STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	5		1	

PROJECT NUMBER
FN-34-6(14)--21-59

R.O.W. PROJECT NUMBER
FN-34-6(15)--21-59

STATE OF IOWA
STATE HIGHWAY COMMISSION

PLANS OF PROPOSED IMPROVEMENT
ON THE
PRIMARY ROAD SYSTEM

LUCAS COUNTY
BRIDGE
ON U.S. 34 AND 65 OVER B.N. R.R. IN LUCAS

SCALES: AS NOTED

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

DESIGN STRESSES

Design stresses for the following materials are in accordance with AASHO'S Standard Specifications for Highway Bridges, Series of 1969, plus Interim Specifications.

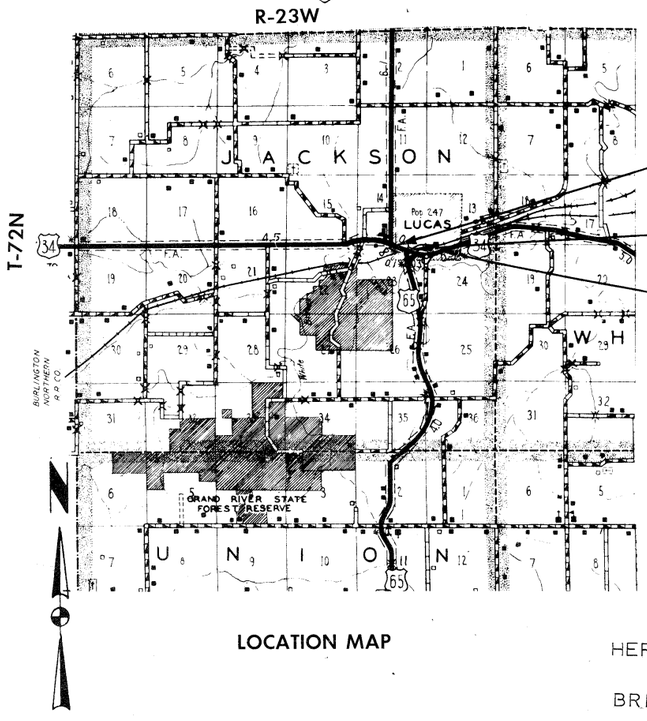
Concrete in accordance with Section 1.5.1, f'c = 3,500 psi.

Reinforcing Steel in accordance with Section 1.5.1(D), f s = 20,000 psi.

Structural Steel in accordance with
Section 1.7.1, ASTM A-36, f s = 20,000 psi.
ASTM A-572 Grade 50, fs=27,000psi

CONVENTIONAL SIGNS

State Line
Co. Line
Twp. Line
Sec. Line
Corp. Line
Urban Bdry.
R.O.W. Lines
Survey Line (Old / New; Sta / Ref Point)
Sec. Corner
Profile Grade
Railroad
Field Tile
Underground Lines (Old / New; G Gas / T Tel)
Culverts (Old / New)
Utility Poles (Power Tel.)
Fences (Barb / Mesh)
Trees Or Brush
Stream
Dike (Old / New)
County Road No.
Primary Road No.
U. S. Road No.
Interstate Road No.



LOCATION MAP

STA. 802+21.80
END PROJECT

DES. NO. 173

STA. 816+58.00
BEGIN PROJECT

Plan Preparation Supervised and Sheets As Built
Plan Preparation Supervised by: Ronald D. Clayton Date 1-15-76
Reviewed & Forwarded to ... Date ...
Plan of Bridge Sheet 1 of 25 Sheets is Hereby Approved & Returned to:
R.E. Percival District Engineer
After Microfilming Return Original to District No. 5

This Project Let as FFG-34-6(14)--17-59

HERBERGER CONST. CO. 1975

BRIDGE

INDEX OF SHEETS		105-3
NO.	DESCRIPTON	
1	TITLE SHEET	
A	REVISION SHEET	
2	ESTIMATE SHEET	
3-25	BRIDGE DESIGN NO.173	
14A	PILE LOG	

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

STANDARD	ISSUED	REVISED

REVISED - OCT 4, 1973

REVISED
SEE FOLLOWING SHEET 1A

APPROVED
9/11/73
DEPUTY CHIEF ENGINEER
IOWA HIGHWAY COMMISSION DATE

LUCAS COUNTY
LETTING DATE OCT. 16, 1973 March 5, 1974
BRIDGE
FN-34-6(14)--21-59

5932.35034
59-0200
STATE CONTROL SECTION NUMBER

LOCATION MAP SCALE
0 1 2 3
miles

NO MILEAGE SUMMARY

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED UNDER MY SUPERVISION AND THAT ENGINEERING DECISIONS WITH REGARD TO THE DESIGN WERE MADE BY ME OR BY OTHER DULY REGISTERED PROFESSIONAL ENGINEERS UNDER THE LAWS OF THE STATE OF IOWA.
[signature]
7492 9-11-73
IOWA REGISTRATION NUMBER DATE

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

LISTING OF PROJECT REVISIONS

DATE	SHEET NUMBER	DESCRIPTION OF REVISIONS	DATE	SHEET NUMBER	DESCRIPTION OF REVISIONS
Dec. 7,'73		Design No. 173			
	Sheet 1A of 25	This sheet added to project (Revision Sheet).			
	Sheet 1 of 25	Note added as follows, "This Project Let as RFG-34-6(14)--17-59."			
		REASON: Project Number changed due to a change in funding.			

MASTER PLANS

REVISION SHEET

FILE NO. 24587 LUCAS COUNTY

PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
FN-34-6(14)--21-59	IOWA	5		1-A	25

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT PERSONAL SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF IOWA.

Sept. 11 1973 — William A. Lundquist — REG. NO. 4449

DATE — WM. A. LUNDQUIST

IN LETTING OF October 16, 1973

DESIGN NO. 173 — IOWA NO. 34 — STA. 807+91.955

LUCAS COUNTY — OVER B. N. R. R. R. R. X'ING NO. 884

SECTION 23 — T-72N R-23W — JACKSON TWP.

DESIGN FOR 35°05'30" SKEW
210'-0 x 48' CONTINUOUS I-BEAM
BRIDGE

ESTIMATE OF QUANTITIES

NO.	ITEM	UNIT	TOTAL
1	Structural Concrete	Cu. Yds.	~~644.30~~ ~~647.5~~
2	Structural Steel A-36	Lbs.	58 900
3	Structural Steel A-572	Lbs.	200 020
4	Reinforcing Steel	Lbs.	~~149 745~~ 149 713
5	Aluminum Handrail 452.12 ~~451.95~~ or Steel Handrail	Lin. Ft.	~~451.95~~
6	Granular Backfill	Cu. Yds.	188
7	4" ø Tile Subdrain	Lin. Ft.	230
8	Class 20 Excavation	Cu. Yds.	445
9	Creosoted Piling	Lin. Ft.	~~4 035~~ 4055
10	Bridge Seat Sealer	Sq. Ft.	508
11	Removal of Existing Structure	L. S.	Lump Sum
12	1 5/8" Preformed Elastic Neoprene	Lin. Ft.	67.4
7001	Applies To Item 1	Cu. Yds.	- 3.20
7002	Applies To Item 4	Lbs.	- 32
8001	Pile Loading Test	#	173.54
8999	Stockpiled Mat'l.	#	0

ESTIMATE REFERENCE INFORMATION 100-4

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

ITEM NO.	DESCRIPTION
1	Includes 321.9 Cu. Yds. of Structural Concrete Class "D" in Superstructure and 325.6 Cu. Yds. of Structural Concrete Class "C" in Substructure.
2.	Quantity includes 93 Lbs. of Lubricated Bronze R.

Butler
C. Perry

IOWA STATE HIGHWAY COMMISSION
Materials Department
AMES LABORATORY

Pile Bearing Tests
C. Calvert
RFG-34-6(14)--17-59
Lucas
R. McIntire (4)
Soil Design
Spec. Investigations (2)

Material Pile Bearing Test — Lab. No. AXP5-4

Contractor Herberger Const. Co. — Project No. RFG-34-6(14)--17-59 — Design No. 173

County Lucas — Township Jackson — Section 23

Pile Location Pier #2 west pad second pile from west and second from north

Tested by Kellogg - Legvold - Less — Date 5-22-75 — Date Reported 5-29-75

Kind of Piling	30' wood
Date Driven	5/20/75
Design Load	21 to 40 ton
Bearing by Formula	6.0
Type of Hammer Used	Delmag D-12
Depth of Hole Bored to Start Pile	0
Length of Test Pile in Contact with Soil	27.7'
Elevation at Bottom Tip of Test Pile	720.0
Highest Gage Reading under 46 Ton Load	.833
Gage Reading after Load Released for 15 Min.	.632

Load - Tons	Highest Gage Reading - In.	Load - Tons	Highest Gage Reading - In.
0	.000	26	.132
2	.004	28	.149
4	.009	30	.167
6	.015	32	.190
8	.024	34	.214
10	.034	36	.240
12	.043	38	.295
14	.053	40	.327
16	.064	42	.386
18	.075	44	.496
20	.087	46	.833
22	.101	0	.632
24	.116		

2 Ton to 6 Ton Loads Held 20 Min.
8 Ton to 36 Ton Loads Held 30 Min.
38 Ton to 46 Ton Loads Held 1 Hr.

Disposition: Information supplied to Construction Department.

C. C. Vf 77

Testing Engineer

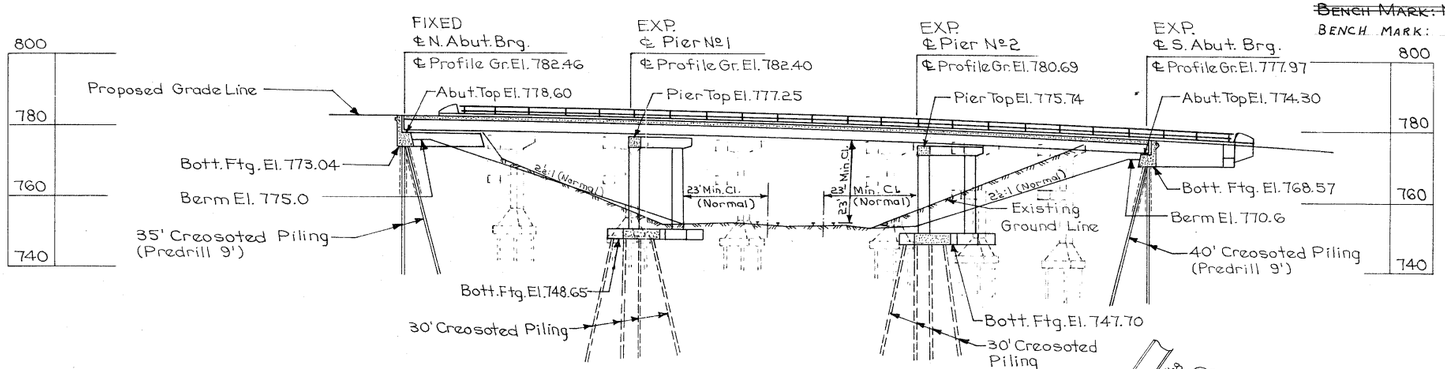
ESTIMATE SHEET

FILE NO. 24587 — LUCAS COUNTY

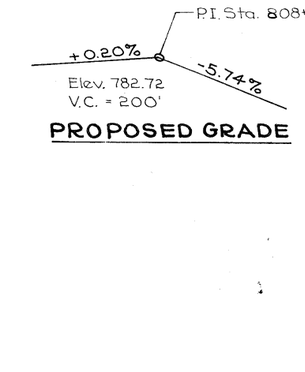
PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
FN-34-6(14)--21-59	IOWA	5		2	

~~BENCH MARK: No 4 "X" at base of ldrl. on N.E. Cor. of R.R. Overpass 15' Lt. of Sta. 807+15 Elev. 780.73~~

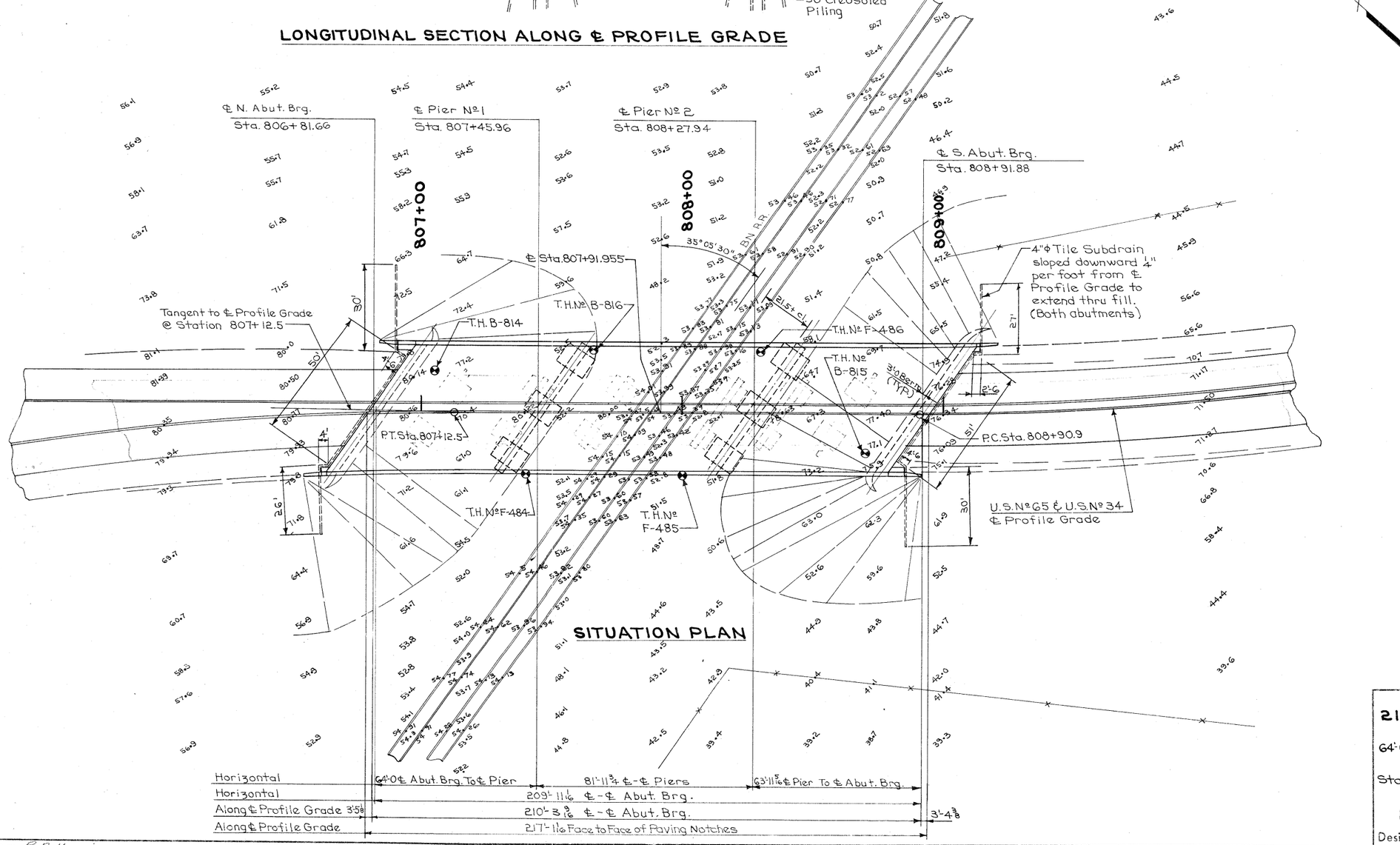
BENCH MARK: No 5 I.H.C. BM. IN NE. WING POST of CONC. Bridge 22' Lt of Sta. 806+90 Elev. 786.00



LONGITUDINAL SECTION ALONG ℄ PROFILE GRADE



PROPOSED GRADE



SITUATION PLAN

LOCATION:

Iowa No 34
Over BN RR
Jackson Twp.
Section 23
T-72 N R-23 W
Lucas County

TRAFFIC COUNT:

3000 V P D (1973)
2000 V P D (1993)

Design For 35°05'30" Skew

210'-0 x 48' CONTINUOUS I-BEAM BRIDGE

64'-0 End Spans 82'-0 Interior Span

SITUATION PLAN

Station: 807+91.955 R.R. Xing No 884 Aug. 1973

LUCAS COUNTY

IOWA STATE HIGHWAY COMMISSION

Design Sheet No.: 1 Of 23 File No.: 24587 Design No.: 173

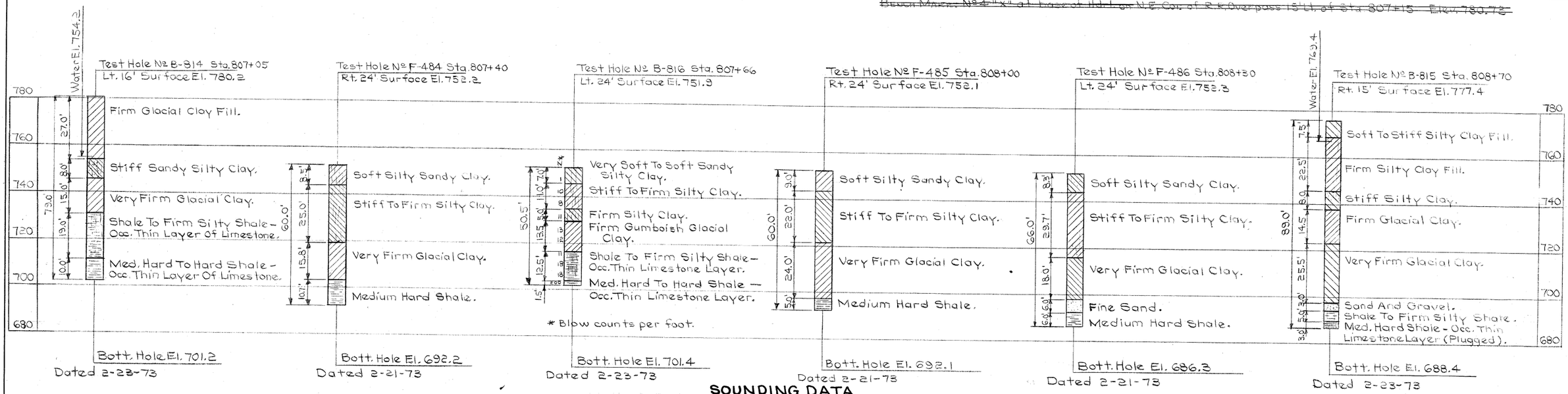
DESIGNED BY: R.P. Venning
DETAILED BY: Otis Twedt, Jr.
TRACED BY:
CHECKED BY: M. Trai

SECTION LEADER William A. Rungaard

LUCAS COUNTY

PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
FN-34-6(14)--21-59	IOWA			2	25

~~Bench Mark: No 4 "X" at base of Hdl. at N.E. Cor. of E.B. Overpass 15' Lt. of Sta. 807+15 Elev. 780.72~~



SOUNDING DATA

GENERAL NOTES:

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

The bridge contractor is to remove the existing multiple span bridge, and replace it with a 210' x 48' continuous I-beam bridge. The existing bridge is Lucas Co. Design No. 1128. Copies of the original design plans will be available to the contractor at the I. S. H. C. office in Ames.

The bid item "Removal of Existing Structure" shall include all costs associated with removing the existing bridge which is composed of 1-42' I-beam span, 2-32' and 2-24' concrete deck girder spans. The substructure consists of six frame piers. The existing bridge is to become the property of the bridge contractor (structural steel = 33,050 lb.). All portions of substructure that interfere with new construction are to be removed completely. The remaining portions of the substructure are to be removed to one foot below finished ground. Removal shall be in accordance with Section 2401 of the Specifications.

The road will be closed during construction.

Red lines on tracings and faint lines on prints indicate the existing structure.

Bridge seat sealer is to be applied to the exposed bridge seat surface at the abutments. The bridge seat surface is to include all surfaces of the bridge seat steps, the wash between steps, and the edge fillets. The sealer is to extend six inches up the front face of the backwall. The bridge seat protective coating shall be Steelcote PE-50 penetrating sealer, or an approved equal, and shall be applied in accordance with the manufacturer's recommendations at a rate of 100 square feet per gallon when the temperature of the bridge seat surface is above 60° F.

The contract unit price per lineal foot of 1 5/8" Preformed Elastic Neoprene Joint shall be full compensation for furnishing and installing the neoprene joint as shown on these plans. Article 2412.12 shall not apply to this bid item.

Pier excavation is based on the assumption that excavation by others has been completed.

The bridge contractor is to install tile subdrain behind each abutment as detailed. The price bid for "4" ø Tile Subdrain" is to include the excavation necessary for the installation.

Abutment piles are to be driven in oversize holes drilled to elev. 764.0 at the north abutment and to elev. 759.6 at the south abutment. The minimum diameter of the drilled holes is to be 4" greater than the diameter of the pile 3 feet from the butt. Voids around the piles are to be filled with dry sand. No separate payment will be made for drilling holes or filling voids since it is considered incidental to driving piles.

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

SPECIFICATIONS:

Design: AASHO, Series of 1969.

Construction: Standard Specifications of the Iowa State Highway Commission, Series of 1972, plus current Special Provisions and Supplemental Specifications. All welding shall meet the requirements of the Eighth Edition of the "Specifications for Welded Highway and Railway Bridges" (AWS D2.0-69) of the American Welded Society, except as modified by the Standard Specifications and the current Supplemental Specifications.

DESIGN STRESSES:

Design stresses for the following materials are in accordance with AASHO Standard Specifications for Highway Bridges, Series of 1969.

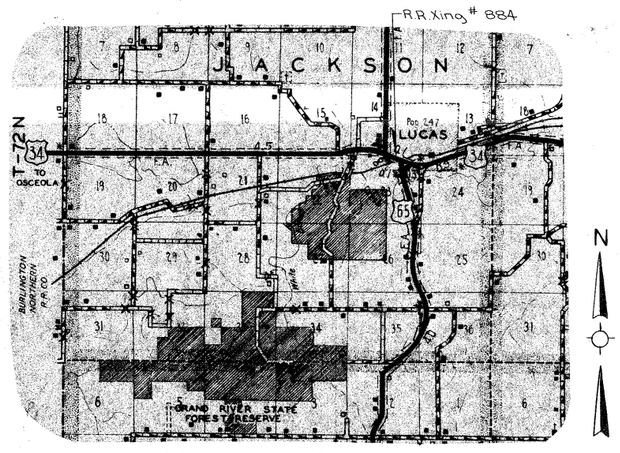
Concrete in accordance with Section 1.5.1 f'c = 3500 psi.

Reinforcing Steel in accordance with Section 1.5.1 fs = 20,000 psi.

Structural Steel in accordance with Section 1.7.1

ASTM A-36, fs = 20,000 psi.

ASTM A-572 Grade 50, fs = 27,000 psi.



LOCATION PLAT

TOTAL ESTIMATED QUANTITIES

Item No	Item	Unit	2 Piers	2 Abuts.	Superstr.	Quantity
1	Structural Concrete	c.y.	169.7	155.9	321.9	~~647.5~~ 644.30
2	Structural Steel A-36	lb.	———	———	58900	58900
3	Structural Steel A-572	lb.	———	———	200020	200020
4	Reinforcing Steel	lb.	24794	16788	108163	~~149745~~ 149713
5A	Aluminum Handrail OR	L.F.	———	———	———	~~451.95~~ 452.12
	Steel Handrail	L.F.	———	———	———	OR ~~451.95~~
6	Granular Backfill	c.y.	———	188	———	188
7	4"ø Tile Subdrain	L.F.	———	———	———	230
8	Class 20 Excavation	c.y.	245	200	———	445
9	Creosoted Piling	L.F.	72@30'	25@35' 25@40'	———	~~4055~~ 4055
10	Bridge Seat Sealer	S.F.	———	508	———	508
11	Removal Of Existing Structure	L.S.	———	———	———	Lump Sum
12	1 5/8" Preformed Elastic Neoprene Joint	L.F.	———	———	67.4	67.4
7001	Applies To Item 1	C.Y.			-3.20	-3.20
7002	Applies To Item 4	lb			-32	-32
8001	Pile Loading Test	$			173.54	173.54
8999	Stockpiled Mat'l.	$			0	0

Item No.

Estimate Reference Information

1 Includes 321.9 c.y. of Structural Concrete Class D in Superstructure and 325.6 c.y. of Structural Concrete Class C in Substructure.

2 Quantity includes 93 lbs. of lubricated Bronze R.

Design For 35°05'30"Skew

210'-0 x 48' CONTINUOUS I-BEAM BRIDGE

64'-0 End Spans 82'-0 Interior Span

QUANTITIES & GENERAL NOTES

Station: 807+91.955 R.R. Xing No 884 Aug. 1973

LUCAS COUNTY

IOWA STATE HIGHWAY COMMISSION

Design Sheet No 2 Of 23 File No 24587 Design No 173

DESIGNED BY: R.A. Nenning TRACED BY:

DETAILED BY: Otis Tweat, Jr. CHECKED BY: H. Trai

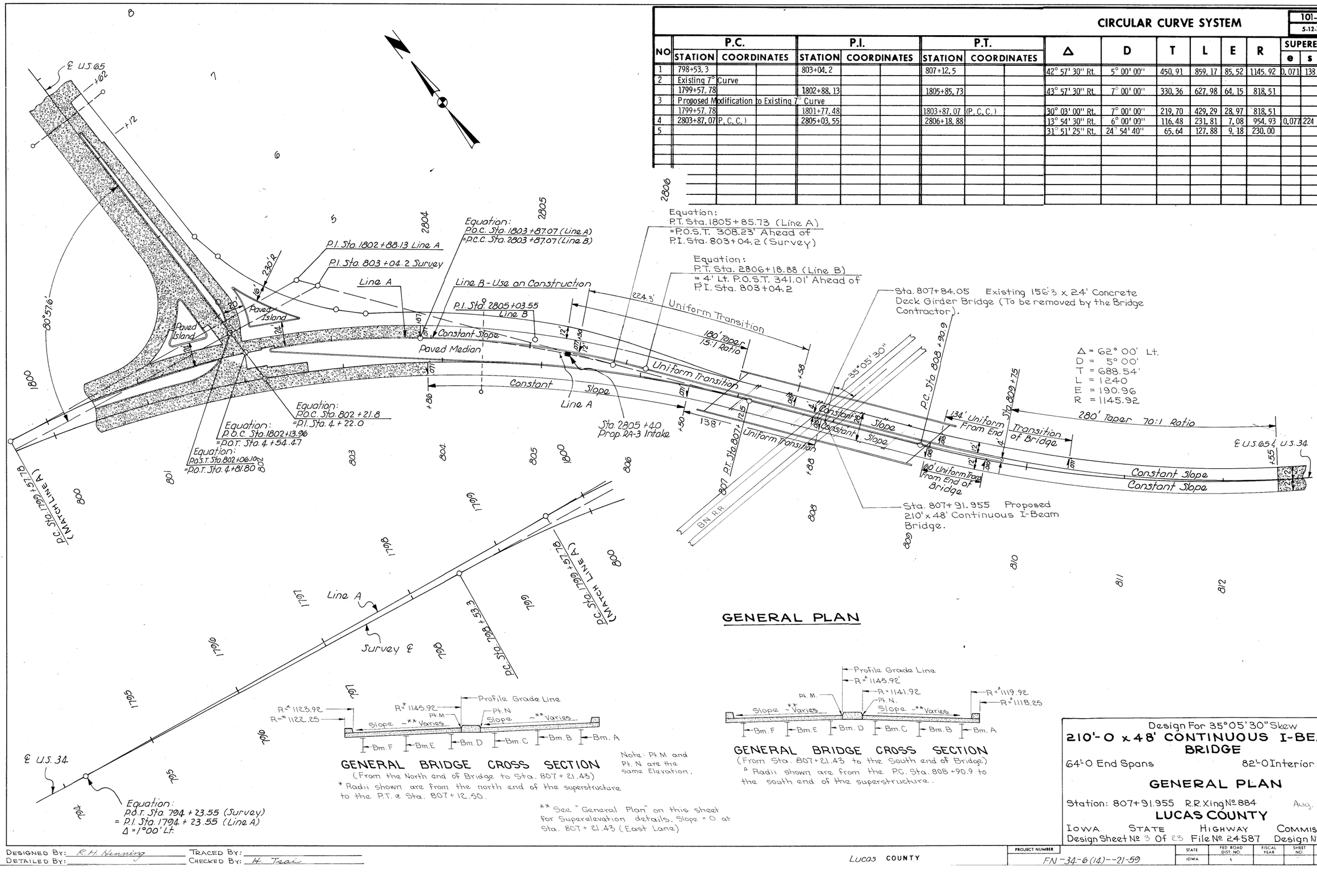
LUCAS COUNTY

PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
FN-74-6(4)--21-72					

CIRCULAR CURVE SYSTEM

101-10
5-12-72

NO	P.C. STATION	P.C. COORDINATES	P.I. STATION	P.I. COORDINATES	P.T. STATION	P.T. COORDINATES	Δ	D	T	L	E	R	SUPERELEV. e	s	m
1	798+53.3		803+04.2		807+12.5		42° 57' 30" Rt.	5° 00' 00"	450.91	859.17	85.52	1145.92	0.071	138	62
2	Existing 7° Curve														
	1799+57.78		1802+88.13		1805+85.73		43° 57' 30" Rt.	7° 00' 00"	330.36	627.98	64.15	818.51			
3	Proposed Modification to Existing 7° Curve														
	1799+57.78		1801+77.48		1803+87.07	(P.C.C.)	30° 03' 00" Rt.	7° 00' 00"	219.70	429.29	28.97	818.51			
4	2803+87.07	(P.C.C.)	2805+03.55		2806+18.88		13° 54' 30" Rt.	6° 00' 00"	116.48	231.81	7.08	954.93	0.077	224	69
5							31° 51' 25" Rt.	24° 54' 40"	65.64	127.88	9.18	230.00			



GENERAL PLAN

GENERAL BRIDGE CROSS SECTION
(From Sta. 807+21.43 to the South end of Bridge.)

* Radii shown are from the P.C. Sta. 808+90.9 to the south end of the superstructure.

GENERAL BRIDGE CROSS SECTION
(From the North end of Bridge to Sta. 807+21.43)

* Radii shown are from the north end of the superstructure to the P.T. @ Sta. 807+12.50.

Note: Pt. M and Pt. N are the same Elevation.

** See "General Plan" on this sheet for Superelevation details. Slope = 0 at Sta. 807+21.43 (East Lane)

Design For 35°05'30" Skew

210'-0 x 48' CONTINUOUS I-BEAM BRIDGE

64'-0 End Spans 82'-0 Interior Span

GENERAL PLAN

Station: 807+91.955 R.R. Xing № 884 Aug. 1973

LUCAS COUNTY

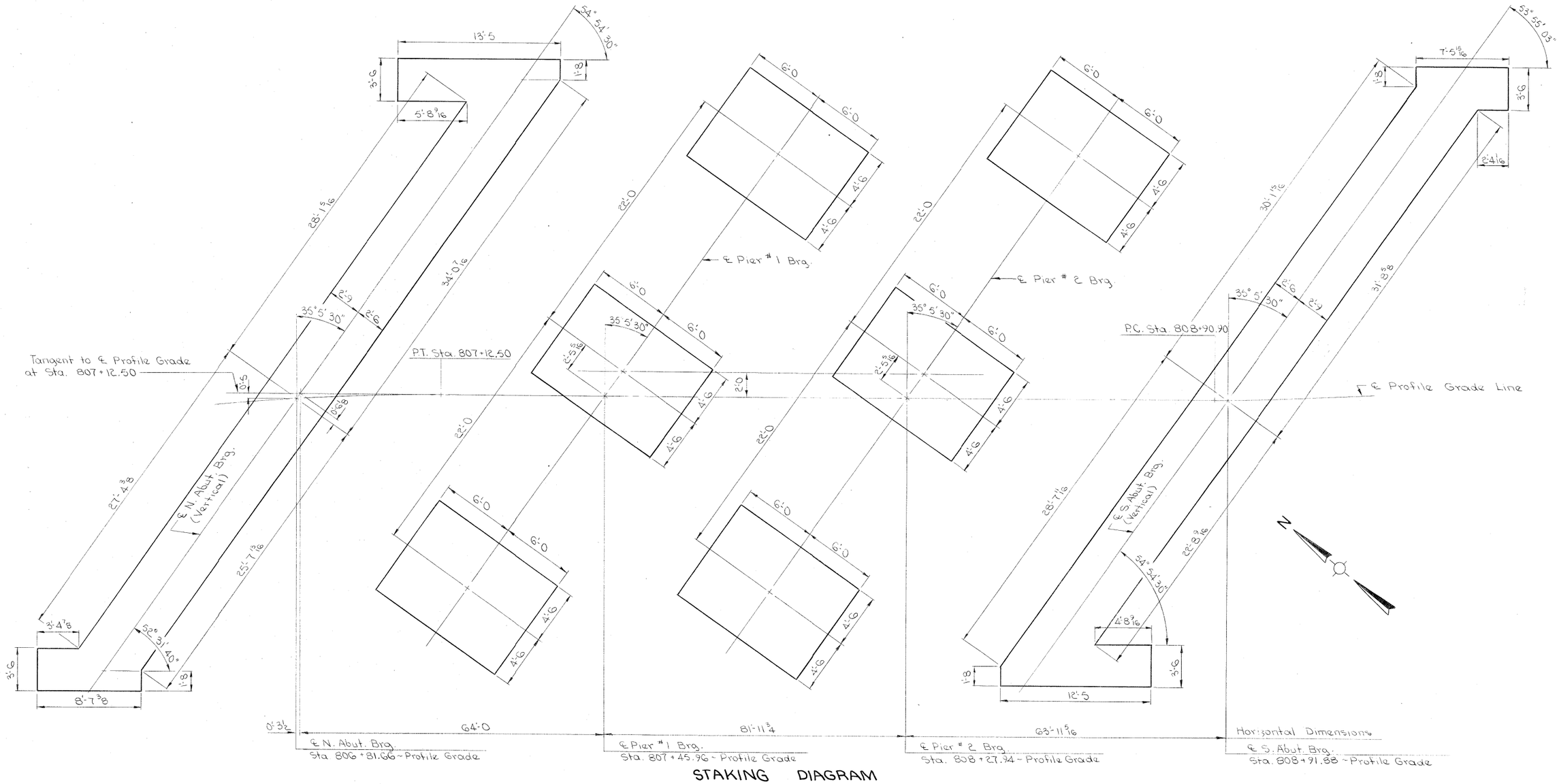
IOWA STATE HIGHWAY COMMISSION

Design Sheet № 3 Of 23 File № 24587 Design № 173

DESIGNED BY: R.H. Henning TRACED BY:
DETAILED BY: CHECKED BY: H. Tsai

LUCAS COUNTY

PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
FN-34-6(14)--21-59	IOWA	5			



STAKING DIAGRAM

Design for 35° 5' 30" Skew

210'-0 × 48'-0 CONTINUOUS I-BEAM BRIDGE

64'-0 End Spans 82'-0 Center Span

STAKING DIAGRAM

Sta. 807+71.76 R.R. X-ing # 884 Aug. 1973

LUCAS COUNTY

IOWA STATE HIGHWAY COMMISSION

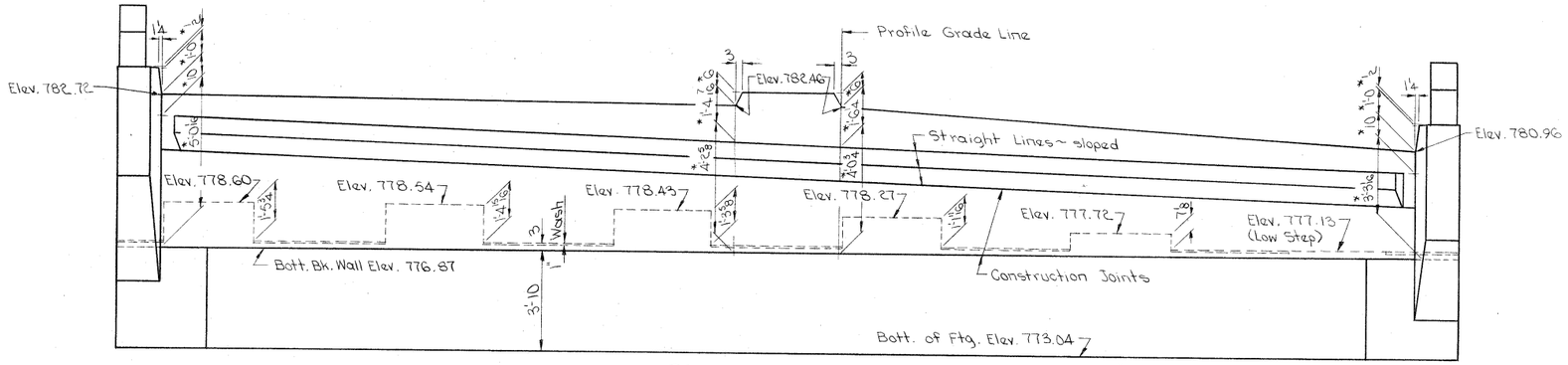
Design Sheet No.: 4 Of 23 File No.: 24587 Design No.: 173

DESIGNED BY: E.B. Henning
DETAILED BY: Wm. Wirig
TRACED BY:
CHECKED BY: H. Tsai

LUCAS COUNTY

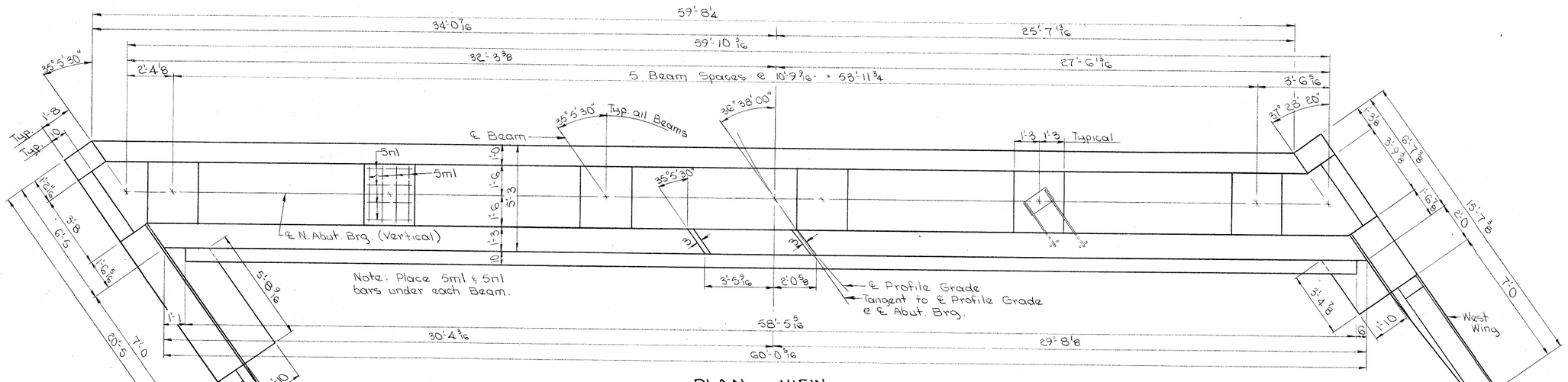
PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
FN-3-(11)--21-91	IOWA	5			

~~Bench Mark: Nail 4" "X" At base of hdrl on N.E. Cor of R.R. Overpass, 16' ℄ Sta. 807+15 El. 780.73~~

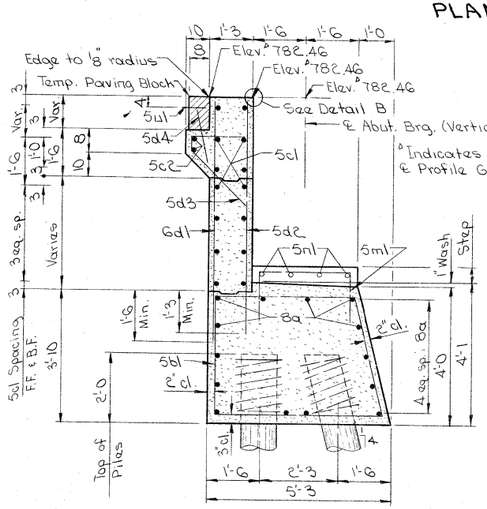


REAR ELEVATION

* Dimensions are at the face of paving notch

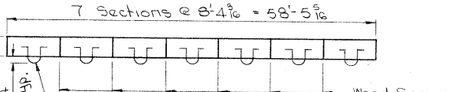


PLAN VIEW

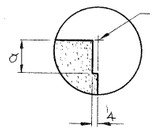


SECTION THRU ABUTMENT

Note: Spirals at top of each pile are made up of 7 turns of 1/4"ø rod, 21" diameter, 3" pitch, with 2-7@10.69 spacers punched to hold spiral.

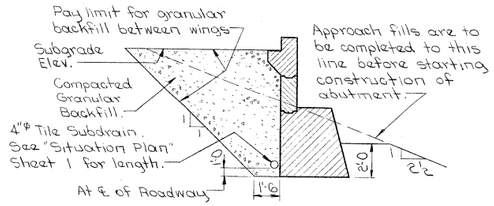


PAVING BLOCK DETAIL



DETAIL B

Note: The dimension "a" from top of backwall to compression seal seat shall be consistant with the recommendations of the manufacturer furnishing the seal.



BACKFILL DETAIL

Design for 35° 5' 30" Skew

210'-0 × 48'-0 CONTINUOUS I-BEAM BRIDGE

64'-0 End Spans 82'-0 Center Span

NORTH ABUTMENT DETAILS

Sta. 807+91.96 R.R.X-ing # 884 Aug. 1973

LUCAS COUNTY

IOWA STATE HIGHWAY COMMISSION

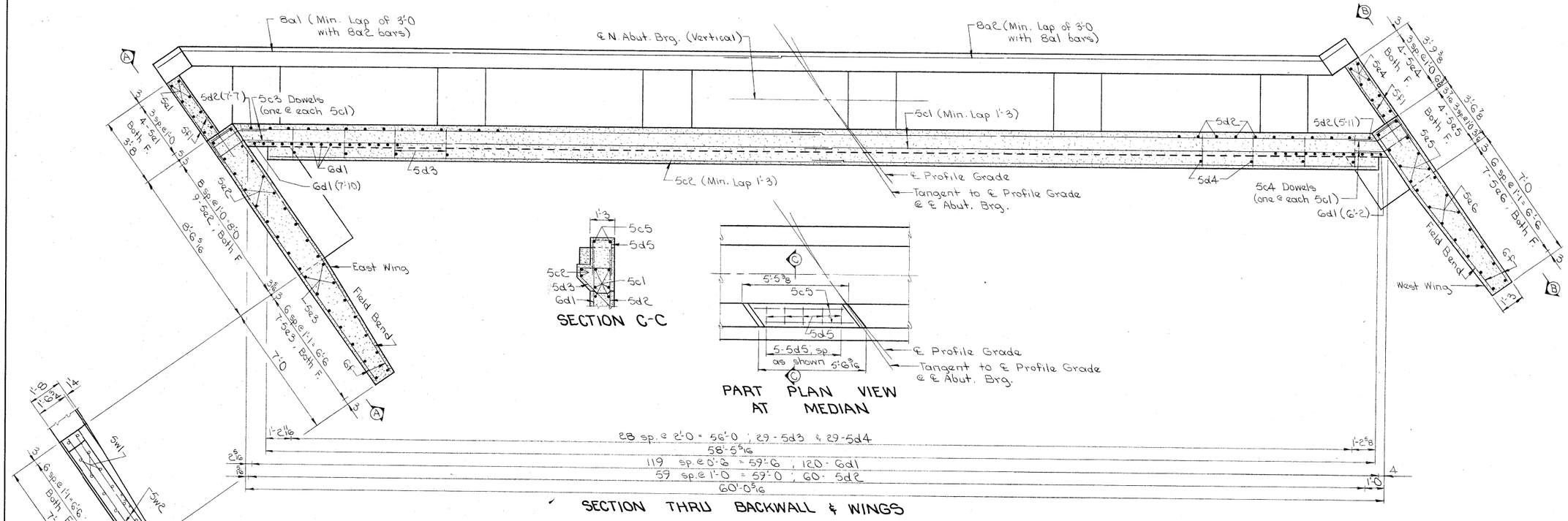
Design Sheet No. 5 of 23 File No. 2A587 Design No. 173

ISHC 316920 10-72 M-672 N6431

DESIGNED BY: R.A. Henning TRACED BY: Doug Warnock

DETAILED BY: Doug Warnock CHECKED BY: H. Trai

PROJECT NUMBER					
STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS



Note: Dimensions shown on Piling Layout are at bottom of footing. Battered piles are to be 1:4 in the direction shown. 25 - 35' Creosoted Piling required at the North Abutment.

Note: See Sheet 7 for Views A-A & B-B.

Design for 35° 5' 30" Skew

210'-0 × 48'-0 CONTINUOUS I-BEAM BRIDGE

64'-0 End Spans 82'-0 Center Span

NORTH ABUTMENT DETAILS

Sta. 807 + 91.96 R.R. X-ing # 884 Aug. 1973

LUCAS COUNTY

IOWA STATE HIGHWAY COMMISSION

Design Street N^o 6 Of 23 File N^o 24587 Design N^o 173

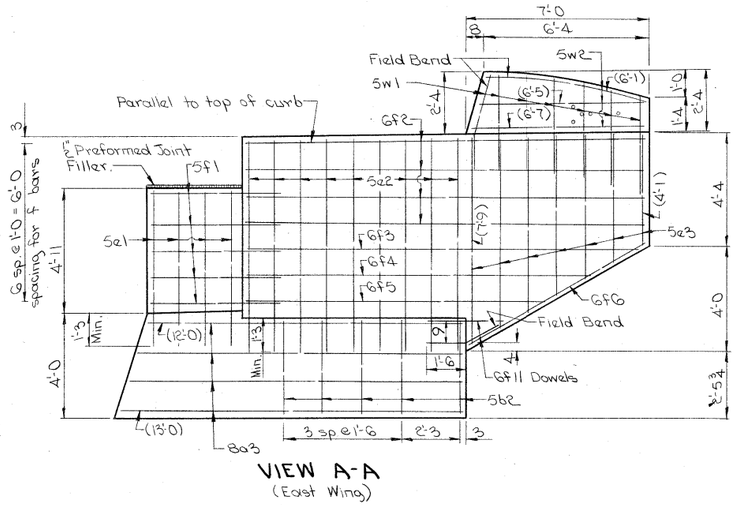
ISHC 316950 10-72 H-672 N6431 DESIGNED BY: R. A. Henning TRACED BY: Doug Warring

DETAILED BY: Doug Warring CHECKED BY: M. Tear

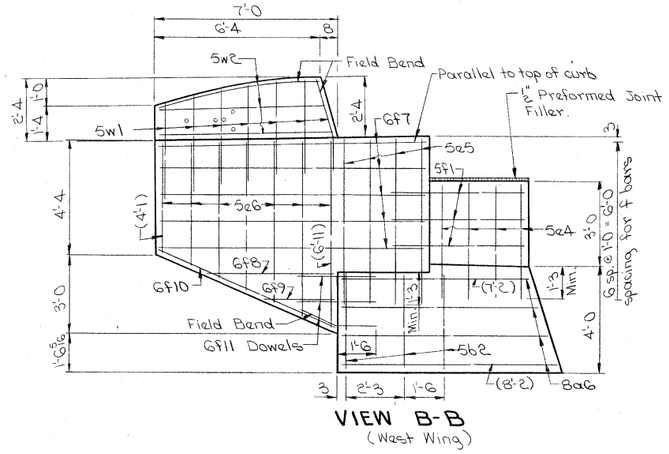
LUCAS COUNTY

PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
BN-32-6 (14)--21--69	IOWA				

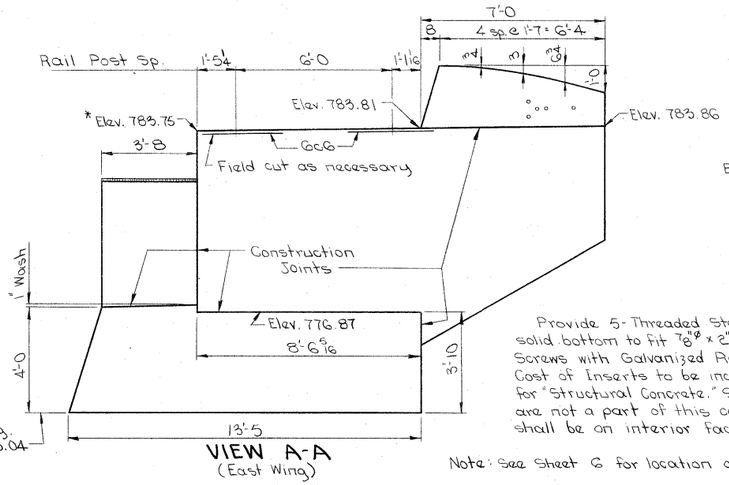
~~Bench Mark N° 4 "X" At base of Rail. on N.E. Cor. of R.R. Overpass, 15' Lt. Sta. 807+15 El. 780.13~~



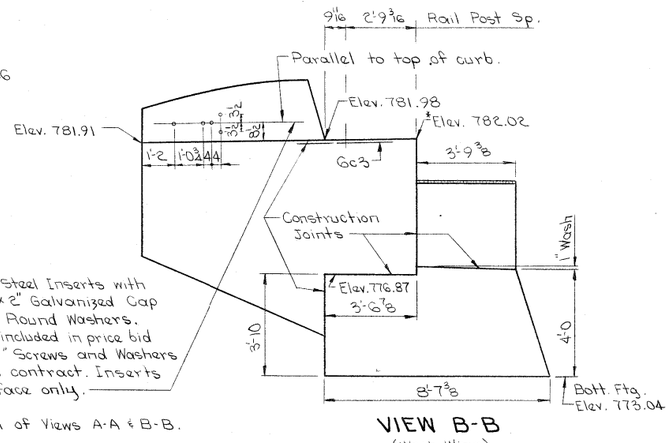
VIEW A-A
(East Wing)



VIEW B-B
(West Wing)



VIEW A-A
(East Wing)



VIEW B-B
(West Wing)

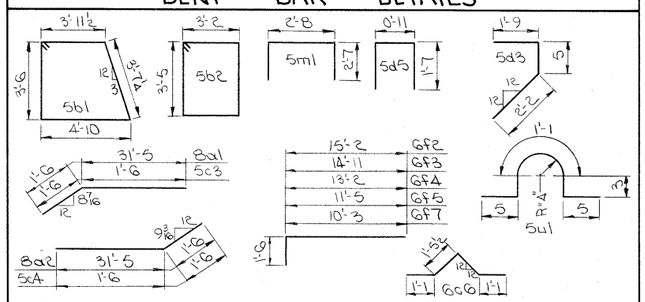
Provide 5- Threaded Steel Inserts with solid bottom to fit 7/8"ø x 2" Galvanized Cap Screws with Galvanized Round Washers. Cost of Inserts to be included in price bid for "Structural Concrete." Screws and Washers are not a part of this contract. Inserts shall be an interior face only.

Note: See Sheet 6 for location of Views A-A & B-B.

REINFORCING BAR LIST ~ NORTH ABUTMENT

Bar	Location	Shape	N°	Length	Weight
8a1	Footing, Longit.	—	14	32'-11	1230
8a2	Footing, Longit.	—	14	32'-11	1230
8a3	East Wing Footing Longit.	—	4	Shown	134
8a4	East Wing Footing Longit.	—	4	8'-7	92
8a5	West Wing Footing Longit.	—	4	6'-3	67
8a6	West Wing Footing Longit.	—	4	Shown	82
5b1	Footing Hoops		42	16'-9	734
5b2	Wing Footing Hoops		8	14'-0	117
5c1	Backwall Longit.	—	28	30'-6	891
5c2	Paving Notch Longit.	—	4	29'-9	124
5c3	Backwall to East Wing Dowels	—	14	3'-0	44
5c4	Backwall to West Wing Dowels	—	14	3'-0	44
5c5	Top of Median - Longit.	—	2	4'-6	9
6c6	Rail Post Anchors		3	5'-0	23
6d1	Backwall Vertical ~ B.F.	—	120	6'-2 7'-10	1262
5d2	Backwall Vertical ~ F.F.	—	60	5'-11 7'-7	422
5d3	Backwall Vertical		29	4'-3	129
*5d4	Paving Block Dowel	—	29	2'-0	60
5d5	Top of Median ~ Transverse		5	3'-11	20
5e1	East Wing Maskwall ~ Both Faces ~ Vert.	—	8	6'-0	50
5e2	East Wingwall ~ Vertical ~ Both Faces	—	18	8'-0	150
5e3	East Wing ~ Vertical ~ Both Faces	—	14	Shown	87
5e4	West Wing Maskwall ~ Both Faces ~ Vert.	—	8	4'-1	34
5e5	West Wingwall ~ Vertical ~ Both Faces	—	8	6'-3	52
5e6	West Wing ~ Vertical ~ Both Faces	—	14	Shown	80
5f1	Maskwalls Horiz. ~ Both Faces	—	16	4'-11	82
6f2	East Wingwall & Wing Horiz.		8	16'-7	199
6f3	East Wingwall & Wing Horiz.		2	16'-4	49
6f4	East Wingwall & Wing Horiz.		2	14'-7	44
6f5	East Wingwall & Wing Horiz.		2	12'-10	39
6f6	East Wing ~ Bottom along slope	—	2	7'-8	23
6f7	West Wingwall & Wing Horiz.		10	11'-8	175
6f8	West Wing ~ Horiz.	—	2	4'-7	14
6f9	West Wing ~ Horiz.	—	2	2'-3	7
6f10	West Wing ~ Bottom along slope	—	2	7'-3	22
6f11	Wing to Footing Dowels	—	10	3'-0	45
5m1	Beam Steps ~ Transverse		24	7'-8	192
5n1	Beam Steps ~ Longit.	—	24	2'-2	54
5u1	~~Paving Block Hoops~~		7	2'-3	~~16~~
5w1	End Post ~ Vertical	—	28	3'-5	100
5w2	End Post ~ Horizontal	—	12	Shown	80
	Pile Spirals 1/4" ø rod	(OOOO)	25	38'-6	161
	Spiral Spacers 7/8 ø O.G.	—	50	1'-10	63
*Structural Grade		Total (Lbs.)			8532

BENT BAR DETAILS



Note: All dimensions are out to out. Radius to ℄ of bar.

NORTH ABUT. CONC. PLACEMENT QUANT'S

Location	Unit	Quantity
Footing & Steps	Cu.Yd.	49.8
Backwall Below Constr. Joint	Cu.Yd.	7.3
Backwall Above Constr. Joint	Cu.Yd.	9.4
East Wing & Wingwall	Cu.Yd.	6.0
West Wing & Wingwall	Cu.Yd.	3.4
Maskwalls	Cu.Yd.	0.9
End Posts 2@ 0.55 Cu.Yd.	Cu.Yd.	1.1
* ~~Paving Block~~ (deleted)	Cu.Yd.	~~17~~
Total (Cu.Yd.)		~~77.6~~ 77.9

*May be Class "C" or Class "D" Concrete.

TOTAL ESTIMATED QUANTITIES~NORTH ABUT.

Item	Unit	Quantity
Structural Concrete Class C	Cu.Yd.	~~77.6~~ 77.9
Reinforcing Steel	Lbs.	~~8532~~ 8516
Class 20 Excavation	Cu.Yd.	100
Granular Backfill	Cu.Yd.	95
Creosoted Piling 25@35'	L.F.	875

ABUTMENT NOTES:

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

Reinforcing steel is to be securely wired in place before concrete is poured. Minimum clear distance from face of concrete to near reinforcing bar is to be 2" unless otherwise noted or shown.

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

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

The Mask Wall is to be poured before the superstructure slab is poured.

Construction joint keyways are to be formed with beveled 2×6's.

Beams and masonry plates are to be set before backwall is placed. Masonry plates are included in the superstructure estimate.

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

Piles are to be driven to full penetration if practicable, but to not less than 20 tons nor more than 40 tons bearing value per pile.

*Ledges are to be formed in the face of curb to seat seal. The elevations shown shall be adjusted accordingly, (See Details on Sheet 18).

Design for 35° 5' 30" Skew

210'-0 × 48'-0 CONTINUOUS I-BEAM BRIDGE

64'-0 End Spans 82'-0 Center Span

NORTH ABUTMENT DETAILS

Sta. 807+91.96 R.R. X-ing # 884 Aug. 1973

LUCAS COUNTY

IOWA STATE HIGHWAY COMMISSION

Design Sheet N° 7 Of 23 File N° 24587 Design N° 173

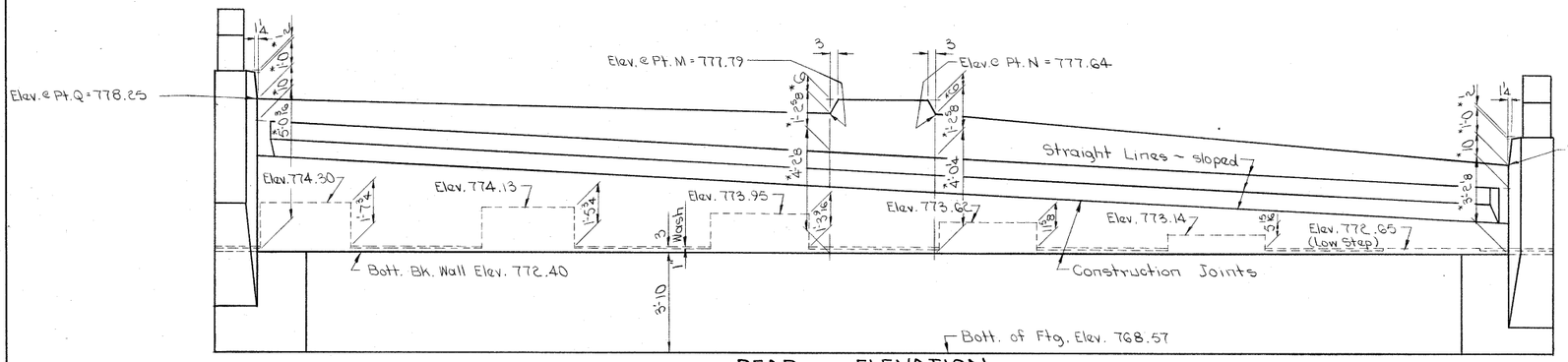
ISHC 316920 10-72 H-672 N8431 DESIGNED BY: R.A. Henning TRACED BY: Doug Warring

DETAILED BY: Doug Warring CHECKED BY: E. Tran

LUCAS COUNTY

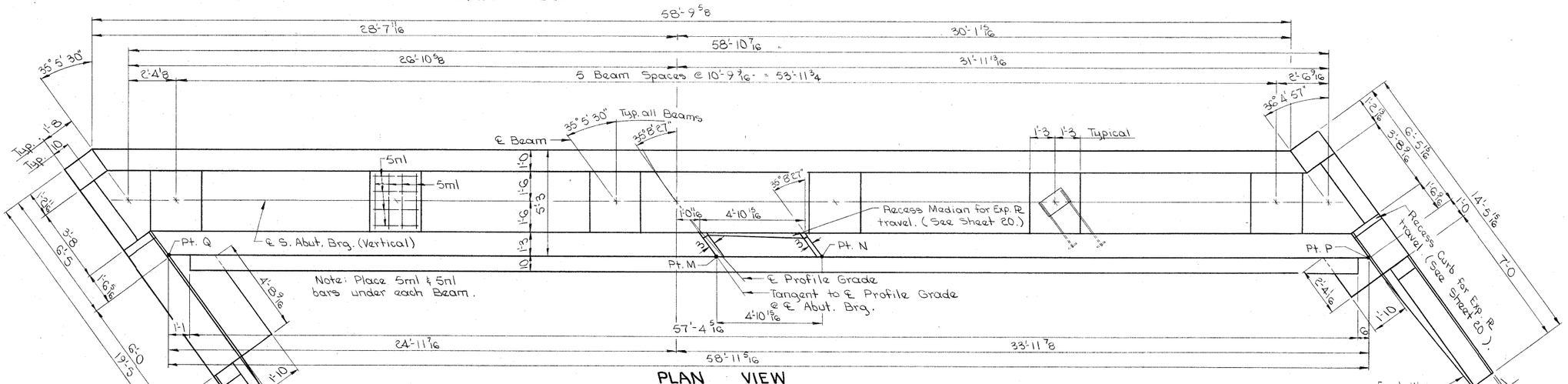
PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
FN-34-6(14)--21-57	IOWA	5		9	23

~~Bench Mark. No 4 "X" At base of rail on NE. Cor. of R.R. Overpass, 15' Lt. Sta. 807+15 El. 780.15~~



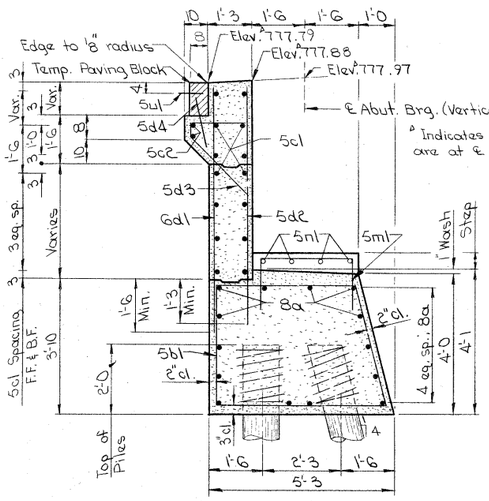
* Dimensions are at the face of paving notch.

REAR ELEVATION



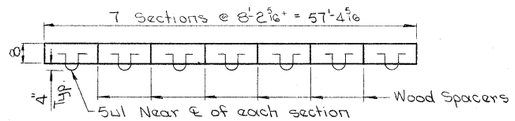
PLAN VIEW

Note: Spirals at top of each pile are made up of 7 turns of 1/4" ϕ rod, 21" diameter, 3" pitch, with 2-7/8" ϕ O.G. 69 spacers punched to hold spiral.

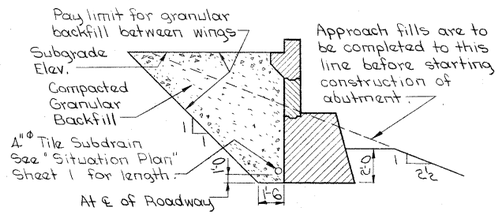


* Indicates Elevations are at ℄ Profile Grade.

SECTION THRU ABUTMENT



PAVING BLOCK DETAIL



BACKFILL DETAIL

Design for 35° 5' 30" Skew

210'-0 × 48'-0 CONTINUOUS I-BEAM BRIDGE

64'-0 End Spans 82'-0 Center Span

SOUTH ABUTMENT DETAILS

Sta. 807+91.96 R.R. X-ing # 884 Aug. 1973

LUCAS COUNTY

IOWA STATE HIGHWAY COMMISSION

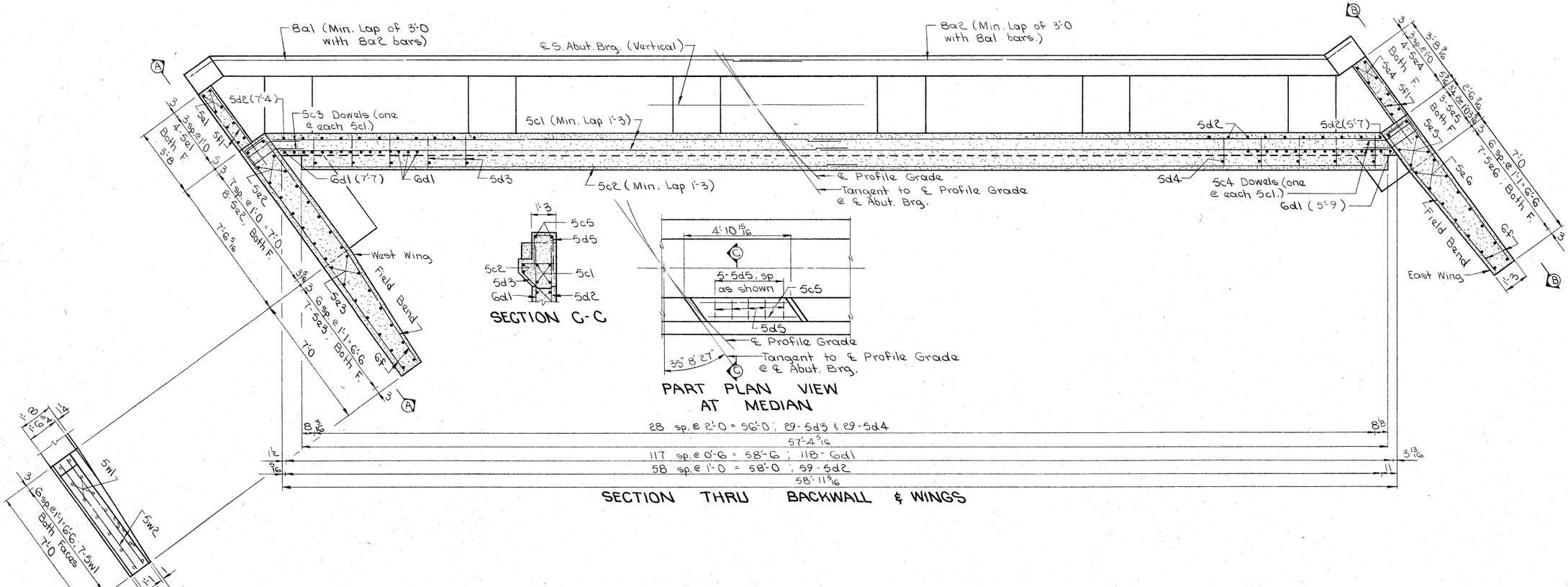
Design Sheet No 8 of 23 File No 24587 Design No 173

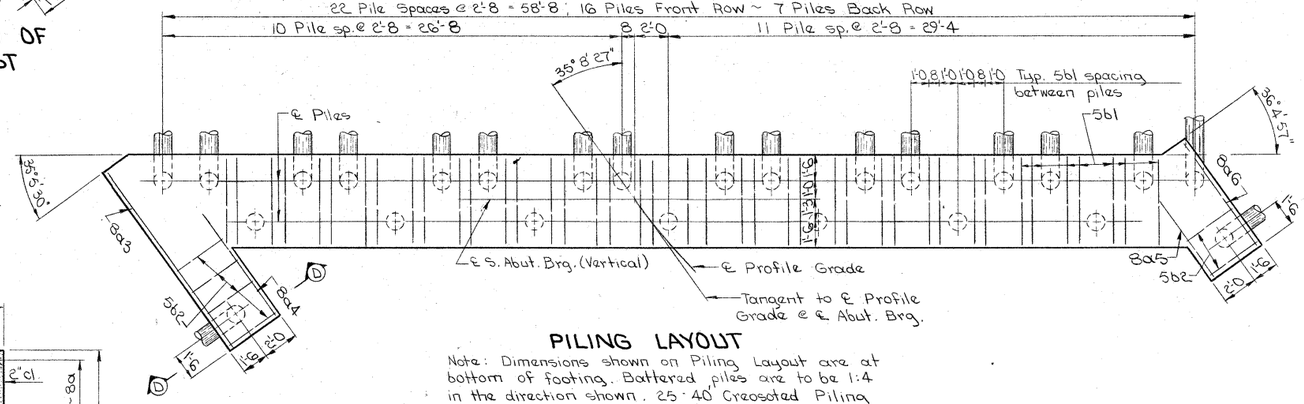
ISHC 316920 10-72 H-672 N6631 DESIGNED BY: R.D. Henning TRACED BY: Doug Warnings

DETAILED BY: Doug Warnings CHECKED BY: H. Trax

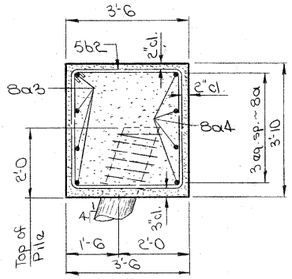
LUCAS COUNTY

PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
FN-34-6(14)--21-59	IOWA	5		10	25





Note: Dimensions shown on Piling Layout are at bottom of footing. Battered piles are to be 1:4 in the direction shown. 25 : 40 Creosoted Piling required at the South Abutment.



Note: See Sheet 10 for Views A-A & B-B.

Design for 35° 5' 30" Skew

210'-0 × 48'-0 CONTINUOUS I-BEAM BRIDGE

64'-0 End Spans 82'-0 Center Span

SOUTH ABUTMENT DETAILS

Sta. 807 + 91.96 R.R. X-ing # 884 Aug. 1973

LUCAS COUNTY

IOWA STATE HIGHWAY COMMISSION

Design Sheet N° 9 Of 23 File N° 2A587 Design N° 173

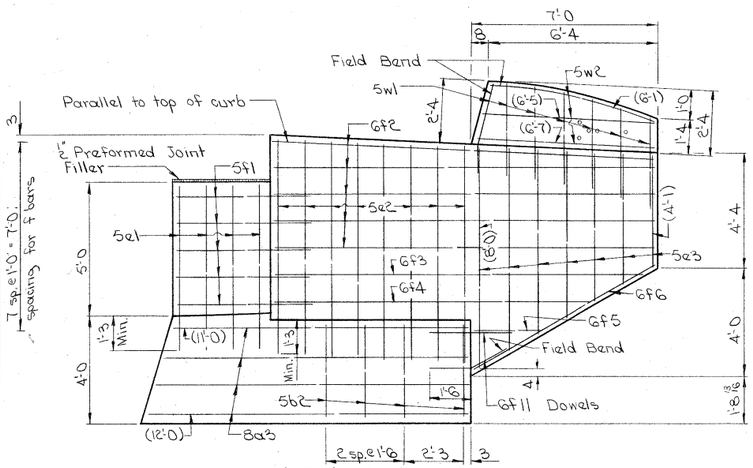
DESIGNED BY: R.A. Nenning TRACED BY: Doug Warning

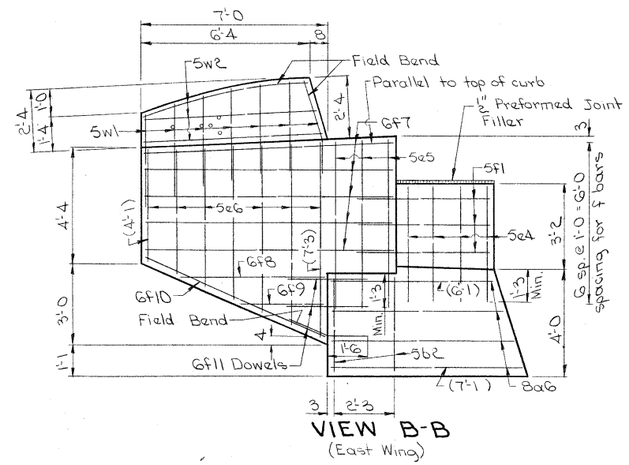
DETAILED BY: Doug Warning CHECKED BY: [illegible]

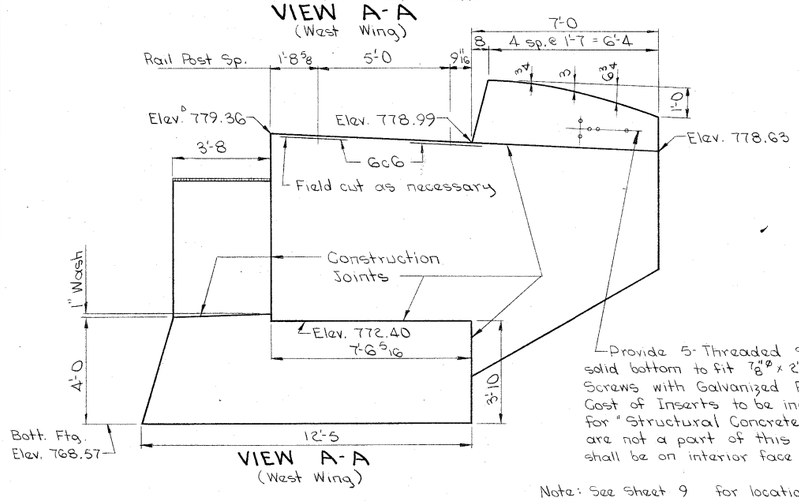
LUCAS COUNTY

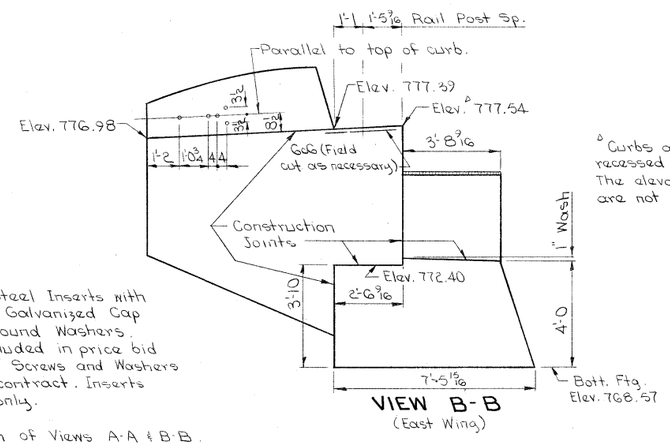
PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
FN-34-6(14)--21-57	IOWA	5		11	23

~~Bench Mark: N° A "X" At base of hdrl. on N.E. Cor. of R.R. Overpass, 15' Lt. Sta. 807+15 El. 780.79~~









Provide 5 Threaded Steel Inserts with solid bottom to fit $\frac{7}{8}^{\phi} \times 2"$ Galvanized Cap Screws with Galvanized Round Washers. Cost of Inserts to be included in price bid for "Structural Concrete." Screws and Washers are not a part of this contract. Inserts shall be on interior face only.

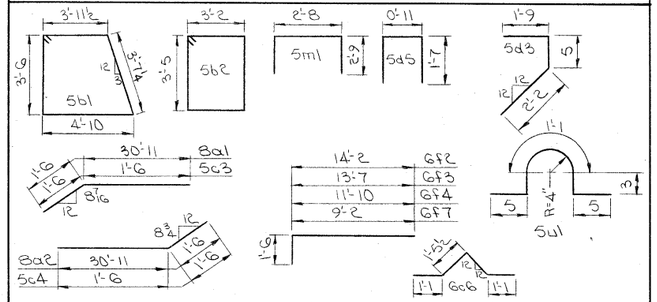
Note: See Sheet 9 for location of Views A-A & B-B.

△ Curbs at these elevations are to be recessed for expansion plate travel. The elevations shown at these points are not adjusted for the ⅜" recess.

REINFORCING BAR LIST ~ SOUTH ABUTMENT

Bar	Location	Shape	N°	Length	Weight
8a1	Footing, Longit.	——	14	32'-5	1212
8a2	Footing, Longit.	——	14	32'-5	1212
8a3	West Wing Footing, Longit.	——	4	Shown	123
8a4	West Wing Footing, Longit.	——	4	7'-7	81
8a5	East Wing Footing, Longit.	——	4	5'-3	56
8a6	East Wing Footing, Longit.	——	4	Shown	70
5b1	Footing Hoops	⊓	41	16'-9	716
5b2	Wing Footing Hoops	⊓	6	14'-0	88
5c1	Backwall Longit.	——	28	30'-0	876
5c2	Paving Notch Longit.	——	4	23'-3	122
5c3	Backwall to West Wing Dowels	—	14	3'-0	44
5c4	Backwall to East Wing Dowels	—	14	3'-0	44
5c5	Top of Median ~ Longit.	——	2	4'-7	10
Gc6	Rail Post Anchors	∧∧	3	5'-0	23
Gd1	Backwall Vertical ~ B.F.	——	118	5'-3 / 7'-7	1182
5d2	Backwall Vertical ~ F.F.	——	59	5'-7 / 7'-4	397
5d3	Backwall Vertical	⊂	29	4'-3	129
*5d4	Paving Block Dowel	——	29	2'-0	60
5d5	Top of Median ~ Transverse	⊓	5	3'-11	20
5e1	West Wing Maskwall ~ Both Faces ~ Vert.	——	8	6'-1	51
5e2	West Wingwall ~ Vertical ~ Both Faces	——	16	8'-1	135
5e3	West Wing ~ Vertical ~ Both Faces	——	14	Shown	88
5e4	East Wing Maskwall ~ Both Faces ~ Vert.	——	8	4'-3	35
5e5	East Wingwall ~ Vertical ~ Both Faces	——	6	6'-3	39
5e6	East Wing ~ Vertical ~ Both Faces	——	14	Shown	83
5f1	Maskwalls Horiz. ~ Both Faces	——	16	5'-0	83
6f2	West Wingwall & Wing Horiz.	⌐	10	15'-7	234
6f3	West Wingwall & Wing Horiz.	⌐	2	15'-0	45
6f4	West Wingwall & Wing Horiz.	⌐	2	13'-3	40
6f5	West Wing Horiz	——	2	2'-7	8
6f6	West Wing ~ Bottom along slope	——	2	7'-8	23
6f7	East Wingwall & Wing Horiz.	⌐	10	10'-7	159
6f8	East Wing ~ Horiz.	——	2	5'-7	17
6f9	East Wing ~ Horiz.	——	2	3'-3	10
6f10	East Wing ~ Bottom along slope	——	2	7'-5	22
6f11	Wing to Footing Dowels	——	10	3'-0	45
5m1	Beam Steps ~ Transverse	⊓	24	8'-0	200
5n1	Beam Steps ~ Longit.	——	24	2'-2	54
5u1	~~Paving Block Hoops~~	⊓	7	2'-3	~~16~~
5w1	End Post ~ Vertical	——	28	3'-5	100
5w2	End Post ~ Horizontal	——	12	Shown	80
	Pile Spirals ¼"$^{\phi}$ rod	⌀⌀⌀	25	38'-6	161
	Spiral Spacers $^{7}/_{8}$ LO.69	——	50	1'-10	63
*Structural Grade		Total (Lbs.)			8256

BENT BAR DETAILS



Note: All dimensions are out to out. Radius to ℄ of bar.

SOUTH ABUT. CONC. PLACEMENT QUANT.'S

Location	Unit	Quantity
Footing & Steps	Cu.Yd.	48.0
Backwall Below Constr Joint	Cu.Yd.	7.1
Backwall Above Constr. Joint	Cu.Yd.	9.0
West Wing & Wingwall	Cu.Yd.	5.6
East Wing & Wingwall	Cu.Yd.	3.1
Maskwalls	Cu.Yd.	0.9
End Posts 2@ 0.55 Cu.Yd.	Cu.Yd.	1.1
*Paving ~~Block~~ (deleted)	Cu.Yd.	~~1.5~~
Total (Cu.Yd.)	Cu.Yd.	~~76.3~~ 74.8

*May be Class "C" or Class "D" Concrete.

TOTAL ESTIMATED QUANTITIES ~ SOUTH ABUT.

Item	Unit	Quantity
Structural Concrete Class C	Cu.Yd	~~76.3~~ 74.8
Reinforcing Steel	Lbs.	~~8256~~ 8240
Class 20 Excavation	Cu.Yd	100
Granular Backfill	Cu.Yd.	93
Creosoted Piling 25@40'	L.F.	1000

ABUTMENT NOTES:

All exposed corners 90° or sharper are to be filleted with a ¾" 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 backfall behind the abutment between wings is to be granular backfill. The remainder of the abutment excavation is to be backfilled with soil.

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

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

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

Construction joint Keyways are to be formed with beveled 2×6's.

Beams and masonry plates are to be set before backwall is placed. Masonry plates are included in the superstructure estimate.

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

Piles are to be driven to full penetration if practicable, but to not less than 20 tons nor more than 40 tons bearing value per pile.

Design for 35° 5' 30" Skew

210'-0 x 48'-0 CONTINUOUS I-BEAM BRIDGE

64'-0 End Spans 82'-0 Center Span

SOUTH ABUTMENT DETAILS

Sta. 807+91.96 R.R. X-ing # 884 Aug. 1973

LUCAS COUNTY

IOWA STATE HIGHWAY COMMISSION

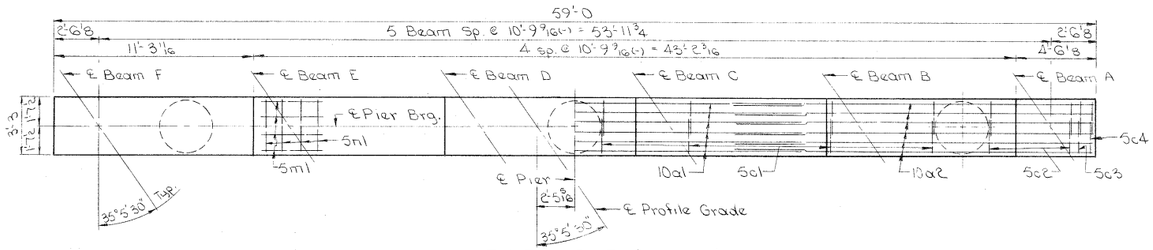
Design Sheet N° 10 Of 23 File N° 24587 Design N° 173

IHC 318920 10-72 N-672 N6431 DESIGNED BY: R.A. Nenning DETAILED BY: Doug Wunsch TRACED BY: Doug Wunsch CHECKED BY: H. Tran

LUCAS COUNTY

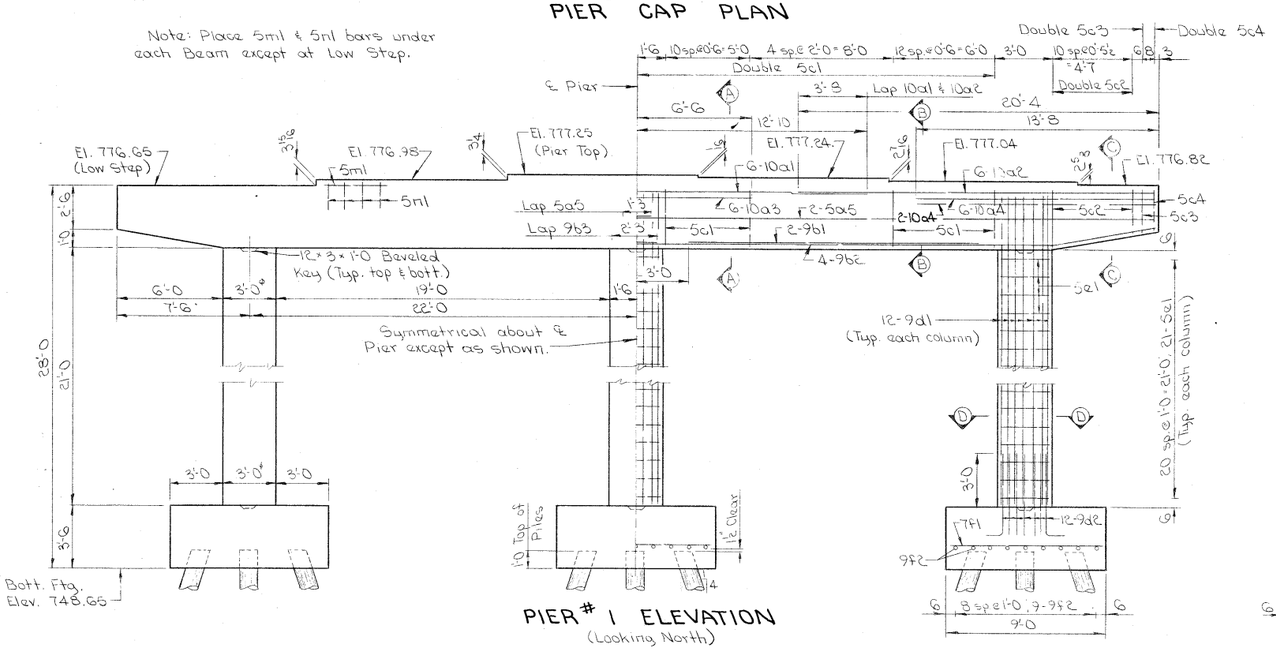
PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
FN-34-6(14)--21-57	IOWA	5		12	23

~~Bench Mark: No "A" "X" At base of Hdd. on N.E. Cor. of R.R. Overpass, 15' ± Sta. 807+15 El. 780.75~~



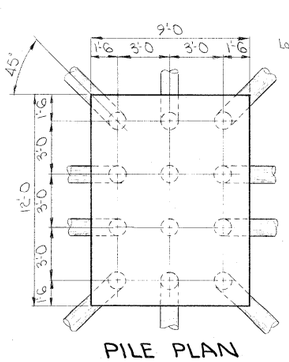
PIER CAP PLAN

Note: Place 5m1 & 5n1 bars under each Beam except at Low Step.



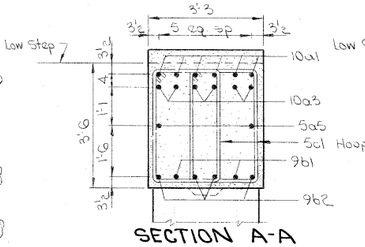
PIER # 1 ELEVATION
(Looking North)

END ELEVATION

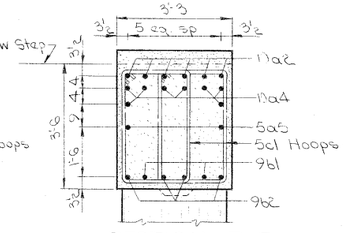


PILE PLAN

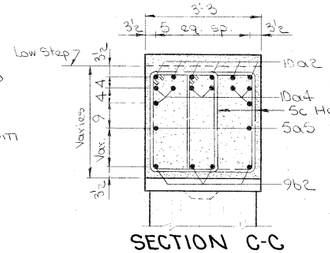
Note: Pile spacing shown at bottom of footing. Batter 1:4 in the direction shown. 12- 30' Creosoted Piling required for each footing.



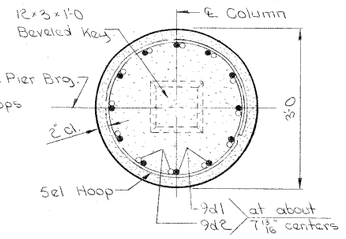
SECTION A-A



SECTION B-B



SECTION C-C



SECTION D-D

PIER NOTES:

All exposed corners 90° or sharper are to be filleted with a ¾" dressed and beveled strip.

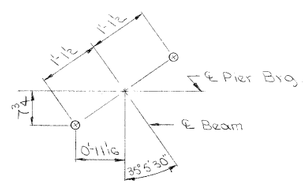
Minimum clear distance from face of concrete to near reinforcing bar is to be 2" unless otherwise noted or shown.

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

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

Reinforcing bars may be shifted slightly to clear anchor bolts.

Piles are to be driven to full penetration if practicable, but to not less than 21 tons nor more than 40 tons bearing value per pile.



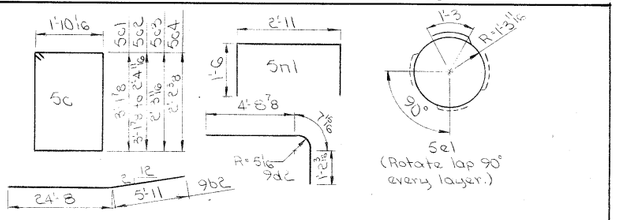
ANCHOR BOLT LOCATIONS

12"ø x 1'-8 Swedge Anchor Bolts
Projection = 4½"

REINFORCING BAR LIST ~ PIER # 1

Bar	Location	Shape	N°	Length	Weight
10a1	Cap Longitudinal ~ Top	——	6	25'-8	363
10a2	Cap Longitudinal ~ Top	——	12	20'-2	1041
10a3	Cap Longitudinal ~ Top	——	6	13'-0	336
10a4	Cap Longitudinal ~ Top	——	16	13'-6	929
5a5	Cap Longitudinal ~ Sides	——	4	30'-0	125
9b1	Cap Longitudinal ~ Bottom	——	4	16'-6	224
9b2	Cap Longitudinal ~ Bottom	⌒	8	30'-7	852
5c1	Cap Hoops	□	108	10'-10	1220
5c2	Cap Hoops ~ Cantilever	□	44	Varies	461
5c3	Cap Hoops ~ Cantilever	□	4	9'-2	38
5c4	Cap Hoops ~ Cantilever	□	4	8'-11	37
9d1	Column Vertical	——	36	24'-0	2938
9d2	Column Vertical ~ Dowels	⌐	36	6'-7	806
5e1	Column Hoops	O	63	9'-6	624
7f1	Footing Transverse	——	36	8'-3	838
9f2	Footing Longitudinal	——	27	11'-8	1071
5m1	Step Longitudinal	——	20	3'-6	73
5n1	Step Transverse	⌐	20	5'-9	120
				Total (Lbs.)	12176

BENT BAR DETAILS



Note: All dimensions are out to out. Radii are to ℄ of bar.

CONCRETE PLACEMENT QUANTITIES PIER # 1

Location	Unit	Quantity
Cap	Cu.Yd.	26.7
Columns	Cu.Yd.	16.5
Footings	Cu.Yd.	41.1
Total (Cu.Yd.)		84.3

TOTAL ESTIMATED QUANTITIES ~ PIER # 1

Item	Unit	Quantity
Structural Concrete - Class C	Cu.Yd.	84.3
Reinforcing Steel	Lbs.	12176
Class 20 Excavation	Cu.Yd.	150
Creosoted Piling 36 @ 30'	L.F.	1080

Design for 35° 5' 30" Skew

210'-0 x 48'-0 CONTINUOUS I-BEAM BRIDGE

64'-0 End Spans 82'-0 Center Span

PIER # 1 DETAILS

Sta. 807+91.76 R.R. X-ing # 884 Aug. 1973

LUCAS COUNTY

IOWA STATE HIGHWAY COMMISSION

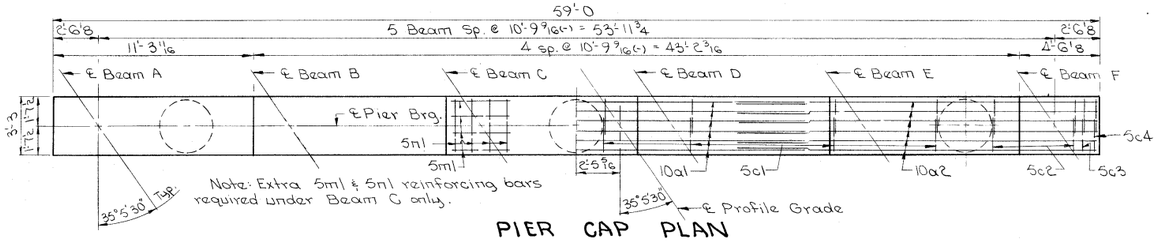
Design Sheet No.: 11 Of 23 File No.: 24587 Design No.: 173

DESIGNED BY: H. Tasi
DETAILED BY: Dewayne Wirring
TRACED BY: Dewayne Wirring
CHECKED BY: R.B. Hemmings

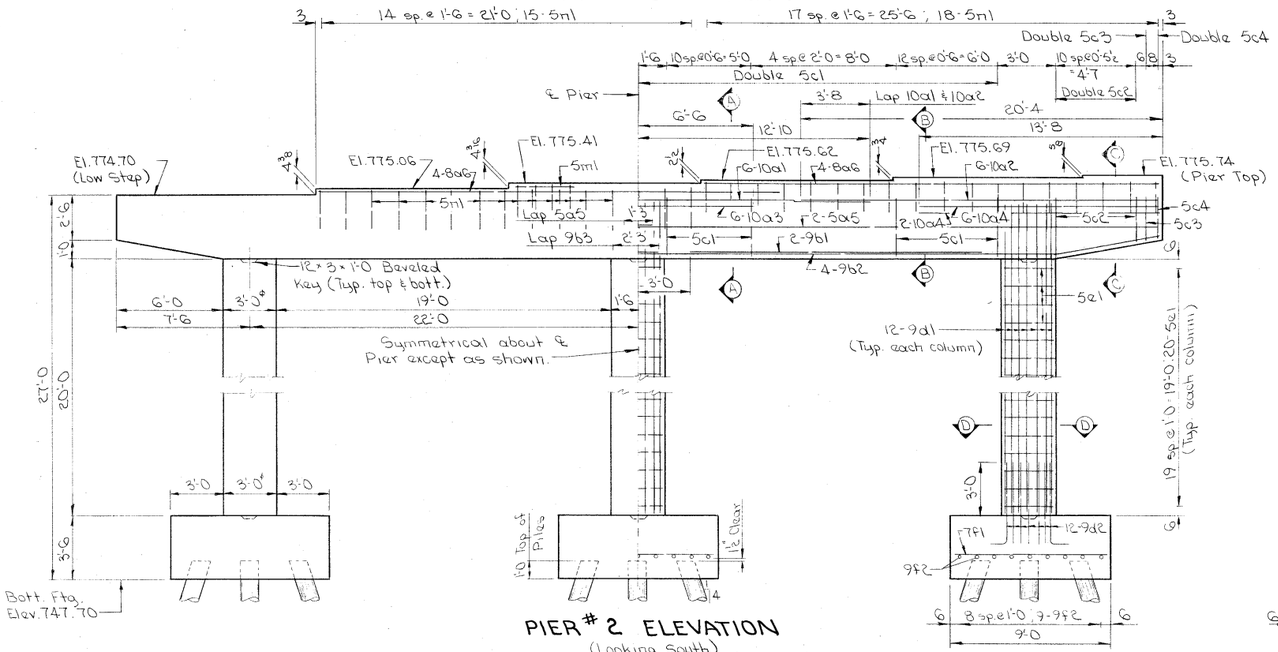
LUCAS COUNTY

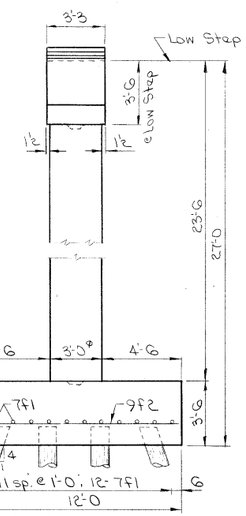
PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
F.N. 24-C(11)--21-59	IOWA	5		13	

~~Bench Mark: N⁰ 4 "x" At base of Hdl. on N.E. Cor. of B.R. Overpass, 15' U. Sta. 807+15 El. 780.73~~



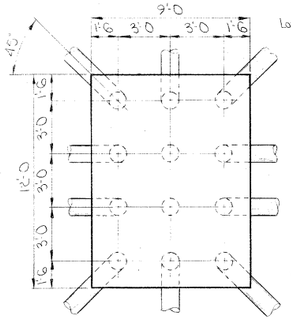
PIER CAP PLAN





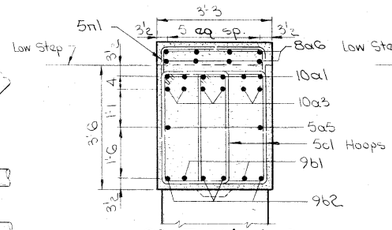
PIER # 2 ELEVATION
(Looking South)

END ELEVATION

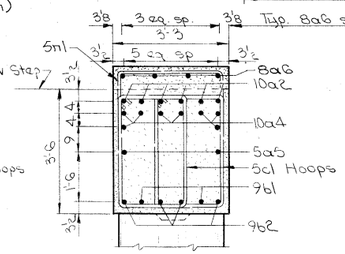


PILE PLAN

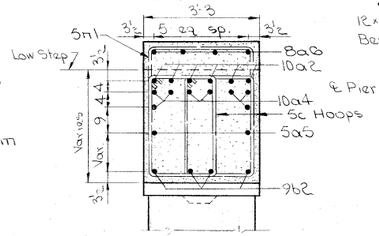
Note: Pile spacing shown at bottom of footing. Batter 1:4 in the direction shown - 12- 30' Creosoted Piling required for each footing.



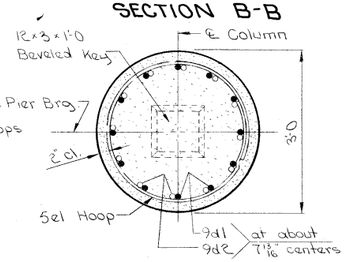
SECTION A-A



SECTION B-B



SECTION C-C



SECTION D-D

PIER NOTES:

All exposed corners 90° or sharper are to be filleted with a ¾ dressed and beveled strip.

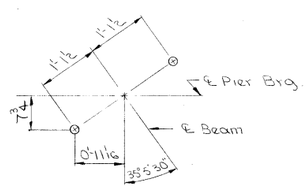
Minimum clear distance from face of concrete to near reinforcing bar is to be 2" unless otherwise noted or shown.

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

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

Reinforcing bars may be shifted slightly to clear anchor bolts.

Piles are to be driven to full penetration if practicable, but to not less than 21 tons nor more than 40 tons bearing value per pile.

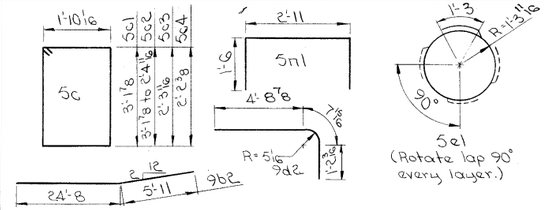


ANCHOR BOLT LOCATIONS
1 2/8" x 1'-8 Swedge Anchor Bolts
Projection = 4 1/2"

REINFORCING BAR LIST ~ PIER # 2

Bar	Location	Shape	N⁰	Length	Weight
10a1	Cap Longitudinal ~ Top	—	6	25'-8	663
10a2	Cap Longitudinal ~ Top	—	12	20'-2	1041
10a3	Cap Longitudinal ~ Top	—	6	13'-0	336
10a4	Cap Longitudinal ~ Top	—	16	13'-6	929
5a5	Cap Longitudinal ~ Sides	—	4	30'-0	125
8a6	Cap Longitudinal ~ Top	—	8	25'-9	550
9b1	Cap Longitudinal ~ Bottom	—	4	16'-6	224
9b2	Cap Longitudinal ~ Bottom	—	8	30'-7	832
5c1	Cap Hoops	□	108	10'-10	1220
5c2	Cap Hoops ~ Cantilever	□	44	Varies	461
5c3	Cap Hoops ~ Cantilever	□	4	9'-2	38
5c4	Cap Hoops ~ Cantilever	□	4	8'-11	37
9d1	Column Vertical	—	36	23'-0	2815
9d2	Column Vertical ~ Dowels	⌐	36	6'-7	806
5e1	Column Hoops	O	60	9'-6	595
7f1	Footing Transverse	—	36	8'-8	638
9f2	Footing Longitudinal	—	27	11'-8	1071
5m1	Step Longitudinal	—	4	3'-6	15
5n1	Step Transverse	⌐¬	37	5'-9	222
				Total (Lbs.)	12618

BENT BAR DETAILS



Note: All dimensions are out to out. Radii are to ℄ of bar.

CONCRETE PLACEMENT QUANTITIES PIER # 2

Location	Unit	Quantity
Cap	Cu.Yd.	28.6
Columns	Cu.Yd.	15.7
Footings	Cu.Yd.	41.1
Total (Cu.Yd.)		85.4

TOTAL ESTIMATED QUANTITIES ~ PIER # 2

Item	Unit	Quantity
Structural Concrete - Class C	Cu.Yd.	85.4
Reinforcing Steel	Lbs.	12618
Class 20 Excavation	Cu.Yd.	95
Creosoted Piling ~~36 @ 30'~~ 34 @ 30' 2 @ 40'	L.F.	1100 ~~1080~~

Design for 35° 5' 30" Skew

210'-0 x 48'-0 CONTINUOUS I-BEAM BRIDGE

64'-0 End Spans 82'-0 Center Span

PIER # 2 DETAILS

Sta. 807+91.76 R.R. X-ing * 884 Aug. 1973

LUCAS COUNTY

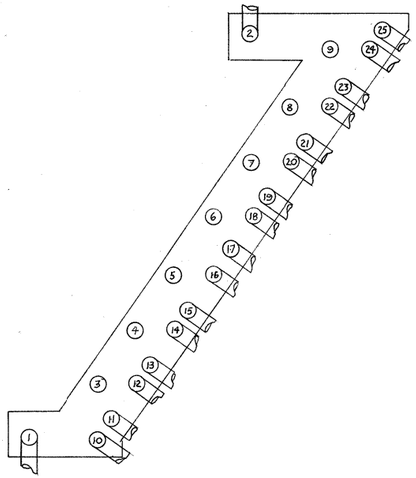
IOWA STATE HIGHWAY COMMISSION

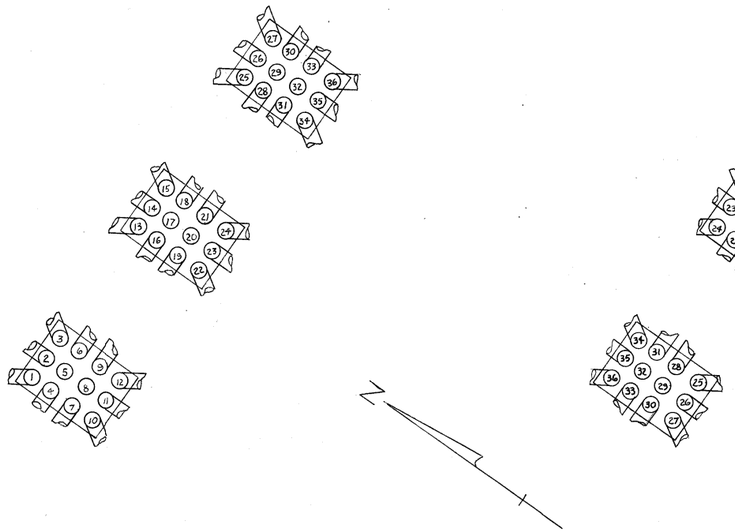
Design Sheet No.: 12 Of 23 File No.: 24581 Design No.: 173

DESIGNED BY: M. Tsai
DETAILED BY: Doug Worrings
TRACED BY: Doug Worrings
CHECKED BY: R. A. Nenning

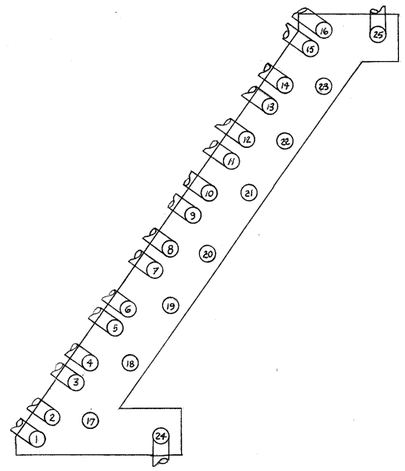
LUCAS COUNTY

PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
FN-3-(5)--4)--(1)-(9)	IOWA	5		12	23





Note: Pile Bearing Test Report (see Sheet 2)



N. ABUT.

Pile NO.	DATE DRIVEN	LENGTH IN LEADS	LENGTH CUT OFF	LENGTH IN STRAIT	AVG PEN NEAT IS BLOWS	RAM DROP	TONS BRG.
B1	6-13-75	35	0.0	350	.65	4.0	10.4
B2	"	"	0.0	350	.60	4.5	12.6
3	6-12-75	"	0.1	349	.70	4.5	11.0
4	6-13-75	"	0.0	350	.70	4.0	9.8
5	"	"	0.0	350	.65	4.5	11.7
6	"	"	0.0	350	.70	4.5	11.0
7	6-12-75	"	0.3	347	.575	4.5	13.1
8	6-13-75	"	0.3	347	.75	4.0	9.2
9	"	"	0.3	347	.95	4.5	16.0
B10	"	"	0.1	349	.65	4.5	11.7
B11	"	"	0.2	348	.65	4.5	11.7
B12	"	"	0.2	348	.65	4.5	11.7
B13	"	"	0.3	347	.50	4.5	14.7
B14	"	"	0.1	349	.40	4.5	12.6
B15	"	"	0.0	350	.60	4.0	11.1
B16	"	"	0.0	350	.45	4.5	16.0
B17	"	"	0.0	350	.60	4.5	12.6
B18	"	"	0.0	350	.40	4.5	17.6
B19	6-12-75	"	0.0	350	.55	4.5	13.6
B20	6-13-75	"	0.0	350	.50	4.5	14.7
B21	"	"	0.0	350	.425	4.5	16.8
B22	"	"	0.0	350	.70	4.5	11.0
B23	"	"	0.2	348	.475	4.5	15.3
B24	"	"	0.0	350	.55	4.0	12.0
B25	"	"	0.0	350	.65	4.0	10.4

PIER 1

Pile NO.	DATE DRIVEN	LENGTH IN LEADS	LENGTH CUT OFF	LENGTH IN STRAIT	AVG PEN LAST 10 BLOWS	RAM DROP	TONS BRG.
B1	6-2-75	30'	1.5	28.5	.625	4.0	11.1
B2	"	"	1.5	28.5	.35	5.0	22.4
B3	"	"	1.2	28.8	.40	4.5	18.2
B4	"	"	1.5	28.5	.525	4.0	12.9
5	"	"	1.1	28.9	.70	4.0	10.1
B6	"	"	1.2	28.8	.55	4.5	14.0
B7	"	"	1.4	28.6	.55	4.0	12.4
8	"	"	1.2	28.8	.625	4.0	11.1
B9	"	"	1.1	28.9	.60	4.0	11.5
B10	"	"	1.3	28.7	.75	4.0	9.5
B11	"	"	1.3	28.7	.725	3.5	8.6
B12	"	"	1.2	28.8	.575	4.0	12.0
B13	"	"	1.1	28.9	.50	4.5	15.1
B14	"	"	1.0	29.0	.50	4.5	15.1
B15	"	"	0.6	29.4	.65	4.0	10.8
B16	"	"	0.6	29.4	.75	4.0	9.5
17	"	"	0.7	29.3	.65	4.5	12.1
B18	"	"	0.6	29.4	.65	4.0	10.8
B19	"	"	0.5	29.5	.85	4.0	8.5
20	"	"	0.8	29.2	.60	4.0	11.5
B21	"	"	1.0	29.0	.65	4.0	10.8
B22	"	"	0.9	29.1	.50	4.0	13.5
B23	"	"	0.6	29.4	.75	4.0	9.5
B24	"	"	0.9	29.1	.75	4.0	9.5
B25	5-30-75	"	0.6	29.4	.80	4.0	9.0
B26	"	"	0.6	29.4	.80	4.0	9.0
B27	"	"	0.7	29.3	.85	4.0	8.5
B28	"	"	0.8	29.2	.70	4.0	10.1
29	"	"	0.6	29.4	.80	4.0	9.0
B30	"	"	0.8	29.2	.70	4.0	10.1
B31	"	"	0.4	29.6	.80	4.0	9.0
32	"	"	0.6	29.4	.60	4.0	11.5
B33	"	"	0.8	29.2	.65	4.0	10.8
B34	"	"	0.6	29.4	.90	4.0	8.1
B35	"	"	0.7	29.3	.825	4.0	8.7
B36	"	"	0.8	29.2	.875	3.5	7.2

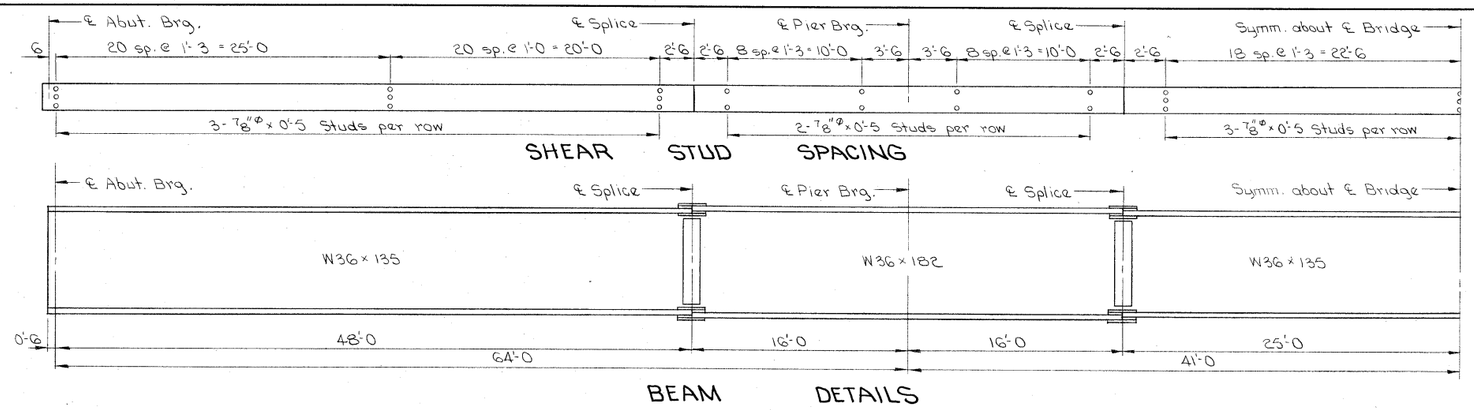
PIER 2

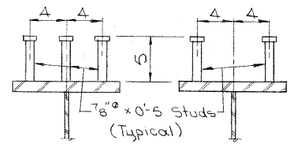
Pile NO.	DATE DRIVEN	LENGTH IN LEADS	LENGTH CUT OFF	LENGTH IN STRAIT	AVG PEN LAST 10 BLOWS	RAM DROP	TONS BRG.
B1	5-29-75	30'	0.3	29.7	.95	4.0	7.7
B2	5-27-75	"	1.1	28.9	.475	3.5	12.3
B3	5-23-75	"	1.3	28.7	.75	4.0	8.5
B4	5-27-75	"	0.3	29.7	.925	3.5	6.9
5	5-20-75	"	0.3	29.7	1.125	3.5	5.8
B6	5-23-75	"	1.0	29.0	.875	3.5	7.2
B7	5-27-75	"	0.2	29.8	.725	3.5	8.6
8	"	"	0.0	30.0	.80	3.5	7.8
B9	5-29-75	"	0.3	29.7	1.50	3.0	5.3
B10	5-27-75	"	0.4	29.6	1.30	3.5	3.5
B11	"	"	0.2	29.8	.80	3.5	7.8
B12	"	"	0.2	29.8	1.025	3.5	6.3
B13	"	"	1.3	28.7	.925	4.0	7.3
B14	"	"	1.1	28.9	.80	3.5	7.8
B15	"	"	1.1	28.9	.85	3.5	7.4
B16	"	"	1.1	28.9	.90	3.5	7.1
17	"	"	1.4	28.6	.95	3.5	6.7
B18	"	"	1.2	28.8	.80	3.5	7.8
B19	"	"	1.4	28.6	.875	3.5	7.2
20	"	"	1.3	28.7	.80	3.5	7.8
B21	"	"	1.5	28.5	.675	3.5	9.1
B22	"	"	1.2	28.8	.95	3.5	6.7
B23	"	"	1.5	28.5	.75	4.0	9.5
B24	"	"	1.5	28.5	.675	3.0	7.8
B25	"	"	0.7	29.3	1.55	4.5	5.5
26	5-20-75	40	0.8	39.2	.90	4.5	8.6
B27	5-27-75	30	0.8	29.2	1.075	4.0	6.9
B28	"	"	0.0	30.0	1.525	4.5	5.6
29	5-20-75	"	0.8	29.2	1.075	3.5	6.0
B30	5-27-75	"	0.0	30.0	1.125	4.5	7.4
B31	"	"	1.0	29.0	1.10	4.5	6.5
32	5-20-75	40	0.2	39.8	1.075	4.0	6.5
B33	5-27-75	30	0.0	30.0	1.50	4.0	5.0
B34	"	"	1.2	28.8	.675	4.0	10.4
B35	"	"	0.0	30.0	1.15	4.5	7.3
B36	"	"	0.0	30.0	1.30	4.0	5.8

S. ABUT.

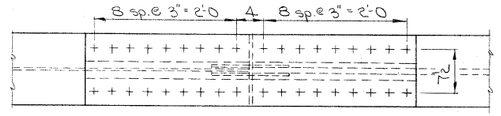
Pile NO.	DATE Driven	LENGTH IN LEADS	LENGTH CUT OFF	LENGTH IN STRAIT	AVG PEN NEAT 10 BLOWS	RAM DROP	TONS BRG.
B1	6-5-75	40'	0.2	39.8	.425	5.0	18.1
B2	"	"	0.2	39.8	.40	4.5	17.1
B3	"	"	0.1	39.9	.425	5.0	18.1
B4	"	"	0.0	40.0	.30	5.0	23.8
B5	"	"	0.0	39.9	.30	4.5	21.4
B6	"	"	0.0	40.0	.375	4.5	18.0
B7	6-6-75	"	0.1	39.9	.40	4.5	17.1
B8	"	"	0.1	39.9	.425	5.0	18.1
B9	"	"	0.0	40.0	.45	5.0	17.3
B10	"	"	0.1	39.9	.40	4.5	17.1
B11	"	"	0.0	40.0	.40	4.5	17.1
B12	"	"	0.1	39.9	.425	5.0	18.1
B13	"	"	0.2	39.8	.45	5.0	17.3
B14	"	"	0.2	39.8	.35	5.0	21.2
B15	"	"	0.1	39.9	.225	5.0	29.3
B16	"	"	0.2	39.8	.275	5.0	25.4
17	6-5-75	"	0.4	39.6	.40	5.0	19.0
18	"	"	0.0	40.0	.40	4.5	17.1
19	"	"	0.0	40.0	.45	4.5	15.6
20	6-6-75	"	0.2	39.8	.375	5.0	20.0
21	6-5-75	"	0.0	40.0	.425	5.0	18.1
22	6-6-75	"	0.2	39.8	.475	5.0	16.6
23	"	"	0.3	39.7	.325	5.0	22.4
B24	6-5-75	"	0.6	39.4	.30	5.0	23.8
B25	6-6-75	"	0.1	39.9	.225	5.0	29.3

PROJECT NUMBER	STATE	FED ROAD DIST NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
FN 34 6(14)--21-59	IOWA	8		14A	25

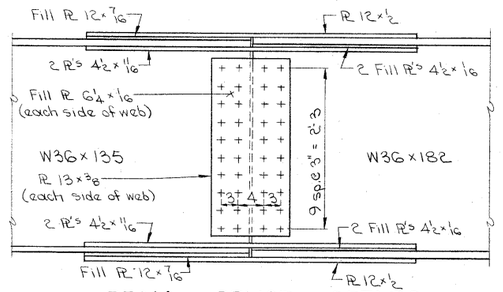




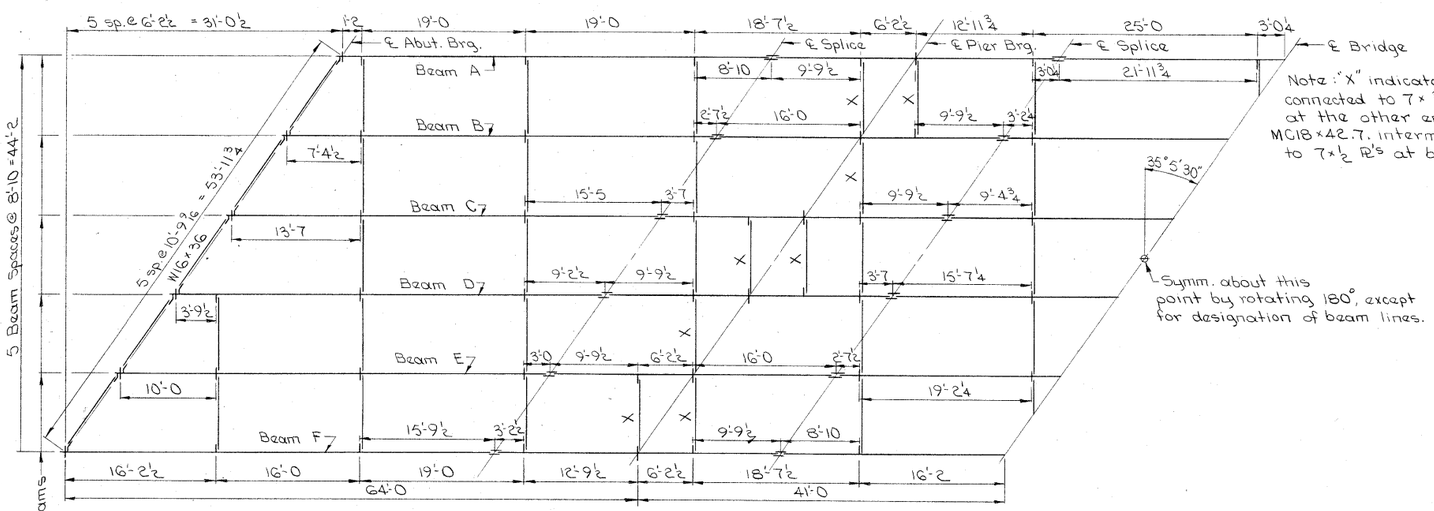
SHEAR STUD DETAILS



TOP & BOTTOM FLANGE SPLICE DETAILS (TYP.)



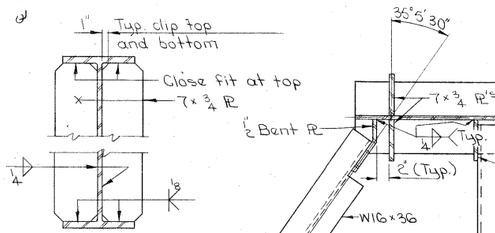
BEAM SPLICE DETAILS
(Typical all Splices)



STRUCTURAL STEEL LAYOUT

Note: "X" indicates W24 x 68 pier diaphragms which are connected to 7 x 3/4 PL's at ℄ Pier Brg. and to 7 x 1/2 PL's at the other end. Diaphragms not designated are MC18 x 42.7. Intermediate diaphragms and are connected to 7 x 1/2 PL's at both ends.

Symm. about this point by rotating 180°, except for designation of beam lines.



SECTION A-A

PART PLAN VIEW SHOWING ABUTMENT STIFFENER DETAILS

PART PLAN VIEW SHOWING PIER STIFFENER DETAILS

SUPERSTRUCTURE NOTES:

This bridge is designed for HS20-44 loading, plus an allowance of 20 lbs. per square foot of roadway for future wearing surface.

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

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

All field connections are to be bolted using "High Tensile Strength Bolts". Unless otherwise noted, all open holes are to be 15/16" ø and all bolts are to be 7/8" ø.

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

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

Splice filler plate thicknesses shown on the plans are based on nominal beam dimensions. These thicknesses are to be verified or adjusted during fabrication to secure a close fit. Each filler plate shall fit to the nearest 1/16" in thickness and single plates are required at any filler location.

The six lines of beams shall be fabricated using rolled beams conforming to ASTM A-572 Grade 50 and splice plates conforming to ASTM A-572 Grade 50. All other structural steel shall be ASTM A-36.

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

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

ROCKER & EXPANSION PLATE SETTINGS

Temp. at time of setting (F)	North Abut.		Pier # 1	Pier # 2	South Abut.	
						(Normal)
10°	—	0	- 3/16	- 7/16	- 5/8	3
50°	—	0	0	0	0	2 1/2
90°	—	0	+ 3/16	+ 7/16	+ 5/8	2

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

Design for 35°5'30" Skew

210'-0 x 48'-0 CONTINUOUS I-BEAM BRIDGE

64'-0 End Spans 82'-0 Center Span

SUPERSTRUCTURE DETAILS

Sta. 807+91.96 R.A. X-ing # 884 Aug. 1973

LUCAS COUNTY

IOWA STATE HIGHWAY COMMISSION

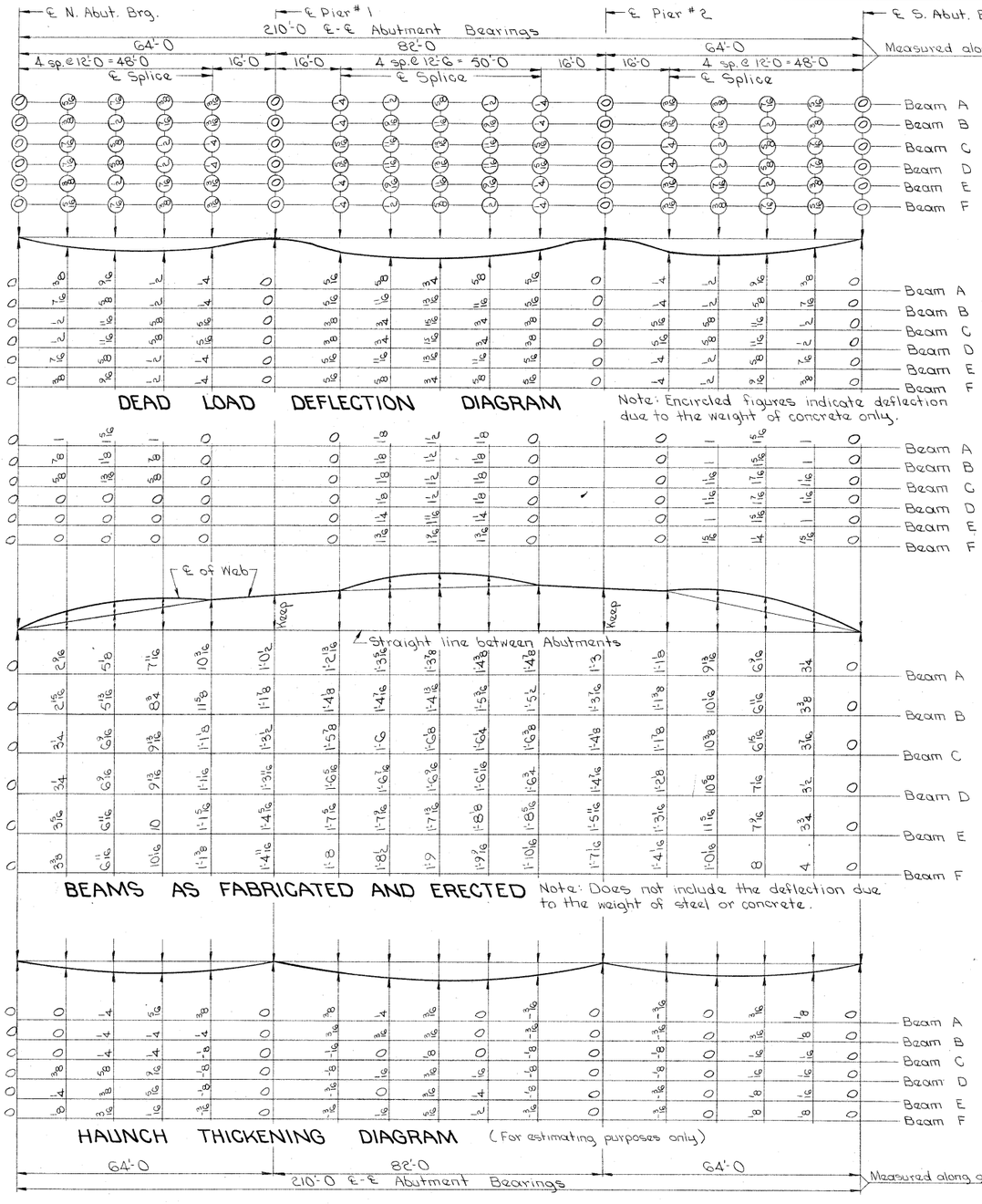
Design Sheet N° 13 of 23 File N° 24587 Design N° 173

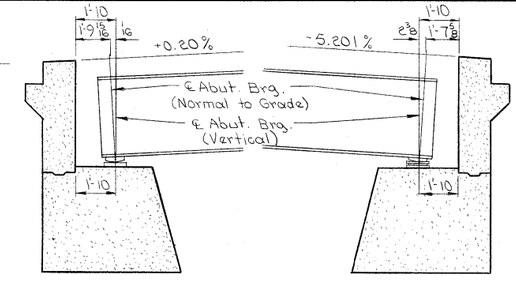
DESIGNED BY: C.A. Nenning TRACED BY: Doug Warring

DETAILED BY: Doug Warring CHECKED BY: K. Tsai

LUCAS COUNTY

PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
FN-34-6(14)--21-57	IOWA	5		15	23

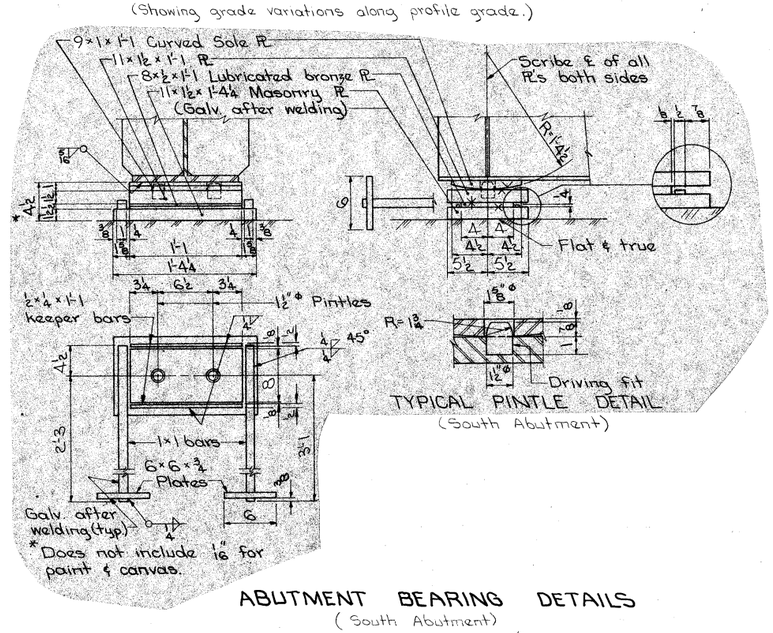




NORTH ABUT. SOUTH ABUT.

PART LONGITUDINAL SECTION

(Showing grade variations along profile grade.)

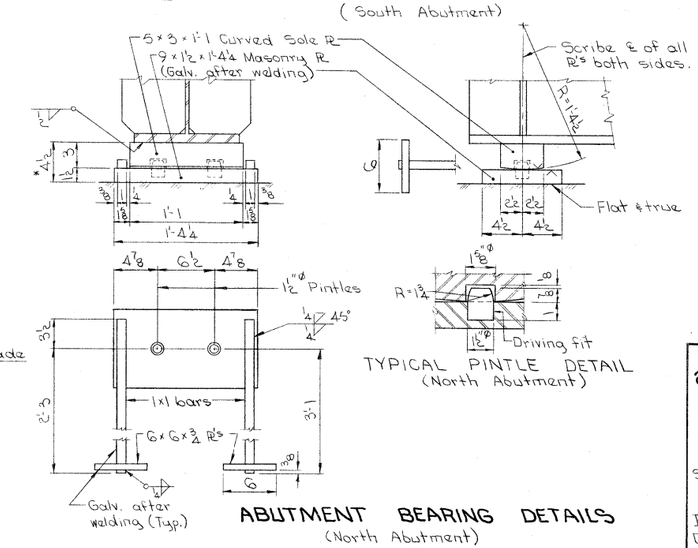


TYPICAL PINTLE DETAIL

(South Abutment)

ABUTMENT BEARING DETAILS

(South Abutment)



TYPICAL PINTLE DETAIL

(North Abutment)

ABUTMENT BEARING DETAILS

(North Abutment)

ABUT. BEARING NOTES:

Surfaces marked "V" shall be finished ANSI 250, surfaces marked "V" shall be finished ANSI 125. Bronze P. shall be lubricated in accordance with I.S.H.C. Spec. Art. 4190.03 (Sliding surface only). Top edges of bronze P. shall be beveled ⅛". All bearings to be set in paint & canvas. Pintle plates and masonry plates are a part of the Superstructure Structural Steel Quantity.

Design for 35° 5' 30" Skew

210'-0 × 48'-0 CONTINUOUS I-BEAM BRIDGE

64'-0 End Spans 82'-0 Center Span

SUPERSTRUCTURE DETAILS

Sta. 807+91.96 R.R. X-ing # 884 Aug. 1973

LUCAS COUNTY

IOWA STATE HIGHWAY COMMISSION

Design Sheet No. 14 Of 23 File No. 24587 Design No. 173

ISHC 316900 10-72 11-672 N6431

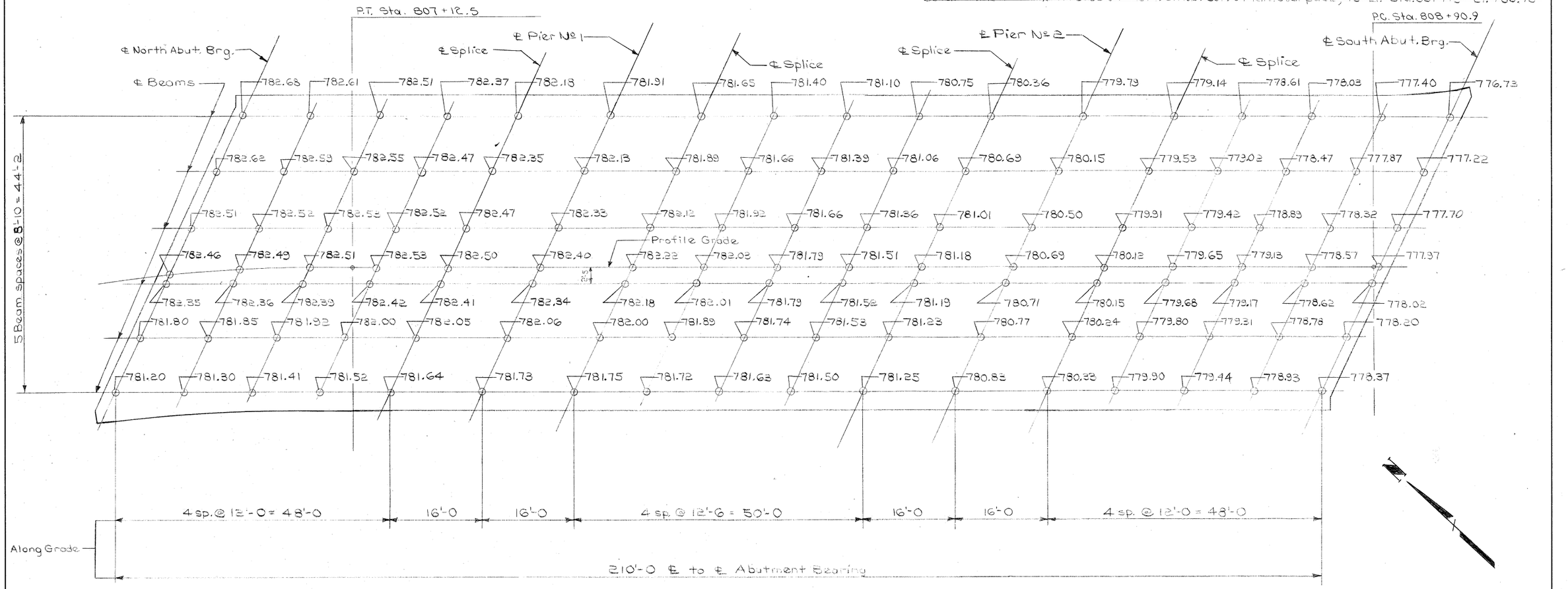
DESIGNED BY: R. B. Manning TRACED BY: Doug Warring

DETAILED BY: Doug Warring CHECKED BY: H. Tran

LUCAS COUNTY

PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
FN-34-6(14)--21-59	IOWA	5		16	23

~~Bench Mark No 4: "X" At base of Inlet on NE. Cor. of P.E. Overpass, 15' Lt. Sta. 807+15 El. 780.78~~



TOP OF SLAB ELEVATIONS

Design for 35° 5' 30" Skew

210'-0 x 48'-0 CONTINUOUS I-BEAM BRIDGE

64'-0 End Spans 82'-0 Center Span

SUPERSTRUCTURE DETAILS

Sta. 807+91.96 R.R. x-ing # 884 Aug. 1973

LUCAS COUNTY

IOWA STATE HIGHWAY COMMISSION

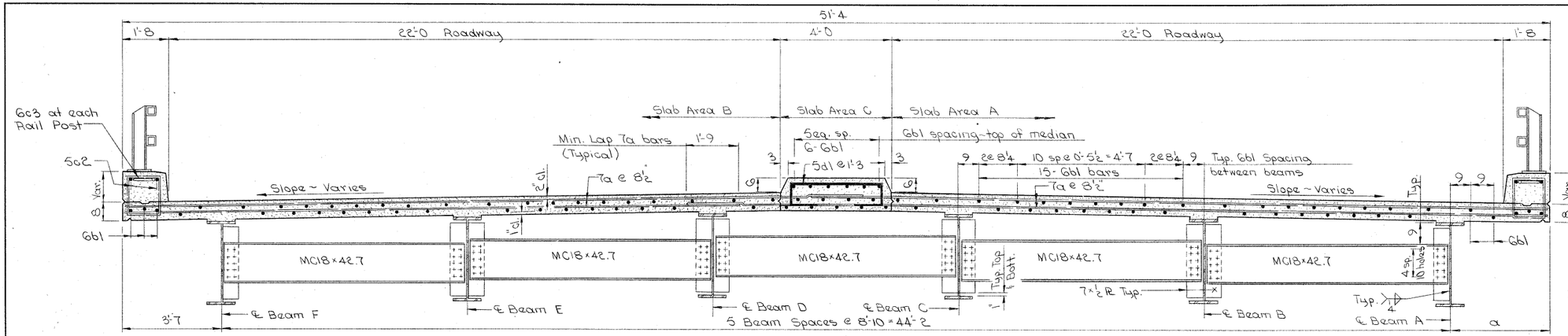
Design Sheet No 150f 23 File No 24587 Design No 173

Designed By: R.B. Nenning Traced By:

Detailed By: Otis Tweedt, Jr. Checked By: H. Tsai

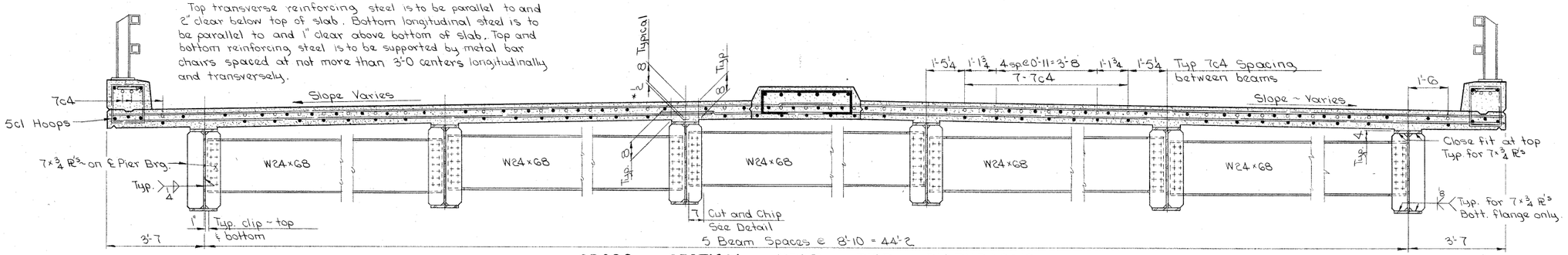
LUCAS COUNTY

PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
FN-34-G(14)--21-59	IOWA	5		17	25



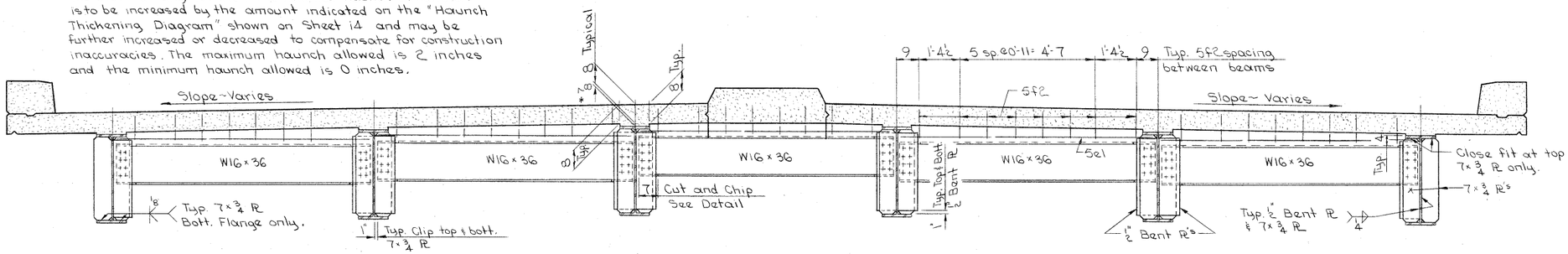
INTERMEDIATE CROSS SECTION
(From Sta. 807+21.43 to P.C. Sta. 808+90.9)

Note: "a" = 3'-7 from Sta. 807+12.5 to Sta. 808+90.9, and varies from Sta. 808+90.9 to South end of Bridge.

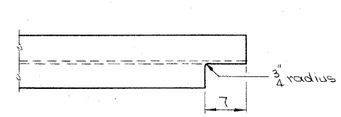


CROSS SECTION NEAR PIER DIAPHRAGMS

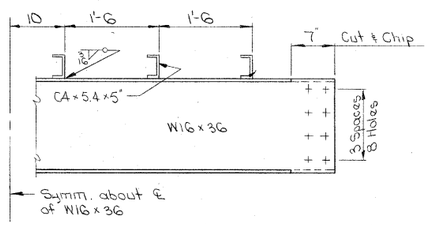
*The haunch dimensions shown are the nominal haunch dimensions at the bearings. For the slab thickness over the beam at any location the nominal haunch dimension is to be increased by the amount indicated on the "Haunch Thickening Diagram" shown on Sheet 14 and may be further increased or decreased to compensate for construction inaccuracies. The maximum haunch allowed is 2 inches and the minimum haunch allowed is 0 inches.



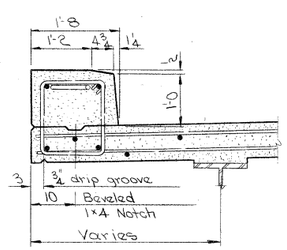
CROSS SECTION NEAR SOUTH ABUTMENT



CUT & CHIP DETAIL



ABUTMENT DIAPHRAGM DETAILS



CURB DETAILS

Design for 35° 5' 30" Skew

210'-0 × 48'-0 CONTINUOUS I-BEAM BRIDGE

64'-0 End Spans 82'-0 Center Span

SUPERSTRUCTURE DETAILS

Sta. 807+91.96 R.R. X-ing # 884 Aug. 1973

LUCAS COUNTY

IOWA STATE HIGHWAY COMMISSION

Design Sheet No. 16 Of 23 File No. 24587 Design No. 173

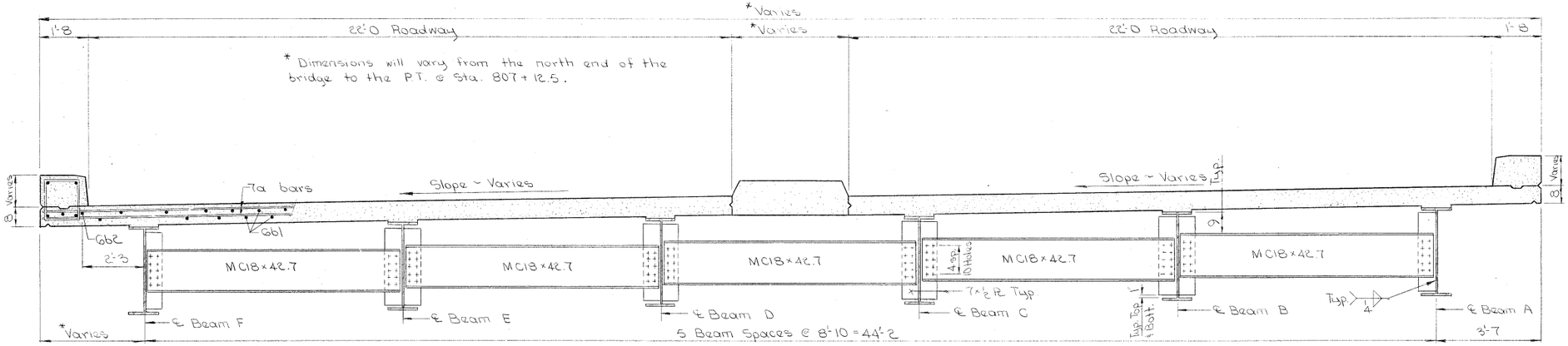
ISHC 316920 10-72 H-672 N6431

DESIGNED BY: R. B. Nenning TRACED BY: Doug Waring

DETAILED BY: Doug Waring CHECKED BY: H. Tsai

LUCAS COUNTY

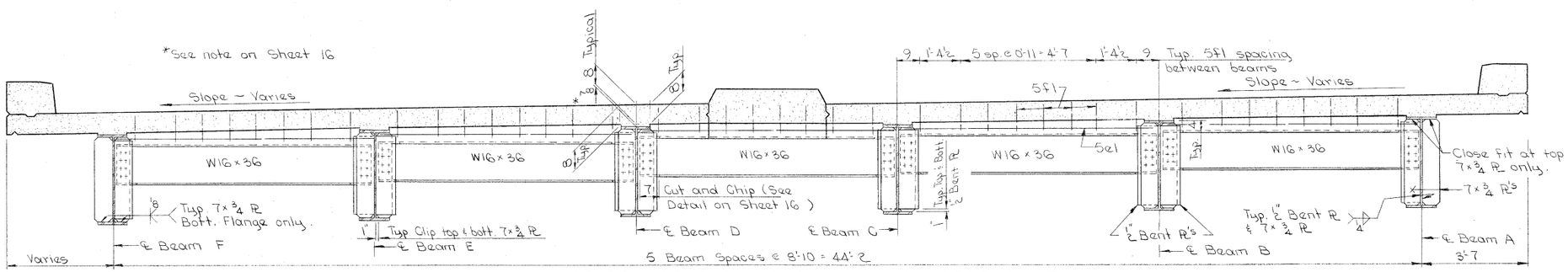
PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
FN-34-6(14)--21-59	IOWA	5		15	25



INTERMEDIATE CROSS SECTION

(From North Abutment to Sta. 807+21.43)

Note: For details not shown on this view see "Intermediate Cross Section" on Sheet 16 .



CROSS SECTION NEAR NORTH ABUTMENT

(See Sheet 16 for "Abutment Diaphragm Details")

MOMENT AND REACTION TABLE

(Moment in Foot-Kips ; Reaction in Kips)

	Load			Positive Moment 64'-0 Span			Negative Moment Pier			Positive Moment 82'-0 Span			Pier Reaction			Abutment Reaction		
	Beams A&F	Beams B&E	Beams C&D	Beams A&F	Beams B&E	Beams C&D	Beams A&F	Beams B&E	Beams C&D	Beams A&F	Beams B&E	Beams C&D	Beams A&F	Beams B&E	Beams C&D	Beams A&F	Beams B&E	Beams C&D
D.L. #1	0.993	1.071	1.241	255	279	317	589	644	736	247	272	310	82.1	89.7	102.0	22.7	24.7	28.3
D.L. #2	0.411	0.177	0.157	126	54	42	191	82	63	155	67	52	33.0	14.2	11.0	10.2	4.4	3.4
U.L.L.	0.455	0.514	0.514	——	——	——	232	262	262	——	——	——	38.2	43.1	43.1	——	——	——
C.L.L.*	12.805	14.454	14.454	——	——	——	136	154	154	——	——	——	——	——	——	——	——	——
	18.496	20.878	20.878	——	——	——	——	——	——	——	——	——	18.5	20.9	20.9	——	——	——
HS20-44	22.765	25.698	25.898	528	596	596	——	——	——	589	665	665	——	——	——	42.5	48.0	48.0
Impact				140	158	158	93	105	105	142	161	161	14.3	16.2	16.2	11.3	12.7	12.7
Total				——	——	——	1241	1247	1317	——	——	——	186.1	184.1	193.2	86.7	90.0	92.4

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

Design for 35° 5' 30" Skew

210'-0 × 48'-0 CONTINUOUS I- BEAM BRIDGE

64'-0 End Spans 82'-0 Center Span

SUPERSTRUCTURE DETAILS

Stat. 807+91.96 R.R. X-ing * 884 Aug. 1973

LUCAS COUNTY

IOWA STATE HIGHWAY COMMISSION

Design Sheet No.: 17 Of 23 File No.: CA587 Design No.: 173

DESIGNED BY: R A Hennings
DETAILED BY: Doug Warnings
TRACED BY: Doug Warnings
CHECKED BY: RH Trail

LUCAS COUNTY

PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
FN-34-6(14)--21-31	IOWA	5		17	

Measured along outside edge of slab.

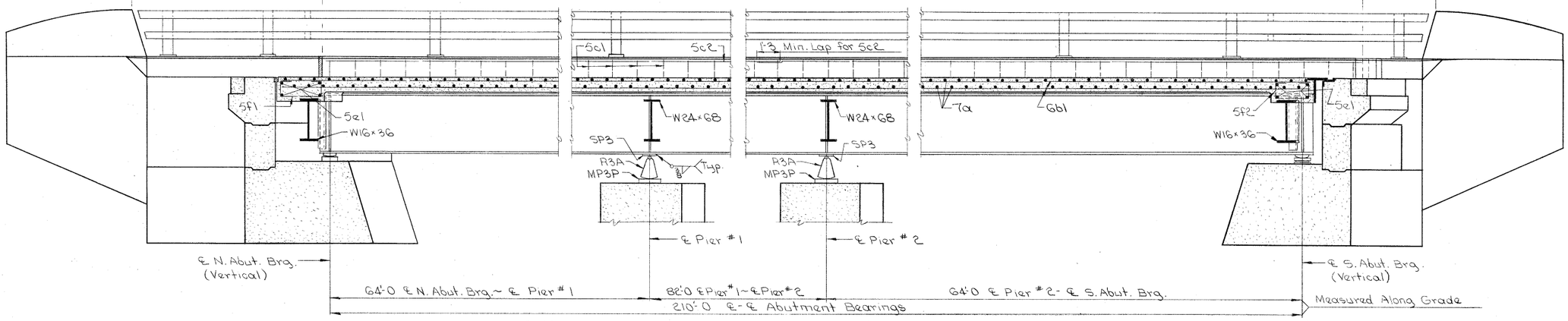
226'-2 1/16" Face to Face of Concrete End Posts (East Curb)
226'-9 3/8" Face to Face of Concrete End Posts (West Curb)

Measured along outside edge of slab. 5 3/4, 9 1/4

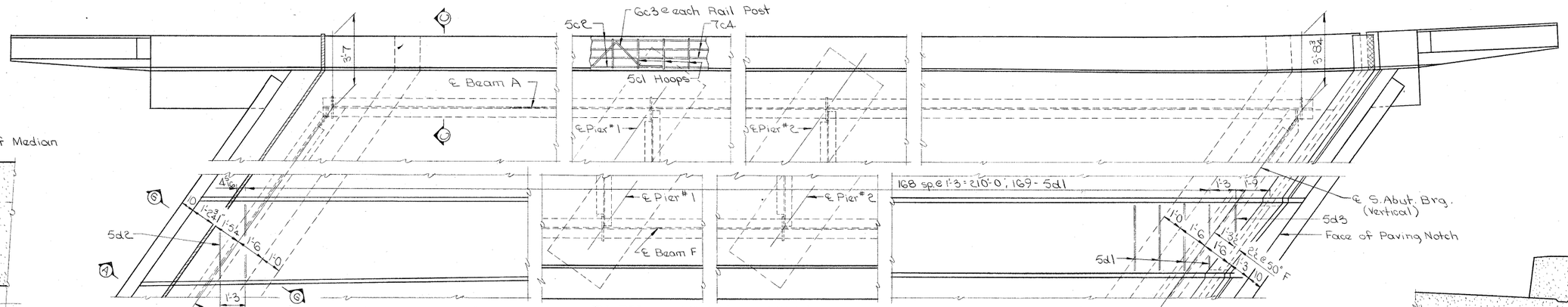
170 sp. @ 1'-3" = 212'-6"; 171 - 5c1 Hoops (East Curb)
170 sp. @ 1'-3" = 212'-6"; 171 - 5c1 Hoops (West Curb)

5 3/4, 9 1/4

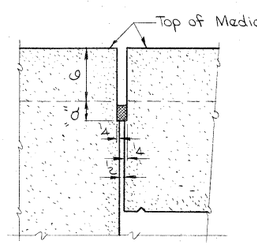
Note: See Sheets 22 & 23 for Rail Post spacing.



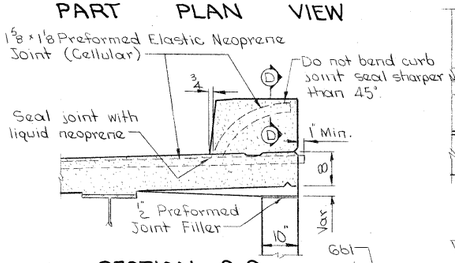
LONGITUDINAL SECTION NEAR CURB



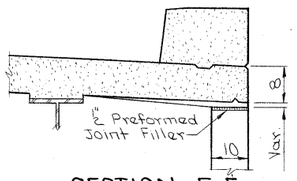
PART PLAN VIEW



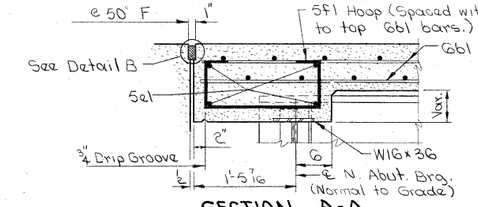
SECTION G-G



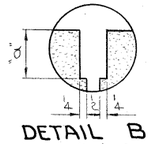
SECTION C-C



SECTION F-F

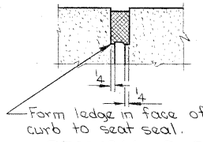


SECTION A-A

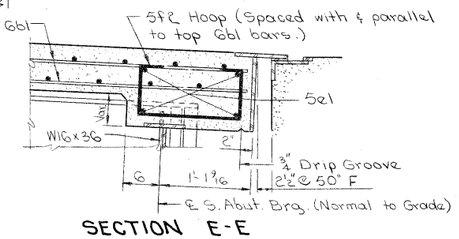


DETAIL B

Note: The distance ("a") from top of slab to compression seal seat shall be consistant with the recommendations of the manufacturer furnishing the seal.



SECTION D-D



SECTION E-E

Design for 35° 5' 30" Skew

210'-0 x 48'-0 CONTINUOUS I-BEAM BRIDGE

64'-0 End Spans 82'-0 Center Span

SUPERSTRUCTURE DETAILS

Sta. 807+91.96 R.R. X-ing # 884 Aug. 1973

LUCAS COUNTY

IOWA STATE HIGHWAY COMMISSION

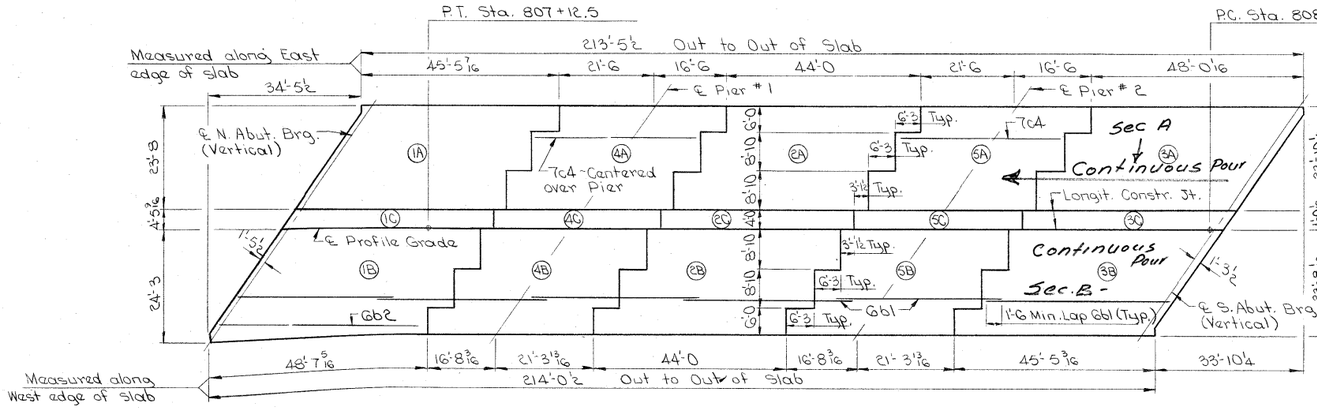
Design Sheet No 18 Of 23 File No 24587 Design No 173

DESIGNED BY: R. A. Henning TRACED BY: Doug Wiersinga
DETAILED BY: Doug Wiersinga CHECKED BY: M. Tasi

LUCAS COUNTY

PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
FN-34-6(14)--21-59	IOWA	5		20	25

ISHC 314920 10-72 11-672 N6431



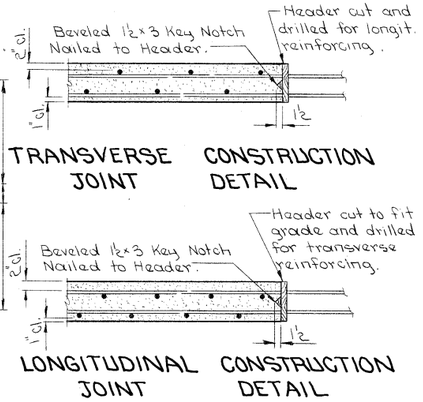
CONCRETE PLACEMENT DIAGRAM AND LONGITUDINAL REINFORCING LAYOUT

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

CONCRETE PLACEMENT QUANTITIES

Slab Section	1	2	3	4	5	Curbs	Total (Cu. Yd.)
A	28.0	26.1	29.3	22.5	22.5	13.4	141.8 C.Y.
B	30.6	26.1	27.8	22.5	22.5	13.4	142.9 C.Y.
C	8.9	7.4	8.1	6.4	6.4	——	37.2 C.Y.
Total	67.5	59.6	65.2	51.4	51.4	26.8	321.9 C.Y.

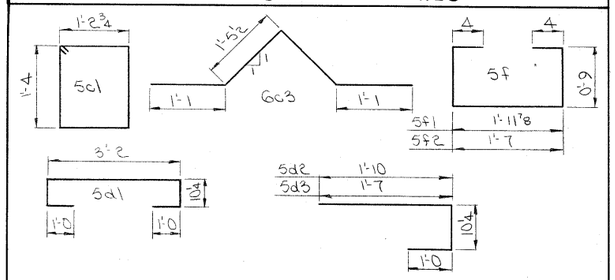
Note: Place Floor in two Continuous Pours with each pour on a separate day.
Sec A - 1, 2, 3, 4 & 5 Continuous Pour
Sec B - 1, 2, 3, 4 & 5 Continuous Pour



REINFORCING STEEL ~ SUPERSTRUCTURE

Bar	Location	Shape	No	Length	Weight
7a1	Slab Transv. Top	——	516	26'-5	27862
7a2	Slab Transv. Top @ N. End	——	22	2'-3 / 23'-10	598
7a3	Slab Transv. Top @ S. End	——	25	2'-3 / 26'-3	728
7a4	Slab Transv. Top @ S. End	——	22	2'-3 / 23'-10	598
7a5	Slab Transv. Top @ N. End	——	36	26'-9	1968
7a6	Slab Transv. Top @ N. End	——	26	2'-1 / 26'-8	764
7a7	Slab Transv. Top @ N. End	——	7	2'-7 / 8'-6	79
7a8	Slab Transv. Top @ N. End	——	29	9'-0	533
7a9	Slab Transv. Bott.	——	271	30'-10	17079
7a10	Slab Transv. Bott.	——	240	22'-0	10792
7a11	Slab Transv. Bott. @ N. End.	——	27	2'-7 / 28'-10	867
7a12	Slab Transv. Bott. @ S. End	——	30	1'-9 / 30'-9	996
7a13	Slab Transv. Bott. @ S. End	——	18	2'-10 / 20'-0	420
7a14	Slab Transv. Bott. @ N. End	——	40	22'-6	1840
7a15	Slab Transv. Bott. @ N. End	——	22	1'-7 / 22'-3	536
7a16	Slab Transv. Bott. @ N. End	——	7	2'-1 / 8'-0	72
7a17	Slab Transv. Bott. @ N. End	——	29	9'-0	535
Gb1	Slab Longit. ~ Top & Bott.	——	546	36'-10	30207
Gb2	Slab Longit. ~ Top @ N.W. Corner	——	1	40'-0	60
5c1	Curb Transv. Hoops	▯	342	6'-0	2140
5c2	Curb Longit. ~ Top	——	24	36'-7	916
Gc3	Rail Post Anchors	⌒	50	5'-0	376
7c4	Top of Slab & Curbs ~ Over Piers	——	82	37'-8	6313
5d1	Median ~ Transv.	⊏⊐	169	6'-6	1146
5d2	Median ~ Transv. @ North End	⊐	1	3'-6	4
5d3	Median ~ Transv. @ South End	⊐	1	3'-3	3
5e1	End Diaphragm ~ Longit.	——	40	10'-6	438
5f1	End Diaphragm ~ Transv. ~ N. Abut.	⊏⊐	40	3'-9	156
5f2	End Diaphragm ~ Transv. ~ S. Abut.	⊏⊐	40	3'-4	139
				Total (Lbs.)	108163

BENT BAR DETAILS

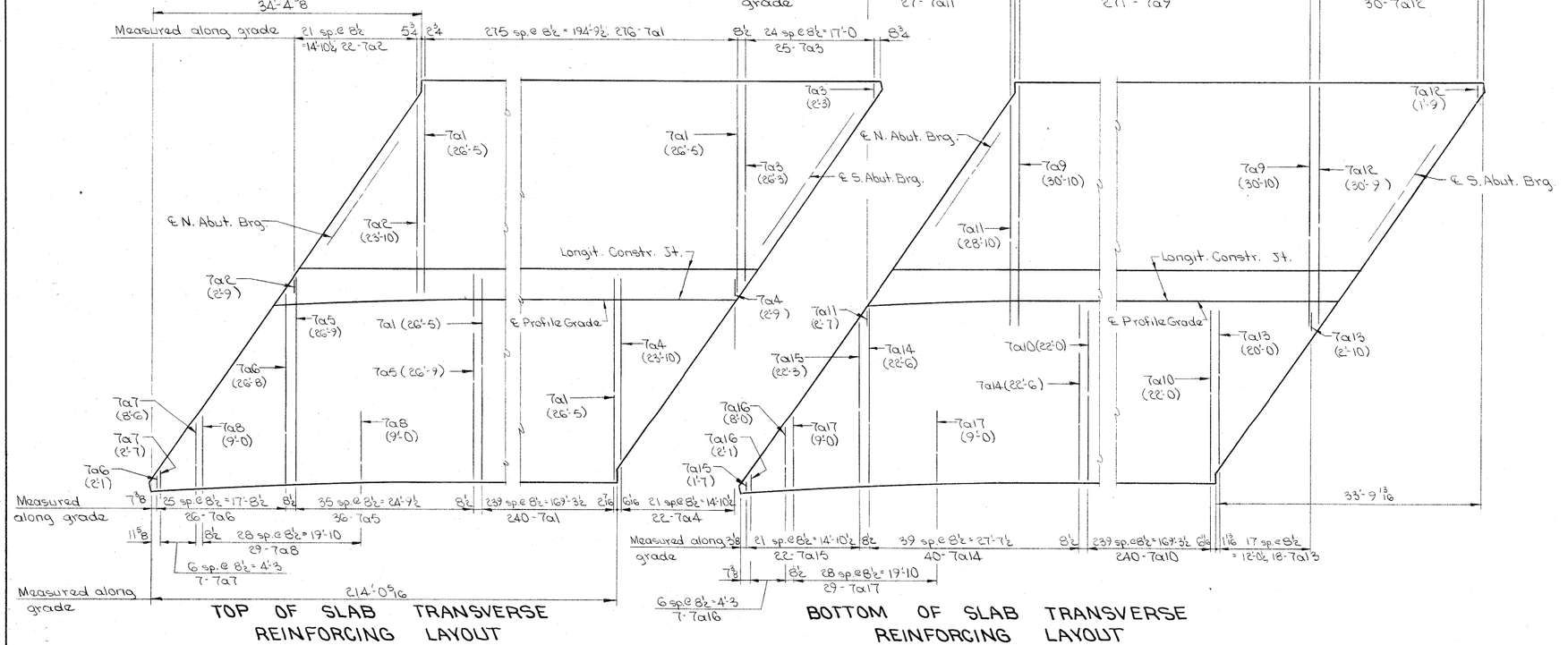


Note: All dimensions are out to out.

TOTAL ESTIMATED QUANTITIES ~ SUPERSTRUCTURE

Item	Unit	Quantity
Structural Concrete Class D	Cu.Yd.	321.9
Reinforcing Steel	Lbs.	108163
Structural Steel A-36	Lbs.	* 58900
Structural Steel A-572	Lbs.	200020
1"x1'8 Preformed Elastic Neoprene Joint	L.F.	67.4

* Quantity includes 93 lbs. of Lubricated Bronze R.



Design for 35° 5' 30" Skew

210'-0 x 48'-0 CONTINUOUS I-BEAM BRIDGE

64'-0 End Spans 82'-0 Center Span

SUPERSTRUCTURE DETAILS

Sta. 807+91.96 R.R. X-ing # 884 Aug., 1973

LUCAS COUNTY

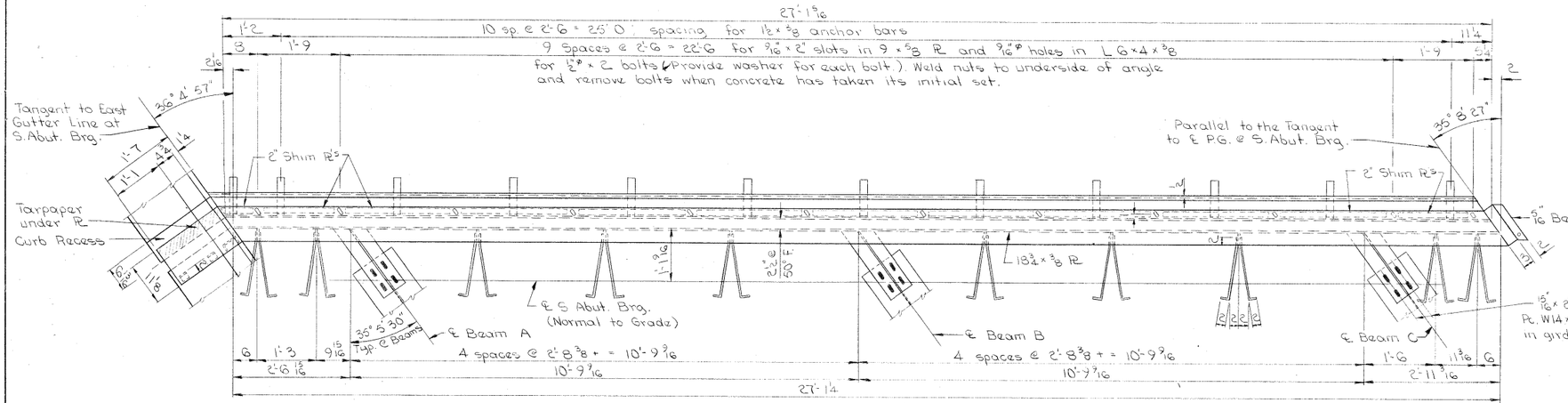
IOWA STATE HIGHWAY COMMISSION

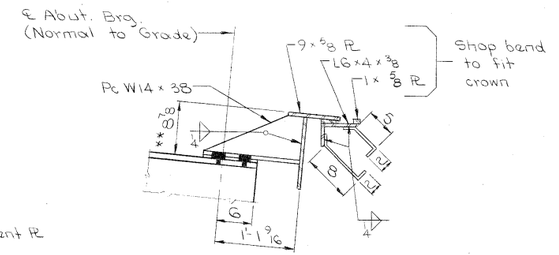
Design Sheet N° 19 of 23 File N° 24587 Design N° 173

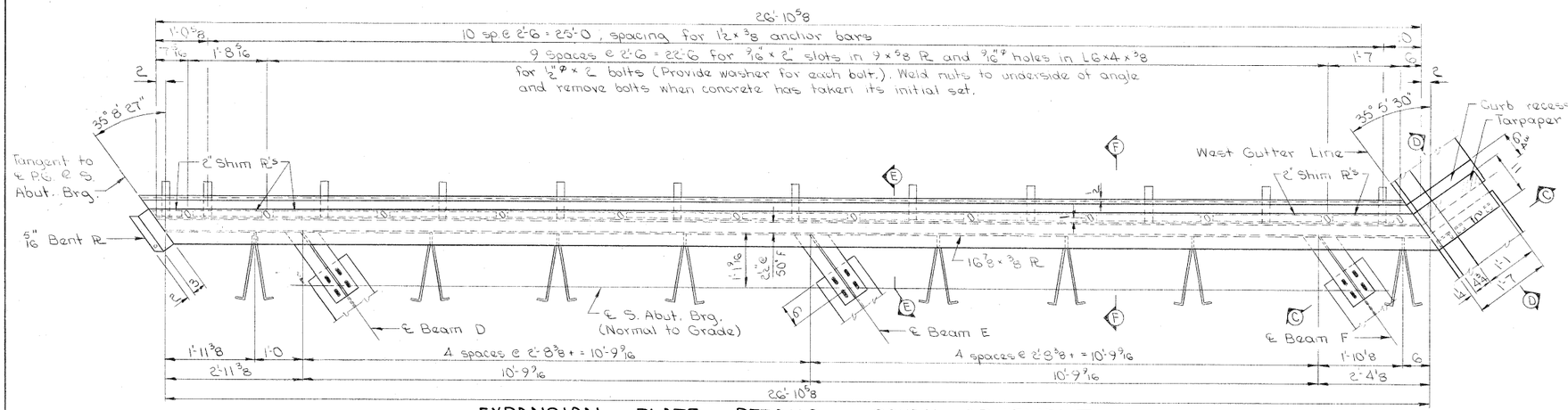
ISHC 316900 10-72 11-672 N6431 DESIGNED BY: R.A. Nenning TRACED BY: Doug Warning
DETAILED BY: Doug Warning CHECKED BY: M. Tasa

LUCAS COUNTY

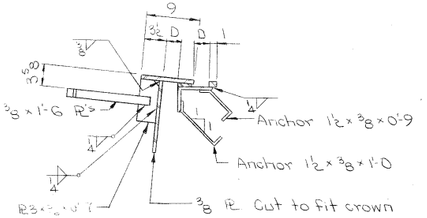
PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
FN-34-6(14)--21-57	IOWA	5		21	25

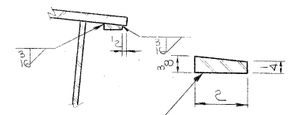




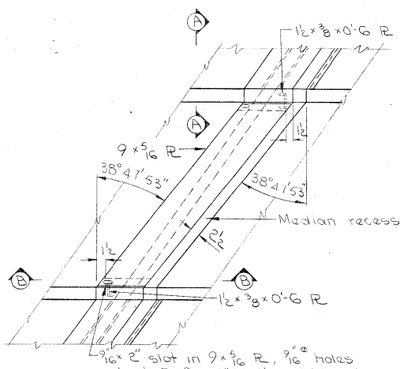


EXPANSION PLATE DETAILS ~ SOUTH ABUTMENT

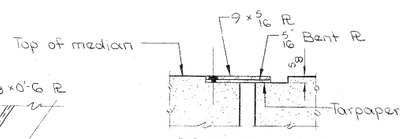


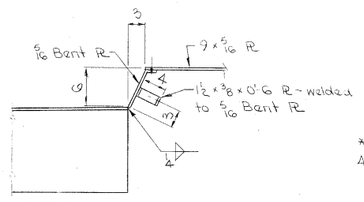


SHIM DETAIL

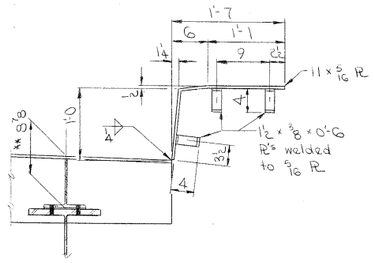


PLAN VIEW OF MEDIAN EXPANSION JOINT

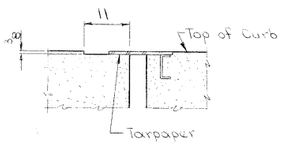




VIEW A-A



VIEW C-C



Note: Dimension "D" is 2½" for a temperature of 50° F. See "Rocker And Expansion Plate Setting" diagram on another sheet for settings for 10° F. and 90° F.

Design for 35° 5' 30" Skew

210'-0 x 48'-0 CONTINUOUS I-BEAM BRIDGE

64'-0 End Spans 82'-0 Center Span

EXPANSION PLATE DETAILS

Sta. 807+91.96 R.R. X-ing # 884 Aug. 1973

LUCAS COUNTY

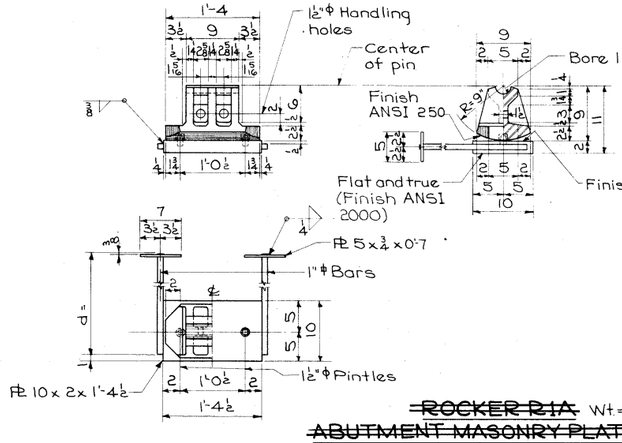
IOWA STATE HIGHWAY COMMISSION

Design Sheet No.: 20 Of 23 File No.: 24587 Design No.: 173

DESIGNED BY: R.A. Nenning
DETAILED BY: Doug Warrings
TRACED BY: Doug Warrings
CHECKED BY: H. Tear

LUCAS COUNTY

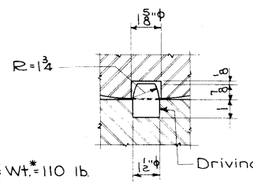
PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
FN-34-6(14)--21-59	IOWA	5		20	23



~~ROCKER R1A~~ Wt = 143 lb

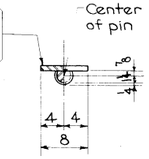
~~ABUTMENT MASONRY PLATE MP1A~~ Wt.* = 110 lb

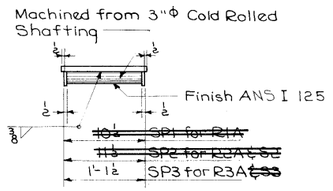
* Wt. does not include 1"□ bars



TYPICAL PINTLE DETAIL

~~SP1 PL 8 x ¾ x 1'-1½~~
~~SP2 PL 8 x ¾ x 1'-0~~
SP3 - PL 8 x ¾ x 1'-2½





SOLE PLATE ~~SP1, SP2 &~~ SP3

Wt. ~~SP1 34 lb.~~ ~~SP2 37 lb.~~ SP3 = 43 lb.

BEARING NOTES:

The casting of ~~R1A, R2A, S2~~, R3A and ~~S3~~ shall comply with Article 4153.04 of the I.H.C. Standard Specifications. Castings may be Gray Iron or Nodular 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.H.C. Standard Specifications and with the requirements of ASTM A-108 steel.

All bearings are to be set in paint and canvas.

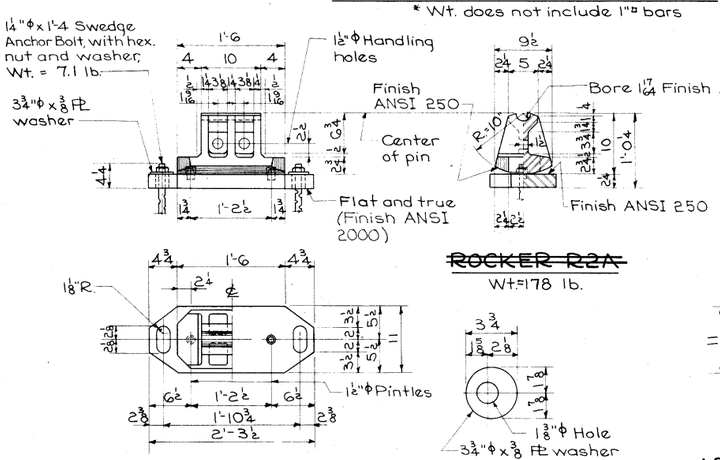
Anchor bolts shall be set in accordance with Article 2408.47 of the I.H.C. Standard Specifications.

After masonry plates, rockers and shoes are in correct location, pour mortar around anchor bolts to fill the slotted holes.

The weight of bearings shown does not include the weight of paint.

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 №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. №3 grease is to be applied.

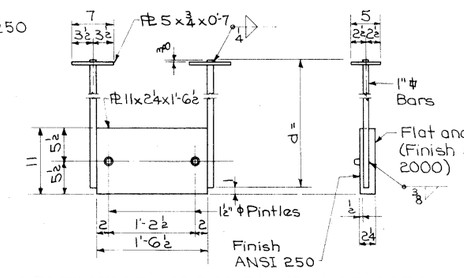
~~Masonry plates MP1A, MP2A and MP3A shall be galvanized after the 1"ϕ bore have been welded to the masonry plates.~~



~~ROCKER R2A~~ Wt=178 lb.

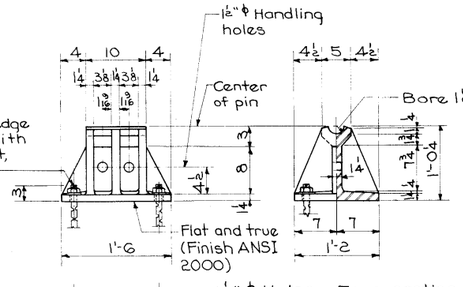
~~PIER MASONRY PLATE MP2P~~

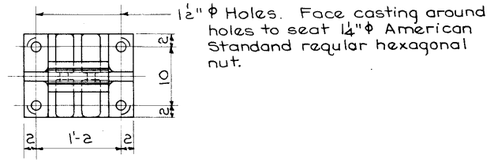
Wt. = 160 lb.



~~ABUTMENT MASONRY PLATE MP2A~~

Wt. 146 lb. (Does not include 1"□ bars)





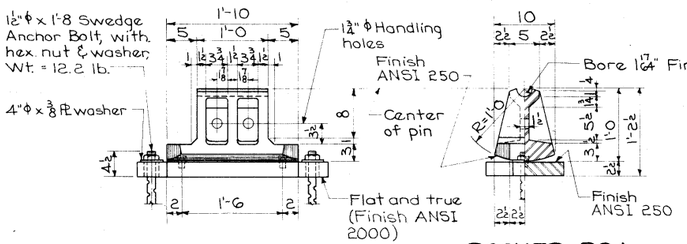
~~FIXED SHOE S2~~

Wt. = 222 lb.

(Similar to S2 V12-1)

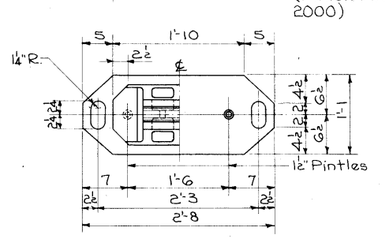
DISTANCE FROM TOP OF SOLE PLATE TO BRIDGE SEAT	
Rockers & Fixed Shoes	* D
~~R1A~~	~~1'-0 1/16~~
~~R2A & S2~~	~~1'-1 15/16~~
R3A ~~& S3~~	1'-4 3/16

* Including 1/16" paint and canvas.



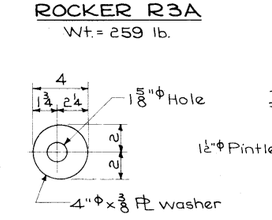
ROCKER R3A

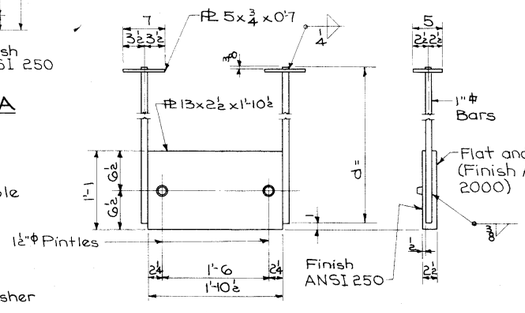
Wt. = 259 lb.



PIER MASONRY PLATE MP3P

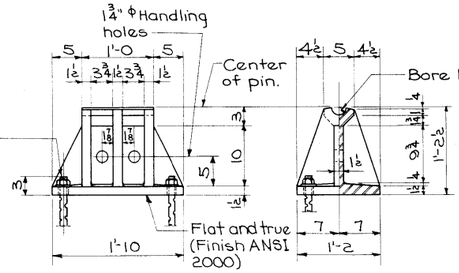
Wt. = 249 lb.

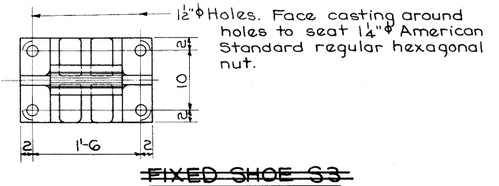




~~ABUTMENT MASONRY PLATE MP3A~~

Wt. = 224 lb. (Does not include 1"□ bars)





~~FIXED SHOE S3~~

Wt. = 349 lb.

(Similar to S1 V10A-7)

MAXIMUM REACTION (In Kips)		
~~R1A~~	~~R2A S2~~	R3A ~~S3~~
~~132~~	~~211~~	263

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

Design for 35° 5' 30" Skew

210'-0 x 48'-0 CONTINUOUS I-BEAM BRIDGE

64'-0 End Spans 82'-0 Center Span

PIER BEARING DETAILS

Sta. 807+91.96 R.R. X-ing № 884 Aug. 1973

LUCAS COUNTY

Iowa State Highway Commission

Design Sheet № 21 Of 23 File № 24587 Design № 173

Revision (7-6-64) Finish on shoes and masonry plates in contact with concrete added.
Revision (6-1-65) Specifications for Rocker and Shoe material clarified.
Revision (7-8-71) Note concerning galvanizing of abutment masonry plates added.
Revision (3-28-72) ASA changed to ANSI
Revision (11-22-72) Note concerning finishing changed.

DESIGNED BY: R.A. Skerning TRACED BY: Doug Warnings

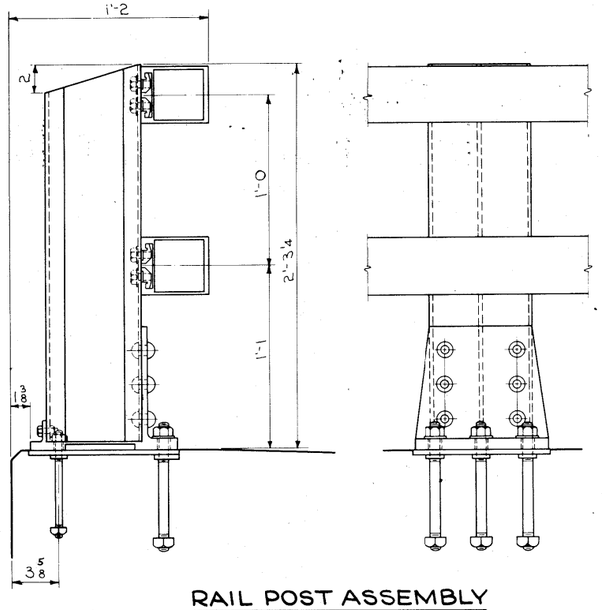
DETAILED BY: — CHECKED BY: H. Traxi

BEARING STANDARD | STANDARD SHEET 1008 | LUCAS COUNTY

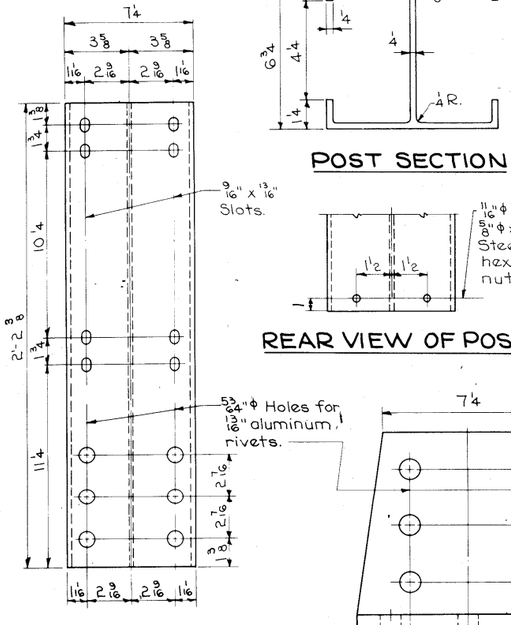
PROJECT NUMBER	STATE	FED ROAD DIST. №	FISCAL YEAR	SHEET №	TOTAL SHEETS
(N.A.S.(H)-21-5)	IOWA	5			

Revised 8-2-72: Rear post bolt size & type changed.
Revised 11-13-70: Exposed anchor bolt nuts & washers changed from aluminum to stainless steel.

Revised 12-26-68: Added explanation for material for clamp bar bolt.
Revised 6-7-67: Red lead shop coat paint note added.
Revised 5-2-67: Material specifications for aluminum and stainless steel changed.
Revised 10-13-66: Note concerning ½"ϕ drain holes added.
Revised 9-23-66: Gage of holes in Post Base Plate changed.
Revised 8-19-66: Post base Plate and Anchor Bolt Assembly Plate details changed.
Revised 7-25-66: Caulking at posts eliminated.
Revised 3-14-66: Minor changes made.



RAIL POST ASSEMBLY

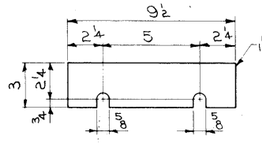


POST

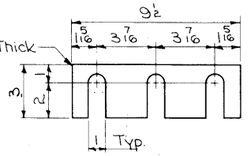
POST SECTION

REAR VIEW OF POST

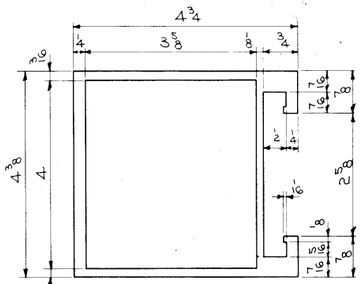
POST BASE PLATE DETAILS



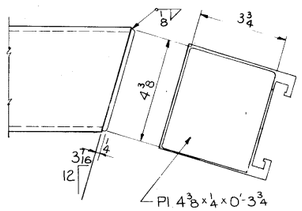
SHIM "A" DETAIL



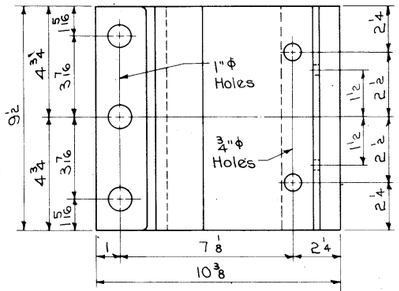
SHIM "B" DETAIL

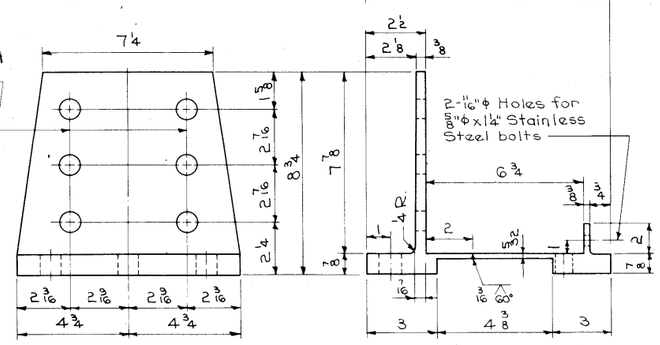


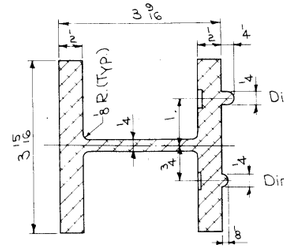
RAIL SECTION



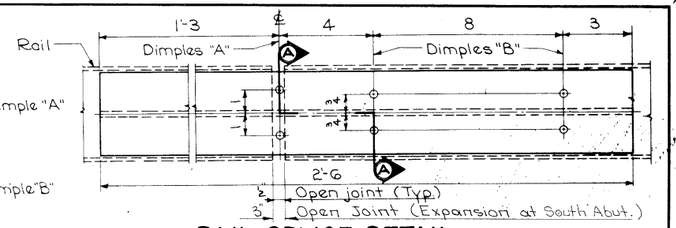
RAIL END CAP DETAILS



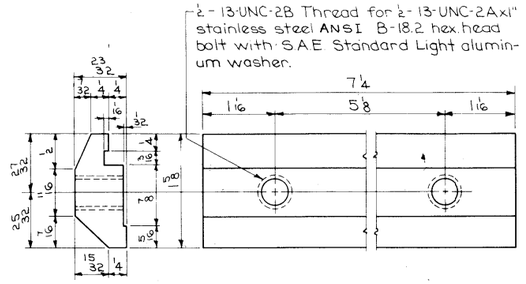




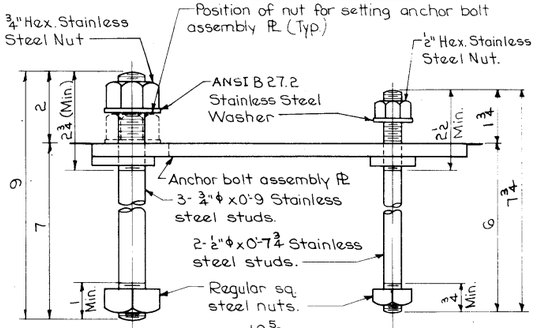
SECTION A-A

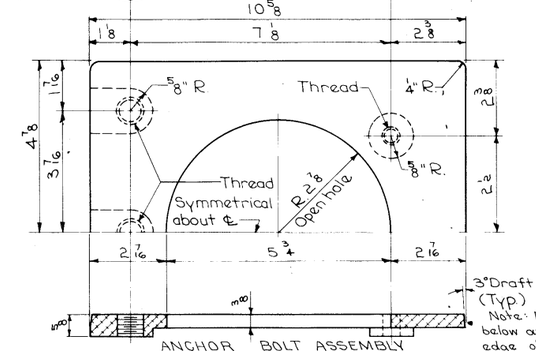


RAIL SPLICE DETAIL



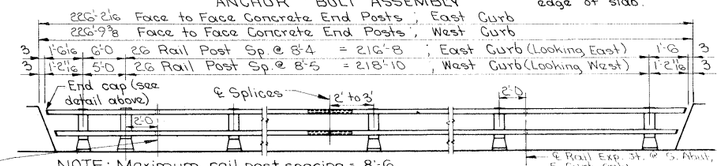
CLAMP BAR DETAILS





ANCHOR BOLT ASSEMBLY

Note: Dimensions shown below are along outside edge of slab.



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

TYPICAL ELEVATION OF RAILING AND RAIL POST LAYOUT

ALUMINUM HANDRAIL NOTES:

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

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

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-O for shims.

Material for anchor studs shall be an ASTM A276 Stainless steel with a minimum ultimate strength of 100,000 psi, a minimum elongation in two inches of 12% and a minimum reduction of area of 40%. Stud thread shall conform to ANSI B-1.1 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.

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-1.1 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" is 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-193, Grade B8 (Carbide solution treated) or A.S.T.M. A-276 Type 430 (Annealed - hot or cold finished).

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-1.1 for UNC threads series, class 2B fit.

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 6061-T6. Rivets shall be button head, cone point and cold driven.

A ½" ϕ drain hole is to be provided, 3 inches in from the end, at the bottom side of the end sections of all rails.

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

DESIGN SPECIFICATIONS:

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

ALUMINUM HANDRAIL QUANTITIES	
Aluminum, Handrail	451.95' Lin. Ft.

Design for 35° 5' 30" Skew

210'-0 x 48'-0 CONTINUOUS I-BEAM BRIDGE

64'-0 End Spans 82'-0 Center Span

ALUMINUM HANDRAIL DETAILS

Sta. 807+91.96 RR X-ing # 884 Apr. 1973

LUCAS COUNTY

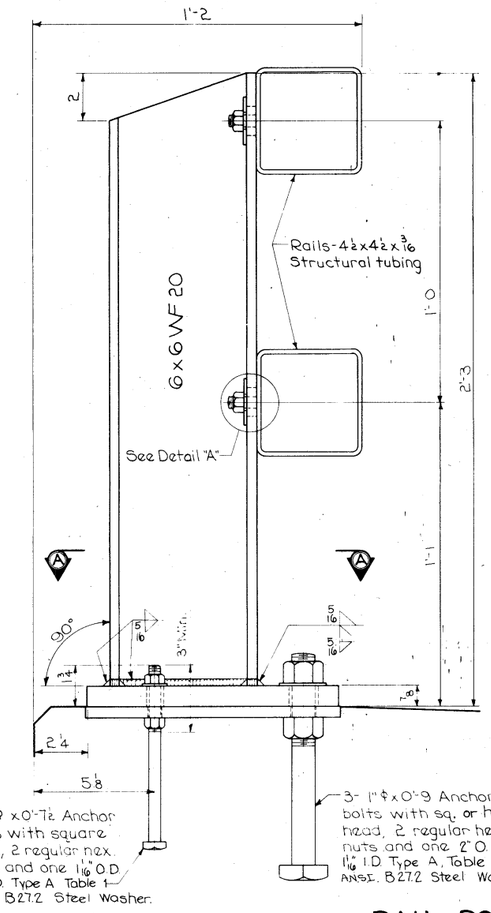
IOWA STATE HIGHWAY COMMISSION

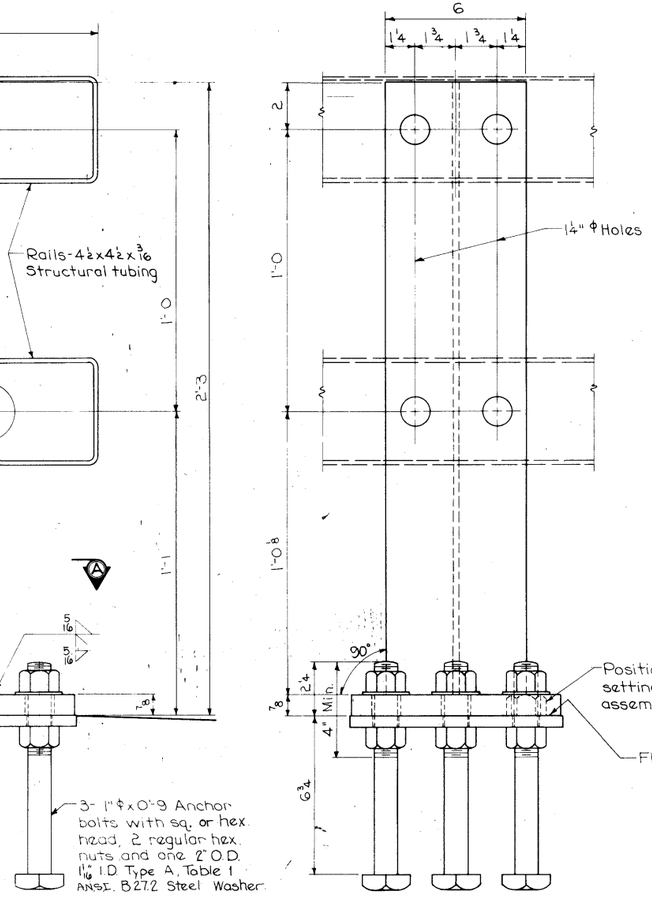
Design Sheet No 22 Of 23 File No 24581 Design No 113

DESIGNED BY: K.P. Nenning TRACED BY: Doug Warnock
DETAILED BY: Doug Warnock CHECKED BY: K. Tapp

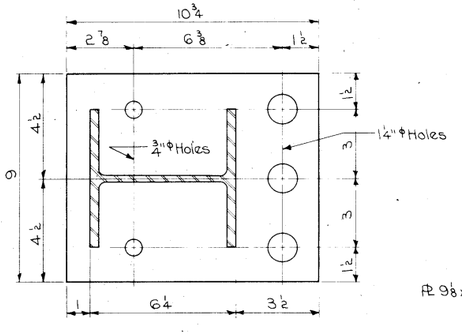
ALUMINUM HANDRAIL DETAILS | STANDARD SHEET 1012 A | LUCAS COUNTY | PROJECT NUMBER

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

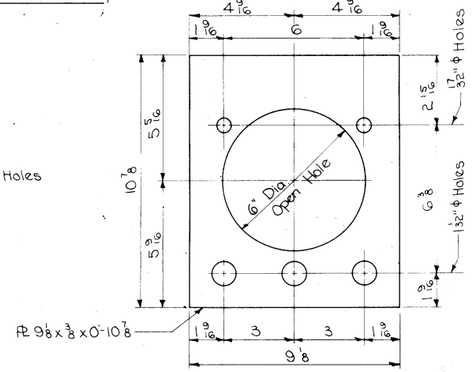




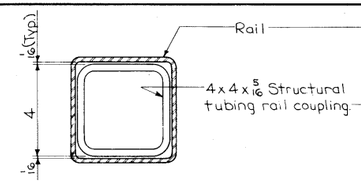
RAIL POST



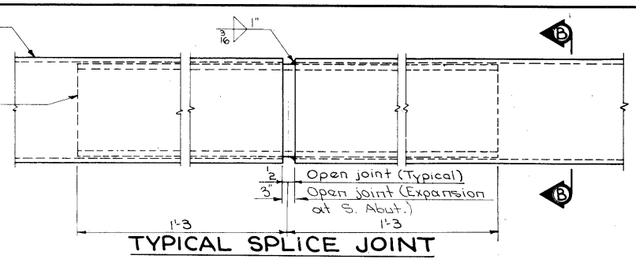
SECTION A-A



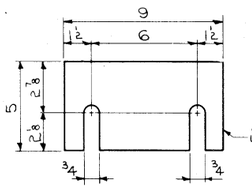
ANCHOR CAGE DETAILS



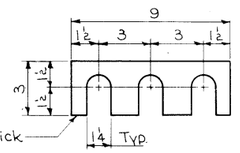
SECTION B-B



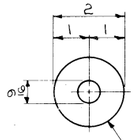
TYPICAL SPLICE JOINT

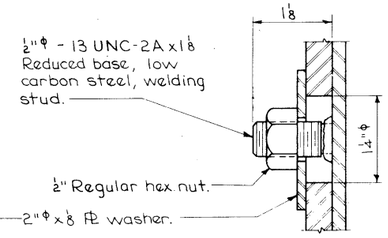


SHIM "A" DETAIL



SHIM "B" DETAIL





DETAIL "A"

STEEL HANDRAIL NOTES:

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

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

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

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

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

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

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

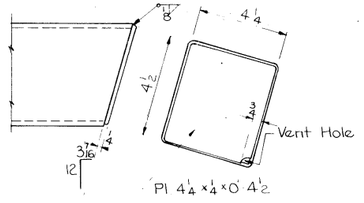
Handling, storage and installation of steel handrail shall be in accordance with Section 2414.06 of the Standard Specifications, except that no caulking will be required.

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

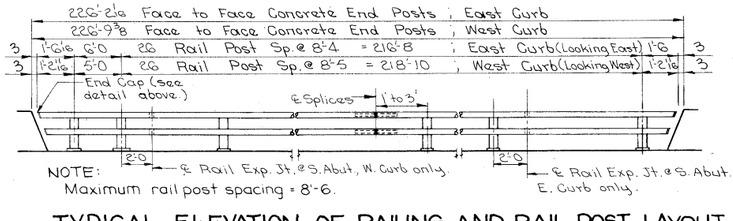
A surface is considered to be "Flat and True" when the deviation from a straight edge placed on this surface in any position, is less than 1/16".

No painting will be required.

Rail studs shall be provided with adequate protection during shipment.



RAIL END CAP DETAILS



TYPICAL ELEVATION OF RAILING AND RAIL POST LAYOUT

Note: Dimensions shown above are along outside edge of slab.

DESIGN SPECIFICATIONS:

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

STEEL HANDRAIL QUANTITIES		
Steel Handrail	451.95	Lin. Ft.

Design for 35° 5' 30" Skew

210'-0 x 48'-0 CONTINUOUS I-BEAM BRIDGE

64'-0 End Spans 82'-0 Center Span

STEEL HANDRAIL DETAILS

Sta. 807 + 91.96 R.R. X-ing # 884 Aug. 1973

LUCAS COUNTY

IOWA STATE HIGHWAY COMMISSION

Design Sheet Nº 23 Of 23 File Nº 24587 Design Nº 173

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

DESIGNED BY: R.D. Henning TRACED BY: Doug Warnings
DETAILED BY: Doug Warnings CHECKED BY: M. Tear

STEEL HANDRAIL DETAILS | STANDARD SHEET 1013A | LUCAS COUNTY

PROJECT NUMBER	STATE	FED ROAD DIST. Nº	FISCAL YEAR	SHEET Nº	Total SHEETS
FN-34-6(14)--21-62	IOWA	5			