HARRISON COUNTY

BRIDGES

I-IG-29-5(17)78--04-43

LETTING DATE

OCT. 11, 1966

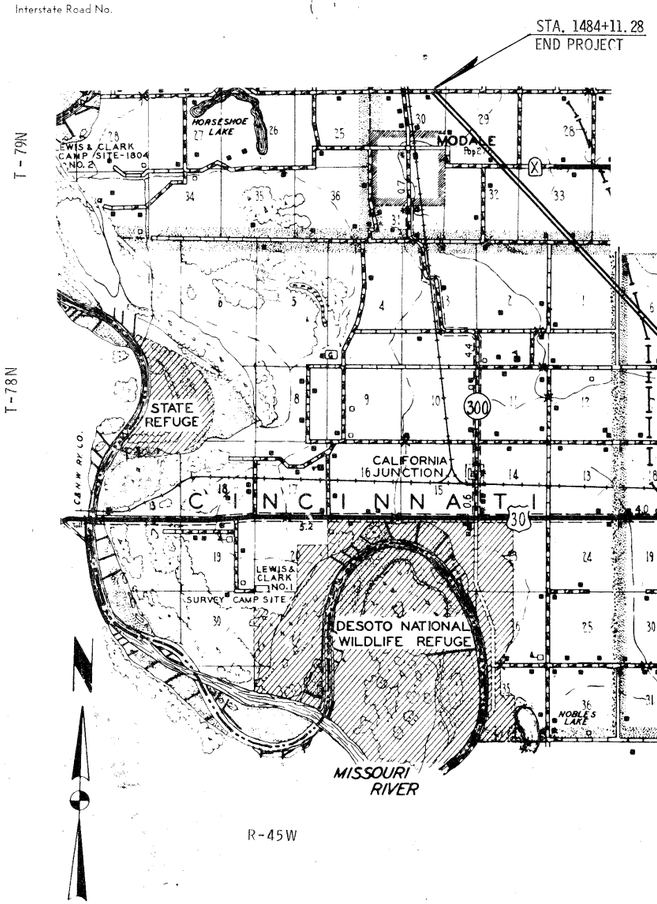
43-0900

43-039-22

#1818

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
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.



STATE OF IOWA
STATE HIGHWAY COMMISSION

PLANS OF PROPOSED IMPROVEMENT
ON THE

INTERSTATE ROAD SYSTEM
BRIDGES
HARRISON COUNTY

ON I-29 FROM U. S. 30 NORTHERLY TO NEAR MODALE

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

PLUS CURRENT SUPPLEMENT SPECIFICATIONS AND SPECIAL PROVISIONS

DESIGN STRESSES for the following materials are in accordance with A.A.S.H.O. Standard Specifications for Highway Bridges, Series of 1961.

Concrete in accordance with Section 1.4.11 f'c = 3500 psi.
Reinforcing Steel in accordance with Section 1.4.12
"Reinforcement" for intermediate, Hard, or Rail Steel Grade.
Structural Steel in accordance with INT. 7(62); Section 1.4.2(B)
"Structural Steel", A-36, fs = 20,000 psi.

CONSTRUCTION PLANS SHOWING PROJECT AS BUILT
Three Copies PREPARED BY Merle J. Blanchard
Asst. Resident Constr. Engr.
DATE FEB 4 1970

ONE COPY PREPARED, APPROVED & FORWARDED TO AMES
John Bennett
District Engineer
Constr.
Date Feb. 11, 1970

TWO COPIES TO BE MADE & RETURNED TO
Walter Morris
John Risch
DISTRICT ENGR.
RES MAINT. ENGR.

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

PROJECT NUMBER
I-IG-29-5(17)78--04-43

INDEX OF SHEETS 105-3

NO.	DESCRIPTION
1	TITLE SHEET
1A	TABULATION OF REVISIONS
2	ESTIMATE SHEET
3-12	BRIDGE DESIGN NO. 565

IOWA STATE HIGHWAY COMMISSION STANDARD REQUIRED
(Available At The I. S. H. C. Storeroom)

STANDARD	ISSUED	REVISED
P10A	1959	

MILEAGE SUMMARY 105-1

DIV.	LOCATION	LIN. FT.	MILES	STATE CONTROL SECTION NO.
	BRIDGE AT STA. 1187+12.50	160.417	.030	

DESIGN DATA
RURAL

1985 AADT	4760	V.P.D.
1985 AADT	8230	V.P.D.
1985 DHV	1104	V.P.H.
DIRECTIONAL	60	%
TRUCKS	11	%
DESIGN V	70	M.P.H.
Full	ACCESS CONTROL	

THIS PROJECT LET AS PROJECT NO.
E-ACI-IG-29-5(17)78--19-43

17 Sheets

REVISED
SEE FOLLOWING SHEET 1A

APPROVED
W. L. Thom 8-30-66
DIRECTOR OF ENGINEERING — DATE
IOWA HIGHWAY COMMISSION

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

DATE _____ 19____ IOWA REG. NO. _____

DEPARTMENT OF COMMERCE
BUREAU OF PUBLIC ROADS
APPROVED
DIVISION ENGINEER — DATE

File 20676 HARRISON COUNTY

STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	5		1	12

I-IG-29-5(17)78--04-43

LISTING OF PROJECT REVISIONS

DATE	SHEET NUMBER	DESCRIPTION OF REVISIONS
Sept. 16, '66	Sheet 1A of 12	This sheet added to project (Listing of project revisions).
	Sheet 1 of 12	The note "This Project Let As Project No. E-ACI-1G-29-5(17)78--19-43" added. Sheet 1A added to "Index of Sheets".

DATE	SHEET NUMBER	DESCRIPTION OF REVISIONS

File No. 20676 Harrison COUNTY

PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
E-ACI-1G-29-5(17)78--19-43	IOWA	5		1-A	12

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

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

I HEREBY CERTIFY THAT 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.

Donald K Schulze

DONALD K. SCHULZE

DATE 8-29-66 REG. NO. 2793

In Letting of October 11, 1966

Design 565 STA. 1187+12.50

I-29 OVER ALLEN DITCH

Section 8 T-78N R-44W ST. JOHNS TOWNSHIP

DESIGN FOR 42° 25' SKEW
DUAL 155'-0 X 39 CONTINUOUS I- BEAM BRIDGE

ESTIMATE OF QUANTITIES

ITEM		UNIT	TOTAL	
(1) Structural Concrete		Cu. Yds.	647.0	
Reinforcing Steel		Lbs.	153 538	
Structural Steel		Lbs.	305 904	
~~10 BP42 Steel~~	~~Furnish~~	L. F.	~~3 500~~	7,632
Bearing Piling	Drive	L. F.	3 500	8,199.3
~~16" P. 10A Piling~~	~~Furnish~~	L. F.	3 350	
~~Type V~~	~~Drive~~	L. F.	3 350	
10 BP 42 ⟶	Encased	L. F.	840	
Granular Backfill		Cu. Yds.	300	
Class 20 Excavation		Cu. Yds	320	
4" ϕ Tile Subdrain		L. F.	~~318~~	350
Aluminum or Steel	Handrail	L. F.	606.34	
	Handrail	L. F.	606.34	

(1) Includes 389.4 Cu. Yds of Class "D" in Superstructure, and 257.6 of Class "C" in Substructure.

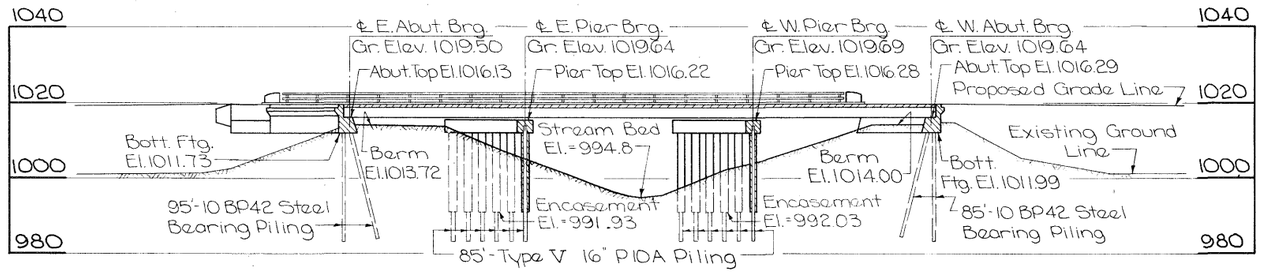
ESTIMATE SHEET

F

K. M.

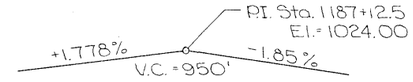
HARRISON COUNTY		IC-29-5(17)78--04-43	STATE IOWA			SHEET NO. 2	TOTAL SHEETS 12

BENCH MARK: STA 1187+12.50, IHC. PLUG IN S.W. WING WALL ON N.B.L. BRIDGE. ELEV.- 1019.67

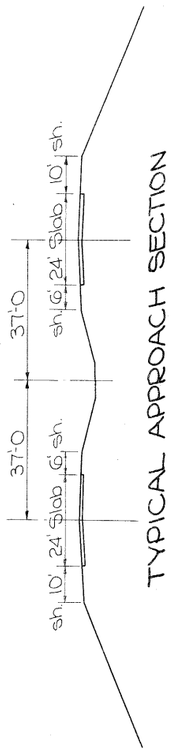


LONGITUDINAL SECTION ALONG ℄ ROADWAY

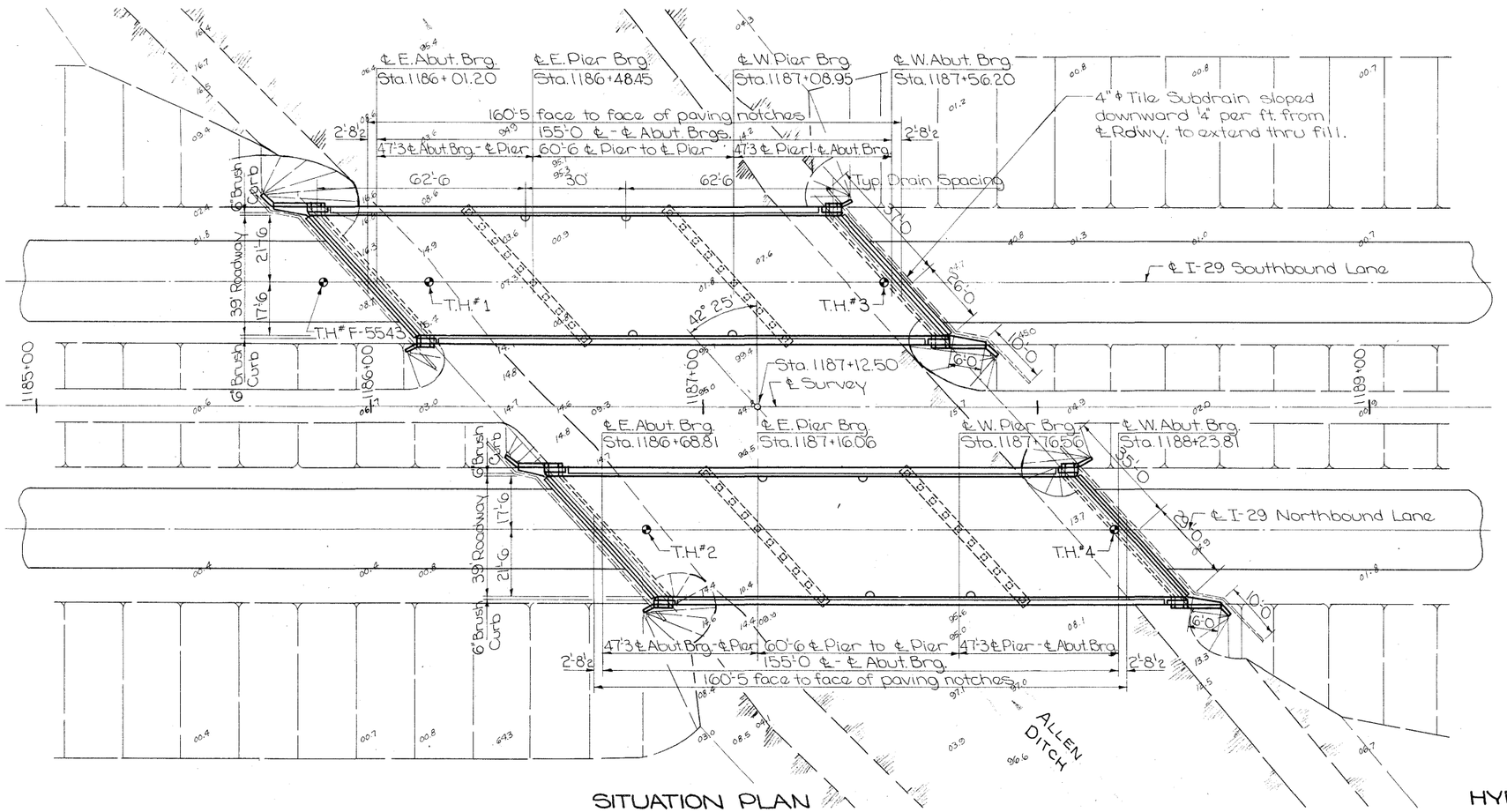
~~BENCH MARK: # 96A Station 1187+85.5 From Pin on Dike, 150' Right Elev.= 1014.84~~



VERTICAL CURVE DATA

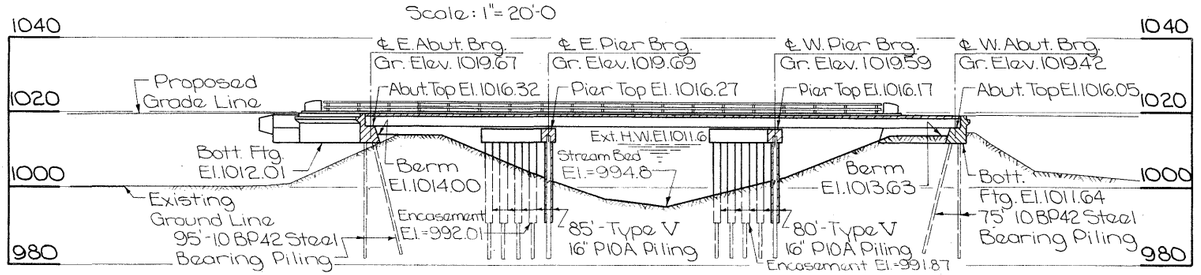


TYPICAL APPROACH SECTION



SITUATION PLAN

Scale: 1" = 20'-0



LONGITUDINAL SECTION ALONG ℄ ROADWAY

LOCATION:
St. Johns Twp.
T-78-N R-44-W
Section 8
Harrison County
I-29 over Allen Ditch

HYDRAULIC DATA:
Drainage Area = 64 sq.mi.

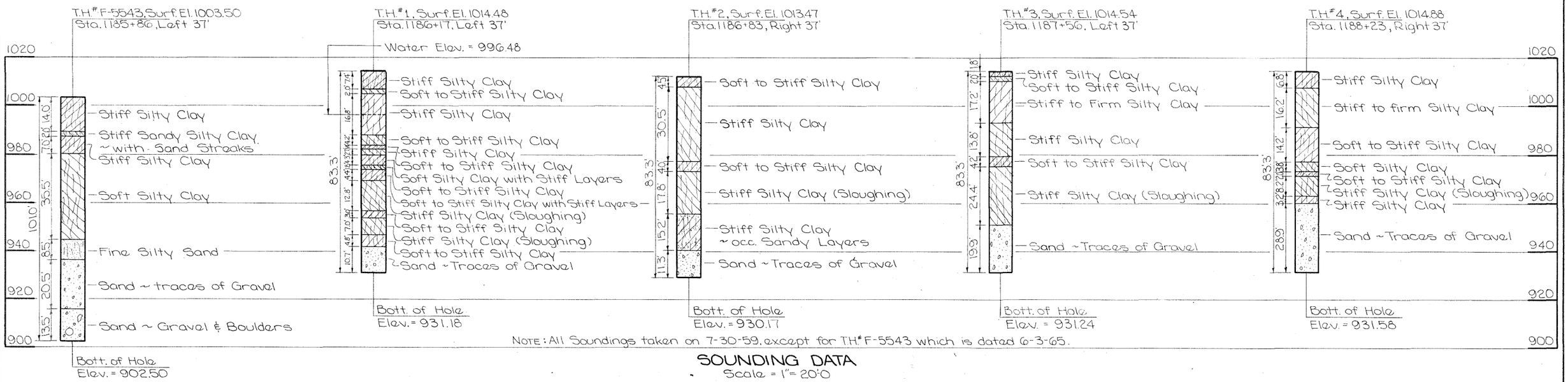
DESIGN NO. 565
FILE NO. 20676
DES. SH. NO. 1 OF 10

Design for 42° 25' Skew
DUAL 155'-0 x 39 CONT. I-BEAM BRIDGE
47'-3 End Spans 60'-6 Interior Span
SITUATION PLAN
Station 1187+12.50 August, 1966
HARRISON COUNTY
IOWA STATE HIGHWAY COMMISSION

Designed By: J.H Traced By: RJ Checked By: WAL

HARRISON COUNTY

PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
I-IG-29-5(17)178--04-43	IOWA	3		3	12



NOTE: All Soundings taken on 7-30-59, except for T.H.# F-5543 which is dated 6-3-65.

SOUNDING DATA

Scale = 1" = 20'0

SPECIFICATIONS:

DESIGN: A.A.S.H.O. Standard Specifications for Highway Bridges, Series of 1961.

CONSTRUCTION: Standard Specifications of the Iowa Highway Commission, Series of 1964, plus current supplemental specifications and special provisions.

DESIGN STRESSES:

Design stresses for the following materials are in accordance with A.A.S.H.O. Standard Specifications for Highway Bridges, Series of 1961.

Concrete in accordance with Section 1.4.11. f_c = 3500 psi.

Reinforcing Steel in accordance with Section 1.4.12. "Reinforcement" for Intermediate, Hard or Rail Steel Grade.

Structural Steel in accordance with INT 7(62) 1.4.2(B) "Structural Steel", A 36, f_s = 20,000 psi.

TOTAL ESTIMATED QUANTITIES

Items	Unit	2 Superstrs	4 Abuts	4 Piers	Total	
*Structural Concrete	c.y.	389.4	192.3	65.3	647.0	
Reinforcing Steel	lb.	121,330	21,504	10,704	153,538	
Structural Steel	lb.	305,904	—	—	305,904	
10 BP42 Steel Piling	Furnish	L.F.	—	**3500	—	~~3500~~ 7,632
	Drive	L.F.	—	**3500	—	~~3500~~ 8,144.3
~~16" PIPA Piling~~	~~Furnish~~	~~L.F.~~	—	—	~~30@85,10@80~~	~~3350~~
~~Except~~	~~Drive~~	~~L.F.~~	—	—	" "	~~3350~~
~~10 BP 42~~	Encased	L.F.	—	—	40@21'	840
Granular Backfill	c.y.	—	300	—	300	
Class 20 Excavation	c.y.	—	320	—	320	
4" ϕ Tile Subdrain	L.F.	—	—	—	~~318~~	350
Aluminum Handrail	L.F.	—	—	—	606.34	
Steel Handrail	L.F.	—	—	—	606.34	

** Includes 10@85', 20@95', 10@75'.

*Includes 389.4 c.y. of Class D in Superstructure and 257.6 c.y. of Class C in Substructure.

GENERAL NOTES.

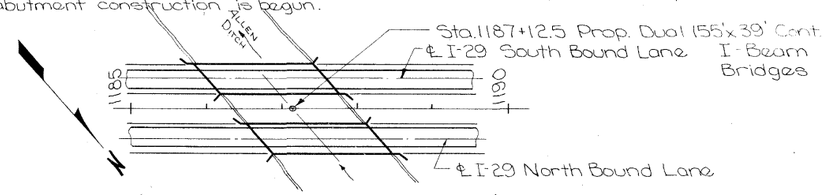
These bridges are designed for H 20-S16-44 loading plus an allowance of 19 lbs. per sq. ft. of roadway for future wearing surface and alternate loading designated in the Bureau of Public Roads PPM 20-4, Section C.

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 berm to the elevations shown.

Abutment piles are to be driven in oversize holes predrilled thru the fill to Elev. 992.0±. The minimum diameter of the drilled hole shall be 4" greater than the diagonal dimension of the 10BP42 steel bearing piling. Voids around the pile 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.

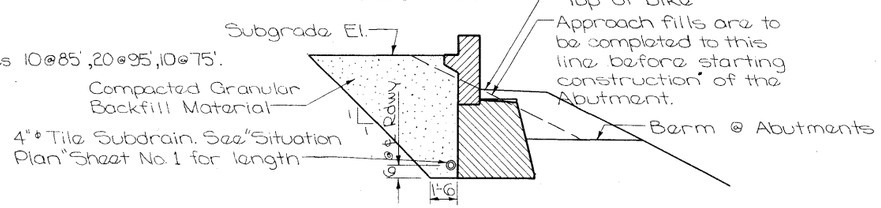
The bridge contractor is to install the 4" ϕ Tile Subdrain behind each abutment as detailed. The price bid for Tile Subdrain is to include the excavation necessary for installation.

Approach fills are to be in place a minimum of 150 days before any abutment construction is begun.



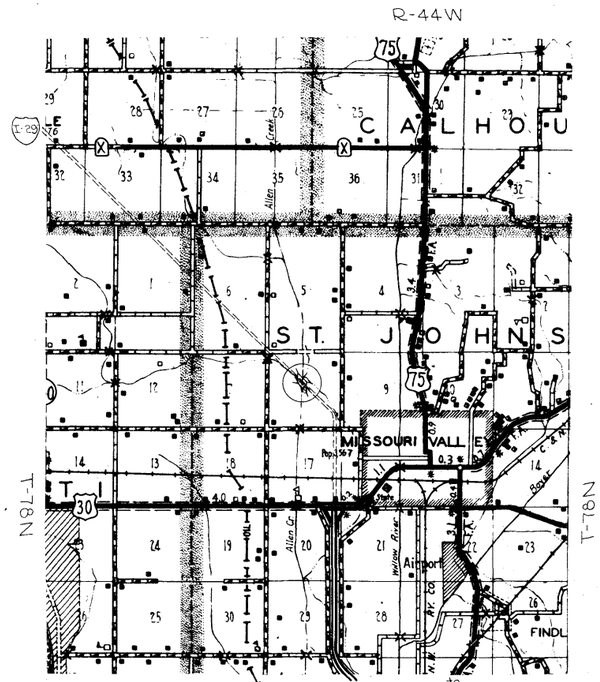
GENERAL PLAN

Scale: 1" = 100'



GRANULAR BACKFILL DETAIL

NOTE: Excavation outside the limits shown above shall be backfilled with granular backfill at the contractor's expense.



LOCATION PLAT

Design for 42° 25' Skew

DUAL 155'-0 x 39 CONT. I-BEAM BRIDGE

47'-3 End Spans 60'-6 Interior Span

SOUNDING DATA

Station 1187+12.50 August, 1966

HARRISON COUNTY

IOWA -STATE HIGHWAY COMMISSION

DESIGN NO. 565
FILE NO. 20676
DES. SH. NO. 2 OF 10

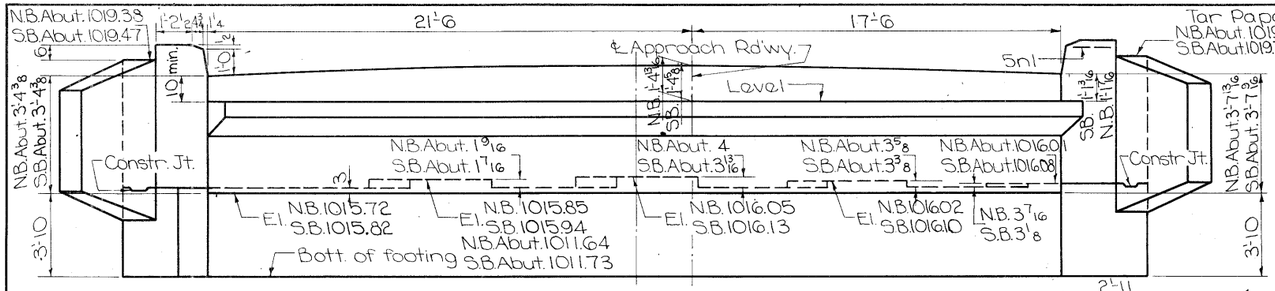
Designed By: J.H Traced By: DH Checked By: WAL

HARRISON COUNTY

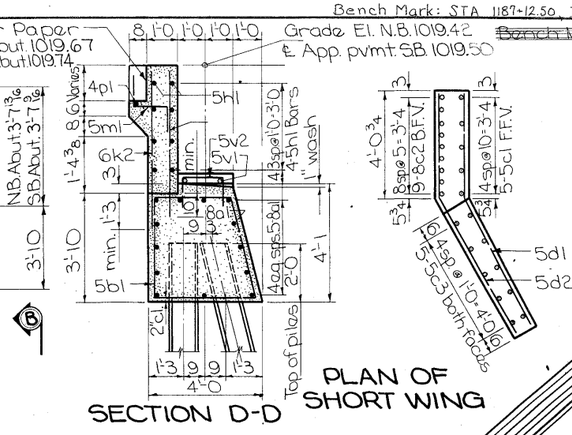
PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
I-IG-29-5(17)78--04-43	IOWA	5		4	12

Bench Mark: STA 1187+12.50, T.H.C. PLUG IN S.W. WING ON N.B.L. BRIDGE, EL E.V. = 1019.67

~~Bench Mark: No 96A Sta. 1187+85.5 Iron Pin on Dike 150' Rt. El. 1014.84~~

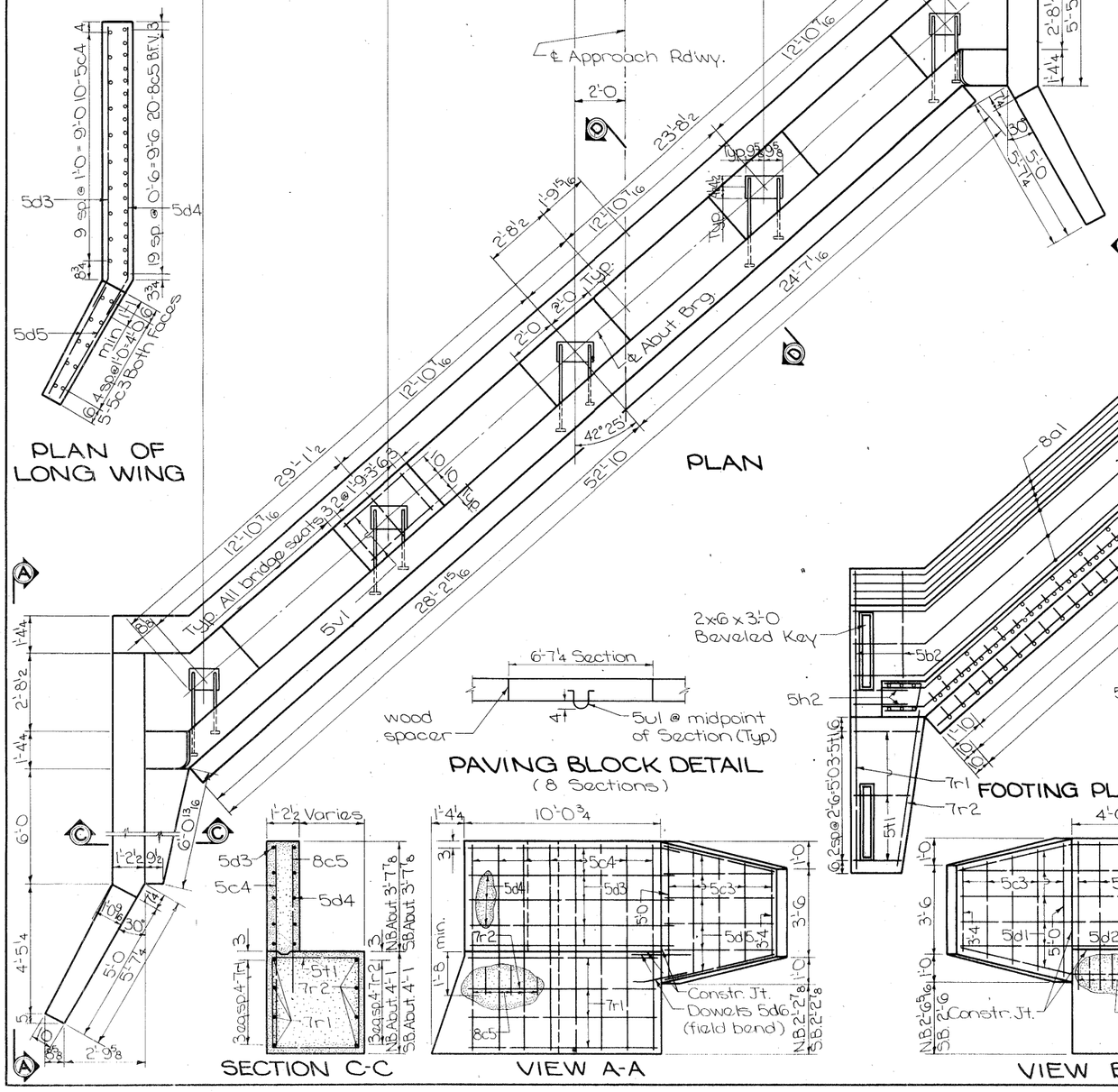


REAR ELEVATION



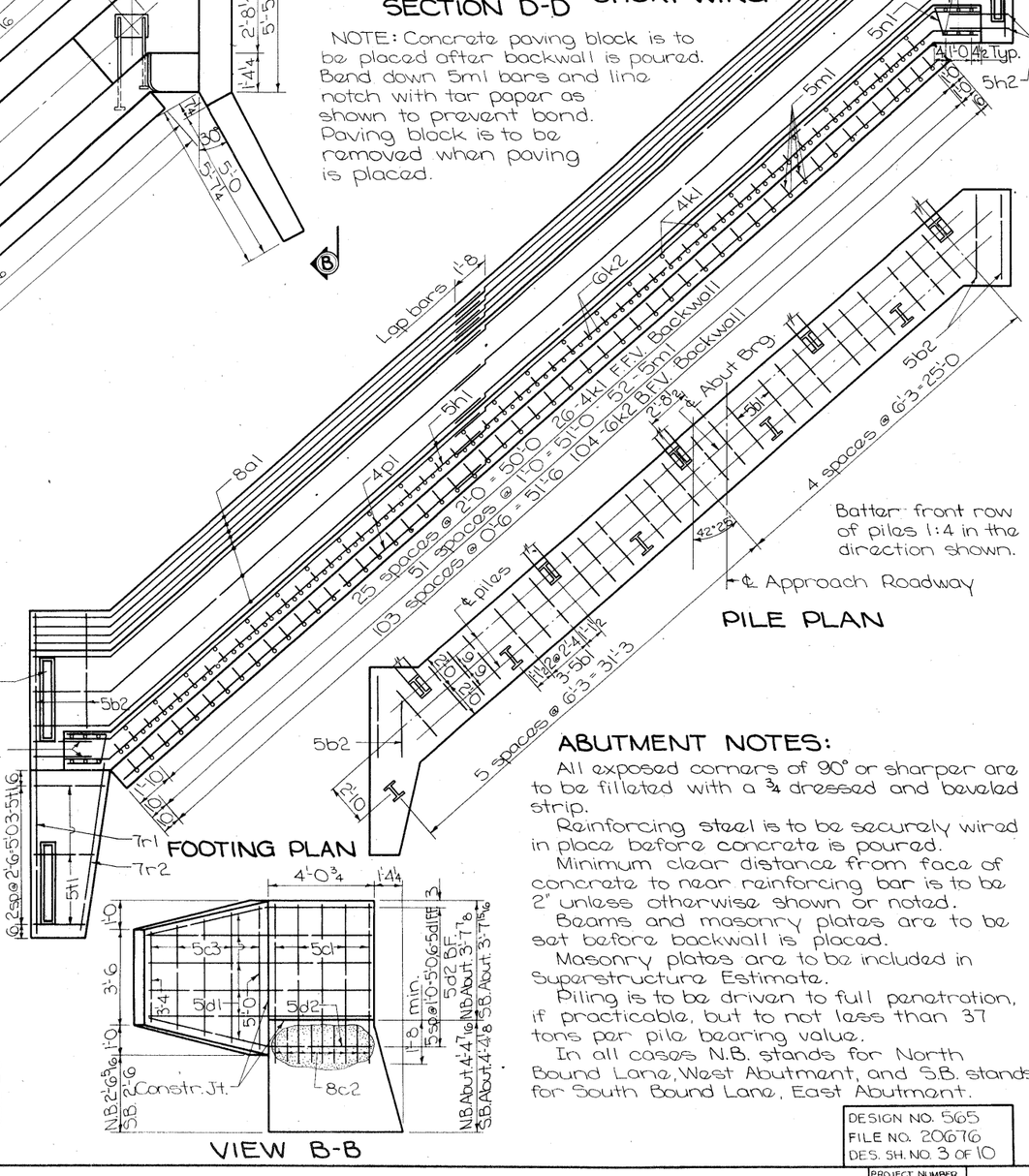
SECTION D-D

NOTE: Concrete paving block is to be placed after backwall is poured. Bend down 5m1 bars and line notch with tar paper as shown to prevent bond. Paving block is to be removed when paving is placed.



PLAN OF LONG WING

PLAN



PILE PLAN

PAVING BLOCK DETAIL
(8 Sections)

SECTION C-C

VIEW A-A

VIEW B-B

ABUTMENT NOTES:

All exposed corners of 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 shown or noted.

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

Masonry plates are to be included in Superstructure Estimate.

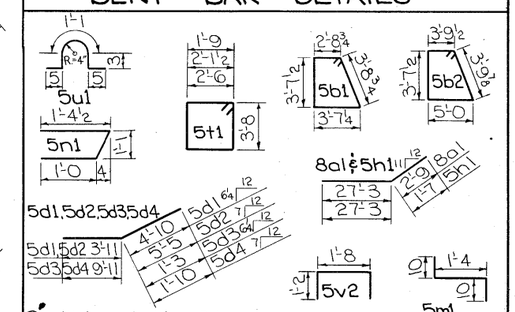
Piling is to be driven to full penetration, if practicable, but to not less than 37 tons per pile bearing value.

In all cases N.B. stands for North Bound Lane, West Abutment, and S.B. stands for South Bound Lane, East Abutment.

REINFORCING BAR LIST

Bar	Location	Shape	No.	Length	Weight
8a1	Footing Longitudinal		26	30'-0	2,083
5b1	Footing Hoops		25	14'-5	376
5b2	" " Ends		4	17'-0	71
5c1	Short Wing F.F.V.		5	5'-2	27
8c2	" " B.F.V.		9	5'-2	124
5c3	Both Wings B.F.V. & F.F.V.		20	Varies	87
5c4	Long Wing F.F.V.		10	7'-6	78
8c5	" " B.F.V.		20	5'-2	276
5d1	Short Wing F.F.H.		6	8'-9	55
5d2	" " B.F.H.		6	9'-4	58
5d3	Long Wing F.F.H.		5	11'-2	58
5d4	" " B.F.H.		5	11'-9	61
5d5	" " F.F.H. & B.F.H.		12	4'-8	58
*5d6	" " Dowels F.F.H. & B.F.H.		4	2'-6	10
5h1	Backwall Long F.F.H. & B.F.H.		16	28'-10	481
5h2	" " F.F.H. & B.F.H. Ends		16	2'-3	38
4k1	" " F.F.V.		26	4'-6	78
6k2	" " B.F.V.		104	4'-11	768
6k3	" " F.F.V. & B.F.V. Ends		12	5'-11	107
*5m1	" " Notch		52	2'-10	154
5n1	" " Curb		2	3'-4	7
4p1	" " Notch		2	26'-8	35
7r1	Footing @ Long Wing		4	9'-9	80
7r2	" " "		4	6'-5	52
5t1	" Hoops Long Wing		3	Varies	38
5v1	" Step Longitudinal		10	3'-6	37
5v2	" " Transverse		15	3'-10	60
5u1	Paving Block hoop		8	2'-3	19
*Structural Grade		Total (One Abut.)			5,376

BENT BAR DETAILS



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

CONCRETE PLACEMENT QUANT.

Location	Unit	Quantities	
Footing	c.y.	33.7	33.7
Backwall	"	9.1	9.1
Paving Block	"	1.5	1.5
Wing Walls	"	4.0	4.0
Total	c.y.	48.3	48.3

ESTIMATED QUANTITIES (Two Abuts.)

Item	Unit	Quantity
Concrete	c.y.	96.6
Reinforcing Steel	lbs.	10,752
Class 20 Excavation 2@80	c.y.	160
10 BP42 Steel Furnish 10 @ 35, 10 @ 75	L.F.	1700
Bearing Piling Drive "	L.F.	1700
Granular Backfill 2@75	c.y.	150

Design for 42° 25' Skew

DUAL 155'-0 x 39' CONTINUOUS I-BEAM BRIDGE

47'-3 End Spans 60'-6 Interior Span

ABUTMENT DETAILS

WEST (N. BOUND), EAST (S. BOUND)

Station 1187+12.50 August, 1966

HARRISON COUNTY

IOWA STATE HIGHWAY COMMISSION

DESIGN NO. 565
FILE NO. 20676
DES. SH. NO. 3 OF 10

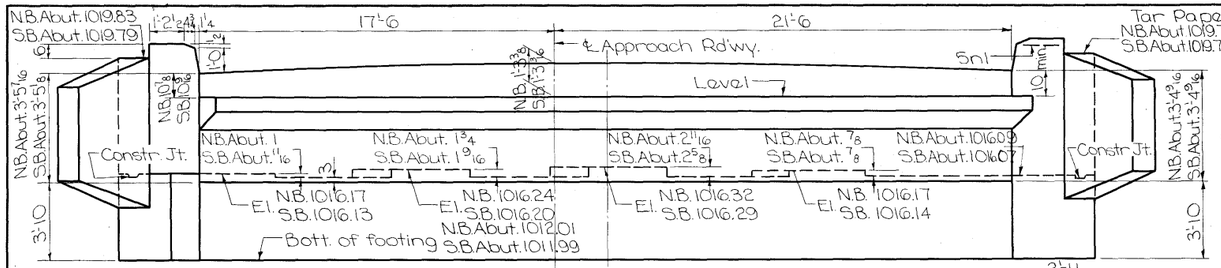
Designed By: J.H Traced By: IPI Checked By: WAL

HARRISON COUNTY

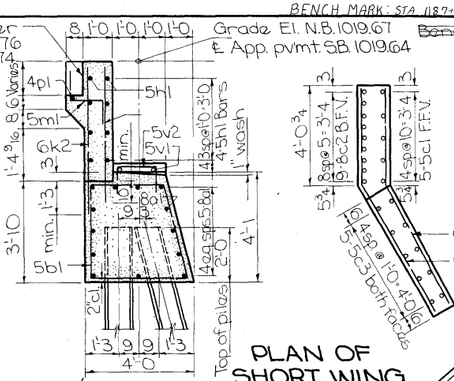
PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
I-IG-29-5(17)78--04-43	IOWA	5		5	12

BENCH MARK: STA 1187+12.50, I.H.C. PLUG in S.W. WING WALL ON N.B.L. BRIDGE, ELEV - 1019.67

~~Bench Mark: No 96A Sta. 1187+85.5 Iron Pin on Dike 150 Rt. El 1014.84~~



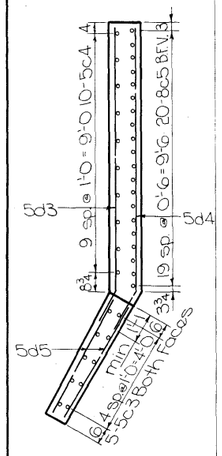
REAR ELEVATION



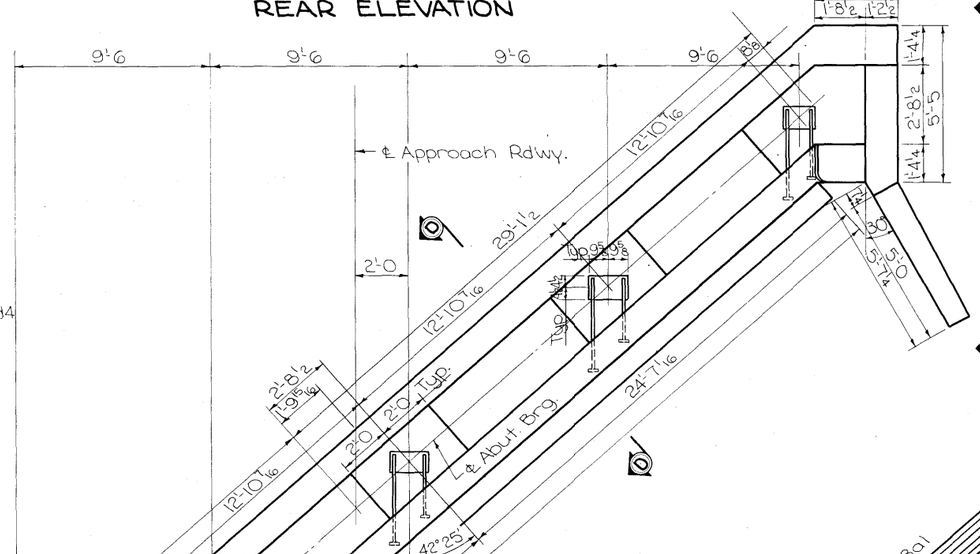
SECTION D-D

PLAN OF SHORT WING

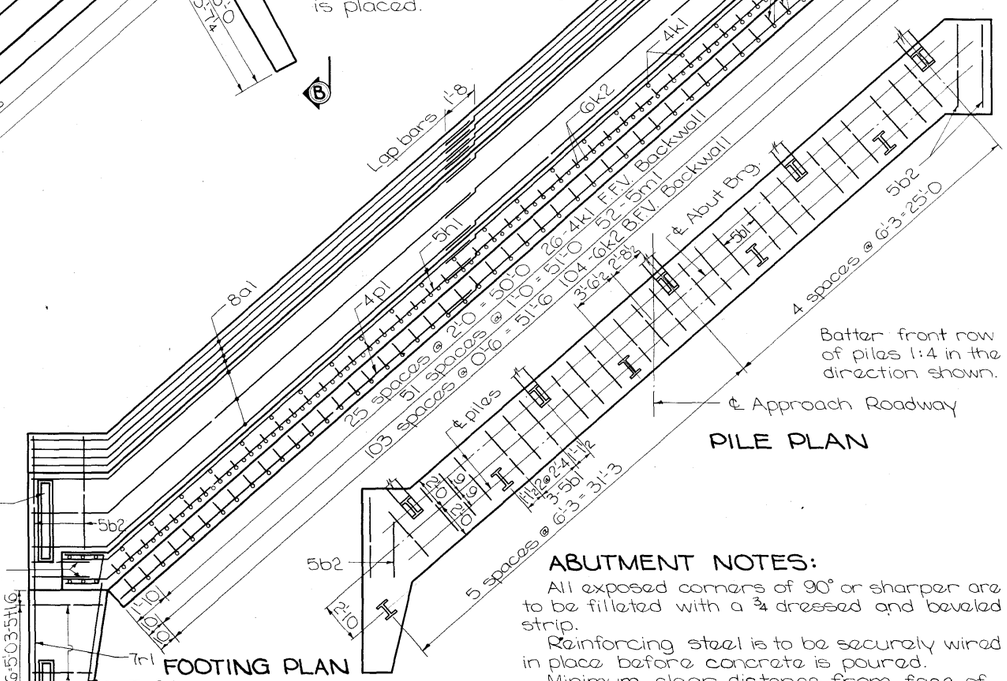
NOTE: Concrete paving block is to be placed after backwall is poured. Bend down 5m1 bars and line notch with tar paper as shown to prevent bond. Paving block is to be removed when paving is placed.



PLAN OF LONG WING

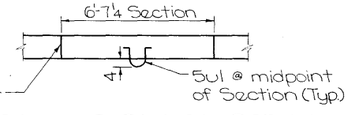


PLAN



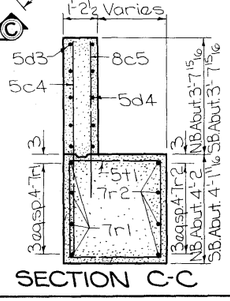
PILE PLAN

Batter front row of piles 1:4 in the direction shown.

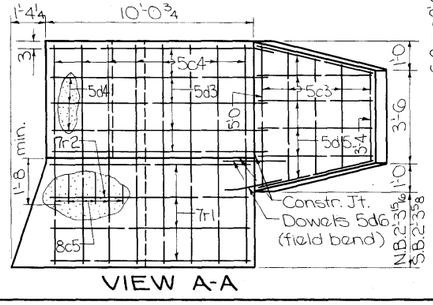


PAVING BLOCK DETAIL
(8 Sections)

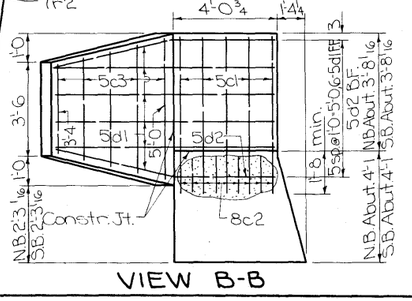
FOOTING PLAN



SECTION C-C



VIEW A-A



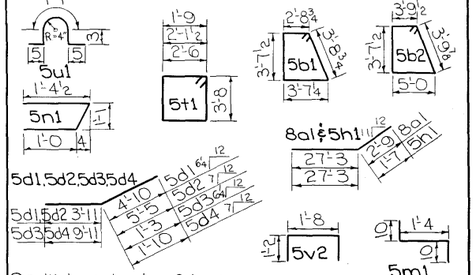
VIEW B-B

REINFORCING BAR LIST

Bar	Location	Shape	No.	Length	Weight
8a1	Footing Longitudinal		26	30'-0	2,083
5b1	Footing Hoops		25	14'-5	376
5b2	" " Ends		4	17'-0	71
5c1	Short Wing F.F.V.		5	5'-2	27
8c2	" " B.F.V.		9	5'-2	124
5c3	Both Wings B.F.V. & F.F.V.		20	Varies	87
5c4	Long Wing F.F.V.		10	7'-6	78
8c5	" " B.F.V.		20	5'-2	276
5d1	Short Wing F.F.H.		6	8'-9	55
5d2	" " B.F.H.		6	9'-4	58
5d3	Long Wing F.F.H.		5	11'-2	58
5d4	" " B.F.H.		5	11'-9	61
5d5	" " F.F.H. & B.F.H.		12	4'-8	58
*5d6	" " Dowels F.F.H. & B.F.H.		4	2'-6	10
5h1	Backwall Long F.F.H. & B.F.H.		16	28'-10	481
5h2	" " F.F.H. & B.F.H. Ends		16	2'-3	38
4k1	" " F.F.V.		26	4'-6	78
6k2	" " B.F.V.		104	4'-11	768
6k3	" " F.F.V. & B.F.V. Ends		12	5'-11	107
*5m1	" " Notch		52	2'-10	154
5n1	" " Curb		2	3'-4	7
4p1	" " Notch		2	26'-8	35
7r1	Footing @ Long Wing		4	9'-9	80
7r2	" " "		4	6'-5	52
5t1	" Hoops Long Wing		3	Varies	38
5v1	" Step Longitudinal		10	3'-6	37
5v2	" " Transverse		15	3'-10	60
5u1	Paving Block hoop		8	2'-3	19

*Structural Grade Total (One Abut.) 5,376

BENT BAR DETAILS



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

CONCRETE PLACEMENT QUANT.

Location	Unit	Quantities	
Footing	c.y.	33.5	33.6
Backwall	"	8.9	8.9
Paving Block	"	1.4	1.4
Wing Walls	"	4.0	4.0
Total	c.y.	47.8	47.9

ESTIMATED QUANTITIES (Two Abuts.)

Item		Unit	Quantity
Concrete		c.y.	957
Reinforcing Steel		lbs.	10,752
Class 20 Excavation	2@80	c.y.	160
10 BP42 Steel	Furnish 10@85, 10@95	L.F.	1800
Bearing Piling	Drive 10@85, 10@95	L.F.	1800
Granular Backfill	2@75	c.y.	150

ABUTMENT NOTES:

All exposed corners of 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 shown or noted.

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

Masonry plates are to be included in Superstructure Estimate.

Piling is to be driven to full penetration, if practicable, but to not less than 37 tons per pile bearing value.

In all cases N.B. stands for North Bound Lane, East Abutment, and S.B. stands for South Bound Lane, West Abutment.

DESIGN NO. 565
FILE NO. 20676
DES. SH. NO. 4 OF 10

Design for 42°25' Skew

DUAL 155'-0 x 39' CONTINUOUS I-BEAM BRIDGE

47'-3 End Spans 60'-6 Interior Span

ABUTMENT DETAILS

WEST (S. BOUND), EAST (N. BOUND)

Station 1187+12.50 August, 1966

HARRISON COUNTY

IOWA STATE HIGHWAY COMMISSION

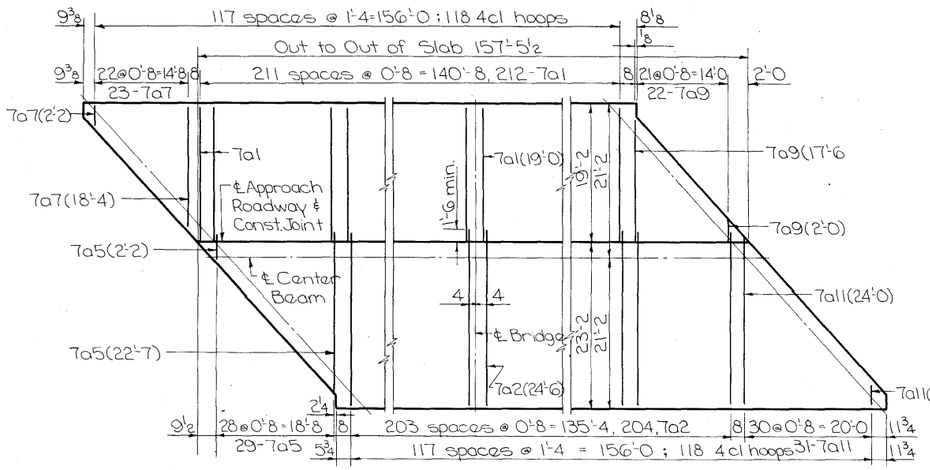
Designed By: J.H Traced By: PH Checked By: WAL

HARRISON COUNTY

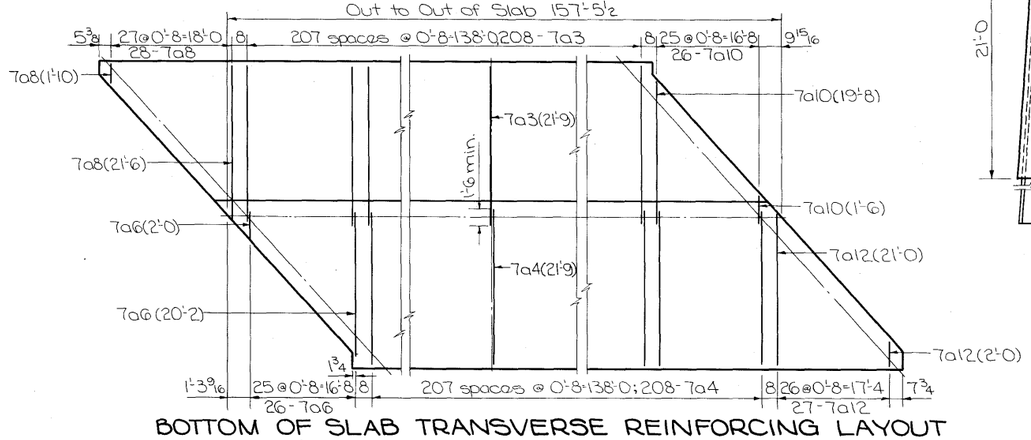
PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
I-IG-29-5(17)78--04-43	IOWA	5		6	12

BENCH MARK: STA 1187+12.50, I.H.C. PLUG IN S.W. WING WALL ON N.B.L. BRIDGE, ELEV.= 1019.67

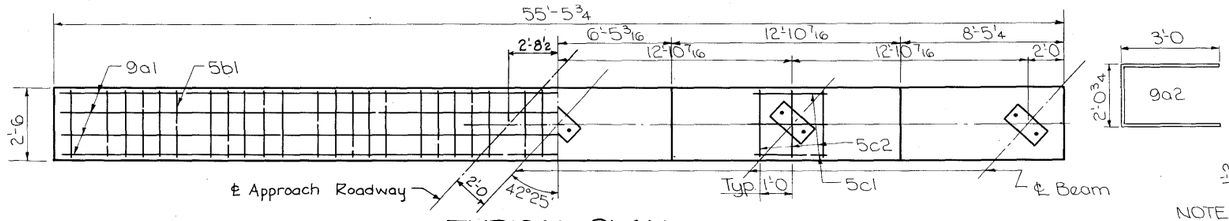
~~Bench Mark: No.96A Sta. 1187+85.5 Iron Pin on Dike 150' Rt. Elev. 1014.84~~



TOP OF SLAB TRANSVERSE REINFORCING LAYOUT

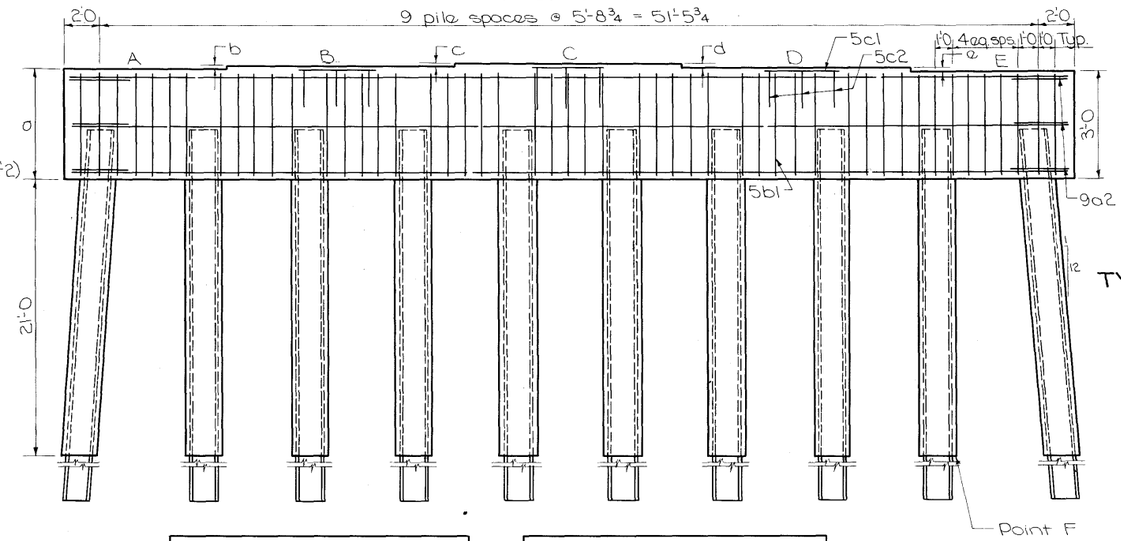


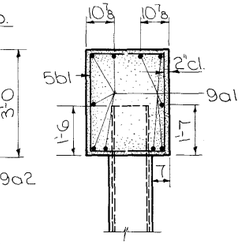
BOTTOM OF SLAB TRANSVERSE REINFORCING LAYOUT



TYPICAL PLAN

NOTE: 5c1 & 5c2 bars under Interior & Center Beams only.





TYPICAL CAP SECTION

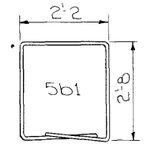


TABLE OF PIER STEPS				
POINT	S. Bound Bridge (looking east)		N. Bound Bridge (looking west)	
	East	West	East	West
a	3'-2 7/16	3'-1 7/16	3'-1 3/4	3'-2 11/16
b	7/16	11/16	5/8	7/16
c	5/8	7/8	3/4	1/2
d	2 3/16	1 15/16	2	2 1/4
e	1 5/16	1 1/16	1'-8	1 3/8

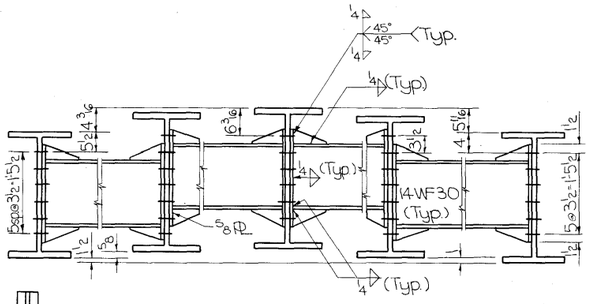
TABLE OF ELEVATIONS				
POINT	S. Bound Bridge (looking east)		N. Bound Bridge (looking west)	
	East	West	East	West
A	1016.13	1016.15	1016.16	1016.09
B	1016.17	1016.21	1016.21	1016.13
*C	1016.22	1016.28	1016.27	1016.17
D	1016.03	1016.12	1016.11	1015.98
E	1015.93	1016.03	1016.01	1015.87
F	991.93	992.03	992.01	991.87

SOUTH BOUND PIER
LOOKING EAST
NORTH BOUND PIER
LOOKING WEST

* Pier Top El.

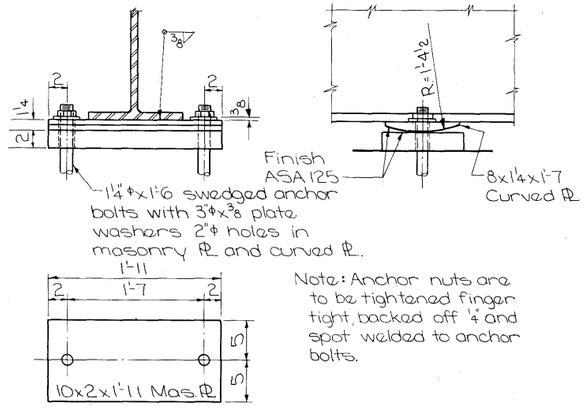
REINFORCING BAR LIST - ONE PIER					
Bar	Location	Shape	No.	Length	Weight
9a1	Cap Longitudinal	—	20	28'-7	1,944
9a2	Cap Ends	⊏	6	7'-11	162
5b1	Cap hoops	□	47	10'-5	511
5c1	Pier Steps, Longitudinal	—	9	2'-6	23
5c2	Pier Steps, Transverse	⊓	9	3'-10	36
					2,676

ESTIMATED QUANTITIES-FOUR PIERS				
Item			Unit	Quantity
Structural Concrete, Class C			C.Y.	65.3
Reinforcing Steel			lbs.	10,704
16" P10A Piling Type V	Furnish	30@85', 10@80'	L.F.	3,350
	Drive	" "	L.F.	3,350
	Encase	40@21'	L.F.	840



14 WF 30

INTERMEDIATE DIAPHRAGM LAYOUT



Note: Anchor nuts are to be tightened finger tight, backed off 1/4 and spot welded to anchor bolts.

PIER BEARING DETAILS

PIER NOTE:

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

Clear distance from face of Concrete to near reinforcing bar is to be 2" unless otherwise shown.

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

Piles are to be driven to full penetration if practicable, but in no case to less than 37 ton bearing value.

Pile encasement is to be the same as that shown for I.H.C. Standard P10A dated June 1959 for 10 BP 42 Steel "H" piles Type V.

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

DESIGN NO. 505
FILE NO. 20676
DES. SH. NO. 5 OF 10

Design for 42°25' Skew

DUAL 155'-0 x 39 CONT. I-BEAM BRIDGE

47'-3 End Spans 60'-6 Interior Span

PIER & SUPERSTRUCTURE DETAILS

Station 1187+12.50 August, 1966

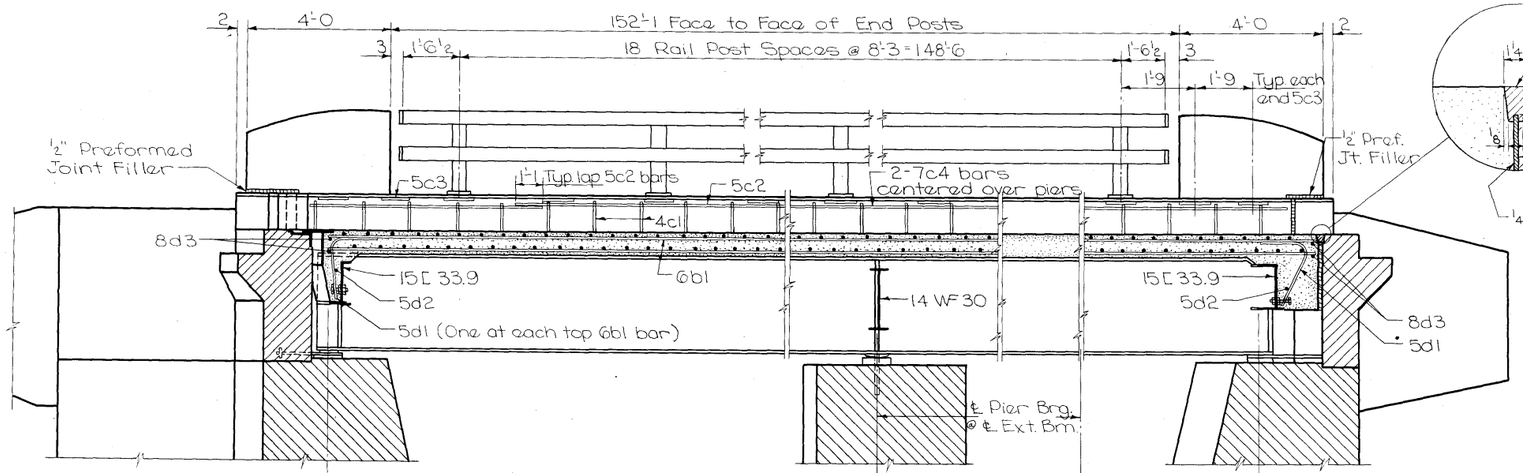
HARRISON COUNTY

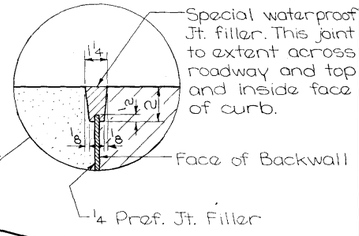
IOWA STATE HIGHWAY COMMISSION

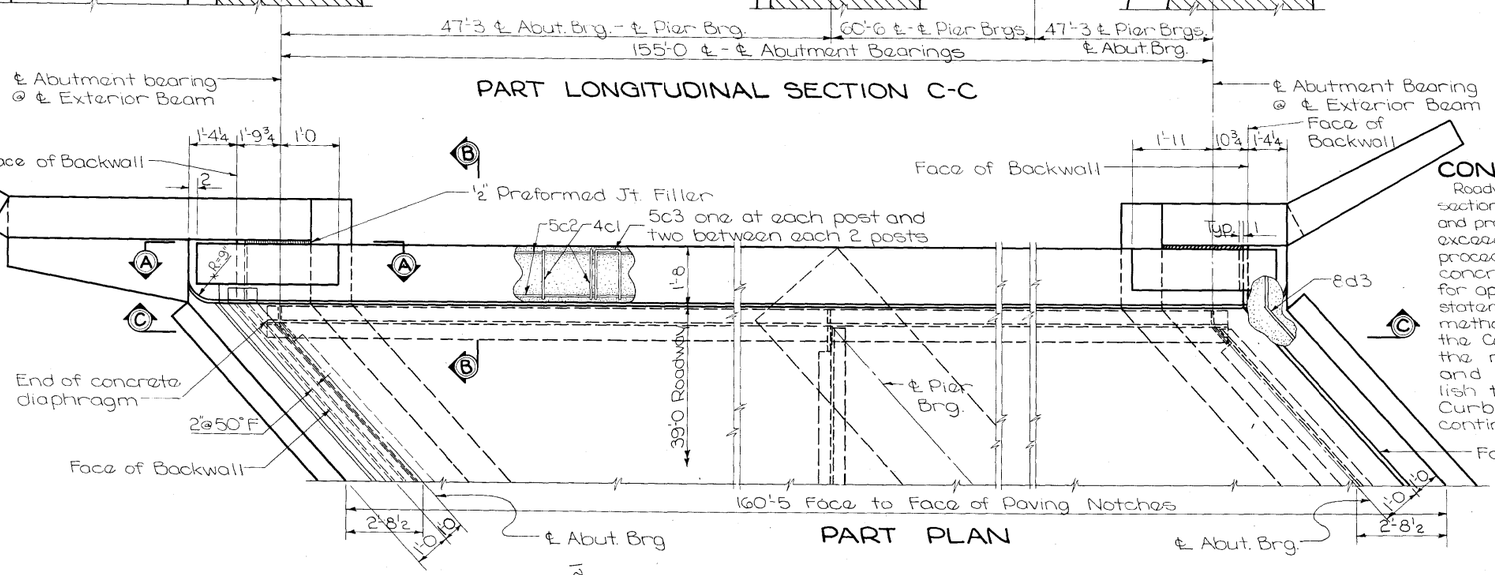
Designed By: J H Traced By: DH Checked By: WAL

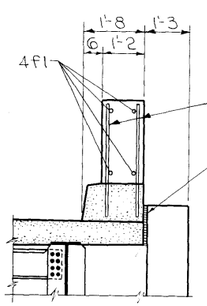
HARRISON COUNTY

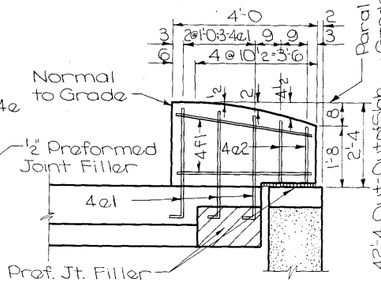
PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
I-IG-29-5(17)78--04-43	IOWA	5		7	12

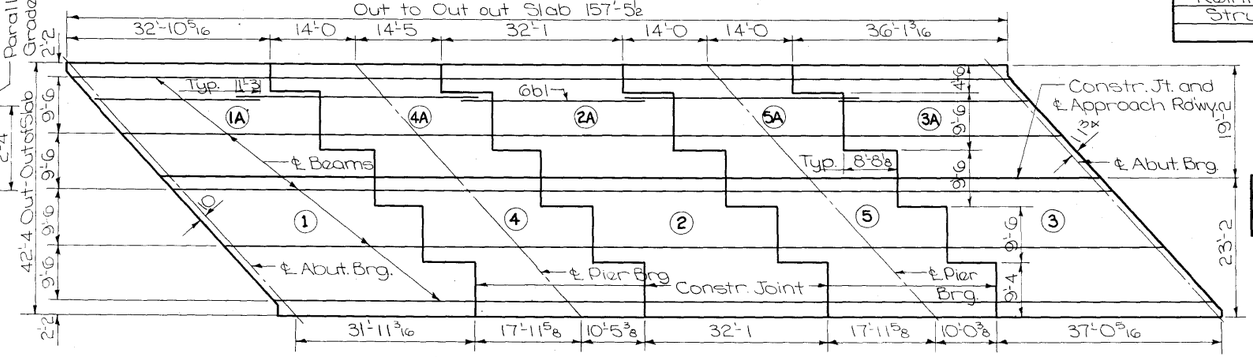












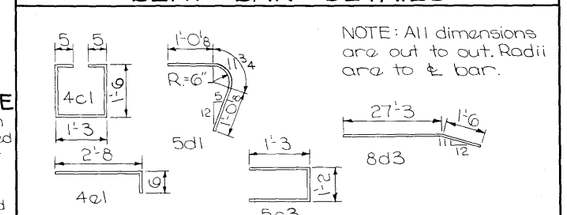
CONC. PLACEMENT NOTE

Roadway slab shall be placed in sections and in sequence indicated and preferably at intervals not exceeding 24 hours. Alternate procedures for placing slab concrete may be submitted for approval together with a statement of the proposed method, and evidence that the Contractor possesses the necessary equipment and facilities to accomplish the required result. Curbs may be poured continuously.

BILL OF REINFORCING - ONE SUPERSTR.

Bar	Location	Shape	No.	Length	Weight
7a1	Slab Transverse Top	—	212	19'-0	8,233
7a2	" " "	—	204	24'-6	10,216
7a3	" " Bott.	—	208	21'-9	9,247
7a4	" " "	—	208	21'-9	9,247
7a5	Slab Transverse Ends Top	—	29	Varies	734
7a6	" " Ends Bott.	—	26	"	591
7a7	" " " Top	—	23	"	479
7a8	" " " Bott.	—	28	"	668
7a9	" " " Top	—	22	"	439
7a10	" " " Bott.	—	26	"	564
7a11	" " " Top	—	31	"	830
7a12	" " " Bott	—	27	"	634
6b1	Slab Longitudinal	—	320	32'-5	15,581
4c1	Curb Hoop	□	236	4'-9	749
5c2	" Longitudinal	—	16	40'-1	669
5c3	" Anchor	⊐	118	3'-6	431
7c4	" Longit. over Piers	—	8	20'-0	327
5d1	Abut. Diaph. Longitudinal	⌐	64	3'-0	200
5d2	" " Transverse	—	4	26'-1	109
8d3	Slab Ends Transverse	⌐	8	28'-9	614
4e1	End Post Vertical	⌐	24	3'-1	49
4e2	" " "	—	16	1'-5	15
4f1	" " Horizontal	—	16	3'-8	39
		Total			60,665

BENT BAR DETAILS



CONCRETE PLACEMENT QUANT.

Section 1	c.y.	21.3	Section 1A	c.y.	17.7
Section 2	"	18.7	Section 2A	"	15.6
Section 3	"	22.0	Section 3A	"	18.2
Section 4	"	16.3	Section 4A	"	13.6
Section 5	"	16.0	Section 5A	"	13.4

Two Curbs 2 @ 10.2	c.y.	20.4
Four End Posts	"	1.5
Total	c.y.	194.7

ESTIMATED QUANTITIES - TWO SUPERSTR.

Item	Unit	Quantity
Structural Concrete - Class D	c.y.	389.4
Reinforcing Steel	lbs.	121,330
Structural Steel	lbs.	305,904

DESIGN NO. 565
FILE NO. 20676
DES. SH. NO. 6 OF 10

Design for 42°25' Skew

DUAL 155'-0 x 39' CONT. I-BEAM BRIDGE

47'-3 End Spans 60'-6 Interior Span

SUPERSTRUCTURE DETAILS

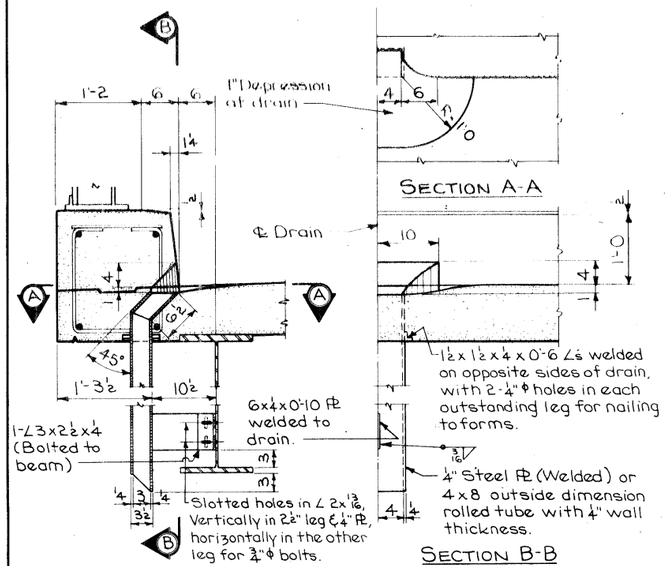
Station 1187+1250 August, 1966

HARRISON COUNTY

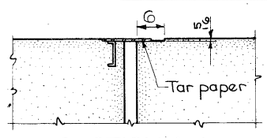
IOWA STATE HIGHWAY COMMISSION

Designed By: J H Traced By: DH Checked By: WAL

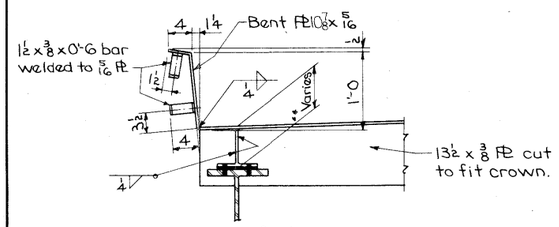
COUNTY	PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	I-IG-29-5(17)78--04-43	IOWA	5		8	12



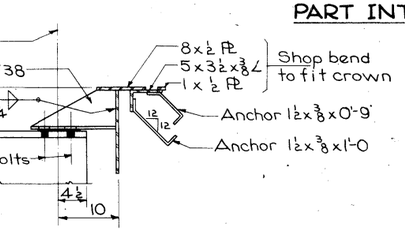
DRAIN DETAILS



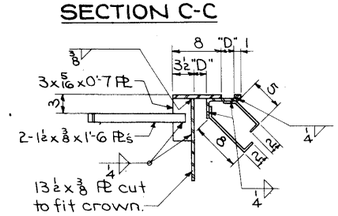
SECTION A-A



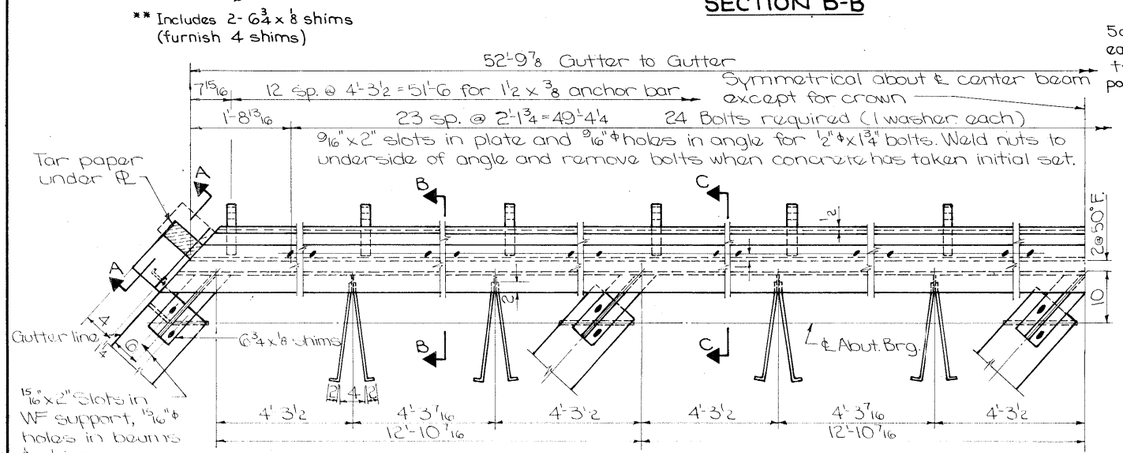
** Includes 2- 6¾ x ⅛ shims (furnish 4 shims)



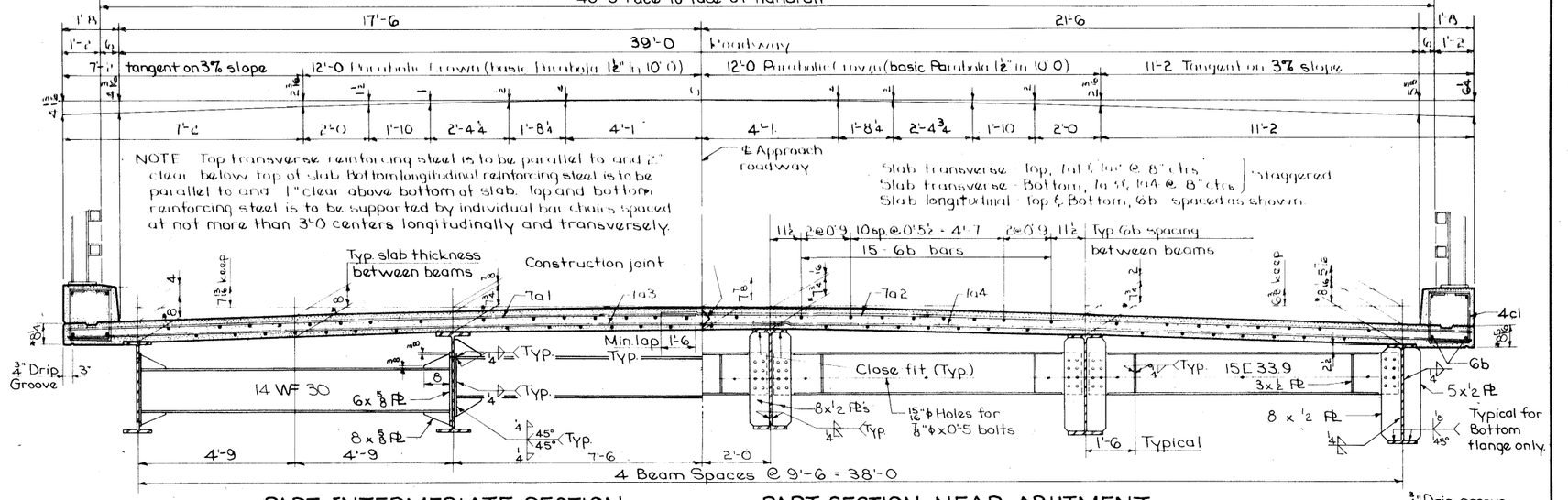
SECTION C-C



SECTION B-B



EXPANSION PLATE DETAILS



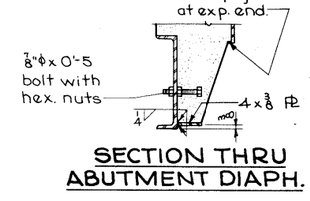
PART INTERMEDIATE SECTION

PART SECTION NEAR ABUTMENT

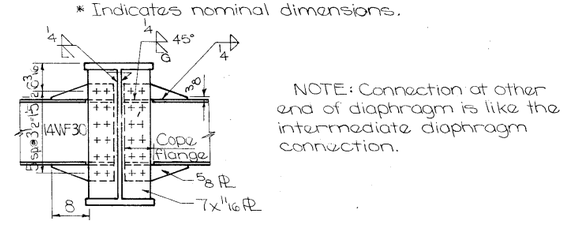
NOTE: The bottom of the slab is to be a flat surface between the top of the top flanges of adjacent beams for end span beams only. For center span beams, embed flange of 27WF114 16" and 30WF124 - 8".

* Indicates nominal dimensions.

	12.808 s.f.
	15.371 s.f.
Area of Slab =	28.179 s.f.
Area of Curb =	1.715 s.f.



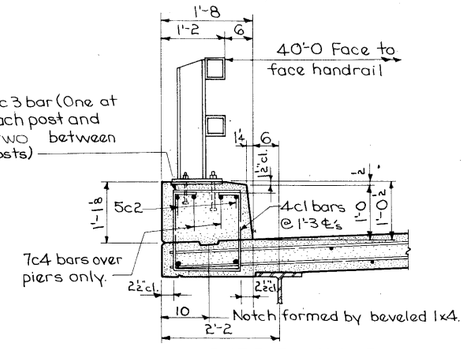
SECTION THRU ABUTMENT DIAPH.



DIAPHRAGM CONNECTION AT PIER BRG.

(Shown for Center Beam)

NOTE: Connection at other end of diaphragm is like the intermediate diaphragm connection.



CURB DETAILS

SUPERSTRUCTURE NOTES:

This bridge is designed for H20-S16 loading plus 19 lb. per square foot of roadway for future wearing surface and alternate loading designated in B.P.R. P.P.M. 20-4, Section 4c.

Field connections are to be bolted. Splice connections will require High Tensile Strength Bolts.

The floor slab as shown includes ½" of wearing surface.

All open holes are to be 15/16"ϕ unless otherwise noted.

All bolts are to be ⅞"ϕ unless otherwise noted.

Bottom flanges of beams are to be perpendicular to webs at reaction points.

Masonry plates are to be set in paint and canvas.

Bearing surfaces of unfinished masonry plates are to be flat and true.

Shop coat of paint is to be omitted on tops of top flanges of beams 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 curb are to be supported by the beams.

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

Design for 42°25' Skew

DUAL 155' x 39' CONTINUOUS I-BEAM BRIDGE

47'-3 End Spans 60'-6 Interior Span

SUPERSTRUCTURE DETAILS

Station 1187+12.50 August, 1966

HARRISON COUNTY

IOWA STATE HIGHWAY COMMISSION

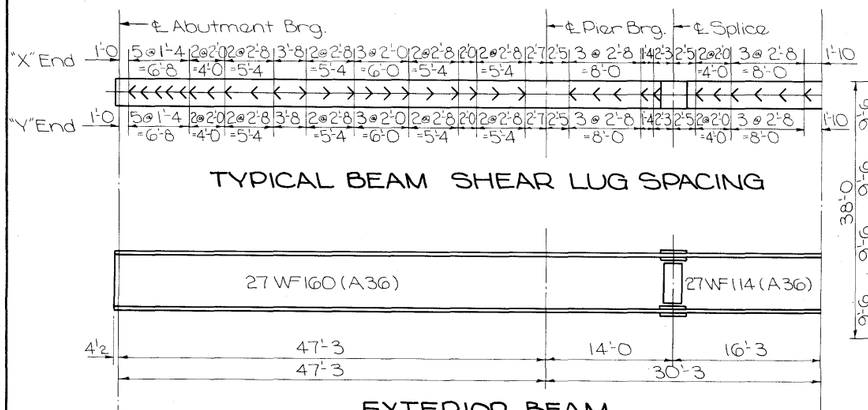
DESIGN NO. 565
FILE NO. 20676
DES. SH. NO. 7 OF 10

Revised: 2-17-65 Notes and details brought up to date.
Revised: 1-23-66 Drain Detail changed. Reinforcing cover changed to 2".

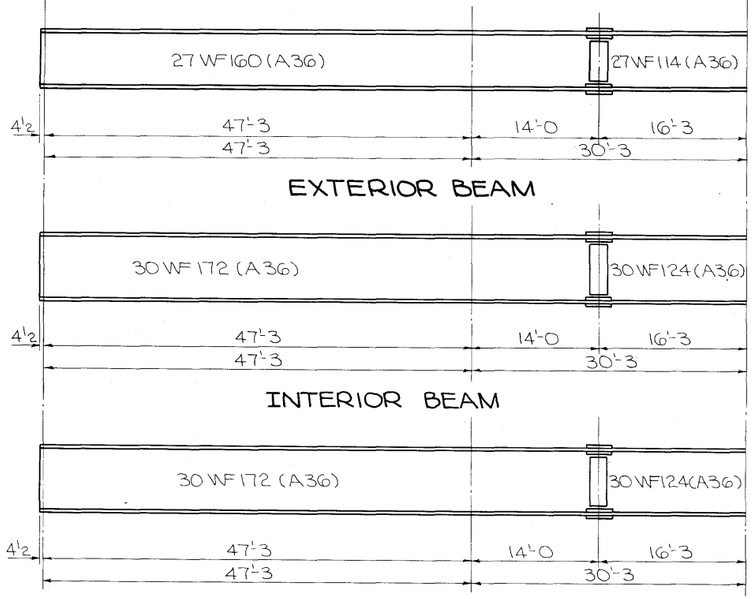
Designed By: JM Traced By: GH Checked By: WAL

4032 HARRISON COUNTY

PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
I-IG-29-5(17)178--04-43	IOWA	5		9	12



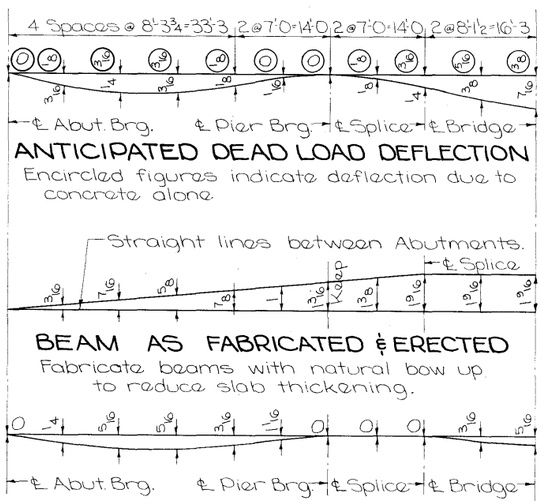
TYPICAL BEAM SHEAR LUG SPACING



EXTERIOR BEAM

INTERIOR BEAM

CENTER BEAM



ANTICIPATED DEAD LOAD DEFLECTION

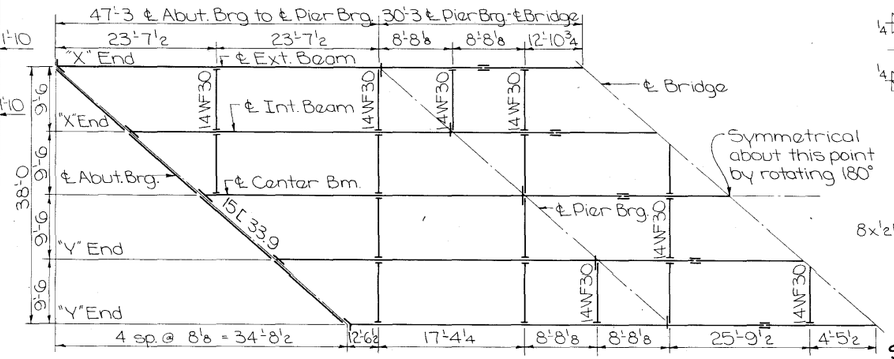
Encircled figures indicate deflection due to concrete alone.

BEAM AS FABRICATED & ERECTED

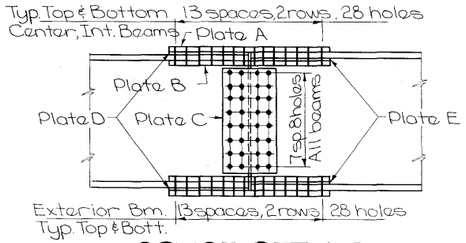
Fabricate beams with natural bow up to reduce slab thickening.

SLAB THICKENING DIAGRAM

For estimating purposes only.



STRUCTURAL STEEL LAYOUT

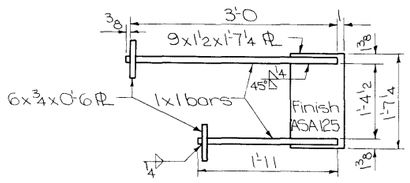


SPLICE DETAILS

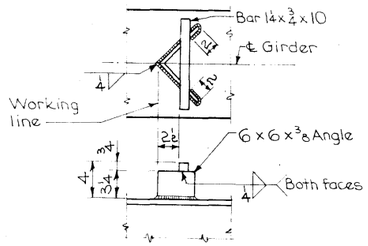
SPLICE DATA

Exterior Beam		Interior Beam		Center Beam	
Plate	Size	Plate	Size	Plate	Size
A	10 x 5/8	A	10½ x 5/8	A	10½ x 5/8
B	4 x 7/8	B	4 x 7/8	B	4 x 7/8
C	12 x 3/8	C	12 x 3/8	C	12 x 3/8
D	10 x 1/16	D	10½ x 1/8	D	10½ x 1/8
E	4 x 3/16	E	4 x 1/4	E	4 x 1/4

ABUTMENT MASONRY PLATE DETAILS - WEST ABUTMENT

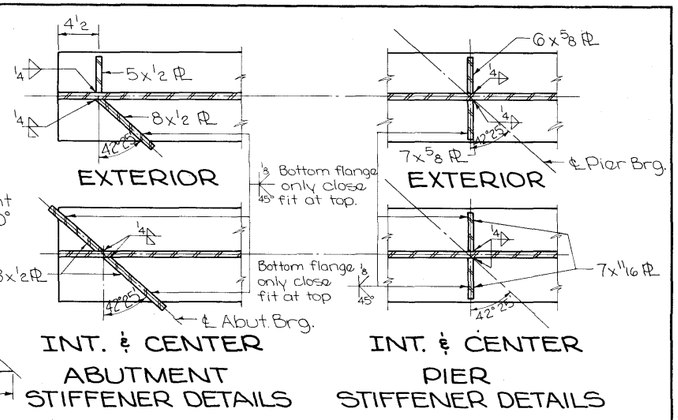


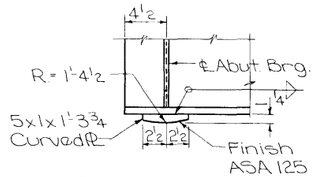
ABUTMENT MASONRY PLATE DETAILS - EAST ABUTMENT



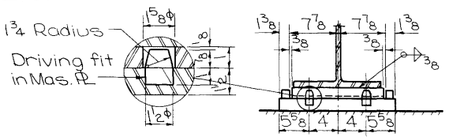
SHEAR LUG DETAIL

640 Required Wt. = 7.12 # ea.

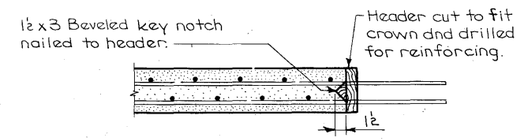




ABUTMENT SOLE PLATE DETAILS



TYPICAL 1½" ϕ PINTLE



CONSTRUCTION JOINT DETAIL

NOTE: Approved Stud Shear Connectors may be used as an alternate for the angle Shear Connectors shown. If studs are used each angle lug is to be replaced by a group of 10 - ⅞" ϕ x 4" studs. The centroid of the stud group is to be in the approximate location of the angle lug replaced. Maximum spacing between stud rows is to be 24" and where the lug angle exceed 24" the equivalent studs are to be located in two or more rows so that the maximum spacing is not exceeded. Studs are to be welded in the shop at locations shown on shop drawings approved by the Iowa State Highway Commission.

DESIGN NO. 565
FILE NO. 20676
DES. SH. NO. 8 OF 10

Design for 42° 25' Skew

DUAL 155'-0 x 39 CONT. I-BEAM BRIDGE

47'-3 End Spans 60'-6 Interior Span

SUPERSTRUCTURE DETAILS

Station 1187+12.50 August, 1966

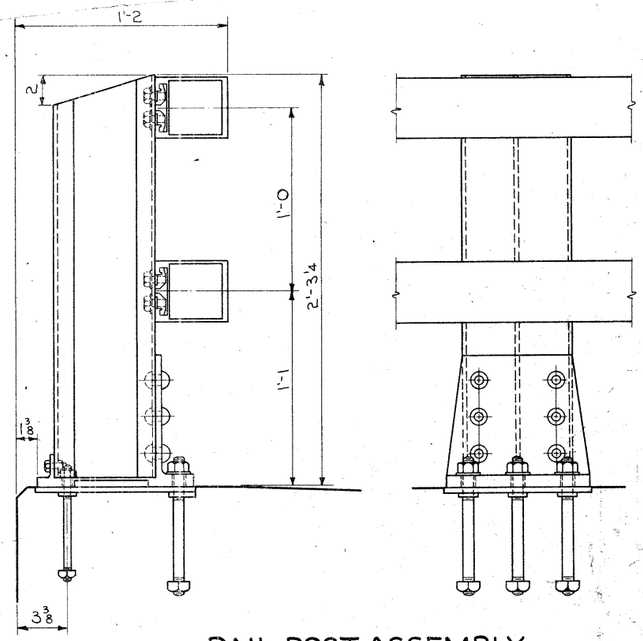
HARRISON COUNTY

IOWA STATE HIGHWAY COMMISSION

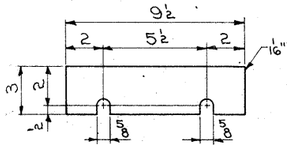
Designed By: JH Traced By: CPJ Checked By: WAL

HARRISON COUNTY

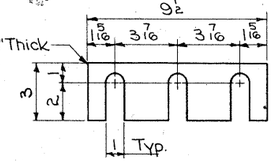
PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
I-IG-29-5(17)178--04-43	IOWA	5		10	12



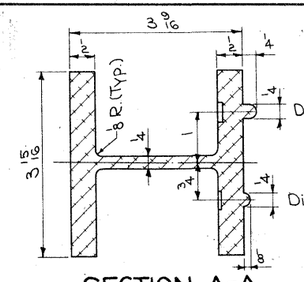
RAIL POST ASSEMBLY



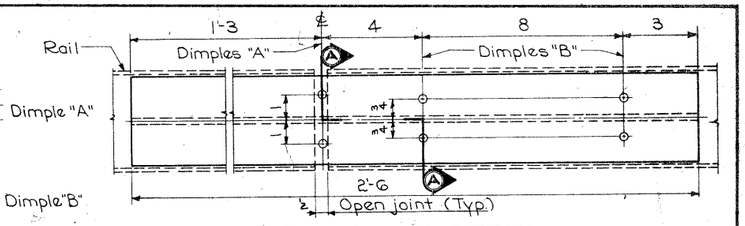
SHIM "A" DETAIL



SHIM "B" DETAIL



SECTION A-A



RAIL SPLICE DETAIL

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.

Material for rails, post, post base plate, rail splice bar, clamp bar, the aluminum bolts and aluminum nuts shall be A.S.T.M. B-221 Alloy 6061-T6 or 6062-T6.

Material for aluminum washers and shims shall be A.S.T.M. B-209; Alloy Alclad 2024-T3 for washers and Alloy 1100-0 for shims.

Material for stainless steel anchor studs shall conform to A.S.T.M. A-276 Type 430, except with a minimum of 100,000 psi ultimate strength & a minimum elongation of 10% in two inches. Stud thread shall conform to A.S.A. 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. The aluminum nuts shall be thick, hexagonal, finished and shall comply with A.S.A. B-18.2. Threads shall comply with A.S.A. B-1.1 for UNC threads series, class 2B fit.

Material for steel nuts shall be A.S.T.M. A-307 Grade A, and shall conform to A.S.A. B-18.2. Threads shall comply with A.S.A. 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 coated with zinc chromate.

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

Material for clamp bar bolt shall be stainless steel A.S.T.M. A-193, Grade B8.

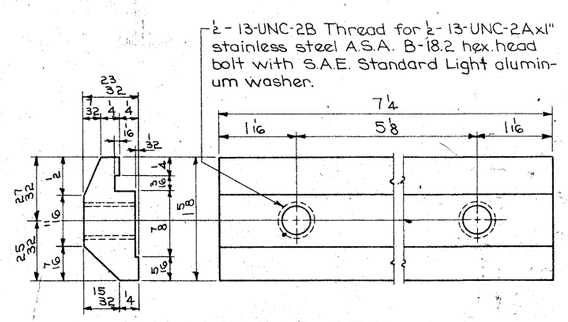
Rail end caps may be either aluminum alloy permanent mold casting or sand mold casting.

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

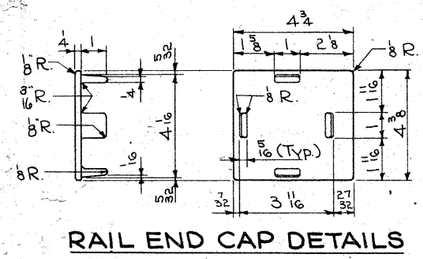
All surfaces requiring zinc chromate shall be given one shop coat of zinc chromate paint.

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 or 6062-T6. Rivets shall be button head, cone point and cold driven.

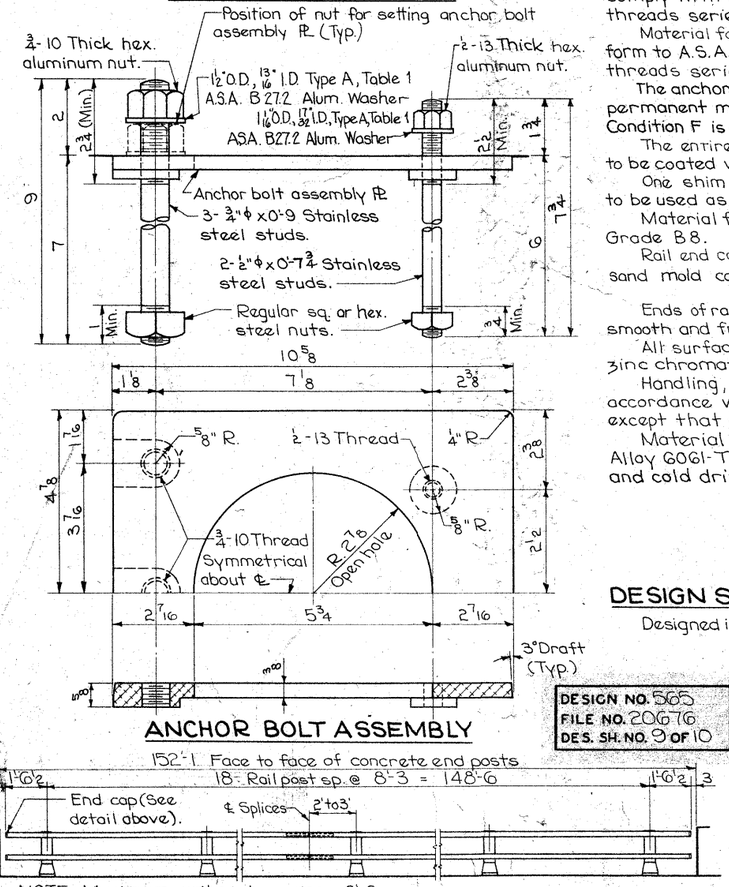


CLAMP BAR DETAILS

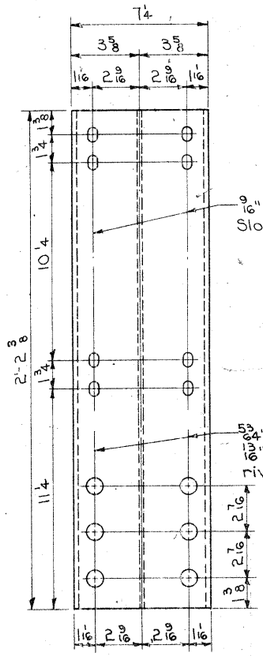


RAIL SECTION

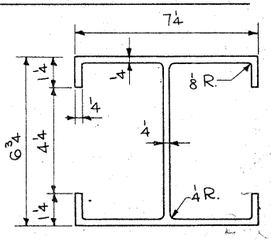
RAIL END CAP DETAILS



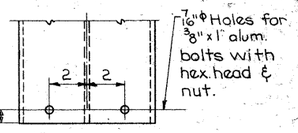
ANCHOR BOLT ASSEMBLY



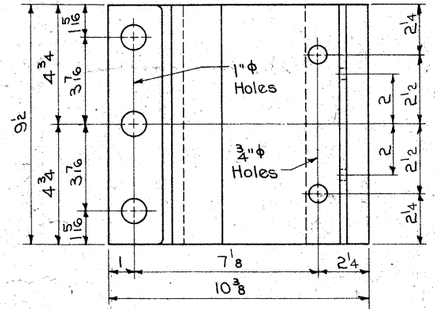
POST

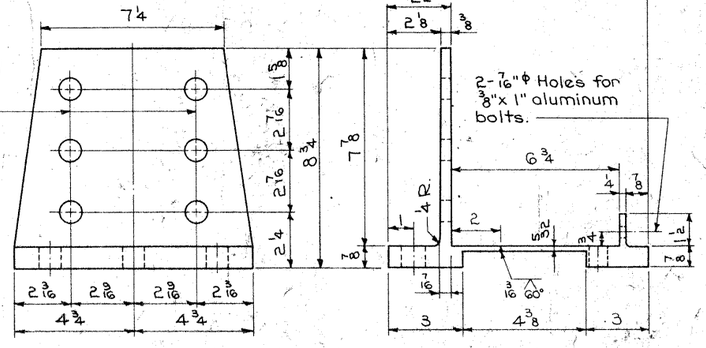


POST SECTION



REAR VIEW OF POST





POST BASE PLATE DETAILS

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

TYPICAL ELEVATION OF RAILING AND RAIL POST LAYOUT

DESIGN SPECIFICATIONS:

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

ALUMINUM HANDRAIL QUANTITIES		
Aluminum Handrail 2 @ 303.17	606.34	Lin. Ft.

DESIGN NO. 565
FILE NO. 206-76
DES. SH. NO. 9 OF 10

Design for 42°25' Skew

DUAL 155'-0 x 39' CONT. I-BEAM BRIDGE

47'-3 End Spans 60'-6 Interior Span

ALUMINUM HANDRAIL DETAILS

Station 1187+12.50 August, 1966

HARRISON COUNTY

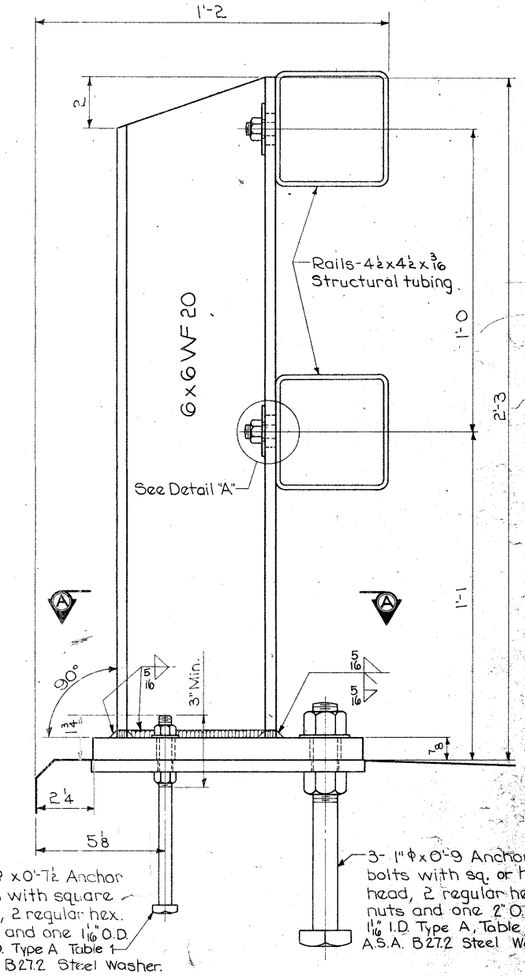
IOWA STATE HIGHWAY COMMISSION

Revised 7-25-66: Caulking at posts eliminated.
Revised 3-14-66: Minor changes made.

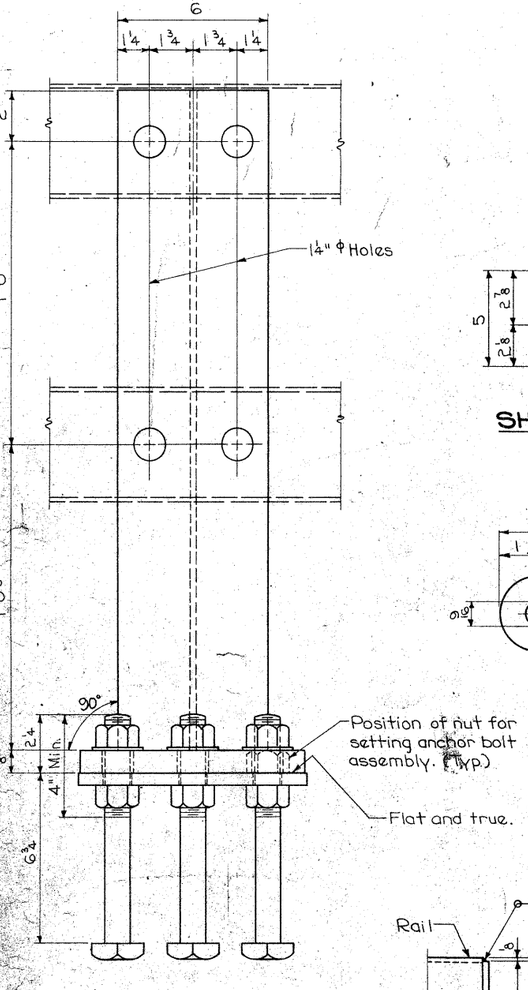
Designed By: JH · Traced By: DI Checked By: WAL

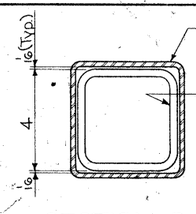
1012 HARRISON COUNTY

PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
I-IG-29-5(17)178--04-43	IOWA	5		11	12

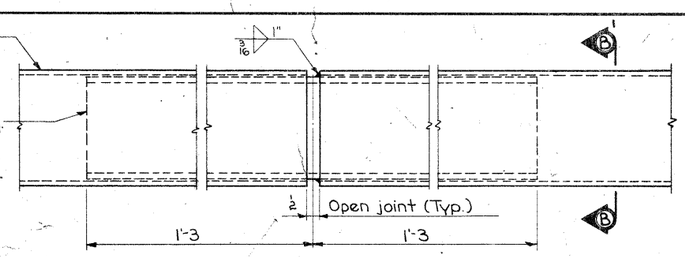


RAIL POST

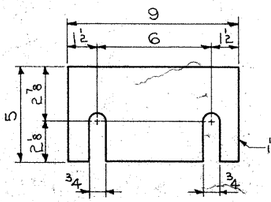




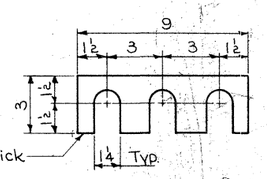
SECTION B-B



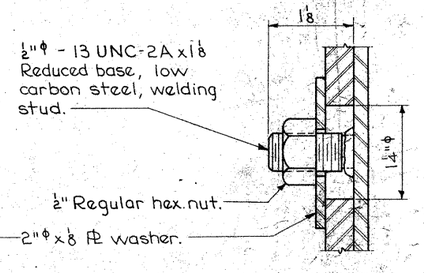
TYPICAL SPLICE JOINT



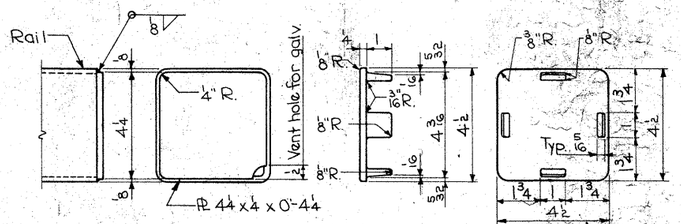
SHIM "A" DETAIL



SHIM "B" DETAIL

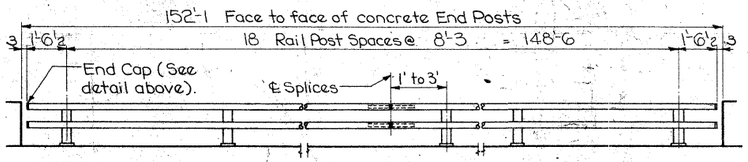


DETAIL "A"



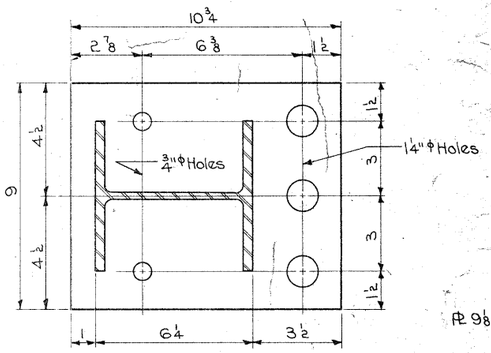
END CAP "A" END CAP "B"

RAIL END CAP DETAILS

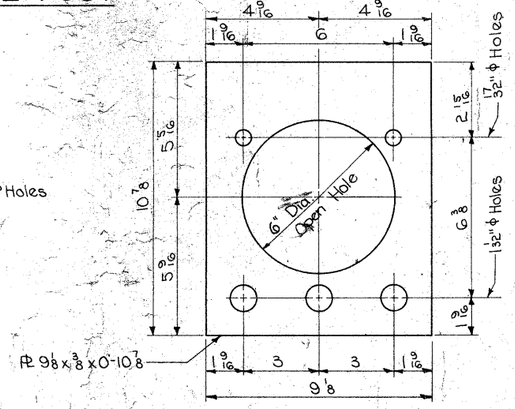


NOTE:
Maximum rail post spacing = 8'-6.

TYPICAL ELEVATION OF RAILING AND RAIL POST LAYOUT



SECTION A-A



ANCHOR CAGE DETAILS

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.

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 End Cap "B" shall be galvanized malleable iron casting or galvanized steel casting.

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.

DESIGN SPECIFICATIONS:

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

STEEL HANDRAIL QUANTITIES		
Steel Handrail, 2@ 303.17	606.34	Lin. Ft.

Design for 42°25' Skew

DUAL 155'-0x39' CONT. I-BEAM BRIDGE

47'-3 End Spans 60'-6 Interior Span

STEEL HANDRAIL DETAILS

Station 1187+12.50 August, 1966

HARRISON COUNTY

IOWA STATE HIGHWAY COMMISSION

DESIGN NO. 565
FILE NO. 20676
DES. SH. NO. 10 OF 10

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

Designed By: J.H Traced By: DH Checked By: WAL

1018 HARRISON COUNTY

PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
I-IG-29-5(17)78--04-43	IOWA	5		12	12