTION C-C

See Detail 6 on Sheet 18 for Horizontal Bolt Spacing.



SECTION D-D

See Detail 3 on Sheet 18 for Horizontal Bolt Spacing.

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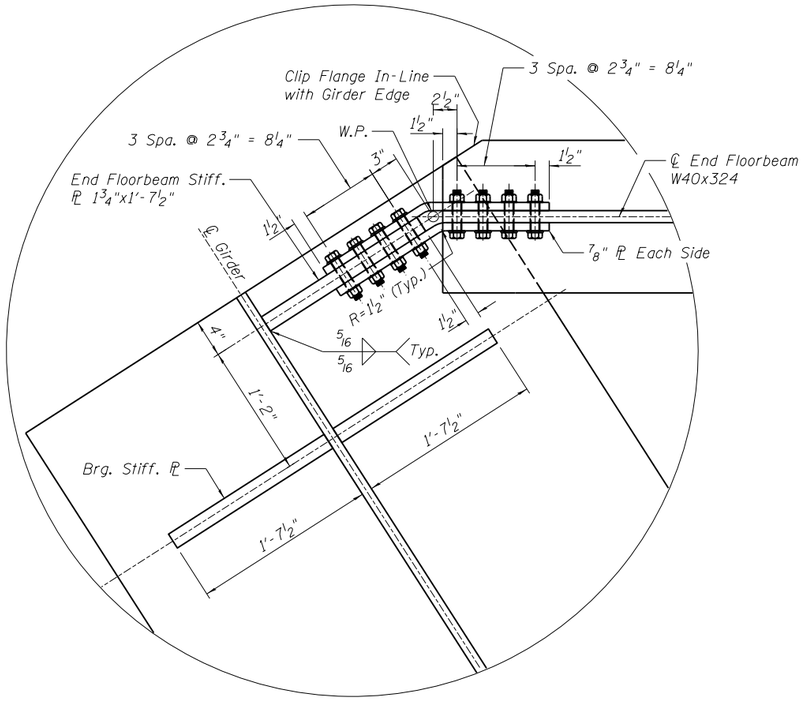
USER NAME = Pop00275 | DESIGNED - MJW | REVISED -
CHECKED - TJH/TDP | REVISED -
PLOT SCALE = 0:2.0000 '' / in. | DRAWN - RSJ | REVISED -
PLOT DATE = 6/26/2019 | CHECKED - MJW | REVISED -

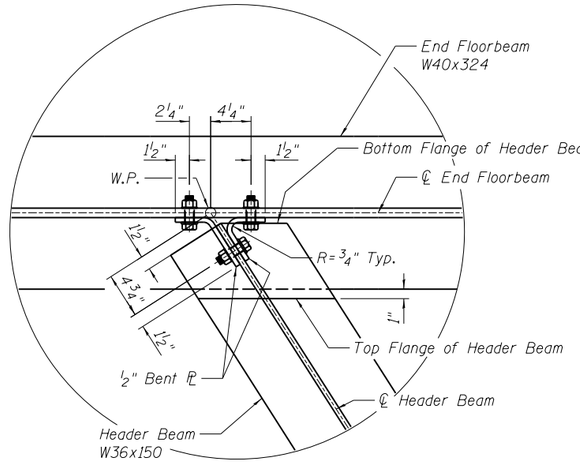
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

MISCELLANEOUS GIRDER DETAILS – SHEET 2 OF 3
STRUCTURE 084-9963 – 6TH ST NSRR
SHEET NO. 17 OF 29 SHEETS

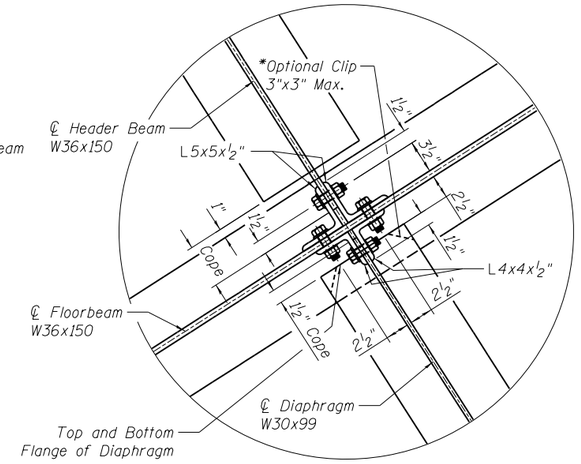
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
•	(109) VB,(110) VB-5	SANGAMON	382	279
		CONTRACT NO. 93733		
•666 & 666 ALT.	ILLINOIS FED. AID PROJECT			



DETAIL 1

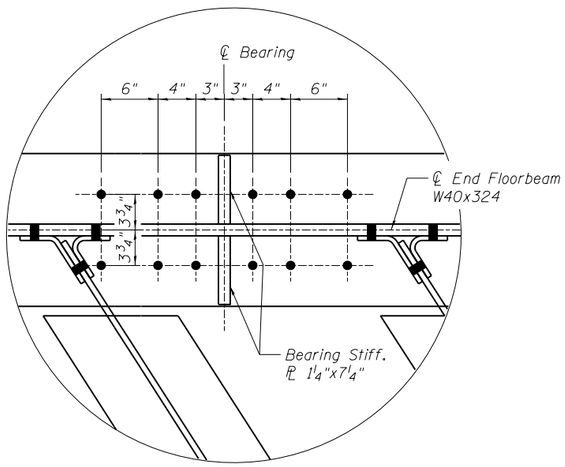


DETAIL 2

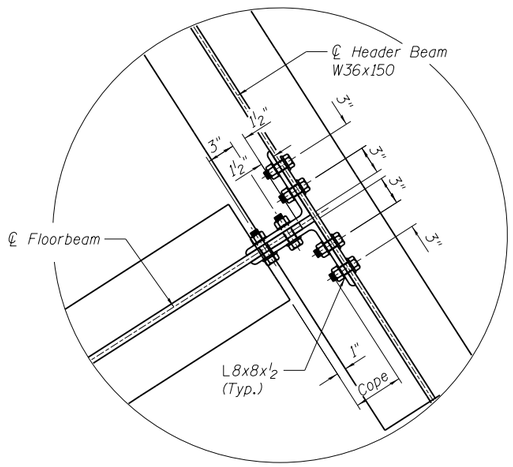


DETAIL 3

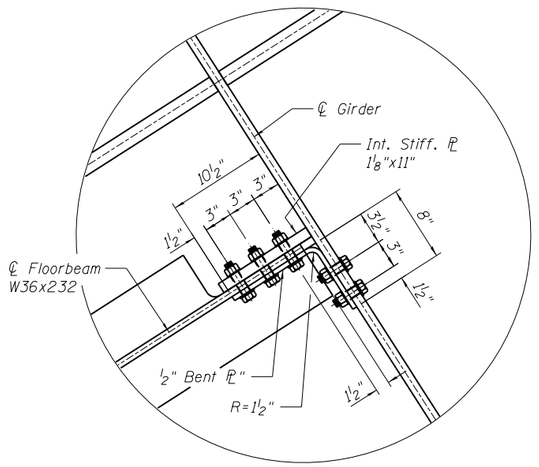
*Clipping diaphragm flanges is permitted to facilitate erection at intermediate and end floor system locations. If clipped it shall be provided at no additional cost to the Department.



DETAIL 4



DETAIL 5



DETAIL 6

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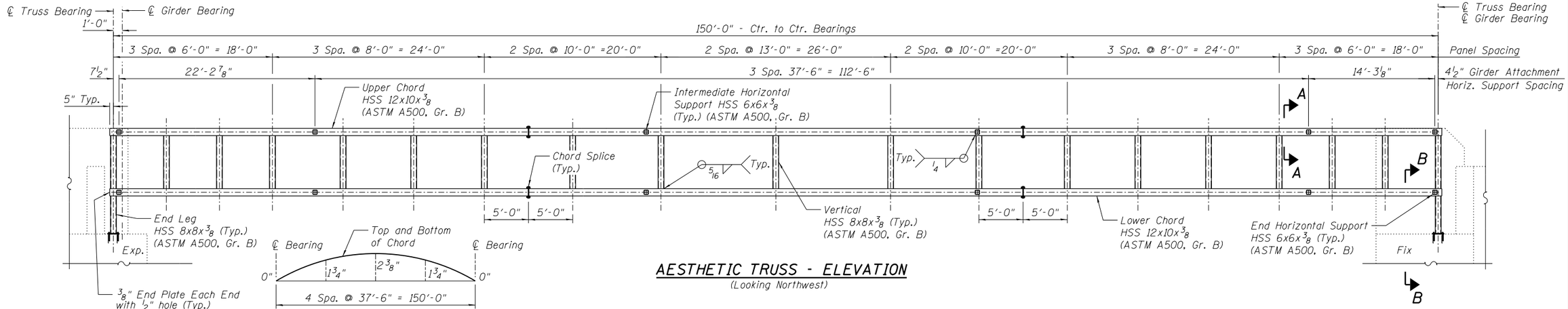
FILE NAME =	USER NAME = Pop00275	DESIGNED - MJW	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION
HANSON		CHECKED - TJH/TDP	REVISED -	MISCELLANEOUS GIRDER DETAILS – SHEET 3 OF 3
	PLOT SCALE = 0:2.0000 ':' / in.	DRAWN - RSJ	REVISED -	STRUCTURE 084–9963 – 6TH ST NSRR
	PLOT DATE = 6/26/2019	CHECKED - MJW	REVISED -	SHEET NO. 18 OF 29 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
•	(109) VB,(110) VB-5	SANGAMON	382	280
		CONTRACT NO. 93733		
•666 & 666 ALT.	ILLINOIS FED. AID PROJECT			

To HANNIBAL, MO
(Timetable West)

To DECATUR, IL
(Timetable East)

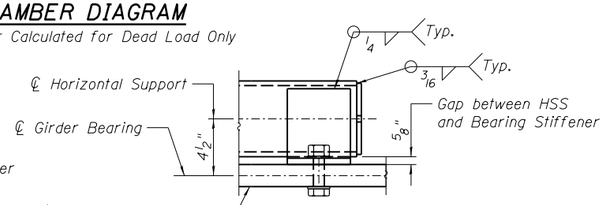


AESTHETIC TRUSS - ELEVATION

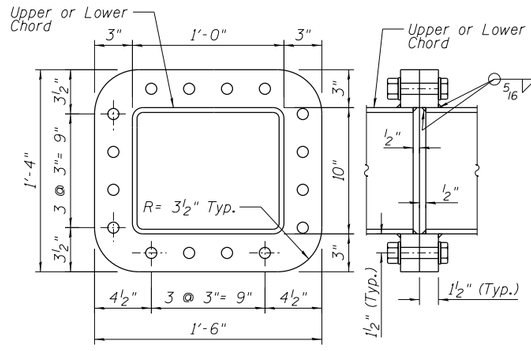
(Looking Northwest)

CAMBER DIAGRAM

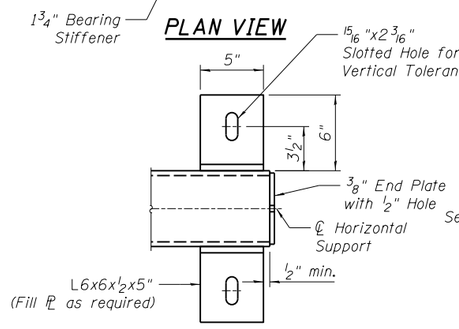
Camber Calculated for Dead Load Only



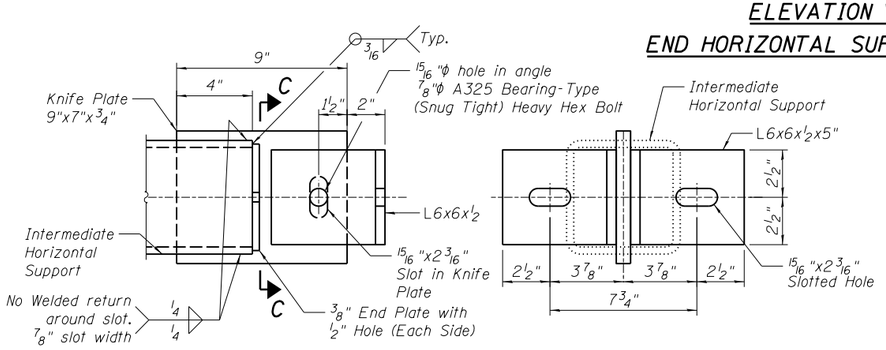
PLAN VIEW



CHORD SPLICE DETAIL

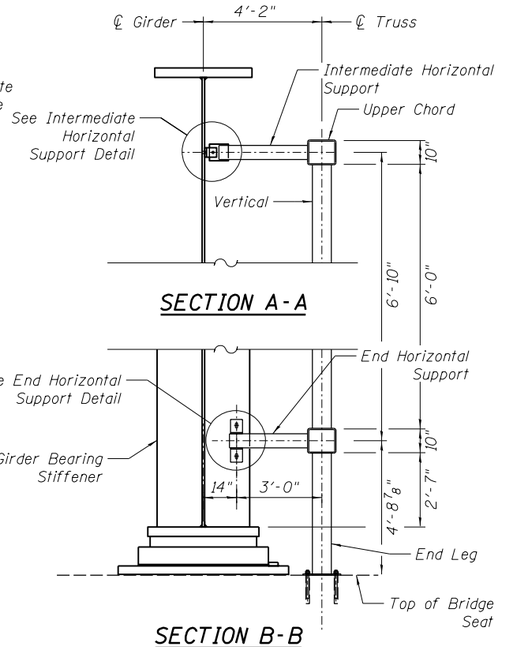


ELEVATION VIEW
END HORIZONTAL SUPPORT DETAIL



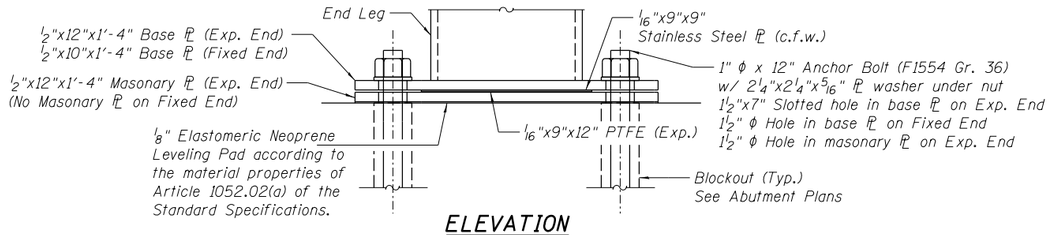
INTERMEDIATE HORIZONTAL SUPPORT DETAIL

SECTION C-C

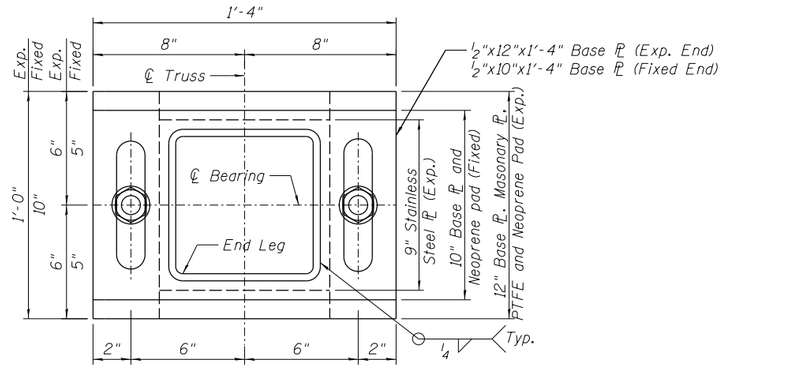


SECTION A-A

SECTION B-B



ELEVATION



PLAN
END LEG BEARING DETAIL

(Expansion Bearing Shown)

Note:

Location of Fixed and Expansion bearings shall match the girder.

Cost for elastomeric neoprene leveling pad, PTFE surface, shall be included in the cost of "Furnishing and Erecting Structural Steel, Bridge No. 4.

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 shall be installed in blockouts with non-shrink grout meeting the material requirements of Article 1024.02 of the Standard Specifications. Blockouts shall be clean prior to grouting and grout installed according to manufactures recommendations.

The PTFE shall be bonded directly to the masonry plate according to the manufacturers recommendations.

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FINAL

FILE NAME =

HANSON

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STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

AESTHETIC TRUSS
STRUCTURE 084-9963 - 6TH ST NSRR
SHEET NO. 19 OF 29 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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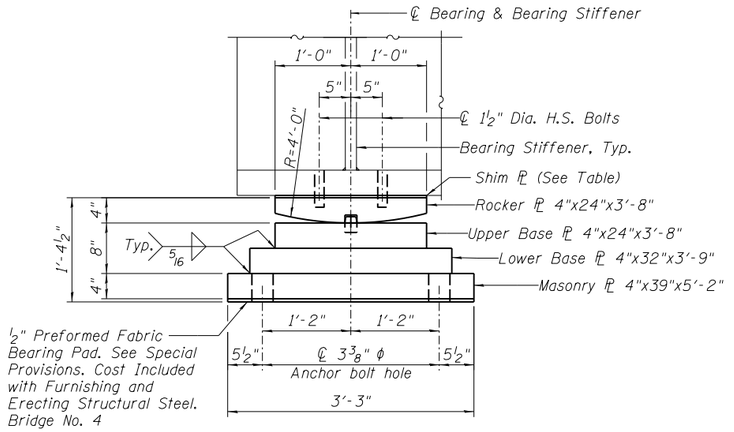
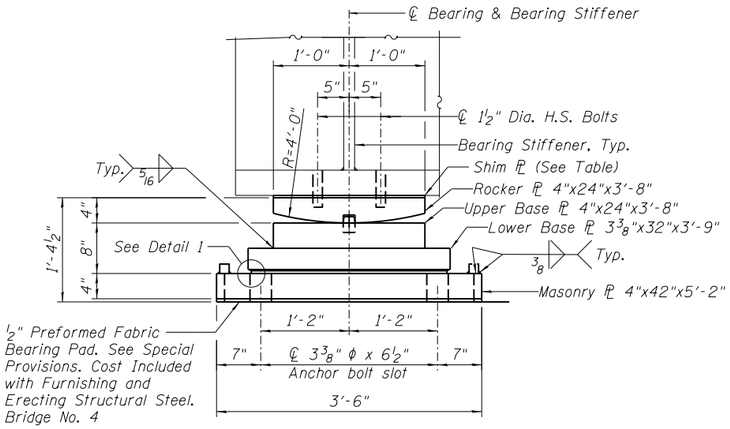
		CONTRACT NO. 93733		
•666 & 666 ALT.	ILLINOIS FED. AID PROJECT			



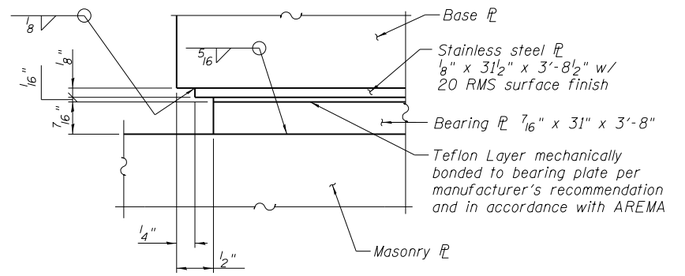
ELEVATION - FIXED BEARING



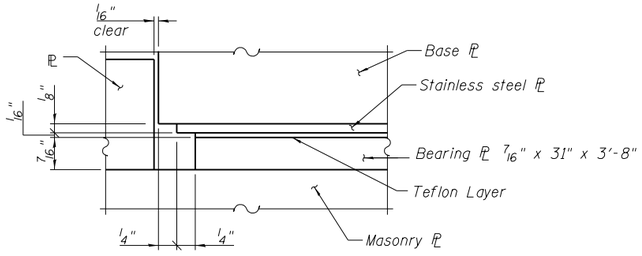
ELEVATION - EXPANSION BEARING

Keeper assembly not shown for clarity

SHIM PLATE THICKNESS	
Location	Thickness
North/East	1/8"
South/East	5/8"
North/West	1/8"
South/West	5/8"



DETAIL 1



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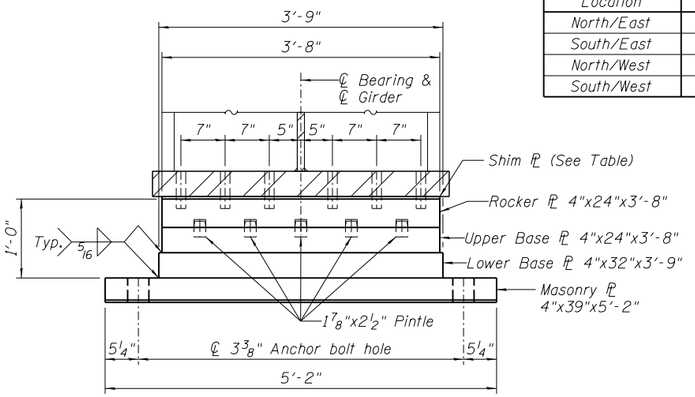
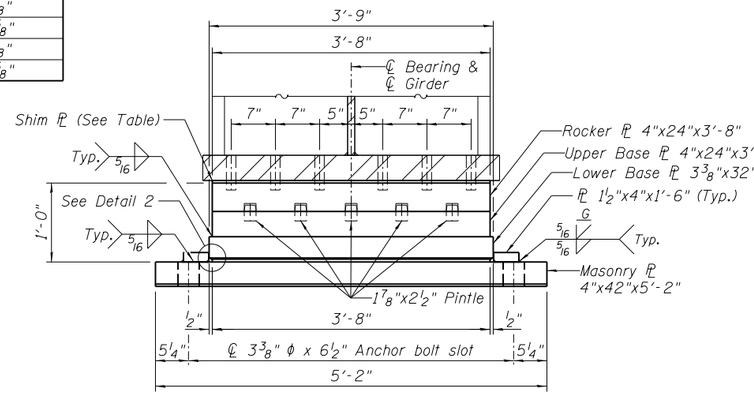
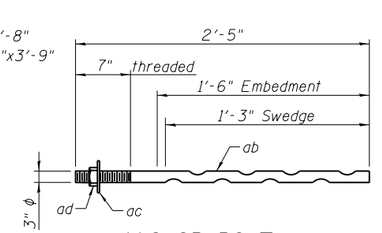


END VIEW - FIXED BEARING



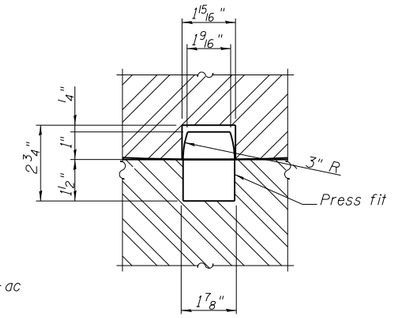
END VIEW - EXPANSION BEARING

Keeper assembly not shown for clarity

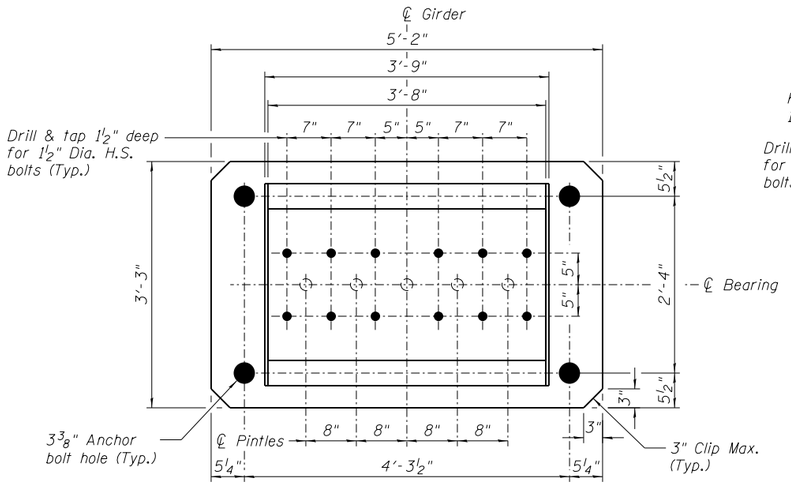


ANCHOR BOLT

1 - Bar 3" Dia. x 2'-5" - ab
1 - Bar 5½" Dia. x ¼" w/ 3⅛" Dia. hole at center - ac
1 - Heavy Hex Nut - ad
Weight = 69 lbs.
Galvanize after fabrication
(16 Required)

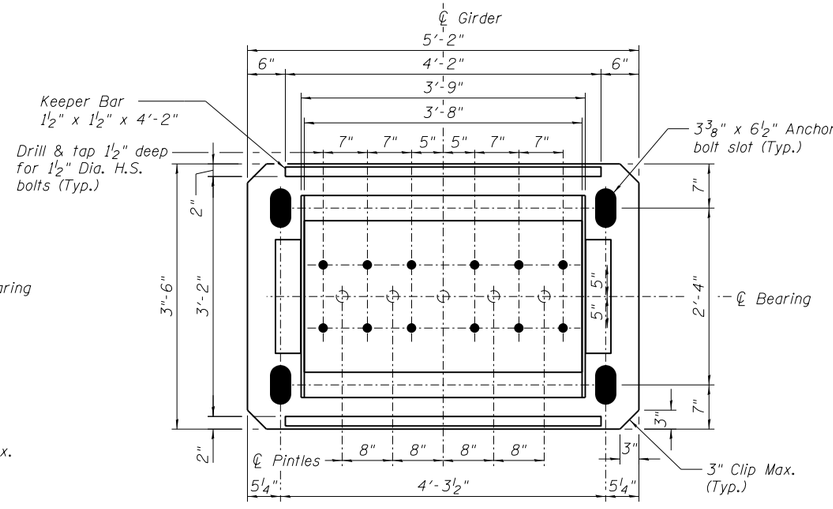


PINTLE DETAIL



PLAN VIEW - FIXED BEARING

(2 Required)



PLAN VIEW - EXPANSION BEARING

(2 Required)

NOTES:

1. Steel used for bearing assemblies shall conform to ASTM A709 GR50, unless noted otherwise. Anchor bolts shall conform to ASTM F1554 Gr 105. Cost of bearings and anchor bolts shall be included in the cost of "Furnishing and Erecting Structural Steel, Bridge No. 4".
2. Stainless steel shall conform to ASTM A480.
3. Bearing assembly weldments shall be stressed relieved by heat treating prior to finish machining, per current AWS structural welding codes.
4. Teflon Layer shall be composed of virgin unfilled TFE resin, unfilled TFE sheets or unfilled TFE fabric. Filler material, such as milled glass fibers will not be allowed. Teflon layer shall conform to the requirements of AREMA Chapter 15.
5. All surfaces in moving contact shall be finished 125 √.
6. All dimensions shown are final dimensions after machining.
7. Bearings to be shop fitted to girders, match marked and assembled in units for shipping.
8. Anchor bolts, nuts and plate washers shall be galvanized in accordance with ASTM B695, Class 50.
9. Anchor bolt nuts shall be A563 Gr DH Heavy Hex & Washers shall be F436 Type 1.
10. Bolt removal and replacements to gain access to properly tighten bearing bolts is incidental to steel erection.

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FINAL

FILE NAME =

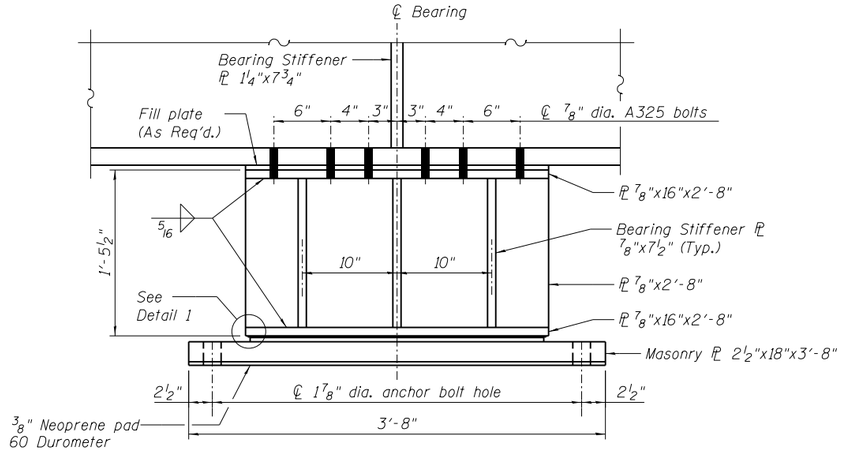
HANSON

USER NAME = Pop00275	DESIGNED - MJW	REVISED -	
	CHECKED - TJH/TDP	REVISED -	
PLOT SCALE = 0:2.0000 '' / in.	DRAWN - RSJ	REVISED -	
PLOT DATE = 6/26/2019	CHECKED - MJW	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

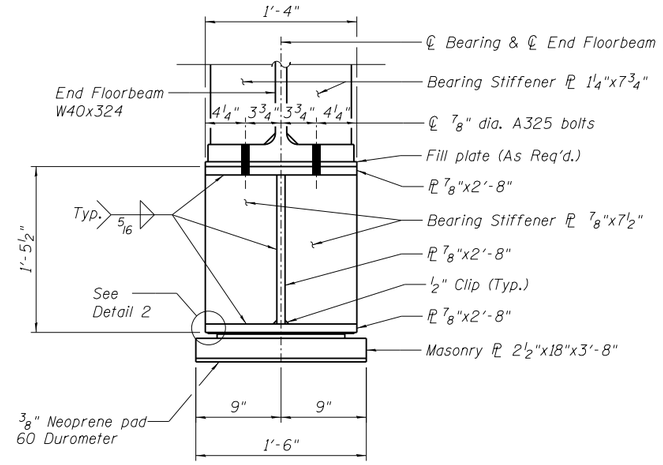
TPG BEARING DETAILS
STRUCTURE 084-9963 - 6TH ST NSRR
SHEET NO. 20 OF 29 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
•	(109) VB,(110) VB-5	SANGAMON	382	282
		CONTRACT NO. 93733		
•666 & 666 ALT.	ILLINOIS FED. AID PROJECT			



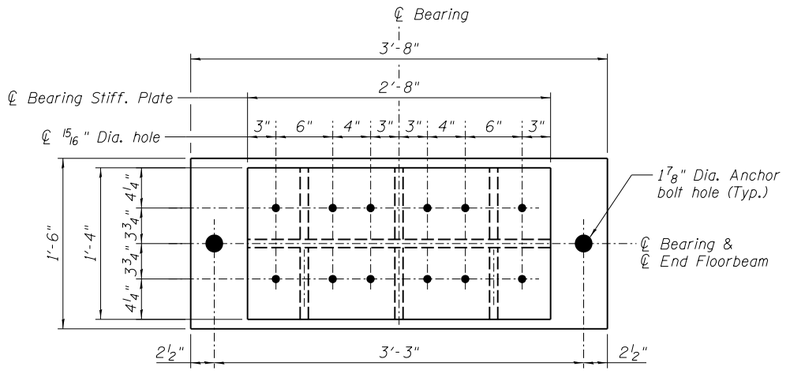
ELEVATION - END FLOORBEAM BEARING

Anchor Bolt not shown for clarity



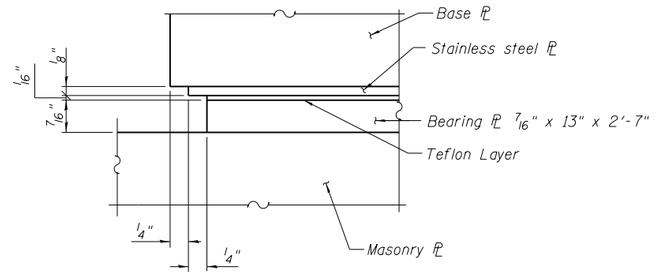
END VIEW - END FLOORBEAM BEARING

Anchor Bolt not shown for clarity

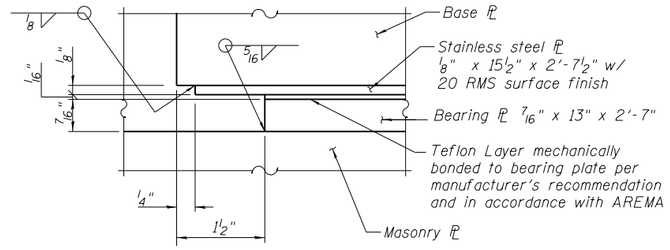


PLAN VIEW - END FLOORBEAM BEARING

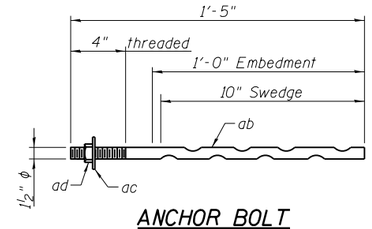
(2 Required)



DETAIL 1



DETAIL 2



ANCHOR BOLT

1 - Bar 1½" Dia. x 1'-5" - ab
1 - Bar 3" Dia. x ¼" w/ 1⅝" Dia. hole at center - ac
1 - Heavy Hex Nut - ad
Weight = 10 lbs.
Galvanize after fabrication
(4 Required)

NOTES:

1. Steel used for bearing assemblies shall conform to ASTM A709 GR50, unless noted otherwise. Anchor bolts shall conform to ASTM F1554 Gr 105. Cost of bearings and anchor bolts shall be included in the cost of "Furnishing and Erecting Structural Steel, Bridge No. 4".
2. Stainless steel shall conform to ASTM A480.
3. Bearing assembly weldments shall be stressed relieved by heat treating prior to finish machining, per current AWS structural welding codes.
4. Teflon Layer shall be composed of virgin unfilled TFE resin, unfilled TFE sheets or unfilled TFE fabric. Filler material, such as milled glass fibers will not be allowed. Teflon layer shall conform to the requirements of AREMA Chapter 15.
5. All surfaces in moving contact shall be finished 125/.
6. All dimensions shown are final dimensions after machining.
7. Bearings to be shop fitted to girders, match marked and assembled in units for shipping.
8. Anchor bolts, nuts and plate washers shall be galvanized in accordance with ASTM B695, Class 50.
9. Anchor bolt nuts shall be A563 Gr DH Heavy Hex & Washers shall be F436 Type 1.
10. Bolt removal and replacements to gain access to properly tighten bearing bolts is incidental to steel erection.

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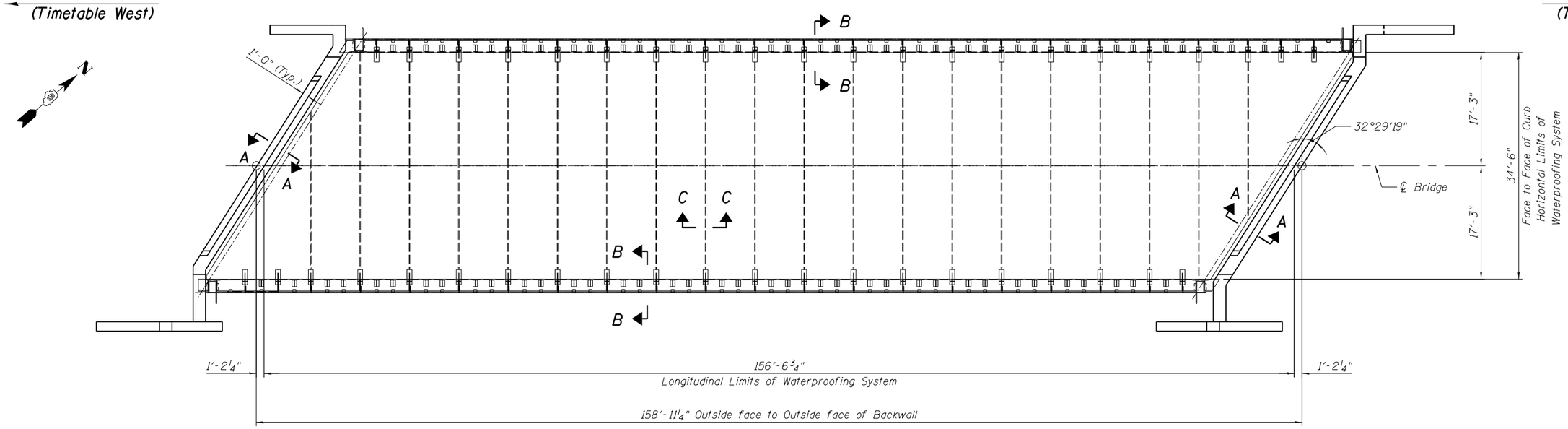
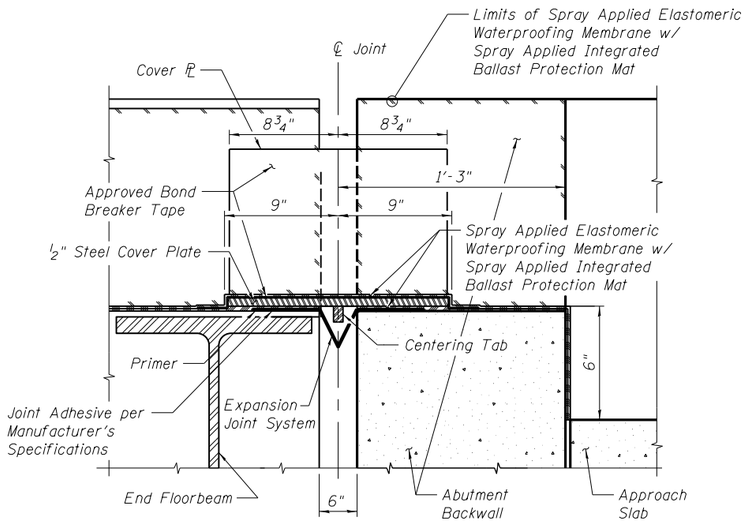
FINAL

FILE NAME =	USER NAME = Pop00275	DESIGNED - MJW	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	END FLOORBEAM BEARING DETAILS STRUCTURE 084-9963 - 6TH ST NSRR
HANSON		CHECKED - TJH/TDP	REVISED -		
	PLOT SCALE = 0:2.0000 '' / in.	DRAWN - RSJ	REVISED -		
© Copyright Hanson Professional Services Inc, 2019	PLOT DATE = 6/26/2019	CHECKED - MJW	REVISED -		SHEET NO. 21 OF 29 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
•	(109) VB,(110) VB-5	SANGAMON	382	283
		CONTRACT NO. 93733		
•666 & 666 ALT.	ILLINOIS FED. AID PROJECT			

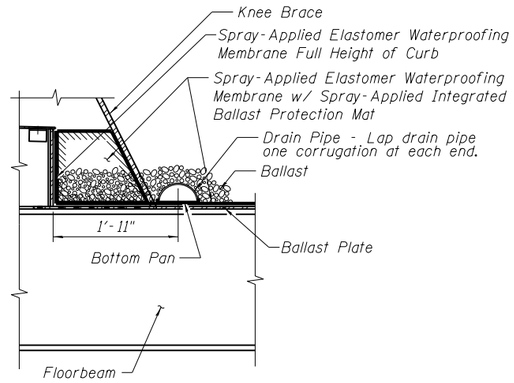


WATERPROOFING LIMITS PLAN

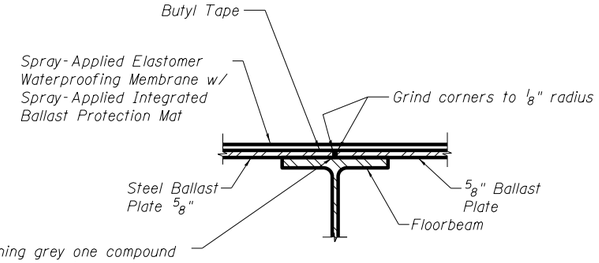


Note:
1. Bridge deck membrane continuous thru joint.
2. Typical Joint Detail shown for information only. Waterproofing installer shall determine final details in accordance with the manufacturer's recommendations.

SECTION A-A
(At Rt. ℄'s to Bk. of Abut.)



SECTION B-B



Non-staining grey one compound non-sag elastomeric gun grade polyurethane sealant meeting the requirements of ASTM C-920, Type S, Grade NS, Class 25. Cost included with Membrane Waterproofing (Special).

SECTION C-C

Notes:

1. Prepare surfaces and apply in accordance with Manufacturer's recommendations.
2. Structural steel cover plates shall be galvanized.
3. Cost of joint adhesive and bond breaker tape shall be included in the cost of "Membrane Waterproofing (Special)".
4. The cover plate is included in the weight of the Structural Steel and will be paid for as "Furnishing and Erecting Structural Steel, Bridge No. 4".
5. For cover plate details see Sheet 16 of 29.

BILL OF MATERIAL

ITEM	UNIT	TOTAL
Membrane Waterproofing (Special)	Sq. Ft.	5,906

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FINAL

FILE NAME =
USER NAME = Pop00275
PLOT SCALE = 0:2.0000 '' / in.
PLOT DATE = 6/26/2019

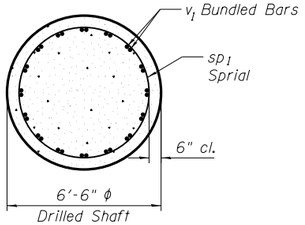
DESIGNED - MJW
CHECKED - TJH/TDP
DRAWN - RSJ
CHECKED - MJW

REVISED -
REVISED -
REVISED -
REVISED -

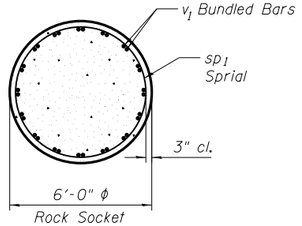
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

BRIDGE DECK WATERPROOFING
STRUCTURE 084-9963 - 6TH ST NSRR
SHEET NO. 22 OF 29 SHEETS

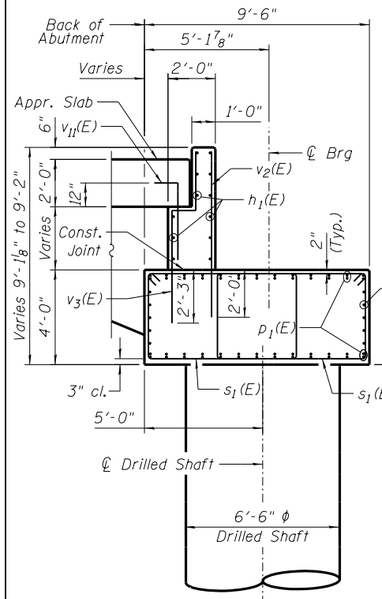
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
•	(109) VB,(110) VB-5	SANGAMON	382	284
		CONTRACT NO. 93733		
•666 & 666 ALT.	ILLINOIS FED. AID PROJECT			



SECTION B-B

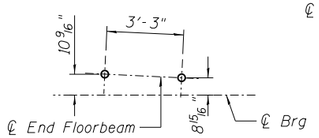


SECTION C-C



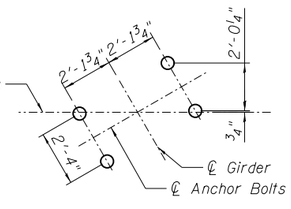
SECTION A-A

(At Rt. L's to Bk. of Abut.)



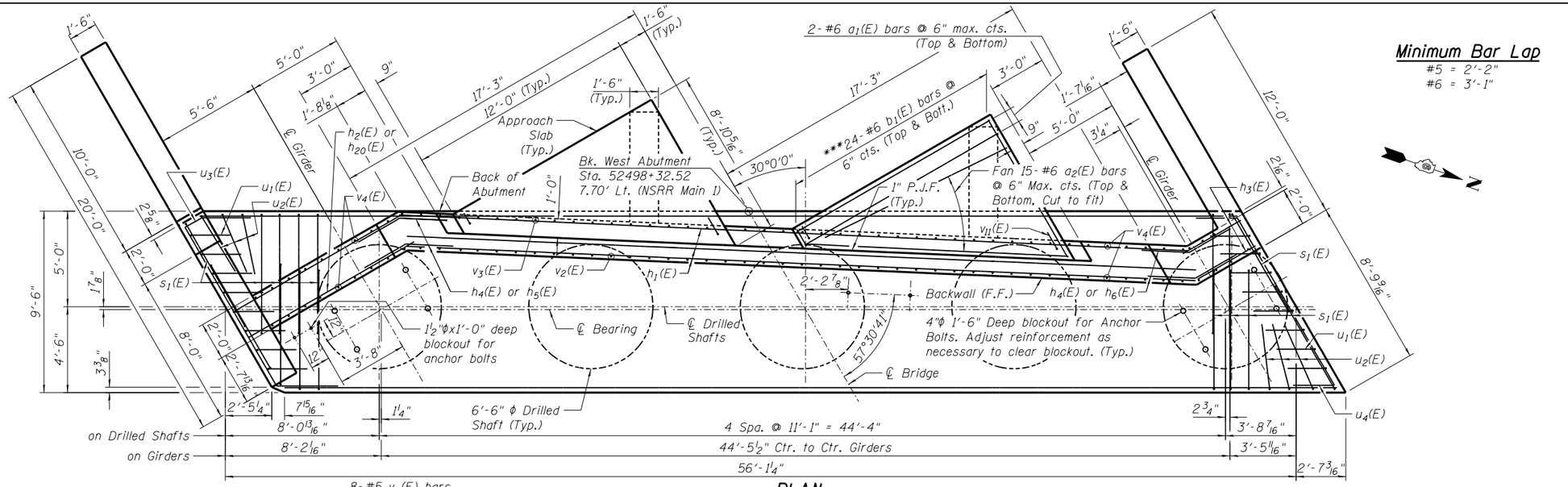
BLOCKOUT LAYOUT

(At Floorbeam Location)



BLOCKOUT LAYOUT

(At Girders Locations)



PLAN

* The quantities and reinforcement detailing are based on the top of shaft and the estimated top of rock elevations shown and may change based on the actual top of rock encountered at each shaft and the final top of shaft elevation.

** Provide 1½ extra turns at top and bottom of each drilled shaft.

*** Order b_1(E) bars full length. Cut to fit skew and use remainder of bars in opposite face.

ELEVATION - WEST ABUTMENT

(Looking West)

Minimum Bar Lap
#5 = 2'-2"
#6 = 3'-1"

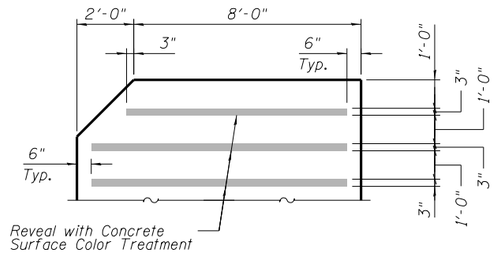
FINAL

FILE NAME =	USER NAME = Pop00275	DESIGNED - MJW	REVISED -
		CHECKED - TJH/TDP	REVISED -
	PLOT SCALE = 0:2.0000 '' / in.	DRAWN - RSJ	REVISED -
	PLOT DATE = 6/26/2019	CHECKED - MJW	REVISED -

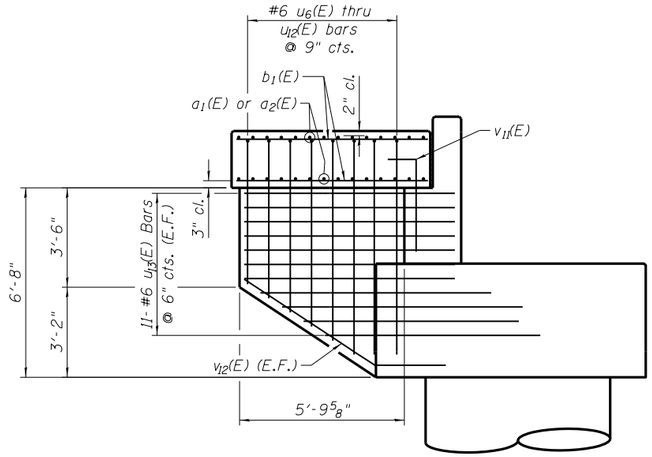
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

WEST ABUTMENT
STRUCTURE 084-9963 - 6TH ST NSRR
SHEET NO. 23 OF 29 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
•	(109) VB,(110) VB-5	SANGAMON	382	285
		CONTRACT NO. 93733		
•666 & 666 ALT.	ILLINOIS FED. AID PROJECT			

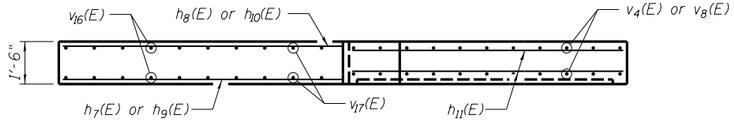


CONCRETE REVEAL DETAIL

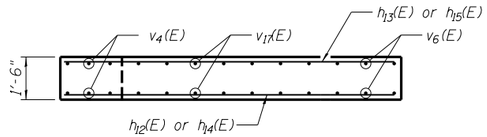


APPROACH SLAB SECTION

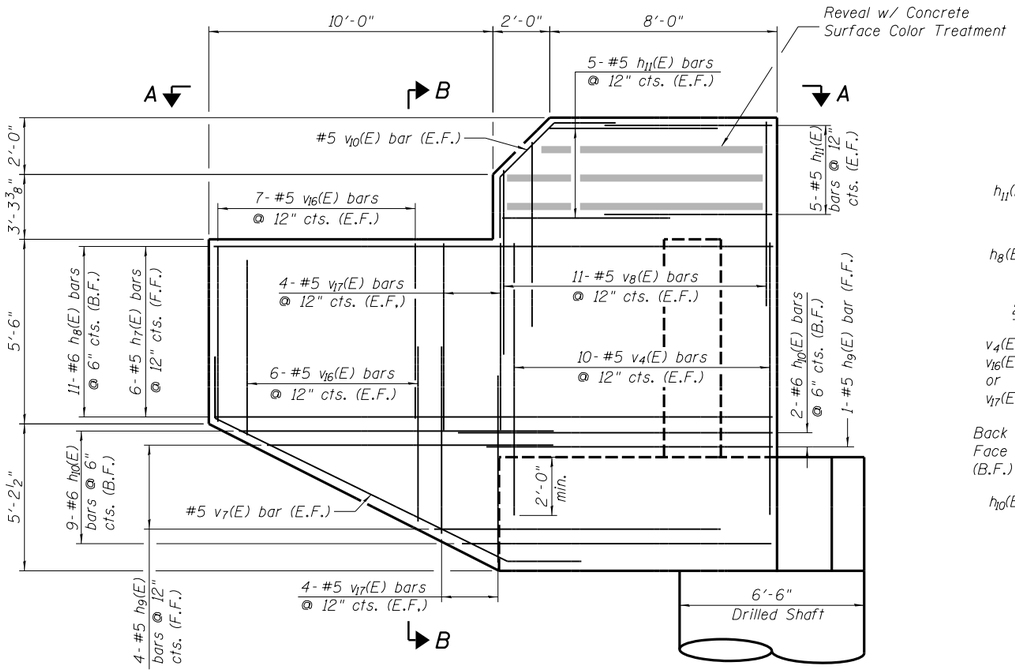
(Horizontal Dimensions at Rt. L's to back of abutment.)



SECTION A-A - PLAN VIEW

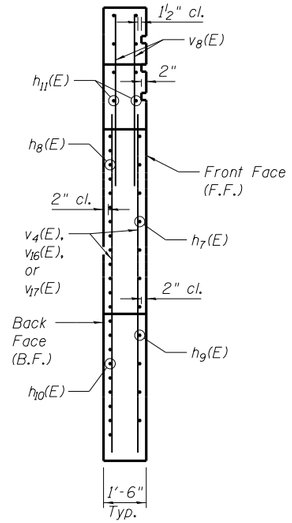


SECTION C-C - PLAN VIEW

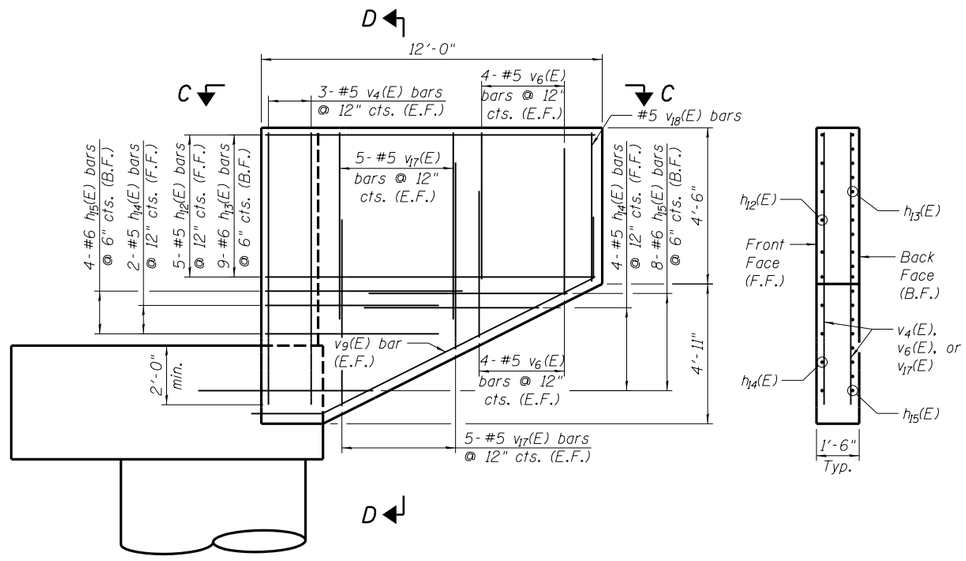


ELEVATION - SOUTH WING END VIEW

(Looking North)



WINGWALL SECTION B-B



ELEVATION - NORTH WING END VIEW

(Looking South)

WINGWALL SECTION D-D

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FINAL

FILE NAME =

HANSON

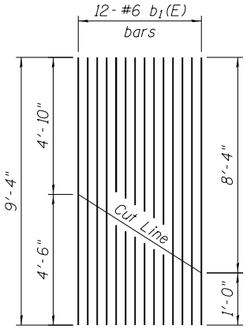
USER NAME = Pop00275	DESIGNED - MJW	REVISED -	
	CHECKED - TJH/TDP	REVISED -	
PLOT SCALE = 0:2.0000 '' / in.	DRAWN - RSJ	REVISED -	
PLOT DATE = 6/26/2019	CHECKED - MJW	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

WEST ABUTMENT DETAILS
STRUCTURE 084-9963 - 6TH ST NSRR

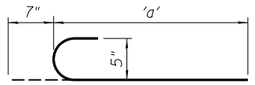
SHEET NO. 24 OF 29 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
•	(109) VB,(110) VB-5	SANGAMON	382	286
		CONTRACT NO. 93733		
•666 & 666 ALT.	ILLINOIS FED. AID PROJECT			



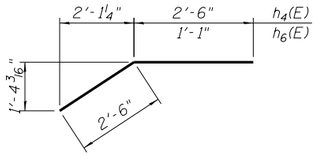
BAR CUTTING DIAGRAM FOR b_1(E)

Order b_1(E) full length. Cut as shown and use remainder of bars in opposite face.

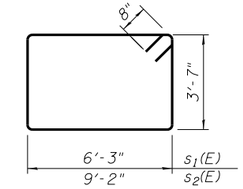


BARS h_2(E), h_3(E) & h_{20}(E

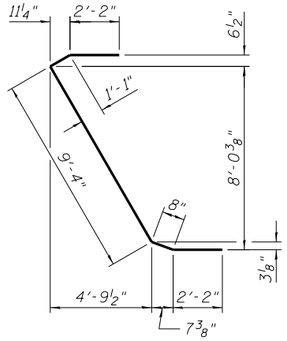
Bar	'a'
h_2(E)	10'-1"
h_3(E)	3'-8"
h_{20}(E)	8'-6"



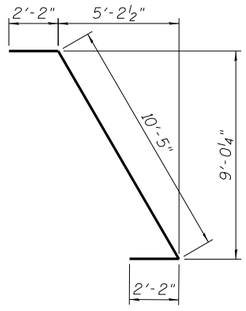
BARS h_4(E) & h_6(E)



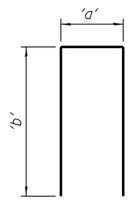
BAR s_1(E) & s_2(E)



BAR u_3(E)

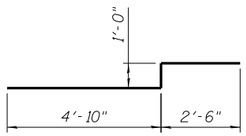


BAR u_4(E)

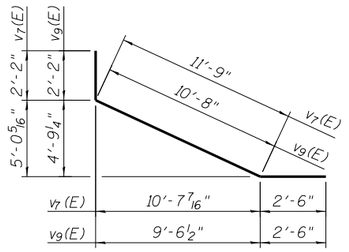


Bar	'a'	'b'
u_1(E)	3'-5"	2'-2"
u_2(E)	3'-7"	3'-6"
u_5(E)	1'-8"	0'-10"
u_6(E)	1'-0"	5'-0"
u_7(E)	1'-0"	5'-5"
u_8(E)	1'-0"	5'-11"
u_9(E)	1'-0"	6'-5"
u_{10}(E)	1'-0"	6'-11"
u_{11}(E)	1'-0"	7'-5"
u_{12}(E)	1'-0"	7'-11"

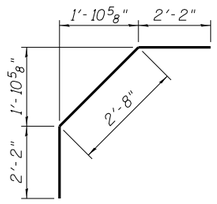
BARS u_1(E), u_2(E), u_5(E), u_6(E) u_7(E), u_8(E), u_9(E), u_{10}(E), u_{11}(E), u_{12}(E)



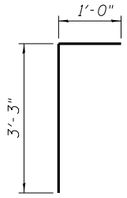
BAR v_3(E)



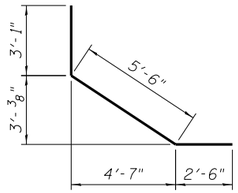
BARS v_7(E) & v_9(E)



BARS v_{10}(E)



BAR v_{11}(E)



BARS v_{12}(E)

BILL OF MATERIAL
WEST ABUTMENT

Bar	No.	Size	Length	Shape
a_1(E)	8	#6	11'-8"	
a_2(E)	60	#6	13'-8"	
b_1(E)	48	#6	9'-4"	
h_1(E)	24	#5	21'-10"	
h_2(E)	18	#5	10'-8"	
h_3(E)	16	#5	4'-3"	
h_4(E)	24	#5	5'-0"	
h_6(E)	4	#5	3'-7"	
h_7(E)	6	#5	19'-8"	
h_8(E)	11	#6	19'-8"	
h_9(E)	5	#5	10'-1"	
h_{10}(E)	11	#6	11'-1"	
h_{11}(E)	20	#5	5'-11"	
h_{12}(E)	5	#5	11'-8"	
h_{13}(E)	9	#6	11'-8"	
h_{14}(E)	6	#5	6'-2"	
h_{15}(E)	12	#6	7'-0"	
h_{20}(E)	4	#5	9'-1"	
p_1(E)	52	#8	55'-8"	
p_2(E)	20	#5	28'-11"	
s_1(E)	64	#6	21'-0"	
s_2(E)	22	#6	26'-10"	
sp_1	5	#6	*36'-3"	
u_1(E)	16	#5	7'-9"	
u_2(E)	6	#5	10'-7"	
u_3(E)	5	#5	15'-5"	
u_4(E)	5	#5	14'-9"	
u_5(E)	19	#5	3'-4"	
u_6(E)	2	#6	11'-0"	
u_7(E)	2	#6	11'-10"	
u_8(E)	2	#6	12'-10"	
u_9(E)	2	#6	13'-10"	
u_{10}(E)	2	#6	14'-10"	
u_{11}(E)	2	#6	15'-10"	
u_{12}(E)	4	#6	16'-10"	
u_{13}(E)	44	#6	7'-5"	
v_1	160	#18	38'-10"	
v_2(E)	34	#5	7'-1"	
v_3(E)	34	#6	8'-4"	
v_4(E)	64	#5	8'-7"	
v_6(E)	16	#5	4'-8"	
v_7(E)	2	#5	16'-5"	
v_8(E)	22	#5	7'-6"	
v_9(E)	2	#5	15'-4"	
v_{10}(E)	2	#5	7'-0"	
v_{11}(E)	28	#6	4'-3"	
v_{12}(E)	4	#6	11'-1"	
v_{16}(E)	26	#5	5'-2"	
v_{17}(E)	36	#5	6'-2"	
v_{18}(E)	2	#5	4'-3"	
Structure Excavation		Cu. Yds.	116	
Concrete Structures		Cu. Yds.	128.0	
Drilled Shaft in Soil		Cu. Yds.	132.4	
Drilled Shaft in Rock		Cu. Yds.	81.2	
Reinforcement Bars		Pound	103,730	
Reinforcement Bars, Epoxy Coated		Pound	18,920	

* Length is height of spiral.

MIN. BAR LAPS FOR SPIRALS

#6 Bars = 2'-7"

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FINAL

FILE NAME =

HANSON

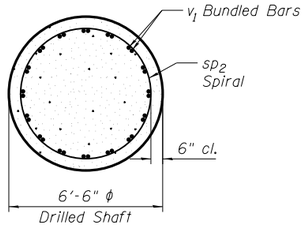
USER NAME = Pop00275	DESIGNED - MJW	REVISED -	
	CHECKED - TJH/TDP	REVISED -	
PLOT SCALE = 0:2.0000 ':' / in.	DRAWN - RSJ	REVISED -	
PLOT DATE = 6/26/2019	CHECKED - MJW	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

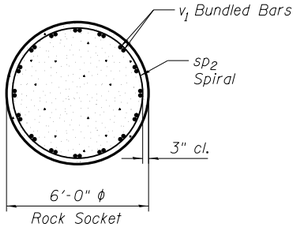
WEST ABUTMENT BILL OF MATERIAL
STRUCTURE 084-9963 - 6TH ST NSRR

SHEET NO. 25 OF 29 SHEETS

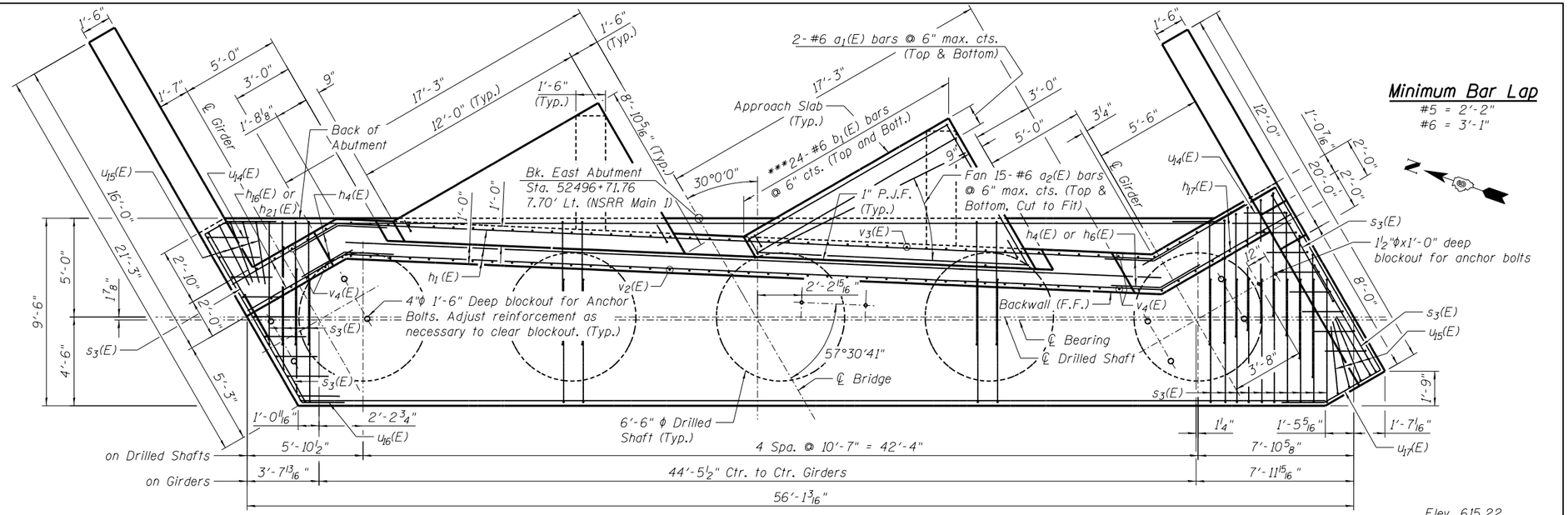
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
•	(109) VB,(110) VB-5	SANGAMON	382	287
		CONTRACT NO. 93733		
•666 & 666 ALT.	ILLINOIS FED. AID PROJECT			



SECTION B-B

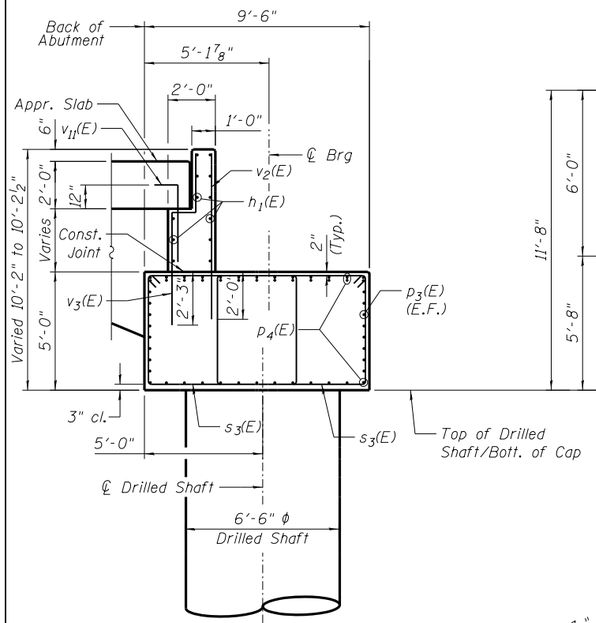


SECTION C-C



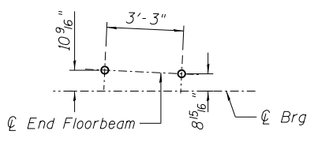
Minimum Bar Lap
#5 = 2'-2"
#6 = 3'-1"

PLAN



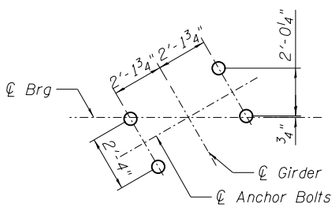
SECTION A-A

(At Rt. L's to Bk. of Abut.)



BLOCKOUT LAYOUT

(At End Floorbeam Location)



BLOCKOUT LAYOUT

(At Girders Locations)

ELEVATION - EAST ABUTMENT

(Looking East)

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FINAL

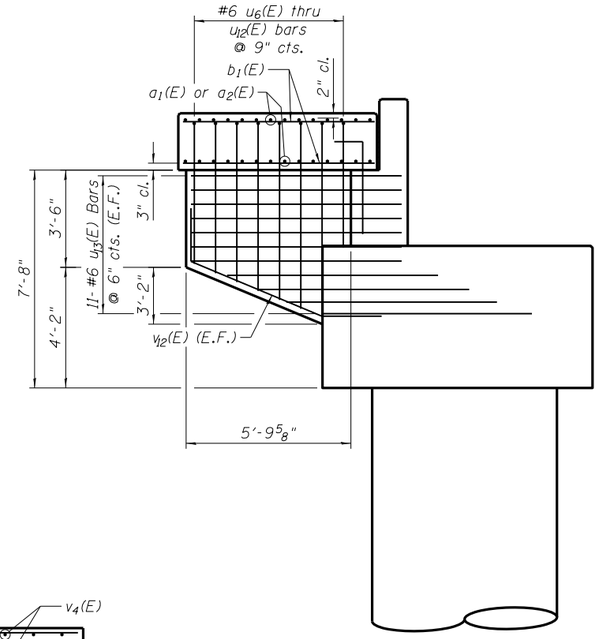
FILE NAME =	USER NAME = Pop00275	DESIGNED - MJW	REVISED -
		CHECKED - TJH/TDP	REVISED -
	PLOT SCALE = 0:2.0000 '' / in.	DRAWN - RSJ	REVISED -
	PLOT DATE = 6/26/2019	CHECKED - MJW	REVISED -

HANSON

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

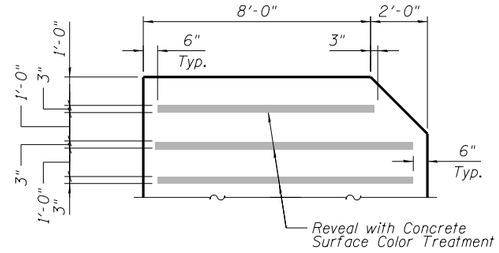
EAST ABUTMENT
STRUCTURE 084-9963 - 6TH ST NSRR
SHEET NO. 26 OF 29 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
•	(109) VB,(110) VB-5	SANGAMON	382	288
		CONTRACT NO. 93733		
•666 & 666 ALT.	ILLINOIS FED. AID PROJECT			

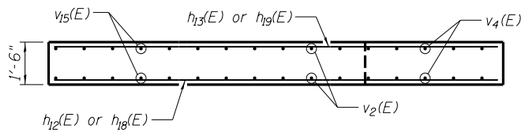


APPROACH SLAB SECTION

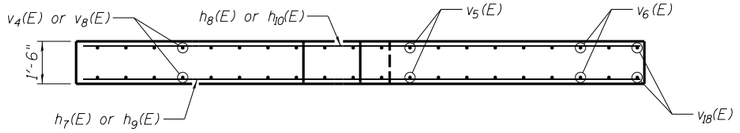
(Horizontal Dimensions at Rt. ℄'s to back of abutment.)



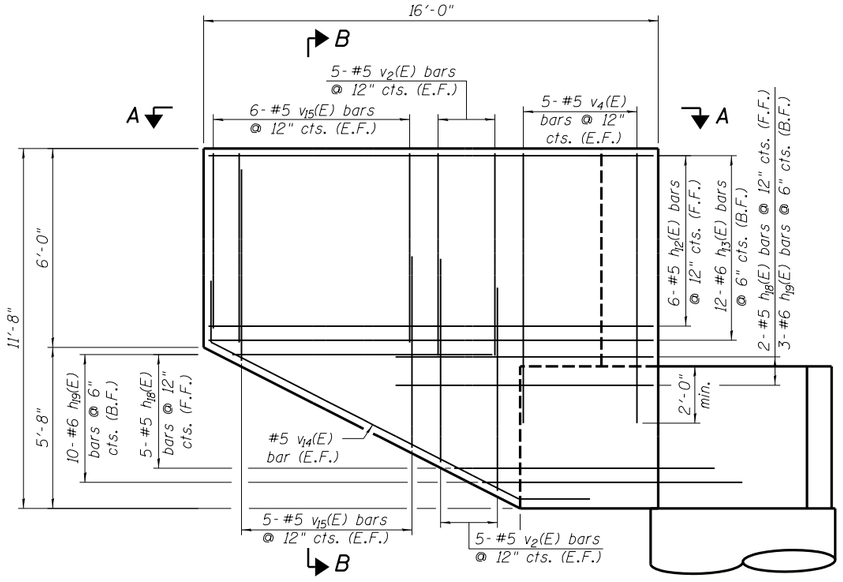
CONCRETE REVEAL DETAIL



SECTION A-A - PLAN VIEW

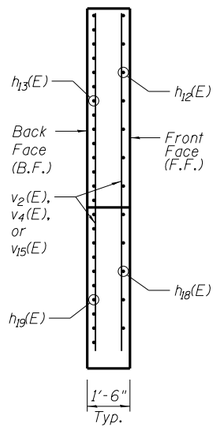


SECTION C-C - PLAN VIEW

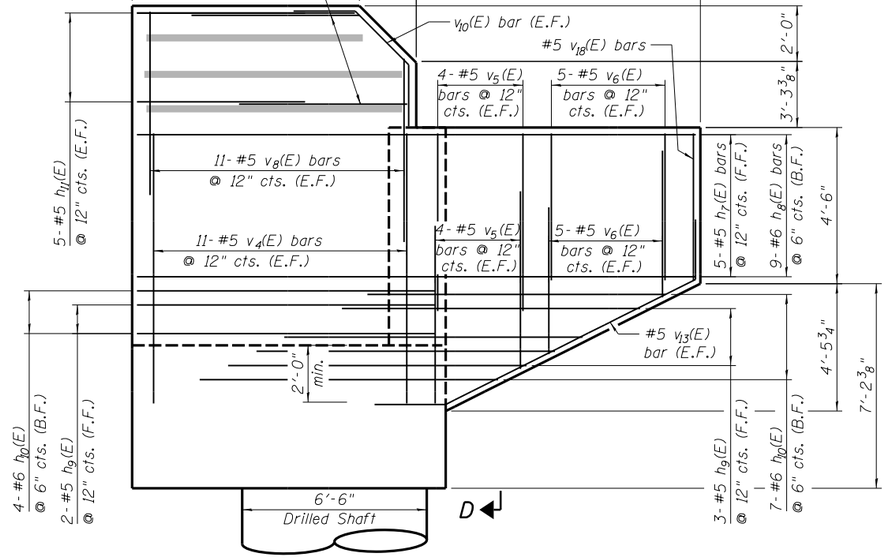


ELEVATION - NORTH WING END VIEW

(Looking South)

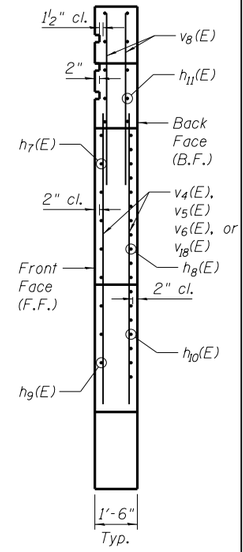


WINGWALL SECTION B-B



ELEVATION - SOUTH WING END VIEW

(Looking North)



WINGWALL SECTION D-D

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FINAL

FILE NAME =

HANSON

USER NAME = Pop00275 | DESIGNED - MJW | REVISED -

CHECKED - TJH/TDP | REVISED -

PLOT SCALE = 0:2.0000 '' / in. | DRAWN - RSJ | REVISED -

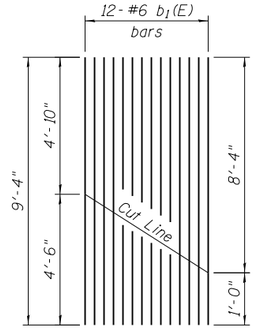
PLOT DATE = 6/26/2019 | CHECKED - MJW | REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

EAST ABUTMENT DETAILS
STRUCTURE 084-9963 - 6TH ST NSRR

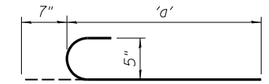
SHEET NO. 27 OF 29 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
•	(109) VB,(110) VB-5	SANGAMON	382	289
		CONTRACT NO. 93733		
•666 & 666 ALT.	ILLINOIS FED. AID PROJECT			



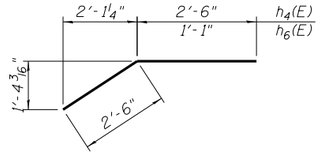
BAR CUTTING DIAGRAM FOR b_1(E)

Order b_1(E) full length. Cut as shown and use remainder of bars in opposite face.

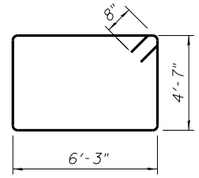


BARS h_{16}(E), h_{17}(E) & h_{21}(E

Bar	'a'
h_{16}(E)	6'-2"
h_{17}(E)	7'-8"
h_{21}(E)	4'-7"



BARS h_4(E) & h_6(E)



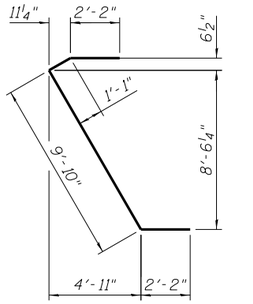
BAR s_3(E)

BILL OF MATERIAL
EAST ABUTMENT

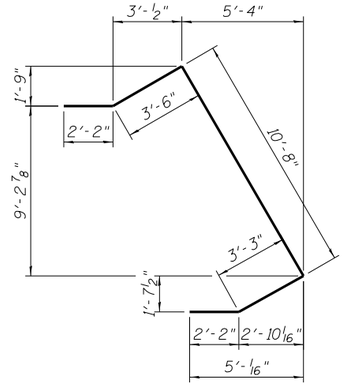
Bar	No.	Size	Length	Shape
a_1(E)	8	#6	11'-8"	——
a_2(E)	60	#6	13'-8"	——
b_1(E)	48	#6	9'-4"	——
h_1(E)	24	#5	21'-10"	——
h_4(E)	24	#5	5'-0"	⌐—
h_6(E)	4	#5	3'-7"	⌐—
h_7(E)	5	#5	19'-8"	——
h_8(E)	9	#6	19'-8"	——
h_9(E)	5	#5	10'-1"	——
h_{10}(E)	11	#6	11'-1"	——
h_{11}(E)	20	#5	5'-11"	——
h_{12}(E)	6	#5	15'-8"	——
h_{13}(E)	12	#6	15'-8"	——
h_{16}(E)	12	#5	6'-9"	⌐—
h_{17}(E)	16	#5	8'-3"	⌐—
h_{18}(E)	7	#5	8'-8"	——
h_{19}(E)	13	#6	9'-1"	——
h_{21}(E)	4	#5	5'-2"	⌐—
p_3(E)	18	#8	55'-8"	——
p_4(E)	39	#10	55'-8"	——
s_3(E)	142	#6	23'-0"	□
sp_2	5	#6	*35'-0"	∿∿
u_5(E)	20	#5	3'-4"	⌐¬
u_6(E)	2	#6	11'-0"	⌐¬
u_7(E)	2	#6	11'-10"	⌐¬
u_8(E)	2	#6	12'-10"	⌐¬
u_9(E)	2	#6	13'-10"	⌐¬
u_{10}(E)	2	#6	14'-10"	⌐¬
u_{11}(E)	2	#6	15'-10"	⌐¬
u_{12}(E)	4	#6	16'-10"	⌐¬
u_{13}(E)	44	#6	7'-5"	⌐¬
u_{14}(E)	18	#5	8'-9"	⌐¬
u_{15}(E)	8	#5	11'-7"	⌐¬
u_{16}(E)	8	#5	15'-3"	⌐⌐
u_{17}(E)	8	#5	21'-9"	⌐⌐
v_1	160	#18	38'-10"	——
v_2(E)	54	#5	7'-1"	——
v_3(E)	34	#6	8'-4"	⌐¬
v_4(E)	72	#5	8'-7"	——
v_5(E)	16	#5	5'-9"	——
v_6(E)	20	#5	4'-8"	——
v_8(E)	22	#5	7'-6"	——
v_{10}(E)	2	#5	7'-0"	⌐
v_{11}(E)	28	#6	4'-3"	⌐
v_{12}(E)	4	#6	11'-1"	⌐⌐
v_{13}(E)	2	#5	14'-6"	⌐⌐
v_{14}(E)	2	#5	16'-10"	⌐⌐
v_{15}(E)	22	#5	5'-8"	——
v_{18}(E)	2	#5	4'-3"	——

Structure Excavation	Cu. Yds.	130
Concrete Structures	Cu. Yds.	149.7
Drilled Shaft in Soil	Cu. Yds.	124.4
Drilled Shaft in Rock	Cu. Yds.	81.2
Reinforcement Bars	Pound	103,060
Reinforcement Bars, Epoxy Coated	Pound	25,610

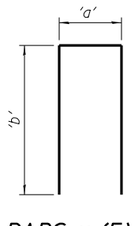
* Length is height of spiral.



BAR u_{16}(E)

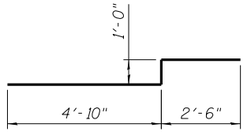


BAR u_{17}(E)

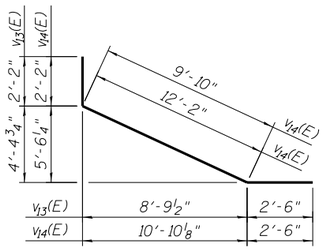


Bar	'a'	'b'
u_5(E)	1'-8"	0'-10"
u_6(E)	1'-0"	5'-0"
u_7(E)	1'-0"	5'-5"
u_8(E)	1'-0"	5'-11"
u_9(E)	1'-0"	6'-5"
u_{10}(E)	1'-0"	6'-11"
u_{11}(E)	1'-0"	7'-5"
u_{12}(E)	1'-0"	7'-11"
u_{14}(E)	4'-5"	2'-2"
u_{15}(E)	4'-7"	3'-6"

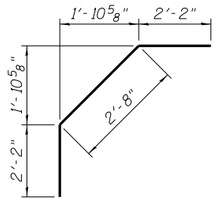
BARS u_5(E), u_6(E), u_7(E), u_8(E)
u_9(E), u_{10}(E), u_{11}(E), u_{12}(E), u_{14}(E), u_{15}(E)



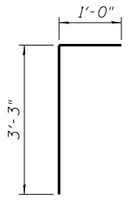
BAR v_3(E)



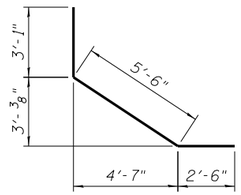
BAR v_{13}(E) & v_{14}(E)



BARS v_{10}(E)



BAR v_{11}(E)



BARS v_{12}(E)

MIN. BAR LAPS FOR SPIRALS

#6 Bars = 2'-7"

B-145
Sta. 998+21, 66' LT
9/5/13

	N	Qu	w%	
601.0				
600.04				TOPSOIL
	8	4.50P	15	Brown very fine sandy clayey SILT, some brick and rock fragments - FILL.
	12	4.50P	16	
595.04				
	12	3.00P	21	Brown and gray very fine sandy SILT.
	8	1.44B	23	
590.04				
	7	3.00P	24	Brown very fine sandy SILT, some clay.
587.54				
	5	0.58B	26	Dark gray very fine sandy silty CLAY.
585.04				
	5	1.03B	24	Gray very fine sandy silty CLAY, trace small gravel.
	5	0.70B	22	
577.54				
	63	4.50P	16	Brown and gray SHALE. (HIGHLY WEATHERED SHALE)
572.54				
	50/4"		9	Gray SHALE.
	50/5"		8	
566.04	Rec. = 77% RQD = 73% Rec. = 90% RQD = 56%			Gray sandy SHALE, micaceous.
562.54	11.3 Rec. = 90% RQD = 48% Rec. = 99% RQD = 68%			Gray clayey SHALE.
558.04				Gray sandy SHALE, micaceous.
556.04	Rec. = 100% RQD = 46% Rec. = 67% RQD = 0%			COAL.
551.54				Bottom of Hole = 49.5 feet

B-146
Sta. 1000+74, 15' RT
9/11/13

	N	Qu	w%	
587.0				
586.61				ASPHALT.
585.86				CONCRETE.
	4		24	Dark gray very fine sandy silty CLAY.
583.53				
	4	0.66B	25	Blue-gray very fine to fine sandy silty CLAY.
	6	2.47S	19	
578.53				
	57	4.50P	14	Brown and gray SHALE. (HIGHLY WEATHERED SHALE)
576.03				
	50	4.50P	11	Gray SHALE.
	50/5"		11	
572.03	Rec. = 81% RQD = 19% Rec. = 88% RQD = 71%			Gray clayey SHALE, micaceous.
	12.7 Rec. = 75% RQD = 44% Rec. = 85% RQD = 51%			
	21.9 Rec. = 91% RQD = 78%			
556.5	Rec. = 100% RQD = 78%			Stiff to very stiff gray shaley CLAY.
553.5				Gray sandy SHALE, micaceous.
553.0				COAL.
552.0				Bottom of Hole = 35.0 feet

LEGEND

N	Standard Penetration Test N (blows/ft)
Qu	Unconfined Strength (tsf)
w%	Natural Moisture Content (%)
DD ▽ 558.10	Water Surface Elevation Encountered in Boring DD = during drilling Oh = at completion 24h = 24 hours after completion

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FINAL

FILE NAME =

HANSON

USER NAME = Pop00275	DESIGNED - MJW	REVISED -
	CHECKED - TJH/TDP	REVISED -
PLOT SCALE = 0:2.0000 '1' / in.	DRAWN - RSJ	REVISED -
PLOT DATE = 6/26/2019	CHECKED - MJW	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SUBSURFACE DATA PROFILE
STRUCTURE 084-9963 - 6TH ST NSRR
SHEET NO. 29 OF 29 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
•	(109) VB,(110) VB-5	SANGAMON	382	291
		CONTRACT NO. 93733		
•666 & 666 ALT.	ILLINOIS FED. AID PROJECT			

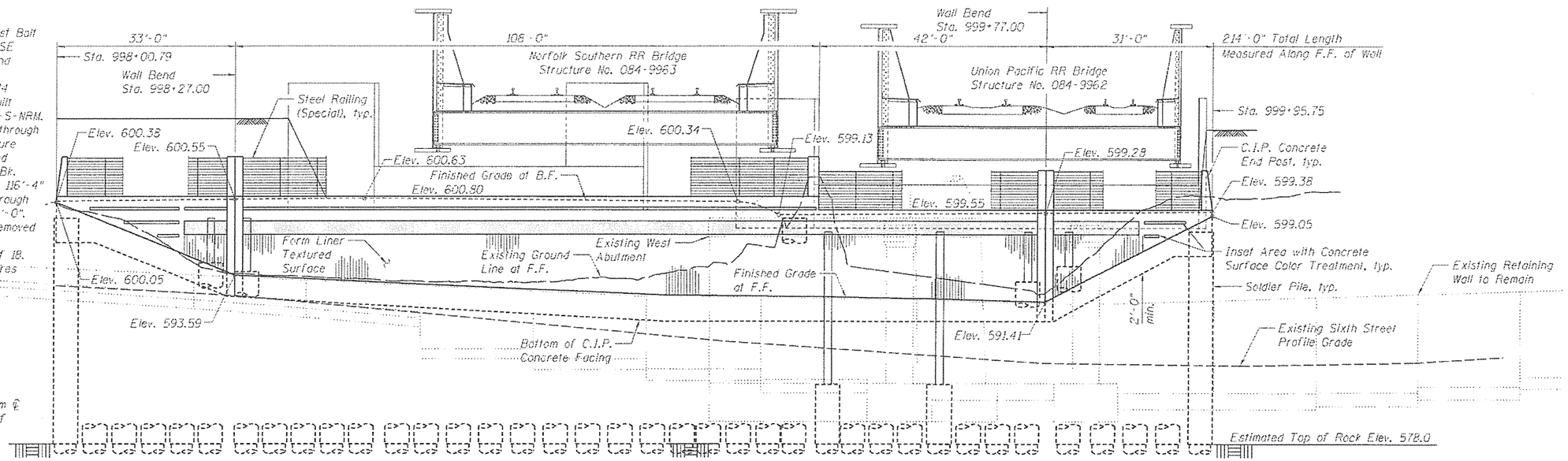
Benchmark:
BM# D2218-07 - Chiseled 'X' on West Bolt of fire hydrant - SE Quad 6th Street and Wellesly Avenue. Elevation = 598.884

Existing Structure: SN 084-9901 - Built in 1934 under 109-S-NRM. Three Span Steel through plate girder structure supported on closed abutments. Bk. to Bk. Abutment length is 116'-4" and ctr. to ctr. through girder width of 20'-0". Structure to be Removed and Replaced.

Construction Sequence: See Sheet 3 of 18.

Traffic Control: Temporary Lane Closures

Salvage: None

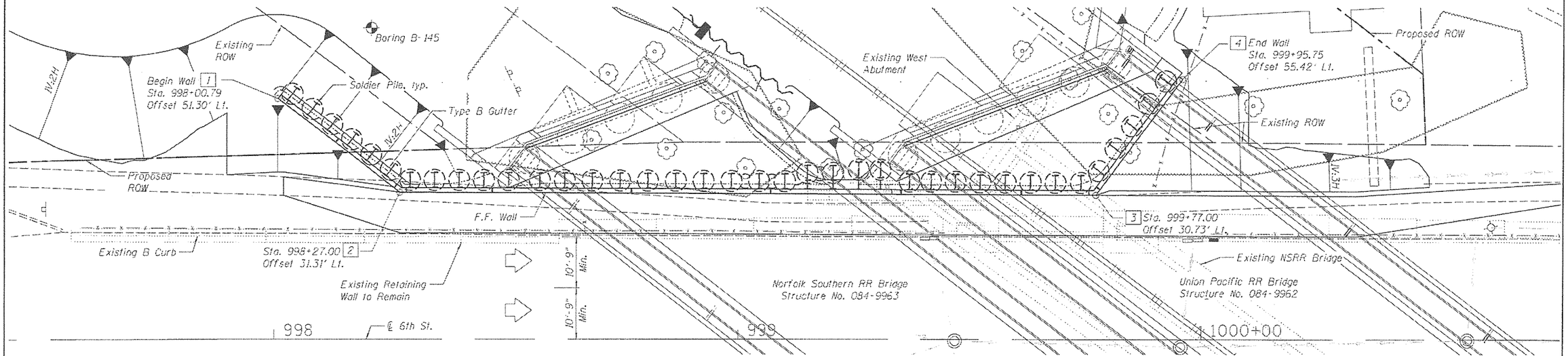


Note: Wall offsets are measured from ℄ 6th Street to the front face of C.I.P. Facing.

F.F. - Front Face
B.F. - Back Face
[2] - Control Point

UNFOLDED ELEVATION

(Looking @ F.F. of West Wall)



PLAN

Sta. 997+00 Elev 595.17
Sta. 997+50 Elev 594.18
Sta. 998+00 Elev 592.72
Sta. 998+50 Elev 590.75
Sta. 999+00 Elev 588.37
Sta. 999+50 Elev 586.05
Sta. 1000+00 Elev 585.14
Sta. 1000+50 Elev 586.13
Sta. 1001+00 Elev 586.33
Sta. 1001+50 Elev 586.77
Sta. 1002+00 Elev 592.51
Sta. 1002+50 Elev 593.88
Sta. 1003+00 Elev 595.11

EXISTING PROFILE GRADE

SIXTH STREET

Along ℄ of Sixth St.

APPROVED
For Structural Adequacy Only
Engineer of Bridges & Structures

LICENSED STRUCTURAL ENGINEER
ROBERT CHARLES CHATMAN
062-060346
STATE OF ILLINOIS
Robert Chatman
June 25, 2019
Expires November 30, 2020

I certify that to the best of my knowledge, information and belief, this retaining wall design is structurally adequate for the design loading shown on the plans. The design is an economical one for the style of structure and complies with requirements of the current AREMA Specifications.

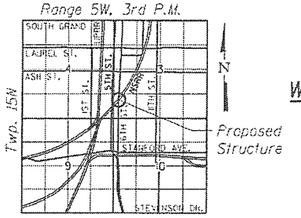
DESIGN SPECIFICATIONS

2017 AREMA Specifications

DESIGN STRESSES

FIELD UNITS

f'c = 4,000 psi
fy = 60,000 psi (Reinforcement)
fy = 50,000 psi (M270 Grade 50)



LOCATION SKETCH

WEST WALL GENERAL PLAN & ELEVATION
6TH ST. RETAINING WALLS
F.A.P. 666-SECTION (109)VB, (110)VB-5
SANGAMON COUNTY
STATION 998+00.79 TO 1001+66.02

FINAL

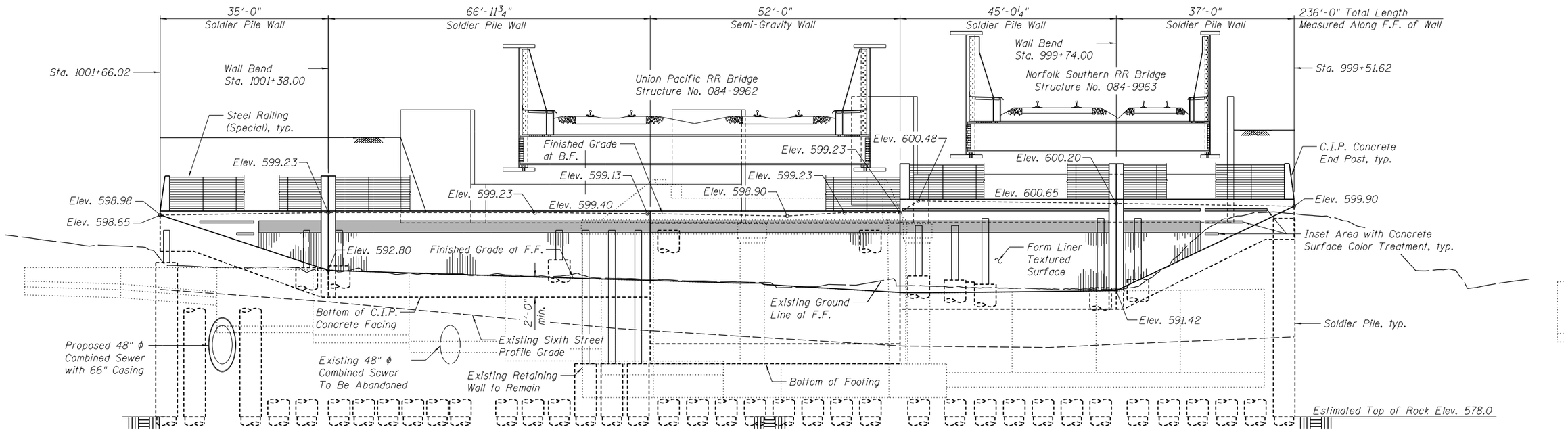
HANSON

USER NAME = modau20223	DESIGNED - RGC	REVISED -	
	CHECKED - KMS	REVISED -	
PLOT SCALE = 0.1667 '/ in.	DRAWN - EJM	REVISED -	
PLOT DATE = 6/25/2019	CHECKED - RGC	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

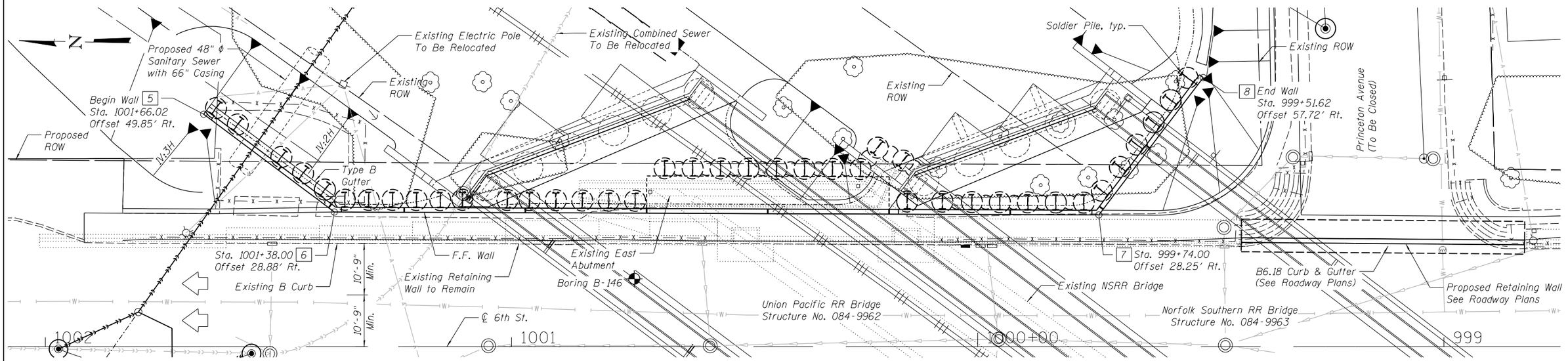
GENERAL PLAN & ELEVATION - WEST WALL
RETAINING WALLS - 6TH STREET
SHEET NO. 1 OF 18 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
*	(109) VB,(110) VB-5	SANGAMON	382	292
		CONTRACT NO. 93733		
	ILLINOIS FED. AID PROJECT			



UNFOLDED ELEVATION

(Looking @ F.F. of East Wall)



PLAN

Note: Wall offsets are measured from ℄ 6th Street to the front face of C.I.P. Facing.

F.F. - Front Face
B.F. - Back Face

6 - Control Point

EAST WALL GENERAL PLAN & ELEVATION
6TH ST. RETAINING WALLS
F.A.P. 666-SECTION (109)VB, (110)VB-5
SANGAMON COUNTY
STATION 998+00.79 TO 1001+66.02

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FINAL

HANSON

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	CHECKED - KMS	REVISED -	
PLOT SCALE = 0.1667 ' / in.	DRAWN - EJM	REVISED -	
PLOT DATE = 6/26/2019	CHECKED - RGC	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

GENERAL PLAN & ELEVATION - EAST WALL
RETAINING WALLS - 6TH STREET

SHEET NO. 2 OF 18 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
•	(109) VB,(110) VB-5	SANGAMON	382	293
		CONTRACT NO. 93733		
	ILLINOIS FED. AID PROJECT			

WALL CONTROL POINTS

Control Point	Station	Offset
1	998+00.79	51.30' LT
2	998+27.00	31.31' LT
3	999+77.00	30.73' LT
4	999+95.75	55.42' LT
5	1001+66.02	49.85' RT
6	1001+38.00	28.88' RT
7	999+74.00	28.25' RT
8	999+51.62	57.72' RT

Control Points are to Front Face of C.I.P. Facing.

GENERAL NOTES

1. Reinforcement bars designated (E) shall be epoxy coated.
2. All substructure concrete shall have a compressive strength of 4,000 psi at 14 days.
3. The Conctractor is responsible for the design and performance of the Untreated Timber Lagging using no less than a 3 in. nominal rough-sawn thickness and timber with a minimum allowable bending stress of 1000 psi.

INDEX OF SHEETS

CONSTRUCTION SEQUENCE

Stage 1: Maintain rail traffic on existing track.

Item 4: NSRR Bridge and south ends of retaining walls

a. Drill and set Soldier Piles 1-5 of the East Retaining Wall, in location of Jacked-In-Place Sanitary Sewer.
b. Install Sanitary Sewer.
c. Drill and place the Secant Lagging to existing ground surface for the West Retaining Wall between Soldier Piles 19-23 and for the East Retaining Wall between Soldier Piles 25-32.
d. Drill and set Soldier Pile 25 and Temporary Soldier Piles A & B of the East Retaining Wall.
e. Drill and set Soldier Piles 1-24 of the West Retaining Wall and Soldier Piles 26-38 of the East Retaining Wall. Drill through footing of existing East Abutment wingwall as required.
c. Install timber lagging while excavating in front of soldier piles to bottom of facing and filling behind soldier piles to bottom of new abutments.
d. Install drilled shafts for the West and East Abutments.
e. Remove conflicting portion of existing East Abutment wingwall.
f. Construct cast-in-place concrete abutments.
g. Install pipe underdrain and cast-in-place concrete facing panels W1-W5 and E10-E11.
h. Place fill behind new abutments and between new abutments and retaining walls.
i. Set bridge superstructure during temporary closure of 6th Street.
j. Complete bridge superstructure, including roadway luminaires. Complete Stage 1 railroad embankment and subballast placement.
k. NSRR places ballast and shifts tracks to Temporary NSRR Main 1 (outside position on new bridge).

Stage 4A: Maintain Rail traffic on Temporary NSRR Main 1.

Item 5: UPRR Bridge and north ends of retaining walls
a. Remove existing bridge superstructure during weekend closure of 6th Street.
b. Drill and place the Secant Lagging to existing ground surface for the East Retaining Wall between Soldier Piles 18-25.
c. Drill and set Soldier Pile 25 of the West Retaining Wall and Soldier Piles 18-24 of the East Retaining Wall.
d. Excavate around existing abutments using previously installed soldier piles to retain railroad embankment near active track.
e. Remove existing abutment and wingwall stems to top of existing footing. Install timber lagging between Soldier Piles 23-25 of the West Retaining Wall to retain embankment while removing south end of existing West Abutment. Remove existing footings only where they conflict with new soldier piles or drilled shafts.
e. Drill and set Soldier Piles 26-38 of the West Retaining Wall and Soldier Piles 6-17 of the East Retaining Wall.
f. Construct semi-gravity wall panels E6-E7.
g. Install timber lagging while excavating in front of soldier piles to bottom of facing and filling behind soldier piles to bottom of abutments.
h. Install drilled shafts for the new abutments. Construct cast-in-place concrete abutments.
i. Install pipe underdrain and cast-in-place concrete facing panels W6-W9, E1-E5, and E8-E9.
j. Place fill behind new abutments and between new abutments and retaining walls.
k. Set bridge superstructure during temporary closure of 6th Street.
l. Complete bridge superstructure. Complete Stage 4A railroad embankment and subballast placement.
m. NSRR installs tracks on NSRR Main 1 (inside position on new bridge).

TOTAL BILL OF MATERIAL

ITEM	UNIT	TOTAL
Porous Granular Embankment	Cu. Yd.	1267
Structure Excavation	Cu. Yd.	395
Form Liner Textured Surface	Sq. Ft.	2785
Stud Shear Connectors	Each	399
Reinforcement Bars, Epoxy Coated	Pound	28560
Slope Wall 4 Inch	Sq. Yd.	301
Furnishing Soldier Piles (W-Section)	Foot	2943
Drilling and Setting Soldier Piles (in Soil)	Cu. Ft.	21193.0
Drilling and Setting Soldier Piles (in Rock)	Cu. Ft.	17326.8
Untreated Timber Lagging	Sq. Ft.	2061
Secant Lagging	Cu. Ft.	1945
Concrete Structures (Retaining Wall)	Cu. Yd.	211.1
Concrete Sealer	Sq. Ft.	3959
Geocomposite Wall Drain	Sq. Yd.	165
Concrete Gutter, Type B	Foot	65
Concrete Surface Color Treatment	Sq. Ft.	514
Steel Railing (Special)	Foot	426
Pipe Underdrains for Structures 4"	Foot	597

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FINAL

HANSON

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	CHECKED - KMS	REVISED -
PLOT SCALE = 0.1667 ' / in.	DRAWN - EJM	REVISED -
PLOT DATE = 6/26/2019	CHECKED - RGC	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

GENERAL DATA
RETAINING WALLS – 6TH STREET
SHEET NO. 3 OF 18 SHEETS

F.A.U. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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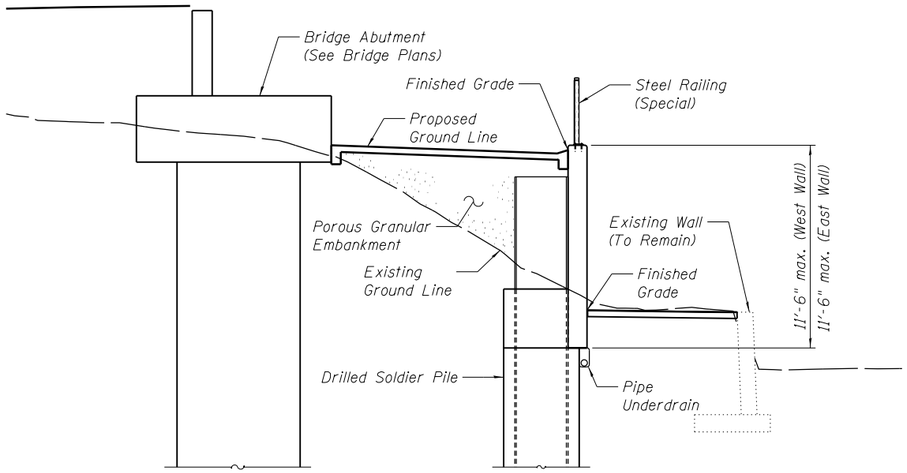
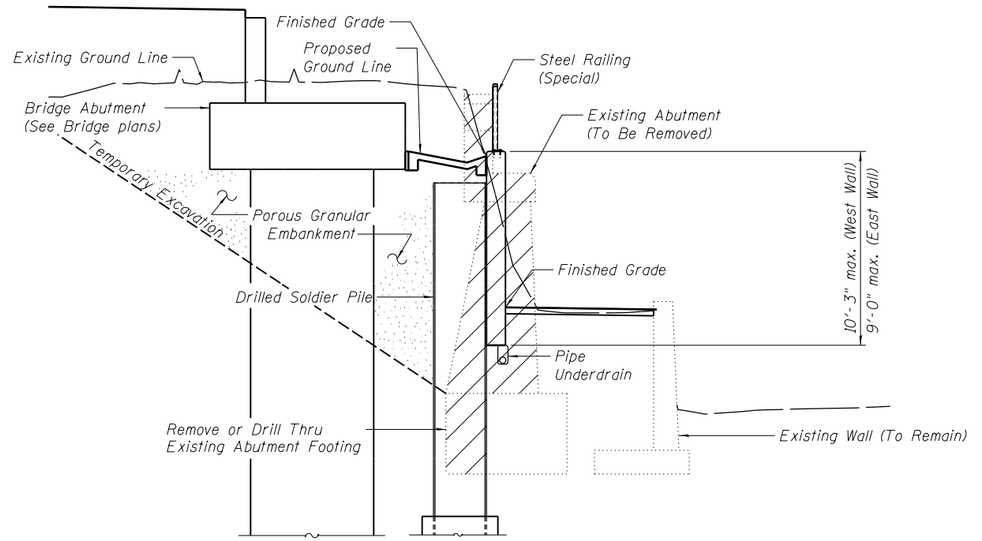
		CONTRACT NO. 93733		
	ILLINOIS FED. AID PROJECT			



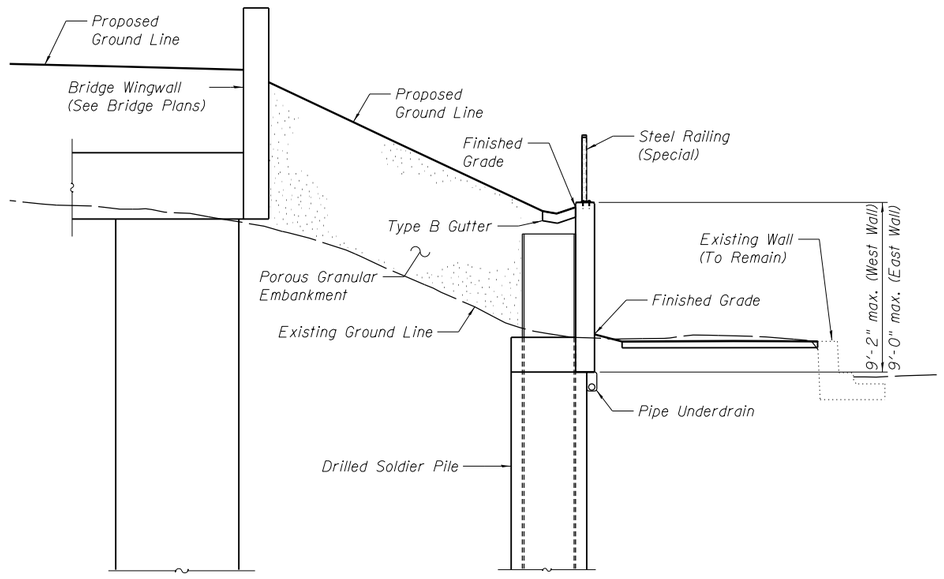
TYPICAL WALL SECTION

Except East Wall Sta. 1000+19.00 to 1000+71.00



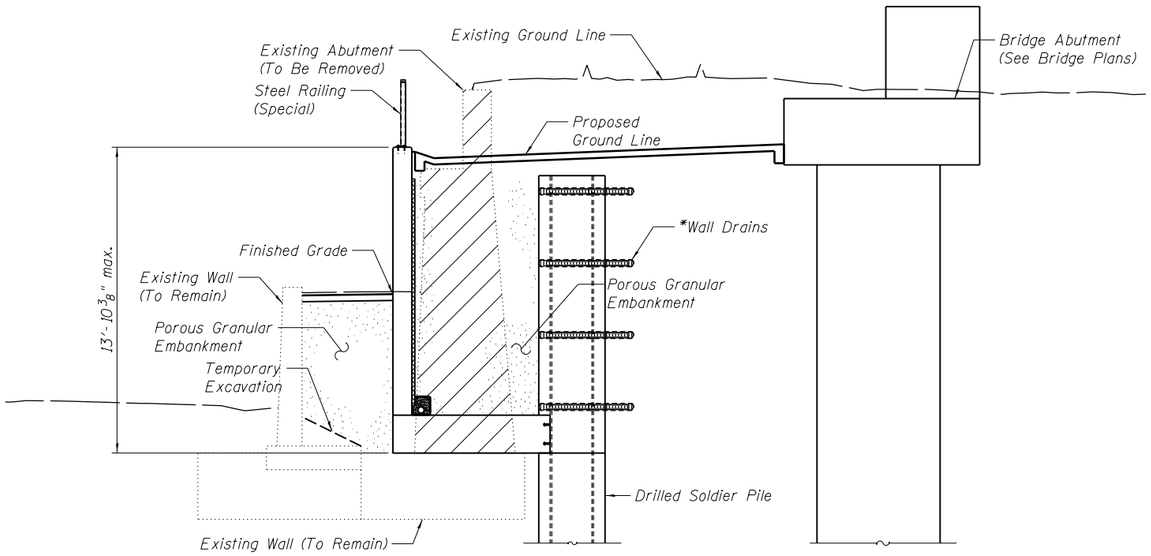
WALL SECTION WITH TEMPORARY EXCAVATION

West Wall Sta. 999+35 to 999+60±
East Wall Sta. 1000+71 to 1000+85±



WALL SECTION PARALLEL TO RAILROAD

West Wall Sta. 998+00.79 to 998+27.00
East Wall Sta. 1001+38.00 to 1001+66.02



SEMI-GRAVITY WALL SECTION

East Wall Sta. 1000+19.00 to 1000+71.00

* Included In The Cost of Secant Lagging.

FINAL

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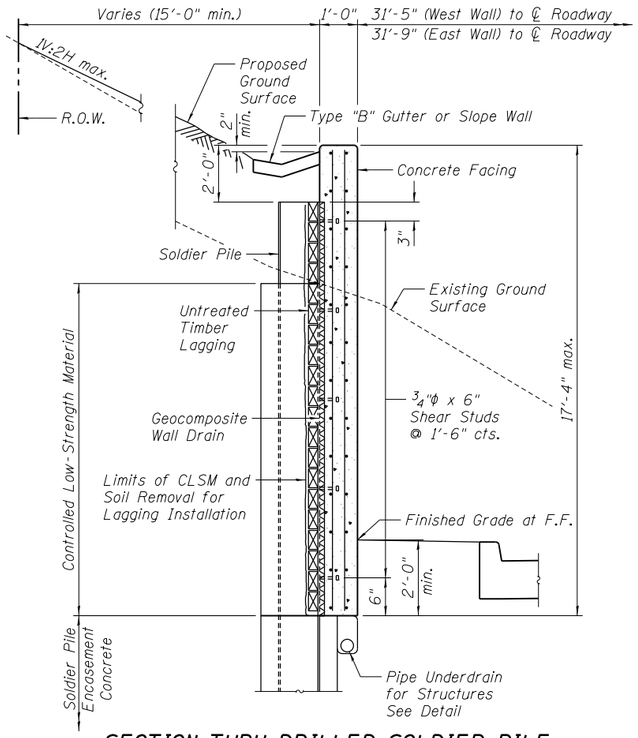
USER NAME = Pop00275	DESIGNED - RGC	REVISED -	
	CHECKED - KMS	REVISED -	
PLOT SCALE = 0.1667 ' / in.	DRAWN - EJM	REVISED -	
PLOT DATE = 6/26/2019	CHECKED - RGC	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

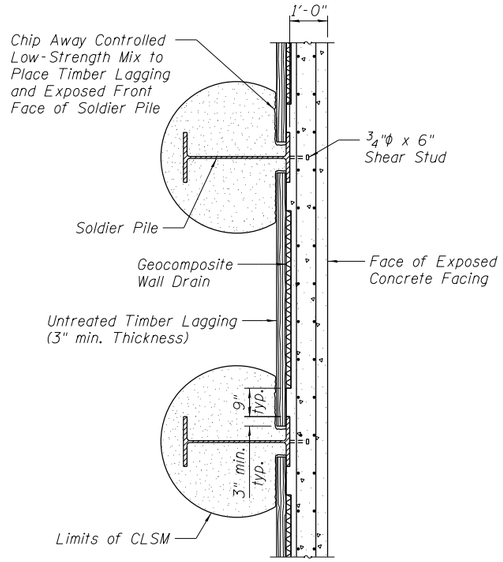
TYPICAL SECTIONS
RETAINING WALLS – 6TH STREET

SHEET NO. 4 OF 18 SHEETS

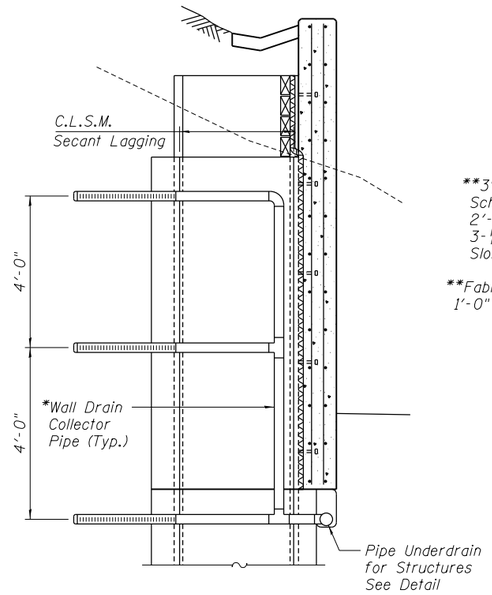
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
•	(109) VB,(110) VB-5	SANGAMON	382	295
		CONTRACT NO. 93733		
	ILLINOIS FED. AID PROJECT			



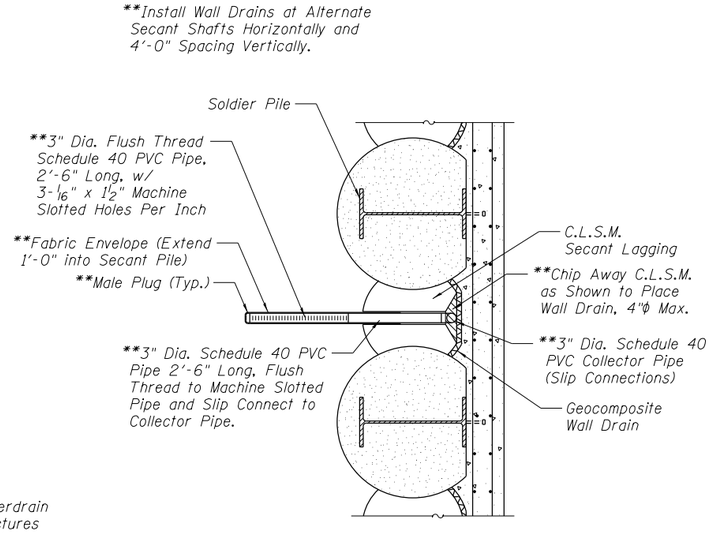
SECTION THRU DRILLED SOLDIER PILE WALL WITH ENCASEMENT AND C.I.P. FACING



SECTION THRU DRILLED SOLDIER PILE WALL

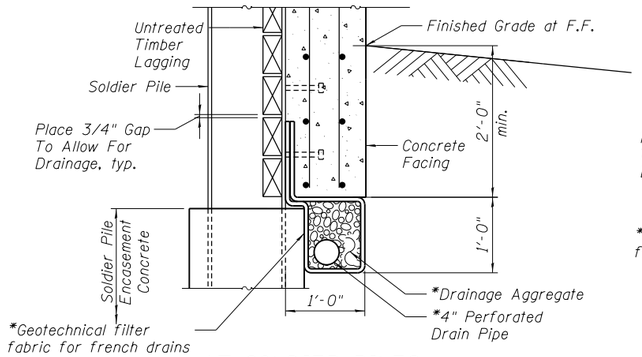


SECTION THRU DRILLED SOLDIER PILE WALL WITH SECANT LAGGING

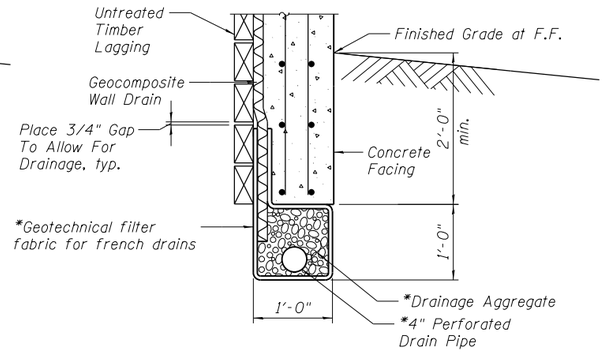


SECTION THRU SECANT LAGGING

** Included In The Cost of Secant Lagging.



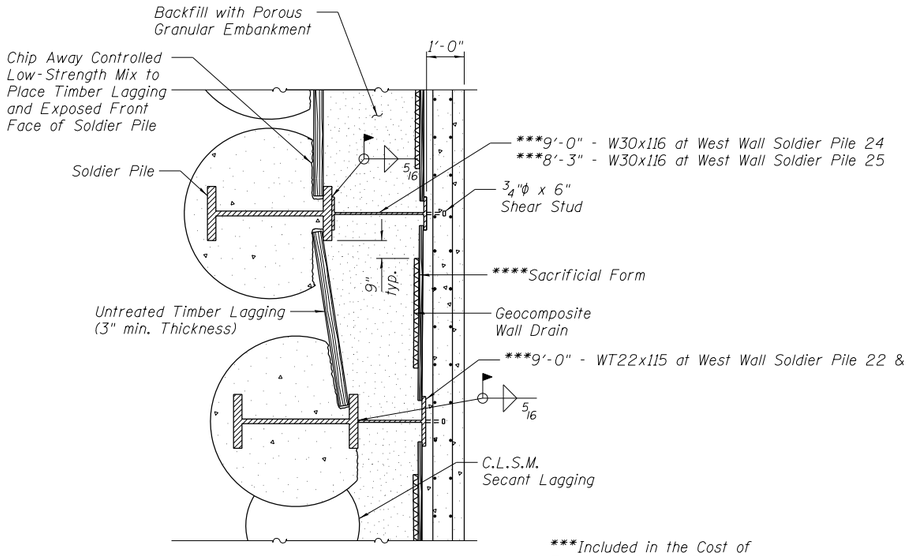
AT SOLDIER PILES



BETWEEN SOLDIER PILES

UNDERDRAIN DETAIL FOR SOLDIER PILE WALLS

*Included in the Cost of Pipe Underdrains for Structures, 4".



SECTION AT OFFSET FACING

***Included in the Cost of Furnishing Soldier Piles (W Section).

****Included in the Cost of Concrete Structures (Retaining Wall).

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FINAL

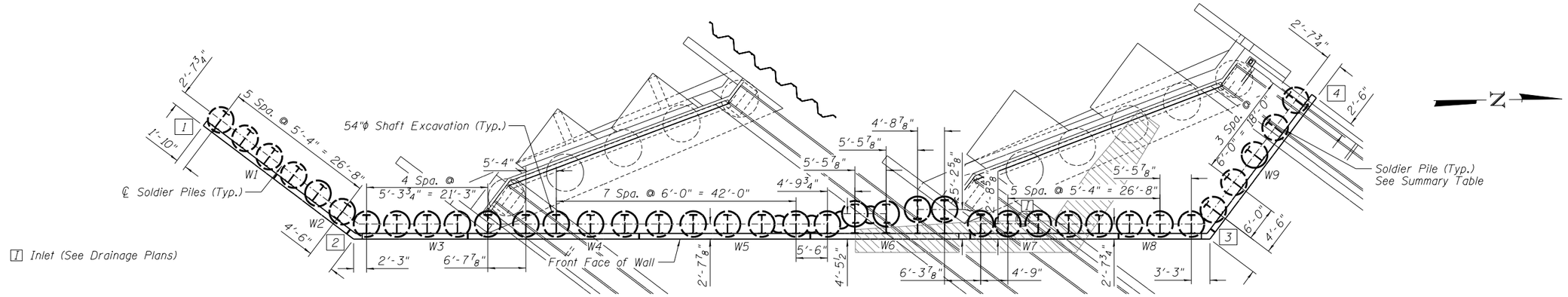
HANSON

USER NAME = Pop00275	DESIGNED - RGC	REVISED -	
	CHECKED - KMS	REVISED -	
PLOT SCALE = 0.1667 ' / in.	DRAWN - EJM	REVISED -	
PLOT DATE = 6/26/2019	CHECKED - RGC	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

TYPICAL SECTIONS
RETAINING WALLS – 6TH STREET
SHEET NO. 5 OF 18 SHEETS

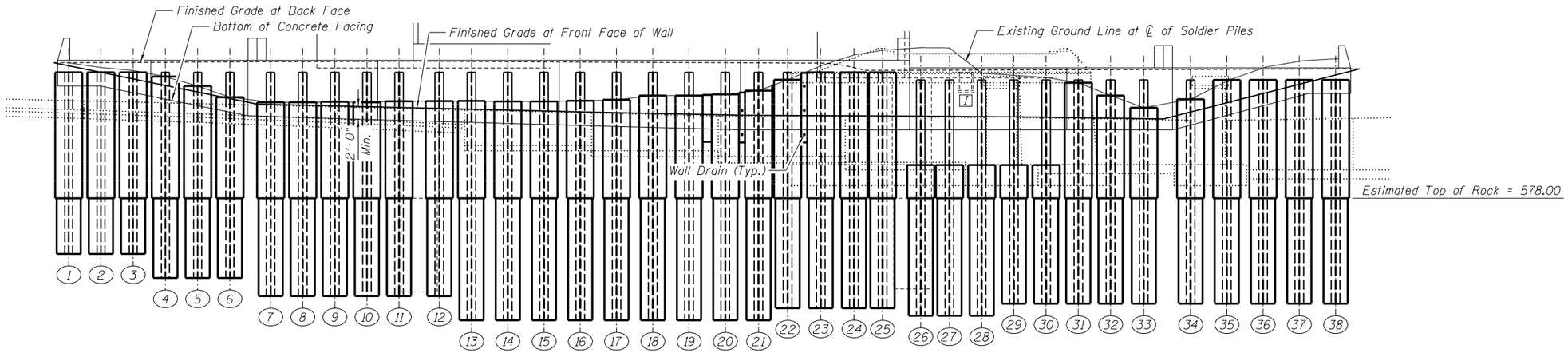
F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
•	(109) VB,(110) VB-5	SANGAMON	382	296
		CONTRACT NO. 93733		
	ILLINOIS FED. AID PROJECT			



1 Inlet (See Drainage Plans)

PLAN

Note: All Dimensions are Measured Along Front Face of Wall



ELEVATION

Unfolded Along Face of Wall

SOLDIER PILE SUMMARY

PILE NO.	PILE SIZE	LENGTH	BOTTOM ELEV.	TOP ELEV.	PILE NO.	PILE SIZE	LENGTH	BOTTOM ELEV.	TOP ELEV.	PILE NO.	PILE SIZE	LENGTH	BOTTOM ELEV.	TOP ELEV.
1	W40x249	30'-0"	568.80	598.80	14	W40x277	41'-0"	557.80	598.80	27	W40x431	39'-0"	558.55	597.55
2	W40x249	30'-0"	568.80	598.80	15	W40x277	41'-0"	557.80	598.80	28	W40x431	39'-0"	558.55	597.55
3	W40x249	30'-0"	568.80	598.80	16	W40x277	41'-0"	557.80	598.80	29	W40x249	37'-0"	560.55	597.55
4	W40x249	34'-0"	564.80	598.80	17	W40x277	41'-0"	557.80	598.80	30	W40x249	37'-0"	560.55	597.55
5	W40x249	34'-0"	564.80	598.80	18	W40x277	41'-0"	557.80	598.80	31	W40x249	37'-0"	560.55	597.55
6	W40x249	34'-0"	564.80	598.80	19	W40x277	41'-0"	557.80	598.80	32	W40x249	37'-0"	560.55	597.55
7	W40x249	37'-0"	561.80	598.80	20	W40x277	41'-0"	557.80	598.80	33	W40x249	37'-0"	560.55	597.55
8	W40x249	37'-0"	561.80	598.80	21	W40x277	41'-0"	557.80	598.80	34	W40x249	37'-0"	560.55	597.55
9	W40x249	37'-0"	561.80	598.80	22	W40x277	39'-0"	559.80	598.80	35	W40x249	37'-0"	560.55	597.55
10	W40x249	37'-0"	561.80	598.80	23	W40x277	39'-0"	559.80	598.80	36	W40x249	37'-0"	560.55	597.55
11	W40x277	37'-0"	561.80	598.80	24	W40x431	39'-0"	559.80	598.80	37	W40x249	37'-0"	560.55	597.55
12	W40x277	37'-0"	561.80	598.80	25	W40x431	39'-0"	558.55	597.55	38	W40x249	37'-0"	560.55	597.55
13	W40x277	41'-0"	557.80	598.80	26	W40x431	39'-0"	558.55	597.55					

SECANT LAGGING SUMMARY

BETWEEN PILES NO.	DIAMETER	LENGTH	BOTTOM ELEV.	TOP ELEV.
19-20	36"	7'-9"	587.32	595.07
20-21	36"	8'-3"	587.22	595.47
21-22	36"	9'-3"	587.42	596.67
22-23	36"	11'-6"	587.23	598.73

WEST WALL
STUD SHEAR CONNECTORS REQUIRED

Pile No.	Number Required on Each Pile
1	2
2-3	3
4	4
5-6	5
7-12	6
13-24	7
25-34	6
35	5
36	4
37	3
38	2

2 = Control Point

BILL OF MATERIAL

ITEM	UNIT	TOTAL
Stud Shear Connectors	Each	216
Furnishing Soldier Piles (W Section)	Foot	1426
Drilling and Setting Soldier Piles (in Soil)	Cu. Ft.	10023.2
Drilling and Setting Soldier Piles (in Rock)	Cu. Ft.	8207.1
Untreated Timber Lagging	Sq. Ft.	1128
Secant Lagging	Cu. Ft.	260

FINAL

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HANSON

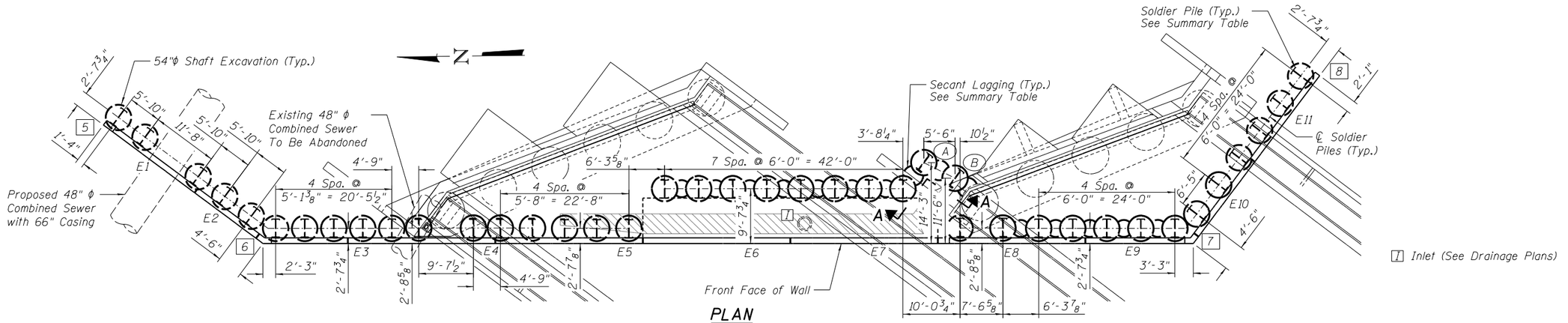
USER NAME = madau00223	DESIGNED - RGC	REVISED -	
	CHECKED - KMS	REVISED -	
PLOT SCALE = 0.1667 ' / in.	DRAWN - EJM	REVISED -	
PLOT DATE = 7/2/2019	CHECKED - RGC	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SOLDIER PILES – WEST WALL
RETAINING WALLS – 6TH STREET

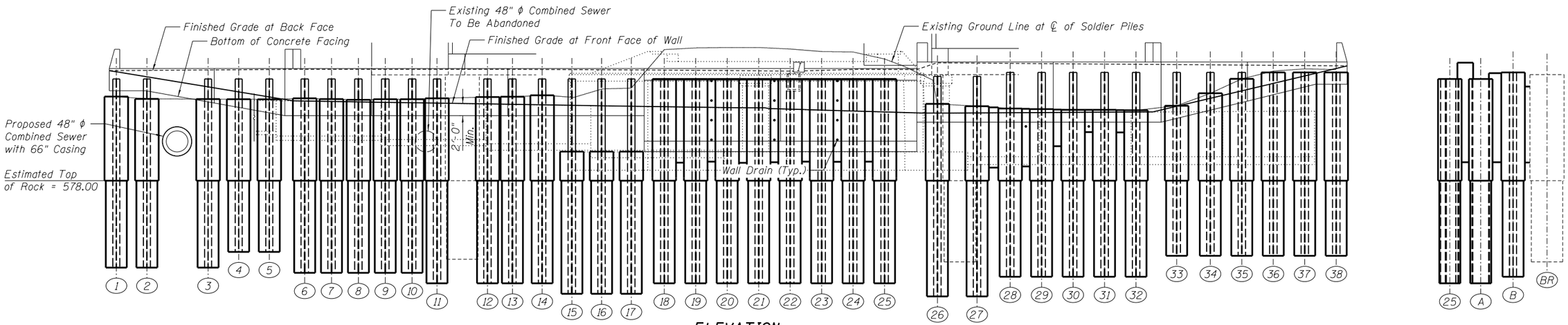
SHEET NO. 6 OF 18 SHEETS

F.A.U. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
•	(109) VB,(110) VB-5	SANGAMON	382	297
		CONTRACT NO. 93733		
	ILLINOIS FED. AID PROJECT			



PLAN

Note: All Dimensions are Measured Along Front Face of Wall



ELEVATION

Unfolded Along Face of Wall

SECTION A-A

Unfolded View

SOLDIER PILE SUMMARY

PILE NO.	PILE SIZE	LENGTH	BOTTOM ELEV.	TOP ELEV.	PILE NO.	PILE SIZE	LENGTH	BOTTOM ELEV.	TOP ELEV.	PILE NO.	PILE SIZE	LENGTH	BOTTOM ELEV.	TOP ELEV.
1	W40x249	36'-0"	561.40	597.40	15	W40x277	41'-0"	556.40	597.40	29	W40x249	39'-0"	559.65	598.65
2	W40x249	36'-0"	561.40	597.40	16	W40x277	41'-0"	556.40	597.40	30	W40x249	39'-0"	559.65	598.65
3	W40x249	36'-0"	561.40	597.40	17	W40x277	41'-0"	556.40	597.40	31	W40x249	39'-0"	559.65	598.65
4	W40x249	33'-0"	564.40	597.40	18	W40x249	39'-0"	558.40	597.40	32	W40x249	39'-0"	559.65	598.65
5	W40x249	33'-0"	564.40	597.40	19	W40x249	39'-0"	558.40	597.40	33	W40x249	35'-0"	563.65	598.65
6	W40x249	37'-0"	560.40	597.40	20	W40x249	39'-0"	558.40	597.40	34	W40x249	35'-0"	563.65	598.65
7	W40x249	37'-0"	560.40	597.40	21	W40x249	39'-0"	558.40	597.40	35	W40x249	35'-0"	563.65	598.65
8	W40x249	37'-0"	560.40	597.40	22	W40x249	39'-0"	558.40	597.40	36	W40x249	35'-0"	563.65	598.65
9	W40x249	37'-0"	560.40	597.40	23	W40x249	39'-0"	558.40	597.40	37	W40x249	35'-0"	563.65	598.65
10	W40x249	37'-0"	560.40	597.40	24	W40x249	39'-0"	558.40	597.40	38	W40x249	35'-0"	563.65	598.65
11	W40x431	39'-0"	558.40	597.40	25	W40x249	39'-0"	558.40	597.40	Temp A	W40x431	39'-0"	558.40	597.40
12	W40x431	39'-0"	558.40	597.40	26	W40x431	42'-0"	555.91	597.91	Temp B	W40x431	39'-0"	559.91	597.91
13	W40x431	39'-0"	558.40	597.40	27	W40x431	42'-0"	555.91	597.91					
14	W40x431	39'-0"	558.40	597.40	28	W40x249	39'-0"	559.65	598.65					

SECANT LAGGING SUMMARY

BETWEEN PILES NO.	DIAMETER	LENGTH	BOTTOM ELEV.	TOP ELEV.
18-19	36"	21'-9"	581.43	603.18
19-20	36"	21'-9"	581.63	603.38
20-21	36"	22'-0"	581.42	603.42
21-22	36"	21'-9"	581.53	603.28
22-23	36"	21'-3"	581.64	602.89
23-24	36"	21'-0"	581.61	602.61
24-25	36"	20'-3"	581.64	601.89
25-A	36"	19'-0"	581.53	600.53
A-B	36"	17'-0"	581.52	598.52
B-BR	36"	14'-6"	581.47	595.97
27-28	36"	11'-6"	580.50	592.00
28-29	36"	11'-0"	580.72	591.72
29-30	36"	7'-0"	584.59	591.59
30-31	36"	4'-3"	587.27	591.52
31-32	36"	4'-3"	587.22	591.47

EAST WALL
STUD SHEAR CONNECTORS REQUIRED

Pile No.	Number Required on Each Pile
1	2
2	3
3	4
4-5	5
6-17	6
18-25	2
26-33	7
34	6
35	5
36	4
37	3
38	2

6 = Control Point

BILL OF MATERIAL

ITEM	UNIT	TOTAL
Stud Shear Connectors	Each	183
Furnishing Soldier Piles (W Section)	Foot	1517
Drilling and Setting Soldier Piles (in Soil)	Cu. Ft.	11169.8
Drilling and Setting Soldier Piles (in Rock)	Cu. Ft.	9119.7
Untreated Timber Lagging	Sq. Ft.	933
Secant Lagging	Cu. Ft.	1685

FINAL

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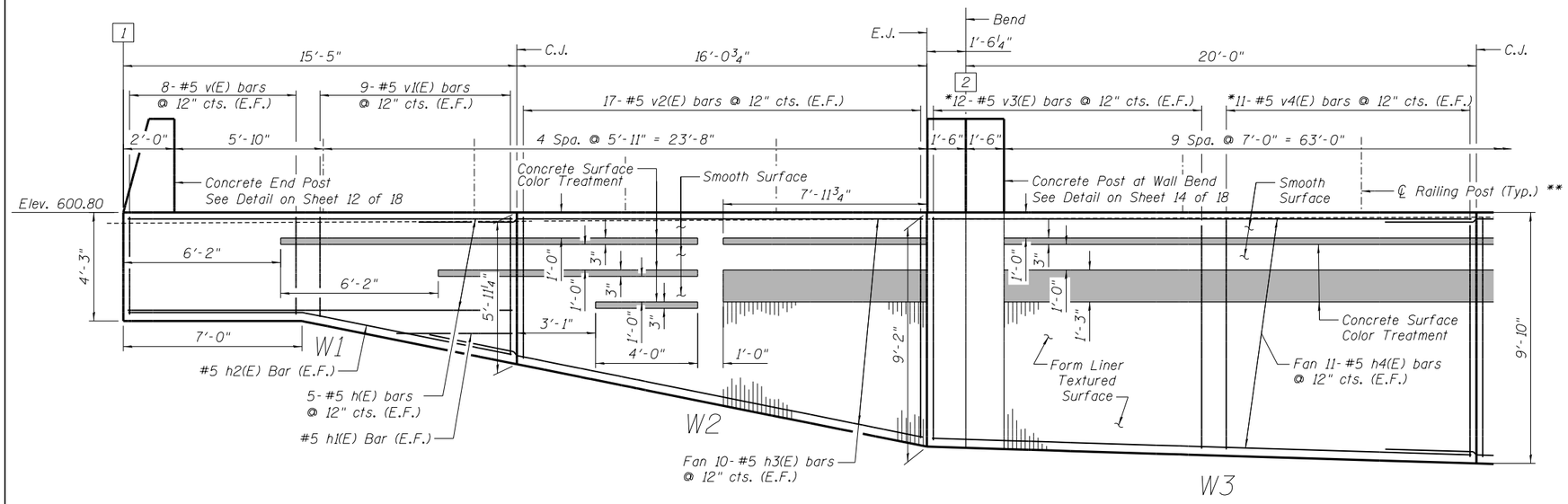
HANSON

USER NAME = Pop00275	DESIGNED - RGC	REVISED -	
	CHECKED - KMS	REVISED -	
PLOT SCALE = 0.1667 ' / in.	DRAWN - EJM	REVISED -	
PLOT DATE = 6/26/2019	CHECKED - RGC	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

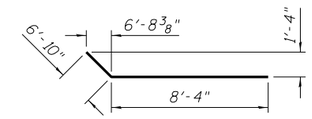
SOLDIER PILES – EAST WALL
RETAINING WALLS – 6TH STREET
SHEET NO. 7 OF 18 SHEETS

F.A.U. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
•	(109) VB,(110) VB-5	SANGAMON	382	298
		CONTRACT NO. 93733		
	ILLINOIS FED. AID PROJECT			

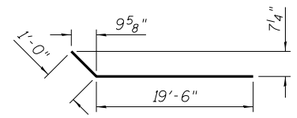


ELEVATION

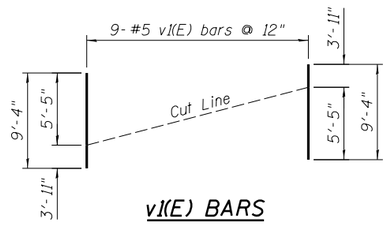
Concrete Facing Panels W1 thru W3



h2(E) BARS

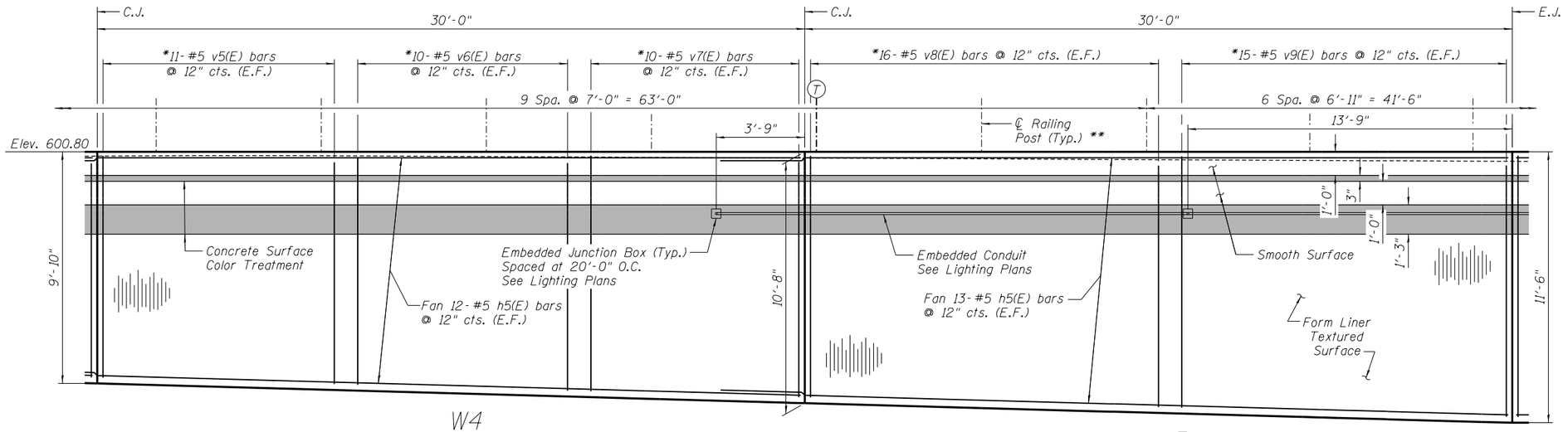


h4(E) BARS



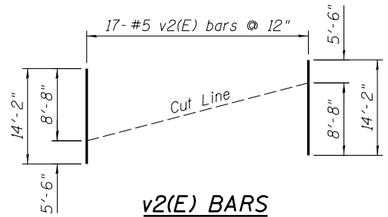
v1(E) BARS

Cut Bars to be Placed E.F.



ELEVATION

Concrete Facing Panels W4 & W5



v2(E) BARS

Cut Bars to be Placed E.F.

BILL OF MATERIAL

Bar	No.	Size	Length	Shape
h(E)	10	#5	15'-1"	———
h1(E)	2	#5	4'-6"	———
h2(E)	2	#5	15'-2"	⌞——
h3(E)	20	#5	19'-9"	———
h4(E)	22	#5	20'-6"	⌞——
h5(E)	50	#5	33'-5"	———
v(E)	16	#5	3'-10"	———
v1(E)	9	#5	9'-4"	———
v2(E)	17	#5	14'-2"	———
v3(E)	24	#5	8'-9"	———
v4(E)	22	#5	9'-1"	———
v5(E)	22	#5	9'-5"	———
v6(E)	20	#5	9'-8"	———
v7(E)	20	#5	10'-0"	———
v8(E)	32	#5	10'-3"	———
v9(E)	30	#5	10'-8"	———
Reinforcement Bars Epoxy Coated		Pound	4960	
Concrete Structures (Retaining Wall)		Cu. Yd.	41.4	

(T) = Intermediate Tensioning Posts

** Steel Railing (Special)
All Measurements are
Along Top of Wall.
Adjust as Necessary
to Avoid C.J.'s & E.J.'s.

Note: E.J. = Expansion Joint
C.J. = Construction Joint
E.F. = Each Face
* = Stagger Bars

[1] = Control Point

MIN. BAR LAPS

#5 Bars = 3'-4"

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FINAL

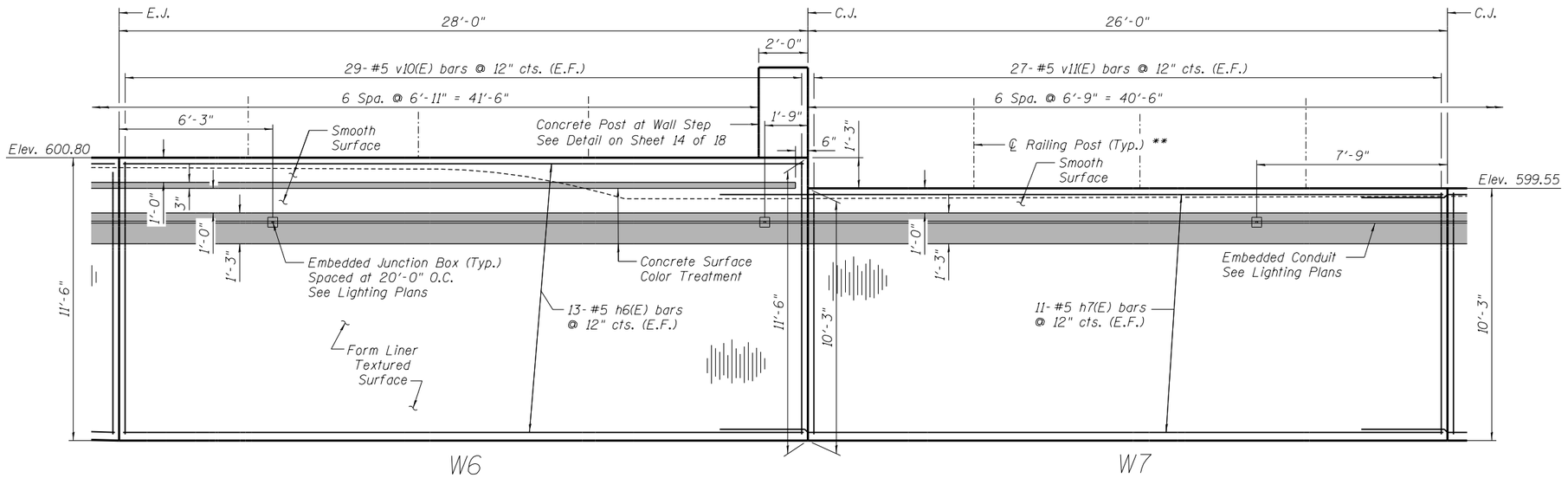
HANSON

USER NAME = Pop00275	DESIGNED - RGC	REVISED -	
	CHECKED - KMS	REVISED -	
PLOT SCALE = 0.1667 ' / in.	DRAWN - EJM	REVISED -	
PLOT DATE = 6/26/2019	CHECKED - RGC	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

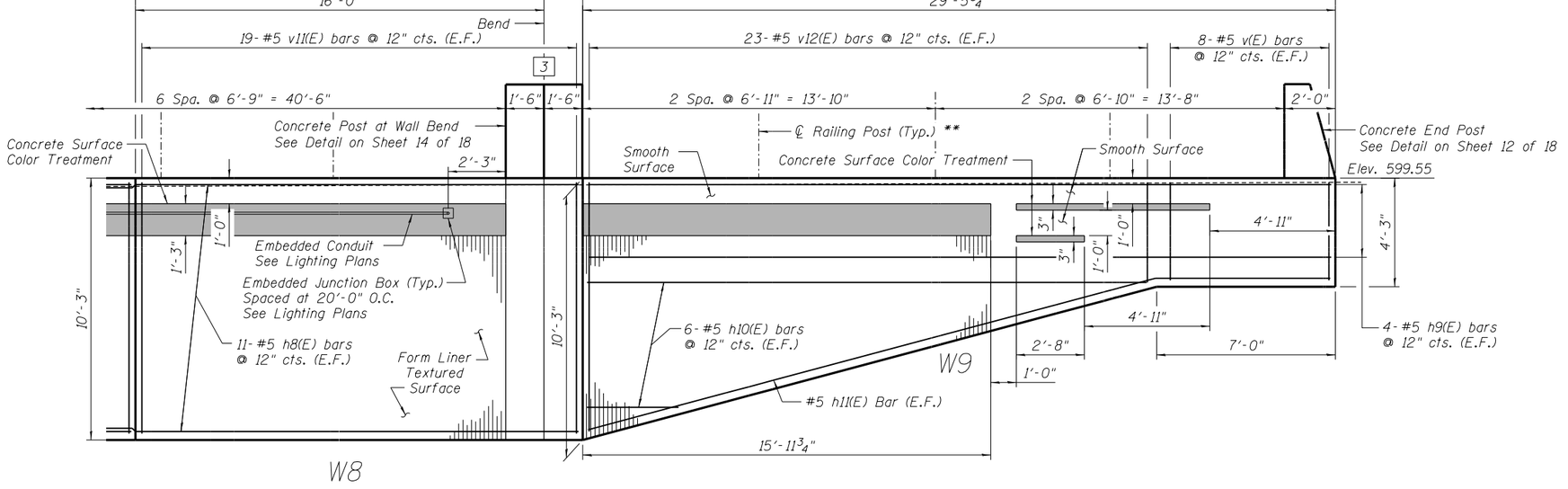
CONCRETE FACING - WEST WALL
RETAINING WALLS - 6TH STREET
SHEET NO. 8 OF 18 SHEETS

F.A.U. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
•	(109) VB,(110) VB-5	SANGAMON	382	299
		CONTRACT NO. 93733		
	ILLINOIS FED. AID PROJECT			



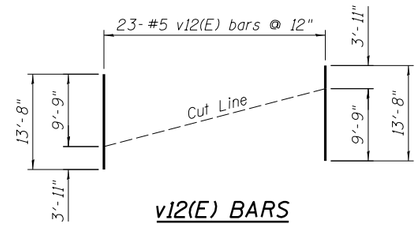
ELEVATION

Concrete Facing Panels W6 & W7



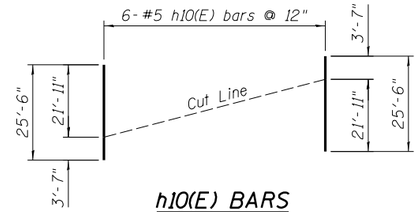
ELEVATION

Concrete Facing Panels W8 & W9



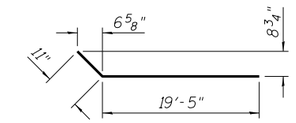
v12(E) BARS

Cut Bars to be Placed E.F.

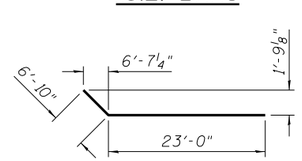


h10(E) BARS

Cut Bars to be Placed E.F.



h8(E) BARS



h11(E) BARS

BILL OF MATERIAL

Bar	No.	Size	Length	Shape
h6(E)	26	#5	27'-8"	———
h7(E)	22	#5	29'-5"	———
h8(E)	22	#5	20'-4"	⌞——
h9(E)	8	#5	29'-1"	———
h10(E)	6	#5	25'-6"	———
h11(E)	2	#5	29'-10"	⌞——
v(E)	16	#5	3'-10"	———
v10(E)	58	#5	11'-1"	———
v11(E)	92	#5	9'-10"	———
v12(E)	23	#5	13'-8"	———
Reinforcement Bars Epoxy Coated			Pound	4350
Concrete Structures (Retaining Wall)			Cu. Yd.	38.4

Note: E.J. = Expansion Joint
C.J. = Construction Joint
E.F. = Each Face
* = Stagger Bars

[1] = Control Point

** Steel Railing (Special)
All Measurements are
Along Top of Wall.
Adjust as Necessary
to Avoid C.J.'s & E.J.'s.

MIN. BAR LAPS

#5 Bars = 3'-4"

FINAL

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USER NAME = Pop00275	DESIGNED - RGC	REVISED -	
	CHECKED - KMS	REVISED -	
PLOT SCALE = 0.1667 ' / in.	DRAWN - EJM	REVISED -	
PLOT DATE = 6/26/2019	CHECKED - RGC	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

CONCRETE FACING – WEST WALL
RETAINING WALLS – 6TH STREET

SHEET NO. 9 OF 18 SHEETS

F.A.U. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
•	(109) VB,(110) VB-5	SANGAMON	382	300
		CONTRACT NO. 93733		
	ILLINOIS FED. AID PROJECT			