

LETTING DATE 2-19-71

FREMONT COUNTY

BRIDGE

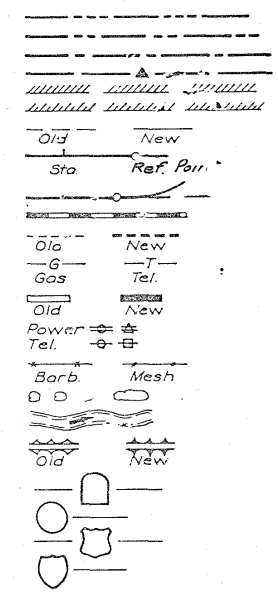
Des. No. 969

PROJECT NO. 1-16-29-1(14)0-04-36

1258 36-29-108

- State Line
Co. Line
Twp. Line
Sec. Line
Corp. Line
Urban Bdry.
R.O.W. Lines
Survey Line
- Profile Grade
Railroad
Field Tile
Underground Lines
- Culverts
Utility Poles
Fences
Trees Or Brush
Stream
Dike
- County Road No.
Primary Road No.
U. S. Road No.
Interstate Road No.

CONVENTIONAL SIGNS



STATE OF IOWA
STATE HIGHWAY COMMISSION

PLANS OF PROPOSED IMPROVEMENT
ON THE

INTERSTATE ROAD SYSTEM

FREMONT COUNTY
BRIDGE

MISSOURI STATE LINE TO 1 MILE S. 1A. 2

SCALES: AS NOTED

THE IOWA STATE HIGHWAY COMMISSION STANDARD SPECIFICATIONS
FOR CONSTRUCTION WORK, SERIES OF 1964 SHALL
APPLY TO WORK ON THIS PROJECT

All Welding shall meet the requirements of the Eighth Edition of the Specifications
for Welded Highway and Railway Bridges (AWS D2.0-69) of the American Welding
Society except as modified by the Standard Specifications and the current Supplemental
Specifications.

DESIGN STRESSES:

Design stresses for the following materials are in accordance with
AASHTO Standard Specifications for Highway Bridges, Series of 1969.
Reinforcing steel in accordance with Section 1.5.1 "Reinforcement",
fs = 20,000 psi.
Concrete in accordance with Section 1.5.1, f'c = 3,500 psi.
Structural Steel in accordance with Section 1.7.1,
ASTM A-36, fs = 20,000 psi.
Prestressed Concrete in accordance with Section 1.6.7, f'c = 5,000 psi.
Prestressing steel in accordance with Section 1.6.7, f's = 270,000 psi.

MILEAGE SUMMARY				STATE CONTROL SECTION NO.
DIV.	LOCATION	LIN. FT.	MILES	
	BRIDGE AT STA. 458+14.85 S. LANE	302.021	.057	
	STA. 457+43.18 N. LANE	370.875	.070	
	BRIDGE AT STA. 32+16.1	178.943	.034	
	BRIDGE AT STA. 81+41.19			
	Total		.161	

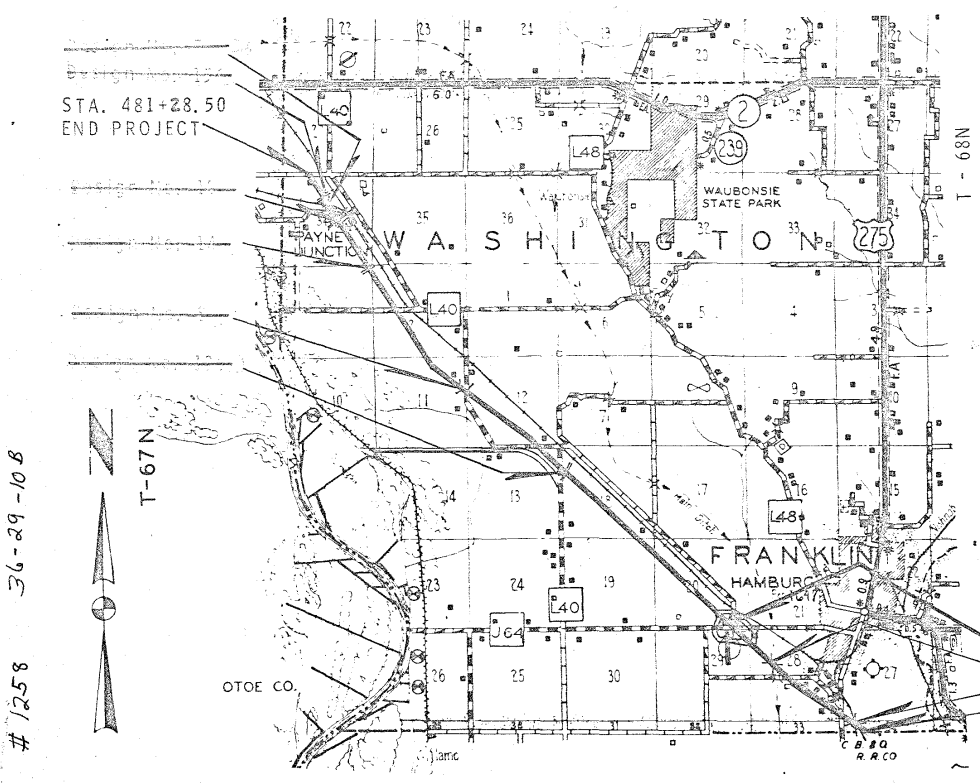
TO BE LEFT
APRIL 20, 1971

Design No. 969
STA. 10+01.03
BEGIN PROJECT

DESIGN DESIGNATION
INTERSTATE
HIGHWAY

1971 AADT	4310	V.P.D.
1991 AADT	7500	V.P.D.
1991 DHV	880	V.P.H.
DIRECTIONAL	50	%
TRUCKS	10	%
DESIGN V	70	M.P.H.

FULL CONTROL OF ACCESS
SHALL BE EXERCISED ON
THIS PROJECT.



STATE CONTROL SECTION NUMBER
36-0700

LOCATION MAP
LOCATION MAP SCALE



LET ON MAR. 2, 1971

INDEX OF SHEETS		105.3
NO.	DESCRIPTION	
1	TITLE SHEET	
1A	REVISION SHEET	
2-2A	ESTIMATE SHEET	
3-18	Bridge Des. No. 969	

CONSTRUCTION PLANS SHOWING PROJECT AS BUILT

Plan Preparation Supervised By: William S. Bensen
Resident Construction Engineer
Date 12/7/82 Iowa Reg. No. 8859

REVIEWED AND FORWARDED TO AMES
James E. Klein District Construction Engineer Date 12/17/82
One 50% Reduced and Two Full-Size Prints To Be Made and Returned To

VAN R. SNYDER
District Engineer

AFTER MICROFILMING RETURN ORIGINAL
TO DISTRICT NO. 4

THIS AS BUILT PLAN INCLUDES

YEAR	WORK	CONTRACTOR	PROJ. INSPECTOR
1972	Bridge	Cunningham-Reis Co.	J. Stanley

IOWA STATE HIGHWAY COMMISSION STANDARDS REQUIRED
(Available at the I. S. H. C. Storeroom)

STANDARD	ISSUED	REVISED
C1P	1932	8-25-67
CFP	5-1945	
F4J		6-19-64
C8F	10-1952	5-17-55
C12F	10-1952	
CBH-00	1-1960	
CHP2.5-65	1965	8-25-67
PIOA	1959	

REVISED:
SEE FOLLOWING SHEET 1.

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED UNDER MY SUPER
VISION AND THAT ENGINEERING DECISIONS WITH REGARD TO THE
DESIGN WERE MADE BY ME OR BY OTHER DULY REGISTERED PROFI
SIONAL ENGINEERS UNDER THE LAWS OF THE STATE OF IOWA
DATE _____ 19____ IOWA REG. NO. _____

APPROVED
James E. Klein
REPUTY CHIEF ENGINEER
IOWA HIGHWAY COMMISSION DATE _____

U.S. DEPT. TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
APPROVED
DIVISION ENGINEER DATE _____

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT PERSONAL SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF IOWA.
Jan. 13, 1971
DATE
WM. A. LUNDQUIST
REG. NO. 4449

DESIGN NO. 769
FREMONT COUNTY
SECTION N 34
OVER C. B. & Q. R. R. & LOCAL ROAD
CROSSING NO. 4290
T - 68N R - 43W
STA. 458+14.82 SO. LANE
STA. 457+25.18 NO. LANE
WASHINGTON TOWNSHIP

DESIGN FOR 39°09' SKEW
DUAL 29'6" x 40'-0" CONTINUOUS I-BEAM BRIDGE

ESTIMATE OF QUANTITIES

ITEM NO.	ITEM	UNIT	TOTAL
1	Structural Concrete	Cu. Yds.	1 450.0
2	Reinforcing Steel	Lbs.	355 862
3	Structural Steel	Lbs.	676 734
4	Aluminum Handrail	L.F.	1 246.29
4	Steel Handrail	L.F.	1 246.29
5	Granular Backfill	Cu. Yds.	292
6	Class 20 Excavation	Cu. Yds.	1 058
7	4" Tile Subdrain	L.F.	352
8	Creosoted Piling	L.F.	9 775
9	Creosoted Test Piling	L.S.	Lump Sum

ESTIMATE REFERENCE INFORMATION

100-4

Data listed below is for informational purposes only and shall not constitute a basis for any extra work orders.

ITEM NO.	DESCRIPTION
1.	Includes 727.8 cu. yds. of Class "D" in Superstructure and 722.2 cu. yds. of Class "C" in Substructure

THESE BRIDGES WILL REQUIRE BRIDGE SIGN ASSEMBLIES, FURNISHED AND PLACED BY OTHERS, AS SPECIFIED IN SECTION 2 C-5 OF THE I. S. H. C. MANUAL ON "UNIFORM TRAFFIC CONTROL DEVICES", DATED JANUARY - 1963.

I HEREBY CERTIFY THAT THESE PLANS HAVE BEEN PREPARED BY ME OR UNDER MY DIRECT PERSONAL SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF IOWA.
DALE E. DERBY
PE.
IOWA REGISTRATION NO. 3049
DATE

DESIGN	LOCATION			DESCRIPTION	ESTIMATE OF QUANTITIES					REMOVALS				
	SECTION	TOWNSHIP	STATION		SIZE AND TYPE	STRUC. CONC. CL. "C" CU. YD.	REINF. STEEL LBS.	EXCAVATION- C.Y.	CL. 20		CL. 24			
1369	18	WASHINGTON	251+00	8.0' x 10.0' x 178.0' Reinforced Concrete Box Culvert	15° Sk.	293.8	39 135	850						
1469	3	WASHINGTON	408+00	12.0' x 12.0' x 172.0' Reinforced Concrete Box Culvert		465.3	57 833	1 469						
1569	34	WASHINGTON	443+40	4.0' x 4.0' x 207.0' Reinforced Concrete Box Culvert with Stub Flume	30° Sk.	116.5	12 143	227						
1969	34	WASHINGTON	458+90	6.0' x 6.0' x 405.0' Reinforced Concrete Box Culvert	Sk. 39°9'	383.5	53 619	820						
				TOTAL		1259.1	162 730	3346						

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT PERSONAL SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF IOWA.
Jan. 13, 1971
DATE
WM. A. LUNDQUIST
REG. NO. 4449

DESIGN NO. 869
FREMONT COUNTY
SECTION 11
LOCAL ROAD OVER I-29
T - 67N R - 43W
STA. 1323+20.9 O. R. (LOCAL ROAD)
STA. 322+80 Q SURVEY (I-29)
WASHINGTON TOWNSHIP

DESIGN FOR 24°48' SKEW
284'-6 x 30' PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

ESTIMATE OF QUANTITIES

ITEM NO.	ITEM	UNIT	TOTAL
1	Structural Concrete	Cu. Yds.	562.1
2	Reinforcing Steel	Lbs.	114 868
3	Aluminum Handrail	L.F.	605.31
3	Steel Handrail	L.F.	605.31
4	Preten. Prestressed Concrete Beams	No.	8
5	Creosoted Piling	L.F.	4 550
6	4" Tile Subdrain	L.F.	212
7	Concrete Slope Protection	Sq. Yds.	400
8	Structural Steel	Lbs.	4 290
9	Class 20 Excavation	Cu. Yds.	367
10	Granular Backfill	Cu. Yds.	122
11	Creosoted Test Piling	L.S.	Lump Sum
12	3 1/2" Preformed Elastic Neop. Jt.	L.F.	82

ESTIMATE REFERENCE INFORMATION

100-4

Data listed below is for informational purposes only and shall not constitute a basis for any extra work orders.

ITEM NO.	DESCRIPTION
1.	306.5 cu. yds. Class "D" Concrete for superstructure & 255.6 cu. yds. Class "C" Concrete for substructure.

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT PERSONAL SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF IOWA.
Jan. 13, 1971
DATE
WM. A. LUNDQUIST
REG. NO. 4449

DESIGN NO. 969
FREMONT COUNTY
SECTIONS 20, 21, 28, 29
COUNTY ROAD "G" OVER PROPOSED I-29
T-67N R-42W
STA. 105+33.04 I-29
STA. 1105+29.74, CO. ROAD "G" (O. R.)
WASHINGTON TOWNSHIP

DESIGN FOR 35°16'19.32" SKEW
328'-0 x 32'-0 CONTINUOUS WELDED PLATE GIRDER BRIDGE

ESTIMATE OF QUANTITIES

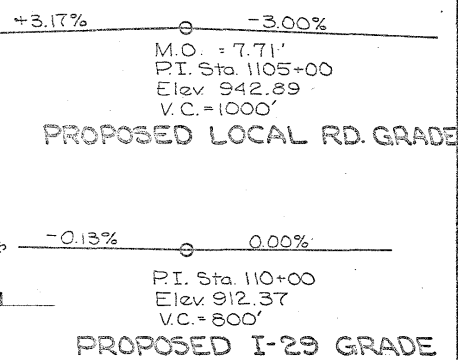
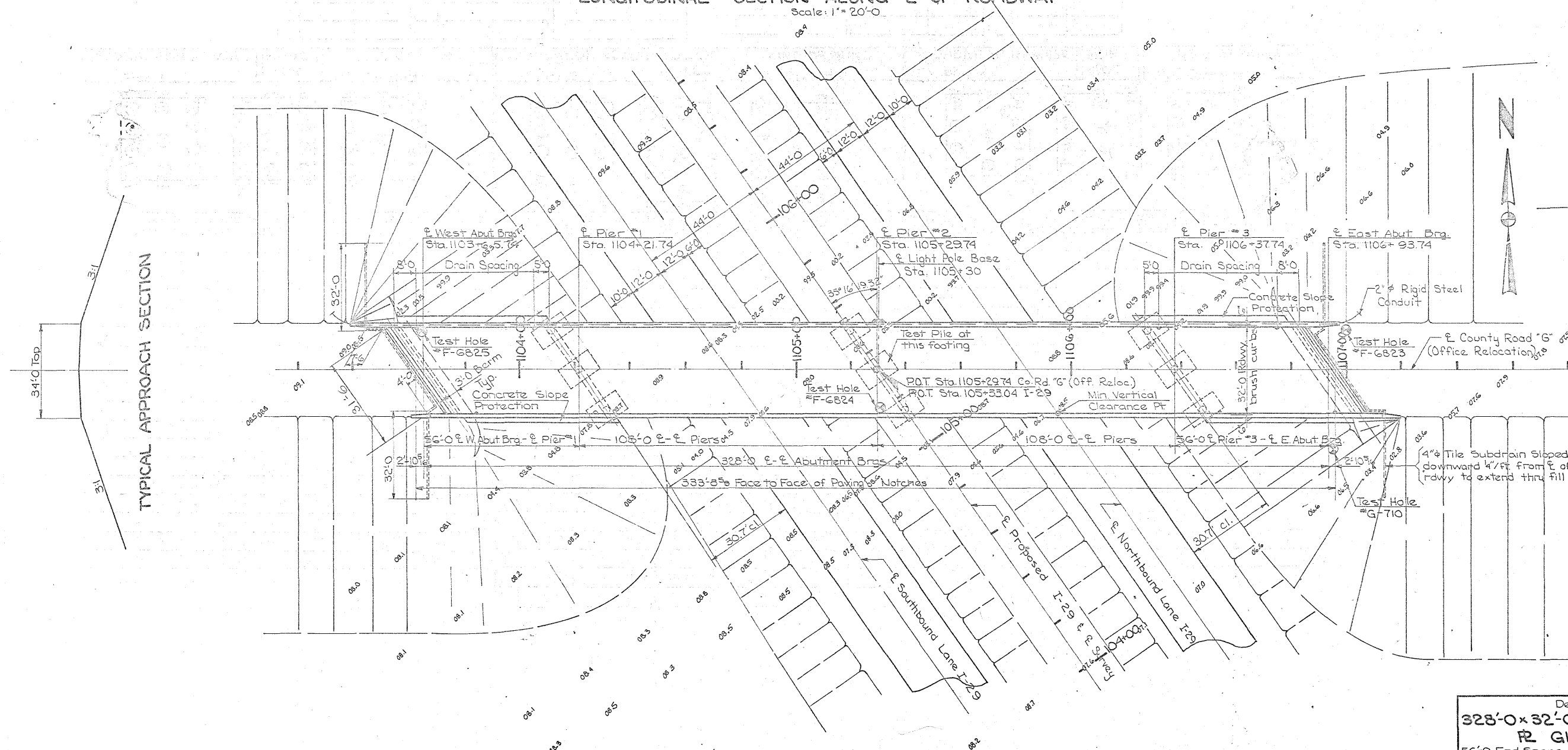
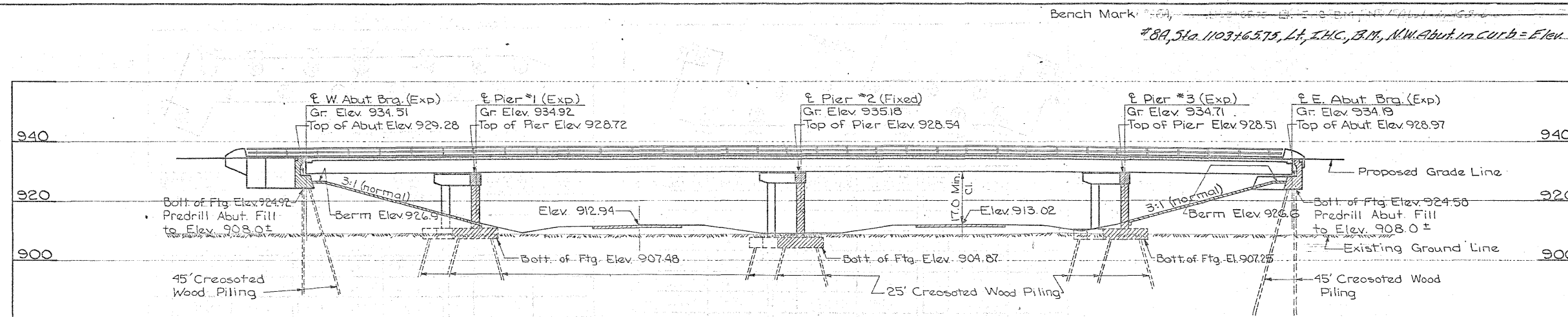
ITEM NO.	ITEM	UNIT	TOTAL
4	Structural Concrete	Cu. Yds.	640.5
5	Reinforcing Steel	Lbs.	160 113
6	Structural Steel	Lbs.	318 270
7	Aluminum Handrail	L.F.	696.4
8	Granular Backfill	Cu. Yds.	140
9	Concrete Slope Protection	Sq. Yds.	510.9
10	Class 20 Excavation	Cu. Yds.	252.389
11	4" Tile Subdrain	L.F.	227
12	Creosoted Piling	L.F.	3530.7
13	Creosoted Test Piling 1 at 35'	L.S.	4500.00
14	2" Rigid Steel Conduit	L.F.	366

ESTIMATE REFERENCE INFORMATION

100-4

Data listed below is for informational purposes only and shall not constitute a basis for any extra work orders.

ITEM NO.	DESCRIPTION
1.	338.2 cu. yds. Structural Concrete Class "D" for superstructure 302.3 cu. yds. of Class "C" for substructure. Includes quantities for 1 light pole base.
11.	Includes 364 L.F. of 2" conduit and 2 L.F. of 1" conduit.



TRAFFIC COUNT: 575 VPD (1988)

LOCATION:
T&E R-42W
Sections 20, 21, 28 & 29
Washington Twp.
Fremont County
County Road 'G' over
Proposed I-29

SITUATION PLAN
Scale: 1" = 20'-0"

Design for 35° 16' 19.32" Skew

**328'-0" x 32'-0" CONTINUOUS WELDED
R GIRDER BRIDGE**

56'-0" End Spans 108'-0" Interior Spans

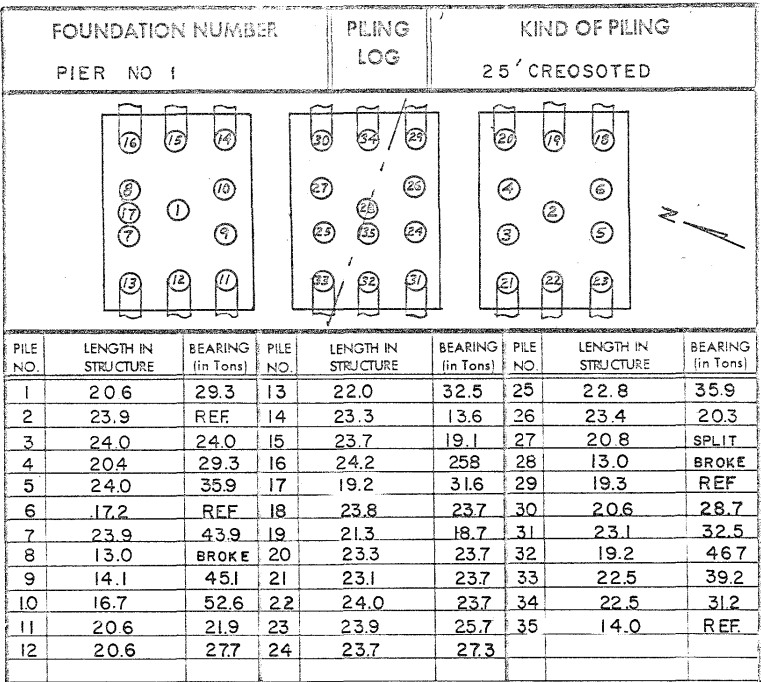
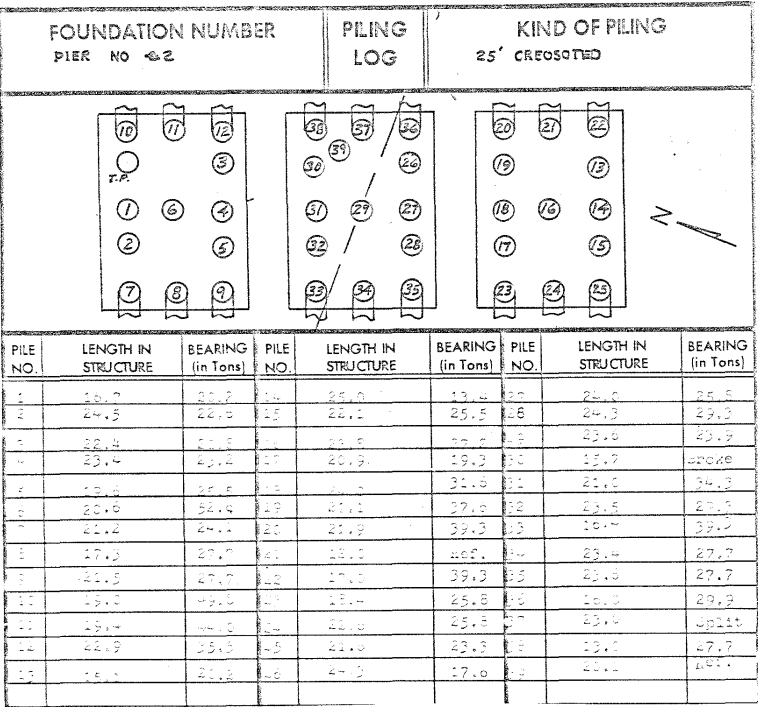
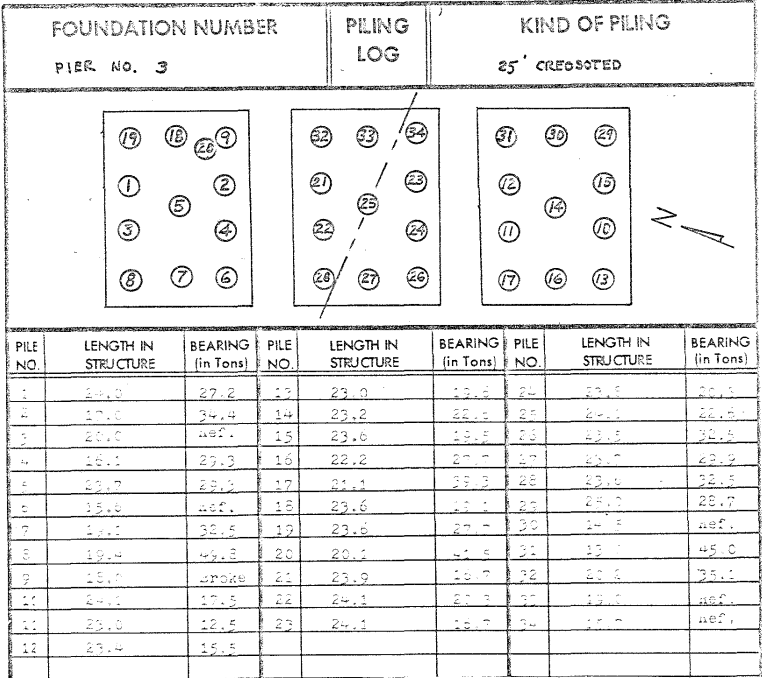
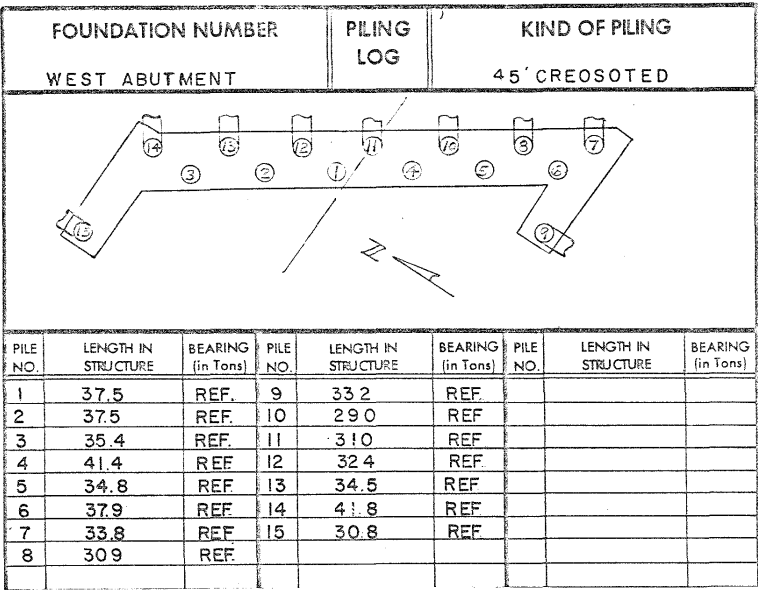
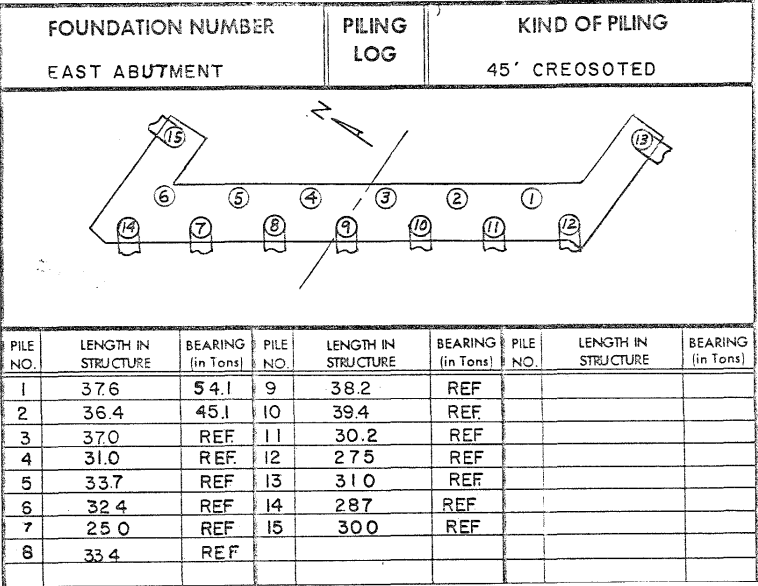
SITUATION PLAN

Sta. 105+33.04, I-29
Sta. 1105+29.74, County Rd. 'G' (Off. Reloc.) July, 1970

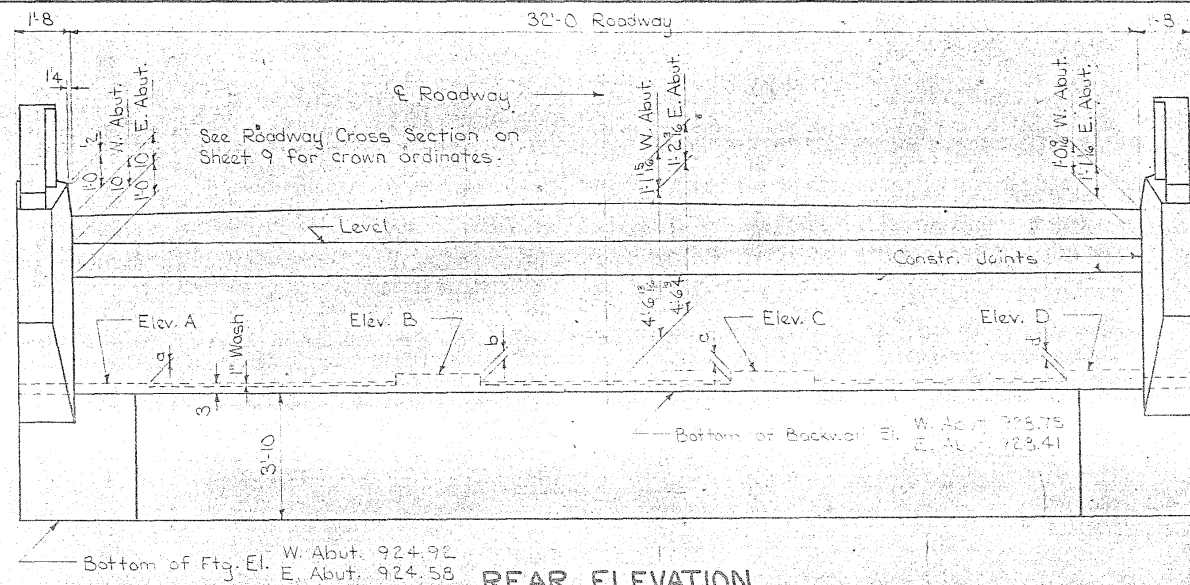
FREMONT COUNTY

IOWA STATE HIGHWAY COMMISSION

Design Sheet No.: 1 Of 16 File No.: 22535 Design No.: 969



Design No. 969

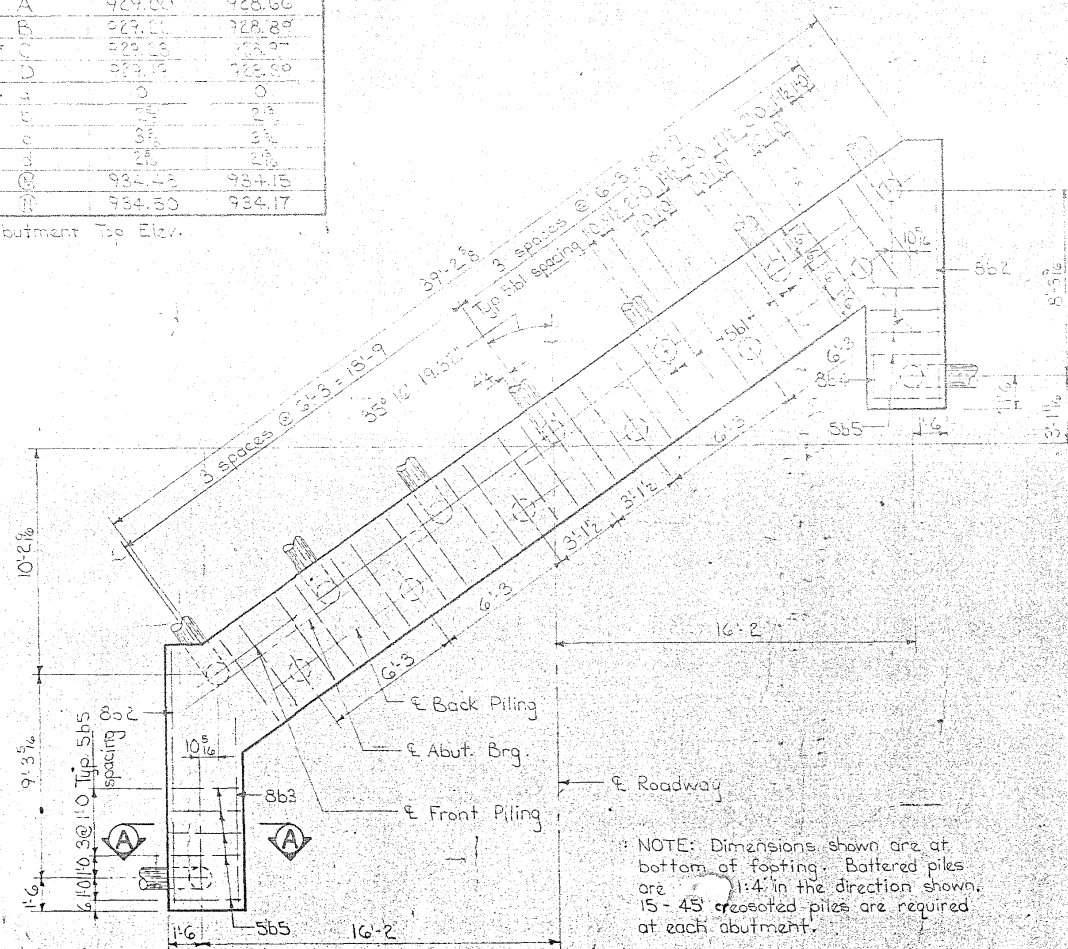


REAR ELEVATION

West Abutment (looking east)
East Abutment (looking west)

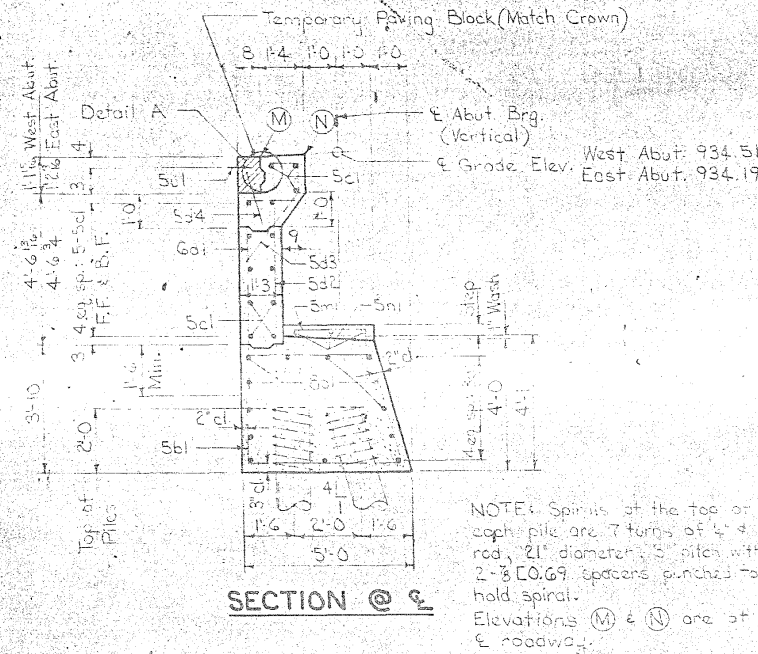
Elev.	West Abut.	East Abut.
A	929.00	928.66
B	929.00	928.80
* C	929.28	929.00
D	929.28	928.80
E	929.28	928.80
F	929.28	928.80
G	929.28	928.80
H	929.28	928.80
I	929.28	928.80
J	929.28	928.80
K	929.28	928.80
L	929.28	928.80
M	929.28	928.80
N	929.28	928.80
O	929.28	928.80
P	929.28	928.80
Q	929.28	928.80
R	929.28	928.80
S	929.28	928.80
T	929.28	928.80
U	929.28	928.80
V	929.28	928.80
W	929.28	928.80
X	929.28	928.80
Y	929.28	928.80
Z	929.28	928.80

* Abutment Top Elev.



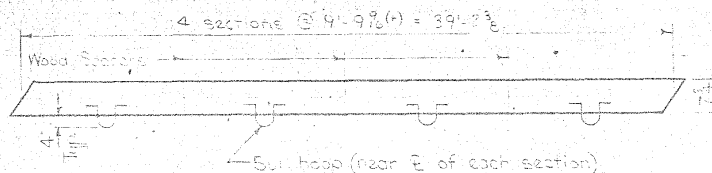
PILE PLAN

NOTE: Dimensions shown are at bottom of footing. Battered piles are 1:4 in the direction shown. 15-45' crooked piles are required at each abutment.

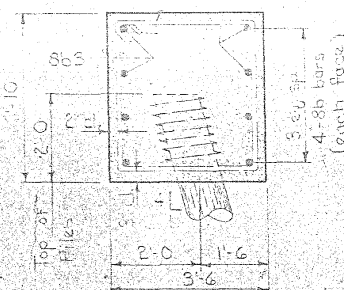


SECTION @ E

NOTE: Spiral at the top of each pile are 7 turns of 4" rod, 21" diameter, 5" pitch with 2-3 @ 0.69' spacings punched to hold spiral. Elevations (M) & (N) are at E roadway.



PAVING BLOCK DETAIL



SECTION A-A

CONC. PLACEMENT QUANT.-ONE ABUT.

Item	Unit	Quantity
Footing and Steps	Cu. Yd.	34.0
Wingwalls	Cu. Yd.	6.8
Backwall Below Constr. Joint	Cu. Yd.	6.5
Backwall Above Constr. Joint	Cu. Yd.	4.5
Maskwalls	Cu. Yd.	.6
Wings	Cu. Yd.	3.7
* Paving Block	Cu. Yd.	1.1
End Posts	Cu. Yd.	.8
Total Cu. Yds.		58.0

* Paving block may be Class C or Class D concrete.

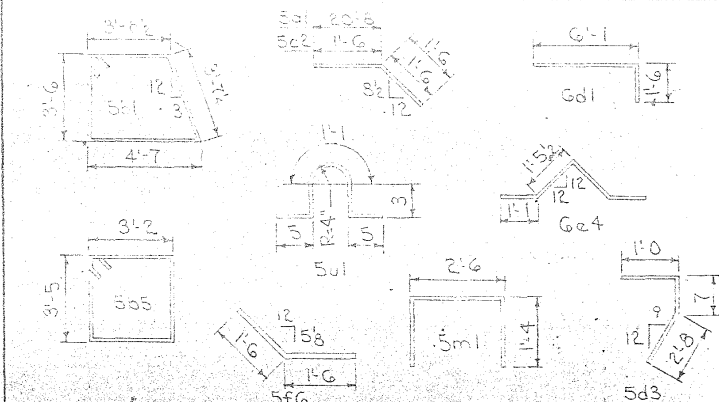
ESTIMATED QUANT.-TWO ABUTS.

Item	Unit	Quantity
Structural Concrete Class C	Cu. Yd.	116.0
Reinforcing Steel	Lbs.	11874
Class 20 Excavation	Cu. Yd.	154
Granular Backfill	Cu. Yd.	140
Crooked Piling 30' @ 45'	L.F.	1350

REINFORCING BAR LIST - ONE ABUTMENT

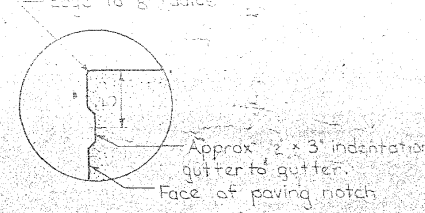
Bar	Location	Shape	No.	Length	Weight	
8a1	Footing Longitudinal		26	22'-2"	1539	
8b1	" Hoops		24	16'-2"	405	
8b2	Wing Footing Longitudinal		8	Varies	239	
8b3	" " "		4	9'-2"	98	
8b4	" " "		4	6'-9"	72	
8b5	" " Hoops		10	13'-11"	145	
5c1	Backwall Longitudinal		13	38'-10"	527	
5c2	" To Wing Dowels		26	3'-0"	81	
5d1	" Vertical B.F.		78	7'-6"	879	
5d2	" " F.F.		39	7'-1"	288	
5d3	" Transverse		38	4'-2"	165	
5e4	* Paving Block Dowels		20	2'-0"	42	
5c1	Wing Vertical		28	Varies	150	
5c1	" " "		32	7'-9"	259	
5e5	Maskwall "		16	5'-5"	90	
5e4	Rail Post Anchor		4	5'-0"	30	
5f1	Wing Horizontal		28	6'-8"	195	
5f2	" " "		24	9'-9"	244	
5f3	Maskwall "		16	3'-9"	63	
5f4	End Post		8	6'-8"	56	
4f5	" " "		4	3'-0"	8	
5f6	Wing To Ftg. Dowel - Bottom		4	3'-0"	13	
5m1	Beam Step Transverse		12	5'-0"	63	
5n1	" " Longitudinal		12	2'-2"	27	
5u1	Paving Block Hoop		4	2'-3"	9	
5w1	End Post Dowel		20	3'-9"	78	
5w2	" " "		12	3'-0"	38	
	Pile Spirals 4" rod		15	38'-6"	96	
	Spiral Spacers 3 @ 0.69'		30	1'-10"	38	
* Structural Grout					Total (lbs)	5937

BENT BAR DETAILS



NOTE: All dimensions are out to out. Radii are to E bar.

DETAIL A



Design For 35° 16' 19.32" Skew
328'-0" x 32'-0" CONTINUOUS WELDED GIRDER BRIDGE

56'-0" End Spans 108'-0" Interior Spans

ABUTMENT DETAILS

Station 105+33.04 I-29

1105+29.74 County Rd. G (Off R210e.) July, 1970

FREMONT COUNTY IOWA STATE HIGHWAY COMMISSION

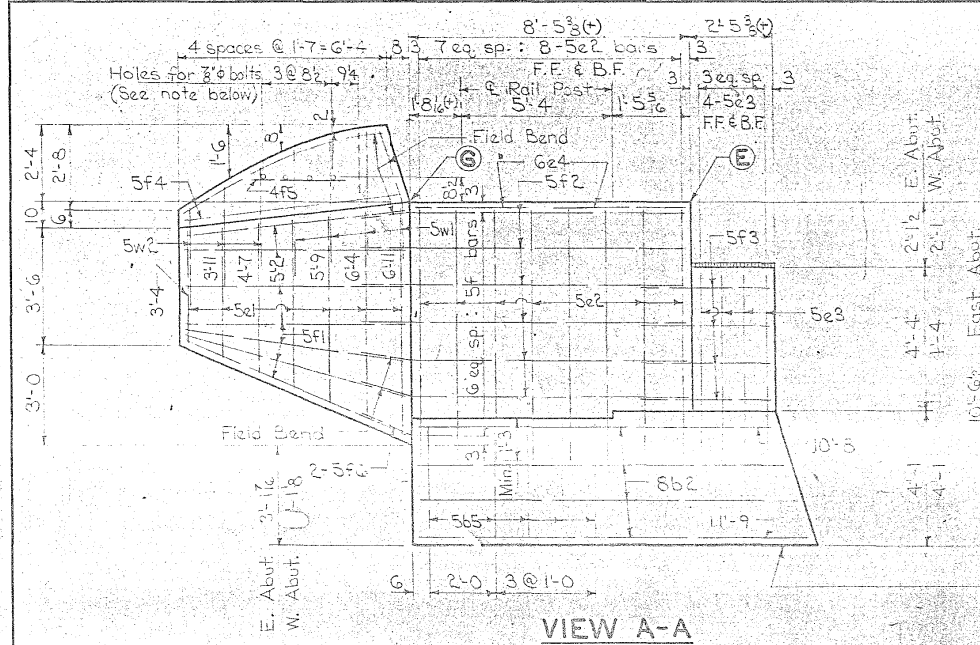
Design Sheet No. 3 Of 16 File No. 22535 Design No. 969

DESIGNED BY: H. T. Tait
DETAILED BY: Darwin Backus

TRACED BY: E. W. Konechne
CHECKED BY: E. W. Konechne

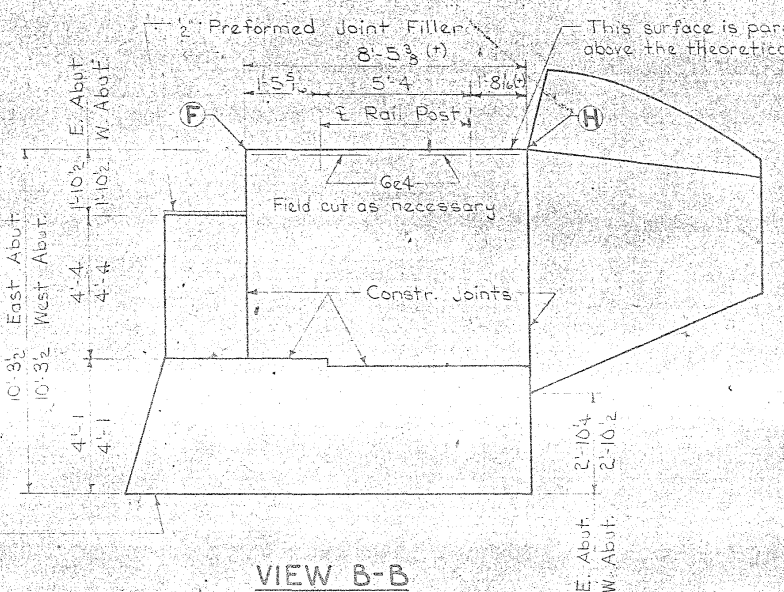
FREMONT COUNTY

PROJECT NUMBER: I-16-29-1(14)0-04-36
STATE: IOWA
FED. ROAD DIST. NO.: 5
FISCAL YEAR: 5
SHEET NO.: 5
TOTAL SHEETS: 18



Point	E. Abut.	W. Abut.
(E)	935.12	935.42
(F)	934.87	935.21
(H)	934.76	935.13

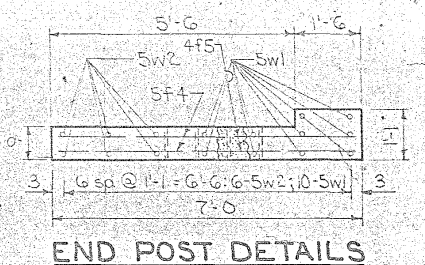
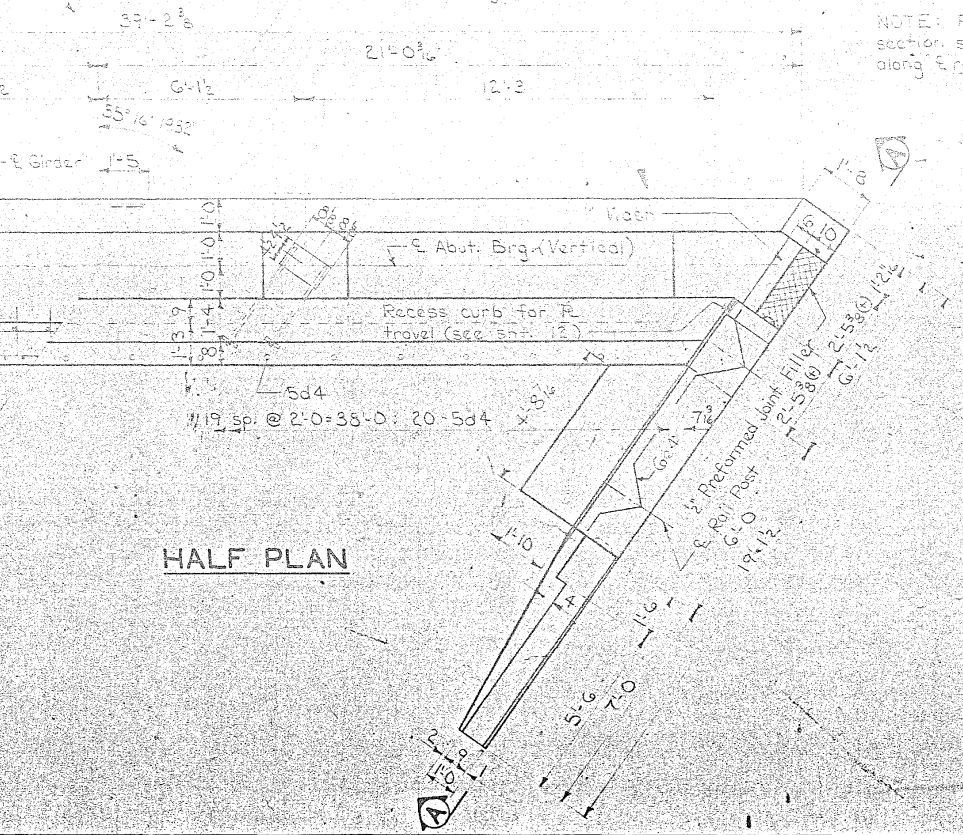
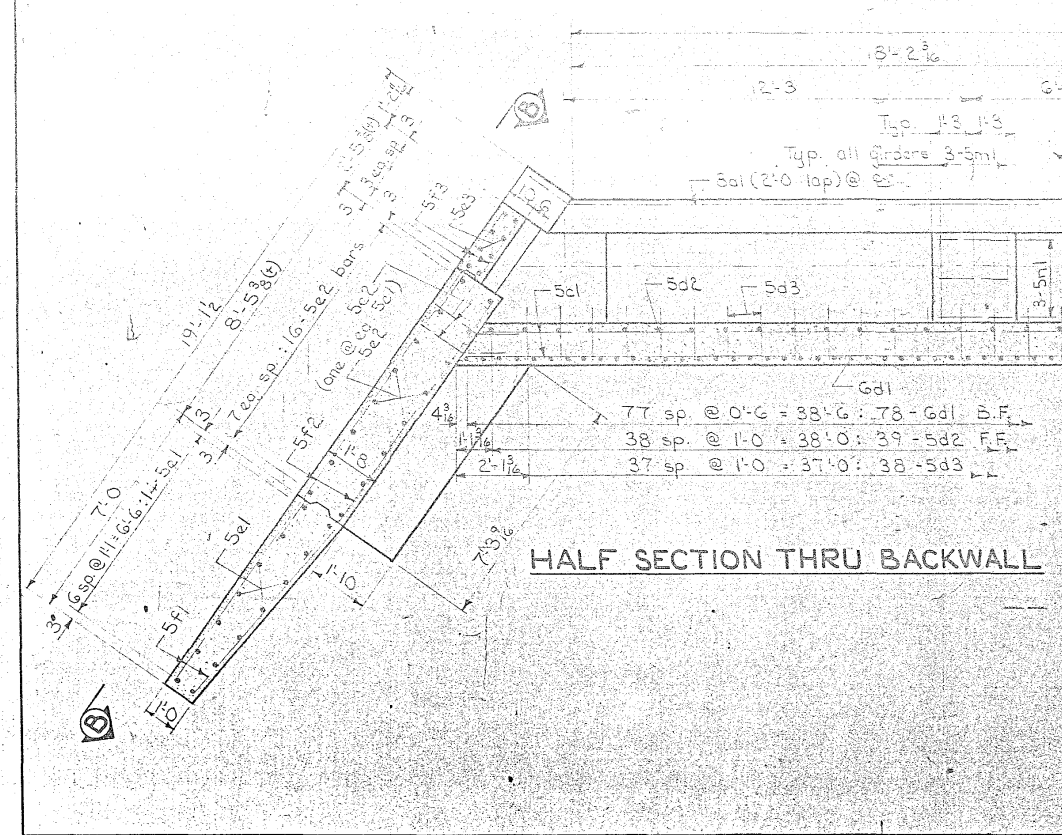
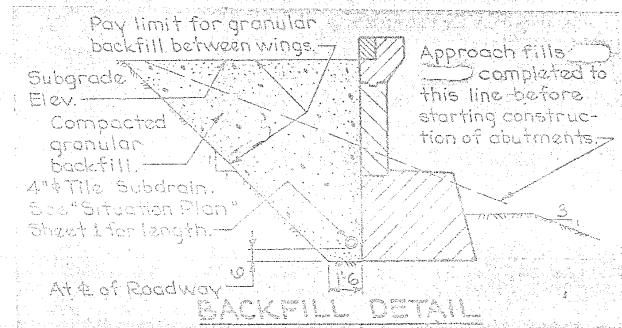
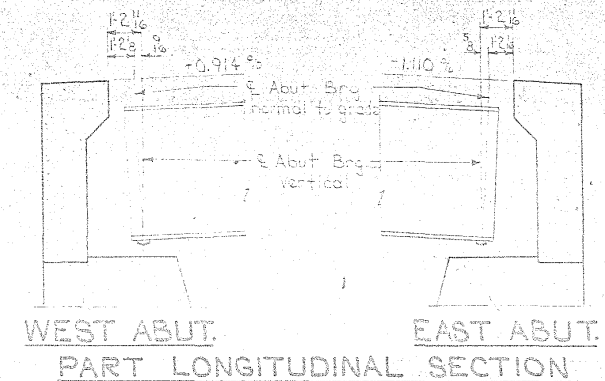
NOTE: Curbs at points (E) & (F) are to be recessed for expansion travel as shown on sheet 12. The elevations shown above are not adjusted for the 3" recess.



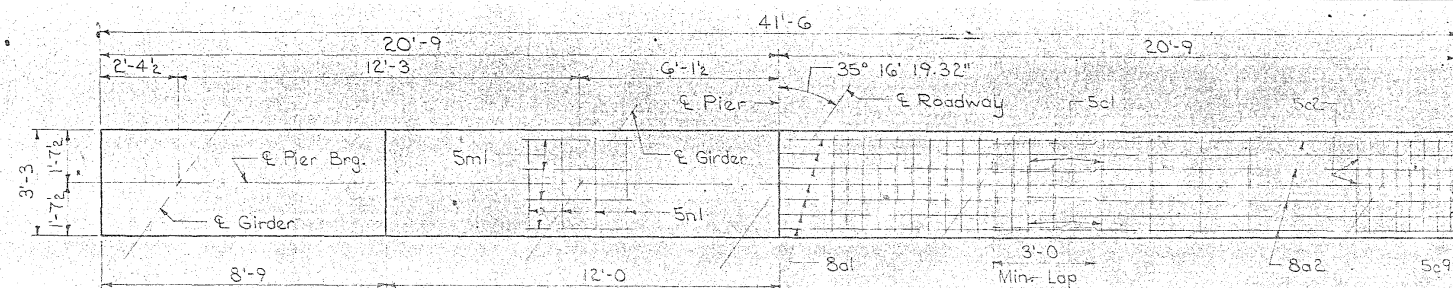
ABUTMENT NOTES:

- All exposed corners 90° or sharper are filleted with a 3/4" dressed and beveled strip.
- Reinforcing steel is securely wired in place before concrete is poured. Minimum clear distance from face of concrete to near reinforcing bar is 2" unless otherwise noted or shown.
- All backfill behind the abutment between wings is granular backfill. The remainder of the abutment excavation is backfilled with soil.
- Cost of all preformed joint and compressible materials is included in price bid for concrete.
- The portion of the backwall containing the abutment anchorage of the expansion plate is poured after the bridge floor is placed.
- The Mask Wall is poured before the superstructure slab is poured.
- Construction joint keyways are formed with beveled 2 x 1's.
- Beams and masonry plates are set before backwall is placed. Masonry plates are included in the superstructure estimate.
- Pile is driven to full penetration if practicable, but to not less than 20 tons nor more than 40 tons bearing value per pile.
- Before the concrete paving block is poured bend down dowels (structural grade) and line the notch with tar paper to prevent bond. Block is removed and bars straightened before pavement is placed. Paving block may be made of Class "C" or Class "D" concrete.

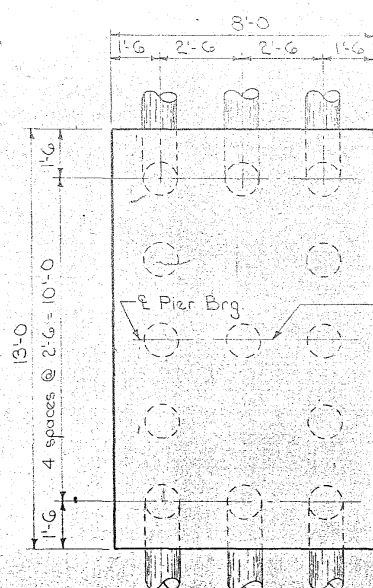
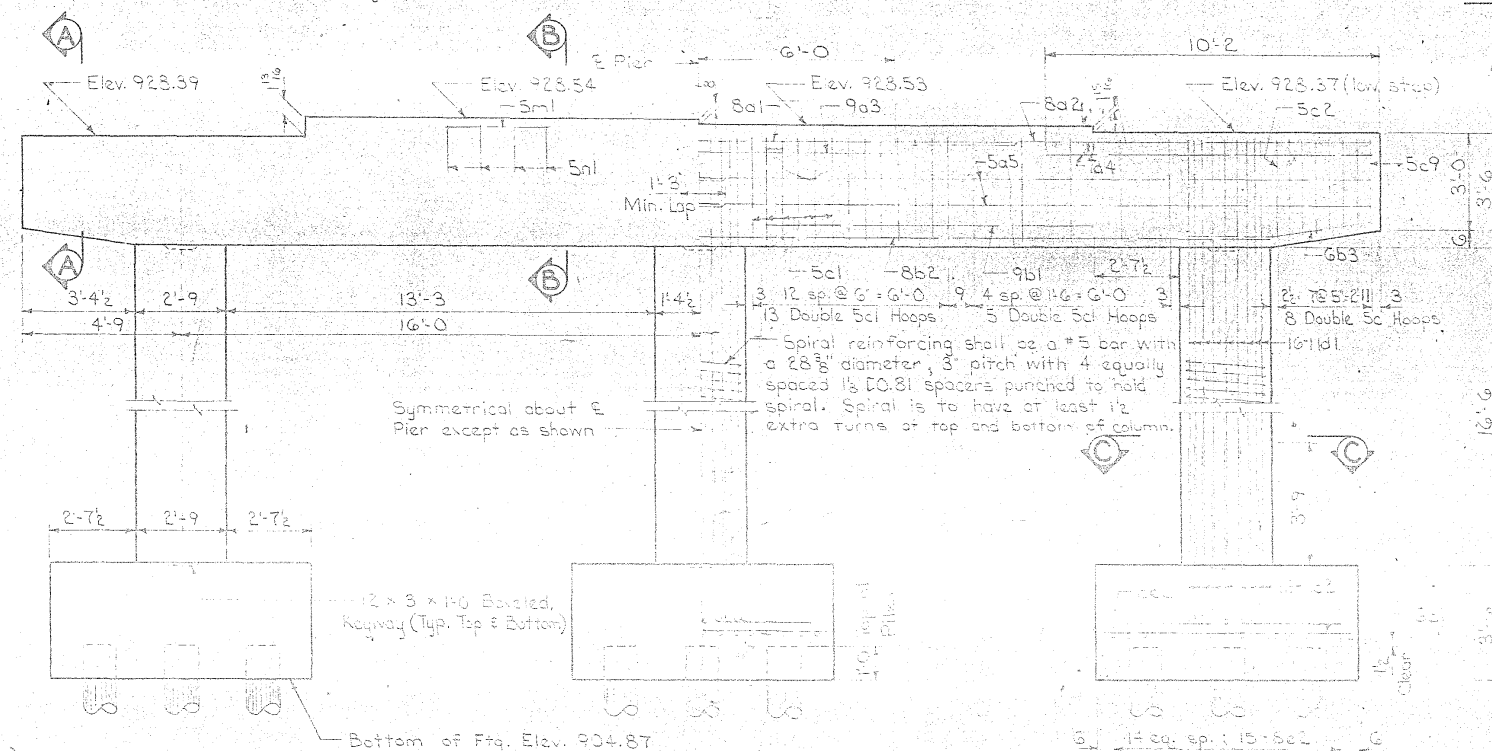
Holes for 7/8" ϕ bolts are formed with 1" ϕ (nominal dia.) St'd. steel pipe sleeves which are galvanized after cutting to proper length. The pipe sleeves are securely fixed in exact location as shown before concrete is poured. The cost of pipe sleeves is included in the price bid for concrete. The 7/8" ϕ bolts are furnished and placed by others.



Design For 35° 10' 19.32" Skew
328'-0" x 32'-0" CONTINUOUS WELDED GIRDER BRIDGE
 56'-0" End Spans 108'-0" Interior Spans
ABUTMENT DETAILS
 Station 105+23.04 I-29
 105+29.74 County Rd. 6 (Off. Reloc.) July, 1970
FREMONT COUNTY
IOWA STATE HIGHWAY COMMISSION
 Design Sheet No. 4 Of 16 File No. 22535 Design No. 969

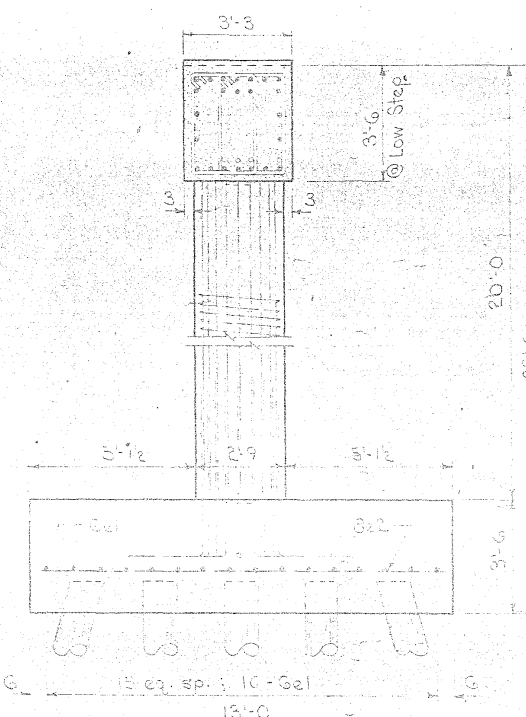
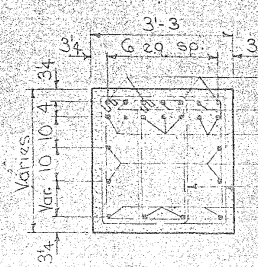
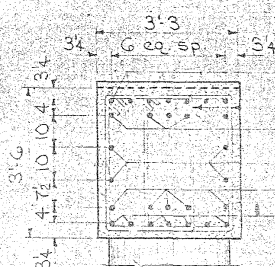
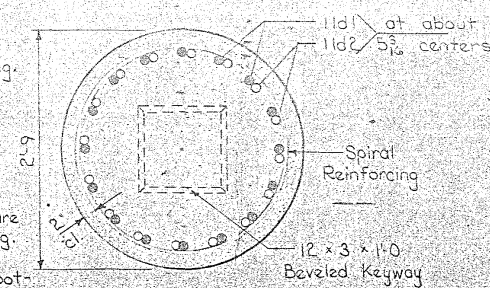


NOTE: 5ml & 5nl bars under interior girders only.



— The test pile is to be one of the vertical piles at the interior footing.

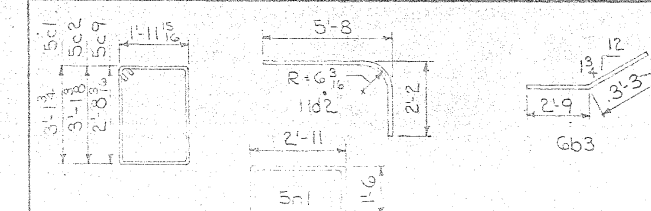
Dimensions shown are at bottom of footing. 13 Creosoted piles required for each footing. Batter piles 1:4 in the direction shown.



REINFORCING BAR LIST - PIER No 2						
Bar	Location		Shape	No.	Length	Weight
8a1	Cap	Longitudinal Top		7	30'-1"	562
8a2	"	"		7	14'-1"	263
9a3	"	"		5	12'-0"	204
7a4	"	"		14	10'-0"	286
5a5	"	" Sides		8	21'-3"	177
9b1	"	" Bottom		10	10'-0"	340
8b2	"	"		7	34'-9"	649
6b3	"	" Ends		8	6'-0"	72
5c1	"	Hoops		72	11'-0"	826
3c2-3c9	"	" Cantilever *		32	Varies	350
11d1	Column	Vertical		48	19'-8"	5016
11d2	"	" Dowels		48	7'-6"	1913
6e1	Footing	Transverse		48	7'-8"	553
6e2	"	Longitudinal		45	12'-8"	1522
5m1	Step	Longitudinal		8	3'-3"	29
5n1	"	Transverse		3	5'-9"	48
	* Column Spiral			3	502'-8"	1573
	18 to 31 Spiral Spacers			12	16'-6"	160

* See Pier Notes below	Total (lbs)	14543
------------------------	-------------	-------

BENT BAR DETAILS



NOTE: All dimensions are out to out. Radii to $\frac{1}{8}$ of bar.

CONCRETE PLACEMENT QUANTITIES

Location	Unit	Quantity
Cop	Cu. Yd.	17.8
Columns	Cu. Yd.	10.9
Footings	Cu. Yd.	39.4
	Total Cu. Yd.	68.1

ESTIMATED QUANTITIES PIER 2

Item	Unit	Quantity
Structural Concrete - Class C	Cu. Yd.	68.1
Reinforcing Steel	Lbs.	14543
Crested Piling 38 @ 25'	L.F.	950
Class 20 Excavation	Cu. Yd.	98
Crested Test Piling 1 @ 35'	L.S.	Lump Sum

PIER NOTES

All exposed corners 90° or sharper.  finished with a 3/4" dressed and beveled strip.

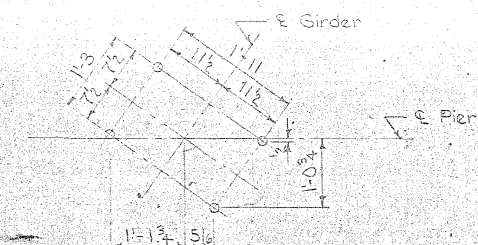
Minimum clear distance from face of concrete to near reinforcing bar is 2" unless otherwise noted or shown.

Reinforcing steel _____ securely wired in place before concrete poured.

Anchor bolts are preset in piers in accordance with the Standard Specifications. The weight of anchor bolts is included in the structural steel quantity.

Reinforcing bars may be shifted slightly to clear anchor bolts. Piles are driven to full penetration if practicable, but to not less than 20 tons nor more than 40 tons bearing value per pile.

The spiral reinforcing may be made of plain structural grade reinforcing steel and spliced by lapping 1 1/2 turns. The length of the spiral shown does not include the lapped length of the splices. The cost of the laps at splices included in the price bid for other reinforcement.



ANCHOR BOLT LOCATION PIER 2

1/2" ϕ x 2'-0 Swedge Anchor Bolts
Projection = 5'

Design For 35° 16' 19.32" Skew
328'-0" x 32'-0" CONTINUOUS WELDED
GIRDER BRIDGE

56'-0" End Spans 108'-0" Interior Spans

PIER 2 DETAILS

Station 105 + 33.04 I-29
1105 + 29.74 County Rd. "G" (Off. Reloc.) July, 1970

FREMONT COUNTY
IOWA STATE HIGHWAY COMMISSION

Design Sheet No: 6 Of 16 File No: 22535 Design No: 969

SHEAR STUD SPACING
(Typical all girders)

INTERIOR GIRDER DETAILS

EXTERIOR GIRDER DETAILS

DEAD LOAD DEFLECTION DIAGRAM

GIRDER AS FABRICATED AND ERECTED

HAUNCH THICKENING DIAGRAM

FLANGE WELDED SPLICE DETAIL

SHEAR STUD DETAILS

STRUCTURAL STEEL LAYOUT

MOMENT AND REACTION TABLE										(Moment in Foot-Kips Reaction in Kips)							
Load		Pos. Mom. Span 1		Neg. Mom. Pier #1 & 3		Pos. Mom. Span 2		Neg. Mom. Pier #2		Abutment Reaction		Pier #1 & 3 Reaction		Pier #2 Reaction			
Ext.	Int.	Ext.	Int.	Ext.	Int.	Ext.	Int.	Ext.	Int.	Ext.	Int.	Ext.	Int.	Ext.	Int.		
D.L. #1	0.990	1265	68	86	63	925	426	544	1273	1226	14.1	13.0	90.1	15.1	116.4	148.7	
D.L. #2	3.404	0.700	33	16	297	147	225	109	441	218	6.0	3.0	37.1	18.4	46.3	22.9	
U.L. L.V.	0.492	0.582	—	—	453	540	—	—	576	681	—	—	50.4	59.6	58.6	69.3	
	3.847	16.364	—	—	214	253	—	—	245	289	—	—	—	—	—	—	
U.L. L.	20002	23.637	—	—	—	—	—	—	—	—	—	—	20.0	23.6	20.0	23.6	
HS E-C-44	24616	29.091	478	565	—	—	783	926	—	—	44.7	52.8	—	—	—	—	
Impact	—	—	32	156	162	192	166	196	176	208	12.3	14.6	17.0	20.1	16.3	19.9	
Total	—	—	—	—	1892	2107	—	—	2711	3022	77	88.4	214.6	236.8	253.1	284.4	

NOTE: * Upper figure is for moment; lower is for shear.

GIRDER SPLICE DETAILS

SPLICE PLATE DATA						
	Exterior Girder			Interior Girder		
	Splice #1	Splice #2	Splice #3	Splice #1	Splice #2	Splice #3
a	5/8	5/8	3/4	3/4	3/4	3/8
b	1/2	3/8	5/8	1/2	1/4	1/16
c	1/2	1/2	1/2	1/4	5/8	3/8
d	5/8	1/2	5/8	3/4	1/2	3/8
e	0	0	0	0	0	1/16
N	3	4	4	3	5	5

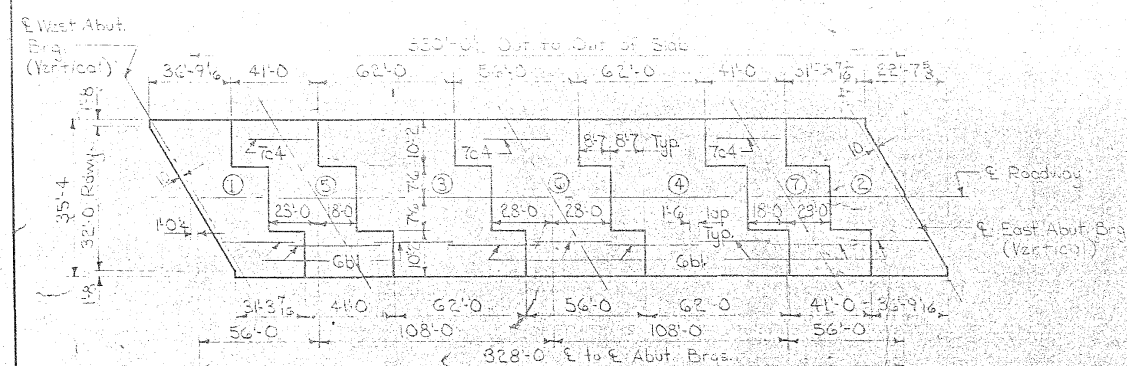
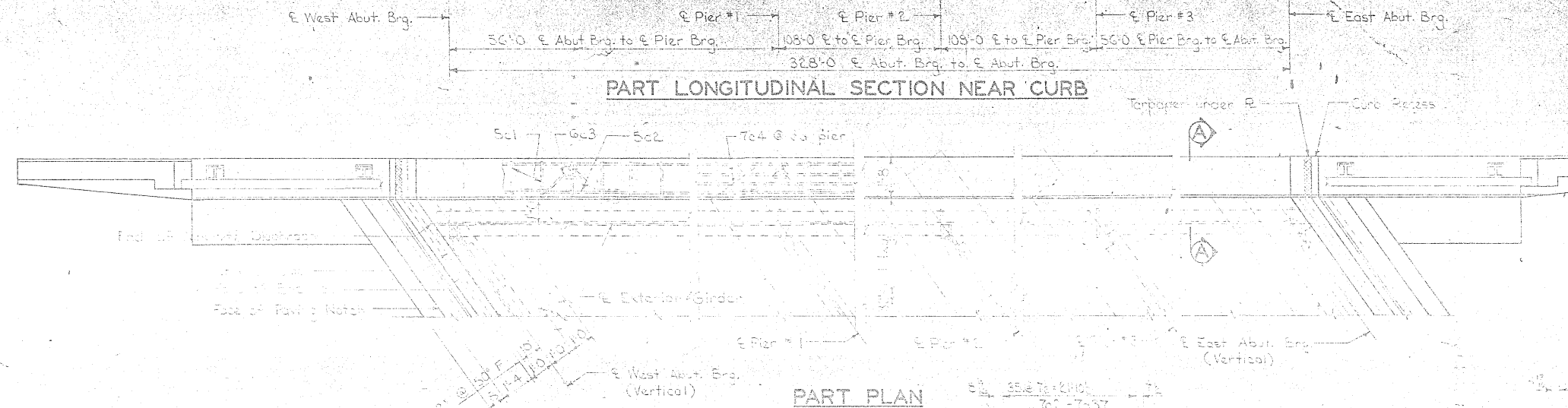
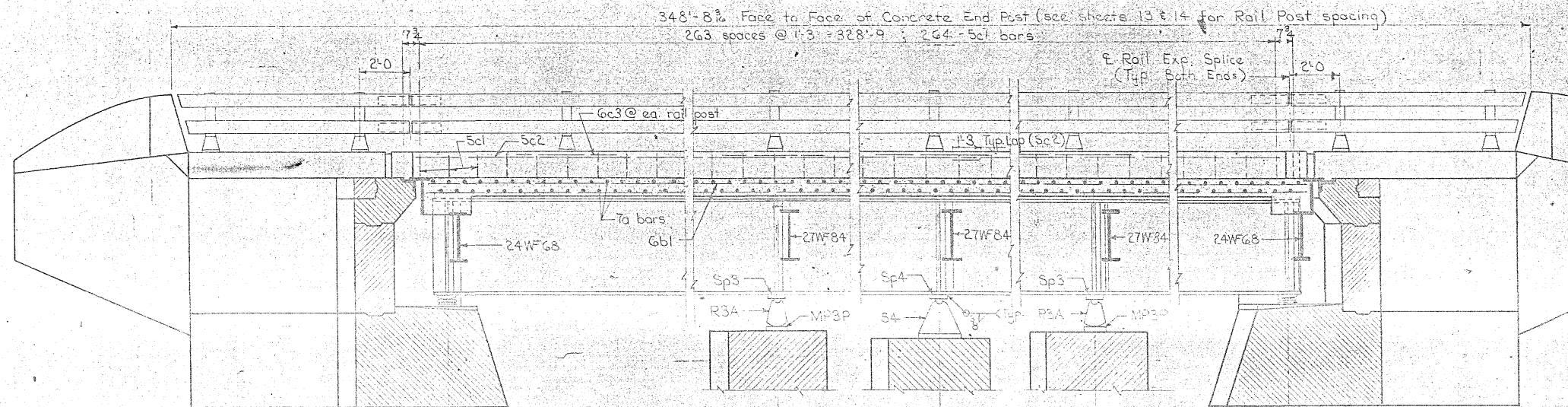
FLANGE TO WEB DETAILS

FLANGE TO WEB WELD SIZE	
Size of Fillet Weld	Flange Thickness
4	3/4
5/8	7/8 - 1 1/2
3/8	1 5/8 - 1 3/4

PLAN VIEW OF SHOP
WELDED FLANGE SPLICE

FLANGE WELDED SPLICE DETAIL

SHEAR STUD DETAILS

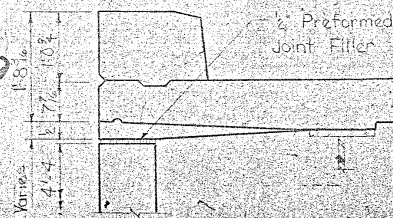


CONCRETE PLACEMENT DIAGRAM AND LONGITUDINAL REINFORCING

NOTE: Roadway slab placed in sections and in sequence indicated by encircled numbers on placement diagram and preferably at intervals not exceeding 24 hours. Curbs may be placed continuously. All slab reinforcing steel placed before any section poured. Alternate procedures for placing concrete may be submitted for approval, together with a statement of the proposed method, and evidence that the Contractor possesses the necessary equipment and facilities to accomplish the required result.

Any alternate procedure however, must provide for the placing of the end spans before the placing of the adjacent interior spans. Curbs may be poured continuously from end to end.

Conc. Placement Sections:
1, 3 & 5 (one foot)
2, 4, 6 & 7 (four feet)



PART SECTION A-A

BOTTOM SLAB TRANSVERSE REINFORCING LAYOUT

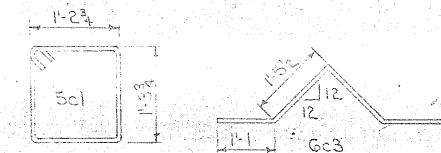


TRANSVERSE CONSTR. JT. DETAIL

REINFORCING STEEL - SUPERSTRUCTURE

Bar	Location	Shape	No.	Length	Weight
Ta1	Slab Trans. - Top & Bottom	—	983	35'-0"	70324
Ta2 - Ta37	" " - Bottom Ends	—	72	Varies	2594
Ta38 - Ta73	" " - Top Ends	—	72	Varies	2532
Gbl	Slab Longit. - Top & Bottom	—	513	38'-0"	29280
Sc1	Curb Trans. Hoops	□	528	5'-10"	3212
Sc2	" Longit.	—	36	37'-9"	1417
Gc3	Rail Post Anchors	—	78	5'-0"	586
Tc4	Slab & Curb Longit. over Piers	—	84	40'-0"	6868
				Total lbs.	116,813

BENT BAR DETAILS



NOTE: All dimensions are out to out.

CONCRETE PLACEMENT QUANTITIES

Section ①	31.3	Cu. Yd.
Section ②	31.3	Cu. Yd.
Section ③	55.4	Cu. Yd.
Section ④	55.4	Cu. Yd.
Section ⑤	36.6	Cu. Yd.
Section ⑥	50.0	Cu. Yd.
Section ⑦	36.6	Cu. Yd.
Curbs 2 @ 20'-0"	41.2	Cu. Yd.
Total	337.8	Cu. Yd.

ESTIMATED QUANTITIES

Concrete	337.8	Cu. Yd.
Reinforcing Steel	116,813	Lbs.
Structural Steel	318,270	Lbs.

* Includes 28 lbs. of bronze R.

* Includes quantities for one Light Pole Base.

TOP SLAB TRANSVERSE REINFORCING LAYOUT

Design For 35° 16' 19.32" Skew
328'-0" x 32'-0" CONTINUOUS WELDED GIRDER BRIDGE
 56'-0" End Spans 108'-0" Interior Spans
SUPERSTRUCTURE DETAILS
 Station 105+33.04 I-29
 105+29.74 County Rd. G (Off. Reloc.) July, 1970
FREMONT COUNTY
IOWA STATE HIGHWAY COMMISSION
 Design Sheet No. 8 Of 16 File No. 22535 Design No. 969

DESIGNED BY: *14 Tzac*
 DETAILED BY: *Darwin Backous*

TRACED BY:
 CHECKED BY: *E. W. Konechne*

FREMONT COUNTY

PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
I-16-29-1(14)0-04-36	IOWA	5		10	18

SUPERSTRUCTURE NOTES:

This bridge is designed for HS20-44 loading, two lanes, plus 20 lb. per square foot of roadway for future wearing surface.

Minimum clear distance from edge of bar to face of concrete is 2" unless otherwise noted or shown.

The floor slab as shown includes 1/2" of wearing surface.

All field connections are bolted using "High Tensile Strength Bolts".

Unless otherwise noted, all open holes are 15/16" and all bolts are 7/8" ϕ .

Bottom flanges are perpendicular to webs at the reaction points. All paint is omitted on tops of top flanges and on other steel surfaces in contact with concrete. Parts inaccessible after erection are given three coats of paint in the shop.

Forms for the slab and curb supported by the girders.

Fill thicknesses shown on plans based on nominal beam or girder dimensions. These thicknesses are verified or adjusted during fabrication to secure a close fit. Each fill plate shall fit to the nearest 1/16" in thickness and single plates are required at any fill location. Beams or girders are truly square at splice points with flanges perpendicular to webs.

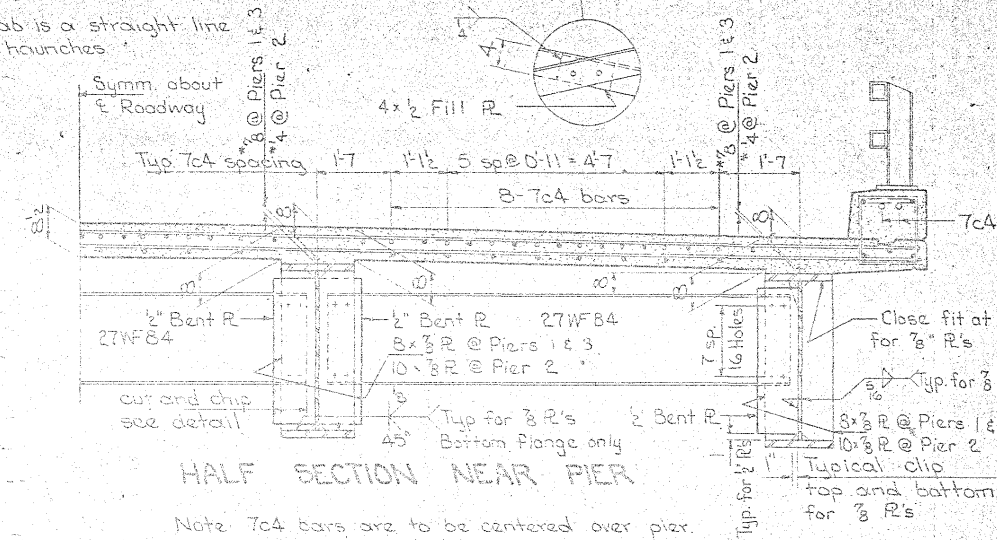
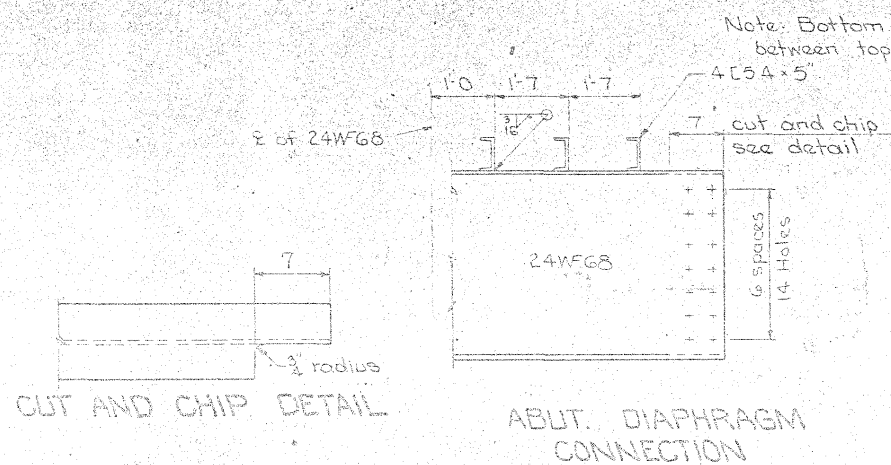
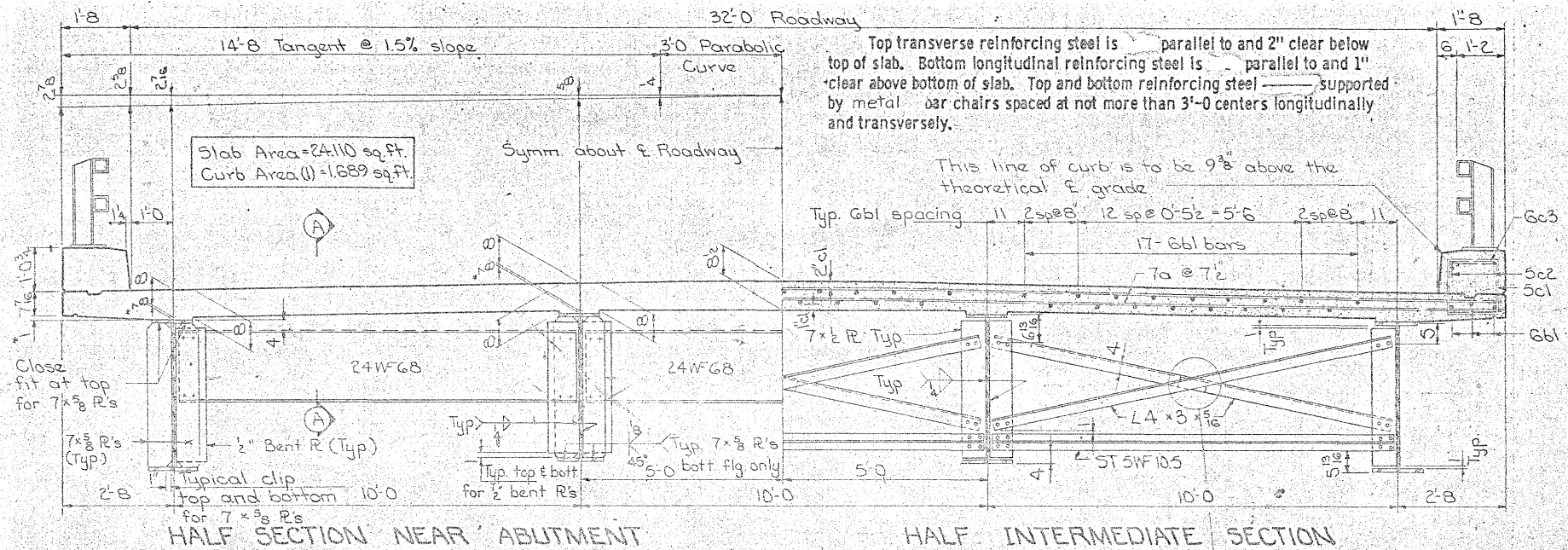
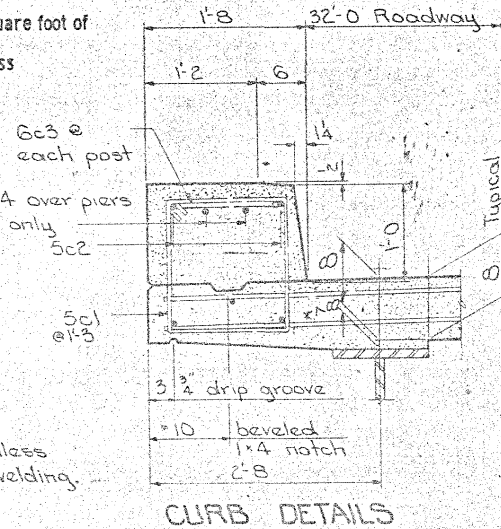
The design drawings indicate AWS prequalified welded joints, and unless otherwise noted the design joint details are for manual shielded metal-arc welding. Alternate joint details may be submitted for approval.

The stiffener to flange welds are not to intersect the longitudinal flange to web welds.

Magnetic particle inspection of welds, in accordance with Article 2408.15 of the Standard Specifications, will be required for the web to flange welds and the bearing stiffener welds of the girders.

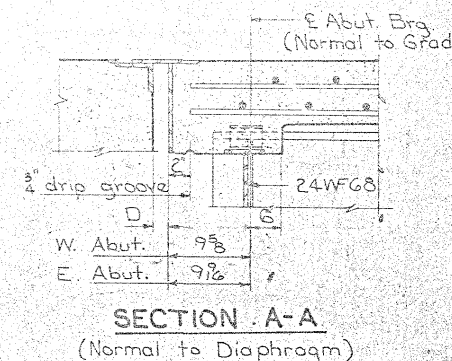
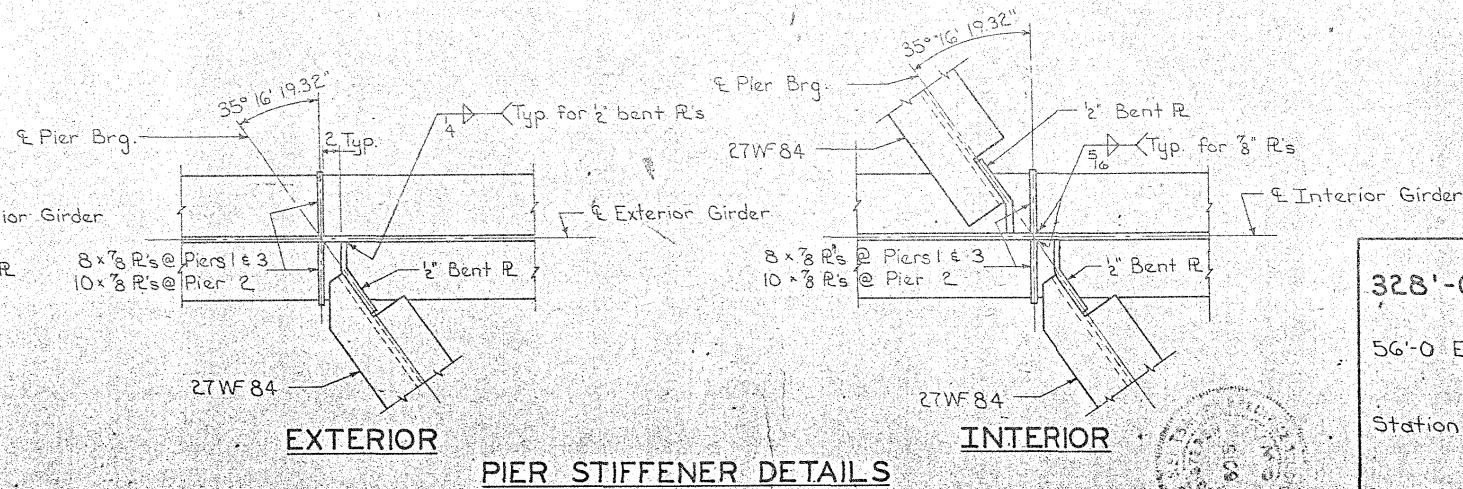
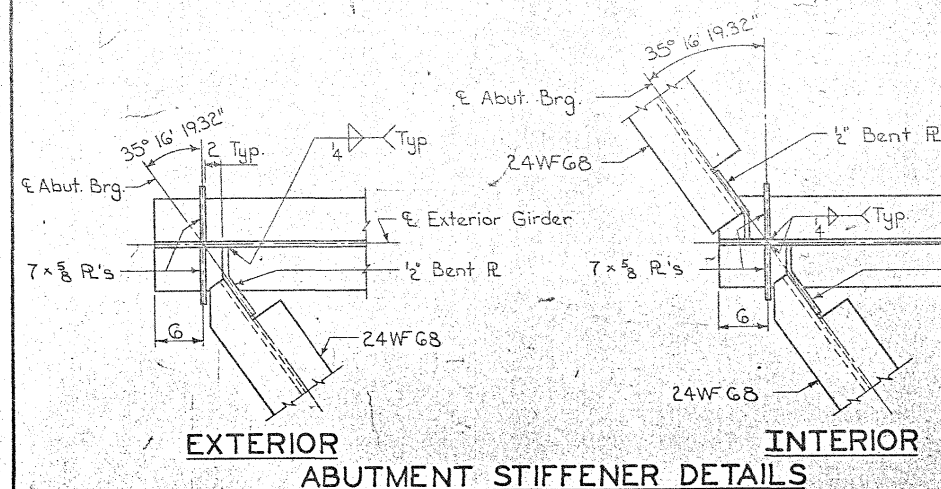
Faying surfaces at diaphragm connections are to be given the shop coat of paint.

Stud shear connectors are to be welded in the shop or in the field at the locations shown on the design plans or the approved shop drawings. Studs are furnished and installed in accordance with Part VI of the Eighth Edition of the "Specifications for Welded Highway and Railway Bridges" (AWS D2.0-69) of the American Welding Society.



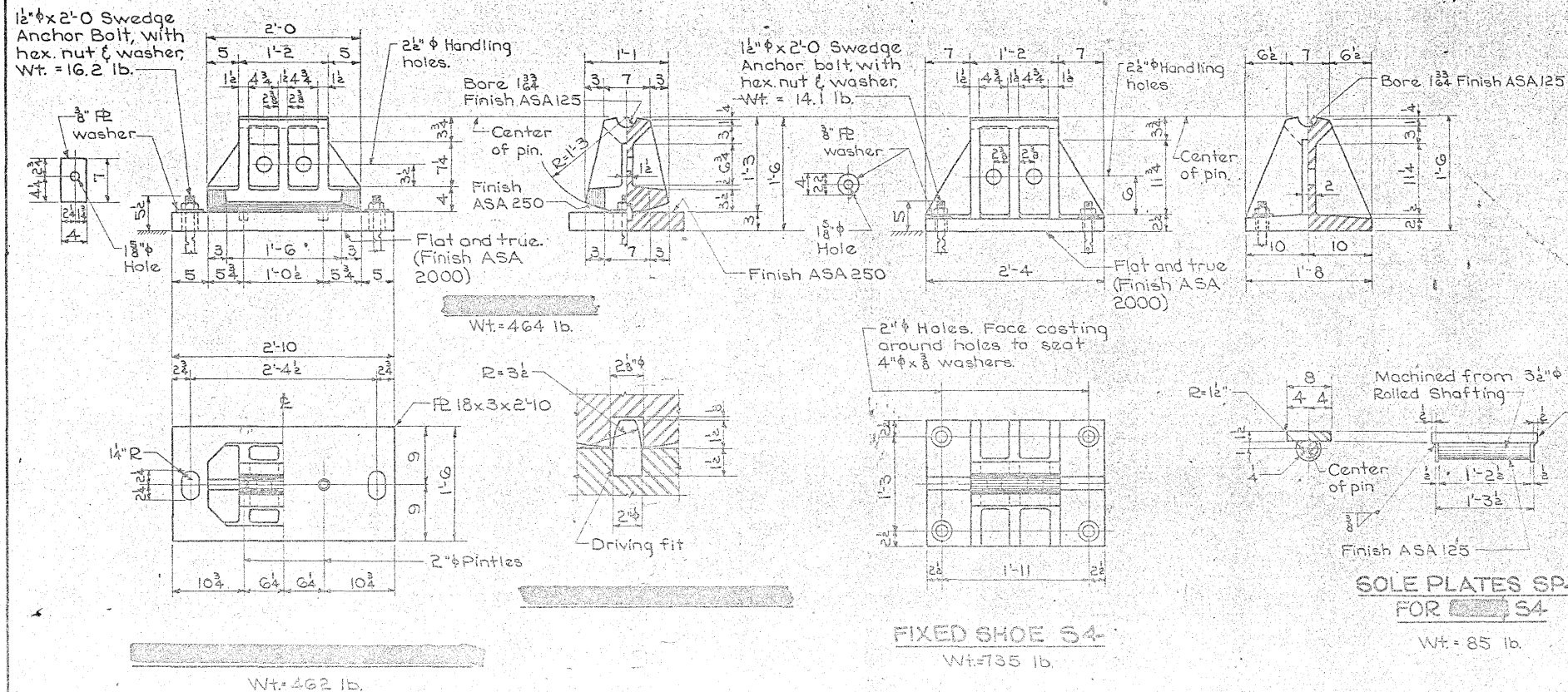
ROCKER & EXPANSION PLATE SETTINGS							
	West Abut.	Pier 1	Pier 2	Pier 3	East Abut.		
Temp. at time of setting	Normal	Normal	Fixed	Normal	Normal	Normal	Normal
10° F	2 1/8	- 1/8	0	- 1/8	- 1/8	2 1/8	
50° F	2	0	0	0	0	2	
90° F	1 3/8	+ 1/8	0	+ 1/8	+ 1/8	1 3/8	

Note: Tilt rockers in direction shown for temp. below 50°, and in the opposite direction for temp. above 50°. Settings for other temp. are proportional.



Design For 35° 16' 19.32" Skew
328'-0" x 32'-0" CONTINUOUS WELDED GIRDER BRIDGE
 56'-0" End Spans. 108'-0" Interior Spans.
SUPERSTRUCTURE DETAILS
 Station 105 + 33.04 I-29
 1105 + 29.74 County Rd 73 (Off. Reloc.) July 1970
FREMONT COUNTY
 Iowa State Highway Commission
 Design Sheet No. 9 Of 16 File No. 22535 Design No. 969

Revision (12-12-62) Pintle size changed
 Revision (7-6-64) Finish on shoes and masonry plates in contact with concrete added.
 Revision (5-27-65) Weights for MP4P, MP5Pa and MP5Pb changed.
 Revision (6-20-66) Nodular Iron Casting ASTM number and grade changed.



BEARING NOTES:

Nodular Iron Castings comply with Article 4153.04 of the Standard Specifications except ASTM A-536, Grade 65-45-12 will be required in lieu of ASTM A-339 Grade 60-45-10.
 The following shall be Nodular Iron Castings:

All plates and bars comply with ASTM A-36.
 Pins comply with Article 4153.02 of the Standard Specifications and with ASTM A-108.
 All bearings set in paint and canvas.
 Anchor bolts set in accordance with Article 2408.47 of the Standard Specifications.
 After masonry plates, rockers and shoes are in correct location, pour mortar around anchor bolts to fill slotted holes.

The weight of bearings shown does not include the weight of paint.
 Surface finished with an ASA 125 Finish.
 Shop coated with an application of white lead and tallow as soon as the surfacing process is done. The shop coated surfaces wiped clean and then a field coat of white lead and tallow applied just before the erection of structural steel in the field.

SOLE PLATES SP4 FOR S4

Wt = 85 lb.

DISTANCE FROM TOP OF SOLE PLATE TO BRIDGE SEAT	
Rockers Fixed Shoes	
S4	1'-8 3/8"

* Including 1/8" paint and canvas.

MAXIMUM REACTION (In Kips)	
S4	
475	

Use SP4 & S4 for Pier 2.

Design For 35° 16' 19.32" Skew
328'-0" x 32'-0" CONTINUOUS WELDED GIRDER BRIDGE
 56'-0" End Spans 108'-0" Interior Spans
BEARING DETAILS
 Station 105 + 33.04, I-29
 1105 + 29.74, County Rd 'G' (Off Reloc.) July, 1970
FREMONT COUNTY
 IOWA STATE HIGHWAY COMMISSION
 Design Sheet No: 10 of 16 File No: 22535 Design No: 969

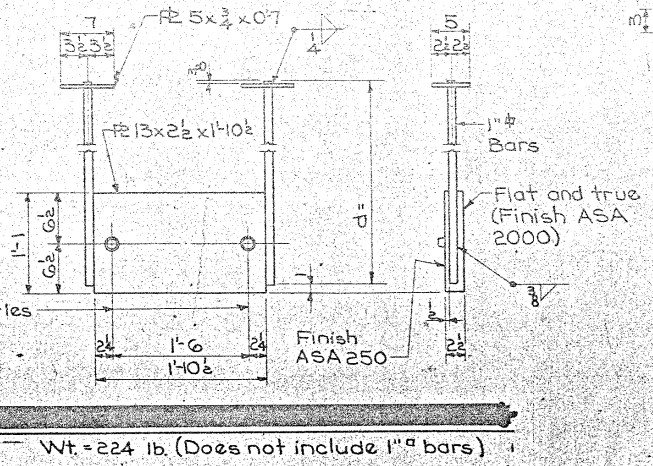
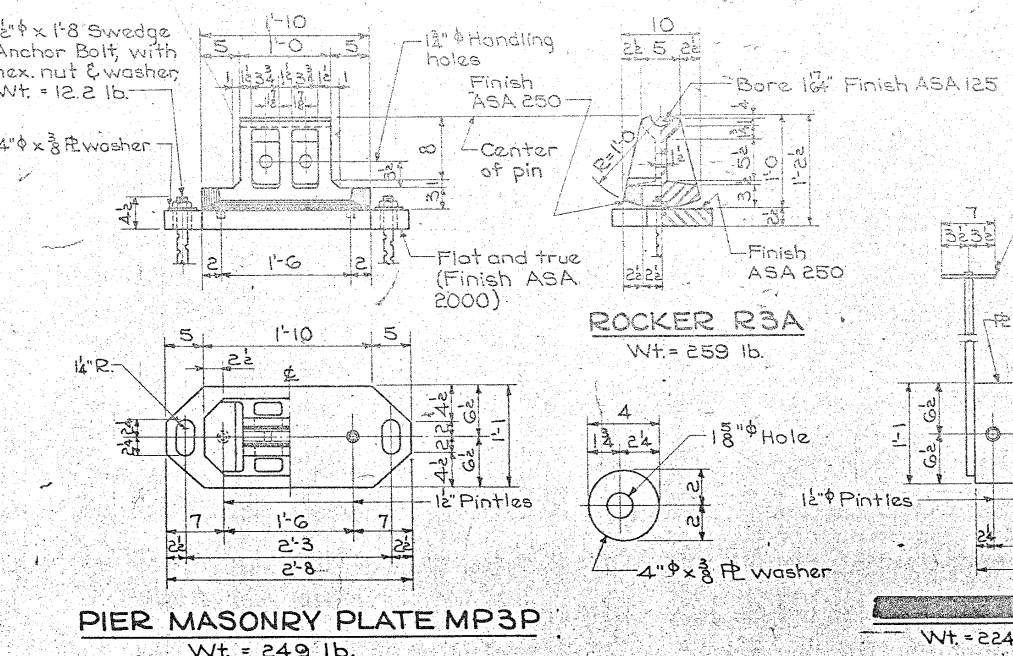
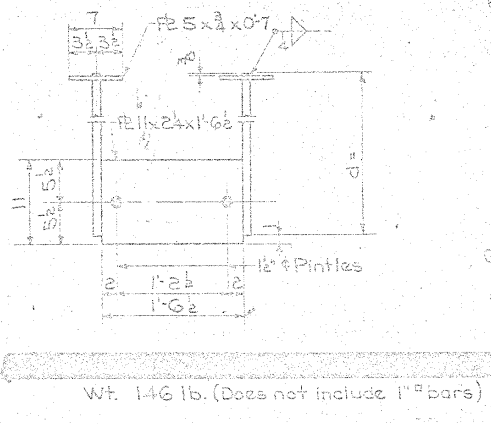
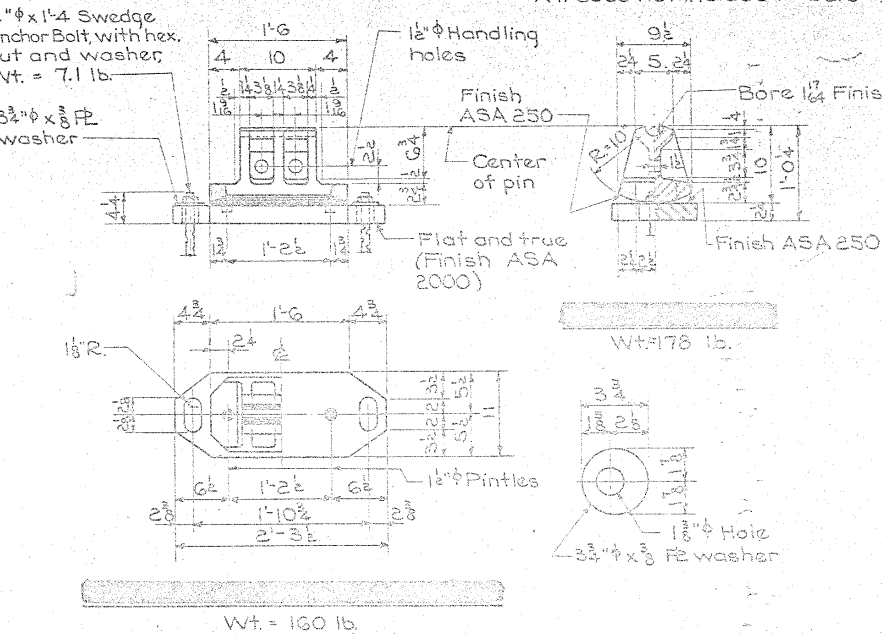
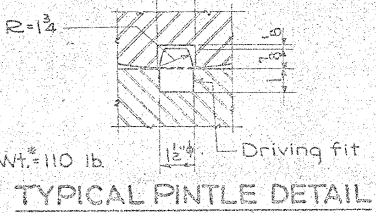
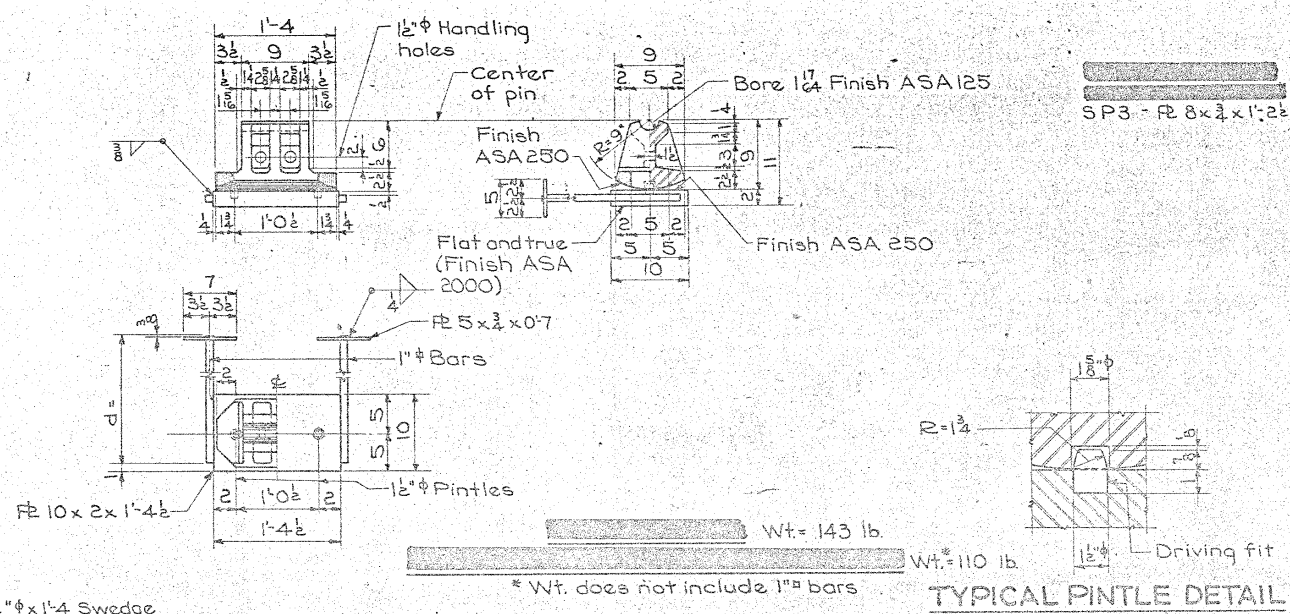
DESIGNED BY: H. T. ... TRACED BY: ...
 CHECKED BY: E. W. Konieczne

FREMONT COUNTY

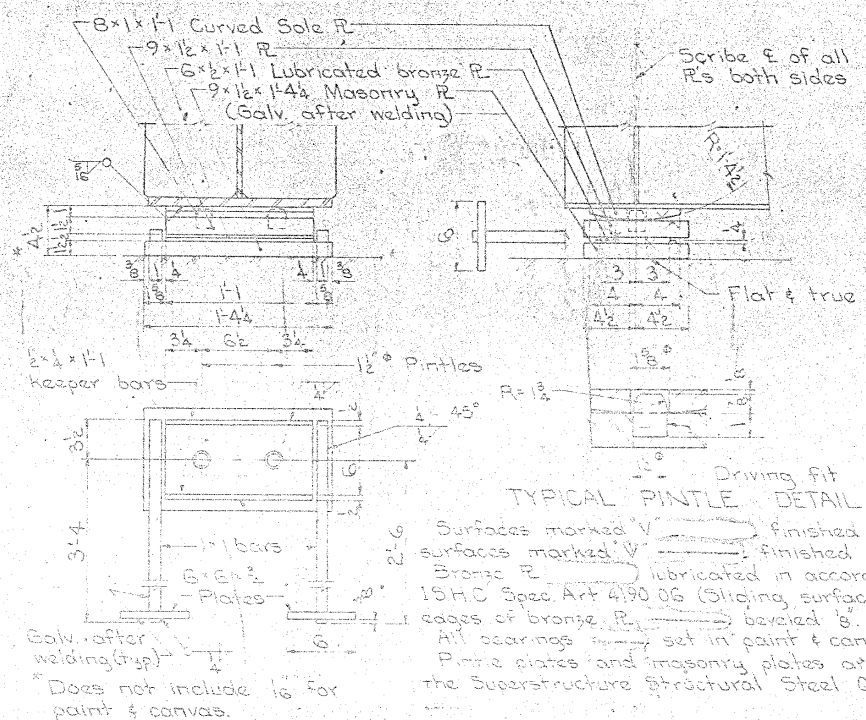
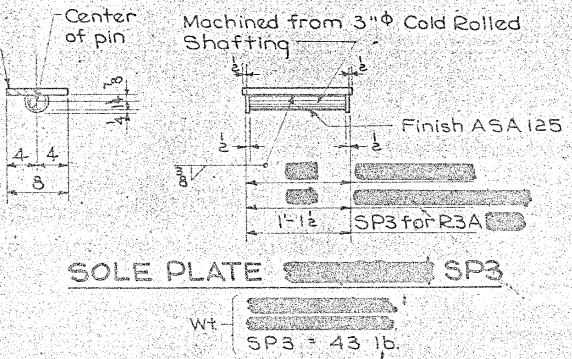
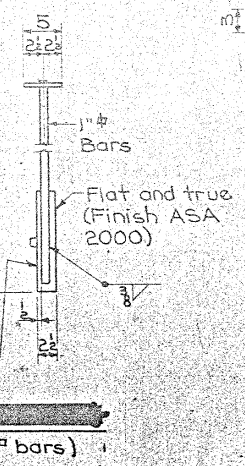
I-IG-29-1(14)0-04-36

STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	5		72	78

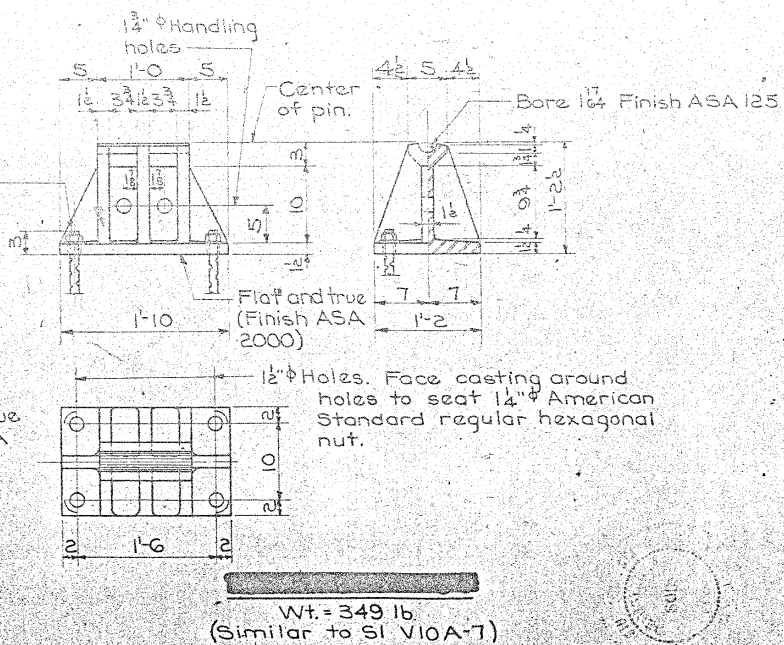
Revision (7-6-64) Finish on shoes and masonry plates in contact with concrete added.
Revision (6-1-65) Specifications for Rocker and Shoe material clarified.



1 1/4" x 1'-4" Swedge Anchor Bolt, with hex. nut & washer, Wt. = 6.1 lb.



ABUTMENT BEARING DETAILS



BEARING NOTES:

The casting of **SP3**, **R3A** comply with Article 4153.04 of the I.H.C. Standard Specifications. Castings may be Gray Iron or Nodular Iron.
The masonry plates marked **MP3P** comply with the requirements of ASTM A-36 steel.
The pins comply with Article 4153.02 of the I.H.C. Standard Specifications and with the requirements of ASTM A-108 steel.
All bearings are set in paint and canvas.
Anchor bolts set in accordance with Article 2408.47 of the I.H.C. Standard Specifications.
After masonry plates, rockers and shoes are in correct location, pour mortar around anchor bolts to fill the slotted holes.
The weight of bearings shown does not include the weight of paint.
Surfaces finished with an ASA 125 finish shop coated with an application of white lead and tallow as soon as the surfacing process is done. The shop coated surfaces wiped clean and then a field coat of white lead and tallow applied just before the erection of structural steel in the field.

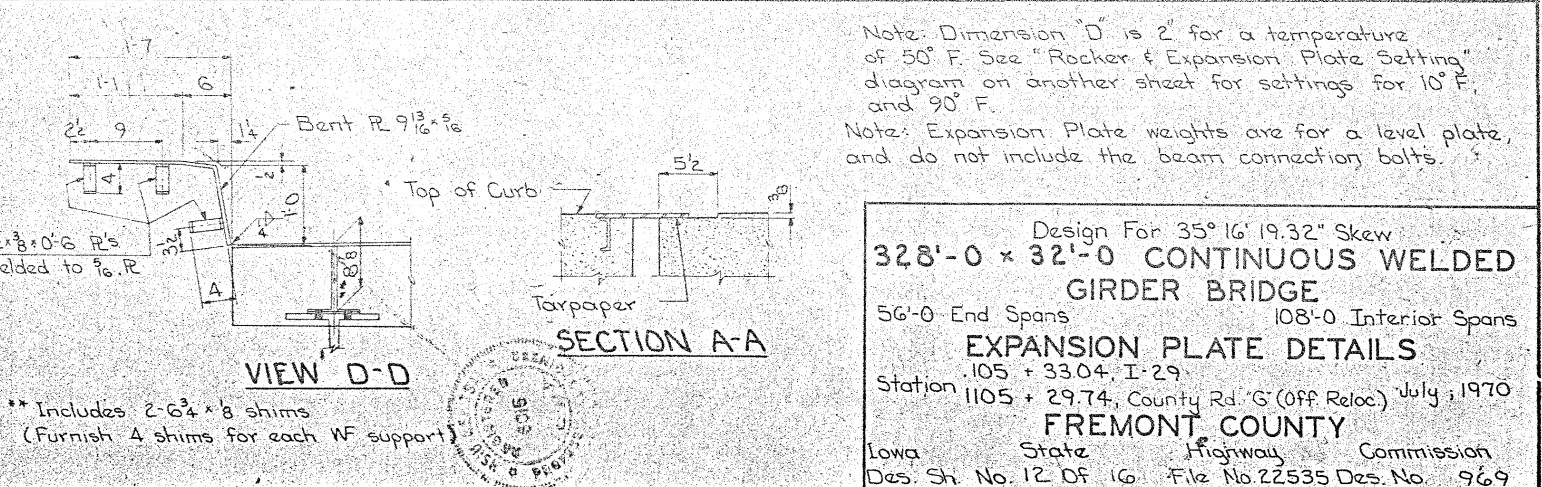
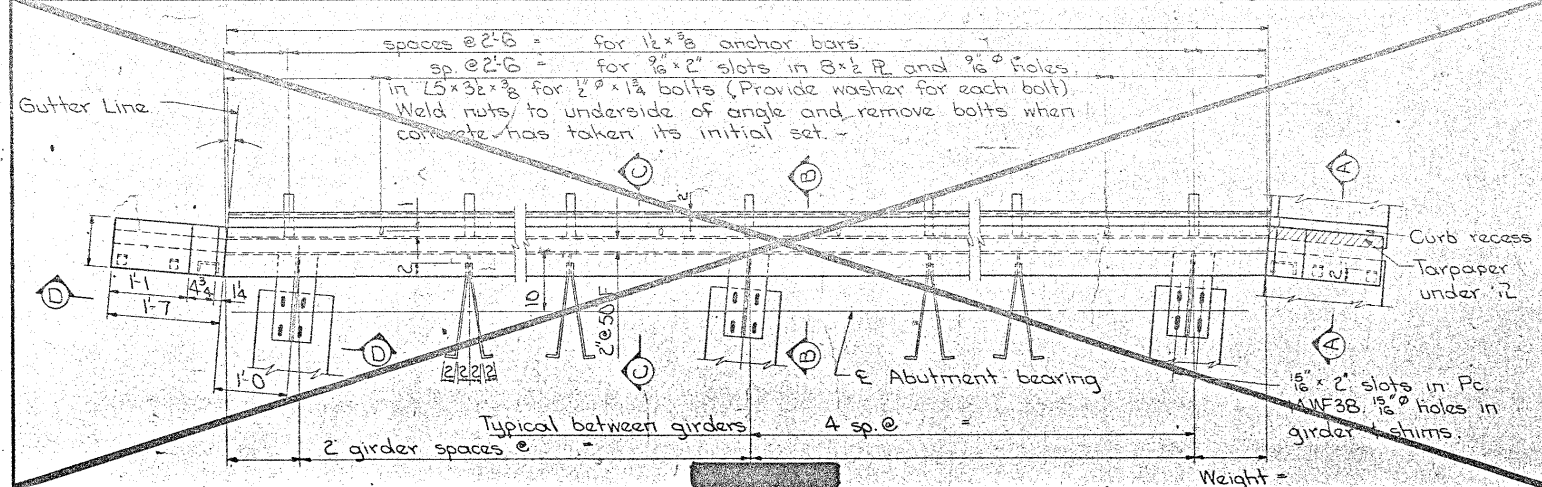
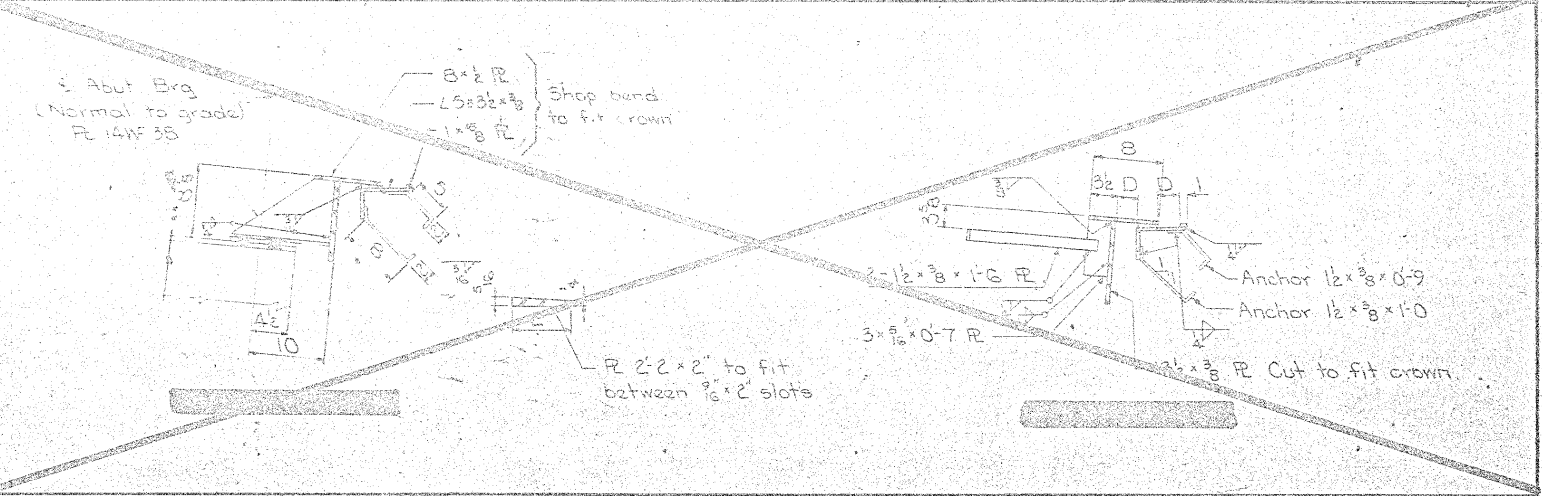
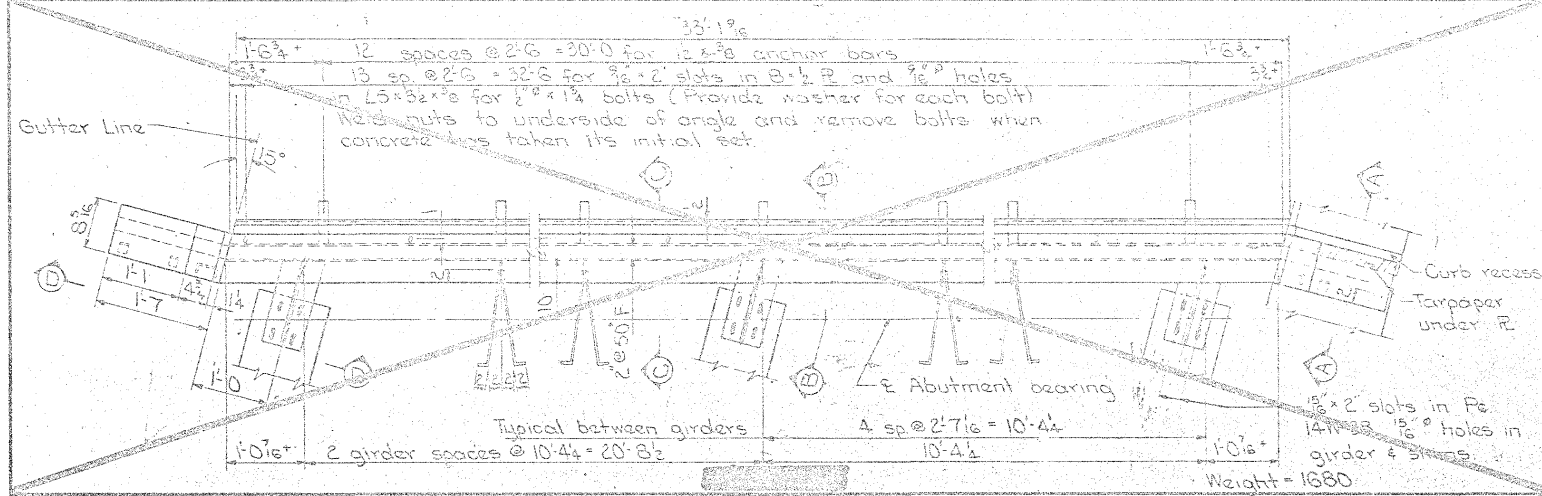
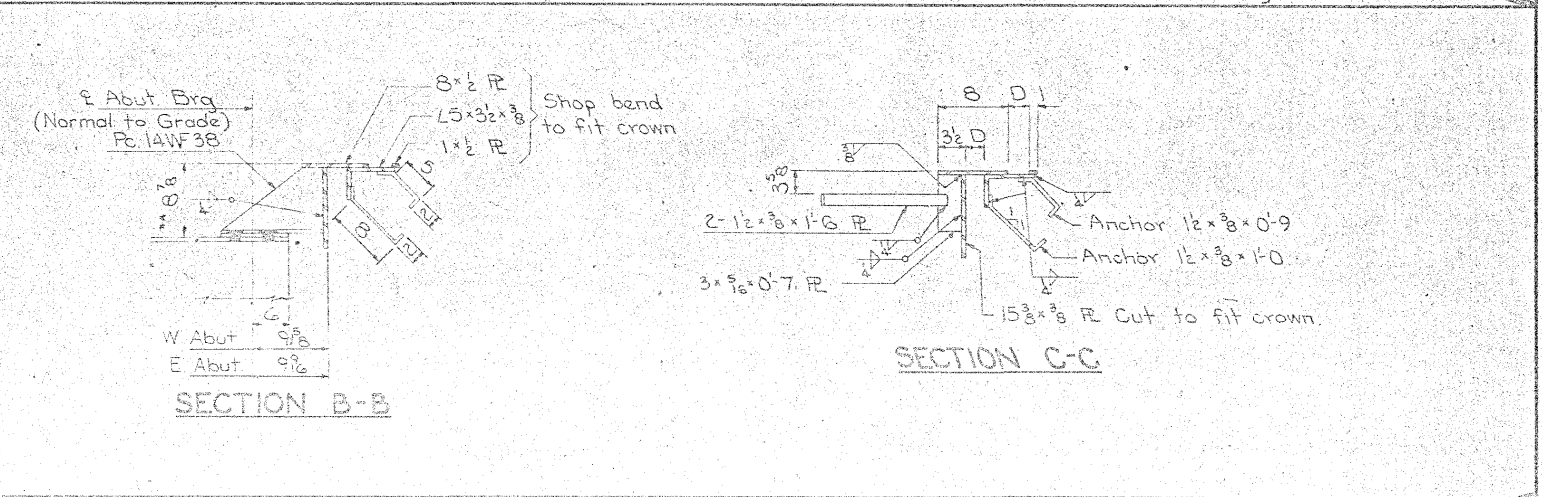
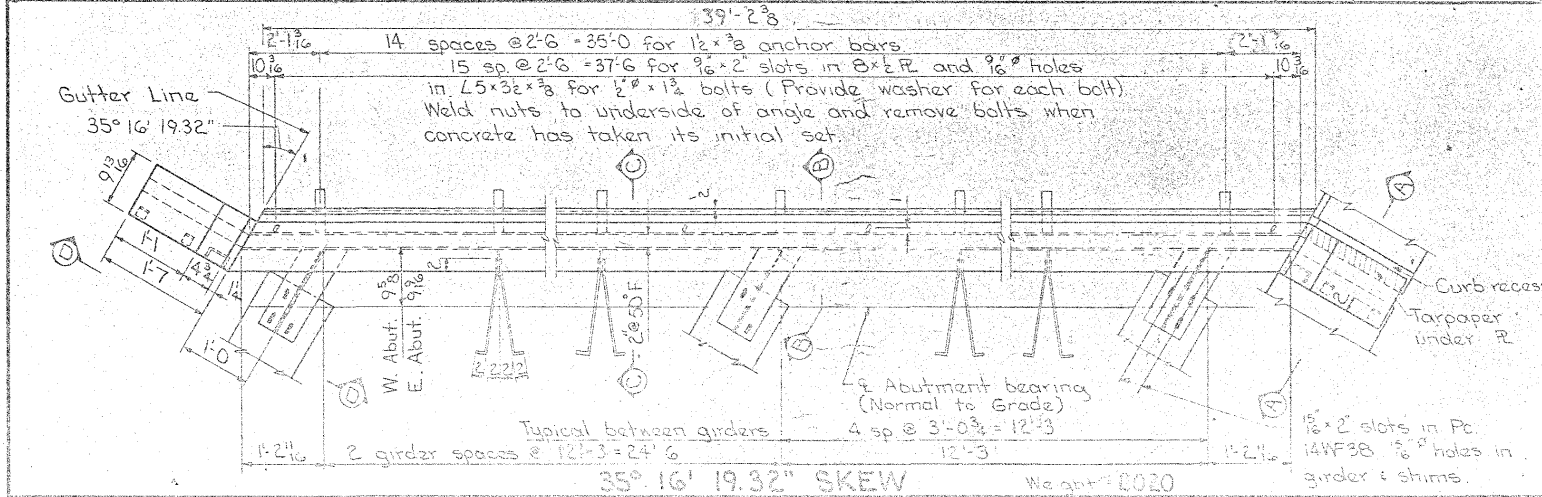
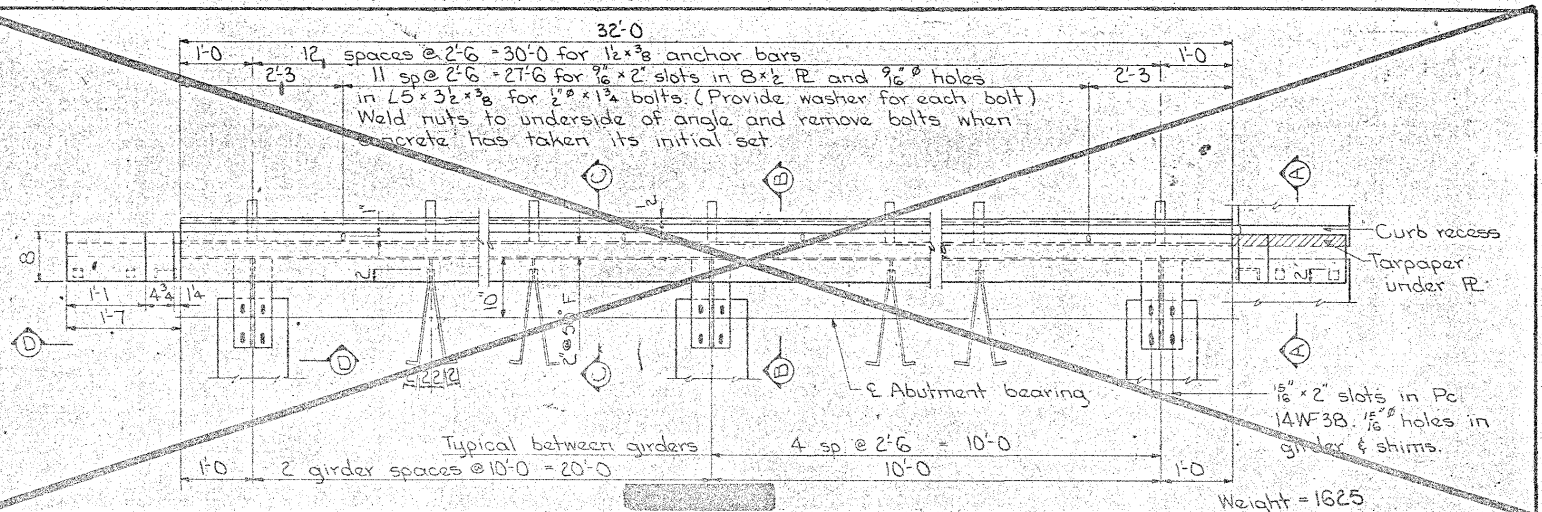
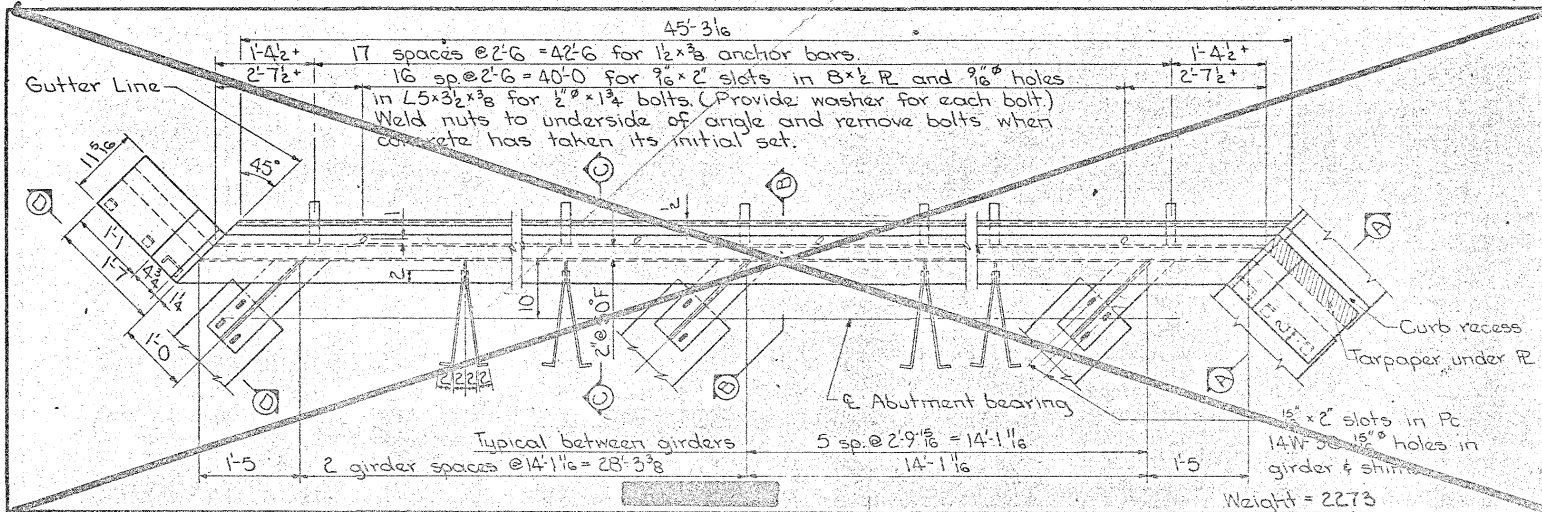
DISTANCE FROM TOP OF SOLE PLATE TO BRIDGE SEAT	
Rockers & Fixed Shoes	1'-4 1/2"
R3A	1'-4 1/2"

* Including 1/2" paint and canvas.

MAXIMUM REACTION (In Kips)	
R3A	263

Use SP3, R3A, & MP3P for Pier 1 & 3

Design For 35° 16' 19.32" Skew
328'-0" x 32'-0" CONTINUOUS WELDED GIRDER BRIDGE
56'-0" End Spans 108'-0" Interior Spans
BEARING DETAILS
Station 105+33.04, I-29
1105+29.74, County Rd. G (Off. Reloc.) July, 1970
FREMONT COUNTY
IOWA STATE HIGHWAY COMMISSION
Design Sheet No. 11 of 16 File No. 22535 Design No. 969



Note: Dimension "D" is 2" for a temperature of 50° F. See "Rocker & Expansion Plate Setting" diagram on another sheet for settings for 10° F. and 90° F.

Note: Expansion Plate weights are for a level plate, and do not include the beam connection bolts.

Design For 35° 16' 19.32" Skew

328'-0" x 32'-0" CONTINUOUS WELDED GIRDER BRIDGE

56'-0" End Spans 108'-0" Interior Spans

EXPANSION PLATE DETAILS

Station 105 + 33.04, I-29

Station 1105 + 29.74, County Rd. G (Off Reloc.) July, 1970

FREMONT COUNTY

Iowa State Highway Commission

Des. Sh. No. 12 Of 16 File No. 22535 Des. No. 969

Technical drawing of a post section. The drawing shows a cross-section of a post with a central vertical slot. Dimensions include a total width of 10 1/4, a slot width of 9 1/16 x 3 1/16, and a distance of 1 1/2 from the center to the edge. A label 'POST SECTION' is present. A note indicates '7/8\"

POST

POST BASE

Technical drawing of a stepped profile. The total width is 92. The profile consists of a base of 16, followed by a series of steps with widths of 16, 36, 36, and 16. The total height is 56.

Technical drawing of a rectangular plate with dimensions and tolerances. The drawing shows a rectangular plate with a central rectangular hole. The dimensions are given in millimeters (mm) with tolerances.

Dimensions and Tolerances:

- Overall width: 400^{+0}_{-1}
- Overall height: 250^{+0}_{-1}
- Inner width: 340^{+0}_{-1}
- Inner height: 160^{+0}_{-1}
- Left margin: 30^{+0}_{-1}
- Right margin: 30^{+0}_{-1}
- Top margin: 40^{+0}_{-1}
- Bottom margin: 40^{+0}_{-1}
- Inner width tolerance: 340^{+0}_{-1}
- Inner height tolerance: 160^{+0}_{-1}
- Left margin tolerance: 30^{+0}_{-1}
- Right margin tolerance: 30^{+0}_{-1}
- Top margin tolerance: 40^{+0}_{-1}
- Bottom margin tolerance: 40^{+0}_{-1}

[illegible]

2- 13-UNC-2B Thread for 2- 13-UNC-2A x stainless steel A5A-B-182 hex-head bolt with SAE Standard Light aluminum washer.

The drawing shows a bracket with the following dimensions and features:

- Top View:**
 - Overall width: 32
 - Overall depth: 16
 - Top flange width: 23
 - Top flange thickness: 3
 - Inner width: 4
 - Inner depth: 4
 - Distance from top flange to hole center: 16
 - Distance from inner width to hole center: 32
- Front View:**
 - Overall height: 25
 - Top flange height: 32
 - Top flange thickness: 1.6
 - Inner height: 16
 - Inner thickness: 1.6
 - Distance from top flange to hole center: 16
 - Distance from inner height to hole center: 32
 - Distance from inner thickness to hole center: 16
 - Distance from hole center to bottom: 16
 - Distance from hole center to bottom flange: 16
 - Bottom flange thickness: 1.6
 - Bottom flange width: 32
- Assembly Details:**
 - Two 13-UNC-2B threaded holes are shown, spaced 116 apart.
 - Dimensions 74 and 58 are indicated for the hole spacing.
 - Dimensions 116 and 58 are indicated for the hole spacing.

[illegible]

NOTE: Maximum rail post spacing = 8'-6".

TYPICAL ELEVATION OF RAILING AND RAIL POST LAYOUT

Diagram illustrating the layout of an open joint in a double-track railway track. The track is shown with two main rails and two dashed lines representing the track boundaries. The dimensions are given in feet: 1'-3" for the first segment, 4' for the second, 8' for the third, and 3' for the fourth. The track is labeled "Rail". The segments are labeled "Dimples A" and "Dimples B". The "Open joint (Typ)" is located at the center of the 8' segment, and the "Open joint (Exp @ Abut.)" is located at the center of the 4' segment. The diagram also shows the placement of "Dimples A" and "Dimples B" relative to the rails and the open joints.

The aluminum handrail is to be bid on a linear foot basis measured from end to end of rail. The price bid for "Aluminum Handrail" shall be full compensation for furnishing all material including the anchor bolts and all of the equipment and labor required to erect the rail in accordance with these plans and specifications.

Material for rails, post, post base plate, rail splice bar and clamp bar shall be ASTM B-211 Alloy 6061-T6. Material for aluminum nuts shall be ASTM B-211 Alloy 6061-T6 or 6262-T9. Material for the aluminum bolts shall be ASTM B-211 Alloy 2024-T4.

Material for anchor studs shall be an ASTM A276 Stainless steel with a minimum ultimate strength of 100,000 psi, a minimum elongation in two inches of 12% and a minimum reduction of area of 40%. Stud thread

Mutuals for steel nuts shall be ASTM A-307 Grade A, and shall conform to A.S.A. B-182. Threads shall comply with A.S.A. B-11 for UNC threads series, class 2B fit.

The entire surfaces of anchor bolt assembly plate and the shims are to be given one shop coat of zinc chromate shopcoat paint or red lead shop coat paint. One shim "A" and one shim "B" is to be furnished for each post, to be used as required.

Ends of rod sections to be sawed or milled. Cut ends to be true, smooth and free from burrs or raised edges.

Handling, storage, and installation of aluminum handrail shall be in accordance with Section 2414.06 of the Standard Specifications, except that no caulking will be required.

A 2" drain hole is to be provided, 3 inches in from the end, at the bottom side of the end sections of all rails.

Designed in accordance with 1964 Interim A.A.S.H.O. Specifications.

Aluminum Handrail	696.4	Lin.Ft
-------------------	-------	--------

56'-0" End Spans 108'-0" Interior Spans

Station 105, 33.04, I-29 11: 1870

FREMONT COUNTY

IOWA STATE HIGHWAY COMMISSION
Design Sheet No: 13 of 16 File No: 22535 Design No: 969

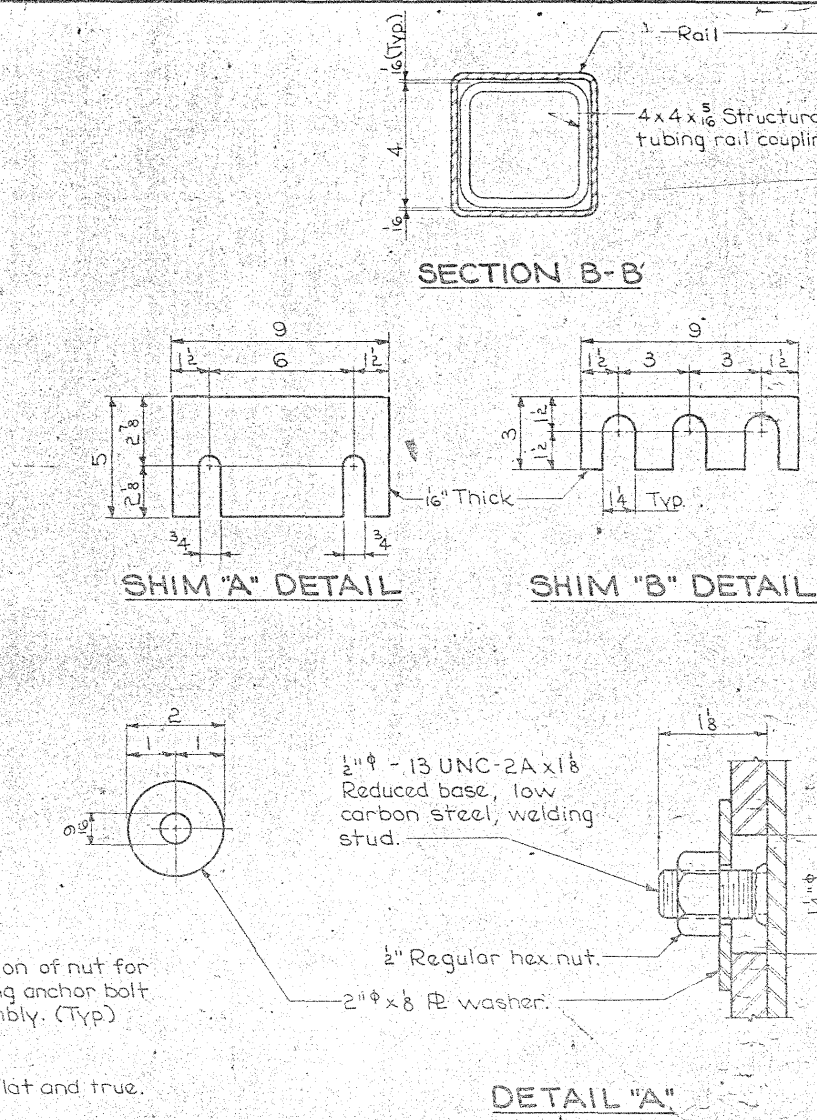
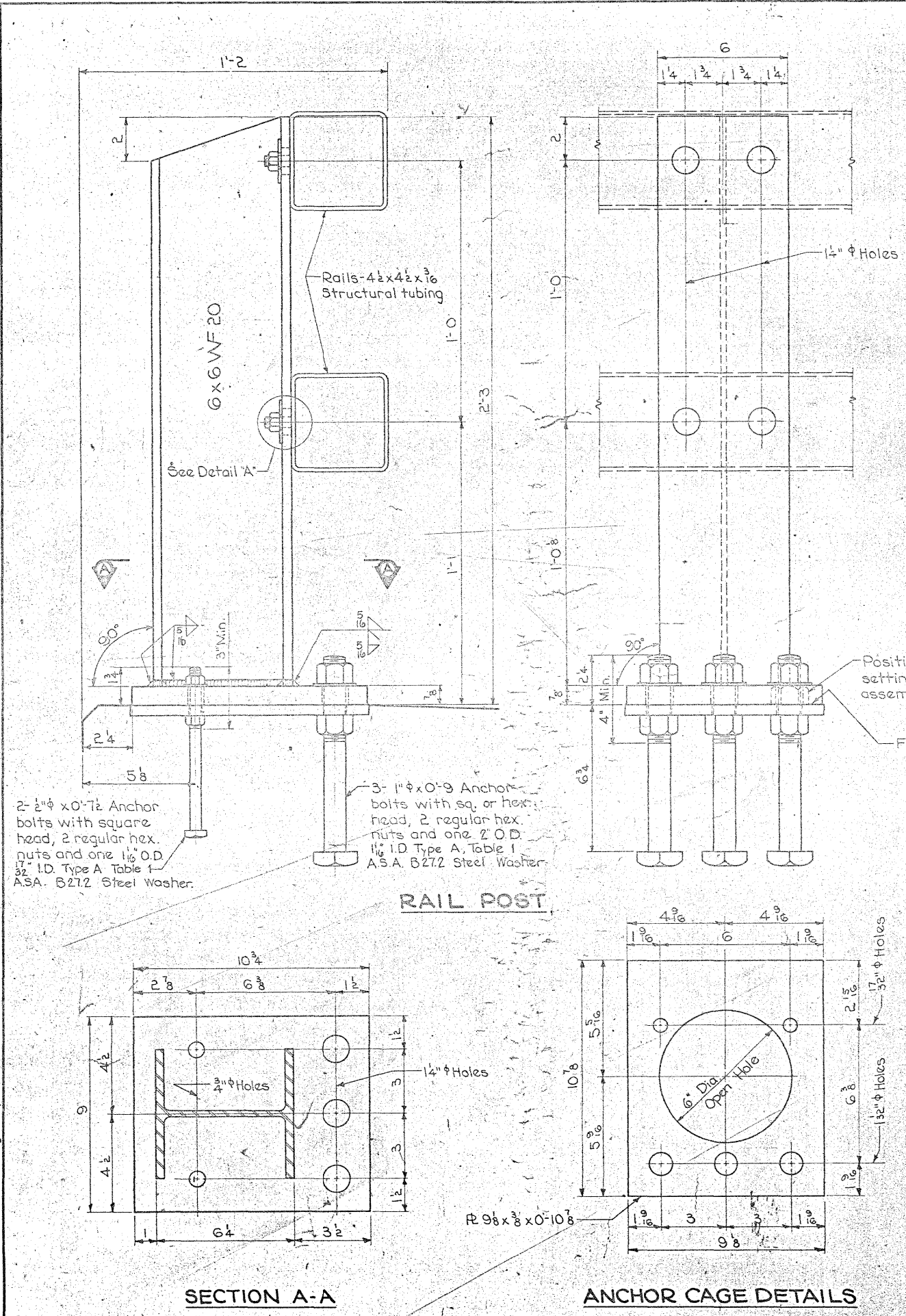
TRACED BY: _____
CHECKED BY: E.W. Konechne

FREMONT COUNTY

STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
-------	------------------------	----------------	--------------	-----------------

	DIST. IN	YEAR	NO.	SHEETS
IOWA	5		15	18

Revised 7-25-66: Caulking at posts eliminated.



STEEL HANDRAIL NOTES:

The steel handrail is to be bid on a lineal foot basis measured from end to end of rail. The price bid for "Steel Handrail" shall be full compensation for furnishing all material including the anchor bolts and all equipment and labor required to erect the rail in accordance with these plans and Specifications.

Each rail section must be attached to as many posts as possible, but to at least three posts before being spliced, except at abutments.

Material for rail tubing, post, base plate and anchor cage shall be A.S.T.M. A-36 and are to be galvanized after fabrication to A.S.T.M. A-123.

Material for anchor bolts and nuts, and rail to post attachment nuts shall be A.S.T.M. A-307 - G1T, Grade A.

Anchor bolts and nuts, rail to post attachment nuts, end caps, washers and shims are to be galvanized to A.S.T.M. A-153.

Ends of tube sections to be sawed or milled. Cut ends to be true, smooth and free from burrs or ragged edges.

Welding shall be in accordance with Section 2408.15 of the Standard Specifications.

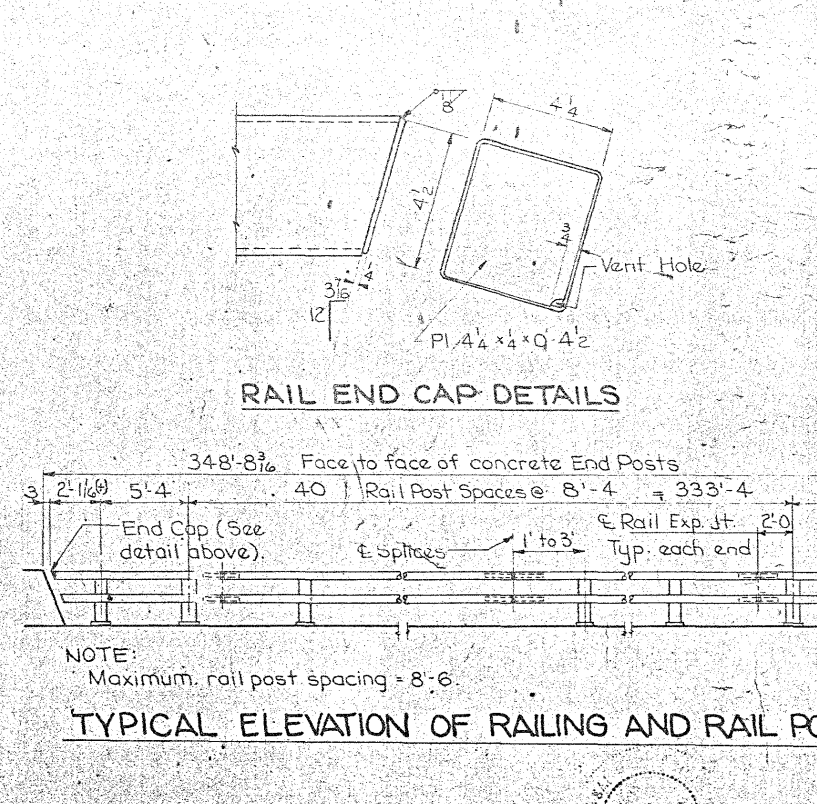
Handling, storage and installation of steel handrail shall be in accordance with Section 2414.06 of the Standard Specifications, except that no caulking will be required.

One shim 'A' and one shim 'B' is to be furnished for each post, to be used as required.

A surface is considered to be "Flat and True" when the deviation from a straight edge placed on this surface in any position, is less than 1/16".

No painting will be required.

Rail studs shall be provided with adequate protection during shipment.



DESIGN SPECIFICATIONS:

Designed in accordance with 1964 Interim A.A.S.H.O. Specifications.

STEEL HANDRAIL QUANTITIES	
Steel Handrail	696.4 Lin. Ft.

Design For 35° 16' 19.32" Skew

328'-0" x 32'-0" CONTINUOUS WELDED GIRDER BRIDGE

56'-0" End Spans 108'-0" Interior Spans

STEEL HANDRAIL DETAILS

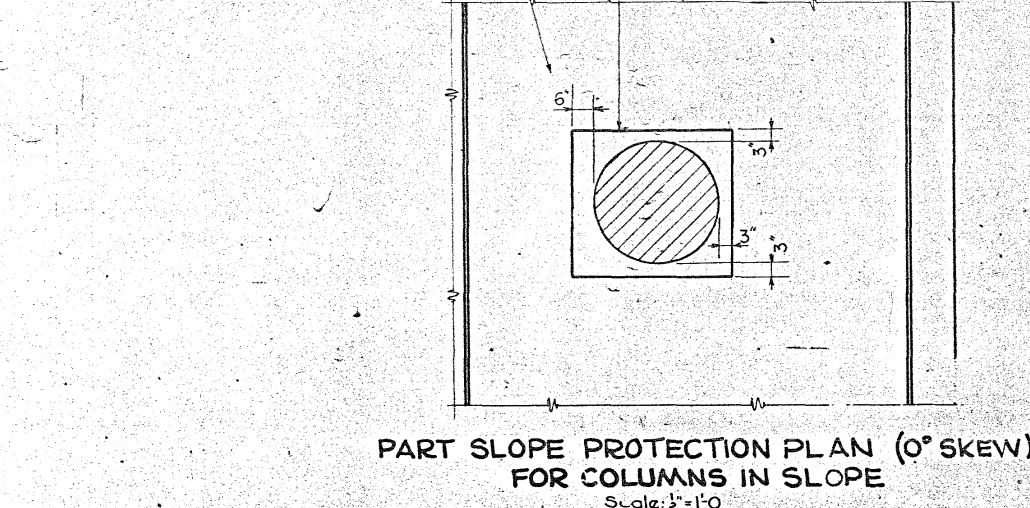
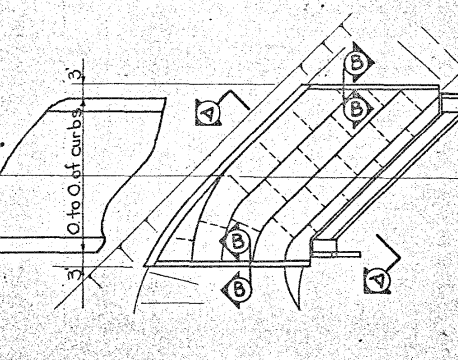
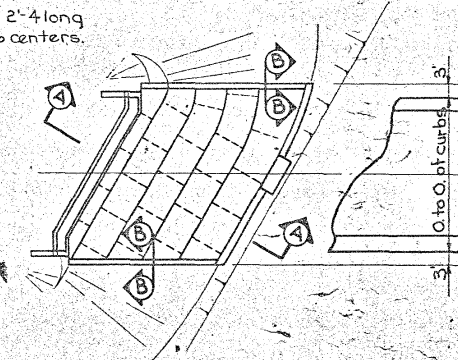
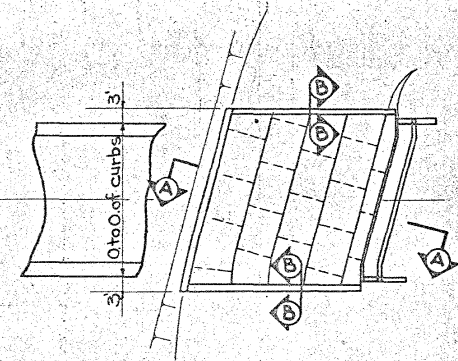
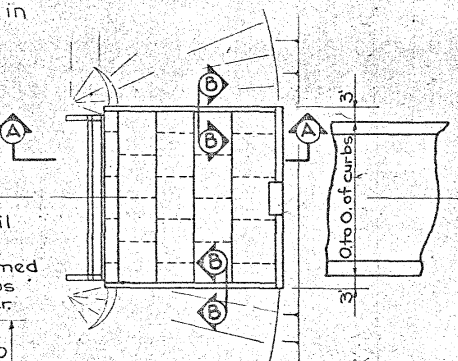
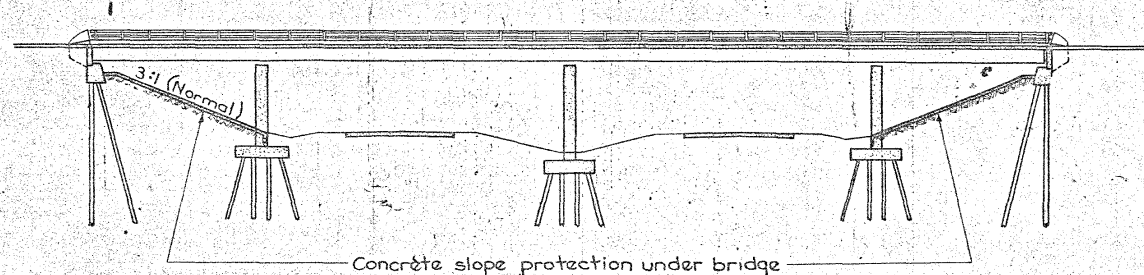
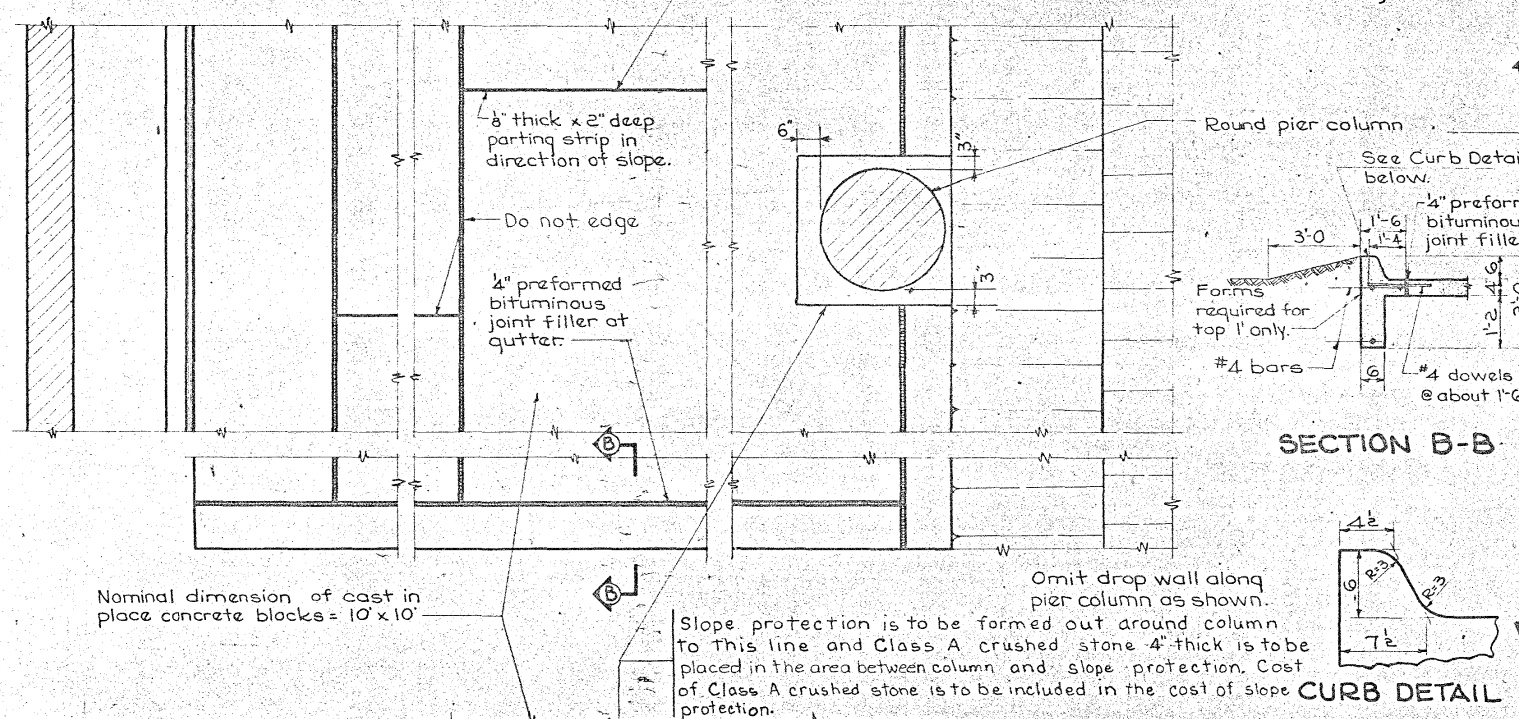
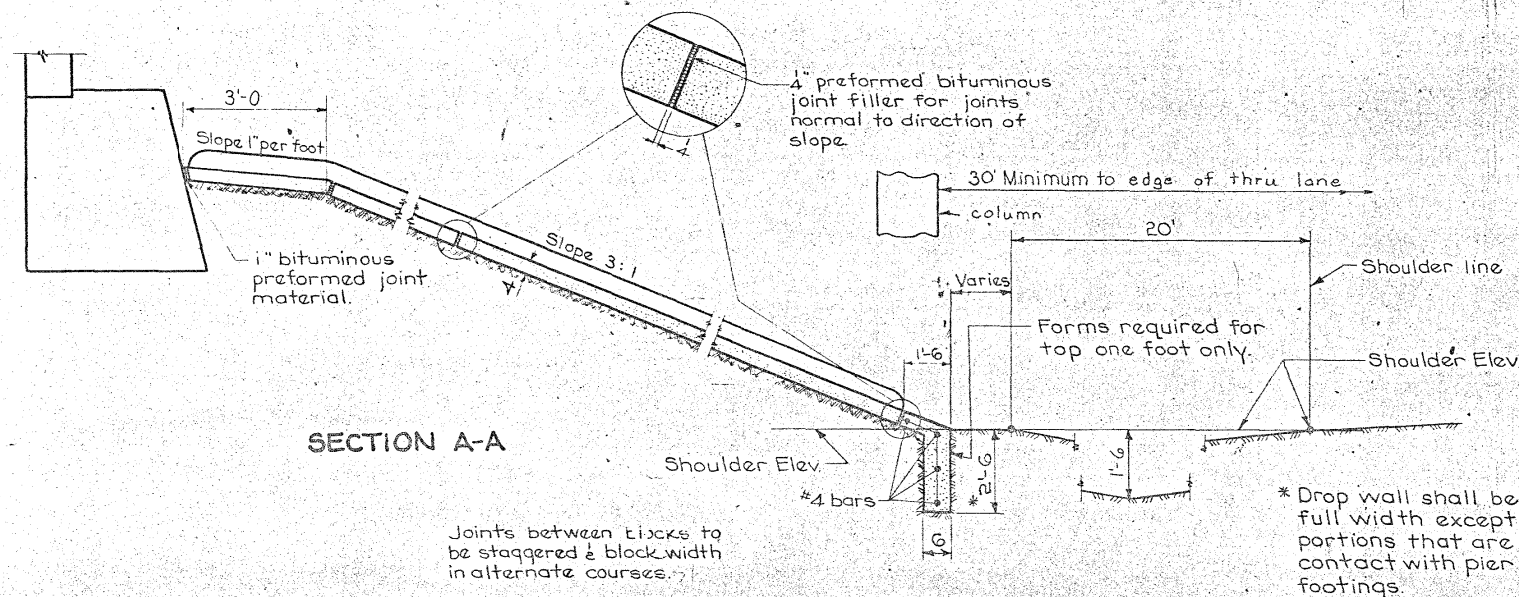
Station 105 + 33.04, I-29

Station 1105 + 29.74, County Rd. 6 (Off Reloc.) July, 1970

FREMONT COUNTY

IOWA STATE HIGHWAY COMMISSION

Design Sheet No. 14 of 16 File No. 22535 Design No. 969



GENERAL NOTES:

This sheet shows details for placing portland cement concrete slope protection under overhead structures. The current specifications of the Iowa Highway Commission shall apply with modifications or additions listed below:

Concrete - Class C Structural

Finish - Class 1, Floated Surface Finish.

Cure - Cure as per current Specifications.

Subgrade Preparation - The subgrade is to be shaped and compacted so that finished slope protection will be similar to examples shown on this sheet. The subgrade shall be firm when concrete is placed. Sprinkling required shall be done early enough so that concrete is not placed on a muddy subgrade. No subgrade paper will be required.

The cast in place concrete is to be poured in approximately 10' wide courses, but all courses on one slope should have approximately equal widths. Adjacent courses shall not be poured within 15 hours of one another.

The joints in the direction of the slope are to be staggered about a block width.

Basis of payment: Payment will be made on a square yard basis for slope protection constructed. The unit price bid per square yard is to include costs of all materials and labor required to construct this protection as shown or intended by these plans. The subgrade preparation including any necessary excavation or filling required to shape the slope to the lines shown on the plans and disposal of excess earth excavated as directed by the Engineer, are considered incidental to placing the concrete slope protection.

Pay quantities are to be based on field measured out to out dimensions.

SLOPE PROTECTION QUANTITIES

West Abutment Slope	276 sq. yd.
East Abutment Slope	268 sq. yd.
Total	544 sq. yd.

Design For 35° 16' 19.32" Skew

328'-0" x 32'-0" CONTINUOUS WELDED GIRDER BRIDGE

56'-0" End Spans 108'-0" Interior Spans

CONCRETE SLOPE PROTECTION

Station 105 + 33.04, I-29

1105 + 29.74 County Rd. "G" (Off. Reloc.) July, 1970

FREMONT COUNTY

IOWA STATE HIGHWAY COMMISSION

Des. Sh. No. 15 of 16 File No. 22535 Des. No. 969

Revised 6-30-67: Dowel bar length changed and note added.

Revised 3-2-65: Cure added.

Revised 10-30-64: Revised for 1964 Standard Specs.

Revised 1-19-61: Curb dowel bars added.

Revised 7-21-60: Corrected for 1960 Standard Specifications.

Revised 2-15-60: Precast block construction deleted. Curb added to sides.

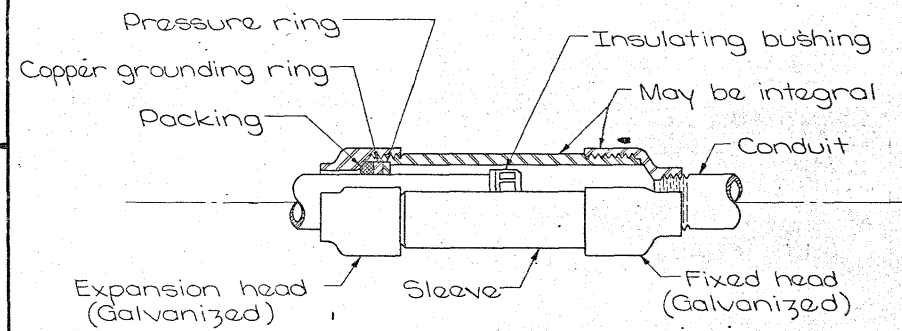
Revised 9-15-59: Statement concerning erosion control added.

Revised 9-4-59: Statement concerning disposal of excess earth added.

Revised 9-19-68: Column clearance dimension changed from edge of shoulder to edge of thru lane.

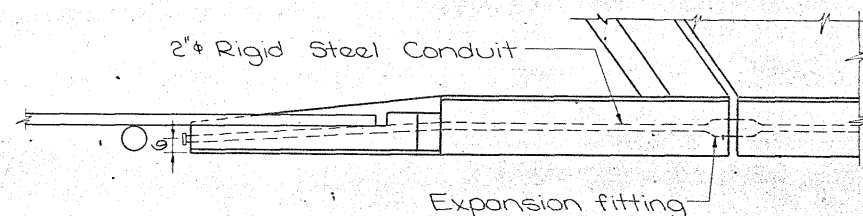
Revised 9-18-68: Form-out around column and crushed stone added.

Revised 6-1-68: Toe of slope protection changed and ditch and column clearances dimensions added.

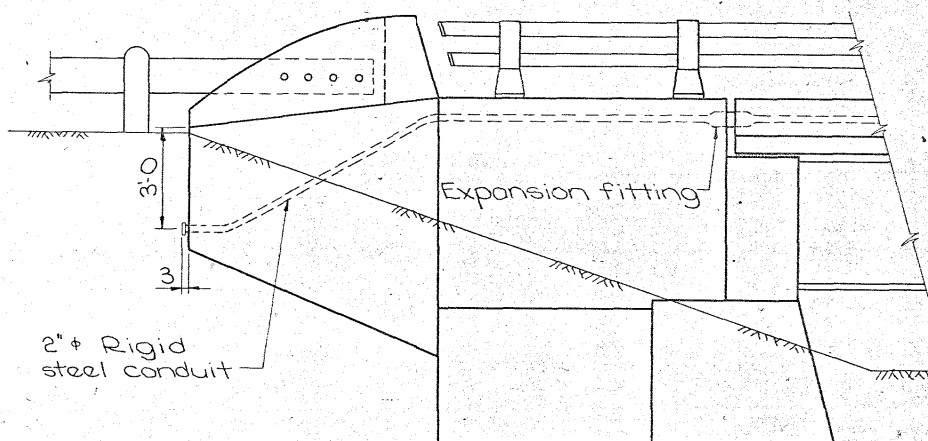


RM-2, TYPE 1 EXPANSION FITTING

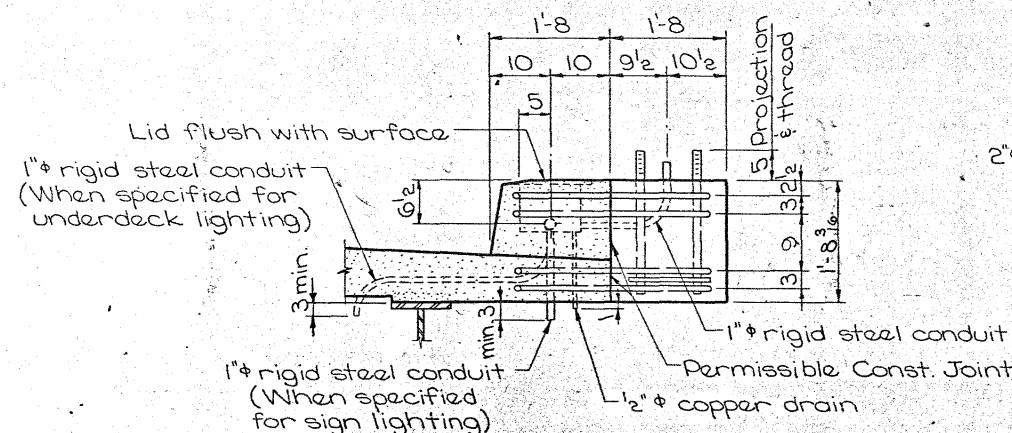
Expansion chamber length is 3" min.



PART PLAN



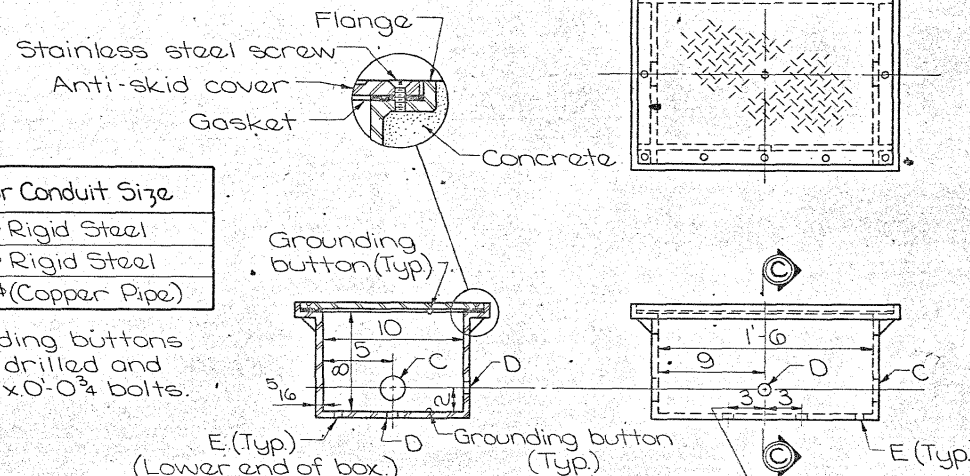
PART ELEVATION



SECTION A-A

Bossed For	Hole	For Conduit Size
5 Threads	C	2" Rigid Steel
None	D	1" Rigid Steel
None	E	1/2" (Copper Pipe)

NOTE: The grounding buttons are to be blind drilled and topped for 3/8" x 0'-0" bolts.



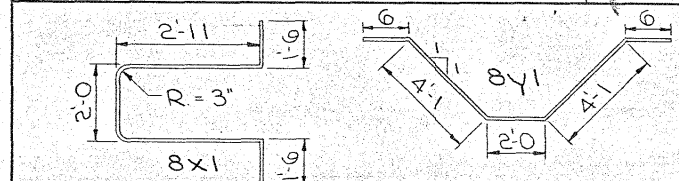
SECTION C-C

RM-9, TYPE 1 JUNCTION BOX

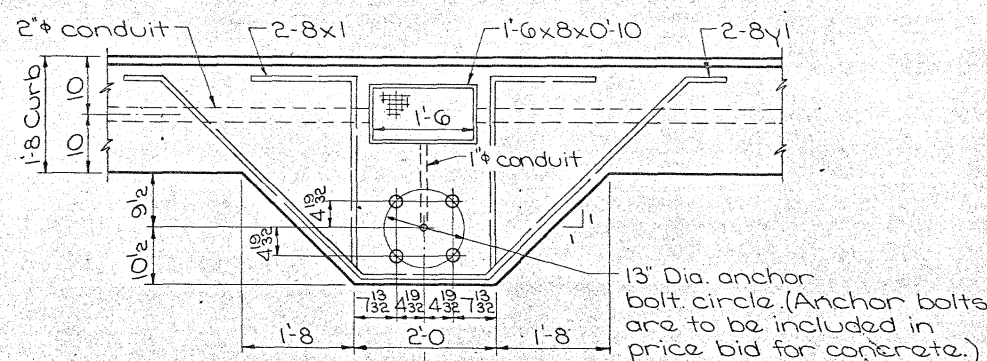
WATERTIGHT, CAST IRON - FLUSH MOUNT

REINFORCING BAR LIST — ONE BASE

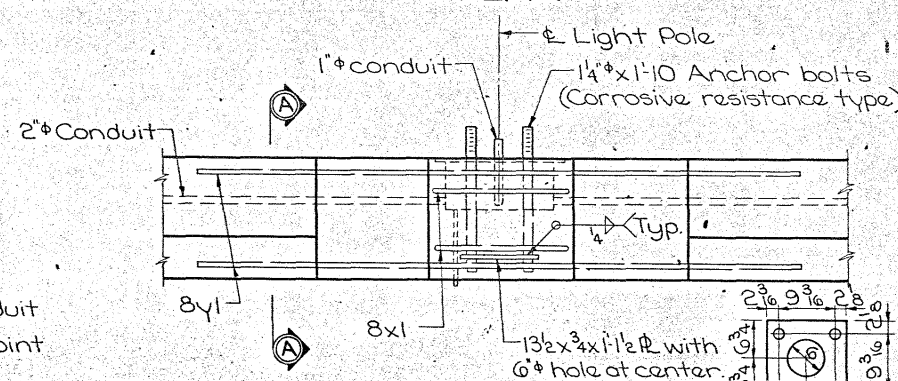
Bar	Location	Shape	No.	Length	Weight
8x1	Pole Anchors	C	2	10'-3"	55
8y1	Curb Anchors	W	2	11'-2"	60
				Total lbs.	115



Note: Dimensions are out to out of bar Radii to & of bar.



PLAN



ELEVATION

LIGHTING NOTES:

Construction shall conform with the current Iowa State Highway Commission Standard Specifications plus current Special Provisions and current Supplemental Specifications for Highway Lighting.

Anchor bolts shall be corrosive resistant type as specified. Stainless steel stud shall not be less than six inches in length.

After conduit runs have been installed a stiff, oversize wire brush or mandrel shall be pulled through the conduit to make certain that no appreciable foreign material remains in the conduit, and that the conduit has not been flattened or otherwise blocked during construction. Each open end of the conduit shall be threaded. Threads shall be protected with an approved bituminous compound. Temporary caps or plugs shall be installed to exclude dirt and moisture.

All entrance holes in junction boxes except for drain pipes shall be tapped for the specified conduit size. Grounding buttons shall be located approximately 3' from the inside surface of the box wall, and not closer than 3" to the edge of any hole in the box floor. Holes for drain pipe shall be placed in the low corner of the box, with a minimum clearance of 1" between the edge of the hole and the inside surface of the box wall. Typical details are shown on this sheet.

Location of the & of light pole may be shifted ±1'-0" so that the location of the junction box does not interfere with the rail post anchor bolts and base plate.

The contract unit price per lineal foot of conduit shall be full compensation for furnishing all material (including junction boxes and fittings), labor and any work incidental to the installation. The concrete and weight of reinforcing steel is included in the Superstructure Estimated Quantities.

The length of conduit installed shall be measured in feet by the Engineer.

Cost of furnishing and installing poles, lights and lighting conductor is not a part of this estimate.

Expansion fitting shall be as specified or as approved by the Engineer. Typical details are shown on this sheet.

**TOTAL ESTIMATED QUANTITIES
ONE BASE**

Item	Amount
2" Rigid Steel Conduit *	366 L.F.
Structural Concrete Class D	0.4 C.Y.
Reinforcing Steel	115 lbs.

* Quantity includes 364 L.F. of 2" conduit and 2 L.F. of 1" conduit.

Design For 35° 16' 19.32" Skew
328'-0" x 32'-0" CONTINUOUS WELDED GIRDER BRIDGE
 56'-0" End Spans 108'-0" Interior Spans
LIGHTING DETAILS
 Station 105 + 33.04, I-29
 1105 + 29.74, County Rd. "G" (Off. Reloc.) July, 1970
FREMONT COUNTY
 IOWA STATE HIGHWAY COMMISSION
 Des. Sht. No. 16 of 16 File No. 22535 Des. No. 969