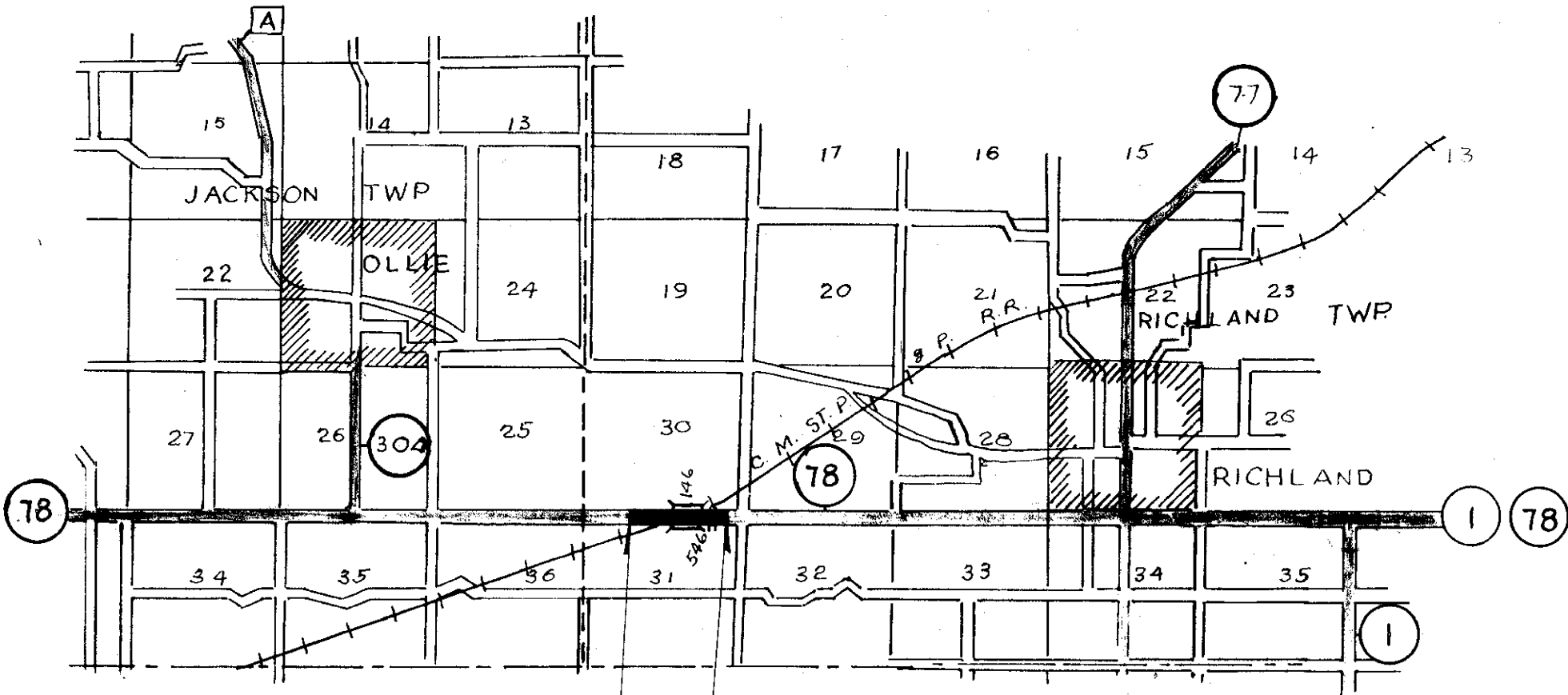


R. 11 W.

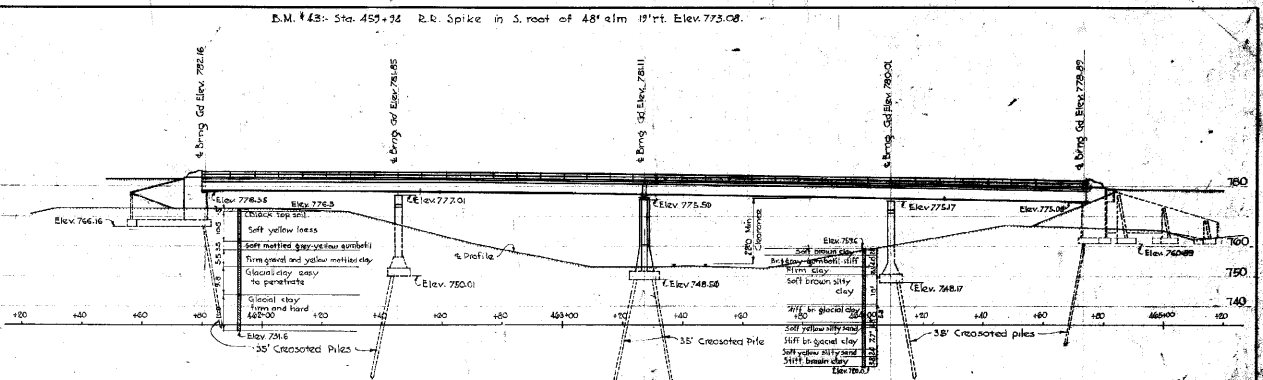
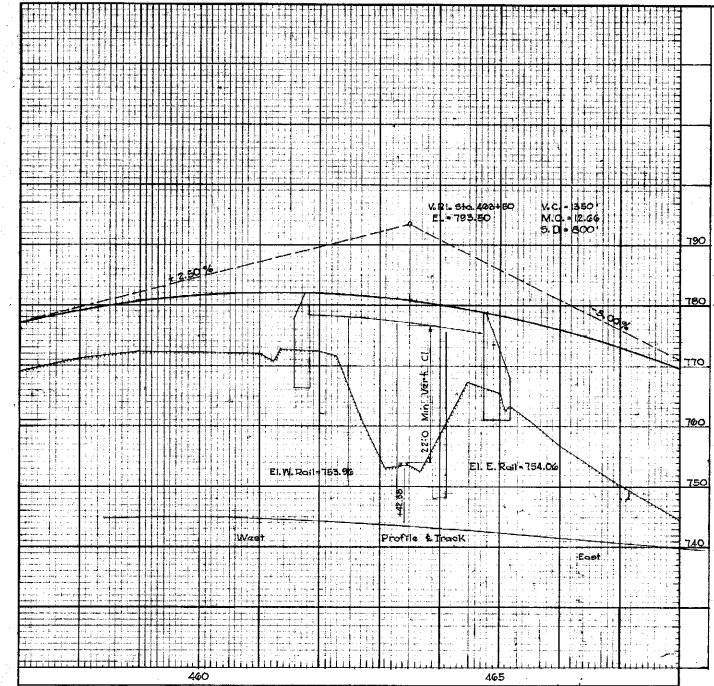
R. 10 W.

T. 74 N.



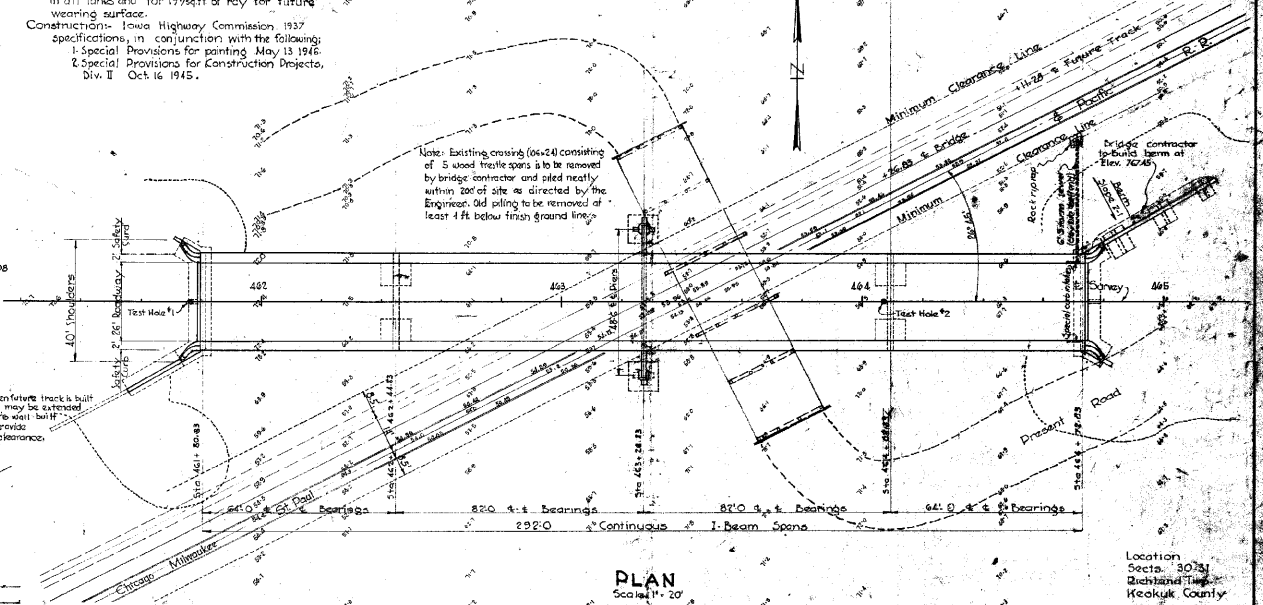
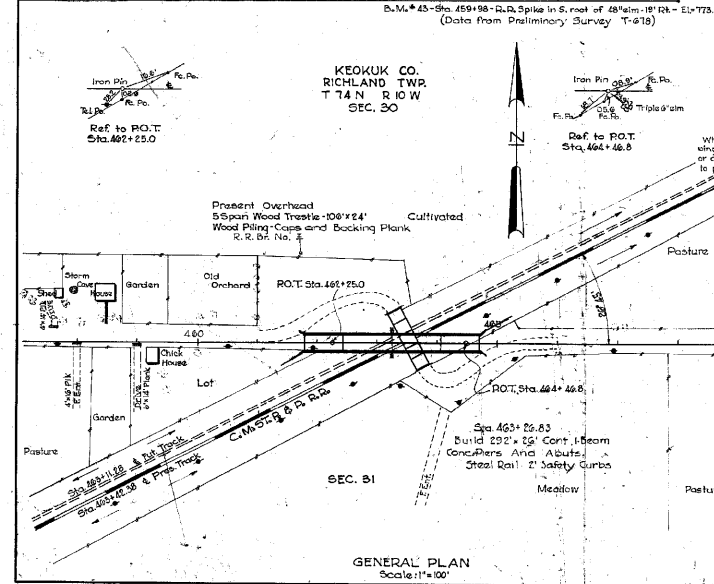
STA 450+00  
BEG. OF PROJ.

STA 475+00  
END OF PROJ.

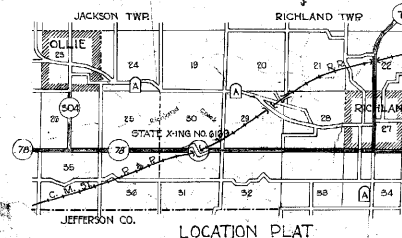


**SPECIFICATIONS**  
 Design: A.A.S.H.O 1944, for H-20 loading except that provision is made for 100% overload in all lanes and for 19/16 ft of rdly for future wearing surface.  
 Construction: Iowa Highway Commission 1937 specifications, in conjunction with the following:  
 1. Special Provisions for painting, May 13 1946.  
 2. Special Provisions for Construction Projects, Div. II Oct. 16 1945.

**ELEVATION**  
 Scale: 1" = 20'



**PLAN**  
 Scale: 1" = 20'

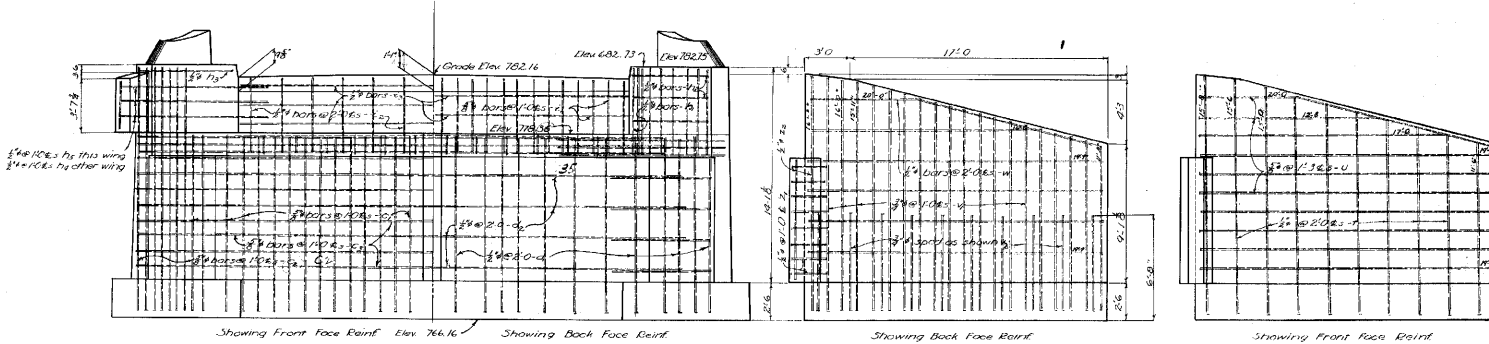


**LOCATION PLAT**

ESTIMATED QUANTITIES			
	Sub-st'	Super st'	Total
Concrete	c.y.	2,975	598-7
Rein steel	lbs	22,725	808-0
Structural Steel	lbs	51,663	3,995-6
Creos. Piling	LF	1,643-5	3,662-0
Excavation	CU YD	74-8	74-4
Excavation	CU YD		1-00
Removal of old crossing			1-00
6" Steam sewer	LF		42

**DESIGN FOR**  
**292'x26' MULTIPLE SPAN OVERHEAD CROSSING**  
**2-64' & 2-82' CONTINUOUS I-BEAM SPANS**  
 AT INTERSECTION OF  
**C.M. STP & P. R.R. AND IOWA PRIM. NO. 728**  
**GENERAL PLAN**  
 STATION 463+26.83 PROJECT NO. F-130 (1)  
**KEOKUK COUNTY**  
**IOWA STATE HIGHWAY COMMISSION**  
**IOWA CROSSING NO. 6169**

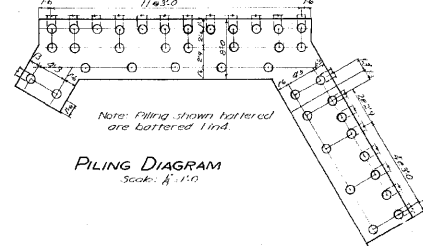
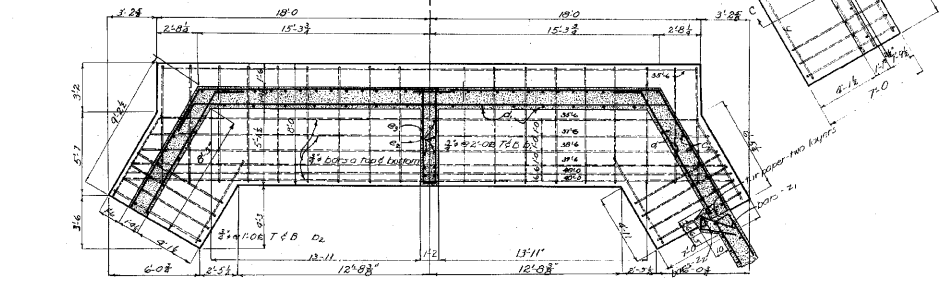
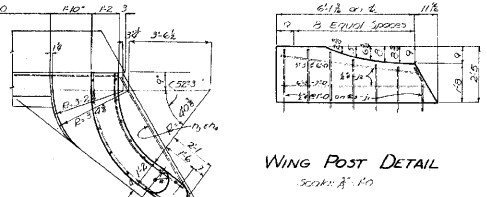
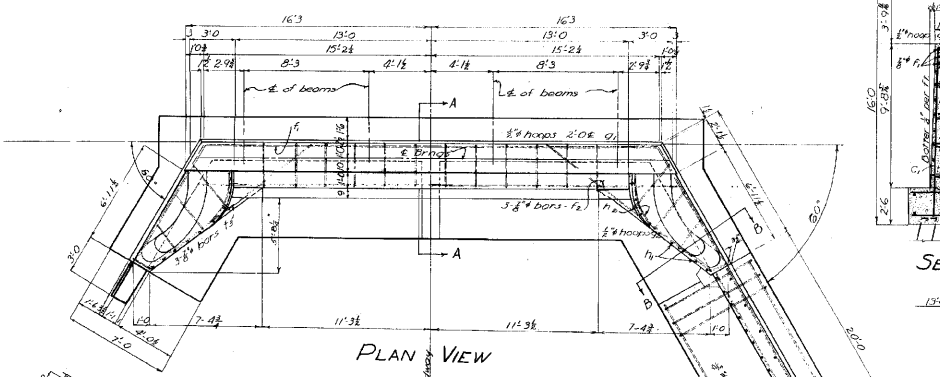
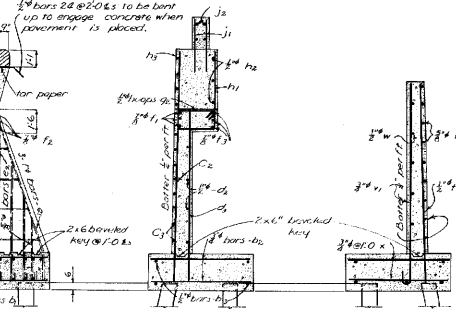
Bench Mark No 43 Sta 459+90 RR Spike in S Root of 48" Elm 19' RR Elev 711.00



REAR ELEVATION  
With Wing Removed

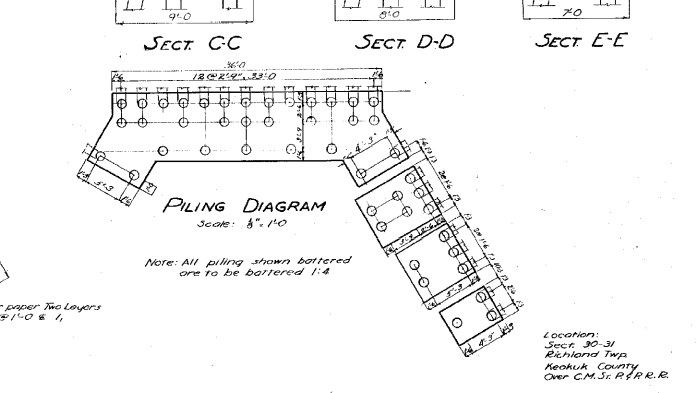
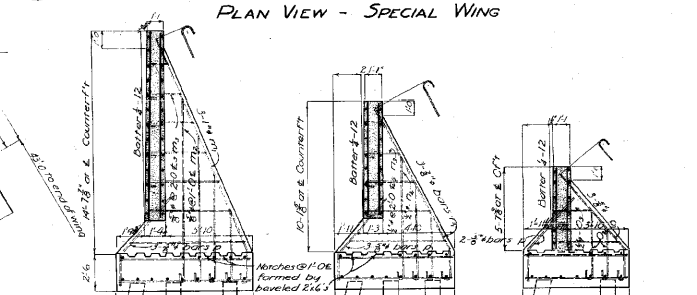
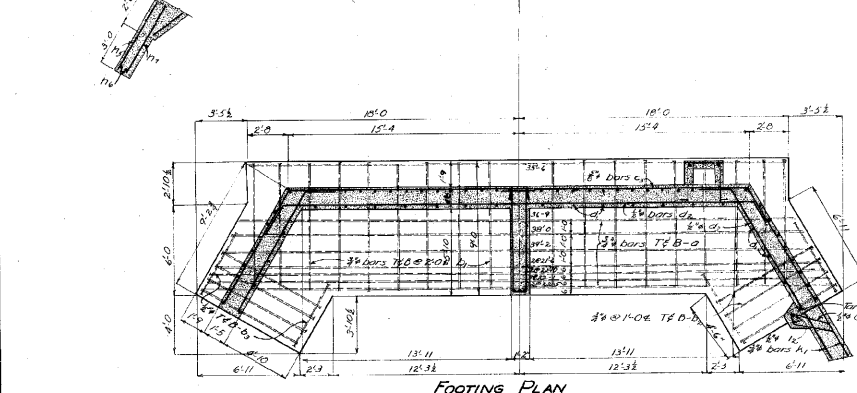
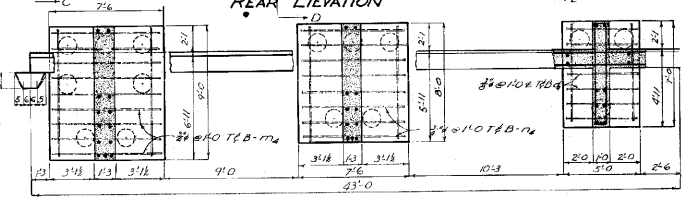
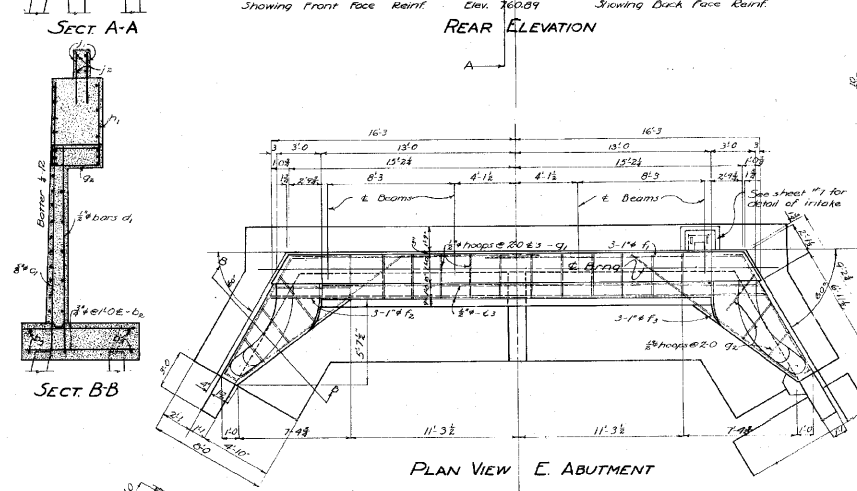
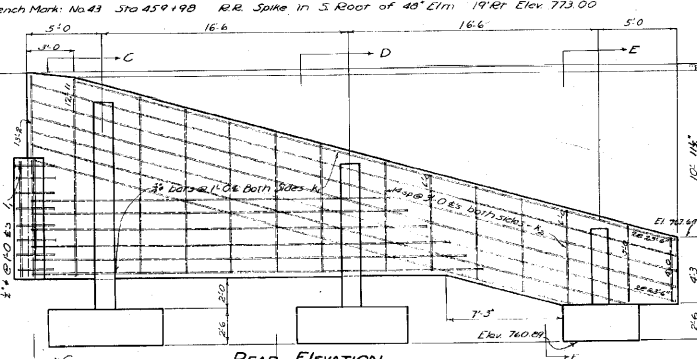
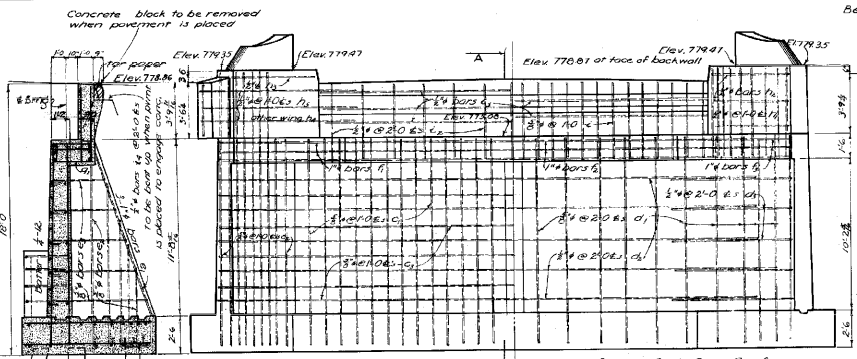
ELEVATION OF WING

Concrete block to be removed when pavement is placed



BILL OF REINFORCING						
Mark	Location	Size	Num	Length	Shape	Weight
a	Main Fly Lign	3/4"	14	Var		400
b	" "	3/8"	36	7.4		419
b <sub>1</sub>	" "	3/8"	16	6.9		162
b <sub>2</sub>	" "	3/8"	0	7.0		37
c	Breast Wall F.F.Y.	3/4"	30	11.40		370
c <sub>1</sub>	Wing Walls F.F.Y.	3/4"	14	16.2		230
c <sub>2</sub>	Breast " F.F.Y.	3/4"	16	23.50		417
d	" " B.F.Y.	3/4"	22	11.10		194
d <sub>1</sub>	" " B.F.Y.	3/4"	9	24.4		92
e	Wing Wall	3/4"	8	11.0		59
e <sub>1</sub>	Counter-P. Reinforcement Bars	1/4"	3	15.0		120
e <sub>2</sub>	" Vertical "	3/8"	10	Var.		89
e <sub>3</sub>	" Horizontal "	3/8"	4	Var.		46
f	Bridge Seat Length F.F.	3/4"	6	25.6		302
f <sub>1</sub>	" " " B.F.	3/4"	3	32.4		194
f <sub>2</sub>	" " " "	3/4"	6	14.0		172
g	" " " "	3/4"	12	7.9		63
g <sub>1</sub>	" " " "	3/4"	6	Var.		44
h	Wing Post Base B.F.Y.	3/4"	18	6.3		75
h <sub>1</sub>	" " " " B.F.Y.	3/4"	6	8.4		35
h <sub>2</sub>	" " " " B.F.Y.	3/4"	2	9.9		13
h <sub>3</sub>	" " " " B.F.Y.	3/4"	3	12.0		23
h <sub>4</sub>	" " " " B.F.Y.	3/4"	3	15.0		29
h <sub>5</sub>	N. Wing Overhang V.	3/4"	2	3.4		1
h <sub>6</sub>	" " " "	3/4"	3	4.0		10
i	Backwall F.F.Y.	3/4"	26	5.6		189
i <sub>1</sub>	" " " "	3/4"	13	4.10		42
j	Wing Post B.F.Y.	3/4"	5	25.0		86
j <sub>1</sub>	Wing Post B.F.Y.	3/4"	28	4.0		72
j <sub>2</sub>	" " " " H	3/4"	8	Var.		31
k	Pavement anchors	3/4"	13	4.0		35
l	Special Wing F.F.Y.	3/4"	10	Var.		91
u	" " " " C.F.Y.	3/4"	10	Var.		196
v	" " " " B.F.Y.	3/4"	20	Var.		427
v <sub>1</sub>	" " " " "	3/4"	10	7.0		105
w	" " " " B.F.Y.	3/4"	6	Var.		77
x	Top Trans F.F.Y.	3/4"	40	6.9		406
y	" " " " " "	3/4"	5	19.9		66
z	Wing Lock H.	3/4"	8	5.6		29
z <sub>1</sub>	" " " " V.	3/4"	2	8.0		10
Reinforcing Steel-Lbs.						5427
ESTIMATED QUANTITIES						
Concrete						CY 95.1
Crested Piling 40x32						1400L
Excavation						CY 158

Design for  
**292' x 26' OVERHEAD CROSSING**  
 2-64' & 2-82' Continuous I-Beam Spans  
 At Intersection of  
 CM St. P. & P.R.R. & Iowa Prim No. 38  
**WEST ABUTMENT DETAILS**  
 Sta. 463+26.83 Project No. F-980(1)  
 KEOKUK COUNTY  
 Iowa Highway Commission  
 Iowa Crossing No. 6169  
 Jan. 1947 Sheet 2 of 7 Scales as noted  
 Design # 146 Keokuk County File # 13451

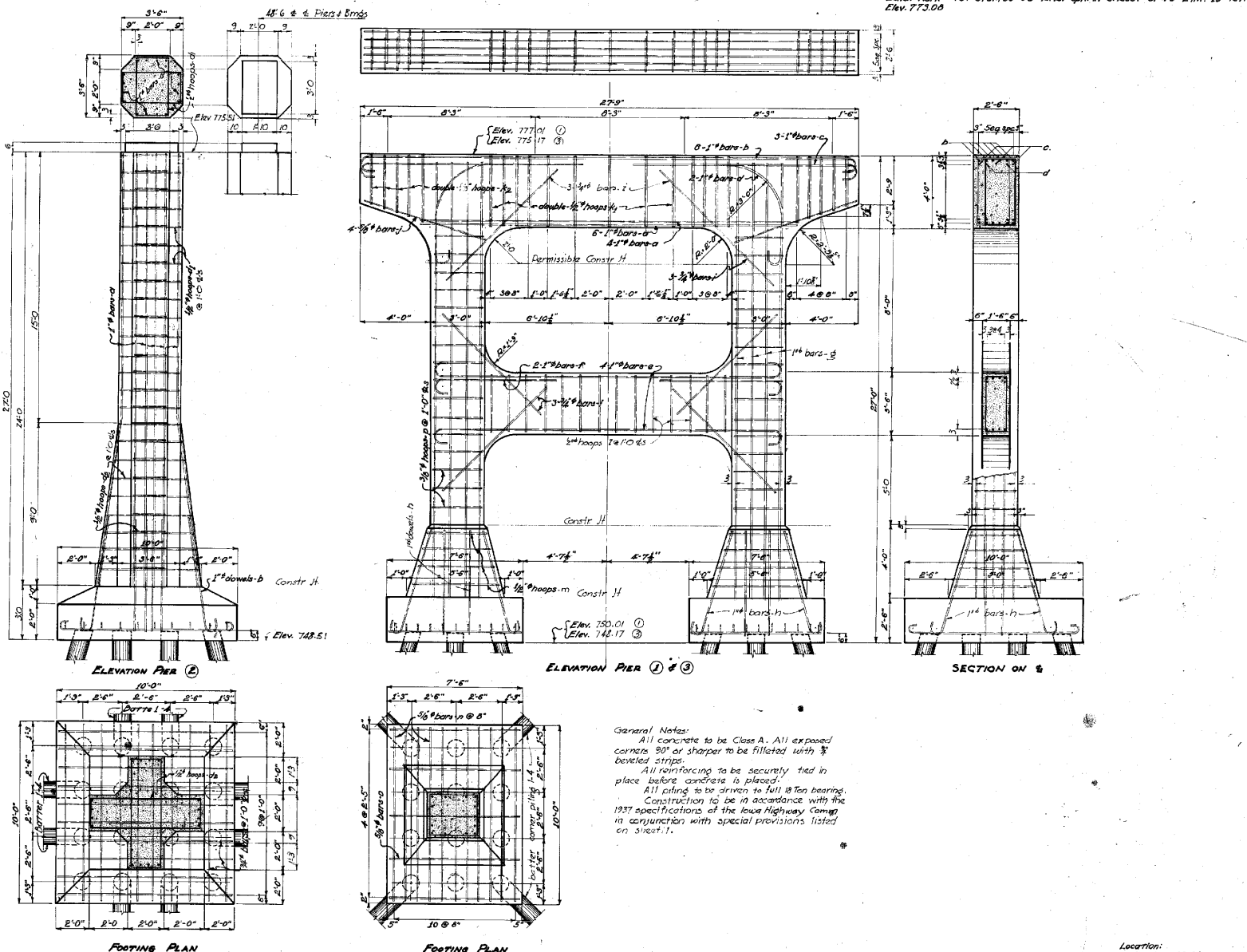


BILL OF REINFORCING					
Mark	Location	Size	Num	Length	Weight
a	Main Footing Longitud	7/8"	24	100'	4289
b	" " Trans "	3/4"	36	85.9'	4751
ca	" " " " "	3/4"	16	25.4'	186
cb	" " " " "	3/4"	8	7.0'	37
c	Breastwall F.F.C.	3/4"	30	134.0'	4933
cd	Wingwall F.F.C.	3/4"	16	18'-1"	302
ce	Breastwall F.F.C.	3/4"	18	25'-3"	474
cl	" " B.F.C.	3/4"	22	13'-10"	317
cd	" " B.F.C.	3/4"	5	35'-6"	185
cf	Wingwall B.F.C.	3/4"	10	11'-0"	116
cg	Counter-Port Tension	1/2"	3	17'-6"	140
eh	" " Vert.	3/4"	10	Var.	110
ei	" " Hor.	3/4"	5	Var.	67
fi	Bridge Seat Longitud	1/2"	6	25'-6"	400
fd	" " " "	1/2"	7	35'-6"	258
fe	" " " "	1/2"	6	14'-0"	272
gf	" " Hoops	3/4"	12	7'-9"	63
gh	" " " "	3/4"	6	Var.	42
hi	Wing Post Base B.F.C.	3/4"	10	8'-3"	274
hj	" " " " "	3/4"	6	8'-6"	55
ik	" " " " "	3/4"	2	8'-9"	13
il	" " " " "	3/4"	3	18'-0"	22
im	" " " " "	3/4"	3	3'-4"	29
in	S. Wing overhang V	3/4"	2	3'-4"	4
io	" " " " "	3/4"	3	4'-9"	10
ip	Backwall B.F.C.	3/4"	26	3'-6"	149
iq	" " F.F.C.	3/4"	13	4'-10"	42
ir	" " B.F.C.	3/4"	5	25'-8"	86
is	Wing Post " " V	3/4"	20	4'-0"	75
it	" " " " "	3/4"	8	Var.	33
iu	Pavement Anchors	3/4"	13	4'-0"	35
iv	Special Wing Wall H.	3/4"	26	Var.	1473
iw	" " " " "	3/4"	28	Var.	134
ix	Wing Locks H.	3/4"	8	3'-6"	22
iy	" " " " "	3/4"	2	2'-9"	10
iz	High Ctr. Tension	1/2"	3	19'-4"	162
ja	" " " " "	3/4"	6	Var.	29
jb	" " " " "	3/4"	6	10'-2"	52
jc	" " " " "	3/4"	6	10'-2"	52
jd	" " " " "	3/4"	15	25'-3"	163
je	" " " " "	3/4"	6	8'-9"	23
jf	Intermed Ctr. Tension	3/4"	3	14'-8"	90
kg	" " " " "	3/4"	6	10'-2"	46
kh	" " " " "	3/4"	4	10'-2"	31
ki	" " " " "	3/4"	13	7'-3"	141
kl	" " " " "	3/4"	6	7'-9"	31
km	Small Ctr. Tension	3/4"	3	9'-8"	30
kn	Small Ctr. V	3/4"	4	Var.	12
ko	" " " " "	3/4"	3	10'-2"	13
kp	" " " " "	3/4"	11	4'-9"	34
kq	" " " " "	3/4"	4	8'-9"	19
kr	All Counter'ts	3/4"	9	7'-0"	37
Storm Sewer's Intake see sheet 7					37
Reinforcing Steel					7674 Lbs
Concrete					115.9 CY
Crestored Piling 4x6x35 1/2x10x12					157 CY
Excavation C.I.T.					157 CY

Note: For details of wing posts see details of West Abutment on sheet 2.

Design for  
**292'x26' OVERHEAD CROSSING**  
 2-64' & 2-82' CONTINUOUS I-BEAM SPANS  
 At Intersection of  
**CM ST. P & P.R.R. IOWA PRIM. NO. 37B**  
**EAST ABUTMENT DETAILS**  
 Station 463+26.83 Project F-930(11)  
**KEOKUK COUNTY**  
 Iowa Highway Commission  
 Iowa Crossing No. 6169  
 Jan 1947 Sheet 3 of 7 Scales as noted

Bench Mark #43: Sta. 439+96 R.R. Spk. in S. Roof of 4.5' Elm. 13' Rr. Elev. 773.00



**General Notes:**  
 All concrete to be Class A. All exposed corners 90° or sharper to be filleted with 3/8" beveled strips.  
 All reinforcing to be securely tied in place before concrete is placed.  
 All piling to be driven to full bearing.  
 Construction to be in accordance with the 1937 specifications of the Iowa Highway Com. in conjunction with special provisions listed on sheet 1.

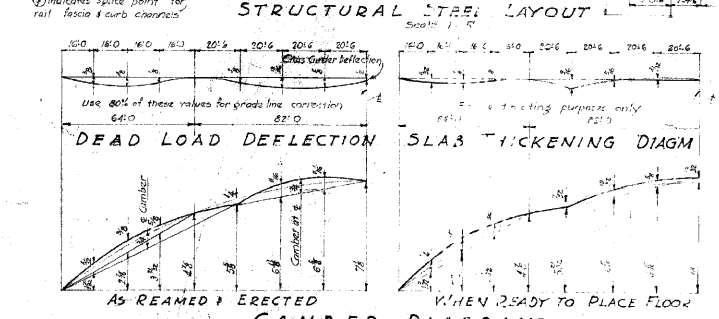
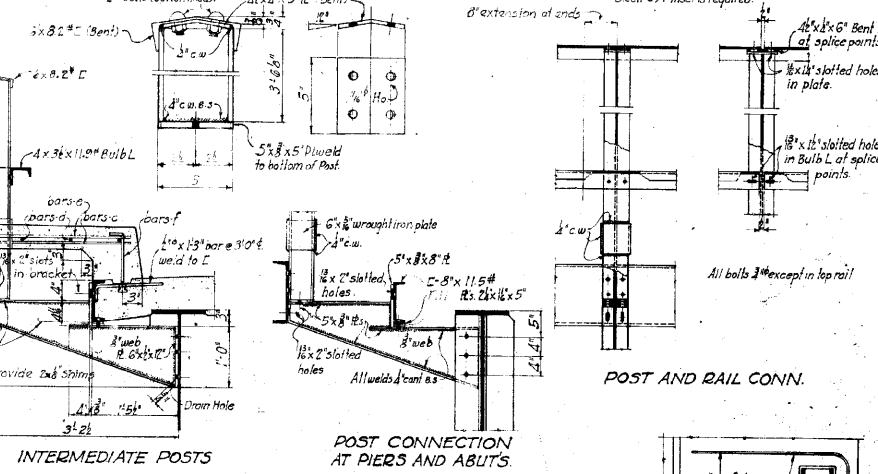
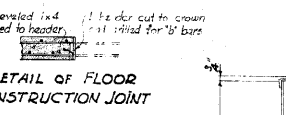
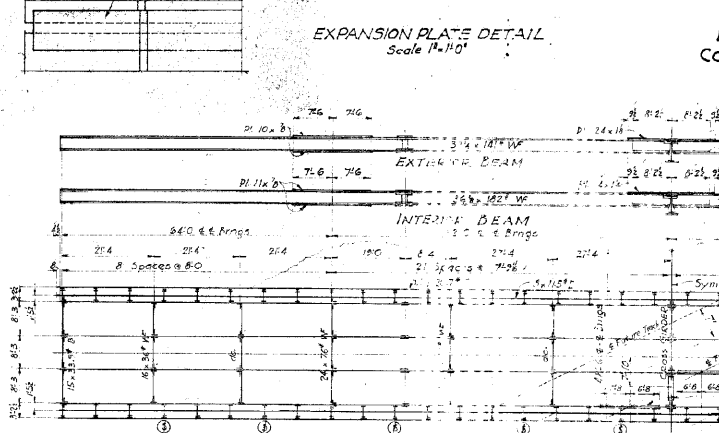
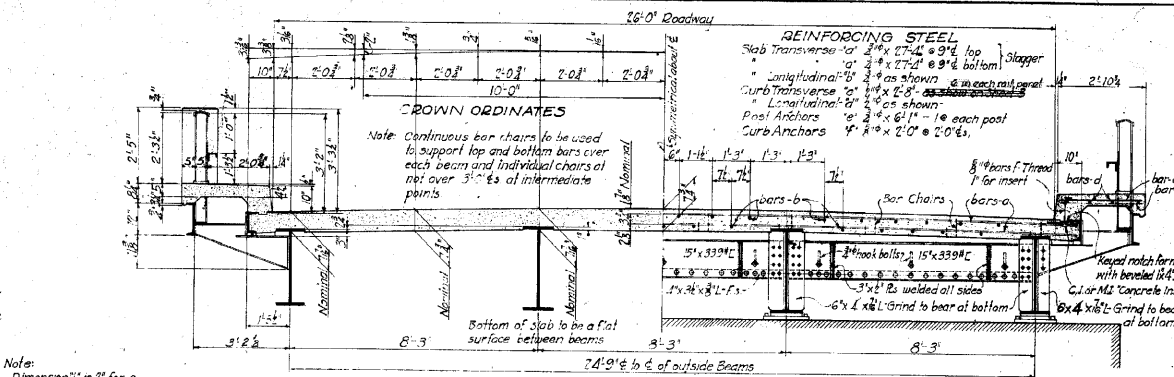
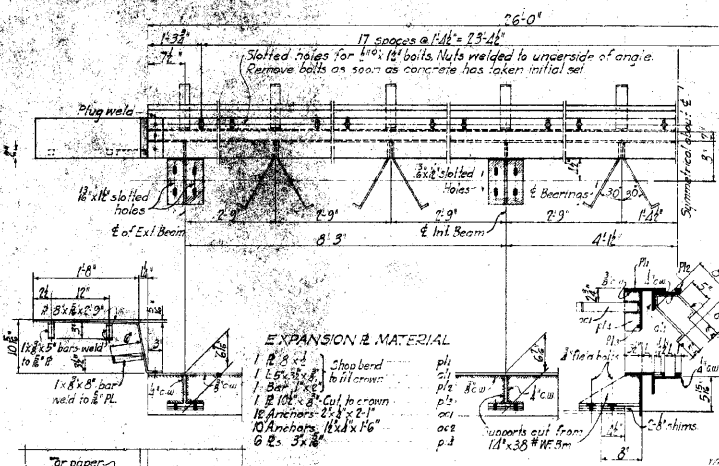
**BILL OF REINFORCING STEEL**

Item	Location	Size	No.	Length	Shape	Weight
<b>PIERS 1 &amp; 2 (TWO PIERS)</b>						
a	Beam Length Bottom	1 1/4"	20	20'-0"		105.8
b	" " Top	1 1/4"	12	22'-5"		54.1
c	" " " "	1 1/4"	12	19'-6"		43.2
d	" " " "	1 1/4"	6	11'-0"		23.5
e	Strut Length	1 1/2"	16	21'-5"		91.4
f	" " " "	1 1/2"	8	7'-9"		16.5
g	Columns Vertical	1 1/2"	52	24'-4"		363.4
h	Pedestals	1 1/2"	48	6'-9"		86.4
i	Beam & Strut Piles	3/8"	36	4'-6"		16.0
j	Carriway Bottom	3/8"	16	7'-0"		11.7
k	Beam Hoops	1/2"	52	11'-3"		39.0
l	Carriway	1/2"	44	10'-0"		26.4
m	Strut	1/2"	28	9'-0"		16.0
n	Pedestal	1/2"	16	16'-0"		17.1
o	Footing Length	3/8"	44	16'-11"		50.5
p	Tram	3/8"	20	7'-5"		15.7
q	Column Hoops	3/8"	64	10'-0"		24.1
						1072.0
<b>PIERS 2 (TWO PIERS)</b>						
a	Shaft Vertical	1 1/4"	32	23'-0"		202.0
b	Footing Details	1 1/4"	32	12'-6"		106.7
c	Footing Horiz.	3/8"	40	11'-3"		67.5
d	Shaft Hoops	1/2"	60	10'-0"		40.0
de	" " " "	1/2"	36	12'-6"		30.0
						447.2

**ESTIMATED QUANTITIES**

Part	Pier 1 (1)	Pier 2 (2)	Total
Concrete	81.8 cu.	12.5	124.3 cu.
Reinf. Steel	1072.0 lbs	447.2 lbs	1519.2 lbs
Crus. Filling	48 @ 35'	32 @ 35'	2800 LF
Excav. Cl. I	304 cu.	12.5 cu.	423 cu.
Excav. Cl. II			

Design For  
**292'x26' OVERHEAD CROSSING**  
 26'-2-02" CONTINUOUS I-BEAM SPANS  
 INTERSECTION  
 C.M. ST. P. & R.R. AND IOWA PRM. No. 378  
**STRUCTURE DETAILS**  
 Station 439+26.00 Project No. F930 (1)  
**KEOKUK COUNTY**  
 Iowa Highway Commission  
**IOWA CROSSING No. 5189**  
 Location: Sections 30-31  
 Richardson Twp.  
 Keokuk Co.  
 Over C.M. St. P. & R.R.  
 Scale 3/8" = 1'-0"



**GENERAL NOTES**  
This bridge is designed for M10 loading under the old specifications (944) of the A.A.S.H.O. except that provisions made for full 100% overload in all joints, and for 18" per sq ft of roadway for future wearing surface.

All field connections to be riveted except at, contact and those in curb channel, and expansion plates which are bolted.

All nuts and bolts to be 3" except as shown otherwise.

Bottom flanges of beams to be truly perpendicular to webs of bridge, and curved top plates to have full line bearing on masonry.

All beam splices to be sub-punched and marked assembled.

Shop assembly to be in two stages as shown above. Drawing to each case to be done after inspection.

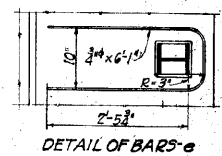
Inventory to be placed in section, and in over indicated letters. Curbs may be placed continuously.

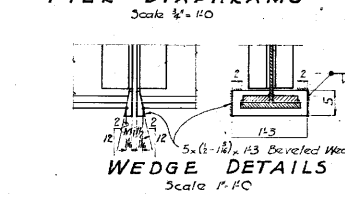
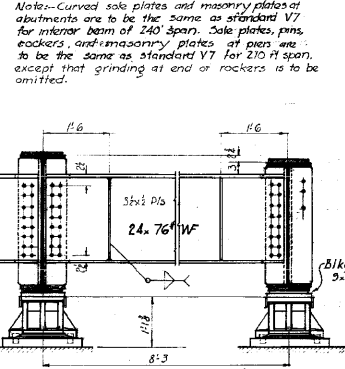
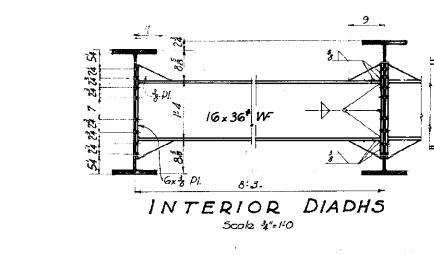
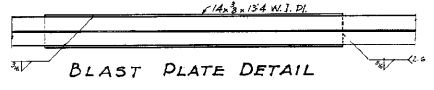
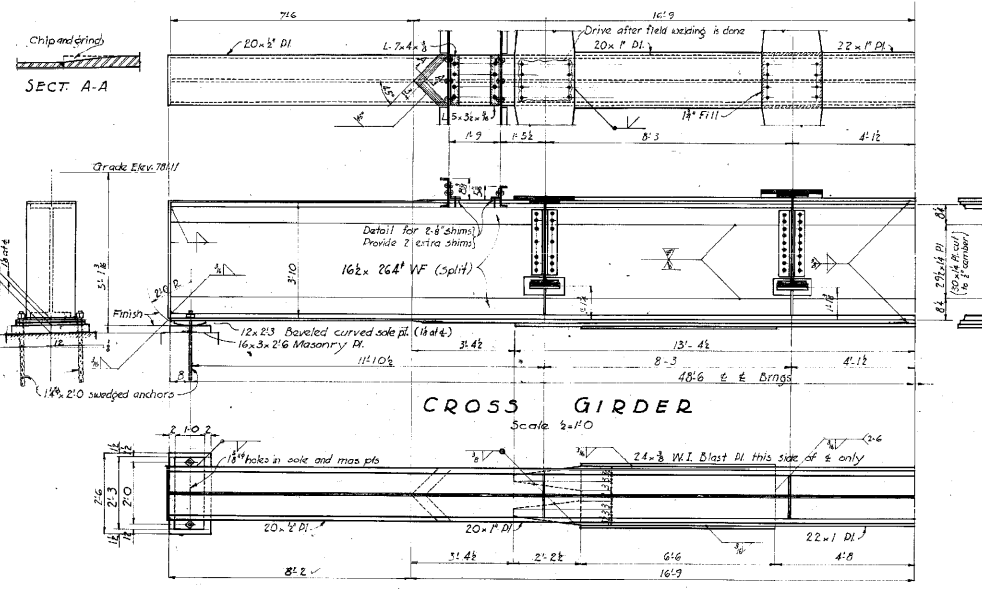
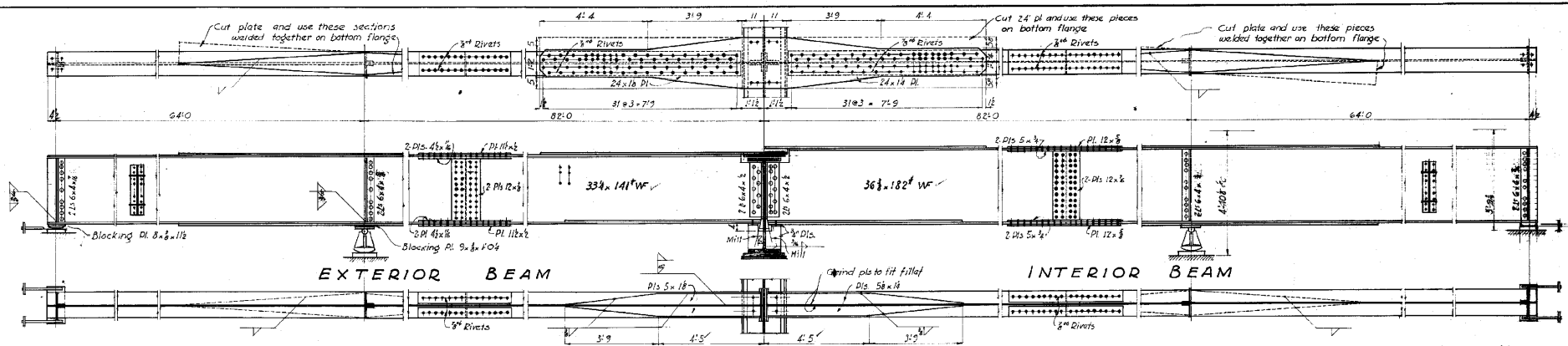
**SUPERSTR REINFORCING**

Mark	Location	Number	Size	Length	Usage	Weight
a	Slab Transverse	770	#6	27'-2"		31280
b1	5" dia Int'l Top	36	#5	24'-6"		1433
b2	Top B	96	#6	24'-11"		3582
b3	5 1/2" dia Top	27	#5	24'-0"		5948
b4	2 1/2" dia Top	152	#5	24'-0"		4924
c	Curb Transv	444	#6	24'-6"		789
d	Curb Longit	80	#6	30'-10"		1644
e	Curb Post Anchor	76	#6	6'-1"		694
f	Curb Anchor	294	#6	2'-0"		673
g	End diaphrag	6	#3	8'-1"		80
<b>Total</b>						<b>51663</b>

Location: Section 30-31  
Richland Twp  
Keokuk Co.  
Over CM & P.R.R.

Design For  
**292x26 OVERHEAD CROSSING**  
2-64 & 2-82 CONTINUOUS 1 BEAM SPANS  
AT INTERSECTION  
C.M. ST. R. & P. R.R. & IOWA PRIMARY NO. 70  
**SUPERSTR DETAILS**  
Station 463+26.83 Project No. F. 930. (1)  
**KEOKUK COUNTY**  
Iowa Highway Commission  
**IOWA CROSSING NO. 6169**  
Jan. 1947. Sheet 5 of 7  
Design 146 Keokuk File 13457





**Erection Note:**  
 Erect cross girder with masonry plate removed and curved sole plate blocked off above masonry. Rivet beam splices with cross girder in this position.  
 Lower cross girder 1/2" rivet cover plates and web connections to cross girder, drive wedges up tight and weld in place.  
 Jack cross girder up into place, insert masonry plates and set anchors.

**General Notes:**  
 All welding to be in accordance with the 1941 specifications of the American Welding Society for Welded Highway and Railway Bridges.  
 Unless otherwise shown all welds are to be continuous with fillet welds.  
 Cross girder to be given 1/2" comb at #.

Load		MOMENT AND REACTION TABLE										Cross Girder						
Stress	Unit	Ext. 1st	Int. 1st	Ext. 2nd	Int. 2nd	Ext. 3rd	Int. 3rd	Ext. 4th	Int. 4th	Ext. 5th	Int. 5th	Ext. 6th	Int. 6th	Mom	Shear			
Dead Load	1182	1182	1182	658.2	674.3	698.0	714.0	295.0	302.0	264.7	270.8	24.0	26.7	97.2	94.3	32040	203.5	
Live Load (uniform)	304	304	304	170.7	171.3	171.6	171.6	132.7	133.5	132.9	133.7	9.1	15.8	25.8	44.8	28.0	11275	66.1
Live Load (concentric)	14850	14850	14850	112.2	129.3	117.8	204.6	114.2	198.2	118.3	205.8	12.3	21.4	12.4	21.4	18.4	346.5	29.2
Live Load Impact	261%	261%	261%	80.2	139.5	87.0	151.0	42.4	113.4	71.8	124.7	3.6	7.8	10.1	17.5	18.5	447.0	28.5
Total				1047.5	1340.4	1113.4	1655.3	607.3	844.1	607.7	866.8	33.0	70.7	140.5	178.0	464.4	5120.0	273
with overload																		
Sect. Mod. Req'd.				674.8	879.6	742.3	958.4	461.7	616.1	422.0	650.1							34.80

\* Increase 44.1% for shear stresses and reactions.

SUPERSTRUCTURE QUANTITIES	
Concrete	237.5 c.y.
Structural Steel	306720 lbs.
Reinforcing Steel	51663 lbs.

Location  
 Sects 30-31  
 Dickland Twp  
 Keokuk County  
 Over C.M. ST. P. & D. R.

Design For  
**292' x 26' OVERHEAD CROSSING**  
 2-64' x 2-82' CONTINUOUS I-BEAM SPANS  
 INTERSECTION OF  
 C.M. ST. P. & D. R. 7 1/2' IOWA DRIM No. 390  
**SUPERSTRUCTURE DETAILS**  
 Station 463 + 26.83 Project No. F 930(1)  
**KEOKUK COUNTY**  
 Iowa Highway Commission  
**IOWA CROSSING No. 6169**  
 Jan 1947 Sheet 6 of 7 Scales attached