F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
VAR	D-4 BRIDGE PAINTING 2022	*	51	1
	ILLINOIS	CONTRACT NO. 68G57		

*WOODFORD AND MARSHALL

11–5–2021 LETTING ITEM 040

INDEX OF SHEET

HIGHWAY STANDARDS

000001–08	701201–05
701001–02	701321–18
701006–05	701400–10
701101–05	701402–12
701106–02	701901–08

ROADWAY CLASSFICATION:

FUNCTIONAL CLASS I–39 INTERSTATE; IL 251 MAJOR COLLECTOR

SN 062–0049 ADT(2019) = 15800; SU = 3.16%; MU = 36.7%

SN 062–0085 ADT(2019) = 800; SU = 3.75%; MU = 1.62%

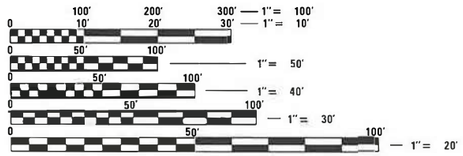
SN 062–0054 ADT(2019) = 15700; SU = 3.98%; MU = 35.67%

SN 062–0055 ADT(2019) = 15700; SU = 3.98%; MU = 35.67%

SN 102–0048 ADT(2019) = 15300; SU = 3.98%; MU = 35.67%

SN 102–0050 ADT(2019) = 15800; SU = 3.16%; MU = 36.7%

SN 102–0051 ADT(2019) = 15800; SU = 3.16% MU = 36.7%



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 EXCAVATORS
1–800–892–0123
OR 811

PROJECT ENGINEER: NICOLE FAYANT 309–671–3454

PROJECT MANAGER: ARLENE OTERO–FEBUS 309–671–3462

CONTRACT NO. 68G57

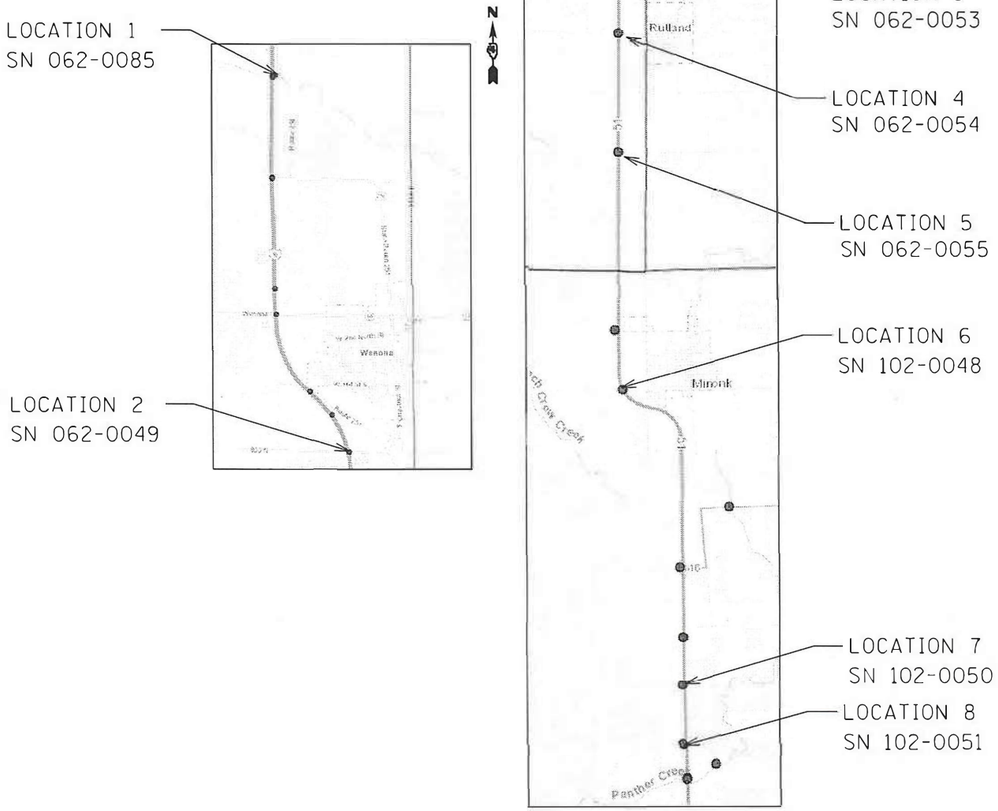
CATALOG NO. 036228–00D

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

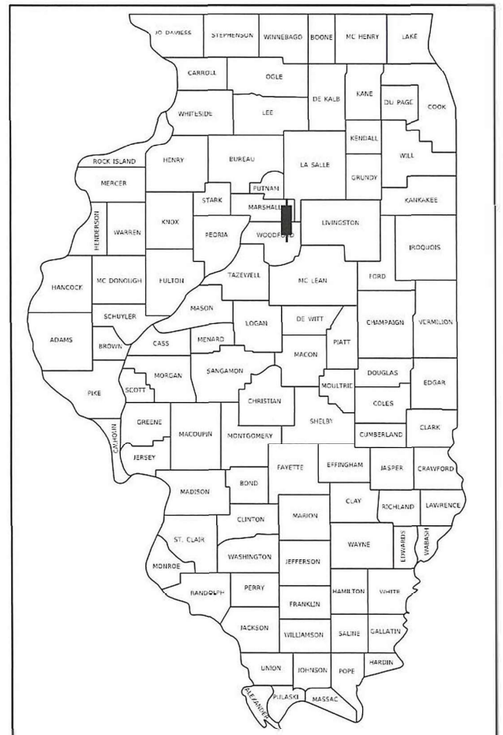
PROPOSED
HIGHWAY PLANS

FAI 39, FAS 253 (I–39/US 51, IL 251)
SECTION D4 BRIDGE PAINTING 2022
PROJECT STP–9SVU(809)
BRIDGE PAINTING
WOODFORD & MARSHALL COUNTIES

C–94–080–21



D-94-059-21



LOCATION OF SECTION INDICATED THUS: –

DESCRIPTION:

PAINTING OF STRUCTURES ALONG THE I–39/US 51 AND IL 251 BETWEEN CH4 IN WOODFORD COUNTY AND 800 N IN MARSHALL COUNTY (SN 062–0049, 062–0085, 062–0054, 062–0055, 102–0048, 102–0050 AND 102–0051).

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SUBMITTED August 16 20 21

REGIONAL ENGINEER

October 1 20 21

ENGINEER OF DESIGN AND ENVIRONMENT

October 2 20 21

DIRECTOR OF HIGHWAYS PROJECT IMPLEMENTATION

PRINTED BY THE AUTHORITY OF THE STATE OF ILLINOIS

REV. 9/14/21

GENERAL NOTES

ALL AREAS INDICATED ON THE PLANS SHALL BE PAINTED WITH THE PAINT SYSTEM 1–OZ/E/U. ALL BEAMS, BRACKETS AND ALL OTHER STRUCTURAL STEEL SHALL BE CLEANED PER NEAR WHITE METAL BLASTED CLEANING SSPC–SPI0.

PROJECT SPECIFIC NOTES

DO NOT SCALE PLANS FOR CONSTRUCTION MEASUREMENTS. THE CONTRACTOR SHALL FIELD VERIFY EXISTING DIMENSIONS AND MAKE NECCESARY APROVED ADJUSTMENTS PRIOR TO ORDERING OF MATERIALS. SUCH VARIANTIONS SHALL NOR BE CAUSE FOR ADDITIONAL COMPENSATION FOR A CHANGE IN SCOPE.

LOCATION 1 SN 062–0085: 10 FT OF ALL BEAM ENDS.
LOCATION 2 SN 062–0049: PAINT ENTIRE STRUCTURE.
LOCATION 3 SN 062–0053: PAINT ENTIRE STRUCTURE.
LOCATION 4 SN 062–0054: PAINT ENTIRE STRUCTURE.
LOCATION 5 SN 062–0055: PAINT ENTIRE STRUCTURE.
LOCATION 6 SN 102–0048: PAINT ENTIRE STRUCTURE.
LOCATION 7 SN 102–0050: PAINT ENTIRE STRUCTURE.
LOCATION 8 SN 102–0051: PAINT ENTIRE STRUCTURE.

ALL FASCIA BEAM SHALL BE RED BROWN (MUNSELL NO. 2.5YR 3/4 AND THE BEAMS UNDERSIDES SHALL BE A LIGHT GRAY (MUNSELL 5B 7/1).

COOPERATION WITH OTHER CONTRACTORS

A COOPERATIVE EFFORT IS REQUIRED WITH OTHER CONTRACTORS IN COORDINATING TRAFFIC CONTROL SIGNING, TRAFFIC MANAGEMENT AND PROGRESSION, AND WORK AT OR NEAR THE PROJECT.

COMMITMENTS

NO COMMITMENTS HAVE BEEN MADE FOR THIS PROJECT.

MODEL: $MODELNAME$
FILE NAME: $FILEL$

USER NAME = $USER$	DESIGNED -	REVISED -
	DRAWN -	REVISED -
PLOT SCALE = $SCALE$	CHECKED -	REVISED -
PLOT DATE = $DATE$	DATE -	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

GENERAL NOTES

SCALE: | SHEET OF SHEETS | STA. | TO STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
VAR	D-4 BRIDGE PAINTING 2022	*	51	2
		CONTRACT NO. 68G57		
	ILLINOIS FED. AID PROJECT			

*WOODFORD AND MARSHALL

				CONSTRUCTION CODE	
				80% FED 20% STATE	80% FED 20% STATE
				BRIDGE	BRIDGE
				MARSHALL	WOODFORD
CODE NO.	ITEM	UNIT	TOTAL QUANTITY	0047 RURAL	0047 RURAL
67100100	MOBILIZATION	L SUM	1	0.6	0.4
70100207	TRAFFIC CONTROL AND PROTECTION, STANDARD 701402	EACH	7	4	3
70100405	TRAFFIC CONTROL AND PROTECTION, STANDARD 701321	EACH	1	1	
70106500	TEMPORARY BRIDGE TRAFFIC SIGNALS	EACH	2	2	
70107025	CHANGEABLE MESSAGE SIGN	CAL DA	112	70	42
70400100	TEMPORARY CONCRETE BARRIER	FOOT	4198	2573	1625
70400200	RELOCATE TEMPORARY CONCRETE BARRIER	FOOT	7920	4670	3250
70600250	IMPACT ATTENUATORS, TEMPORARY (NON- REDIRECTIVE), TEST LEVEL 3	EACH	9	6	3
70600350	IMPACT ATTENUATORS, RELOCATE (NON- REDIRECTIVE), TEST LEVEL 3	EACH	16	10	6
X5060601	CONTAINMENT AND DISPOSAL OF NON-LEAD PAINT CLEANING RESIDUES NO. 1	L SUM	1	1	
X5060602	CONTAINMENT AND DISPOSAL OF NON-LEAD PAINT CLEANING RESIDUES NO. 2	L SUM	1	1	
X5060603	CONTAINMENT AND DISPOSAL OF NON-LEAD PAINT CLEANING RESIDUES NO. 3	L SUM	1	1	
X5060604	CONTAINMENT AND DISPOSAL OF NON-LEAD PAINT CLEANING RESIDUES NO. 4	L SUM	1	1	
X5060605	CONTAINMENT AND DISPOSAL OF NON-LEAD PAINT CLEANING RESIDUES NO. 5	L SUM	1	1	
X5060606	CONTAINMENT AND DISPOSAL OF NON-LEAD PAINT CLEANING RESIDUES NO. 6	L SUM	1		1

MODEL: $MODELNAME$
FILE NAME: $FILE$

USER NAME = $USER$	DESIGNED -	REVISED -	
	DRAWN -	REVISED -	
PLOT SCALE = $SCALE$	CHECKED -	REVISED -	
PLOT DATE = $DATE$	DATE -	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SUMMARY OF QUANTITIES

SCALE: | SHEET 1 OF 2 SHEETS | STA. | TO STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
VER	D-4 BRIDGE PAINTING 2022	*	51	3
		CONTRACT NO. 68G57		
	ILLINOIS FED. AID PROJECT			

REV. 9/28/21

*MARSHALL AND WOODFORD

				CONSTRUCTION CODE	
				80% FED 20% STATE	80% FED 20% STATE
				BRIDGE	BRIDGE
				MARSHALL	WOODFORD
CODE NO.	ITEM	UNIT	TOTAL QUANTITY	0047	0047
				RURAL	RURAL
X5060607	CONTAINMENT AND DISPOSAL OF NON-LEAD PAINT CLEANING RESIDUES NO. 7	L SUM	1		1
X5060608	CONTAINMENT AND DISPOSAL OF NON-LEAD PAINT CLEANING RESIDUES NO. 8	L SUM	1		1
Z0010501	CLEANING AND PAINTING STEEL BRIDGE NO. 1	L SUM	1	1	
Z0010502	CLEANING AND PAINTING STEEL BRIDGE NO. 2	L SUM	1	1	
Z0010503	CLEANING AND PAINTING STEEL BRIDGE NO. 3	L SUM	1	1	
Z0010504	CLEANING AND PAINTING STEEL BRIDGE NO. 4	L SUM	1	1	
Z0010505	CLEANING AND PAINTING STEEL BRIDGE NO. 5	L SUM	1	1	
Z0010506	CLEANING AND PAINTING STEEL BRIDGE NO. 6	L SUM	1		1
Z0010507	CLEANING AND PAINTING STEEL BRIDGE NO. 7	L SUM	1		1
Z0010508	CLEANING AND PAINTING STEEL BRIDGE NO. 8	L SUM	1		1

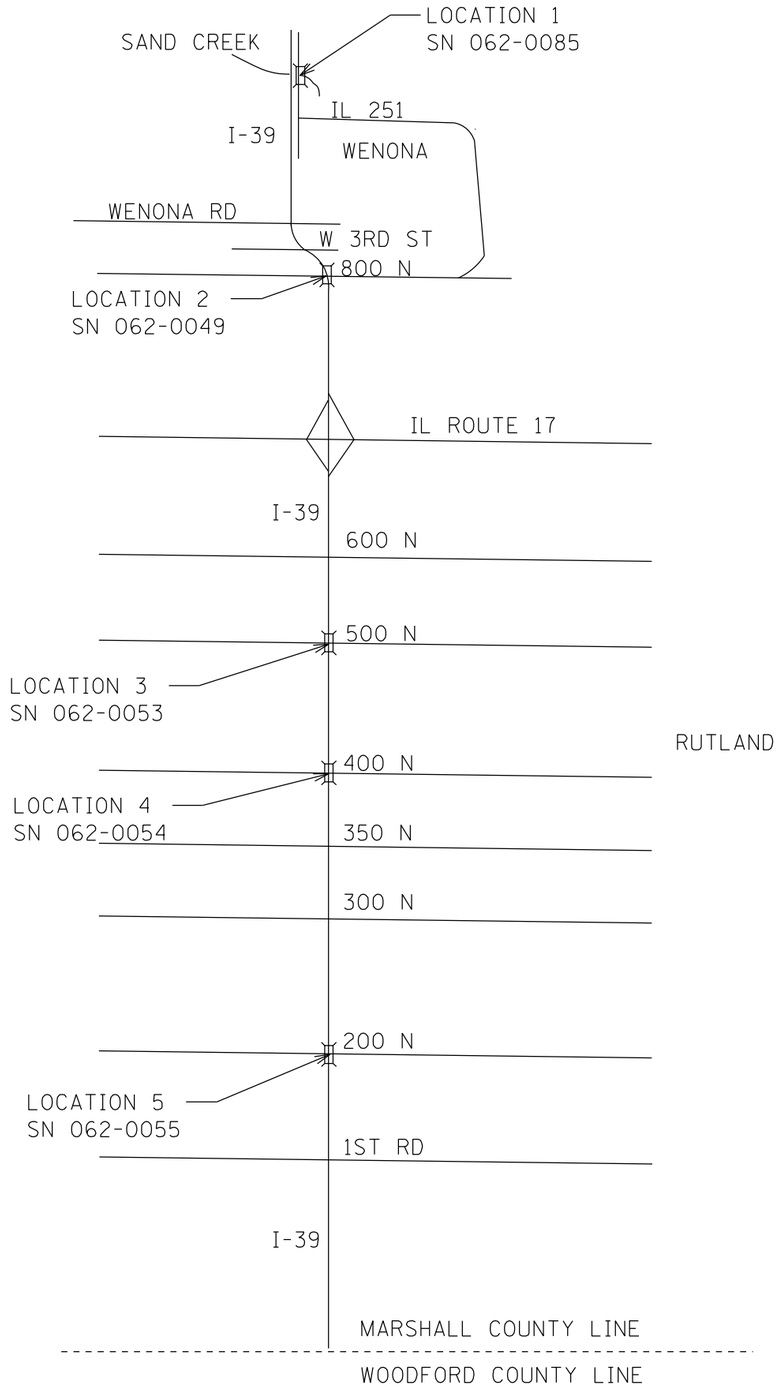
MODEL: $MODELNAME$
FILE NAME: $FILE$

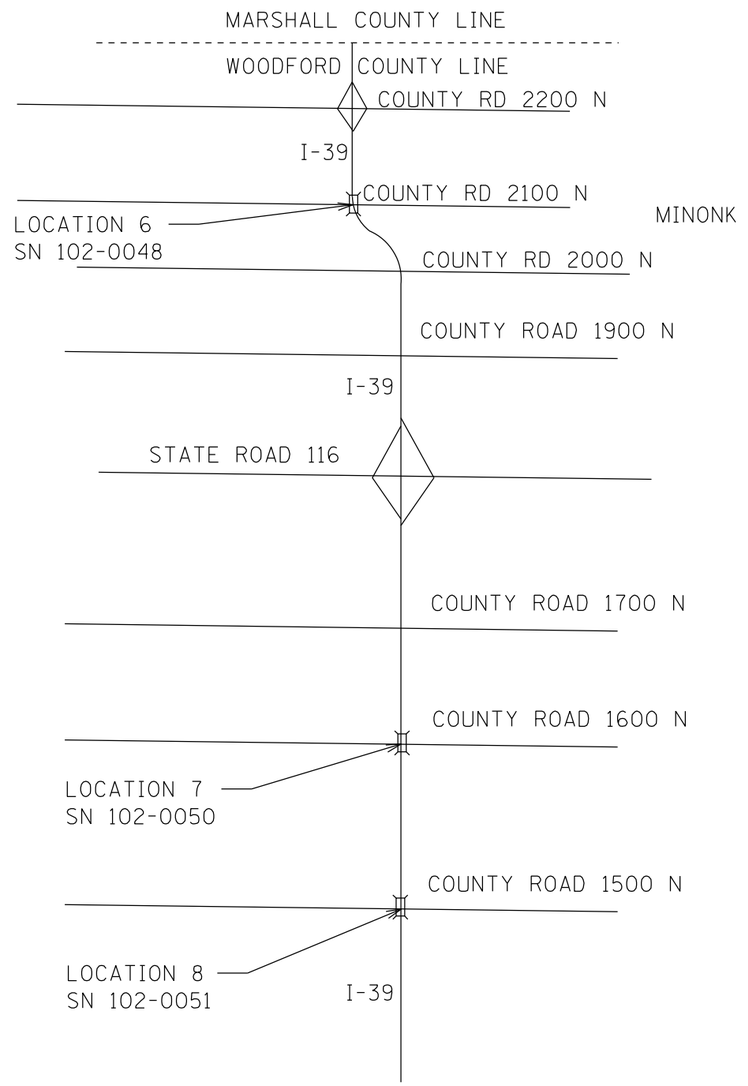
USER NAME = $USER$	DESIGNED -	REVISED -	**STATE OF ILLINOIS** **DEPARTMENT OF TRANSPORTATION**
	DRAWN -	REVISED -	
PLOT SCALE = $SCALE$	CHECKED -	REVISED -	
PLOT DATE = $DATE$	DATE -	REVISED -	

SUMMARY OF QUANTITIES

SCALE: | SHEET 2 OF 2 SHEETS | STA. | TO STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
VER	D-4 BRIDGE PAINTING 2022	*	51	4
		CONTRACT NO. 68G57		
	ILLINOIS FED. AID PROJECT			





MODEL: $MODELNAME$
FILE NAME: $FILE$

USER NAME = $USER$	DESIGNED -	REVISED -
	DRAWN -	REVISED -
PLOT SCALE = $SCALE$	CHECKED -	REVISED -
PLOT DATE = $DATE$	DATE -	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

LINE DIAGRAM

SCALE: | SHEET 1 OF 1 SHEETS | STA. | TO STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
VAR	D-4 BRIDGE PAINTING 2022	*	51	5
		CONTRACT NO. 68G57		
	ILLINOIS	FED. AID PROJECT		

• MARSHALL & WOODFORD

MOBILIZATION	
LOCATION	L SUM
JOBSITE	1

CHANGEABLE MESSAGE SIGN	
LOCATION	CAL DAYS
JOBSITE	112

TWO SIGNS @ 7 DAYS EACH PER LOCATION

TRAFFIC CONTROL AND PROTECTION									
LOCATION				STANDARD 701321	STANDARD 701402	TEMP CONCRETE BARRIER*	RELOCATE TEMP CONC BARRIER	IMPACT ATTENUATORS TEMP (NRD) TL3	IMPACT ATTN RELOCATE (NRD) TL3
NO.	STRUCTURE NO.	FACILITY CARRIED	FEATURE CROSSED	EACH	EACH	FOOT	FOOT	EACH	EACH
1	062-0085	IL 251	Sandy Creek	1		477	477	2	2
2	062-0049	TR 69C (800 N)	I-39		1	540	1081	1	2
3	062-0053	CH 4 (500 N)	I-39		1	519	1038	1	2
4	062-0054	FAS 369 (400 N)	I-39		1	519	1038	1	2
5	062-0055	TR 121A (200 N)	I-39		1	518	1036	1	2
6	102-0048	TR 41 (2100 N)	I-39		1	587	1174	1	2
7	102-0050	TR 95 (1600 N)	I-39		1	519	1038	1	2
8	102-0051	TR 103 (1500 N)	I-39		1	519	1038	1	2
TOTAL				1	7	4198	7920	9	16

* Using Temporary Concrete Barrier on passing lane with lane closure on the passing Lane of the opposite direction

LOCATION NO	STRUCTURE NO	CLEANING AND PAINTING STRUCTURAL STEEL	CONTAINMENT & DISPOSAL NON-LEAD RESIDUES
		LSUM	LSUM
1	062-0085	1	1
2	062-0049	1	1
3	062-0053	1	1
4	062-0054	1	1
5	062-0055	1	1
6	102-0048	1	1
7	102-0050	1	1
8	102-0051	1	1
TOTAL		8	8

MODEL: $MODELNAME$
FILE NAME: $FILE$

USER NAME = $USER$	DESIGNED -	REVISED -	
	DRAWN -	REVISED -	
PLOT SCALE = $SCALE$	CHECKED -	REVISED -	
PLOT DATE = $DATE$	DATE -	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SCHEDULES OF QUANTITIES

SCALE: | SHEET 1 OF 1 SHEETS | STA. | TO STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
VAR	BRIDGE PAINTING 2022	*	51	6
		CONTRACT NO. 68G57		
	ILLINOIS FED. AID PROJECT			

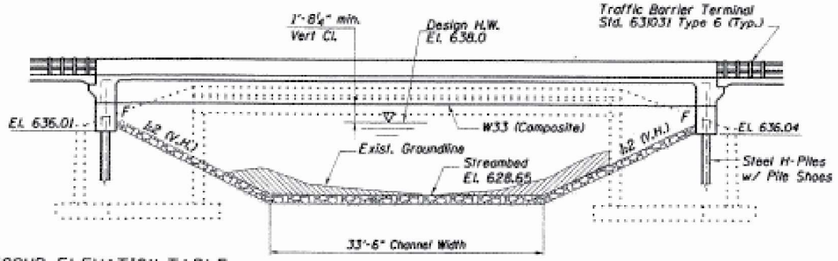
• MARSHALL AND WOODFORD

SN 062-0085
IL 251 OVER SANDY CREEK

B.M. #2: Chiseled "X" in S.E. Headwall, Sta. 133+53.70, 20.96' Rt., Elev. 641.50

Existing Structure: S.N. 062-0002, originally constructed in 1924 and widened in 1956. Existing structure consists of 6 single span cast-in-place T-beams on closed abutments, 53' back to back of abutments and 36'-4" out out of deck.
Existing structure to be removed and replaced. Traffic is to be detoured.

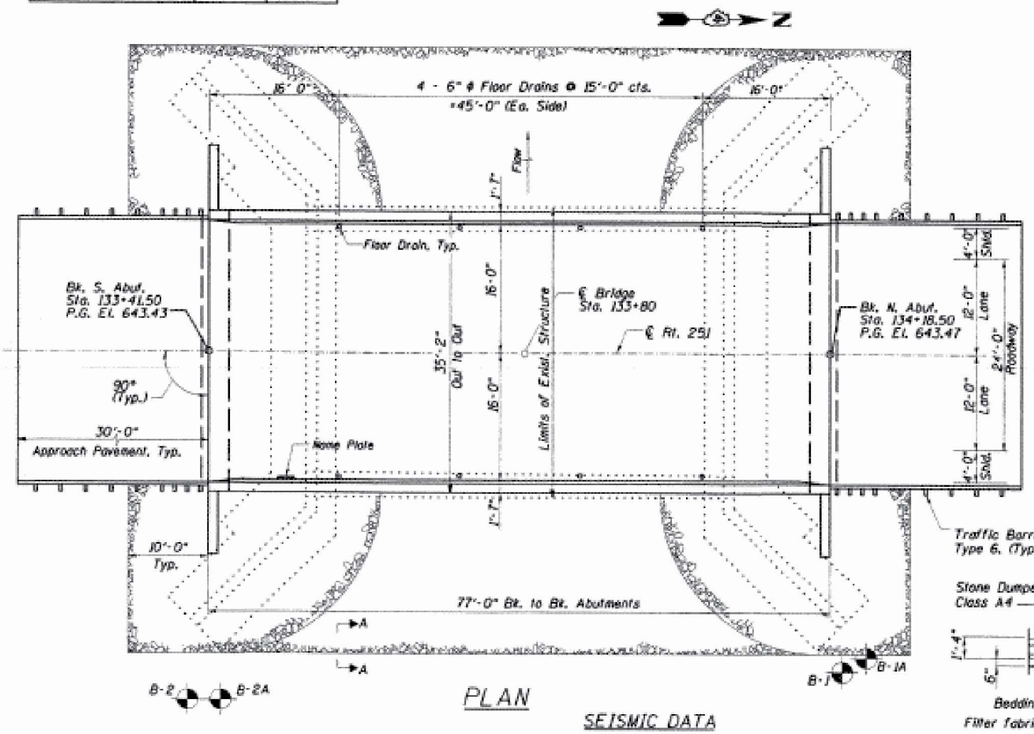
No salvage



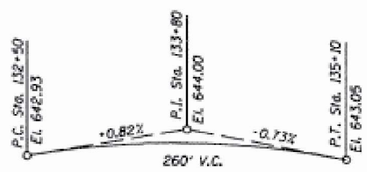
ELEVATION

DESIGN SCOUR ELEVATION TABLE

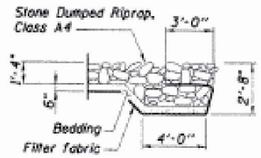
Design Scour Elevations	S. Abut.	N. Abut.
	636.01	636.04



PLAN



PROFILE GRADE



SECTION A-A

STATION 133+80
BUILT BY
STATE OF ILLINOIS
F.A. RT. 251 SEC. 68 BR-1
LOADING HL-93
STR. NO. 062-0085

NAME PLATE
See Std. 515001

INDEX OF BRIDGE SHEETS

GENERAL NOTES

1. Fasteners shall be AASHTO M164 Type 1, mechanically galvanized bolts in painted areas and M164 Type 3 in unpainted areas. Bolts ⅞ in. ϕ, holes 15/16 in. ϕ, unless otherwise noted.
2. Calculated weight of Structural Steel = 74,830 Pounds.
3. All structural steel shall be AASHTO M 270 Grade 50W.
4. No field welding is permitted except as specified in the contract documents.
5. Reinforcement bars shall conform to the requirements of ASTM A 706 Gr 60 (IL Modified). See Special Provisions.
6. Reinforcement bars designated (E) shall be epoxy coated.
7. Structural steel shall only be painted for a distance equal to the depth of embedment into the concrete cap plus 3 inches. Those areas shall be primed in the shop with a Department approved zinc rich primer. No field painting shall be required. All structural steel shall be cleaned as specified in the Special Provision for "Surface Preparation and Painting Requirements for Weathering Steel".
8. Layout of slope protection system may be varied in the field to suit ground conditions as directed by the Engineer.
9. The Contractor shall drive test piles to 110% of the nominal required bearing specified in production locations at substructures specified or approved by the Engineer before ordering the remainder of piles.
10. Slipforming of the parapets is not allowed.

SEISMIC DATA
Seismic Performance Zone (SPZ) = 1
Bedrock Acceleration Coefficient (A) = 0.04g
Site Coefficient (S) = 1.0

DESIGN SPECIFICATIONS
2007 LRFD AASHTO
4th Edition

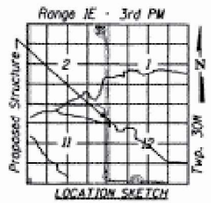
LOADING HL-93
Allow 50#/sq. ft. for future wearing surface.

DESIGN STRESSES
FIELD UNITS
New Construction
f'c = 3,500 p.s.i.
fy = 60,000 p.s.i. (Reinf.)
fy = 50,000 p.s.i. (M270 Grade 50W)

WATERWAY INFORMATION

Drainage Area = 14.5 sq. mi. Low Grade Elev. 641.1 ft. @ Sta. 130+00

Flood	Freq. Yr.	Q C.F.S.	Opening Sq. ft Exist.	Opening Sq. ft Prop.	Nat. H.W.E. ft.	Head - ft. Exist.	Head - ft. Prop.	Headwater Elev. - Ft Exist.	Headwater Elev. - Ft Prop.
	10	1223	328	364	636.9	0.6	0.2	637.5	637.1
Design	50	1799	335	441	638.0	0.9	0.2	638.9	638.2
Base	100	2036	335	462	638.3	1.0	0.2	639.3	638.5
Max. Calc.	500	2589	335	529	639.2	1.4	0.2	640.6	639.4



TOTAL BILL OF MATERIAL

ITEM	UNITS	SUPER	SUB	TOTAL
Porous Granular Embankment (Special)	Cu. Yd.	-	97	97
Stone Dumped Riprap, Class A4	Ton	-	820	820
Filter Fabric	Sq. Yd.	-	891	891
Removal of Existing Structures No. 2	Each	-	-	1
Structure Excavation	Cu. Yd.	-	340.6	340.6
Floor Drains	Each	8	-	8
Concrete Structures	Cu. Yd.	-	30.4	30.4
Concrete Superstructure	Cu. Yd.	111.8	-	111.8
Bridge Deck Grooving	Sq. Yd.	257	-	257
Concrete Encasement	Cu. Yd.	-	4.8	4.8
Protective Coat	Sq. Yd.	339	-	339
Furnishing and Erecting Structural Steel	L. Sum	1	-	1
Stud Shear Connectors	Each	1,026	-	1,026
Reinforcement Bars, Epoxy Coated	Pound	21,700	3,880	25,580
Bar Splicers	Each	64	-	64
Furnishing Steel Piles HP12x53	Foot	-	336	336
Driving Piles	Foot	-	336	336
Test Pile Steel HP12x53	Each	-	2	2
Pile Shoes	Each	-	14	14
Name Plates	Each	1	-	1
Anchor Bolts, 1"	Each	-	24	24
Geocomposite Wall Drain	Sq. Yd.	-	66	66
Pipe Underdrains for Structures 4"	Foot	-	134	134

FAS 253 (IL 251)	68 BR-1	MARSHALL	97	72

SHEET NO. 1 OF 15 SHEETS

Contract #68573

APPROVED
For Structural Adequacy Only
Ralph E Anderson
Engineer of Bridges & Structures

Signed Olufemi A. Olabeinde
OLUFEMI A. OLABEINDE, P.E., S.E.
LICENSE EXPIRES 11-30-2010
10/17/2008
Date

REVISIONS	
NAME	DATE

STRUCTURE DESIGNS, INCORPORATED
ARCHITECTS & ENGINEERS
701 (773) 930-1780 • www.structuredesigninc.com

ILLINOIS DEPARTMENT OF TRANSPORTATION

GENERAL PLAN AND ELEVATION
ILL. RTE. 251
OVER SANDY CREEK
F.A.S. 253 SEC. 68 BR-1
MARSHALL COUNTY
STA. 133+80.00 S.N. 062-0085
DESIGNED BY: S.G. DRAWN BY: T.C.S.
DATE: 11-20-08 CHECKED BY: O.A.O.

MODEL: \$MODELNAME\$
FILE NAME: \$FILE\$

USER NAME = \$USER\$	DESIGNED -	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION
	DRAWN -	REVISED -	
PLOT SCALE = \$SCALE\$	CHECKED -	REVISED -	
PLOT DATE = \$DATE\$	DATE -	REVISED -	

LOCATION 1 SN 062-0085
PLAN & ELEVATION VIEW
SCALE: SHEET 1 OF 5 SHEETS STA. TO STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
VAR	D-4 BRIDGE PAINTING 2022	*	51	7
			CONTRACT NO. 68G57	
		ILLINOIS	FED. AID PROJECT	

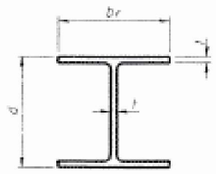
*WOODFORD AND MARSHALL

SN 062-0085

IL 251 OVER SANDY CREEK

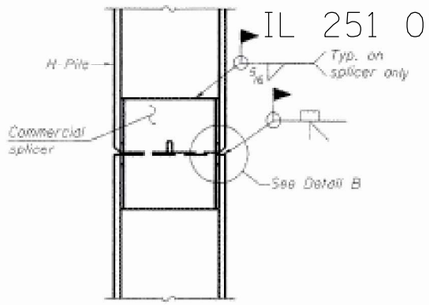
ROUTE NO.	SECTION	COUNTY	FED. NO.	"SE"	SHEET NO. 12
FAS 253 (IL 251)	68 BR-1	MARSHALL	97	83	15 SHEETS
FED. ROAD DIST. NO.		ILLINOIS	FED. AID PROJECT		

Contract #68573

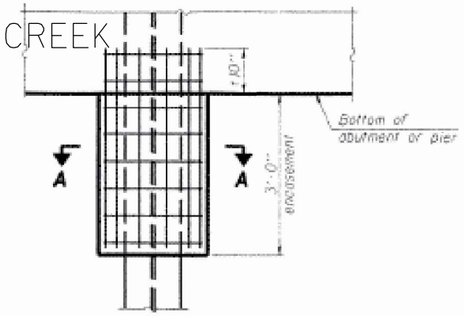


STEEL PILE TABLE

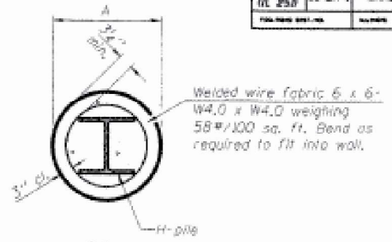
Designation	Depth d	Flange width b_f	Web and Flange thickness t	Encasement diameter A
HP 14x117	14 1/2"	14 7/8"	15/16"	30"
x102	14"	14 3/4"	13/16"	30"
x89	13 7/8"	14 3/4"	5/8"	30"
x73	13 5/8"	14 5/8"	1/2"	30"
HP 12x84	12 1/4"	12 1/4"	13/16"	24"
x74	12 1/8"	12 1/4"	5/8"	24"
x63	12"	12 1/8"	1/2"	24"
x53	11 3/4"	12"	7/16"	24"
HP 10x57	10"	10 1/4"	9/16"	24"
x42	9 3/4"	10 1/8"	7/16"	24"
HP 8x36	8"	8 1/8"	7/16"	18"



ELEVATION



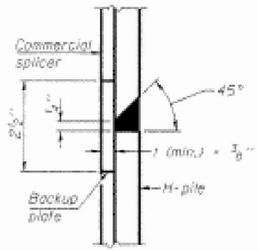
ELEVATION



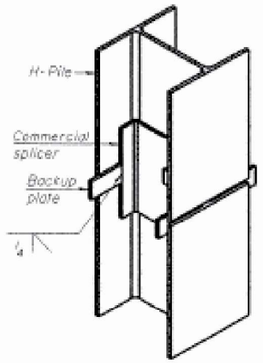
Note:
Forms for encasement may be omitted when soil conditions permit.

SECTION A-A

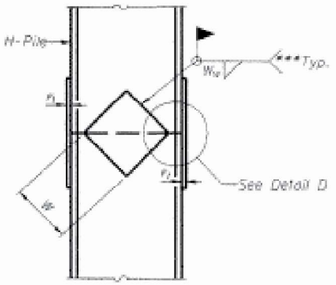
PILE ENCASEMENT



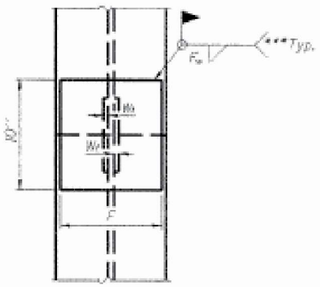
DETAIL "B"



ISOMETRIC VIEW

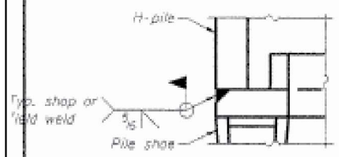


ELEVATION



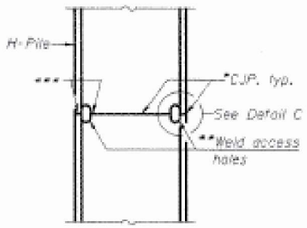
END VIEW

ELEVATION

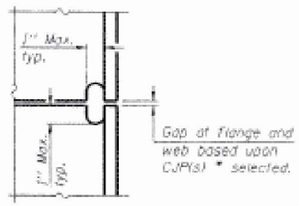


DETAIL A

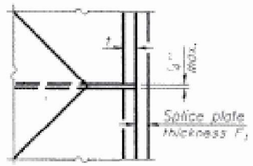
H-PILE SHOE ATTACHMENT



ELEVATION



DETAIL C



DETAIL D

WELDED PLATE FIELD SPLICE

COMPLETE PENETRATION WELD SPLICE

Designation	F	F_1	F_w	W	W_f	W_w
HP 14x117	12 1/2"	1"	7/8"	7 3/4"	5/8"	1/2"
x102	12 1/2"	7/8"	3/4"	7 3/4"	5/8"	1/2"
x89	12 1/2"	3/4"	11/16"	7 3/4"	5/8"	1/2"
x73	12 1/2"	5/8"	9/16"	7 3/4"	5/8"	1/2"
HP 12x84	10"	7/8"	9/16"	6 1/2"	5/8"	1/2"
x74	10"	7/8"	11/16"	6 1/2"	5/8"	1/2"
x63	10"	5/8"	1/2"	6 1/2"	1/2"	3/8"
x53	10"	3/8"	1/2"	6 1/2"	1/2"	3/8"
HP 10x57	8"	3/4"	9/16"	5 1/4"	1/2"	3/8"
x42	8"	5/8"	9/16"	5 1/4"	1/2"	3/8"
HP 8x36	7"	5/8"	7/16"	4 1/4"	1/2"	3/8"

Note:
The steel H-piles shall be according to AASHTO M270 Grade 50.

*Use joint conforming to Figure 3.4 in AWS D1.1, Structure Welding Code - Steel.

**Preparation per Fig. 5.2 in AWS D1.1, Structure Welding Code - Steel.

***Interrupt welds 1/4" from end of each pile.

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ARCHITECTS & ENGINEERS
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ILLINOIS DEPARTMENT OF TRANSPORTATION

STEEL H-PILES DETAILS

ILL. RTE. 251
OVER SANDY CREEK
F.A.S. 253 SEC. 68 BR-1
MARSHALL COUNTY
STA. 133+80.00 S.N. 062-0085
DESIGNED BY: S.G. DRAWN BY: T.C.S.
DATE: 11-20-08 CHECKED BY: O.A.O.

MODEL: \$MODELNAME\$
FILE NAME: \$FILE\$

USER NAME = \$USER\$	DESIGNED -	REVISED -
	DRAWN -	REVISED -
PLOT SCALE = \$SCALE\$	CHECKED -	REVISED -
PLOT DATE = \$DATE\$	DATE -	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

LOCATION 1 SN 062-0085
STEEL H-PILES DETAILS

SCALE: | SHEET 5 OF 5 SHEETS | STA. | TO STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
VAR	D-4 BRIDGE PAINTING 2022	*	51	14
		CONTRACT NO. 68G57		
	ILLINOIS	FED. AID PROJECT		

*WOODFORD AND MARSHALL

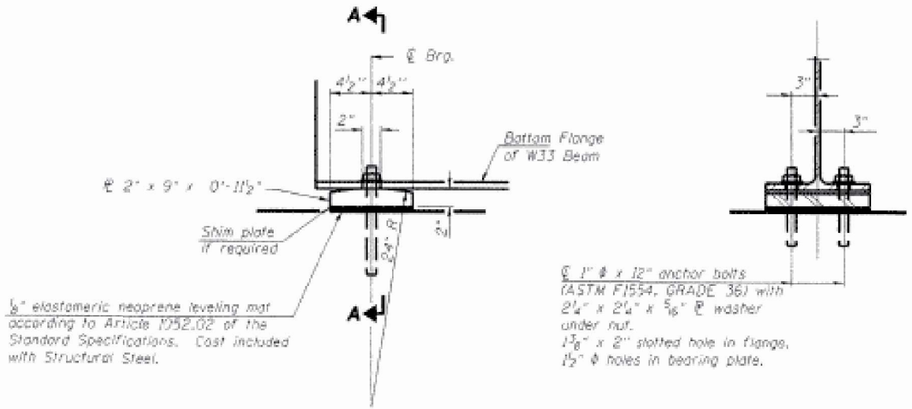
SN 062-0085

IL 251 OVER SANDY CREEK

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
FAS 253 IL 251	68 BR-1	MARSHALL	97	80
FED. ROAD DIST. NO.	ILLINOIS	FED. AID PROJECT		

SHEET NO. 9
15 SHEETS

Contract #68573



ELEVATION AT ABUTMENT

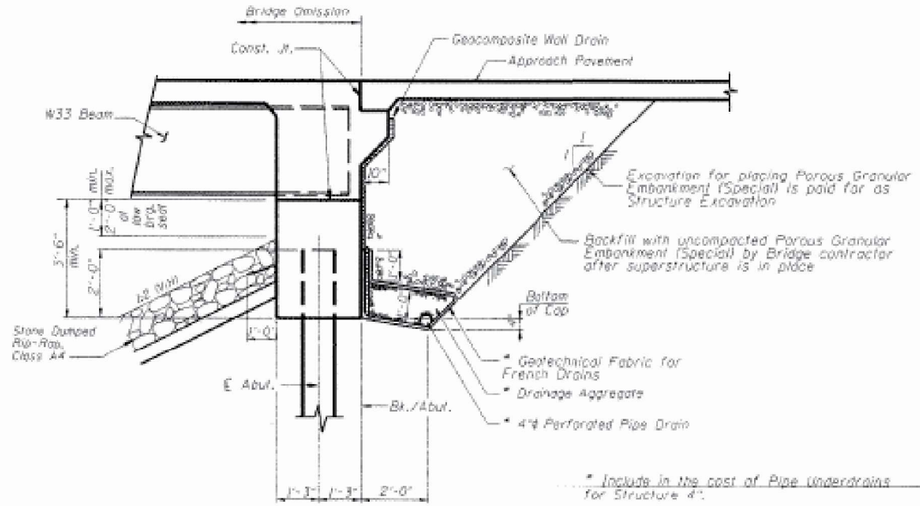
SECTION A-A

FIXED BEARING

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 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.



* Include in the cost of Pipe Underdrains for Structure 4".

SECTION THRU ABUTMENT (TYP.)

Notes:
All drainage system components shall extend to 2'-0" from the end of each wingwall except an outlet pipe shall extend until intersecting with the side slopes. The pipes shall drain into concrete headwalls. (See Article 601.05 of the Standard Specifications and Highway Standard 601.01)

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ILLINOIS DEPARTMENT OF TRANSPORTATION

BEAM BEARING & ABUT. BACKFILL DETAILS

ILL. RTE. 251
OVER SANDY CREEK
F.A.S. 253 SEC. 68 BR-1
MARSHALL COUNTY
STA. 133+80.00 S.N. 062-0085

DESIGNED BY: S.G. DRAWN BY: T.C.S.
DATE: 11-20-08 CHECKED BY: D.A.O.

FOR INFORMATION ONLY

MODEL: $MODELNAME$
FILE NAME: $FILEL$

USER NAME = $USER$	DESIGNED -	REVISED -
	DRAWN -	REVISED -
PLOT SCALE = $SCALE$	CHECKED -	REVISED -
PLOT DATE = $DATE$	DATE -	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

LOCATION 1 SN 062-0085
BEAM BEARING DETAILS

SCALE: | SHEET 4 OF 5 SHEETS | STA. | TO STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
VAR	D-4 BRIDGE PAINTING 2022	"	51	13
			CONTRACT NO. 68G57	
		ILLINOIS	FED. AID PROJECT	

•WOODFORD AND MARSHALL

SN 062-0085
IL 251 OVER SANDY CREEK

ROUTE NO.	SECTION	COUNTY	SHEET NO.	TOTAL SHEETS
FAS 253 (IL 251)	68 BR-1	MARSHALL	97	75

SHEET NO. 4
15 SHEETS
Contract #68573

WEST CURB LINE

Location	Station	Offset	Theoretical Grade Elevations
Bk. N. Abut.	134+18.50	16.42	643.19
A	134+28.50	16.42	643.17
B	134+38.50	16.42	643.14
End N. Appr. Pav't.	134+48.50	16.42	643.11

WEST EDGE OF PAVEMENT

Location	Station	Offset	Theoretical Grade Elevations
Bk. N. Abut.	134+18.50	12.00	643.28
A	134+28.50	12.00	643.26
B	134+38.50	12.00	643.23
End N. Appr. Pav't.	134+48.50	12.00	643.20

℄ ROADWAY & PG

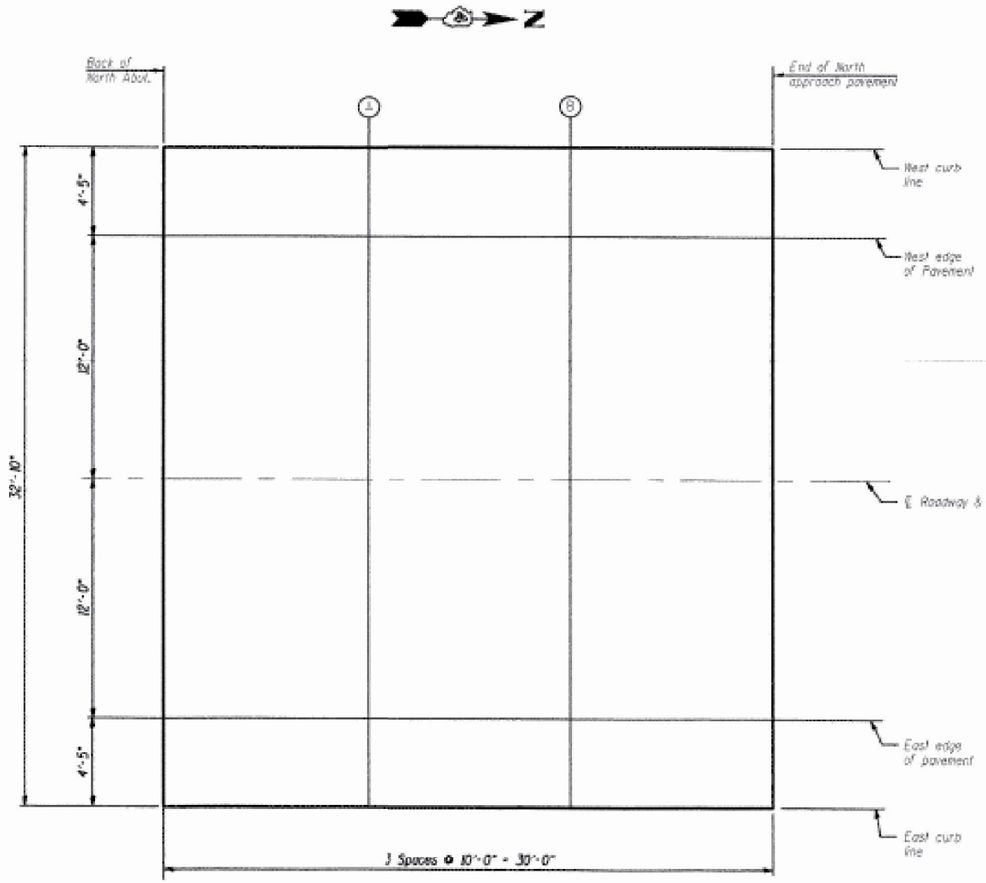
Location	Station	Offset	Theoretical Grade Elevations
Bk. N. Abut.	134+18.50	0.00	643.47
A	134+28.50	0.00	643.45
B	134+38.50	0.00	643.42
End N. Appr. Pav't.	134+48.50	0.00	643.39

EAST EDGE OF PAVEMENT

Location	Station	Offset	Theoretical Grade Elevations
Bk. N. Abut.	134+18.50	-12.00	643.28
A	134+28.50	-12.00	643.26
B	134+38.50	-12.00	643.23
End N. Appr. Pav't.	134+48.50	-12.00	643.20

EAST CURB LINE

Location	Station	Offset	Theoretical Grade Elevations
Bk. N. Abut.	134+18.50	-16.42	643.19
A	134+28.50	-16.42	643.17
B	134+38.50	-16.42	643.14
End N. Appr. Pav't.	134+48.50	-16.42	643.11



PLAN

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REVISIONS	
NAME	DATE

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ARCHITECTS & ENGINEERS
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ILLINOIS DEPARTMENT OF TRANSPORTATION

TOP OF NORTH APPROACH SLAB ELEVATIONS

ILL. RTE. 251
OVER SANDY CREEK
F.A.S. 253 SEC. 68 BR-1
MARSHALL COUNTY
STA. 133+80.00 S.N. 062-0085

DESIGNED BY: S.G. DRAWN BY: T.C.S.
DATE: 11-20-08 CHECKED BY: D.A.D.

MODEL: $MODELNAME$
FILE NAME: $FILEL$

USER NAME = $USER$	DESIGNED -	REVISED -	
	DRAWN -	REVISED -	
PLOT SCALE = $SCALE$	CHECKED -	REVISED -	
PLOT DATE = $DATE$	DATE -	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

LOCATION 1 SN 062-0085
FLAMMING PLAN

SCALE: | SHEET 3 OF 5 SHEETS | STA. | TO STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
VAR	D-4 BRIDGE PAINTING 2022	"	51	12
		CONTRACT NO. 68G57		
	ILLINOIS FED. AID PROJECT			

SN 062-0085
IL 251 OVER SANDY CREEK

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
FAS 253 (IL 251)	68 BR-1	MARSHALL	97	74
PROJECT NO.		ILLINOIS	FED. AID PROJECT	

SHEET NO. 3
15 SHEETS

Contract #68573

WEST CURB LINE

Location	Station	Offset	Theoretical Grade Elevations
End S. Appr. Pav't.	133+11.50	16.42	643.05
A	133+21.50	16.42	643.09
B	133+31.50	16.42	643.12
Bk. S. Abut.	133+41.50	16.42	643.16

WEST EDGE OF PAVEMENT

Location	Station	Offset	Theoretical Grade Elevations
End S. Appr. Pav't.	133+11.50	12.00	643.14
A	133+21.50	12.00	643.18
B	133+31.50	12.00	643.22
Bk. S. Abut.	133+41.50	12.00	643.25

℄ ROADWAY & PG

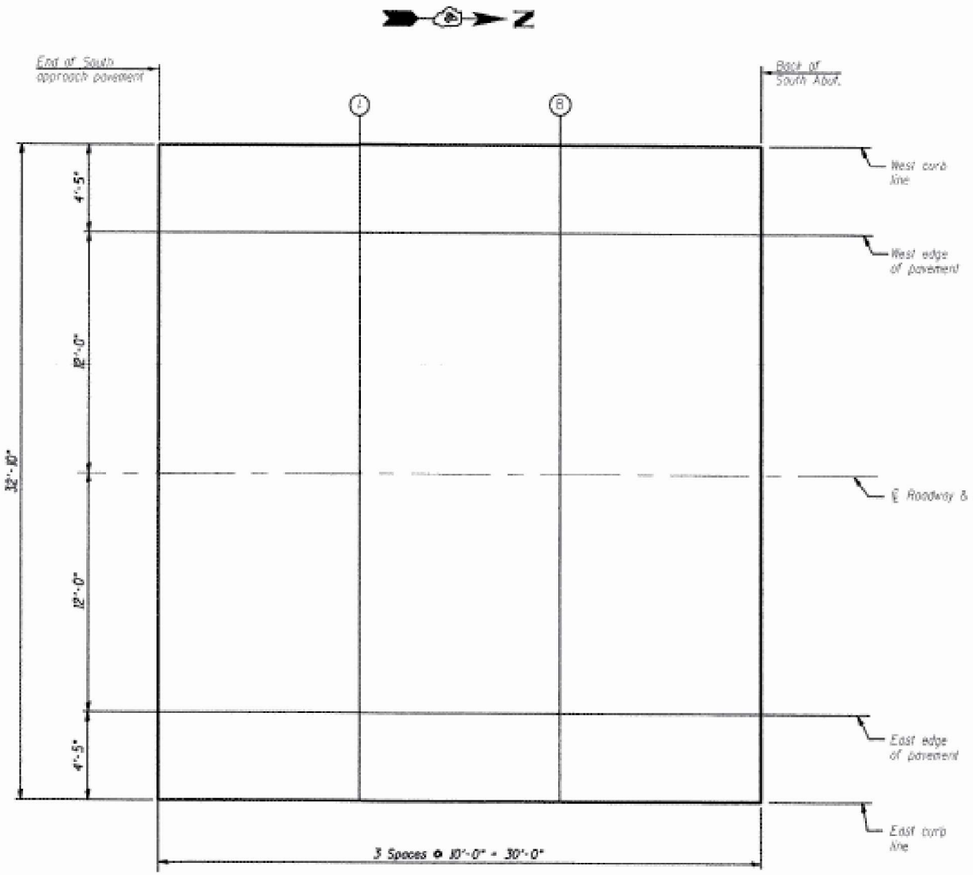
Location	Station	Offset	Theoretical Grade Elevations
End S. Appr. Pav't.	133+11.50	0.00	643.33
A	133+21.50	0.00	643.37
B	133+31.50	0.00	643.40
Bk. S. Abut.	133+41.50	0.00	643.43

EAST EDGE OF PAVEMENT

Location	Station	Offset	Theoretical Grade Elevations
End S. Appr. Pav't.	133+11.50	-12.00	643.14
A	133+21.50	-12.00	643.18
B	133+31.50	-12.00	643.22
Bk. S. Abut.	133+41.50	-12.00	643.25

EAST CURB LINE

Location	Station	Offset	Theoretical Grade Elevations
End S. Appr. Pav't.	133+11.50	-16.42	643.05
A	133+21.50	-16.42	643.09
B	133+31.50	-16.42	643.12
Bk. S. Abut.	133+41.50	-16.42	643.16



PLAN

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REVISIONS	
NAME	DATE

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ILLINOIS DEPARTMENT OF TRANSPORTATION

TOP OF SOUTH APPROACH SLAB ELEVATIONS

ILL. RTE. 251
OVER SANDY CREEK
F.A.S. 253 SEC. 68 BR-1
MARSHALL COUNTY
STA. 133+80.00 S.N. 062-0085

DESIGNED BY: S.G. DRAWN BY: T.C.S.
DATE: 11-20-08 CHECKED BY: O.A.O.

R:\0507-010\DWG\Bridge\E-AS.dgn 11/19/2008 6:03:18 PM

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FILE NAME: $FILES

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	DRAWN -	REVISED -	
PLOT SCALE = $SCALES	CHECKED -	REVISED -	
PLOT DATE = $DATES	DATE -	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

LOCATION 1 SN 062-0085
FLAMMING PLAN

SCALE: | SHEET 3 OF 5 SHEETS | STA. | TO STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
VAR	D-4 BRIDGE PAINTING 2022	*	51	11
		CONTRACT NO. 68G57		
	ILLINOIS FED. AID PROJECT			

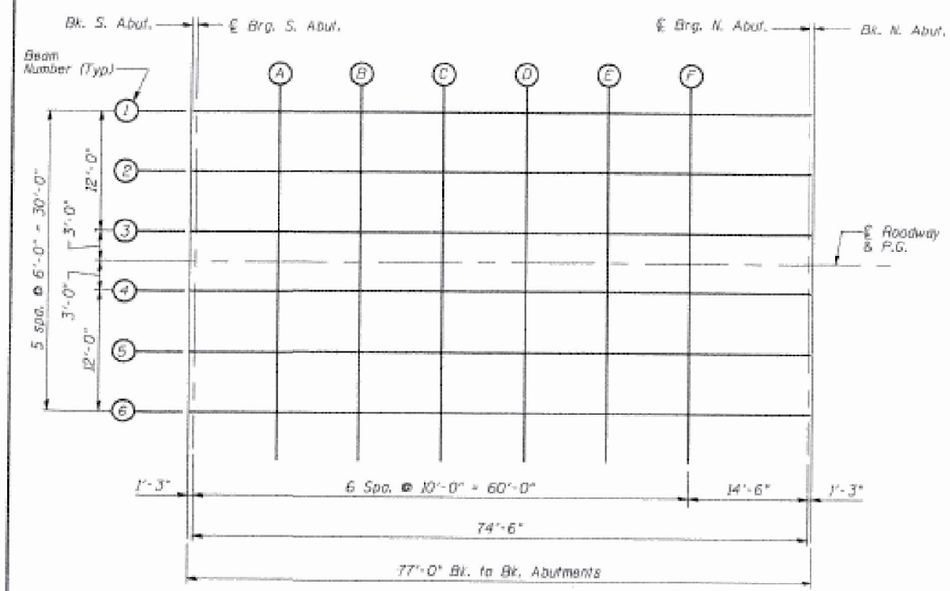
SN 062-0085

IL 251 OVER SANDY CREEK

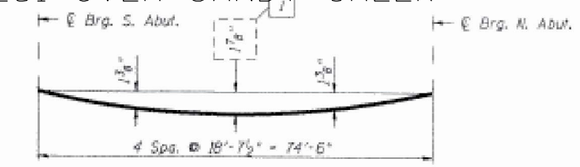
FAS 253 (IL 251)	68 BR-1	MARSHALL	97	73

SHEET NO. 2
15 SHEETS

Contract #68573



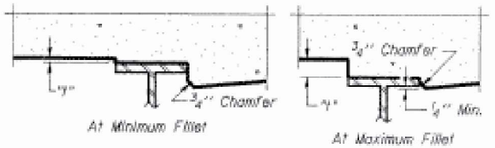
PLAN



DEAD LOAD DEFLECTION DIAGRAM

(Includes weight of concrete only.)

Note:
The above deflections are not to be used in the field if the engineer is working from the grade elevations adjusted for dead load deflections as shown below.



To determine "T". After all structural steel has been erected, elevations of the top flanges of the beams shall be taken at intervals shown below. These elevations subtracted from the "Theoretical Grade Elevations Adjusted For Dead Load Deflection" shown below, minus slab thickness, equals the fillet heights "T" above top flange of beams.

FILLET HEIGHTS

BEAM 1

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. S. Abut.	133+41.50	15.00	643.18	643.18
℄ Brg. S. Abut.	133+42.75	15.00	643.19	643.19
A	133+52.75	15.00	643.21	643.28
B	133+62.75	15.00	643.23	643.35
C	133+72.75	15.00	643.24	643.39
D	133+82.75	15.00	643.25	643.41
E	133+92.75	15.00	643.25	643.38
F	134+02.75	15.00	643.24	643.33
℄ Brg. N. Abut.	134+17.25	15.00	643.22	643.22
Bk. N. Abut.	134+18.50	15.00	643.22	643.22

1

BEAM 2

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. S. Abut.	133+41.50	9.00	643.29	643.29
℄ Brg. S. Abut.	133+42.75	9.00	643.30	643.30
A	133+52.75	9.00	643.32	643.39
B	133+62.75	9.00	643.34	643.46
C	133+72.75	9.00	643.35	643.50
D	133+82.75	9.00	643.36	643.52
E	133+92.75	9.00	643.36	643.49
F	134+02.75	9.00	643.35	643.44
℄ Brg. N. Abut.	134+17.25	9.00	643.33	643.33
Bk. N. Abut.	134+18.50	9.00	643.33	643.33

1

BEAM 3

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. S. Abut.	133+41.50	3.00	643.39	643.39
℄ Brg. S. Abut.	133+42.75	3.00	643.39	643.39
A	133+52.75	3.00	643.41	643.48
B	133+62.75	3.00	643.43	643.55
C	133+72.75	3.00	643.44	643.60
D	133+82.75	3.00	643.45	643.61
E	133+92.75	3.00	643.45	643.59
F	134+02.75	3.00	643.44	643.54
℄ Brg. N. Abut.	134+17.25	3.00	643.42	643.42
Bk. N. Abut.	134+18.50	3.00	643.42	643.42

1

℄ ROADWAY & P.G.

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. S. Abut.	133+41.50	0.00	643.43	643.43
℄ Brg. S. Abut.	133+42.75	0.00	643.44	643.44
A	133+52.75	0.00	643.46	643.53
B	133+62.75	0.00	643.48	643.60
C	133+72.75	0.00	643.49	643.64
D	133+82.75	0.00	643.50	643.66
E	133+92.75	0.00	643.50	643.63
F	134+02.75	0.00	643.49	643.58
℄ Brg. N. Abut.	134+17.25	0.00	643.47	643.47
Bk. N. Abut.	134+18.50	0.00	643.47	643.47

1

BEAM 4

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. S. Abut.	133+41.50	-3.00	643.39	643.39
℄ Brg. S. Abut.	133+42.75	-3.00	643.39	643.39
A	133+52.75	-3.00	643.41	643.48
B	133+62.75	-3.00	643.43	643.55
C	133+72.75	-3.00	643.44	643.60
D	133+82.75	-3.00	643.45	643.61
E	133+92.75	-3.00	643.45	643.59
F	134+02.75	-3.00	643.44	643.54
℄ Brg. N. Abut.	134+17.25	-3.00	643.42	643.42
Bk. N. Abut.	134+18.50	-3.00	643.42	643.42

1

BEAM 5

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. S. Abut.	133+41.50	-9.00	643.29	643.29
℄ Brg. S. Abut.	133+42.75	-9.00	643.30	643.30
A	133+52.75	-9.00	643.32	643.39
B	133+62.75	-9.00	643.34	643.46
C	133+72.75	-9.00	643.35	643.50
D	133+82.75	-9.00	643.36	643.52
E	133+92.75	-9.00	643.36	643.49
F	134+02.75	-9.00	643.35	643.44
℄ Brg. N. Abut.	134+17.25	-9.00	643.33	643.33
Bk. N. Abut.	134+18.50	-9.00	643.33	643.33

1

BEAM 6

Location	Station	Offset	Theoretical Grade Elevations	Theoretical Grade Elevations Adjusted For Dead Load Deflection
Bk. S. Abut.	133+41.50	-15.00	643.18	643.18
℄ Brg. S. Abut.	133+42.75	-15.00	643.19	643.19
A	133+52.75	-15.00	643.21	643.28
B	133+62.75	-15.00	643.23	643.35
C	133+72.75	-15.00	643.24	643.39
D	133+82.75	-15.00	643.25	643.41
E	133+92.75	-15.00	643.25	643.38
F	134+02.75	-15.00	643.24	643.33
℄ Brg. N. Abut.	134+17.25	-15.00	643.22	643.22
Bk. N. Abut.	134+18.50	-15.00	643.22	643.22

1

E-S

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STRUCTURE DESIGNS, INCORPORATED
ARCHITECTS & ENGINEERS
PH (773) 838-1700 • www.structuredesignsinc.com

REVISIONS	
NAME	DATE

ILLINOIS DEPARTMENT OF TRANSPORTATION

TOP OF SLAB ELEVATIONS

ILL. RTE. 251
OVER SANDY CREEK
F.A.S. 253 SEC. 68 BR-1
MARSHALL COUNTY
STA. 133+80.00 S.N. 062-0085

DESIGNED BY: S.G. DRAWN BY: T.C.S.
DATE: 11-20-08 CHECKED BY: O.A.G.

MODEL: \$MODELNAME\$
FILE NAME: \$FILES

USER NAME = \$USERS	DESIGNED -	REVISED -	
	DRAWN -	REVISED -	
PLOT SCALE = \$SCALES	CHECKED -	REVISED -	
PLOT DATE = \$DATES	DATE -	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

LOCATION 1 SN 062-0085
STEEL H-PILES DETAILS

SCALE: | SHEET 5 OF 5 SHEETS | STA. | TO STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
VAR	D-4 BRIDGE PAINTING 2022	*	51	10
		CONTRACT NO. 68G57		
	ILLINOIS FED. AID PROJECT			

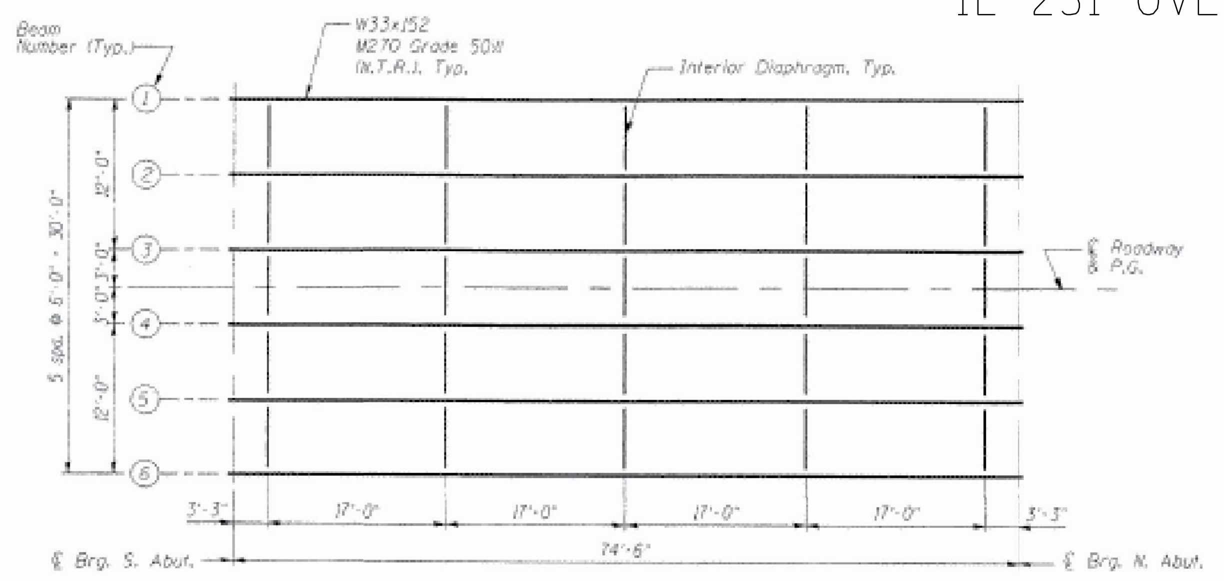
SN 062-0085

IL 251 OVER SANDY CREEK

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
FAS 253 (IL 251)	68 BR-1	MARSHALL	97	79

SHEET NO. 8 — 15 SHEETS

Contract #68573



INTERIOR GIRDER MOMENT TABLE		
		0.5 Sp.
I_s	(in⁴)	8,160
$I_c(n)$	(in⁴)	20,780
$I_c(3n)$	(in⁴)	14,979
S_s	(in³)	487.0
$S_c(n)$	(in³)	702.2
$S_c(3n)$	(in³)	629.1
DC1	(k/')	0.769
M_{DC1}	('k)	534.2
DC2	(k/')	0.15
M_{DC2}	('k)	104.0
DW	(k/')	0.266
M_{DW}	('k)	185.0
M_{LL} + Imp	('k)	1,006.9
M_u(Strength I)	('k)	2,837.5
$\phi_f M_n$	('k)	3,464.7
f_s DC1	(ksi)	13.32
f_s DC2	(ksi)	1.98
f_s DW	(ksi)	3.53
f_s 1.3(L_L+I)	(ksi)	22.36
f_s (Service II)	(ksi)	41.19
f_s (Total)(Strength I)	(ksi)	54.52
Vf	(k)	23.4

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

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

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

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

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

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

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

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

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

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

M_u (Strength I): Factored design moment (kip-ft.).
1.25 (M_{DC1} + M_{DC2}) + 1.5 M_{DW} + 1.75 M_{LL} + Imp

$\phi_f M_n$: Compact composite positive moment capacity computed according to Article 6.10.7.1 (kip-ft.).

f_s (Service II): Sum of stresses as computed from the moments below (ksi).
M_{DC1} + M_{DC2} + M_{DW} + 1.3 M_{LL} + Imp

f_s (Total)(Strength I): Sum of stresses as computed from the moments below on non-compact section (ksi).
1.25 (M_{DC1} + M_{DC2}) + 1.5 M_{DW} + 1.75 M_{LL} + Imp

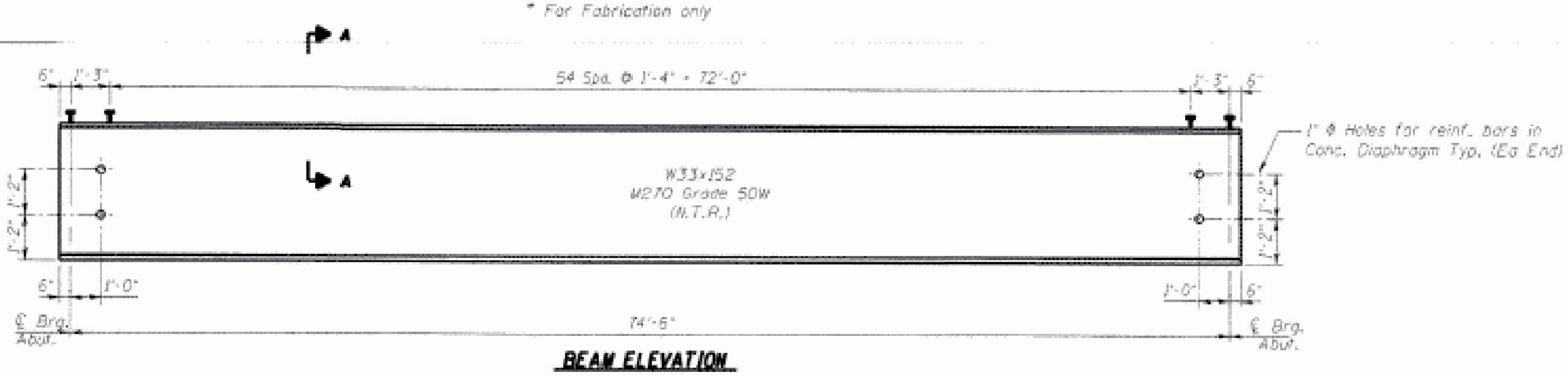
Vr: Factored shear range computed according to Article 6.10.10.

INTERIOR GIRDER REACTION TABLE HL93 Loading		
		Abut.
R_{DC1}	(k)	28.6
R_{DC2}	(k)	5.55
R_{DW}	(k)	9.95
R_{LL} + Imp	(k)	72.1
R_{Total}	(k)	116.2

*** TOP OF BEAM ELEVATIONS**

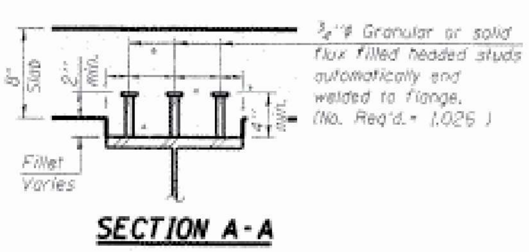
Beam Number	℄ Brg. S. Abut.	℄ Brg. N. Abut.
1	642.48	642.51
2	642.59	642.62
3	642.68	642.72
4	642.68	642.72
5	642.59	642.62
6	642.48	642.51

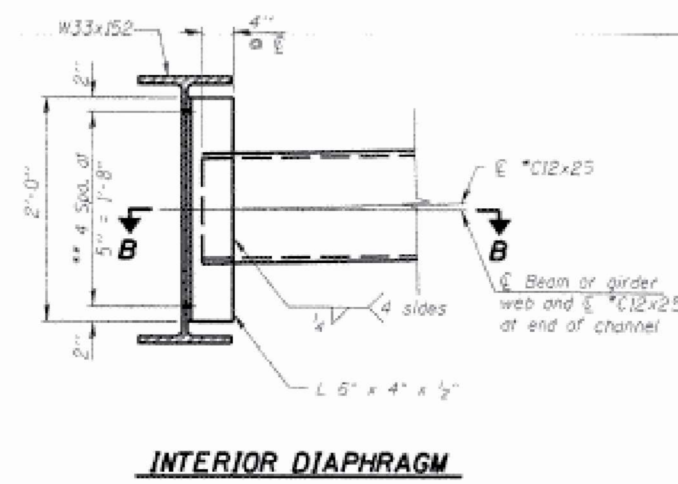
* For Fabrication only

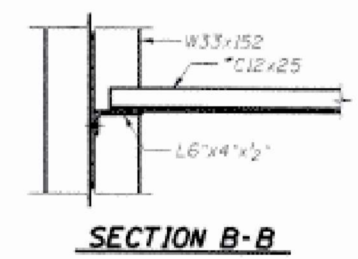


Note:
Load carrying components designated "NTR" shall conform to the Supplemental Requirements for Notch Toughness, Zone 2.

General Note:
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.







Note:
Two hardened washers required for each set of oversized holes.

* C12x30 are permitted to facilitate material acquisition. Calculated weight of structural steel is based on the lighter section.

** ¾" ϕ HS bolts, ¹⁵⁄₁₆" ϕ holes

FOR INFORMATION ONLY

REVISIONS	
NAME	DATE

STRUCTURE DESIGNS, INCORPORATED
ARCHITECTS & ENGINEERS

ILLINOIS DEPARTMENT OF TRANSPORTATION

STEEL FRAMING PLAN AND DETAILS

ILL. RTE. 251
OVER SANDY CREEK
F.A.S. 253 SEC. 68 BR-1
MARSHALL COUNTY
STA. 133+80.00 S.N. 062-0085

DESIGNED BY: S.G. DRAWN BY: T.C.S.
DATE: 11-20-08 CHECKED BY: O.A.O.

G-1 11-1-06

MODEL: $MODELNAME$
FILE NAME: $FILES$

USER NAME = $USER$	DESIGNED -	REVISED -
	DRAWN -	REVISED -
PLOT SCALE = $SCALE$	CHECKED -	REVISED -
PLOT DATE = $DATE$	DATE -	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

LOCATION 1 SN 062–0085
FLAMMING PLAN

SCALE: SHEET 3 OF 5 SHEETS STA. TO STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
VAR	D-4 BRIDGE PAINTING 2022	*	51	9

CONTRACT NO. 68G57

ILLINOIS FED. AID PROJECT

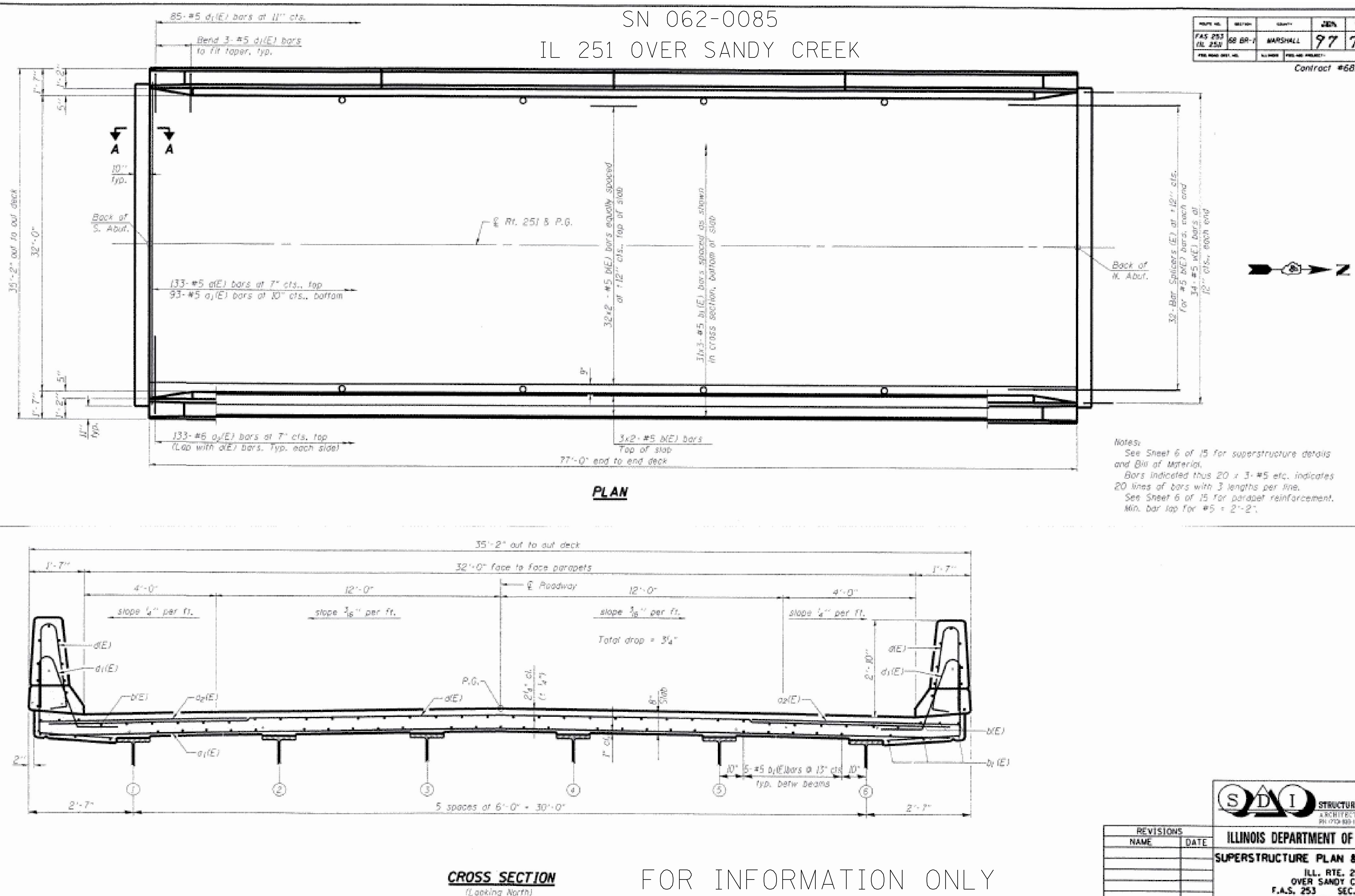
*WOODFORD AND MARSHALL

SN 062-0085
IL 251 OVER SANDY CREEK

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
FAS 253 (IL 251)	68 BR-1	MARSHALL	97	76

SHEET NO. 5
15 SHEETS

Contract #68573



Notes:
See Sheet 6 of 15 for superstructure details and Bill of Material.
Bars indicated thus 20 x 3-#5 etc. indicates 20 lines of bars with 3 lengths per line.
See Sheet 6 of 15 for parapet reinforcement.
Min. bar lap for #5 = 2'-2".

FOR INFORMATION ONLY

SI-1-0 9-3-07

REVISIONS	
NAME	DATE

SDI STRUCTURE DESIGNS, INCORPORATED
ARCHITECTS & ENGINEERS

ILLINOIS DEPARTMENT OF TRANSPORTATION

SUPERSTRUCTURE PLAN & CROSS SECTION

ILL. RTE. 251
OVER SANDY CREEK
F.A.S. 253 SEC. 68 BR-1
MARSHALL COUNTY
STA. 133+80.00 S.N. 062-0085
DESIGNED BY: S.G. DRAWN BY: T.C.S.
DATE: 11-20-08 CHECKED BY: O.A.O.

USER NAME = $USER$	DESIGNED -	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION
	DRAWN -	REVISED -	
PLOT SCALE = $SCALE$	CHECKED -	REVISED -	
PLOT DATE = $DATE$	DATE -	REVISED -	

LOCATION 1 SN 062–0085
SUPERSTRUCTURE PLAN & CROSS SECTION
SCALE: SHEET 2 OF 5 SHEETS STA. TO STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
VAR	D-4 BRIDGE PAINTING 2022	*	51	8

CONTRACT NO. 68G57
ILLINOIS FED. AID PROJECT
*WOODFORD AND MARSHALL

MODEL: $MODELNAME$
FILE NAME: $FILES$

SN 062-0049

I-39 TC 69C (800)

S.M. #23. R.R. Spike in Power Pole, Sta. 643+12, 225' Rt. Elev. 695.35

Traffic Maintenance : Road to be closed to traffic.

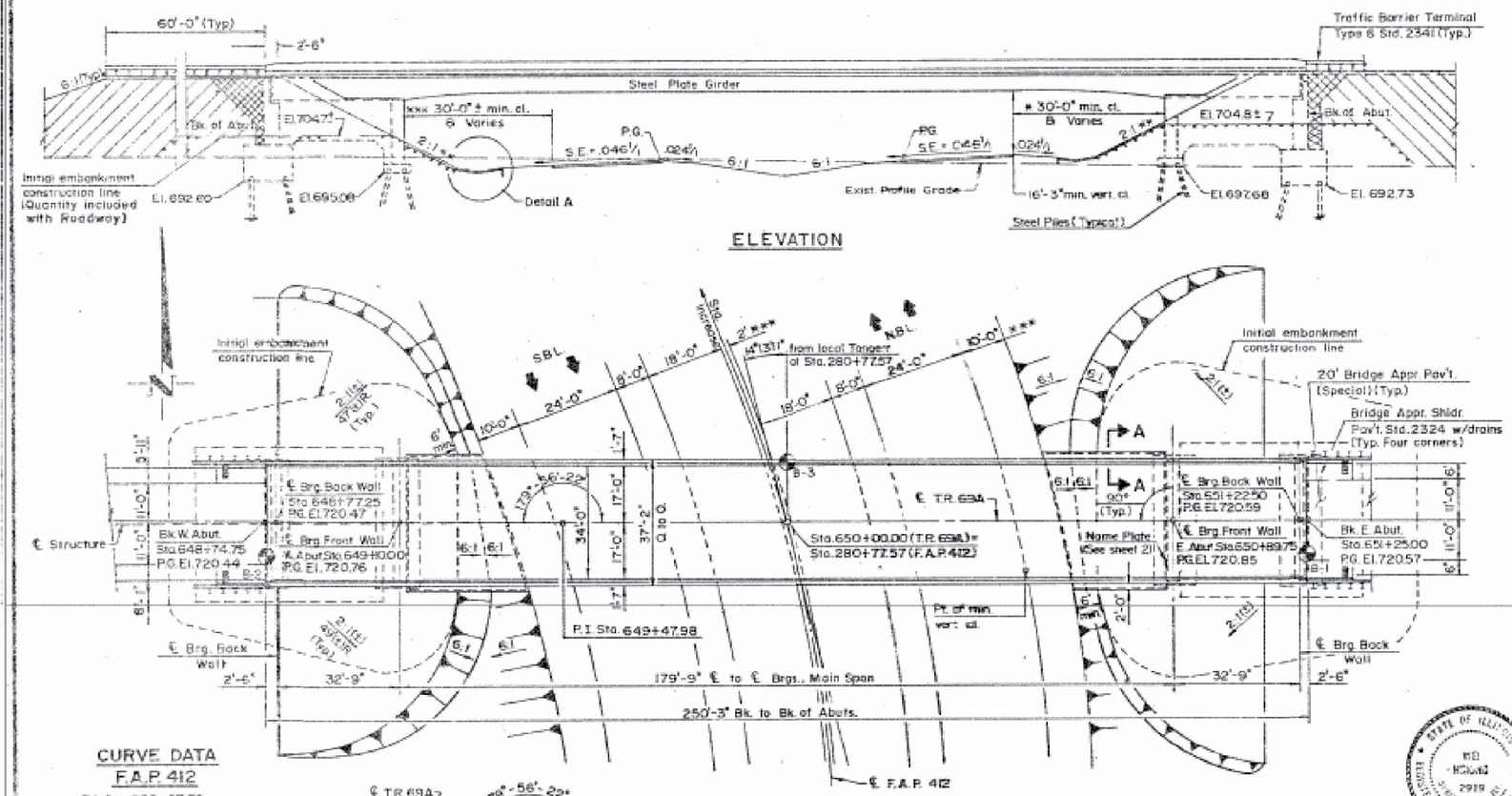
EMBANKMENT CONSTRUCTION

1. Initial embankment construction as indicated by . . . . shall be the minimum embankment that must be constructed prior to construction of abutments.
2. Construct abutments.
3. Hatched area ▨ to be placed after abutment is constructed and before construction of superstructure.
4. Place Porous Granular Embankment from 3'-0" below bridge seat at back wall to subgrade at 45° slope after deck, caps and back wall has been poured, as shown by cross hatch. ▨

All dimensions are radial to F.A.P. 412
* Side Slope are at Rt. 2:1 to the Front Wall.

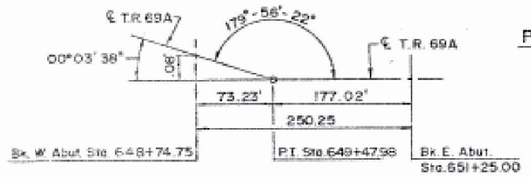
ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
FAP 412	62-3HB	MARSHALL	52	21
FED. ROAD DIST. NO. *	ILLINOIS	PROJECT		

SHEET 1 OF 12

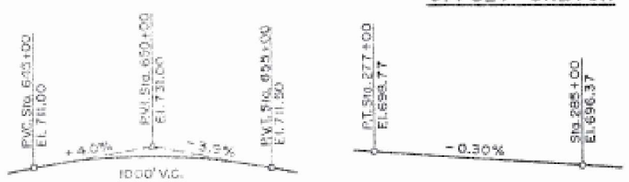


CURVE DATA
F.A.P. 412

P.I. Sta. 288+07.70
Δ = 44°41'14"
D = 1°30.00"
R = 3819.72'
T = 1569.98'
L = 2979.15'
E = 310.05'
P.C. = Sta. 272+37.72
P.T. = Sta. 302+16.87
S.E. = 0.046 ft/ft

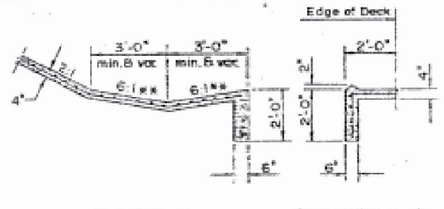


OFFSET SKETCH



PROFILE GRADE (T.R. 69A)
(Along ℄ of T.R. 69A)

PROFILE GRADE (F.A.P. 412)
(Along Median Edge of Pav't)



DETAIL A

SECTION A-A

APPROVED
FOR STRUCTURAL ADEQUACY ONLY

℄ Approved Structural Engineer

STATE OF ILLINOIS — HSIONG — 2919 — REGISTERED STRUCTURAL ENGINEER

Illinois Structural No. 2919

GENERAL NOTES

See Foundation Boring Log Sheet in Plans.

Fasteners shall be high strength bolts. Bolts 3/4" Ø, open holes 13/16" Ø, unless otherwise noted.

Calculated weight of Structural Steel = 195,590 (M-183)
= 116,500 (M-223 Gr. 50)

The Zinc-silicate and vinyl paint system shall be used for shop and field painting of Structural Steel except where otherwise noted.

Field welding of construction accessories will not be permitted to the bottom flange of girders nor to the top flange from girder ends to splice. Field welding in other areas will be permitted only when approved by the Engineer.

Anchor bolts shall be set before bolting cross frames over supports.

The main load carrying member components subject to tensile stress shall conform to the Supplemental Requirements for Notch Toughness Zone 2. These Components are the tension flanges, webs and all splice plate material of the steel girders.

Reinforcement bars shall conform to the requirements of AASHTO M-31, M-42 or M-53 Grade 60.

Slope wall shall be reinforced with welded wire fabric, 6"x6" - W4.0 x W4.0, weighing 58 lbs. per 100 sq. ft.

Bearing seat surfaces shall be constructed or adjusted to the designated elevations within a tolerance of 1/8 inch. Adjustment shall be made either by grinding the surface or by shimming the bearing. Two 1/8" adjusting shims, of the dimensions of the top bearing plate, shall be provided for each bearing plate, in addition to all other plates or shims.

The contractor shall drive two steel test piles in a permanent location at each abutment as directed by the Engineer before ordering the remainder of piles.

All structural steel fabricators performing work on the main load carrying components of steel structures shall be certified under Category III (AISC) of the Quality Certification Program.

TOTAL BILL OF MATERIALS

ITEM	UNIT	SUPER	SUB	TOTAL
Protective Coat ①	Sq. Yds.	1,148	—	1,148
Class X Concrete Superstructure	Cu. Yds.	314.7	—	314.7
Class X Concrete	Cu. Yds.	—	348.7	348.7
Class A Concrete	Cu. Yds.	—	278.7	278.7
Erecting Structural Steel	L. S.	0.5	—	0.5
Stud Shear Connectors	Ea.	1,510	—	1,510
Reinforcement Bars	Lbs.	—	23,490	23,490
Reinforcement Bars, Epoxy Coated	Lbs.	81,440	15,970	97,410
Test Piles Steel HP 12x53	Ea.	—	4	4
Steel Piles HP 12x53	Lin. Ft.	—	3,440	3,440
Name Plates	Ea.	1	—	1
Slope Wall 4"	Sq. Yds.	—	240	240
Erecting Elastomeric Brg. Assembly, Ty. I	Ea.	—	20	20
Rubbed Finish (MODIFIED)	Sq. Ft.	1,725	460	2,185
Porous Granular Embankment	Cu. Yds.	—	270	270
Structure Excavation	Cu. Yds.	—	831	831
Geocomposite Wall Drain	Sq. Yds.	—	102	102
Screen Panel	Ea.	—	8	8
Tiedown Device	Ea.	—	10	10
Fabric Wrapped 6" Pipe Drain (Spec.)	Lin. Ft.	—	148	148
BRIDGE DECK GROOVING	Sq. Yds.		690	800
FURNISH & ERECT STRUCTURAL STEEL	Lbs.		7,820	7,820

① Includes deck

DESIGN SPECIFICATIONS
AASHTO (1983) & 1984 thru 1987 Interims with exceptions or modifications as indicated.

LOADING HS 20-44
Allow 25 #/sq.ft. for future wearing surface

DESIGN STRESSES
f'c = 3,500 p.s.i.
fy = 60,000 p.s.i. (Reinforcement)
fy = 50,000 p.s.i. (Structural Steel) (AASHTO M223, Gr. 50).
fy = 36,000 p.s.i. (Structural Steel) (AASHTO M183).
Max. range of temperature = 120°F (-10° to 110°F)

LOCATION SKETCH

T.R. 69A OVER F.A.P. RTE. 412
GENERAL PLAN & ELEVATION
F.A.P. RTE. 412 SECTION 62-3HB
MARSHALL COUNTY
STA. 280+77.57
STR. NO. 062-0049

HSIONG ASSOCIATES LTD.

DESIGNED S.J.S. CHECKED W.H.
DRAWN R.H.M. DATE NO. H-0348

FOR INFORMATION ONLY

MODEL : SMODELNAME
FILE NAME: SFILEIL

USER NAME = SUSERS	DESIGNED -	REVISED -	
	DRAWN -	REVISED -	
PLOT SCALE = SSCALES	CHECKED -	REVISED -	
PLOT DATE = SDATES	DATE -	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

LOCATION 2 SN 062-0049
PLAN & ELEVATION VIEW

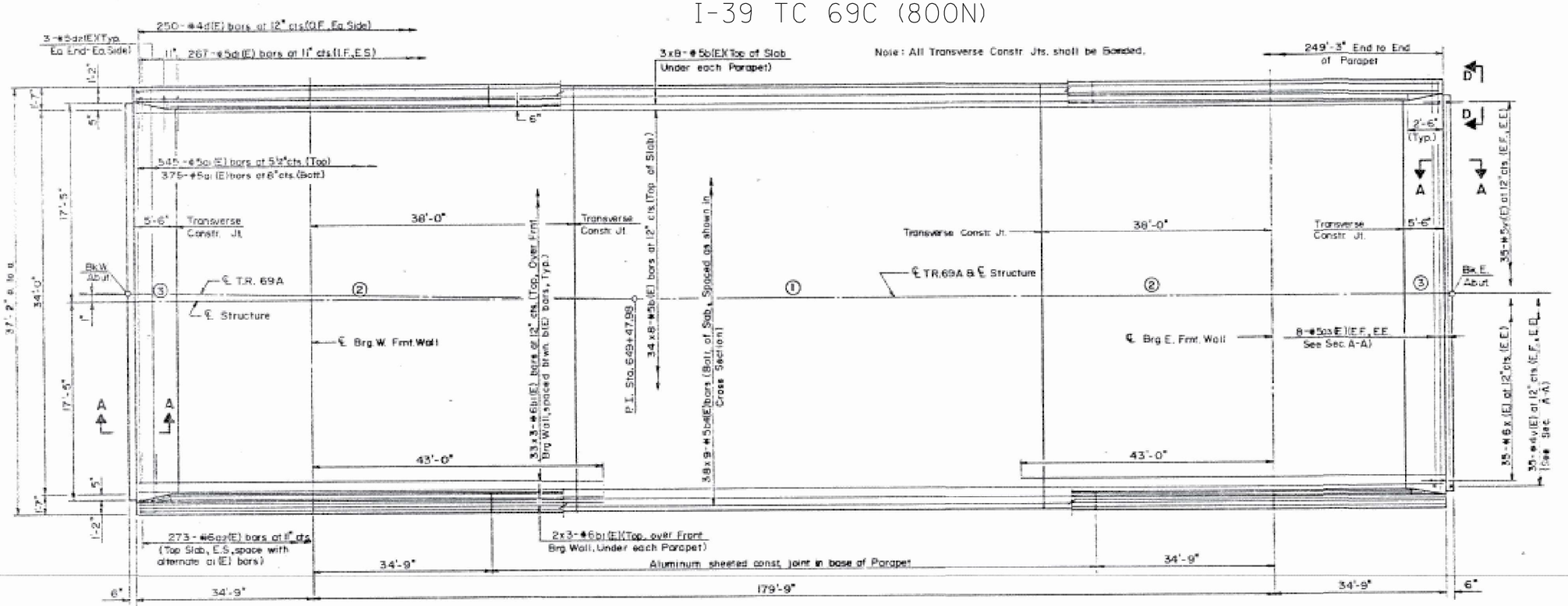
SCALE: | SHEET 1 OF 6 SHEETS | STA. | TO STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
VAR	D-4 BRIDGE PAINTING 2022	*	51	15
			CONTRACT NO. 68G57	
		ILLINOIS	FED. AID PROJECT	

*WOODFORD AND MARSHALL

F.A.P.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
412	62-3HB	MARSHALL	62	24
				SHEET 4 OF 12

SN 062-0049
I-39 TC 69C (800N)



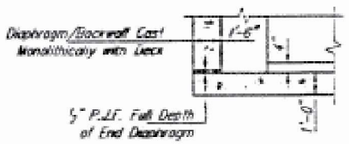
PLAN

Note: Slab area ① ② & ③ indicate pouring sequence.

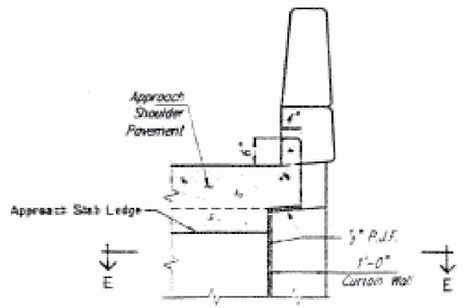
CROSS SECTION

MIN. BAR LAP

# 5	2'-2"
# 6	2'-7"
# 8	4'-6"



SECTION E-E



SECTION D-D

Note: Construct bridge symmetrical about ℄ structure with crown at ℄ structure.

SUPERSTRUCTURE
F.A.P. ROUTE 412 SEC.62-3HB
MARSHALL COUNTY
STATION 280+77.57

FOR INFORMATION ONLY

Work this Sheet with Sheet 5 of 11

HSIONG ASSOCIATES LTD.

DESIGNED W.H. CHECKED G.J.S
DRAWN B.H.H. DATE NO. H-0764.A

MODEL: SMODELNAMES
FILE NAME: SFILELS

USER NAME = SUSERS	DESIGNED -	REVISED -
	DRAWN -	REVISED -
PLOT SCALE = SSCALES	CHECKED -	REVISED -
PLOT DATE = SDATES	DATE -	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

LOCATION 2 SN 062-0049
SUPERSTRUCTURE PLAN & CROSS SECTION

SCALE: | SHEET 2 OF 6 SHEETS | STA. | TO STA.

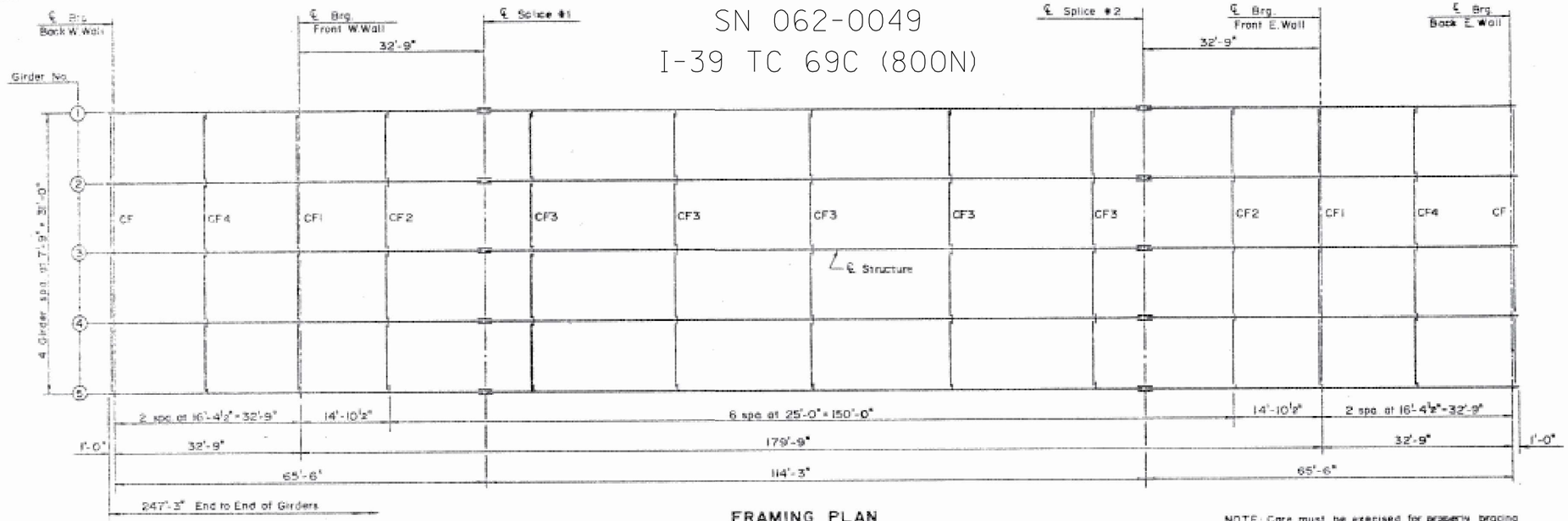
F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
VAR	D-4 BRIDGE PAINTING 2022	"	51	16
			CONTRACT NO. 68G57	
		ILLINOIS	FED. AID PROJECT	

•WOODFORD AND MARSHALL

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
FAP 412	62-3HB	MARSHALL	82	26
FED. ROAD DIST. NO. 7	ILLINOIS	PROJECT		

SHEET 6 OF 12

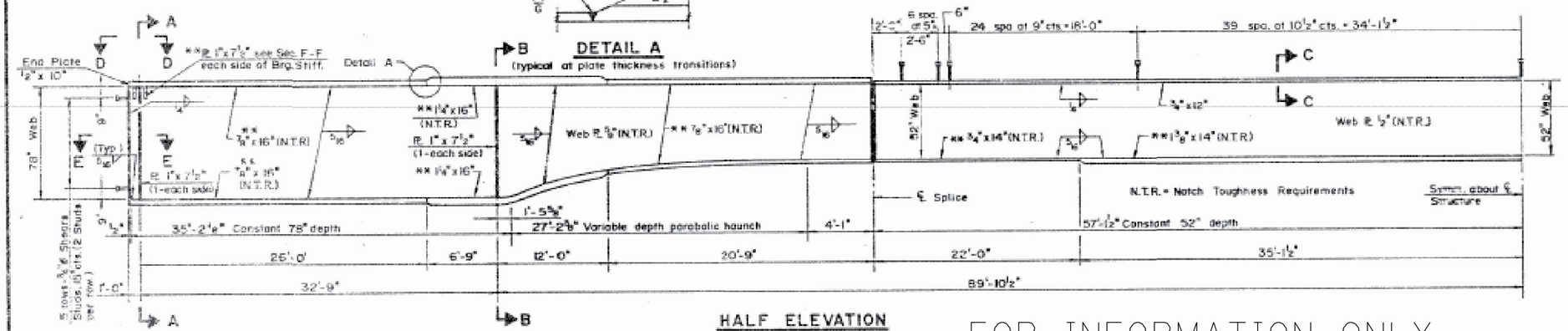
SN 062-0049
I-39 TC 69C (800N)



FRAMING PLAN

See Sheet 7 for erection sequence.

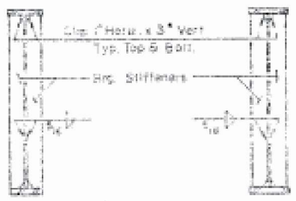
NOTE: Care must be exercised for properly bracing the top flange during shipping and erection before the cross frames are installed.



HALF ELEVATION

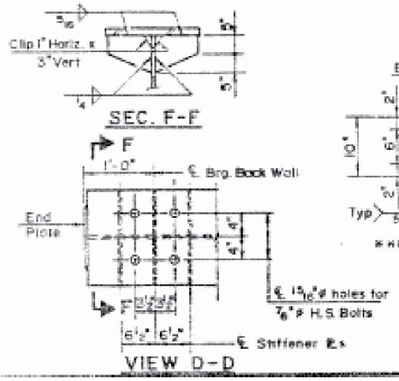
** Indicates M-223 Gr. 50 Steel

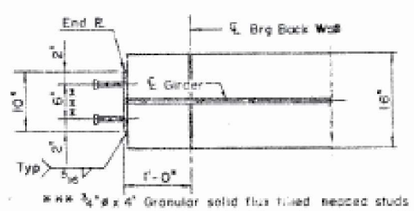
FOR INFORMATION ONLY



SEC. A-A

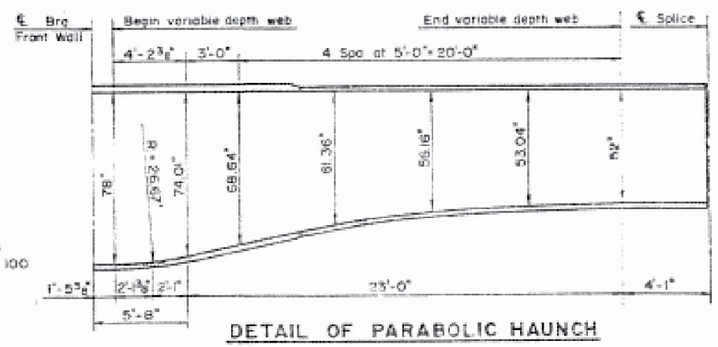
SEC. B-B



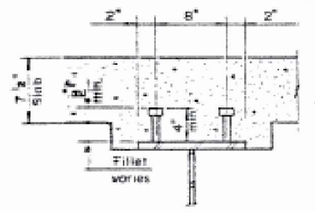


*** ¾" ø x 4" Granular solid flux filled headed studs automatically end welded to end plate. No req'd. 100 STUD SHEAR CONNECTOR.

SEC. E-E

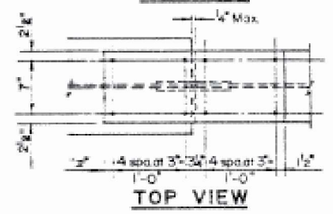


DETAIL OF PARABOLIC HAUNCH

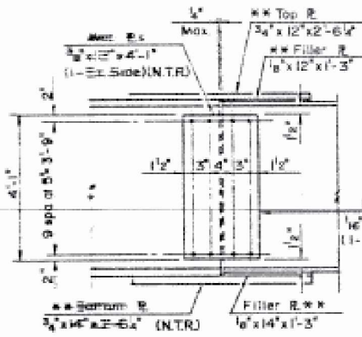


* STUD SHEAR CONNECTOR ¾" ø Granular or solid flux filled headed studs automatically end welded to flange. No req'd. 1410

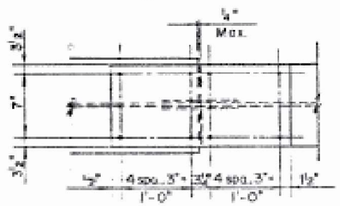
SEC. C-C



TOP VIEW



SIDE VIEW



BOTTOM VIEW

FIELD SPLICE DETAIL

All bolts for field splices are ⅞" ø H.S. bolts. Drawn holes shall be 15/16" ø

FRAMING PLAN
F.A.P. ROUTE 412 SEC. 62-3HB
MARSHALL COUNTY
STA. 280+77.57

HSIONG ASSOCIATES LTD.

DESIGNED G.J.G. CHECKED W.H.

DRAWN R.H.H. DATE NO. H-034

USER NAME = SUSERS	DESIGNED -	REVISED -	
	DRAWN -	REVISED -	
PLOT SCALE = SSCALES	CHECKED -	REVISED -	
PLOT DATE = SDATES	DATE -	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

LOCATION 2 SN 062-0049
FLAMMING PLAN

SCALE: | SHEET 3 OF 6 SHEETS | STA. | TO STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
VAR	D-4 BRIDGE PAINTING 2022	*	51	17
			CONTRACT NO. 68G57	
		ILLINOIS	FED. AID PROJECT	

*WOODFORD AND MARSHALL

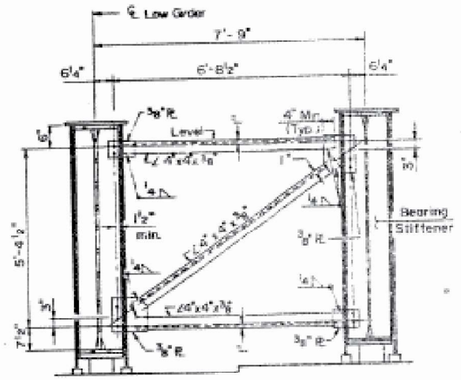
MODEL: SMODELNAMES
FILE NAME: SFILELS

SN 062-0049

I-39 TC 69C (800N)

F.A.P. RTE.	62-3HB	MARSHALL	82	27
FED. ROAD DIST. NO. 7	ILLINOIS	PROJECT		

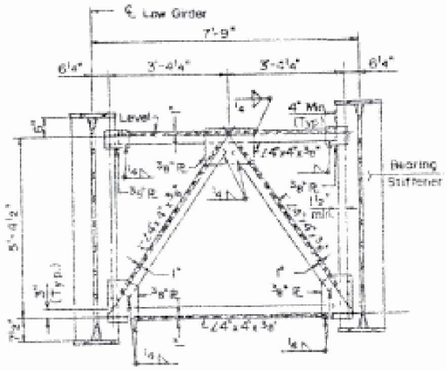
SHEET 7 OF 12



END CROSS FRAME - CF

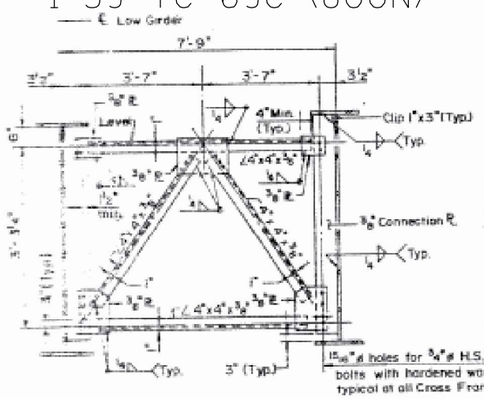
No Req'd. = 8

Cross Frames may be removed after Backwall is in place.



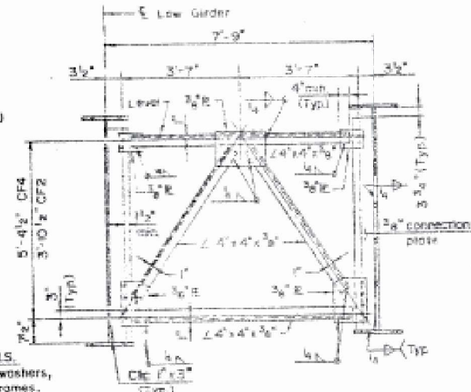
INTERIOR CROSS FRAME - CF1

No. Req'd. = 8



INTERIOR CROSS FRAME - CF3

No. Req'd. = 20



INTERIOR CROSS FRAME - CF2 & CF4

CF2 No Req'd = 8
CF4 No Req'd = 8

MOMENT TABLE - INTERIOR GIRDER

		℄ Brg. Front Wall	0.5 Ig
Is	(in⁴)	87,527	24,425
Ic	(in⁴)	———	66,348
Ss	(in.³)	2,175	1,098
Sc	(in.³)	———	1,529
Z	(in.³)	———	———
R	(K/I)	1.06	.96
MR	('K)	2,707	1,175
SR	(K/I)	.33	.33
MsR	('K)	783	568
ML	('K)	1,357	1,152
Mimp.	('K)	293	189
Sg(ML+I)	('K)	2750	2,235
Mo	('K)	8112	5,171
Mu	('K)	———	———
fs ℄ non-compk s.s.)		14.9	12.9
fs ℄ comp.	(k.s.i.)	4.3	4.5
fs Sg(L+I)	(k.s.i.)	15.2	17.5
fs (overload)	(k.s.i.)	34.4	34.9
*** fs (Total)	(k.s.i.)	44.8	45.4
VR	('K)	52.0	———
Fyf	(k.s.i)	48.8	46.6

Is and Ss are the moment of inertia and section modulus of the steel section used in computing fs (Total and Overload)

Ic and Sc are the moment of inertia and section modulus of the composite section used in computing fs(Total and Overload).

*** Nyp - compact section

Mo (Applied Moment) = 1.3 [MR + MsR + ⅝ (ML + I)]

VR is the maximum ℄ + impact shear range in span.

fs (Total) is the sum of the stresses due to 1.3 [MR + Ms ℄ + ⅝ (ML + I)]

fs (Overload) is the sum of the stresses due to MR + Ms ℄ + ⅝ (ML + I)

MR - Moment due to dead loads on non-composite section.

Ms ℄ - Moment due to dead loads on composite section.

ML - Moment due to live load on non-composite or composite section.

I - Live load impact

Fyf as computed according to AASHTO 10.53.1.3

TOP OF WEB ELEVATION

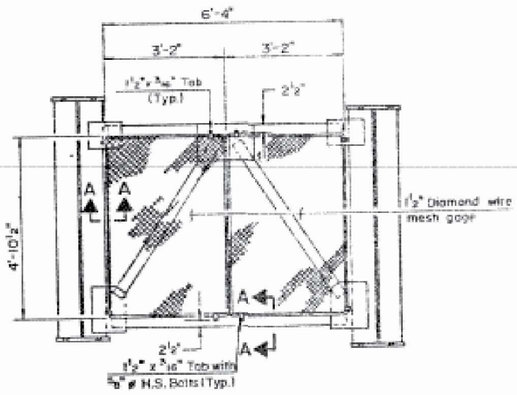
(For Fabrication Only)

GIRDER	℄ Brg. Back Wall at W. Abut.	℄ Brg. Front Wall at W. Abut.	℄ Splice #1	℄ Splice #2	℄ Brg. Front Wall E. Abut.	℄ Brg. Back Wall at E. Abut.
1 & 5	719.21	719.61	720.25	720.07	719.71	719.34
2 & 4	719.36	719.76	720.40	720.22	719.86	719.49
3	719.48	719.88	720.52	720.34	719.98	719.61

* Elevations at splices have been adjusted for camber.

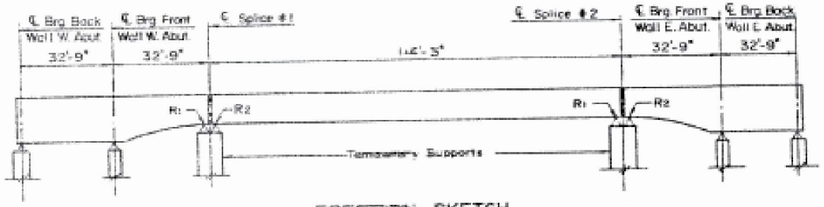
REACTION INTERIOR GIRDER

		℄ Brg. Back Wall	℄ Brg. Front Wall
R ℄	(K)	-79.8	235.8
R ℄	(K)	-44.1	107.9
Imp	(K)	-7.2	18.8
R Total	(K)	-131.2	360.6



TYPICAL SCREEN PANEL AT CROSS FAME CF1

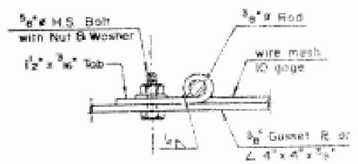
No Req'd = 8



ERECTION SKETCH

R1 = 5.4 K / Girder

R2 = 1.5 K / Girder

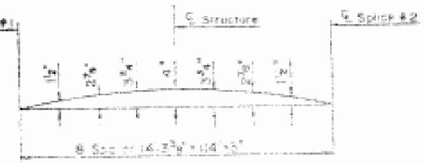


SECTION A-A

ERECTION SEQUENCE

1. Erect the girders in 3 segments, supported by the permanent bearings and the temporary supports. Temporary supports shall be incidental to cost of ERECTING STRUCT STEEL
2. Erect the girder end ties.
3. Install sidewalk brackets.
4. Remove temporary supports.
5. Pour concrete deck. For pouring sequence see Sheet 4 of 12

The Contractor may submit an alternate erection scheme for the approval of the Engineer prior to construction or ordering of materials.



CAMBER DIAGRAM

FOR INFORMATION ONLY

CROSS FRAME DETAILS
F.A.P ROUTE 412 SEC. 62-3HB
MARSHALL COUNTY
STATION 280+77.57

HSIONG ASSOCIATES LTD.

DESIGNED GJG | CHECKED WH

DRAWN RMH | DATE | NO. H-0346

MODEL: SMODELNAME
FILE NAME: SFILEL

USER NAME = SUSERS	DESIGNED -	REVISED -	
	DRAWN -	REVISED -	
PLOT SCALE = SSCALES	CHECKED -	REVISED -	
PLOT DATE = SDATES	DATE -	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

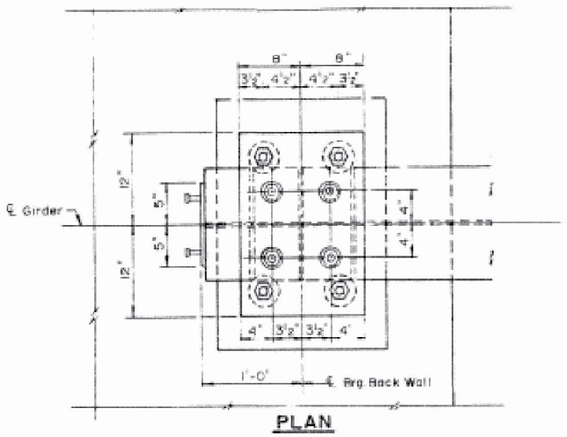
LOCATION 2 SN 062-0049
CROSS FRAME DETAILS

SCALE: | SHEET 4 OF 6 SHEETS | STA. | TO STA.

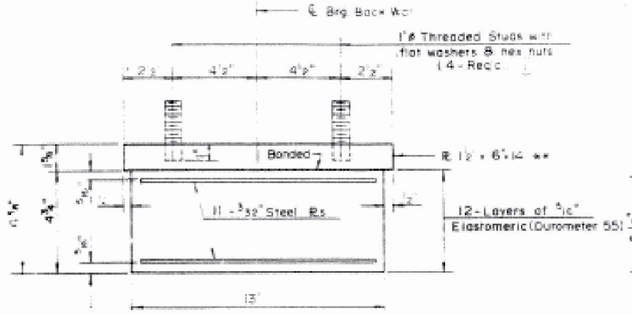
F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
VAR	D-4 BRIDGE PAINTING 2022	"	51	18
			CONTRACT NO. 68G57	
		ILLINOIS	FED. AID PROJECT	

SN 062-0049

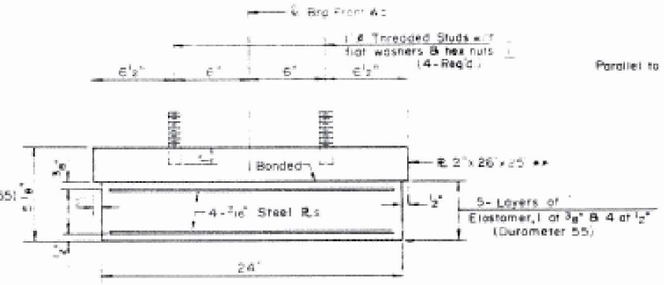
I-39 TC 69C (800N)



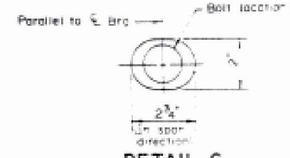
PLAN



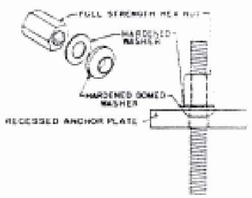
DETAIL OF ELASTOMERIC BEARING
① AT BACK WALL
(10 Req'd.)



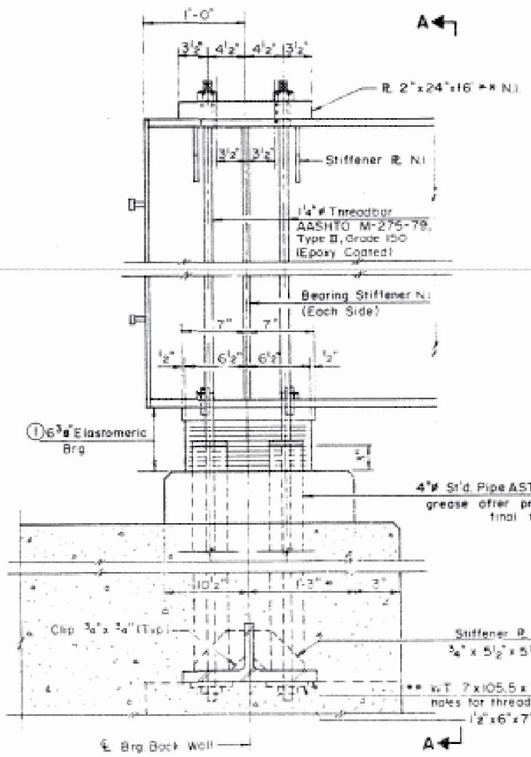
DETAIL OF ELASTOMERIC BEARING
① AT FRONT WALL
(10 Req'd.)



DETAIL C



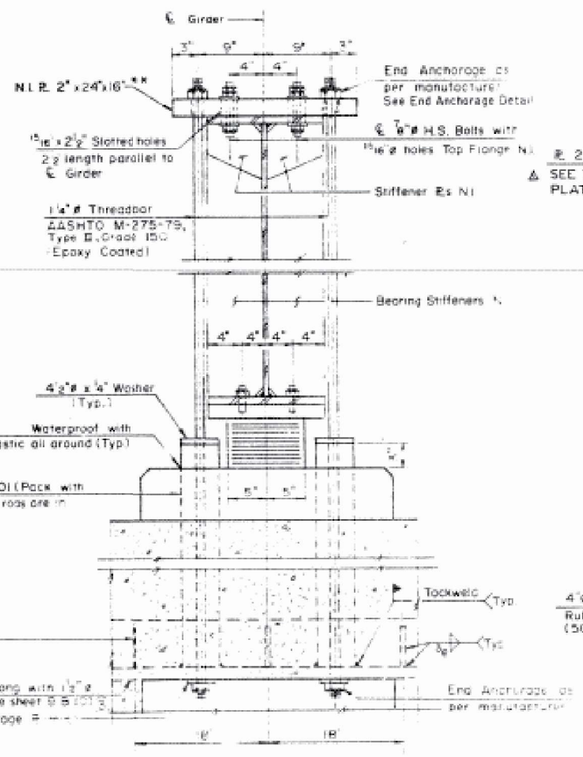
END ANCHORAGE DETAIL



DETAIL OF TIEDOWN DEVICE ②
(10 Required.)

② All items shown are included in TIEDOWN DEVICE except as noted N.I.(NOT INCLUDED)

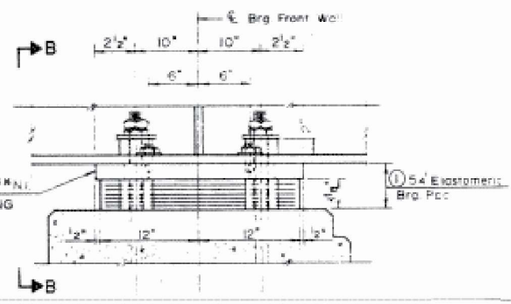
③ Cost included in FURNISHING AND ERECTING STRUCTURAL STEEL.



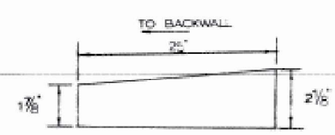
② SECTION A-A

Initially stress each threadbar to 30 kips after anchorage is set. During installation, tighten the tie down rods evenly so that uniform pressure is put on the bearings at all time. After completion of pouring of sequence 1 & 2 of the deck slab, stress each threadbar an additional 12 kips for final anchorage.

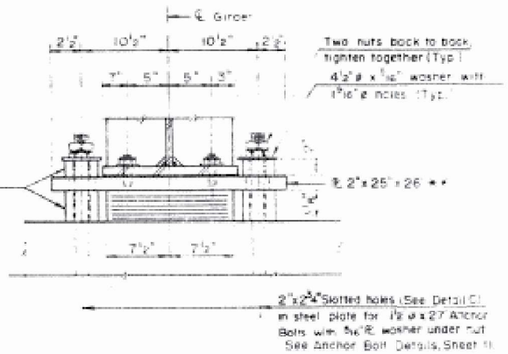
Note: Holes in steel plates and washers for the 1¼" threadbar shall be 1⅜" unless otherwise noted.



SECTION THRU FRONT BRG. WALL
① Cost included in ELASTOMERIC BEARING ASS'Y, TYPE I



⚠ TOP BEARING PLATE DETAIL



SECTION B-B

** Indicates M-223 Gr. 50 Steel

BEARING DETAILS
F.A.P. ROUTE 412 SEC. 62-3HB
MARSHALL COUNTY
STATION 280+77.57

HSIONG ASSOCIATES LTD

DESIGNED - CHECKED -
DRAWN - DATE -

FOR INFORMATION ONLY

MODEL: \$MODELNAME\$
FILE NAME: \$FILEIL\$

USER NAME = \$USER\$	DESIGNED -	REVISED -	
	DRAWN -	REVISED -	
PLOT SCALE = \$SCALE\$	CHECKED -	REVISED -	
PLOT DATE = \$DATE\$	DATE -	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

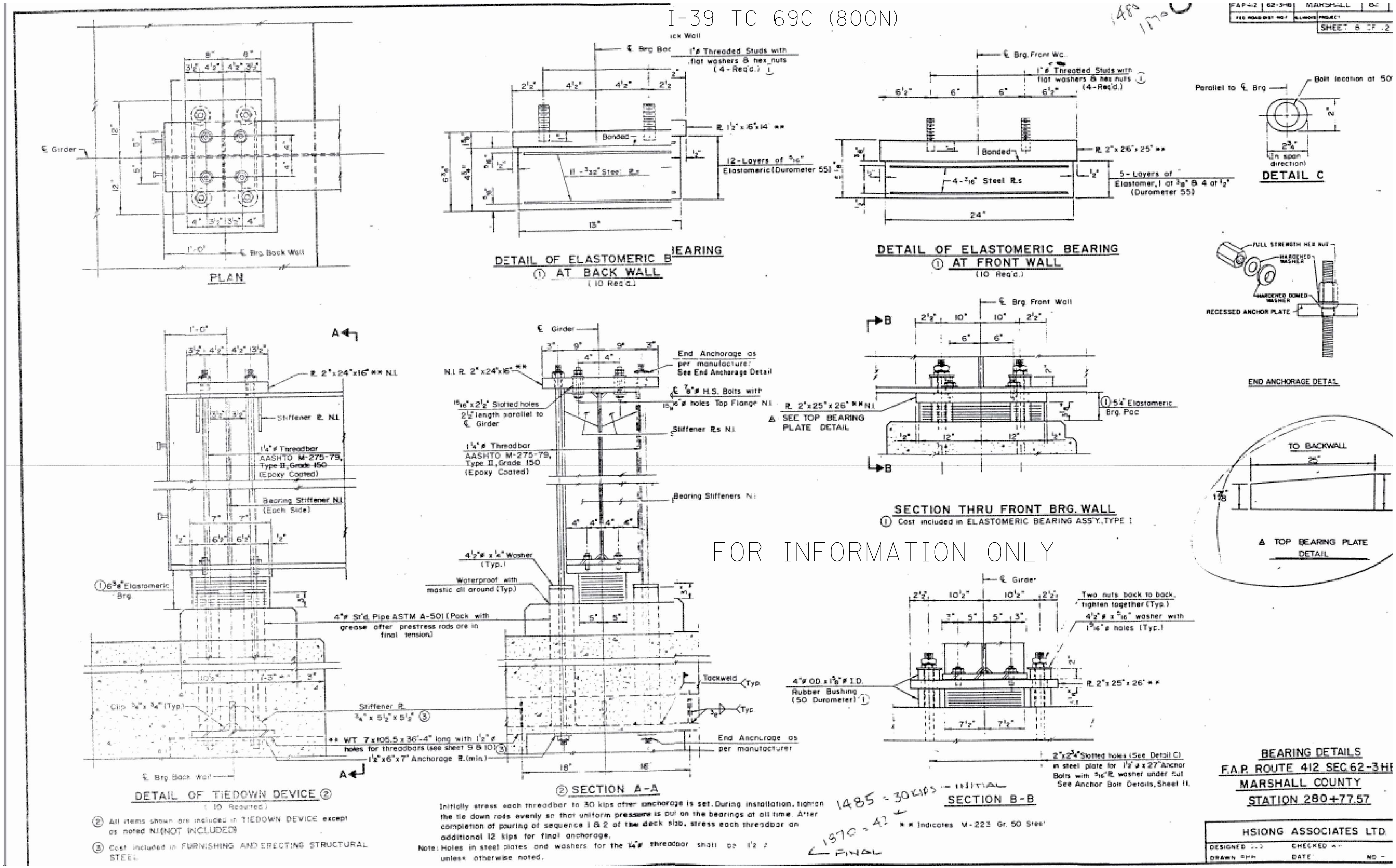
LOCATION 2 SN 062-0049
BEARING DETAILS

SCALE: | SHEET 5 OF 6 SHEETS | STA. | TO STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
VAR	D-4 BRIDGE PAINTING 2022	"	51	19
		CONTRACT NO. 68G57		
	ILLINOIS FED. AID PROJECT			

SN 062-0049

I-39 TC 69C (800N)



PLAN
DETAIL OF ELASTOMERIC BEARING
① AT BACK WALL
(10 Req'd.)
DETAIL OF ELASTOMERIC BEARING
① AT FRONT WALL
(10 Req'd.)
DETAIL C
END ANCHORAGE DETAIL
SECTION THRU FRONT BRG. WALL
① Cost included in ELASTOMERIC BEARING ASS'Y., TYPE I
TOP BEARING PLATE DETAIL
DETAIL OF TIEDOWN DEVICE ②
(10 Required)
② SECTION A-A
SECTION B-B
② All items shown are included in TIEDOWN DEVICE except as noted N.I.(NOT INCLUDED)
③ Cost included in FURNISHING AND ERECTING STRUCTURAL STEEL
Initially stress each threadbar to 30 kips after anchorage is set. During installation, tighten the tie down rods evenly so that uniform pressure is put on the bearings at all time. After completion of pouring of sequence 1 & 2 of the deck slab, stress each threadbar an additional 12 kips for final anchorage.
Note: Holes in steel plates and washers for the 1¼"ø threadbar shall be 1½"ø unless otherwise noted.
** Indicates M-223 Gr. 50 Steel
BEARING DETAILS
F.A.P. ROUTE 412 SEC. 62-3HB
MARSHALL COUNTY
STATION 280+77.57
HSIONG ASSOCIATES LTD.

FOR INFORMATION ONLY

USER NAME = $USER$	DESIGNED -	REVISED -	
	DRAWN -	REVISED -	
PLOT SCALE = $SCALE$	CHECKED -	REVISED -	
PLOT DATE = $DATE$	DATE -	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

LOCATION 2 SN 062-0049
BEARING DETAILS

SCALE: SHEET 6 OF 6 SHEETS STA. TO STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
VAR	D-4 BRIDGE PAINTING 2022		51	20
		CONTRACT NO. 68G57		
		ILLINOIS FED. AID PROJECT		

MODEL: $MODELNAME$
FILE NAME: $FILE$

F.A.P. 412		Marshall	12.9	110B
FED. ROAD DIST. NO. 3	ILLINOIS	PROJECT		

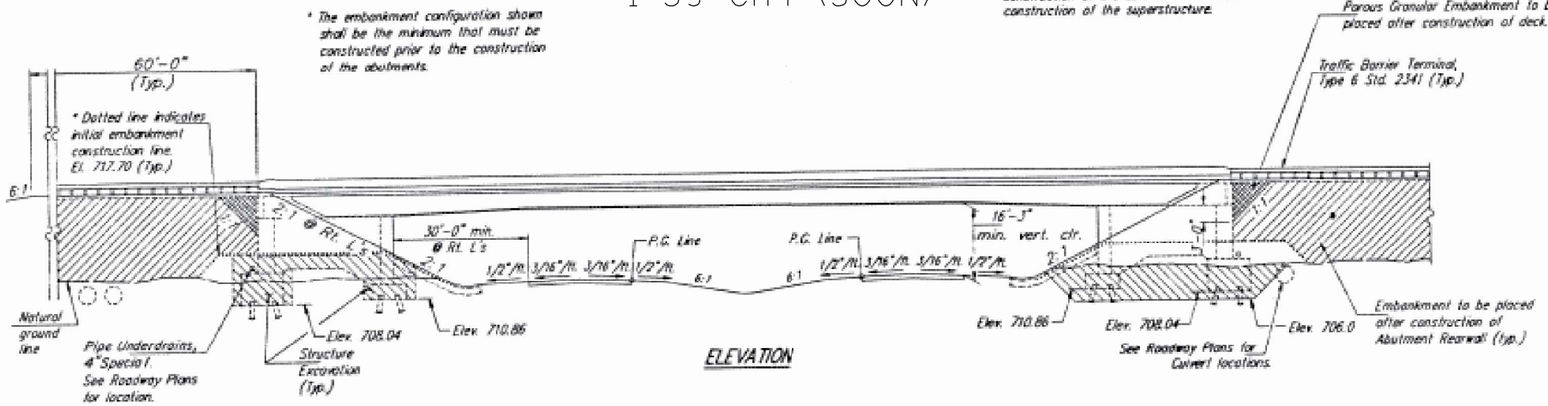
SN 062-0053
I-39 CH4 (500N)

Bench Mark: #302-A, Sta. 121+43.46, 163.2' Lt.
R.R. Spike in East Twin Power Pole, Elev. 712.86

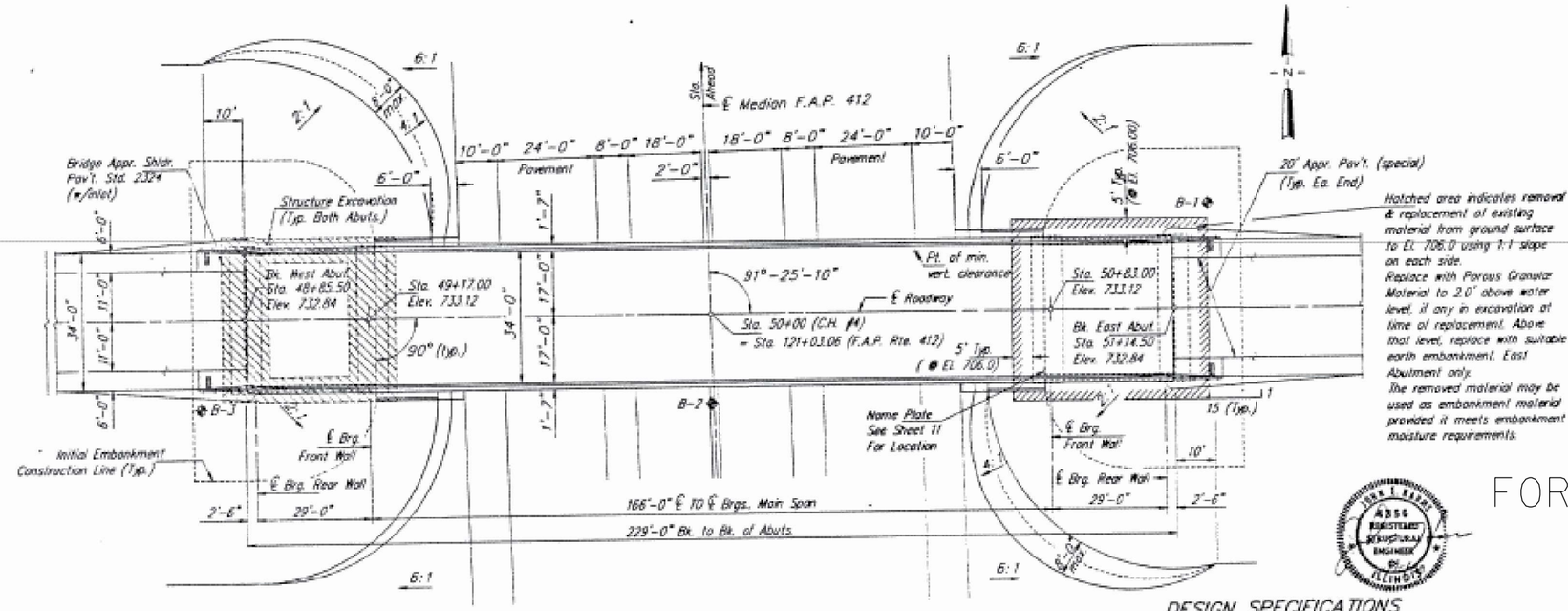
Existing Structure: None

* The embankment configuration shown shall be the minimum that must be constructed prior to the construction of the abutments.

Note: Hatched area indicates embankment placement after construction of abutment. Grass-hatched area indicates a portion of the embankment to be placed after construction of the abutment and after construction of the superstructure.



ELEVATION



PLAN

GENERAL NOTES

1. See Sheet 3 Of 13 for Boring Data.
2. Fasteners shall be High Strength Bolts. Bolts 7/8" Dia., Open Holes 15/16" Dia., unless otherwise noted.
3. Calculated weight of AASHTO M-223, Grade 50 Structural Steel= 120,494 Lbs. Calculated weight of AASHTO M-183 Structural steel= 163,988 Lbs.
4. The Zinc-Silicate and Vinyl Paint System shall be used for shop and field painting of structural except where otherwise noted.
5. Field welding of construction accessories will not be permitted to the bottom flange of the girders nor to the top flange of the girders in Spans 1 and 3, nor to the top flange in Span 2 for a distance equal to one-fourth the span length from the abutment front walls. Field welding in other areas will be permitted only when approved by the Engineer.
6. Anchor Bolts shall be set before erecting cross frames over abutment front walls.
7. The main load carrying components subject to tensile stress shall conform to the Supplemental Requirements for Notch Toughness Zone 2. These components are the tension flanges, webs and all splice plate material of the steel girders.
8. Reinforcement Bars shall conform to the requirements of AASHTO M-31, M-42 or M-53 Grade 60.
9. Slope Wall shall be reinforced with Welded Wire Fabric, 6" x 6" - W4.0 x W4.0, weighing 58 Lbs. per 100 Sq. Ft.
10. Bearing Seat Surfaces shall be constructed or adjusted to the designated elevations within a tolerance of 1/8 inch. Adjustment shall be made either by grinding the surface or by shimming the bearing. Two 1/8" adjusting shims shall be provided for each bearing. See Sheet 9 of 13 for shim plate size. The shim plates are considered incidental to the Elastomeric Bearing and are not included in the structural steel quantities.
11. The Contractor shall drive two concrete test piles in permanent locations, one at the West Abutment back wall and one at the East Abutment front wall, as directed by the Engineer, before ordering the remainder of piles.
12. All structural steel fabricators performing work on the main load carrying components of steel structures shall be certified under Category III of the Quality Certification Program.
13. Rubbed finish shall be applied to the fascia and all exposed surfaces of the abutments to 1 ft. below final grade. See Sheets 5 and 11 of 13.

FOR INFORMATION ONLY

APPROVED
FOR STRUCTURAL ADEQUACY ONLY
Registered Structural Engineer

DESIGN SPECIFICATIONS

AASHTO (1983) and 1984, 1985 Interims with exceptions or modifications as indicated.

LOADING HS20-44

Allow 25#/sq. ft. for future wearing surface.

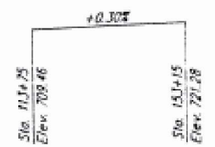
DESIGN STRESSES

f'c = 3,500 psi
fy = 60,000 psi (reinforcement)
fy = 50,000 psi Flanges (Structural steel AASHTO M223, Grade 50)
fy = 36,000 psi Web (Structural steel AASHTO M183)

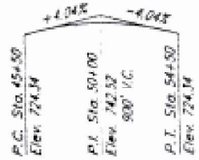
Max. range of temperature = 120°F(-10°F to 110°F).

STATION 121+03.06
BUILT 19__ BY
STATE OF ILLINOIS
F.A.P. RT. 412 SEC. 62-2HB-1
LOADING HS20
STR. NO. 062-0053

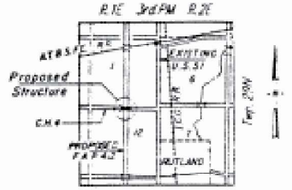
NAME PLATE
See Std. 2113



PROFILE GRADE (F.A.P. 412)
(along median edge of pavement)



PROFILE GRADE (C.H. #4)
(along ℄ roadway)



LOCATION SKETCH

GENERAL PLAN & ELEVATION
C.H. 4 OVER F.A.P. ROUTE 412
F.A.P. ROUTE 412 - SEC. 62-2HB-1
MARSHALL COUNTY
STATION 121+03.06
STRUCTURE NUMBER 062-0053

DESIGNED	T.E.B.	FILE NO.	8652011
DRAWN	J.E.H.	DATE	11-15-88
CHECKED	D.A.N.		
DATE	T.E.H.		

HANSON WILSON INCORPORATED
SPRINGFIELD, ILLINOIS - SALINA, KANSAS

USER NAME = $USERS	DESIGNED -	REVISED -	
	DRAWN -	REVISED -	
PLOT SCALE = $SCALES	CHECKED -	REVISED -	
PLOT DATE = $DATES	DATE -	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

LOCATION 3 SN 062-0053
PLAN & ELEVATION VIEW

SCALE: | SHEET 1 OF 5 SHEETS | STA. | TO STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
VAR	D-4 BRIDGE PAINTING 2022	"	51	21
		CONTRACT NO. 68G57		
		ILLINOIS	FED. AID PROJECT	

MODEL: $MODELNAME$
FILE NAME: $FILES

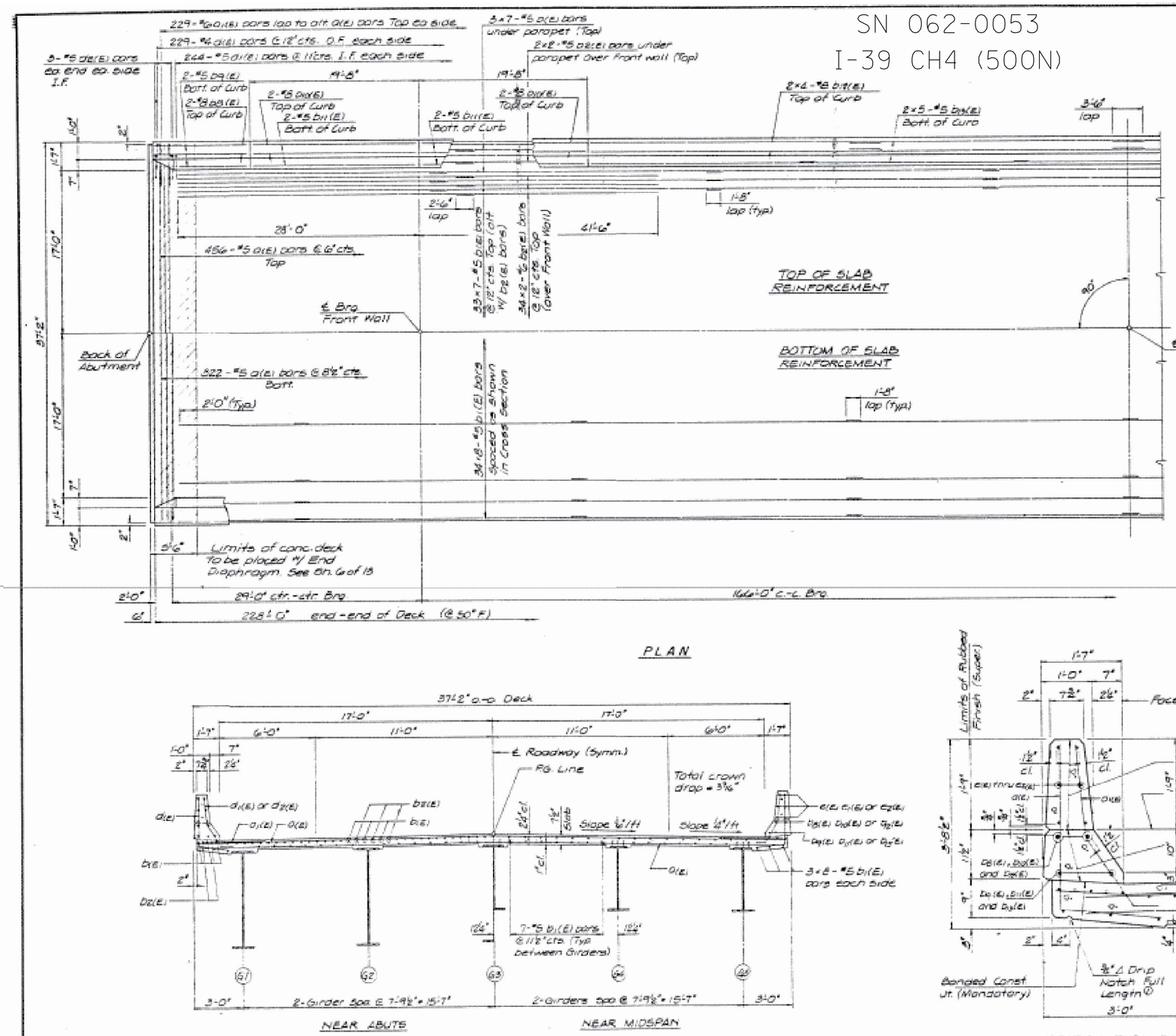
*WOODFORD AND MARSHALL

SN 062-0053

I-39 CH4 (500N)

ROUTE NO.	SEC.	COUNTY	TOTAL SHEETS	SHEET NO.
F.A.P. 412	*	Marshall	129	11-E
FED. ROAD DIST. NO. 7	ILLINOIS	PROJECT		

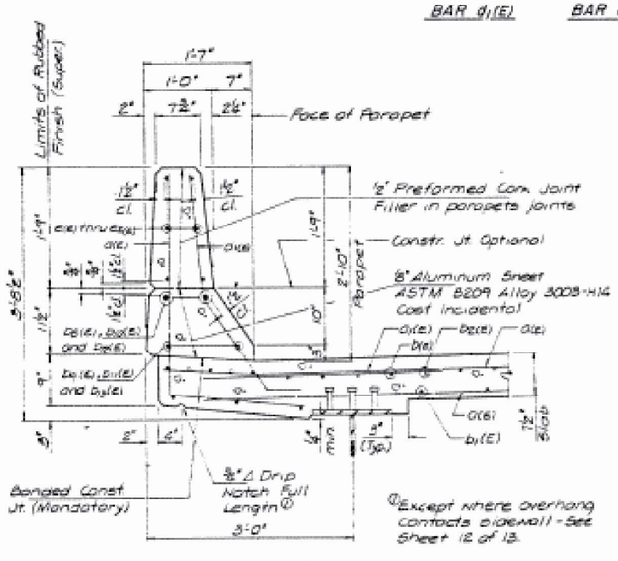
Sheet 5 of 13



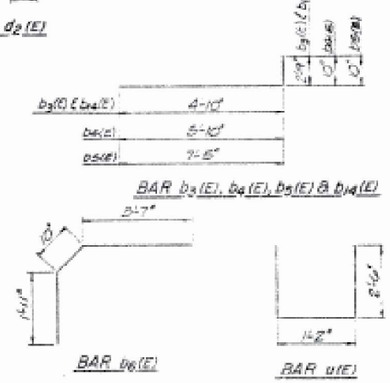
PLAN

BILL OF MATERIAL

Bar	No.	Size	Length	Shape
a(E)	778	#5	36'-6"	
a1(E)	456	#6	41'-0"	
a2(E)	32	#6	34'-4"	
b2(E)	273	#5	33'-3"	
b1(E)	272	#5	29'-3"	
b2(E)	152	#6	36'-10"	
b3(E)	70	#5	9'-7"	
b6(E)	64	#5	6'-8"	
b5(E)	64	#5	6'-3"	
b4(E)	62	#5	6'-2"	
b7(E)	16	#5	2'-10"	
b8(E)	8	#5	11'-0"	
b9(E)	8	#5	11'-0"	
b10(E)	12	#5	19'-4"	
b11(E)	16	#5	19'-4"	
b12(E)	16	#5	34'-3"	
b13(E)	20	#5	26'-8"	
b14(E)	68	#6	7'-7"	
d(E)	458	#6	5'-0"	
d1(E)	486	#5	3'-10"	
d2(E)	12	#5	3'-7"	
e(E)	84	#6	11'-0"	
e1(E)	48	#6	19'-4"	
e2(E)	96	#6	15'-6"	
u(E)	64	#5	6'-2"	
Class 'X' Conc. Super.		Cu Yds.	283.3	
Reinf. Bars Epox. Cntd.		Lbs.	72,050	



SECTION THRU PARAPET



NEAR ABUTS — NEAR MIDSPAN

CROSS SECTION

FOR INFORMATION ONLY

SUPERSTRUCTURE
C.H. 4 OVER F.A.P. ROUTE 412
F.A.P. ROUTE 412 - SEC. 62-2HB-1
MARSHALL COUNTY
STATION 121+03.06
STRUCTURE NUMBER 062-0053

TEB
TEH
RDD
TEH

HANSON WILSON INCORPORATED

8/5/2011
11-15-88

USER NAME = $USERS	DESIGNED -	REVISED -
	DRAWN -	REVISED -
PLOT SCALE = $SCALES	CHECKED -	REVISED -
PLOT DATE = $DATES	DATE -	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

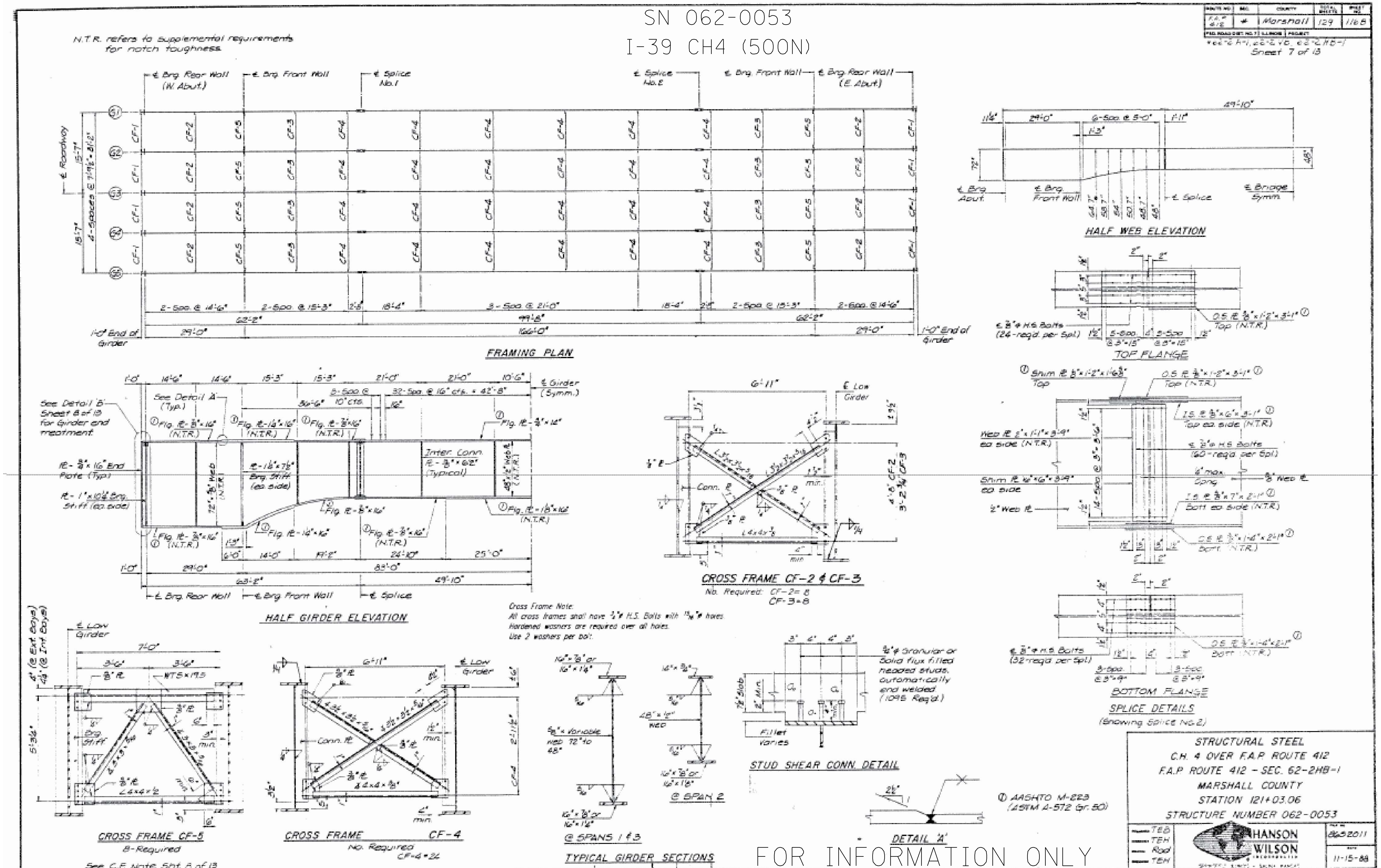
LOCATION 3 SN 062-0053
SUPERSTRUCTURE PLAN & CROSS SECTION

SCALE: | SHEET 2 OF 5 SHEETS | STA. | TO STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
VAR	D-4 BRIDGE PAINTING 2022	*	51	22
			CONTRACT NO. 68G57	
		ILLINOIS	FED. AID PROJECT	

MODEL: $MODELNAME
FILE NAME: $FILEIN

*WOODFORD AND MARSHALL


SN 062-0053
I-39 CH4 (500N)
N.T.R. refers to supplemental requirements for notch toughness.
Sheet 7 of 13
FRAMING PLAN
HALF WEB ELEVATION
TOP FLANGE
HALF GIRDER ELEVATION
CROSS FRAME CF-2 & CF-3
Cross Frame Note:
All cross frames shall have 7/8"ø H.S. Bolts with 15/16"ø holes.
Hardened washers are required over all holes.
Use 2 washers per bolt.
BOTTOM FLANGE
SPLICE DETAILS
(Showing Splice No. 2)
CROSS FRAME CF-5
8-Required
See C.F. Note Sht. 8 of 13
CROSS FRAME CF-4
No. Required CF-4 = 24
TYPICAL GIRDER SECTIONS
STUD SHEAR CONN. DETAIL
DETAIL 'A'
① AASHTO M-223 (ASTM A-572 Gr. 50)
STRUCTURAL STEEL
C.H. 4 OVER F.A.P. ROUTE 412
F.A.P. ROUTE 412 - SEC. 62-2HB-1
MARSHALL COUNTY
STATION 121+03.06
STRUCTURE NUMBER 062-0053
HANSON WILSON
11-15-88
FOR INFORMATION ONLY

USER NAME = $USER$	DESIGNED -	REVISED -	
	DRAWN -	REVISED -	
PLOT SCALE = $SCALE$	CHECKED -	REVISED -	
PLOT DATE = $DATE$	DATE -	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

LOCATION 3 SN 062–0053
FLAMMING PLAN

SCALE: SHEET 3 OF 5 SHEETS STA. TO STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
VAR	D-4 BRIDGE PAINTING 2022	*	51	23
		CONTRACT NO. 68G57		
		ILLINOIS FED. AID PROJECT		

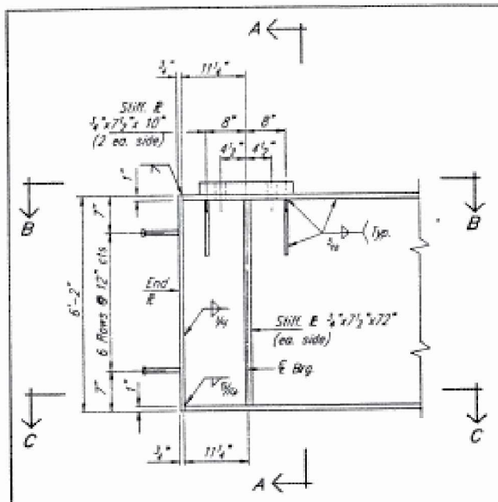
*WOODFORD AND MARSHALL

MODEL: $MODELNAME$
FILE NAME: $FILEL$

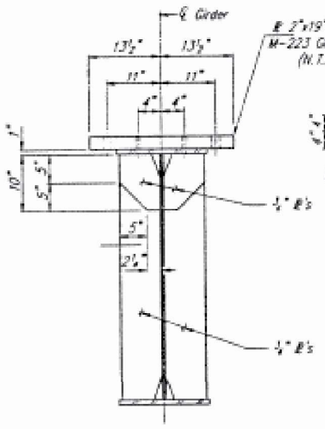
ROUTE NO.	SEC.	COUNTY	TOTAL SHEETS	SHEET NO.
F.A.P. 412	*	Marshall	129	1175
FED. ROAD DIST. NO. 1	ILLINOIS	PROJECT		

(* 62-2R-1, 62-2VB, 62-2HB-1)
Sheet 8 of 13

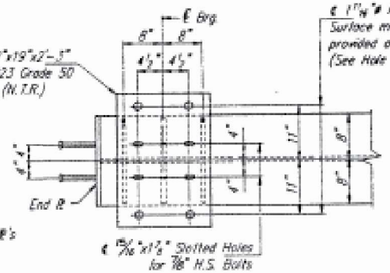
SN 062-0053
I-39 CH4 (500N)



DETAIL B

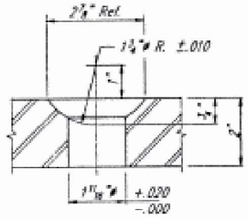


SECTION A-A

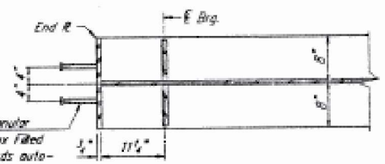


SECTION B-B

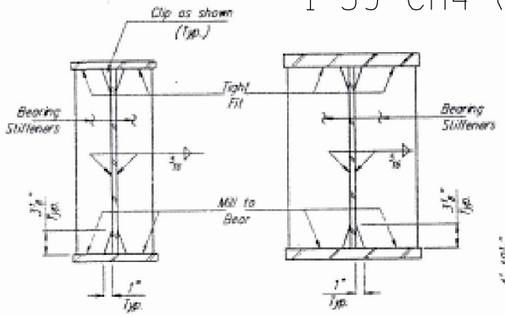
℄ 1 11/16" ø Holes for Epoxy Coated Prestressing Bars. Surface must be compatible with the nuts provided as part of the Tie Down Devices. (See Hole Detail)



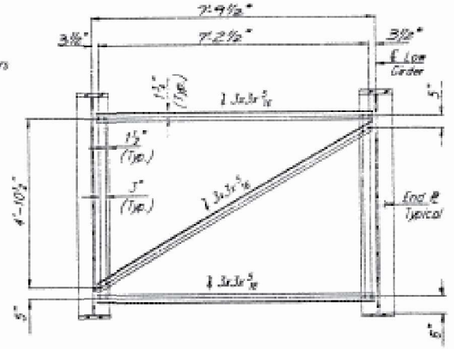
HOLE DETAIL



SECTION C-C



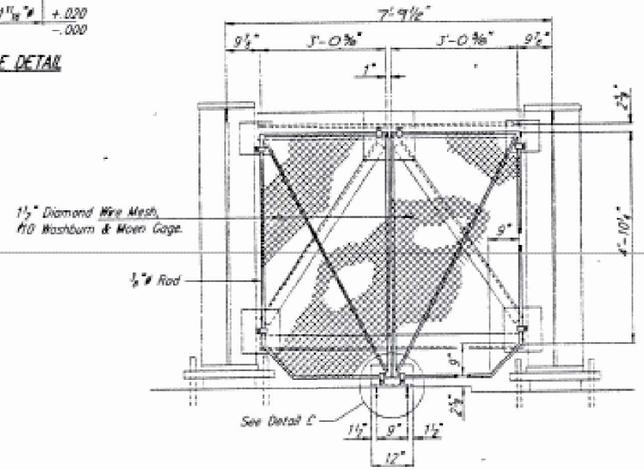
BRG. STIFFENER DETAILS



CROSS FRAME CF-1

(8 - Required)

Cross Frame Note:
Cross Frame CF-1 shall be removed after backwall is in place. Fill holes with ⅞" H.S. Bolts.



SCREEN PANEL ELEVATION

Looking toward Front of Front Wall
(8 Req'd - See Special Provisions)

Screen Panel Notes:

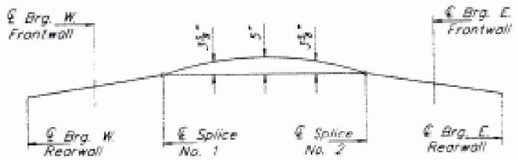
1. All materials shall be galvanized.
2. One Accessible screen panel shall be provided at each front wall.

INT. GIRDER MOMENT TABLE			
		℄ Brg. E. & W. Frtwall	.5 Span 2
Is	(in⁴)	73,095	21,045
Ic (n=27)	(in⁴)	——	38,555
Ic (n=9)	(in⁴)	——	53,115
Ss	(in³)	1,962	976
Sc (n=27)	(in³)	——	1,208
Sc (n=9)	(in³)	——	1,314
Q	(K/ft.)	1.410	.980
MQ	(ft.-K)	3,189	976
SQ	(K/ft.)	——	.360
MSQ	(ft.-K)	——	451
MA	(ft.-K)	1,212	1,021
MDW	(ft.-K)	272	176
½ (MA+1)	(ft.-K)	2,473	1,995
Mo	(ft.-K)	7,361	4,449
Mu	(ft.-K)	7,406	——
fs @ non-comp	(k.s.i.)	19.5	12.0
fs @ (comp.)	(k.s.i.)	——	4.5
fs ½ (MA+1)	(k.s.i.)	15.1	18.2
fs (overload)	(k.s.i.)	34.6	34.7
fs (TOTAL)	(k.s.i.)	——	45.1
R x Fy	(k.s.i.)	——	48.6
VR	(K)	——	54

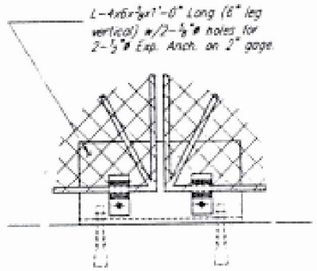
Notes:
Is and Ss are the Moment of Inertia and Section Modulus of the steel section.
Ic and Sc are the Moment of Inertia and Section Modulus of the composite section used in computing fs for bottom flange.
VR is the maximum ℄ + Impact Shear Range in span used to determine Shear Connector spacing.
Mo (Applied Moment) = 1.3[MQ+MSQ+½(MA+1)]
Mu moment capacity according to AASHTO 10.53.1.3
fs (Total) is the sum of the stresses due to 1.3[MQ+½(MA+1)]
fs (Overload) is the sum of the stresses due to MQ+½(MA+1)
R Hybrid Girder Reduction according to AASHTO 10.53.2

INTERIOR GIRDER REACTION TABLE					
		℄ Brg. W. Rearwall	℄ Brg. W. Frtwall	℄ Brg. E. Frtwall	℄ Brg. E. Rearwall
R DW	(K)	-75.5	241.5	241.5	-75.5
R A	(K)	-45.4	105.0	105.0	-45.4
Imp.	(K)	-13.6	23.6	23.6	-13.6
R TOTAL	(K)	-134.5	370.1	370.1	-134.5

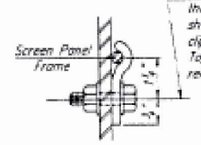
TOP OF WEB ELEVATIONS (For Fabrication Only)			
	Girders 1 & 5	Girders 2 & 4	Girder 3
℄ Brg. W. Rearwl.	731.61	731.76	731.88
℄ Brg. W. Frtwl.	731.99	732.14	732.26
℄ Splice #1	732.44	732.58	732.70
℄ Splice #2	732.44	732.58	732.70
℄ Brg. E. Frtwl.	731.99	732.14	732.26
℄ Brg. E. Rearwl.	731.61	731.76	731.88



CAMBER DIAGRAM



DETAIL C



CLIP-SIDE VIEW

(8-Req'd./Panel)

℄-¾" bolt, before spoiling the threads the contractor shall verify that the side clips will act as hinges. Top & Bolt. Clips shall be removable.

FOR INFORMATION ONLY

STRUCTURAL STEEL DETAILS
C.H. 4 OVER F.A.P. ROUTE 412
F.A.P. ROUTE 412 - SEC. 62-2HB-1
MARSHALL COUNTY
STATION 121+03.06
STRUCTURE NUMBER 062-0053

DESIGNED	T.E.H.	
CHECKED	C.P.M.	
DRAWN	D.A.N.	
TRACED	T.E.H.	

HANSON WILSON INCORPORATED
SPRINGFIELD, ILLINOIS - SALINA, KANSAS

86520††
11-15-85

MODEL: SMODELNAMES
FILE NAME: SFILES

USER NAME = SUSERS	DESIGNED -	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION
	DRAWN -	REVISED -	
PLOT SCALE = SSCALES	CHECKED -	REVISED -	
PLOT DATE = SDATES	DATE -	REVISED -	

LOCATION 3 SN 062-0053
STRUCTURAL STEEL DETAILS
SCALE: | SHEET 4 OF 5 SHEETS | STA. | TO STA.

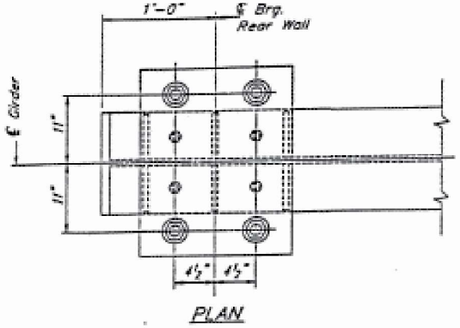
F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
VAR	D-4 BRIDGE PAINTING 2022	*	51	24
		CONTRACT NO. 68G57		
	ILLINOIS FED. AID PROJECT			

*WOODFORD AND MARSHALL

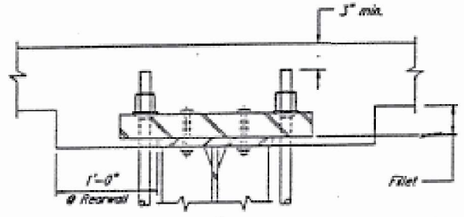
SN 062-0053
I-39 CH4 (500N)

F.A.P. 412	*	Marshall	129	(18C)
FED. ROAD DIST. NO. 7	ILLINOIS	PROJECT		

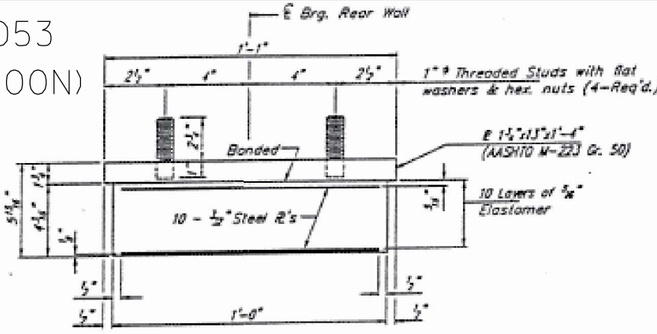
* 62-2A-1, 62-2VE, 62-2HB-1
Sheet 9 of 13



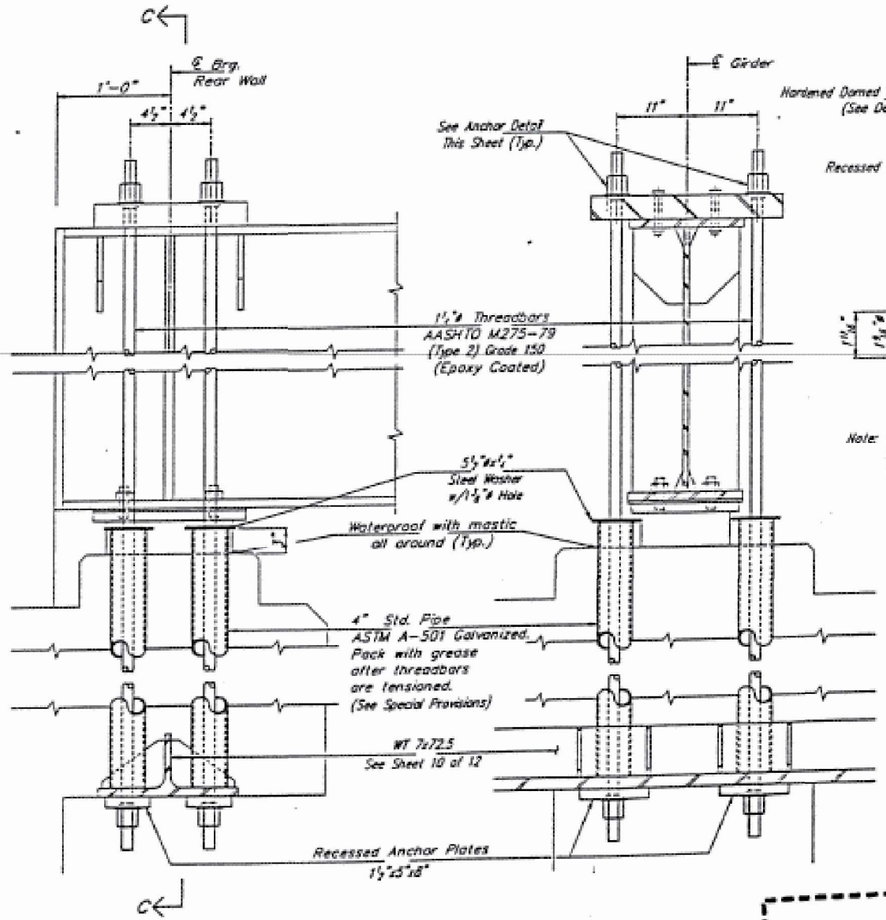
PLAN



FILLET DETAIL AT REARWALL
(5'-0" in Length)



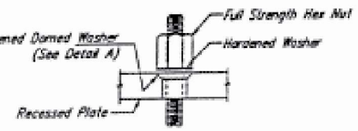
BEARING ASSEMBLY
(10 - Required)



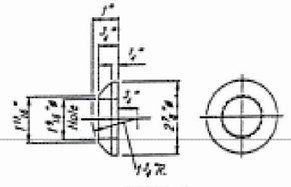
TIEDOWN DEVICE

Initially stress each threadbar to 32 kips after anchorage is set. After completion of Pouring Sequence 1 and 2 at the deck slab stress each threadbar an additional 11 kips.

SECTION C-C

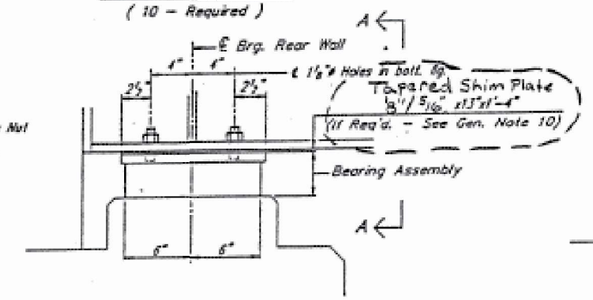


ANCHOR DETAIL

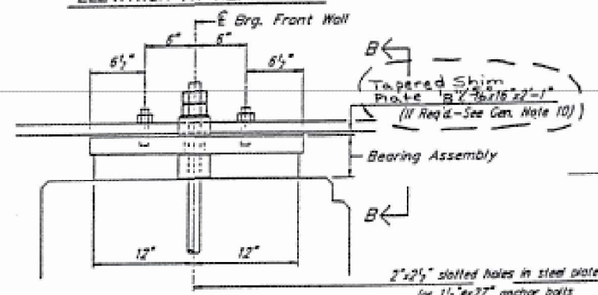


DETAIL A

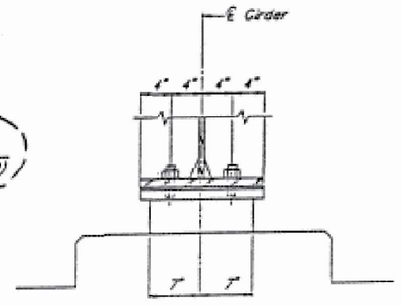
Note: Material to meet the Chemical and Mechanical Requirements of F436 for "Hardened Steel Washers".



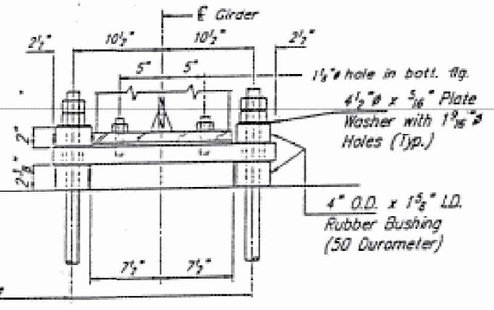
ELEVATION AT REAR WALL



ELEVATION AT FRONT WALL

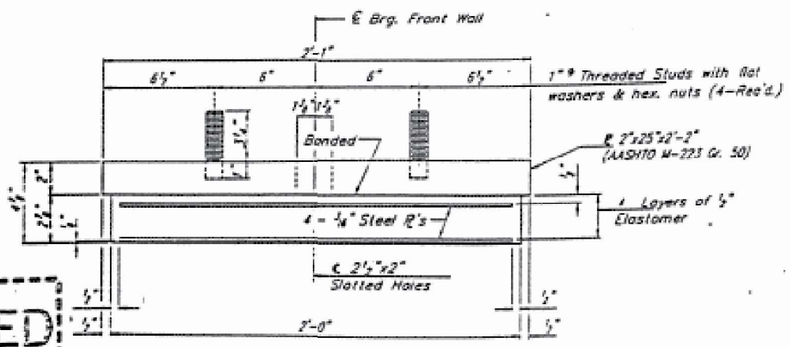


SECTION A-A



SECTION B-B

2"x2½" slotted holes in steel plate for 1½"ø x27" anchor bolts with ⅝" plate washer.



BEARING ASSEMBLY
(10 - Required)

BILL OF MATERIAL

Item	Unit	Total
Tiedown Device	Each	10
Elastomeric Bearing Assembly Type I	Each	20

BEARINGS & TIEDOWNS
CH. 4 OVER F.A.P. ROUTE 412
F.A.P. ROUTE 412 - SEC. 62-2HB-1
MARSHALL COUNTY
STATION 121+03.06
STRUCTURE NUMBER 062-0053

T.E.H.
C.P.M.
D.A.K.
T.E.H.

HANSON WILSON
SPRINGFIELD, ILLINOIS - SALINA, KANSAS

DATE 8552011
DATE 11-15-88

AS REVISED

FOR INFORMATION ONLY

MODEL: $MODELNAME$
FILE NAME: $FILE$

USER NAME = $USER$	DESIGNED -	REVISED -
	DRAWN -	REVISED -
PLOT SCALE = $SCALE$	CHECKED -	REVISED -
PLOT DATE = $DATE$	DATE -	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

LOCATION 3 SN 062-0053
BEARING DETAILS

SCALE: | SHEET 5 OF 5 SHEETS | STA. | TO STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
VAR	D-4 BRIDGE PAINTING 2022	*	51	25
		CONTRACT NO. 68G57		
	ILLINOIS FED. AID PROJECT			

*WOODFORD AND MARSHALL

SN 062-0054

I-39 FAS 369 (400N)

ROUTE NO.	SEC.	COUNTY	TOTAL SHEETS	SHEET NO.
F.A.P. 412	*	Marshall	51	22
SPEC. ROAD DIST. NO. 7	ILLINOIS	PROJECT PID-412-3144		

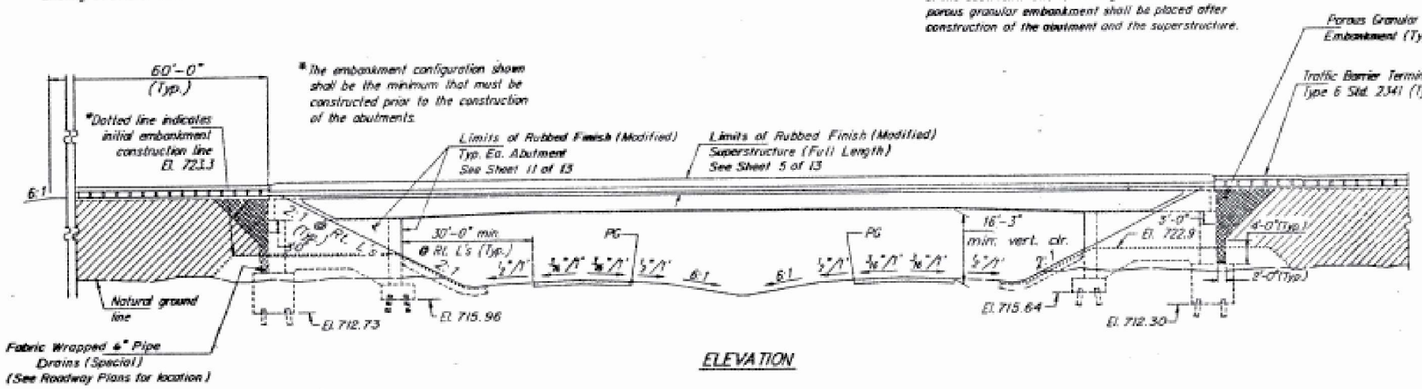
*Sec. 62-2HB

Sheet 1 of 13

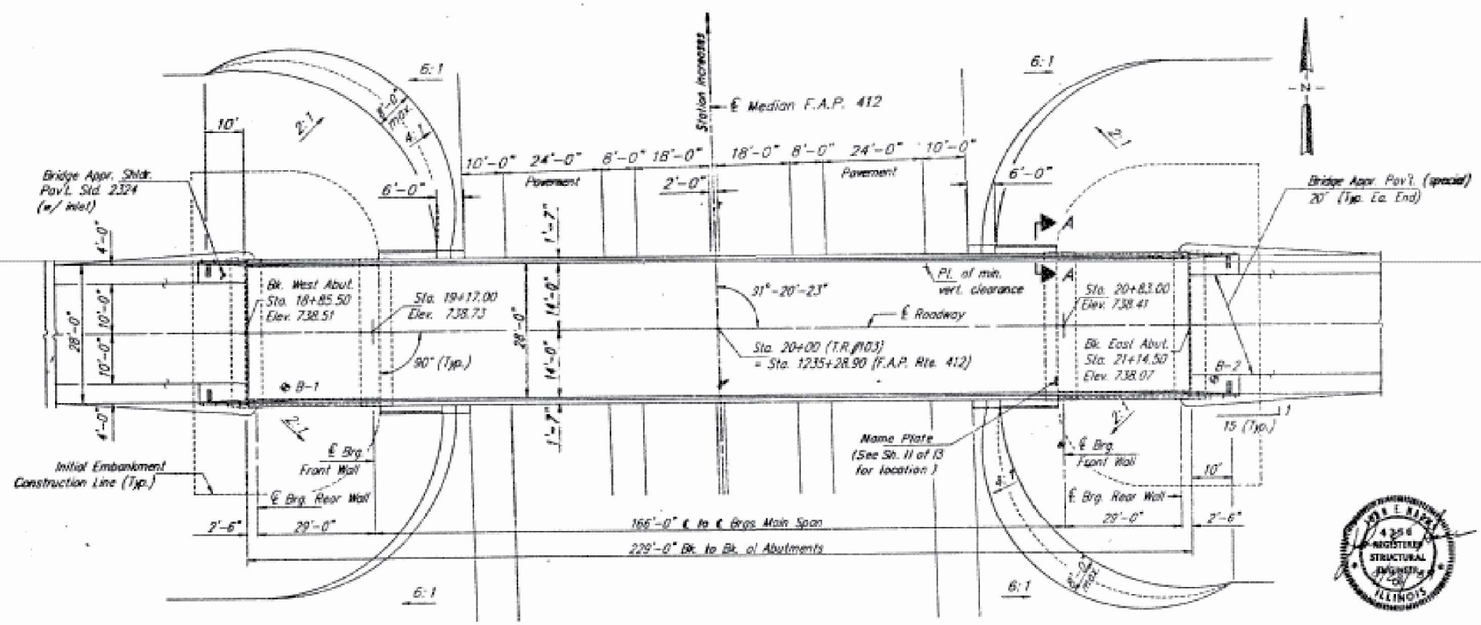
Bench Mark: #293-A; Sta. 1235+00; 66.0' Lt.
R.R. Spike in North Side of Brace Pole; Elev. 715.68

Existing Structure: None

Note: The embankment (hatched area) and porous granular embankment (cross-hatched area) up to 3 ft. below the abutment seat shall be placed after construction of the abutment. The remaining embankment and porous granular embankment shall be placed after construction of the abutment and the superstructure.



ELEVATION

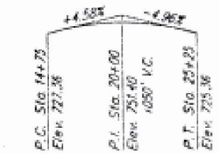


PLAN

1235+28.90
BUILT 19__ BY
STATE OF ILLINOIS
F.A.P. RT. 412 SEC. 62-2HB
PROJECT PID-412-3144)
LOADING HS20
STR. NO. 062-0054

NAME PLATE
See Std. 2113

PROFILE GRADE (F.A.P. 412)
(along median edge of pavement)



PROFILE GRADE (T.R.103)
(along ℄ roadway)

GENERAL NOTES

1. See Sheet 3 of 13 for Boring Data.
2. Fasteners shall be High Strength Bolts. Bolts 7/8" Dia., Open Holes 15/16" Dia., unless otherwise noted.
3. For Erection:
   Calculated weight of AASHTO M-223, Grade 50 Structural Steel = 102,360 Lbs.
   Calculated weight of AASHTO M-183 Structural Steel = 126,290 Lbs.
   For Furnishing and Erection:
   Calculated weight of AASHTO M-183 Structural Steel = 6,220 Lbs.
4. The Zinc-Silicate and Vinyl Paint System shall be used for shop and field painting of structural except where otherwise noted.
5. Field welding of construction accessories will not be permitted to the bottom flange of the girders nor to the top flange of the girders in Spans 1 and 3 nor to the top flange in Span 2 for a distance equal to one-fourth the span length from the abutment front walls. Field welding in other areas will be permitted only when approved by the Engineer.
6. Anchor Bolts shall be set before bolting cross frames over abutment front walls.
7. The main load carrying components subject to tensile stress shall conform to the Supplemental Requirements for Notch Toughness Zone 2. These components are the tension flanges, webs and all splice plate materia of the steel girders.
8. Reinforcement Bars shall conform to the requirements of AASHTO M-31, M-42 or M-53 Grade 60.
9. Slope Wall shall be reinforced with Welded Wire Fabric, 6" x 6" - W4.0 x W4.0, weighing 58 Lbs. per 100 Sq. Ft.
10. Bearing Seat Surfaces shall be constructed or adjusted to the designated elevations within a tolerance of 1/8 inch. Adjustment shall be made either by grinding the surface or by shimming the bearing. Two 1/8" adjusting shims shall be provided for each bearing. See Sheet 9 of 13 for shim plate size. The shim plates are considered incidental to the Elastomeric Bearing and are not included in the structural steel quantities.
11. The Contractor shall drive four concrete test piles in permanent locations, two at the West Abutment; each wall, and two at the East Abutment; each wall, as directed by the Engineer, before ordering the remainder of piles.
12. All structural steel fabricators performing work on the main load carrying components of steel structures shall be certified under Category 111 of the Quality Certification Program.
13. Rubbed finish (Modified) shall be applied to the fascia and all exposed surfaces of the abutments to 1 ft. below final grade. See Sheets 5 and 11 of 13.
14. See Special Provisions for Bridge Deck Grooving.

FOR INFORMATION ONLY

APPROVED
FOR STRUCTURAL ADEQUACY ONLY
Regional Structural Engineer

DESIGN SPECIFICATIONS

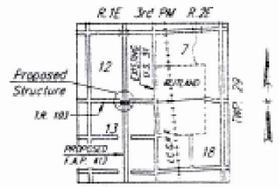
1983 AASHTO Specifications and 1984 thru 1986 Interims with exceptions or modifications as indicated.

LOADING HS20-44

Allow 25#/sq. ft. for future wearing surface.

DESIGN STRESSES

f'c = 3,500 psi
fy = 60,000 psi (reinforcement)
fy = 50,000 psi Flanges (Structural steel AASHTO M270, Grade 50)
fy = 36,000 psi Web (Structural steel AASHTO M183) Max. range temperature = 120°F. (-10° to 110° F.)



LOCATION SKETCH

GENERAL PLAN & ELEVATION
T.R. 103 OVER F.A.P. 412
F.A.P. ROUTE 412 - SEC. 62-2HB
MARSHALL COUNTY
STATION 1235+28.90
STRUCTURE NUMBER 062-0054

C.D.P.
M.D.M.
D.A.N.
M.D.M.

HANSON WILSON INCORPORATED
SPRINGFIELD, ILLINOIS - SALINA, KANSAS

8652011

9-20-89

USER NAME = $USERS	DESIGNED -	REVISED -
	DRAWN -	REVISED -
PLOT SCALE = $SCALES	CHECKED -	REVISED -
PLOT DATE = $DATES	DATE -	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

LOCATION 4 SN 062-0054
PLAN & ELEVATION VIEW

SCALE: | SHEET 1 OF 5 SHEETS | STA. | TO STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
VAR	D-4 BRIDGE PAINTING 2022	*	51	26
			CONTRACT NO. 68G57	
		ILLINOIS	FED. AID PROJECT	

*WOODFORD AND MARSHALL

MODEL: $MODELNAME$
FILE NAME: $FILEL$

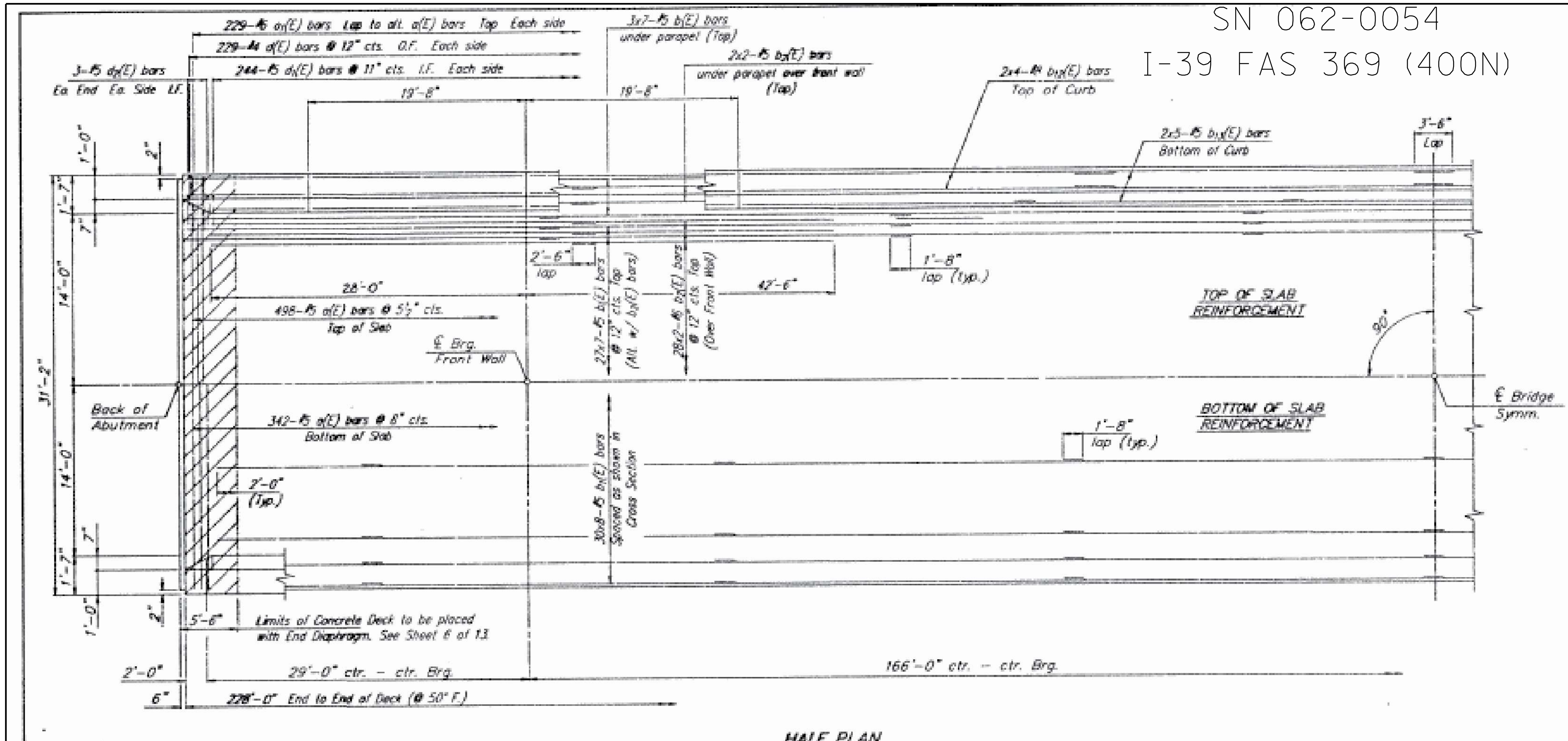
SN 062-0054

I-39 FAS 369 (400N)

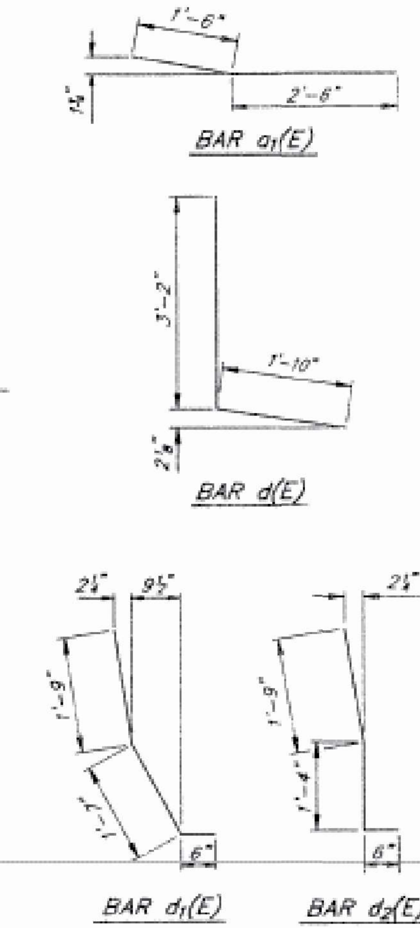
ROUTE NO.	SEC.	COUNTY	TOTAL SHEETS	SHEET NO.
F.A.P. 412	*	Marshall	56	26
FED. ROAD DIST. NO. 7	ILLINOIS	PROJECT		

*Sec. 62-2HB

Sheet 5 of 13

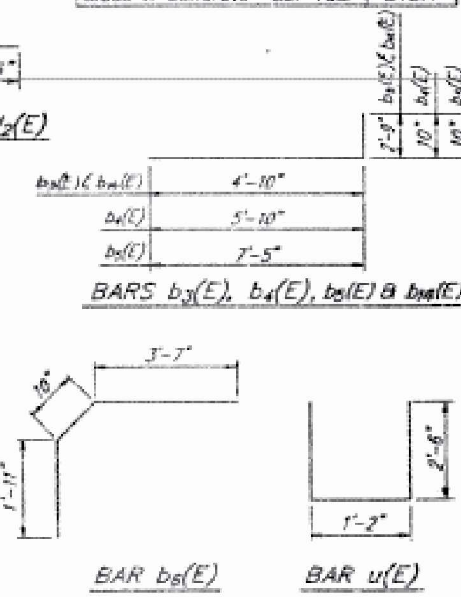


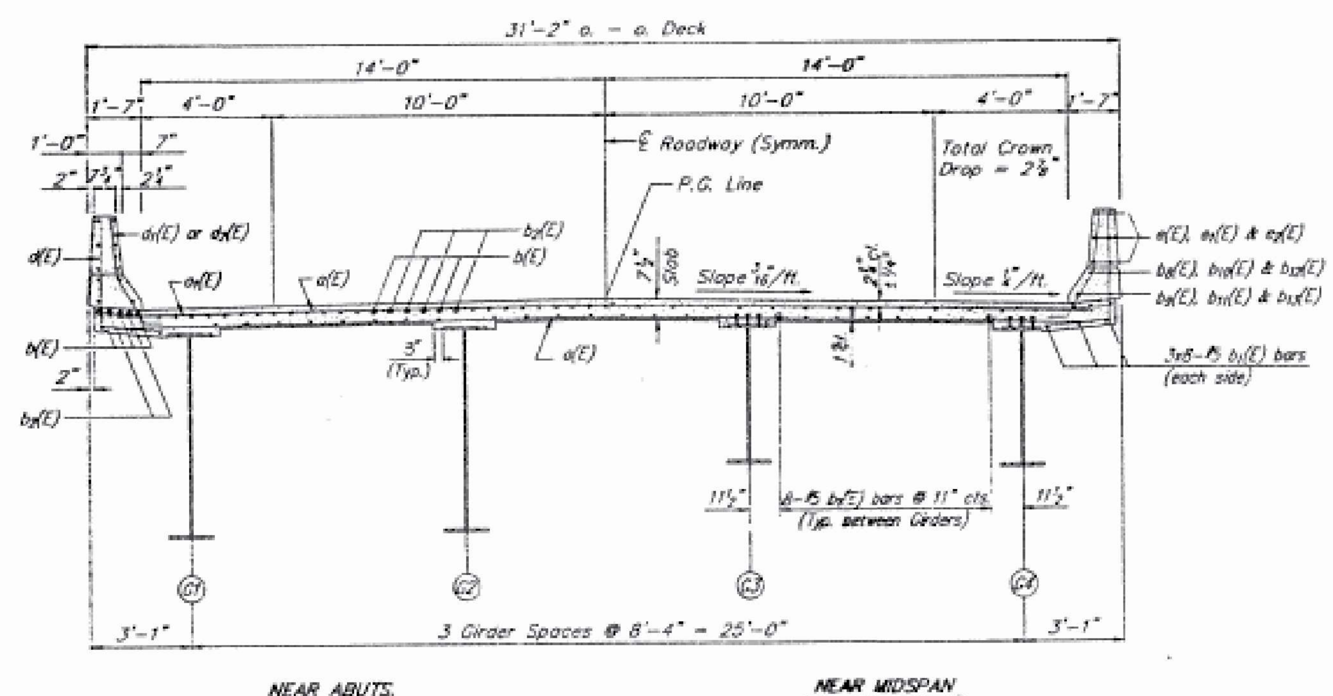
HALF PLAN



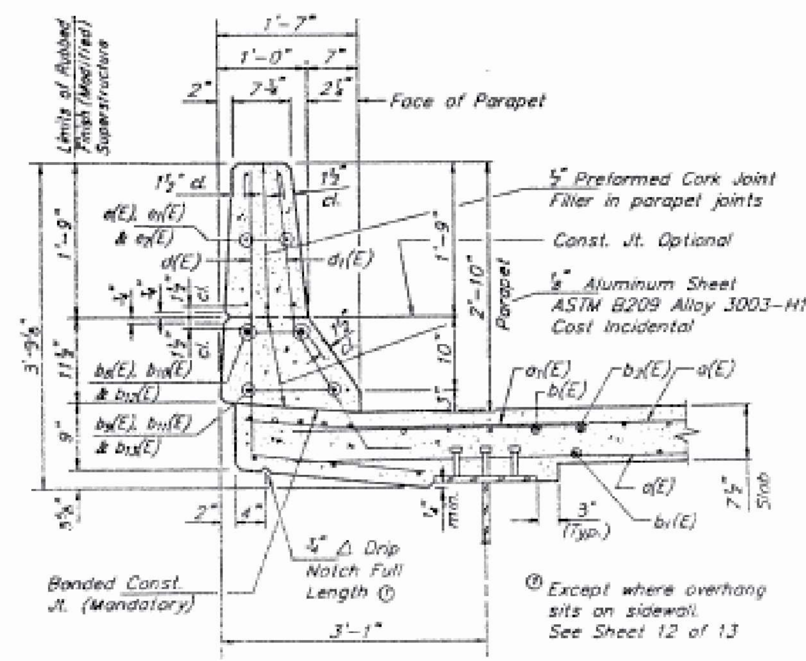
BILL OF MATERIAL

Bar	No.	Size	Length	Shape
a(E)	840	#5	30'-6"	
a_1(E)	458	#5	4'-0"	
a_2(E)	28	#6	30'-6"	
b(E)	231	#5	33'-3"	
b_1(E)	240	#5	29'-3"	
b_2(E)	128	#4	36'-6"	
b_3(E)	56	#5	7'-7"	
b_4(E)	56	#5	6'-8"	
b_5(E)	56	#5	8'-3"	
b_6(E)	56	#5	6'-4"	
b_7(E)	16	#5	4'-10"	
b_8(E)	8	#8	11'-0"	
b_9(E)	8	#5	11'-0"	
b_{10}(E)	16	#8	19'-4"	
b_{11}(E)	16	#5	19'-4"	
b_{12}(E)	16	#8	34'-3"	
b_{13}(E)	20	#5	26'-8"	
b_{14}(E)	56	#6	7'-7"	
d(E)	458	#4	5'-0"	
d_1(E)	488	#5	3'-10"	
d_2(E)	12	#5	3'-7"	
e(E)	24	#4	11'-0"	
e_1(E)	48	#4	19'-4"	
e_2(E)	96	#4	15'-6"	
u(E)	56	#5	6'-2"	
Reinf. Bars Epoxy Ctd. Lbs.				64,690
Class X Concrete Cu. Yds.				242.4





CROSS SECTION



SECTION THRU PARAPET

FOR INFORMATION ONLY

SUPERSTRUCTURE
T.R. 103 OVER F.A.P. 412
F.A.P. ROUTE 412 - SEC. 62-2HB
MARSHALL COUNTY
STATION 1235+28.90
STRUCTURE NUMBER 062-0054

C.D.P. / M.D.M. / D.A.H. / M.D.M.

HANSON WILSON INCORPORATED — SPRINGFIELD, ILLINOIS - SALINA, KANSAS

86S2011

9-20-89

USER NAME = $USER$	DESIGNED -	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	LOCATION 4 SN 062-0054 SUPERSTRUCTURE PLAN & CROSS SECTION
	DRAWN	REVISED -		
PLOT SCALE = $SCALE$	CHECKED -	REVISED -		
PLOT DATE = $DATE$	DATE -	REVISED -		SCALE: SHEET 2 OF 5 SHEETS STA. TO STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
VAR	D-4 BRIDGE PAINTING 2022	*	51	27
		CONTRACT NO. 68G57		
		ILLINOIS	FED. AID PROJECT	

*WOODFORD AND MARSHALL

MODEL: $MODELNAME$ FILE NAME: $FILEL$

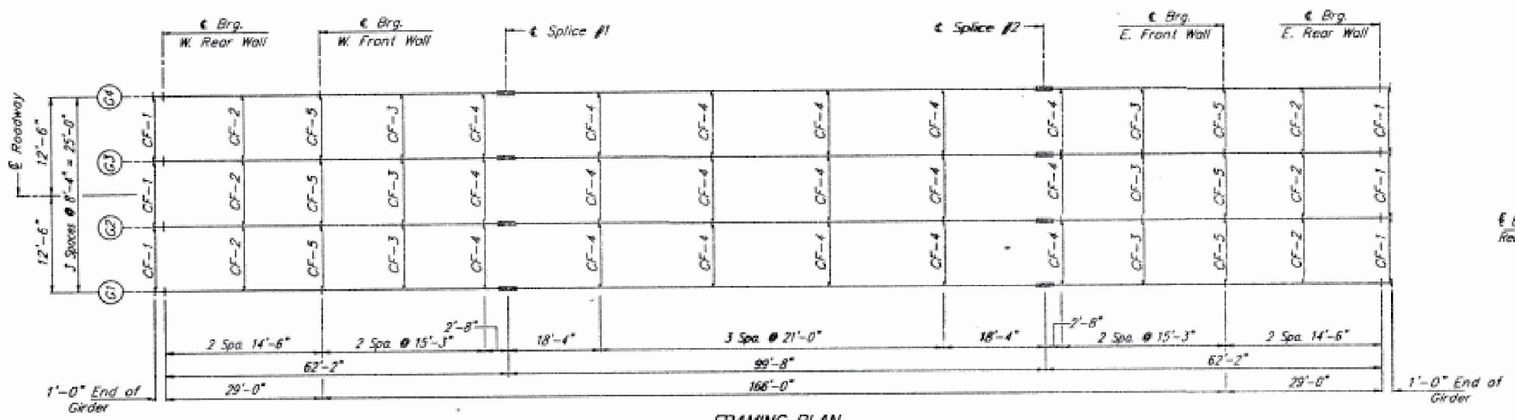
SN 062-0054

I-39 FAS 369 (400N)

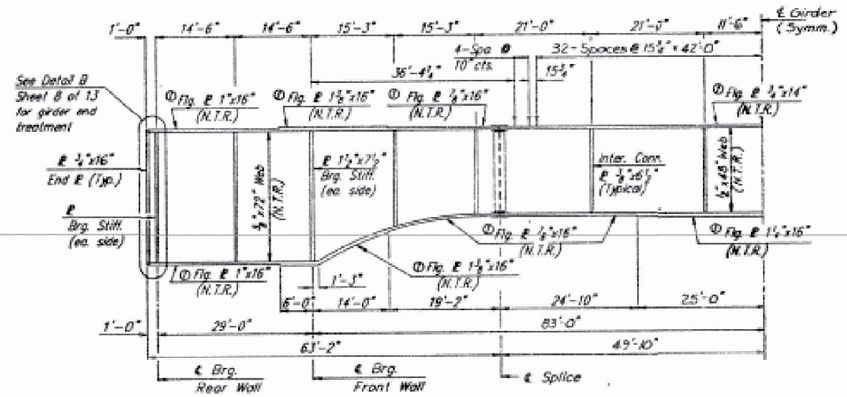
ROUTE NO.	SEC.	COUNTY	TOTAL SHEETS	SHEET NO.
F.A.P. 412	*	Marshall	56	28
FED. ROAD DIST. NO. 7	ILLINOIS	PROJECT E-97-442-97		

*Sec. 62-2HB

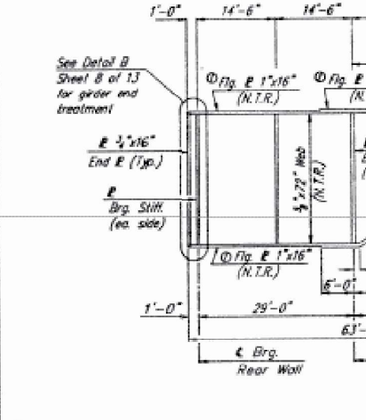
Sheet 7 of 13



FRAMING PLAN

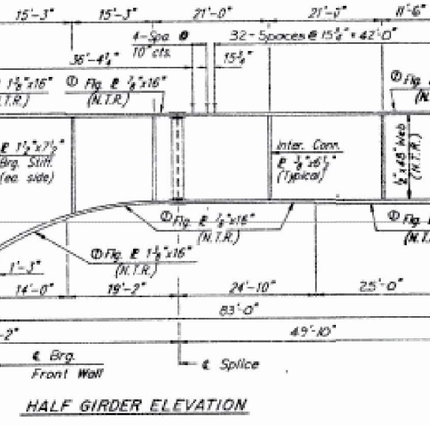


HALF GIRDER ELEVATION



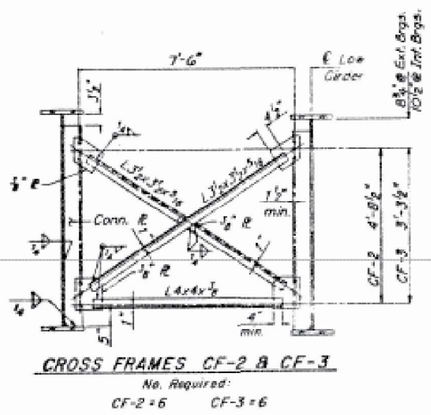
CROSS FRAME CF-5

6-Required



CROSS FRAME CF-4

18-Required

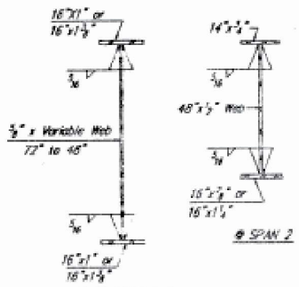


CROSS FRAMES CF-2 & CF-3

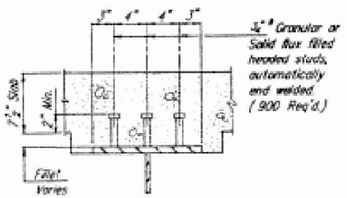
No. Required:

CF-2 = 6 CF-3 = 6

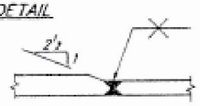
Cross Frame Note:
All cross frames shall have ⅞" H.S. Bolts with 15/16" ø holes. Hardened washers are required over all holes. Use 2 washers per bolt.



TYPICAL GIRDER SECTIONS



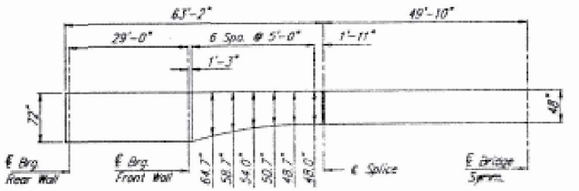
SHEAR STUD CONN. DETAIL



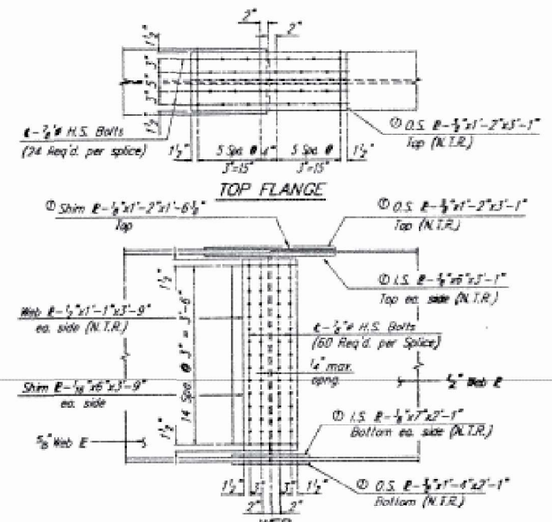
DETAIL A

FLANGE TRANSITION

① AASHTO M-223 (ASTM A-572 Grade 50)



HALF WEB ELEVATION



SPLICE DETAIL

STRUCTURAL STEEL
T.R. 103 OVER F.A.P. 412
F.A.P. ROUTE 412 - SEC. 62-2HB
MARSHALL COUNTY
STATION 1235+28.90
STRUCTURE NUMBER 062-0054

DESIGN	C.D.P.
DETAILED	M.D.M.
CHECKED	D.A.N.
QUANTITIES	M.D.M.

HANSON WILSON INCORPORATED
SPRINGFIELD, ILLINOIS - SALINA, KANSAS

FILE NO. 8652011
DATE 9-20-89

FOR INFORMATION ONLY

USER NAME = $USERS	DESIGNED -	REVISED -
	DRAWN -	REVISED -
PLOT SCALE = $SCALES	CHECKED -	REVISED -
PLOT DATE = $DATES	DATE -	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

LOCATION 4 SN 062-0054
FLAMMING PLAN

SCALE: | SHEET 3 OF 5 SHEETS | STA. | TO STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
VAR	D-4 BRIDGE PAINTING 2022	*	51	28
		CONTRACT NO. 68G57		
		ILLINOIS	FED. AID PROJECT	

*WOODFORD AND MARSHALL

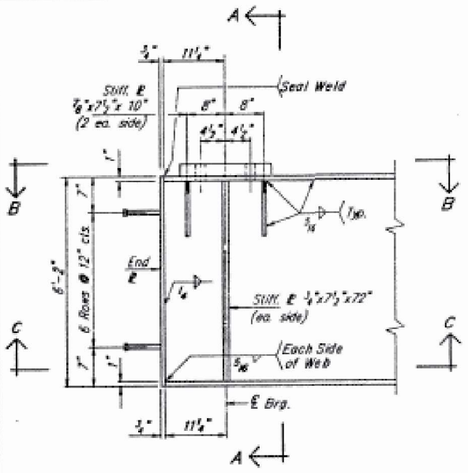
MODEL: $MODELNAME$
FILE NAME: $FILEL$

SN 062-0054

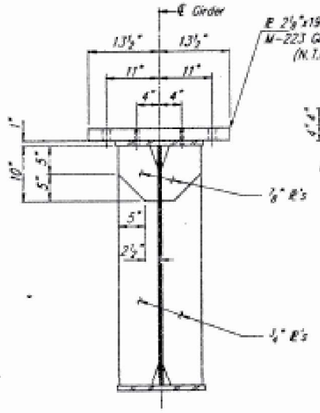
I-39 FAS 369 (400N) *Sec 62-2HB

ROUTE NO.	SEC.	COUNTY	TOTAL SHEETS	SHEET NO.
F.A.P. 412	*	Marshall	56	29
FED. ROAD DIST. NO. 7	ILLINOIS	PROJECT		

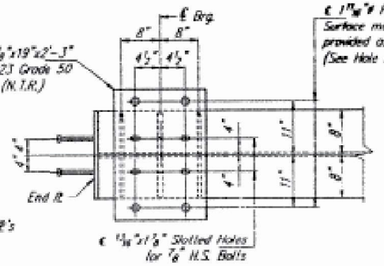
Sheet 8 of 13



DETAIL B

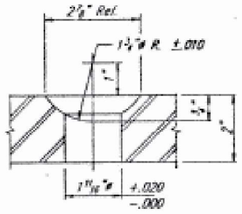


SECTION A–A

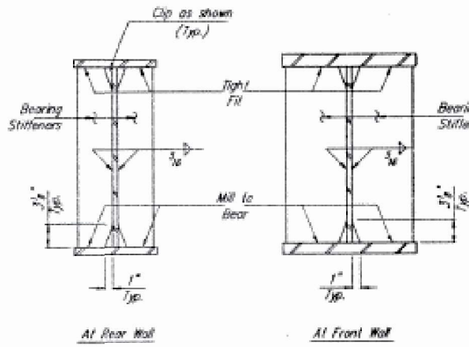


SECTION B–B

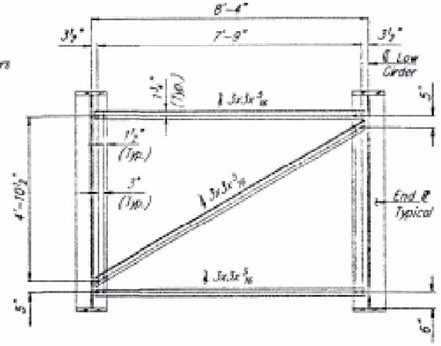
℄ 1 15/16" ø Holes for Epoxy Coated Prestressing Bars. Surface must be compatible with the nuts provided as part of the Tie Down Devices. (See Hole Detail)



HOLE DETAIL



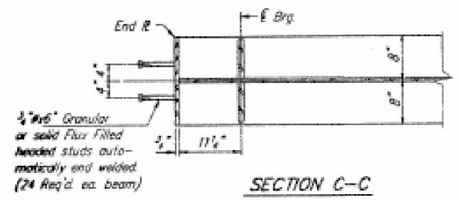
BRG. STIFFENER DETAILS



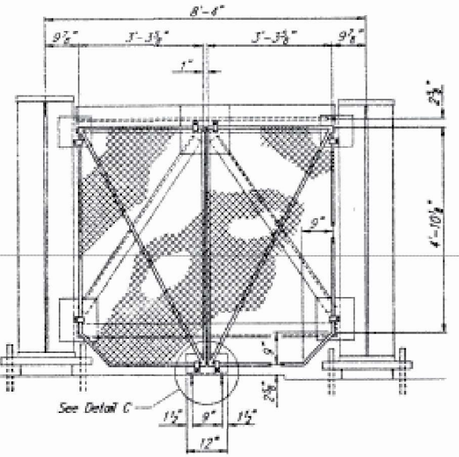
CROSS FRAME CF–1

(6 – Required)

Cross Frame Note:
All cross frames shall have ⅞" H.S. Bolts with 15/16" ø holes. Hardened washers are required over all holes. Two washers per bolt.



SECTION C–C



SCREEN PANEL ELEVATION

Looking toward Front of Front Wall
(6 Req'd. See Special Provisions)

Screen Panel Notes.

1. All materials shall be galvanized.
2. One accessible screen panel shall be provided at each front wall.

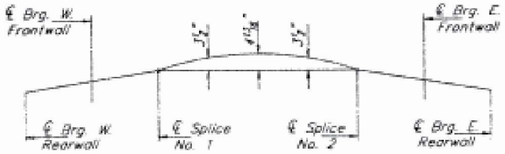
FOR INFORMATION ONLY

INT. GIRDER MOMENT TABLE			
		℄ Brg. E. & W. Frtwall	.5 Span 2
Is	(in^4)	80,607	21,948
Ic (n=27)	(in^4)	——	40,549
Ic (n=9)	(in^4)	——	56,341
Sc	(in^3)	2,157	1,050
Sc (n=27)	(in^3)	——	1,298
Sc (n=9)	(in^3)	——	1,411
℄	(K/ft.)	1.544	1.04
MP	(ft.–K)	3,627	1,078
S℄	(K/ft.)	——	0.414
MS℄	(ft.–K)	——	510
ML	(ft.–K)	1,311	1,085
MMP	(ft.–K)	295	186
$\frac{5}{3}(ML+I)$	(ft.–K)	2,680	2,118
Mo	(ft.–K)	8,199	4,818
Mu	(ft.–K)	8,125	——
fs ℄ non-comp.	(k.s.i.)	20.2	12.3
fs ℄ (comp.)	(k.s.i.)	——	4.7
fs $\frac{5}{3}(k+I)$	(k.s.i.)	14.9	18.0
fs (overload)	(k.s.i.)	35.1	35.0
fs (TOTAL)	(k.s.i.)	45.6	45.5
R+Fy	(k.s.i.)	——	48.7
VR	(K)	——	58

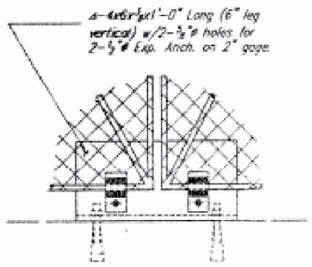
Notes:
Is and Ss are the Moment of Inertia and Section Modulus of the steel section.
Ic and Sc are the Moment of Inertia and Section Modulus of the composite section used in computing fs for bottom flange.
VR is the maximum ℄ + Impact Shear Range in span used to determine Shear Connector spacing.
Mo (Applied Moment) = $1.3[M_D+M_{SD}+\frac{5}{3}(M_L+I)]$
Mu = Moment Capacity according to AASHTO 10.53.1.3
fs (Total) is the sum of the stresses due to $1.3[M_D+\frac{5}{3}(M_L+I)]$
fs (Overload) is the sum of the stresses due to $M_D+\frac{5}{3}(M_L+I)$
R = Hybrid Girder Reduction according to AASHTO 10.53.2

INTERIOR GIRDER REACTION TABLE					
		℄ Brg. W. Rearwall	℄ Brg. W. Frtwall	℄ Brg. E. Frtwall	℄ Brg. W. Rearwall
R D	(K)	–88.7	273.0	273.0	–88.7
R L	(K)	–49.2	113.0	113.0	–49.2
Imp.	(K)	–14.8	25.4	25.4	–14.8
R TOTAL	(K)	–152.7	411.4	411.4	–152.7

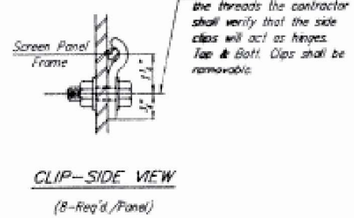
TOP OF WEB ELEVATIONS				
	Girder 1	Girder 2	Girder 3	Girder 4
℄ Brg. W. Rearwl.	737.51	737.45	737.45	737.31
℄ Brg. W. Frtwl.	737.65	737.79	737.79	737.65
℄ Splice #1	738.03	738.17	738.17	738.03
℄ Splice #2	737.84	737.98	737.98	737.84
℄ Brg. E. Frtwl.	737.33	737.48	737.48	737.33
℄ Brg. E. Rearwl.	736.88	737.03	737.03	736.88



CAMBER DIAGRAM



DETAIL C



CLIP–SIDE VIEW

(8–Req'd./Panel)

STRUCTURAL STEEL DETAILS
T.R. 103 OVER F.A.P. 412
F.A.P. ROUTE 412 – SEC. 62–2HB
MARSHALL COUNTY
STATION 1235+28.90
STRUCTURE NUMBER 062–0054

C.D.P.
M.D.M.
D.A.N.
M.D.M.

HANSON WILSON INCORPORATED
SPRINGFIELD, ILLINOIS – SALINA, KANSAS

FILE NO. 8652011
DATE 9-20-89

MODEL: SMODELNAME
FILE NAME: SFILEL5

	USER NAME = SUSERS	DESIGNED -	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	LOCATION 4 SN 062–0054 STRUCTURAL STEEL DETAILS
		DRAWN -	REVISED -		
	PLOT SCALE = SSCALES	CHECKED -	REVISED -		SCALE: SHEET 4 OF 5 SHEETS STA. TO STA.
	PLOT DATE = SDATES	DATE -	REVISED -		

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
VAR	D-4 BRIDGE PAINTING 2022	*	59	29
			CONTRACT NO. 68G57	
		ILLINOIS	FED. AID PROJECT	

*WOODFORD AND MARSHALL

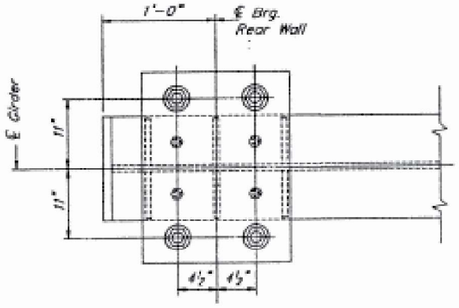
SN 062-0054

I-39 FAS 369 (400N)

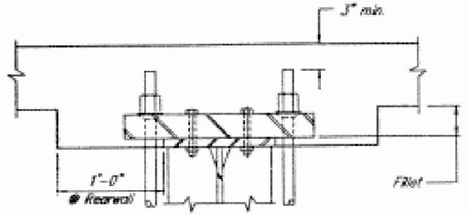
ROUTE NO.	SEC.	COUNTY	TOTAL SHEETS	SHEET NO.
F.A.P. 412	*	Marshall	56	30
FED. ROAD DIST. NO. 7	ILLINOIS	PROJECT		

*Sec. 62-2HB

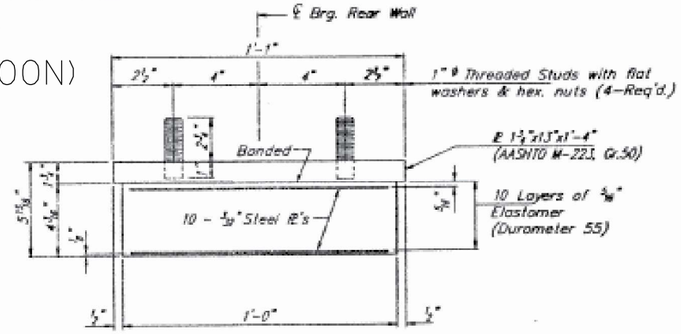
Sheet 9 of 13



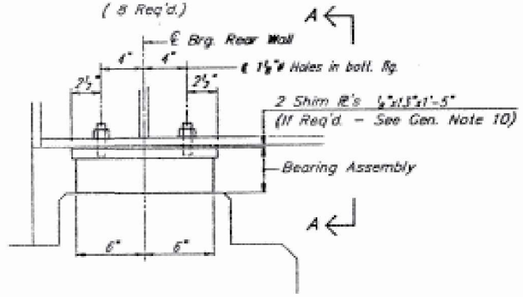
PLAN



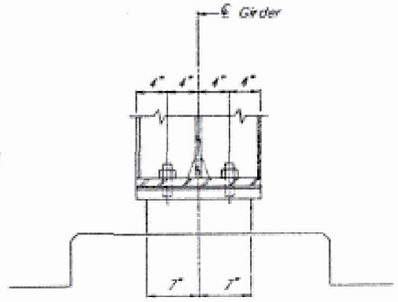
FILLET DETAIL AT REARWALL
(5'-0" in Length)



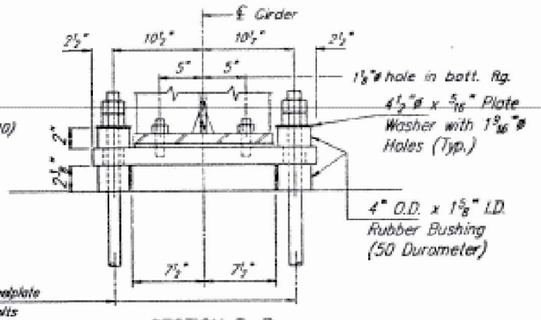
BEARING ASSEMBLY
(8 Req'd.)



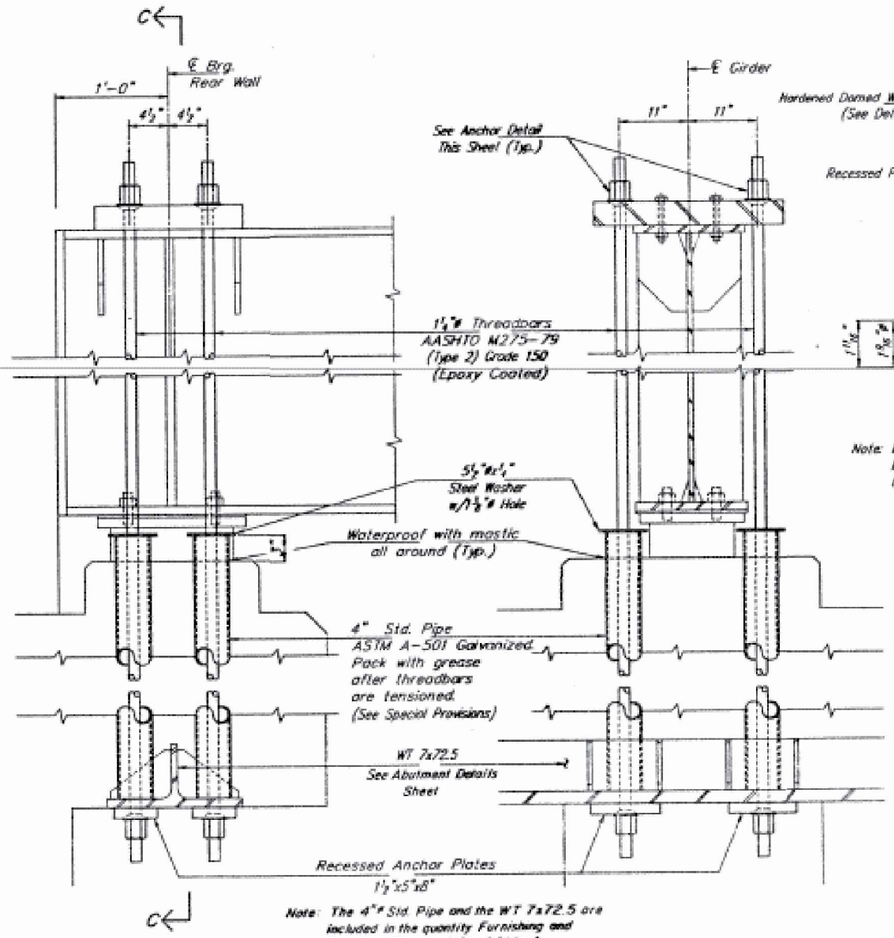
ELEVATION AT REAR WALL



SECTION A-A



SECTION B-B

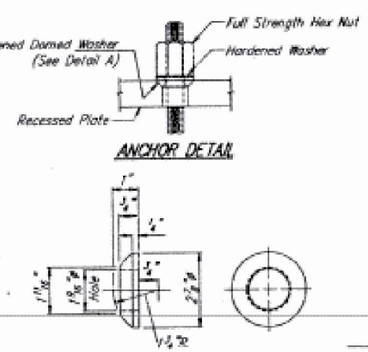


TIEDOWN DEVICE

Note: The 4" ø Std. Pipe and the WT 7x72.5 are included in the quantity Furnishing and Erecting Structural Steel (Lbs.)

SECTION C-C

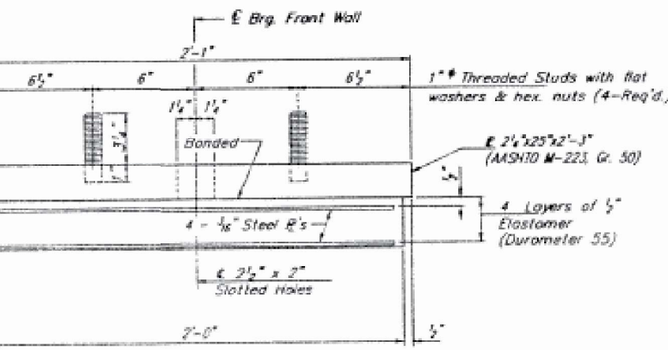
Initially stress each threadbar to 32 kips after anchorage is set. After completion of Pouring Sequence 1 and 2 of the deck slab, stress each threadbar an additional 15 kips.



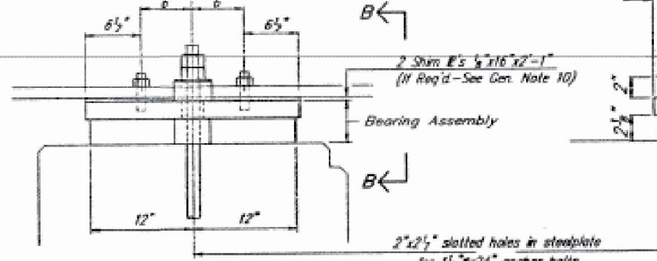
ANCHOR DETAIL

DETAIL A

Note: Material to meet the Chemical and Mechanical Requirements of F436 for "Hardened Steel Washers".



BEARING ASSEMBLY
(8 Req'd.)



ELEVATION AT FRONT WALL

BILL OF MATERIAL

Item	Unit	Total
Tiedown Device	Each	8
Erecting Elastomeric Bearing Assembly Type I	Each	16

BEARINGS & TIEDOWNS
T.R. 103 OVER F.A.P. 412
F.A.P. ROUTE 412 - SEC. 62-2HB
MARSHALL COUNTY
STATION 1235+28.90
STRUCTURE NUMBER 062-0054

DESIGNED C.D.P.
CHECKED M.D.M.
DRAWN D.A.N.
TRACED M.D.M.

HANSON WILSON INCORPORATED
SPRINGFIELD, ILLINOIS - SALINA, KANSAS

FILE NO. 8652011
DATE 9-20-89

FOR INFORMATION ONLY

MODEL: \$MODELNAME\$
FILE NAME: \$FILES\$

USER NAME = \$USER\$	DESIGNED -	REVISED -	
	DRAWN -	REVISED -	
PLOT SCALE = \$SCALE\$	CHECKED -	REVISED -	
PLOT DATE = \$DATE\$	DATE -	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

LOCATION 4 SN 062-0054
BEARING DETAILS

SCALE: | SHEET 5 OF 5 SHEETS | STA. | TO STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
VAR	D-4 BRIDGE PAINTING 2022	*	51	30
		CONTRACT NO. 68G57		
	ILLINOIS FED. AID PROJECT			

*WOODFORD AND MARSHALL

F.A. RTE.	SEC.	COUNTY	TOTAL SHEETS	SHEET NO.
412	62-1HB	MARSHALL	55	16
FH.WA. REG. 5		ILLINOIS PROJECT		

SHEET No.: 1

SHEETS: 13

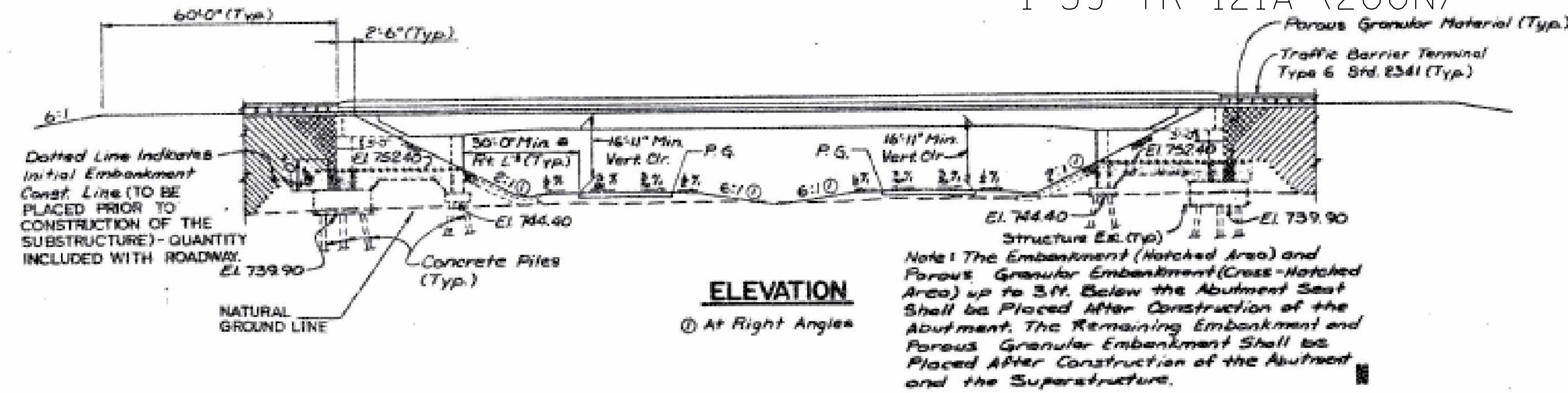
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SN 062-0055

I-39 TR 121A (200N)

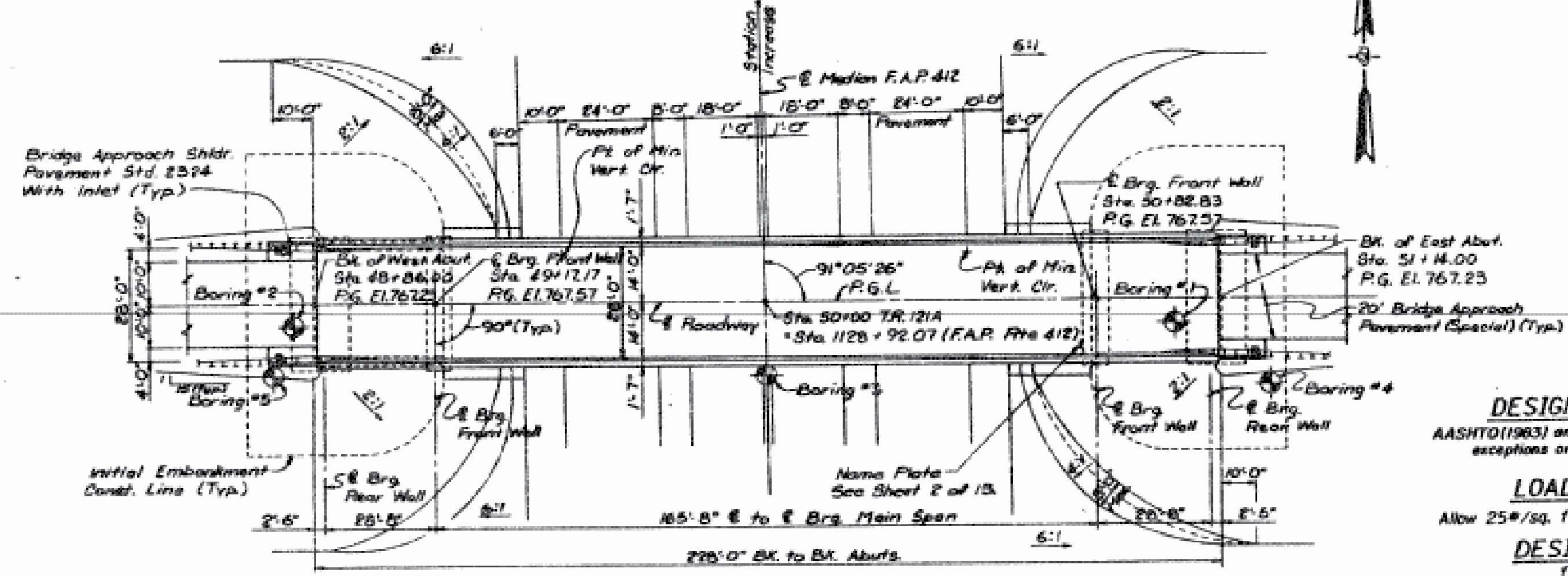
Bench Mark 3: Elev. 742.15 RR Spike in East Leg of H-Frame Electrical Tower 187.6 Lt of ℄ FAP Route 412 Sta. 1129+34.10

Existing Structure : None

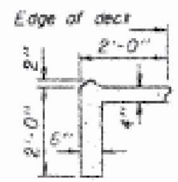


ELEVATION

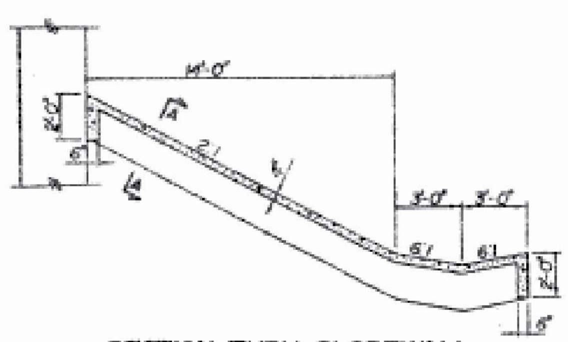
① At Right Angles



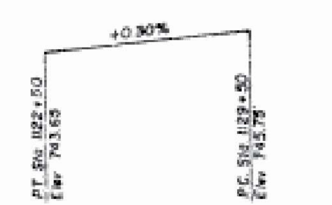
PLAN



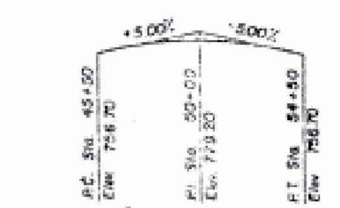
SECTION A-A



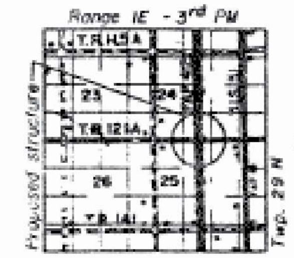
SECTION THRU SLOPEWALL



PROFILE GRADE (F.A.P. 412)
(along median edge of pavement)



PROFILE GRADE (T.R. 121A)
(along ℄ roadway)



LOCATION SKETCH

APPROVED
FOR STRUCTURAL ADEQUACY ONLY

Registered Structural Engineer

DESIGN SPECIFICATIONS

AASHTO (1983) and 1984, 1985, 1986 Interims with exceptions or modifications as indicated.

LOADING HS20-44

Allow 25#/sq. ft. for future wearing surface.

DESIGN STRESSES

f'_c = 3,500 psi
f_y = 60,000 psi (reinforcement)
f_y = 50,000 (structural steel, AASHTO M223, Grade 50)
f_y = 36,000 psi (structural steel, AASHTO M183)

Max. range of temperature = 120°F (-10°F to 110°F)

GENERAL NOTES

SEE SHEETS 29-30 FOR BORING DATA.

FASTENERS SHALL BE HIGH STRENGTH BOLTS. BOLTS 3/4"Ø, OPEN HOLES 13/16"Ø, UNLESS OTHERWISE NOTED.

CALCULATED WEIGHT OF STRUCTURAL STEEL = 126,430 (M183)
= 101,400 (M223)

THE ZINC-SILICATE AND VINYL PAINT SYSTEM SHALL BE USED FOR SHOP AND FIELD PAINTING OF STRUCTURAL STEEL EXCEPT WHERE OTHERWISE NOTED.

FIELD WELDING OF CONSTRUCTION ACCESSORIES WILL NOT BE PERMITTED TO THE BOTTOM FLANGE OF GIRDERS NOR TO THE TOP FLANGE FROM GIRDER ENDS TO SPLICE. FIELD WELDING IN OTHER AREAS WILL BE PERMITTED ONLY WHEN APPROVED BY THE ENGINEER.

ANCHOR BOLTS SHALL BE SET BEFORE BOLTING CROSS FRAMES OVER FRONT WALLS.

THE MAIN LOAD CARRYING MEMBER COMPONENTS SUBJECT TO TENSILE STRESS SHALL CONFORM TO THE SUPPLEMENTAL REQUIREMENTS FOR NOTCH TOUGHNESS ZONE 2. THESE COMPONENTS ARE THE TENSION FLANGES, WEBS AND ALL SPLICE PLATE MATERIAL OF THE STEEL GIRDERS.

REINFORCEMENT BARS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M-31, M-42 OR M-53 GRADE 60.

SLOPE WALL SHALL BE REINFORCED WITH WELDED WIRE FABRIC, 6" X 6" - W4.0 X W4.0, WEIGHING 58 LBS. PER 100 SQ. FT.

BEARING SEAT SURFACES SHALL BE CONSTRUCTED OR ADJUSTED TO THE DESIGNATED ELEVATIONS WITHIN A TOLERANCE OF 1/8 INCH. ADJUSTMENT SHALL BE MADE EITHER BY GRINDING THE SURFACE OR BY SHIMMING THE BEARING. TWO 1/8" ADJUSTING SHIMS, OF THE DIMENSIONS OF THE TOP BEARING PLATE, SHALL BE PROVIDED FOR EACH BEARING PLATE, IN ADDITION TO ALL OTHER PLATES OR SHIMS.

THE CONTRACTOR SHALL DRIVE ONE CONCRETE TEST PILE IN A PERMANENT LOCATION AT THE FRONT AND REAR WALLS OF BOTH ABUTMENTS AS DIRECTED BY THE ENGINEER BEFORE ORDERING THE REMAINDER OF PILES.

ALL STRUCTURAL STEEL FABRICATORS PERFORMING WORK ON THE MAIN LOAD CARRYING COMPONENTS OF STEEL STRUCTURES SHALL BE CERTIFIED UNDER CATEGORY III (AISC) OF THE QUALITY CERTIFICATION PROGRAM.

TOTAL BILL OF MATERIALS

ITEM	UNIT	SUPER	SUBSTR.	TOTAL
Porous Granular Embankment	Cu. Yd.	———	254	254
Structure Excavation	Cu. Yd.	———	812	812
* Protective Coat	Sq. Yd.	892	———	892
Class X Concrete Superstructure	Cu. Yd.	269.2	———	269.2
Erecting Structural Steel	L.S.	1	———	1
Stud Shear Connectors 3/4" Ø	Ea.	968	———	968
Reinforcement Bars	Lb.	———	24,650	24,650
Reinforcement Bars (Epoxy Coated)	Lb.	64,490	7040	71,530
Concrete Piles	Lin. Ft.	———	2520	2520
Test Piles (Concrete)	Ea.	———	4	4
Name Plates	Ea.	1	———	1
Slope Wall (4")	Sq. Yd.	———	170	170
Erecting Elastomeric Bearing Assembly, Type I	Ea.	———	16	16
Tiedown Device	Ea.	———	8	8
Geocomposite Wall Drain	Sq. Yd.	———	97.6	97.6
Class A Concrete	Cu. Yd.	———	302.2	302.2
Class X Concrete	Cu. Yd.	———	294.0	294.0
Screen Panel	Ea.	6	———	6
Rubbed Finish (Modified)	Sq. Ft.	1570	859	2429
Pipe Drains, 6" Ø (Special)	Lin. Ft.	———	260	260
Bridge Deck Grooving	Sq. Yd.	706.2	———	706.2
Furnishing and Erecting Structural Steel	Lb.	8930	———	8930

* Includes Bridge Deck Surface of 706 Sq. Yd.

Plans Prepared By:
VOLLMER ASSOCIATES
Consulting Engineers

GENERAL PLAN
T.R. 121A OVER F.A.P. ROUTE 412
F.A.P. ROUTE 412 - SEC. 62-1HB
MARSHALL COUNTY
STA. 1128+92.07 (F.A.P. 412)
STRUCTURE NO. 062-0055

FOR INFORMATION ONLY

USER NAME = $USER$	DESIGNED -	REVISED -	
	DRAWN -	REVISED -	
PLOT SCALE = $SCALE$	CHECKED -	REVISED -	
PLOT DATE = $DATE$	DATE -	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

LOCATION 5 SN 062-0055
PLAN & ELEVATION VIEW

SCALE: SHEET 1 OF 6 SHEETS STA. TO STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
VAR	D-4 BRIDGE PAINTING 2022	*	51	31
		CONTRACT NO. 68G57		
		ILLINOIS FED. AID PROJECT		

*WOODFORD AND MARSHALL

MODEL: $MODELNAME$
FILE NAME: $FILE$

F.A. RTE.	SEC.	COUNTY	TOTAL SHEETS	SHEET NO.
412	62-IHB	MARSHALL	85	20
F.H.W.A. REG. 5	ILLINOIS	PROJECT		

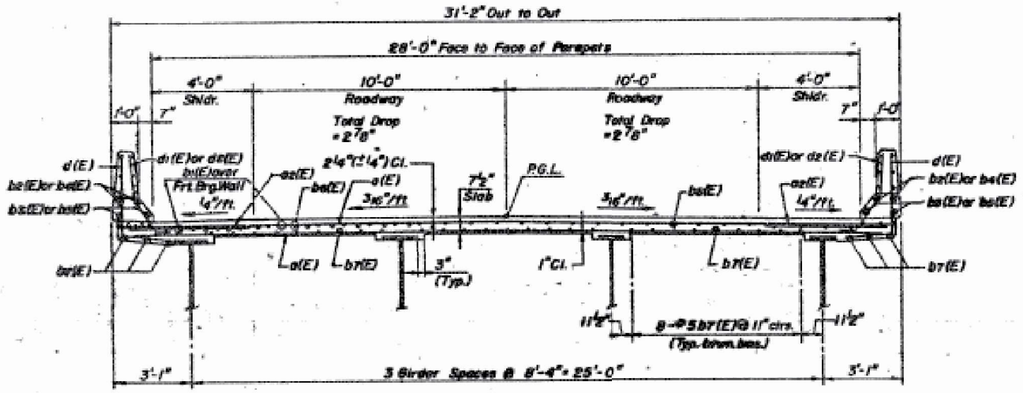
SHEET No.: 5

SHEETS: 13

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

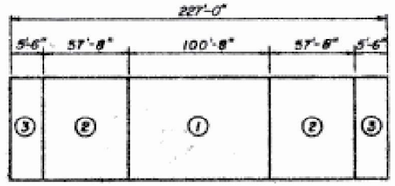
SN 062-0055

I-39 TR 121A (200N)

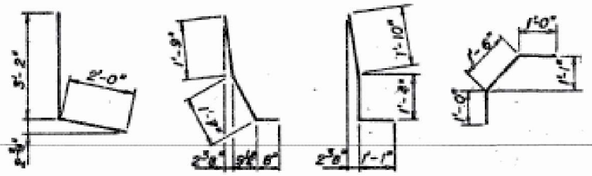


NEAR FRONT BEARING WALL AT CENTER

CROSS SECTION



DECK POURING SEQUENCE PLAN



MIN. BAR LAP

#4	1'-8"
#5	2'-2"
#6	2'-7"
#8	4'-6"

SUPERSTRUCTURE BILL OF MATERIALS

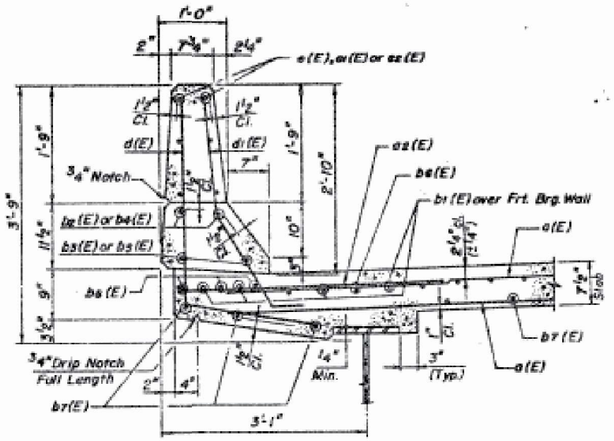
BAR	NO.	SIZE	LENGTH	SHAPE
a (E)	660	#5	30'-0"	
a2(E)	496	#5	4'-0"	
a3(E)	32	#5	28'-7"	
b1 (E)	186	#6	25'-1"	
b2 (E)	16	#8	30'-8"	
b3 (E)	16	#5	30'-4"	
b4 (E)	12	#8	37'-8"	
b5 (E)	12	#8	36'-1"	
b6 (E)	238	#5	34'-6"	
b7 (E)	240	#5	30'-3"	
d (E)	456	#6	5'-2"	
d1 (E)	482	#5	4'-0"	
d2 (E)	12	#5	4'-3"	
e (E)	96	#4	15'-2"	
e1 (E)	24	#4	12'-0"	
e2 (E)	48	#4	19'-10"	
v (E)	120	#4	8'-3"	
v1 (E)	120	#5	5'-0"	
x (E)	60	#6	3'-6"	

ITEM	UNIT	QUANTITY
Class X Conc.- Superstructure	Cu. Yds.	265.2
Reinforcement bars Epoxy Coated	Lbs.	41,490

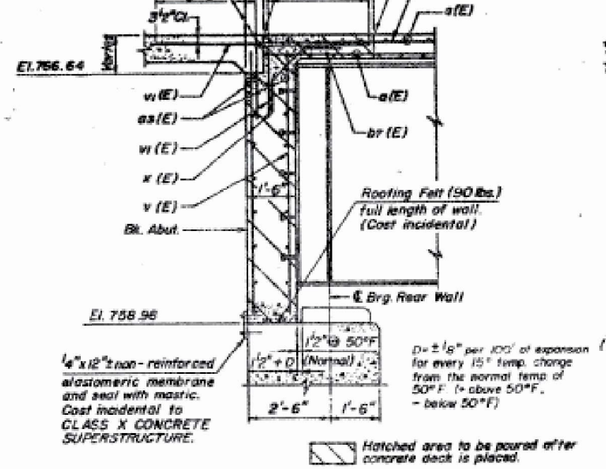
Bars indicated thus (x3-#6 etc.) indicates one row of bars with three lengths per line.

Reinforcement bars designated (E) shall be epoxy coated

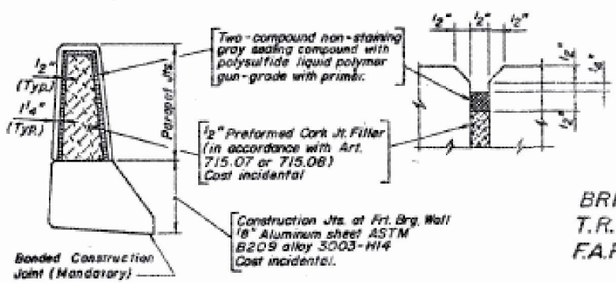
Work this sheet with sheet 4 of 13



SECTION A-A



SECTION B-B



PARAPET JOINT DETAILS

BAR BENDING DIAGRAMS

BRIDGE DECK CROSS SECTION
T.R. 121A OVER F.A.P. ROUTE 412
F.A.P. ROUTE 412 - SEC. 62 - IHB
MARSHALL COUNTY
STA. 1128+92.07 (F.A.P. 412)
STRUCTURE NO. 062-0055

FOR INFORMATION ONLY

Date: 1-29-88

VOLLMER ASSOCIATES

MODEL: $MODELNAME$
FILE NAME: $FILEL$

USER NAME = $USER$	DESIGNED -	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION
	DRAWN -	REVISED -	
PLOT SCALE = $SCALE$	CHECKED -	REVISED -	
PLOT DATE = $DATE$	DATE -	REVISED -	

LOCATION 5 SN 062-0055
CROSS SECTION

SCALE: | SHEET 2 OF 6 SHEETS | STA. | TO STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
VAR	D-4 BRIDGE PAINTING 2022	"	51	32
			CONTRACT NO. 68G57	
		ILLINOIS	FED. AID PROJECT	

•WOODFORD AND MARSHALL

F.A. STE.	SEC.	COUNTY	TOTAL SHEETS	SHEET NO.
412	62-IHB	MARSHALL	55	21
FED. ROAD DIST. NO.	ILLINOIS	PROJECT		

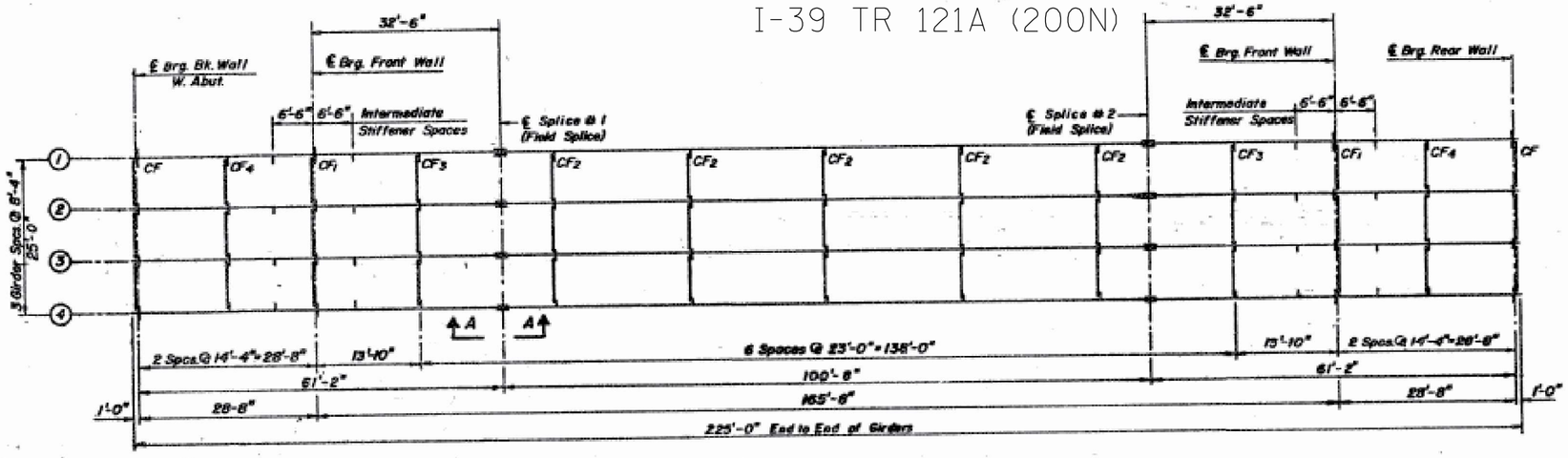
SHEET No.: 6

SHEETS: 13

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

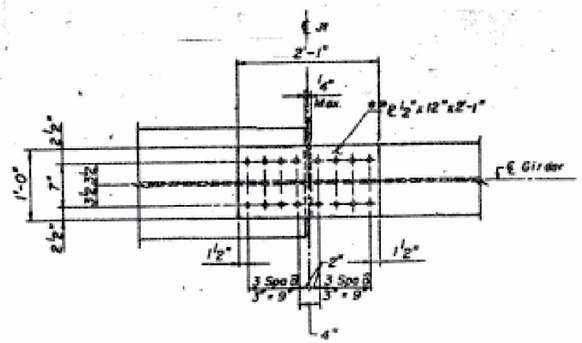
SN 062-0055

I-39 TR 121A (200N)

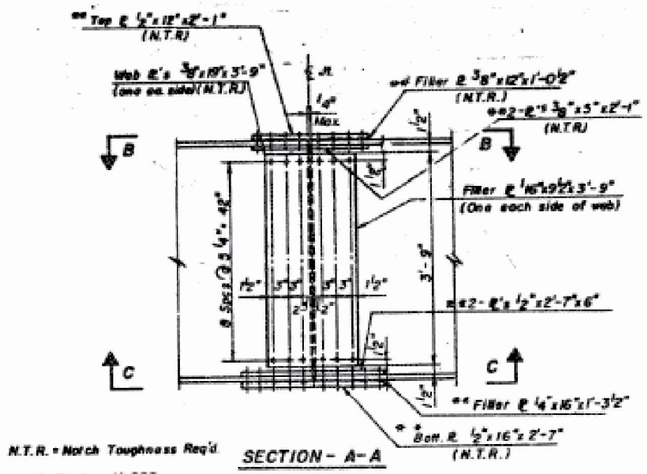


NOTE: Care must be exercised for properly bracing the 12" top flange during shipping and erection before the cross frames are installed.

FRAMING PLAN



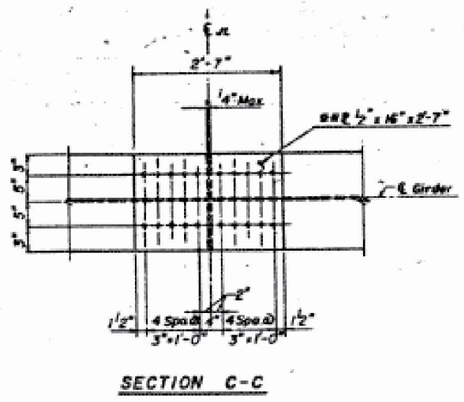
SECTION B-B



N.T.R. = Notch Toughness Req'd.

Indicates M-223 Gr. 50 Steel

SECTION - A-A



SECTION C-C

NOTE: All bolts for field splices are 7/8" ϕ H.S. bolts Open holes shall be 15/16" ϕ (Typ.)

FIELD SPLICE DETAILS

REFERENCES

Cross Frame Details & Erection Sequence — Sheet 8 of 13

Girder Schedule — Sheet 7 of 13

FRAMING PLAN
T.R. 121A OVER F.A.P. ROUTE 412
F.A.P. ROUTE 412 - SEC. 62 - IHB
MARSHALL COUNTY
STA. 1128+92.07 (F.A.P. 412)
STRUCTURE NO. 062-0055

FOR INFORMATION ONLY

MODEL: \$MODELNAME\$
FILE NAME: \$FILE\$

USER NAME = \$USER\$	DESIGNED -	REVISED -
	DRAWN -	REVISED -
PLOT SCALE = \$SCALE\$	CHECKED -	REVISED -
PLOT DATE = \$DATE\$	DATE -	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

LOCATION 5 SN 062-0055
FLAMMING PLAN

SCALE: | SHEET 3 OF 6 SHEETS | STA. | TO STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
VAR	D-4 BRIDGE PAINTING 2022	"	51	33
			CONTRACT NO. 68G57	
		ILLINOIS	FED. AID PROJECT	

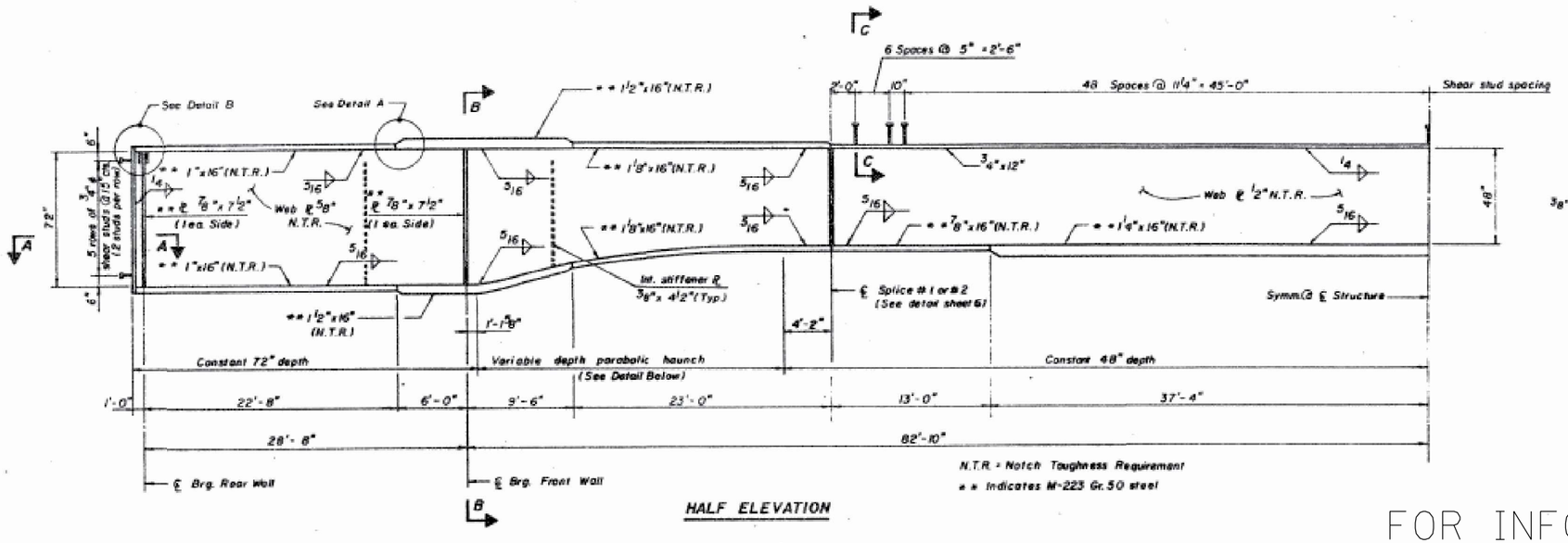
*WOODFORD AND MARSHALL

SN 062-0055
I-39 TR 121A (200N)

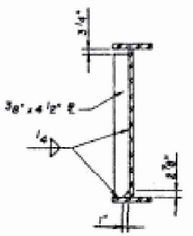
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

F.A. RTE.	SEC.	COUNTY	TOTAL SHEETS	SHEET NO.
412	62-IHB	MARSHALL	55	22
F.H.W.A. REG. 5	ILLINOIS	PROJECT		

SHEET No.: 7
SHEETS: 13

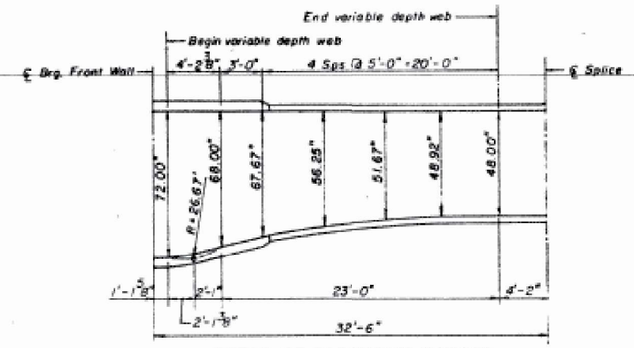


HALF ELEVATION

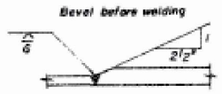


INT. STIFFNER DETAILS

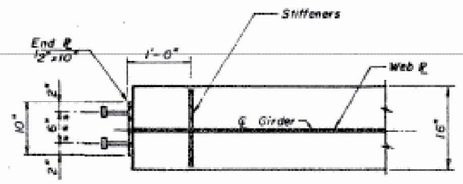
FOR INFORMATION ONLY



DETAIL OF PARABOLIC HAUNCH

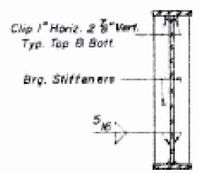


DETAIL A



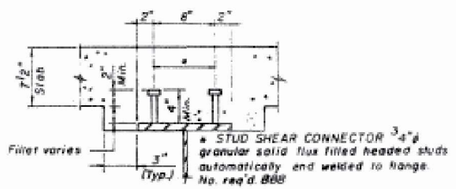
SECTION A-A

* * * 3/4" ø x 4" Granular or solid flux filled headed studs automatically end welded to end plate. No. req'd. 80 STUD SHEAR CONNECTOR.

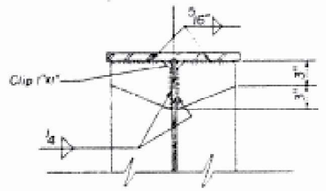


SECTION B-B
Typ. @ ℄ Brg. Front & Rear Wall

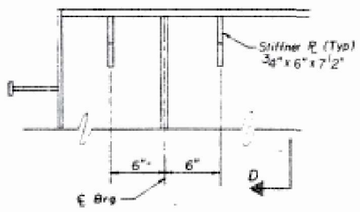
Brg. stiffeners shall be tight fit at top & mill to bear at bottom.



SECTION C-C



SECTION D-D



DETAIL B

REFERENCES

Camber Diagram — Sheet 8 of 13

GIRDER SCHEDULE
T.R. 121A OVER F.A.P. ROUTE 412
F.A.P. ROUTE 412 - SEC. 62 - IHB
MARSHALL COUNTY
STA. 1128+92.07 (F.A.P. 412)
STRUCTURE NO. 062-0055

Date: 1-29-86

VOLLMER ASSOCIATES

MODEL: sMODELNAME
FILE NAME: sFILEL

USER NAME = sUSERS	DESIGNED -	REVISED -	
	DRAWN -	REVISED -	
PLOT SCALE = sSCALES	CHECKED -	REVISED -	
PLOT DATE = sDATES	DATE -	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

LOCATION 5 SN 062-0055
GIRDER DETAILS

SCALE: | SHEET 4 OF 6 SHEETS | STA. | TO STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
VAR	D-4 BRIDGE PAINTING 2022	*	51	34
			CONTRACT NO. 68G57	
		ILLINOIS	FED. AID PROJECT	

*WOODFORD AND MARSHALL

SN 062-0055

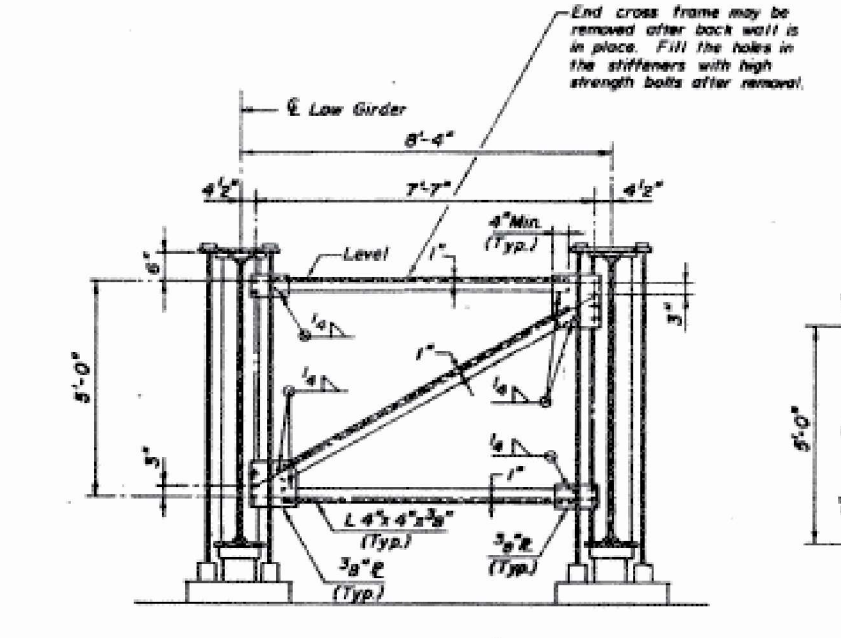
I-39 TR 121A (200N)

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

F.A. RTE.	SEC.	COUNTY	TOTAL SHEETS	SHEET NO.
412	62-IHB	MARSHALL	55	23
F.H.W.A. REG. 5	ILLINOIS	PROJECT		

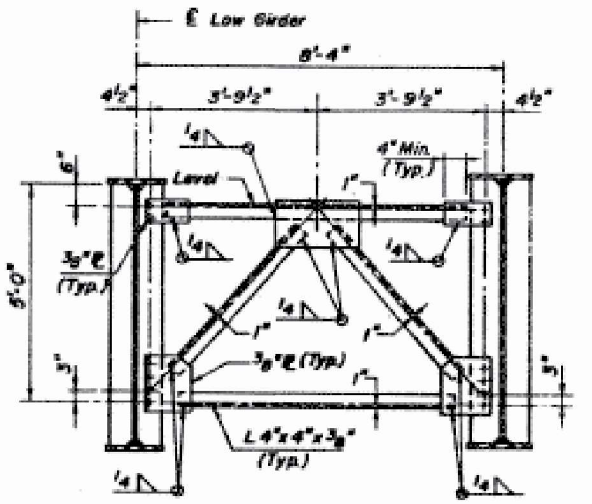
SHEET No.: 8

SHEETS: 13



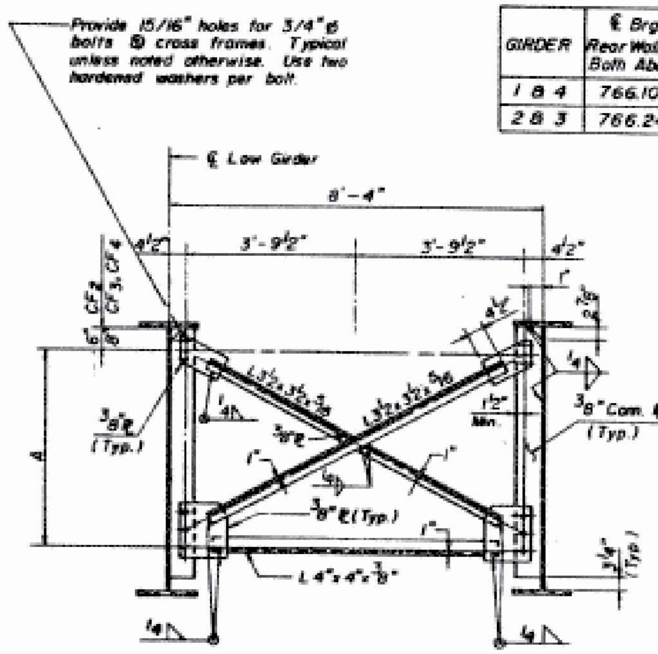
END CROSS FRAME - CF

No. Req'd. = 6



INTERIOR CROSS FRAME - CF_1

No. Req'd. = 6



INTERIOR CROSS FRAME - CF_2, CF_3 & CF_4

CF_2 No. Req'd. = 15 ; CF_3 No. Req'd. = 6

CF_4 No. Req'd. = 6

CF_2 Shown, CF_3 & CF_4 Similar except the connection plate shall be welded to the bottom flange and undercut at the top.

VALUE OF 'A'
CF_2 = 3'-0"
CF_3 = 3'-3"
CF_4 = 5'-0"

TOP OF WEB ELEVATION

(For Fabrication only)

GIRDER	℄ Brg. Rear Wall @ Both Abuts.	℄ Brg. Front Wall @ Both Abuts.	℄ Splices #1 & #2
1 & 4	766.10	766.46	766.86
2 & 3	766.24	766.60	767.00

MAXIMUM MOMENT TABLE
INTERIOR GIRDER

Property		℄ Brg Front Wall	℄ Middle Span
Is	(in.⁴)	84,276	20,679
Ic	(in.⁴)		54,619
Ss	(in.³)	2,247	1,029
Sc	(in.³)		1,402
Z	(in.³)		
℄	(K/')	[illegible]	1.031
M℄	('K)	[illegible]	903
S℄	(K/')		0.423
Ms℄	('K)		424
ML	('K)	1,286	937
Mimp.	('K)	374	272
$^5/_3$ (ML+I)	('K)	2,767	2,015
Ma	('K)	8,414	4,345
Mu	('K)		
fs℄ non-comp.	(k.s.i.)	19.79	10.53
fs℄ comp.	(k.s.i.)		3.63
fs$^5/_3$ (L+I)	(k.s.i.)	14.78	17.23
fs (overload)	(k.s.i.)	34.57	31.39
*** fs (Total)	(k.s.i.)	44.94	40.81
VR	(K)		54.0
R x Fy	(k.s.i.)	50.00	46.74

Is and Ss are the moment of inertia and section modulus of the steel section used in computing fs Total.

Ic and Sc are the moment of inertia and section modulus of the composite section used in computing fs Total.

R is the reduction factor for Hybrid Section.

*** Non-compact section.

Ma (Applied Moment) = 1.3 [M℄ + Ms℄ + $^5/_3$ (ML + I)]

VR is the maximum L + impact shear range in span.

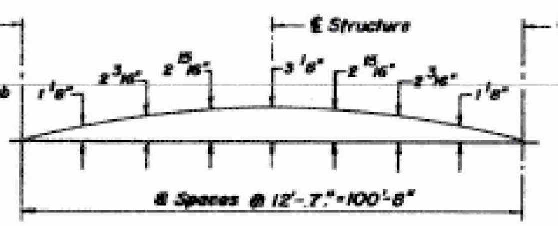
fs (Total) is the sum of the stresses due to 1.3 [M℄ + Ms℄ + $^5/_3$ (ML + I)]

REACTION - INTERIOR GIRDER

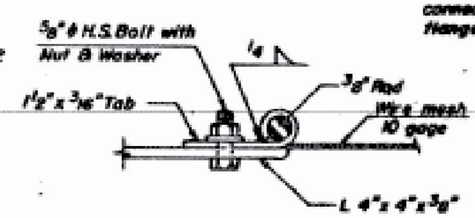
	℄ Bearing Rear Wall		℄ Bearing Front Wall
	* Max. Uplift	Final Loading	Final Loading
R℄	-124.87	-107.04	275.12
RL		-55.78	109.22
Imp		-11.42	31.71
R Total	-124.87	-174.24	416.05

* Loading for Max. Dead Load Uplift.

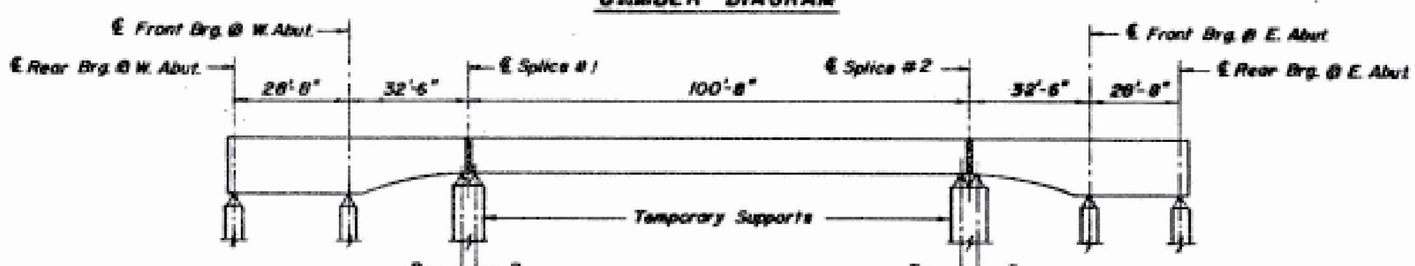
NOTE: Cambered for Deck Slab Steel & Superimposed Dead Loads.



CAMBER DIAGRAM



SECTION B-B



ERECTION SKETCH

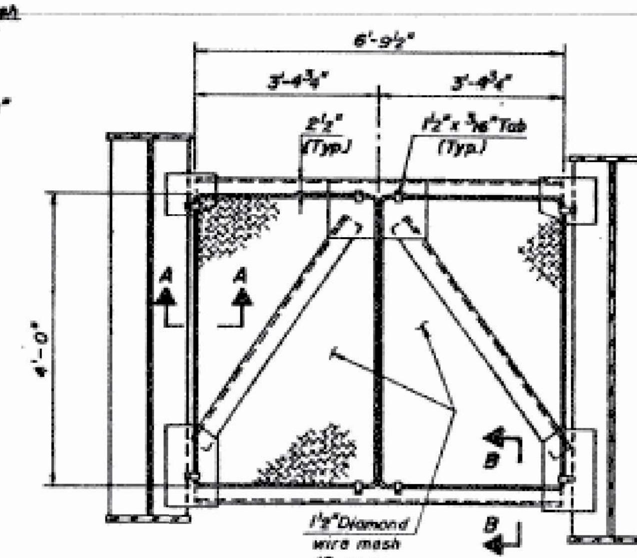
R_1 = 4.4 K/Girder

R_2 = 10.2 K/Girder

Erection Sequence

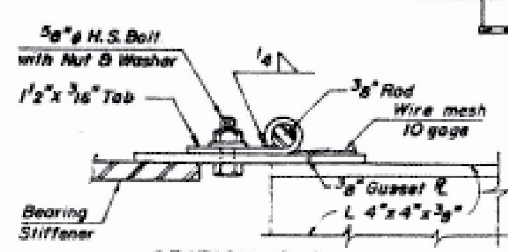
1. Erect the girders in 3 segments, supported by the permanent bearings and the temporary supports. Temporary supports shall be incidental to ERECTING STRUCTURAL STEEL.
2. Erect the girder splices.
3. Install tiedown devices.
4. Remove temporary supports.
5. Pour concrete deck. For pouring sequence see Sheet 5 of 13

Note: Prior to erecting superstructure the contractor shall submit a DETAILED ERECTION SEQUENCE to the ENGINEER FOR APPROVAL



TYPICAL SCREEN PANEL AT CROSS FRAME CF_1

No. Req'd. = 6



SECTION A-A

NOTES FOR TYPICAL SCREEN PANEL:

1. B INDICATES STANDARD GAGE FOR ANGLES.
2. CLIPS SHALL BE PROVIDED FOR PERMANENT SCREEN PANELS.
3. ONE ACCESSIBLE SCREEN PANEL SHALL BE PROVIDED AT EACH FRONT ABUTMENT.
4. PROVIDE HINGED TABS AT CONNECTIONS TO THE CONNECTION PLATES FOR THE ACCESSIBLE SCREEN PANEL ONLY.
5. STANDARD CONSTRUCTION:
   1. MESH: 1 1/2" DIAMOND
   2. WIRE: NO. 10 WASHBURN & MOEN GUAGE
   3. FRAME: 3/8" ROUND ROD
6. ALL MATERIALS TO BE GALVANIZED.
7. TWO WIRE-MESHED FRAMES SHALL BE PROVIDED FOR EACH SCREEN PANEL.
8. FOUR TABS SHALL BE PROVIDED FOR EACH WIRE-MESHED FRAME.

CROSS FRAME DETAILS
T.R. 121A OVER F.A.P. ROUTE 412
F.A.P. ROUTE 412 - SEC. 62 - 1HB
MARSHALL COUNTY
STA. 1128 + 92.07 (F.A.P. 412)
STRUCTURE NO. 062-0055

FOR INFORMATION ONLY

MODEL: $MODELNAME$
FILE NAME: $FILE$

USER NAME = $USER$	DESIGNED -	REVISED -
	DRAWN	REVISED -
PLOT SCALE = $SCALE$	CHECKED -	REVISED -
PLOT DATE = $DATE$	DATE -	REVISED -

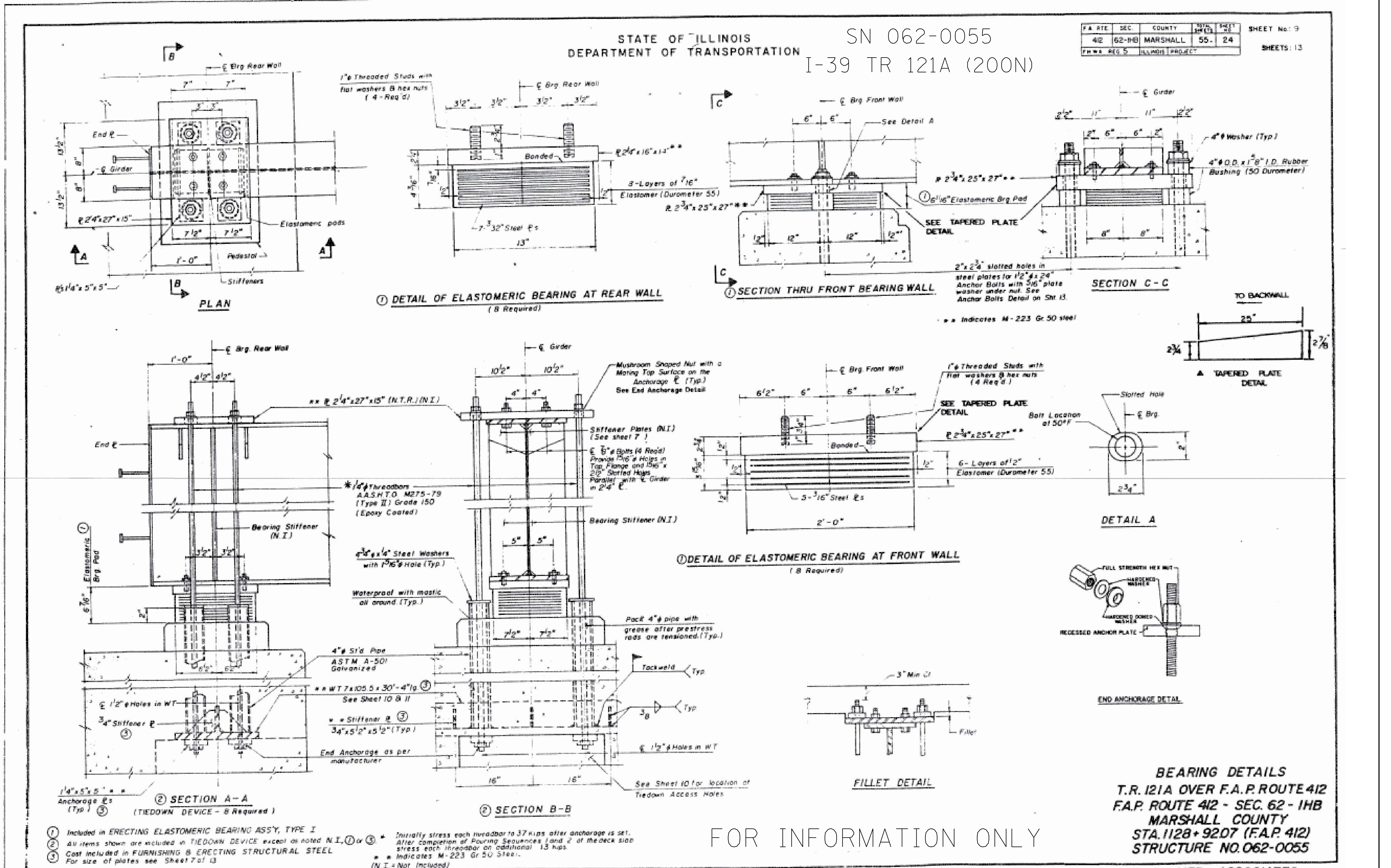
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

LOCATION 5 SN 062–0055
CROSS FRAME DETAILS

SCALE: | SHEET 5 OF 6 SHEETS | STA. | TO STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
VAR	D-4 BRIDGE PAINTING 2022	*	51	35
		CONTRACT NO. 68G57		
		ILLINOIS FED. AID PROJECT		

*WOODFORD AND MARSHALL


STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
SN 062-0055
I-39 TR 121A (200N)
SHEET No. 9
SHEETS: 13
PLAN
① DETAIL OF ELASTOMERIC BEARING AT REAR WALL
(8 Required)
① SECTION THRU FRONT BEARING WALL
SECTION C - C
TAPERED PLATE DETAIL
TO BACKWALL
① DETAIL OF ELASTOMERIC BEARING AT FRONT WALL
(8 Required)
DETAIL A
END ANCHORAGE DETAIL
FILLET DETAIL
② SECTION A - A
(TIEDOWN DEVICE - 8 Required)
② SECTION B - B
① Included in ERECTING ELASTOMERIC BEARING ASS'Y, TYPE I
② All items shown are included in TIEDOWN DEVICE except as noted N.I., ① or ③.
③ Cost included in FURNISHING & ERECTING STRUCTURAL STEEL
For size of plates see Sheet 7 of 13
* Initially stress each threadbar to 37 Kips after anchorage is set. After completion of Pouring Sequences 1 and 2 of the deck slab stress each threadbar an additional 13 kips.
* * Indicates M-223 Gr 50 Steel.
(N.I. = Not Included)
FOR INFORMATION ONLY
BEARING DETAILS
T.R. 121A OVER F.A.P. ROUTE 412
F.A.P. ROUTE 412 - SEC. 62 - IHB
MARSHALL COUNTY
STA. 1128+92.07 (F.A.P. 412)
STRUCTURE NO. 062-0055

MODEL: $MODELNAME$
FILE NAME: $FILEL$

USER NAME = $USER$	DESIGNED -	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION	LOCATION 5 SN 062–0055 BEARING DETAILS
	DRAWN -	REVISED -		
PLOT SCALE = $SCALE$	CHECKED -	REVISED -		
PLOT DATE = $DATE$	DATE -	REVISED -		SCALE: SHEET 6 OF 6 SHEETS STA. TO STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
VAR	D-4 BRIDGE PAINTING 2022	*	51	36
		CONTRACT NO. 68G57		
		ILLINOIS FED. AID PROJECT		

*WOODFORD AND MARSHALL

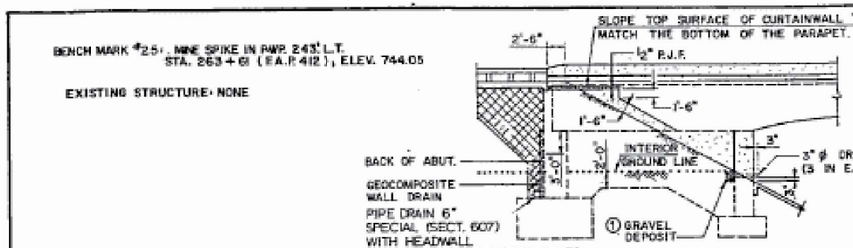
SN 102-0048 I-39 TR 41 (2100N)

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
F.A.P 412	102-3HB-3	WOODFORD	82	23
FED ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		

SHEET NO. 1 IN 14 SHEETS

BENCH MARK #25: MINE SPIKE IN PWR. 243' L.T. STA. 263+61 (E.A.F.412), ELEV. 744.05

EXISTING STRUCTURE: NONE



DETAIL B

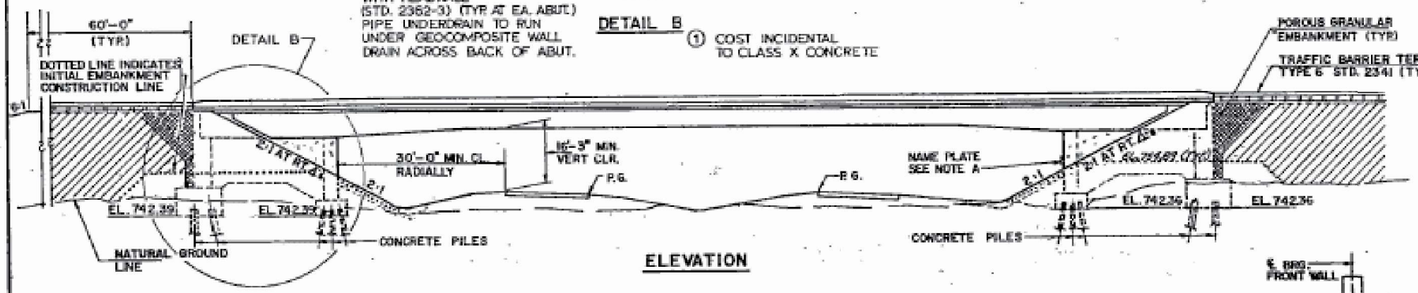
① COST INCIDENTAL TO CLASS X CONCRETE

INDICATES POROUS GRANULAR EMBANKMENT TO BE PLACED AFTER SUPERSTRUCTURE BACKWALL IS CONSTRUCTED.

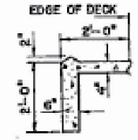
INDICATES EMBANKMENT TO BE PLACED AFTER ABUTMENTS ARE CONSTRUCTED.

INDICATES RUBBED FINISH MODIFIED EXTERIOR OF FASCIA & ALL EXTERIOR SURFACES OF ABUTMENTS.

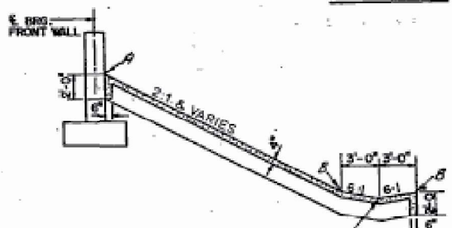
SLOPEWALL ELEV	WEST		EAST	
	NORTH	SOUTH	NORTH	SOUTH
ELEV. A	755.80	755.48	753.70	753.00
ELEV. B	743.80	743.48	743.70	743.00
ELEV. C	743.30	742.98	743.20	742.50



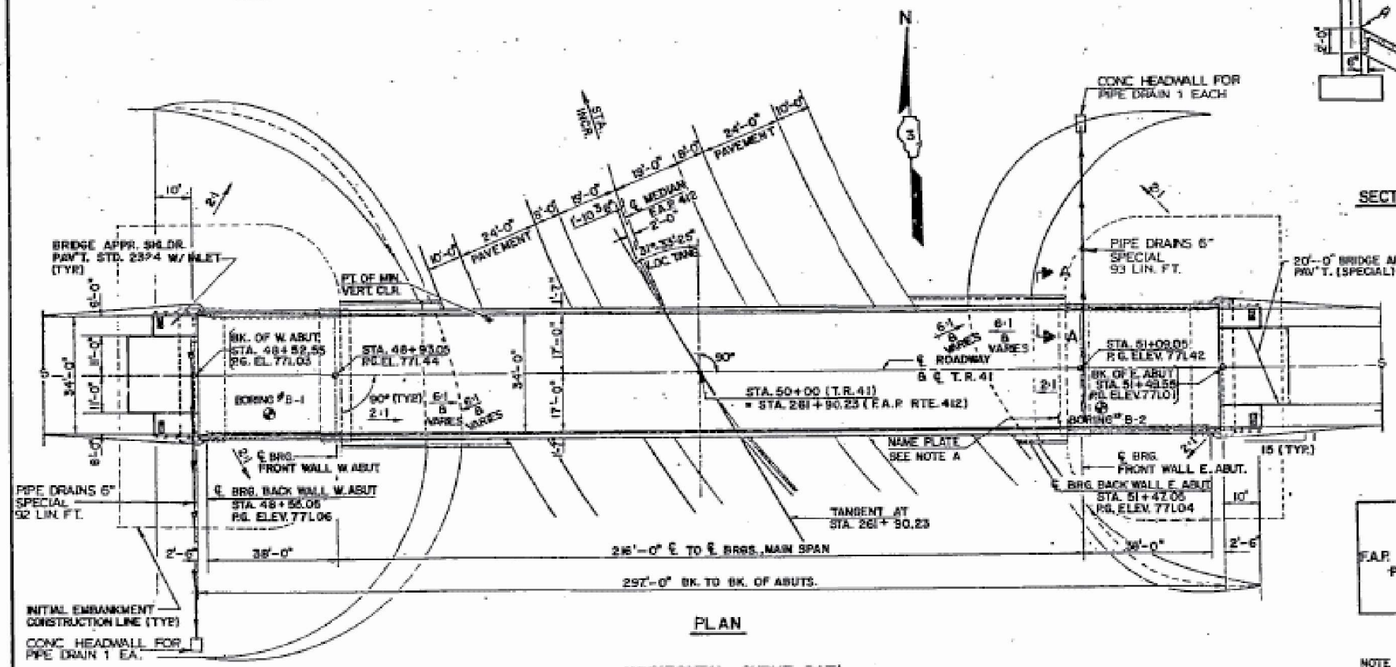
ELEVATION



SECTION A-A



SECTION THRU SLOPEWALL



PLAN

GENERAL NOTES

1. SEE PROPOSAL FOR BORING DATA.
2. FASTENERS SHALL BE HIGH STRENGTH BOLTS. BOLTS 7/8"ø, OVEN HOLES 15/16"ø UNLESS OTHERWISE NOTED.
3. CALCULATED WEIGHT OF STRUCTURAL STEEL = 406,200 LBS. (AASHTO M223, GR.50)
   14,130 LBS. (AASHTO M183)
   2,080 LBS. (ASTM A501)
4. THE ZINC-SILICONE AND VINYL PAINT SYSTEM SHALL BE USED FOR SHOP AND FIELD PAINTING OF STRUCTURAL STEEL EXCEPT WHERE OTHERWISE NOTED.
5. FIELD WELDING OF CONSTRUCTION ACCESSORIES WILL NOT BE PERMITTED TO THE BOTTOM FLANGE OF GIRDERS NOR TO THE TOP FLANGE FOR ALL OF SPANS 1 AND 3 AND IN SPAN 2 A DISTANCE EQUAL TO ONE-FOURTH THE SPAN LENGTH FROM THE FRONT WALL OF THE ABUTMENTS. FIELD WELDING IN OTHER AREAS WILL BE PERMITTED ONLY WHEN APPROVED BY THE ENGINEER.
6. ANCHOR BOLTS SHALL BE SET BEFORE BOLTING CROSSFRAMES OVER SUPPORTS.
7. THE MAIN LOAD CARRYING MEMBER COMPONENTS SUBJECT TO TENSILE STRESS SHALL CONFORM TO THE SUPPLEMENTAL REQUIREMENTS FOR NOTCH TOUGHNESS ZONE 2. THESE COMPONENTS ARE THE TENSION FLANGES, WEBS AND ALL SPLICE PLATE MATERIAL OF THE STEEL GIRDERS.
8. REINFORCEMENT BARS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M-31, M-42 OR M-53 GRADE 60.
9. SLOPE WALL SHALL BE REINFORCED WITH WWF/DEO WIRE FABRIC, 6" X 6" - W4.0 X W4.0, WEIGHING 58 LBS. PER 100 SQ. FT.
10. THE EMBANKMENT CONFIGURATION SHOWN SHALL BE THE MINIMUM EMBANKMENT THAT MUST BE CONSTRUCTED PRIOR TO CONSTRUCTION OF THE ABUTMENTS.
11. BEARING SEAT SURFACES FOR THE PLATE GIRDERS SHALL BE CONSTRUCTED OR ADJUSTED TO THE DESIGNATED ELEVATIONS WITHIN A TOLERANCE OF 1/8 INCH. ADJUSTMENT SHALL BE MADE EITHER BY GRINDING THE SURFACE OR BY SHIMMING THE BEARING. TWO 1/8" ADJUSTING SHIMS, OF THE DIMENSIONS OF THE TOP BEARING PLATE, SHALL BE PROVIDED FOR EACH BEARING IN ADDITION TO ALL OTHER PLATES OR SHIMS AND PLACED AS DETAILED.
12. THE CONTRACTOR SHALL DRIVE ONE CONCRETE TEST PILE IN A PERMANENT LOCATION AT THE FRONT & REAR WALLS OF EACH ABUTMENT AS DIRECTED BY THE ENGINEER BEFORE ORDERING THE REMAINDER OF PILES.
13. ALL STRUCTURAL STEEL FABRICATORS PERFORMING WORK ON THE MAIN LOAD CARRYING COMPONENTS OF STEEL STRUCTURES SHALL BE CERTIFIED UNDER CATEGORY III (AISC) OF THE QUALITY CERTIFICATION PROGRAM.

TOTAL BILL OF MATERIAL

	ITEM	UNIT	SUPER STRUCT.	SUB STRUCT.	TOTAL
	STRUCTURE EXCAVATION	CU. YD.	—	1375.0	1375.0
**	PROTECTIVE COAT	SQ. YD.	1360	—	1360
	ELASTOMERIC BEARING ASSEMBLY TYPE I	EACH	20	—	20
*	TEDOWN DEVICE	EACH	10	—	10
	CLASS A CONCRETE	CU. YD.	—	431.6	431.6
	CLASS X CONCRETE	CU. YD.	—	485.2	485.2
	CLASS X CONCRETE SUPERSTRUCTURE	CU. YD.	363.4	—	363.4
	FURNISHING & ERECTING STRUCTURAL STEEL	L. SUM	1	—	1
	STUD SHEAR CONNECTORS	EACH	1605	—	1605
	REINFORCEMENT BARS	POUND	—	47,480	47,480
	REINFORCEMENT BARS, EPOXY COATED	POUND	91,040	12,900	103,940
	FURNISHING CONCRETE PILES	LIN. FT.	—	5734	5734
	DRIVING CONC. PILES	LIN. FT.		5734	5734
	TEST PILE CONCRETE	EACH	—	4	4
	NAME PLATES	EACH	—	1	1
	SLOPEWALL, 4 IN.	SQ. YD.	—	358	358
*	GEOCOMPOSITE WALL DRAIN	SQ. YD.	—	82	82
*	SCREEN PANELS	EACH	8	—	8
	POROUS GRANULAR EMBANKMENT	CU. YD.	—	560	560
	PIPE DRAINS 6" SPECIAL	LIN. FT.	—	185	185
	RUBBED FINISH (MODIFIED)	SQ. FT.	1606	1500	3106
	CONC. HEADWALLS FOR PIPE DRAINS	EACH		2	2
	BRIDGE DECK GROOVING	SQ. YD.	1052		1052

** INCLUDES BRIDGE DECK SURFACE
* SEE SPECIAL PROVISIONS

DESIGN SPECIFICATIONS

AASHTO (1983) AND 1984 THROUGH 1988 INTERIMS.

LOADING HS20-44

ALLOW 25#/ SQ. FT. FOR FUTURE WEARING SURFACE.

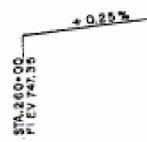
DESIGN STRESSES

f'c = 3,500 psi
fy = 60,000 psi (REINFORCEMENT)
fy = 50,000 psi (STRUCTURAL STEEL, AASHTO M223, GRADE 50)
fy = 36,000 psi (STRUCT M183)
MAX. RANGE OF TEMPERATURE = 120° F (-10° F TO 110° F).

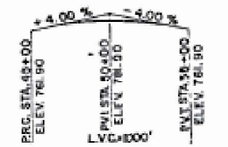
HORIZONTAL CURVE DATA

(F.A.P. RTE. 412)

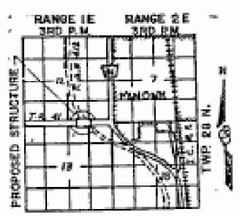
P.I. STA. = 261+80.02
△ = 76°-14'-44" RT.
D = 2°-00'-00"
R = 2,864.79'
T = 2,248.12'
L = 3,812.28'
E = 776.79'
S.E. = 0.053 ft/ft
P.C. STA. = 239+31.90
P.T. STA. = 277+44.18
S.E. TRANSITION:
STA. 237+31.90 TO 240+31.90
& STA. 276+44.18 (BK.) TO 932+68.49 (AH.)



PROFILE GRADE (F.A.P 412)
(ALONG MEDIAN EDGE OF PAVEMENT)



PROFILE GRADE (T.R.41)
(ALONG ℄ ROADWAY)



LOCATION MAP

STATION 261+90.23
BUILT IN BY
STATE OF ILLINOIS
F.A.P. RTE. 412 SEC. 102-3HB-3
PROJ. EBF-412-3(34)
LOADING HS 20
STR. NO. 102-0048

NAME PLATE

(STANDARD 2113)

NOTE A: FOR EXACT LOCATION OF NAME PLATE SEE SHEET 11 OF 14.

APPROVED
FOR STRUCTURAL ADEQUACY ONLY

John W Clark
Registered Structural Engineer

WELLS ENGINEERS, INC.

GENERAL PLAN
T.R. 41 OVER F.A.P. ROUTE 412
F.A.P. ROUTE 412 - SEC. 102-3HB-3
WOODFORD COUNTY
STATION 261+ 90.23 (F.A.P. RTE. 412)

STRUCTURE NO. 102-0048
DATE 12-10-86 | DRAWN BY GPS | JOB NO. 860375
DESIGNED BY K.P. | CHECKED BY: PMJ | SHEET NO. 1 OF 14

FOR INFORMATION ONLY

USER NAME = $USERS	DESIGNED -	REVISED -	
	DRAWN -	REVISED -	
PLOT SCALE = $SCALES	CHECKED -	REVISED -	
PLOT DATE = $DATES	DATE -	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

LOCATION 6 SN 102-0048
PLAN & ELEVATION VIEW

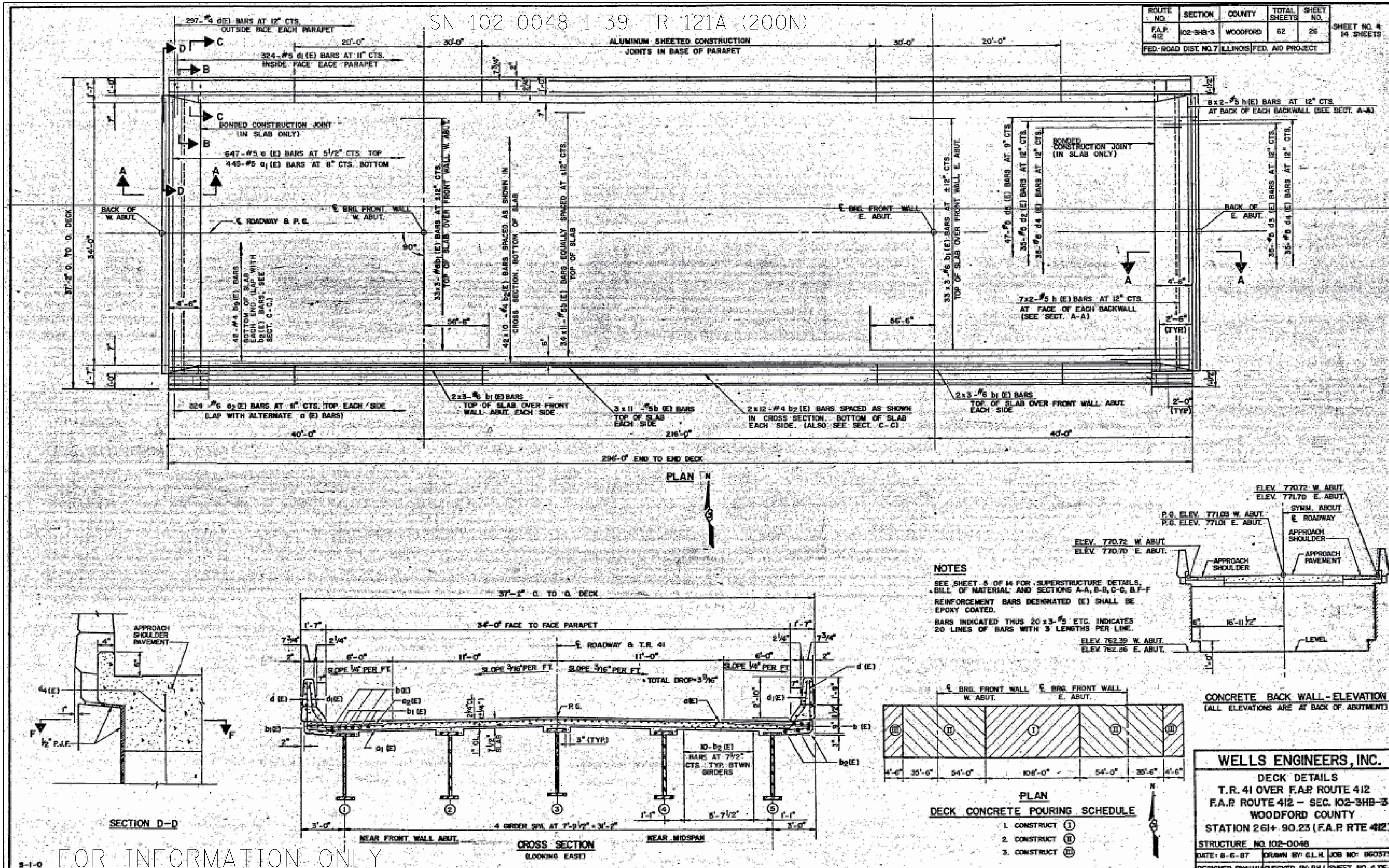
SCALE: | SHEET 1 OF 5 SHEETS | STA. | TO STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
VAR	D-4 BRIDGE PAINTING 2022	"	51	37
			CONTRACT NO. 68G57	
		ILLINOIS	FED. AID PROJECT	

*WOODFORD AND MARSHALL

MODEL: $MODELNAME
FILE NAME: $FILEL$

SN 102-0048 I-39 TR 121A (200N)



ROUTE NO. F.A.P. 412
SECTION 102-3HB-3
COUNTY WOODFORD
TOTAL SHEETS 62
SHEET NO. 26
SHEET NO. 4 14 SHEETS
FED. ROAD DIST. NO. 7 ILLINOIS FED. AID PROJECT
297-#4 d(E) BARS AT 12" CTS. OUTSIDE FACE EACH PARAPET
324-#5 d1(E) BARS AT 11" CTS. INSIDE FACE EACE PARAPET
ALUMINUM SHEETED CONSTRUCTION JOINTS IN BASE OF PARAPET
BONDED CONSTRUCTION JOINT (IN SLAB ONLY)
647-#5 a (E) BARS AT 5 1/2" CTS. TOP
445-#5 a1 (E) BARS AT 8" CTS. BOTTOM
BACK OF W. ABUT.
℄ ROADWAY & P.G.
℄ BRG. FRONT WALL W. ABUT.
℄ BRG. FRONT WALL E. ABUT.
BACK OF E. ABUT.
8x2-#5 h(E) BARS AT 12" CTS. AT BACK OF EACH BACKWALL (SEE SECT. A-A)
7x2-#5 h (E) BARS AT 12" CTS. AT FACE OF EACH BACKWALL (SEE SECT. A-A)
37'-2" O. TO O. DECK
324-#6 a2 (E) BARS AT 11" CTS. TOP EACH SIDE (LAP WITH ALTERNATE a (E) BARS)
2x3-#6 b1 (E) BARS TOP OF SLAB OVER FRONT WALL ABUT. EACH SIDE
3x11-#5b (E) BARS TOP OF SLAB EACH SIDE
2x12-#4 b2 (E) BARS SPACED AS SHOWN IN CROSS SECTION. BOTTOM OF SLAB EACH SIDE. (ALSO SEE SECT. C-C)
40'-0"
216'-0"
296'-0" END TO END DECK
PLAN
NOTES
SEE SHEET 5 OF 14 FOR SUPERSTRUCTURE DETAILS, BILL OF MATERIAL AND SECTIONS A-A, B-B, C-C, & F-F
REINFORCEMENT BARS DESIGNATED (E) SHALL BE EPOXY COATED.
BARS INDICATED THUS 20x3-#5 ETC. INDICATES 20 LINES OF BARS WITH 3 LENGTHS PER LINE.
37'-2" O. TO O. DECK
34'-0" FACE TO FACE PARAPET
℄ ROADWAY & T.R. 41
SLOPE 1/4" PER FT.
SLOPE 3/16" PER FT.
TOTAL DROP=3 9/16"
4 GIRDER SPA. AT 7'-9 1/2" = 31'-2"
NEAR FRONT WALL ABUT.
NEAR MIDSPAN
CROSS SECTION (LOOKING EAST)
SECTION D-D
APPROACH SHOULDER PAVEMENT
ELEV. 770.72 W. ABUT.
ELEV. 771.70 E. ABUT.
P.G. ELEV. 771.03 W. ABUT.
P.G. ELEV. 771.01 E. ABUT.
ELEV. 762.39 W. ABUT.
ELEV. 762.36 E. ABUT.
CONCRETE BACK WALL-ELEVATION (ALL ELEVATIONS ARE AT BACK OF ABUTMENT)
PLAN
DECK CONCRETE POURING SCHEDULE
1. CONSTRUCT (I)
2. CONSTRUCT (II)
3. CONSTRUCT (III)
WELLS ENGINEERS, INC.
DECK DETAILS
T.R. 41 OVER F.A.P. ROUTE 412
F.A.P. ROUTE 412 - SEC. 102-3HB-3
WOODFORD COUNTY
STATION 261+ 90.23 (F.A.P. RTE 412)
STRUCTURE NO. 102-0048
DATE: 8-6-87 DRAWN BY: G.L.H. JOB NO: 860375
DESIGNED BY: M.M.H. CHECKED BY: P.H.I. SHEET NO. 4 OF 14
S-1-0

FOR INFORMATION ONLY

MODEL: $MODELNAME$
FILE NAME: $FILEL$

USER NAME = $USER$	DESIGNED -	REVISED -	
	DRAWN -	REVISED -	
PLOT SCALE = $SCALE$	CHECKED -	REVISED -	
PLOT DATE = $DATE$	DATE -	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

LOCATION 6 SN 102–0048
CROSS SECTION

SCALE: SHEET 2 OF 5 SHEETS STA. TO STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
VAR	D-4 BRIDGE PAINTING 2022	*	51	38
		CONTRACT NO. 68G57		
		ILLINOIS FED. AID PROJECT		

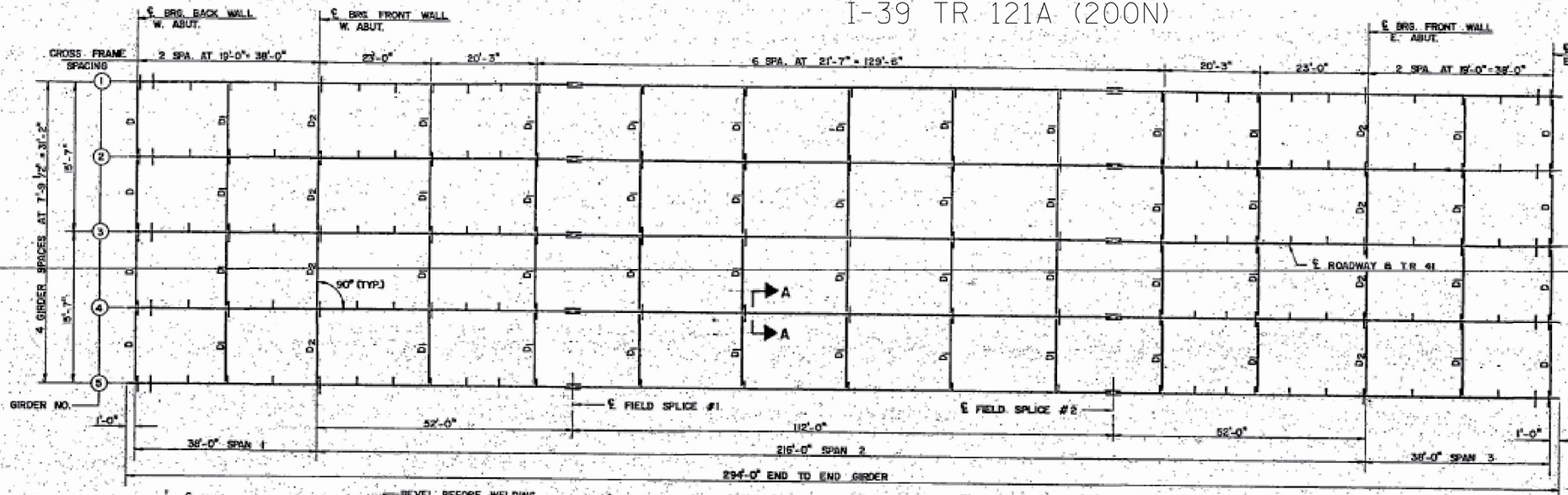
*WOODFORD AND MARSHALL

SN 102-0048

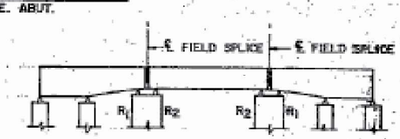
I-39 TR 121A (200N)

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
F.A.P. 412	102-3HB-3	WOODFORD	62	28
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		

SHEET NO. 6 OF 14 SHEETS



FRAMING PLAN



ERECTION SKETCH

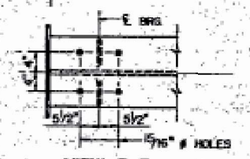
R_1 = 4.3 K PER GIRDER

R_2 = 10.3 K PER GIRDER

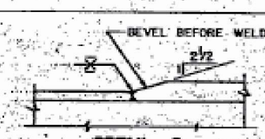
PLATE GIRDER ERECTION SEQUENCE

1. ERECT THE GIRDERS IN 3 SEGMENTS, SUPPORTED BY THE PERMANENT BEARINGS AT ABUTMENT FRONT AND REAR WALLS AND TEMPORARY SUPPORTS AT SPLICES.
2. ERECT THE GIRDER SPLICES.
3. INSTALL TIEDOWN DEVICES.
4. REMOVE TEMPORARY SUPPORTS.
5. POUR CONCRETE DECK IN SEQUENCE AS SHOWN ON SHEET NO. 4.

COST OF ERECTING AND REMOVING TEMPORARY SUPPORTS SHALL BE INCIDENTAL TO THE COST OF FURNISHING AND ERECTING STRUCTURAL STEEL.

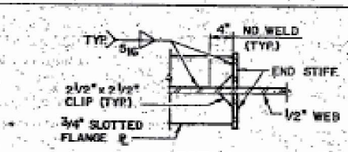


VIEW E-E

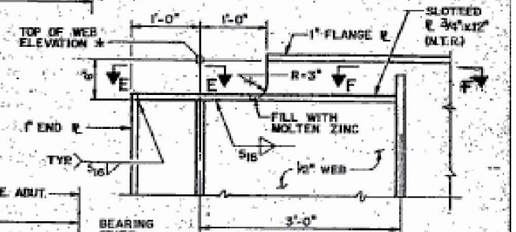


DETAIL B

TYPICAL SPLICE FOR FLANGES OF DIFFERENT THICKNESSES



SECTION F-F

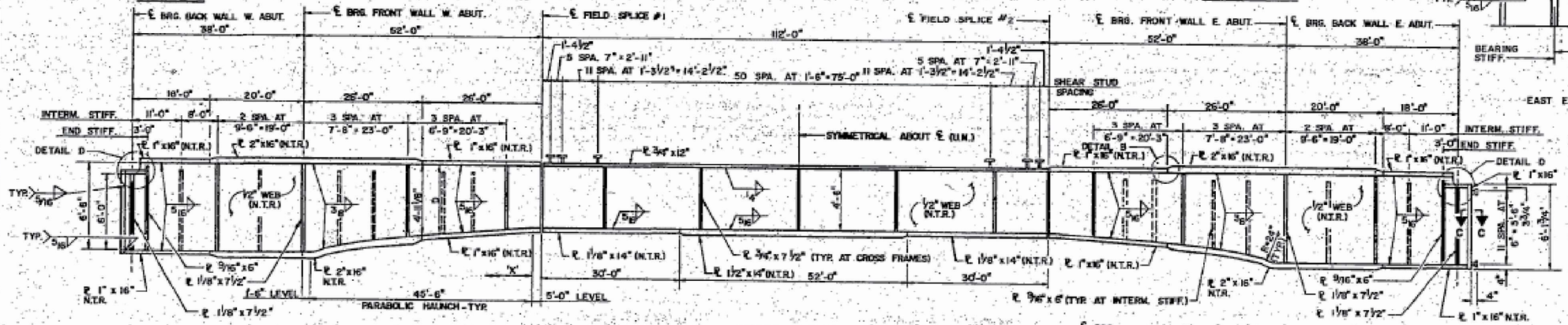


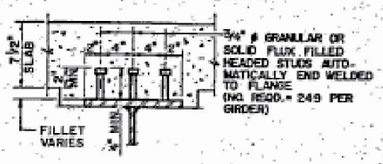
DETAIL D

SHOWING WEST END

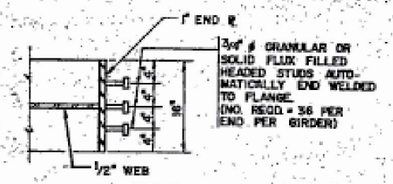
EAST END OPPOSITE HAND AND SIMILAR

* THIS POINT IS THE LOCATION WHERE THE TOP OF WEB ELEVATION IS GIVEN IN THE TABLE ON SHEET NO. 7.





SECTION A-A



SECTION C-C

GIRDER ELEVATION

SHOWN FOR G2, G3 & G4

SIMILAR FOR G1 & G5

ALL GIRDER STEEL IS AASHTO M223 (GRADE 50)

N.T.R. = NOTCH TOUGHNESS REQUIREMENT

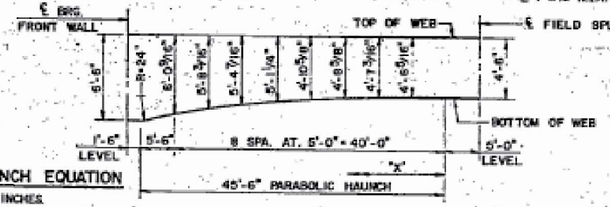
Flanges, web, splice — M223 intermediate stiffeners plate for diaphragm

PARABOLIC HAUNCH EQUATION

D = WEB HEIGHT, IN INCHES

$D = 54 + .0116\ x^2$

WHERE 'X' IS IN FEET



GIRDER WEB CUTTING DIAGRAM

WELLS ENGINEERS, INC.

FRAMING PLAN

T.R. 41 OVER F.A.P. ROUTE 412

F.A.P. ROUTE 412 – SEC. 102-3HB-3

WOODFORD COUNTY

STATION 261+ 90.23 (F.A.P. RTE 412)

STRUCTURE NO. 102-0048

DATE: 8-6-87	DRAWN BY: GLH	JOB NO: 960375
DESIGNED BY: MLJ	CHECKED BY: PJH	SHEET NO. 6 OF 14

FOR INFORMATION ONLY

USER NAME = $USERS	DESIGNED -	REVISED -	
	DRAWN -	REVISED -	
PLOT SCALE = $SCALES	CHECKED -	REVISED -	
PLOT DATE = $DATES	DATE -	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

LOCATION 6 SN 102-0048
FLAMMING PLAN

SCALE: | SHEET 3 OF 5 SHEETS | STA. | TO STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
VAR	D-4 BRIDGE PAINTING 2022	*	51	39
			CONTRACT NO. 68G57	
		ILLINOIS	FED. AID PROJECT	

*WOODFORD AND MARSHALL

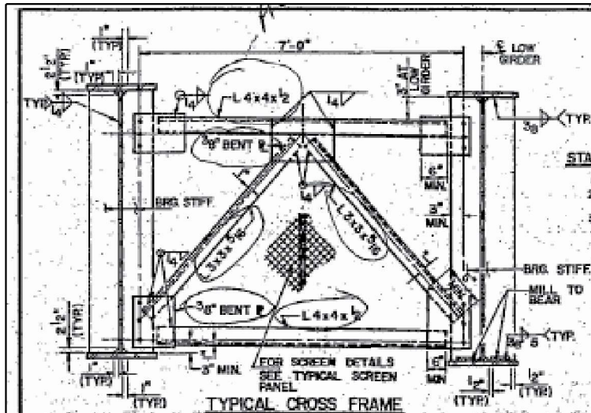
MODEL: $MODELNAME$
FILE NAME: $FILEL$

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
F.A.P. 412	102-3HB-3	WOODFORD	62	29
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		

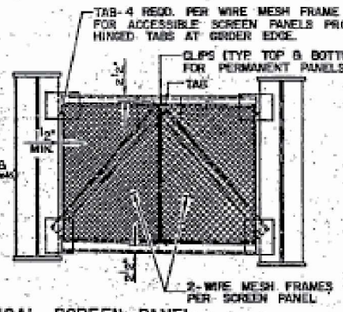
SHEET NO. 7 14 SHEETS

SN 102-0048

I-39 TR 121A (200N)



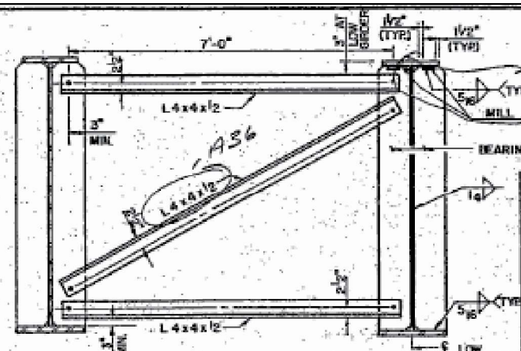
TYPICAL CROSS FRAME
AT FRONT WALL ABUTMENT-D2



STANDARD CONSTRUCTION

1. MESH: 1½" DIAMOND
2. WIRE: NO. 10 WASHBURN & MOEN GAUGE (WILLIAMS & CAMPBELL)
3. FRAME: 3/8" ROUND ROD
- ALL MATERIALS TO BE GALVANIZED.

TYPICAL SCREEN PANEL
AT FRONT WALL ABUTMENT
(8 REQUIRED)

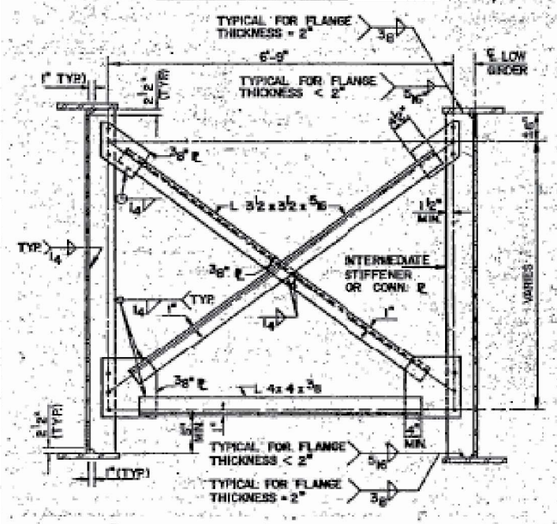


TYPICAL CROSS FRAME
AT BACK WALL ABUTMENT-D

ERECTION SEQUENCE FOR THE SCREEN PANELS

1. PERMANENT (3 REQD. PER ABUTMENT)
   a. FIELD CONNECT THE TWO WIRE-MESHED FRAMES WITH A CLIP TYPE CONNECTION.
   b. FIELD DRILL HOLES AT THE CONNECTION PLATES AND ANGLES OF THE CROSS FRAMES TO MATCH THE LOCATION OF THE TABS.
   c. HIGH STRENGTH BOLTS SHALL BE USED AND SHALL BE DRAWN UP TIGHT AND THE THREADS BURRED AT THE FACE OF THE NUT WITH A POINTED TOOL.
2. ACCESSIBLE (1 REQD. PER ABUTMENT)
   a. FIELD DRILL HOLES AT THE CONNECTION PLATES AND ANGLES OF THE CROSS FRAMES TO MATCH THE LOCATION OF ALL THE TABS.
   b. HIGH STRENGTH BOLTS SHALL BE USED AND SHALL BE DRAWN UP TIGHT.
   c. BURR THE THREADS AT THE FACE OF THE NUT FOR THE HINGED TABS ONLY.

all bolts shall be ⅞" dia bolts

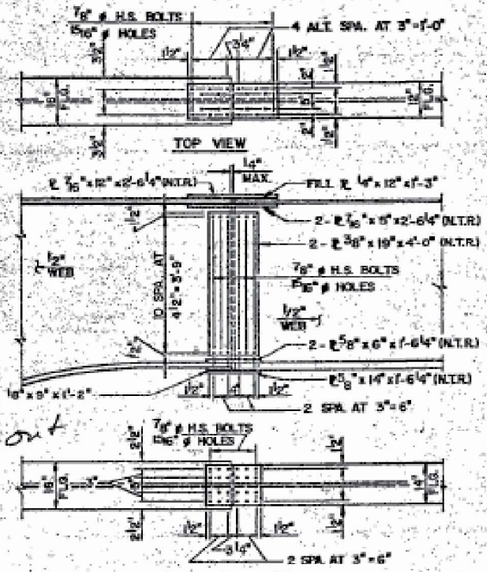


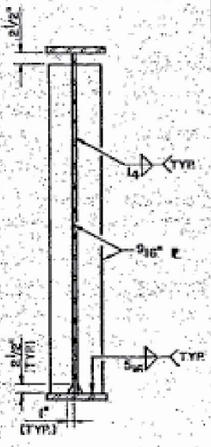
TYPICAL INTERIOR CROSS FRAME-D1

CROSS FRAME NOTES

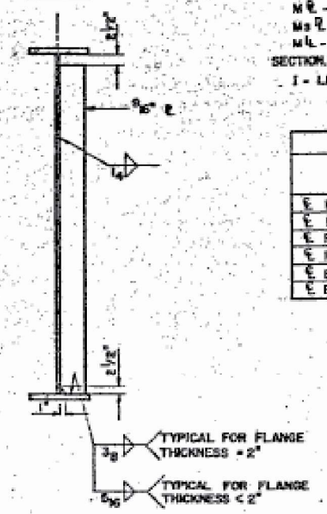
DETAIL ⅞" ø HOLES FOR ALL ⅞" ø BOLTS.
1⅛" ø HOLES FOR ALL ⅞" ø BOLTS.
HARDENED WASHERS SHALL BE REQUIRED OVER ALL HOLES.

CROSS FRAME-D MAY BE REMOVED AFTER CONCRETE BACKWALL IS IN PLACE.





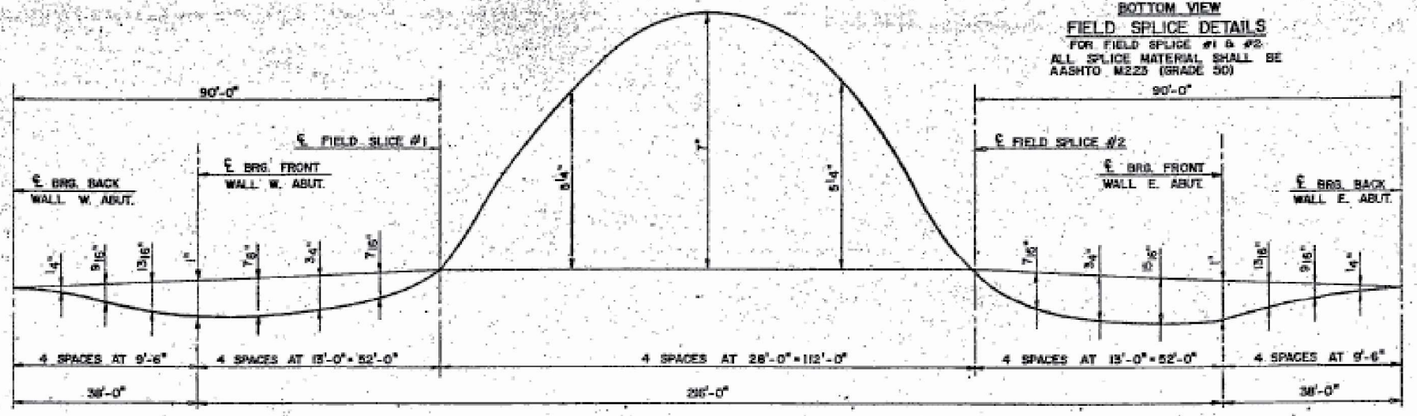
END STIFFENER
DETAIL



INTERMEDIATE STIFFENER
DETAIL

FIELD SPLICE DETAILS

FOR FIELD SPLICE #1 & #2
ALL SPLICE MATERIAL SHALL BE AASHTO M223 (GRADE 50)



CAMBER DIAGRAM

FOR INFORMATION ONLY

A36 angles for diaphragm connection plate Dist comments

INTERIOR GIRDER MOMENT TABLE

ITEM		0.47 SP1 0.53 SP3	FRNT. ABTS.	0.88 SP2 0.12 SP2	0.62 SP2 0.38 SP2	0.50 SP2
Is	(in⁴)	69704	122194	37535	24592	27496
Ic	(in⁴)	–	–	–	64359	74987
Ss	(in³)	1743	2980	1228	1004	1217
Sc	(in³)	–	–	–	1407	1694
Z	(in³)	–	–	–	–	–
℄	(K/L)	1.40	1.45	1.36	0.94	0.94
MR	('K)	-2386	-5414	-2258	1049	1401
s℄	(K/L)	–	–	–	0.35	0.35
Ms℄	('K)	–	–	–	817	748
ML	('K)	-935	-1994	-789	1135	1346
M imp.	('K)	-385	-395	-152	167	226
5/3 (ML+I)	('K)	-1867	-3962	-1535	2170	2573
Mo	('K)	-5438	-12215	-4905	4987	6139
Ms	('K)	–	–	–	–	–
fs℄ NON-COMP	(K.S.I.)	15.9	21.8	21.9	12.5	13.8
fs℄ COMP.	(K.S.I.)	–	–	–	5.3	5.3
fs 5/3 (ML+I)	(K.S.I.)	12.9	16.0	15.0	18.5	18.2
fs (OVERLOAD)	(K.S.I.)	28.8	37.8	36.9	36.3	37.3
fs (TOTAL)	(K.S.I.)	37.4	49.1	48.0	47.2	48.5
VR	(K)	–	–	–	68.6	–

INTERIOR GIRDER REACTION TABLE

ITEM		BACK WALL ABUT.	FRONT WALL ABUT.
R℄	(K)	-116.4	312.7
RL	(K)	-58.8	128.4
IMP.	(K)	-8.6	17.0
RTOTAL	(K)	-183.8	458.1

MD (APPLIED MOMENT) = 1.3 [M℄ + Ms ℄ + 5/3 (ML + I)]

Is AND Ss ARE THE MOMENT OF INERTIA AND SECTION MODULUS OF THE STEEL USED IN COMPUTING fs (TOTAL AND OVERLOAD).

Ic AND Sc ARE THE MOMENT OF INERTIA AND SECTION MODULUS OF THE COMPOSITE SECTION USED IN COMPUTING fs (TOTAL AND OVERLOAD).

VR IS THE MAXIMUM L + IMPACT SHEAR RANGE IN SPAN.

fs (TOTAL) IS THE SUM OF THE STRESSES DUE TO 1.3 [M℄ + Ms ℄ + 5/3 (ML + I)].

fs (OVERLOAD) IS THE SUM OF THE STRESSES DUE TO M℄ + Ms ℄ + 5/3 (ML + I)

M℄ - MOMENT DUE TO DEAD LOADS ON NON-COMPOSITE SECTION.

Ms℄ - MOMENT DUE TO DEAD LOADS ON COMPOSITE SECTION.

ML - MOMENT DUE TO LIVE LOAD ON NON-COMPOSITE OR COMPOSITE SECTION.

I - LIVE LOAD IMPACT.

TOP OF WEB ELEVATIONS (FOR FABRICATION ONLY)

	GIRDER NUMBERS		
	1 & 5	2 & 4	3
℄ BRG. BACK WALL W. ABUT.	769.94	770.08	770.21
℄ BRG. FRONT WALL W. ABUT.	770.32	770.47	770.59
℄ FIELD SPLICE #1	771.04	771.19	771.31
℄ FIELD SPLICE #2	771.03	771.18	771.30
℄ BRG. FRONT WALL E. ABUT.	770.30	770.45	770.57
℄ BRG. BACK WALL E. ABUT.	769.91	770.06	770.18

WELLS ENGINEERS, INC.

FRAMING DETAILS
T.R. 41 OVER F.A.P. ROUTE 412
F.A.P. ROUTE 412 – SEC. 102-3HB-3
WOODFORD COUNTY
STATION 261+90.23 (F.A.P. RTE. 412)

STRUCTURE NO. 102-0048

DATE: 8-6-87	DRAWN BY: B.N.	JOB NO: 0603375
DESIGNED BY: FMJ	CHECKED BY: PHI	SHEET NO. 7 OF 14

USER NAME = $USERS	DESIGNED -	REVISED -	
	DRAWN -	REVISED -	
PLOT SCALE = $SCALES	CHECKED -	REVISED -	
PLOT DATE = $DATES	DATE -	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

LOCATION & SN 102-0048
FLAMMING PLAN

SCALE: | SHEET 4 OF 5 SHEETS | STA. | TO STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
VAR	D-4 BRIDGE PAINTING 2022	*	51	40
		CONTRACT NO. 68G57		
	ILLINOIS	FED. AID PROJECT		

*WOODFORD AND MARSHALL

MODEL: $MODELNAME$
FILE NAME: $FILES

FED. ROAD DIST. NO.	STATE	FED. AID PROJECT	F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
7	ILLINOIS		412	102-3HB-3	WOODFORD	62	(30a)

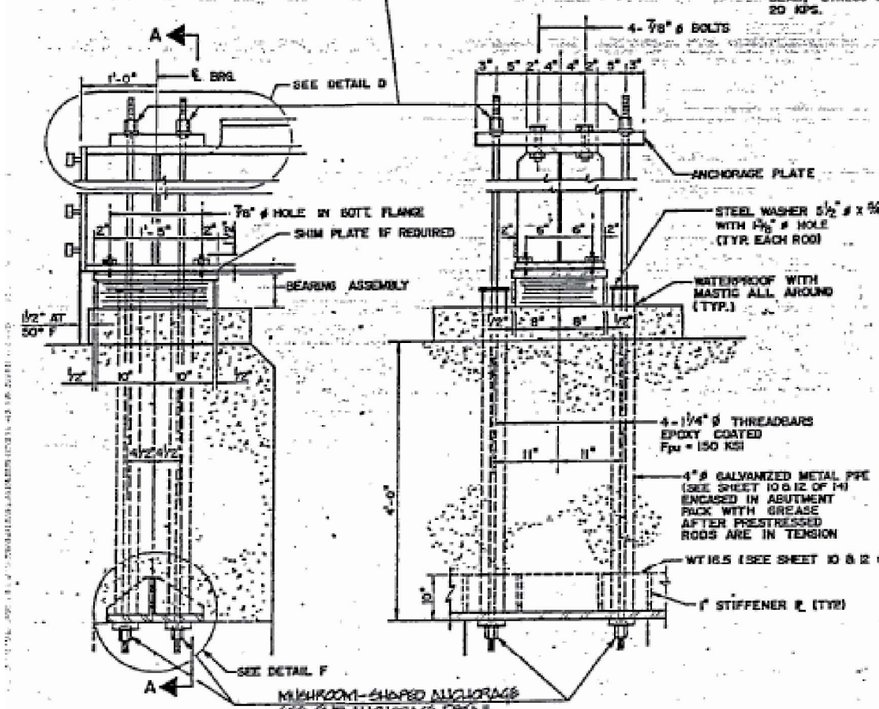
SHEET NO. 8 IN SHEETS

SN 102-0048

I-39 TR 121A (200N)

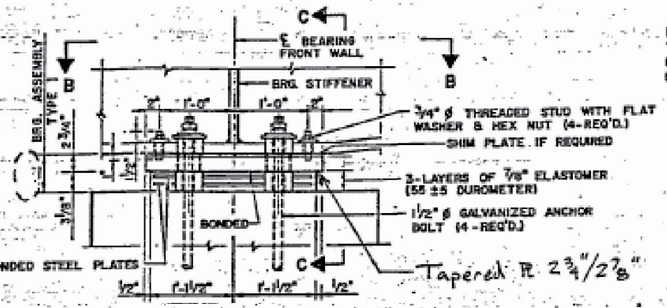
MUSHROOM-SHAPED ANCHORAGE SEE ELID ANCHORAGE DETAIL

INITIALLY STRESS EACH THREADBAR TO 46 KIPS AFTER ANCHORAGE IS SET. AFTER COMPLETION OF POURING SEQUENCE 1 AND 2 OF THE DECK SLAB, STRESS EACH THREADBAR AN ADDITIONAL 20 KIPS.

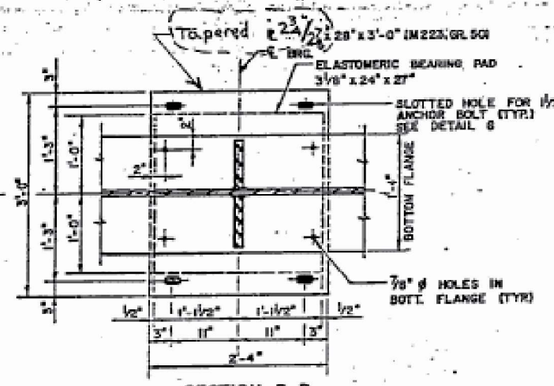


ELEVATION AT BACK WALL ABUTMENT

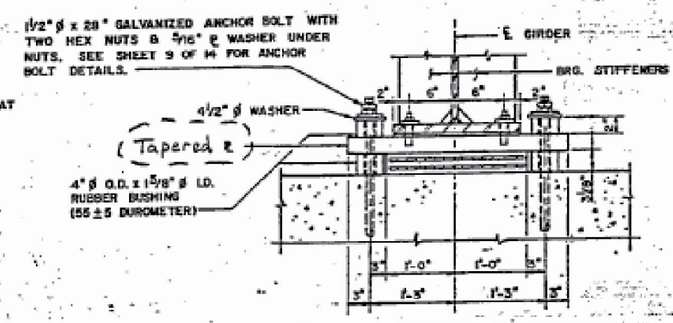
SECTION A-A



ELEVATION AT FRONT WALL

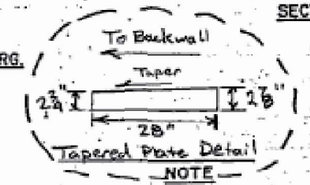


SECTION B-B



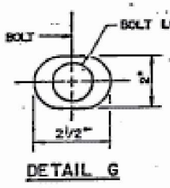
SECTION C-C

TYPE I ELASTOMERIC BRG. (10 REQUIRED)

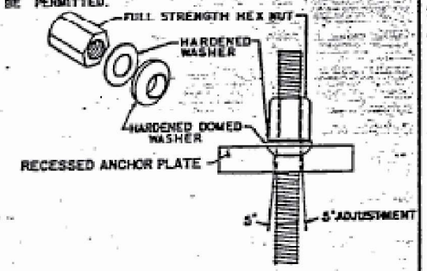


NOTE

FLAME CUTTING OF PRESTRESSING ROD WILL NOT BE PERMITTED.



DETAIL G

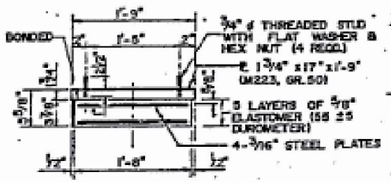


END ANCHORAGE DETAIL

BILL OF MATERIAL

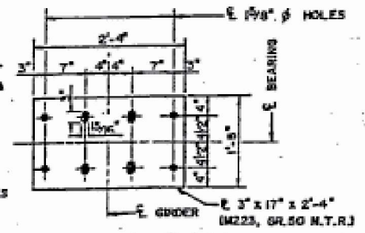
ITEM	UNIT	EACH
ELASTOMERIC BEARING ASSEMBLY TYPE I	EACH	20
TIEDOWN DEVICE	EACH	10

TYPE I ELASTOMERIC BRG. (10 REQUIRED)



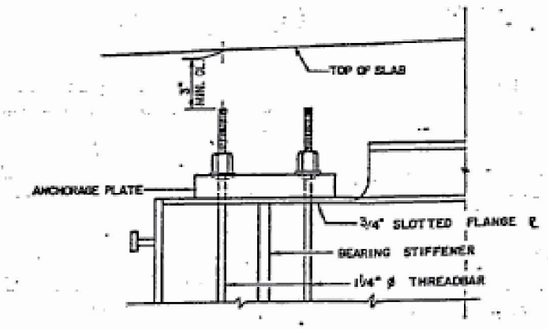
BEARING ASSEMBLY

NOTE SHIM PLATES SHALL NOT BE PLACED UNDER BEARING ASSEMBLY.

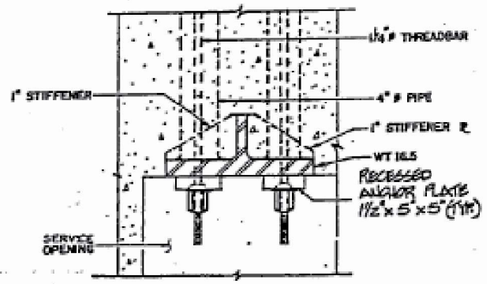


PLAN ANCHORAGE PLATE

NOTE: TIEDOWN DEVICE INCLUDES THREADBARS, NUTS, WASHERS, AND ANCHORAGE PLATE. SEE SPECIAL PROVISIONS.



DETAIL D



DETAIL F

AS REVISED

FOR INFORMATION ONLY

WELLS ENGINEERS, INC.

BEARING DETAILS
T.R. 41 OVER F.A.P. ROUTE 412
F.A.P. ROUTE 412 – SEC. 102-3HB-3
WOODFORD COUNTY
STATION 261+ 90.23 (F.A.P. RTE 412)

STRUCTURE - NO. 102-0048

DATE: 8-6-87 | DRAWN BY: G.L.H. | JOB NO: 860375 | CHECKED BY: P.H.I. | SHEET NO. 5 OF 14

MODEL: $MODELNAME$
FILE NAME: $FILE$

USER NAME = $USER$	DESIGNED -	REVISED -
	DRAWN -	REVISED -
PLOT SCALE = $SCALE$	CHECKED -	REVISED -
PLOT DATE = $DATE$	DATE -	REVISED -

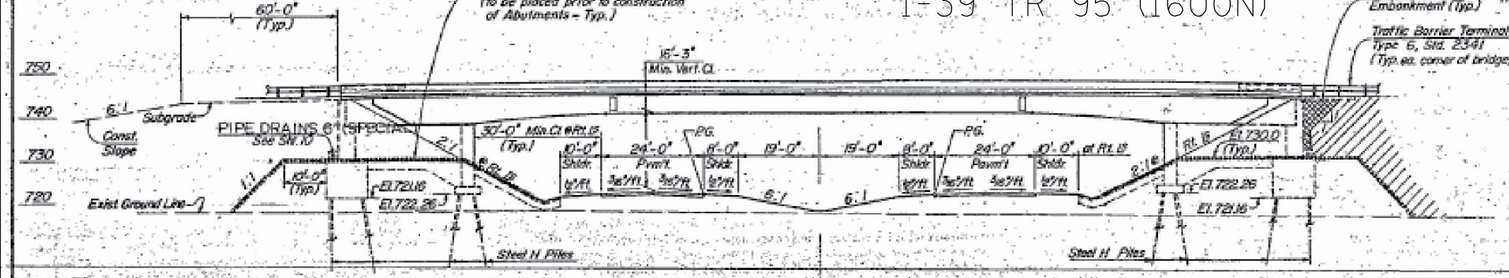
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

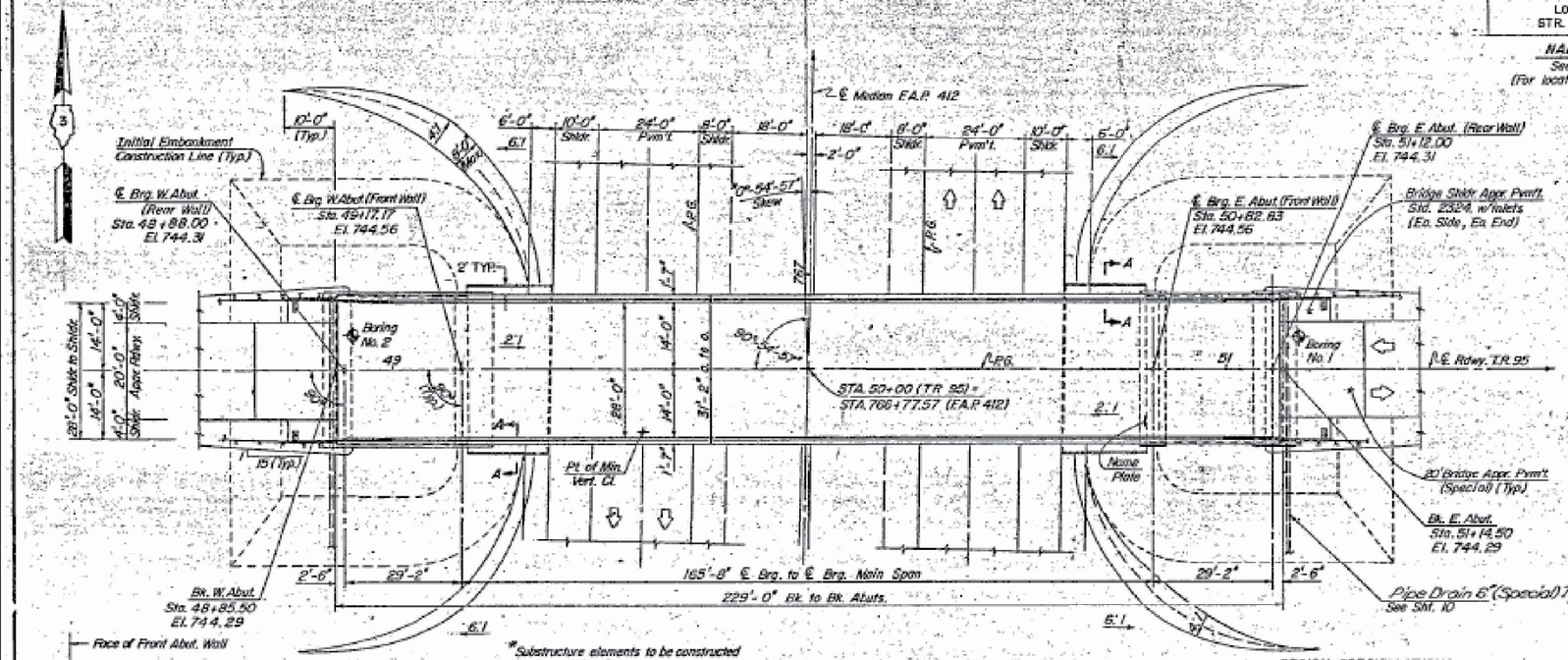
LOCATION 6 SN 102-0048
BEARING DETAILS

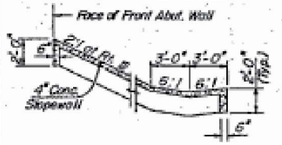
SCALE: | SHEET 5 OF 5 SHEETS | STA. | TO STA.

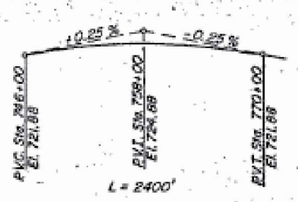
F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
VAR	D-4 BRIDGE PAINTING 2022	*	51	41
			CONTRACT NO. 68G57	
		ILLINOIS	FED. AID PROJECT	

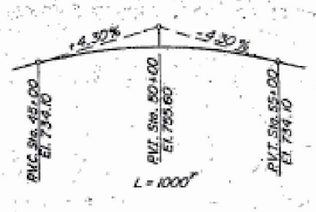
*WOODFORD AND MARSHALL











BM #5: Mine spike in PWP
25' Rt. Sta. 48+89, Elev. 719.08

Existing Structure - None

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SN 102-0050
I-39 TR 95 (1600N)

NOTE:
▭ area indicates embankment placement prior to construction of substructure.
▨ hatched area indicates embankment to be placed after construction of the Abutment (Rear Wall) and before construction of the Superstructure.
▩ Cross hatched area indicates Porous Granular Embankment from top of footing of rear wall to subgrade after deck and backwall have been poured.

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
F.A.P. 412	102-3HB-1	WOODFORD	37	14
FED. ROAD DIST. NO. 7		ILLINOIS	FED. AID PROJECT	

SHEET NO. 1
11 SHEETS

ELEVATION

GENERAL NOTES

Fasteners shall be high strength bolts. Bolts ¾" ø, open holes 13/16" ø, unless otherwise noted.

Calculated weight of Structural Steel= 125,000 Lbs. (M-183)
107,000 Lbs. (M-223 Gr. 50)

See sheet 11 of 11 for Boring Data.

The Zinc-silicate and vinyl paint system shall be used for shop and field painting of Structural Steel except where otherwise noted.

Slopewall shall be reinforced with welded wire fabric, 6"x6"-W4.0xW4.0, weighing 58# lbs. per 100 sq. ft.

Field welding of construction accessories will not be permitted to the bottom flange of the girders nor to the top flange from girder ends to splice. Field welding in other areas will be permitted only when approved by the Engineer.

Anchor bolts shall be set before bolting cross frames over supports.

Bearing seat surfaces shall be constructed or adjusted to the designated elevations within a tolerance of ⅛". Adjustment shall be made either by grinding the surface or by shimming the bearing. For Type I Elastomeric Bearings, two ⅛" shims of the dimensions shown on Sht. 7 shall be provided for each bearing and placed as detailed.

The main load carrying member components subject to tensile stress shall conform to the Supplemental Requirements for Notch Toughness Zone 2. These Components are the tension flanges, webs, and all splice plate material of the steel girders.

Reinforcement bars shall conform to the requirements of AASHTO M-31, M-42, or M-53 Grade 60.

See Sheet No. 8 for Steel Erection Sequence.

The contractor shall drive two test piles in permanent locations, one at the West Abutment Rear Wall and one at the East Abutment Rear Wall, as directed by the Engineer before ordering the remainder of piles.

STATION 766+77.57
BUILT 19__ BY
STATE OF ILLINOIS
F.A.P. RTE. 412 SEC. 102-3HB-1
F.A. PROJECT EBF-412-3(35)
LOADING HS20
STR. NO. 102-0050

NAME PLATE
See Std. 2113
(For location, see Sheet 9)

*Substructure elements to be constructed at Rt. ℄ to T.R. 95.

PLAN

SECTION THRU SLOPEWALL

SECTION A-A

DESIGNED	D.V.K.
CHECKED	G.E.P.
DRAWN	J.T.
CHECKED	D.V.K.

5/87

PROFILE GRADE F.A.P. 412
(along median edge of pavement)

PROFILE GRADE T.R. 95
(along ℄ Roadway)

DESIGN SPECIFICATIONS
AASHTO (1983) & 1984 thru 1988 Interims.

LOADING HS20-44
Allow 25#/sq. ft. for future wearing surface.

DESIGN STRESSES
f'_c = 3,500 psi
f_y = 60,000 psi (Reinforcing Steel)
f_y = 50,000 psi (Struct. Steel AASHTO M-223 Gr. 50)
f_y = 36,000 psi (Struct. Steel AASHTO M-183)
f_u = 150,000 psi (High Strength Rods)

Max. range of temperature = 120° F (-10°F to 110°F)
Pile Capacity = 53 Tons

APPROVED
FOR STRUCTURAL ADEQUACY ONLY
James T. Tuchman
Engineer of Bridges and Structures

LOCATION SKETCH

* See Special Provisions

TOTAL BILL OF MATERIAL

	ITEM	UNIT	SUPER	SUB	TOTAL
	Class X Concrete Superstructure	Cu. Yds.	250.2		250.2
	Class X Concrete	Cu. Yds.		241.6	241.6
	Class A Concrete	Cu. Yds.		272.0	272.0
	Reinforcement Bars	Lbs.		22,640	22,640
	Reinf. Bars (Epoxy Coated)	Lbs.	63,950	6,640	70,590
	Steel Piles HP 10 x 42	Lin. Ft.		3,219	3,219
	Test Pile Steel HP 10x42	Each		2	2
	Slopewall (4")	Sq. Yds.		234	234
	Porous Granular Embankment	Cu. Yds.		80	80
††	Protective Coat	Sq. Yds.	896		896
	Pipe Drains 6" (SPECIAL)	Lin. Ft.		148	148
	Stud Shear Connectors (¾" ø)	Each	984		984
	Elastom. Brg. Assy., Type I	Each	16		16
*	Geocomposite Wall Drain	Sq. Yds.		56	56
	Name Plates	Each		1	1
*	Tiedown Device	Each	8		8
	Structure Excavation	Cu. Yds.		620	620
	Furnishing & Erecting Structural Steel	L. S.	1		1
*	Screen Panel	Each	6		6
	Rubbed Finish (Modified)	Sq. Ft.	1580	1011	2591
	Conc. Hdwl. For Pipe Drains	Each		2	2
	Bridge Deck Grooving	Sq. Yd.	712		712

†† Quantity includes top of roadway surface

91-3312

GENERAL PLAN & ELEVATION
T.R. 95 OVER F.A.P. 412
SEC. 102-3 HB-1
WOODFORD CO.
STA. 766+77.57
STRUCTURE NO. 102-0050

Gregory E. Pohlen

FOR INFORMATION ONLY

MODEL: $MODELNAME$
FILE NAME: $FILEL$

USER NAME = $USER$	DESIGNED -	REVISED -	
	DRAWN -	REVISED -	
PLOT SCALE = $SCALE$	CHECKED -	REVISED -	
PLOT DATE = $DATE$	DATE -	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

LOCATION 7 SN 102-0050
PLAN & ELEVATION VIEW

SCALE: SHEET 1 OF 5 SHEETS STA. TO STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
VAR	D-4 BRIDGE PAINTING 2022	*	51	42
	CONTRACT NO. 68G57			
	ILLINOIS	FED. AID PROJECT		

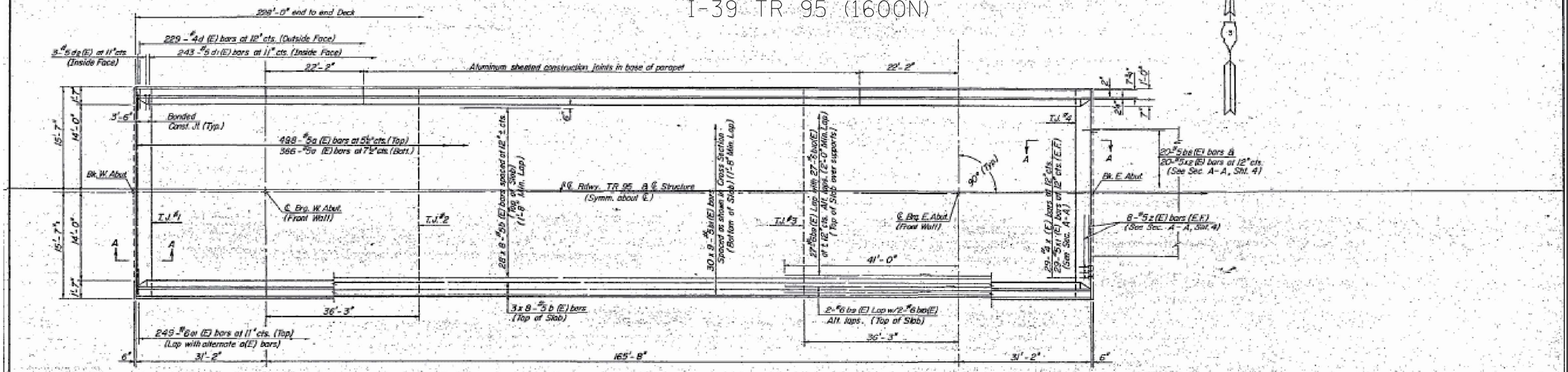
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

SN 102-0050

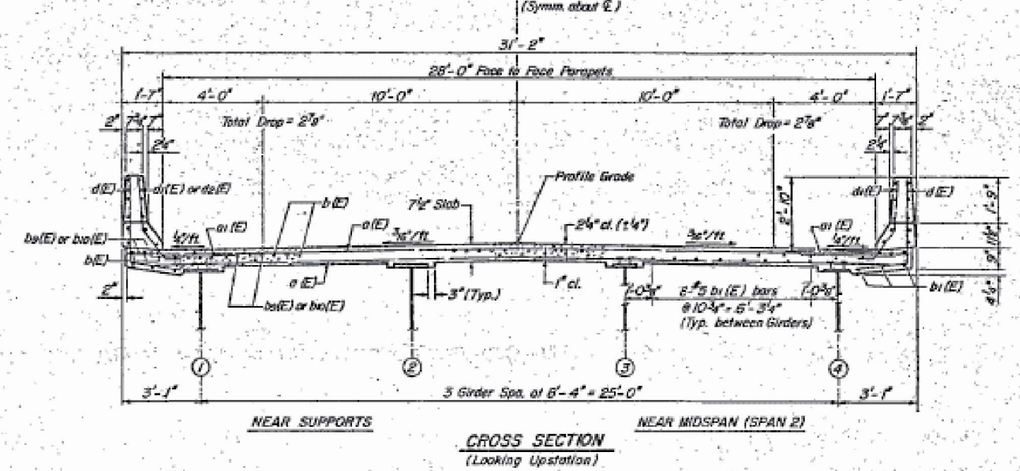
I-39 TR 95 (1600N)

BOOK NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
F. A. R. T. F. A. P. 412	102-3HB-1	WOODFORD	57	16
PROJ. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		

SHEET NO. 2
11 SHEETS



PLAN



CROSS SECTION
(Looking Upstation)

NOTES:
See sheet No. 4 for Superstructure Details and Bill of Material.

Reinforcement bars designated (E) shall be epoxy coated.

Bars indicated thus: 28 x 8 - #5 etc. indicates 28 lines of bars with 8 lengths per line.

See Sht. No. 4 for Paving Diagram and Sec. A-A.

DESIGNED	D.V.K.
CHECKED	G.E.P.
DRAWN	J.T.
CHECKED	D.V.K.

SUPERSTRUCTURE
T.R 95 OVER F.A.P. 412
SEC. 102-3HB - 1
WOODFORD CO.
STA. 766+77.57

FOR INFORMATION ONLY

MODEL: $MODELNAME$
FILE NAME: $FILE$

USER NAME = $USERS	DESIGNED -	REVISED -
	DRAWN -	REVISED -
PLOT SCALE = $SCALES	CHECKED -	REVISED -
PLOT DATE = $DATES	DATE -	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

LOCATION 7 SN 102-0050
SUPERSTRUCTURE AND CROSS SECTION

SCALE: | SHEET 2 OF 5 SHEETS | STA. | TO STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
VAR	D-4 BRIDGE PAINTING 2022	"	51	43
		CONTRACT NO. 68G57		
	ILLINOIS	FED. AID PROJECT		

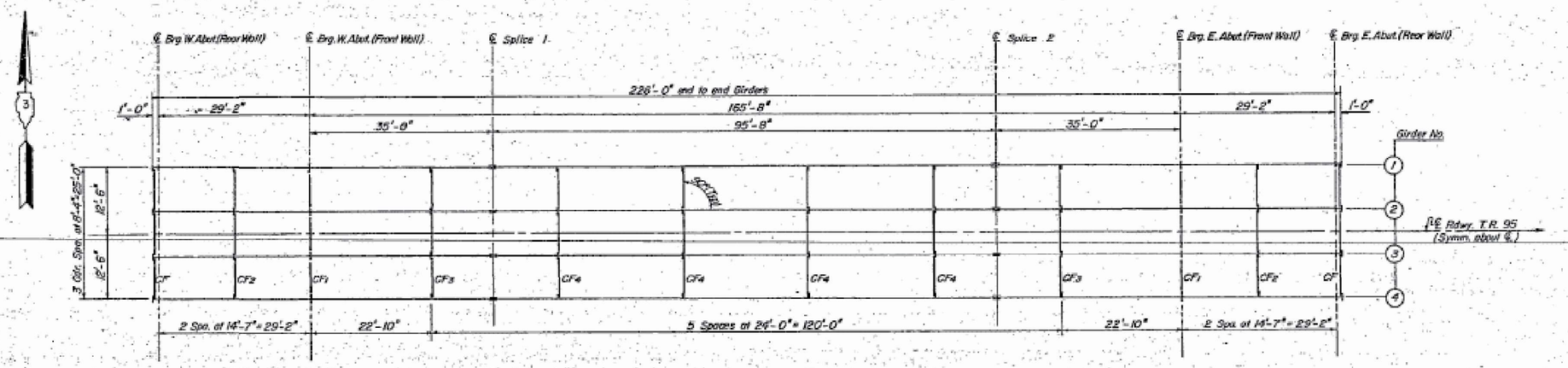
SN 102-0050

I-39 TR 95 (1600N)

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
F.A.I. F.A.P. 412	102-3HB-1	WOODFORD	37	18
FED. ROAD DIST. NO. 7		ILLINOIS	FED. AID PROJECT	

SHEET NO. 18 OF 37 SHEETS



FRAMING PLAN

INTERIOR GIRDER REACTION TABLE		E & W Abuts. (Rear Wall)	E & W Abuts. (Front Wall)
	R D (K)	-93.8	253.0
*	R L (K)	-32.4	112.9
*	Imp. (K)	-9.7	25.4
*	R Total (K)	-135.9	391.3

Negative values indicate uplift condition.

*The maximum downward reaction for each girder at the Abut. Rear Wall is RL = 41.0k and R I = 12.3k

EXTERIOR GIRDER MOMENT TABLE			
	0.5 Sp. 1 or 3	Pont Abut Wall	0.5 Sp. 2
Is (in⁴)	51,196.5	73,100.8	19,844.4
Ic (in⁴)	——	——	52,990.2
Ss (in³)	1,393.1	1,962.4	956.0
Sc (in³)	——	——	1,314.2
D (K/')	1.451	1.514	1.001
M D ('K)	1,523.5	3,358.5	995.4
s D (K/')	——	——	0.380
Ms D ('K)	——	——	469.8
M L ('K)	645.9	1,309.1	1,087.2
M Imp ('K)	193.8	294.3	187.0
fb (MS + I) ('K)	1,399.4	2,672.3	2,123.7
Ma ('K)	3,799.8	7,840.0	4,665.6
fs D non-comp (k.s.i.)	13.12	20.54	12.49
fs D (comp) (k.s.i.)	——	——	4.29
fs fb (D + I) (k.s.i.)	12.05	16.34	19.39
fs Overload (k.s.i.)	25.17	36.88	36.17
fs Total (k.s.i.)	32.72	47.94	47.02
VR (K)	——	——	58.3

Is and Ss are the moment of inertia and section modulus of the steel section used in computing fs (Total & Overload).

Ic and Sc are the moment of inertia and section modulus of the composite used in computing fs (Total & Overload).

VR is the maximum L + Impact shear range in span.

Ma (Applied Moment) = 1.3 [M D + Ms D + 5/3 (M L + I)].

fs (Overload) is the sum of the stresses due to M D + Ms D + 5/3 (M L + I)

fs (Total) is the sum of the stresses due to 1.3 [M D + Ms D + 5/3 (M L + I)].

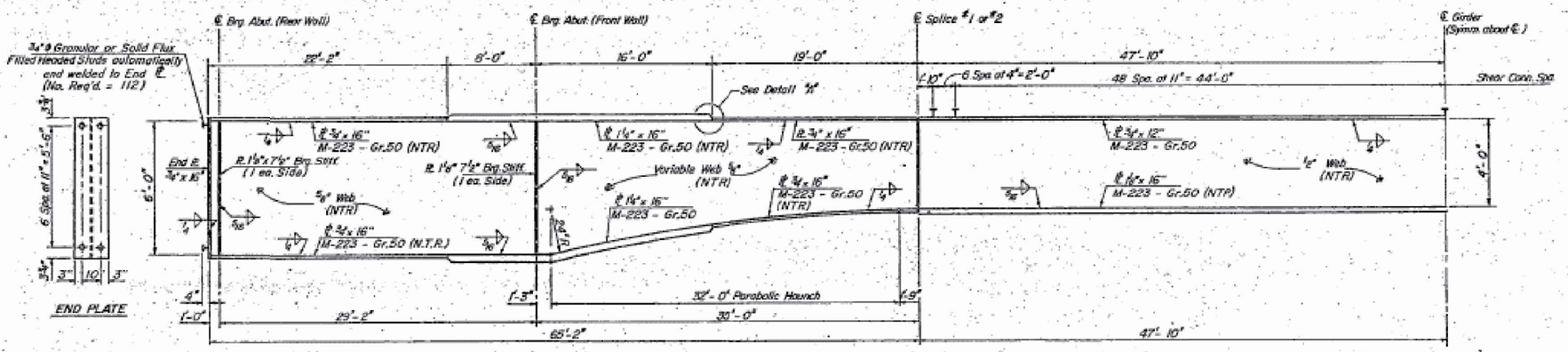
** Non-compact section.

M D = Moment due to dead loads on non-composite section.

Ms D = Moment due to dead loads on composite section.

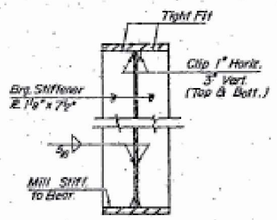
M L = Moment due to live loads on non-composite or composite section.

I = Live load impact

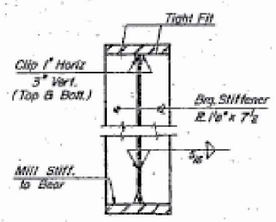


GIRDER ELEVATION

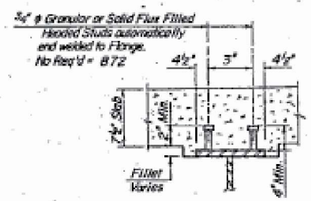
NOTES:
NTR denotes plates to which Notch Toughness Requirements are applicable.



SECTION AT ℄ BRG. ABUT. (REAR WALL)



SECTION AT ℄ BRG. ABUT. (FRONT WALL)

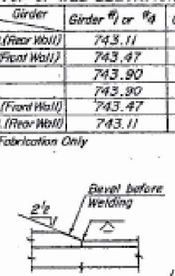


SECTION THRU SLAB (Center Span)

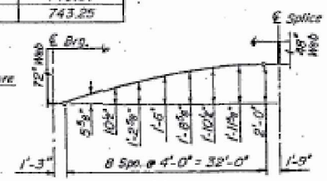
†TOP OF WEB ELEVATIONS

Location \ Girder	Girder #1 or #4	Girder #2 or #3
℄ Brg. W. Abut (Rear Wall)	743.11	743.25
℄ Brg. W. Abut (Front Wall)	743.47	743.61
℄ Splice #1	743.90	744.04
℄ Splice #2	743.90	744.04
℄ Brg. E. Abut (Front Wall)	743.47	743.61
℄ Brg. E. Abut (Rear Wall)	743.11	743.25

†For Fabrication Only



DETAIL "A"



LAYOUT - PARABOLIC HAUNCH

STRUCTURAL STEEL DETAILS
T.R. 95 OVER F.A.P. 412
SEC. 102-3HB - 1
WOODFORD CO.
STA. 766+77.57

DESIGNED	D.V.K.
CHECKED	G.E.P.
DRAWN	J.T.
CHECKED	D.V.K.

FOR INFORMATION ONLY

MODEL: $MODELNAME$
FILE NAME: $FILEL$

USER NAME = $USERS	DESIGNED -	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION
	DRAWN -	REVISED -	
PLOT SCALE = $SCALES	CHECKED -	REVISED -	
PLOT DATE = $DATES	DATE -	REVISED -	

LOCATION 7 SN 102-0050
FLAMMING PLAN

SCALE: | SHEET 3 OF 5 SHEETS | STA. | TO STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
VAR	D-4 BRIDGE PAINTING 2022	"	51	44
		CONTRACT NO. 68G57		
	ILLINOIS FED. AID PROJECT			

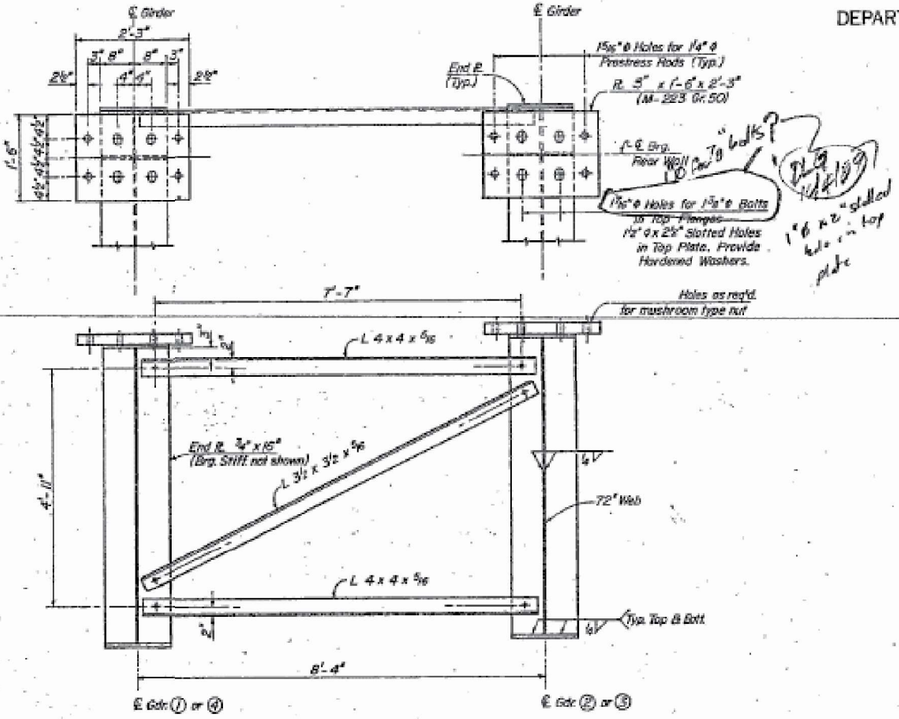
SN 102-0050

I-39 TR 95 (1600N)

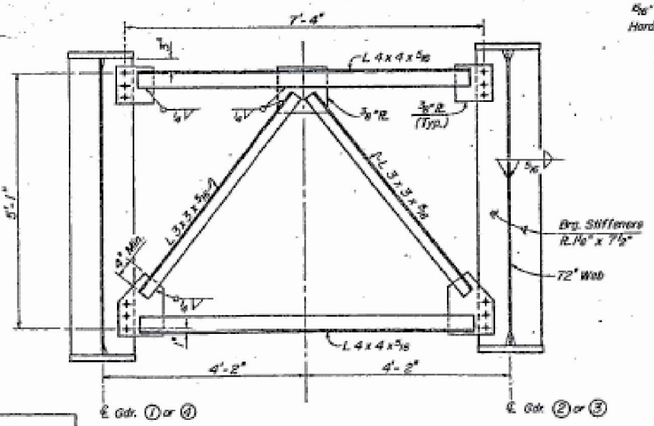
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

STATE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
S.N. 102-3HB-1 F.A.P. 412	102-3HB-1	WOODFORD	37	19
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		

SHEET NO. 6
11 SHEETS

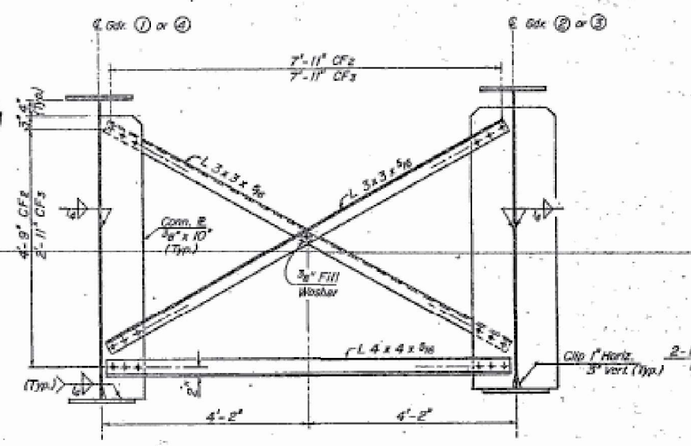


END CROSS FRAME "CF"
(2 Frame shall be removed after deck pour 1 & 2 are in place)
(6 Req'd.)

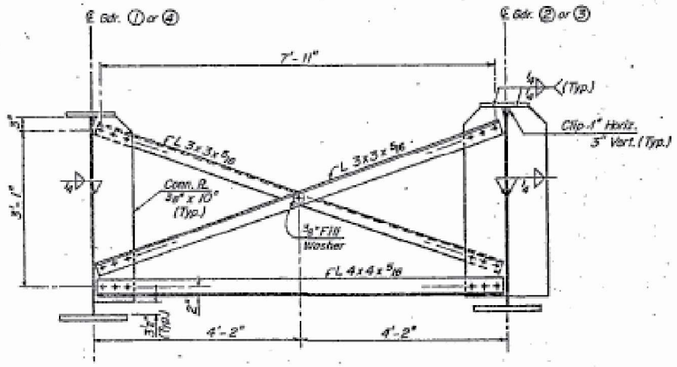


CROSS FRAME "CF1"
(6 Req'd.)

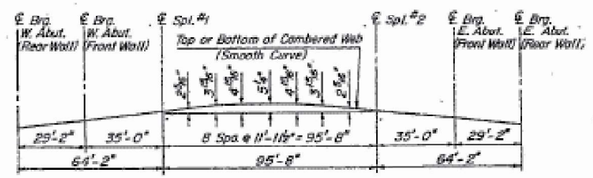
NOTES:
Cross Frame connections
¾" ø H.S. bolts.
15/16" ø holes for ¾" ø bolts.
Hardened washers required over all holes.



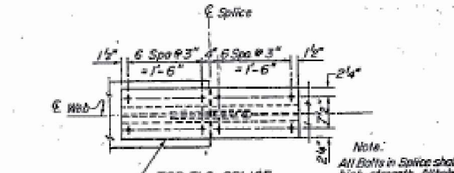
CROSS FRAMES "CF2" & "CF3"
(6 ea. Req'd.)



CROSS FRAME "CF4"
(12 Req'd.)



CAMBER DIAGRAM



Note:
All Bolts in Splice shall be ⅞" ø high strength. All holes shall be 15/16" ø.
All Splice Plate materials shall be M-223 Gr.50 (A.T.R.) except Fill Plates which shall be M-169.

BOTTOM FLG. SPLICE

FIELD SPLICE DETAILS
(8 Req'd.)

DESIGNED	D.V.K.
CHECKED	G.E.P.
DRAWN	J.T.
CHECKED	D.V.K.

FOR INFORMATION ONLY

STRUCTURAL STEEL DETAILS
T.R. 95 OVER F.A.P. 412
SEC. 102-3HB-1
WOODFORD CO.
STA. 766+77.57

MODEL: $MODELNAME$
FILE NAME: $FILES

USER NAME = $USERS	DESIGNED -	REVISED -	
	DRAWN -	REVISED -	
PLOT SCALE = $SCALES	CHECKED -	REVISED -	
PLOT DATE = $DATES	DATE -	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

LOCATION 7 SN 102-0050
STRUCTURAL STEEL DETAILS

SCALE: | SHEET 4 OF 5 SHEETS | STA. | TO STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
VAR	D-4 BRIDGE PAINTING 2022	"	51	45
		CONTRACT NO. 68G57		
	ILLINOIS	FED. AID PROJECT		

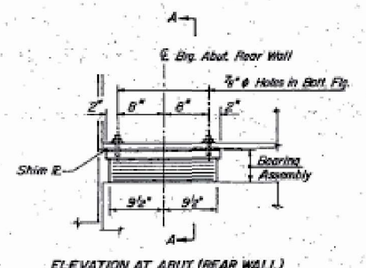
SN 102-0050

I-39 TR 95 (1600N)

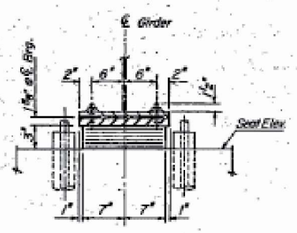
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
F.A.P. 412	102-3HB-1	WOODFORD	37	28
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		

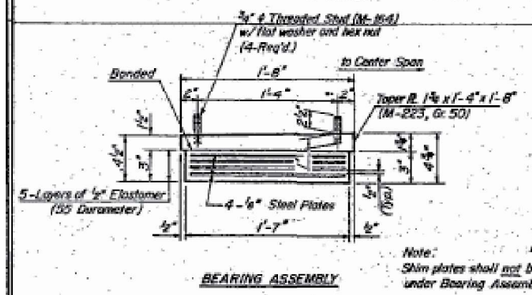
SHEET NO. 7 OF 11 SHEETS



ELEVATION AT ABUT. (REAR WALL)
(Threadbar omitted for clarity)

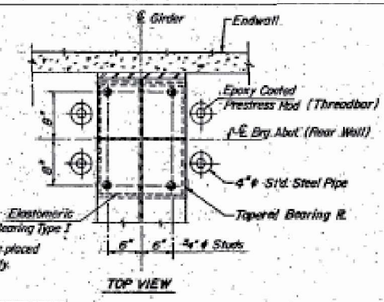


SECTION A-A



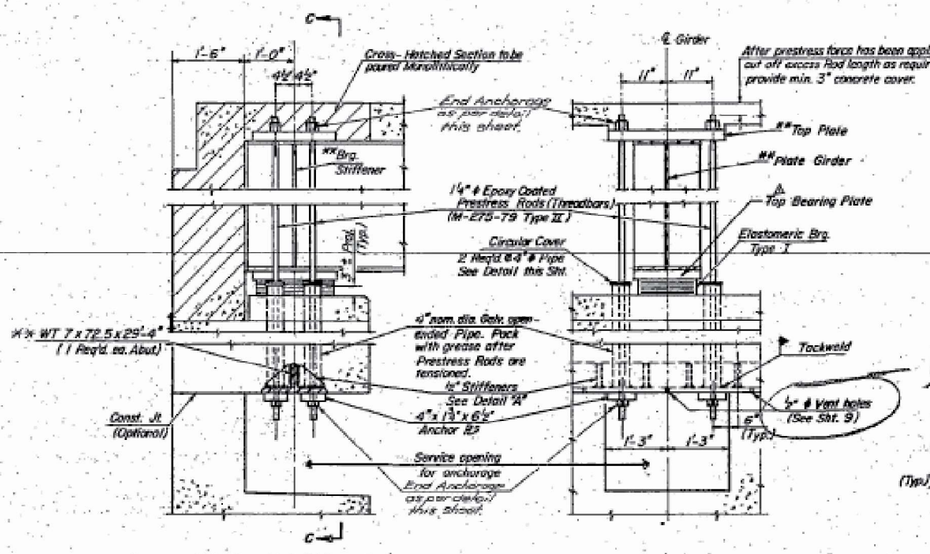
BEARING ASSEMBLY

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



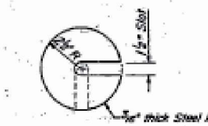
TOP VIEW

TYPE I ELASTOMERIC BRG. ASSEMBLY AT ABUT. (REAR WALL)

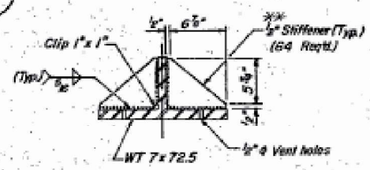


SEC. THRU ABUT (REAR WALL)

SECTION C-C



CIRCULAR COVER

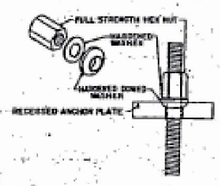


DETAIL "A"

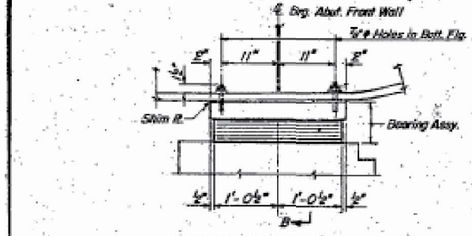
TIEDOWN DETAILS

All items shown on this detail are included in TIEDOWN DEVICE except as noted.
**Cost included in Furnishing and Erecting Structural Steel.

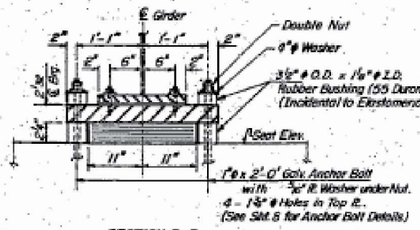
Initially stress each Prestress Rod (Threadbar) to 26 kips. after anchorage is set. After completion of Pouring Sequence 1 and 2 of the deck slab, stress each Prestress Rod an additional 21 kips.



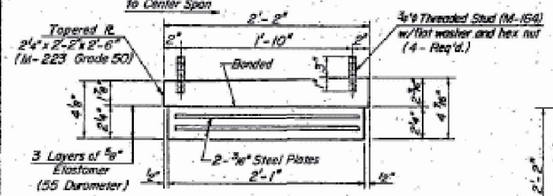
END ANCHORAGE DETAIL



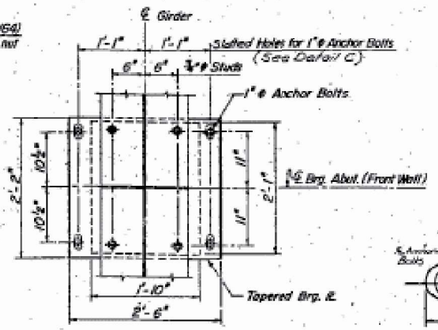
ELEVATION AT ABUT. (FRONT WALL)
(Galv. Anchor Bolts omitted)



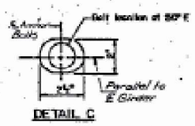
SECTION B-B



BEARING ASSEMBLY



TOP VIEW



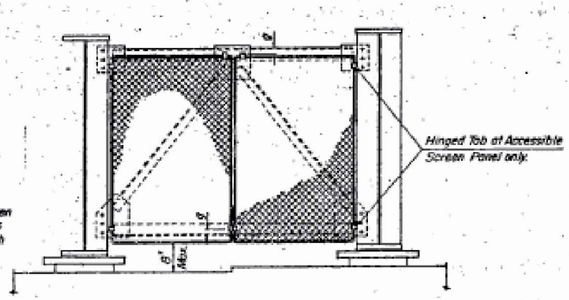
DETAIL C

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

TYPE I ELASTOMERIC BRG. ASSEMBLY AT ABUT. (FRONT WALL)

ERECTION SEQUENCE FOR SCREEN PANELS

1. Permanent Panels:
   a. Field clamp wire-meshed frames to cross frames.
   b. Field drill holes at connection plates & angles of cross frames to match location of tabs.
   c. Install high strength bolts through all tabs.
   d. Bolts shall be drawn up tight & the threads burred at the face of the nut with a pointed tool.
2. Accessible Panels:
   Sequence similar to Permanent Screen Panels except clip-type connections shall be used in place of high strength bolts of connection to angles.



NOTES

1. "ø" indicates standard gage for angles.
2. Clips shall be provided for Accessible Screen Panels only.
3. One Accessible Screen Panel shall be provided at each Abut. - Front Wall.
4. Provide hinged tabs at connections to connection plates for Accessible Screen Panel only.
5. See Special Provision for added information.

TYP. SCREEN PANEL AT ABUT. (FRONT WALL)
(6 - Req'd.)

FOR INFORMATION ONLY

SCREEN PANEL BEARING AND ANCHORAGE DETAILS
T.R. 95 OVER F.A.P. 412
SEC. 102-3HB-1
WOODFORD CO.
STA. 766+77.57

DESIGNED	D.V.K.		
CHECKED	G.E.P.		
DRAWN	J.T.		
CHECKED	D.V.K.		

MODEL: $MODELNAME$
FILE NAME: $FILE$

USER NAME = $USER$	DESIGNED -	REVISED -	
	DRAWN -	REVISED -	
PLOT SCALE = $SCALE$	CHECKED -	REVISED -	
PLOT DATE = $DATE$	DATE -	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

LOCATION 7 SN 102-0050
BEARING DETAILS

SCALE: | SHEET 5 OF 5 SHEETS | STA. | TO STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
VAR	D-4 BRIDGE PAINTING 2022	"	51	46
			CONTRACT NO. 68G57	
		ILLINOIS	FED. AID PROJECT	

SN 102-0051

I-39 TR 103 (1500N)

BM #1: Exist. RR Spike N. Side PWP 27' Lt. Sta. 20+73, Elev. 707.58

Existing Structure - None

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

Cross hatched area indicates Porous Granular Embankment from 3'-0" below bridge seat of rear wall to subgrade at 45° slope after deck and backwall have been poured.

Hatched area indicates embankment to be placed after construction of the abutment rear wall and before construction of the superstructure.

F.A.P. 412	102-3HB-1F	WOODFORD	12	3	[illegible]

GENERAL NOTES

Fasteners shall be high strength bolts. Bolts ¾" φ, open holes 13/16" φ unless otherwise noted.

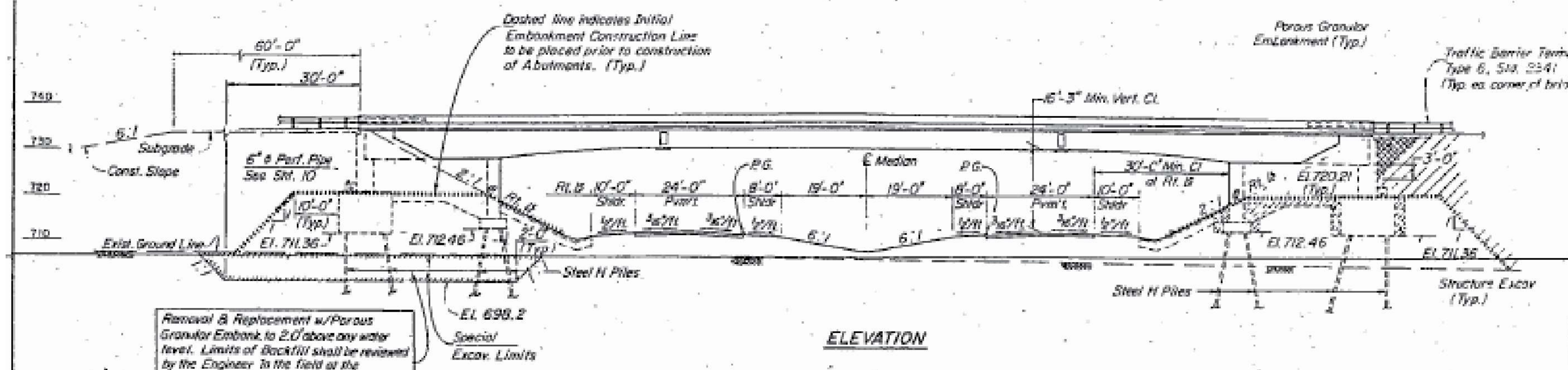
Calculated weight of Structural Steel = 125,000 Lbs. (M-183) / 107,700 Lbs. (M-223 Gr. 50)

The Zinc-silicate and vinyl paint system shall be used for shop and field painting of Structural Steel except where otherwise noted.

The main load carrying member components subject to tensile stress shall conform to the Supplemental Requirements for Notch Toughness Zone 2. These Components are the tension flanges, webs, and all splice plate material of the steel girders.

ALL STRUCTURAL STEEL FABRICATORS PERFORMING WORK ON THE MAIN LOAD CARRYING COMPONENTS OF STEEL STRUCTURES SHALL BE CERTIFIED UNDER CATEGORY III (AISC) OF THE QUALITY CERTIFICATION PROGRAM.

TWO 1/8" ADJUSTING SHIMS, OF THE DIMENSIONS OF THE TOP BEARING PLATE, SHALL BE PROVIDED FOR EACH BEARING IN ADDITION TO ALL OTHER PLATES OR SHIMS.

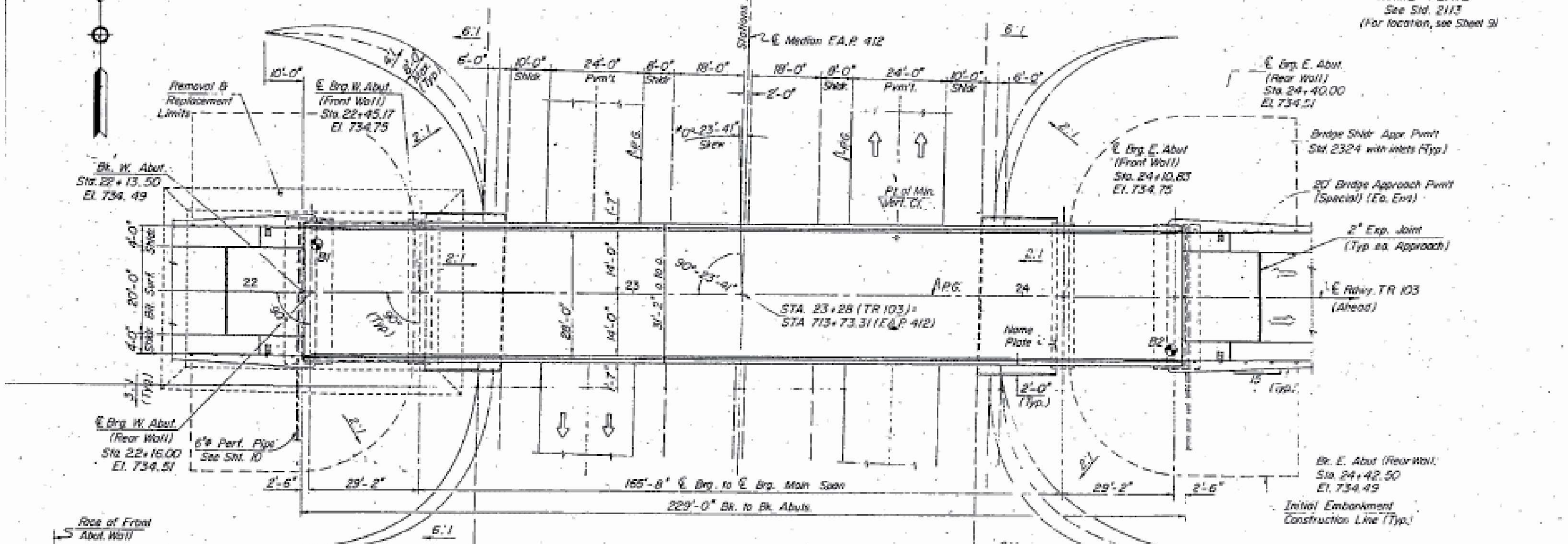


ELEVATION

STATION 713+73.31
BUILT 19__ BY
STATE OF ILLINOIS
F.A.P. RTE. 412 SEC. 102-3HB
F.A. PROJ.
LOADING HS-20
STR. NO. 102-0051

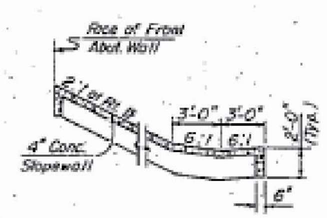
NAME PLATE
See Std. 2113
(For location, see Sheet 9)

SUMMARY OF QUANTITIES (FURNISHING & DELIVERING STRUCTURAL STEEL)			
CODE NO.	ITEM	UNIT	TOTAL
50700200	FURNISHING STRUCTURAL STEEL	L SUM	1
X5032700	FURNISHING ELASTOMERIC BEARING ASSEMBLY, TYPE I	EACH	36

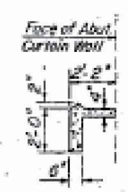


*Substructure elements to be constructed at Rt. ∠s to T.R. 103.

PLAN



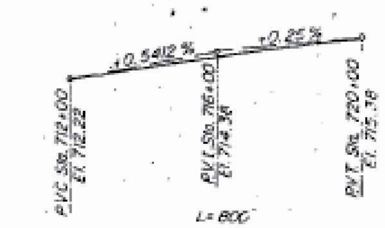
SECTION THRU SLOPEWALL



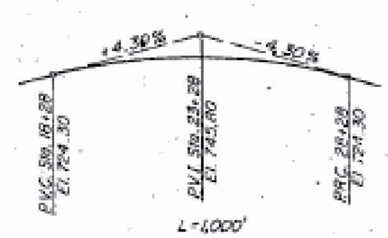
SECTION F-F

DESIGNED	DVK
CHECKED	GEP
DRAWN	JT
CHECKED	GEP

7/87



PROFILE GRADE F.A.P. 412
(along median edge of Pvmt.)



PROFILE GRADE TR 103
(along ℄ Roadway)

DESIGN SPECIFICATIONS

AASHTO (1983) & 1984, 1985, 1986 Interims with exceptions or modifications as indicated.

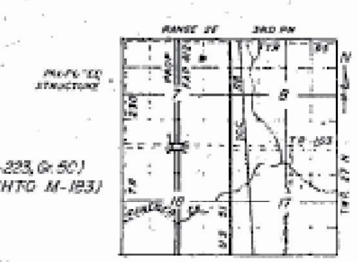
LOADING HS20-44

Allow 25 #/sq. ft. for future wearing surface

DESIGN STRESSES

f'c = 3,500 p.s.i.
fy = 60,000 p.s.i. (Reinf.)
fy = 50,000 p.s.i. (Struct. Steel AASHTO M-223, Gr. 50)
fy = 36,000 p.s.i. (Web) (Struct. Steel, AASHTO M-183)

Max. range of temperature = 120° F (-10° F to 110° F)



LOCATION SKETCH

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION
DISTRICT THREE

PREPARED BY: [signature]
DISTRICT ENGINEER OF DESIGN

DATE: July 22, 1988

EXAMINED BY: [signature]
DISTRICT ENGINEER OF CONSTRUCTION
[signature]
DISTRICT ENGINEER OF MAINTENANCE
[signature]
DISTRICT ENGINEER OF MATERIALS
[signature]
DISTRICT ENGINEER OF TRAFFIC
[signature]
DISTRICT ENGINEER OF PLANNING

APPROVED
FOR STRUCTURAL ADEQUACY ONLY
[signature]
Registered Structural Engineer

GENERAL PLAN
T.R. 103 OVER F.A.P. 412
SEC 102 - 3HB - 1F
WOODFORD CO.
STA. 713+73.31
STRUCTURE NO. 102-0051

FOR INFORMATION ONLY

MODEL: $MODELNAME$ FILE NAME: $FILES$

USER NAME = $USER$	DESIGNED -	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION
	DRAWN -	REVISED -	
PLOT SCALE = $SCALE$	CHECKED -	REVISED -	
PLOT DATE = $DATE$	DATE -	REVISED -	

LOCATION 8 SN 102–0051
PLAN & ELEVATION VIEW

SCALE: SHEET 1 OF 5 SHEETS STA. TO STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
VAR	D-4 BRIDGE PAINTING 2022	"	51	47
		CONTRACT NO. 68G57		
		ILLINOIS FED. AID PROJECT		

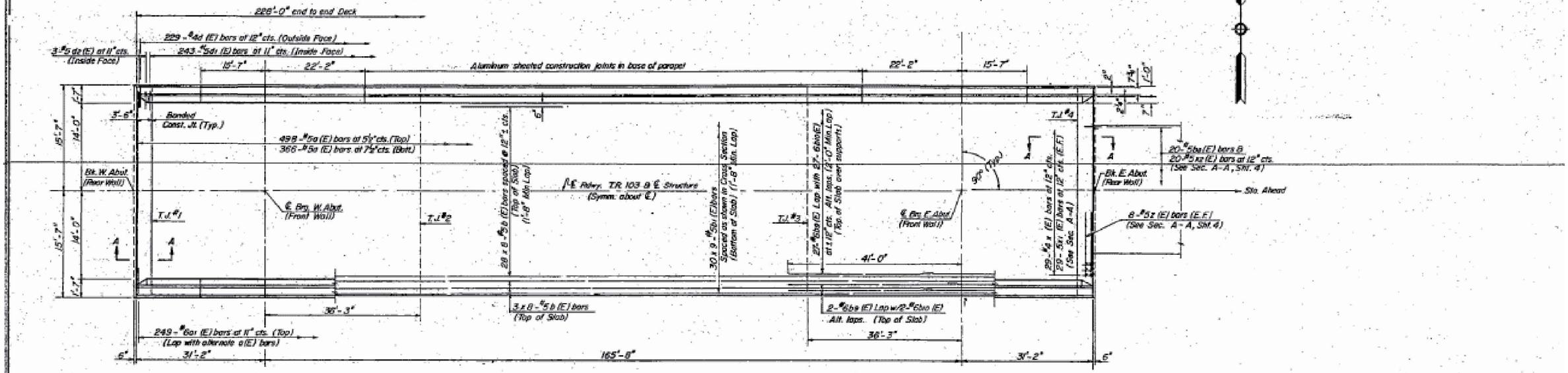
SN 102-0051

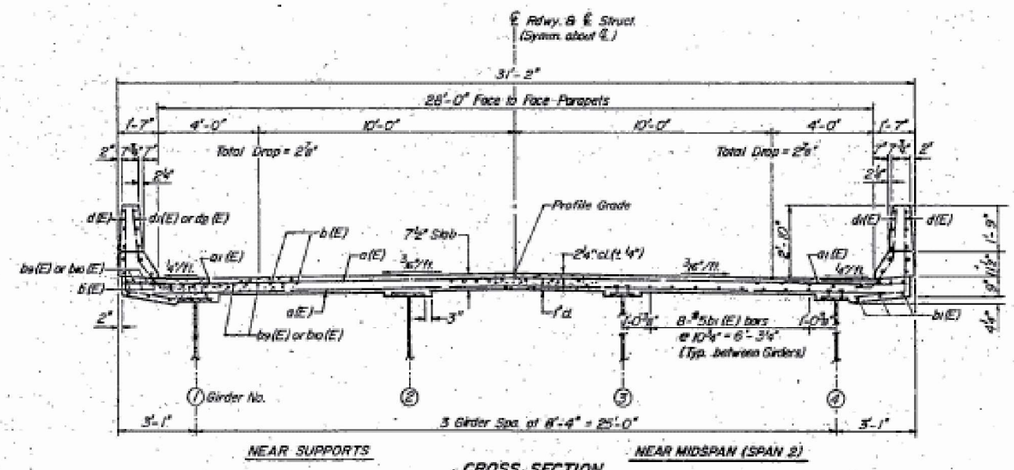
I-39 TR 103 (1500N)

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

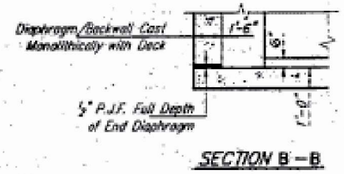
ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
F.A.P. 412	102-3HB	WOODFORD	40	19
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		

SHEET NO. 3
11 SHEETS

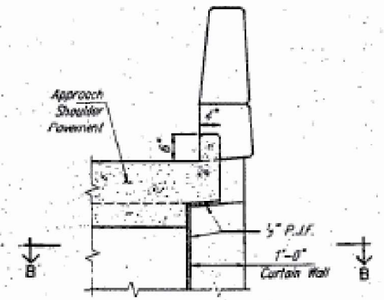




CROSS SECTION
(Looking Upstation)



SECTION B – B



END VIEW

NOTES:
See sheet No. 4 for Deck Details and Bill of Material.

Reinforcement bars designated (E) shall be epoxy coated.

Bars indicated thus: 28 x 8 - #5 etc. indicates 28 lines of bars with 8 lengths per line.

See Sht. No. 4 for Pouring Diagram and Sec. A-A.

DESIGNED	D.V.K.
CHECKED	G.E.P.
DRAWN	J.T.
CHECKED	G.E.P.

FOR INFORMATION ONLY

DECK
T.R. 103 OVER F.A.P. 412
SEC. 102 - 3HB
WOODFORD CO.
STA. 713+73.31

MODEL: \MODELNAMES
FILE NAME: SFILES

USER NAME = SUSERS	DESIGNED -	REVISED -
	DRAWN -	REVISED -
PLOT SCALE = SSCALES	CHECKED -	REVISED -
PLOT DATE = SDATES	DATE -	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

LOCATION & SN 102-0051
SUPERSTRUCTURE AND CROSS SECTION

SCALE: | SHEET 2 OF 5 SHEETS | STA. | TO STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
VAR	D-4 BRIDGE PAINTING 2022	"	51	48
		CONTRACT NO. 68G57		
	ILLINOIS	FED. AID PROJECT		

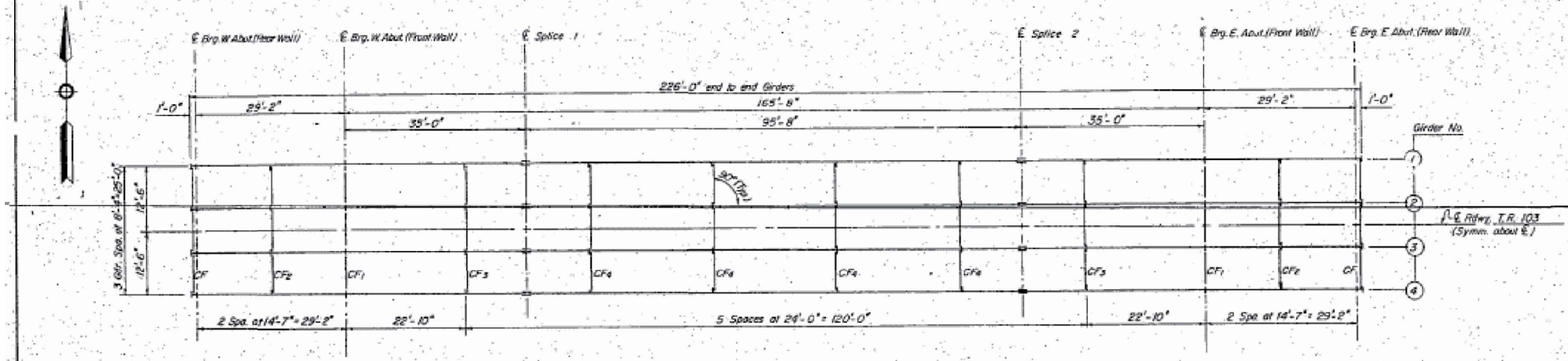
SN 102-0051

I-39 TR 103 (1500N)

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
F.A.P. 412	102-3HB -1F	WOODFORD	12	7
FED. ROAD DIST. NO. 9	ILLINOIS	FED. AID PROJECT		

SHEET NO. 5
11 SHEETS



FRAMING PLAN

INTERIOR GIRDER REACTION TABLE			
		E. & W. Abuts. (Rear Wall)	E. & W. Abuts. (Front Wall)
R D	(K)	-93.8	253.0
* R L	(K)	*-32.4	112.9
* Imp.	(K)	*- 9.7	25.4
* R Total	(K)	*-135.9	391.3

Negative values indicate uplift condition.

The maximum downward reaction at the Abut. Rear Wall's are RL = 41.0 and Rs = 12.3*

EXTERIOR GIRDER MOMENT TABLE			
	0.5 Sp. for 3	Front Abut. Wall	0.5 Sp. 2
Is (in⁴)	51,196.5	73,100.8	19,844.4
Ic (in⁴)	———	———	52,990.2
Ss (in³)	1,393.1	1,962.4	906.0
Sc (in³)	———	———	1,314.2
M D (K'.)	1,451	1,514	1,001
M L (K')	1,523.5	3,358.5	995.4
s D (K/i)	———	———	0.380
Ms L (K')	———	———	469.8
M L (K')	645.9	1,309.1	1,047.2
M Imp (K')	193.8	294.3	187.0
fs (M L + I) (K')	1,399.4	2,672.3	2,123.7
Mo (K')	3,799.8	7,840.0	4,665.6
fs D non-comp (k.s.i.)	13.12	20.54	12.45
fs D (comp) (k.s.i.)	———	———	4.29
fs S (L + I) (k.s.i.)	12.05	16.34	19.39
fs Overload (k.s.i.)	25.17	36.88	36.17
fs Total (k.s.i.)	32.72	41.44	47.02
VR (K)	———	———	58.3

Is and Ss are the moment of inertia and section modulus of the steel section used in computing fs (Total & Overload)

Ic and Sc are the moment of inertia and section modulus of the composite used in computing fs (Total & Overload)

VR is the maximum L + Impact shear range in span.

Mo (Applied Moment) = 1.3 [M D + Ms D + S (M L + I)]

fs (Overload) is the sum of the stresses due to M D + Ms D + S (M L + I)

fs (Total) is the sum of the stresses due to 1.3 [M D + Ms D + S (M L + I)]

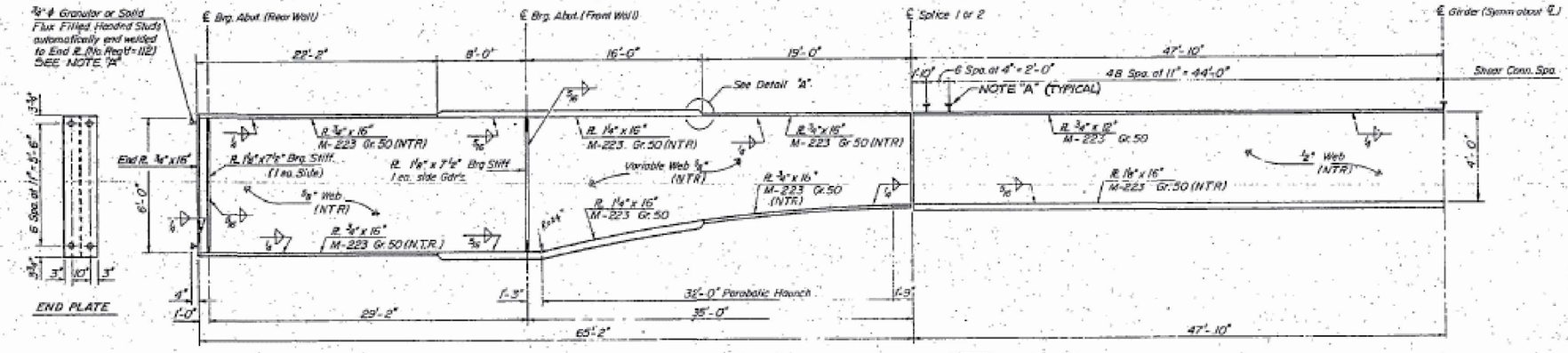
** Non-compact section.

M D - Moment due to dead loads on non-composite section.

Ms D - Moment due to dead loads on composite section.

M L - Moment due to live loads on non-composite or composite section.

I = Live load impact.



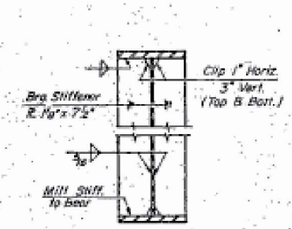
NOTES:
N.T.R. denotes plates to which Notch Toughness Requirements are applicable.

GIRDER ELEVATION

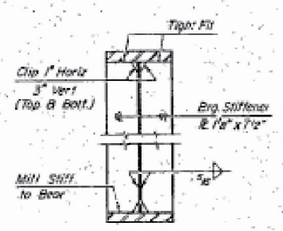
NOTE A:
STUD SHEAR CONNECTORS NOT INCLUDED IN FABRICATION CONTRACT.

TOP OF WEB ELEVATIONS*		
Location \ Girder	Girder #1 or #4	Girder #2 or #3
℄ Brg. Abut. (Rear Wall)	733.31	733.45
℄ Brg. Abut. (Front Wall)	733.67	733.81
℄ Splice 1 or 2	734.10	734.24

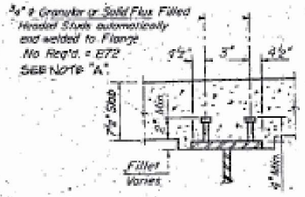
* For Fabrication only.



SECTION AT ℄ BRG. ABUT.-REAR WALL

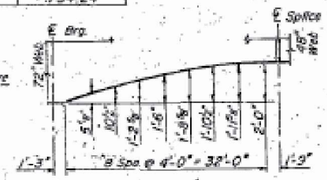


SECTION AT ABUT.-FRONT WALL



SECTION THRU SLAB (Center Span)

DETAIL "A"



LAYOUT - PARABOLIC HAUNCH

DESIGNED	D.V.K.
CHECKED	G.E.P.
DRAWN	J.T.
CHECKED	G.E.P.

FOR INFORMATION ONLY

STRUCTURAL STEEL DETAILS
T.R. 103 OVER F.A.P. 412
SEC. 102-3HB-1F
WOODFORD CO.
STA. 713+73.31

MODEL: $MODELNAME$
FILE NAME: $FILE$

USER NAME = $USER$	DESIGNED -	REVISED -	
	DRAWN -	REVISED -	
PLOT SCALE = $SCALE$	CHECKED -	REVISED -	
PLOT DATE = $DATE$	DATE -	REVISED -	

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

LOCATION 8 SN 102-0051
FLAMMING PLAN

SCALE: | SHEET 3 OF 5 SHEETS | STA. | TO STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
VAR	D-4 BRIDGE PAINTING 2022	*	51	49
		CONTRACT NO. 68G57		
	ILLINOIS FED. AID PROJECT			

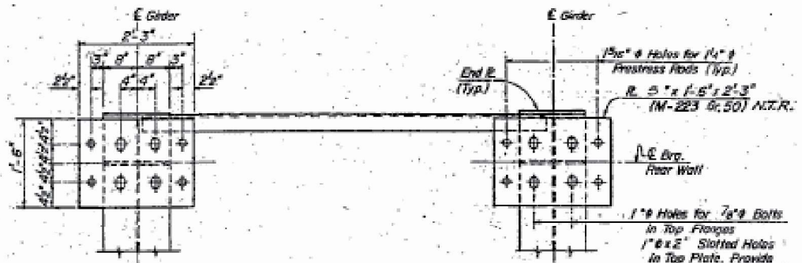
SN 102-0051

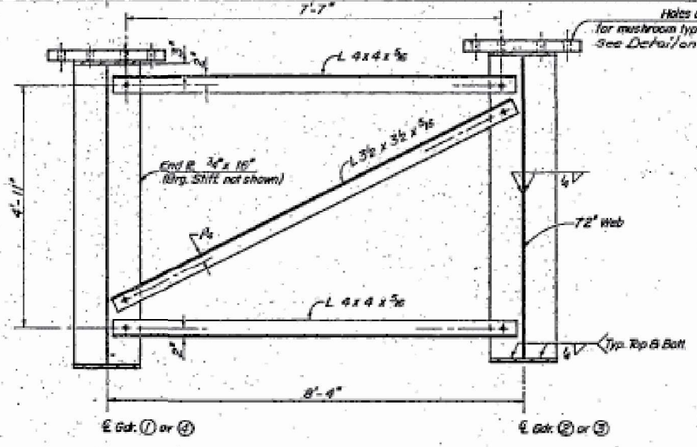
I-39 TR 103 (1500N)

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

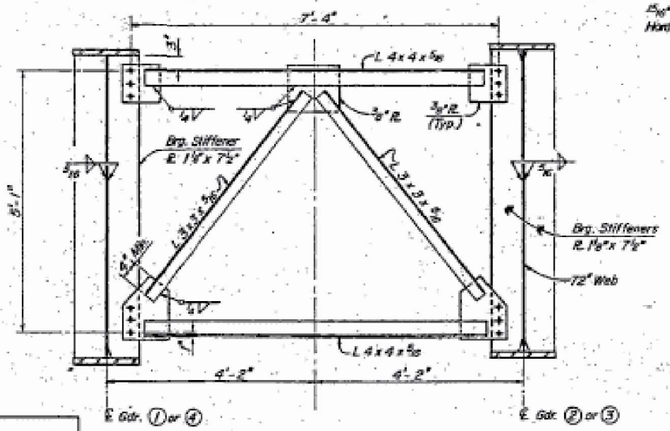
ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
T.R. 103 F.A.P. 412	102-3HB	WOODFORD	40	22
PROJ. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		

SHEET NO. 6
11 SHEETS



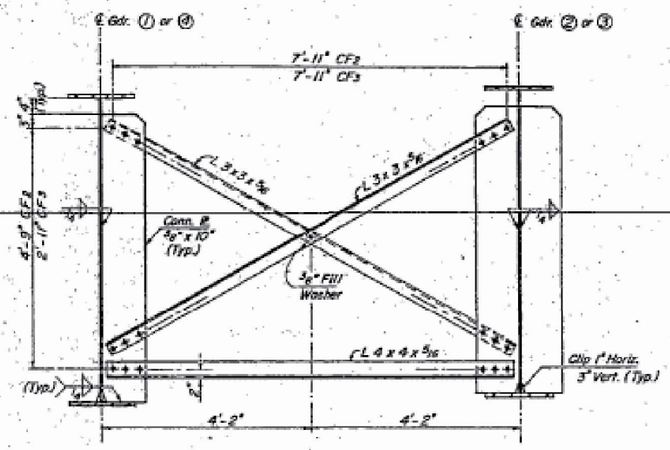


END CROSS FRAME "CF"
(2 Frame may be removed after endwall is in place)
(6 Req'd.)



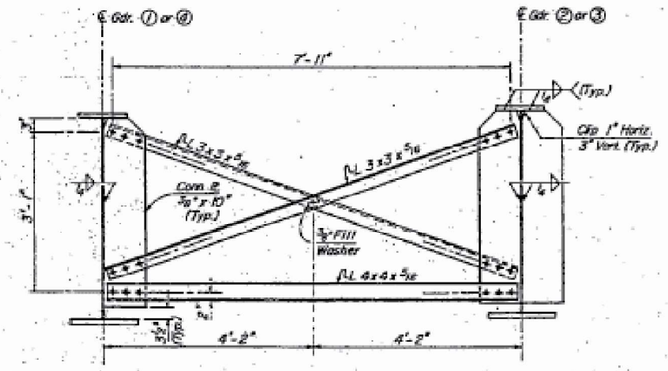
CROSS FRAME "CF1"
(6 Req'd.)

DESIGNED	D.V.K.
CHECKED	G.E.P.
DRAWN	J.T.
CHECKED	G.E.P.

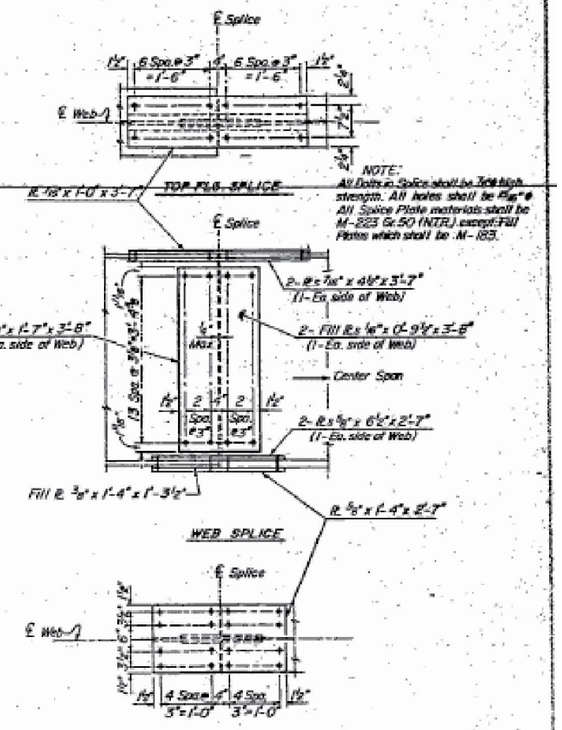


CROSS FRAMES "CF2" & "CF3"
(6 ea. Req'd.)

NOTES:
Cross Frame connections
¾" ø H.S. Bolts
15/16" ø holes for ¾" ø bolts.
Hardened washers required over all holes.

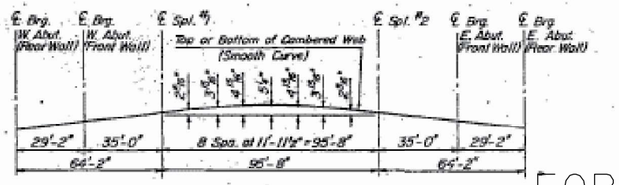


CROSS FRAME "CF4"
(12 Req'd.)



BOTTOM FLG. SPLICE

FIELD SPLICE DETAILS
(8 Req'd.)



CAMBER DIAGRAM

FOR INFORMATION ONLY

STRUCTURAL STEEL DETAILS
T.R. 103 OVER F.A.P. 412
SEC. 102-3HB
WOODFORD CO.
STA. 713+73.31

MODEL: $MODELNAME$
FILE NAME: $FILEL$

USER NAME = $USER$	DESIGNED -	REVISED -
	DRAWN -	REVISED -
PLOT SCALE = $SCALE$	CHECKED -	REVISED -
PLOT DATE = $DATE$	DATE -	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

LOCATION 8 SN 102–0051
STRUCTURAL STEEL DETAILS

SCALE: | SHEET 4 OF 5 SHEETS | STA. | TO STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
VAR	D-4 BRIDGE PAINTING 2022	"	51	50
			CONTRACT NO. 68G57	
	ILLINOIS	FED. AID PROJECT		

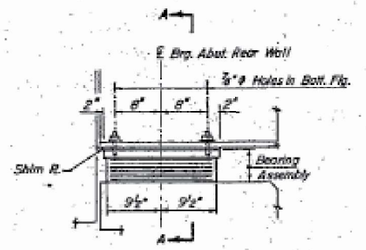
SN 102-0051

I-39 TR 103 (1500N)

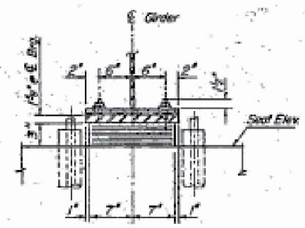
STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

ROUTE NO.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
S.B.I. & A.P. 412	102-3HB	WOODFORD	40	23
FED. ROAD DIST. NO. 7	ILLINOIS	FED. AID PROJECT		

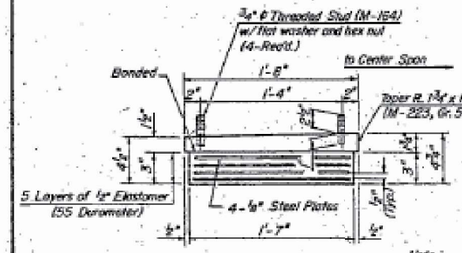
SHEET NO. 7 OF 11 SHEETS



ELEVATION AT ABUT. REAR WALL
(Threadbar omitted for clarity)

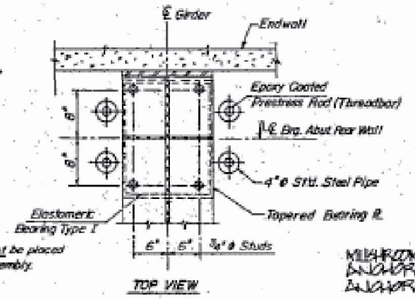


SECTION A-A



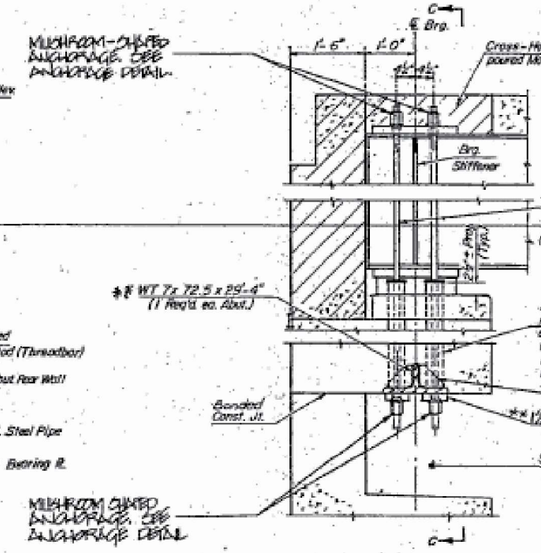
BEARING ASSEMBLY

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

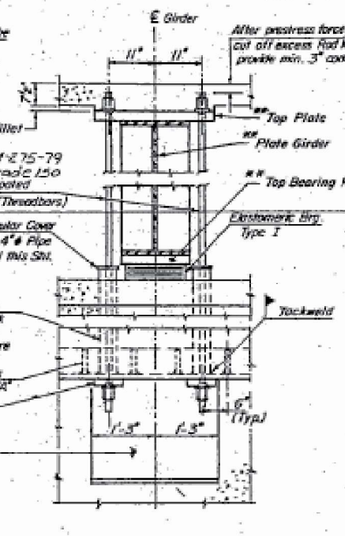


TOP VIEW

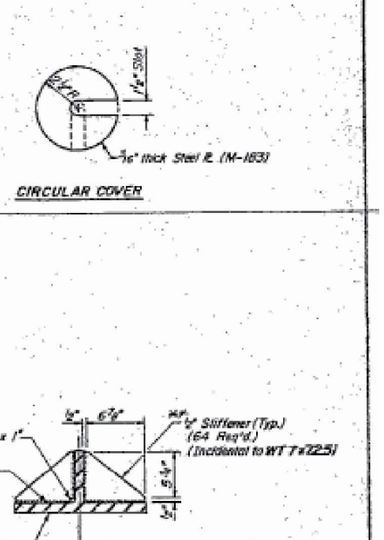
TYPE I ELASTOMERIC BRG. ASSEMBLY
AT ABUT. - REAR WALL



SEC. THRU ABUT. REAR WALL



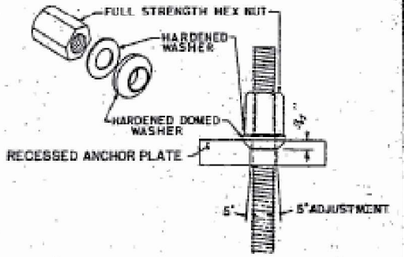
SECTION C-C



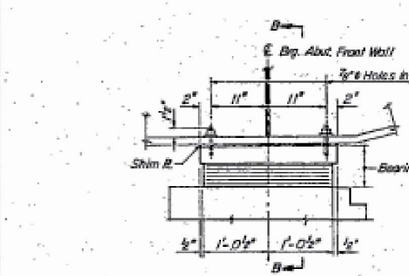
TIEDOWN DETAILS

All items shown on this detail are included in TIEDOWN DEVICE except as noted.
** Cost included in Furnishing Structural Steel.

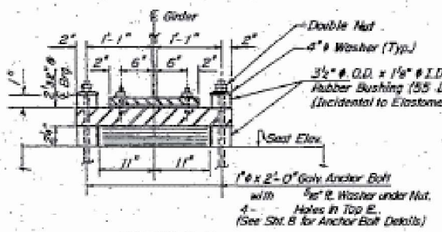
Initially stress each Prestress Rod (Threadbar) to 34 kips after anchorage is set. After completion of Pouring Sequence 1 and 2 of the deck slab, stress each Prestress Rod an additional 12 kips.



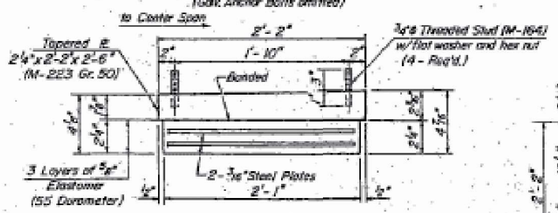
END ANCHORAGE DETAIL



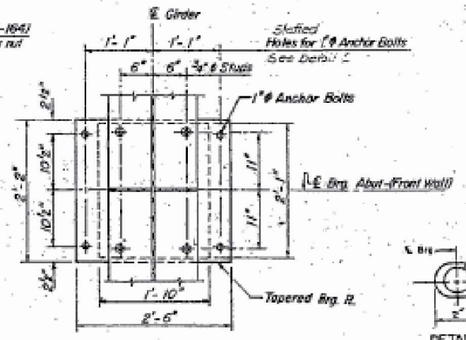
ELEVATION AT ABUT - FRONT WALL
(Galv. Anchor Bolts omitted)



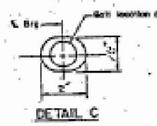
SECTION B-B



BEARING ASSEMBLY

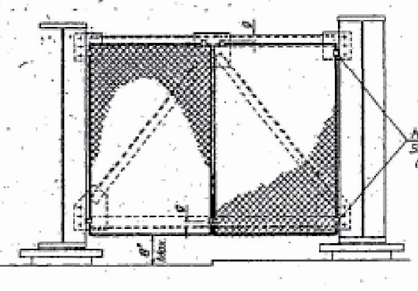


TOP VIEW



ERECTION SEQUENCE FOR SCREEN PANELS

1. Permanent Panels:
   a. Field clamp wire-meshed frames to cross frames.
   b. Field drill holes at connection plates & angles of cross-frames to match location of tabs.
   c. Install high strength bolts through all tabs, zinc coat all bolts.
   d. Bolts shall be drawn up tight & the threads burred at the face of the nut with a pointed tool.
2. Accessible Panels:
   Sequence similar to Permanent Screen Panels except clip-type connections shall be used in place of high strength bolts at connection to angles.



NOTES

1. "g" indicates standard gage for angles.
2. 4 tabs shall be provided for each Screen Panel.
3. One Accessible Screen Panel shall be provided at each Abut. - Front Wall.
4. Provide hinged tabs at connections to connection plates for Accessible Screen Panel only.
5. See Special Provision for added information.

TYP. SCREEN PANEL AT ABUT. - (FRONT WALL)
(6 Req'd.)

STANDARD CONSTRUCTION

Mesh : 1½" Diamond
Wire : No. 10 Washburn & Moen Gauge (0.135" dia.)
Frame : ⅜" Round Rod.
- All materials to be galvanized.
- Two Wire-meshed Frames shall be provided for each Screen Panel.
- Four tabs shall be provided for each Wire-meshed Frame.

SCREEN PANEL, BEARING AND ANCHORAGE DETAILS
T.R. 103 OVER F.A.P. 412
SEC. 102 - 3HB
WOODFORD CO.
STA. 713+73.31

TYPE I ELASTOMERIC BRG. ASSEMBLY
AT ABUT. - FRONT WALL

DESIGNED	D.V.K.
CHECKED	G.E.P.
DRAWN	J.T.
CHECKED	D.V.K.

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

FOR INFORMATION ONLY

MODEL: SMODELNAME
FILE NAME: SFILEL

USER NAME = SUSERS	DESIGNED -	REVISED -	STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION
	DRAWN -	REVISED -	
PLOT SCALE = SSCALES	CHECKED -	REVISED -	
PLOT DATE = SDATES	DATE -	REVISED -	

LOCATION 8 SN 102-0051
BEARING DETAILS

SCALE: | SHEET 5 OF 5 SHEETS | STA. | TO STA.

F.A. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
VAR	D-4 BRIDGE PAINTING 2022	*	51	51
			CONTRACT NO. 68G57	
		ILLINOIS	FED. AID PROJECT	