

03-08-13 LETTING ITEM 100

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

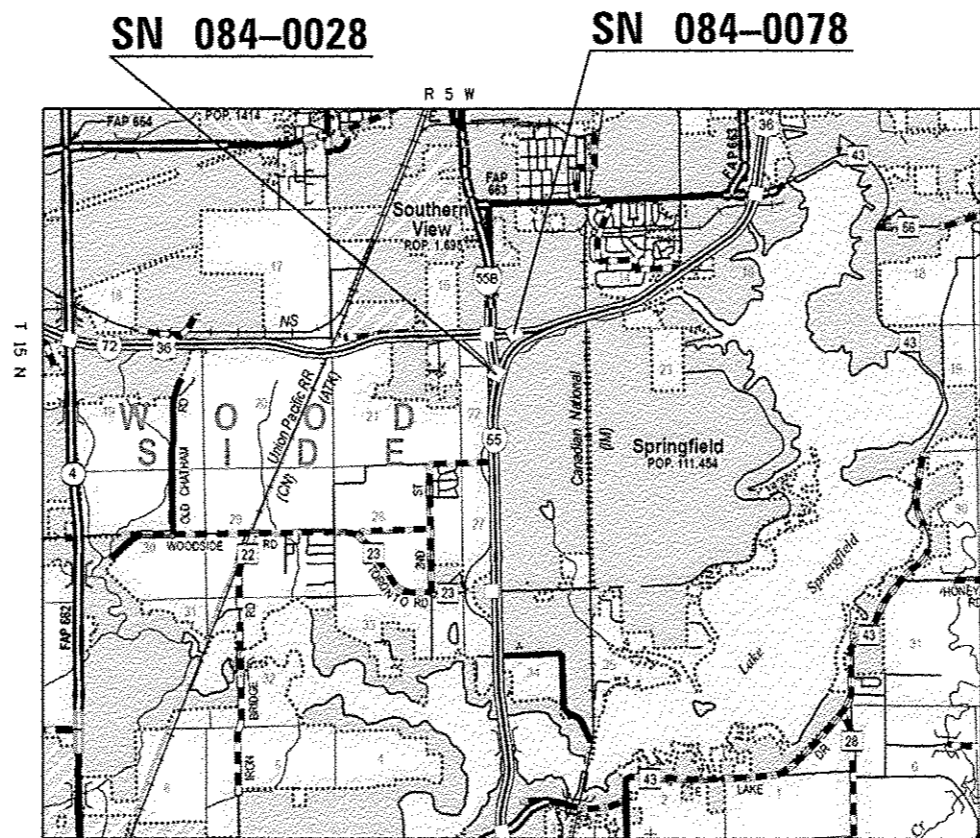
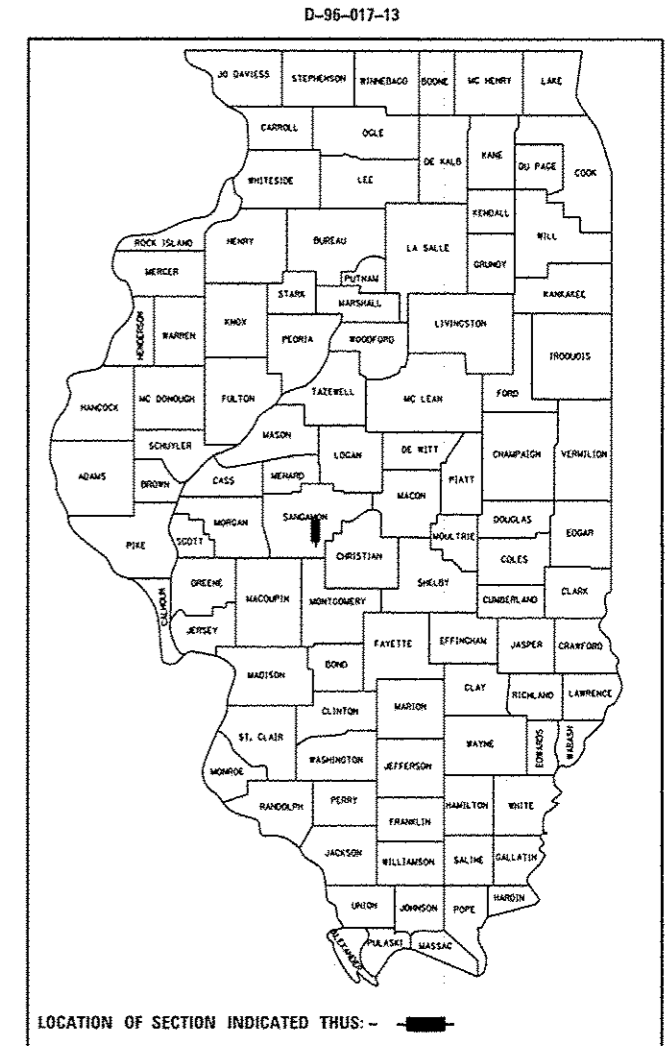
**PROPOSED
HIGHWAY PLANS**

FAI ROUTE 55 (I-55)
SECTION D6 PAINTING 2013
BRIDGE PAINTING
SANGAMON COUNTY

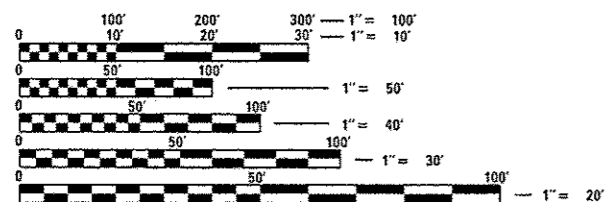
C-96-017-13

FOR INDEX OF SHEETS, SEE SHEET NO. 2

F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
55	D6 PAINTING 2013	SANGAMON	26	1
		ILLINOIS	CONTRACT NO. 72F85	



LOCATION MAP
NOT TO SCALE



FULL SIZE PLANS HAVE BEEN PREPARED USING STANDARD ENGINEERING SCALES. REDUCED SIZED PLANS WILL NOT CONFORM TO STANDARD SCALES. IN MAKING MEASUREMENTS ON REDUCED PLANS, THE ABOVE SCALES MAY BE USED.

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

PROJECT ENGINEER - STEVE BERAN 217-785-9290
PROJECT MANAGER - DAVE COPENBARGER 217-785-5306

GROSS LENGTH = 630.00 FT. = 0.119 MILE
NET LENGTH = 630.00 FT. = 0.119 MILE

CONTRACT NO. 72F85

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

SUBMITTED 12/26 20 12

Randy Ansell
DEPUTY DIRECTOR OF HIGHWAYS, REGION ENGINEER

Feb 1 20 13
John D. Baranzelli, P.E.
ENGINEER OF DESIGN AND ENVIRONMENT

Feb 1 20 13
Omer Osman, P.E.
DIRECTOR OF HIGHWAYS, CHIEF ENGINEER

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OF THE STATE OF ILLINOIS

INDEX OF SHEETS:

- 1 - COVER SHEET
- 2 - INDEX, HIGHWAY STANDARDS, & GENERAL NOTES
- 3 - SUMMARY OF QUANTITIES
- 4 THRU 16 - EXISTING PLANS, SN 084-0028
- 17 THRU 26 - EXISTING PLANS, SN 084-0078

- STANDARDS
- 701101-03
 - 701106-02
 - 701400-06
 - 701401-07
 - 701901-02

GENERAL NOTES:

STRUCTURE NO 1 - SN 084-0028, 6TH ST/BL55 NB OVER SB I-55 LOCATED .25 M S OF I-72. CLEANING AND PAINTING OF THE EXISTING STRUCTURAL STEEL SHALL BE AS SPECIFIED IN THE SPECIAL PROVISIONS FOR "CLEANING AND PAINTING EXISTING STEEL STRUCTURES". ALL EXISTING STEEL SHALL BE CLEANED PER NEAR WHITE BLAST CLEANING PER SSPC SP 10. ALL EXISTING STEEL CLEANED SHALL BE PAINTED ACCORDING TO THE REQUIREMENTS OF PAINT SYSTEM 1 - OZ/E/U. THE COLOR OF THE FINAL FINISH COAT FOR THE OUTSIDE AND BOTTOM OF THE FASCIA BEAMS SHALL BE GREEN, MUNSELL NO 7.5G 4/8. THE COLOR OF THE FINAL FINISH COAT FOR ALL INTERIOR SURFACES AND SHALL BE GRAY, MUNSELL NO 5B 7/1. NEW STEEL INSTALLED ON A RECENT PROJECT AS SHOWN ON SHEETS 5 AND 6 HAS BEEN PAINTED WITH OZ/E/U PAINT SYSTEM. THIS PAINT SYSTEM SHALL BE PROTECED AND NOT DAMAGED.

STRUCTURE NO 2 - SN 084-0078, I-72 EB OVER I-55 SB LOCATED .2 M E OF BL55/S 6TH ST. CLEANING AND PAINTING OF THE EXISTING STRUCTURAL STEEL SHALL BE AS SPECIFIED IN THE SPECIAL PROVISIONS FOR "CLEANING AND PAINTING EXISTING STEEL STRUCTURES". ALL EXISTING STEEL SHALL BE CLEANED PER NEAR WHITE BLAST CLEANING PER SSPC SP 10. ALL EXISTING STEEL CLEANED SHALL BE PAINTED ACCORDING TO THE REQUIREMENTS OF PAINT SYSTEM 1 - OZ/E/U. THE COLOR OF THE FINAL FINISH COAT FOR THE OUTSIDE AND BOTTOM OF THE FASCIA BEAMS SHALL BE GREEN, MUNSELL NO 7.5G 4/8. THE COLOR OF THE FINAL FINISH COAT FOR ALL INTERIOR SURFACES SHALL BE GRAY, MUNSELL NO 5B 7/1. NEW STEEL INSTALLED ON A RECENT PROJECT AS SHOWN ON SHEET 19 HAS BEEN PRIMED WITH INORGANIC ZINC PRIMER. THIS PRIMER SHALL NOT BE DAMAGED AND SHALL BE OVERCOATED WITH THE EPOXY/URETHANE COATS AFTER CLEANING AND SPOT PRIMING.

THE USE OF AIR MONITORS WILL BE REQUIRED AT STRUCTURES NUMBERS 1 AND 2. A MINIMUM OF 2 MONITORS WILL BE REQUIRED AT EACH BRIDGE TO MONITOR ABRASIVE BLASTING OPERATIONS AT THIS SITE, SEE SPECIAL PROVISIONS FOR "CONTAINMENT AND DISPOSAL OF LEAD PAINT CLEANING RESIDUES".

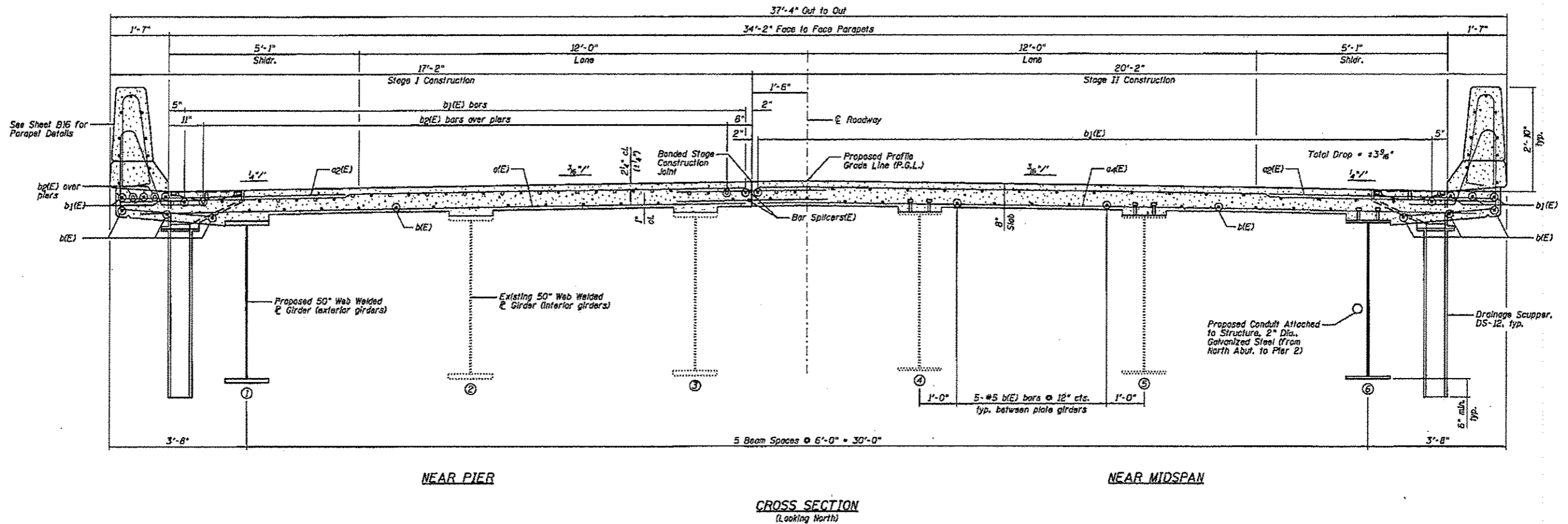
THE SSPC-QP-1 AND SSPC-QP2 PAINTING CONTRACTOR CERTIFICATIONS WILL BE REQUIRED FOR THESE BRIDGES.

STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS DISTRICT 6	
EXAMINED <u>12/5</u>	20 <u>12</u>
<u>William M. Beyer</u> ENGINEER OF OPERATIONS	
EXAMINED <u>12/13</u>	20 <u>12</u>
<u>Jimmy J. [Signature]</u> ENGINEER OF PROJECT IMPLEMENTATION	
EXAMINED <u>12/14</u>	20 <u>12</u>
<u>2RML1</u> ENGINEER OF PROGRAM DEVELOPMENT	

FILE NAME *	USER NAME * copenbergerda	DESIGNED -	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	INDEX, HIGHWAY STANDARDS GENERAL NOTES	F.A.I RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
S:\Bridges\plans\CAD\72F85 - D6 PAINTING	2013\plansheet1.dgn	DRAWN -	REVISED -			55	D6 PAINTING 2013	SANGAMON	26	2
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	PLOT DATE * Dec-26-2012 09:37:11AM	DATE -	REVISED -		SHEET	OF	SHEETS	STA.	TO	STA.
ILLINOIS FED. AID PROJECT CONTRACT NO. 72F85										

SUMMARY OF QUANTITIES

CODE NO.	ITEM	UNIT	100% STATE	100% STATE
			0014	0014
			SANG QTY	TOTAL QTY
Z0010501	CLEANING AND PAINTING STEEL BRIDGE, NO. 1	L SUM	1	1
Z0010502	CLEANING AND PAINTING STEEL BRIDGE, NO. 2	L SUM	1	1
Z0007101	CONTAINMENT AND DISPOSAL OF LEAD PAINT CLEANING RESIDUES, NO 1	L SUM	1	1
Z0007102	CONTAINMENT AND DISPOSAL OF LEAD PAINT CLEANING RESIDUES, NO 2	L SUM	1	1
67100100	MOBILIZATION	L SUM	1	1
70100800	TRAFFIC CONTROL AND PROTECTION, STANDARD 701401	L SUM	1	1
70106800	CHANGEABLE MESSAGE SIGNS	CAL MO	2	2
70200100	NIGHTTIME WORK ZONE LIGHTING	L SUM	1	1



NOTES:

- 1.) See Sheet B15 for Superstructure Details and Bill of Material.
- 2.) Space drainage scuppers to miss stud shear connectors and transverse reinforcing bars.
- 3.) See Sheet B44 for Bar Splicer Details.

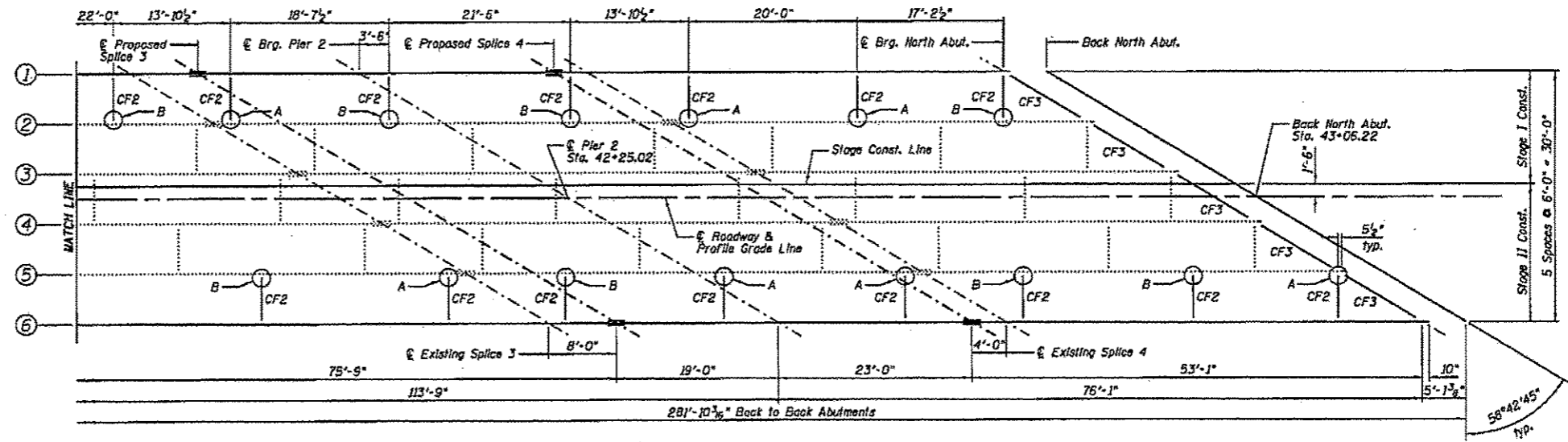
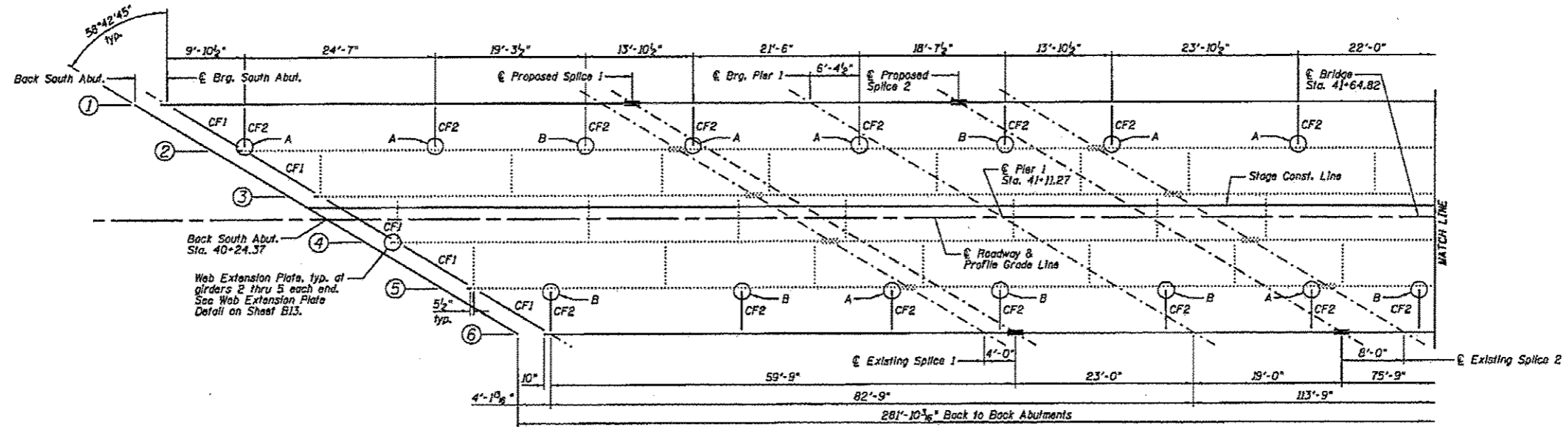
SUPERSTRUCTURE CROSS SECTION

STRUCTURE NO.084-0028

FOR INFORMATION ONLY

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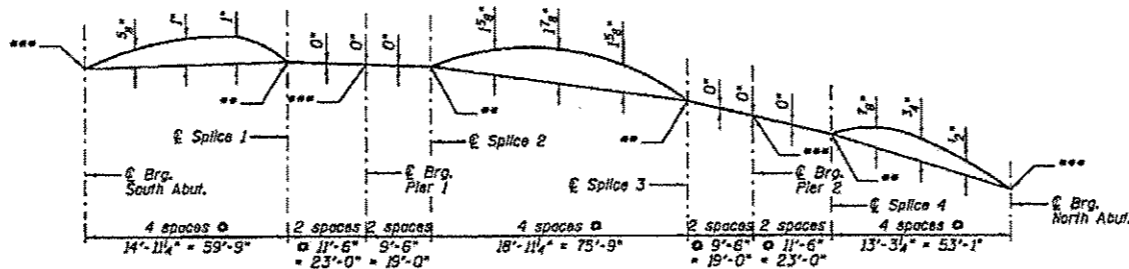
SCALE: SHEET OF SHEETS STA. TO STA.



TOP OF WEB ELEVATIONS

Location	Girder 1	Girder 6
€ Brg. S. Abut.	615.53	615.64
€ Splice 1	615.58	615.57
€ Brg. Pier 1	618.58	615.52
€ Splice 2	615.57	615.48
€ Splice 3	615.36	615.11
€ Brg. Pier 2	615.26	614.96
€ Splice 4	615.13	614.79
€ Brg. N. Abut.	614.80	614.35

*For fabrication use only.
Elevations of splices have been adjusted for Dead Load Deflection.



CAMBER DIAGRAM

** Theoretical top of web elevations before Dead Load Deflection.
*** Final top of web elevations at Abutments and Piers.

A - Denotes cross frame to transverse stiffener plate connection.
B - Denotes cross frame to top connection.

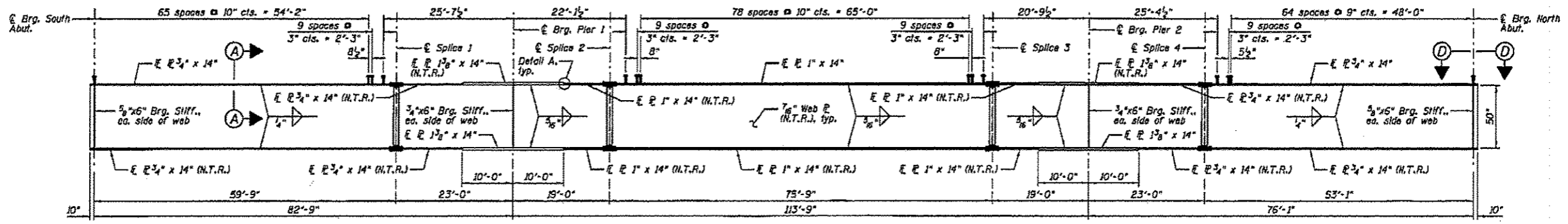
NOTES:

- See Sheet B12 for Cross Frame Connections "A" and "B".
- All cross frames or diaphragms shall be installed as steel is erected and secured with erection pins and bolts except as otherwise noted. Individual cross frames or diaphragms at supports may be temporarily disconnected to install bearing anchor rods.

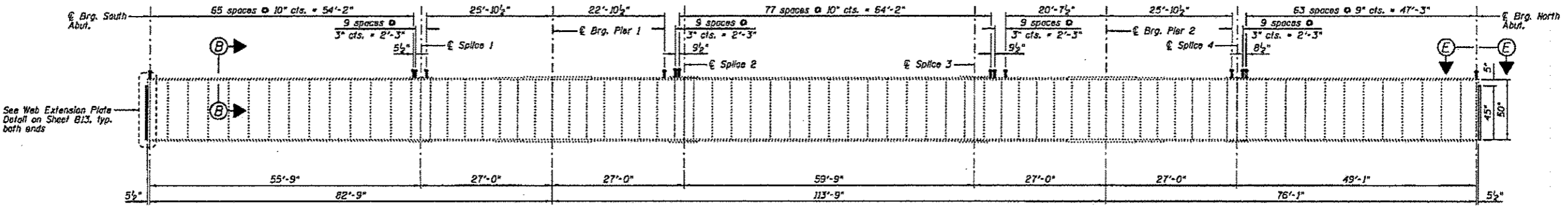
STRUCTURAL STEEL
STRUCTURE NO.084-0028

FOR INFORMATION ONLY

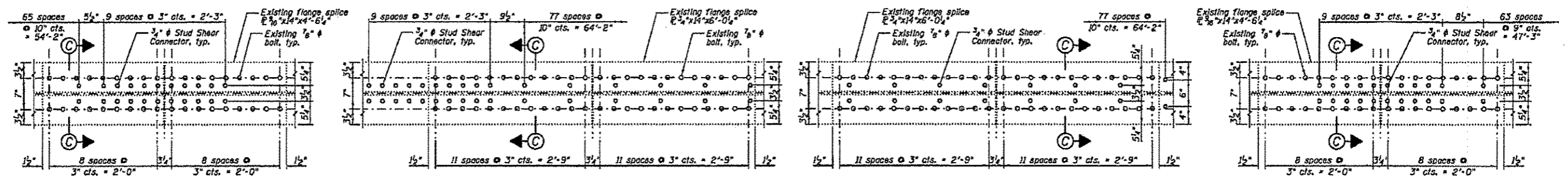
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	PLOT DATE * Nov-28-2012 09:28:33PM	DATE -	REVISED -								ILLINOIS FED. AID PROJECT		



PROPOSED GIRDER ELEVATION



EXISTING GIRDER ELEVATION

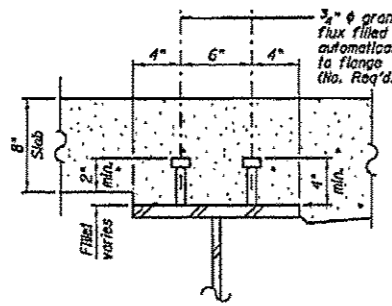


STUD SHEAR CONNECTORS - PLAN AT SPLICE 1

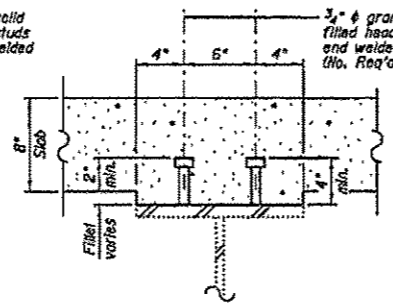
STUD SHEAR CONNECTORS - PLAN AT SPLICE 2

STUD SHEAR CONNECTORS - PLAN AT SPLICE 3

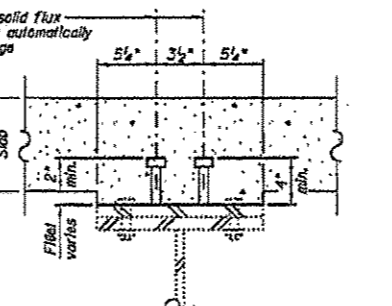
STUD SHEAR CONNECTORS - PLAN AT SPLICE 4



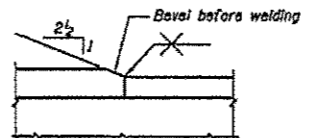
SECTION A-A



SECTION B-B



SECTION C-C



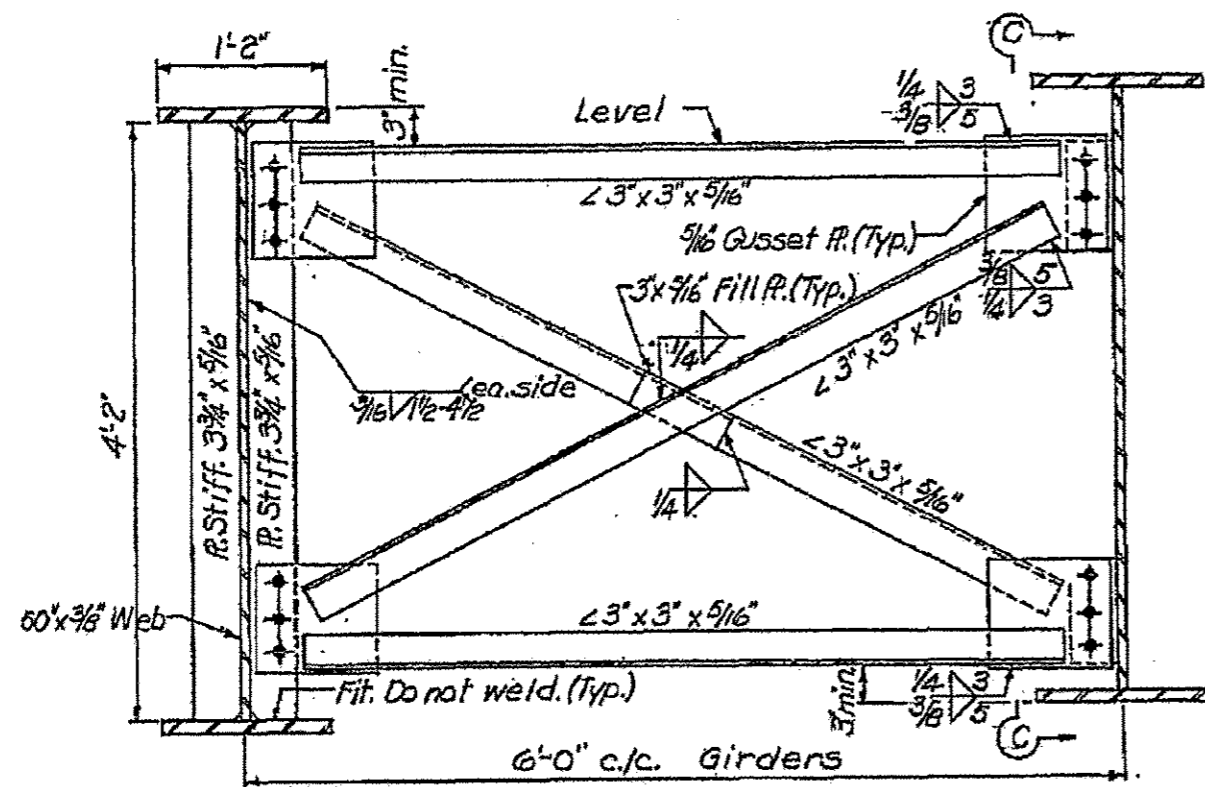
DETAIL A - FLANGE TRANSITION

- NOTES:
- 1.) Load carrying components designated N.T.R. shall conform to the Supplemental Requirements for Notch Toughness, Zone 2.
 - 2.) All girder flange plates, web plates, splice plates and bearing stiffener plates shall be AASHTO M270 Grade 50.
 - 3.) See Sheet B13 for Sections D-D and E-E.

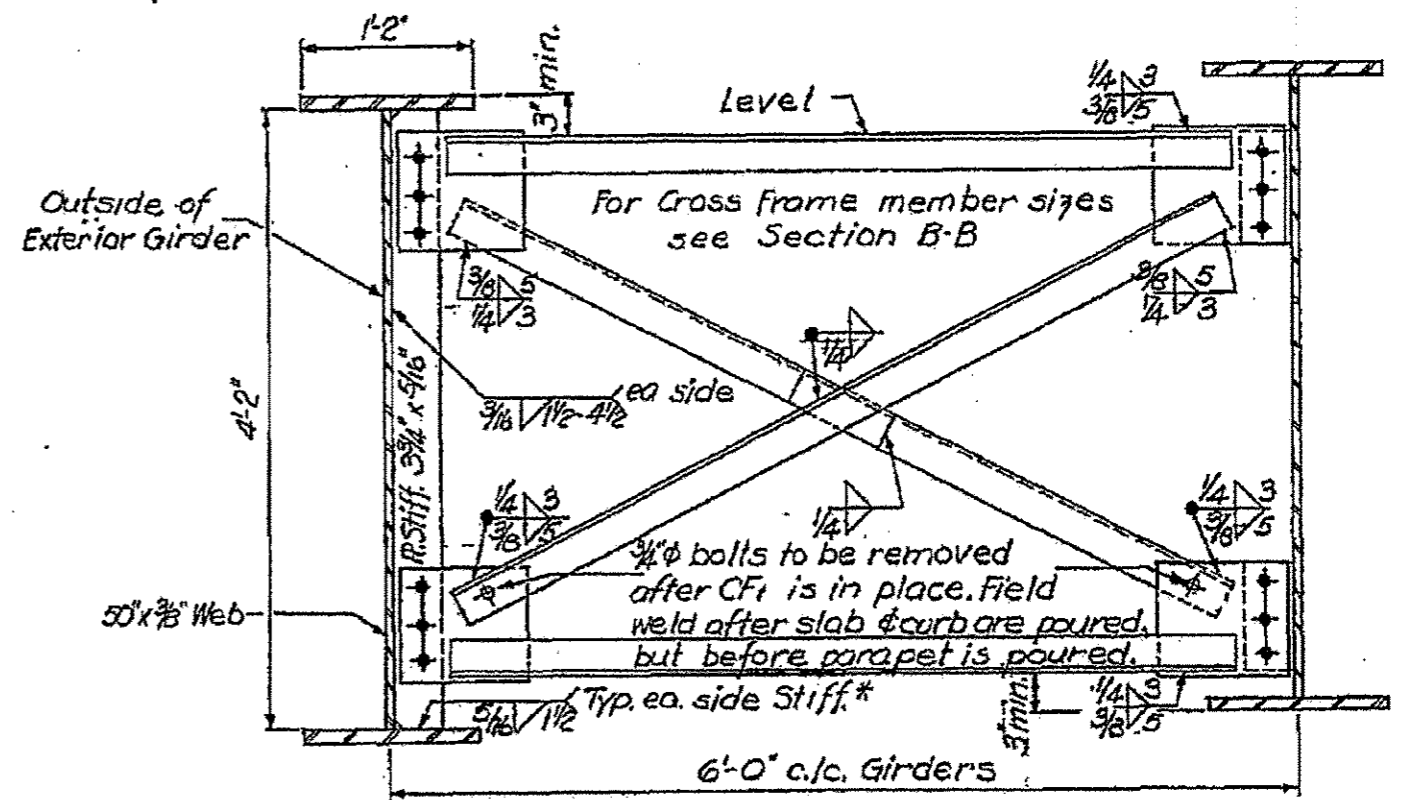
STRUCTURAL STEEL
STRUCTURE NO.084-0028

FOR INFORMATION ONLY

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	PLOT DATE = Nov-20-2012 8:26:38PM	CHECKED -	REVISED -									CONTRACT NO. 72F85				
	DATE -	REVISED -	ILLINOIS FED. AID PROJECT													



SECTION B-B
Showing Interior Girder & Cross Frame CF2



SECTION A-A
Showing Exterior Girder & Cross Frame CF1

STRUCTURE NO.084-002B

FOR INFORMATION ONLY

FILE NAME *	USER NAME * mcdonalds	DESIGNED -	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	EXISTING CROSSFRAME	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.	
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					SCALE:	SHEET	OF	SHEETS	STA.	TO STA.	

INTERIOR GIRDER MOMENT TABLE					
	0.4 Sp. 1	Pier 1	0.5 Sp. 2	Pier 2	0.6 Sp. 3
I_x	(in ⁴) 17429	32995	22116	32995	17429
$I_{c(n)}$	(in ⁴) 40581	-	48002	-	40581
$I_{c(3n)}$	(in ⁴) 30457	-	36091	-	30457
S_x	(in ³) 677	1242	851	1242	677
$S_{c(n)}$	(in ³) 911	-	1097	-	911
$S_{c(3n)}$	(in ³) 837	-	1013	-	837
ρ	(K ²) 0.766	1.291	0.794	1.291	0.766
M_D	(K) 288	1288	458	1187	217
s_D	(K ²) 0.435	-	0.435	-	0.435
M_{D1}	(K) 189	-	294	-	143
M_L	(K) 552	505	670	481	499
M_I	(K) 132	113	141	109	124
$S_x [M_L + M_I]$	(K) 1140	1130	1352	983	1038
M_s	(K) 2102	3013	2735	2821	1818
M_u	(K) 3386	-	3877	-	3386
r_x Non-comp	(ksi) 5.1	12.4	6.5	11.5	3.8
r_x Comp	(ksi) 2.7	-	3.5	-	2.1
r_x $S_x [M_L + M_I]$	(ksi) 15.0	10.0	14.8	9.5	13.7
r_x (Overload)	(ksi) 22.8	22.4	24.7	21.0	19.6
r_x (Total)	(ksi) -	29.1	-	27.3	-
VR	(K) 47.1	-	42.7	-	48.4

INTERIOR GIRDER REACTION TABLE				
	S. Abut.	Pier 1	Pier 2	N. Abut.
R_R	(K) 34.2	137.5	131.7	28.6
R_L	(K) 34.8	54.2	53.0	34.5
R_I	(K) 8.4	11.9	12.2	8.6
R_{Total}	(K) 77.4	203.6	196.9	71.7

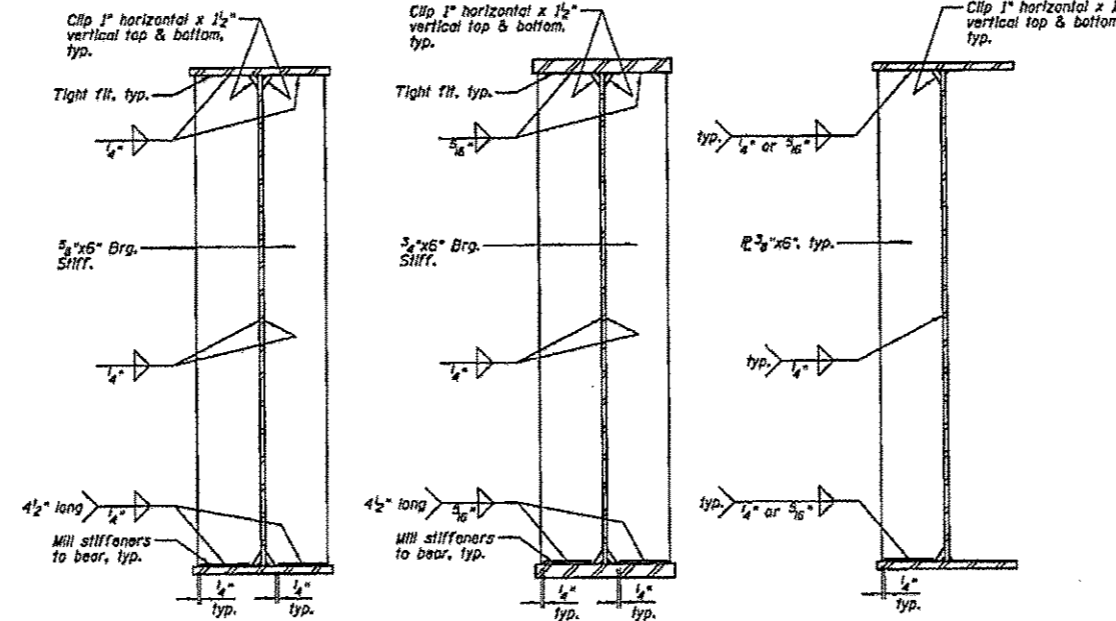
• Compact sections
 •• Non-Compact and slender sections

I_x, S_x : Non-composite moment of inertia and section modulus of the steel section used for computing r_x (Total and Overload) due to non-composite dead loads (in⁴ and in³).
 $I_{c(n)}, S_{c(n)}$: Composite moment of inertia and section modulus of the steel and deck based upon the modular ratio, "n", used for computing r_x (Total and Overload) due to short-term composite live loads (in⁴ and in³).
 $I_{c(3n)}, S_{c(3n)}$: Composite moment of inertia and section modulus of the steel and deck based upon 3 times the modular ratio, "3n", used for computing r_x (Total and Overload) due to long-term composite (superimposed) dead loads (in⁴ and in³).
 ρ : Un-factored non-composite dead load (kips/ft.).
 M_D : Un-factored moment due to non-composite dead load (kip-ft.).
 s_D : Un-factored long-term composite (superimposed) dead load (kips/ft.).
 M_{D1} : Un-factored moment due to long-term composite (superimposed) dead load (kip-ft.).
 M_L : Un-factored live load moment (kip-ft.).
 M_I : Un-factored moment due to impact (kip-ft.).
 M_{D1} : Factored design moment (kip-ft.).
 $1.3 [M_D + M_{D1} + \frac{1}{2} (M_L + M_I)]$
 M_u : Compact composite moment capacity according to AASHTO LFD 10.50.1.1 or compact non-composite moment capacity according to AASHTO LFD 10.48.1 (kip-ft.).
 r_x (Overload): Sum of stresses as computed from the moments below (ksi).
 $1.3 [M_D + M_{D1} + \frac{1}{2} (M_L + M_I)]$
 r_x (Total): Sum of stresses as computed from the moments below on non-compact section (ksi).
 $1.3 [M_D + M_{D1} + \frac{1}{2} (M_L + M_I)]$
 VR: Maximum + Impact horizontal shear range within the composite portion of the span for stud shear connector design (kips).

EXTERIOR GIRDER MOMENT TABLE					
	0.4 Sp. 1	Pier 1	0.5 Sp. 2	Pier 2	0.6 Sp. 3
I_x	(in ⁴) 18080	29968	22767	29968	18080
$I_{c(n)}$	(in ⁴) 42305	-	49613	-	42305
$I_{c(3n)}$	(in ⁴) 31445	-	37009	-	31445
S_x	(in ³) 702	1136	876	1136	702
$S_{c(n)}$	(in ³) 961	-	1146	-	961
$S_{c(3n)}$	(in ³) 875	-	1051	-	876
ρ	(K ²) 0.845	1.348	0.873	1.348	0.845
M_D	(K) 324	1348	520	1244	245
s_D	(K ²) 0.435	-	0.435	-	0.435
M_{D1}	(K) 190	-	302	-	146
M_L	(K) 521	464	642	441	471
M_I	(K) 125	104	134	100	117
$S_x [M_L + M_I]$	(K) 1077	947	1293	902	980
M_s	(K) 2068	2983	2750	2789	1782
M_u	(K) 4983	-	5705	-	4983
r_x Non-comp	(ksi) 5.5	14.2	7.1	13.1	4.2
r_x Comp	(ksi) 2.6	-	3.4	-	2.0
r_x $S_x [M_L + M_I]$	(ksi) 13.4	10.0	13.5	9.5	12.2
r_x (Overload)	(ksi) 21.6	24.2	24.1	22.7	18.4
r_x (Total)	(ksi) -	31.5	-	29.5	-
VR	(K) 44.2	-	40.1	-	45.4

EXTERIOR GIRDER REACTION TABLE				
	S. Abut.	Pier 1	Pier 2	N. Abut.
R_R	(K) 36.7	145.6	139.5	30.8
R_L	(K) 32.8	50.9	49.8	32.5
R_I	(K) 7.9	11.2	11.5	8.1
R_{Total}	(K) 77.4	207.7	200.8	71.4

• Compact sections
 •• Non-Compact and slender sections

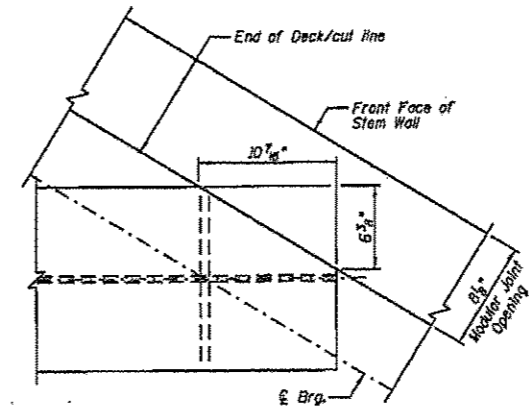


SECTION • ABUTMENTS

SECTION • PIERS

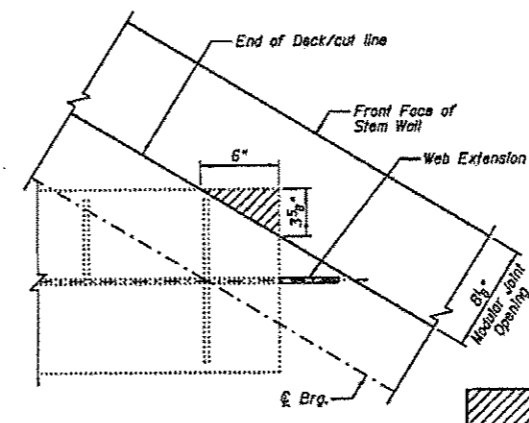
SECTION • CROSS FRAME CF2

Note: Connecting plate not required on outside face of plate girder.



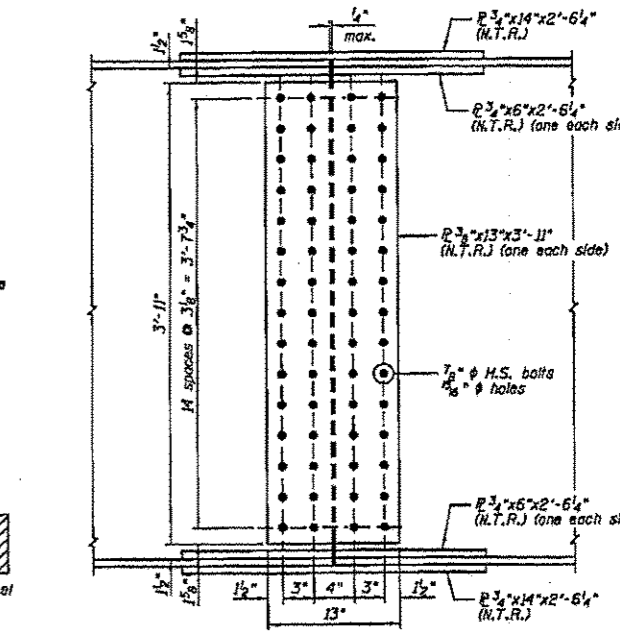
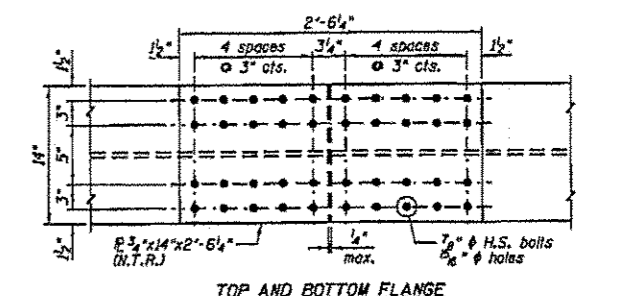
SECTION D-D

Note: Top Flange only.



SECTION E-E

Note: Top Flange only.



SPLICE DETAILS

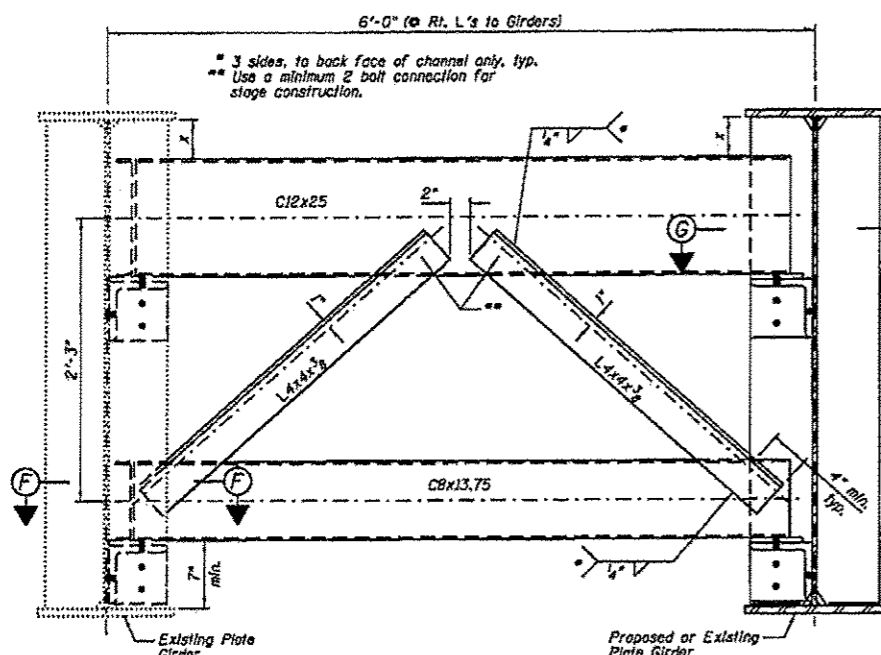
(8 - Required)

NOTES:
 1.) Load carrying components designated N.T.R. shall conform to the Supplemental Requirements for Notch Toughness, Zone 2.
 2.) All girder flange plates, web plates, splice plates and bearing stiffener plates shall be AASHTO M270 Grade 50.
 3.) See Sheet B23 for Sections D-D and E-E locations.

STRUCTURAL STEEL
 STRUCTURE NO.084-0028

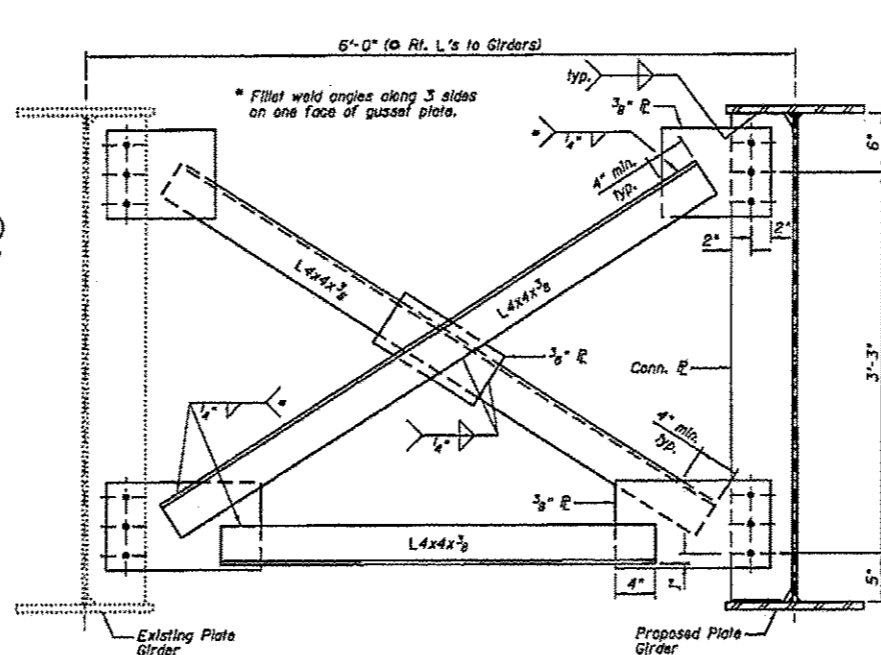
FOR INFORMATION ONLY

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		CHECKED: -	REVISED: -					CONTRACT NO. T2FB5				
		DATE: -	REVISED: -									



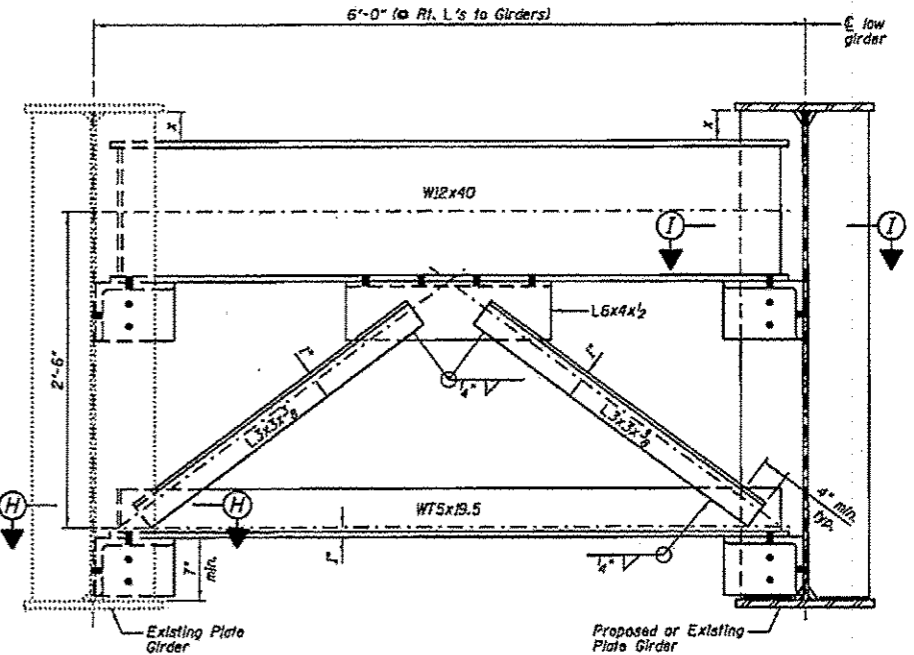
TYPICAL END CROSS FRAME AT SOUTH ABUTMENT - CF1
(5 - Required)

- Notes: 1.) Detail 5/8" φ holes for all 3/4" φ bolts.
2.) Two hardened washers shall be required for each set of oversized holes.
3.) Place diaphragm with projected legs outward from abutment backwall.
4.) Bearing Stiffeners shall be welded to flanges when used as cross frame Connection Plates.



TYPICAL INTERIOR CROSS FRAME - CF2 (CONNECTION "A")
(15 - Required)

- Notes: 1.) See Sheet B9 for Cross Frame Connection "A" locations.
2.) Detail 5/8" φ holes for all 3/4" φ bolts.
3.) Two hardened washers shall be required for each set of oversized holes.
4.) For existing to proposed connection, match existing bolt holes. The Fabrication Contractor shall provide connection details for all existing to proposed connections per the existing shop drawings.



TYPICAL END CROSS FRAME AT NORTH ABUTMENT - CF3
(5 - Required)

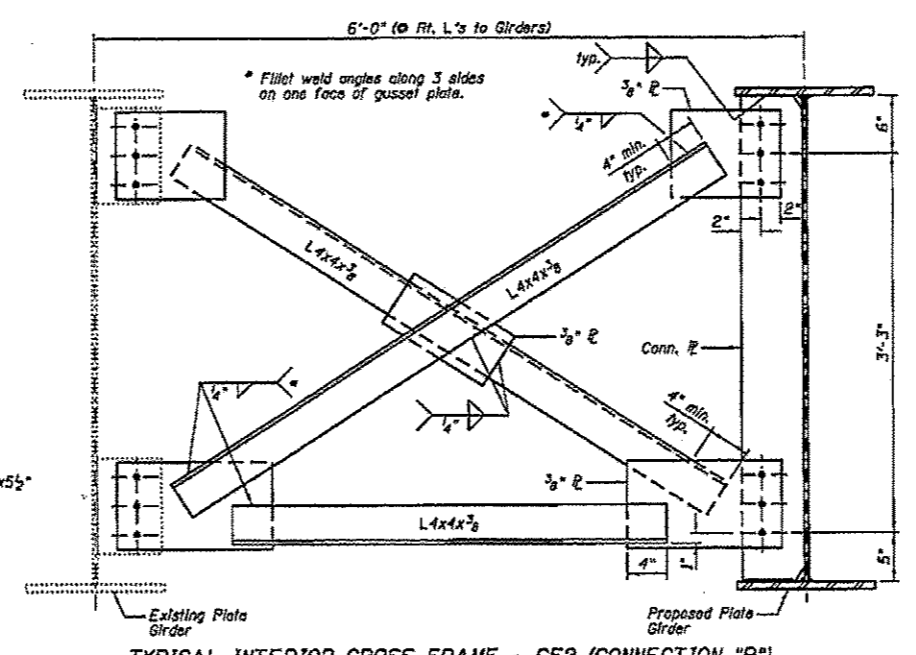
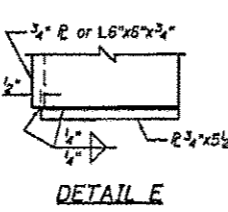
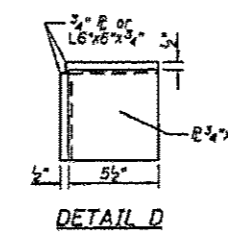
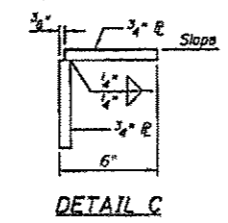
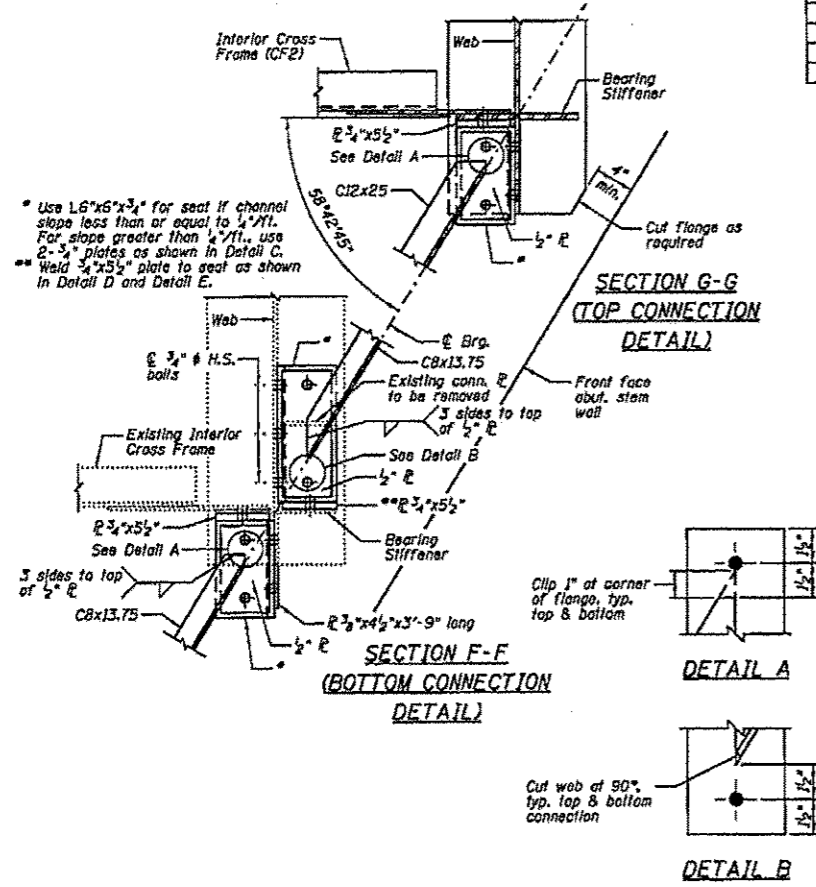
- Notes: 1.) Detail 5/8" φ holes for all 3/4" φ bolts.
2.) Two hardened washers shall be required for each set of oversized holes.

SOUTH ABUTMENT TABLE

Girder No.	"x" Dimension
1	5 1/2"
2	5 1/2"
3	5 1/2"
4	4 1/2"
5	4 1/2"
6	5 1/2"

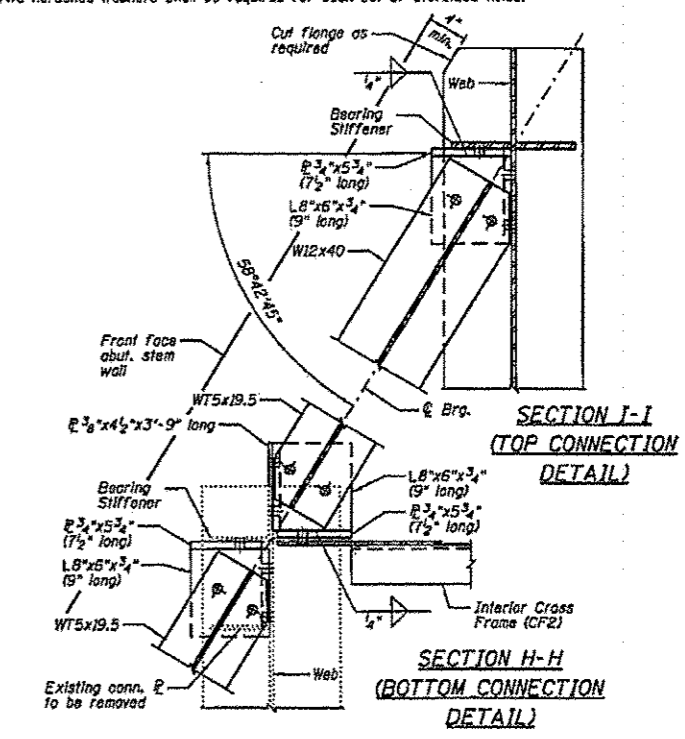
NORTH ABUTMENT TABLE

Girder No.	"x" Dimension
1	5 1/2"
2	5 1/2"
3	5 1/2"
4	5 1/2"
5	5 1/2"
6	5 1/2"



TYPICAL INTERIOR CROSS FRAME - CF2 (CONNECTION "B")
(15 - Required)

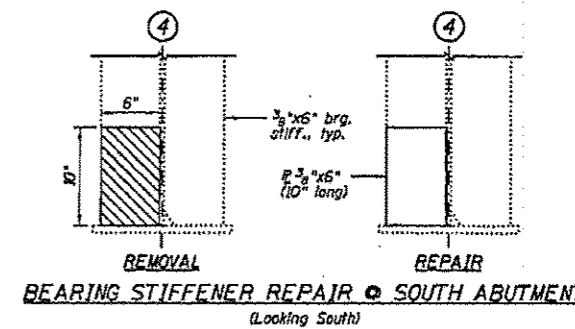
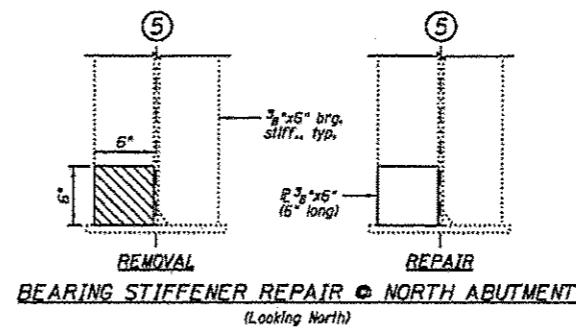
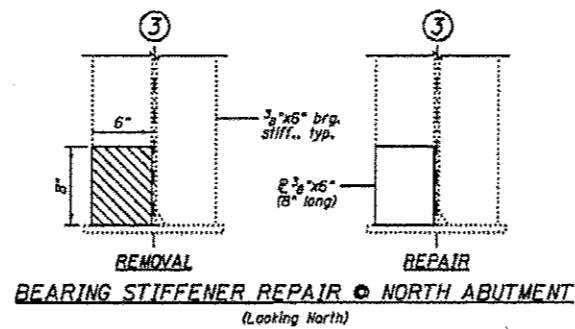
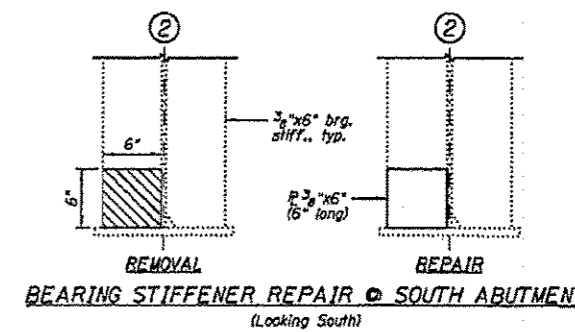
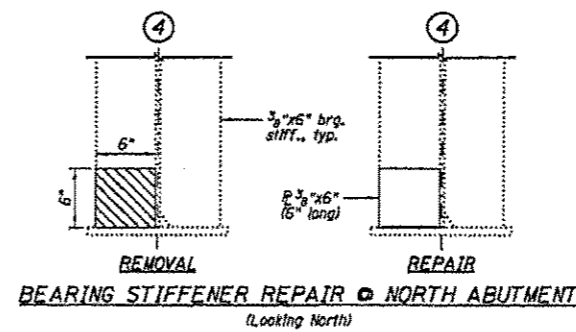
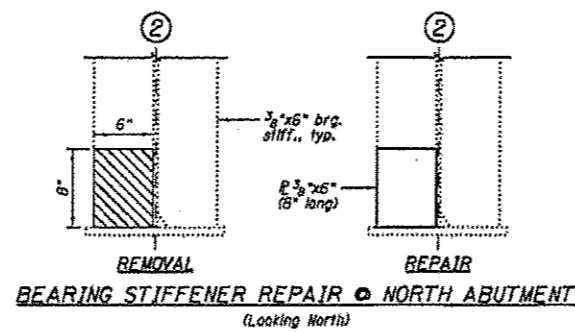
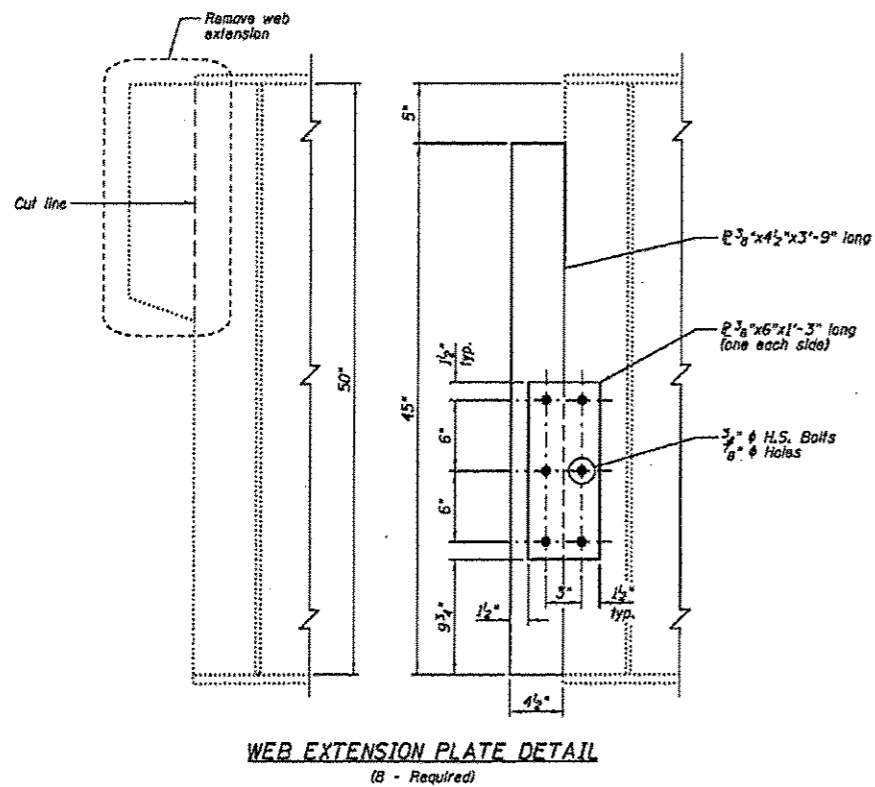
- Notes: 1.) See Sheet B9 for Cross Frame Connection "B" locations.
2.) Detail 5/8" φ holes for all 3/4" φ bolts.
3.) Two hardened washers shall be required for each set of oversized holes.
4.) For existing to proposed connection, match existing bolt holes. The Fabrication Contractor shall provide connection details for all existing to proposed connections per the existing shop drawings.



STRUCTURAL STEEL
STRUCTURE NO.084-0028

FOR INFORMATION ONLY

FILE NAME =	USER NAME = axdonaldr	DESIGNED =	REVISED =	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	STRUCTURAL STEEL	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.	
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Default	Default	CHECKED = 0.9878 / 1h	REVISED =			SCALE: SHEET OF SHEETS STA. TO STA.		CONTRACT NO. 72F85		ILLINOIS FED. AID PROJECT	
		DATE =	REVISED =								



WEB EXTENSION PLATE DETAIL
(B - Required)

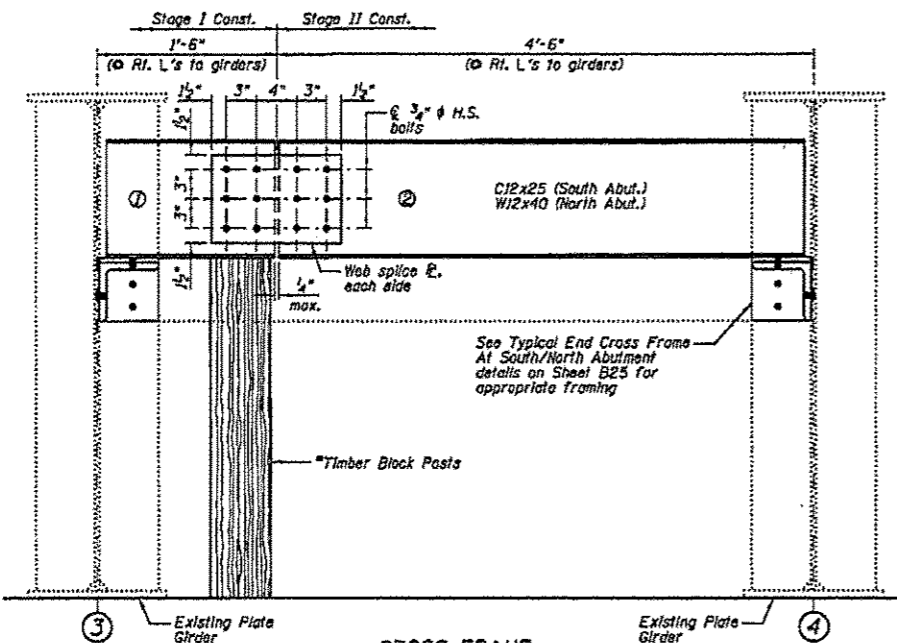
BEARING STIFFENER REPAIR @ NORTH ABUTMENT
(Looking North)

BEARING STIFFENER REPAIR @ NORTH ABUTMENT
(Looking North)

BEARING STIFFENER REPAIR @ SOUTH ABUTMENT
(Looking South)

NOTES:

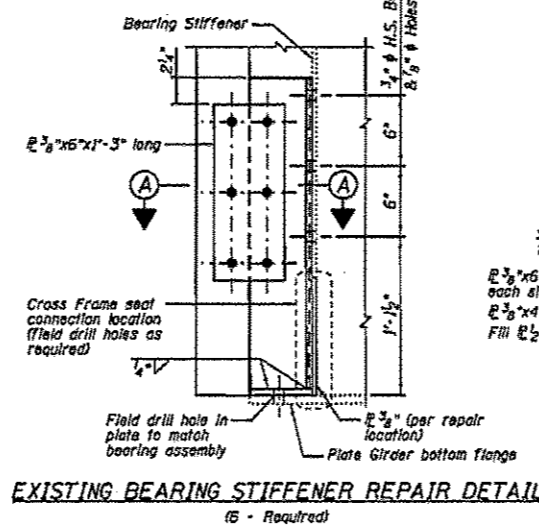
- 1.) All bearing stiffener replacement plate steel shall be M270 Grade 36.
- 2.) All existing structural steel in contact with the repair area shall be cleaned per Section 506 of the Standard Specifications.



CROSS FRAME
* Cost of Timber Block Posts are included with Erecting Structural Steel.

CROSS FRAME STAGE CONSTRUCTION SEQUENCE

- 1.) Order Cross Frame in two sections.
- 2.) Attach Section ① of Cross Frame to Girder 3.
- 3.) Place Timber Block Posts between Section ① of Cross Frame and Abutment Bearing Section.
- 4.) Attach Section ② of Cross Frame to both Girder 4 and Section ① of Cross Frame during Stage II Construction with splice plates.
- 5.) Remove Timber Block Posts.
- 6.) Install lower portion of Cross Frame during Stage II Construction.

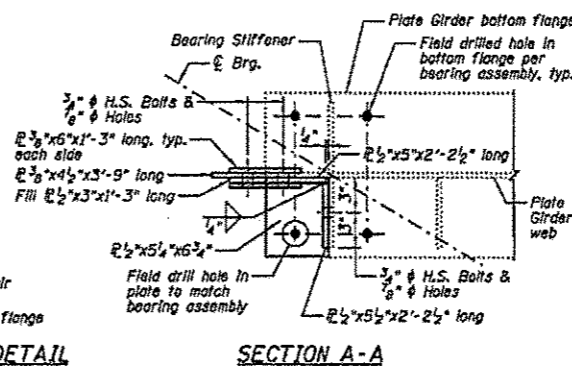


EXISTING BEARING STIFFENER REPAIR DETAIL
(B - Required)

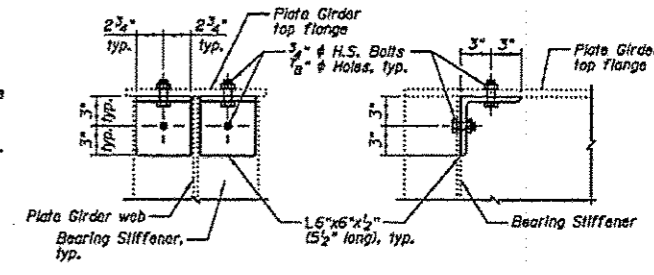
NOTES:

- 1.) See Web Extension Plate Detail for additional information.
- 2.) Grind corners as required to clear existing welds.
- 3.) All new structural steel shall be M270 Grade 36.
- 4.) All existing structural steel in contact with the repair area shall be cleaned per Section 506 of the Standard Specifications.
- 5.) All field drilling shall be done in accordance with Section 505 of the Standard Specifications.

NOTE:
See Sheet B23 for Web Extension Plate locations.



SECTION A-A



EXISTING TOP FLANGE BEARING STIFFENER CONNECTION DETAILS
(B - Required @ 8 locations)

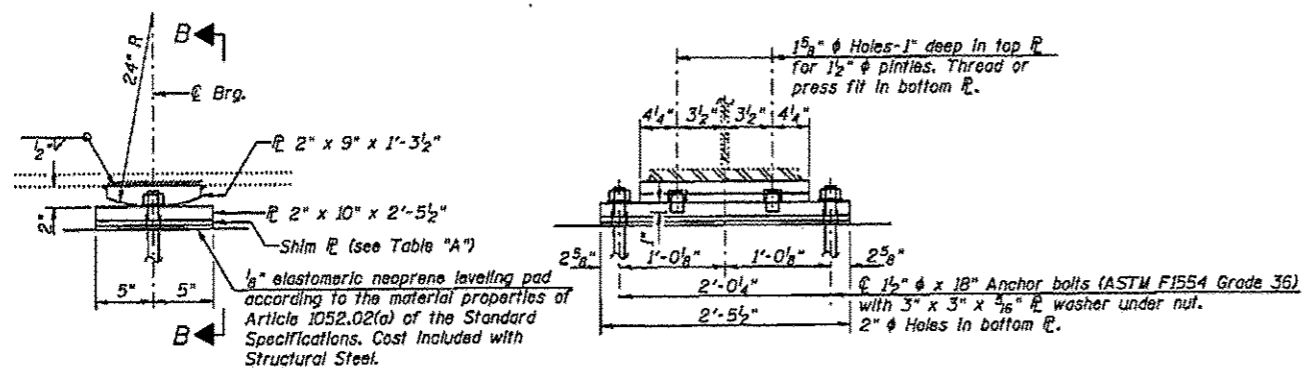
BILL OF MATERIAL

Item	Unit	Total
Structural Steel Repair	Pound	490

STRUCTURAL STEEL
STRUCTURE NO.084-0028

FOR INFORMATION ONLY

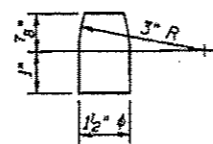
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o:\documents and settings\wdonaldrs\de	http://planeshst.dgn	DRAWN -	REVISED -				55	DB PAINTING 2013	SANGAMON	26	11
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Defaults	PLOT DATE * Nov-28-2012 03:20:48PM	DATE -	REVISED -				ILLINOIS FED. AID PROJECT				



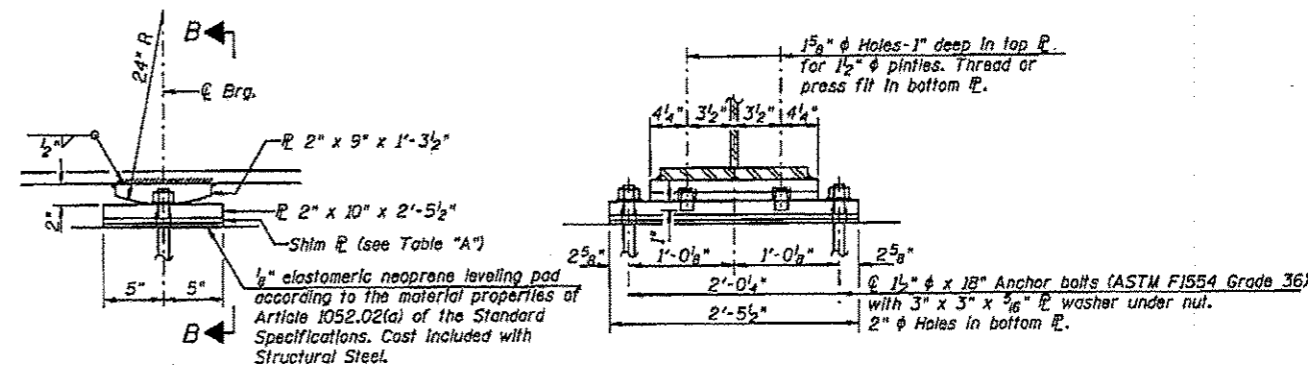
ELEVATION AT PIER NO. 1

SECTION B-B

FIXED BEARING - EXISTING
(At Pier No. 1 - 4 Required)



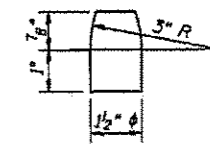
PINTLE



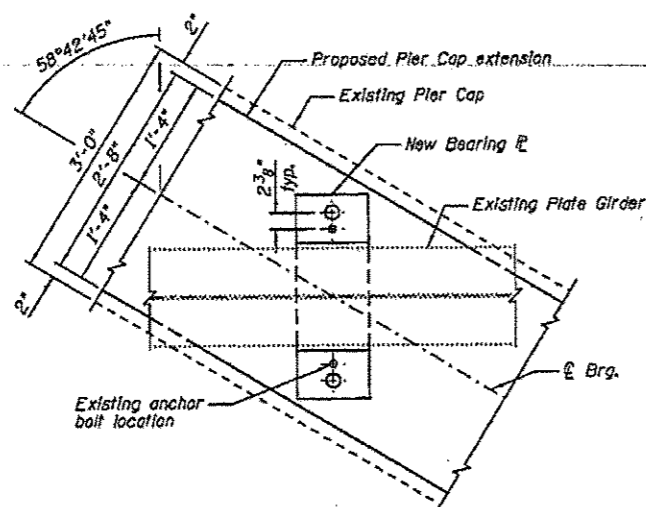
ELEVATION AT PIER NO. 1

SECTION B-B

FIXED BEARING - PROPOSED
(At Pier No. 1 - 2 Required)

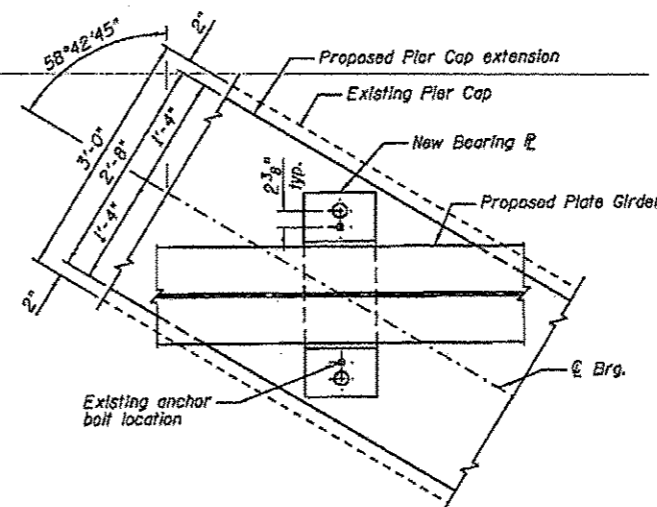


PINTLE



BEARING PLAN AT PIER NO. 1

Notes:
Anchor bolts shall be ASTM F1554 all-thread (or an Engineer-approved alternate material) of the grade(s) and diameter(s) specified, ASTM A307 Grade C anchor bolts may be used in lieu of ASTM F1554 Grade 36 (Fy=36ksi). The corresponding specified grade of AASHTO M314 anchor bolts may be used in lieu of ASTM F1554.
Anchor bolts at fixed bearings may be either cast in place or installed in holes drilled after the supported member is in place.
Drilled and set anchor bolts shall be installed according to Article 521.06 of the Standard Specifications.



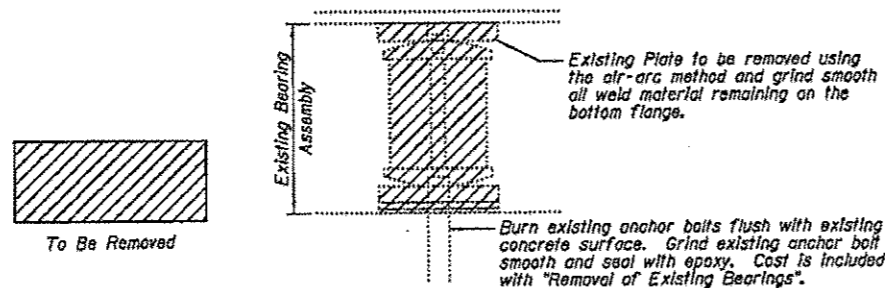
BEARING PLAN AT PIER NO. 1

BILL OF MATERIAL

Item	Unit	Total
Removal of Existing Bearings	Each	24
Anchor Bolts, 1 1/2"	Each	12

TABLE "A"

Girder No.	Shim Thickness
1	1/4"
3	1/2"

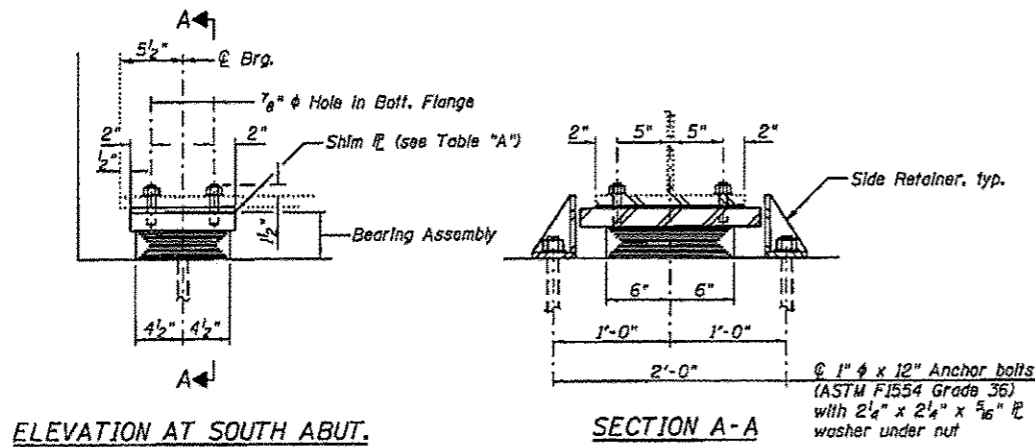


EXISTING BEARING REMOVAL DETAIL

NOTE:

Two 1/2 in. adjusting shims shall be provided for each bearing in addition to all other plates or shims and placed as shown on bearing details.

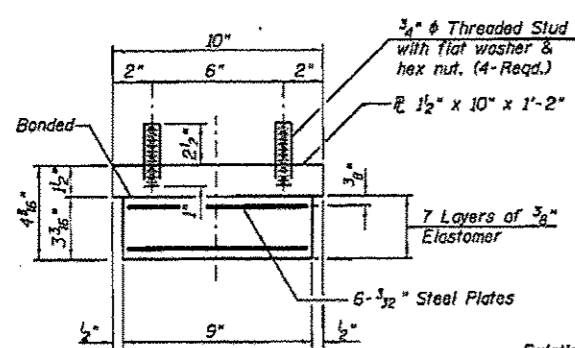
FOR INFORMATION ONLY



ELEVATION AT SOUTH ABUT.

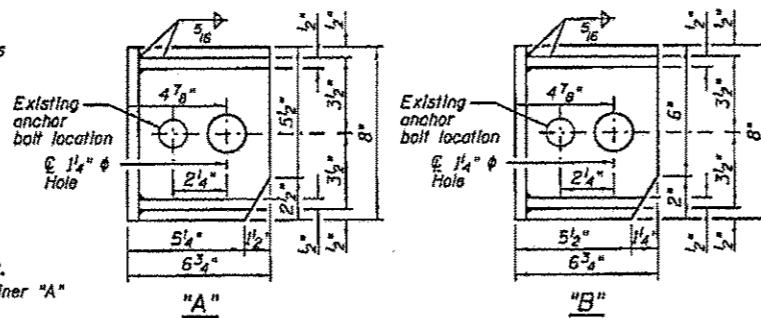
SECTION A-A

TYPE I ELASTOMERIC EXP. BRG.
(At South Abutment - 4 Required)



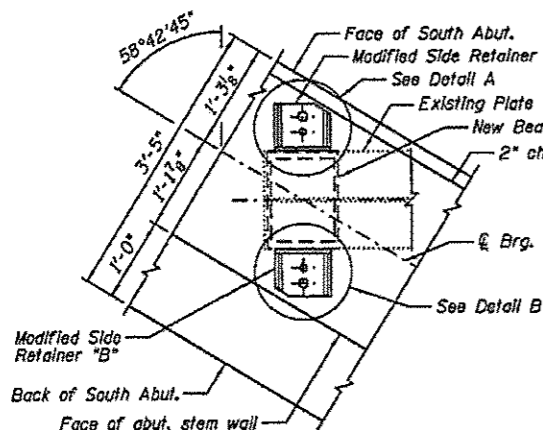
BEARING ASSEMBLY

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



MODIFIED SIDE RETAINER

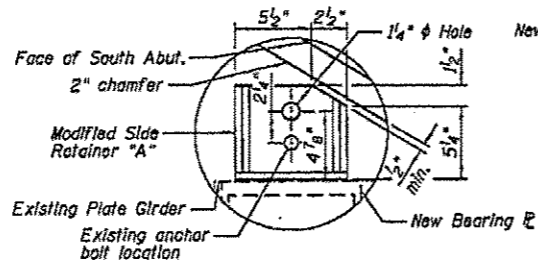
Equivalent rolled angle with stiffeners will be allowed in lieu of welded plates.



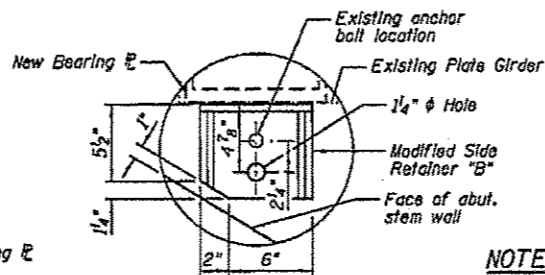
BEARING PLAN AT SOUTH ABUTMENT

I-2E-1

10-1-08

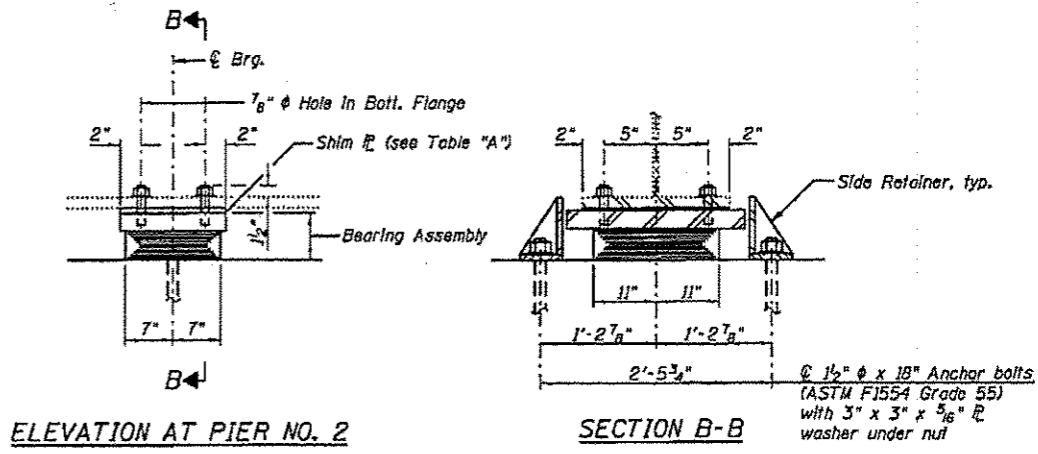


DETAIL A



DETAIL B

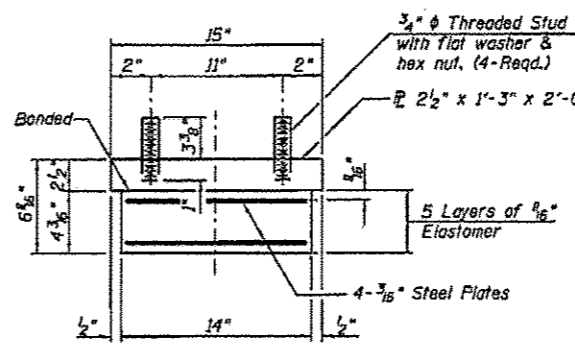
Notes:
Anchor bolts shall be ASTM F1554 all-thread (or an Engineer-approved alternate material) of the grade(s) and diameter(s) specified. ASTM A307 Grade C anchor bolts may be used in lieu of ASTM F1554 Grade 36 (Fy=36ksi). The corresponding specified grade of AASHTO M314 anchor bolts may be used in lieu of ASTM F1554.
Anchor bolts for side retainers may be cast in place or installed in holes drilled before or after members are in place.
Drilled and set anchor bolts shall be installed according to Article 521.06 of the Standard Specifications.
Side retainers and other steel members required for the bearing assembly shall be included in the cost of Elastomeric Bearing Assembly, Type I.



ELEVATION AT PIER NO. 2

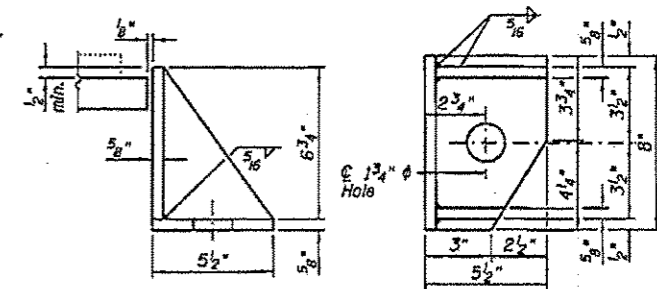
SECTION B-B

TYPE I ELASTOMERIC EXP. BRG.
(At Pier No. 2 - 4 Required)



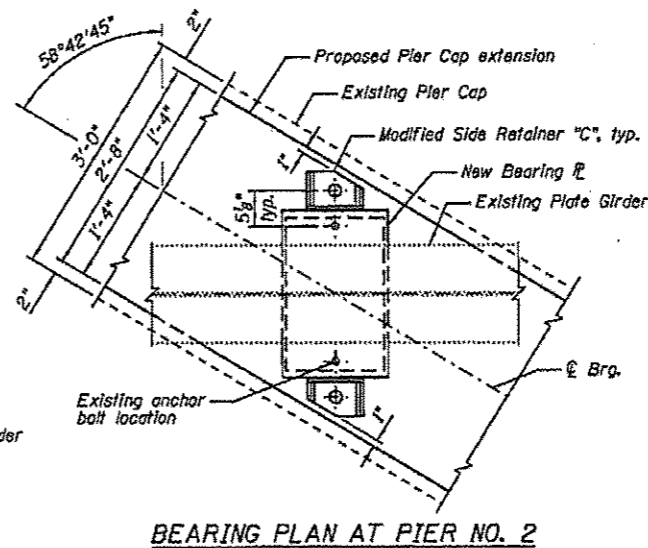
BEARING ASSEMBLY

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



MODIFIED SIDE RETAINER "C"

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



BEARING PLAN AT PIER NO. 2

NOTE:

Two 1/2 in. adjusting shims shall be provided for each bearing in addition to all other plates or shims and placed as shown on bearing details.

BILL OF MATERIAL

Item	Unit	Total
Erecting Elastomeric Bearing Assembly, Type I	Each	8
Anchor Bolts, 1"	Each	8
Anchor Bolts, 1 1/2"	Each	8

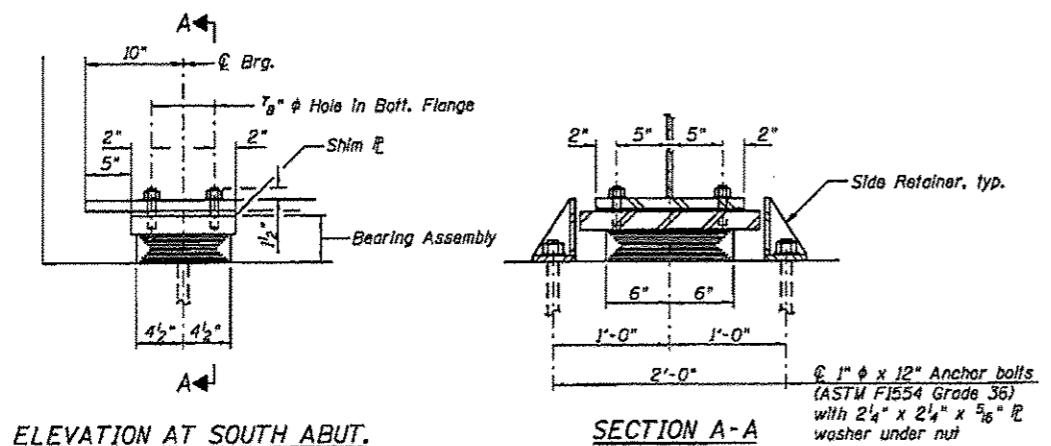
TABLE "A"

Location/Girder No.	Shim Thickness
South Abut./3	1/2"
South Abut./5	3/8"
Pier No. 2/2	1/4"

EXISTING GIRDER TYPE I BEARING DETAILS
STRUCTURE NO.084-0028

FOR INFORMATION ONLY

FILE NAME *	USER NAME * mcdonalds	DESIGNED -	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	BEARING DETAILS	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.	
c:\documents and settings\mcdonalds\desktop\plansheet.dgn	top\plansheet.dgn	DRAWN -	REVISED -			55	06 PAINTING 2013	SANGAMON	26	13	
PLOT SCALE * 0.1000 1/16"		CHECKED -	REVISED -			CONTRACT NO. 72FBS					
PLOT DATE * Nov-20-2012 01:28:50PM		DATE -	REVISED -			ILLINOIS FED. AID PROJECT					
Default				SCALE:	SHEET OF SHEETS	STA.	TO STA.				

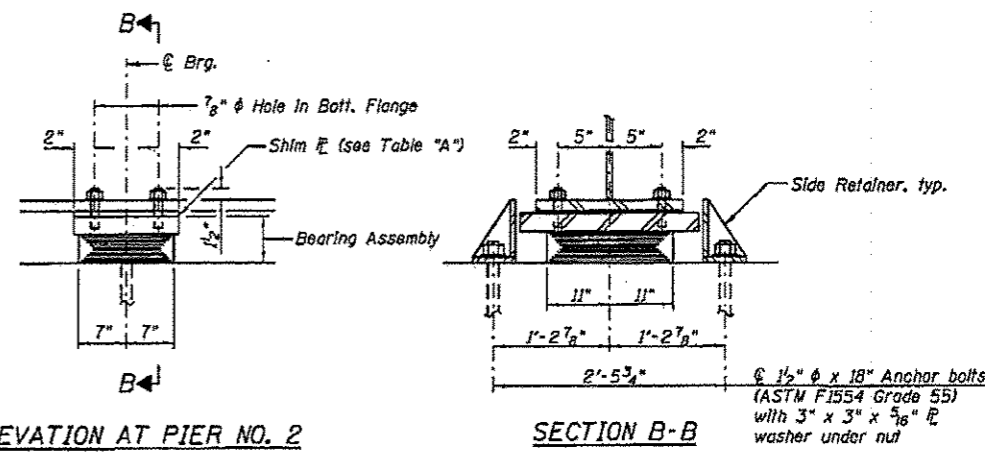


ELEVATION AT SOUTH ABUT.

SECTION A-A

Notes:
Anchor bolts shall be ASTM F1554 all-thread for an Engineer-approved alternate material of the grade(s) and diameter(s) specified. ASTM A307 Grade C anchor bolts may be used in lieu of ASTM F1554 Grade 36 (Fy=36ksi). The corresponding specified grade of AASHTO M314 anchor bolts may be used in lieu of ASTM F1554.
Anchor bolts for side retainers may be cast in place or installed in holes drilled before or after members are in place.
Drilled and set anchor bolts shall be installed according to Article 521.06 of the Standard Specifications.
Side retainers and other steel members required for the bearing assembly shall be included in the cost of Elastomeric Bearing Assembly, Type I.

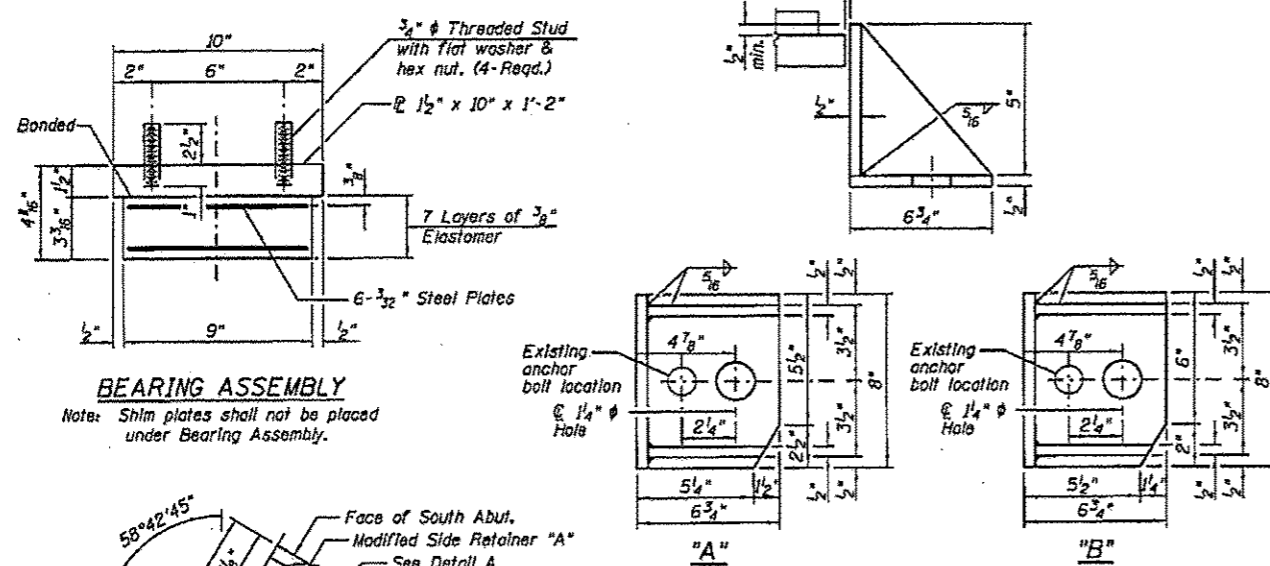
TYPE I ELASTOMERIC EXP. BRG.
(At South Abutment - 2 Required)



ELEVATION AT PIER NO. 2

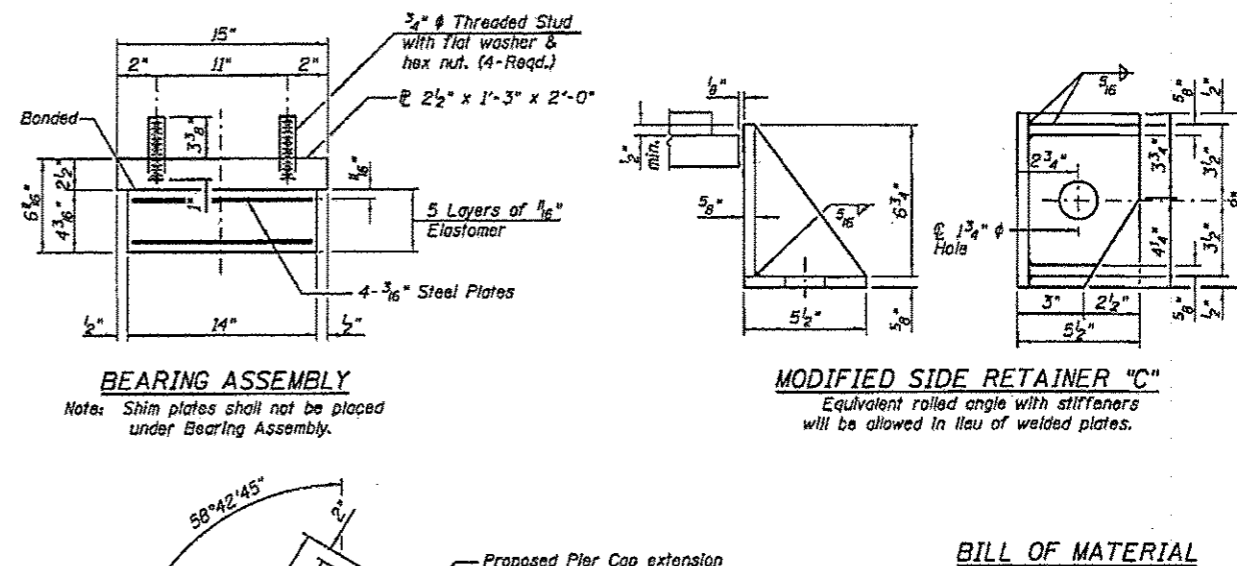
SECTION B-B

TYPE I ELASTOMERIC EXP. BRG.
(At Pier No. 2 - 2 Required)



BEARING ASSEMBLY

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

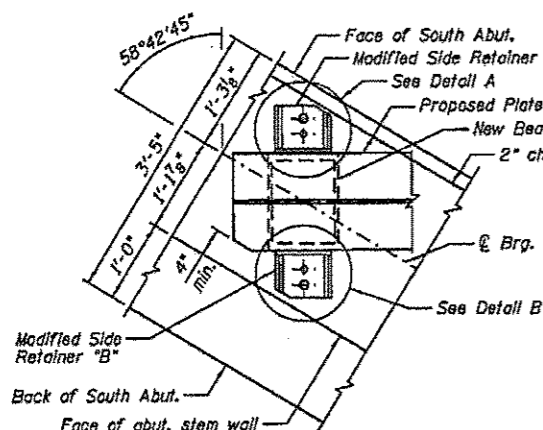


BEARING ASSEMBLY

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

MODIFIED SIDE RETAINER "C"

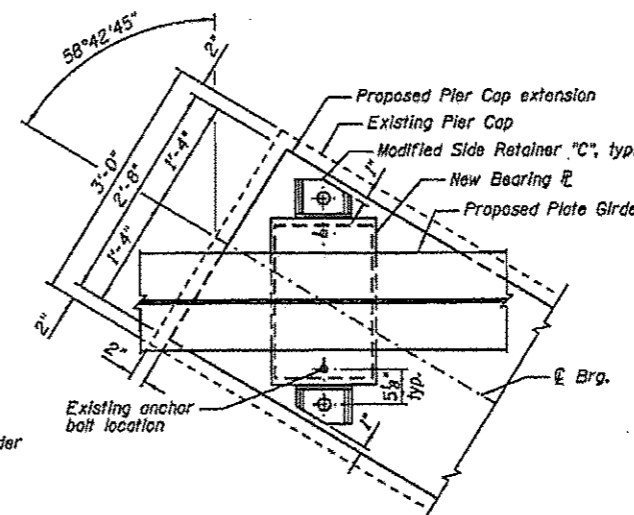
Equivalent rolled angle with stiffeners will be allowed in lieu of welded plates.



BEARING PLAN AT SOUTH ABUTMENT

MODIFIED SIDE RETAINER

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



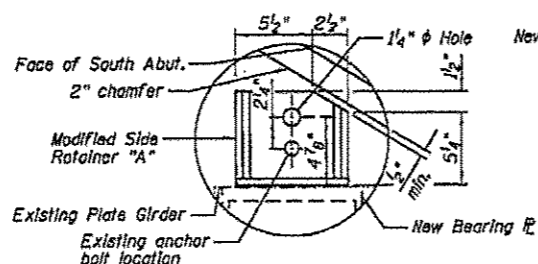
BEARING PLAN AT PIER NO. 2

BILL OF MATERIAL

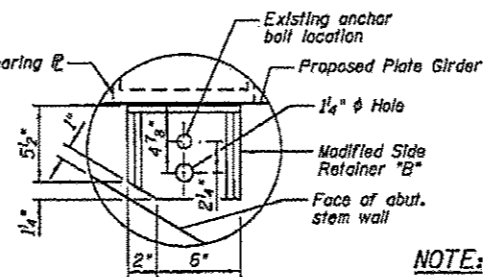
Item	Unit	Total
Erecting Elastomeric Bearing Assembly, Type I	Each	4
Anchor Bolts, 1"	Each	4
Anchor Bolts, 1 1/2"	Each	4

TABLE "A"

Location/Girder No.	Shim Thickness
Pier No. 2/1	1/2"



DETAIL A



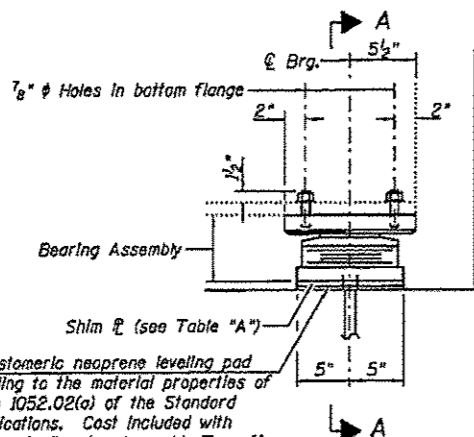
DETAIL B

NOTE:

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

FOR INFORMATION ONLY

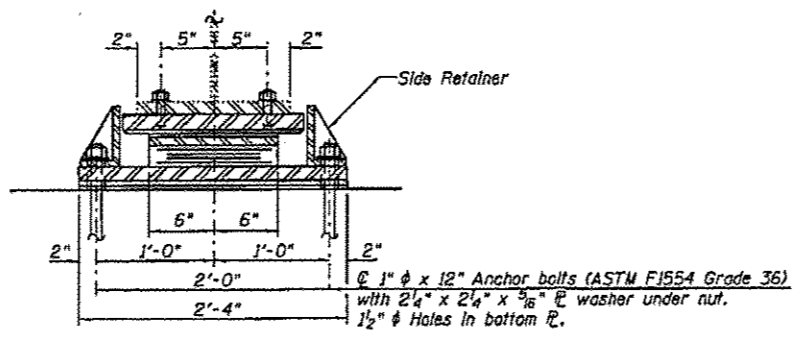
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PLOT SCALE = 8.9388' / 1"	CHECKED -	REVISED -	55								26	14	
PLOT DATE = Nov-28-2012 8:23:43PM	DATE -	REVISED -	CONTRACT NO. 72F85										
Default				[ILLINOIS] FED. AID PROJECT									



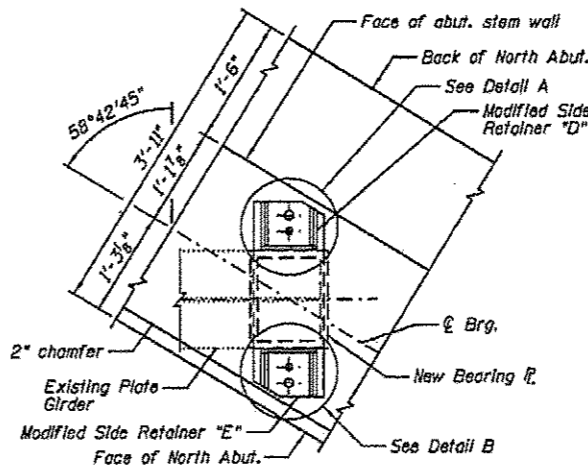
1/4" elastomeric neoprene leveling pad according to the material properties of Article 1052.02(a) of the Standard Specifications. Cast included with Elastomeric Bearing Assembly Type II.

ELEVATION AT NORTH ABUT.

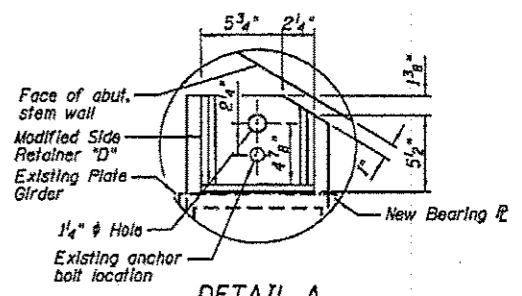
TYPE II ELASTOMERIC EXP. BRG.
(At North Abutment - 4 Required)



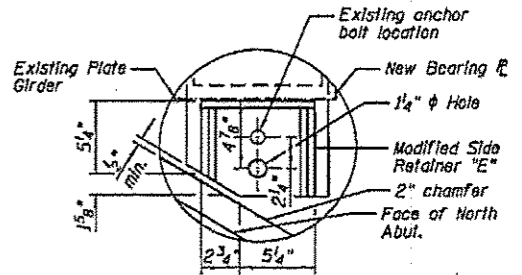
SECTION A-A



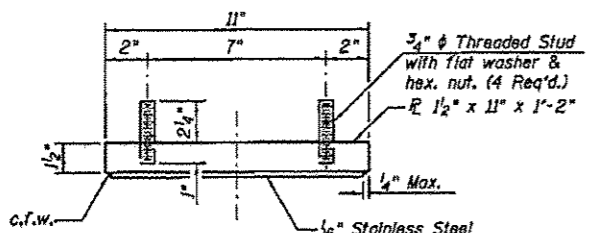
BEARING PLAN AT NORTH ABUTMENT



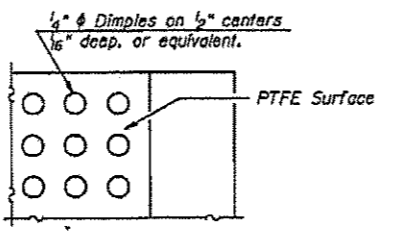
DETAIL A



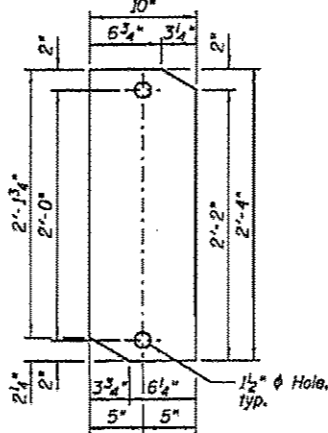
DETAIL B



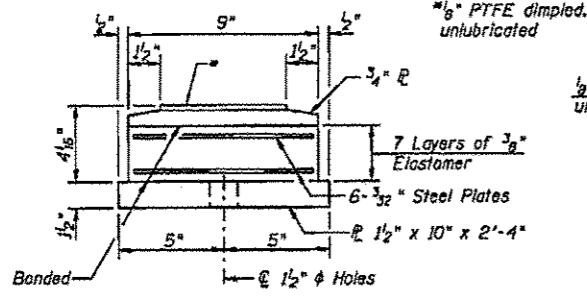
TOP BEARING ASSEMBLY



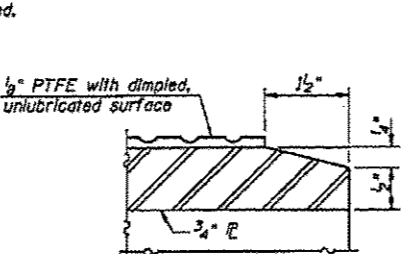
PLAN-PTFE SURFACE



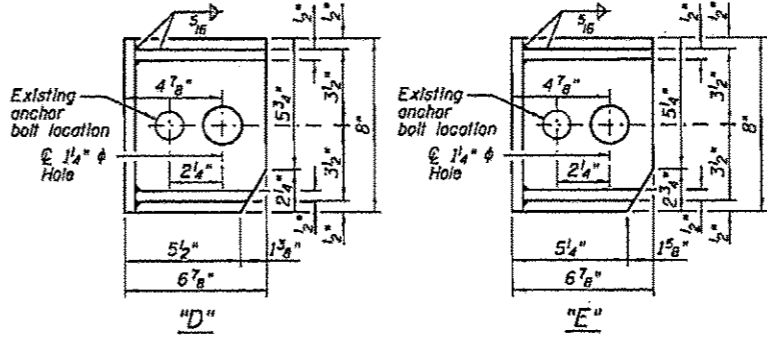
BOTTOM PLATE PLAN



BOTTOM BEARING ASSEMBLY



SECTION THRU PTFE



MODIFIED SIDE RETAINER

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

Notes:
Anchor bolts shall be ASTM F1554 all-thread for an Engineer-approved alternate material of the grade(s) and diameter(s) specified. ASTM A307 Grade C anchor bolts may be used in lieu of ASTM F1554 Grade 36 (Fy=36ksi). The corresponding specified grade of AASHTO M314 anchor bolts may be used in lieu of ASTM F1554.
Anchor bolts for Type II bearings shall be placed in holes drilled in the concrete through holes in the bottom bearing plate after members are in place. Side retainers shall be placed after bolts are installed.
Drilled and set anchor bolts shall be installed according to Article 521.06 of the Standard Specifications.
Side retainers and other steel members required for the bearing assembly shall be included in the cost of Elastomeric Bearing Assembly, Type II.
The 1/8" PTFE sheet shall be bonded directly to the top steel plate with a two-component, medium viscosity epoxy resin, conforming to the requirements of the Federal Specification MM-A-134, Type I. The bond agent shall be applied on the full area of the contact surfaces.
Bonding of 1/8" PTFE sheet during vulcanizing process will be permitted provided the process and method of adjusting assembly height is approved by the Engineer.

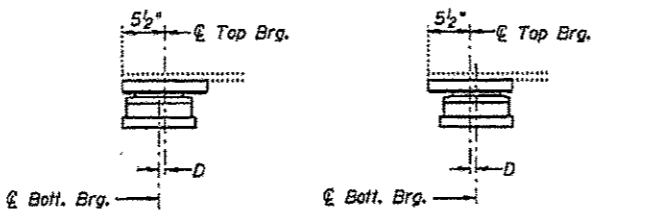
BILL OF MATERIAL

Item	Unit	Total
Erecting Elastomeric Bearing Assembly, Type II	Each	4
Anchor Bolts, 1"	Each	8

TABLE "A"

Girder No.	Shim Thickness
2	3/8"
3	1/2"

EXISTING GIRDER TYPE II BEARING DETAILS STRUCTURE NO.084-0028



SETTING ANCHOR BOLTS AT EXP. BRG.

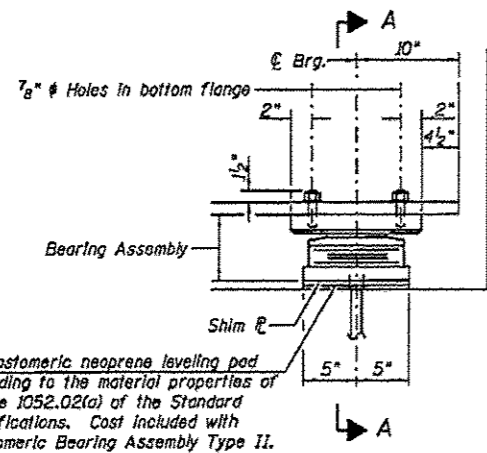
D=1/8" per each 100' of expansion for every 15° temp. change from the normal temp. of 50°F.

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

FOR INFORMATION ONLY

I-2E-2

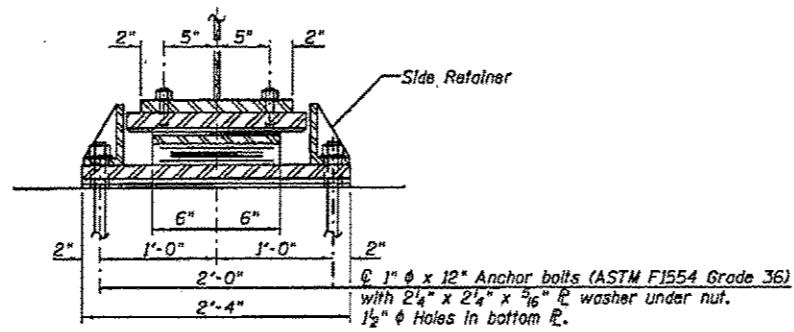
10-1-08



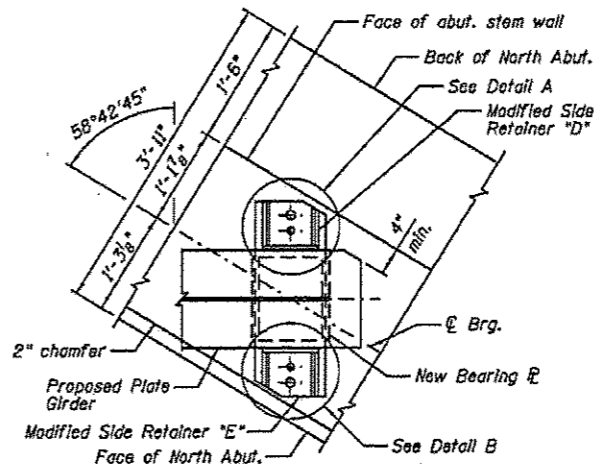
1/2" elastomeric neoprene leveling pad according to the material properties of Article 1052.02(a) of the Standard Specifications. Cost included with Elastomeric Bearing Assembly Type II.

ELEVATION AT NORTH ABUT.

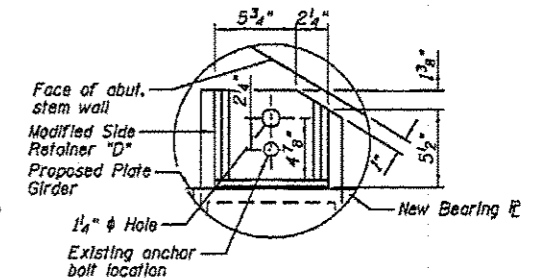
TYPE II ELASTOMERIC EXP. BRG.
(At North Abutment - 2 Required)



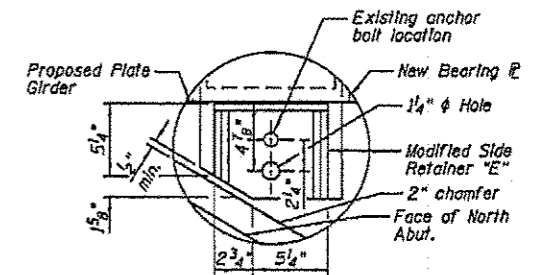
SECTION A-A



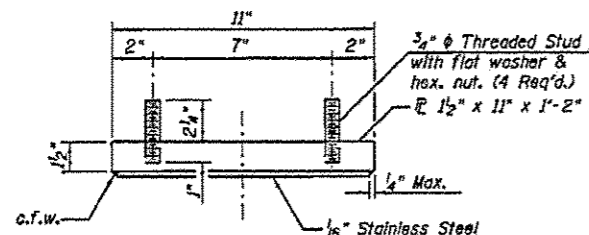
BEARING PLAN AT NORTH ABUTMENT



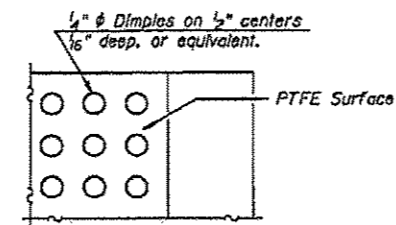
DETAIL A



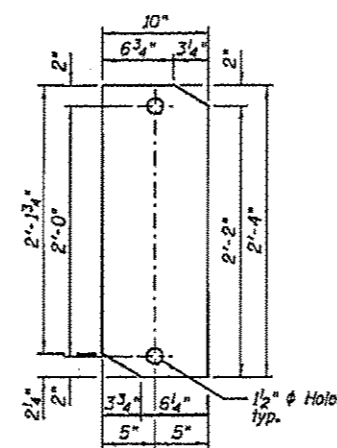
DETAIL B



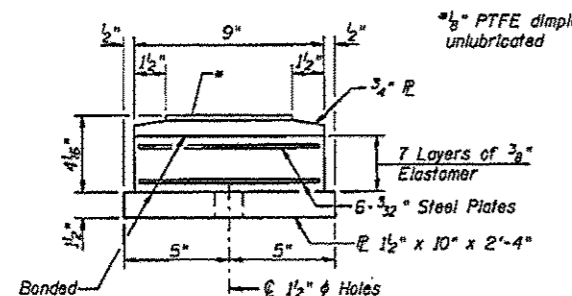
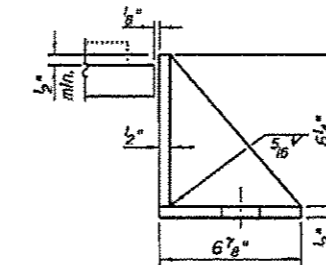
TOP BEARING ASSEMBLY



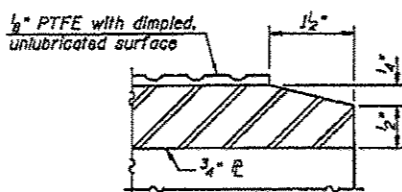
PLAN-PTFE SURFACE



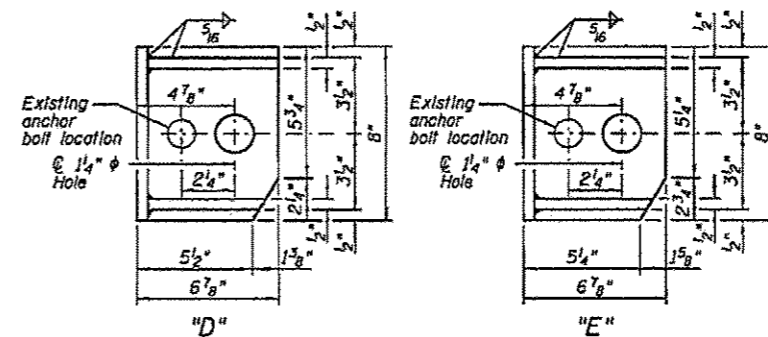
BOTTOM PLATE PLAN



BOTTOM BEARING ASSEMBLY



SECTION THRU PTFE



MODIFIED SIDE RETAINER

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

Notes:
Anchor bolts shall be ASTM F1554 all-thread (or an Engineer-approved alternate material) of the grade(s) and diameter(s) specified. ASTM A307 Grade C anchor bolts may be used in lieu of ASTM F1554 Grade 36 (Fy=36ksi). The corresponding specified grade of AASHTO M314 anchor bolts may be used in lieu of ASTM F1554.

Anchor bolts for Type II bearings shall be placed in holes drilled in the concrete through holes in the bottom bearing plate after members are in place. Side retainers shall be placed after bolts are installed.

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

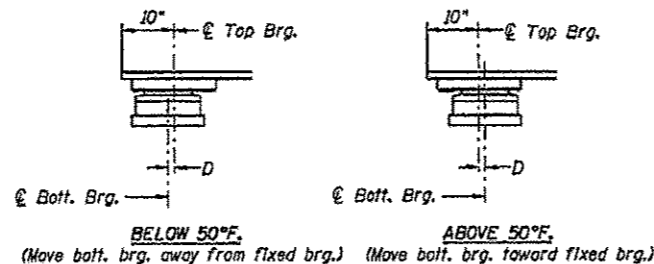
Side retainers and other steel members required for the bearing assembly shall be included in the cost of Elastomeric Bearing Assembly, Type II.

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

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

BILL OF MATERIAL

Item	Unit	Total
Erecting Elastomeric Bearing Assembly, Type II	Each	2
Anchor Bolts, 1"	Each	4



SETTING ANCHOR BOLTS AT EXP. BRG.

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

NOTE:

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

FOR INFORMATION ONLY

PROPOSED GIRDER TYPE II BEARING DETAILS
STRUCTURE NO.084-0028

FILE NAME *	USER NAME * medonalds	DESIGNED -	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	BEARING DETAILS	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.	
c:\documents and settings\medonalds\de		DRAWN -	REVISED -			55	DE PAINTING 2013	SANGAMON	26	16	
		CHECKED -	REVISED -			CONTRACT NO. 72F85					
Default		DATE -	REVISED -			[ILLINOIS] FED. AID PROJECT					

I-2E-2

10-1-08

SCALE: SHEET OF SHEETS STA. TO STA.

Benchmarks:

- 1.) BM 100 Chiseled "C" at the Southwest corner of concrete foundation of East pier of I-72 bridge over SB I-55, Elev. 589.75.
- 2.) BM 101A Chiseled "C" on the Northwest parapet wall of I-72 bridge over SB I-55, Elev. 615.80.
- 3.) MON 9911 Brass tablet set in concrete, North side of EB I-72, +50' West of West end of bridge I-72 over SB I-55, Elev. 615.04.

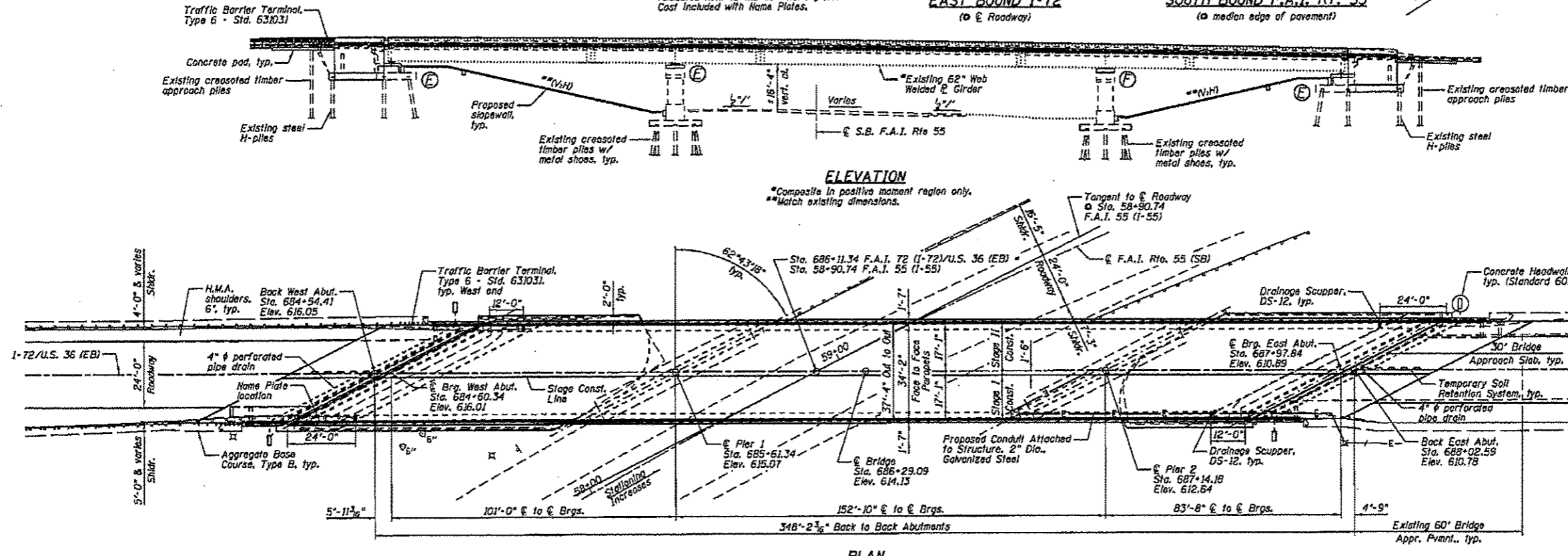
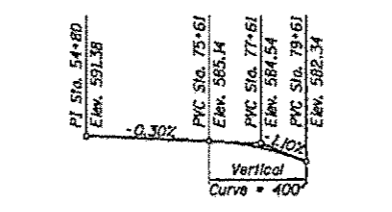
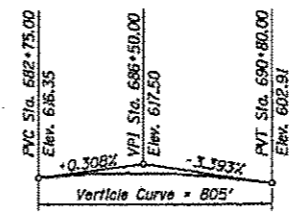
Existing Structure:

Structure No. 084-0078, built in 1962 as Section 84-3HB-5. The superstructure consists of a continuous three span non-composite welded plate girder bridge with a 7" concrete slab. The substructure consists of concrete pile bent abutments supported by steel piles and concrete multiple column pile bent piers supported by timber piles. The back-to-back of abutments dimension measures 347'-0" and the out-to-out of deck dimension measures 35'-0". The span lengths are 101'-0", 152'-10" and 83'-8" (to bearing to E bearing) with a 62°43'18" left forward skew. The existing beams, piers and a portion of the abutments will be reincorporated into the new structure. One lane of traffic will be maintained utilizing stage construction.

STATION 686+29.09
 REBUILT TO... BY
 STATE OF ILLINOIS
 F.A.I. RTE. 72 SEC. 184-3HB-5/BR
 LOADING HS20-44
 STRUCTURE NO. 084-0078

NAME PLATE

Existing name plate shall be cleaned and relocated next to the new name plate. Cost included with Name Plates.



CURVE DATA:
 (I-72/U.S. 36 (EB))
 PI STA. = 693+04.84
 Δ = 20° 22' 59" (LT)
 D = 2° 29' 16"
 R = 2,302.98'
 T = 414.02'
 L = 819.25'
 E = 36.52'
 e = 4.50%

CURVE DATA:
 (F.A.I. Rte. 55 (I-55))
 PI STA. = 57+22.27
 Δ = 39° 13' 36" (RT)
 D = 2° 59' 59"
 R = 1,909.97'
 T = 680.51'
 L = 1,307.63'
 E = 117.64'
 e = 5.80%

INDEX TO SHEETS

SHEET NO.	TITLE
B1	GENERAL PLAN AND ELEVATION
B2	GENERAL DATA
B3	STAGE CONSTRUCTION
B4	TEMPORARY CONCRETE BARRIER FOR STAGE CONSTRUCTION
B5	TOP OF SLAB ELEVATION LOCATIONS
B6-B8	TOP OF SLAB ELEVATIONS
B9	TOP OF WEST APPROACH SLAB ELEVATIONS
B10	TOP OF EAST APPROACH SLAB ELEVATIONS
B11-B13	SUPERSTRUCTURE DECK
B14	SUPERSTRUCTURE CROSS SECTION
B15-B16	SUPERSTRUCTURE DETAILS
B17	WEST BRIDGE APPROACH SLAB DETAILS
B18	EAST BRIDGE APPROACH SLAB DETAILS
B19	DRAINAGE SCUPPER, DS-12
B20	PERFORMED JOINT STRIP SEAL
B21	MODULAR EXPANSION JOINT DETAILS
B22-B24	STRUCTURAL STEEL
B25	FIXED BEARING DETAILS
B26-B27	TYPE II ELASTOMERIC BEARING DETAILS
B28	GUIDED EXPANSION HLWR BEARING DETAILS
B29	WEST ABUTMENT REMOVAL
B30-B32	WEST ABUTMENT
B33	EAST ABUTMENT REMOVAL
B34-B36	EAST ABUTMENT
B37	PIER NO. 1 REPAIR
B38	PIER NO. 1
B39	PIER NO. 2 REPAIR
B40	PIER NO. 2
B41	BAR SPLICER ASSEMBLY AND MECHANICAL SPLICER DETAILS
B42	CONCRETE PARAPET SLIPFORMING OPTION

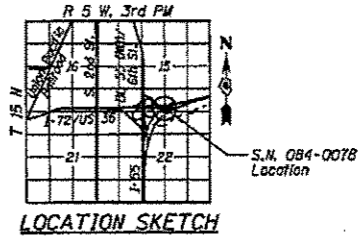
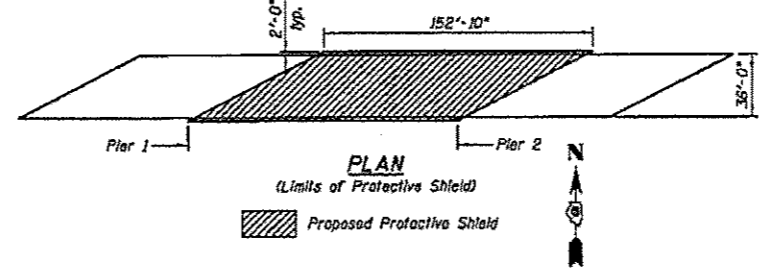
EXISTING DESIGN STRESSES
 $f_c = 1,400 \text{ psi}$
 $f_s = 20,000 \text{ psi (Reinforcement)}$
 $f_s = 18,000 \text{ psi (Structural Steel)}$
 $n = 10$

DESIGN SPECIFICATIONS
 2002 AASHTO Standard Specifications for Highway Bridges

DESIGN STRESSES
FIELD UNITS
 $f'_c = 3,500 \text{ psi (Cast-In-Place)}$
 $f_y = 60,000 \text{ psi (Reinforcement)}$
 $f_y = 35,000 \text{ psi (Structural Steel - M270 Grade 35)}$
 $f_y = 50,000 \text{ psi (Structural Steel - M270 Grade 50)}$

LOADING HS20-44 & ALT.
 Allow 50#/sq. ft. for future wearing surface.

SEISMIC DATA
 Seismic Performance Category (SPC) = A
 Bedrock Acceleration Coefficient (A) = 0.048
 Site Coefficient (S) = 2.0



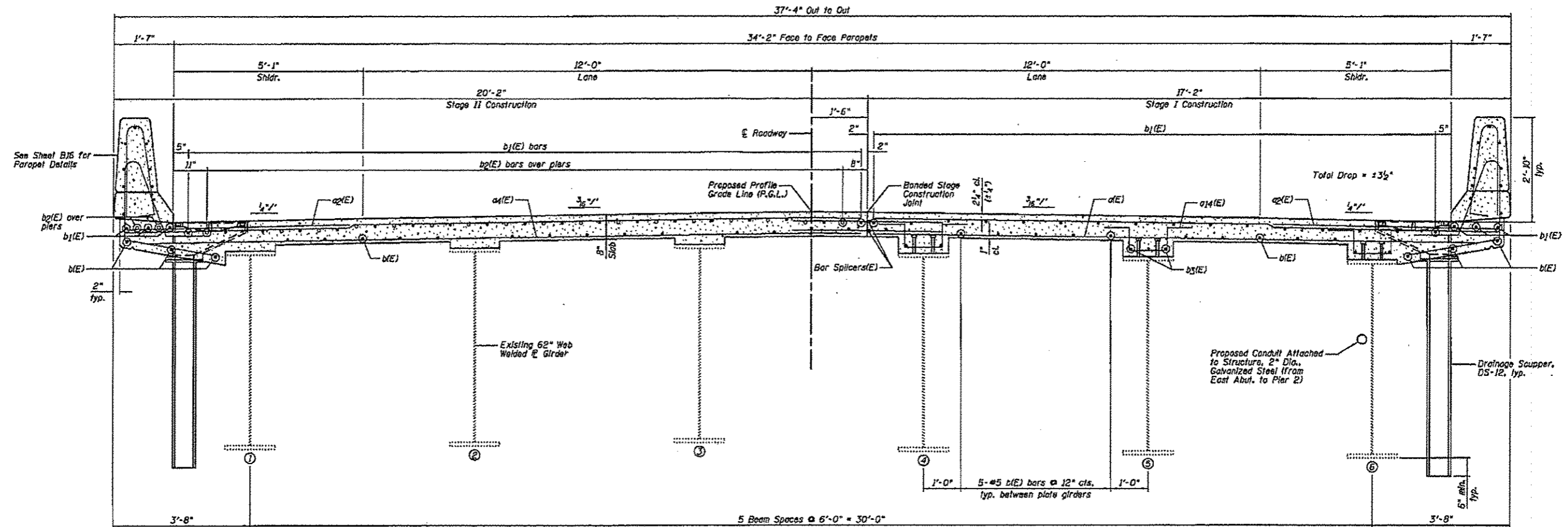
GENERAL PLAN AND ELEVATION
I-72 / U.S. 36 OVER
S.B. F.A.I. ROUTE 72
SECTION 184-3HB-5/BR
SANGAMON COUNTY
STATION 686+29.09
STRUCTURE NO.084-0078



JOSEPH M. LOWRANCE
 ILLINOIS STRUCTURAL ENGINEER
 NO. 081-006446
 Exp. Date 11/30/10

FOR INFORMATION ONLY

FILE NAME: SNB-bridgeplans_CAD72F85 - DS PAINTING	USER NAME: mopenburgarda	DESIGNED: -	REVISED: -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	GENERAL PLAN AND ELEVATION				F.A.I. RTE. 55	SECTION D6 PAINTING 2013	COUNTY SANGAMON	TOTAL SHEETS 26	SHEET NO. 17
PLDT SCALE: 1/8" = 1'-0"	PLDT DATE: Dec-28-2012 8:19:01AM	DRAWN: -	REVISED: -		SCALE: -	SHEET OF SHEETS: -	STA. -	TO STA. -	[ILLINOIS] FED. AID PROJECT				
CONTRACT NO. 72F85	DATE: -	CHECKED: -	REVISED: -										



NEAR PIER

NEAR MIDSPAN

CROSS SECTION
(Looking East)

NOTES:

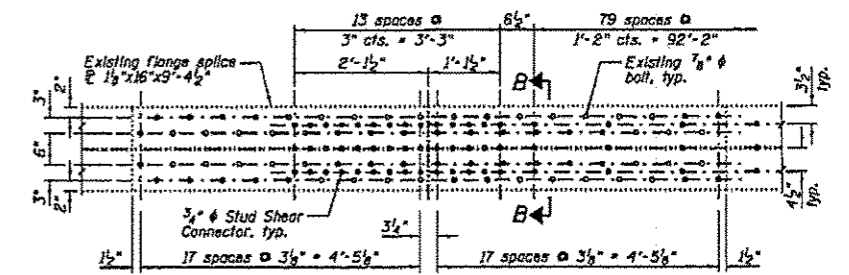
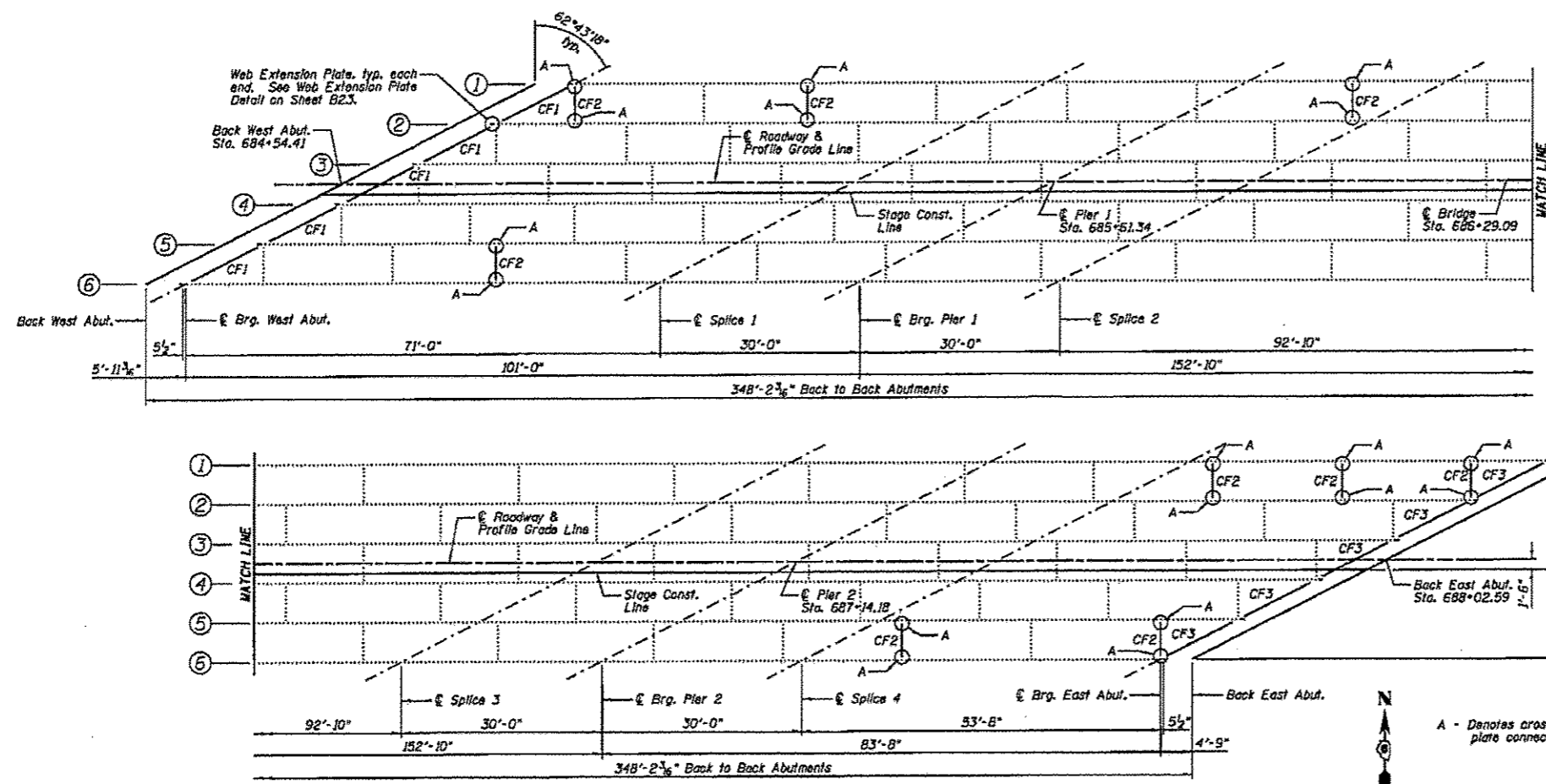
- 1.) See Sheet B15 for Superstructure Details and Bill of Material.
- 2.) Space drainage scuppers to miss stud shear connectors and transverse reinforcing bars.
- 3.) See Sheet B41 for Bar Splicer Details.
- 4.) Fillet reinforcement a1(E) and b3(E) are only required in Span No. 2.

SUPERSTRUCTURE CROSS SECTION

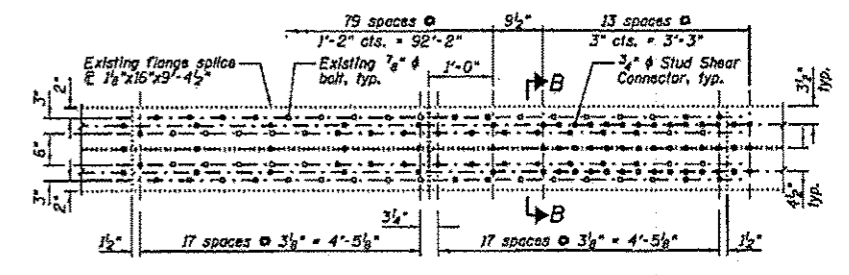
STRUCTURE NO.084-0078

FOR INFORMATION ONLY

FILE NAME *	USER NAME * emadonalds	DESIGNED -	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	SUPERSTRUCTURE CROSS SECTION	F-AJ	SECTION	COUNTY	TOTAL	SHEET	
e:\documents and settings\emadonalds\de	ktop\plansheet.dgn	DRAWN -	REVISED -			55	D6 PAINTING 2013	SANGAMON	26	18	
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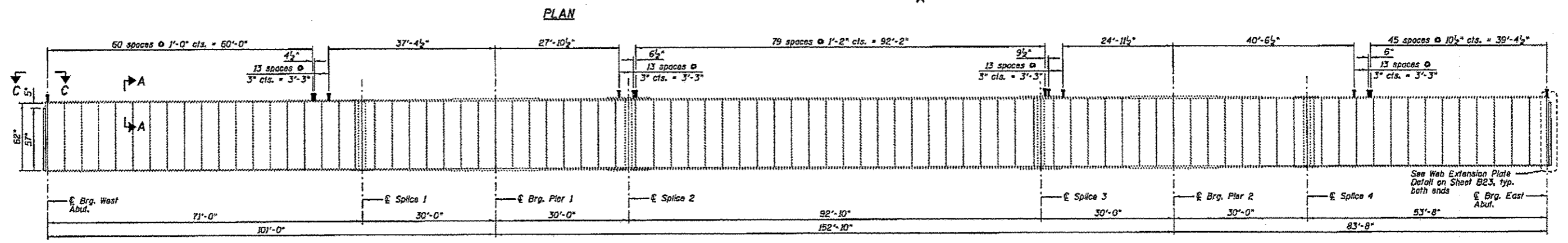


STUD SHEAR CONNECTORS -
PLAN AT SPLICE 2

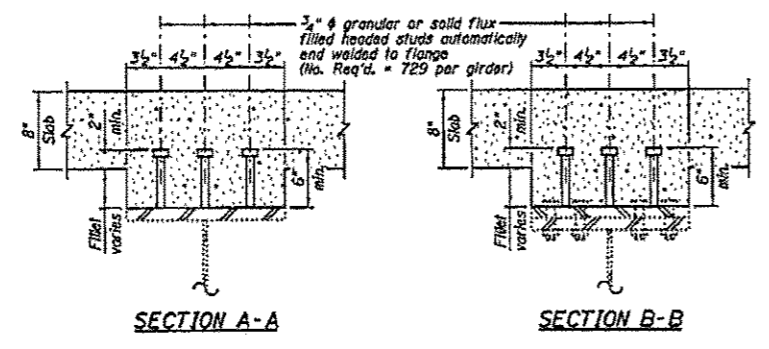


STUD SHEAR CONNECTORS -
PLAN AT SPLICE 3

A - Denotes cross frame to transverse stiffener plate connection.



EXISTING GIRDER ELEVATION



SECTION A-A

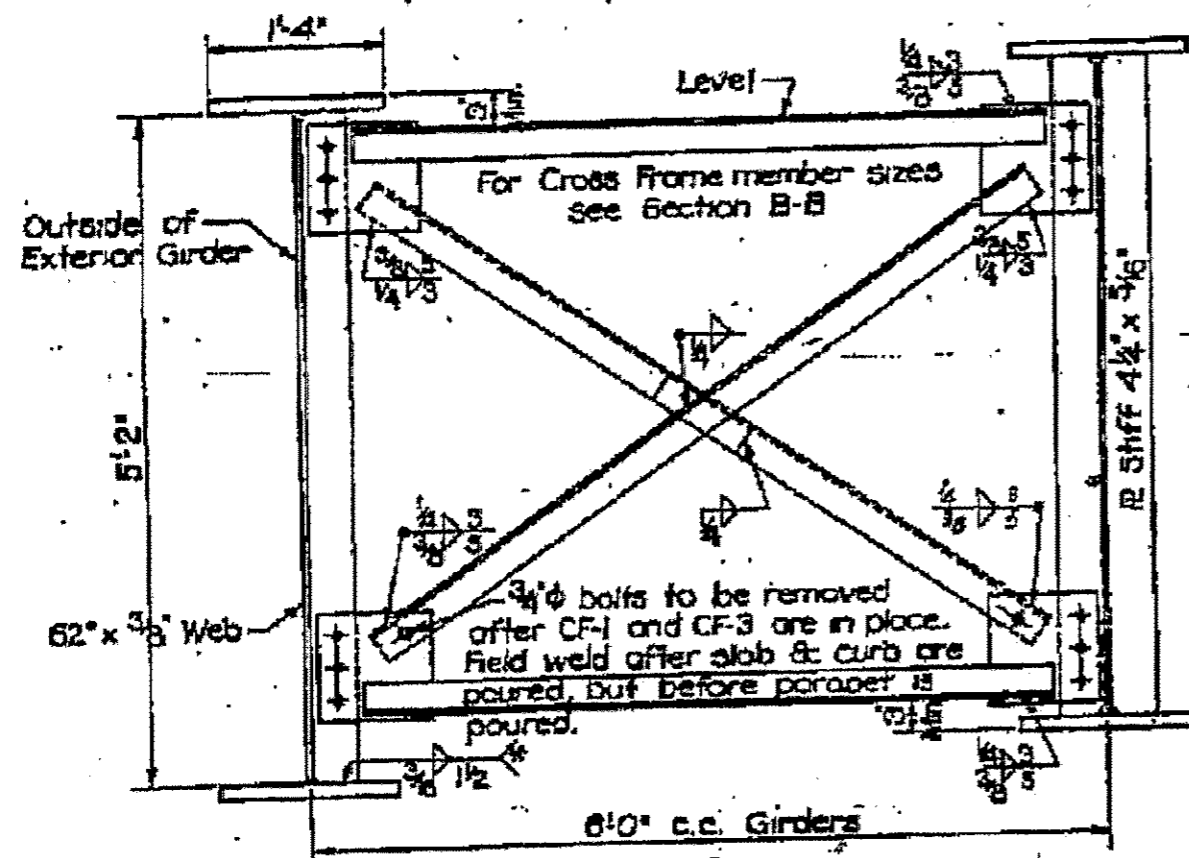
SECTION B-B

- NOTES:
- 1) See Sheet B24 for Cross Frame Connections "A".
 - 2) See Sheet B23 for Sections C-C.

FOR INFORMATION ONLY

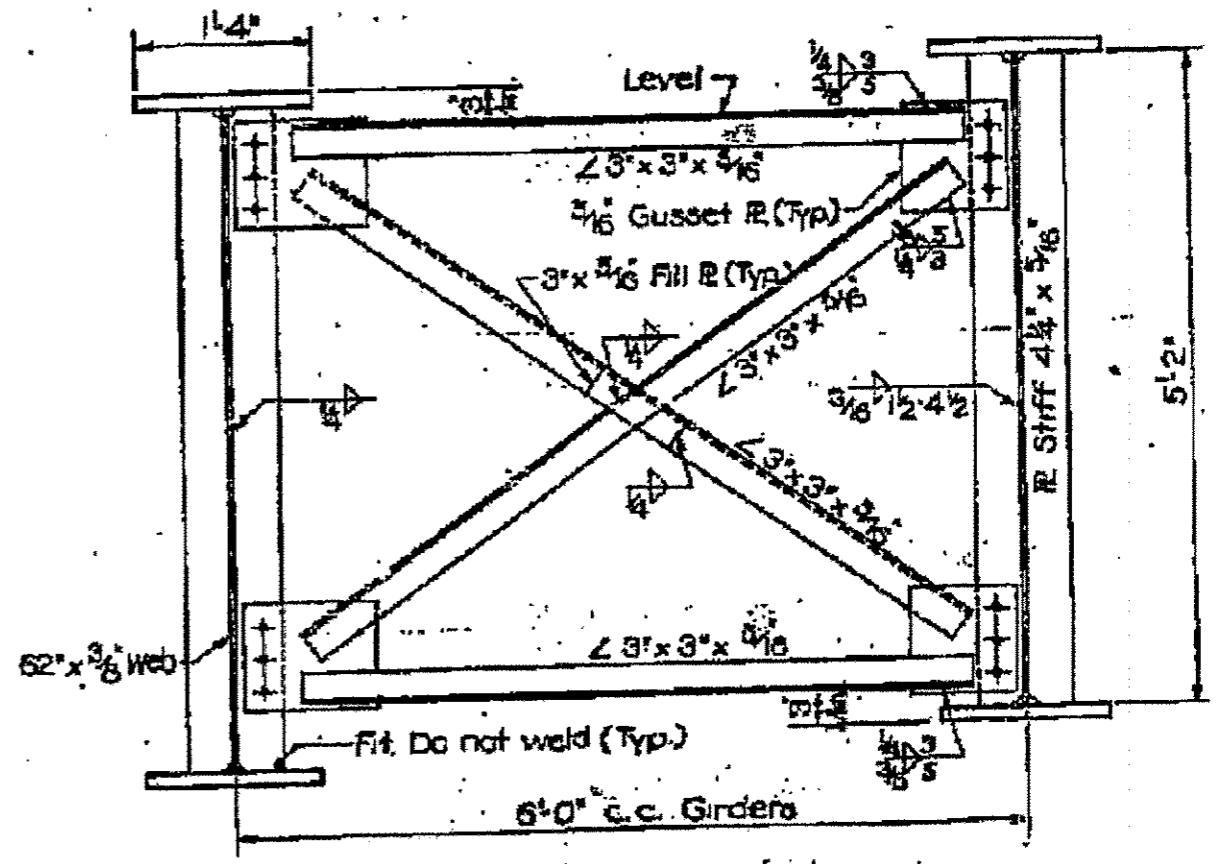
STRUCTURAL STEEL
STRUCTURE NO.084-0078

FILE NAME =	USER NAME = macdonalds	DESIGNED -	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	STRUCTURAL STEEL			P.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.			
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PLOT SCALE = 8/32" = 1" = 1/4"	CHECKED -	REVISED -	55			06 PAINTING 2013	SANGAMON						26	19	
Default	DATE -	REVISED -	ILLINOIS			FED. AID PROJECT	CONTRACT NO. 72F85								



SECTION A-A

Showing Exterior Girder & Cross Frames CF-1 & CF-3



SECTION B-B

Showing Interior Girder & Cross Frames CF-2 & CF-4

STRUCTURE NO.084-0078

FOR INFORMATION ONLY

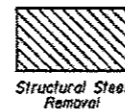
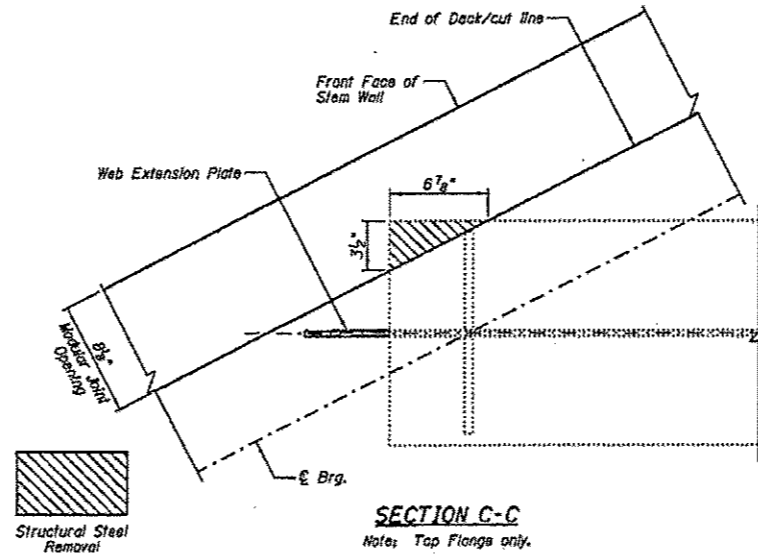
FILE NAME *	USER NAME * medonaldra	DESIGNED -	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	EXISTING CROSSFRAME	SCALE:	SHEET	OF	SHEETS	STA.	TO STA.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
m:\documents and settings\medonaldra\de	ktop\plansheet.dgn	DRAWN -	REVISED -			B5	D6 PAINTING 2013	SANGAMON	26	20					
PLOT SCALE * 3/8" = 1'-0"		CHECKED -	REVISED -			CONTRACT NO. 72F85									
Default	PLOT DATE * Nov-20-2012 8:38:02PM	DATE -	REVISED -			ILLINOIS/REG. AID PROJECT									

INTERIOR GIRDER MOMENT TABLE					
	0.4 Sp. 1	Pier 1	0.5 Sp. 2	Pier 2	0.6 Sp. 3
I_s	(in ⁴) 31074	68666	47459	68666	31074
$I_{c(n)}$	(in ⁴) 67629	-	91350	-	67629
$I_{c(3n)}$	(in ⁴) 50769	-	69412	-	50769
S_s	(in ³) 979	2089	1472	2089	979
$S_{c(n)}$	(in ³) 1282	-	1796	-	1282
$S_{c(3n)}$	(in ³) 1178	-	1669	-	1178
R	(k/ft) 0.774	1.331	0.828	1.331	0.774
M_D	(k) 345	2347	1011	2075	109
s_D	(k/ft) 0.435	-	0.435	-	0.435
M_L	(k) 232	-	564	-	101
M_I	(k) 683	814	945	757	543
M_1	(k) 151	161	170	155	130
$M_2 (M_L + I)$	(k) 1390	1625	1858	1520	1122
M_a	(k) 2557	5164	4463	4674	1731
M_u	(k) 4730	-	6066	-	4730
f_s non-comp	(ksi) 4.2	13.5	8.2	11.9	1.3
f_s comp	(ksi) 2.4	-	4.1	-	1.0
$f_s \frac{1}{2} (M_L + M_I)$	(ksi) 13.0	9.3	12.4	8.7	10.5
f_s (Overload)	(ksi) 19.6	22.8	24.7	20.7	12.9
f_s (Total)	(ksi) -	29.7	-	26.8	-
VR	(k) 48.3	-	43.8	-	51.1

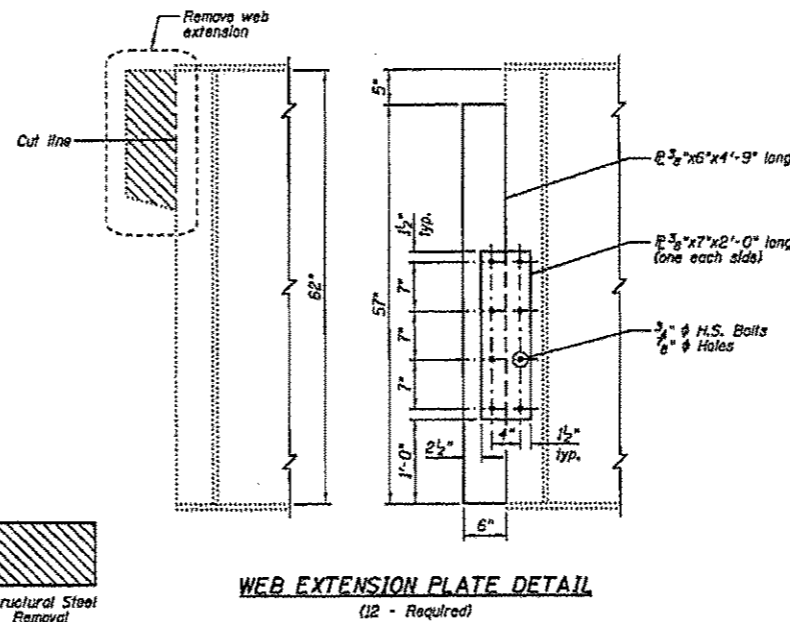
INTERIOR GIRDER REACTION TABLE				
	W. Abut.	Pier 1	Pier 2	E. Abut.
R_R	(k) 39.2	188.9	175.9	26.9
R_L	(k) 35.5	66.2	63.7	34.8
R_I	(k) 7.8	13.2	13.4	8.4
R_{Total}	(k) 82.5	268.3	253.0	70.1

- Compact sections
- Non-Compact and slender sections

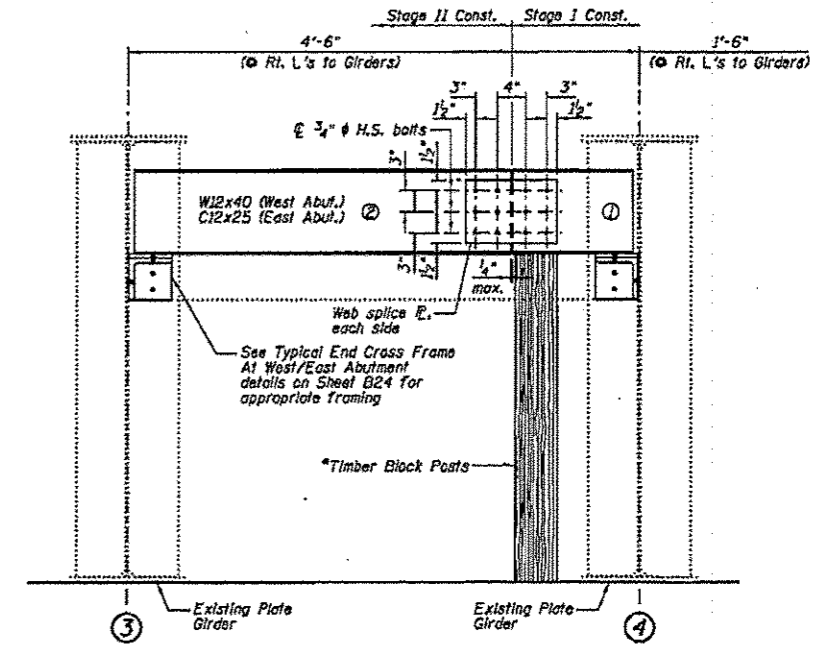
- I_s, S_s : Non-composite moment of inertia and section modulus of the steel section used for computing f_s (Total and Overload) due to non-composite dead loads (in. and in. 3).
- $I_{c(n)}, S_{c(n)}$: Composite moment of inertia and section modulus of the steel and deck based upon the modular ratio, "n", used for computing f_s (Total and Overload) due to short-term composite live loads (in. and in. 3).
- $I_{c(3n)}, S_{c(3n)}$: Composite moment of inertia and section modulus of the steel and deck based upon 3 times the modular ratio, "3n", used for computing f_s (Total and Overload) due to long-term composite (superimposed) dead loads (in. and in. 3).
- R : Un-factored non-composite dead load (kips/ft.).
- M_D : Un-factored moment due to non-composite dead load (kip-ft.).
- s_D : Un-factored long-term composite (superimposed) dead load (kips/ft.).
- M_L : Un-factored moment due to long-term composite (superimposed) dead load (kip-ft.).
- M_I : Un-factored live load moment (kip-ft.).
- M_1 : Un-factored moment due to impact (kip-ft.).
- M_2 : Factored design moment (kip-ft.).
- $1.3 [M_D + M_L + M_I]$
- M_u : Compact composite moment capacity according to AASHTO LFD 10.50.1.1 or compact non-composite moment capacity according to AASHTO LFD 10.48.1 (kip-ft.).
- f_s (Overload): Sum of stresses as computed from the moments below (ksi).
- $M_D + M_L + M_I$
- $1.3 [M_D + M_L + M_I]$
- f_s (Total): Sum of stresses as computed from the moments below on non-compact section (ksi).
- $1.3 [M_D + M_L + M_I]$
- VR: Maximum + Impact horizontal shear range within the composite portion of the span for stud shear connector design (kips).



SECTION C-C
Notes: Top Flange only.



WEB EXTENSION PLATE DETAIL
(12 - Required)

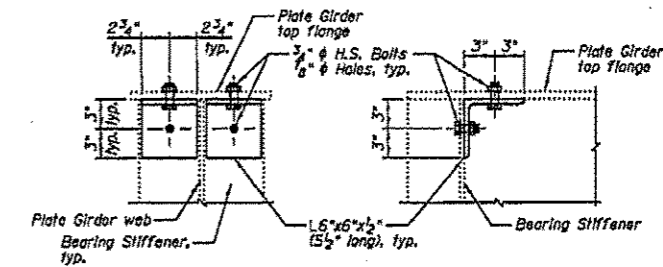


CROSS FRAME

* Cast of Timber Block Posts are Included with Furnishing and Erecting Structural Steel.

CROSS FRAME STAGE CONSTRUCTION SEQUENCE

- 1.) Order Cross Frame in two sections.
- 2.) Attach Section ① of Cross Frame to Girder 4.
- 3.) Place Timber Block Posts between Section ① of Cross Frame and Abutment Bearing Section.
- 4.) Attach Section ② of Cross Frame to both Girder 3 and Section ① of Cross Frame during Stage II Construction with splice plates.
- 5.) Remove Timber Block Posts.
- 6.) Install lower portion of Cross Frame during Stage II Construction.



EXISTING TOP FLANGE ABUTMENT BEARING STIFFENER CONNECTION DETAILS
(24 - Required @ 12 locations)

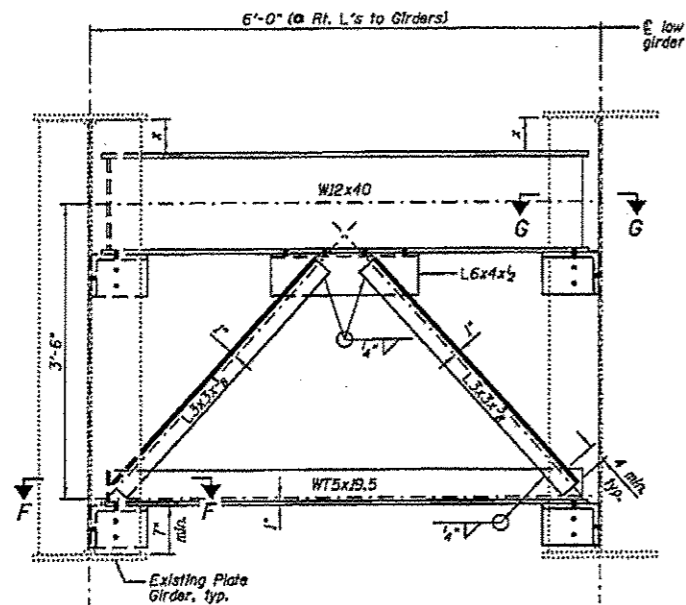
STRUCTURAL STEEL
STRUCTURE NO.084-0078

NOTES:

- 1.) See Sheet B22 for Section C-C location.
- 2.) See Sheet B22 for Web Extension Plate locations.

FOR INFORMATION ONLY

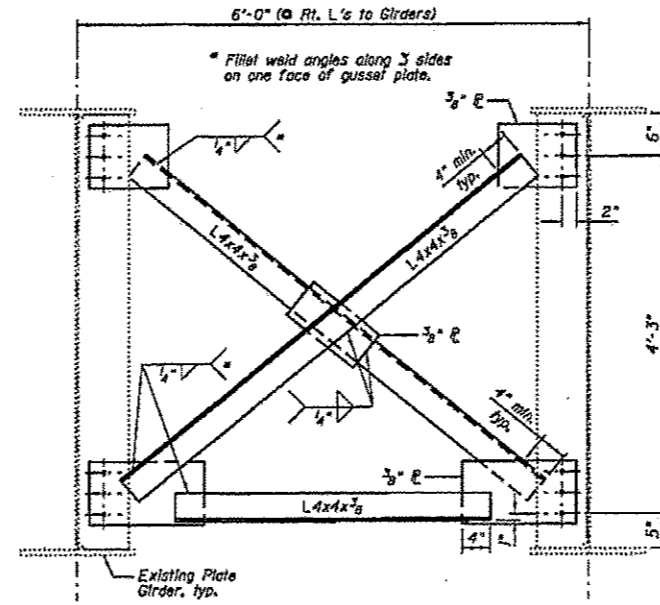
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		PLOT DATE = Nov-29-2012 9:12:52PM	DATE -							
						SCALE:	SHEET	OF	SHEETS	STA. TO STA.
						ILLINOIS FED. AID PROJECT				



TYPICAL END CROSS FRAME AT WEST ABUTMENT - CF1
(5 - Required)

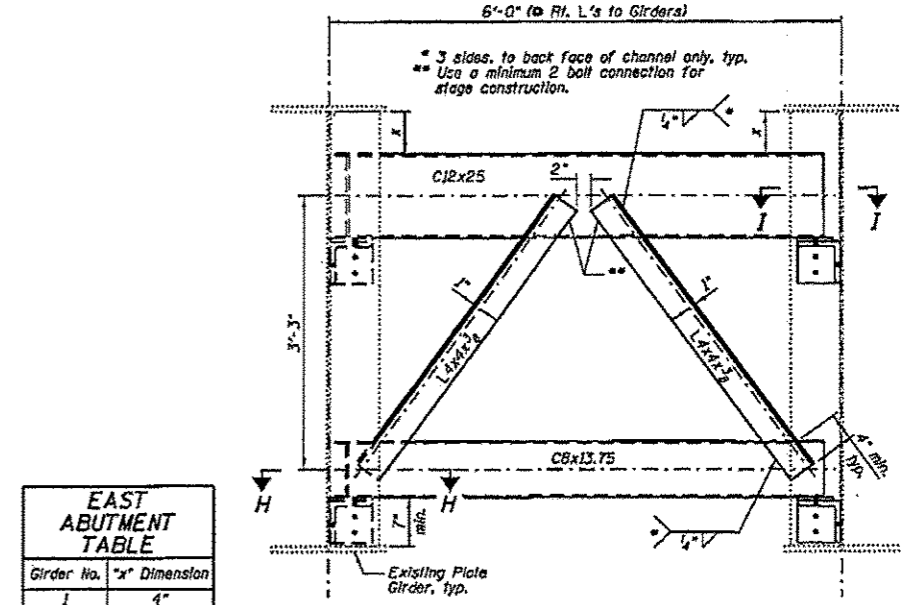
Notes: 1.) Detail 3/8" holes for all 3/4" bolts.
2.) Two hardened washers shall be required for each set of oversized holes.

WEST ABUTMENT TABLE	
Girder No.	"x" Dimension
1	4 3/8"
2	4 3/8"
3	4 3/8"
4	4 3/8"
5	5 3/8"
6	5 3/8"



TYPICAL INTERIOR CROSS FRAME - CF2 (CONNECTION "A")
(9 - Required)

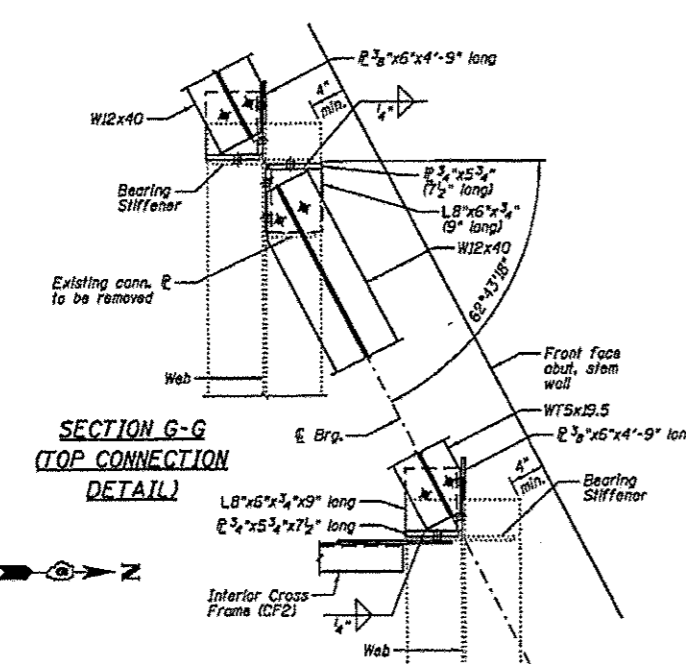
Notes: 1.) See Sheet B22 for Cross Frame Connection "A" locations.
2.) Detail 3/8" holes for all 3/4" bolts.
3.) Two hardened washers shall be required for each set of oversized holes.
4.) For existing to proposed connection, match existing bolt holes. The Contractor shall provide connection details for all existing to proposed connections per the existing shop drawings.



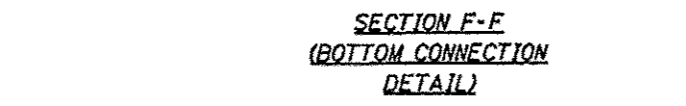
TYPICAL END CROSS FRAME AT EAST ABUTMENT - CF3
(5 - Required)

Notes: 1.) Detail 3/8" holes for all 3/4" bolts.
2.) Two hardened washers shall be required for each set of oversized holes.
3.) Place alphas with channel flanges projected outward from abutment backwall.

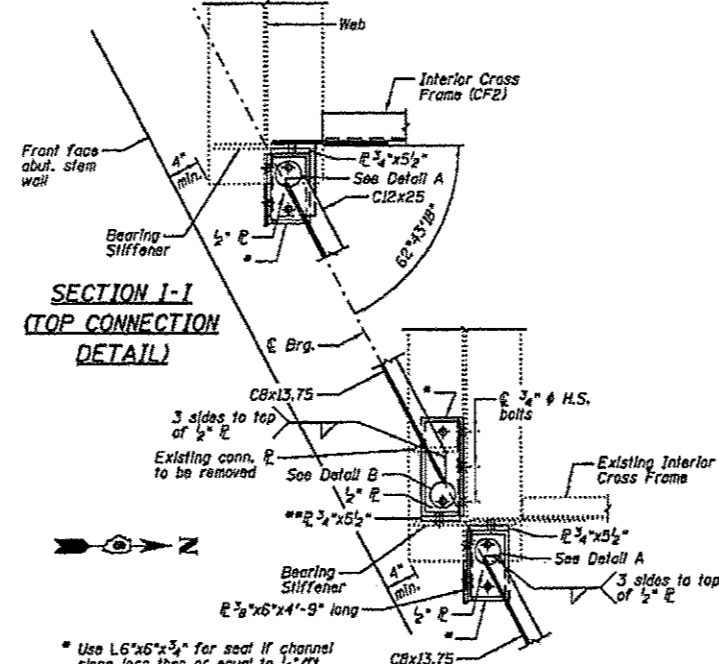
EAST ABUTMENT TABLE	
Girder No.	"x" Dimension
1	4"
2	4 3/8"
3	4 3/8"
4	4"
5	5 3/8"
6	5 3/8"



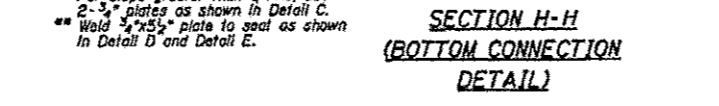
SECTION G-G (TOP CONNECTION DETAIL)



SECTION F-F (BOTTOM CONNECTION DETAIL)

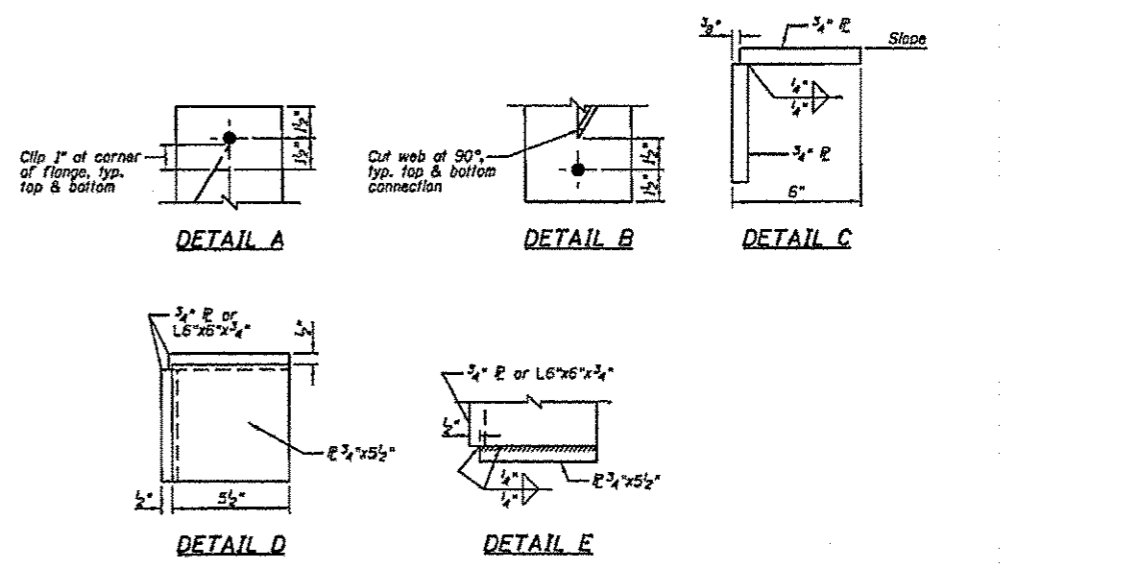


SECTION I-I (TOP CONNECTION DETAIL)



SECTION H-H (BOTTOM CONNECTION DETAIL)

* Use L6"x6"x3/4" for seat if channel slope less than or equal to 1/4"/ft. For slope greater than 1/4"/ft., use 2"-3/4" plates as shown in Detail C.
** Weld 3/4"x5 1/2" plate to seat as shown in Detail D and Detail E.



DETAIL A

DETAIL B

DETAIL C

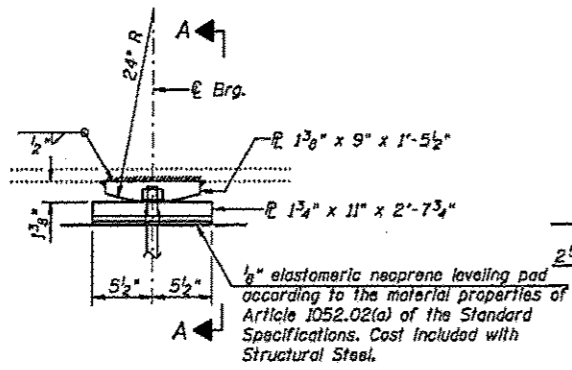
DETAIL D

DETAIL E

STRUCTURAL STEEL
STRUCTURE NO.084-0078

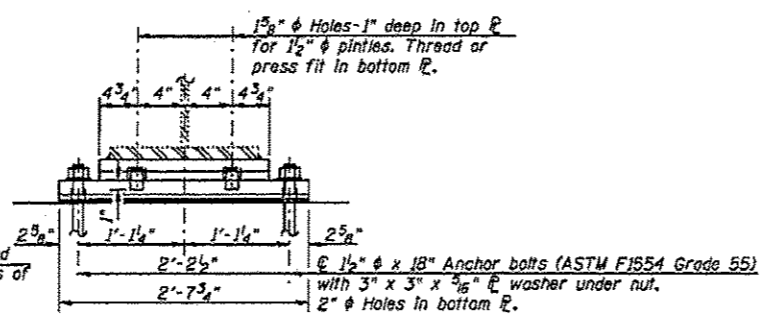
FOR INFORMATION ONLY

FILE NAME =	USER NAME = mcdonaldra	DESIGNED -	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	STRUCTURAL STEEL	F.A.I. SITE	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.	
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PLT DATE = Nov-28-2012 01:29:00PM		DATE -	REVISED -			[ILLINOIS] FED. AID PROJECT					
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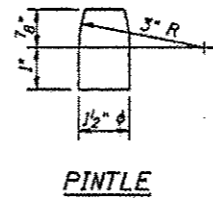


ELEVATION AT PIER NO. 2

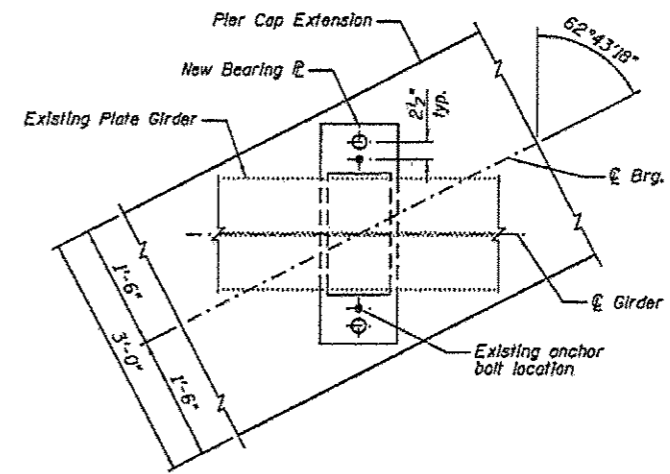
FIXED BEARING
(At Pier No. 2 - 6 Required)



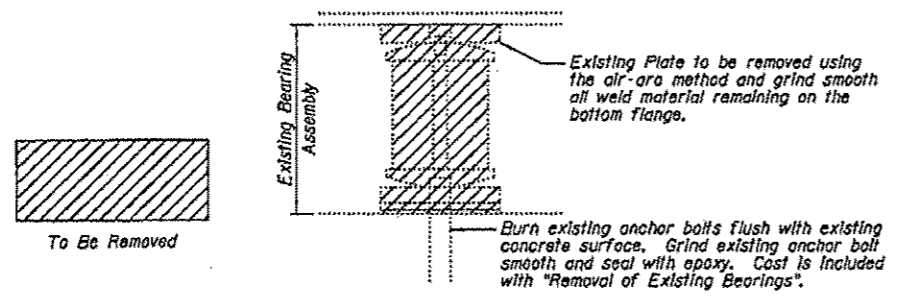
SECTION A-A



PINTLE



BEARING PLAN AT PIER NO. 2



EXISTING BEARING REMOVAL DETAIL

Notes:
Anchor bolts shall be ASTM F1554 all-thread (or an Engineer-approved alternate material) of the grade(s) and diameter(s) specified. The corresponding specified grade of AASHTO M314 anchor bolts may be used in lieu of ASTM F1554.
Anchor bolts at fixed bearings may be either cast in place or installed in holes drilled after the supported member is in place.
Drilled and set anchor bolts shall be installed according to Article 521.06 of the Standard Specifications.

BILL OF MATERIAL

Item	Unit	Total
Removal of Existing Bearings	Each	24
Anchor Bolts, 1 1/2"	Each	12

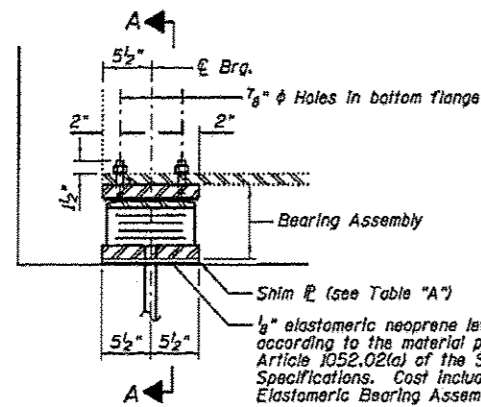
NOTES:

- 1.) The structural steel plates of the bearing assembly shall conform to the requirements of AASHTO M270 Grade 50.
- 2.) Two 1/2 inch adjusting shims shall be provided for each bearing in addition to all other plates or shims and placed as shown on bearing details.

FIXED BEARING DETAILS
STRUCTURE NO.084-0078

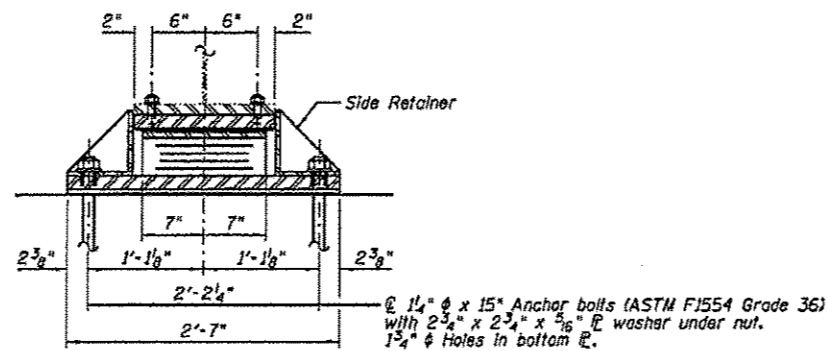
FOR INFORMATION ONLY

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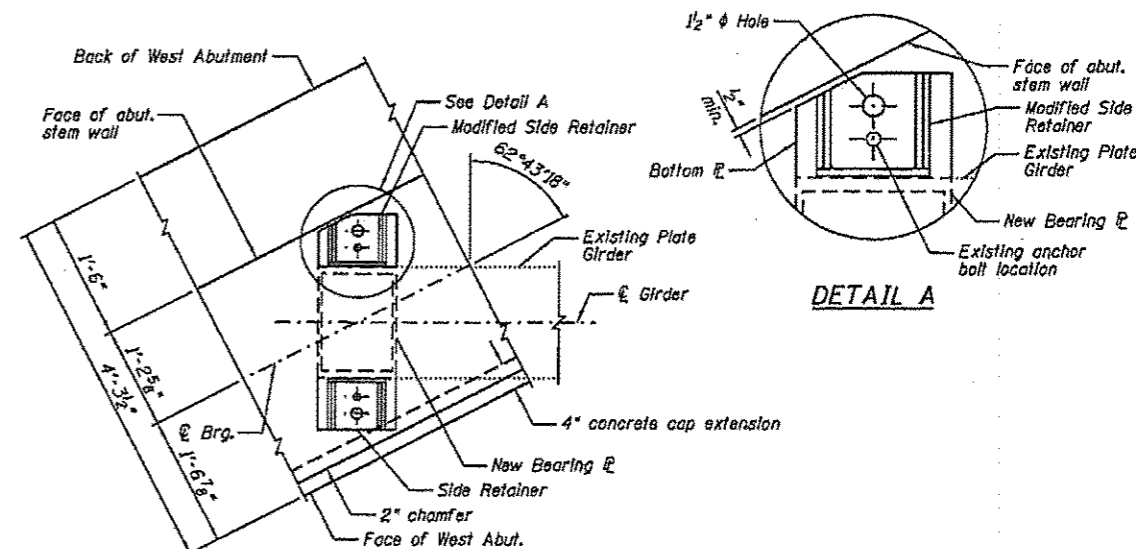


ELEVATION AT WEST ABUT.

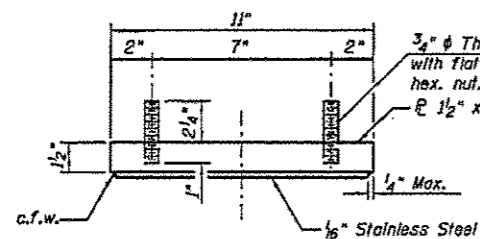
TYPE II ELASTOMERIC EXP. BRG.
(At West Abutment - 6 Required)



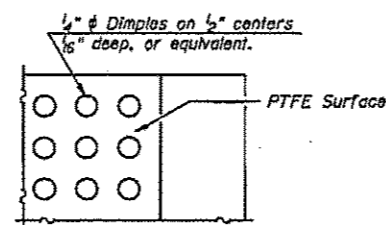
SECTION A-A



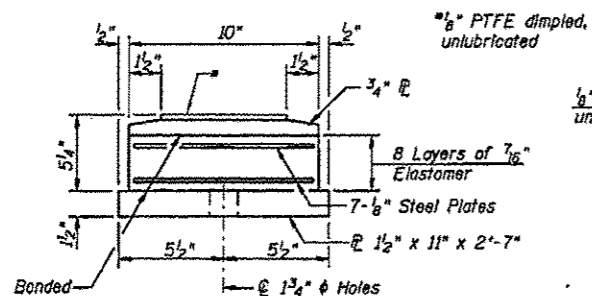
BEARING PLAN AT WEST ABUTMENT



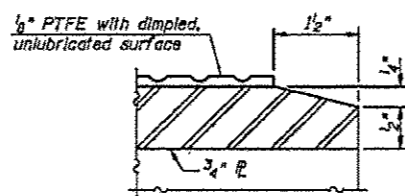
TOP BEARING ASSEMBLY



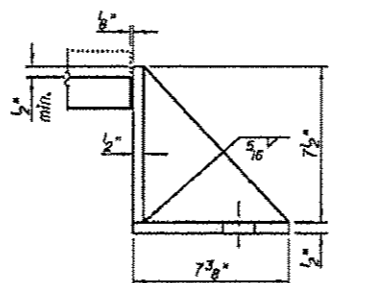
PLAN-PTFE SURFACE



BOTTOM BEARING ASSEMBLY

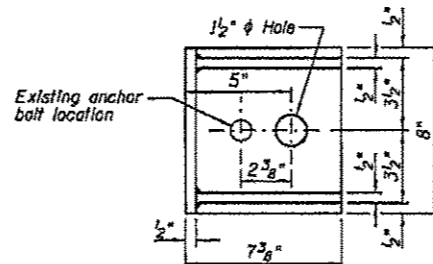


SECTION THRU PTFE



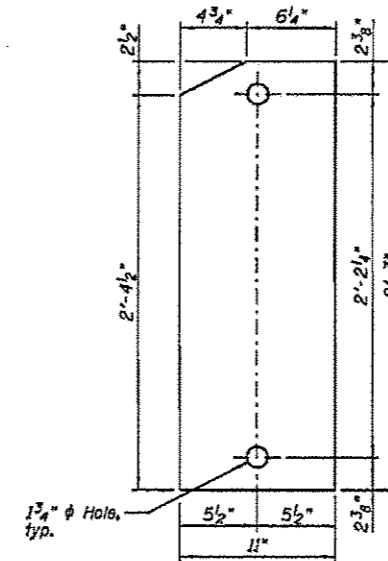
SIDE RETAINER

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



MODIFIED SIDE RETAINER

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



BOTTOM PLATE PLAN

Notes:
Anchor bolts shall be ASTM F1554 all-thread (or an Engineer-approved alternate material) of the grade(s) and diameter(s) specified. ASTM A307 Grade C anchor bolts may be used in lieu of ASTM F1554 Grade 36 (Fy=36ksi). The corresponding specified grade of AASHTO M314 anchor bolts may be used in lieu of ASTM F1554.

Anchor bolts for Type II bearings shall be placed in holes drilled in the concrete through holes in the bottom bearing plate after members are in place. Side retainers shall be placed after bolts are installed.

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

Side retainers and other steel members required for the bearing assembly shall be included in the cost of Elastomeric Bearing Assembly, Type II.

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

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

BILL OF MATERIAL

Item	Unit	Total
Elastomeric Bearing Assembly, Type II	Each	6
Anchor Bolts, 1 1/4"	Each	12

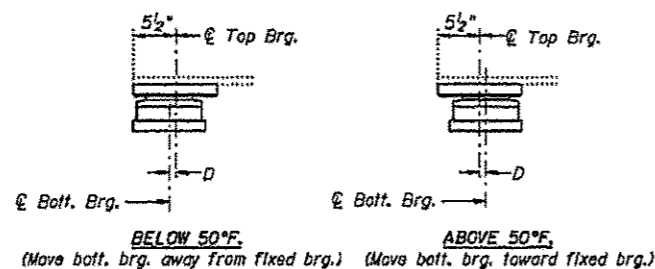
TABLE "A"

Girder No.	Shim Thickness
4	1/8"
5	3/8"

TYPE II ELASTOMERIC BEARING DETAILS
STRUCTURE NO.084-Q078

NOTE:

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



SETTING ANCHOR BOLTS AT EXP. BRG.

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

FOR INFORMATION ONLY

FILE NAME	USER NAME	DESIGNED	REVISED
\\documents and settings\edonaldra\desktop\plansheet.dgn	edonaldra	-	-
		DRAWN	REVISED
		CHECKED	REVISED
		DATE	REVISED

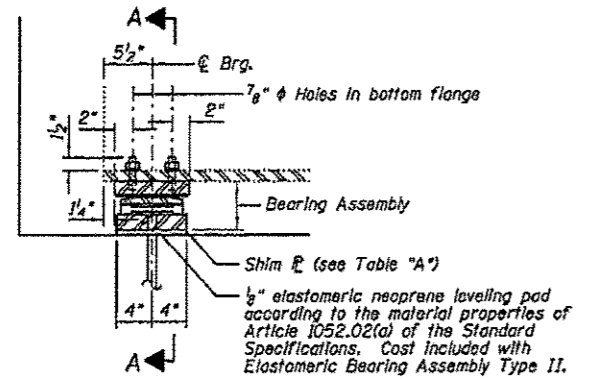
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

BEARING DETAILS

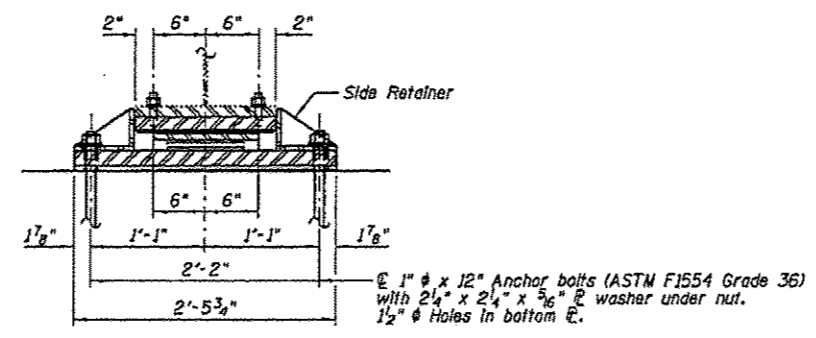
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F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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CONTRACT NO. 72F85
ILLINOIS FED. AID PROJECT

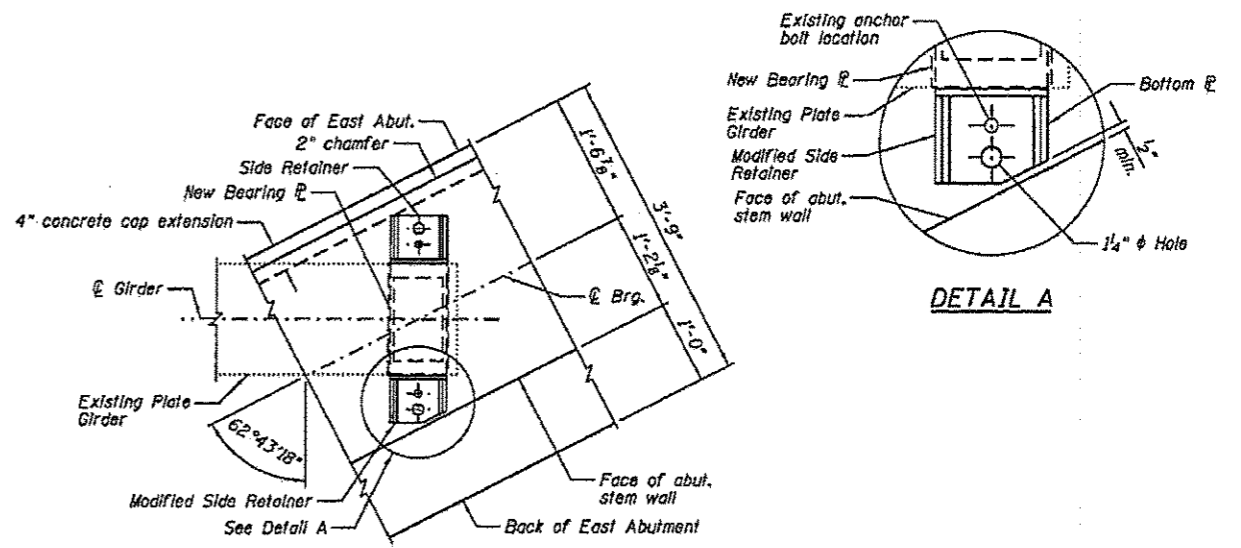


ELEVATION AT EAST ABUT.



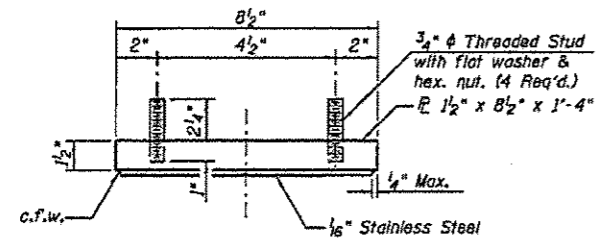
SECTION A-A

TYPE II ELASTOMERIC EXP. BRG.
(A) East Abutment - 6 Required

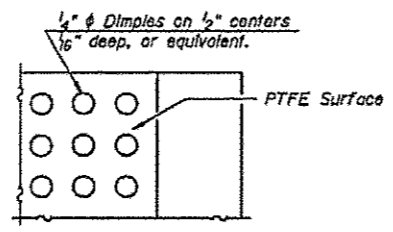


BEARING PLAN AT EAST ABUTMENT

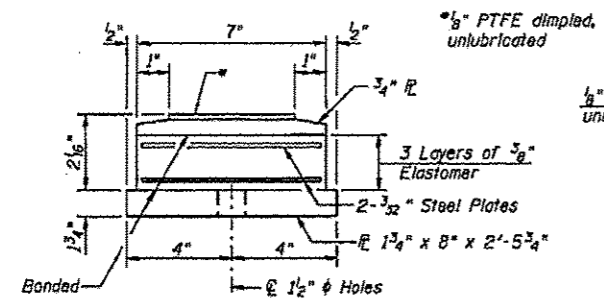
DETAIL A



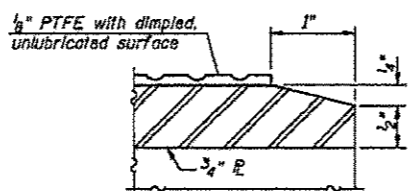
TOP BEARING ASSEMBLY



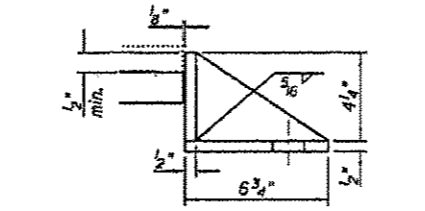
PLAN-PTFE SURFACE



BOTTOM BEARING ASSEMBLY

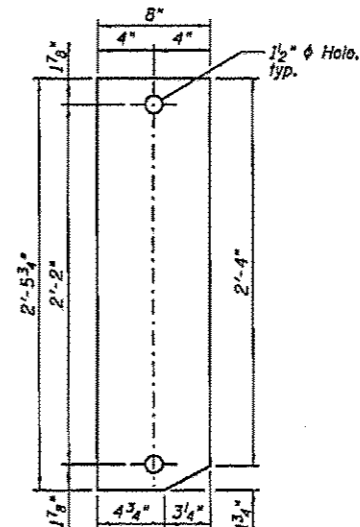


SECTION THRU PTFE

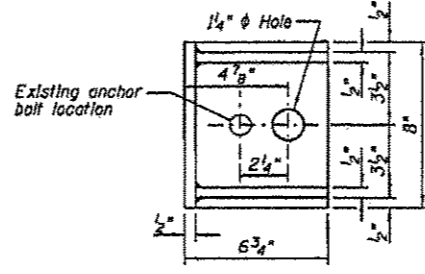


SIDE RETAINER

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



BOTTOM PLATE PLAN



MODIFIED SIDE RETAINER

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

Notes:
Anchor bolts shall be ASTM F1554 all-thread (or an Engineer-approved alternate material) of the grade(s) and diameter(s) specified. ASTM A307 Grade C anchor bolts may be used in lieu of ASTM F1554 Grade 36 (Fy=36ksi). The corresponding specified grade of AASHTO M314 anchor bolts may be used in lieu of ASTM F1554.
Anchor bolts for Type II bearings shall be placed in holes drilled in the concrete through holes in the bottom bearing plate after members are in place. Side retainers shall be placed after bolts are installed.
Drilled and set anchor bolts shall be installed according to Article 521.06 of the Standard Specifications.
Side retainers and other steel members required for the bearing assembly shall be included in the cost of Elastomeric Bearing Assembly, Type II.
The 1/8" PTFE sheet shall be bonded directly to the top steel plate with a two-component, medium viscosity epoxy resin, conforming to the requirements of the Federal Specification MMM-A-134, Type I. The bond agent shall be applied on the full area of the contact surfaces.
Bonding of 1/8" PTFE sheet during vulcanizing process will be permitted provided the process and method of adjusting assembly height is approved by the Engineer.

BILL OF MATERIAL

Item	Unit	Total
Elastomeric Bearing Assembly, Type II	Each	6
Anchor Bolts, 1"	Each	12

TABLE "A"

Girder No.	Shim Thickness
6	1/2"

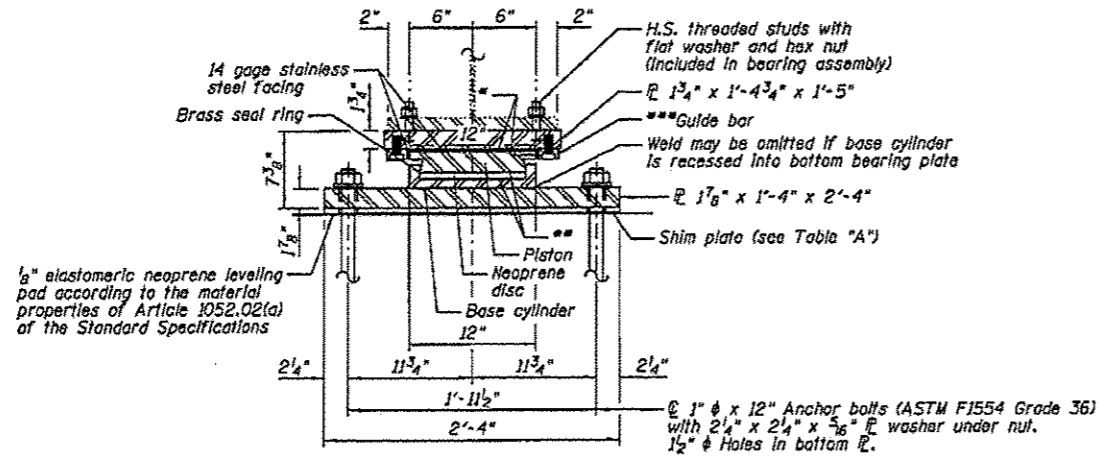
TYPE II ELASTOMERIC BEARING DETAILS
STRUCTURE NO.084-Q078

NOTE:

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

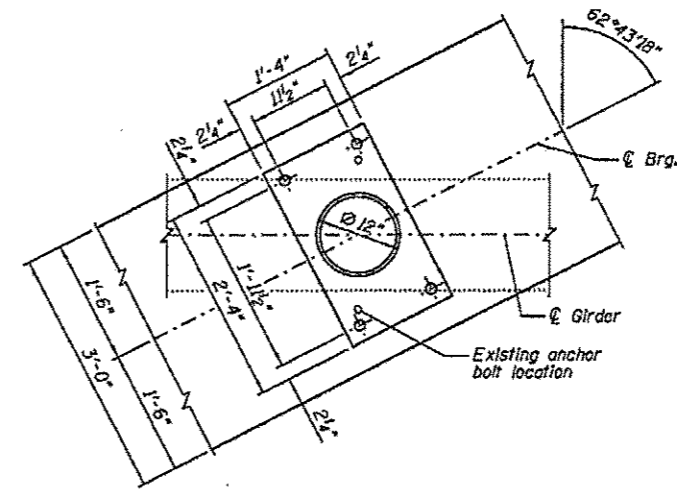
FOR INFORMATION ONLY

FILE NAME *	USER NAME * madonalds	DESIGNED -	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	BEARING DETAILS	SCALE: SHEET OF SHEETS STA. TO STA.	F.A.J. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
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GUIDED EXPANSION HLMR BEARING

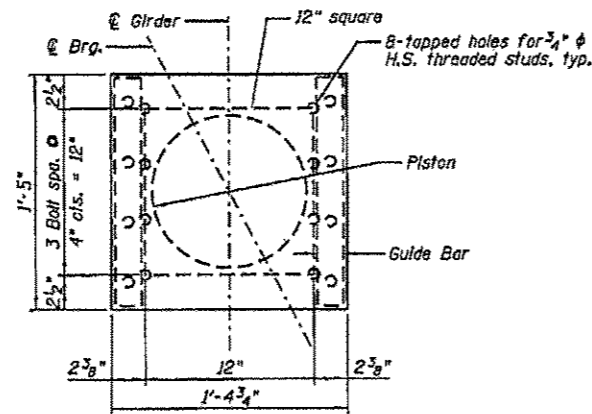
- **Dimpled, unlubricated PTFE sliding surface (bonded to piston)
- **PTFE shear reducer discs (unbonded)
- ***As alternates to the bolted connection shown, the guide bars may be connected to the top bearing plate by groove welds or the guide bars and top bearing plate may be fabricated as a single piece.



BOTTOM BEARING P AND BASE CYLINDER PLAN AT PIER NO. 1

HLMR BEARING DATA

Vertical Design Load (kips)	Lateral Design Load (kips)	Total Required Movement (in.)	Total Required Rotation (rad.)	L (in.)	D (in.)	T ₁ (in.)	T _b (in.)	T _h (in.)
255.1	0	2	0.0002	12	12	1.75	1.875	7.375



TOP BEARING P AND PISTON PLAN

BILL OF MATERIAL

Item	Unit	Total
High Load Multi-Rotation Bearings, Guided Expansion, 300k	Each	6
Anchor Bolts, 1"	Each	24

TABLE "A"

Girder No.	Shim Thickness
5	1/2"

NOTES:

- 1.) The structural steel plates of the bearing assembly shall conform to the requirements of AASHTO M270 Grade 50.
- 2.) Two 1/8 in. adjusting shims shall be provided for each bearing in addition to all other plates or shims and placed as shown on bearing details.
- 3.) Total Bearing Heights (T_h) are based on values taken from a specific manufacturer's design tables. Actual bearing heights may differ from contract plans. Contractor to verify bearing heights and adjust steel extension height if required.
- 4.) The Vertical Design Load in table is the actual controlling vertical service load.
- 5.) HLMR Bearings dimensions and details are based on a specific manufacturer's design tables. Contractor shall make necessary modifications based on the actual bearings provided.

GUIDED EXPANSION HLMR BEARING DETAILS STRUCTURE NO.084-Q078

FOR INFORMATION ONLY

FILE NAME *	USER NAME * mcdonaldr	DESIGNED -	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	BEARING DETAILS	F.A.I. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.	
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		DATE -	REVISED -			ILLINOIS FED. AID PROJECT					