

STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	1		1	120
PROJECT NUMBER				
I-380-6(74)273--01-57				
R.O.W. PROJECT NUMBER				
I-380-6(81)273--01-57				
PRELIMINARY ENGINEER NUMBER				
I-380-6(73)273--01-57				

IOWA DEPARTMENT OF TRANSPORTATION Highway Division

PLANS OF PROPOSED IMPROVEMENT ON THE INTERSTATE ROAD SYSTEM LINN COUNTY BRIDGES AND CULVERTS

ON INTERSTATE 380 FROM
0.5 MI. NORTH OF TODDVILLE NORTH TO CENTER POINT

THE STANDARD SPECIFICATIONS, SERIES OF 1977
OF THE IOWA DEPARTMENT OF TRANSPORTATION
SHALL APPLY TO CONSTRUCTION WORK ON THIS PROJECT
(PLUS CURRENT SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS)

DESIGN STRESSES:
Design stresses for the following materials are in accordance with the
AASHTO Standard Specifications for Highway Bridges, Series of 1977.
Reinforcing Steel in accordance with Section 1.5, Grade 40
Concrete in accordance with Section 1.5, $f'_c = 3,500$ psi.
Prestressed Concrete in accordance with Section 1.6.6, $f'_c = 5,000$ psi.
Prestressing Steel in accordance with Section 1.6.6, $f'_s = 270,000$ psi.
Structural Steel in accordance with Section 1.7, ASTM A-36. Fatigue
stress cycles based on Case II.

MILEAGE SUMMARY				105.1
DIV.	LOCATION	LIN. FT.	MILES	
RURAL (LINN COUNTY)	STA. 1228+30.94 TO STA. 1457+30.48	22,899.54		
	BRIDGES AT STA. 1232+60.00	116.83		
	BRIDGES AT STA. 1303+70.08 (O.R.)	112.67		
	EQUATION: STA. 1457+30.48 = STA. 1456+07.23			
	STA. 1456+07.23 TO STA. 1593+50.00	13,742.77		
TOTAL LENGTH OF ROADWAY		36,412.81	6.896	
TOTAL LENGTH OF BRIDGES		229.50	0.044	
TOTAL LENGTH OF PROJECT		36,642.31	6.940	

STANDARD ROAD PLANS	
The Following Road Plans Apply To Work On This Project.	
IDENT	DATE
RF-1	9-3-76
RF-3	9-3-76
RF-14	8-2-74
RF-30A	4-1-77
RF-30B	3-10-72

DESIGN DATA INTERSTATE HIGHWAY			
1981 AADT	7,688	V.P.D.	
2001 AADT	12,608	V.P.D.	
2001 DHV	3,606	V.P.H.	
TRUCKS	18	%	
FULL CONTROL OF ACCESS SHALL BE EXERCISED ON THIS PROJECT.			

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED
UNDER MY SUPERVISION AND THAT ENGINEERING
DECISIONS WITH REGARD TO THE DESIGN WERE
MADE BY ME OR BY OTHER DULY REGISTERED
PROFESSIONAL ENGINEERS UNDER THE LAWS OF
THE STATE OF IOWA.
[Signature]
IOWA REGISTRATION NUMBER 2792 DATE 9-23-81

Highway Division
AUTHORIZED FOR LETTING
[Signature] 9-25-81
DEPUTY CHIEF ENGINEER DATE

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

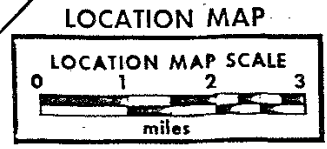
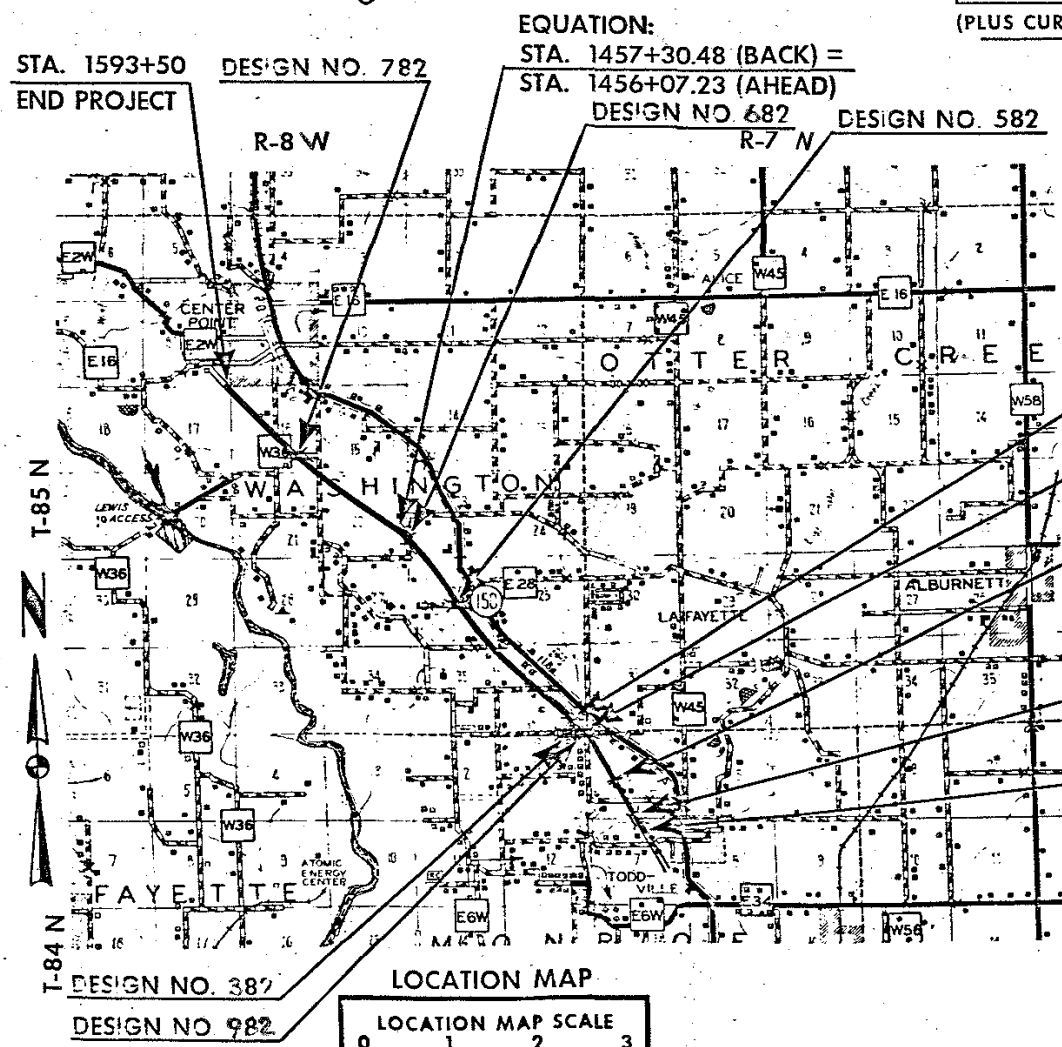
INDEX OF SHEETS	
NO.	DESCRIPTION
1	TITLE SHEET
2-3	ESTIMATE SHEETS FOR BRIDGES (LET Nov. 10, 1981)
4	ESTIMATE SHEET FOR CULVERTS
5-15	BRIDGE DESIGN NO. 182
16-37	BRIDGE DESIGN NO. 282
38-54	BRIDGE DESIGN NO. 382
55-66	BRIDGE DESIGN NO. 482
67-81	BRIDGE DESIGN NO. 582
82-101	BRIDGE DESIGN NO. 682
102-116	BRIDGE DESIGN NO. 782
117-118	CULVERT DESIGN NO. 882
119-120	CULVERT DESIGN NO. 982

THIS AS BUILT PLAN INCLUDES			
YEAR	WORK	CONTRACTOR	PROJ. INSPECTOR
1982	DESIGN 882 & 982	K. Const. Inc.	M. Tompkins
THIS AS BUILT PLAN INCLUDES			
YEAR	WORK	CONTRACTOR	PROJ. INSPECTOR
1982	DESIGN 482	OLIPHANT	JERRY GUGE
1983	DESIGN 182	OLIPHANT	JERRY GUGE
1982 & 83	DESIGN 382 & 582	SCHMIDT	DON KROTZ
THIS AS BUILT PLAN INCLUDES			
YEAR	WORK	CONTRACTOR	PROJ. INSPECTOR
1983	DESIGN 282	LUNDA	D. SANDS
1983	DESIGN 682	LUNDA	D. SANDS
1983	DESIGN 782	IOWA	D. SANDS

CONSTRUCTION PLANS SHOWING PROJECT AS BUILT
Plan Preparation Supervised By: *[Signature]*
Resident Construction Engineer
Date: Feb. 28, 1984 Iowa Reg. No. 8537
REVIEWED AND FORWARDED TO AMES
District Construction Engineer
Date: _____
One 50% Reduced and Two Full-Size Prints To Be Made and Returned To
District Engineer
AFTER MICROFILMING RETURN ORIGINAL
TO DISTRICT NO.

Utility Poles
Fences
Trees Or Brush
Stream
Dike
County Road No.
Primary Road No.
U. S. Road No.
Interstate Road No.

Power
Te.
Barb
Mesh
Old
NEW



BRIDGES & CULVERTS
I-380-6(74)273--01-57
LINN COUNTY

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.
9/9/81
DATE
WM. A. LUNDQUIST
REG. NO. 4449

DESIGN NO. 182
LINN COUNTY
SECTION 6
OVER EAST OTTER CREEK
T-84N R-7W
STA. 1232+60.00
MONROE TWP.
DESIGN FOR
DUAL 113'-10 x 40' PRETENSIONED PRESTRESSED
CONCRETE BEAM BRIDGES

NO.	ITEM	UNIT	TOTAL
1	Structural Concrete	Cu. Yd.	508.2
2	Reinforcing Steel	Lbs.	58,191
3	Reinforcing Steel- Epoxy Coated	Lbs.	
4	HP10x42 Steel Bearing Piling	Furnish Drive Lin. Ft.	2,358.0 2,051.8 612
5	Pretensioned Prestressed Concrete Beam	A34 A42 No.	24 12
6	Granular Backfill	Cu. Yd.	180
7	Class 20 Excavation	Cu. Yd.	188.5
8	Class 10 Channel Excavation	Cu. Yd.	563
9	Concrete Barrier Rail	Lin. Ft.	523.3
10	Subdrain	Lin. Ft.	250
11	Prebored Holes	Lin. Ft.	177

ESTIMATE REFERENCE INFORMATION100-4

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

ITEM NO.	DESCRIPTION
1	Includes 376.2 Cu. Yd. Class D Structural Concrete for Superstructure and 132.0 Cu. Yd. Class C Structural Concrete for Substructure.

EXTRA WORK ORDERS

NO.	DESCRIPTION	UNIT	TOTAL
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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.
9/9/81
DATE
WM. A. LUNDQUIST
REG. NO. 4449

DESIGN NO. 282
LINN COUNTY
SECTION 36
SIDE ROAD OVER I-380
T-85N R-8W
STA. 2288+15.45
WASHINGTON TWP.
OTTER CREEK TWP.
MONROE TWP.
DESIGN FOR 29°22'12" SKEW
312'-0 x 30'-0 CONTINUOUS WELDED
GIRDER BRIDGE

NO.	ITEM	UNIT	TOTAL
1	Structural Concrete	Cu. Yd.	517.9
2	Structural Steel	Lbs.	238,105
3	Reinforcing Steel	Lbs.	85,606
4	Reinforcing Steel-Epoxy Coated	Lbs.	57,803
5	HP10x42 Steel Bearing Piling	Furnish Drive Lin. Ft.	1,732.1 1,567.3
6	Bridge Seat Sealer	Sq. Ft.	240
7	Prebored Holes as per Plan	Lin. Ft.	374
8	Concrete Barrier Rail	Lin. Ft.	687.8
9	Granular Backfill	Cu. Yd.	126
10	Subdrain	Lin. Ft.	196
11	Steel Extrusion Joint with Neoprene	Lin. Ft.	72
12	Concrete Slope Protection	Sq. Yd.	492.2
13	Class 20 Excavation	Cu. Yd.	400.6
14	Class 22 Excavation	Cu. Yd.	60.7

ESTIMATE REFERENCE INFORMATION100-4

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

ITEM NO.	DESCRIPTION
1	Includes 272.0 Cu. Yd. Class "D" Structural Concrete for Superstructure and 245.9 Cu. Yd. Class "C" Structural 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.
9/9/81
DATE
WM. A. LUNDQUIST
REG. NO. 4449

DESIGN NO. 382
LINN COUNTY
SECTION 36
OVER WEST OTTER CREEK
T-85N R-8W
STA. 2274+50
WASHINGTON TWP.
MONROE TWP.
DESIGN FOR 45° SKEW
155'-6 x 30' PRETENSIONED PRESTRESSED
CONCRETE BEAM BRIDGE

NO.	ITEM	UNIT	TOTAL
1	Structural Concrete	Cu. Yd.	397.3
2	Reinforcing Steel	Lbs.	50,251
3	Reinforcing Steel-Epoxy Coated	Lbs.	24,040
4	Structural Steel	Lbs.	1,450
5	Pretensioned Prestressed Concrete Beams	B42 B50 B59R No.	5 5 5
6	HP10x42 Steel Bearing Piling	Furnish Drive Lin. Ft.	262.7 240.9
7	Granular Backfill	Cu. Yd.	149.7
8	Class 20 Excavation	Cu. Yd.	97.7
9	Class 21 Excavation	Cu. Yd.	140.9
10	Class 22 Excavation	Cu. Yd.	159
11	Concrete Barrier Rail	Lin. Ft.	372.1
12	Subdrain	Lin. Ft.	165.4
13	Steel Extrusion Joint with Neoprene	Lin. Ft.	44.8
14	2" Preformed Elastic Neoprene Joint	Lin. Ft.	45.0
15	Bridge Seat Sealer	Sq. Ft.	345
16	Removal of Existing Structure	L.S.	Lump Sum
17	Class 10 Channel Excavation	Cu. Yd.	0.0

ESTIMATE REFERENCE INFORMATION100-4

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

ITEM NO.	DESCRIPTION
1	Includes 174.9 cu. yd. Class D Structural Concrete for Superstructure and 222.4 cu. yd. Class C Structural 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.
9/9/81
DATE
JAMES R. SASSAMAN
REG. NO. 2663

DESIGN NO. 482
LINN COUNTY
SECTION 36
OVER WEST OTTER CREEK
T-85N R-8W
STA. 1303+70.08
WASHINGTON TWP.
DESIGN FOR 0° SKEW (1°30' CURVE)
DUAL 109'-8 x 40' PRETENSIONED PRESTRESSED
CONCRETE BEAM BRIDGES

NO.	ITEM	UNIT	TOTAL
1	Structural Concrete	Cu. Yds.	570.0
2	Reinforcing Steel	Lbs.	75,646
3	Reinforcing Steel-Epoxy Coated	Lbs.	45,680
4	Pretensioned Prestressed Concrete Beam	A30 A34 A42 No.	12 12 12
5	HP10x42 Steel Bearing Piling	Furnish Drive Lin. Ft.	453.4 373.3
6	Concrete Barrier Rail	Lin. Ft.	506.6
7	Class 21 Excavation	Cu. Yd.	45.0
8	Granular Backfill	Cu. Yds	172
9	Class 10 Channel Excavation	Cu. Yds.	1,740
10	Class 20 Excavation	Cu. Yds.	205.9
11	Class 22 Excavation	Cu. Yds.	84.6
12	Subdrain	Lin. Ft.	224

ESTIMATE REFERENCE INFORMATION100-4

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

ITEM NO.	DESCRIPTION
1	The slab and abutment wings, 368.2 cu. yds., are to be Class "D" Concrete. The remainder, 201.8 cu. yds., is to be Class "C" Concrete.
3	Includes 22,664 lin. ft. of #5 bars, 11,422 lin. ft. of #6 bars, and 1,830 lin. ft. of #8 bars.

EXTRA WORK ORDERS

NO.	DESCRIPTION	UNIT	TOTAL
B001	PILE SPICES	ONLY	2
B002	PROVIDE HEATING OF MATERIALS FOR STRUCTURAL CONCRETE	CU YD	24.83
B003	PROVIDE PROTECTION OF STRUCTURAL COCRETE	CU YD	24.83

FILE NO 25803

LINN COUNTY

PROJECT NUMBER
1-380-6(74)273--01-57

STATE
IOWA

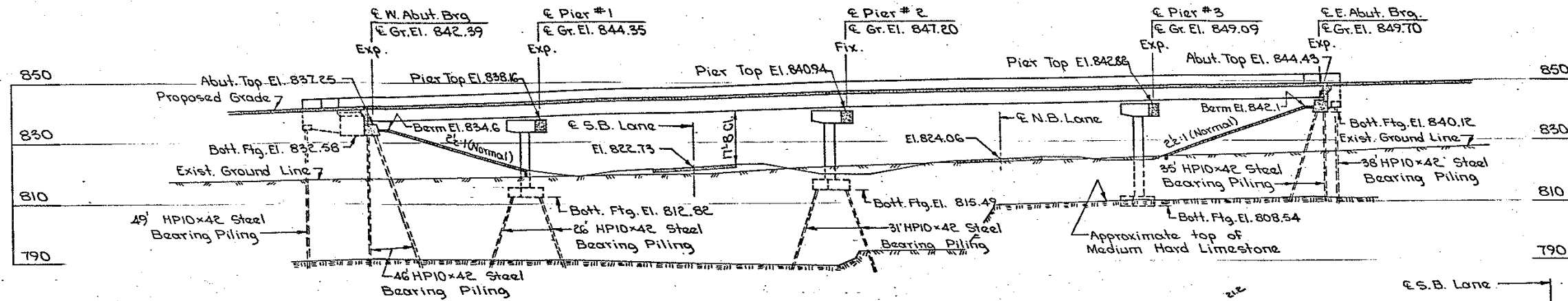
FED. ROAD DIST. NO.
5

FISCAL YEAR
1981

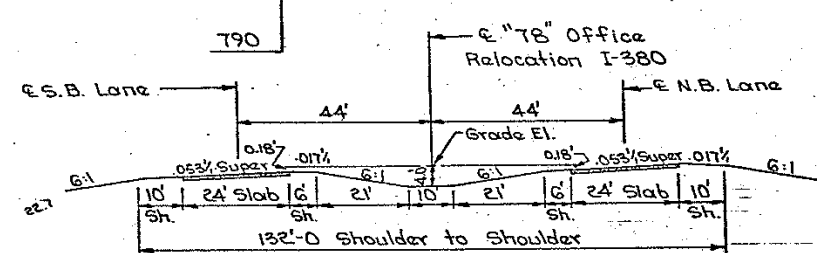
SHEET NO
2

TOTAL SHEETS
120

Bench Mark: 849.79 Cut "X" Barrier Rail over Center Pier



PROPOSED GRADE LOCAL SIDE ROAD
 P.I. Sta. 2289+00
 El. 851.82
 V.C. = 500'
 M.O. = 2.98'

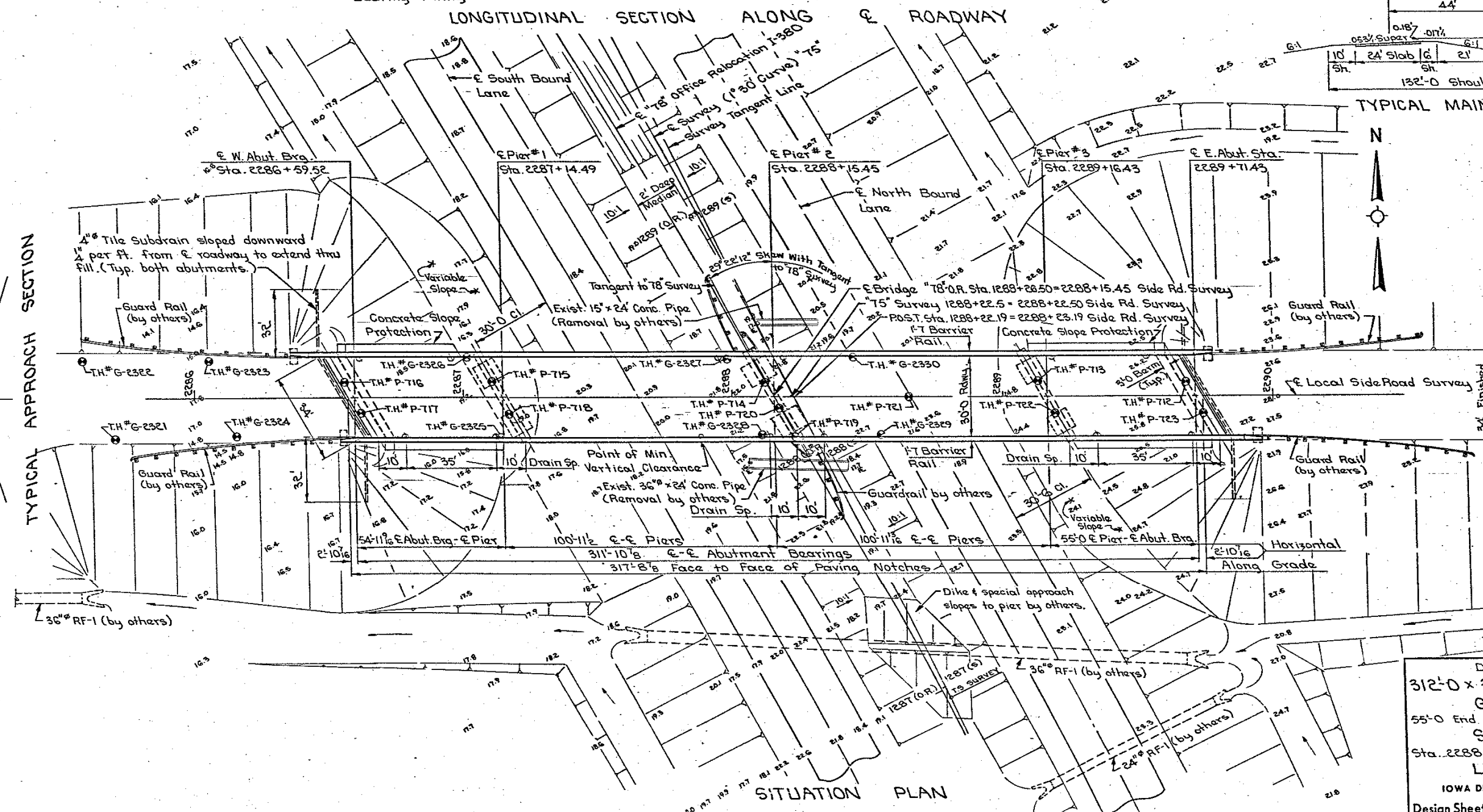


PROPOSED GRADE I-380
 P.I. Sta. 1286+00, El. = 827.76
 -1.68%

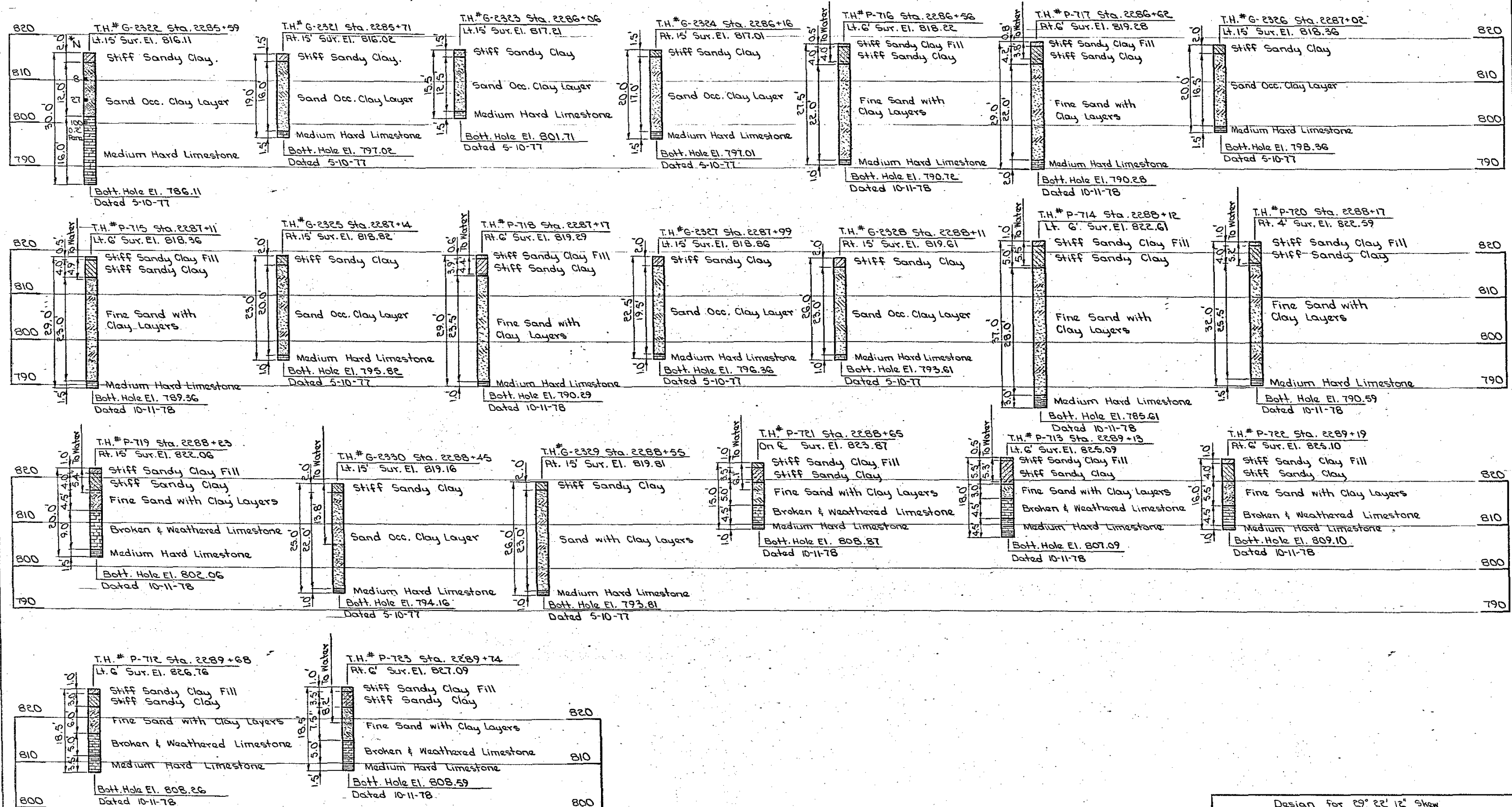
HORIZONTAL CURVE DATA I-380:
 1978 Office Relocation:
 Δ = 31° 19' 17"
 D = 1° 30'
 T = 1070.85'
 L = 2088.09'
 E = 147.27'
 R = 3819.72'
 e = .053%

TRAFFIC COUNT:
 160 A.D.T. (1980)

LOCATION:
 Local Side Road over I-380
 Washington Twp. T85N R8W Sec 36
 Otter Creek Twp. T85N R1W Sec 31
 Monroe Twp. T84N R8W Sec 1, 6
 Linn County



Design for 29° 22' 12" Skew
 312'-0" x 30'-0" CONTINUOUS WELDED GIRDER BRIDGE
 55'-0" End Spans 2-101'-0" Interior Spans
 SITUATION PLAN
 Sta. 2288+15.45 April 1980
 LINN COUNTY
 IOWA DEPARTMENT OF TRANSPORTATION-HIGHWAY DIVISION
 Design Sheet No. 1 Of 22 File No. 25803 Design No. 282



SOUNDING DATA
 * Number of Blows Per Foot

Design for 29° 22' 12" Skew
312'-0" x 30'-0" CONTINUOUS WELDED GIRDER BRIDGE
 55'-0" End Spans 2-101'-0" Interior Spans
SOUNDING DATA
 Sta. 2288+15.45 April 1980
LINN COUNTY
 IOWA DEPARTMENT OF TRANSPORTATION-HIGHWAY DIVISION
 Design Sheet No. 2 Of 22 File No. 25803 Design No. 282

DESIGNED BY: *[Signature]*
 TRACED BY: *[Signature]*
 CHECKED BY: *[Signature]*

PROJECT NUMBER: _____
 STATE: IOWA FISCAL YEAR: _____ SHEET NO.: 17 TOTAL SHEETS: 120

GENERAL NOTES:

This bridge is designed for H20-44 loading, plus 20 lb. per sq. ft. of roadway for future wearing surface.

The approach fills as shown are not a part of this contract, but are to be in place before any abutment piles are driven. The bridge contractor is to level off and shape the berms to the elevations and dimensions shown. Dressing of slopes outside the bridge area not disturbed by the bridge contractor shall be paid for as extra work.

The pier excavation quantities assume that the grading will be completed prior to the start of pier excavation.

Abutment piles are to be driven in oversized holes predrilled through the fill to Elev. 819.0± at the West Abut. and Elev. 827.0± at the East Abut. The minimum diameter of the drilled holes is to be 16 inches. These drilled holes are to be maintained open during driving of the piles to the extent that casing or drilling mud may be required for collapsing soils. Immediately after driving a pile, the void around the pile is to be filled with loose dry sand. Any drilling mud used shall be removed from the hole prior to placing the sand.

The contractor is to notice that many of the slab reinforcing bars and all of the barrier rail reinforcing bars are to be epoxy coated--see list and notes on Des. Sh. 16. The epoxy coating shall be done in accordance with current Special Provisions and Supplemental Specifications of the Iowa D.O.T.--Highway Division.

Unless otherwise specified, the reinforcement supplied for this structure may be grade 40, 50, or 60 reinforcement in accordance with the Standard Specifications. The design stresses for all grades are based on 40 grade reinforcement.

If 60 grade reinforcement is specified in the superstructure, pier, or abutment notes then only 60 grade reinforcement shall be supplied for the part of the structure designated, and the design stresses are to be for 60 grade.

Utility companies whose facilities are shown on the plans or known to be within the construction limits, shall be notified by the contractor of the construction start-up date.

Red lines on drawings and faint lines on prints indicate existing concrete pipes.

Guard rail is to be placed by others.

The bridge contractor is to install subdrains behind each abutment as detailed. The subdrain may be either drain tile or perforated plastic pipe with a minimum nominal diameter of 4" and a maximum nominal diameter of 6". The price bid for "Subdrain" is to include the excavation necessary for the installation.

The bridge contractor is to construct concrete slope protection as shown on Des. Sh. 1 and as detailed on Des. Sh. 22.

Bridge Seat Sealer is to be applied to the exposed bridge seat surfaces at the abutments. The bridge seat surface is to include all surfaces of the bridge seat steps, the wash between the steps, and the edge fillets. The sealer is to extend six inches up the front face of the backwall. The bridge seat protective coating shall be an approved sealer as per Materials I.M. 491.12 and shall be applied in accordance with the manufacturer's recommendations.

TOTAL		BRIDGE QUANTITIES				
Item No.	Item	Unit	2 Abuts.	3 Piers	Superstr.	Total
1	Structural Concrete	Cu.Yd.	98.8	147.1	272.0	517.9
2	Structural Steel	Lbs.	_____	_____	238105	238105
3	Reinforcing Steel	Lbs.	11458	32691	41457	85606
4	Reinforcing Steel- Epoxy Coated	Lbs.	_____	_____	57803	57803
5	HPI0x42 Steel	L.F.	3848.48	10226.14	_____	1732.1
	Bearing Piling	L.F.	3848.48	10226.14	_____	1567.3
6	Bridge Seat Sealer	Sq.Ft.	240	_____	_____	240
7	Prebored Holes as per Plan	L.F.	374	_____	_____	374
8	Concrete Barrier Rail	L.F.	_____	_____	_____	687.8
9	Granular Backfill	Cu.Yd.	126	_____	_____	126
10	Subdrain	L.F.	_____	_____	_____	196
11	Steel Extrusion Joint with Neoprene	L.F.	_____	_____	_____	72
12	Concrete Slope Protection	Sq.Yd.	_____	_____	_____	492.2
13	Class 20 Excavation	Cu.Yd.	168.1	232.5	_____	400.6
14	Class 22 Excavation	Cu.Yd.	_____	60.7	_____	60.7

Item No. 1 Includes 272.0 Cu.Yd. Class "D" Structural Concrete for Superstructure and 245.9 Cu.Yd. Class "C" Structural Concrete for Substructure.

EXTRA WORK ORDERS

NO.	DESCRIPTION	UNIT	TOTAL
8001	Mass Concrete	Cu. Yd.	5.7
8002	Welds	Eact	2
8003	Class 22 Excavation	Cu. Yd.	2.1
8004	Payment for heating of material	Cu. Yd.	33.2
8005	Payment for cold weather protection of concrete	Cu. Yd.	33.2
8006	Price adjustment on 15 sq. yds. of concrete slope protection	PRICE	\$15.30 CR

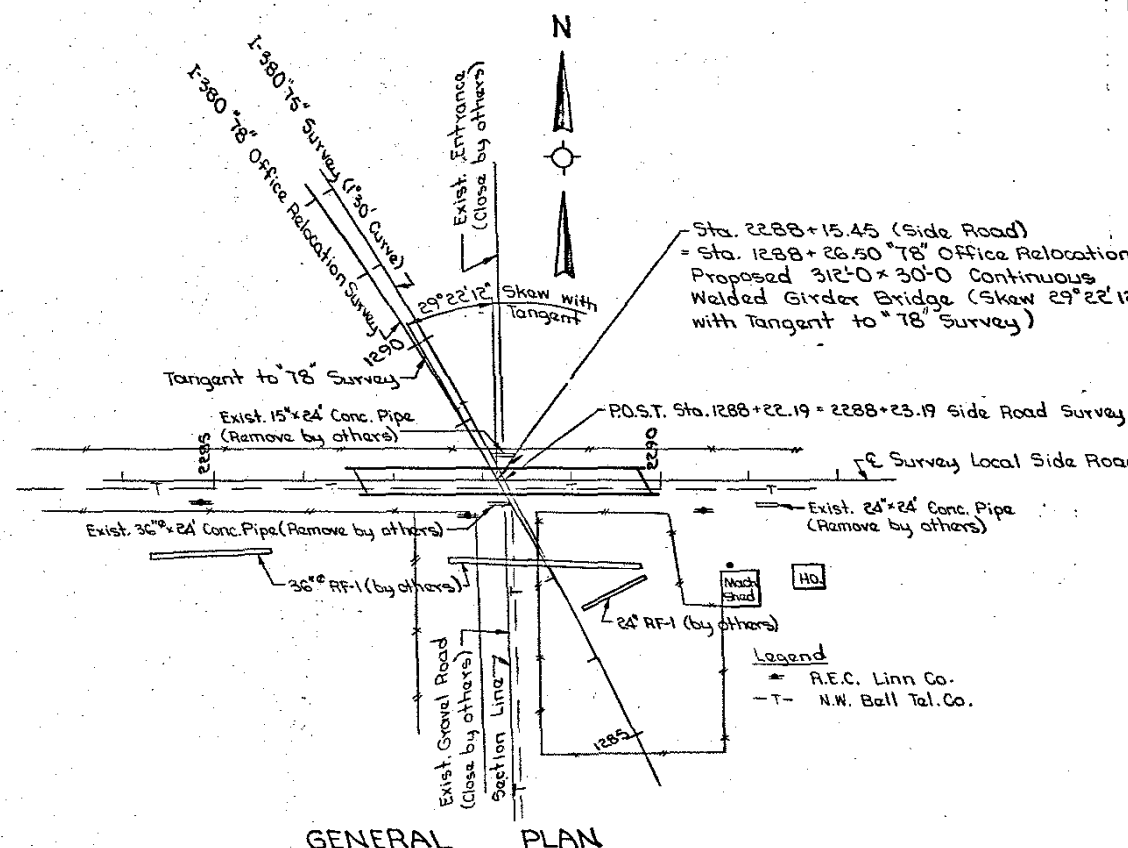
DESIGN STRESSES:

Design stresses for the following materials are in accordance with the AASHTO Standard Specifications for Highway Bridges, Series of 1977. Reinforcing Steel in accordance with Section 1.5, Grade 40 and Grade 60. Concrete in accordance with Section 1.5, $f_c = 3,500$ psi. Structural Steel in accordance with Section 1.7. ASTM A-36, Fatigue stress cycles based on Case II.

SPECIFICATIONS:

Design: AASHTO Series of 1977. Construction: Iowa Department of Transportation Specification, Series of 1977, plus current Supplemental Specifications and Special Provisions.

Design for 29° 22' 12" Skew
312'-0" x 30'-0" CONTINUOUS WELDED GIRDER BRIDGE
55'-0" End Spans 2-10'-0" Interior Spans
GENERAL PLAN, QUANTITIES, NOTES
Sta. 2288+15.45 April 1980
LINN COUNTY
IOWA DEPARTMENT OF TRANSPORTATION-HIGHWAY DIVISION
Design Sheet No. 3 Of 22 File No. 25803 Design No. 282



GENERAL PLAN

DESIGNED BY: [Signature]

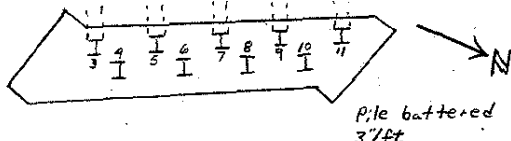
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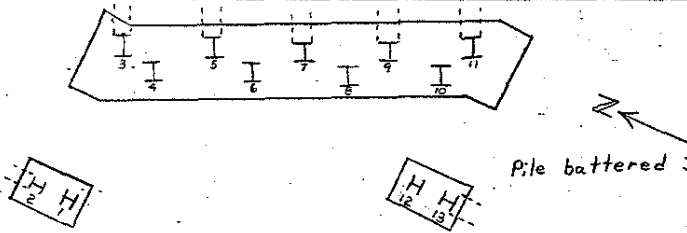
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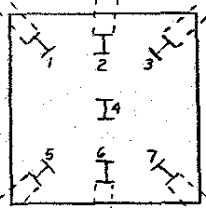
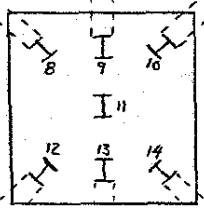
LINN COUNTY

PROJECT NUMBER

STATE IOWA FISCAL YEAR 1980 SHEET NO. 18 TOTAL SHEETS 120

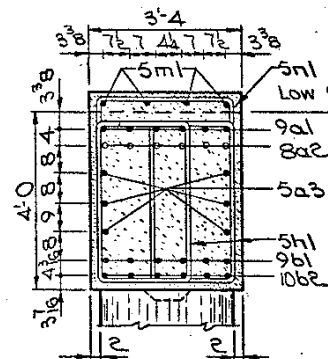
FOUNDATION NUMBER			PILING LOG		KIND OF PILING																																																									
East Abutment					Steel HP10x42																																																									
 Pile battered 3'/ft.																																																														
<table><thead><tr><th>PILE NO.</th><th>LENGTH IN STRUCTURE</th><th>BEARING (in Tons)</th><th>PILE NO.</th><th>LENGTH IN STRUCTURE</th><th>BEARING (in Tons)</th><th>PILE NO.</th><th>LENGTH IN STRUCTURE</th><th>BEARING (in Tons)</th></tr></thead><tbody><tr><td>1</td><td>30.6</td><td>Ref.</td><td>6</td><td>34.5</td><td>Ref.</td><td>10</td><td>33.4</td><td>Ref.</td></tr><tr><td>2</td><td>41.0</td><td>Ref.</td><td>7</td><td>35.0</td><td>62.0</td><td>11</td><td>33.4</td><td>Ref.</td></tr><tr><td>3</td><td>34.8</td><td>Ref.</td><td>8</td><td>33.0</td><td>Ref.</td><td>12</td><td>36.0</td><td>Ref.</td></tr><tr><td>4</td><td>32.6</td><td>Ref.</td><td>9</td><td>33.5</td><td>Ref.</td><td>13</td><td>35.8</td><td>Ref.</td></tr><tr><td>5</td><td>34.0</td><td>Ref.</td><td></td><td></td><td></td><td></td><td></td><td></td></tr></tbody></table>									PILE NO.	LENGTH IN STRUCTURE	BEARING (in Tons)	PILE NO.	LENGTH IN STRUCTURE	BEARING (in Tons)	PILE NO.	LENGTH IN STRUCTURE	BEARING (in Tons)	1	30.6	Ref.	6	34.5	Ref.	10	33.4	Ref.	2	41.0	Ref.	7	35.0	62.0	11	33.4	Ref.	3	34.8	Ref.	8	33.0	Ref.	12	36.0	Ref.	4	32.6	Ref.	9	33.5	Ref.	13	35.8	Ref.	5	34.0	Ref.						
PILE NO.	LENGTH IN STRUCTURE	BEARING (in Tons)	PILE NO.	LENGTH IN STRUCTURE	BEARING (in Tons)	PILE NO.	LENGTH IN STRUCTURE	BEARING (in Tons)																																																						
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3	34.8	Ref.	8	33.0	Ref.	12	36.0	Ref.																																																						
4	32.6	Ref.	9	33.5	Ref.	13	35.8	Ref.																																																						
5	34.0	Ref.																																																												

FOUNDATION NUMBER			PILING LOG			KIND OF PILING		
West Abutment						Steel HP10x42		
								
PILE NO.	LENGTH IN STRUCTURE	BEARING (in Tons)	PILE NO.	LENGTH IN STRUCTURE	BEARING (in Tons)	PILE NO.	LENGTH IN STRUCTURE	BEARING (in Tons)
1	44.3	Ref.	6	43.5	Ref.	10	43.9	Ref.
2	45.1	Ref.	7	44.3	Ref.	11	44.5	Ref.
3	45.0	Ref.	8	43.7	Ref.	12	46.2	70.7
4	43.6	65.9	9	44.9	Ref.	13	47.9	70.7
5	44.8	Ref.						

FOUNDATION NUMBER			PILING LOG			KIND OF PILING		
Pier No. 2						Steel HP 10x42		
						N ← Pile battered 3"/ft.		
PILE NO.	LENGTH IN STRUCTURE	BEARING (in Tons)	PILE NO.	LENGTH IN STRUCTURE	BEARING (in Tons)	PILE NO.	LENGTH IN STRUCTURE	BEARING (in Tons)
1	27.9	Ref.	6	27.0	Ref.	11	13.0	Ref.
2	30.3	Ref.	7	30.0	Ref.	12	28.4	Ref.
3	32.2	Ref.	8	16.0	Ref.	13	16.2	Ref.
4	28.4	72.0	9	10.1	Ref.	14	10.8	Ref.
5	27.9	Ref.	10	12.6	Ref.			

FOUNDATION NUMBER			PILING LOG		KIND OF PILING			
Pier No. 1					Steel HP 10x42			
PILE NO.	LENGTH IN STRUCTURE	BEARING (in Tons)	PILE NO.	LENGTH IN STRUCTURE	BEARING (in Tons)	PILE NO.	LENGTH IN STRUCTURE	BEARING (in Tons)
1	21.8	Ref.	5	22.6	Ref.	8	22.1	Ref.
2	22.2	Ref.	6	22.7	Ref.	9	23.1	Ref.
3	21.4	Ref.	7	22.5	Ref.	10	23.0	Ref.
4	22.8	Ref.						

36'-0"



Technical drawing of a window frame assembly. The drawing shows a cross-section of the frame with various components labeled with numbers and letters. Dimensions are provided for the overall size and specific components.

Dimensions:

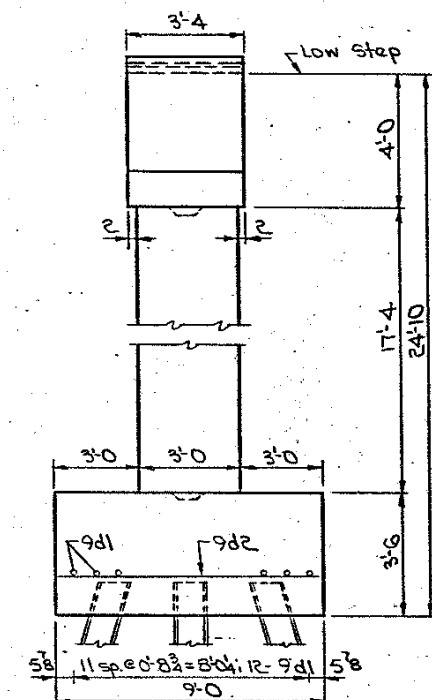
- Overall width: 3' 4"
- Overall height: 3' 8"
- Top horizontal distance: 7 1/2"
- Top horizontal distance: 4 1/4"
- Top horizontal distance: 7 1/2"
- Top horizontal distance: 3' 3"
- Top horizontal distance: 5m2
- Top horizontal distance: 5n1
- Top horizontal distance: 9a1
- Top horizontal distance: 8a2
- Top horizontal distance: 5h2
- Top horizontal distance: 5a3
- Top horizontal distance: 6b3
- Bottom horizontal distance: 2
- Bottom horizontal distance: 2

Labels:

- 3' 4"
- 3' 8"
- 7 1/2"
- 4 1/4"
- 7 1/2"
- 3' 3"
- 5m2
- 5n1
- 9a1
- 8a2
- 5h2
- 5a3
- 6b3
- 2
- 2

SECTION A-A

SECTION B-B



END VIEW



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

All exposed corners 90° or sharper are to be filleted with a 3/4" dressed and beveled strip.

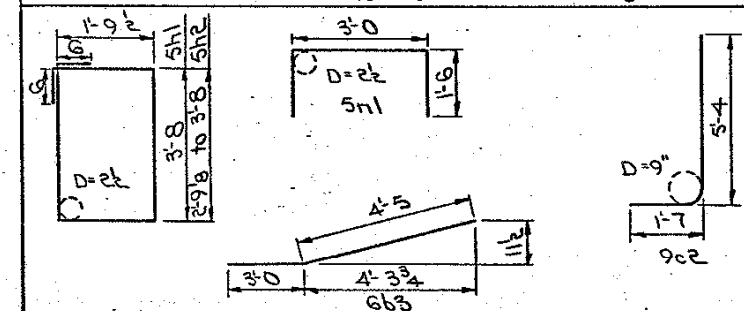
Reinforcing steel is to be securely wired in place before concrete is poured. Anchor bolts are to be preset in piers in accordance with the Standard Specifications. The weight of anchor bolts is included in the structural steel quantity. Reinforcing bars may be shifted slightly to clear anchor bolts.

The spiral reinforcing may be made of plain structural grade reinforcing steel and may be spliced by lapping 24 inches. The length of the spiral shown does not include the lapped length of the splices. The cost of the laps at splices is to be included in the price bid for other reinforcement.

HP 10x42 Steel bearing piling shall be driven to practical refusal and seated in sound limestone. Seating shall be done with a diesel hammer with a ram weight of at least 27000 pounds delivering at least 19,000 foot pounds of energy or a gravity hammer having an effective weight of at least 4500 pounds and driving energy of not less than 36,000 foot pounds nor more than 40,000 foot pounds. The number of piles is based on a 55ton bearing value per pile.

ANCHOR BOLT LOCATION
1 1/2" x 1-8 Swedge Anchor Bolts
with 4 1/2" Projection.

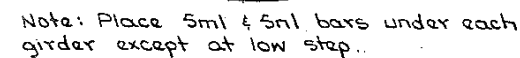
BENT BAR DETAILS



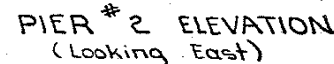
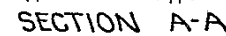
Note: All dimensions are out to out. D = Pin diameter.

CONCRETE PLACEMENT		QUANTITIES	
Location		Unit	Quantity
Pier Cap		Cu.Yd.	18.5
Pier Columns		Cu.Yd.	9.1
Pier Footings		Cu.Yd.	21.0
Total (Cu.Yd.)			48.6
TOTAL ESTIMATED QUANTITIES ~		PIER # 1	
Item		Unit	Total
Structural Concrete Class C		Cu.Yd.	48.6
Reinforcing Steel		Lbs.	1706
Class 20 Excavation		Cu.Yd.	67.8
HP10x42 Steel	Furnish 10@ 26'	L.F.	251.1
Bearing Piling	Drive 10@ 26'	L.F.	224.2

Design for 29° 22' 12" Skew
312'-0" x 30'-0" CONTINUOUS WELDED
GIRDER BRIDGE
55'-0" End Spans 2-101'-0" Interior Spans
PIER # 1 DETAILS
Sta. 2288+15.45 April 1980
LINN COUNTY
IOWA DEPARTMENT OF TRANSPORTATION-HIGHWAY DIVISION
Design Sheet No.: 4 Of 22 File No.: 25803 Design No.: 282



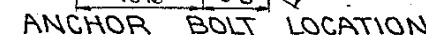
Symmetrical about E.
Pier except as noted.



Spiral reinforcing is to be #4 bar with $3\frac{1}{2}$ " diameter, 12" pitch with 4 equally spaced $7\frac{1}{8}$ " E.O.69 spacers punched to hold spirals. Spirals are to have $1\frac{1}{2}$ extra turns at top and bottom of columns.

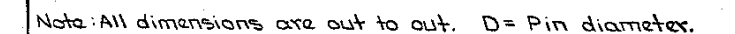


Note: Dimensions shown on Pile Plan are at bottom of footing. Batter piles 1:4 in the direction shown. 7-31 HP10x42 Steel Bearing Piling required in each footing.



1 1/2" x 1-4 Swedge Anchor Bolts
with 3" Projection.

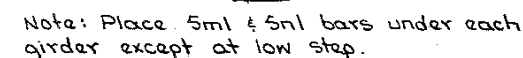
BENT BAR DETAILS



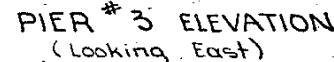
TOTAL ESTIMATED QUANTITIES ~ PIER #2

NOTE: See Des. Sh. 4 for "Pier Notes."

Design for 29° 22' 12" Skew
312'-0" x 30'-0" CONTINUOUS WELDED
GIRDER BRIDGE
55'-0" End Spans 2-101'-0" Interior Spans
PIER # 2 DETAILS
Sta. 2288+15.45 April 1980
LINN COUNTY
IOWA DEPARTMENT OF TRANSPORTATION-HIGHWAY DIVISION
Design Sheet No.: 5 Of 22 File No.: 25803 Design No.: 282



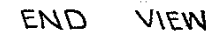
Symmetrical about E
Pier except as noted.



$1\frac{1}{2}'' \times 1'-8$ Swedge Anchor Bolts
with $4\frac{1}{2}''$ Projection.



SECTION B-B



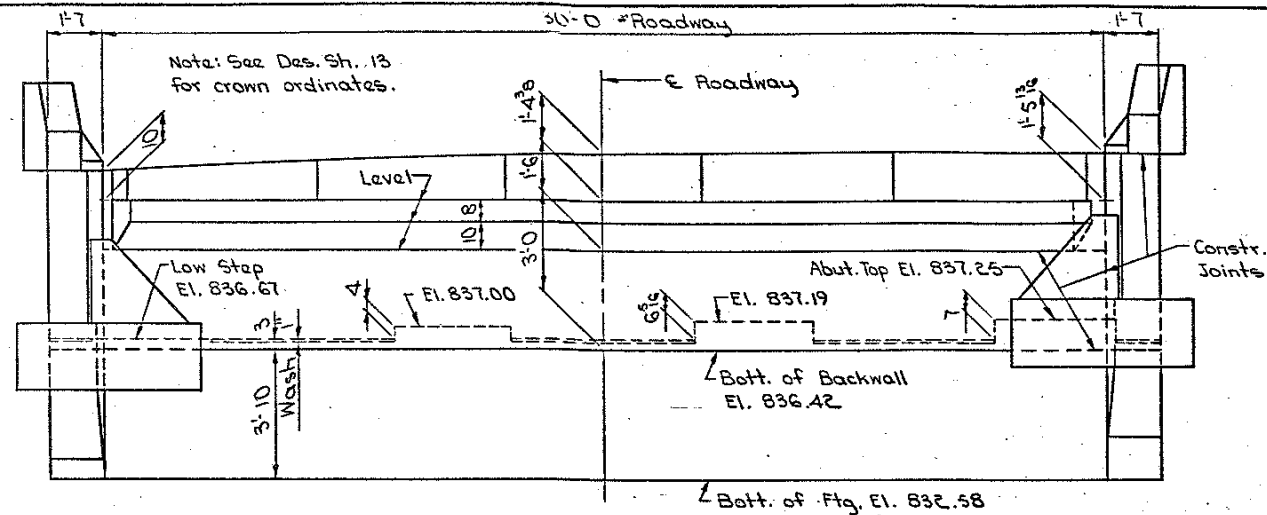
Footings are to extend at least 6 inches into the medium hard limestone with the final 6 inches of excavation to be to the neat lines of the footing.

BENT BAR DETAILS

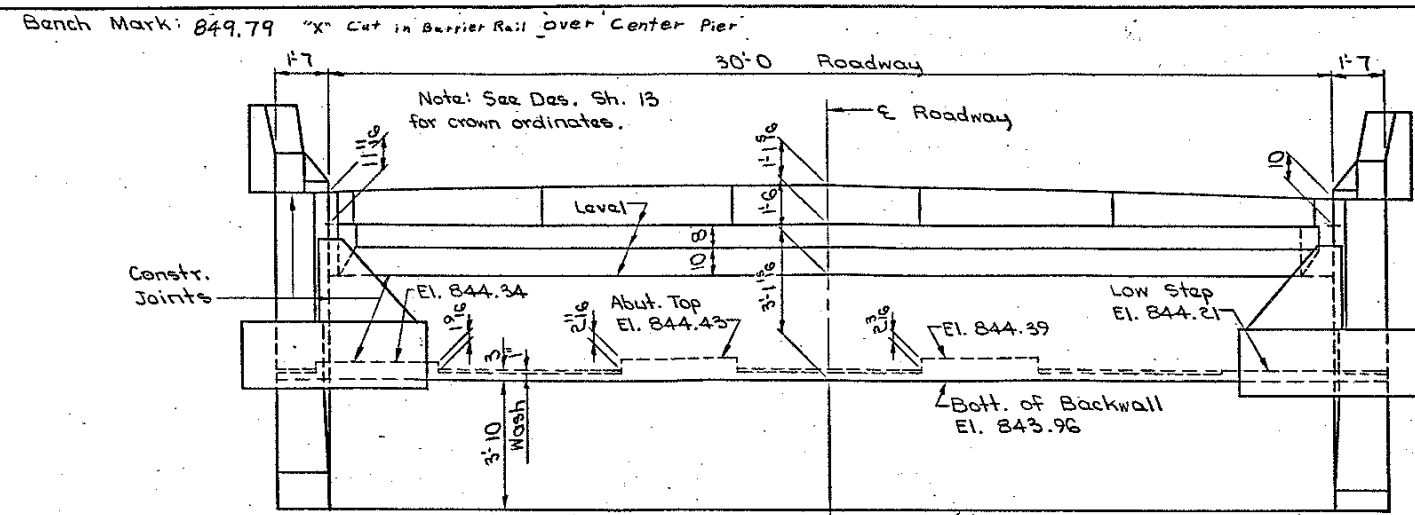
Note: All dimensions are out to out. D = Pin diameter.

Item	Unit	Total
Structural Concrete Class C	Cu.Yd.	46.2
Reinforcing Steel	Lbs.	12118
Class 20 Excavation	Cu.Yd.	87
Class 22 Excavation	Cu.Yd.	60.7

Design for 29° 22' 12" Skew
312'-0" x 30'-0" CONTINUOUS WELDED
GIRDER BRIDGE
55'-0" End Spans 2-101'-0" Interior Spans
PIER # 3 DETAILS
Sta. 2288 +15.45 April 1980
LINN COUNTY
IOWA DEPARTMENT OF TRANSPORTATION-HIGHWAY DIVISION
Design Sheet No.: 6 Of 22 File No.: 25803 Design No.: 282



WEST ABUTMENT - REAR ELEVATION
(Looking East)

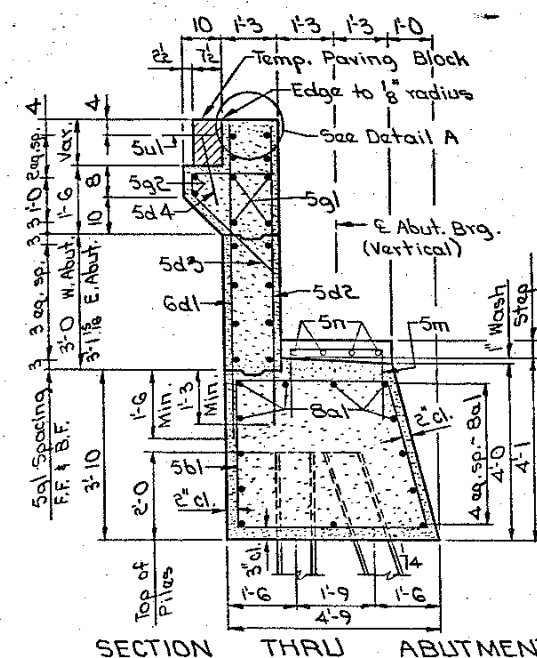
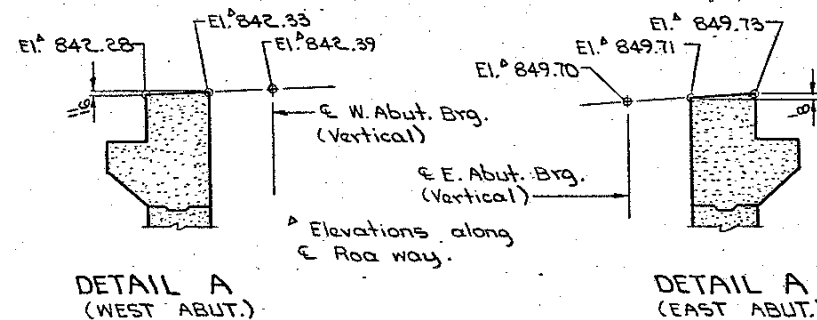
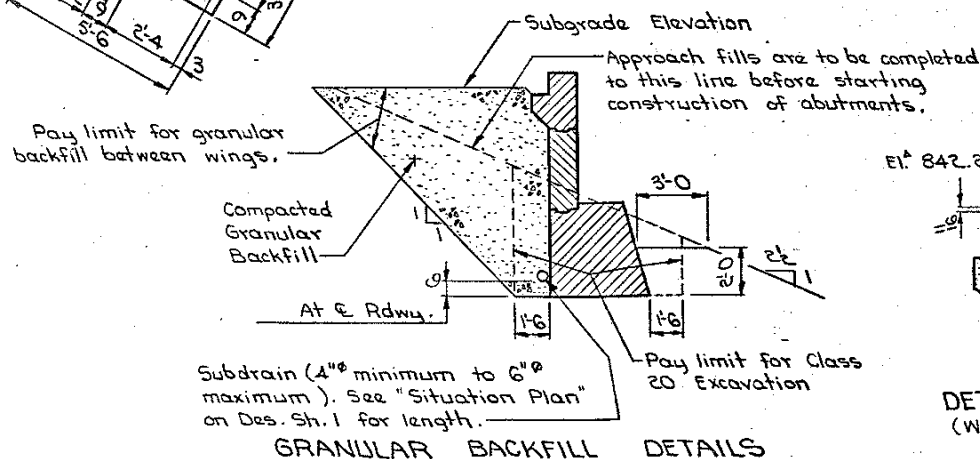
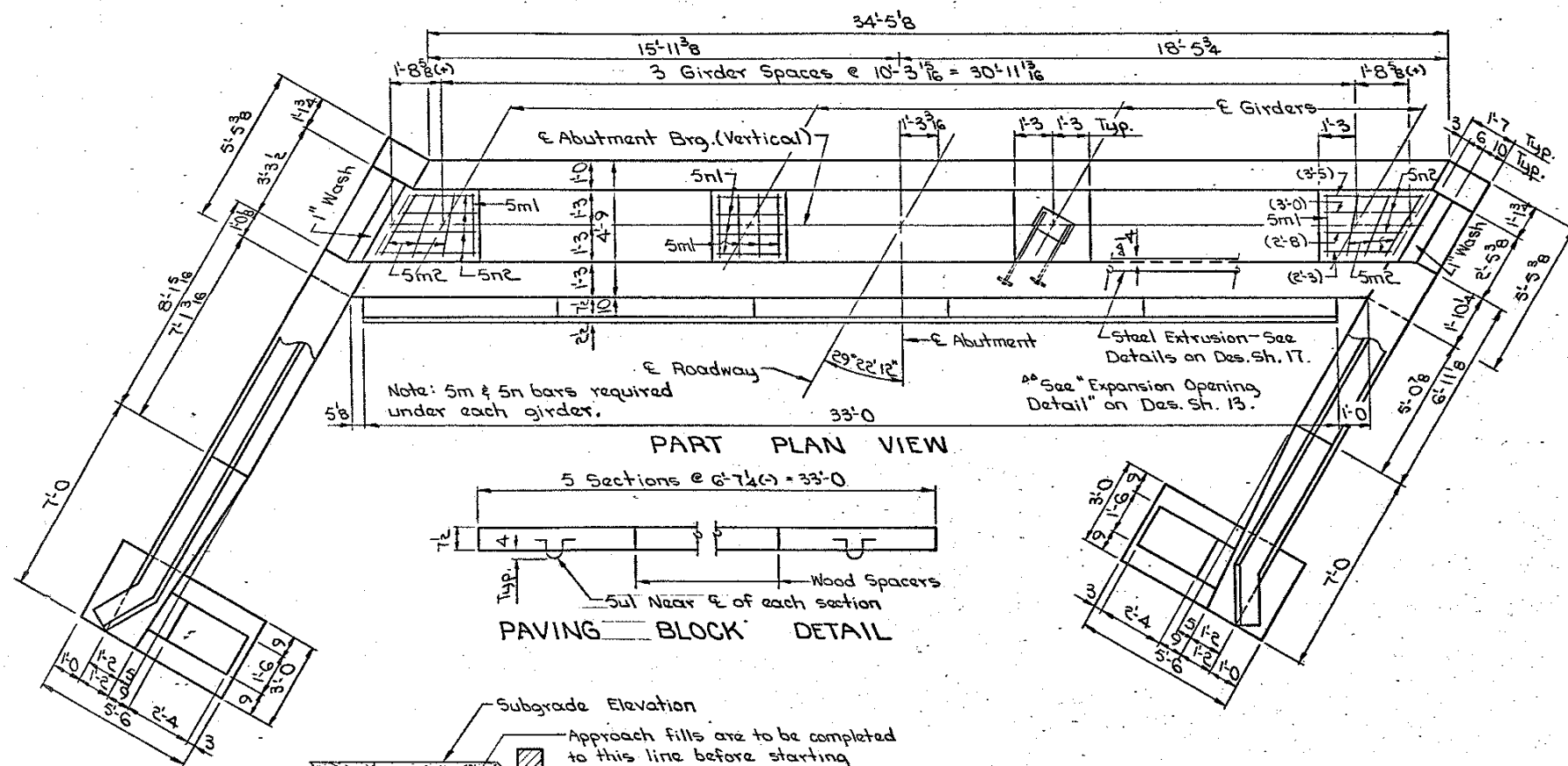


EAST ABUTMENT - REAR ELEVATION
(Looking West)

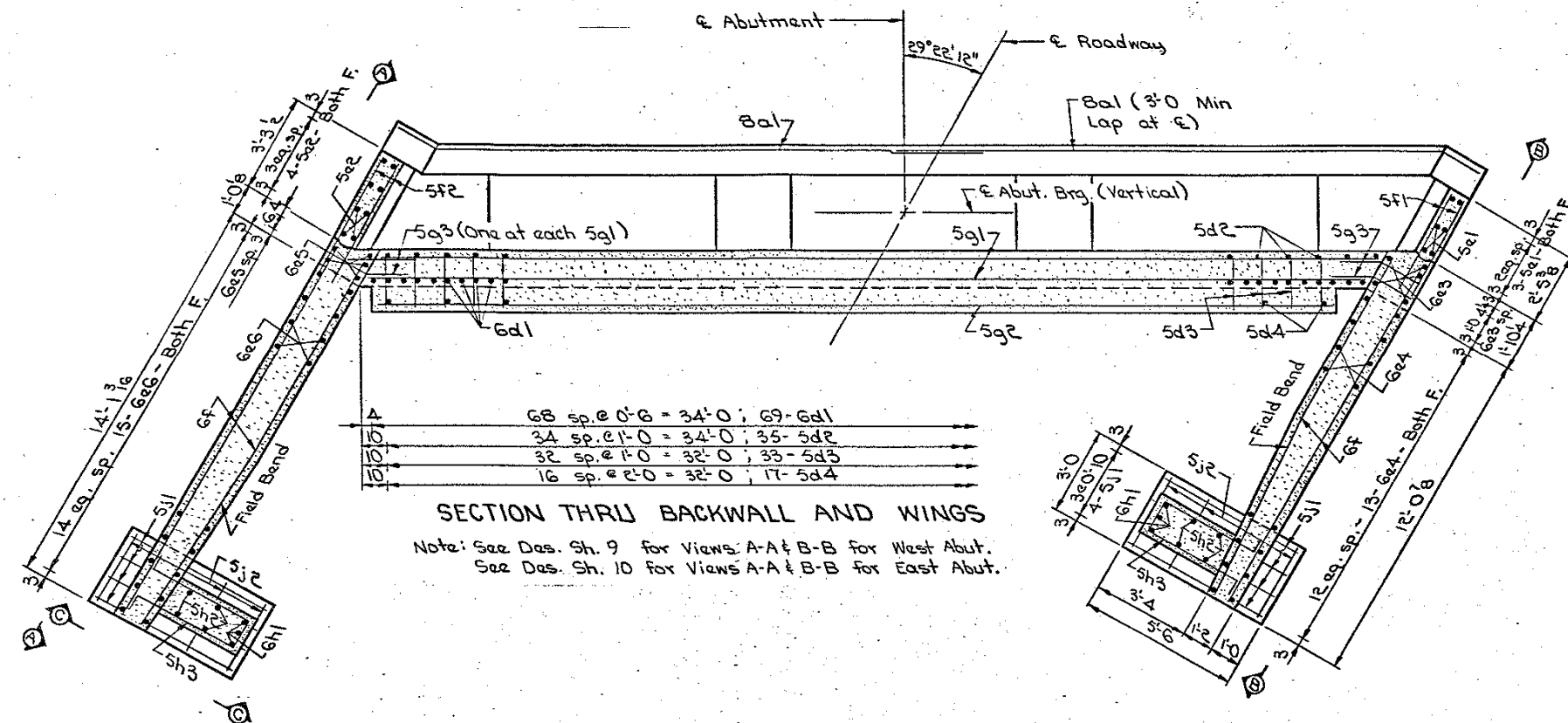
ABUTMENT CONCRETE PLACEMENT QUANT'S			
Location	Unit	West Abut.	East Abut.
Footings and Steps	Cu.Yd.	24.3	24.1
Backwall Below Constr. Joint	Cu.Yd.	4.8	5.0
Backwall Above Constr. Joint	Cu.Yd.	5.5	5.1
Maskwall @ South Wing	Cu.Yd.	0.4	0.3
Maskwall @ North Wing	Cu.Yd.	0.4	0.3
South Wingwall	Cu.Yd.	5.0	5.3
North Wingwall	Cu.Yd.	5.6	4.7
Wing Footings @ 1.2 = 2.4	Cu.Yd.	2.4	2.4
Counterforts @ 0.3 = 0.6	Cu.Yd.	0.6	0.6
*Paving Block	Cu.Yd.	1.0	0.8
Total (Cu.Yd.)		50.0	48.8

* May be Class C or Class D Concrete.

TOTAL ESTIMATED ABUTMENT QUANTITIES				
Item	Unit	West Abut.	East Abut.	Total
Structural Concrete Class "C"	Cu.Yd.	50.0	48.8	98.8
Reinforcing Steel	Lbs.	5756	5702	11458
Class 20 Excavation	Cu.Yd.	83.4	84.7	168.1
Granular Backfill	Cu.Yd.	63	63	126
Bridge Seat Sealer	Sq.Ft.	120	120	240
Prebored Holes as per Plan	L.F.	189	185	374
HP10x42 Steel	L.F.	9446', 4e49'	9435', 4e38'	10773
Bearing Piling Drive	L.F.	9446', 4e49'	9435', 4e38'	10303

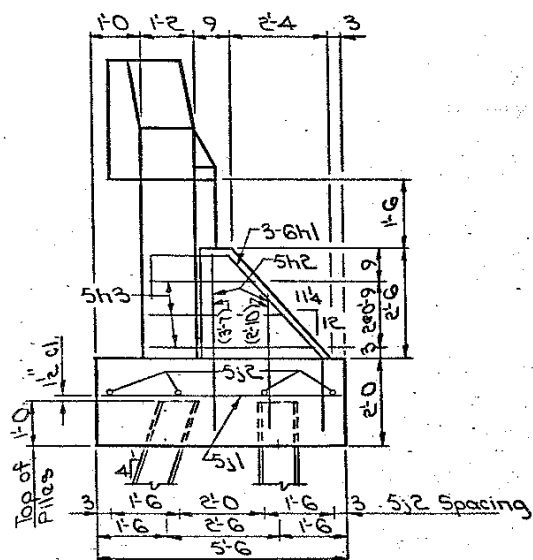


Design for 29° 22' 12" Skew
312'-0" x 30'-0" CONTINUOUS WELDED GIRDER BRIDGE
 55'-0" End Spans 2-101'-0" Interior Spans
ABUTMENT DETAILS
 Sta. 2288+15.45
LINN COUNTY
 IOWA DEPARTMENT OF TRANSPORTATION-HIGHWAY DIVISION
 Design Sheet No. 7 Of 22 File No. 25803 Design No. 282



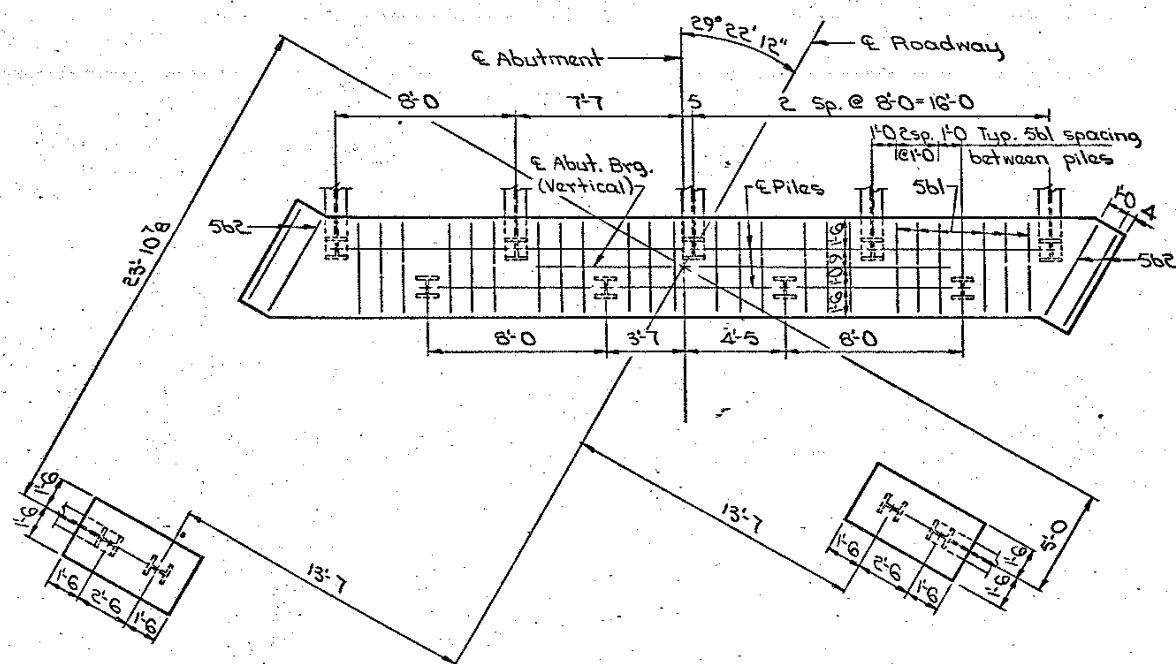
SECTION THRU BACKWALL AND WINGS

Note: See Des. Sh. 9 for Views A-A & B-B for West Abut.
See Des. Sh. 10 for Views A-A & B-B for East Abut.



VIEW C-C

(Details shown are typical for both abutments.)



PILING LAYOUT

Note: Dimensions shown on Piling Layout are at bottom of footing. Battered piles are to be 1:4 in the direction shown. 9-46 HP10x42 Steel Piling required at the West Abut. Ftg. and 4-49 HP10x42 Steel Piling required at the West Abut. Wing Ftg. 9-35 HP10x42 Steel Piling required at the East Abut. Ftg. and 4-38 HP10x42 Steel Piling required at the East Abut. Wing Ftg.

ABUTMENT NOTES: (TYPICAL FOR BOTH ABUTMENTS)

All exposed corners 90° or sharper are to be filleted with a 3/4" dressed and beveled strip.

Reinforcing steel is to be securely wired in place before concrete is poured.

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

All backfill behind the abutment between wings is to be granular backfill. The remainder of the abutment excavation is to be backfilled with soil.

Cost of preformed expansion joint filler is to be included in price bid for concrete.

The Maskwall is to be poured before the superstructure slab is poured.

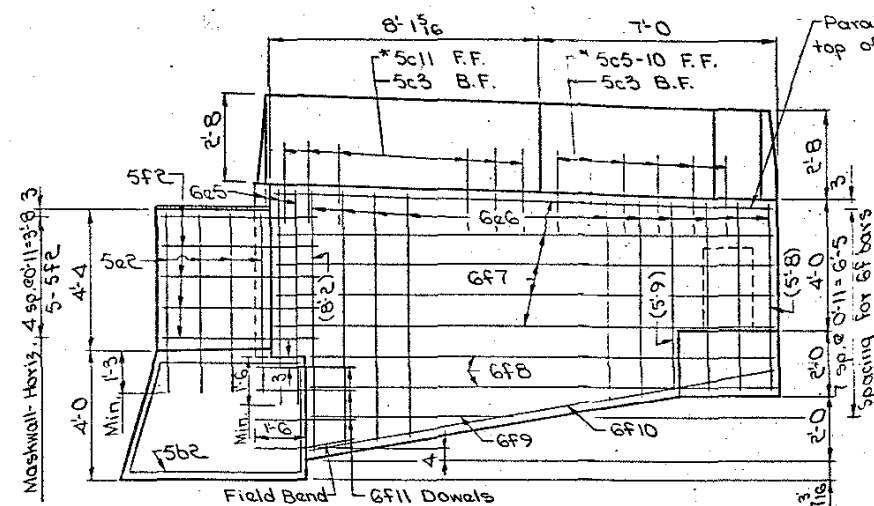
Construction joint keyways are to be formed with beveled 2x6's.

Girders and masonry plates are to be set before backwall is placed.

The portion of the backwall containing the abutment anchorage of the expansion device is to be poured after the bridge floor is placed.

Before the concrete paving block is poured bend down dowels (structural grade) and line the notch with tarpaper to prevent bond. Block is to be removed and bars straightened before pavement is placed. Paving block may be made of Class "C" or Class "D" concrete.

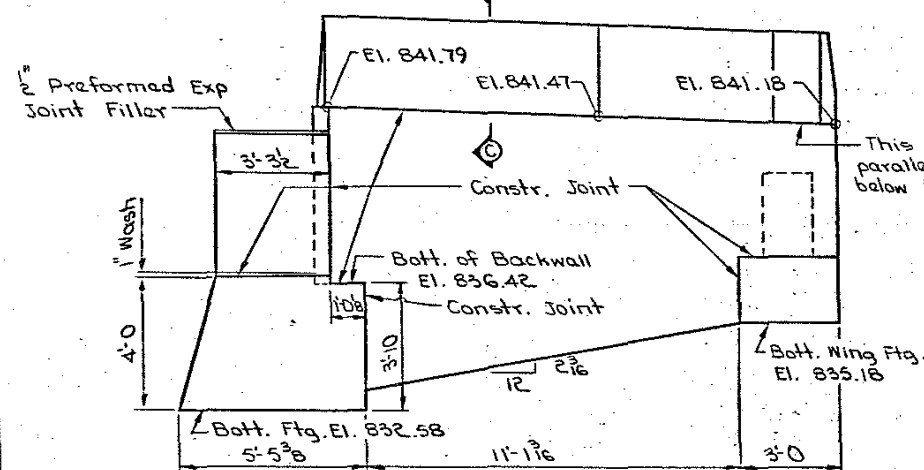
Steel H point bearing piling shall be driven to practical refusal and seated in sound rock. Seating shall be done with a diesel hammer with a ram weight of at least 2,700 pounds delivering at least 22,000 foot pounds of energy or a gravity hammer having an effective weight of at least 5,000 pounds and driving energy of not less than 38,000 foot pounds nor more than 40,000 foot pounds. The number of piles is based on a 40 ton bearing value per pile.



VIEW A-A - WEST ABUT. (North Wing)

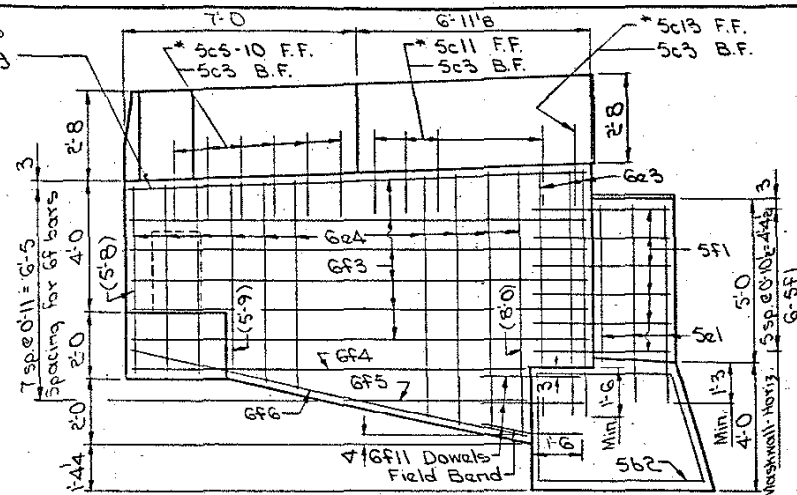
* NOTE: See Des. Shs. 20 & 21 for details of Barrier Rail and spacing of 5c bars. The 5c reinforcing bars are included in the Superstructure Quantities.

NOTE: See Des. Sh. 8 for location of Views A-A & B-B.

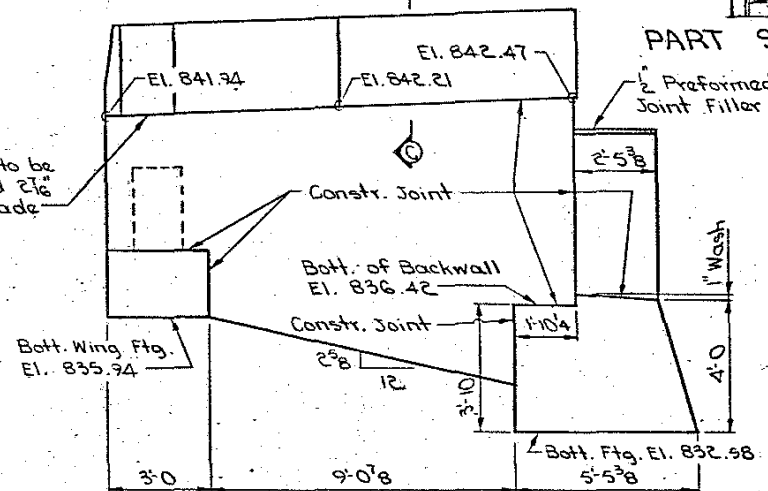
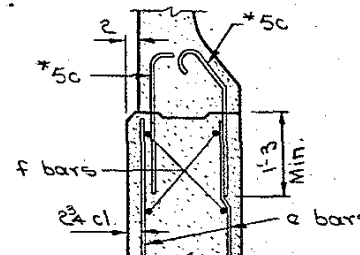


VIEW A-A - WEST ABUT. (North Wing)

Bank Mark: N^o 181, Sta. 1289+63 (Survey) 312' W., Set R.R. Sph. N. Side Po. Pole W. of intersection El. = 816.41

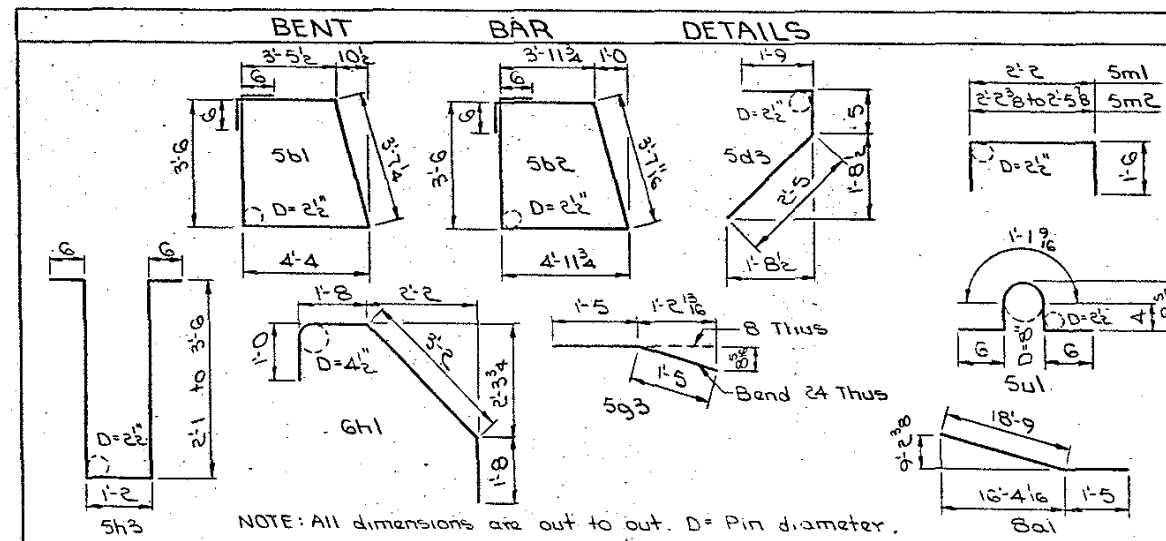


VIEW B-B - WEST ABUT. (South Wing)



VIEW B-B - WEST ABUT. (South Wing)

REINFORCING BAR LIST - WEST ABUTMENT				
Bar	Location	Shape	N ^o	Length
Bar	Location	Shape	N ^o	Length
5b1	Footings Hoops	□	24	15'-11"
5b2	Footings Hoops @ Ends	□	4	17'-2"
6d1	Backwall Vertical B.F.	—	69	7'-3"
5d2	Backwall Vertical F.F.	—	35	7'-0"
5d3	Paving Notch - Transverse	—	33	4'-7"
*5d4	Paving Notch - Dowels	—	17	2'-0"
5e1	South Maskwall - Vertical	—	6	6'-1"
5e2	North Maskwall - Vertical	—	8	5'-5"
6e3	South Wingwall - Vertical	—	5	7'-5"
6e4	South Wingwall - Vertical	—	26	Shown
6e5	North Wingwall - Vertical	—	5	6'-9"
6e6	North Wingwall - Vertical	—	30	Shown
5f1	South Maskwall - Horiz.	—	12	4'-2"
5f2	North Maskwall - Horiz.	—	10	4'-7"
6f3	South Wingwall - Horiz.	—	12	13'-2"
6f4	South Wingwall - Horiz.	—	2	11'-8"
6f5	South Wingwall - Horiz.	—	2	5'-0"
6f6	South Wingwall - bottom along slope	—	2	12'-0"
6f7	North Wingwall - Horiz.	—	10	14'-9"
6f8	North Wingwall - Horiz.	—	4	13'-9"
6f9	North Wingwall - Horiz.	—	2	6'-1"
6f10	North Wingwall - bottom along slope	—	2	13'-11"
6f11	Wing to Footings Dowels	—	14	3'-0"
5a1	Backwall Longit.	—	16	34'-1"
5a2	Paving Notch Longit.	—	2	32'-8"
5a3	Backwall Dowels	—	32	2'-10"
6h1	Counterforts - Vertical	—	6	7'-6"
5h2	Counterforts - Vertical	—	8	Shown
5h3	Counterforts - Horizontal	—	6	Varies
5j1	Wing Footings - Longit.	—	8	5'-2"
5j2	Wing Footings - Transv.	—	8	2'-8"
5m1	Girder Steps - Transv.	—	10	5'-2"
5m2	Exterior Girder Steps - Transv.	—	6	Varies
5n1	Interior Girder Steps - Longit.	—	8	2'-2"
5n2	Exterior Girder Steps - Longit.	—	8	Shown
5u1	Paving Block Hoops	—	5	2'-10"
* Structural Grade			Total (lbs.)	5756



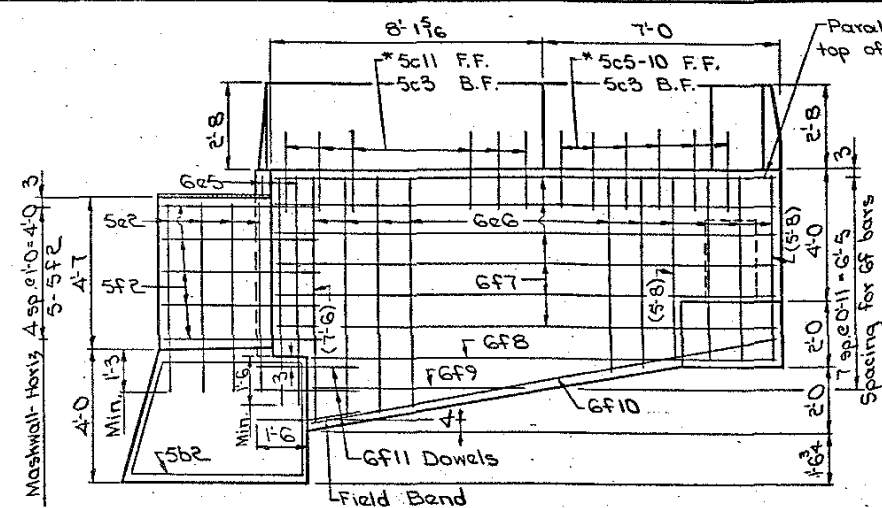
NOTE: All dimensions are out to out. D = Pin diameter.

Design for 29° 22' 12" Skew
 312'-0" x 30'-0" CONTINUOUS WELDED GIRDER BRIDGE
 55'-0" End Spans 2-101'-0" Interior Spans
 WEST ABUTMENT DETAILS
 Sta. 2288+15.45 April 1980
 LINN COUNTY
 IOWA DEPARTMENT OF TRANSPORTATION-HIGHWAY DIVISION
 Design Sheet No. 9 Of 22 File No. 25803 Design No. 282

DESIGNED BY: [Signature]
 TRACED BY: [Signature]
 CHECKED BY: [Signature]

LINN COUNTY

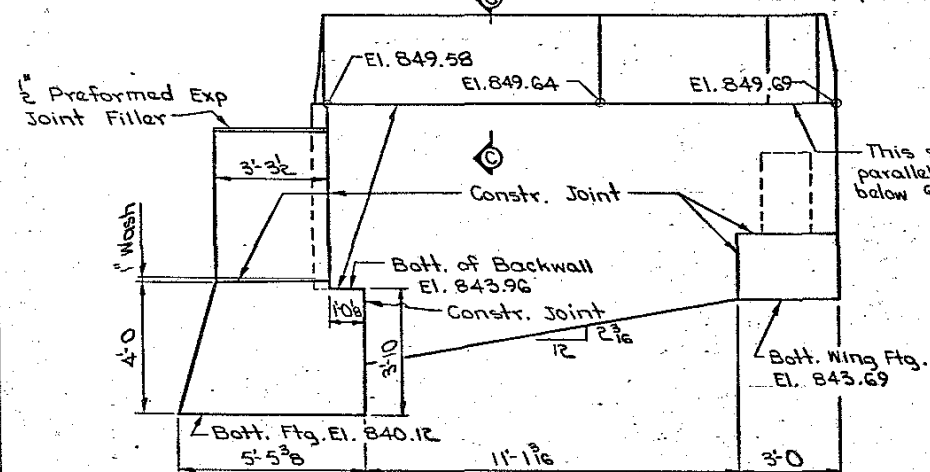
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 STATE: IOWA
 DIST. NO.: 1
 FISCAL YEAR: [Blank]
 SHEET NO.: 24
 TOTAL SHEETS: 120



VIEW A-A - EAST ABUT.
(South Wing)

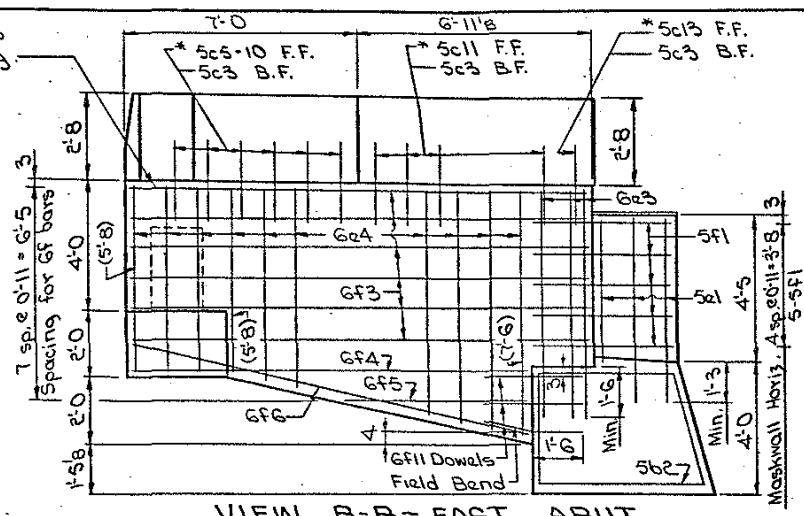
* NOTE: See Des. Shs. 20 & 21 for details of Barrier Rail and spacing of 5c bars. The 5c reinforcing bars are included in the Superstructure Quantities.

NOTE:
See Des. Sh. 8 for location of Views A-A & B-B.

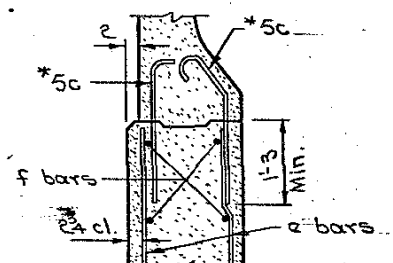


VIEW A-A - EAST ABUT.
(South Wing)

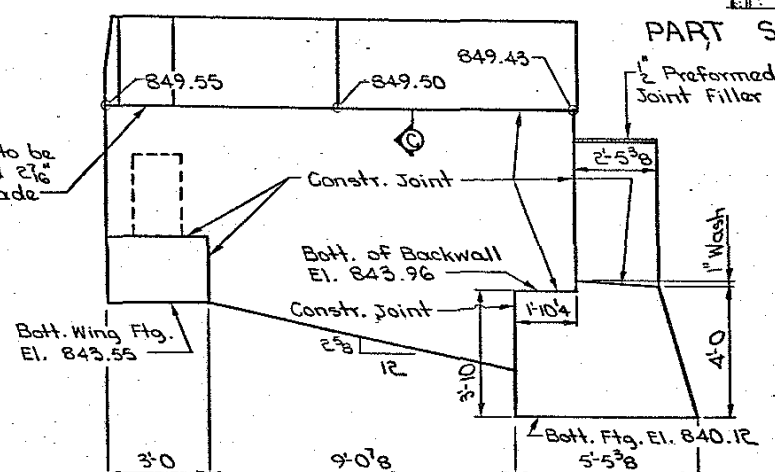
Branch Mark: N^o 181; Sta. 1289+63 (Survey) 312' Lt., Set R.R. Spk.
N. Side Po. Pole W. of Intersection El. = 816.41



VIEW B-B - EAST ABUT.
(North Wing)

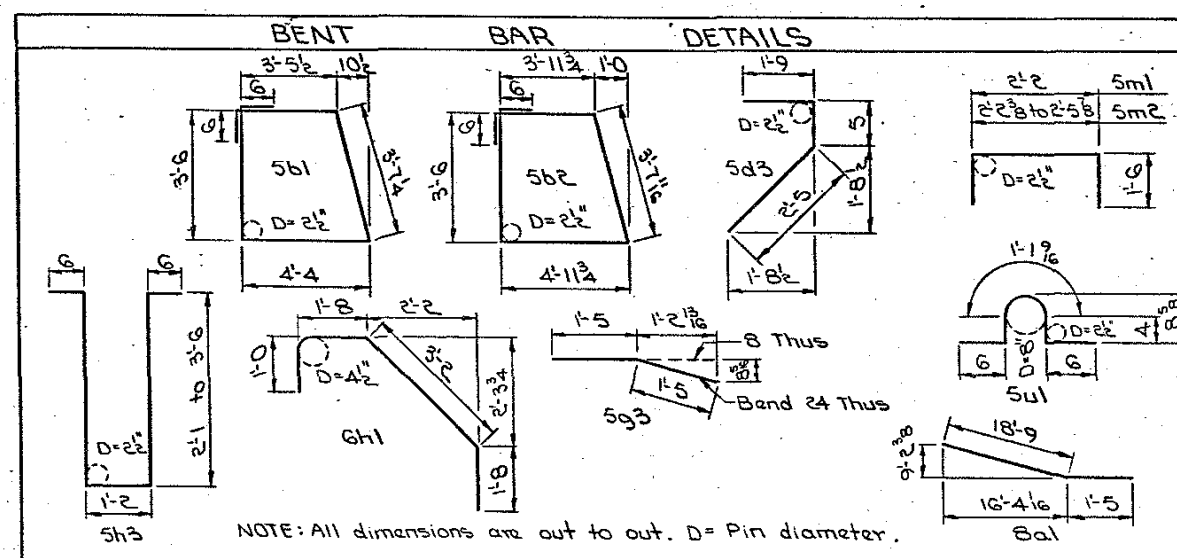


PART SECTION C-C



VIEW B-B - EAST ABUT.
(North Wing)

REINFORCING BAR LIST - EAST ABUTMENT					
Bar	Location	Shape	N ^o	Length	Weight
Ba1	Footings Longit.	U	26	20'-2	1400
5b1	Footings Hoops	□	24	15'-11	398
5b2	Footings Hoops @ Ends	□	4	17'-2	72
Gd1	Backwall Vertical B.F.	—	69	7'-2	743
5d2	Backwall Vertical F.F.	—	35	6'-11	253
5d3	Paving Notch - Transverse	—	33	4'-7	158
*5d4	Paving Notch - Dowels	—	17	2'-0	35
5e1	North Maskwall - Vertical	—	6	5'-6	34
5e2	South Maskwall - Vertical	—	8	5'-8	47
Gc3	North Wingwall - Vertical	—	5	6'-10	51
Gc4	North Wingwall - Vertical	—	26	Shown	249
Gc5	South Wingwall - Vertical	—	5	7'-0	53
Gc6	South Wingwall - Vertical	—	30	Shown	288
5f1	North Maskwall - Horiz.	—	10	4'-2	44
5f2	South Maskwall - Horiz.	—	10	4'-7	48
Gf3	North Wingwall - Horiz.	—	12	13'-2	231
Gf4	North Wingwall - Horiz.	—	2	11'-8	35
Gf5	North Wingwall - Horiz.	—	2	5'-0	15
Gf6	North Wingwall - bottom along slope	—	2	12'-0	36
Gf7	South Wingwall - Horiz.	—	12	14'-9	266
Gf8	South Wingwall - Horiz.	—	2	13'-9	41
Gf9	South Wingwall - Horiz.	—	2	6'-1	18
Gf10	South Wingwall - bottom along slope	—	2	13'-11	42
Gf11	Wing to Footings Dowels	—	12	3'-0	54
5g1	Backwall Longit.	—	16	34'-1	569
5g2	Paving Notch Longit.	—	2	32'-8	68
5g3	Backwall Dowels	—	32	2'-10	95
Gh1	Counterforts - Vertical	—	6	7'-6	68
5h2	Counterforts - Vertical	—	8	Shown	27
5h3	Counterforts - Horizontal	—	6	Varies	49
5j1	Wing Footings - Longit.	—	8	5'-2	43
5j2	Wing Footings - Transv.	—	8	2'-8	22
5m1	Girder Steps - Transv.	—	10	5'-2	54
5m2	Exterior Girder Steps - Transv.	—	6	Varies	33
5n1	Interior Girder Steps - Longit.	—	8	2'-2	18
5n2	Exterior Girder Steps - Longit.	—	8	Shown	24
5u1	Paving Block Hoops	—	5	2'-10	15
*Structural Grade				Total (lbs.)	5702

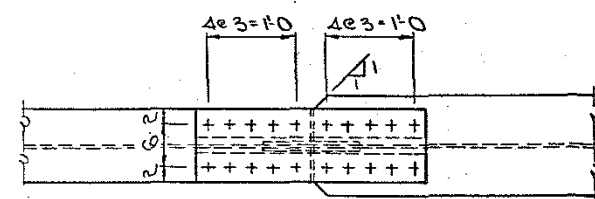


NOTE: All dimensions are out to out. D = Pin diameter.

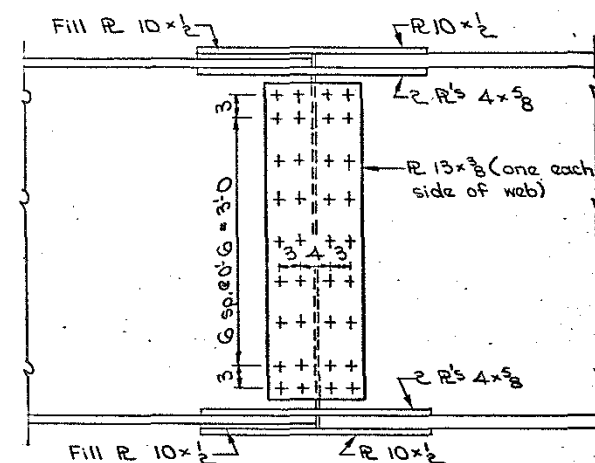
Design for 29° 22' 12" Skew
312'-0" x 30'-0" CONTINUOUS WELDED GIRDER BRIDGE
55'-0" End Spans 2-101'-0" Interior Spans
EAST ABUTMENT DETAILS
Sta. 2288+15.45 April 1980
LINN COUNTY
IOWA DEPARTMENT OF TRANSPORTATION-HIGHWAY DIVISION
Design Sheet No. 10 Of 22 File No. 25803 Design No. 282

DESIGNED BY: [Signature]
TRACED BY: [Signature]
CHECKED BY: [Signature]

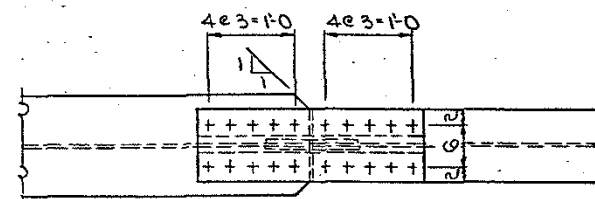
LINN COUNTY PROJECT NUMBER [Blank] STATE IOWA PROJECT NO. [Blank] SHEET NO. 25 TOTAL SHEETS 120



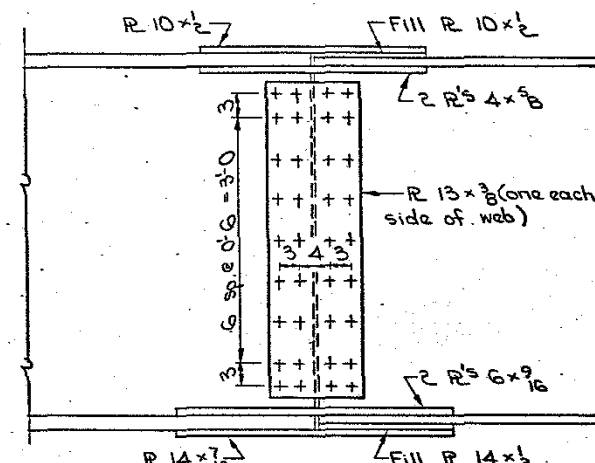
TOP FLANGE



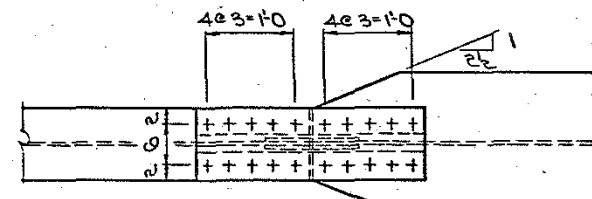
BOLTED SPLICE # 1 DETAILS



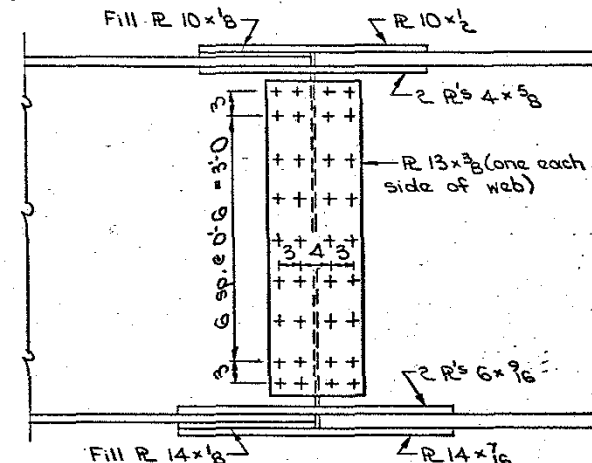
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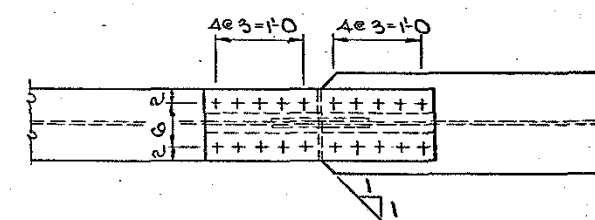
BOLTED SPLICE # 2 DETAILS



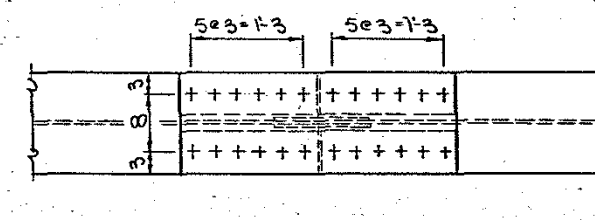
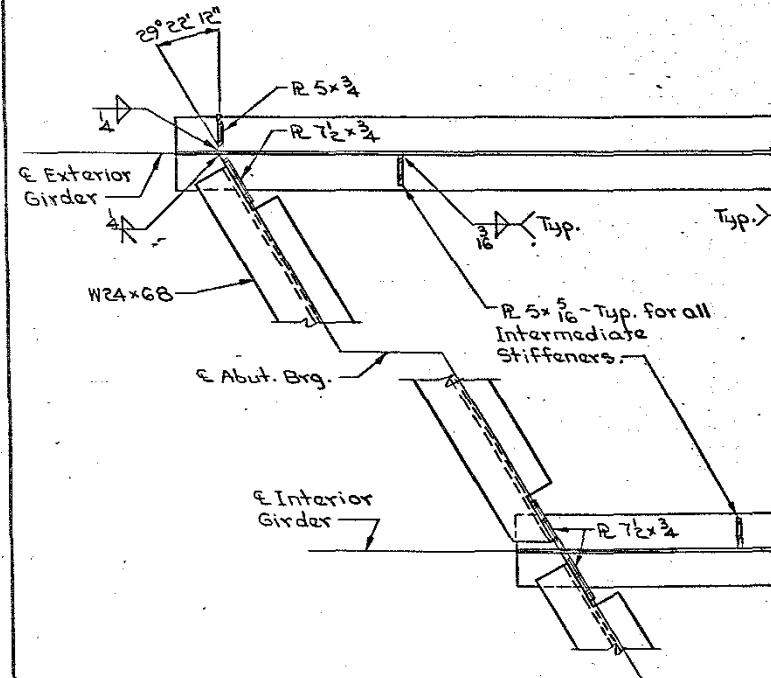
TOP FLANGE



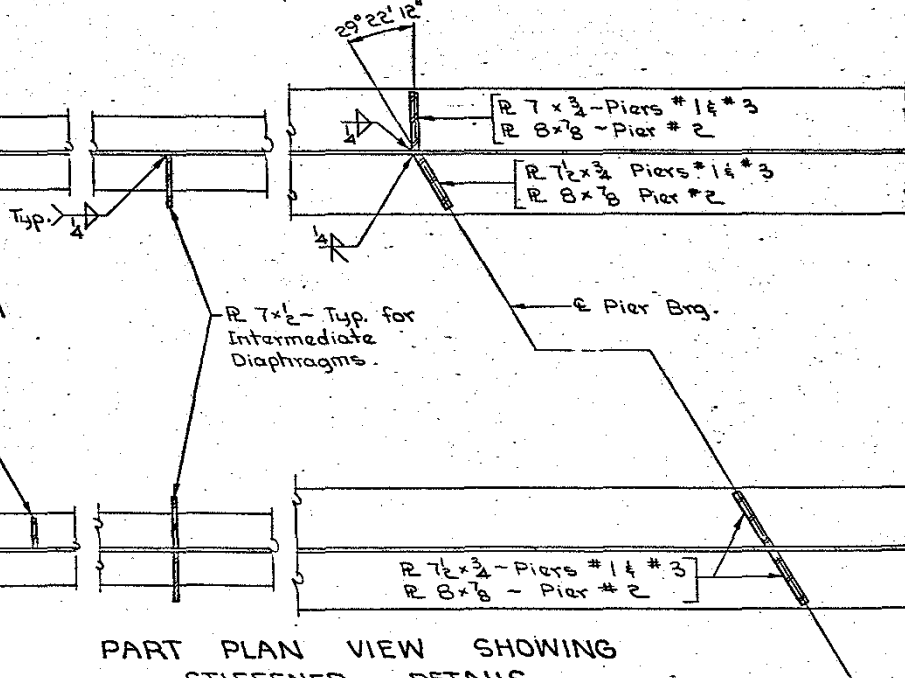
BOLTED SPLICE # 3 DETAILS



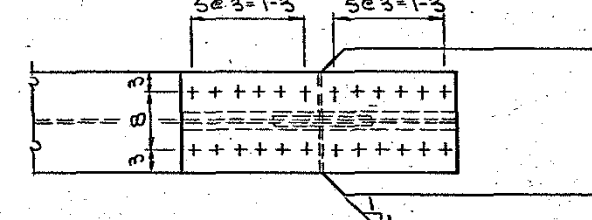
BOTTOM FLANGE



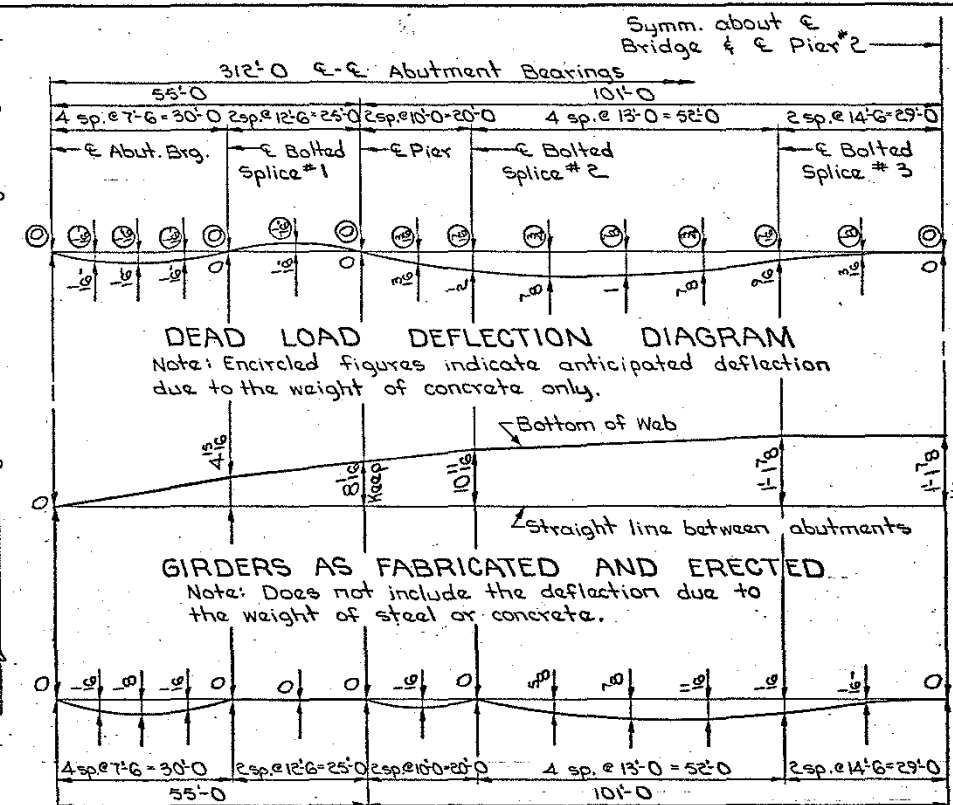
BOTTOM FLANGE



PART PLAN VIEW SHOWING STIFFENER DETAILS



BOTTOM FLANGE



HAUNCH THICKENING DIAGRAM
(For estimating purposes only)

Design for 29° 22' 12" Skew
312'-0" x 30'-0" CONTINUOUS WELDED GIRDER BRIDGE
55'-0" End Spans 2-101'-0" Interior Spans
SUPERSTRUCTURE DETAILS
Sta. 2288 + 15.45 April 1980
LINN COUNTY
IOWA DEPARTMENT OF TRANSPORTATION-HIGHWAY DIVISION
Design Sheet No. 11 Of 22 File No. 25803 Design No. 282

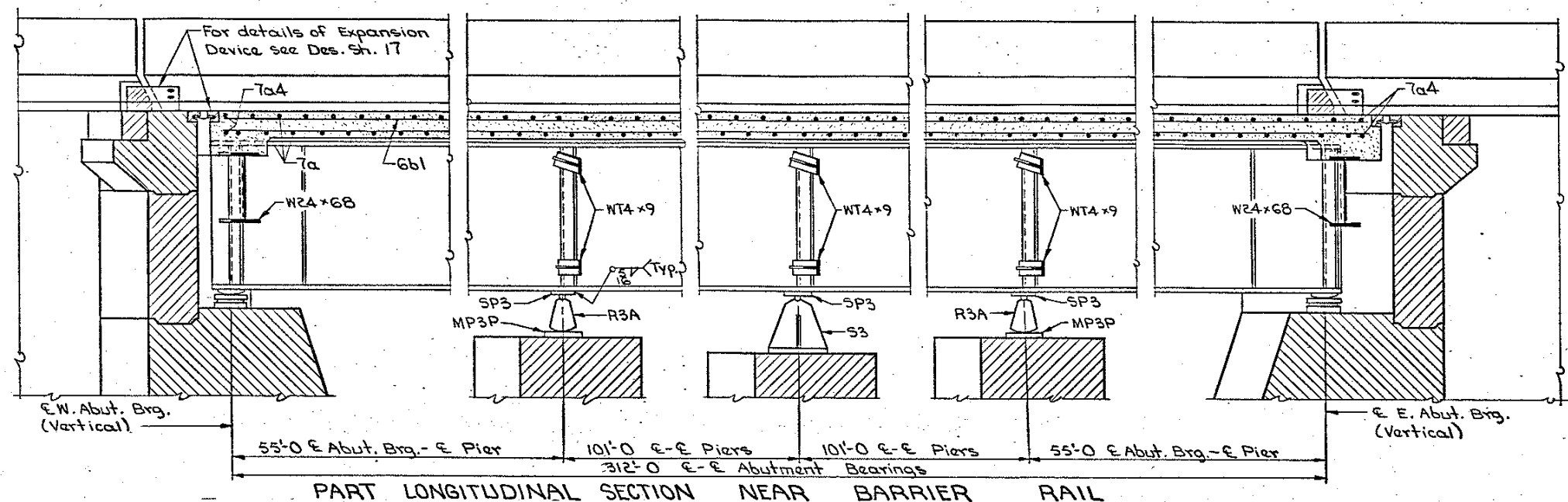
DESIGNED BY: [Signature]
TRACED BY: [Signature]
CHECKED BY: [Signature]

LINN COUNTY

PROJECT NUMBER

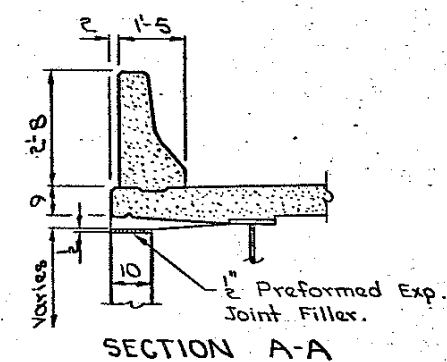
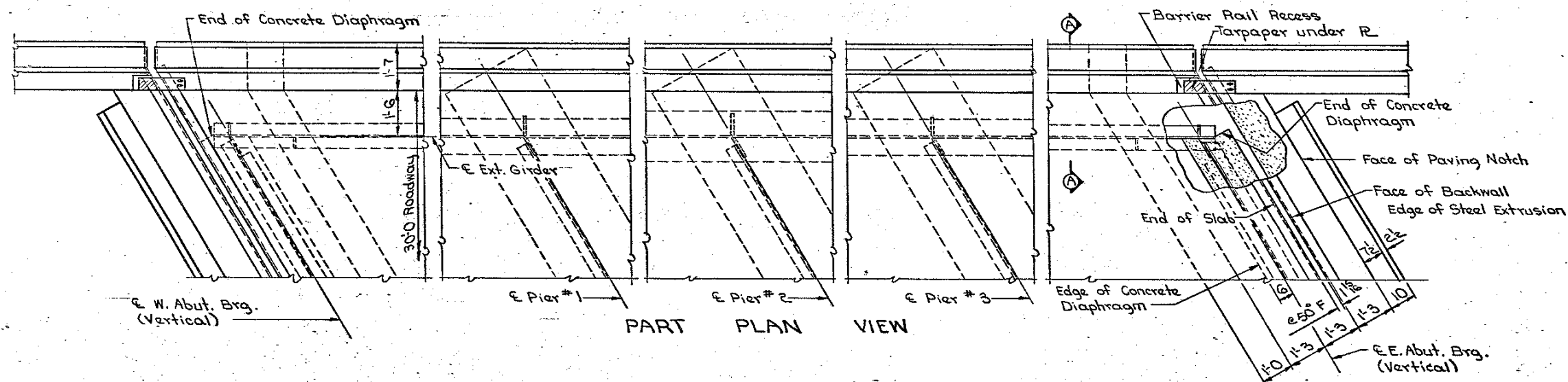
STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	5		26	120

PROJECT NUMBER	STATE	FED. ROAD DIST NO	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	IOWA	6		28	120



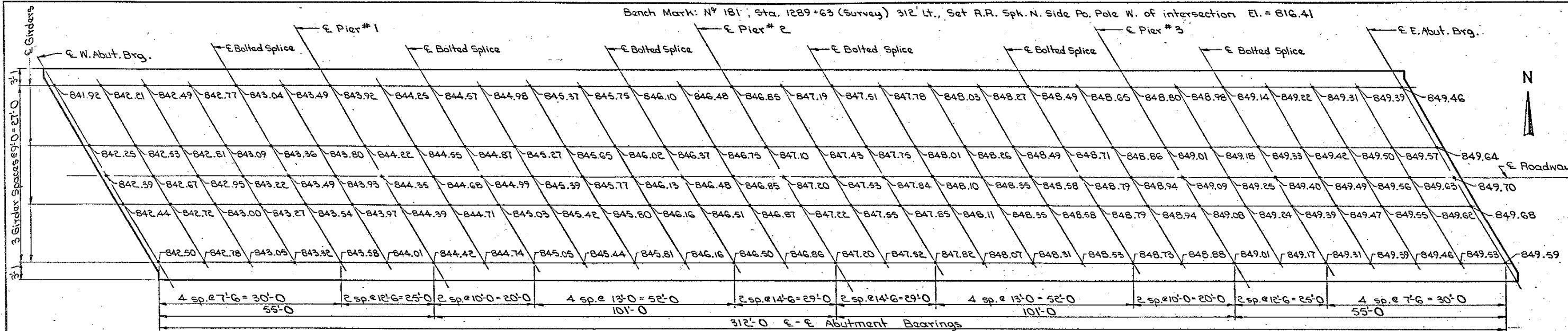
ROCKER & EXPANSION JOINT SETTINGS							
Temp. at time of setting (F)	West. Abut.	Pier #1	Pier #2	Pier #3	East Abut.		
							
10°	2/8	1/2	5/16	5/16	1/2		
50°	1 1/8	0	0	0	1 1/8		
90°	1 1/2	3/8	5/16	5/16	1 1/2		

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

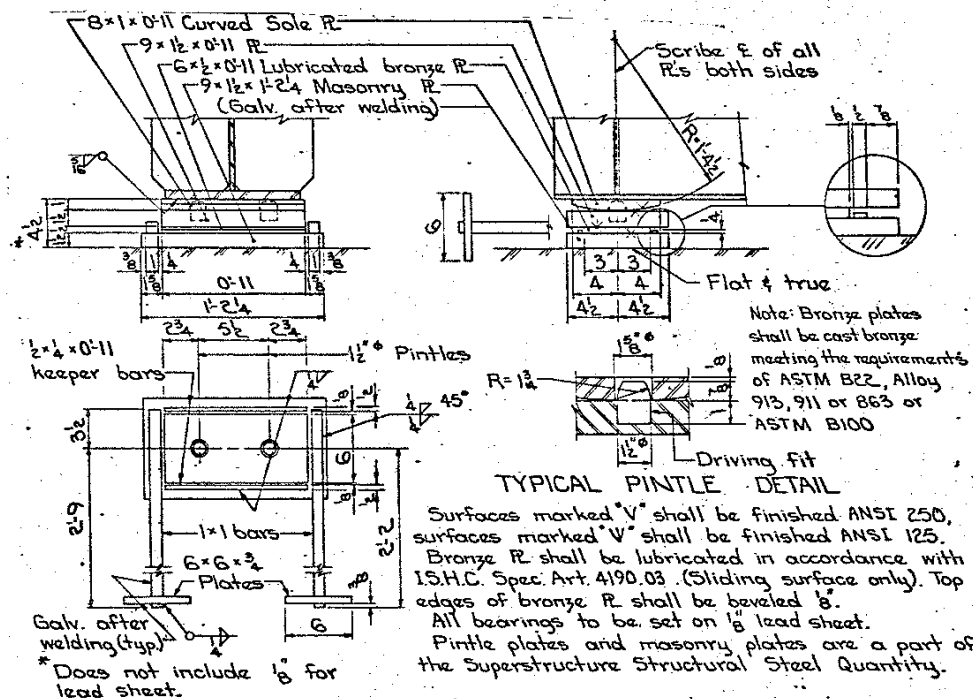
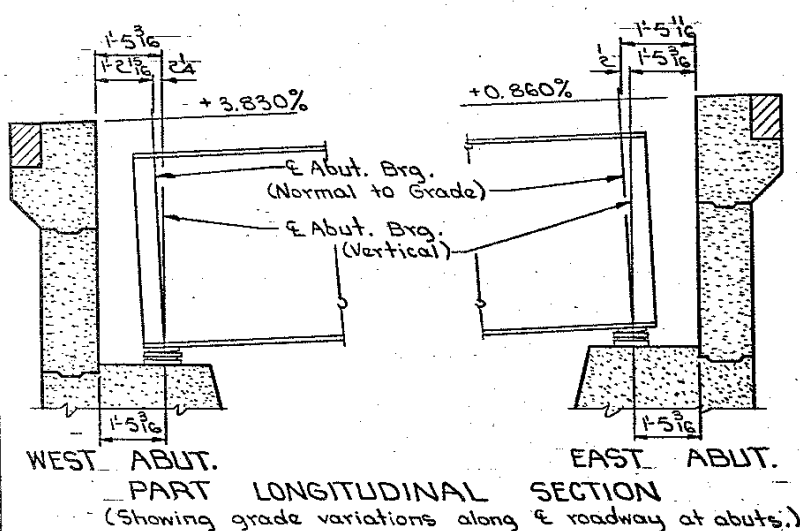


Design for 29° 22' 12" Skew
312'-0" x 30'-0" CONTINUOUS WELDED
GIRDER BRIDGE
55'-0" End Spans 2-101'-0" Interior Spans
SUPERSTRUCTURE DETAILS
Sta. 2288 + 15.45 April 1980
LINN COUNTY
IOWA DEPARTMENT OF TRANSPORTATION-HIGHWAY DIVISION
Design Sheet No. 14 Of 22 File No. 25803 Design No. 282

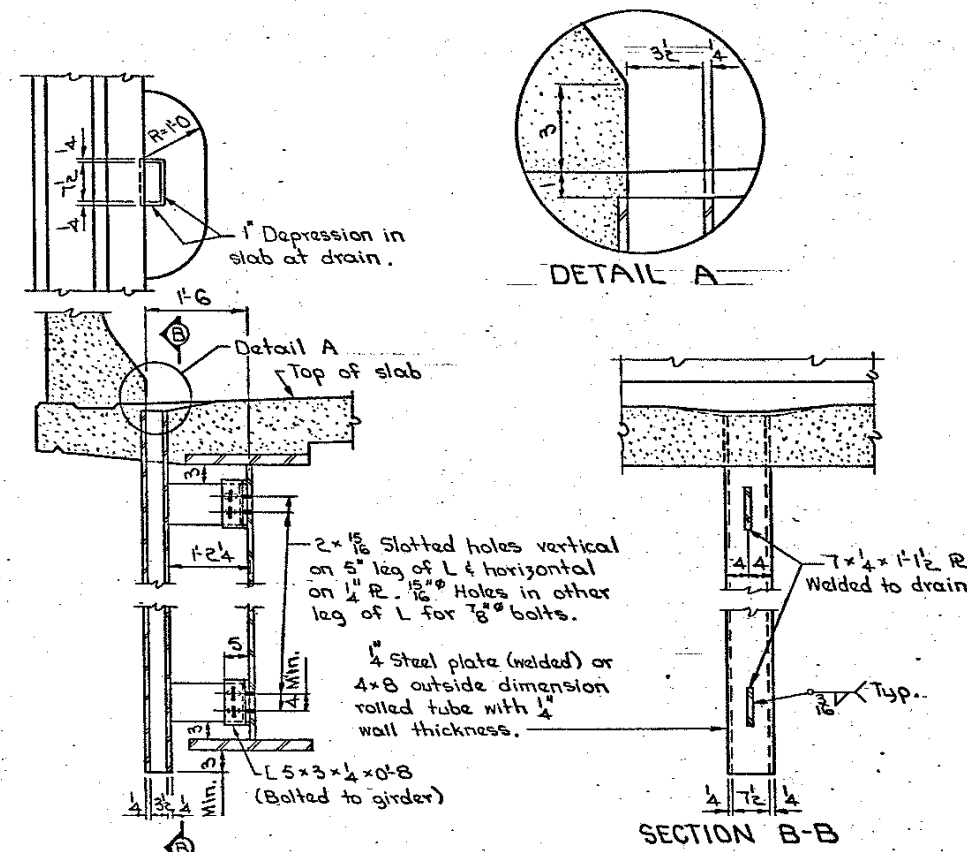
Bank Mark: N^o 181, Sta. 1289+63 (Survey) 312' Lt., Set R.R. Spk. N. Side Po. Pole W. of intersection El. = 816.41



TOP OF SLAB ELEVATIONS



ABUTMENT BEARING DETAILS



NOTE: Weight of each drain = 119 lbs. - 12 required. For location see "Situation Plan" on Des. Sh. 1.

MOMENT AND REACTION TABLE										(Moment in Foot-kips, Reaction in kips)						
	Load		Positive Moment End Span		Negative Moment Piers 1 & 3		Positive Moment Interior Span		Negative Moment Pier #2		Abutment Reaction		Piers 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	0.997	1.100	82	90	700	772	347	383	1149	1268	14.7	16.2	86.0	94.9	109.6	120.9
D.L. #2	0.490	0.180	67	25	278	102	248	91	476	175	8.4	3.1	41.3	15.2	53.4	19.6
U.L.L.	0.461	0.524	167	189	328	373	346	393	484	550	12.6	14.4	43.1	49.0	52.4	59.6
*C.L.L.	12.960	14.727	153	173	166	189	226	257	216	245						
	18.720	21.273									18.7	21.3	18.7	21.3	18.7	21.3
Impact			89	101	122	138	127	144	155	176	8.7	9.9	15.2	17.3	15.7	17.9
Total					1594	1574			2480	2414	63.1	64.9	204.3	197.7	249.8	239.3

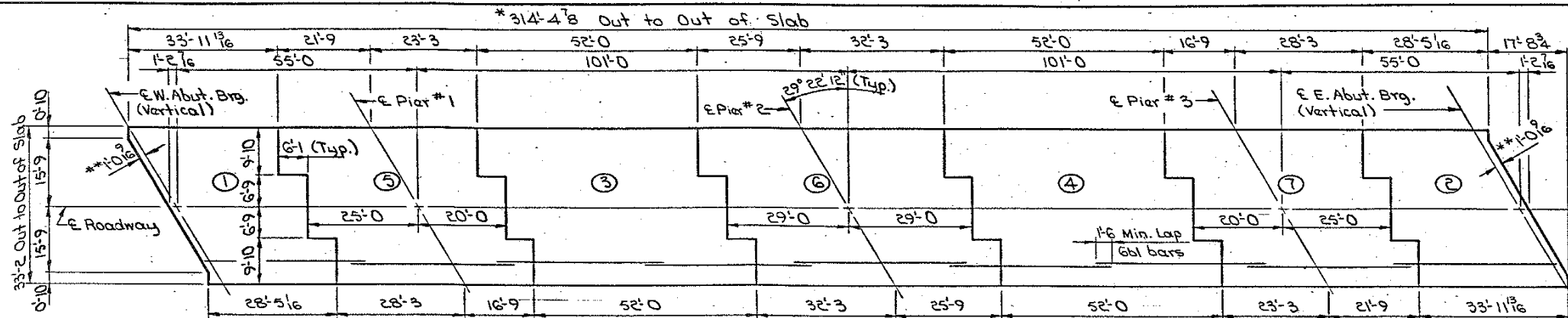
* Upper figure is for moment, lower figure is for shear.

Design for 29° 22' 12" Skew
 312'-0" x 30'-0" CONTINUOUS WELDED GIRDER BRIDGE
 55'-0" End Spans 2-10'-0" Interior Spans
 SUPERSTRUCTURE DETAILS
 Sta. 2288+15.45 April 1980
 LINN COUNTY
 IOWA DEPARTMENT OF TRANSPORTATION-HIGHWAY DIVISION
 Design Sheet No. 15 Of 22 File No. 25803 Design No. 282

DESIGNED BY: [Signature]
 TRACED BY: [Signature]
 CHECKED BY: [Signature]

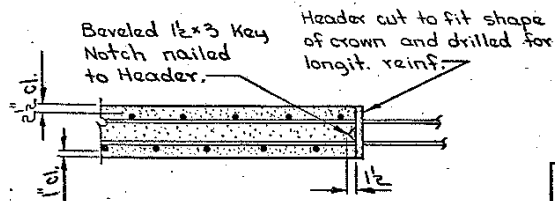
LINN COUNTY

PROJECT NUMBER: [Blank]
 STATE: IOWA
 FISCAL YEAR: 1
 SHEET NO.: 30
 TOTAL SHEETS: 120



CONCRETE PLACEMENT DIAGRAM AND LONGITUDINAL REINFORCING LAYOUT

NOTE: Roadway slab shall be placed in sections and in sequence indicated by encircled numbers on placement diagram and preferably at intervals not exceeding 24 hours. All slab reinforcing steel is to be placed before any section is 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.



TRANSVERSE CONSTR. JOINT DETAIL

* See "Expansion Opening Detail" on Des. Sh. 13

** See "Expansion Opening Detail" and "Section A-A on Des. Sh. 13.

CONCRETE PLACEMENT QUANTS. SUPERSTRUCTURE		
Location	Unit	Quantity
Section ①	Cu. Yd.	27.6
Section ②	Cu. Yd.	27.7
Section ③	Cu. Yd.	44.9
Section ④	Cu. Yd.	44.9
Section ⑤	Cu. Yd.	38.6
Section ⑥	Cu. Yd.	49.7
Section ⑦	Cu. Yd.	38.6
Total (Cu. Yd.)		272.0

REINFORCING BAR LIST-SUPERSTRUCTURE					
Bar	Location	Shape	Nº	Length	Weight
Ta1	Slab Transverse-Top & Bottom	—	749	32'-10"	50266
Ta2	Slab Transverse-Top @ ends	—	44	Varies	1499
Ta3	Slab Transverse-Bottom @ ends	—	42	Varies	1427
Ta4	End of Slab-Transv.-Top & Bottom	—	8	19'-9"	323
Gbl	Slab Longitudinal-Top & Bottom	—	603	36'-3"	32832
	Barrier Rail (See Des. Sh. 21)				12913
* See "Epoxy Coating Notes" on this sheet. Total (Lbs.)					99260
BENT BAR DETAILS					
NOTE: All dimensions are out to out.					

EPOXY COATING NOTES:

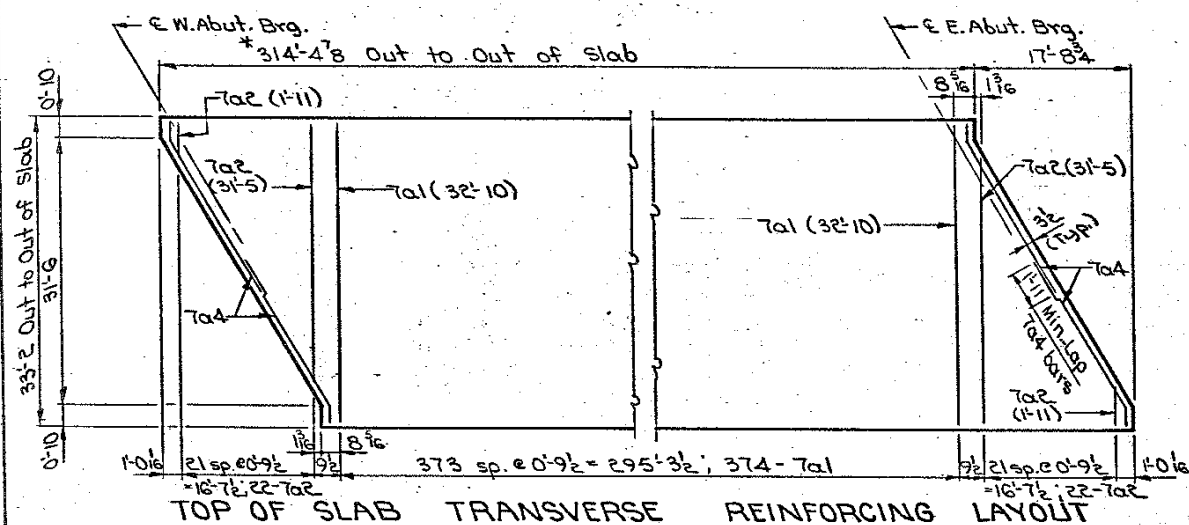
All top of slab reinforcing steel, both transverse and longitudinal bars, plus all barrier rail bars shall be epoxy coated. See "Superstructure Notes" on Des. Sh. 13. From the bar list shown on this sheet, the following bars shall be epoxy coated:

- 374 of the Ta1 bars = 25099
- All of the Ta2 bars = 1499
- 4 of the Ta4 bars = 161
- 333 of the Gbl bars = 18131
- All of the Barrier Rail bars = 12913

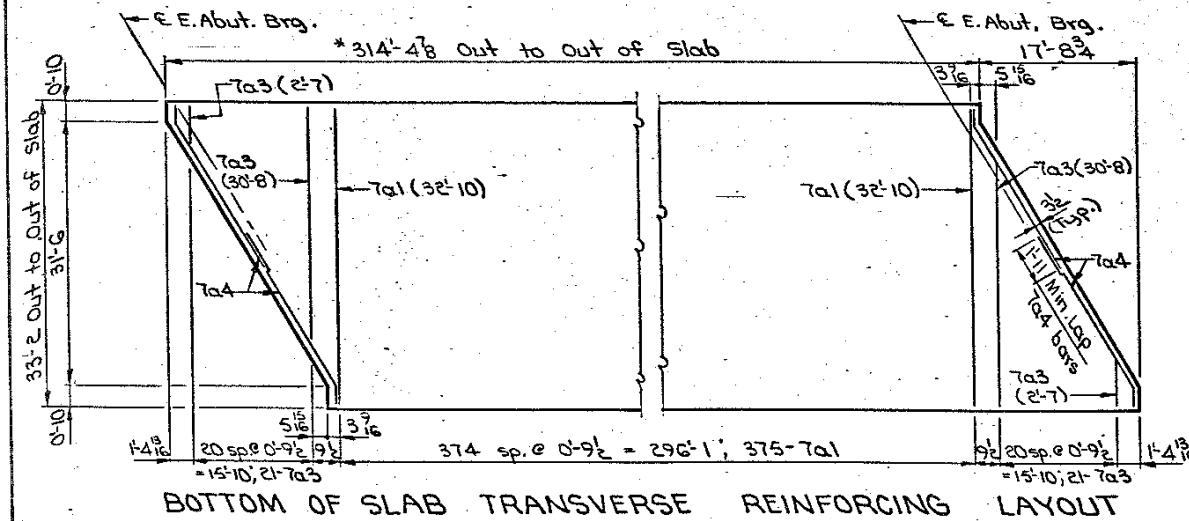
Total = 57803 lbs. (To be epoxy coated)

TOTAL ESTIMATED QUANTITIES-SUPERSTR.

Item	Unit	Quantity
Structural Concrete Class "D"	Cu. Yd.	272.0
Reinforcing Steel	Lbs.	41457
Reinforcing Steel-Epoxy Coated	Lbs.	57803
Structural Steel	Lbs.	238105



TOP OF SLAB TRANSVERSE REINFORCING LAYOUT



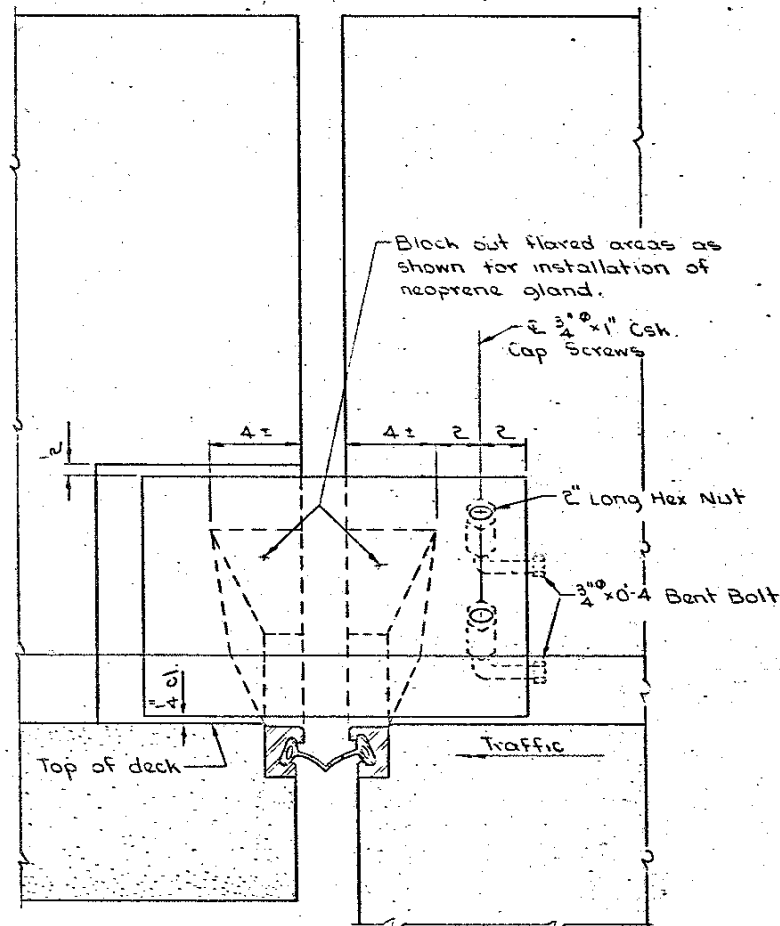
BOTTOM OF SLAB TRANSVERSE REINFORCING LAYOUT

Design for 29° 22' 12" Skew
 312'-0" x 30'-0" CONTINUOUS WELDED GIRDER BRIDGE
 55'-0" End Spans 2-101'-0" Interior Spans
 SUPERSTRUCTURE DETAILS
 Sta. 2288 + 15.45 April 1980
 LINN COUNTY
 IOWA DEPARTMENT OF TRANSPORTATION-HIGHWAY DIVISION
 Design Sheet No. 16 Of 22 File No. 25803 Design No. 282

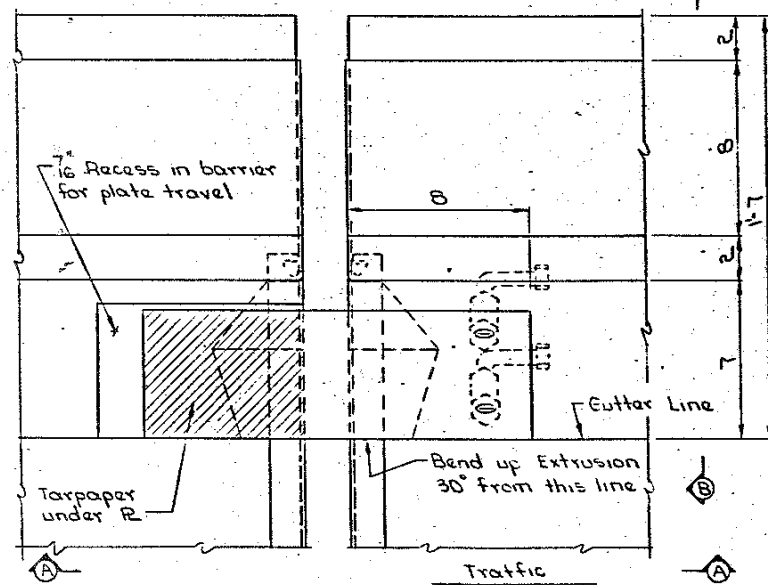
DESIGNED BY: [Signature]
 TRACED BY: [Signature]
 CHECKED BY: [Signature]

LINN COUNTY

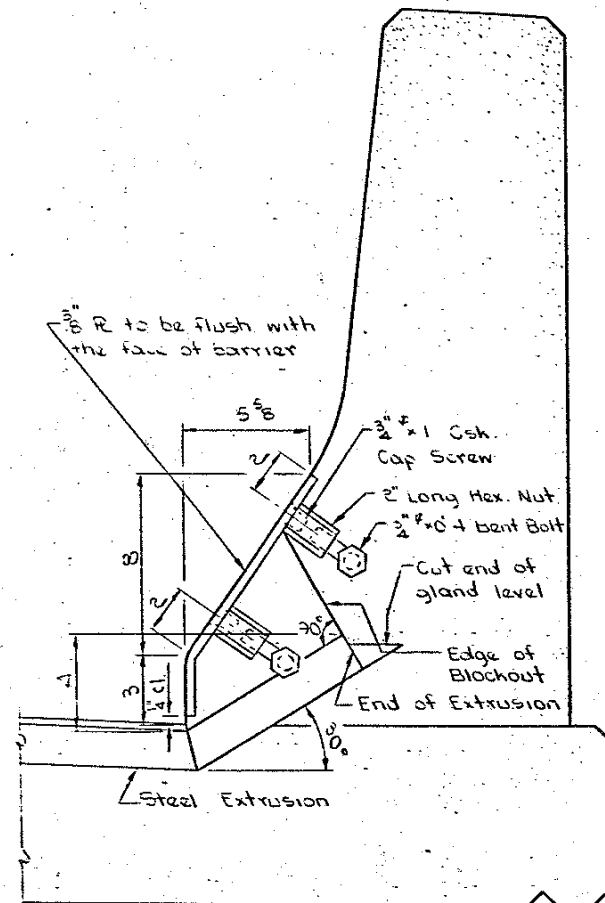
PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	IOWA	8		31	120



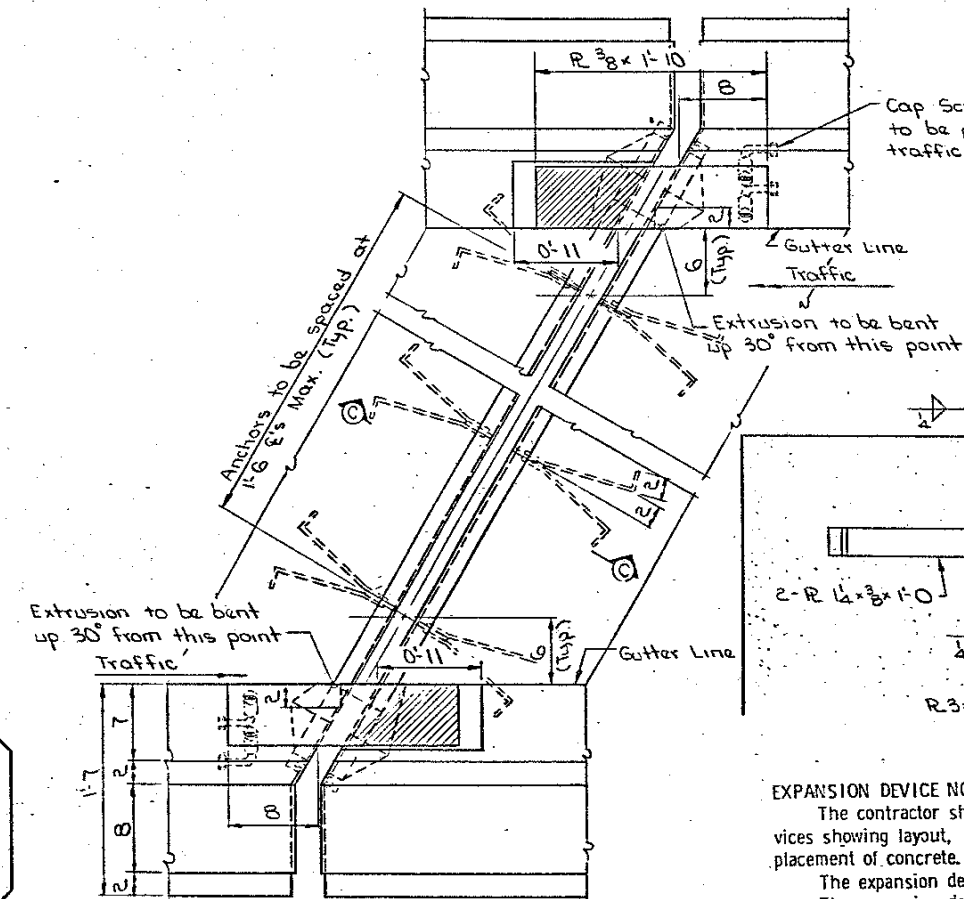
SECTION A-A



PART PLAN VIEW AT BARRIER RAIL



SECTION B-B



PART PLAN VIEW OF EXPANSION DEVICE

Note: The skew shown on the above view is for illustrative purposes only. The actual skew of this design is 29° 22' 12" R.A.

- EXPANSION DEVICE NOTES:**
- The contractor shall submit for approval shop drawings of the expansion devices showing layout, materials to be used, and provisions for holding device during placement of concrete.
 - The expansion device shall be galvanized after welding.
 - The expansion device is to be parallel to grade.
 - Cap screws shall be countersunk 1/16" below top of the plate.
 - One permissible shop or field splice may be made in the steel extrusions providing the pieces are joined with a prequalified single groove weld, and all surfaces not in contact with concrete are ground flush. No weld shall be permitted in the internal section of the extrusion where the neoprene gland is to be located.
 - The neoprene gland is to be placed as one continuous piece from end to end of the steel extrusions.
 - The minimum grade of Structural Steel for the expansion device shall be ASTM A-36.
 - The neoprene gland shall conform to ASTM D-2628 modified to exclude recovery tests.
 - Blockout details may be altered from those shown provided the gland may be installed and removed if necessary.
 - The contract unit price bid for "Steel Extrusion Joint with Neoprene" shall be full compensation for furnishing and installing the expansion joints. This work will consist of furnishing all required materials and the installation and adjustment of the expansion joints in accordance with the details shown on the plans and as directed by the engineer. The furnishing and installation of all necessary hardware and accessories as supplied by the expansion joint manufacturer are to be included in this work, including the anchorage system and any temporary erection material. All work and materials for the installation of the expansion joints are to comply with the written recommendations of the expansion joint manufacturer.
 - The following devices are approved for use.
 1. Watson-Bowman Co., Type A-2 extrusion with S-400 gland.
 2. ACME, Type A extrusion with AS400 gland.
 3. Approved equal.

Design for 29° 22' 12" Skew
 312'-0" x 30'-0" CONTINUOUS WELDED
 GIRDER BRIDGE
 55'-0" End Spans 2-10'-0" Interior Spans
 EXPANSION DEVICE DETAILS
 Sta. 22.88 +15.45 April 1980
 LINN COUNTY
 IOWA DEPARTMENT OF TRANSPORTATION-HIGHWAY DIVISION
 Design Sheet No. 17 Of 22 File No. 25803 Design No. 282

DESIGNED BY: [Signature]
 CHECKED BY: [Signature]

TRACED BY: [Signature]
 CHECKED BY: [Signature]

EXPANSION DEVICE DETAILS - Steel Extrusion with Neoprene Gland

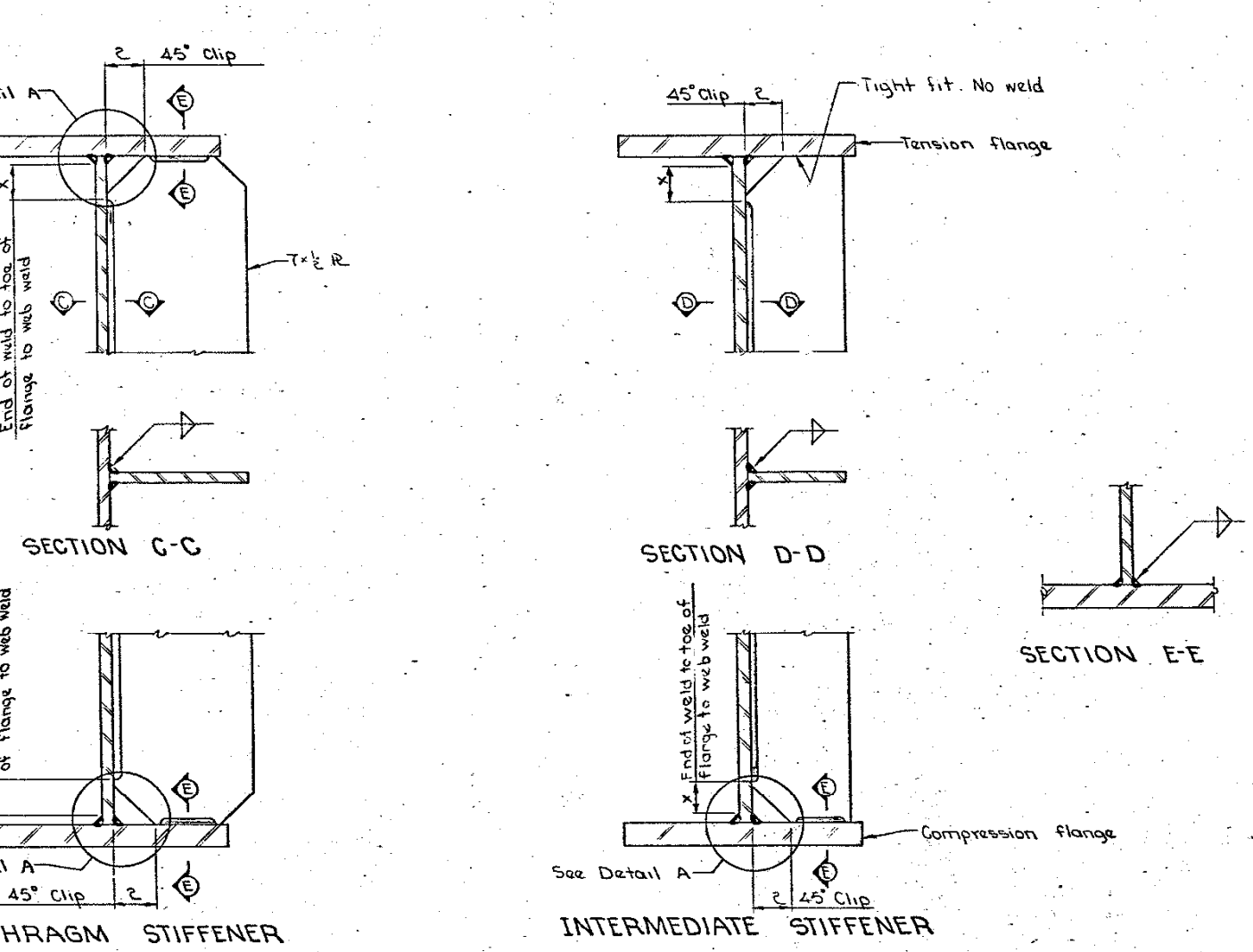
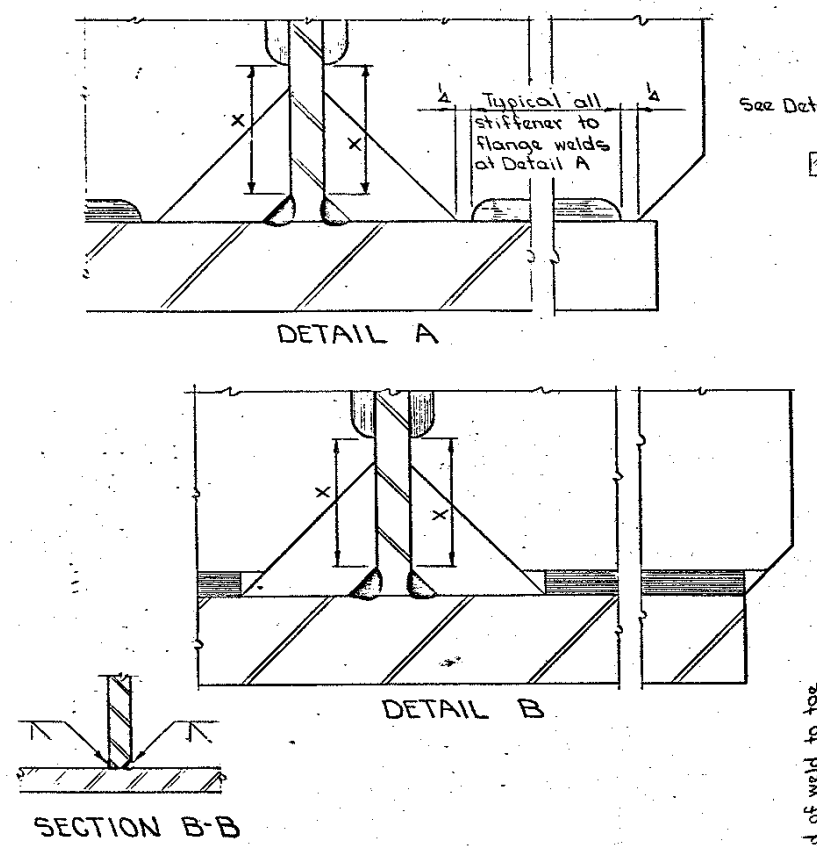
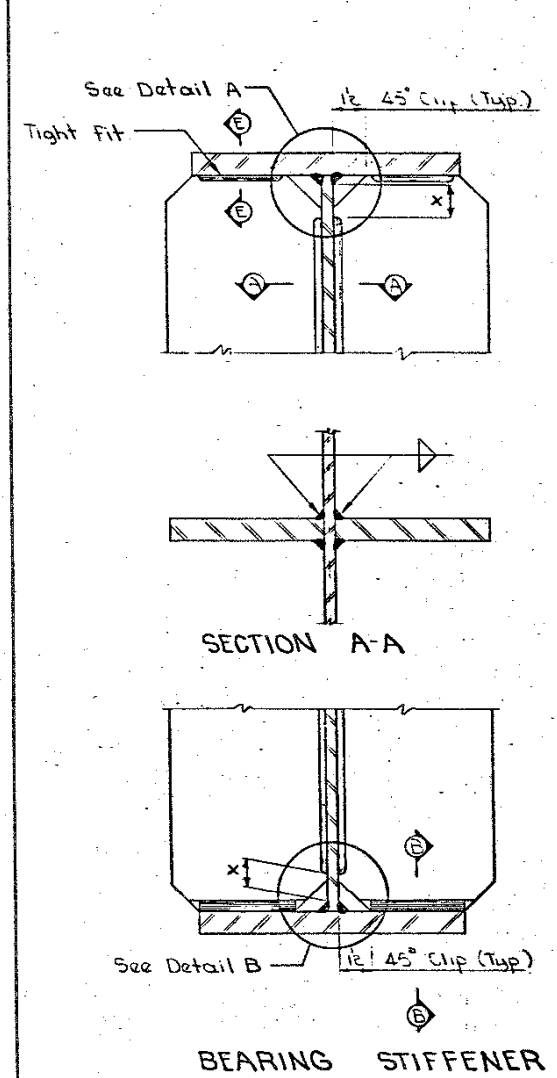
STANDARD SHEET 1026

LINN COUNTY

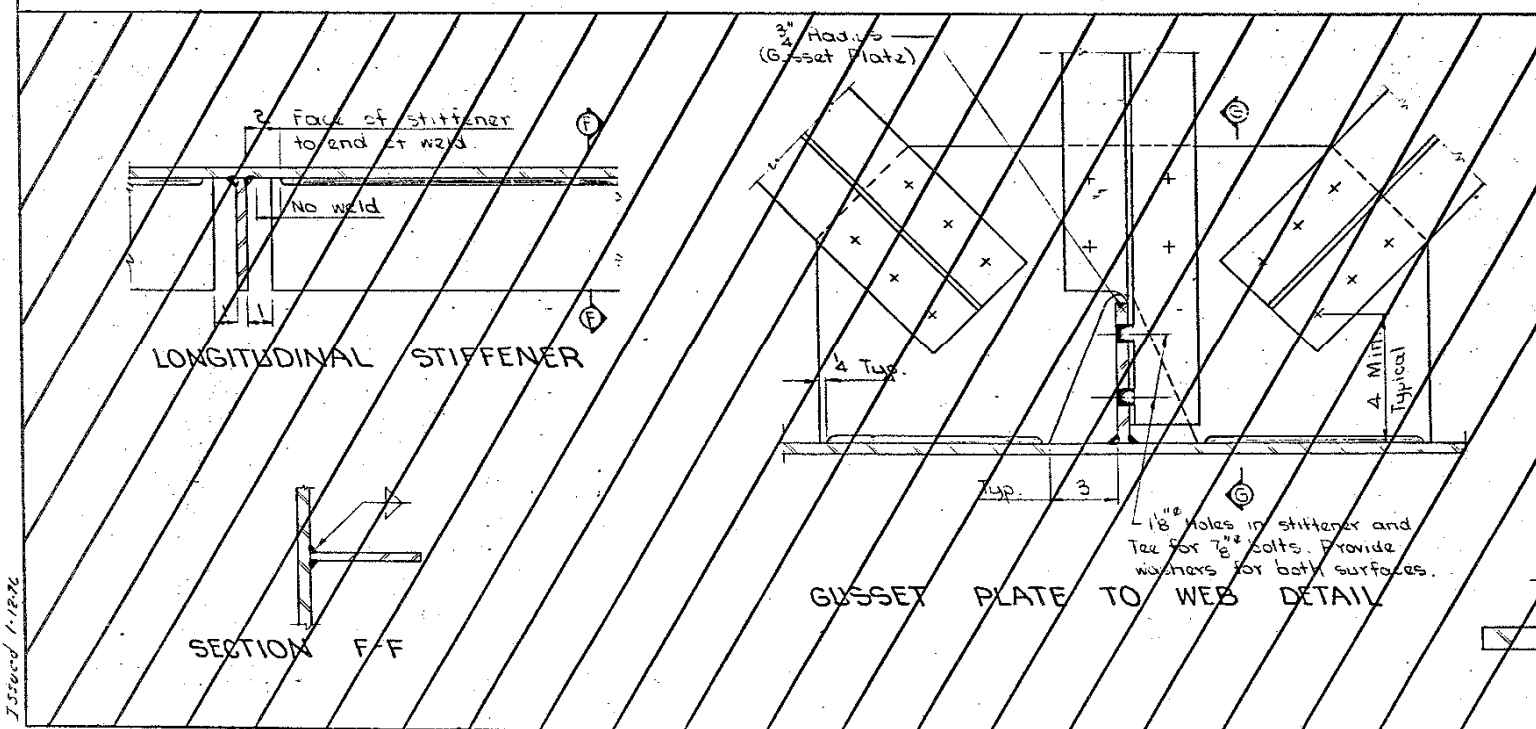
PROJECT NUMBER

STATE: IOWA
 FED. ROAD DIST. NO.: 1
 FISCAL YEAR: 1980
 SHEET NO.: 32
 TOTAL SHEETS: 120

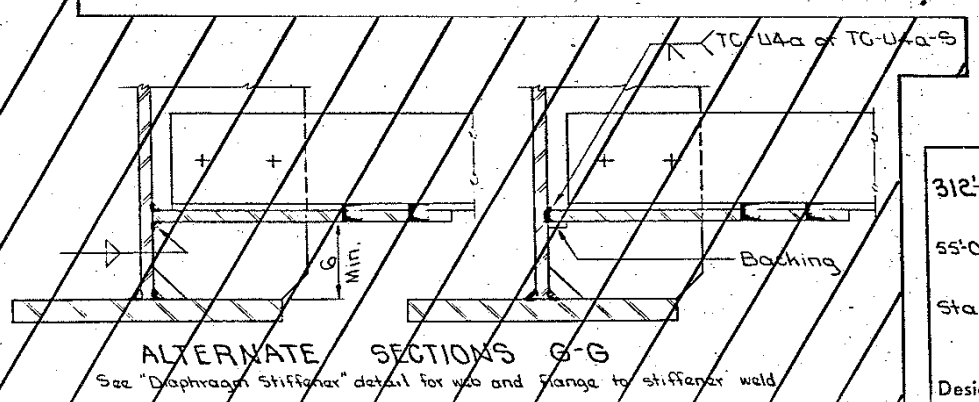
Revised 8-1-78: Bearing stiffeners and Diaphragm stiffeners to be welded to both flanges. Drop around weld removed.
 Revised 8-1-77: Stiffener weld gap changed.
 Revised 5-2-77: Gusset plate to web details changed.
 Revised 1-1-76



NOTE:
 This sheet is primarily for the use of fabricator's workmen and Iowa Department of Transportation inspectors in interpreting plan details. It covers the locations of weld termini that are not specified by typical weld symbols.
 The acceptability and use of the weld treatment shown on this sheet for any specific project is the responsibility of the designing engineer.

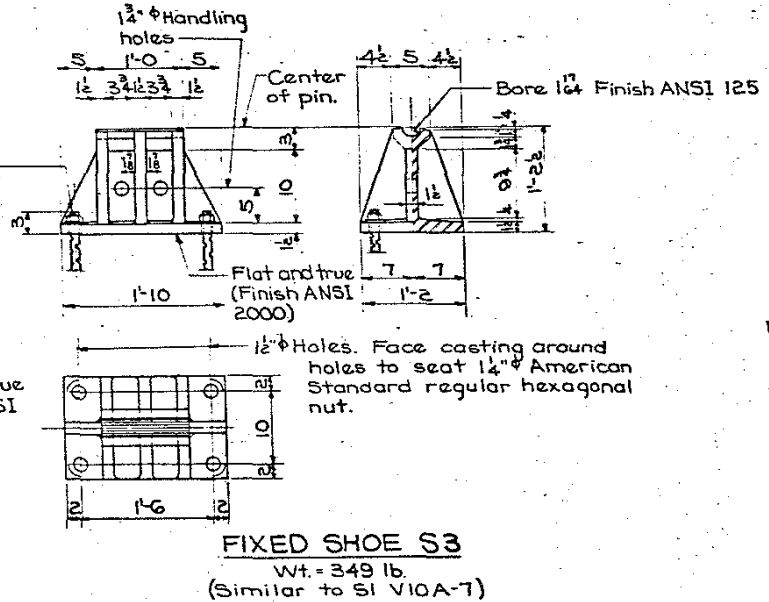
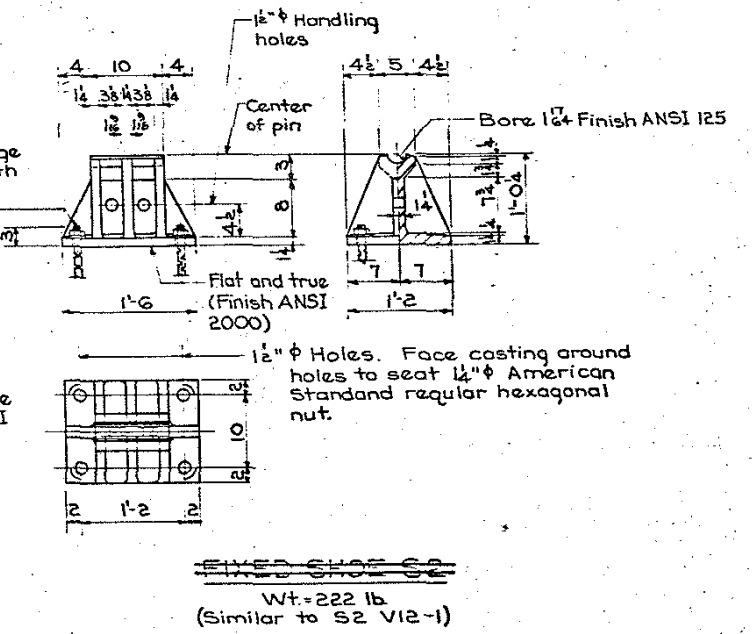
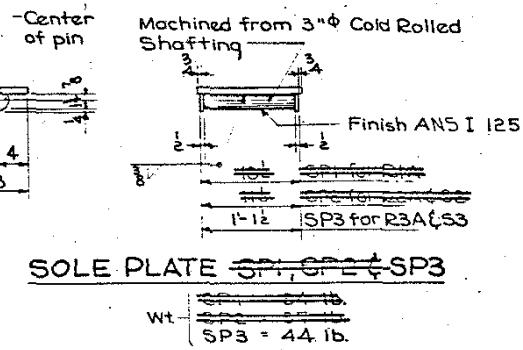
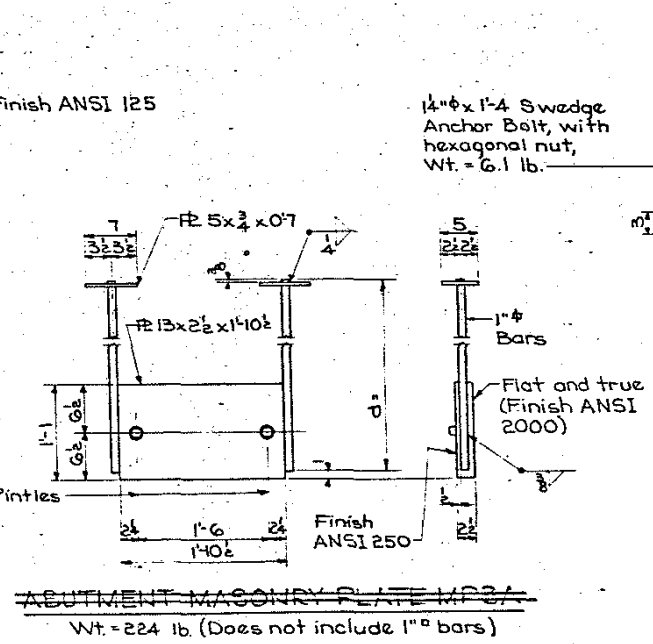
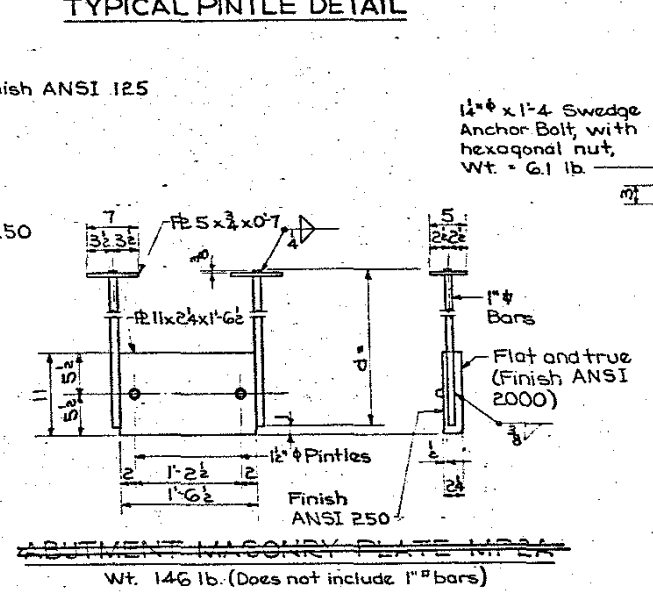
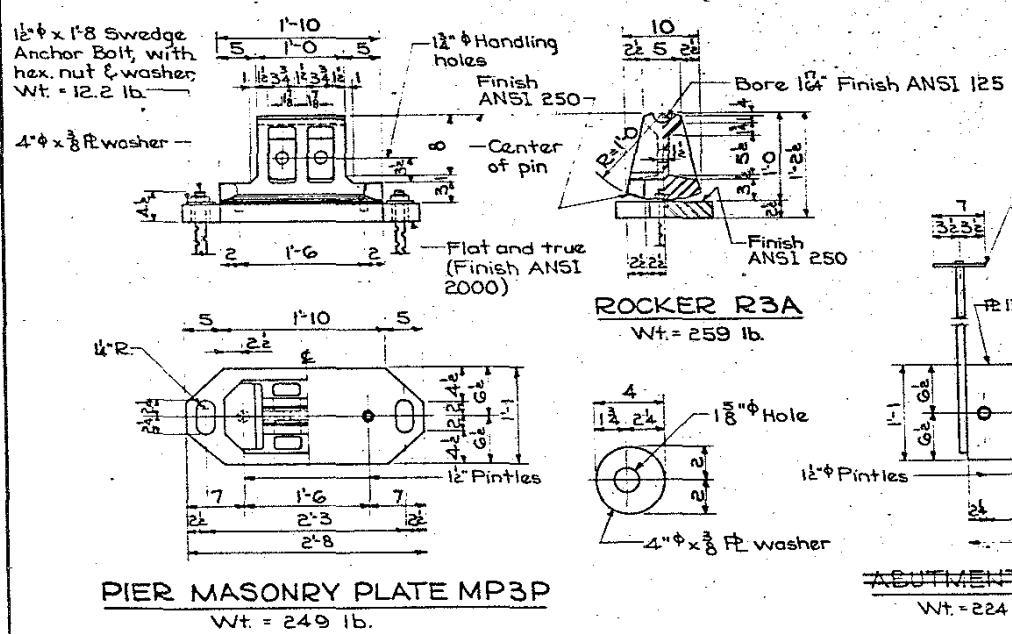
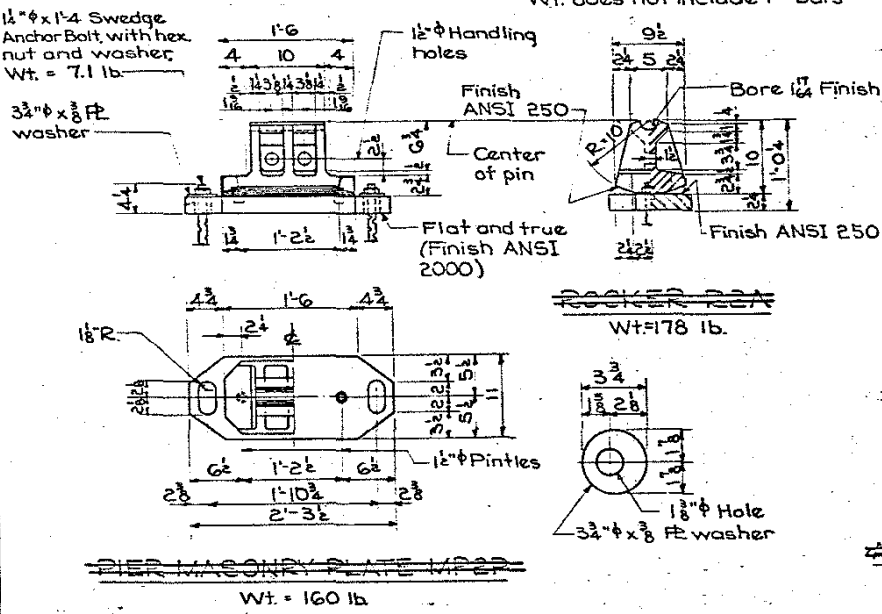
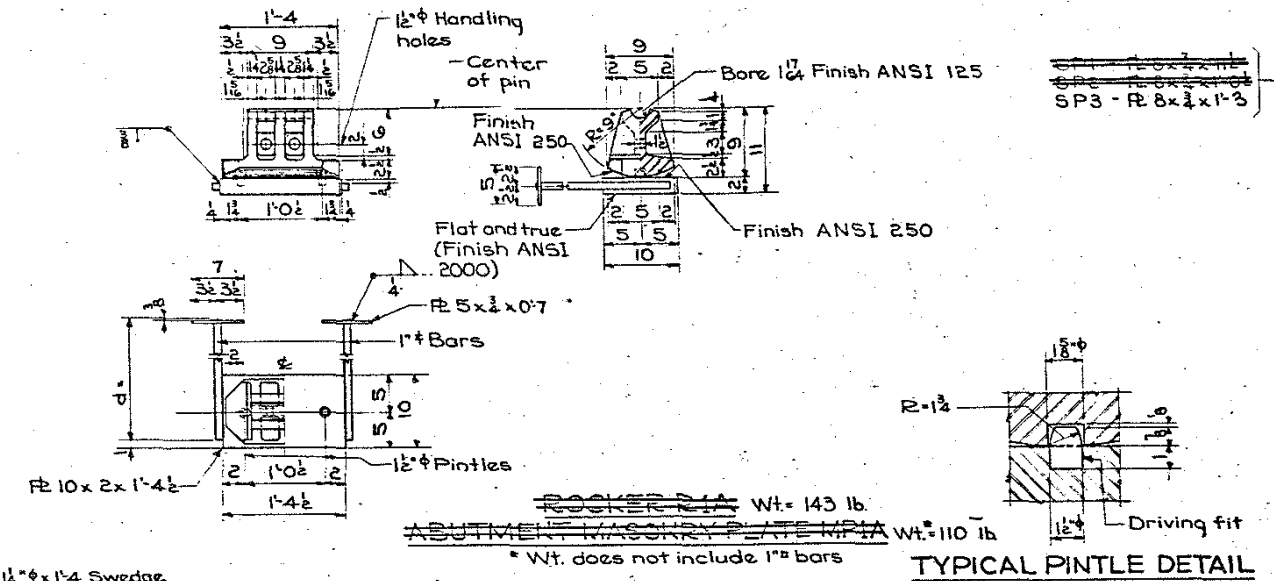


Web Thickness	X=5t or 2" Min.
3/8	2
7/16	2 3/16
1/2	2 1/2
5/8	2 7/8
3/4	3 1/8
7/8	3 1/2



Design for 29° 22' 12" Skew
 312'-0" x 30'-0" CONTINUOUS WELDED GIRDER BRIDGE
 55'-0" End Spans 2-101'-0" Interior Spans
 WELDING DETAILS
 Sta. 2288 + 15.45 April 1980
 LINN COUNTY
 IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
 Design Sheet No. 18 Of 22 File No. 25803 Design No. 282

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.
Revision (7-8-71) Note concerning galvanizing of abutment masonry plates added.
Revision (3-28-72) ASA changed to ANSI.
Revision (11-22-72) Note concerning finishing changed.
Revision (8-29-77) Agency updated. Notes concerning material to fill slots, and seating of bearings changed.



BEARING NOTES:

The casting of R3A and S3 shall comply with Article 4153.04 of the IDOT Standard Specifications. Castings may be Gray Iron or Nodular Iron.
The masonry plates marked ~~MP22, MP24, MP3A, MP3P~~ shall comply with the requirements of ASTM A-36 steel.
The pins shall comply with Article 4153.02 of the IDOT Standard Specifications and with the requirements of ASTM A-108 steel.
Anchor bolts shall be set in accordance with Article 2408.47 of the IDOT Standard Specifications.
All bearings are to be set on a 1/8" lead sheet in accordance with 2408.38 of the Specifications.
The weight of bearings shown does not include the weight of paint.
As soon as the surfacing process is done, the surfaces finished with an ANSI 125 finish shall be shop coated with an application of waterproof National Lubricating Grease Institute N23 multipurpose grease. Just before the erection of the structural steel in the field, the shop coated surfaces are to be wiped clean and a field coat of N.L.G.I. N23 grease is to be applied.
Masonry plates MP1A, MP2A and MP3A shall be galvanized after the 1" bars have been welded to the masonry plates.
After masonry plates, rockers and shoes are in correct location, fill slotted holes around anchor bolts with a sulphur-based compound or epoxy resin adhesive in accordance with Article 2408.47 of the Standard Specifications.

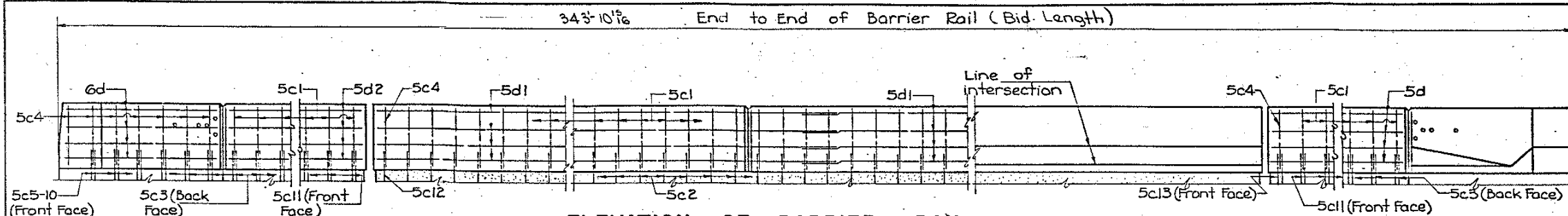
DISTANCE FROM TOP OF SOLE PLATE TO BRIDGE SEAT	
Rockers & Fixed Shoes	0
R3A & S3	1'-4"

* Including 1/8" lead sheet.

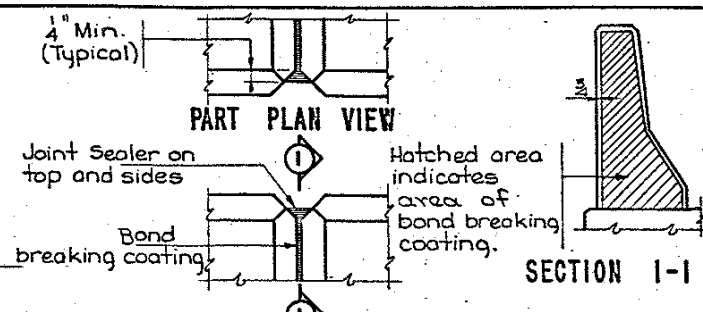
MAXIMUM REACTION (In Kips)	
R3A	263
S3	263

Note: Use SP3, R3A, MP3P & S3 from this sheet.

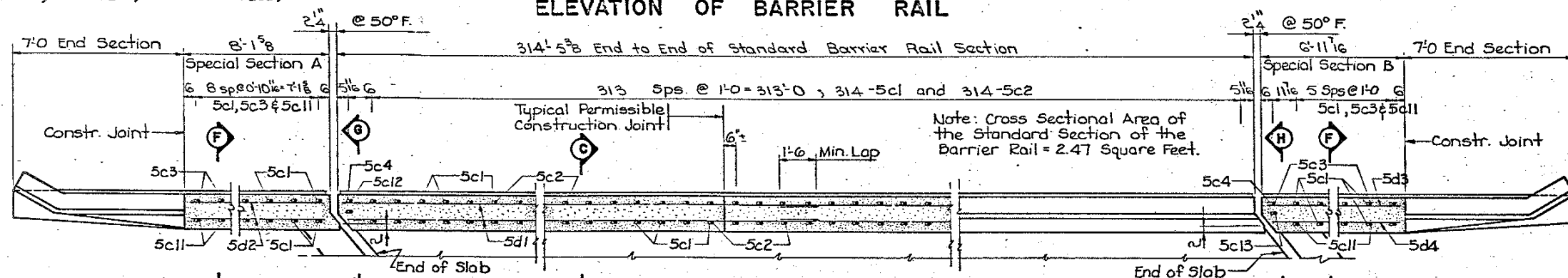
Design for 29° 22' Skew
312'-0" x 30'-0" CONTINUOUS WELDED GIRDER BRIDGE
55'-0" End Spans 2-101'-0" Interior Spans
PIER BEARING DETAILS
Sta. 2288 +15.45 April 1980
LINN COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
Design Sheet No. 19 Of 22 File No. 25803 Design No. 282



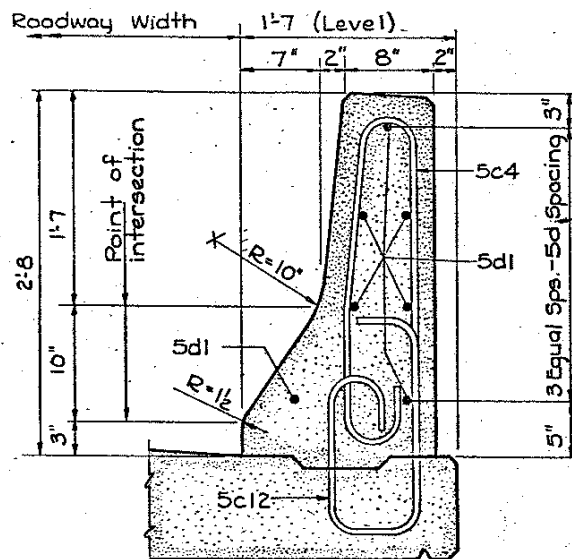
ELEVATION OF BARRIER RAIL



PART ELEVATION VIEW
BARRIER RAIL JOINT DETAILS

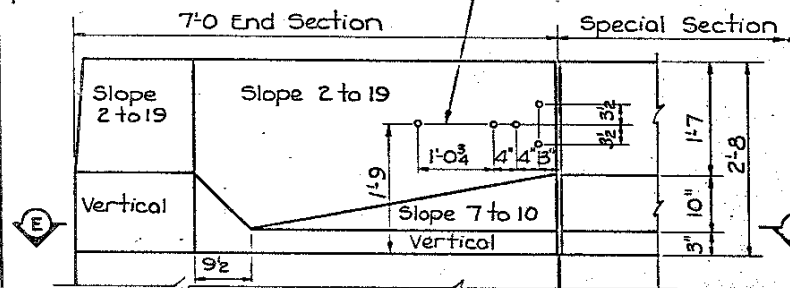


PART SECTION OF BARRIER RAIL



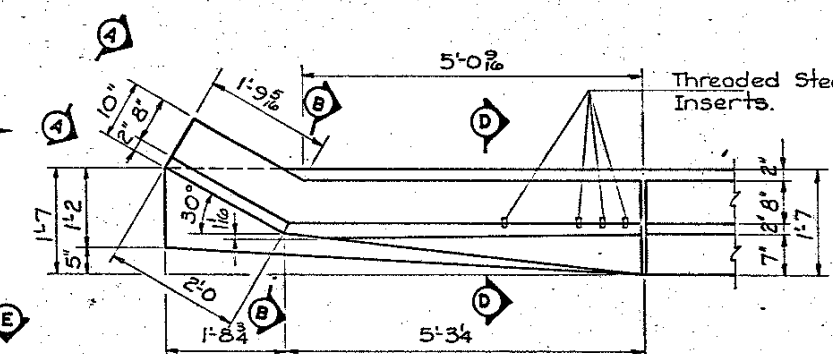
SECTION G-G

Provide five threaded steel inserts with solid bottom to fit 8 x 2 galvanized cap screw with galvanized round washers. Cost of inserts to be included in price bid for "Structural Concrete". Screws and washers are not a part of this contract.

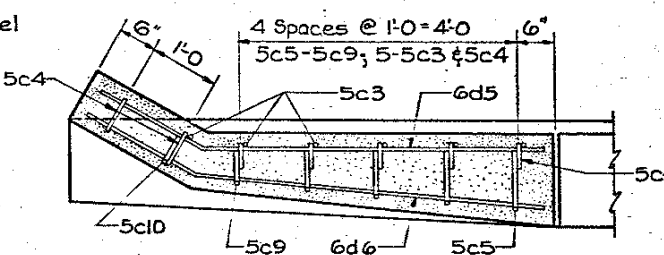


PART ELEVATION

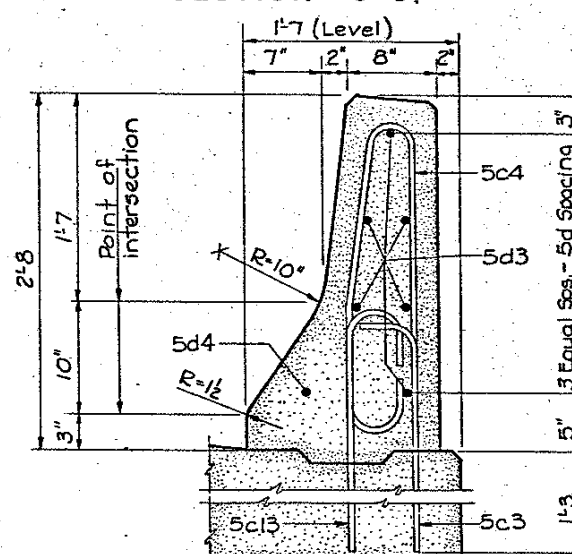
DETAILS OF END SECTION



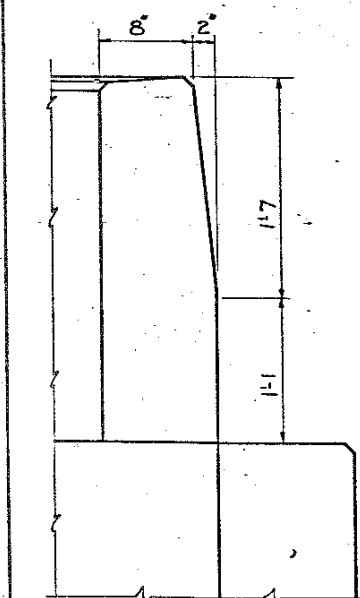
PART PLAN VIEW



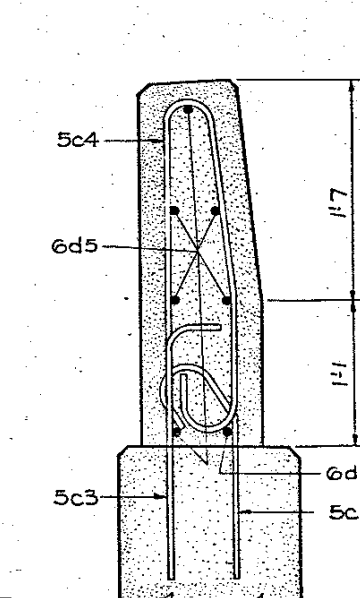
PART SECTION E-E



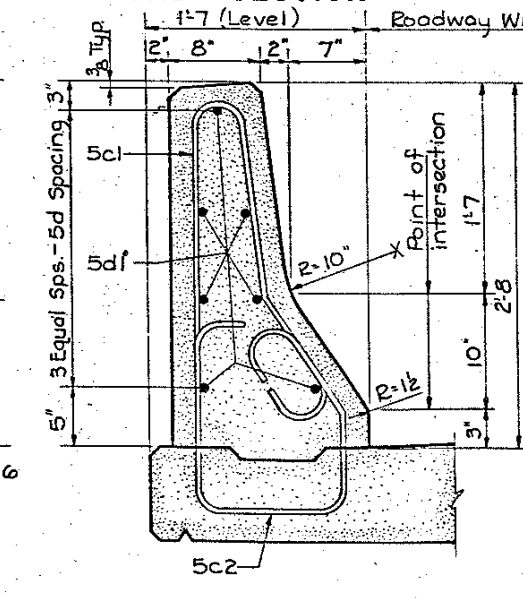
SECTION H-H



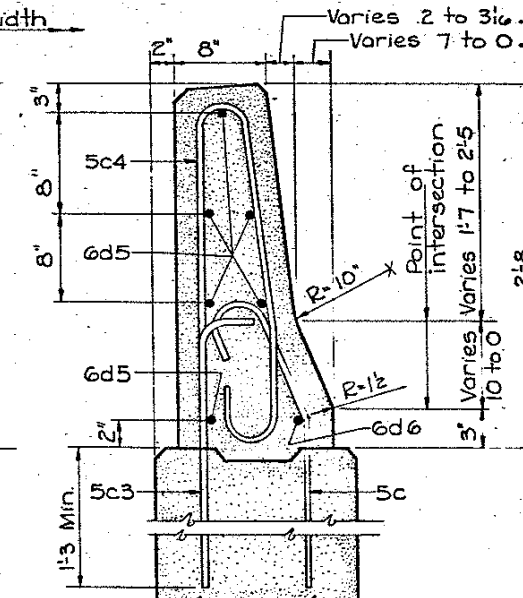
PART VIEW A-A



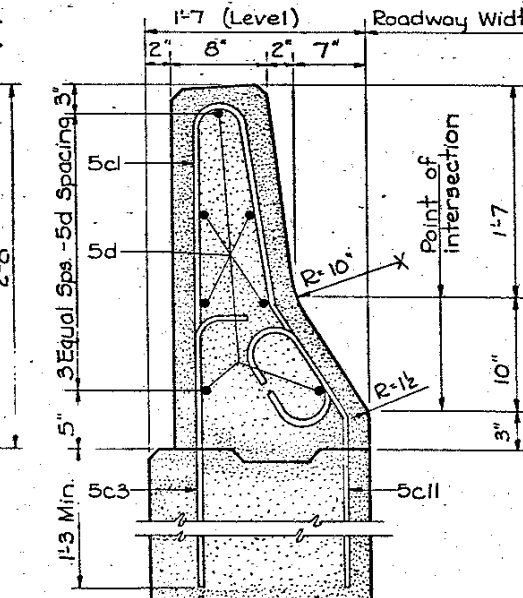
PART SECTION B-B



PART SECTION C-C



PART SECTION D-D



PART SECTION F-F

Design for 29° 22' 12" Skew
312'-0" x 30'-0" CONTINUOUS WELDED
GIRDER BRIDGE
55'-0" End Spans 2-101'-0" Interior Spans
BARRIER RAIL DETAILS
Sta. 2288 + 15.45 April 1980
LINN COUNTY
IOWA DEPARTMENT OF TRANSPORTATION-HIGHWAY DIVISION
Design Sheet No. 20 Of 22 File No. 25803 Design No. 262

DESIGNED BY: [Signature]
CHECKED BY: [Signature]

TRACED BY: [Signature]
CHECKED BY: [Signature]

LINN COUNTY

PROJECT NUMBER: [Blank]
STATE: IOWA
FISCAL YEAR: [Blank]
SHEET NO: 35
TOTAL SHEETS: 120

BARRIER RAIL NOTES:

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

All exposed corners 90° or sharper are to be filleted with a 3/4" dressed and beveled strip.

Top of the barrier rail is to be parallel to the theoretical & grade.

The permissible construction joints are to be placed between vertical bars at a minimum spacing of 20 feet. Construction joint contact surfaces are to be coated with an approved bond breaker.

Cost of the joint sealer and bond breaker shall be considered incidental to other construction.

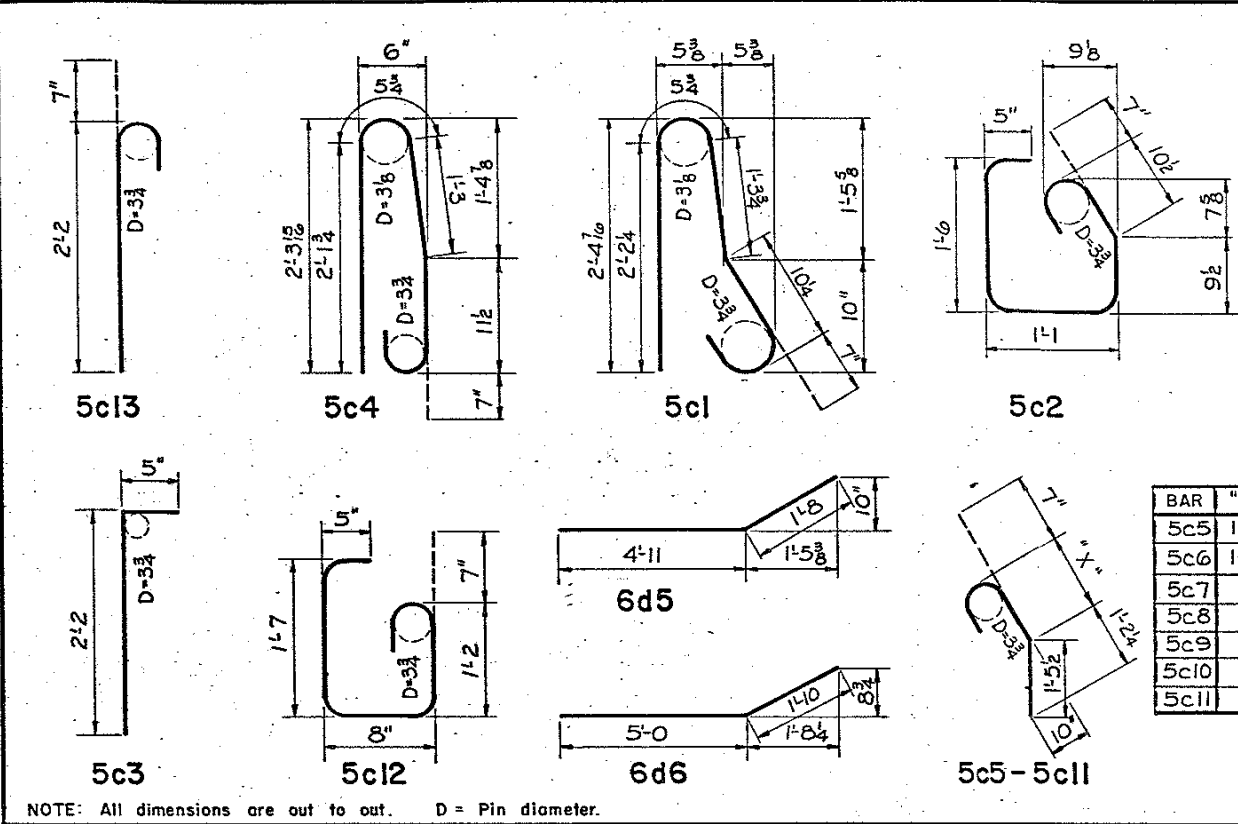
All barrier rail concrete is to be Class D.

All barrier rail reinforcing steel is to be epoxy coated.

The concrete barrier rail is to be bid on a lineal foot basis measured from end to end of rail. The number of lineal feet of barrier rail installed will be paid for at the contract price per lineal foot based on plan quantities. Price bid for Concrete Barrier Rail shall be full compensation for furnishing all material, excluding reinforcing steel, and all of the equipment and labor required to erect the rail in accordance with these plans and current specifications. All barrier rail reinforcing steel is to be included with the superstructure reinforcing steel.

The joint sealer shall conform to Fed. Spec. TT-500230 or TT-500227 for Type II, Class A or B.

BENT BAR DETAILS



EPOXY REINFORCING STEEL — TWO RAILS

SECTION	BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
STANDARD SECTION	5c1	Vertical	D	628	5'-5"	3548
	5c2	Vertical	D	628	5'-3"	3439
	5c4	Vertical	D	2	5'-5"	11
	5c12	Vertical	D	2	4'-5"	9
	5d1	Longitudinal	—	126	36'-3"	4764
4 END SECTIONS	5c3	Vertical	Γ	24	2'-7"	65
	5c4	Vertical	D	28	5'-5"	158
	5c5-10	Vertical	γ	24	Varies	74
	6d5	Longitudinal	—	24	6'-7"	237
	6d6	Longitudinal	—	4	6'-10"	41
SPECIAL SECTION A	5c1	Vertical	D	18	5'-5"	102
	5c3	Vertical	Γ	18	2'-7"	48
	5c11	Vertical	γ	18	2'-11"	55
	5d2	Longitudinal	—	14	7'-9"	113
SPECIAL SECTION B	5c1	Vertical	D	12	5'-5"	68
	5c3	Vertical	Γ	12	2'-7"	32
	5c4	Vertical	D	2	5'-5"	11
	5c11	Vertical	γ	12	2'-11"	37
	5c13	Vertical	Γ	2	2'-9"	6
	5d3	Longitudinal	—	12	6'-7"	82
	5d4	Longitudinal	—	2	6'-0"	13

(INCLUDED WITH SUPERSTRUCTURE REINFORCING) TOTAL (LBS.) 12913

CONCRETE PLACEMENT SUMMARY		
SECTION		TOTAL
STANDARD SECTION		57.5
END SECTIONS	4 At 0.58	2.3
SPECIAL SECTION A	2 At 0.75	1.5
SPECIAL SECTION B	2 At 0.64	1.3
Total (Cu. Yd.)		62.6

CONCRETE BARRIER RAIL QUANTITIES		
ITEM	UNIT	QUANTITY
CONCRETE BARRIER RAIL	LIN. FT.	687.8

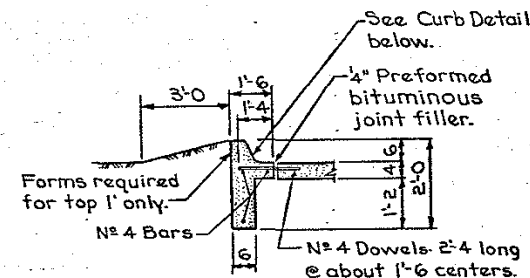
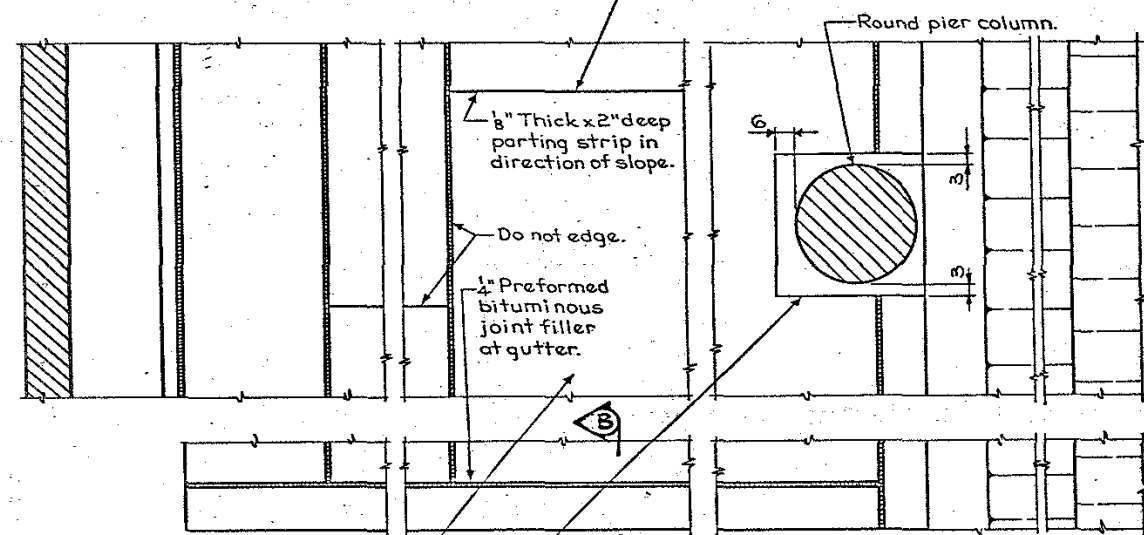
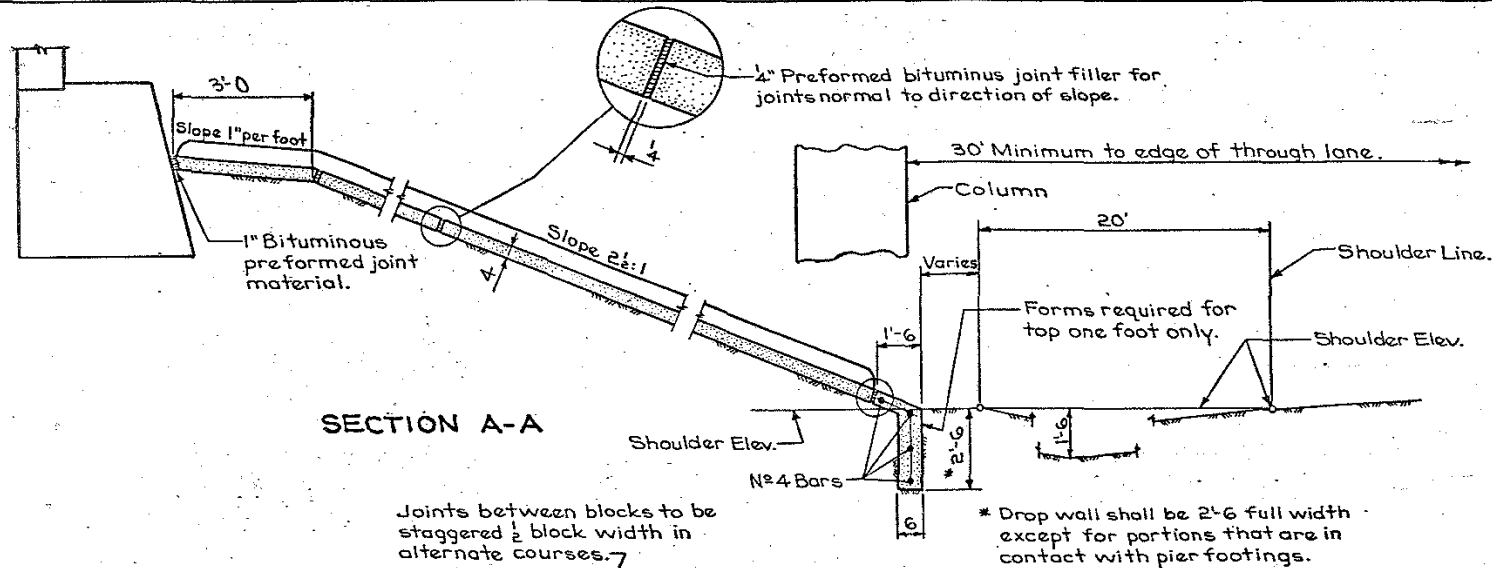
Design for 29° 22' 12" Skew
312'-0" x 30'-0" CONTINUOUS WELDED GIRDER BRIDGE
55'-0" End Spans 2-101'-0" Interior Spans
BARRIER RAIL DETAILS
Sta. 2288+15.45 April 1980
LINN COUNTY
IOWA DEPARTMENT OF TRANSPORTATION-HIGHWAY DIVISION
Design Sheet No.: 21 Of 22-File No.: 25803 Design No.: 282

DESIGNED BY: Don Warriner
CHECKED BY: Steve J. Jell

LINN COUNTY

PROJECT NUMBER

STATE: IOWA
FED. ROAD DIST. NO.:
FISCAL YEAR:
SHEET NO.: 36
TOTAL SHEETS: 120



SECTION B-B

CURB DETAIL

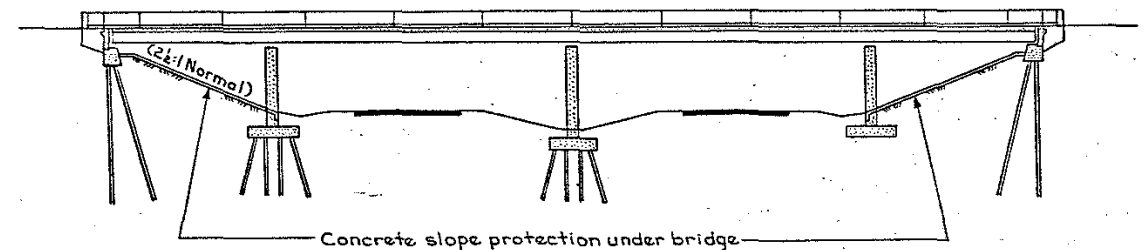
GENERAL NOTES:

This sheet shows details for placing port land cement concrete slope protection under overhead structures. The current specifications of the Iowa Department Of Transportation shall apply with modifications or additions listed below:

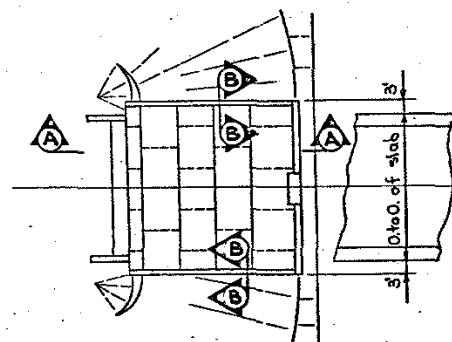
Concrete - Class C Structural.
Finish - Class 1, Floated Surface Finish.
Cure - Cure as per current Specifications.
Subgrade Preparation - The subgrade is to be shaped and compacted so that finished slope protection will be similar to examples shown on this sheet. The subgrade shall be firm when concrete 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 1/2 block width.

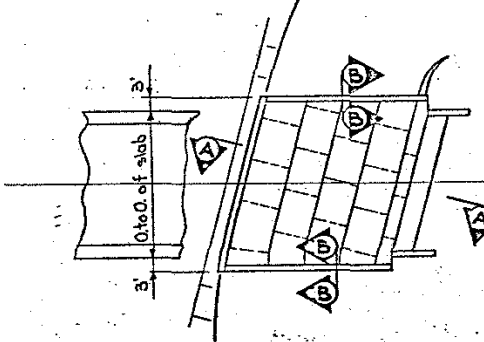
Basis of payment: Payment will be made on a square yard basis for slope protection constructed. The unit price bid per square yard is to include costs of all materials and labor required to construct this protection as shown or intended by these plans. The subgrade preparation including any necessary



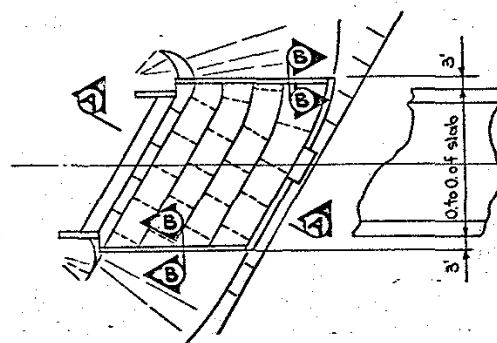
LONGITUDINAL SECTION ALONG & ROADWAY



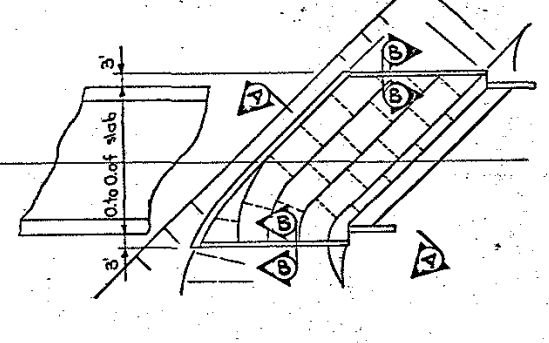
SLOPE PROTECTION LAYOUT 0° SKEW



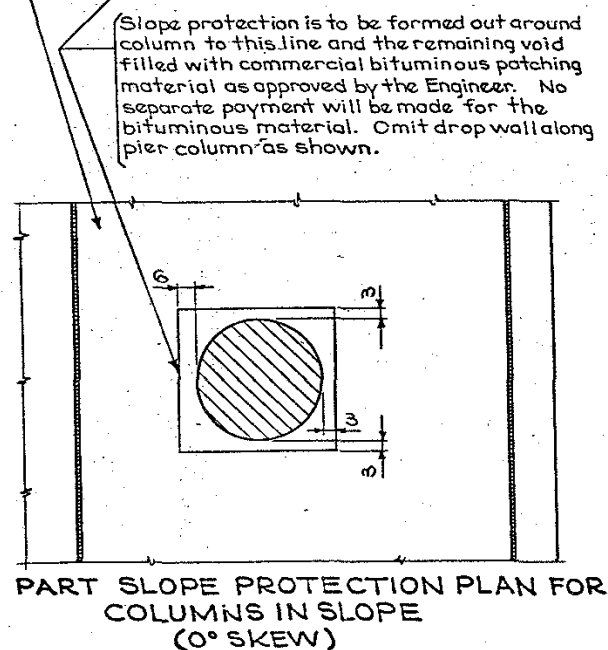
SLOPE PROTECTION LAYOUT 15° SKEW



SLOPE PROTECTION LAYOUT 30° SKEW



SLOPE PROTECTION LAYOUT 45° SKEW



PART SLOPE PROTECTION PLAN FOR COLUMNS IN SLOPE (0° SKEW)

CONCRETE SLOPE PROTECTION	
Location	Quantity
West Slope	247.2 Sq. Yd.
East Slope	245.0 Sq. Yd.
Total	492.2 Sq. Yd.

Design for 29° 22' 12" Skew
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CONCRETE SLOPE PROTECTION
Sta. 2288 + 15.45 April 1980
LINN COUNTY
IOWA DEPARTMENT OF TRANSPORTATION-HIGHWAY DIVISION
Design Sheet No.: 22 Of 22 File No.: 25803 Design No.: 282

DESIGNED BY: *Don Warriner*

TRACED BY: *Don Warriner*

CONCRETE SLOPE PROTECTION

STANDARD SHEET 1006

LINN COUNTY

PROJECT NUMBER

STATE: IOWA
FED. ROAD DIST. NO.: 1
PLAN: 1
SHEET: 37 OF 120