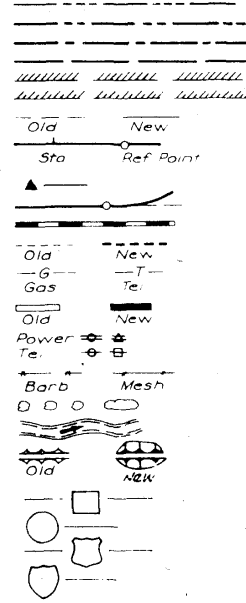


Part I of II
BRIDGE
I-380-6(68)263--01-57
LINN COUNTY

- State Line
Co. Line
Twp. Line
Sec. Line
Corp. Line
Urban Bdry
R.O.W. Lines
Survey Line
- Sec. Corner
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



IOWA
DEPARTMENT OF TRANSPORTATION

Highway Division

PLANS OF PROPOSED IMPROVEMENT ON THE

INTERSTATE ROAD SYSTEM

LINN COUNTY

BRIDGE

I-380 SOUTH APPROACH TO CEDAR RAPIDS BRIDGE & DAM IN CEDAR RAPIDS

SCALES AS NOTED

THE STANDARD SPECIFICATIONS, SERIES OF 1972,
OF THE IOWA STATE HIGHWAY COMMISSION,
SHALL APPLY TO CONSTRUCTION WORK ON THIS PROJECT.
(PLUS CURRENT SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS)

WELDING SPECIFICATIONS

All welding shall meet the requirements of the First Edition of the
Structural Welding Code (AWS D1.1-72 including revision 1-73) of the
American Welding Society as modified by the AASHTO 1974 Standard
Specification and the current Supplemental Specification and Special
Provisions.

DESIGN STRESSES

Design stresses for the following materials are in accordance with
AASHTO's Standard Specifications for Highway Bridges,
Series of 1973.

Concrete in accordance with Section 1.5.1., $f'_c=3,500$ psi.

Reinforcing Steel in accordance with Section 1.5.1.(D), $f_s=20,000$ psi.
Grade 40 and $f_s=24,000$ Grade 60.

Structural Steel in accordance with Section 1.7.1., ASTM A-36,
 $f_s=20,000$ psi.

MILEAGE SUMMARY

LOCATION	LIN. FT.	MILES
Bridge at Sta. 322+81.95	2242.68	.425

LOCATION MAP
NOT TO SCALE
PART OF CITY OF CEDAR RAPIDS
T-83N R-7W
SECTION 21, 28
RAPIDS TOWNSHIP

CONSTRUCTION PLANS
SHOWING PROJECT AS BUILT

Plan Preparation Supervised By: *[Signature]* Date: 7/11/81

Reviewed & Forwarded to Ames By: *[Signature]* Date: 7/11/81

Dist. Const. Eng. Date

Number of Copies (Total 3) 2 to be made & returned to:

ROBERT C. HENELY Date: 7/11/81

Number of Copies (Total 6) 6

DES. NO. 1276

THIS AS BUILT PLAN INCLUDES

YEAR	WORK	CONTRACTOR	PROJ. INSPECTOR
1979	BRIDGE	LUNDA CONST. CO.	DON KROTZ

DESIGN DATA
1994 AADT 58450 V.P.D.
Directional 60%
Trucks 5%
Design V 60MPH
Full Access Control

THIS PROJECT LET AS
EACI-380-6(68)263--08-57

DEPARTMENT OF TRANSPORTATION, HIGHWAY DIVISION
STANDARDS REQUIRED (Available at Bridge Design Services)

STANDARD	ISSUED	REVISED
----------	--------	---------

NONE REQUIRED

REVISED
SEE FOLLOWING SHEET 1A 1/B

APPROVED
FOR CITY OF CEDAR RAPIDS DATE

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
(SEE SHEET 1 OF 201)
5156 July 8, 1976
IOWA REGISTRATION NUMBER DATE

DEPARTMENT OF TRANSPORTATION
IOWA
Highway Division

APPROVED
DEPUTY CHIEF ENGINEER DATE

U.S. DEPT. TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED
DIVISION ENGINEER DATE

PART I of II

LISTING OF PROJECT REVISIONS

DATE	SHEET NUMBER	DESCRIPTION OF REVISIONS	DATE	SHEET NUMBER	DESCRIPTION OF REVISIONS
9-23-77	1B of 203 152 of 203 149 of 203 59A of 203 59 of 203 6 of 203 2 of 203 1 of 203	Design No. 1276 This sheet added to project (Revision Sheet). Girder P bearing stiffeners at Pier 12N shifted 5" and Diaphragm connection plate stiffener added. Detail A added to show Girder P Brg. Stiffeners at Pier 12N shifted 5" & Diaphragm connection plate stiffener added. This sheet added (Pier 12N--East Cantilever Modification). Modify East end of cap beam, added appropriate notes and adjusted quantities for same. Quantities corrected. Design 1276--Concrete, Reinforcing Steel and Structural Steel quantities changed. Sheet 1B & 59A added to "Index of Sheets". REASON: The south Approach goes over First Avenue West. First Avenue West was widened to the extent that a portion of the road extended under pier cap of Pier 12N. This reduced the vertical clearance too much; therefore, Pier 12N cap modified so that it does not extend beyond the curb and superstructure changed to fit on the modified cap. MASTERS PRINTED			
11-15-77	189 of 203	Design No. 1276 Deck Drain near Pier 6N shifted 2'-0. REASON: Error in plan details. The shifting of the above mentioned deck drain is necessary to prevent interference with a diaphragm. MASTERS PRINTED			

REVISION SHEET

FILE NO. 23191

LINN COUNTY

PROJECT NUMBER

EACI-380-6(68)263--08-57

STATE

IOWA

FED. ROAD DIST. NO.

5

FISCAL YEAR

SHEET NO.

1-B

TOTAL SHEETS

203

LISTING OF PROJECT REVISIONS

DATE	SHEET NUMBER	DESCRIPTION OF REVISIONS	DATE	SHEET NUMBER	DESCRIPTION OF REVISIONS
1-3-77	1A of 203	Design No. 1276 This sheet added to project (Revision Sheet).	3-11-77	195 of 203	Design No. 1276 Note expanded to include bolts in galvanizing requirements.
	78 of 203	Location of waterline added and backrow pile near center of wall section 12 battered.		187 of 203	Corrected splice type number.
	75 of 203	Spacing of backrow piles under wall section 4 changed. Waterline location and notes added.		186 of 203	Corrected fill plate thickness at splice type 59.
	1 of 203	Sheet 1A added to "Index of Sheets".		177 of 203	Corrected location of break in cross slope.
		REASON: Change due to site accommodation. Field personnel located 18' waterline and pile spacing adjusted to avoid damaging a known utility.		175 of 203	Corrected anchor bolt length.
				158 of 203	Flange field splice type corrected at one location.
				6, 142, 155 of 203	Structural steel quantity corrected.
				153 of 203	Deflections and camber between Pier 12 and 13 N for Girder J corrected.
				152 of 203	Corrected girder designation & clarified filler plate.
				150 of 203	Flange field splice corrected at 4 locations.
				149 of 203	Flange field splice type corrected at 2 locations.
				60 of 203	Anchor bolt spacing dimension corrected.
				2 of 203	Design 1276 -- Structural steel quantity corrected.
					REASON: Errors in plan details.
2-14-77	191 of 203	Design 1276 Expansion Jt. 1 SB girder spacing corrected.	3-24-77	110 of 203	Design No. 1276 Field splice type corrected at one location - Girder X.
	138 of 203	Bottom Flange Splice type corrected.			REASON: Error in plan detail (type of field splice in Girder X). No change in quantities.
	135 of 203	Structural Steel quantity corrected.			
	88 of 203	Girder spacing along C brg. Exp. Jt. 1S & C Pier 6S corrected.	4-28-77	36 of 203	Design No. 1276 Dimensions corrected to shift cap beam to correct position.
	29 of 203	Girder F Bridge Seat Elevation corrected.		15 of 203	C to C column dimension corrected -- Pier 16S.
	26 of 203	Two girder spaces corrected.			REASON: Plan discrepancy of dimension between columns of Pier 16S.
	22 of 203	Bridge Seat Elevation for Girder E corrected.			MASTERS PRINTED
	13 of 203	Dimension corrected C - C Columns Pier 6S.	5-3-77	150 of 203	DESIGN 1276 Corrected angle at Pier 15N.
	6 of 203	Structural Steel quantity corrected.		149 of 203	Corrected dimension to C NBL at Pier 11N.
	2 of 203	Design 1276 -- Structural Steel quantity corrected.		102 of 203	Corrected angle at Pier 17S.
		REASON: Detailing errors and minor discrepancies. Structural steel quantity decreased 2, 293 lbs.		63 of 203	Corrected footing tie dimension.
2-28-77	180 of 203	Design No. 1276 Bearing stiffener size at abutment corrected.		58 of 203	Corrected arrowhead from C Pad to C Column. Corrected footing ties.
	155 & 176 of 203	Structural steel quantity corrected.		56 of 203	Footing tie corrected.
	158 of 203	Bottom flange type of splice corrected.		38 of 203	Footing tie dimension corrected.
	152 of 203	Bearing material at Pier 14N corrected.		29 of 203	Pier callouts for angle to C Southbound lanes corrected.
	151 of 203	Sole plate size & weld for same corrected.		27 of 203	Cap cantilever dimensions corrected.
	116 & 142 of 203	Structural steel estimated quantity corrected.			REASON: Plan discrepancies.
	120A of 203	This sheet added. Details shown on this sheet are to supersede those shown on sheet 120 of 203 (Design sheet 118 of 201).			MASTERS PRINTED
	120 of 203	This sheet voided. Details shown on this sheet are to be superseded by those shown on sheet 120A of 203 (Design sheet 118A of 201).	6/02/77	31 of 203	Design No. 1276 East Footing Detail void & note added. (Pier 11S)
	110 of 203	Dimension corrected.		31A of 203	This sheet added. (Footing Detail for Pier 11S).
	104 of 203	Dead Load deflections corrected.			REASON: Correction of construction error. The pile group for the east footing of Pier 11S was construction 1.5' too close to C of lanes. The addition of two piles, modification of footing dimensions and reinforcing are required. Contractor to sustain cost of additional material and labor.
	100 of 203	Elevation corrected.			MASTERS PRINTED
	69 of 203	Dimensions, elevations and bar list corrected.			
	68 of 203	Footing elevations and subdrain elevations corrected.			
	6 of 203	Quantities corrected.			
	2 of 203	Design 1276 -- Structural Concrete, Reinforcing Steel, Structural Steel, Class 20 Excavation and Granular Backfill quantities corrected.			
		REASON: Errors in detailing.			
		MASTERS PRINTED			

IN LETTING OF Oct. 14, 1976	DES. NO. 1276 I-380 SOUTH APPROACH TO CEDAR RIVER STA. 322 + 81.95 LINN COUNTY BRIDGE & DAM IN CEDAR RAPIDS. Q FREEWAY			
	SECTION 21 & 28 T-83N. R-7W RAPIDS TWP.			
	DESIGN FOR			
	VARIABLE SKEW			
	CONTINUOUS WELDED PLATE GIRDER BRIDGE			
	OF QUANTITIES			
	NO.	ITEM	UNIT	TOTAL
	1	Structural Concrete	Cu. Yds.	13,917.90
	2	Reinforcing Steel	Lbs.	2,055,558
	3	Reinforcing Steel - Epoxy Coated	Lbs.	1,133,474
	4	Structural Steel	Lbs.	9,703,848
	5	Aluminum Handrail	Lin. Ft.	10,389.7
	6	HP 10 x 42 Steel	Furnish Lin. Ft.	59,160.6
		Bearing Piling	Drive Lin. Ft.	53,204.6
	7	Excavation, Class 20	Cu. Yds.	6,941
	8	Granular Backfill	Cu. Yds.	356
	9	Concrete Slope Protection	Sq. Yds.	779.5
	10	Subdrain	Lin. Ft.	368
	11	Bridge Seat Sealer	Sq. Ft.	15370
	12	2" Ø Rigid Steel Conduit	Lin. Ft.	4,583.14
	13	Bleeder Drains	No.	16
	14	Preformed Elastic Neoprene Jt. (3 1/2")	Lin. Ft.	25
	15	Preformed Elastic Neoprene Jt. (2 1/2")	Lin. Ft.	25
	16	Bridge Floor Surfacing	Sq. Yds.	30,109.34
	17	Freeway Drainage System	L.S.	LUMP SUM
	18	Chain Link Fence as per Plan	Sta.	11.91
	19	Reinforced Bridge Approach Section	Sq. Yds.	160
	20	6" PC Concrete Paved Shoulder	Sq. Yds.	712
	21	Granular Surfacing Cl. "A" Crushed Stone on Rd.	Tons	1,612.6
	22	Field Office	No.	1

REFERENCE INFORMATION

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

ITEM NO.	DESCRIPTION
1	5,115.7 5,111.4 Cu. Yds. Class C Concrete 5,772.8 Cu. Yds. Class D Concrete. 8,793.0
3	370,739 Lin. Ft. No. 5 bar; 377,630 Lin. Ft. No. 6 bar; 83,559 Lin. Ft. No. 7 bar; 2,593 Lin. Ft. No. 9 bar. 571,345 Lbs. Grade 60 bars.
6	27 at 17', 30 at 19', 36 at 20', 50 at 21', 47 at 22', 12 at 23', 32 at 24', 56 at 25', 110 at 26', 160 at 27', 255 at 28', 144 at 29', 38 at 30', 56 at 31', 66 at 32', 54 at 33', 32 at 34', 20 at 35', 36 at 37', 16 at 38', 29 at 40', 30 at 41', 25 at 42', 61 at 43', 16 at 48', 10 at 49', 10 at 52', 22 at 55'. SEE SHEETS 203B-203C
12	Includes 33 Lin. Ft. of 1" Ø Rigid Steel Conduit.
19	(10').
20	Includes 12 Lin. Ft. Type "D" curb.
21	Article 1107.03 does not apply.
16	"Bridge Floor Surfacing" is referred to as "P.C. Concrete Surfacing" in detail plans.

BRANCH MARKS

CUT "X" IN EAST WINGWALL N. ABUTMENT RAMP E-1
ELEV. 130.67

L.I.L.C. PILING TOP WEST WINGWALL S. ABUTMENT N.B.L.
ELEV. 120.25

Revised 9-23-77: Design 1276-- Concrete, Reinforcing Steel and Structural Steel quantities changed.
Revised 3-11-77: Design 1276-- Structural Steel quantity corrected.
Revised 2-28-77: Design 1276-- Structural Concrete, Reinforcing Steel, Structural Steel, Class 20 Excavation and Granular Backfill quantities corrected.
Revised 2-14-77: Design 1276-- Structural Steel quantity corrected.

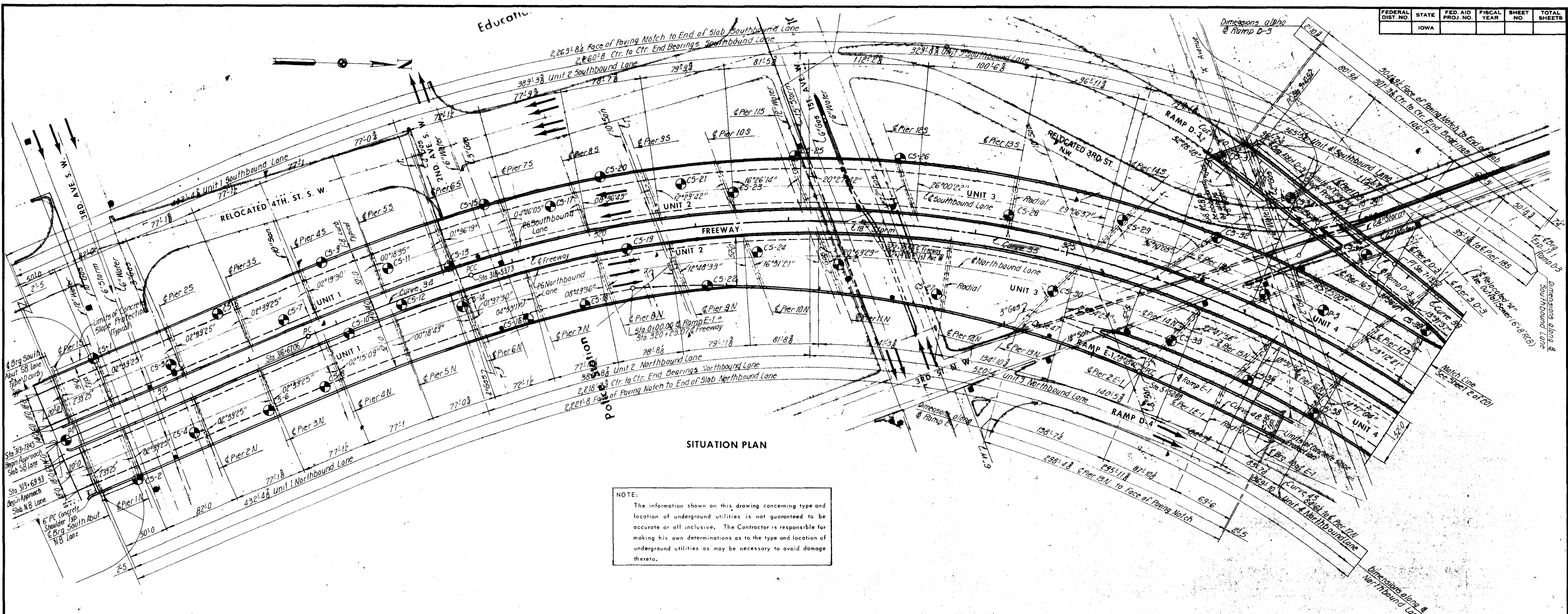
ESTIMATE SHEET

FILE NO. 23191

LINN COUNTY

I-380-6(68)263--01-57

STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
OWA	5		2	203-0



CURVE DATA			
Curve 34 @ Freeway P.I. Sta. 317+60.450 Δ = 4°40'00.5" D = 2°30'00.0" T = 93.388 L = 186.672 E = 1.902 R = 2291.831	Curve 35 @ Freeway P.I. Sta. 327+27.203 Δ = 74°37'57.3" D = 5°00'00.0" T = 873.469 L = 1492.652 E = 294.942 R = 1145.916	Curve 36 @ Southbound Lane P.I. Sta. 324+27.104 Δ = 8°11'21.6" D = 4°56'22.7" T = 63.035 L = 165.788 E = 2.958 R = 1159.916	Curve 37 @ Northbound Lane P.I. Sta. 335+07.126 Δ = 12°53'16.1" D = 2°30'00.0" T = 253.848 L = 515.512 E = 14.571 R = 2291.831
Curve 38 @ Southbound Lane P.I. Sta. 335+03.879 Δ = 4°41'54.5" D = 2°30'00.0" T = 94.022 L = 187.939 E = 1.928 R = 2291.831	Curve 39 @ Ramp D-3 P.I. Sta. 3+65.663 Δ = 25°11'00.2" D = 3°30'00.0" T = 365.669 L = 719.525 E = 40.343 R = 1637.022	Curve 40 @ Ramp D-3 P.I. Sta. 10+11.904 Δ = 12°07'12.4" D = 6°00'00.0" T = 101.373 L = 202.002 E = 5.366 R = 954.930	Curve 45 @ Ramp D-4 P.I. Sta. 5+05.013 Δ = 23°04'50.9" D = 4°00'00.0" T = 305.521 L = 602.020 E = 32.220 R = 1432.394
Curve 46 @ Ramp D-4 P.I. Sta. 10+51.570 Δ = 24°31'27.9" D = 5°00'00.0" T = 249.053 L = 490.488 E = 26.753 R = 1145.916	Curve 47 @ Ramp E-1 P.I. Sta. 2+81.928 Δ = 27°38'37.6" D = 5°00'00.0" T = 281.928 L = 552.876 E = 34.172 R = 1145.916	Curve 48 @ Ramp E-1 P.I. Sta. 8+04.504 Δ = 12°31'52.4" D = 2°30'00.0" T = 251.623 L = 501.243 E = 13.772 R = 2291.831	

BENCH MARK	
BM - 55	"X" cut in East Top Bolt on Top of Fire Hydrant on NE Corner of 3rd. St. and 3rd. Ave. S.W. E.I. 93.95
BM - 57	"X" cut in Northwest Bolt on Top of Fire Hydrant on NE Corner of 1st. Ave. and 3rd. St. N.W. E.I. 97.96
BM - 59	"X" cut in Northwest Bolt on Top of Fire Hydrant on SW Corner of 1st. Ave. and 1st. St. S.W. E.I. 100.93

LOCATION

I-380 over 3rd. Ave S.W., 2nd. Ave. S.W., 1st. Ave. W., 3rd. St. N.W., and 1st. St. N.W.
City of Cedar Rapids
Linn County
Rapids Imp.
T-83N R-7W
Sections 21 and 23

DESIGN TRAFFIC

I-380 Traffic Count
40,420 Two Way V.P.D. (1994)
Ramp E-1 Traffic Count
2,770 One Way V.P.D. (1994)
Ramp D-3 Traffic Count
12,940 One Way V.P.D. (1994)
Ramp D-4 Traffic Count
12,940 One Way V.P.D. (1994)

Notes:

All dimensions are measured horizontally.
● indicates sounding location.
for Sounding Data see Sheets 9, 5, 6, 7, and 8 of 201
● indicates point of minimum vertical clearance.

Iowa Natural Resources Council Approval
Order No. 72-29, dated February 8, 1972.

I hereby certify that this plan, specification or report 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.

Paul E. Heineman
Paul E. Heineman, P.E., Iowa Reg. No. 1156

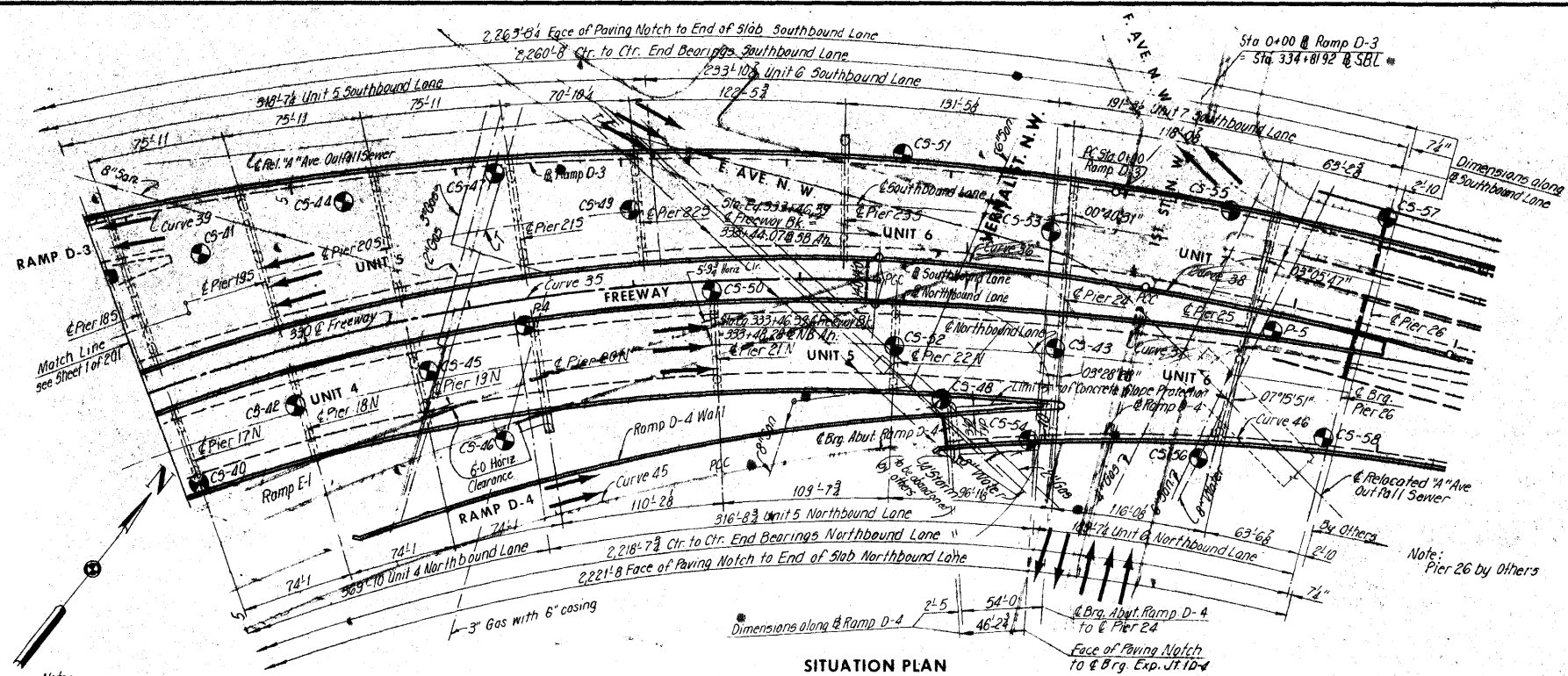
**CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE
SITUATION PLAN**

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

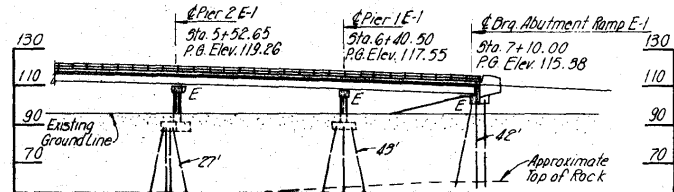
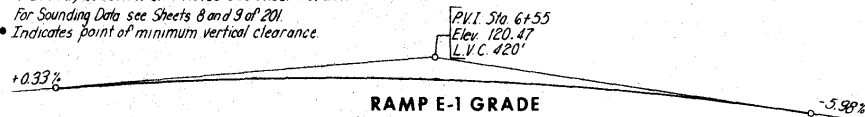
STA. 322+81.95 @ FREEWAY =
STA. 32+14.70 @ 1ST. AVE. W. PROJECT NO. I-380-6(68)263-01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

MADE AJS DATE 7-11-74 CHECKED RLF DATE 7-16-74

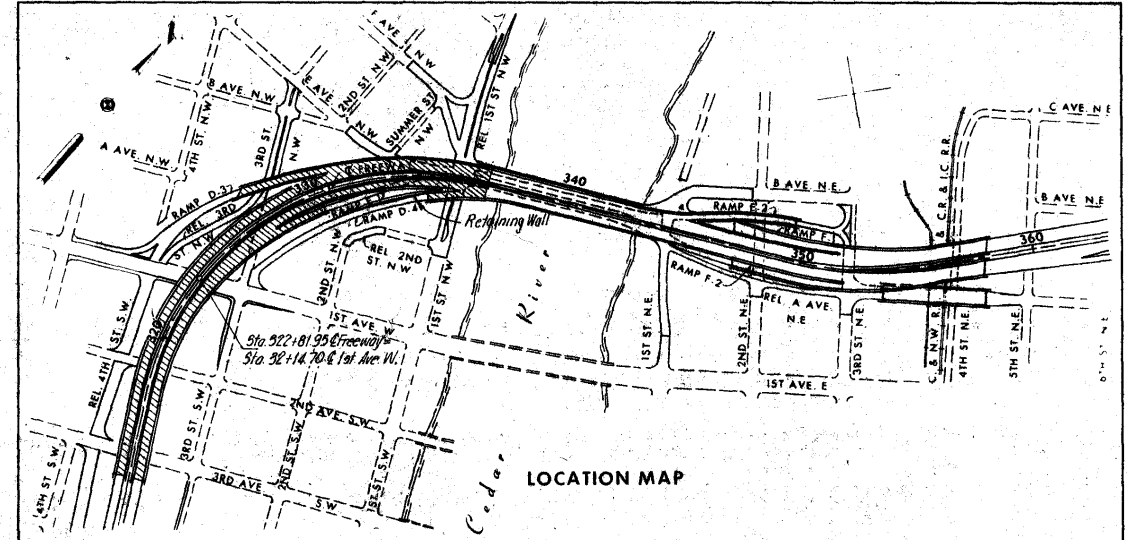
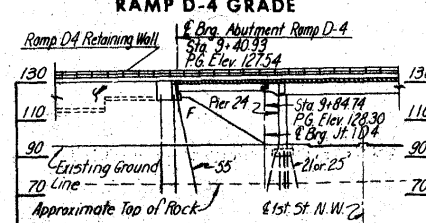
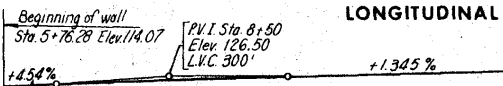
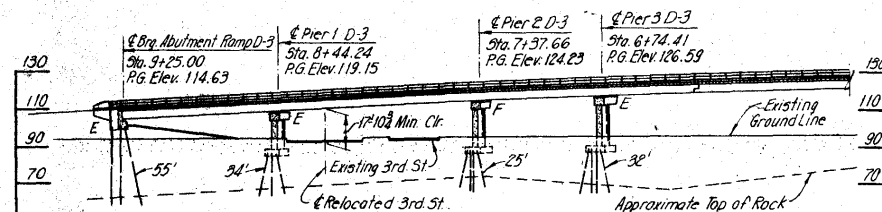
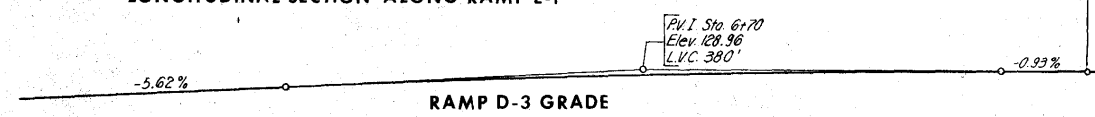
FEDERAL DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	IOWA				



Note:
For Curve Data, Bench Marks, Design Traffic, Location and Notes see Sheet 1 of 201.
For Sounding Data see Sheets 8 and 9 of 201.
Indicates point of minimum vertical clearance.



NOTE:
The information shown on this drawing concerning type and location of underground utilities is not guaranteed to be accurate or all inclusive. The Contractor is responsible for making his own determinations as to the type and location of underground utilities as may be necessary to avoid damage thereto.



CEDAR RIVER BRIDGE SOUTH APPROACH DESIGN FOR VARIABLE SKEW CONTINUOUS WELDED PLATE GIRDER BRIDGE

SITUATION PLAN

STA. 322+81.95 @ FREEWAY=
STA. 32+14.70 @ 1ST AVE. W PROJECT NO. I-380-6(68)263--01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

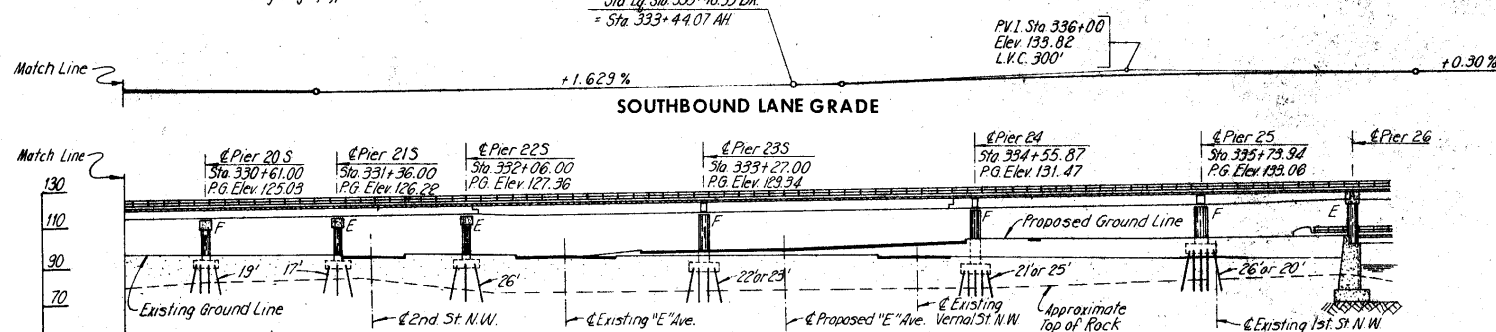
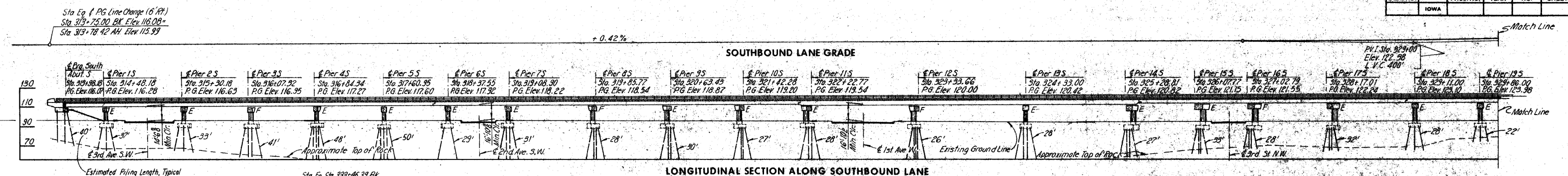
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

MADE AJS DATE 7-11-74 CHECKED RLF DATE 7-16-74

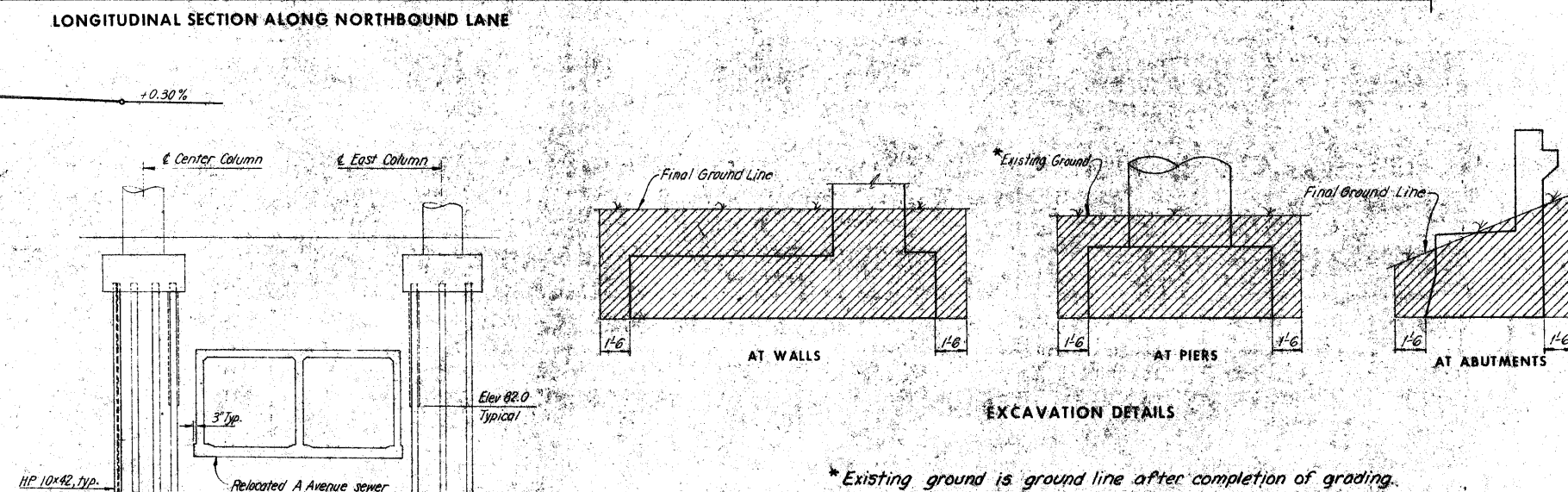
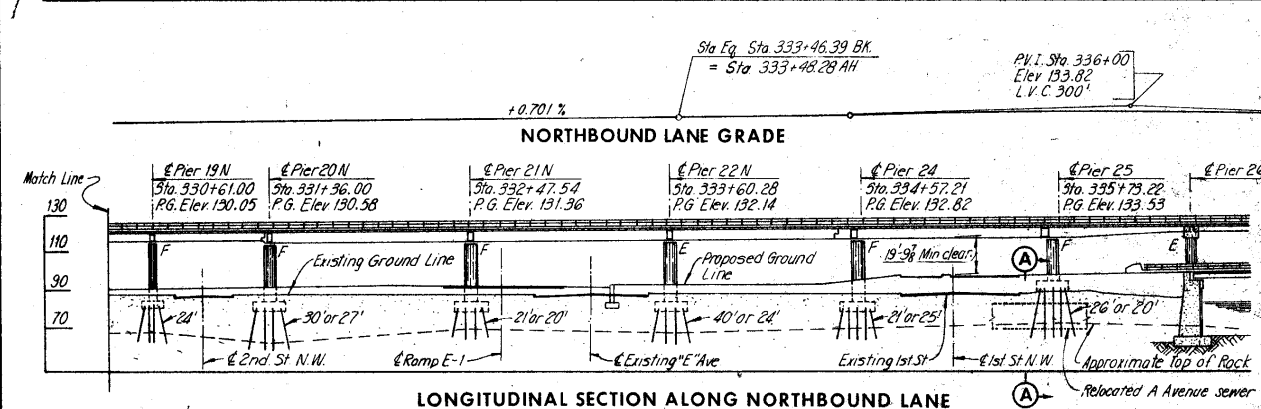
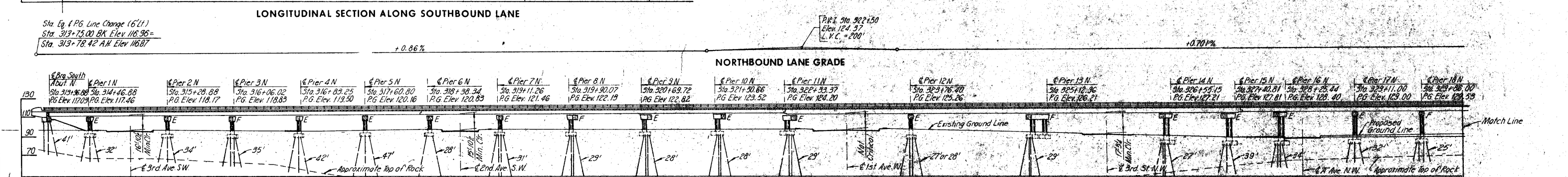
SHEET 2 OF 201

DESIGN NO. 1276 LINN COUNTY FILE 23191 SHEET 4 OF 203-0

FEDERAL DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEET
	IOWA				



Note:
All piles are HP 10 x 42
Steel Bearing Piles.



SECTION A-A
(Normal to sewer)

Note:
By means of probes, establish outer limit of A Avenue sewer. Design plans indicate that the footing extends 3' beyond outer limit of sewer. Pre-drill pile rows immediately adjacent to box to Elevation 82.0.

* Existing ground is ground line after completion of grading.

**CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE**

SITUATION PLAN

STA. 322+81.95 @ FREEWAY =
STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. 1-380-6(68)263--01-57

LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

SHEET 3 OF 201

DESIGN NO. 1276 LINN COUNTY FILE 23191 SHEET 5 OF 203-0

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

MADE <u>AJS</u>	DATE <u>7-11-74</u>	CHECKED <u>RLF</u>	DATE <u>7-16-74</u>
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SHEET 3 OF 201

DESIGN NO. 1276 LINN COUNTY FILE 23191 SHEET 5 OF 203-0

TOTAL ESTIMATED QUANTITIES							
ITEM NO.	ITEM	UNIT	WALLS	5 ABUT.	52 PIERS	SUPERST.	TOTAL
1	Structural Concrete	Cu. Yds.	639.0	282.9	4,739.6	8,251.2	13,912.3
2	Reinforcing Steel	Lbs.	55,312	30,672	941,362	1,028,513	2,055,954
3	Reinforcing Steel-Epoxy Coated	Lbs.				1,133,494	1,133,494
4	Structural Steel	Lbs.			23,762	9,694,636	9,702,878
5	Aluminum Handrail	Lin. Ft.				10,586.3	10,586.3
6	HP 10 x 42 Steel	Lin. Ft.	4,774	2,965	39,107		46,846
	Bearing Piling	Drive	4,774	2,965	39,107		46,846
7	Excavation, Class 20	Cu. Yds.	1,196	368	5,377		6,941
8	Granular Backfill	Cu. Yds.		356			356
9	Concrete Slope Protection	Sq. Yds.		830			830
10	Subdrain	Lin. Ft.		368			368
11	Bridge Seat Sealer	Sq. Ft.		716			716
12	2" Rigid Steel Conduit	Lin. Ft.				4,726	4,726
13	Bleeder Drains	Each				16	16
14	Preformed Elastic Neoprene Jt. (3/4")	Lin. Ft.				25	25
15	Preformed Elastic Neoprene Jt. (2 1/2")	Lin. Ft.				25	25
16	Bridge Floor Surfacing	Sq. Yds.				29,536	29,536
17	Freeway Drainage System	Lump Sum				Lump Sum	Lump Sum
18	Chain Link Fence as per Plan	Stations				11.91	11.91
19	Reinforced Bridge Approach Section	Sq. Yds.		160			160
20	6" PC Concrete Paved Shoulder	Sq. Yds.		81			81
21	Granular Surfacing Class "A" Crushed Stone on Road	Tons					3,000
22	Field Office	No.					1

ITEM NO. ESTIMATE REFERENCE INFORMATION

1. 5,110.3 Cu. Yds. Class C Concrete
3,719.4 Cu. Yds. Class D Concrete
8,793.0
3. 370,739 Lin. Ft. No. 5 bar; 377,630 Lin. Ft. No. 6 bar; 83,559 Lin. Ft. No. 7 bar; 2,593 Lin. Ft. No. 9 bar.
571,345 Lbs. Grade 60 bars.
6. 27 @ 17', 30 @ 19', 36 @ 20', 50 @ 21', 47 @ 22', 12 @ 23', 32 @ 24', 56 @ 25', 110 @ 26', 160 @ 27', 255 @ 28', 144 @ 29', 38 @ 30', 56 @ 31', 68 @ 32', 54 @ 33', 32 @ 34', 20 @ 35', 36 @ 37', 16 @ 38', 29 @ 40', 90 @ 41', 25 @ 42', 61 @ 43', 16 @ 48', 10 @ 49', 10 @ 52', 22 @ 55'
SEE SHEETS 203B-203O
12. Includes 33 Lin. Ft. of 1" Rigid Steel Conduit.
19. (10")
20. Includes 1.2 Lin. Ft. Type "B" curb.
21. Article 1109.03 does not apply.
16. Bridge Floor Surfacing is referred to as P.C. Concrete Surfacing in the detail plans.

GENERAL UTILITY NOTE

Underground facilities, structures and utilities have been plotted from available surveys and records, and therefore their locations must be considered approximate only. It is possible there may be others, the existence of which is presently not known or shown. It is the Contractor's responsibility to determine their existence and exact location and to avoid damage thereto.

Extreme care should be exercised by the Contractor at the locations listed below to avoid relocation and/or repair costs. During excavation work in connection with bridge construction adequate shoring may be necessary. Northwestern Bell Telephone Company shall be notified sufficiently in advance so as to have a man on the job at any time work is being done at these locations.

- Second Avenue S.W. - Pier 6S-6N is to be placed 12' from a 12-duct conduit which contains seven (7) cables. Pier 7S-7N on the north side of said street is to be placed in close proximity to a buried 600 pair cable.
- Alley between Second Avenue S.W. and First Avenue West - Pier 9S-9N is to be placed only 2' to 3' from four-duct conduit containing four (4) cables. These cables contain, in addition to others, emergency police and fire circuits to the police station.
- Second Street N.W. north of A Avenue - Two manholes and a four-duct conduit containing four (4) cables are in the immediate vicinity of grading and bridge construction.

GENERAL NOTES

This bridge is designed for HS20-44 loading and 25 lbs. per sq. ft. for 2" bonded wearing surface plus an allowance of 20 lbs. per sq. ft. for future wearing surface and the alternate loading design-ated in R.P.M. 20-4, Section 4c.
Drawings shall not be scaled.
All dimensions are horizontal unless shown otherwise.
Utilities are to be relocated by others.

The bridge contractor is to install subdrains behind the abut-ment and ramp ditches and the abutment for Ramp C-1, Ramp D-3 and Ramp D-4 as detailed. The subdrain may be either drain tile or perforated plastic pipe with a minimum nominal diameter of 6". The price bid for "Subdrain" is to include the excavation necessary for the installation.

The bridge contractor is to level off and shape the berms to elevations and dimensions shown.

Unless otherwise noted, the HP 10 x 42 steel bearing piles of the abutments, Piers 6S thru 14S and Piers 6N thru 14N shall be driven to a minimum bearing value of 37 tons per pile. The HP 10x42 steel bearing piles at the wall along Ramp C-4 and all other piers shall be driven to a minimum bearing value of 55 tons per pile. All piles are to be driven with a diesel hammer of adequate capacity.

Steel piles, except Pier piles with a minimum bearing value of 37 tons, shall be driven to practical refusal and sealed in lime-stone. Steel piles 40' or less shall be sealed with a diesel hammer of at least 18,000 foot-pounds of rated energy operating at full capacity, or a gravity hammer having an effective weight of at least 4,500 pounds and driving energy of not less than 36,000 foot-pounds nor more than 40,000 foot-pounds. Steel piles over 40' long shall be sealed with a diesel hammer of at least 26,000 foot-pounds of rated energy operating at full capacity, or a gravity hammer having an effective weight of at least 6,000 pounds and driving energy of not less than 38,000 foot-pounds nor more than 40,000 foot-pounds.

Bridge seat sealer is to be applied to the exposed bridge seat surface of the abutments. The bridge seat surface is to include all surfaces of the bridge seat steps, the wall between the steps, and the edge fillets. At the abutments the sealer is to extend six inches up the front face of the backwall and on top of the backwall. On the bridge deck the 6" strip of concrete next to the expansion joints and deck drains is to be treated after the surfacing has been placed. The bridge seat protective coating shall be an approved sealer per I.D.O. Materials M.M. 491.12 and shall be applied in accordance with the manufacturer's recommendations at a rate of 80 square feet per gallon when the temperature of the bridge deck or bridge seat surface is above 60°F.

Expansion joint metalwork, and preformed elastic neoprene joint of Pier 26 have been furnished by others. Metalwork attached to Pier 26 has been installed by other. Expansion joint metalwork is to be attached to girders and the preformed elastic neoprene joint is to be installed under this contract. This work is considered incidental to all other contract items and will not be paid for as a separate item.

PREDRILLED HOLES FOR PILING

Pier 25 piles adjacent to Relocated "A" Avenue sewer are to be driven in oversized holes drilled through the fill to Elev. 82.00. The minimum diameter of the drilled holes is to be four inches greater than the maximum dimension of the pile. These predrilled 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. No separate payment will be made for drilling or maintaining open holes or filling voids since it is considered incidental to driving piles.

Piles which will penetrate abandoned concrete box sewers in "A" and "E" Avenues shall be predrilled to the bottom of the sewer. Predrilling shall conform to the requirements shown above.

DESIGN STRESSES

Design stresses for the following materials are in accordance with AASHTO Standard Specifications for Highway Bridges, Series of 1973 plus Interim Specifications.
Structural Steel in accordance with Section 7 "Structural Steel Design," ASTM A36, $f_y = 20,000$ psi.
Reinforcing Steel in accordance with Section 1.5.1 "Reinforce-ment," $f_y = 20,000$ psi, Grade 40 and 24,000 psi, Grade 60.
Concrete in accordance with Section 1.5.1, $f_c = 3,500$ psi.

SPECIFICATIONS

DESIGN: AASHTO Series of 1973

CONSTRUCTION: Iowa State Highway Commission Standard Specifications, Series of 1972 plus current Supplemental Specifi-cations and Special Provisions.

WELDING: All welding shall meet the requirements of the First Edition of the "Structural Welding Code (AWS D1.1-72 in-cluding revision 1-73) of the American Welding Society as modified by AASHTO 1974 Standard Specifications, the current Supplemental Specifications and Special Provisions.

BRIDGE DECK NOTE

The deck concrete for these bridges shall be placed in two (2) lifts.
1. The first lift will be Class "D" concrete providing 1" of cover over the top layer of slab reinforcing. The materials, placement, finish and cure shall be in accordance with the Standard Construction Specifications and Supplemental Specifi-cations Division II except that the broom finish will not be required. Test wells for nuclear density test will be required. See note on this sheet.
2. The second lift will be a 2" thick "P.C. Concrete Surfacing" to be placed after the curbs are placed. The width of each sur-facing pass shall be such that the longitudinal joint between passes will be located at a lane line. The materials, placement, finish and cure shall be in accordance with current Supplemental Specifications.

NUCLEAR DENSITY TEST WELL NOTE

Test wells for nuclear density checks shall be cast into the surface of the Class "D" concrete curb. The test wells shall have nominal dimensions of 1" x 10" x 10" and shall be located, in each surfacing pass, as follows: Three (3) at each end, within 5 feet from the end joint, plus a minimum of three (3) additional test wells, equally spaced longitudinally to be not more than 50 feet apart. Each surfacing pass will require a total of: Test wells for Ramp D-4, 9 test wells for Units 6 N.B. and 7 S.B., 10 test wells for Unit 6 N.B., 11 test wells for Ramps E1 and D3, 12 test wells for Units 3 S.B. and 5 N.B. and 5 B., 14 test wells for Unit 1 N.B. and S.B. and 16 test wells for Unit 3 N.B.

CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE

ESTIMATED QUANTITIES AND GENERAL NOTES

STA. 322+81.95 @ FREEWAY =
STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. I-380-6(68)263--01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

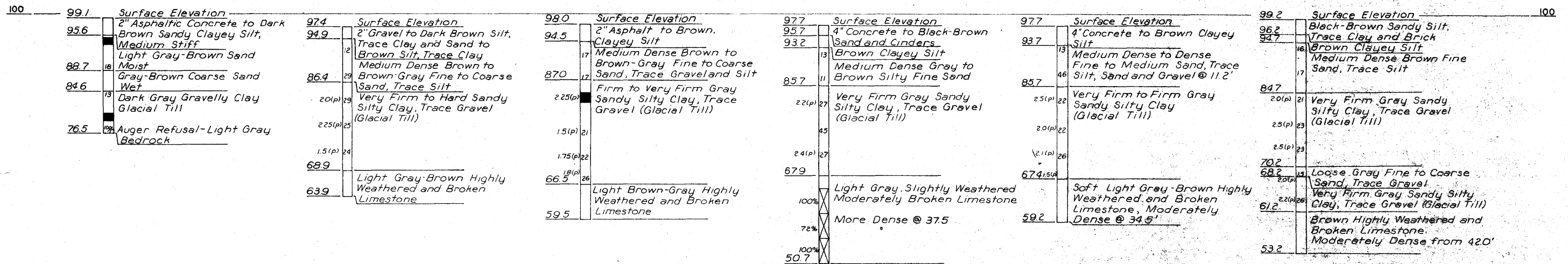
SHEET 4 OF 201

DESIGN NO. 1276 LINN COUNTY FILE 23191 SHEET 6 OF 203-0

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

MADE BY DATE 7-19-74 CHECKED DATE 7-1-76

Revised 9-23-77: Quantities corrected.
Revised 3-11-77: Structural Steel Quantity corrected.
Revised 2-28-77: Quantities corrected.
Revised 2-14-77: Structural Steel quantity corrected.



P-1
S. Abut., S.B.
S. Abut., N.B.

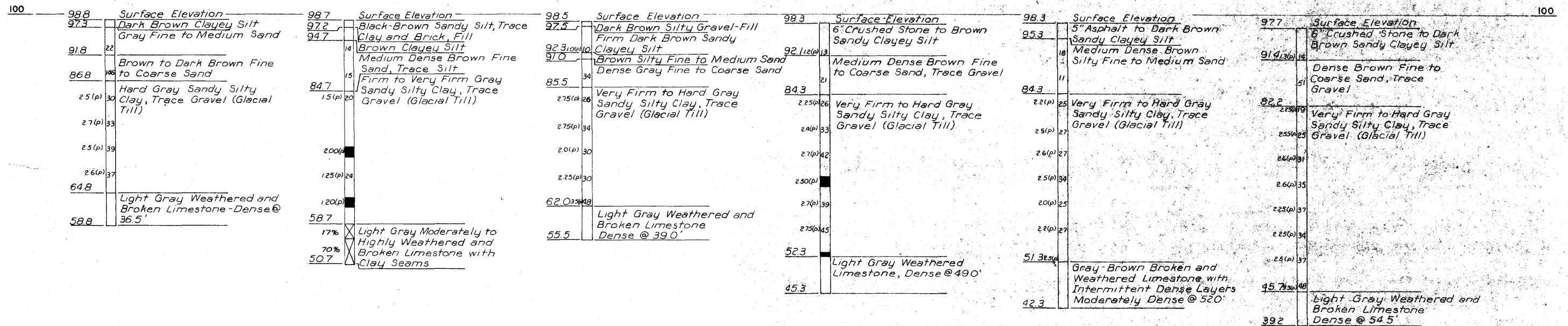
CS-2
Pier 1N, N.B.

CS-1
Pier 1S, S.B.

CS-4
Pier 2N, N.B.

CS-3
Pier 2S, S.B.

CS-5
Pier 3S, S.B.



CS-6
Pier 3N, N.B.

CS-7
Pier 4S, S.B.

CS-8
Pier 4N, N.B.

CS-10
Pier 4N, N.B.

CS-9
Pier 4S, S.B.

CS-12
Pier 5N, N.B.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

MADE 6-6-74 DATE 6-4-74

SOUNDING DATA

NOTE:
Subsurface information shown on this drawing was obtained solely for use in establishing design controls for the project. The accuracy of this information is not guaranteed and it is not to be construed as part of the plans governing the construction of this project.

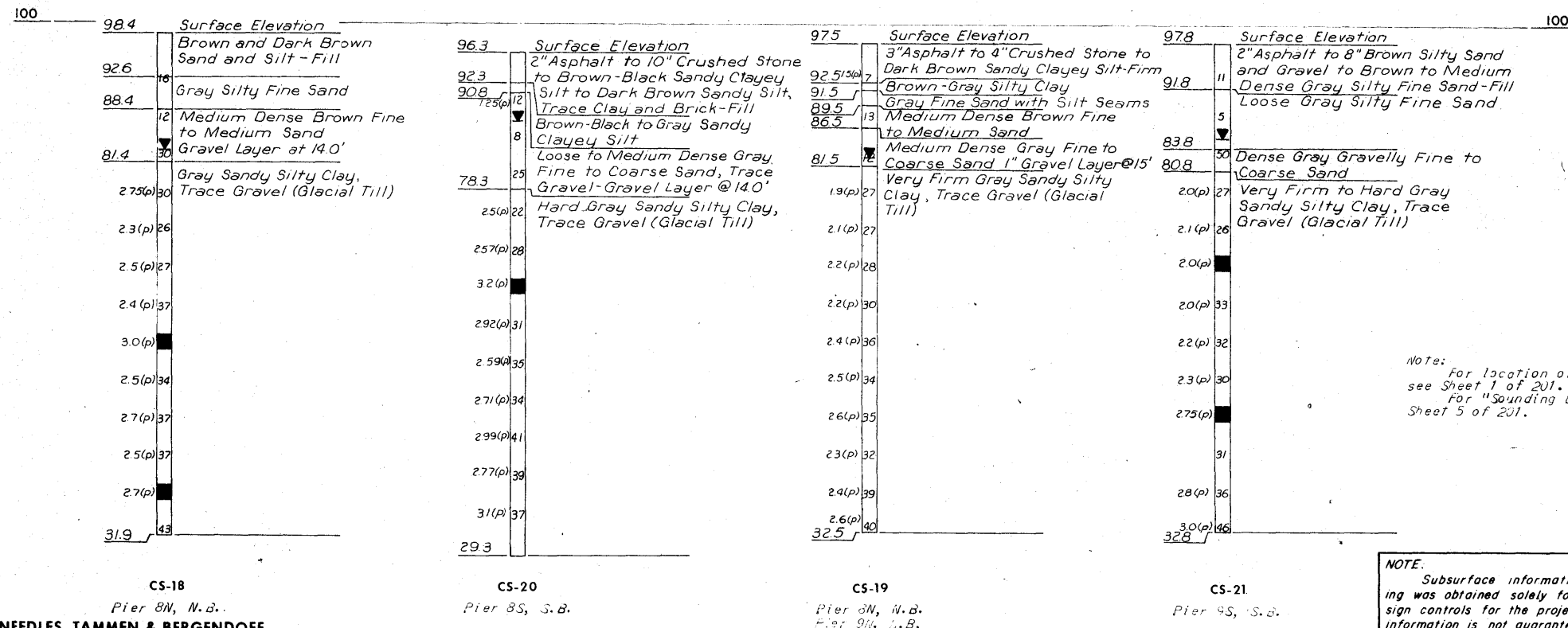
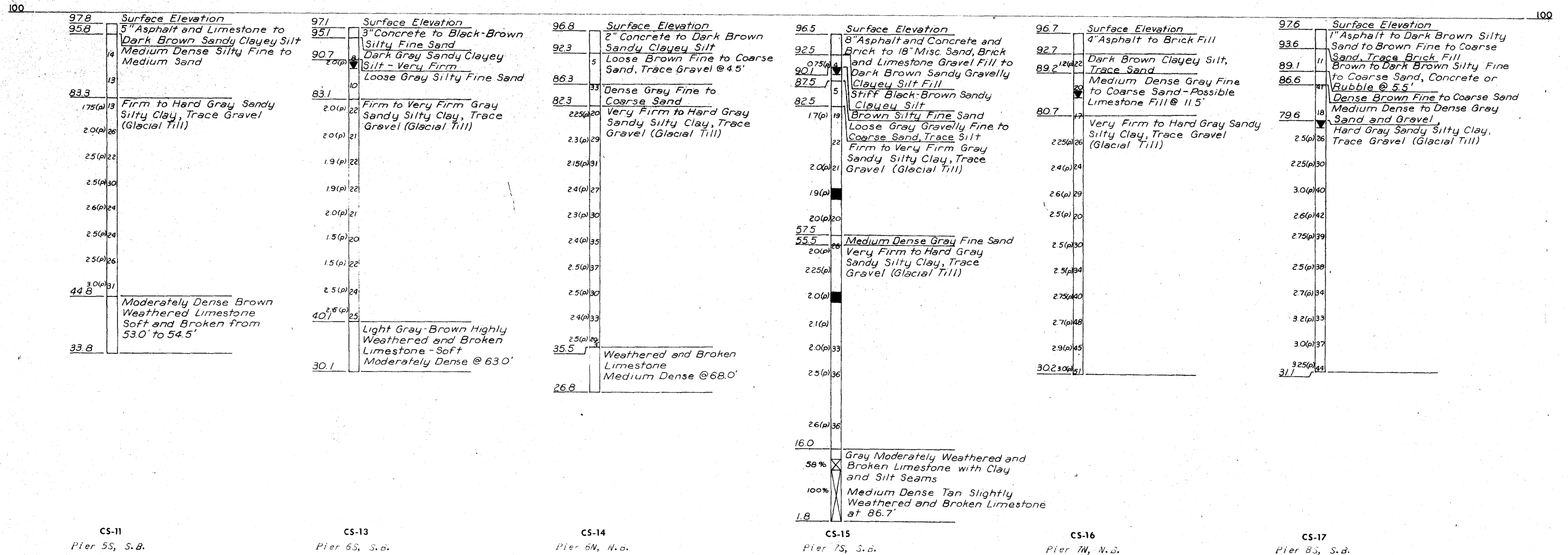
CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE

SOUNDING DATA

STA. 322+81.95 @ FREEWAY =
STA. 32+14.70 @ 1ST. AVE. W
PROJECT NO. I-380-6(68)263--01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

SHEET 5 OF 201

DESIGN NO. 127A LINN COUNTY FILE 73191 SHEET 7 OF 203



Note: For location of soundings see Sheet 1 of 201.
For "Sounding Legend" see Sheet 5 of 201.

NOTE: Subsurface information shown on this drawing was obtained solely for use in establishing design controls for the project. The accuracy of this information is not guaranteed and it is not to be construed as part of the plans governing the construction of this project.

**CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE**

SOUNDING DATA

STA. 322+81.95 @ FREEWAY =
STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. I-380-6(68)263--01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

SOUNDING DATA

MADE 6-6-64 DATE 6-6-64
CHECKED 6-6-64 DATE 6-6-64

100

97.6		Surface Elevation
93.9	20	Crushed Stone to Dark Brown Clayey Silt
88.7	18	Medium Dense, Brown Fine Sand
82.1	57	Dense, Gray, Gravelly, Fine to Coarse Sand
2.0 (P)	29	Very Firm to Hard, Gray, Sandy Silty Clay, Trace Gravel (Glacial Till)
2.9 (P)	27	
2.4 (P)	27	
2.0 (P)	28	
2.25 (P)	26	
2.6 (P)	28	
2.25 (P)	28	
2.3 (P)	27	
2.25 (P)	33	
2.3 (P)	32	
2.7 (P)	35	
2.9 (P)	43	
2.3 (P)	46	
2.0 (P)		
-2.4	77	

CS-22
er 9N, N.B.

98.6		Surface Elevation
95.8		2" Asphalt, 6" Brown Sand & Gravel
93.6	10	to Black Clayey Silt
92.00		Gray-Brown, Sandy Silty, Clay
88.1	9	Loose, Brown, Fine Sand
	40	Dense, Gray, Fine to Coarse, Gravelly Sand
81.6		
2.1(0)	20	Very Firm to Hard, Gray, Sandy Silty Clay, Trace Gravel, (Glacial Till)
2.2(0)	21	
2.1(0)	30	
2.2(0)	31	
2.25(0)	32	
2.3(0)	31	
2.1(0)	33	
	33	
2.4(0)	33	
2.5(0)	35	
33.6		

CS-23
Pier 10S, S.B.

98.4		Surface Elevation
92.9	13	4" Crushed Stone to Dark Brown Clayey Silt
87.4	8	Loose Brown Fine Sand
82.4	36	Dense Gray Fine to Coarse Sand; Trace Gravel
18 (P) 84		Very Firm to Hard Gray Sandy Silty Clay, Trace Gravel (Glacial Till)
20 (P) 25		
19 (P) 29		
21 (P) 28		
21 (P) 36		
22 (P) 38		
23 (P) 39		
25 (P) 36		
25 (P) 36		
24 (P)		
33.4	34	

CS-24
Pier 10N, N.B.

97.5		Surface Elevation
94.0	14	2' Sod to Brown Clayey Silt
	▼	Loose Gray Fine to Medium Sand, to Dense Gray Gravelly
	8	Fine to Coarse Sand
91.5	51	
	46	Very Firm to Hard, Gray, Sandy Silty Clay, trace
2.15(P)	25	Gravel (Glacial Till)
2.25(P)	25	
2.0(P)	31	
2.2(P)	28	
2.5(P)	■	
2.5 (P)	37	
2.75(P)	35	
2.6(P)	35	
3.0(P)	■	
2.8(P)	■	
32.5	40	

CS-25
Pier 11 S, S.B.

Elevation	Description
97.3	Surface Elevation
96.3	Dark Brown Clayey Silt Topsoil
	Medium Dense, Light Gray, Medium Sand
85.0	Dense Gray-Brown, Gravelly Sand
79.0	Dense, Light Gray Sand
72.3	Gray-Brown Coarse Sand
70.0	Gray Sandy Clay - Glacial Till
27.3	

P-2
Pier 11N, N.B.

Surface Elevation		
97.5	2'	Sod & Topsoil to Dark Brown Silty Clay
96.5	19	Medium Dense, Reddish-Brown to Brown Fine to Medium Sand
96.5	11	
81.5	61	Dense Gray, Fine to Coarse Sand
2.25 (P)	82	Very Firm to Hard, Gray, Sandy, Silty Clay, Trace Gravel (Glacial Till)
2.6 (P)		
2.25 (P)	26	
2.5 (P)	30	
2.75 (P)		
3.0 (P)	31	
2.75 (P)	37	
2.25 (P)		
2.50 (P)	36	
3.0 (P)	50	
3.0 (P)	33	
3.5 (P)		
2.75 (P)	38	
2.9 (P)		
2.5	60	

CS-26
Rier 12S, S.B.

Surface Elevation	
96.8	2" Sod to Dark Brown Silty Clay, Trace Sand and Organic
1.75(0) 89.8	Medium Dense, Brown, Fine to Medium Sand with Silty Sand Layers
84.8	Very Firm to Hard, Gray, Sandy Silty Clay, Trace Gravel (Glacial Till)
2.5(P)	
2.5(P) 26	
2.5(P)	
2.3(P) 28	
2.5(P) 24	
2.25(P) 28	
2.3(P) 27	
2.75(P) 34	
2.25(P)	
67	
2.6(P) 40	
55	
2.5(P) 40	
2.5(P) 58	
-3.2	Gravel Layers noted while drilling 92'to 98.5

CS-27
Pier 12N, N.B.

97.7	Surface Elevation
1.5(P) 11	5" Crushed Stone to Firm
91.0	Dark Brown Clayey Silt
15	Medium Dense to Dense, Brown
48	to Gray, Fine to Coarse
	Gravelly Sand
79.7	
2.2(P) 24	Very Firm to Hard, Gray,
1.75(P) 28	Sandy, Silty Clay, Trace
	Gravel (Glacial Till)
2.2(P) 27	
1.8(P) 27	
2.0(P) 28	
2.25(P) 26	
2.3(P) 25	
2.5(P) 31	
2.4(P) 30	
2.9(P) 32	
3.0(P) 30	
2.75(P)	
22.7	28

CS-28
Pier 13S, S.B.

Surface Elevation	
96.6	
96.1	Brown Silt
95.8	Dark Brown-Black Sandy
90.6	Silty Clay
	Loose Brown Fine to Coarse
85.6	Sand
82.1	Brown Gravelly, Fine to Coarse
	Sand
	Very Firm to Hard Gray
20 (P)	Sandy Silty Clay, Trace
	Gravel (Glacial Till)
2.25 (P)	
2.75 (P)	
3.0 (P)	
3.1 (P)	
3.2 (P)	
2.9 (P)	
3.1 (P)	
39.1	
35.1	Gray-Brown, Highly Weathered
	Broken Limestone

CS-30
Pier 13N, N. B.

96.8		Surface Elevation
1.50(p)	17	Brown to Black Clayey Silt, Silty Sand with Cinders, Fill
89.8	21	Firm Brown Sandy Silty Clay
86.3	21	Medium-Dense, Brown Fine Sand
83.8		Brown Gravelly, Fine to Coarse, Sand, Trace Silt and Clay
2.0(p)	19	
2.0(p)	24	Very Firm to Hard Gray, Sandy Silty Clay, Trace Gravel (Glacial Till)
2.4(p)	26	
2.25(p)	25	
2.0(p)	30	
2.2(p)		
56.8	29	

CS-29
Pier 14S, S.B.

Note: For location of soundings
see Sheet 1 of 201.
For "Sounding Legend" see
Sheet 5 of 201.

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HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

MADE CGL DATE _____ CHECKED 30f DATE 4-4-74

SOUNDING DATA

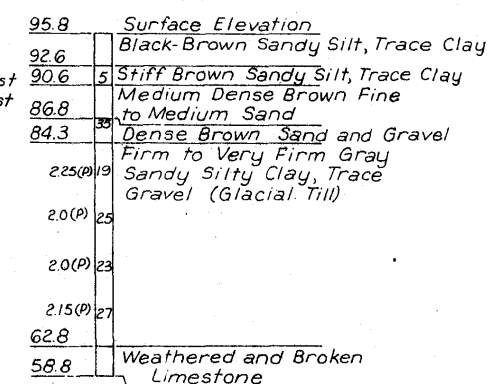
**CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE**

SOUNDING DATA

STA. 322+81.95 @ FREEWAY=
STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. I-380-6(68)263--01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

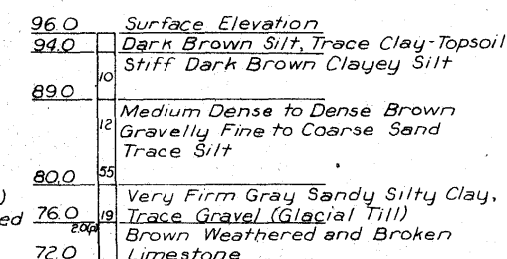
SHEET 7 OF 201

DESIGN NO. 1276 LINN COUNTY FILE 23191 SHEET 9 OF 203-0



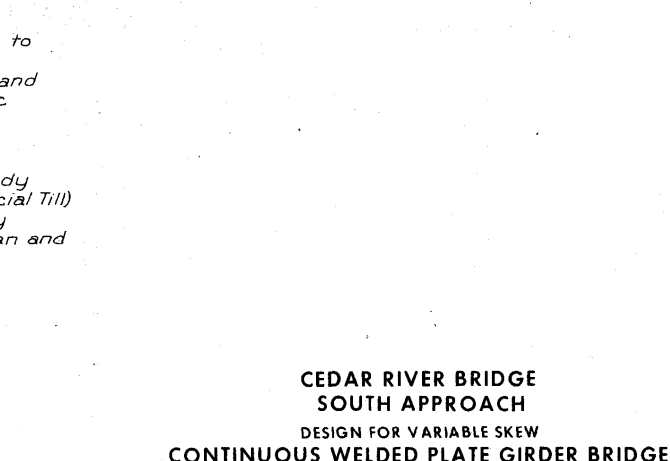
CS-38

Pier 16N, N.B.
Apartment (E-1)



CS-45

Pier 19th, N.B.



CS-

Pier 22N, N.

STA. 322+81.95 @ FREEWAY=
STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. 1-380-6(68)263--01-57

LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

100

100

Surface Elevation		
96.3	15	Brown Clayey Silt, Fill
95.8	15	Dark Brown Silt, Trace Clay & Sand, Fill
93.3	15	Brown-Black, Silty Sand Fill
89.6	10	Brown Clayey Silty Fine Sand
85.8	10	Loose Brown Fine to Medium Sand
82.3	14	Medium Dense, Brown, Gravelly, Fine to Coarse Sand
	11	Firm to Very Firm, Sandy Silty Clay, Trace Gravel (Glacial Till)
2.5(P)	20	
1.75(P)	20	
1.8(P)	17	
63.8		Light Brown-Gray, Highly Weathered and Broken Limestone
58.8		

CS-31

Abutment (D-3)

Surface Elevation		
96.3		Dark Brown, Gravelly Silty Sand Fill
86.3		Brown Limestone & Red Brick
82.8	105	Very Dense, Brown, Gravelly Fine to Coarse Sand
79.8	24	Very Firm to Hard, Gray, Sandy Silty Clay, Trace Gravel (Glacial Till)
20(P)	24	
20(P)	26	
68.8		Light, Gray-Brown, Soft, Highly Weathered & Broken Limestone
63.8		

CS-34

Pier 1 (D-3)

Surface Elevation		
96.3		Brown-Black Silt, Trace Clay
92.6	325(P)	Hard Brown Silty Clay
89.3	23	Medium Dense, Brown, Fine to Coarse Sand
83.5		Very Dense, Gravelly Fine to Coarse Sand
81.3	86	Firm Gray, Sandy Silty Clay, Trace Gravel (Glacial Till)
1.75(P)	21	
74.8		Weathered and Broken Limestone
70.8		

CS-37

Pier 2 (D-3)

Surface Elevation		
95.5		Dark Brown to Black, Sandy Silt with Cinders, Fill
94.0	8	Dark Brown Silt, Trace Clay
93.0	8	Stiff Brown Clayey Silt
90.6		Loose Brown Silty Fine Sand
87.0	11	Medium Dense to Dense, Brown, Fine to Coarse Sand with Gravel
81.1	25	Brown, Highly Weathered & Broken, Limestone
77.0		

CS-46

Pier 20N, N.B.

Surface Elevation		
96.7	11	2" Asphalt to 4" Brick to Medium Dense, Brown Fine Sand Trace Gravel
89.7	7	Stiff Dark Gray, Sandy Silt, Slightly Organic, Trace Gravel
83.7		Medium Dense, Gray, Fine to Medium Sand, Trace Gravel
81.7	26	Firm to Hard, Gray, Sandy Silty Clay, Trace Gravel (Glacial Till)
25(P)	22	
75.7		Moderately Hard, Light Gray & Tan Limestone with Some Porous Zones
66.9		2" Void at 26.5'

CS-48

Abutment (D-4)

Surface Elevation		
97.0		Brown Sandy Silt, Topsoil
96.5	14	Firm, Brown, Sandy Silt, Trace to Some Clay
88.5	13	Medium Dense, Brown, Silty Sand with Clayey Sand Layers
83.5	2	Very Loose, Brown, Fine Sand with Dark Gray Sand Layers, Trace Organic and Petroleum Odor
78.5	43	Dense Brown Fine to Coarse Sand
75.2		Light Gray & Tan Limestone, Hard
71.5		

CS-54

Pier 24, N.B.

100

100

Surface Elevation		
96.7	22	2" Asphalt to 4" Brick, Medium Dense Brown, Fine to Medium Sand, Trace Brick, Fill
88.2	11	Medium Dense, Brown, Silty Sand, Trace Gravel & Clay
86.7		Brown, Sandy Silty Clay with Gravel
83.2		Brown & Tan Limestone, Dense, Slightly Weathered and Broken
79.2		

CS-55

Pier 25, S.B.

Surface Elevation		
96.8	10	2" Asphalt to 3" Base Material to Loose, Dark Brown, Fine to Medium Sand, Trace Gravel
86.3	61	Very Firm, Brown to Gray Sandy Silty Clay, Trace Gravel (Glacial Till)
2.3(P)		
80.3		Moderately Hard, Brown, Highly Fractured Limestone
77.55(P)		
92%		
69.8		Moderately Hard, Light Gray & Brown Limestone
48%		
60.3		Soft Tan Limestone, Porous and Broken
26%		
50%		

CS-56

Pier 25, N.B.

Surface Elevation		
97.9	12	6" Crushed Rock to Brown Clay, Sand & Rock Fill
	6	
81.9	10	Brown Gravelly Clay
79.7		
98%		Tan and Gray Dolomite, Laminated, Brittle, Fractured
100%		
69.6		Tan Shale, Clay, No Recovery
66.5		
64.7		Brittle Tan Dolomite

P-5

Pier 25, N.B.

Surface Elevation		
97.9	16	3" Crushed Stone to Medium Dense Brown to Reddish Brown Gravelly Fine to Coarse Sand, Trace Silt, Brick and Concrete, Fill
	23	
81.4	17	Firm to Hard, Gray, Sandy Silty Clay, Trace Gravel (Glacial Till)
1.75(P)	51	
78.4		Brown and Tan Weathered and Broken Limestone
72.9		

CS-58

Pier 26, N.B.

Surface Elevation		
97.8	8	3" Crushed Stone to Loose, Brown Fine to Coarse Sand, Trace Gravel and Brick, Fill
88.0	29	Brown, Highly Weathered and Broken Limestone
	*	
76.8		* Refusal, Sampler Bouncing

CS-57

Pier 26, S.B.

Surface Elevation		
97.2	16	Brown Sandy Silt, Topsoil
96.7		Medium Dense, Brown, Silty Clayey Sand, Moist, with Gravel & Trace Organic, Possible Fill
85.2	20(P)	Firm to Very Firm, Gray Sandy Silty Clay, Trace Gravel (Glacial Till)
77.6	38	Brown Weathered Limestone to Light Gray & Tan Moderately Hard Limestone
72.4		

CS-43

Pier 24, N.B.

100

100

Surface Elevation		
96.7	15(P)	6" Crushed Rock to Dark Brown Clayey Silt - Trace Sand
91.8	8	Brown Silt, Trace Sand & Clay
91.2		Loose to Medium Dense, Brown, Fine to Coarse Sand, Trace Gravel
84.2	12	
1.25(P)	18	Firm Gray Sandy Silty Clay Trace Gravel (Glacial Till)
78.7		
74.2		Brown Highly Weathered & Broken Limestone

CS-51

Pier 23S, S.B.

Surface Elevation		
97.8		Brown Silt, Trace Clay, Fill
94.3	26	Medium Dense to Dense Dark Brown, Silty Fine Sand, Trace Gravel & Cinders Fill
	32	
84.8	1.5(P)	Gray Sandy Silty Clay, Trace Gravel (Glacial Till)
1.25(P)	22	
77.8	32	Brown Highly Weathered & Broken Limestone
73.8		

CS-53

Pier 24, S.B.

SOUNDING DATA

Note: For location of soundings see Sheets 1 and 2 of 201. For "Sounding Legend" see Sheet 5 of 201.

NOTE: Subsurface information shown on this drawing was obtained solely for use in establishing design controls for the project. The accuracy of this information is not guaranteed and it is not to be construed as part of the plans governing the construction of this project.

CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE

SOUNDING DATA

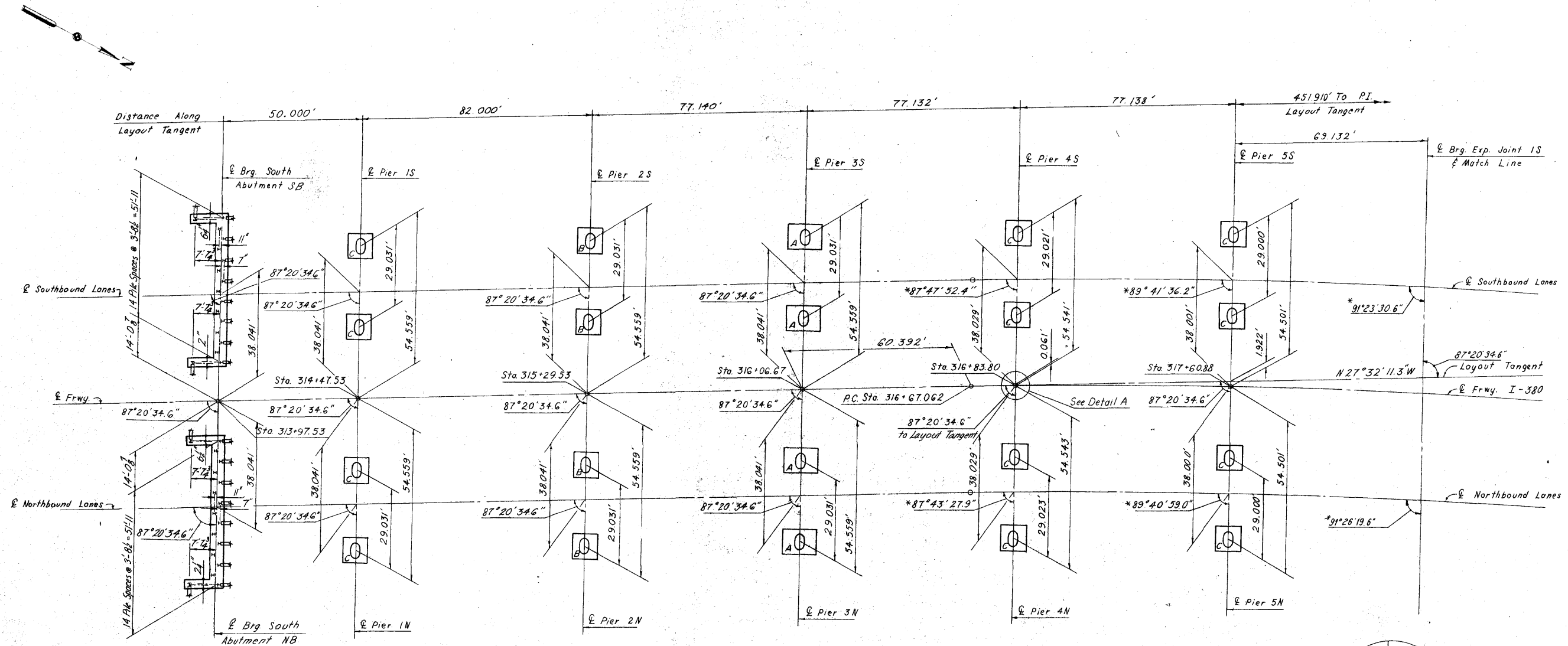
STA. 322+81.95 @ FREEWAY =
STA. 32+14.70 @ 1ST. AVE. W
PROJECT NO. I-380-6(68)263--01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

MADE CC DATE CHECKED SA DATE 8-2-74

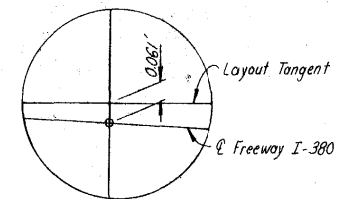
SHEET 9 OF 201

DESIGN NO. 1276 LINN COUNTY FILE 23191 SHEET 11 OF 203



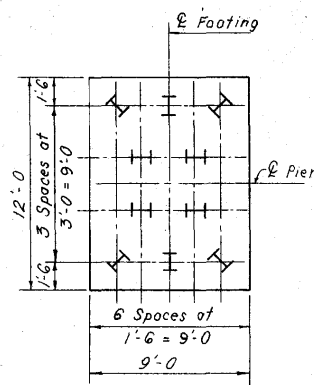
FOOTING PLAN

* Angle given to local tangent of Lane

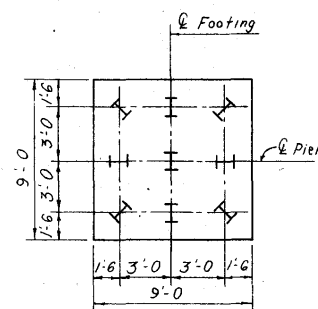


DETAIL A

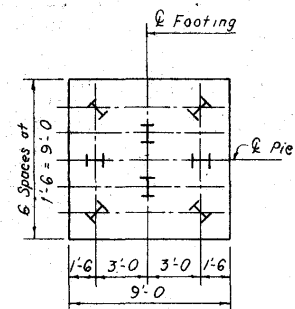
Notes:
The letter inside of the pier footing denotes the type of footing.
See Pier and Abutment Details for amount of batter and location of battered piles.



TYPE A FOOTING



TYPE B FOOTING



TYPE C FOOTING

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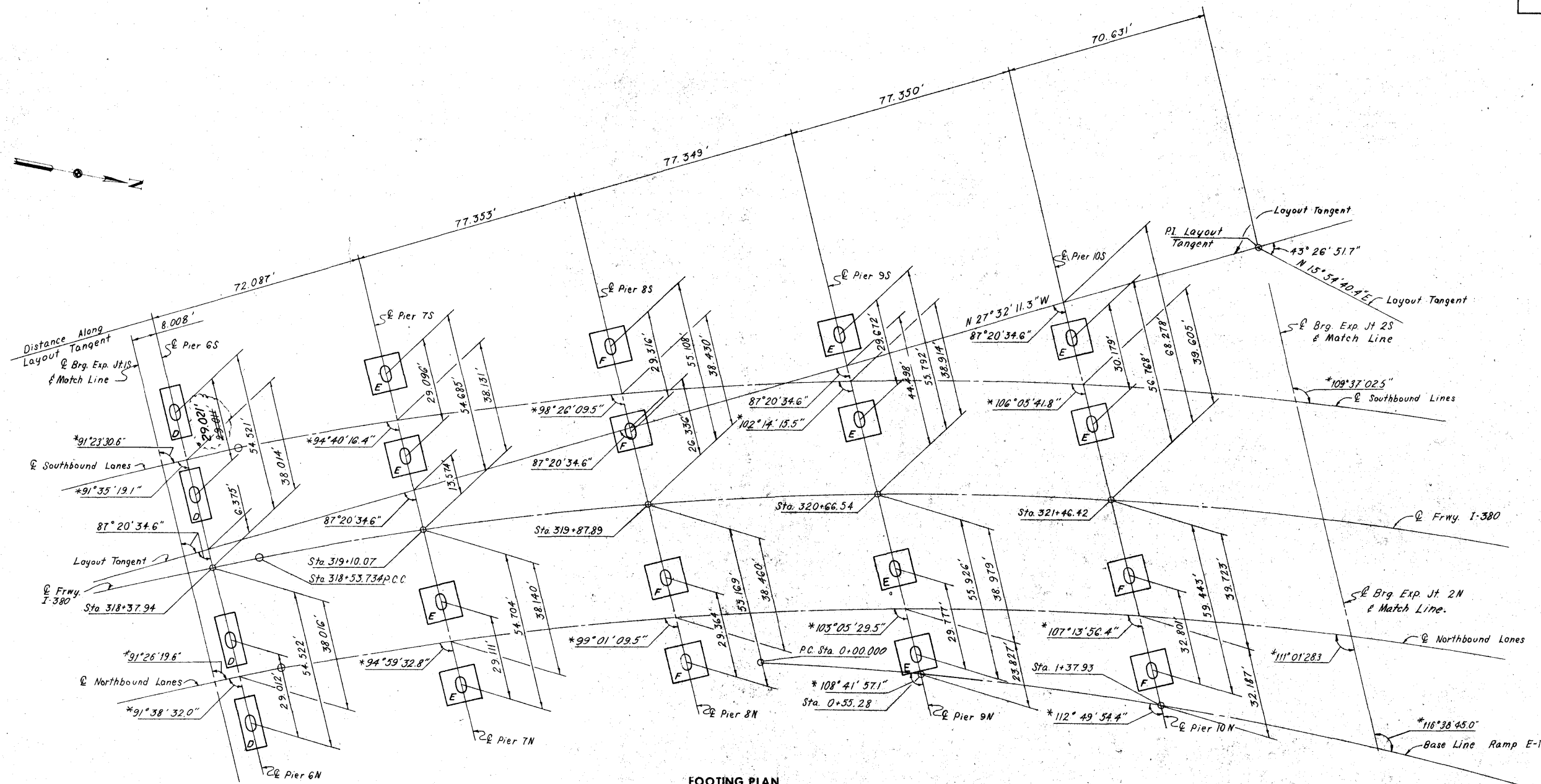
MADE LCK DATE 5-30-74 CHECKED ROC DATE 6-24-74

CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE
FOOTING PLAN - UNITS 1SB AND 1NB

STA. 322+81.95 @ FREEWAY =
STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. I-380-6(68)263--01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

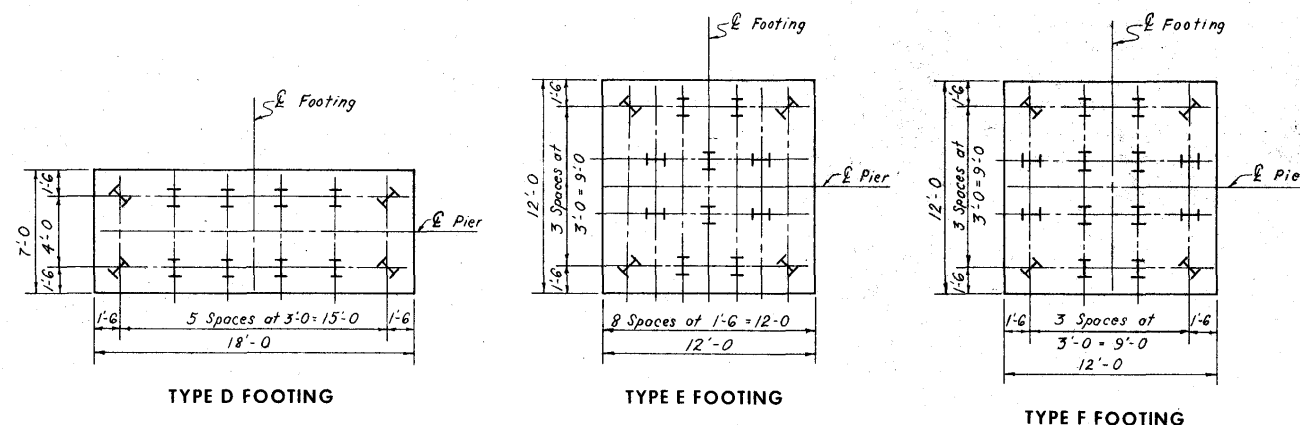
DESIGN NO. 1276 LINN COUNTY FILE 23191 SHEET 12 OF 203-0

SHEET 10 OF 201



FOOTING PLAN

* Angle given to local tangents of Lane or Ramp.



TYPE D FOOTING

TYPE E FOOTING

TYPE F FOOTING

Notes:
The letter inside of the pier footing denotes the type of footing.
See Pier Details for amount of batter and location of battered piles.

**CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE
FOOTING PLAN - UNITS 2SB AND 2NB**

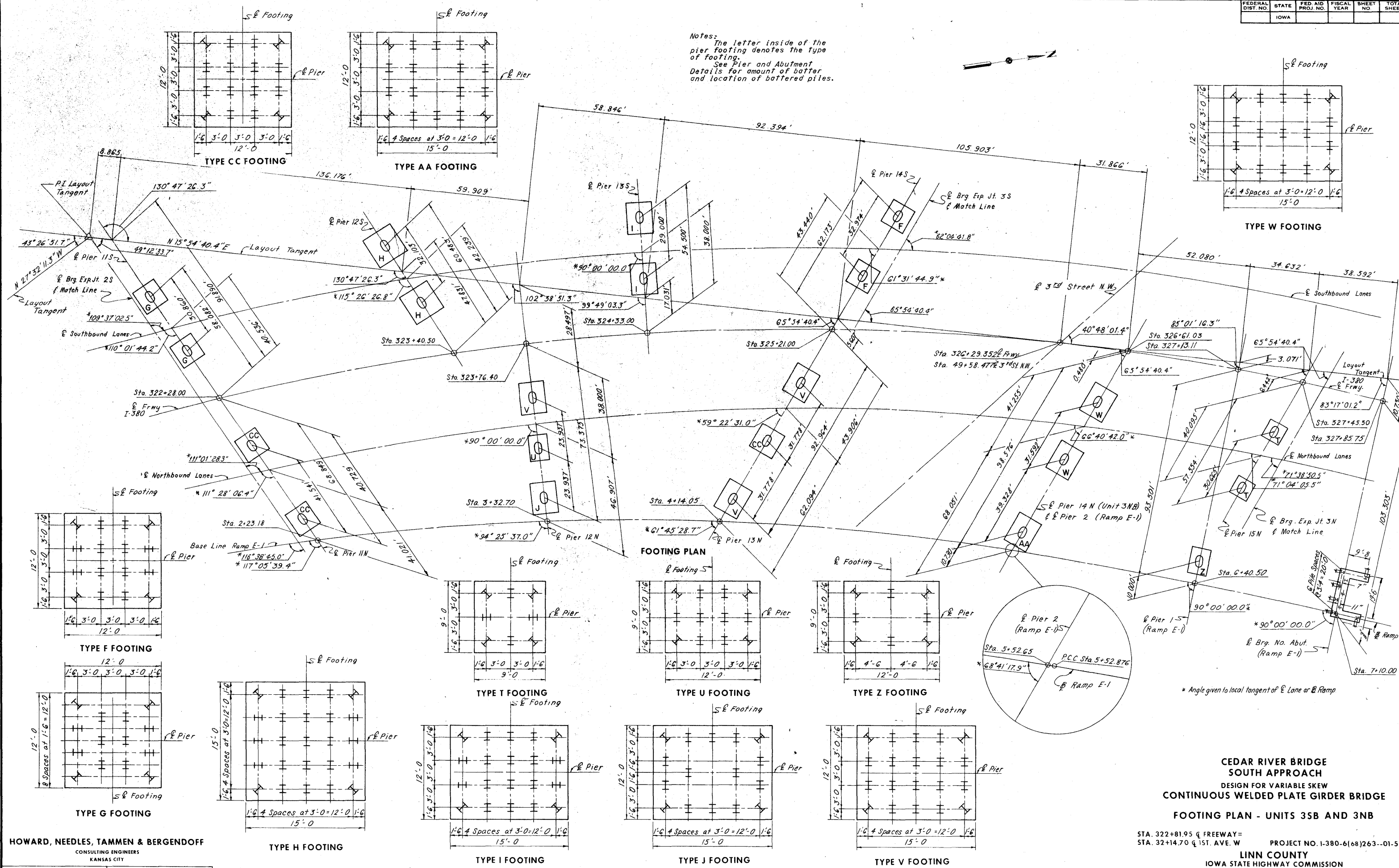
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STA. 32+14.70 & 1ST. AVE. W
PROJECT NO. I-380-6(68)263--01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
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KANSAS CITY

MADE L.G.K. DATE 5-30-74 CHECKED R.O.C. DATE 6-24-74

Revised 2-14-77: Dimension corrected E-E columns Pier 6S.

Notes:
The letter inside of the pier footing denotes the type of footing.
See Pier and Abutment Details for amount of batter and location of battered piles.

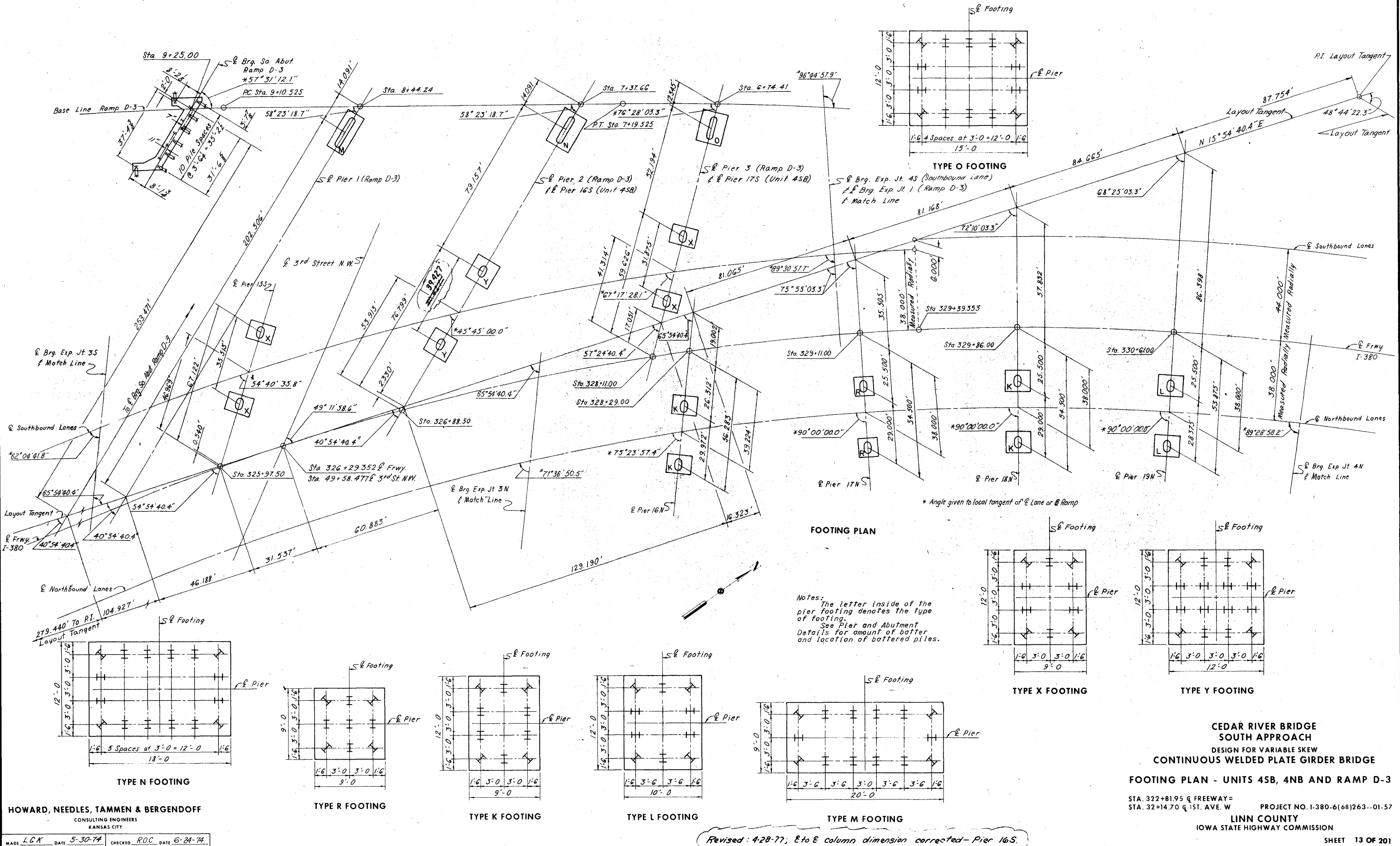


HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

MADE LGA DATE 5-30-74 CHECKED R.O.C. DATE 6-24-74

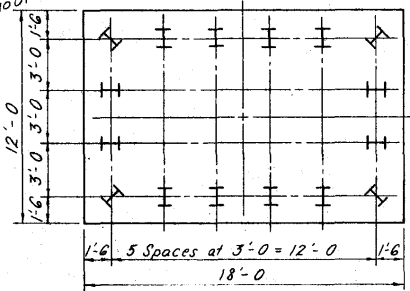
**CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE
FOOTING PLAN - UNITS 3SB AND 3NB**

STA. 322+81.95 @ FREEWAY =
STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. 1-380-6(68)263--01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

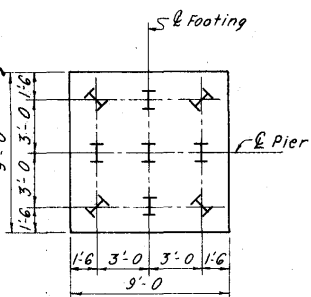


FOOTING PLAN

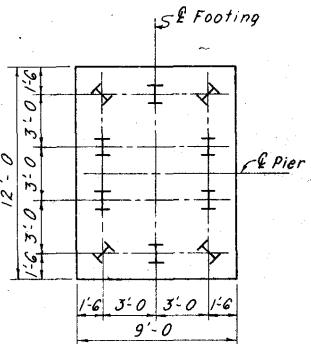
Notes:
The letter inside of the pier footing denotes the type of footing.
See Pier and Abutment Details for amount of batter and location of battered piles.



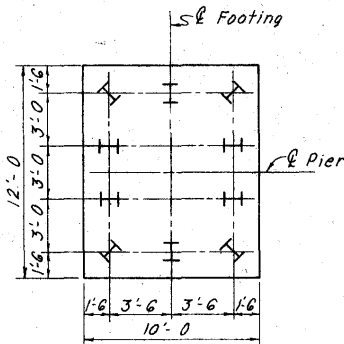
TYPE N FOOTING



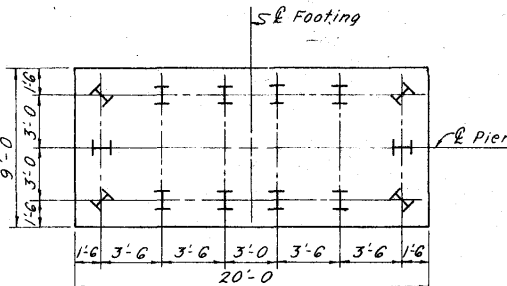
TYPE R FOOTING



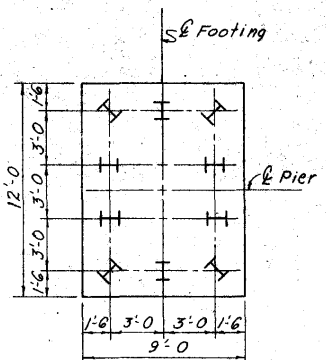
TYPE K FOOTING



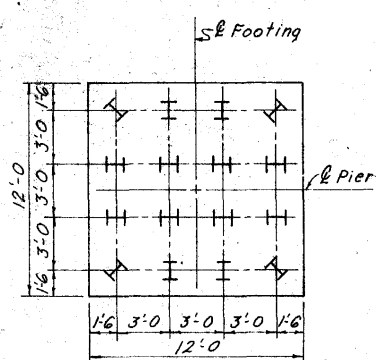
TYPE L FOOTING



TYPE M FOOTING



TYPE X FOOTING



TYPE Y FOOTING

**CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE**

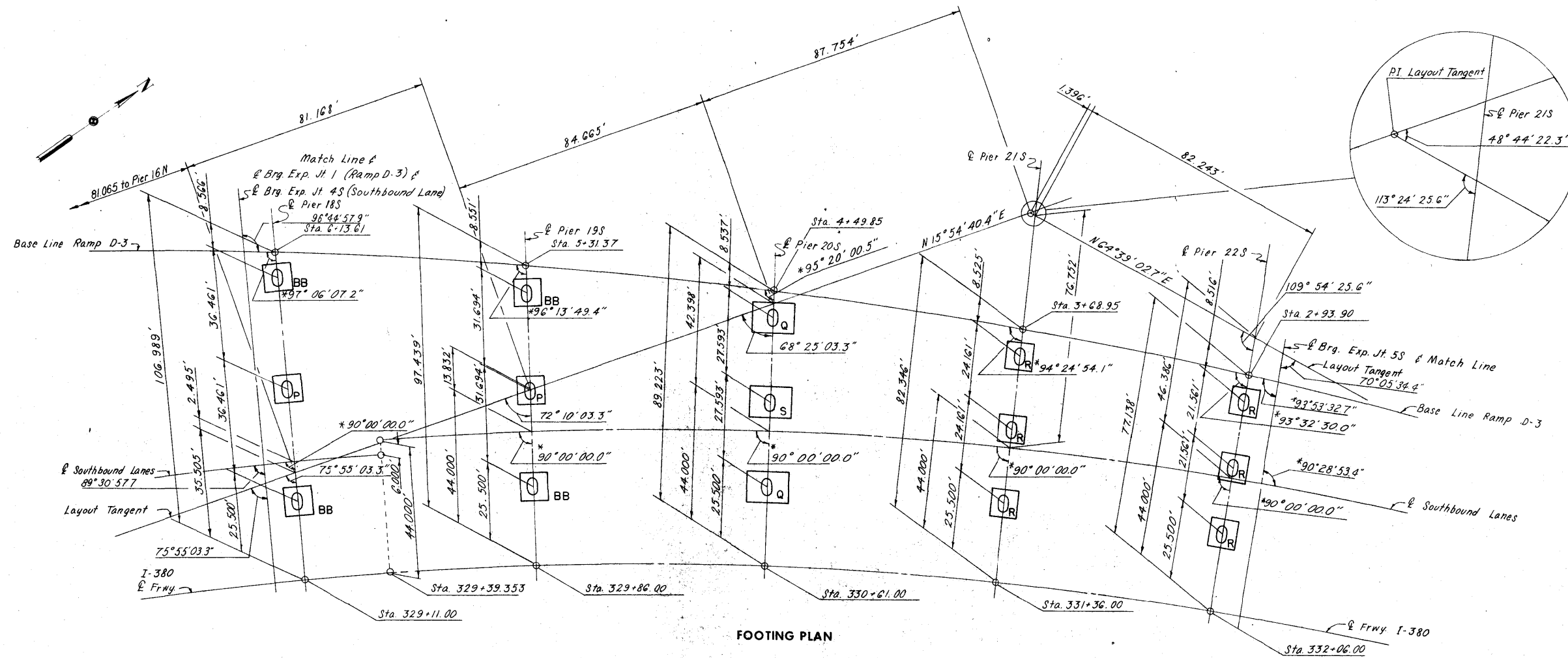
FOOTING PLAN - UNITS 4SB, 4NB AND RAMP D-3

STA. 322+81.95 @ FREEWAY =
STA. 32+14.70 @ 1ST. AVE. W
PROJECT NO. I-380-6(68)263--01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

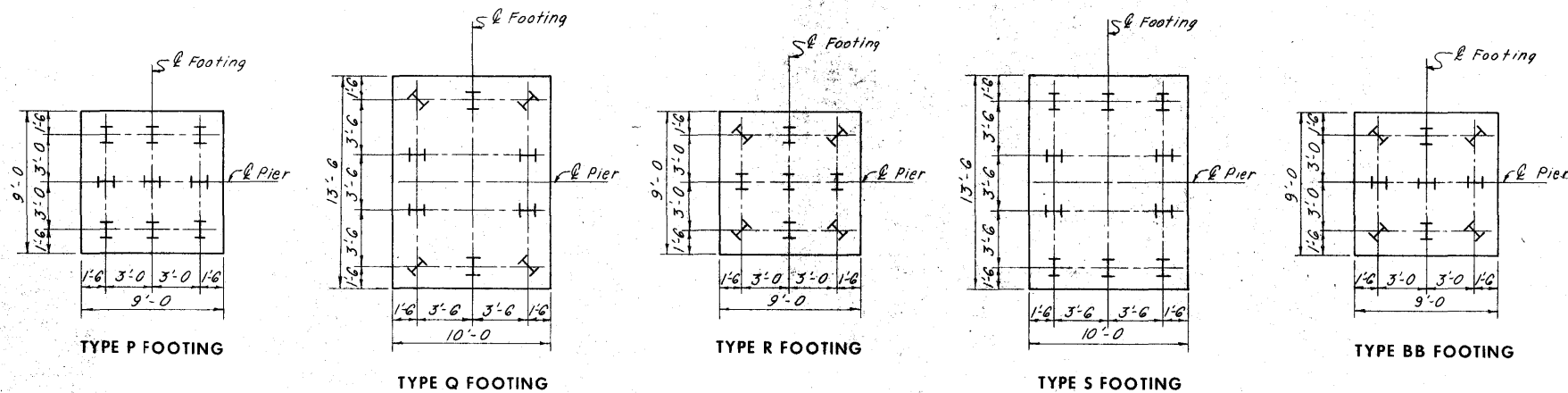
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KANSAS CITY

MADE L.G.K. DATE 5-30-74 CHECKED R.O.C. DATE 6-24-74

Revised: 4-28-77; E to E column dimension corrected - Pier 16S.



FOOTING PLAN



Notes: The letter inside of the pier footing denotes the type of footing.
 See Pier Details for amount of batter and location of battered piles.

* Angle given to local tangent of & Lane or & Ramp

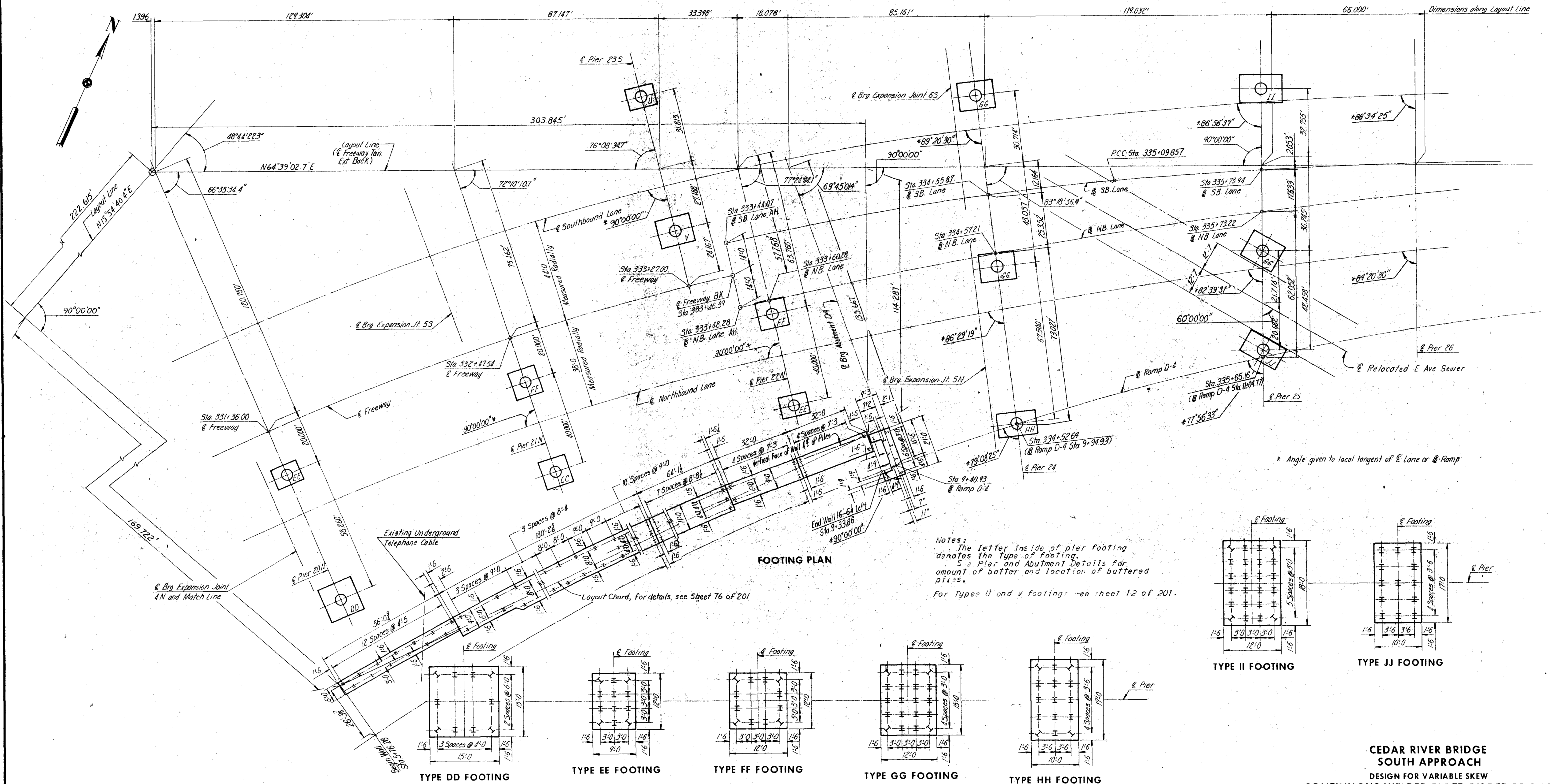
CEDAR RIVER BRIDGE
 SOUTH APPROACH
 DESIGN FOR VARIABLE SKEW
 CONTINUOUS WELDED PLATE GIRDER BRIDGE
 FOOTING PLAN - UNITS 55B

STA. 322+81.95 & FREEWAY=
 STA. 32+14.70 & 1ST. AVE. W
 PROJECT NO. I-380-6(68)263--01-57
 LINN COUNTY
 IOWA STATE HIGHWAY COMMISSION

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MADE LGK DATE 5-30-74 CHECKED R.O.C. DATE 6-24-74

SHEET 14 OF 201



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MADE BJT DATE 7-11-74 CHECKED RLF DATE 7-16-74

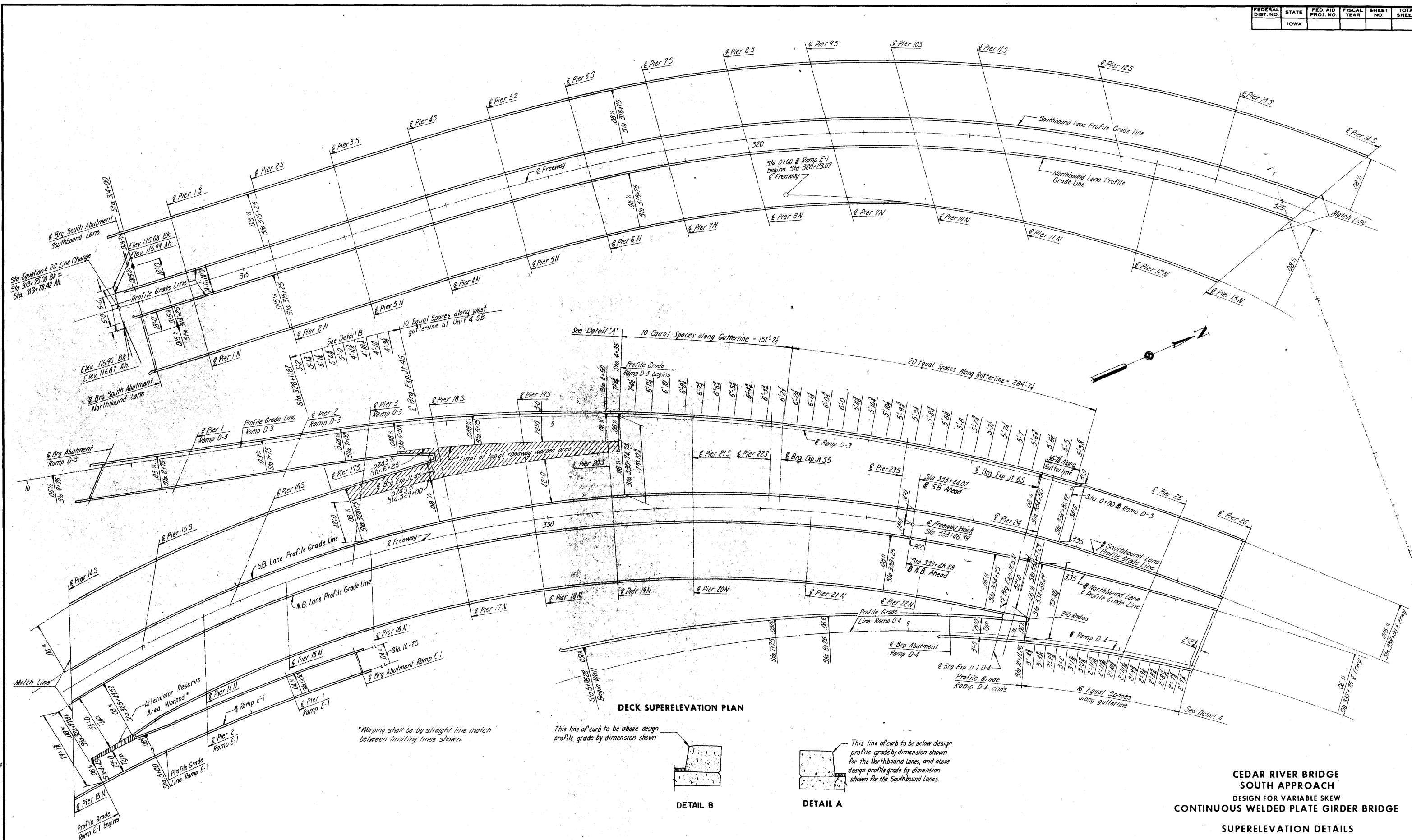
**CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE
FOOTING PLAN
UNITS 6 AND 7 SB AND 5 AND 6 NB**

STA. 322+81.95 @ FREEWAY =
STA. 324+14.70 @ 1ST. AVE. W PROJECT NO. 1-380-6(68)263--01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

SHEET 15 OF 201

DESIGN NO. 1274 LINN COUNTY FILE 22101 SHEET 17 OF 203

FEDERAL DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEET
	IOWA				



**CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE
SUPERELEVATION DETAILS**

STA. 322+81.95 @ FREEWAY=
STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. I-380-6(68)263--01-57

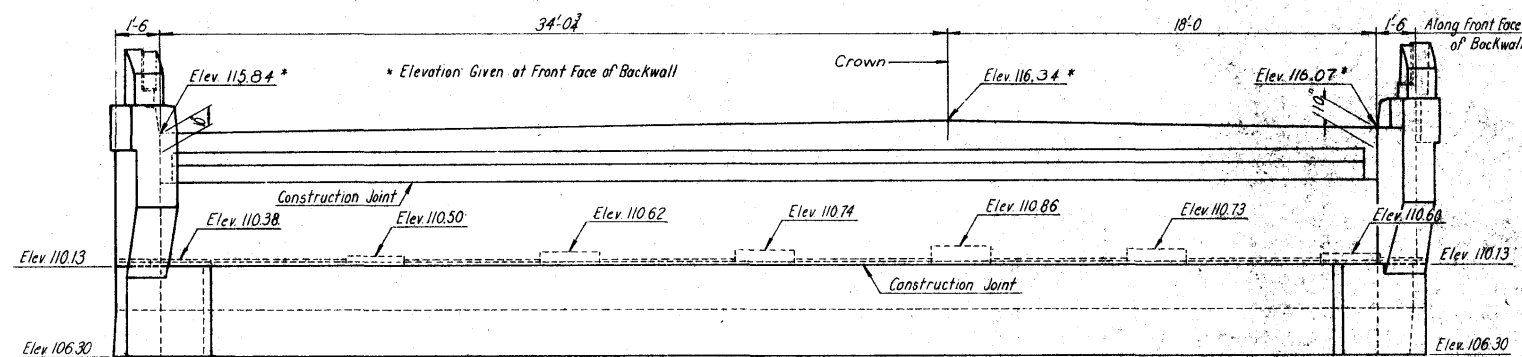
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
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KANSAS CITY

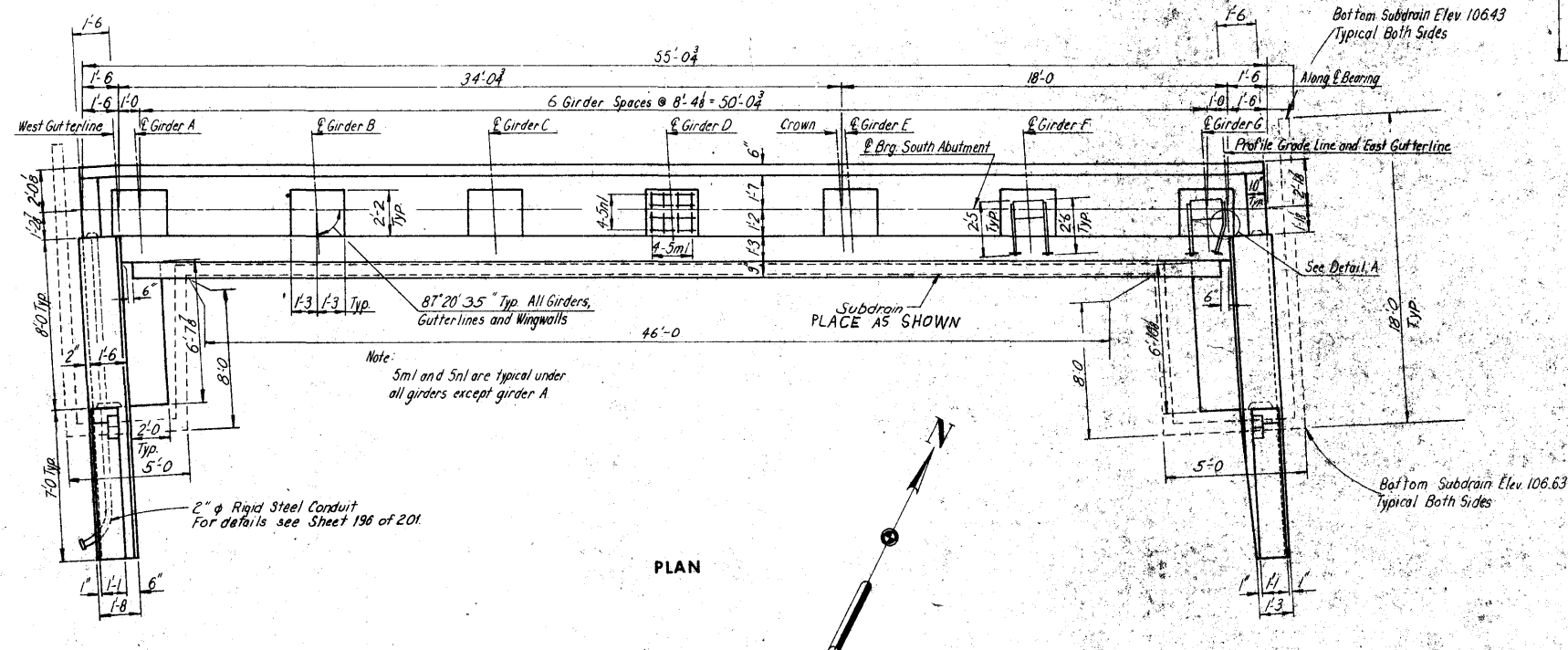
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SHEET 16 OF 201

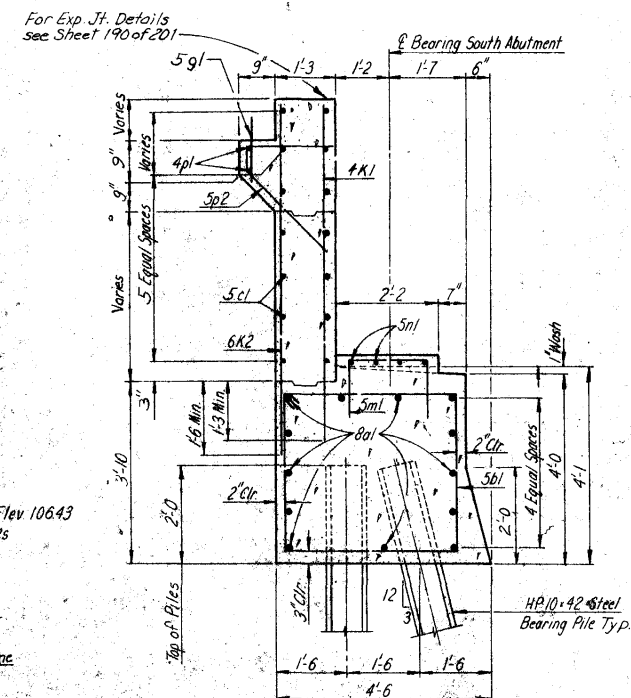
DESIGN NO. 1274 LINN COUNTY FILE 22101 SHEET 18 OF 20



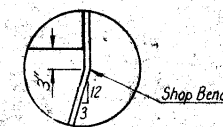
REAR ELEVATION



PLAN



TYPICAL SECTION



DETAIL A

Note: Girder A anchor bar is to be bent similar to bar in Detail A.

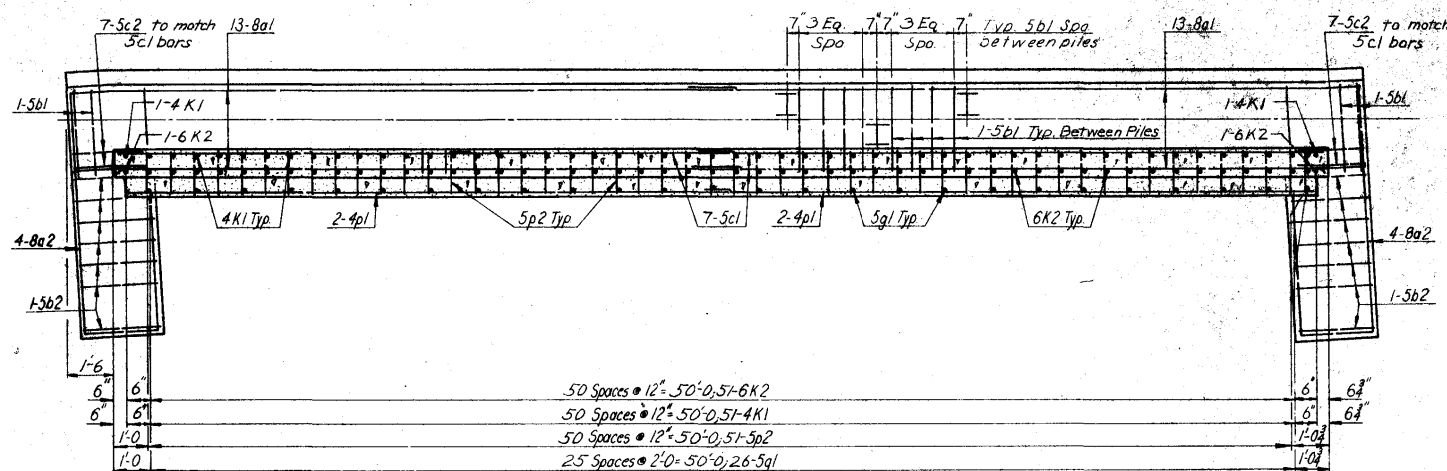
CONCRETE PLACEMENT QUANTITIES		
LOCATION	UNIT	QUANTITY
Footing and Steps (Class C)	Cu. Yds.	4.4
Backwall above Constr. Jt. (Class D)	Cu. Yds.	7.9
Backwall below Constr. Jt. (Class C)	Cu. Yds.	8.4
Wingwalls (Class D)	Cu. Yds.	6.3
Manholes (Class C)	Cu. Yds.	0.8
Temporary Paving Block ** (Class C)	Cu. Yds.	1.4
End Posts 2 @ .55' (Class D)	Cu. Yds.	1.1
Wings (Class D)	Cu. Yds.	4.3
Total	Cu. Yds.	40.6

** Paving block may be Class D concrete

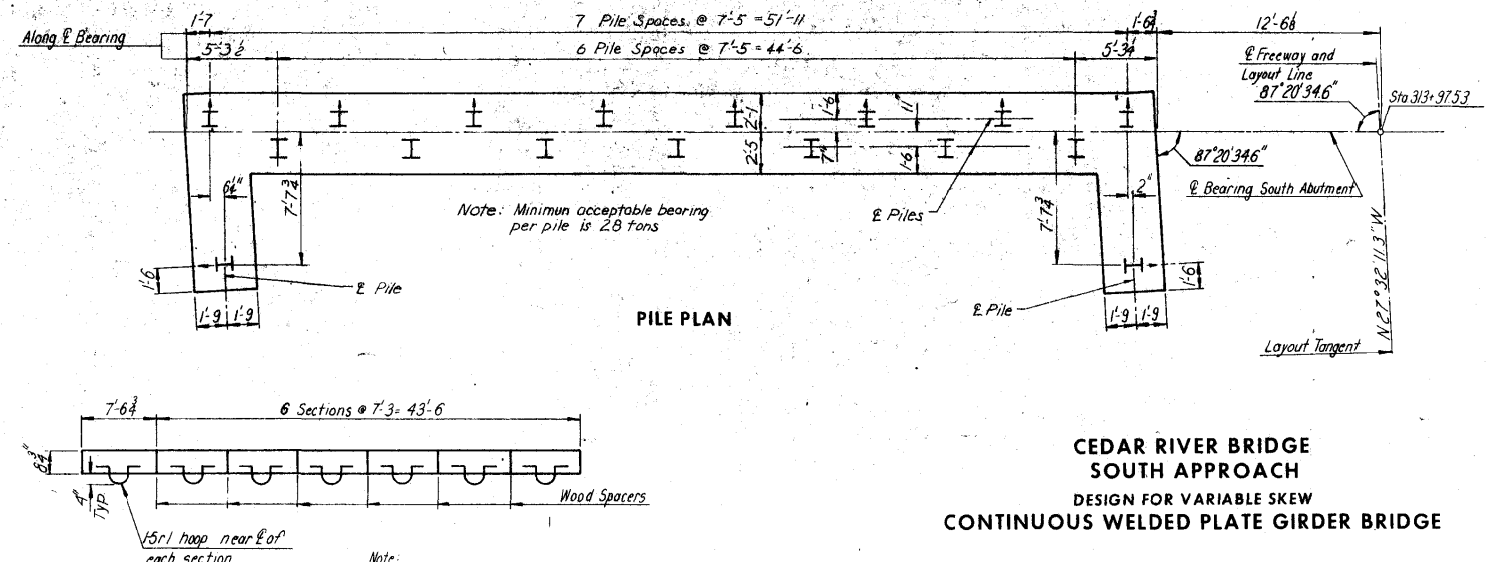
ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Structural Concrete ***	Cu. Yds.	70.0
Reinforcing Steel	Lbs.	7,509
HP 10x42 Steel Bearing sheet piling	Furnish Lin. Ft.	600
Pile 17 @ 40' see Piling Log	Drive Lin. Ft.	600
Granular Backfill	Cu. Yds.	99
Suodrain	Lin. Ft.	108
Excavation, Class 20	Cu. Yds.	100
Bridge seat sealer	Sq. Ft.	210

... Includes 51.0 Cu. Yds. Class C concrete
and 19.6 Cu. Yds. Class D concrete.

Notes: For "Abutment Notes" see Sheet 18 of 201.
For "Bill of Reinforcement" see Sheet
18 of 201.



FOOTING PLAN



PILE PLAN

TEMPORARY PAVING BLOCK PLAN

Note:
Wood Spacers are to
be included in the
price bid for concrete.

**CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE**

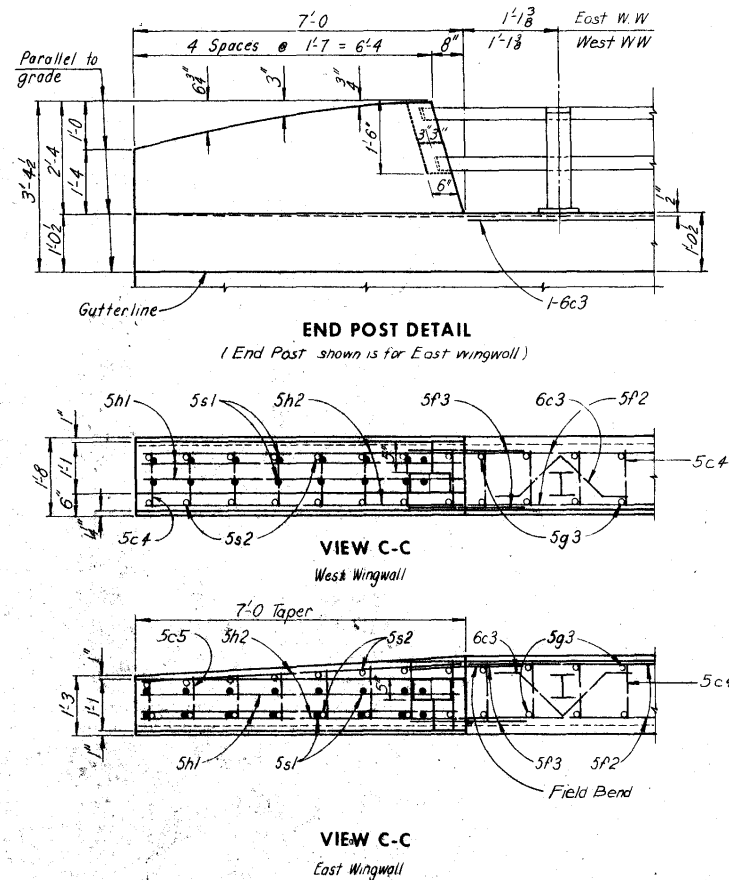
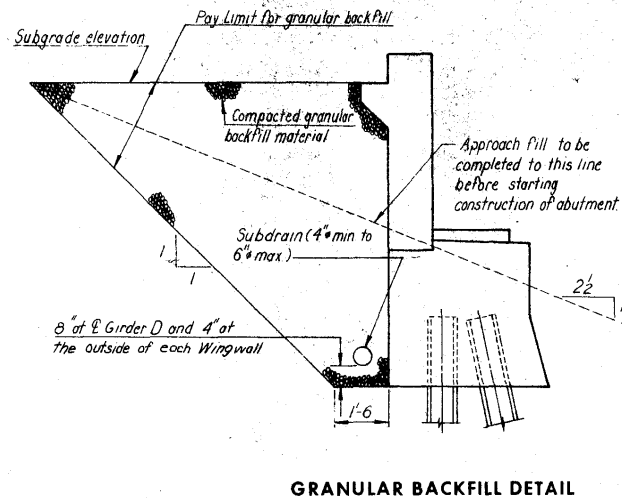
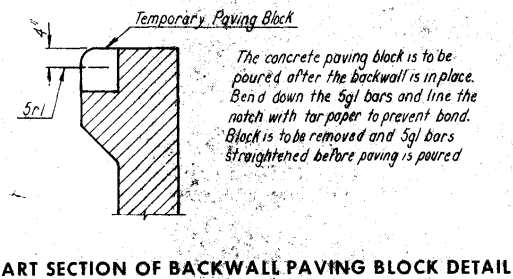
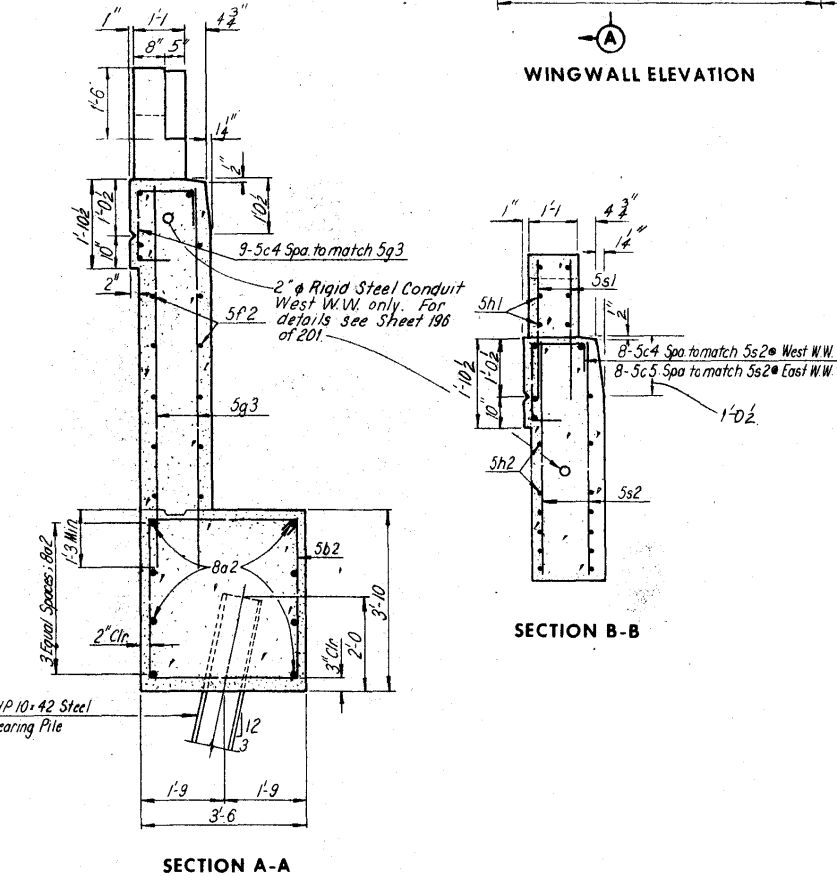
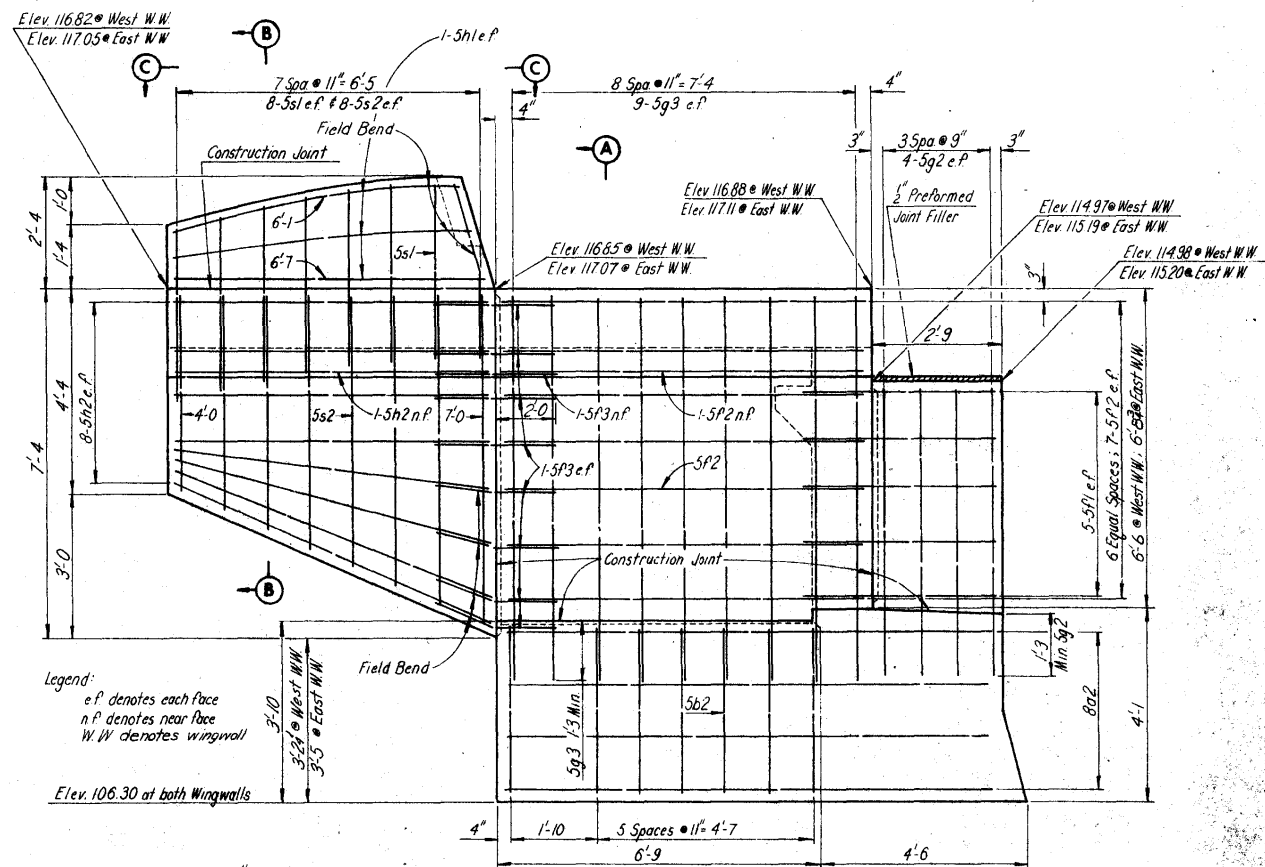
SOUTH ABUTMENT SOUTHBOUND LANE

STA. 322+81.95 @ FREEWAY =
STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. 1-380-6(68)263--01-57

LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

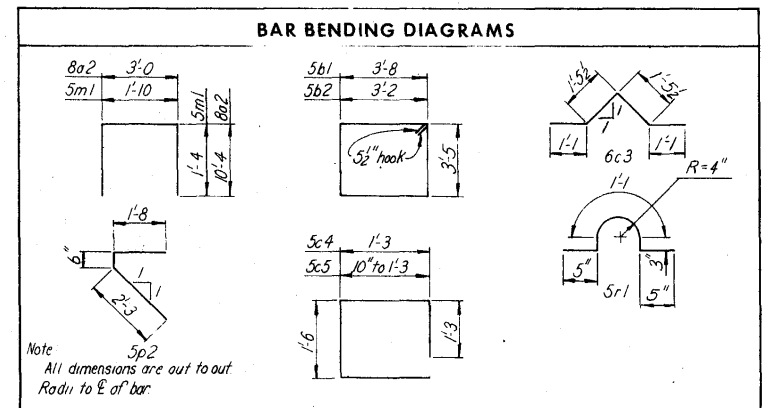
SHEET 17 OF 201

DESIGN NO. 1276 LINN COUNTY FILE 23191 SHEET 19 OF 203-0



BILL OF REINFORCEMENT					
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
8a1	Footings		20	28'-6"	1,978
8a2	Footings, Wingwall		8	23'-6"	502
5b1	Footings		60	14'-10"	928
5b2	Footings, Wingwall		14	13'-10"	202
5c1	Backwall		28	26'-6"	774
5c2	Backwall, Dowel		28	2'-7"	75
6c3	Rail Post Anchor		2	5'-0"	15
5c4	Curb, Vertical		26	5'-0"	136
5c5	Curb, Vertical		1 Ser 8	Varies	38
5f1	Maskwall		20	4'-0"	83
5f2	Wingwall		30	7'-8"	240
5f3	Wing, Dowel		34	3'-10"	136
5g1	Approach Slab Seat		26	1'-9"	47
5g2	Maskwall		16	6'-0"	100
5g3	Wingwall		30	7'-11"	297
5h1	End Post		4 Ser 3	Varies	79
5h2	Wing		34	6'-8"	236
4k1	Backwall		53	7'-4"	250
6k2	Backwall		53	7'-7"	604
5m1	Step		24	4'-4"	108
5n1	Step		24	2'-2"	54
4p1	Approach Slab Seat		4	25'-11"	69
5p2	Approach Slab Seat		51	4'-4"	231
5r1	Temporary Paving Block		7	2'-3"	16
5s1	End Post, Dowel		32	3'-6"	117
5s2	Wing		4 Ser 8	Varies	184
Total					7,509

Abutment Notes:
 All exposed corners 90° or sharper are to be filled with a 1/2" 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 all preformed joint material is to be included in the price bid for concrete.
 Masonry plates are to be set before the backwall is placed.
 The maskwalls are to be poured before the superstructure slab is poured.
 Construction joint keyways are to be formed with beveled 2 x 6's except as noted.
 Place top portion of backwall after superstructure slab is in place.
 Gutter piles 3" per foot where indicated.
 Pile spacing shown is at bottom of footing.
 All piles are to be driven to full penetration if practicable but to at least 37-ton bearing value for HP10x42, unless otherwise noted.
 See General Notes on Sheet 4 of 201.



**CEDAR RIVER BRIDGE
 SOUTH APPROACH
 DESIGN FOR VARIABLE SKEW
 CONTINUOUS WELDED PLATE GIRDER BRIDGE**

ABUTMENT DETAILS SOUTHBOUND LANE

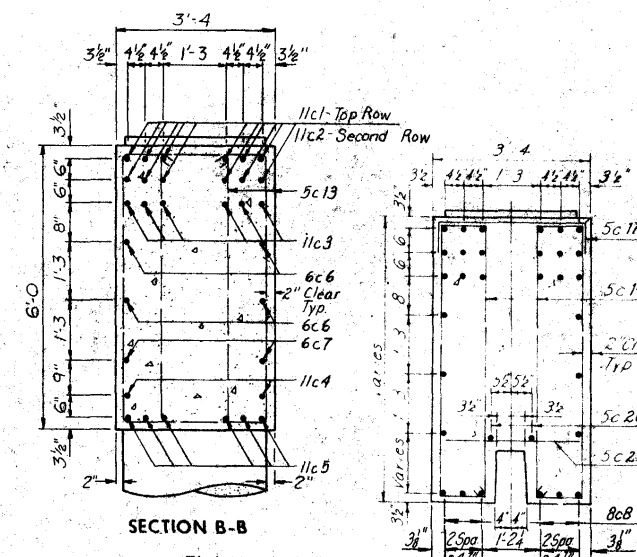
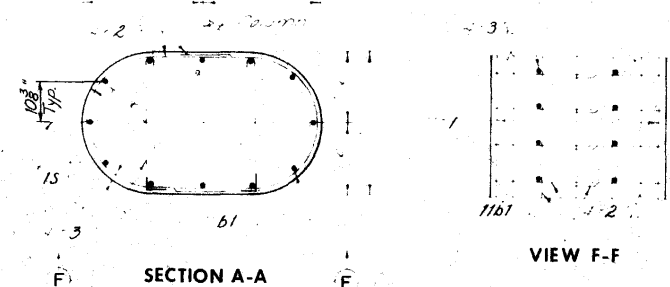
STA: 322+81.95 @ FREEWAY =
 STA: 324+70 @ 1ST. AVE. W PROJECT NO. I-380-6(68)263--01-57
 LINN COUNTY
 IOWA STATE HIGHWAY COMMISSION

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
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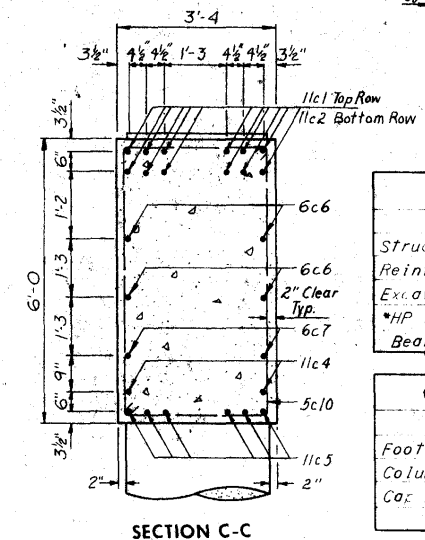
MADE DLR DATE 4-29-74 CHECKED DCH DATE 7-12-74

SHEET 18 OF 201

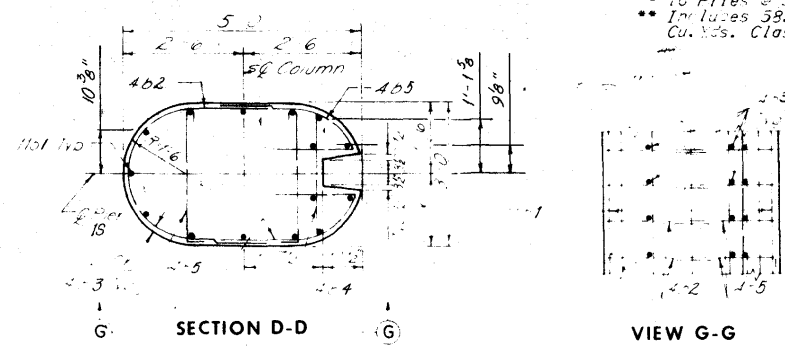
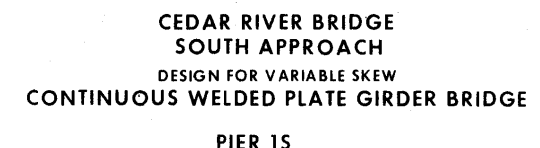
DESIGN NO. 1276 LINN COUNTY FILE 23191 SHEET 20 OF 203



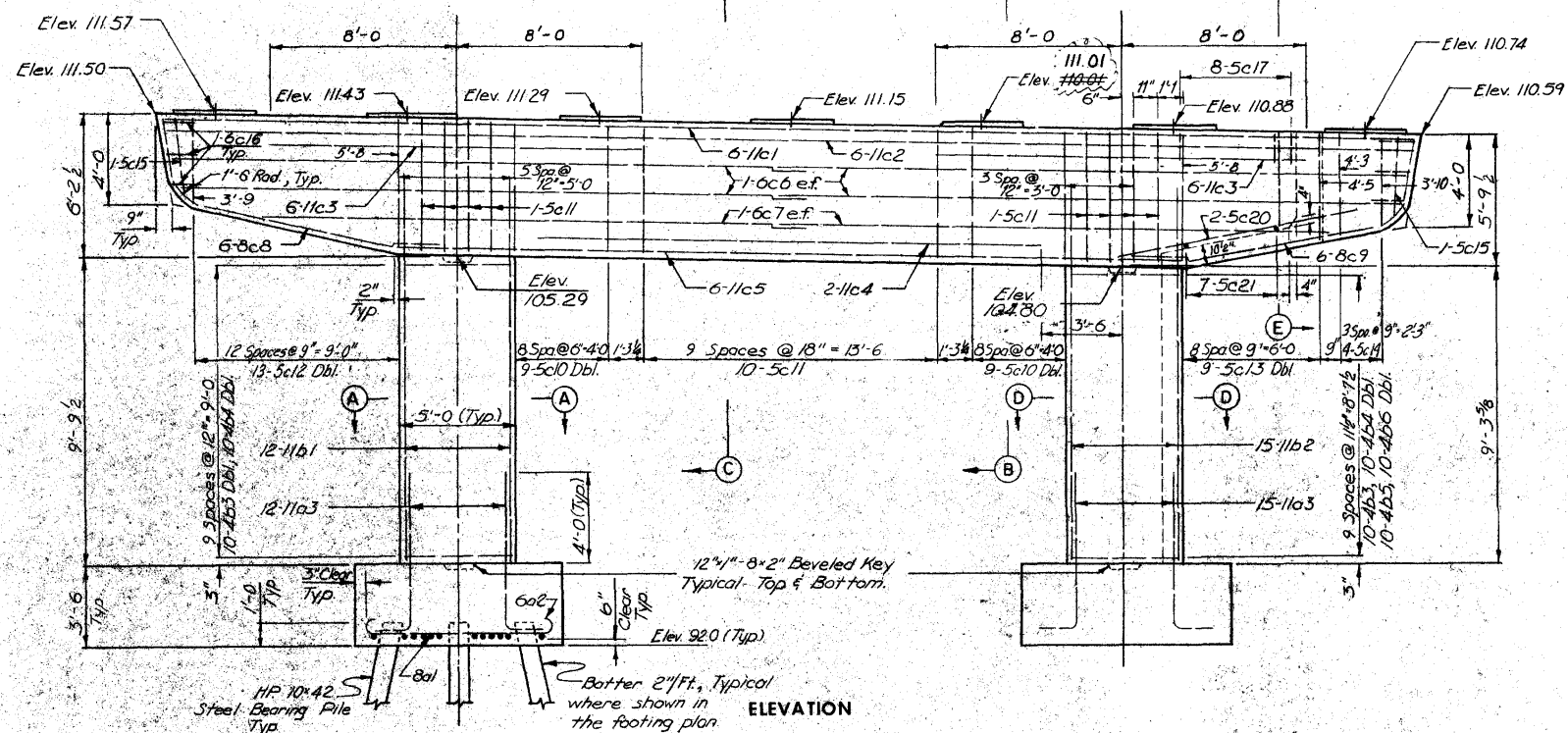
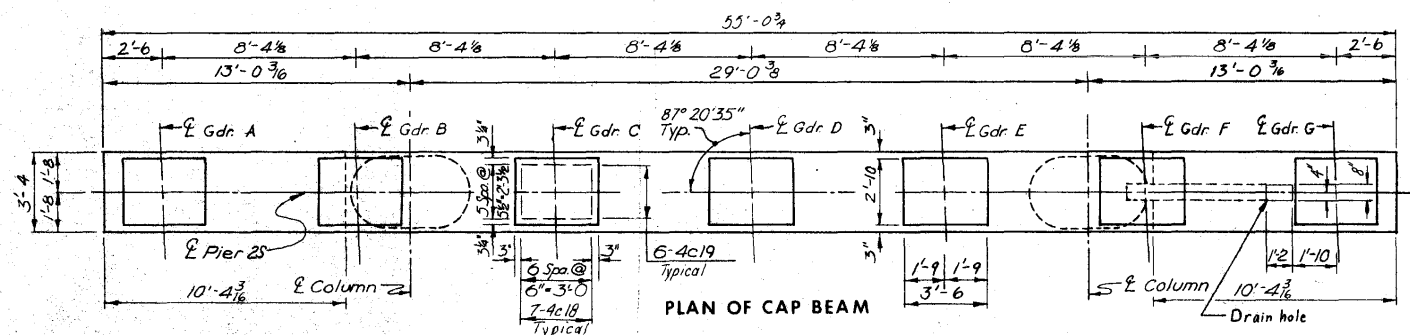
SECTION E-E



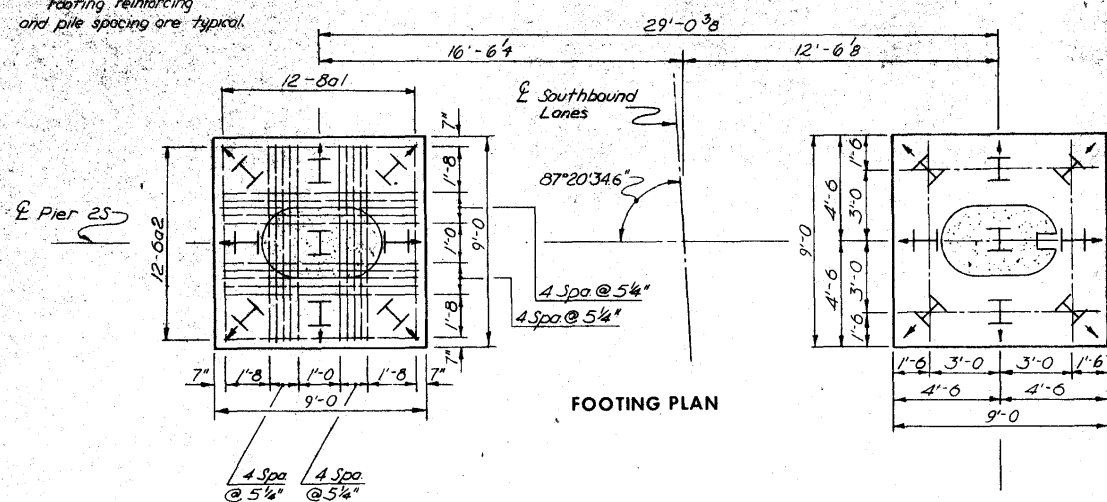
CONCRETE PLACEMENT QUANTITIES		
LOCATION	UNIT	QUANTITY
Footings, Class C	Cu. Yds.	21.0
Columns, Class D	Cu. Yds.	8.5
Cap. Beam, Class C	Cu. Yds.	37.8
Total	Cu. Yds.	67.3



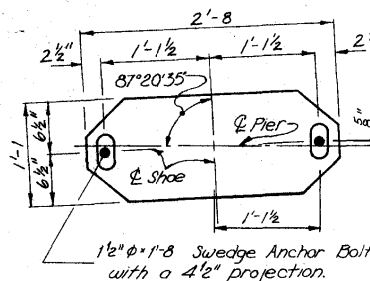
DESIGN NO 1276 LINN COUNTY FILE 23101 SHEET 21 OF 203



Note:
Footing reinforcing
and pile spacing are typical.

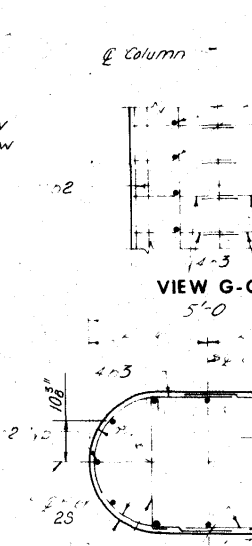
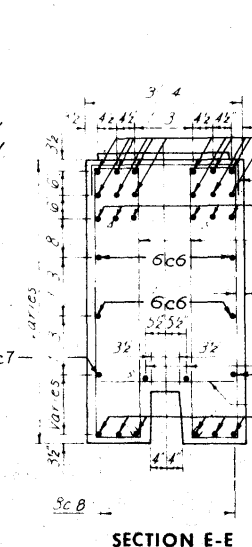
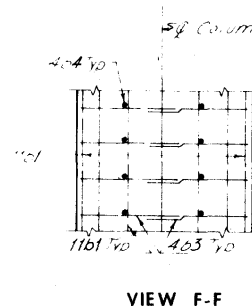
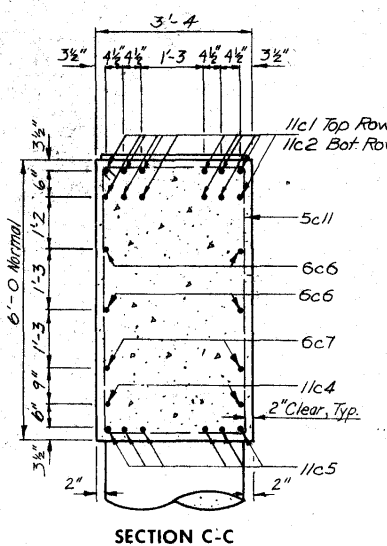
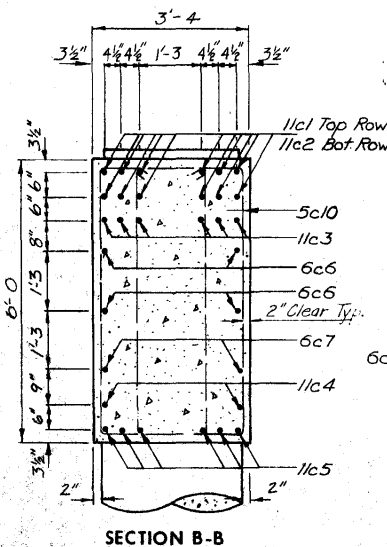
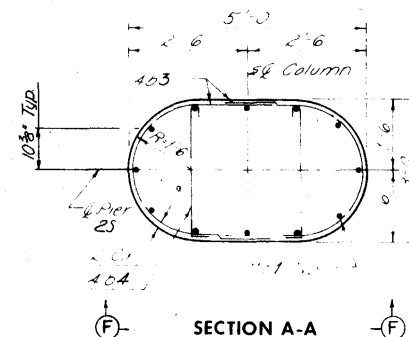


Notes:
For "Pier Notes" see Sheet 22 of 201.
Minimum acceptable bearing per pile
is 50 tons.



ANCHOR BOLT SETTING PLAN

* 19 Piles @ 33' see Piling Log Sheet 203B
** In Ladder 58.6 Cu. Yds. Class C and 3.1
Cu. Yds. Class D

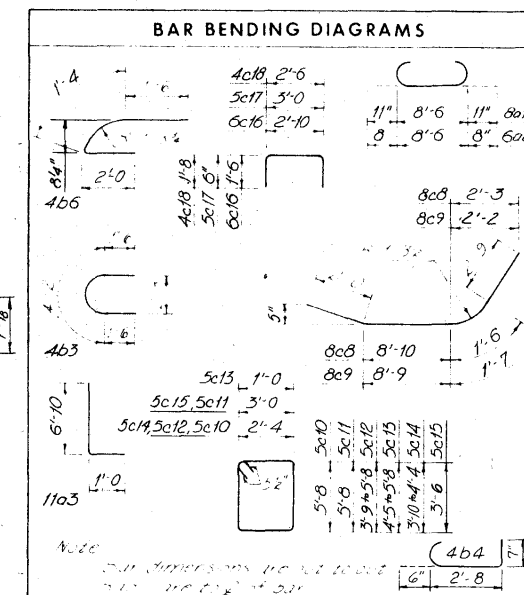


SECTION D-D

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Structural Concrete **	Cu. Yds.	67.7
Reinforcing Steel	Lbs.	13,323
Excavation, Class 20	Cu. Yds.	720
*HP10x42 Steel Furnish	Lin. Ft.	594
Bearing Piles Drive	Lin. Ft.	544

CONCRETE PLACEMENT QUANTITIES		
LOCATION	UNIT	QUANTITY
Footings, Class C	Cu. Yds.	21.0
Columns, Class D	Cu. Yds.	2.1
Cap Beam, Class C	Cu. Yds.	37.5
Total	Cu. Yds.	67.7

BILL OF REINFORCEMENT					
PIER 25					
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
8a1	Footing, Horizontal		24	10'-4"	662
6a2	Footing, Horizontal		24	3'-10"	54
11a3	Footing, Vertical		27	7'-9"	112
11b1	Column, Vertical		12	13'-10"	382
11b2	Column, Vertical		15	13'-4"	1063
4b3	Column, Horizontal		30	7'-2"	144
4b4	Column, Horizontal		40	3'-8"	98
4b5	Column, Horizontal		10	2'-6"	17
4b6	Column, Horizontal		20	4'-9"	6
11c1	Cap Beam, Horizontal		6	54'-7"	1740
11c2	Cap Beam, Horizontal		6	54'-5"	1735
11c3	Cap Beam, Horizontal		12	16'-0"	1020
11c4	Cap Beam, Horizontal		2	22'-0"	24
11c5	Cap Beam, Horizontal		6	34'-2"	1080
6c6	Cap Beam, Horizontal		8	27'-9"	33
6c7	Cap Beam, Horizontal		4	24'-9"	149
8c8	Cap Beam, Horizontal		6	15'-1"	242
8c9	Cap Beam, Horizontal		6	15'-1"	242
5c10	Cap Beam, Vertical		36	16'-8"	626
5c11	Cap Beam, Vertical		18	18'-0"	339
5c12	Cap Beam, Vertical	2Ser13	Varies		400
5c13	Cap Beam, Vertical	2Ser9	Varies		239
5c14	Cap Beam, Vertical	2Ser4	Varies		112
5c15	Cap Beam, Vertical		2	12'-8"	21
6c16	Cap Beam, Horizontal		6	5'-8"	51
5c17	Cap Beam, Horizontal		8	3'-10"	32
4c18	Cap Beam, Horizontal		4	5'-8"	195
4c19	Cap Beam, Horizontal		42	3'-2"	89
5c20	Cap Beam, Horizontal		2	10'-3"	21
5c21	Cap Beam, Horizontal		7	3'-0"	22
Total					13,323



CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE

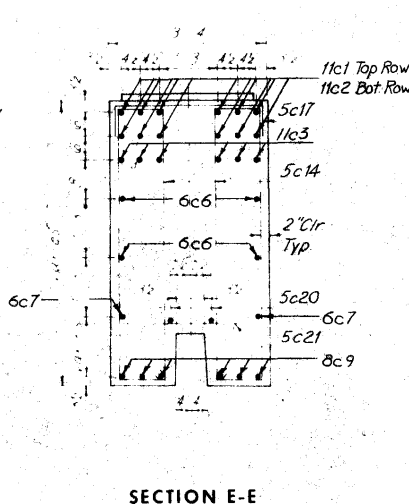
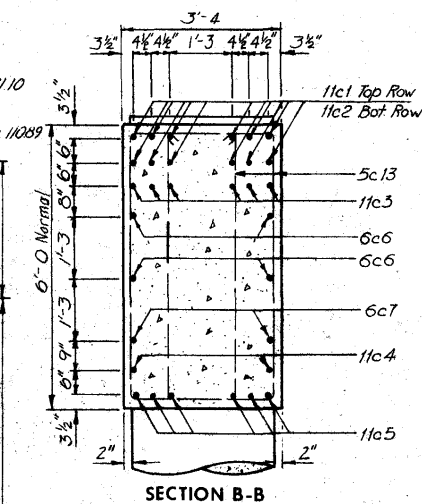
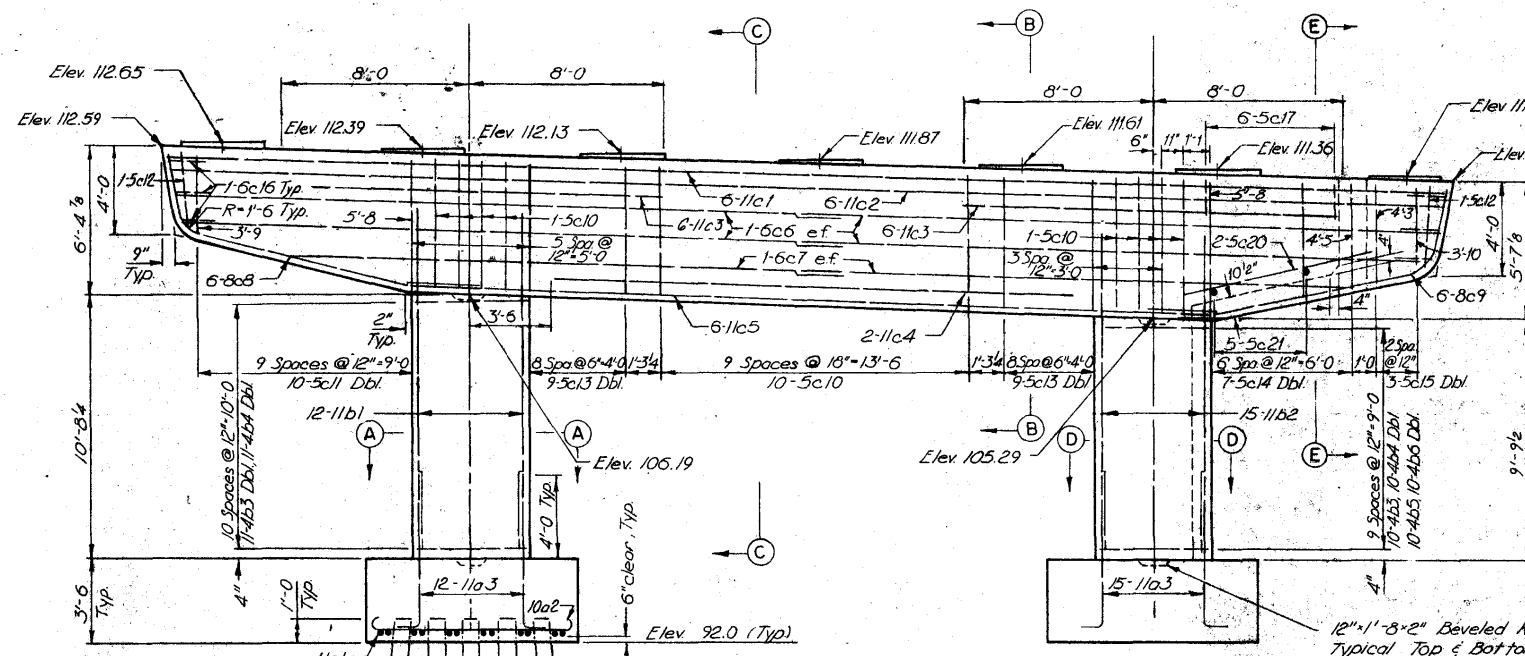
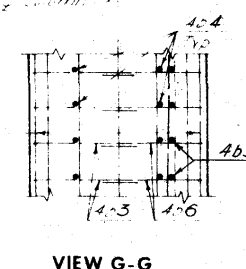
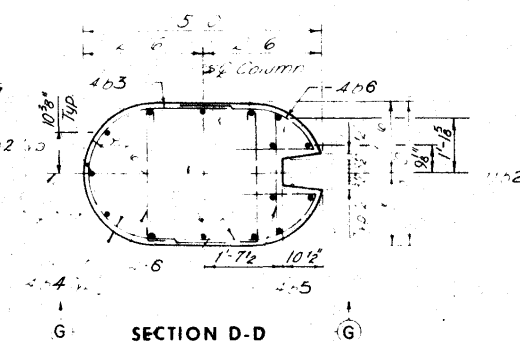
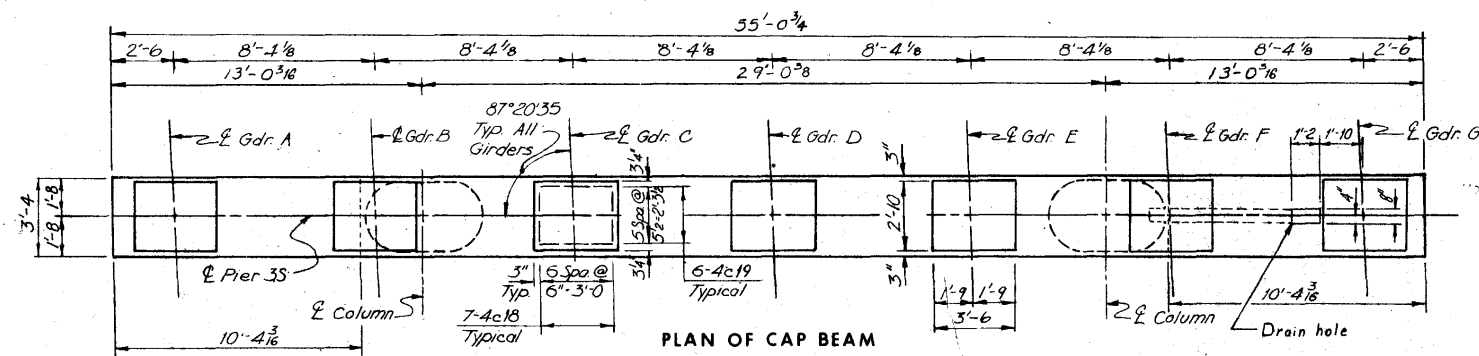
PIER 25

STA. 322+81.95 @ FREEWAY=
STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. I-380-6(68)263--01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

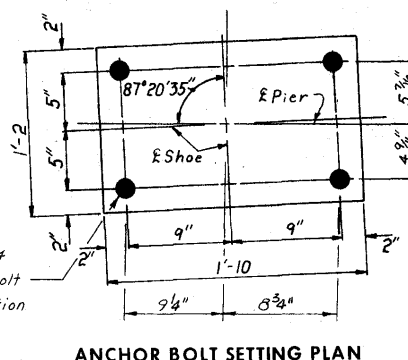
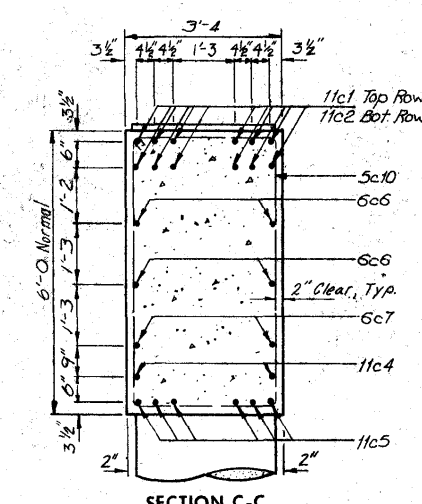
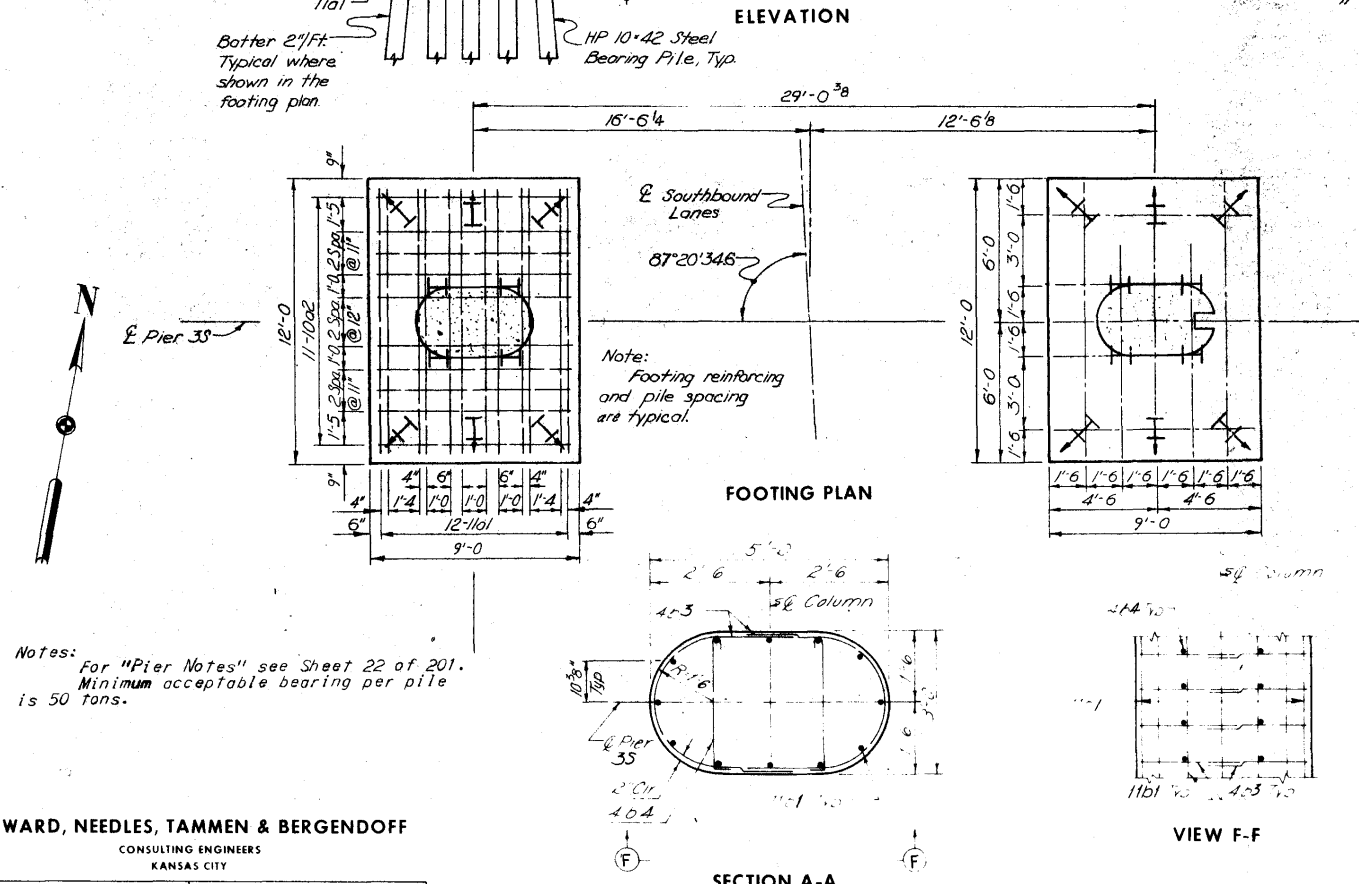
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

MADE GAK DATE 12-6-73 CHECKED R.O.C. DATE 6-29-74

Revised 2-14-77: Bridge Seat Elevation for Girder E corrected.

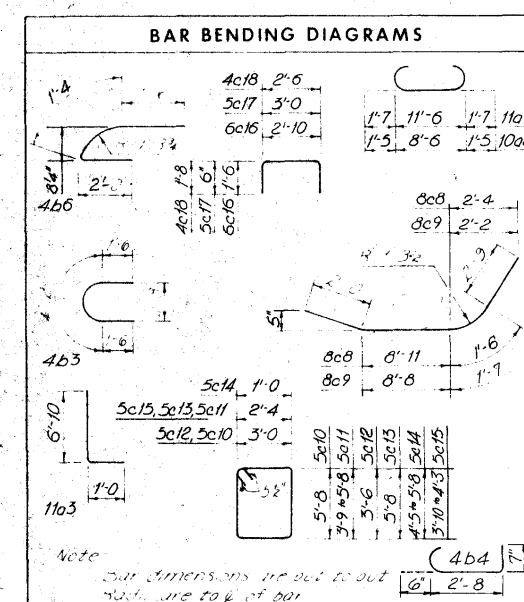


BILL OF REINFORCEMENT					
PIER 35					
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
11a1	Footing, Horizontal		24	14'-8"	1870
10a2	Footing, Horizontal		22	11'-4"	1072
11a3	Footing, Vertical		27	7'-9"	1112
11b1	Column, Vertical		12	14'-8"	925
11b2	Column, Vertical		15	13'-9"	1096
4b3	Column, Horizontal		32	7'-2"	152
4b4	Column, Horizontal		42	3'-8"	102
4b5	Column, Horizontal		10	2'-6"	17
4b6	Column, Horizontal		20	4'-9"	62
11c1	Cap Beam, Horizontal		6	54'-7"	1740
11c2	Cap Beam, Horizontal		6	54'-5"	1735
11c3	Cap Beam, Horizontal		12	16'-0"	1020
11c4	Cap Beam, Horizontal		2	22'-0"	274
11c5	Cap Beam, Horizontal		6	34'-2"	1089
6c6	Cap Beam, Horizontal		8	27'-9"	822
6c7	Cap Beam, Horizontal		4	24'-9"	149
8c8	Cap Beam, Horizontal		6	15'-0"	24
8c9	Cap Beam, Horizontal		6	15'-0"	240
5c10	Cap Beam, Vertical		18	18'-0"	538
5c11	Cap Beam, Vertical		2Ser10	Varies	208
5c12	Cap Beam, Vertical		2	13'-8"	29
5c13	Cap Beam, Vertical		16	16'-8"	626
5c14	Cap Beam, Vertical		2Ser7	Varies	196
5c15	Cap Beam, Vertical		2Ser5	Varies	84
6c16	Cap Beam, Horizontal		6	3'-8"	51
5c17	Cap Beam, Horizontal		6	31'-0"	24
4c18	Cap Beam, Horizontal		42	5'-8"	185
4c19	Cap Beam, Horizontal		42	3'-2"	89
5c20	Cap Beam, Horizontal		2	10'-3"	21
5c21	Cap Beam, Horizontal		5	3'-0"	15
Total					15,162



ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Structural Concrete (C&C)	Cu. Yds.	75.4
Reinforcing Steel	Lbs.	15,162
Excavation, Class 20	Cu. Yds.	299.47
*HP10.42 Steel	Furnish	820
Bearing Piles	Lin. Ft.	820
Drive	Lin. Ft.	820

CONCRETE PLACEMENT QUANTITIES		
LOCATION	UNIT	QUANTITY
Footings, Class C	Cu. Yds.	28.0
Columns, Class C	Cu. Yds.	9.7
Cap Beam, Class C	Cu. Yds.	17.7
<i>Total</i>	Cu. Yds.	55.4

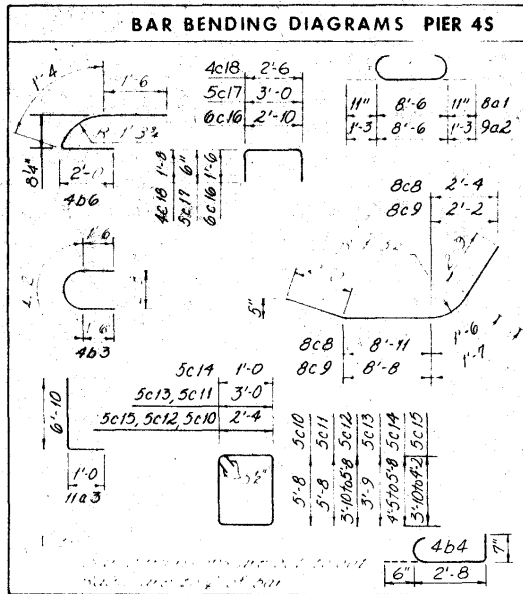


**CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE**

PIER 3S

STA. 322+81.95 @ FREEWAY=
STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. I-380-6(68)263--01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

BILL OF REINFORCEMENT					
PIER 4S					
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
8a1	Footing, Horizontal		16	10'-4	441
9a2	Footing, Horizontal		12	11'-0	449
11a3	Footing, Vertical		27	7'-9	1112
11b1	Column, Vertical		12	16'-0	1020
11b2	Column, Vertical		15	14'-9	1176
4b3	Column, Horizontal		35	7'-2	168
4b4	Column, Horizontal		46	3'-8	113
4b5	Column, Horizontal		11	2'-6	18
4b6	Column, Horizontal		22	4'-9	70
11c1	Cap Beam, Horizontal		6	54'-6	1737
11c2	Cap Beam, Horizontal		6	54'-4	1732
11c3	Cap Beam, Horizontal		12	16'-0	1020
11c4	Cap Beam, Horizontal		2	22'-0	234
11c5	Cap Beam, Horizontal		6	34'-1	1087
6c6	Cap Beam, Horizontal		8	27'-9	333
6c7	Cap Beam, Horizontal		4	24'-0	144
8c8	Cap Beam, Horizontal		6	15'-2	243
8c9	Cap Beam, Horizontal		6	15'-0	240
5c10	Cap Beam, Vertical		36	16'-8	626
5c11	Cap Beam, Vertical		18	18'-0	338
5c12	Cap Beam, Vertical		2Ser10	Varies	309
5c13	Cap Beam, Vertical		2	14'-2	30
5c14	Cap Beam, Vertical		2Ser7	Varies	186
5c15	Cap Beam, Vertical		2Ser3	Varies	83
6c16	Cap Beam, Horizontal		6	5'-8	51
5c17	Cap Beam, Horizontal		6	1'-10	24
4c18	Cap Beam, Horizontal		49	5'-8	185
4c19	Cap Beam, Horizontal		42	3'-2	89
5c20	Cap Beam, Horizontal		2	10'-2	21
5c21	Cap Beam, Horizontal		5	3'-0	16
Total					13,295

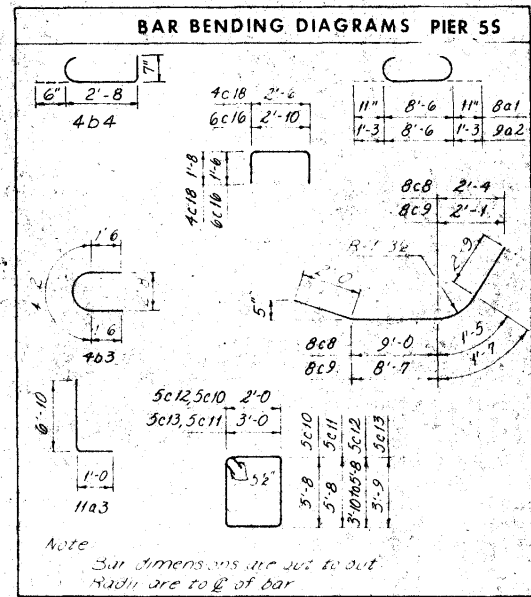


ESTIMATED QUANTITIES PIER 4S		
ITEM	UNIT	QUANTITY
Structural Concrete (C.I.C.)	Cu. Yds.	69.6
Reinforcing Steel	Lbs.	13,295
Excavation, Class 20	Cu. Yds.	77
*HP10x42 Steel	Furnish Lin. Ft.	769
Bearing Piles	Drive Lin. Ft.	769
		729.8
		615.4

CONCRETE PLACEMENT QUANTITIES		
LOCATION	UNIT	QUANTITY
Footings, Class C	Cu. Yds.	21.0
Column, Class C	Cu. Yds.	10.8
Cap Beam, Class C	Cu. Yds.	37.8
Total	Cu. Yds.	69.6

* 16 Piles @ 43'. SEE PILING LOG-Sheet 203B

BILL OF REINFORCEMENT					
PIER 5S					
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
8a1	Footing, Horizontal		16	10'-4	441
9a2	Footing, Horizontal		12	11'-0	449
11a3	Footing, Vertical		24	7'-9	988
11b1	Column, Vertical		12	16'-10	1073
11b2	Column, Vertical		12	15'-2	967
4b3	Column, Horizontal		48	7'-2	230
4b4	Column, Horizontal		48	3'-8	118
11c1	Cap Beam, Horizontal		6	54'-6	1737
11c2	Cap Beam, Horizontal		6	54'-4	1732
11c3	Cap Beam, Horizontal		12	16'-0	1020
11c4	Cap Beam, Horizontal		2	22'-0	234
11c5	Cap Beam, Horizontal		6	34'-1	1087
6c6	Cap Beam, Horizontal		8	27'-9	333
6c7	Cap Beam, Horizontal		4	24'-0	144
8c8	Cap Beam, Horizontal		6	15'-2	243
8c9	Cap Beam, Horizontal		6	14'-11	239
5c10	Cap Beam, Vertical		36	16'-0	601
5c11	Cap Beam, Vertical		18	18'-0	338
5c12	Cap Beam, Vertical		4Ser13	Varies	768
5c13	Cap Beam, Vertical		2	14'-2	30
6c16	Cap Beam, Horizontal		6	5'-8	51
4c18	Cap Beam, Horizontal		49	5'-8	185
4c19	Cap Beam, Horizontal		42	3'-2	89
Total					13,097

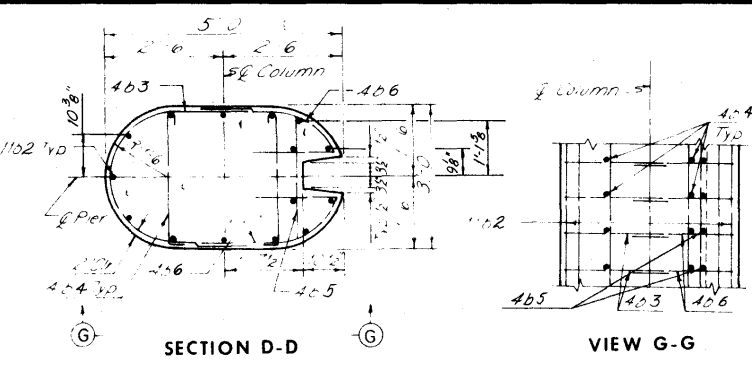
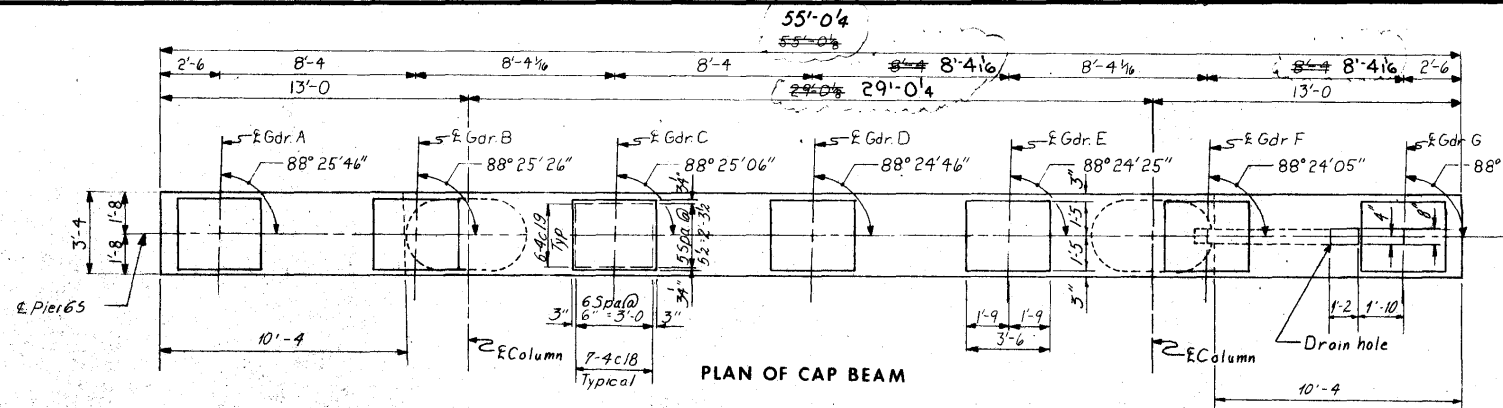


Note: For Pier Details see Sheet 22 of 201.

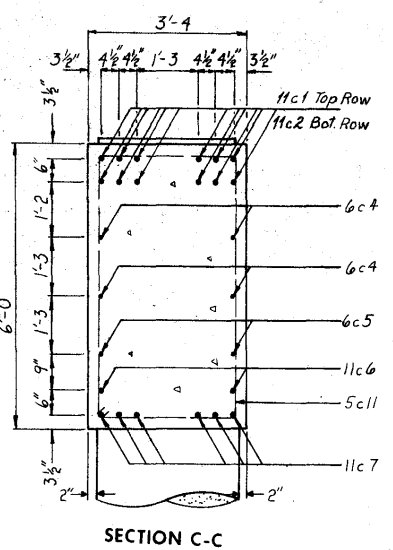
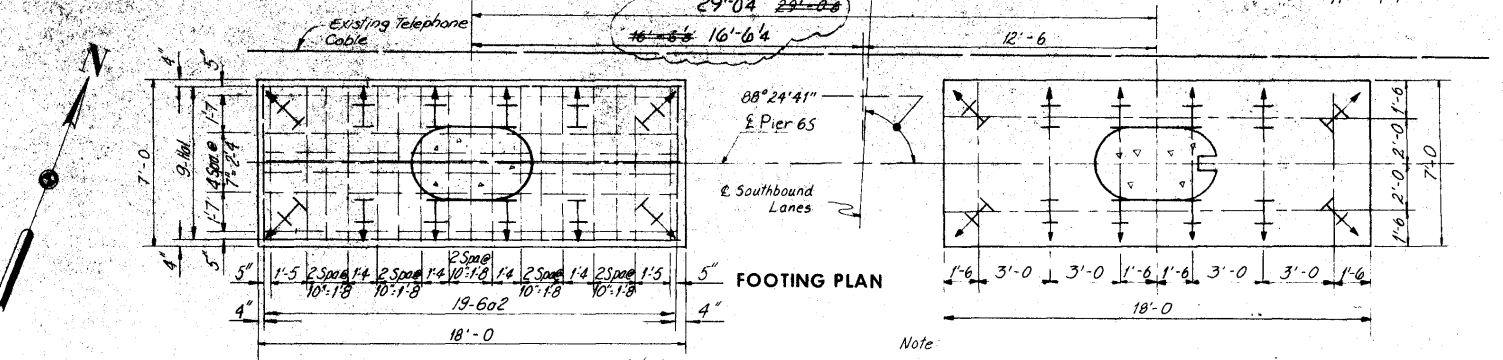
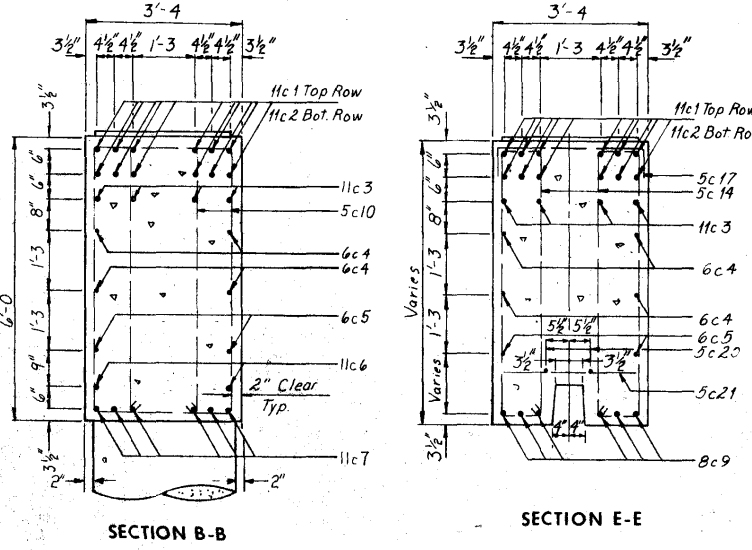
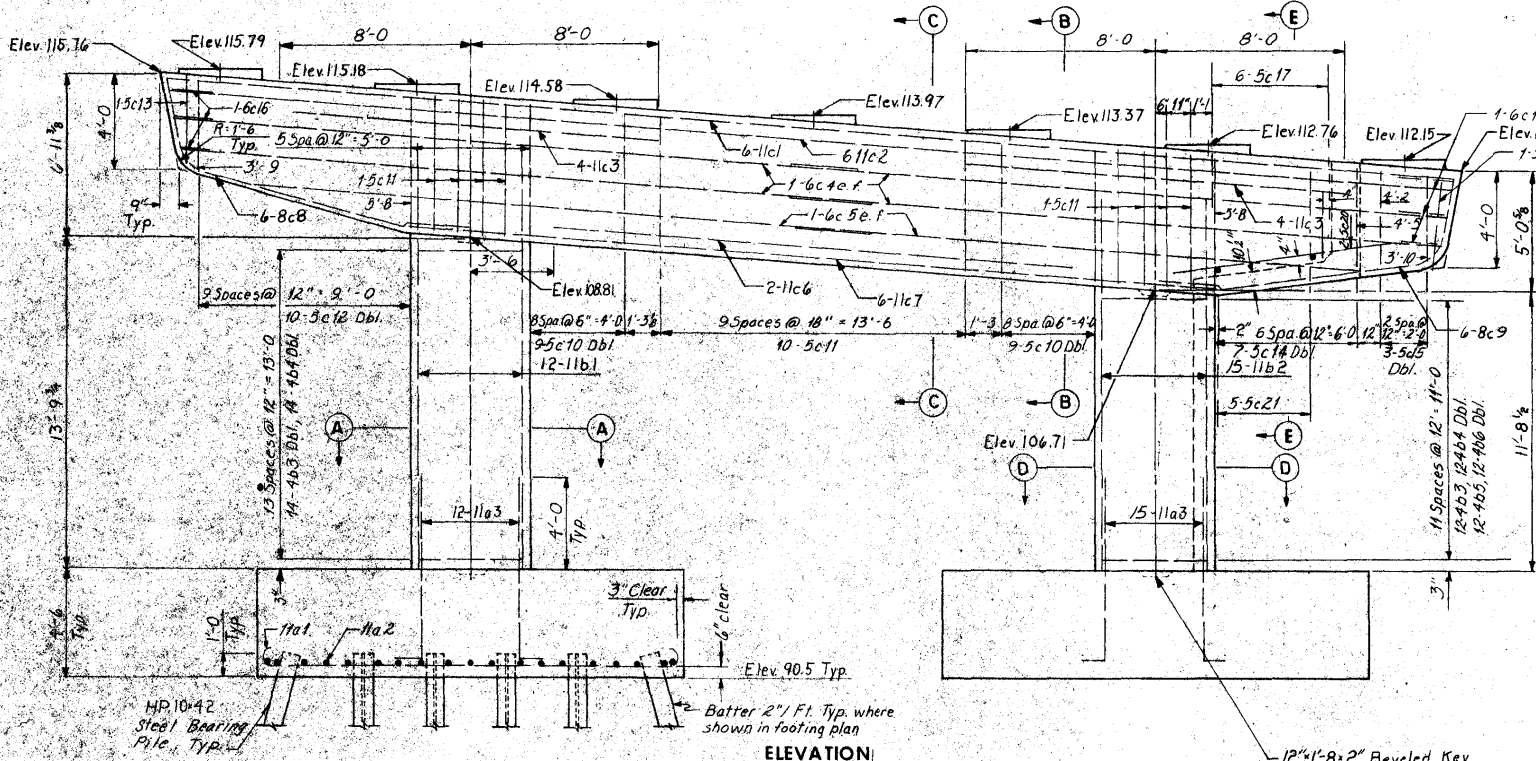
ESTIMATED QUANTITIES PIER 5S		
ITEM	UNIT	QUANTITY
Structural Concrete (C.I.C.)	Cu. Yds.	70.8
Reinforcing Steel	Lbs.	13,097
Excavation, Class 20	Cu. Yds.	69
*HP10x42 Steel	Furnish Lin. Ft.	528
Bearing Piles	Drive Lin. Ft.	528
		789.0
		756.1

CONCRETE PLACEMENT QUANTITIES		
LOCATION	UNIT	QUANTITY
Footings, Class C	Cu. Yds.	21.0
Columns, Class C	Cu. Yds.	11.7
Cap Beam, Class C	Cu. Yds.	38.1
Total	Cu. Yds.	70.8

* 16 Piles @ 33'. See Piling Log-Sheet 203B



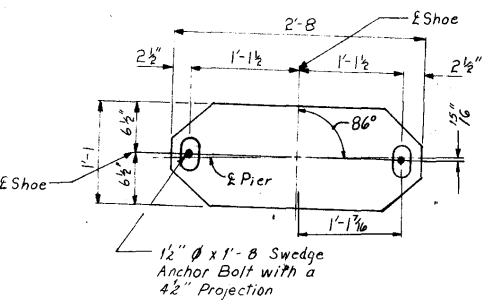
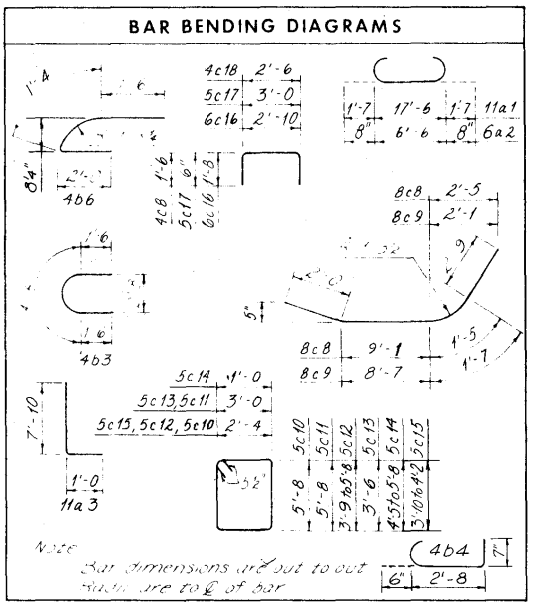
BILL OF REINFORCEMENT					
PIER 65					
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
11a1	Footing, Horizontal		18	20'-8"	1976
6a2	Footing, Horizontal		38	7'-10"	447
11a3	Footing, Vertical		27	8'-9"	1255
11b1	Column, Vertical		12	17'-10"	1137
11b2	Column, Vertical		15	15'-9"	1255
4b2	Column, Horizontal		40	7'-2"	191
4b4	Column, Horizontal		52	1'-8"	127
4b5	Column, Horizontal		12	2'-6"	20
4b6	Column, Horizontal		24	4'-5"	75
11.1	Cap Beam, Horizontal		6	54'-6"	17.7
11.2	Cap Beam, Horizontal		5	54'-4"	17.2
11.3	Cap Beam, Horizontal		8	16'-0"	680
6.4	Cap Beam, Horizontal		9	27'-9"	333
6.5	Cap Beam, Horizontal		4	24'-9"	149
11.6	Cap Beam, Horizontal		2	22'-0"	234
11.7	Cap Beam, Horizontal		6	34'-2"	1089
8c8	Cap Beam, Horizontal		6	15'-3"	244
8c9	Cap Beam, Horizontal		6	14'-11"	239
5c10	Cap Beam, Vertical		36	16'-8"	626
5.11	Cap Beam, Vertical		18	18'-0"	338
5.12	Cap Beam, Vertical		2Ser10	Varies	308
5.13	Cap Beam, Vertical		2	13'-8"	29
5.14	Cap Beam, Vertical		2Ser7	Varies	186
5.15	Cap Beam, Vertical		2Ser7	Varies	83
6c16	Cap Beam, Horizontal		6	5'-8"	51
5c17	Cap Beam, Horizontal		6	3'-10"	24
4c18	Cap Beam, Horizontal		43	5'-8"	185
4c19	Cap Beam, Horizontal		42	3'-2"	89
5c20	Cap Beam, Horizontal		2	10'-3"	21
5c21	Cap Beam, Horizontal		5	3'-0"	16
Total					14,877



ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Structural Concrete**	Cu. Yd.	92.0
Reinforcing Steel	Lb.	14,877
Elevation, Class 20	Cu. Yds.	103.6
*HP10.42 Steel Furnish	Lin. Ft.	123.0
Bearing Piles Drive	Lin. Ft.	106.6

CONCRETE PLACEMENT QUANTITIES		
LOCATION	UNIT	QUANTITY
Footing, Class C	Cu. Yds.	42.0
Column, Class D	Cu. Yds.	12.1
Cap Beam, Class C	Cu. Yds.	7.9
Total	Cu. Yds.	92.0

* 14 Piles @ 29' see Piling Log Sheet 203C
** In places 75.3 Cu. Yds. Class C and 12.1 Cu. Yds. Class D.



Notes: For "Pier Notes" see Sheet 22 of 201.
Minimum acceptable bearing per pile is 33 tons.

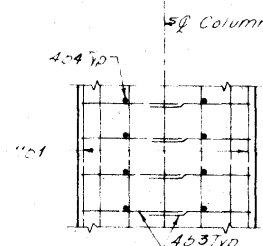
**CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE
PIER 65**

STA. 322+81.95 Q FREEWAY =
STA. 32+14.70 Q 1ST. AVE. W PROJECT NO. I-380-6(68)263--01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

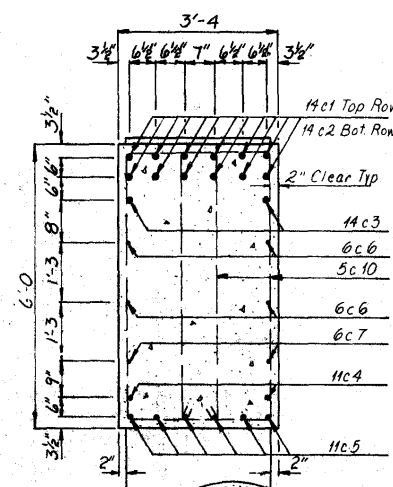
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

MADE RDO DATE 2-1-74 CHECKED RQC DATE 7-1-74

Revised 2-14-77: Two girder spaces corrected



VIEW D-D



Hand-drawn cross-section diagram of a wall assembly. The diagram shows a central vertical section with various layers and dimensions. On the left, a vertical dimension of 6'-0" is indicated. The wall assembly consists of several layers: 1. Exterior finish (3 1/2" thick). 2. Insulation (6" thick). 3. Structural wall (1'-3" thick). 4. Insulation (1'-3" thick). 5. Structural wall (6" thick). 6. Insulation (6" thick). 7. Structural wall (1'-3" thick). 8. Insulation (6" thick). 9. Structural wall (6" thick). 10. Interior finish (3 1/2" thick). The insulation layers are labeled "14c1 Top R", "14c2 Bot. R", "6c6", "5c11", "6c7", "11c4", and "11c5". The structural wall layers are labeled "3'-4" at the top and "2" at the bottom. The diagram also shows a "2" Clear Typ." gap between the insulation and the structural wall.

Technical drawing of a Swedge Anchor Bolt with a 4 1/2 inch projection. The drawing shows a side view of the bolt with dimensions: overall length 2'-8, end projections 2 1/2 inch, distance from end to first hole 1'-1 1/2, distance between holes 1'-1 1/2, distance from second hole to end 2 1/2, hole diameter 1 1/2 inch, hole spacing 1'-1 3/8, and a 97 degree angle. Labels include 'Shoe' and 'Pier'.

Revised 5-3-77: Cap cantilever dimensions corrected.

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Structural Concrete	Cu. Yds.	88.4
Reinforcing Steel	Lbs.	16,582
Excavation, Class 20	Cu. Yds.	997.5
*HP 10:42 Steel	Lin. Ft.	3349
Bearing Piles	Lin. Ft.	319

* 28 Piles @ 51'. see Piling Log Sheet 203C
** Includes 75.6 Cu. Yds. Class C and 128 Cu. Yds. Class D.

The diagrams illustrate various bar bending configurations with the following labels and dimensions:

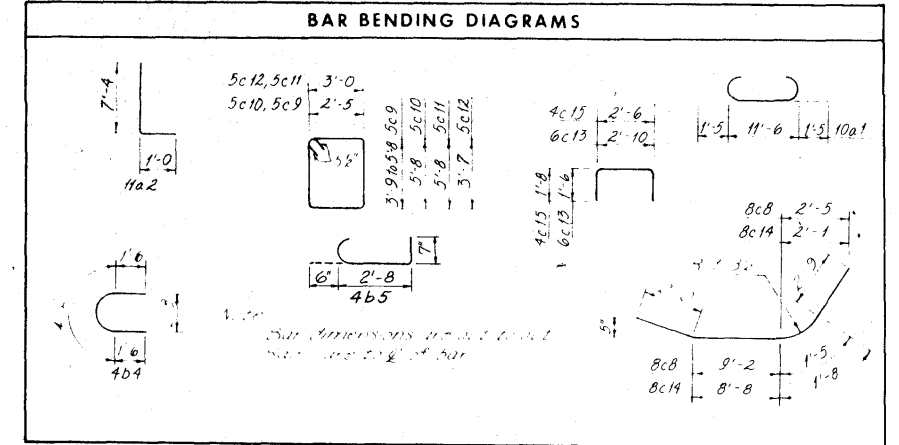
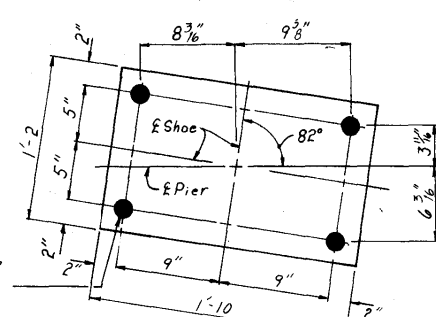
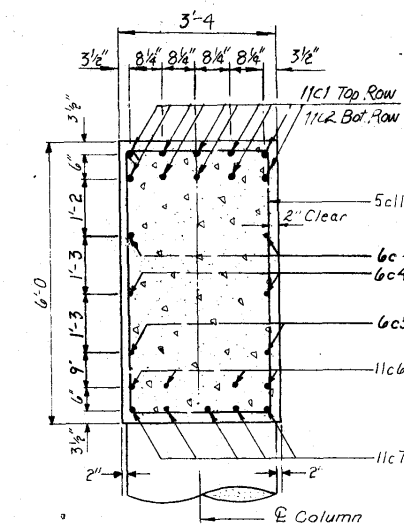
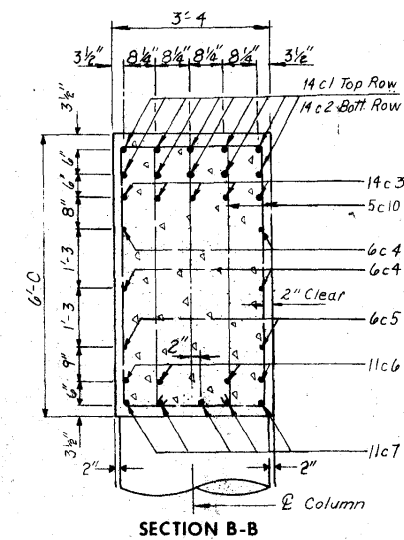
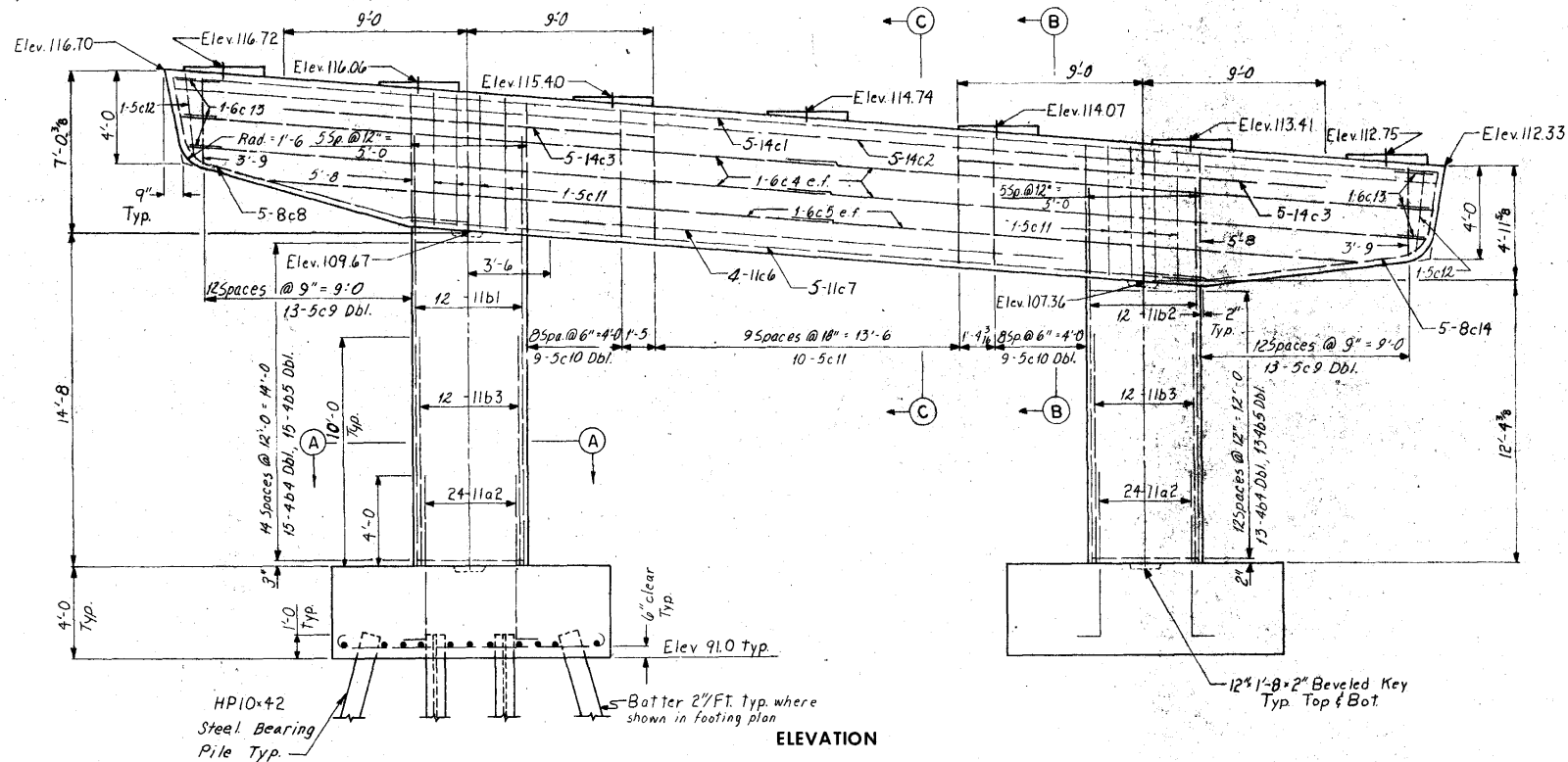
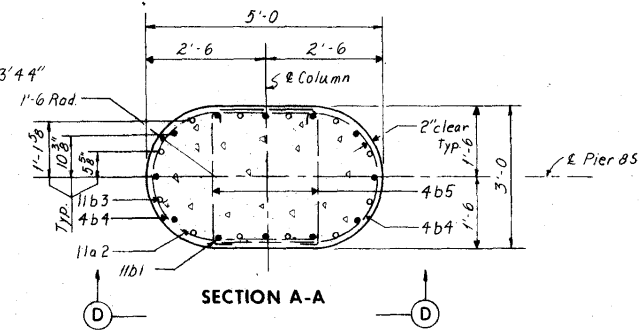
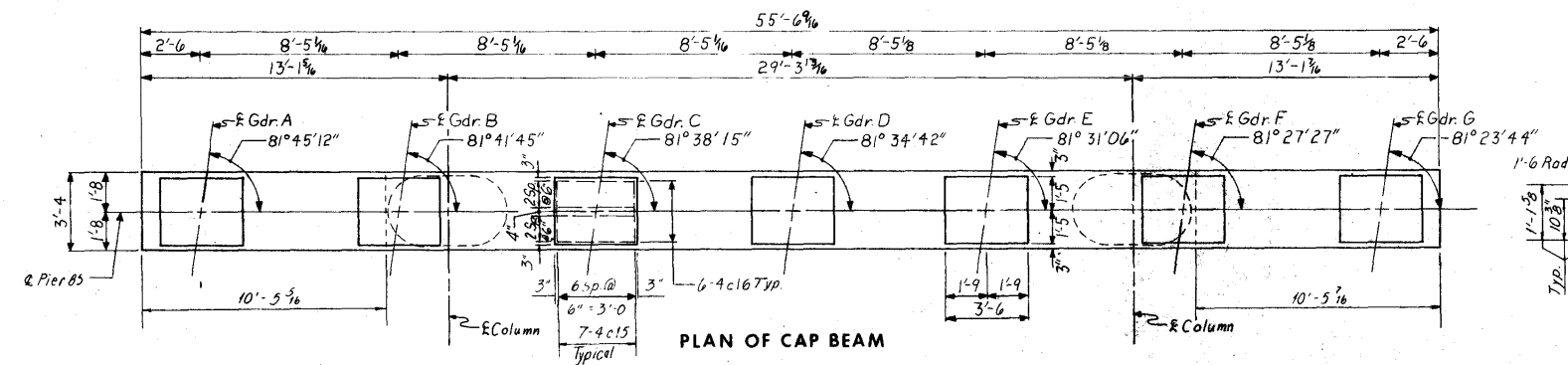
- Diagram 1 (Top Left):** U-bar with dimensions 6", 2'-8", 7". Label: 4b4.
- Diagram 2 (Top Middle):** U-bar with dimensions 4c15, 2'-6", 6c19, 2'-10".
- Diagram 3 (Top Right):** U-bar with dimensions 1'-5", 11'-6", 1'-5", 10a, 11", 11'-6", 11", 8a.
- Diagram 4 (Middle Left):** U-bar with dimensions 4c15, 1'-6", 6c19, 1'-6".
- Diagram 5 (Middle Right):** L-bar with dimensions 8c8, 2'-5", 8c9, 2'-1".
- Diagram 6 (Bottom Left):** U-bar with dimensions 6", 1'-6", 4b3.
- Diagram 7 (Bottom Middle):** L-bar with dimensions 5c13, 5c11, 3'-0", 5c12, 5c10, 2'-0".
- Diagram 8 (Bottom Right):** L-bar with dimensions 8c8, 9'-1", 8c9, 8'-7", 1'-5", 1'-8".
- Diagram 9 (Far Bottom Left):** L-bar with dimensions 6'-10", 1'-0", 11a3.
- Diagram 10 (Far Bottom Middle):** Square bar with dimensions 5'-8", 5c10, 5'-8", 5c11, 5'-10", 5c12, 5'-9", 5c13.

Note: Bar dimensions are out to out
Bar end of bar

SHEET 25 OF 201

MADE L.D.H. DATE 1-8-74 CHECKED R.O.C. DATE 6-29-74

DESIGN NO. 1276 LINN COUNTY FILE 23101 SHEET 27 OF 202



BILL OF REINFORCEMENT					
PIER 85					
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
10a1	Footings, Horizontal		48	14'-4"	2960
10a2	Footings, Vertical		48	8'-3"	2104
11b1	Column, Vertical		12	18'-8"	1190
11b2	Column, Vertical		12	16'-4"	1041
11b3	Column, Vertical		24	10'-0"	1275
4b4	Column, Horizontal		56	7'-2"	268
4b5	Column, Horizontal		56	3'-8"	157
14c1	Cap Beam, Horizontal		5	55'-1"	2107
14c2	Cap Beam, Horizontal		5	54'-10"	2097
14c3	Cap Beam, Horizontal		10	18'-0"	1377
6c4	Cap Beam, Horizontal		8	28'-0"	536
6c5	Cap Beam, Horizontal		4	25'-0"	150
11c6	Cap Beam, Horizontal		4	22'-4"	475
11c7	Cap Beam, Horizontal		5	41'-5"	914
8c8	Cap Beam, Horizontal		5	15'-4"	205
5c9	Cap Beam, Vertical		4 Ser 13	Varies	805
5c10	Cap Beam, Vertical		6	16'-10"	62
5c11	Cap Beam, Vertical		18	18'-0"	538
5c12	Cap Beam, Vertical		2	17'-10"	29
6c13	Cap Beam, Horizontal		6	5'-8"	51
8c14	Cap Beam, Horizontal		5	15'-1"	201
4c15	Cap Beam, Horizontal		49	5'-8"	185
4c16	Cap Beam, Horizontal		42	3'-2"	89
Total					18,970

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Structural Concrete (C1C)	Cu. Yds.	94.2
Reinforcing Steel	Lbs.	18,970
Excavation, Class 20	Cu. Yds.	110
HP 10-42 Steel Piles	Lin. Ft.	1764.3
Bearing Piles Drive	Lin. Ft.	1681.3

CONCRETE PLACEMENT QUANTITIES		
LOCATION	UNIT	QUANTITY
Footings, Class C	Cu. Yds.	42.7
Column, Class C	Cu. Yds.	15.1
Cap Beam, Class C	Cu. Yds.	38.5
Total	Cu. Yds.	94.3

• 2 Piles @ 28' See Piling Log Sheet 203C
CEDAR RIVER BRIDGE
SOUTH APPROACH
 DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE

PIER 85

STA. 322+81.95 @ FREEWAY =
 STA. 32+14.70 @ 1ST. AVE. W

PROJECT NO. I-380-6(68)263--01-57

LINN COUNTY

IOWA STATE HIGHWAY COMMISSION

STA. 322+81.95 @ FREEWAY =
 STA. 32+14.70 @ 1ST. AVE. W

PROJECT NO. I-380-6(68)263--01-57

LINN COUNTY

IOWA STATE HIGHWAY COMMISSION

VIEW D-D

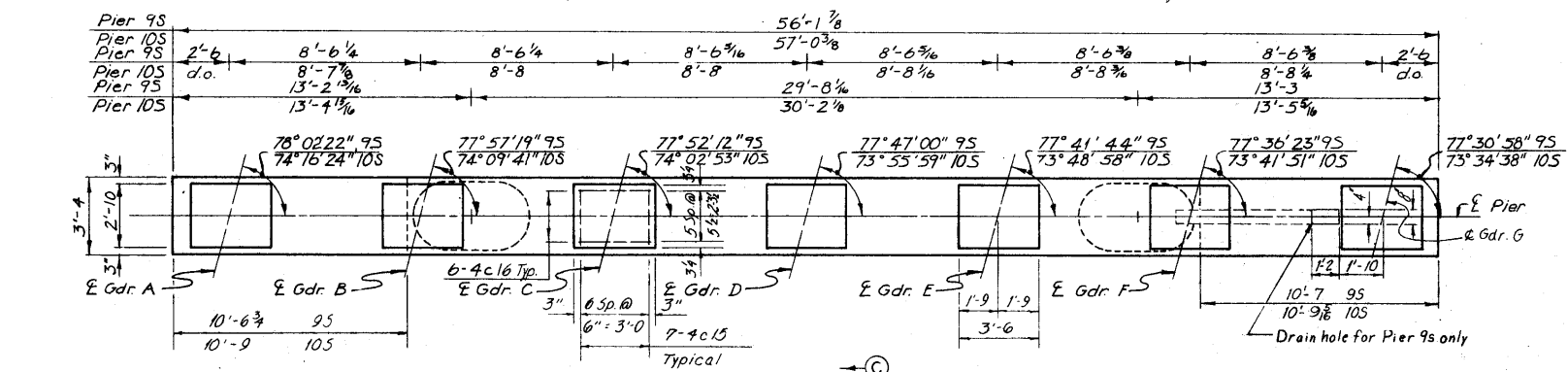
ANCHOR BOLT SETTING PLAN

Notes:
 for "Pier Notes" see Sheet 22 of 201.
 Minimum acceptable bearing per pile
 is 36 tons.

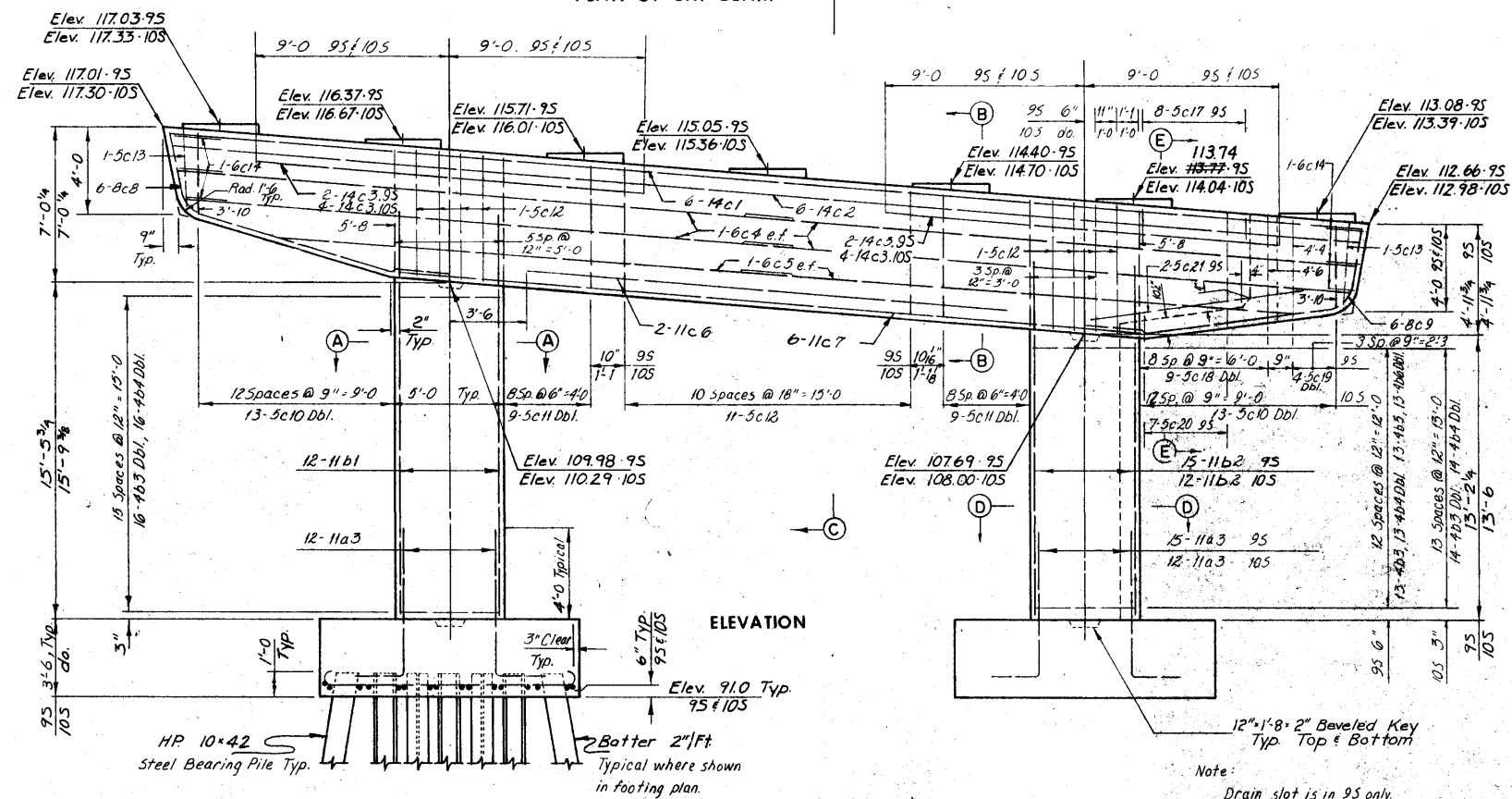
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
 CONSULTING ENGINEERS
 KANSAS CITY

MADE RDO DATE 1-16-74 CHECKED R.O.C. DATE 6-29-74

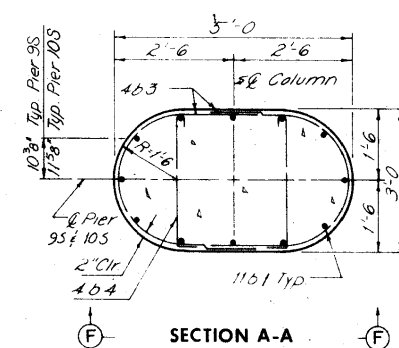
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	IOWA				



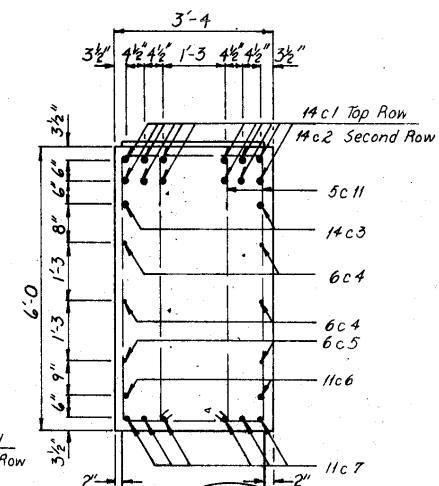
PLAN OF CAP BEAM



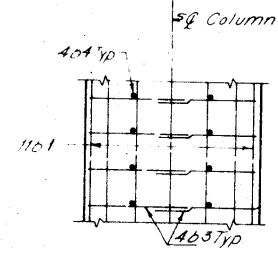
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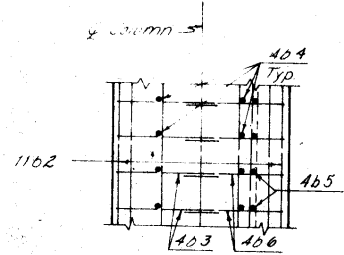
SECTION A-A



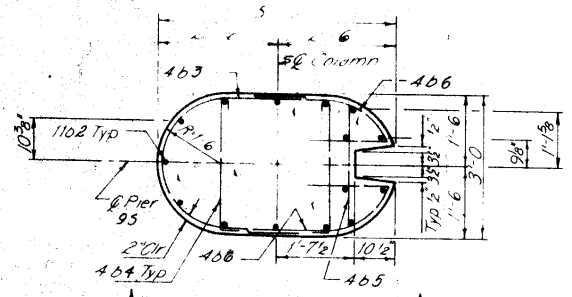
SECTION B-B PIER 9S



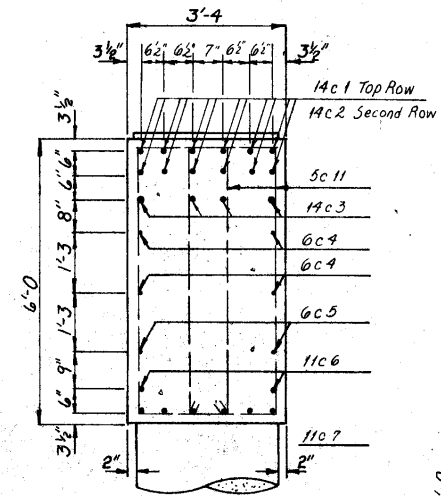
VIEW F-F



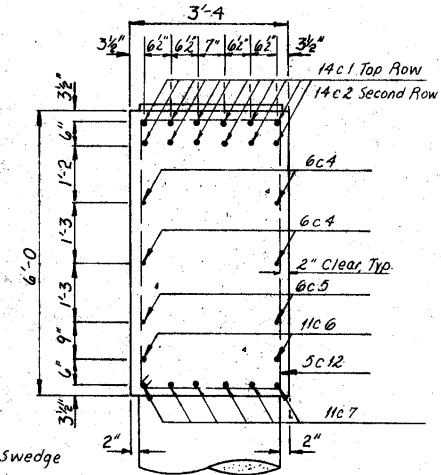
VIEW G-G



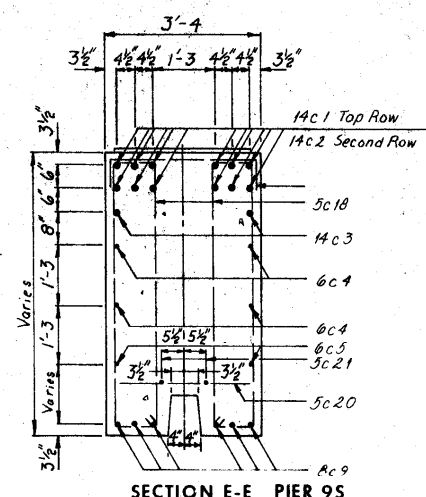
SECTION D-1
PIER 9.5



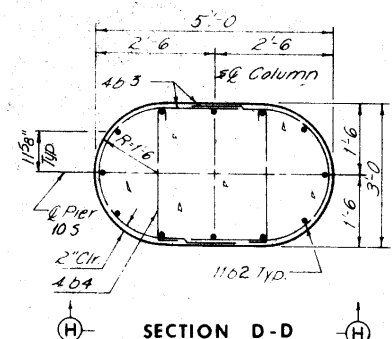
SECTION B-B PIER 10S



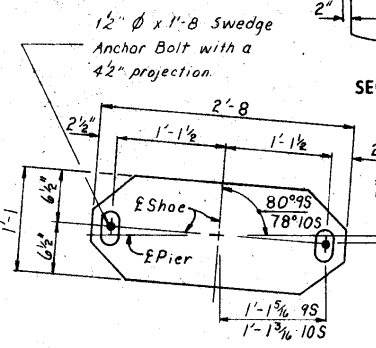
SECTION C-C PIER 10S



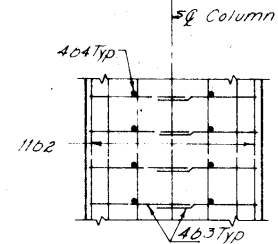
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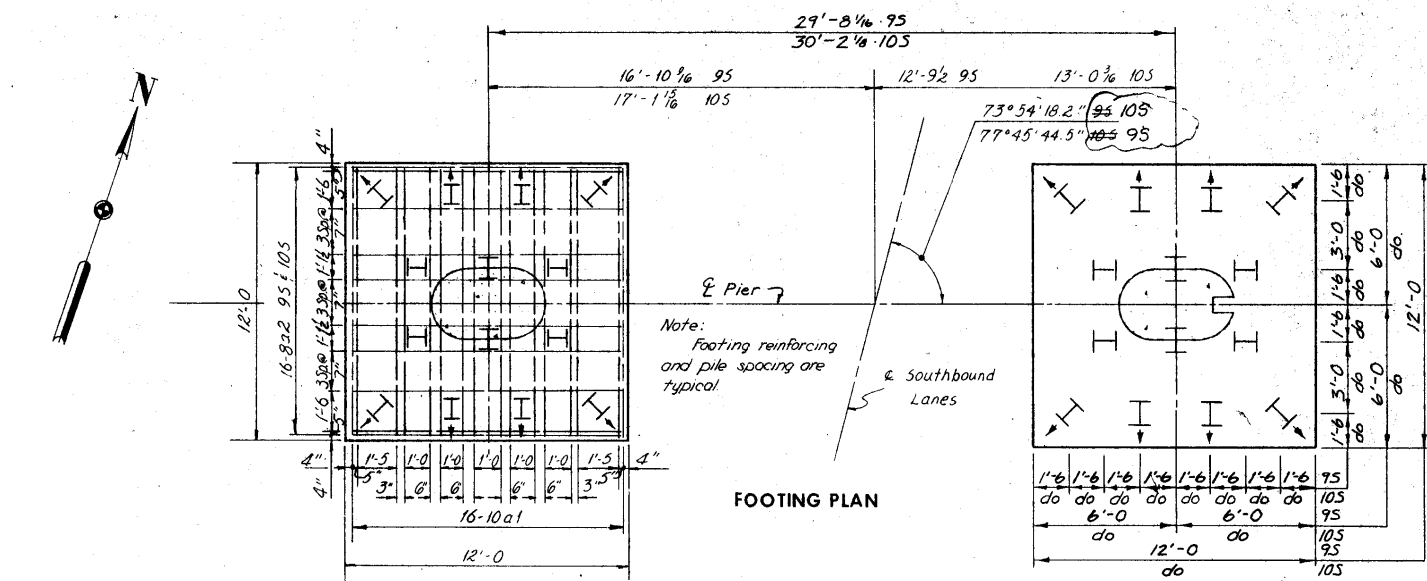
SECTION D
PIER 10 S



ANCHOR BOLT SETTING PLAN



VIEW H-H



FOOTING PLAN

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

Notes: For "Pier Notes" see Sheet 22 of 201.
Minimum acceptable bearing per pile
is 34 tons for Pier 9S and 36 tons for Pier
10S.

Notes: For Bill of Reinforcement, Bending Diagram, Estimated Quantities and Concrete Placement Quantities see Sheet 28 of 201.

Revised 2-14-77: Girder F Bridge Seat Elevation corrected

VIEW H-H
(Revised 5-3-77: Pier callouts for angle to E Southbound Lanes corrected.)

**CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE**

PIERS 9S AND 10S

STA. 322+81.95 Q FREEWAY=
STA. 32+14.70 Q 1ST. AVE. W PROJECT NO. 1-380-6(68)263--01-57

LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

SHEET 27 OF 201

DESIGN NO. 1276 LINN COUNTY FILE 23191 SHEET 29 OF 203-0

3435-21-00 001

BILL OF REINFORCEMENT					
PIER 9S					
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
10a1	Footings, Horizontal		32	14'-4"	19.74
8a2	Footings, Horizontal		32	13'-4"	11.34
11a	Footings, Vertical		27	7'-9"	11.12
11b1	Column, Vertical		12	13'-6"	124
11b2	Column, Vertical		15	17'-0"	137.5
4b3	Column, Horizontal		45	7'-2"	21.2
4b4	Column, Horizontal		59	7'-9"	14.2
4b5	Column, Horizontal		12	2'-6"	2.2
4b6	Column, Horizontal		26	4'-9"	32
14.1	Cap Beam, Horizontal		6	55'-8"	255.5
14.2	Cap Beam, Horizontal		6	55'-6"	254.7
14.3	Cap Beam, Horizontal		4	18'-0"	55.1
6.4	Cap Beam, Horizontal		8	28'-4"	74.0
6.5	Cap Beam, Horizontal		4	25'-1"	15.2
11c6	Cap Beam, Horizontal		2	27'-8"	24.1
11c7	Cap Beam, Horizontal		6	4'-9"	11.02
8c8	Cap Beam, Horizontal		6	15'-5"	4.7
8c9	Cap Beam, Horizontal		6	15'-1"	2.44
5c10	Cap Beam, Vertical		2Ser13	Varies	40.2
5c11	Cap Beam, Vertical		6	16'-9"	6.26
5c12	Cap Beam, Vertical		19	19'-0"	5.7
5c13	Cap Beam, Vertical		2	1'-10"	2.9
6.14	Cap Beam, Horizontal		6	5'-8"	5.1
4.15	Cap Beam, Horizontal		49	5'-8"	19.2
4.16	Cap Beam, Horizontal		4	2'-2"	8.9
5c17	Cap Beam, Horizontal		8	2'-10"	1.2
5c18	Cap Beam, Vertical		2Ser9	Varies	24.1
5c19	Cap Beam, Vertical		2Ser4	Varies	11.3
5c20	Cap Beam, Horizontal		7	2'-0"	2.2
5c21	Cap Beam, Horizontal		2	10'-0"	2.1
Total					17,457

ESTIMATED QUANTITIES 9S		
ITEM	UNIT	QUANTITY
Structural Concrete (C.C.)	Cu. Yds.	89.3
Reinforcing Steel	Lbs.	17,457
Excavation, Class C	Cu. Yds.	95
*HP 10.4" Steel Furnish	Lin. Ft.	942
Bearing Piles Drive	Lin. Ft.	942

CONCRETE PLACEMENT QUANTITIES		
LOCATION	UNIT	QUANTITY
Footings, Class C	Cu. Yds.	37.3
Columns, Class C	Cu. Yds.	13.3
Cap Beam, Class C	Cu. Yds.	39.7
Total	Cu. Yds.	89.3

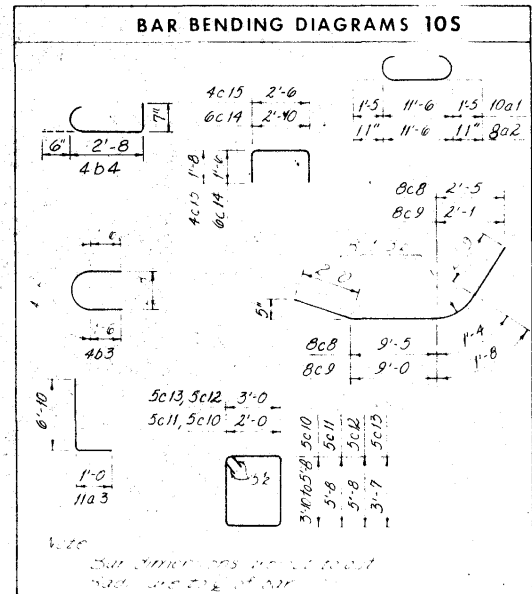
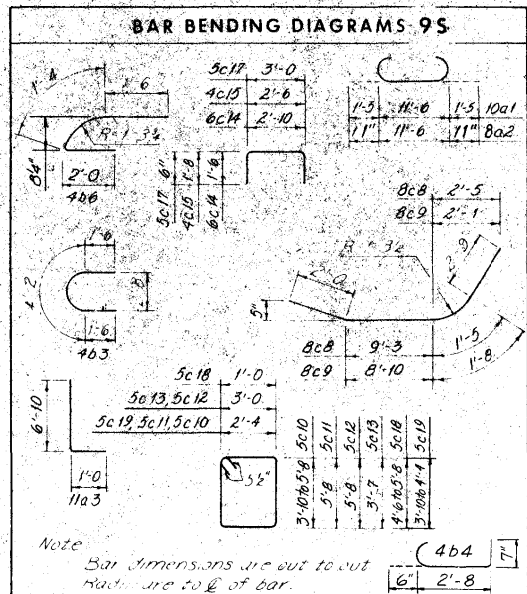
*.8 Piles @ 30'. SEE Piling Log 203C & D.

BILL OF REINFORCEMENT					
PIER 10S					
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
10a1	Footings, Horizontal		32	14'-4"	19.74
8a2	Footings, Horizontal		32	13'-4"	11.34
11a	Footings, Vertical		24	7'-9"	9.98
11b1	Column, Vertical		12	13'-9"	129.5
11b2	Column, Vertical		12	17'-6"	111.6
4b3	Column, Horizontal		60	7'-2"	9.7
4b4	Column, Horizontal		60	7'-9"	14.2
14.1	Cap Beam, Horizontal		6	56'-7"	253.7
14.2	Cap Beam, Horizontal		5	56'-4"	252.5
14.3	Cap Beam, Horizontal		8	18'-0"	11.0
6.4	Cap Beam, Horizontal		4	28'-2"	4.2
6.5	Cap Beam, Horizontal		4	25'-2"	15.2
11.6	Cap Beam, Horizontal		2	27'-2"	24.5
11.7	Cap Beam, Horizontal		6	4'-9"	11.24
8.8	Cap Beam, Horizontal		6	15'-5"	4.2
8.9	Cap Beam, Horizontal		6	15'-5"	4.2
5.10	Cap Beam, Vertical		4Ser13	Varies	68
5.12	Cap Beam, Vertical		19	19'-0"	60.1
5.13	Cap Beam, Vertical		2	1'-10"	2.9
6.14	Cap Beam, Horizontal		6	5'-8"	5.1
4.15	Cap Beam, Horizontal		4	5'-8"	19.2
4.16	Cap Beam, Horizontal		42	2'-2"	2.9
Total					17,640

ESTIMATED QUANTITIES 10S		
ITEM	UNIT	QUANTITY
Structural Concrete (C.C.)	Cu. Yds.	91.0
Reinforcing Steel	Lbs.	17,640
Excavation, Class C	Cu. Yds.	120.125
*HP 10.4" Steel Furnish	Lin. Ft.	756
Bearing Piles Drive	Lin. Ft.	756

CONCRETE PLACEMENT QUANTITIES		
LOCATION	UNIT	QUANTITY
Footings, Class C	Cu. Yds.	37.3
Columns, Class C	Cu. Yds.	14.2
Cap Beam, Class C	Cu. Yds.	39.5
Total	Cu. Yds.	91.0

*.8 Piles @ 30'. SEE Piling Log 203D.



Note: See Piling Log 203D for Pier Details see Sheet 27 of 201.

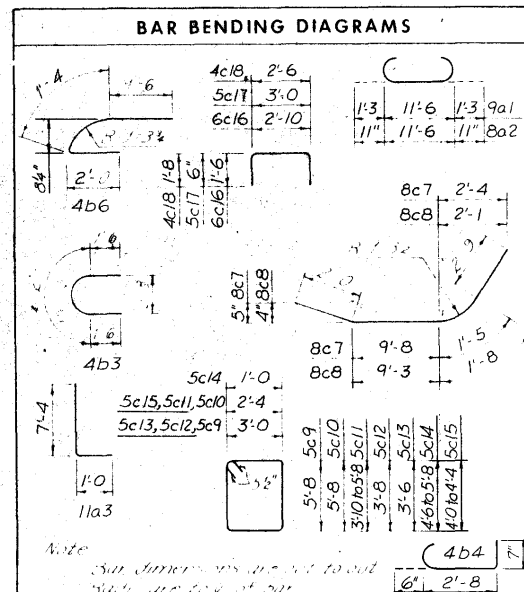
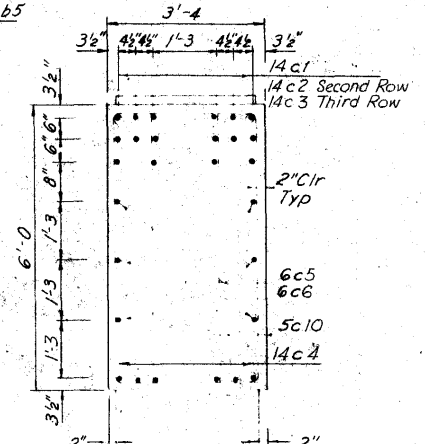
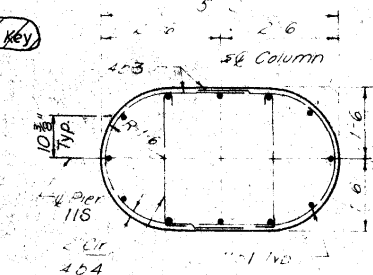
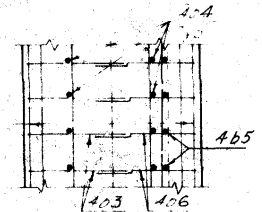
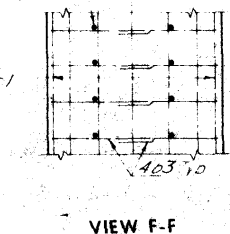
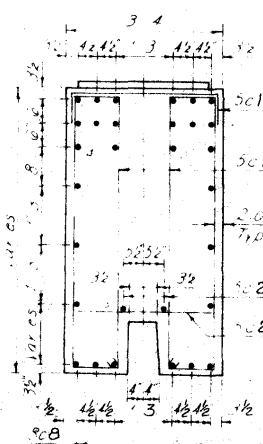
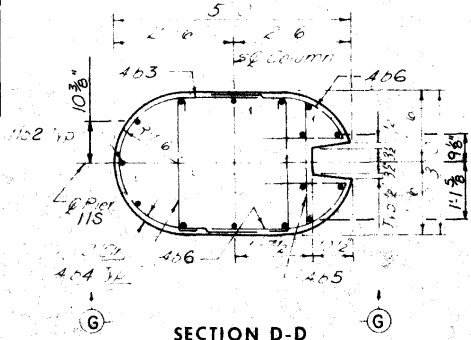
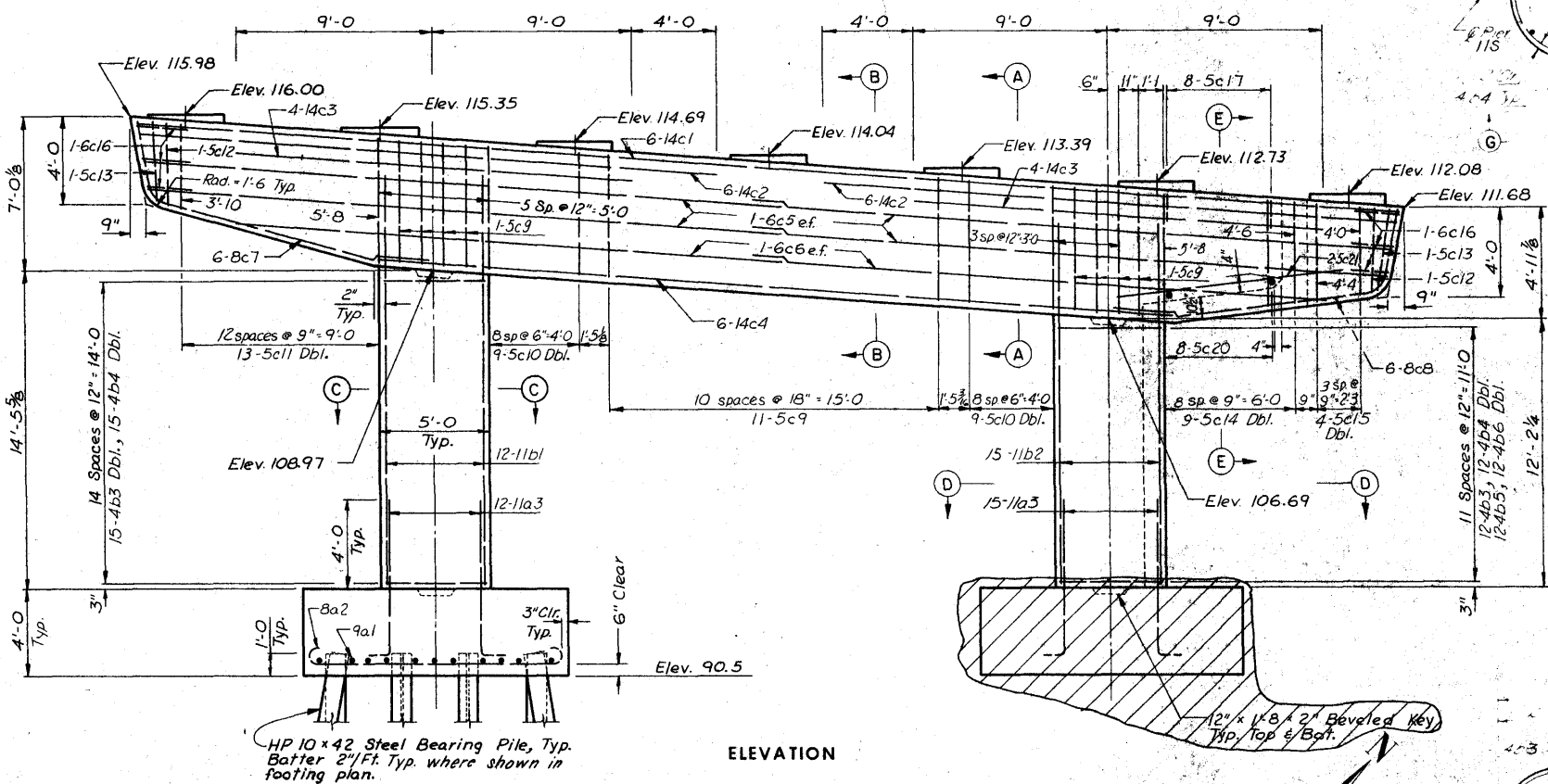
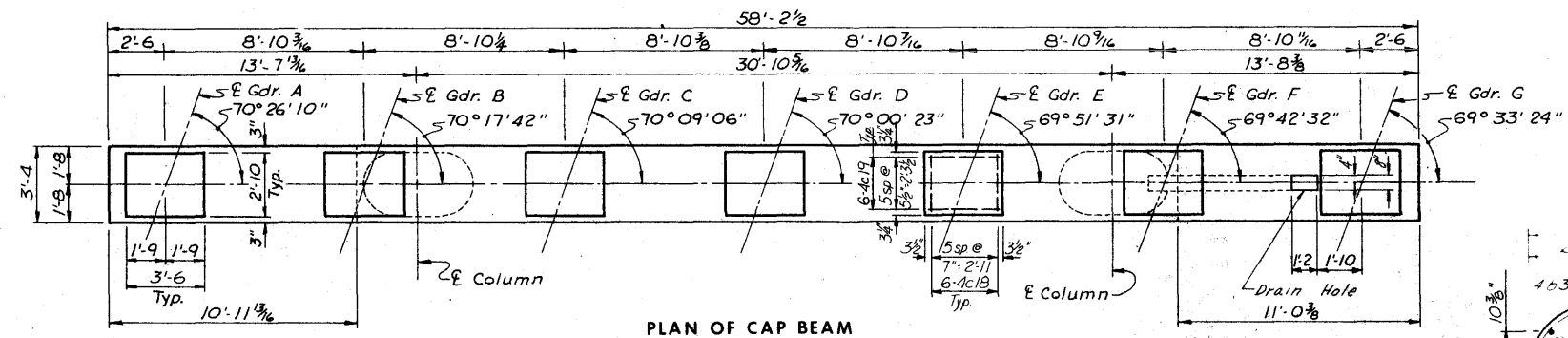
CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE
PIERS 9S AND 10S

STA. 322+81.95 @ FREEWAY =
STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. I-380-6(68)263-01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

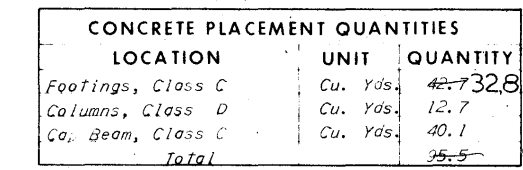
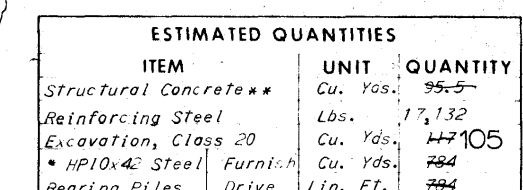
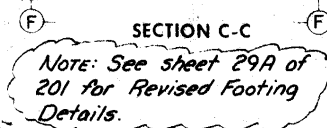
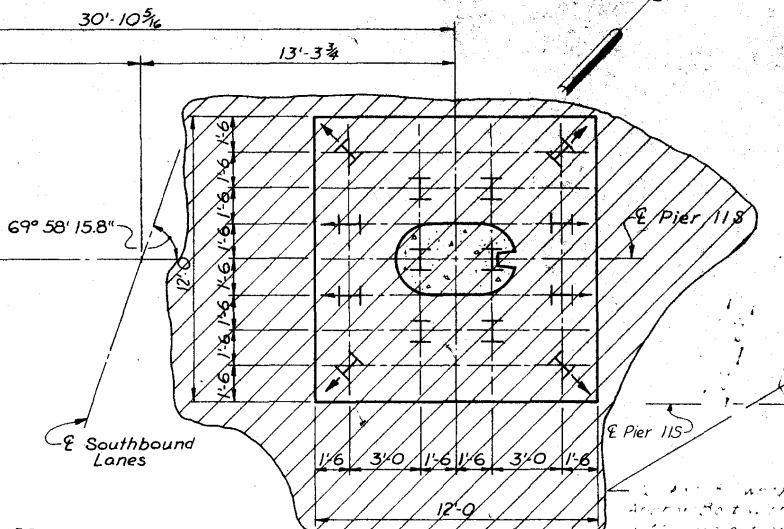
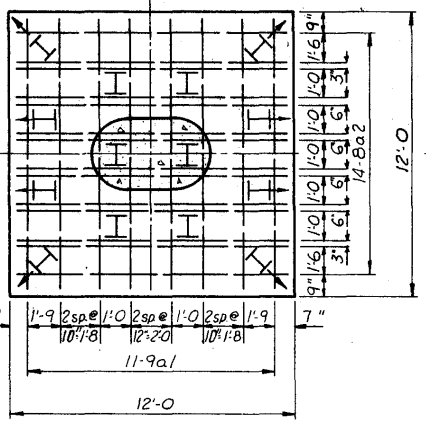
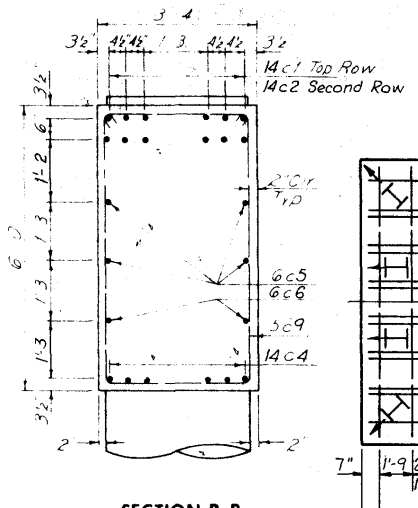
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

MADE GAK DATE 5-8-74 CHECKED R.O.C. DATE 6-29-74

SHEET 28 OF 201



BILL OF REINFORCEMENT						
PIER IIS						
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT	
501	Footing, Horizontal	C	22	14'-0"	104"	
802	Footing, Horizontal	C	28	13'-4"	99"	
1101	Footing, Vertical	J	27	8'-3"	1183	
1101	Column, Vertical	—	12	18'-6"	1179	
1102	Column, Vertical	—	15	16'-2"	1288	
401	Column, Horizontal	C	40	7'-0"	201	
404	Column, Horizontal	C	54	3'-8"	100	
405	Column, Horizontal	—	12	2'-6"	30	
406	Column, Horizontal	C	24	4'-9"	76	
141	Cap Beam, Horizontal	—	6	57'-8"	2647	
142	Cap Beam, Horizontal	—	12	26'-4"	2417	
143	Cap Beam, Horizontal	—	8	18'-0"	1102	
144	Cap Beam, Horizontal	—	6	36'-0"	1652	
605	Cap Beam, Horizontal	—	8	29'-4"	752	
606	Cap Beam, Horizontal	—	4	26'-0"	158	
807	Cap Beam, Horizontal	J	6	15'-10"	254	
808	Cap Beam, Horizontal	J	6	15'-8"	251	
509	Cap Beam, Vertical	S	19	18'-0"	57	
510	Cap Beam, Vertical	S	6	16'-8"	626	
511	Cap Beam, Vertical	S	2 Ser 13	Varies	402	
512	Cap Beam, Vertical	S	2	14'-0"	20	
513	Cap Beam, Vertical	S	2	14'-8"	20	
514	Cap Beam, Vertical	S	2 Ser 9	Varies	241	
515	Cap Beam, Horizontal	—	2 Ser 4	Varies	114	
616	Cap Beam, Horizontal	J	6	51'-8"	51	
517	Cap Beam, Horizontal	J	8	31'-10"	32	
418	Cap Beam, Horizontal	J	4	51'-8"	159	
419	Cap Beam, Horizontal	—	4	31'-2"	89	
520	Cap Beam, Horizontal	—	8	31'-0"	25	
521	Cap Beam, Horizontal	—	2	10'-6"	22	
Total					17,132	



HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

Note:
Footing reinforcing
and pile spacing are typical.

Notes: For "Pier Notes" see Sheet 22 of 201.
Minimum acceptable bearing per pile
is 37 tons.

ANCHOR BOLT SETTING PLAN

Revised 6-2-77: East Footing Detail void & note added.

**CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE**

PIER 11S

STA. 322+81.95 @ FREEWAY=
STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. 1-380-6(68)263--01-57

LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

SHEET 29 OF 201

DESIGN NO. 1234 LINN COUNTY FILE 23191 SHEET 31 OF 203

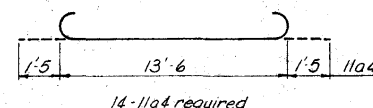
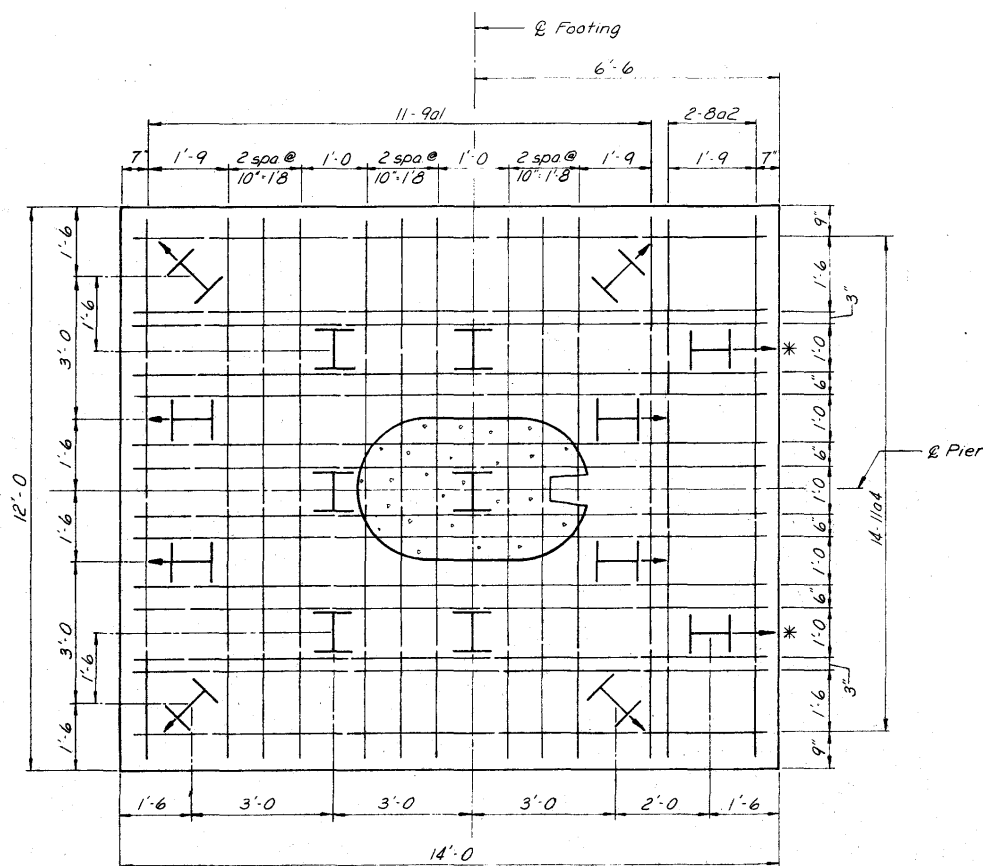
FEDERAL DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	IOWA				

NOTES FOR RE-DESIGNED PIER FOOTING:

This sheet was added because piles for the right footing (looking upstation) were driven 1'-6" to the left of the original design location. Therefore two additional piles were added to the footing.

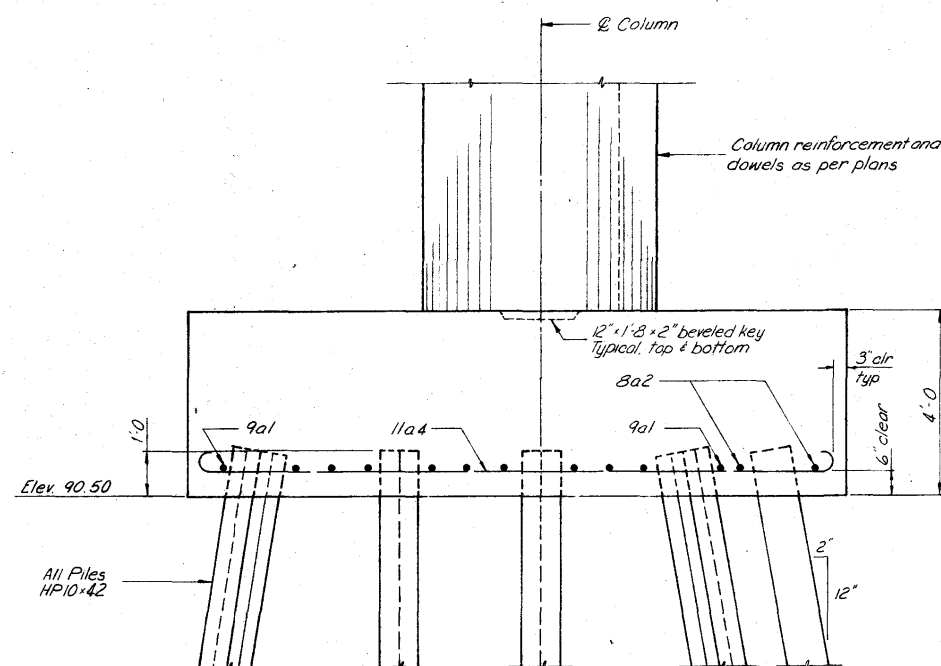
All notes not shown on this sheet are to be the same as shown on the original design plan sheet. The footing depth and elevation was not changed, only the footing plan dimensions have changed. Reinforcing steel sizes have changed. The 11a4 bars were not furnished for the original footing. Two 8a2 bars and eleven 9a1 bars are to be used from the reinforcement originally furnished. The remainder of the 8a2 bars are waste.

All additional piles, concrete, excavation and reinforcing bars not shown in the Quantity Book or Bill of Reinforcing Sheet 29 of 201, are to be furnished by the contractor.



BAR BENDING DIAGRAMS

* Additional HP10x42 pile, battered 2" per foot



FOOTING PLAN

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

MADE DHM DATE 5-26-77 CHECKED LJR DATE 5-31-77

Revised 6-2-77: This sheet added.

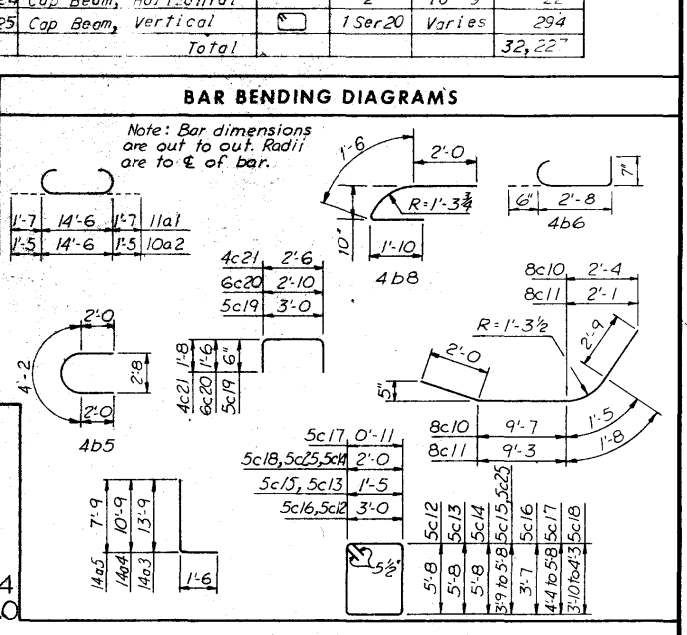
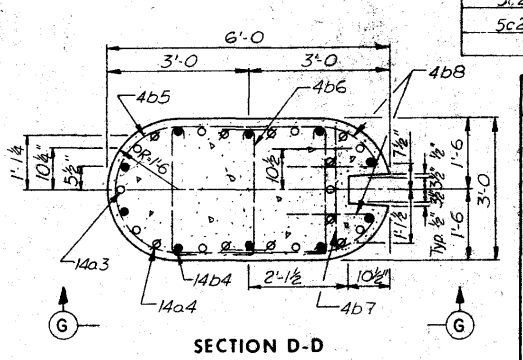
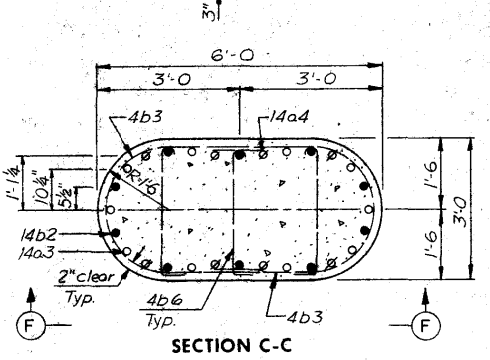
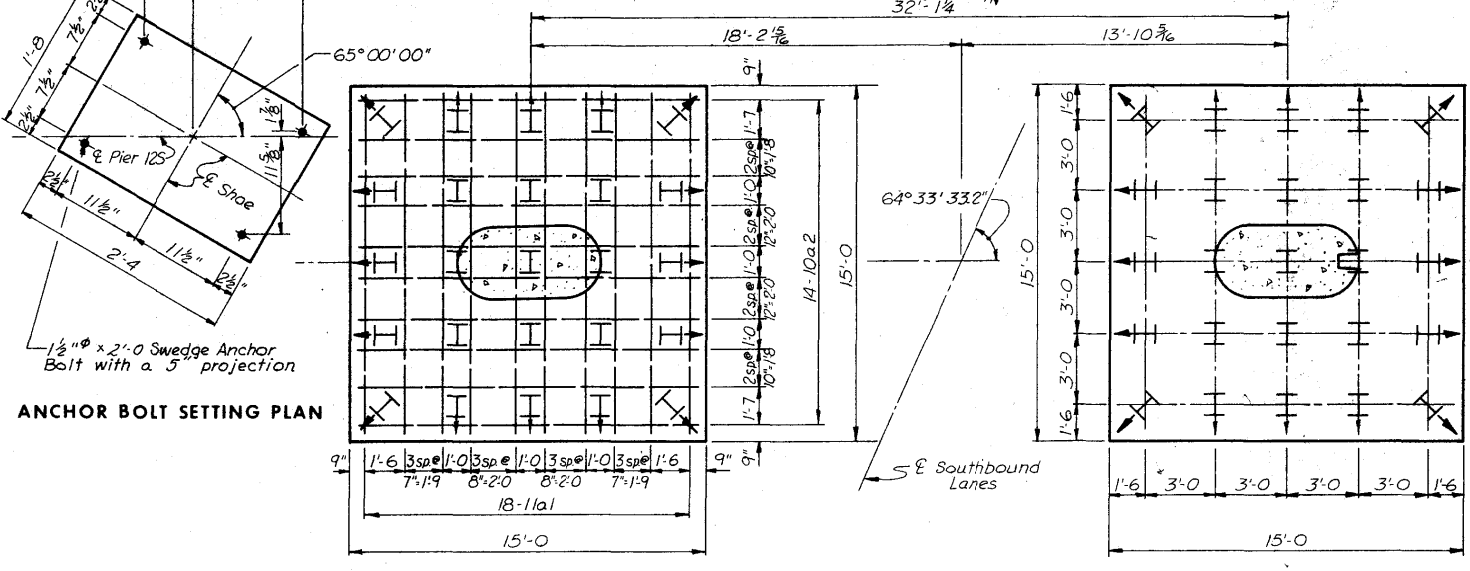
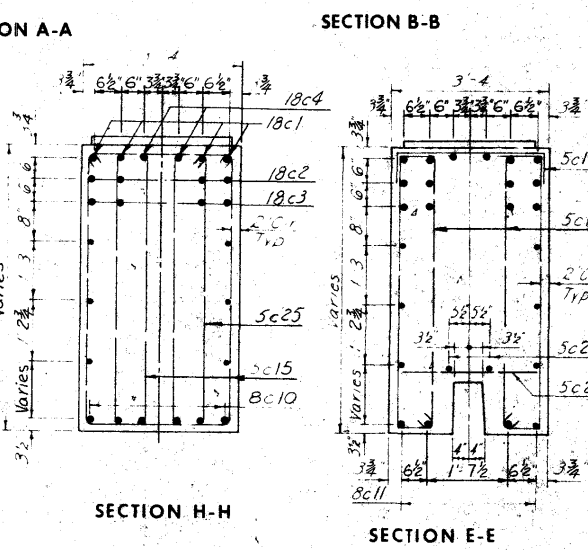
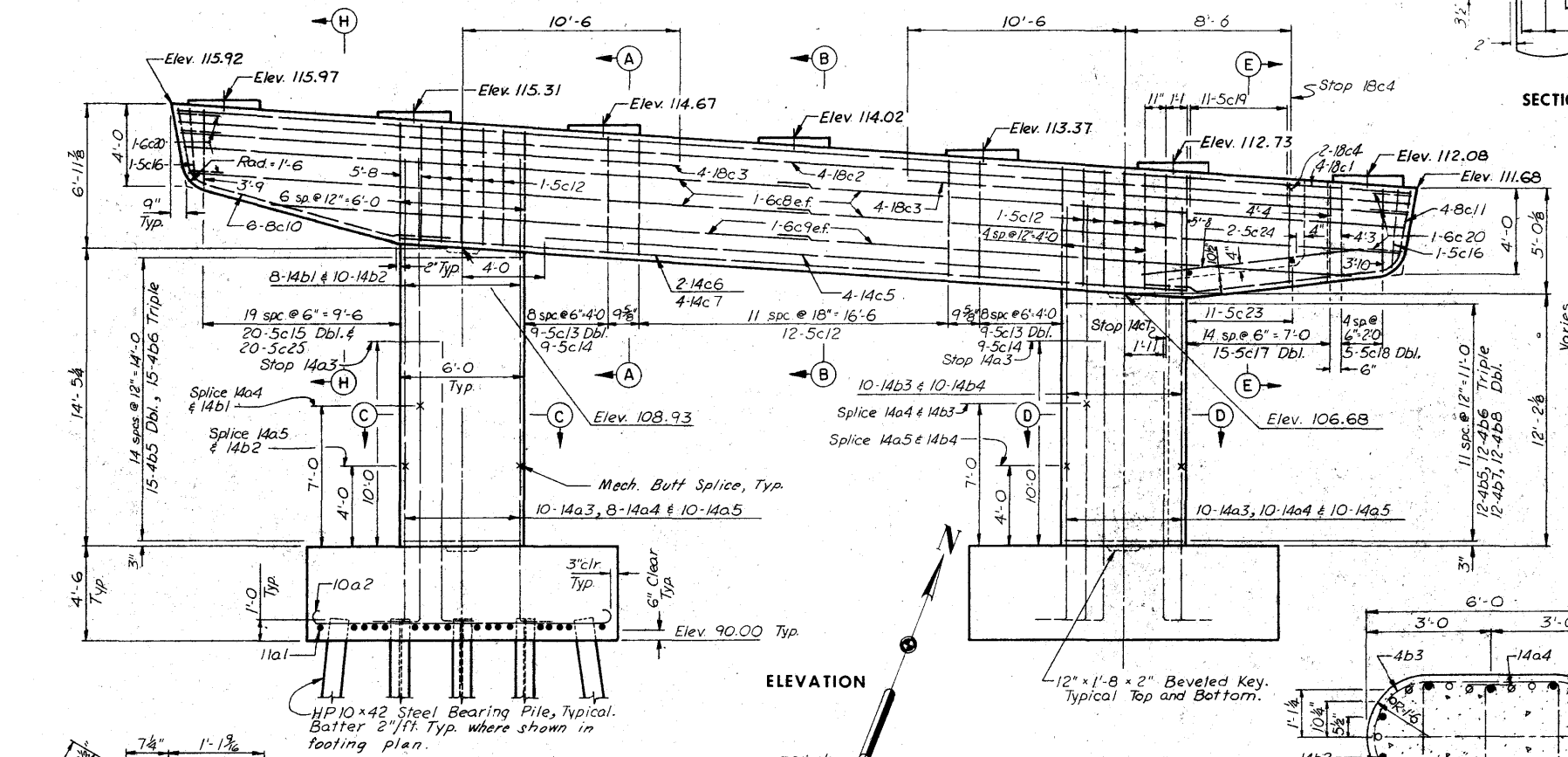
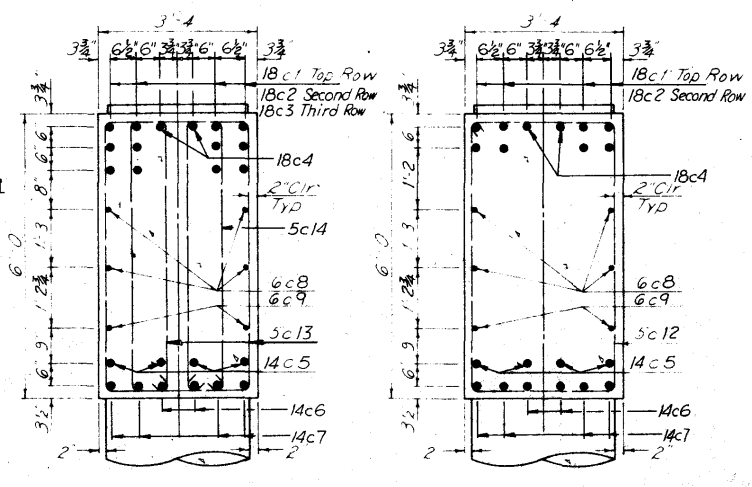
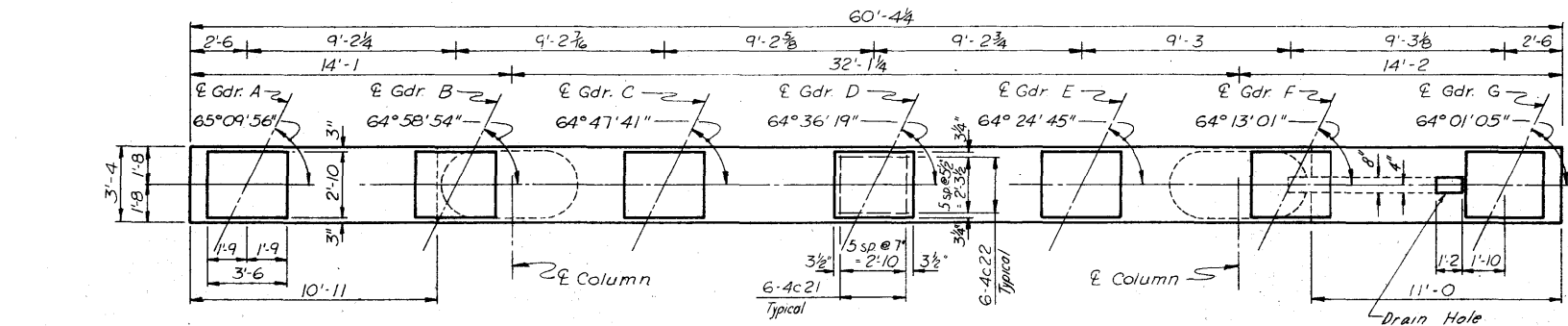
CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE

PIER 115

STA. 322+81.95 @ FREEWAY=
STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. I-380-6(68)263--01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

SHEET 29A OF 201

DESIGN NO. 1276 LINN COUNTY FILE 23191 SHEET 31A OF 203-0



ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
Structural Concrete **	Cu. Yds.	132.3
Reinforcing Steel	Lbs.	32,227
Elevation, Class 20	Cu. Yds.	168
*HP 10.4" Steel	Lin. Ft.	21674
Bearing Piles	Lin. Ft.	21560

CONCRETE PLACEMENT QUANTITIES

LOCATION	UNIT	QUANTITY
Footings, Class C	Cu. Yds.	75.0
Column, Class D	Cu. Yds.	15.6
Cap Beam, Class C	Cu. Yds.	41.7
Total	Cu. Yds.	132.3

BILL OF REINFORCEMENT

PIER 125				
BAR	LOCATION	SHAPE	NO.	LENGTH WEIGHT
11a1	Footing, Horizontal		36	17'-8 3379
10a2	Footing, Horizontal		28	17'-4 2088
14a3	Footing, Vertical		20	15'-2 2320
14a4	Footing, Vertical		18	12'-2 1675
14a5	Footing, Vertical		20	9'-2 1403
14b1	Column, Vertical		8	12'-0 74
14b2	Column, Vertical		10	15'-0 1148
14b3	Column, Vertical		10	9'-9 746
14b4	Column, Vertical		10	12'-9 975
4b5	Column, Horizontal		42	8'-2 358
4b6	Column, Horizontal		81	5'-8 198
4b7	Column, Horizontal		12	2'-4 19
4b8	Column, Horizontal		24	5'-2 84
181	Cap Beam, Horizontal		4	59'-11 3259
182	Cap Beam, Horizontal		4	59'-8 246
183	Cap Beam, Horizontal		8	24'-3 2638
18c4	Cap Beam, Horizontal		2	54'-6 1482
14c5	Cap Beam, Horizontal		4	24'-1 77
14c6	Cap Beam, Horizontal		2	37'-0 566
14c7	Cap Beam, Horizontal		4	18'-2 1168
6c8	Cap Beam, Horizontal		8	10'-6 366
6c9	Cap Beam, Horizontal		4	27'-1 164
8c10	Cap Beam, Horizontal		6	15'-9 751
8c11	Cap Beam, Horizontal		4	15'-8 167
5c12	Cap Beam, Vertical		22	18'-0 411
5c13	Cap Beam, Vertical		36	14'-10 557
5c14	Cap Beam, Vertical		18	16'-0 300
5c15	Cap Beam, Vertical		23er20	Varies 539
5c16	Cap Beam, Vertical		2	15'-10 29
5c17	Cap Beam, Vertical		23er15	Varies 391
5c18	Cap Beam, Vertical		2Ser5	Varies 122
5c19	Cap Beam, Horizontal		11	3'-10 44
6c20	Cap Beam, Horizontal		6	5'-8 51
4c21	Cap Beam, Horizontal		42	5'-8 159
4c22	Cap Beam, Horizontal		42	3'-2 89
5c23	Cap Beam, Horizontal		11	3'-0 34
5c24	Cap Beam, Horizontal		2	10'-9 22
5c25	Cap Beam, Vertical		1Ser20	Varies 294
Total				32,227

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

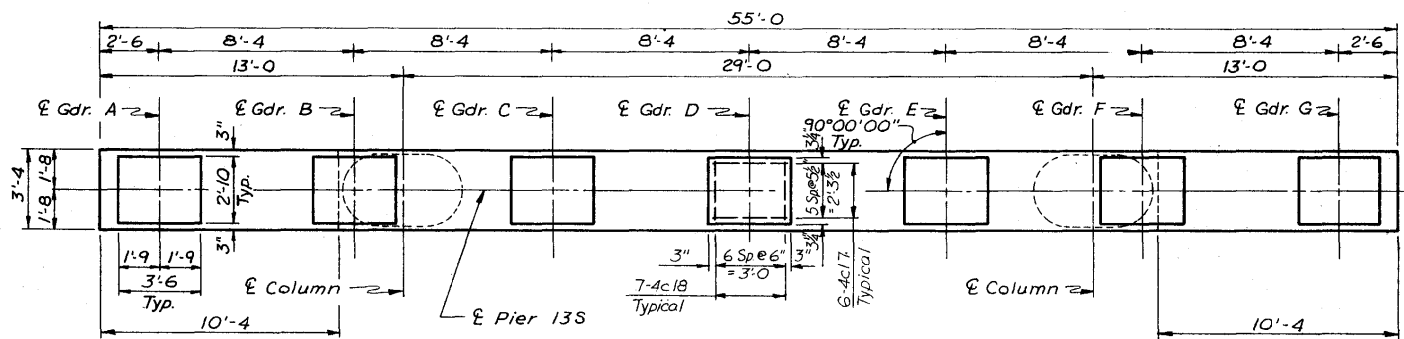
Notes:
For "Pier Notes" see Sheet 22 of 201.
Minimum acceptable bearing per pile
is 32 tons.

Note:
Pile spacing and footing
reinforcing are typical.

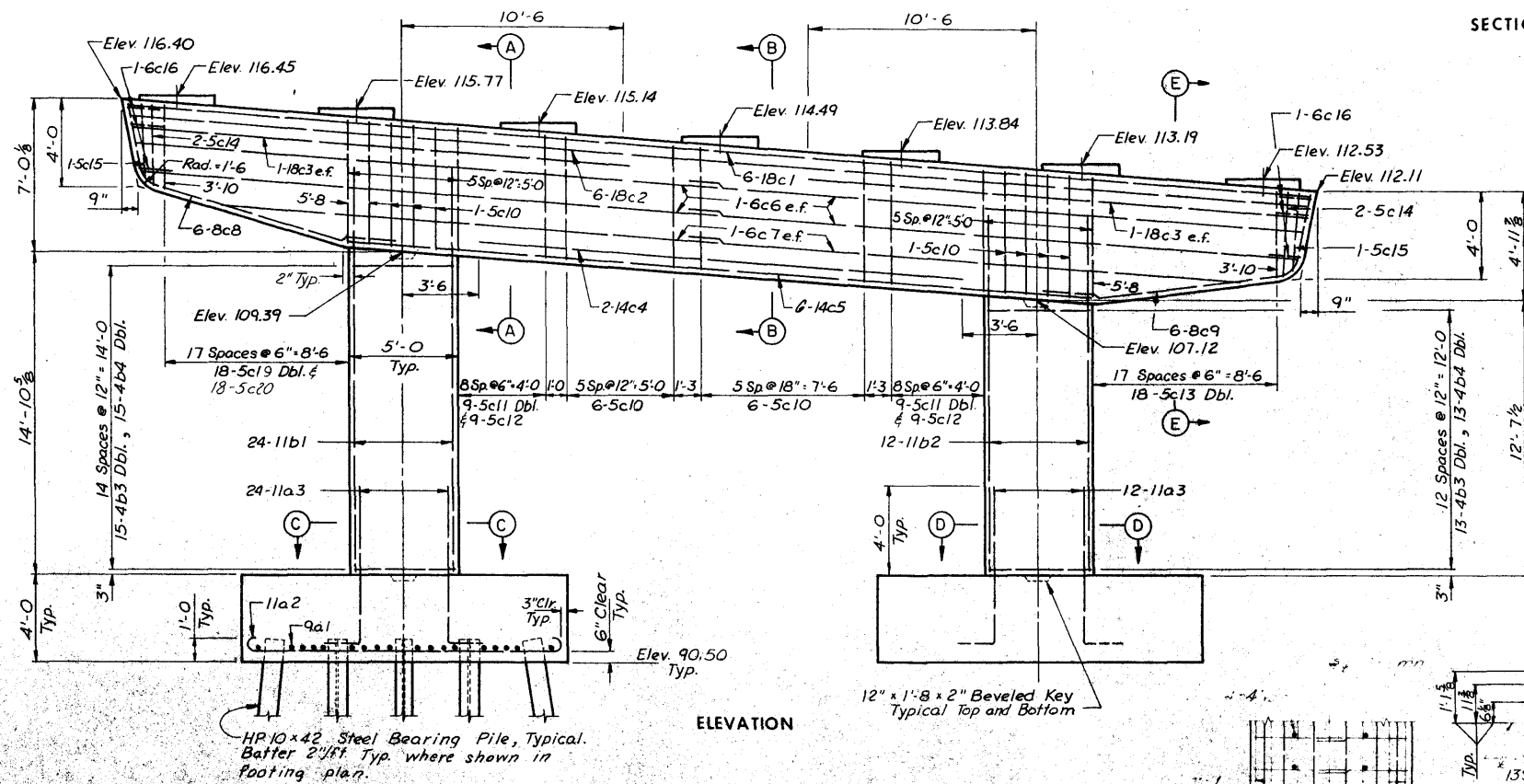
VIEW F-F
VIEW G-G

* 50 Piles @ 26' See Piling Log Sheet 2-23D
Includes 116.7 Cu. Yds. Class C and 15.6
Cu. Yds. Class D

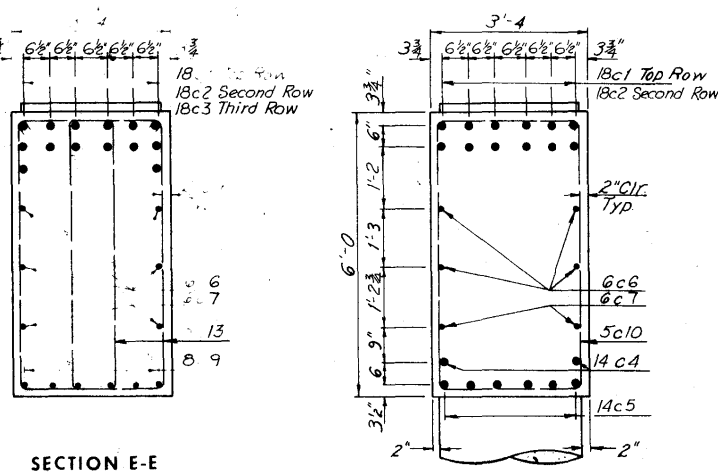
STA. 322+81.95 @ FREEWAY=
STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. I-380-6(68)263--01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION



PLAN OF CAP BEAM

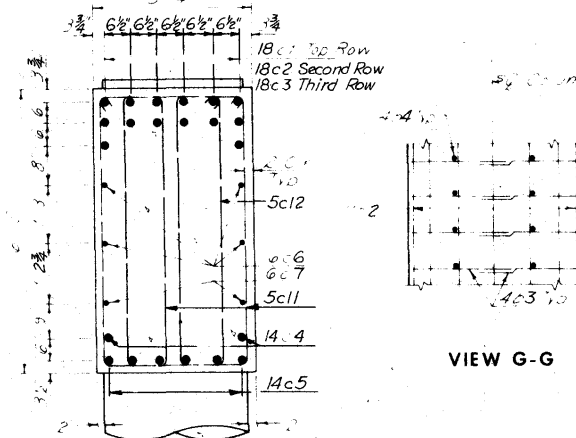


ELEVATION



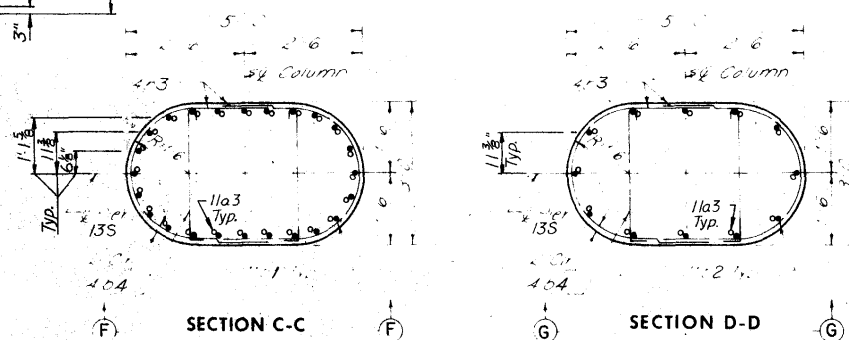
SECTION E-E

SECTION B-B



VIEW G-G

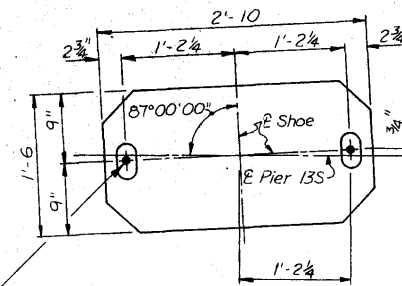
SECTION A-A



SECTION C-C

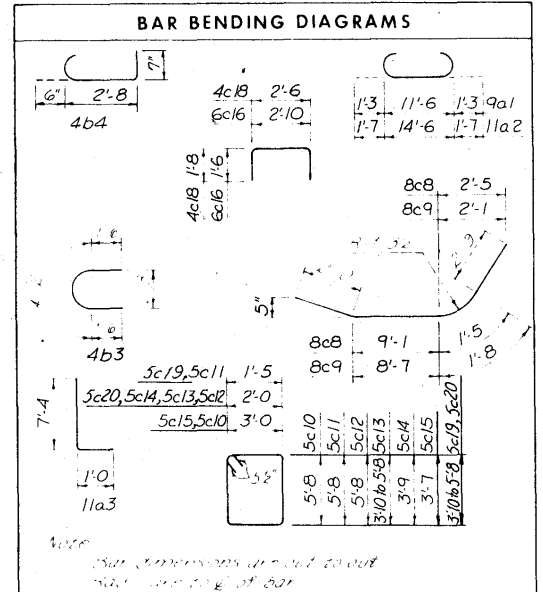
SECTION D-D

VIEW F-F



ANCHOR BOLT SETTING PLAN

BILL OF REINFORCEMENT					
PIER 13S					
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
9a1	Footings, Horizontal		16	14'-0"	1714
11a2	Footings, Horizontal		28	17'-8"	2628
11a3	Footings, Vertical		36	8'-0"	1578
11b1	Column, Vertical		24	18'-11"	2412
11b2	Column, Vertical		12	16'-8"	106
4b3	Column, Horizontal		56	7'-2"	268
4b4	Column, Horizontal		56	3'-8"	12
18c1	Cap Beam, Horizontal		6	54'-6"	4447
18c2	Cap Beam, Horizontal		6	54'-4"	4434
18c3	Cap Beam, Horizontal		4	23'-1"	1256
14c4	Cap Beam, Horizontal		2	22'-0"	7
14c5	Cap Beam, Horizontal		6	24'-1"	1564
6c6	Cap Beam, Horizontal		8	27'-2"	353
6c7	Cap Beam, Horizontal		4	24'-9"	149
8c8	Cap Beam, Horizontal		6	15'-0"	244
8c9	Cap Beam, Horizontal		6	15'-0"	240
5c10	Cap Beam, Vertical		20	18'-10"	575
5c11	Cap Beam, Vertical		36	14'-10"	557
5c12	Cap Beam, Vertical		18	16'-0"	500
5c13	Cap Beam, Vertical		2 Ser18	Varies	532
5c14	Cap Beam, Vertical		4	12'-2"	51
5c15	Cap Beam, Vertical		2	13'-10"	9
6c16	Cap Beam, Horizontal		6	5'-8"	51
4c17	Cap Beam, Horizontal		4	3'-2"	89
4c18	Cap Beam, Horizontal		49	5'-8"	185
5c19	Cap Beam, Vertical		2 Ser18	Varies	488
5c20	Cap Beam, Vertical		1 Ser18	Varies	266
Total					25,727



ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Structural Concrete (C10)	Cu. Yds.	104.8
Reinforcing Steel	Lbs.	25,727
Excavation, Class 20	Cu. Yds.	144,340
*HP 10.42 Steel Funnels	Lin. Ft.	120,185.2
Bearing Piles Drive	Lin. Ft.	120,184.8

CONCRETE PLACEMENT QUANTITIES		
LOCATION	UNIT	QUANTITY
Footings, Class C	Cu. Yds.	52.1
Column, Class C	Cu. Yds.	13.3
Cap Beam, Class C	Cu. Yds.	38.2
Total	Cu. Yds.	104.8

*40 Piles @ 28' See Piling Log Sheet 203E

CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE

PIER 13S

STA. 322+81.95 & FREEWAY =
STA. 32+14.70 & 1ST. AVE. W PROJECT NO. I-380-6(68)263--01-57

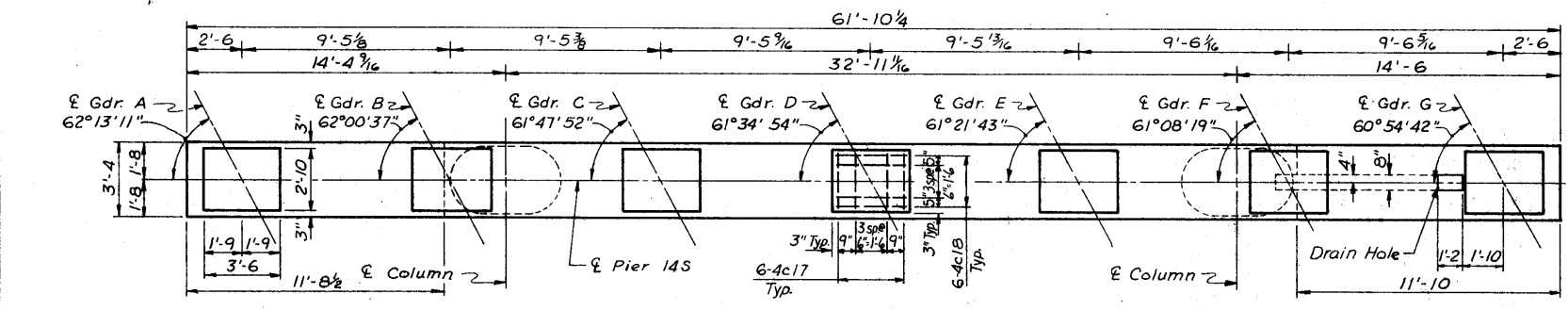
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

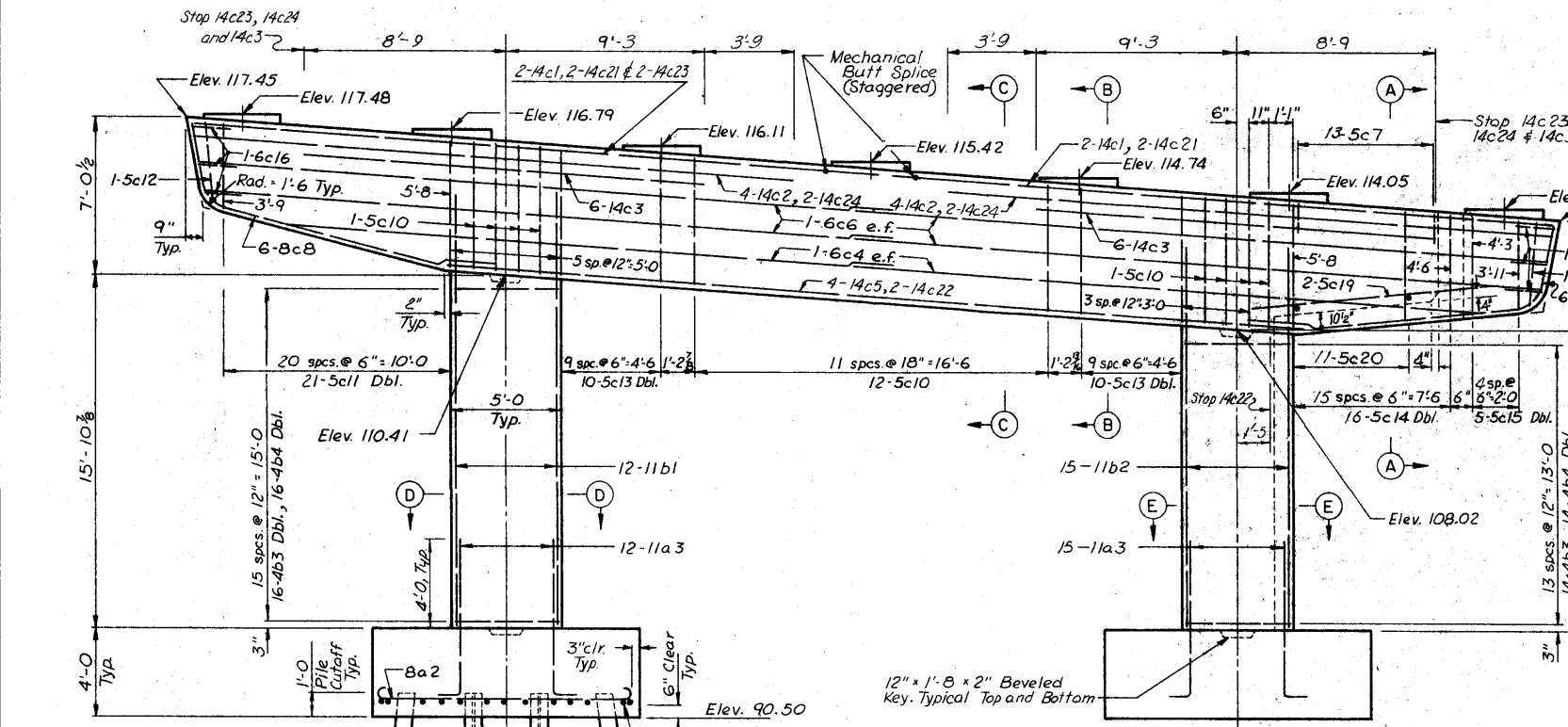
MADE L.D.H. DATE 4-27-74 CHECKED R.O.C. DATE 6-29-74

FOOTING PLAN

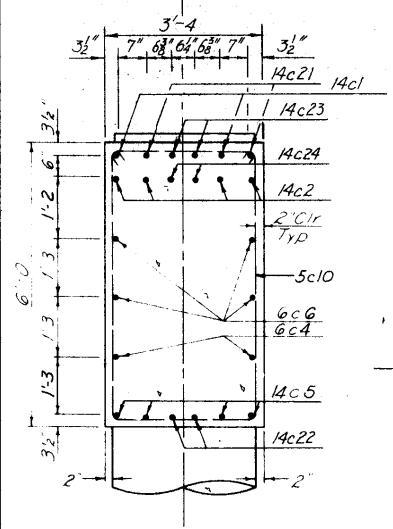
Notes: For "Pier Notes" see Sheet 22 of 201.
Minimum acceptable bearing per pile
is 34 tons.



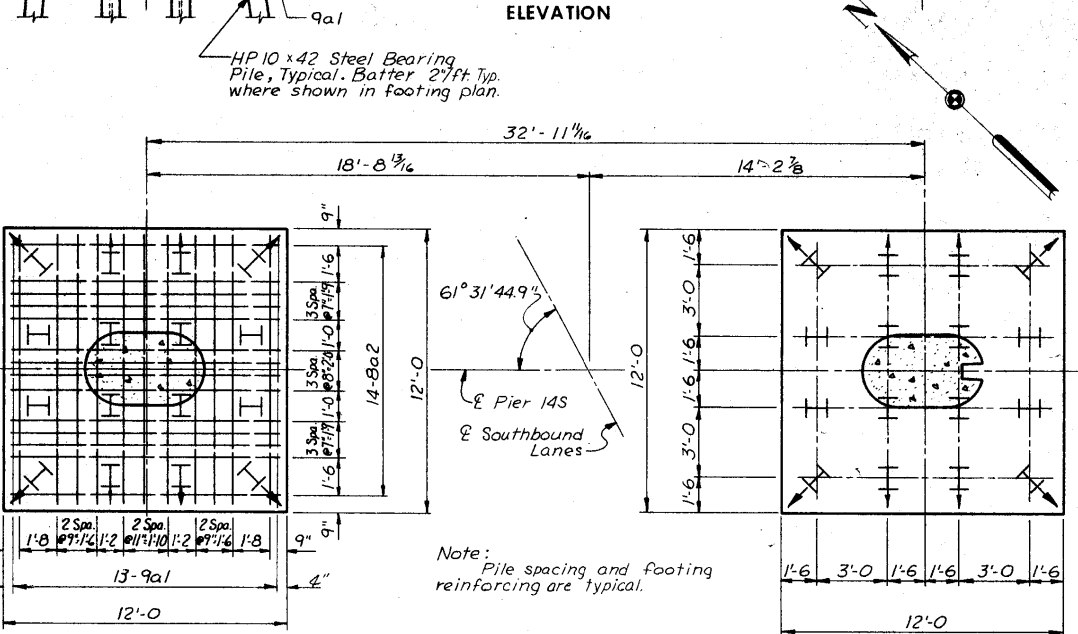
PLAN OF CAP BEAM



ELEVATION

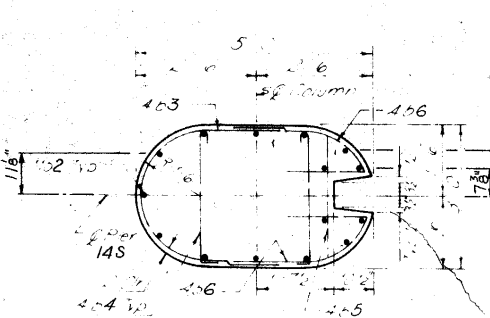


SECTION C-C

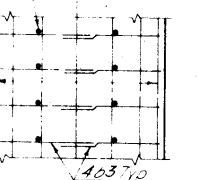


FOOTING PLAN

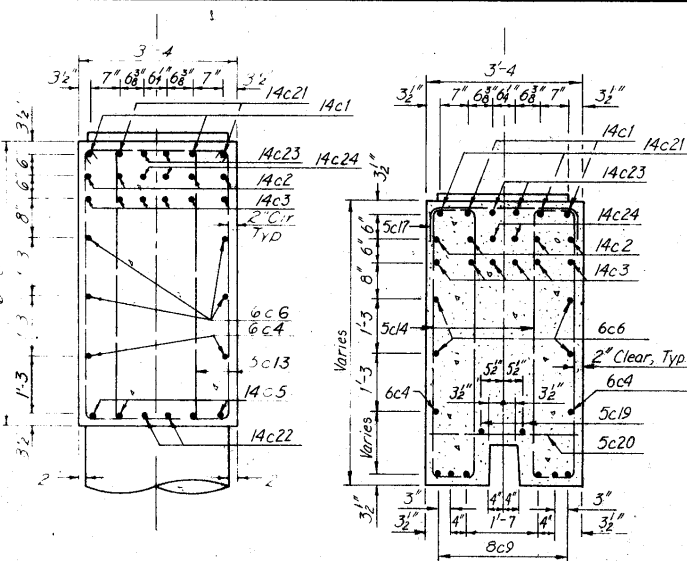
Note: Pile spacing and footing reinforcing are typical.



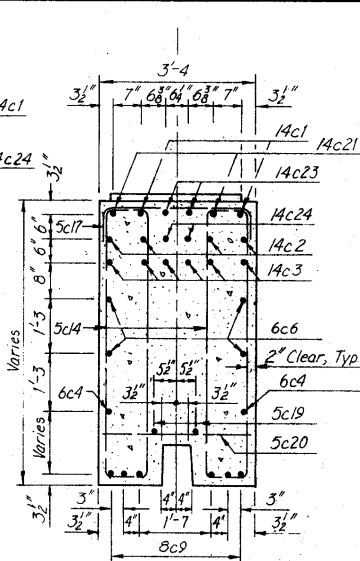
SECTION E-F



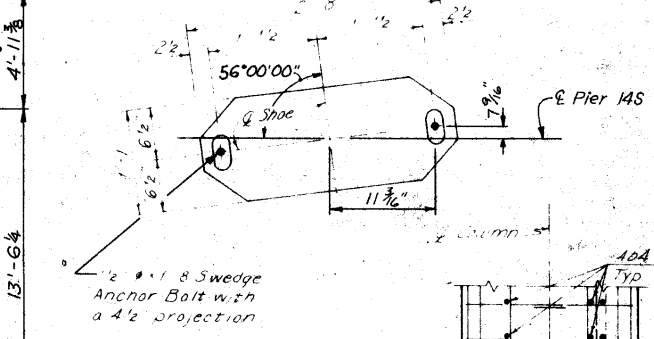
VIEW G-G



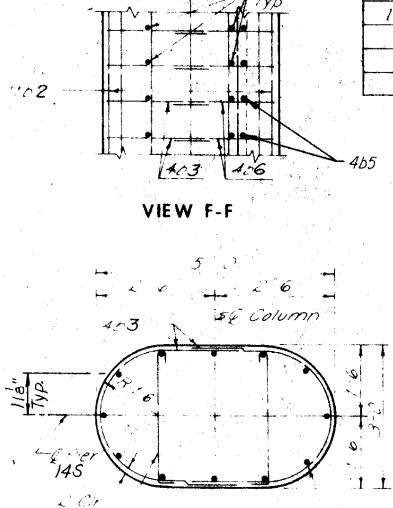
SECTION B-B



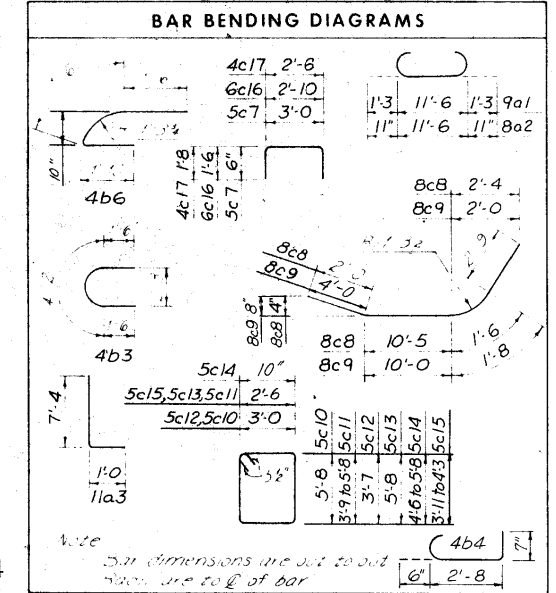
SECTION A-A



ANCHOR BOLT SETTING PLAN



SECTION D-D



BAR BENDING DIAGRAMS

BILL OF REINFORCEMENT					
PIER 14S					
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
301	Footing, Horizontal		26	14'-0"	1238
302	Footing, Horizontal		28	14'-4"	997
110	Footing, Vertical		27	8'-2"	1187
1101	Column, Vertical		12	19'-11"	1270
1102	Column, Vertical		15	17'-7"	1401
40	Column, Horizontal		46	7'-2"	220
404	Column, Horizontal		60	7'-8"	147
405	Column, Horizontal		14	21'-6"	127
406	Column, Horizontal		28	41'-9"	89
1401	Cap Beam, Horizontal		4	28'-8"	877
1402	Cap Beam, Horizontal		8	27'-2"	166
1403	Cap Beam, Horizontal		12	18'-0"	165
604	Cap Beam, Horizontal		4	27'-9"	167
1405	Cap Beam, Horizontal		4	58'-1"	1165
606	Cap Beam, Horizontal		8	51'-2"	374
507	Cap Beam, Horizontal		13	51'-10"	52
808	Cap Beam, Horizontal		6	16'-8"	267
809	Cap Beam, Horizontal		6	18'-5"	295
510	Cap Beam, Vertical		20	18'-0"	775
511	Cap Beam, Vertical		2 Ser 21	Varies	661
512	Cap Beam, Vertical		2	13'-10"	23
501	Cap Beam, Vertical		40	17'-0"	709
514	Cap Beam, Vertical		2 Ser 16	Varies	417
5015	Cap Beam, Vertical		2 Ser 5	Varies	144
616	Cap Beam, Vertical		6	5'-8"	51
417	Cap Beam, Horizontal		40	5'-8"	152
5018	Cap Beam, Horizontal		40	51'-2"	83
519	Cap Beam, Horizontal		2	11'-1"	11
5020	Cap Beam, Horizontal		11	71'-0"	34
1401	Cap Beam, Horizontal		4	71'-8"	1000
1402	Cap Beam, Horizontal		8	71'-0"	556
1403	Cap Beam, Horizontal		12	50'-5"	771
1404	Cap Beam, Horizontal		4	71'-9"	666
Total					18,774

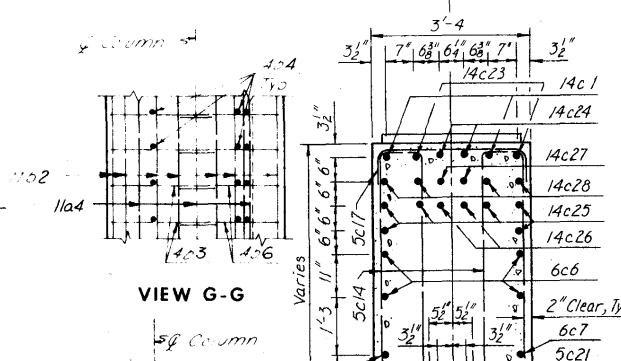
ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Structural Concrete (C1C)	Cu. Yds.	99.3
Reinforcing Steel	Lbs.	18,774
Excavation, Class 20	Cu. Yds.	100.8
•HP 10x42 Steel	Ltn. Ft.	564
Bearing Piles	Ltn. Ft.	123.7
		131.9

CONCRETE PLACEMENT QUANTITIES		
LOCATION	UNIT	QUANTITY
Footings, Class C	Cu. Yds.	42.7
Columns, Class C	Cu. Yds.	14.0
Cap Beam, Class C	Cu. Yds.	42.6
Total	Cu. Yds.	99.3

**CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE**

PIER 14S

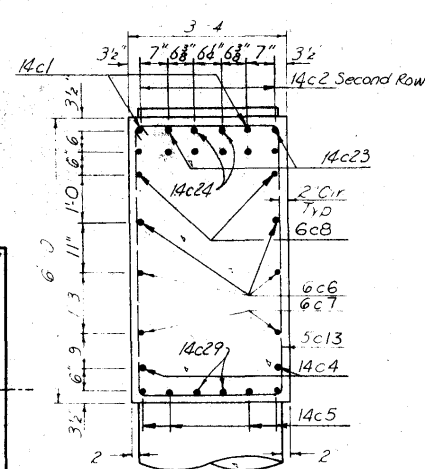
STA. 322+81.95 @ FREEWAY=
STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. I-380-6(68)263--01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION



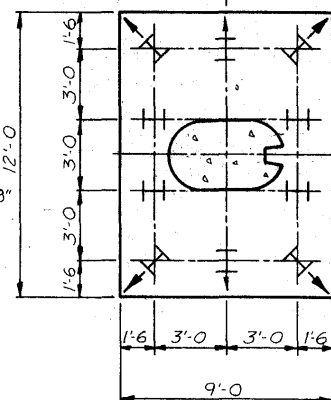
VIEW G-G



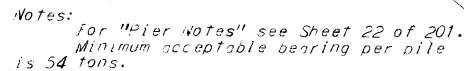
SECTION E-E



SECTION C-C



FOOTING PLAN

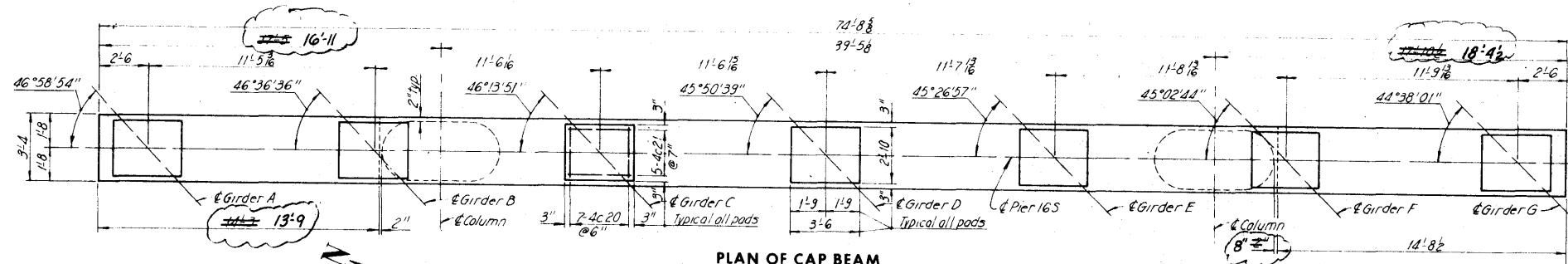


ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Structural Concrete (C.I.)	Cu. Yds.	88.6
Reinforcing Steel	Lbs.	22,487
Excavation, Class 20	Cu. Yds.	75,73.3
*HP 10, 42 Steel	Lin. Ft.	666,666.7
Bearing Piles	Lin. Ft.	666,623.8

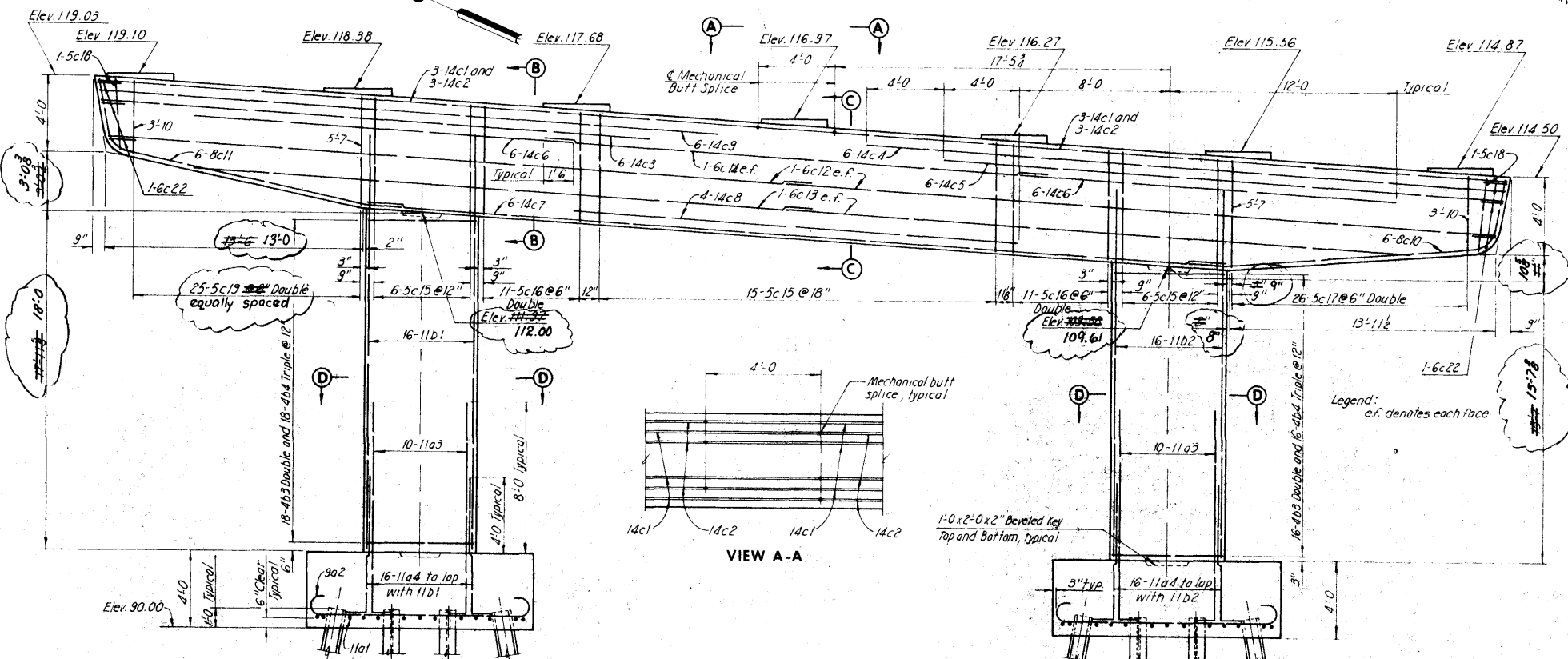
LOCATION	UNIT	QUANTITY
Footings, Class C	Cu. Yds.	28.0
Columns, Class C	Cu. Yds.	15.0
Cap Beam, Class C	Cu. Yds.	45.6
Total	Cu. Yds.	88.6

**PIER 15S**

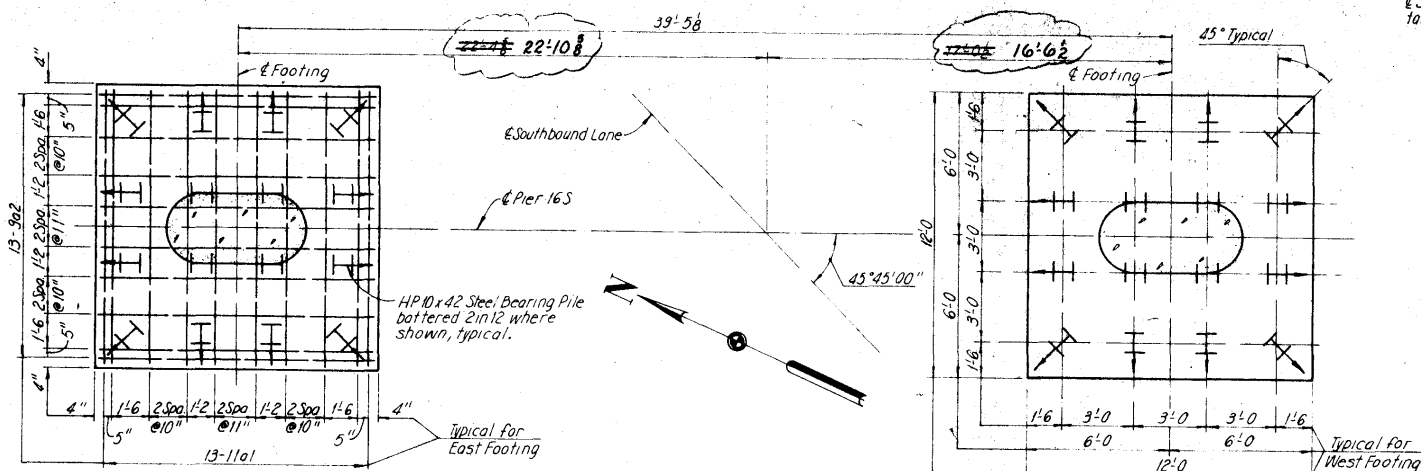
- 20 Piles @ 33'. See Piling Log sheet 203E



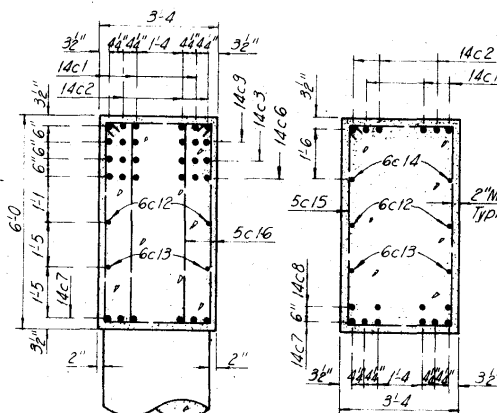
PLAN OF CAP BEAM



ELEVATION

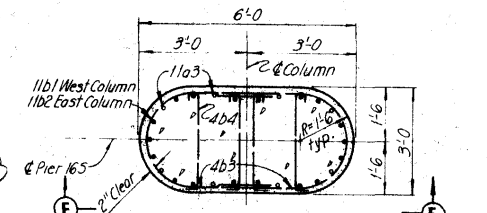


FOOTING PLAN

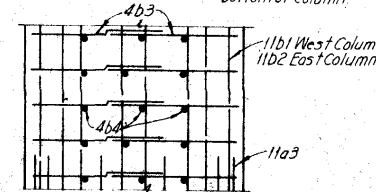


SECTION B-B

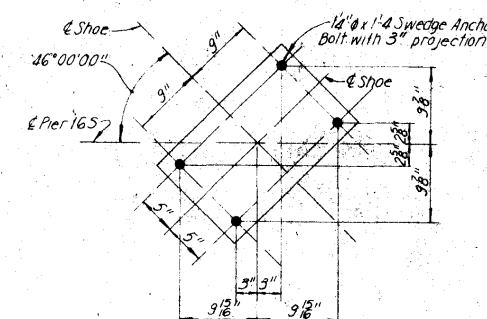
SECTION C-C



SECTION D-D



VIEW E-E



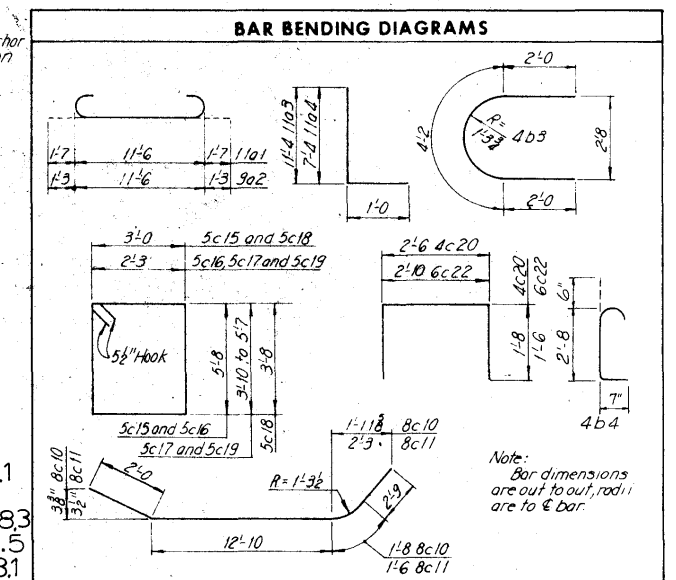
ANCHOR BOLT SETTING PLAN

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Structural concrete (C12)	Cu. Yds.	144.1241
Reinforcing Steel	Lbs.	28,219
Excavation, Class 20	Cu. Yds.	102.983
*HP10x42 Steel	Furnish	861.5
bearing piles	Drive	867.581

*32 Piles @ 28'. See Piling Log Sheet 203E

CONCRETE PLACEMENT QUANTITIES		
LOCATION	UNIT	QUANTITY
Footings, Class C	Cu. Yds.	42.7
Columns, Class C	Cu. Yds.	20.29.7
Cap Beam, Class C	Cu. Yds.	51.7
Total	Cu. Yds.	114.4

BILL OF REINFORCEMENT					
PIER 16 S					
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
11a1	Footings Horizontal		25	14'-8"	2,026
9a2	Footings Horizontal		25	14'-0"	1,238
11a3	Footings Vertical		20	12'-3"	1,302
11a4	Footings Vertical		32	8'-3"	1,403
11b1	Column Vertical		16	22'-0"	1,870
11b2	Column Vertical		16	19'-7"	1,665
4b3	Column Horizontal		68	8'-2"	371
4b4	Column Horizontal		102	3'-8"	250
14c1	Cap Beam Horizontal		6	39'-1"	1,794
14c2	Cap Beam Horizontal		6	35'-1"	1,610
14c3	Cap Beam Horizontal		6	29'-0"	1,331
14c4	Cap Beam Horizontal		6	33'-7"	1,541
14c5	Cap Beam Horizontal		6	29'-6"	1,354
14c6	Cap Beam Horizontal		12	20'-0"	1,836
14c7	Cap Beam Horizontal		6	45'-9"	2,100
14c8	Cap Beam Horizontal		4	23'-5"	717
14c9	Cap Beam Horizontal		6	33'-2"	1,522
8c10	Cap Beam Horizontal		6	19'-3"	508
8c11	Cap Beam Horizontal		6	19'-1"	306
6c12	Cap Beam Horizontal		4	37'-6"	225
6c13	Cap Beam Horizontal		4	36'-0"	216
6c14	Cap Beam Horizontal		2	26'-5"	79
5c15	Cap Beam Vertical		27	18'-0"	507
5c16	Cap Beam Vertical		44	16'-6"	757
5c17	Cap Beam Vertical		25er26	Varies	791
5c18	Cap Beam Vertical		2	14'-0"	29
5c19	Cap Beam Vertical		25er25	Varies	761
4c20	Cap Beam Vertical		44	5'-8"	185
4c21	Cap Beam Horizontal		17	3'-2"	74
6c22	Cap Beam Horizontal		0	5'-8"	51
Total					28,219



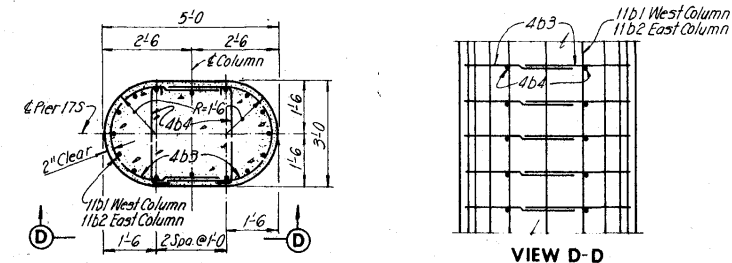
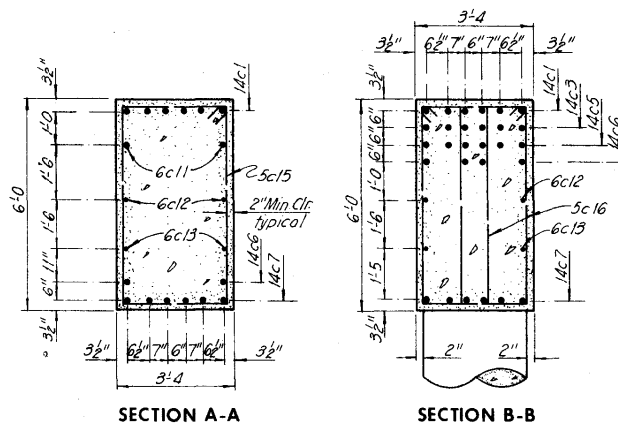
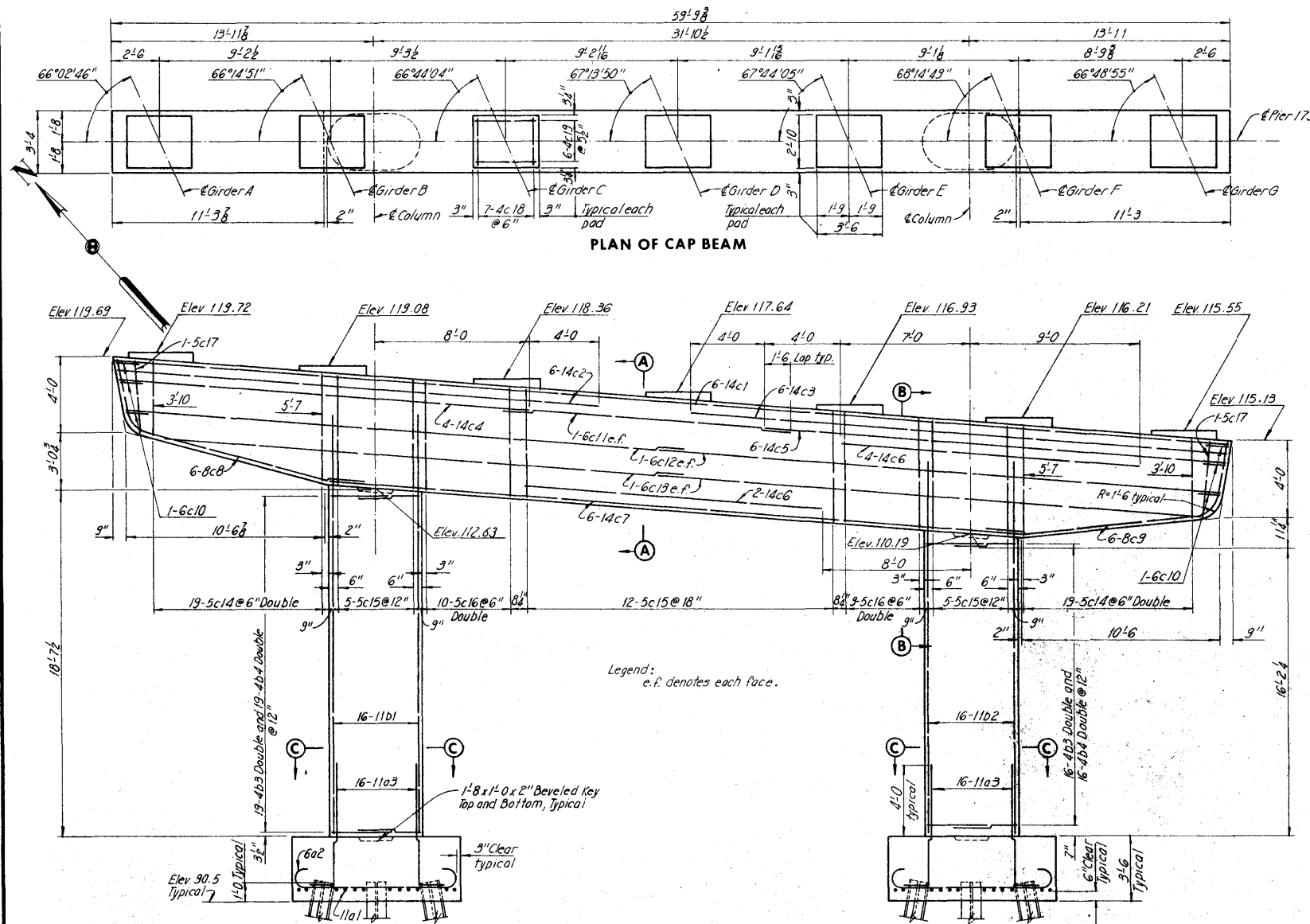
**CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE
PIER 16 S**

STA. 322+81.95 @ FREEWAY =
STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. I-380-6(68)263--01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

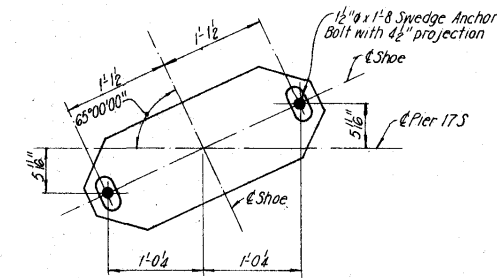
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

MADE AJS DATE 6-5-74 CHECKED AW DATE 6-12-74

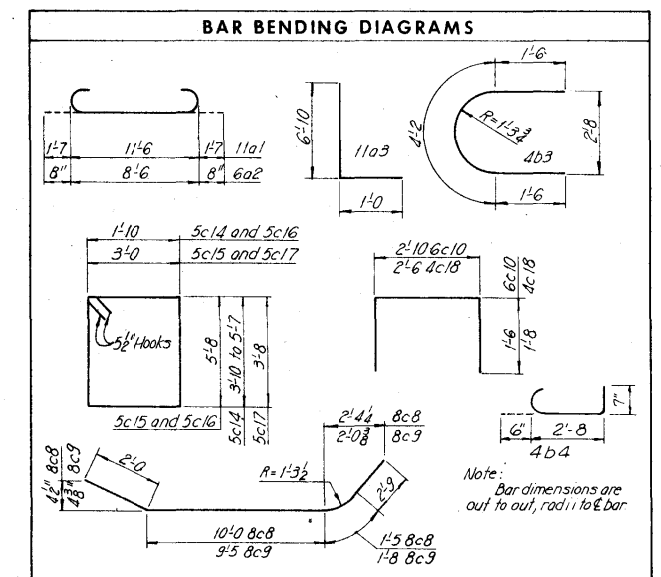
Revised: 4-28-77; Dimensions corrected to shift cap beam to correct position.



Note:
11b1 and 11b2
to be equally spaced
on rounded ends of
column.



BILL OF REINFORCEMENT					
PIER 17S					
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
11a1	Footing Horizontal	U	24	14'-8"	1,870
6a2	Footing Horizontal	U	32	9'-10"	473
11a3	Footing Vertical	U	32	7'-9"	1,318
11b1	Column Vertical	U	16	22'-8"	1,927
11b2	Column Vertical	U	16	20'-2"	1,714
4b3	Column Horizontal	U	70	7'-2"	335
4b4	Column Horizontal	U	70	3'-8"	171
14c1	Cap Beam Horizontal	U	6	59'-4"	2,723
14c2		U	6	25'-8"	1,178
14c3		U	6	23'-7"	1,312
14c4		U	4	21'-6"	658
14c5		U	6	24'-6"	1,125
14c6		U	6	16'-0"	734
14c7		U	6	37'-3"	1,710
8c8		U	6	16'-2"	259
8c9		U	6	15'-10"	234
6c10		U	6	5'-8"	51
6c11		U	2	15'-11"	48
6c12		U	4	30'-0"	180
6c13	Cap Beam Horizontal	U	4	28'-0"	163
5c14	Cap Beam Vertical	U	4	28'-0"	163
5c15		4 Ser 19	22	Varies	1,090
5c16			38	15'-8"	621
5c17			2	14'-0"	29
4c18	Cap Beam Vertical	U	49	5'-8"	185
4c19	Cap Beam Horizontal	U	42	3'-2"	89
Total					20,635



ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Structural Concrete (C10)	Cu.Yds.	86.4
Reinforcing Steel	Lbs.	20,635
Excavation, Class 20	Cu.Yds.	72.7
*HP10x42 Steel	Furnish	640
Bearing Piles	Drive	587.3
		463.1

*20 Piles @ 32'. See Piling Log sheet 203F

CONCRETE PLACEMENT QUANTITIES		
LOCATION	UNIT	QUANTITY
Footing, Class C	Cu.Yds.	28.0
Column, Class C	Cu.Yds.	16.9
Cap Beam, Class C	Cu.Yds.	41.5
Total	Cu.Yds.	86.4

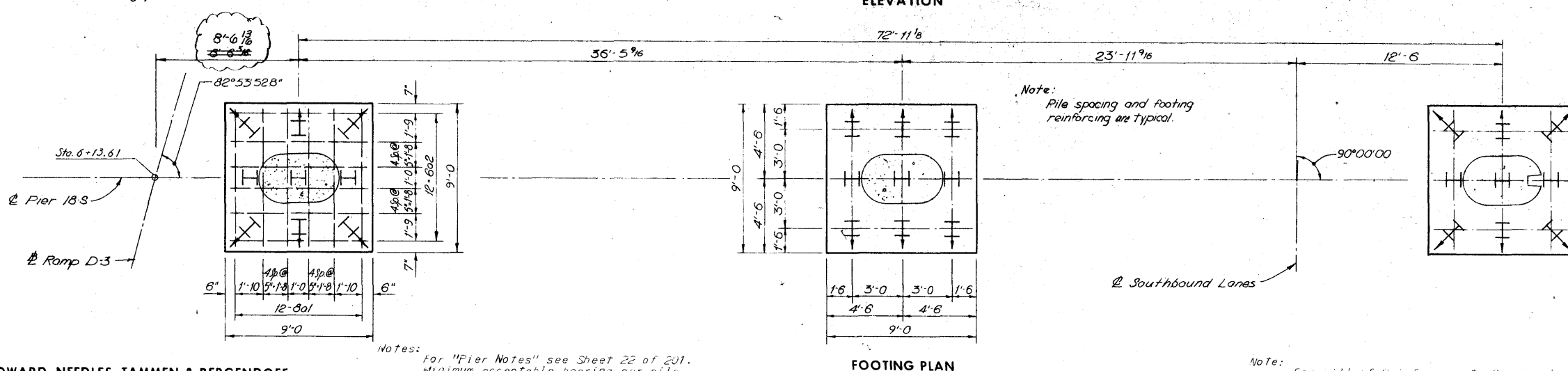
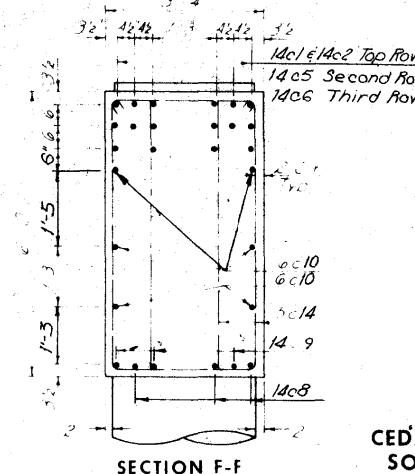
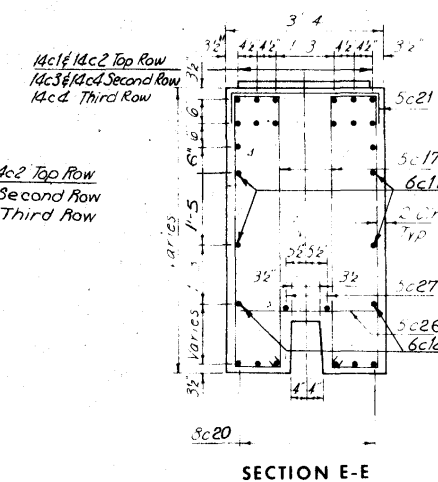
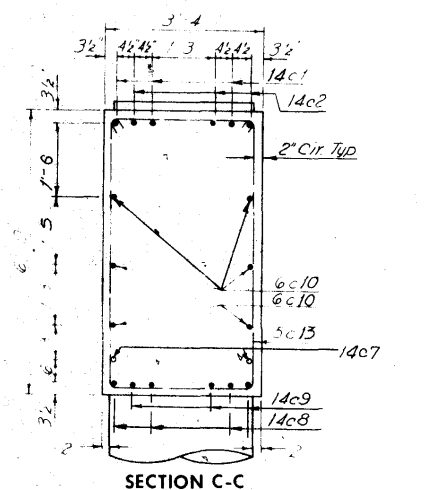
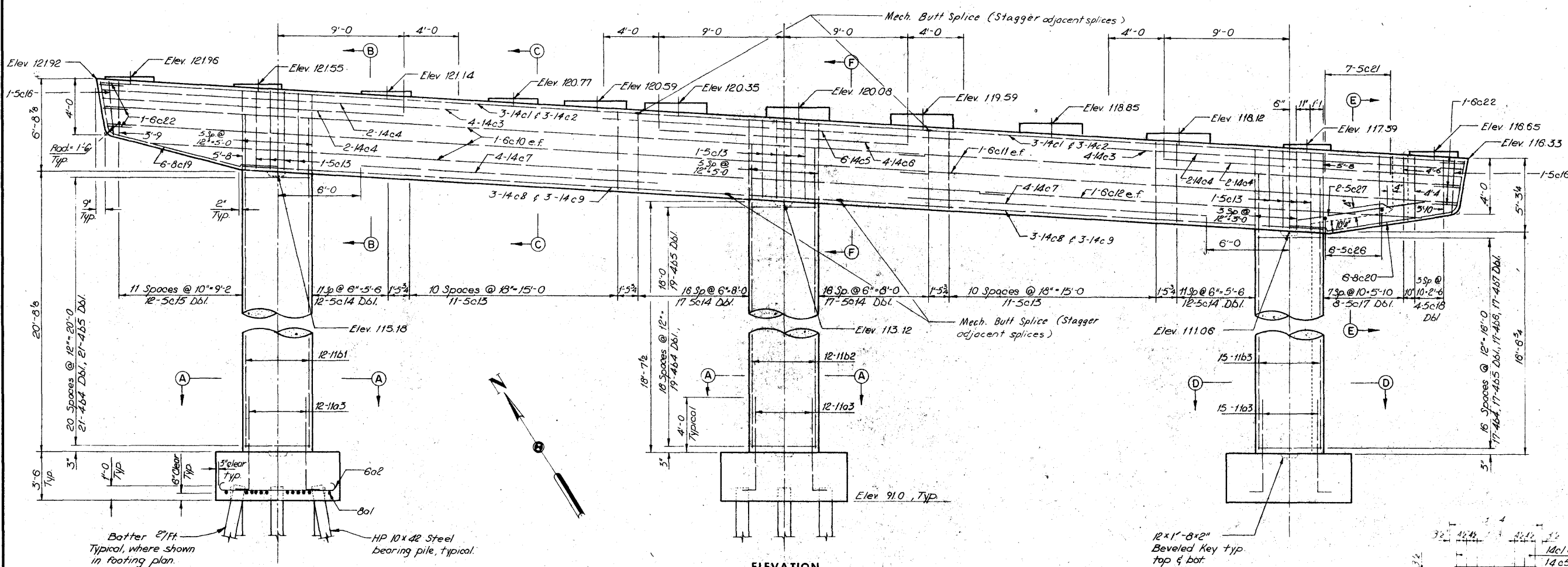
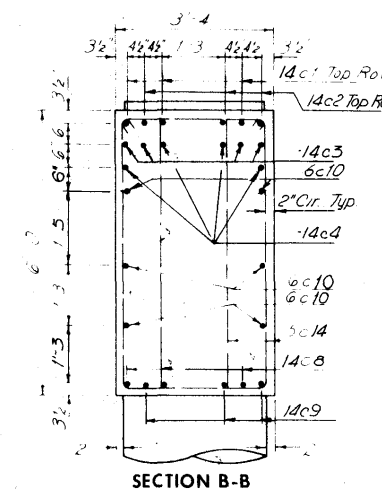
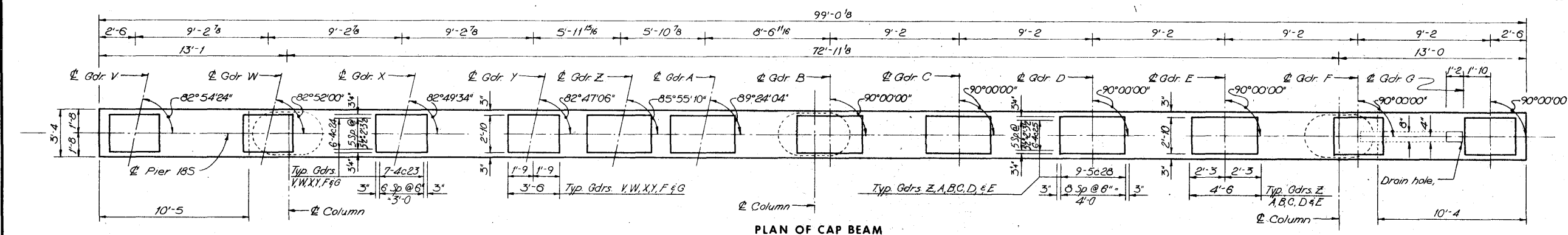
**CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE**

PIER 17S

STA. 322+81.95 @ FREEWAY =
STA. 324+14.70 @ 1ST. AVE. W

PROJECT NO. I-380-6(68)263--01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

FEDERAL DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEET
	IOWA				



Note:
Pile spacing and footing
reinforcing are typical.

Note: For Bill of Reinforcement, Bar Bending Diagrams, Estimated Quantities, Concrete Placement Quantities, Anchor Bolt Setting Plan, additional sections and views, see sheet 39 of 201.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

Notes: For "Pier Notes" see Sheet 22 of 201.
Minimum acceptable bearing per pile
is 45 tons for the west footing, 57 tons
for the center footing and 51 tons for the
east footing.

Revised 5-3-77: Footing tie dimension corrected.

F-F

CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE

PIER 18S

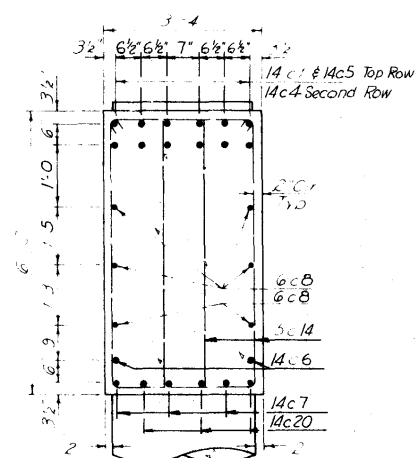
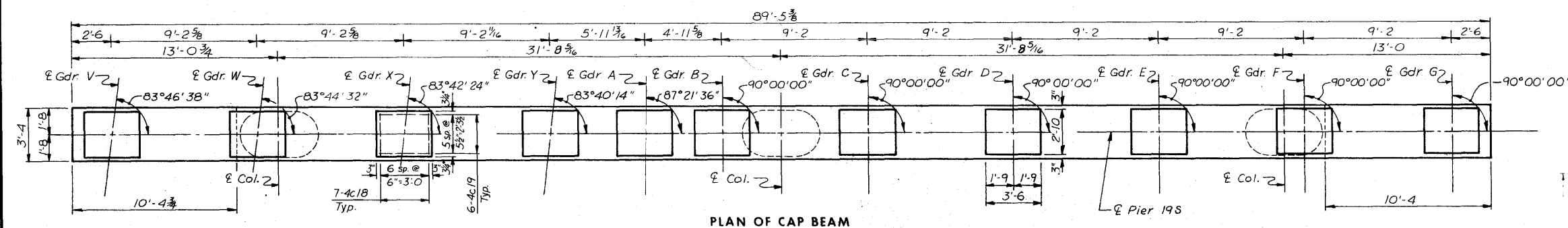
STA. 322+81.95 @ FREEWAY=
STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. I-380-6(68)263--01-5

LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

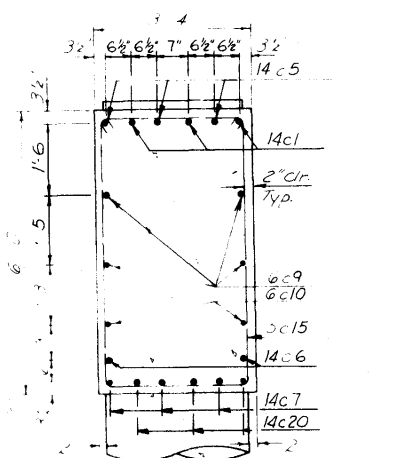
SHEET 36 OF 201

DESIGN NO. 1276 LINN COUNTY FILE 23191 SHEET 38 OF 203

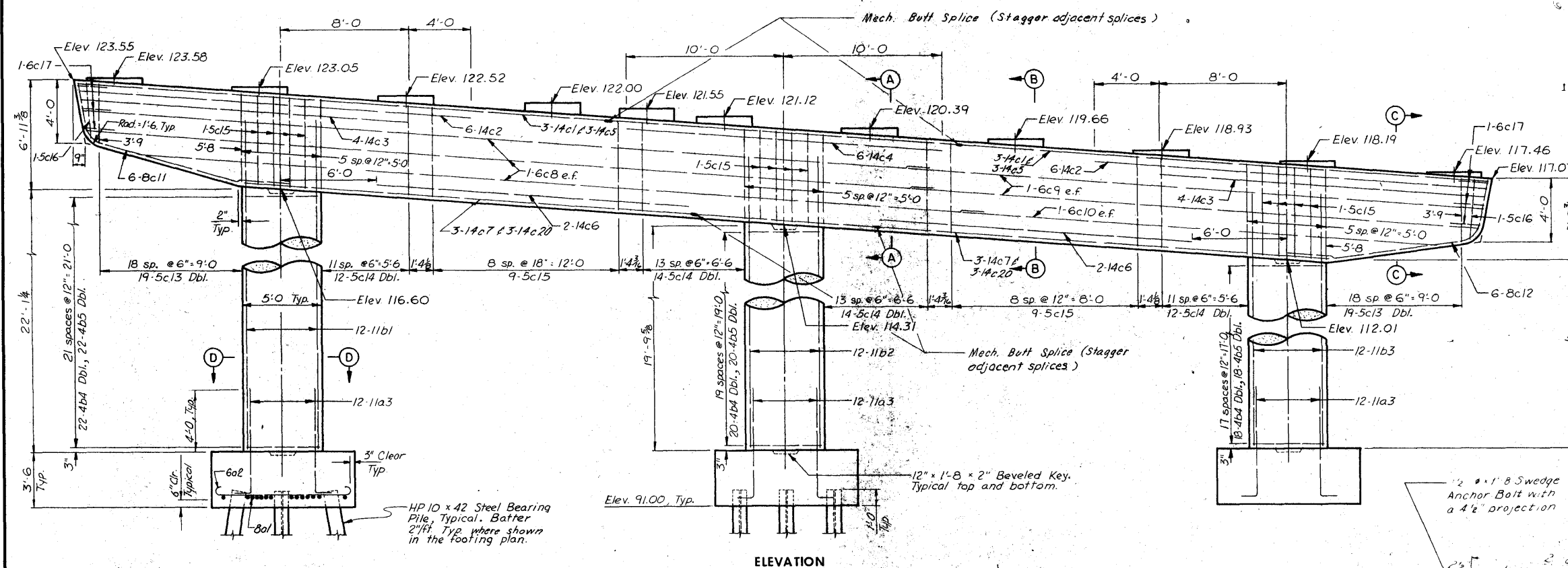
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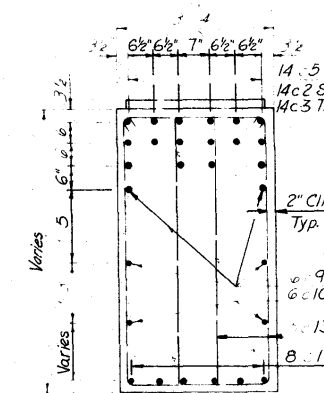
SECTION A-A



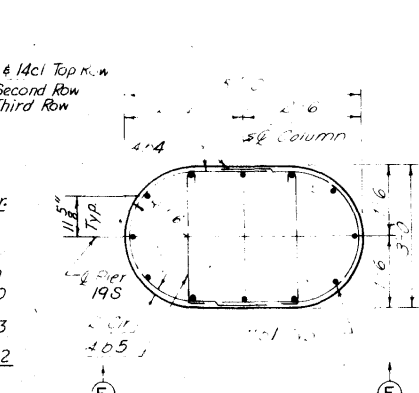
SECTION B-B



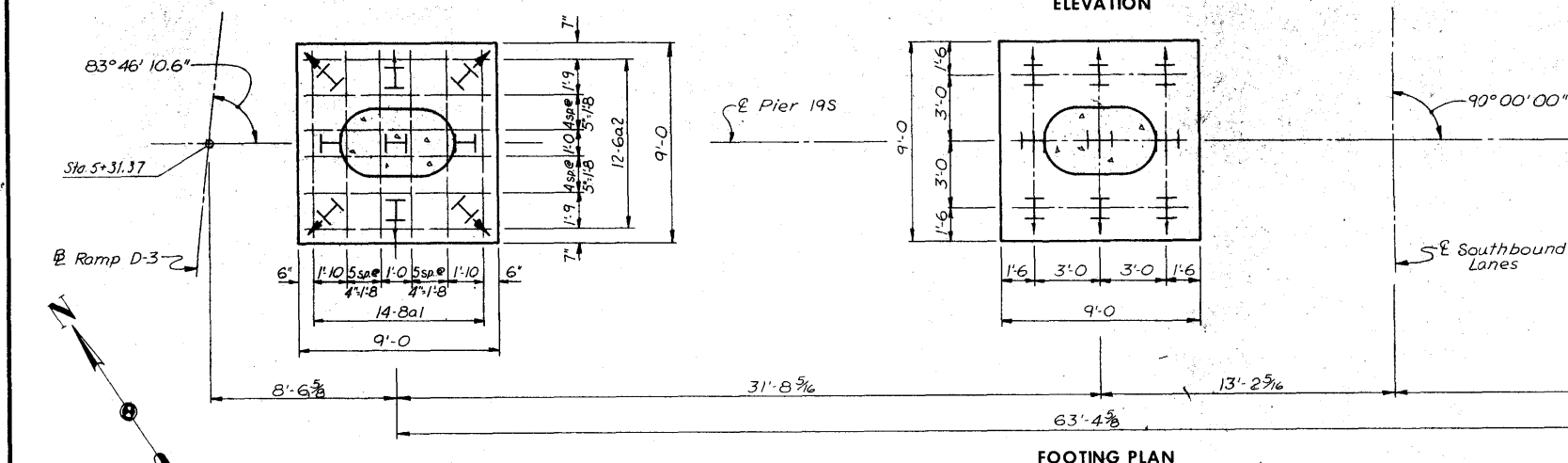
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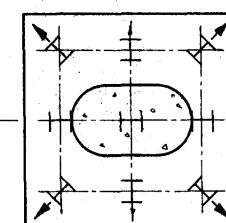
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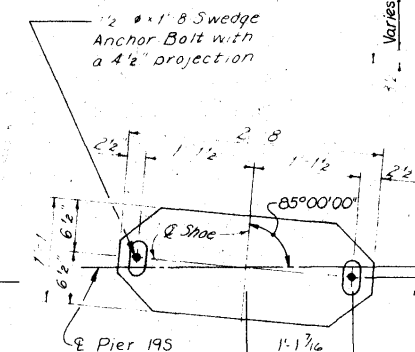
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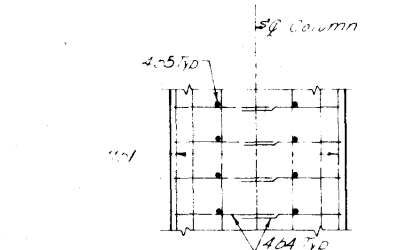
FOOTING PLAN



ANCHOR BOLT SETTING PLAN



ANCHOR BOLT SETTING PLAN



VIEW E-E

ESTIMATED QUANTITIES - PIER 19S		
ITEM	UNIT	QUANTITY
Structural Concrete (K.C.)	Cu. Yds.	125.1
Reinforcing Steel	Lbs.	26,077
Excavation, Class 20	Cu. Yds.	95.0
•HP10x42 Steel	Furnish	594
Bearing Piles	Lin. Ft.	535
	Lin. Ft.	58,292

CONCRETE PLACEMENT QUANTITIES		
LOCATION	UNIT	QUANTITY
Footings, Class C	Cu. Yds.	31.5
Columns, Class C	Cu. Yds.	28.8
Co. Beam, Class C	Cu. Yds.	64.8
Total	Cu. Yds.	125.1

- 27 Piles @ 22'. See ~~Box~~ Piling Log sheet 203F

**CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE**

PIER 19S

STA. 322+81.95 @ FREEWAY=
STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. I-380-6(68)263--01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

SHEET 37 OF 201

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

MADE <i>L.D.H.</i>	DATE <i>5-30-74</i>	CHECKED <i>R.O.C.</i>	DATE <i>7-1-74</i>
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Notes: For "Pier Notes" see Sheet 22 of 201.
Minimum acceptable bearing per pile
is 56 tons for the west footing, 54 tons
for the center footing and 51 tons for the
east footing.

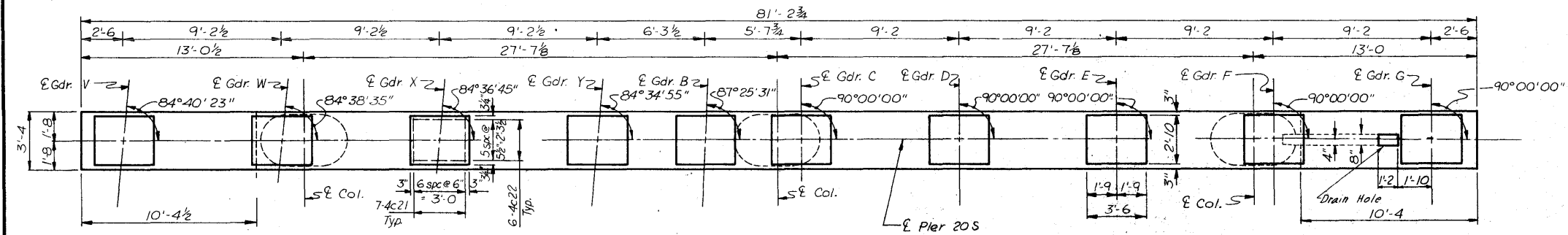
Note: For Bill of Reinforcement and Bar Bending Diagrams, see sheet 35 of 201

91.7

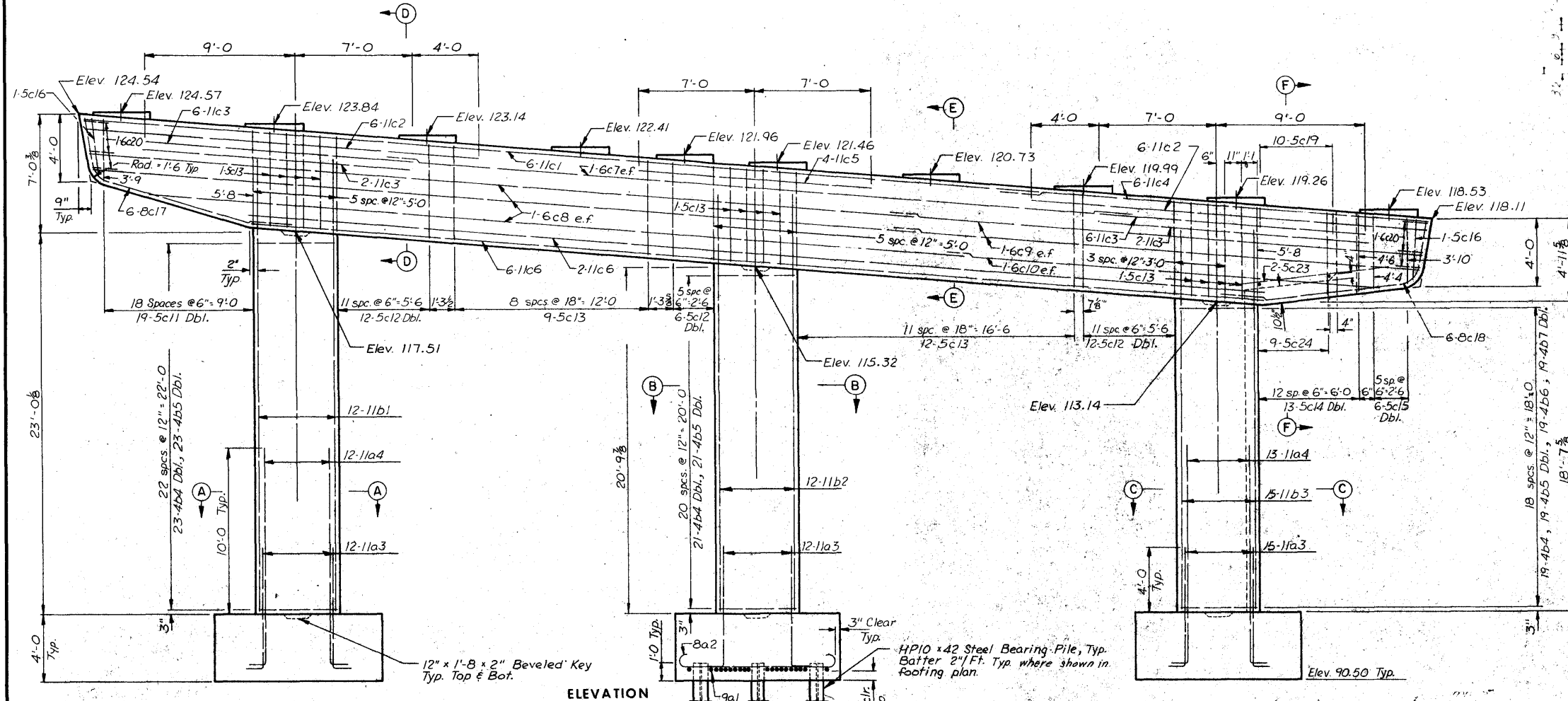
DESIGN NO. 1276 LINN COUNTY FILE 23101 SHEET 39 OF 203

3435-21-00 001

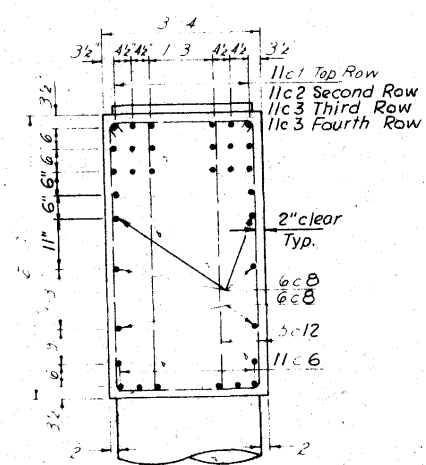
FEDERAL DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
2	IOWA				



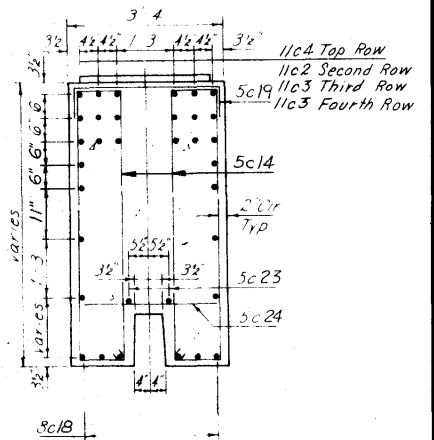
PLAN OF CAP BEAM



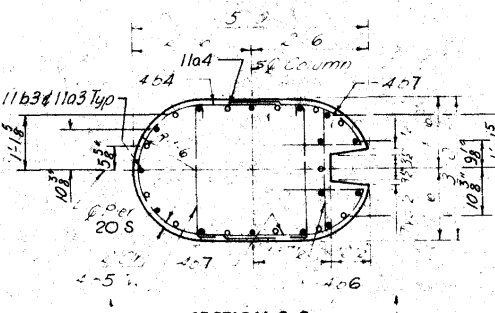
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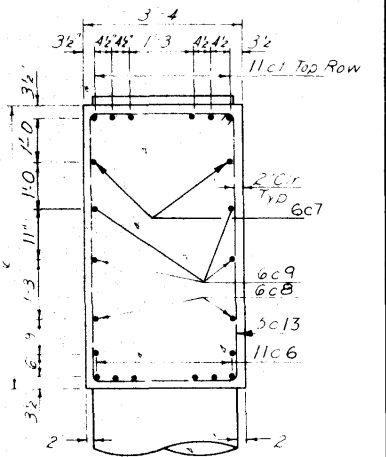
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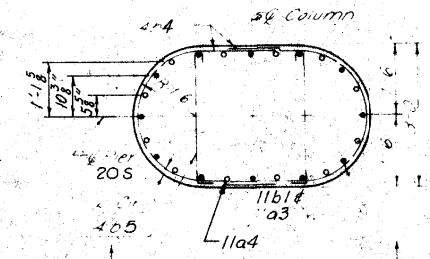
SECTION F-F



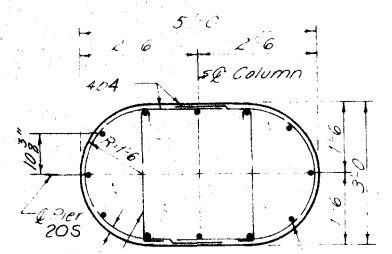
SECTION C-



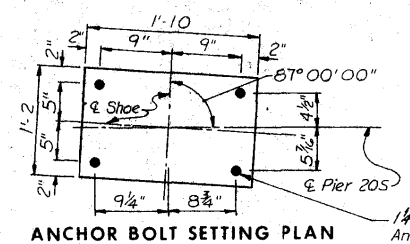
SECTION E-E



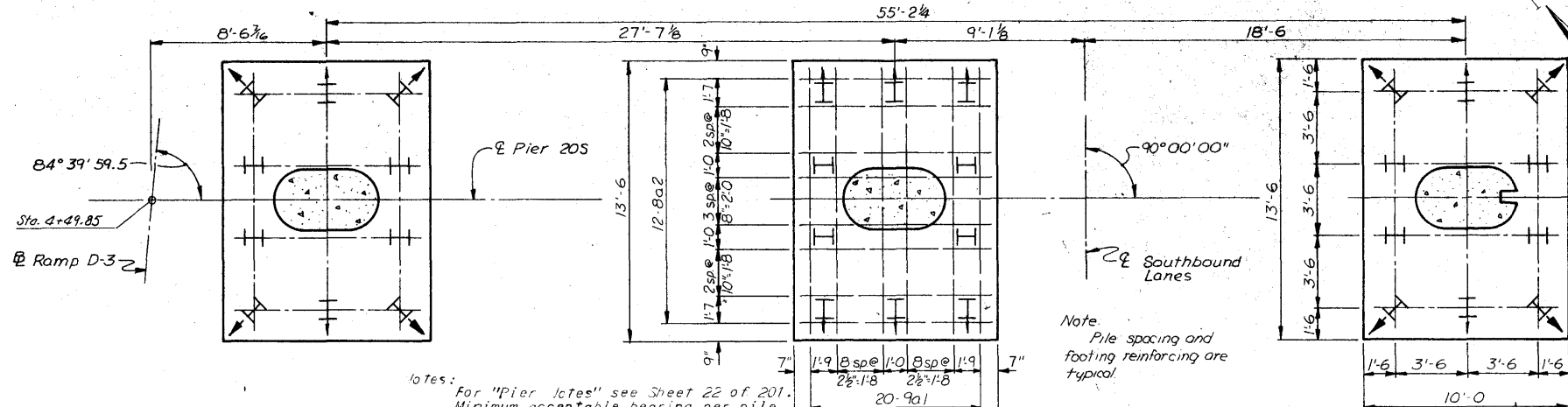
SECTION A-A



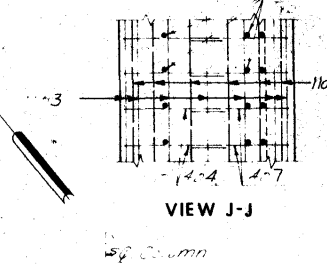
SECTION B-B



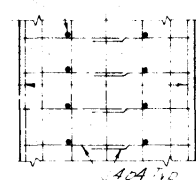
ANCHOR BOLT SETTING PLAN



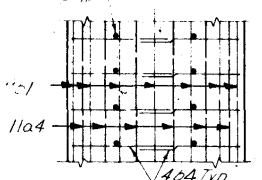
FOOTING PLAN



VIEW J-J



VIEW H-H



VIEW G-G

Note: Pile spacing and footing reinforcing are typical.

Notes: For bill of reinforcement, see per 123 Diagrams
Estimated Quantities, and Concrete Placement
Quantities, see sheet 39 of 201.

**CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE**

PIER 20S

STA. 322+81.95 @ FREEWAY=
STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. 1-380-6(68)263--01-57

LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

SHEET 38 OF 201

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

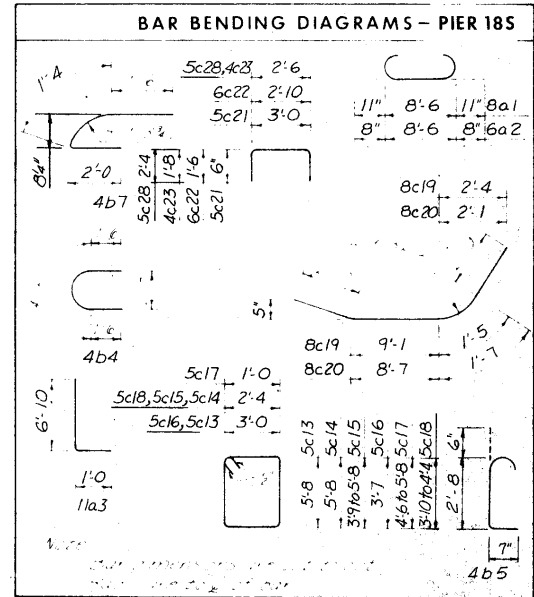
MADE <u>L.D.H.</u> DATE <u>6-4-74</u>	CHECKED <u>R.O.C.</u> DATE <u>7-1-74</u>
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For "Pier Notes" see Sheet 22 of 201.
Minimum acceptable bearing per pile
is 47 tons for the west footing, 42 tons
for the center footing and 45 tons for the
east footing.

DESIGN NO. 1276 LINN COUNTY FILE 23191 SHEET 40 OF 203-0

3435-21-00 201

BILL OF REINFORCEMENT					
PIER 18S					
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
801	Footings, Horizontal		36	10'-4	995
602	Footings, Horizontal		36	9'-10	532
1103	Footings, Vertical		39	7'-9	1606
1161	Column, Vertical		12	24'-8	1572
1162	Column, Vertical		12	22'-8	1445
1163	Column, Vertical		15	20'-7	1640
404	Column, Horizontal		97	7'-2	464
405	Column, Horizontal		114	3'-8	279
406	Column, Horizontal		17	2'-6	28
407	Column, Horizontal		34	4'-9	108
1401	Cap Beam, Horizontal		6	38'-6	1757
1402	Cap Beam, Horizontal		6	60'-0	2754
1403	Cap Beam, Horizontal		8	25'-9	1576
1404	Cap Beam, Horizontal		8	21'-8	126
1405	Cap Beam, Horizontal		6	26'-0	113
1406	Cap Beam, Horizontal		4	18'-0	551
1407	Cap Beam, Horizontal		8	21'-6	1216
1408	Cap Beam, Horizontal		6	43'-0	1974
1409	Cap Beam, Horizontal		6	35'-0	1607
6010	Cap Beam, Horizontal		6	60'-0	541
6011	Cap Beam, Horizontal		4	39'-6	237
6012	Cap Beam, Horizontal		2	33'-6	101
5013	Cap Beam, Vertical		34	18'-0	638
5014	Cap Beam, Vertical		116	16'-8	2016
5015	Cap Beam, Vertical		2Ser12	Varies	69
5016	Cap Beam, Vertical		2	13'-10	25
5017	Cap Beam, Vertical		2Ser9	Varies	14
5018	Cap Beam, Vertical		2Ser4	Varies	113
8019	Cap Beam, Horizontal		6	15'-3	244
8020	Cap Beam, Horizontal		6	14'-11	239
5021	Cap Beam, Horizontal		7	3'-10	28
6022	Cap Beam, Horizontal		6	5'-8	51
4023	Cap Beam, Horizontal		42	5'-8	159
4024	Cap Beam, Horizontal		36	3'-2	76
4025	Cap Beam, Horizontal		36	4'-2	100
5026	Cap Beam, Horizontal		6	3'-0	19
5027	Cap Beam, Horizontal		2	10'-3	21
5028	Cap Beam, Horizontal		54	7'-0	394
Total					28,321

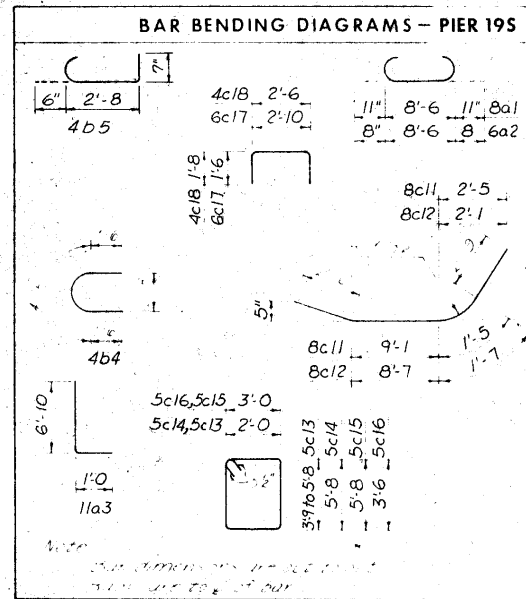


ESTIMATED QUANTITIES - PIER 18S		
ITEM	UNIT	QUANTITY
Structural Concrete (CIC)	Cu. Yds.	131.2
Reinforcing Steel	Lbs.	28,321
Excavation, Class 20	Cu. Yds.	90.7
* HP 10x42 Steel Furnish	Lin. Ft.	7567.02
Bearing Piles Drive	Lin. Ft.	5416

CONCRETE PLACEMENT QUANTITIES		
LOCATION	UNIT	QUANTITY
Footings, Class C	Cu. Yds.	31.5
Columns, Class C	Cu. Yds.	26.7
Cap. Beam, Class C	Cu. Yds.	73.0
Total	Cu. Yds.	131.2

- 27 Piles @ 28'. see Piling Log sheet 203F

BILL OF REINFORCEMENT					
PIER 19S					
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
8a1	Footing, Horizontal		42	10'-4"	1759
6a2	Footing, Horizontal		36	9'-10"	532
11a2	Footing, Vertical		36	7'-9"	1482
11b1	Column, Vertical		12	26'-1"	1667
11b2	Column, Vertical		12	27'-10"	1520
11b3	Column, Vertical		12	21'-6"	1371
4b4	Column, Horizontal		120	7'-2"	574
4b5	Column, Horizontal		120	11'-8"	294
14c1	Cap Beam, Horizontal		6	56'-0"	2570
14c2	Cap Beam, Horizontal		12	24'-9"	2272
14c3	Cap Beam, Horizontal		8	20'-7"	1260
14c4	Cap Beam, Horizontal		6	20'-0"	918
14c5	Cap Beam, Horizontal		6	23'-0"	1515
14c6	Cap Beam, Horizontal		4	19'-9"	607
14c7	Cap Beam, Horizontal		6	40'-6"	1833
6c8	Cap Beam, Horizontal		6	54'-0"	487
6c9	Cap Beam, Horizontal		4	36'-0"	216
6c10	Cap Beam, Horizontal		2	29'-9"	89
8c11	Cap Beam, Horizontal		6	15'-3"	244
8c12	Cap Beam, Horizontal		6	14'-11"	279
5c13	Cap Beam, Vertical		4 Ser 19	Varie	1116
5c14	Cap Beam, Vertical		104	16'-0"	1736
5c15	Cap Beam, Vertical		30	18'-0"	567
5c16	Cap Beam, Vertical		2	15'-8"	23
6c17	Cap Beam, Horizontal		6	5'-8"	51
6c18	Cap Beam, Horizontal		17	5'-8"	291
4c19	Cap Beam, Horizontal		66	3'-2"	140
4c20	Cap Beam, Horizontal		6	28'-0"	1287
Total					26,077

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ESTIMATED QUANTITIES PIER 205		
ITEM	UNIT	QUANTITY
Structural Concrete (C.I.C.)	Cu. Yds.	147.5
Reinforcing Steel	Lbs.	25,386
Excavation, Class 20	Cu. Yds.	144
*HP 10:45 Steel	Furnish	538.3
Bearing Piles	Drive	570 434.1

CONCRETE PLACEMENT QUANTITIES		
LOCATION	UNIT	QUANTITY
Footings, Class C	Cu. Yds.	60.0
Columns, Class C	Cu. Yds.	29.3
Cor. Beam, Class C	Cu. Yds.	57.6
Total	Cu. Yds.	147.5

* 30 Piles @ 19'. See Piling Log sheet 203F

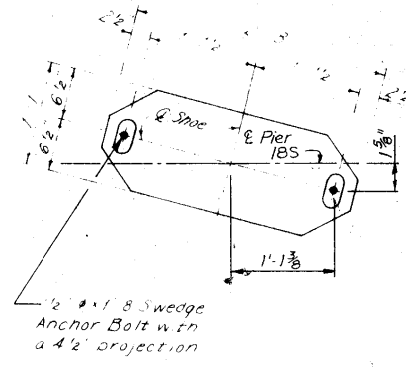
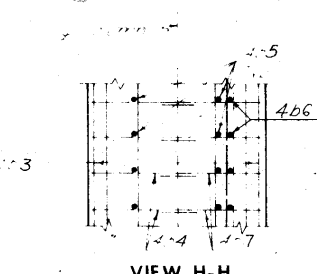
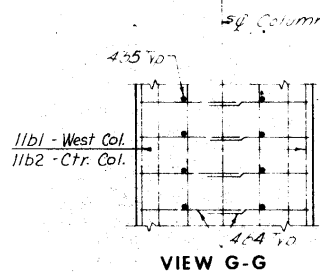
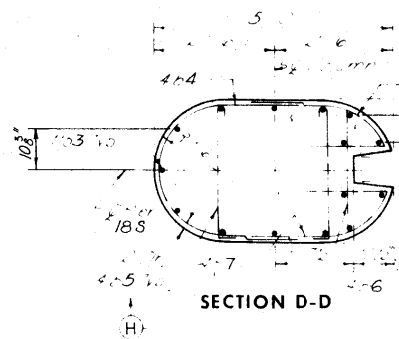
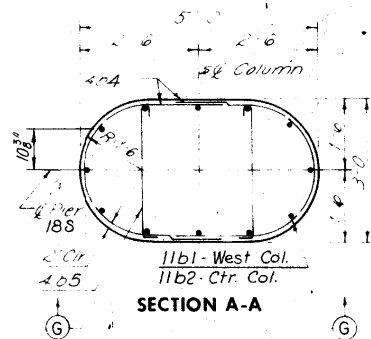
**CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE
PIER 18S, 19S AND 20S**

STA. 322+81.95 @ FREEWAY =
STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. I-380-6(68)263--01-57

LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

SHEET 39 OF 201

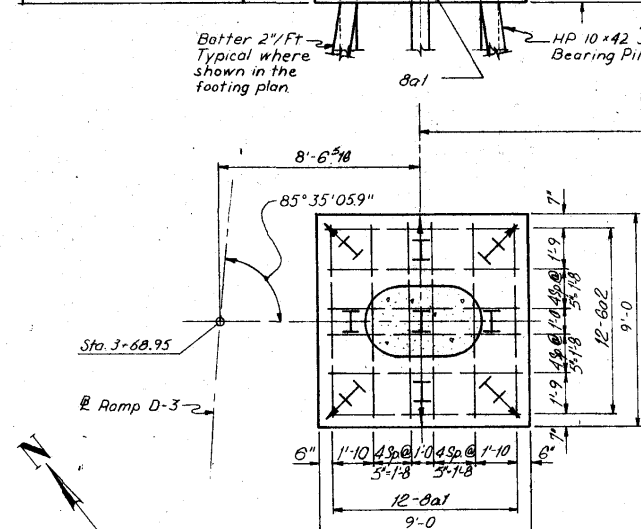
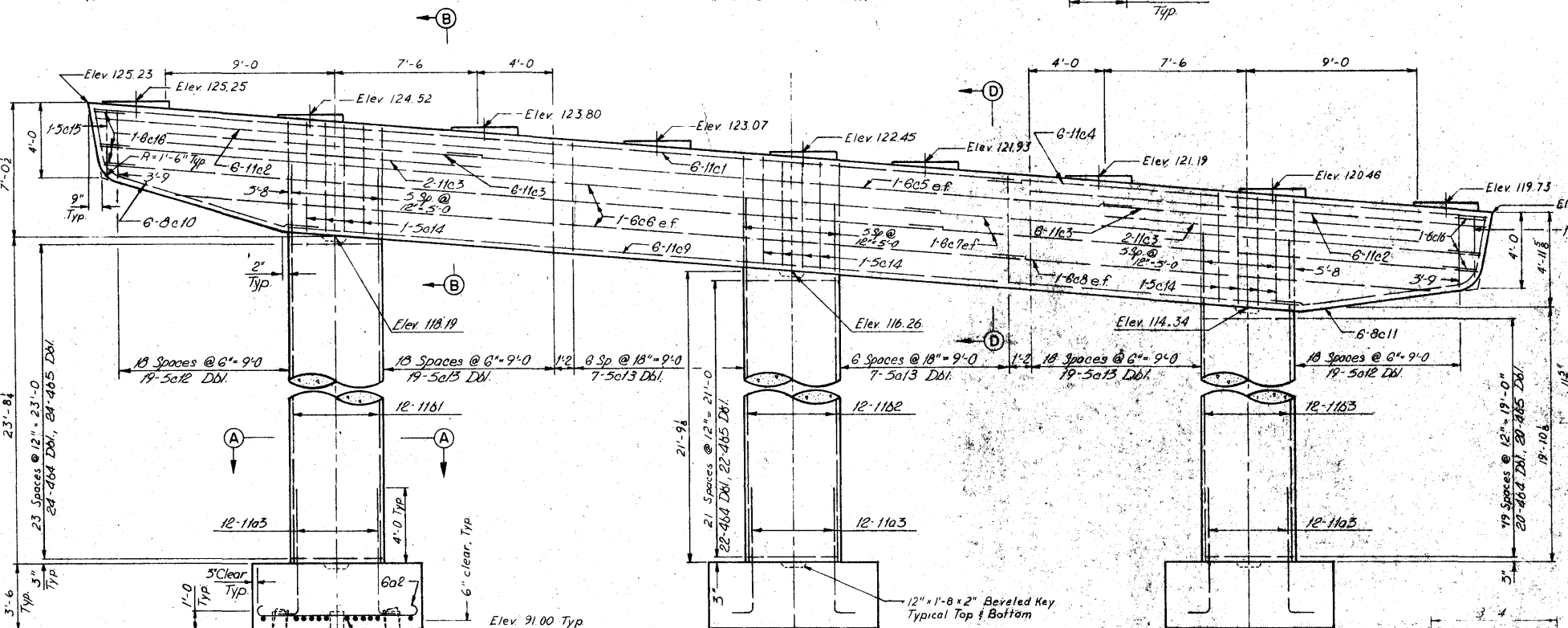
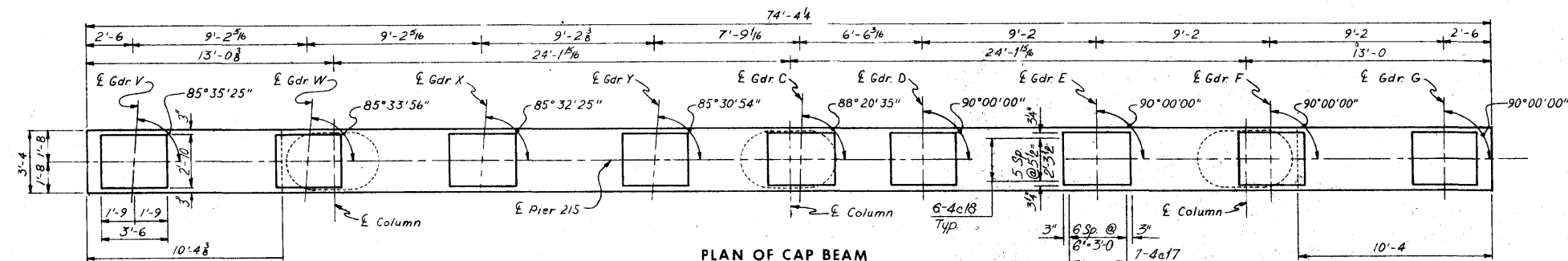
DESIGN NO. 1276 LINN COUNTY FILE 23191 SHEET 41 OF 203-C



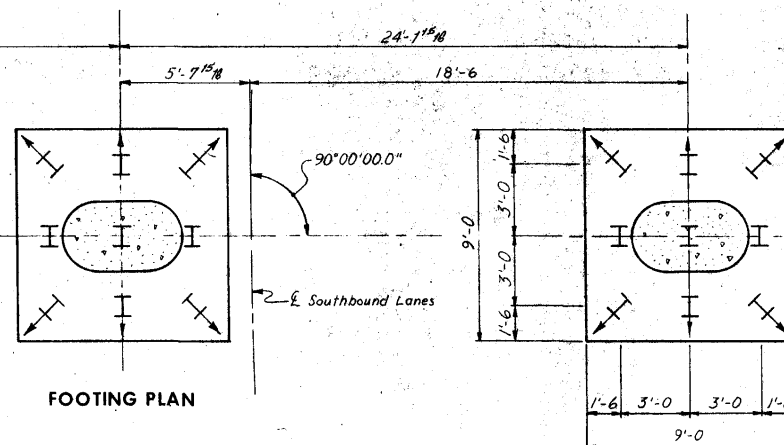
Note:
for Pier Details see Sheets
36, 37 and 38 of 201.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

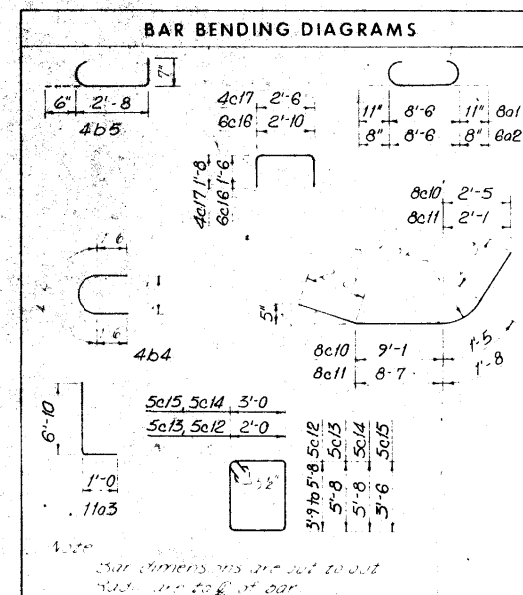
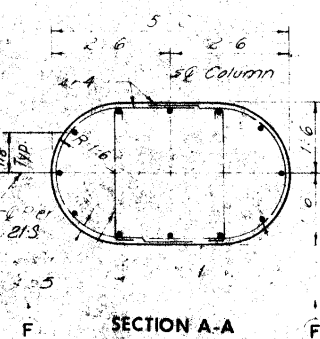
MADE LDH DATE 6-4-74 CHECKED R.O.C. DATE 7-1-74



Note: Minimum acceptable bearing per pile is 43 tons for the west footing, 41 tons for the center footing and 4 tons for the east footing.



BILL OF REINFORCEMENT					
PIER 215					
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
9a1	Footings, Horizontal		10	4	39.3
6a2	Footings, Horizontal		36	9'-10"	5.3
11a1	Footings, Vertical		36	7'-9"	149.2
11b1	Column, Vertical		12	27'-8"	1.764
11b2	Column, Vertical		12	25'-9"	164.2
11b3	Column, Vertical		12	22'-10"	152.0
4b4	Column, Horizontal		12	7'-2"	6.3
4b5	Column, Horizontal		12	21'-8"	3.3
11c1	Cap Beam, Horizontal		6	50'-0"	1594
11c2	Cap Beam, Horizontal		12	4'-2"	1541
11c3	Cap Beam, Horizontal		16	16'-6"	140
11c4	Cap Beam, Horizontal		6	26'-6"	94.5
6c5	Cap Beam, Horizontal		2	36'-4"	105
6c6	Cap Beam, Horizontal		6	45'-0"	406
6c7	Cap Beam, Horizontal		4	30'-0"	190
6c8	Cap Beam, Horizontal		2	23'-6"	71
11c9	Cap Beam, Horizontal		6	53'-5"	170.3
8c10	Cap Beam, Horizontal		5	15'-2"	244
8c11	Cap Beam, Horizontal		6	15'-0"	240
5c12	Cap Beam, Vertical		43er19	Varies	1116
5c13	Cap Beam, Vertical		104	16'-0"	1736
5c14	Cap Beam, Vertical		12	18'-0"	225
5c15	Cap Beam, Vertical		2	13'-8"	29
6c16	Cap Beam, Horizontal		6	5'-8"	51
4c17	Cap Beam, Horizontal		6	5'-8"	2.8
4c18	Cap Beam, Horizontal		34	1'-2"	114
Total					20,733



ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Structural Concrete (C.I.C.)	Cu. Yds.	115.8
Reinforcing Steel	Lbs.	20,733
Excavation, Class 20	Cu. Yds.	92
HP 10 42 Steel	Lin. Ft.	45,423.1
Bearing Piles	Drive	45,315.4

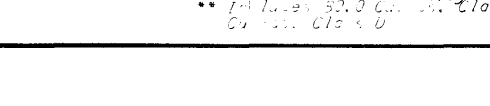
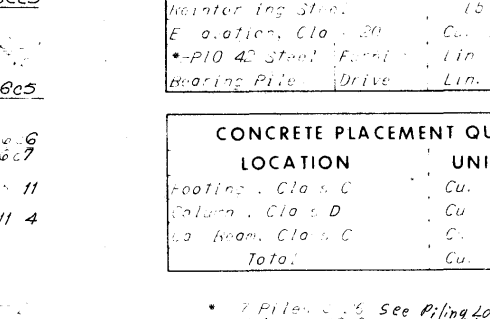
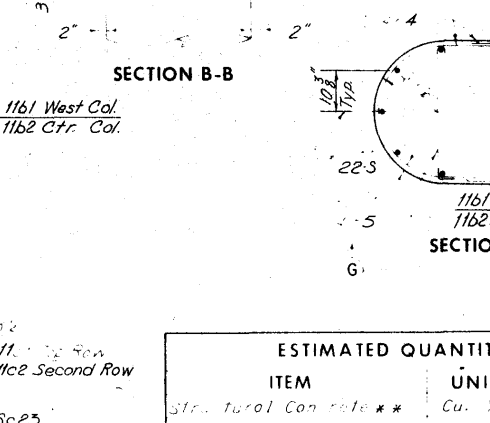
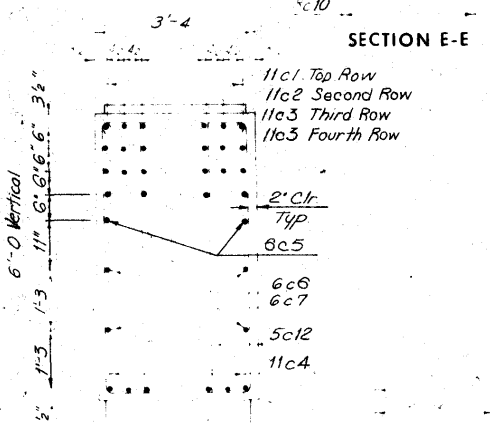
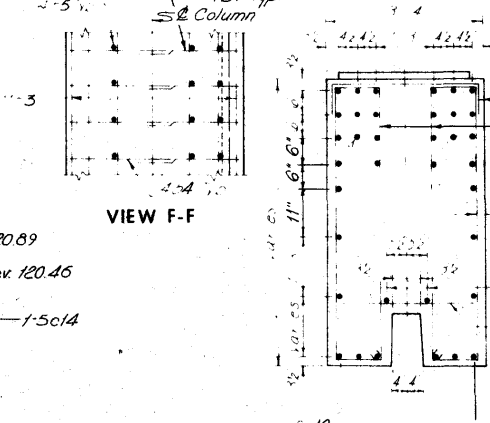
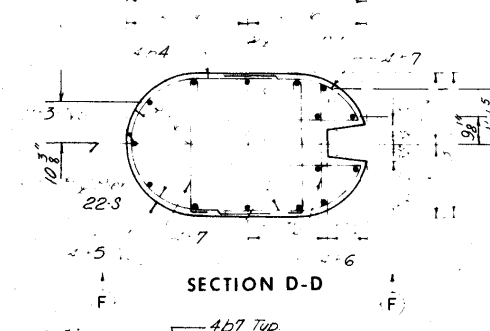
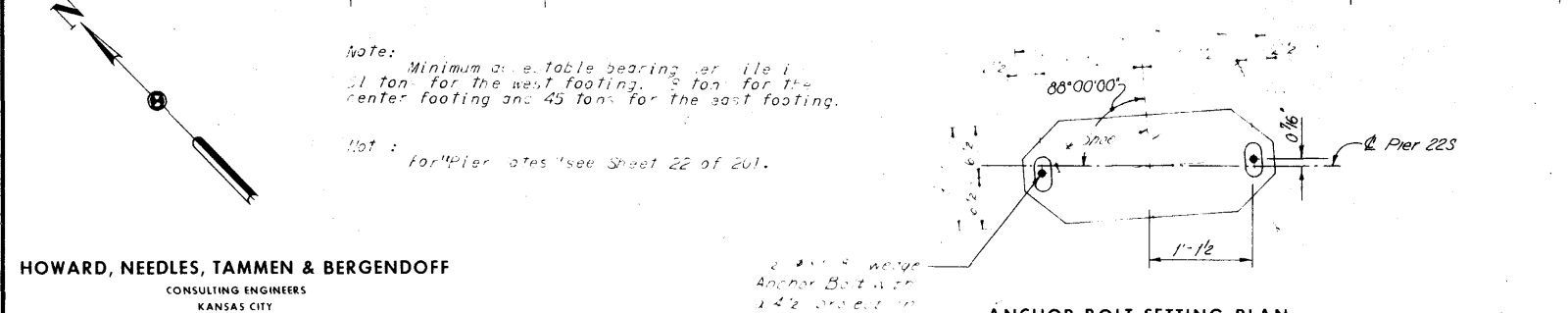
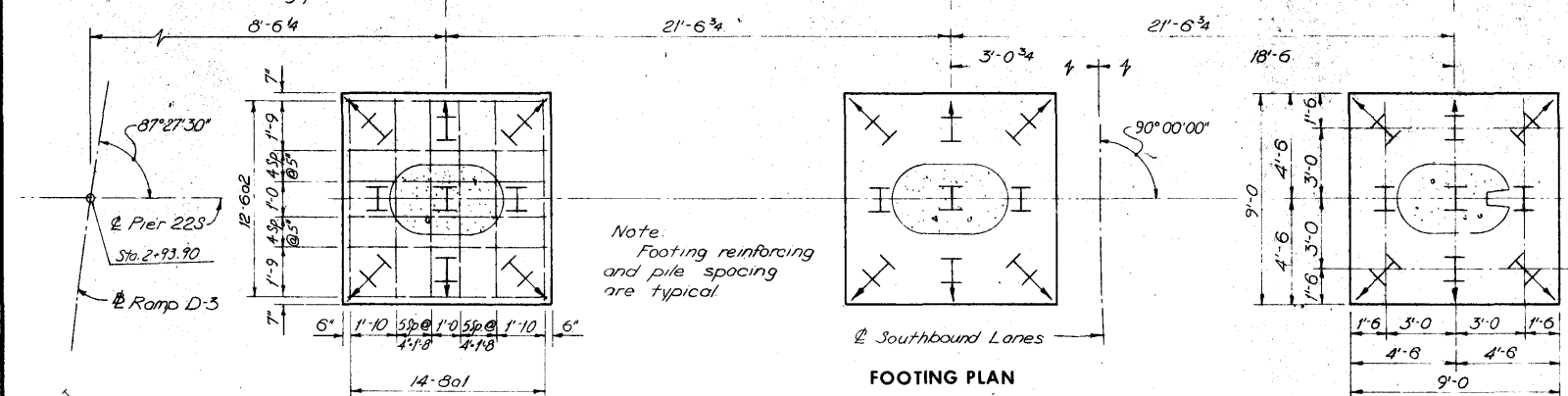
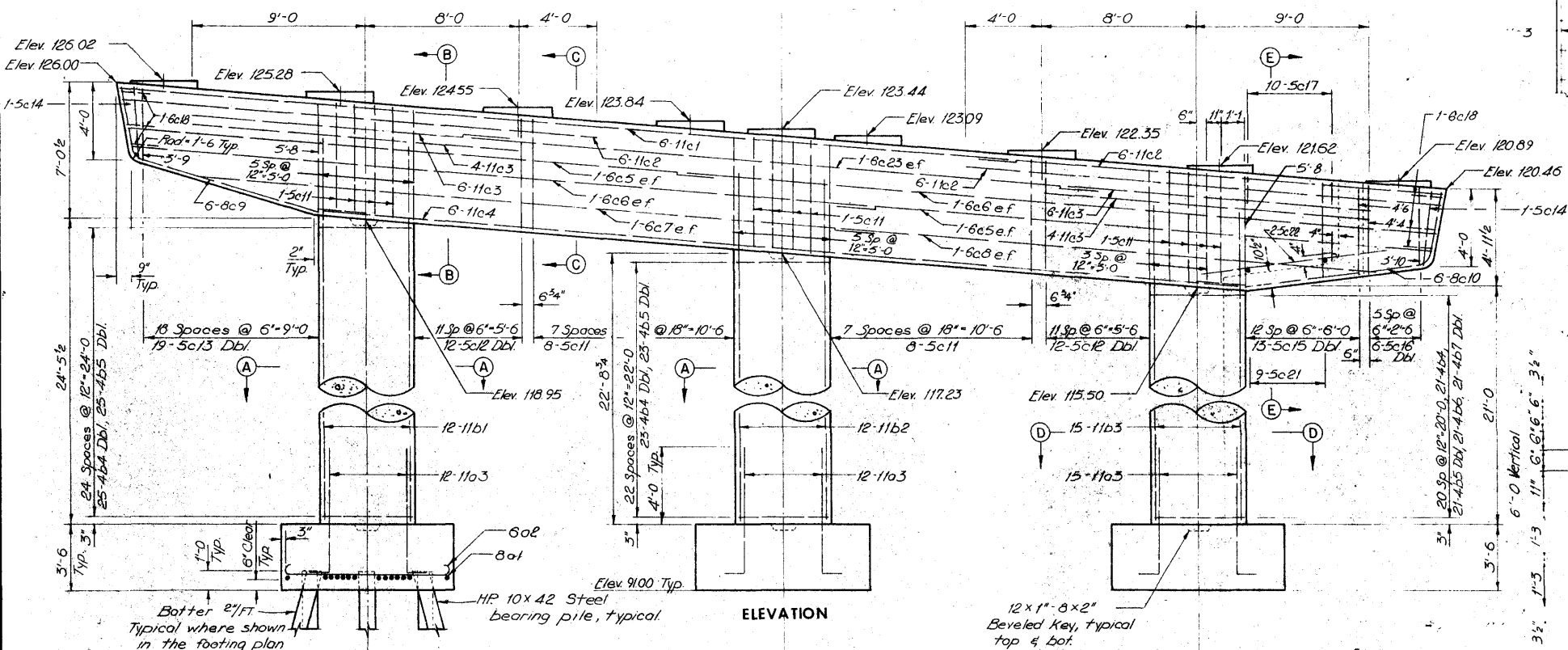
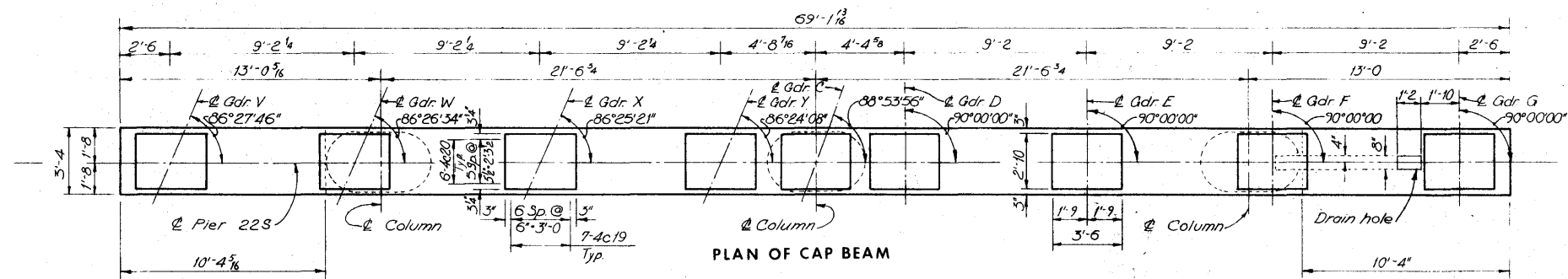
CONCRETE PLACEMENT QUANTITIES		
LOCATION	UNIT	QUANTITY
Footings, Class C	Cu. Yds.	1.5
Column, Class C	Cu. Yds.	31.6
Cap Beam, Class C	Cu. Yds.	52.7
Total	Cu. Yds.	115.8

**CEDAR RIVER BRIDGE
SOUTH APPROACH**
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE
PIER 215
STA. 322+81.95 & FREEWAY =
STA. 32+14.70 & 1ST. AVE. W
PROJECT NO. I-380-6(68)263--01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

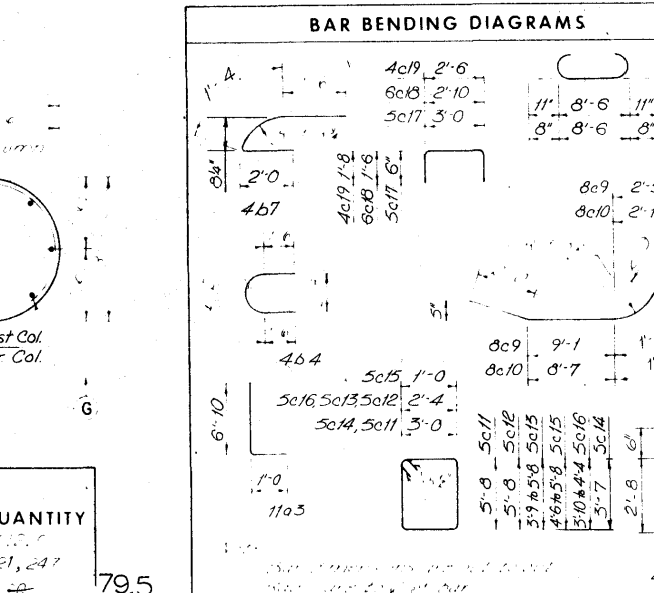
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

MADE 5/17/74 DATE 5-6-74 CHECKED R.O.C. DATE 7-1-74

27 Piles @ 17' See Piling Log Sheet 203F



BILL OF REINFORCEMENT					
PIER 225					
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
6a1	Footings, Longitudinal	4	10	4	1159
6a2	Footings, Horizontal	6	9	10	532
11a1	Footings, Vertical	39	7	9	1606
11b1	Column, Vertical	12	28	6	1817
11b2	Column, Vertical	12	26	9	1705
11b3	Column, Vertical	15	25	0	1992
4b4	Column, Horizontal	117	7	2	560
4b5	Column, Horizontal	128	2	8	38
4b6	Column, Horizontal	21	2	6	5
4b7	Column, Horizontal	45	4	0	1
11c1	Cap Beam, Horizontal	6	47	0	1498
11c2	Cap Beam, Horizontal	18	24	8	239
11c3	Cap Beam, Horizontal	20	17	0	1806
11c4	Cap Beam, Horizontal	6	48	0	152
6c5	Cap Beam, Horizontal	4	30	0	180
6c6	Cap Beam, Horizontal	4	40	0	40
6c7	Cap Beam, Horizontal	2	6	8	110
6c8	Cap Beam, Horizontal	3	26	3	80
6c9	Cap Beam, Horizontal	6	15	0	244
6c10	Cap Beam, Horizontal	6	15	0	40
5c11	Cap Beam, Vertical	28	18	0	526
5c12	Cap Beam, Vertical	48	16	8	44
5c13	Cap Beam, Vertical	28	19	0	545
5c14	Cap Beam, Vertical	2	1	10	20
5c15	Cap Beam, Vertical	1	1	10	20
5c16	Cap Beam, Vertical	2	1	10	20
5c17	Cap Beam, Vertical	2	1	10	20
5c18	Cap Beam, Vertical	2	1	10	20
5c19	Cap Beam, Vertical	2	1	10	20
5c20	Cap Beam, Vertical	2	1	10	20
5c21	Cap Beam, Vertical	2	1	10	20
5c22	Cap Beam, Vertical	2	1	10	20
5c23	Cap Beam, Vertical	2	1	10	20
5c24	Cap Beam, Vertical	2	1	10	20
5c25	Cap Beam, Vertical	2	1	10	20
5c26	Cap Beam, Vertical	2	1	10	20
5c27	Cap Beam, Vertical	2	1	10	20
5c28	Cap Beam, Vertical	2	1	10	20
5c29	Cap Beam, Vertical	2	1	10	20
5c30	Cap Beam, Vertical	2	1	10	20
5c31	Cap Beam, Vertical	2	1	10	20
5c32	Cap Beam, Vertical	2	1	10	20
5c33	Cap Beam, Vertical	2	1	10	20
5c34	Cap Beam, Vertical	2	1	10	20
5c35	Cap Beam, Vertical	2	1	10	20
5c36	Cap Beam, Vertical	2	1	10	20
5c37	Cap Beam, Vertical	2	1	10	20
5c38	Cap Beam, Vertical	2	1	10	20
5c39	Cap Beam, Vertical	2	1	10	20
5c40	Cap Beam, Vertical	2	1	10	20
5c41	Cap Beam, Vertical	2	1	10	20
5c42	Cap Beam, Vertical	2	1	10	20
5c43	Cap Beam, Vertical	2	1	10	20
5c44	Cap Beam, Vertical	2	1	10	20
5c45	Cap Beam, Vertical	2	1	10	20
5c46	Cap Beam, Vertical	2	1	10	20
5c47	Cap Beam, Vertical	2	1	10	20
5c48	Cap Beam, Vertical	2	1	10	20
5c49	Cap Beam, Vertical	2	1	10	20
5c50	Cap Beam, Vertical	2	1	10	20
5c51	Cap Beam, Vertical	2	1	10	20
5c52	Cap Beam, Vertical	2	1	10	20
5c53	Cap Beam, Vertical	2	1	10	20
5c54	Cap Beam, Vertical	2	1	10	20
5c55	Cap Beam, Vertical	2	1	10	20
5c56	Cap Beam, Vertical	2	1	10	20
5c57	Cap Beam, Vertical	2	1	10	20
5c58	Cap Beam, Vertical	2	1	10	20
5c59	Cap Beam, Vertical	2	1	10	20
5c60	Cap Beam, Vertical	2	1	10	20
5c61	Cap Beam, Vertical	2	1	10	20
5c62	Cap Beam, Vertical	2	1	10	20
5c63	Cap Beam, Vertical	2	1	10	20
5c64	Cap Beam, Vertical	2	1	10	20
5c65	Cap Beam, Vertical	2	1	10	20
5c66	Cap Beam, Vertical	2	1	10	20
5c67	Cap Beam, Vertical	2	1	10	20
5c68	Cap Beam, Vertical	2	1	10	20
5c69	Cap Beam, Vertical	2	1	10	20
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5c85	Cap Beam, Vertical	2	1	10	20
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5c90	Cap Beam, Vertical	2	1	10	20
5c91	Cap Beam, Vertical	2	1	10	20
5c92	Cap Beam, Vertical	2	1	10	20
5c93	Cap Beam, Vertical	2	1	10	20
5c94	Cap Beam, Vertical	2	1	10	20
5c95	Cap Beam, Vertical	2	1	10	20
5c96	Cap Beam, Vertical	2	1	10	20
5c97	Cap Beam, Vertical	2	1	10	20
5c98	Cap Beam, Vertical	2	1	10	20
5c99	Cap Beam, Vertical	2	1	10	20
5c100	Cap Beam, Vertical	2	1	10	20
Total					21,247



ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Structural Concrete	Cu. Yds.	15.5
Reinforcing Steel	Lbs.	21,247
Excavation, Class C	Cu. Yds.	40
HP 10x42 Steel Pile	Lin. Ft.	702,640.5
Bearing Pile Drive	Lin. Ft.	702,455.9

CONCRETE PLACEMENT QUANTITIES		
LOCATION	UNIT	QUANTITY
Footings, Class C	Cu. Yds.	1.5
Columns, Class C	Cu. Yds.	2.6
Cap Beams, Class C	Cu. Yds.	40.5
Total	Cu. Yds.	112.6

**CEDAR RIVER BRIDGE
SOUTH APPROACH**
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE

PIER 225

STA. 322+81.95 @ FREEWAY =
STA. 32+14.70 @ 1ST. AVE. W

PROJECT NO. I-380-6(68)263-01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

STA. 322+81.95 @ FREEWAY =
STA. 32+14.70 @ 1ST. AVE. W

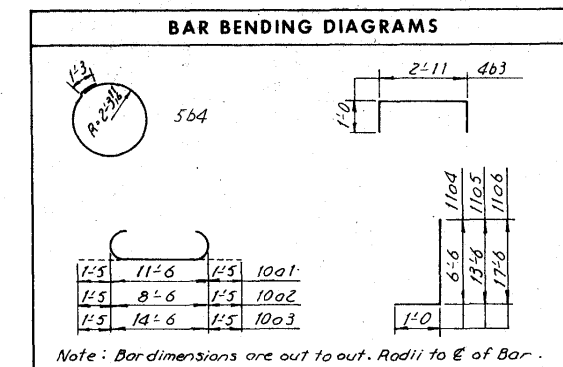
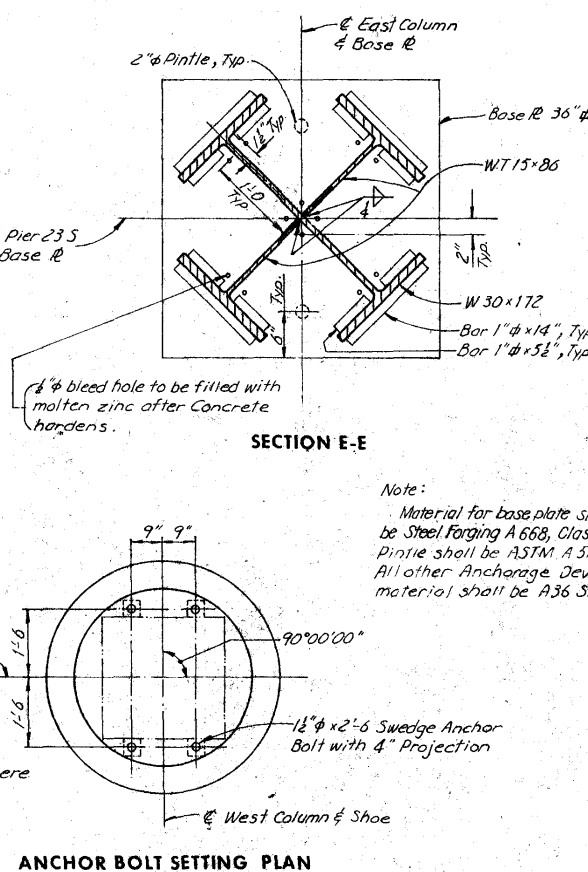
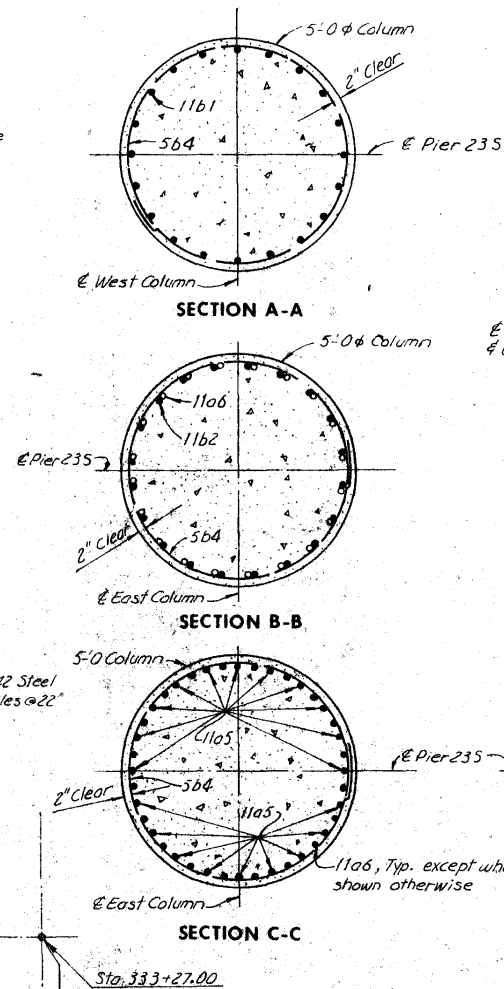
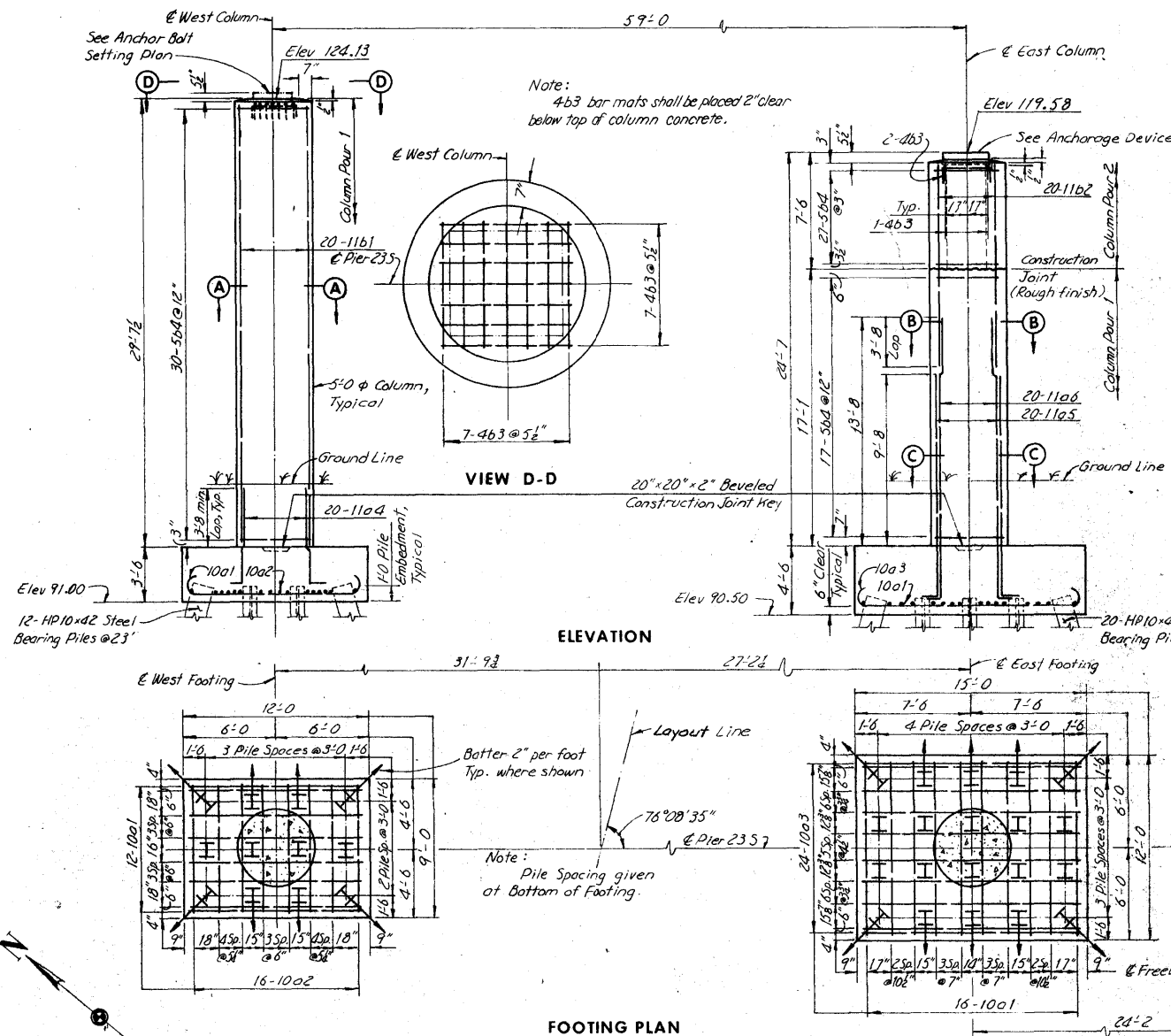
PROJECT NO. I-380-6(68)263-01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

DESIGN NO. 1276 LINN COUNTY FILE 23191 SHEET 43 OF 203-0

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

MADE G.O.K. DATE 5-15-74 CHECKED R.O.C. DATE 7-1-74

SHEET 41 OF 201



BILL OF REINFORCEMENT					
PIER 235					
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
10a1	Footing, Horizontal	U	28	14'-4"	1,727
10a2	Footing, Horizontal	U	16	11'-4"	730
10a3	Footing, Horizontal	U	24	17'-4"	1,790
11a4	Footing, Vertical	L	20	7'-5"	788
11a5	Footing, Vertical	L	20	14'-5"	1,532
11a6	Footing, Vertical	L	20	18'-5"	1,957
11b1	Column, Vertical		20	29'-4"	3,117
11b2	Column, Vertical		20	13'-11"	1,479
4b3	Column, Vertical		18	4'-9"	57
5b4	Column, Horizontal	○	74	15'-9"	1,216
Total					14,443

CONCRETE PLACEMENT QUANTITIES		
LOCATION	UNIT	QUANTITY
Footing Class C	Cu. Yds.	44.0
Column Pour 1 Class D	Cu. Yds.	34.0
Column Pour 2 Class D	Cu. Yds.	5.1
Total	Cu. Yds.	83.1

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Structural Concrete *	Cu. Yds.	83.1
Reinforcing Steel	Lbs.	14,443
Structural Steel **	Lbs.	5,192
HP 10x42 Steel	Lin. Ft.	74,648.2
Bearing Pile ** Drive	Lin. Ft.	74,444.7
Excavation Class 20	Cu. Yds.	93
		111.0

* Structural Concrete Quantity includes 39.1 Cu. Yds. of Class D and 44.0 Cu. Yds. of Class C.

** Structural Steel Quantity includes 2,195 Lbs. of A668 Forging, Class F and 2,997 Lbs. of A36 Steel.

HP 10x42 Steel Bearing Pile Quantity includes 20 @ 22' and 12 @ 23'. See Pier Elevations.

Minimum acceptable bearing per pile is 55 Tons.

**CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE**

PIER 235

STA. 322+81.95 @ FREEWAY =
STA. 32+14.70 @ 1ST. AVE. W

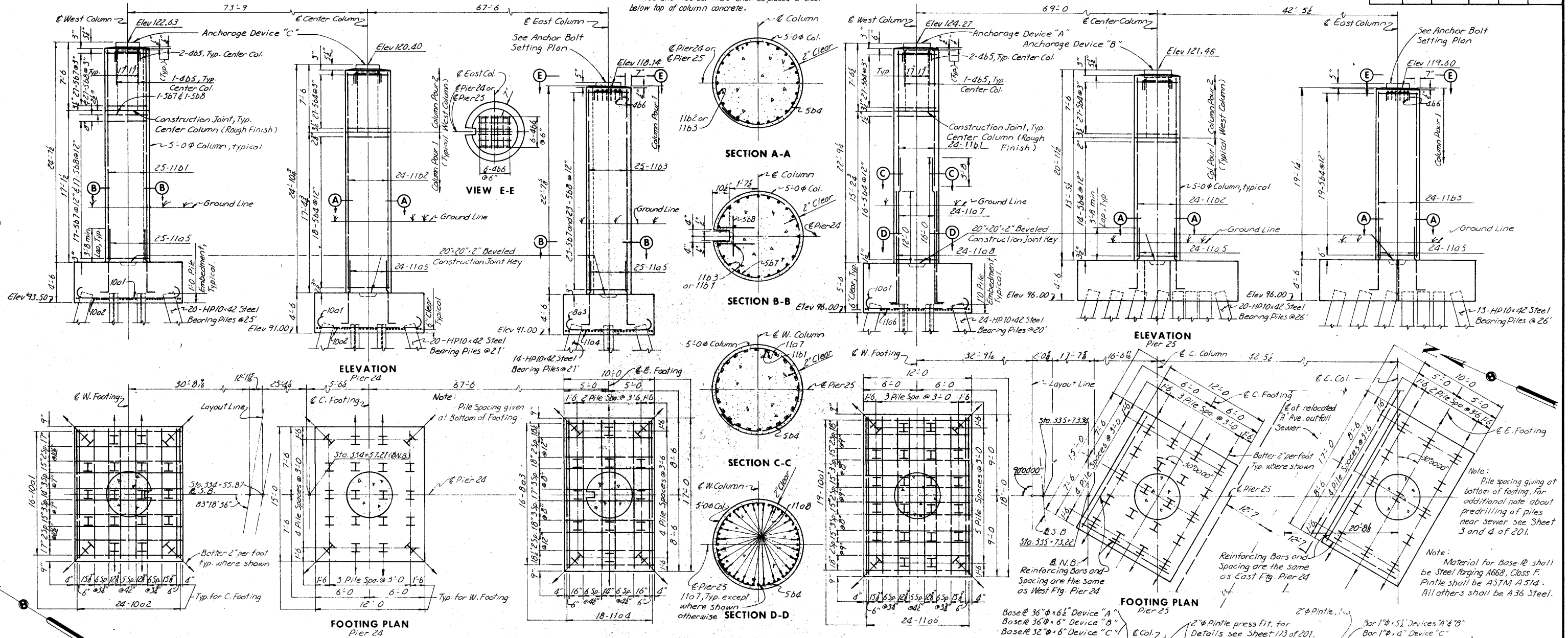
PROJECT NO. I-380-6(68)263--01-57

LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

MADE *AW* DATE 04-04-74 CHECKED *RLF* DATE 5-20-74

Note:
4b5 and 4b6 bar mats shall be placed 2" clear below top of column concrete.



Notes:
Minimum acceptable bearing per pile is 53 Tons for W. and C. cols. of Pier 24 and E. col. of Pier 25, 55 Tons for E. col. of Pier 24, 52 Tons for W. col. of Pier 25 and 50 Tons for C. col. of Pier 25.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

MADE AW DATE 03-18-74 CHECKED RLF DATE 5-20-74

BILL OF REINFORCEMENT									
		PIER 24				PIER 25			
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT	NO.	LENGTH	WEIGHT	
10a1	Footing, Horizontal		32	14'-4"	1,374	35	14'-4"	2,159	
10a2	Footing, Horizontal		48	17'-4"	3,580	24	17'-4"	1,790	
8a3	Footing, Horizontal		16	11'-4"	484	16	11'-4"	434	
11a4	Footing, Horizontal		18	19'-8"	1,831	18	19'-8"	1,881	
11a5	Footing, Vertical		74	8'-5"	3,309	48	8'-5"	2,146	
11a6	Footing, Horizontal		24	20'-8"	2,635	24	21'-8"	2,763	
11a7	Footing, Vertical		24	17'-8"	2,253	24	17'-8"	2,253	
11a8	Footing, Vertical								
11b1	Column, Vertical		25	24'-0"	3,183	24	9'-9"	1,245	
11a2	Column, Vertical		24	24'-3"	3,092	24	20'-3"	2,532	
11b3	Column, Vertical		25	22'-5"	2,971	24	18'-10"	2,401	
5b4	Column, Horizontal		45	15'-9"	739	103	15'-9"	1,632	
4b5	Column, Vertical		8	4'-9"	25	8	4'-9"	25	
4b6	Column, Vertical		12	4'-5"	35	12	4'-5"	35	
5b7	Column, Horizontal		68	17'-7"	1,247				
5b8	Column, Horizontal		68	5'-5"	242				
			Total		22,773			24,039	

CONCRETE PLACEMENT QUANTITIES			
LOCATION	UNIT	PIER 24	PIER 25
Footing Class C	Cu. Yds.	80.3	102.3
Column Pour 1 Class D	Cu. Yds.	41.1	34.8
Column Pour 2 Class D	Cu. Yds.	5.3	10.5
Total	Cu. Yds.	139.2	147.4

ESTIMATED QUANTITIES			
ITEM	UNIT	PIER 24	PIER 25
Structural Concrete	Cu. Yds.	139.2	147.4
Reinforcing Steel	Lbs.	22,773	24,039
Structural Steel	Lbs.	8,003	10,557
HP 10x42 Steel - Furnish	Lin. ft.	1,244	1,338
bearing pile - Drive	Lin. ft.	1,244	1,338
Excavation Class 20	Cu. Yds.	1095.8	1547.7
		1214.5	231.1

* Structural Concrete Quantity includes 509 Cu. Yds. of Class D and 88.3 Cu. Yds. of Class C for Pier 24, and 451 Cu. Yds. of Class D and 102.3 Cu. Yds. of Class C for Pier 25.

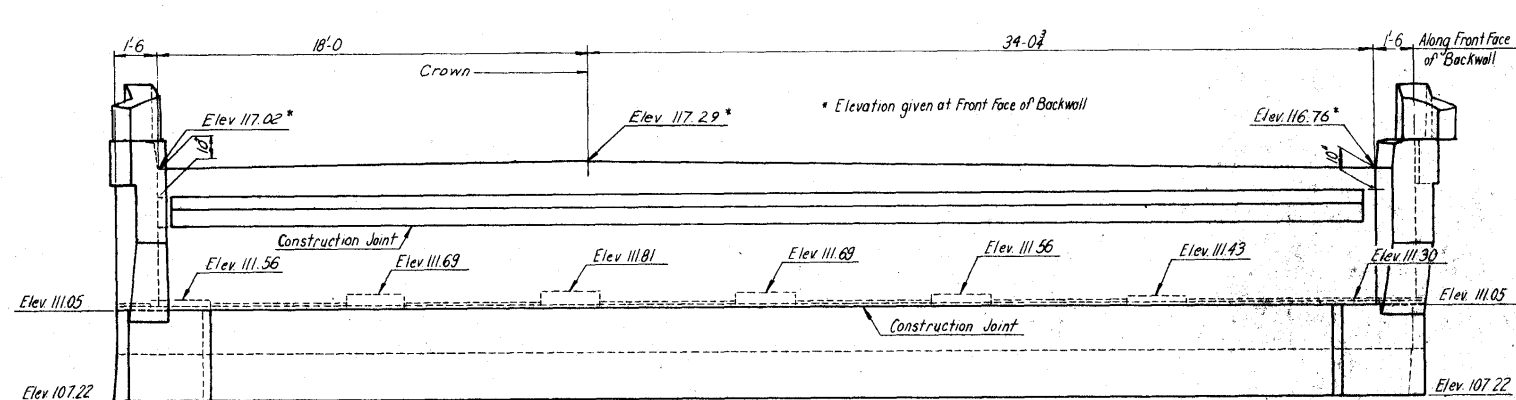
** Structural Steel Quantity includes 3,485 Lbs. of A 668 Forging, Class F and 4,318 Lbs. of A 36 for Pier 24, and 4,313 Lbs. of A 668 Forging, Class F and 5,994 Lbs. of A 36 for Pier 25. (Weight of A 514 steel is included in the weight for A 668 Forging.)

** HP 10x42 Steel Bearing Pile Quantity includes 20@25' and 34@21' for Pier 24, and 24@20' and 33@26' for Pier 25. See Pier Elevations. See Piling Log Sheet 2036

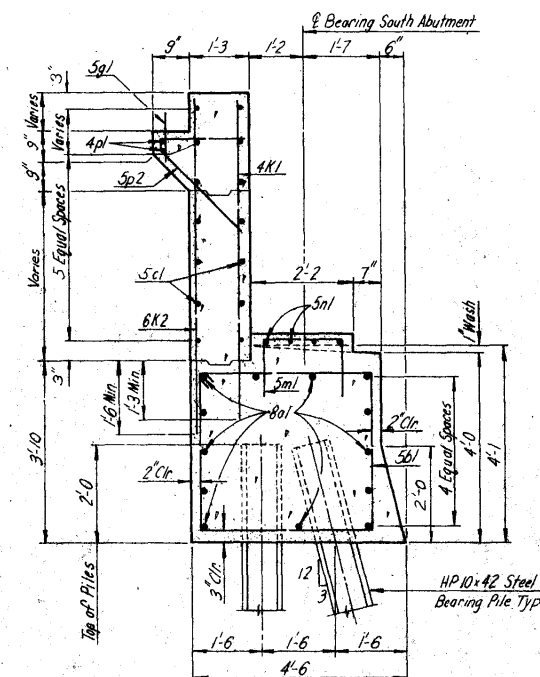
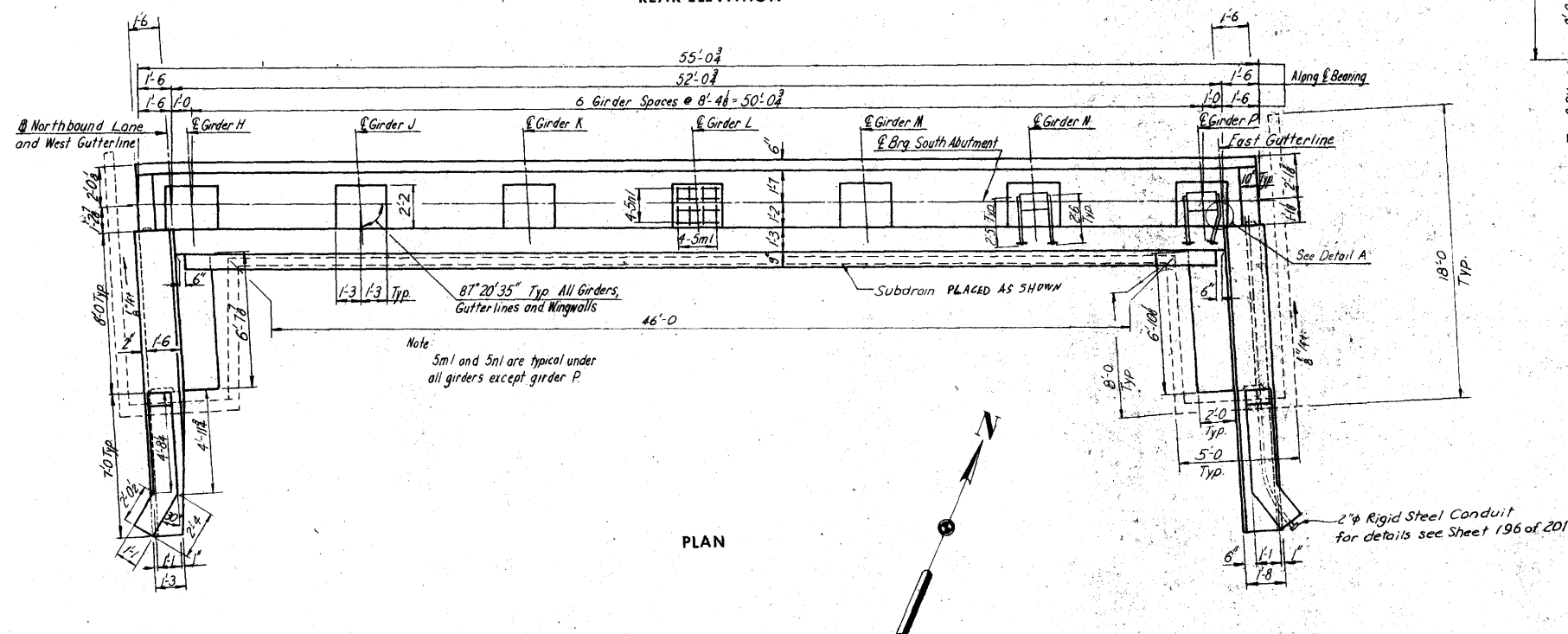
**CEDAR RIVER BRIDGE
SOUTH APPROACH**
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE
PIER 24 AND PIER 25

STA. 322+81.95 @ FREEWAY =
STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. I-380-6(68)263--01-57

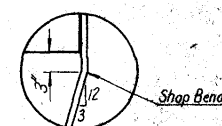
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION



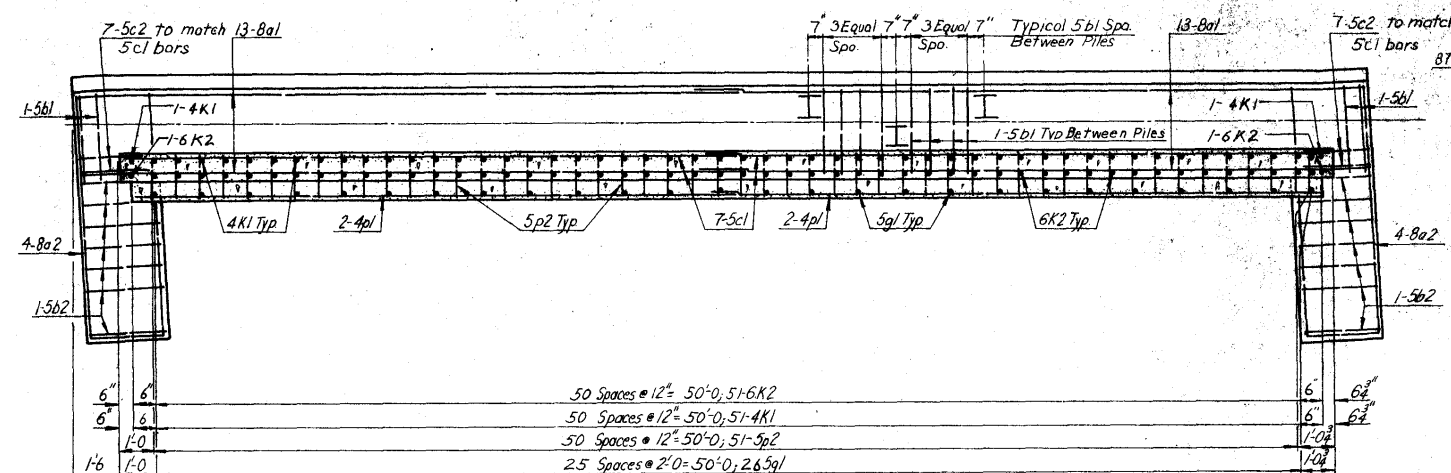
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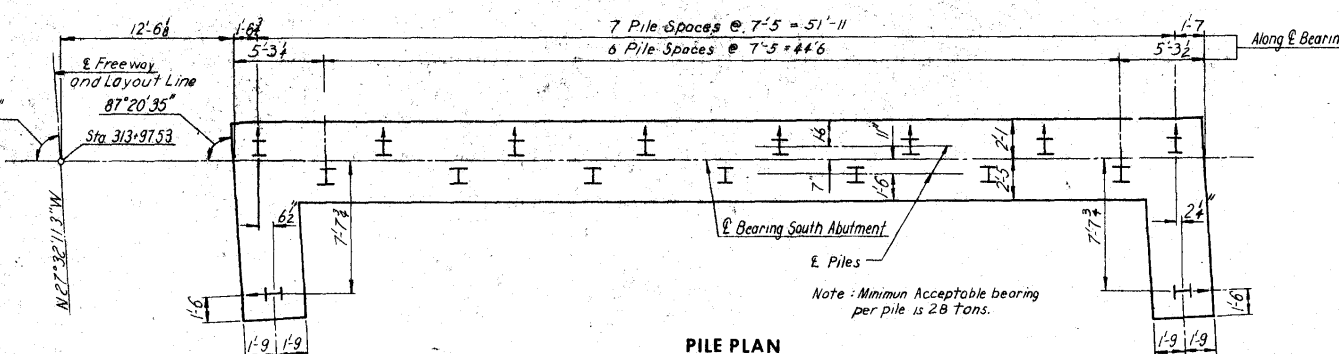
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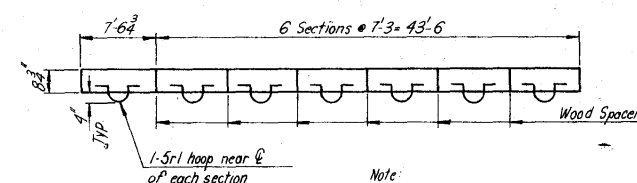
DETAIL A



FOOTING PLAN



PILE PLAN



TEMPORARY PAVING BLOCK PLAN

CONCRETE PLACEMENT QUANTITIES			
LOCATION		UNIT	QUANTITY
Footings and Steps	(Class C)	Cu. Yds.	40.4
Backwall above Constr. Jt.	(Class D)	Cu. Yds.	1.9
Backwall below Constr. Jt.	(Class C)	Cu. Yds.	8.6
Wingwalls	(Class D)	Cu. Yds.	0.5
Maskwalls	(Class C)	Cu. Yds.	0.8
Temporary Paving Block **	(Class C)	Cu. Yds.	1.4
End Posts 2 @ .55	(Class D)	Cu. Yds.	1.1
Wings	(Class D)	Cu. Yds.	4.3
Total		Cu. Yds.	70.2

** Paving Block may be Class D concrete.

ESTIMATED QUANTITIES			
ITEM		UNIT	QUANTITY
Structural Concrete ***		Cu. Yds.	76.7
Reinforcing Steel		Lbs.	7,571
HP 10x42 Steel Bearing Pile 17 @ 41' ^{Sheet Piling} _{202H}	Furnish	Lin. Ft.	697
	Drive	Lin. Ft.	62
Granular Backfill		Cu. Yds.	99
Subdrain		Lin. Ft.	108
Excavation, Class 20		Cu. Yds.	100
Bridge seat sealer		Sq. Ft.	210

Includes
*** Includes 51.1 Cu. Yds Class C concrete
and 19.6 Cu Yds Class C concrete.

Notes:
For "Abutment Notes" see Sheet 18 of 201.
For "Bill of Reinforcement" see Sheet
45 of 201.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

MADE DLR DATE 5-1-74 CHECKED DCH DATE 7-12-74

**CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE**

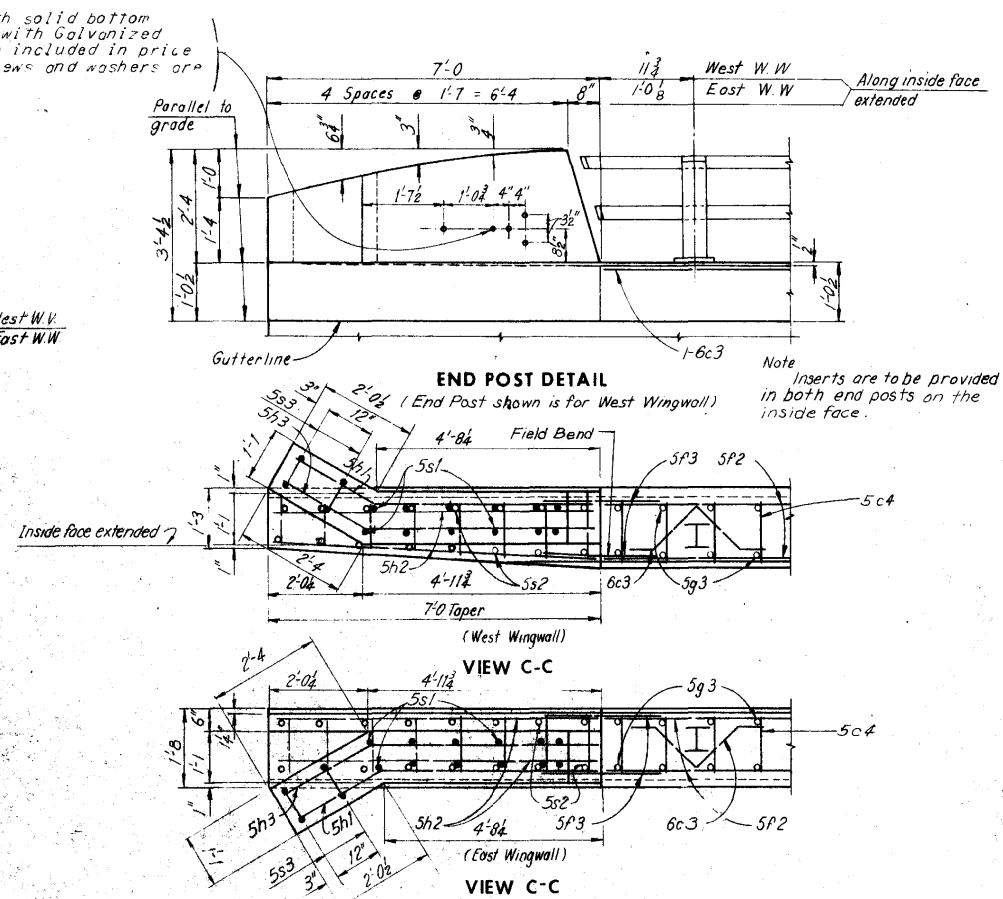
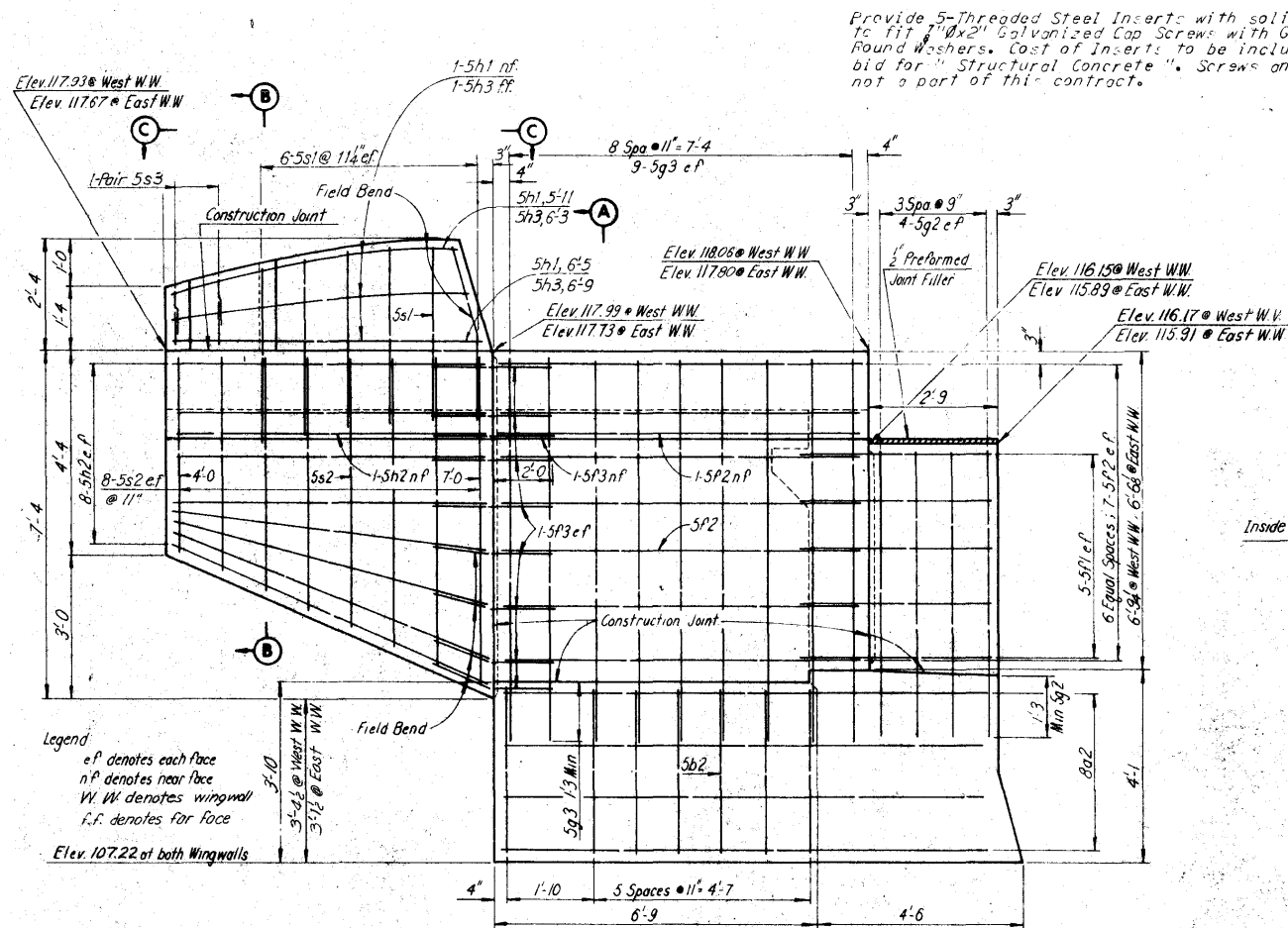
SOUTH ABUTMENT NORTHBOUND LANE

STA. 322+81.95 @ FREEWAY=
STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. I-380-6(68)263--01-57

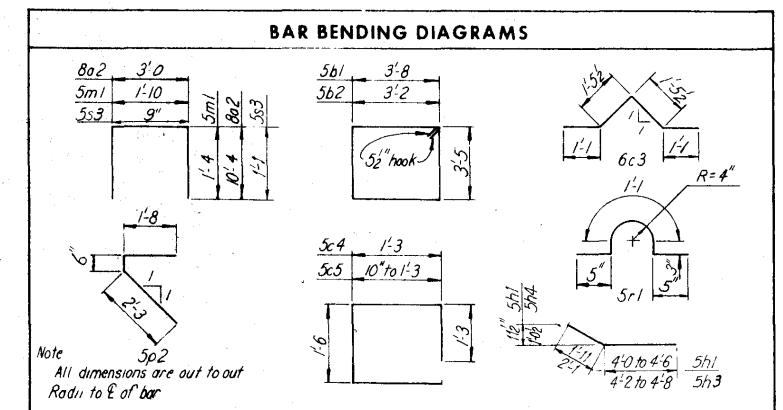
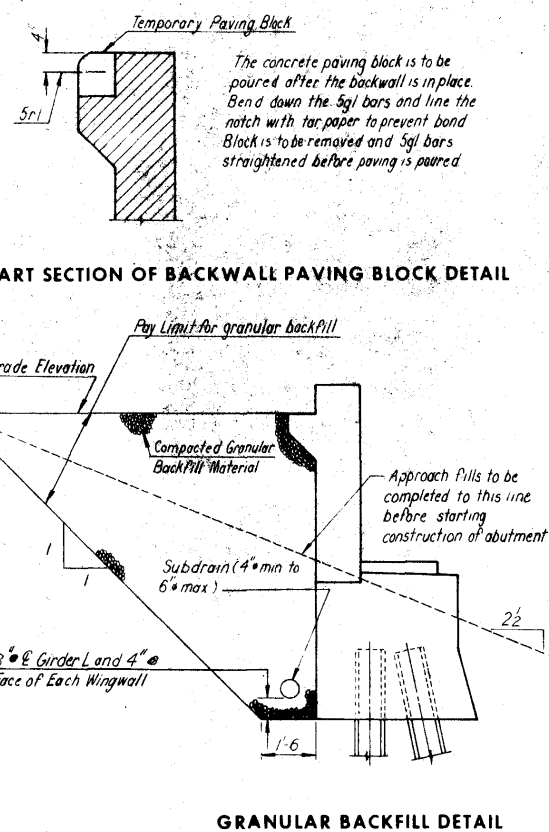
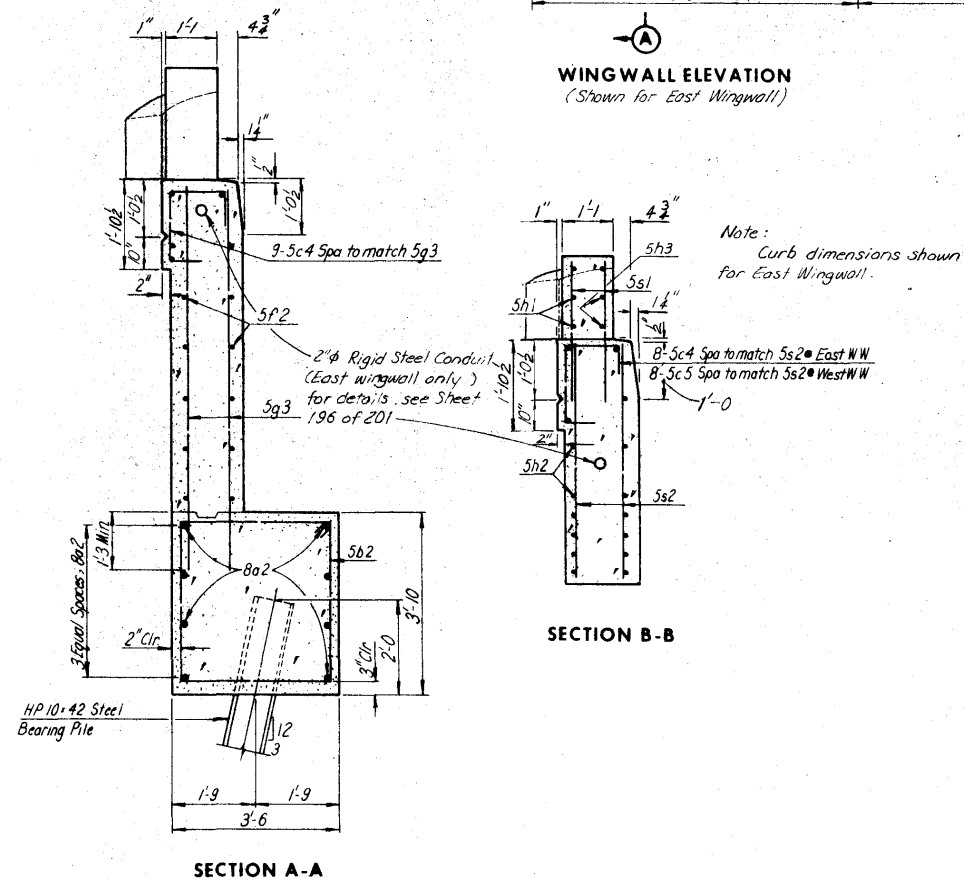
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

SHEET 44 OF 201

DESIGN NO. 1276 LINN COUNTY FILE 23101 SHEET 46 OF 203-0



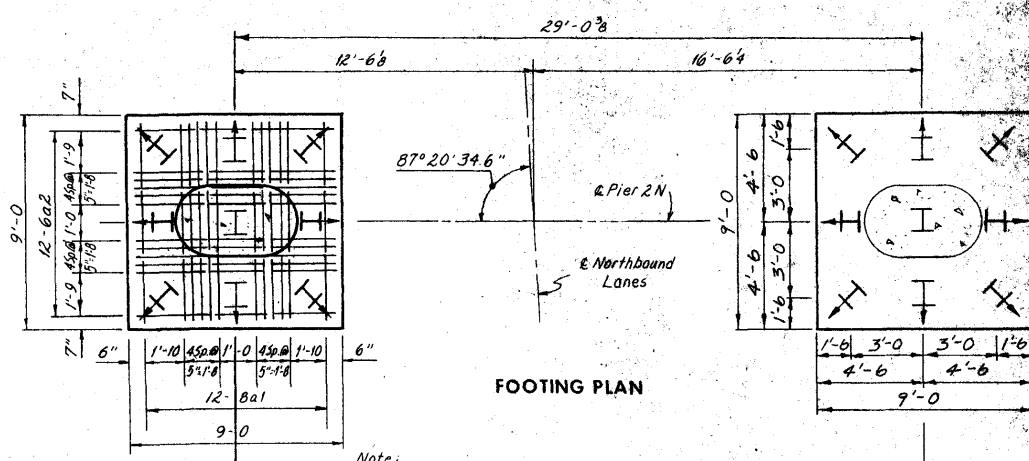
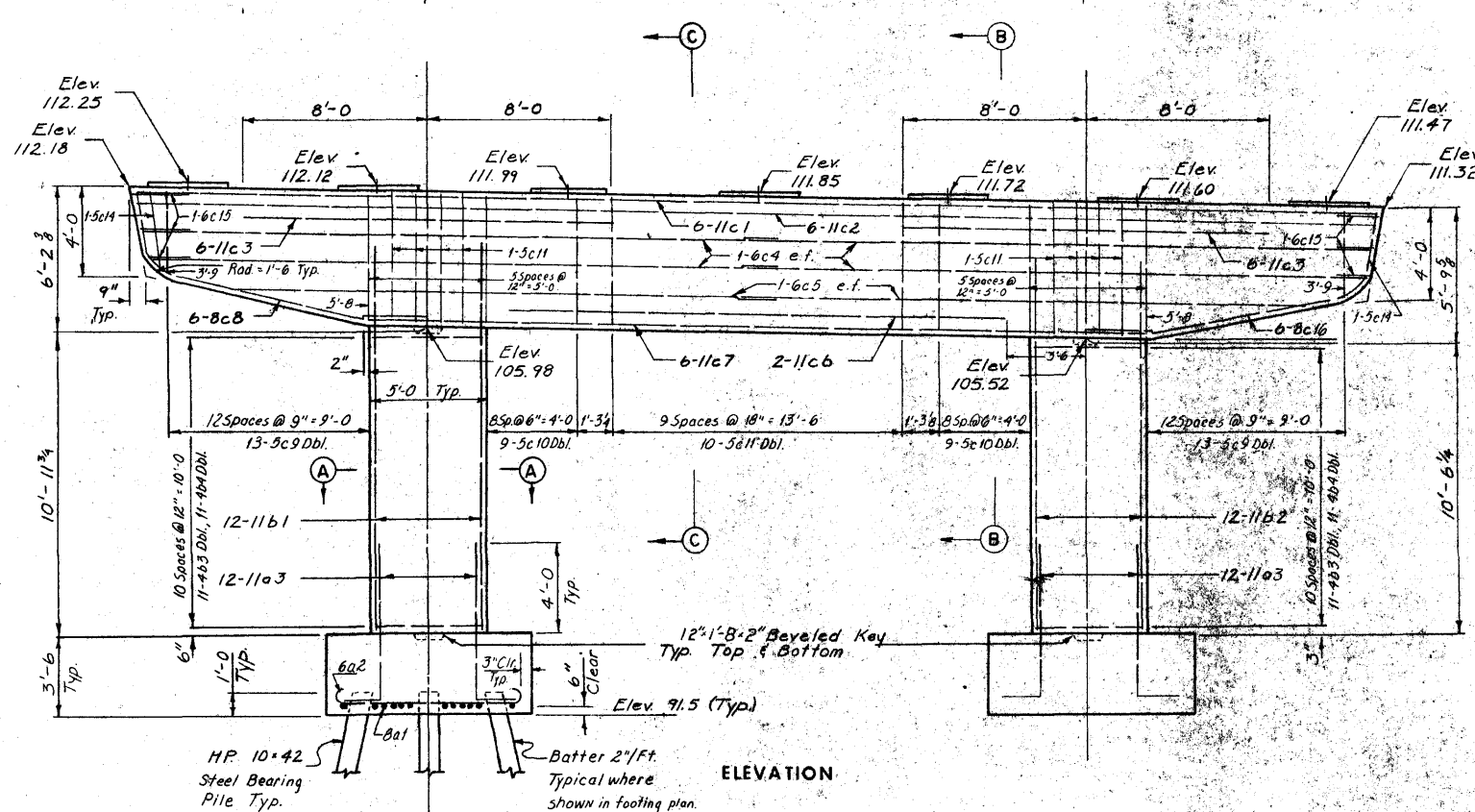
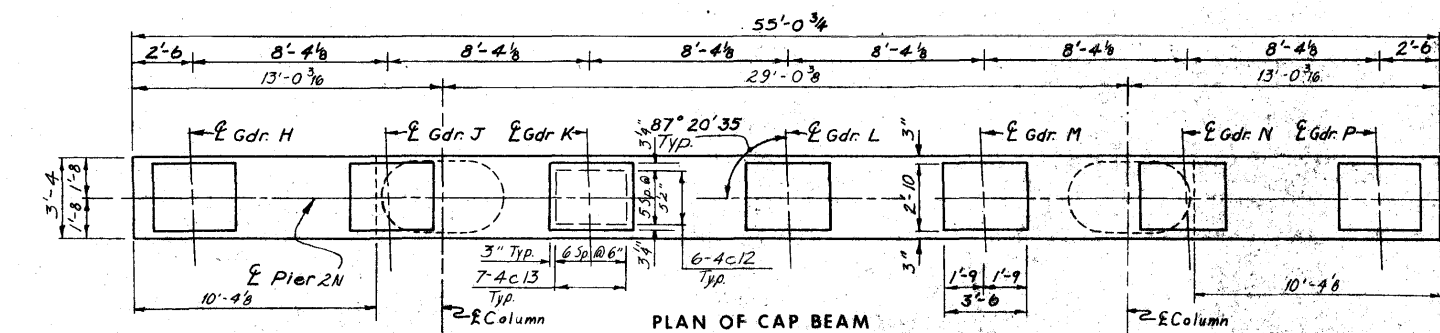
BILL OF REINFORCEMENT						
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT	
8a1	Footing		25	23'-6"	1,978	
8a2	Footing, Wing all		8	23'-6"	502	
5b1	Footing		60	14'-10"	928	
5b2	Footing, Wing all		14	13'-10"	202	
5c1	Back all		28	26'-6"	774	
5c2	Back all, Ds el		28	2'-7"	75	
6c3	Full Post Anchor		2	5'-0"	15	
5c4	Curb Vertical		26	5'-0"	156	
5c5	Curb Vertical		1 Ser 8	Varies	38	
5f1	Mask all		20	4'-0"	83	
5f2	Wing all		30	7'-8"	230	
5f3	Wing Ds el		34	3'-10"	156	
5g1	Approach Slab Sect		26	1'-9"	47	
5g2	Mask all		16	6'-1"	102	
5g3	Wing all		33	8'-3"	310	
5h1	End Post		2 Ser 3	Varies	36	
5h2	Wing		34	6'-8"	236	
5h3	End Post, Horiz		2 Ser 3	Varies	41	
4k1	Back all		53	7'-4"	250	
6k2	Back all		53	7'-7"	604	
5m1	Step		24	4'-4"	108	
5n1	Step		24	2'-2"	54	
4p1	Approach Slab Sect		4	25'-11"	69	
5p2	Approach Slab Sect		51	4'-4"	231	
5r1	Temporary Paving Block		7	2'-3"	16	
5-1	End Post, Vertical		24	3'-7"	90	
5-2	Wing		4 Ser 8	Varies	184	
5s3	End Post, Vertical		8	2'-5"	23	
	Total				7,521	



**CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE**

ABUTMENT DETAILS NORTHBOUND LANE

STA. 322+81.95 @ FREEWAY =
STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. I-380-6(68)263--01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

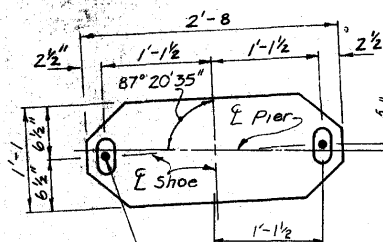


Note:

Pile spacing and footing reinforcing are typical.

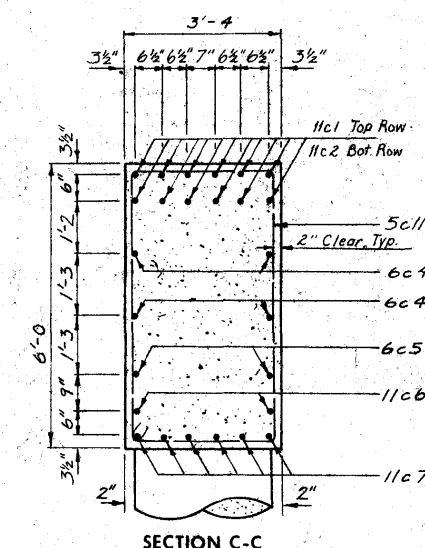
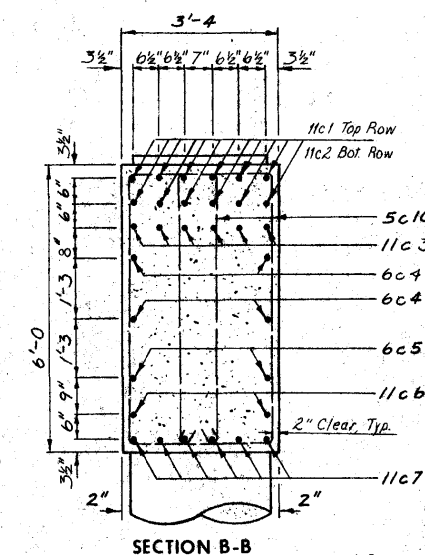
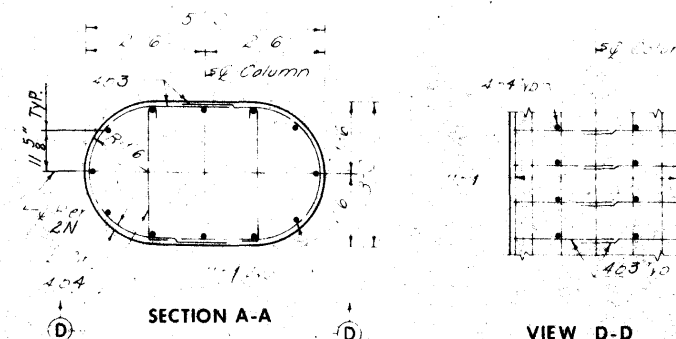
Notes:

Notes: For "Pier Notes" see Sheet 22 of 201.
Minimum acceptable bearing per pile
is 50 tons.



1 1/2" ϕ x 1'-8 Swedge
Anchor Bolt with a 4'2
projection.
























ANCHOR BOLT SETTING PLAN

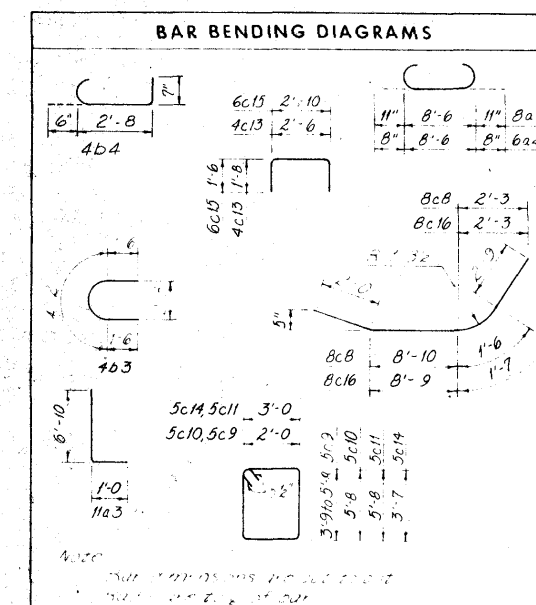


ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Structural Concrete **	Cu. Yds.	69.
Reinforcing Steel	Lbs.	13,044
Excavation, Class 20	Cu. Yds.	85
• HP 10x42 Steel	Furnish	612
Bearing Piles	Lin. Ft.	612
Drive	Lin. Ft.	612

CONCRETE PLACEMENT QUANTITIES		
LOCATION	UNIT	QUANTITY
Footings, Class C	Cu. Yds.	21.0
Column, Class D	Cu. Yds.	10.4
Co. Bedm, Class C	Cu. Yds.	37.9
Total	Cu. Yds.	69.2

* 1c Pile @ 34, see Piling Log Sheet 203A
 ** 1c Pile @ 35, see Piling Log Sheet 203B
 10.4 Caisson @ 36, see Piling Log Sheet 203C

BILL OF REINFORCEMENT					
PIER 2N					
BAR	LOCATION	SHAPE	NO	LENGTH	WEIGHT
8a1	Footing, Horizontal		24	10'-4	66.3
6a2	Footing, Horizontal		24	3'-10	54
11a	Footing, Vertical		24	7'-9	988
11b1	Column, Vertical		12	15'-0	956
11b2	Column, Vertical		12	14'-6	924
4b3	Column, Horizontal		44	7'-2	211
4b4	Column, Horizontal		44	7'-8	108
11c1	Cap Beam, Horizontal		6	54'-7	1740
11c2	Cap Beam, Horizontal		6	54'-5	175
11c3	Cap Beam, Horizontal		12	16'-0	1020
6c4	Cap Beam, Horizontal		8	27'-9	37
6c5	Cap Beam, Horizontal		4	24'-9	149
11c6	Cap Beam, Horizontal		2	22'-0	34
11c7	Cap Beam, Horizontal		6	24'-2	1089
8c8	Cap Beam, Horizontal		6	15'-1	243
5c9	Cap Beam, Vertical		4Ser13	Varies	64
5c10	Cap Beam, Vertical		16	16'-0	601
5c11	Cap Beam, Vertical		18	18'-0	738
4c12	Cap Beam, Horizontal		42	3'-2	89
4c13	Cap Beam, Horizontal		49	5'-8	185
5c14	Cap Beam, Vertical		2	13'-10	29
6c15	Cap Beam, Horizontal		6	5'-8	51
8c16	Cap Beam, Horizontal		6	15'-1	242
Total					13,044



**CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE**

PIER 2N

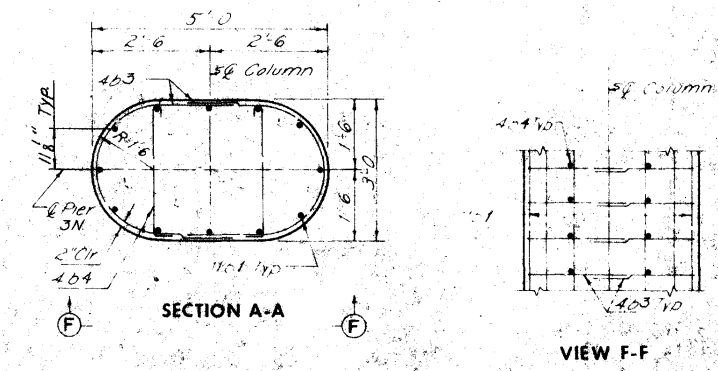
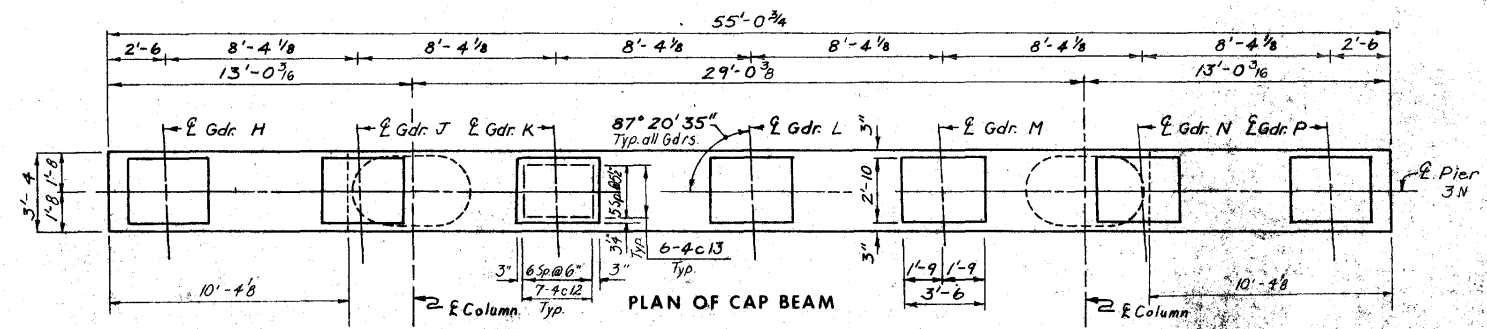
STA. 322+81.95 @ FREEWAY=
STA. 32+14.70 @ 1ST. AVE. W

PROJECT NO. 1-380-6(68)263--01-57

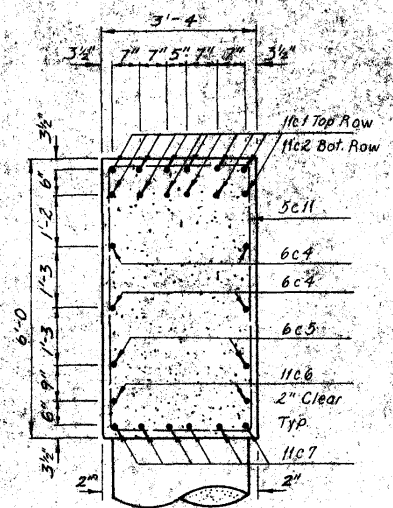
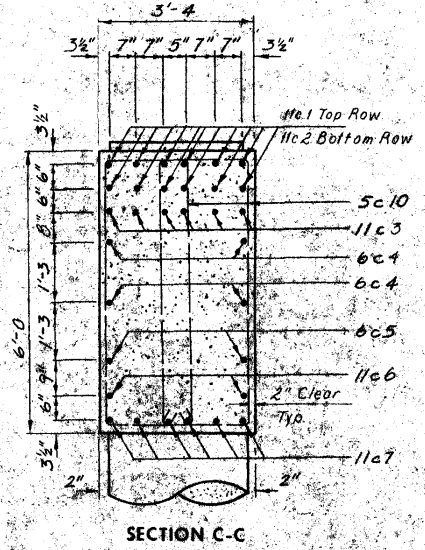
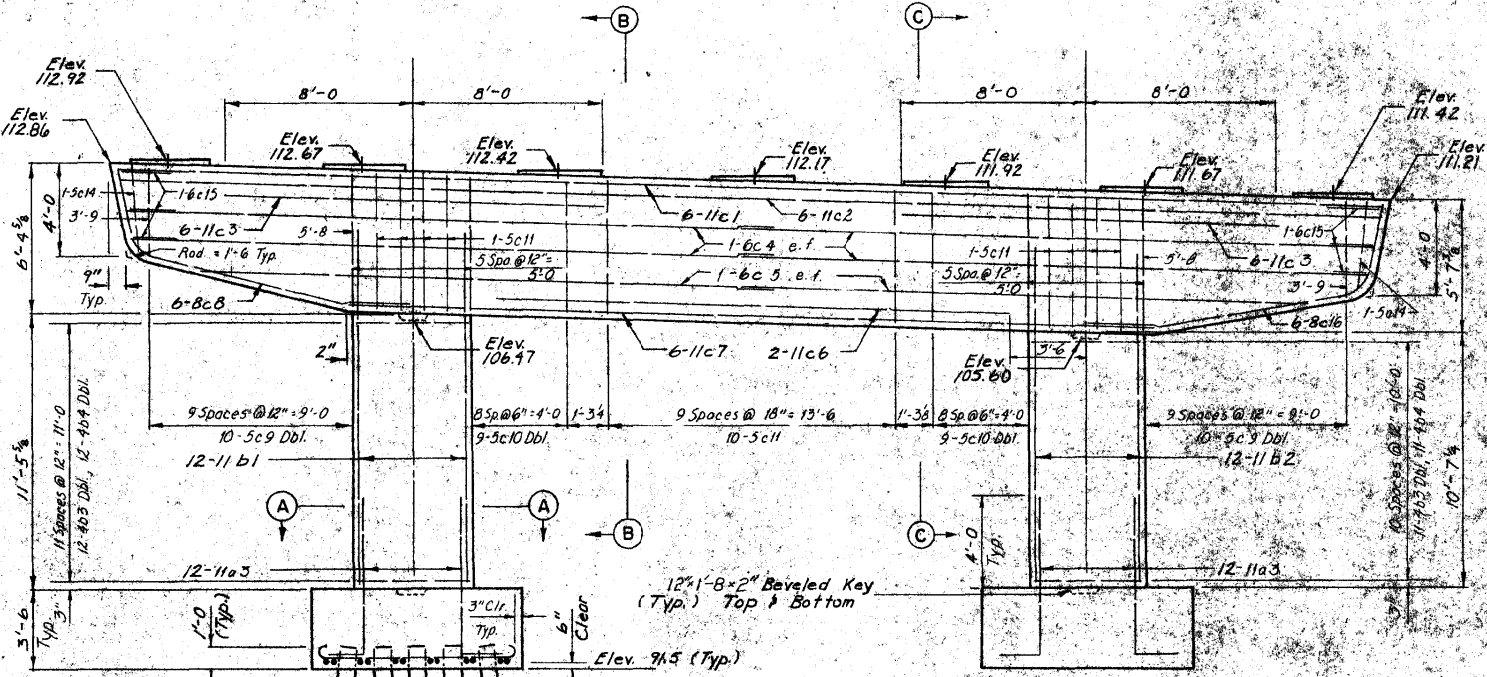
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

SHEET 47 OF 201

Part II of III



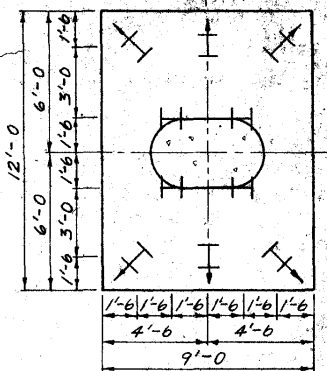
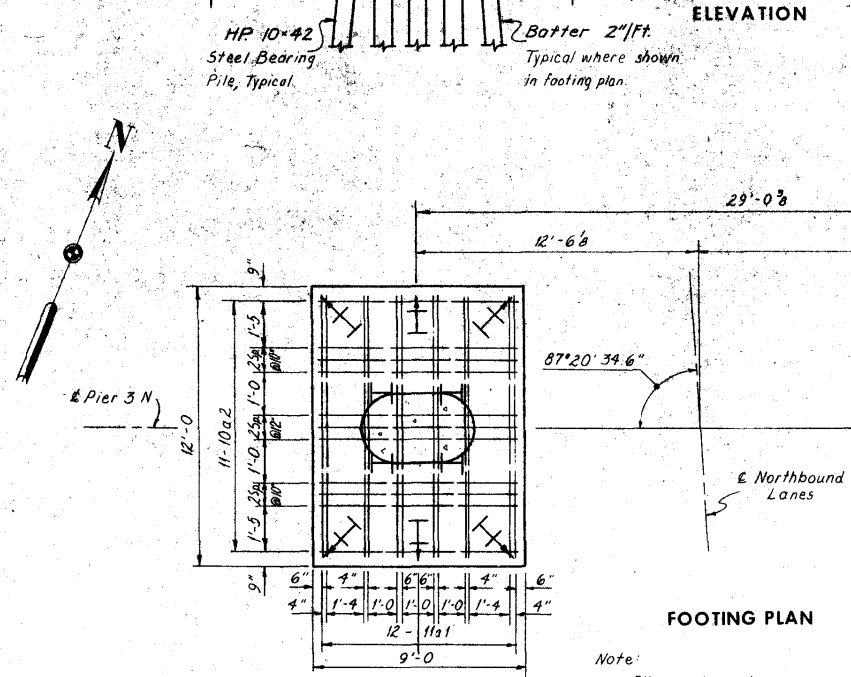
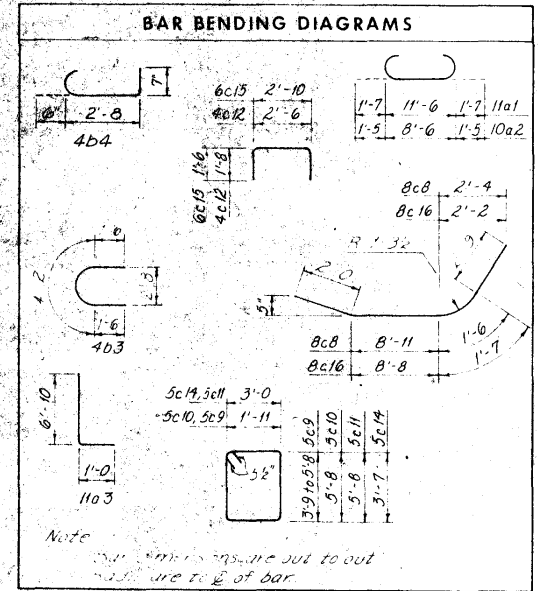
BILL OF REINFORCEMENT					
PIER 3N					
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
11a1	Footing, Horizontal		24	14'-8"	1870
10a2	Footing, Horizontal		22	11'-4"	1073
11a3	Footing, Vertical		24	7'-9"	988
11b1	Column, Horizontal		12	15'-6"	988
11b2	Column, Horizontal		12	14'-8"	935
4b3	Column, Horizontal		46	7'-2"	220
4b4	Column, Horizontal		46	3'-8"	113
11c1	Cap Beam, Horizontal		6	54'-7"	1740
11c2	Cap Beam, Horizontal		6	54'-5"	1735
11c3	Cap Beam, Horizontal		12	16'-0"	1020
6c4	Cap Beam, Horizontal		8	27'-9"	333
6c5	Cap Beam, Horizontal		4	24'-9"	149
11c6	Cap Beam, Horizontal		2	22'-0"	234
11c7	Cap Beam, Horizontal		6	34'-2"	1089
8c8	Cap Beam, Horizontal		6	15'-2"	243
5c10	Cap Beam, Vertical	4Ser10	Varies		581
5c10	Cap Beam, Vertical		36	15'-10"	595
5c11	Cap Beam, Vertical		18	18'-0"	338
4c12	Cap Beam, Horizontal		49	5'-8"	185
4c13	Cap Beam, Horizontal		42	3'-2"	89
5c14	Cap Beam, Vertical		2	15'-10"	29
6c15	Cap Beam, Horizontal		6	5'-8"	51
8c16	Cap Beam, Horizontal		6	15'-0"	240
Total					14,838



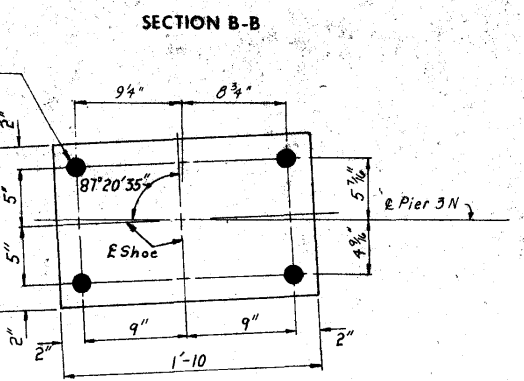
ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Structural Concrete (C/C)	Cu. Yds.	76.7
Reinforcing Steel	Lbs.	14,838
Excavation, Class 20	Cu. Yds.	988.7
HP 10.42 Steel Piling	Lin. Ft.	7906.750
Bearing Piles Drive	Lin. Ft.	7006.002

CONCRETE PLACEMENT QUANTITIES		
LOCATION	UNIT	QUANTITY
Footing, Class C	Cu. Yds.	28.0
Columns, Class C	Cu. Yds.	10.7
Cap Beam, Class C	Cu. Yds.	38.0
Total	Cu. Yds.	76.7

• 20 Piles @ 35'. See Piling Log sheet 203H



1 1/4" x 1'-4" Swedge Anchor Bolt with a 3" projection



**CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE**

PIER 3N

STA. 322+81.95 @ FREEWAY =
STA. 32+14.70 @ 1ST. AVE. W. PROJECT NO. I-380-6(68)263--01-57

LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

Part II of III

SHEET 48 OF 201

DESIGN NO. 1276 LINN COUNTY FILE 23191 SHEET 50 OF 203-0

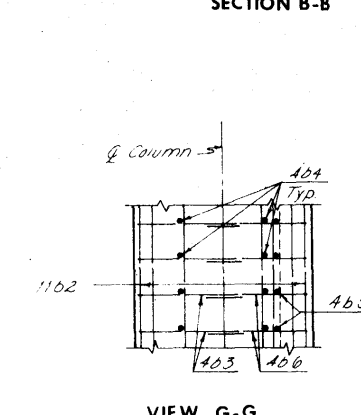
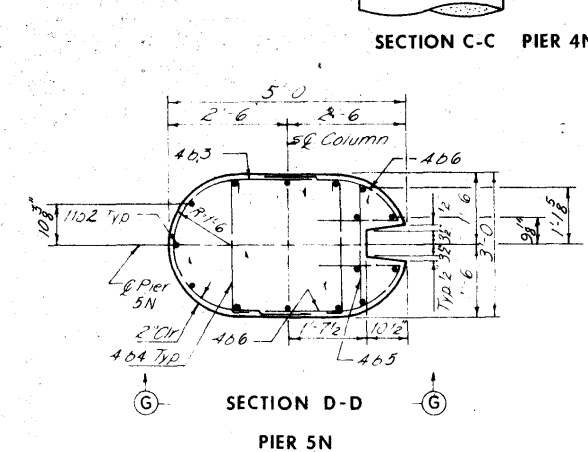
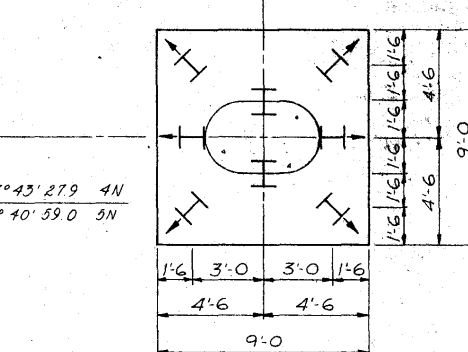
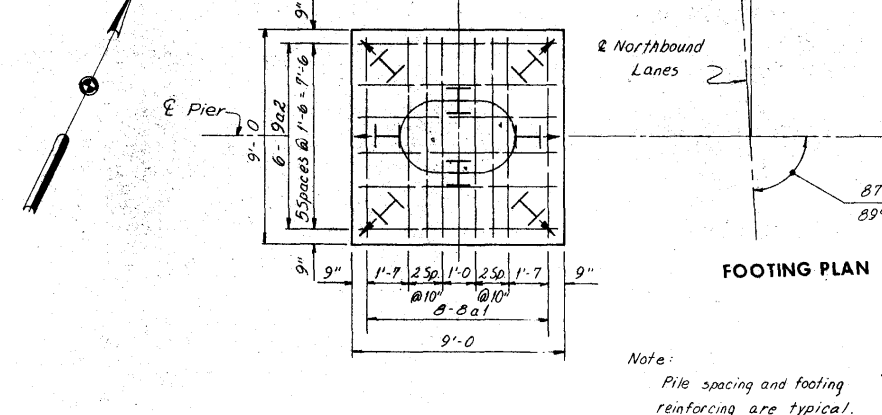
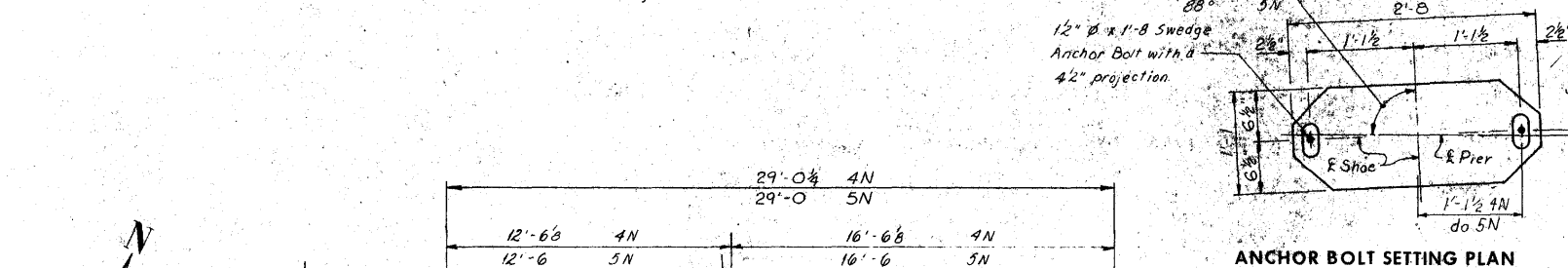
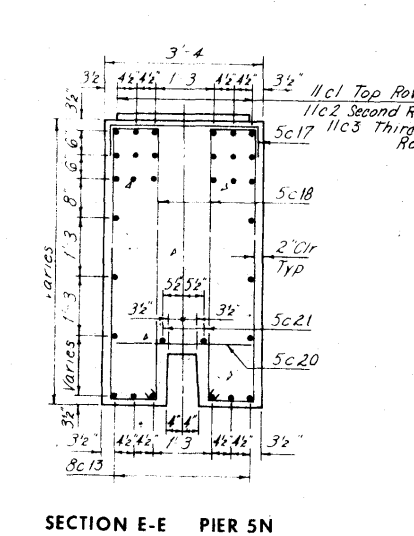
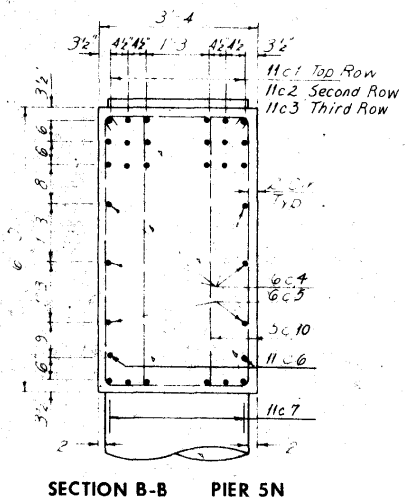
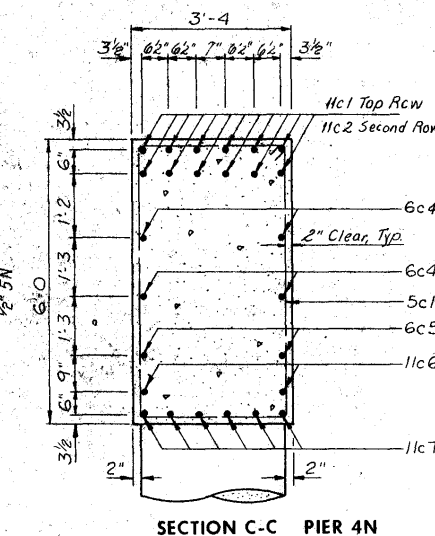
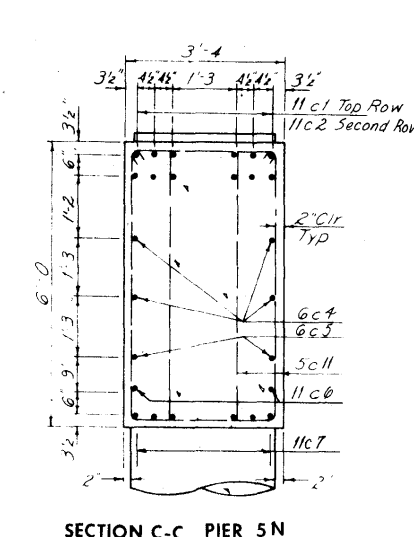
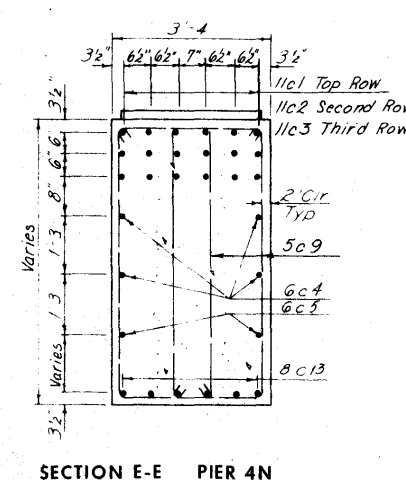
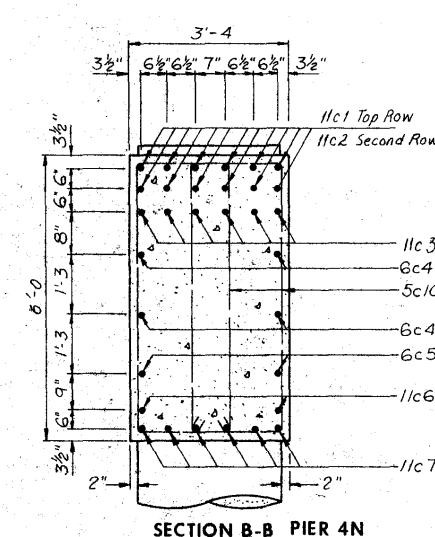
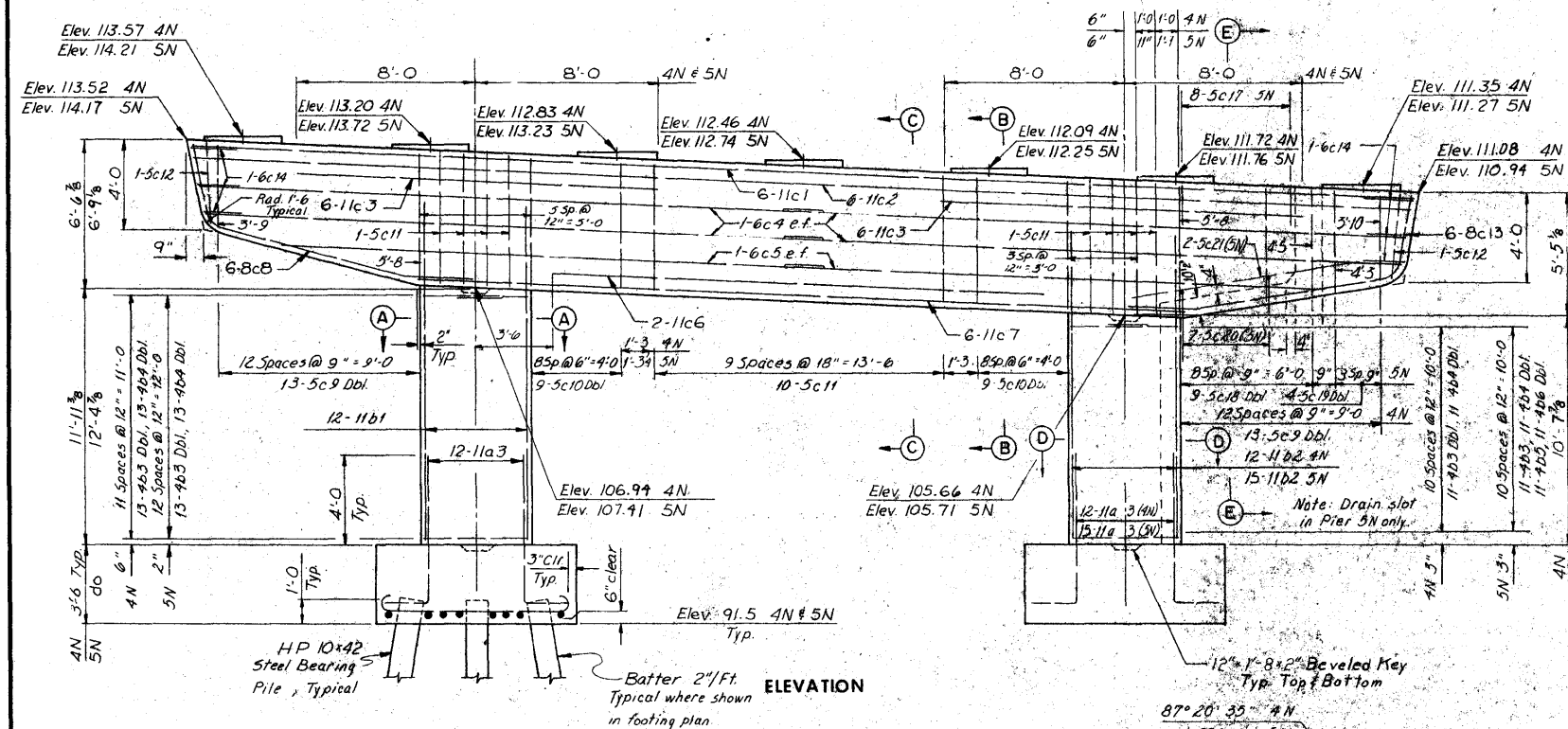
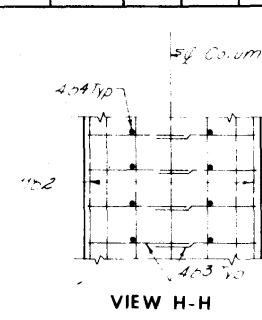
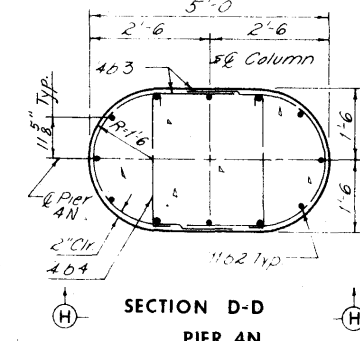
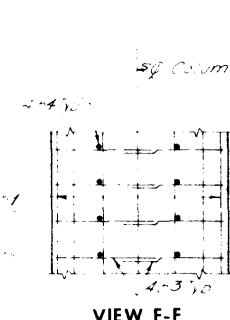
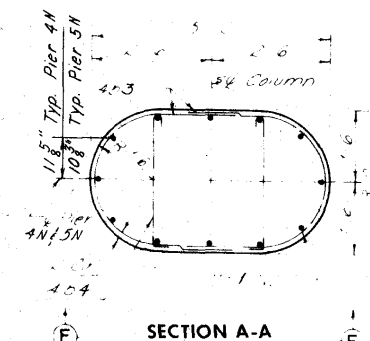
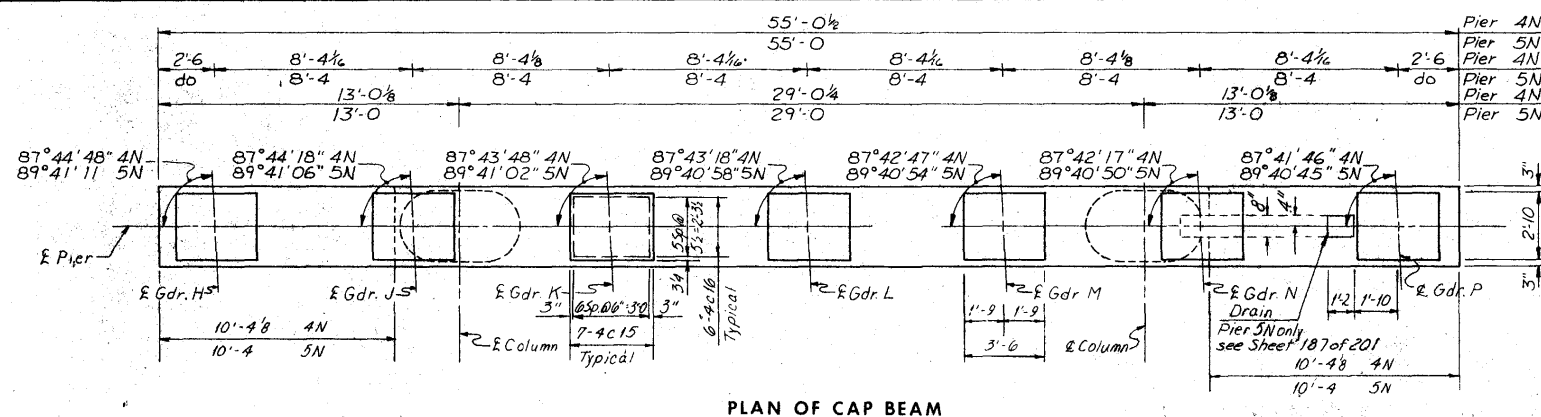
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

MADE GAK DATE 1-24-74 CHECKED R.O.C. DATE 7-1-74

Notes:
For "Pier Notes" see Sheet 22 of 201.
Minimum acceptable bearing per pile is 51 tons.

Note:
Pile spacing and footing reinforcing are typical.

FEDERAL DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	IOWA				



Note: For Bill of Reinforcement, Bar Bending Diagrams, Estimated Quantities, and Concrete Placement Quantities, see sheet 50 of 201.

**CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE**

PIERS 4N AND 5N

STA. 322+81.95 @ FREEWAY=
STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. 1-380-6(68)263--01-57

LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

SHEET 49 OF 201

BILL OF REINFORCEMENT					
PIER 4N					
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
8a1	Footng, Horizontal		16	10'-4	441
9a2	Footng, Horizontal		12	11'-0	443
11a	Footng, Vertical		24	7'-9	989
11b1	Column, Vertical		12	16'-0	1020
11b2	Column, Vertical		12	14'-8	915
4b3	Column, Horizontal		48	7'-2	230
4b4	Column, Horizontal		48	7'-8	118
11c1	Cap Beam, Horizontal		6	54'-7	1740
11c2	Cap Beam, Horizontal		6	54'-5	1715
11c3	Cap Beam, Horizontal		12	16'-0	1020
6c4	Cap Beam, Horizontal		8	27'-9	
6c5	Cap Beam, Horizontal		4	24'-9	149
11c6	Cap Beam, Horizontal		2	22'-0	114
11c7	Cap Beam, Horizontal		6	54'-1	1087
8c8	Cap Beam, Horizontal		6	15'-2	243
5c9	Cap Beam, Vertical		4Ser13	Varies	764
5c10	Cap Beam, Vertical		16	16'-0	601
5c11	Cap Beam, Vertical		18	18'-0	8
5c12	Cap Beam, Vertical		2	15'-8	29
8c13	Cap Beam, Horizontal		6	15'-0	240
6c14	Cap Beam, Horizontal		6	5'-8	51
4c15	Cap Beam, Horizontal		43	5'-8	185
4c16	Cap Beam, Horizontal		42	5'-2	89
Total					13,019

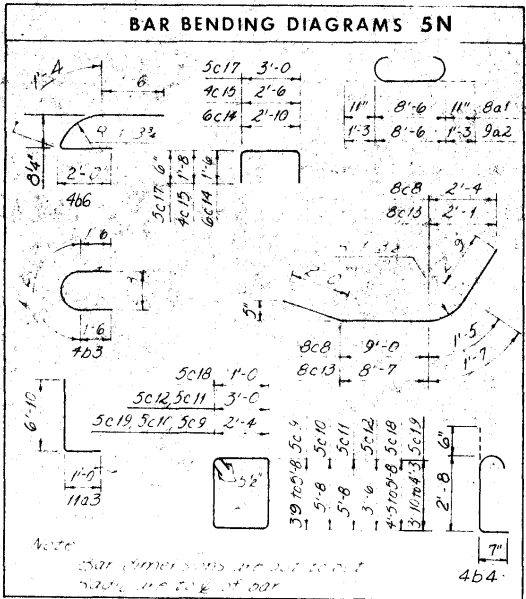
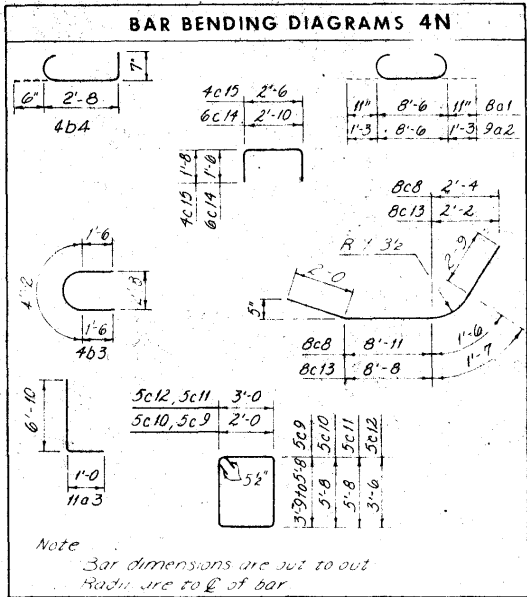
ESTIMATED QUANTITIES 4N		
ITEM	UNIT	QUANTITY
Structural Concrete (C/C)	Cu. Yds.	69.9
Reinforcing Steel	Lbs.	13,019
Excavation, Class 0	Cu. Yds.	7565.1
*HP10, 4" Steel Furnish	Lin. Ft.	67
Bearing Piles Drive	Lin. Ft.	67
		6442
		5607

CONCRETE PLACEMENT QUANTITIES		
LOCATION	UNIT	QUANTITY
Footings, Class C	Cu. Yds.	21.0
Column, Class C	Cu. Yds.	10.9
Cap Beam, Class C	Cu. Yds.	9.0
Total	Cu. Yds.	69.9
• 16 Piles @ 42". See Piling Log Sheet 203H		

BILL OF REINFORCEMENT					
PIER 5N					
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
8a1	Footng, Horizontal		15	10'-4	441
9a2	Footng, Horizontal		12	11'-0	443
11a	Footng, Vertical		27	7'-9	1112
11b1	Column, Vertical		15	16'-5	1047
11b2	Column, Vertical		15	14'-9	1176
4b3	Column, Horizontal		7	7'-2	177
4b4	Column, Horizontal		43	3'-8	118
4b5	Column, Horizontal		11	2'-6	18
4b6	Column, Horizontal		22	4'-9	70
11c1	Cap Beam, Horizontal		6	54'-5	1787
11c2	Cap Beam, Horizontal		6	54'-4	1762
11c3	Cap Beam, Horizontal		12	16'-0	1020
6c4	Cap Beam, Horizontal		8	27'-9	
6c5	Cap Beam, Horizontal		4	24'-9	149
11c6	Cap Beam, Horizontal		2	22'-0	114
11c7	Cap Beam, Horizontal		6	54'-1	1087
8c8	Cap Beam, Horizontal		6	15'-2	243
5c9	Cap Beam, Vertical		2Ser13	Varies	400
5c10	Cap Beam, Vertical		6	16'-8	68
5c11	Cap Beam, Vertical		18	18'-0	8
5c12	Cap Beam, Vertical		2	15'-8	29
8c13	Cap Beam, Horizontal		6	14'-11	239
6c14	Cap Beam, Horizontal		6	5'-8	51
4c15	Cap Beam, Horizontal		43	5'-8	185
4c16	Cap Beam, Horizontal		42	5'-2	89
5c17	Cap Beam, Horizontal		8	5'-10	32
5c18	Cap Beam, Vertical		2Ser9	Varies	239
5c19	Cap Beam, Vertical		2Ser4	Varies	112
5c20	Cap Beam, Horizontal		7	5'-0	22
5c21	Cap Beam, Horizontal		8	10'-0	51
Total					13,526

ESTIMATED QUANTITIES 5N		
ITEM	UNIT	QUANTITY
Structural Concrete (C/C)	Cu. Yds.	59.8
Reinforcing Steel	Lbs.	13,526
Excavation, Class 30	Cu. Yds.	6557.6
*HP 10, 4" Steel Furnish	Lin. Ft.	608
Bearing Piles Drive	Lin. Ft.	608
		750.6
		746.3

CONCRETE PLACEMENT QUANTITIES		
LOCATION	UNIT	QUANTITY
Footings, Class C	Cu. Yds.	21.0
Columns, Class C	Cu. Yds.	11.0
Cap Beam, Class C	Cu. Yds.	7.8
Total	Cu. Yds.	69.8
• 16 Piles @ 38". See Piling Log Sheet 203H		



Note: For Pier Details see Sheet 49 of 201.

CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE

PIERS 4N AND 5N

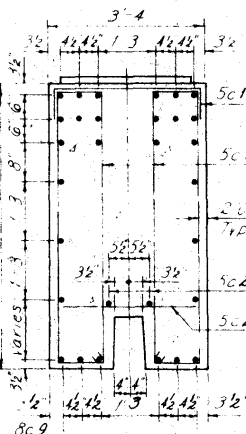
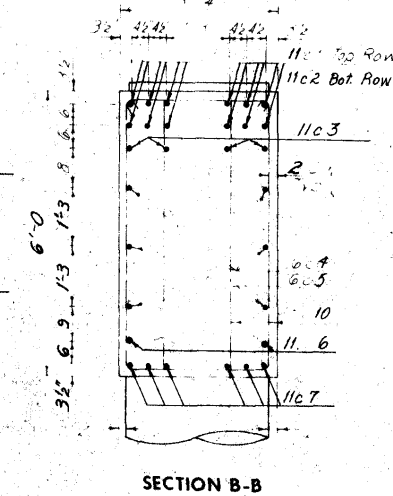
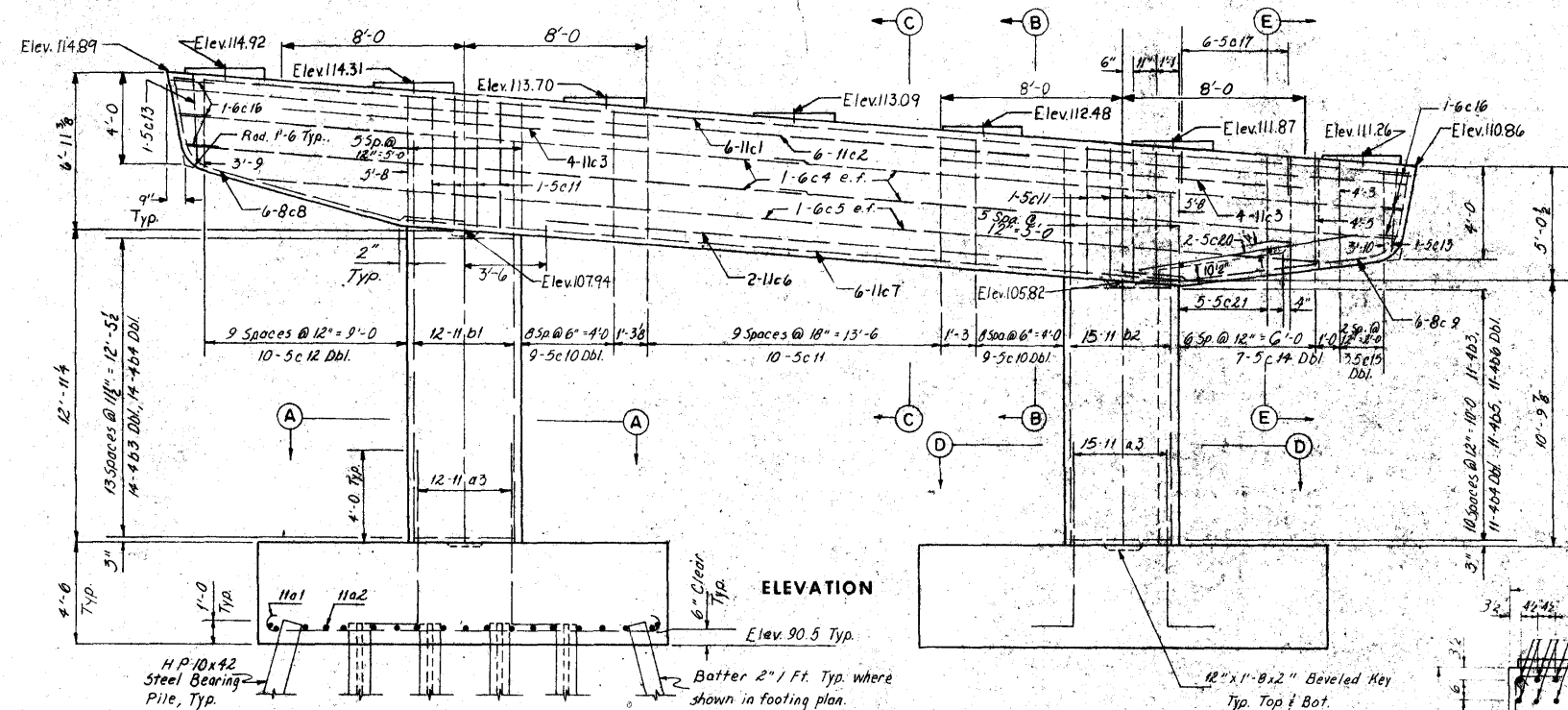
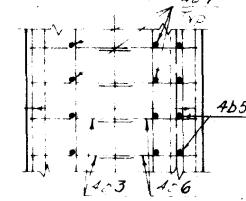
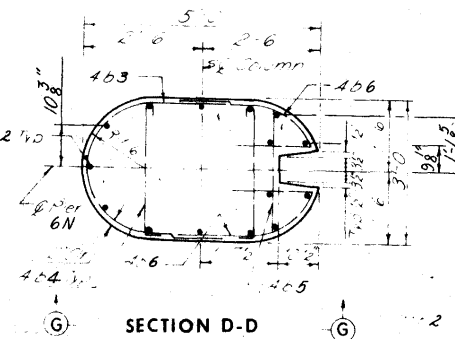
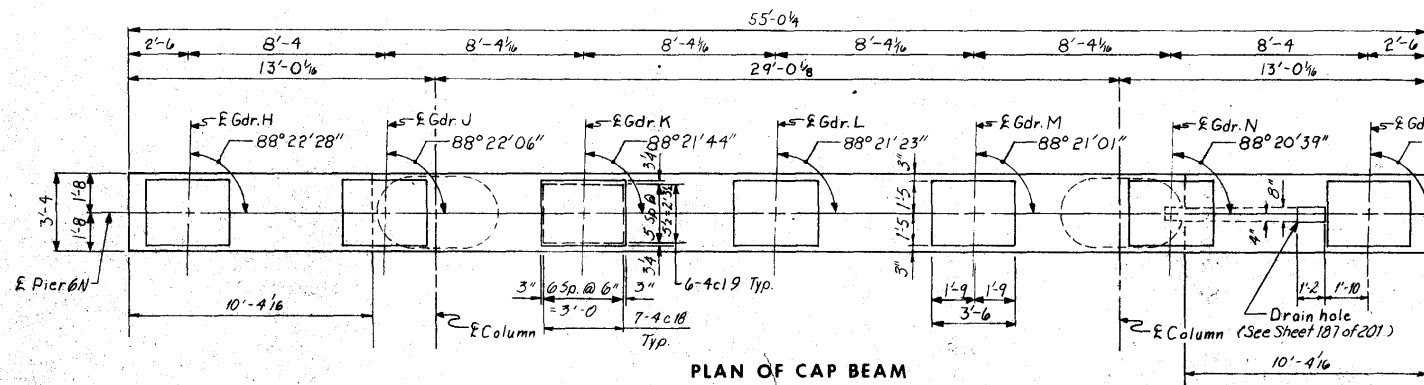
STA. 322+81.95 @ FREEWAY=
STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. I-380-6(68)263--01-57
LINN COUNTY
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KANSAS CITY

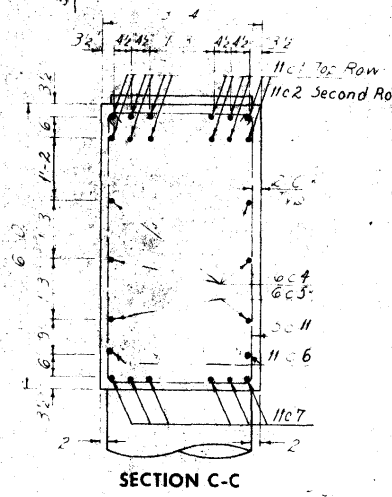
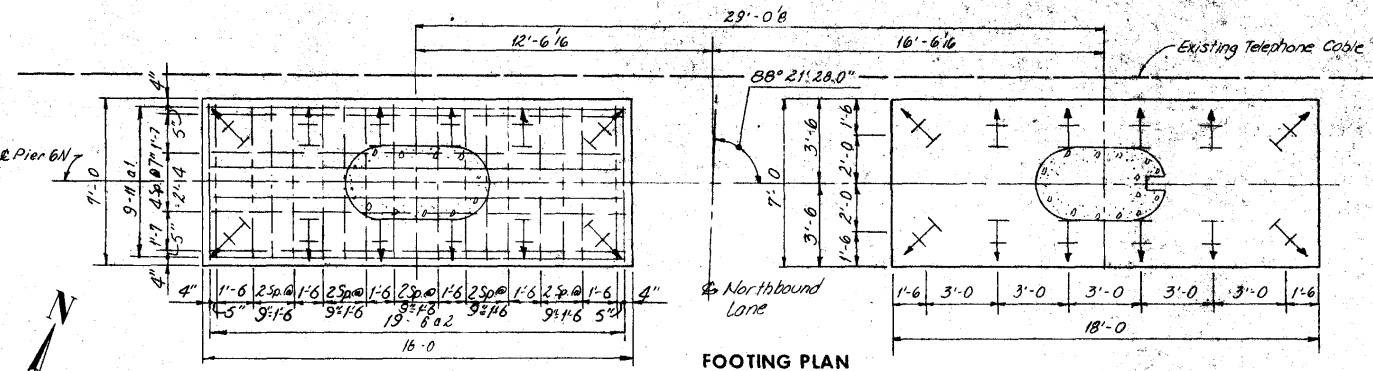
MADE L.D.H. DATE 1-24-74 CHECKED R.O.C. DATE 7-1-74

SHEET 50 OF 201

DESIGN NO. 1276 LINN COUNTY FILE 23191 SHEET 52 OF 203

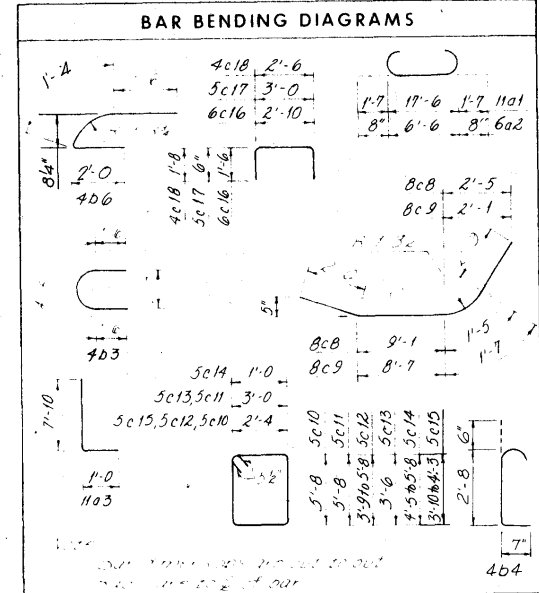


BILL OF REINFORCEMENT					
PIER 6N					
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
11a1	Footings, Horizontal		18	20'-2"	1976
6c2	Footings, Horizontal		38	7'-10"	447
11a2	Footings, Vertical		27	8'-5"	1255
11b1	Column, Vertical		12	16'-11"	1079
11b2	Column, Vertical		15	14'-10"	1182
4b	Column, Horizontal		39	7'-2"	187
4b4	Column, Horizontal		50	3'-8"	125
4b5	Column, Horizontal		11	2'-6"	19
4b6	Column, Horizontal		25	4'-9"	70
11c1	Cap Beam, Horizontal		6	54'-6"	1757
11c2	Cap Beam, Horizontal		5	54'-4"	1735
11c3	Cap Beam, Horizontal		8	16'-0"	680
6c4	Cap Beam, Horizontal		8	27'-9"	271
6c5	Cap Beam, Horizontal		4	24'-9"	149
11c6	Cap Beam, Horizontal		2	22'-0"	334
11c7	Cap Beam, Horizontal		6	24'-2"	1089
8c8	Cap Beam, Horizontal		6	15'-3"	244
8c9	Cap Beam, Horizontal		6	14'-11"	239
5c10	Cap Beam, Vertical		36	16'-8"	626
5c11	Cap Beam, Vertical		18	18'-0"	338
5c12	Cap Beam, Vertical		25	Varies	308
5c13	Cap Beam, Vertical		2	13'-8"	29
5c14	Cap Beam, Vertical		25	Varies	186
5c15	Cap Beam, Vertical		25	Varies	94
6c16	Cap Beam, Horizontal		6	5'-8"	51
5c17	Cap Beam, Horizontal		6	21'-10"	24
4c18	Cap Beam, Horizontal		49	5'-8"	185
4c19	Cap Beam, Horizontal		42	3'-2"	89
5c20	Cap Beam, Horizontal		2	10'-1"	21
5c21	Cap Beam, Horizontal		5	5'-0"	16
Total					14,730



ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Structural Concrete **	Cu. Yds.	94.7
Reinforcing Steel	Lbs.	14,730
Excavation, Class 20	Cu. Yds.	88.7
*HP 10.42 Steel Funnels	Lin. Ft.	672
Bearing Piles Drive	Lin. Ft.	672
Total		

CONCRETE PLACEMENT QUANTITIES		
LOCATION	UNIT	QUANTITY
Footings, Class C	Cu. Yds.	42.0
Columns, Class D	Cu. Yds.	11.5
Cap Beam, Class C	Cu. Yds.	37.9
Total		



**CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE**

PIER 6N

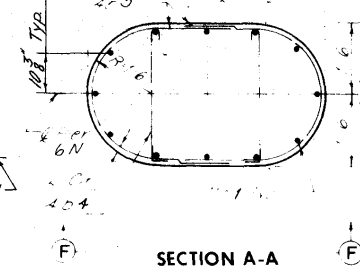
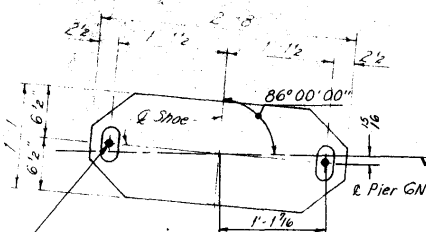
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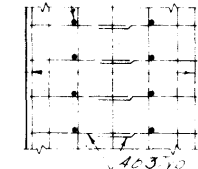
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
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KANSAS CITY

MADE RDO DATE 2-19-74 CHECKED ROC DATE 7-8-74

ANCHOR BOLT SETTING PLAN



VIEW F-F

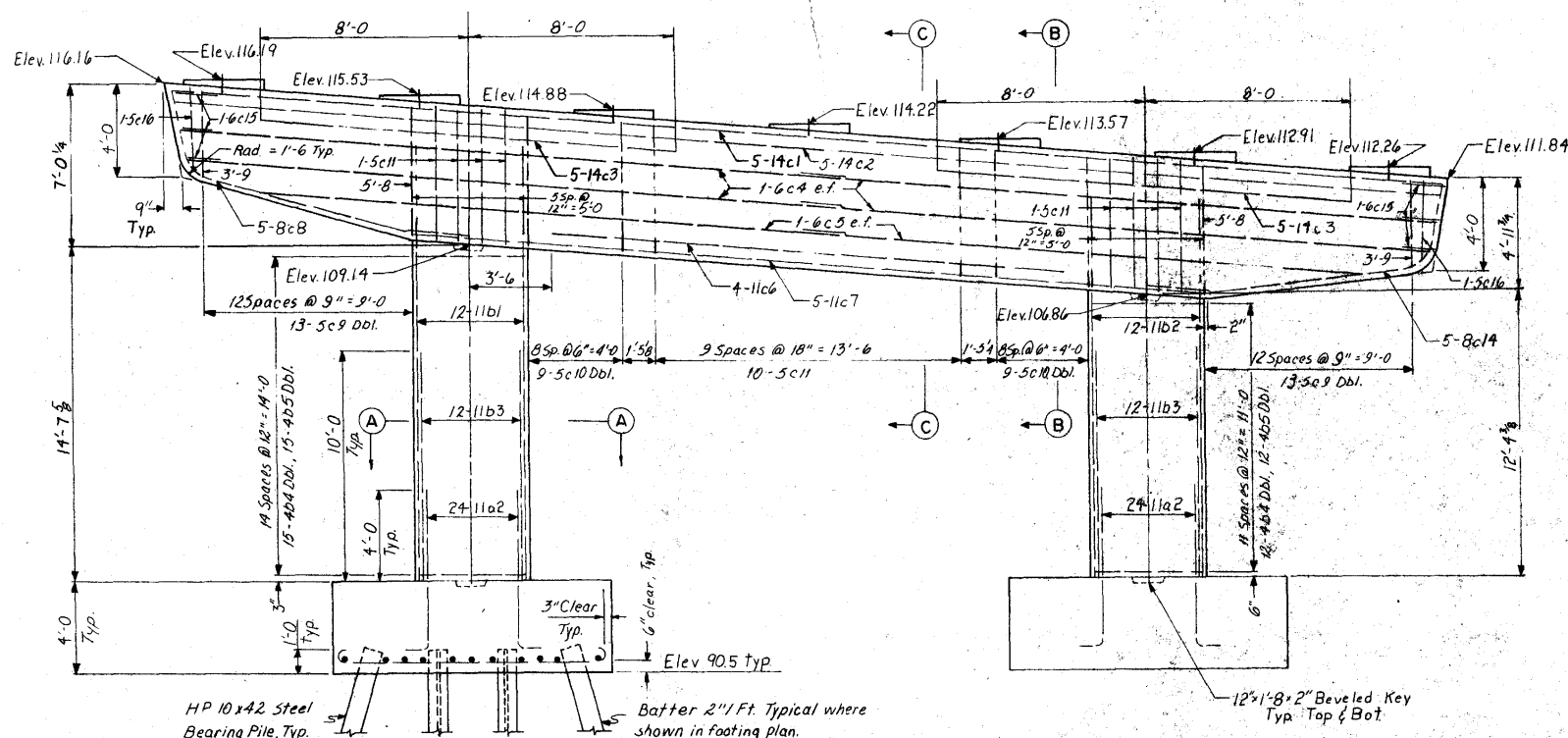


Note:
Pile spacing and footing
reinforcing are typical.

Notes:
For "Pier Notes" see Sheet 22 of 201.
Minimum acceptable bearing per pile
is 36 tons.

1/2" x 1'-8" Sledge
Anchor Bolt with
a 4' projection

Hand-drawn structural drawings of a bridge section. The main drawing is "SECTION A-A" showing a cross-section of a bridge deck with a central oval opening. Dimensions include a total width of 26, a central opening width of 10.5, and a height of 11.15. Reinforcement is shown with circles and dots. Labels include "34 Column", "11b1 or 11b3", and "4x4". A smaller detail drawing on the right shows a grid of reinforcement bars with dimensions 11.15, 10.5, and 5.0.

[illegible]

3'-4"

3/4" 8" 8" 8" 8" 3/2"

11c1 Top Row

11c2 Second Row

5c11

6c4

6c4

6c5

11c6

11c7

2"

3/2" 8" 6" 9" 8" 3/2"

6'-0"

6'-9"

1'-3"

1'-3"

1'-6"

1'-6"

3/4"

2"

Table:

5c11	6c4	6c5	11c6	11c7	2"
------	-----	-----	------	------	----

Figure 1 is a plan view of a rectangular plate. The overall dimensions are 1'-2" (1 foot 2 inches) in height and 1'-10" (1 foot 10 inches) in width. The plate has four corner holes, each with a diameter of 8 1/2" (8 and a half inches). The distance between the centers of the holes is 9 1/16" (9 and one sixteenth inch) horizontally and 5" (5 inches) vertically. The plate is tilted at an angle of 81° (81 degrees) relative to the horizontal. The plate is labeled with "Σ Shoe" and "Σ Pier" indicating specific features or components.

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Structural Concrete, G.C.	Cu. Yds.	34.4
Reinforcing Steel	Lbs.	13,838
Excavation, Class 20	Cu. Yds.	128
4" x 4" Steel	Lin. Ft.	130
Furnish		428
Bearing Piles	Lin. Ft.	1463
Drive		428

LOCATION	UNIT	QUANTITY
Footings, Class C	Cu. Yds.	42.7
Columns, Class C	Cu. Yds.	15.1
Can Beam, Class C	Cu. Yds.	38.6
Total	Cu. Yds.	96.4

[illegible]

CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE

STA. 322+81.95 @ FREEWAY=
STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. I-380-6(68)263--01-57

LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

MADE RDO DATE 3-1-74 CHECKED ROC DATE 7-9-74

Notes: For "Pier Notes" see Sheet 27 of 201.
Minimum acceptable bearing per pile
is 36 tons.

Diagram of a rectangular column with rounded ends. Dimensions: Overall width = 5'-0" (2'-6" + 2'-6"); Overall height = 3'-0" (1'-6" + 1'-6"). Reinforcement details: 5# Column, 2# Cir, 10" top slab, 10" bottom slab. The column is labeled "5# Column" and "2# Cir".

This elevation drawing shows the side profile of a bridge structure. Key features include:

- Dimensions:** Total length of 13'-1" and total height of 15'-4 1/8".
- Elevations:** Various points are marked with elevations such as 116.85, 116.87, 116.22, 115.57, 114.92, 114.27, 113.63, 112.98, 112.57, 109.84, 107.58, and 91.0.
- Structural Elements:** Reinforcement bars (e.g., 1-6c16, 2-14c3, 6-14c1, 6-14c2, 1-6c4 e.f., 1-6c5 e.f., 2-11c6, 6-11c7, 7-5c20, 6-8c15), concrete (1-5c11, 3-5p10, 12"-5'-0", 12"-9'-0", 12"-11'-0", 12"-13'-0", 12"-14'-0", 12"-15'-0", 12"-16'-0", 12"-17'-0", 12"-18'-0", 12"-19'-0", 12"-20'-0", 12"-21'-0", 12"-22'-0", 12"-23'-0", 12"-24'-0", 12"-25'-0", 12"-26'-0", 12"-27'-0", 12"-28'-0", 12"-29'-0", 12"-30'-0", 12"-31'-0", 12"-32'-0", 12"-33'-0", 12"-34'-0", 12"-35'-0", 12"-36'-0", 12"-37'-0", 12"-38'-0", 12"-39'-0", 12"-40'-0", 12"-41'-0", 12"-42'-0", 12"-43'-0", 12"-44'-0", 12"-45'-0", 12"-46'-0", 12"-47'-0", 12"-48'-0", 12"-49'-0", 12"-50'-0", 12"-51'-0", 12"-52'-0", 12"-53'-0", 12"-54'-0", 12"-55'-0", 12"-56'-0", 12"-57'-0", 12"-58'-0", 12"-59'-0", 12"-60'-0", 12"-61'-0", 12"-62'-0", 12"-63'-0", 12"-64'-0", 12"-65'-0", 12"-66'-0", 12"-67'-0", 12"-68'-0", 12"-69'-0", 12"-70'-0", 12"-71'-0", 12"-72'-0", 12"-73'-0", 12"-74'-0", 12"-75'-0", 12"-76'-0", 12"-77'-0", 12"-78'-0", 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Technical drawing of a window frame assembly, showing dimensions and component labels. The drawing is oriented vertically.

Dimensions:

- Top width: 3'-4"
- Top left corner: 3 1/2"
- Top right corner: 3 1/2"
- Left side height: 6'-0"
- Internal vertical dimensions (from top): 3 1/2", 8", 1'-3", 1'-3", 9", 6", 3 1/2"
- Bottom width: 2'-0"
- Bottom right corner: 2"

Component Labels:

- 14c1 Top Row
- 14c2 Second Row
- 14c3
- 5c10
- 6c4
- 6c4
- 2" Clear, Typ
- 6c5
- 11c6
- 11c7

The drawing shows a cross-section of a window frame with multiple panes and structural elements. The panes are labeled with codes like 14c1, 14c2, 14c3, 5c10, 6c4, 6c5, 11c6, and 11c7. The frame is labeled with codes like 14c1, 14c2, 14c3, 5c10, 6c4, 6c5, 11c6, and 11c7. The drawing includes various dimensions for the frame and panes, such as 3'-4" for the top width, 6'-0" for the left height, and 2'-0" for the bottom width. The drawing also shows a 2" clear space between the panes.

Architectural drawing of a building plan. The drawing shows a rectangular structure with internal dimensions and material specifications. The overall width is 3' 4" and the overall depth is 3' 2". The plan includes a central entrance area with a door labeled '5C21' and a window labeled '5C20'. The walls are labeled '5C11' and '5C12'. The floor is labeled '2" C/P Typ'. The drawing also shows a small rectangular area at the bottom with dimensions 4' 1" and 1' 3". The drawing is labeled 'VARIES' on the left side.

[illegible]

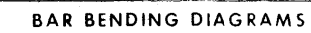
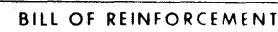
BAR BENDING DIAGRAMS

The diagram shows a rectangular frame with the following dimensions and bar specifications:

- Overall Dimensions:**
 - Top width: 2'-0"
 - Right height: 2'-10"
 - Bottom width: 2'-4"
 - Left height: 6'-10"
- Bar Specifications:**
 - Top horizontal bars: 4c18, 5c17, 6c16
 - Right vertical bars: 8c8, 8c15
 - Bottom horizontal bars: 5c12, 5c14, 5c11, 5c13, 5c10, 5c9
 - Left vertical bars: 4c18, 5c17, 6c16
- Other Dimensions:**
 - Top right corner: 11'-6", 11'-6", 11'-6", 11'-6"
 - Bottom right corner: 9'-4", 8'-10", 9'-5", 9'-8"
 - Bottom left corner: 1'-0", 11'-0", 1'-0", 11'-0"
 - Bottom right corner: 2'-8", 2'-8", 2'-8", 2'-8"

MADE RDO DATE 3-8-74 CHECKED ROC DATE 7-9-74

DESIGN NO 1274 LINN COUNTY FILE 22101 CLERT E/ 25 227

ESTIMATED QUANTITIESCONCRETE PLACEMENT QUANTITIE

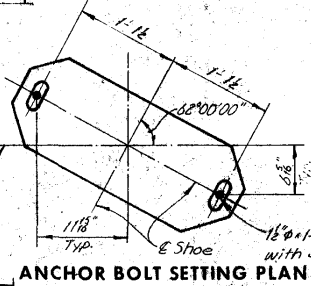
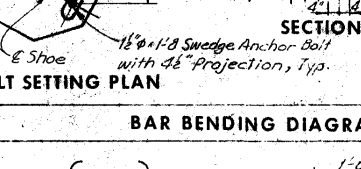
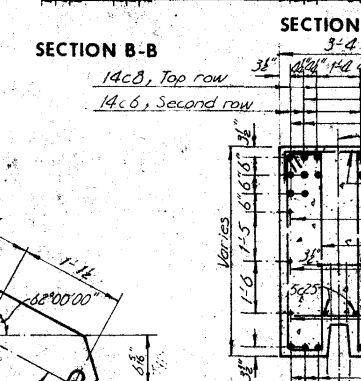
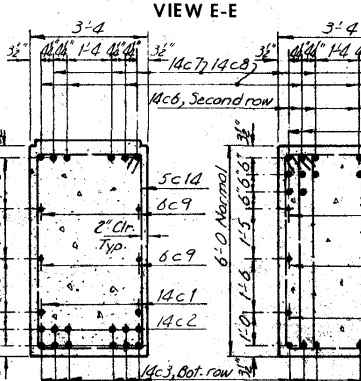
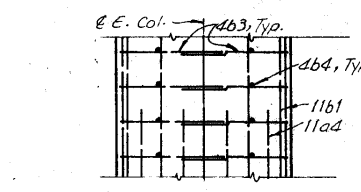
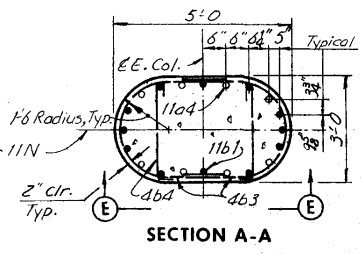
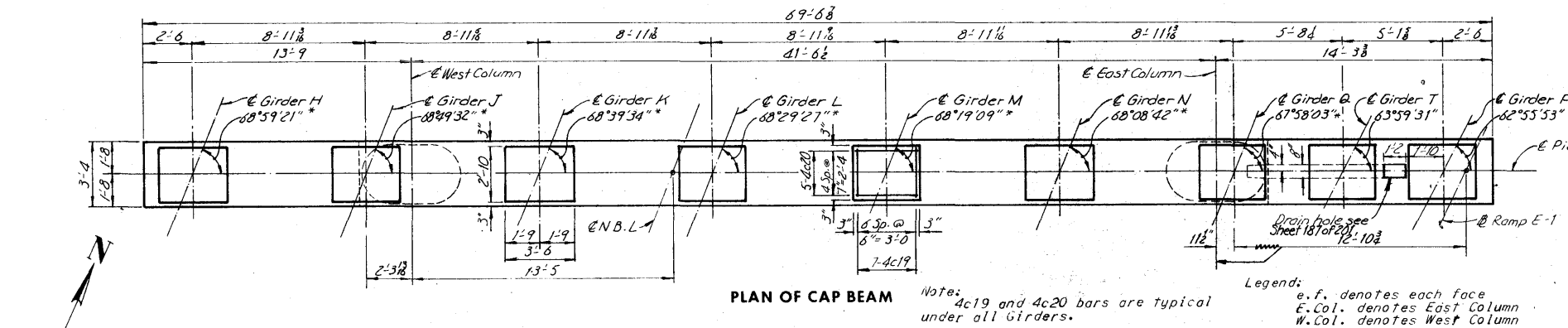
**CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE**

PIER 10N

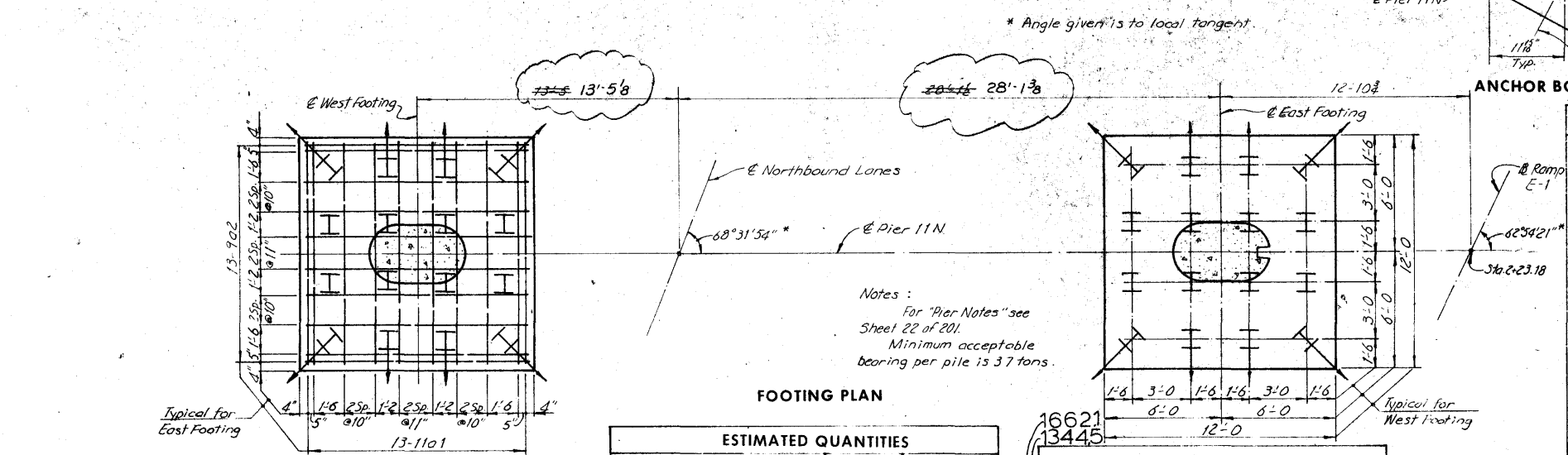
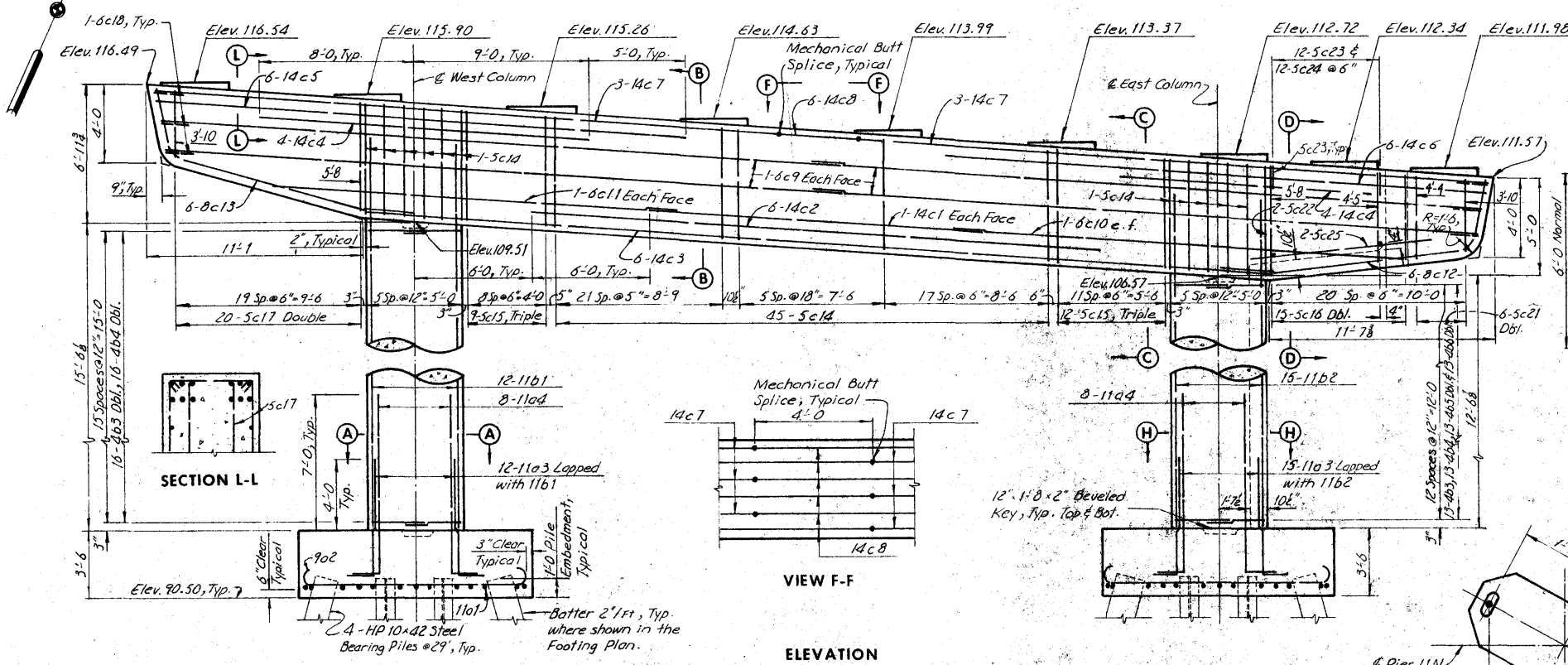
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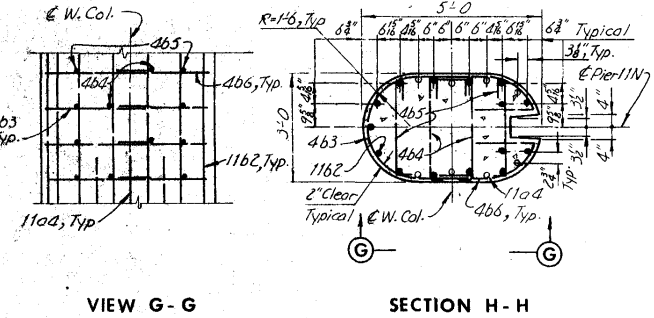
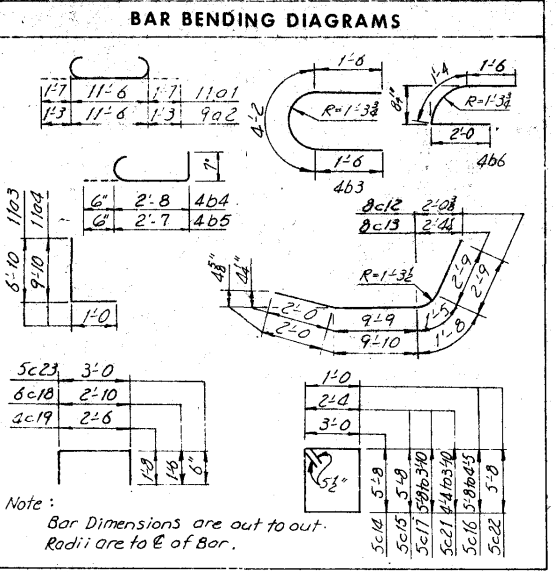
SHEET 55 OF 201



BILL OF REINFORCEMENT					
PIER 11N					
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
11a1	Footings, Horizontal	U	26	14'-8"	2,026
9a2	Footings, Horizontal	U	26	14'-0"	1,238
11a3	Footings, Vertical	L	27	7'-9"	1,112
11a4	Footings, Vertical	L	16	10'-9"	914
11b1	Column, Vertical		12	19'-6"	1,243
11b2	Column, Vertical		15	16'-7"	1,322
4b3	Column, Horizontal	U	45	7'-2"	215
4b4	Column, Horizontal	U	45	3'-8"	110
4b5	Column, Horizontal	U	26	3'-7"	62
4b6	Column, Horizontal	U	26	4'-9"	82
14c1	Cap beam, Horizontal		2	17'-7"	259
14c2	Cap beam, Horizontal		6	23'-7"	1,358
14c3	Cap beam, Horizontal		6	46'-10"	2,150
14c4	Cap beam, Horizontal		8	17'-0"	1,040
14c5	Cap beam, Horizontal		6	27'-7"	1,266
14c6	Cap beam, Horizontal		6	28'-1"	1,283
14c7	Cap beam, Horizontal		6	35'-8"	1,683
14c8	Cap beam, Horizontal		6	32'-8"	1,499
6c9	Cap beam, Horizontal		8	35'-6"	427
6c10	Cap beam, Horizontal		2	22'-1"	66
6c11	Cap beam, Horizontal		2	21'-6"	65
8c12	Cap beam, Horizontal		6	16'-3"	260
8c13	Cap beam, Horizontal		6	15'-11"	255
5c14	Cap beam, Vertical		56	18'-0"	1,051
5c15	Cap beam, Vertical		63	16'-8"	1,095
5c16	Cap beam, Vertical		2 Ser. 15	Varies	399
5c17	Cap beam, Vertical		2 Ser. 20	Varies	619
6c18	Cap beam, Horizontal		6	5'-8"	51
4c19	Cap beam, Vertical		63	5'-8"	238
4c20	Cap beam, Horizontal		45	3'-2"	95
5c21	Cap beam, Vertical		2 Ser. 6	Varies	169
5c22	Cap beam, Vertical		2	14'-0"	29
5c23	Cap beam, Vertical		12	3'-10"	48
5c24	Cap beam, Horizontal		12	3'-0"	38
5c25	Cap beam, Horizontal		2	9'-8"	20
Total					23,803



ESTIMATED QUANTITIES			CONCRETE PLACEMENT QUANTITIES		
ITEM	UNIT	QUANTITY	LOCATION	UNIT	QUANTITY
Structural Concrete**	Cu. Yds.	99.2	Footings, Class C	Cu. Yds.	37.3
Reinforcing Steel	Lbs.	23,803	Columns, Class D	Cu. Yds.	13.3
Excavation, Class 20	Cu. Yds.	104.2	Cap Beam, Class C	Cu. Yds.	48.6
HP 10x42 Steel	Lin. Ft.	826	Total	Cu. Yds.	99.2
Bearing Piles*	Drive	928			



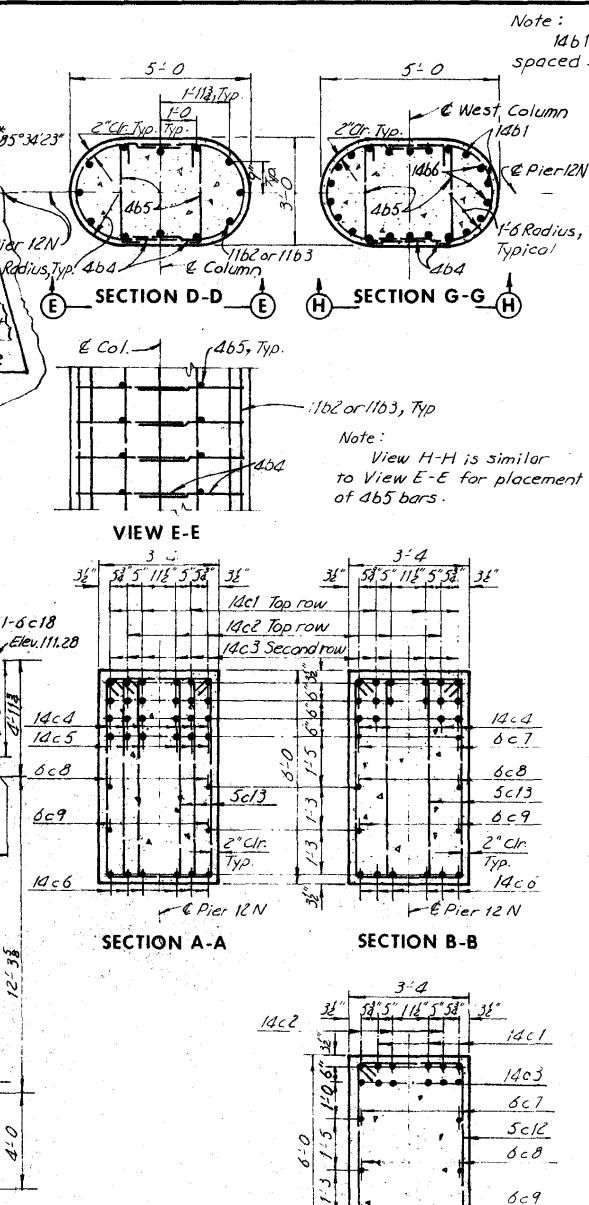
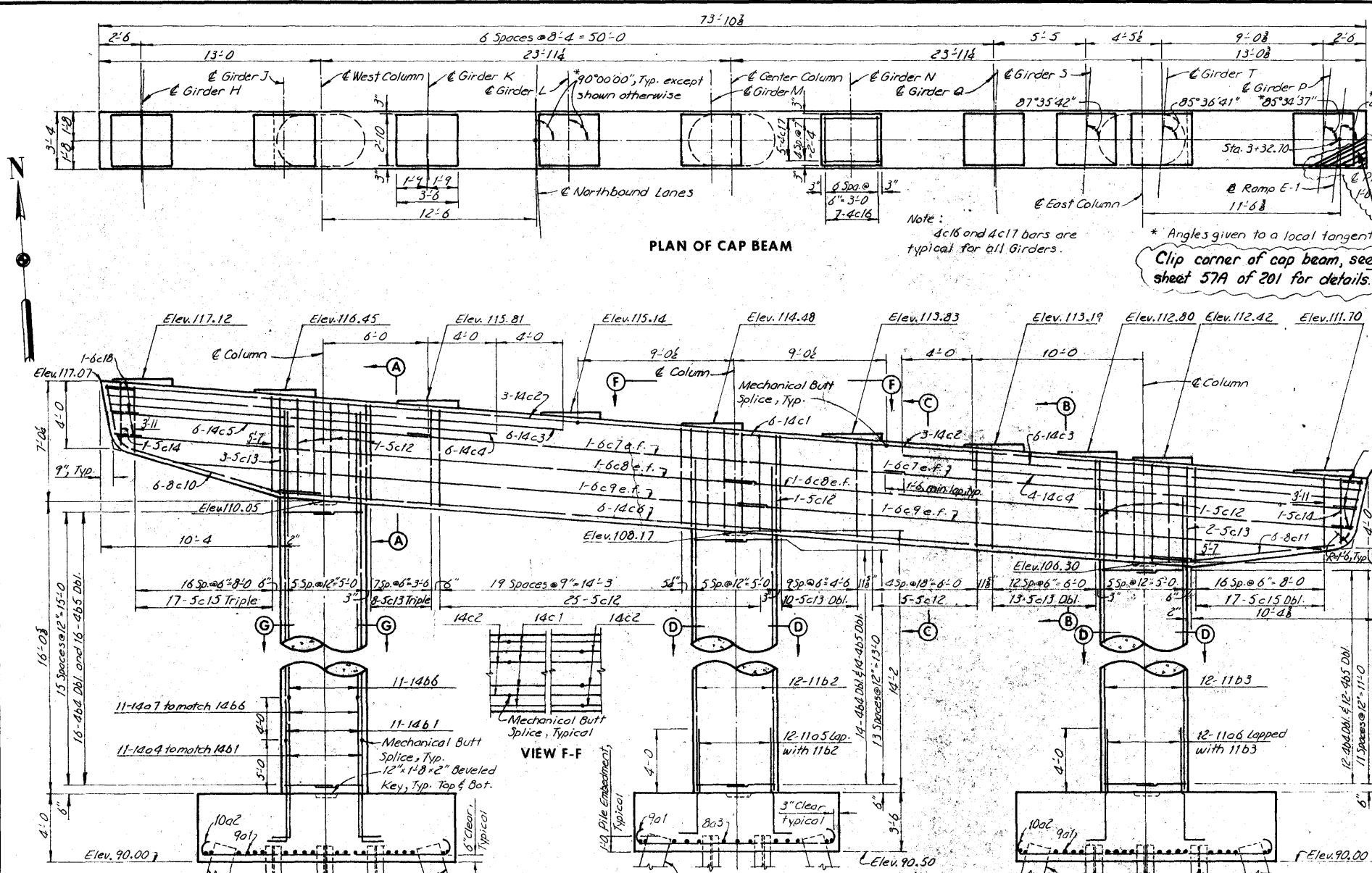
**CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE
PIER 11N**

STA. 322+81.95 & FREEWAY =
STA. 32+14.70 @ 1ST. AVE. W
PROJECT NO. I-380-6(68)263--01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

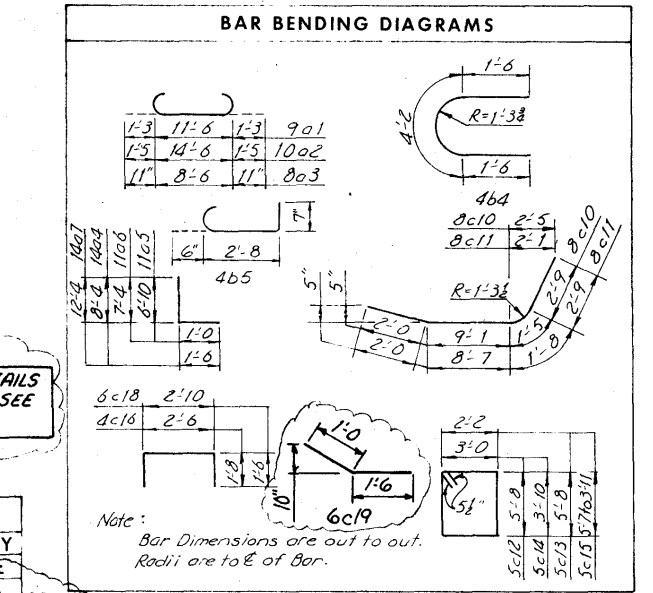
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

MADE *AW* DATE *06-03-78* CHECKED *JAH* DATE *7-8-78*

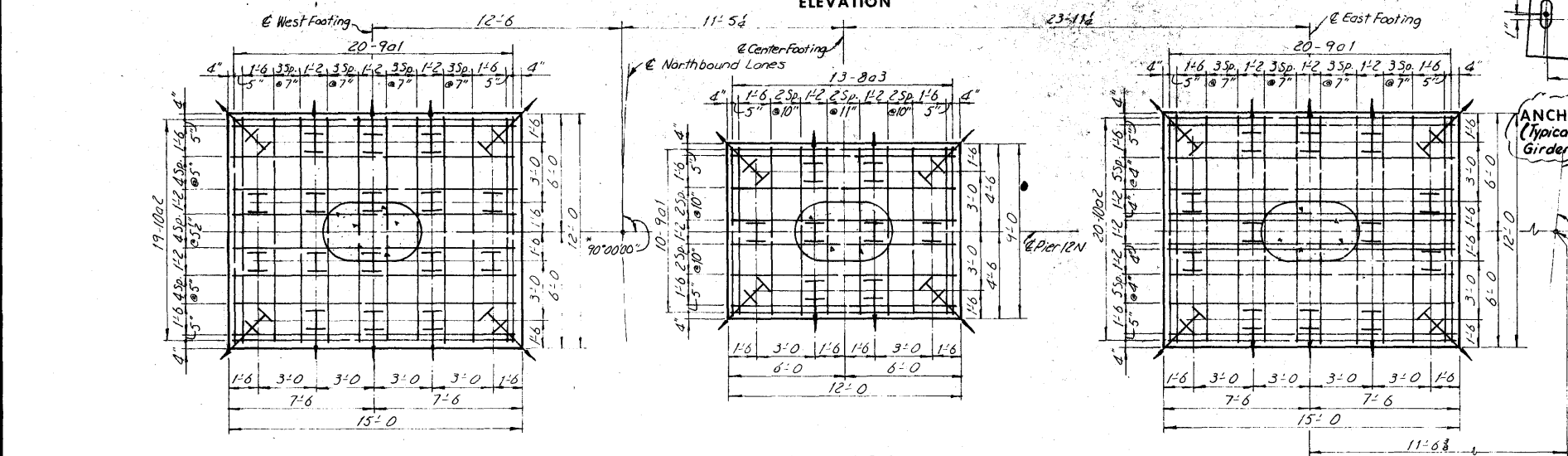
Revised 5-3-77: Corrected arrowhead from E Pad to E Column. Corrected footing ties.



BILL OF REINFORCEMENT					
PIER 12N					
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
9a1	Footings, Horizontal		50	14'-0"	2,380
10a2	Footings, Horizontal		39	17'-4"	2,909
8a3	Footings, Horizontal		13	10'-4"	359
14a4	Footings, Vertical		11	9'-9"	820
11a5	Footings, Vertical		12	7'-9"	494
11a6	Footings, Vertical		12	8'-3"	526
14a7	Footings, Vertical		11	13'-9"	1,157
14b1	Columns, Vertical		11	16'-1"	1,353
11b2	Columns, Vertical		12	18'-2"	1,158
11b3	Columns, Vertical		12	16'-4"	1,041
4b4	Columns, Horizontal		84	7'-2"	402
4b5	Columns, Horizontal		84	3'-8"	206
14b6	Columns, Vertical		11	12'-1"	1,017
14c1	Cap Beam, Horizontal		6	45'-10"	2,104
14c2	Cap Beam, Horizontal		6	27'-9"	1,274
14c3	Cap Beam, Horizontal		12	26'-9"	2,456
14c4	Cap Beam, Horizontal		10	22'-8"	1,734
14c5	Cap Beam, Horizontal		6	18'-7"	853
14c6	Cap Beam, Horizontal		6	53'-2"	2,440
6c7	Cap Beam, Horizontal		4	23'-1"	169
6c8	Cap Beam, Horizontal		4	37'-0"	222
6c9	Cap Beam, Horizontal		4	34'-3"	206
8c10	Cap Beam, Horizontal		6	15'-3"	244
8c11	Cap Beam, Horizontal		6	15'-0"	240
5c12	Cap Beam, Vertical		41	18'-0"	770
5c13	Cap Beam, Vertical		75	16'-4"	1,278
5c14	Cap Beam, Vertical		2	14'-4"	30
5c15	Cap Beam, Vertical		5 Ser. 17	Varies	1,285
4c16	Cap Beam, Vertical		70	5'-8"	265
4c17	Cap Beam, Horizontal		50	3'-2"	106
6c18	Cap Beam, Horizontal		6	5'-8"	51
6c19	Cap Beam, Horizontal		1	2'-6"	4
Total					29,553



Legend:
e.f. denotes each face.



ANCHOR BOLT SETTING PLAN
(Typical for all girders except Girder P, see sheet 57A of 201 for details)

FOR MODIFICATION DETAILS OF EAST CANTILEVER SEE SHEET 57A OF 201.

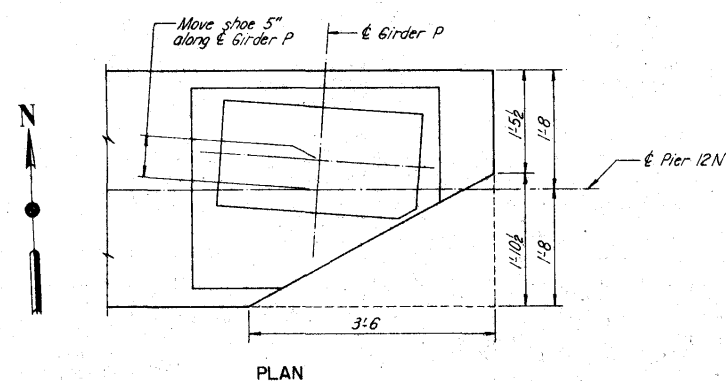
ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Structural Concrete**	Cu. Yds.	140.0
Reinforcing Steel	Lbs.	29,553
Excavation, Class 20	Cu. Yds.	168.0
HP 10x42 Steel	Lin. Ft.	1,300
Bearing Pile, 4 Drive	Lin. Ft.	1,300
* 35 @ 27', 12 @ 28' See Piling Log sheet 2037		

CONCRETE PLACEMENT QUANTITIES		
LOCATION	UNIT	QUANTITY
Footings	Cu. Yds.	6.3
Columns, Cl. C	Cu. Yds.	20.6
Cap Beam, Cl. C	Cu. Yds.	52.1
Total	Cu. Yds.	140.0

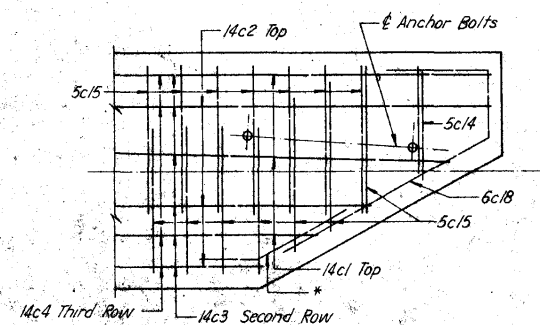
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
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KANSAS CITY

CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE
PIER 12N
STA. 322+81.95 @ FREEWAY =
STA. 32+14.70 @ 1ST. AVE. W
PROJECT NO. I-380-6(68)263--01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION
SHEET 57 OF 201

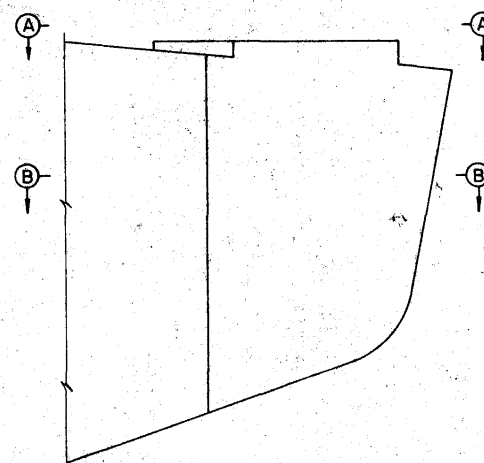
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	IOWA				



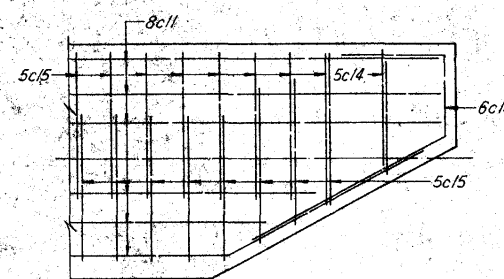
PLAN



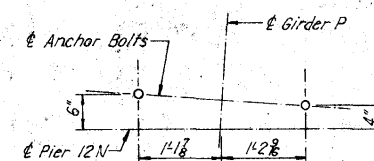
VIEW A-A



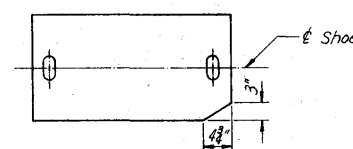
ELEVATION



SECTION B-B



ANCHOR BOLT SETTING PLAN
(Girder P only)



MASONRY PLATE CLIP DETAIL

- Comments Pertaining to Bars
- 14c1: Cut one to fit and move one to miss anchor bolt.
 - 14c2: Cut two to fit.
 - 14c3: Slide three to left as required and move one to miss anchor bolts.
 - 14c4: Slide two to the left.
 - 6c7: Field bend as required.
 - 6c8: Field bend as required.
 - 6c9: Field bend as required.
 - 8c11: Cut two as required and field bend outside one.
 - 5c14: Cut into half and telescope halves.
 - 5c15: Move bars in as required.
 - 4c16: Field bend as required.
 - 4c17: Field bend as required.
 - 6c18: Field bend as required.
- *: A new no. 6 bar field bent to fill void in top row. (6c19)

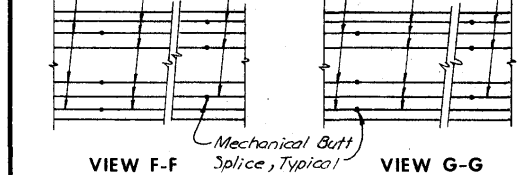
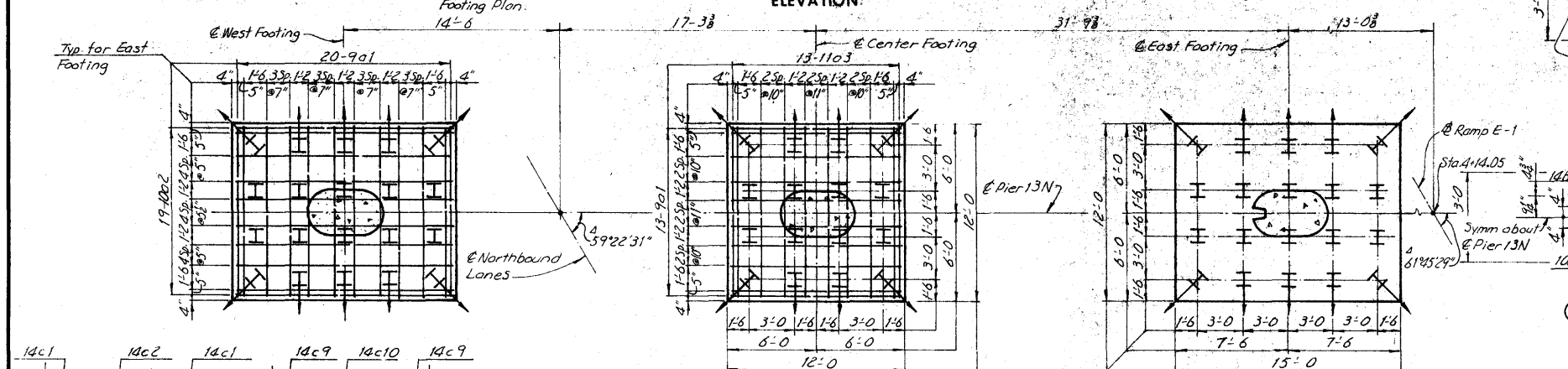
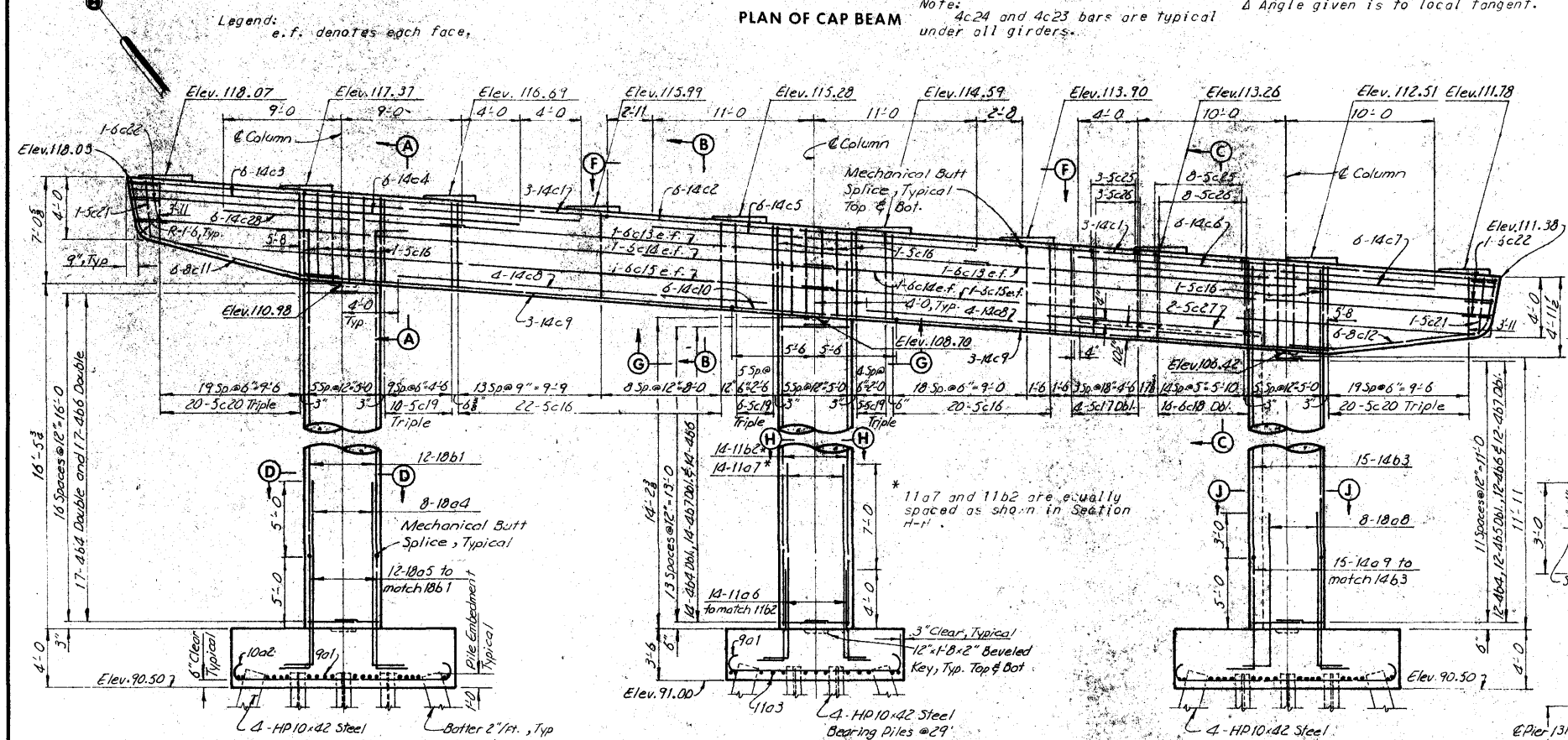
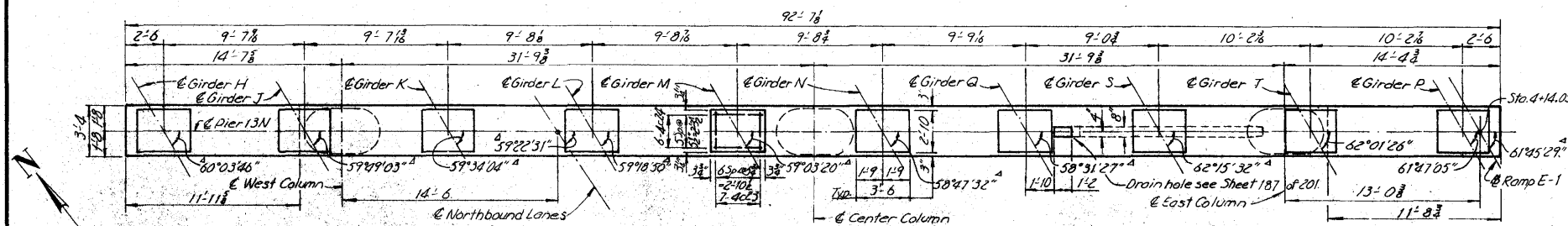
Reason for Revision:
Eliminated portion of capbeam cantilever which
would extend beyond back face of 1st. Ave. West Curb.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
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KANSAS CITY

MADE BY DATE 9-14-77 CHECKED LJR DATE 9-14-77

Revised: 9-23-77; This sheet added.

CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE
PIER 12N
EAST CANTILEVER MODIFICATION
STA. 322+81.95 @ FREEWAY =
STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. I-380-6(68)263--01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION



HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

MADE QWT DATE 06-12-74 CHECKED JAH DATE 7-9-74

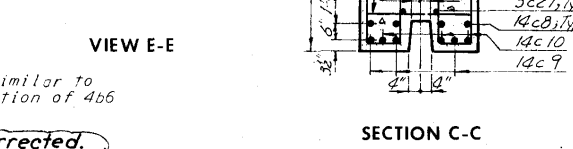
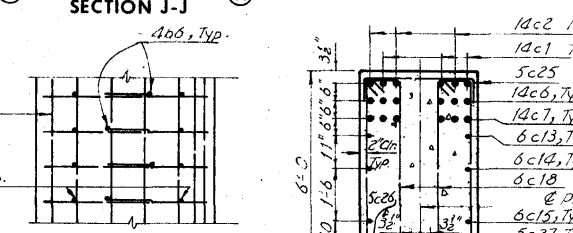
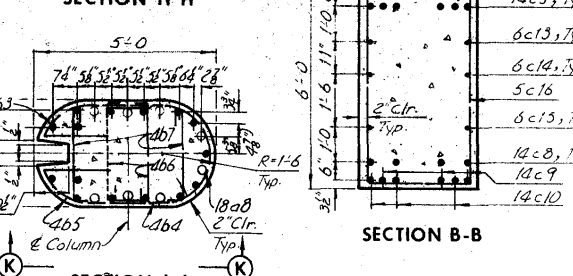
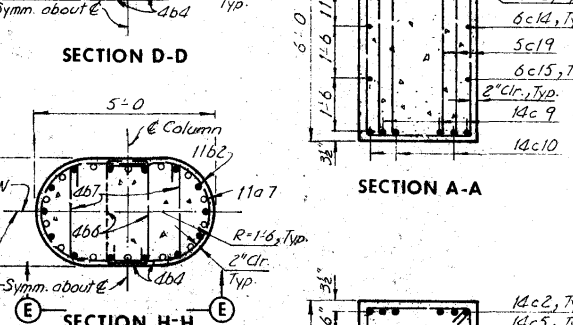
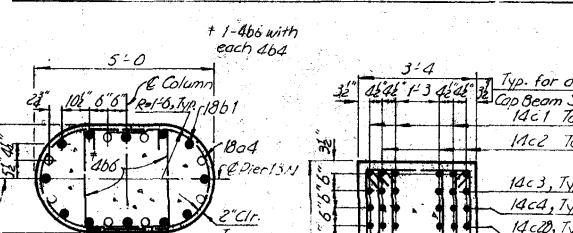
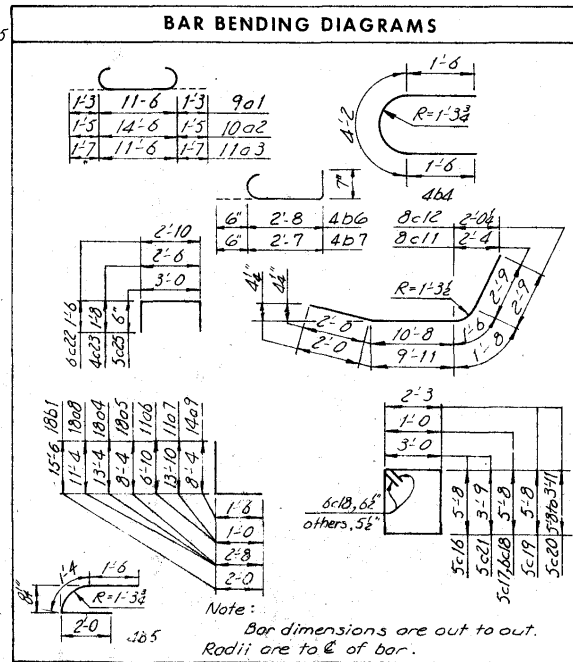
ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Structural Concrete (C10)	Cu. Yds.	158.0
Reinforcing Steel	Lbs.	42,770
Excavation, Class 20	Cu. Yds.	164.3
HP 10x42 Steel	Lin. Ft.	7,624
Bearing Piles	Drive	1,624

CONCRETE PLACEMENT QUANTITIES		
LOCATION	UNIT	QUANTITY
Footings, Class C	Cu. Yds.	72.0
Columns, Class C	Cu. Yds.	20.4
Cap Beam, Class C	Cu. Yds.	65.6
Total	Cu. Yds.	158.0

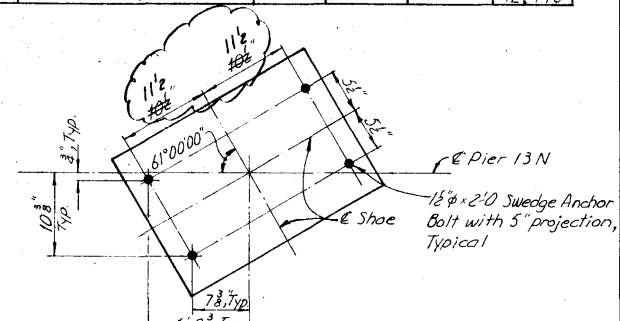
56 @ 29' see Piling Log Sheet 203J

3139.0
3015.8

Revised 3-11-77: Anchor bolt spacing dimension corrected.



BILL OF REINFORCEMENT					
PIER 13 N					
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
9a1	Footings, Horizontal		53	14'-0"	2,523
10a2	Footings, Horizontal		38	17'-4"	2,834
11a3	Footings, Horizontal		13	14'-8"	1,013
18a4	Footings, Vertical		8	15'-11"	1,732
18a5	Footings, Vertical		12	10'-11"	1,782
11a6	Footings, Vertical		14	7'-9"	576
11a7	Footings, Vertical		14	14'-9"	1,097
18a8	Footings, Vertical		8	13'-11"	1,514
14a9	Footings, Vertical		15	9'-9"	1,119
18a1	Column, Vertical		12	17'-5"	2,842
11a2	Column, Vertical		14	18'-3"	1,357
14a3	Column, Vertical		15	11'-11"	1,367
4a4	Column, Horizontal		73	7'-2"	354
4a5	Column, Horizontal		4	4'-9"	76
4a6	Column, Horizontal		60	3'-8"	147
4a7	Column, Horizontal		52	3'-7"	124
14c1	Cap Beam, Horizontal		6	32'-4"	1,484
14c2	Cap Beam, Horizontal		6	60'-0"	2,794
14c3	Cap Beam, Horizontal		6	31'-5"	1,442
14c4	Cap Beam, Horizontal		6	27'-4"	1,255
14c5	Cap Beam, Horizontal		6	22'-0"	1,010
14c6	Cap Beam, Horizontal		6	23'-2"	1,293
14c7	Cap Beam, Horizontal		6	20'-0"	918
14c8	Cap Beam, Horizontal		8	23'-10"	1,459
14c9	Cap Beam, Horizontal		6	28'-11"	1,327
14c10	Cap Beam, Horizontal		6	39'-11"	1,832
8c11	Cap Beam, Horizontal		6	16'-11"	271
8c12	Cap Beam, Horizontal		6	16'-4"	262
6c13	Cap Beam, Horizontal		4	35'-10"	215
6c14	Cap Beam, Horizontal		4	45'-6"	279
6c15	Cap Beam, Horizontal		4	44'-6"	267
5c16	Cap Beam, Vertical		59	18'-0"	1,108
5c17	Cap Beam, Vertical		8	14'-0"	117
6c18	Cap Beam, Vertical		32	14'-2"	691
5c19	Cap Beam, Vertical		63	16'-6"	1,084
5c20	Cap Beam, Vertical		65	Varies	1,846
5c21	Cap Beam, Vertical		2	14'-2"	30
6c22	Cap Beam, Horizontal		6	5'-8"	51
4c23	Cap Beam, Vertical		70	5'-8"	265
4c24	Cap Beam, Horizontal		60	3'-2"	127
5c25	Cap Beam, Vertical		11	3'-10"	44
5c26	Cap Beam, Horizontal		11	3'-0"	34
5c27	Cap Beam, Horizontal		2	15'-3"	32
14c28	Cap Beam, Horizontal		6	18'-0"	826
Total					42,770

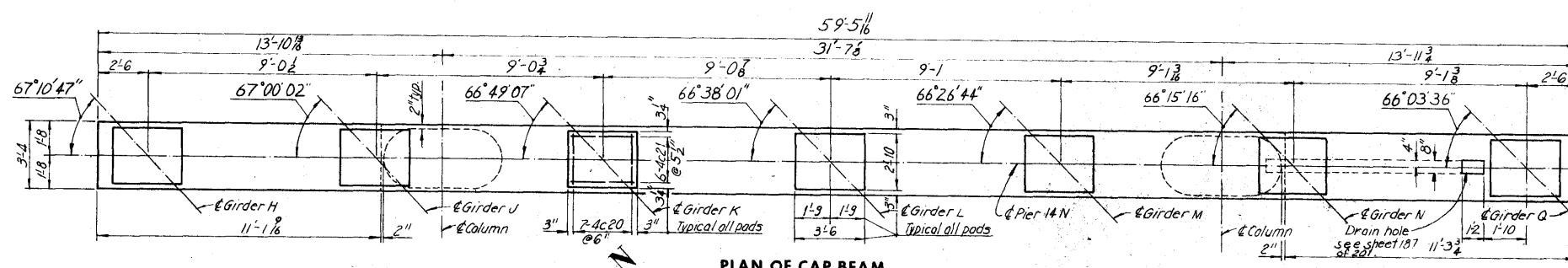


ANCHOR BOLT SETTING PLAN
CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE
PIER 13 N

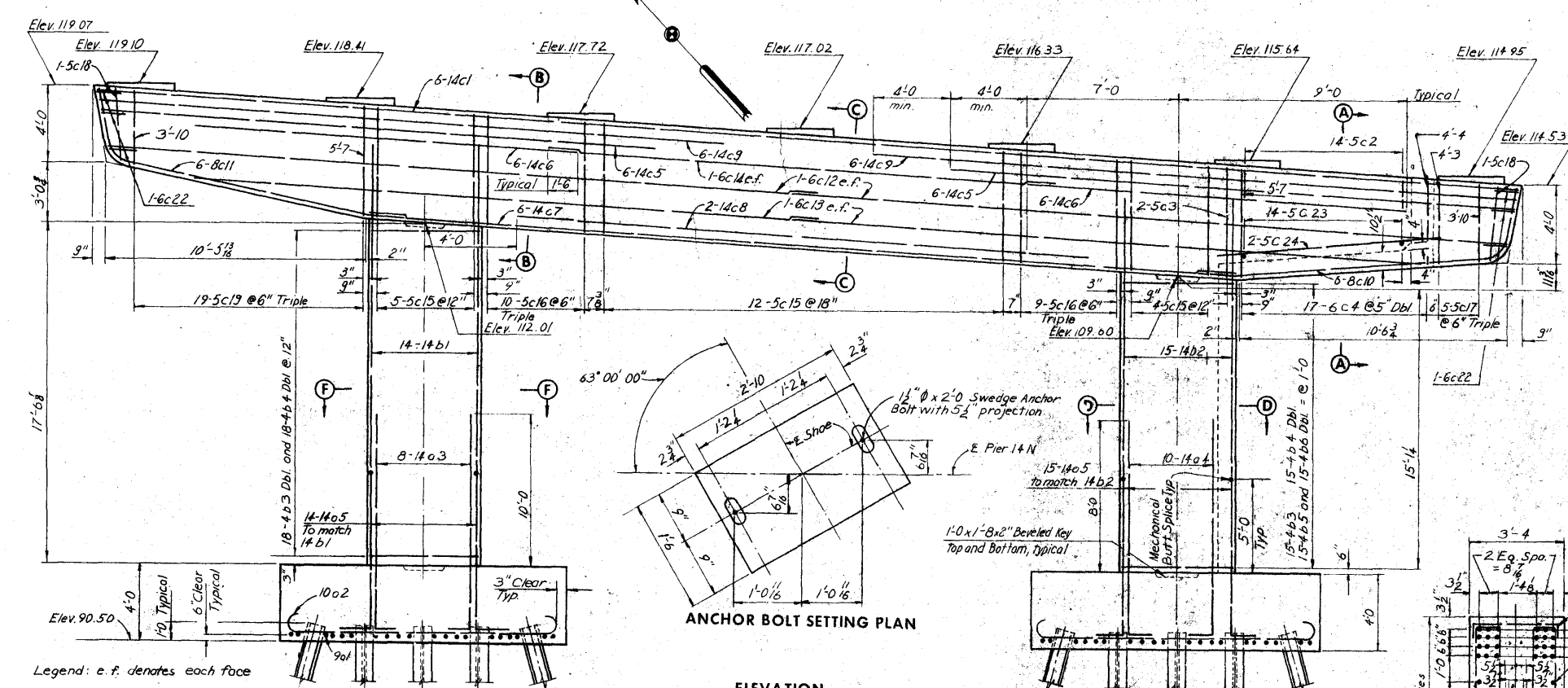
STA. 322+81.95 @ FREEWAY =
STA. 32+14.70 @ 1ST. AVE. W
PROJECT NO. I-380-6(68)263--01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

DESIGN NO. 1276 LINN COUNTY FILE 23191 SHEET 60 OF 203-0

SHEET 58 OF 201

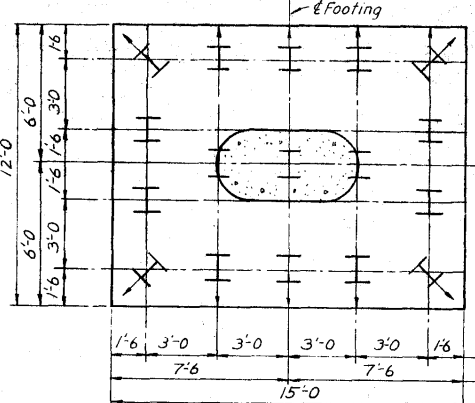


PLAN OF CAP BEAM

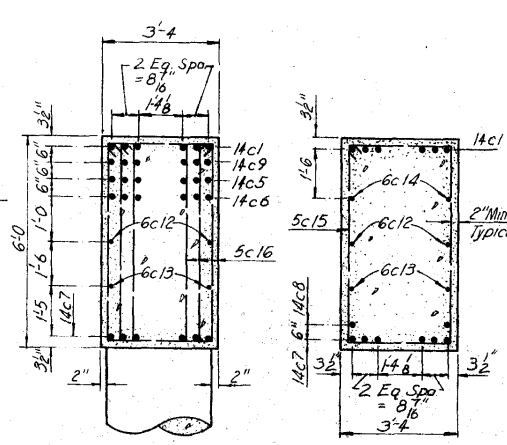


ELEVATION

ANCHOR BOLT SETTING PLAN

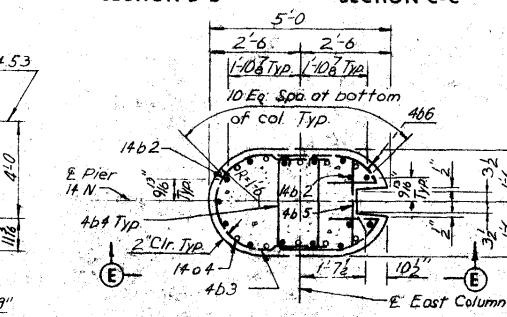


FOOTING PLAN

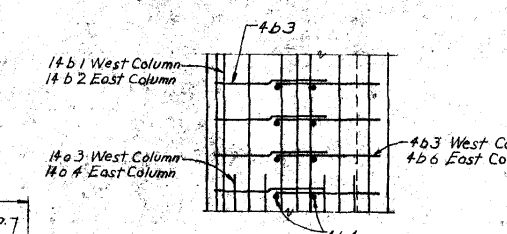


SECTION B-B

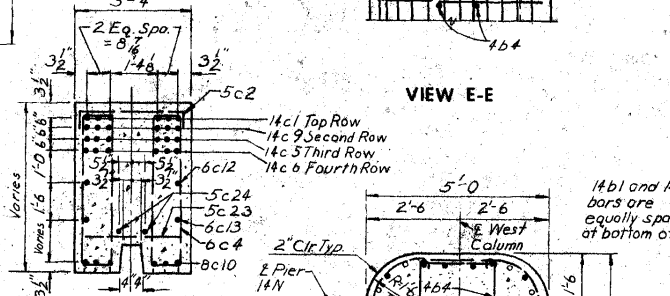
SECTION C-C



SECTION D-D



VIEW E-E



SECTION A-A

SECTION F-F

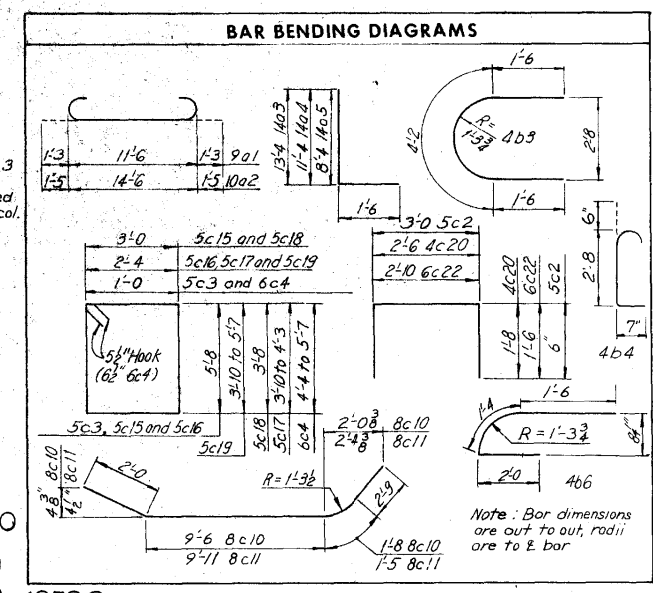
Note: View G-G is similar to View E-E for placement of 4b4.

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Structural concrete (C/C)	Cu.Yds.	109.8
Reinforcing Steel	Lb.	28,712
Excavation, Class 20	Cu.Yds.	113.0
*HP10x42 Steel	Furnish	418
driving Piles	Drive Lin.ft.	978

*34 Piles @ 27' See Piling Log Sheet 203. K

CONCRETE PLACEMENT QUANTITIES		
LOCATION	UNIT	QUANTITY
Footings, Class C	Cu.Yds.	53.3
Columns, Class C	Cu.Yds.	15.5
Cap Beam, Class C	Cu.Yds.	41.0
Total	Cu.Yds.	109.8

BILL OF REINFORCEMENT					
PIER 14N					
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
9a1	Footing Horizontal		40	14'-0"	1904
10a2	Footing Horizontal		40	17'-4"	2983
14a3	Footing Vertical		8	14'-9"	903
14a4	Footing Vertical		10	12'-9"	975
14a5	Footing Vertical		23	9'-9"	2163
14b1	Column Vertical		14	17'-6"	1874
14b2	Column Vertical		15	15'-1"	1731
4b3	Column Horizontal		51	7'-2"	244
4b4	Column Horizontal		66	3'-8"	182
4b5	Column Horizontal		15	2'-6"	25
4b6	Column Horizontal		30	4'-9"	95
14c1	Cap beam Horizontal		6	59'-1"	2712
5c2	Cap beam Vertical		14	3'-10"	56
5c3	Cap beam Vertical		2	14'-0"	29
6c4	Cap beam Vertical	2Ser17	Varies		651
14c5	Cap beam Horizontal		12	24'-7"	2257
14c6	Cap beam Horizontal		12	16'-0"	1469
14c7	Cap beam Horizontal		6	37'-0"	1693
14c8	Cap beam Horizontal		2	23'-8"	362
14c9	Cap beam Horizontal		12	29'-6"	2616
8c10	Cap beam Horizontal		6	15'-11"	255
8c11	Cap beam Horizontal		6	16'-1"	258
6c12	Cap beam Horizontal		4	23'-9"	179
6c13	Cap beam Horizontal		4	28'-11"	162
6c14	Cap beam Horizontal		2	20'-8"	62
5c15	Cap beam Vertical		21	13'-0"	394
5c16	Cap beam Vertical		57	5'-8"	931
5c17	Cap beam Vertical	3Ser5	Varies		210
5c18	Cap beam Vertical		2	14'-0"	29
5c19	Cap beam Vertical	3Ser19	Varies		877
4c20	Cap beam Vertical		45	5'-8"	185
4c21	Cap beam Horizontal		42	3'-2"	89
6c22	Cap beam Horizontal		5	5'-8"	51
5c23	Cap beam Horizontal		14	3'-0"	44
5c24	Cap beam Horizontal		2	8'-4"	17
Total					28,712



**CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE
PIER 14N**

STA. 322+81.95 @ FREEWAY =
STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. I-380-6(68)263--01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

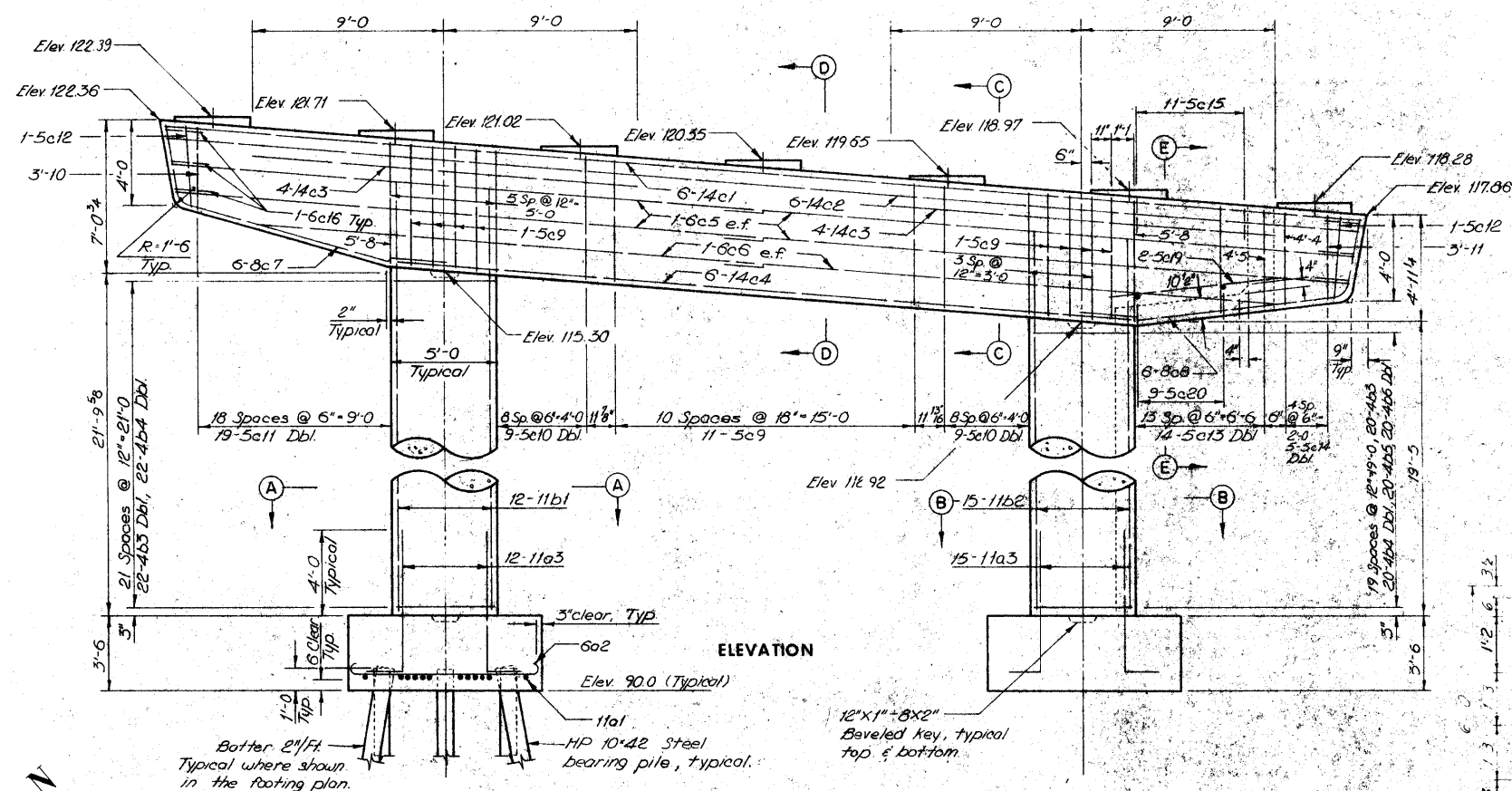
MADE RLA DATE 6-19-74 CHECKED AW DATE 7-10-74

Notes:
For "Pier Notes" see Sheet 22 of 201.
Minimum acceptable bearing per pile is 37 tons.

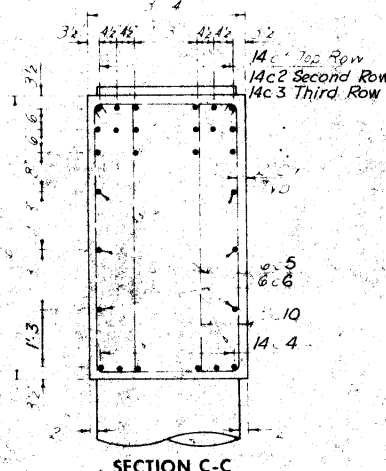


VIEW F-F

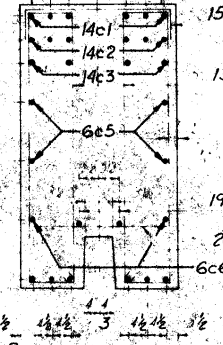
VIEW F-F



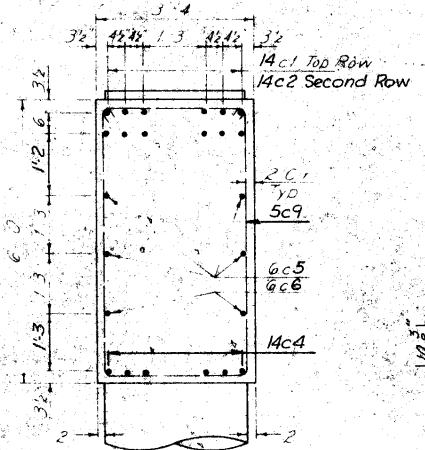
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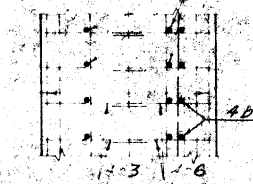
SECTION C-C



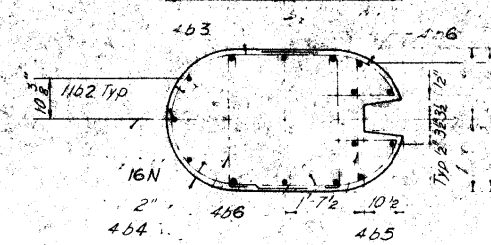
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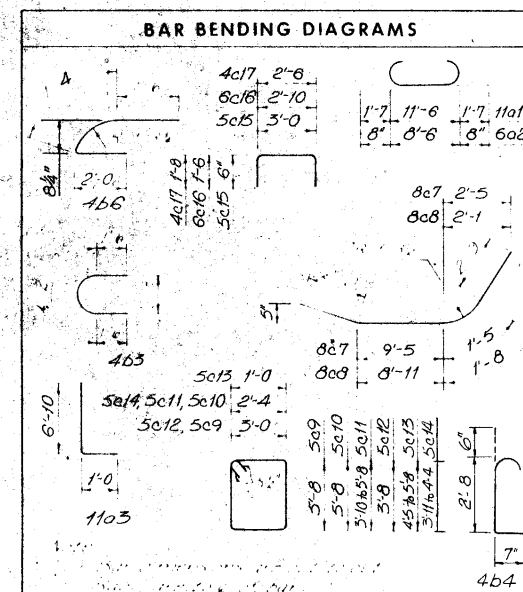
SECTION D-D



VIEW G-G



SECTION B-B



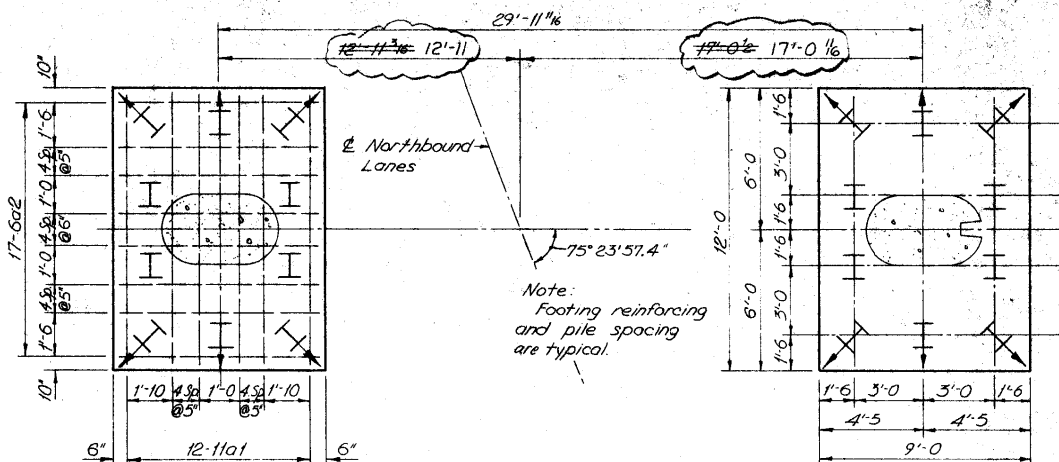
BAR BENDING DIAGRAMS

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

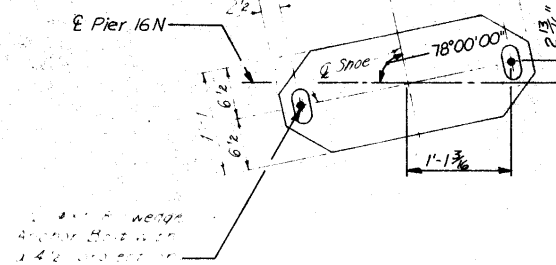
Notes: For "Pier Notes" see Sheet 22 of 201.
Minimum acceptable bearing per pile
is 49 tons.

Revised 5-3-77: Corrected footing tie dimensions

FOOTING PLAN



FOOTING PLAN



ANCHOR BOLT SETTING PLAN

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Structural Concrete (C/C)	Cu. Yds.	85.7
Reinforcing Steel	Lbs.	19,039
Excavation, Class 20	Cu. Yds.	7973.3
*HP 10x42 Steel	Ltn. Ft.	740.0
Bearing Piles Drive	Ltn. Ft.	740.0

CONCRETE PLACEMENT QUANTITIES		
LOCATION	UNIT	QUANTITY
Footings, Class C	Cu. Yds.	28.0
Columns, Class C	Cu. Yds.	19.6
Cap. Beam, Class C	Cu. Yds.	39.1
<i>Total</i>	Cu. Yds.	86.7

* 20 Piles @ 37' see Piling Log sheet 203K

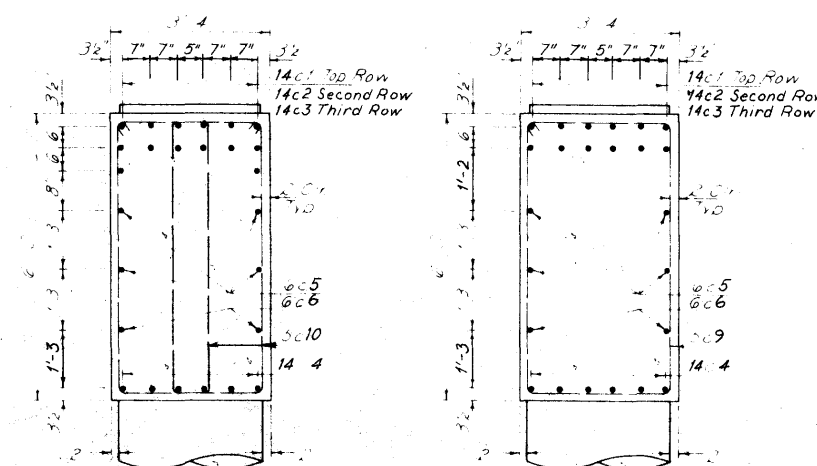
CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE

PIER 16N

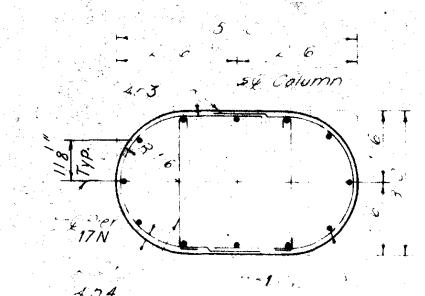
STA 322+81.95 @ FREEWAY=
STA 32+14.70 @ 1ST. AVE. W PROJECT NO. 1-380-6(68)263 01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

SHEET 61 OF 201

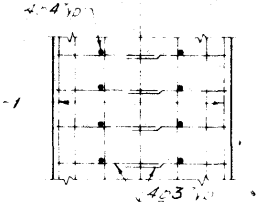
DESIGN NO. 1276 LINN COUNTY FILE 23191 SHEET 63 OF 203-C



SECTION C-C



SECTION A-A



VIEW D-D

BAR BENDING DIAGRAMS

Diagram 1: Bar 4b4, dimensions: 6'-0", 2'-8", 1'-0".

Diagram 2: Bar 4c14, 6c13, dimensions: 2'-6", 2'-10", 1'-8", 1'-0".

Diagram 3: Bar 4b3, dimensions: 6'-0", 1'-0".

Diagram 4: Bar 5c11, 5c10, 5c12, 5c9, dimensions: 1'-11", 3'-0", 1'-0".

Diagram 5: Bar 4b2, dimensions: 1'-0", 11a2.

Diagram 6: Bar 4c7, 8c8, dimensions: 2'-5", 2'-1", 1'-5", 1'-8".

Diagram 7: Bar 5c9, 5c10, 5c11, 5c12, dimensions: 5'-8", 5'-8", 3'-9", 5'-8".

Diagram 8: Bar 4c7, 8c8, dimensions: 9'-1", 8'-7", 1'-5", 1'-8".

Diagram 9: Bar 4c14, 6c13, dimensions: 1'-8", 1'-0".

Diagram 10: Bar 4b3, dimensions: 6'-0", 1'-0".

Diagram 11: Bar 4c7, 8c8, dimensions: 2'-5", 2'-1", 1'-5", 1'-8".

Diagram 12: Bar 5c9, 5c10, 5c11, 5c12, dimensions: 5'-8", 5'-8", 3'-9", 5'-8".

Diagram 13: Bar 4c7, 8c8, dimensions: 9'-1", 8'-7", 1'-5", 1'-8".

Diagram 14: Bar 4c14, 6c13, dimensions: 1'-8", 1'-0".

ANCHOR BOLT SETTING PLAN

CONCRETE PLACEMENT QUANTITIES		
LOCATION	UNIT	QUANTITY
Footings, Class C	Cu. Yds.	21.0
Columns, Class C	Cu. Yds.	20.1
Can. Beam, Class C	Cu. Yds.	38.2
Total	Cu. Yds.	79.3

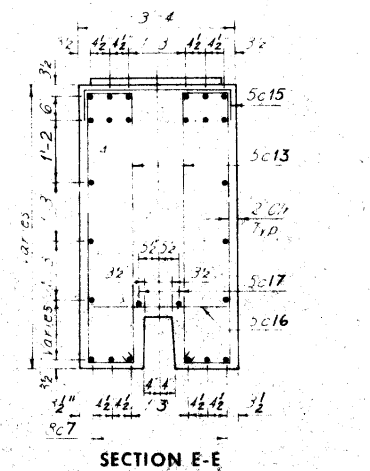
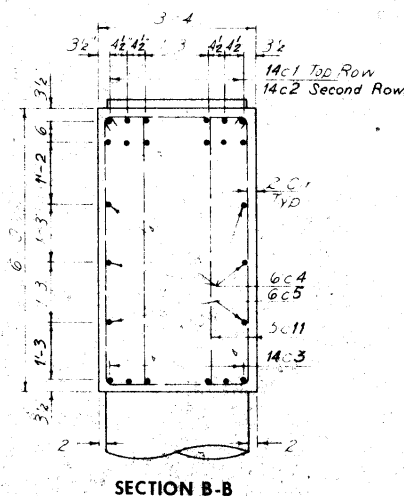
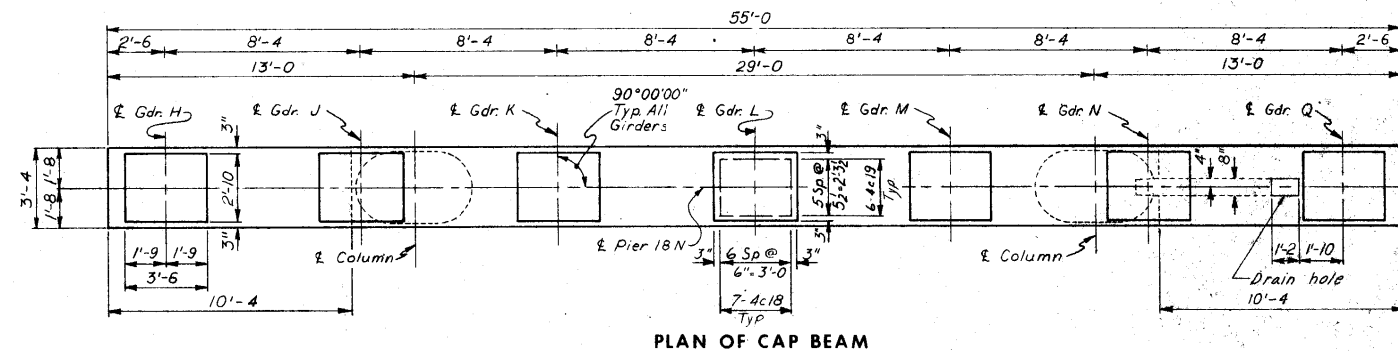
* 18 Piles @ 32' see Piling Log sheet 203K

**CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE**

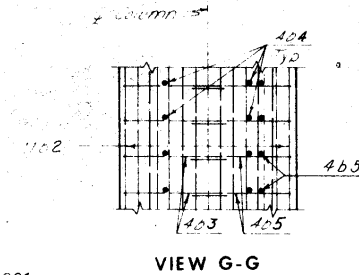
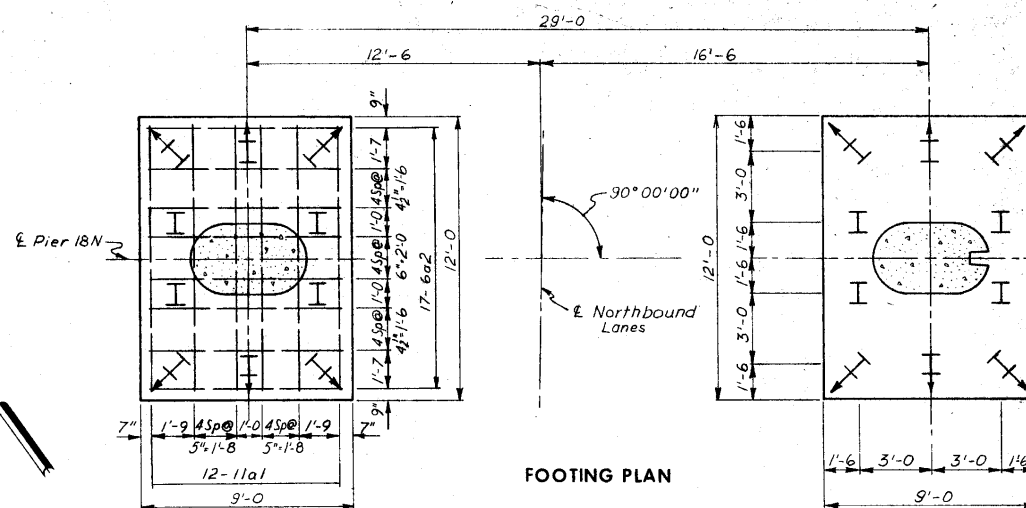
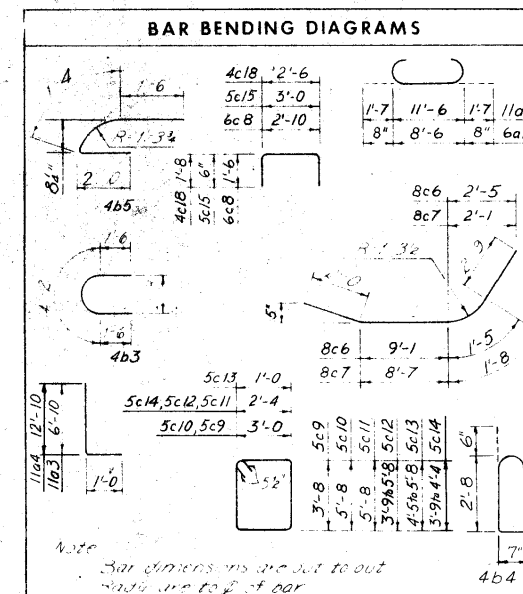
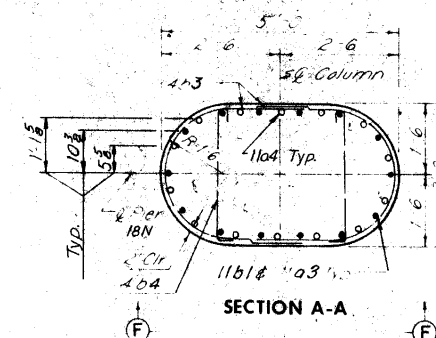
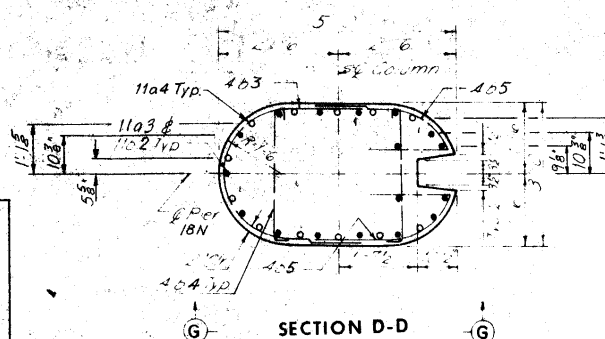
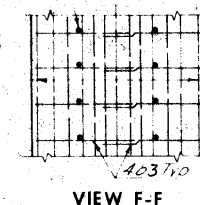
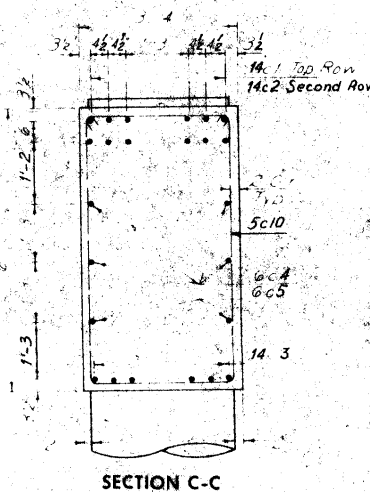
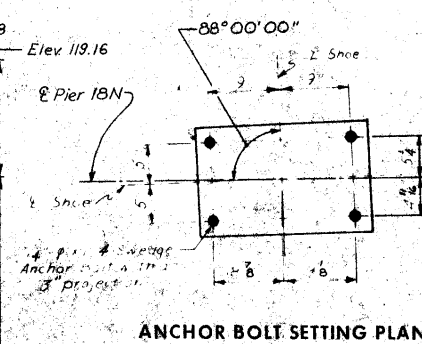
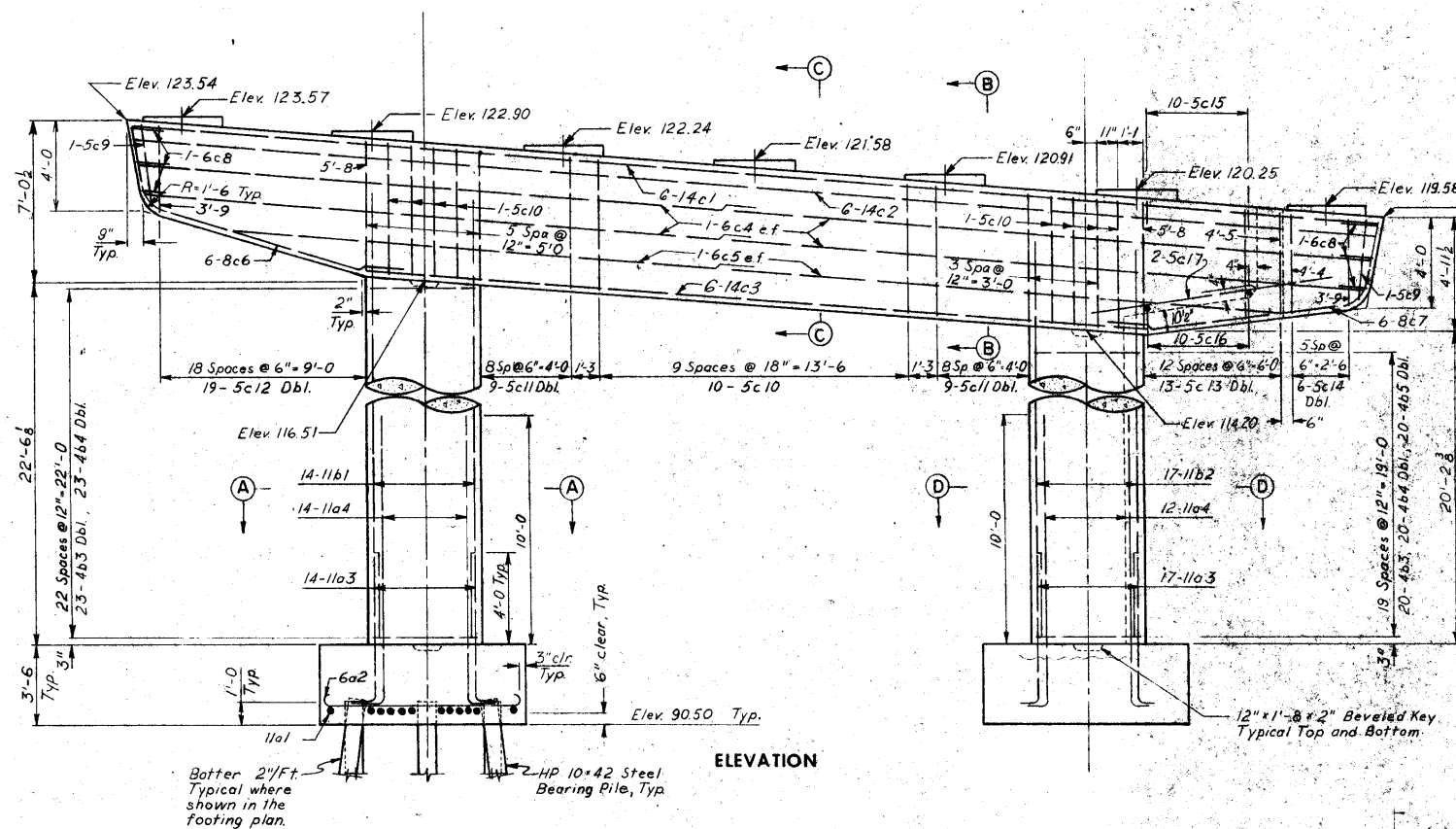
PIER 17N

LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

DESIGN NO. 1276 LINN COUNTY FILE 23191 SHEET 64 OF 203-0



BILL OF REINFORCEMENT					
PIER 18N					
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
11a1	Footings, Horizontal		24	14'-8	1870
6a2	Footings, Horizontal		34	9'-10	502
11a3	Footings, Vertical		31	7'-9	1278
11a4	Footings, Vertical		26	1'-9	1899
11b1	Column, Vertical		14	26'-6	1371
11b2	Column, Vertical		17	24'-2	2181
4b	Column, Horizontal		66	7'-2	316
4b4	Column, Horizontal		86	3'-8	211
4b5	Column, Horizontal		40	4'-9	127
14c1	Cap Beam, Horizontal		6	54'-6	2502
14c2	Cap Beam, Horizontal		6	54'-4	2494
14c3	Cap Beam, Horizontal		6	54'-1	1564
6c4	Cap Beam, Horizontal		8	27'-9	535
6c5	Cap Beam, Horizontal		4	24'-2	149
6c6	Cap Beam, Horizontal		6	15'-2	244
8c7	Cap Beam, Horizontal		6	15'-0	240
6c8	Cap Beam, Horizontal		6	5'-8	51
5c9	Cap Beam, Vertical		2	14'-0	29
5c10	Cap Beam, Vertical		18	18'-0	338
5c11	Cap Beam, Vertical		36	16'-8	626
5c12	Cap Beam, Vertical		2 Ser 13	Varies	585
5c13	Cap Beam, Vertical		2 Ser 13	Varies	246
5c14	Cap Beam, Vertical		2 Ser 6	Varies	168
5c15	Cap Beam, Horizontal		10	51'-10	40
5c16	Cap Beam, Horizontal		10	5'-0	51
5c17	Cap Beam, Horizontal		2	10'-0	21
4c18	Cap Beam, Horizontal		43	5'-8	185
4c19	Cap Beam, Horizontal		4	1'-2	89
Total					20,390



ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Structural Concrete (C.I.C)	Cu. Yds.	86.2
Reinforcing Steel	Lbs.	20,390
Excavation Class 20	Cu. Yds.	77.4
• 10' x 42" Steel	Lin. Ft.	500
Reinforcing Piling Drive	Lin. Ft.	500

CONCRETE PLACEMENT QUANTITIES		
LOCATION	UNIT	QUANTITY
<i>Footings, Class C</i>	<i>Cu. Yds.</i>	<i>38.0</i>
<i>Columns, Class C</i>	<i>Cu. Yds.</i>	<i>20.3</i>
<i>Co. Beam, Class C</i>	<i>Cu. Yds.</i>	<i>37.9</i>
<i>Total</i>	<i>Cu. Yds.</i>	<i>86.2</i>

477.9
411.5

**CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED-PLATE GIRDER BRIDGE**

PIER 18N

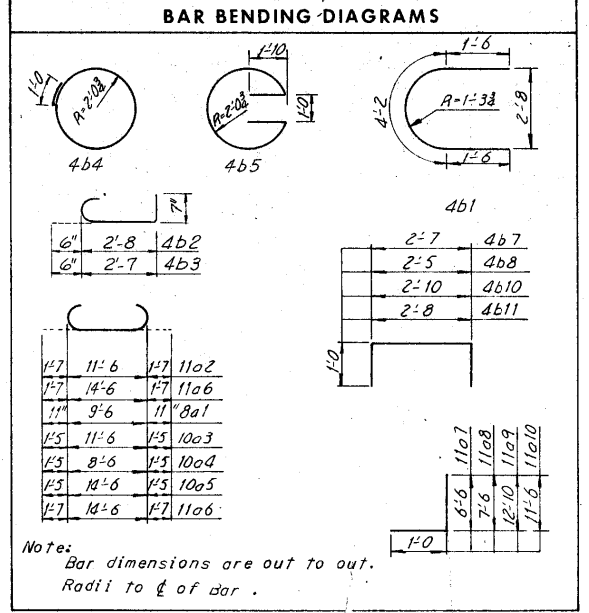
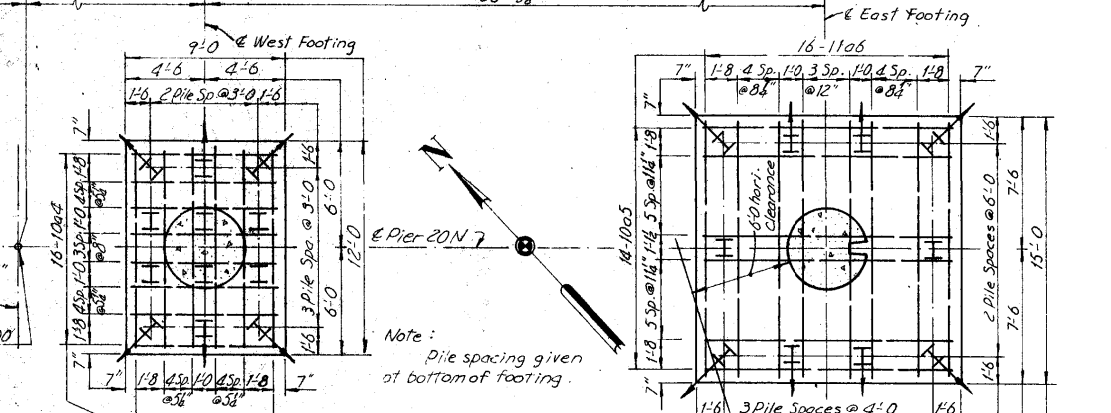
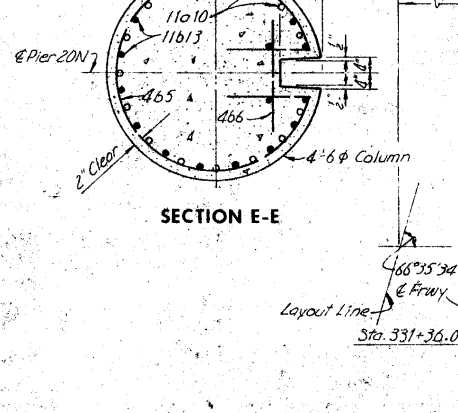
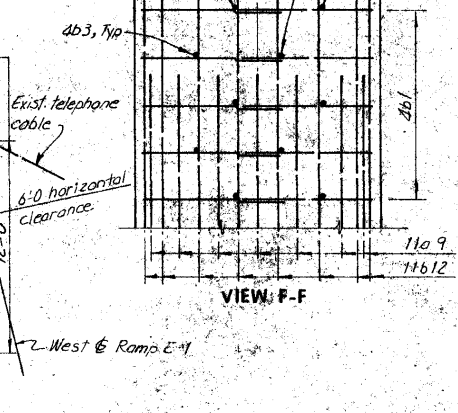
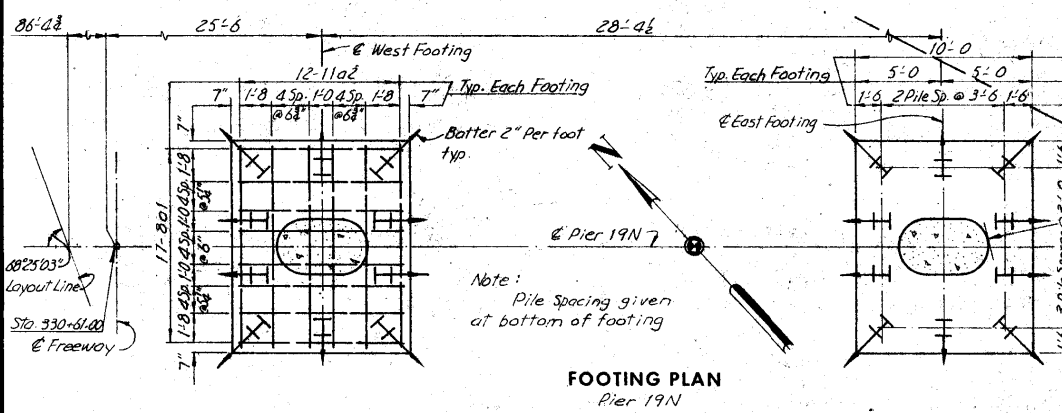
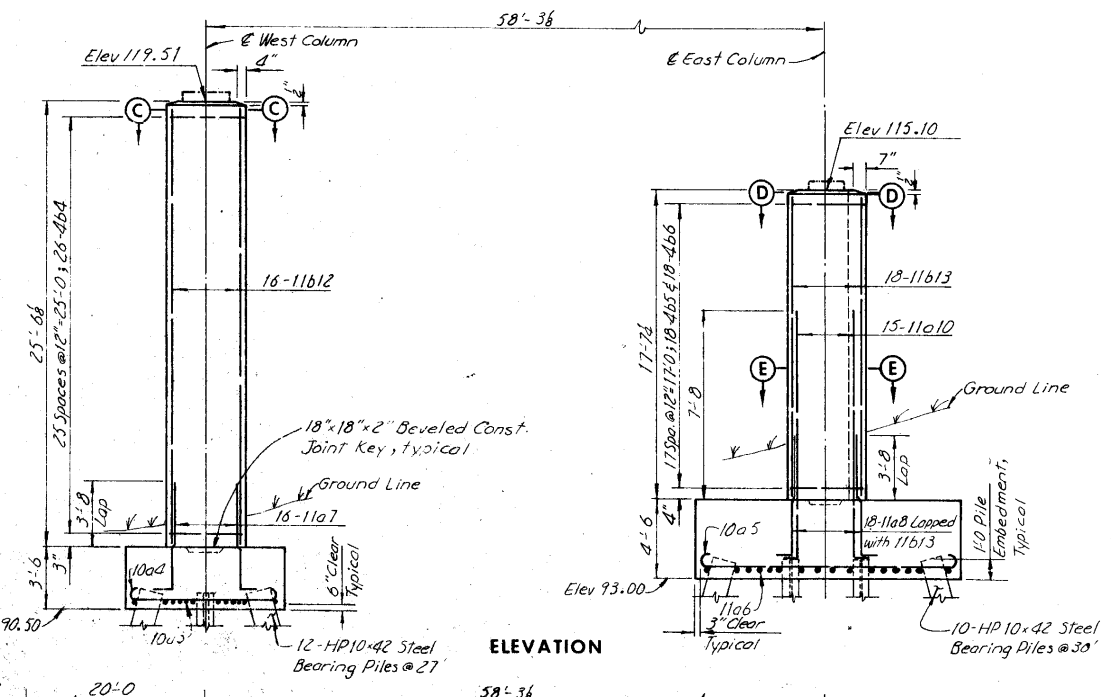
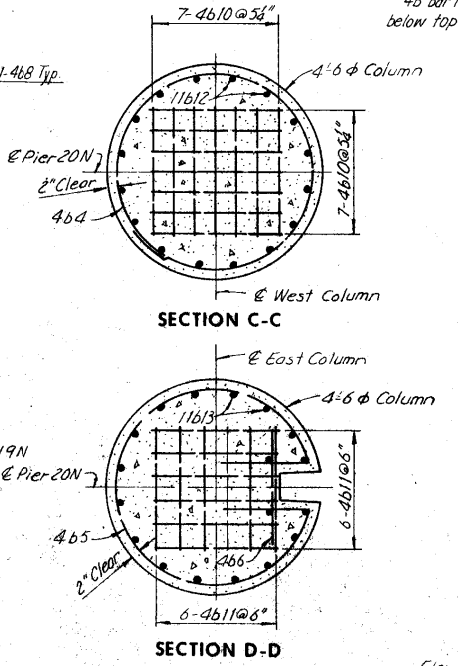
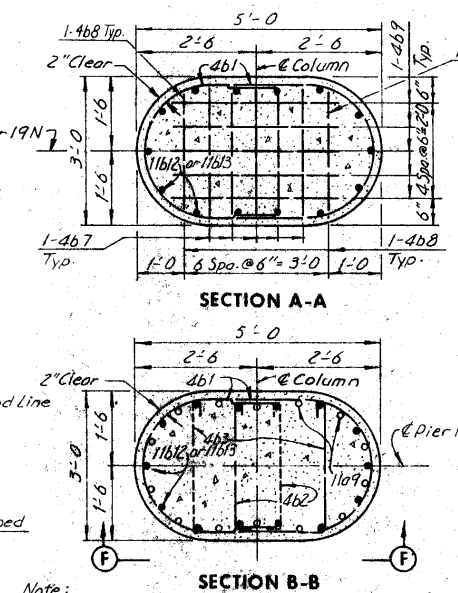
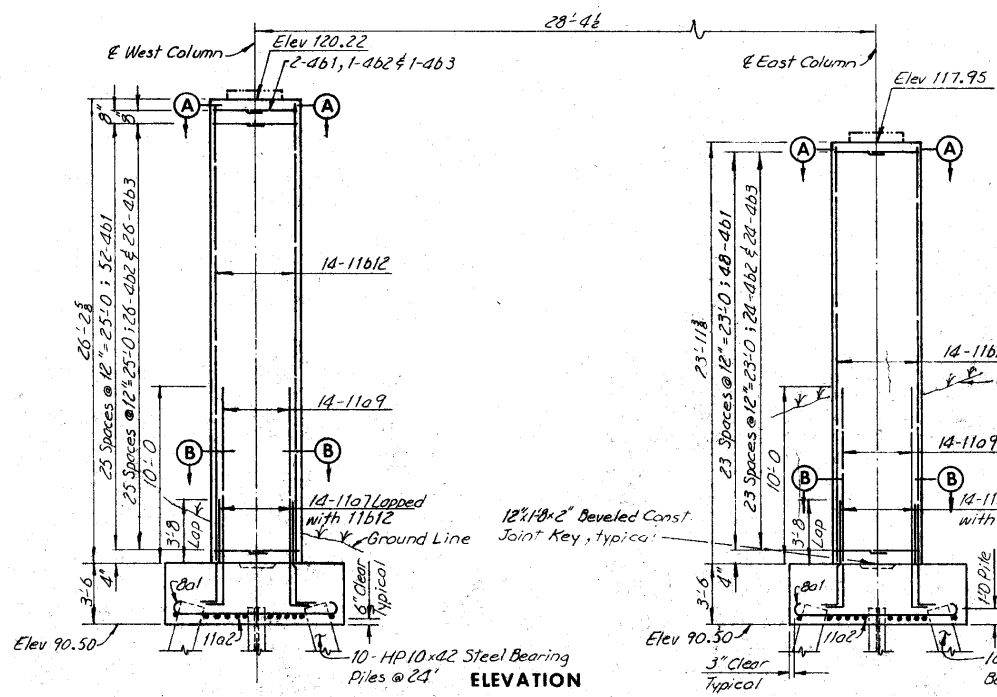
STA. 322+81.95 Q FREEWAY=
STA. 32+14.70 Q 1ST. AVE. W PROJECT NO. 1-380-6(68)263--01-57

LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

SHEET 63 OF 201

DESIGN NO. 1276 LINN COUNTY FILE 23191 SHEET 65 OF 203-

Note:
45 bar mats shall be placed 2" clear below top of column concrete.



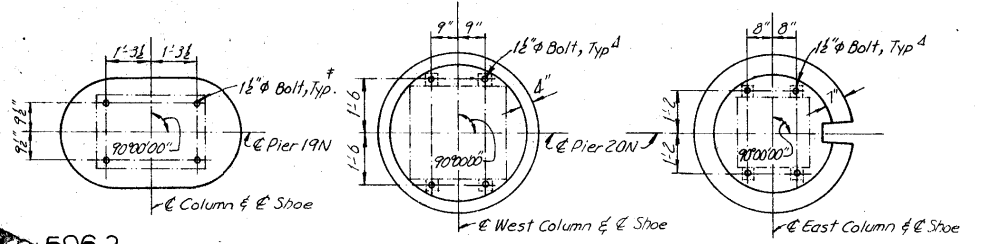
BILL OF REINFORCEMENT						
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT	
4b1	Footing, Horizontal		34	11'-4"	1,029	
11a2	Footing, Horizontal		24	14'-8"	1,870	
10a3	Footing, Horizontal		12	14'-4"	740	
10a4	Footing, Horizontal		16	11'-4"	780	
10a5	Footing, Horizontal		14	17'-4"	1,044	
11a6	Footing, Horizontal		16	17'-8"	1,502	
11a7	Footing, Vertical		28	7'-5"	1,103	
11a8	Footing, Vertical		18	7'-5"	630	
11a9	Footing, Vertical		18	8'-5"	805	
11a10	Footing, Vertical		15	12'-5"	990	
4b1	Column, Horizontal		102	7'-2"	488	
4b2	Column, Horizontal		51	3'-8"	125	
4b3	Column, Horizontal		51	3'-7"	122	
4b4	Column, Horizontal		26	14'-0"	243	
4b5	Column, Horizontal		18	15'-6"	186	
4b6	Column, Horizontal		18	3'-5"	41	
4b7	Column, Vertical		10	4'-5"	30	
4b8	Column, Vertical		4	4'-3"	11	
4b9	Column, Horizontal		10	3'-6"	23	
4b10	Column, Vertical		14	4'-8"	44	
4b11	Column, Vertical		12	4'-6"	36	
11b12	Column, Vertical		16	25'-3"	2,146	
11b13	Column, Vertical		14	23'-8"	1,658	
Total					10,535	10,845

CONCRETE PLACEMENT QUANTITIES			
LOCATION	UNIT	PIER 19N	PIER 20N
Footing Class C	Cu. Yds.	31.1	51.5
Column Class D	Cu. Yds.	24.3	25.0
Total	Cu. Yds.	55.4	76.5

ESTIMATED QUANTITIES			
ITEM	UNIT	PIER 19N	PIER 20N
Structural Concrete *	Cu. Yds.	55.4	76.5
Reinforcing Steel	Lbs.	10,535	10,845
HP 10x42 Steel	Lin. Ft.	400	624
Bearing Pile ** Drive	Lin. Ft.	400	624
Excavation Class 20	Cu. Yds.	452.8	766

* Structural Concrete Quantity includes 31.1 Cu. Yds. of Class C and 24.3 Cu. Yds. of Class D for Pier 19N, and 51.5 Cu. Yds. of Class C and 25.0 Cu. Yds. of Class D for Pier 20N.
** HP 10x42 Steel Bearing Pile Quantity includes 20@24' for Pier 19N, and 12@27' and 10@30' for Pier 20N. See Piling Log for Pier Elevation.
Minimum acceptable bearing per pile is 55 Tons for Pier 19N and Pier 20N. See Piling LOG SHEET 20K & L.

Note:
For "Pier Notes" see Sheet 22 of 201.

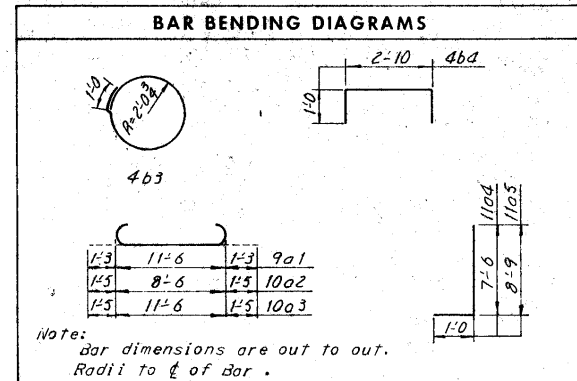
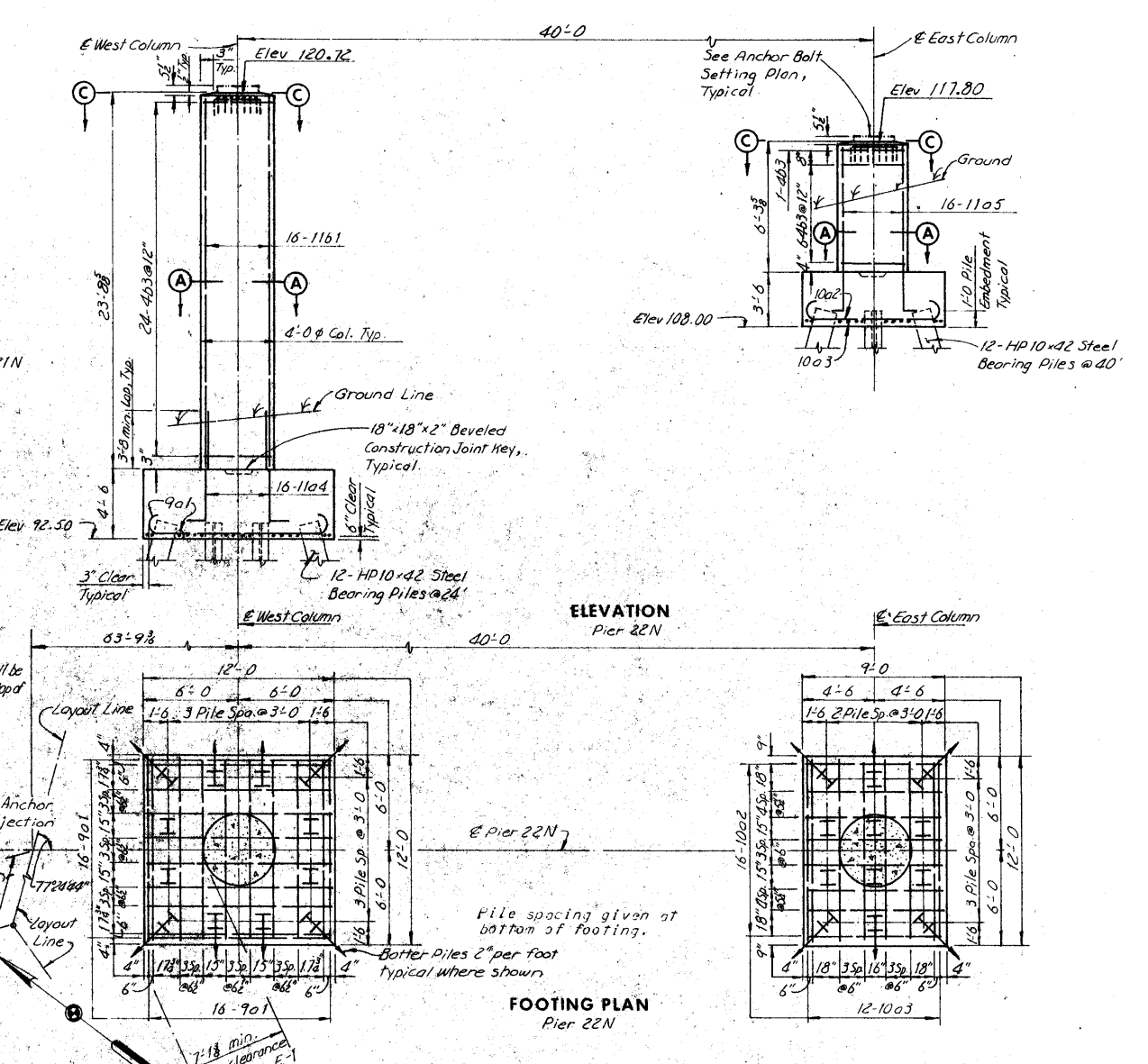
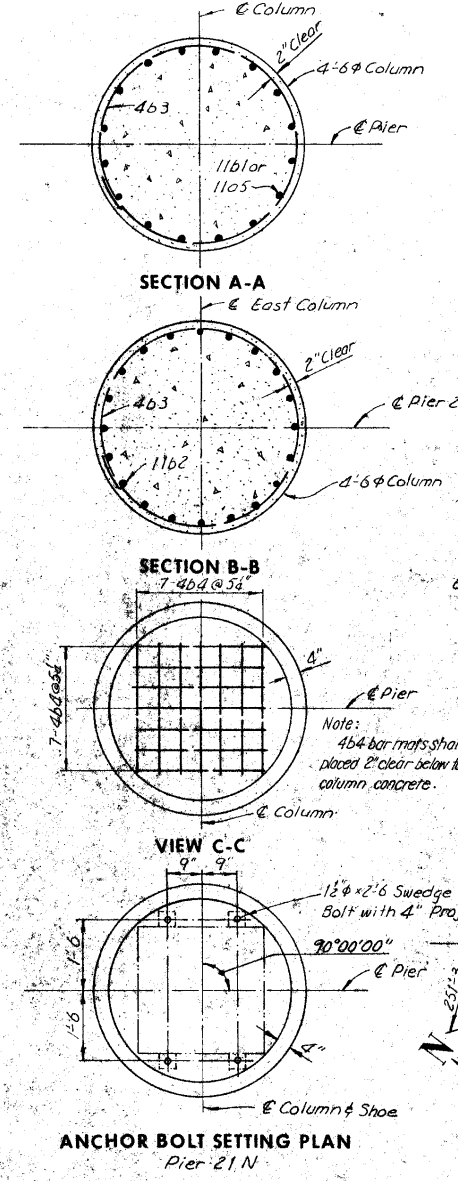
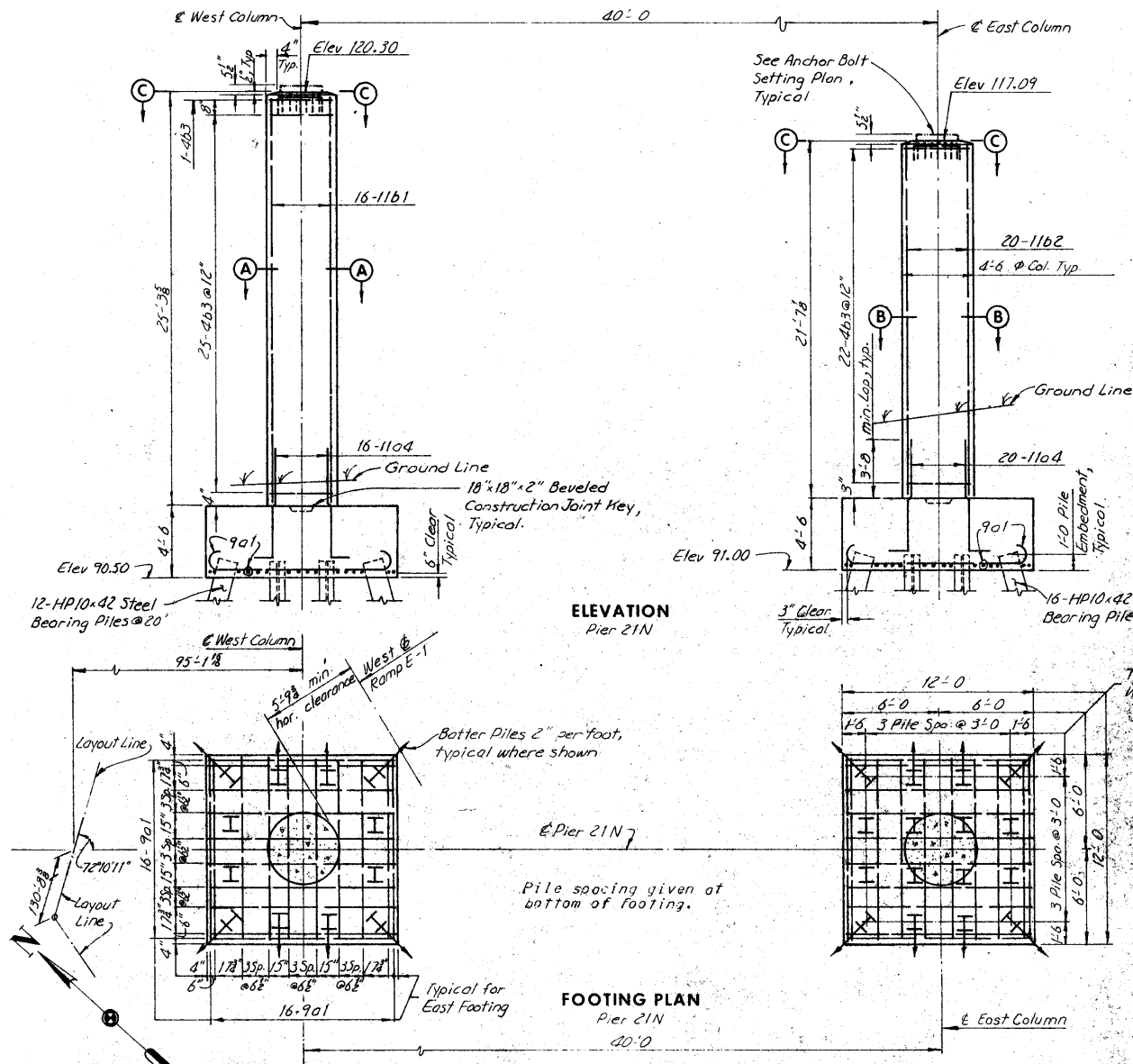


**CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE
PIERS 19N AND 20N**

STA. 322+81.95 @ FREEWAY =
STA. 32+14.70 @ 1ST. AVE. W
PROJECT NO. I-380-6(68)263--01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

MADE *AW* DATE 04-11-74 CHECKED *RLF* DATE 5-13-74



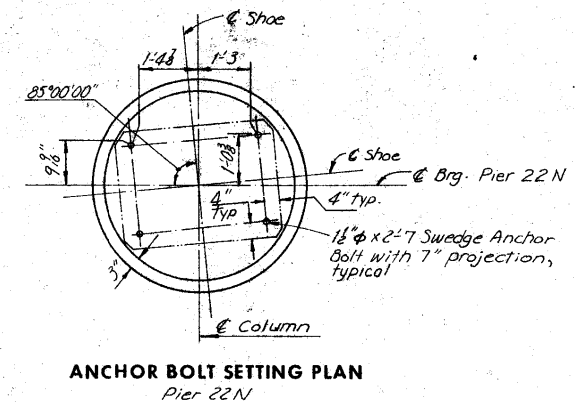
BILL OF REINFORCEMENT								
			PIER 21N			PIER 22N		
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT	NO.	LENGTH	WEIGHT
9a1	Footing, Horizontal	U	64	14'-0"	3,046	32	14'-0"	1,523
10a2	Footing, Horizontal	U	16	11'-4"	730	16	11'-4"	730
10a3	Footing, Horizontal	U	12	14'-4"	740	12	14'-4"	740
11a4	Footing, Vertical	T	36	8'-5"	1,610	16	8'-5"	715
11a5	Footing, Vertical	T	16	9'-8"	822	16	9'-8"	822
11b1	Column, Vertical	I	16	25'-0"	2,125	16	23'-5"	1,991
11b2	Column, Vertical	I	20	21'-4"	2,267	31	14'-0"	290
4b3	Column, Horizontal	I	48	14'-0"	443	28	4'-3"	87
4b4	Column, Vertical	I	28	4'-8"	87	28	4'-3"	87
Total					9,534			6,943

CONCRETE PLACEMENT QUANTITIES				
LOCATION	UNIT	PIER 21N	PIER 22N	
Footing Class C	Cu. Yds.	49.9	59.0	
Column Class D	Cu. Yds.	27.5	17.7	16.3
Total	Cu. Yds.	77.4	76.7	54.3

ESTIMATED QUANTITIES				
ITEM	UNIT	PIER 21N	PIER 22N	
Structural Concrete *	Cu. Yds.	76.6	55.7	54.3
Reinforcing Steel	Lbs.	9,584	6,948	
HP 10x42 Steel	Lin. Ft.	576	758	679.0
Bearing Pile **	Lin. Ft.	576	758	675.3
Excavation Class 20	Cu. Yds.	702.2	78.3	
		744.8	77.8	

* Structural Concrete Quantity includes 48.0 Cu. Yds. of Class C and 27.6 Cu. Yds. of Class D for Pier 21N, and 38.0 Cu. Yds. of Class C and 17.7 Cu. Yds. of Class D for Pier 22N.

** HP 10x42 Steel bearing Pile Quantity includes 120' and 160' for Pier 21N, and 120' and 120' for Pier 22N. See Piling Log sheet 2034. Minimum acceptable bearing per pile is 55 Tons for Pier 21N and Pier 22N.



**CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE**

PIERS 21N AND 22N

STA. 322+81.95 @ FREEWAY =
STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. I-380-6(68)263-01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

MADE AW DATE 04-09-74 CHECKED RLF DATE 5-20-74

Note: For "Pier Notes" see Sheet 22 of 201.

BACK-ALL
14.0

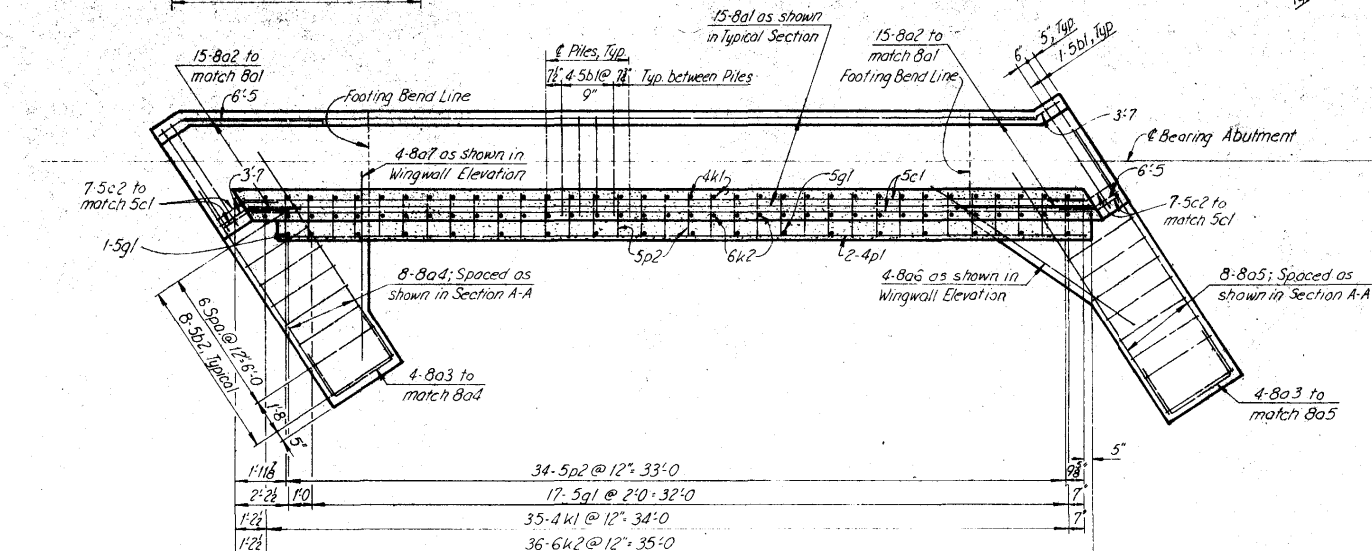
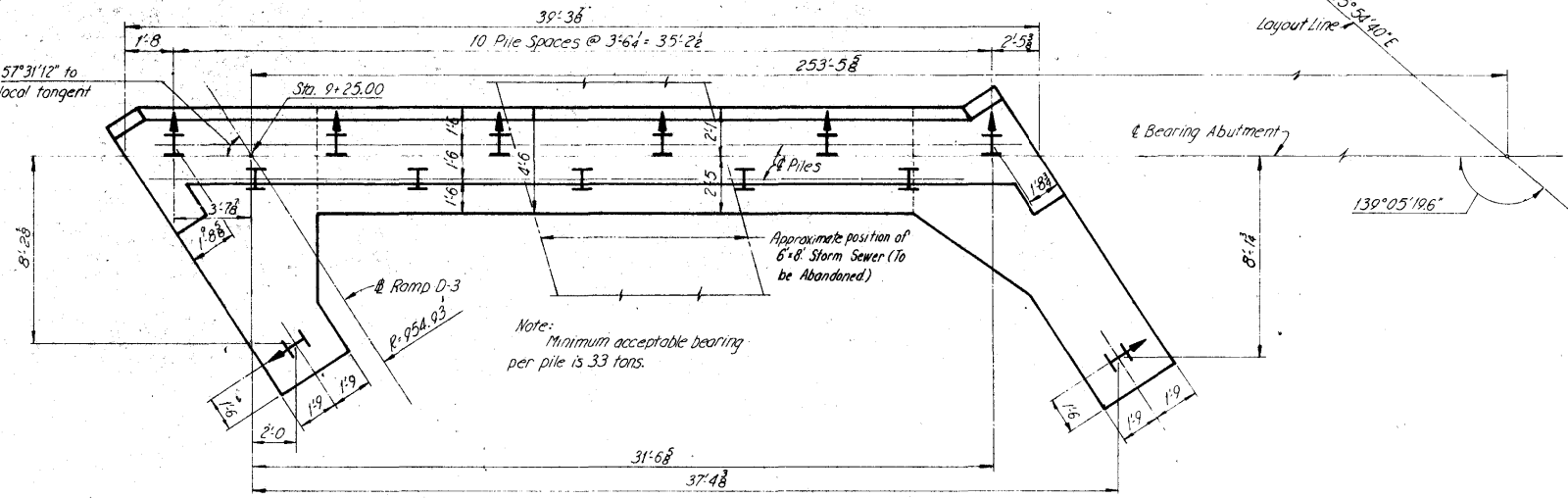
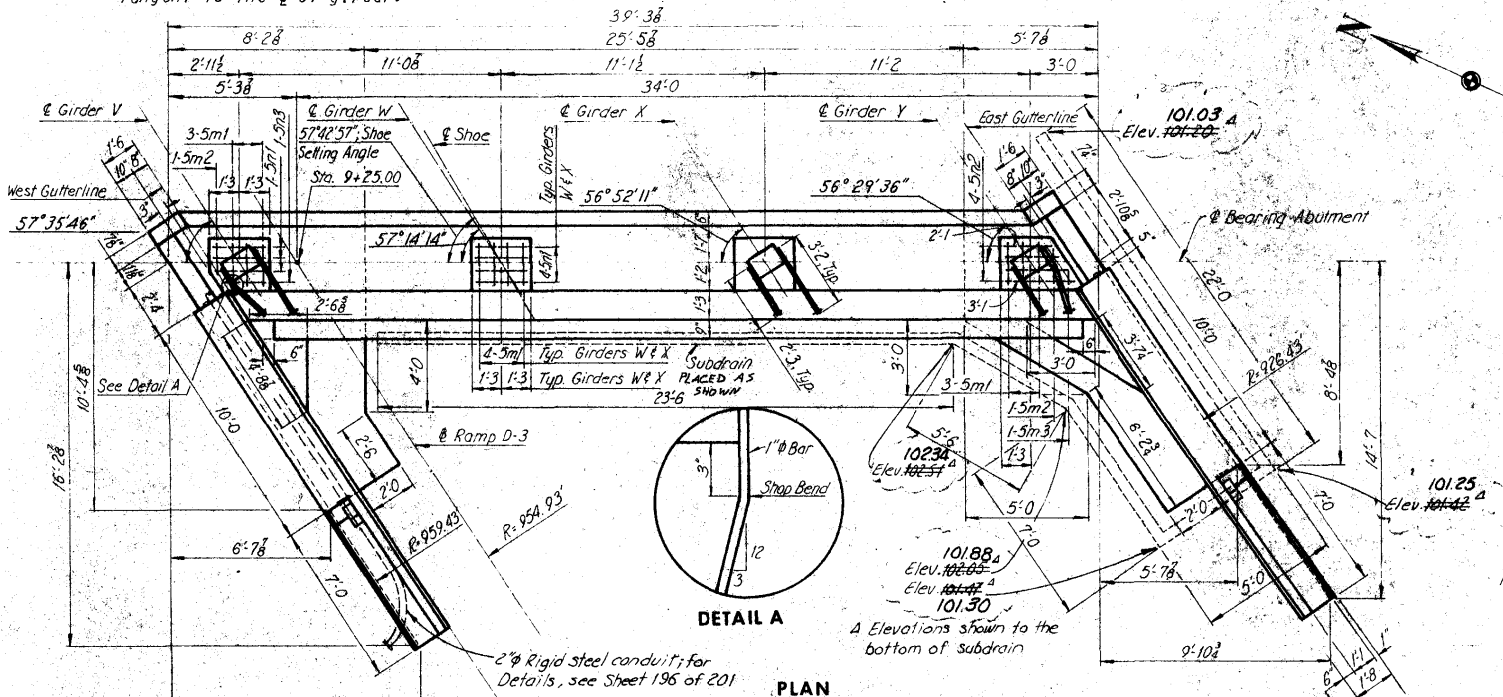
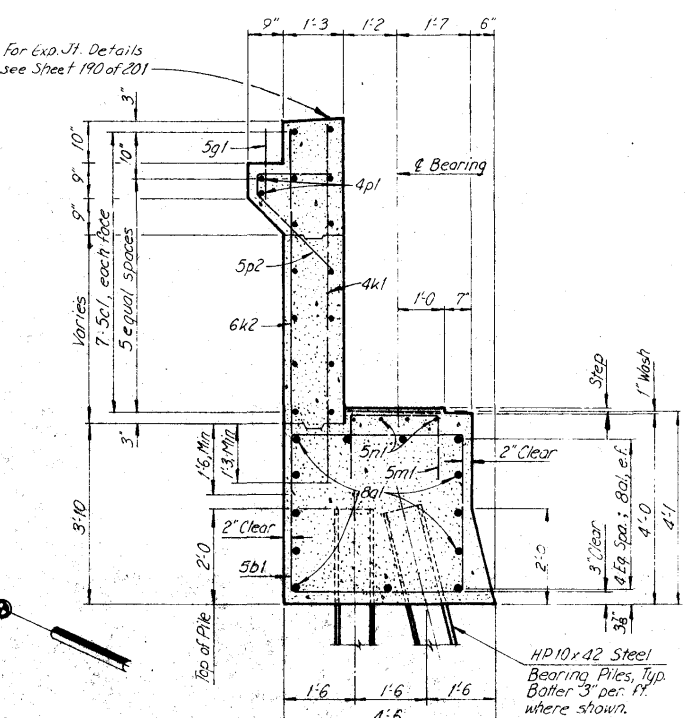
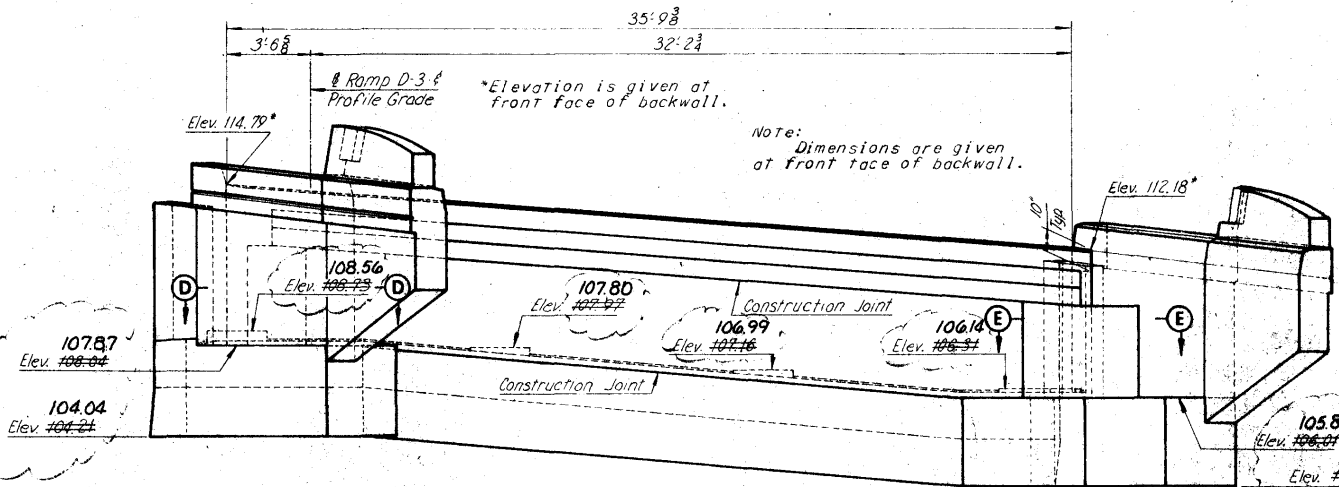
CONCRETE PLACEMENT QUANTITIES		
LOCATION	UNIT	QUANTITY
Footing and Steps (Class C)	Cu. Yds.	33.3
Backwall above Const. Jt. (Class D)	Cu. Yds.	4.9
Backwall and Fillets below Const. Jt. (Class C)	Cu. Yds.	8.5
Wingwalls (Class D)	Cu. Yds.	8.4
Wings (Class D)	Cu. Yds.	4.8
Maskwalls (Class C)	Cu. Yds.	.9
End Posts (Class D)	Cu. Yds.	1.1
Temporary Paving Block (Class C)**	Cu. Yds.	.8
Total	Cu. Yds.	62.7

** Paving Block may be Class D Concrete.

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Structural Concrete ***	Cu. Yds.	62.7
Reinforcing Steel	Lbs.	7,028
Excavation Class 20	Cu. Yds.	72.0
Granular Backfill	Cu. Yds.	75.0
Subdrain	Lin. Ft.	63
HP 10x42 Steel Bearing Piles	Lin. Ft.	621.2
15 @ 55' Log Sheet Piles	Lin. Ft.	520.0
Bridge Seat Sealer	Sq. Ft.	149

*** Includes 43.2 Cu. Yds. Class C Concrete and 19.2 Cu. Yds. Class D Concrete.

Notes: For "Section E-E", "Section D-D" and "Bill of Reinforcement" see Sheet 67 of 201.
For "Abutment Notes" see Sheet 18 of 201.



**CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE
ABUTMENT, RAMP D-3**

STA. 322+81.95 @ FREEWAY =
STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. I-380-6(68)263--01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

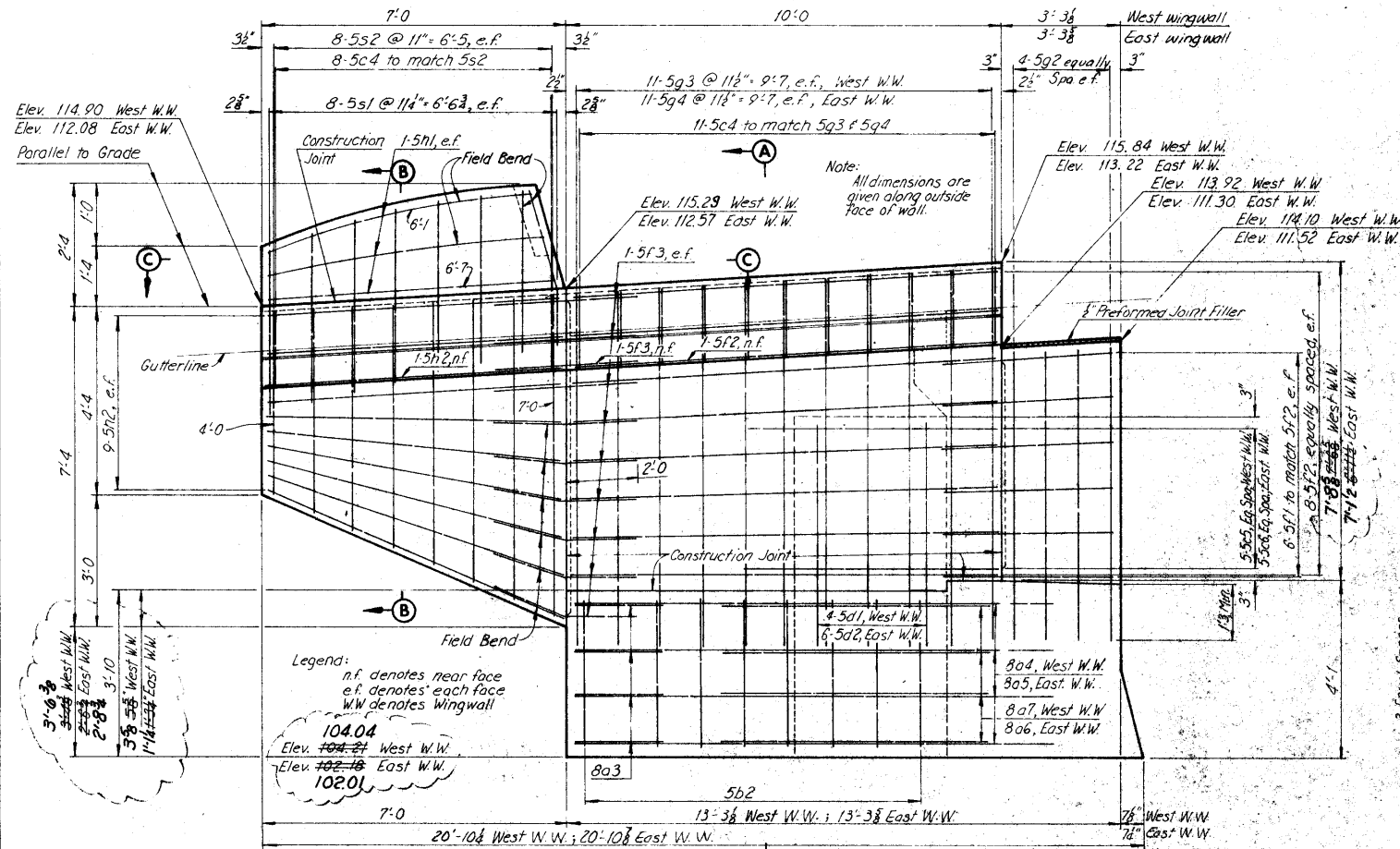
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

MADE JLR DATE 5-17-74 CHECKED DLR DATE 7-10-74

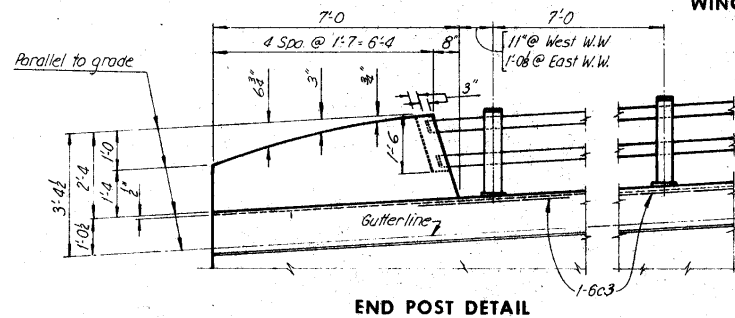
Revised 2-28-77: Footing elevations and subdrain elevations corrected.

SHEET 66 OF 201

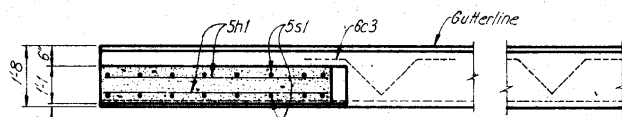
DESIGN NO. 1276 LINN COUNTY FILE 23191 SHEET 68 OF 203-0



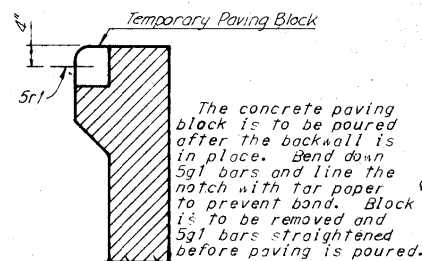
WINGWALL ELEVATION



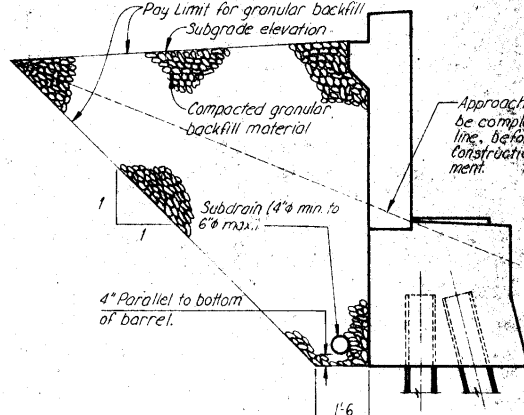
END POST DETAIL



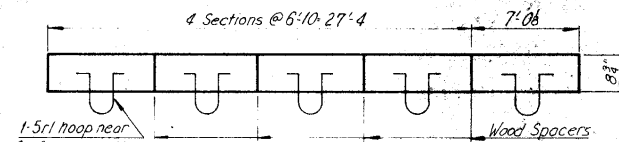
SECTION C-C



PART SECTION OF BACKWALL PAVING BLOCK DETAIL

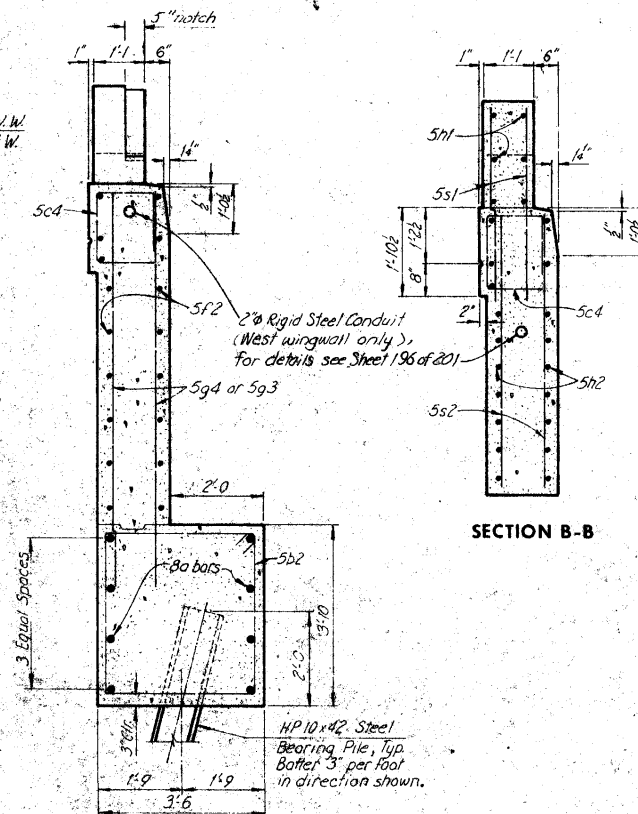


GRANULAR BACKFILL DETAIL



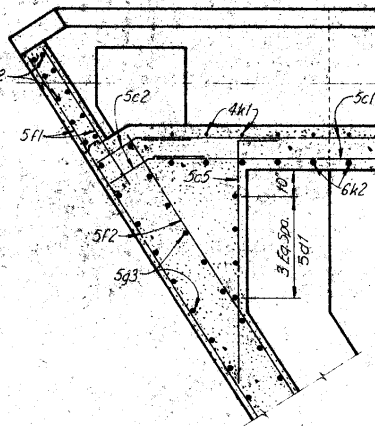
TEMPORARY PAVING BLOCK PLAN

Note: For location of "Section E-E" and "Section D-D" see Sheet 66 of 201.

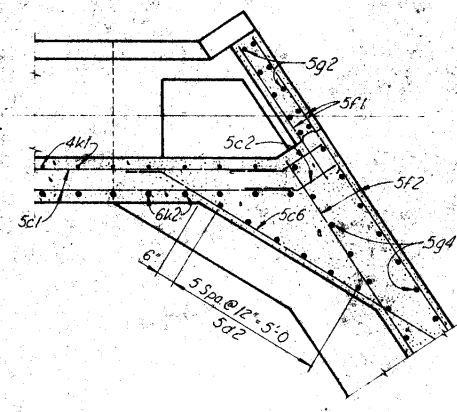


SECTION A-A

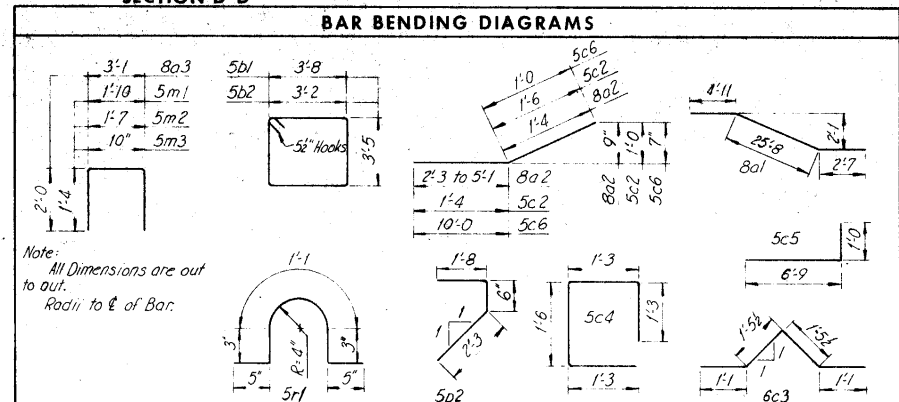
SECTION B-B



SECTION D-D



SECTION E-E



BAR BENDING DIAGRAMS

BILL OF REINFORCEMENT					
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
8a1	Footings		13	33'-2"	1,151
8a2	Footings		2Ser15	Varies	401
8a3	Footings, Wingwall		8	6'-11"	148
8a4	Footings, Wingwall		8	11'-6"	246
8a5	Footings, Wingwall		8	12'-3"	252
8a6	Footings, Fillet		4	10'-0"	107
8a7	Footings, Fillet		4	8'-0"	85
5b1	Footings		44	14'-10"	691
5b2	Footings, Wingwall		16	13'-10"	231
5c1	Backwall		14	35'-5"	517
5c2	Backwall, Dowels		28	2'-10"	83
5c3	Rail Post Anchor		4	5'-0"	30
5c4	Curb, Vertical		38	5'-0"	198
5c5	Fillet, Horizontal		5	7'-8"	40
5c6	Fillet, Horizontal		5	11'-0"	57
5d1	Fillet, Vertical		4	58'-11"	24
5d2	Fillet, Vertical		6	58'-11"	34
5f1	Maskwall		24	4'-1"	102
5f2	Wingwall		34	3'-8"	343
5f3	Wingwall, Dowel		38	3'-10"	152
5g1	Approach Slab Seat		18	1'-9"	33
5g2	Maskwall		16	7'-5"	124
5g3	Wingwall		22	9'-11"	208
5g4	Wingwall		22	8'-6"	195
5h1	End Post		4Ser3	Varies	79
5h2	Wing, Horizontal		38	6'-8"	264
4k1	Backwall		35	8'-0"	187
6k2	Backwall		36	8'-3"	446
5m1	Girder Step		14	4'-4"	63
5m2	Girder Step		2	4'-1"	9
5m3	Girder Step		1	3'-4"	3
5n1	Girder Step		11	2'-2"	25
5n2	Girder Step		1Ser4	Varies	11
5n3	Girder Step		1	2'-0"	2
4p1	Approach Slab Seat		2	34'-0"	45
5p2	Approach Slab Seat		34	4'-4"	154
5r1	Paving Block		5	2'-3"	12
5s1	End Post		32	3'-6"	117
5s2	Wing, Vertical		4Ser8	Varies	184
Total					7,053

CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE

ABUTMENT DETAILS, RAMP D-3

STA. 322+81.95 & FREEWAY=
STA. 32+14.70 & 1ST. AVE. W. PROJECT NO. I-380-6(68)263-01-57

LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

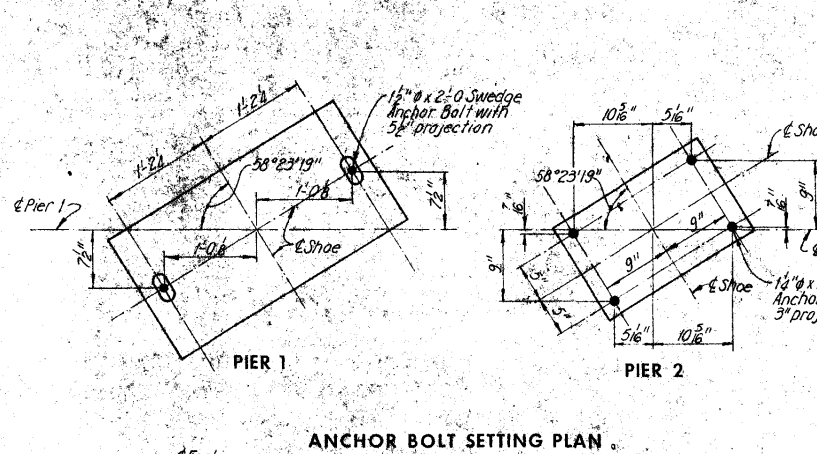
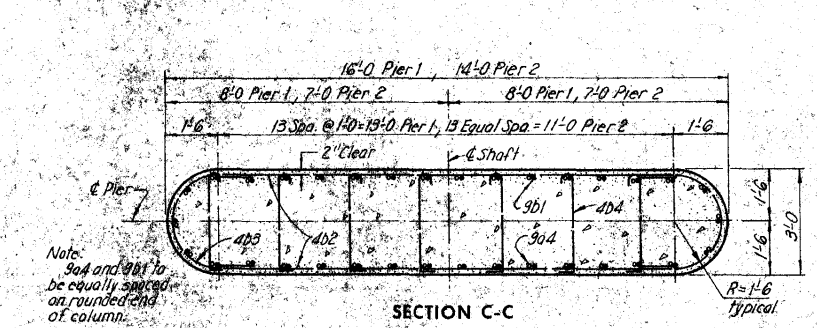
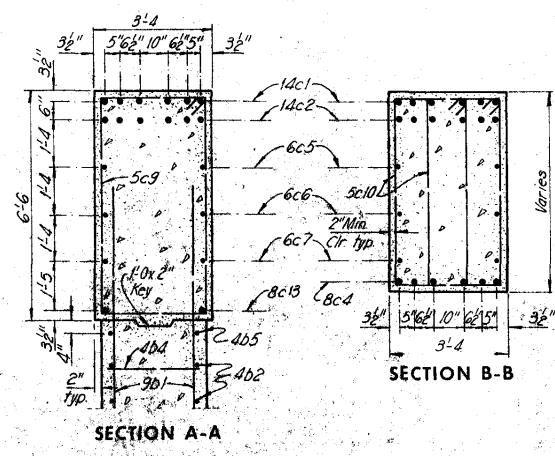
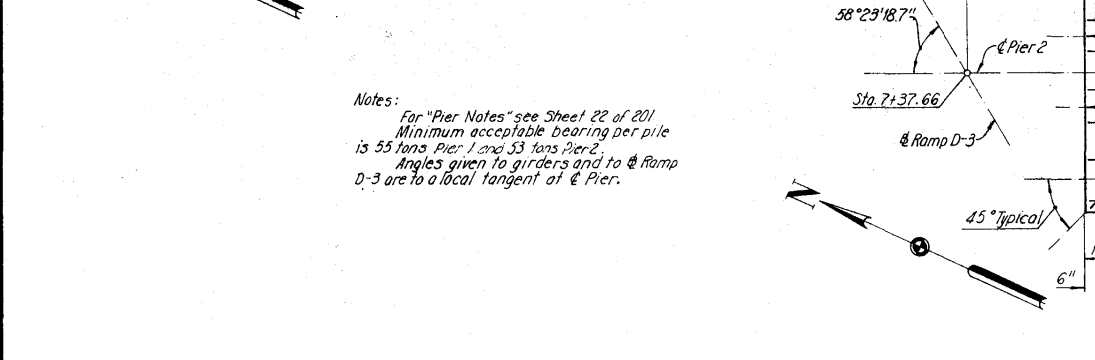
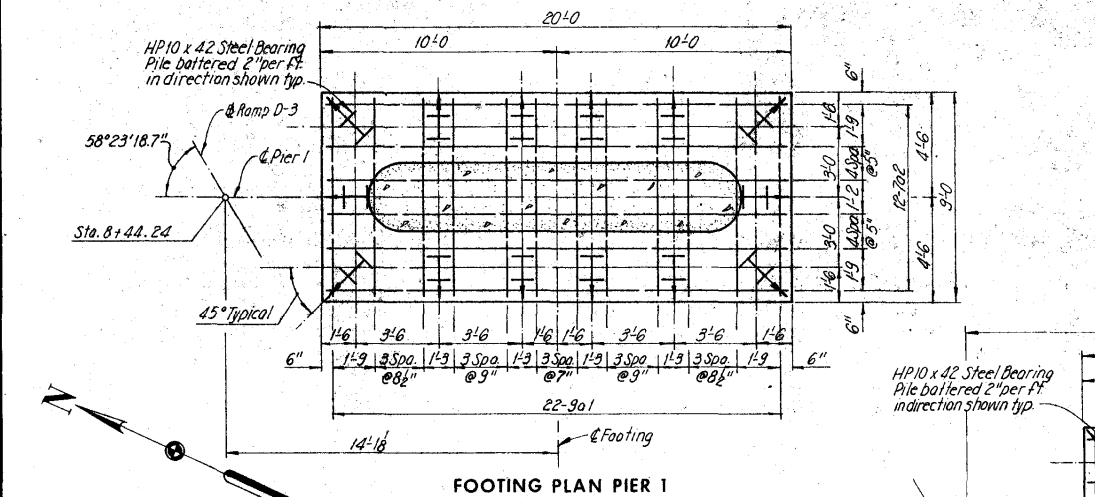
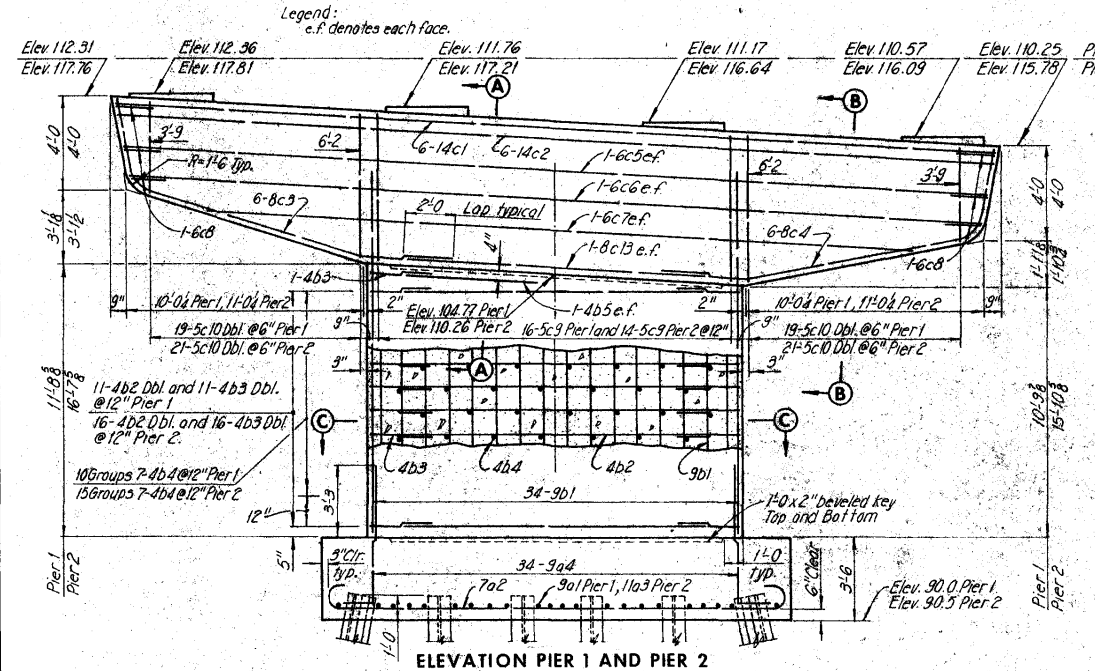
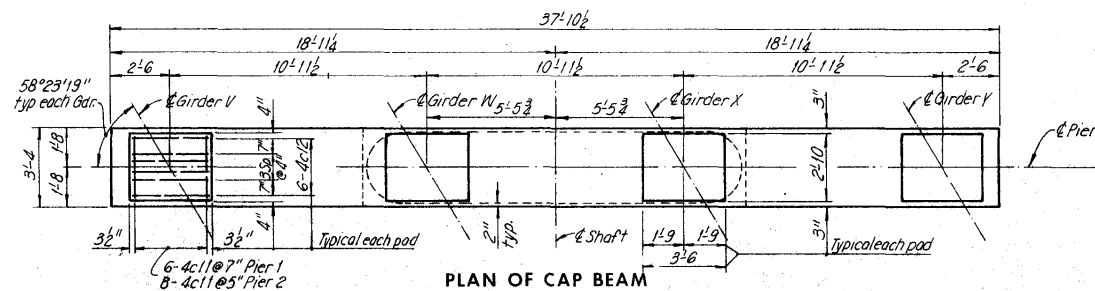
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

MADE JJP DATE 5-17-74 CHECKED DLR DATE 7-10-74

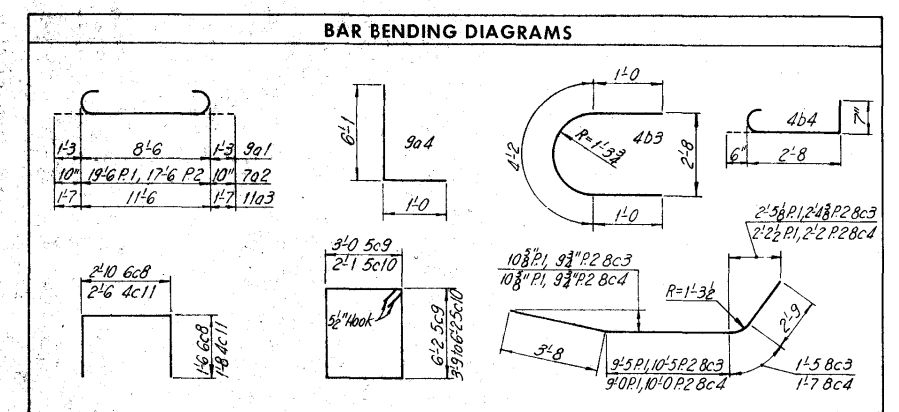
Revised 2-28-77: Dimensions, elevations, and bar list corrected.

SHEET 67 OF 201

DESIGN NO. 1276 LINN COUNTY FILE 23191 SHEET 69 OF 203-0



BILL OF REINFORCEMENT								
BAR	LOCATION	SHAPE	PIER 1			PIER 2		
			NO.	LENGTH	WEIGHT	NO.	LENGTH	WEIGHT
9a1	Footing Horizontal	J	22	11'-0	823	—	—	—
7a2	Footing Horizontal		12	21'-2	519	17	19'-2	666
11a3	Footing Horizontal		—	—	—	22	14'-8	1,714
9a4	Footing Vertical		34	7'-0	809	34	7'-0	809
9b1	Shaft Vertical	I	34	14'-11	1,724	34	19'-10	2,293
4b2	Shaft Horizontal		22	13'-0	191	32	11'-0	235
4b3	Shaft Horizontal		23	6'-2	95	33	6'-2	136
4b4	Shaft Horizontal		70	3'-8	171	105	3'-8	257
4b5	Shaft Horizontal		2	5'-6	7	2	4'-6	6
14c1	Cap Beam Horizontal	J	6	37'-5	1,717	6	37'-5	1,717
14c2	Cap Beam Horizontal		6	37'-3	1,710	6	37'-3	1,710
8c3	Cap Beam Horizontal		6	17'-3	276	6	18'-3	292
8c4	Cap Beam Horizontal		6	17'-0	272	6	18'-0	288
6c5	Cap Beam Horizontal		2	36'-9	110	2	36'-9	110
6c6	Cap Beam Horizontal		2	36'-3	109	2	36'-3	109
6c7	Cap Beam Horizontal		2	29'-7	89	2	29'-0	87
6c8	Cap Beam Horizontal		6	5'-8	51	6	5'-8	51
5c9	Cap Beam Vertical		16	19'-0	317	14	19'-0	277
5c10	Cap Beam Vertical		4Ser19	Varies	1,169	4Ser21	Varies	1,292
4c11	Cap Beam Vertical		24	5'-8	51	32	5'-8	121
4c12	Cap Beam Horizontal		24	3'-2	51	24	3'-2	51
8c13	Cap Beam Horizontal		2	13'-0	69	2	11'-0	59
Total					10,370	12,280		



ESTIMATED QUANTITIES			
ITEM	UNIT	PIER 1	PIER 2
Structural Concrete (C10)	Cu.Yd.	69.3 ^d	78.5
Reinforcing Steel	Lb.	10,370	12,280
Excavation, Class 20	Cu.Yd.	60.3	65.3
HP10x42 Steel Bearing Pile	Lin.Ft.	429.8	309.1
	Drive Lin.Ft.	383.0	332.0

*14 Pile @ 34' Pier 1 and 16 Pile @ 25' Pier 2. See Piling Log Sheet 203M.

CONCRETE PLACEMENT QUANTITIES			
LOCATION	UNIT	PIER 1	PIER 2
Footing, Class C	Cu.Yds.	23.3	27.9
Shaft, Class C	Cu.Yds.	19.2	24.1
Cap Beam, Class C	Cu.Yds.	26.8	26.5
Total	Cu.Yds.	69.3 ^d	78.5

^d Includes 19.2 Cu.Yds. of Class D Concrete in Pier 1 Shaft.

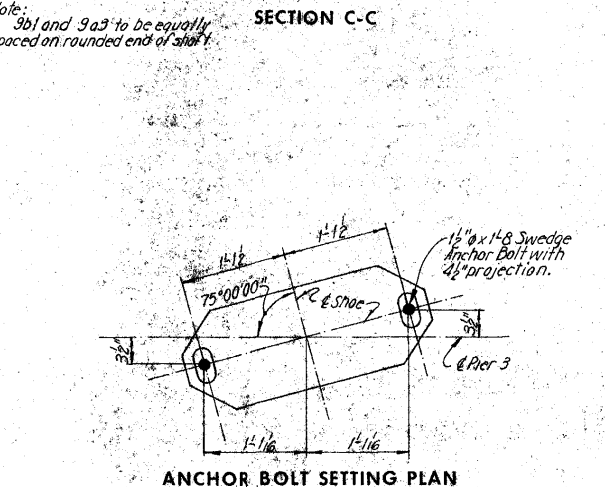
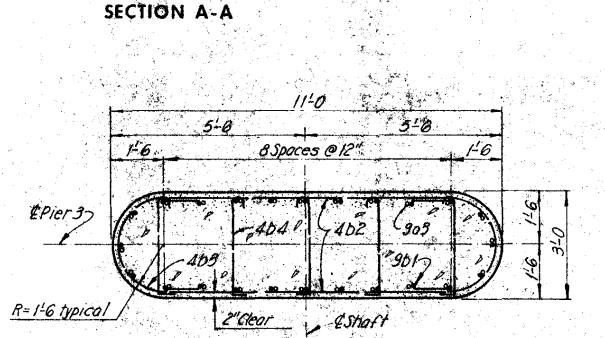
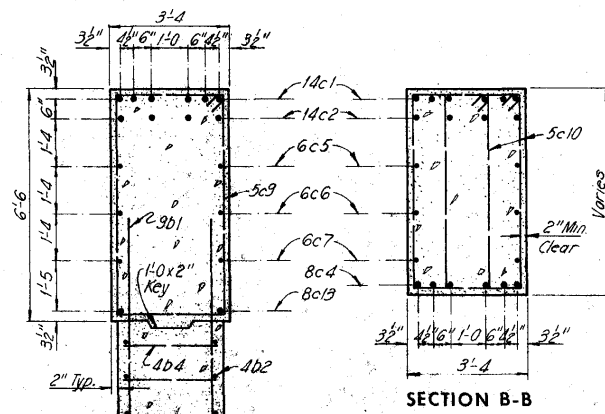
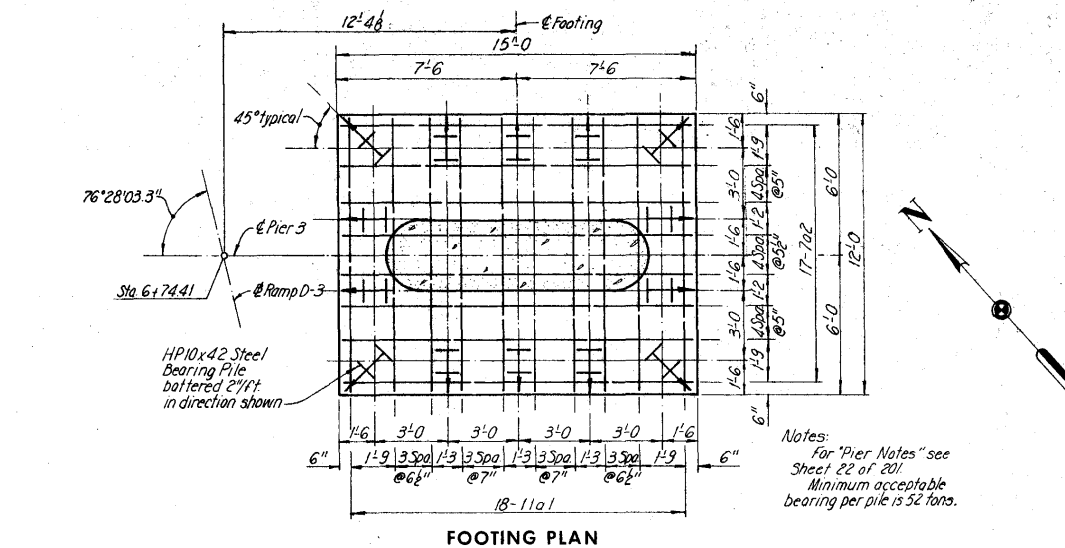
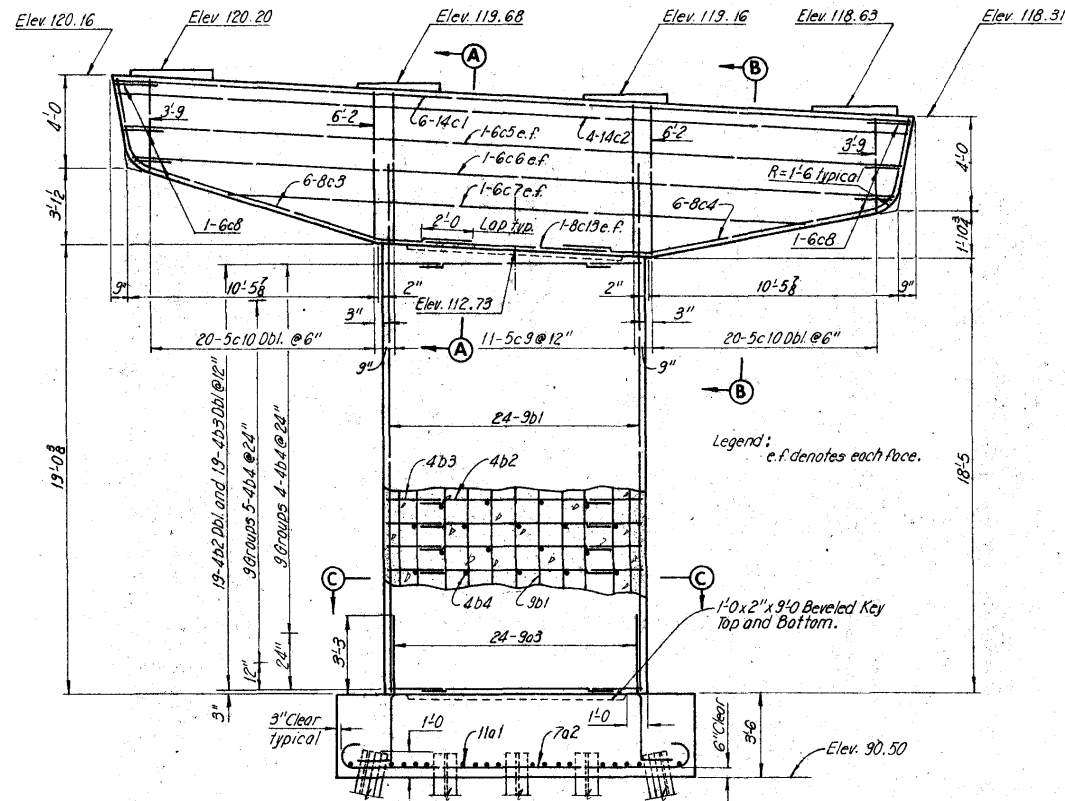
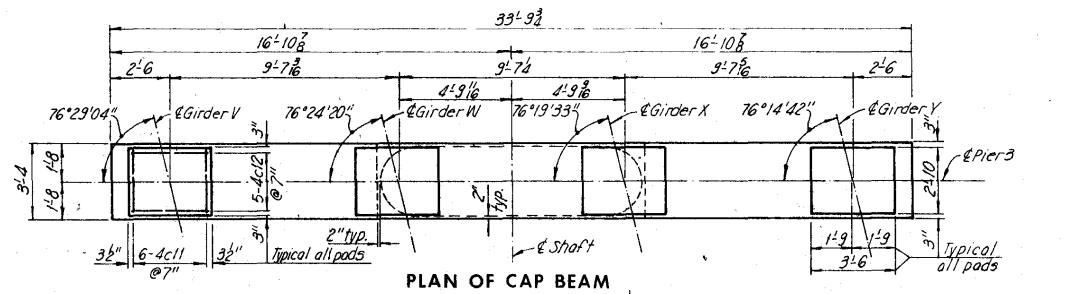
**CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE
PIERS 1 AND 2, RAMP D-3**

STA. 322+81.95 & FREEWAY =
STA. 32+14.70 & 1ST. AVE. W PROJECT NO. I-380-6(68)263-01-57

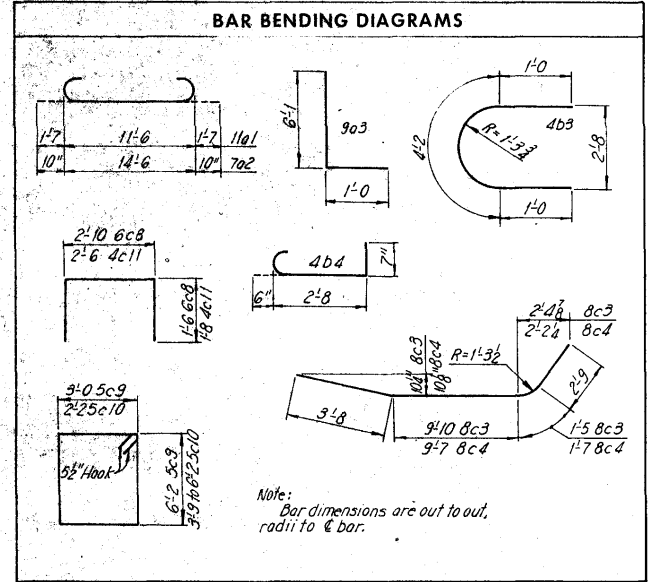
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

MADE *AJS* DATE *6-18-74* CHECKED *DW* DATE *06-29-74*



BILL OF REINFORCEMENT					
PIER 3					
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
11a1	Footing Horizontal		18	14'-8"	1,403
7a2	Footing Horizontal		17	16'-2"	562
9a3	Footing Vertical		24	7'-0"	571
9b1	Shaft Vertical		24	22'-3"	1,816
4b2	Shaft Horizontal		38	8'-0"	203
4b3	Shaft Horizontal		38	6'-2"	157
4b4	Shaft Horizontal		81	3'-8"	198
14c1	Cap Beam Horizontal		6	33'-4"	1,530
14c2	Cap Beam Horizontal		4	33'-2"	1,015
8c3	Cap Beam Horizontal		6	17'-8"	283
8c4	Cap Beam Horizontal		6	17'-7"	282
6c5	Cap Beam Horizontal		2	32'-2"	98
6c6	Cap Beam Horizontal		2	32'-2"	97
6c7	Cap Beam Horizontal		2	25'-0"	75
6c8	Cap Beam Horizontal		6	5'-8"	51
5c9	Cap Beam Vertical		11	19'-0"	218
5c10	Cap Beam Vertical		4 Ser 20	Varies	1,245
4c11	Cap Beam Vertical		24	5'-8"	91
4c12	Cap Beam Horizontal		20	3'-2"	42
8c13	Cap Beam Horizontal		2	8'-0"	43
Total					9,980



ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Structural Concrete (C10)	Cu.Yds.	69.3
Reinforcing Steel	Lb.	9,980
Excavation, Class 20	Cu.Yds.	56.0
HP10x42 Steel	Furnish	448
Bearing Piles	Drive	448
		399.8
		288.2

*14 Piles @ 32'. See Piling Log Sheet 203.M.

CONCRETE PLACEMENT QUANTITIES		
LOCATION	UNIT	QUANTITY
Footing, Class C	Cu.Yds.	23.3
Shaft, Class C	Cu.Yds.	21.6
Cap Beam, Class C	Cu.Yds.	23.4
Total	Cu.Yds.	68.3

**CEDAR RIVER BRIDGE
SOUTH APPROACH**
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE

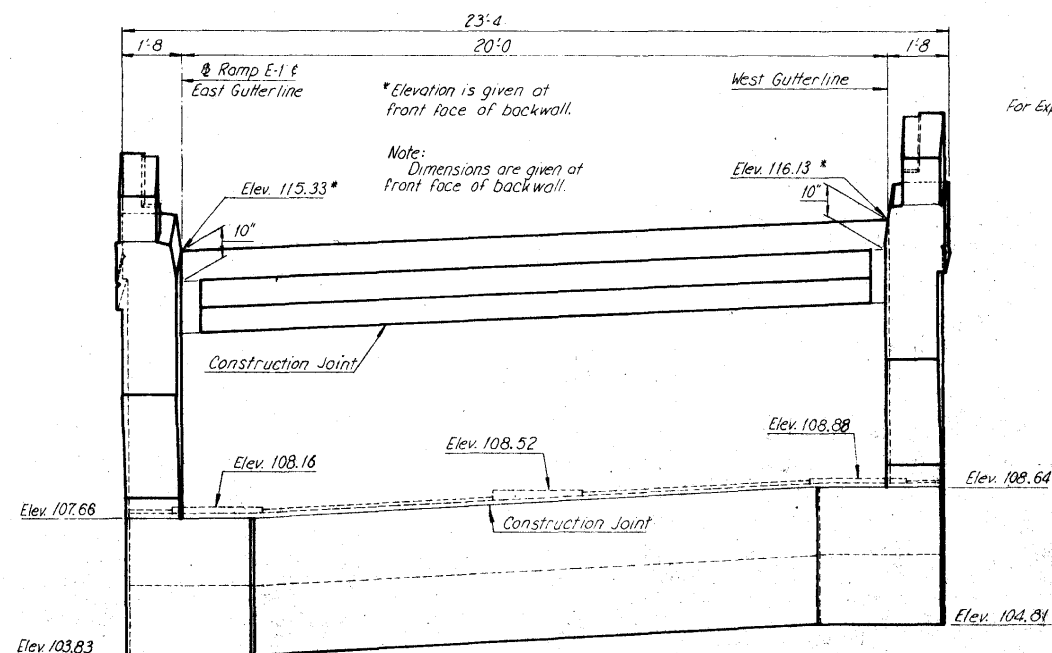
PIER 3, RAMP D-3

STA. 322+81.95 @ FREEWAY =
STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. I-380-6(68)263--01-57

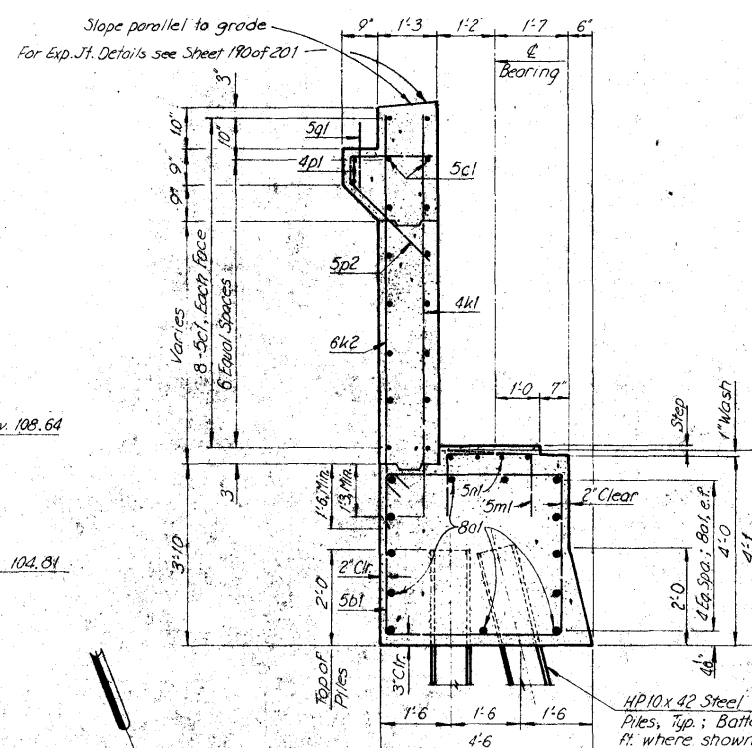
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

MADE RJS DATE 6-21-74 CHECKED J.W. DATE 06-29-74



REAR ELEVATION



TYPICAL SECTION

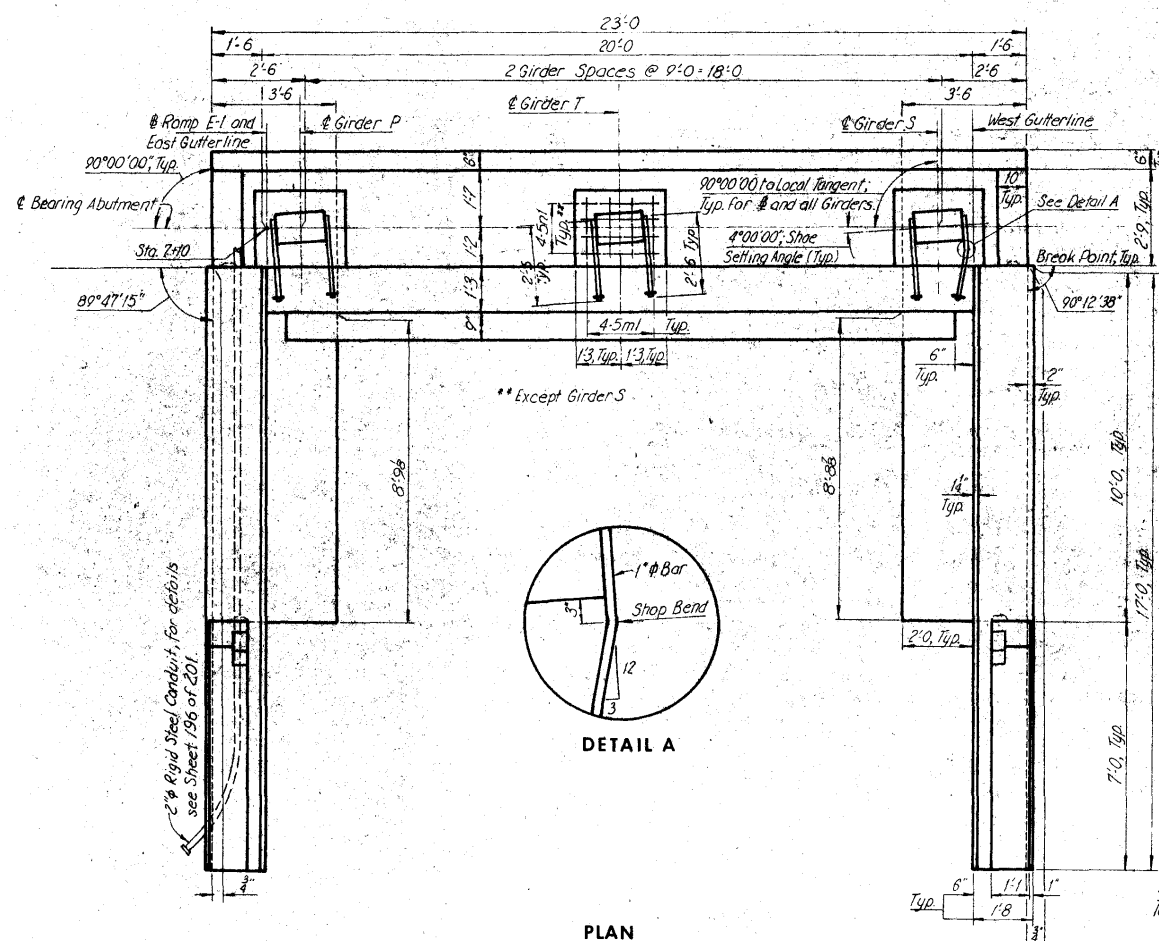
Notes:
For "Abutment Notes" see Sheet 18 of 201.
For "Bill of Reinforcement" see Sheet
71 of 201.

CONCRETE PLACEMENT QUANTITIES		
LOCATION	UNIT	QUANTITY
Footings and Steps (Class C)	Cu. Yds.	23.7
Backwall Below Const. Jt. (Class C)	Cu. Yds.	4.9
Backwall Above Const. Jt. (Class D)	Cu. Yds.	2.8
Wingwalls (Class D)	Cu. Yds.	8.0
Wings (Class D)	Cu. Yds.	4.8
Maskwalls (Class C)	Cu. Yds.	1.1
End Posts 2 @ .55 (Class D)	Cu. Yds.	1.1
Temporary Faving Block** (Class C)	Cu. Yds.	5 0
TOTAL	Cu. Yds.	46.8 AC

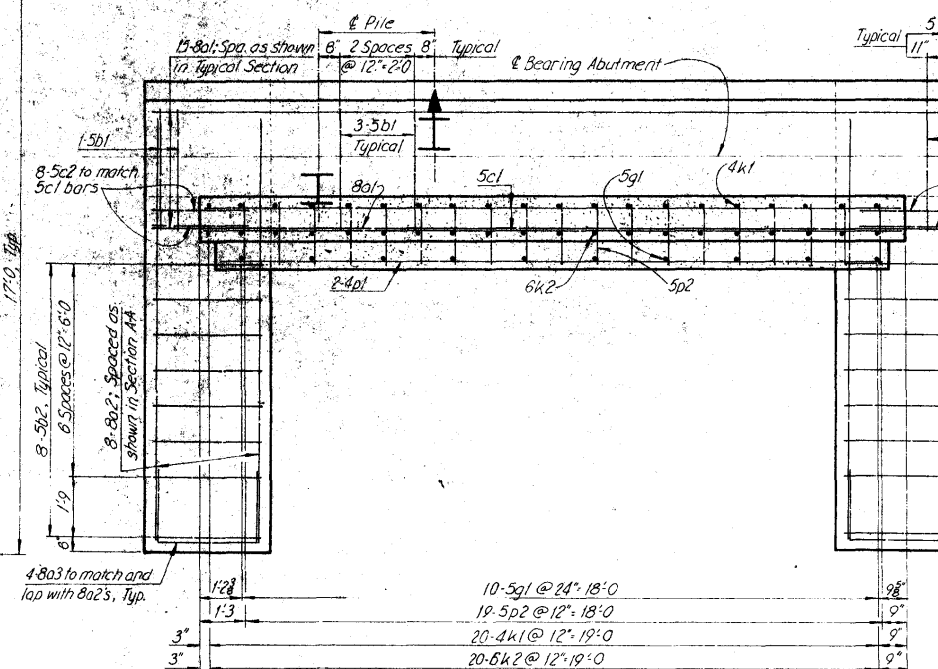
* * Paving Block may be Class D Concrete.

ESTIMATED QUANTITIES			
ITEM	UNIT	QUANTITY	
Structural Concrete***	Cu. Yds.	46.8	46.4
Reinforcing Steel	Lbs.	5,153	
Excavation Class 20	Cu. Yds.	55	52.7
Granular Backfill	Cu. Yds.	43	
Subdrain	Lin. Ft.	49	
HP10x42 Steel Bearing	Furnish	370	391.0
Pile 9 @ 42'-0"	Drive	370	429.9
Bridge Seat Sealer	Sq. Ft.	75	

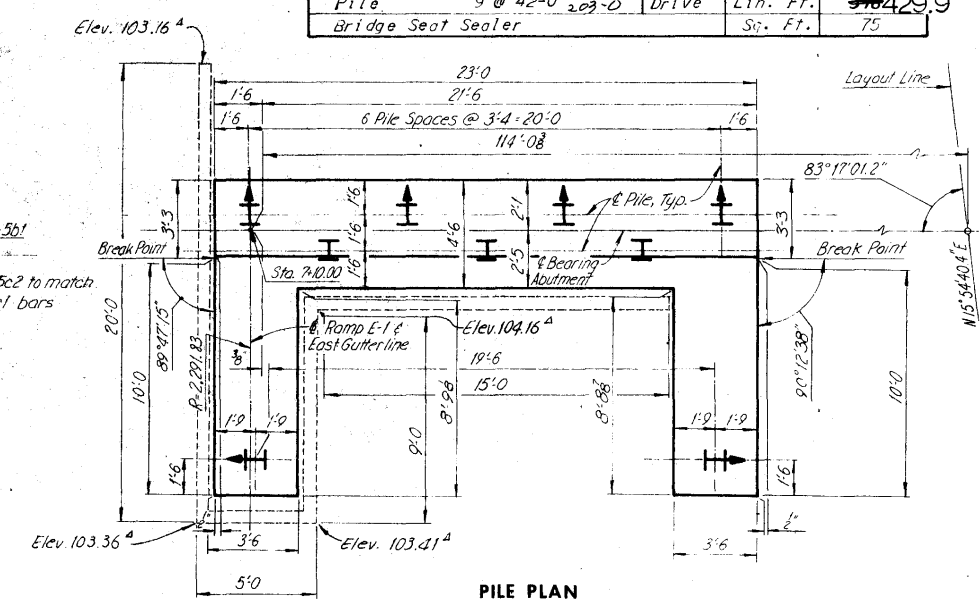
*** Includes 30:1 Cu. Yds. Class C concrete and 16.7 Cu. Yds. Class D concrete.



PLAN



FOOTING PLAN



PILE PLAN

Δ Elevations shown to the bottom of subdrain.
Subdrain PLACED AS SHOWN.

Minimum acceptable bearing
per Pipe is 32 tons.

CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE
ABUTMENT, RAMP E-1

STA 322+81.95 @ FREEWAY=
STA 32+14.70 @ 1ST. AVE. W PROJECT NO. 1-380-6(68)263--01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

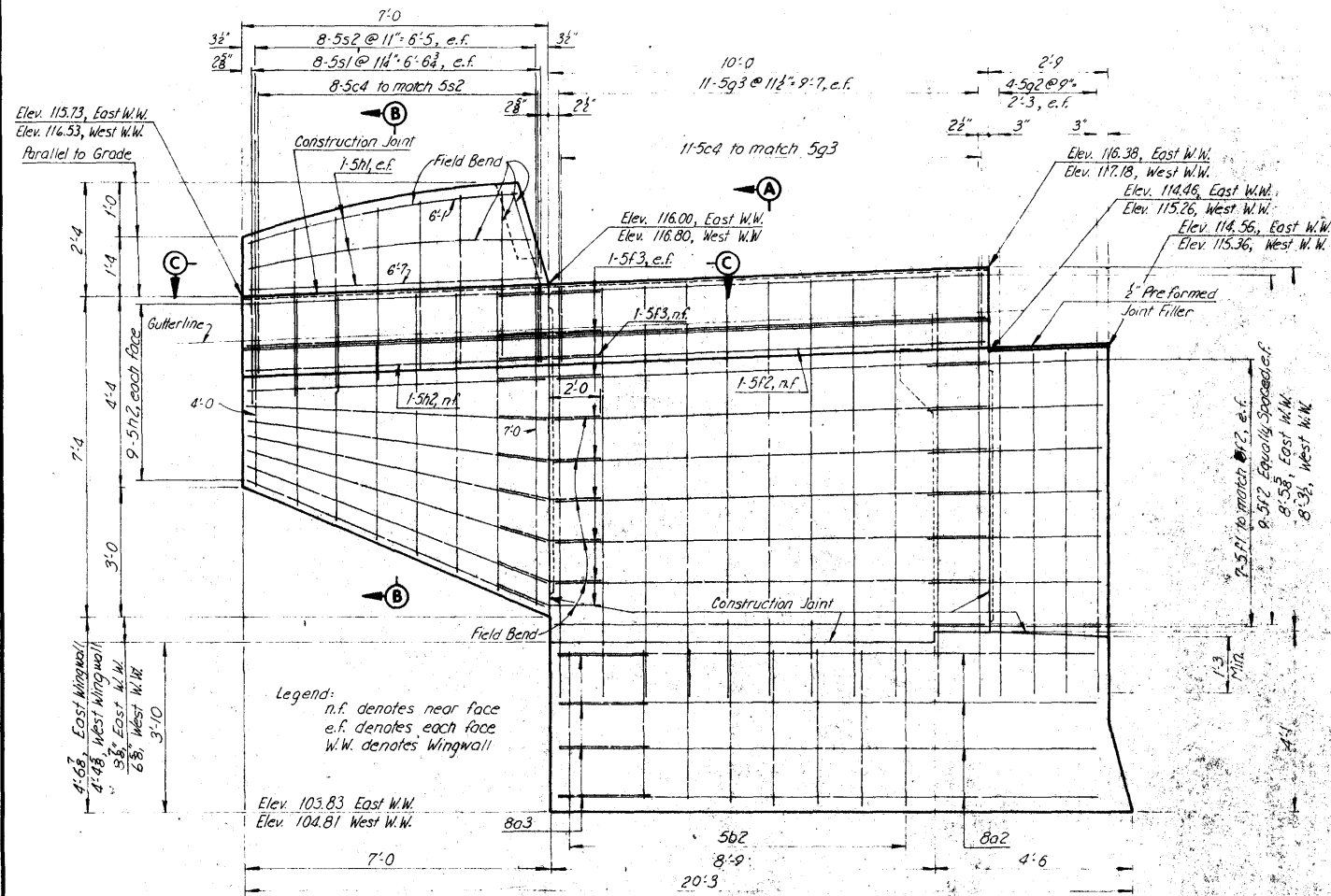
SHEET 70 OF 201

DESIGN NO. 1276 LINN COUNTY FILE 23191 SHEET 72 OF 203-C

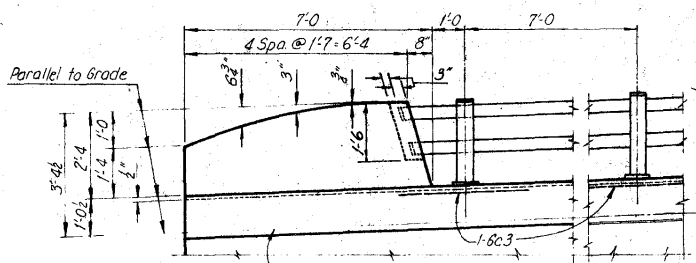
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

MADE <u>JJR</u>	DATE <u>4-26-74</u>	CHECKED <u>DLR</u>	DATE <u>7-11-74</u>
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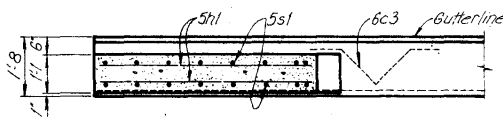
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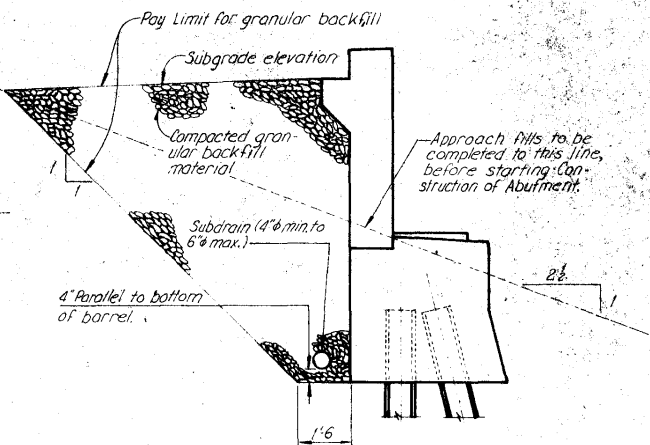
WINGWALL ELEVATION



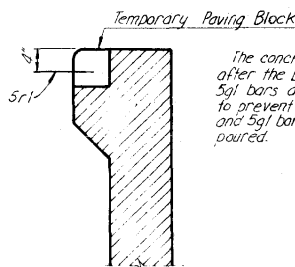
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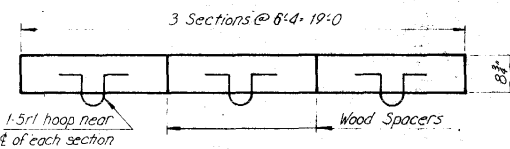
SECTION C-C



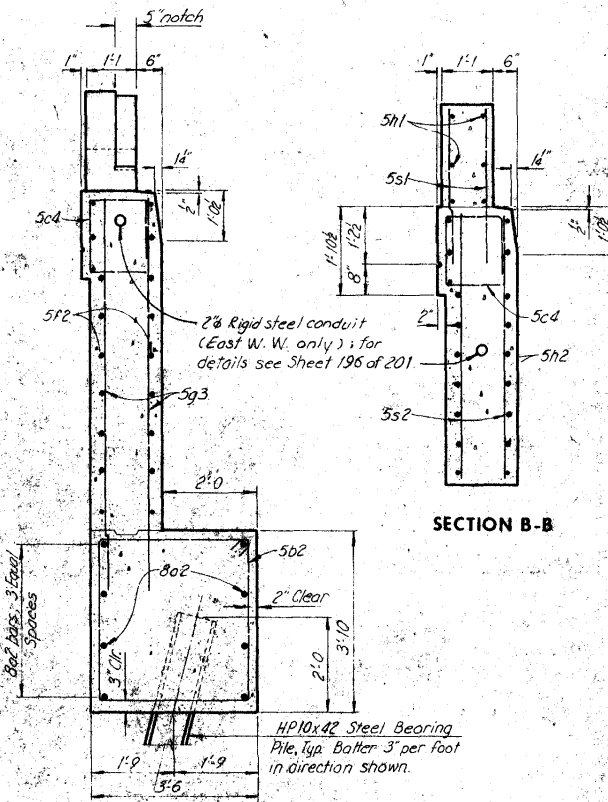
GRANULAR BACKFILL DETAIL



PART SECTION OF BACKWALL PAVING BLOCK DETAIL



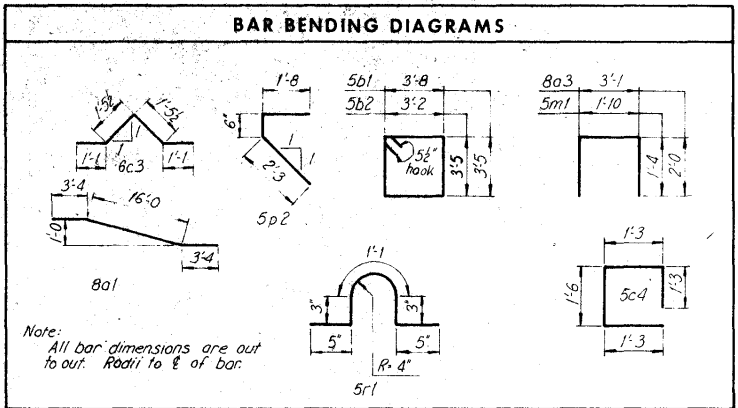
TEMPORARY PAVING BLOCK PLAN



SECTION A-A

SECTION B-B

BILL OF REINFORCEMENT					
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
8a1	Footings		13	22'-8"	787
8a2	Footings W.W.		16	12'-3"	523
8a3	Footings W.W.		8	6'-11"	148
5b1	Footings		22	14'-10"	340
5b2	Footings W.W.		16	13'-10"	231
5c1	Backwall		16	19'-8"	328
5c2	Backwall Dowels		32	2'-10"	95
6c3	Roll Post Anchor		4	5'-0"	30
5c4	Curb, Vertical		38	5'-0"	198
5f1	Maskwall		28	4'-2"	122
5f2	Wingwall		38	9'-8"	383
5f3	Wingwall Dowels		38	3'-10"	152
5g1	Approach Slab Seat		10	1'-9"	18
5g2	Maskwall		16	7'-9"	129
5g3	Wingwall		44	9'-10"	451
5h1	End Post		4Ser3	Varies	79
5h2	Wingwall		38	6'-8"	264
4k1	Backwall		20	8'-8"	116
6k2	Backwall		20	8'-11"	258
5m1	Girder Step		12	4'-4"	54
5n1	Girder Step		8	2'-2"	18
4o1	Approach Slab Seat		2	18'-8"	25
5o2	Approach Slab Seat		19	4'-4"	86
5r1	Paving block		3	2'-3"	7
5s1	End Post		32	3'-6"	117
5s2	Wing. Vertical		4Serd	Varies	184
Total					5,153

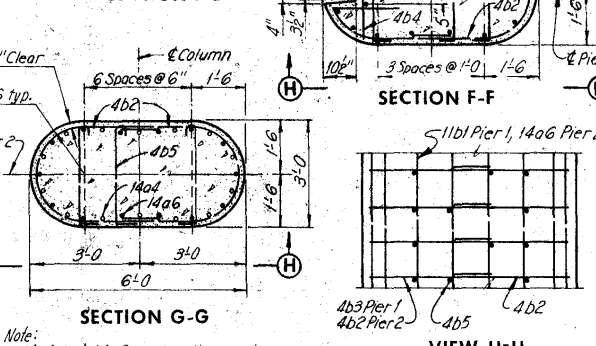
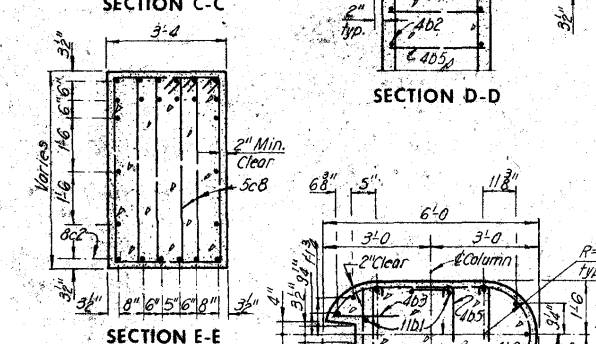
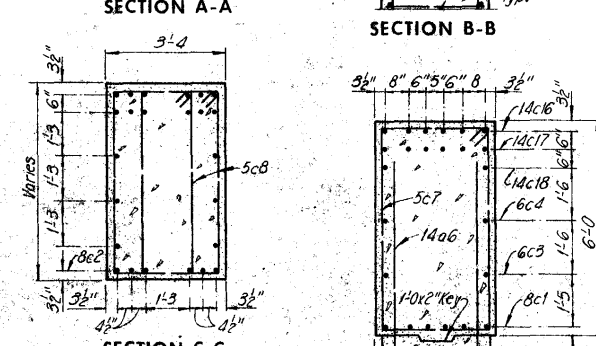
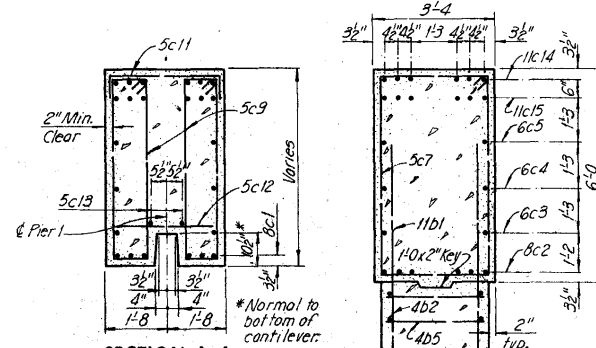
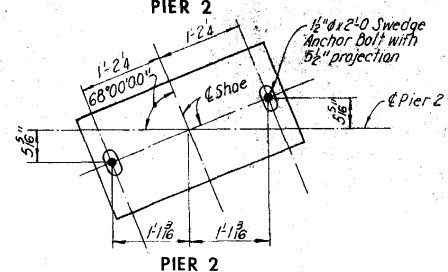
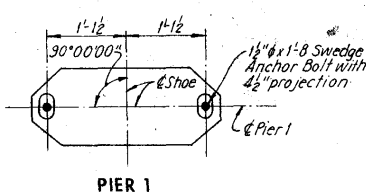
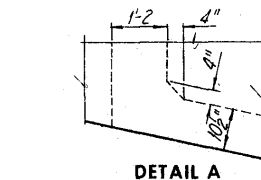
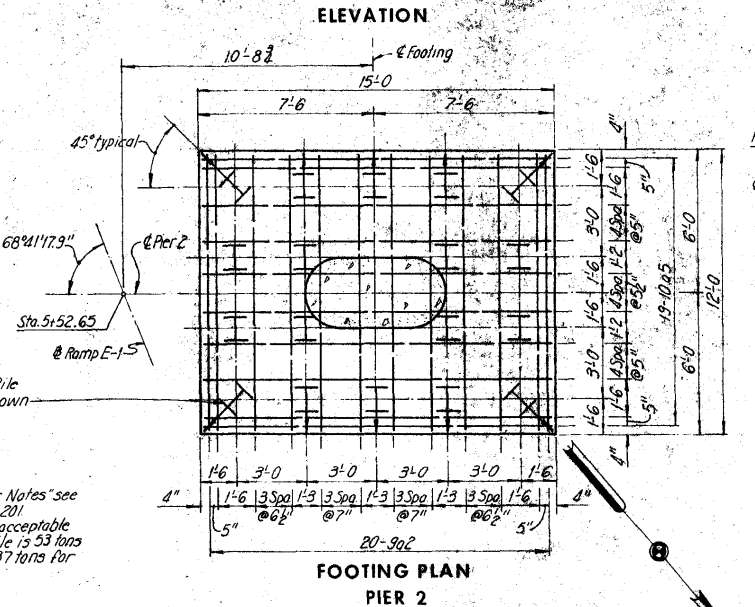
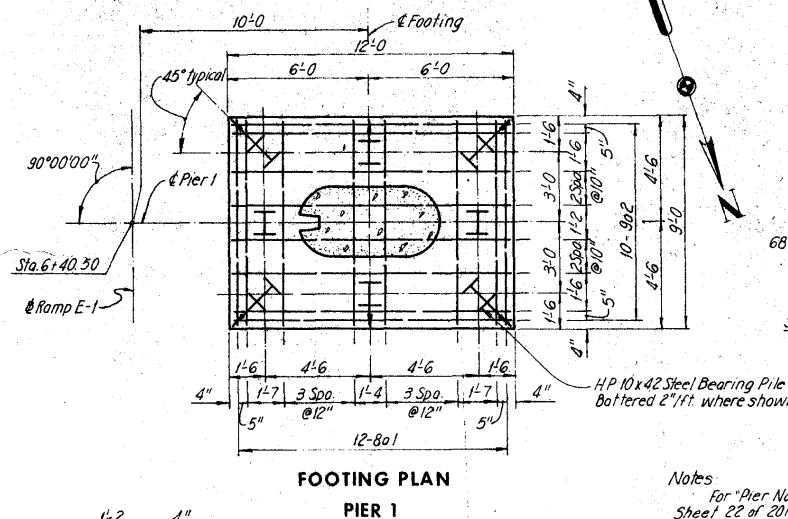
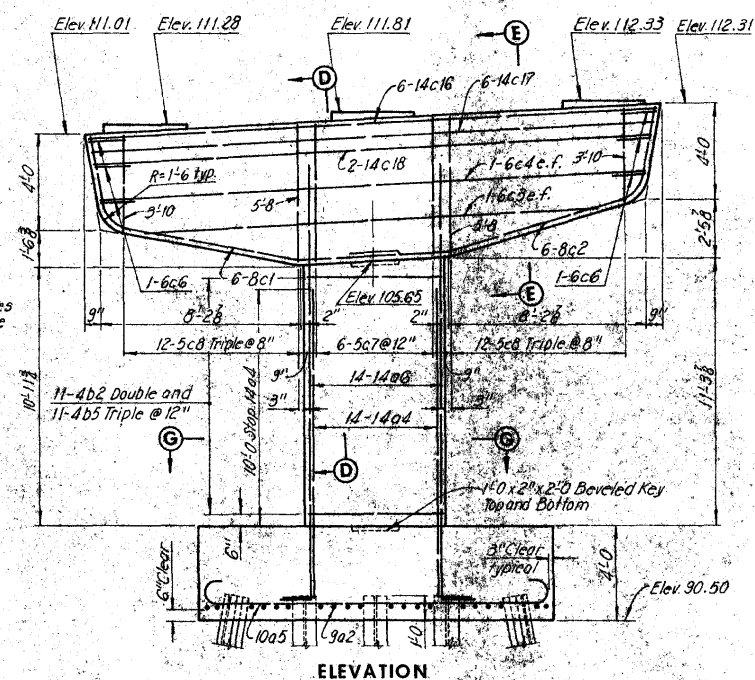
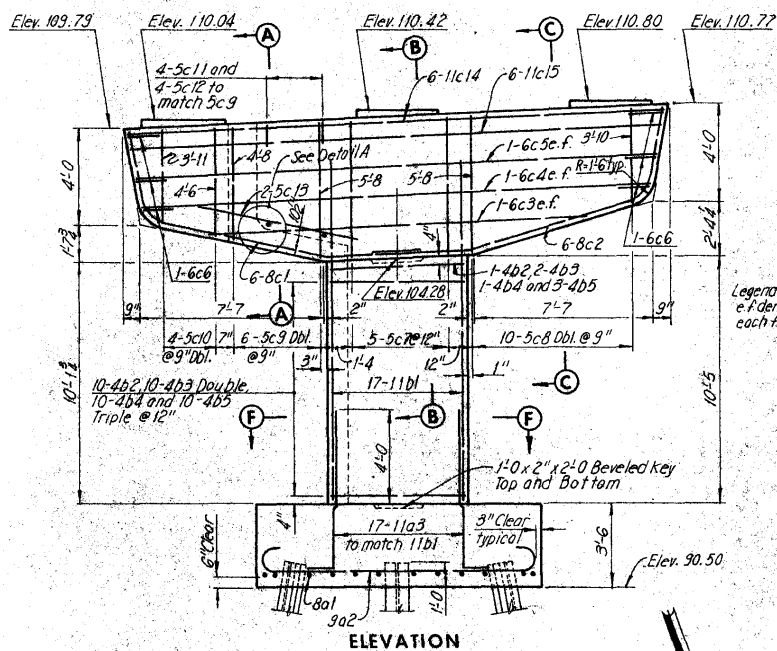
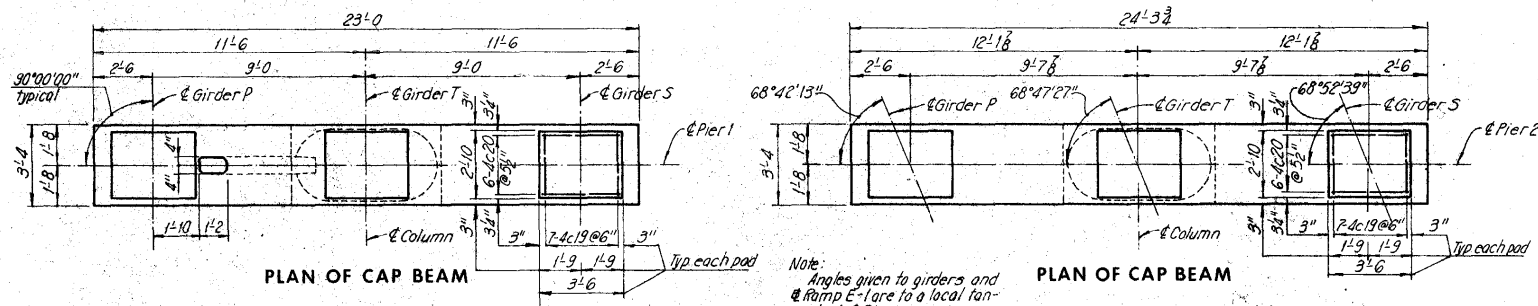


**CEDAR RIVER BRIDGE
 SOUTH APPROACH
 DESIGN FOR VARIABLE SKEW
 CONTINUOUS WELDED PLATE GIRDER BRIDGE
 ABUTMENT DETAILS, RAMP E-I**

STA. 322+81.95 @ FREEWAY =
 STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. I-380-6(68)263--01-57
 LINN COUNTY
 IOWA STATE HIGHWAY COMMISSION

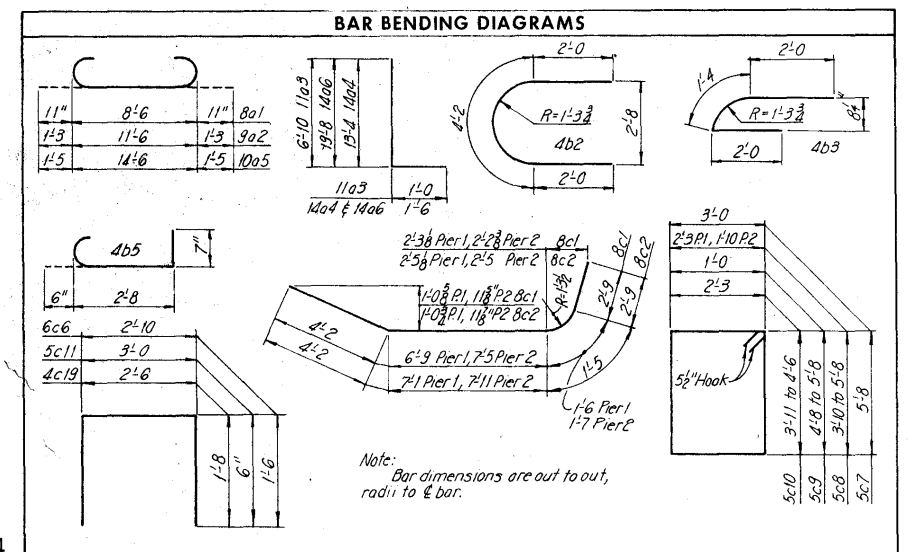
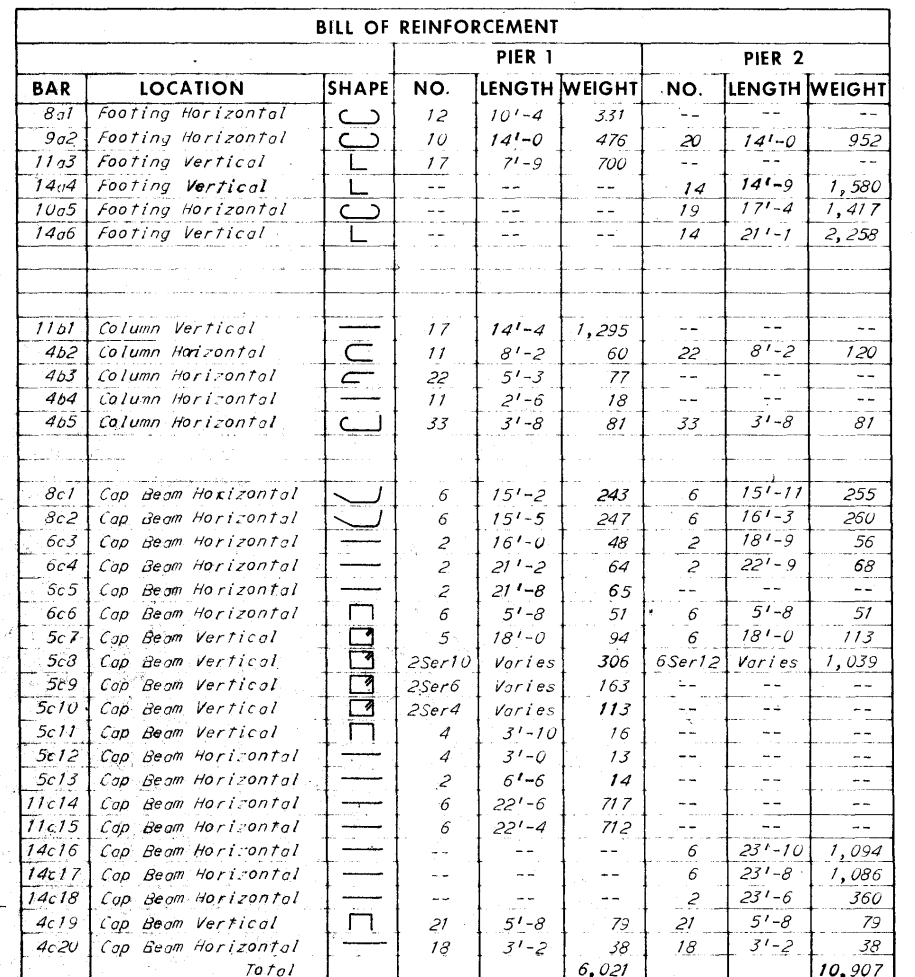
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
 CONSULTING ENGINEERS
 KANSAS CITY

MADE JJR DATE 4-26-74 CHECKED DLR DATE 7-11-74



ESTIMATED QUANTITIES			
		PIER 1	PIER 2
ITEM	UNIT	QUANTITY	QUANTITY
Structural Concrete (C/C)	Cu.Yds.	34.3	48.7
Reinforcing Steel	Lbs.	6,021	10,907
Excavation, Class 20	Cu.Yds.	39.3	58.0
HP10x42 Steel	Furnish	444	456
Driving Piles	Drive	444	456

CONCRETE PLACEMENT QUANTITIES			
		PIER 1	PIER 2
LOCATION	UNIT	QUANTITY	QUANTITY
Footing, Class C	Cu.Yds.	14.0141	26.7
Column, Class C	Cu.Yds.	5.9	6.6
Cap Beam, Class C	Cu.Yds.	14.3	15.4
Total	Cu.Yds.	34.2343	48.7



CEDAR RIVER BRIDGE
SOUTH APPROACH
 DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE

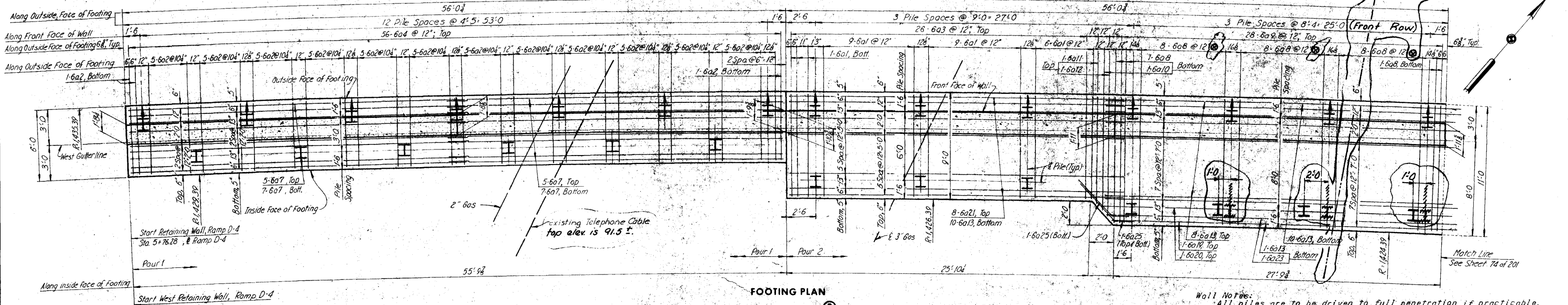
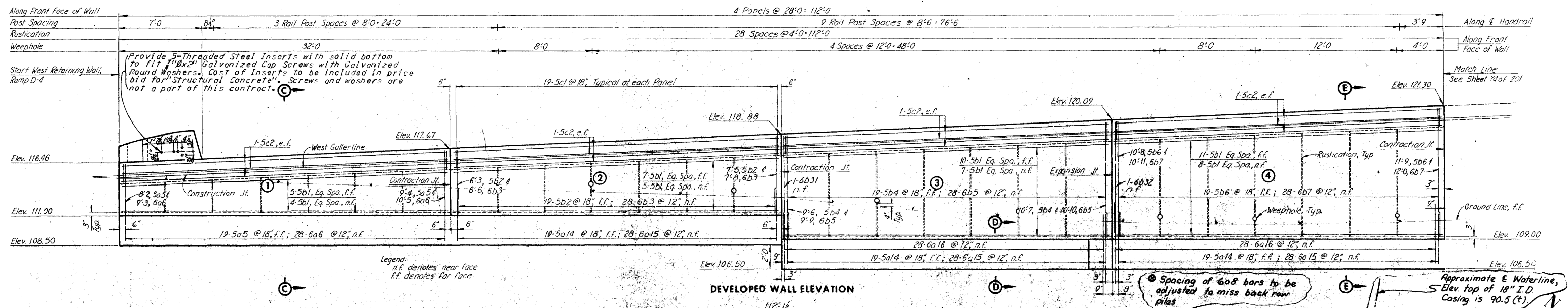
PIERS 1 AND 2, RAMP E-1

STA. 322+81.95 @ FREEWAY=
STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. 1-380-6(68)263--01-57

LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

SHEET 72 OF 201

DESIGN NO. 1276 LINN COUNTY FILE 23191 SHEET 74 OF 203-0

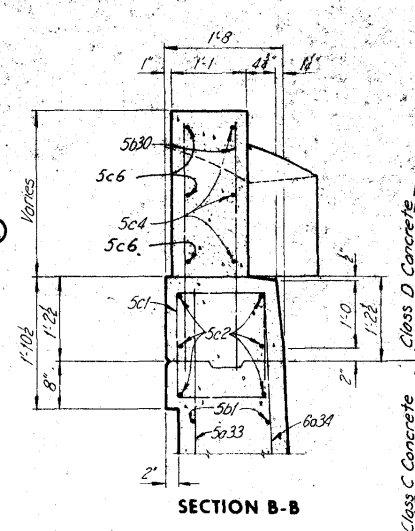
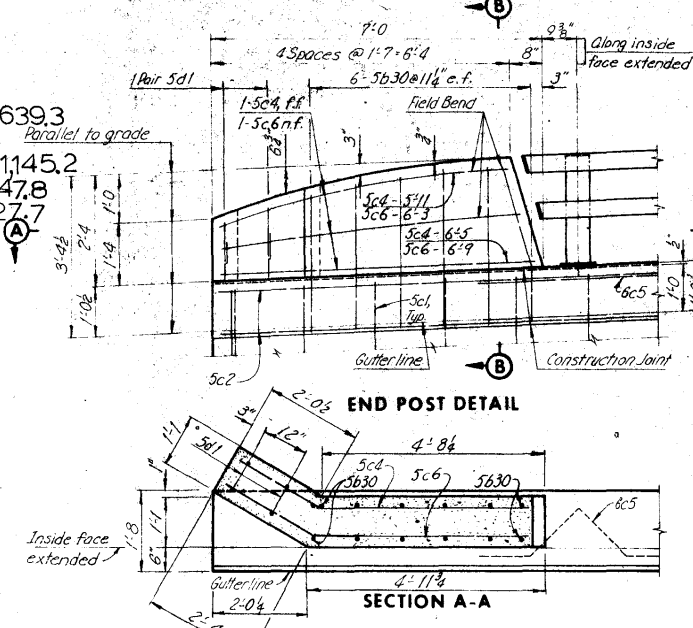


CONCRETE PLACEMENT QUANTITIES	
Curb Total (Class D)	26.3 Cu. Yds.
End Post (Class D)	0.6 Cu. Yds.
Panel 1 (Class C)	8.0 Cu. Yds.
Panel 2 (Class C)	10.1 Cu. Yds.
Panel 3 (Class C)	16.2 Cu. Yds.
Panel 4 (Class C)	18.6 Cu. Yds.
Panel 5 (Class C)	21.1 Cu. Yds.
Panel 6 (Class C)	27.1 Cu. Yds.
Panel 7 (Class C)	30.1 Cu. Yds.
Panel 8 (Class C)	33.1 Cu. Yds.
Panel 9 (Class C)	29.6 Cu. Yds.
Panel 10 (Class C)	31.8 Cu. Yds.
Panel 11 (Class C)	20.4 Cu. Yds.
Panel 12 (Class C)	14.2 Cu. Yds.
Footing, Pour 1 (Class C)	32.4 Cu. Yds.
Footing, Pour 2 (Class C)	191.8 Cu. Yds.
Footing, Pour 3 (Class C)	72.8 Cu. Yds.
Footing, Pour 4 (Class C)	27.4 Cu. Yds.
Footing, Pour 5 (Class C)	27.4 Cu. Yds.
Total	639.0 Cu. Yds.

ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Structural Concrete*	Cu. Yds.	639.00
Reinforcing Steel	Lbs.	55,382
Excavation Class 20	Cu. Yds.	1,196
HP10x42 Steel **	Furnish Lin. Ft.	4,774.48
Boring Piles	Drive Lin. Ft.	5,774.43

* Includes 612.1 Cu. Yds. Class C concrete and 26.9 Cu. Yds. Class D concrete.
** 53 @ 41'-0, 37 @ 43'-0, 10 @ 49'-0 and 10 @ 52'-0
SEE Piling Log, sheet 203 M40

Notes:
For Sections C-C, D-D and E-E see Sheet 75 of 201.
For Bill of Reinforcement see Sheet 76 of 201.
Piles not shown in "Developed Wall Elevation".
Set piles radial or normal to outside face of footing, except where shown otherwise.
For Contraction Joints, Expansion Joints and Rustication Details see Sheet 74 of 201.



Wall Notes:

All piles are to be driven to full penetration if practicable, but to at least 55 ton bearing value, unless otherwise stated. The minimum acceptable bearing per pile is 54 Tons. Pile dimensions shown are of the bottom of footing and all piles are HP 10x42.

Piles are to be battered 3" per foot where indicated. All dowel bars shall be securely fastened into position prior to the placement of footing concrete.

For Weephole Detail, see Sheet 74 of 201.

Expansion and contraction joints shall extend from top of footing to top of wall.

All exposed corners 90° or sharper are to be filleted with a 1" dressed and beveled strip.

Cost of furnishing and placing waterproofing, preformed joint filler and 1" vertical joint sealer is to be included in price bid for concrete.

Use 2" clear on-all reinforcing unless shown otherwise.

Porous backfill material shall conform with Section 4131 of the Standard Specifications. Cost of porous backfill is to be included in price bid for concrete.

1-6c5 bar is to be placed under each handrail post.

The pile spacing and/or batter has been adjusted to facilitate avoiding damage to known utilities. The contractor may predrill adjacent piles to preclude damage. See "General Utility Note" sheet 4 of 201.

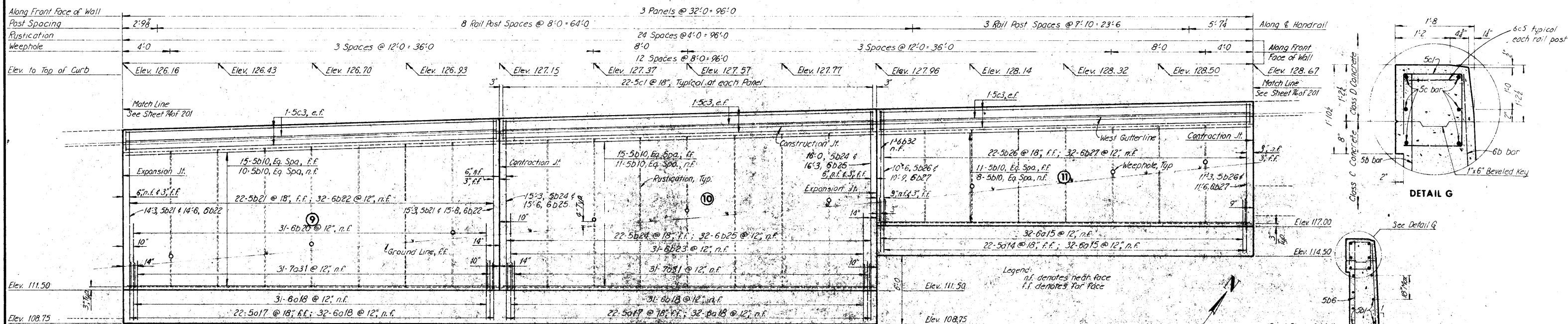
**CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE
RETAINING WALL, RAMP D-4**

STA. 322+81.95 @ FREEWAY=
STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. I-380-6(68)263--01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

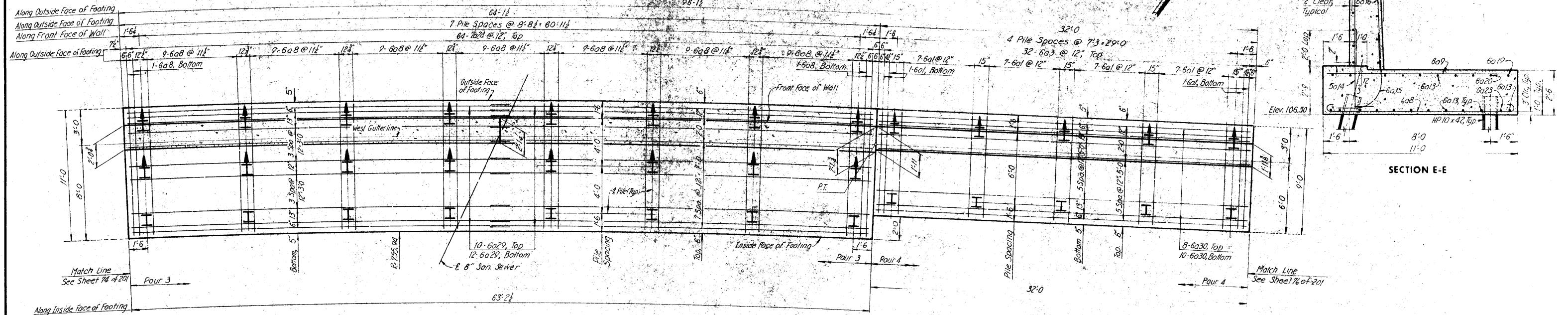
MADE JJR DATE 4-15-74 CHECKED DCH DATE 7-16-74

Revised: 1-3-77; Spacing of back row piles under wall section ④ changed, Waterline location and notes added.

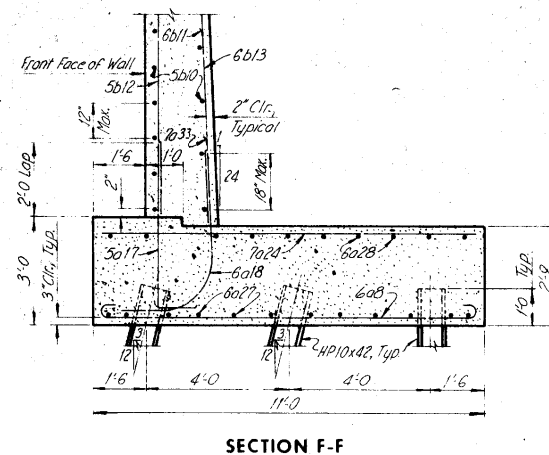
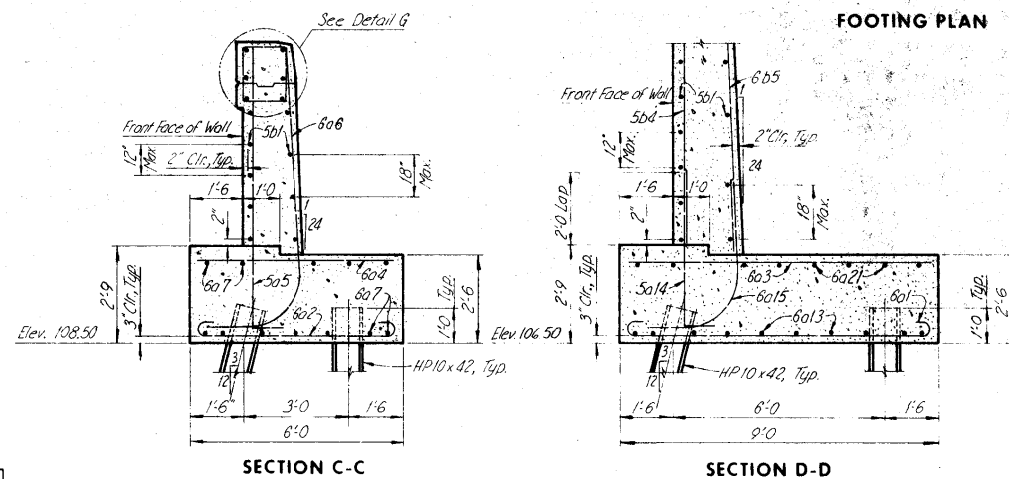
FEDERAL DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEET
	IOWA				



WALL ELEVATION



FOOTING PLAN



Notes: For Bill of Reinforcement see Sheet 76 of 201.
Piles not shown in "Wall Elevation".
Set piles radial or normal to outside face of footing, except where shown otherwise.
For Contraction Joints, Expansion Joints and Rustication Details see Sheet 74 of 201.
For location of Section C-C, Section D-D and Section E-E see Sheet 73 of 201.
For location of Section F-F see Sheet 74 of 201.

**CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE**

RETAINING WALL, RAMP D-4

STA. 322+81.95 @ FREEWAY=
STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. I-380-6(68)263--01-57

LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

SHEET 75 OF 201

DESIGN NO. 1276 LINN COUNTY FILE 23191 SHEET 77 OF 203-0

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

MADE JJR DATE 4-15-74 CHECKED DCH DATE 7-16-74

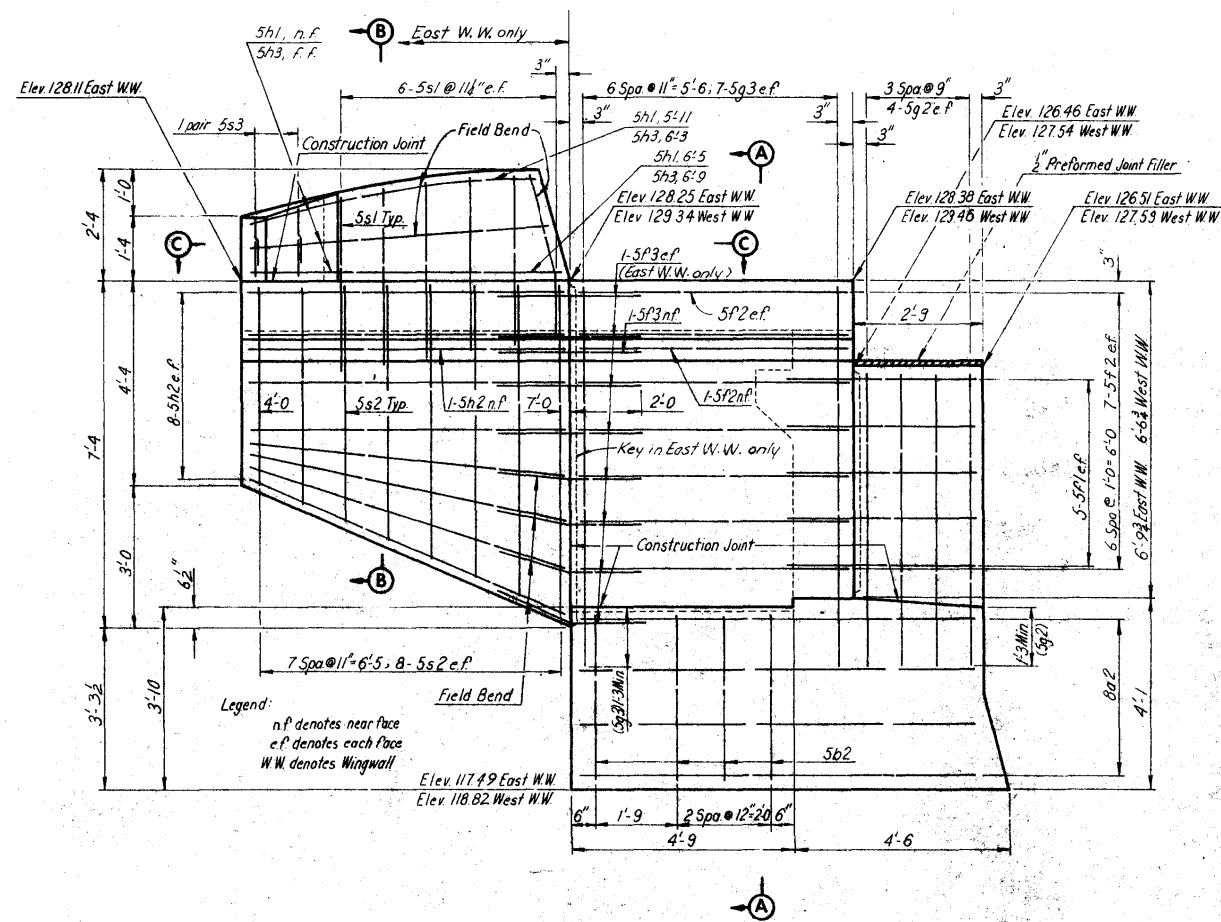
SECTION C-C

SECTION D-D

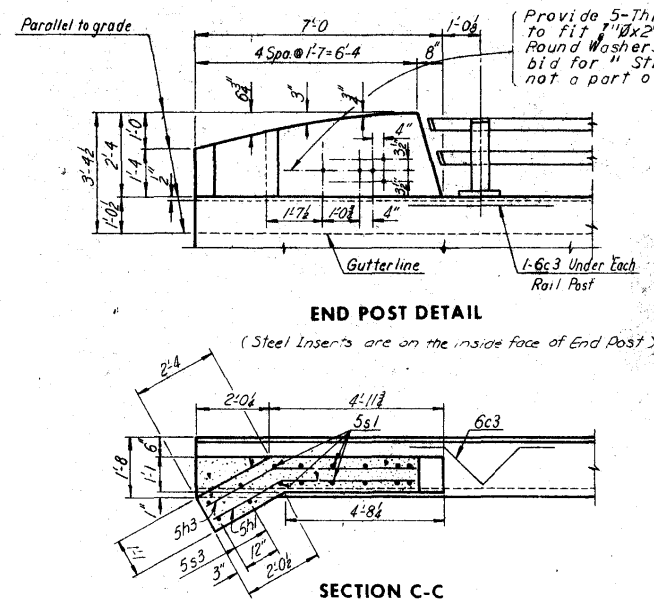
SECTION F-F

DESIGN NO. 1276 LINN COUNTY FILE 23191 SHEET 77 OF 203-C

MADE DLR DATE 3-15-74 CHECKED DCH DATE 7-16-74

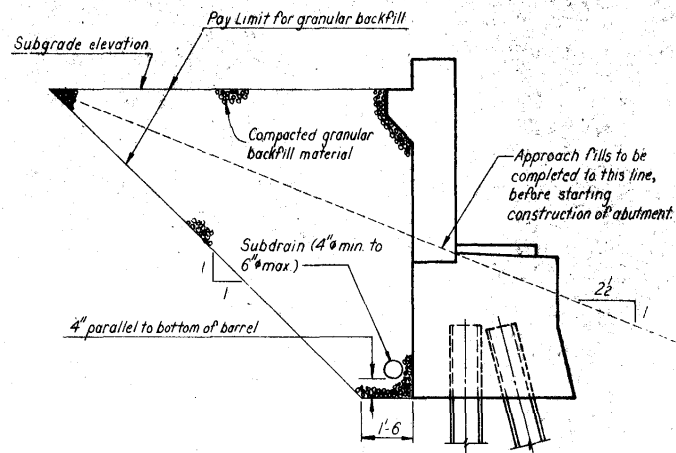


WINGWALL ELEVATION

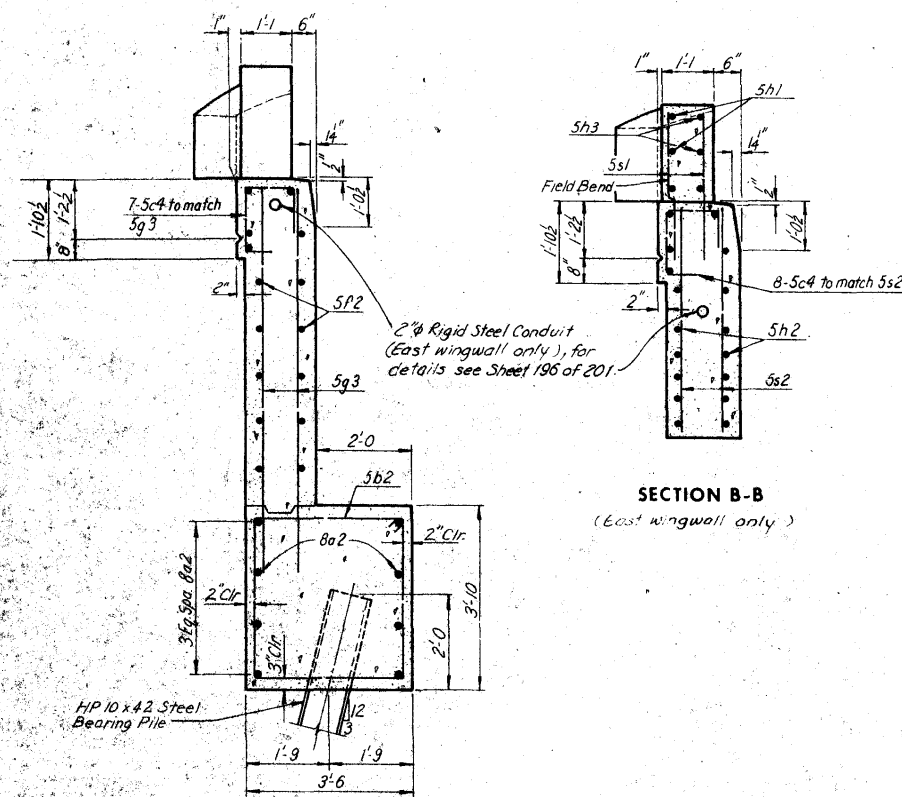


END POST DETAIL

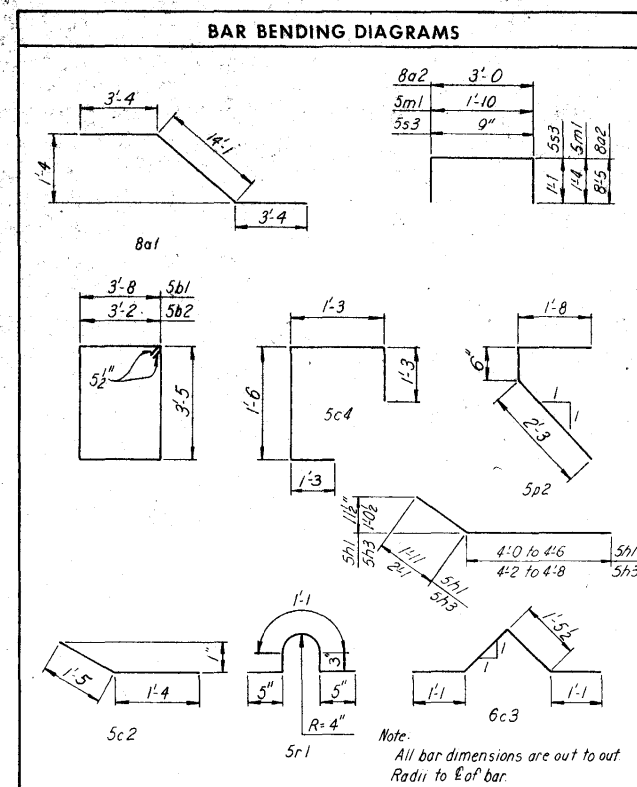
(Steel Inserts are on the inside face of End Post)



GRANULAR BACKFILL DETAIL



SECTION A-A
(End Post on East wingwall only)



BAR BENDING DIAGRAMS

Note:
All bar dimensions are out to out.
Radii to $\frac{1}{2}$ of bar.

BILL OF REINFORCEMENT						
Aoutment-Pomp D-4						
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT	
8a1	Footing		13	20'-9	720	
8a2	Footing W.W.		3	19'-8	420	
5u1	Footing		22	14'-10	340	
5u2	Footing W.W.		8	13'-10	115	
5c1	Backwall		12	17'-8	221	
5c2	Backwall Dowels		24	2'-9	69	
6c3	Roll Post Anchor		2	5'-0	75	
5c4	Curb Vertical		22	5'-0	115	
5f1	Maskwall		20	4'-0	83	
5f2	Wingwall		30	5'-8	177	
5f3	Wingwall Dowels		17	3'-10	68	
5g1	Approach Slab Seat		9	1'-9	16	
5g2	Maskwall		16	6'-1	102	
5g3	Wingwall		28	8'-2	239	
5h1	End Post		1 Ser3	Varies	19	
5h2	Wingwall		17	6'-8	118	
5h3	End Post, Horiz		1 Ser 3	Varies	20	
4a1	Backwall		3	6'-10	14	
6K2	backwall		3	7'-1	32	
4K3	backwall		1 Ser14	Varies	65	
6K4	backwall		1 Ser14	Varies	152	
4K5	backwall		2	7'-3	10	
6K6	backwall		2	7'-6	23	
5m1	Girder Step		8	4'-4	36	
5n1	Girder Step		8	2'-2	18	
4p1	Approach Slab Seat		2	16'-8	22	
5p2	Approach Slab Seat		17	4'-4	77	
5r1	Paving block		3	2'-3	7	
5s1	End Post Vertical		12	3'-7	45	
5s2	Wingwall		2 Ser8	Varies	92	
5s3	End Post Vertical		4	2'-9	11	
Total					3,461	

**CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE**

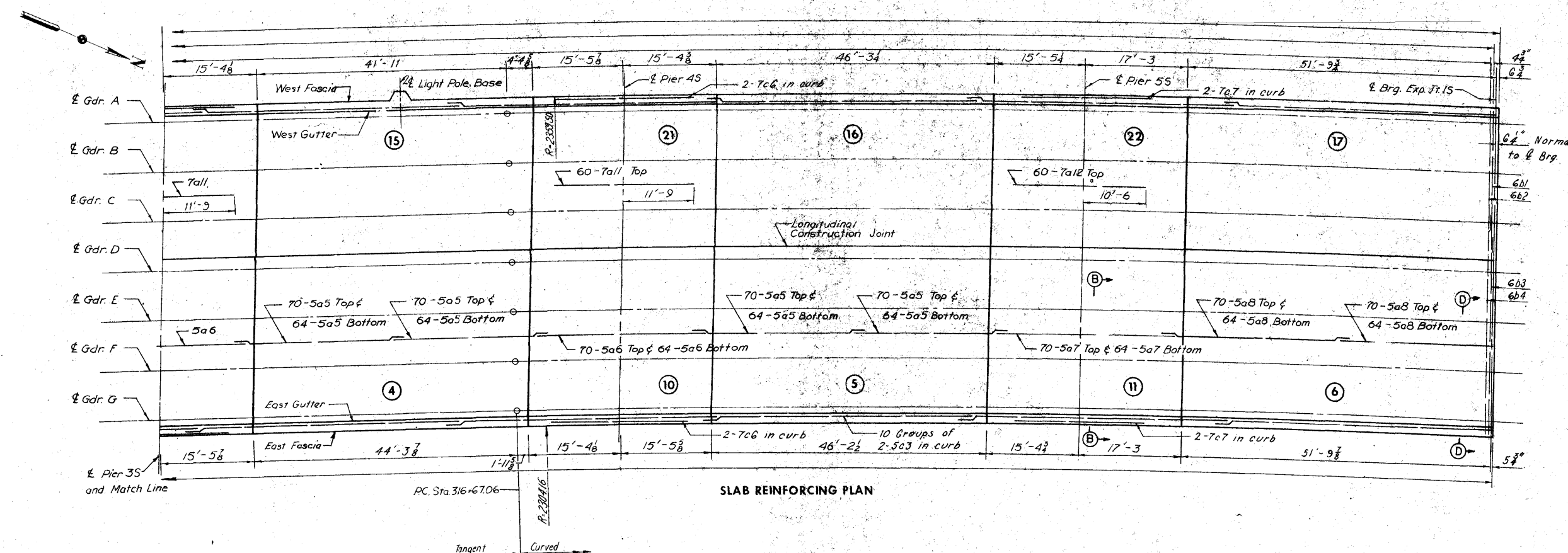
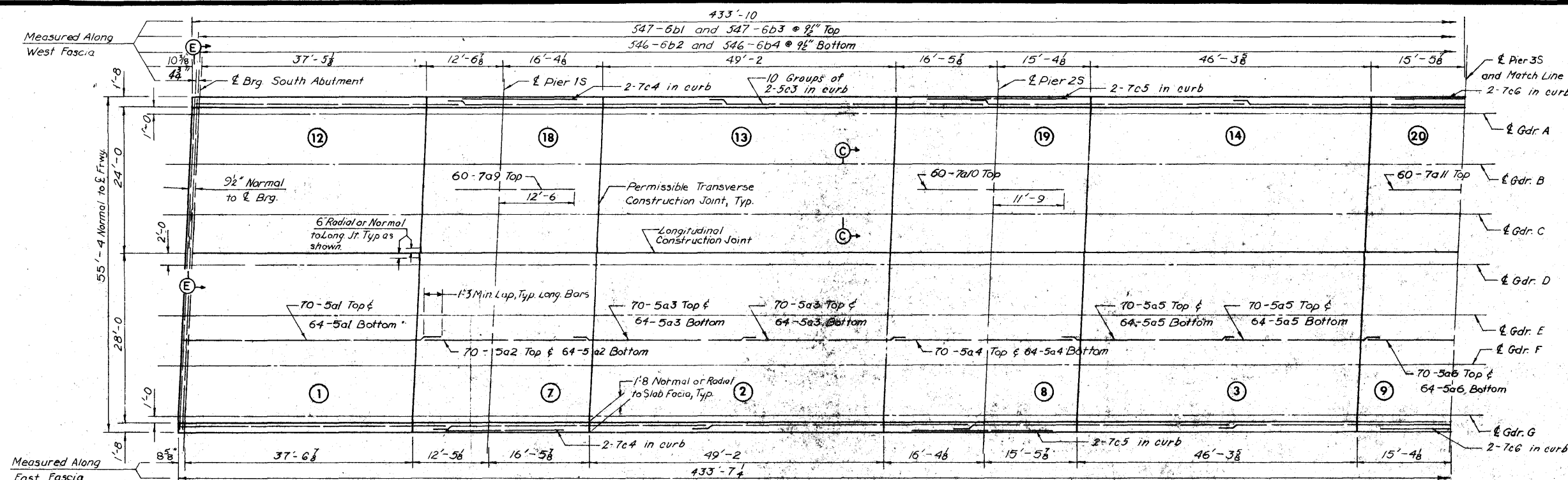
ABUTMENT DETAILS, RAMP D-4

STA. 322+81.95 @ FREEWAY =
STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. 1-380-6(68)263--01-57

LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

MADE DLR DATE 3-21-74 CHECKED DCH DATE 7-16-74



SLAB REINFORCING PLAN

CONCRETE PLACEMENT QUANTITIES

POUR	CU.YDS.	POUR	CU.YDS.
1	30.2	14	30.5
2	37.5	15	30.4
3	35.4	16	30.5
4	35.3	17	35.4
5	35.3	18	19.8
6	41.0	19	21.0
7	22.0	20	20.3
8	24.3	21	20.3
9	23.6	22	21.6
10	23.6	Light Blister	.4
11	24.9	West Curb	30.8
12	26.2	East Curb	30.8
13	32.4	Total (Cl.D)	683.5

SUPERSTRUCTURE ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Structural Concrete (Class D)	Cu.Yds.	683.5
Reinforcing Steel #4	Lbs.	85,489
Reinforcing Steel-Epoxy Coated	Lbs.	94,085
Structural Steel #4	Lbs.	584,586
P.C. Concrete Surfacing	Sq.Yds.	2,494

Includes reinforcing for 1 light blister
 Includes weight of Exp. Jt. at the abutment and bearing plates.

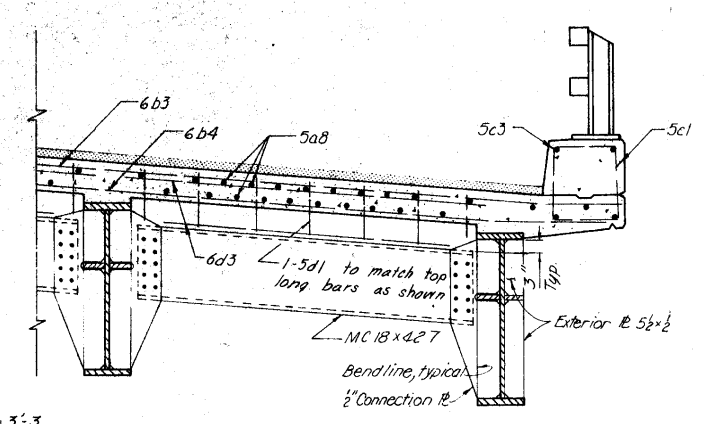
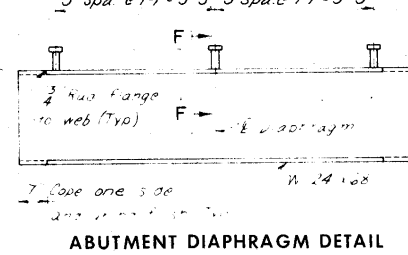
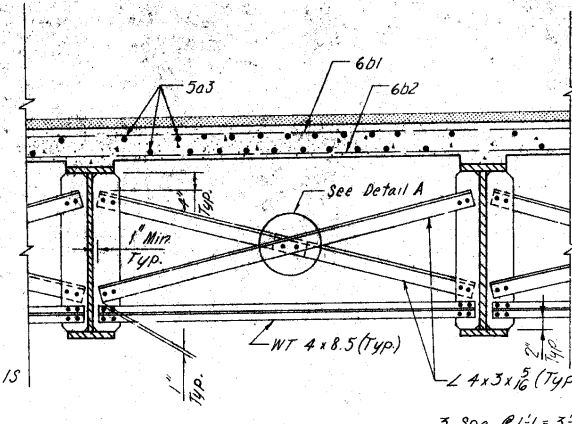
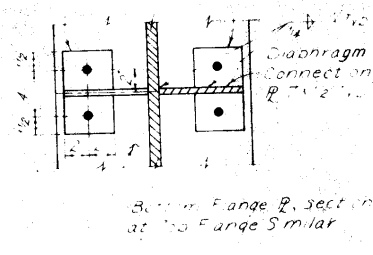
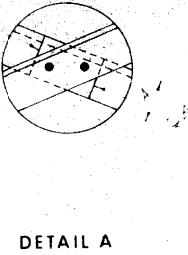
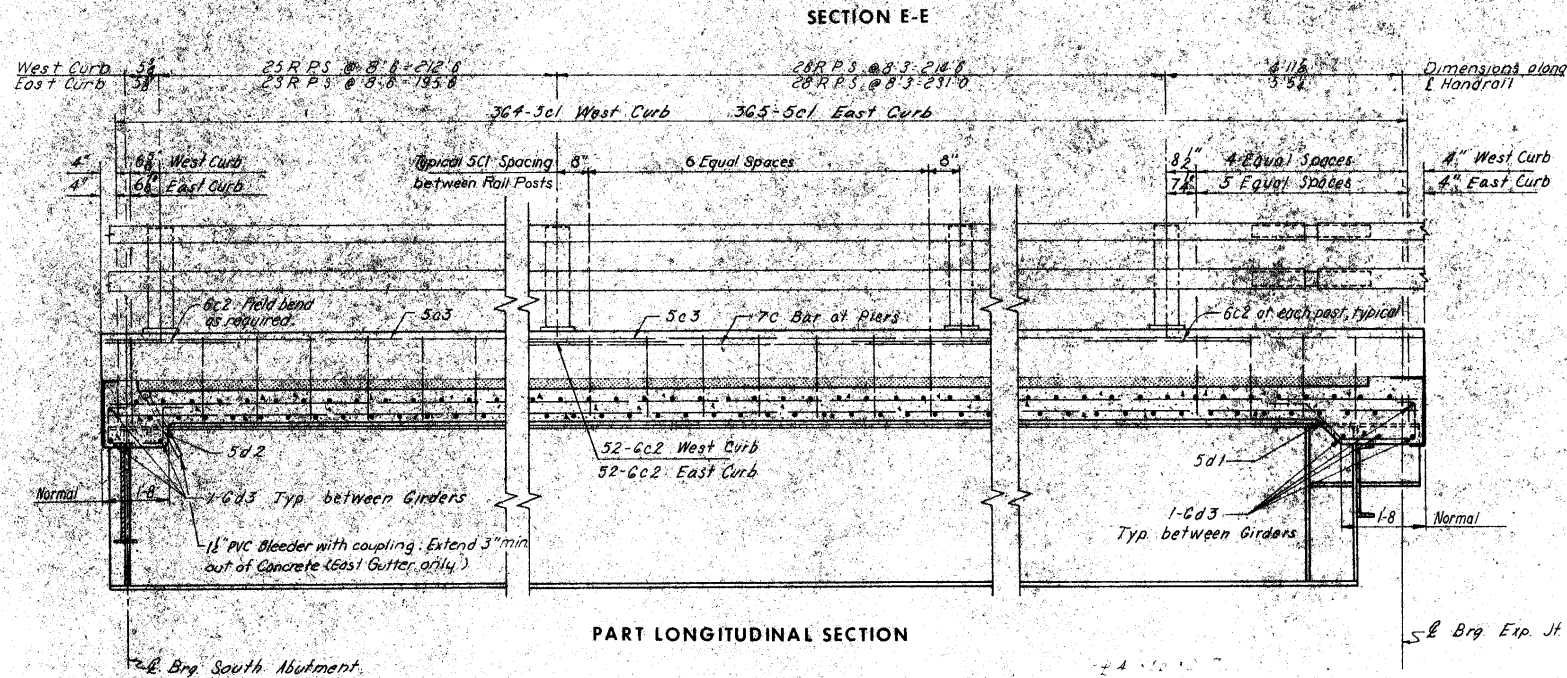
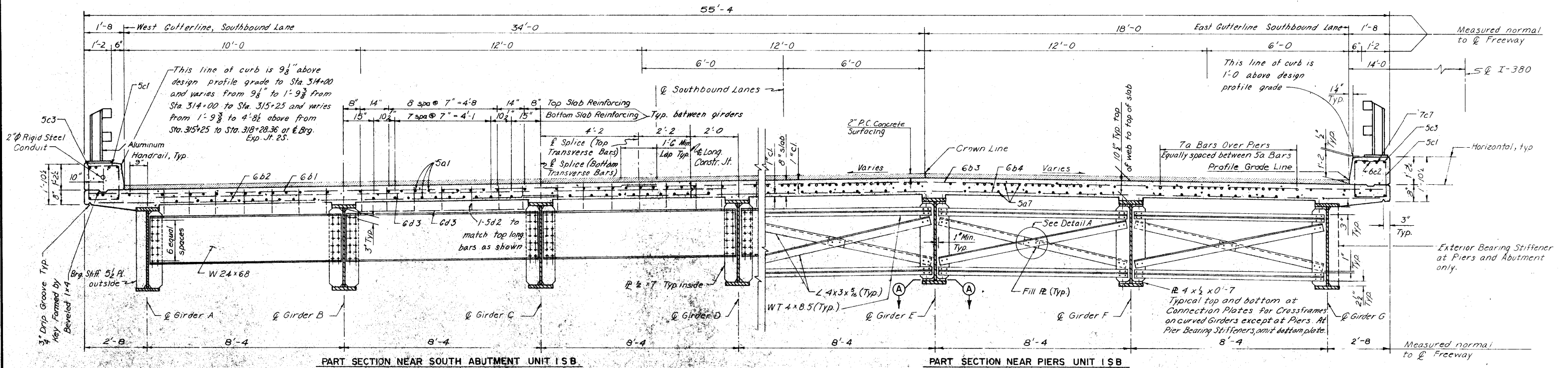
Notes:
 For "Bill of Reinforcement" see Sheet 81 of 201.
 For "Top of P.C. Concrete Surfacing Elevations" see sheet 81 of 201.
 For "Sections" see sheet 80 of 201.
 Deck inlets are required in east gutter at Piers 1S, 2S, 3S and 4S and in east gutter at Expansion Joint 1S. See Sheets 187 and 188 of 201, for detail.

**CEDAR RIVER BRIDGE
 SOUTH APPROACH
 DESIGN FOR VARIABLE SKEW
 CONTINUOUS WELDED PLATE GIRDER BRIDGE
 SLAB PLAN - UNIT 15B**

STA. 322+81.95 & FREEWAY =
 STA. 32+14.70 & 1ST. AVE. W PROJECT NO. I-380-6(68)263--01-57
 LINN COUNTY
 IOWA STATE HIGHWAY COMMISSION

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
 CONSULTING ENGINEERS
 KANSAS CITY

MADE das DATE 1/20 CHECKED CBM DATE 5/16/74



Note: Section B-B applies from F.C. of curve to Expansion Joint 15. For Super-elevation Data see Sheet 16 of 201. For Location of Section: B-B, C-C, D-D and E-E, see Sheet 79 of 201. For Roller Joint Details, see Sheet 181 of 201.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

MADE *das* DATE *6/18* CHECKED *CSH* DATE *8-13-74*

CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE

SUPERSTRUCTURE DETAILS - UNIT 1 S B

STA. 322+81.95 @ FREEWAY =
STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. 1-380-6(68)263--01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

SECTION F-F

ELEVATIONS — TOP OF P.C. CONCRETE SURFACING (2" above top of first lift of concrete)																									
Girder	So. Abut	.25	.50	.75	F.S. 1	.25	.50	.75	F.S. 2	.25	.50	.75	F.S. 3	.25	.50	.75	F.S. 4	.25	.50	.75	F.S. 5	.25	.50	.75	E.J. 1S
A	115.86	115.06	116.26	116.46	116.66	116.91	116.16	117.41	117.69	117.96	118.22	118.48	118.75	119.02	119.29	119.55	119.81	120.07	120.32	120.57	120.83	121.00	121.17	121.35	121.52
B	115.98	115.15	116.32	116.48	116.65	116.86	116.06	117.23	117.53	117.76	117.99	118.23	118.46	118.70	118.94	119.18	119.41	119.63	119.86	120.08	120.31	120.46	120.62	120.77	120.93
C	115.10	116.24	116.37	116.51	116.64	116.81	116.97	116.14	117.36	117.57	117.77	117.97	118.18	118.39	118.60	118.80	119.01	119.20	119.40	119.60	119.79	119.93	120.06	120.20	120.33
D	116.23	116.33	116.43	116.53	116.63	116.76	116.88	116.01	117.20	117.37	117.55	117.72	117.89	118.07	118.25	118.43	118.60	118.77	118.94	119.11	119.28	119.39	119.51	119.62	119.74
E	116.34	116.41	116.48	116.55	116.62	116.70	116.79	116.88	117.04	117.18	117.32	117.47	117.61	117.76	117.91	118.05	118.20	118.34	118.48	118.62	118.76	118.86	118.95	119.05	119.15
F	116.21	116.28	116.35	116.42	116.49	116.58	116.66	116.75	116.87	116.99	117.10	117.22	117.33	117.45	117.57	117.68	117.80	117.91	118.02	117.13	118.25	118.32	118.40	118.47	118.55
G	115.09	115.16	116.23	116.30	116.37	116.45	116.54	116.62	116.71	116.80	116.88	116.97	117.05	117.14	117.23	117.31	117.40	117.48	117.56	117.65	117.73	117.79	117.84	117.90	117.96

Legend: F.S. denotes Field Splice

*All of the number of bars noted below are to be epoxy coated and placed in the top mat of reinforcing; 70-501 (2920 Lbs.), 70-502 (2063 Lbs.), 140-503 (3943 Lbs.), 70-504 (2275 Lbs.), 120-505 (11171 Lbs.), 140-506 (4405 Lbs.), 70-507 (2336 Lbs.), 140-508 (4016 Lbs.), 12-503 (144 Lbs.). Epoxy coated ab bars are to be Grade 60 reinforcing steel.

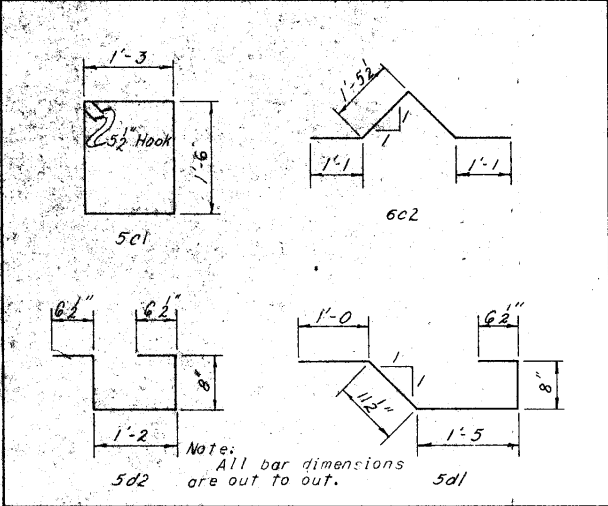
BILL OF REINFORCEMENT

BAR	LOCATION	SHAPE	NO	LENGTH	WEIGHT
*501	Slab, Longitudinal	—	14	40'-0"	5590
*502	Slab, Longitudinal	—	14	28'-0"	3948
*503	Slab, Longitudinal	—	268	2'-0"	7547
*504	Slab, Longitudinal	—	14	71'-2"	4556
*505	Slab, Longitudinal	—	804	25'-6"	1184
*506	Slab, Longitudinal	—	268	7'-2"	8412
*507	Slab, Longitudinal	—	14	32'-0"	4472
*508	Slab, Longitudinal	—	268	27'-6"	7687
*709	Slab, Longitudinal	—	60	20'-0"	45
*7010	Slab, Longitudinal	—	60	24'-0"	2974
*7011	Slab, Longitudinal	—	120	21'-6"	5764
*7012	Slab, Longitudinal	—	60	32'-0"	2724
*601	Slab, Transverse To:	—	547	24'-2"	19855
602	Slab, Transverse To:	—	546	20'-0"	16402
*603	Slab, Transverse To:	—	547	32'-6"	26702
604	Slab, Transverse To:	—	546	36'-8"	30070
*501	End Diaphragm	—	42	4'-3"	137
*502	End Diaphragm	—	42	3'-3"	142
*503	End Diaphragm	—	42	3'-0"	505
501	Curb, Transverse	—	729	6'-2"	4688
604	Curb, Under Post	—	104	5'-0"	191
502	Curb, Longitudinal	—	20	44'-6"	1807
704	Curb, Longitudinal	—	4	0'-0"	16
705	Curb, Longitudinal	—	4	24'-0"	198
706	Curb, Longitudinal	—	8	24'-6"	384
707	Curb, Longitudinal	—	4	22'-0"	182
Total					179439

TABLE OF MOMENTS AND REACTIONS IN FOOT-KIPS AND KIPS

	ITEM	MAXIMUM POSITIVE MOMENT						MAXIMUM NEGATIVE MOMENT					REACTIONS									
		SPAN 1	SPAN 2	SPAN 3	SPAN 4	SPAN 5	SPAN 6	PIER 1S	PIER 2S	PIER 3S	PIER 4S	PIER 5S	S. ABUT	PIER 1S	PIER 2S	PIER 3S	PIER 4S	PIER 5S	JT. 1S			
GIRDER A	Dead Load A	96	283	179	212	183	325	487	577	501	501	588	14.5	72.6	79.1	73.9	74.2	81.3	25.3			
	Dead Load B	36	106	71	81	75	116	150	177	156	156	177	5.0	23.8	26.1	24.5	24.7	26.6	8.6			
	Live Load	356	498	480	478	487	536	390	458	436	448	442	38.1	54.3	57.5	56.4	57.5	57.5	41.6			
	Impact	102	120	119	119	121	139	112	111	109	112	115	10.9	13.2	14.2	14.0	14.3	14.3	10.7			
	Total							1139	1323	1202	1217	1322	68.5	163.9	176.9	168.8	170.7	179.7	86.2			
GIRDER B	Dead Load A	107	316	201	237	205	363	545	646	560	558	656	16.2	81.3	88.6	82.8	82.6	90.6	28.2			
	Dead Load B	52	153	103	117	107	164	217	256	225	222	253	7.3	34.4	37.8	35.5	35.2	38.0	12.3			
	Live Load	394	551	531	529	536	591	439	504	483	493	488	42.9	59.0	63.6	62.4	63.3	63.2	45.8			
	Impact	113	133	132	131	133	152	116	125	120	122	124	11.3	15.7	15.7	15.5	15.7	15.9	11.8			
	Total							1317	1531	1388	1395	1521	77.7	190.4	205.7	196.2	197.1	207.7	98.1			
GIRDER C	Dead Load A	107	316	201	237	204	362	545	646	560	556	653	16.2	81.3	88.6	82.8	82.2	90.2	28.1			
	Dead Load B	52	153	103	117	107	164	217	256	225	222	253	7.3	34.4	37.8	35.5	35.3	38.0	12.3			
	Live Load	394	551	531	529	534	589	439	504	483	491	486	42.9	59.0	63.6	62.4	63.0	62.9	45.6			
	Impact	113	133	132	131	132	151	116	125	120	121	123	11.3	15.7	15.7	15.5	15.6	15.9	11.8			
	Total							1317	1531	1388	1390	1515	77.7	190.4	205.7	196.2	196.1	207.0	97.8			
GIRDER D	Dead Load A	107	316	201	237	203	360	545	646	560	553	650	16.2	81.3	88.6	82.8	81.9	89.8	28.0			
	Dead Load B	52	153	103	117	107	164	217	256	225	222	253	7.3	34.4	37.8	35.5	35.2	38.0	12.3			
	Live Load	394	551	531	529	531	586	439	504	483	489	484	42.9	59.0	63.6	62.4	62.7	62.6	45.4			
	Impact	113	133	132	131	132	151	116	125	120	121	123	11.3	15.7	15.7	15.5	15.6	15.8	11.7			
	Total							1317	1531	1388	1385	1510	77.7	190.4	205.7	196.2	195.4	206.2	97.4			
GIRDER E	Dead Load A	107	316	201	237	203	359	545	646	560	552	649	16.2	81.3	88.6	82.8	81.7	89.6	28.0			
	Dead Load B	52	153	103	117	107	164	217	256	225	222	253	7.3	34.4	37.8	35.5	35.2	38.0	12.3			
	Live Load	394	551	531	529	530	585	439	504	483	488	483	42.9	59.0	63.6	62.4	62.6	62.4	45.3			
	Impact	113	133	132	131	132	151	116	125	120	120	122	11.3	15.7	15.7	15.5	15.5	15.7	11.6			
	Total							1317	1531	1388	1382	1506	77.7	190.4	205.7	196.2	195.0	205.7	97.2			
GIRDER F	Dead Load A	107	316	201	237	202	358	545	646	560	550	647	16.2	81.3	88.6	82.8	81.5	89.4	27.9			
	Dead Load B	52	153	103	117	107	164	217	256	225	222	253	7.3	34.4	37.8	35.5	35.2	38.0	12.3			
	Live Load	394	551	531	529	528	583	439	504	483	487	482	42.9	59.0	63.6	62.4	62.4	62.3	45.2			
	Impact	113	133	132	131	131	150	116	125	120	120	122	11.3	15.7	15.7	15.5	15.5	15.7	11.6			
	Total							1317	1531	1388	1379	1503	77.7	190.4	205.7	196.2	194.4	205.4	97.0			
GIRDER G	Dead Load A	96	283	179	212	179	318	487	577	501	491	576	14.5	72.6	79.1	73.9	72.7	79.7	24.8			
	Dead Load B	36	106	71	81	75	116	150	177	156	156	177	5.0	23.8	26.1	24.5	24.7	26.6	8.6			
	Live Load	356	498	480	478	479	527	390	458	436	441	435	38.1	54.3	57.5	56.4	56.6	56.6	40.9			
	Impact	102	120	119	119	119	137	112	111	109	110	113	10.9	13.2	14.2	14.0	14.1	14.1	10.5			
	Total							1139	1323	1202	1198	1301	68.5	163.9	176.9	168.8	168.1	177.0	84.8			

BAR BENDING DIAGRAMS



CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE

SUPERSTRUCTURE DETAILS - UNIT 15B

STA. 322+81.95 @ FREEWAY = PROJECT NO. I-380-6(08)263-01-57
STA. 32+14.70 @ 1ST. AVE. W

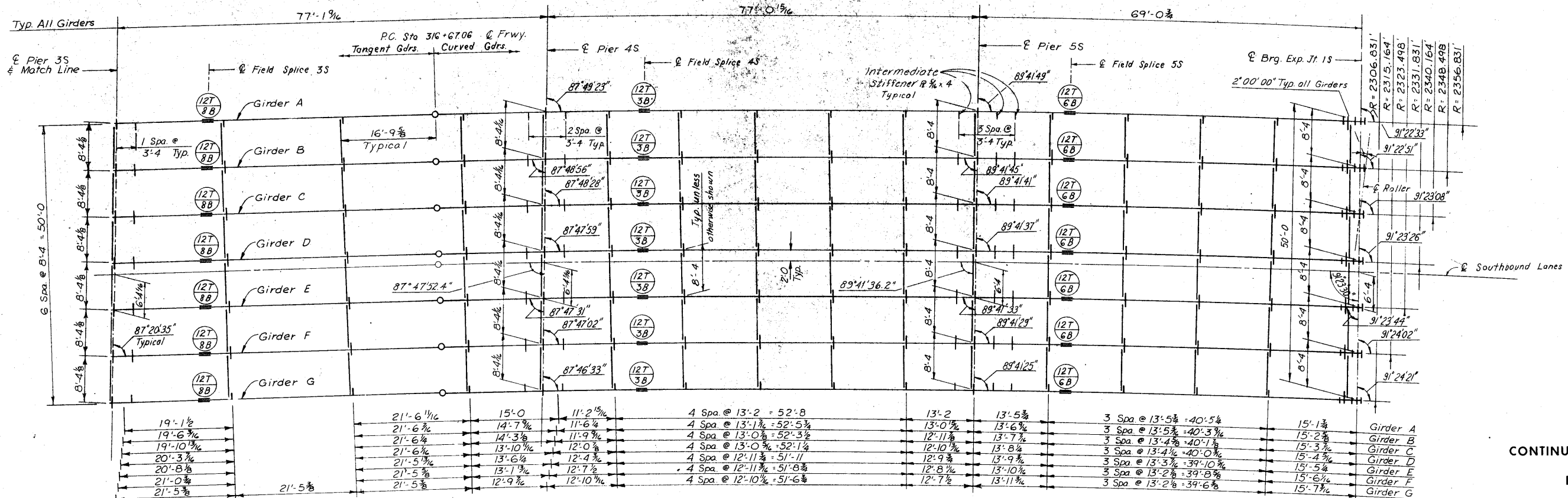
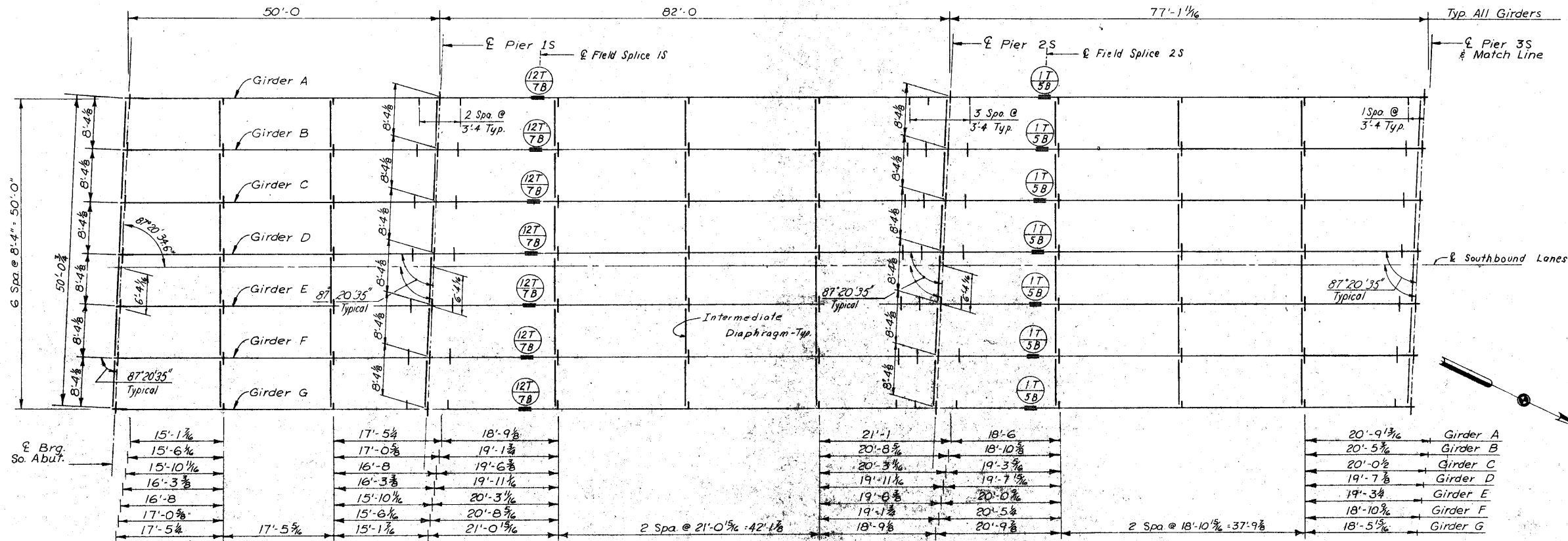
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

SHEET 81 OF 201

DESIGN NO. 1276 LINN COUNTY FILE 23191 SHEET 83 OF 203-0

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

WAL. 005 DATE 4-24-74 CHECKED C. J. C. DATE 5-19-74



HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

FRAMING PLAN

Note:
Angles to curved girders are to a local
tangent to the Δ of girder

CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE

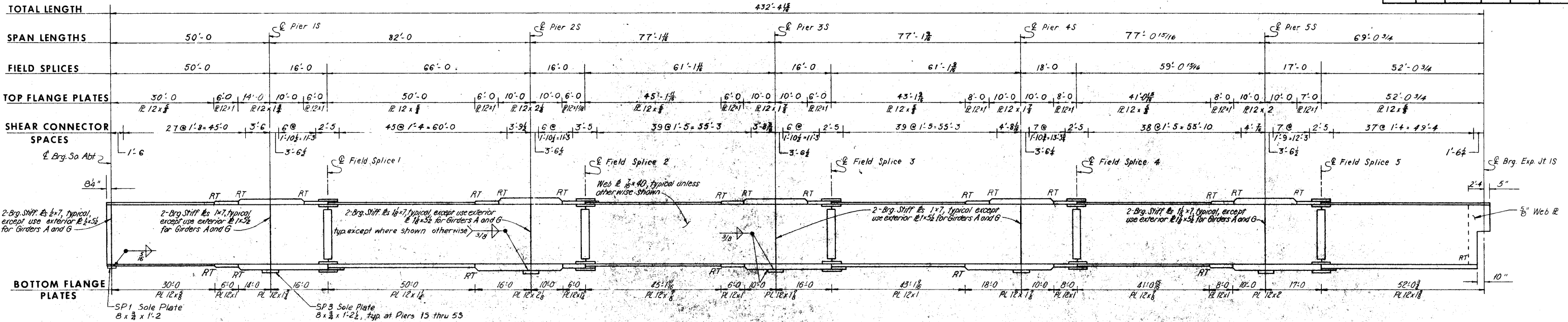
FRAMING PLAN - UNIT 1SB

STA. 322+81.95 Δ FREEWAY =
STA. 32+14.70 Δ 1ST. AVE. W PROJECT NO. I-380-6(68)263--01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

MADE dds DATE 3-14-74 CHECKED JBA DATE 6-17-74

SHEET 82 OF 201

DESIGN NO. 1276 LINN COUNTY FILE 23191 SHEET 84 OF 203-0



TYPICAL ROCKER SETTINGS UNIT 15B								
	SOUTH ABUTMENT	PIER 1S	PIER 2S	PIER 3S	PIER 4S	PIER 5S	EXP. JT. 1S	
Temperature at time of setting								
30°F	2 3/8"	5/16"	1/8"	1/4"	0"	1/4"	1/2"	3/16"
50°F	2 3/8"	0"	0"	0"	0"	0"	0"	3/16"
10°F	3 1/8"	-5/16"	-1/8"	-1/4"	0"	-1/4"	-1/2"	4 1/16"
Sole Plate	SP1	SP3	SP3	SP3	SP3	SP3		
Rocker	R1A	R3A	R3A		R3A	R3A		
Masonry Plate	MP1A	MP3P	MP3P	MP3P	MP3P	MP3P		

Notes:
Rockers are to be set vertically at 50°F. For temperatures above 50°F, set masonry plate toward fixed shoe (+). For temperatures below 50°F, set masonry plate away from fixed shoe (-). Settings for other temperatures are proportional to those shown for a 40°F temperature change.

SPECIFICATIONS

Design stresses for the following materials are in accordance with AASHTO Standard Specifications for Highway Bridges, Series of 1973 plus Interim Specifications.

Structural steel in accordance with Section 7 "Structural Steel Design", ASTM A36, $f_s = 20,000$ p.s.i.

Reinforcing steel in accordance with Section 1.5.1 "Reinforcement", $f_s = 20,000$ p.s.i. Grade 40 and 24,000 p.s.i. Grade 60.

Concrete in accordance with Section 1.5.1 $f'_c = 3,500$ p.s.i.

Construction: Iowa State Highway Commission Standard Specifications, Series of 1972 plus current Supplemental Specifications and Special Provisions of the Iowa Department of Transportation-Highway Division.

All welding shall meet the requirements of the First Edition of the Structural Welding Code (AWS D1.1-72 including revision 1-73) of the American Welding Society as modified by the AASHTO 1974 Standard Specification and the current Supplemental Specification and Special Provisions.

GIRDER DETAILS GIRDERS A,B,C,D,E,F, and G

SUPERSTRUCTURE NOTES

These bridges are designed for HS20-44 loading and 25 lbs./sq. ft. for 2" loaded wearing surface plus an allowance of 20 lbs./sq. ft. for future wearing surface and the alternate loading designated in P.E.M. 20-4, Section 4C.

All field connections are to be bolted with "High Tensile Strength Bolts". The estimated structural steel weight for these connections is based on "High Tensile Strength Bolts". Unless otherwise noted, all open holes are to be 1" and all bolts are to be 1/2".

Girder splices are to be sub-punched or sub-drilled and reamed. Before reaming, all girders are to be assembled for inspection. After inspection holes are to be reamed and all parts match marked.

Flame cutting shall be in accordance with Art. 2408.14 of the Standard Specifications.

Field splice points are to be supported by falsework or other approved means as directed by the Engineer, and adjusted as closely as possible to dimensions shown on the "Girders as Fabricated and Erected Diagram" before bolting is completed.

Shop coat of paint is to be omitted on top of top flanges of girders and other steel surfaces in contact with concrete. Parts inaccessible after erection are to be given three coats of paint in the shop.

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

Structural steel shall conform to Specifications for ASTM A36 steel.

Stud shear connectors are to be welded in the shop or in the field at the locations shown on the design plans or on the approved shop drawings. Studs shall be furnished and installed in accordance with Part IV of the First Edition of the "Structural Welding Code (AWS D1.1-72 including revision 1-73) of the American Welding Society. Weight of shear connectors is included in the structural steel quantities. There shall be no shear connector groups located at the bearing abutment or at the ends of piers.

All dimensions are horizontal.

Bearing surfaces of rockers are to be faced in accordance with Art. 2408.24 of the Standard Specifications. Masonry plates shall be set in point and chases.

Bearing surfaces of unfinished plates shall be flat and true.

Forms for slab and curbs are to be supported by the girders.

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

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.

Fill thicknesses shown on plans are based on the nominal girder dimensions. These thicknesses are to be verified or adjusted during fabrication to secure a close fit. Each fill plate shall fit to the nearest 1/8" in thickness and single plates are required at any fill location. Girders are to be truly square at splice points and reaction points with flanges perpendicular to webs.

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

An "RT" shown on girder elevations indicates location of tension splices or splices subject to reversal stresses and requires radiographic inspection of adjacent flange and web, flange or web welds in accordance with the Construction Specifications.

Shop splices and web to flange welds shall be welded by the submerged arc process.

Bottom flange plates are to be true perpendicular to webs at the reaction points.

Slab top transverse reinforcing steel is to be parallel to and 1" clear below top of slab. Slab bottom transverse reinforcing steel is to be parallel to and 1" clear above bottom of slab. Top and bottom reinforcing steel is to be supported by individual metal bar chairs spaced no more than 3'-0" centers longitudinally and transversely or continuous type bar chairs of 4'-0" centers.

Positive Moments due to Dead Load B, Live Load and Impact are resisted by composite action. Dead Load A includes weight of slab and girders. Dead Load B includes weight of curbs, rails and wearing surface. Moments and reactions shown are for normal Live Load Loadings. HS 20-44 Truck Loading governs for positive moments, abutment reactions and reactions at roller joints. Equivalent Lane Loading governs for Negative moments and reactions at piers.

"Top of P.C. Concrete Surfacing" shown are final surface design grade elevations at .25 points (or .10 points) between either & Brg. Abutment (or Pier 26) and adjacent field splice or field splices or field splice and & Brg. Expansion Joint; of steel cap beams, elevations are given at & pier and each adjacent girder field splice. Pavement elevations are expected to occur after all dead loads are imposed upon the structure. Locations of slab elevations are coincident with Dead Load Deflection ordinates.

CONCRETE PLACEMENT NOTE:
Roadway slab shall be placed in sections and in sequence indicated by circled numbers, except as noted otherwise. Alternate procedures for placing slab 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 results. The curb may be poured continuously.

Notes:
For end of girders and Roller Joint Details see Sheet 181 of 201.
For Deck Drain details and locations see Sheets 187 and 188 of 201.
For end of slab haunches and Sliding Plate Joint details, see Sheets 190 and 191 of 201.
For details of Bearing and Intermediate Stiffeners, Welded Shop Splices, Shear Connectors, Longitudinal Slab Construction Joint, and Bleeder Drain, see Sheet 182 of 201.
The cost of field welding the sole plates to the flange plates is to be included in the price bid for "Structural Steel".
At the Contractor's option, negative moment girder flange plates may be extended to eliminate intervening butt welds. If, at bolted field splices, this results in a fill plate 2" or greater in thickness, the fill plate shall be extended beyond the splice plates and the extension secured by enough additional fasteners to develop the filler per AASHTO Art. 1.7.19. Pay weight in any case will be based upon materials shown in these design plans.
Bleeder drains are to be installed in the low corner of each unit. See "Port Longitudinal Section near Curb" for location of bleeder drain.

CEDAR RIVER BRIDGE SOUTH APPROACH DESIGN FOR VARIABLE SKEW CONTINUOUS WELDED PLATE GIRDER BRIDGE GIRDER ELEVATIONS - UNIT 15B

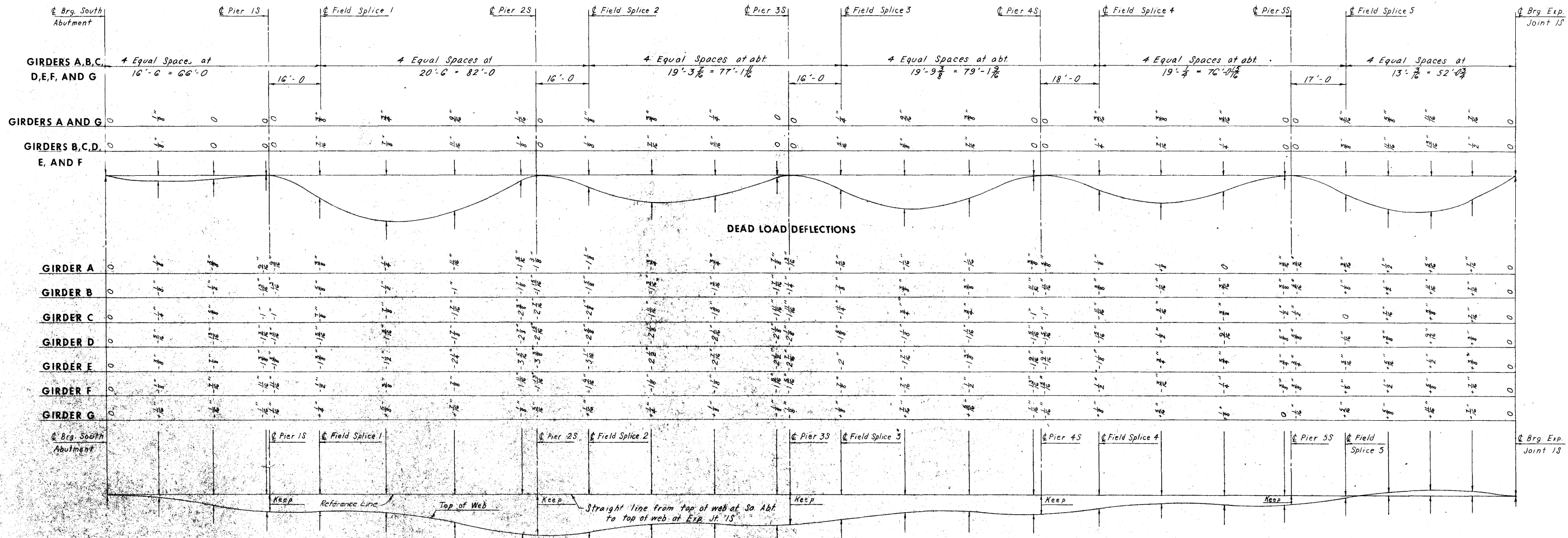
STA. 322+81.95 @ FREEWAY =
STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. I-380-6(68)263--01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

MADE L.G.K. DATE 12-19-73 CHECKED D.R.A. DATE 6-17-74

SHEET 83 OF 201

DESIGN NO. 1276 LINN COUNTY FILE 23191 SHEET 85 OF 203-0



Note: Off-sets are given at joint between field lines and at pier, abutment and expansion joints. For Girders A and G 1% of the dead load deflection is due to structural steel and 7% is due to concrete on P.C. surface course. For Girders B thru F 1% of the dead load deflection is due to structural steel and 81% is due to concrete on P.C. surface course.

Deflection due to concrete on P.C. surface course includes 15% due to the P.C. surface course. Bottom of web to be parallel to top of web.

**CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE**

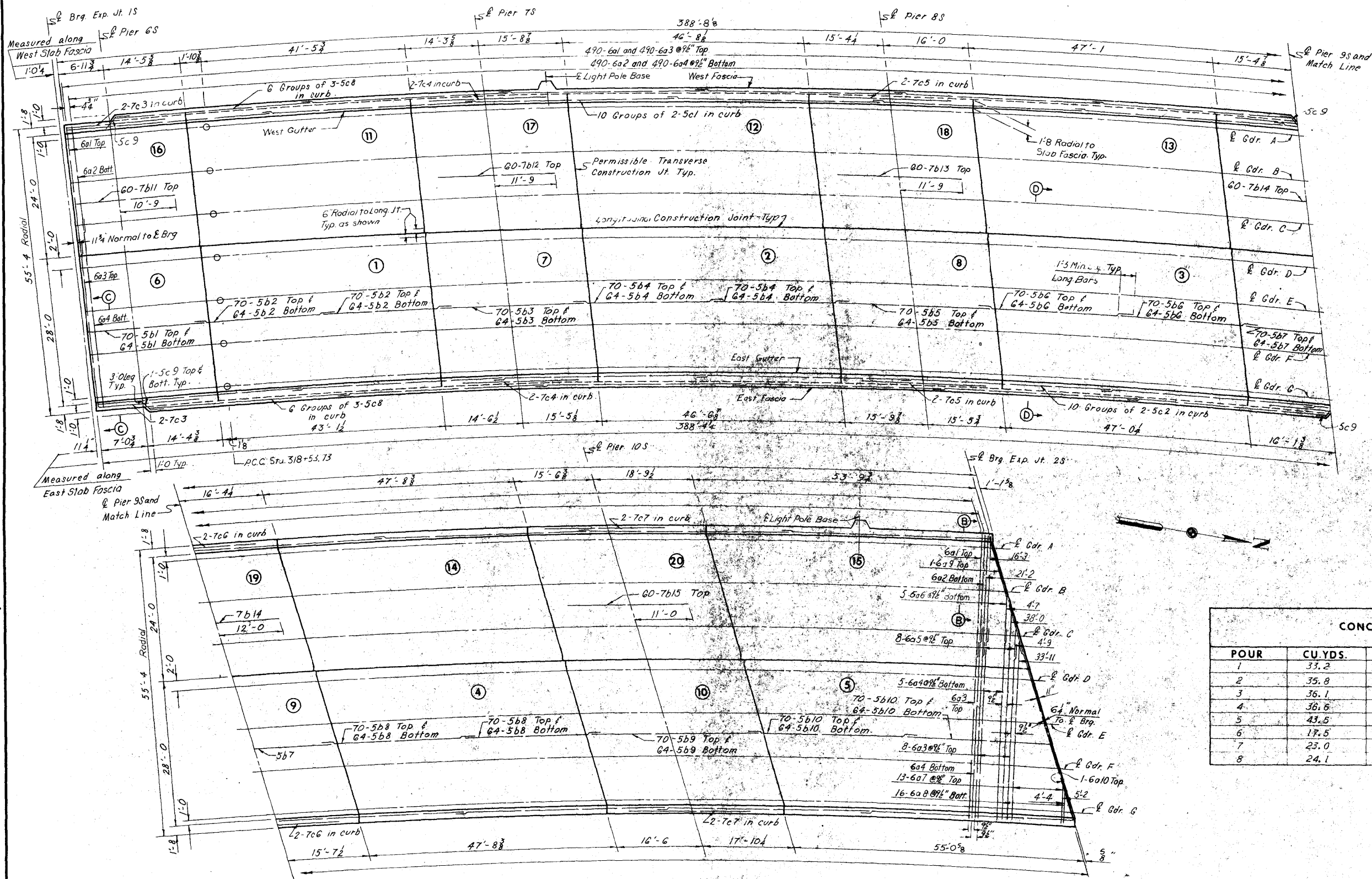
DEFLECTION DIAGRAMS - UNIT 15B

STA. 322+81.95 @ FREEWAY = PROJECT NO. I-380-6(68)263--01-57
STA. 32+14.70 @ 1ST. AVE. W

**LINN COUNTY
IOWA STATE HIGHWAY COMMISSION**

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

MADE LGK DATE 1-15-74 CHECKED CSM DATE 9-74



SLAB REINFORCING PLAN

SUPERSTRUCTURE ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Structural Concrete (Class D)	Cu. Yds.	6240
Reinforcing Steel A	Lbs.	80,286
Reinforcing Steel-Epoxy Coated	Lbs.	86,595
Structural Steel 44	Lbs.	715,259
P.C. Concrete Surfacing	Sq. Yds.	2236

CONCRETE PLACEMENT QUANTITIES					
POUR	CU.YDS.	POUR	CU.YDS.	POUR	CU.YDS.
1	33.2	9	24.4	17	19.9
2	35.8	10	26.4	18	20.8
3	36.1	11	28.7	19	21.0
4	36.6	12	30.9	20	22.7
5	43.5	13	31.2	Light Blister	.7
6	17.5	14	31.6	West Curb	34.8
7	23.0	15	37.4	East Curb	27.5
8	24.1	16	15.2	Total (C.I.D.)	624.0

Notes: For "Bill of Reinforcement" see Sheet 87 of 201.
 For "Top of P.C. Concrete Surfacing Elevations", see sheet 87 of 201.
 For "Sections" see Sheet 96 of 201.
 Deck inlets are required in east gutter at Pier 9S and in east gutter at Expansion Joint 2S. See Sheet 187 of 201 for details.
 Unit 1SB Pours 6 and 17 shall be placed prior to Unit 2SB Pours 6 and 16.

**CEDAR RIVER BRIDGE
 SOUTH APPROACH
 DESIGN FOR VARIABLE SKEW
 CONTINUOUS WELDED PLATE GIRDER BRIDGE**

SLAB PLAN - UNIT 2SB

STA. 322+81.95 @ FREEWAY =
 STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. I-380-6(68)263--01-57

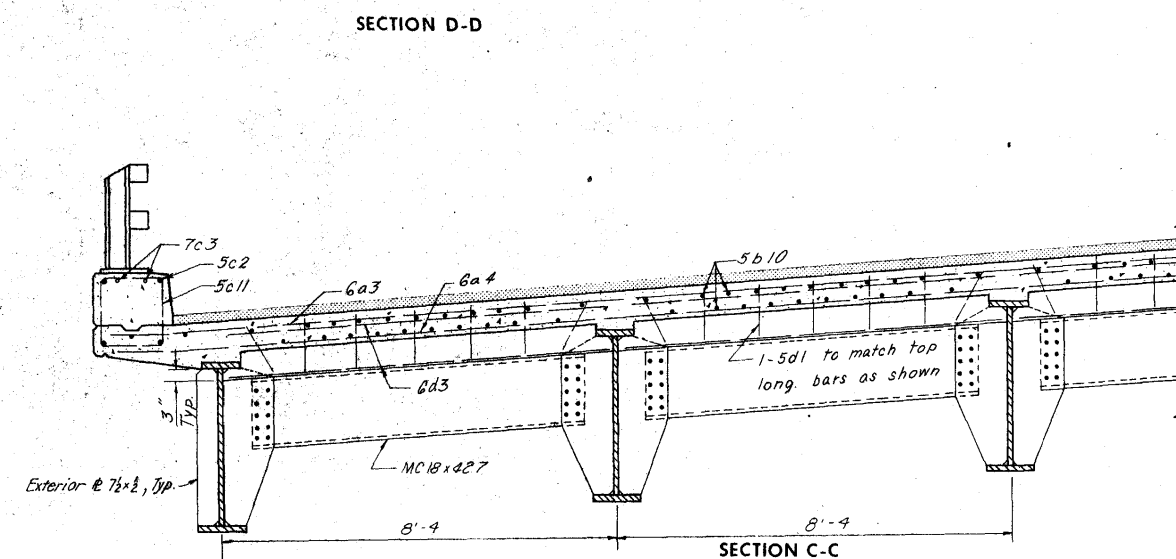
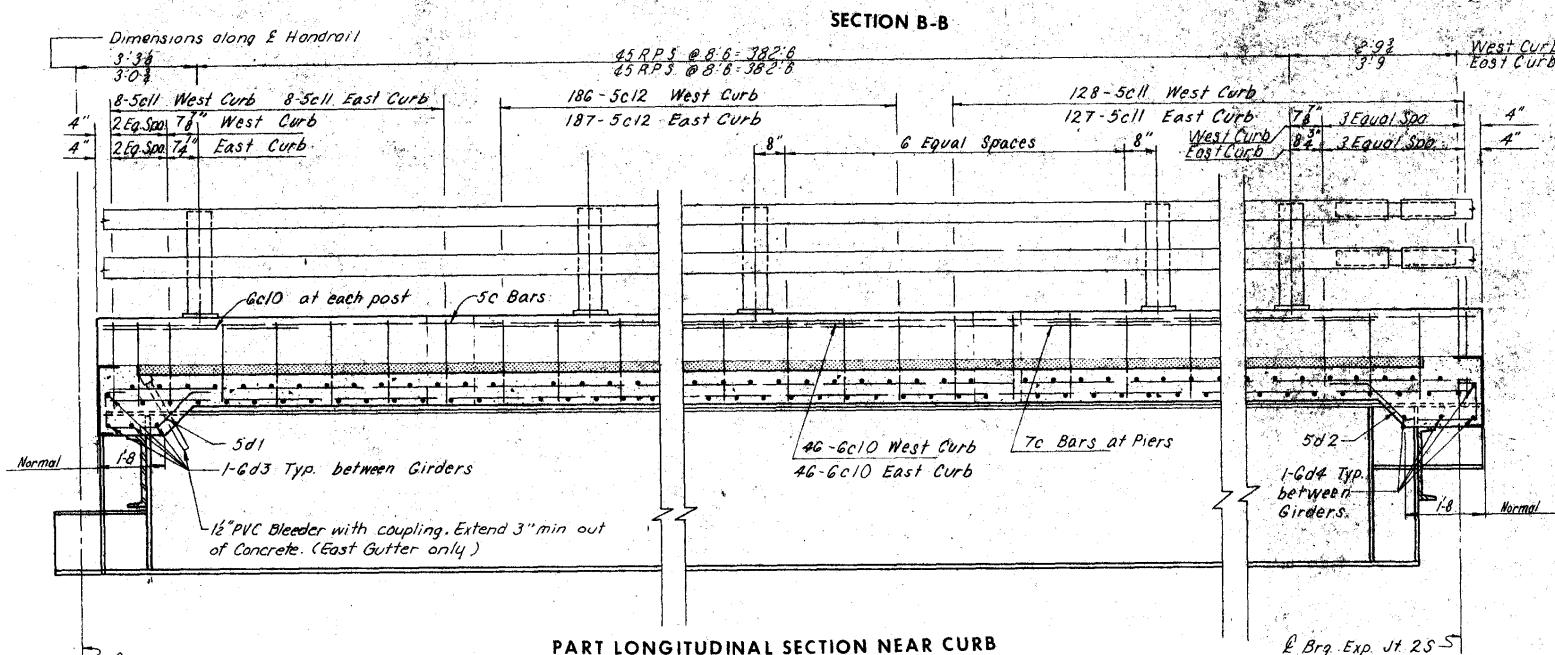
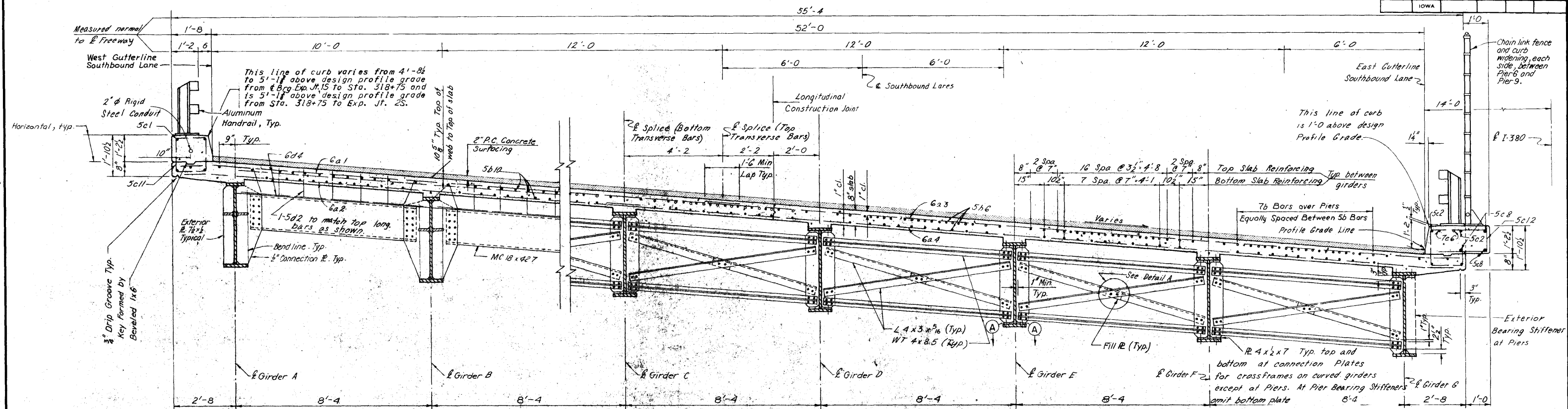
**LINN COUNTY
 IOWA STATE HIGHWAY COMMISSION**

SHEET 85 OF 201

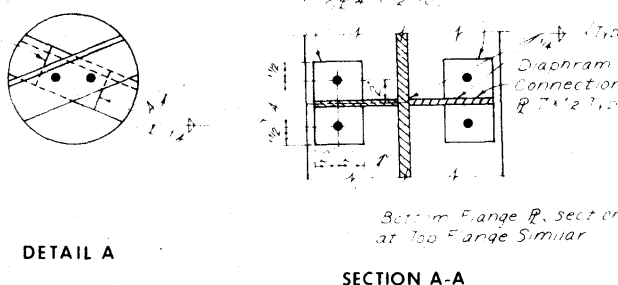
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
 CONSULTING ENGINEERS
 KANSAS CITY

MADE dbb DATE 4/18 CHECKED CJM DATE 5/22/74

DESIGN NO. 1776 LINN COUNTY FILE 2201 SHEET 87 OF 202



Note:
for Locations of Sections A-B, C-C,
and D-D, see Sheet 85 of 201.
for Superlevation Data see Sheet
16 of 201.
for Roller Joint Details, see Sheet
181 of 201.



HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

**CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE
SUPERSTRUCTURE DETAILS - UNIT 25B**

STA. 322+81.95 @ FREEWAY=
STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. I-380-6(68)263--01-57

LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

SHEET 86 OF 201

DESIGN NO. 1276 LINN COUNTY FILE 22101 SHEET 99 OF 20

ELEVATIONS — TOP OF P.C. CONCRETE SURFACING (2" above top of first lift of concrete)																									
Girder	E.J. 1S	.25	.50	.75	F.S. 1	.25	.50	.75	F.S. 2	.25	.50	.75	F.S. 3	.25	.50	.75	F.S. 4	.25	.50	.75	F.S. 5	.25	.50	.75	E.J. 2S
A	121.52	121.73	121.94	122.15	122.22	122.29	122.37	122.45	122.53	122.60	122.67	122.75	122.82	122.90	122.99	123.07	123.16	123.19	123.22	123.25	123.28	123.34	123.39	123.45	123.51
B	120.93	121.12	121.30	121.49	121.55	121.63	121.71	121.79	121.86	121.94	122.02	122.10	122.18	122.26	122.34	122.42	122.50	122.53	122.56	122.59	122.63	122.68	122.74	122.80	122.85
C	120.33	120.50	120.66	120.82	120.89	120.97	121.05	121.12	121.20	121.28	121.36	121.44	121.52	121.60	121.68	121.76	121.84	121.88	121.91	121.95	121.99	122.04	122.09	122.14	122.20
D	119.74	119.88	120.02	120.15	120.22	120.30	120.38	120.46	120.54	120.62	120.70	120.78	120.86	120.94	121.02	121.10	121.18	121.22	121.25	121.29	121.32	121.38	121.43	121.49	121.54
E	119.15	119.26	119.38	119.49	119.56	119.64	119.72	119.80	119.88	119.96	120.04	120.12	120.20	120.28	120.36	120.44	120.52	120.56	120.59	120.63	120.66	120.72	120.77	120.83	120.89
F	118.55	118.65	118.74	118.83	118.90	118.98	119.06	119.14	119.22	119.30	119.38	119.46	119.54	119.62	119.70	119.78	119.86	119.90	119.93	119.97	120.00	120.06	120.12	120.17	120.23
G	117.96	118.03	118.10	118.16	118.23	118.31	118.35	118.47	118.55	118.63	118.71	118.79	118.87	118.95	119.03	119.12	119.20	119.23	119.27	119.31	119.34	119.40	119.46	119.52	119.58

Legend: F.S. denotes Field Splice

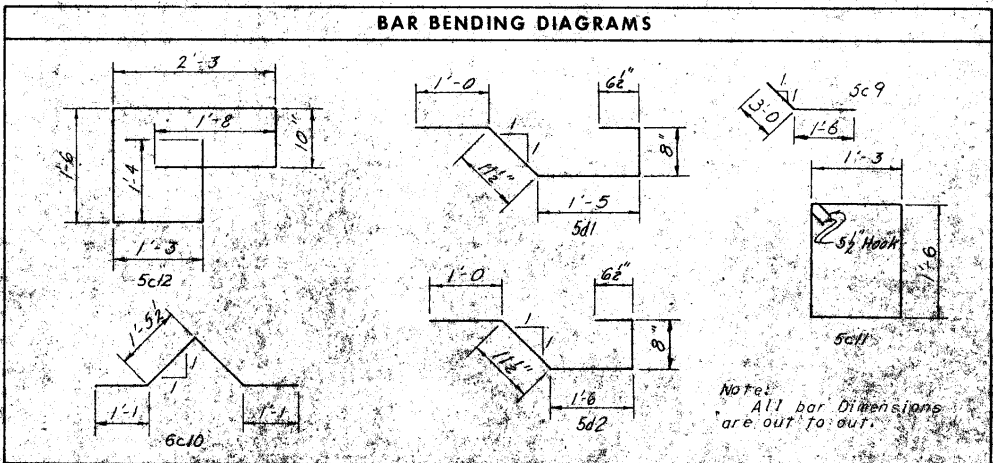


TABLE OF MOMENTS AND REACTIONS IN FOOT-KIPS AND KIPS																		
	ITEM	MAXIMUM POSITIVE MOMENT					MAXIMUM NEGATIVE MOMENT					REACTIONS						
		SPAN 1	SPAN 2	SPAN 3	SPAN 4	SPAN 5	PIER 6S	PIER 7S	PIER 8S	PIER 9S	PIER 10S	JT. 1S	PIER 6S	PIER 7S	PIER 8S	PIER 9S	PIER 10S	JT. 2S
GIRDER A	Dead Load A	282	242	253	246	420	300	644	642	597	742	25.3	64.4	79.6	79.2	76.2	86.2	27.2
	Dead Load B	94	94	95	89	145	88	185	194	183	219	8.6	21.6	25.5	26.5	29.7	28.4	9.3
	Live Load	617	537	547	560	634	348	498	505	514	522	41.6	51.0	57.4	57.9	58.2	59.0	42.3
	Impact	157	132	136	138	158	87	124	124	126	132	10.7	12.5	14.4	14.5	14.6	14.8	10.5
	Total						823	1451	1465	1420	1615	86.2	149.3	176.9	178.1	174.7	189.4	89.3
GIRDER B	Dead Load A	312	271	261	249	466	297	714	715	664	825	28.2	71.5	88.4	88.0	84.9	95.8	30.1
	Dead Load B	134	135	135	128	206	126	267	275	261	311	12.3	31.2	36.9	37.6	36.6	40.4	13.3
	Live Load	679	592	605	617	698	383	549	556	564	578	45.8	56.4	63.5	64.0	64.2	65.1	46.6
	Impact	174	145	148	152	174	97	138	139	141	144	11.8	13.9	15.7	15.9	16.0	16.2	11.5
	Total						903	1668	1685	1630	1858	98.1	173.0	204.5	205.5	201.7	217.5	101.5
GIRDER C	Dead Load A	309	270	280	248	463	295	710	712	661	821	28.1	71.2	88.0	87.6	84.5	95.4	30.0
	Dead Load B	134	135	135	127	206	126	267	275	261	311	12.3	31.2	36.9	37.6	36.6	40.4	13.3
	Live Load	675	588	602	614	695	382	547	553	562	575	45.6	56.1	63.2	63.7	63.9	64.8	46.4
	Impact	173	144	147	151	173	96	136	138	140	143	11.8	13.8	15.6	15.8	15.9	16.1	11.4
	Total						899	1660	1678	1624	1850	97.8	172.3	203.7	204.7	200.9	216.7	101.1
GIRDER D	Dead Load A	308	269	279	247	460	293	707	708	657	817	28.0	70.8	87.6	87.2	84.1	94.9	29.8
	Dead Load B	134	135	135	127	206	126	267	275	261	311	12.3	31.2	36.9	37.6	36.6	40.4	13.3
	Live Load	673	586	600	612	693	381	544	551	560	573	45.2	56.0	63.0	63.5	63.7	64.6	46.3
	Impact	172	143	146	150	172	95	135	136	139	142	11.7	13.7	15.5	15.7	15.8	16.0	11.3
	Total						895	1653	1670	1617	1843	97.4	171.7	203.0	204.0	200.2	215.9	100.7
GIRDER E	Dead Load A	307	267	278	246	458	292	705	706	655	815	28.0	70.5	87.3	86.9	83.8	94.5	29.7
	Dead Load B	134	135	135	127	206	126	267	275	261	311	12.3	31.2	36.9	37.6	36.6	40.4	13.3
	Live Load	671	585	598	610	692	380	543	550	559	572	45.3	55.9	62.9	63.4	63.6	64.5	46.3
	Impact	172	143	146	150	172	95	135	136	139	142	11.6	13.7	15.5	15.7	15.8	16.0	11.3
	Total						893	1650	1666	1614	1840	97.2	171.3	202.6	203.6	199.8	215.4	100.6
GIRDER F	Dead Load A	306	266	276	245	457	291	702	704	653	812	27.9	70.3	87.1	86.6	83.6	94.2	29.6
	Dead Load B	134	135	135	127	206	126	267	275	261	311	12.3	31.2	36.9	37.6	36.6	40.4	13.3
	Live Load	670	584	597	609	691	378	542	549	558	571	45.2	55.8	62.8	63.3	63.5	64.4	46.2
	Impact	170	142	145	148	170	94	134	135	138	141	11.6	13.6	15.4	15.6	15.7	15.9	11.2
	Total						889	1645	1663	1610	1835	97.0	170.9	202.2	203.1	199.4	214.9	100.3
GIRDER G	Dead Load A	274	236	242	218	408	257	623	623	579	719	24.8	62.2	77.4	76.9	74.0	83.6	26.4
	Dead Load B	134	135	135	128	206	88	185	194	183	219	8.6	21.6	25.5	26.5	25.7	28.4	9.3
	Live Load	607	528	539	550	624	342	491	496	506	515	40.9	50.2	56.5	57.0	57.3	58.1	41.6
	Impact	155	130	134	135	156	86	122	122	124	130	10.5	12.4	14.2	14.3	14.4	14.6	10.4
	Total						696	1275	1288	1250	1420	84.8	146.4	173.6	174.7	171.4	184.7	87.7

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

MADE DRA DATE 5-74 CHECKED C.B.M. DATE 6-20-74

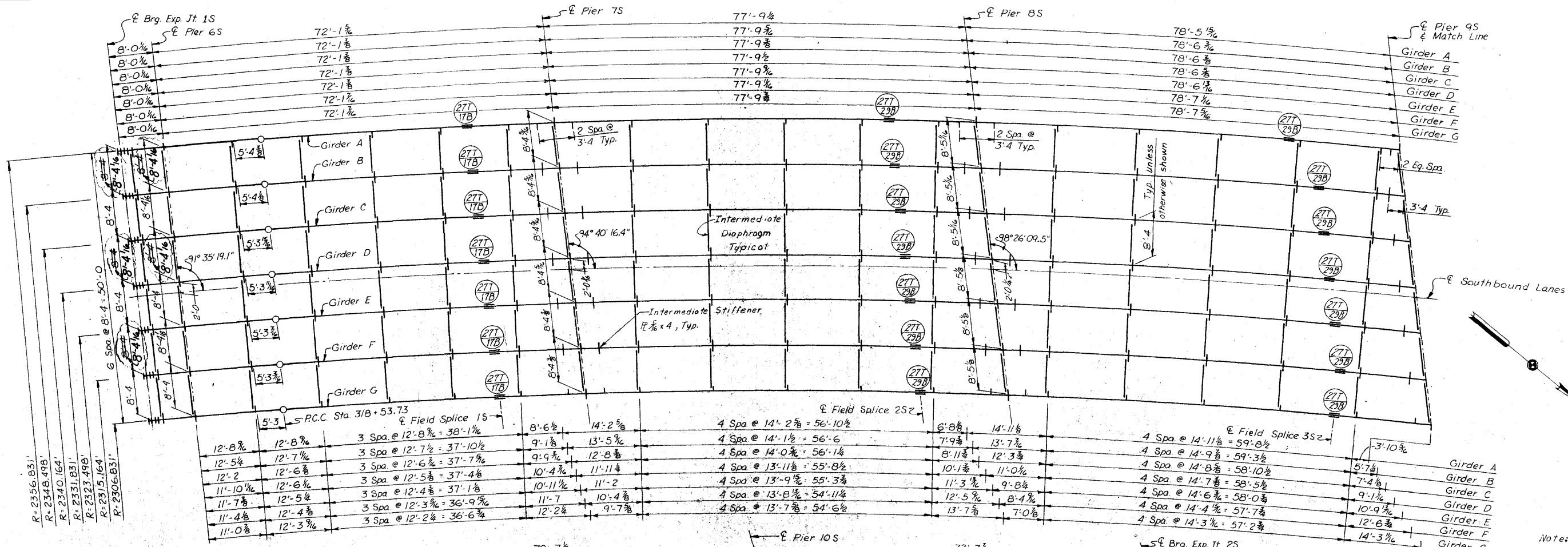
CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE

SUPERSTRUCTURE DETAILS - UNIT 25B

STA. 322+81.95 @ FREEWAY=
STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. I-380-6(68)263-01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

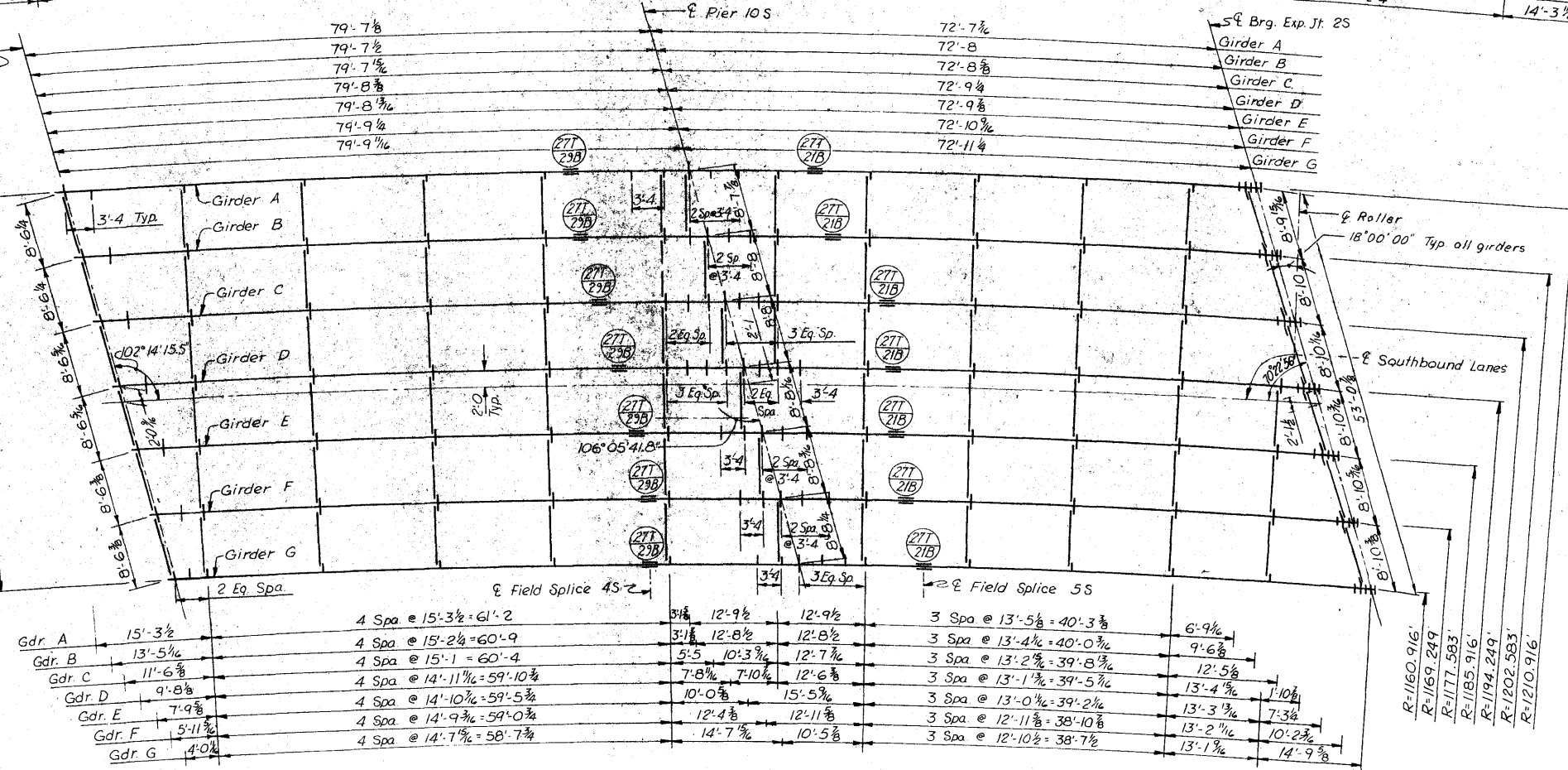
SHEET 87 OF 201

DESIGN NO. 1776 LINN COUNTY FILE 73101 SHEET 89 OF 203-0



Note: Unless otherwise shown diaphragms are set radial or perpendicular to the Southbound Lane. For Bearing Stiffeners and Intermediate Stiffener Details, see Sheet 182 of 201. For Roller Joint Detail, see Sheet 181 of 201. For Girder Splice Detail, see Sheet 183 of 201.

Girder	Joint 1S	Pier 6S	Pier 7S	Pier 8S	Pier 9S	Pier 10S	Joint 2S
A	91'22'33"	91'34'14"	94'34'00"	98'14'48"	101'57'38"	105'43'36"	109'09'46"
B	91'22'51"	91'34'34"	94'35'55"	98'15'15"	102'02'41"	105'50'19"	109'18'02"
C	91'23'08"	91'34'54"	94'37'50"	98'17'45"	102'07'48"	105'57'07"	109'26'27"
D	91'23'26"	91'35'14"	94'39'48"	98'20'18"	102'13'00"	106'04'01"	109'34'58"
E	91'23'44"	91'35'35"	94'41'47"	98'22'54"	102'18'16"	106'11'02"	109'43'38"
F	91'24'02"	91'35'55"	94'43'48"	98'25'33"	102'23'37"	106'18'09"	109'52'25"
G	91'24'21"	91'36'16"	94'45'50"	98'28'16"	102'29'02"	106'25'22"	110'01'21"



FRAMING PLAN

**CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE**

FRAMING PLAN - UNIT 2SB

STA. 322+81.95 @ FREEWAY =
STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. I-380-6(68)263--01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

MADE 4-25-74 DATE 4-25-74 CHECKED DRA DATE 6-17-74

Revised 2-14-77: Girder spacing along E Brg. Exp. Jt. 1S & E Pier 6S corrected.

TOTAL LENGTH		GIRDER A = 388'-7 1/8"				GIRDER B = 388'-8 3/4"				GIRDER C = 388'-9 3/4"				GIRDER D = 388'-11 1/4"				GIRDER E = 389'-0 3/8"				GIRDER F = 389'-2"				GIRDER G = 389'-3 1/2"			
GIRDERS A,B,C		A=72'-1 1/8" B=72'-1 1/8" C=72'-1 1/8"				A=77'-9 1/4" B=77'-9 1/4" C=77'-9 1/4"				A=78'-5 1/8" B=78'-6 3/8" C=78'-6 3/8"				A=79'-7 1/8" B=79'-7 1/8" C=79'-7 1/8"				A=72'-7 1/8" B=72'-8" C=72'-8 3/8"											
GIRDERS D,E		D=72'-1 1/8" E=72'-1 1/8"				D=77'-9 1/4" E=77'-9 1/4"				D=78'-6 3/8" E=78'-6 3/8"				D=79'-8 3/8" E=79'-8 3/8"				D=72'-9 1/4" E=72'-9 1/4"											
GIRDERS F,G		F=72'-1 1/8" G=72'-1 1/8"				F=77'-9 1/4" G=77'-9 1/4"				F=78'-7 1/8" G=78'-7 1/8"				F=79'-9 1/4" G=79'-9 1/4"				F=72'-10 1/8" G=72'-11 1/4"											
FIELD SPICES		GIRDER A 8'-0 1/2" 56'-1 1/8" 16'-0" 61'-9 1/4" 16'-0" 57'-8 1/8" 20'-9" 64'-7 1/8" 15'-0" 16'-0" 56'-7 1/8"				GIRDER B 8'-0 1/2" 56'-1 1/8" 16'-0" 61'-9 1/4" 16'-0" 62'-6 3/8" 16'-0" 63'-7 1/8" 16'-0" 56'-8"				GIRDER C 8'-0 1/2" 56'-1 1/8" 16'-0" 61'-9 1/4" 16'-0" 62'-6 3/8" 16'-0" 63'-7 1/8" 16'-0" 51'-11 1/8"				GIRDER D 8'-0 1/2" 56'-1 1/8" 16'-0" 61'-9 1/4" 16'-0" 62'-6 3/8" 16'-0" 63'-8 3/8" 16'-0" 19'-0" 53'-9 1/4"				GIRDER E 8'-0 1/2" 56'-1 1/8" 16'-0" 61'-9 1/4" 16'-0" 62'-6 3/8" 16'-0" 63'-8 3/8" 16'-0" 53'-9 1/4"				GIRDER F 8'-0 1/2" 56'-1 1/8" 16'-0" 61'-9 1/4" 16'-0" 62'-9 1/4" 17'-0" 58'-10 3/8"				GIRDER G 8'-0 1/2" 56'-1 1/8" 16'-0" 61'-9 1/4" 16'-0" 60'-7 1/8" 18'-1" 60'-9 1/4" 19'-0" 16'-0" 56'-11 1/4"			
TOP FLANGE PLATES		GIRDER A 8'-0 1/2" 10'-0" 46'-1 1/8" 6'-0" 10'-0" 10'-0" 6'-0" 45'-9 1/4" 6'-0" 10'-0" 10'-0" 6'-0" 41'-8 1/8" 10'-9" 10'-0" 10'-0" 6'-0" 46'-7 1/8" 5'-0" 10'-0" 10'-0" 6'-0" 56'-7 1/8"				GIRDER B 8'-0 1/2" 10'-0" 46'-1 1/8" 6'-0" 10'-0" 10'-0" 6'-0" 45'-9 1/4" 6'-0" 10'-0" 10'-0" 6'-0" 46'-5 1/8" 6'-0" 10'-0" 10'-0" 6'-0" 47'-7 1/8" 6'-0" 10'-0" 10'-0" 6'-0" 56'-8"				GIRDER C 8'-0 1/2" 10'-0" 46'-1 1/8" 6'-0" 10'-0" 10'-0" 6'-0" 45'-9 1/4" 6'-0" 10'-0" 10'-0" 6'-0" 48'-6 3/8" 6'-0" 10'-0" 10'-0" 6'-0" 47'-7 1/8" 6'-0" 10'-0" 10'-0" 6'-0" 51'-11 1/8"				GIRDER D 8'-0 1/2" 10'-0" 46'-1 1/8" 6'-0" 10'-0" 10'-0" 6'-0" 45'-9 1/4" 6'-0" 10'-0" 10'-0" 6'-0" 46'-6 3/8" 6'-0" 10'-0" 10'-0" 6'-0" 47'-8 1/8" 6'-0" 10'-0" 10'-0" 6'-0" 53'-9 1/4"				GIRDER E 8'-0 1/2" 10'-0" 46'-1 1/8" 6'-0" 10'-0" 10'-0" 6'-0" 45'-9 1/4" 6'-0" 10'-0" 10'-0" 6'-0" 46'-8 1/8" 6'-0" 10'-0" 10'-0" 6'-0" 47'-8 1/8" 6'-0" 10'-0" 10'-0" 6'-0" 55'-3 1/8"				GIRDER F 8'-0 1/2" 10'-0" 46'-1 1/8" 6'-0" 10'-0" 10'-0" 6'-0" 45'-9 1/4" 6'-0" 10'-0" 10'-0" 6'-0" 46'-7 1/8" 6'-0" 10'-0" 10'-0" 6'-0" 46'-8 1/8" 7'-0" 10'-0" 10'-0" 6'-0" 56'-10 3/8"				GIRDER G 8'-0 1/2" 10'-0" 46'-1 1/8" 6'-0" 10'-0" 10'-0" 6'-0" 45'-9 1/4" 6'-0" 10'-0" 10'-0" 6'-0" 44'-7 1/8" 8'-0" 10'-0" 10'-0" 6'-0" 44'-9 1/4" 9'-0" 10'-0" 10'-0" 6'-0" 56'-11 1/4"			
SHEAR CONNECTOR SPACES		GIRDER A 3'-4 1/8" 41 Spa. @ 1'-3" = 51'-3" 3'-0" 6 Spa. @ 4'-3 1/4" 42 Spa. @ 1'-4" = 56'-0" 3'-0" 6 Spa. @ 3'-6 1/8" 41 Spa. @ 1'-4" = 54'-8" 3'-0" 9 Spa. @ 4'-3 1/8" 44 Spa. @ 1'-4" = 58'-8" 3'-0" 6 Spa. @ 3'-0" 43 Spa. @ 1'-3" = 53'-9" 1'-4 1/8"				GIRDER B 3'-4 1/8" 41 Spa. @ 1'-3" = 51'-3" 3'-0" 6 Spa. @ 4'-3 1/4" 42 Spa. @ 1'-4" = 56'-0" 3'-0" 6 Spa. @ 3'-6 1/8" 43 Spa. @ 1'-4" = 57'-4" 3'-0" 6 Spa. @ 3'-5 1/8" 44 Spa. @ 1'-4" = 58'-8" 3'-0" 6 Spa. @ 3'-6 1/8" 43 Spa. @ 1'-3" = 53'-9" 1'-5"				GIRDER C 3'-4 1/8" 41 Spa. @ 1'-3" = 51'-3" 3'-0" 6 Spa. @ 4'-3 1/4" 42 Spa. @ 1'-4" = 56'-0" 3'-0" 6 Spa. @ 3'-6 1/8" 43 Spa. @ 1'-4" = 57'-4" 3'-0" 6 Spa. @ 3'-5 1/8" 44 Spa. @ 1'-4" = 58'-8" 3'-0" 6 Spa. @ 3'-6 1/8" 39 Spa. @ 1'-3" = 48'-9" 1'-8 3/8"				GIRDER D 3'-4 1/8" 41 Spa. @ 1'-3" = 51'-3" 3'-0" 6 Spa. @ 4'-3 1/4" 42 Spa. @ 1'-4" = 56'-0" 3'-0" 6 Spa. @ 3'-6 1/8" 43 Spa. @ 1'-4" = 57'-4" 3'-0" 6 Spa. @ 3'-5 1/8" 44 Spa. @ 1'-4" = 58'-8" 3'-0" 6 Spa. @ 3'-6 1/8" 43 Spa. @ 1'-2" = 50'-2" 2'-1 1/4"				GIRDER E 3'-4 1/8" 41 Spa. @ 1'-3" = 51'-3" 3'-0" 6 Spa. @ 4'-3 1/4" 42 Spa. @ 1'-4" = 56'-0" 3'-0" 6 Spa. @ 3'-6 1/8" 43 Spa. @ 1'-4" = 57'-4" 3'-0" 6 Spa. @ 3'-5 1/8" 44 Spa. @ 1'-4" = 58'-8" 3'-0" 6 Spa. @ 3'-6 1/8" 42 Spa. @ 1'-3" = 52'-6" 1'-9 1/8"				GIRDER F 3'-4 1/8" 41 Spa. @ 1'-3" = 51'-3" 3'-0" 6 Spa. @ 4'-3 1/4" 42 Spa. @ 1'-4" = 56'-0" 3'-0" 6 Spa. @ 3'-6 1/8" 43 Spa. @ 1'-4" = 57'-4" 3'-0" 6 Spa. @ 3'-5 1/8" 44 Spa. @ 1'-4" = 58'-8" 3'-0" 6 Spa. @ 3'-6 1/8" 43 Spa. @ 1'-3" = 53'-9" 1'-7 1/8"				GIRDER G 3'-4 1/8" 41 Spa. @ 1'-3" = 51'-3" 3'-0" 6 Spa. @ 4'-3 1/4" 42 Spa. @ 1'-4" = 56'-0" 3'-0" 6 Spa. @ 3'-6 1/8" 44 Spa. @ 1'-3" = 55'-0" 3'-0" 7 Spa. @ 4'-3 1/8" 44 Spa. @ 1'-3" = 55'-0" 3'-0" 8 Spa. @ 4'-3 1/8" 43 Spa. @ 1'-3" = 53'-9" 1'-8 1/4"			
BOTTOM FLANGE PLATES		GIRDER A 8'-0 1/2" 62'-1 1/8" 10'-0" 10'-0" 57'-9 1/4" 10'-0" 10'-0" 58'-5 1/8" 10'-0" 10'-0" 59'-7 1/8" 10'-0" 10'-0" 62'-7 1/8"				GIRDER B 8'-0 1/2" 62'-1 1/8" 10'-0" 10'-0" 57'-9 1/4" 10'-0" 10'-0" 58'-6 3/8" 10'-0" 10'-0" 59'-7 1/8" 10'-0" 10'-0" 62'-8"				GIRDER C 8'-0 1/2" 62'-1 1/8" 10'-0" 10'-0" 57'-9 1/4" 10'-0" 10'-0" 58'-6 3/8" 10'-0" 10'-0" 59'-7 1/8" 10'-0" 10'-0" 62'-8 3/8"				GIRDER D 8'-0 1/2" 62'-1 1/8" 10'-0" 10'-0" 57'-9 1/4" 10'-0" 10'-0" 58'-6 3/8" 10'-0" 10'-0" 59'-8 1/8" 10'-0" 10'-0" 62'-9 1/4"				GIRDER E 8'-0 1/2" 62'-1 1/8" 10'-0" 10'-0" 57'-9 1/4" 10'-0" 10'-0" 58'-6 1/2" 10'-0" 10'-0" 59'-8 1/8" 10'-0" 10'-0" 62'-9 3/8"				GIRDER F 8'-0 1/2" 62'-1 1/8" 10'-0" 10'-0" 57'-9 1/4" 10'-0" 10'-0" 58'-7 1/8" 10'-0" 10'-0" 59'-9 1/8" 10'-0" 10'-0" 62'-10 3/8"				GIRDER G 8'-0 1/2" 62'-1 1/8" 10'-0" 10'-0" 57'-9 1/4" 10'-0" 10'-0" 58'-7 1/8" 10'-0" 10'-0" 59'-9 1/8" 10'-0" 10'-0" 62'-11 1/4"			

GIRDER DETAILS

Notes:
Rockets are to be set vertically at 50°F.
For temperatures above 50°F., set masonry plate toward fixed shoe (+). For temperatures below 50°F., set masonry plate away from fixed shoe (-). Settings for other temperatures are proportional to those shown for a 40° temperature change.

TYPICAL ROCKER SETTINGS UNIT 25B									
	EXP. JT. 15	PIER 65	PIER 75	PIER 85	PIER 95	PIER 105	EXP. JT. 25		
Temperature at time of setting									
90°F	2 1/2"	0"	2"	4"	0"	4"	2"	2 3/8"	
50°F	3 1/2"	0"	0"	0"	0"	0"	0"	3 1/2"	
10°F	4 1/2"	- 3/8"	- 1/2"	- 1/2"	0"	- 1/2"	- 1/2"	4 1/2"	
Sole Plate	SP3	SP3	SP3	SP3	SP3	SP3	SP3		
Rocker	R3A	R3A		R3A	R3A				
Masonry Plate	MP3P	MP3P	S3	MP3P	MP3P				

CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE

GIRDER ELEVATIONS - UNIT 25B

STA. 322+81.95 @ FREEWAY =
STA. 32+14.70 @ 1ST. AVE. W
PROJECT NO. I-380-6(68)263-01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

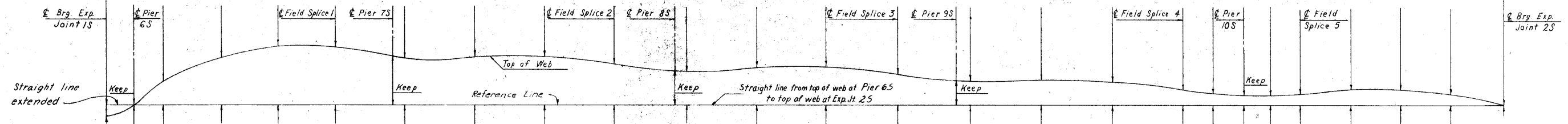
MADE LCA DATE 1-23-74 CHECKED DRA DATE 6-17-74

	Brig. Exp. Joint 15	Pier 6S	Field Splice 1	Pier 7S	Field Splice 2	Pier 8S	Field Splice 3	Pier 9S	Field Splice 4	Pier 10S	Field Splice 5	Brig. Exp. Joint 25
		4 Equal Spaces		4 Equal Spaces		4 Equal Spaces		4 Equal Spaces		4 Equal Spaces		
GIRDER A		at obt. $16'-0\frac{5}{8} = 64'-1\frac{1}{8}$	16'-0	A,B,C,D,E,F,G at obt. $19'-5\frac{5}{8} = 77'-9\frac{1}{2}$	16'-0	A,B,C,D,E,F,G at obt. $18'-5\frac{1}{4} = 73'-8\frac{1}{8}$	20'-9	A at obt. $21'-4 = 85'-4\frac{1}{8}$	15'-0	16'-0	at obt. $14'-1\frac{1}{8} = 56'-7\frac{3}{8}$	
GIRDER B		at obt. $16'-0\frac{3}{8} = 64'-1\frac{1}{8}$		at obt. $19'-5\frac{5}{8} = 77'-9\frac{1}{2}$		at obt. $19'-7\frac{1}{8} = 78'-6\frac{1}{8}$		at obt. $19'-10\frac{3}{8} = 79'-7\frac{1}{2}$		at obt. $8'-0 = 32'-0$	at obt. $14'-2 = 56'-8$	
GIRDER C		at obt. $16'-0\frac{3}{8} = 64'-1\frac{1}{8}$		at obt. $19'-5\frac{5}{8} = 77'-9\frac{1}{2}$		at obt. $19'-7\frac{1}{8} = 78'-6\frac{1}{8}$		at obt. $19'-11 = 79'-7\frac{1}{8}$		at obt. $9'-2\frac{1}{4} = 36'-9$	at obt. $12'-11\frac{1}{8} = 51'-11\frac{1}{8}$	
GIRDER D		at obt. $16'-0\frac{3}{8} = 64'-1\frac{1}{8}$		at obt. $19'-5\frac{5}{8} = 77'-9\frac{1}{2}$		at obt. $19'-7\frac{1}{8} = 78'-6\frac{1}{8}$		at obt. $19'-11\frac{1}{8} = 79'-8\frac{3}{8}$		at obt. $8'-9 = 35'-0$	at obt. $13'-5\frac{5}{8} = 53'-9\frac{1}{4}$	
GIRDER E		at obt. $16'-0\frac{3}{8} = 64'-1\frac{1}{8}$		at obt. $19'-5\frac{5}{8} = 77'-9\frac{1}{2}$		at obt. $19'-7\frac{1}{8} = 78'-6\frac{1}{8}$		at obt. $19'-11\frac{1}{8} = 79'-8\frac{3}{8}$		at obt. $8'-3 = 33'-0$	at obt. $13'-11\frac{1}{2} = 55'-9\frac{3}{4}$	
GIRDER F		at obt. $16'-0\frac{3}{8} = 64'-1\frac{1}{8}$		at obt. $19'-5\frac{5}{8} = 77'-9\frac{1}{2}$		at obt. $19'-7\frac{1}{8} = 78'-7\frac{1}{8}$		at obt. $19'-8\frac{5}{8} = 78'-9\frac{1}{4}$		at obt. $8'-3 = 33'-0$	at obt. $14'-2\frac{3}{8} = 56'-10\frac{3}{8}$	
GIRDER G		at obt. $16'-0\frac{3}{8} = 64'-1\frac{1}{8}$		at obt. $19'-5\frac{5}{8} = 77'-9\frac{1}{2}$		at obt. $19'-1\frac{1}{8} = 76'-7\frac{1}{8}$	18'-0	6 at obt. $19'-8\frac{1}{8} = 78'-9\frac{1}{8}$	19'-0	16'-0	at obt. $8'-9 = 35'-0$	at obt. $14'-2\frac{1}{2} = 56'-11\frac{1}{2}$

GIRDER A	0	0	0	0	0	0	0	0	0	0	0	0
GIRDER B	0	0	0	0	0	0	0	0	0	0	0	0
GIRDER C	0	0	0	0	0	0	0	0	0	0	0	0
GIRDER D	0	0	0	0	0	0	0	0	0	0	0	0
GIRDER E	0	0	0	0	0	0	0	0	0	0	0	0
GIRDER F	0	0	0	0	0	0	0	0	0	0	0	0
GIRDER G	0	0	0	0	0	0	0	0	0	0	0	0

DEAD-LOAD DEFLECTIONS

GIRDER A	0	0	0	0	0	0	0	0	0	0	0	0
GIRDER B	0	0	0	0	0	0	0	0	0	0	0	0
GIRDER C	0	0	0	0	0	0	0	0	0	0	0	0
GIRDER D	0	0	0	0	0	0	0	0	0	0	0	0
GIRDER E	0	0	0	0	0	0	0	0	0	0	0	0
GIRDER F	0	0	0	0	0	0	0	0	0	0	0	0
GIRDER G	0	0	0	0	0	0	0	0	0	0	0	0



GIRDERS AS FABRICATED AND ERECTED DIAGRAM
(In the Horizontal Position)

Note:
Negative values denote camber below reference line.

Note:
Offsets are given at joints between field splices and at piers and expansion joints.
For Girders A thru G 30% of the dead load deflection is due to structural steel and 80% is due to concrete and P.C. surface course.
Deflection due to concrete and P.C. surface course includes 15% due to the P.C. surface course.
Bottom of web to be parallel to top of web.

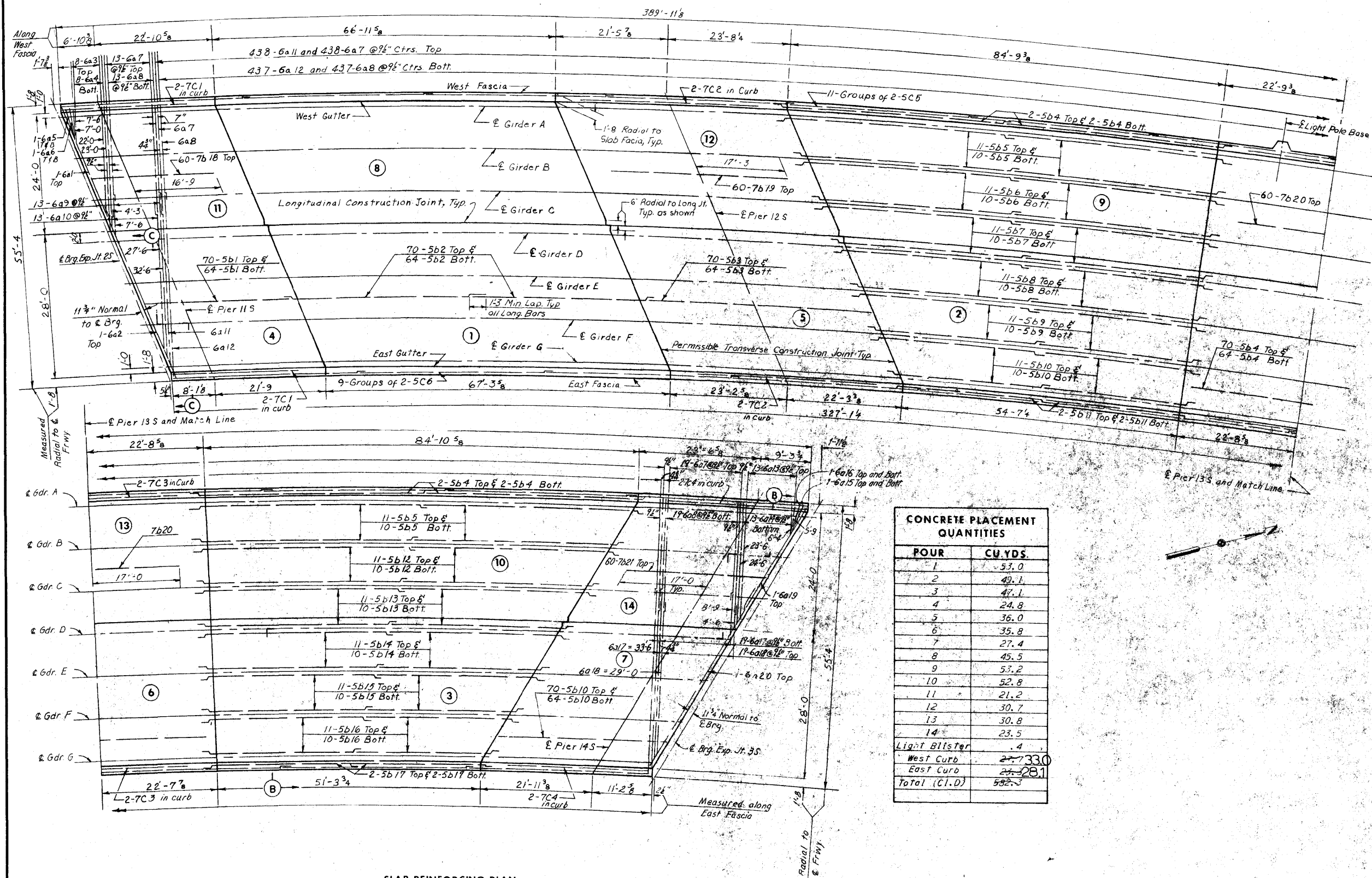
CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE

DEFLECTION DIAGRAMS - UNIT 25B

STA. 322+81.95 @ FREEWAY =
STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. I-380-6(68)263--01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

MADE LCK DATE 2-20-74 CHECKED C.B.M. DATE 9-74



SLAB REINFORCING PLAN

CONCRETE PLACEMENT QUANTITIES	
POUR	CU. YDS.
1	53.0
2	49.1
3	47.1
4	24.8
5	36.0
6	35.8
7	27.4
8	45.5
9	53.2
10	52.8
11	21.2
12	30.7
13	30.8
14	23.5
Light Blister	.4
West Curb	27.330
East Curb	27.281
Total (C.I.D.)	552.3

Notes:
 For "Bill of Reinforcement" see Sheet 93 of 201.
 For "Top of P.C. Concrete Surfacing Elevations", see sheet 93 of 201.
 For "Sections" see Sheet 92 of 201.
 Deck inlets are required in east gutter at Pier 12S and in east gutter at Expansion Joint 3S. See Sheet 187 of 201 for details.
 Unit 2SB Pours 5 and 15 shall be placed prior to Unit 3SB Pours 4 and 11.
 Unit 4SB Pours 1 and 8 shall be placed prior to Unit 3SB Pours 7 and 14.

SUPERSTRUCTURE ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Structural Concrete (Class D)	Cu.Yds.	582.3
Reinforcing Steel #4	Lbs.	72,328
Reinforcing Steel-Epoxy Coated	Lbs.	82,480
Structural Steel #4	Lbs.	720,550
P.C. Concrete Surfacing	Sq.Yds.	2,258

2069.89

CEDAR RIVER BRIDGE
 SOUTH APPROACH
 DESIGN FOR VARIABLE SKEW
 CONTINUOUS WELDED PLATE GIRDER BRIDGE

SLAB PLAN - UNIT 3SB

STA. 322+81.95 & FREEWAY =
 STA. 32+14.70 & 1ST. AVE. W PROJECT NO. I-380-6(68)263--01-57

LINN COUNTY
 IOWA STATE HIGHWAY COMMISSION

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
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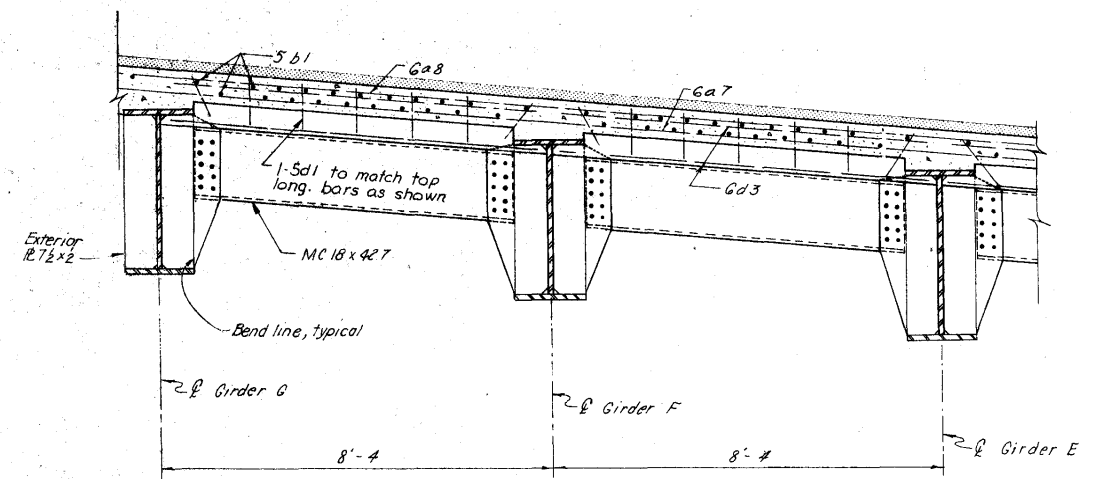
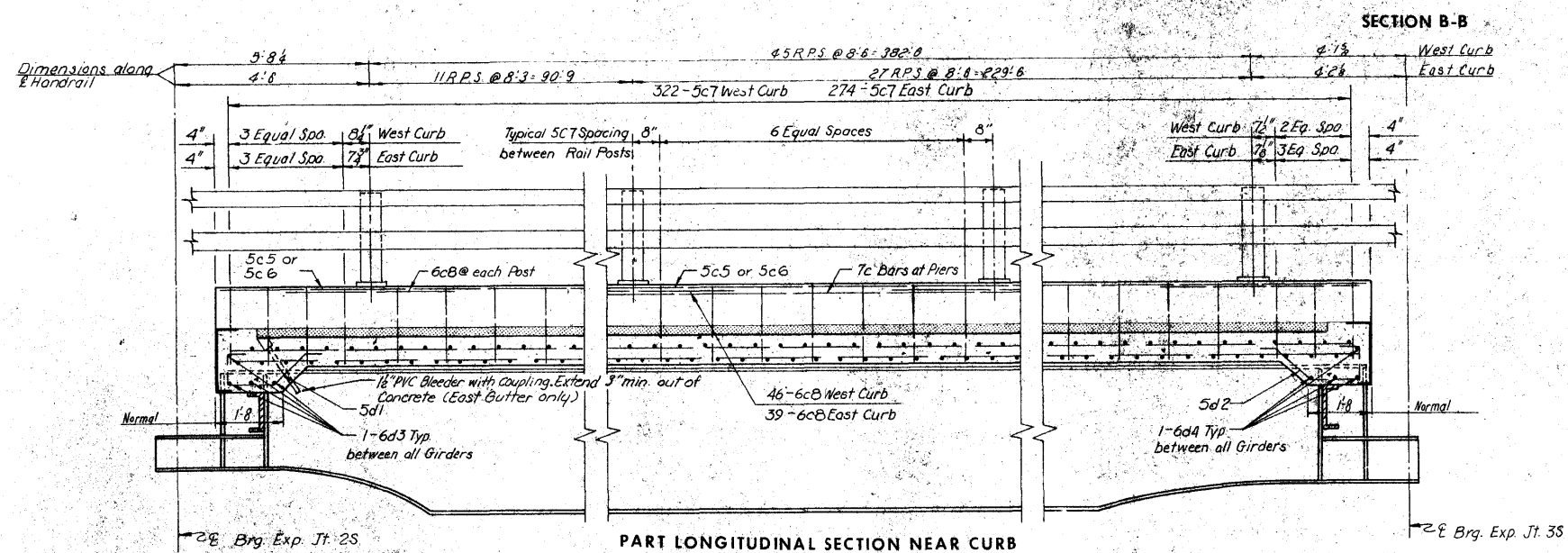
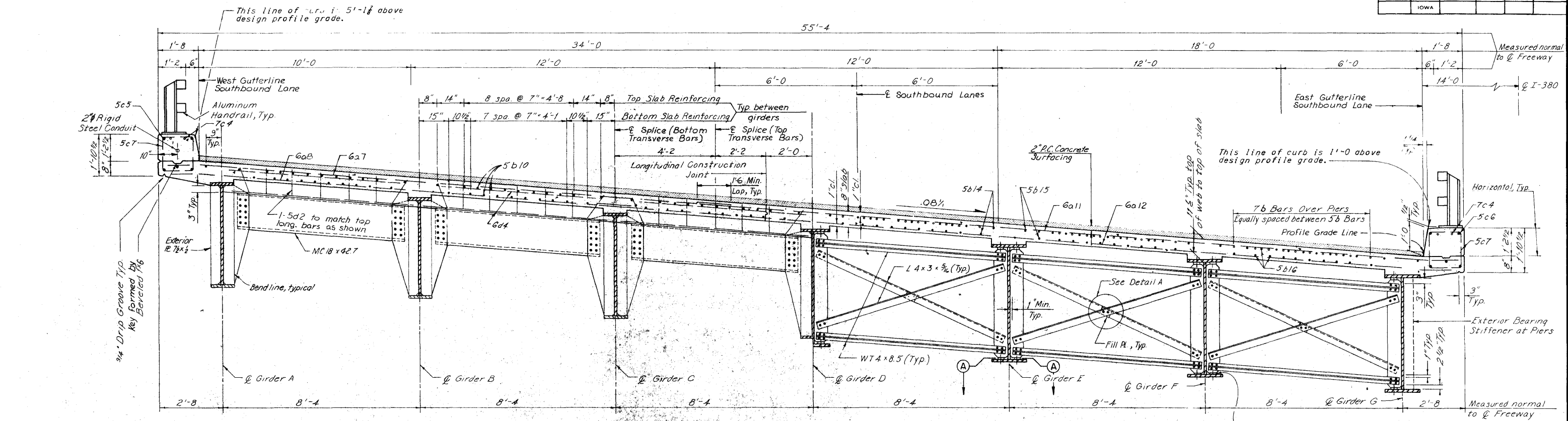
MADE E.J.F. DATE 3-20-74 CHECKED C.B. DATE 6-14-74

4 Includes reinforcing for 1 light blister.
 44 Includes weight of Exp. Jt. at Exp. Jt. 2S and rollers at Exp. Jts. 2S and 3S and bearing plates.

SHEET 91 OF 201

DESIGN NO. 1274 LINN COUNTY FILE 23191 SHEET 93 OF 203

FEDERAL DIST NO.	STATE	FED AID PROJ NO	FISCAL YEAR	SHEET NO	TOTAL SHEETS
	IOWA				



SECTION C-C



SECTION A-A

DETAIL A

Note:
for location of Sections A-B and C-C
see Sheet 91 of 201.
for Filler Joint Details see Sheet
181 of 201.

**CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE
SUPERSTRUCTURE DETAILS - UNIT 3SB**

STA. 322+81.95 @ FREEWAY=
STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. I-380-6(68)263--01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

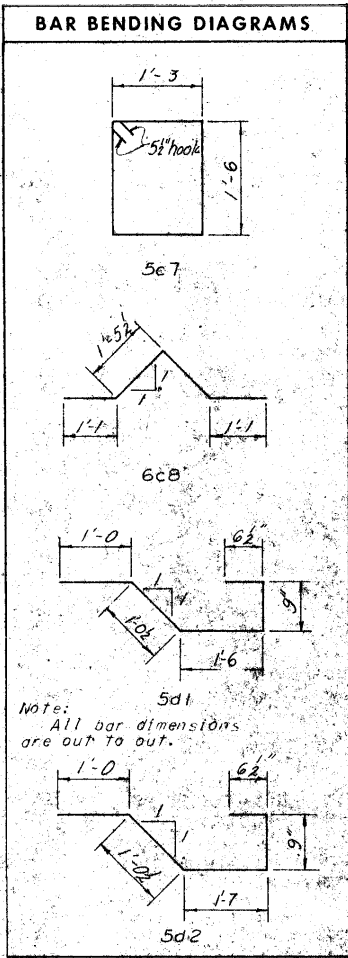
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

MADE REO DATE 2-27-74 CHECKED CBM DATE 6-10-74

SHEET 92 OF 201

DESIGN NO. 1276 LINN COUNTY FILE 23191 SHEET 94 OF 203-0

TABLE OF MOMENTS AND REACTIONS IN FOOT-KIPS AND KIPS														
	ITEM	MAXIMUM POSITIVE MOMENT			MAXIMUM NEGATIVE MOMENT				REACTIONS					
		SPAN 1	SPAN 2	SPAN 3	PIER 11S	PIER 12S	PIER 13S	PIER 14S	JT. 2S	PIER 11S	PIER 12S	PIER 13S	PIER 14S	JT. 3S
GIRDER A	Dead Load A	835	533	1209	313	1633	2073	376	27.2	84.7	135.7	152.7	93.4	26.8
	Dead Load B	262	212	373	104	453	566	137	9.3	46.4	69.3	77.3	52.8	9.0
	Live Load	1064	1033	1247	387	1128	1277	483	41.9	60.7	85.0	90.1	65.4	43.1
	Impact	225	203	246	90	230	250	107	10.9	14.1	17.4	17.6	14.4	10.5
	Total				894	3444	4166	1103	89.3	205.9	307.4	337.7	226.0	89.4
GIRDER B	Dead Load A	964	507	1221	341	1758	2100	412	30.1	93.6	147.2	159.4	100.6	29.3
	Dead Load B	397	272	495	150	641	744	198	13.3	39.8	58.3	62.7	44.1	12.8
	Live Load	1164	1078	1297	423	1193	1299	527	46.1	66.3	91.5	95.0	70.4	47.2
	Impact	246	215	261	98	244	260	118	12.0	15.4	18.7	19.0	15.8	11.6
	Total				1012	3836	4403	1255	101.5	215.1	315.7	336.1	230.9	100.9
GIRDER C	Dead Load A	963	436	1098	337	1672	1856	408	30.0	92.7	142.1	148.7	97.3	28.4
	Dead Load B	404	242	451	150	622	675	198	13.3	40.0	57.4	58.7	43.4	12.6
	Live Load	1144	1017	1221	420	1138	1198	522	45.9	65.5	89.0	90.9	68.8	46.8
	Impact	242	207	250	97	236	245	118	11.9	15.2	18.4	18.6	15.6	11.6
	Total				1004	3668	3974	1246	101.1	213.4	306.9	317.8	225.1	99.4
GIRDER D	Dead Load A	962	366	975	334	1587	1613	404	29.8	91.7	136.9	137.9	94.0	27.4
	Dead Load B	412	212	408	150	602	606	198	13.3	40.1	56.4	56.5	42.6	12.3
	Live Load	1124	956	1145	416	1083	1097	517	45.8	64.7	86.4	86.8	67.2	46.3
	Impact	237	199	239	96	227	229	119	11.8	15.0	18.1	18.1	15.4	11.6
	Total				996	3499	3545	1238	100.7	211.5	297.8	299.3	219.2	97.6
GIRDER E	Dead Load A	960	324	840	333	1540	1406	402	29.7	91.2	133.9	127.7	90.7	26.8
	Dead Load B	416	191	354	150	592	534	198	13.3	40.2	55.8	53.0	41.5	12.1
	Live Load	1112	908	1065	414	1046	1004	514	45.7	64.1	84.7	83.0	65.7	46.0
	Impact	234	192	228	96	222	214	120	11.8	14.9	18.0	17.8	15.3	11.6
	Total				993	3400	3158	1234	100.5	210.4	292.4	281.5	213.3	96.5
GIRDER F	Dead Load A	957	282	705	332	1493	1199	401	29.6	90.6	130.8	117.4	87.4	26.1
	Dead Load B	420	171	300	150	582	463	198	13.3	40.3	55.2	49.4	40.5	14.9
	Live Load	1100	859	984	412	1008	911	512	45.6	63.6	83.1	79.3	64.2	45.7
	Impact	232	185	217	95	216	200	121	11.8	14.8	17.8	17.4	15.2	11.6
	Total				989	3299	2773	1232	100.3	209.3	286.9	263.5	207.3	95.3
GIRDER G	Dead Load A	855	194	569	299	1278	938	359	26.4	80.9	113.4	97.3	76.6	23.7
	Dead Load B	295	97	191	104	393	284	137	9.3	28.0	37.6	32.2	27.6	8.1
	Live Load	979	727	838	369	878	759	459	41.3	57.0	72.4	68.8	57.0	40.9
	Impact	206	161	188	85	190	169	109	10.7	13.2	15.8	15.3	13.6	10.5
	Total				857	2739	2150	1064	87.7	179.1	240.2	213.6	174.8	82.2



* All of the number of bars noted below are to be epoxy coated and placed in the top mat of reinforcing: 1-605 (11 Lbs.), 1-606 (8 Lbs.), 1-5013 (286 Lbs.), 1-6015 (8 Lbs.), 1-5016 (7 Lbs.), 70-501 (2 135 Lbs.), 150-502 (5,281 Lbs.), 70-503 (3,261 Lbs.), 70-504 (3,654 Lbs.), 44-505 (2,042 Lbs.), 22-506 (966 Lbs.), 22-507 (910 Lbs.), 22-508 (857 Lbs.), 22-509 (799 Lbs.), 91-5010 (3,103 Lbs.), 4-5011 (124 Lbs.), 22-5012 (90 Lbs.), 22-5013 (899 Lbs.), 22-5014 (838 Lbs.), 22-5015 (775 Lbs.), 22-5016 (715 Lbs.), 4-5017 (120 Lbs.), 5-503 (77 Lbs.) and 1-604 (82 Lbs.). Epoxy coated 60 bars are to be Grade 60 reinforcing steel.

BILL OF REINFORCEMENT					
BAR	LOCATION	SHAPE	NO	LENGTH	WEIGHT
*601	Slab, Transverse		1	23'-6"	35
*602	Slab, Transverse		1	35'-0"	53
*603	Slab, Transverse Top		1 Ser 8	Varies	175
604	Slab, Transverse Bott		1 Ser 8	Varies	183
*605	Slab, Transverse		2	7'-0"	21
*606	Slab, Transverse		2	5'-0"	15
*607	Slab, Transverse Top		470	24'-2"	17060
608	Slab, Transverse Bott		409	20'-0"	14089
609	Slab, Transverse Bott		1 Ser 13	Varies	391
*6010	Slab, Transverse Top		1 Ser 13	Varies	310
*6011	Slab, Transverse Top		438	32'-6"	21381
6012	Slab, Transverse Bott		437	36'-8"	24067
*6013	Slab, Transverse Top		1 Ser 13	Varies	286
6014	Slab, Transverse Bott		1 Ser 13	Varies	301
*6015	Slab, Transverse		2	5'-6"	17
*6016	Slab, Transverse		2	4'-6"	14
6017	Slab, Transverse Bott		1 Ser 19	Varies	603
*6018	Slab, Transverse Top		1 Ser 19	Varies	478
*6019	Slab, Transverse		1	21'-6"	32
*6020	Slab, Transverse		1	41'-0"	62
*501	Slab, Longitudinal		134	29'-3"	4,088
*502	Slab, Longitudinal		268	36'-2"	10,109
*503	Slab, Longitudinal		134	44'-8"	6,243
*504	Slab, Longitudinal		150	44'-11"	7,027
*505	Slab, Longitudinal		84	44'-6"	3,899
*506	Slab, Longitudinal		42	42'-1"	1,844
*507	Slab, Longitudinal		42	39'-8"	1,738
*508	Slab, Longitudinal		42	37'-4"	1,635
*509	Slab, Longitudinal		42	34'-10"	1,526
*5010	Slab, Longitudinal		176	32'-4"	5,935
*5011	Slab, Longitudinal		8	29'-10"	249
*5012	Slab, Longitudinal		42	41'-10"	1,833
*5013	Slab, Longitudinal		42	39'-2"	1,716
*5014	Slab, Longitudinal		42	36'-6"	1,599
*5015	Slab, Longitudinal		42	33'-10"	1,482
*5016	Slab, Longitudinal		42	31'-2"	1,365
*5017	Slab, Longitudinal		8	28'-8"	239
*7018	Slab, Longitudinal		60	24'-0"	2,943
*7019	Slab, Longitudinal		60	34'-0"	4,170
*7020	Slab, Longitudinal		60	24'-3"	4,200
*7021	Slab, Longitudinal		60	26'-6"	3,250
701	Curb, Longitudinal		4	24'-0"	196
702	Curb, Longitudinal		4	34'-0"	278
703	Curb, Longitudinal		4	34'-3"	280
704	Curb, Longitudinal		4	26'-6"	217
505	Curb, Longitudinal		22	36'-7"	839
506	Curb, Longitudinal		18	7'-6"	704
507	Curb, Transverse		536	5'-2"	3833
608	Curb, Post		35	5'-0"	639
*501	End Diaphragm		4	1'-0"	204
*502	End Diaphragm		4	1'-0"	208
*603	End Diaphragm		14	3'-6"	106
*604	End Diaphragm		24	3'-1"	327
Total					154,593

ELEVATIONS — TOP OF P.C. CONCRETE SURFACING (2" above top of first lift of concrete)																													
Girder	E.J. 2S	.25	.50	.75	F.S. 1	.25	.50	.75	F.S. 2	.25	.50	.75	F.S. 3	.25	.50	.75	F.S. 4	.25	.50	.75	F.S. 5	.25	.50	.75	F.S. 6	.25	.50	.75	E.J. 3S
A	123.51	123.53	123.54	123.55	123.58	123.66	123.73	123.81	123.88	123.93	123.99	124.04	124.05	124.16	124.23	124.30	124.37	124.44	124.51	124.57	124.64	124.72	124.80	124.88	124.96	124.98	125.01	125.03	125.06
B	122.85	122.87	122.89	122.91	122.93	123.00	123.07	123.15	123.22	123.28	123.33	123.39	123.44	123.51	123.57	123.64	123.70	123.77	123.83	123.90	123.97	124.05	124.12	124.20	124.28	124.30	124.33	124.35	124.37
C	122.20	122.22	122.23	122.25	122.27	122.35	122.43	122.50	122.58	122.63	122.69	122.74	122.79	122.86	122.93	122.99	123.06	123.11	123.17	123.22	123.27	123.36	123.44	123.52	123.60	123.62	123.64	123.67	123.69
D	121.54	121.56	121.58	121.60	121.63	121.70	121.76	121.85	121.93	121.98	122.04	122.10	122.15	122.21	122.27	122.33	122.39	122.45	122.50	122.55	122.60	122.68	122.76	122.83	122.91	122.94	122.96	122.98	123.01
E	120.89	120.91	120.93	120.94	120.96	121.04	121.12	121.20	121.28	121.33	121.39	121.44	121.49	121.56	121.62	121.68	121.74	121.78	121.83	121.88	121.92	122.00	122.07	122.15	122.23	122.25	122.27	122.30	122.32
F	120.23	120.25	120.27	120.29	120.31	120.39	120.47	120.55	120.64	120.69	120.74	120.79	120.85	120.91	120.97	121.03	121.09	121.13	121.17	121.21	121.25	121.32	121.40	121.47	121.55	121.57	121.59	121.61	121.64
G	119.58	119.60	119.62	119.64	119.66	119.74	119.82	119.90	119.98	120.04	120.09	120.14	120.19	120.25	120.31	120.37	120.43	120.46	120.50	120.53	120.57	120.64	120.71	120.78	120.85	120.88	120.90	120.93	120.95

Legend: F.S. denotes Field Splice

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KANSAS CITY

MADE E.J.F. DATE 3-20-74 CHECKED C.B.M. DATE 6-14-74

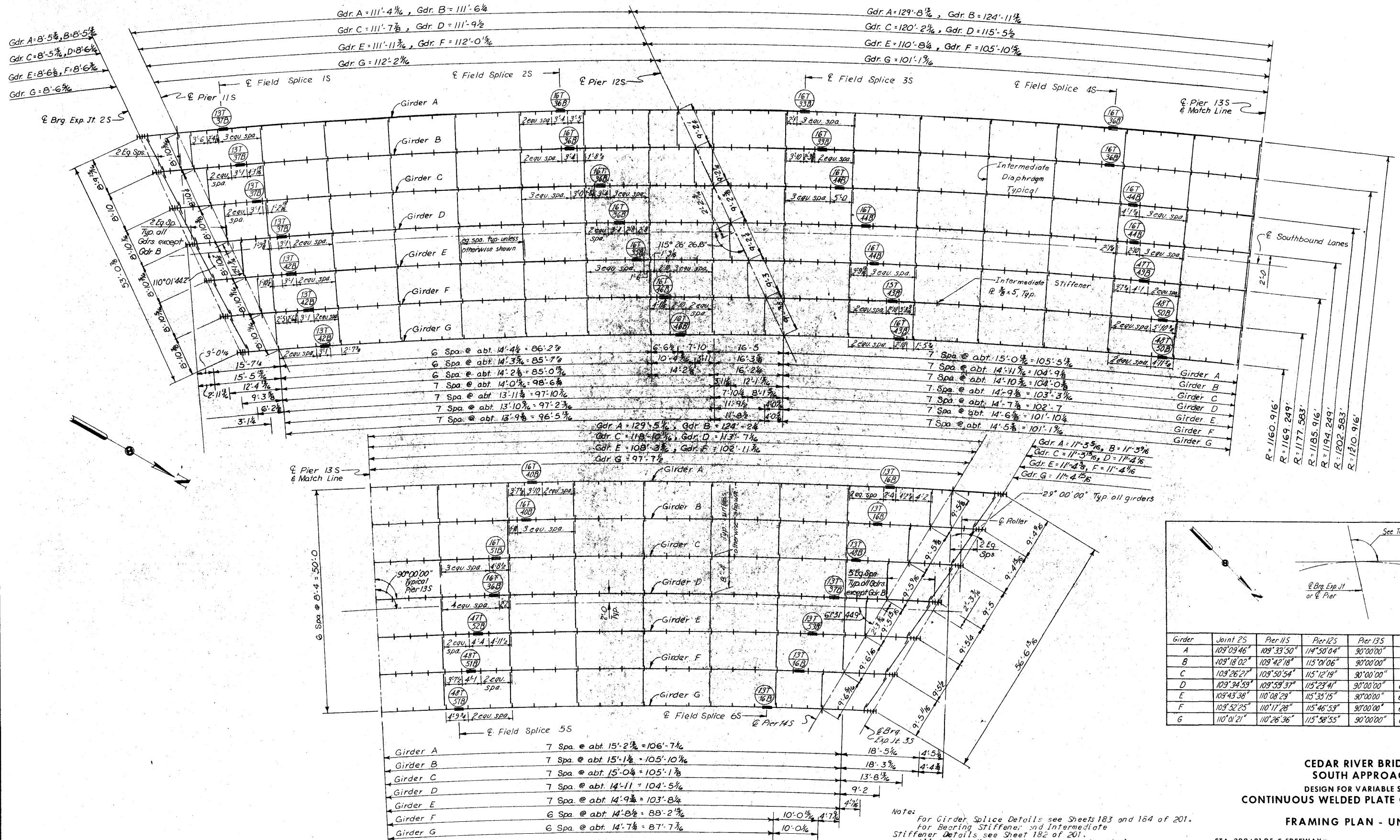
CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE

SUPERSTRUCTURE DETAILS - UNIT 35B

STA. 322+81.95 @ FREEWAY=
STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. I-380-6(68)263--01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

SHEET 93 OF 201

DESIGN NO. 1274 LINN COUNTY FILE 23101 SHEET 95 OF 203-0



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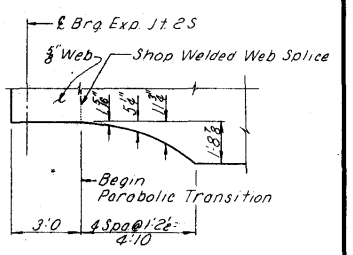
FRAMING PLAN

CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE

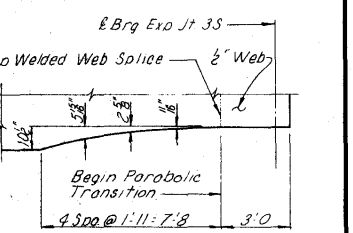
FRAMING PLAN - UNIT 3S

STA. 322+81.95 @ FREEWAY =
STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. I-380-6(68)263--01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

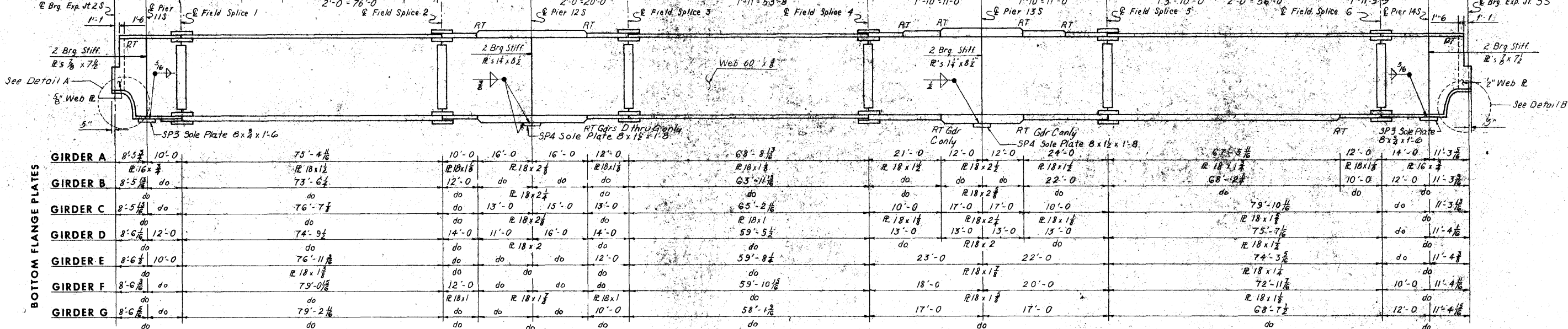
TOTAL LENGTH		388'-1 1/4 Girder A				380'-5 1/8 Girder B				370'-7 Girder C				360'-8 3/8 Girder D				350'-9 1/4 Girder E				340'-10 3/8 Girder F				330'-11 Girder G					
SPAN LENGTHS		See Below		111'-9 1/8 Girder A 111'-9 1/2 Girder D		111'-6 1/4 Girder B 111'-11 3/8 Girder E 112'-2 1/8 Girder G		111'-7 7/8 Girder C 112'-0 1/8 Girder F		129'-8 1/8 Girder A 115'-5 1/2 Girder D		124'-11 1/8 Girder B 110'-8 1/4 Girder E 101'-1 1/8 Girder G		120'-2 1/4 Girder C 105'-10 1/8 Girder F		129'-5 1/8 Girder A 113'-7 1/8 Girder D		124'-2 1/4 Girder B 108'-3 Girder E 97'-7 1/2 Girder G		118'-10 1/8 Girder C 102'-11 1/8 Girder F				See Below							
FIELD SPLICES	GIRDER A	8'-5 1/2	10'-0		75'-4 1/8		26'-0		28'-0		68'-8 1/8		33'-0		36'-0		79'-5 1/8		14'-0		11'-3 1/8										
	GIRDER B	8'-5 1/2	do		73'-6 1/4		28'-0		do		63'-11 1/8		do		34'-0		78'-2 1/4		12'-0		11'-3 1/8										
	GIRDER C	8'-5 1/2	do		76'-7 1/8		25'-0		do		65'-2 1/8		27'-0		27'-0		79'-10 1/8		do		11'-3 1/8										
	GIRDER D	8'-6 1/2	12'-0		74'-9 1/2		do		30'-0		59'-5 1/2		26'-0		26'-0		75'-7 1/8		do		11'-4 1/8										
	GIRDER E	8'-6 1/2	10'-0		76'-11 1/8		do		28'-0		59'-8 1/4		23'-0		22'-0		74'-3 1/8		do		11'-4 1/8										
	GIRDER F	8'-6 1/2	do		79'-0 1/8		23'-0		do		59'-10 1/8		18'-0		20'-0		72'-11 1/8		10'-0		11'-4 1/8										
	GIRDER G	8'-6 1/2	do		79'-2 1/8		do		26'-0		58'-1 1/8		17'-0		17'-0		68'-7 1/2		12'-0		11'-4 1/8										
TOP FLANGE PLATES	GIRDER A	8'-5 1/2	10'-0		75'-4 1/8		10'-0	16'-0	16'-0	12'-0		68'-8 1/8		10'-0	11'-0	12'-0	12'-0	12'-0	12'-0		79'-5 1/8		14'-0	11'-3 1/8							
	GIRDER B	8'-5 1/2	do		73'-6 1/4		12'-0	do	do	do		63'-11 1/8		do	do	do	do	do	do		78'-2 1/4		12'-0	11'-3 1/8							
	GIRDER C	8'-5 1/2	do		76'-7 1/8		do	13'-0	15'-0	13'-0		65'-2 1/8		do	do	17'-0	17'-0	do	do		79'-10 1/8		do	11'-3 1/8							
	GIRDER D	8'-6 1/2	12'-0		74'-9 1/2		14'-0	11'-0	16'-0	14'-0		59'-5 1/2		13'-0	13'-0	13'-0	13'-0	do	do		75'-7 1/8		do	11'-4 1/8							
	GIRDER E	8'-6 1/2	10'-0		76'-11 1/8		do	do	do	12'-0		59'-8 1/4		23'-0	23'-0	22'-0	22'-0	do	do		74'-3 1/8		do	11'-4 1/8							
	GIRDER F	8'-6 1/2	do		79'-0 1/8		12'-0	do	do	do		59'-10 1/8		18'-0	18'-0	20'-0	20'-0	do	do		72'-11 1/8		10'-0	11'-4 1/8							
	GIRDER G	8'-6 1/2	do		79'-2 1/8		do	do	do	10'-0		58'-1 1/8		17'-0	17'-0	17'-0	17'-0	do	do		68'-7 1/2		12'-0	11'-4 1/8							
SHEAR CONNECTOR SPACES	GIRDER A	8'-5 1/2	5'-10	2 Spaces @ 1'-11 = 3'-10	2'-4 1/2	20 Spaces @ 2'-0 = 40'-0	17 Spaces @ 1'-10 = 33'-0	10 Spaces @ 2'-0 = 20'-0	4'-10	11 Spaces @ 2'-6 1/2 = 28'-0	26 Spaces @ 1'-11 = 49'-10	8 Spaces @ 2'-0 = 16'-0	2'-6 1/2	14 Spaces @ 5'-0 = 70'-0	4'-10	15 Spaces @ 2'-0 = 30'-0	2'-6 1/2	40 Spaces @ 1'-11 = 76'-8	2'-6 1/2	4 Spaces @ 2'-0 = 8'-0	4'-10	11'-3 1/8									
	GIRDER B	8'-5 1/2	do	do	2'-5 1/2	22 Spaces @ 1'-11 = 42'-2	18 Spaces @ 1'-8 = 28'-4	11 Spaces @ 2'-0 = 22'-0	do	do	do	do	2'-5	do	do	6'-10	13 Spaces @ 2'-0 = 26'-0	2'-11 1/8	3 Spaces @ 1'-8 = 5'-8	29 Spaces @ 1'-8 = 58'-0	7 Spaces @ 1'-8 = 11'-8	2'-11 1/8	3 Spaces @ 1'-11 = 5'-9	5'-1	11'-3 1/8						
	GIRDER C	8'-5 1/2	do	do	2'-8	21 Spaces @ 2'-0 = 42'-0	19 Spaces @ 1'-8 = 31'-8	10 Spaces @ 2'-0 = 20'-0	4'-8	do	do	do	2'-8 1/2	11 Spaces @ 5'-9 = 59'-9	5'-9	11 Spaces @ 1'-11 = 20'-1	2'-4 1/2	6 Spaces @ 1'-9 = 10'-6	26 Spaces @ 2'-0 = 52'-0	9 Spaces @ 1'-8 = 15'-0	2'-4 1/2	do	do	11'-3 1/8							
	GIRDER D	8'-6 1/2	5'-1	3 Spaces @ 1'-11 = 5'-9	2'-9 1/2	43 Spaces @ 1'-8 = 71'-8	2'-9 1/2	do	do	5'-10	12 Spaces @ 1'-11 = 23'-8	7 Spaces @ 1'-10 = 12'-0	17 Spaces @ 1'-8 = 38'-8	7 Spaces @ 1'-10 = 12'-0	2'-8 1/2	10 Spaces @ 4'-10 = 40'-0	4'-10	10 Spaces @ 2'-0 = 20'-0	8 Spaces @ 1'-7 = 12'-8	36 Spaces @ 1'-8 = 60'-0	3'-9 1/2	do	do	11'-4 1/8							
	GIRDER E	8'-6 1/2	5'-0	2 Spaces @ 1'-11 = 3'-10	2'-8 1/2	22 Spaces @ 1'-11 = 42'-2	19 Spaces @ 1'-8 = 31'-8	10 Spaces @ 2'-0 = 20'-0	4'-10	11 Spaces @ 2'-4 1/2 = 22'-0	6 Spaces @ 1'-11 = 6'-6	20 Spaces @ 1'-10 = 22'-0	13 Spaces @ 1'-8 = 21'-8	9 Spaces @ 1'-11 = 17'-3	do	do	8 Spaces @ 2'-0 = 16'-0	3'-6	15 Spaces @ 1'-5 = 22'-5	17 Spaces @ 1'-7 = 26'-7	8 Spaces @ 1'-11 = 15'-4	2'-10 1/2	do	do	11'-4 1/8						
	GIRDER F	8'-6 1/2	do	do	2'-8 1/2	20 Spaces @ 2'-0 = 40'-0	22 Spaces @ 1'-8 = 36'-2	9 Spaces @ 1'-11 = 17'-3	4'-7	do	do	2'-4 1/2	12 Spaces @ 1'-10 = 22'-0	8 Spaces @ 1'-9 = 14'-0	10 Spaces @ 2'-0 = 20'-0	3'-12	6 Spaces @ 4'-10 = 24'-0	7 Spaces @ 2'-0 = 14'-0	3'-3 1/2	24 Spaces @ 1'-5 = 29'-9	17 Spaces @ 1'-7 = 32'-7	5 Spaces @ 1'-5 = 7'-5	2'-6 1/2	2 Spaces @ 1'-11 = 3'-10	5'-0	11'-4 1/8					
	GIRDER G	8'-6 1/2	do	do	2'-9 1/2	38 Spaces @ 2'-0 = 76'-0	2'-9 1/2	do	do	do	10 Spaces @ 2'-0 = 20'-0	3'-0	28 Spaces @ 1'-11 = 53'-8	3'-9 1/2	6 Spaces @ 1'-10 = 11'-0	do	do	6 Spaces @ 1'-10 = 11'-0	3'-2 1/2	8 Spaces @ 1'-3 = 10'-0	28 Spaces @ 1'-7 = 36'-8	2'-5 1/2	3 Spaces @ 1'-11 = 5'-9	5'-1	11'-4 1/8						
BOTTOM FLANGE PLATES	GIRDER A	8'-5 1/2	10'-0		75'-4 1/8		10'-0	16'-0	16'-0	12'-0		68'-8 1/8		21'-0	12'-0	12'-0	24'-0		68'-5 1/8		12'-0	14'-0	11'-3 1/8								
	GIRDER B	8'-5 1/2	do		73'-6 1/4		12'-0	do	do	do		63'-11 1/8		do	do	do	22'-0		68'-12 1/2		10'-0	12'-0	11'-3 1/8								
	GIRDER C	8'-5 1/2	do		76'-7 1/8		do	13'-0	15'-0	13'-0		65'-2 1/8		do	do	17'-0	17'-0	10'-0		79'-10 1/8		do	do	11'-3 1/8							
	GIRDER D	8'-6 1/2	12'-0		74'-9 1/2		14'-0	11'-0	16'-0	14'-0		59'-5 1/2		13'-0	13'-0	13'-0	13'-0	do	do		75'-7 1/8		do	do	11'-4 1/8						
	GIRDER E	8'-6 1/2	10'-0		76'-11 1/8		do	do	do	12'-0		59'-8 1/4		23'-0	23'-0	22'-0	22'-0	do	do		74'-3 1/8		do	do	11'-4 1/8						
	GIRDER F	8'-6 1/2	do		79'-0 1/8		12'-0	do	do	do		59'-10 1/8		18'-0	18'-0	20'-0	20'-0	do	do		72'-11 1/8		10'-0	do	11'-4 1/8						
	GIRDER G	8'-6 1/2	do		79'-2 1/8		do	do	do	10'-0		58'-1 1/8		17'-0	17'-0	17'-0	17'-0	do	do		68'-7 1/2		12'-0	do	11'-4 1/8						



DETAIL A



DETAIL B



TYPICAL ROCKER SETTINGS UNIT 3SB							
	EXP. JT. 2S	PIER 11S	PIER 12S	PIER 13S	PIER 14S	EXP. JT. 3S	
Temperature at time of setting							
90°F	2 3/8"	3/8"	0"	3/8"	1/8"	5/8"	2 3/8"
50°F	3 1/2"	0"	0"	0"	0"	0"	3 1/2"
10°F	4 5/8"	-3/8"	-3/8"	0"	-3/8"	-5/8"	4 13/16"
Sole Plate	SP3	SP3	SP4	SP4	SP3	SP3	
Rocker		R3A		R4	R3A		
Masonry Plate		MP3P	S4	MP4P	MP3P		

GIRDER DETAILS

Notes: Rockers are to be set vertically at 50°F. For temperatures above 50°F, set masonry plate toward fixed shoe (+). For temperatures below 50°F, set masonry plate away from fixed shoe (-). Settings for other temperatures are proportional to those shown for a 40° temperature change.

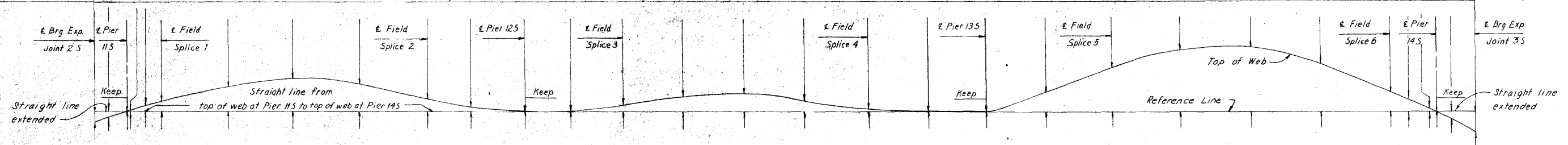
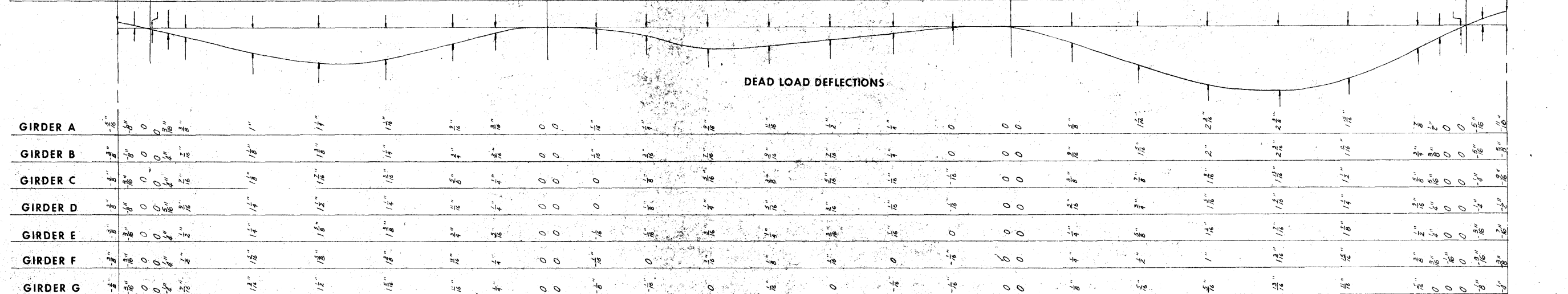
CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE
GIRDER ELEVATIONS - UNIT 3SB

STA. 322+81.95 @ FREEWAY =
STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. I-380-6(68)263--01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

MADE LCK DATE 1-31-74 CHECKED DRA DATE 6-17-74

	£ Brg. Exp. Joint 25	£ Pier 115	£ Field Splice 1	£ Field Splice 2	£ Pier 125	£ Field Splice 3	£ Field Splice 4	£ Pier 135	£ Field Splice 5	£ Field Splice 6	£ Pier 145	£ Brg. Exp. Joint 35
		4 Equal Spaces	4 Equal Spaces	4 Equal Spaces	4 Equal Spaces	4 Equal Spaces	4 Equal Spaces	4 Equal Spaces	4 Equal Spaces	4 Equal Spaces	4 Equal Spaces	
		10'-0"	A,B,C,E,F,G	26'-0"	28'-0"		33'-0"	36'-0"		14'-0"		
GIRDER A	at 4'-7 $\frac{7}{8}$ " = 18'-5 $\frac{3}{4}$ "		at abt 18'-10 $\frac{3}{16}$ " = 75'-4 $\frac{11}{16}$ "	at 13'-6'-54'-0"		at abt 17'-2 $\frac{13}{16}$ " = 68'-8 $\frac{13}{16}$ "	at 17'-3" = 69'-0"		at abt 19'-10 $\frac{1}{8}$ " = 79'-5 $\frac{11}{16}$ "		at abt 6'-3 $\frac{13}{16}$ " = 25'-3 $\frac{5}{16}$ "	
GIRDER B	at abt 4'-7 $\frac{7}{8}$ " = 18'-5 $\frac{3}{16}$ "		at 18'-4 $\frac{9}{16}$ " = 73'-6 $\frac{1}{4}$ "	28'-0"	do	at 14'-0" = 56'-0"	do	34'-0"		at 19'-0 $\frac{9}{16}$ " = 78'-2 $\frac{1}{4}$ "	at abt 5'-9 $\frac{9}{16}$ " = 23'-3 $\frac{3}{8}$ "	
GIRDER C	at abt 4'-7 $\frac{1}{2}$ " = 18'-5 $\frac{15}{16}$ "		at abt 19'-1 $\frac{15}{16}$ " = 76'-7 $\frac{7}{8}$ "	25'-0"	do	at 13'-3" = 53'-0"	at abt 10'-3 $\frac{11}{16}$ " = 65'-2 $\frac{11}{16}$ "	at 13'-6" = 54'-0"		at abt 19'-11 $\frac{11}{16}$ " = 79'-10 $\frac{11}{16}$ "	at abt 5'-9 $\frac{15}{16}$ " = 23'-3 $\frac{15}{16}$ "	
GIRDER D	at abt 5'-1 $\frac{1}{2}$ " = 20'-6 $\frac{1}{16}$ "	12'-0"	at 18'-8 $\frac{3}{8}$ " = 74'-9 $\frac{1}{2}$ "	do	30'-0"	at 13'-9" = 55'-0"	at 14'-10 $\frac{3}{8}$ " = 59'-5 $\frac{1}{2}$ "	at 13'-0" = 52'-0"		at abt 18'-10 $\frac{3}{4}$ " = 75'-7 $\frac{1}{16}$ "	at abt 5'-10" = 23'-4 $\frac{1}{16}$ "	
GIRDER E	at abt 4'-7 $\frac{1}{2}$ " = 18'-6 $\frac{3}{8}$ "		at abt 19'-2 $\frac{13}{16}$ " = 76'-11 $\frac{3}{16}$ "	do	28'-0"	at 13'-3" = 53'-0"	at 14'-1 $\frac{11}{16}$ " = 59'-8 $\frac{1}{4}$ "	at 11'-3" = 45'-0"		at abt 18'-6 $\frac{13}{16}$ " = 74'-3 $\frac{5}{16}$ "	at abt 5'-10 $\frac{1}{16}$ " = 23'-4 $\frac{3}{8}$ "	
GIRDER F	at abt 4'-7 $\frac{9}{16}$ " = 18'-6 $\frac{3}{16}$ "		at abt 19'-9 $\frac{1}{4}$ " = 79'-0 $\frac{1}{16}$ "	23'-0"	do	at 12'-9" = 51'-0"	at abt 14'-11 $\frac{3}{8}$ " = 59'-10 $\frac{15}{16}$ "	at 9'-6" = 38'-0"		at abt 18'-2 $\frac{7}{8}$ " = 72'-11 $\frac{7}{16}$ "	at abt 5'-4 $\frac{3}{8}$ " = 21'-4 $\frac{11}{16}$ "	
GIRDER G	at abt 4'-7 $\frac{9}{16}$ " = 18'-6 $\frac{5}{16}$ "		at abt 19'-9 $\frac{11}{16}$ " = 79'-2 $\frac{11}{16}$ "	do	26'-0"	at 12'-3" = 49'-0"	at abt 14'-6 $\frac{3}{8}$ " = 58'-1 $\frac{9}{16}$ "	at 8'-6" = 34'-0"		at 17'-1 $\frac{7}{8}$ " = 68'-7 $\frac{1}{2}$ "	at abt 5'-10 $\frac{1}{4}$ " = 23'-4 $\frac{1}{8}$ "	

[illegible]

GIRDERS AS FABRICATED AND ERECTED DIAGRAM
(In the Horizontal Position)

Note: Negative value denotes: comber below reference line.

Note: Off et. are given at joint between field
slabs and girder and a 50% joint
For Girder A thru E 22% of the dead load
deflection is due to structural steel and 78% is
due to concrete and P.C. surface course. For
Girder F and G 21% of the dead load deflection is
due to concrete and P.C. surface course.
Deflection is to concrete and P.C.
surface course includes 13% due to the
P.C. surface course.
Bottom of web to be parallel to top
of web.

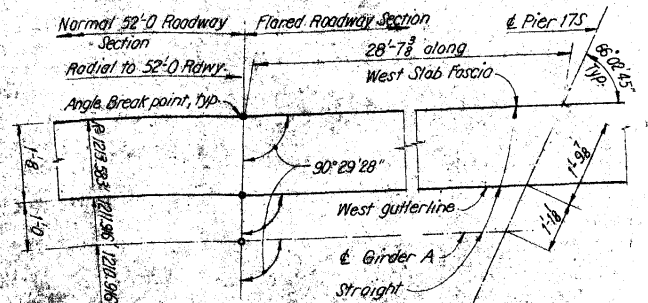
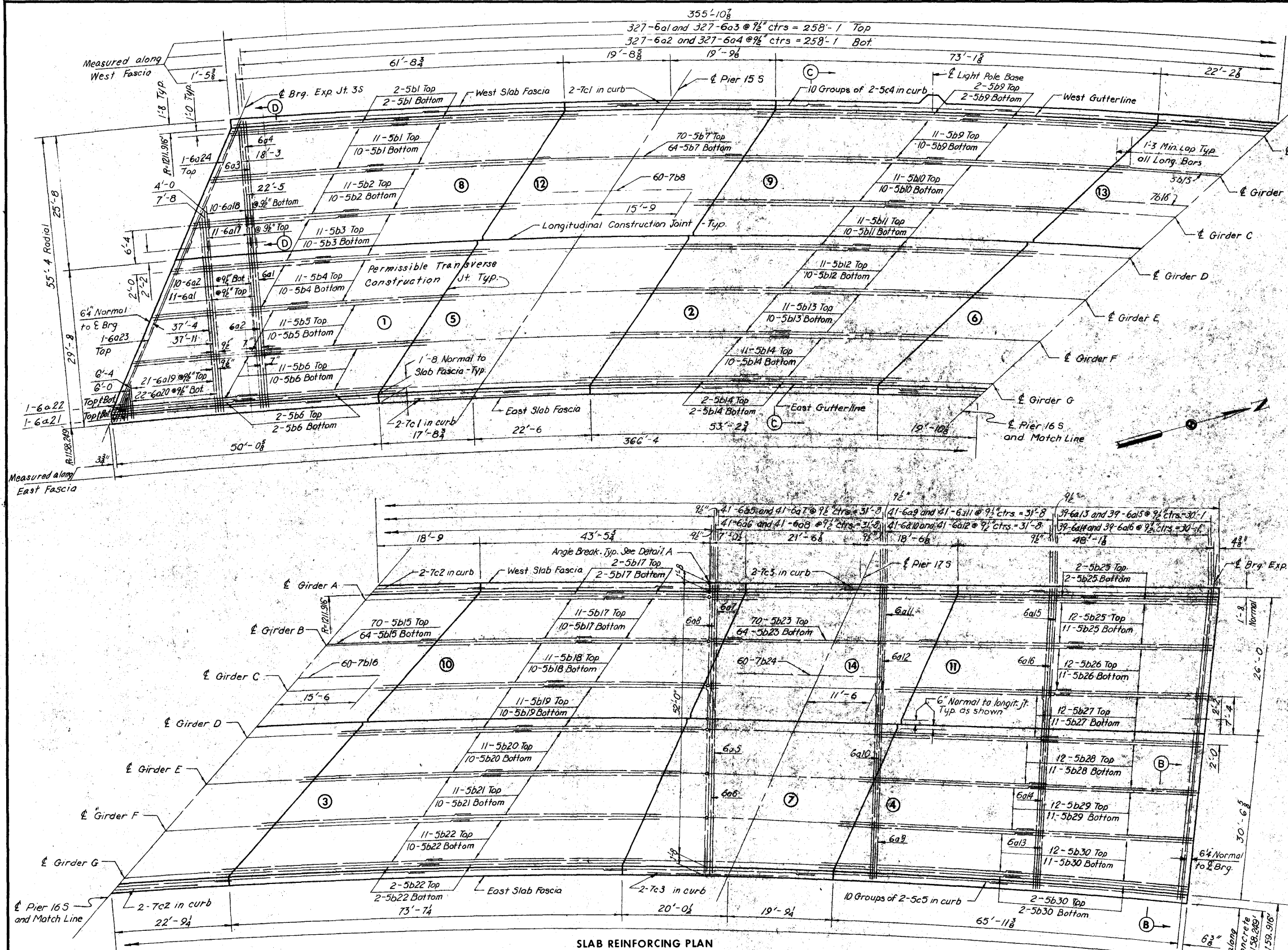
**CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE**

DEFLECTION DIAGRAMS - UNIT 3SB

STA 322+81.95 @ FREEWAY=
STA 32+14.70 @ 1ST AVE. W PROJECT NO. 1-380-6(68)263- 01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

MADE TNL DATE 4-4-74 CHECKED CBM DATE 9-74



DETAIL A

Notes:
 For "Bill of Reinforcement" see Sheet 98 of 201.
 For "Top of P.C. Concrete Surfacing Elevations", see sheet 98 of 201.
 For "Sections" see Sheet 99 of 201.
 Deck inlets are required in the east gutter at Pier 15S and in east gutter at Expansion Joint 4S. See Sheet 187 of 201 for details.

CONCRETE PLACEMENT QUANTITIES					
POUR	CU.YDS.	POUR	CU.YDS.	POUR	CU.YDS.
1	42.2	7	30.5	13	27.4
2	44.7	8	41.0	14	26.8
3	52.1	9	45.5	West Curb	25.3
4	50.5	10	36.8	East Curb	26.1
5	30.7	11	37.7	Light Blister	0.4
6	32.4	12	26.2	Total (C.I.D.)	576.3

SUPERSTRUCTURE ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Structural Concrete (Class D)	Cu.Yds.	567.3
Reinforcing Steel #4	Lbs.	73,129
Reinforcing Steel-Epoxy Coated	Lbs.	79,337
Structural Steel #4	Lbs.	617,911
P.C. Concrete Surfacing	Sq.Yds.	2167.48

3 includes reinforcing for 1 light blister.
 44 includes weight of Exp. jt. at Exp. jt. 3S and bearing plates.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
 CONSULTING ENGINEERS
 KANSAS CITY

MADE des DATE 4/20 CHECKED C.B.M. DATE 6-01-74

CEDAR RIVER BRIDGE
 SOUTH APPROACH
 DESIGN FOR VARIABLE SKEW
 CONTINUOUS WELDED PLATE GIRDER BRIDGE

SLAB PLAN - UNIT 45B

STA. 322+81.95 @ FREEWAY =
 STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. I-380-6(68)263--01-57

LINN COUNTY
 IOWA STATE HIGHWAY COMMISSION

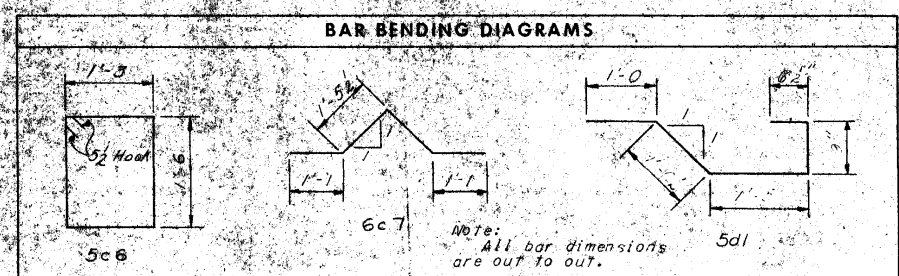
SHEET 97 OF 201

DESIGN NO. 1276 LINN COUNTY FILE 23191 SHEET 99 OF 203-0

Part III of IV

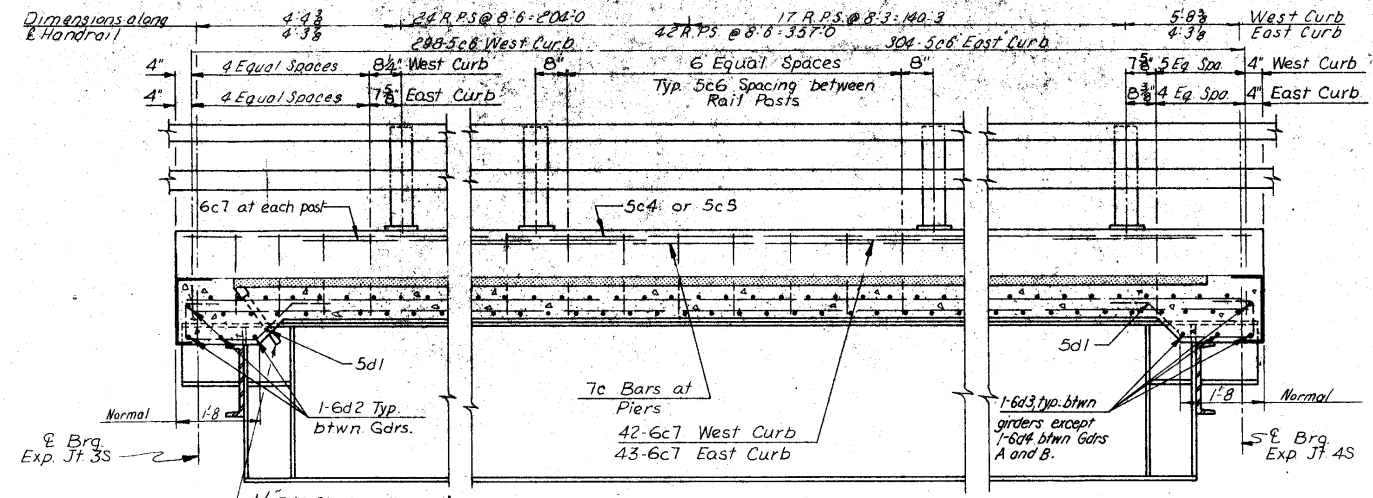
TABLE OF MOMENTS AND REACTIONS IN FOOT-KIPS AND KIPS													
GIRDER	ITEM	MAXIMUM POSITIVE MOMENT				MAXIMUM NEGATIVE MOMENT			REACTIONS				
		SPAN 1	SPAN 2	SPAN 3	SPAN 4	PIER 15S	PIER 16S	PIER 17S	JT. 3S	PIER 15S	PIER 16S	PIER 17S	JT. 4S
GIRDER A	Dead Load A	381	616	260	319	1206	1112	680	26.8	113.2	108.2	85.4	24.4
	Dead Load B	131	219	98	116	344	328	200	9.0	60.1	58.2	46.7	8.5
	Live Load	719	833	670	584	774	789	579	43.1	70.8	71.9	62.9	42.6
	Impact	175	174	154	151	174	173	141	10.5	15.9	15.7	15.3	10.9
	Total	—	—	—	—	2498	2402	1600	89.4	260.0	254.0	210.3	86.4
GIRDER B	Dead Load A	397	624	345	389	1246	1219	866	29.3	121.0	119.2	101.9	28.8
	Dead Load B	183	293	170	180	466	468	329	12.8	49.6	49.4	42.4	12.8
	Live Load	767	884	763	694	816	854	683	47.2	77.1	78.2	71.5	48.1
	Impact	188	187	172	177	185	187	164	11.6	16.4	17.1	17.1	12.3
	Total	—	—	—	—	2713	2728	2042	100.9	264.1	263.9	232.9	102.0
GIRDER C	Dead Load A	378	567	389	410	1152	1200	948	28.4	115.4	117.3	105.9	29.6
	Dead Load B	176	273	195	188	438	469	364	12.6	48.1	49.6	44.5	13.1
	Live Load	740	854	783	725	782	846	716	46.8	74.9	77.4	72.7	48.4
	Impact	182	183	174	182	179	185	169	11.6	16.6	16.9	17.2	12.2
	Total	—	—	—	—	2551	2700	2197	99.4	255.0	261.2	240.3	103.3
GIRDER D	Dead Load A	360	511	434	432	1059	1181	1029	27.4	109.8	115.3	109.8	30.4
	Dead Load B	169	253	220	197	411	470	398	12.3	46.6	49.7	46.5	13.4
	Live Load	712	824	803	756	748	837	748	46.3	72.6	76.6	73.9	48.7
	Impact	176	178	176	188	174	182	174	11.6	16.9	16.7	17.2	12.1
	Total	—	—	—	—	2392	2670	2349	97.6	245.9	258.3	247.4	104.6
GIRDER E	Dead Load A	349	452	489	461	968	1177	1131	26.8	104.5	114.3	114.6	31.4
	Dead Load B	164	227	250	209	380	476	439	12.1	44.8	50.0	48.8	13.9
	Live Load	686	796	831	794	716	841	791	46.0	71.1	76.6	75.6	49.0
	Impact	172	174	179	195	168	183	181	10.7	16.7	16.6	17.3	12.0
	Total	—	—	—	—	2232	2677	2542	96.5	237.1	257.7	256.3	106.3
GIRDER F	Dead Load A	338	392	544	489	877	1174	1232	26.1	99.1	113.6	119.4	32.4
	Dead Load B	160	202	279	222	348	462	481	11.9	43.0	50.3	51.0	14.2
	Live Load	660	767	858	831	683	845	833	45.7	69.5	76.4	77.8	48.3
	Impact	168	170	182	201	163	183	188	11.6	16.6	16.6	17.4	12.9
	Total	—	—	—	—	2071	2684	2734	95.3	228.2	256.9	265.0	107.9
GIRDER G	Dead Load A	292	297	533	452	703	1047	1180	22.7	83.4	100.5	109.4	29.2
	Dead Load B	107	122	214	162	219	340	361	8.1	48.4	59.6	62.3	10.9
	Live Load	573	666	797	773	589	773	785	40.9	61.4	69.0	70.6	44.1
	Impact	148	150	166	184	141	167	174	10.5	14.7	14.9	15.7	10.5
	Total	—	—	—	—	1652	2327	2500	82.2	207.9	244.0	258.0	96.9

BILL OF REINFORCEMENT					
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
* 6a1	Slab, Transverse To		338	2'-5"	16.57
6a2	Slab, Transverse Bot.		337	2'-1'-7"	18518
* 6a3	Slab, Transverse To		327	2'-1'-1"	11829
6a4	Slab, Transverse Bot.		327	1'-11"	9782
* 6a5	Slab, Transverse Top		41	2'-5"	2058
6a6	Slab, Transverse Bot.		41	2'-7'-8"	2320
* 6a7	Slab, Transverse Top		41	2'-4'-10"	1529
6a8	Slab, Transverse Bot.		41	2'-0'-5"	1257
* 6a9	Slab, Transverse Top		41	3'-4'-4"	2114
6a10	Slab, Transverse Bot.		41	3'-8'-9"	2386
* 6a11	Slab, Transverse Top		41	2'-5'-6"	1570
6a12	Slab, Transverse Bot.		41	2'-1'-2"	1303
* 6a13	Slab, Transverse Top		39	2'-5"	2065
6a14	Slab, Transverse Bot.		39	2'-10"	2333
* 6a15	Slab, Transverse Top		39	2'-6"	1538
6a16	Slab, Transverse Bot.		39	2'-1'-10"	1279
* 6a17	Slab, Transverse Top		1 Ser 11	Varies	249
6a18	Slab, Transverse Bot.		1 Ser 10	Varies	167
* 6a19	Slab, Transverse Top		1 Ser 21	Varies	689
6a20	Slab, Transverse Bot.		1 Ser 22	Varies	726
* 6a21	Slab, Transverse		4	4'-10"	29
* 6a22	Slab, Transverse		4	4'-6"	27
* 6a23	Slab, Transverse		1	3'-1'-4"	55
* 6a24	Slab, Transverse		1	2'-0"	41



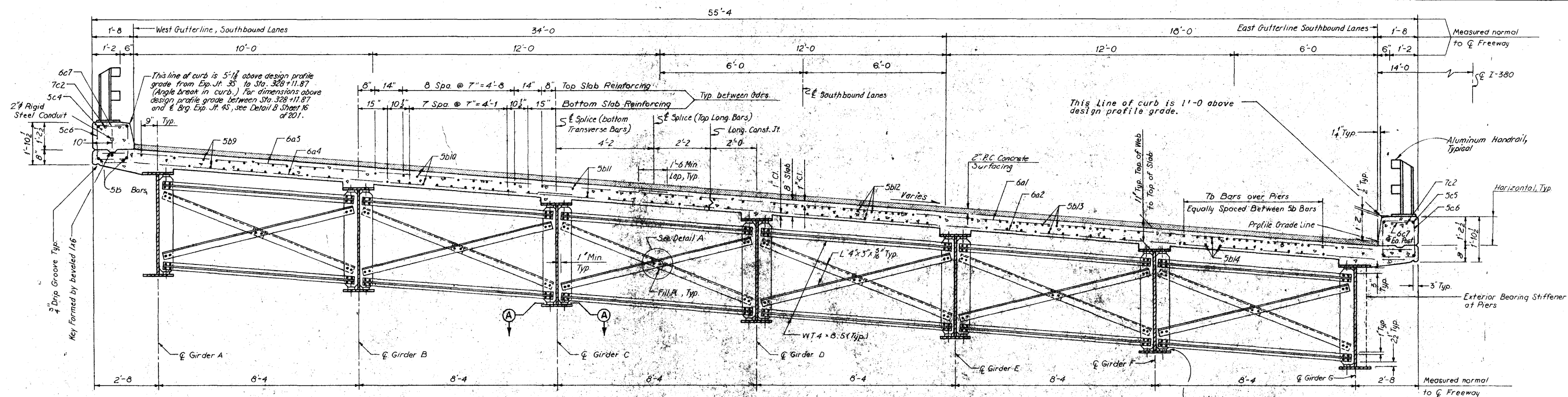
* 5b1	Slab, Longitudinal		50	3'-1"	1725
* 5b2	Slab, Longitudinal		42	2'-0"	1401
* 5b3	Slab, Longitudinal		42	3'-0'-11"	1554
* 5b4	Slab, Longitudinal		42	2'-1'-10"	1507
* 5b5	Slab, Longitudinal		42	2'-9"	1259
* 5b6	Slab, Longitudinal		50	2'-1'-10"	1452
* 5b7	Slab, Longitudinal		134	3'-0"	5451
* 5b8	Slab, Longitudinal		60	2'-7'-3"	3342
* 5b9	Slab, Longitudinal		50	3'-1"	2047
* 5b10	Slab, Longitudinal		42	2'-7'-4"	1635
* 5b11	Slab, Longitudinal		42	2'-5'-8"	1562
* 5b12	Slab, Longitudinal		42	2'-4'-0"	1489
* 5b13	Slab, Longitudinal		42	2'-2'-4"	1416
* 5b14	Slab, Longitudinal		50	2'-0'-8"	1599
* 5b15	Slab, Longitudinal		134	4'-0'-0"	5590
* 5b16	Slab, Longitudinal		60	3'-1"	3815
* 5b17	Slab, Longitudinal		50	2'-9'-7"	154
* 5b18	Slab, Longitudinal		42	3'-1'-6"	1380
* 5b19	Slab, Longitudinal		42	3'-7'-5"	1464
* 5b20	Slab, Longitudinal		42	3'-5'-4"	1548
* 5b21	Slab, Longitudinal		42	3'-7'-3"	1632
* 5b22	Slab, Longitudinal		50	3'-9'-2"	2047
* 5b23	Slab, Longitudinal		134	3'-9'-1"	5462
* 5b24	Slab, Longitudinal		60	2'-7'-0"	3311
* 5b25	Slab, Longitudinal		54	2'-7'-0"	1521
* 5b26	Slab, Longitudinal		46	2'-8'-6"	1767
* 5b27	Slab, Longitudinal		46	2'-0'-10"	149
* 5b28	Slab, Longitudinal		46	2'-1'-5"	1507
* 5b29	Slab, Longitudinal		46	2'-0"	1582
* 5b30	Slab, Longitudinal		54	3'-4'-1"	1929
7c1	Curb, Longitudinal		4	2'-7'-3"	223
7c2	Curb, Longitudinal		4	3'-1"	256
7c3	Curb, Longitudinal		4	2'-7'-0"	221
5c4	Curb, Longitudinal		20	3'-1'-10"	768
5c5	Curb, Longitudinal		20	3'-7'-11"	791
5c6	Curb, Transverse		60	6'-2"	3872
6c7	Curb, Post		85	5'-0"	638
* 5d1	End Diaphragm		90	4'-7"	430
* 6a2	End Diaphragm		24	9'-0"	324
* 6a3	End Diaphragm		20	8'-10"	265
* 6a4	End Diaphragm		4	8'-4"	50
Total					152,351

ELEVATIONS — TOP OF P.C. CONCRETE SURFACING (2" above top of first lift of concrete)																													
Girder	E.J. 3S	.25	.50	.75	F.S. 1	.25	.50	.75	F.S. 2	.25	.50	.75	F.S. 3	.25	.50	.75	F.S. 4	.25	.50	.75	F.S. 5	.25	.50	.75	F.S. 6	.25	.50	.75	F.S. 4S
A	125.06	125.11	125.17	125.22	125.28	125.33	125.38	125.43	125.48	125.54	125.59	125.68	125.76	125.83	125.89	125.96	126.04	126.11	126.18	126.26	126.36	126.41	126.44	126.48	126.51	126.56	126.60	126.64	126.69
B	124.37	124.43	124.48	124.53	124.59	124.64	124.69	124.74	124.79	124.85	124.92	124.98	125.06	125.11	125.18	125.24	125.32	125.39	125.48	125.56	125.66	125.74	125.82	125.91	126.00	126.12	126.25	126.36	126.48
C	123.69	123.74	123.79	123.85	123.90	123.95	123.99	124.04	124.09	124.15	124.22	124.28	124.35	124.41	124.47	124.53	124.60	124.67	124.76	124.84	124.93	125.02	125.11	125.22	125.34	125.48	125.64	125.82	126.01
D	123.01	123.06	123.11	123.16	123.21	123.26	123.30	123.35	123.39	123.45	123.52	123.58	123.65	123.70	123.76	123.82	123.89	123.97	124.06	124.15	124.25	124.33	124.40	124.49	124.59	124.74	124.90	125.08	125.28
E	122.32	122.37	122.42	122.47	122.53	122.57	122.61	122.66	122.70	122.76	122.82	122.88	122.94	123.00	123.05	123.11	123.18	123.25	123.35	123.44	123.55	123.62	123.70	123.78	123.88	124.02	124.17	124.35	124.54
F	121.64	121.69	121.74	121.79	121.85	121.88	121.92	121.96	122.00	122.06	122.12	122.17	122.23	122.28	122.34	122.41	122.47	122.55	122.64	122.74	122.84	122.93	123.00	123.07	123.17	123.30	123.45	123.62	123.81
G	120.95	121.00	121.05	121.10	121.15	121.19	121.24	121.28	121.32	121.37	121.43	121.48	121.54	121.58	121.63	121.68	121.74	121.83	121.92	122.03	122.15	122.23	122.32	122.42	122.51	122.64	122.78	122.93	123.08

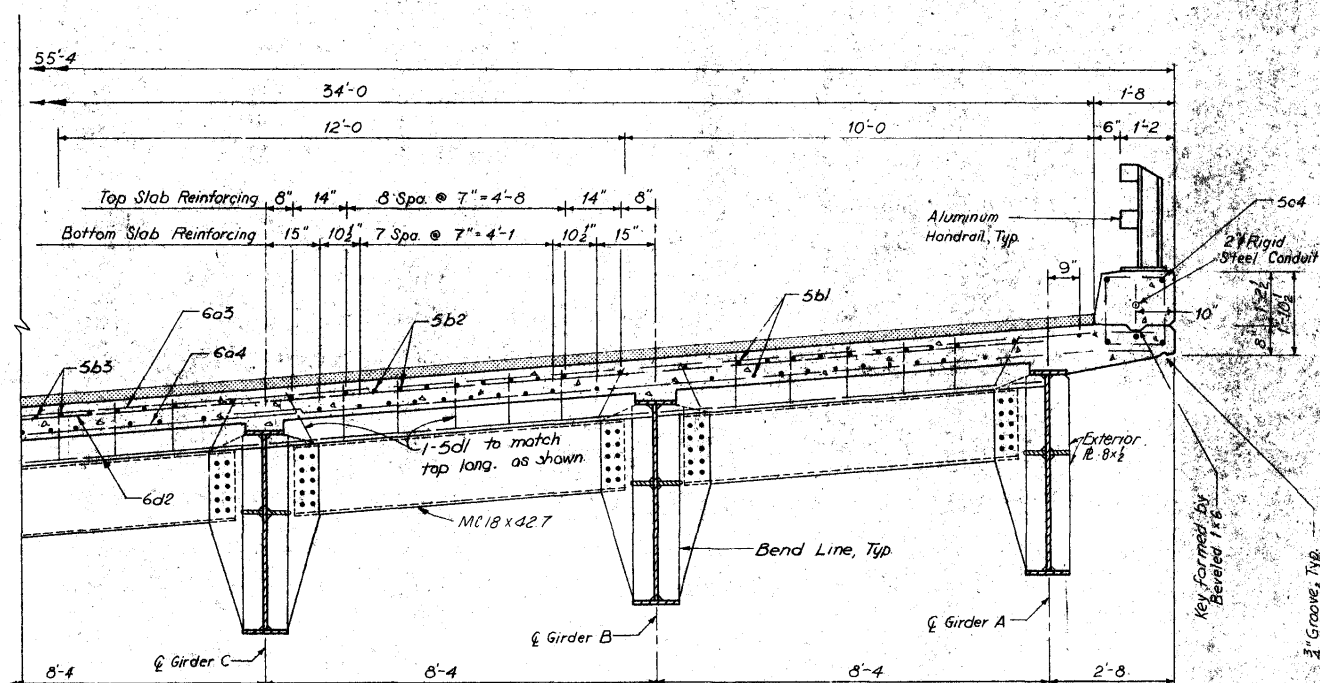


*All, or the number of bars noted below, are to be epoxy coated and placed in the top mat of reinforcing. 2-6a21 (15 Lbs.), 2-6a22 (14 Lbs.), 2-5b1 (897 Lbs.), 2-5b2 (131 Lbs.), 2-5b3 (709 Lbs.), 2-5b4 (385 Lbs.), 2-5b5 (690 Lbs.), 2-5b6 (1755 Lbs.), 70-5b7 (2817 Lbs.), 60-5b8 (3342 Lbs.), 2-5b9 (100 Lbs.), 2-5b10 (937 Lbs.), 2-5b11 (818 Lbs.), 2-5b12 (780 Lbs.), 2-5b13 (712 Lbs.), 2-5b14 (832 Lbs.), 70-5b15 (2920 Lbs.), 60-5b16 (3833 Lbs.), 2-5b17 (302 Lbs.), 2-5b18 (723 Lbs.), 2-5b19 (707 Lbs.), 2-5b20 (311 Lbs.), 2-5b21 (935 Lbs.), 2-5b22 (1062 Lbs.), 70-5b23 (2853 Lbs.), 60-5b24 (3311 Lbs.), 2-5b25 (789 Lbs.), 2-5b26 (713 Lbs.), 2-5b27 (751 Lbs.), 2-5b28 (785 Lbs.), 2-5b29 (825 Lbs.), 2-5b30 (1000 Lbs.), 5-6a2 (81 Lbs.), 5-

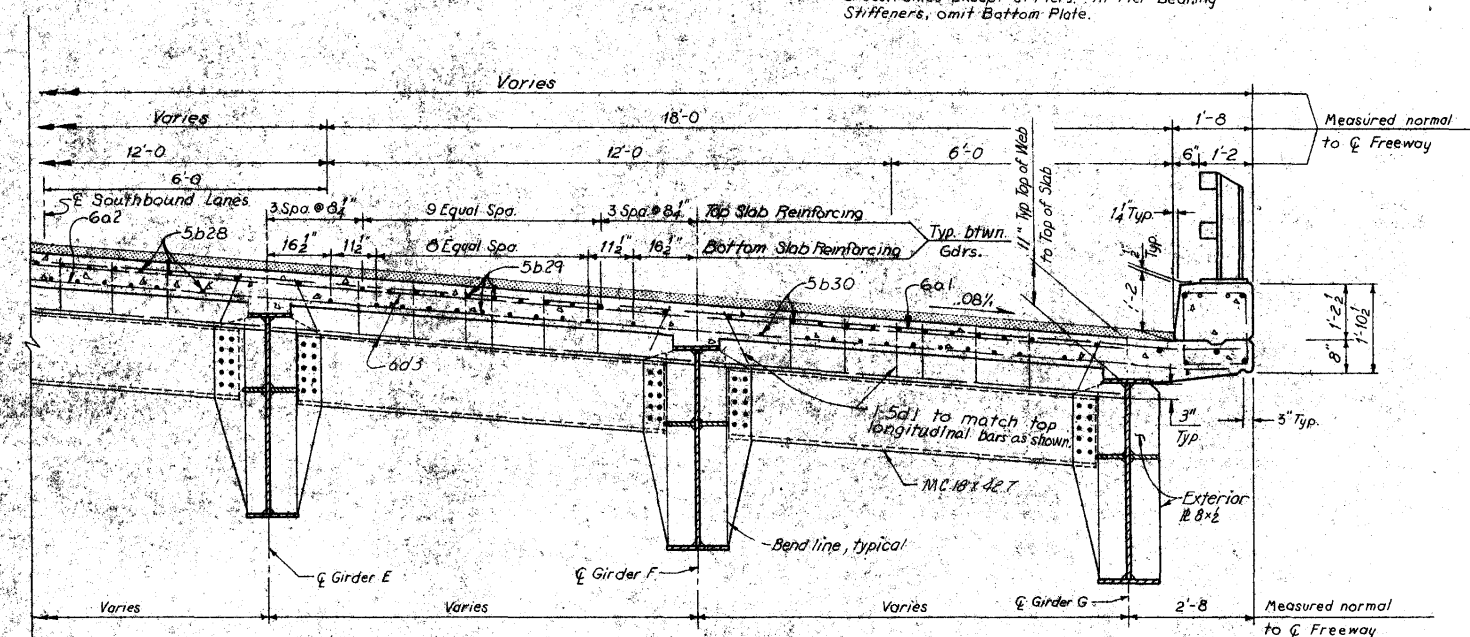
FEDERAL DIST. NO.	STATE	FED AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	IOWA				



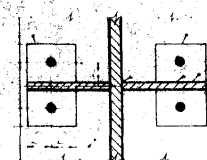
SECTION C-C



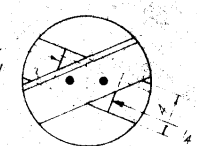
SECTION D-D



SECTION B-B



SECTION A-A



DETAIL A

Note:
For Superelevation Data see Sheet 16 of 201.
For location of Sections B-B, C-C and D-D
see Sheet 97 of 201.
For Foller Joint Detail see Sheet 181 of 201.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

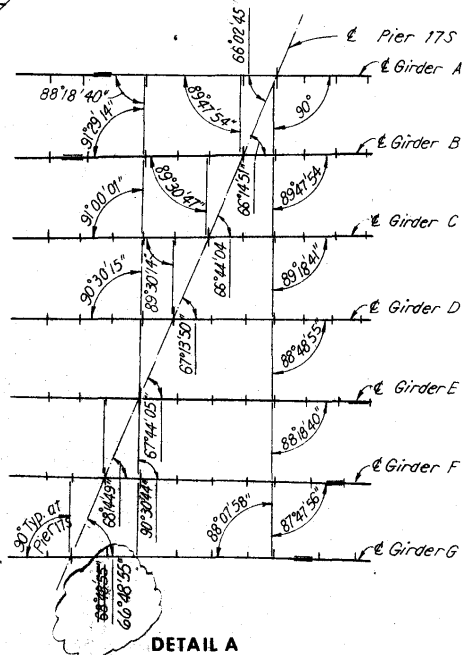
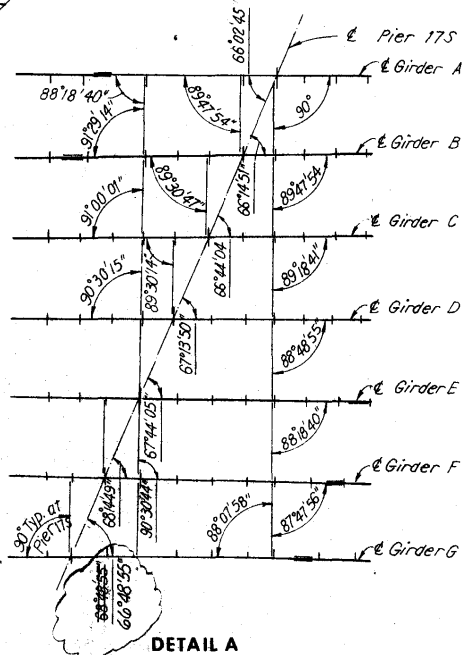
MADE W.R.K. DATE 5-9-74 CHECKED CBM DATE 9-74

**CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE
SUPERSTRUCTURE DETAILS - UNIT 4SB**

STA. 322+81.95 @ FREEWAY =
STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. I-380-6(68)263--01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

SHEET 99 OF 201

DESIGN NO. 1276 LINN COUNTY FILE 23191 SHEET 101 OF 203-0

[illegible]

DETAIL A

This diagram shows the plan view of the connection between Pier 17S and Girders A through G. The pier is represented by two intersecting centerlines forming a cross. The girders are labeled as follows:

- Girder A (top horizontal)
- Girder B (second horizontal from top)
- Girder C (third horizontal from top)
- Girder D (fourth horizontal from top)
- Girder E (fifth horizontal from top)
- Girder F (sixth horizontal from top)
- Girder G (bottom horizontal)

The pier's orientation is indicated by a north arrow pointing towards the upper right, labeled "Pier 17S". Various angles and dimensions are provided for each girder connection:

- Girder A:** Angle of $88^{\circ}18'40''$ from the pier centerline; distance of $66'02'45''$ from the pier centerline.
- Girder B:** Angle of $91^{\circ}23'14''$ from the pier centerline; distance of $83'32'54''$ from the pier centerline.
- Girder C:** Angle of $91^{\circ}00'01''$ from the pier centerline; distance of $83'30'47''$ from the pier centerline.
- Girder D:** Angle of $90^{\circ}30'15''$ from the pier centerline; distance of $83'30'14''$ from the pier centerline.
- Girder E:** Angle of $88^{\circ}48'55''$ from the pier centerline; distance of $65'12'19''$ from the pier centerline.
- Girder F:** Angle of $88^{\circ}18'40''$ from the pier centerline; distance of $67'44'05''$ from the pier centerline.
- Girder G:** Angle of $88^{\circ}07'56''$ from the pier centerline; distance of $87'47'56''$ from the pier centerline.

A circular callout at the bottom left corner highlights the intersection area, containing the following dimensions:

- Radius: $88'48'35''$
- Distance: $60'48'55''$

[illegible][illegible][illegible][illegible][illegible][illegible]

DETAIL A

This diagram shows the plan view of the connection between Pier 17S and Girders A through G. The pier is represented by a vertical line at the top, labeled "Pier 17S". Seven girders, labeled "Girder A" through "Girder G", run horizontally across the page. The diagram includes various dimensions and angles:

- Girder A:** Angle of $88^{\circ}18'40''$ from the horizontal; distance of $91'23'14''$ from the pier centerline.
- Girder B:** Angle of $89^{\circ}27'54''$ from the horizontal; distance of $89'30'14''$ from the pier centerline.
- Girder C:** Angle of $89'27'54''$ from the horizontal; distance of $91'00'01''$ from the pier centerline.
- Girder D:** Angle of $89'16'41''$ from the horizontal; distance of $90'30'15''$ from the pier centerline.
- Girder E:** Angle of $88'48'55''$ from the horizontal; distance of $88'30'14''$ from the pier centerline.
- Girder F:** Angle of $88'16'40''$ from the horizontal; distance of $85'44'04''$ from the pier centerline.
- Girder G:** Angle of $87'47'56''$ from the horizontal; distance of $88'07'56''$ from the pier centerline.

The diagram also shows the following dimensions and angles:

- Distance of $66'02'45''$ from the pier centerline to the centerline of Girder A.
- Angle of 90° between the pier centerline and the centerline of Girder A.
- Angle of $85'44'04''$ between the pier centerline and the centerline of Girder D.
- Angle of $85'44'04''$ between the pier centerline and the centerline of Girder E.
- Angle of $85'44'04''$ between the pier centerline and the centerline of Girder F.
- Angle of $85'44'04''$ between the pier centerline and the centerline of Girder G.
- Angle of $85'44'04''$ between the pier centerline and the centerline of Girder H.
- Angle of $85'44'04''$ between the pier centerline and the centerline of Girder I.
- Angle of $85'44'04''$ between the pier centerline and the centerline of Girder J.
- Angle of $85'44'04''$ between the pier centerline and the centerline of Girder K.
- Angle of $85'44'04''$ between the pier centerline and the centerline of Girder L.
- Angle of $85'44'04''$ between the pier centerline and the centerline of Girder M.
- Angle of $85'44'04''$ between the pier centerline and the centerline of Girder N.
- Angle of $85'44'04''$ between the pier centerline and the centerline of Girder O.
- Angle of $85'44'04''$ between the pier centerline and the centerline of Girder P.
- Angle of $85'44'04''$ between the pier centerline and the centerline of Girder Q.
- Angle of $85'44'04''$ between the pier centerline and the centerline of Girder R.
- Angle of $85'44'04''$ between the pier centerline and the centerline of Girder S.
- Angle of $85'44'04''$ between the pier centerline and the centerline of Girder T.
- Angle of $85'44'04''$ between the pier centerline and the centerline of Girder U.
- Angle of $85'44'04''$ between the pier centerline and the centerline of Girder V.
- Angle of $85'44'04''$ between the pier centerline and the centerline of Girder W.
- Angle of $85'44'04''$ between the pier centerline and the centerline of Girder X.
- Angle of $85'44'04''$ between the pier centerline and the centerline of Girder Y.
- Angle of $85'44'04''$ between the pier centerline and the centerline of Girder Z.

[illegible]

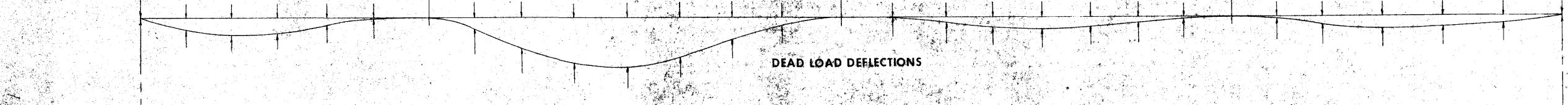
DESIGN NO 1276 LINN COUNTY FILE 22101 SHEET 103 OF 200

Part II of II

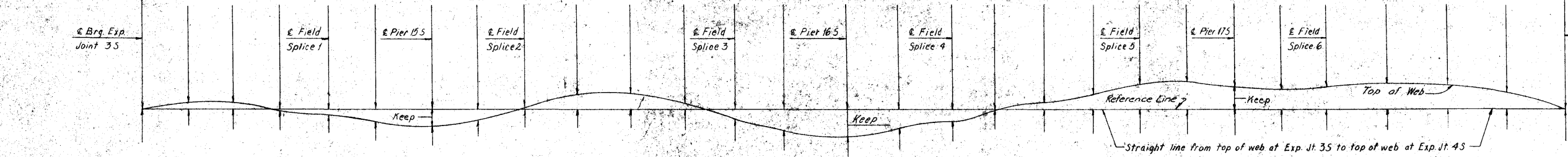
FEDERAL DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	IOWA				

	Brq Exp Joint 35	Field Splice 1	Pier 155	Field Splice 2	Field Splice 3	Pier 165	Field Splice 4	Field Splice 5	Pier 175	Field Splice 6	Brq Exp Joint 45
	4 Equal Spaces	4 Equal Spaces	4 Equal Spaces	4 Equal Spaces	4 Equal Spaces	4 Equal Spaces	4 Equal Spaces	4 Equal Spaces	4 Equal Spaces	4 Equal Spaces	4 Equal Spaces
GIRDER A	at 13'-7 1/8" = 54'-9 3/4"	26'-0" at 12'-6" = 50'-0"	24'-0" at 12'-6" = 50'-0"	@ abt. 17'-5 1/8" = 69'-2 1/8"	21'-0" at 12'-3" = 49'-0"	28'-0" at 12'-3" = 49'-0"	at 11'-6 1/8" = 46'-0 1/4"	18'-0" at 9'-6" = 38'-0"	20'-0" at 9'-6" = 38'-0"	at 11'-10 1/8" = 47'-7 1/4"	
GIRDER B	at 13'-2 1/2" = 52'-10"	do	do	@ abt. 16'-4 1/8" = 65'-4 1/8"	do	do	at 12'-8 1/8" = 50'-8 1/2"	do	do	at 12'-7 1/8" = 50'-6 1/2"	
GIRDER C	@ abt. 12'-11 1/2" = 51'-10 1/2"	25'-0" at 11'-9" = 47'-0"	22'-0" at 11'-9" = 47'-0"	@ abt. 16'-1 3/8" = 64'-5 3/8"	at 12'-0" = 48'-0"	at 12'-0" = 48'-0"	@ abt. 12'-10 1/4" = 51'-4 1/4"	at 11'-3" = 45'-0"	at 11'-3" = 45'-0"	@ abt. 12'-7 1/4" = 50'-5 1/4"	
GIRDER D	@ abt. 12'-8 1/2" = 50'-10 1/2"	do	20'-0" at 11'-0" = 44'-0"	@ abt. 15'-5 1/8" = 62'-6 1/8"	at 12'-3" = 49'-0"	at 12'-3" = 49'-0"	@ abt. 14'-3 3/8" = 57'-2"	at 10'-6" = 42'-0"	at 10'-6" = 42'-0"	at 13'-6 1/8" = 54'-3 3/4"	
GIRDER E	@ abt. 12'-5 1/8" = 49'-9 1/8"	23'-0" at 10'-9" = 43'-0"	18'-0" at 10'-9" = 43'-0"	@ abt. 14'-4 1/4" = 57'-6 1/4"	at 12'-8" = 51'-0"	at 12'-8" = 51'-0"	at 14'-9 3/8" = 59'-0 3/4"	at 11'-3" = 45'-0"	at 11'-3" = 45'-0"	@ abt. 14'-0 1/8" = 56'-2 1/8"	
GIRDER F	at 12'-8 3/8" = 50'-9 1/2"	20'-0" at 9'-6" = 38'-0"	18'-0" at 9'-6" = 38'-0"	@ abt. 13'-10 1/4" = 55'-7 1/4"	at 13'-0" = 52'-0"	at 13'-0" = 52'-0"	@ abt. 13'-3" = 61'-1/8"	at 12'-0" = 48'-0"	at 12'-0" = 48'-0"	@ abt. 14'-6 1/8" = 58'-0 3/8"	
GIRDER G	at 12'-2 1/4" = 48'-9"	do	20'-0" at 10'-0" = 40'-0"	@ abt. 13'-1 1/8" = 52'-8 1/8"	at 11'-6" = 46'-0"	at 11'-6" = 46'-0"	at 17'-3 3/8" = 69'-1 1/2"	do	do	at 15'-2 3/8" = 60'-9 1/2"	

GIRDER A	0	5" 16	1" 2	7" 16	4" 4	1" 16	0	0	3" 8	13" 16	1" 16	18" 16	3" 4	0	0	0	3" 16	5" 16	3" 16	3" 16	1" 16	0	0	6" 8	4" 4	3" 8	7" 16	1" 16	0
GIRDER B	0	3" 8	9" 16	1" 2	5" 16	8" 16	0	0	5" 16	13" 16	1" 16	18" 16	18" 16	3" 16	0	0	6" 8	5" 16	1" 2	9" 16	7" 16	4" 4	1" 16	0	0	6" 8	5" 16	1" 16	0
GIRDER C	0	5" 16	2" 16	7" 16	4" 4	1" 16	0	0	4" 4	11" 16	1" 16	18" 16	8" 8	1" 8	0	0	8" 8	3" 8	3" 8	3" 8	3" 8	0	0	6" 8	3" 8	9" 16	9" 16	3" 8	0
GIRDER D	0	5" 16	7" 16	7" 16	4" 4	1" 16	0	0	3" 16	12" 16	1" 16	18" 16	2" 16	1" 4	0	0	4" 4	9" 16	3" 8	1" 16	13" 16	7" 16	3" 16	0	0	6" 8	11" 16	7" 16	0
GIRDER E	0	5" 16	2" 16	7" 16	4" 4	8" 8	0	0	3" 16	7" 16	13" 16	1" 16	18" 16	2" 16	1" 16	0	0	4" 4	3" 8	1" 16	13" 16	12" 16	3" 16	0	0	3" 8	7" 16	11" 16	0
GIRDER F	0	4" 4	7" 16	3" 8	3" 16	1" 16	0	0	6" 8	5" 16	13" 16	1" 16	18" 16	1" 16	1" 16	0	0	5" 16	13" 16	1" 16	13" 16	12" 16	3" 16	0	0	3" 16	7" 16	13" 16	0
GIRDER G	0	4" 4	3" 8	5" 16	3" 16	1" 16	0	0	6" 8	4" 4	13" 16	1" 16	18" 16	1" 16	1" 16	0	0	5" 16	11" 16	1" 16	13" 16	12" 16	3" 16	0	0	6" 8	13" 16	9" 16	0



GIRDER A	0	4"	1"	1"	1"	1"	0	0	1"	1"	1"	1"	1"	1"	1"	0	0	1"	1"	1"	1"	1"	1"	0	0	1"	1"	1"	1"	0
GIRDER B	0	1"	1"	1"	1"	1"	0	0	1"	1"	1"	1"	1"	1"	1"	0	0	1"	1"	1"	1"	1"	1"	0	0	1"	1"	1"	1"	0
GIRDER C	0	1"	1"	1"	1"	1"	0	0	1"	1"	1"	1"	1"	1"	1"	0	0	1"	1"	1"	1"	1"	1"	0	0	1"	1"	1"	1"	0
GIRDER D	0	1"	1"	1"	1"	1"	0	0	1"	1"	1"	1"	1"	1"	1"	0	0	1"	1"	1"	1"	1"	1"	0	0	1"	1"	1"	1"	0
GIRDER E	0	0	1"	1"	1"	1"	0	0	1"	1"	1"	1"	1"	1"	1"	0	0	1"	1"	1"	1"	1"	1"	0	0	1"	1"	1"	1"	0
GIRDER F	0	0	1"	1"	1"	1"	0	0	1"	1"	1"	1"	1"	1"	1"	0	0	1"	1"	1"	1"	1"	1"	0	0	1"	1"	1"	1"	0
GIRDER G	0	0	1"	1"	1"	1"	0	0	1"	1"	1"	1"	1"	1"	1"	0	0	1"	1"	1"	1"	1"	1"	0	0	1"	1"	1"	1"	0



GIRDERS AS FABRICATED AND ERECTED DIAGRAM
(In the Horizontal Position)

Note:
Negative values are amount of camber below the reference line.

Note:
Off et. are given at + joint between field splices and at piers and expansion joints.
For Girders A thru E 13% of the dead load deflection is due to structural steel and 18% is due to concrete and P.C. urfa e our e.
Deflection due to on rete on P.C. of web.
surface course includes 15% due to the P.C. surface course.
bottom of web to be parallel to to of web.

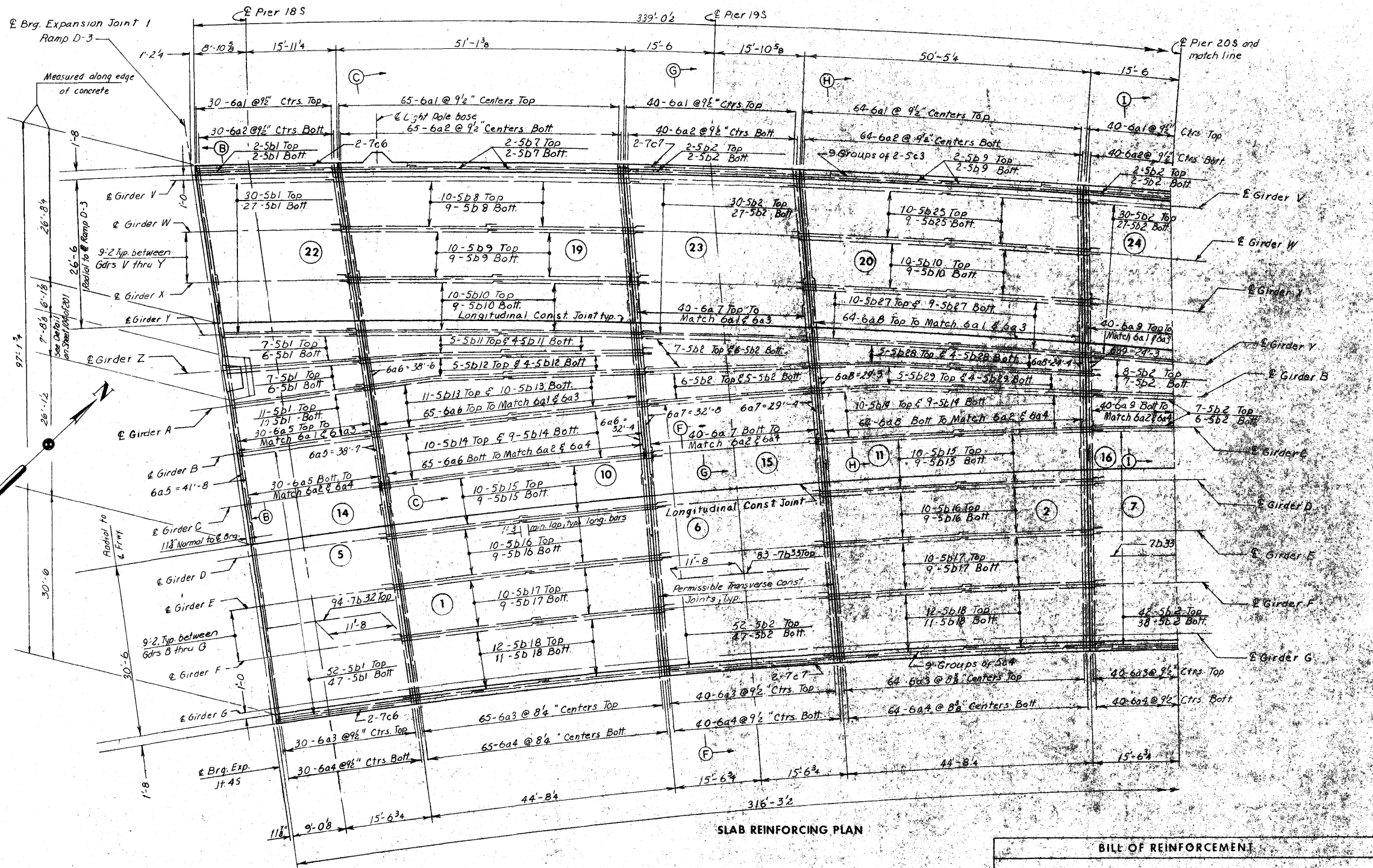
CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE
DEFLECTION DIAGRAMS - UNIT 45B

STA. 322+81.95 @ FREEWAY=
STA. 32+14.70 @ 1ST. AVE. W
PROJECT NO. I-380-6(68)263--01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

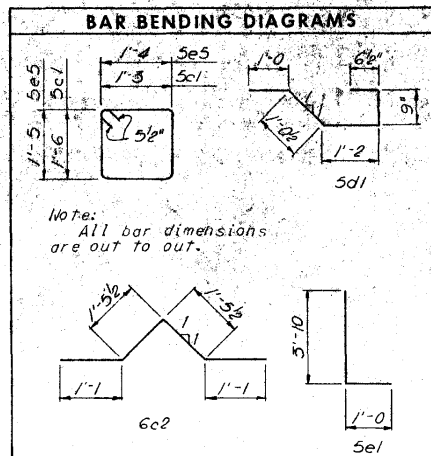
Revised 2-28-77: Dead Load deflections corrected.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

MADE INL DATE 5-1-74 CHECKED CBM DATE 9-74



*All, or the number of bars noted below, are to be epoxy coated and placed in the top mat of reinforcing: 30-6a5 (1808 Lbs.), 40-6a5 (3458 Lbs.), 40-6a7 (1862 Lbs.), 64-6a8 (2575 Lbs.), 40-6a9 (1369 Lbs.), 63-6a10 (1822 Lbs.), 39-6a11 (937 Lbs.), 109-5b1 (2738 Lbs.), 18-5b2 (5949 Lbs.), 84-5b3 (2585 Lbs.), 74-5b4 (1775 Lbs.), 4-5b5 (107 Lbs.), 20-5b6 (532 Lbs.), 4-5b7 (117 Lbs.), 20-5b8 (584 Lbs.), 24-5b9 (695 Lbs.), 44-5b10 (1258 Lbs.), 10-5b11 (283 Lbs.), 10-5b12 (280 Lbs.), 22-5b13 (612 Lbs.), 40-5b14 (1099 Lbs.), 60-5b15 (1627 Lbs.), 60-5b16 (1606 Lbs.), 60-5b17 (1611 Lbs.), 72-5b18 (1890 Lbs.), 20-5b19 (527 Lbs.), 20-5b20 (522 Lbs.), 10-5b21 (412 Lbs.), 14-5b22 (357 Lbs.), 20-5b23 (506 Lbs.), 20-5b24 (501 Lbs.), 20-5b25 (577 Lbs.), 24-5b26 (592 Lbs.), 40-5b27 (1130 Lbs.), 30-5b28 (837 Lbs.), 22-5b29 (608 Lbs.), 20-5b30 (570 Lbs.), 12-5b31 (329 Lbs.), 14-6a2 (186 Lbs.), 1-6a3 (19 Lbs.), 1-6a4 (13 Lbs.), and 1-6a5 (12 Lbs.). Epoxy coated or bars are to be Grade 60 reinforcing steel.



BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
*6a1	Slab, Transverse		341	6'-2"	13,402
*6a2	Slab, Transverse		341	11'-7"	11,055
*6a3	Slab, Transverse		30	55'-4"	22,820
*6a4	Slab, Transverse		429	30'-11"	25,721
*6a5	Slab, Transverse		2Ser 30	Varies	3,616
*6a6	Slab, Transverse		2Ser 65	Varies	6,915
*6a7	Slab, Transverse		2Ser 40	Varies	3,725
*6a8	Slab, Transverse		2Ser 64	Varies	5,151
*6a9	Slab, Transverse		2Ser 40	Varies	2,739
*6a10	Slab, Transverse		2Ser 63	Varies	3,643
*6a11	Slab, Transverse		2Ser 39	Varies	1,874
*6a12	Slab, Transverse		1Ser 59	Varies	3,401
*6a13	Slab, Transverse		1Ser 59	Varies	3,031
*6a14	Slab, Transverse		1Ser 30	Varies	1,618
*6a15	Slab, Transverse		1Ser 29	Varies	1,383

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
*5b1	Slab, Longitudinal		207	24'-1"	5200
*5b2	Slab, Longitudinal		353	30'-8"	11291
*5b3	Slab, Longitudinal		160	29'-6"	4923
*5b4	Slab, Longitudinal		140	23'-0"	3358
*5b5	Slab, Longitudinal		8	25'-7"	213
*5b6	Slab, Longitudinal		38	25'-6"	1011
*5b7	Slab, Longitudinal		8	28'-1"	234
*5b8	Slab, Longitudinal		38	28'-0"	1110
*5b9	Slab, Longitudinal		16	27'-9"	1331
*5b10	Slab, Longitudinal		84	27'-5"	2402
*5b11	Slab, Longitudinal		18	27'-2"	510
*5b12	Slab, Longitudinal		18	26'-10"	504
*5b13	Slab, Longitudinal		42	26'-8"	1168
*5b14	Slab, Longitudinal		75	26'-4"	2087
*5b15	Slab, Longitudinal		114	26'-0"	3091
*5b16	Slab, Longitudinal		114	25'-8"	3052
*5b17	Slab, Longitudinal		114	25'-9"	3062
*5b18	Slab, Longitudinal		130	25'-2"	3622
*5b19	Slab, Longitudinal		30	25'-1"	1001
*5b20	Slab, Longitudinal		38	25'-0"	991
*5b21	Slab, Longitudinal		30	24'-8"	772
*5b22	Slab, Longitudinal		28	24'-5"	662
*5b23	Slab, Longitudinal		30	24'-2"	961
*5b24	Slab, Longitudinal		38	24'-0"	931
*5b25	Slab, Longitudinal		38	27'-8"	1097
*5b26	Slab, Longitudinal		4	23'-8"	1135
*5b27	Slab, Longitudinal		7	27'-1"	2117
*5b28	Slab, Longitudinal		5	26'-9"	1532
*5b29	Slab, Longitudinal		40	26'-6"	1106
*5b30	Slab, Longitudinal		30	27'-4"	1083
*5b31	Slab, Longitudinal		22	26'-3"	602
*5b32	Slab, Longitudinal		94	20'-6"	3939
*5b33	Slab, Longitudinal		159	23'-4"	7583
*5b34	Slab, Longitudinal		72	22'-6"	3311
*5b35	Slab, Longitudinal		62	19'-8"	2492
*5b36	Slab, Longitudinal		552	6'-2"	3550
*5b37	Slab, Longitudinal		80	5'-0"	601
*5b38	Slab, Longitudinal		18	58'-10"	739
*5b39	Slab, Longitudinal		18	36'-4"	682
*5b40	Slab, Longitudinal		4	7'-9"	16
*5b41	Slab, Longitudinal		4	20'-6"	169
*5b42	Slab, Longitudinal		8	23'-4"	283
*5b43	Slab, Longitudinal		4	22'-6"	184
*5b44	Slab, Longitudinal		4	19'-8"	161
*5b45	Slab, Longitudinal		133	4'-4"	601
*5b46	Slab, Longitudinal		56	8'-10"	741
*5b47	Slab, Longitudinal		12	12'-5"	77
*5b48	Slab, Longitudinal		4	8'-4"	50
*5b49	Slab, Longitudinal		4	8'-1"	49
*5b50	Slab, Longitudinal		18	4'-9"	175
*5b51	Slab, Longitudinal		6	6'-10"	27
*5b52	Slab, Longitudinal		3	5'-10"	18
*5b53	Slab, Longitudinal		2	6'-3"	13
*5b54	Slab, Longitudinal		9	6'-2"	59
Total					197,942

Note: For continuation of Slab Plan and Notes see Sheet 104 of 201.

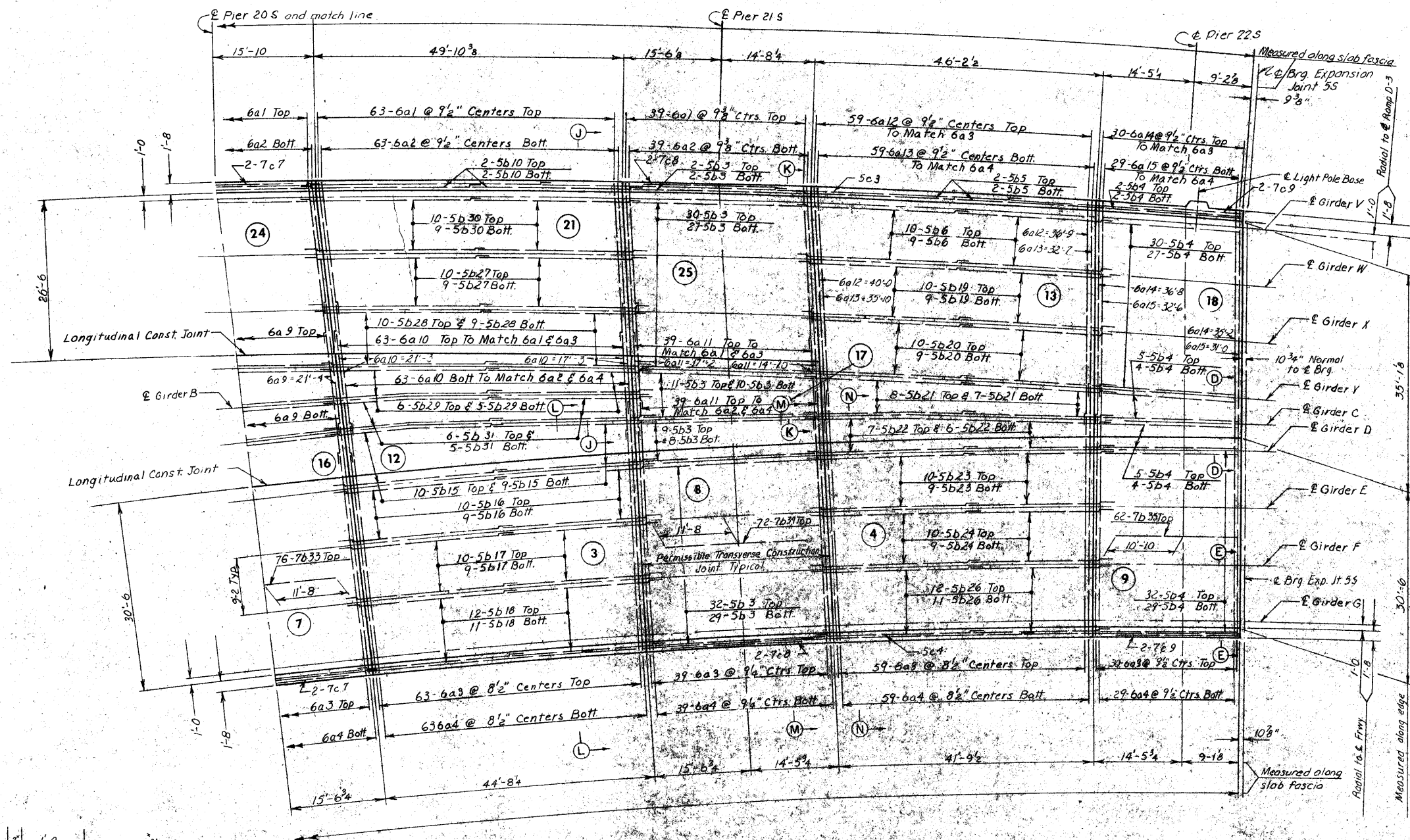
CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE

SLAB PLAN - UNIT 55B

STA. 322+81.95 @ FREEWAY =
STA. 32+14.70 @ 1ST. AVE. W. PROJECT NO. I-380-6(68)263--01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

MADE E.J.F. DATE 6-13-74 CHECKED R.O.C. DATE 7-10-74



CONCRETE PLACEMENT

POUR	CU.YDS.
1	37.8
2	37.8
3	37.8
4	35.3
5	21.4
6	25.7
7	25.8
8	24.9
9	20.6
10	41.4
11	30.5
12	21.3
13	45.8
14	25.4
15	23.2
16	16.8
17	11.0
18	24.0
19	36.3
20	35.8
21	35.4
22	18.8
23	22.6
24	22.6
25	21.8
West Curb	24.246
East Curb	22.572
End Block+Curb	1.5
Light Blister	.8
Total (C.I.D.)	740.7

SUPERSTRUCTURE ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
Structural Concrete (Class D)	Cu.Yds.	740.7
Reinforcing Steel	Lbs.	92,120
Reinforcing Steel-Epoxy Coated	Lbs.	106,044
Structural Steel ΔΔ	Lbs.	808,555
P.C. Concrete Surfacing	Sq.Yds.	2,687

Δ Includes reinforcing for 2 light blisters.
 ΔΔ Includes weight of expansion joint at Exp. 2925.14
 Jt. 4S, rollers at Exp. Jt. 4S and 5S and bearing plates and sign support brackets.

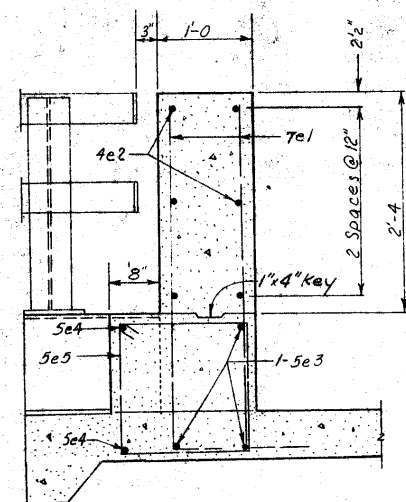
Notes:
 For "Bill of Reinforcement" see sheet 103 of 201.
 For "Top of P.C. Concrete Surfacing Elevations", see sheet 107 of 201.
 For Sections see Sheets 105 and 106 of 201.
 Deck inlets are required in the east gutter at Pier 20S and in the east gutter at Expansion Joint 5S. See Sheet 187 of 201 for details.
 Ramp D-3 Pours 4 and 11 and Unit 4SB Pours 4 and 11 shall be placed prior to Unit 5SB Pours 5, 14 and 22. Unit 6SB Pours 1 and 4 shall be placed prior to Unit 5SB Pours 5 and 18.

CEDAR RIVER BRIDGE SOUTH APPROACH DESIGN FOR VARIABLE SKEW CONTINUOUS WELDED PLATE GIRDER BRIDGE SLAB PLAN - UNIT 5SB

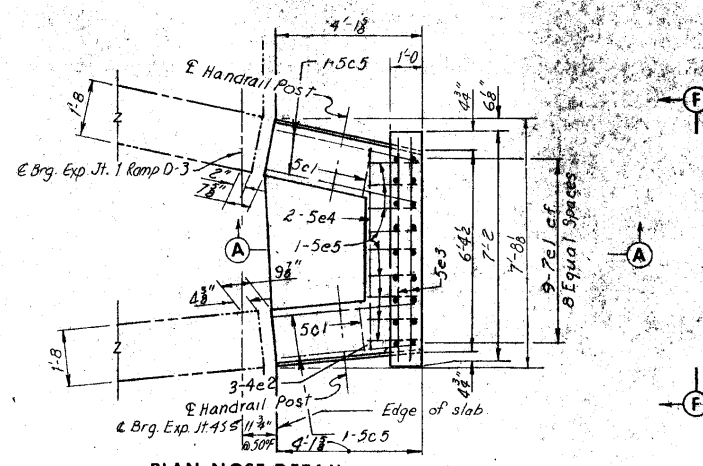
STA. 322+81.95 @ FREEWAY =
 STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. I-380-6(68)263--01-57
 LINN COUNTY
 IOWA STATE HIGHWAY COMMISSION

SHEET 104 OF 201

DESIGN NO. 1276 LINN COUNTY FILE 23191 SHEET 106 OF 203-0



SECTION A-A



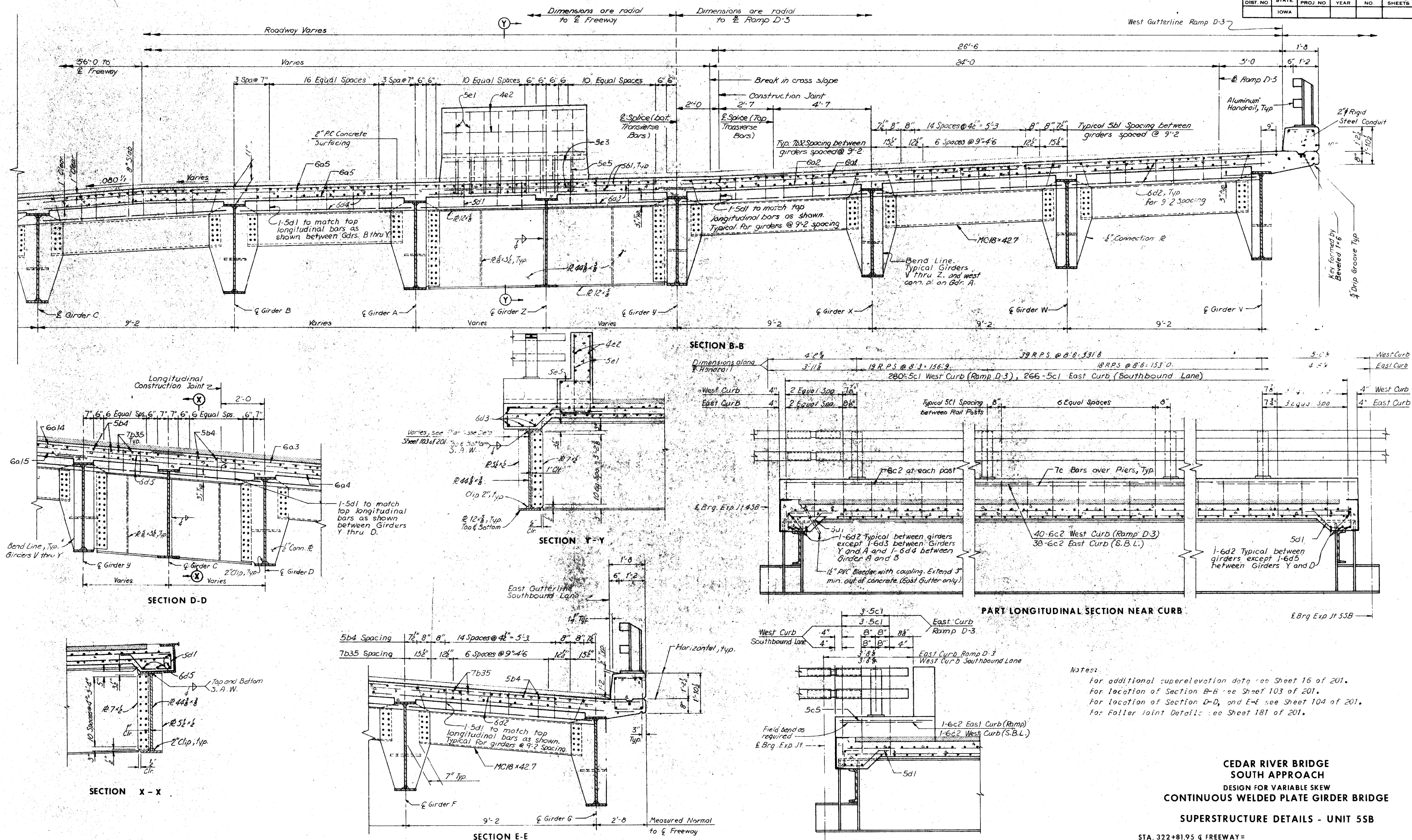
PLAN NOSE DETAIL

Note:
 For View F-F see Sheet 141 of 201.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
 CONSULTING ENGINEERS
 KANSAS CITY

MADE C.J.F. DATE 3-22-74 CHECKED R.O.C. DATE 7-10-74

FEDERAL DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	IOWA				



HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

MADE	L.D.H.	DATE	6-20-74	CHECKED	R.O.C	DATE	7-10-74
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STA. 322+81.95 @ FREEWAY=
STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. I-380-6(68)263--01-57

LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

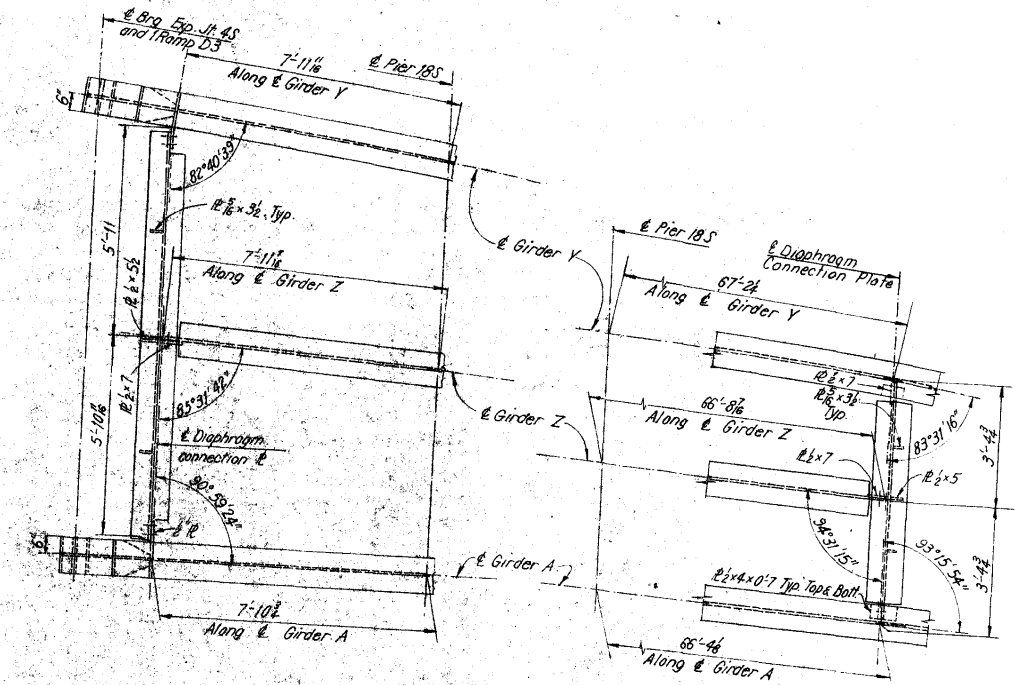
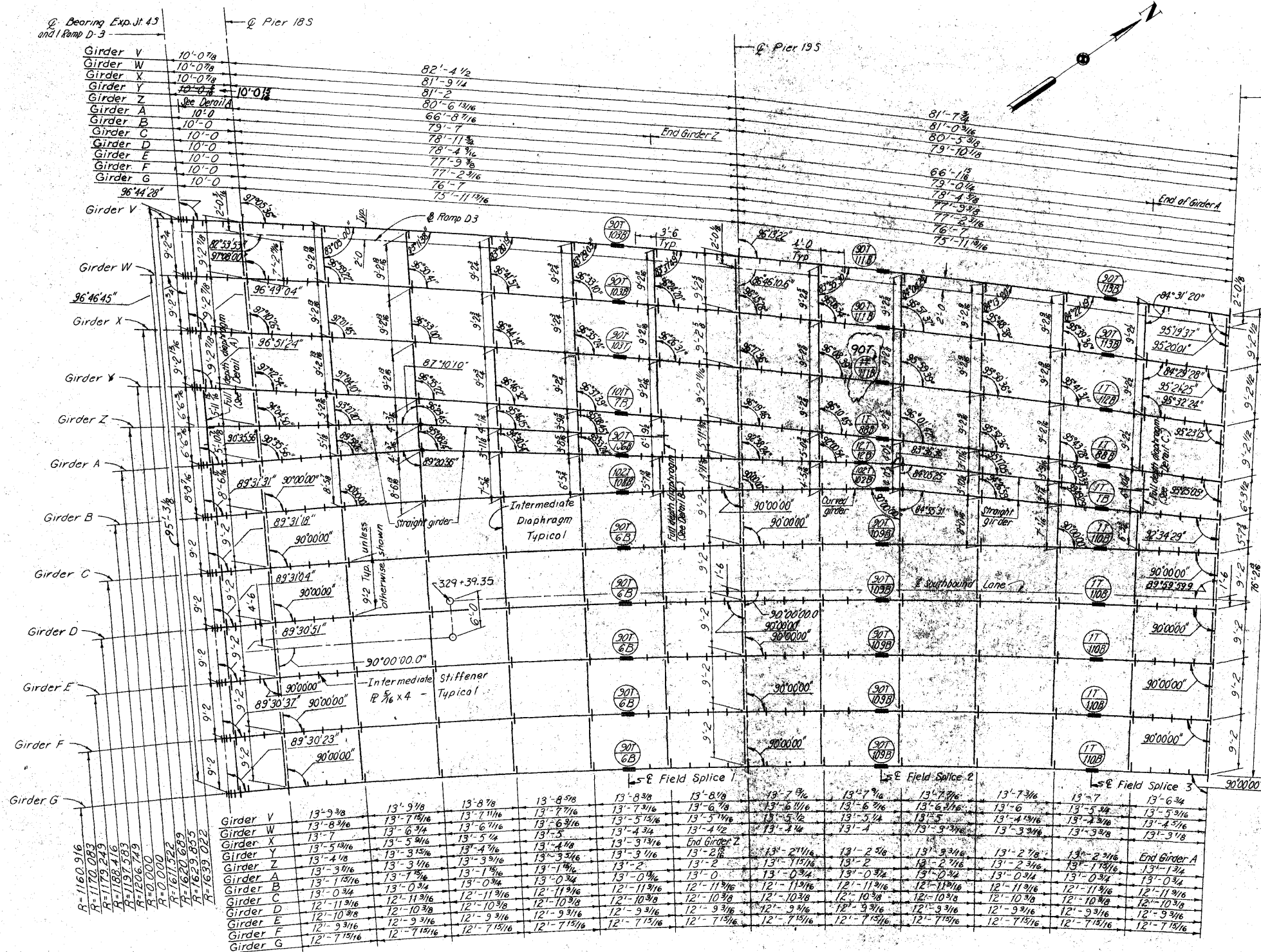
DESIGN NO. 1276 LINN COUNTY FILE 23191 SHEET 108 OF 203-0

TABLE OF MOMENTS AND REACTIONS IN FOOT-KIPS AND KIPS

	ITEM	MAXIMUM POSITIVE MOMENT				MAXIMUM NEGATIVE MOMENT					REACTIONS						
		SPAN 1	SPAN 2	SPAN 3	SPAN 4	PIER 18S	PIER 19S	PIER 20S	PIER 21S	PIER 22S	JT. 1-D3	PIER 18S	PIER 19S	PIER 20S	PIER 21S	PIER 22S	JT. 5S
GIRDER V	Dead Load A	402	181	254	187	256	804	640	664	527	20.4	64.5	91.2	80.7	81.6	90.7	41.6
	Dead Load B	233	147	184	119	167	377	327	305	320	11.7	39.1	48.8	45.5	43.6	53.9	24.2
	Live Load	766	616	612	687	428	627	595	591	484	35.1	54.6	67.7	66.3	65.7	65.9	47.5
	Impact	185	150	148	171	116	151	144	145	133	10.1	14.8	16.3	16.1	16.1	18.1	9.7
	Total	—	—	—	—	967	1959	1706	1705	1464	77.3	173.9	224.0	208.6	207.0	228.6	123.0
GIRDER W	Dead Load A	454	204	290	206	297	907	731	743	616	24.5	73.9	103.8	92.4	92.6	105.1	48.1
	Dead Load B	169	106	134	85	123	274	239	220	235	9.0	28.7	35.7	33.3	31.8	39.6	17.5
	Live Load	860	692	686	771	484	702	668	661	548	51.8	64.4	78.9	77.5	76.6	77.1	58.0
	Impact	209	168	167	157	132	170	162	163	150	14.6	17.5	19.1	18.8	18.9	21.2	12.0
	Total	—	—	—	—	1036	2053	1800	1787	1549	99.9	184.5	237.5	222.0	219.9	243.0	135.6
GIRDER X	Dead Load A	445	204	280	202	297	898	715	728	616	25.6	73.7	103.3	91.4	91.9	105.0	47.7
	Dead Load B	166	106	129	84	123	270	234	214	235	9.4	28.6	35.4	33.0	31.4	39.5	17.4
	Live Load	847	682	671	758	480	689	653	647	543	52.5	64.0	78.1	76.7	75.9	78.3	58.0
	Impact	207	166	164	190	131	168	159	160	150	14.5	17.4	19.1	18.7	18.7	19.4	12.0
	Total	—	—	—	—	1031	2025	1761	1749	1544	102.0	183.7	235.9	219.8	218.5	242.2	135.1
GIRDER Y	Dead Load A	406	157	275	173	260	824	663	725	496	32.7	64.9	98.6	86.8	92.9	87.1	27.2
	Dead Load B	134	83	113	83	102	216	196	198	177	16.8	23.6	28.7	27.9	28.4	31.3	17.2
	Live Load	685	554	585	660	394	557	549	562	442	45.7	50.0	64.4	65.6	63.5	59.9	58.0
	Impact	166	135	142	165	107	136	134	139	122	12.4	13.6	15.7	16.0	15.7	16.5	12.0
	Total	—	—	—	—	863	1733	1542	1624	1237	107.6	152.1	207.4	196.3	200.5	184.8	114.4
GIRDER Z	Dead Load A	288	—	—	—	429	—	—	—	—	—	89.5	—	—	—	—	—
	Dead Load B	90	—	—	—	134	—	—	—	—	—	27.9	—	—	—	—	—
	Live Load	297	—	—	—	184	—	—	—	—	—	26.9	—	—	—	—	—
	Impact	77	—	—	—	52	—	—	—	—	—	7.6	—	—	—	—	—
	Total	—	—	—	—	799	—	—	—	—	JT. 4S	151.9	—	—	—	—	—
GIRDER A	Dead Load A	251	134	—	—	537	564	—	—	—	—	34.4	99.4	76.6	—	—	—
	Dead Load B	142	54	—	—	66	190	—	—	—	—	8.5	18.8	26.2	—	—	—
	Live Load	602	374	—	—	419	406	—	—	—	—	42.6	52.5	50.0	—	—	—
	Impact	152	98	—	—	114	103	—	—	—	—	10.9	14.3	12.7	—	—	—
	Total	—	—	—	—	1136	1263	—	—	—	—	86.4	185.0	165.5	—	—	—
GIRDER B	Dead Load A	390	167	223	—	378	802	—	—	—	—	28.8	81.6	93.6	78.7	—	—
	Dead Load B	145	78	81	—	157	233	—	—	—	—	12.8	31.9	31.2	23.6	—	—
	Live Load	812	496	401	—	505	584	—	—	—	—	48.1	63.6	65.1	51.5	—	—
	Impact	199	122	105	—	138	144	—	—	—	—	12.3	17.4	16.0	13.0	—	—
	Total	—	—	—	—	1178	1763	—	—	—	—	102.0	194.5	205.9	166.8	—	—
GIRDER C	Dead Load A	370	213	240	197	382	827	664	703	414	29.6	81.9	98.4	84.8	88.3	75.5	—
	Dead Load B	134	112	94	90	160	249	204	189	136	13.1	32.1	33.9	29.4	28.8	25.7	—
	Live Load	811	652	546	644	509	652	578	530	385	48.4	67.2	75.7	66.0	63.3	58.3	—
	Impact	200	160	135	162	139	161	143	132	106	12.2	18.4	18.7	16.3	15.8	16.0	—
	Total	—	—	—	—	1190	1889	1589	1554	1041	103.3	199.6	226.7	196.5	193.4	175.5	—
GIRDER D	Dead Load A	368	199	268	186	382	804	689	703	510	30.4	81.9	97.1	89.3	88.0	88.9	46.7
	Dead Load B	133	106	111	143	160	242	215	245	46	13.4	32.1	33.3	32.1	30.2	31.9	17.0
	Live Load	800	644	645	702	509	644	622	601	460	48.7	67.2	75.2	67.7	70.8	63.3	58.0
	Impact	199	159	158	177	137	159	151	149	127	12.1	18.1	18.6	18.2	17.5	17.4	12.0
	Total	—	—	—	—	1188	1849	1677	1698	1143	104.6	199.3	224.2	214.3	206.5	201.5	133.7
GIRDER E	Dead Load A	356	188	267	179	382	774	670	677	627	31.4	81.6	95.2	87.9	87.4	104.3	46.3
	Dead Load B	129	97	123	75	160	231	219	200	240	13.9	31.9	32.6	31.7	30.0	39.3	16.9
	Live Load	782	623	627	721	503	623	600	606	539	49.0	66.4	74.1	73.5	72.9	74.8	58.0
	Impact	194	156	156	183	138	154	149	150	150	12.0	18.3	18.4	18.2	18.0	20.8	12.0
	Total	—	—	—	—	1183	1782	1638	1633	1556	106.3	198.2	220.3	211.3	208.3	239.2	133.2
GIRDER F	Dead Load A	356	188	267	179	382	774	670	677	627	32.4	81.6	95.2	87.9	87.4	104.3	45.9
	Dead Load B	129	97	123	75	160	231	219	200	240	14.3	31.9	32.6	31.7	30.0	39.3	16.8
	Live Load	782	623	627	721	503	623	600	606	539	49.3	66.4	74.1	73.5	72.9	74.8	57.9
	Impact	194	156	156	183	138	154	149	150	150	11.9	18.3	18.4	18.2	18.0	20.8	12.1
	Total	—	—	—	—	1183	1782	1638	1633	1556	107.9	198.2	220.3	211.3	208.3	239.2	132.7
GIRDER G	Dead Load A	308	163	225	158	326	667	570	575	537	29.2	70.0	82.5	75.9	75.3	88.8	39.1
	Dead Load B	172	132	162	99	217	309	292	264	326	10.1	43.3	44.0	42.7	40.2	53.3	22.8
	Live Load	674	537	537	619	437	536	514	517	469	44.1	54.8	61.2	60.5	59.9	62.2	47.3
	Impact	167	134	134	157	120	133	129	130	130	10.5	15.0	15.2	15.1	15.0	17.2	9.9
	Total	—	—	—	—	1100	1645	1505	1486	1462	93.9	183.1	202.9	194.2	190.4	222.5	119.1

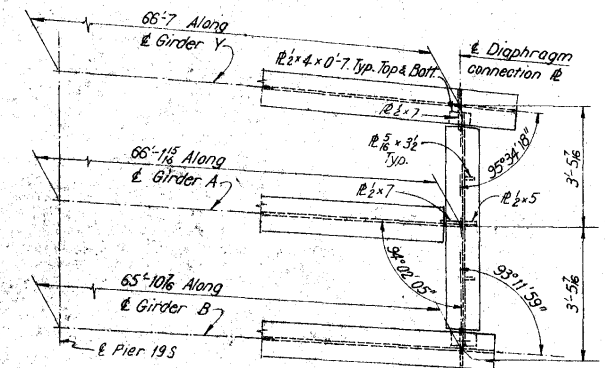
ELEVATIONS — TOP OF P.C. CONCRETE SURFACING (2" above top of first lift of concrete)																
Girder	Exp. Jt.	.25	.50	.75	End Gdr	F.S. 1	.25	.50	.75	F.S. 2	.25	.50	.75	End Gdr		
V	128.21	128.68	129.11	129.50	—	129.85	130.05	130.23	130.40	130.55	130.67	130.78	130.88	—		
W	127.80	128.26	128.69	129.06	—	129.37	129.54	129.70	129.84	129.97	130.06	130.15	130.22	—		
X	127.39	127.85	128.27	128.62	—	128.89	129.08	129.16	129.28	129.38	129.45	129.51	129.56	—		
Y	127.01	127.45	127.84	128.17	—	128.38	128.53	128.59	128.67	128.76	128.80	128.84	128.88	—		
Z	126.85	127.28	127.68	127.97	128.22	—	—	—	—	—	—	—	—	—		
A	126.69	127.05	127.44	127.70	—	127.92	128.04	128.13	128.23	128.35	128.50	128.55	128.59	128.65		
B	126.48	126.71	126.96	127.20	—	127.44	127.60	127.74	127.89	128.05	128.12	128.18	128.24	—		
C	126.01	126.19	126.37	126.55	—	126.75	126.88	127.02	127.15	127.29	127.41	127.52	127.64	—		
D	125.28	125.45	125.63	125.82	—	126.02	126.15	126.28	126.42	126.56	126.67	126.79	126.90	—		
E	124.54	124.72	124.90	125.08	—	125.28	125.41	125.55	125.69	125.83	125.94	126.05	126.17	—		
F	123.81	123.98	124.16	124.35	—	124.55	124.68	124.82	124.96	125.10	125.21	125.32	125.43	—		
G	123.08	123.25	123.43	123.61	—	123.81	123.94	124.08	124.23	124.37	124.48	124.59	124.70	—		

Girder	F.S. 3	.25	.50	.75	F.S. 4	.25	.50	.75	End Gdr	F.S. 5	.25	.50	.75	F.S. 6
V	130.97	131.07	131.17	131.26	131.34	131.42	131.50	131.59	—	131.68	131.76	131.85	131.94	132.04
W	130.29	130.36	130.44	130.53	130.61	130.69	130.77	130.85	—	130.94	131.03	131.12	131.21	131.30
X	129.61	129.66	129.72	129.81	129.87	129.93	130.03	130.12	—	130.20	130.29	130.38	130.47	130.57
Y	128.90	128.95	128.99	129.03	129.14	129.21	129.30	129.38	—	129.47	129.56	129.65	129.74	129.83
Z	128.31	128.40	128.50	128.60	128.73	128.83	128.95	129.07	129.19	—	—	—	—	—
B	127.76	127.90	127.94	128.19	128.33	128.46	128.56	128.66	—	128.77	128.90	129.03	129.16	129.31
D	127.02	127.16	127.31	127.45	127.60	127.75	127.89	128.04	—	128.19	128.35	128.50	128.66	128.82
E	126.28	126.43	126.57	126.72	126.87	127.02	127.16	127.31	—	127.45	127.61	127.77	127.93	128.09
F	125.55	125.69	125.84	125.98	126.14	126.28	126.43	126.57	—	126.72	126.88	127.04	127.20	127.36
G	124.81	124.96	125.11	125.26	125.41	125.55	125.69	125.84	—	125.98	126.14	126.30	126.47	126.63



DETAIL A

DETAIL B



DETAIL C

Note:
All intermediate diaphragms are set radial to Girder G.
Angles given for curved girders are to the tangent to the centerline of the girder at the expansion joint or connection plate.
..... denotes girder bend point

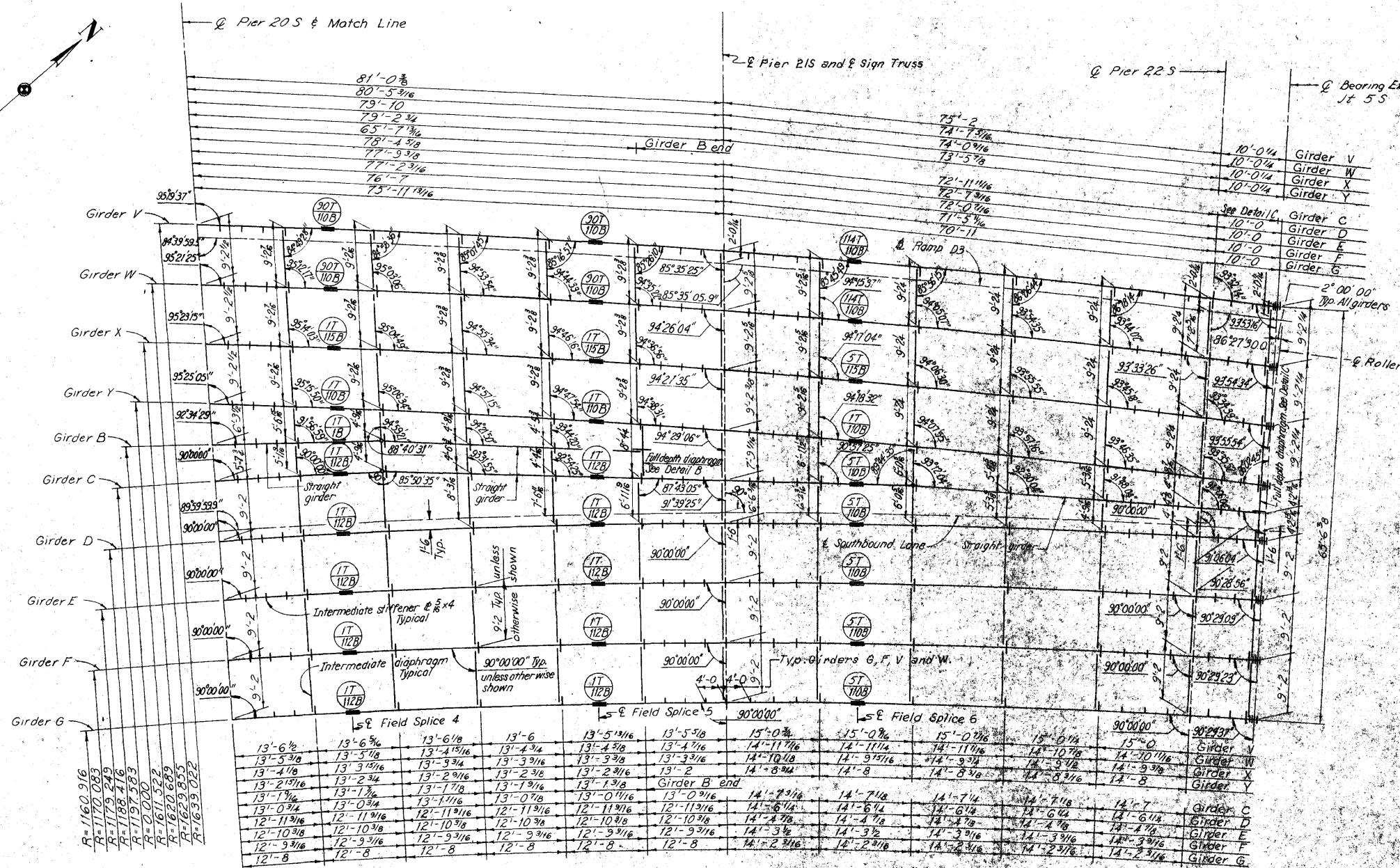
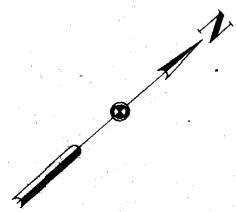
FRAMING PLAN

Note:
For Girder Slice Details see sheet 183, 184 and 185 of 201.
For Bearing Stiffener and Intermediate Stiffener Details see Sheet 182 of 201.
For additional Framing Plan Details see sheet 109 of 201.

**CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE**

FRAMING PLAN - UNIT 55B

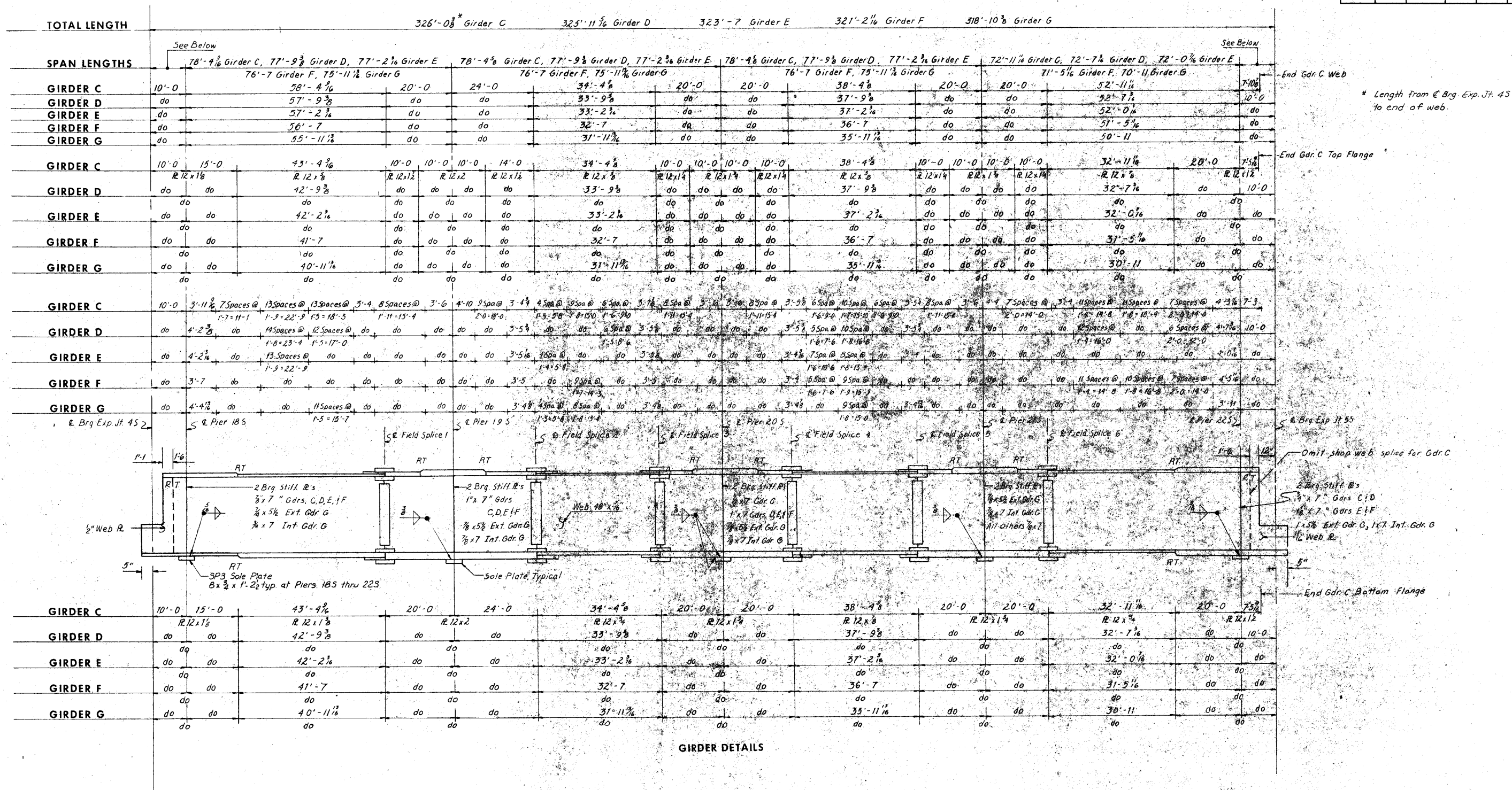
STA. 322+81.95 @ FREEWAY =
STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. I-380-6(68)263--01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION



SPAN LENGTHS
FIELD SPICES
TOP FLANGE PLATES
SHEAR CONNECTOR SPACES
BOTTOM FLANGE PLATES

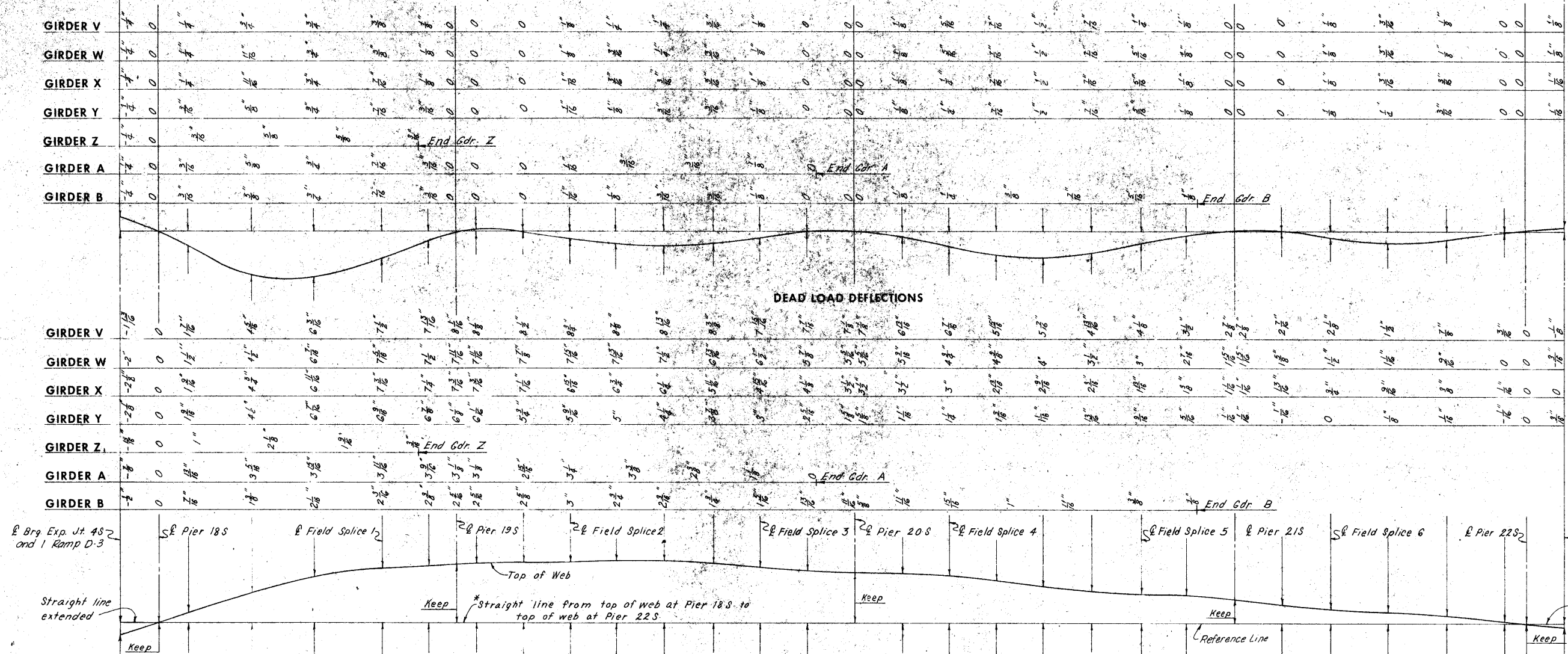
GIRDERS V, W, X, AND Y		340'-3 3/4 Girder V		337'-11 1/2 Girder W		335'-7 1/2 Girder X		333'-2 3/4 Girder Y	
GIRDER Z		74'-6 3/8 Girder Z		End of Gdr Z Web		End of Gdr A Web		End of Gdr B Web	
GIRDER A		155'-8 1/8 Girder A		233'-7 1/2 Girder B					
GIRDER B									
GIRDERS V, W, X, AND Y		82'-4 1/2 Girder V		81'-9 1/4 Girder W		81'-2 Girder X		80'-6 1/2 Girder Y	
GIRDERS Z, A, AND B		79'-7 Girder A		78'-11 3/4 Girder B					
GIRDER V		62'-4 1/2		20'-0		24'-0		37'-7 3/4	
GIRDER W		61'-9 1/4		do		do		37'-0 3/8	
GIRDER X		61'-2		do		do		36'-5 3/8	
GIRDER Y		60'-6 1/2		do		do		35'-10 1/8	
GIRDER Z		63'-7		16'-0		20'-0		42'-1 1/8	
GIRDER A		58'-11 3/4		20'-0		24'-0		36'-0 1/4	
GIRDER B									
GIRDER V		10'-0 3/8		15'-0		47'-4 1/2		8'-0	
GIRDER W		do		do		do		do	
GIRDER X		do		do		do		do	
GIRDER Y		do		do		do		do	
GIRDER Z		do		do		do		do	
GIRDER A		do		do		do		do	
GIRDER B		do		do		do		do	
GIRDER V		10'-0 3/8		15'-0		47'-4 1/2		8'-0	
GIRDER W		do		do		do		do	
GIRDER X		do		do		do		do	
GIRDER Y		do		do		do		do	
GIRDER Z		do		do		do		do	
GIRDER A		do		do		do		do	
GIRDER B		do		do		do		do	
GIRDER V		10'-0 3/8		15'-0		47'-4 1/2		8'-0	
GIRDER W		do		do		do		do	
GIRDER X		do		do		do		do	
GIRDER Y		do		do		do		do	
GIRDER Z		do		do		do		do	
GIRDER A		do		do		do		do	
GIRDER B		do		do		do		do	
GIRDER V		10'-0 3/8		15'-0		47'-4 1/2		8'-0	
GIRDER W		do		do		do		do	
GIRDER X		do		do		do		do	
GIRDER Y		do		do		do		do	
GIRDER Z		do		do		do		do	
GIRDER A		do		do		do		do	
GIRDER B		do		do		do		do	
GIRDER V		10'-0 3/8		15'-0		47'-4 1/2		8'-0	
GIRDER W		do		do		do		do	
GIRDER X		do		do		do		do	
GIRDER Y		do		do		do		do	
GIRDER Z		do		do		do		do	
GIRDER A		do		do		do		do	
GIRDER B		do		do		do		do	
GIRDER V		10'-0 3/8		15'-0		47'-4 1/2		8'-0	
GIRDER W		do		do		do		do	
GIRDER X		do		do		do		do	
GIRDER Y		do		do		do		do	
GIRDER Z		do		do		do		do	
GIRDER A		do		do		do		do	
GIRDER B		do		do		do		do	
GIRDER V		10'-0 3/8		15'-0		47'-4 1/2		8'-0	
GIRDER W		do		do		do		do	
GIRDER X		do		do		do		do	
GIRDER Y		do		do		do		do	
GIRDER Z		do		do		do		do	
GIRDER A		do		do		do		do	
GIRDER B		do		do		do		do	
GIRDER V		10'-0 3/8		15'-0		47'-4 1/2		8'-0	
GIRDER W		do		do		do		do	
GIRDER X		do		do		do		do	
GIRDER Y		do		do		do		do	
GIRDER Z		do		do		do		do	
GIRDER A		do		do		do		do	
GIRDER B		do		do		do		do	
GIRDER V		10'-0 3/8		15'-0		47'-4 1/2		8'-0	
GIRDER W		do		do		do		do	
GIRDER X		do		do		do		do	
GIRDER Y		do		do		do		do	
GIRDER Z		do		do		do		do	
GIRDER A		do		do		do		do	
GIRDER B		do		do		do		do	
GIRDER V		10'-0 3/8		15'-0		47'-4 1/2		8'-0	
GIRDER W		do		do		do		do	
GIRDER X		do		do		do		do	
GIRDER Y		do		do		do		do	
GIRDER Z		do		do		do		do	
GIRDER A		do		do		do		do	
GIRDER B		do		do		do		do	
GIRDER V		10'-0 3/8		15'-0		47'-4 1/2		8'-0	
GIRDER W		do		do		do		do	
GIRDER X		do		do		do		do	
GIRDER Y		do		do		do		do	
GIRDER Z		do		do		do		do	
GIRDER A		do		do		do		do	
GIRDER B		do		do		do		do	
GIRDER V		10'-0 3/8		15'-0		47'-4 1/2		8'-0	
GIRDER W		do		do		do		do	
GIRDER X		do		do		do		do	
GIRDER Y		do		do		do		do	
GIRDER Z		do		do		do		do	
GIRDER A		do		do		do		do	
GIRDER B		do		do		do		do	
GIRDER V		10'-0 3/8		15'-0		47'-4 1/2		8'-0	
GIRDER W		do		do		do		do	
GIRDER X		do		do		do		do	
GIRDER Y		do		do		do		do	
GIRDER Z		do		do		do		do	
GIRDER A		do		do		do		do	
GIRDER B		do		do		do		do	
GIRDER V		10'-0 3/8		15'-0		47'-4 1/2		8'-0	
GIRDER W		do		do		do		do	
GIRDER X		do		do		do		do	
GIRDER Y		do		do		do		do	
GIRDER Z		do		do		do		do	
GIRDER A		do		do		do		do	
GIRDER B		do		do		do		do	
GIRDER V		10'-0 3/8		15'-0		47'-4 1/2		8'-0	
GIRDER W		do		do		do		do	
GIRDER X		do		do		do		do	
GIRDER Y		do		do		do		do	
GIRDER Z		do		do		do		do	
GIRDER A		do		do		do		do	
GIRDER B		do		do		do		do	
GIRDER V		10'-0 3/8		15'-0		47'-4 1/2		8'-0	
GIRDER W		do		do		do		do	
GIRDER X		do		do		do		do	
GIRDER Y		do		do		do		do	
GIRDER Z		do		do		do		do	
GIRDER A		do		do		do		do	
GIRDER B		do		do		do		do	
GIRDER V		10'-0 3/8		15'-0		47'-4 1/2		8'-0	
GIRDER W		do		do		do		do	
GIRDER X		do		do		do		do	
GIRDER Y		do		do		do		do	
GIRDER Z		do		do		do		do	
GIRDER A		do		do		do		do	
GIRDER B		do		do		do		do	
GIRDER V		10'-0 3/8		15'-0		47'-4 1/2		8'-0	
GIRDER W		do		do		do		do	
GIRDER X		do		do		do		do	
GIRDER Y		do		do		do		do	
GIRDER Z		do		do		do		do	
GIRDER A		do		do		do		do	
GIRDER B		do		do		do		do	
GIRDER V		10'-0 3/8		15'-0		47'-4 1/2		8'-0	
GIRDER W		do		do		do		do	
GIRDER X		do		do		do		do	
GIRDER Y		do		do		do		do	
GIRDER Z		do		do		do		do	
GIRDER A		do		do		do		do	
GIRDER B		do		do		do		do	
GIRDER V		10'-0 3/8		15'-0		47'-4 1/2		8'-0	
GIRDER W		do		do		do		do	
GIRDER X		do		do		do		do	
GIRDER Y		do		do		do		do	
GIRDER Z		do		do		do		do	
GIRDER A		do		do		do		do	
GIRDER B		do		do		do		do	
GIRDER V		10'-0 3/8		15'-0		47'-4 1/2		8'-0	
GIRDER W		do		do		do		do	
GIRDER X		do		do		do		do	
GIRDER Y		do		do		do		do	
GIRDER Z		do		do		do		do	
GIRDER A		do		do		do		do	
GIRDER B		do		do		do		do	
GIRDER V		10'-0 3/8		15'-0		47'-4 1/2		8'-0	
GIRDER W		do		do		do		do	
GIRDER X		do		do		do		do	
GIRDER Y		do		do		do		do	
GIRDER Z		do		do		do		do	
GIRDER A		do		do		do		do	
GIRDER B		do		do		do		do	
GIRDER V		10'-0 3/8		15'-0		47'-4 1/2		8'-0	
GIRDER W		do		do		do		do	
GIRDER X		do		do		do		do	
GIRDER Y		do		do		do		do	
GIRDER Z		do		do		do		do	
GIRDER A		do		do		do		do	
GIRDER B		do		do		do		do	
GIRDER V		10'-0 3/8		15'-0		47'-4 1/2		8'-0	
GIRDER W		do		do		do		do	
GIRDER X		do		do		do		do	
GIRDER Y		do		do		do		do	
GIRDER Z		do		do		do		do	
GIRDER A		do		do		do		do	
GIRDER B		do		do		do		do	
GIRDER V		10'-0 3/8		15'-0		47'-4 1/2		8'-0	
GIRDER W		do		do		do		do	
GIRDER X		do		do		do		do	
GIRDER Y		do		do		do		do	
GIRDER Z		do		do		do		do	
GIRDER A		do		do		do		do	
GIRDER B		do		do		do		do	
GIRDER V		10'-0 3/8		15'-0		47'-4 1/2		8'-0	
GIRDER W		do		do		do		do	
GIRDER X		do		do		do		do	
GIRDER Y		do		do		do		do	
GIRDER Z		do		do		do		do	
GIRDER A		do		do		do		do	
GIRDER B		do		do		do		do	
GIRDER V		10'-0 3/8		15'-0		47'-4 1/2		8'-0	
GIRDER W		do		do		do		do	
GIRDER X		do		do		do		do	
GIRDER Y		do		do		do		do	
GIRDER Z		do		do		do		do	
GIRDER A		do		do		do		do	
GIRDER B		do		do		do		do	
GIRDER V		10'-0 3/8		15'-0		47'-4 1/2		8'-0	
GIRDER W		do		do		do		do	
GIRDER X		do		do		do		do	
GIRDER Y		do		do		do		do	
GIRDER Z		do		do		do		do	
GIRDER A		do		do		do		do	
GIRDER B		do		do		do		do	
GIRDER V		10'-0 3/8		15'-0		47'-4 1/2		8'-0	
GIRDER W		do		do		do		do	
GIRDER X		do		do		do		do	
GIRDER Y		do		do		do		do	
GIRDER Z		do		do		do		do	
GIRDER A		do		do		do		do	
GIRDER B		do		do		do		do	
GIRDER V		10'-0 3/8		15'-0		47'-4 1/2		8'-0	
GIRDER W		do		do		do		do	
GIRDER X		do		do		do		do	
GIRDER Y		do		do		do		do	
GIRDER Z		do		do		do		do	
GIRDER A		do		do		do		do	
GIRDER B		do		do					

TOP
 SHEAR CONNECTOR SPACES
 FLANGE PLATES
 FIELD SPICES
 BOTTOM FLANGE PLATES



TYPICAL ROCKER SETTINGS UNIT 55B								
	EXP. JT. 45	PIER 185	PIER 195	PIER 205	PIER 215	PIER 225	EXP. JT. 55	
Temperature at time of setting								
90°F	2 1/8"	3 1/8"	2"	1 1/8"	0"	1 1/8"	2"	1 1/8"
50°F	3 1/2"	0"	0"	0"	0"	0"	0"	2 3/4"
10°F	4 9/16"	-3 1/8"	-2"	-1 1/8"	0"	-1 1/8"	-2"	3 5/8"
Sole Plate		SP3	SP3	SP3	SP3	SP3		
Rocker		R3A	R3A		R3A	R3A		
Masonry Plate		MP3P	MP3P	S3	MP3P	MP3P		

	SE Pier 18S	SE Pier 19S	SE Pier 20S	SE Pier 21S	SE Pier 22S
	4 Equal Spaces	4 Equal Spaces	4 Equal Spaces	4 Equal Spaces	4 Equal Spaces
	Grds. V, W, X, Y	Grds. V, W, X, Y	Grds. V, W, X, Y	Grds. V, W, X, Y	Grds. V, W, X, Y
GIRDER V	at abt. $18'-1\frac{1}{2}" = 72'-5\frac{1}{2}"$	at $11'-0" = 44'-0"$	at $9'-4\frac{1}{2}" = 37'-7\frac{1}{2}"$	at abt. $10'-3\frac{1}{2}" = 41'-\frac{1}{2}"$	at $16'-3\frac{3}{8}" = 65'-2\frac{1}{4}"$
GIRDER W	at abt. $17'-11\frac{1}{2}" = 71'-10\frac{1}{2}"$	do	at abt. $9'-3\frac{1}{2}" = 37'-\frac{1}{2}"$	at abt. $10'-1\frac{1}{2}" = 40'-5\frac{1}{2}"$	at abt. $16'-1\frac{1}{2}" = 64'-7\frac{1}{2}"$
GIRDER X	at abt. $17'-9\frac{3}{4}" = 71'-2\frac{3}{4}"$	do	at abt. $9'-1\frac{1}{8}" = 36'-5\frac{3}{8}"$	at $9'-11\frac{1}{2}" = 39'-10"$	at abt. $16'-\frac{5}{16}" = 64'-\frac{13}{16}"$
GIRDER Y	at abt. $17'-7\frac{1}{8}" = 70'-7\frac{1}{8}"$	do	at abt. $8'-11\frac{1}{8}" = 35'-10\frac{1}{8}"$	at $9'-9\frac{1}{4}" = 39'-2\frac{1}{4}"$	at abt. $15'-10\frac{1}{2}" = 63'-6\frac{1}{2}"$
GIRDER Z	at abt. $19'-1\frac{1}{8}" = 76'-7\frac{1}{8}"$	End Gdr. Z			
GIRDER A	at $18'-4\frac{3}{4}" = 73'-7"$	at $9'-0" = 36'-0"$	at abt. $11'-6\frac{3}{4}" = 46'-1\frac{1}{4}"$	End Gdr. A	
GIRDER B	at $17'-2\frac{1}{8}" = 68'-11\frac{1}{8}"$	at $11'-0" = 44'-0"$	at $9'-0\frac{1}{2}" = 36'-0\frac{1}{2}"$	at $11'-4\frac{1}{8}" = 45'-7\frac{3}{8}"$	End Gdr. B



HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

MADE LCK DATE 5-8-74 CHECKED C.B.M. DATE 9-18-74

* Or straight line from Exp. Jt. 4S to
diaphragm at end of Girder Z or straight
line from Exp. Jt. 4S to diaphragm at
end of Girder A or straight line from
Exp. Jt. 4S to diaphragm at end of Girder B.

Note:
For additional Deflection Diagrams
see Sheet 113 of 201.
Negative camber values are cambers below
reference line.

CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE

DEFLECTION DIAGRAMS - UNIT 55B

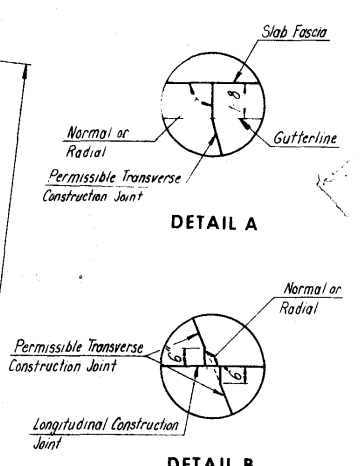
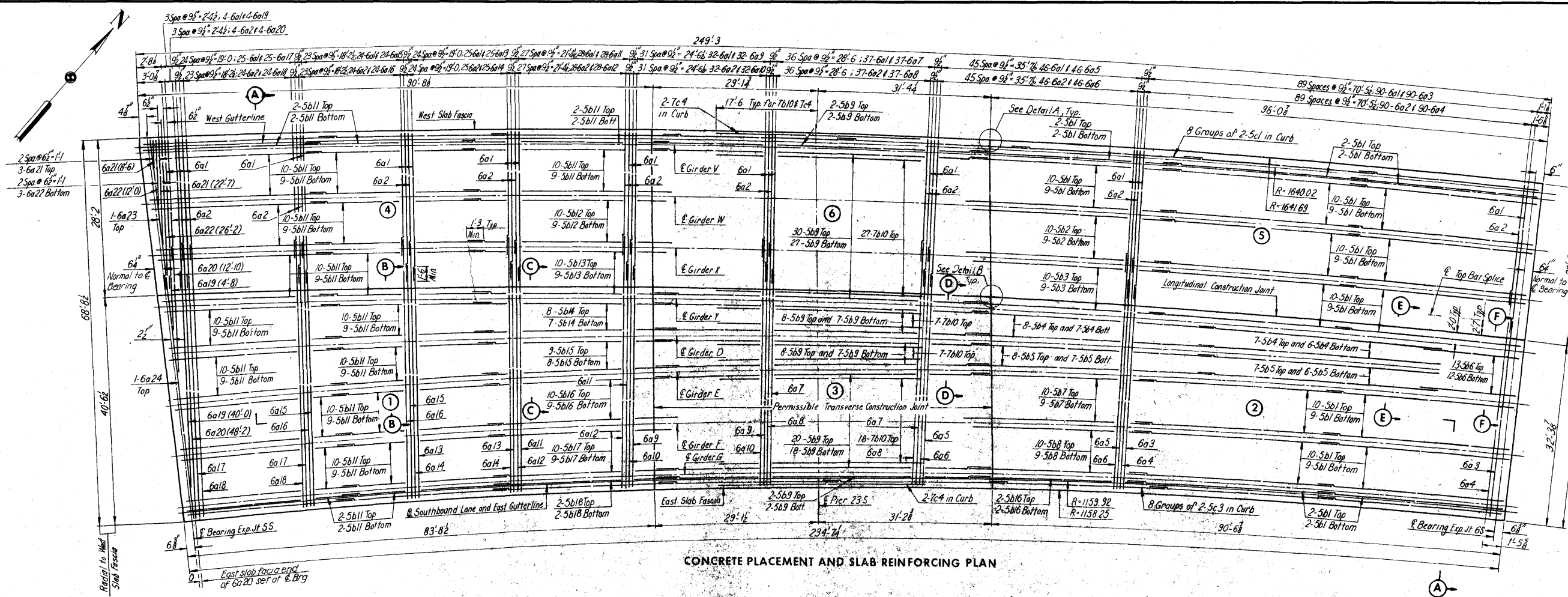
STA. 322+81.95 @ FREEWAY=
STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. I-380-6(68)263--01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

SHEET 112 OF 201

DESIGN NO. 1276 LINN COUNTY FILE 23191 SHEET 114 OF 203-0

	SE Pier 18 S	SE Pier 19 S	SE Pier 20 S	SE Pier 21 S	SE Pier 22 S
	4 Equal Spaces	4 Equal Spaces	4 Equal Spaces	4 Equal Spaces	4 Equal Spaces
	Grds. C,D,E,F,G	Grds. C,D,E,F,G	Grds. C,D,E,F,G	Grds. C,D,E,F,G	Grds. C,D,E,F,G
GIRDER C	at abt. 17'-1 1/2" = 68'-4 1/2"	at 11'-0" = 44'-0"	at abt. 8'-7 1/2" = 34'-4 1/2"	at abt. 9'-7 1/2" = 38'-4 1/2"	at abt. 15'-8 1/2" = 62'-11 1/2"
GIRDER D	at abt. 16'-11 1/2" = 67'-9 1/2"	do	at abt. 8'-5 1/2" = 33'-9 1/2"	at abt. 9'-5 1/2" = 37'-9 1/2"	at abt. 15'-7 1/2" = 62'-7 1/2"
GIRDER E	at abt. 16'-9 3/4" = 67'-2 1/4"	do	at abt. 8'-3 3/4" = 33'-2 1/4"	at abt. 9'-3 3/4" = 37'-2 1/4"	at abt. 15'-6 1/4" = 62'-7/8"
GIRDER F	at 16'-7 1/2" = 66'-7"	do	at 8'-1 1/2" = 32'-7"	at 9'-1 1/2" = 36'-7"	at abt. 15'-3 1/2" = 61'-3 1/2"
GIRDER G	at abt. 16'-5 1/2" = 65'-11 1/2"	do	at 7'-11 1/2" = 31'-11 1/2"	at abt. 8'-11 1/2" = 35'-11 1/2"	at 15'-2 1/2" = 60'-11"

GIRDER C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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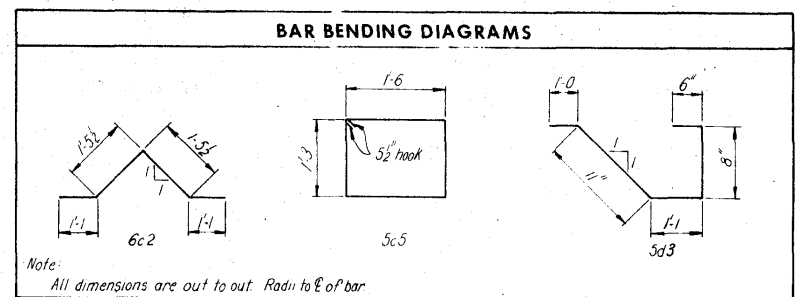


BILL OF REINFORCEMENT					
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
* 6a1	Slab Transverse, Top	—	311	20'-2	12,223
6a2	Slab Transverse, Bottom	—	310	21'-7	10,050
* 6a3	Slab Transverse, Top	—	90	36'-7	4,945
6a4	Slab Transverse, Bottom	—	90	41'-2	5,565
* 6a5	Slab Transverse, Top	—	46	37'-7	2,597
6a6	Slab Transverse, Bottom	—	46	42'-2	2,913
* 6a7	Slab Transverse, Top	—	37	38'-7	2,144
6a8	Slab Transverse, Bottom	—	37	43'-2	2,399
* 6a9	Slab Transverse, Top	—	32	39'-7	1,903
6a10	Slab Transverse, Bottom	—	32	44'-2	2,123
* 6a11	Slab Transverse, Top	—	28	40'-7	1,707
6a12	Slab Transverse, Bottom	—	28	45'-2	1,900
* 6a13	Slab Transverse, Top	—	25	41'-7	1,561
6a14	Slab Transverse, Bottom	—	25	46'-2	1,734
* 6a15	Slab Transverse, Top	—	24	42'-7	1,535
6a16	Slab Transverse, Bottom	—	24	47'-2	1,700
* 6a17	Slab Transverse, Top	—	25	43'-8	1,640
6a18	Slab Transverse, Bottom	—	24	48'-3	1,739
* 6a19	Slab Transverse, Top	1 Ser 4	Varies	134	
6a20	Slab Transverse, Bottom	1 Ser 4	Varies	183	
* 6a21	Slab Transverse, Top	1 Ser 3	Varies	70	
6a22	Slab Transverse, Bottom	1 Ser 3	Varies	86	
* 6a23	Slab Transverse, Top	—	1	26'-3	39
6a24	Slab Transverse, Bottom	—	1	43'-9	66
* 5b1	Slab Longitudinal	—	229	34'-0	8,120
* 5b2	Slab Longitudinal	—	19	32'-7	646
* 5b3	Slab Longitudinal	—	19	31'-5	623
* 5b4	Slab Longitudinal	—	28	41'-10	1,222

BILL OF REINFORCEMENT					
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
* 5a5	Slab Longitudinal	—	28	40'-9	1,190
* 5b5	Slab Longitudinal	—	25	15'-8	409
* 5b7	Slab Longitudinal	—	19	28'-11	573
* 5b8	Slab Longitudinal	—	19	27'-10	552
* 5b9	Slab Longitudinal	—	133	60'-0	8,323
* 7b10	Slab Longitudinal	—	59	36'-4	4,382
* 5b11	Slab Longitudinal	—	305	31'-6	7,021
* 5b12	Slab Longitudinal	—	19	30'-1	596
* 5b13	Slab Longitudinal	—	19	29'-4	581
* 5b14	Slab Longitudinal	—	15	28'-4	443
* 5b15	Slab Longitudinal	—	17	27'-6	488
* 5b16	Slab Longitudinal	—	23	26'-8	640
* 5b17	Slab Longitudinal	—	19	25'-8	509
* 5b18	Slab Longitudinal	—	4	24'-10	104
5c1	Curb, Longitudinal	—	16	32'-3	538
6c2	Post Anchor	—	58	5'-0	436
5c3	Curb, Longitudinal	—	16	31'-5	508
7c4	Curb, Longitudinal	—	4	36'-4	297
5c5	Curb, Hoops	—	405	6'-2	2,605
* 6d1	Diaphragm, Horizontal	—	48	8'-5	607
* 6d2	Diaphragm, Horizontal	—	4	7'-8	46
* 5d3	Diaphragm, Vertical	—	104	4'-0	434
Total					105,849

* All, or the number of bars noted below, are to be epoxy coated and placed in the top mat of reinforcing:
120-5b1 (4255lbs), 10-5b2 (340lbs), 10-5b3 (328lbs), 15-5b4 (654lbs), 15-5b5 (632lbs), 13-5b6 (212lbs), 10-5b7 (302lbs), 10-5b8 (290lbs), 70-5b9 (4381lbs), 160-5b11 (5257lbs), 10-5b12 (314lbs), 10-5b13 (306lbs), 2-5b14 (236lbs), 9-5b15 (258lbs), 12-5b16 (334lbs), 10-5b17 (268lbs), 2-5b18 (52lbs), 12-6d1 (152lbs), 1-6d2 (17lbs). Epoxy coated 6a bars are to be Grade 60 reinforcing steel.

Notes:
For "Top of P.C. Concrete Surfacing Elevations" see Sheet 116 of 201.
For "Sections" see Sheet 115 of 201.
For "Concrete Placement Note" see Sheet 120 of 201.
An east gutter deck inlet is required at Exp. Jt. 6S.



CONCRETE PLACEMENT QUANTITIES	
POUR	CU. YDS.
1	89.3
2	83.4
3	54.4
4	68.0
5	58.4
6	43.8
Curbs	34.8
Total	432.1

** Includes 8,379 lbs. A-668, Class F forging steel at Pier 23S.

SUPERSTRUCTURE ESTIMATED QUANTITIES		
UNIT 6 - SOUTHBOUND		
ITEM	UNIT	QUANTITY
Structural Concrete (Class C)	Sq. yds.	432.1
Reinforcing Steel	Lbs.	51,850
Reinforcing Steel-Epoxy Coated	Lbs.	53,969
Structural Steel Deck	Lbs.	80,112
P.C. Concrete Surfacing	Sq. yds.	1,044

Includes the weight of Pier 23S capbeam, expansion joint and bearing plates at Exp. Jt. 5S and bearing devices at Pier 23S.

CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE

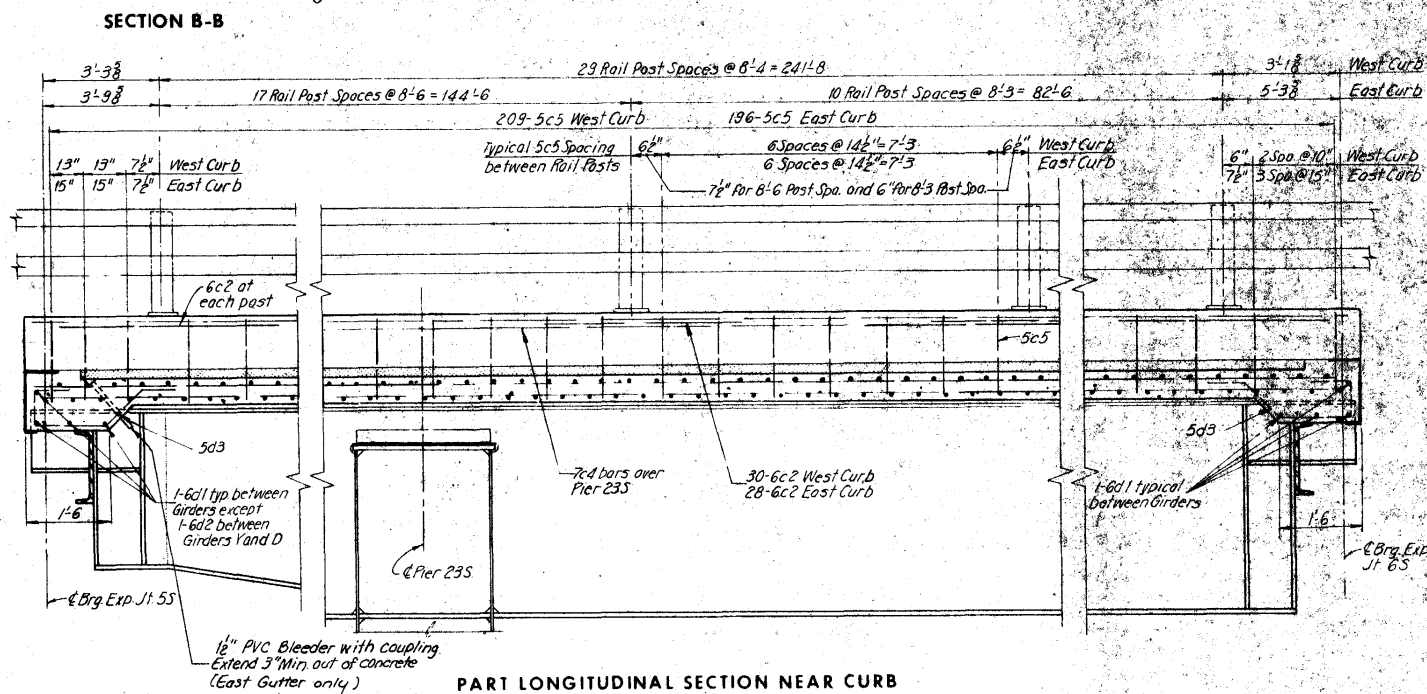
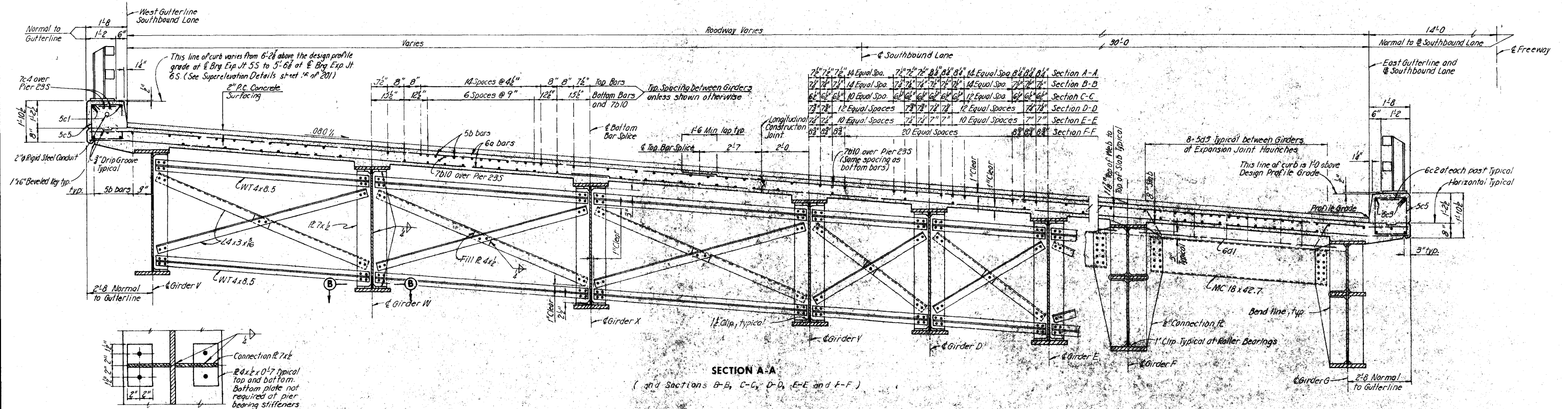
SLAB PLAN UNIT 6 SOUTHBOUND LANE

STA. 322+81.95 @ FREEWAY =
STA. 32+14.70 @ 1ST AVE. W PROJECT NO. I-380-6(68)263-01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

MADE DLR DATE 5-31-74 CHECKED JSB DATE 7-13-74

Revised 2-28-77: Structural Steel estimated quantity corrected.



Notes:
For locations of Sections see Sheet 114 of 201.
For Roller Joint Detail see Sheet 181 of 201.

**CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE**

TYPICAL SECTIONS UNIT 6 SOUTHBOUND LANE

STA. 322+81.95 @ FREEWAY =
STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. I-380-6(68)263-01-57

LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

MADE AJS DATE 07-11-74 CHECKED JSH DATE 07-11-74

SHEET 115 OF 201

DESIGN NO 1276 LINN COUNTY FILE 23191 SHEET 117 OF 203

ELEVATIONS — TOP OF P.C. CONCRETE SURFACING (2" above top of first lift of concrete)																			
Girder	F.S. 5S	.25	.50	.75	F.S. 1	.25	.50	.75	F.S. 2	P23S	F.S. 3	.25	.50	.75	F.S. 4	.25	.50	.75	F.S. 6S
V	132.68	132.87	133.06	133.26	133.47	133.59	133.72	133.85	133.99	134.05	134.11	134.24	134.37	134.51	134.65	134.93	135.22	135.51	135.82
W	131.95	132.13	132.33	132.53	132.73	132.86	132.99	133.12	133.25	133.31	133.38	133.51	133.64	133.77	133.91	134.19	134.48	134.78	135.08
X	131.21	131.40	131.59	131.79	131.99	132.12	132.25	132.38	132.52	132.58	132.64	132.77	132.90	133.04	133.17	133.46	133.75	134.04	134.35
Y	130.48	130.66	130.85	131.05	131.25	131.38	131.51	131.65	131.78	131.85	131.91	132.04	132.17	132.31	132.44	132.73	133.01	133.31	133.61
D	129.80	130.02	130.24	130.46	130.69	130.84	130.99	131.14	131.29	131.36	131.43	131.57	131.72	131.86	132.01	132.26	132.51	132.76	133.02
E	129.07	129.33	129.60	129.86	130.12	130.29	130.46	130.63	130.80	130.88	130.96	131.12	131.28	131.44	131.60	131.92	132.23	132.55	132.86
F	128.34	128.60	128.86	129.12	129.38	129.56	129.73	129.90	130.07	130.15	130.23	130.39	130.55	130.71	130.87	131.19	131.50	131.81	132.13
G	127.61	127.87	128.13	128.38	128.64	128.82	129.00	129.16	129.34	129.42	129.50	129.66	129.82	129.98	130.14	130.46	130.77	131.08	131.39

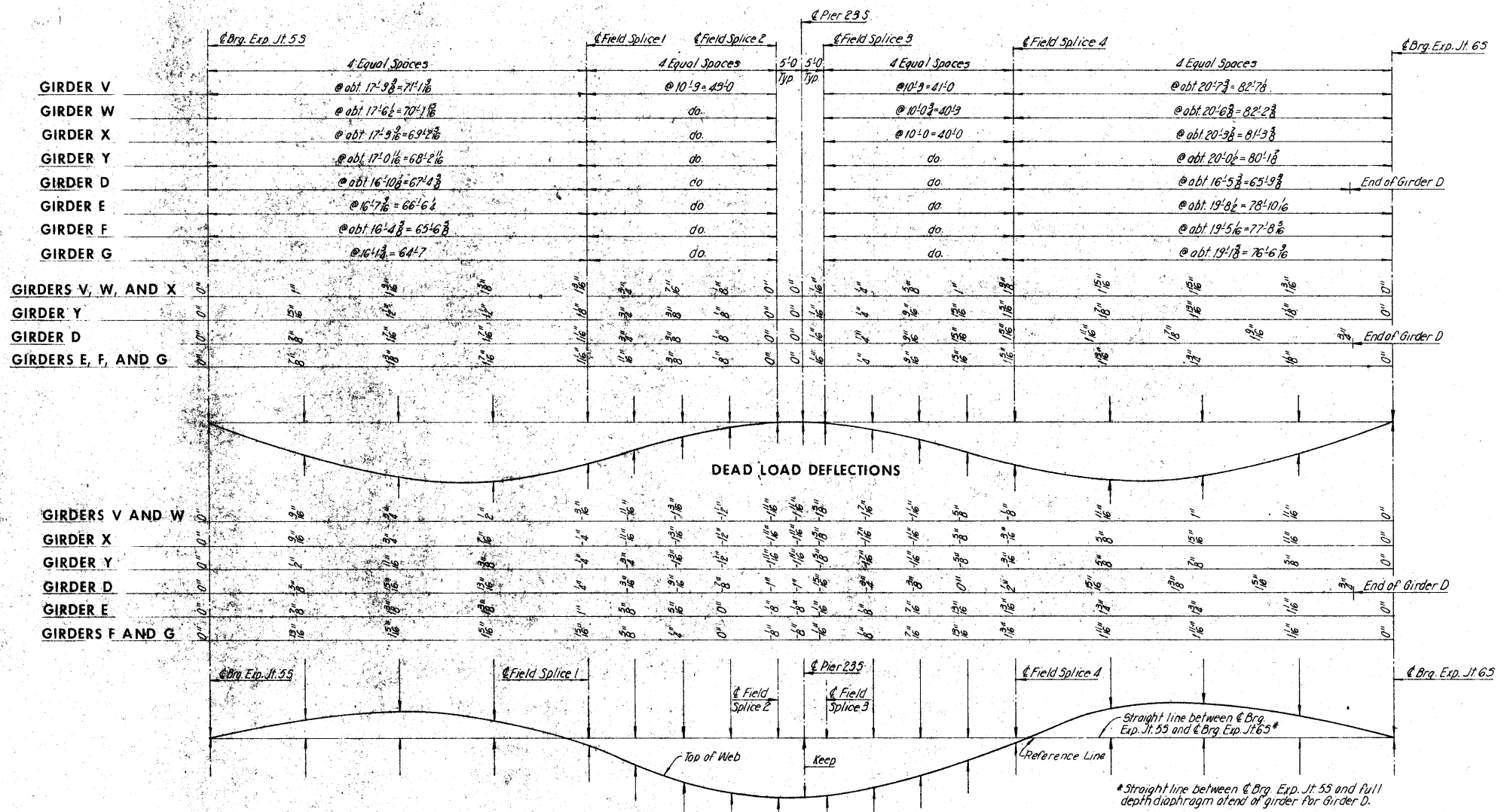
*full depth diaphragm at end of Girder D

Legend:
F.S. denotes Field Splice
E.J. denotes Expansion Joint
P denotes Pier

Note:
20% of dead load deflection is due to structural steel, 68% due to concrete and 12% due to wearing surface.

For "Moment and Reaction Note", see sheet 83 of 201.

TABLE OF MOMENTS AND REACTIONS IN FOOT KIPS AND KIPS - UNIT 6 SOUTHBOUND LANE							
ITEM	MAXIMUM POSITIVE MOMENT		MAXIMUM NEGATIVE MOMENT		REACTIONS		
	SPAN 1	SPAN 2	PIER 23S	EXP. JT. 5S	PIER 23S	EXP. JT. 6S	
GIRDER V	Dead Load A	810	1221	2843	41.6	177.2	50.0
	Dead Load B	548	762	1174	24.2	87.9	28.4
	Live Load	1187	1302	1309	47.5	91.8	47.8
	Impact	244	255	262	9.7	18.4	9.4
	Total			5588	123.0	375.3	135.6
GIRDER W	Dead Load A	897	1387	3446	48.1	211.4	58.4
	Dead Load B	393	550	844	17.5	63.9	20.6
	Live Load	1343	1474	1473	58.0	107.3	58.7
	Impact	277	290	296	12.0	21.7	11.6
	Total			6059	135.6	404.3	149.3
GIRDER X	Dead Load A	882	1359	3381	47.7	209.8	57.9
	Dead Load B	386	539	828	17.4	63.3	20.4
	Live Load	1329	1459	1458	58.0	106.7	58.6
	Impact	275	289	294	12.0	21.6	11.7
	Total			5961	135.1	401.4	148.6
GIRDER Y	Dead Load A	867	1340	3329	47.2	185.4	69.5
	Dead Load B	380	532	815	17.2	56.0	24.6
	Live Load	1316	1445	1443	58.0	94.5	58.6
	Impact	274	286	293	12.0	19.3	11.7
	Total			5880	134.4	355.2	164.4
GIRDER D	Dead Load A	733	745	2367	46.7	136.9	*24.3
	Dead Load B	324	296	577	17.0	41.3	*8.5
	Live Load	1130	808	1000	58.0	86.4	*31.2
	Impact	236	161	204	12.0	17.6	*7.0
	Total			4148	133.7	282.2	*71.0
GIRDER E	Dead Load A	830	1302	3255	46.3	179.9	68.7
	Dead Load B	367	518	794	16.9	54.3	24.2
	Live Load	1290	1421	1386	58.0	107.9	58.5
	Impact	271	285	284	12.0	22.0	11.8
	Total			5719	133.2	364.1	163.2
GIRDER F	Dead Load A	815	1278	3194	45.9	203.2	56.1
	Dead Load B	361	508	779	16.8	61.3	19.8
	Live Load	1279	1408	1373	57.9	104.1	58.5
	Impact	270	284	283	12.1	21.4	11.8
	Total			5629	132.7	390.0	146.2
GIRDER G	Dead Load A	670	1050	2626	39.1	166.9	47.2
	Dead Load B	483	681	1042	22.8	82.8	26.8
	Live Load	1104	1216	1186	47.3	89.3	47.6
	Impact	233	246	244	9.9	18.4	9.6
	Total			5098	119.1	357.4	131.2



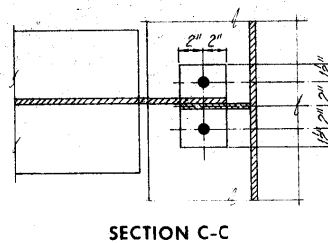
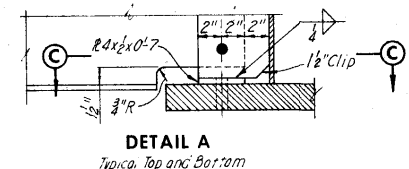
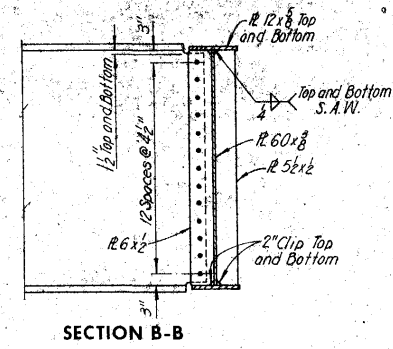
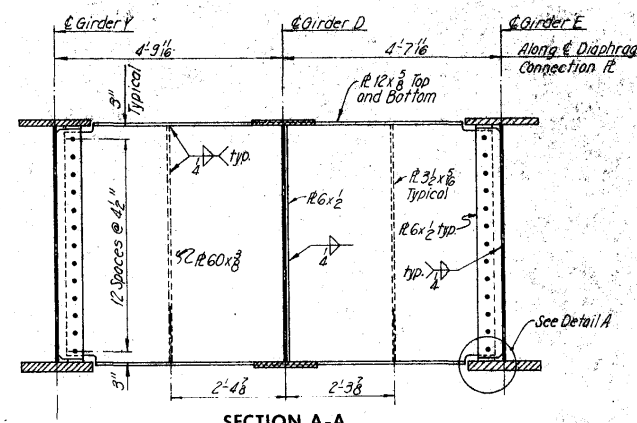
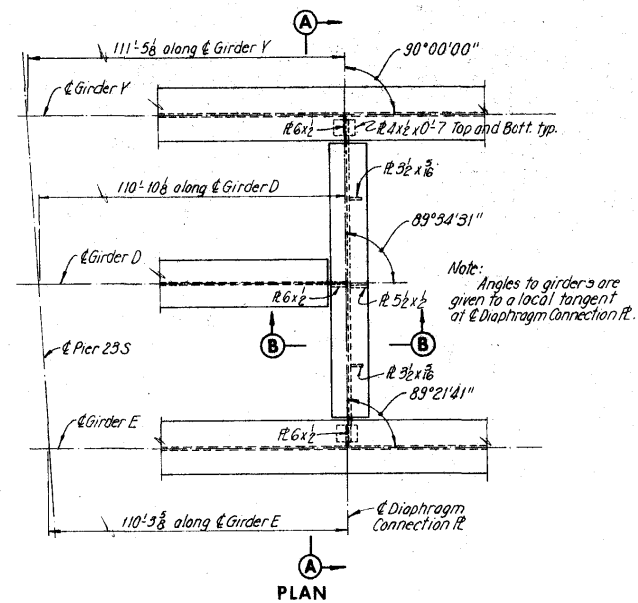
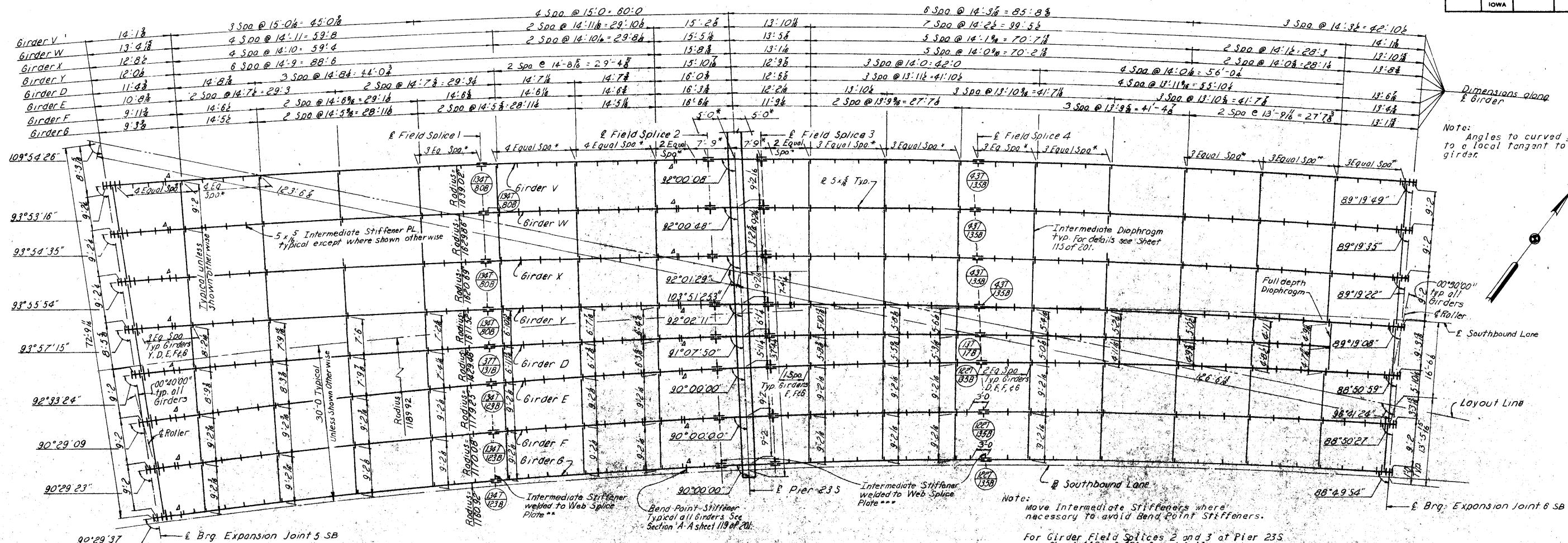
Note:
Offsets are given at one fourth points between @ Brg. Exp. Jts. and adjacent field splices, at one fourth points between field splices and at @ Pier 23S.
Negative camber values are camber below reference line.

GIRDERS AS FABRICATED AND ERECTED DIAGRAM
(In the horizontal position)

CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE
TABLE OF DEFLECTIONS AND SLAB ELEVATIONS
UNIT 6 SOUTHBOUND LANE
STA. 322+81.95 @ FREEWAY =
STA. 32+14.70 @ 1ST. AVE. W
PROJECT NO. I-380-6(68)263--01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

MADE BY JWH/ALS DATE 7-17-74 CHECKED JAH/CWL DATE 7-19-74



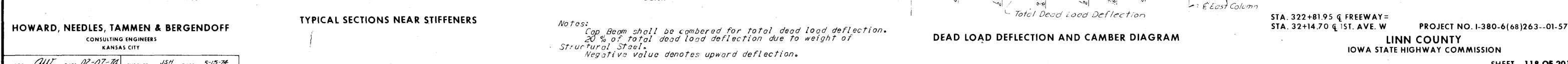
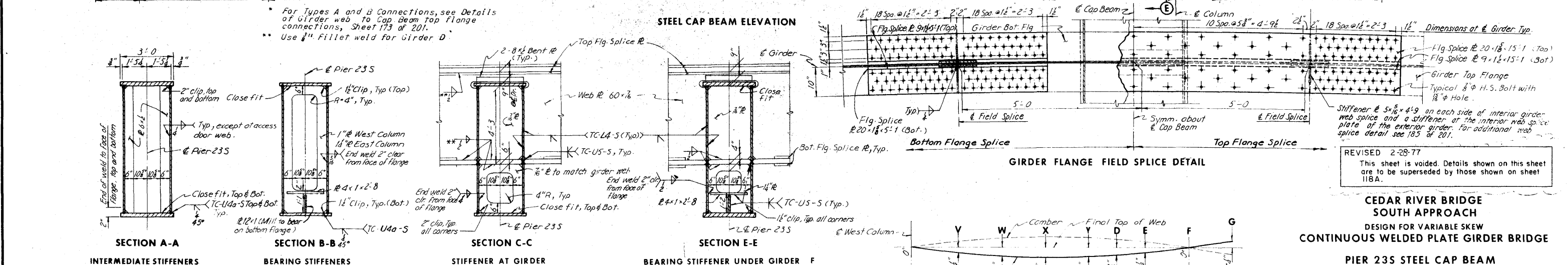
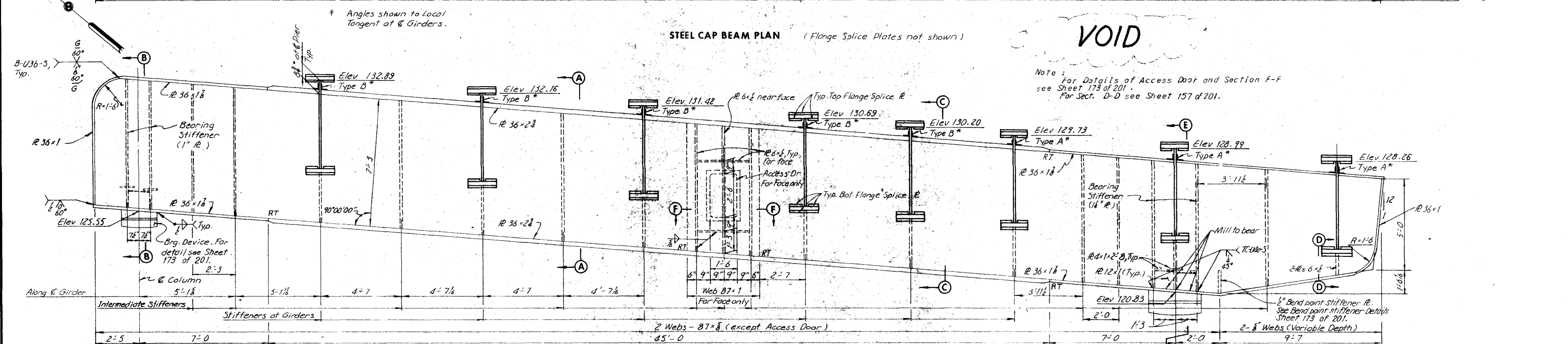
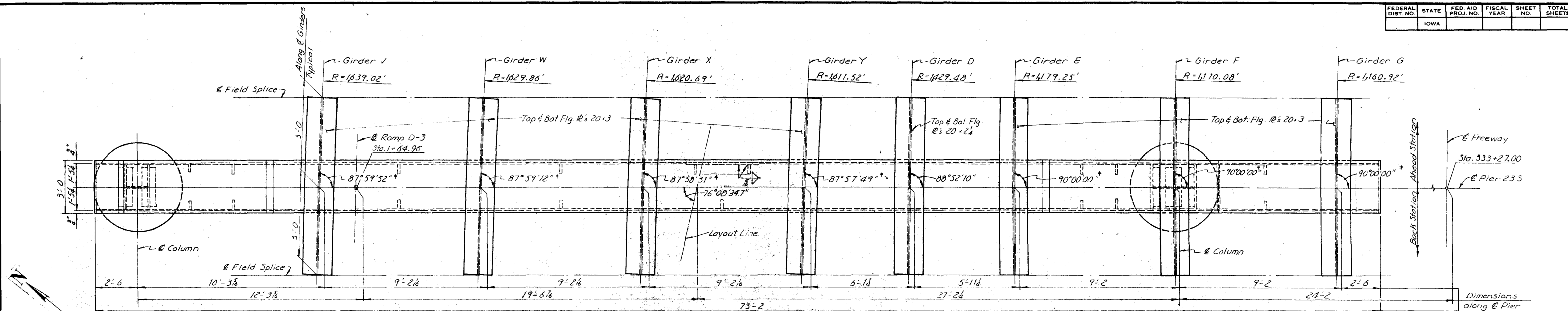
**CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE**

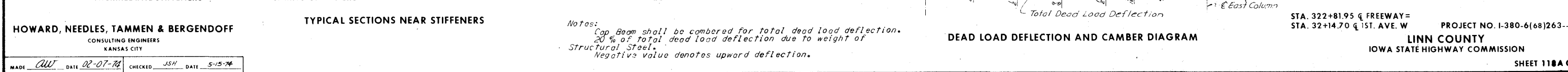
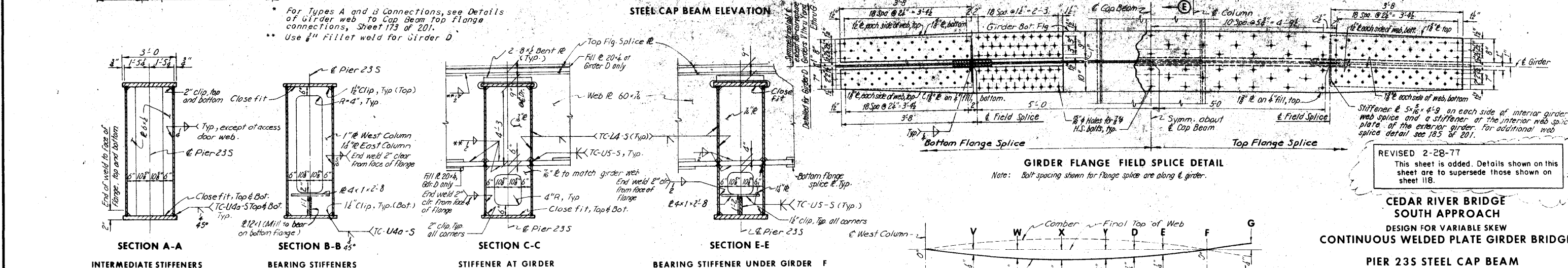
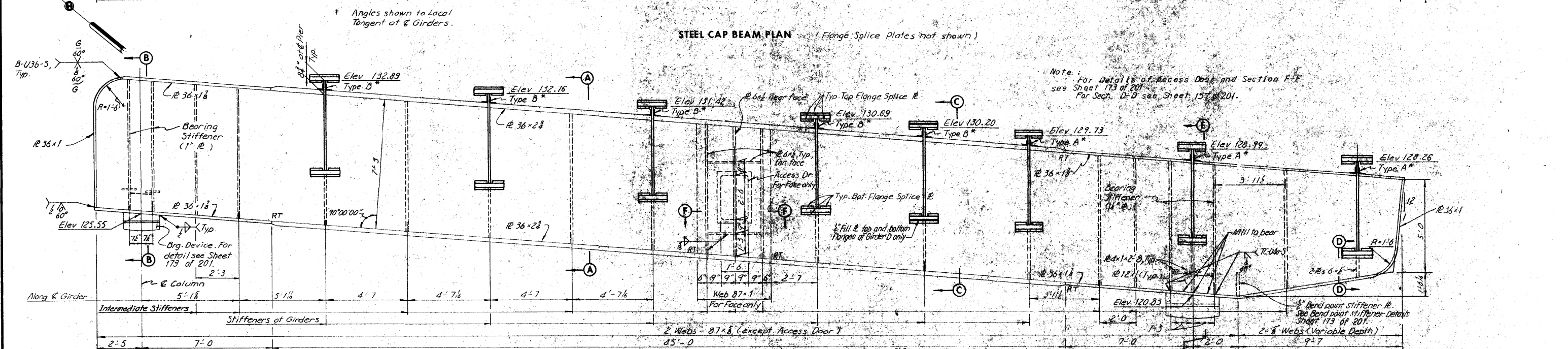
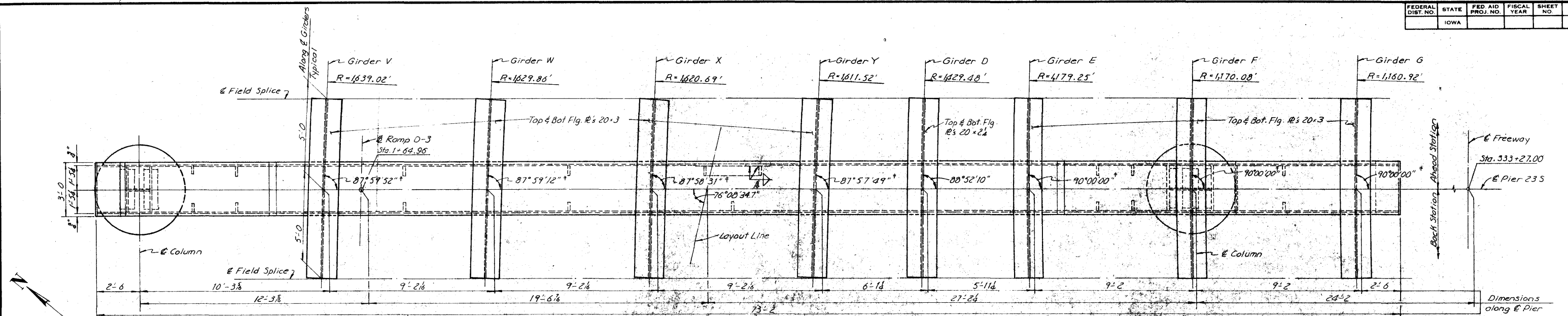
FRAMING PLAN UNIT 6 SOUTHBOUND LANE

STA. 322+81.95 @ FREEWAY =
STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. I-380-6(68)263--01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

MADE DCH DATE 6-10-74 CHECKED DLR DATE 7-10-74





GIRDER LENGTH

SPAN LENGTH

FIELD SPICE

TOP FLANGE PLATE

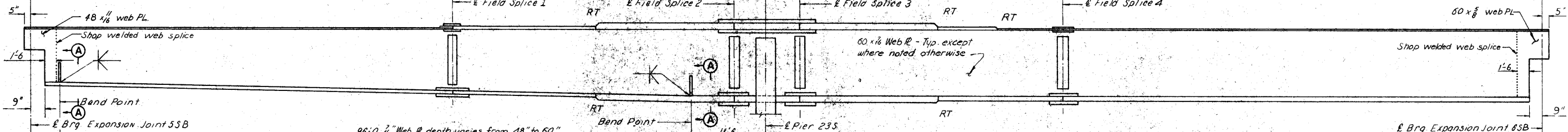
SHEAR CONNECTOR SPACES

BOTTOM FLANGE PLATE

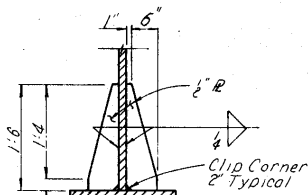
247'-8 1/8" Girder V 245'-1 1/8" Girder W 243'-5 1/8" Girder X 241'-4 3/8" Girder Y 226'-1 1/8" Girder D 238'-4 3/8" Girder E 236'-2 1/8" Girder F 234'-1 1/8" Girder G

119'-1 1/8" Girder V 118'-1 1/8" Girder W 117'-2 3/8" Girder X 116'-2 1/8" Girder Y 115'-4 3/8" Girder D 114'-6 1/8" Girder E 113'-6 3/8" Girder F 112'-7" Girder G 129'-7 1/8" Girder V 127'-5 3/8" Girder W 126'-3 3/8" Girder X 125'-1 1/8" Girder Y 110'-9 3/8" Girder D 123'-10 1/8" Girder E 122'-8 3/8" Girder F 121'-6 3/8" Girder G

GIRDER V	71'-1 1/8		43'-0	5'-0	5'-0	41'-0		82'-7 1/8	End Girder D Web	
GIRDER W	70'-1 1/8		40	40	40	40'-3		82'-2 3/8		
GIRDER X	69'-2 1/8		40	40	40	40'-0		81'-3 3/8		
GIRDER Y	68'-2 1/8		40	40	40	40		80'-1 1/8		
GIRDER D	67'-4 3/8		40	40	40	40		65'-9 3/8	End Girder D Web	
GIRDER E	66'-6 1/8		40	40	40	40		78'-10 1/8		
GIRDER F	65'-6 3/8		40	40	40	40		77'-8 3/8		
GIRDER G	64'-7		40	40	40	40		76'-6 1/8		
GIRDER V	71'-1 1/8	22'-0	21'-0	5'-0	5'-0	21'-0	9'-0	93'-7 1/8		
GIRDER W	70'-1 1/8	20	20	40	40	20	20	92'-5 3/8		
GIRDER X	69'-2 1/8	20	20	40	40	20	20	91'-3 3/8		
GIRDER Y	68'-2 1/8	20	20	40	40	20	20	90'-1 1/8		
GIRDER D	67'-4 3/8	20	20	40	40	20	20	75'-3 3/8	End Girder D Flange	
GIRDER E	66'-6 1/8	20	20	40	40	20	20	88'-10 1/8		
GIRDER F	65'-6 3/8	20	20	40	40	20	20	87'-8 3/8		
GIRDER G	64'-7	20	20	40	40	20	20	86'-8 1/8		
GIRDER V	1 1/8	34 Spd @ 2'-0 = 68'-0	1'-10 1/2	20 Spd @ 1'-11 = 36'-2	7'-10	8'-2	18 Spd @ 2'-0 = 36'-0	1'-10 1/2	40 Spd @ 2'-0 = 80'-0	1 1/8
GIRDER W	1 1/8	35 Spd @ 1'-11 = 67'-1	00 00	00	00	7'-8	00	1'-7 00	41 Spd @ 1'-11 = 78'-7	1 1/8
GIRDER X	1 1/8	33 Spd @ 2'-0 = 66'-0	00 00	00	00	00	17 Spd @ 2'-0 = 34'-0	1 Spd @ 1'-6 1/2 = 1'-6 1/2	39 Spd @ 2'-0 = 78'-0	1 1/8
GIRDER Y	1 1/8	34 Spd @ 1'-11 = 65'-2	00 00	00	00	00	00	00 1'-5	40 Spd @ 1'-11 = 76'-8	1 1/8
GIRDER D	1 1/8	32 Spd @ 2'-0 = 64'-0	00 00	00	00	00	00	00 00 00	33 Spd @ 1'-11 = 63'-3	1 1/8
GIRDER E	1 1/8	33 Spd @ 1'-11 = 63'-3	00 00	00	00	00	00	00 00 00	38 Spd @ 2'-0 = 76'-0	1 1/8
GIRDER F	1 1/8	31 Spd @ 2'-0 = 62'-0	00 00	00	00	00	00	00 00 00	39 Spd @ 1'-11 = 74'-9	1 1/8
GIRDER G	1 1/8	32 Spd @ 1'-11 = 61'-4	00 00	00	00	00	00	00 00 00	37 Spd @ 2'-0 = 74'-0	1 1/8
GIRDER V	93'-1 1/8		21'-0	5'-0	5'-0	21'-0		102'-7 1/8		
GIRDER W	92'-1 1/8		20	40	40	20		101'-5 3/8		
GIRDER X	91'-2 1/8		20	40	40	20		100'-3 3/8		
GIRDER Y	90'-2 1/8		20	40	40	20		99'-1 1/8		
GIRDER D	89'-4 3/8		20	40	40	20		98'-3 3/8	End Girder D Flange	
GIRDER E	88'-6 1/8		20	40	40	20		97'-10 1/8		
GIRDER F	87'-6 3/8		20	40	40	20		96'-8 3/8		
GIRDER G	86'-7		20	40	40	20		95'-6 1/8		



GIRDER DETAILS



SECTION A-A

TYPICAL ROCKER SETTING					
	EXP. JT. 5	PIER 23	EXP. JT. 6		
Temperature at time of setting					
90°F	1 1/8"	1 1/8"	0"	1 1/8"	2 1/8"
50°F	2 3/8"	0"	0"	0"	2 3/8"
10°F	3 3/8"	1 1/8"	0"	1 1/8"	3 3/8"

Note:
Rollers to be set vertical at 50°F, in position shown for temperatures over 50°F and opposite position shown for temperatures under 50°F.
Settings for other temperatures are proportional to those shown for a 40° temperature change.
For details of bearing device at Pier 23 see Sheet 173 of 201.

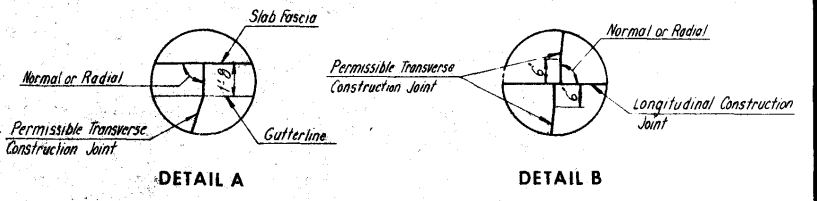
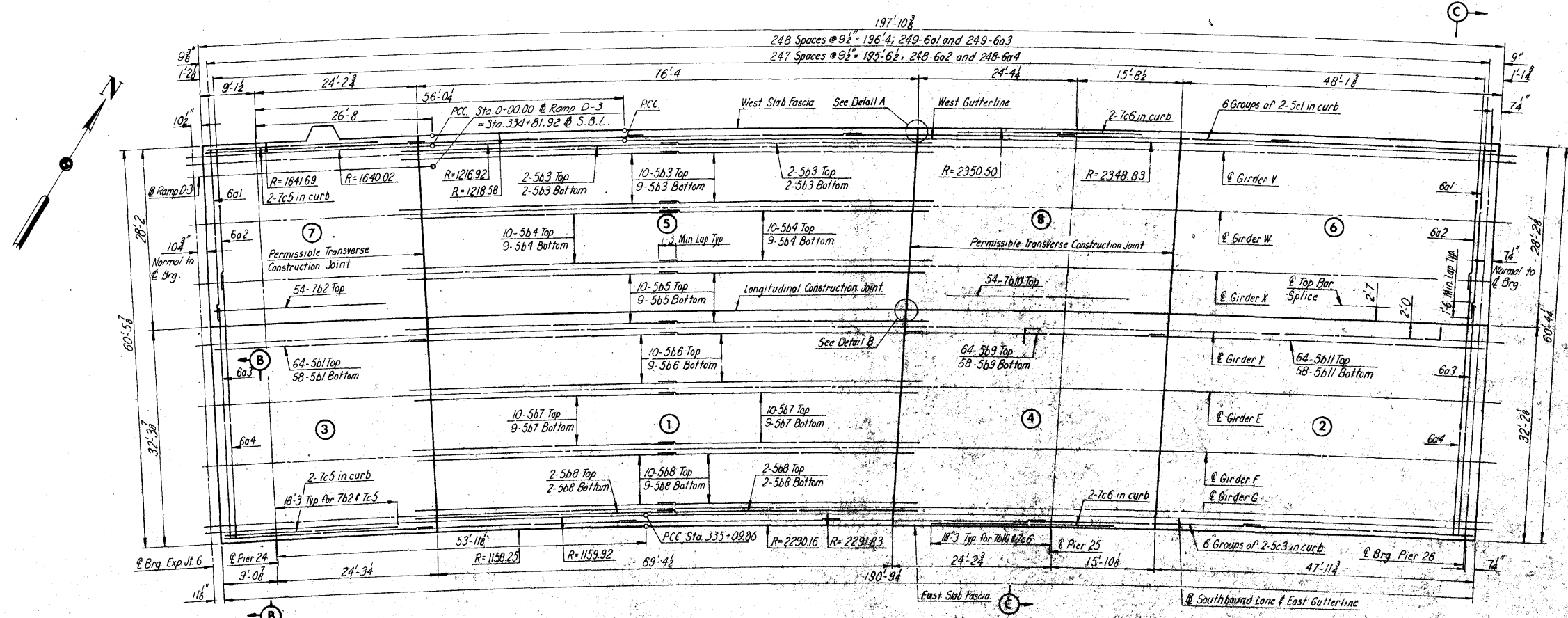
CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE

GIRDER ELEVATIONS UNIT 6 SOUTHBOUND LANE

STA. 322+81.95 @ FREEWAY =
STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. I-380-6(68)263--01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

MADE DCH DATE 8-8-74 CHECKED RLF DATE 6-27-74

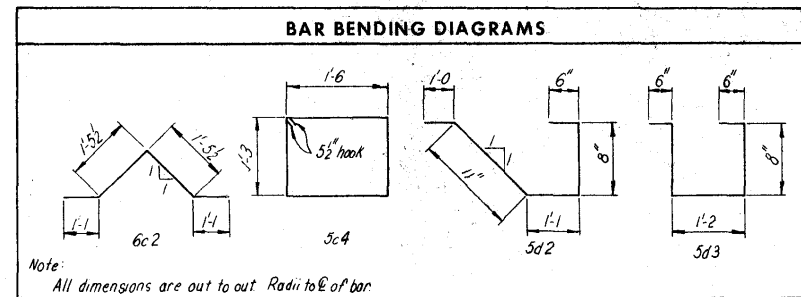


CONCRETE PLACEMENT QUANTITIES	
POUR	CU. YDS.
1	54.4
2	40.4
3	28.7
4	32.5
5	54.4
6	35.3
7	25.1
8	28.4
Curb	27.5
Light Blisters	.4
Total	332.1

BILL OF REINFORCEMENT					
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
* 5a1	Slab, Transverse	—	248	20'-2"	9,786
* 6a2	Slab, Transverse	—	248	21'-7"	8,040
* 6a3	Slab, Transverse	—	249	35'-6"	13,277
* 6a4	Slab, Transverse	—	248	40'-1"	14,931
* 5b1	Slab, Longitudinal	—	122	33'-1"	4,210
* 7b2	Slab, Longitudinal	—	54	27'-3"	3,008
* 5b3	Slab, Longitudinal	—	46	40'-5"	1,939
* 5b4	Slab, Longitudinal	—	38	39'-8"	1,572
* 5b5	Slab, Longitudinal	—	38	39'-2"	1,552
* 5b6	Slab, Longitudinal	—	38	38'-7"	1,529
* 5b7	Slab, Longitudinal	—	38	38'-1"	1,509
* 5b8	Slab, Longitudinal	—	45	37'-6"	1,799
* 5b9	Slab, Longitudinal	—	122	39'-8"	5,047
* 7b10	Slab, Longitudinal	—	54	27'-9"	3,063
* 5b11	Slab, Longitudinal	—	122	49'-6"	6,299
5c1	Curb, Horizontal	—	12	34'-0"	426
6c2	Post Anchor	—	46	5'-0"	346
5c3	Curb, Horizontal	—	12	32'-10"	411
5c4	Curb, Slopes	—	327	6'-2"	2,103
7c5	Curb, Longitudinal	—	4	27'-3"	223
7c6	Curb, Longitudinal	—	4	27'-9"	227
* 6d1	Diaphragm, Horizontal	—	42	8'-5"	531
* 5d2	Diaphragm, Vertical	—	48	4'-0"	200
* 5d3	Diaphragm, Vertical	—	48	3'-2"	159
Total					82,187

*All, or the number of bars noted below, are to be epoxy coated and placed in the top mat of reinforcing; 64-5b1 (2208 Lbs.), 54-7b2 (3000 Lbs.), 24-5b3 (1012 Lbs.), 20-5b4 (827 Lbs.), 20-5b5 (817 Lbs.), 20-5b6 (805 Lbs.), 20-5b7 (794 Lbs.), 24-5b8 (939 Lbs.), 64-5b9 (2540 Lbs.), 54-7b10 (3063 Lbs.), 64-5b11 (3304 Lbs.), 12-6d1 (152 Lbs.), 48-5d2 (200 Lbs.) and 48-5d3 (159 Lbs.). Epoxy coated 6a bars are to be Grade 60 reinforcing steel.

Notes:
 For "Top of P.C. Concrete Surfacing Elevations" see Sheet 122 of 201.
 For "Sections" see Sheet 121 of 201.
 Unit 6S Pour 2 and 5 shall be placed prior to Unit 7S Pour 3 and 7.



SUPERSTRUCTURE ESTIMATED QUANTITIES		
UNIT 7 - SOUTHBOUND		
ITEM	UNIT	QUANTITY
Structural Concrete (Class D)	Cu. Yds.	332.1
Reinforcing Steel Δ	Lbs.	39,303
Reinforcing Steel-Epoxy Coated	Lbs.	42,999
Structural Steel ΔΔ	Lbs.	761,555
P.C. Concrete Surfacing	Sq. Ft.	1232.47

Δ Includes 115 Lbs. for 1 light blister.
 ΔΔ Includes the weights of Piers 24 and 25 capbeams, expansion joint with rollers and bearing plates of Expansion Joint 6S and bearing devices of the piers.
 *Includes 23,740 Lbs. A-235, Class G forging steel of Piers 24 and 25.

CEDAR RIVER BRIDGE
SOUTH APPROACH
 DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE
SLAB PLAN
UNIT 7 SOUTHBOUND LANE
 STA. 322+81.95 @ FREEWAY =
 STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. I-380-6(68)263--01-57
LINN COUNTY
 IOWA STATE HIGHWAY COMMISSION

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
 CONSULTING ENGINEERS
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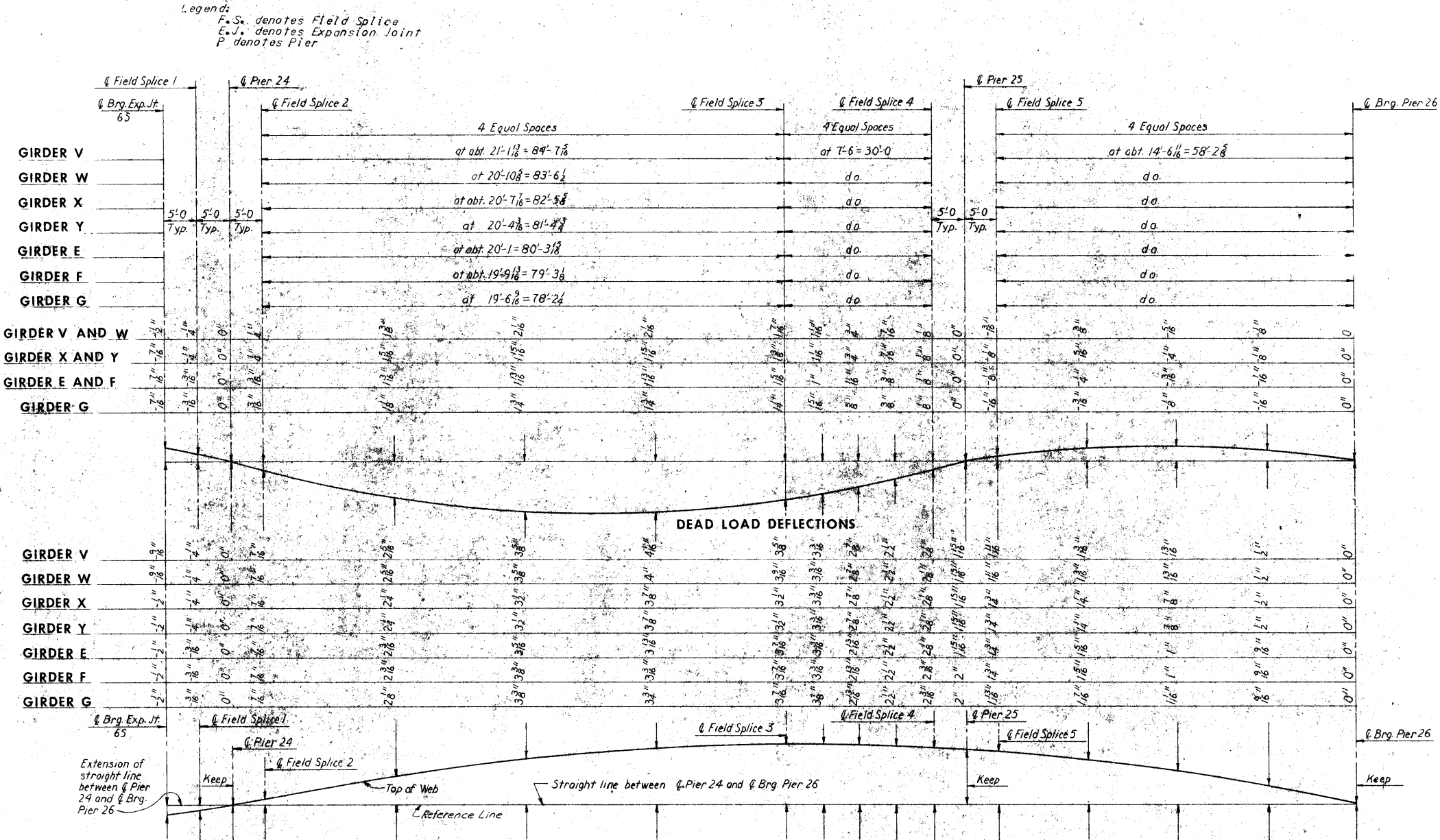
MADE DLR DATE 6-4-74 CHECKED JSH DATE 7-12-74

ELEVATIONS — TOP OF P.C. CONCRETE SURFACING (2" above top of first lift of concrete)																		
Girder	E.J. 65	F.S. 1	P24	F.S. 2	.25	.50	.75	F.S. 3	.25	.50	.75	F.S. 4	P25	F.S. 5	.25	.50	.75	Brig. 26
V	135.82	135.88	135.92	135.95	136.09	136.22	136.33	136.43	136.46	136.48	136.51	136.53	136.54	136.55	136.58	136.60	136.61	136.62
W	135.08	135.15	135.19	135.23	135.40	135.55	135.69	135.81	135.85	135.89	135.92	135.95	135.97	135.99	136.04	136.08	136.11	136.13
X	134.35	134.41	134.46	135.51	134.71	134.89	135.05	135.20	135.25	135.29	135.34	135.38	135.41	135.43	135.50	135.56	135.61	135.65
Y	133.61	133.68	133.74	133.79	134.01	134.22	134.41	134.58	134.58	134.64	134.70	134.80	134.84	134.87	134.95	135.03	135.10	135.16
E	132.86	132.94	133.01	133.07	133.32	133.55	133.76	133.96	134.03	134.10	134.16	134.22	134.26	134.30	134.41	134.51	134.60	134.68
F	132.13	132.21	132.28	132.35	132.62	132.88	133.12	133.34	133.42	133.50	133.57	133.65	133.69	133.74	133.86	133.98	134.09	134.19
G	131.39	131.47	131.55	131.63	131.93	132.21	132.47	132.72	132.81	132.90	132.98	133.06	133.12	133.17	133.32	133.46	133.58	133.70

Note:
20% of the Dead load Deflection is due to structural steel, 68% due to concrete and 12% due to wearing surface.

For "Moments and Reaction Note" see Sheet 83 of 201.

TABLE OF MOMENTS AND REACTIONS IN FOOT KIPS AND KIPS - UNIT 7 SOUTHBOUND LANE								
	ITEM	MAXIMUM POSITIVE MOMENT		MAXIMUM NEGATIVE MOMENT		REACTIONS		
		SPAN 1	SPAN 2	PIER 24	PIER 25	PIER 24	PIER 25	PIER 26
GIRDER V	Dead Load A	1098	-31	579	1716	117.7	139.1	8.7
	Dead Load B	61.4	25	326	760	65.0	67.4	6.6
	Live Load	1163	530	478	1001	75.7	81.8	47.0
	Impact	231	141	103	229	16.3	18.7	12.5
	Total			1486	3706	274.7	303.0	74.8
GIRDER W	Dead Load A	1286	-25	685	2012	139.4	159.9	11.0
	Dead Load B	441	21	239	547	47.5	49.0	5.0
	Live Load	1317	607	547	1130	86.5	93.1	53.8
	Impact	266	161	118	259	18.6	21.4	14.3
	Total			1589	3948	292.0	323.4	84.1
GIRDER X	Dead Load A	1261	-14	680	1974	138.3	158.6	11.6
	Dead Load B	431	25	238	537	47.4	48.6	5.2
	Live Load	1302	606	547	1114	85.2	92.6	53.8
	Impact	267	161	118	256	18.6	21.3	14.3
	Total			1583	3881	290.5	321.1	84.9
GIRDER Y	Dead Load A	1235	-2	674	1936	137.1	157.1	12.1
	Dead Load B	422	28	238	526	47.1	48.2	5.3
	Live Load	1297	606	547	1097	85.0	92.0	53.8
	Impact	269	161	118	253	18.6	21.2	14.3
	Total			1577	3912	288.8	318.5	85.5
GIRDER E	Dead Load A	1210	10	668	1898	136.0	155.7	12.7
	Dead Load B	412	31	238	516	46.9	47.8	5.5
	Live Load	1271	605	547	1081	85.8	91.5	53.8
	Impact	270	161	118	249	18.5	21.1	14.3
	Total			1571	3744	287.2	316.1	86.3
GIRDER F	Dead Load A	1184	21	662	1860	134.8	154.2	13.3
	Dead Load B	402	34	237	505	46.0	47.3	5.6
	Live Load	1256	605	547	1064	85.5	91.0	53.8
	Impact	271	161	118	246	18.5	21.0	14.3
	Total			1564	3675	285.4	313.5	87.0
GIRDER G	Dead Load A	970	28	549	1525	111.9	127.9	11.6
	Dead Load B	534	50	322	674	63.1	63.9	7.8
	Live Load	1084	528	478	915	74.5	78.9	47.0
	Impact	238	141	103	212	16.1	18.3	12.5
	Total			1452	3326	265.6	289.0	78.9



Note:
Offsets are given at one fourth points between Field Splice 2 and Field Splice 3, Field Splice 3 and Field Splice 4, Field Splice 5 and Pier 26, and at Exp. Jt. 65, Field Splice 1 and Piers.
Negative camber values are camber below reference line.

GIRDERS AS FABRICATED AND ERECTED DIAGRAM

(In the horizontal position)

CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE
TABLE OF DEFLECTIONS AND SLAB ELEVATIONS
UNIT 7 SOUTHBOUND LANE

STA. 322+81.95 @ FREEWAY =
STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. I-380-6(68)263--01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

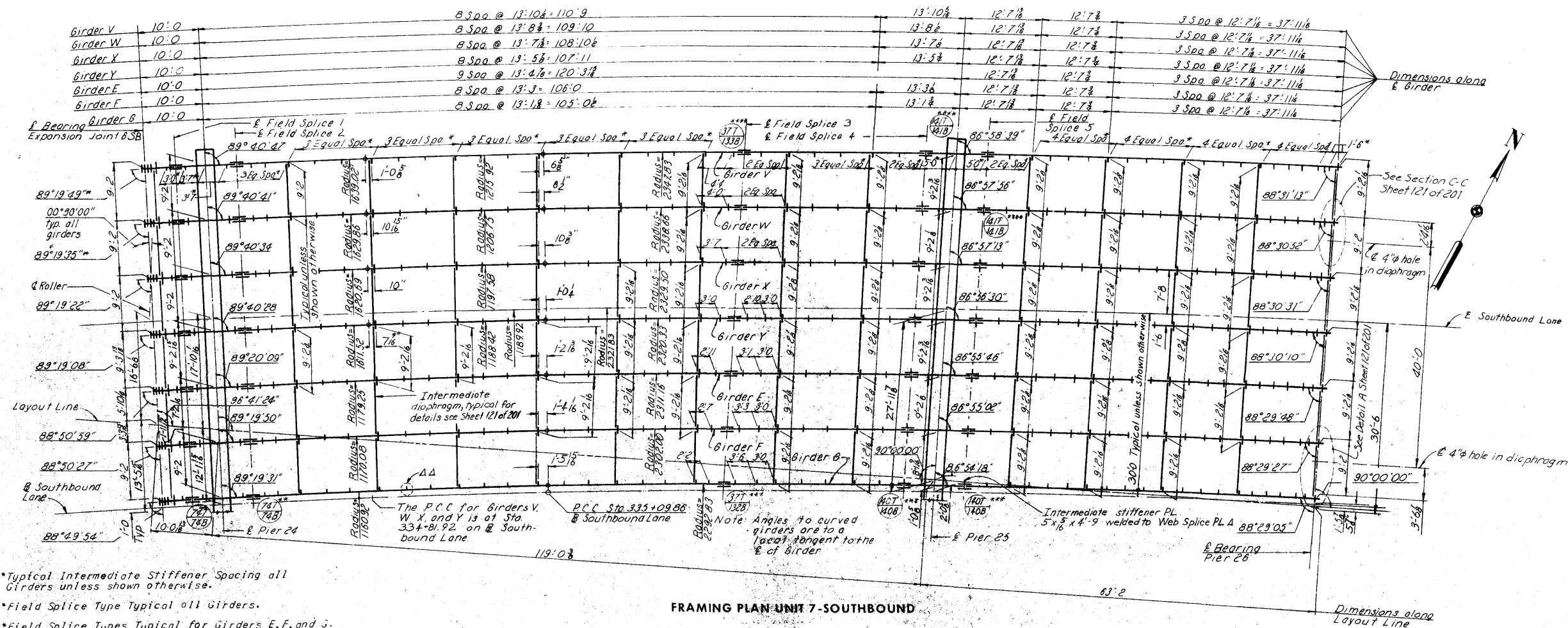
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

MADE TJW DATE 7-18-74 CHECKED JER DATE 7-18-74

SHEET 122 OF 201

DESIGN NO. 1276 LINN COUNTY FILE 23191 SHEET 124 OF 203-0

FEDERAL DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	IOWA				



FRAMING PLAN UNIT 7-SOUTHBOUND

- *Typical Intermediate Stiffener Spacing all Girders unless shown otherwise.
- **Field Splice Type Typical all Girders.
- ***Field Splice Types Typical for Girders E, F, and B.
- ****Field Splice Types Typical for Girders V, W, X, and Y.

Δ Provide 2 stiffeners at interior girder web splices and 1 stiffener at interior web splice PL of exterior girder.

ΔΔ 5x8 Intermediate stiffener PL. typical except where shown otherwise.

Notes:
For girder splice details see Sheet 183, 184 and 186 of 201.
For bearing stiffener and intermediate stiffener details see Sheet 121 and 182 of 201.

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KANSAS CITY

MADE DCH DATE 8-12-74 CHECKED DLR DATE 6-26-74

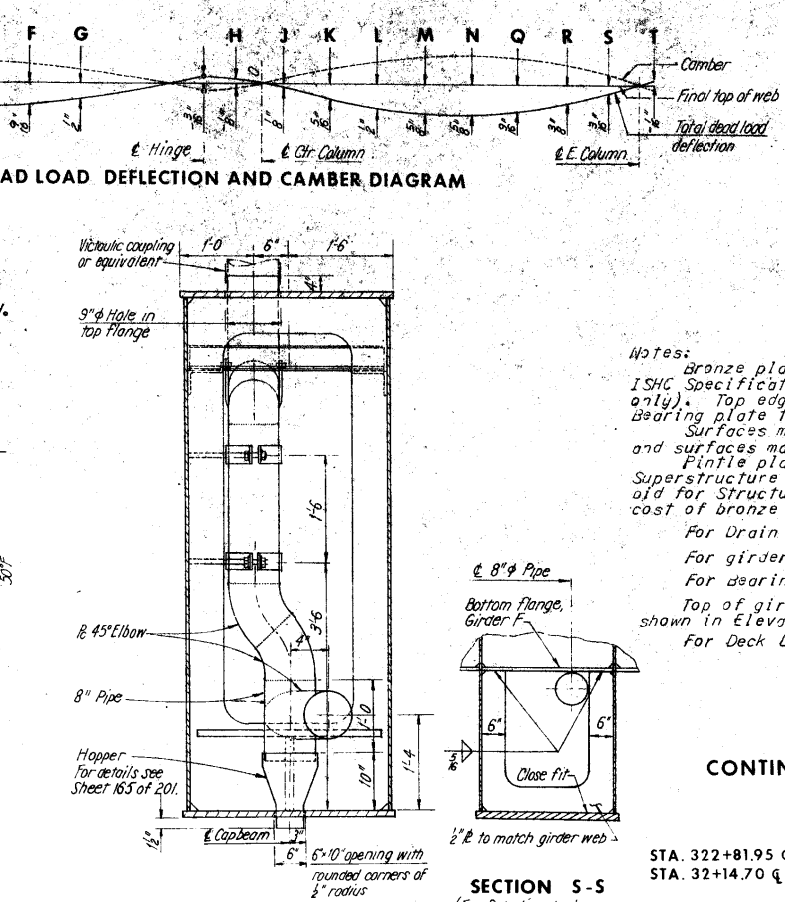
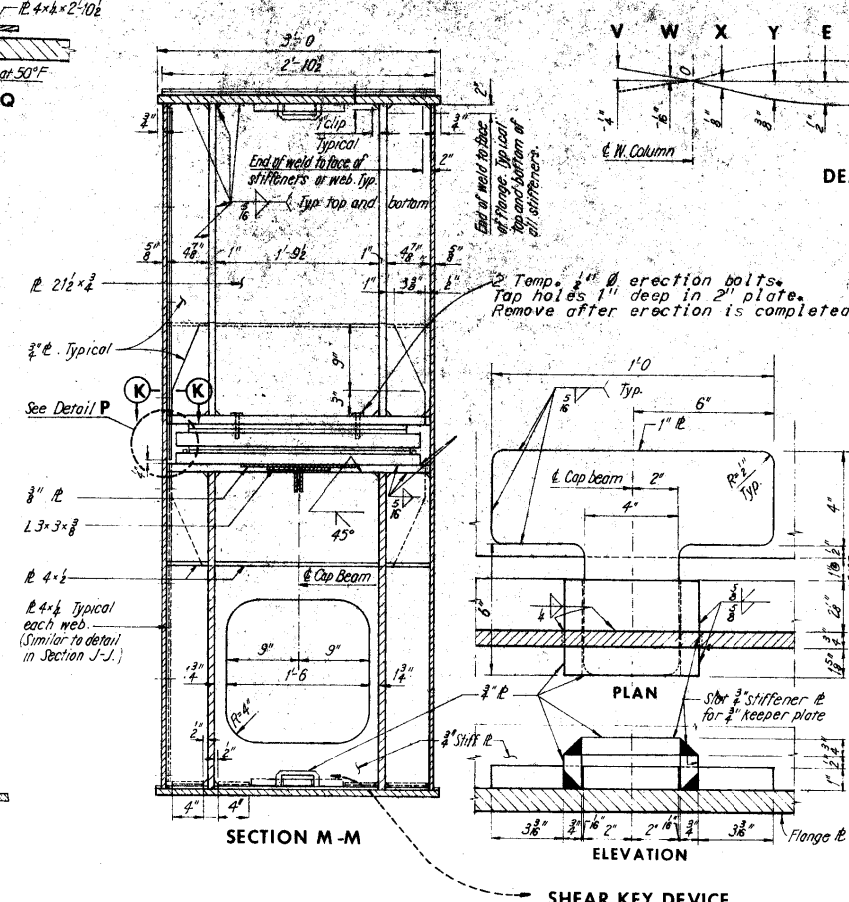
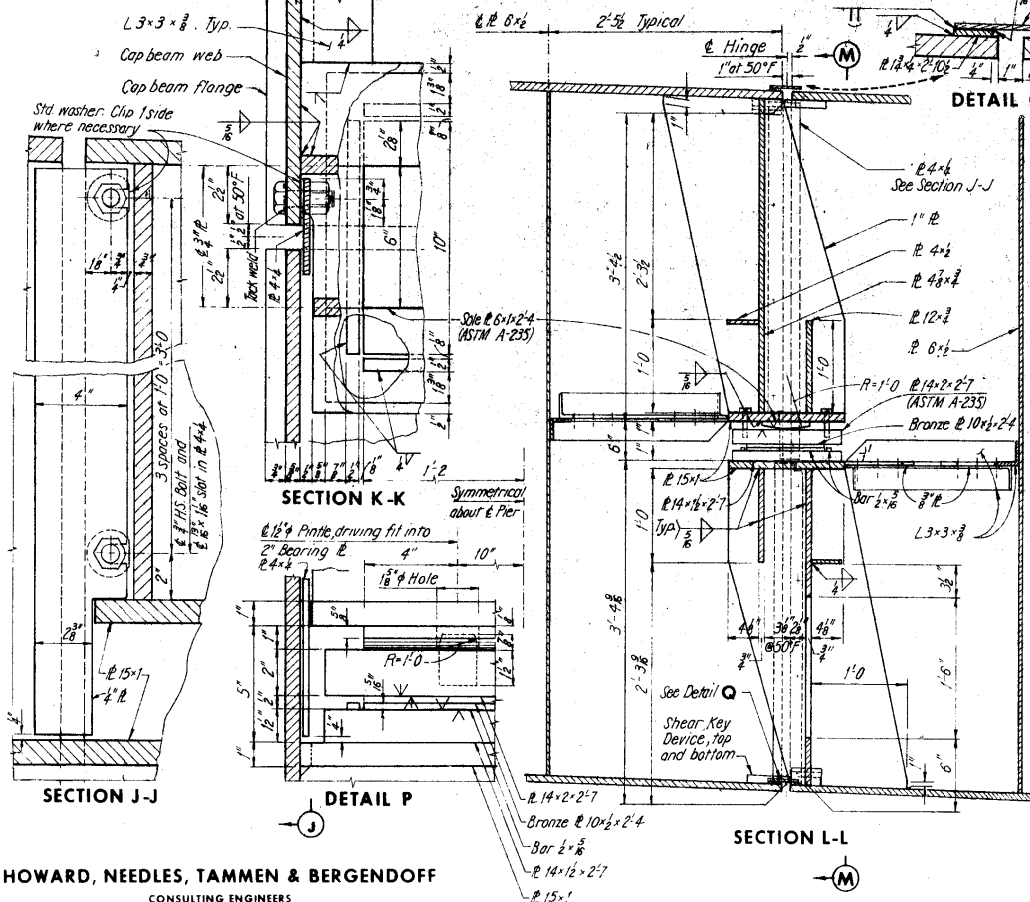
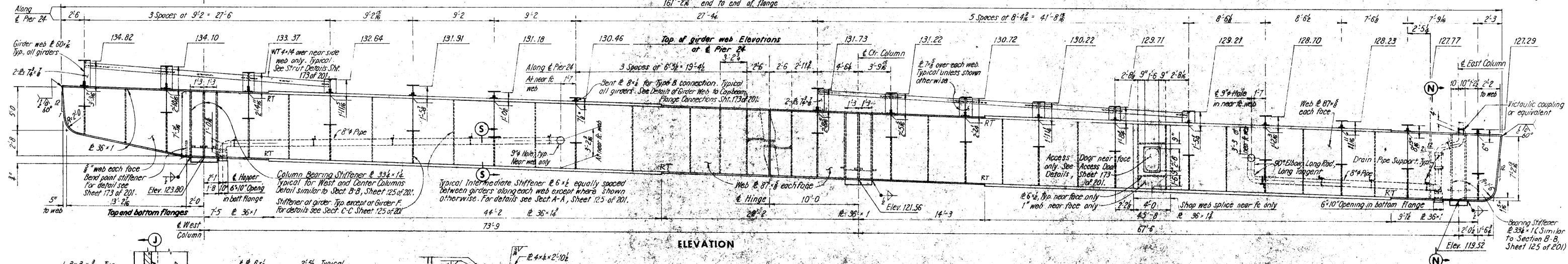
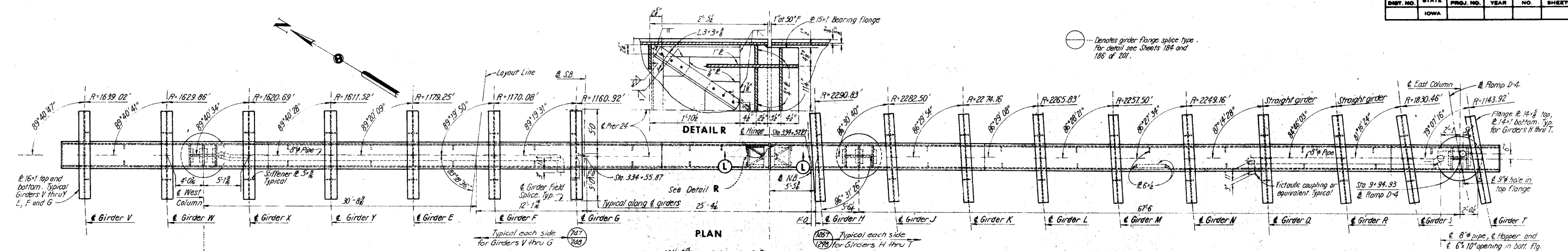
CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE

FRAMING PLAN UNIT 7 SOUTHBOUND LANE

STA. 322+81.95 @ FREEWAY =
STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. I-380-6(68)263--01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

SHEET 123 OF 201

DESIGN NO. 1276 LINN COUNTY FILE 23191 SHEET 125 OF 203-0



Note: Cap beam shall be cambered for total dead load deflection.
Negative values denote upward deflections.
20% total dead load deflections due to weight of structural steel.

Notes:
 1. Bronze plate shall be lubricated in accordance with ISHC Specifications Article 4190.03 (Sliding surface only). Top edges of bronze plate shall be beveled $\frac{1}{8}$ ".
 2. Bearing plate to be galvanized after welding.
 3. Surfaces marked "V" shall be finished ASA 250 and surfaces marked "W" shall be finished ASA 125.
 4. Pintle lates and bearing plate are part of the Superstructure Structural Steel Quantity. Unit price bid for Structural Steel shall include allowance for cost of bronze plate.

For Drain Pipe Support Details see Sheet 164 of 201.
For girder flange to web welds see Sheet 182 of 231.
For bearing Device Details over columns see Sht. 173 of 201.
Top of girder web to top of cap beam web offsets
own in Elevation are at $\frac{1}{2}$ girders and $\frac{1}{2}$ Pier 24.
For Deck Drainage notes see Sheet 187 of 201.

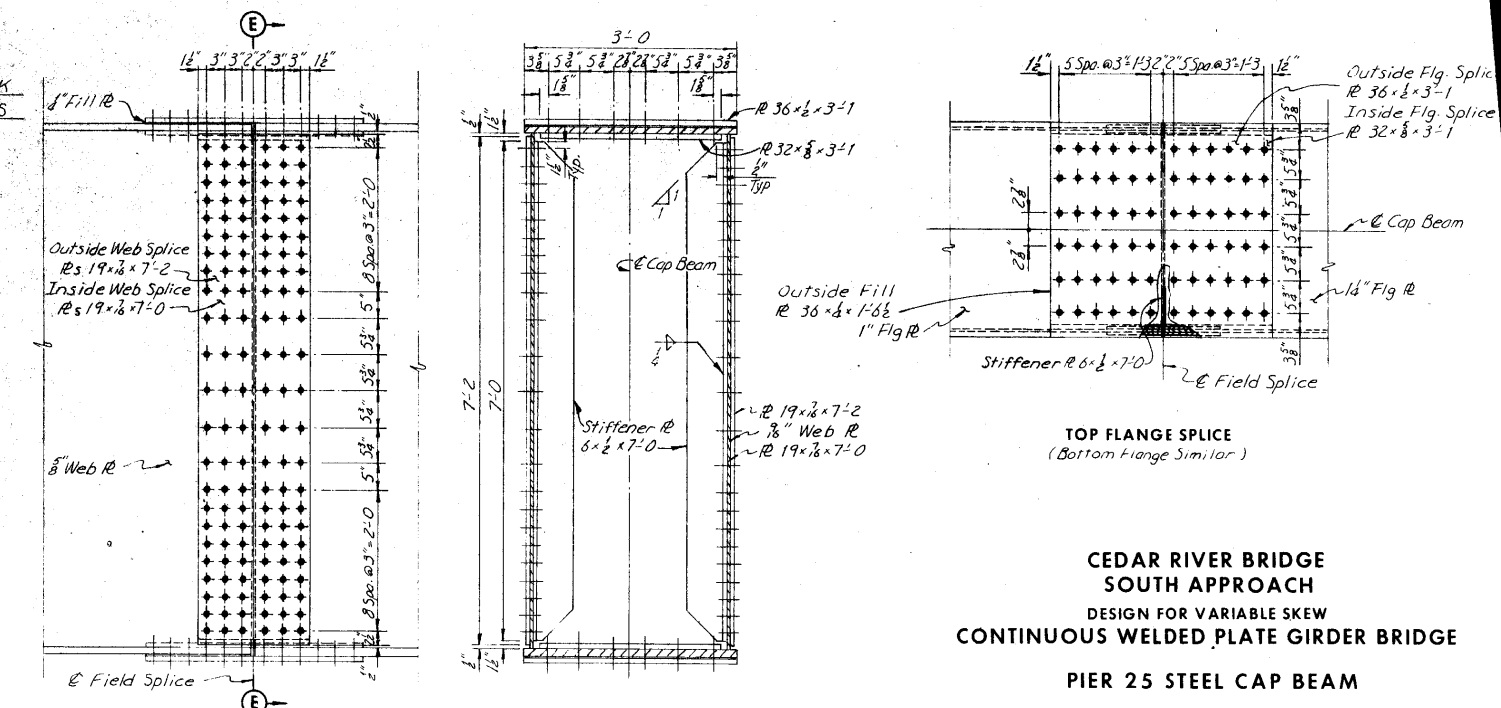
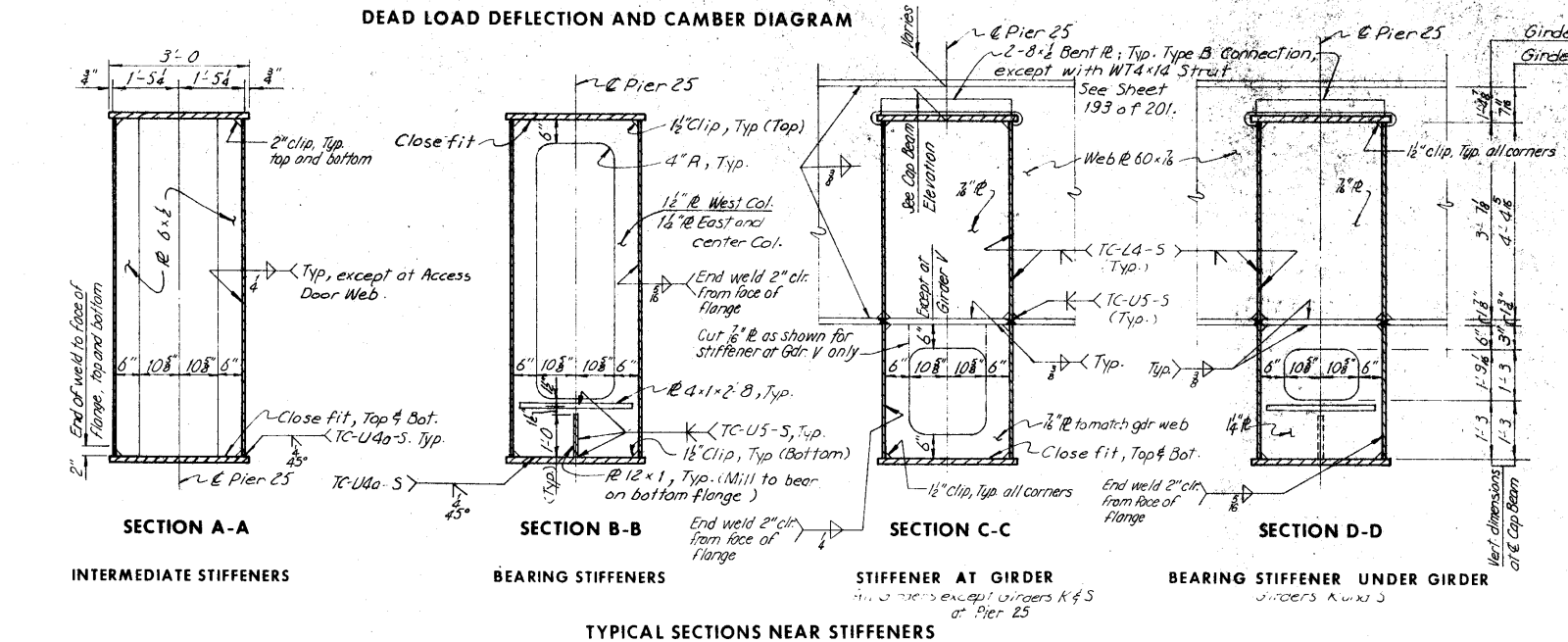
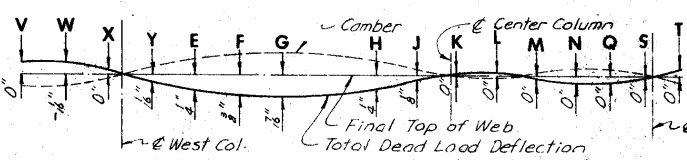
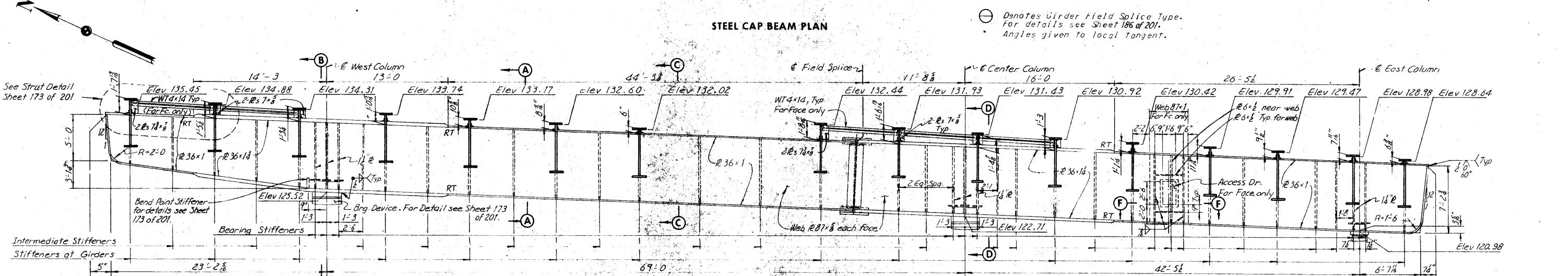
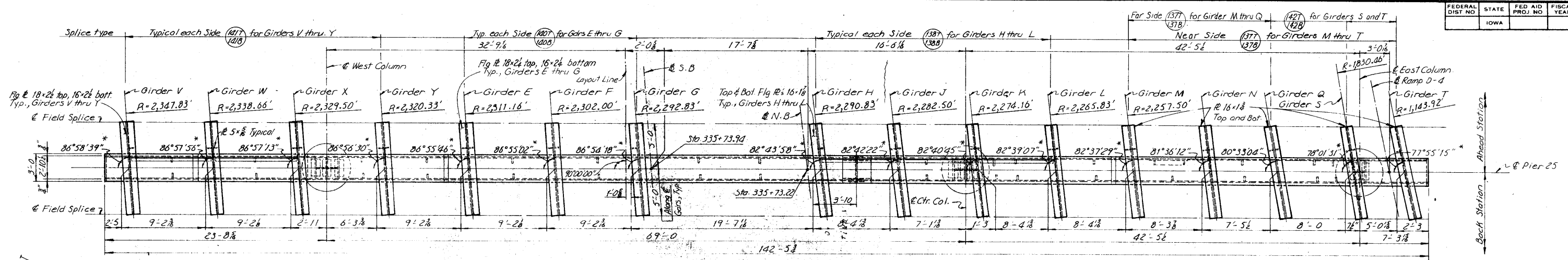
**CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE**

PIER 24 STEEL CAP BEAM

STA. 322+81.95 @ FREEWAY=
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LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

SHEET 124 OF 201



GIRDER LENGTH

SPAN LENGTH

FIELD SPICE

TOP FLANGE PLATE

SHEAR CONNECTOR SPACES

BOTTOM FLANGE PLATE

197'-9 1/2" Girder V, 196'-3 1/2" Girder W, 195'-8 1/2" Girder X, 194'-7 1/2" Girder Y, 193'-6 1/2" Girder E, 192'-5 1/2" Girder F, 191'-4 1/2" Girder G

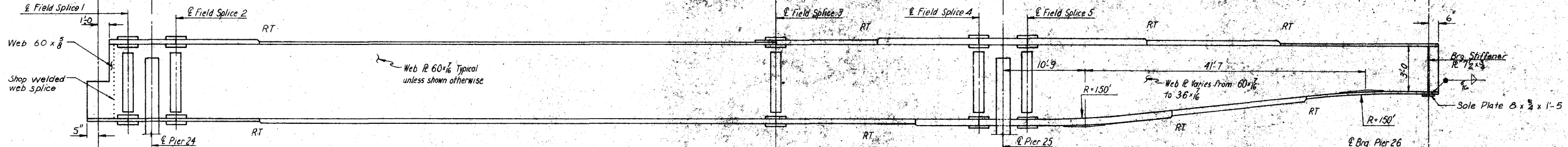
124'-7 1/2" Girder V, 123'-6 1/2" Girder W, 122'-5 1/2" Girder X, 121'-4 1/2" Girder Y, 120'-3 1/2" Girder E, 119'-3 1/2" Girder F, 118'-2 1/2" Girder G

63'-2 1/2" All Girders

GIRDER V	5'-0"	5'-0"	5'-0"		84'-7 1/2"		30'-0"	5'-0"	5'-0"		58'-2 1/2"
GIRDER W	do	do	do		83'-6 1/2"		do	do	do		do
GIRDER X	do	do	do		82'-5 1/2"		do	do	do		do
GIRDER Y	do	do	do		81'-4 1/2"		do	do	do		do
GIRDER E	do	do	do		80'-3 1/2"		do	do	do		do
GIRDER F	do	do	do		79'-2 1/2"		do	do	do		do
GIRDER G	do	do	do		78'-2 1/2"		do	do	do		do

GIRDER V	24'-0"				75'-7 1/2"		15'-0"	15'-0"	10'-0"	20'-0"	20'-0"	18'-2 1/2"
GIRDER W	do				74'-6 1/2"		do	do	do	do	do	do
GIRDER X	do				73'-5 1/2"		do	do	do	do	do	do
GIRDER Y	do				72'-4 1/2"		do	do	do	do	do	do
GIRDER E	do				71'-3 1/2"		do	do	do	do	do	do
GIRDER F	do				70'-2 1/2"		do	do	do	do	do	do
GIRDER G	do				69'-2 1/2"		do	do	do	do	do	do

GIRDER V	10'-0"	7'-0"	40 Spa @ 2'-0" = 80'-0"		2'-7 1/2"	8 Spa @ 1'-10" = 14'-8"	5 Spa @ 2'-0" = 10'-0"	8'-9"	8'-5"	19 Spa @ 2'-0" = 38'-0"	6 Spa @ 1'-8" = 8'-0"	7 Spa @ 1'-7 1/2" = 11'-9"
GIRDER W	do	7'-0"	41 Spa @ 1'-11" = 78'-7"		2'-11 1/2"	do	do	do	do	do	do	do
GIRDER X	do	6'-8"	do		2'-2 1/2"	do	do	do	do	do	do	do
GIRDER Y	do	7'-0"	40 Spa @ 1'-11" = 76'-8"		2'-8 1/2"	do	do	do	do	do	do	do
GIRDER E	do	6'-9"	do		1'-10 1/2"	do	do	do	8'-6"	17 Spa @ 2'-0" = 34'-0"	6 Spa @ 1'-6 3/4" = 9'-0"	5 Spa @ 1'-2 1/2" = 10'-0"
GIRDER F	do	7'-0"	39 Spa @ 1'-11" = 74'-9"		2'-6 1/2"	do	do	do	do	do	do	do
GIRDER G	do	6'-6"	do		1'-11 1/2"	do	do	do	do	do	do	do



GIRDER V	24'-0"				95'-7 1/2"		15'-0"	25'-0"	20'-0"	18'-2 1/2"
GIRDER W	do				94'-6 1/2"		do	do	do	do
GIRDER X	do				93'-5 1/2"		do	do	do	do
GIRDER Y	do				92'-4 1/2"		do	do	do	do
GIRDER E	do				91'-3 1/2"		do	do	do	do
GIRDER F	do				90'-2 1/2"		do	do	do	do
GIRDER G	do				89'-2 1/2"		do	do	do	do

TYPICAL ROCKER SETTING

	EXP. JT. 6	PIER 24	PIER 25	PIER 26
Temperature at time of setting				
90°F	2 1/2"	5/16"	0"	0"
50°F	2 3/8"	0"	0"	0"
10°F	3 1/8"	5/16"	0"	0"

GIRDER DETAILS

Note: Rollers to be set vertical at 50°F, in position shown for temperatures over 50°F and opposite position shown for temperatures under 50°F.
Masonry plates at Pier 26 to be set towards fixed pier for temperatures over 50°F and away from fixed pier for temperatures under 50°F.
Settings for other temperatures are proportional to those shown for a 40° temperature change.
For details of bearing devices at Piers 24 and 25 see sheet 173 of 201, and at Pier 26 see sheet 171 of 201.

CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE

GIRDER ELEVATIONS UNIT 7 SOUTHBOUND LANE

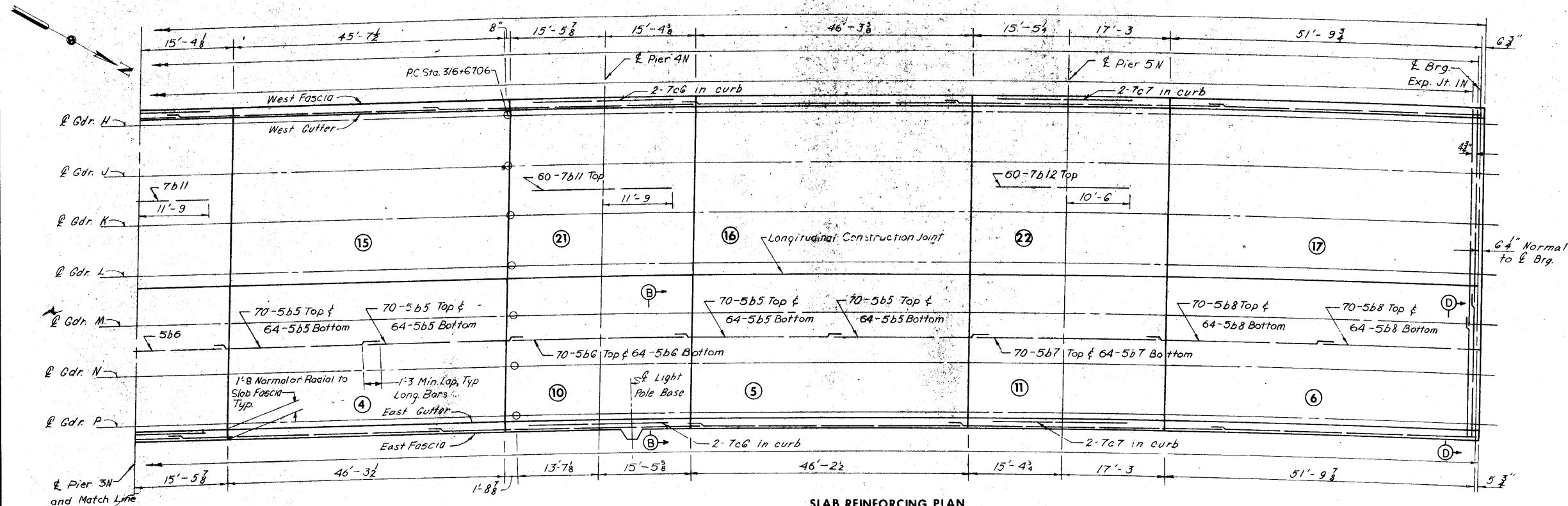
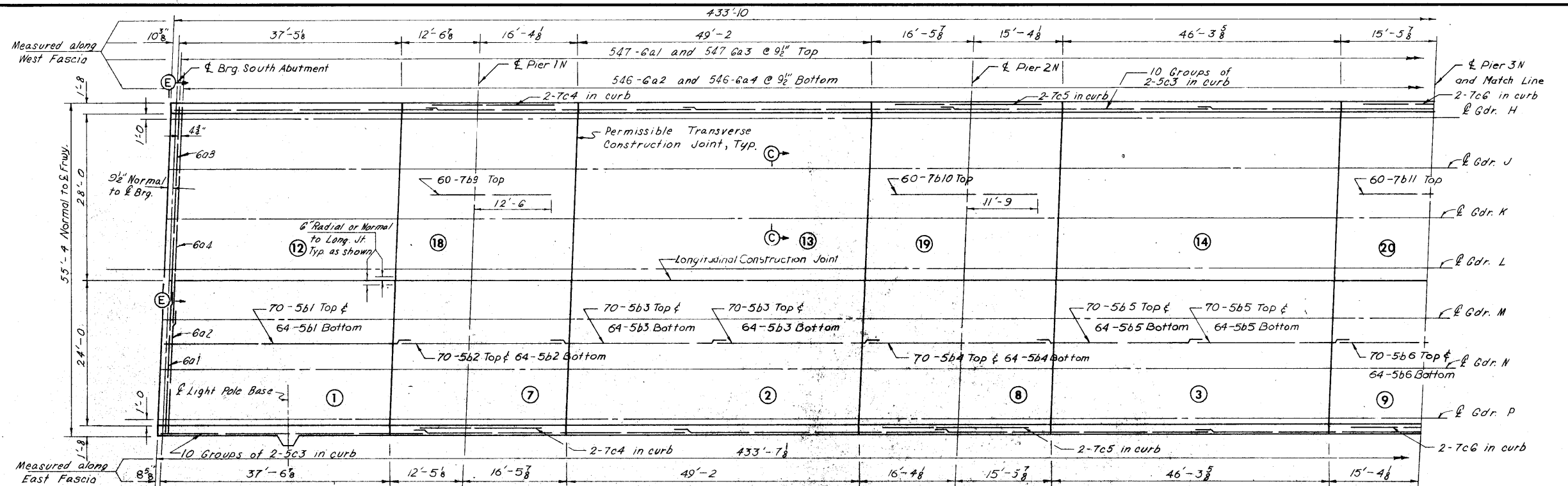
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LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

MADE DLR DATE 6-6-74 CHECKED RLF DATE 6-26-74

SHEET 126 OF 201

DESIGN NO. 1276 LINN COUNTY FILE 23191 SHEET 128 OF 203-0



SLAB REINFORCING PLAN

Notes: For "Bill of Reinforcement" see sheet 129 of 201.
For "Top of P.C. Concrete Surfacing Elevations", see sheet 129 of 201.
For "Sections" see Sheet 128 of 201.
Deck inlets are required in east gutter at Pier 5N and in east gutter at Expansion Joint 1N. See Sheet 187 of 201 for details.

CONCRETE PLACEMENT QUANTITIES

POUR	CU.YDS.	POUR	CU.YDS.	POUR	CU.YDS.
1	25.2	10	20.5	19	24.3
2	2.4	11	21.5	20	23.6
3	30.5	12	20.2	21	23.6
4	30.5	13	27.5	22	24.9
5	20.5	14	25.4	Light Blister	.8
6	25.4	15	25.4	West Curb	30.8
7	19.8	16	25.3	East Curb	30.8
8	21.0	17	21.0	Total (Cl.O.)	684.1
9	20.2	18	22.0		

SUPERSTRUCTURE ESTIMATED QUANTITIES

ITEM	UNIT	QUANTITY
Structural Concrete (Class D)	Cu.Yds.	684.1
Reinforcing Steel	Lbs.	35,135
Reinforcing Steel-Epoxy Coated	Lbs.	94,185
Structural Steel	Lbs.	584,895
P.C. Concrete Surfacing	Sq.Yds.	2,494

1 Includes reinforcing for 2 light blisters
2 Includes weight of Exp. Joint at abutment and bearing plates.

CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE

SLAB PLAN - UNIT 1NB

STA. 322+81.95 @ FREEWAY =
STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. I-380-6(68)263--01-57

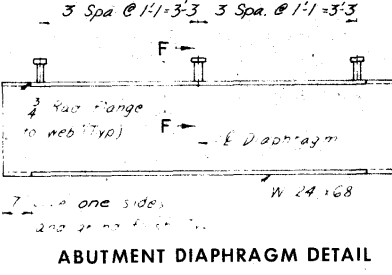
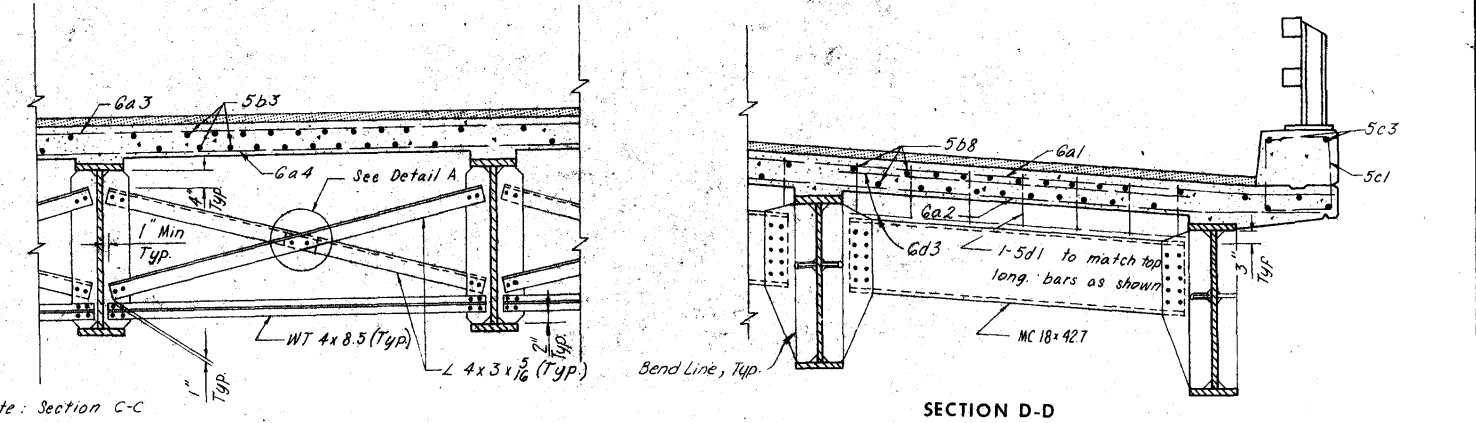
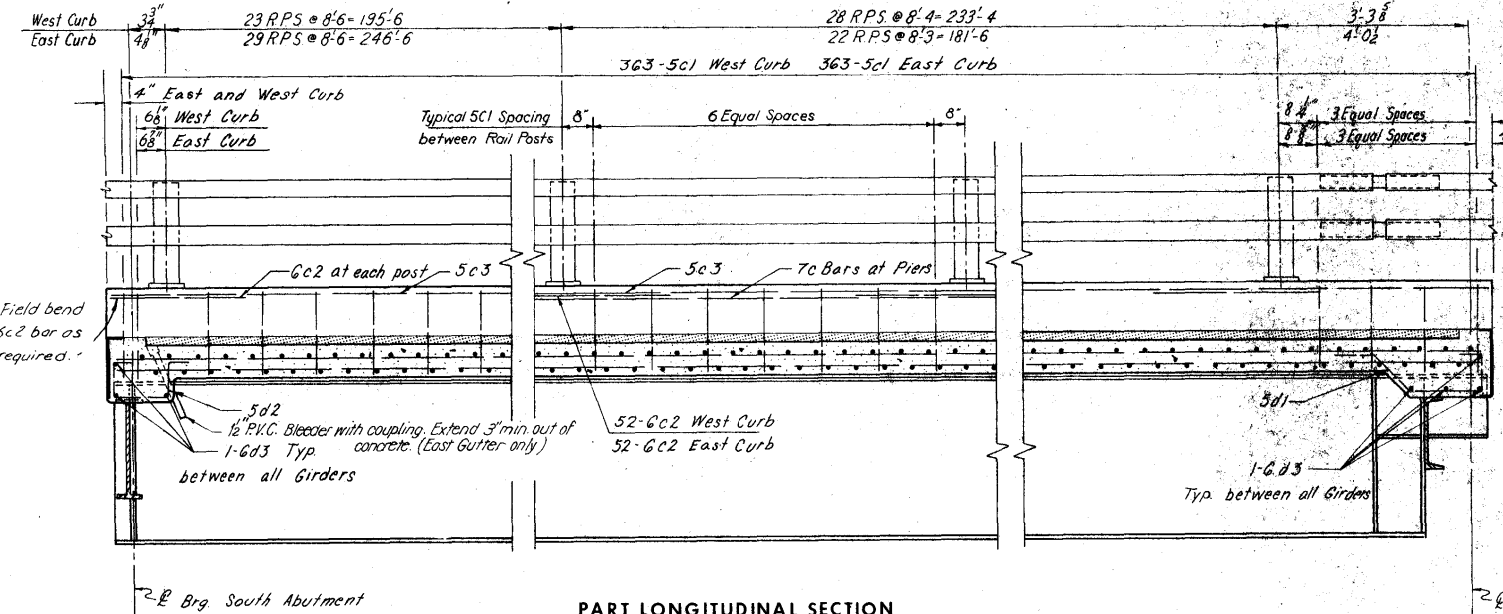
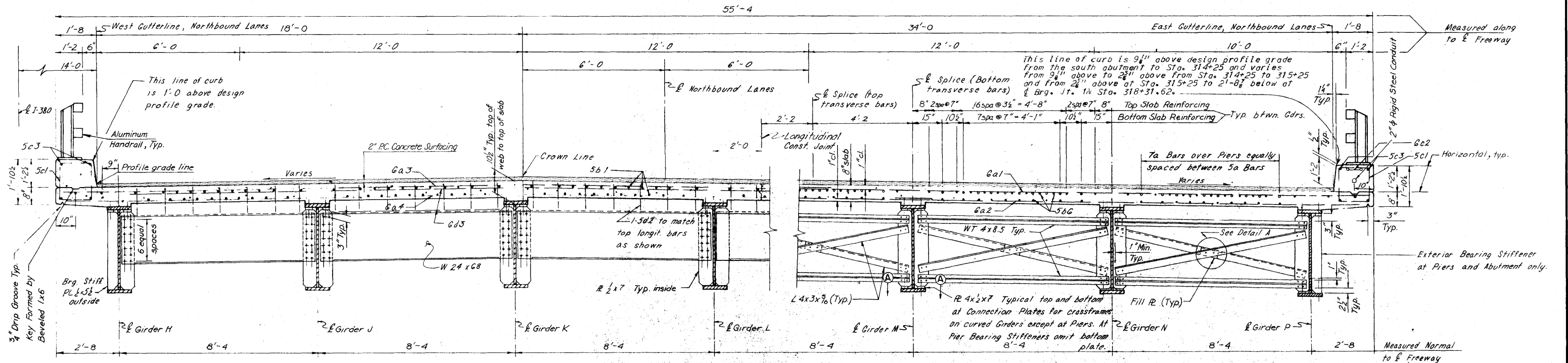
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

MADE das DATE 4/20 CHECKED CSM DATE 5/17/74

SHEET 127 OF 201

DESIGN NO. 127A LINN COUNTY FILE 23101 SHEET 129 OF 203-0



**CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE
SUPERSTRUCTURE DETAILS - UNIT 1NB**

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

MADE dos DATE 6/18 CHECKED DATE 6/18

STA. 322+81.95 @ FREEWAY =
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LINN COUNTY
IOWA STATE HIGHWAY COMMISSION
SHEET 128 OF 201

DESIGN NO. 1276 LINN COUNTY FILE 23191 SHEET 128 OF 203-0

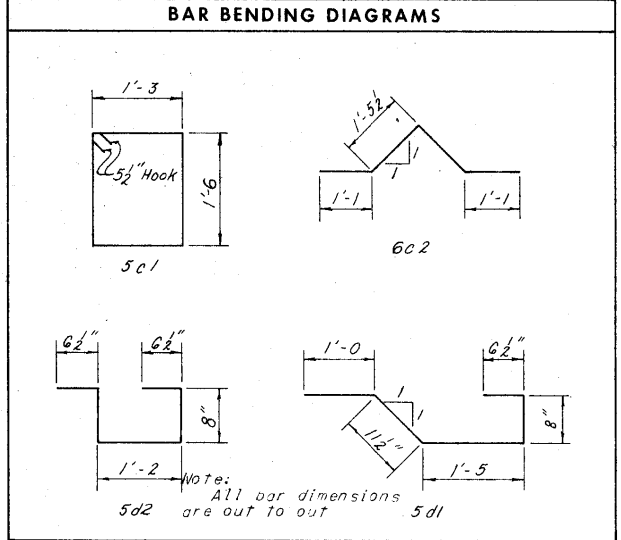
ELEVATIONS — TOP OF P.C. CONCRETE SURFACING (2" above top of first lift of concrete)																									
Girder	So. Abut.	.25	.50	.75	F.S. 1	.25	.50	.75	F.S. 2	.25	.50	.75	F.S. 3	.25	.50	.75	F.S. 4	.25	.50	.75	F.S. 5	.25	.50	.75	E.J. 1N
H	117.05	117.19	117.33	117.47	117.60	117.77	117.94	118.11	118.29	118.45	118.61	118.77	118.94	119.10	119.27	119.44	119.60	119.77	119.93	120.09	120.25	120.36	120.47	120.58	120.69
J	117.17	117.31	117.44	117.54	117.63	117.75	117.87	117.99	118.13	118.26	118.39	118.53	118.66	118.79	118.93	119.07	119.20	119.34	119.47	119.60	119.73	119.82	119.91	120.00	120.09
K	117.29	117.43	117.55	117.61	117.66	117.73	117.80	117.87	117.97	118.07	118.18	118.28	118.38	118.49	118.59	118.70	118.81	118.91	119.01	119.11	119.22	119.29	119.36	119.43	119.50
L	117.17	117.32	117.44	117.49	117.54	117.61	117.67	117.74	117.82	117.89	117.96	118.03	117.11	118.18	118.26	118.33	118.41	118.48	118.55	118.63	118.70	118.75	118.80	118.85	118.90
M	117.04	117.19	117.31	117.36	117.42	117.48	117.55	117.61	117.66	117.70	117.75	117.79	117.83	117.88	117.92	117.97	118.01	118.05	118.10	118.14	118.18	118.21	118.24	118.27	118.30
N	116.92	117.06	117.18	117.24	117.29	117.36	117.42	117.49	117.51	117.52	117.53	117.55	117.56	117.57	117.59	117.60	117.61	117.63	117.64	117.65	117.67	117.68	117.68	117.69	117.70
P	116.79	116.93	117.06	117.11	117.16	117.23	117.30	117.36	117.36	117.34	117.32	117.30	117.29	117.27	117.25	117.24	117.22	117.20	117.18	117.17	117.15	117.14	117.13	117.11	117.10

Legend: F.S. denotes Field Splice

*All, or the number of bars noted below, are to be epoxy coated and placed in the top mat of reinforcing. 70-5b1 (2920 Lbs.), 70-5b2 (2063 Lbs.), 140-5b3 (3943 Lbs.), 70-5b4 (2275 Lbs.), 420-5b5 (11,171 Lbs.), 140-5b6 (4405 Lbs.), 70-5b7 (2336 Lbs.), 140-5b8 (4015 Lbs.), 12-6d3 (144 Lbs.). Epoxy coated 6a bars are to be Grade 60 reinforcing steel.

BILL OF REINFORCEMENT					
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
*5b1	Slab, Longitudinal	—	134	40'-0"	5590
*5b2	Slab, Longitudinal	—	134	38'-0"	3949
*5b3	Slab, Longitudinal	—	268	27'-0"	7547
*5b4	Slab, Longitudinal	—	134	14'-0"	4756
*5b5	Slab, Longitudinal	—	804	25'-6"	21184
*5b6	Slab, Longitudinal	—	268	30'-0"	8472
*5b7	Slab, Longitudinal	—	134	12'-0"	4472
*5b8	Slab, Longitudinal	—	268	27'-6"	7687
*7b9	Slab, Longitudinal	—	60	20'-0"	2453
*7b10	Slab, Longitudinal	—	60	24'-0"	3074
*7b11	Slab, Longitudinal	—	120	23'-6"	5764
*7b12	Slab, Longitudinal	—	60	22'-0"	2729
*6a1	Slab, Transverse To	—	547	24'-0"	19855
*6a2	Slab, Transverse Btm	—	546	20'-0"	15402
*6a3	Slab, Transverse To	—	547	32'-6"	26702
*6a4	Slab, Transverse Btm	—	546	36'-8"	30070
5c1	Curb, Transverse	—	726	6'-2"	4670
6c1	Curb under Post	—	104	5'-0"	781
5c2	Curb, Longitudinal	—	40	44'-6"	1957
7c4	Curb, Longitudinal	—	4	20'-0"	164
7c5	Curb, Longitudinal	—	4	24'-0"	138
7c6	Curb, Longitudinal	—	4	24'-6"	184
7c7	Curb, Longitudinal	—	4	22'-0"	180
*5d1	End Diaphragm	—	4	4'-5"	120
*5d2	End Diaphragm	—	42	3'-3"	140
*6d3	End Diaphragm	—	42	3'-0"	575
Total					179,441

TABLE OF MOMENTS AND REACTIONS IN FOOT-KIPS AND KIPS																			
ITEM	MAXIMUM POSITIVE MOMENT						MAXIMUM NEGATIVE MOMENT					REACTIONS							
	SPAN 1	SPAN 2	SPAN 3	SPAN 4	SPAN 5	SPAN 6	PIER 1N	PIER 2N	PIER 3N	PIER 4N	PIER 5N	S ABUT	PIER 1N	PIER 2N	PIER 3N	PIER 4N	PIER 5N	JT. 1N	
GIRDER H	Dead Load A	96	283	179	212	183	325	487	577	501	501	588	14.5	72.6	79.1	73.9	74.2	81.3	25.3
	Dead Load B	36	106	71	81	75	116	150	177	156	156	177	5.0	23.8	26.1	24.5	24.7	26.6	8.6
	Live Load	356	498	480	478	487	536	390	458	436	448	442	38.1	54.3	57.5	56.4	57.5	57.5	41.6
	Impact	102	120	119	119	121	139	112	111	109	112	115	10.9	13.2	14.2	14.0	14.3	14.3	10.7
	Total	—	—	—	—	—	—	1139	1323	1202	1217	1322	68.5	163.9	175.9	168.8	170.7	179.7	86.2
GIRDER J	Dead Load A	107	316	201	237	205	363	545	646	560	558	656	16.2	81.3	88.6	82.8	82.6	90.6	28.2
	Dead Load B	52	153	103	117	107	164	217	256	225	222	253	7.3	34.4	37.8	35.5	35.2	38.0	12.3
	Live Load	394	551	531	529	536	591	439	504	483	493	488	42.9	59.0	63.6	62.4	63.3	63.2	45.8
	Impact	113	133	132	131	133	152	116	125	120	122	124	11.3	15.7	15.7	15.5	15.7	15.9	11.8
	Total	—	—	—	—	—	—	1317	1531	1388	1395	1521	77.7	190.4	205.7	196.2	197.1	207.7	98.1
GIRDER K	Dead Load A	107	316	201	237	204	362	545	646	560	556	653	16.2	81.3	88.6	82.8	82.2	90.2	28.1
	Dead Load B	52	153	103	117	107	164	217	256	225	222	253	7.3	34.4	37.8	35.5	35.3	38.0	12.3
	Live Load	394	551	531	529	534	589	439	504	483	491	486	42.9	59.0	63.6	62.4	63.0	62.9	45.6
	Impact	113	133	132	131	132	151	116	125	120	121	123	11.3	15.7	15.7	15.5	15.6	15.9	11.8
	Total	—	—	—	—	—	—	1317	1531	1388	1390	1515	77.7	190.4	205.7	196.2	196.1	207.0	97.8
GIRDER L	Dead Load A	107	316	201	237	203	360	545	646	560	553	650	16.2	81.3	88.6	82.8	81.9	89.8	28.0
	Dead Load B	52	153	103	117	107	164	217	256	225	222	253	7.3	34.4	37.8	35.5	35.2	38.0	12.3
	Live Load	394	551	531	529	531	586	439	504	483	489	484	42.9	59.0	63.6	62.4	62.7	62.6	45.4
	Impact	113	133	132	131	132	151	116	125	120	121	123	11.3	15.7	15.7	15.5	15.6	15.8	11.7
	Total	—	—	—	—	—	—	1317	1531	1388	1385	1510	77.7	190.4	205.7	196.2	195.4	206.2	97.4
GIRDER M	Dead Load A	107	316	201	237	203	359	545	646	560	552	649	16.2	81.3	88.6	82.8	81.7	89.6	28.0
	Dead Load B	52	153	103	117	107	164	217	256	225	222	253	7.3	34.4	37.8	35.5	35.2	38.0	12.3
	Live Load	394	551	531	529	530	585	439	504	483	488	483	42.9	59.0	63.6	62.4	62.6	62.4	45.3
	Impact	113	133	132	131	132	151	116	125	120	120	122	11.3	15.7	15.7	15.5	15.5	15.7	11.6
	Total	—	—	—	—	—	—	1317	1531	1388	1382	1506	77.7	190.4	205.7	196.2	195.0	205.7	97.2
GIRDER N	Dead Load A	107	316	201	237	202	358	545	646	560	550	647	16.2	81.3	88.6	82.8	81.5	89.4	27.9
	Dead Load B	52	153	103	117	107	164	217	256	225	222	253	7.3	34.4	37.8	35.5	35.2	38.0	12.3
	Live Load	394	551	531	529	528	583	439	504	483	487	482	42.9	59.0	63.6	62.4	62.4	62.3	45.2
	Impact	113	133	132	131	131	150	116	125	120	120	122	11.3	15.7	15.7	15.5	15.5	15.7	11.6
	Total	—	—	—	—	—	—	1317	1531	1388	1379	1503	77.7	190.4	205.7	196.2	194.4	205.4	97.0
GIRDER P	Dead Load A	96	283	179	212	179	318	487	577	501	491	576	14.5	72.6	79.1	73.9	72.7	79.7	24.8
	Dead Load B	36	106	71	81	75	116	150	177	156	156	177	5.0	23.8	26.1	24.5	24.7	26.6	8.6
	Live Load	356	498	480	478	479	527	390	458	436	441	435	38.1	54.3	57.5	56.4	56.6	56.6	40.9
	Impact	102	120	119	119	119	137	112	111	109	110	113	10.9	13.2	14.2	14.0	14.1	14.1	10.5
	Total	—	—	—	—	—	—	1139	1323	1202	1198	1301	68.5	163.9	175.9	168.8	168.1	177.0	84.8



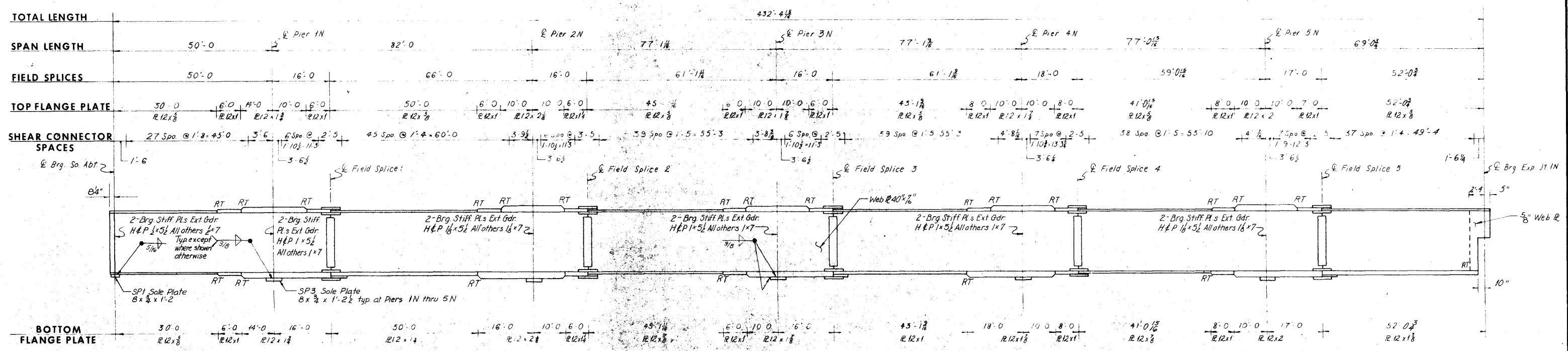
CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE

SUPERSTRUCTURE DETAILS - UNIT 1NB

STA. 322+81.95 @ FREEWAY=
STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. I-380-6(68)263--01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

MADE DDS DATE 4-25-74 CHECKED CBN DATE 6-12-74



TYPICAL ROCKER SETTINGS UNIT INB								
	SOUTH ABUTMENT	PIER 1N	PIER 2N	PIER 3N	PIER 4N	PIER 5N	EXP. JT. 1N	
Temperature at time of setting								
90°F	2 7/8"	3 1/8"	1/2"	1/4"	0"	1/4"	1/2"	5/16"
50°F	2 3/4"	0"	0"	0"	0"	0"	0"	3/2"
10°F	3 3/8"	-5/8"	-1/2"	-1/4"	0"	-1/4"	-1/2"	-9/16"
Sole Plate	SP1	SP3	SP3	SP3	SP3	SP3	SP3	
Rocker	RIA	R3A	R3A	R3A	R3A	R3A	R3A	
Masonry Plate	MP1A	MP3P	MP3P	S3	MP3P	MP3P	MP3P	

Notes:
 Rockers are to be set vertically at 50°F.
 For temperatures above 50°F., set masonry plate toward fixed shoe (+). For temperatures below 50°F., set masonry plate away from fixed shoe (-). Settings for other temperatures are proportional to those shown for a 40° temperature change.

CEDAR RIVER BRIDGE
SOUTH APPROACH
 DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE
GIRDER ELEVATIONS - UNIT INB

STA. 322+81.95 @ FREEWAY =
 STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. I-380-6(68)263--01-57
LINN COUNTY
 IOWA STATE HIGHWAY COMMISSION

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
 CONSULTING ENGINEERS
 KANSAS CITY

MADE L.G.K. DATE 12-17-73 CHECKED D.R.A. DATE 6-17-74



**CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE**

SHEET 132 OF 201



Δ Includes reinforcing for 2 light blisters 239167
Δ Includes weight of Exp. Jt. and roller of
Exp. Jt. 1N and bearing plates.

Notes: For "Bill of Reinforcement"
see Sheet 135 of 201.
For "Top of P.C. Concrete
Surfacing Elevations", see sheet 135
of 201.
For Sections see Sheet 134
of 201.

Deck inlets are required in east gutter at Sta. 318+52 and at Piers 7N and 9N and in east gutter at Expansion Joint 2W. See sheets 187 and 188 of 201 for details.

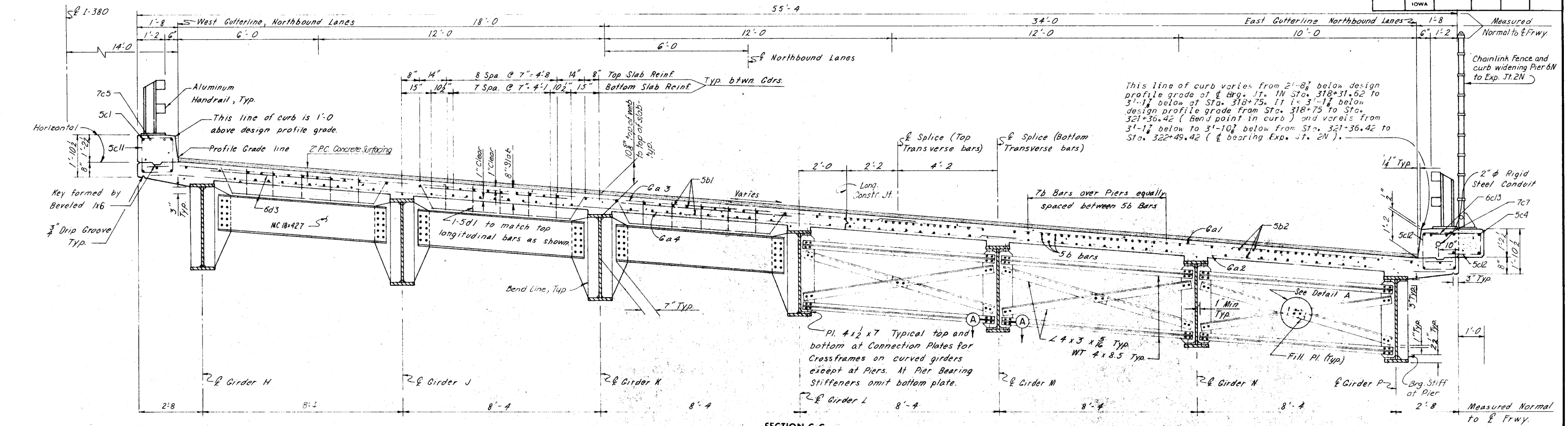
Unit 1NB Pours 6 and 17 shall be placed prior to Unit 2WB Pours 6 and 16.

SLAB PLAN - UNIT 2NB

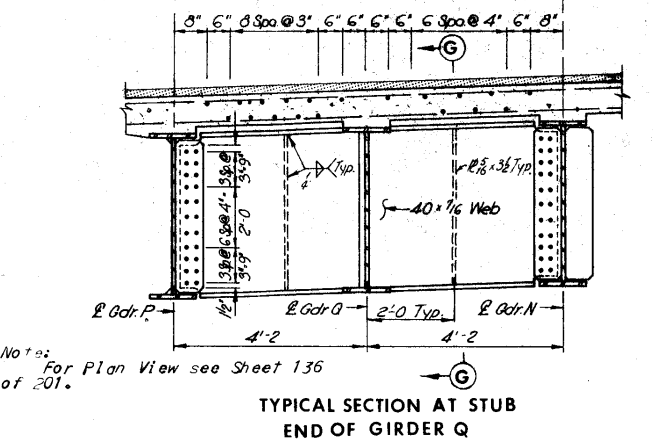
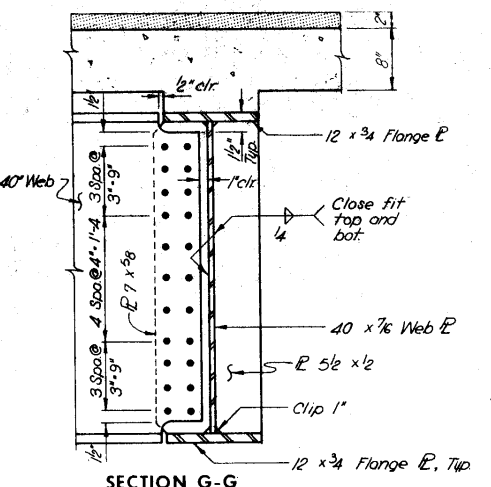
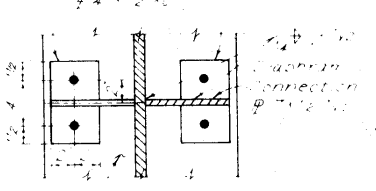
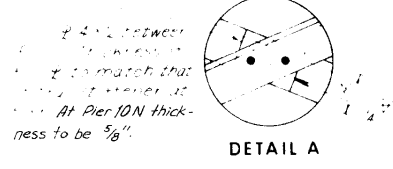
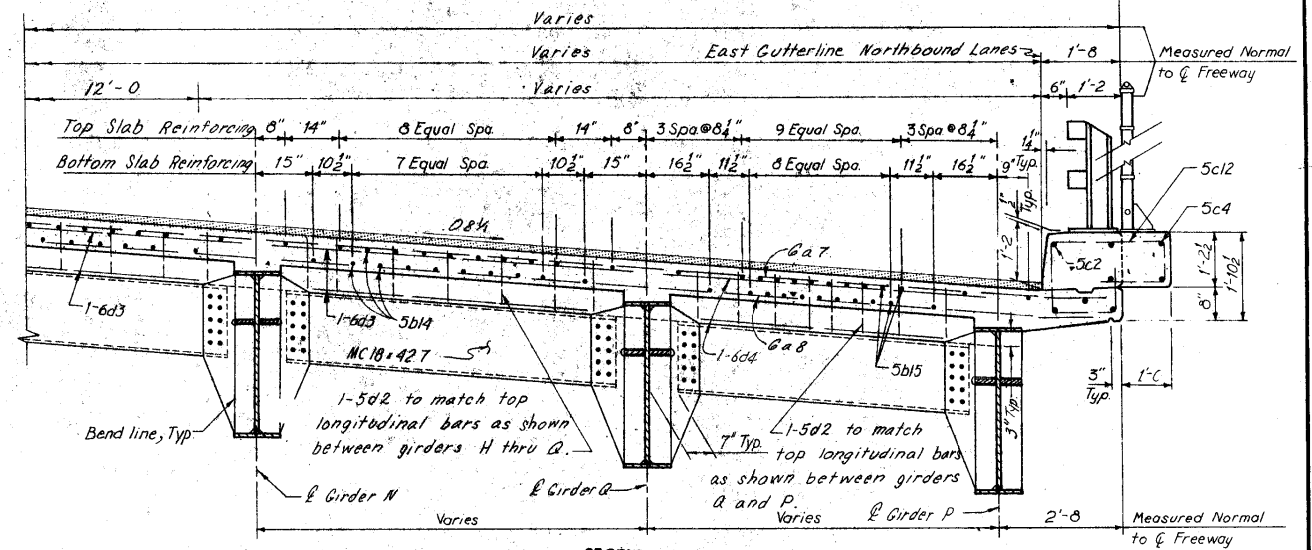
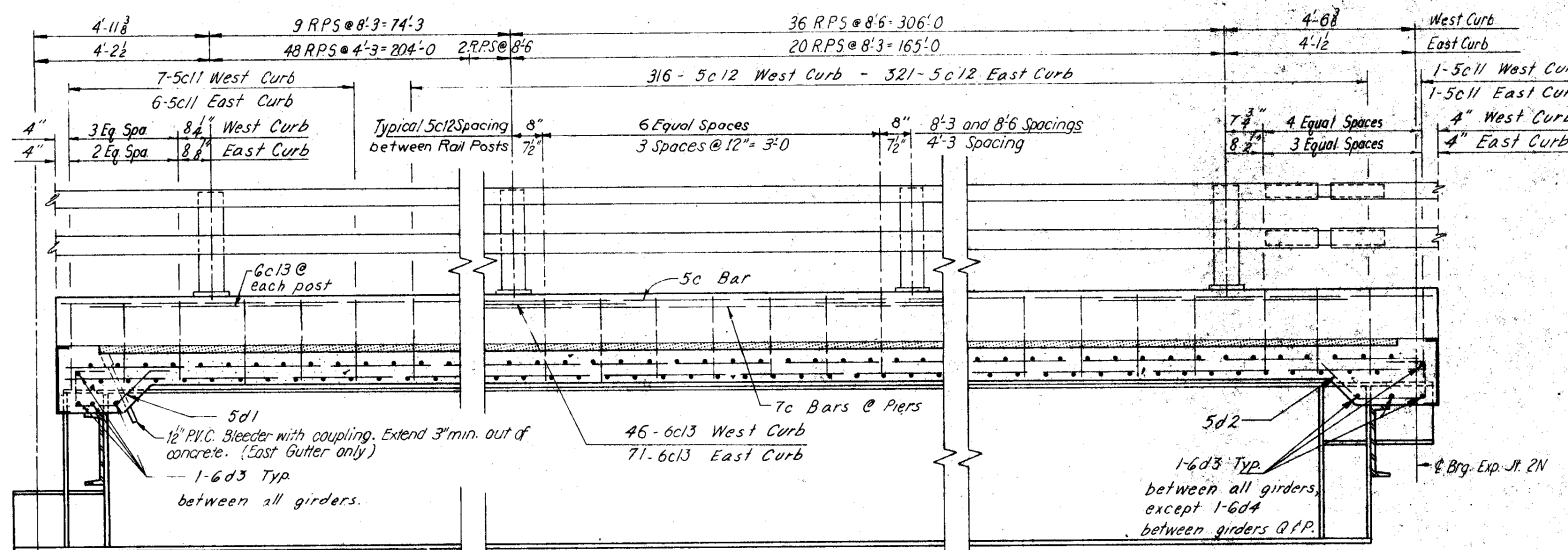
SHEET 133 OF 201

DESIGN NO 1276 LINN COUNTY FILE 23191 SHEET 135 OF 203-C

Revised 2-14-77: Structural Steel quantity corrected.



This line of curb varies from 2'-8" below design profile grade at Brg. Jt. 1N Sta. 318+31.62 to 3'-1 1/8" below at Sta. 318+75. 11' 1'-3'-1 1/8" below design profile grade from Sta. 318+75 to Sta. 321+36.42 (Bend point in curb) and varies from 3'-1 1/8" below to 3'-10 3/8" below from Sta. 321+36.42 to Sta. 322+49.42 (Bearing Exp. Jt. 2N).



Notes:
For super-elevation data see Sheet 16 of 201.
For location of Sections B-B, and C-C see Sheet 133 of 201.

**CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE**

SUPERSTRUCTURE DETAILS - UNIT 2NB

STA. 322+81.95 @ FREEWAY =
STA. 32+14.70 @ 1ST. AVE. W

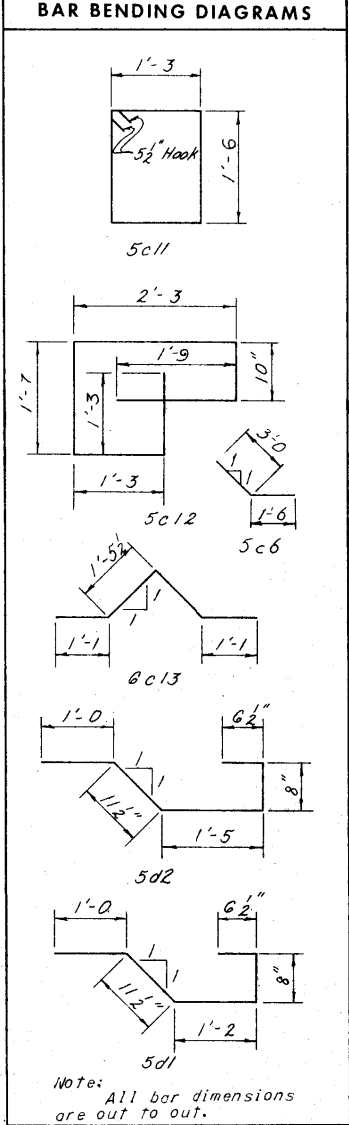
PROJECT NO. 1-380-6(68)263--01-57

LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

MADE L.G.K. DATE 6-14-74 CHECKED C.B.M. DATE 6-19-74

TABLE OF MOMENTS AND REACTIONS IN FOOT-KIPS AND KIPS																			
	ITEM	MAXIMUM POSITIVE MOMENT					MAXIMUM NEGATIVE MOMENT					REACTIONS							
		SPAN 1	SPAN 2	SPAN 3	SPAN 4	SPAN 5	PIER 6N	PIER 7N	PIER 8N	PIER 9N	PIER 10N	JT. 1N	PIER 6N	PIER 7N	PIER 8N	PIER 9N	PIER 10N	JT. 2N	
GIRDER H	Dead Load A	285	245	255	227	425	268	651	550	605	751	25.3	64.3	79.8	79.2	76.4	86.2	27.1	
	Dead Load B	94	94	95	90	146	89	186	195	184	221	3.6	21.6	25.5	26.5	25.7	28.4	9.3	
	Live Load	622	542	555	566	641	350	502	508	517	528	41.6	50.9	57.4	58.0	58.2	59.0	42.2	
	Impact	159	133	135	139	156	88	125	128	129	132	10.7	12.7	14.4	14.5	14.6	14.8	10.5	
	Total	—	—	—	—	—	795	1464	1481	1435	1632	86.2	149.5	177.1	178.2	174.9	188.4	89.1	
GIRDER J	Dead Load A	315	274	284	253	471	300	722	722	672	835	28.2	71.6	88.5	88.1	84.9	95.8	30.1	
	Dead Load B	135	136	136	129	208	128	269	278	264	315	12.3	31.2	36.9	37.7	36.7	40.5	13.3	
	Live Load	689	596	609	621	703	388	554	561	570	582	45.8	56.3	63.4	64.0	64.2	65.1	46.5	
	Impact	172	149	152	155	176	96	139	140	142	145	11.8	14.1	15.9	16.0	16.1	16.3	11.6	
	Total	—	—	—	—	—	912	1684	1701	1648	1877	98.1	173.2	204.7	205.8	201.9	217.7	101.5	
GIRDER K	Dead Load A	314	273	283	252	467	298	719	719	668	829	28.1	71.2	87.9	87.5	84.4	95.2	29.9	
	Dead Load B	135	136	136	129	208	128	269	278	264	315	12.3	31.2	36.9	37.7	36.7	40.5	13.3	
	Live Load	686	593	607	619	701	387	552	559	568	580	45.6	56.1	63.1	63.7	63.9	64.8	46.3	
	Impact	171	147	151	154	175	96	138	139	141	144	11.8	14.0	15.8	15.9	16.0	16.2	11.5	
	Total	—	—	—	—	—	909	1678	1695	1641	1868	97.8	172.5	203.7	204.8	201.0	216.7	101.0	
GIRDER L	Dead Load A	311	271	282	250	465	295	713	713	663	824	28.0	70.8	87.4	87.0	83.9	94.6	29.7	
	Dead Load B	135	136	136	129	208	128	269	278	264	315	12.3	31.2	36.9	37.7	36.7	40.5	13.3	
	Live Load	684	591	604	617	699	386	550	557	566	578	45.4	55.9	62.9	63.5	63.7	64.6	46.1	
	Impact	170	146	150	153	174	95	136	138	140	143	11.7	13.9	15.7	15.8	15.9	16.1	11.4	
	Total	—	—	—	—	—	904	1668	1686	1633	1860	97.4	171.8	202.9	204.0	200.2	215.8	100.5	
GIRDER M	Dead Load A	309	269	279	248	462	294	710	710	660	820	28.0	70.3	86.9	86.5	83.4	94.1	29.6	
	Dead Load B	135	136	136	129	208	128	269	278	264	315	12.3	31.2	36.9	37.7	36.7	40.5	13.3	
	Live Load	683	590	603	615	698	385	549	556	564	577	45.3	55.8	62.8	63.4	63.6	64.5	46.0	
	Impact	169	145	149	152	173	95	135	136	139	142	11.6	13.8	15.6	15.7	15.8	16.0	11.3	
	Total	—	—	—	—	—	902	1663	1680	1627	1854	97.2	171.1	202.2	203.3	199.5	215.1	100.2	
GIRDER N	Dead Load A	308	268	278	247	460	293	706	706	657	816	27.9	70.0	86.6	86.2	83.0	93.1	29.4	
	Dead Load B	135	136	136	129	208	128	269	278	264	315	12.3	31.2	36.9	37.7	36.7	40.5	13.3	
	Live Load	682	589	602	614	696	384	548	554	563	576	45.2	55.7	62.7	63.3	63.5	64.4	45.9	
	Impact	167	144	147	151	172	94	134	135	138	141	11.6	13.7	15.5	15.6	15.7	15.9	11.3	
	Total	—	—	—	—	—	899	1657	1673	1622	1848	97.0	170.6	201.7	202.8	198.9	214.5	99.9	
GIRDER Q	Dead Load A	—	—	—	—	501	—	—	—	—	502	—	—	—	—	—	62.6	28.2	
	Dead Load B	—	—	—	—	167	—	—	—	—	253	—	—	—	—	—	32.6	10.7	
	Live Load	—	—	—	—	567	—	—	—	—	401	—	—	—	—	—	30.9	17.2	
	Impact	—	—	—	—	142	—	—	—	—	101	—	—	—	—	—	7.7	4.3	
	Total	—	—	—	—	—	—	—	—	—	1257	—	—	—	—	—	133.8	60.4	
GIRDER P	Dead Load A	275	237	246	219	362	259	629	627	584	682	24.8	62.0	77.0	76.4	73.7	78.4	23.1	
	Dead Load B	94	94	95	90	146	89	186	195	184	221	3.6	21.6	25.5	26.5	25.7	28.4	9.3	
	Live Load	611	533	546	556	550	345	493	499	508	486	40.9	50.0	56.4	57.0	57.2	54.3	36.2	
	Impact	156	131	133	136	134	87	123	125	126	122	10.5	12.5	14.2	14.3	14.4	13.6	9.0	
	Total	—	—	—	—	—	780	1431	1445	1402	1511	84.8	146.1	173.1	174.2	171.0	174.7	77.6	



ELEVATIONS — TOP OF P.C. CONCRETE SURFACING (2" above top of first lift of concrete)																											
Girder	E.J. 1N	.25	.50	.75	F.S. 1	.25	.50	.75	F.S. 2	.25	.50	.75	F.S. 3	.25	.50	.75	F.S. 4	Beg Grd	.25	.50	.75	F.S. 5	.25	.50	.75	E.J. 2N	
H	120.69	120.83	120.96	121.10	121.24	121.41	121.58	121.75	121.92	122.08	122.24	122.40	122.56	122.74	122.92	123.10	123.28	—	123.37	123.45	123.53	123.62	123.73	123.84	123.95	124.05	
J	120.09	120.20	120.32	120.44	120.58	120.75	120.92	121.09	121.26	121.43	121.61	121.78	121.95	122.12	122.29	122.45	122.62	—	122.70	122.79	122.87	122.95	123.07	123.18	123.30	123.41	
K	119.50	119.58	119.67	119.77	119.92	120.09	120.26	120.43	120.60	120.78	120.95	121.13	121.30	121.48	121.65	121.83	122.01	—	122.08	122.15	122.22	122.29	122.41	122.53	122.65	122.77	
L	118.90	118.96	119.02	119.11	119.25	119.42	119.61	119.78	119.95	120.12	120.30	120.47	120.65	120.83	121.01	121.19	121.36	—	121.43	121.51	121.58	121.65	121.77	121.89	122.01	122.13	
M	118.30	118.34	118.37	118.45	118.59	118.77	118.94	119.12	119.29	119.47	119.65	119.82	120.00	120.18	120.36	120.54	120.72	—	120.80	120.88	120.95	121.03	121.15	121.26	121.38	121.49	
N	117.70	117.71	117.73	117.79	117.93	118.11	118.28	118.46	118.64	118.82	118.99	119.17	119.35	119.53	119.71	119.89	120.08	—	120.15	120.22	120.29	120.36	120.49	120.61	120.73	120.85	
P	117.10	117.09	117.07	117.13	117.27	117.45	117.63	117.80	117.98	118.16	118.34	118.51	118.69	118.87	119.05	119.23	119.33	—	119.35	119.37	119.39	119.40	119.43	119.45	119.48	119.50	
Q	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	119.65	119.67	119.71	119.75	119.81	119.89	119.98	120.09	120.21	

Legend: F.S. denotes Field Splice

*All, or the number of bars noted below are to be epoxy coated and placed in the top mat of reinforcing;
70-5b1 (1533 Lbs.), 140-5b2 (3540 Lbs.), 70-5b3 (2142 Lbs.), 140-5b4 (3197 Lbs.), 70-5b5 (2239 Lbs.), 140-5b6 (3821 Lbs.), 70-5b7 (2263 Lbs.), 127-5b8 (3511 Lbs.), 13-5b9 (304 Lbs.), 57-5b10 (2000 Lbs.), 7-5b11 (295 Lbs.), 7-5b12 (252 Lbs.), 114-5b13 (3458 Lbs.), 21-5b14 (543 Lbs.), 23-5b15 (730 Lbs.), 12-5b3 (48 Lbs.) and 1-5d4 (13 Lbs.). Epoxy coated 60 bars are to be Grade 60 reinforcing steel.

CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE

SUPERSTRUCTURE DETAILS - UNIT 2NB

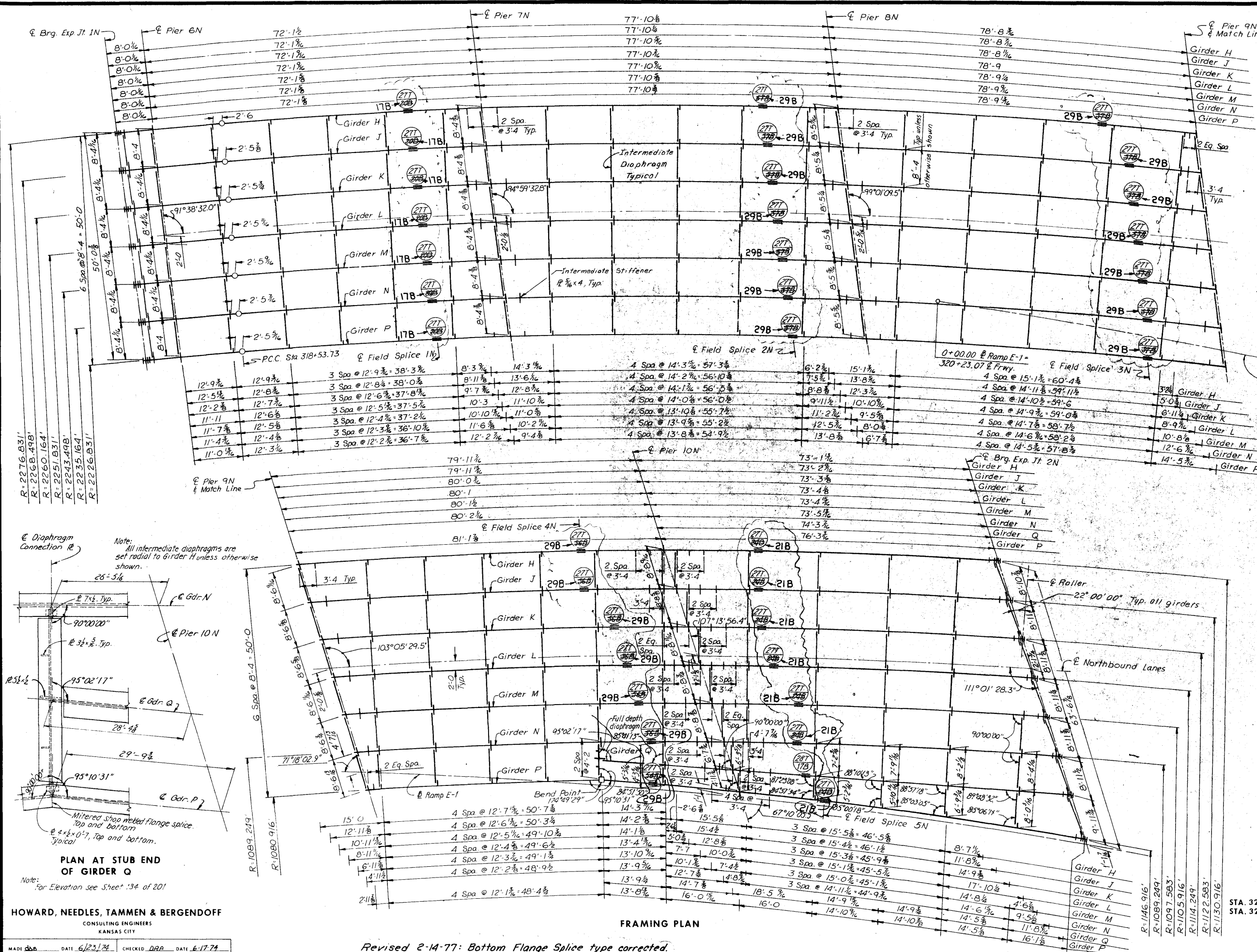
STA. 322+81.95 & FREEWAY =
STA. 32+14.70 & 1ST. AVE. W PROJECT NO. I-380-6(68)263--01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

MADE DDS DATE 4-20-74 CHECKED C.B.M. DATE 6-20-74

SHEET 135 OF 201

DESIGN NO 1276 LINN COUNTY FILE 23191 SHEET 137 OF 203-0



Notes:
For girder splice details see Sheet 183 and 184 of 201.
For Brg. Stiff. and Inter. Stiff. details see Sheet 182 of 201.

See Table
Tangent to
Girder

Girder	Joint 1N	Pier 6N	Pier 7N	Pier 8N	Pier 9N
H	91° 25' 27"	91° 37' 32"	94° 53' 26"	98° 50' 04"	102° 49' 14"
J	91° 25' 46"	91° 37' 54"	94° 53' 37"	98° 50' 02"	102° 55' 03"
K	91° 26' 05"	91° 38' 16"	94° 57' 50"	98° 50' 03"	103° 00' 57"
L	91° 26' 24"	91° 38' 37"	95° 00' 05"	99° 02' 09"	103° 06' 56"
M	91° 26' 44"	91° 38' 59"	95° 02' 22"	99° 06' 18"	103° 13' 01"
N	91° 27' 03"	91° 39' 21"	95° 04' 41"	99° 10' 31"	103° 19' 12"
P	91° 27' 22"	91° 39' 44"	95° 07' 03"	99° 14' 48"	103° 25' 28"

Girder	Pier 10N	Joint 2N
H	106° 52' 17"	110° 34' 38"
J	107° 00' 01"	110° 44' 14"
K	107° 07' 53"	110° 53' 58"
L	107° 15' 52"	111° 03' 52"
M	107° 23' 59"	111° 13' 55"
N	107° 32' 14"	111° 24' 09"
Q	111° 11' 04"	111° 11' 04"
P	112° 48' 39"	116° 37' 15"

**CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE**

FRAMING PLAN - UNIT 2N

STA. 322+81.95 & FREEWAY =
STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. I-380-6(68)263--01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

MADE DBB DATE 6/23/74 CHECKED DBB DATE 6-17-74

Revised 2-14-77: Bottom Flange Splice type corrected.

TOTAL LENGTH		GIRDER H = 389'-9 1/2"										GIRDER J = 389'-10 1/2"										GIRDER K = 390'-0 3/4"										GIRDER L = 390'-2 1/2"																																																																																																																																																																																																																																																																																																																																																													
SPAN LENGTHS	GIRDER H	8'-0 1/2"		72'-1 1/2"						77'-10 1/2"						78'-8 7/8"						79'-11 1/2"						73'-1 13/16"																																																																																																																																																																																																																																																																																																																																																																	
	GIRDER J	8'-0 1/2"		72'-1 1/2"						77'-10 1/2"						78'-8 7/8"						79'-11 1/2"						73'-2 3/8"																																																																																																																																																																																																																																																																																																																																																																	
	GIRDER K	8'-0 1/2"		72'-1 1/2"						77'-10 1/2"						78'-8 7/8"						80'-0 1/2"						73'-3 3/8"																																																																																																																																																																																																																																																																																																																																																																	
	GIRDER L	8'-0 1/2"		72'-1 1/2"						77'-10 1/2"						78'-9"						80'-1"						73'-4 1/8"																																																																																																																																																																																																																																																																																																																																																																	
FIELD SPICES	GIRDER H	8'-0 1/2"		56'-1 1/2"				16'-0"		61'-10 1/2"				16'-0"		58'-2 3/8"				20'-6"		61'-11 1/2"				18'-0"		20'-6"		52'-7 13/16"																																																																																																																																																																																																																																																																																																																																																															
	GIRDER J	8'-0 1/2"		56'-1 1/2"				16'-0"		61'-10 1/2"				16'-0"		62'-8 7/8"				16'-0"		59'-11 13/16"				20'-0"		18'-0"		55'-2 3/8"																																																																																																																																																																																																																																																																																																																																																															
	GIRDER K	8'-0 1/2"		do				16'-0"		61'-10 1/2"				16'-0"		62'-8 7/8"				16'-0"		64'-2 1/2"				16'-0"		16'-0"		57'-3 3/8"																																																																																																																																																																																																																																																																																																																																																															
	GIRDER L	8'-0 1/2"		do				16'-0"		61'-10 1/2"				16'-0"		62'-9"				16'-0"		64'-1"				16'-0"		16'-0"		57'-4 1/8"																																																																																																																																																																																																																																																																																																																																																															
TOP FLANGE PLATES	GIRDER H	8'-0 1/2"		10'-0"		46'-1 1/2"		6'-0"		10'-0"		10'-0"		6'-0"		45'-10 1/2"		6'-0"		10'-0"		10'-0"		6'-0"		42'-2 3/8"		10'-6"		10'-0"		6'-0"		45'-11 1/2"		8'-0"		10'-0"		10'-0"		10'-6"		52'-7 13/16"																																																																																																																																																																																																																																																																																																																																																	
	GIRDER J	8'-0 1/2"		do		do		6'-0"		10'-0"		10'-0"		6'-0"		45'-10 1/2"		6'-0"		10'-0"		10'-0"		6'-0"		46'-8 7/8"		6'-0"		10'-0"		6'-0"		43'-11 13/16"		10'-0"		10'-0"		10'-0"		8'-0"		55'-2 3/8"																																																																																																																																																																																																																																																																																																																																																	
	GIRDER K	8'-0 1/2"		do		do		6'-0"		10'-0"		10'-0"		6'-0"		45'-10 1/2"		6'-0"		10'-0"		10'-0"		6'-0"		46'-8 7/8"		6'-0"		10'-0"		6'-0"		48'-0 1/2"		6'-0"		10'-0"		10'-0"		6'-0"		57'-3 3/8"																																																																																																																																																																																																																																																																																																																																																	
	GIRDER L	8'-0 1/2"		do		do		6'-0"		10'-0"		10'-0"		6'-0"		45'-10 1/2"		6'-0"		10'-0"		10'-0"		6'-0"		46'-9"		6'-0"		10'-0"		6'-0"		48'-1"		6'-0"		10'-0"		10'-0"		6'-0"		57'-4 1/8"																																																																																																																																																																																																																																																																																																																																																	
SHEAR CONNECTOR SPACES	GIRDER H	3'-4 1/2"		41 Spa. @ 1'-3" = 51'-3"				3'-0"		6 Spa. @ 1'-4" = 56'-0"				3'-0"		6 Spa. @ 1'-4" = 56'-0"				3'-0"		6 Spa. @ 1'-4" = 56'-0"				3'-0"		8 Spa. @ 1'-3" = 56'-3"				3'-0"		7 Spa. @ 1'-3" = 55'-0"				3'-0"		8 Spa. @ 1'-3" = 55'-0"				40 Spa. @ 1'-3" = 50'-0"		1'-1 1/2"																																																																																																																																																																																																																																																																																																																																															
	GIRDER J	3'-4 1/2"		41 Spa. @ 1'-3" = 51'-3"				do		6 Spa. @ 1'-4" = 56'-0"				do		6 Spa. @ 1'-4" = 56'-0"				do		6 Spa. @ 1'-4" = 56'-0"				do		6 Spa. @ 1'-4" = 56'-0"				do		7 Spa. @ 1'-3" = 55'-0"				do		7 Spa. @ 1'-3" = 55'-0"				42 Spa. @ 1'-3" = 52'-6"		1'-2 1/2"																																																																																																																																																																																																																																																																																																																																															
	GIRDER K	do		41 Spa. @ 1'-3" = 51'-3"				do		6 Spa. @ 1'-4" = 56'-0"				do		6 Spa. @ 1'-4" = 56'-0"				do		6 Spa. @ 1'-4" = 56'-0"				do		6 Spa. @ 1'-4" = 56'-0"				do		7 Spa. @ 1'-3" = 55'-0"				do		7 Spa. @ 1'-3" = 55'-0"				43 Spa. @ 1'-3" = 53'-9"		2'-0 3/8"																																																																																																																																																																																																																																																																																																																																															
	GIRDER L	do		41 Spa. @ 1'-3" = 51'-3"				do		6 Spa. @ 1'-4" = 56'-0"				do		6 Spa. @ 1'-4" = 56'-0"				do		6 Spa. @ 1'-4" = 56'-0"				do		6 Spa. @ 1'-4" = 56'-0"				do		7 Spa. @ 1'-3" = 55'-0"				do		7 Spa. @ 1'-3" = 55'-0"				43 Spa. @ 1'-3" = 53'-9"		2'-1 1/8"																																																																																																																																																																																																																																																																																																																																															
		2 Brg. Exp Jt. IN.		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-1"		1'-6"		1'-	

GIRDER DETAILS

Note:
For additional Girder Elevation:
see Sheet 138 of 201.

TYPICAL ROCKER SETTINGS UNIT 2NB									
	EXP. JT. 1N	PIER 6N	PIER 7N	PIER 8N	PIER 9N	PIER 10N	EXP. JT. 2N		
Temperature at time of setting									
90°F	2 3/8"	9/16"	1/2"	1/2"	0"	1/2"	3/4"	2"	
50°F	3 1/2"	0"	0"	0"	0"	0"	0"	3 1/2"	
10°F	4 1/8"	-1/8"	-1/4"	-1/4"	0"	-1/4"	-3/4"	5"	
Sole Plate		SP3	SP3	SP3	SP3	SP3			
Rocker		R3A	R3A		R3A	R3A			
Masonry Plate		MP3P	MP3P	S3	MP3P	MP3P			

Notes:
Rockers are to be set vertically at 50°F.
For temperatures above 50°F., set masonry plate toward fixed shoe (+). For temperatures below 50°F., set masonry plate away from fixed shoe (-). Settings for other temperatures are proportional to those shown for a 40° temperature change.

CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE
GIRDER ELEVATIONS - UNIT 2NB

STA. 322+81.95 @ FREEWAY =
STA. 32+14.70 @ 1ST. AVE. W
PROJECT NO. I-380-6(68)263--01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

MADE LGA DATE 1-9-74 CHECKED DRA DATE 6-17-74

SHEET 137 OF 201

DESIGN NO. 1276 LINN COUNTY FILE 23191 SHEET 139 OF 203-0

GIRDER DETAILS



SHEET 138 OF 201

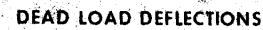
[illegible]

Figure 1 is a detailed cross-section diagram of a bridge deck. It shows the top of the web and various structural features. The diagram includes labels for 'Brg. Exp. Joint 1N', 'Pier 6N', 'Field Splice 1', 'Pier 7N', 'Field Splice 2', 'Pier 8N', 'Field Splice 3', 'Pier 9N', 'Field Splice 4', 'Pier 10N', and 'Field Splice 5'. A 'Reference Line' is shown, and a note indicates a 'Straight line from top of web at Pier 6N to top of web at Exp. Jt. 2N'. The diagram also shows 'Keep' areas and a 'Top of Web' line.

Note: Negative comber values indicate comber below the reference line.

Note: Off sets are given at a point between field splices and at pier and expansion joints.

For Girder H and P 20% of the dead load deflection is due to structural steel and 80% is due to concrete and P.C. surface course. For Girder J thru N 19% of the dead load deflection is due to structural steel and 79% is due to concrete and P.C. surface course. For Girder Q 24% of the dead load deflection is due to structural steel and 75% is due to concrete and P.C. surface course.

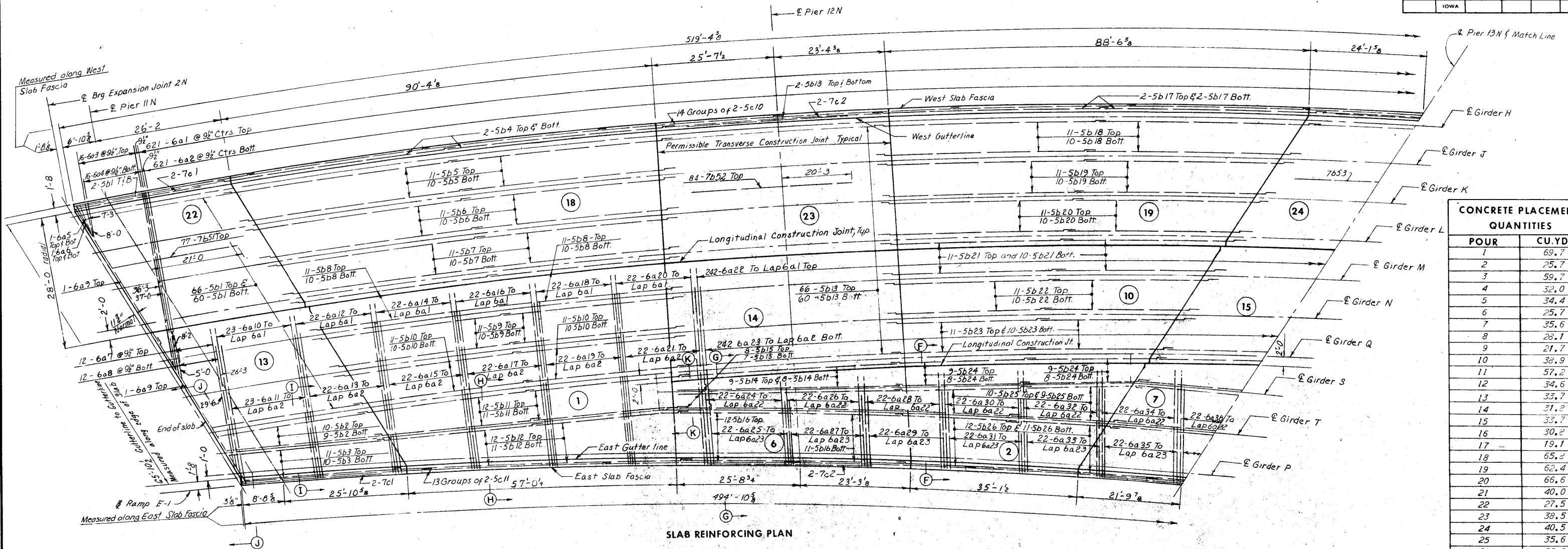
Negative camber values are camber below reference line.

Bottom of web to be parallel to top of web.

Deflection due to concrete and P.C. surface course includes 1.5% due to the P.C. surface course.

LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

MADE LGK DATE 3-5-74 CHECKED CBM DATE 9-19-74



CONCRETE PLACEMENT QUANTITIES	
POUR	CU. YDS.
1	69.7
2	25.7
3	59.7
4	32.0
5	34.4
6	25.7
7	35.6
8	28.1
9	21.7
10	38.9
11	57.2
12	34.6
13	33.7
14	31.2
15	33.7
16	30.2
17	19.1
18	65.2
19	62.4
20	66.6
21	40.0
22	27.5
23	38.5
24	40.5
25	35.6
26	22.1
Light Blister	.8
West Curb NBL	36.9
East Curb NBL	12.1
West Curb E-1	15.7
East Curb E-1	35.2
Term. Block	.7
Total (Cl.O.)	1112.8

SUPERSTRUCTURE ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Structural Concrete (Class D)	Cu. Yds.	1,112.8
Reinforcing Steel Δ	Lbs.	140,327
Reinforcing Steel-Epoxy Coated	Lbs.	159,204
Structural Steel ΔΔ	Lbs.	1,482,762
P.C. Concrete Surfacing	Sq. Yds.	3,936

Δ Includes reinforcing for 2 light blisters.
ΔΔ Includes weight of expansion joint at Expansion joint 2N, rollers at Expansion Joint 2N and 3N, and bearing plates and sign support brackets.

Notes:
Unit 3NB Pours 5 and 15 shall be placed prior to Unit 3NB Pours 13 and 22.
For continuation of Slab Plan see Sheet 141 of 201.
For additional notes see Sheet 141 of 201.

**CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE**

SLAB PLAN - UNIT 3NB

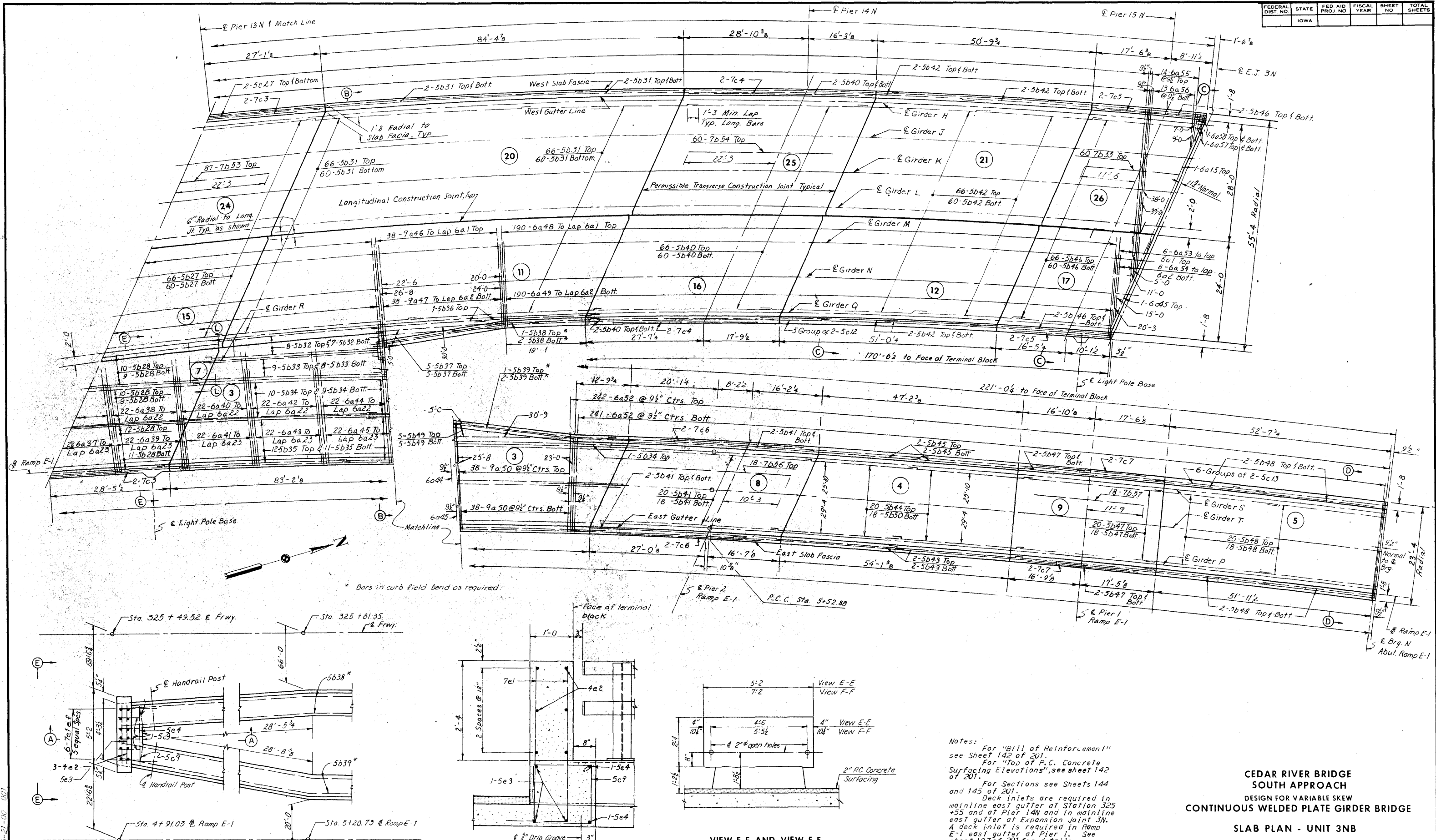
STA. 322+81.95 & FREEWAY =
STA. 32+14.70 & 1ST. AVE. W PROJECT NO. I-380-6(68)263--01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

MADE E.J.F. DATE 3-20-74 CHECKED D.R.A. DATE 6-28-74

Revised 9-23-77: Structural Steel quantity increased for added stiffener on Girder P.
Revised 3-11-77: Structural Steel quantity corrected.
Revised 2-28-77: Structural Steel estimated quantity corrected.

1,486,130 1,486,348
1,486,543
3556.18 3NB
495.91 RAMP E1



HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

PART PLAN NOSE DETAIL

SECTION A-A

VIEW E-E AND VIEW F-F

**CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE**

SLAB PLAN - UNIT 3NB

STA. 322+81.95 @ FREEWAY =
STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. I-380-6(68)263--01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

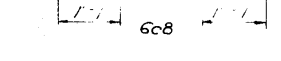
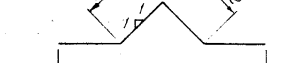
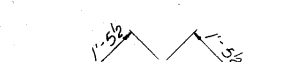
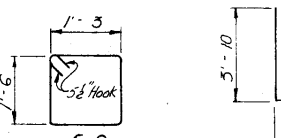
ELEVATIONS — TOP OF P.C. CONCRETE SURFACING (2" above top of first lift of concrete)

Girder	E.J. 2N	.25	.50	.75	F.S. 1	.10	.20	.30	.40	.50	.60	.70	.80	.90	F.S. 2	beg GdrR	.25	.50	.75	F.S. 3	.25	.50	.75	F.S. 4	.25	.50	.75	F.S. 5	beg GdrR	.10	.20	.25	.30	.40	.50
H	124.05	124.10	124.15	124.20	124.25	124.32	124.38	124.45	124.51	124.58	124.64	124.71	124.77	124.83	124.89	—	125.02	125.16	125.29	125.42	125.55	125.68	125.81	125.94	126.04	126.14	126.25	126.35	—	126.41	126.47	—	126.53	126.59	126.65
J	123.41	123.46	123.50	123.54	123.59	123.65	123.72	123.79	123.85	123.92	123.98	124.04	124.11	124.17	124.23	—	124.37	124.51	124.65	124.79	124.88	124.98	125.08	125.17	125.29	125.40	125.51	125.63	—	125.69	125.75	—	125.81	125.87	125.93
K	122.77	122.82	122.88	122.93	122.98	123.04	123.11	123.17	123.23	123.29	123.36	123.42	123.48	123.54	123.60	—	123.72	123.84	123.96	124.08	124.19	124.29	124.40	124.50	124.61	124.71	124.82	124.92	—	124.98	124.04	—	125.10	125.16	125.22
L	122.13	122.18	122.23	122.28	122.32	122.35	122.45	122.51	122.57	122.63	122.69	122.75	122.81	122.87	122.93	—	123.04	123.14	123.25	123.36	123.48	123.60	123.72	123.84	123.94	124.04	124.13	124.23	—	124.29	124.35	—	124.41	124.47	124.53
M	121.49	121.54	121.58	121.62	121.67	121.73	121.79	121.85	121.91	121.97	122.03	122.09	122.15	122.20	122.26	—	122.37	122.48	122.59	122.69	122.80	122.90	123.01	123.12	123.22	123.32	123.42	123.53	—	123.59	123.64	—	123.70	123.76	123.82
N	120.85	120.89	120.93	120.97	121.01	121.08	121.14	121.21	121.28	121.35	121.41	121.48	121.54	121.60	121.67	—	121.76	121.85	121.94	122.03	122.12	122.21	122.30	122.40	122.50	122.60	122.71	122.81	—	122.87	122.93	—	122.99	123.05	123.12
Q	120.21	120.25	120.29	120.33	120.37	120.44	120.50	120.57	120.63	120.69	120.76	120.82	120.88	120.94	121.00	—	121.09	121.18	121.27	121.36	121.46	121.55	121.64	121.74	121.83	121.91	122.01	122.11	—	122.17	122.23	—	122.29	122.36	122.42
R	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	121.68	—	—	121.73	—	—	121.88
S	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	120.66	120.69	120.73	120.78	120.85	120.91	120.98	121.07	121.16	121.23	121.26	121.29	121.32	—	121.33	121.33	—	121.32	121.31	121.28
T	119.86	119.87	119.88	119.89	119.91	119.94	119.97	120.01	120.05	120.11	120.16	120.22	120.28	120.34	120.36	—	120.37	120.39	120.40	120.41	120.43	120.45	120.46	120.48	120.51	120.53	120.56	120.59	—	120.61	120.61	—	120.61	120.59	120.57
P	119.50	119.51	119.51	119.52	119.53	119.54	119.55	119.56	119.57	119.58	119.60	119.61	119.62	119.63	119.64	—	119.65	119.66	119.68	119.69	119.71	119.72	119.74	119.75	119.78	119.81	119.84	119.87	—	119.89	119.89	—	119.89	119.87	119.85

ELEVATIONS — TOP OF P.C. CONCRETE SURFACING (2" above top of first lift of concrete)

Girder	.50	.60	.70	.75	.80	.90	F.S. 6	End Gdr	.10	.20	.25	.30	.40	.50	.60	.70	.75	.80	.90	F.S. 7	.25	.50	.75	E.J. 3N	F.S. 8	.25	.50	.75	Abut. E-1
H	126.65	126.71	126.77	—	126.83	126.89	126.95	—	—	—	127.04	—	—	127.14	—	—	127.23	—	—	127.33	127.45	127.56	127.68	127.80	—	—	—	—	—
J	125.93	125.98	126.04	—	126.10	126.16	126.22	—	—	—	126.33	—	—	126.44	—	—	126.54	—	—	126.65	126.77	126.88	127.00	127.12	—	—	—	—	—
K	125.22	125.28	125.34	—	125.40	125.46	125.52	—	—	—	125.64	—	—	125.75	—	—	125.87	—	—	125.98	126.09	126.21	126.32	126.43	—	—	—	—	—
L	124.53	124.59	124.65	—	124.71	124.77	124.83	—	—	—	124.99	—	—	125.05	—	—	125.15	—	—	125.26	125.38	125.50	125.62	125.74	—	—	—	—	—
M	123.82	123.88	123.94	—	124.00	124.06	124.12	—	—	—	124.23	—	—	124.35	—	—	124.46	—	—	124.58	124.70	124.82	124.94	125.06	—	—	—	—	—
N	123.12	123.18	123.24	—	123.30	123.36	123.42	—	—	—	123.54	—	—	123.65	—	—	123.77	—	—	123.89	124.01	124.13	124.25	124.37	—	—	—	—	—
Q	122.42	122.48	122.55	—	122.61	122.67	122.73	—	—	—	122.85	—	—	122.97	—	—	123.10	—	—	123.21	123.33	123.44	123.56	123.68	—	—	—	—	—
R	121.78	—	—	121.81	—	—	—	121.84	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
S	121.28	121.22	121.13	—	121.03	120.82	120.80	—	120.68	120.54	—	120.39	120.23	120.06	119.89	119.70	—	119.51	119.30	119.08	118.84	118.59	118.32	—	118.05	117.62	117.26	116.66	116.14
T	120.57	120.53	120.46	—	120.39	120.30	120.20	—	120.09	119.97	—	119.84	119.70	119.55	119.39	119.22	—	119.04	118.85	118.65	118.42	118.19	117.94	—	117.68	117.26	116.80	116.30	115.78
P	119.85	119.91	119.76	—	119.70	119.69	119.56	—	119.47	119.37	—	119.26	119.14	119.01	118.87	118.72	—	118.56	118.39	118.21	118.00	117.75	117.56	—	117.32	116.89	116.44	115.94	115.42

BAR BENDING DIAGRAMS



Note: All bar dimensions are out to out.

BILL OF REINFORCEMENT

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
*6a1	Slab, Transverse Top	—	621	32'-5"	30.236
*6a2	Slab, Transverse Bott.	—	621	36'-7"	34.123
*6a3	Slab, Transverse Top	1 Ser 16	Varies	—	523
*6a4	Slab, Transverse Bott.	1 Ser 16	Varies	—	541
*6a5	Slab, Transverse T&B	2	6'-0"	13	—
*6a6	Slab, Transverse T&B	2	5'-0"	15	—
*6a7	Slab, Transverse Top	1 Ser 12	Varies	—	339
*6a8	Slab, Transverse Bott.	1 Ser 12	Varies	—	262
*6a9	Slab, Transverse Top	2	34'-9"	11.4	—
*6a10	Slab, Transverse Top	23	34'-5"	1.189	—
*6a11	Slab, Transverse Bott.	23	0'-6"	1.054	—
*6a12	Slab, Transverse Top	22	6'-1"	1.192	—
*6a13	Slab, Transverse Bott.	22	32'-0"	1.157	—
*6a14	Slab, Transverse Top	22	37'-6"	1.239	—
*6a15	Slab, Transverse T&B	23	33'-6"	1.157	—
*6a16	Slab, Transverse Top	22	38'-6"	1.272	—
*6a17	Slab, Transverse Bott.	22	34'-6"	1.140	—
*6a18	Slab, Transverse Top	22	40'-0"	1.322	—
*6a19	Slab, Transverse Bott.	22	6'-0"	1.190	—
*6a20	Slab, Transverse Top	22	41'-6"	1.371	—
*6a21	Slab, Transverse Bott.	22	7'-5"	1.236	—
*6a22	Slab, Transverse Top	242	6'-5"	9.602	—
*6a23	Slab, Transverse Bott.	242	2'-6"	9.541	—
*6a24	Slab, Transverse Top	22	17'-8"	564	—
*6a25	Slab, Transverse Bott.	22	1'-4"	441	—
*6a26	Slab, Transverse Top	22	18'-10"	622	—
*6a27	Slab, Transverse Bott.	22	14'-6"	479	—
*6a28	Slab, Transverse Top	22	20'-1"	664	—
*6a29	Slab, Transverse Bott.	22	15'-8"	510	—
*6a30	Slab, Transverse Top	22	21'-3"	702	—
*6a31	Slab, Transverse Bott.	22	17'-0"	562	—
*6a32	Slab, Transverse Top	22	32'-5"	711	—
*6a33	Slab, Transverse Bott.	22	18'-4"	606	—
*6a34	Slab, Transverse Top	22	23'-7"	779	—
*6a35	Slab, Transverse Bott.	22	19'-5"	612	—
*6a36	Slab, Transverse Top	22	24'-9"	816	—
*6a37	Slab, Transverse Bott.	22	20'-8"	653	—
*6a38	Slab, Transverse Top	22	25'-10"	851	—
*6a39	Slab, Transverse Bott.	22	21'-9"	719	—
*6a40	Slab, Transverse Top	22	6'-10"	887	—
*6a41	Slab, Transverse Bott.	22	2'-8"	719	—
*6a42	Slab, Transverse Top	22	2'-8"	928	—
*6a43	Slab, Transverse Bott.	22	2'-11"	790	—

BILL OF REINFORCEMENT

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
* 6a44	Slab, Transverse To.	—	22	29'-7"	967
* 6a45	Slab, Transverse T&B	—	23	25'-0"	864
* 9a46	Slab, Transverse To.	—	1 Ser 38	Varies	3,273
9a47	Slab, Transverse Bott.	—	1 Ser 38	Varies	2,746
* 6a48	Slab, Transverse Top	—	190	24'-1"	873
6a49	Slab, Transverse Bott.	—	190	10'-11"	5.81
* 9a50	Slab, Transverse T&B	—	2 Ser 38	Varies	2,268
* 6a51	Slab, Transverse T&B	—	483	2'-0"	10.686
* 6a53	Slab, Transverse To.	—	1 Ser 6	Varies	141
6a54	Slab, Transverse Bott.	—	1 Ser 6	Varies	90
* 6a55	Slab, Transverse Top	—	1 Ser 14	Varies	464
6a56	Slab, Transverse Bott.	—	1 Ser 13	Varies	455
* 6a57	Slab, Transverse T&B	—	4	6'-6"	39
* 6a58	Slab, Transverse T&B	—	4	4'-0"	24
* 5b1	Longitudinal T and B	—	130	4'-6"	4407
* 5b2	Longitudinal T and B	—	19	3'-6"	664
* 5b3	Longitudinal T and B	—	21	2'-9"	739
* 5b4	Longitudinal T and B	—	3	47'-6"	396
* 5b5	Longitudinal T and B	—	4	46'-11"	2055
* 5b6	Longitudinal T and B	—	4	44'-11"	1968
* 5b7	Longitudinal T and B	—	4	4'-10"	1876
* 5b8	Longitudinal T and B	—	42	40'-11"	1792
* 5b9	Longitudinal T and B	—	42	38'-11"	1703
* 5b10	Longitudinal T and B	—	42	6'-11"	1617
* 5b11	Longitudinal T and B	—	46	34'-11"	1675
* 5b12	Longitudinal T and B	—	46	32'-11"	1,579
* 5b13	Longitudinal T and B	—	120	43'-7"	6587
* 5b14	Longitudinal T and B	—	17	49'-8"	861
* 5b15	Longitudinal T and B	—	15	4'-11"	73
* 5b16	Longitudinal T and B	—	23	48'-10"	1,171
* 5b17	Longitudinal T and B	—	8	46'-8"	389
* 5b18	Longitudinal T and B	—	4	45'-11"	2011
* 5b19	Longitudinal T and B	—	4	43'-0"	1884
* 5b20	Longitudinal T and B	—	4	29'-10"	1745
* 5b21	Longitudinal T and B	—	4	57'-0"	1621
* 5b22	Longitudinal T and B	—	4	34'-0"	1489
* 5b23	Longitudinal T and B	—	4	31'-0"	1,358
* 5b24	Longitudinal T and B	—	4	28'-2"	999
* 5b25	Longitudinal T and B	—	38	26'-0"	1,030
* 5b26	Longitudinal T and B	—	4	2'-3"	1,115
* 5b27	Longitudinal T and B	—	120	50'-4"	6825
* 5b28	Longitudinal T and B	—	7	49'-7"	3,135

TABLE OF MOMENTS AND REACTIONS IN FOOT-KIPS AND KIPS																							
GIRDER	ITEM	MAXIMUM POSITIVE MOMENT					MAXIMUM NEGATIVE MOMENT							REACTIONS									
		SPAN 1	SPAN 2	SPAN 3	SPAN 4	SPAN 5	PIER 11N	PIER 12N	PIER 13N	PIER 14N	PIER 15N	PIER 2N*	PIER 1N*	JT. 2N	PIER 11N	PIER 12N	PIER 13N	PIER 14N	PIER 15N	JT. 3N	PIER 2N*	PIER 1N*	ABUT*
GIRDER H	Dead Load A	1673	436	1197	113	---	329	2481	1991	1595	401	---	---	27.1	100.6	167.1	149.4	132.0	70.2	26.7	---	---	---
	Dead Load B	485	153	378	34	---	104	613	524	471	139	---	---	9.3	29.8	44.8	42.1	39.5	23.2	8.9	---	---	---
	Live Load	1408	1096	1120	800	---	415	1466	1336	1145	493	---	---	42.2	67.4	94.6	90.8	83.2	57.9	42.3	---	---	---
	Impact	265	211	212	191	---	78	278	288	240	117	---	---	10.5	12.7	18.0	17.4	17.5	13.8	10.4	---	---	---
	Total	---	---	---	---	---	926	4838	4106	3451	1150	---	---	89.1	210.5	324.5	299.7	272.2	165.1	88.3	---	---	---
GIRDER J	Dead Load A	1661	378	1316	128	---	358	2418	2081	1757	438	---	---	30.1	105.8	169.9	158.4	144.7	76.8	29.3	---	---	---
	Dead Load B	666	185	544	46	---	150	838	741	686	201	---	---	13.3	42.9	63.7	60.4	57.3	33.5	12.7	---	---	---
	Live Load	1481	1143	1213	879	---	453	1508	1407	1242	542	---	---	46.5	72.7	100.5	97.5	90.7	63.5	36.5	---	---	---
	Impact	283	226	228	209	---	87	292	272	261	129	---	---	11.6	13.9	19.5	18.8	19.0	15.1	11.6	---	---	---
	Total	---	---	---	---	---	1048	5056	4501	3946	1310	---	---	101.5	235.3	353.6	335.1	311.7	188.9	100.1	---	---	---
GIRDER K	Dead Load A	1538	288	1272	125	---	353	2174	1936	1705	428	---	---	29.9	102.8	158.6	149.9	140.5	75.1	28.8	---	---	---
	Dead Load B	623	115	550	43	---	154	766	724	692	201	---	---	13.3	42.8	60.7	59.4	57.5	33.4	12.6	---	---	---
	Live Load	1388	1078	1172	869	---	448	1400	1338	1208	537	---	---	46.3	71.1	96.5	94.1	88.6	62.7	41.3	---	---	---
	Impact	270	218	220	206	---	87	276	261	254	127	---	---	11.5	13.8	19.1	18.4	18.6	14.9	11.5	---	---	---
	Total	---	---	---	---	---	1042	4616	4259	3859	1293	---	---	101.0	230.5	334.9	321.8	305.2	186.1	94.2	---	---	---
GIRDER L	Dead Load A	1414	197	1228	122	---	348	1930	1791	1654	417	---	---	29.7	99.8	147.3	141.4	136.3	73.4	28.2	---	---	---
	Dead Load B	580	114	556	41	---	159	695	706	697	201	---	---	13.3	42.7	57.8	58.4	57.7	33.3	12.6	---	---	---
	Live Load	1294	1013	1132	859	---	443	1293	1270	1175	532	---	---	46.1	69.4	92.5	90.7	86.5	61.9	46.1	---	---	---
	Impact	256	210	213	204	---	88	261	250	247	126	---	---	11.4	13.7	18.7	17.9	18.2	14.7	11.5	---	---	---
	Total	---	---	---	---	---	1038	4179	4017	3773	1276	---	---	100.5	225.6	316.3	308.4	298.7	183.3	98.4	---	---	---
GIRDER M	Dead Load A	1331	114	1255	128	---	349	1749	1736	1680	397	---	---	29.6	98.2	144.4	138.2	136.8	71.1	27.8	---	---	---
	Dead Load B	548	72	566	38	---	159	631	694	706	201	---	---	13.3	42.2	54.8	57.5	58.1	33.2	12.5	---	---	---
	Live Load	1260	958	1137	860	---	443	1212	1244	1176	532	---	---	46.0	68.3	89.8	89.9	86.7	60.0	46.0	---	---	---
	Impact	253	203	213	205	---	89	250	247	247	126	---	---	11.3	13.8	18.6	17.9	18.2	16.4	11.5	---	---	---
	Total	---	---	---	---	---	1040	3842	3921	3809	1256	---	---	100.2	222.5	307.6	303.5	299.8	180.7	97.8	---	---	---
GIRDER N	Dead Load A	1249	31	1282	134	---	349	1567	1680	1706	377	---	---	29.4	96.5	131.8	135.0	137.3	68.6	27.5	---	---	---
	Dead Load B	516	31	576	34	---	159	568	683	715	201	---	---	13.3	41.6	51.7	56.6	58.5	33.1	12.4	---	---	---
	Live Load	1226	904	1142	860	---	443	1132	1219	1177	532	---	---	45.9	67.2	87.0	89.1	86.9	58.1	45.9	---	---	---
	Impact	250	196	213	205	---	90	239	245	247	126	---	---	11.3	13.8	18.4	17.9	18.2	18.2	11.5	---	---	---
	Total	---	---	---	---	---	1041	3506	3827	3845	1236	---	---	99.9	219.5	288.9	298.6	300.9	178.0	97.3	---	---	---
GIRDER O	Dead Load A	1249	-257	1660	-46	---	378	1346	1880	1829	386	---	---	28.2	99.2	121.9	152.2	136.9	63.6	24.0	---	---	---
	Dead Load B	424	41	391	26	---	124	491	492	489	136	---	---	10.7	34.8	46.0	42.6	40.2	23.0	8.5	---	---	---
	Live Load	1042	760	999	771	---	362	938	1058	1036	467	---	---	17.2	52.6	72.0	75.0	73.4	61.6	41.4	---	---	---
	Impact	217	170	187	183	---	75	202	216	218	111	---	---	4.3	14.7	18.8	18.8	19.5	14.7	10.3	---	---	---
	Total	---	---	---	---	---	939	2977	3646	3572	1100	---	---	60.4	201.3	258.8	288.6	270.0	162.9	84.2	---	---	---
GIRDER R	Dead Load A	---	---	199	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	Dead Load B	---	---	62	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	Live Load	---	---	97	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	Impact	---	---	29	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	Total	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
+ GIRDER S	Dead Load A	---	-226	1696	-57	548	---	916	1703	---	---	1878	394	---	---	84.0	140.1	---	---	---	145.8	69.8	32.8
	Dead Load B	---	-41	541	22	226	---	299	641	---	---	670	191	---	---	29.0	53.4	---	---	---	56.8	32.7	14.0
	Live Load	---	624	921	593	629	---	624	1079	---	---	1002	557	---	---	49.6	79.3	---	---	---	75.9	61.5	43.7
	Impact	---	143	175	142	163	---	136	224	---	---	212	139	---	---	12.0	18.2	---	---	---	16.1	15.3	11.4
	Total	---	---	---	---	---	---	1975	3647	---	---	3762	1281	---	---	174.6	291.0	---	---	---	294.6	179.3	101.9
+ GIRDER T	Dead Load A	1108	-268	1402	40	546	37	1183	1525	---	---	1802	1546	---	49.6	110.2	128.0	---	---	---	145.7	83.4	34.0
	Dead Load B	414	-135	738	3	290	0	334	790	---	---	915	257	---	15.8	34.2	64.0	---	---	---	76.0	43.4	18.1
	Live Load	782	688	1174	732	612	279	786	1100	---	---	1193	639	---	42.2	65.1	83.6	---	---	---	90.3	70.2	40.0
	Impact	165	162	223	175	182	59	175	231	---	---	253	159	---	8.9	14.4	17.6	---	---	---	19.1	17.4	10.2
	Total	---	---	---	---	---	375	2478	3646	---	---	4163	1602	---	116.8	223.9	293.2	---	---	---	331.1	214.4	102.3
+ GIRDER P	Dead Load A	882	-212	1208	78	452	313	914	1359	---	---	1600	510	23.1	80.0	89.9	115.1	---	---	---	127.7	74.6	28.6
	Dead Load B	289	-121	604	65	229	90	226	665	---	---	760	229	9.3	24.2	25.6	53.5	---	---	---	62.9	37.0	14.5
	Live Load	974	652	1029	625	627	388	844	1035	---	---	1050	583	36.2	58.5	72.7	79.5	---	---	---	80.2	62.8	43.3
	Impact	208	158	191	149	159	83	191	219	---	---	222	144	9.0	12.5	16.4	16.9	---	---	---	17.0	15.4	11.0
	Total	---	---	---	---	---	874	2175	3278	---	---	3632	1466	77.6	175.2	204.6	265.0	---	---	---	287.8	189.8	97.4

† Spans 3, 4 and 5 are on Ramp E-1.

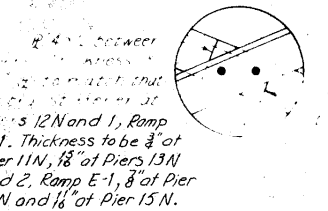
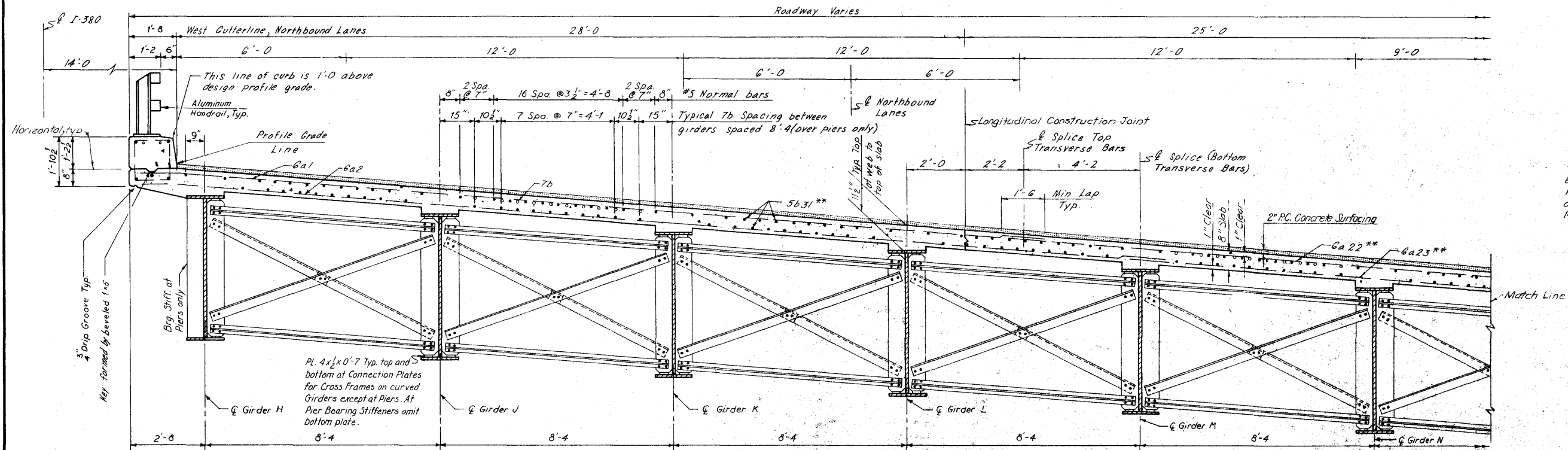
* Ramp E-1 Pier or Abutment.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

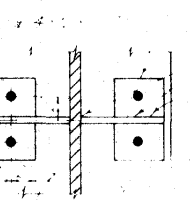
MADE T.M.L. DATE 4-1-74 CHECKED C.B.P. DATE 6-24-74

CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE
SUPERSTRUCTURE DETAILS - UNIT 3NB

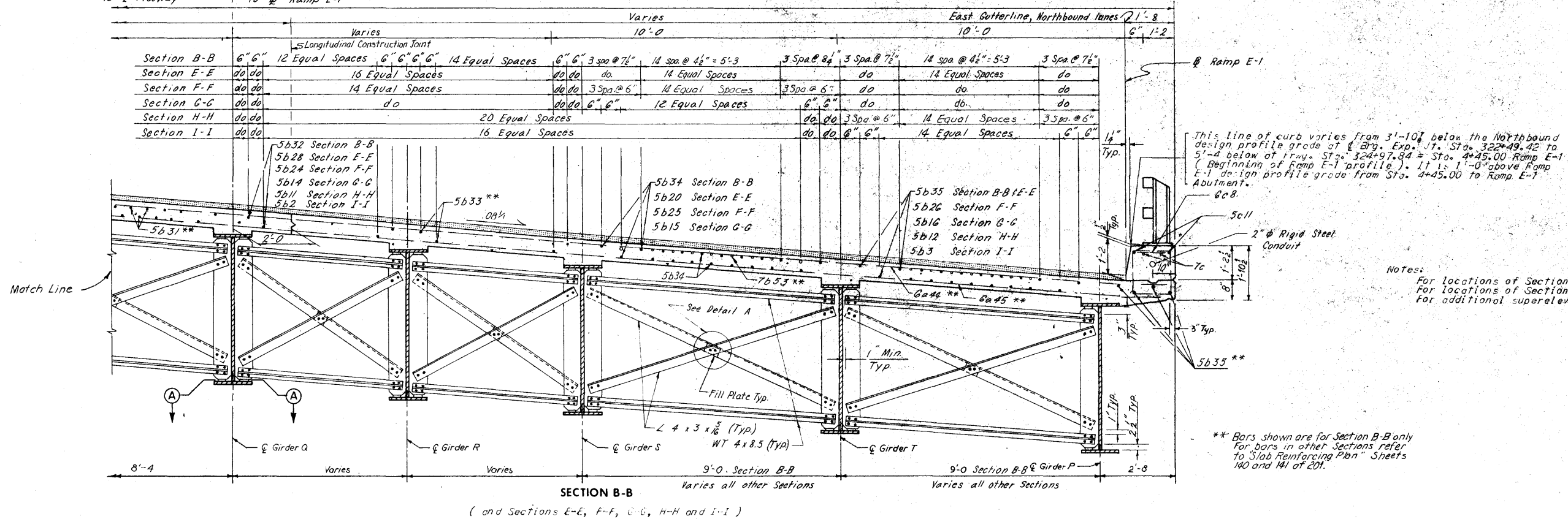
STA. 322+81.95 @ FREEWAY=
STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. I-380-6(68)263--01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION



SECTION A-A



SECTION A-A



Notes:

For locations of Sections F-F, G-G, H-H and I-I see Sheet 140 of 201.

For locations of Sections B-B and E-E see Sheet 141 of 201.

For additional superlevation data see Sheet 16 of 201.

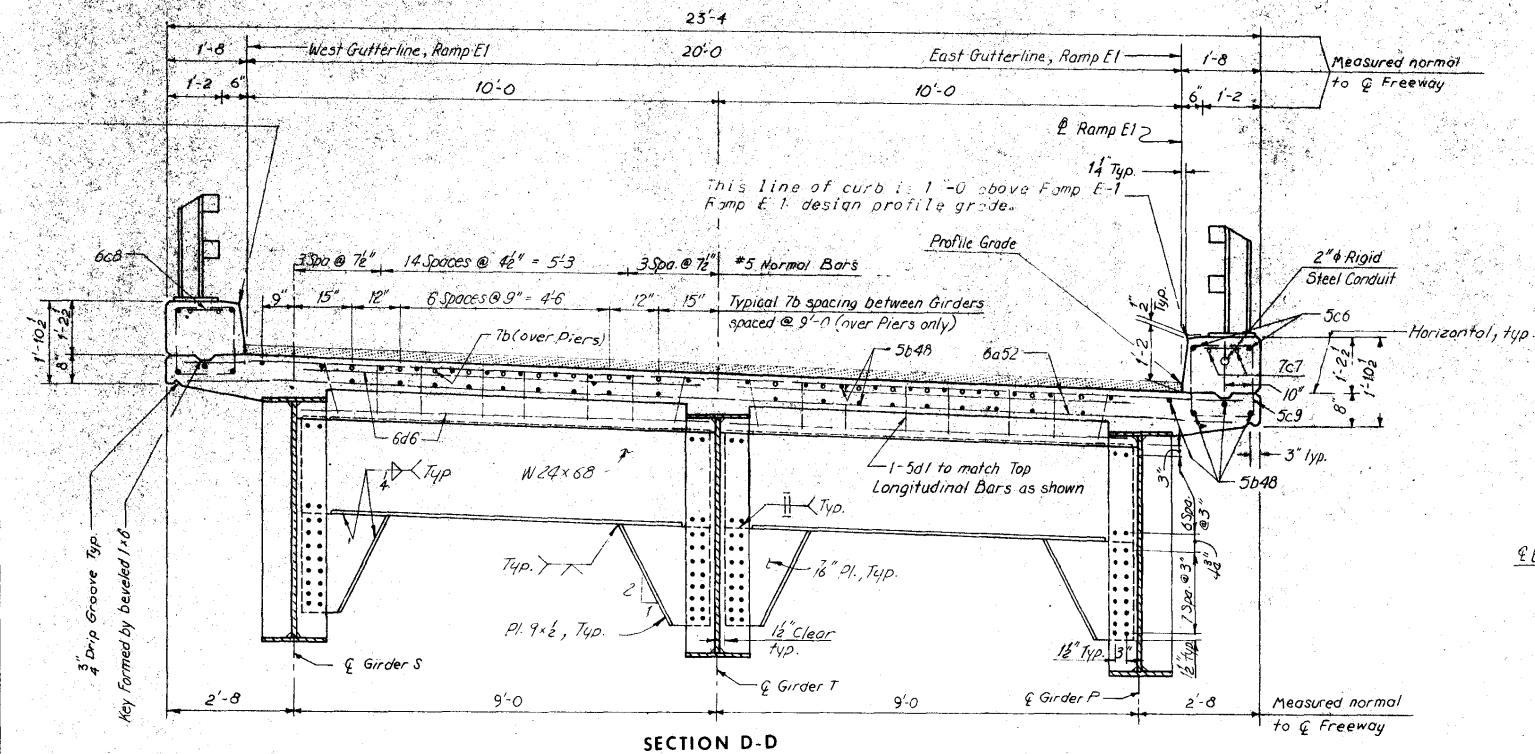
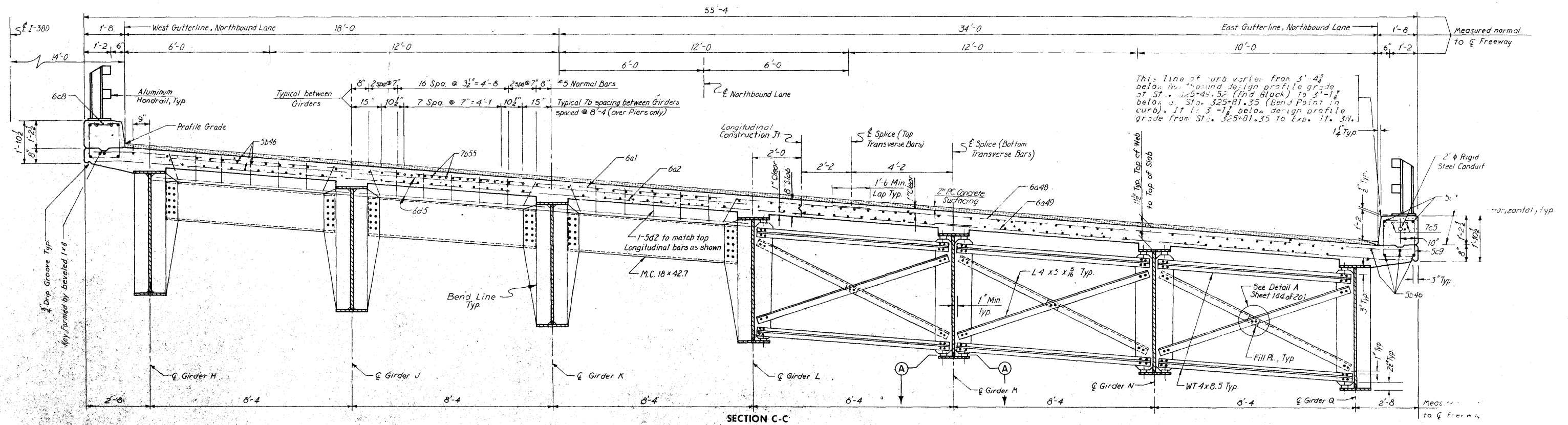
** Bars shown are for Section B-B only
For bars in other sections refer to "Slab Reinforcing Plan" Sheets 140 and 141 of 201.

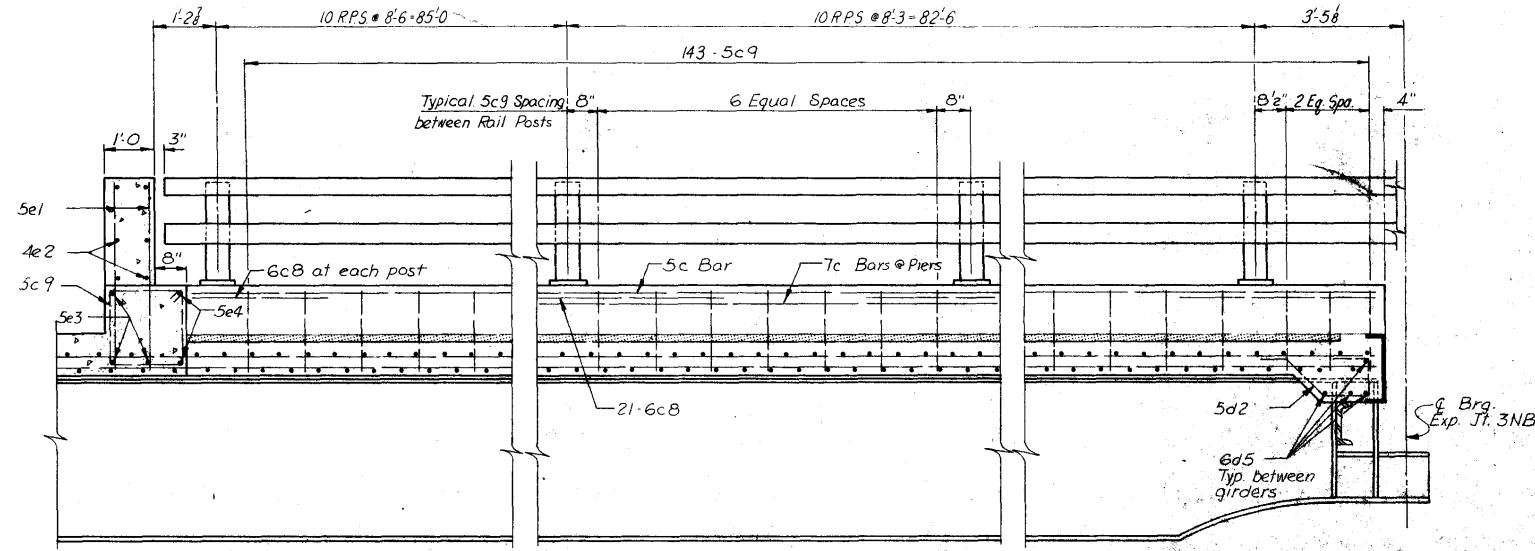
CEDAR RIVER BRIDGE
SOUTH APPROACH
 DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE
SUPERSTRUCTURE DETAILS - UNIT 3NB

STA. 322+81.95 @ FREEWAY =
 STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. I-380-6(68)263--01-57
 LINN COUNTY
 IOWA STATE HIGHWAY COMMISSION

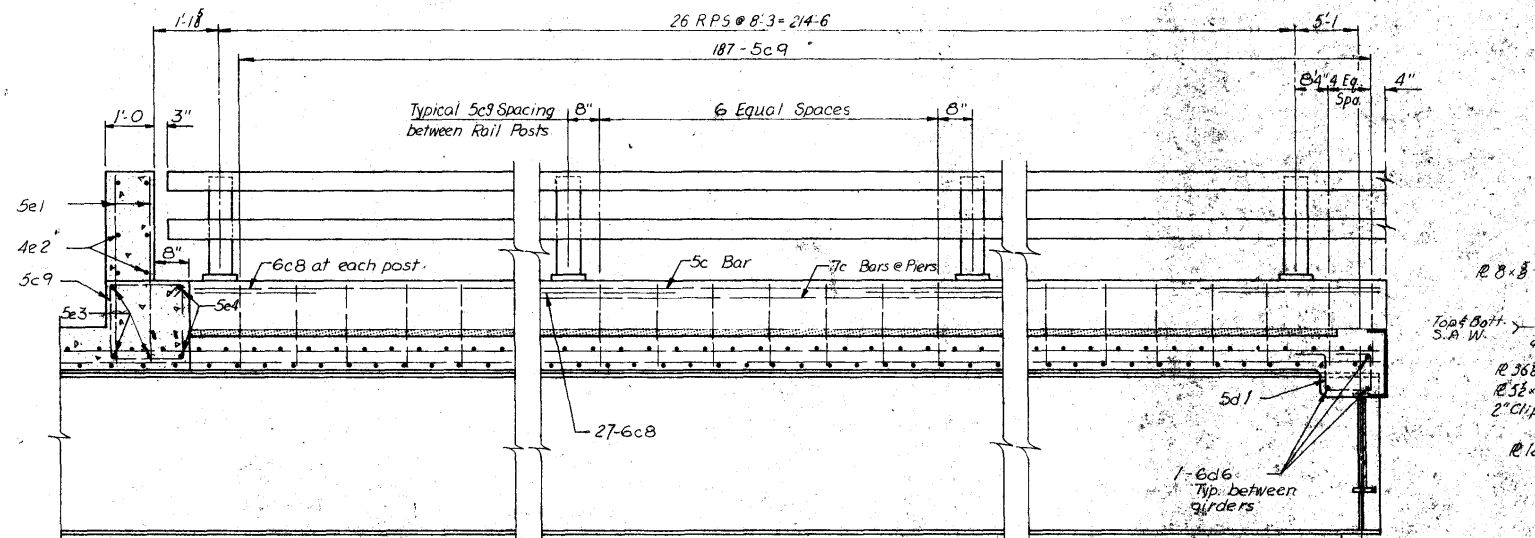
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
 CONSULTING ENGINEERS
 KANSAS CITY

MADE LCH DATE 6-5-74 CHECKED DRA DATE 6-28-74

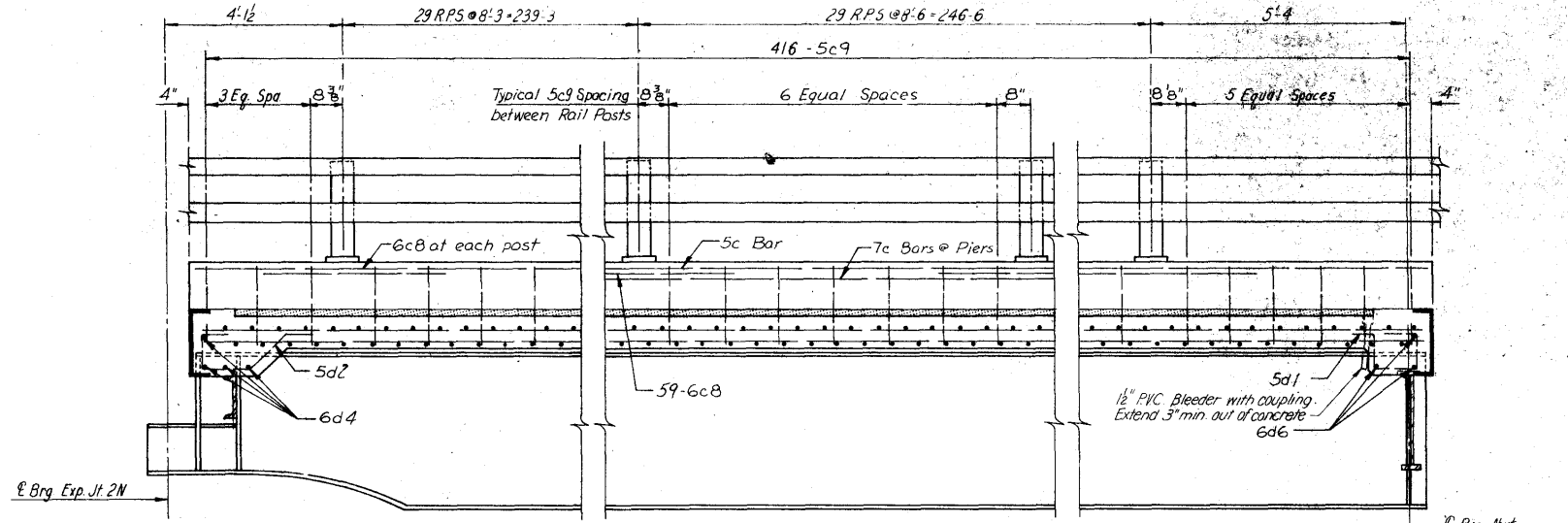




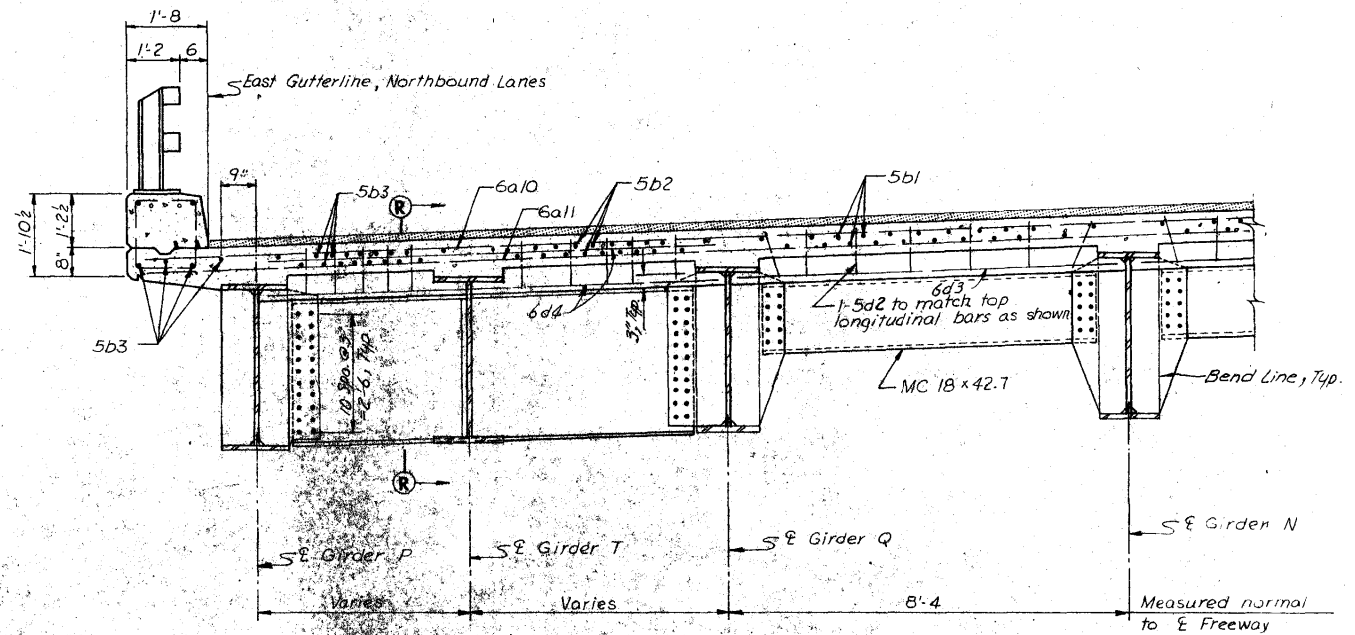
PART LONGITUDINAL SECTION NEAR EAST CURB



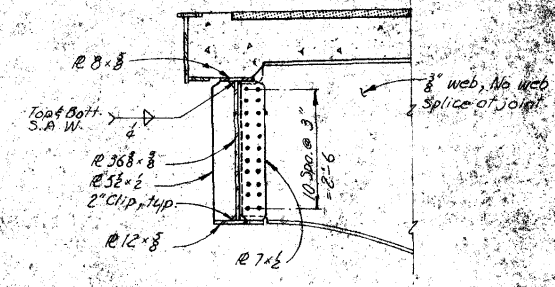
PART LONGITUDINAL SECTION NEAR WEST CURB RAMP E-1



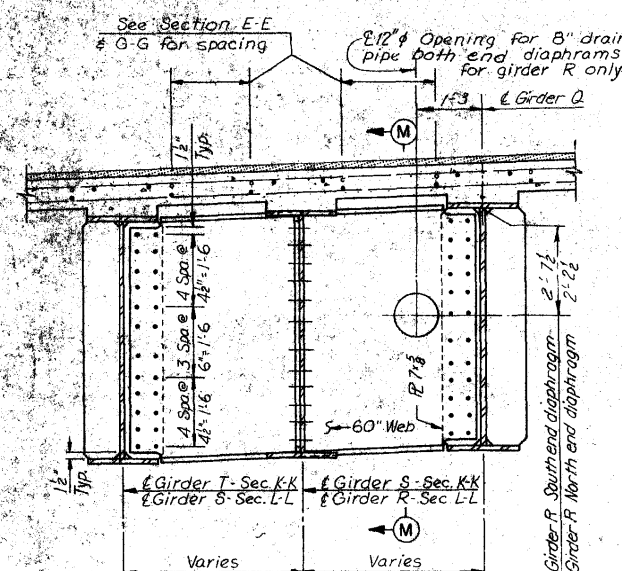
PART LONGITUDINAL SECTION NEAR EAST CURB RAMP E-1



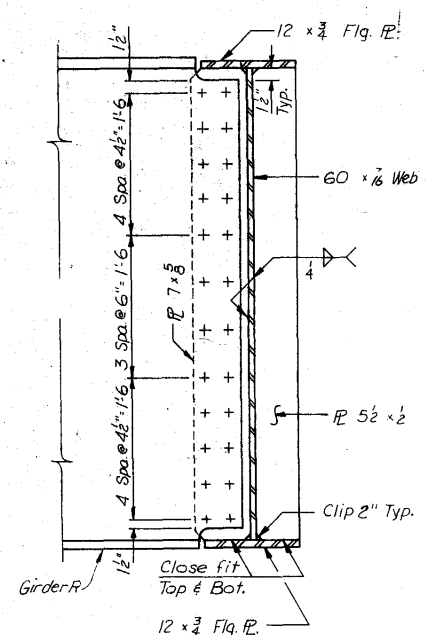
SECTION J-J



SECTION R-R



SECTION K-K and L-L



SECTION M-M

Note:
Section L-L is typical for both Girder R and diaphragm details. For location of Section L-L see Sheet 141 of 201.
For location of Section K-K see Sheet 140 of 201.

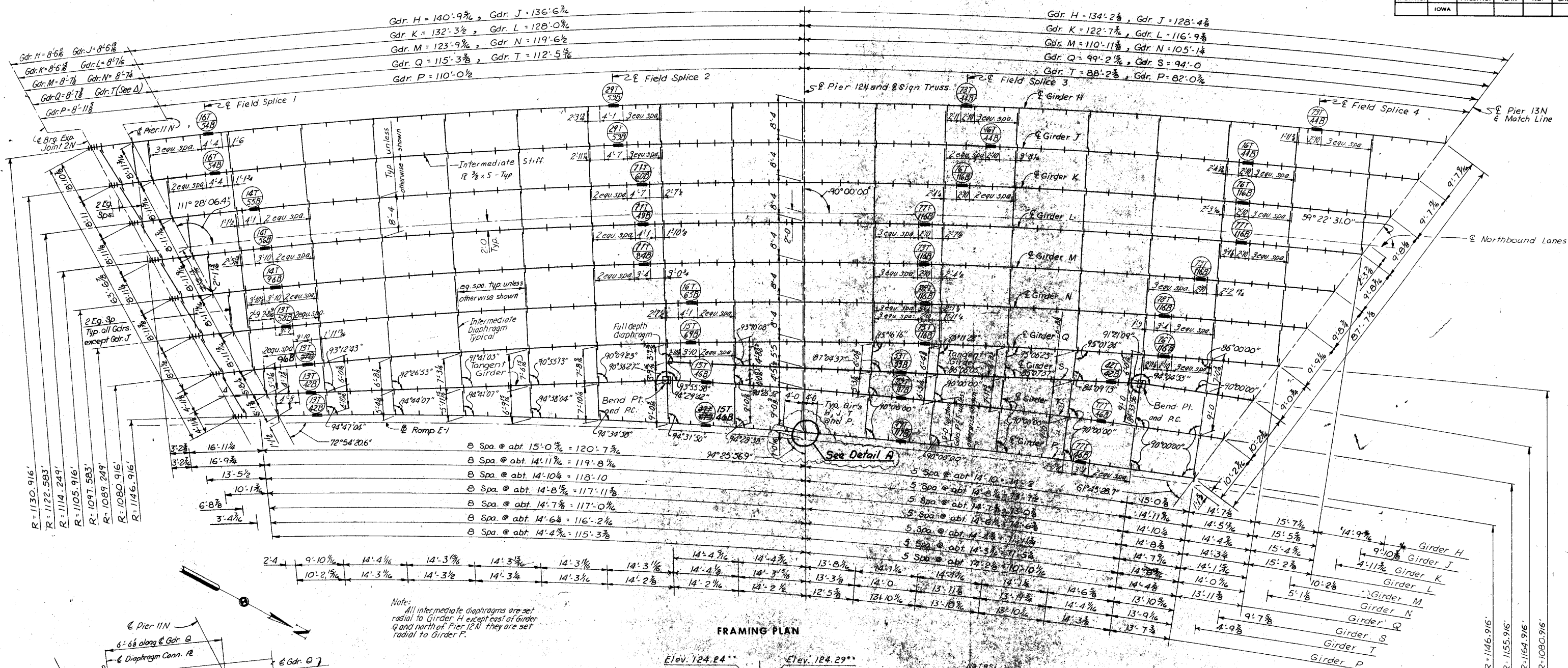
**CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE**

SUPERSTRUCTURE DETAILS - UNIT 3NB

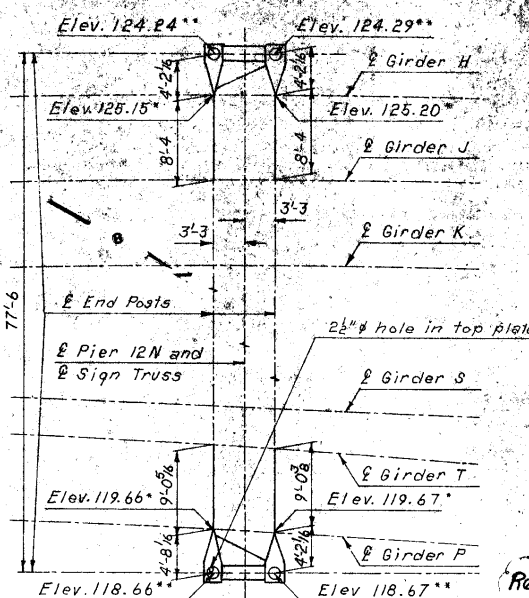
STA. 322+81.95 @ FREEWAY =
STA. 324+14.70 @ 1ST. AVE. W PROJECT NO. I-380-6(68)263--01-57
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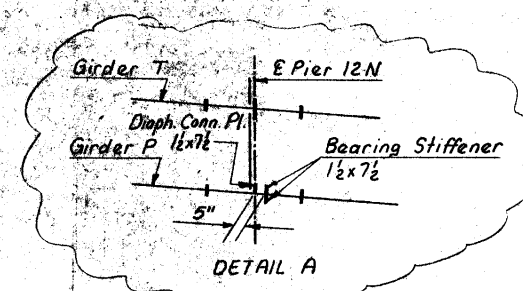
MADE LDH DATE 7-2-74 CHECKED DRA DATE 6-28-74



FRAMING PLAN



LOCATION SKETCH



DETAIL A

Girder	Joint 2N	Pier 11N	Pier 12N	Pier 13N
H	110°34'38"	111°00'39"	90°00'00"	60°03'46"
J	110°44'14"	111°18'28"	90°00'00"	59°49'03"
K	110°53'58"	110°26'26"	90°00'00"	59°34'04"
L	111°03'52"	111°30'33"	90°00'00"	59°18'50"
M	111°13'55"	111°40'51"	90°00'00"	59°03'20"
N	111°24'09"	111°51'19"	90°00'00"	58°47'32"
Q	111°34'32"	112°01'57"	90°00'00"	58°31'27"
S	—	—	92°24'18"	62°15'32"
T	116°00'29"	116°00'29"	94°23'19"	62°01'26"
P	116°37'15"	117°04'07"	94°25'23"	61°47'05"

Revised: 9-23-77; Detail A added to show Girder P Brg. Stiffeners at Pier 12N shifted 5" & Diaphragm connection plate stiffener added.
Revised 5-3-77: Corrected dimension to E NBL at Pier 11N.
Revised 3-11-77: Flange Field Splice type corrected at 2 locations.

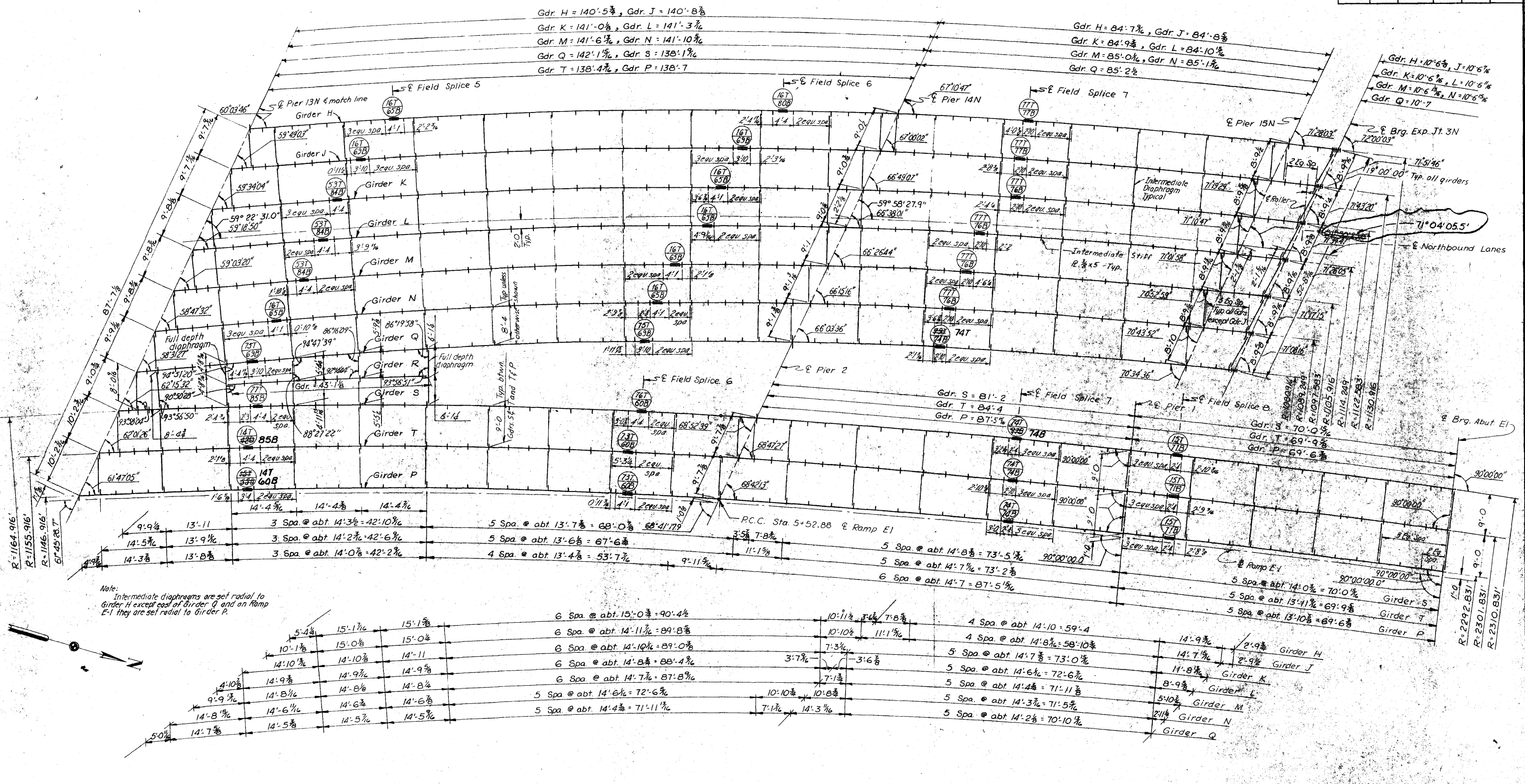
STA. 322+81.95 @ FREEWAY =
STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. I-380-6(68)263--01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

SHEET 147 OF 201

DESIGN NO. 1276 LINN COUNTY FILE 23191 SHEET 149 OF 203-0

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

MADE LGK DATE SEPT 24 CHECKED DRA DATE 6-17-74



FRAMING PLAN

**CEDAR RIVER BRIDGE
SOUTH APPROACH**
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE

FRAMING PLAN - UNIT 3NB

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

Revised 5-3-77: Corrected angle at Pier 15N.
Revised 3-11-77: Flange Field Splice corrected at 4 locations.

Note:
For additional Framing Plan Details see Sheet 147 of 201.
For girder splice details see Sheet 183 thru 185 of 201.
For Brg. Stiff. and Intermediate Stiff. details see Sheet 182 of 201.

STA. 322+81.95 @ FREEWAY =
STA. 324+70 @ 1ST. AVE. W PROJECT NO. I-380-6(68)263-01-57

LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

MADE LCH DATE Sept 26 CHECKED DRB DATE 6-17-74

Part IV of IV
SHEET 148 OF 201

TOTAL LENGTH

519'-2 1/16" Girder H 509'-6 1/16" Girder J 499'-10 1/16" Girder K 490'-2 1/16" Girder L 480'-5 3/8" Girder M 470'-9 3/8" Girder N 461'-1 1/8" Girder Q

SPAN LENGTHS

FIELD SPICES

TOP FLANGE PLATES

SHEAR CONNECTOR SPACES

BOTTOM FLANGE PLATES

See Below

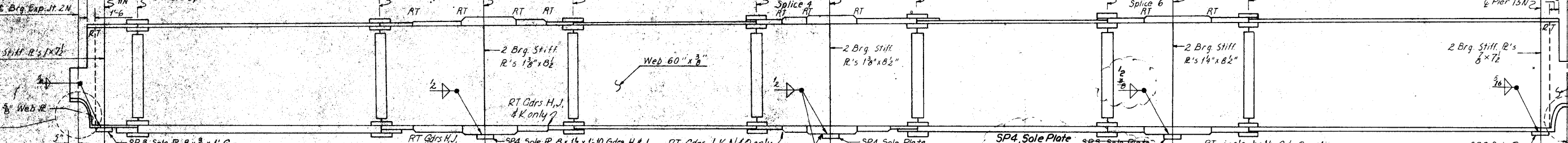
See Below

140'-9 3/8" Girder H, 136'-6 1/8" Girder J, 132'-3 1/2" Girder K, 128'-0 1/8" Girder L, 134'-2 3/8" Girder H, 128'-4 3/8" Girder J, 122'-7 1/8" Girder K, 116'-9 3/8" Girder L, 140'-5 3/8" Girder H, 140'-8 3/8" Girder J, 141'-0 3/8" Girder K, 141'-3 3/8" Girder L, 84'-7 3/8" Girder H, 84'-8 3/8" Girder J, 84'-9 3/8" Girder K, 84'-10 3/8" Girder L, 123'-9 3/8" Girder M, 119'-6 1/2" Girder N, 115'-3 3/8" Girder Q, 110'-11 3/8" Girder M, 105'-1 1/4" Girder N, 99'-2 1/4" Girder Q, 141'-6 1/8" Girder M, 141'-10 3/8" Girder N, 142'-1 1/8" Girder Q, 85'-0 1/8" Girder M, 85'-1 1/8" Girder N, 85'-2 1/2" Girder Q

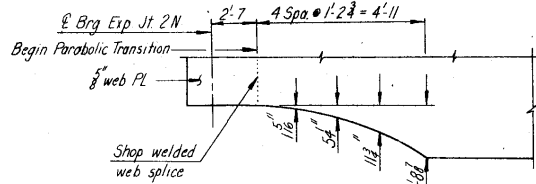
GIRDER H	8'-6 1/8"	16'-0"	84'-9 3/8"	12'-0"	13'-0"	15'-0"	14'-0"	10'-0"	73'-2 3/8"	11'-0"	10'-0"	6'-0"	7'-0"	10'-0"	14'-0"	84'-5 3/8"	10'-0"	15'-0"	12'-0"	16'-0"	56'-7 1/8"	10'-6 1/8"
GIRDER J	8'-6 1/8"	13'-0"	84'-6 1/8"	do	12'-0"	15'-0"	13'-0"	14'-0"	53'-4 3/8"	12'-0"	do	14'-0"	9'-0"	9'-0"	10'-0"	82'-8 3/8"	10'-0"	10'-0"	14'-0"	do	54'-8 3/8"	10'-6 1/8"
GIRDER K	8'-6 1/8"	17'-0"	81'-3 3/8"	do	10'-0"	10'-0"	14'-0"	20'-0"	58'-7 3/8"	11'-0"	20'-0"	15'-0"	12'-0"	15'-0"	12'-0"	83'-0 3/8"	16'-0"	15'-0"	do	19'-0"	51'-9 3/8"	10'-6 1/8"
GIRDER L	8'-7 1/8"	15'-0"	79'-0 3/8"	do	do	do	do	do	66'-9 3/8"	do	do	do	do	13'-0"	13'-0"	83'-3 1/8"	15'-0"	do	do	15'-0"	55'-10 1/8"	10'-6 1/8"
GIRDER M	8'-7 1/8"	13'-0"	76'-9 3/8"	do	do	do	do	do	57'-11 3/8"	do	do	do	do	do	do	80'-6 1/8"	18'-0"	do	do	16'-0"	55'-0 1/8"	10'-6 1/8"
GIRDER N	8'-7 1/8"	11'-0"	84'-6 1/2"	do	13'-0"	11'-0"	10'-0"	15'-0"	50'-1 1/4"	do	do	do	do	do	do	82'-10 3/8"	17'-0"	16'-0"	do	do	55'-1 3/8"	10'-6 1/8"
GIRDER Q	8'-7 1/8"	do	80'-3 3/8"	do	15'-0"	9'-0"	11'-0"	14'-0"	50'-2 1/8"	do	do	do	do	do	do	84'-1 1/8"	20'-0"	12'-0"	12'-0"	10'-0"	53'-2 1/2"	10'-7"

GIRDER H	8'-6 1/8"	16'-0"	84'-9 3/8"	12'-0"	13'-0"	15'-0"	14'-0"	10'-0"	73'-2 3/8"	11'-0"	10'-0"	6'-0"	7'-0"	10'-0"	14'-0"	84'-5 3/8"	10'-0"	15'-0"	12'-0"	16'-0"	56'-7 1/8"	10'-6 1/8"
GIRDER J	8'-6 1/8"	13'-0"	84'-6 1/8"	do	12'-0"	15'-0"	13'-0"	14'-0"	53'-4 3/8"	12'-0"	do	14'-0"	9'-0"	9'-0"	10'-0"	82'-8 3/8"	10'-0"	10'-0"	14'-0"	do	54'-8 3/8"	10'-6 1/8"
GIRDER K	8'-6 1/8"	17'-0"	81'-3 3/8"	do	10'-0"	10'-0"	14'-0"	20'-0"	58'-7 3/8"	11'-0"	20'-0"	15'-0"	12'-0"	15'-0"	12'-0"	83'-0 3/8"	16'-0"	15'-0"	do	19'-0"	51'-9 3/8"	10'-6 1/8"
GIRDER L	8'-7 1/8"	15'-0"	79'-0 3/8"	do	do	do	do	do	66'-9 3/8"	do	do	do	do	13'-0"	13'-0"	83'-3 1/8"	15'-0"	do	do	15'-0"	55'-10 1/8"	10'-6 1/8"
GIRDER M	8'-7 1/8"	13'-0"	76'-9 3/8"	do	do	do	do	do	57'-11 3/8"	do	do	do	do	do	do	80'-6 1/8"	18'-0"	do	do	16'-0"	55'-0 1/8"	10'-6 1/8"
GIRDER N	8'-7 1/8"	11'-0"	84'-6 1/2"	do	13'-0"	11'-0"	10'-0"	15'-0"	50'-1 1/4"	do	do	do	do	do	do	82'-10 3/8"	17'-0"	16'-0"	do	do	55'-1 3/8"	10'-6 1/8"
GIRDER Q	8'-7 1/8"	do	80'-3 3/8"	do	15'-0"	9'-0"	11'-0"	14'-0"	50'-2 1/8"	do	do	do	do	do	do	84'-1 1/8"	20'-0"	12'-0"	12'-0"	10'-0"	53'-2 1/2"	10'-7"

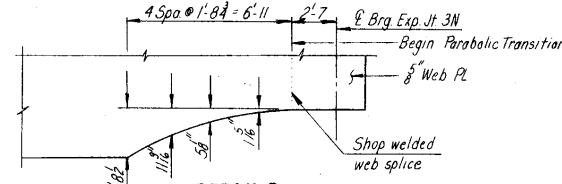
GIRDER H	4'-10 = 10'-0	5 Spa @ 2'-0 = 6'-0	2'-10 1/2 = 15'-4	33 Spa @ 2'-0 = 66'-0	8 Spa @ 1'-11 = 15'-4	2'-10 1/2 = 7'-8	4 Spa @ 1'-11 = 7'-8	135 Spa @ 2'-0 = 26'-0	5'-2	4'-10	145 Spa @ 2'-7 1/2 = 26'-0	26 Spa @ 2'-0	52'-0	10 Spa @ 1'-10	18'-4	2'-7 1/2	11 Spa @ 4'-0 = 44'-0	4'-11	13 Spa @ 2'-6 = 38'-0	33 Spaces @ 2'-0 = 66'-0	10 Spaces @ 1'-7 = 15'-10	2'-5 1/4	10 Spa @ 4'-8 = 40'-0	4'-7	11 Spa @ 2'-10 1/2 = 22'-0	5 Spaces @ 1'-10	9'-2	20 Spaces @ 2'-0 = 40'-0	6'-0		
GIRDER J	5'-2	4 Spa @ 1'-8 = 6'-8	2'-4 1/8 = 19'-15 1/2	9 Spa @ 1'-8 = 2'-0	19 Spa @ 1'-8 = 2'-0	9 Spa @ 2'-4 = 18'-0	4 Spa @ 1'-8 = 6'-8	do	do	5'-3	17 Spa @ 2'-4 1/2 = 38'-0	16 Spa @ 2'-0	32'-0	12 Spa @ 1'-7	19'-0	2'-4 1/8	11 Spa @ 4'-2 = 46'-0	4'-10	11 Spa @ 2'-7 = 22'-0	8 Spa @ 1'-8 = 15'-11 1/4	13 Spa @ 1'-8 = 20'-2 1/2	2'-6 3/8 = 19'-11 1/4	10 Spa @ 1'-8 = 20'-0	10 Spa @ 4'-7 = 40'-0	do	12 Spa @ 2'-11 3/8 = 26'-0	7 Spaces @ 1'-9	12'-3	13 Spaces @ 1'-11	24'-11	5 Spa @ do = 2'-10
GIRDER K	5'-4	6 Spa @ 1'-9 = 10'-6	2'-6 3/4 = 19'-12 3/4	7 Spa @ 1'-9 = 20'-3 3/4	17 Spa @ 1'-9 = 14'-15 1/2	do	13 Spa @ 2'-6 3/4 = 5'-0	3 Spa @ 1'-8 = 23'-0	12 Spa @ 1'-11 = 4'-10	5'-7	13 Spa @ 2'-0 = 2'-0	3'-1 1/8	4 Spa @ 2'-0 = 8'-0	22 Spa @ 1'-10 1/2 = 41'-3	3 Spa @ 2'-0 = 6'-0	3'-1 1/8	12 Spa @ 5'-7 = 54'-0	5'-1	10 Spa @ 3'-2 1/2 = 20'-0	14 Spa @ 1'-8 = 11'-0	14 Spa @ 1'-8 = 11'-0	15 Spa @ 2'-8 = 15'-2 1/2	2 Spa @ 1'-8 = 2'-0	11 Spa @ 5'-0 = 55'-0	5'-7	13 Spa @ 2'-10 1/2 = 2'-0	22 Spaces @ 1'-10	40'-4	2 Spa @ do = 2'-0	do	
GIRDER L	5'-1	5 Spa @ 1'-9 = 8'-9	2'-8 3/8 = 10'-6	6 Spa @ 1'-9 = 10'-6	24 Spa @ 2'-0 = 48'-0	10 Spa @ 1'-8 = 19'-17 1/2	4 Spa @ 1'-8 = 7'-0	11 Spa @ 1'-11 = 21'-1	12 Spa @ 1'-11 = 11'-19 1/2	4'-9	4'-5	10 Spa @ 3'-3 3/8 = 2'-0	21 Spaces @ 1'-9 = 19'-3	3'-3 3/8	10 Spa @ 4'-5 = 44'-0	4'-4	11 Spa @ 3'-2 1/2 = 44'-0	4'-4	11 Spa @ 3'-2 1/2 = 44'-0	14 Spa @ 1'-8 = 11'-0	14 Spa @ 1'-8 = 11'-0	15 Spa @ 2'-8 = 15'-2 1/2	2 Spa @ 1'-8 = 2'-0	11 Spa @ 5'-0 = 55'-0	5'-7	13 Spa @ 2'-10 1/2 = 2'-0	22 Spaces @ 1'-10	36'-8	5 Spa @ do = 2'-0	do	
GIRDER M	5'-2	4 Spa @ 1'-8 = 6'-8	2'-6 1/8 = 12'-3	7 Spa @ 1'-8 = 14'-0	23 Spa @ 2'-0 = 46'-0	9 Spa @ 1'-8 = 15'-0	2'-6 3/4 = 12'-3	do	do	do	do	2'-4 1/2	29 Spaces @ 1'-11 = 31'-9	2'-4 1/2	11 Spa @ 4'-10 = 44'-0	do	do	3'-0 1/2	do	do	do	2'-6 3/8 = 15'-2 1/2	2 Spa @ 1'-8 = 2'-0	12 Spa @ 5'-0 = 60'-0	4'-7	12 Spa @ 2'-10 1/2 = 2'-0	20 Spaces @ 1'-10	36'-8	5 Spa @ do = 2'-0	do	
GIRDER N	4'-10	3 Spa @ 1'-8 = 5'-0	2'-7 1/4 = 18'-13 1/4	8 Spa @ 1'-8 = 20'-0	22 Spa @ 2'-0 = 44'-0	7 Spa @ 1'-8 = 14'-0	2'-7 1/4 = 18'-13 1/4	9 Spa @ 2'-0 = 18'-0	4'-10	do	do	3'-2 3/8	24 Spaces @ 1'-11 = 46'-0	3'-2 3/8	12 Spa @ 4'-10 = 48'-0	do	4'-10	10 Spa @ 2'-6 3/8 = 2'-0	do	16 Spa @ 2'-0 = 32'-0	do	2'-6 3/8 = 15'-2 1/2	do	do	do	do	3'-8 1/8	19 Spaces @ 1'-10	34'-10	6 Spa @ do = 2'-0	do
GIRDER Q	do	do	2'-4 1/8 = 18'-10	7 Spa @ 1'-10 = 27'-0	27 Spa @ 2'-0 = 54'-0	7 Spa @ 1'-7 = 11'-0	2'-4 1/4 = 11'-11 1/4	4 Spa @ 1'-7 = 6'-0	6 Spa @ 5'-0 = 30'-0	do	do	3'-6 1/2	23 Spaces @ 2'-0 = 46'-0	3'-6 1/2	9 Spa @ 4'-10 = 36'-0	do	do	2'-7 1/2	38 Spaces @ 2'-0 = 76'-0	3 Spa @ 2'-7 1/2 = 15'-15 1/2	4 Spa @ 1'-8 = 20'-0	10 Spa @ 5'-2 = 50'-0	do	do	do	do	3'-9 1/2	do	5 Spa @ do = 2'-0	do	
	11	2 Pier	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	11	2 Pier	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	11	2 Pier	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	11	2 Pier	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	11	2 Pier	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	11	2 Pier	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	11	2 Pier	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	11	2 Pier	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	11	2 Pier	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	11	2 Pier	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	11	2 Pier	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	11	2 Pier	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	11	2 Pier	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	11	2 Pier	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	11	2 Pier	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	11	2 Pier	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	11	2 Pier	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	11	2 Pier	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	11	2 Pier	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	11	2 Pier	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	11	2 Pier	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	11	2 Pier	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1						



GIRDER H	8'-6 1/8"	16'-0"	84'-9 3/8"	12'-0"	13'-0"	15'-0"	14'-0"	10'-0"	73'-2 3/8"	11'-0"	10'-0"	6'-0"	7'-0"	10'-0"	14'-0"	84'-5 3/8"	10'-0"	15'-0"	12'-0"	16'-0"	56'-7 1/8"	10'-6 1/8"
GIRDER J	8'-6 1/8"	13'-0"	84'-6 1/8"	do	12'-0"	15'-0"	13'-0"	14'-0"	53'-4 3/8"	12'-0"	do	14'-0"	9'-0"	9'-0"	10'-0"	82'-8 3/8"	10'-0"	10'-0"	14'-0"	do	54'-8 3/8"	10'-6 1/8"
GIRDER K	8'-6 1/8"	17'-0"	81'-3 3/8"	do	10'-0"	10'-0"	14'-0"	20'-0"	58'-7 3/8"	11'-0"	20'-0"	15'-0"	12'-0"	15'-0"	12'-0"	83'-0 3/8"	16'-0"	15'-0"	do	19'-0"	51'-9 3/8"	10'-6 1/8"
GIRDER L	8'-7 1/8"	15'-0"	79'-0 3/8"	do	do	do	do	do	66'-9 3/8"	do	do	do	do	13'-0"	13'-0"	83'-3 1/8"	15'-0"	do	do	15'-0"	55'-10 1/8"	10'-6 1/8"
GIRDER M	8'-7 1/8"	13'-0"	76'-9 3/8"	do	do	do	do	do	57'-11 3/8"	do	do	do	do	do	do	80'-6 1/8"	18'-0"	do	do	16'-0"	55'-0 1/8"	10'-6 1/8"
GIRDER N	8'-7 1/8"	11'-0"	84'-6 1/2"	do	13'-0"	11'-0"	10'-0"	15'-0"	50'-1 1/4"	do	do	do	do	do	do	82'-10 3/8"	17'-0"	16'-0"	do	do	55'-1 3/8"	10'-6 1/8"
GIRDER Q	8'-7 1/8"	do	80'-3 3/8"	do	15'-0"	9'-0"	11'-0"	14'-0"	50'-2 1/8"	do	do	do	do	do	do	84'-1 1/8"	20'-0"	12'-0"	12'-0"	10'-0"	53'-2 1/2"	10'-7"



GIRDER DETAILS



Note: For additional Girder Elevation see Sheet 150 of 201.

CEDAR RIVER BRIDGE SOUTH APPROACH DESIGN FOR VARIABLE SKEW CONTINUOUS WELDED PLATE GIRDER BRIDGE

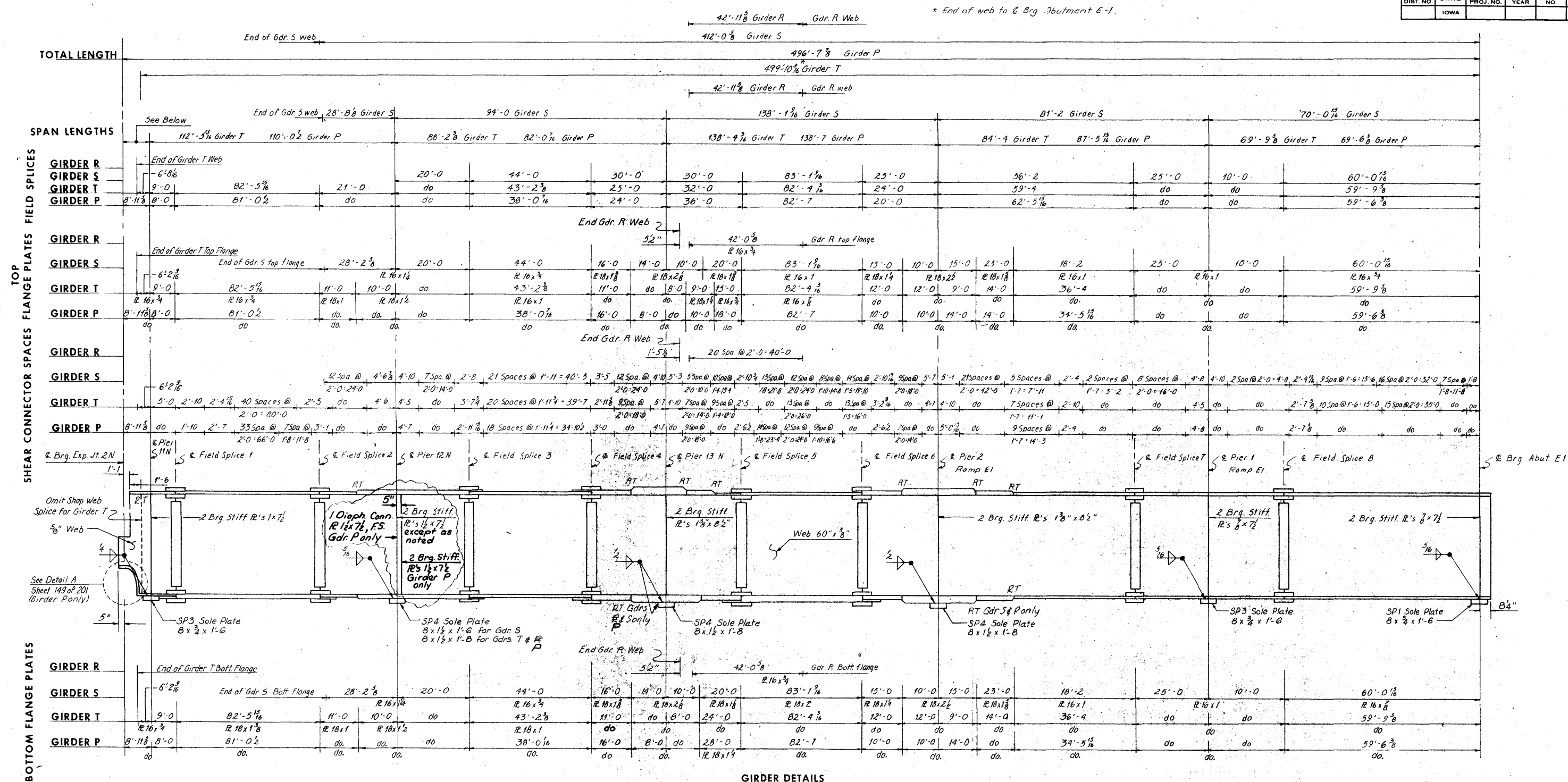
GIRDER ELEVATIONS - UNIT 3NB









STA. 322+81.95 @ FREEWAY = PROJECT NO. I-380-6(68)263--01-57
STA. 32+14.70 @ I-57 AVE. W
LINN COUNTY IOWA STATE HIGHWAY COMMISSION






HOWARD, NEEDLES, TAMMEN & BERGENDOFF CONSULTING ENGINEERS KANSAS CITY

MADE TNL DATE 5-20-74 CHECKED DBA DATE 6-17-74

Revised 2-28-77: Sole plate size & weld for same corrected.



TYPICAL ROCKER SETTINGS UNIT 3NB									
	EXP. JT. 2N	PIER 11N	PIER 12N	PIER 13N	PIER 14N	PIER 15	EXPT. JT. 3N		
Temperature at time of setting									
90°F	2"	3 1/4"	3 1/4"	3 1/8"	0"	1 1/8"	1 1/8"	3 1/2"	
50°F	3 1/2"	0"	0"	0"	0"	0"	0"	3 1/2"	
10°F	5"	-3 1/4"	-3 1/4"	-3 1/8"	0"	-1 1/8"	-1 1/8"	-5 1/2"	
Sole Plate	————	SP3	SP4	SP4	SP3	SP3	————	————	
Rocker	————	R3A	R4	————	R3A	R3A	————	————	
Masonry Plate	————	MP3P	MP4P	SA	MP3P	MP3P	————	————	

TYPICAL ROCKER SETTINGS UNIT 3NB / Ramp E-1					
	PIER 13N	PIER 2	PIER 1	ABUTMENT E1	
Temperature at time of setting					
90°F	0"	7/16"	1/16"	1/16"	1 13/16"
50°F	0"	0"	0"	0"	2 3/4"
10°F	0"	-1/16"	-1 1/16"	-1/16"	3 3/16"
Sole Plate	SP4	SP4	SP3	SP1	—
Rocker	—	R4	R3A	R1A	—
Masonry Plate	S4	MP4P	MP3P	MP1A	—

Notes:
Rockers are to be set vertically at 50°. For temperatures above 50°F., set masonry plate toward fixed shoe (+). For temperatures below 50°F., set masonry plate away from fixed shoe (-). Settings for other temperatures are proportional to those shown for a 40° temperature change.

**CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE**

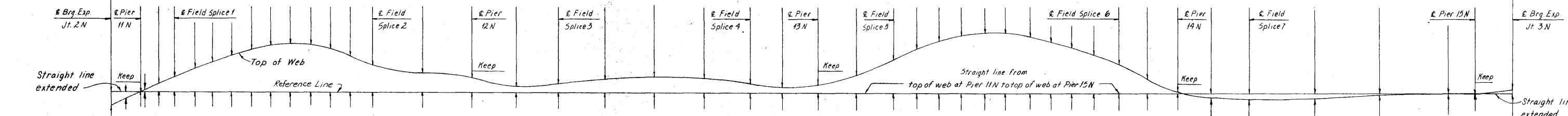
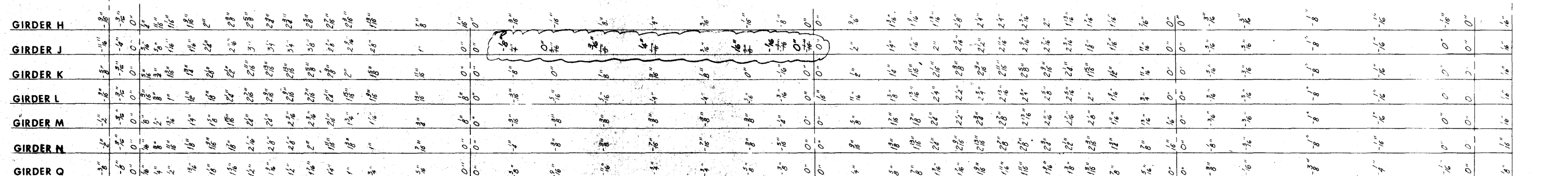
GIRDER ELEVATIONS - UNIT 3NB

STA. 322+81.95 @ FREEWAY=
STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. I-380-6(68)263--01-57

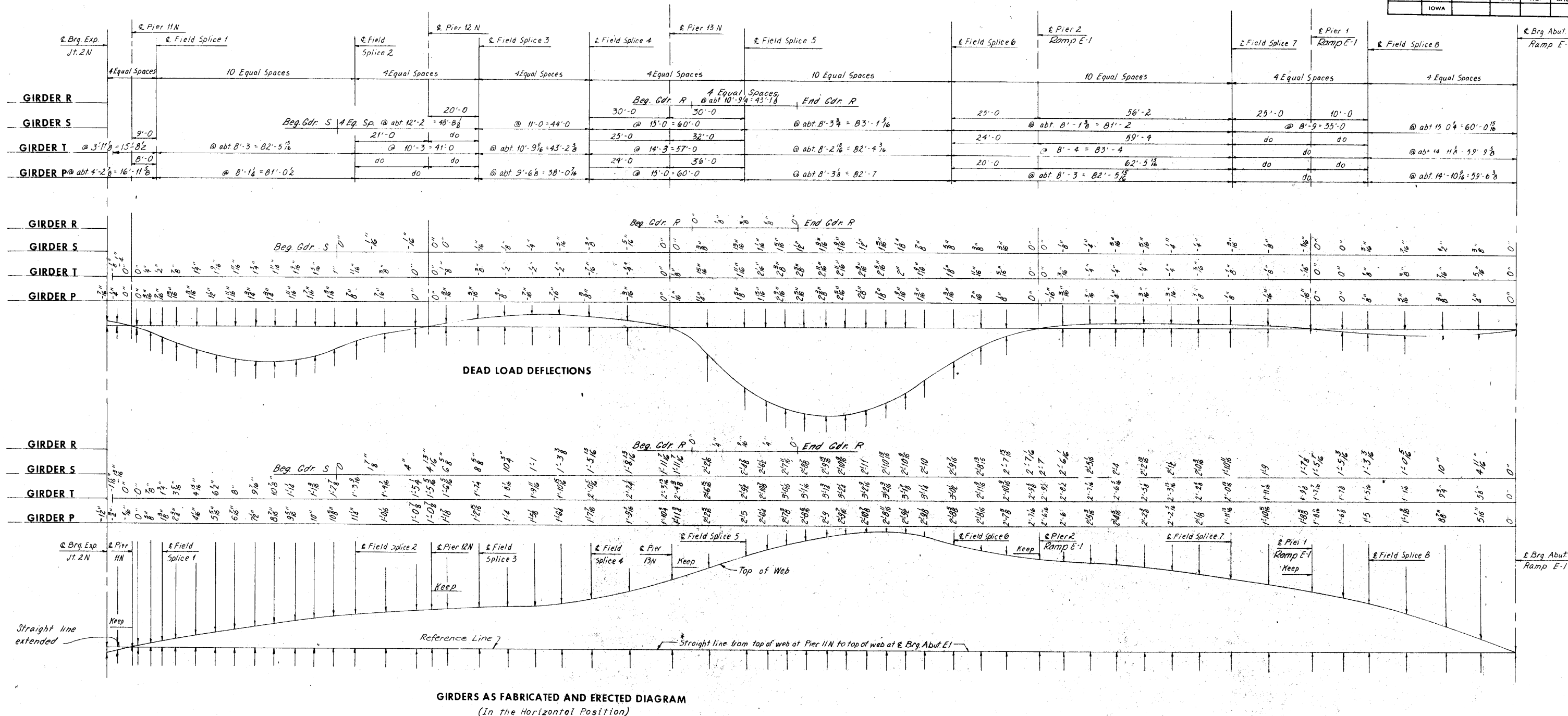
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

SHEET 150 OF 201

DESIGN NO. 1276 LINN COUNTY FILE 23191 SHEET 152 OF 203-C



SHEET 151 OF 201



- * Or straight line from diaphragm at beginning of Girder R to diaphragm at end of Girder R or straight line from diaphragm at beginning of Girder S to Apument E-1.

**CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE
DEFLECTION DIAGRAMS - UNIT 3NB**

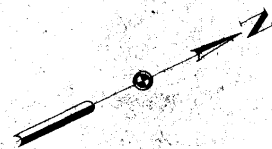
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

STA. 322+81.95 Q FREEWAY=
STA. 32+14.70 Q 1ST. AVE. W PROJECT NO. 1-380-6(68)263--01-57

LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

Note: for additional Deflection Diagrams see Sheet 151 of 201.
Negative camber values are camber below reference line.

MADE TNL DATE 4-10-74 CHECKED CBM DATE 8-4-74

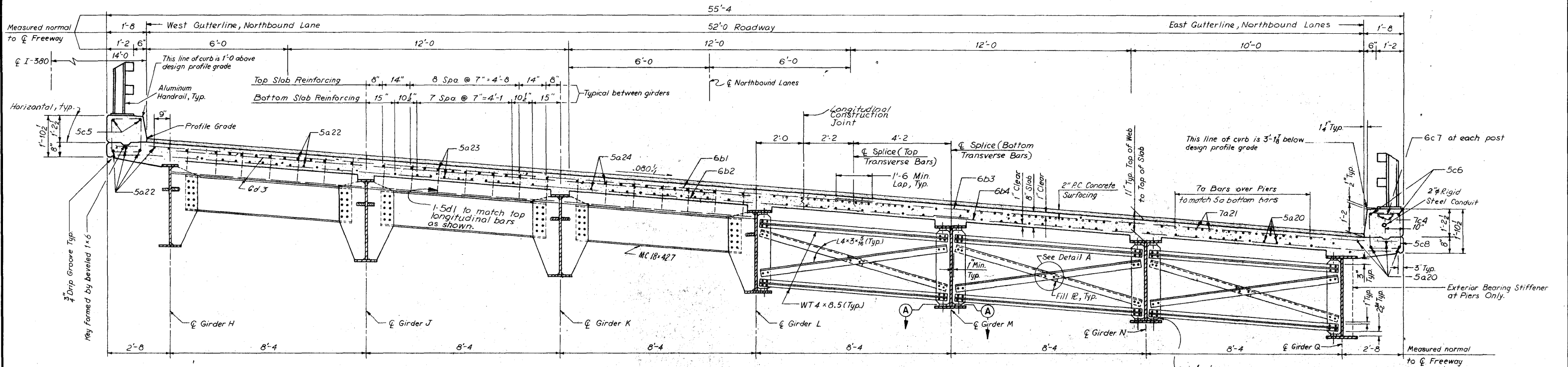


SUPERSTRUCTURE ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Structural Concrete (Class D)	Cu. Yds.	595.3
Reinforcing Steel 4	Lbs.	7,189
Reinforcing Steel-Epoxy Coated	Lbs.	80,953
Structural Steel 4d	Lbs.	509,412
P.C Concrete Surfacing	Sq. Yds.	2,129

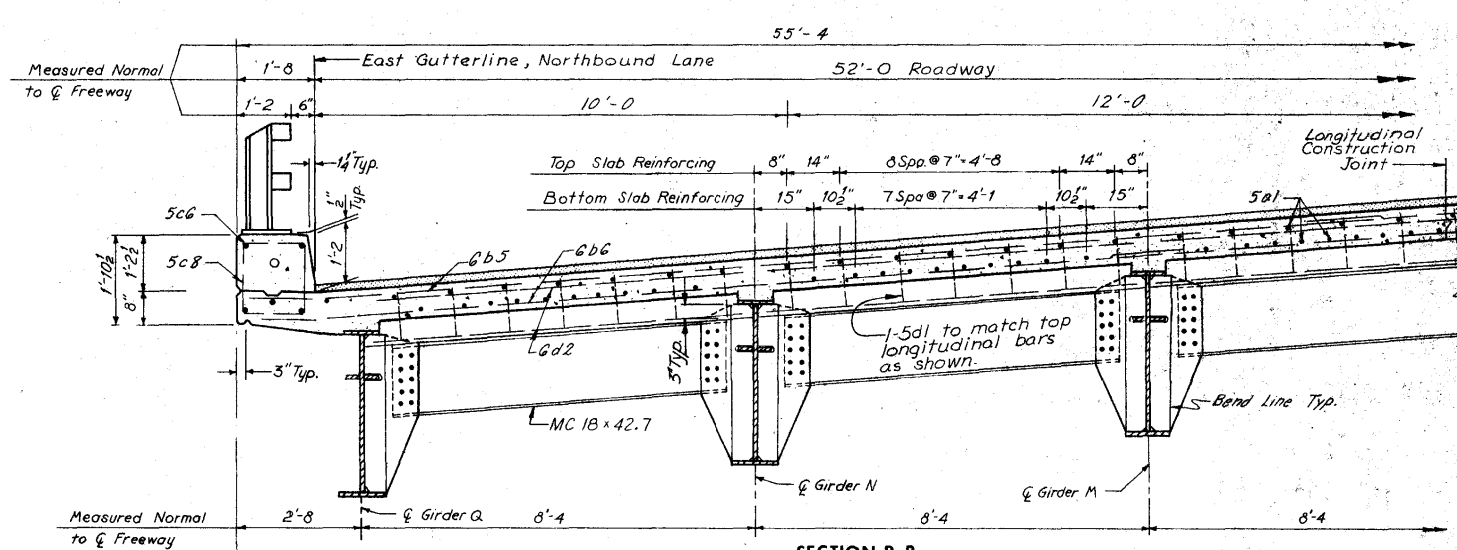
(2139,62)

SHEET 153 OF 201

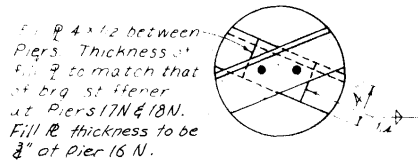
Revised 3-11-77: Structural steel quantity corrected.
Revised 2-28-77: Structural steel quantity corrected.



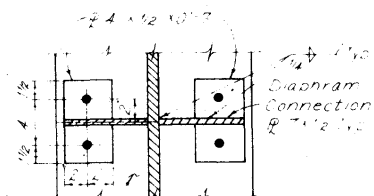
SECTION C-C



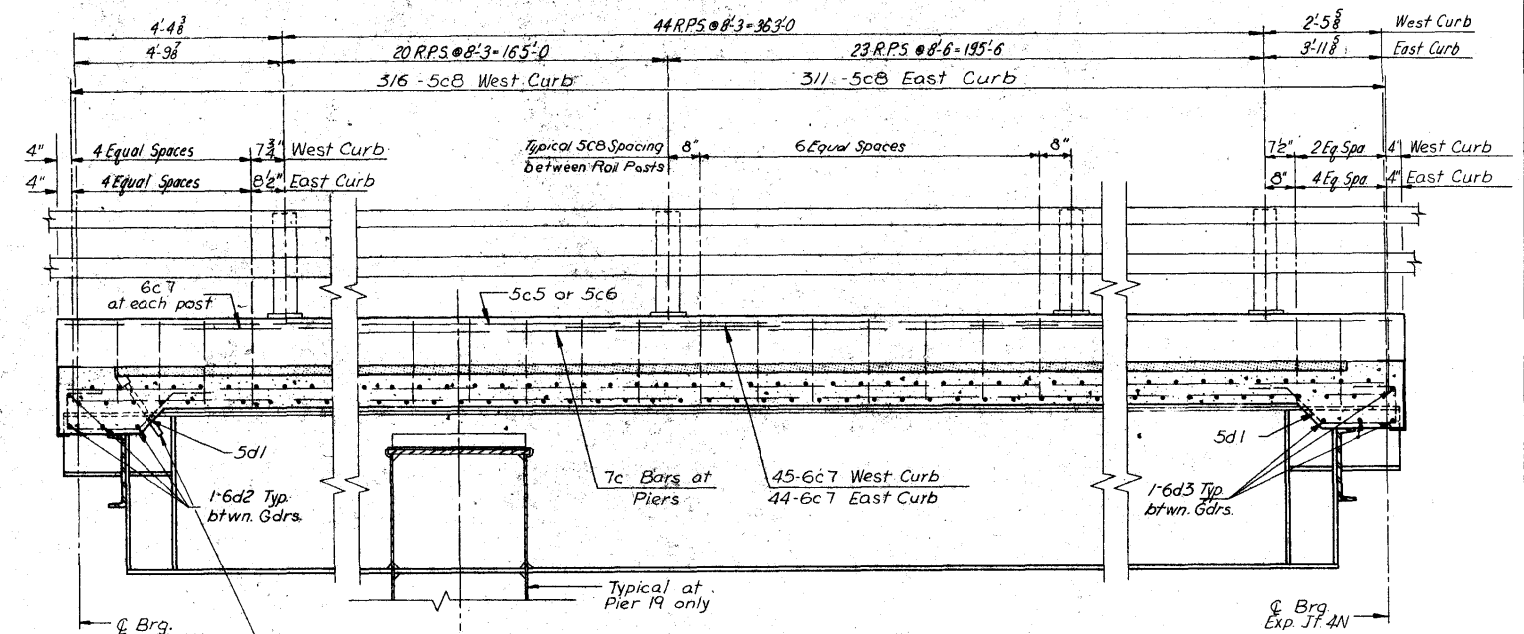
SECTION B-B



DETAIL A



SECTION A-A



PART LONGITUDINAL SECTION NEAR CURB

Note:
For locations of Sections B-B and C-C see Sheet 153 of 201.

**CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE
SUPERSTRUCTURE DETAILS - UNIT 4NB**

STA. 322+81.95 @ FREEWAY=
STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. I-380-6(68)263--01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

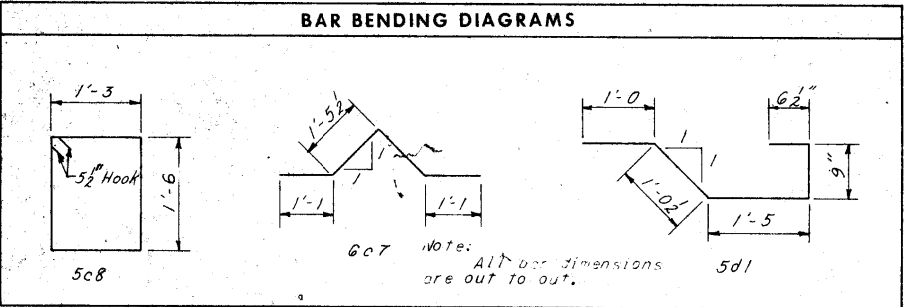
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

MADE W.R.K. DATE 5-8-74 CHECKED C.B.M. DATE 6-10-74

TABLE OF MOMENTS AND REACTIONS IN FOOT-KIPS AND KIPS																
GIRDER	ITEM	MAXIMUM POSITIVE MOMENT					MAXIMUM NEGATIVE MOMENT					REACTIONS				
		SPAN 1	SPAN 2	SPAN 3	SPAN 4	SPAN 5	PIER 16N	PIER 17N	PIER 18N	PIER 19N	JT. 3N	PIER 16N	PIER 17N	PIER 18N	PIER 19N	JT. 4N
GIRDER H	Dead Load A	402	305	199	212	316	803	614	500	591	26.7	91.7	78.6	70.7	77.9	23.5
	Dead Load B	135	112	73	81	174	232	187	153	174	8.9	28.7	25.5	23.1	24.8	7.8
	Live Load	643	617	524	517	541	560	537	479	457	42.3	60.8	59.8	56.9	55.6	41.1
	Impact	162	147	132	130	143	137	131	120	118	10.4	14.9	14.6	14.3	14.4	10.7
	Total	—	—	—	—	—	1732	1469	1252	1340	88.3	195.5	178.5	165.0	172.7	83.1
GIRDER J	Dead Load A	439	353	207	231	338	901	685	535	639	29.3	101.4	87.2	77.0	85.3	25.6
	Dead Load B	193	170	100	114	147	339	273	213	244	12.7	41.8	37.0	32.7	35.4	11.1
	Live Load	708	680	566	556	583	619	590	514	492	46.5	66.9	65.5	61.9	60.7	45.2
	Impact	179	161	143	141	155	151	144	130	127	11.6	16.3	16.0	15.6	15.7	11.7
	Total	—	—	—	—	—	2010	1692	1392	1502	100.1	226.4	205.7	187.2	197.1	93.6
GIRDER K	Dead Load A	426	372	195	230	328	912	695	518	627	28.5	101.5	87.4	75.6	84.2	25.2
	Dead Load B	190	182	96	113	144	347	285	207	241	12.6	42.6	37.4	32.2	35.3	11.0
	Live Load	706	684	558	547	575	623	592	505	484	46.3	66.7	65.3	61.1	60.1	45.0
	Impact	179	161	141	139	153	152	144	128	125	11.5	16.3	16.0	15.5	15.6	11.7
	Total	—	—	—	—	—	2034	1716	1358	1477	98.9	226.7	206.0	184.4	195.2	92.9
GIRDER L	Dead Load A	413	390	183	229	318	923	704	501	615	28.2	101.5	87.7	74.1	83.1	24.7
	Dead Load B	187	195	93	113	142	355	297	201	238	12.6	42.6	37.8	31.8	35.1	10.9
	Live Load	704	688	550	538	567	627	594	496	476	46.1	66.5	65.0	60.4	59.5	44.8
	Impact	178	161	140	137	151	153	144	126	124	11.5	16.2	15.8	15.4	15.5	11.6
	Total	—	—	—	—	—	2058	1739	1324	1453	98.4	226.8	206.3	181.7	193.2	92.0
GIRDER M	Dead Load A	404	410	170	228	308	938	720	485	608	27.8	102.0	88.4	72.8	82.4	24.3
	Dead Load B	182	202	86	113	139	362	300	196	236	12.5	43.0	38.2	31.3	34.8	10.8
	Live Load	702	696	544	531	560	634	600	489	470	46.0	66.6	65.0	59.9	59.1	44.6
	Impact	178	161	139	135	150	154	146	124	123	11.5	16.1	15.8	15.3	15.4	11.6
	Total	—	—	—	—	—	2088	1766	1294	1437	97.8	227.7	207.4	179.3	191.7	91.3
GIRDER N	Dead Load A	394	431	157	227	279	954	735	469	600	27.5	102.6	89.0	71.6	81.7	24.0
	Dead Load B	177	208	79	113	136	370	302	190	233	12.4	43.5	38.6	30.9	34.6	10.7
	Live Load	704	704	538	524	552	641	606	482	464	45.9	66.7	65.1	59.4	58.7	44.4
	Impact	178	162	137	133	149	154	147	123	122	11.5	16.1	15.8	15.2	15.4	11.6
	Total	—	—	—	—	—	2119	1790	1264	1419	97.3	228.3	208.5	177.1	190.4	90.7
GIRDER O	Dead Load A	338	406	131	204	268	868	678	410	534	24.0	92.1	80.3	63.2	72.7	21.3
	Dead Load B	122	153	51	79	94	263	217	129	162	8.5	30.5	27.1	21.3	24.0	7.4
	Live Load	635	646	485	471	498	588	555	434	418	41.4	60.5	59.1	53.5	52.9	40.1
	Impact	161	147	124	120	134	141	134	111	110	10.3	14.5	14.2	13.6	13.9	10.4
	Total	—	—	—	—	—	1860	1584	1084	1224	84.2	197.6	180.7	151.6	163.5	79.2

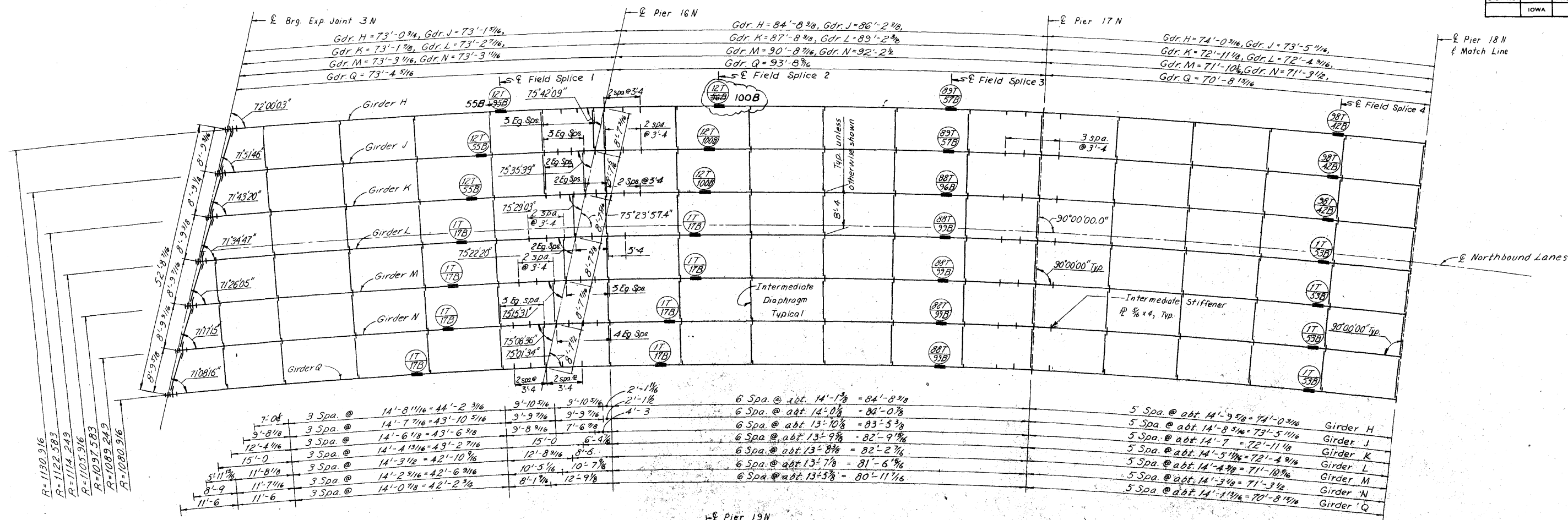
*All, or the number of bars noted below, are to be epoxy coated and placed in the top mat of reinforcing: 1-40-501 (1259 Lbs.), 70-502 (1359 Lbs.), 26-504 (753 Lbs.), 22-505 (654 Lbs.), 2-506 (671 Lbs.), 22-507 (1088 Lbs.), 22-508 (706 Lbs.), 20-509 (85 Lbs.), 70-5010 (2312 Lbs.), 7-5012 (19.2 Lbs.), 5-5013 (1709 Lbs.), 5-5017 (112 Lbs.), 5-5018 (1109 Lbs.), 5-5016 (109 Lbs.), 5-5017 (1275 Lbs.), 70-5018 (2069 Lbs.), 70-5020 (378 Lbs.), 3-5022 (388 Lbs.), 22-5023 (379 Lbs.), 22-5024 (51 Lbs.), 2-5025 (338 Lbs.), 0-502 (75 Lbs.) and 6-503 (72 Lbs.). Epoxy coated number of bars are to be Grade 60 reinforcing steel.

BILL OF REINFORCEMENT					
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
* 6b1	Slab, Transverse, Top	—	467	25'-5"	22,738
* 6b2	Slab, Transverse, Bot.	—	466	25'-7"	25,606
* 6b3	Slab, Transverse, Top	—	479	24'-1"	17,377
* 6b4	Slab, Transverse, Bot.	—	478	19'-11"	14,299
* 6b5	Slab, Transverse, Top	—	1	33'-6"	50
* 6b6	Slab, Transverse, Bot.	—	1	25'-9"	35
* 6b7	Slab, Transverse, Top	—	1 Ser 12	Varies	342
* 6b8	Slab, Transverse, Bot.	—	1 Ser 12	Varies	429
* 6b9	Slab, Transverse, Top	—	1 Ser 8	Varies	174
* 6b10	Slab, Transverse, Bot.	—	1 Ser 8	Varies	129
* 5a1	Slab, Longitudinal	—	266	25'-2"	815
* 5a2	Slab, Longitudinal	—	134	25'-6"	4562
* 7a3	Slab, Longitudinal	—	60	25'-3"	2057
* 5a4	Slab, Longitudinal	—	50	27'-9"	1447
* 5a5	Slab, Longitudinal	—	42	28'-6"	1249
* 5a6	Slab, Longitudinal	—	42	29'-2"	1281
* 5a7	Slab, Longitudinal	—	42	30'-0"	1314
* 5a8	Slab, Longitudinal	—	42	30'-9"	1347
* 5a9	Slab, Longitudinal	—	50	31'-6"	1647
* 5a10	Slab, Longitudinal	—	134	31'-9"	4426
* 7a11	Slab, Longitudinal	—	60	24'-6"	2005
* 5a12	Slab, Longitudinal	—	142	25'-2"	4727
* 5a13	Slab, Longitudinal	—	126	24'-10"	4264
* 5a14	Slab, Longitudinal	—	84	24'-6"	2146
* 5a15	Slab, Longitudinal	—	84	24'-2"	2117
* 5a16	Slab, Longitudinal	—	84	23'-10"	2088
* 5a17	Slab, Longitudinal	—	100	22'-6"	2451
* 5a18	Slab, Longitudinal	—	134	28'-4"	3960
* 7a19	Slab, Longitudinal	—	60	22'-0"	2699
* 5a20	Slab, Longitudinal	—	134	29'-5"	4111
* 7a21	Slab, Longitudinal	—	60	20'-6"	2514
* 5a22	Slab, Longitudinal	—	50	25'-9"	1743
* 5a23	Slab, Longitudinal	—	42	25'-3"	1106
* 5a24	Slab, Longitudinal	—	42	24'-7"	1077
* 5a25	Slab, Longitudinal	—	50	24'-3"	1265
7.1	Curb Longitudinal	—	4	25'-2"	206
7.2	Curb Longitudinal	—	4	24'-6"	200
7.3	Curb Longitudinal	—	4	22'-0"	180
7.4	Curb Longitudinal	—	4	20'-6"	169
5.5	Curb Longitudinal	—	20	38'-4"	900
5.6	Curb Longitudinal	—	20	38'-2"	796
6.7	Curb under Foot	—	89	5'-0"	668
5.8	Curb, Transverse	—	627	6'-2"	4033
* 5a1	Diaphragm, Vertical	—	64	4'-1"	401
* 6b1	Diaphragm, Horizontal	—	24	8'-5"	303
* 6b3	Diaphragm, Horizontal	—	24	8'-0"	288
Total					155,027



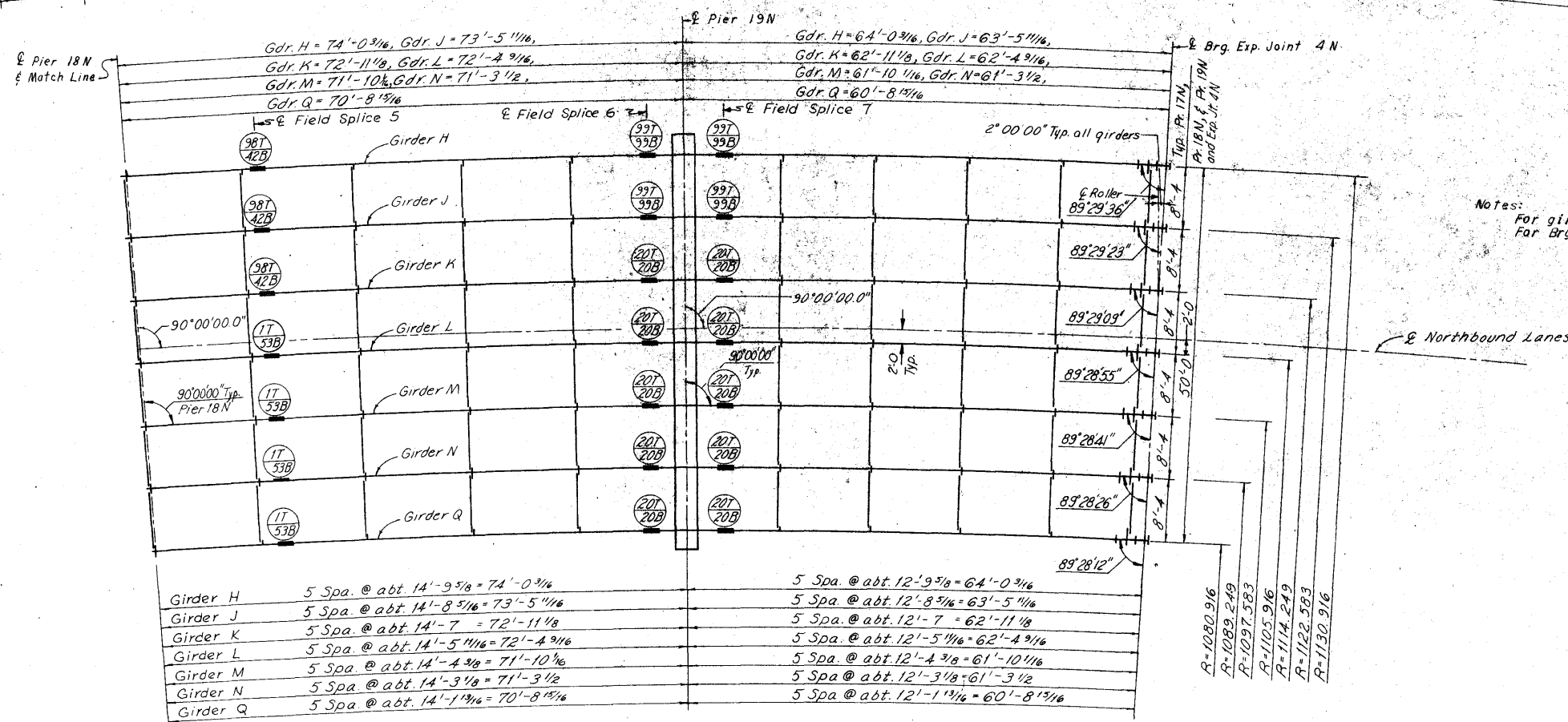
ELEVATIONS — TOP OF P.C. CONCRETE SURFACING (2" above top of first lift of concrete)																																	
Girder	E.J. 3N	.25	.50	.75	F.S. 1	.25	.50	.75	F.S. 2	.25	.50	.75	F.S. 3	.25	.50	.75	F.S. 4	.25	.50	.75	F.S. 5	.25	.50	.75	F.S. 6	.25	.50	.75	F.S. 7	.25	.50	.75	E.J. 4N
H	127.80	127.90	127.99	128.09	128.15	128.26	128.33	128.40	128.48	128.56	128.64	128.72	128.80	128.93	129.06	129.20	129.33	129.39	129.45	129.51	129.57	129.66	129.76	129.85	129.94	129.96	129.98	129.99	130.01	130.11	130.22	130.33	130.43
J	127.12	127.21	127.30	127.39	127.48	127.56	127.64	127.72	127.80	127.88	127.96	128.05	128.13	128.26	128.40	128.53	128.66	128.72	128.78	128.84	128.90	129.00	129.09	129.18	129.27	129.29	129.31	129.33	129.34	129.45	129.55	129.66	129.76
K	126.43	126.52	126.62	126.71	126.80	126.88	126.96	127.03	127.12	127.20	127.29	127.38	127.46	127.59	127.73	127.86	127.99	128.06	128.12	128.18	128.24	128.33	128.42	128.51	128.61	128.62	128.64	128.66	128.68	128.78	128.89	128.99	129.10
L	125.74	125.84	126.93	126.02	126.12	126.20	126.28	126.36	126.44	126.53	126.62	126.71	126.79	126.93	127.06	127.19	127.33	127.39	127.45	127.51	127.57	127.66	127.76	127.85	127.94	127.96	127.98	127.99	128.01	128.12	128.22	128.32	128.43
M	125.06	125.15	125.25	125.34	125.43	125.52	125.60	125.69	125.78	125.86	125.95	126.04	126.13	126.26	126.39	126.53	126.66	126.72	126.78	126.85	126.91	127.00	127.09	127.18	127.27	127.29	127.31	127.33	127.35	127.45	127.55	127.66	127.76
N	124.37	124.47	124.56	124.66	124.76	124.84	124.91	124.99	125.07	125.17	125.27	125.36	125.46	125.59	125.72	125.85	125.99	126.05	126.12	126.18	126.24	126.33	126.42	126.51	126.61	126.62	126.64	126.66	126.68	126.78	126.89	126.99	127.09
Q	123.68	123.77	123.87	123.96	124.05	124.13	124.22	124.31	124.39	124.49	124.59	124.69	124.79	124.92	125.06	125.19	125.32	125.39	125.45	125.51	125.58	125.67	125.76	125.85	125.94	125.96	125.98	125.99	126.01	126.12	126.22	126.32	126.43

Legend: F.S. denotes Field Splice



Note:
All intermediate diaphragms are
set radial to girders.

Notes:
For girder splice details see Sheet 183 thru 185 of 201.
For Brg. Stiff. and Int. Stiff. details see Sheet 182 of 201.



**CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE**

FRAMING PLAN - UNIT 4NB

STA. 322+81.95 @ FREEWAY=
STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. 1-380-6(68)263 -01-57

LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

SHEET 156 OF 201

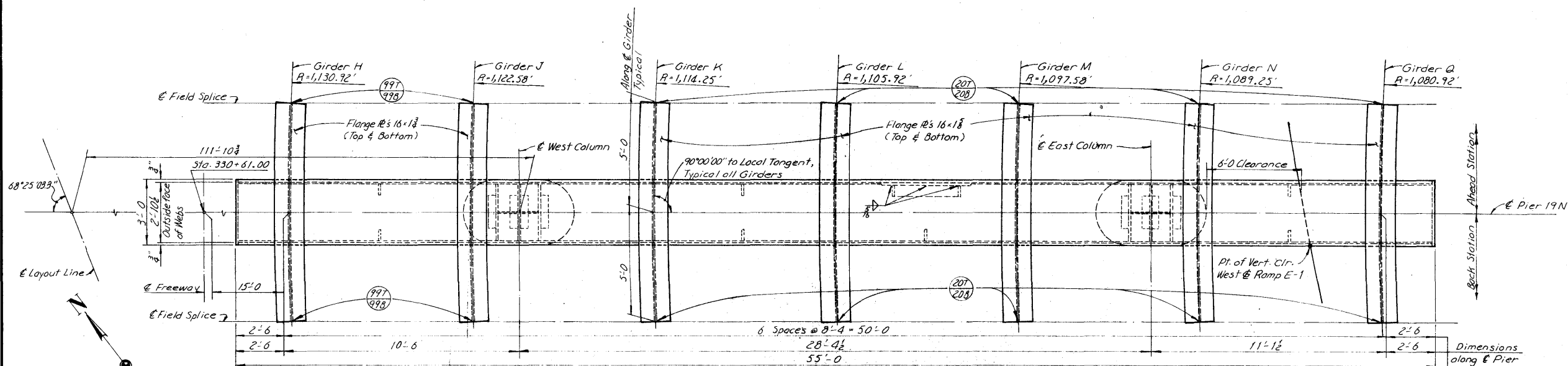
DESIGN NO. 1276 LINN COUNTY FILE 23191 SHEET 158 OF 203-0

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

MADE RF.O. DATE 2-22-74 CHECKED PRA DATE 6-17-74

Revised 3-11-77: Flange Field Splice type corrected at one location.
Revised 2-28-77: Bottom flange type of splice corrected.

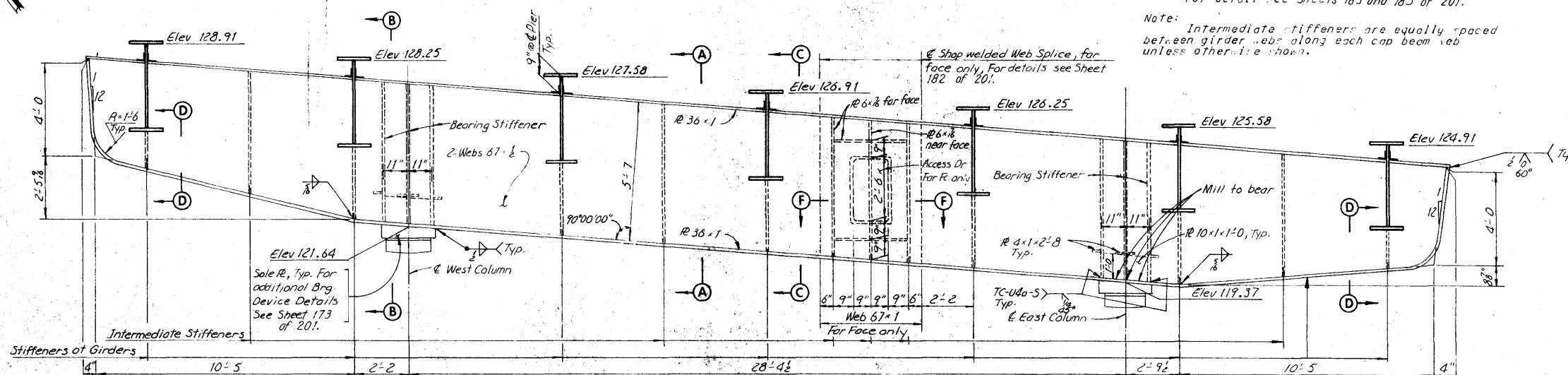
FRAMING PLAN



STEEL CAP BEAM PLAN

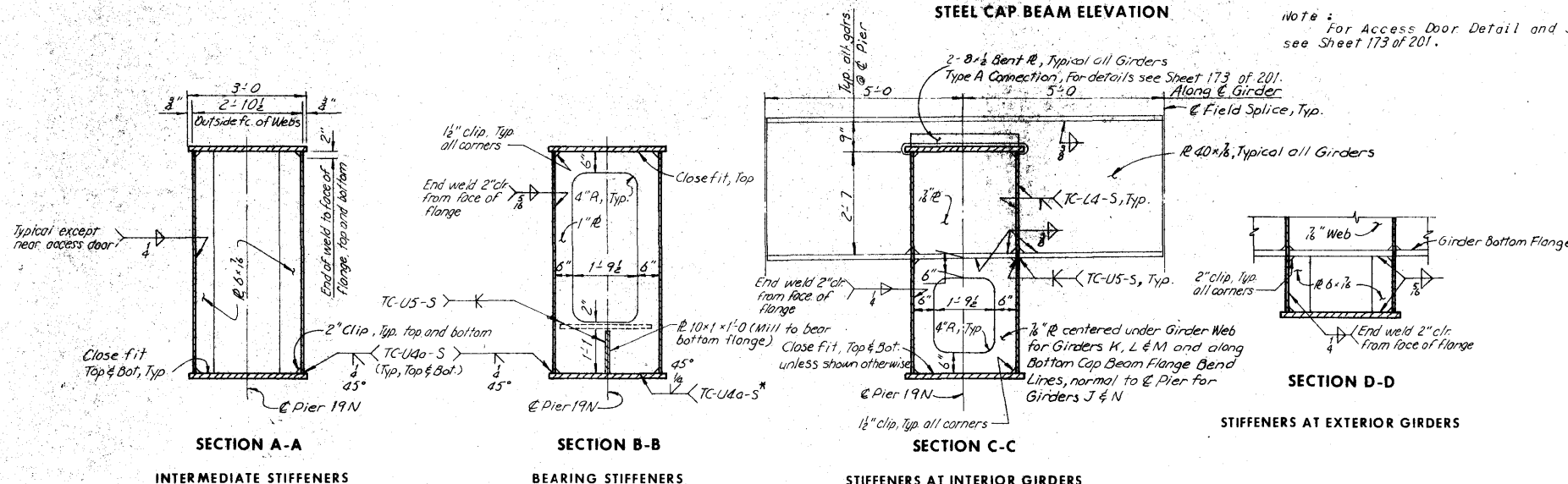
⊙ Denotes Girder Field Splice Type.
For detail see Sheets 183 and 185 of 201.

Note: Intermediate stiffeners are equally spaced between girder webs along each cap beam web unless otherwise shown.



STEEL CAP BEAM ELEVATION

Note: For Access Door Detail and Section F-F see Sheet 173 of 201.



SECTION A-A

INTERMEDIATE STIFFENERS

SECTION B-B

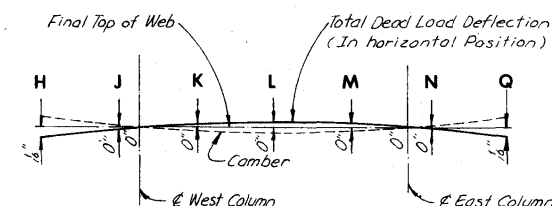
BEARING STIFFENERS

SECTION C-C

STIFFENERS AT INTERIOR GIRDERS

SECTION D-D

STIFFENERS AT EXTERIOR GIRDERS



Note: Cap beam shall be cambered for total dead load deflection. 18% of total dead load deflection due to weight of structural steel.

DEAD LOAD DEFLECTION AND CAMBER DIAGRAM

**CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE**

PIER 19N STEEL CAP BEAM

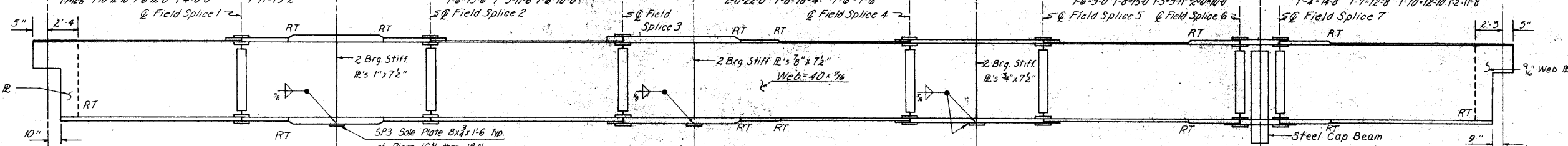
STA. 322+81.95 @ FREEWAY =
STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. I-380-6(68)263--01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
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KANSAS CITY

MADE *AW* DATE *04-02-74* CHECKED *JSH* DATE *5-14-74*

* Middle bearing stiff. to be milled to bear on bottom flange.

TOTAL LENGTH		369'-9" Girder H, 369'-8" Girder J, 369'-7" Girder K, 369'-6" Girder L, 369'-5" Girder M, 369'-4" Girder N, 369'-3" Girder Q													
SPAN LENGTHS		5 @ Brq. Exp. Jt. 3N 73'-0" Girder H, 73'-1" Girder J, 73'-1" Girder K, 73'-2" Girder L, 73'-3" Girder M, 73'-3" Girder N, 73'-4" Girder Q 5 @ Pier 16N 84'-8" Girder H, 86'-2" Girder J, 87'-8" Girder K, 89'-2" Girder L, 90'-8" Girder M, 92'-2" Girder N, 93'-8" Girder Q 5 @ Pier 17N 74'-0" Girder H, 73'-5" Girder J, 72'-11" Girder K, 72'-4" Girder L, 71'-10" Girder M, 71'-3" Girder N, 70'-8" Girder Q 5 @ Pier 18N 74'-0" Girder H, 73'-5" Girder J, 72'-11" Girder K, 72'-4" Girder L, 71'-10" Girder M, 71'-3" Girder N, 70'-8" Girder Q 5 @ Pier 19N 64'-0" Girder H, 63'-5" Girder J, 62'-11" Girder K, 62'-4" Girder L, 61'-10" Girder M, 61'-3" Girder N, 60'-8" Girder Q													
FIELD SPICES	GIRDER H	53'-0" 3/4	20'-0	22'-0	44'-8 3/8	18'-0	22'-0	57'-0 3/8	17'-0	17'-0	39'-0 3/8	13'-0	5'-0 5/8	13'-0	46'-0 3/8
	GIRDER J	51'-1 5/16	22'-0	22'-0	46'-2 3/8	18'-0	22'-0	56'-5 1/16	17'-0	17'-0	38'-5 1/16	13'-0	5'-0 5/8	13'-0	45'-5 1/16
	GIRDER K	51'-1 7/8	22'-0	22'-0	47'-8 3/8	18'-0	22'-0	55'-11 7/8	17'-0	17'-0	37'-11 7/8	13'-0	5'-0 5/8	13'-0	44'-11 7/8
	GIRDER L	51'-2 3/16	22'-0	23'-0	48'-2 3/8	18'-0	23'-0	55'-4 3/16	17'-0	17'-0	37'-4 3/16	13'-0	5'-0 5/8	13'-0	44'-4 3/16
	GIRDER M	51'-3 1/16	22'-0	25'-0	47'-8 1/16	18'-0	25'-0	54'-10 1/16	17'-0	17'-0	36'-10 1/16	13'-0	5'-0 5/8	13'-0	43'-10 1/16
	GIRDER N	52'-3 1/16	21'-0	22'-0	52'-2 1/2	18'-0	22'-0	54'-3 1/2	17'-0	17'-0	36'-3 1/2	13'-0	5'-0 5/8	13'-0	43'-3 1/2
	GIRDER Q	49'-4 5/16	24'-0	22'-0	53'-8 5/16	18'-0	22'-0	53'-8 5/16	17'-0	17'-0	35'-8 5/16	13'-0	5'-0 5/8	13'-0	42'-8 5/16
TOP FLANGE PLATES	GIRDER H	R 12 x 5/8	R 16 x 1	R 16 x 2	R 16 x 1	R 12 x 5/8	R 16 x 1	R 12 x 5/8	R 16 x 1	R 12 x 5/8	R 16 x 1	R 12 x 5/8	R 16 x 1	R 16 x 1	R 12 x 5/8
	GIRDER J	R 12 x 5/8	R 16 x 1	R 16 x 2	R 16 x 1	R 12 x 5/8	R 16 x 1	R 12 x 5/8	R 16 x 1	R 12 x 5/8	R 16 x 1	R 12 x 5/8	R 16 x 1	R 16 x 1	R 12 x 5/8
	GIRDER K	R 12 x 5/8	R 16 x 1	R 16 x 2	R 16 x 1	R 12 x 5/8	R 16 x 1	R 12 x 5/8	R 16 x 1	R 12 x 5/8	R 16 x 1	R 12 x 5/8	R 16 x 1	R 16 x 1	R 12 x 5/8
	GIRDER L	R 12 x 5/8	R 16 x 1	R 16 x 2	R 16 x 1	R 12 x 5/8	R 16 x 1	R 12 x 5/8	R 16 x 1	R 12 x 5/8	R 16 x 1	R 12 x 5/8	R 16 x 1	R 16 x 1	R 12 x 5/8
	GIRDER M	R 12 x 5/8	R 16 x 1	R 16 x 2	R 16 x 1	R 12 x 5/8	R 16 x 1	R 12 x 5/8	R 16 x 1	R 12 x 5/8	R 16 x 1	R 12 x 5/8	R 16 x 1	R 16 x 1	R 12 x 5/8
	GIRDER N	R 12 x 5/8	R 16 x 1	R 16 x 2	R 16 x 1	R 12 x 5/8	R 16 x 1	R 12 x 5/8	R 16 x 1	R 12 x 5/8	R 16 x 1	R 12 x 5/8	R 16 x 1	R 16 x 1	R 12 x 5/8
	GIRDER Q	R 12 x 5/8	R 16 x 1	R 16 x 2	R 16 x 1	R 12 x 5/8	R 16 x 1	R 12 x 5/8	R 16 x 1	R 12 x 5/8	R 16 x 1	R 12 x 5/8	R 16 x 1	R 16 x 1	R 12 x 5/8
SHEAR CONNECTOR SPACES	GIRDER H	1-7 Brq. @ 8 spa @ 2' 5 3/4, 8 spa @ 3' 6, 3' 7, 9 spa @ 3' 7 1/2, 9 spa @ 9 spa @ 9 spa @ 3' 7 1/2, 7 spa @ 3' 5, 3' 10 1/2, 8 spa @ 7 spa @ 10 spa @ 6 spa @ 3' 6 1/2, 6 spa @ 3' 10, 3' 10, 6 spa @ 3' 9 1/2, 5 spa @ 9 spa @ 6 spa @ 7 spa @ 4' 4 1/2, 3' 2 1/2, 11 spa @ 8 spa @ 8 spa @ 10 spa @ 1' 2													
	GIRDER J	1-7 Brq. @ 8 spa @ 2' 5 3/4, 8 spa @ 3' 6, 3' 7, 9 spa @ 3' 7 1/2, 9 spa @ 9 spa @ 9 spa @ 3' 7 1/2, 7 spa @ 3' 5, 3' 10 1/2, 8 spa @ 7 spa @ 10 spa @ 6 spa @ 3' 6 1/2, 6 spa @ 3' 10, 3' 10, 6 spa @ 3' 9 1/2, 5 spa @ 9 spa @ 6 spa @ 7 spa @ 4' 4 1/2, 3' 2 1/2, 11 spa @ 8 spa @ 8 spa @ 10 spa @ 1' 2													
	GIRDER K	1-7 Brq. @ 8 spa @ 2' 5 3/4, 8 spa @ 3' 6, 3' 7, 9 spa @ 3' 7 1/2, 9 spa @ 9 spa @ 9 spa @ 3' 7 1/2, 7 spa @ 3' 5, 3' 10 1/2, 8 spa @ 7 spa @ 10 spa @ 6 spa @ 3' 6 1/2, 6 spa @ 3' 10, 3' 10, 6 spa @ 3' 9 1/2, 5 spa @ 9 spa @ 6 spa @ 7 spa @ 4' 4 1/2, 3' 2 1/2, 11 spa @ 8 spa @ 8 spa @ 10 spa @ 1' 2													
	GIRDER L	1-7 Brq. @ 8 spa @ 2' 5 3/4, 8 spa @ 3' 6, 3' 7, 9 spa @ 3' 7 1/2, 9 spa @ 9 spa @ 9 spa @ 3' 7 1/2, 7 spa @ 3' 5, 3' 10 1/2, 8 spa @ 7 spa @ 10 spa @ 6 spa @ 3' 6 1/2, 6 spa @ 3' 10, 3' 10, 6 spa @ 3' 9 1/2, 5 spa @ 9 spa @ 6 spa @ 7 spa @ 4' 4 1/2, 3' 2 1/2, 11 spa @ 8 spa @ 8 spa @ 10 spa @ 1' 2													
	GIRDER M	1-7 Brq. @ 8 spa @ 2' 5 3/4, 8 spa @ 3' 6, 3' 7, 9 spa @ 3' 7 1/2, 9 spa @ 9 spa @ 9 spa @ 3' 7 1/2, 7 spa @ 3' 5, 3' 10 1/2, 8 spa @ 7 spa @ 10 spa @ 6 spa @ 3' 6 1/2, 6 spa @ 3' 10, 3' 10, 6 spa @ 3' 9 1/2, 5 spa @ 9 spa @ 6 spa @ 7 spa @ 4' 4 1/2, 3' 2 1/2, 11 spa @ 8 spa @ 8 spa @ 10 spa @ 1' 2													
	GIRDER N	1-7 Brq. @ 8 spa @ 2' 5 3/4, 8 spa @ 3' 6, 3' 7, 9 spa @ 3' 7 1/2, 9 spa @ 9 spa @ 9 spa @ 3' 7 1/2, 7 spa @ 3' 5, 3' 10 1/2, 8 spa @ 7 spa @ 10 spa @ 6 spa @ 3' 6 1/2, 6 spa @ 3' 10, 3' 10, 6 spa @ 3' 9 1/2, 5 spa @ 9 spa @ 6 spa @ 7 spa @ 4' 4 1/2, 3' 2 1/2, 11 spa @ 8 spa @ 8 spa @ 10 spa @ 1' 2													
	GIRDER Q	1-7 Brq. @ 8 spa @ 2' 5 3/4, 8 spa @ 3' 6, 3' 7, 9 spa @ 3' 7 1/2, 9 spa @ 9 spa @ 9 spa @ 3' 7 1/2, 7 spa @ 3' 5, 3' 10 1/2, 8 spa @ 7 spa @ 10 spa @ 6 spa @ 3' 6 1/2, 6 spa @ 3' 10, 3' 10, 6 spa @ 3' 9 1/2, 5 spa @ 9 spa @ 6 spa @ 7 spa @ 4' 4 1/2, 3' 2 1/2, 11 spa @ 8 spa @ 8 spa @ 10 spa @ 1' 2													



TYPICAL ROCKER SETTINGS UNIT 4NB							
	EXP. JT. 3N	PIER 16N	PIER 17N	PIER 18N	PIER 19N	EXP. JT. 4N	
Temperature at time of setting							
90°F	2 1/2"	3"	2"	4"	0"	0"	2 1/2"
50°F	3 1/2"	0"	0"	0"	0"	0"	2 3/4"
10°F	4 3/4"	-3"	-2"	-4"	0"	-1"	3 1/4"
Sole Plate		SP3	SP3	SP3	Special		
Rocker		R3A	R3A		Special		
Masonry Plate		MP3P	MP3P	53	Special		

Notes:
 Rockers are to be set vertically at 50°F.
 For temperatures above 50°F, set masonry plate toward fixed shoe (+). For temperatures below 50°F, set masonry plate away from fixed shoe (-). Settings for other temperatures are proportional to those shown for a 40° temperature change.
 For Pier 19N Bearing Device detail see Sheet 173 of 201.

CEDAR RIVER BRIDGE
 SOUTH APPROACH
 DESIGN FOR VARIABLE SKEW
 CONTINUOUS WELDED PLATE GIRDER BRIDGE

GIRDER ELEVATIONS - UNIT 4NB

STA 322+81.9 @ FREEWAY
 STA 32+14.70 @ ST AVE. W PROJECT NO 1-380 6168/263 01-57

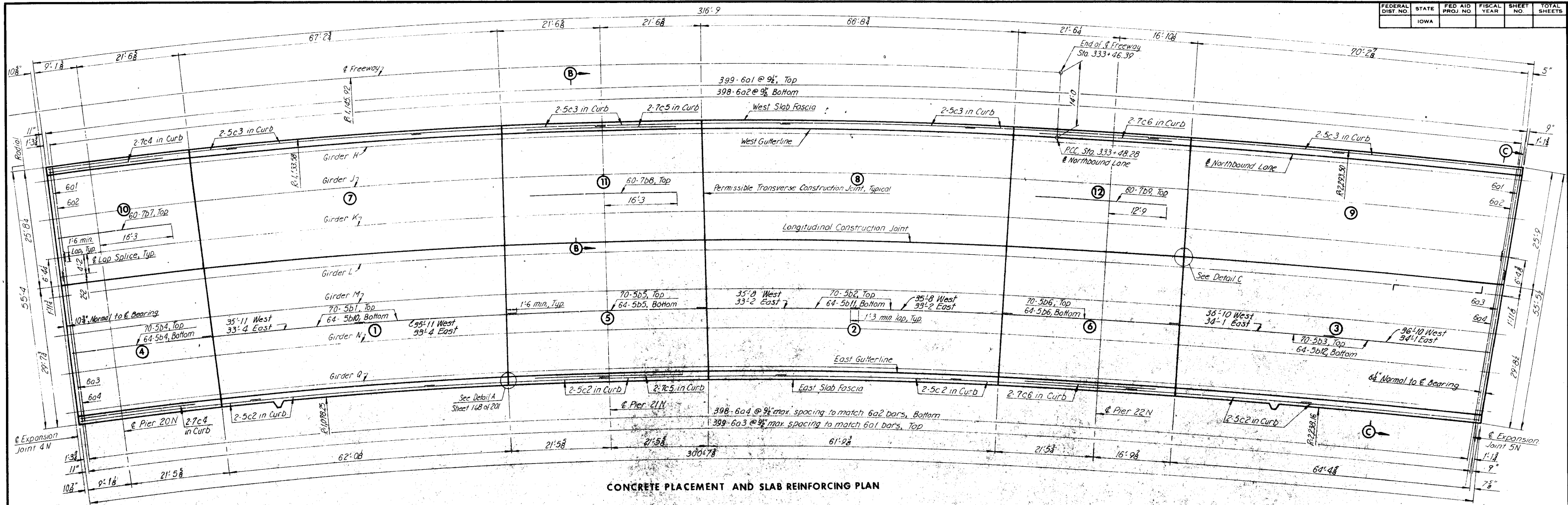
LINN COUNTY
 IOWA STATE HIGHWAY COMMISSION

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
 CONSULTING ENGINEERS
 KANSAS CITY

MADE R.E.O. DATE 5-11-74 CHECKED DRA DATE 6-17-74

	SE Brg. Exp. Jt. 3N	SE Field Splice 1	SE Pier 16N	SE Field Splice 2	SE Field Splice 3	SE Pier 17N	SE Field Splice 4	SE Pier 18N	SE Field Splice 5	SE Field Splice 6	SE Pier 19N	SE Field Splice 7	SE Brg. Exp. Jt. 4N
	4 Equal Spaces		4 Equal Spaces		4 Equal Spaces		4 Equal Spaces		4 Equal Spaces		4 Equal Spaces		
GIRDER H	at 13'-3 3/8" = 53'-0 3/8"	at 10'-6" = 42'-0"	at 11'-2 1/8" = 44'-8 1/8"	at 18'-0"	at 18'-9 1/8" = 75'-1 1/8"	at 17'-0"	at 17'-0"	at 13'-1/8" = 52'-0 1/8"	5'-0"	5'-0"	at 14'-9 1/8" = 59'-0 1/8"		
GIRDER J	at abt. 12'-9 1/8" = 51'-0 1/8"	at 11'-0" = 44'-0"	at abt. 11'-6 1/8" = 46'-2 1/8"	at abt. 18'-7 1/8" = 74'-5 1/8"	do	at abt. 12'-10 7/8" = 51'-5 1/8"	do	do	at abt. 14'-7 1/8" = 58'-5 1/8"				
GIRDER K	at abt. 12'-9 1/8" = 51'-1 1/8"	at 11'-0" = 44'-0"	at abt. 11'-11 1/8" = 47'-8 1/8"	at abt. 18'-5 1/8" = 73'-11 1/8"	do	at abt. 12'-8 3/8" = 50'-11 1/8"	do	do	at abt. 14'-5 1/8" = 57'-11 1/8"				
GIRDER L	at abt. 12'-9 1/8" = 51'-2 1/8"	at 11'-3" = 45'-0"	at abt. 12'-0 1/8" = 48'-2 1/8"	at abt. 18'-4 1/8" = 73'-4 1/8"	do	at abt. 12'-7 1/8" = 50'-4 1/8"	do	do	at abt. 14'-4 1/8" = 57'-4 1/8"				
GIRDER M	at abt. 12'-9 1/8" = 51'-3 1/8"	at 11'-9" = 47'-0"	at abt. 11'-11 1/8" = 47'-8 1/8"	at abt. 18'-2 1/8" = 72'-10 1/8"	do	at abt. 12'-5 1/8" = 49'-10 1/8"	do	do	at abt. 14'-2 1/8" = 56'-10 1/8"				
GIRDER N	at abt. 13'-1/8" = 52'-3 1/8"	at 10'-9" = 43'-0"	at 13'-0 1/8" = 52'-2 1/8"	at 18'-0 1/8" = 72'-3 1/8"	do	at 12'-3 1/8" = 49'-3 1/8"	do	do	at 14'-0 1/8" = 56'-3 1/8"				
GIRDER Q	at abt. 12'-4 1/8" = 49'-4 1/8"	at 11'-6" = 46'-0"	at abt. 13'-5 1/8" = 53'-8 1/8"	at abt. 17'-11 1/8" = 71'-8 1/8"	do	at abt. 12'-2 1/8" = 48'-8 1/8"	do	do	at abt. 13'-11 1/8" = 55'-8 1/8"				

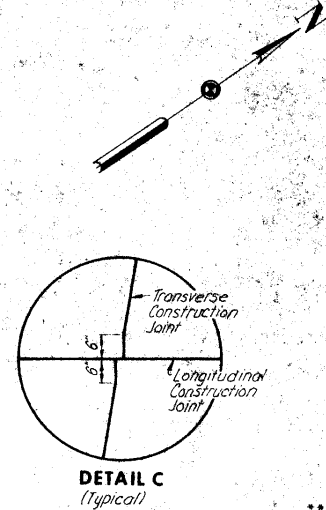
GIRDER H	0	1/2"	3/4"	1"	1 1/8"	1 1/4"	1 1/2"	1 3/4"	2"	2 1/4"	2 1/2"	2 3/4"	3"	3 1/4"	3 1/2"	3 3/4"	4"	4 1/4"	4 1/2"	4 3/4"	5"	5 1/4"	5 1/2"	5 3/4"	6"	6 1/4"	6 1/2"	6 3/4"	7"	7 1/4"	7 1/2"	7 3/4"	8"	8 1/4"	8 1/2"	8 3/4"	9"	9 1/4"	9 1/2"	9 3/4"	10"	10 1/4"	10 1/2"	10 3/4"	11"	11 1/4"	11 1/2"	11 3/4"	12"	12 1/4"	12 1/2"	12 3/4"	13"	13 1/4"	13 1/2"	13 3/4"	14"	14 1/4"	14 1/2"	14 3/4"	15"	15 1/4"	15 1/2"	15 3/4"	16"	16 1/4"	16 1/2"	16 3/4"	17"	17 1/4"	17 1/2"	17 3/4"	18"	18 1/4"	18 1/2"	18 3/4"	19"	19 1/4"	19 1/2"	19 3/4"	20"	20 1/4"	20 1/2"	20 3/4"	21"	21 1/4"	21 1/2"	21 3/4"	22"	22 1/4"	22 1/2"	22 3/4"	23"	23 1/4"	23 1/2"	23 3/4"	24"	24 1/4"	24 1/2"	24 3/4"	25"	25 1/4"	25 1/2"	25 3/4"	26"	26 1/4"	26 1/2"	26 3/4"	27"	27 1/4"	27 1/2"	27 3/4"	28"	28 1/4"	28 1/2"	28 3/4"	29"	29 1/4"	29 1/2"	29 3/4"	30"	30 1/4"	30 1/2"	30 3/4"	31"	31 1/4"	31 1/2"	31 3/4"	32"	32 1/4"	32 1/2"	32 3/4"	33"	33 1/4"	33 1/2"	33 3/4"	34"	34 1/4"	34 1/2"	34 3/4"	35"	35 1/4"	35 1/2"	35 3/4"	36"	36 1/4"	36 1/2"	36 3/4"	37"	37 1/4"	37 1/2"	37 3/4"	38"	38 1/4"	38 1/2"	38 3/4"	39"	39 1/4"	39 1/2"	39 3/4"	40"	40 1/4"	40 1/2"	40 3/4"	41"	41 1/4"	41 1/2"	41 3/4"	42"	42 1/4"	42 1/2"	42 3/4"	43"	43 1/4"	43 1/2"	43 3/4"	44"	44 1/4"	44 1/2"	44 3/4"	45"	45 1/4"	45 1/2"	45 3/4"	46"	46 1/4"	46 1/2"	46 3/4"	47"	47 1/4"	47 1/2"	47 3/4"	48"	48 1/4"	48 1/2"	48 3/4"	49"	49 1/4"	49 1/2"	49 3/4"	50"	50 1/4"	50 1/2"	50 3/4"	51"	51 1/4"	51 1/2"	51 3/4"	52"	52 1/4"	52 1/2"	52 3/4"	53"	53 1/4"	53 1/2"	53 3/4"	54"	54 1/4"	54 1/2"	54 3/4"	55"	55 1/4"	55 1/2"	55 3/4"	56"	56 1/4"	56 1/2"	56 3/4"	57"	57 1/4"	57 1/2"	57 3/4"	58"	58 1/4"	58 1/2"	58 3/4"	59"	59 1/4"	59 1/2"	59 3/4"	60"	60 1/4"	60 1/2"	60 3/4"	61"	61 1/4"	61 1/2"	61 3/4"	62"	62 1/4"	62 1/2"	62 3/4"	63"	63 1/4"	63 1/2"	63 3/4"	64"	64 1/4"	64 1/2"	64 3/4"	65"	65 1/4"	65 1/2"	65 3/4"	66"	66 1/4"	66 1/2"	66 3/4"	67"	67 1/4"	67 1/2"	67 3/4"	68"	68 1/4"	68 1/2"	68 3/4"	69"	69 1/4"	69 1/2"	69 3/4"	70"	70 1/4"	70 1/2"	70 3/4"	71"	71 1/4"	71 1/2"	71 3/4"	72"	72 1/4"	72 1/2"	72 3/4"	73"	73 1/4"	73 1/2"	73 3/4"	74"	74 1/4"	74 1/2"	74 3/4"	75"	75 1/4"	75 1/2"	75 3/4"	76"	76 1/4"	76 1/2"	76 3/4"	77"	77 1/4"	77 1/2"	77 3/4"	78"	78 1/4"	78 1/2"	78 3/4"	79"	79 1/4"	79 1/2"	79 3/4"	80"	80 1/4"	80 1/2"	80 3/4"	81"	81 1/4"	81 1/2"	81 3/4"	82"	82 1/4"	82 1/2"	82 3/4"	83"	83 1/4"	83 1/2"	83 3/4"	84"	84 1/4"	84 1/2"	84 3/4"	85"	85 1/4"	85 1/2"	85 3/4"	86"	86 1/4"	86 1/2"	86 3/4"	87"	87 1/4"	87 1/2"	87 3/4"	88"	88 1/4"	88 1/2"	88 3/4"	89"	89 1/4"	89 1/2"	89 3/4"	90"	90 1/4"	90 1/2"	90 3/4"	91"	91 1/4"	91 1/2"	91 3/4"	92"	92 1/4"	92 1/2"	92 3/4"	93"	93 1/4"	93 1/2"	93 3/4"	94"	94 1/4"	94 1/2"	94 3/4"	95"	95 1/4"	95 1/2"	95 3/4"	96"	96 1/4"	96 1/2"	96 3/4"	97"	97 1/4"	97 1/2"	97 3/4"	98"	98 1/4"	98 1/2"	98 3/4"	99"	99 1/4"	99 1/2"	99 3/4"	100"	100 1/4"	100 1/2"	100 3/4"	101"	101 1/4"	101 1/2"	101 3/4"	102"	102 1/4"	102 1/2"	102 3/4"	103"	103 1/4"	103 1/2"	103 3/4"	104"	104 1/4"	104 1/2"	104 3/4"	105"	105 1/4"	105 1/2"	105 3/4"	106"	106 1/4"	106 1/2"	106 3/4"	107"	107 1/4"	107 1/2"	107 3/4"	108"	108 1/4"	108 1/2"	108 3/4"	109"	109 1/4"	109 1/2"	109 3/4"	110"	110 1/4"	110 1/2"	110 3/4"	111"	111 1/4"	111 1/2"	111 3/4"	112"	112 1/4"	112 1/2"	112 3/4"	113"	113 1/4"	113 1/2"	113 3/4"	114"	114 1/4"	114 1/2"	114 3/4"	115"	115 1/4"	115 1/2"	115 3/4"	116"	116 1/4"	116 1/2"	116 3/4"	117"	117 1/4"	117 1/2"	117 3/4"	118"	118 1/4"	118 1/2"	118 3/4"	119"	119 1/4"	119 1/2"	119 3/4"	120"	120 1/4"	120 1/2"	120 3/4"	121"	121 1/4"	121 1/2"	121 3/4"	122"	122 1/4"	122 1/2"	122 3/4"	123"	123 1/4"	123 1/2"	123 3/4"	124"	124 1/4"	124 1/2"	124 3/4"	125"	125 1/4"	125 1/2"	125 3/4"	126"	126 1/4"	126 1/2"	126 3/4"	127"	127 1/4"	127 1/2"	127 3/4"	128"	128 1/4"	128 1/2"	128 3/4"	129"	129 1/4"	129 1/2"	129 3/4"	130"	130 1/4"	130 1/2"	130 3/4"	131"	131 1/4"	131 1/2"	131 3/4"	132"	132 1/4"	132 1/2"	132 3/4"	133"	133 1/4"	133 1/2"	133 3/4"	134"	134 1/4"	134 1/2"	134 3/4"	135"	135 1/4"	135 1/2"	135 3/4"	136"	136 1/4"	136 1/2"	136 3/4"	137"	137 1/4"	137 1/2"	137 3/4"	138"	138 1/4"	138 1/2"	138 3/4"	139"	139 1/4"	139 1/2"	139 3/4"	140"	140 1/4"	140 1/2"	140 3/4"	141"	141 1/4"	141 1/2"	141 3/4"	142"	142 1/4"	142 1/2"	142 3/4"	143"	143 1/4"	143 1/2"	143 3/4"	144"	144 1/4"	144 1/2"	144 3/4"	145"	145 1/4"	145 1/2"	145 3/4"	146"	146 1/4"	146 1/2"	146 3/4"	147"	147 1/4"	147 1/2"	147 3/4"	148"	148 1/4"	148 1/2"	148 3/4"	149"	149 1/4"	149 1/2"	149 3/4"	150"	150 1/4"	150 1/2"	150 3/4"	151"	151 1/4"	151 1/2"	151 3/4"	152"	152 1/4"	152 1/2"	152 3/4"	153"	153 1/4"	153 1/2"	153 3/4"	154"	154 1/4"	154 1/2"	154 3/4"	155"	155 1/4"	155 1/2"	155 3/4"	156"	156 1/4"	156 1/2"	156 3/4"	157"	157 1/4"	157 1/2"	157 3/4"	158"	158 1/4"	158 1/2"	158 3/4"	159"	159 1/4"	159 1/2"	159 3/4"	160"	160 1/4"	160 1/2"	160 3/4"	161"	161 1/4"	161 1/2"	161 3/4"	162"	162 1/4"	162 1/2"	162 3/4"	163"	163 1/4"	163 1/2"	163 3/4"	164"	164 1/4"	164 1/2"	164 3/4"	165"	165 1/4"	165 1/2"	165 3/4"	166"	166 1/4"	166 1/2"	166 3/4"	167"	167 1/4"	167 1/2"	167 3/4"	168"	168 1/4"	168 1/2"	168 3/4"	169"	169 1/4"	169 1/2"	169 3/4"	170"	170 1/4"	170 1/2"	170 3/4"	171"	171 1/4"	171 1/2"	171 3/4"	172"	172 1/4"	172 1/2"	172 3/4"	173"	173 1/4"	173 1/2"	173 3/4"	174"	174 1/4"	174 1/2"	174 3/4"	175"	175 1/4"	175 1/2"	175 3/4"	176"	176 1/4"	176 1/2"	176 3/4"	177"	177 1/4"	177 1/2"	177 3/4"	178"	178 1/4"	178 1/2"	178 3/4"	179"	179 1/4"	179 1/2"	179 3/4"	180"	180 1/4"	180 1/2"	180 3/4"	181"	181 1/4"	181 1/2"	181 3/4"	182"	182 1/4"	182 1/2"	182 3/4"	183"	183 1/4"	183 1/2"	183 3/4"	184"	184 1/4"	184 1/2"	184 3/4"	185"	185 1/4"	185 1/2"	185 3/4"	186"	186 1/4"	186 1/2"	186 3/4"	187"	187 1/4"	187 1/2"	187 3/4"	188"	188 1/4"	188 1/2"	188 3/4"	189"	189 1/4"	189 1/2"	189 3/4"	190"	190 1/4"	190 1/2"	190 3/4"	191"	191 1/4"	191 1/2"	191 3/4"	192"	192 1/4"	192 1/2"	192 3/4"	193"	193 1/4"	193 1/2"	193 3/4"	194"	194 1/4"	194 1/2"	194 3/4"	195"	195 1/4"	195 1/2"	195 3/4"	196"	196 1/4"	196 1/2"	196 3/4"	197"	197 1/4"	197 1/2"	197 3/4"	198"	198 1/4"	198 1/2"	198 3/4"	199"	199 1/4"	199 1/2"	199 3/4"	200"	200 1/4"	200 1/2"	200 3/4"	201"	201 1/4"	201 1/2"	201 3/4"	202"	202 1/4"	202 1/2"	202 3/4"	203"	203 1/4"	203 1/2"	203 3/4"	204"	204 1/4"	204 1/2"	204 3/4"	205"	205 1/4"	205 1/2"	205 3/4"	206"	206 1/4"	206 1/2"	206 3/4"	207"	207 1/4"	207 1/2"	207 3/4"	208"	208 1/4"	208 1/2"	208 3/4"	209"	209 1/4"	209 1/2"	209 3/4"	210"	210 1/4"	210 1/2"	210 3/4"	211"	211 1/4"	211 1/2"	211 3/4"	212"	212 1/4"	212 1/2"	212 3/4"	213"	213 1/4"	213 1/2"	213 3/4"	214"	214 1/4"	214 1/2"	214 3/4"	215"	215 1/4"	215 1/2"	215 3/4"	216"	216 1/4"	216 1/2"	216 3/4"	217"	217 1/4"	217 1/2"	217 3/4"	218"	218 1/4"	218 1/2"	218 3/4"	219"	219 1/4"	219 1/2"	219 3/4"	220"	220 1/4"	220 1/2"	220 3/4"	221"	221 1/4"	221 1/2"	221 3/4"	222"	222 1/4"	222 1/2"	222 3/4"	223"	223 1/4"	223 1/2"	223 3/4"	224"	224 1/4"	224 1/2"	224 3/4"	225"	225 1/4"	225 1/2"	225 3/4"	226"	226 1/4"	226 1/2"	226 3/4"	227"	227 1/4"	227 1/2"	227 3/4"	228"	228 1/4"	228 1/2"	228 3/4"	229"	229 1/4"	229 1/2"	229 3/4"	230"	230 1/4"	230 1/2"	230 3/4"	231"	231 1/4"	231 1/2"	231 3/4"	232"	232 1/4"	232 1/2"	232 3/4"	233"	233 1/4"	233 1/2"	233 3/4"	234"	234 1/4"	234 1/2"	234 3/4"	235"	235 1/4"	235 1/2"	235 3/4"	236"	236 1/4"	236 1/2"	236 3/4"	237"	237 1/4"	237 1/2"	237 3/4"	238"	238 1/4"	238 1/2"	238 3/4"	239"	239 1/4"	239 1/2"	239 3/4"	240"	240 1/4"	240 1/2"	240 3/4"	241"	241 1/4"	241 1/2"	241 3/4"	242"	242 1/4"	242 1/2"	242 3/4"	243"	243 1/4"	243 1/2"	243 3/4"	244"	244 1/4"	244 1/2"	244 3/4"	245"	245 1/4"	245 1/2"	245 3/4"	246"	246 1/4"	246 1/2"	246 3/4"	247"	247 1/4"	247 1/2"	247 3/4"	248"	248 1/4"	248 1/2"	248 3/4"	249"	249 1/4"	249 1/2"	249 3/4"	250"	250 1/4"	250 1/2"	250 3/4"	251"	251 1/4"	251 1/2"	251 3/4"	252"	252 1/4"	252 1/2"	252 3/4"	253"	253 1/4"	253 1/2"	253 3/4"	254"	254 1/4"	254 1/2"	254 3/4"	255"	255 1/4"	255 1/2"	255 3/4"	256"	256 1/4"	256 1/2"	256 3/4"	257"	257 1/4"	257 1/2"	257 3/4"	258"	258 1/4"	258 1/2"	258 3/4"	259"	259 1/4"	259 1/2"	259 3/4"	260"	260 1/4"	260 1/2"	260 3/4"	261"	261 1/4"	261 1/2"	261 3/4"	262"	262 1/4"	262 1/2"	262 3/4"	263"	263 1/4"	263 1/2"	263 3/4"	264"	264 1/4"	264 1/2"	264 3/4"	265"	265 1/4"	265 1/2"	265 3/4"	266"	266 1/4"	266 1/2"	266 3/4"	267"	267 1/4"	267 1/2"	267 3/4"	268"	268 1/4"	268 1/2"	268 3/4"	269"	269 1/4"	269 1/2"	269 3/4"	270"	270 1/4"	270 1/2"	270 3/4"	271"	271 1/4"	271 1/2"	271 3/4"	272"	272 1/4"	272 1/2"	272 3/4"	273"	273 1/4"	273 1/2"	273 3/4"	274"	274 1/4"	274 1/2"	274 3/4"	275"	275 1/4"	275 1/2"	275 3/4"	276"	276 1/4"	276 1/2"	276 3/4"	277"	277 1/4"	277 1/2"	277 3/4"	278"	278 1/4"	278 1/2"	278 3/4"	279"	279 1/4"	279 1/2"	279 3/4"	280"	280 1/4"	280 1/2"	280 3/4"	281"	281 1/4"	281 1/2"	281 3/4"	282"	282 1/4"	282 1/2"	282 3/4"	283"	283 1/4"	283 1/2"	283 3/4"	284"	284 1/4"	284 1/2"	284 3/4"	285"	285 1/4"	285 1/2"	285 3/4"	286"	286 1/4"	286 1/2"	286 3/4"	287"	287 1/4"	287 1/2"	287 3/4"	288"	288 1/4"	288 1/2"	288 3/4"	289"	289 1/4"	289 1/2"	289 3/4"	290"	290 1/4"	290 1/2"	290 3/4"	291"	29
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CONCRETE PLACEMENT AND SLAB REINFORCING PLAN

BILL OF REINFORCEMENT									
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT	BAR	LOCATION	SHAPE	NO.
* 6a1	Slab, Trans. Top		399	24'-1"	14,443	5c1	Curb Hoop		516
6a2	Slab, Trans. Bottom		398	19'-11"	11,906	5c2	Curb, Longitudinal		16
* 6a3	Slab, Trans. Top		399	32'-7"	19,527	5c3	Curb, Longitudinal		16
6a4	Slab, Trans. Bottom		398	36'-9"	21,969	7c4	Curb, Longitudinal		4
						7c5	Curb, Longitudinal		4
						7c6	Curb, Longitudinal		4
						6c7	Curb, Under Post		74
* 5b1	Slab, Longitudinal		2Ser 70	Varies	5,056	* 5d1	Exp. Jt. Diaphragm		84
* 5b2	Slab, Longitudinal		2Ser 70	Varies	5,026	* 6d2	Exp. Jt. Diaphragm		48
* 5b3	Slab, Longitudinal		2Ser 70	Varies	5,178				
* 5b4	Slab, Longitudinal		134	30'-4"	4,239				
* 5b5	Slab, Longitudinal		134	42'-6"	5,940				
* 5b6	Slab, Longitudinal		134	37'-10"	5,288				
* 7b7	Slab, Longitudinal		60	25'-3"	3,097				
* 7b8	Slab, Longitudinal		60	32'-6"	3,986				
* 7b9	Slab, Longitudinal		60	29'-0"	3,557				
5b10	Slab, Longitudinal		2Ser 64	Varies	4,623				
5b11	Slab, Longitudinal		2Ser 64	Varies	4,595				
5b12	Slab, Longitudinal		2Ser 64	Varies	4,734				
						Total			130,007

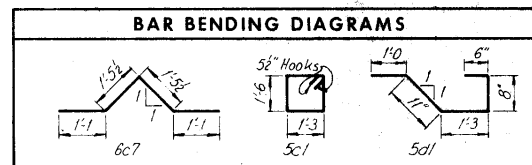
CONCRETE PLACEMENT QUANTITIES	
POUR	CU.YDS.
1	48.4
2	48.1
3	51.3
4	24.5
5	32.8
6	29.4
7	44.4
8	44.1
9	47.6
10	20.9
11	26.0
12	25.2
West Curb	22.8
East Curb	21.7
Light Blister	.8
Total	490.0



All, or the number of bars noted below, are to be epoxy coated and placed in the top mat of reinforcing.
70-5b4(2215lbs), 70-5b5(3103lbs), 70-5b6(2762lbs) and 12-6d2(144lbs). Epoxy coated 6a bars are to be Grade 60 reinforcing bars.

** Includes 17,120 lbs. A-235, class G forging steel at Pier 20N, 21N and 22N.

Notes:
For "Top of P.C. Concrete Surfacing Elevations" see Sheet 162 of 201.
For "Sections" see Sheet 161 of 201.
For "Concrete Placement Note" see Sheet 168 of 201.
Unit 4NB Pours 5 and 14 shall be placed prior to Unit 5NB Pours 4 and 10.
A deck inlet is required in east gutter at Expansion Joint 5N.



SUPERSTRUCTURE ESTIMATED QUANTITIES UNIT 5 NORTHBOUND		
ITEM	UNIT	QUANTITY
Structural Concrete (Class D)	Cu. Yds.	490.0
Reinforcing Steel 14	Lbs.	61,788
Reinforcing Steel-Epoxy Coated	Lbs.	68,449
Structural Steel 14A	Lbs.	** 597,197
P.C. Concrete Surfacing	Sq. Yds.	1,777

4 includes 230 lbs. for two Light Blisters.
4A includes the weights of capbeams at Pier 20N, 21N and 22N, rollers including bearing plates, bearing devices at Piers and expansion joint at Expansion Joint 4N.

1779.40

CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE

SLAB PLAN UNIT 5 NORTHBOUND LANE

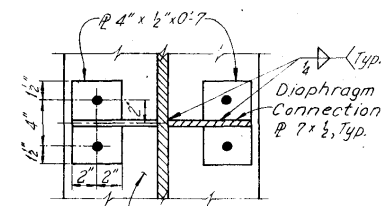
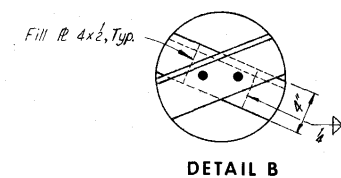
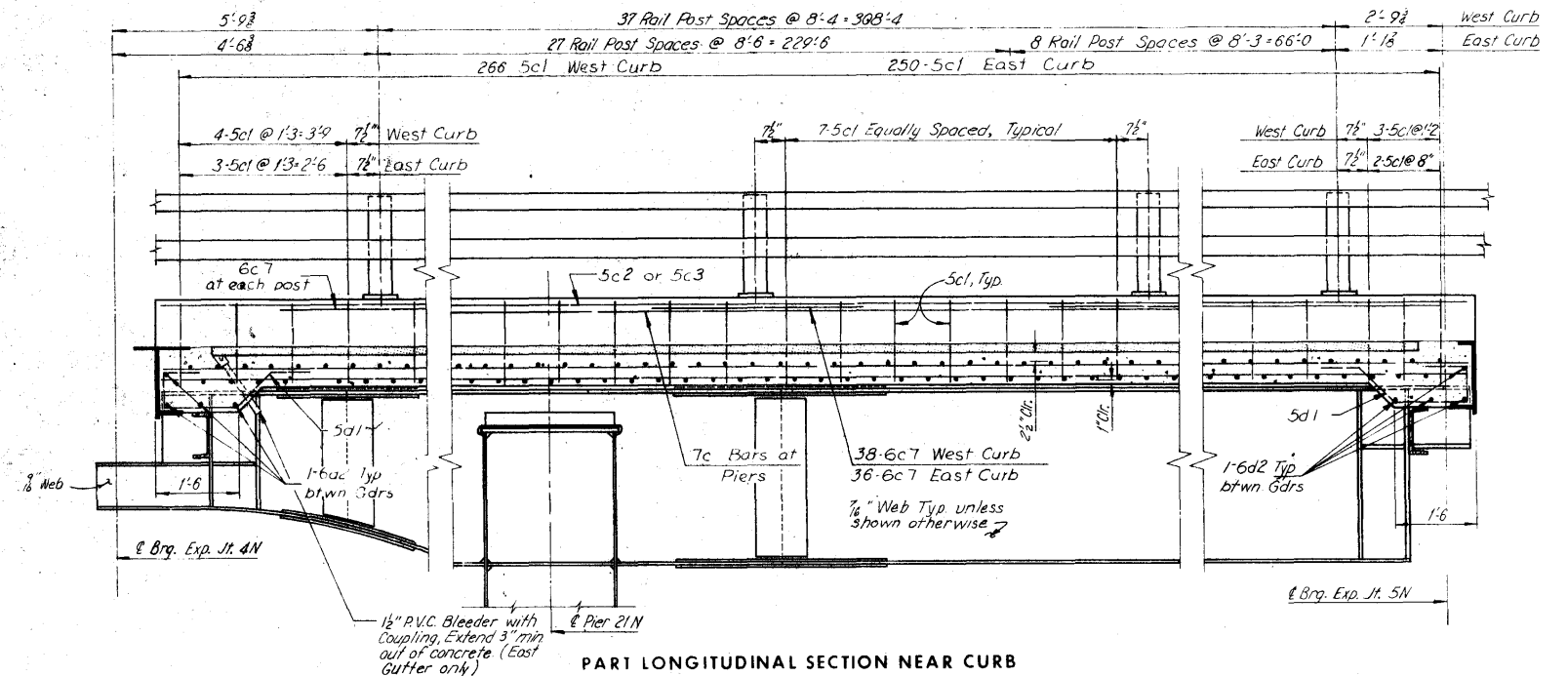
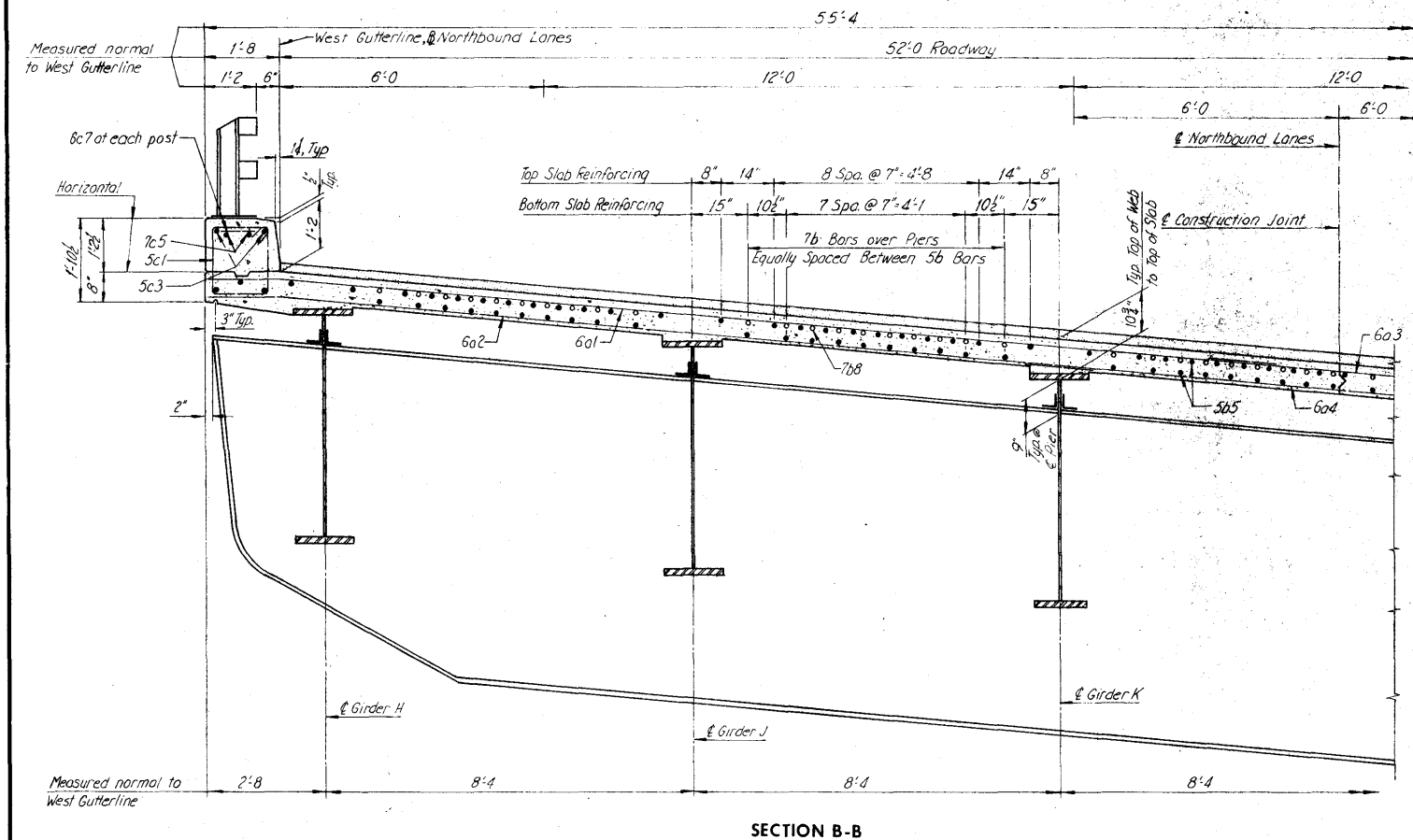
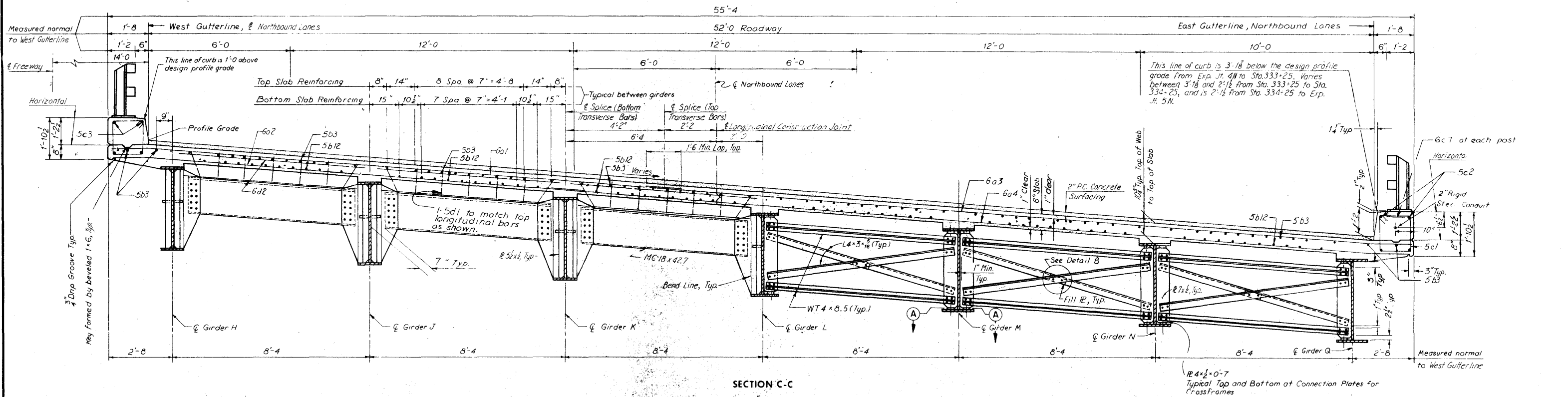
STA. 322+81.95 @ FREEWAY =
STA. 32+14.70 @ 1ST. AVE. W
PROJECT NO. I-380-6(68)263--01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

MADE JLR DATE 5-23-74 CHECKED JSH DATE 7-10-74

SHEET 160 OF 201

DESIGN NO. 1276 LINN COUNTY FILE 23191 SHEET 162 OF 203-0



**CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE
SUPERSTRUCTURE DETAILS - UNIT 5N**

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
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KANSAS CITY

Notes:
for location of Sections B-B and C-C see Sheet 160 of 201.
for Superlevation Data see Sheet 16 of 201.

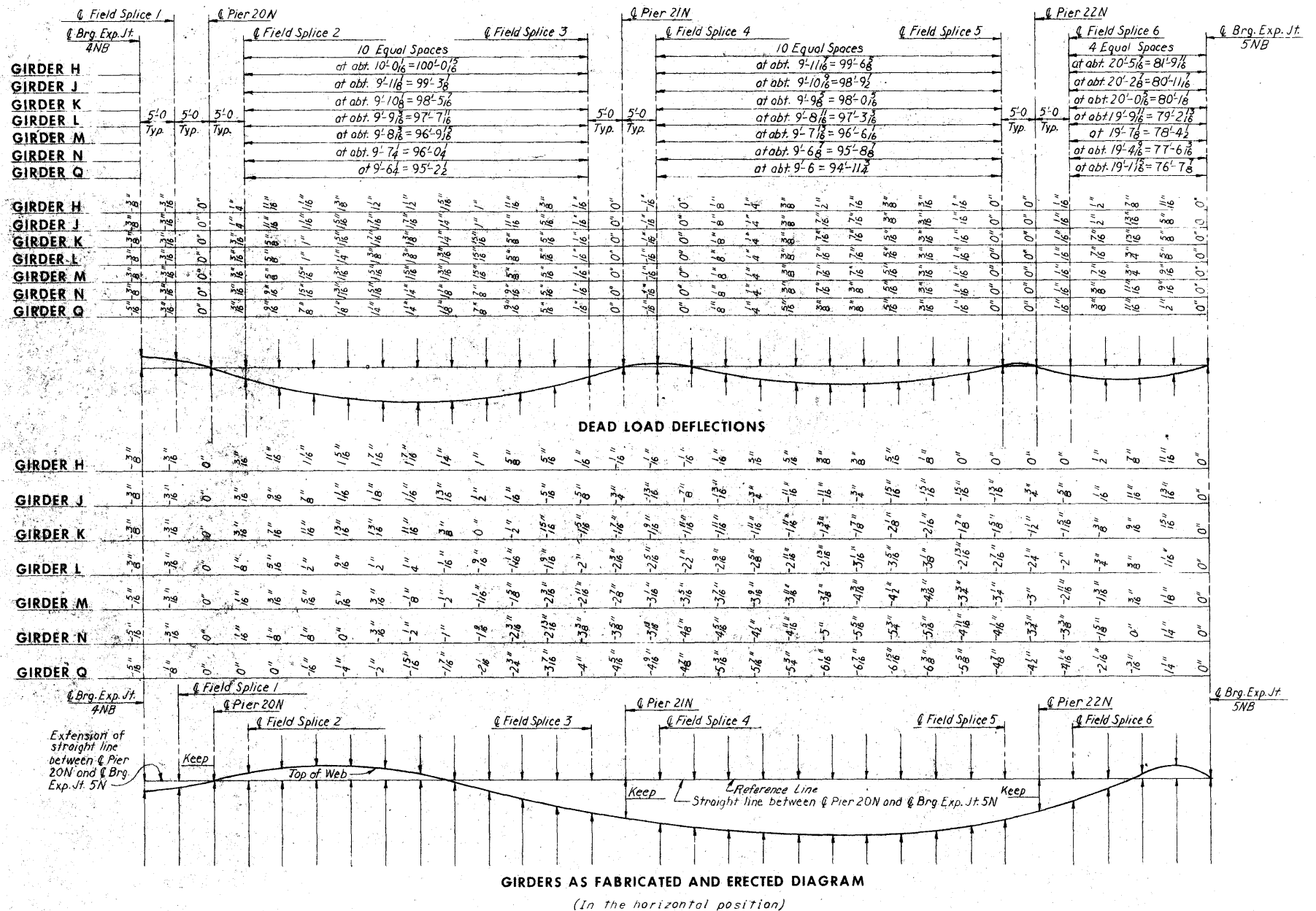
STA. 322+81.95 @ FREEWAY =
STA. 32+14.70 @ 1ST. AVE. W
PROJECT NO. I-380-6(68)263-01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

MADE JJP DATE 7-12-74 CHECKED DLR DATE 7-15-74

ELEVATIONS — TOP OF P.C. CONCRETE SURFACING (2" above top of first lift of concrete)																																
Girder	E.J. 4N	F.S. 1	P20N	F.S. 2	.10	.20	.30	.40	.50	.60	.70	.80	.90	F.S. 3	P21N	F.S. 4	.10	.20	.30	.40	.50	.60	.70	.80	.90	F.S. 5	P22N	F.S. 6	.25	.50	.75	E.J. 5N
H	130.43	130.47	130.50	130.54	130.61	130.68	130.75	130.82	130.89	130.96	131.03	131.11	131.18	131.25	131.28	131.32	131.39	131.46	131.53	131.60	131.67	131.74	131.81	131.89	131.96	132.03	132.07	132.10	132.25	132.40	132.55	132.69
J	129.76	129.80	129.83	129.87	129.94	130.01	130.08	130.15	130.23	130.30	130.37	130.44	130.51	130.58	130.62	130.65	130.72	130.79	130.86	130.94	131.01	131.08	131.15	131.23	131.32	131.41	131.46	131.50	131.68	131.86	132.04	132.19
K	129.10	129.13	129.17	129.20	129.28	129.35	129.42	129.49	129.56	129.63	129.70	129.77	129.84	129.91	129.95	129.99	130.06	130.13	130.20	130.27	130.34	130.41	130.48	130.58	130.69	130.79	130.85	130.90	131.11	131.33	131.54	131.68
L	128.43	128.47	128.50	128.54	128.61	128.68	128.75	128.82	128.89	128.96	129.03	129.11	129.18	129.25	129.28	129.32	129.39	129.46	129.53	129.60	129.67	129.74	129.81	129.93	130.05	130.17	130.24	130.30	130.55	130.79	131.04	131.18
M	127.76	127.80	127.83	127.87	127.94	128.01	128.08	128.15	128.23	128.30	128.37	128.44	128.51	128.58	128.62	128.65	128.72	128.79	128.87	128.94	129.01	129.08	129.15	129.28	129.42	129.56	129.63	129.70	129.98	130.26	130.53	130.67
N	127.09	127.13	127.17	127.20	127.28	127.35	127.42	127.49	127.56	127.63	127.70	127.77	127.84	127.91	127.95	127.99	128.06	128.13	128.20	128.27	128.34	128.41	128.48	128.62	128.78	128.94	129.02	129.10	129.41	129.72	130.03	130.17
Q	126.43	126.46	126.50	126.54	126.61	126.68	126.75	126.82	126.89	126.96	127.03	127.10	127.18	127.25	127.28	127.32	127.39	127.46	127.53	127.60	127.67	127.74	127.81	127.97	128.15	128.32	128.41	128.49	128.84	129.18	129.52	129.67

Legend:
F.S. denotes Field Splice
E.J. denotes Expansion Joint
P denotes Pier

TABLE OF MOMENTS AND REACTIONS IN FOOT KIPS AND KIPS - UNIT 5 NORTHBOUND LANE												
ITEM	MAXIMUM POSITIVE MOMENT			MAXIMUM NEGATIVE MOMENT			REACTIONS					
	SPAN 1	SPAN 2	SPAN 3	PIER 20N	PIER 21N	PIER 22N	PIER 20N	PIER 21N	PIER 22N	EXP. JT. 5N		
GIRDER H	Dead Load A	769	331	547	300	1430	1087	75.8	118.8	104.5	31.3	
	Dead Load B	450	265	329	202	703	556	47.2	65.1	59.4	18.2	
	Live Load	1002	821	794	423	930	792	60.1	78.9	73.5	42.8	
	Impact	214	175	187	99	199	178	14.1	16.8	16.5	10.1	
	Total				1024	3262	2613	197.2	279.6	252.9	102.4	
GIRDER J	Dead Load A	885	383	627	343	1644	1244	87.6	137.4	120.6	36.2	
	Dead Load B	307	180	222	136	477	376	32.3	44.6	39.9	12.4	
	Live Load	1099	899	869	464	1016	864	66.0	86.7	80.7	47.3	
	Impact	235	193	205	110	218	194	15.7	18.5	18.2	11.2	
	Total				1053	3355	2678	201.6	287.2	259.4	107.1	
GIRDER K	Dead Load A	873	379	616	338	1622	1221	86.9	136.5	119.5	35.9	
	Dead Load B	302	178	218	134	471	370	32.0	44.2	39.5	12.3	
	Live Load	1091	892	859	461	1004	853	65.7	86.2	80.2	47.3	
	Impact	234	192	203	110	216	192	15.7	18.5	18.2	11.2	
	Total				1043	3313	2636	200.3	285.4	257.4	106.7	
GIRDER L	Dead Load A	862	375	604	332	1600	1198	86.1	135.6	118.4	35.5	
	Dead Load B	299	174	214	132	464	363	31.7	44.0	39.2	12.1	
	Live Load	1082	883	850	459	992	841	65.5	85.7	79.7	47.1	
	Impact	232	191	202	109	214	190	15.6	18.5	18.2	11.3	
	Total				1032	3270	2592	198.9	283.8	255.5	106.0	
GIRDER M	Dead Load A	850	372	593	328	1579	1175	85.5	134.8	117.4	35.2	
	Dead Load B	295	172	210	130	459	358	31.4	43.6	38.9	12.0	
	Live Load	1074	875	840	456	981	831	65.3	85.4	79.3	47.1	
	Impact	231	190	199	109	213	189	15.6	18.4	18.1	11.3	
	Total				1023	3232	2553	197.8	282.2	253.7	105.6	
GIRDER N	Dead Load A	839	368	582	323	1553	1152	84.8	133.9	116.3	34.9	
	Dead Load B	292	170	206	128	452	351	31.2	43.4	38.6	11.9	
	Live Load	1065	868	832	453	969	820	63.8	84.9	78.8	47.1	
	Impact	230	189	198	119	210	186	16.8	18.4	18.1	11.3	
	Total				1023	3189	2509	196.6	280.6	251.8	105.2	
GIRDER Q	Dead Load A	711	314	491	273	1318	969	72.2	114.2	98.9	29.7	
	Dead Load B	419	244	293	182	647	500	44.9	62.5	55.5	17.1	
	Live Load	956	778	744	409	867	731	53.6	76.4	70.9	42.6	
	Impact	207	170	179	98	189	167	14.1	16.6	16.3	10.3	
	Total				962	3021	2367	189.8	269.7	241.6	99.7	

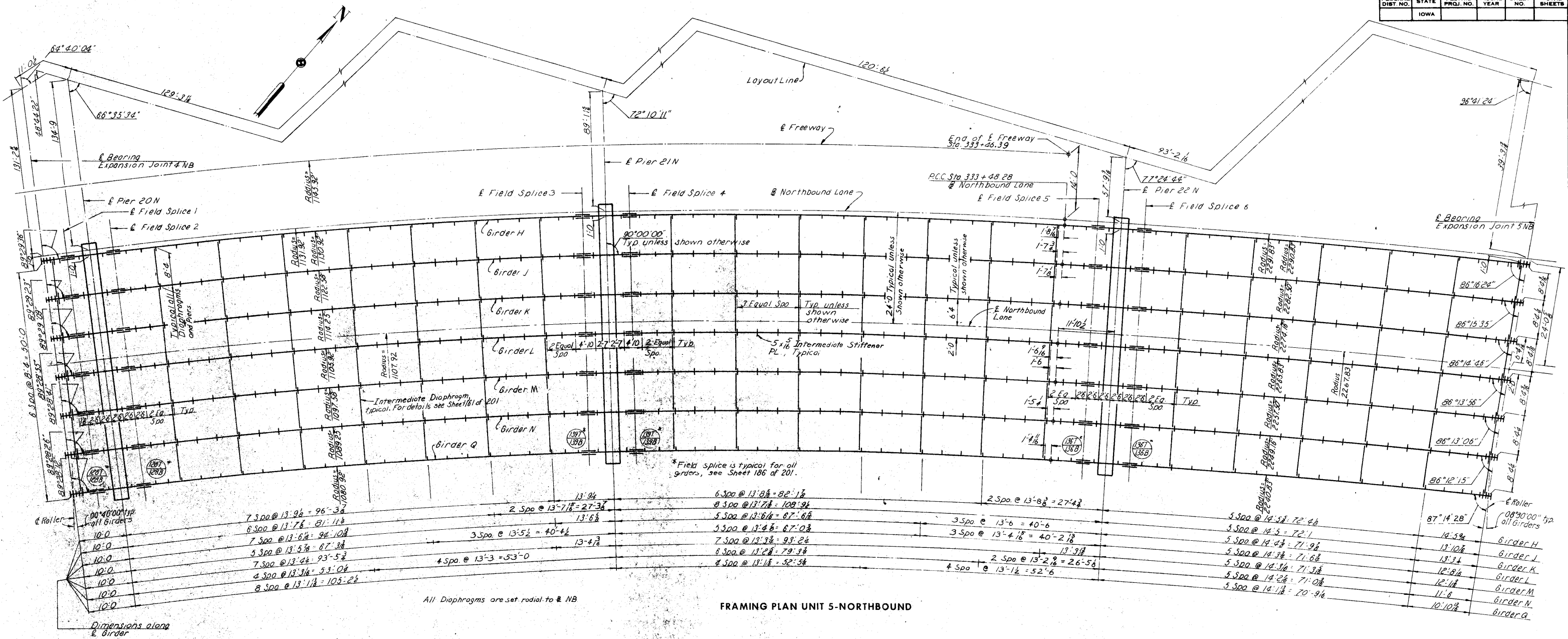


Note:
Offsets are given at one tenth points between Field Splice 2 and Field Splice 3, Field Splice 4 and Field Splice 5, at one fourth points between Field Splice 6 and Exp. Jt. 5N, and at Exp. Jt. 4N, Field Splice 1 and Piers.
Negative camber values are camber below reference line.
20% of dead load deflection is due to structural steel and 80% due to concrete, and 12% due to wearing surface.
For "Moment and Reaction Note", see sheet 83 of 201.

CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE
TABLE OF DEFLECTIONS AND SLAB ELEVATIONS
UNIT 5 NORTHBOUND LANE
STA. 322+81.95 @ FREEWAY =
STA. 324+14.70 @ 1ST. AVE. W
PROJECT NO. I-380-6(68)263--01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

MADE TJW DATE 7-12-74 CHECKED JER DATE 7-19-74



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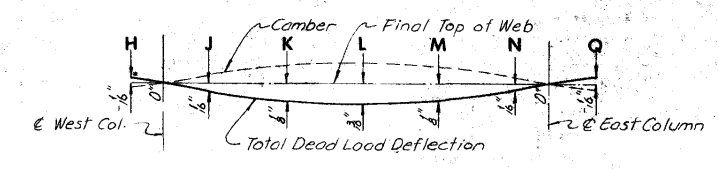
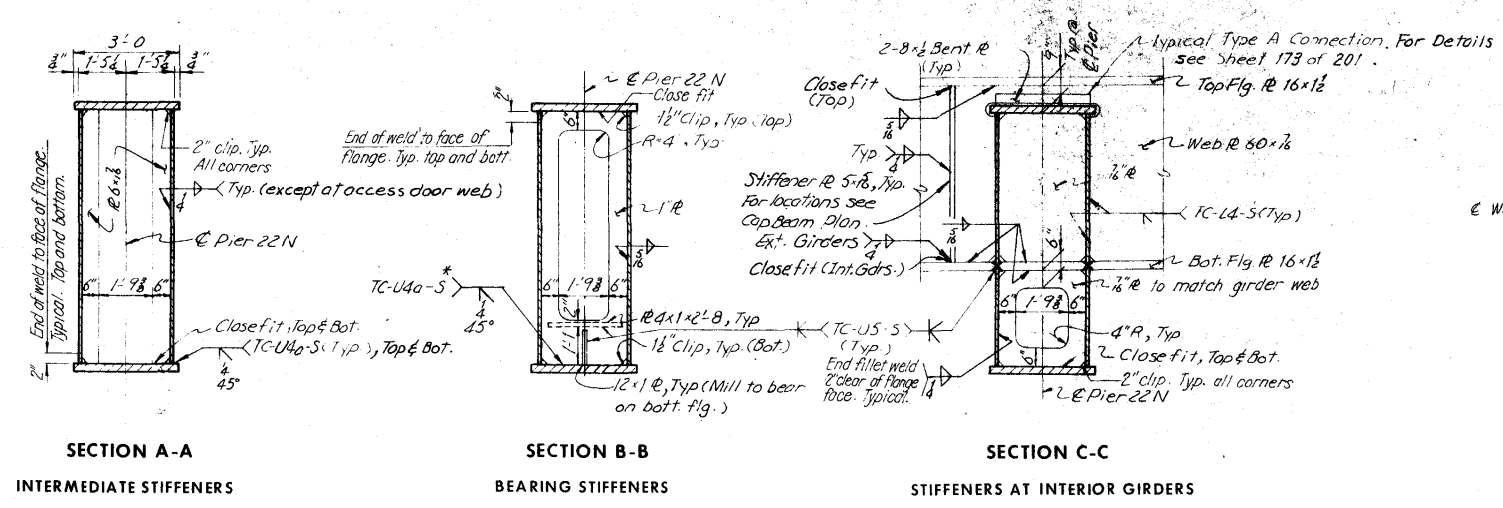
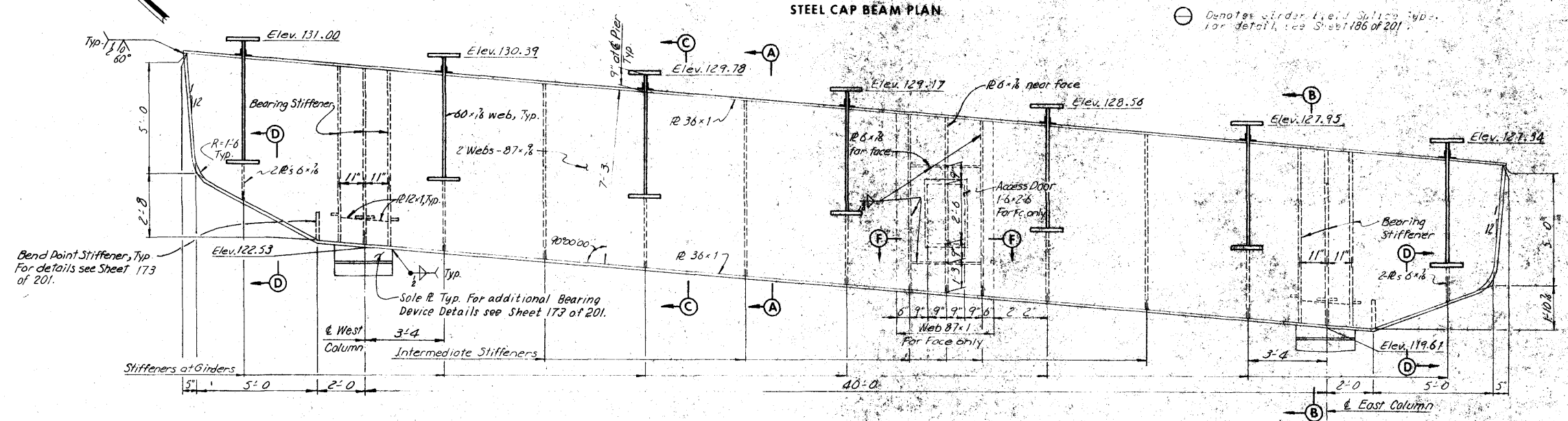
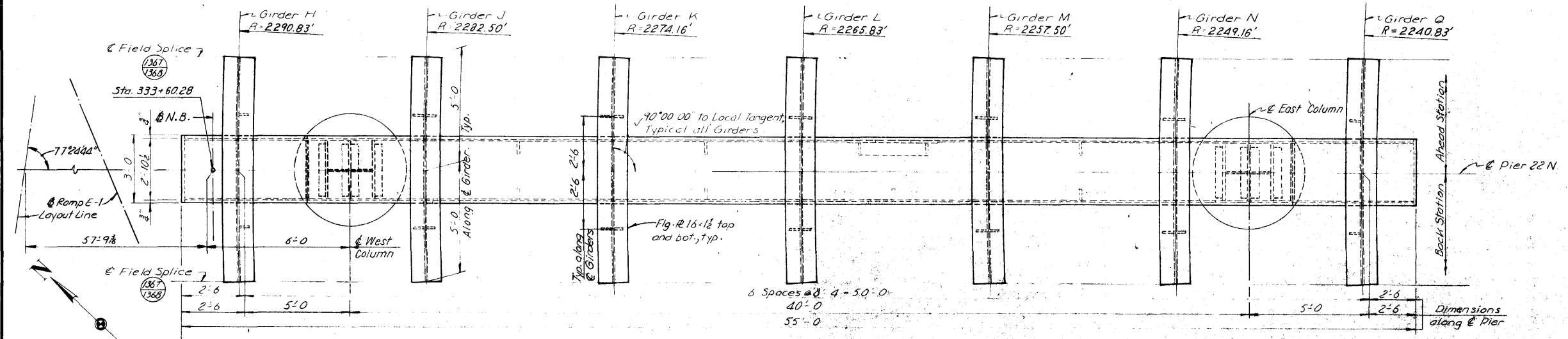
MADE DCH DATE 6-10-74 CHECKED DLR DATE 6-26-74

CEDAR RIVER BRIDGE
 SOUTH APPROACH
 DESIGN FOR VARIABLE SKEW
 CONTINUOUS WELDED PLATE GIRDER BRIDGE
 FRAMING PLAN UNIT 5 NORTHBOUND LANE

STA. 322+81.95 ℓ FREEWAY=
 STA. 32+14.70 ℓ 1ST. AVE. W PROJECT NO. I-380-6(68)263--01-57
 LINN COUNTY
 IOWA STATE HIGHWAY COMMISSION

SHEET 163 OF 201

DESIGN NO. 1276 LINN COUNTY FILE 23191 SHEET 165 OF 203-0



Note: Cap beam shall be cambered for total dead load deflection. 18% of total dead load deflection due to weight of structural steel. Negative values denote up and deflections.

**CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE
PIER 22N STEEL CAP BEAM**

STA. 322+81.95 @ FREEWAY =
STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. I-380-6(68)263--01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

MADE *AW* DATE 02-25-74 CHECKED *JSH* DATE 5-14-74

FIELD SPICE	SPAN LENGTH	GIRDER LENGTH
1	1	1
2	2	2
3	3	3
4	4	4
5	5	5
6	6	6
7	7	7
8	8	8
9	9	9
10	10	10
11	11	11
12	12	12
13	13	13
14	14	14
15	15	15
16	16	16
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94	94	94
95	95	95
96	96	96
97	97	97
98	98	98
99	99	99
100	100	100

TOP FLANGE PLATE

SHEAR CONNECTOR SPACES

3 BOTTOM FLANGE PLATE

316'-3 1/2 Girder H 314'-0 1/2 Girder J 311'-6 1/2 Girder K 309'-1 1/2 Girder L 306'-8 1/2 Girder M 304'-3 1/2 Girder N 301'-10 1/2 Girder Q

	10'-0" All Girders	110'-0 1/2 Girder H	109'-3 1/2 Girder J	108'-5 1/2 Girder K	107'-7 1/2 Girder L	106'-9 1/2 Girder M	106'-0 1/2 Girder N	109'-6 1/2 Girder H	108'-9 1/2 Girder J	108'-0 1/2 Girder K	107'-3 1/2 Girder L	106'-6 1/2 Girder M	105'-8 1/2 Girder N	86'-9 1/2 Girder H	85'-1 1/2 Girder J	85'-1 1/2 Girder K	84'-2 1/2 Girder L		
GIRDER H	5'-0"	5'-0"		100'-0 1/2			5'-0"	5'-0"			99'-6 1/2			5'-0"	5'-0"		81'-9 1/2		
GIRDER J	do	do	do	99'-3 1/2			do	do			98'-9 1/2			do	do		80'-1 1/2		
GIRDER K	do	do	do	98'-5 1/2			do	do			98'-0 1/2			do	do		80'-1 1/2		
GIRDER L	do	do	do	97'-7 1/2			do	do			97'-3 1/2			do	do		79'-2 1/2		
GIRDER M	do	do	do	96'-9 1/2			do	do			96'-6 1/2			do	do		78'-8 1/2		
GIRDER N	do	do	do	96'-0 1/2			do	do			95'-8 1/2			do	do		77'-6 1/2		
GIRDER Q	do	do	do	95'-2 1/2			do	do			94'-1 1/2			do	do		76'-7 1/2		
GIRDER H		93'-0 1/2 R 14x1 1/2			10'-0" R 14x1 1/2	12'-0" R 14x1 1/2	5'-0" R 16x1 1/2	5'-0" R 14x1 1/2	12'-0" R 14x1 1/2	15'-0" R 14x1 1/2		52'-6 1/2 R 14x1 1/2		10'-0" R 14x1 1/2	10'-0" R 14x1 1/2	5'-0" R 16x1 1/2	12'-0" R 14x1 1/2	10'-0" R 14x1 1/2	59'-9 1/2 R 14x1 1/2
GIRDER J		92'-3 1/2 do			do	do	do	do	do	do		51'-9 1/2 do		do	do	do	do	do	58'-1 1/2 do
GIRDER K		91'-5 1/2 do			do	do	do	do	do	do		51'-0 1/2 do		do	do	do	do	do	58'-1 1/2 do
GIRDER L		90'-7 1/2 do			do	do	do	do	do	do		50'-3 1/2 do		do	do	do	do	do	57'-2 1/2 do
GIRDER M		89'-9 1/2 do			do	do	do	do	do	do		49'-6 1/2 do		do	do	do	do	do	56'-4 1/2 do
GIRDER N		89'-0 1/2 do			do	do	do	do	do	do		48'-8 1/2 do		do	do	do	do	do	55'-6 1/2 do
GIRDER Q		88'-2 1/2 do			do	do	do	do	do	do		47'-1 1/2 do		do	do	do	do	do	54'-7 1/2 do
GIRDER H	2'-3" Sps @ 1'-1" 6'-8" 6'-8" Sps @ 1'-0" = 14'-8"	23 Sps @ 2'-0"-46'-0"	12 Sps @ 1'-9"-21'-0"	7 Sps @ 2'-0"-40'-0"	7-8 1/2	8-1 1/2	12 Sps @ 2'-0"-24'-0"	4 Sps @ 1'-9"-8'-0"	14 Sps @ 1'-11"-26'-10"	11 Sps @ 1'-10"-20'-2"	8 Sps @ 2'-0"-18'-0"	7-4 1/2	7-3 1/2	8 Sps @ 2'-0"-16'-0"	5 Sps @ 1'-8"-8'-4"	27 Sps @ 2'-0"-54'-0"	1'-2"		
GIRDER J	do do do do 6 Sps @ 1'-10"-11'-0"	25 Sps @ 2'-0"-50'-0"	12 Sps @ 1'-8"-20'-0"	do	7-6 1/2	8-4"	do	5 Sps @ 1'-9"-8'-9"	12 Sps @ 2'-0"-24'-0"	do	do	7-6 1/2	7-7 1/2	do	5 Sps @ 1'-9"-8'-9"	26 Sps @ 2'-0"-52'-0"	1'-6 1/2		
GIRDER K	do do do do do	do	11 Sps @ 1'-8"-18'-4"	do	8-4 1/2	8-1 1/2	do	5 Sps @ 1'-9"-8'-9"	do	do	do	7-4 1/2	7-2 1/2	do	do	do	1'-2"		
GIRDER L	do do do do do	24 Sps @ 2'-0"-48'-0"	12 Sps @ 1'-8"-20'-0"	do	7-11 1/2	8-0 1/2	do	5 Sps @ 1'-9"-8'-9"	do	11 Sps @ 1'-9"-19'-3"	do	7-3 1/2	7-4 1/2	8 Sps @ 1'-11"-15'-4"	5 Sps @ 1'-8"-8'-4"	do	do		
GIRDER M	do do do do do	do	11 Sps @ 1'-9"-19'-3"	do	7-10 1/2	8-2"	do	do	do	11 Sps @ 1'-10"-20'-2"	7 Sps @ 2'-0"-18'-0"	7-5 1/2	7-5 1/2	8 Sps @ 2'-0"-16'-0"	5 Sps @ 1'-9"-8'-9"	25 Sps @ 2'-0"-50'-0"	do		
GIRDER N	do do do do 5 Sps @ 1'-10"-9'-2"	do	12 Sps @ 1'-9"-21'-0"	7 Sps @ 2'-0"-11'-3 1/2	7-8 1/2	8-2 1/2	do	do	12 Sps @ 1'-11"-23'-0"	10 Sps @ 1'-10"-18'-4"	8 Sps @ 2'-0"-16'-0"	7-5 1/2	7-6 1/2	8 Sps @ 1'-11"-15'-4"	5 Sps @ 1'-8"-8'-4"	do	1'-4"		
GIRDER Q	do do do do do	do	11 Sps @ 1'-9"-19'-3"	7 Sps @ 2'-0"-40'-0"	8-1"	8-3 1/2	do	do	12 Sps @ 2'-0"-24'-0"	do	7 Sps @ 2'-0"-14'-0"	7-6 1/2	7-6 1/2	8 Sps @ 2'-0"-16'-0"	5 Sps @ 1'-9"-8'-9"	24 Sps @ 2'-0"-48'-0"	1'-4 1/2		
GIRDER H		20'-0" R 14x1 1/2		85'-0 1/2 R 14x1 1/2		10'-0" R 14x1 1/2	5'-0" R 16x1 1/2	5'-0" R 14x1 1/2	12'-0" R 14x1 1/2	10'-0" R 14x1 1/2		65'-6 1/2 R 14x1 1/2							
GIRDER J		do		84'-3 1/2 do		do	do	do	do	do		64'-9 1/2 do		do	do	do	do	63'-9 1/2 do	
GIRDER K		do		83'-5 1/2 do		do	do	do	do	do		64'-0 1/2 do		do	do	do	do	63'-1 1/2 do	
GIRDER L		do		82'-7 1/2 do		do	do	do	do	do		63'-3 1/2 do		do	do	do	do	62'-2 1/2 do	
GIRDER M		do		81'-9 1/2 do		do	do	do	do	do		62'-6 1/2 do		do	do	do	do	61'-4 1/2 do	
GIRDER N		do		81'-0 1/2 do		do	do	do	do	do		61'-8 1/2 do		do	do	do	do	60'-6 1/2 do	
GIRDER Q		do		80'-2 1/2 do		do	do	do	do	do		60'-1 1/2 do		do	do	do	do	59'-7 1/2 do	

GIRDER DETAILS

TYPICAL ROCKER SETTING							
	EXP. JT. 4	PIER 20	PIER 21	PIER 22	EXP. JT. 5		
Temperature of time of setting							
90°F	2 1/2"	4"	0"	0"	1/2"	1/2"	1 1/2"
50°F	2 3/4"	0"	0"	0"	0"	0"	2 3/4"
10°F	3 1/2"	1/2"	0"	0"	-1/2"	-1/2"	3 3/4"

Note:
 Rollers to be set vertical of 50°F, in position shown for temperatures over 50°F and opposite position shown for temperatures under 50°F.
 Masonry plates at Pier 22 to be set towards fixed pier for temperatures over 50°F and away from fixed pier for temperatures under 50°F.
 Settings for other temperatures are proportional to those shown for 40°F temperature change.
 For Bearing Deck details of Piers 20, 21 and 22 see Sheet 173 of 201.

**CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE**

GIRDER ELEVATIONS UNIT 5 NORTHBOUND LANE

STA. 322+81.95 @ FREEWAY=
STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. 1-380-6(68)263--01-57

LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

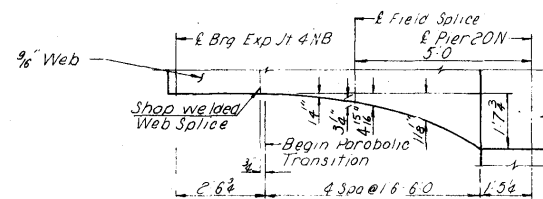
SHEET 167 OF 201

DESIGN NO 1276 LINN COUNTY FILE 23191 SHEET 169 OF 203-0

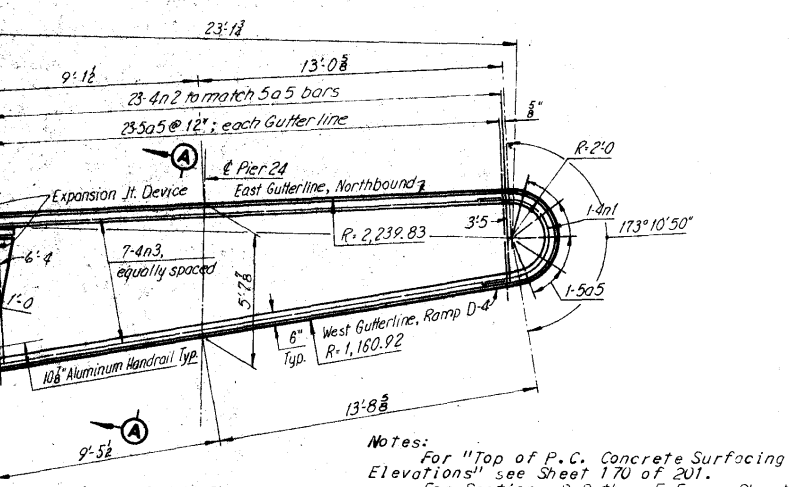
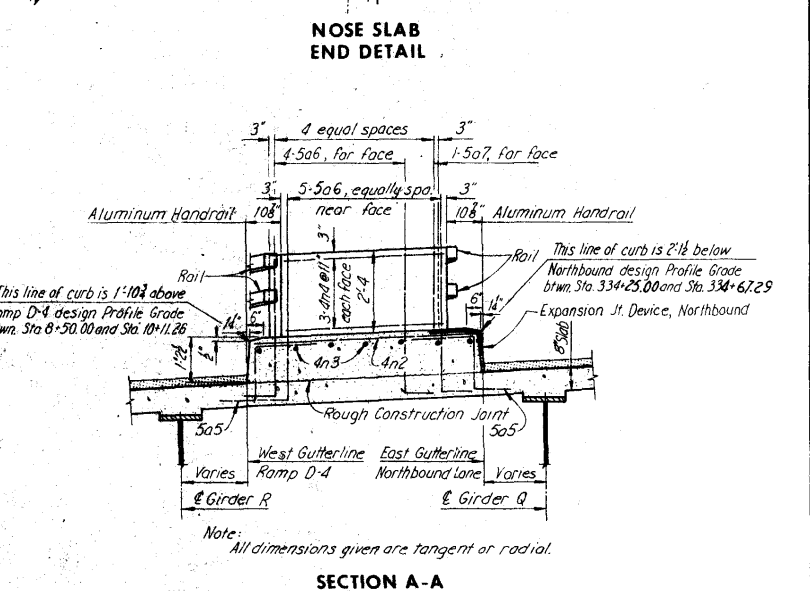
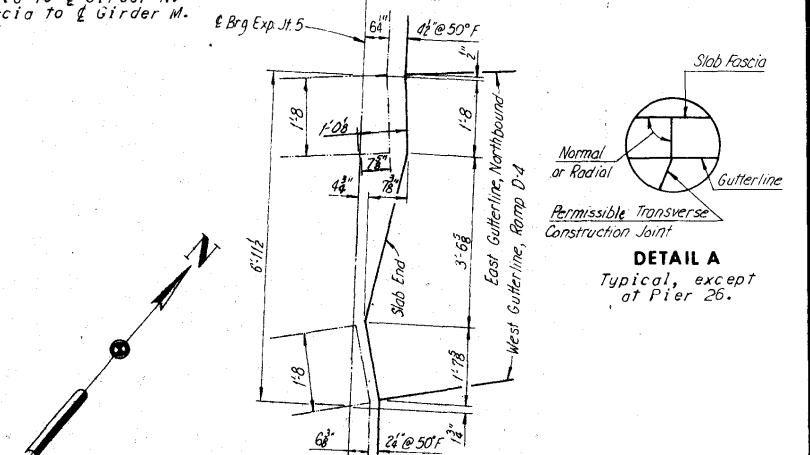
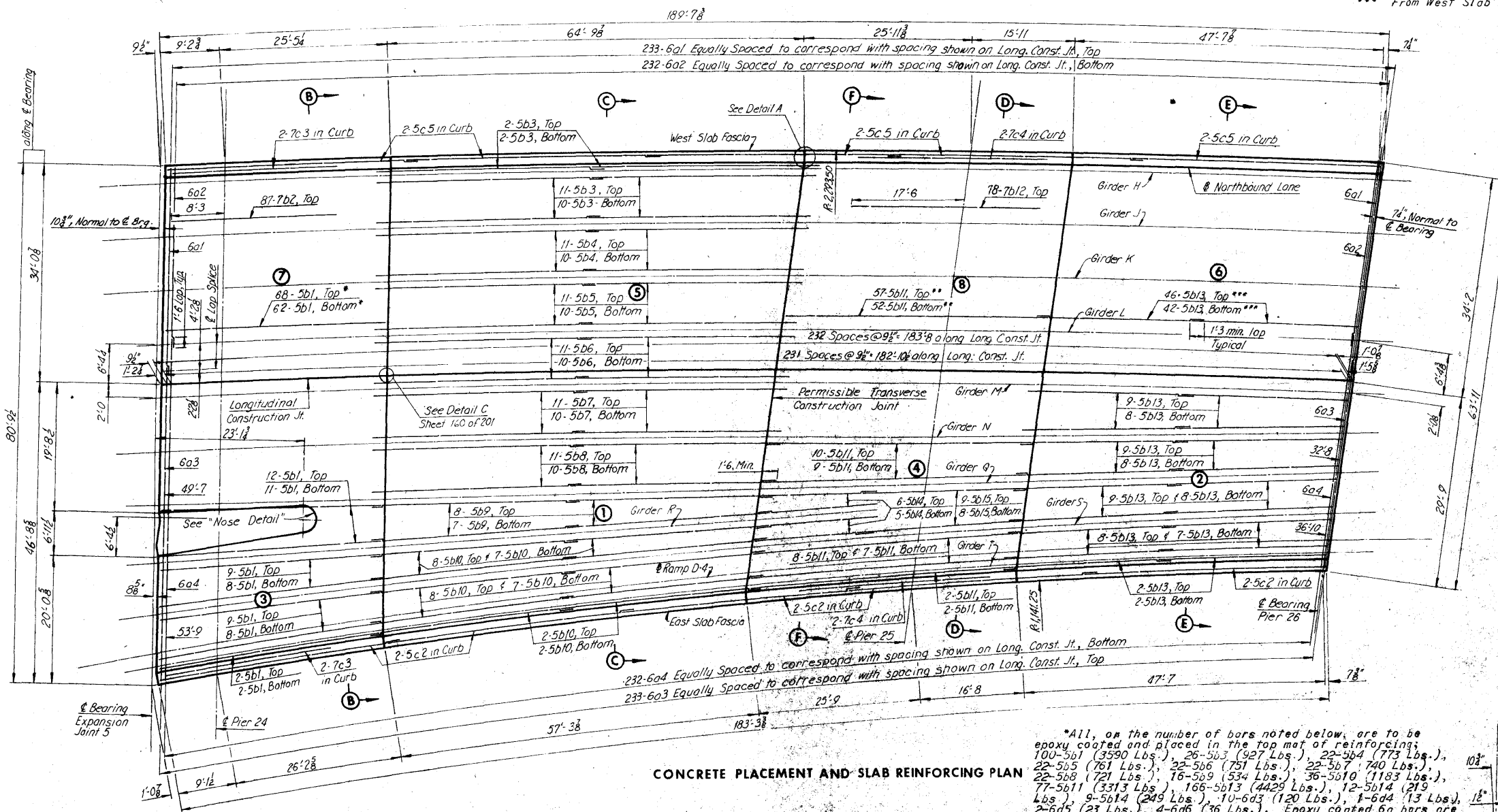
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

MADE DCH DATE 5-30-74 CHECKED RLF DATE 7-12-74

DETAIL A



Note:
 ... From West Slab Fascia to & Girder Q.
 ... From West Slab Fascia to & Girder N.
 ... From West Slab Fascia to & Girder M.

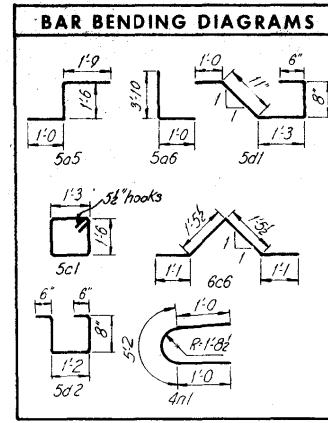


CONCRETE PLACEMENT AND SLAB REINFORCING PLAN

*All, on the number of bars noted below, are to be epoxy coated and placed in the top mat of reinforcing:
 100-5b1 (3590 Lbs.), 26-5b3 (927 Lbs.), 22-5b4 (773 Lbs.),
 22-5b5 (761 Lbs.), 22-5b6 (751 Lbs.), 22-5b7 (740 Lbs.),
 22-5b8 (721 Lbs.), 16-5b9 (534 Lbs.), 36-5b10 (1183 Lbs.),
 77-5b11 (3313 Lbs.), 166-5b13 (4429 Lbs.), 12-5b14 (219 Lbs.),
 9-5b14 (249 Lbs.), 10-6d3 (120 Lbs.), 1-6d4 (13 Lbs.),
 2-6d5 (23 Lbs.), 4-6d6 (36 Lbs.). Epoxy coated 60 bars are to be Grade 60 reinforcing steel.

BILL OF REINFORCEMENT											
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT	BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
* 6a1	Slab, Transverse		233	32'-5"	11,345	* 5b13	Slab, Longitudinal		316	25'-7"	8,432
* 6a2	Slab, Transverse		232	28'-3"	9,844	* 5b14	Slab, Longitudinal		22	17'-6"	402
* 6a3	Slab, Transverse		1 Ser 233	Varies	14,392	* 5b15	Slab, Longitudinal		17	26'-6"	470
* 6a4	Slab, Transverse		1 Ser 232	Varies	15,783						
* 6a5	Nose, Vertical		51	4'-1"	217						
* 6a6	Nose, Vertical		9	4'-9"	45						
* 6a7	Nose, Vertical		1	2'-1"	2						
* 5b1	Slab, Longitudinal		191	34'-5"	6,856	5c1	Curb, Vertical		325	6'-2"	2,090
* 5b2	Slab, Longitudinal		87	25'-9"	4,579	5c2	Curb, Longitudinal		10	37'-8"	393
* 5b3	Slab, Longitudinal		50	34'-2"	1,782	7c3	Curb, Longitudinal		4	25'-9"	211
* 5b4	Slab, Longitudinal		42	33'-8"	1,475	7c4	Curb, Longitudinal		4	27'-0"	221
* 5b5	Slab, Longitudinal		42	33'-2"	1,453	5c5	Curb, Longitudinal		10	38'-10"	405
* 5b6	Slab, Longitudinal		42	32'-9"	1,435	6c6	Curb, Under Rail Post		46	5'-0"	345
* 5b7	Slab, Longitudinal		42	32'-3"	1,413						
* 5b8	Slab, Longitudinal		42	31'-5"	1,376	* 5d1	Exp. Jt., Vertical		62	4'-6"	291
* 5b9	Slab, Longitudinal		30	32'-0"	1,001	* 5d2	Abut. Jt., Vertical		52	3'-5"	185
* 5b10	Slab, Longitudinal		68	31'-6"	2,234	* 6a3	Exp. Jt., Transverse		40	8'-0"	481
* 5b11	Slab, Longitudinal		147	41'-3"	6,324	* 6a4	Exp. Jt., Transverse		4	8'-6"	51
* 5b12	Slab, Longitudinal		78	27'-0"	4,304	* 6a5	Exp. Jt., Transverse		8	7'-7"	91
						* 6a6	Exp. Jt., Transverse		16	5'-11"	142
						4n1	Nose		1	7'-2"	5
						4n2	Nose, Transverse		1 Ser 23	Varies	75
						4n3	Nose, Longitudinal		7	22'-4"	104
						4n4	Nose, Transverse		6	4'-10"	19
						Total					100,239

SUPERSTRUCTURE ESTIMATED QUANTITIES			UNIT 6		
ITEM	UNIT	QUANTITY			
Structural Concrete (Class D)	Cu. Yds.	373.5			
Reinforcing Steel	Lbs.	46,795			
Reinforcing Steel-Epoxy Coated	Lbs.	53,444			
Structural Steel A	Lbs.	427,531			
P.C. Concrete Surfacing	Sq. Yds.	4,323			
					1401.28



CONCRETE PLACEMENT QUANTITIES	
POUR	CU. YDS.
1	59.0
2	38.8
3	40.5
4	37.7
5	55.0
6	42.5
7	31.2
8	36.0
West Curb	13.6
East Curb	13.2
Nose	6.0
Total	373.5

CONCRETE PLACEMENT NOTE:
 Roadway slab shall be placed in sections and in sequence indicated by circled numbers, except as noted otherwise. Alternate procedures for placing slab 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 results. The curb may be poured continuously.

NOSE DETAIL

Notes:
 For "Top of P.C. Concrete Surfacing Elevations" see Sheet 170 of 201.
 For Sections B-B thru F-F see Sheet 169 of 201.
 Unit 5WB Pours 3 and 9 shall be placed prior to Unit 6WB Pours 3 and 7. Ramp D-4 Slab shall be placed prior to Unit 6WB Pour 3.

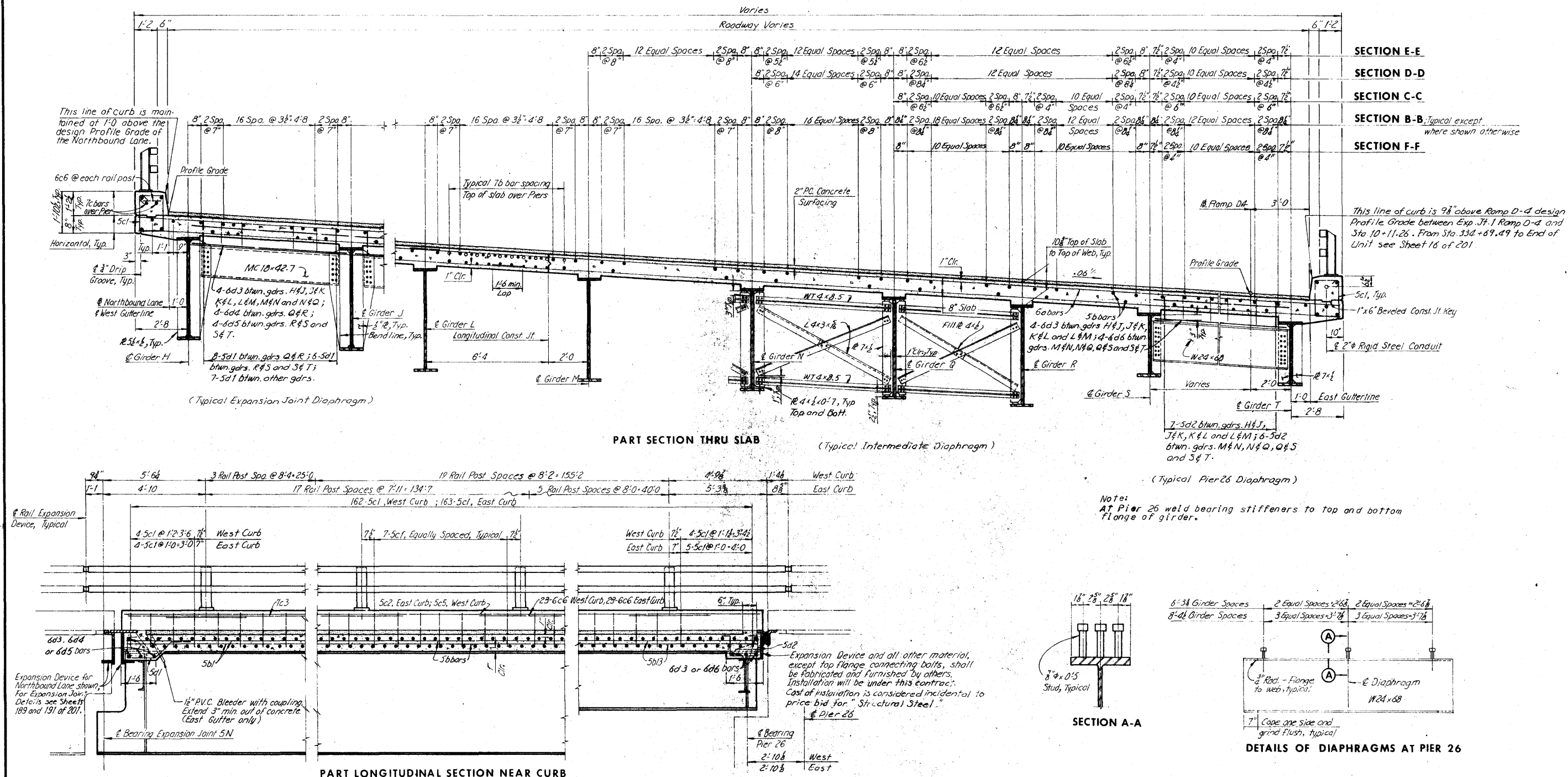
CEDAR RIVER BRIDGE SOUTH APPROACH DESIGN FOR VARIABLE SKEW CONTINUOUS WELDED PLATE GIRDER BRIDGE SLAB PLAN UNIT 6 NORTHBOUND LANE

STA. 322+81.95 @ FREEWAY =
 STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. I-380-6(68)263--01-57

LINN COUNTY
 IOWA STATE HIGHWAY COMMISSION

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
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 KANSAS CITY

MADE JJR DATE 6-11-74 CHECKED JSH DATE 7-17-74



HOWARD, NEEDLES, TAMMEN & BERGENDOFF
 CONSULTING ENGINEERS
 KANSAS CITY

MADE JJR DATE 6-10-74 CHECKED JSH DATE 7-16-74

CEDAR RIVER BRIDGE
 SOUTH APPROACH
 DESIGN FOR VARIABLE SKEW
 CONTINUOUS WELDED PLATE GIRDER BRIDGE
 SLAB SECTIONS UNIT 6 NORTHBOUND LANE

STA. 322+81.95 @ FREEWAY =
 STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. I-380-6(68)263--01-57

LINN COUNTY
 IOWA STATE HIGHWAY COMMISSION

SHEET 169 OF 201

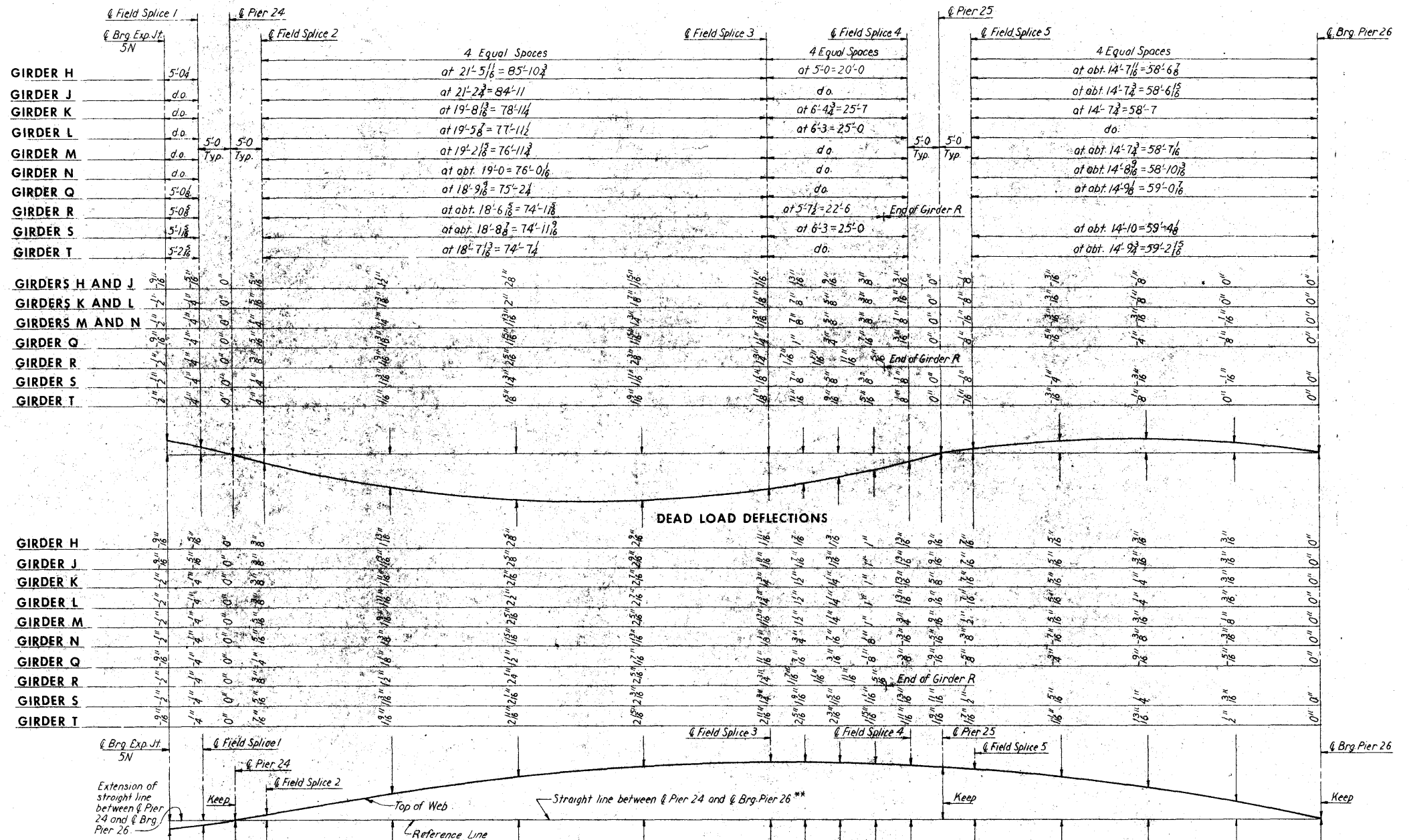
DESIGN NO. 1276 LINN COUNTY FILE 23191 SHEET 171 OF 203-0

ELEVATIONS — TOP OF P.C. CONCRETE SURFACING (2" above top of first lift of concrete)																									
Girder	E.J. 5N	F.S. 1	P.24	F.S. 2	.25	.50	.75	1.00	1.25	1.50	1.75	F.S. 4	P.25	F.S. 5	.25	.50	.75	1.00	1.25	1.50	1.75	2.00	2.25	2.50	2.75
H	132.69	132.72	132.76	132.79	132.84	132.88	132.91	132.94	132.97	133.00	133.03	133.06	133.09	133.12	133.15	133.18	133.21	133.24	133.27	133.30	133.33	133.36	133.39	133.42	133.45
J	132.19	132.22	132.26	132.29	132.33	132.37	132.40	132.43	132.46	132.49	132.52	132.55	132.58	132.61	132.64	132.67	132.70	132.73	132.76	132.79	132.82	132.85	132.88	132.91	132.94
K	131.68	131.72	131.75	131.79	131.82	131.85	131.88	131.91	131.94	131.97	132.00	132.03	132.06	132.09	132.12	132.15	132.18	132.21	132.24	132.27	132.30	132.33	132.36	132.39	132.42
L	131.18	131.21	131.25	131.28	131.31	131.34	131.37	131.40	131.43	131.46	131.49	131.52	131.55	131.58	131.61	131.64	131.67	131.70	131.73	131.76	131.79	131.82	131.85	131.88	131.91
M	130.67	130.71	130.74	130.78	130.81	130.84	130.87	130.90	130.93	130.96	130.99	131.02	131.05	131.08	131.11	131.14	131.17	131.20	131.23	131.26	131.29	131.32	131.35	131.38	131.41
N	130.17	130.21	130.24	130.28	130.31	130.34	130.37	130.40	130.43	130.46	130.49	130.52	130.55	130.58	130.61	130.64	130.67	130.70	130.73	130.76	130.79	130.82	130.85	130.88	130.91
Q	129.67	129.70	129.73	129.76	129.79	129.82	129.85	129.88	129.91	129.94	129.97	130.00	130.03	130.06	130.09	130.12	130.15	130.18	130.21	130.24	130.27	130.30	130.33	130.36	130.39
R	129.18	129.22	129.26	129.30	129.33	129.36	129.39	129.42	129.45	129.48	129.51	129.54	129.57	129.60	129.63	129.66	129.69	129.72	129.75	129.78	129.81	129.84	129.87	129.90	129.93
S	128.68	128.74	128.80	128.86	128.91	128.96	129.01	129.06	129.11	129.16	129.21	129.26	129.31	129.36	129.41	129.46	129.51	129.56	129.61	129.66	129.71	129.76	129.81	129.86	129.91
T	128.17	128.25	128.32	128.39	128.46	128.53	128.60	128.67	128.74	128.81	128.88	128.95	129.02	129.09	129.16	129.23	129.30	129.37	129.44	129.51	129.58	129.65	129.72	129.79	129.86

*Full depth diaphragm at end of Girder R

Legend:
F.S. denotes Field Splice
E.J. denotes Expansion Joint
P denotes Pier

TABLE OF MOMENTS AND REACTIONS IN FOOT KIPS AND KIPS - UNIT 6 NORTHBOUND LANE									
ITEM	MAXIMUM POSITIVE MOMENT		MAXIMUM NEGATIVE MOMENT		REACTIONS				
	SPAN 1	SPAN 2	PIER 24	PIER 25	PIER 24	PIER 25	PIER 26		
GIRDER H	Dead Load A	890	38	373	1304	84.5	114.0	11.2	
	Dead Load B	528	46	217	649	51.3	62.0	7.5	
	Live Load	992	488	420	822	63.7	74.1	45.1	
	Impact	207	129	99	191	15.0	17.5	11.9	
	Total			1109	2966	218.5	267.6	75.7	
GIRDER J	Dead Load A	1014	51	431	1502	102.2	132.1	13.4	
	Dead Load B	357	35	148	439	35.0	42.4	5.3	
	Live Load	1087	540	463	896	70.2	81.4	49.8	
	Impact	227	143	109	209	16.5	19.3	13.2	
	Total			1151	3046	223.9	275.2	81.7	
GIRDER K	Dead Load A	991	59	427	1484	101.2	131.2	13.7	
	Dead Load B	350	37	147	431	34.7	42.1	5.4	
	Live Load	1076	540	462	883	69.9	81.0	49.8	
	Impact	226	143	109	207	16.5	19.2	13.2	
	Total			1145	3005	222.3	273.5	82.1	
GIRDER L	Dead Load A	969	65	424	1466	100.2	130.4	14.0	
	Dead Load B	343	40	145	424	34.4	41.8	5.6	
	Live Load	1067	541	462	870	69.6	80.5	49.8	
	Impact	224	144	110	204	16.6	19.1	13.2	
	Total			1141	2964	220.8	271.8	82.6	
GIRDER M	Dead Load A	953	47	420	1429	99.4	127.8	12.2	
	Dead Load B	338	33	144	413	34.1	40.9	4.8	
	Live Load	1056	495	461	848	69.4	80.0	43.7	
	Impact	223	131	110	200	16.6	19.1	11.6	
	Total			1135	2890	219.5	267.8	72.3	
GIRDER N	Dead Load A	911	29	417	1350	97.9	123.2	10.2	
	Dead Load B	323	4	143	385	33.6	36.6	2.7	
	Live Load	1024	435	460	802	69.1	75.1	37.1	
	Impact	217	116	110	189	16.6	17.9	9.8	
	Total			1130	2726	217.2	252.8	59.8	
GIRDER Q	Dead Load A	807	32	346	1259	88.3	129.1	10.4	
	Dead Load B	228	18	198	379	42.3	59.7	3.7	
	Live Load	854	388	427	812	61.5	73.8	37.1	
	Impact	182	102	102	193	14.7	17.7	9.8	
	Total			1073	2649	206.8	260.3	71.0	
GIRDER R	Dead Load A	947		247		77.1	*36.6		
	Dead Load B	272		155		37.6	*10.6		
	Live Load	815		388		43.8	*25.1		
	Impact	180		113		12.7	*5.5		
	Total			903		171.2	*77.8		
GIRDER S	Dead Load A	777	50	296	1220	78.7	120.3	12.0	
	Dead Load B	259	36	105	322	26.8	36.0	4.5	
	Live Load	817	423	439	663	51.1	66.3	34.0	
	Impact	174	111	129	156	15.0	15.9	9.0	
	Total			969	2361	171.6	238.5	59.5	
GIRDER T	Dead Load A	749	42	242	1097	62.6	98.1	9.3	
	Dead Load B	455	53	151	549	41.5	54.4	7.2	
	Live Load	322	355	399	620	47.4	54.1	28.6	
	Impact	175	93	119	146	14.1	12.9	7.6	
	Total			914	2412	172.6	219.5	52.7	



Notes:
Offsets are given at one fourth points between Field Splice 2 and Field Splice 3, Field Splice 3 and Field Splice 4, Field Splice 4 and Pier 26, and at Exp. Jt. 5N, Field Splice 1 and Piers.
Negative camber values are camber below reference line.
** Straight line between Pier 24 and full depth diaphragm at end of girder for Girder R.

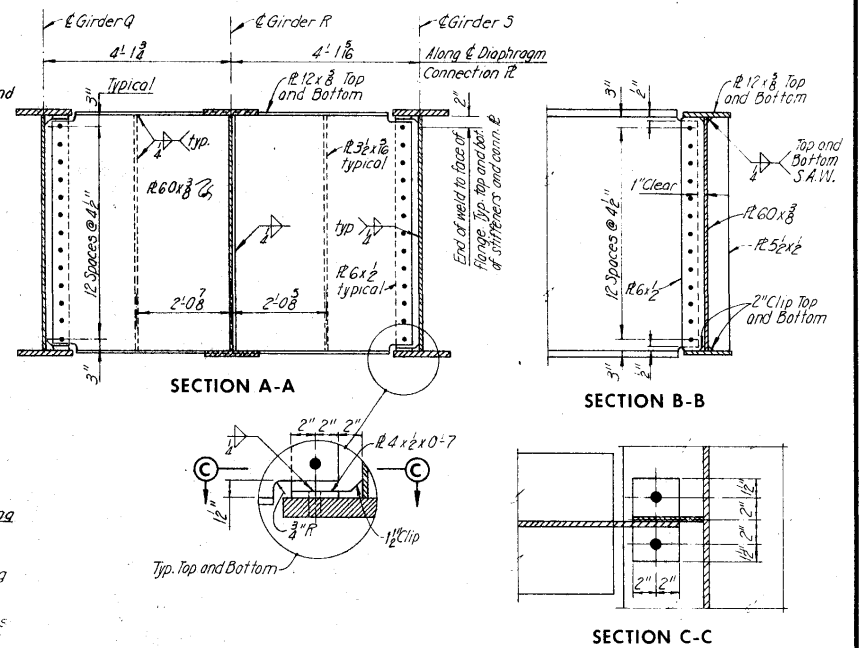
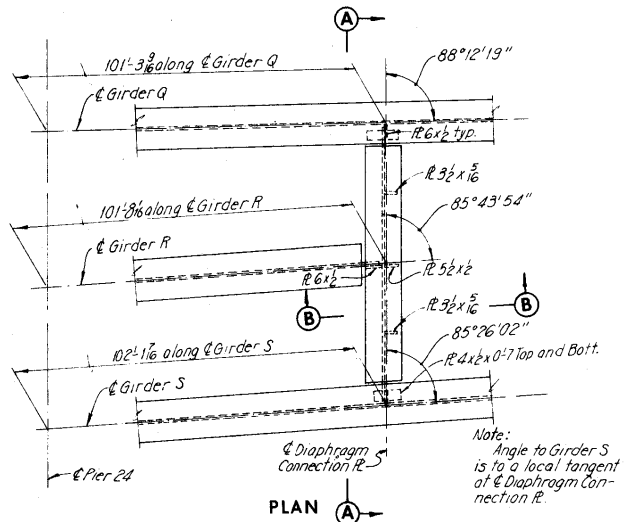
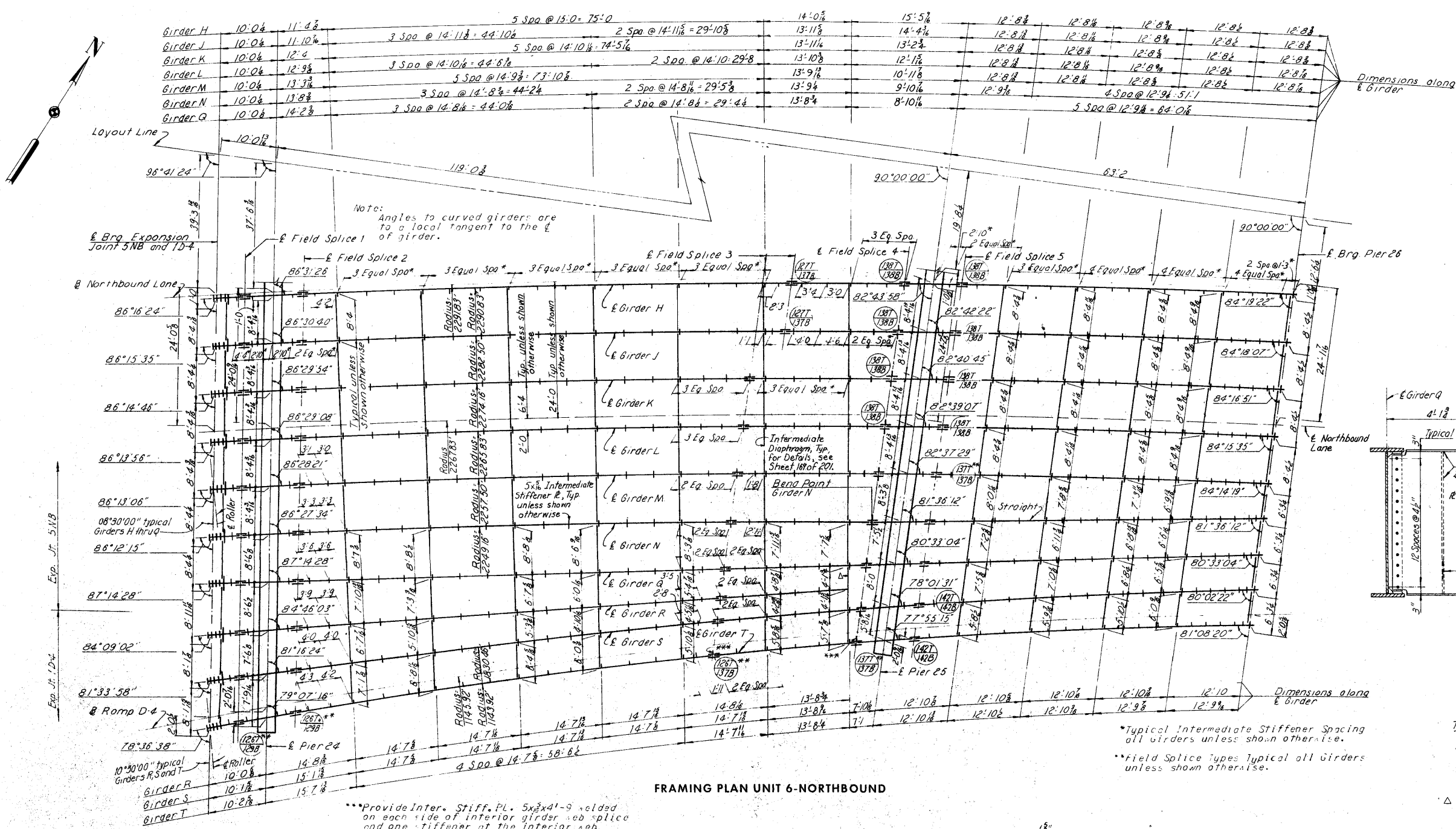
GIRDERS AS FABRICATED AND ERECTED DIAGRAM
(In the horizontal position)

CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE
TABLE OF DEFLECTIONS AND SLAB ELEVATIONS
UNIT 6 NORTHBOUND LANE

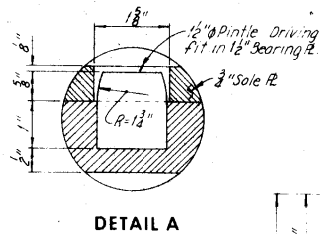
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LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

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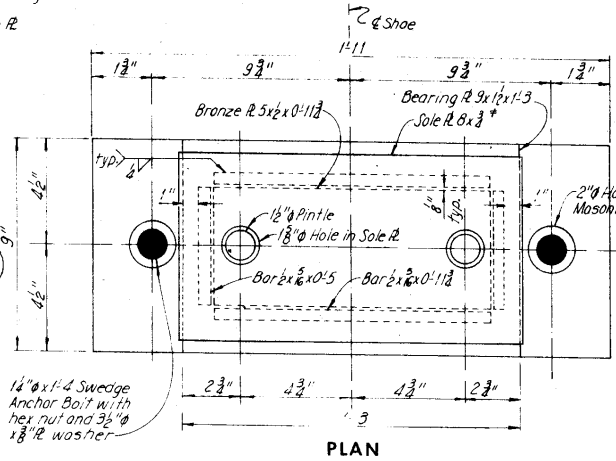
MADE TJW DATE 7-18-74 CHECKED JER DATE 7-18-74



DIAPHRAGM DETAILS AT END OF GIRDER R



Notes:
Bronze plate shall be lubricated in accordance with I.D.O.T. Specifications Article 4190.03 (Sliding surface only). Top edges of bronze plate shall be beveled. Masonry plates to be galvanized after welding.
Surfaces marked "V" shall be finished 4SA 250 and surfaces marked "W" shall be finished 4SA 125. Masonry plates are to be set in point and canvas.
Anchor bolts shall be set in accordance with Article 2409.47 of the I.D.O.T. Standard Specifications.
The complete shoe including the anchor bolt assembly and bronze plate is included as structural steel.



Notes:
For girder splice details see Sheet 186 of 201.
For inter. stiff. details see Sheet 182 of 201.

**CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE**

FRAMING PLAN UNIT 6 NORTHBOUND LANE

STA. 322+81.95 @ FREEWAY =
STA. 32+14.70 @ 1ST. AVE. W
PROJECT NO. I-380-6(68)263--01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

BEARING DEVICE AT PIER 26

Required Weight = 161 lbs. each
(Shown for Northbound Lane, Southbound Lane similar)

GIRDER LENGTH
SPAN LENGTH

FIELD SPICE

TOP FLANGE PLATE

SHEAR CONNECTOR SPACES

BOTTOM FLANGE PLATE

GIRDER H
GIRDER J
GIRDER K
GIRDER L
GIRDER M
GIRDER N
GIRDER Q
GIRDER R
GIRDER S
GIRDER T

GIRDER H
GIRDER J
GIRDER K
GIRDER L
GIRDER M
GIRDER N
GIRDER Q
GIRDER R
GIRDER S
GIRDER T

GIRDER H
GIRDER J
GIRDER K
GIRDER L
GIRDER M
GIRDER N
GIRDER Q
GIRDER R
GIRDER S
GIRDER T

GIRDER H
GIRDER J
GIRDER K
GIRDER L
GIRDER M
GIRDER N
GIRDER Q
GIRDER R
GIRDER S
GIRDER T

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CONSULTING ENGINEERS
KANSAS CITY

MADE DCH DATE 6-5-74 CHECKED RLF DATE 7-13-74

189'-5 3/8 Girder H 188'-6 1/8 Girder J 187'-6 1/2 Girder K 186'-6 3/8 Girder L 185'-7 1/8 Girder M 184'-10 1/8 Girder N 184'-2 1/8 Girder Q 111'-7 1/8 Girder R 184'-5 Girder S 184'-0 1/2 Girder T

10'-0 1/2 Girders H-N	115'-10 3/8 Girder H	114'-11 Girder J	113'-11 1/2 Girder K	112'-11 1/2 Girder L	111'-11 3/8 Girder M	111'-0 1/8 Girder N	110'-2 1/4 Girder Q	101'-6 1/8 Girder R	109'-11 3/8 Girder S	109'-7 1/8 Girder T	63'-6 1/8 Girder H	63'-6 1/8 Girder J	63'-7 Girder K	63'-7 Girder L	63'-7 1/8 Girder M	63'-10 1/8 Girder N	64'-0 1/8 Girder Q	64'-4 1/8 Girder S	64'-2 1/8 Girder T
5'-0 1/2	5'-0	5'-0									20'-0	5'-0	5'-0		58'-6 1/8				
do	do	do									do	do	do		58'-6 1/8				
do	do	do									25'-0	do	do		58'-7				
do	do	do									do	do	do		do				
do	do	do									do	do	do		58'-7 1/8				
do	do	do									do	do	do		58'-10 3/8				
5'-0 1/2	do	do									do	do	do		59'-0 1/2				
5'-0 1/2	do	do									22'-5 3/8	do	do		do				
5'-1 1/8	do	do									25'-0	do	do		59'-4 1/8				
5'-2 3/8	do	do									do	do	do		59'-2 3/8				

100'-11											10'-0	10'-0	5'-0	5'-0	18'-0	19'-0	21'-6 1/8		
R 14 x 1 1/2											R 14 x 1 1/2	R 14 x 1 1/2	R 16 1/8	R 16 1/8	R 14 x 1 1/2	R 14 x 1	R 14 x 1 1/2		
99'-11 1/4											do	do	do	do	do	do	21'-6 1/8		
do											do	do	do	do	do	do	do		
98'-11 1/2											do	do	do	do	do	do	21'-7		
do											do	do	do	do	do	do	do		
97'-11 3/8											do	do	do	do	do	do	do		
do											do	do	do	do	do	do	do		
97'-0											do	do	do	do	do	do	21'-7 1/8		
do											do	do	do	do	do	do	do		
96'-0 5/8											do	do	do	do	do	do	21'-10 1/8		
do											do	do	do	do	do	do	do		
95'-2 3/8											do	do	do	do	do	do	22'-0 1/8		
do											do	do	do	do	do	do	do		
111'-1 1/2											do	do	do	do	do	do	do		
do											do	do	do	do	do	do	do		
95'-0 3/8											do	do	do	do	do	do	22'-4 1/8		
do											do	do	do	do	do	do	do		
94'-9 3/8											do	do	do	do	do	do	22'-2 1/8		
do											do	do	do	do	do	do	do		

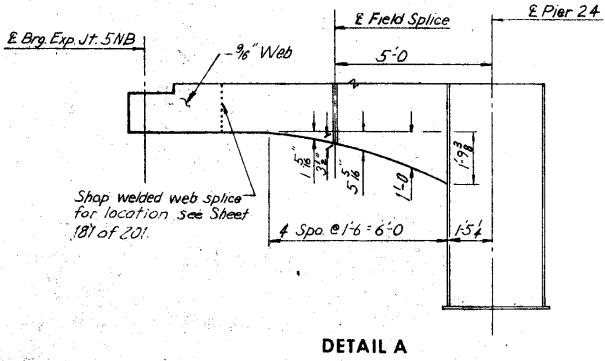
2'-3 1/4	1'-5 1/2 @ 1'-9	6'-0	6'-5	20'-5 3/8 @ 1'-10	28'-5 3/8 @ 2'-0	58'-0	9'-5 3/8 @ 1'-9	15'-9	3'-0	1'-10	7'-8 3/8	7'-8	17'-5 3/8 @ 2'-0	34'-0	6'-5 3/8 @ 1'-7	9'-6	8'-3 3/8 @ 1'-5	11'-4	10'-8
do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do
do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do
do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do
do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do
do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do
do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do
do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do
do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do
do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do

2'-3 1/4	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do
do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do
do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do
do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do
do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do
do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do
do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do
do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do
do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do
do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do

2'-3 1/4	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do
do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do
do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do
do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do
do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do
do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do
do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do
do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do
do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do
do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do	do

28'-0 1/2											92'-10 3/8								
do											R 14 x 1 1/2								
do											91'-11								
do											do								
do											90'-11 1/4								
do											do								
do											89'-11 1/2								
do											do								
do											88'-11 3/8								
do											do								
do											88'-0 1/2								
do											do								
28'-0 1/2											87'-2 1/4								
do											do								
28'-0 1/2											89'-0 3/8								
do											do								
28'-1 1/8											88'-11 3/8								
do											do								
28'-2 3/8											86'-7 1/4								
do											do								

GIRDER DETAILS



TYPICAL ROCKER SETTING				
	EXP. JT. 5	PIER 24	PIER 25	PIER 26
Temperature at time of setting				
90°F	1 3/8"	1/2"	0"	0"
50°F	2 3/8"	0"	0"	0"
10°F	3 3/8"	0"	0"	0"

EXP. JT. 1 D-4	
1 1/8"	3/16"
2 1/8"	0"
3 1/8"	3/16"

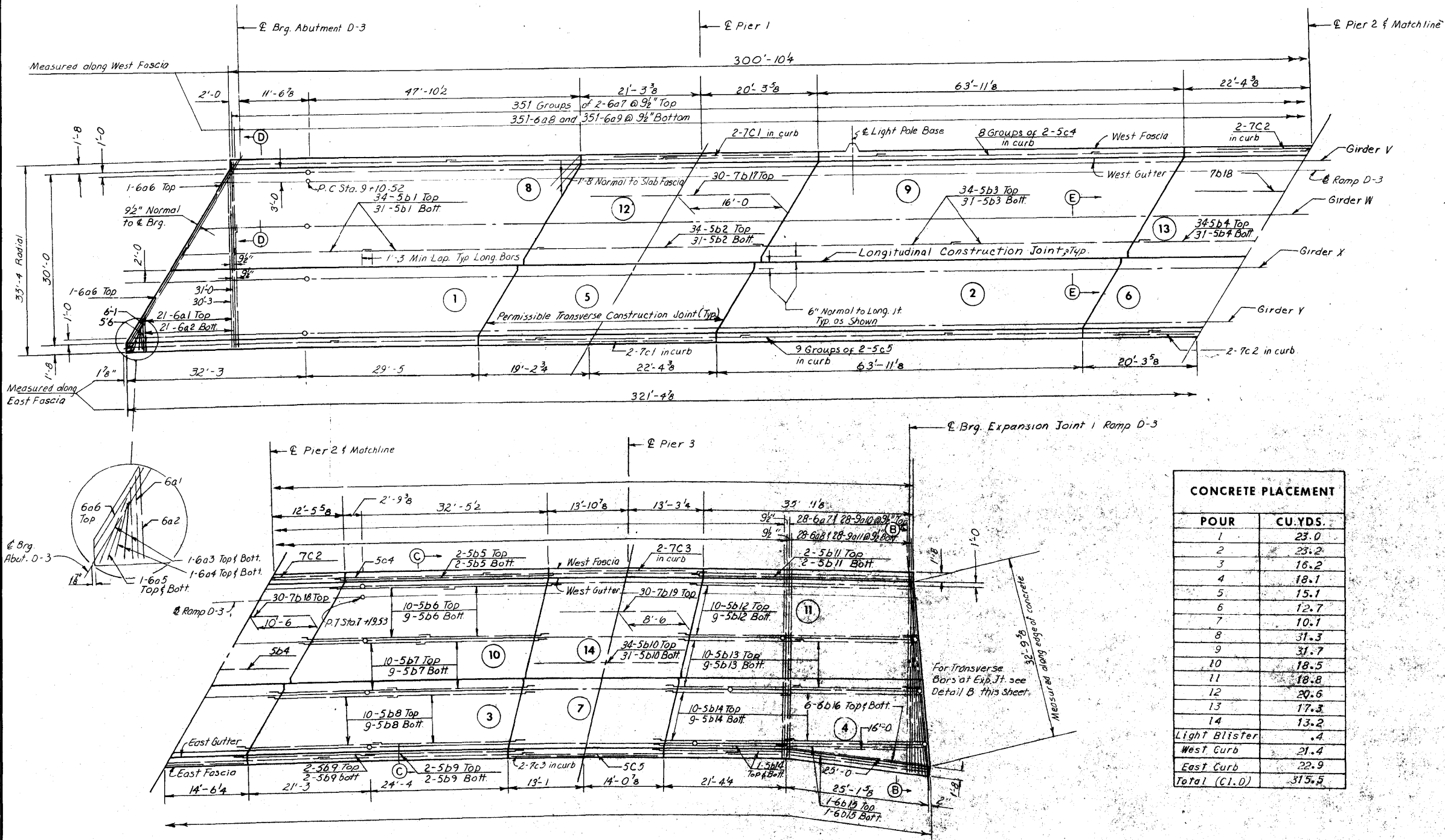
Note:
Rollers to be set vertical at 50°F, in position shown for temperatures over 50°F and opposite position shown for temperatures under 50°F.
Masonry plates at Pier 26 to be set towards fixed pier for temperatures above 50°F and away from fixed pier for temperatures under 50°F.
Settings for other temperatures are proportional to those shown for a 40°F temperature change.
See Sheet 173 of 201 for Bearing Device details at Piers 24 and 25 and Sheet 171 of 201 for Pier 26.

CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE

GIRDER ELEVATIONS UNIT 6 NORTHBOUND LANE

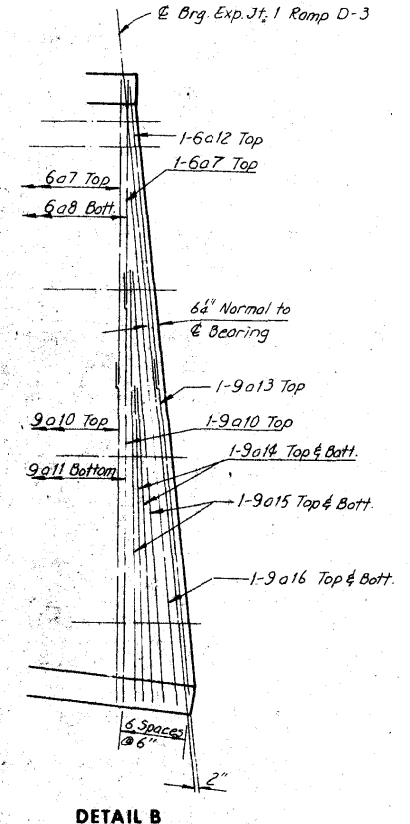
STA. 322+81.95 @ FREEWAY =
STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. I-380-6(68)263--01-57

LINN COUNTY
IOWA STATE HIGHWAY COMMISSION



SLAB REINFORCING PLAN

CONCRETE PLACEMENT	
POUR	CU. YDS.
1	23.0
2	23.2
3	16.2
4	18.1
5	15.1
6	12.7
7	10.1
8	31.3
9	31.7
10	18.5
11	18.8
12	20.6
13	17.3
14	13.2
Light Blister	.4
West Curb	21.4
East Curb	22.9
Total (C.I.D.)	315.5



DETAIL B

SUPERSTRUCTURE ESTIMATED QUANTITIES		
ITEM	UNIT	QUANTITY
Structural Concrete (Loss L)	Cu. Yds.	315.5
Reinforcing Steel	Lbs.	33,117
Reinforcing Steel-Epoxy Coated	Lbs.	3,509
Structural Steel	Lbs.	226,777
P.C. Concrete Surfacing	Sq. Ft.	4,032

286,755
1040.48

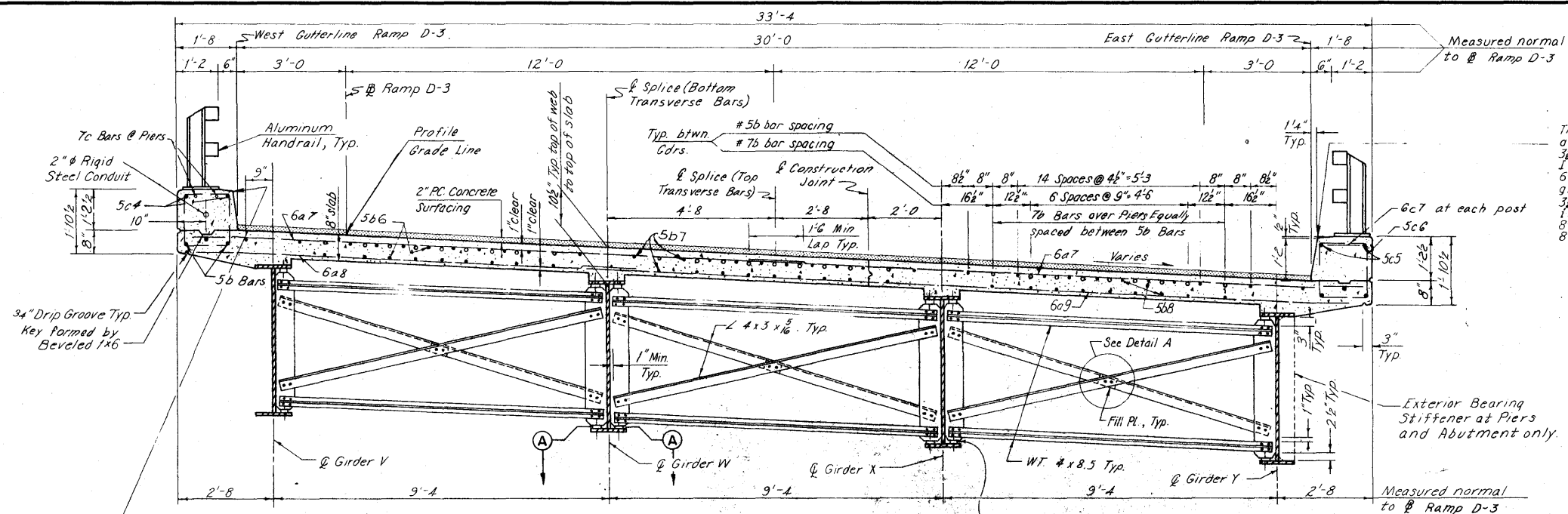
Notes:
For "Bill of Reinforcement" see Sheet 176 of 201.
For "Top of P.C. Concrete Surfacing Elevations", see sheet 176 of 201.
For Sections see Sheet 175 of 201.

**CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE**

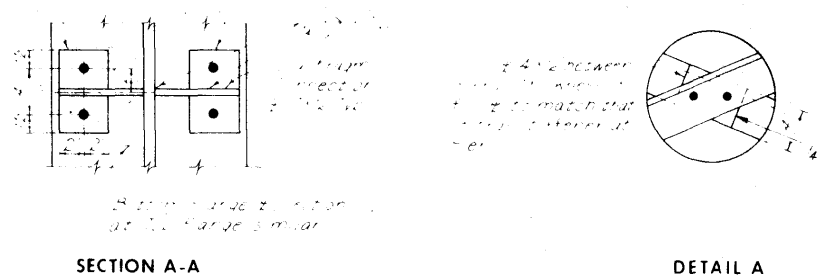
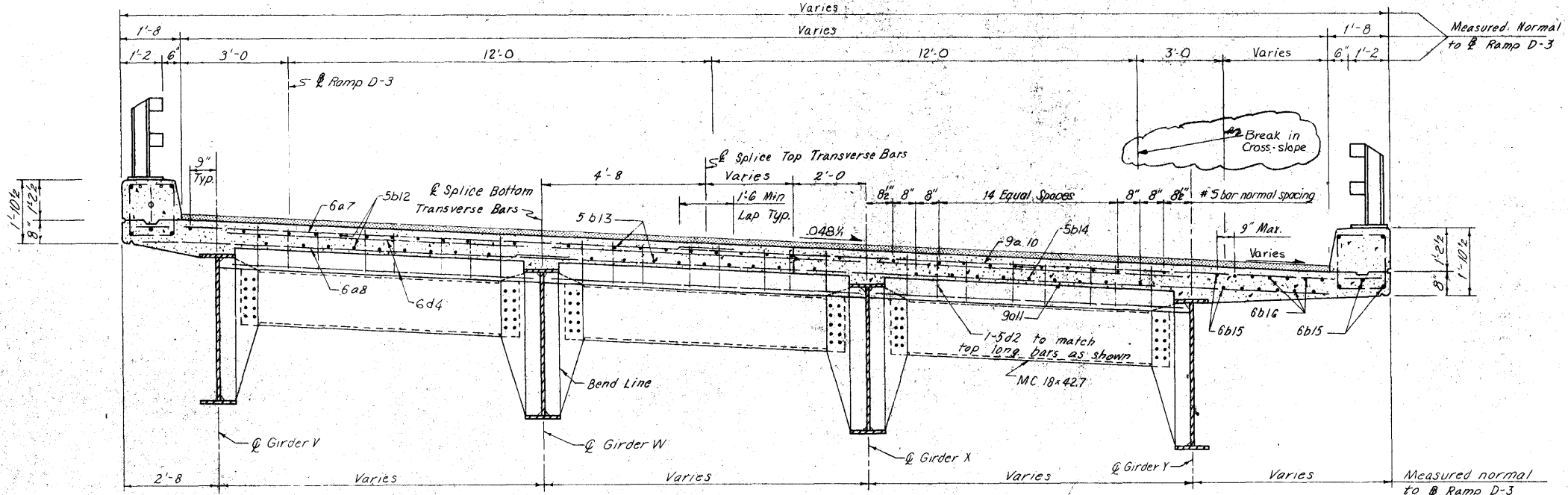
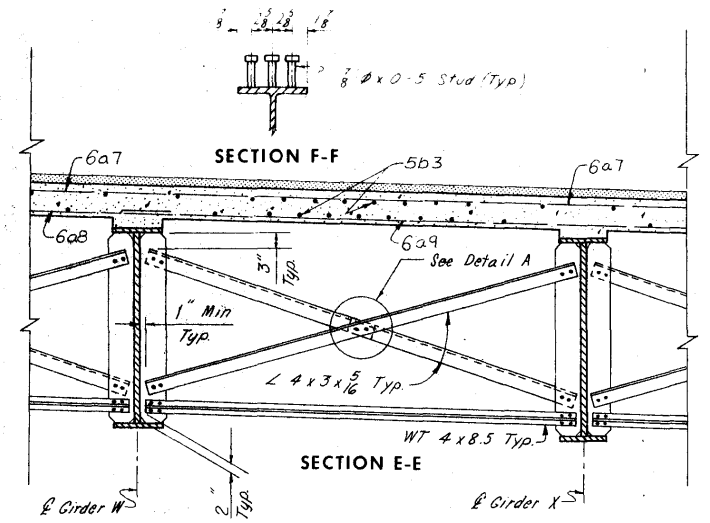
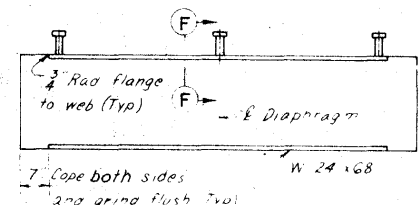
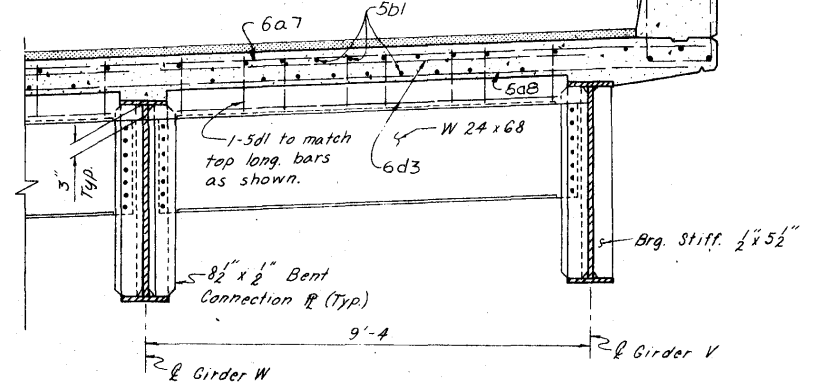
SLAB PLAN - RAMP D-3

STA. 322+81.95 @ FREEWAY=
STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. I-380-6(68)263--01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

Δ includes reinforcing for 1 light blister.
ΔΔ includes weight of Exp. Jts. at Abutment D-3 and Exp. Jt. 1 Ramp D-3.



This line of curb is 4 1/4" below design profile grade at & bearing of Exp. Jt. 1 (Ramp D-3) and varies to 3 1/4" below at Sta. 6+45.29 (End of curb transition). It varies from 3 1/4" below to 3 1/2" below from Sta. 6+45.29 to Sta. 6+50.00. It is 3 1/2" below design profile grade from Sta. 6+50.00 to Sta. 7+00 and varies from 3 1/2" below to 2 1/4" above from Sta. 7+00 to Sta. 7+75. It is 2 1/4" above design profile grade from Sta. 7+75 to Sta. 8+75 and varies from 2 1/4" above to 4 1/4" below from Sta. 8+75 to & Brg. Sta. 9+42.80 Ramp D-3 Abutment.



**CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE**

SUPERSTRUCTURE DETAILS - RAMP D-3

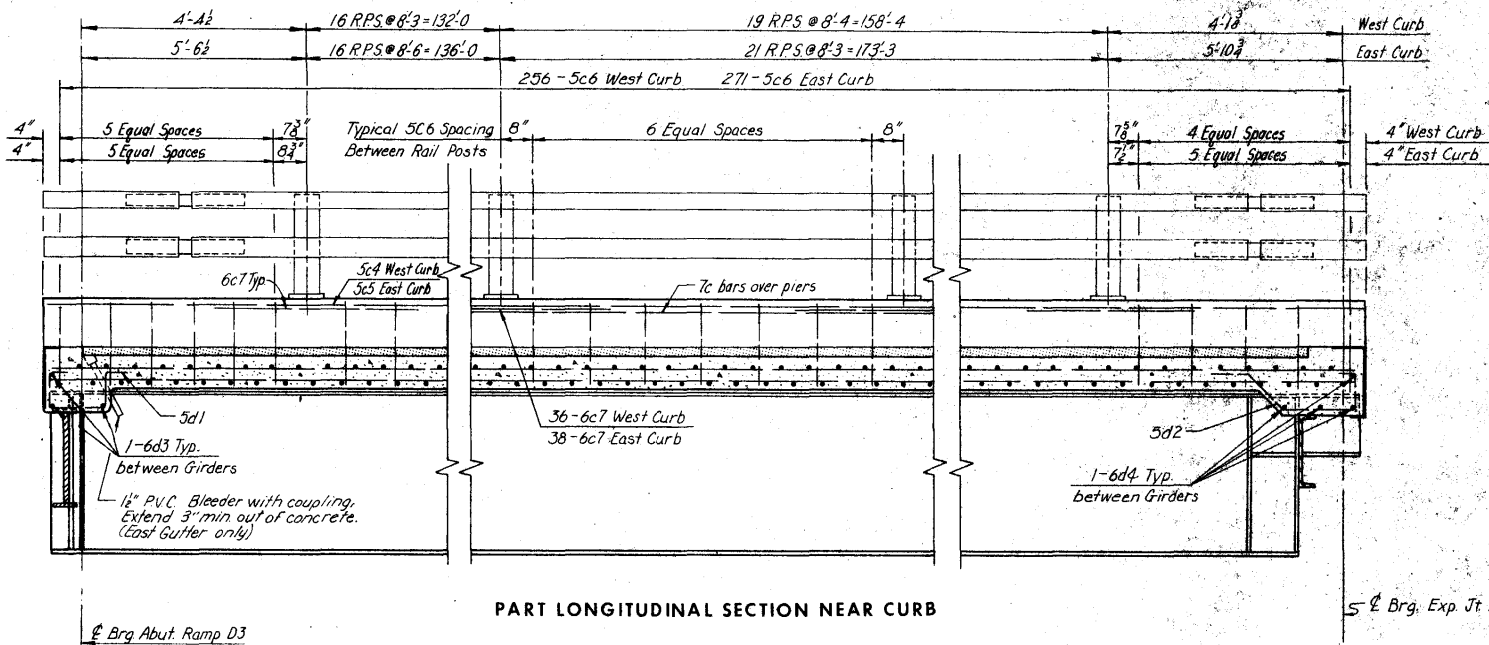
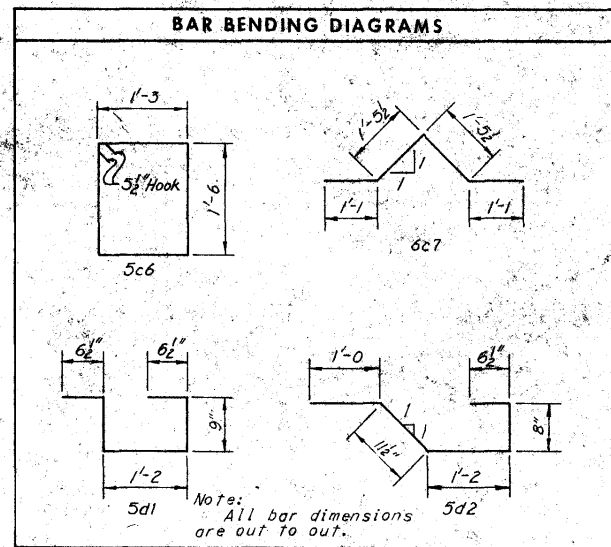
STA. 322+81.95 & FREEWAY =
STA. 32+14.70 & 1ST. AVE. W PROJECT NO. 1-380-6(68)263--01-57

LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

TABLE OF MOMENTS AND REACTIONS IN FOOT-KIPS AND KIPS													
	ITEM	MAXIMUM POSITIVE MOMENT				MAXIMUM NEGATIVE MOMENT			REACTIONS				
		SPAN 1	SPAN 2	SPAN 3	SPAN 4	PIER 1	PIER 2	PIER 3	ABUT D3	PIER 1	PIER 2	PIER 3	JT. ID 3
GIRDER V	Dead Load A	398	483	47	220	1095	763	282	27.3	111.7	91.4	55.7	20.4
	Dead Load B	227	317	40	120	523	409	126	16.2	60.2	51.3	30.5	11.7
	Live Load	596	613	337	320	575	522	288	38.8	60.1	57.1	45.2	35.1
	Impact	145	133	89	91	132	126	79	9.5	13.8	13.6	12.4	10.1
	Total					2325	1820	775	91.8	245.8	213.4	143.8	77.3
GIRDER W	Dead Load A	467	552	50	275	1246	911	395	31.7	128.2	107.2	70.4	24.5
	Dead Load B	168	233	32	96	386	306	115	12.0	44.4	38.4	24.8	9.0
	Live Load	804	831	521	468	777	713	423	56.0	84.1	80.6	66.1	51.8
	Impact	196	180	135	132	180	170	115	13.7	19.4	19.0	17.8	14.6
	Total					2589	2100	1048	113.4	276.1	245.2	179.1	99.9
GIRDER X	Dead Load A	474	547	78	298	1241	925	456	31.8	127.9	108.2	75.6	25.6
	Dead Load B	169	232	43	105	385	309	134	12.0	44.4	38.7	26.5	9.4
	Live Load	804	834	551	505	781	721	454	56.0	84.3	81.1	67.7	52.5
	Impact	196	181	140	139	180	170	120	13.7	19.4	19.0	18.2	14.5
	Total					2587	2125	924	113.5	276.0	247.0	188.0	102.0
GIRDER Y	Dead Load A	408	478	57	411	1080	789	553	27.5	111.1	92.7	84.2	32.7
	Dead Load B	228	314	63	200	521	417	235	16.2	60.0	52.3	43.3	16.8
	Live Load	596	621	430	501	581	542	404	38.8	60.4	58.3	55.6	45.7
	Impact	146	135	108	136	134	127	106	9.5	13.9	13.6	14.3	12.4
	Total					2316	1875	1298	92.0	245.4	216.9	197.6	107.6

*All, or the number of bars noted below, are to be epoxy coated and placed in the top mat of reinforcing:
2-6a3(141bs), 2-6a4(111bs), 1-6a5(51bs), 2-6a6(581bs),
2-9a14(1161bs), 2-9a15(1701bs), 1-9a16(991bs),
6a-5b1(22871bs), 34-5b2(14571bs), 6a-5b3(24171bs),
34-5b4(12181bs), 2-5b5(741bs), 20-5b6(4521bs),
20-5b7(4821bs), 20-5b8(5151bs), 4-5b9(1041bs),
34-5b10(9571bs), 2-5b11(201bs), 10-5b12(4331bs),
20-5b13(4761bs), 22-5b14(5621bs), 2-6b15(751bs),
6-6b16(1851bs), 3-6d3(421bs) and 3-6d4(401bs).
Epoxy coated 6a and 9a bars are to be Grade 60 re-
inforcing steel.

BILL OF REINFORCEMENT					
BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
6a1 *	Slab, Transverse Top	---	1 Ser 21	Varies	564
6a2	Slab, Transverse Bott.	---	1 Ser 21	Varies	515
6a3 *	Slab, Transverse	---	4	4'-6	27
6a4 *	Slab, Transverse	---	4	3'-6	21
6a5 *	Slab, Transverse	---	2	3'-0	9
6a6 *	Slab, Transverse	---	2	19'-3	58
6a7 *	Slab, Transverse Top	---	731	17'-3	12,940
6a8	Slab, Transverse Bott.	---	379	12'-9	7,250
6a9	Slab, Transverse Bott.	---	351	22'-0	11,590
9a10 *	Slab, Transverse Top	---	29	19'-9	1,947
9a11	Slab, Transverse Bott.	---	28	24'-3	2,309
6a12 *	Slab, Transverse	---	1	1'-0	26
9a13 *	Slab, Transverse	---	1	20'-0	68
9a14 *	Slab, Transverse	---	4	17'-0	231
9a15 *	Slab, Transverse	---	4	25'-0	340
9a16 *	Slab, Transverse	---	2	20'-0	197
5b1 *	Slab, Longitudinal	---	130	32'-3	4,373
5b2 *	Slab, Longitudinal	---	65	41'-1	2,725
5b3 *	Slab, Longitudinal	---	130	34'-1	4,621
5b4 *	Slab, Longitudinal	---	65	34'-4	2,328
5b5 *	Slab, Longitudinal	---	4	35'-6	148
5b6 *	Slab, Longitudinal	---	30	21'-8	259
5b7 *	Slab, Longitudinal	---	30	23'-1	915
5b8 *	Slab, Longitudinal	---	30	24'-8	970
5b9 *	Slab, Longitudinal	---	8	24'-11	208
5b10 *	Slab, Longitudinal	---	65	27'-0	1,230
5b11 *	Slab, Longitudinal	---	4	38'-5	160
5b12 *	Slab, Longitudinal	---	19	41'-6	222
5b13 *	Slab, Longitudinal	---	30	22'-10	905
5b14 *	Slab, Longitudinal	---	42	24'-6	1,073
6b15 *	Slab, Longitudinal	---	4	25'-0	150
6b16 *	Slab, Longitudinal	---	2 Ser 6	Varies	365
7b17 *	Slab, Longitudinal	---	30	28'-3	1,732
7b18 *	Slab, Longitudinal	---	30	26'-6	1,625
7b19 *	Slab, Longitudinal	---	30	18'-0	1,165
7c1	Curb, Longitudinal	---	4	28'-3	231
7c2	Curb, Longitudinal	---	4	26'-6	217
7c3	Curb, Longitudinal	---	4	19'-0	155
5c4	Curb, Longitudinal	---	16	38'-9	647
5c5	Curb, Longitudinal	---	18	36'-9	690
5c6	Curb, Transverse	---	527	6'-2	3,390
6c7	Curb, Post	---	74	5'-0	556
5d1 *	End Diaphragm	---	24	3'-5	86
5d2 *	End Diaphragm	---	24	4'-5	111
6d3 *	End Diaphragm	---	9	10'-9	145
6d4 *	End Diaphragm	---	12	8'-10	159
Total					77,611



ELEVATIONS — TOP OF P.C. CONCRETE SURFACING (2" above top of first lift of concrete)																					
Girder	Abut. D3	.25	.50	.75	F.S. 1	.25	.50	.75	F.S. 2	.25	.50	.75	F.S. 3	.25	.50	.75	F.S. 4	.25	.50	.75	EJ 103
V	114.79	115.56	116.34	117.11	117.89	118.61	119.31	119.99	120.64	121.40	122.13	122.83	123.51	124.20	124.86	125.49	126.08	126.67	127.22	127.73	128.21
W	114.02	114.85	115.66	116.48	117.29	117.98	118.66	119.32	119.97	120.76	121.53	122.26	122.95	123.65	124.31	124.94	125.55	126.17	126.75	127.29	127.80
X	113.22	114.09	114.95	115.81	116.66	117.39	118.09	118.77	119.44	120.31	121.00	121.53	122.41	123.11	123.78	124.41	125.02	125.67	126.28	126.85	127.39
Y	112.36	113.33	114.31	115.25	116.20	116.91	117.57	118.22	118.86	119.69	120.48	121.25	121.96	122.65	123.30	123.90	124.48	125.17	125.81	126.43	127.01

CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE
SUPERSTRUCTURE DETAILS - RAMP D-3

STA. 322+81.95 @ FREEWAY =
STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. I-380-6(68)263--01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

MADE dos DATE 6/10 CHECKED C.B.M. DATE 6-20-74

TOTAL LENGTH		239'-11" Girder V, 306'-3 3/4" Girder W, 312'-8 1/4" Girder X, 319'-0 1/4" Girder Y																																	
SPAN LENGTHS		5" Brq. Abut. D-3				5" Pier 1				5" Pier 2				5" Pier 3				8" Brq. Exp. J.H. Ramp D-3																	
		80'-8 15/16" Girder V, 80'-9 11/16" Girder W, 80'-10 3/4" Girder X, 81'-0 1/4" Girder Y				106'-7" Girder V, 106'-7" Girder W, 106'-7" Girder X, 106'-7" Girder Y				62'-6 5/8" Girder V, 65'-9 3/8" Girder W, 69'-0 3/8" Girder X, 72'-3 3/4" Girder Y				50'-0 7/8" Girder V, 53'-1 1/8" Girder W, 56'-1 7/8" Girder X, 59'-2 1/2" Girder Y																					
FIELD SPICES	GIRDER V	55'-8 15/16"				25'-0"				26'-0"				60'-7"				20'-0"				44'-6 5/8"				18'-0"				50'-0 7/8"					
	GIRDER W	55'-9 11/16"				do.				24'-0"				62'-7"				do.				47'-9 1/2"				do.				53'-1 1/8"					
	GIRDER X	55'-10 3/4"				do.				25'-0"				61'-7"				do.				51'-0 3/8"				do.				56'-1 15/16"					
	GIRDER Y	59'-0 1/4"				22'-0"				do.				63'-7"				18'-0"				54'-3 3/4"				do.				59'-2 1/2"					
TOP SPACES FLANGE PLATES	GIRDER V	55'-8 15/16" R 12 x 1 1/2				10'-0" 15'-0" R 12 x 1 1/2 R 16 x 2				11'-0" 11'-0" R 12 x 1 1/2 R 12 x 1 1/2				60'-7" R 12 x 1 1/2				20'-0" R 12 x 2				15'-0" 12'-0" R 12 x 1 1/2 R 12 x 1 1/2				18'-0" 13'-0" R 12 x 1 1/2 R 12 x 1 1/2				37'-0 7/8" R 12 x 1 1/2					
	GIRDER W	55'-9 11/16" do.				do. do. do. do.				9'-0" 9'-0" do. do.				62'-7" do.				do. do. do. do.				20'-9 1/2" 20'-9 1/2" do. do.				do. do.				40'-1 1/8" do.					
	GIRDER X	55'-10 3/4" do.				do. do. do. do.				10'-0" 10'-0" do. do.				61'-7" do.				do. do. do. do.				24'-0 3/8" 24'-0 3/8" do. do.				do. do.				43'-1 15/16" do.					
	GIRDER Y	59'-0 1/4" do.				7'-0" do. do. do.				do. do. do. do.				63'-7" do.				18'-0" do. do. do.				do. do. do. do.				27'-3 3/4" 27'-3 3/4" do. do.				do. do.				46'-2 1/2" do.	
SHEAR CONNECTOR SPACES FLANGE PLATES	GIRDER V	1'-10" 8 spa. @ 10 spa. @ 10 spa. @ 3'-8" 10 spa. @ 3'-10" 11 spa. @ 3'-8" 10 spa. @ 8 spa. @ 17 spa. @ 3'-11" 8 spa. @ 3'-6" 11 spa. @ 9 spa. @ 3'-6" 7 spa. @ 4'-0" 3'-6" 3 spa. @ 6 spa. @ 10 spa. @ 5 spa. @ 1'-9"				1'-10" 14'-8" 1'-11" 19'-2" 1'-9" 17'-6" 2'-0" 20'-0" 1'-11" 19'-2" 1'-8" 16'-8" 2'-0" 16'-0" 1'-4" 22'-8" 1'-11" 15'-4" 1'-11" 21'-1" 1'-8" 15'-0" 1'-10" 12'-10" 2'-0" 6'-0" 1'-8" 10'-0" 2'-0" 20'-0" @ 1'-9" 8'-9"																													
	GIRDER W	1'-7" 9 spa. @ 7 spa. @ 5 spa. @ 11 spa. @ 4'-0" do. do. 3'-8" 10 spa. @ 3'-7" 12 spa. @ 10 spa. @ 6 spa. @ 10 spa. @ 3'-10" do. do. 4'-3 3/4" 12 spa. @ 12 spa. @ 3'-7 1/2" do. do. 3'-3 3/4" 4 spa. @ 8 spa. @ 12 spa. @ 6 spa. @ 1'-6"				1'-7" 14'-3" 1'-9" 12'-3" 1'-8" 8'-4" 1'-6" 16'-6" 1'-11" 19'-2" 1'-6" 18'-0" 1'-9" 17'-6" 1'-7" 9'-6" 1'-9" 12'-6" 2'-0" 24'-0" 1'-5" 17'-0" 1'-5" 17'-0" 2'-0" 8'-0" 1'-5" 11'-4" 1'-8" 20'-0" 1'-6" 9'-6"																													
	GIRDER X	do. do. do. do. 4'-1 3/4" do. do. 3'-10" 10 spa. @ do. 11 spa. @ 11 spa. @ do. 9 spa. @ do. do. do. 4'-2 3/4" 13 spa. @ 13 spa. @ 3'-6 3/8" do. do. 4'-3 3/4" 5 spa. @ do. do. do. 2'-0" 10'-0"				2'-0" 20'-0" 1'-6" 16'-6" 1'-9" 19'-3" do. 1'-3" 11'-3" 2'-0" 26'-0" 1'-5" 18'-5" 2'-0" 10'-0"																													
	GIRDER Y	1'-10" 9 spa. @ 9 spa. @ 12 spa. @ 3'-7 1/2" 9 spa. @ 3'-7 do. do. 3'-10" 10 spa. @ 10 spa. @ 16 spa. @ 4'-1" 7 spa. @ 3'-5" 4'-3 3/4" 16 spa. @ 7 spa. @ 3'-9 1/2" do. do. 5'-11" 3 spa. @ 21 spa. @ 12 spa. @ 1'-6"				1'-10" 16'-6" 1'-11" 17'-3" 1'-9" 21'-0" 1'-10" 17'-3" 2'-0" 20'-0" 1'-8" 16'-8" 2'-0" 20'-0" 1'-4" 21'-4" 1'-11" 13'-5" 2'-0" 32'-0" 1'-8" 15'-0" 2'-0" 6'-0" 1'-5" 29'-3" 1'-6" 18'-0"																													
BOTTOM FLANGE PLATES	GIRDER V	55'-8 15/16" R 12 x 1 1/2				10'-0" 15'-0" R 12 x 1 1/2 R 16 x 2				26'-0"				60'-7" R 12 x 1 1/2				20'-0"				15'-0" 12'-0" R 12 x 2 R 12 x 1 1/2				18'-0" 13'-0" R 12 x 1 1/2 R 12 x 1 1/2				37'-0 7/8" R 12 x 1 1/2					
	GIRDER W	55'-9 11/16"				do. do. do. do.				24'-0"				62'-7"				do.				do. do. do. do.				20'-9 1/2" 20'-9 1/2" do. do.				do. do.				40'-1 1/8" do.	
	GIRDER X	55'-10 3/4"				do. do. do. do.				25'-0"				61'-7"				do.				do. do. do. do.				24'-0 3/8" 24'-0 3/8" do. do.				do. do.				43'-1 15/16" do.	
	GIRDER Y	59'-0 1/4"				7'-0" do. do. do.				do. do. do. do.				63'-7"				18'-0" do. do. do.				do. do. do. do.				27'-3 3/4" 27'-3 3/4" do. do.				do. do.				46'-2 1/2" do.	

2 Brq. Stiff. Plates
Ext. Gdr. V 1 x 5 1/2"
Int. Gdr. V 1 x 7
Gdr. W 1 x 7

SP1 Sole R 8 x 3/4 x 1'-2

SP4 Sole R 8 x 1 1/2 x 1'-6

SP3 Sole R 8 x 3/4 x 1'-2 1/2

SP3 Sole R 8 x 3/4 x 1'-2 1/2

2 Brq. Stiff. Plates
Ext. Gdr. V 1 x 5 1/2"
Int. Gdr. V 1 x 7
Gdr. W 1 x 7

2 Brq. Stiff. Plates
Ext. Gdr. V 1 x 5 1/2"
Int. Gdr. V 1 x 7
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Int. Gdr. V 1 x 7
Gdr. W 1 x 7

2 Brq. Stiff. Plates
Ext. Gdr. V 1 x 5 1/2"
Int. Gdr. V 1 x 7
Gdr. W 1 x 7

2 Brq. Stiff. Plates
Ext. Gdr. V 1 x 5 1/2"
Int. Gdr. V 1 x 7
Gdr. W 1 x 7

2 Brq. Stiff. Plates
Ext. Gdr. V 1 x 5 1/2"
Int. Gdr. V 1 x 7
Gdr. W 1 x 7

2 Brq. Stiff. Plates
Ext. Gdr. V 1 x 5 1/2"
Int. Gdr. V 1 x 7
Gdr. W 1 x 7

2 Brq. Stiff. Plates
Ext. Gdr. V 1 x 5 1/2"
Int. Gdr. V 1 x 7
Gdr. W 1 x 7

2 Brq. Stiff. Plates
Ext. Gdr. V 1 x 5 1/2"
Int. Gdr. V 1 x 7
Gdr. W 1 x 7

2 Brq. Stiff. Plates
Ext. Gdr. V 1 x 5 1/2"
Int. Gdr. V 1 x 7
Gdr. W 1 x 7

2 Brq. Stiff. Plates
Ext. Gdr. V 1 x 5 1/2"
Int. Gdr. V 1 x 7
Gdr. W 1 x 7

2 Brq. Stiff. Plates
Ext. Gdr. V 1 x 5 1/2"
Int. Gdr. V 1 x 7
Gdr. W 1 x 7

2 Brq. Stiff. Plates
Ext. Gdr. V 1 x 5 1/2"
Int. Gdr. V 1 x 7
Gdr. W 1 x 7

2 Brq. Stiff. Plates
Ext. Gdr. V 1 x 5 1/2"
Int. Gdr. V 1 x 7
Gdr. W 1 x 7

2 Brq. Stiff. Plates
Ext. Gdr. V 1 x 5 1/2"
Int. Gdr. V 1 x 7
Gdr. W 1 x 7

2 Brq. Stiff. Plates
Ext. Gdr. V 1 x 5 1/2"
Int. Gdr. V 1 x 7
Gdr. W 1 x 7

2 Brq. Stiff. Plates
Ext. Gdr. V 1 x 5 1/2"
Int. Gdr. V 1 x 7
Gdr. W 1 x 7

2 Brq. Stiff. Plates
Ext. Gdr. V 1 x 5 1/2"
Int. Gdr. V 1 x 7
Gdr. W 1 x 7

2 Brq. Stiff. Plates
Ext. Gdr. V 1 x 5 1/2"
Int. Gdr. V 1 x 7
Gdr. W 1 x 7







2 Brq. Stiff. Plates
Ext. Gdr. V 1 x 5 1/2"
Int. Gdr. V 1 x 7
Gdr. W 1 x 7

2 Brq. Stiff. Plates
Ext. Gdr. V 1 x 5 1/2"
Int. Gdr. V 1 x 7
Gdr. W 1 x 7

2 Brq. Stiff.

* The exterior bearing stiffeners on girders V and Y are $5\frac{1}{2}$ x the thickness shown.

GIRDER DETAILS

TYPICAL ROCKER SETTINGS RAMP D-3							
	ABUTMENT D-3	PIER 1	PIER 2	PIER 3	EXP. JT. 1 D-3		
Temperature at time of setting							
90°F	28"	3 1/2"	5 1/2"	0"	3 1/2"	1 1/2"	
50°F	2 3/4"	0"	0"	0"	0"	2"	
10°F	3 3/8"	- 3 1/2"	- 5 1/2"	0 11"	- 3 1/2"	2 3/8"	
Sole Plate	SP1	SP4	SP3	SP3			
Rocker	RIA	R4		R3A			
Masonry Plate	MPIA	MP4P	S3	MP3P			

Notes:
Ro kers are to be set vertically at 50°F.
For temperatures above 50°F., set masonry
plate toward fired shoe (-). For temperatures
below 50°F., set masonry plate away from
fired shoe (-). Settings for other tem-
peratures are proportional to those shown for
a 40° temperature change.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

MADE R.E.O. DATE 5-11-74 CHECKED DRA DATE 6-17-74

Revised 2-28-77: Bearing stiffener size at abutment corrected.

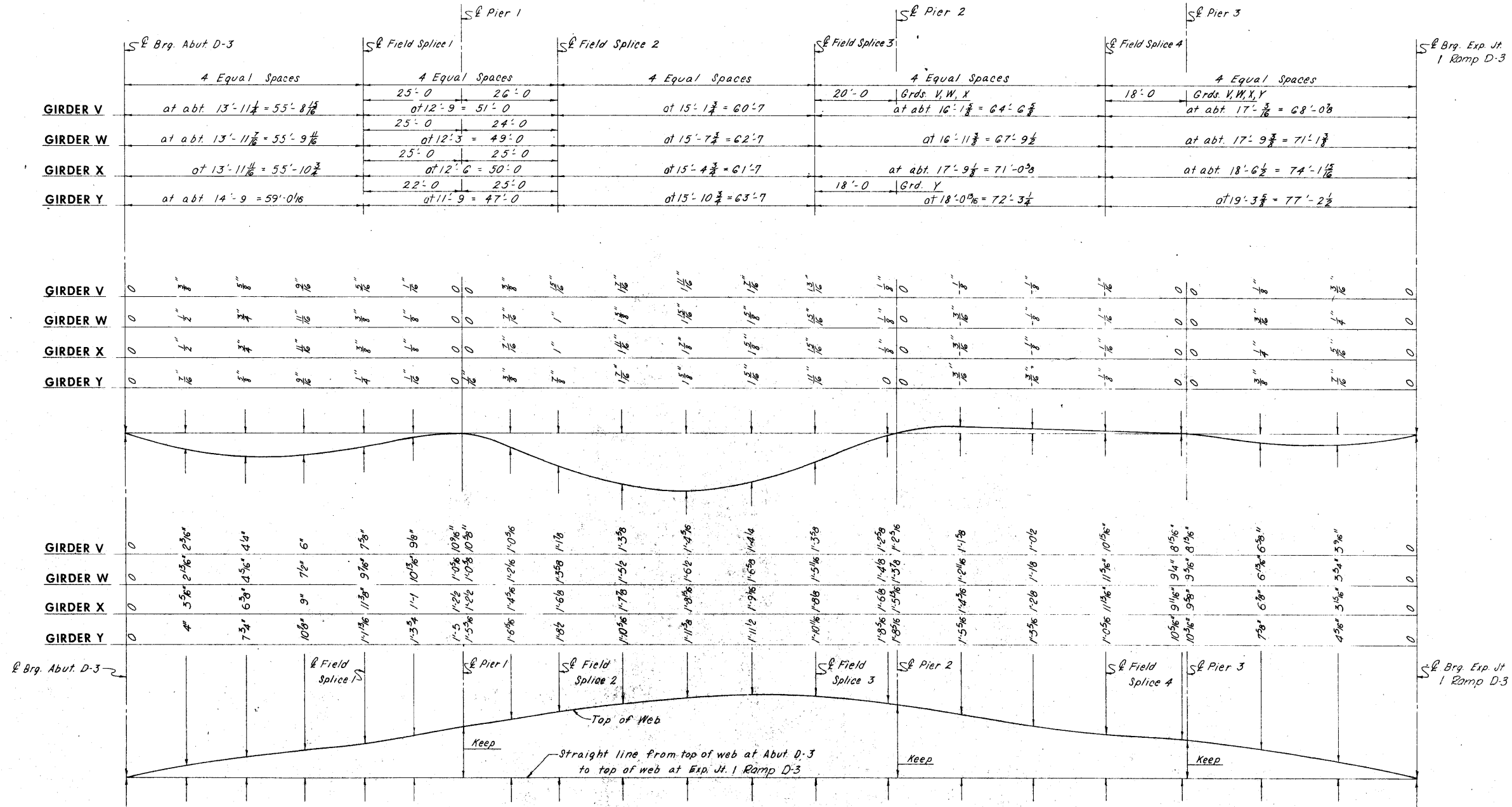
CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE

GIRDER ELEVATIONS - RAMP D-3

STA. 322+81.95 @ FREEWAY=
STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. 1-380-6(68)263--01 5
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

SHEET 178 OF 201

DESIGN NO. 1276 LINN COUNTY FILE 23191 SHEET 180 OF 203-0



GIRDERS AS FABRICATED AND ERECTED DIAGRAM
(In the Horizontal Position)

Note: Offsets are given at 10' intervals between field splices and at pier, abutment, and expansion joint.
For Girders V and W, 10% of the dead load deflection is due to true trapezoidal and 32% is due to on-grade and A.C. surface course. For Girders X and Y, 10% of the dead load deflection is due to true trapezoidal and 34% is due to on-grade and P.C. surface course.
Deflection due to on-grade and P.C. surface course includes 15% due to the P.C. surface course.
Bottom of web to be parallel to top of web.

CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE
DEFLECTION DIAGRAMS - RAMP D-3

STA. 322+81.95 @ FREEWAY =
STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. I-380-6(68)263--01-57
LINN COUNTY
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CONSULTING ENGINEERS
KANSAS CITY

MADE L.C.K. DATE 5-2-74 CHECKED C.B.M. DATE 6-20-74

SHEET 179 OF 201

DESIGN NO. 1276 LINN COUNTY FILE 23191 SHEET 181 OF 203-0

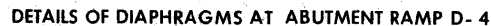
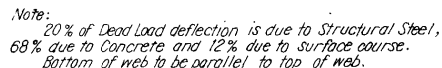


SHEAR CONNECTOR SPACES



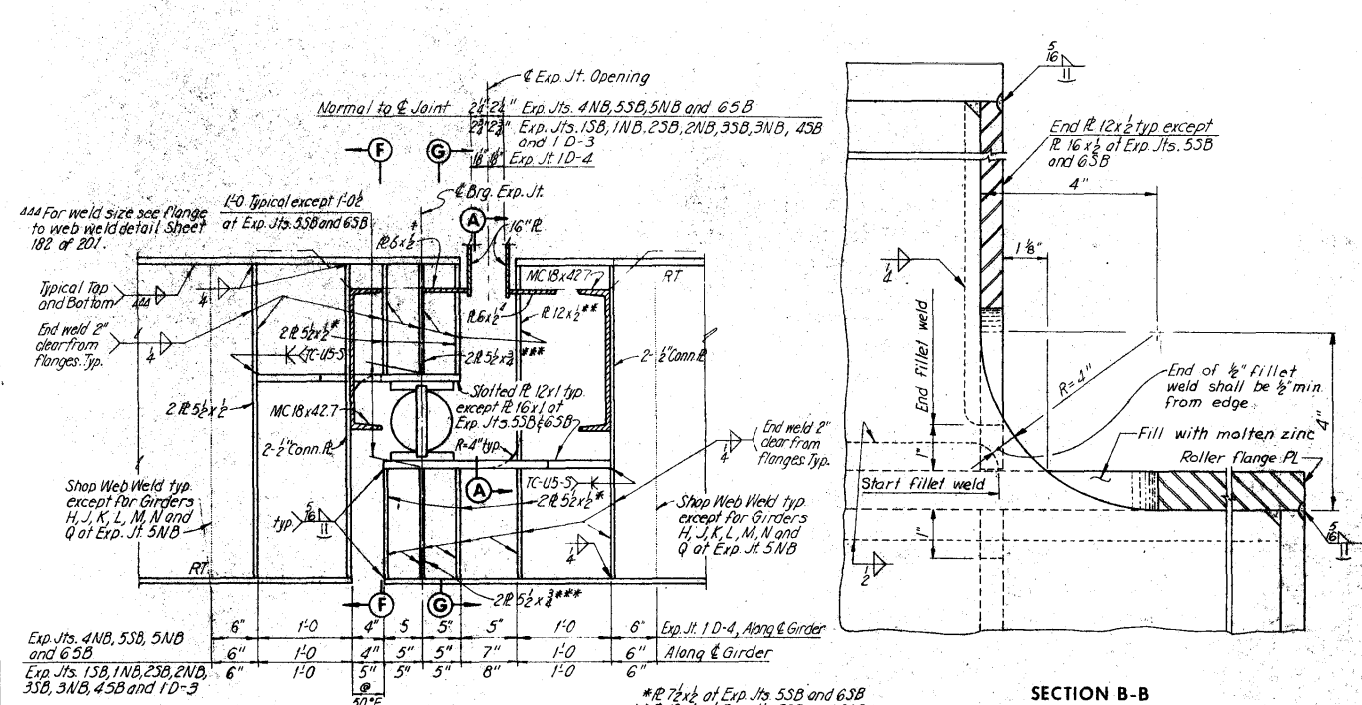
‡Maximum Positive Moment

MADE DCH DATE 5-30-74 CHECKED DLR DATE 7-18-74

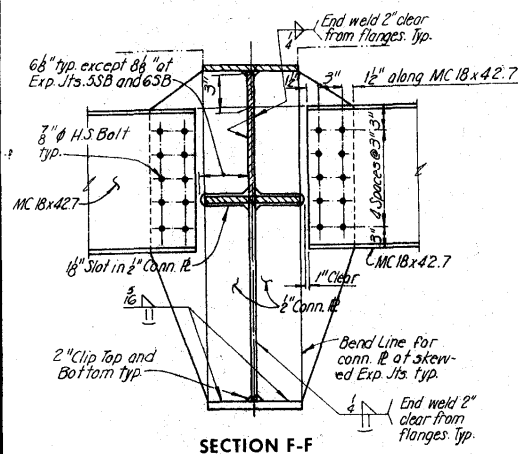


DESIGN NO. 1276 LINN COUNTY FILE 23191 SHEET 182 OF 203-

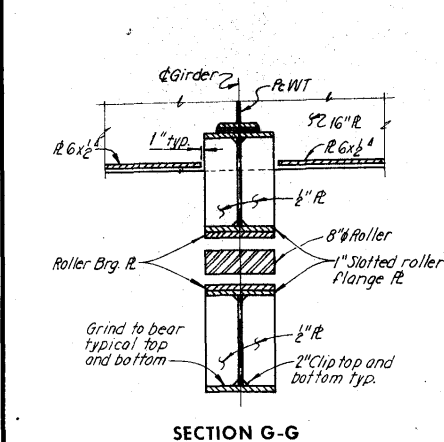
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	IOWA				



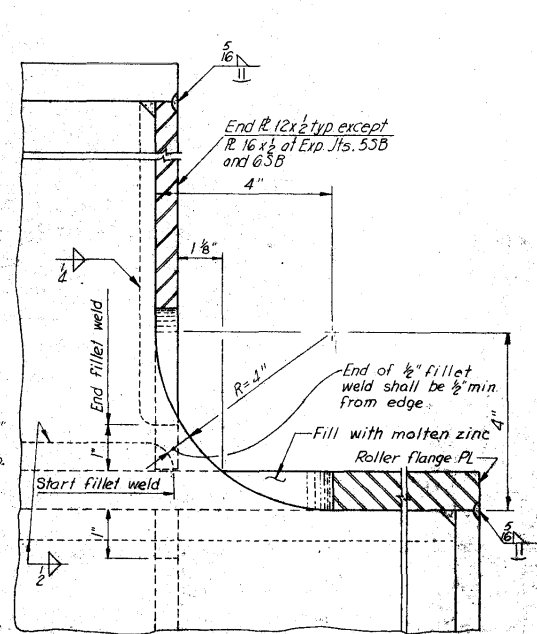
ROLLER JOINT DETAILS



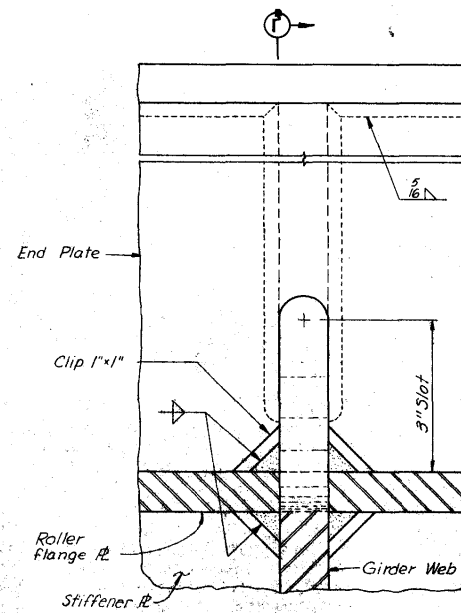
SECTION F-F



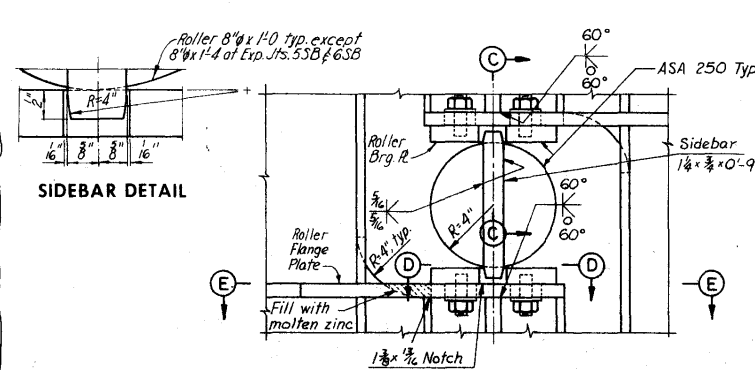
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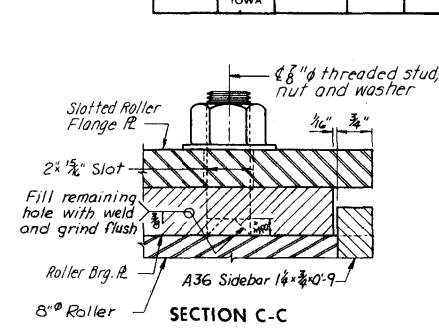
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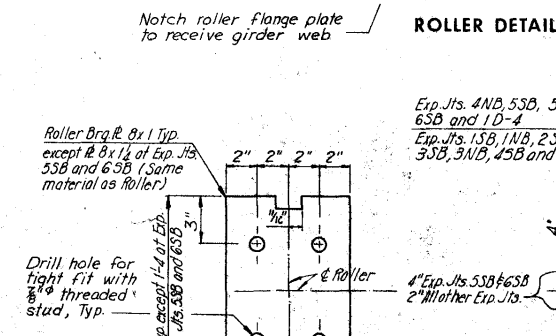
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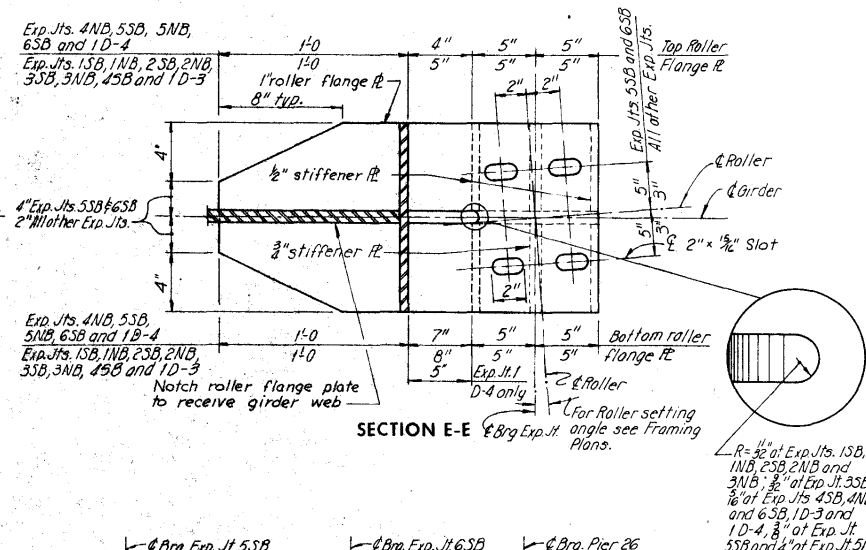
SIDEBAR DETAIL



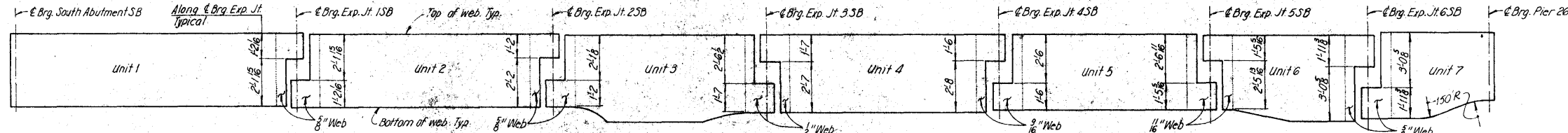
SECTION C-C



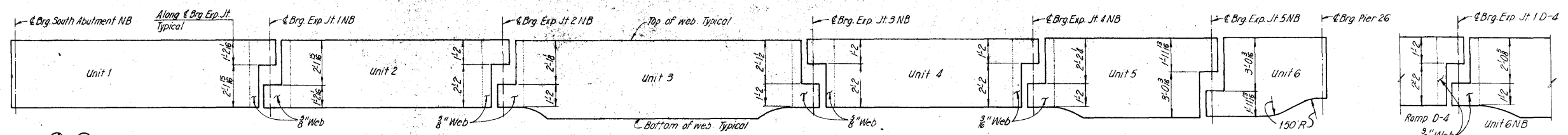
SECTION D-D



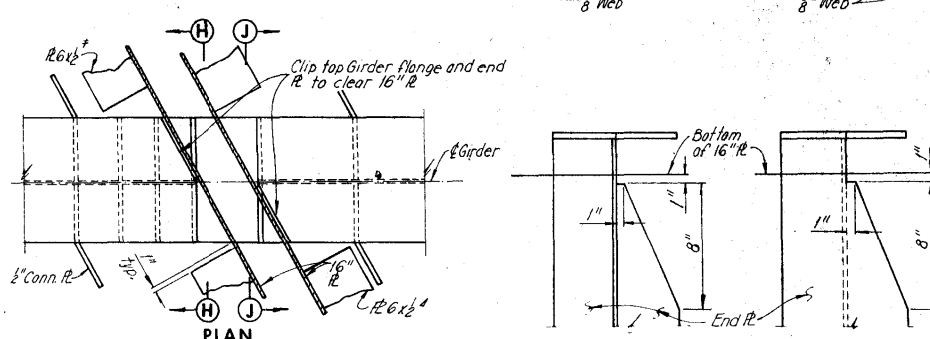
SECTION E-E (Brg Exp. H. angle se)



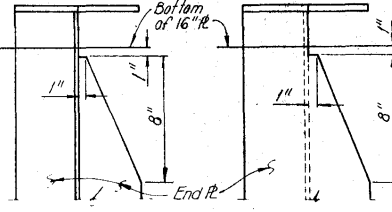
EXPANSION JOINT LOCATIONS SOUTHBOUND LANE



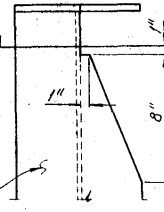
EXPANSION JOINT LOCATIONS NORTHBOUND LANE



PLAN



SECTION H-H



SECTION J-J

Note: Material for Roller and Roller Bearing Plates shall be Structural Steel Forging, ASTM A668 Class J with a minimum Yield Strength of 60,000 p.s.i. All other structural steel material shall be ASTM A36 Steel.

**CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE
SUPERSTRUCTURE DETAILS**

STA. 322+81.95 @ FREEWAY=
STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. I-380-6(68)263--01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

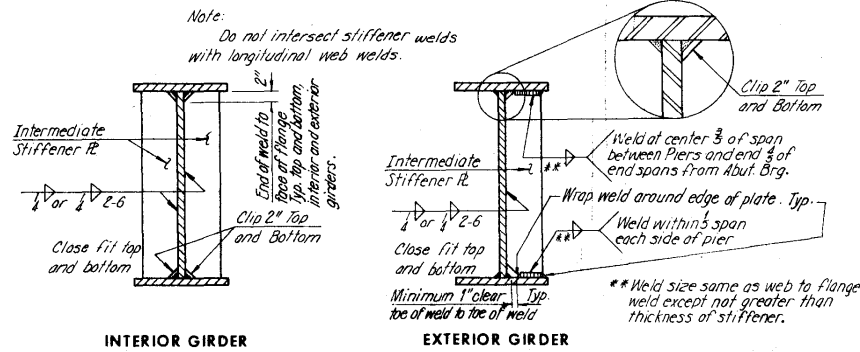
SHEET 181 OF 201

DESIGN NO. 1276 LINN COUNTY FILE 23191 SHEET 183 OF 203-C

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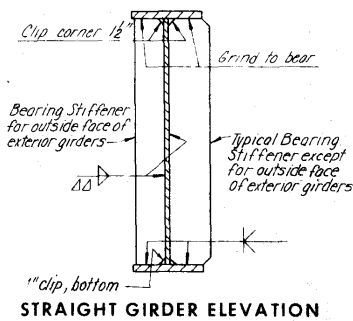
MADE	<i>AJS</i>	DATE	<i>6-28-74</i>	CHECKED	<i>aw</i>	DATE	<i>07-02-74</i>
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Shown for Girders at Exp. Jt. 2SB.
Similar for Girders at Exp. Jts.
2NB, 3SB, 3NB, 1D-3 and 1D-4.
Use $4 \times 3 \times \frac{3}{4}$ for Exp. Jts. 2NB, 2SB,
3NB and 3SB.
Use $4 \times 3 \times \frac{3}{4}$ for Exp. Jt. 3SB.

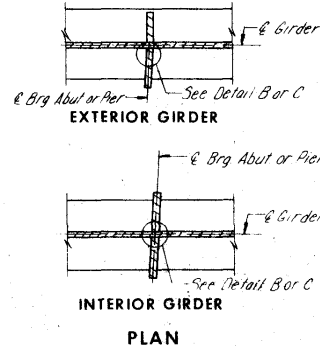


TYPICAL INTERMEDIATE STIFFENER DETAIL

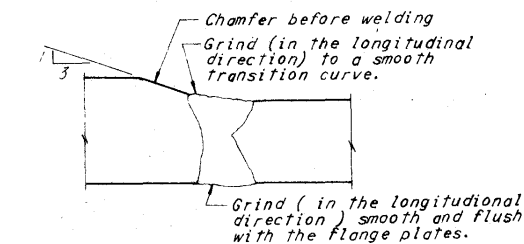
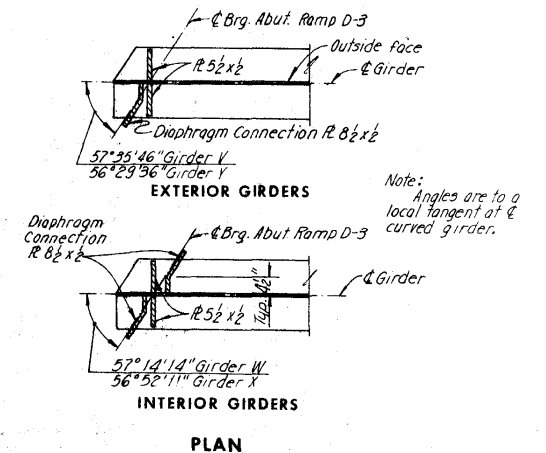
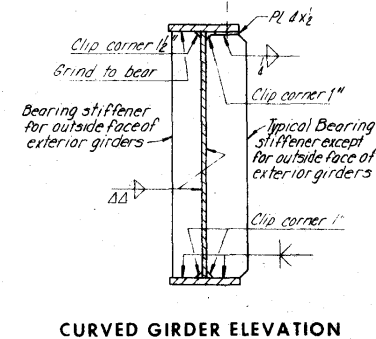
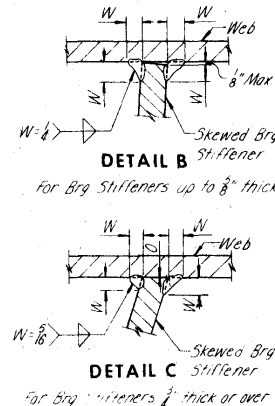
Note: Diaphragm connection stiffener is to be clipped and welded the same as intermediate stiffener unless otherwise shown.



Note: for bearing stiffener size see Girder Details



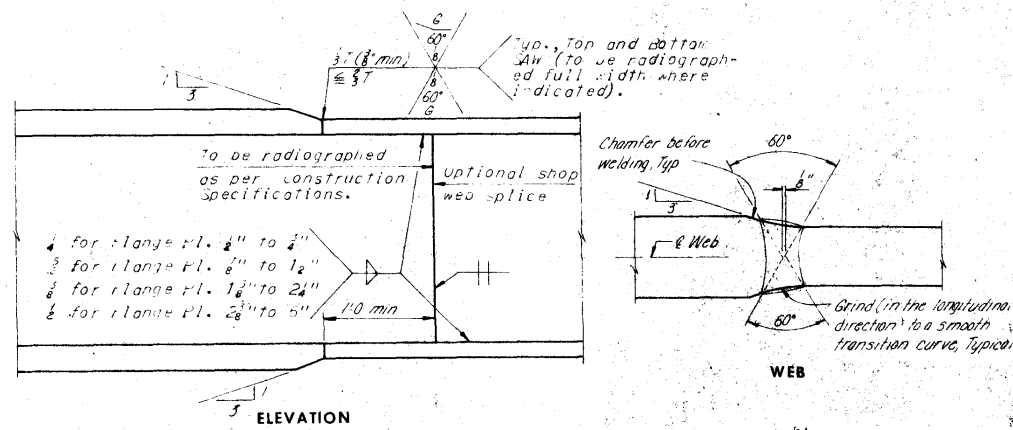
TYPICAL BEARING STIFFENER DETAIL



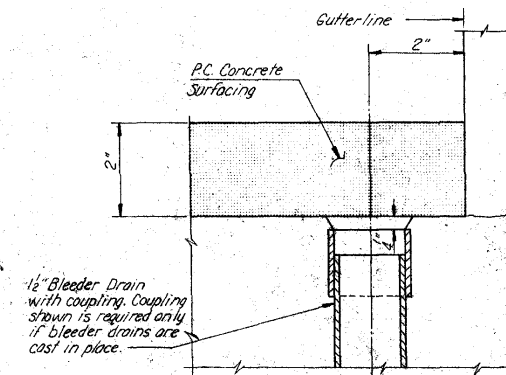
TRANSITION BY CHAMFERING THICKER PART

Note: Flange plates of equal thickness similar, chamfer not required.

FLANGE



TRANSITION OF THICKNESS
TYPICAL WELDED SHOP SPLICE DETAILS



Bleeder Drain Notes:

A. Installing

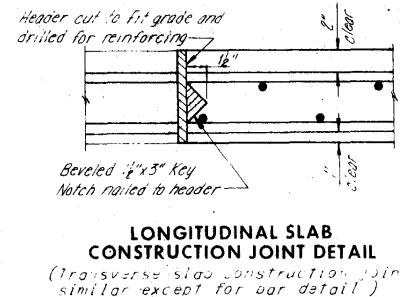
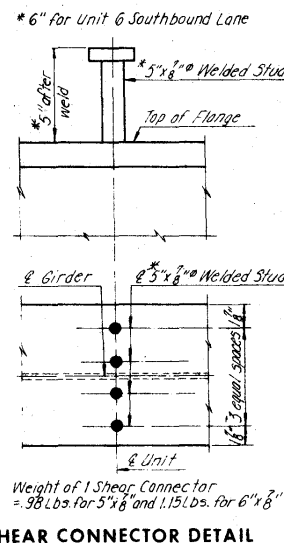
The bleeder drains shall be installed before the bridge floor surfacing is placed. The plastic pipe shall be installed in drilled holes or the pipe may be cast-in-place with the concrete slab. The pipe shall be installed so that the top of the pipe is flush with or 1/4 inch below the concrete deck surface. The pipe coupling indicated on the plan detail is required only if bleeder drains are cast-in-place. The number of bleeder drains required on the bridge and their spacing shall be as shown or noted on the plans.

B. Materials

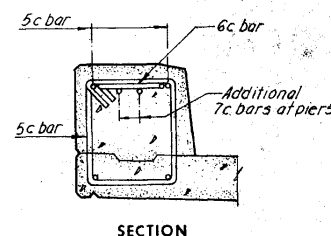
Drilled in place notes: Drilled bleeder holes shall be drilled to 2.0 inch diameter. Drilling shall be performed by diamond core drills and shall result in accurately and neatly drilled holes without spalling of concrete at the edges of holes at both top and bottom of the slab. The outside surface of the plastic pipe shall be firmly secured to the circumference of the hole by mastic. The mastic shall be spread on both the pipe surface and the concrete circumference of the hole before inserting the pipe into the hole. The mastic shall completely fill the space between the pipe and circumference of the hole.

C. Measurement and Payment

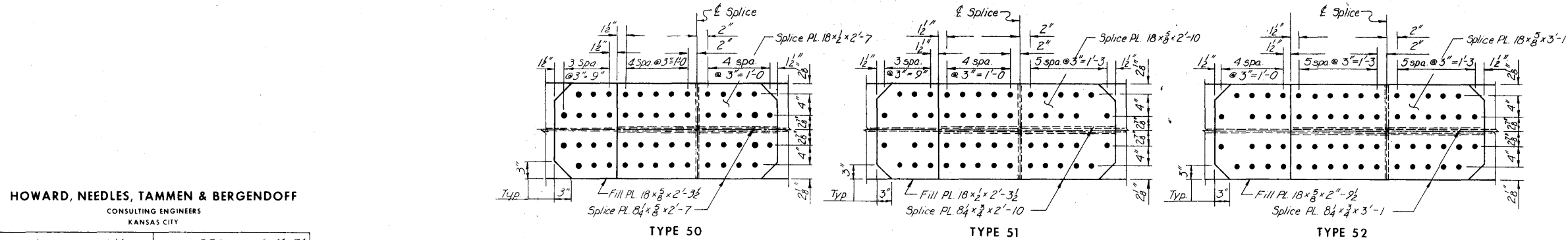
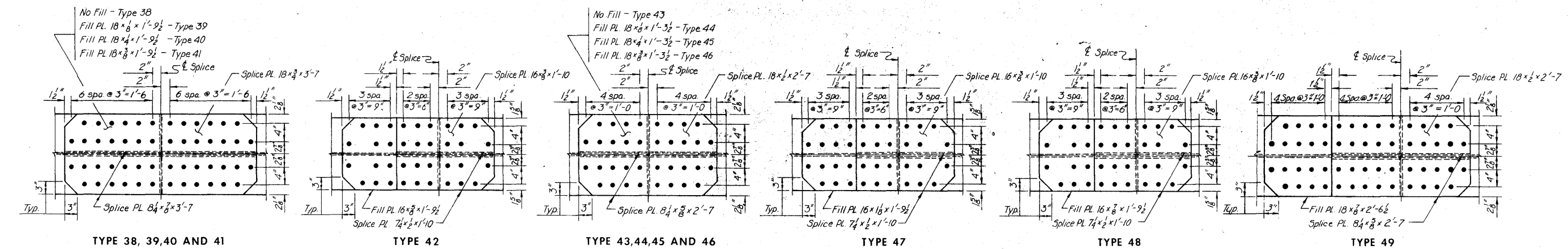
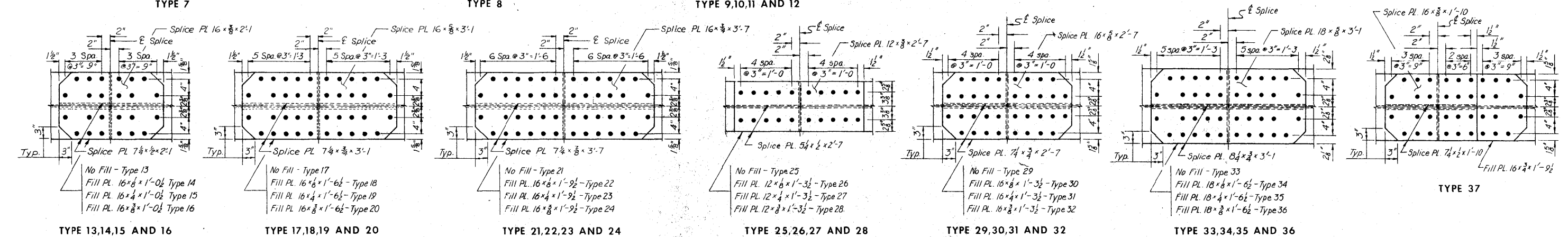
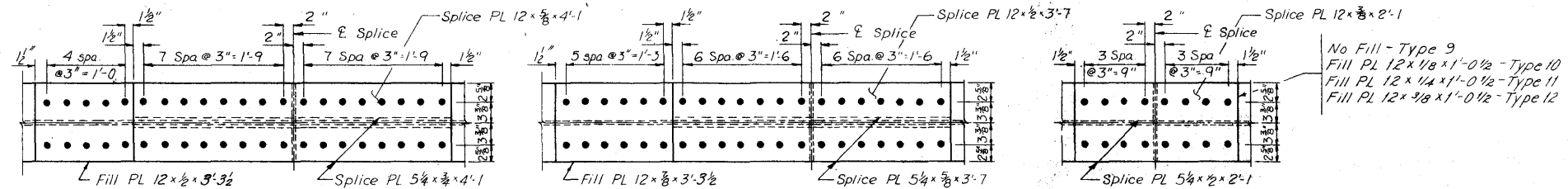
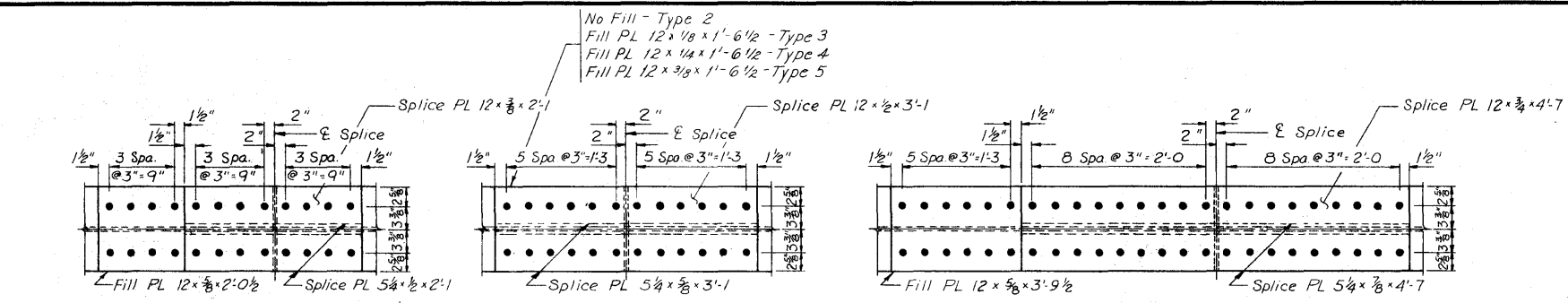
Bleeder drains will be measured by the Engineer by count and the Contractor paid the unit price bid for the number of deck bleeder drains constructed.



FLANGE WIDTH TRANSITION WELDED PLATE GIRDER



CURB REINFORCING DETAIL



**CEDAR RIVER BRIDGE
 SOUTH APPROACH
 DESIGN FOR VARIABLE SKEW
 CONTINUOUS WELDED PLATE GIRDER BRIDGE
 GIRDER SPLICE DETAILS**

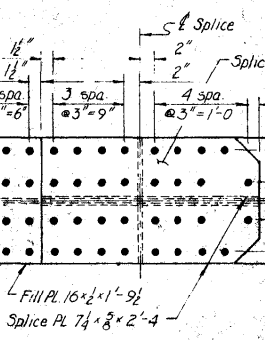
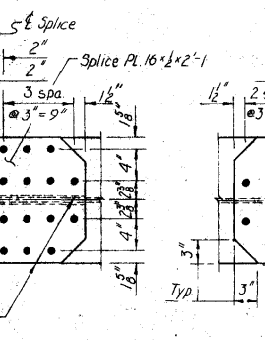
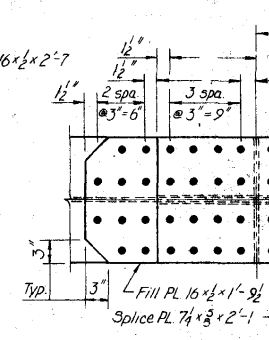
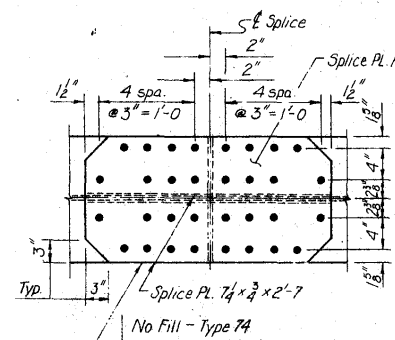
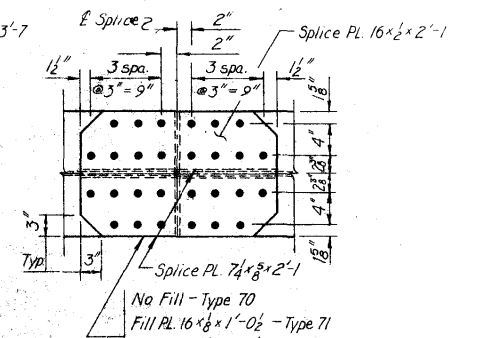
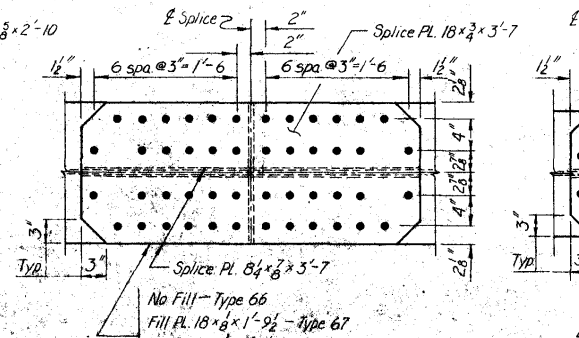
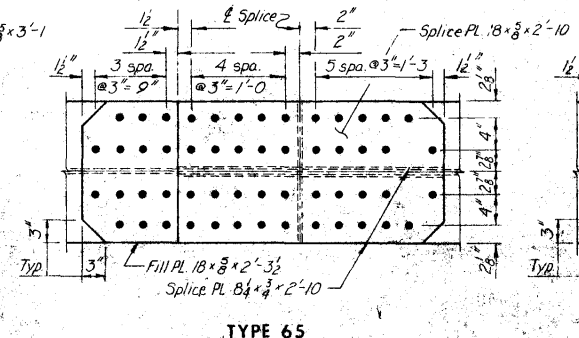
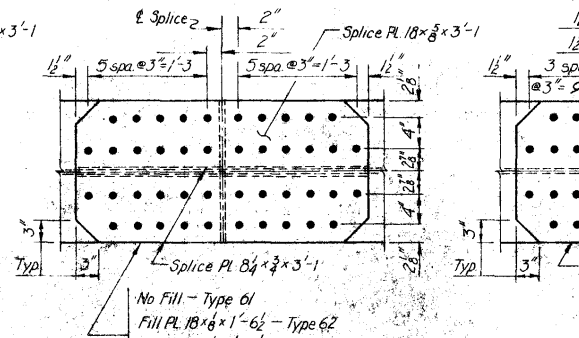
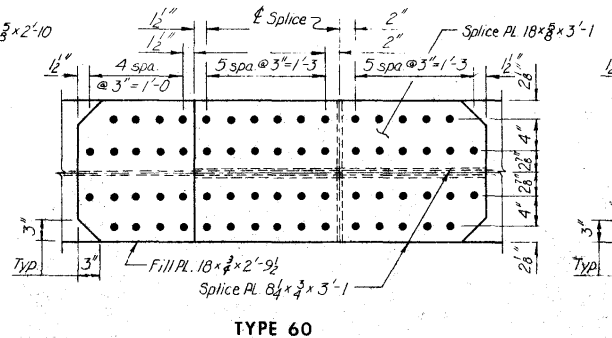
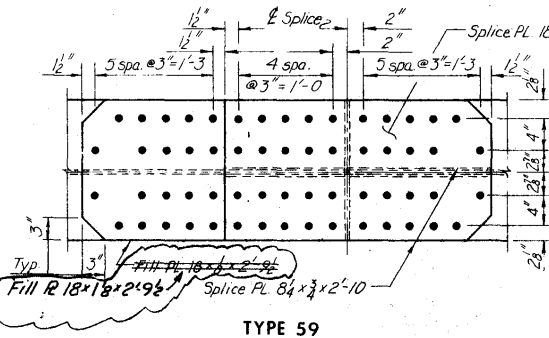
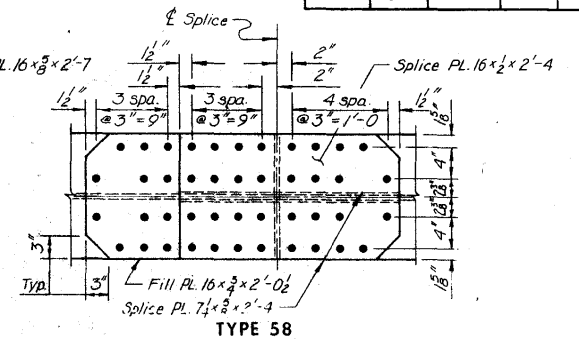
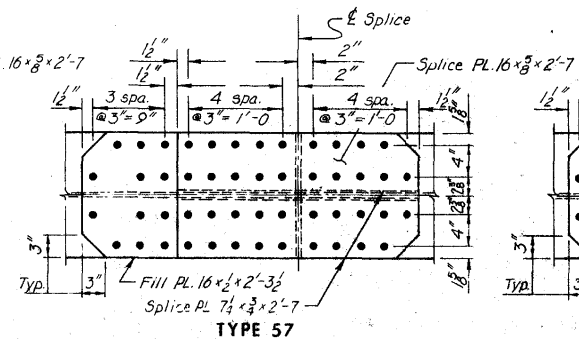
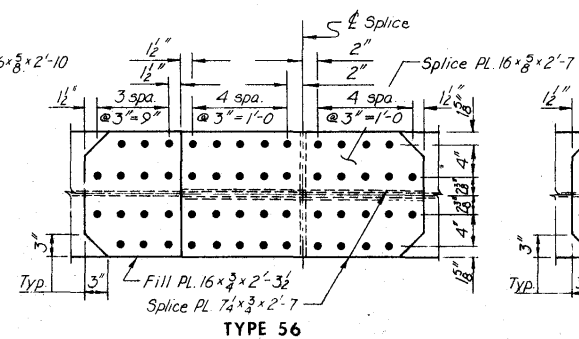
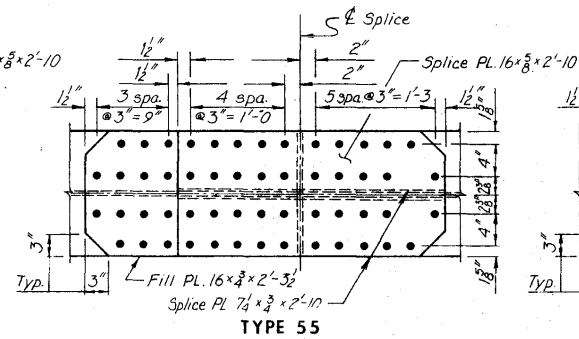
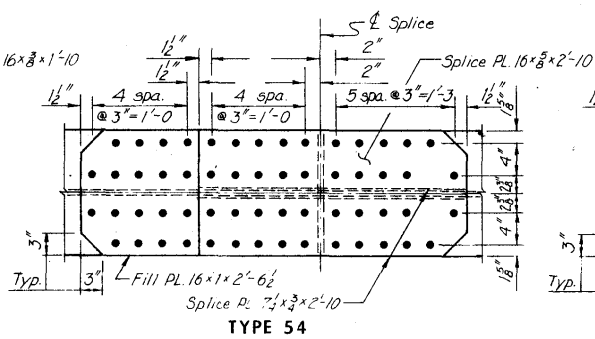
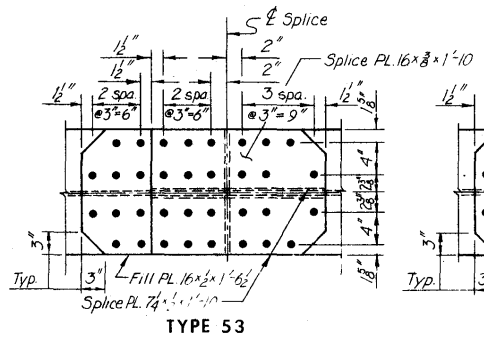
STA. 322+81.95 & FREEWAY =
 STA. 32+14.70 & 1ST. AVE. W
 PROJECT NO. I-380-6(68)263--01-57
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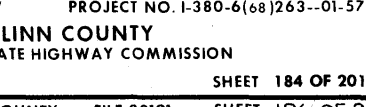
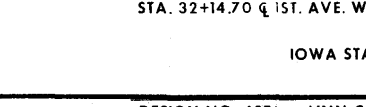
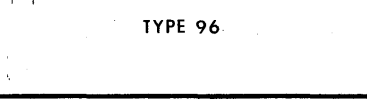
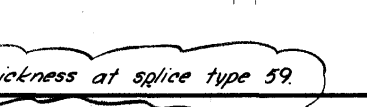
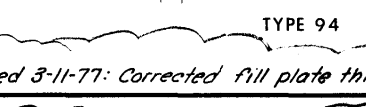
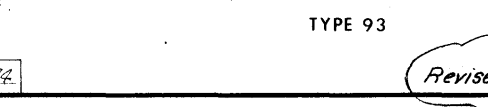
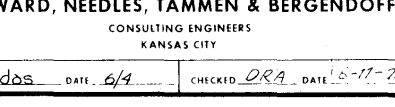
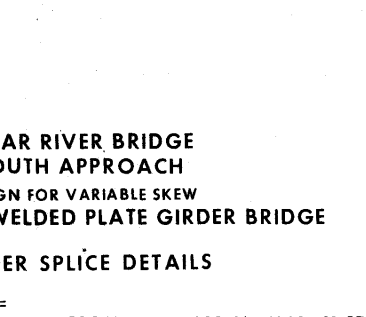
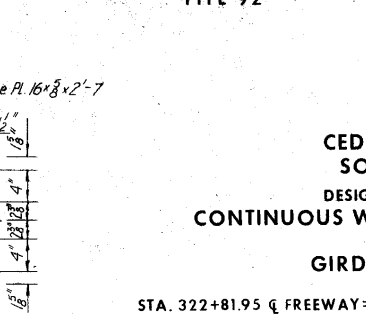
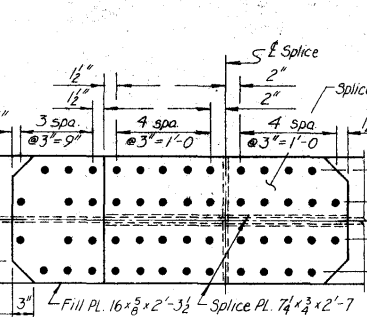
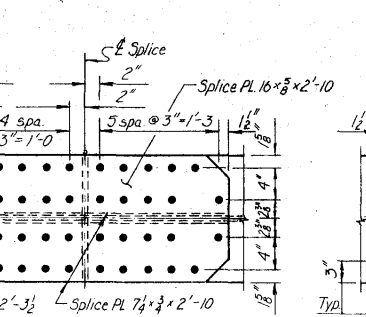
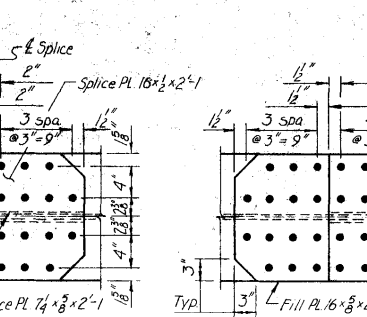
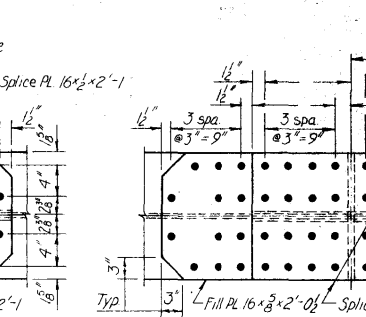
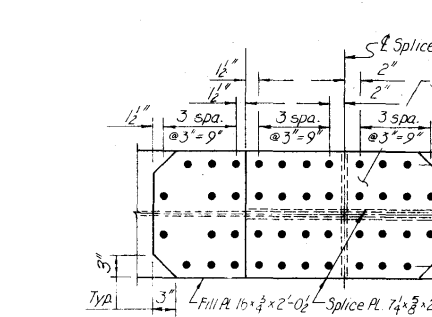
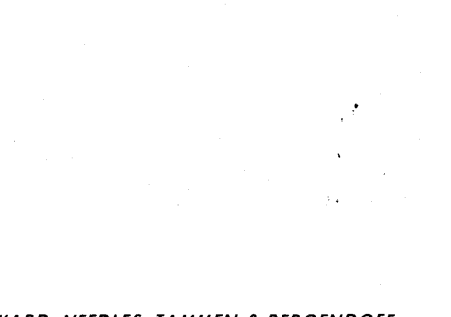
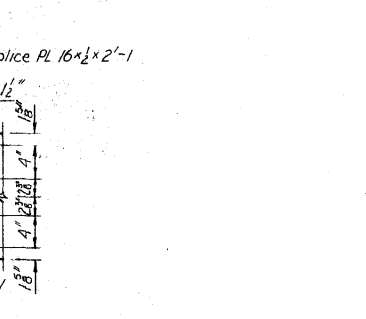
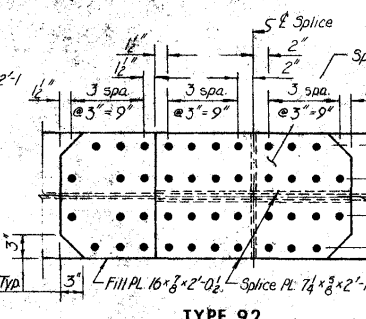
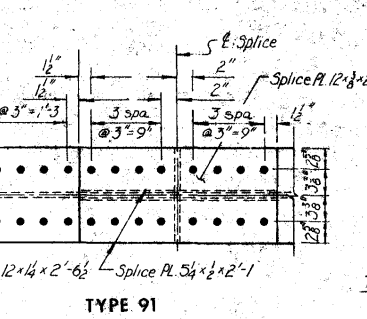
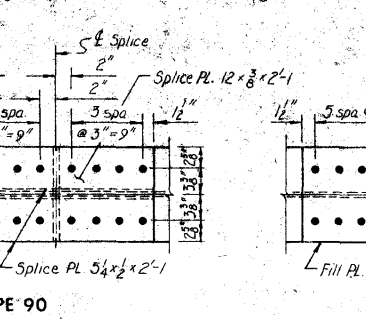
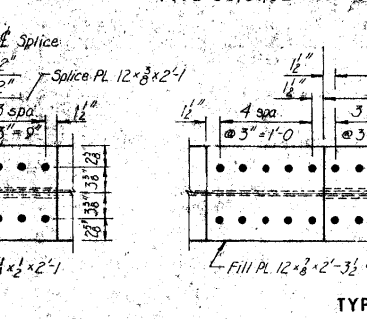
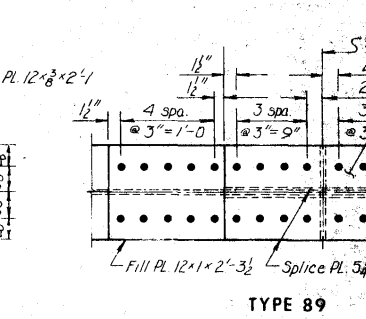
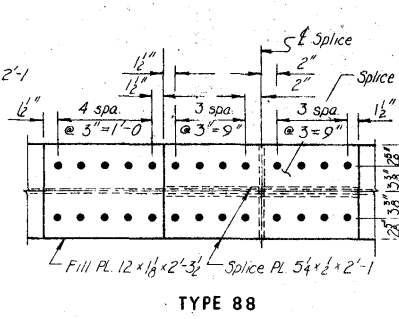
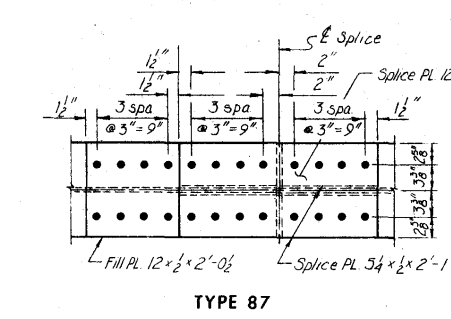
MADE dbs DATE 6/4 CHECKED DRA DATE 6-11-74

SHEET 183 OF 201

DESIGN NO. 1274 LINN COUNTY FILE 23191 SHEET 185 OF 203



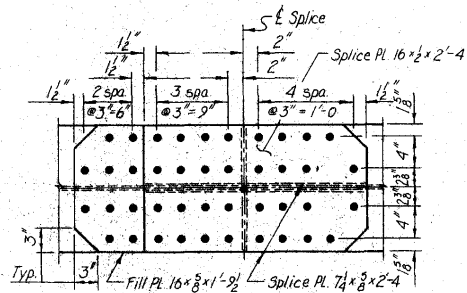
TYPE 74, 75, 76 AND 77



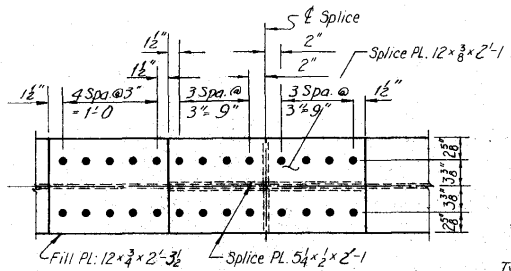
**CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE
GIRDER SPLICE DETAILS**

STA. 322+81.95 @ FREEWAY =
STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. I-380-6(68)263--01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

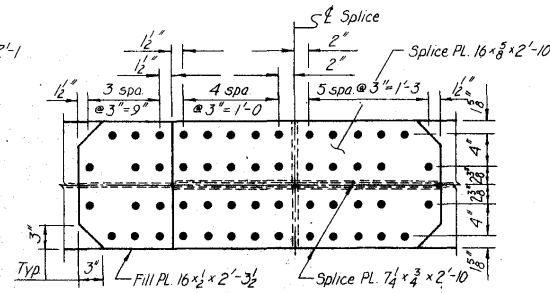
Revised 3-11-77: Corrected fill plate thickness at splice type 59.



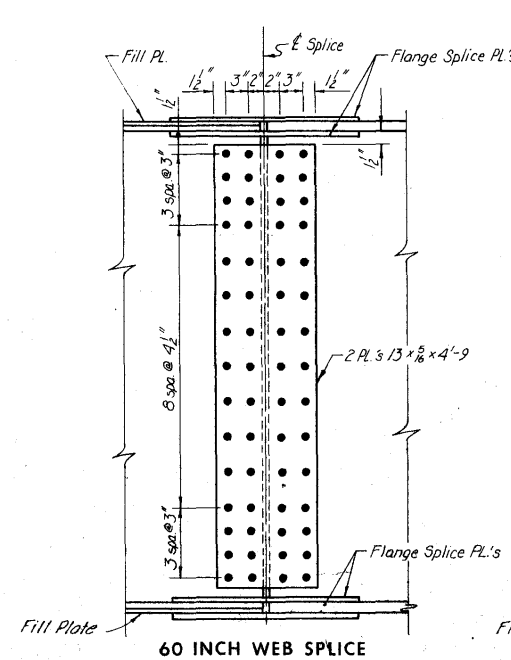
TYPE 97



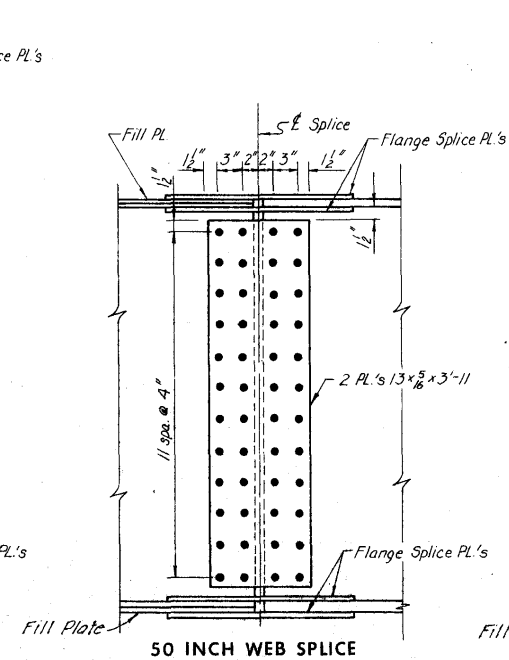
TYPE 98



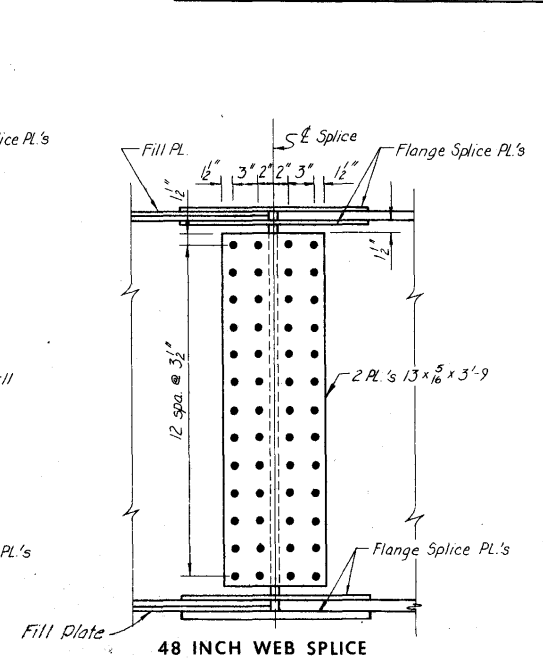
TYPE 99



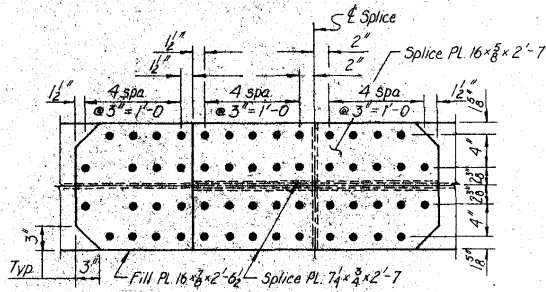
60 INCH WEB SPlice



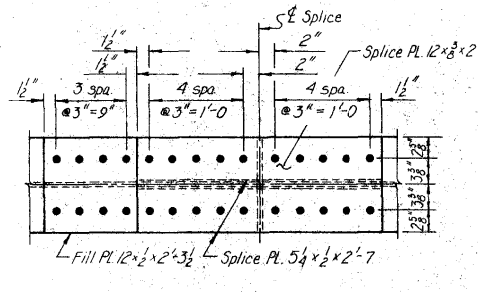
50 INCH WEB SPlice



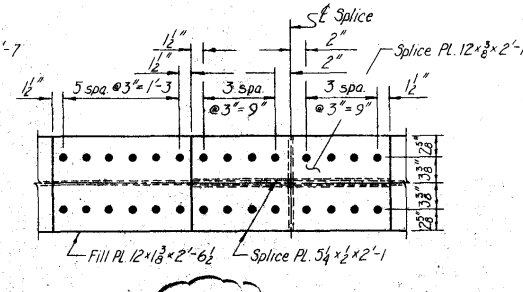
48 INCH WEB SPlice



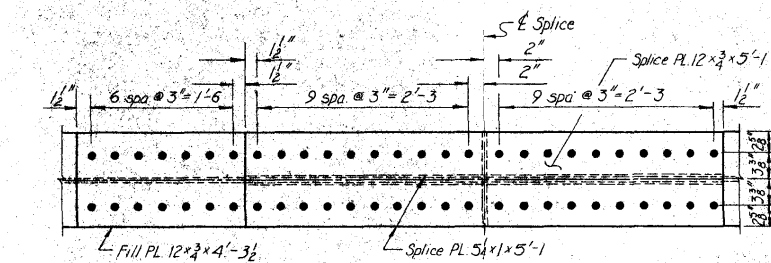
TYPE 100



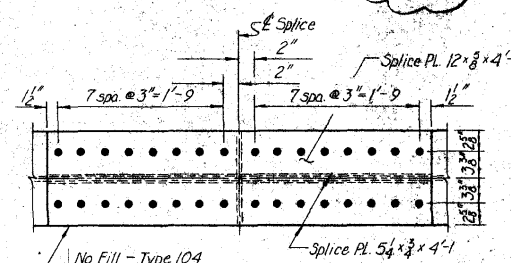
TYPE 101



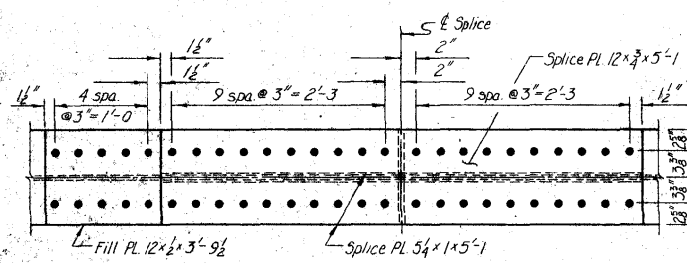
TYPE 102



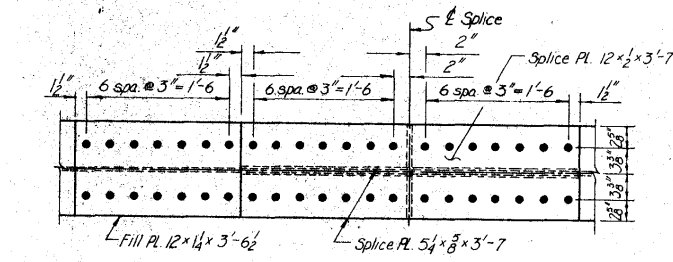
TYPE 103



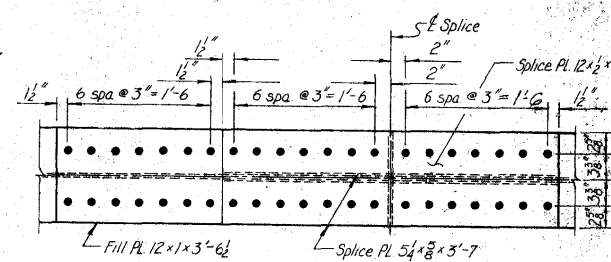
TYPE 104, 105, 106 AND 107



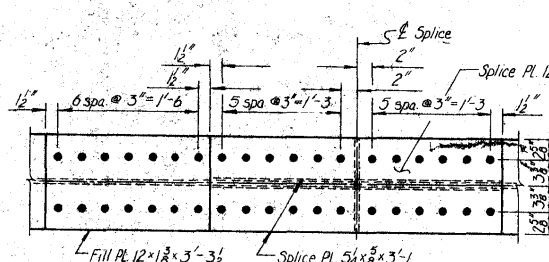
TYPE 108



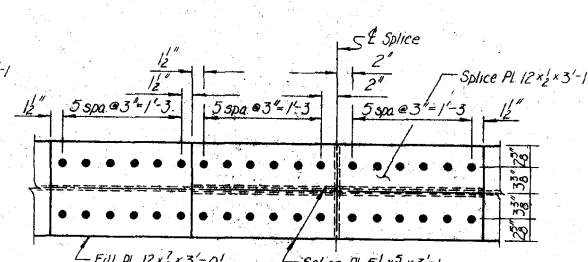
TYPE 109



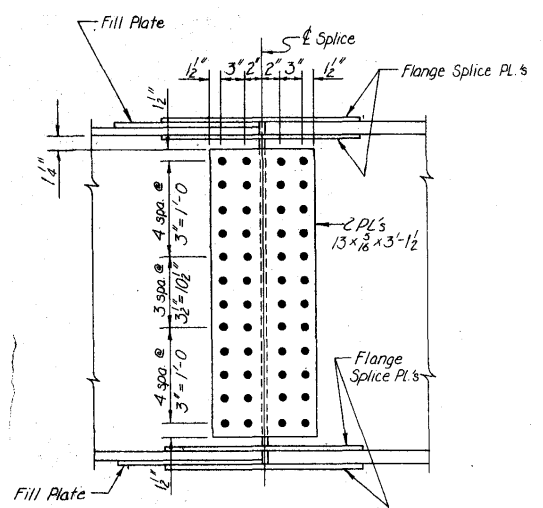
TYPE 110



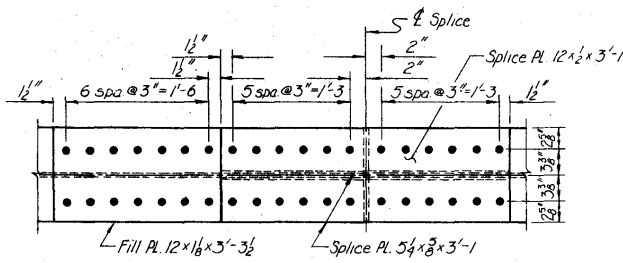
TYPE 111



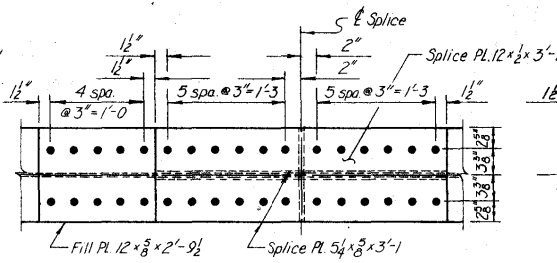
TYPE 112



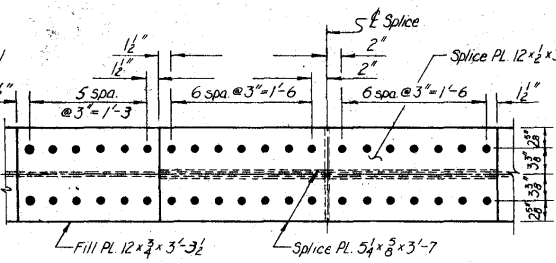
40 INCH WEB SPlice



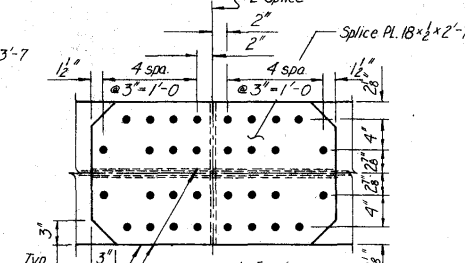
TYPE 113



TYPE 114



TYPE 115



TYPE 116 AND 122

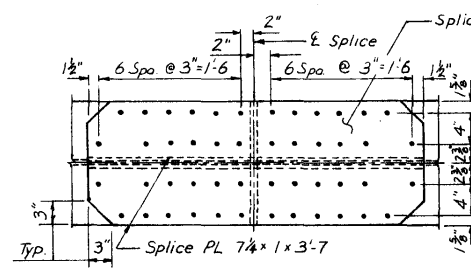
CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE
GIRDER SPlice DETAILS

STA. 322+81.95 @ FREEWAY =
STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. I-380-6(68)263--01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

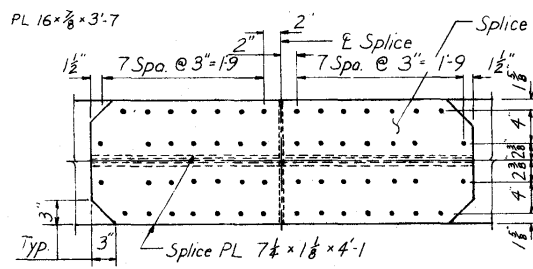
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

MADE DWS DATE 6/4 CHECKED DRA DATE 6-11-74

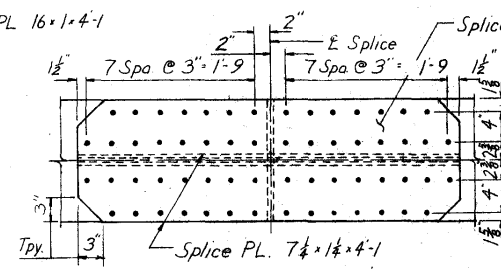
Revised 3-11-77: Corrected splice type number.



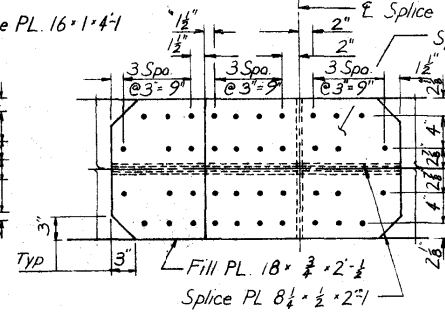
TYPE 131



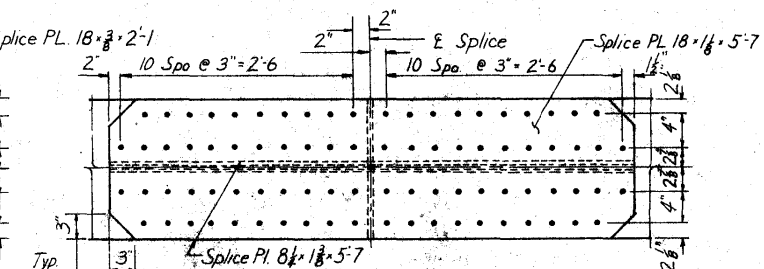
TYPE 132



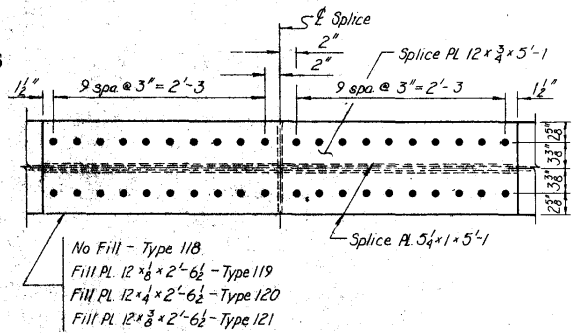
TYPE 133



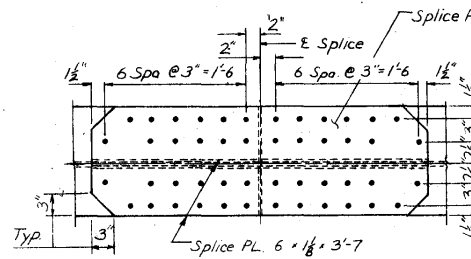
TYPE 134



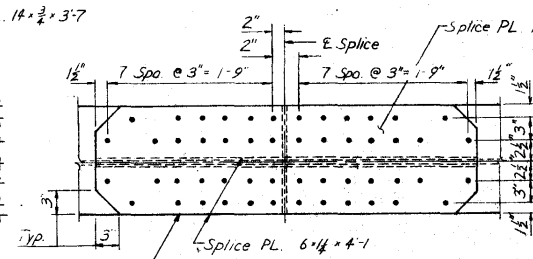
TYPE 135



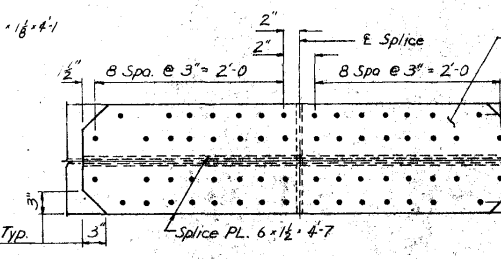
TYPE 118, 119, 120 AND 121



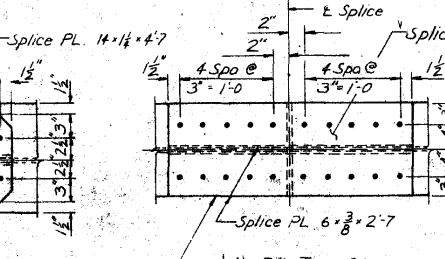
TYPE 136



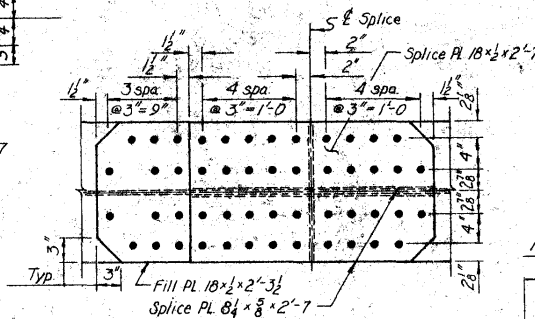
TYPES 137 AND 138



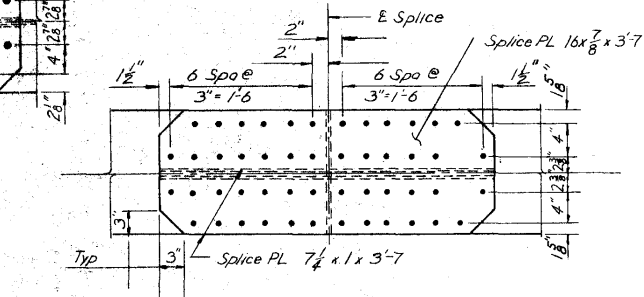
TYPE 139



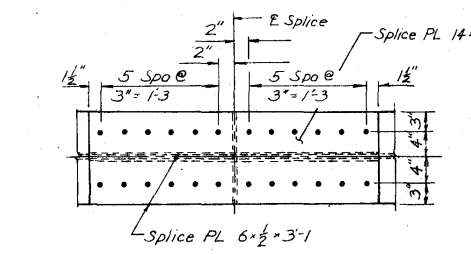
TYPES 126 AND 127



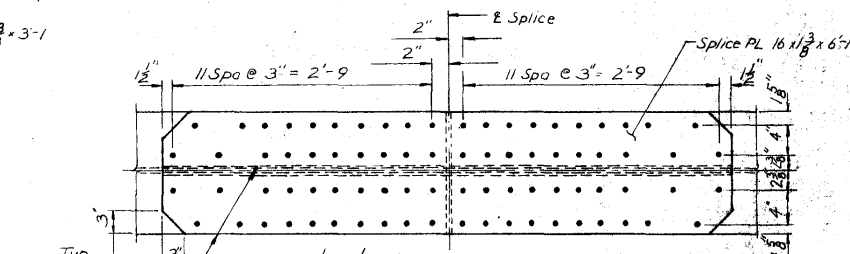
TYPE 117



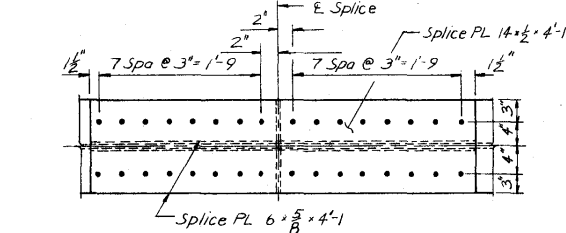
TYPE 142



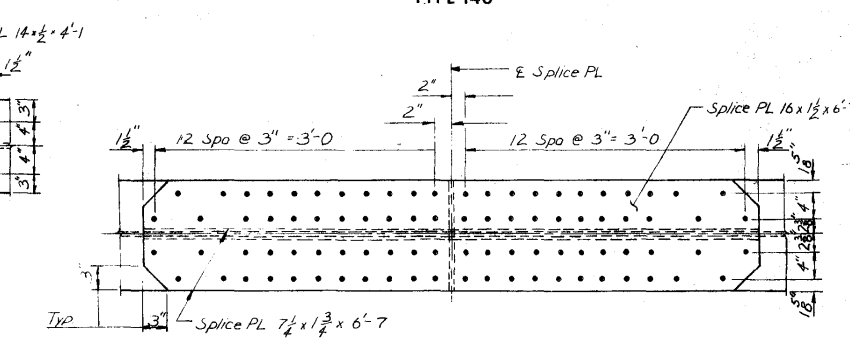
TYPE 128



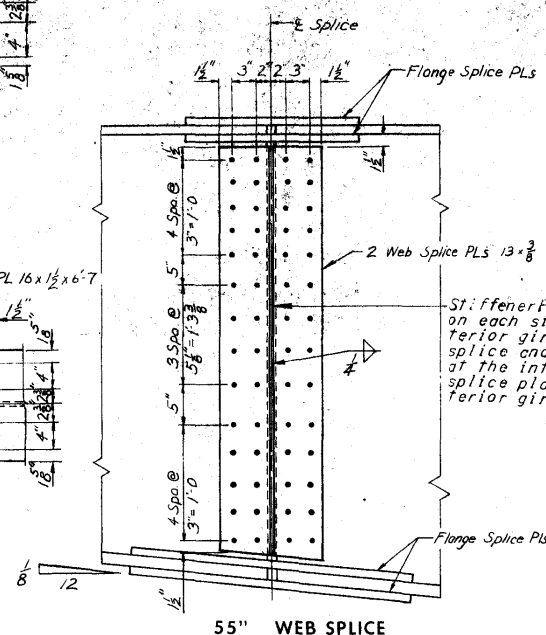
TYPE 140



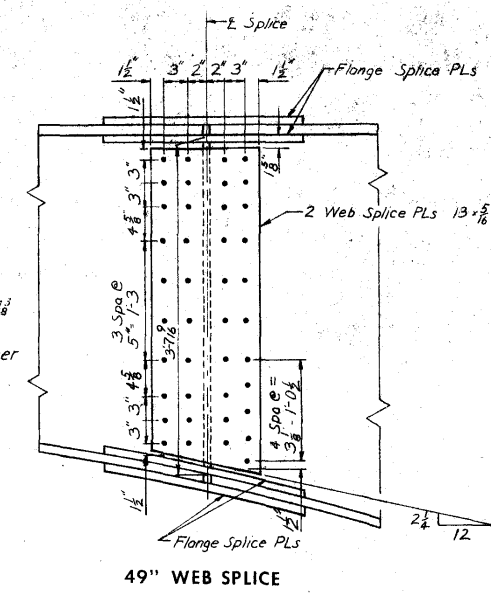
TYPE 129



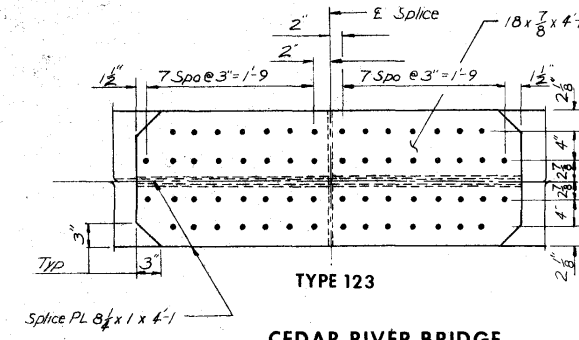
TYPE 141



55\"/>



49\"/>



TYPE 123

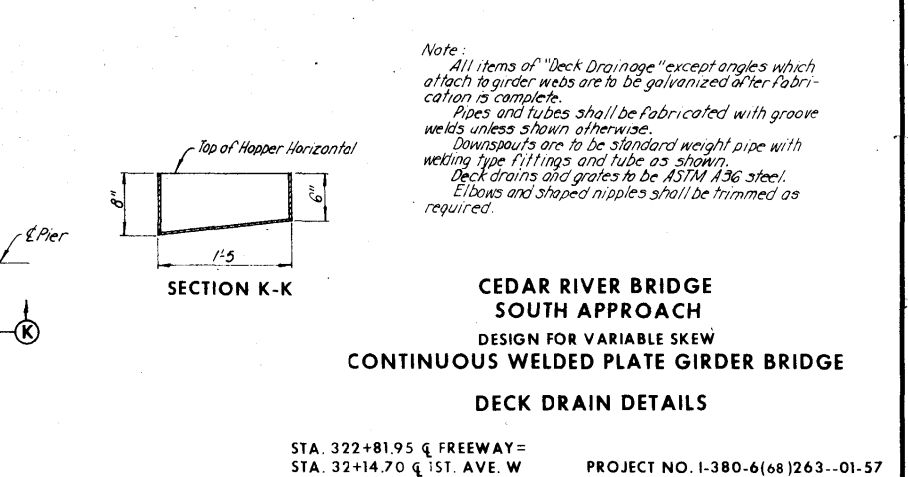
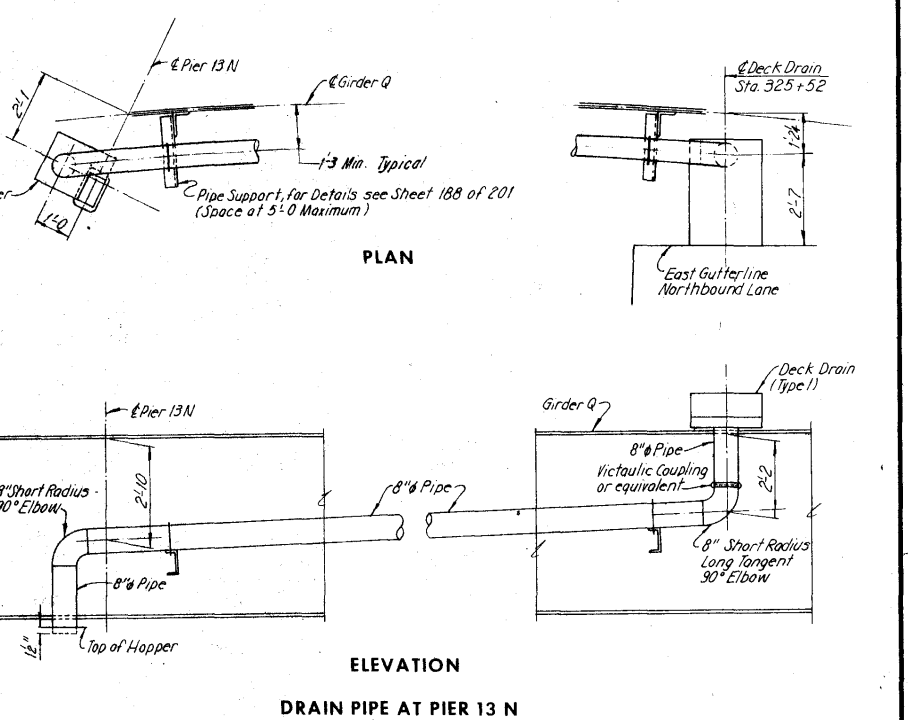
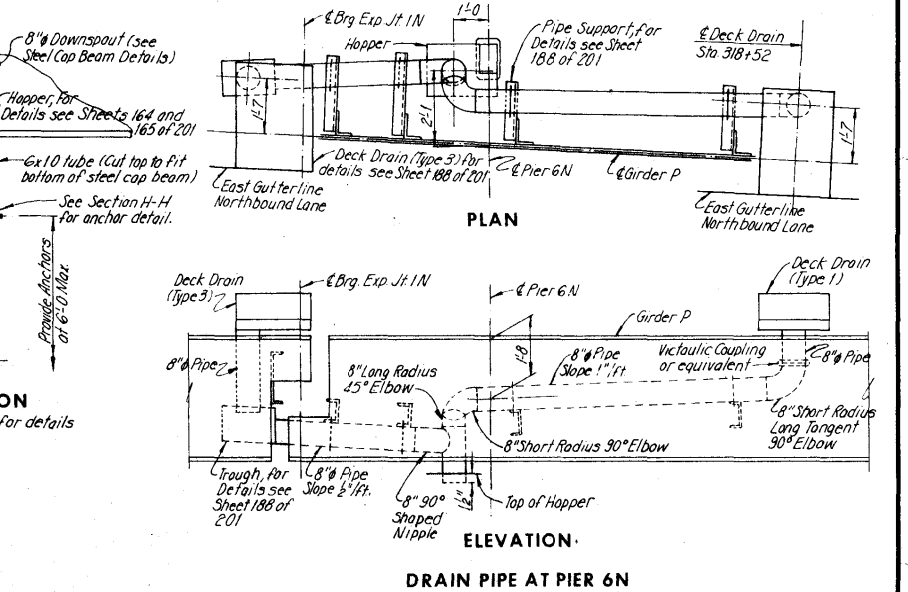
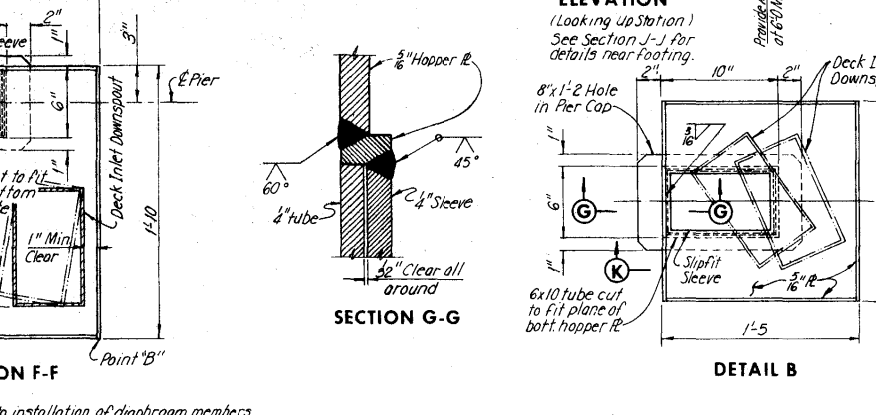
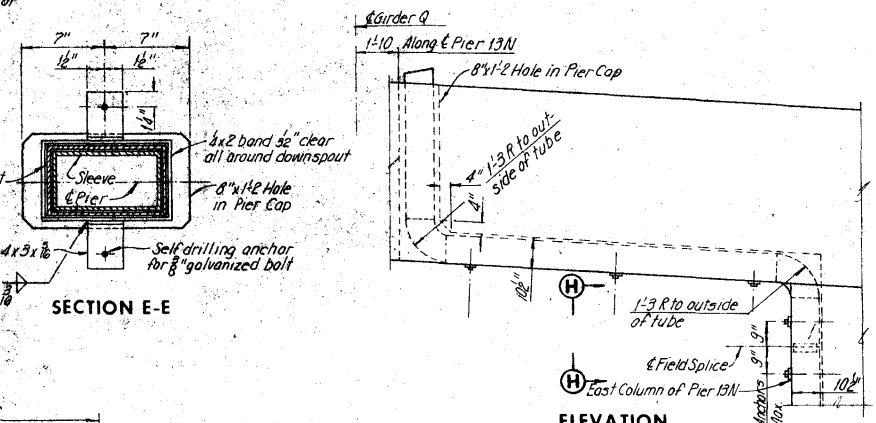
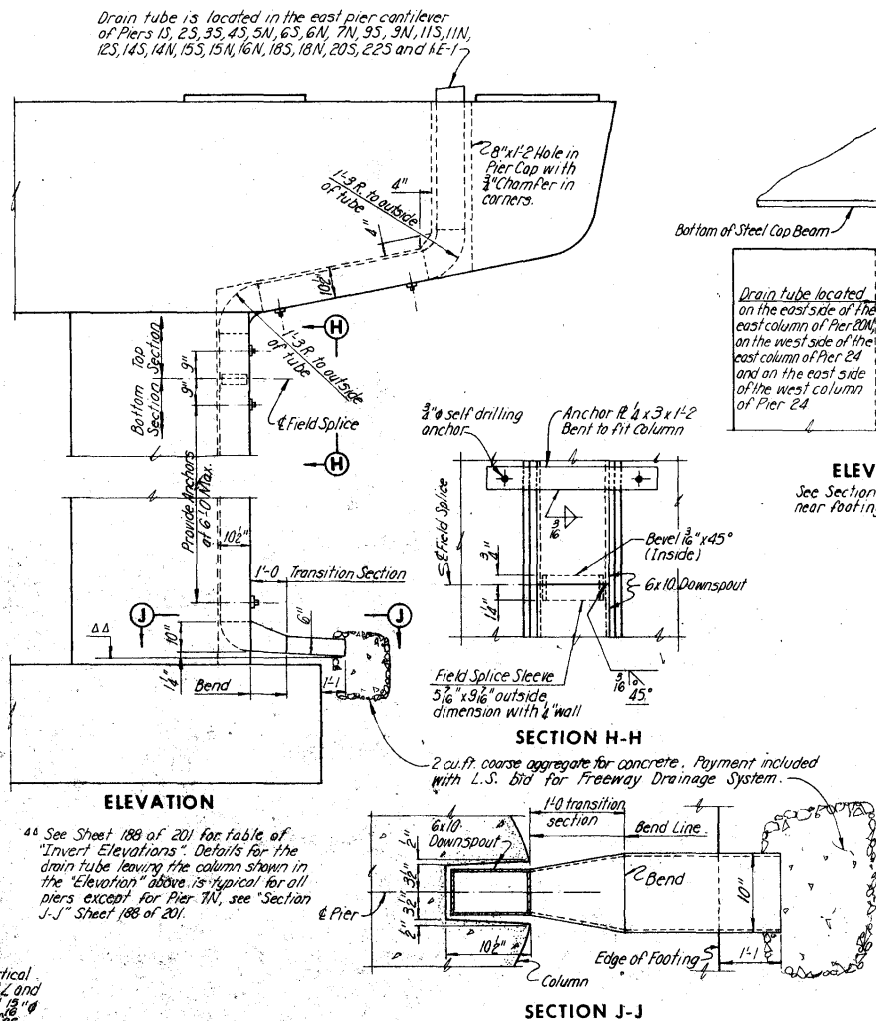
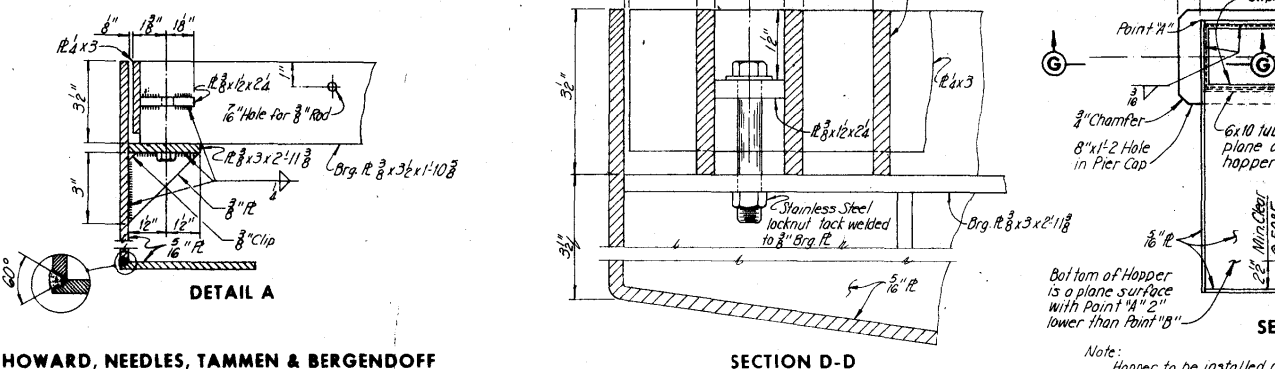
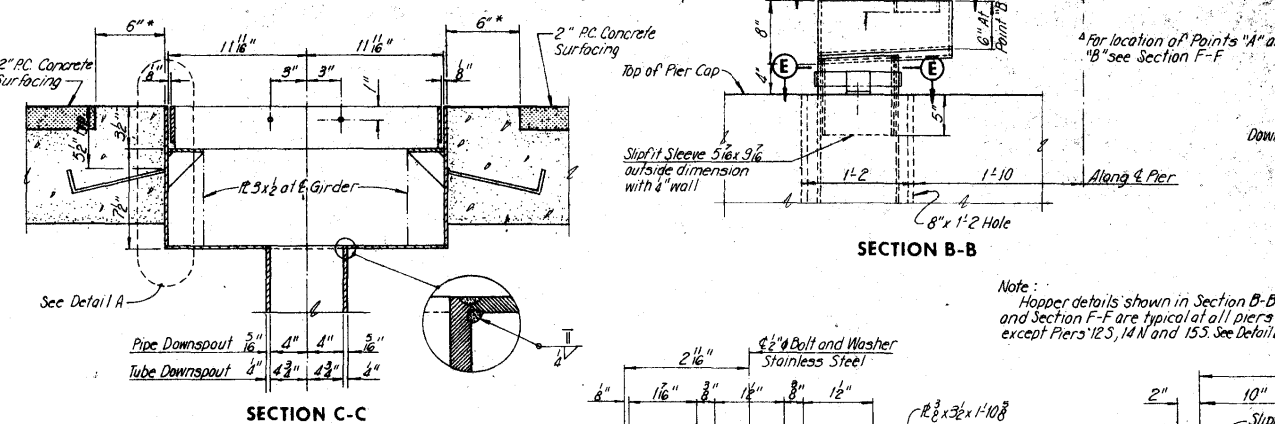
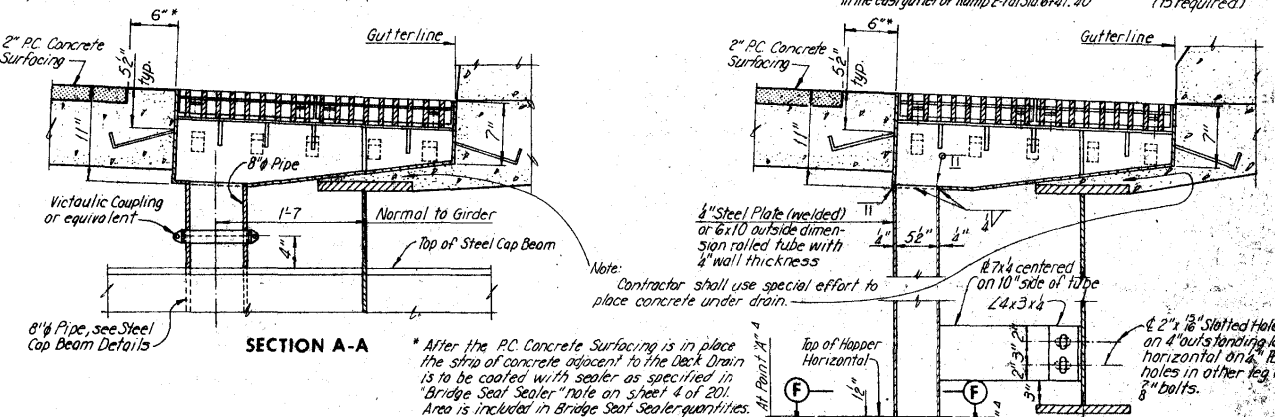
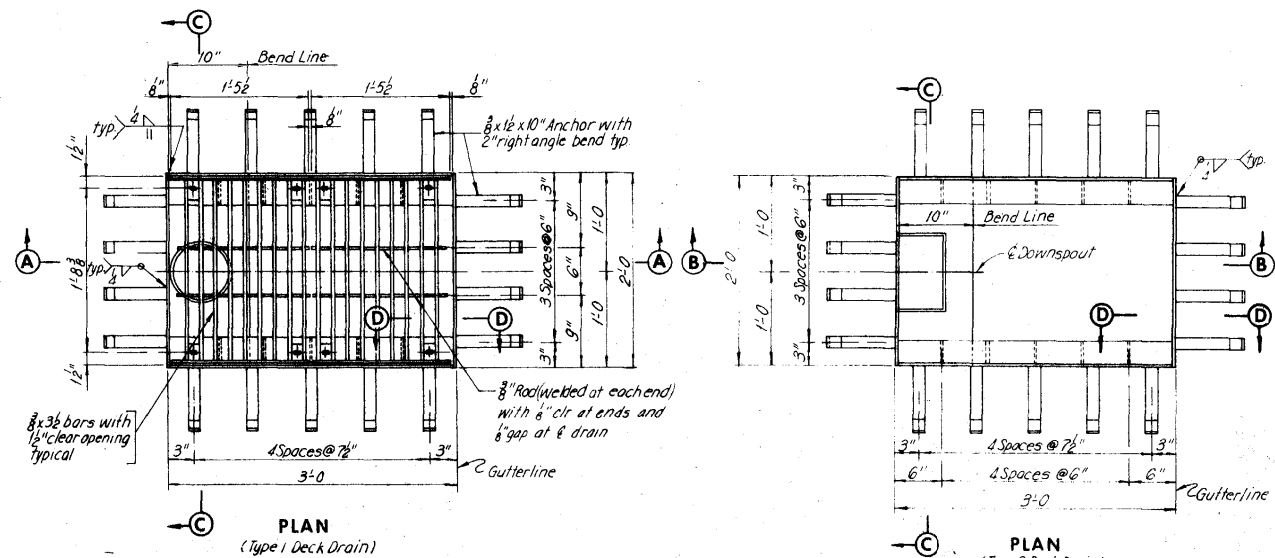
**CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE**

GIRDER SPLICE DETAILS

STA. 322+81.95 @ FREEWAY =
STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. I-380-6(68)263--01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

MADE R.L.H. DATE 06-26-74 CHECKED J.S.H. DATE 7-10-74



**CEDAR RIVER BRIDGE
 SOUTH APPROACH
 DESIGN FOR VARIABLE SKEW
 CONTINUOUS WELDED PLATE GIRDER BRIDGE
 DECK DRAIN DETAILS**

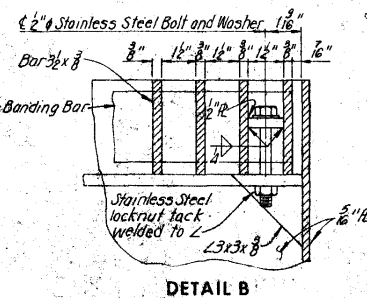
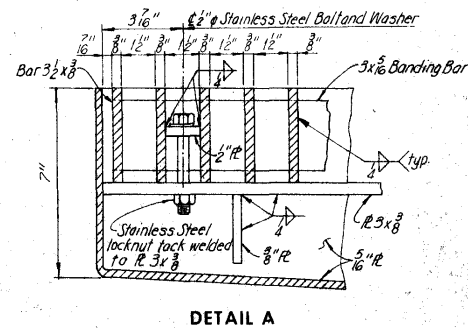
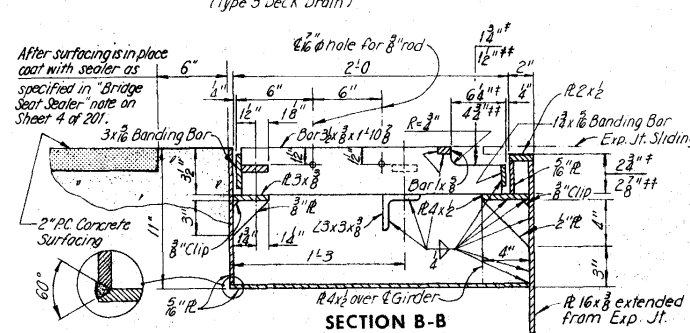
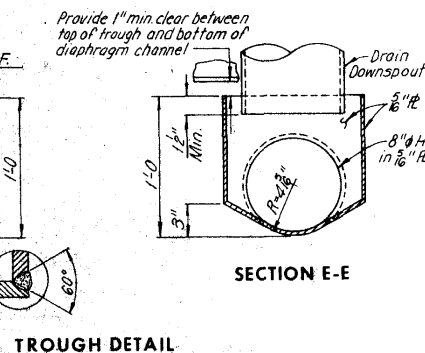
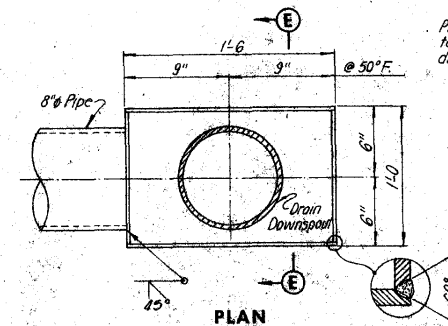
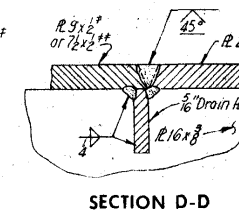
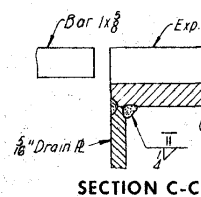
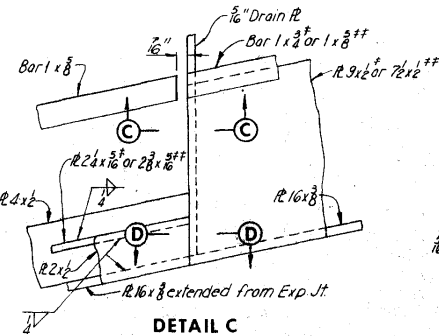
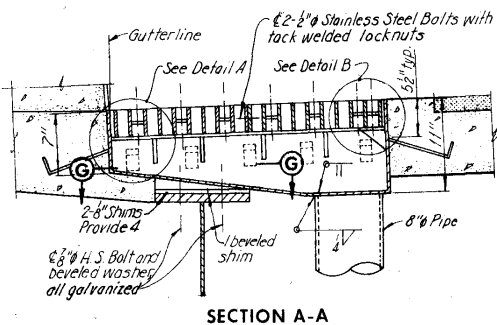
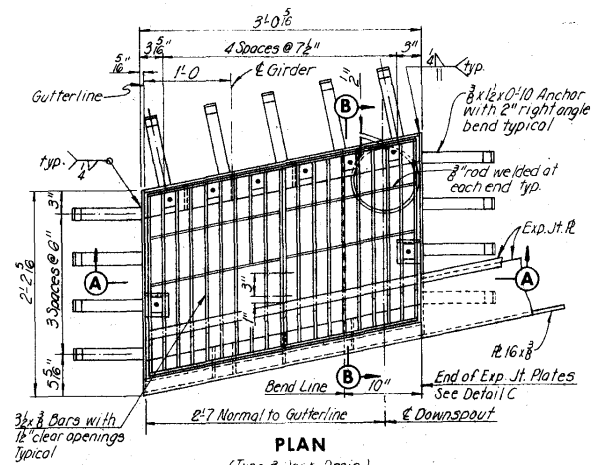
STA. 322+81.95 & FREEWAY =
 STA. 32+14.70 & 1ST. AVE. W PROJECT NO. 1-380-6(68)263--01-57
 LINN COUNTY
 IOWA STATE HIGHWAY COMMISSION

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
 CONSULTING ENGINEERS
 KANSAS CITY

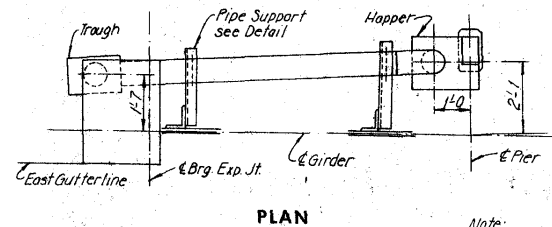
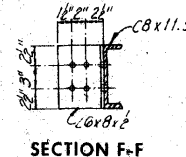
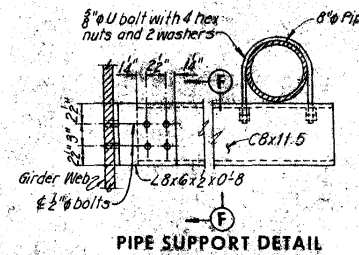
MADE AJS DATE 5-7-74 CHECKED RLF DATE 6-20-74

Revised 11-15-77: Deck Drain near Pier 6N shifted 2'-0."

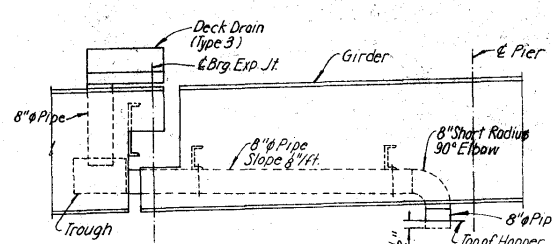
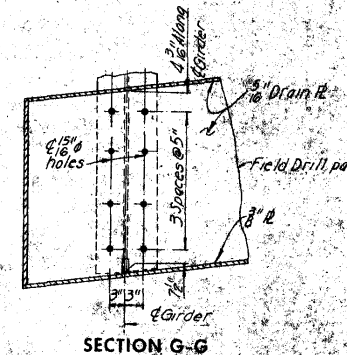
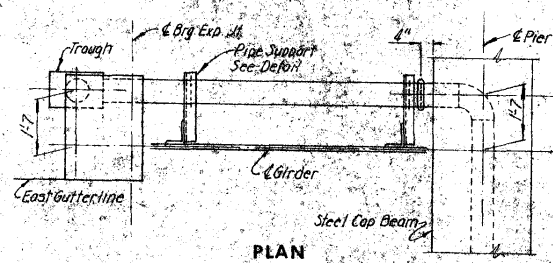
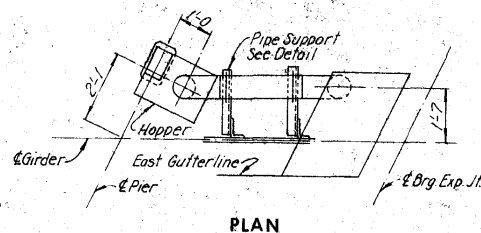
* For Exp Jts. 13, 1N, 23, 2N, 3S, 3N and 4S.
 ** For Exp Jts. 4N, 5S, 5N and 6S.



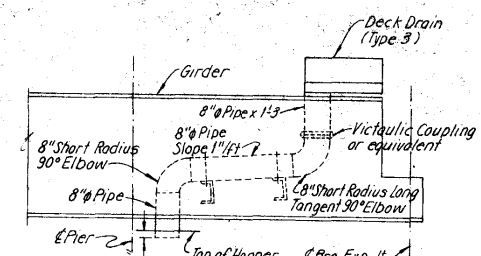
Note:
 Type 3 Deck Drains are utilized on the south side of the exp. jt. in the east gutter of exp. Jts. 13, 1N, 23, 2N, 3S, 3N, 4S, 4N, 5S, 5N and 6S. (If required)



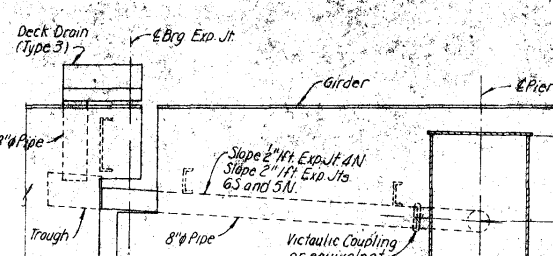
Note:
 For Hopper Details see Sheet 187 of 201.



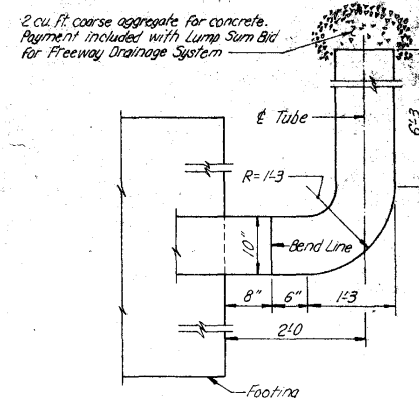
Drain Pipe of Exp. Jt. 4S is shown. Drain Pipe at Exp. Jts. 13, 23, and 2N is similar.



Drain Pipe of Exp. Jt. 3S is shown. Drain Pipe at Exp. Jts. 3N and 5S is similar.



Drain Pipe at Exp. Jt. 4N is shown. Drain Pipe at Exp. Jts. 6S and 5N is similar.



Note:
 For location of "Section J-J" see Sheet 187 of 201.

INVERT ELEVATIONS			
PIER	ELEVATION	PIER	ELEVATION
1S	95.65	14S	95.35
2S	96.50	14N	94.50
3S	96.69	15S	94.85
4S	96.40	15N	94.25
5N	96.09	1-E1	94.25
6S	96.45	16N	108.65
6N	95.72	18S	94.75
7N	96.05	18N	105.45
9S	95.85	20S	94.75
9N	96.10	20N	103.35
11S	94.75	22S	94.75
11N	94.39	24 East Col.	101.75
12S	95.65	24 West Col.	101.20
13N	94.95		

Note:
 For location of "Invert Elevations" see 44 on Sheet 187 of 201.

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
 CONSULTING ENGINEERS
 KANSAS CITY

MADE AJS DATE 5-14-74 CHECKED RLF DATE 6-20-74

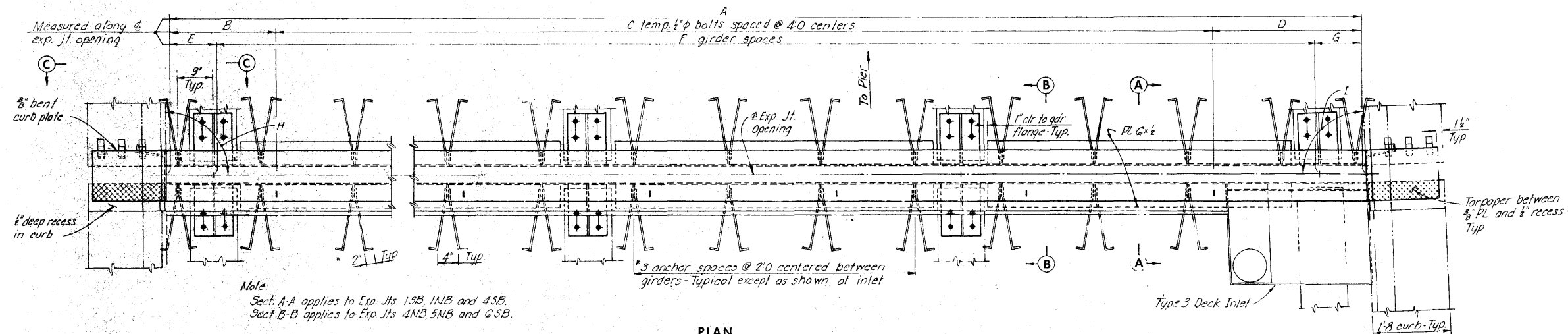
Note:
 The item "Freeway Drainage System" (L.S.) includes the following:
 1. Deck inlets and attached downspouts.
 2. Grates at roadway expansion joints.
 3. Troughs
 4. Horizontal and vertical pipe runs
 5. Victaulic couplings
 6. Hoppers
 7. All runs attached to piers (including bolts, anchors, etc.)
 8. Pipe supports, U bolts, attachment angles and bolts.
 9. Coarse aggregates for concrete
 Excluded are pans of expansion joint deck inlet and attached downspout.
 For additional notes see Sheet 187 of 201.

CEDAR RIVER BRIDGE
 SOUTH APPROACH
 DESIGN FOR VARIABLE SKEW
 CONTINUOUS WELDED PLATE GIRDER BRIDGE
 DECK DRAIN DETAILS

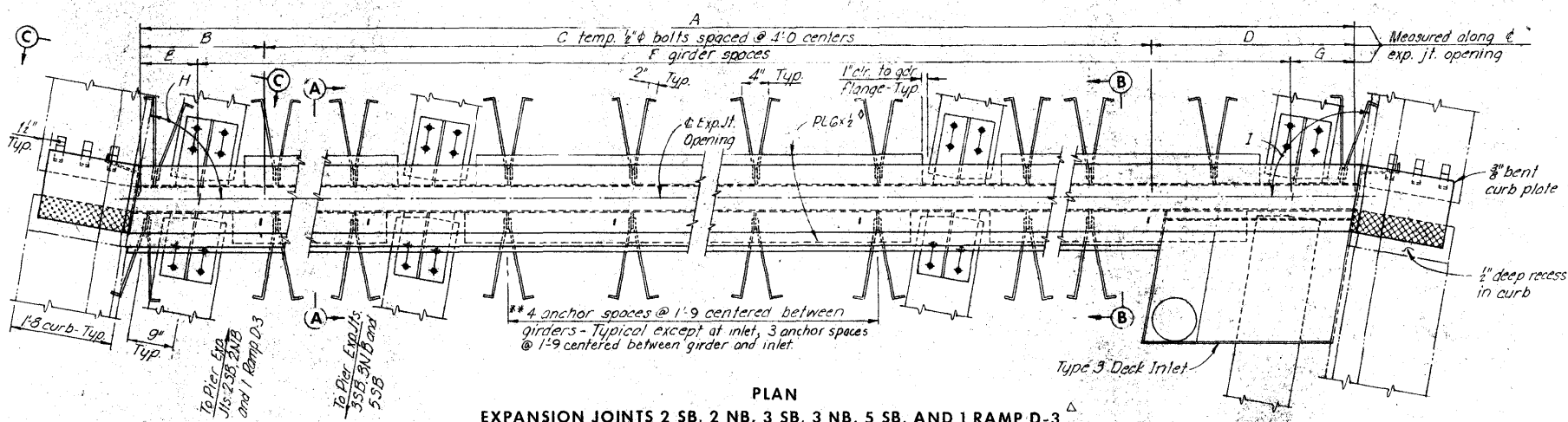
STA. 322+81.95 @ FREEWAY=
 STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. I-380-6(68)263--01-57
 LINN COUNTY
 IOWA STATE HIGHWAY COMMISSION

SHEET 188 OF 201

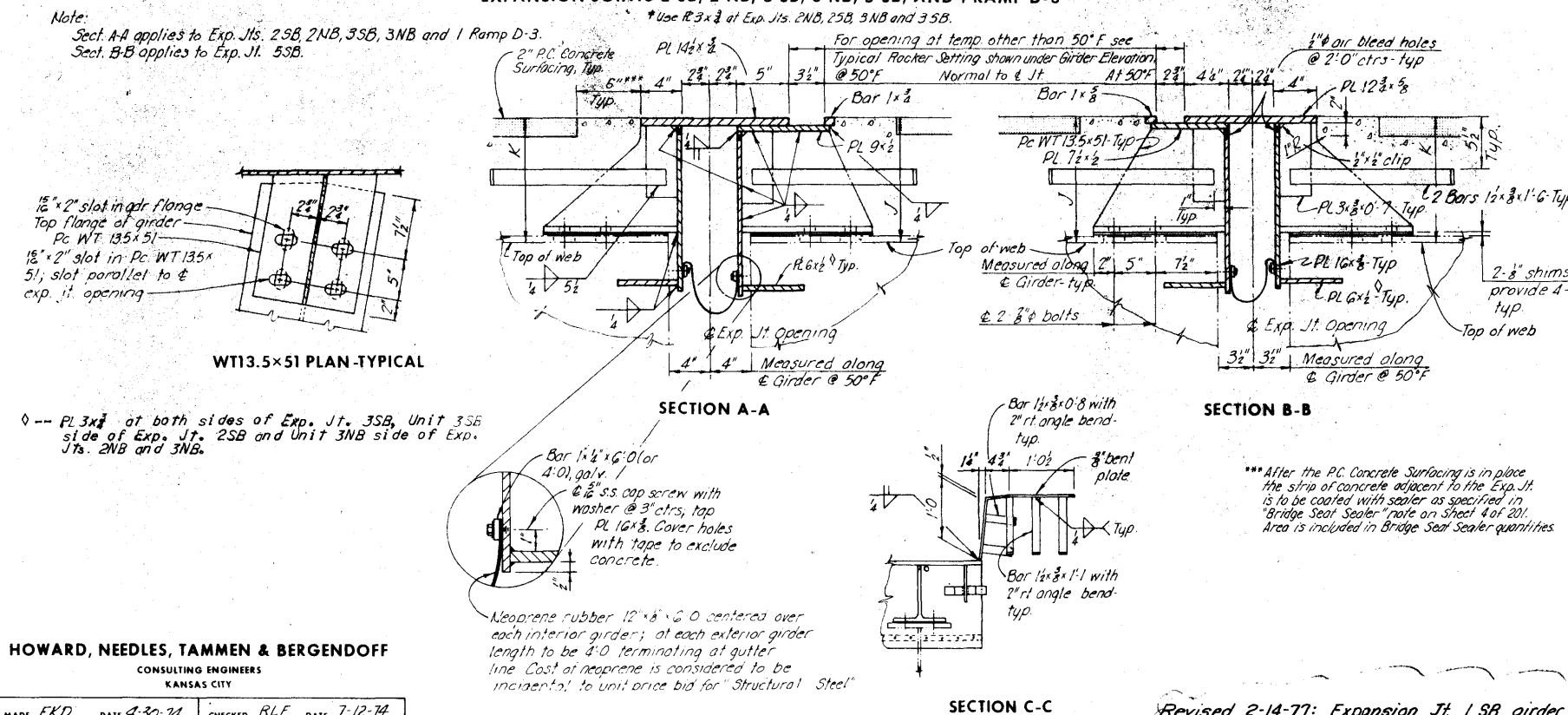
DESIGN NO. 1276 LINN COUNTY FILE 23191 SHEET 190 OF 203



PLAN
EXPANSION JOINTS 1 SB, 1 NB, 4 SB, 4 NB, 5 NB AND 6 SB



PLAN
EXPANSION JOINTS 2 SB, 2 NB, 3 SB, 3 NB, 5 SB, AND 1 RAMP D-3



(See Framing Plan for spacing sequence)

LOCATION	JOINT	A	B	C	D	E	F	G	H	I	J	K	WEIGHT
SB	1	52'-0"	0'-9"	13	3'-2"	1'-0"	3 @ 8'-4", 3 @ 8'-4"	11'-5"	88°36'24"	91°25'30"	1'-0"	1'-0"	7,922
NB	1	52'-0"	0'-8"	13	3'-4"	1'-0"	1 @ 8'-4", 2 @ 8'-4", 1 @ 8'-4", 2 @ 8'-4"	11'-5"	88°33'27"	91°28'34"	1'-0"	1'-0"	7,922
SB	4	55'-7"	0'-9"	14	3'-10"	1'-0"	1 @ 8'-8", 5 @ 9'-2"	1'-0"	95°26'52"	89°32'36"	1'-1"	1'-1"	7,827
NB	4	52'-0"	0'-8"	13	3'-4"	1'-0"	6 @ 8'-4"	1'-0"	90°23'29"	89°30'09"	1'-1"	1'-0"	7,289
NB	5	52'-1"	0'-10"	13	3'-3"	1'-0"	2 @ 8'-4", 2 @ 8'-4", 1 @ 8'-4", 1 @ 8'-4"	0'-11"	93°42'34"	86°12'16"	1'-0"	1'-0"	7,282
SB	6	57'-1"	1'-5"	14	3'-8"	1'-0"	3 @ 9'-2", 1 @ 9'-3", 2 @ 9'-2"	1'-0"	90°38'51"	88°51'42"	1'-1"	1'-1"	7,885
SB	2	55'-2"	1'-3"	13	5'-11"	1'-0"	8'-9", 8'-10", 8'-10", 8'-10", 8'-10", 8'-10"	1'-0"	70°49'59"	110°04'47"	1'-0"	1'-1"	8,072
NB	2	65'-10"	1'-5"	16	4'-5"	1'-0"	11'-10", 8'-11", 8'-11", 8'-11", 8'-11", 8'-11"	1'-1"	69°24'04"	113°04'15"	1'-0"	1'-1"	9,477
SB	3	59'-10"	1'-8"	14	5'-2"	1'-1"	1 @ 9'-4", 9'-4", 9'-5", 9'-5", 9'-5", 9'-5"	1'-1"	117°15'44"	61°24'22"	1'-1"	1'-1"	8,502
NB	3	54'-9"	2'-11"	13	3'-10"	1'-0"	1 @ 8'-9", 8'-9", 8'-9", 8'-9", 8'-9", 8'-9"	1'-0"	108°01'21"	71°04'39"	1'-1"	1'-1"	8,101
SB	5	65'-6"	1'-11"	16	3'-7"	1'-0"	3 @ 9'-2", 1 @ 8'-6", 3 @ 9'-2"	1'-0"	86°08'12"	90°27'47"	1'-1"	1'-1"	8,964
RAMP D-3	1	32'-9"	3'-0"	8	1'-9"	1'-0"	3 @ 9'-2"	4'-1"	83°14'11"	102°14'33"	1'-0"	1'-1"	4,269

At EJ 1 Ramp D-3 there is no inlet. Extend plates to curb and provide WT over girder.

QUANTITIES	UNIT	QUANTITY
BRIDGE SEAT SEALER	SQ. FT.	821

Notes:
Unless shown otherwise, Sections A-A and B-B are to be worked together.
At each 1/2" temp. bolt provide a 3/4" x 2" slot in the upper plate and a 3/4" hole in the lower plate. Bolts are to be 1 1/2" in length and are to be provided with a washer. Weld nuts to underside of lower plate. Remove bolts when concrete has taken initial set.
Concrete is to be carefully placed and compacted behind expansion devices in order to eliminate voids in concrete.
The expansion device, including attached inlet pan, is to be galvanized after fabrication.
Material for expansion devices shall be A36 steel. Payment for furnishing and placing expansion devices shall be included in the unit price bid for "Structural Steel". Weights tabulated above include weight of attached inlet pan.
At the option of the Contractor, a field welded splice will be permitted in each expansion device. Details are subject to approval of the Iowa Department of Transportation prior to fabrication.
For details of Typ. 3 Deck Inlet, see Sheet 138 of 201.
See "Framing Plans" for girder designations and girder angles.

**CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE**

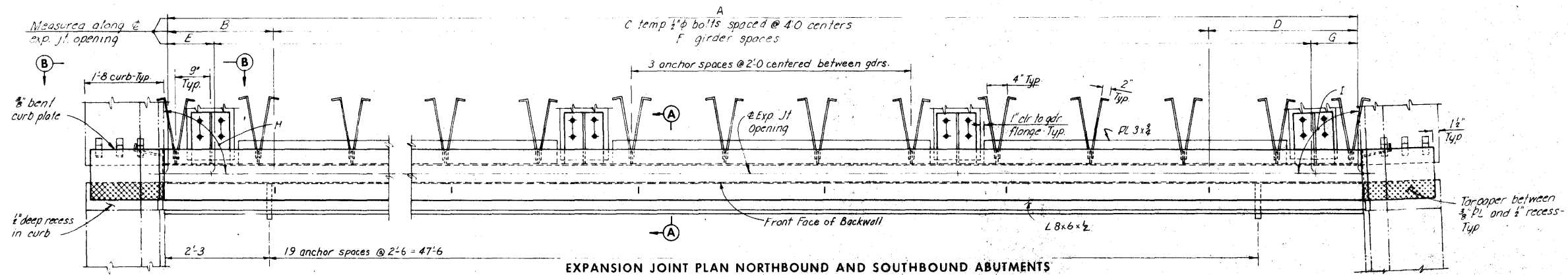
ROADWAY EXPANSION JOINTS

STA. 322+81.95 Q FREEWAY =
STA. 32+14.70 Q 1ST. AVE. W PROJECT NO. I-380-6(68)263--01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

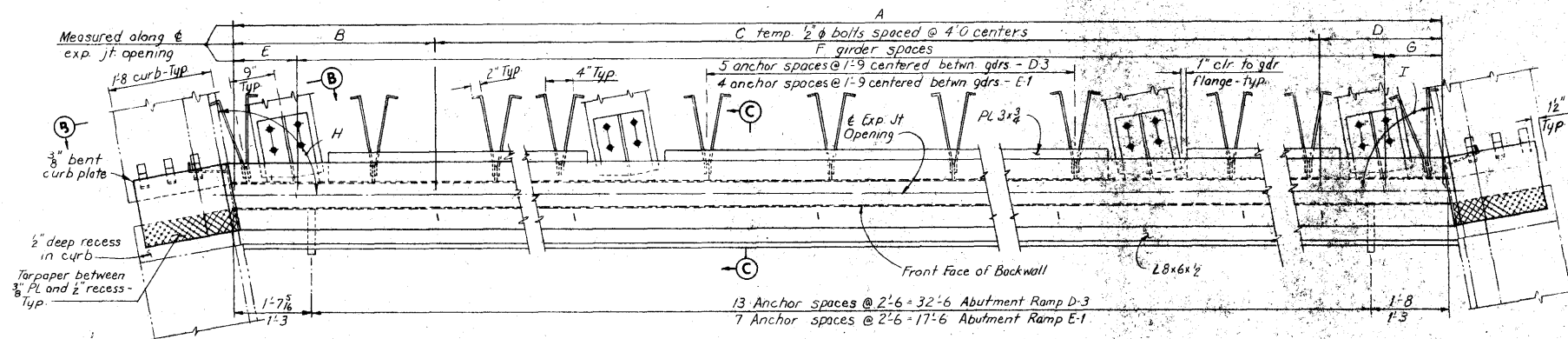
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

MADE F.K.D. DATE 4-30-74 CHECKED R.L.F. DATE 7-12-74

Revised 2-14-77: Expansion Jt. 1 SB girder spacing corrected.



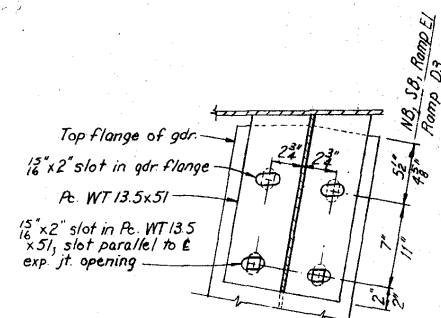
EXPANSION JOINT PLAN NORTHBOUND AND SOUTHBOUND ABUTMENTS



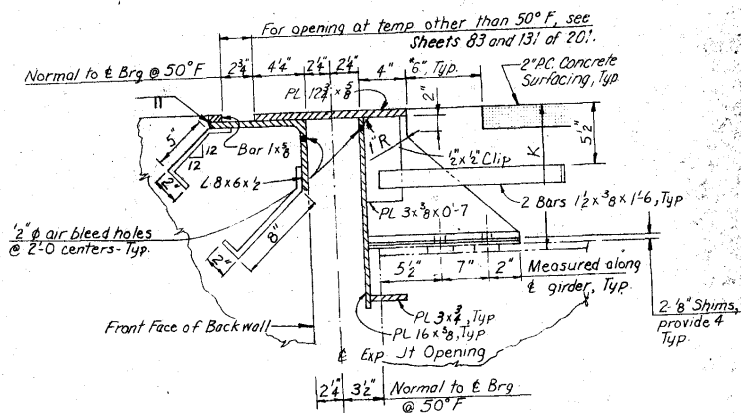
EXPANSION JOINT PLAN RAMP D-3 AND RAMP E-1 ABUTMENTS

EXPANSION JOINT DIMENSIONS AND ANGLES												
LOCATION	JOINT	A	B	C	D	E	F	G	H	I	K	WEIGHT
NB	ABUT.	52'-0 1/2"	2'-0"	13	2'-0 1/2"	1'-0"	6 @ 8'-4 1/2"	1'-0"	92°39'25"	87°20'15"	1'-0 1/2"	5,034
SB	ABUT.	52'-0 1/2"	2'-0"	13	2'-0 1/2"	1'-0"	6 @ 8'-4 1/2"	1'-0"	92°39'25"	87°20'15"	1'-0 1/2"	5,034
RAMP D-3	ABUT.	35'-9 1/2"	1'-10 1/2"	9	1'-10 1/2"	1'-2 1/2"	1 @ 11'-1 1/2", 1 @ 11'-1 1/2", 1 @ 11'-1 1/2"	1'-2 1/2"	122°26'07"	56°22'48"	1'-0 1/2"	3,767
RAMP E-1	ABUT.	20'-0"	2'-0"	5	2'-0"	1'-0"	2 @ 9'-0"	1'-0"	89°53'32"	90°01'27"	1'-1 1/2"	2,206

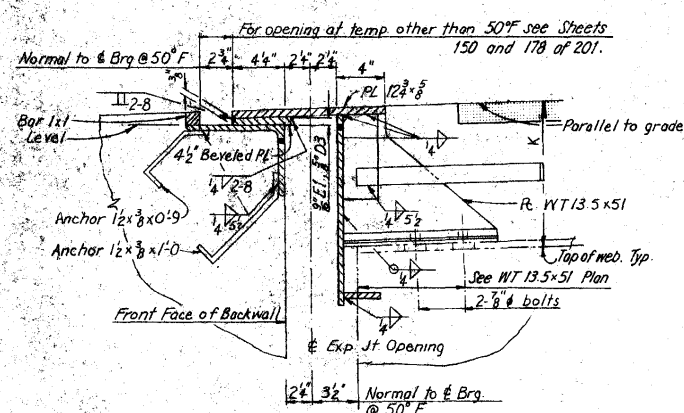
Note:
At each 1/4" temporary bolt, provide a 1/2" x 2" slot in the plate and a 1/2" hole in the angle. Bolts are to be 1 1/2" long with Section A-A and 2 1/2" long with Section C-C and are to be provided with a washer. Weld nuts to underside of angle. Remove bolts when concrete has taken initial set.
Concrete is to be carefully placed and compacted behind expansion devices in order to eliminate voids in concrete.
The expansion device is to be galvanized after fabrication.
Material for expansion devices shall be A36 steel. Payment for furnishing and placing expansion devices shall be included in the unit price bid for "Structural Steel".
At the option of the Contractor, a field welded splice will be permitted in each expansion device. Details are subject to approval of the Iowa Department of Transportation prior to fabrication.
See "Framing Plans" for girder designations and girder angles.
Unless shown otherwise, Sections A-A and C-C are to be worked together.



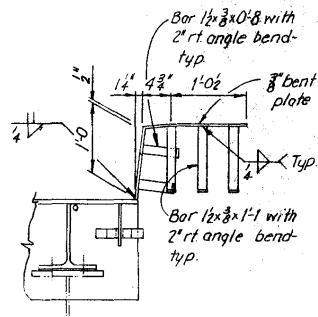
WT13.5x51 PLAN-TYPICAL



SECTION A-A



SECTION C-C



SECTION B-B

* After the PC Concrete Surfacing is in place the strip of concrete adjacent to the Exp. Jt. is to be coated with sealer as specified in "Bridge Seal Sealer" note on Sheet 4 of 201. Area is included in Bridge Seal Sealer quantities.

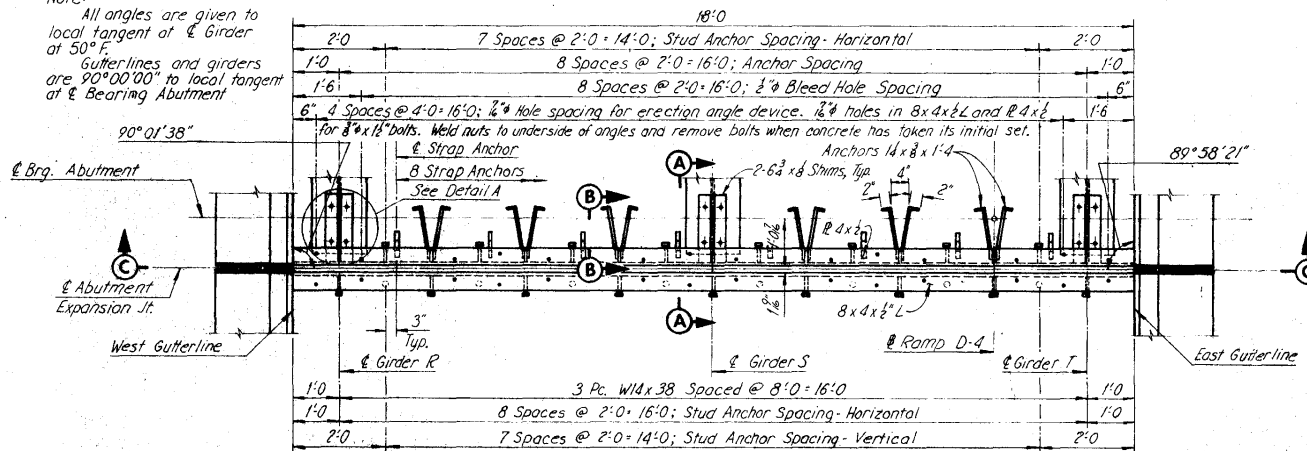
**CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE
EXPANSION JOINT DETAILS**

STA. 322+81.95 @ FREEWAY =
STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. I-380-6(68)263--01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

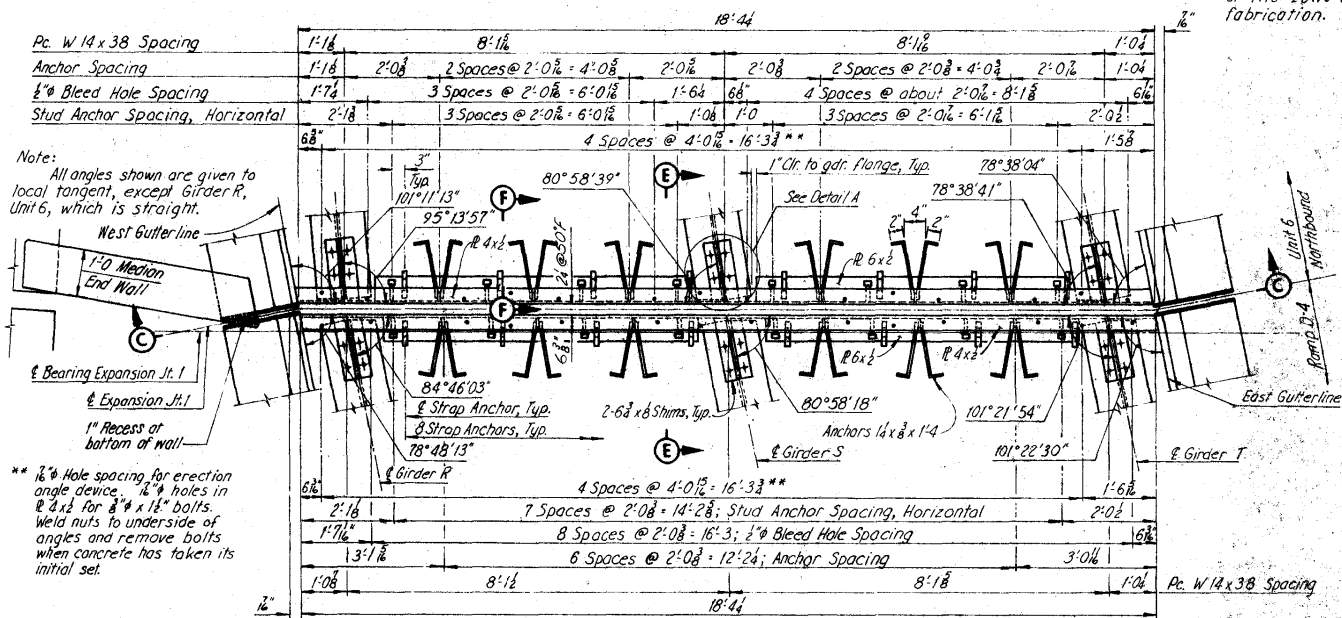
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

MADE RLF DATE 7-10-74 CHECKED CWW DATE 7-15-74

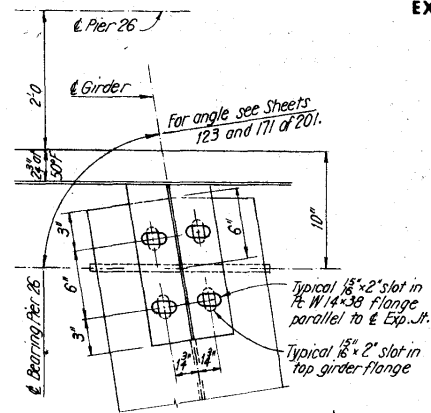
Note:
All angles are given to local tangent at $\frac{1}{2}$ Girder at 50° F.
Gutterlines and girders are 90° 00' 00" to local tangent at $\frac{1}{2}$ Bearing Abutment.



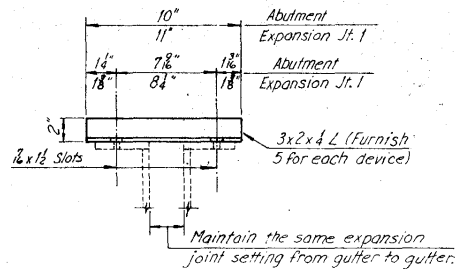
EXPANSION JOINT PLAN - ABUTMENT, RAMP D-4
(Weight = 1,133 Lbs.)



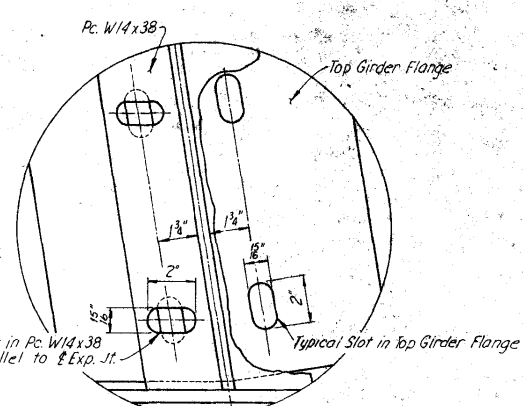
EXPANSION JOINT PLAN - EXPANSION JOINT 1, RAMP D-4
(Weight = 1,900 Lbs.)



GIRDER FLANGE SLOTS AT PIER 26 EXPANSION JOINT

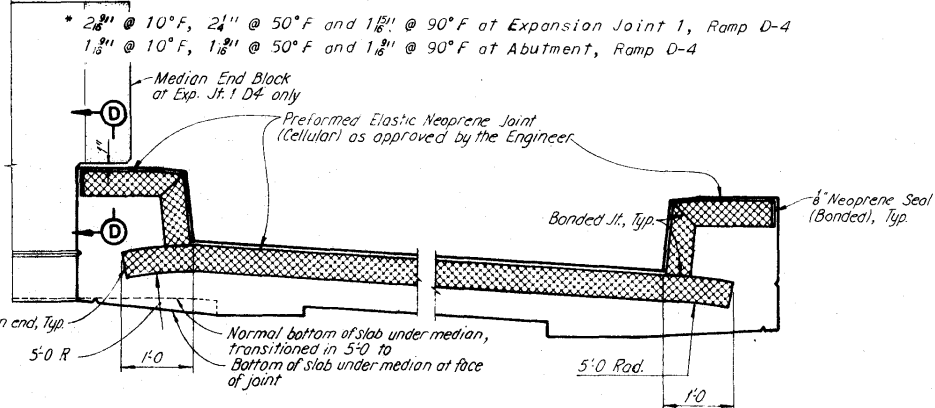


ERECTION ANGLE FOR EXPANSION JOINT



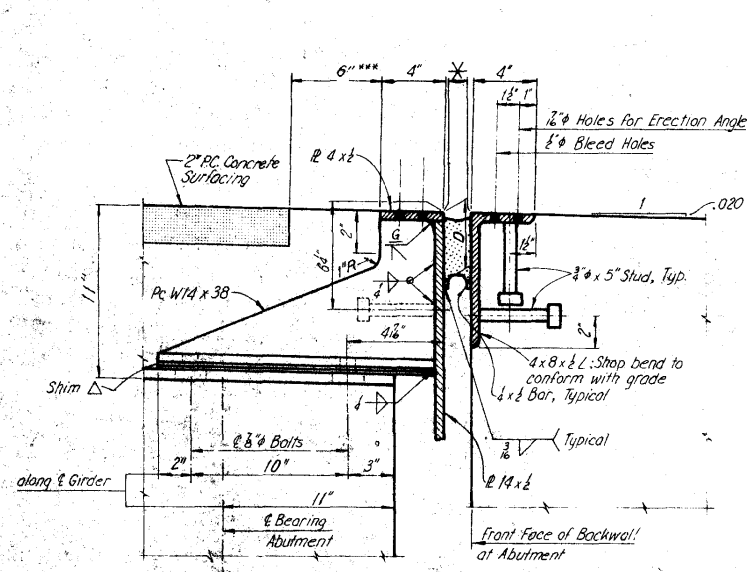
DETAIL A

(Detail shown is for Expansion Joint 5; hole location is typical for Ramp D-4, Abutment.)



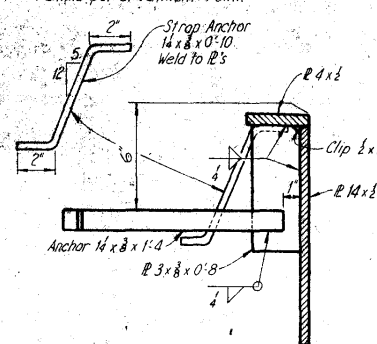
SECTION C-C

Note:
At the option of the contractor, a field welded splice will be permitted in the expansion device. Details are subject to approval of the Iowa Department of Transportation prior to fabrication.



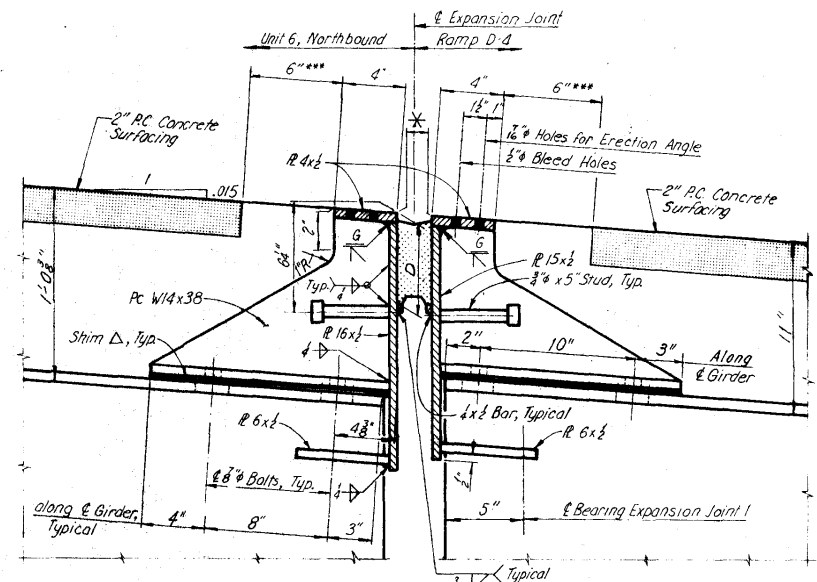
SECTION A-A

Includes 2-6x8 shims (Rush) & shims per attachment point.



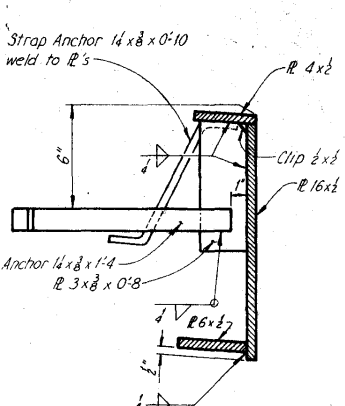
SECTION B-B

*** After the PC Concrete Surfacing is in place the strip of concrete adjacent to the Exp. Jt. is to be coated with sealer as specified in "Bridge Seal Sealer" note on Sheet 4 of 201. Area is included in Bridge Seal Sealer quantities.



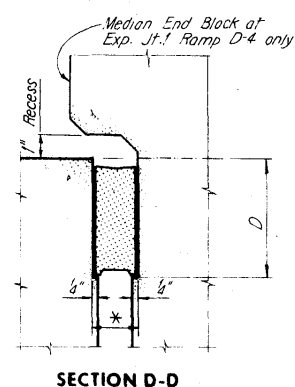
SECTION E-E

Note:
Anchor straps not shown in Sections A-A & E-E.



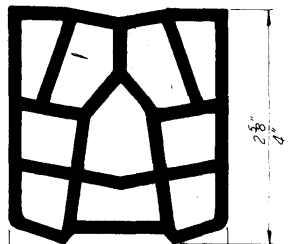
SECTION F-F

Expansion Device With Neoprene Compression Sealer Notes:
Unless shown otherwise, materials for expansion devices shall be of A36 steel.
Payment for furnishing and placing expansion devices shall be included in the price bid for "Structural Steel." Concrete is to be carefully placed and compacted behind the expansion angles and plates in order to eliminate voids in the concrete.
The distance (D) from the top surface to compression seal retainer bar (4x2) shall be consistent with the recommendations of the manufacturer furnishing the seal. Drawings of the seal to be used showing the size, type and manufacturer are to be furnished with the shop drawings for the expansion device.
Expansion device, except for erection angles, is to be galvanized after welding.



SECTION D-D

Note:
Other seals of cellular configuration with about the same size and movement rating may be substituted with approval of the Engineer.



NEOPRENE COMPRESSION SEALER

CEDAR RIVER BRIDGE SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE
EXPANSION JOINT DETAILS

STA. 322+81.95 @ FREEWAY =
STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. I-380-6(68)263--01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

MADE JJR DATE 7-1-74 CHECKED RLF DATE 7-12-74

QUANTITIES		
Item	Amount	
Chain Link Fence Southbound Lane	4.42	Stations
Chain Link Fence Northbound Lane	7.42	Stations
Total	11.91	Stations

STEEL CHAIN LINK FENCE NOTES:

The chain link fence is to be bid on a station basis measured from C to C of end posts. The price bid for "Chain Link Fence, as per plan" shall be full compensation for furnishing all material, including concrete anchors and shims, and all of the equipment and labor required to erect the fence in accordance with these plans and specifications.

The chain link fabric shall be either zinc or aluminum coated fabric, 2" mesh, No. 9 Wires, 96" height with knuckled selvages top and bottom.

The stud concrete anchors shall be galvanized and have a minimum pullout strength of 8000 pounds based on 4000 psi concrete.

The posts, braces, rails and special fittings shall be in accordance with Articles 4154.10 and 4154.11 of the Standard Construction Specifications unless noted otherwise.

The fence shall be true to line, taut, and comply with the best practice for fence construction of this type. All ends of wires shall be turned so that they extend away from the handrail side of the fence.

BARRIER CURB & RAIL NOTES:

The aluminum barrier curb rail is to be bid on a lineal foot basis measured end to end of rail. The price bid for "Aluminum Barrier Curb Rail" shall be full compensation for furnishing all material, including anchor bolts and shims, and all of the equipment and labor required to erect the rail in accordance with these plans and specifications.

The entire surfaces of the aluminum shims are to be painted one shop coat of zinc chromate shop coat paint or red lead shop coat paint. At least one painted shim shall be used at each rail post.

Ends of rail sections to be sawed or milled. All cut ends are to be true, smooth and free of burrs or ragged edges.

Material for the tube rail, posts and base plates shall be ASTM B-221 Alloy 6061-T6. Material for shims and cast end caps shall be in accordance with Section 4190 of the Standard Specs.

The stud concrete anchors shall be galvanized and have a minimum pull out strength of 8000 pounds based on 4000 pound concrete.

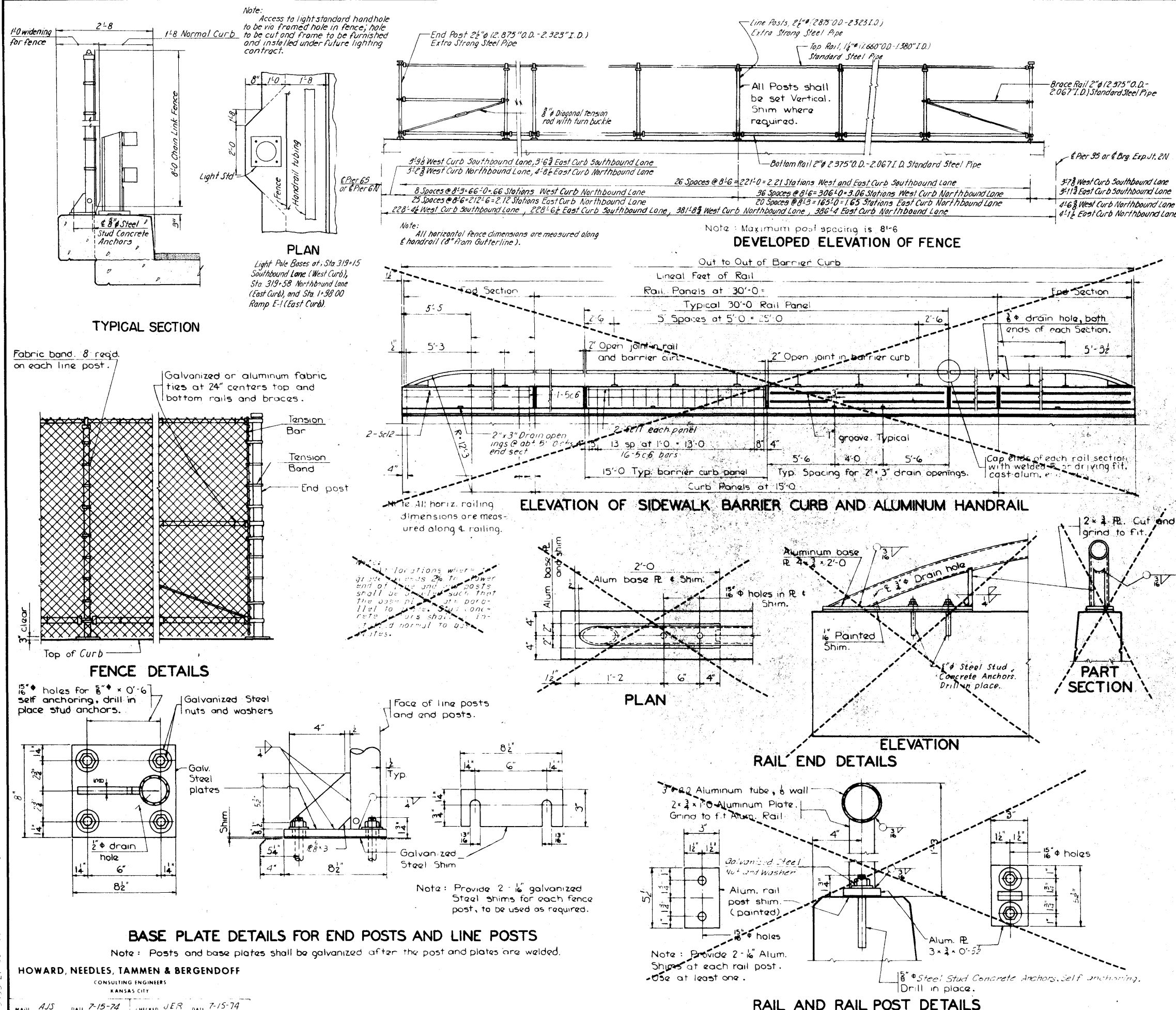
The concrete and reinforcing steel quantities are included with the Superstructure Estimated Quantities.

Note: End posts and line posts are to be aligned with handrail posts.

CEDAR RIVER BRIDGE SOUTH APPROACH DESIGN FOR VARIABLE SKEW CONTINUOUS WELDED PLATE GIRDER BRIDGE CHAIN LINK FENCE

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LINN COUNTY
IOWA STATE HIGHWAY COMMISSION



BEARING NOTES:

The casting of R1A, R2A, S2, R3A and S3 shall comply with Article 4153.04 of the I.C.C. Standard Specifications. Castings may be Gray Iron or Malleable Iron.

The masonry plates marked MP1A, MP2A, MP2P, MP3A and MP3P shall comply with the requirements of ASTM A-36 steel.

The pins shall comply with Article 4153.02 of the I.C.C. Standard Specifications and with the requirements of ASTM A-101 steel.

All bearings are to be set in point and canvas.

After masonry plates, rockers and shoes are in correct location, pour mortar around anchor bolts to fill the slotted holes.

The sight of bearings shown does not include the weight of point.


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 No. 3 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. No. 3 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.

Sole plates shall be shop welded to girder flange. See Girder Elevation or Longitudinal Section Near Curb.

Anchor bolts shall be preset, except at Pier 26. For Anchor Bolt Setting Plans see Pier Details. At Pier 26 anchor bolts shall be set in accordance with Article 2403.47 of the I.C.C. Standard Specifications.

Bearing under steel girder are detailed on sheet 173 of 201.

DISTANCE FROM TOP OF SOLE PLATE TO BRIDGE SEAT	
Rockers & Fixed Shoes	
R1A	1'-0 1/8"
R2A & S2	1'-1 1/8"
R3A & S3	1'-4 1/8"

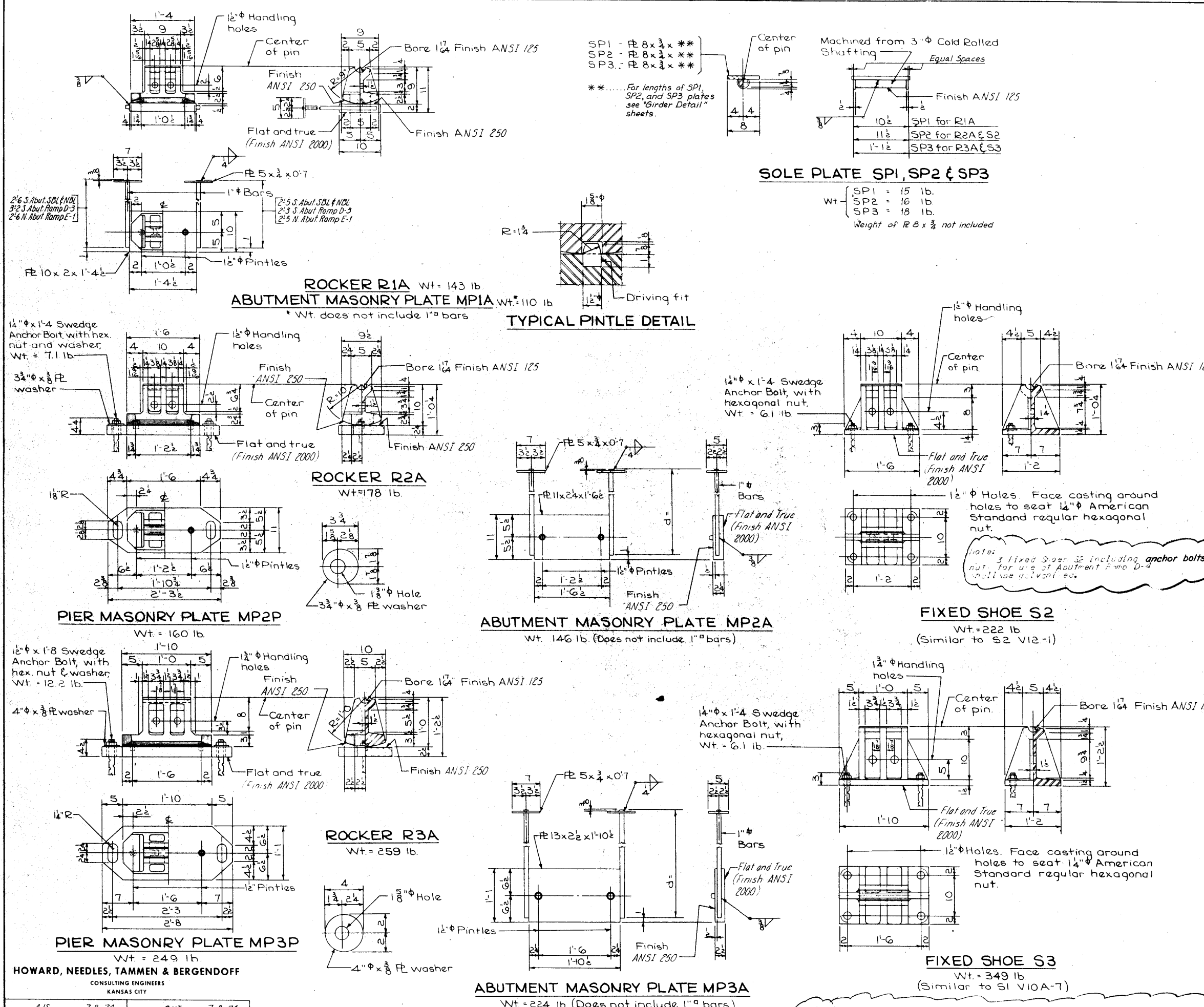
* Including 1/8" paint and canvas.

MAXIMUM REACTION (In Kips)			
R1A	R2A S2	R3A S3	
132	171	263	

**CEDAR RIVER BRIDGE
SOUTH APPROACH**
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE

BEARING DETAILS

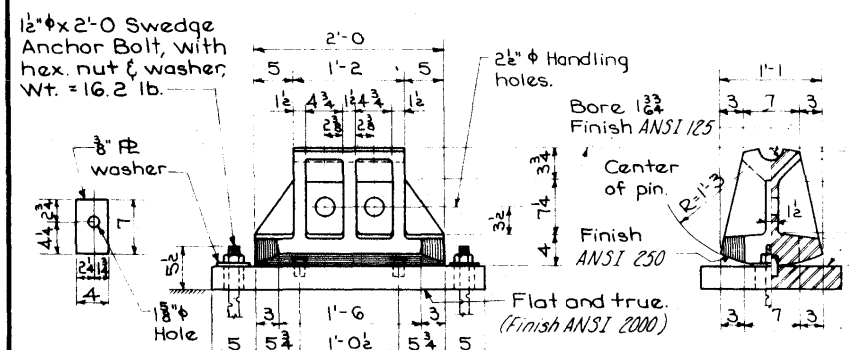
STA. 322+81.95 @ FREEWAY =
STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. I-380-6(68)263--01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION



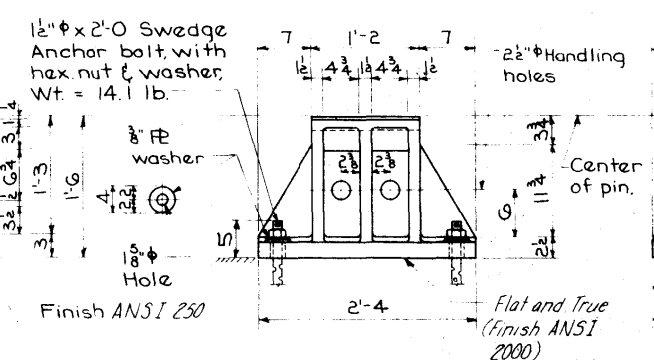
HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

MADE AJS DATE 7-8-74 CHECKED AW DATE 7-8-74

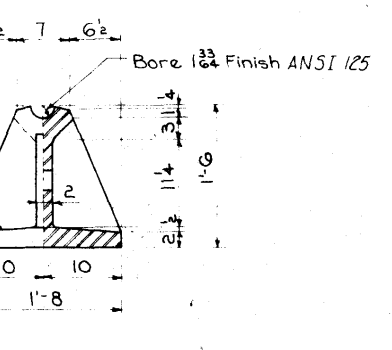
Revised 3-11-77: Note expanded to include bolts in galvanizing requirements.



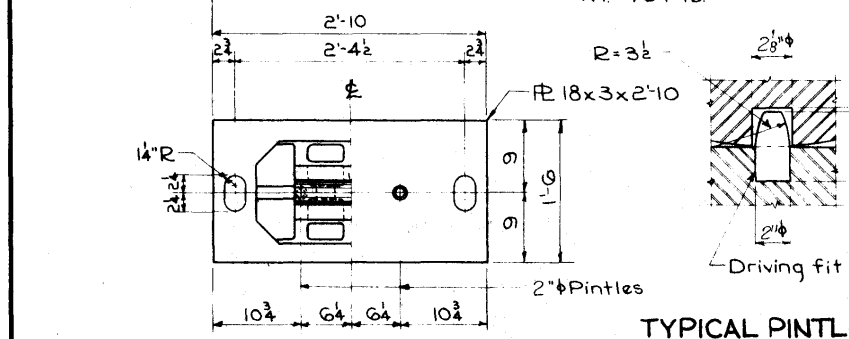
ROCKER R4
Wt = 464 lb.



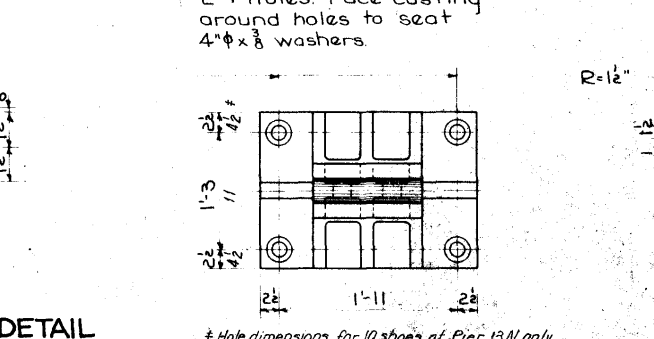
ROCKER R5
Wt = 776 lb.



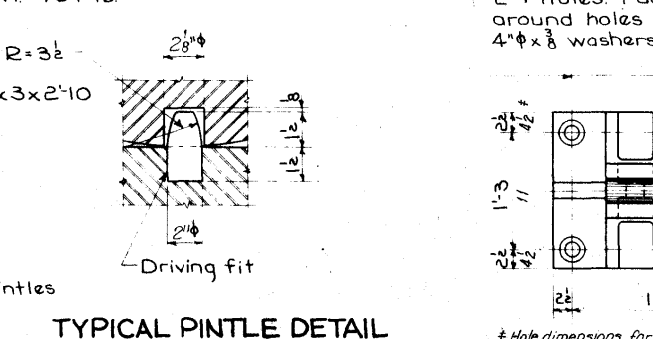
ROCKER R6
Wt = 1274 lb.



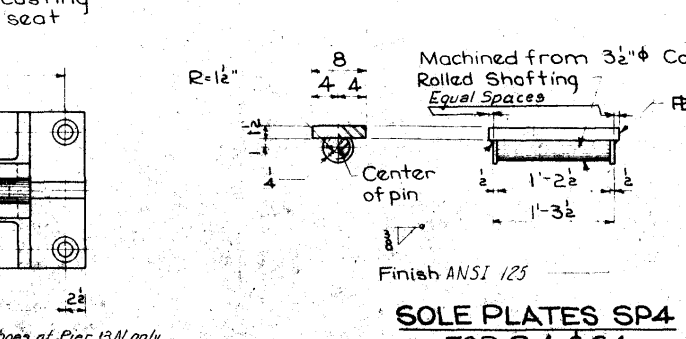
PIER MASONRY PLATE MP4P
Wt = 462 lbs.



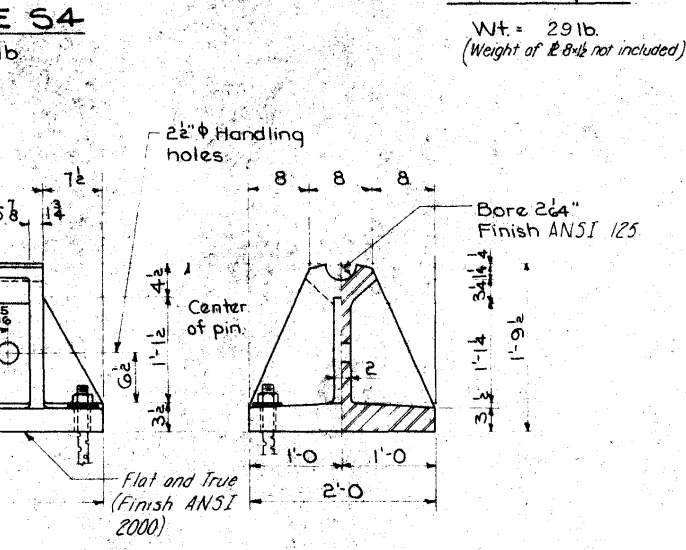
PIER MASONRY PLATE MP5Pa FOR SPAN LENGTH GREATER THAN 150'
Wt = 877 lb.



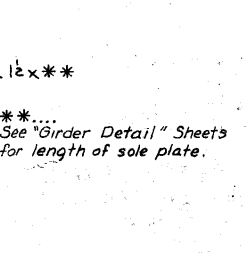
PIER MASONRY PLATE MP5Pb FOR SPAN LENGTH 101' TO 150'
Wt = 897 lb.



FIXED SHOE S4
Wt = 735 lb.



FIXED SHOE S5
Wt = 1274 lb.



SOLE PLATES SP4 FOR R4 & S4
Wt = 291 lb.
(Weight of R8 not included)



SOLE PLATES SP5 FOR R5 & S5
Wt = 159 lb.

BEARING NOTES :

Modular Iron Castings shall 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 Modular Iron Castings:

R4	MP4P	S4
R5	MP5P	S5

All plates and bars shall comply with ASTM A-36. Pins shall comply with Article 4153.02 of the Standard Specifications and with ASTM A-108.

All bearings are to be set in paint and canvas.

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.

As soon as the surfacing process is done, the surface finished with an ANSI 125 finish shall be shop coated with an application of waterproof National Lubricating Grease Institute No. 3 multi-purpose 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. No. 3 grease is to be applied.

Anchor bolts shall be preset. For Anchor Bolt Setting Plans see Pier Details.

DISTANCE FROM TOP OF SOLE PLATE TO BRIDGE SEAT	
Rockers & Fixed Shoes	
R4 & S4	1'-8 1/8"
R5 & S5	2'-0 1/8"

* Including 1/8" paint and canvas.

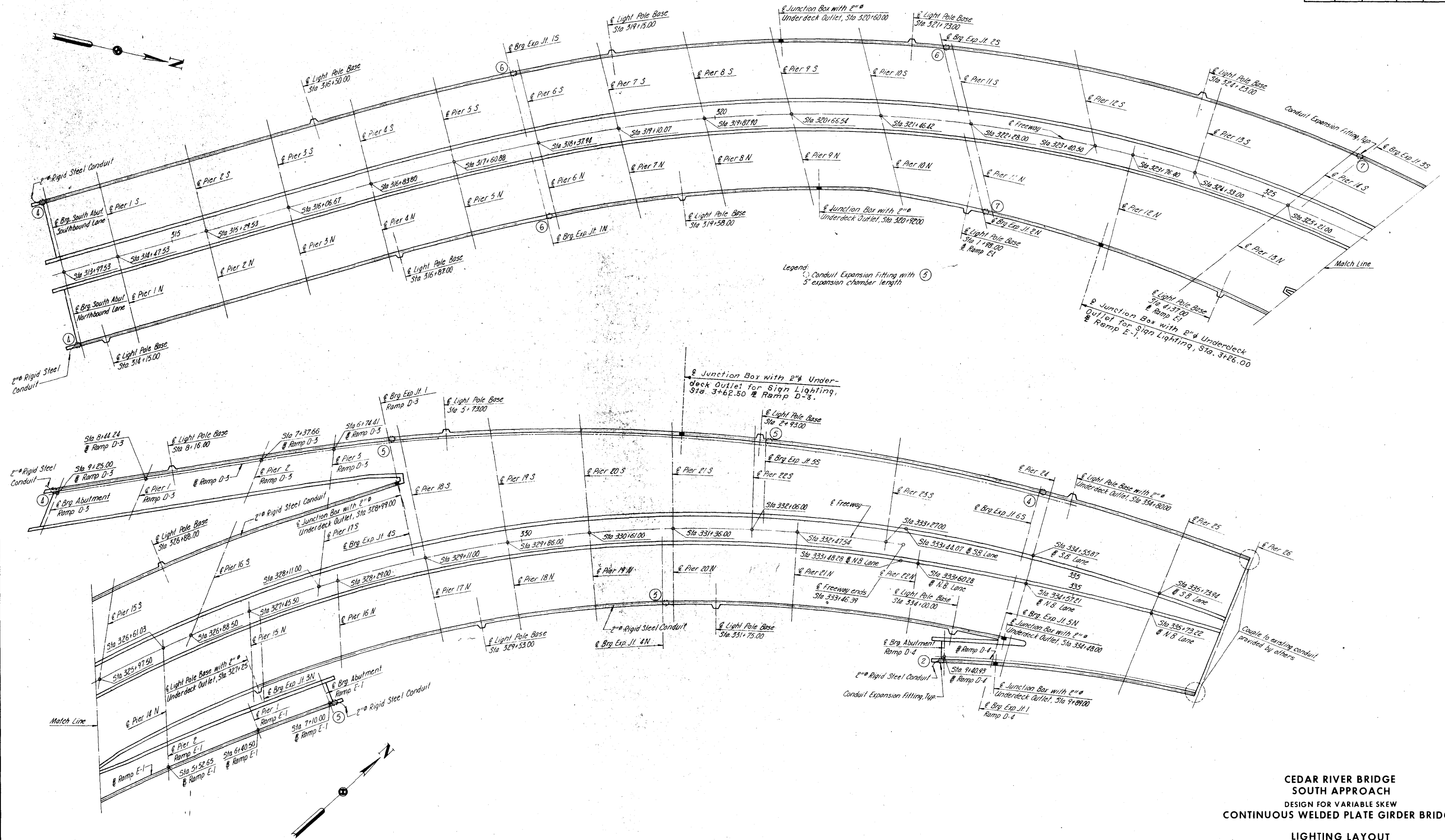
MAXIMUM REACTION (In Kips)	
R4 S4	R5 S5
475	650

**CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE**

BEARING DETAILS

STA. 322+81.95 @ FREEWAY =
STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. I-380-6(68)263-01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

FEDERAL DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	IOWA				



**CEDAR RIVER BRIDGE
SOUTH APPROACH**
 DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE

LIGHTING LAYOUT

STA. 322+81.95 @ FREEWAY =
 STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. I-380-6(68)263--01-57
LINN COUNTY
 IOWA STATE HIGHWAY COMMISSION

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
 CONSULTING ENGINEERS
 KANSAS CITY

MADE BY DATE 1-17-74 CHECKED JAH DATE 7-16-74

2" Rigid Steel Conduit unless noted otherwise (for under-deck lighting when specified)

2" Rigid Steel Conduit

Face of Curb

Face of Curb for Light Pole Base at Sta. 319+15, Sta. 319+33, and Sta. 319+00. Detail for this Light Pole Base shall be worked with Sheet 192.

2" Rigid Steel Conduit

1" x 2" anchor bolt

Anchor bolts and anchor plate are included in the price bid for concrete

Face of Curb for Light
Pole Base at Sta. 319+15,
Sta 319+58, and Sta 1+98.00.
Detail for this Light
Pole Base shall be
worked with Sheet 192
of 201.

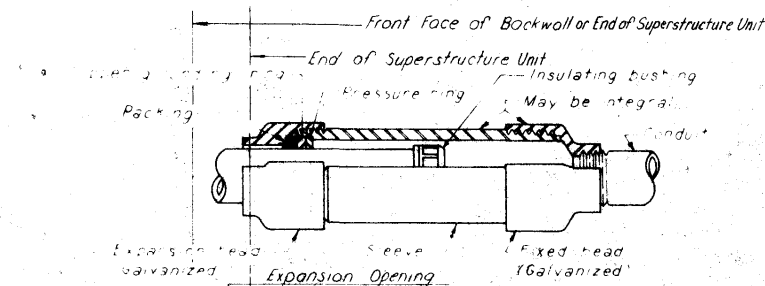
Hand-drawn cross-section diagram of a well casing and pump assembly. The diagram shows a 2-inch diameter conduit with an 8-foot length, a 1-inch diameter conduit, and a 1-inch diameter anchor bolt with 5 threads. The assembly is mounted on a 6-inch wide base. The diagram is labeled with dimensions and components.

Labels and dimensions in the diagram:

- 2" ϕ conduit
- 8' (length of 2" conduit)
- 1" ϕ conduit
- 1" ϕ Anchor Bolt 5 Thread (galvanized as shown)
- 6" (width of base)
- 8' (length of 1" conduit)
- 1" ϕ (diameter of anchor bolt)

- 2" ϕ rigid steel conduit to the junction boxes at Sta. 1+26.00 \pm Ramp E-1 and Sta. 3+02.00 \pm Ramp D-3. Infeed and cap end. (Sign lighting)

MADE DLR DATE 7-16-74 - CHECKED JSH DATE 7-17-74



shown on sheet 195 of 201.
Southbound Lane - 7 required
Northbound Lane and Ramp E-1 - 5 required
Ramps D-3 and D-4 - 1 each required

Note: The grounding buttons are to be blind drilled and tapped for $\frac{3}{8}$ " ϕ x 0.04 bolts.

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

Anchor bolt material shall comply with the requirements of ASTM A-325 or A-193 Grade 37. Anchor bolt nuts shall comply with ASTM A-325. Anchor bolts shall be galvanized as shown.

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. The open end of the conduit shall be capped, threaded, or closed with an approved approved bituminous compound. Temporary caps or plugs shall be installed to exclude dirt and moisture.

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

All entrance holes in junction boxes except for drain pipes shall be capped 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, a minimum of 1" from the edge of the box, and between the edge of the hole and the inside surface of the box wall. Typical details are shown on this sheet.

Location of the E of light pole may be shifted
to 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.

Note: Dimensions are out to out of bar.

BILL OF REINFORCEMENT		
Southbound Lane	(8 oncs)	5.0 lbs.
Northbound Lane and Ramp E-1	(5 oncs)	1,035 lbs.
Ramp D-3	(1 oncs)	115 lbs.
1st-1	(18 oncs)	2,070 lbs.

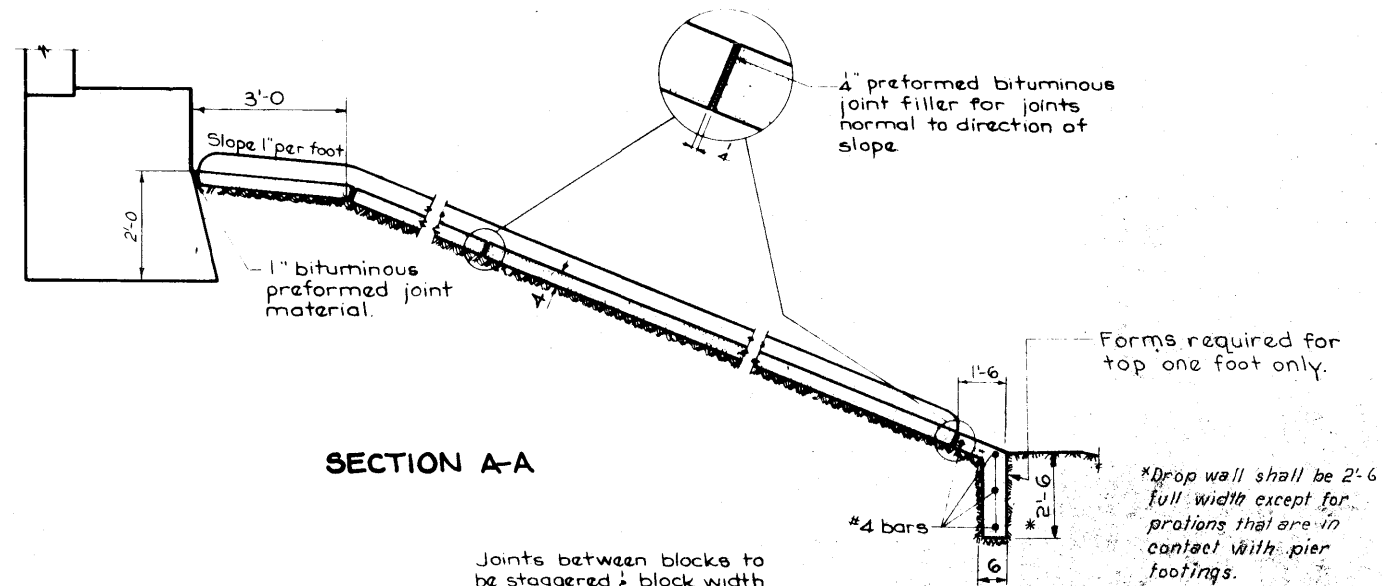
**CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW,
CONTINUOUS WELDED PLATE GIRDER BRIDGE
LIGHTING DETAILS**

STA. 322+81.95 @ FREEWAY=
STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. 1-380-6(68)263--01-57

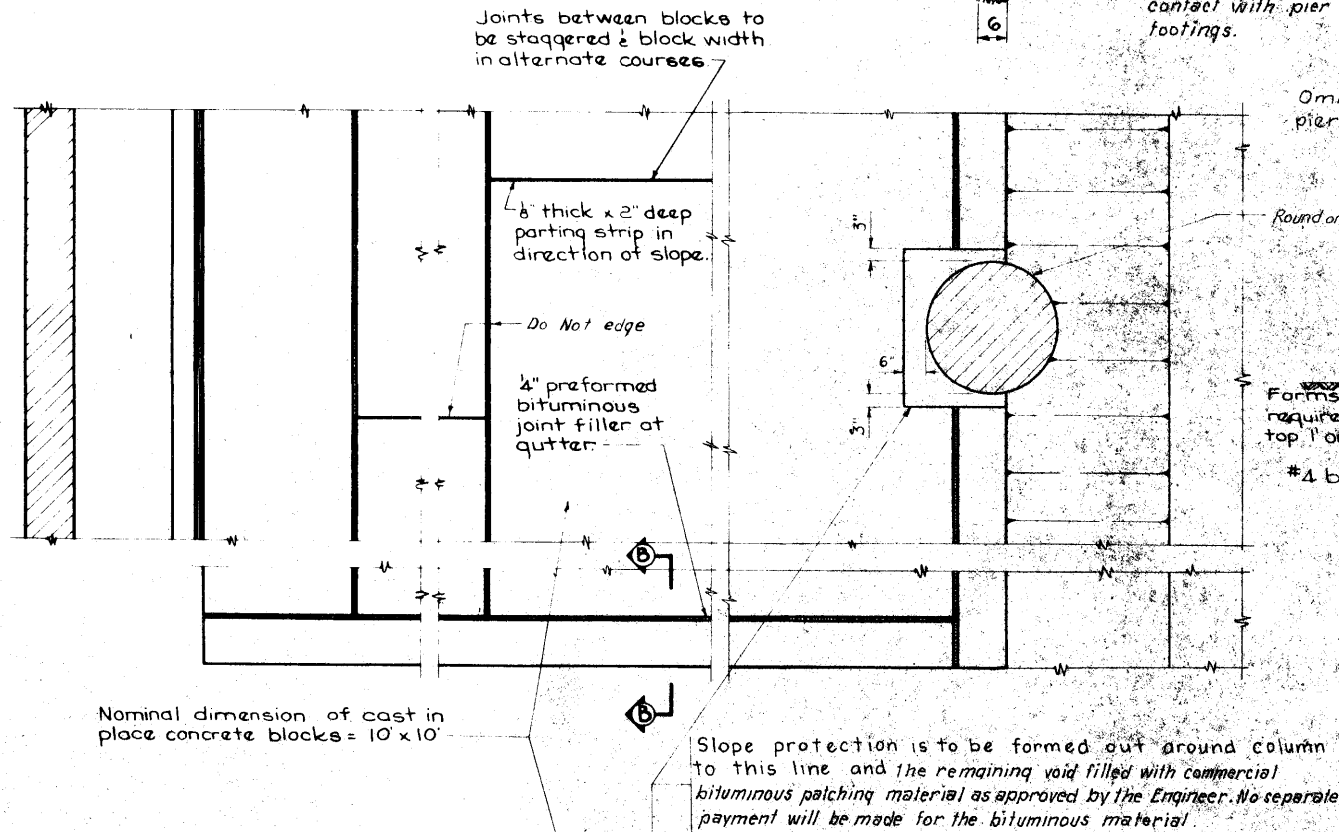
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

SHEET 196 OF 201

DESIGN NO. 127A TOWN COUNTY FILE 23191 SHEET 102 OF 203-0



SECTION A-A



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

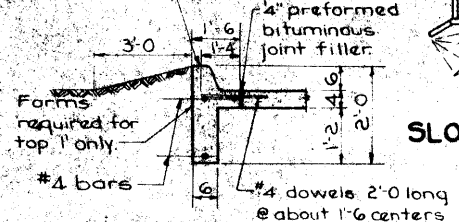
Scale: 1/2" = 1'-0"

*Drop wall shall be 2'-6" full width except for projections that are in contact with pier footings.

Omit drop wall along pier column as shown.

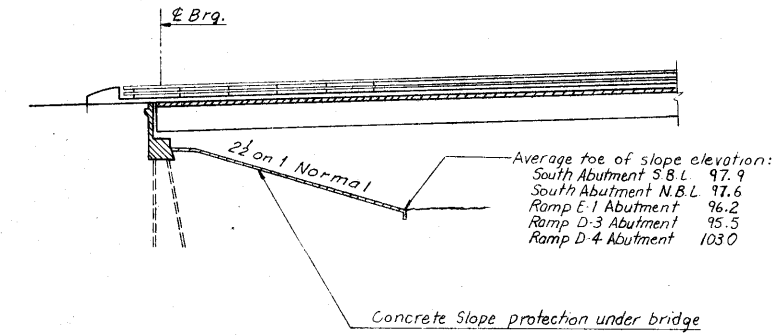
Round or obround pier column

See Curb Detail below.

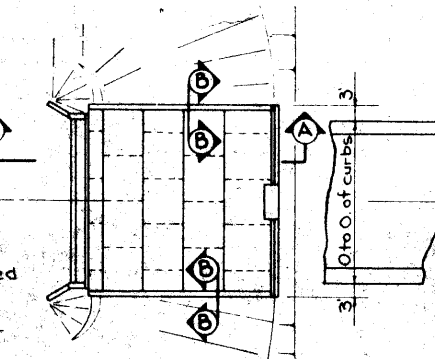


SECTION B-B

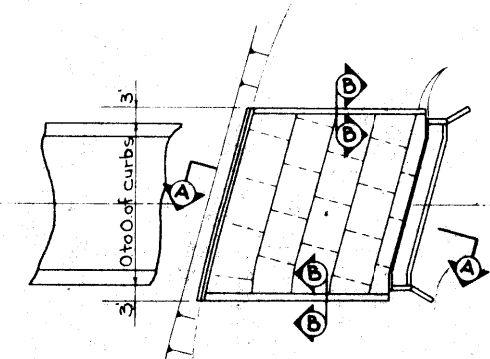
CURB DETAIL



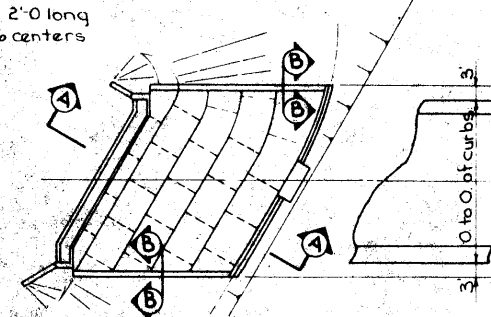
LONGITUDINAL SECTION ALONG C OF ROADWAY



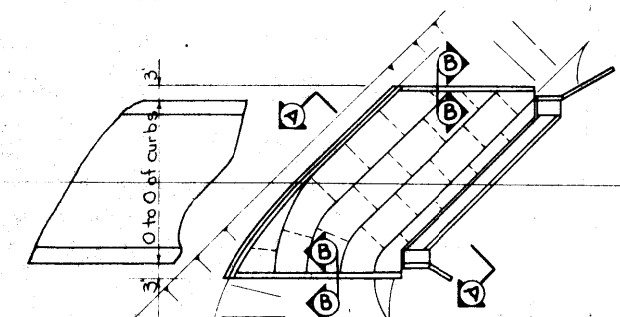
SLOPE PROTECTION LAYOUT 0° SKEW



SLOPE PROTECTION LAYOUT 15° SKEW



SLOPE PROTECTION LAYOUT 30° SKEW



SLOPE PROTECTION LAYOUT 45° SKEW

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 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 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.

Where erosion control work is completed the Contractor shall be responsible for any plant materials destroyed adjacent to slope protection area. The Contractor shall replant, reseed and re-mulch all areas disturbed adjacent to slope protection areas in accordance with section 2601 of Standard Specifications, Series of 1972, at his expense.

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

ESTIMATED QUANTITIES	
S. Abut. N.B.L.	223 S. Yd. 215.2
S. Abut. S.B.L.	224 S. Yd. 197.2
Ramp E-1 Abut.	225 S. Yd. 99.2
Ramp D-3 Abut.	146 S. Yd. 122.4
Ramp D-4 Abut.	147 S. Yd. 145.5
TOTAL	846 S. Yd. 779.5

CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE

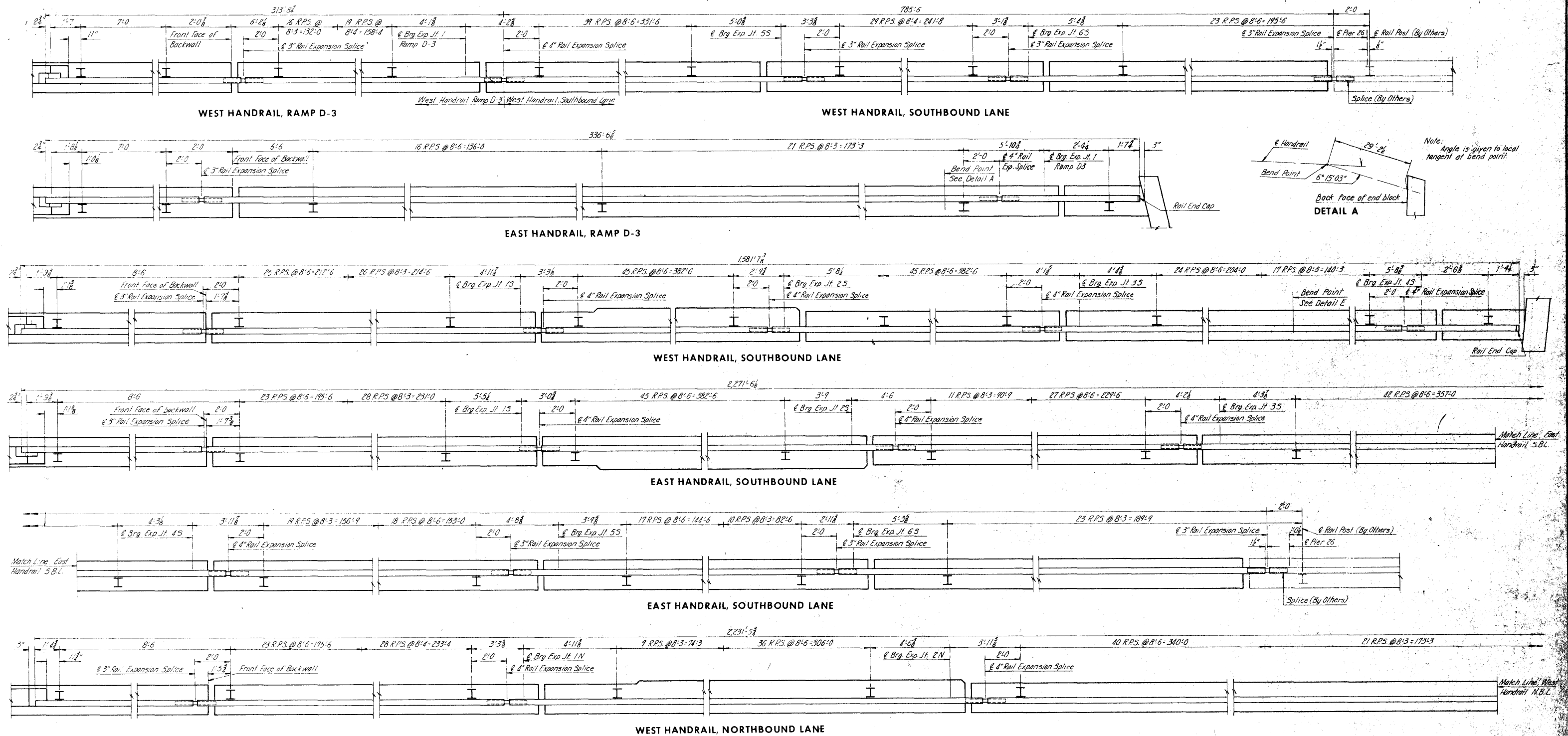
CONCRETE SLOPE PROTECTION

STA. 322+81.95 @ FREEWAY =
STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. 1-380-6(68)263-01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

MADE RLF DATE 7-15-74 CHECKED JSH DATE 7-15-74

FEDERAL DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	IOWA				



HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

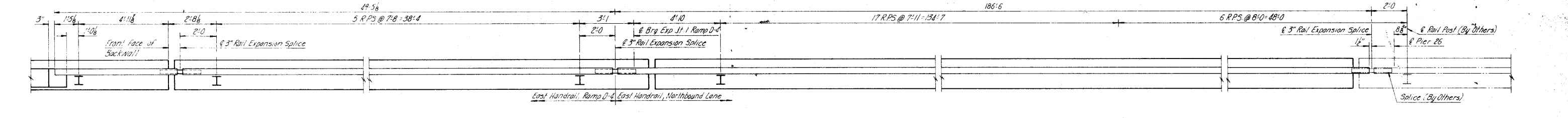
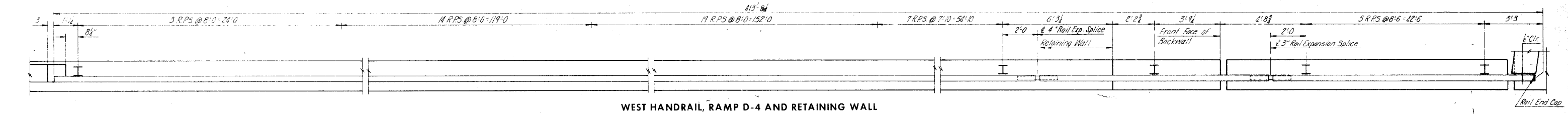
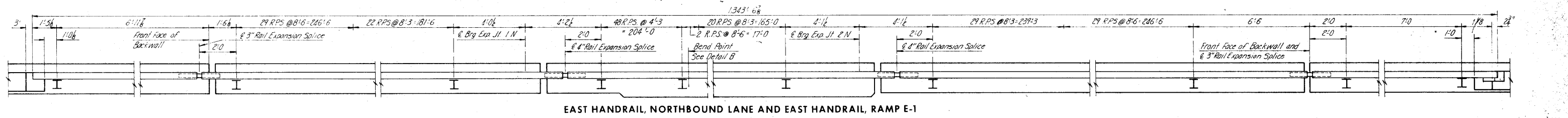
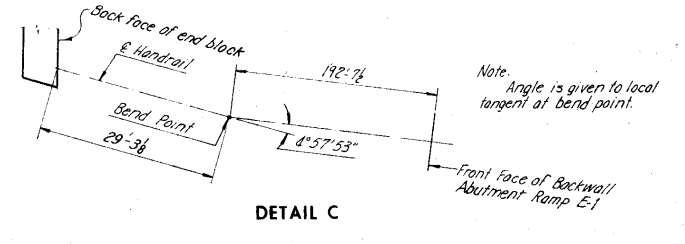
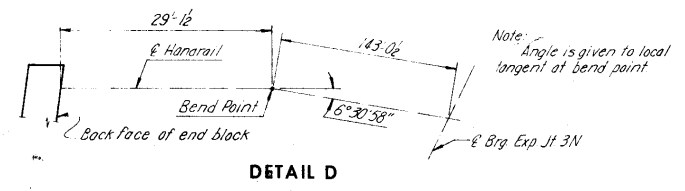
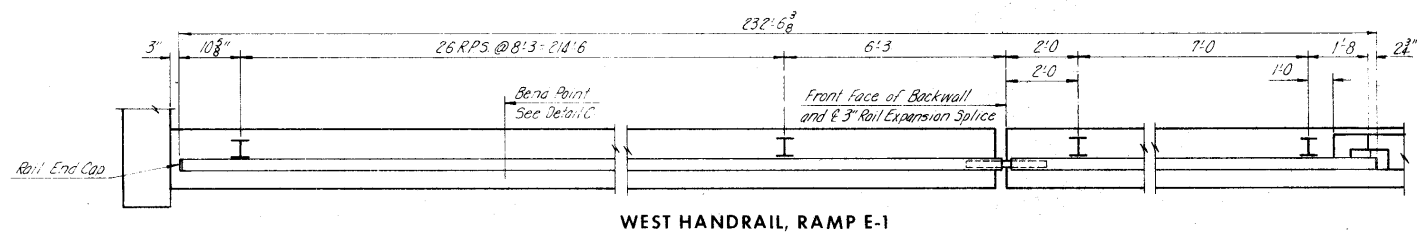
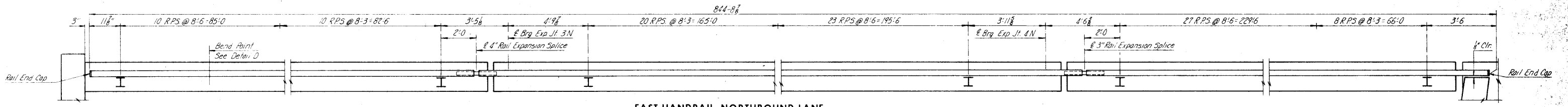
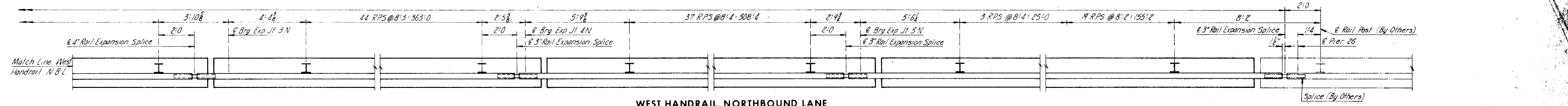
MADE BY DATE 4-3-74 CHECKED DCH DATE 7-17-74

CEAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE
HANDRAIL LAYOUT

STA. 322+81.95 @ FREEWAY =
STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. I-380-6(68)263-01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION

SHEET 198 OF 201

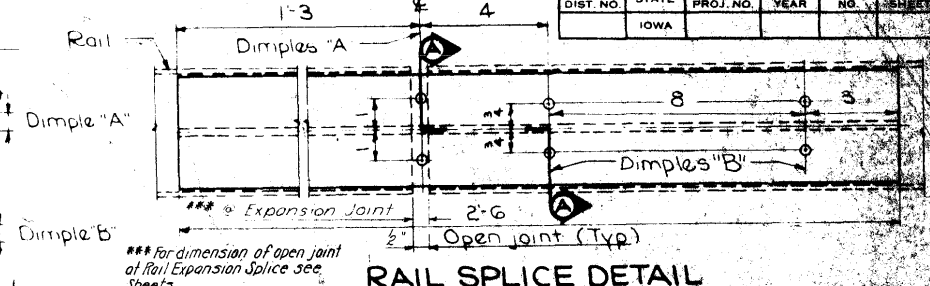
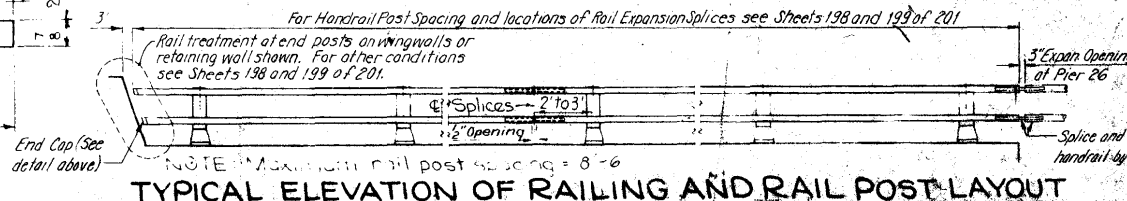
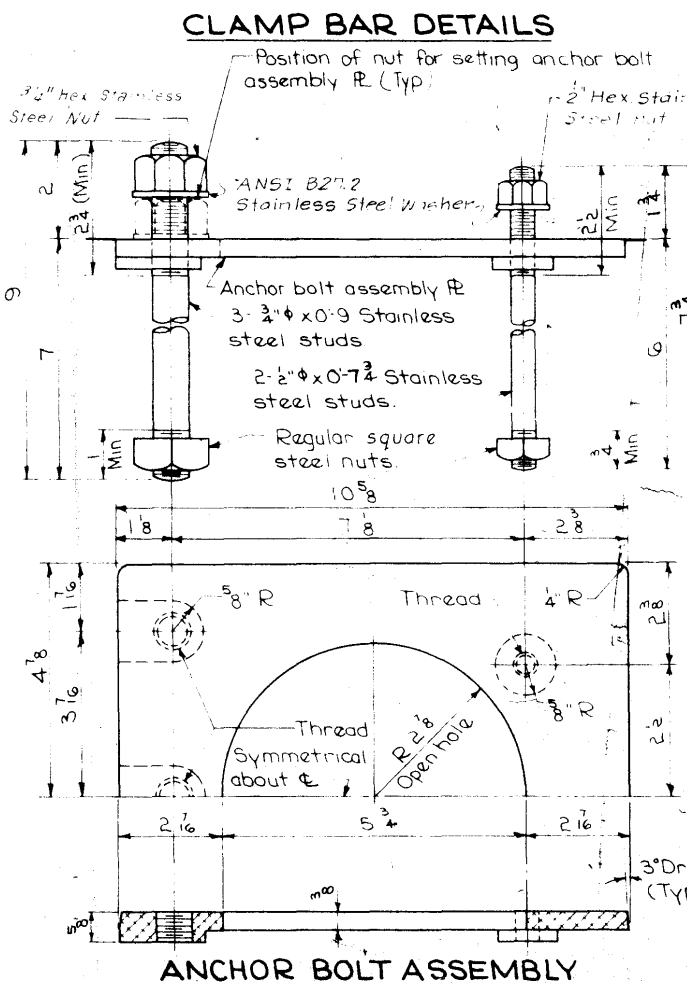
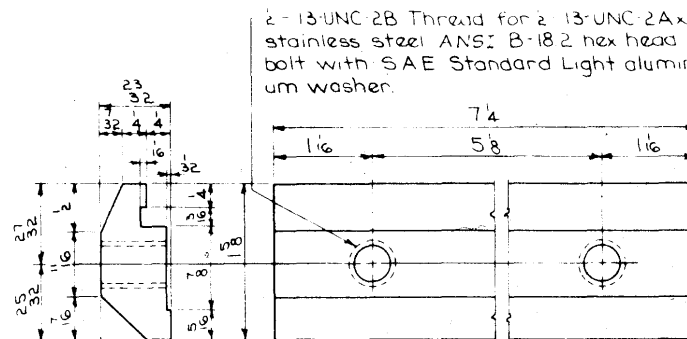
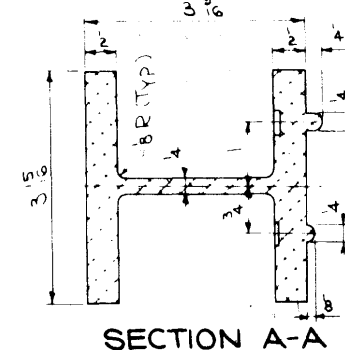
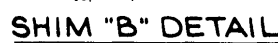
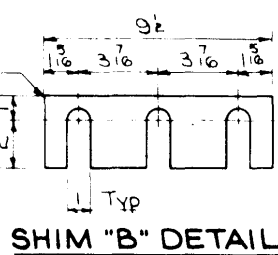
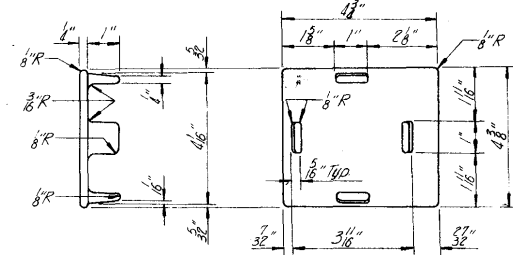
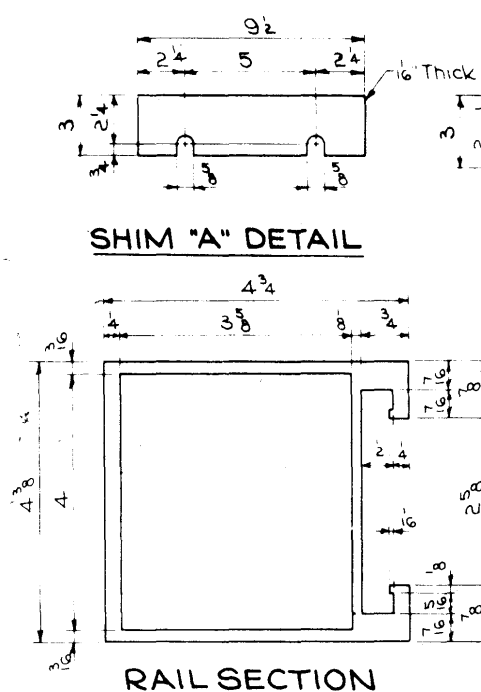
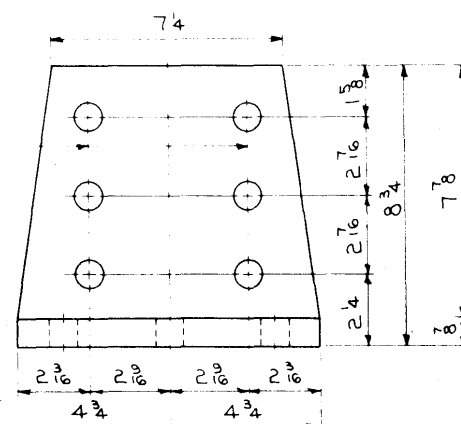
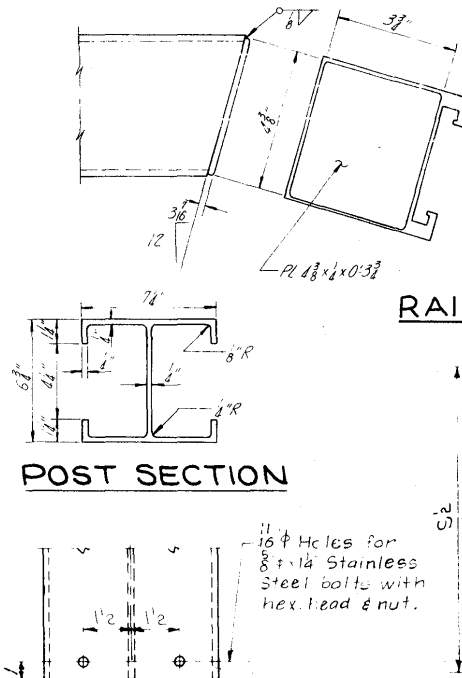
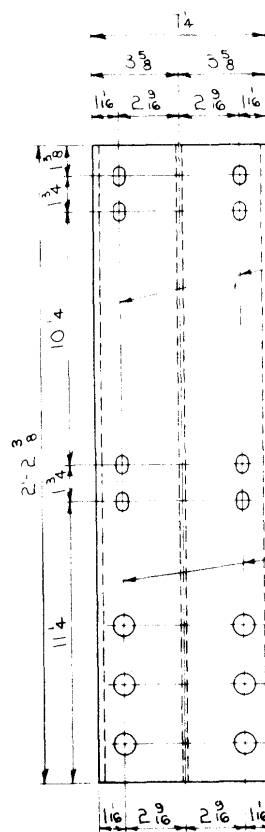
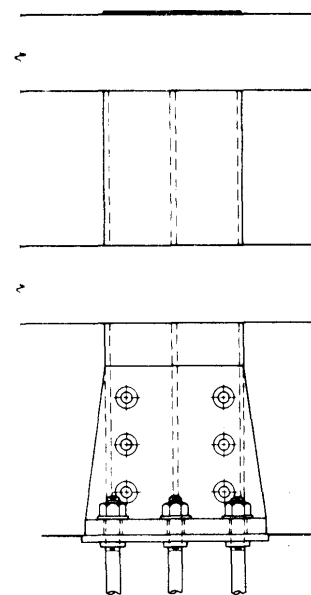
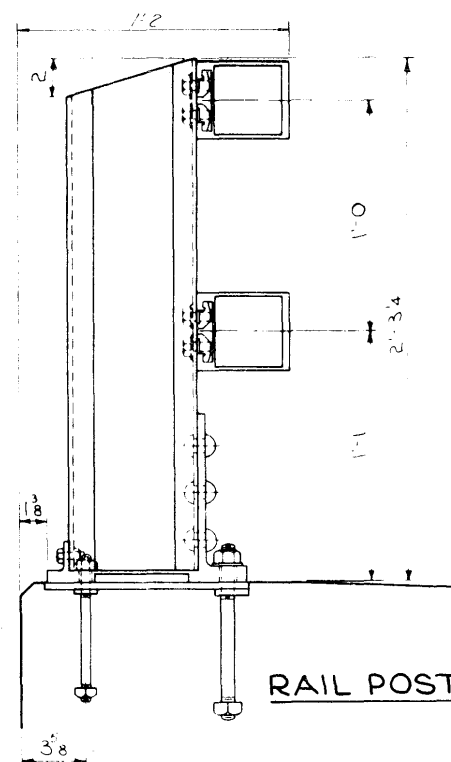
DESIGN NO. 1276 LINN COUNTY FILE 23191 SHEET 200 OF 203-0



HOWARD, NEEDLES, TAMMEN & BERGENDOFF
CONSULTING ENGINEERS
KANSAS CITY

MADE BY DATE 6-2-74 CHECKED DCH DATE 7-18-74

CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE
HANDRAIL LAYOUT
STA. 322+81.95 @ FREEWAY =
STA. 32+14.70 @ 1ST. AVE. W PROJECT NO. I-380-6(68)263--01-57
LINN COUNTY
IOWA STATE HIGHWAY COMMISSION
SHEET 199 OF 201



ALUMINUM HANDRAIL NOTES:

The aluminum handrail is to be bid on a lineal foot basis measured from end to end of rails. 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.

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

Material for rails, post, post base plate, rail splice bar and clamp bar shall be ASTM B-221 Alloy 6061-T6.

Material for aluminum washers and shims shall be ASTM B-209; Alloy Alclad 2024-T3 for washers and Alloy 1100-0 for shims.

Material for anchor studs shall be an ASTM A 276 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 shall conform to ANSI B-11 for UNC threads series, class 2A fit. Threads may be rolled or cut. Diameter of stud shall be not less than pitch diameter of threads. The material for the stainless steel nuts and washers shall be non-magnetic stainless steel. The stainless steel nuts shall be hexagonal, finished and shall comply with ANSI B-18.2. Threads shall comply with ANSI B-11 for UNC threads series, Class 2B fit.

Material for steel nuts shall be A.S.T.M. A-307 Grade A, and shall conform to ANSI B-18.2. Threads shall comply with ANSI B-11 for UNC threads series, class 2B fit.

The anchor bolt assembly plate shall be a flat and true aluminum alloy permanent mold casting complying with ASTM B-108 Alloy SG70 A or B. Condition F is acceptable. Suitable alternates will be considered for approval.

The entire surfaces of anchor bolt assembly plate and the shims are to be given one shop coat of zinc chromate shop coat paint or red lead shop coat paint.

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

Material for clamp bar bolt and rear post bolt shall be stainless steel A.S.T.M. A-153, Grade 28 (Carbide solution treated) or A.S.T.M. A-276 type 430 (Annealed hot or cold finished).

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

Rail end caps may be either aluminum alloy permanent mold casting or sand mold casting.

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.

Material for aluminum rivets shall be A.S.T.M. B-316 or B-221 Alloy 5061-T6. Rivets shall be button head, cone point and cold driven.

A $\frac{1}{2}$ " ϕ drain hole is to be provided, 3 inches in from the end, at the bottom side of the end sections of all rails.

Handrail dimensions are measured along a line 1'-0" from the outside face of the curb.

DESIGN SPECIFICATIONS:

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

ALUMINUM HANDRAIL QUANTITIES				
SB Lane	NB Lane and Ramp E ¹	Ramp D-3	Ramp D-4 and Retaining Wall	Unit
4638.6	4838.8	650.4	463.1	lin. ft.

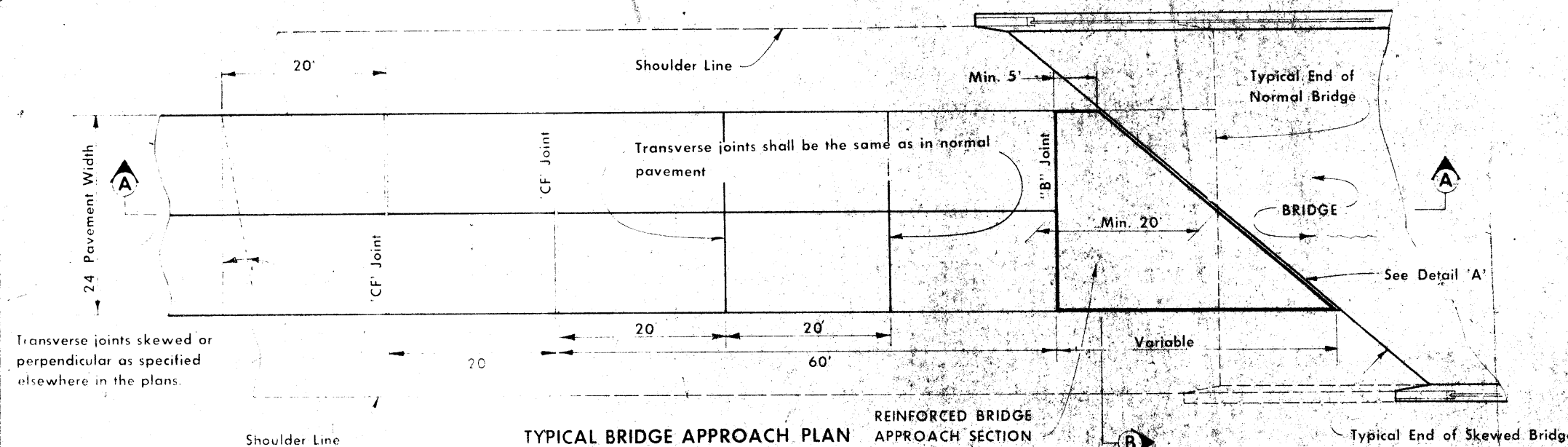
**CEDAR RIVER BRIDGE
SOUTH APPROACH
DESIGN FOR VARIABLE SKEW
CONTINUOUS WELDED PLATE GIRDER BRIDGE**

ALUMINUM HANDRAIL DETAILS

STA. 322+81.95 @ FREEWAY=
STA. 32+14.70 @ 1ST. AVE. W

PROJECT NO. I-380-6(68)263--01-5

LINN COUNTY
IOWA STATE HIGHWAY COMMISSION



GENERAL NOTES

Details indicated hereon are typical and shall be used for all situations where directly applicable.

The concrete used for construction of bridge approach section as indicated shall be the same as for remainder of pavement and shall be placed as required for pavement, unless otherwise directed by the Engineer.

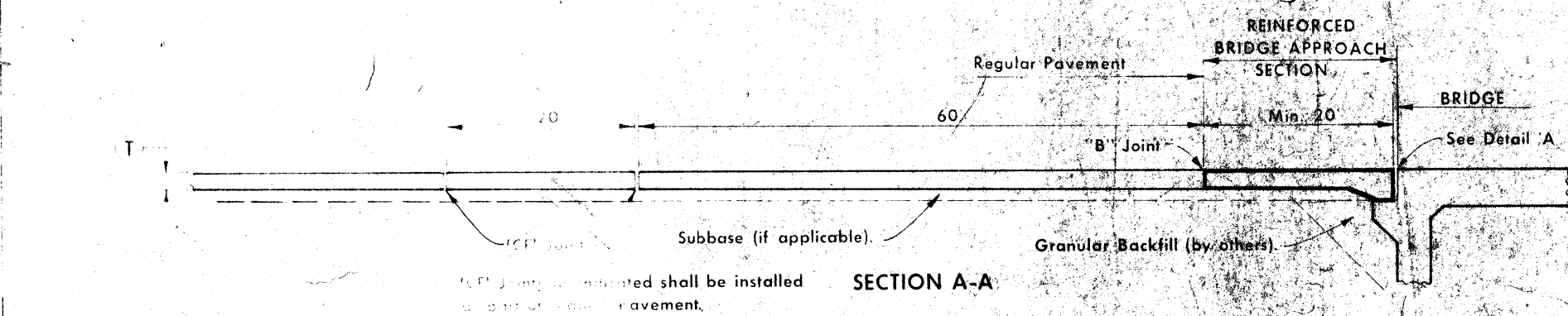
For individual locations requiring dimensions other than those indicated, construction procedure shall be similar, with appropriate modifications as directed by the Engineer. Quantities shall be as indicated on plans.

Price bid for "Reinforced Bridge Approach Section" shall be considered full compensation for construction as detailed hereon, and as shown on detail plans.

Transverse joints skewed or perpendicular as specified elsewhere in the plans.

TYPICAL BRIDGE APPROACH PLAN

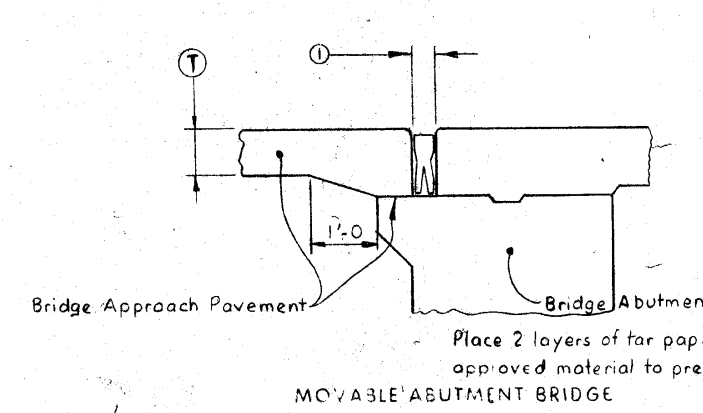
REINFORCED BRIDGE APPROACH SECTION



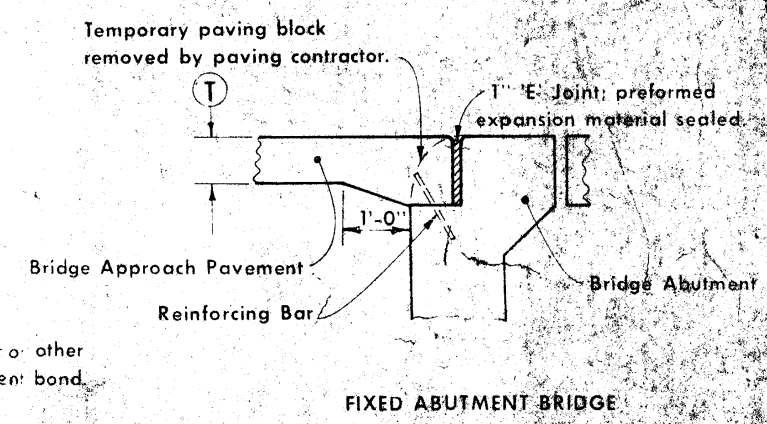
SECTION A-A

Quantity for 20' long approach section for 24' pavement is 53.33 sq. yds. of "Reinforced Bridge Approach Section"

① To be constructed same as CF-Joint.
Refer to standard plan RH-2 for additional details of pavement joints.



MOVABLE ABUTMENT BRIDGE

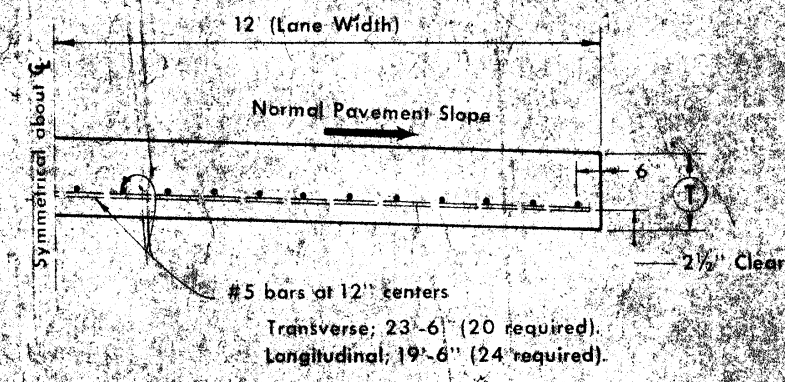


FIXED ABUTMENT BRIDGE

DETAIL 'A'

NOTE: Joint treatment at bridge end shall be as directed by the Engineer.

NOTE: "T" is same thickness as is required for remainder of project pavement.



TYPICAL HALF SECTION B

		Highway Division	
		STANDARD ROAD PLAN	RK-11
DESIGNED BY CHECKED BY APPROVED BY	MASS ROAD DESIGN ENGINEER <i>[Signature]</i>	ROAD DESIGN ENGINEER <i>[Signature]</i>	DEPUTY CHIEF ENGINEER <i>[Signature]</i>
	BRIDGE APPROACH DETAILS (TWO-LANE) STANDARD CONCRETE PAVEMENT		
	DATE: <i>[Blank]</i>		

I.380-6(63)263--01-57

	DESCRIPTION	UNIT	UNIT PRICE	TOTAL
	CONNECT WATER SERVICE	327.50	1.00	327.50
	PORTABLE WOODEN WALKWAY	160.00	4.50	720.00
	PAVEMENT REMOVAL, 41.3 SQ. YDS.	41.30	10.00	413.00
	PAVEMENT, STANDARD P.C. CONG., CLASS C, 9 IN., 41.3 SQ. YDS.	41.30	20.00	826.00
	PAYMENT FOR PILE LOADING TEST	1,500.00	1.00	1,500.00
	STRUCTURAL CONG. HEATING	1,487.10	3.00	4,461.30
	STRUCTURAL CONG. PROTECTION	60.70	7.00	424.90
	PAYMENT FOR PILE LOADING TESTS	2.00	1,500.00	3,000.00
	PILING WELDS MADE IN FOOTING.	80.00	50.00	4,000.00
	MASS PILING WELDS	352.00	20.00	7,040.00
	PROVIDE ALL EQUIPMENT AND LABOR NECESSARY TO ALTER PIER 12N AS PER PLAN REVISION.	400.00	1.00	400.00
	FURNISH AND ERECT SHORT GIRDER SECTIONS.	5,386.64	1.00	5,386.64
	PLACE ANCHOR BOLTS AT FIXED PIERS, 28 BOLT.	8.00	3.00	24.00
	PLACE ANCHOR BOLTS AT MOVABLE PIERS, 21 BOLT.	22.00	40.00	880.00
	MOUNTING BOLTS, 32	32.00	32.42	1,037.44
	CONNECT ENDS OF BRIDGE DECKS TO 8" CPM SEWER SYSTEM, 35 CONNECTIONS.	35.00	75.00	2,625.00
	PLACE MOUNTING BOLT SUPPORTS, 4 LOCATIONS.	4.00	33.336	133.34
	PROVIDE RETARDING ADMIXTURE IN 2548.2 C.Y. CONG.	2,548.20	1.50	3,822.30
	FURNISH ALL LABOR, EQUIPMENT, AND MATERIAL NECESSARY TO CONSTRUCT CURB.	425.00	1.00	425.00
	FURNISH ALL LABOR, EQUIPMENT, AND MATERIAL NECESSARY TO CHANGE DRAIN GROOVE	515.00	1.00	515.00