HARRISON COUNTY

STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	5		1	52

IOWA ACCOUNT NUMBER	PROJECT NUMBER
04 43 0900 007	I-IG-29-5(7)78**43-9

STATE OF IOWA
STATE HIGHWAY COMMISSION

PLANS OF PROPOSED IMPROVEMENT
ON THE

INTERSTATE ROAD SYSTEM
BRIDGES AND CULVERTS

HARRISON COUNTY

ON I-29 FROM U. S. 30, WEST OF MISSOURI VALLEY NORTHERLY 7.7 MILES
THE IOWA STATE HIGHWAY COMMISSION STANDARD SPECIFICATIONS
FOR CONSTRUCTION WORK, SERIES OF **1964** SHALL
APPLY TO WORK ON THIS PROJECT
(Plus current Supplemental Specifications and Special Provisions.)

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

* *Structural Steel*
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.
Prestressed Concrete in accordance with Section 1.13.7 f'c = 5000 psi.
Prestressing Steel in accordance with Section 1.13.7 f's = 250,000 psi.

MILEAGE SUMMARY 105-1

DIV.	LOCATION	LIN. FT.	MILES
	Bridge at Sta. 1088+28.60	222.417	.042
	Bridge at Sta. 1108+46.64	141.167	.027
	Total		.069

* Structural Steel in accordance with I. N. T. 7(62), Section 1.4.2(B), "Structural Steel", A-36 fs=20,000 p. s. i.

CONSTRUCTION PLANS SHOWING PROJECT AS BUILT
THREE COPIES PREPARED BY Albert Hansen DATE FEB 4 1970
Ass't. Resident Constr. Engr.
ONE COPY APPROVED, & FORWARDED TO AMES
John P. Brennan DATE Feb. 11, 1970
District Constr. Engineer
TWO COPIES TO BE MADE & RETURNED TO DISTRICT ENG'R. RES. MAINT. ENG'R.
Walter Morris
John Risch

INDEX OF SHEETS 105-3

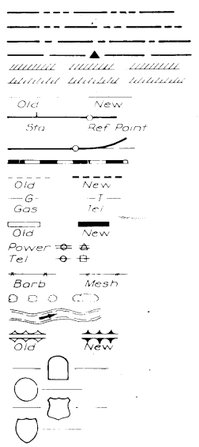
NO.	DESCRIPTION
1	TITLE SHEET
2	ESTIMATE SHEET
2A	ESTIMATE SHEET
3	MISCELLANEOUS SHEET (CHP 2.5 - 65)
~~4-19~~	~~BRIDGE DES. NO. 265~~
~~20-28~~	~~BRIDGE DES. NO. 365~~
29-49	BRIDGE DES. NO. 465
~~50~~	~~SITUATION PLAN FOR DES. NO. 1665~~
~~51~~	~~SITUATION PLAN DES. NO. 1765 AND 1865~~
~~52~~	~~HEADWALL DETAILS FOR DES. NO. 1865~~
1A	TABULATION OF REVISION
~~52A-K~~	~~BRIDGE DES. NO. 1065~~
~~52AA-AK~~	~~BRIDGE DES. NO. 965~~

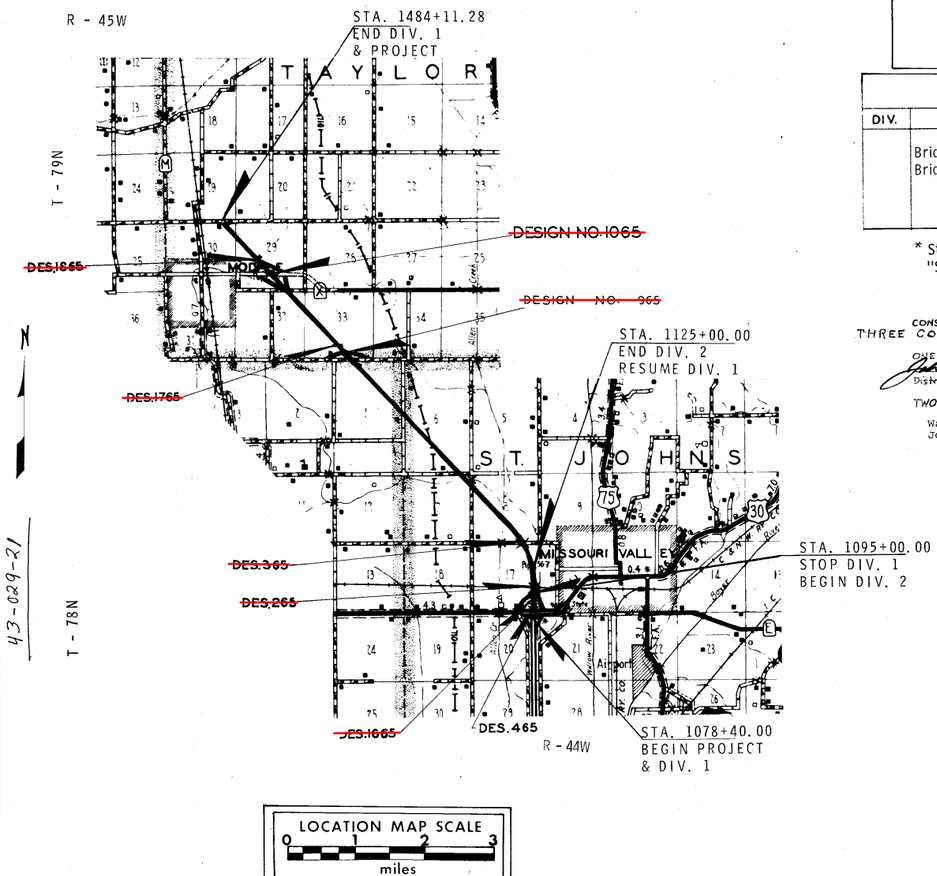
IOWA STATE HIGHWAY COMMISSION
STANDARDS REQUIRED
(AVAILABLE AT ISHC STOREROOM)

STANDARD	ISSUED	REVISED
C1P	1932	1944
C2P	1932	1944
C6F	1932	1944
C8F	1932	1944
CBH-00	1960	
CBH-30	1960	1961

CONVENTIONAL SIGNS

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





LOCATION MAP SCALE
0 1 2 3
miles

PROJECT NO. I-IG-29-5(7)78**43-9
BRIDGE

LETTING DATE
Jan. 18, 1966
March 30, 1966
April 28, 1966

12-820-63

[redacted]

1180

REVISED
SEE FOLLOWING SHEET - 1A

APPROVED
ENGINEERING DIRECTOR DATE
IOWA HIGHWAY COMMISSION

DEPARTMENT OF COMMERCE
BUREAU OF PUBLIC ROADS
APPROVED
DIVISION ENGINEER DATE

Dec. (30)

REVISIONS FOR THIS PROJECT

PROJECT NUMBER I-IG-29-5(7)78**43-9 HARRISON COUNTY

WORK CLASS BRIDGES & CULVERTS

DATE	SHEET NUMBER	REVISION
12-23-65	20	NOTE ADDED TO GENERAL NOTES
2-7-66	52A-52K	BRIDGE DESIGN NO. 1065 ADDED (MARCH 30, 1966 LETTING)
2-14-66	51	DES. NO. 1865 NOTE ADDED
3-3-66	51	DES. NO. 1865 FILL AND REINFORCING STEEL CHANGED DUE TO OVER LOAD.
3-3-66	2	DES. NO. 1865 & TOTAL REINF. STEEL QUANTITIES CHANGED.
3-4-66	51	DES. NO. 1865 REINF. STEEL QUANTITY CORRECTED.
3-4-66	2	DES. NO. 1865 & TOTAL REINF. STEEL QUANTITIES CORRECTED
3-9-66	52AA-5AK	DES. NO. 965 ADDED (APRIL 28-1966 LETTING).
3-9-66	2A	ESTIMATE SHEET ADDED
April 10, 1967		In Letting of January 18, 1966
	Sheet 16 of 52	Design 265 Concrete placement quantities corrected.
	Sheet 4 of 52	Superstructure concrete quantities corrected.
	Sheet 2 of 52	Design 265:- Concrete quantity corrected.

DATE	SHEET NUMBER	REVISION

DATE	SHEET NUMBER	REVISION

File 20676

HARRISON COUNTY

PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
I-IG-29-5(7)78**43-9	IOWA	5		1A	52

REVISION SHEET

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	IOWA			2	52

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.

William C. Eyer
WILLIAM C. EYER

DATE 12-16-65 REG. NO. 2926

In Letting of Jan. 18, 1966

DESIGN 265 STATION 1108+46.64 INT. 29
ON INTERSTATE NO. 29 OVER C. & N. W. RAILWAY
IOWA CROSSING NO. 2324
SECTION 17 T-78 R-44W TOWNSHIP ST. JOHNS

DESIGN FOR 1°08' SKEW
DUAL 138'-4 X 40' & VAR. PRETENSIONED
PRESTRESSED CONCRETE BEAM BRIDGES

ESTIMATE OF QUANTITIES

ITEM		UNIT	TOTAL	
(1) Structural Concrete		Cu. Yds.	~~732.0~~	722.7
Reinforcing Steel		Lbs.	159 800	
Pretensioned Prestressed Concrete Beams	(42'-6 A4)	No.	38	
	(50'-10 A6)	No.	19	
Aluminum or Steel Handrails		L.F.	~~529.3~~	529.6
		L.F.	529.3	
Creosoted Piles		L.F.	~~3 360~~	3,355.4
10 BP 42 Steel	Furnish	L.F.	~~3 000~~	2,970
Bearing Piling	Drive	L.F.	~~2 800~~	3049.6
Class 20 Excavation		Cu. Yds.	732	
Granular Backfill		Cu. Yds.	201	
4" ϕ Tile Subdrain		L.F.	~~252~~	253
Steel Bearing Test Piling		L.S.	Lump Sum	

(1) Includes 343.8 cy. Class D; 388.2 cy. Class C.

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 12-16-65 REG. NO. 2793

In Letting of Jan. 18, 1966 (1966 / 1965)

DESIGN 365 ON LOCAL ROAD STA. 1141+63.61 ON INTERSTATE NO. 29
OVER INTERSTATE NO. 29 STA. 11141+56.66 ON LOCAL ROAD
SECTIONS 8 & 17 T-78N R-44W TOWNSHIP ST. JOHNS

DESIGN FOR 9°-11' SKEW
223'-9 X 28 PRETENSIONED PRESTRESSED
CONCRETE BEAM BRIDGE

ESTIMATE OF QUANTITIES

ITEM		UNIT	TOTAL	
(1) Structural Concrete		Cu. Yds.	343.1	
Reinforcing Steel		Lbs.	76 524	
Pretensioned Prestressed Concrete Beams	38'-4 (B99)	No.	5	
	46'-8 (B2)	No.	5	
	67'-6 (B7)	No.	10	
Creosoted Piling		L.F.	~~2 870~~	3368.3
Class 20 Excavation		Cu. Yds.	236	
4" ϕ Tile Subdrain		L.F.	~~168~~	140
Granular Backfill		Cu. Yds.	93	
Aluminum or Steel Handrail		L.F.	~~435.6~~	435.7
		L.F.	435.6	
Concrete Slope Protection		Sq. Yds.	~~395~~	419.7
Creosoted Test Piling		L.S.	LUMP SUM	

(1) 196.1 c.y. of Structural Concrete Class D for Superstructure and 147.0 c.y. of Class C for Substructure.

I HEREBY CERRTIFY 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.

12-16-65 James R. Sassaman 20663
DATE JAMES R. SASSAMAN REG. NO.

In Letting of Jan. 18, 1966

DESIGN NO. 465 STA. 1088+28.60 RT. LANE I 29
STA. 479+87.80 LT. LANE U.S. No. 30
ON I 29 OVER U. S. NO. 30
SECTION 16-17-20-21 F-78-N R-44-W TOWNSHIP ST. JOHNS

DESIGN FOR 1°13'30" SKEW
DUAL 219'-7 X 39' & VARIABLE PRETENSIONED
PRESTRESSED CONCRETE BEAM BRIDGES

ESTIMATE OF QUANTITIES

ITEM		UNIT	TOTAL	
(1) Structural Concrete		Cu. Yds.	1 097.0	
Reinforcing Steel		Lbs.	259 535	
Pretensioned Prestressed Concrete Beams	B-1 (42'-6)	No.	21	
	B-99 (38'-4)	No.	21	
	B-7 (67'-6)	No.	42	
Aluminum or Steel Handrail		L.F.	854.3	
		L.F.	~~854.3~~	854.4
Class 20 Excavation		Cu. Yds.	782	
Creosoted Test Piling		L.S.	Lump Sum	
2" ϕ Rigid Steel Conduit		L.F.	~~484~~	478.4
Creosoted Piling		L.F.	~~11 480~~	8,716.8
Granular Backfill		Cu. Yds.	289	
Concrete Slope Protection		Sq. Yds.	~~1 059~~	1086.8
4" ϕ Tile Subdrain		L.F.	277	

(1) The floor, curbs & end posts, 575.2 c.y. is to be class "D" concrete. The remainder 521.8 CY is to be Class "C" concrete.

I HEREBY CERTIFY THAT THESE PLANS HAVE BEEN PREPARED BY ME OR UNDER MY DIRECT PERSONAL SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF IOWA.

Dale E. Derby
DALE E. DERBY P.E. IOWA REGISTRATION NO. 3049 DATE 12-16-65

In Letting of Jan. 18, 1966 (1966 / 1965)

DESIGN	LOCATION: SECTION	TOWNSHIP	STATION	DESCRIPTION: SIZE AND TYPE	STRUC. CONC. CLASS "C" Cu. Yd.	REINF. STEEL LBS.	EXCAVATION - C.Y. CL. 20	CL. 24	CL. 10 CHAN.		GRANULAR BACKFILL Cu. Yd.		REMOVALS
1665	17	ST. JOHNS	1096+00	2' X 3' X 234' R.C. Box Culvert	74.9	4 262	154						
1765	33	TAYLOR	1341+25	6' X 6' X 147' R.C. Box Culvert Skew 30°	131.5	17 690	340						
1865	29	TAYLOR	1445+39	8' X 10' X 142' R.C. Box Culvert Skew 7°	256.7	~~30 036~~	515				~~54.46~~ 50	~~54.65~~	
						~~32 630~~							
						50 830							
				TOTALS	463.1	~~51 988~~	1 009				~~54.46~~ 50	~~54.65~~	
						~~54 783~~							
						60 782							

Revised 4-10-67: Design Nº 265 Superstructure Concrete Quantities Corrected
Revised 3-4-66: Design No. 1865 and Total Reinforcing Steel Quantities corrected.
Revised 3-3-66: Design No. 1865 and Total Reinforcing Steel Quantities changed.

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 2-7-66 REG. NO. 2793

In Letting of March 30, 1966

DESIGN 1065 IOWA NO. 300 OVER I-29 STA. 1142I+00.00 IOWA NO. 300
STA. 1421+00.00 I-29
SECTION 29 T-79N R-44W TAYLOR TOWNSHIP

DESIGN FOR 42°43'
322' X 30' CONTINUOUS WELDED GIRDER BRIDGE

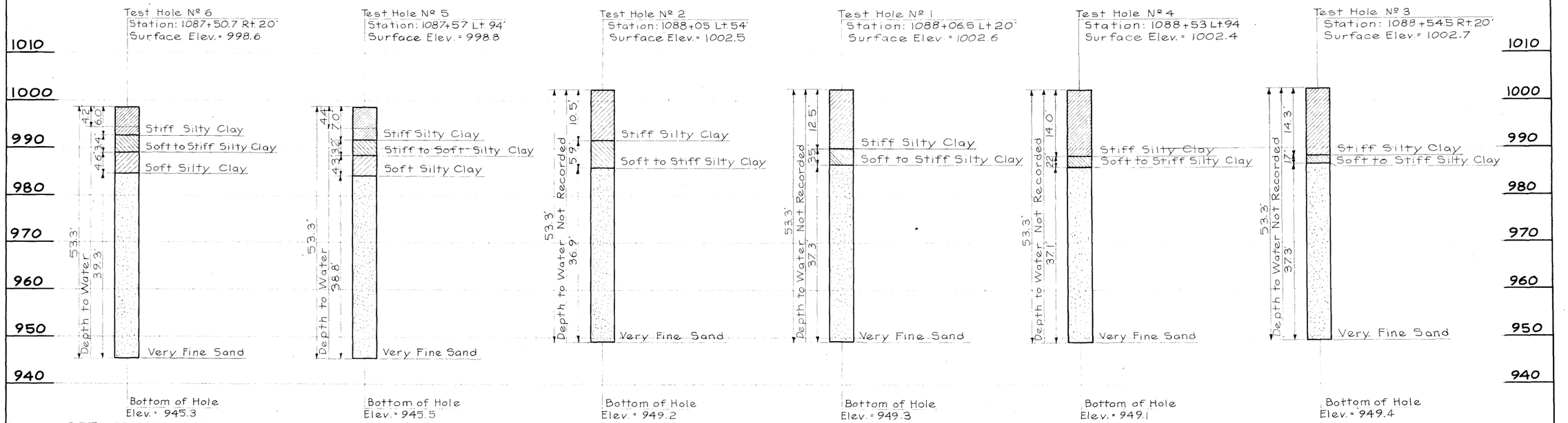
ESTIMATE OF QUANTITIES

ITEM		UNIT	TOTAL	
(1) Structural Concrete		Cu. Yds.	559.3	
Reinforcing Steel		Lbs.	147 135	
Structural Steel		Lbs.	285 680	
Aluminum or Steel Rail		L.F.	637.21	
		L.F.	637.21	
10 BP42 Steel	Furnish	L.F.	~~1 200~~	1220
Bearing Piling	Drive	L.F.	~~1 200~~	1416.8
Creosoted Piling		L.F.	~~2 100~~	2,134
Class 20 Excavation		Cu. Yds.	200	
Granular Backfill		Cu. Yds.	150	
4" ϕ Tile Subdrain		L.F.	~~186~~	208
Concrete Slope Protection		Sq. Yds.	670	

(1) 314.6 c.y. Class D Concrete for Superstructure and 244.7 c.y. Class C Concrete for Substructure.

HARRISON COUNTY PROJECT NO. I-IG-29-5(7)78 ** 43-9 FILE NO. 20676 SHEET NO. 2

Sta. 1089+02 ± S.B.L.
BM # 91-A Cut "X" in NE Wing Post Base ~ S.B.L. Elev. 1024.76
~~Bench Mark # 91: Sta. 1088+62, RR Spk. in S.E. Root of 24" Ash, Lt. 250, El. 1000.40~~



SOUNDING DATA

Dated June 24, 1958 Scale 1" = 10'-0

SPECIFICATIONS:

Design: A.A.S.H.O., Series of 1961.
Construction: Standard Specifications of the Iowa State 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.

Reinforcing Steel in accordance with Section 1. 4.12 "Reinforcement" for Intermediate, Hard, or Rail Steel grade.
Concrete in accordance with Section 1.4.11 f'_c = 3500 p.s.i.

See sheet 16 for design stresses for prestressed beams.

TOTAL ESTIMATED QUANTITIES

Item		Units	East Bridge 2-Abuts	East Bridge 3-Piers	East Bridge Superstr	West Bridge 2-Abuts	West Bridge 3-Piers	West Bridge Superstr	Total	
*Structural Concrete		Cu Yds	63.5	148.4	248.3	104.0	205.9	326.9	1,097.0	
Reinforcing Steel		lbs.	7,390	31,475	71,550	10,910	41,497	96,713	259535	
Pretensioned	B-1 (42'-6)	Nº			9			12	21	
Prestressed	B-99 (38'-4)	Nº			9			12	21	
Concr. Beams	B-7 (67'-6)	Nº			18			24	42	
Aluminum Handrail or Steel Handrail		Lin Ft							854.3	
		Lin Ft							~~854.3~~	854.4
Class 20 Excavation		Cu Yds	96	261		138	287		782	
Creosoted Test Piling		L.S.					1@ 45'		Lump Sum	
2" ϕ Rigid Steel Conduit		Lin Ft							~~484~~	478.4
Creosoted Piling		Lin Ft	30@55'	93@35		40@55'	125@35		~~11,480~~	8716.8
Granular Backfill		Cu Yds	110			179			289	
Concrete Slope Protection		Sq Yds							~~1059~~	1086.8
4" ϕ Tile Subdrain		Lin Ft							277	

*The floor, curbs & end posts, 575.2 C.Y. is to be Class "D" Concrete. The remainder, 521.8 C.Y. is to be Class "C" Concrete.

GENERAL NOTES:

These bridges are designed for HS20-44 loading and alternate loading designated in B.P.R. P.P.M. 20-4, Section 4c plus an allowance of 19 lbs. per square foot of roadway for future wearing surface.

The approach fills are not a part of this estimate but are to be in place at least 75 days before abutment piles are driven. Abutment piles are to be driven in oversize holes drilled through the fill to elevation 998.0. The minimum diameter of the drilled hole is to be 4 inches greater than the diameter of the pile 3 feet from the butt. Voids around 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.

Pier excavation quantities assume that the grading work will be completed prior to start of pier construction.

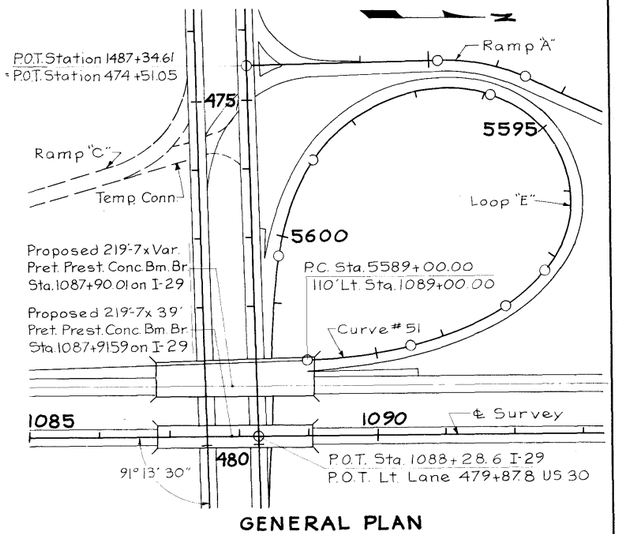
The Bridge Contractor is to install the tile subdrain behind each abutment as shown and noted on sheets 2, 3 and 6. The price bid for "4" ϕ Tile Subdrain" is to include all the labor and excavation necessary for installation.

The Bridge Contractor is to level off and shape the berms to the elevations shown.

The Bridge Contractor is to construct these bridges while maintaining two-way traffic on U.S. #30. The Bridge Contractors cost for signing as noted or shown on sheet 21 is considered incidental to the cost of constr.

TEST PILE NOTES:

The lengths shown for "Creosoted Piling" are estimated lengths for bidding purposes only. One test pile shall be driven before ordering any additional piling. Before driving the test pile, the area at the test pile is to be excavated to the proposed footing elevation. Pile lengths will be determined from test pile results. The lump sum bid for "Creosoted Test Piling" is to include all costs required to furnish and drive the test pile in the location shown on these plans and as directed by the Engineer.



GENERAL PLAN

Scale: 1" = 100'

Design for 1° 13' 30" Skew

DUAL 219'-7" x 39" ϕ VARIABLE PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGES

38'-11½" & 43'-1½" End Spans 2-68'-9" Interior Spans
Concrete Floor & Substructure Tubular Handrail

SOUNDINGS & GENERAL PLAN

Sta. 1088+28.60 Rt. Lane I-29
Sta. 479+87.80 Lt. Lane U.S. #30
Proj. Nº I-IG-29-5(7)78**-43-9

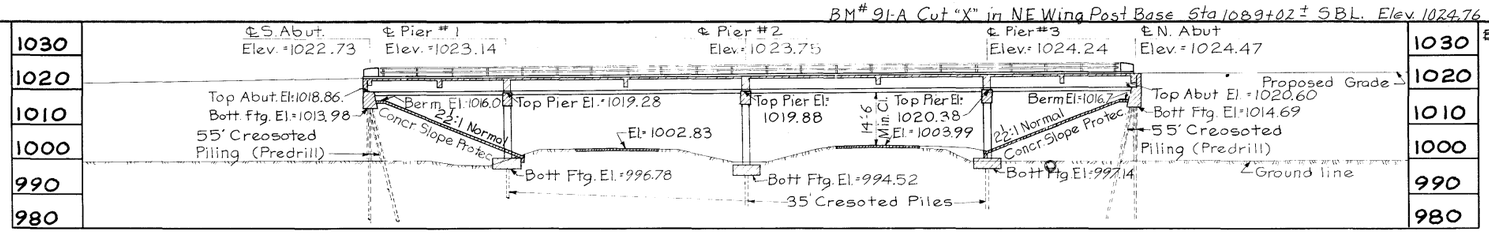
HARRISON COUNTY

IOWA STATE HIGHWAY COMMISSION
December, 1965 Sheet 1 of 21

Design Nº 465 Harrison County File Nº 20676

JRS

BM # 91-A Cut "X" in NE Wing Post Base Sta 1089+02 ± SBL. Elev. 1024.76

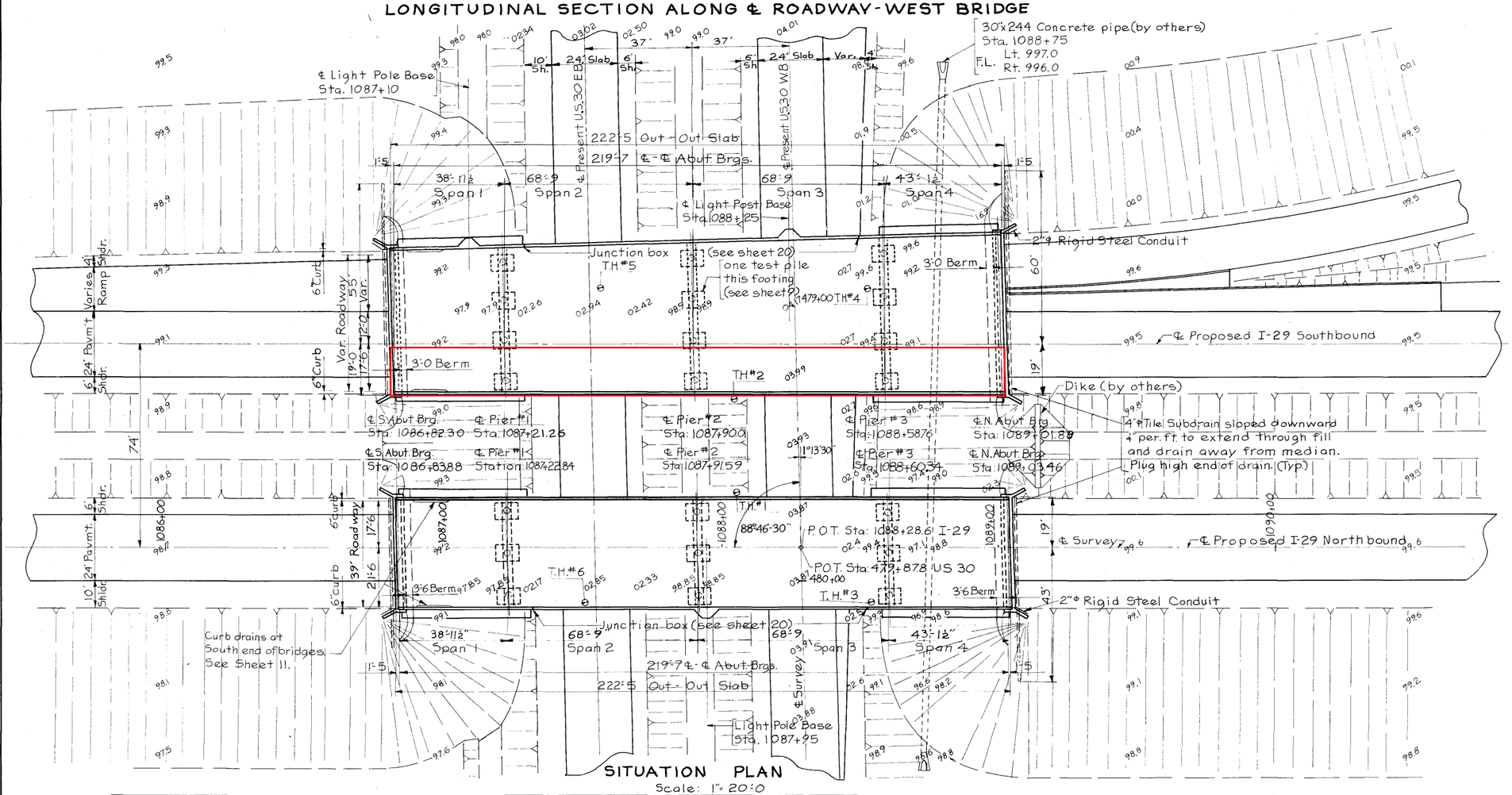


B.M. # 91: Sta. 1088+62 R.R. Spk. in S.E. Root of 24" Ash, Lt. 250, Elev. 1000.40

LONGITUDINAL SECTION ALONG ℄ ROADWAY - WEST BRIDGE

P.I. Sta: 1087+00
El. = 1025.73
+2.297 % -0.20 %
V.C. = 900'
M.O. = 2.809
I-29 Grade

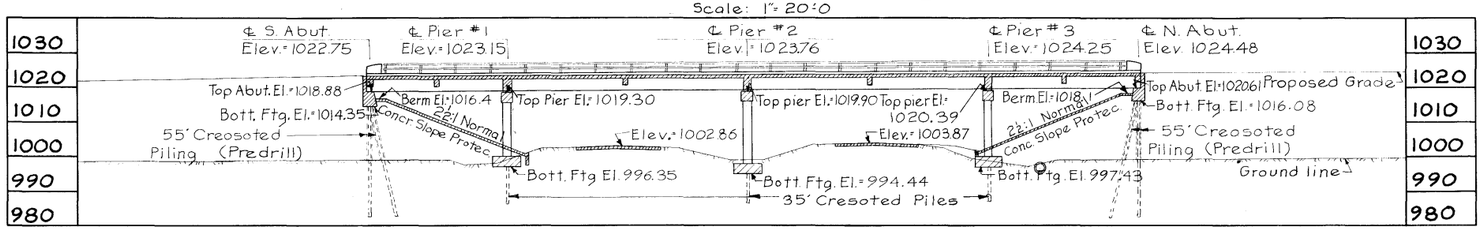
U.A.C. Present Grade
Grade on U.S. # 30



SITUATION PLAN

Scale: 1" = 20'-0

Curve Data # 51
Δ = 11° 15' Lt
D = 7°30'
T = 75.25
L = 150.00
E = 3.70'
R = 764.0'



LONGITUDINAL SECTION ALONG ℄ ROADWAY - EAST BRIDGE

LOCATION:
St. Johns Twp.
Sec. 16, 17, 20, 21,
T-78-N R-44-W
Harrison County
On I-29
Over U.S. # 30

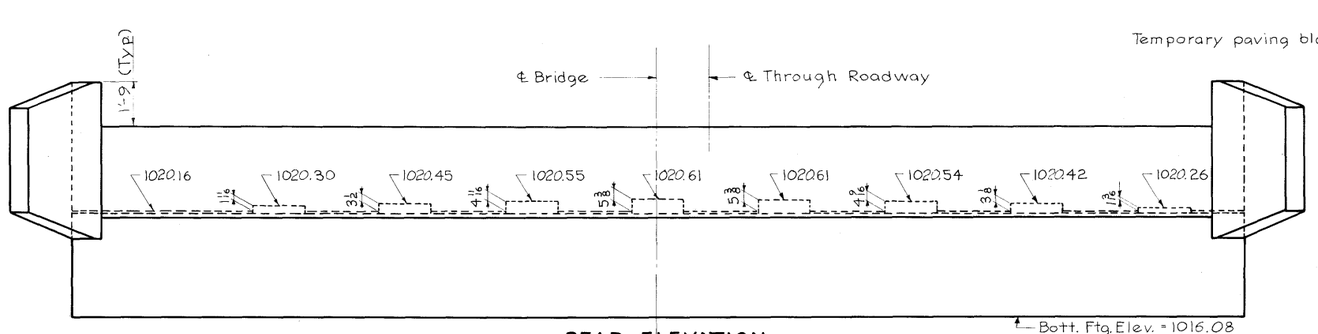
Design for 1°13'30" Skew
DUAL 219'-7x39' ℄ VARIABLE PRETENSIONED
PRESTRESSED CONCRETE BEAM BRIDGES
38'-11½ & 43'-1½ End Spans 2-68'-9 Interior Spans
Concrete Floor & Substructure Tubular Handrail

SITUATION PLAN
Station: 1088+28.60 Rt. Lane I-29 Proj. № I-IG-29-5(7)78**43-9
479+87.80 Lt. Lane U.S. 30
HARRISON COUNTY
IOWA STATE HIGHWAY COMMISSION
December, 1965 Sheet 2 of 21

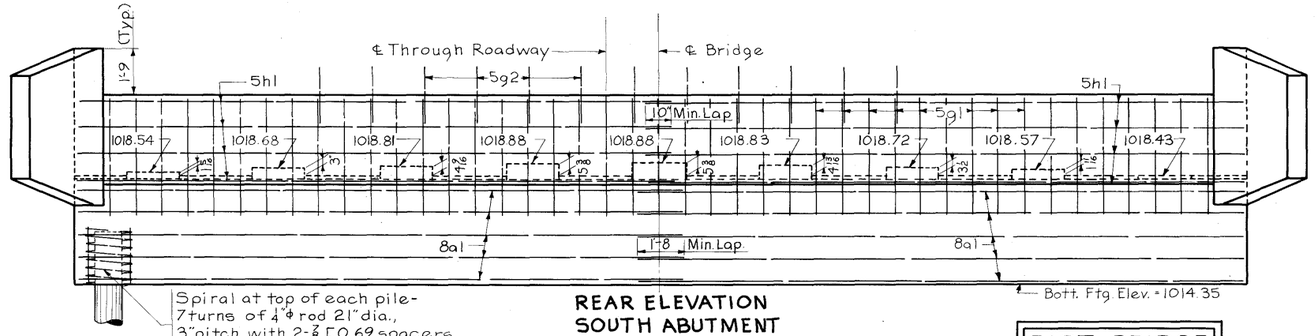
Design № 465 Harrison County File № 20676

Bench Mark #91-A Cut "X" in N.E. Wing Post Base Sta 1089+02 ± S.B.L. Elev. 1024.76

~~Bench Mark #91: Sta. 1088+62 RR Spk in S.E. Root of 24" Ash, Lt. 250' - Elev. = 1000.40~~



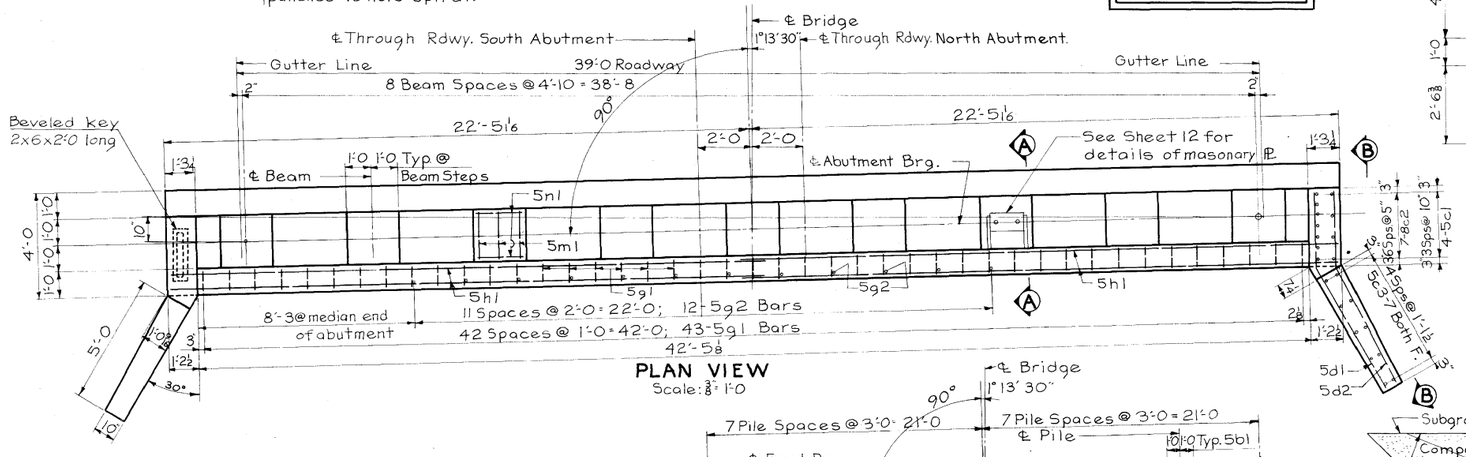
REAR ELEVATION
NORTH ABUTMENT



Spiral at top of each pile-
7 turns of $\frac{1}{4}$" ϕ rod 21" dia.,
3" pitch with 2-$\frac{7}{8}$ [0.69 spacers
punched to hold spiral.

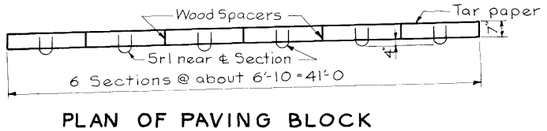
REAR ELEVATION
SOUTH ABUTMENT

EAST BRIDGE

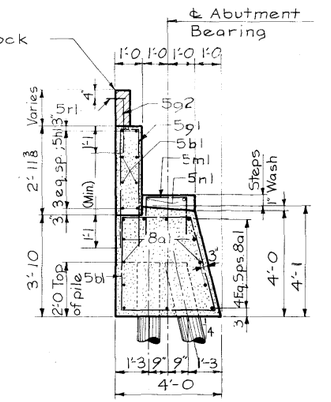


PLAN VIEW
Scale: $\frac{3}{8}$" = 1'-0

Note: Dimensions shown are at the bottom of the footing. Batter front row piles 1:4 in the direction shown. 15 Creosoted Piles are required per abutment.

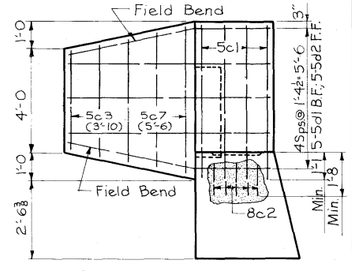


PLAN OF PAVING BLOCK

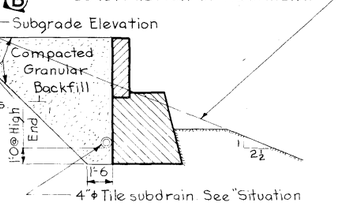


SECTION A-A

Note: Temporary paving block is to match roadway crown and be placed after superstructure slab has been placed. Bend down 5g2 bars and line approach pavement support with tar paper to prevent bond.



VIEW B-B



BACKFILL DETAILS

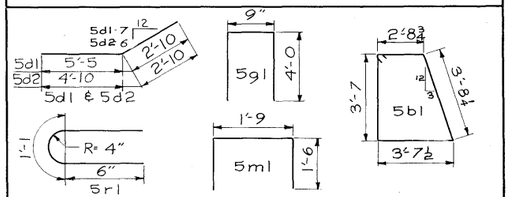
Approach fills are to be completed to this line before starting construction of Abutment.

* Structural Grade

REINFORCING STEEL ~ ONE ABUTMENT

Bars	Location	shape	Nº	Length	Weight
8a1	Footing Longitudinal		26	23'-1	1602
5b1	Footing Hoops		30	14'-5	451
5c1	Endwalls Vertical F.F.		8	5'-6	46
8c2	Endwalls Vertical B.F.		14	6'-1	227
5c3-7	Wings Vertical		20	Varies	97
5d1	Wings Horizontal B.F.		10	8'-3	86
5d2	Wings Horizontal F.F.		10	7'-8	80
5g1	Backwall Vertical		43	8'-7	389
5g2	Pavement Dowels		12	2'-2	27
5h1	Backwall Horizontal		16	22'-10	381
5m1	Bridge Seat Cap Trans.		27	4'-7	129
5n1	Bridge Seat Cap Longitu.		18	1'-9	33
5r1	Paving Block Loops		6	2'-1	13
	Pile Spiral - $\frac{1}{4}$" ϕ rod		15	38'-6	96
	" " spacers @ [0.69		30	1'-10	38
	Total (lbs.)				3695

BENT BAR DETAILS



Note: Dimensions are out to out. Radii to ℄ bar.

CONCRETE PLACEMENT QUANTITIES

Location	N. Abutment	S. Abutment
Footing	22.7	22.6
Backwall	4.6	4.6
Wings & Endwalls	3.1	3.1
Paving Block	1.4	1.4
Total cu. yds.	31.8	31.7

ESTIMATED QUANTITIES

ITEM	Unit	North Abut.	South Abut.	Total
Structural Concrete Class "C"	Cu. Yds.	31.8	31.7	63.5
Reinforcing steel	Lbs.	3695	3695	7390
Excavation Class 20	Cu. Yds.	48	48	96
Granular Backfill	Cu. Yds.	55	55	110
Creosoted Piling	L. F.	15@55'	15@55'	1650'

ABUTMENT NOTES:

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

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

All exposed corners of 90° or sharper are to be filleted $\frac{3}{4}$".

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

Design load for pile is 20 tons. A yield bearing of 60 tons, shall be obtained and is to be determined by either the pile driving formula bearing multiplied by the appropriate correlation factor for the foundation soil, or by test load.

Design for 1°13'30" Skew

DUAL 21'-7x39' & VARIABLE PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGES

38'-11½ & 43'-1½ End Spans — 2-68'-9 Interior Spans

Concrete Floor & Substructure — Tubular Handrail

ABUTMENT DETAILS-EAST BRIDGE

Sta: 1088+28.60 Rt Lane I-29
Sta: 479+87.80 Lt Lane US #30

Proj. Nº I-IG-29-5(7)78xx43-9

HARRISON COUNTY

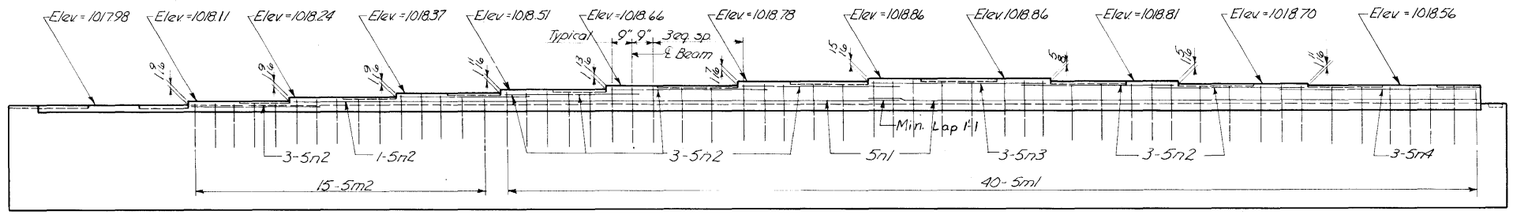
IOWA STATE HIGHWAY COMMISSION

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Design Nº 465 Harrison County File Nº 20676

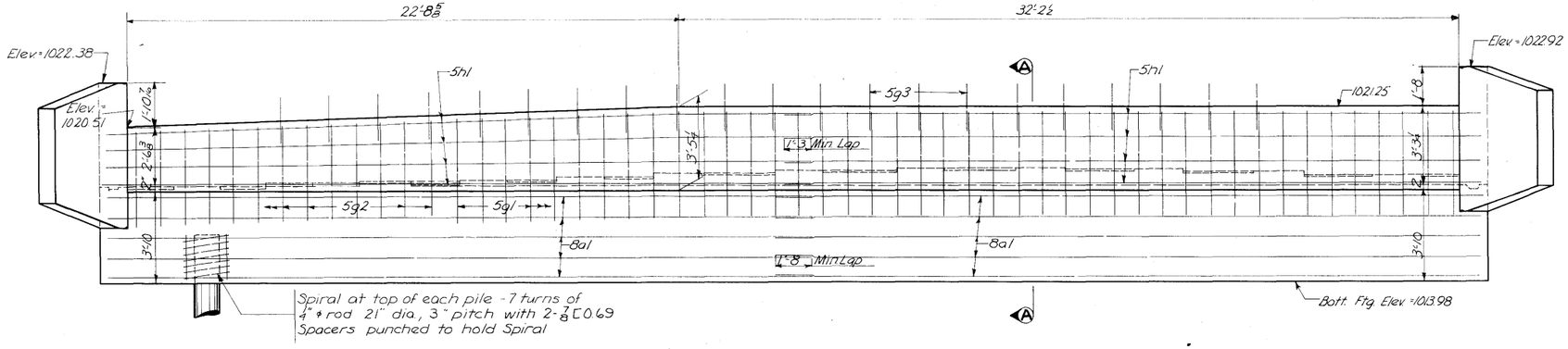
Bench Mark # 91-A Cut "X" in NE. Wing Post Base Sta 1089+02 ± SBL. Elev. 1024.76

~~Bench Mark #91, Sta 1088+62, RR Spk. in S.E. Root of 24" Ash, LL 250' Elev. 1000.40~~



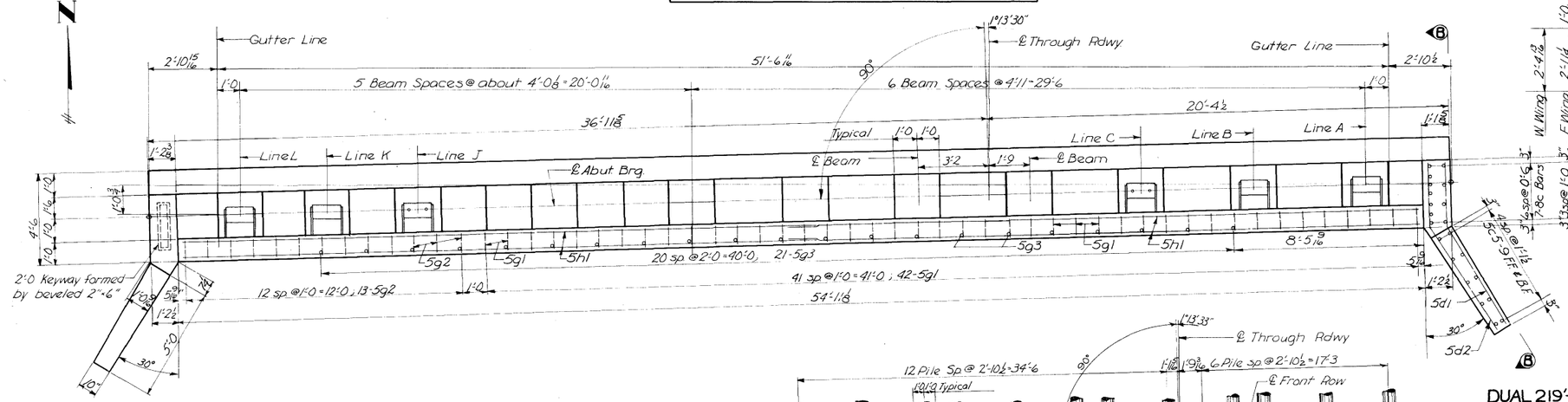
REAR ELEVATION

(Backwall and wings not shown)

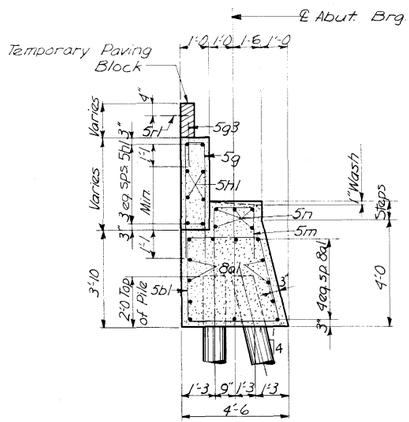


REAR ELEVATION

WEST BRIDGE - SOUTH ABUTMENT

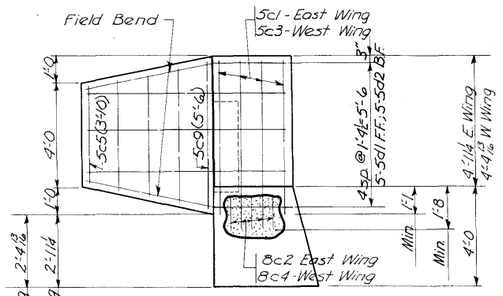


Note: Dimensions shown are to the bottom of the footing. Batter front row piles 1:4 in direction shown. 20 - Creosoted piles are required.



SECTION A-A

Note: Temporary paving block is to match roadway crown and be placed after superstructure slab has been placed. Bend down bars 5g3 and line approach pavement support with tar paper to prevent bond.



VIEW B-B

(Shown for East Wing)

Note: Omit pintles from masonry plates of Lines A, B, K & L. For details of masonry plates see sheet 12. Beams and masonry plates are to be in place before backwall is placed.

Design for 1°13'30" Skew

DUAL 219'-7 × 39' ℄ VAR. PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGES

38'-11½ & 43½ End Spans — 2-68'-9 Interior Spans

Concrete Floor & Substructure — Tubular Handrail

WEST BRIDGE ABUTMENT DETAILS

Sta: 1088+26.60 Rt. Lane I-29 Proj. № I-IG-29-5(7)78 ** 43-9

Sta: 479+87.80 Lt. Lane U.S. #30

HARRISON COUNTY

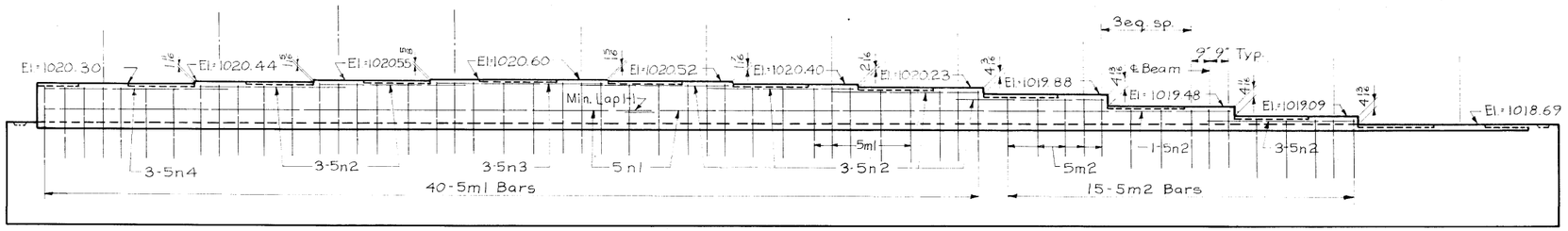
Iowa State Highway Commission

December, 1965

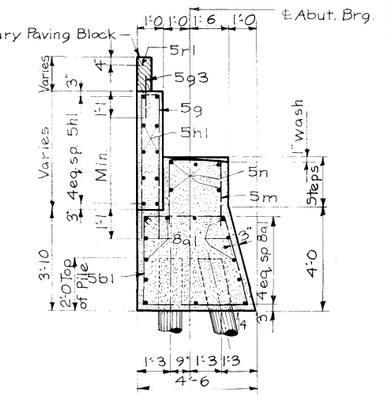
Sheet 4 of 21

Design № 965 Harrison County File № 20676

Bench Mark #91-A Cut "X" in NE Wing Post Base Sta 1089+02 ± SBL. Elev. 1024.76
~~Bench Mark #91, Sta 1088+62, R.R. Spk. in S.E. Root of 24" Ash, 11.250' Elevation 1000.40~~

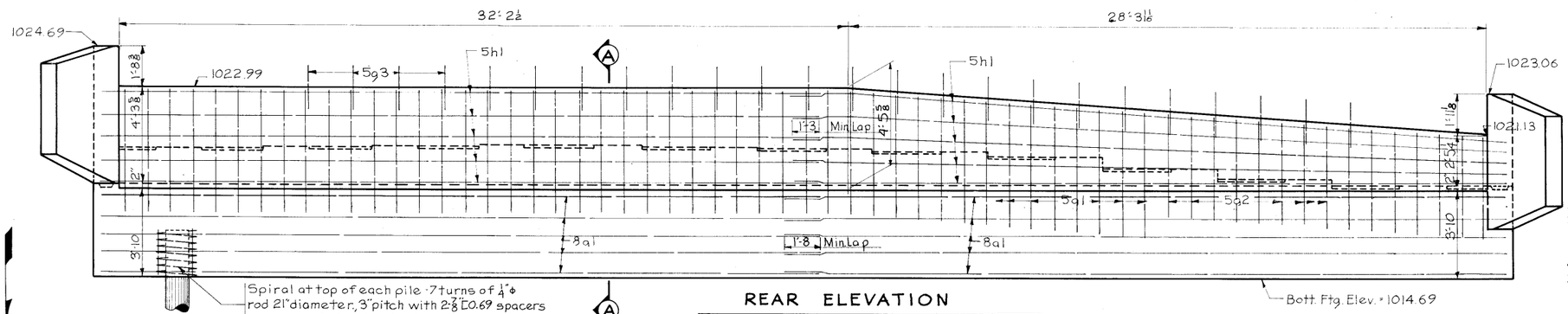


REAR ELEVATION
(Backwall and wings not shown)

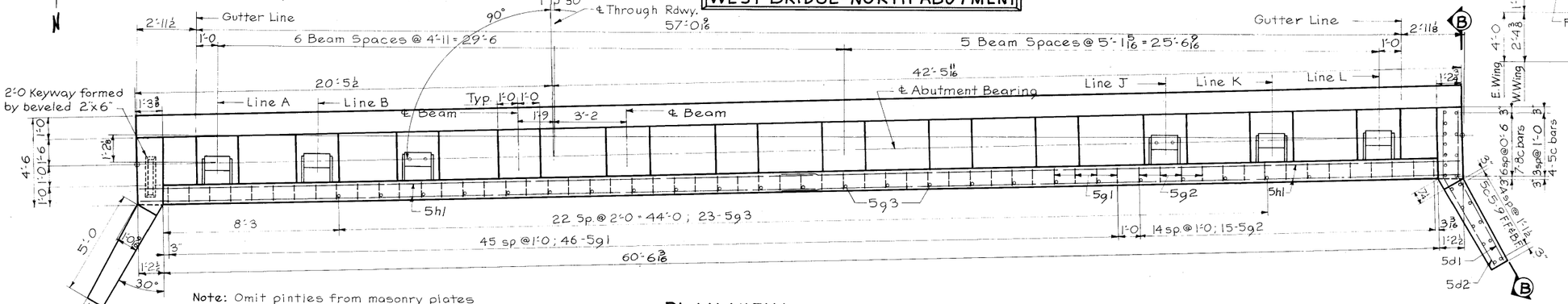


SECTION A-A

Note: Temporary paving block is to match roadway crown and be placed after superstructure slab has been placed. Bend down 5g3 bars and line approach pavement support with tar paper to prevent bond.

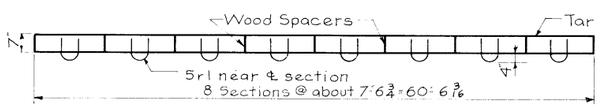


REAR ELEVATION
WEST BRIDGE-NORTH ABUTMENT



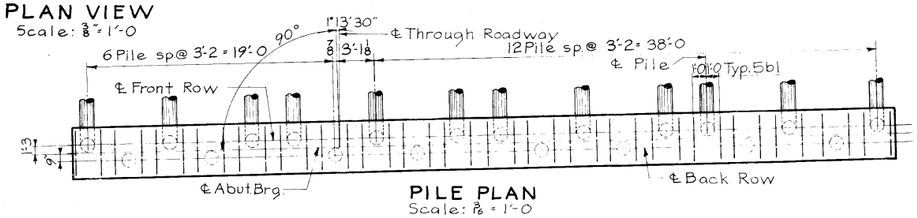
VIEW B-B
(Shown for West wing)

Note: Omit pintles from masonry plates of Lines A, B, K & L. For details of masonry plates see sheet 12. Beams and masonry plates are to be in place before backwall is placed.



PLAN OF PAVING BLOCK

PLAN VIEW
Scale: 3/8" = 1'-0



PILE PLAN
Scale: 1/16" = 1'-0

Note: Dimensions shown are at the bottom of the footing. Batter front row piles 1:4 in the direction shown. 20 Creosoted Piles are required.

Design for 1° 13' 30" Skew
DUAL 21'-7x39" & VARIABLE PRETENSIONED
PRESTRESSED CONCRETE BEAM BRIDGES
38'-11½ & 43'-1½ End Spans 2-68'-9 Interior Spans
Concrete Floor & Substructure Tubular Handrail
WEST BRIDGE ABUTMENT DETAILS
Sta. 1088+28.60 Rt. Lane I-29 Proj. No. I-IG-29-5(7)78^xx43-9
Sta. 479+87.80 Lt. Lane US-# 30
HARRISON COUNTY
IOWA STATE HIGHWAY COMMISSION
December, 1965 Sheet 5 of 21

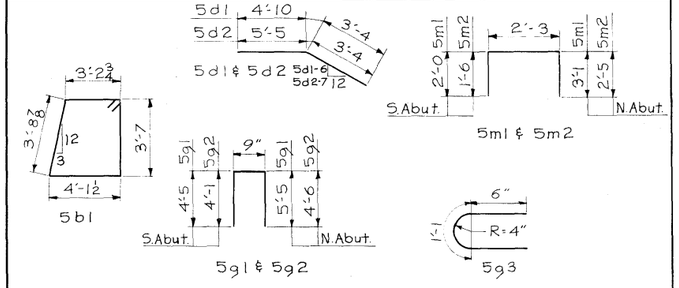
Design No. 465 Harrison County File No. 20676

REINFORCING STEEL ~ WEST BRIDGE

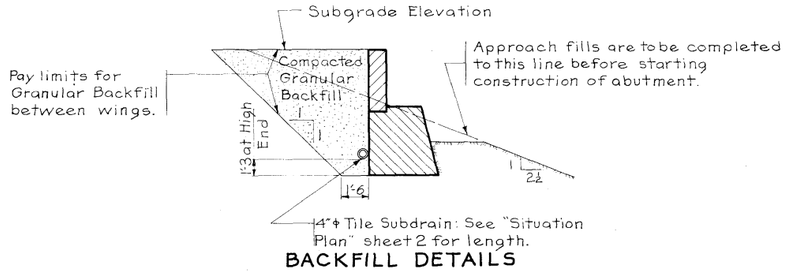
Bar	Location	Shape	S. Abut. Nº	S. Abut. Length	S. Abut. Weight	N. Abut. Nº	N. Abut. Length	N. Abut. Weight
8a1	Footing, Longitudinal	—	26	29'-5	2042	26	32'-2	2233
5b1	Footing, Hoops	▱	40	15'-5	636	40	15'-5	636
5c1	Endwall, Vertical, F.F. East Wing	—	4	5'-10	24	4	7'-0	29
8c2	" , " , B.F. East Wing	—	7	6'-5	120	7	7'-7	142
5c3	" , " , F.F. West Wing	—	4	5'-4	22	4	5'-4	22
8c4	" , " , B.F. West Wing	—	7	5'-11	111	7	5'-11	111
5c5*	Wings, Vertical	—	20	Varies	97	20	Varies	97
5d1	Wings, Horizontal, F.F.	⟋	10	8'-2	85	10	8'-2	85
5d2	" " , B.F.	⟋	10	8'-9	91	10	8'-9	91
5g1	Backwall, Vertical	⊏	42	9'-5	413	46	11'-5	548
5g2	" "	⊏	13	8'-9	119	15	9'-7	150
5g3	Pavement, Dowels	—	21	2'-2	47	23	2'-2	52
5h1	Backwall, Horizontal	—	16	29'-3	488	20	32'-0	668
5m1	Bridge Seat Cap, Trans.	⊓	40	6'-1	254	40	8'-3	344
5m2	" " " , "	⊓	15	5'-1	80	15	6'-11	108
5n1	Bridge Seat Cap, Longit.	—	4	23'-2	97	4	24'-9	103
5n2	" " " , "	—	22	6'-1	140	22	6'-3	143
5n3	" " " , "	—	3	6'-8	21	3	6'-8	21
5n4	" " " , "	—	3	7'-9	24	3	7'-9	24
5r1	Paving Block Loops	⊂	7	2'-1	15	8	2'-1	17
	Pile Spiral - 1/4" ϕ rod	∿∿∿	20	38'-6	129	20	38'-6	129
	" " spacer 3/8" □ 0.69	—	40	1'-10	51	40	1'-10	51
	Total lbs.				5106			5804

*Structural Grade

BENT BAR DETAILS



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



BACKFILL DETAILS

CONCRETE PLACEMENT QUANTITIES

	S. Abut.	N. Abut.
Footing	35.4	42.7
Backwall	6.7	9.0
Wings	3.3	3.5
Paving Block	1.6	1.8
Total	47.0	57.0

ESTIMATED QUANTITIES ~ TWO ABUTMENTS

Item	Quantity Units	S. Abut.	N. Abut.	Total
Structural Concrete, Class "C"	C. Y.	47.0	57.0	104.0
Reinforcing Steel	lbs.	5106	5804	10,910
Class 20 Excavation	C. Y.	66	72	138
Granular Backfill	C. Y.	79	100	179
Creosoted Piling 20@55' ea. abut.	L.F.	1100	1100	2200

Note: See sheet 3 for Abutment Notes.

Design for 1° 13' 30" Skew

DUAL 219'-7" x 39' ϕ VARIABLE PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGES

38'-11½" & 43'-1½" End Spans — 2-68'-9" Interior Spans

Concrete Floor & Substructure — Tubular Handrail

WEST BRIDGE ABUTMENT DETAILS

Sta.: 1088+28.60 Rt. Lane I-29 Sta.: 479+87.80 Lt. Lane U.S.#30 Proj. Nº I-IG-29-5(7)78××43-9

HARRISON COUNTY

IOWA STATE HIGHWAY COMMISSION

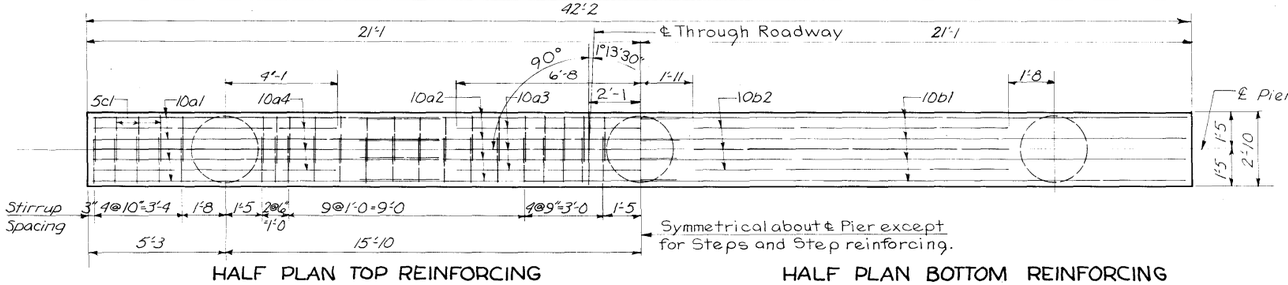
December, 1965 Sheet 6 of 21

Design Nº 465 Harrison County File Nº 20676

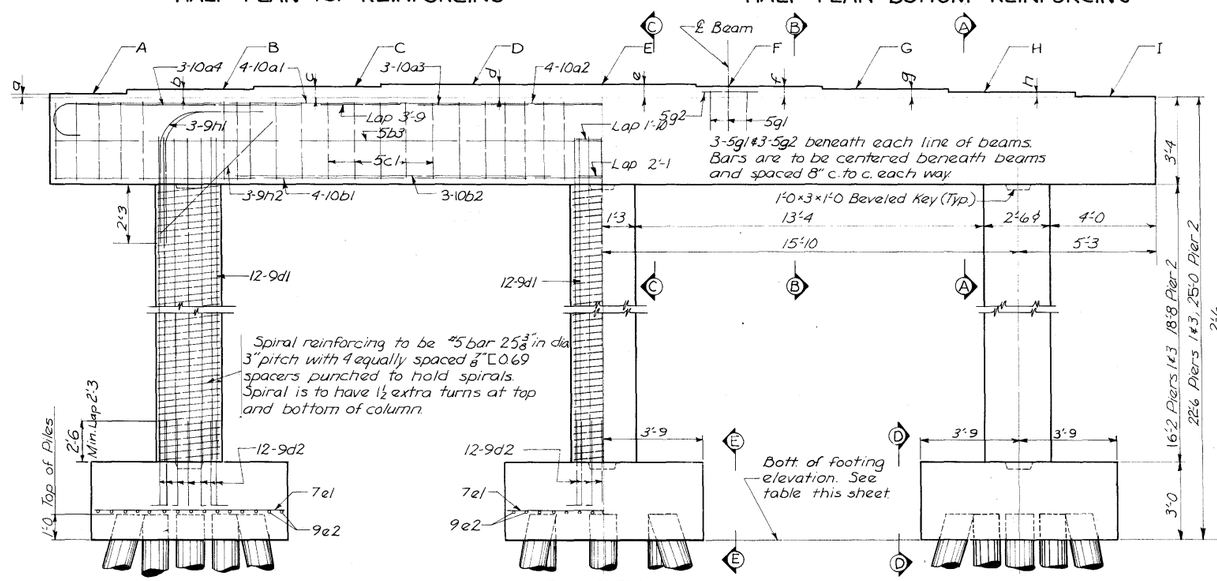
Sta 1089+02±

BM #91-A- Cut "X" in NE Wing Post Base – SBL. Elev. 1024.76

~~Bench Mark #91: Sta. 1088+62, Lt 250', R.R. Spk in S.E. Root of 24" Ash. Elev = 1000.40~~

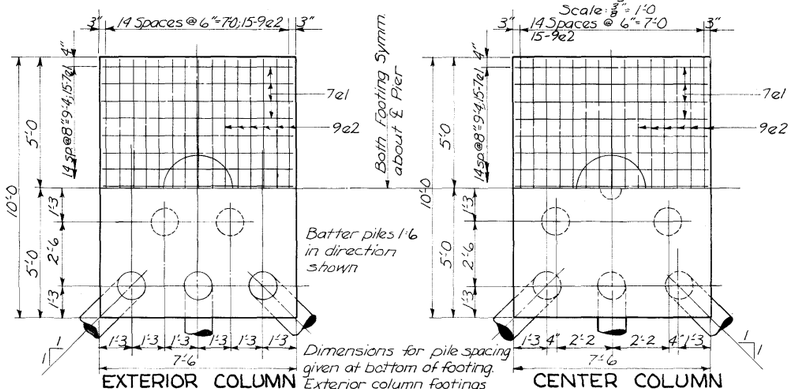


HALF PLAN TOP REINFORCING



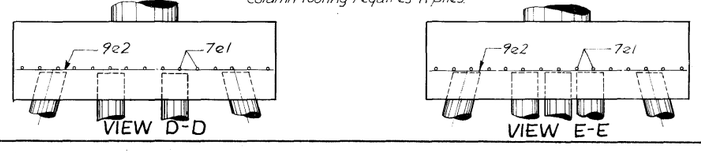
HALF PLAN BOTTOM REINFORCING

ELEVATION
Looking North
Scale: ⅜" = 1'-0



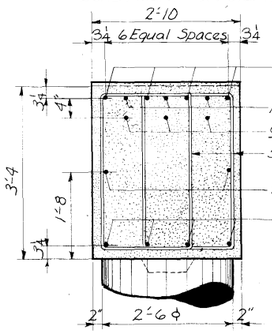
EXTERIOR COLUMN FOOTING PLAN

CENTER COLUMN FOOTING PLAN

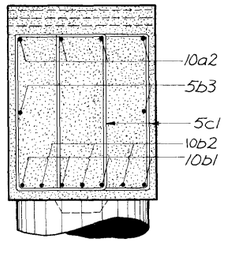


VIEW D-D

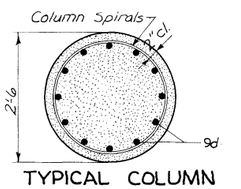
VIEW E-E



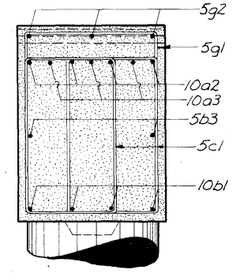
SECTION A-A
Scale: ¾" = 1'-0



SECTION B-B
Scale: ¾" = 1'-0



TYPICAL COLUMN SECTION
Scale ¾" = 1'-0



SECTION C-C
Scale ¾" = 1'-0

EAST BRIDGE

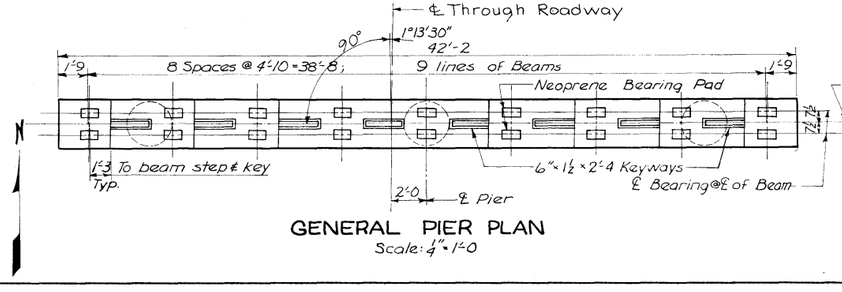
PIER NOTES:

All exposed corners of 90° or sharper are to be filleted ¾"

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

The spiral reinforcement maybe made of plain structural grade reinforcing steel and spliced by lapping 1½ turns. The length of spiral shown does not include the lapped length of the splices. The cost of the laps is to be included in the price bid for other reinforcement.

Design load for pile is 20 tons. A yield bearing of 40 tons shall be obtained and is to be determined by either the pile driving formula bearing multiplied by the appropriate correlation factor for the foundation soil, or by test load.

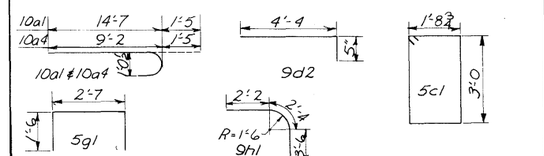


GENERAL PIER PLAN
Scale: ¼" = 1'-0

REINFORCING BAR LIST

Bar	Location	Shape	No	Length	Pier #1 Weight	Pier #2 Weight	Pier #3 Weight
10a1	Cap Top Longitudinal		8	16'-0	551	551	551
10a2	Cap Top Longitudinal		4	20'-3	349	349	349
10a3	Cap Top Longitudinal		3	13'-4	172	172	172
10a4	Cap Top Longitudinal		6	10'-7	273	273	273
10b1	Cap Bottom Longitudinal		8	22'-0	757	757	757
10b2	Cap Bottom Longitudinal		6	12'-3	316	316	316
5b3	Cap Sides Longitudinal		4	21'-10	91	91	91
5c1	Cap Hoops		84	10'-2	891	891	891
9d1	Column Vertical Pier 1 & 3		36	18'-2	2224	—	2224
9d1	Column Vertical Pier 2		36	20'-8	—	2530	—
9d2	Footing Dowels		36	4'-7	561	561	561
7e1	Footing		45	7'-2	659	659	659
9e2	Footing		45	9'-8	1479	1479	1479
5g1	Cap Under Beams		27	5'-5	153	153	153
5g2	Cap Under Beams		27	2'-0	56	56	56
9h1	Column Corners		6	8'-0	163	163	163
9h2	Column Corners		6	6'-0	122	122	122
#5	Column Spirals Piers 1 & 3		3	441'-3	1381	—	1381
#5	Column Spirals Pier 2		3	490'-0	—	1533	—
	⅜ □ 069 Spiral Spacers Piers 1 & 3		12	16'-2	134	—	134
	⅜ □ 069 Spiral Spacers Pier 2		12	18'-8	—	155	—
				Total (lbs)	10,332	10811	10332

BENT BAR DETAILS



Note: All dimensions are out to out. Radii to ℄ Bar.

CONCRETE PLACEMENT QUANTITY

Location	Pier 1	Pier 2	Pier 3
Cap	16.1	16.1	16.1
Column	8.8	10.2	8.8
Footing	24.1	24.1	24.1
Total (Cu. Yds)	49.0	50.4	49.0

TOTAL ESTIMATED QUANTITIES — THREE PIERS

Item	Units	Pier 1	Pier 2	Pier 3	Total
Structural Concrete Class "C"	Cu Yds	49.0	50.4	49.0	148.4
Reinforcing Steel	lbs	10332	10811	10332	31475
Creosoted Piling	Lin. Ft	31 @ 35'	31 @ 35'	31 @ 35'	3255'
Class 20 Excavation	Cu Yds	91	82	88	261

TABLE OF ELEVATIONS

Points	Pier 1	Pier 2	Pier 3
A	1018.96	1019.55	1020.05
B	1019.10	1019.70	1020.19
C	1019.23	1019.83	1020.32
D	1019.29	1019.89	1020.38
E	1019.30	1019.90	1020.39
F	1019.25	1019.84	1020.33
G	1019.13	1019.73	1020.22
H	1018.99	1019.59	1020.08
I	1018.85	1019.44	1019.93
Bott. Ftg	996.35	994.44	997.43

TABLE OF STEPS

Points	Pier 1	Pier 2	Pier 3
a	1 3/16	1 1/16	1 7/16
b	3	3 1/16	3 1/16
c	4 7/16	4 1/16	4 1/16
d	5 1/4	5 3/16	5 3/16
e	5 3/16	5 1/2	5 1/2
f	4 13/16	4 13/16	4 13/16
g	3 3/16	3 1/2	3 1/4
h	1 1/16	1 13/16	1 13/16

Design for 1°13'30" Skew

DUAL 219'-7 × 39' ℄ VAR. PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGES

38'-11½ & 43'-1½ End Spans — Concrete Floor & Substructure

2-68'-9 Interior Spans — Tubular Handrail

EAST BRIDGE — PIER DETAILS

Sta. 1088+28.60 Rt. Lane 1-29

Sta. 479+87.80 Lt. Lane US-30

Proj. No. I-IG-29-5(7)178 × × 43-9

HARRISON COUNTY

Iowa State Highway Commission

December, 1965

Sheet 7 of 21

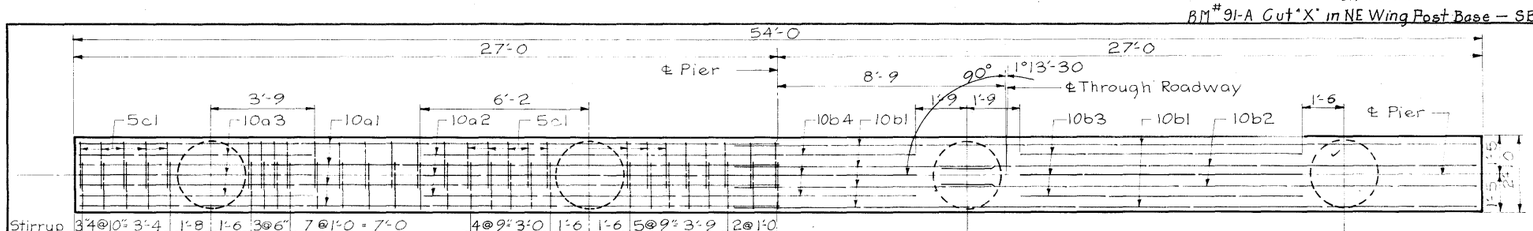
Design No. 965 — Harrison County — File No. 20676

Sta 1089+02.5

BM #91-A Cut "X" in NE Wing Post Base — SBL Elev. 1024.76

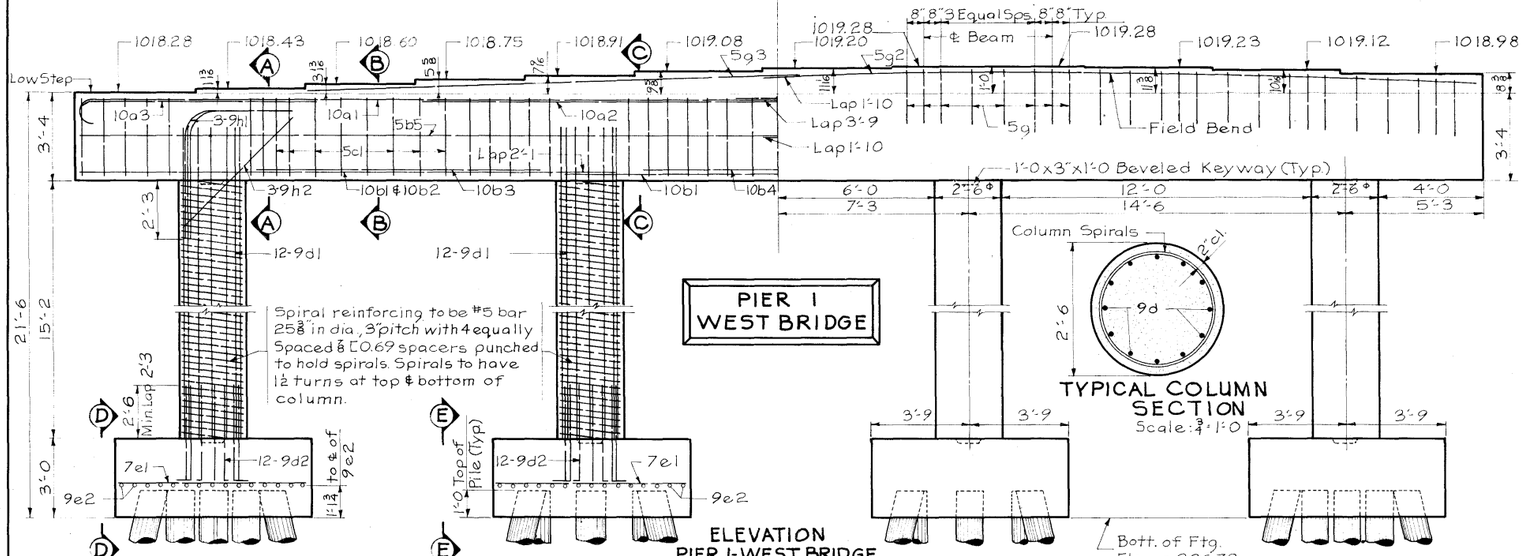
36 52

~~Bench Mark #91, Sta. 1088+62 Lt. 250' R.R. Spk. in SE Root of 24" Ash. Elev. = 1000.40~~

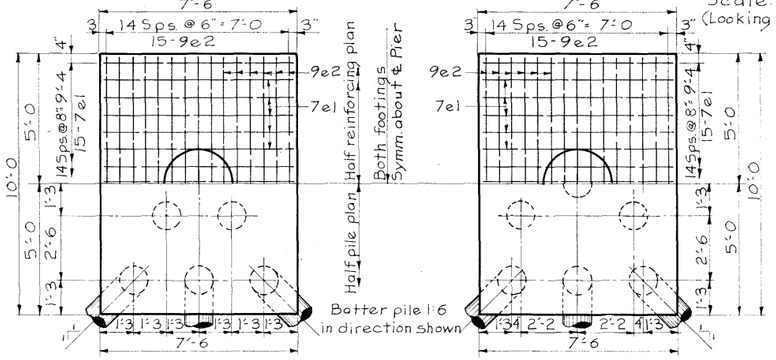


HAIF PLAN TOP REINFORCING

HALF PLAN BOTTOM REINFORCING



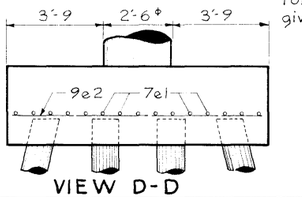
ELEVATION PIER 1-WEST BRIDGE
Scale: ¾" = 1'-0
(Looking North)



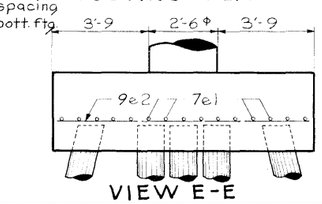
EXTERIOR COLUMN FOOTING PLAN

Dimension shown for pile spacing given at bott. ftg.

INTERIOR COLUMN FOOTING PLAN



VIEW D-D



VIEW E-E

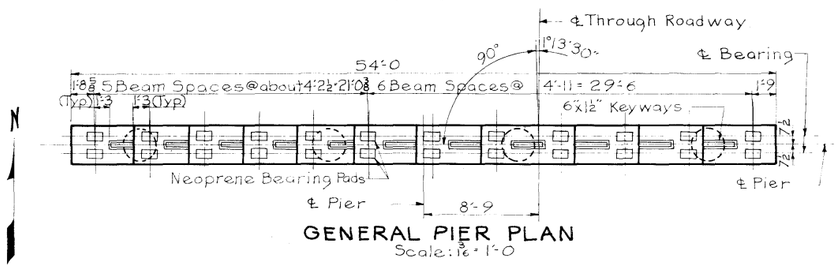
PIER NOTES:

All exposed corners of 90° or sharper are to be filleted ¾".

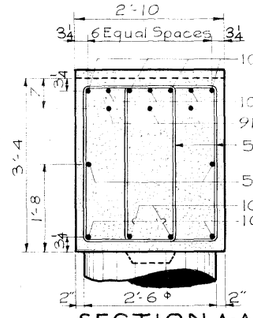
Clear distance from face of concrete to near reinforcing bar shall be 2" unless otherwise shown.

The spiral reinforcement may be made of plain structural grade reinforcing steel and spliced by lapping 1½ turns. The length of spiral shown does not include the lapped length of the splices. The cost of the laps is to be included in the price bid for other reinforcement.

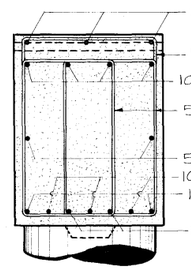
Design load for pile is 20 tons. A yied bearing of 40 tons shall be obtained and is to be determined by either the pile driving formula bearing multiplied by the appropriate correlation factor for the foundation soil, or by test load.



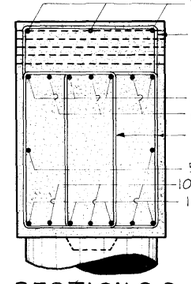
GENERAL PIER PLAN
Scale: 1/16" = 1'-0



SECTION A-A
Scale: ¾" = 1'-0



SECTION B-B
Scale: ¾" = 1'-0

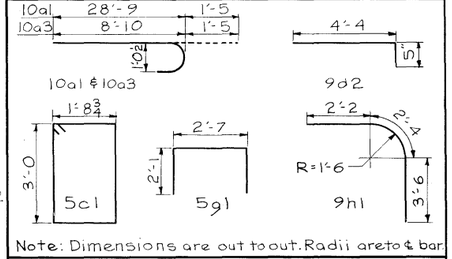


SECTION C-C
Scale: ¾" = 1'-0

REINFORCING BAR LIST

Bar	Location	Shape	N°	Length	Weight
10a1	Cap, Top Longitudinal	⊃	8	30'2	1038
10a2	" " "	—	3	26'10	346
10a3	" " "	⊃	6	10'3	265
10b1	Cap, Bottom Longitudinal	—	4	35'2	605
10b2	" " "	—	4	20'9	357
10b3	" , Bott. Long. Exterior Span	—	6	11'3	290
10b4	" " " Interior "	—	3	11'0	142
5b5	" , Sides Longitudinal	—	4	27'9	116
5c1	Cap, Hoops	□	110	10'2	1166
9d1	Column, Vertical	—	48	17'2	2802
9d2	Footing Dowel, Vertical	⌐	48	4'7	748
7e1	Footing	—	60	7'2	879
9e2	"	—	60	9'8	1972
9h1	Column, Corners	⌐	6	8'0	163
9h2	" "	—	6	6'0	122
5g1	Cap, Under Beams	⌐	58	6'7	398
5g2	" " "	—	3	27'9	87
5g3	" " "	—	3	18'10	59
#5	Column, Spiral	∿	4	414'8	1730
	⅝ [0.69 Spacers	—	16	15'2	167
				Total (lbs)	13452

BENT BAR DETAILS



Note: Dimensions are out to out. Radii are to ℄ bar.

CONCRETE PLACEMENT QUANT.—ONE PIER

Location	Quantity
Cap	22.6
Column	11.0
Footing	32.1
Total (Cu. Yds)	65.7

TOTAL ESTIMATED QUANT.—ONE PIER

Item	Units	Quantity
Structural Concrete, Class 'C'	Cu. Yds	65.7
Reinforcing Steel	lbs.	13,452
Creosoted Piling 42@35'	Lin. Ft.	1,470
Class 20 Excavation	Cu. Yds.	97

Design for 1° 13' 30" Skew

DUAL 21'-7x39' ℄ VARIABLE PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGES

38'-11½ & 43'-1½ End Spans — 2-68'-9 Interior Spans

Concrete Floor & Substructure — Tubular Handrail

WEST BRIDGE - PIER DETAILS

Station: 1088+28.60 Rt. Lane I-29

Station: 479+87.80 Lt. Lane US #30

Proj. N° I-IG-29-5(7)78××43-9

HARRISON COUNTY

IOWA STATE HIGHWAY COMMISSION

December, 1965

Sheet 8 of 21

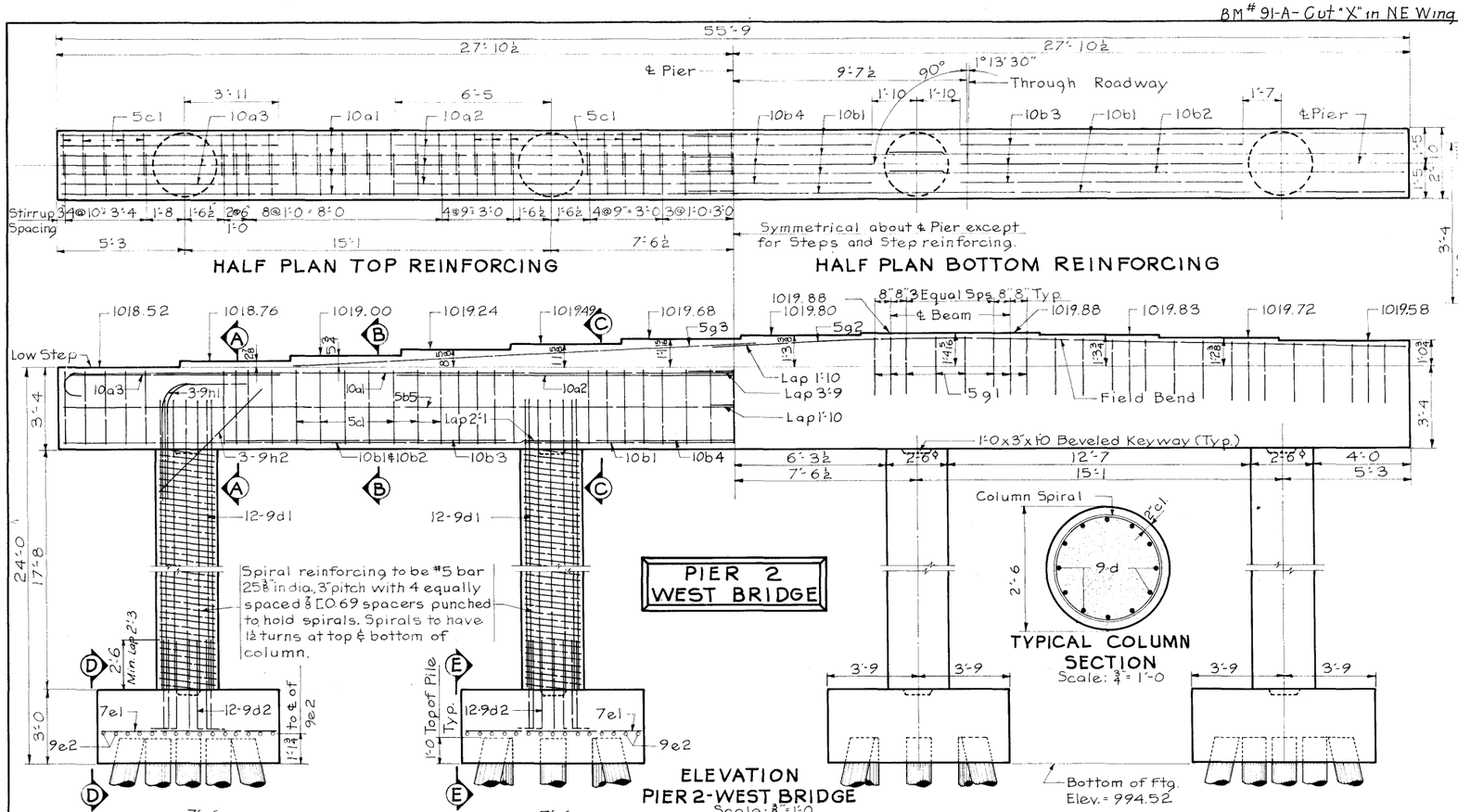
Design N° 465 Harrison County File N° 20676

Sta 1088+02±

BM # 91-A-Cut "X" in NE Wing Post Base – S.B.L. Elev 1024.76

37 52

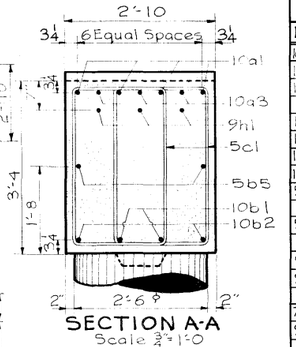
~~Bench Mark #91: Sta 1088+62 Lt. 250' R.R. Spk in S.E. Root of 24" Ash. Elev. = 1000.40~~



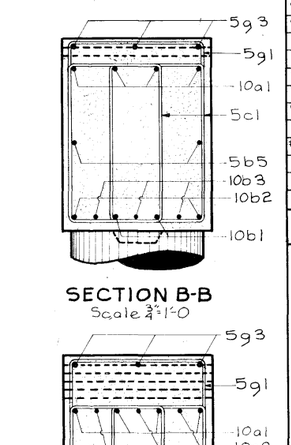
HALF PLAN TOP REINFORCING

HALF PLAN BOTTOM REINFORCING

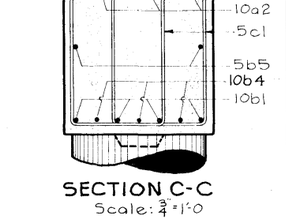
ELEVATION
PIER 2-WEST BRIDGE
Scale: ⅜"=1'-0
(Looking North)



SECTION A-A
Scale ¾"=1'-0



SECTION B-B
Scale ¾"=1'-0

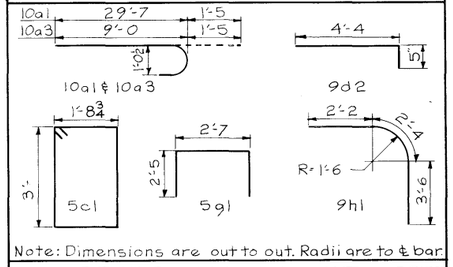


SECTION C-C
Scale: ¾"=1'-0

REINFORCING BAR LIST

Bar	Location	Shape	Nº	Length	Weight
10a1	Cap, Top Longitudinal		8	31'-10	1067
10a2	" " "		3	27'-11	360
10a3	" " "		6	10'-5	269
10b1	Cap, Bottom Longitudinal		4	36'-4	625
10b2	" " "		4	21'-3	366
10b3	" Bott. Long. Exterior Span		6	11'-8	301
10b4	" " " Interior "		3	11'-5	147
5b5	" Sides Longitudinal		4	28'-8	120
5c1	Cap, Hoops	☐	110	10'-2	1166
9d1	Column, Vertical		48	19'-8	3210
9d2	Footing Dowel, Vertical	⌋	48	4'-7	748
7e1	Footing		60	7'-2	879
9e2	"		60	9'-8	1972
9h1	Column, Corners	⌐	6	8'-0	163
9h2	" "		6	6'-0	122
5g1	Cap, Under Beams	⌐	58	7'-3	439
5g2	" " "		3	28'-8	90
5g3	" " "		3	19'-1	60
#5	Column, Spiral	∞	4	463'-5	1933
	& ☐0.69 Spacers		16	17'-8	195
				Total (lbs.)	14,232

BENT BAR DETAILS



Note: Dimensions are out to out. Radii are to ℄ bar.

CONCRETE PLACEMENT QUANT.~ONE PIER

Location	Quantity
Cap	24.9
Column	12.8
Footing	32.1
Total (Cu. Yds.)	69.8

TOTAL ESTIMTED QUANT.~ONE PIER

ITEM	UNITS	QUANTITY
Structural Concrete, Class "C"	Cu. Yds.	69.8
Reinforcing Steel	lbs.	14,232
Creosoted Piling 41@35'	Lin. Ft.	1435
Class 20 Excavation	Cu. Yds.	91
Creosoted Test Piling 1@45'	L.S.	Lump Sum

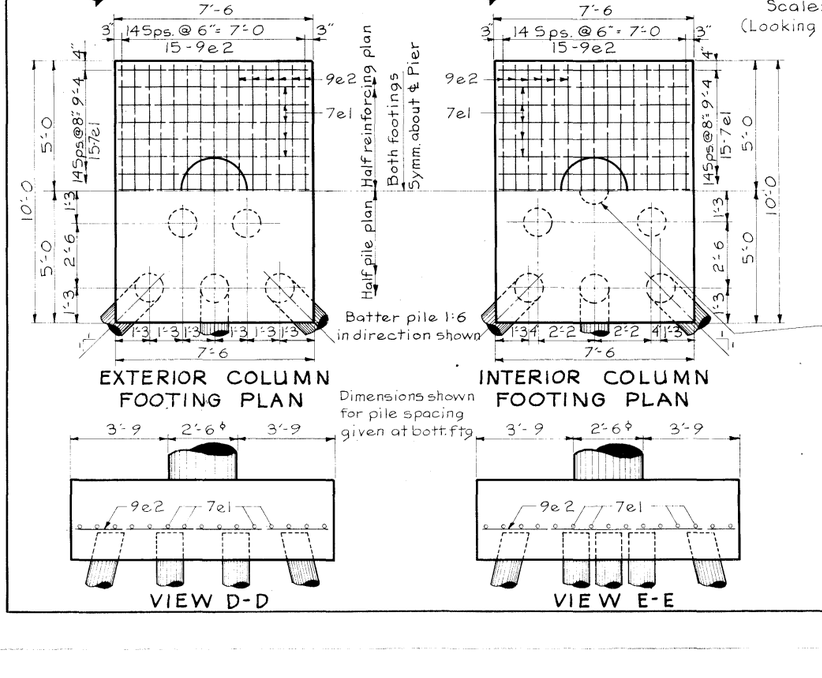
PIER NOTES:

All exposed corners of 90° or sharper are to be filleted ¾".

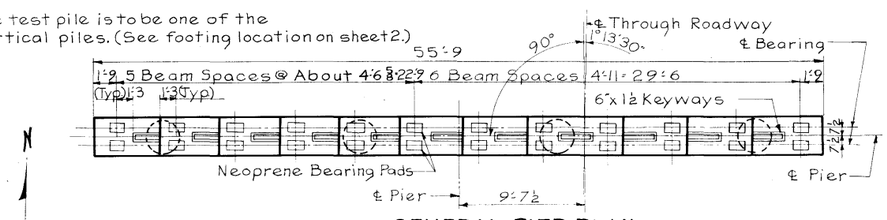
Clear distance from face of concrete to near reinforcing bar shall be 2" unless otherwise shown.

The spiral reinforcement may be made of plain structural grade reinforcing steel and spliced by lapping 1½ turns. The length of spiral shown does not include the lapped length of the splices. The cost of the laps is to be included in the price bid for other reinforcement.

Design load for pile is 20 tons. A yield bearing of 40 tons shall be obtained and is to be determined by either the Pile driving formula bearing multiplied by the appropriate correlation factor for the foundation soil, or by test load.



The test pile is to be one of the vertical piles. (See footing location on sheet 2.)



Design for 1°13'30" Skew

DUAL 219'-7x39' & VARIABLE PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGES

38'-11½ & 43'-1½ End Spans. 2-68'-9 Interior Spans

Concrete Floor & Substructure Tubular Handrail

WEST BRIDGE-PIER DETAILS

Station: 1088+28.60 Rt. Lane I-29

Station: 479+87.80 Lt. Lane U.S. #30 Proj. Nº I-IG-29-5(7)78**439

HARRISON COUNTY

IOWA STATE HIGHWAY COMMISSION

December, 1965 Sheet 9 of 21

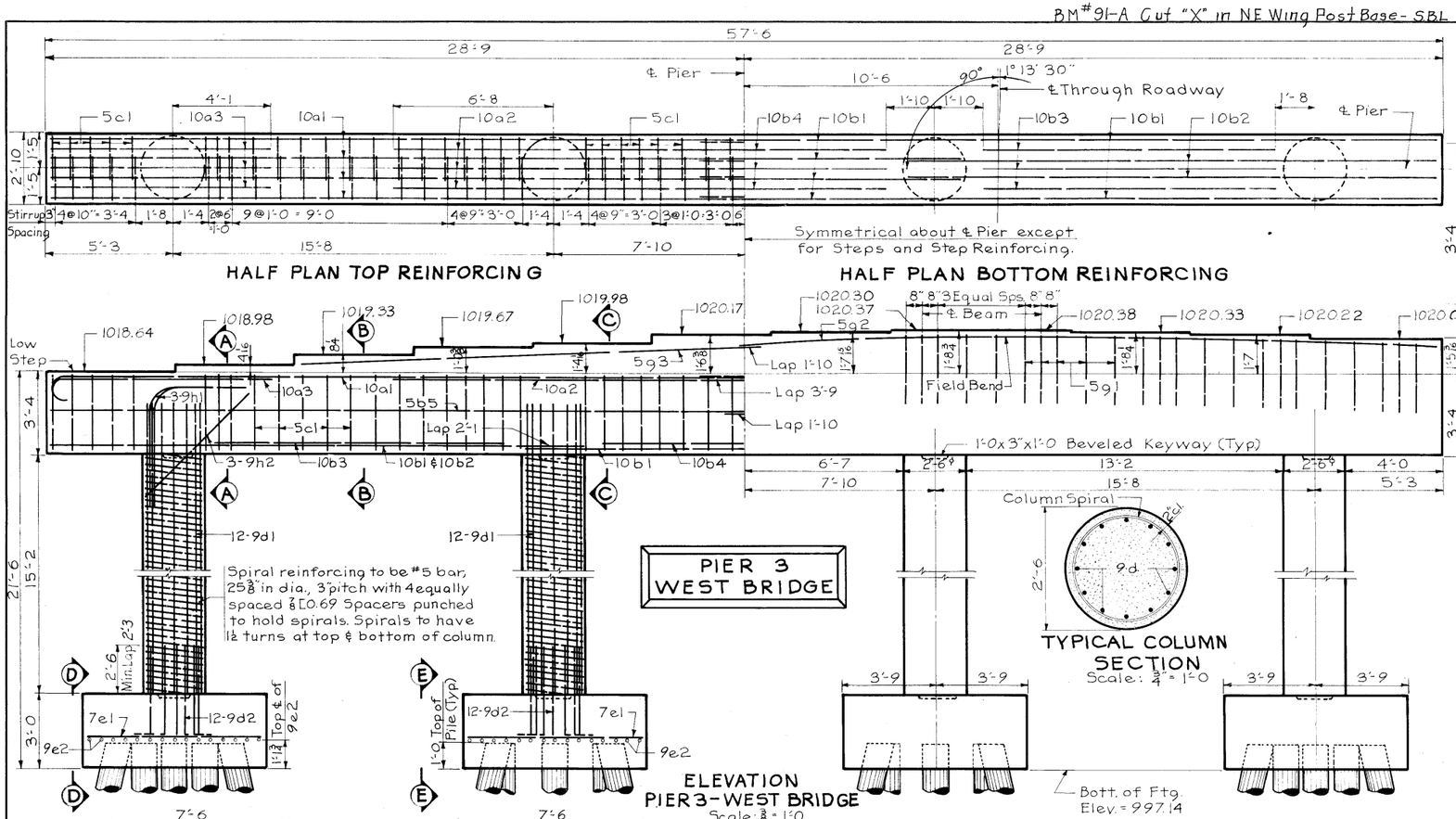
Design Nº 465 Harrison County File Nº 20676

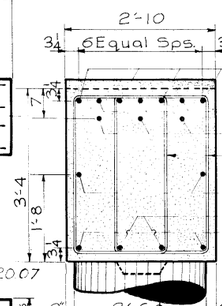
Sta 1089+02.5

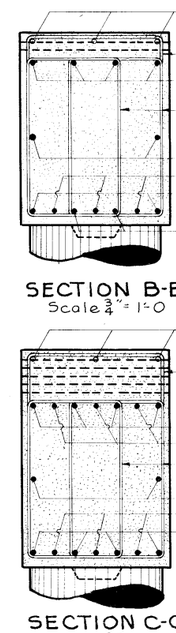
BM #91-A Cut "X" in NE Wing Post Base - SBL Elev. 1024.76

38 52

~~Bench Mark #91 Sta 1088+62 Lt 250' RR Spk in SE Root of 24" Ash: Elev. 1000.40~~



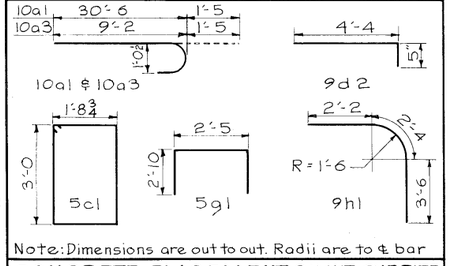




REINFORCING BAR LIST

Bar	Location	Shape	Nº	Length	Weight
10a1	Cap, Top Longitudinal		8	31'-11	1099
10a2	Cap, " "		3	29'-0	374
10a3	" " "		6	10'-7	273
10b1	Cap, Bottom Longitudinal		4	37'-6	645
10b2	" " "		4	21'-10	376
10b3	" Bott. Long. Exterior Span		6	12'-2	314
10b4	" " " Interior "		3	12'-0	155
5b5	" Sides Longitudinal		4	29'-6	123
5c1	Cap, Hoops		116	10'-2	1230
9d1	Column, Vertical		48	17'-2	2802
9d2	Footing Dowel, Vertical		48	4'-7	748
7e1	Footing		60	7'-2	879
9e2	"		60	9'-8	1972
9h1	Column, Corners		6	8'-0	163
9h2	" "		6	6'-0	122
5g1	Cap, Under Beams		58	8'-1	489
5g2	" " "		3	29'-6	92
5g3	" " "		3	19'-2	60
#5	Column, Spiral		4	414'-8	1730
	⅜ [0.69 Spacers		16	15'-2	167
				Total (lbs)	13,813

BENT BAR DETAILS



Note: Dimensions are out to out. Radii are to ℄ bar

CONCRETE PLACEMENT QUANT.-ONE PIER

Location	Quantity
Cap	27.3
Column	11.0
Footing	32.1
Total (Cu. Yds)	70.4

TOTAL ESTIMATED QUANT.-ONE PIER

Item	Units	Quantity
Structural Concrete, Class C	Cu Yds	70.4
Reinforcing Steel	lbs.	13,813
Creosoted Piling 42@35'	Lin. Ft.	1,470
Class 20 Excavation	Cu. Yds	99

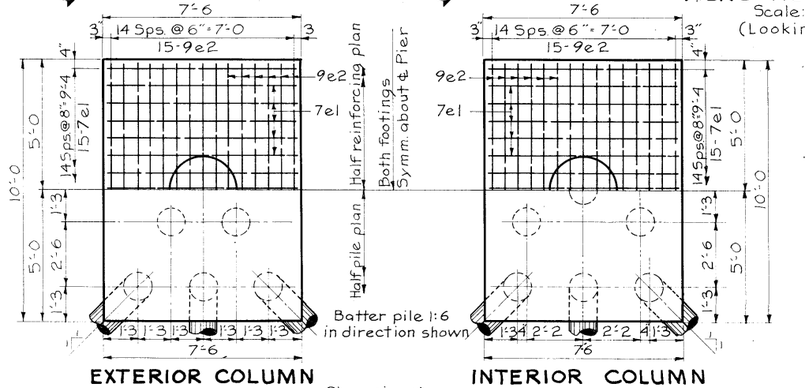
PIER NOTES:

All exposed corners of 90° or sharper are to be filleted ¾".

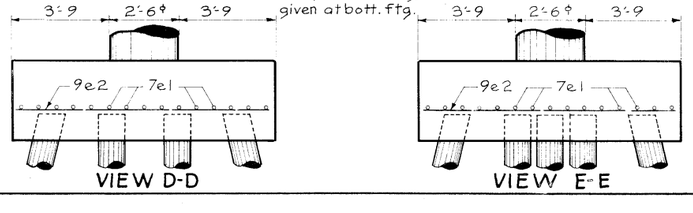
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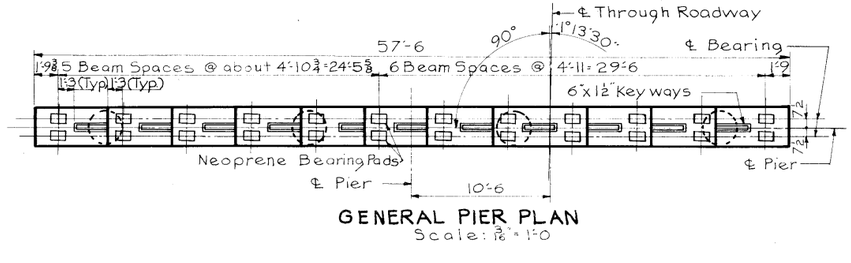
The spiral reinforcement may be made of plain structural grade reinforcing steel and spliced by lapping 1½ turns. The length of spirals shown does not include the lapped length of the splices. The cost of the laps is to be included in the price bid for other reinforcement.

Design load for pile is 20 tons. A yield bearing of 40 tons shall be obtained and is to be determined by either the pile driving formula bearing multiplied by the appropriate correlation factor for the foundation soil, or by test load.



Dimension shown for pile spacing given at bott. ftg.





N

Design for 1° 13' 3" Skew

DUAL 219'-7" x 39' ℄ VARIABLE PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGES

38'-11½ & 43'-1½ End Spans 2-68'-9 Interior Spans

Concrete Floor & Substructure Tubular Handrail

WEST BRIDGE - PIER DETAILS

Station: 1088+28.60 Rt. Lane I-29

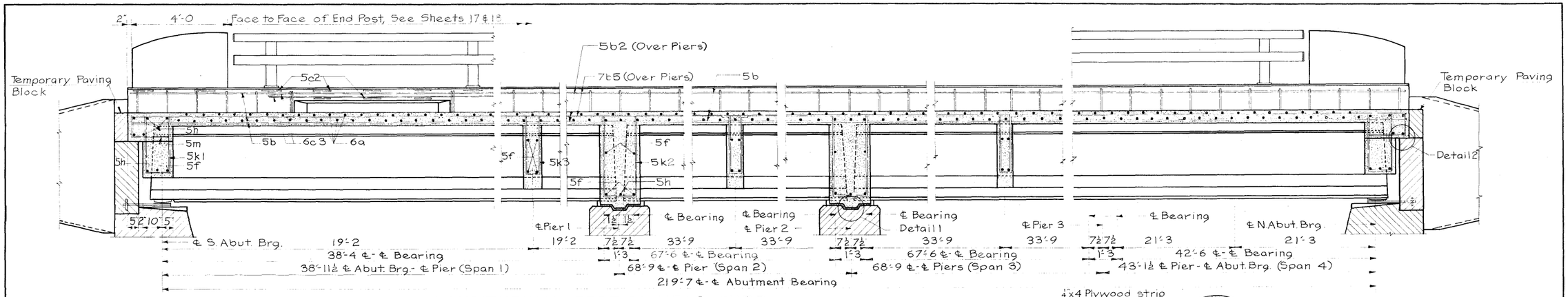
Station: 479+87.80 Lt. Lane U.S.#30 Proj. Nº I-IG-29-5(7)78 ** 43-9

HARRISON COUNTY

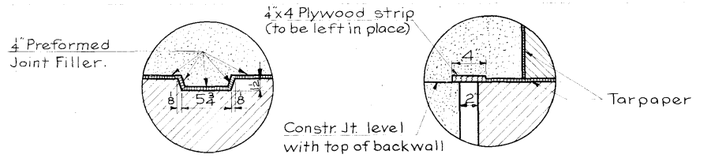
IOWA STATE HIGHWAY COMMISSION

December, 1965 Sheet 10 of 21

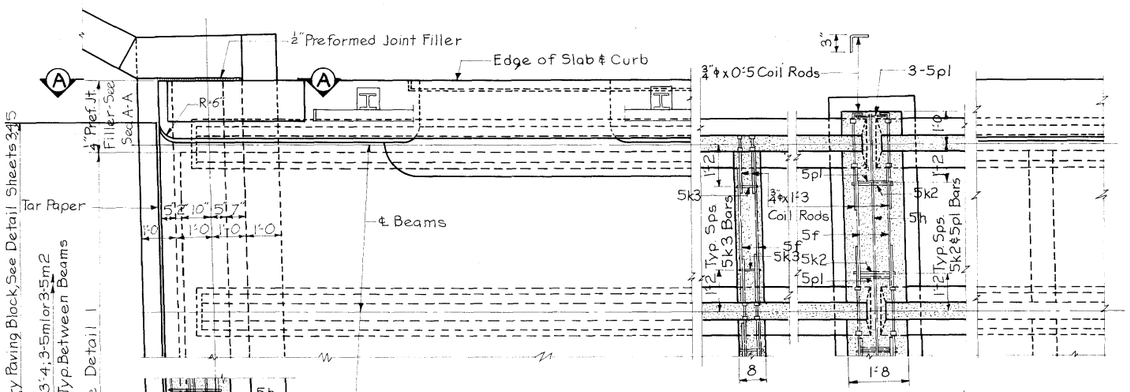
Design Nº 465 Harrison County File Nº 20676

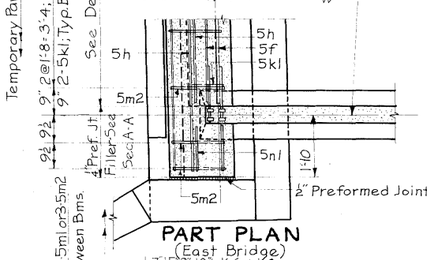


LONGITUDINAL SECTION NEAR CURB

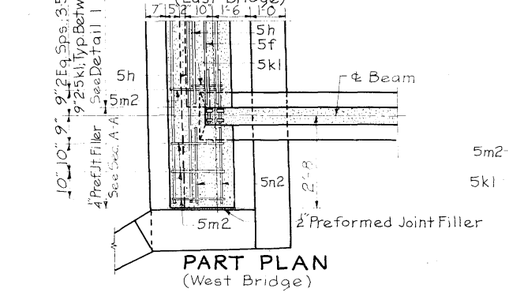


DETAIL 1 DETAIL 2

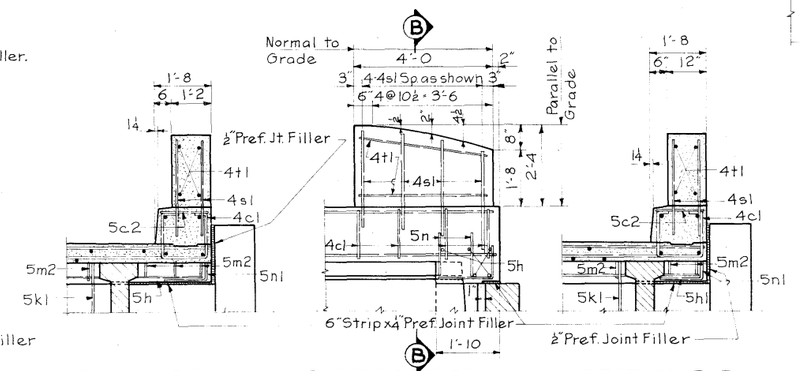




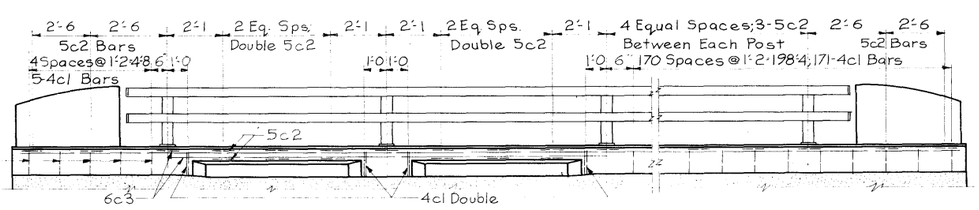
PART PLAN (East Bridge)



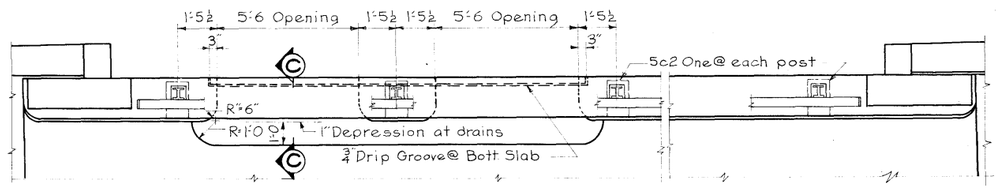
PART PLAN (West Bridge)



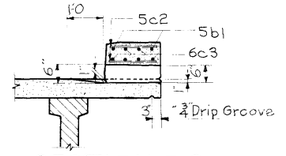
SECTION B-B (West Bridge) PART SECTION A-A SECTION B-B (East Bridge)



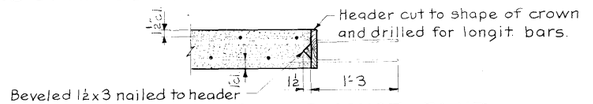
PART LONGITUDINAL SECTION SHOWING CURB DRAINS



PART PLAN CURB DRAIN DETAILS



SECTION C-C



TRANSVERSE FLOOR CONST. JOINT

Design for 1° 13' 30" Skew

DUAL 219'-7 x 39' ℄ VARIABLE PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGES

38'-11½ & 43'-1½ End Spans — 2-68'-9 Interior Spans

Concrete Floor & Substructure — Tubular Handrail

SUPERSTRUCTURE DETAILS

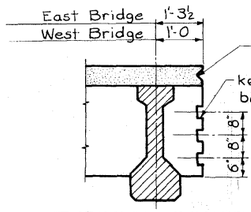
Sta. 1088+28.60 Rt. Lane I-29
Sta. 479+87.80 Lt. Lane U.S. #30
Proj. Nº I-IG-29-5(7)78 xx 43-9

HARRISON COUNTY

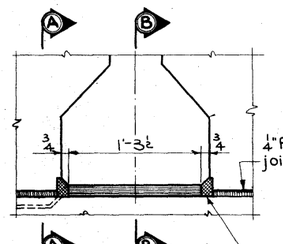
IOWA STATE HIGHWAY COMMISSION

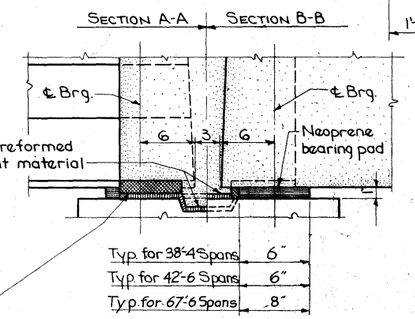
December, 1965 — Sheet 11 of 21

Design Nº 465 Harrison County File Nº 20676



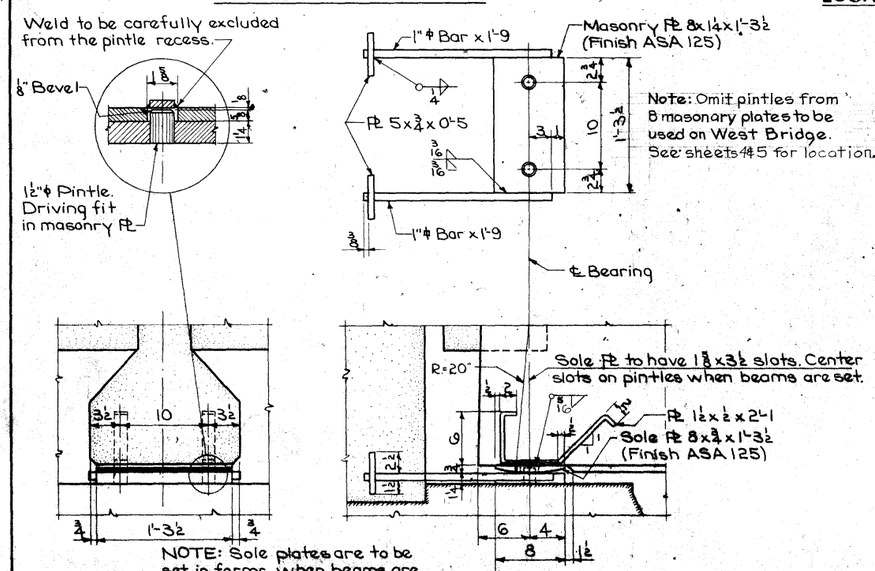
VERTICAL CONSTRUCTION JT. DETAIL FOR INTERMEDIATE DIAPH.





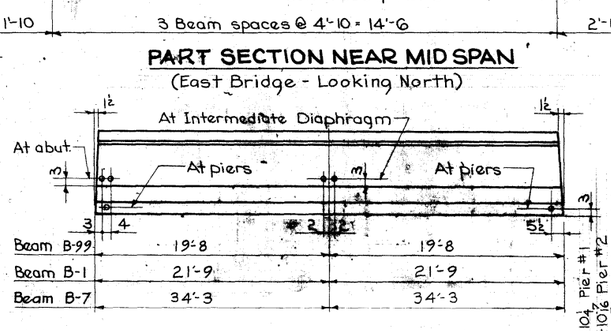
1x2 Strip of compressible material surrounding Neoprene bearing pads. Compressible material shall conform to the AASHO Spec. M-153 (Type III).

PIER BEARING DETAILS



NOTE: Sole plates are to be set in forms when beams are cast and formed out below as shown to exclude concrete.

ABUTMENT BEARING DETAILS



LOCATION OF BEAM COIL TIES

PART SECTION NEAR MID SPAN
(East Bridge - Looking North)

PART SECTION NEAR ABUTMENT
(East Bridge - Looking North)

	10.050 s.f.
	11.326 s.f.
Area of Slab =	21.376 s.f.
Area of Curb =	1.715 s.f.

PART SECTION NEAR PIER
(East Bridge - Looking North)

SUPERSTRUCTURE NOTES:

This bridge is designed for HS20-44 Loading, plus 19 lbs. per sq.ft. of roadway for future wearing surface and alternate loading designated in B.P.R. PPM. 20-4, Section 4c.

Concrete in slab is to have a 28 day crushing strength of 3500 p.s.i. and is to contain no Class "V" aggregate. It is to be placed as dry as practicable to reduce shrinkage to a minimum and special precaution is to be taken to secure complete bond between beams and slab. All exposed corners of 90° or sharper are to be filleted ¾".

Clear distance from face of concrete to near reinforcing bar is to be 1½" unless otherwise noted or shown.

All reinforcing is to be securely wired in place and adequately supported on metal bar chairs before placing concrete.

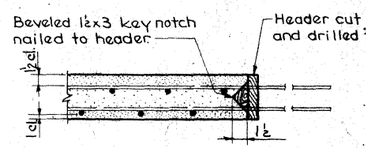
Cost of all bearing material is to be included in price bid for the beam.

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

Slab as shown includes ½" of wearing surface.

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

For Pretensioned Prestressed Concrete Beam Details see Sheet 16.



LONGITUDINAL FLOOR CONSTRUCTION JOINT DETAIL

Design For Skew 1°13'30"

DUAL 219'-7x39'6"VAR PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGES

38'-11½ & 43'-1½ End Spans — 2-68'-9 Interior Spans

Concrete Floor & Substructure — Tubular Handrail

SUPERSTRUCTURE DETAILS

Sta: 1088+28.60 Rt Lane I-29
Sta: 479+87.80 Lt Lane US.#30
Project № I-IG-29-5(7)78

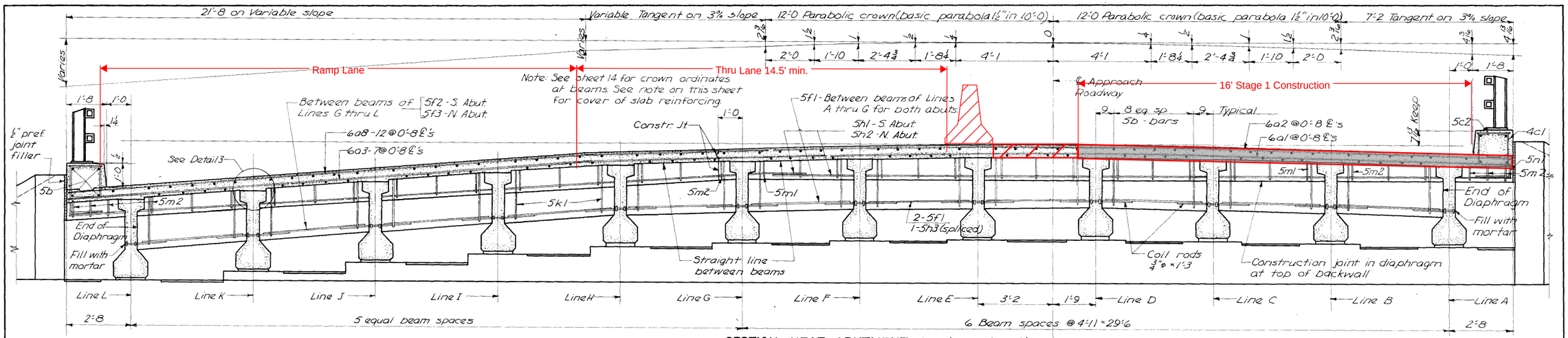
HARRISON COUNTY

IOWA STATE HIGHWAY COMMISSION

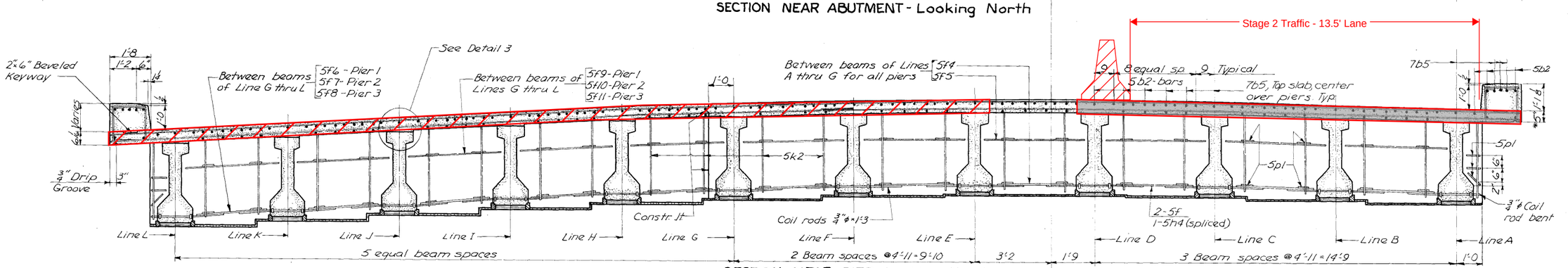
December, 1965 — Sheet 12 of 21

Design № 465 — Harrison County — File № 20675

Revised 1-6-64: Bars 5k3 added and minor changes made.



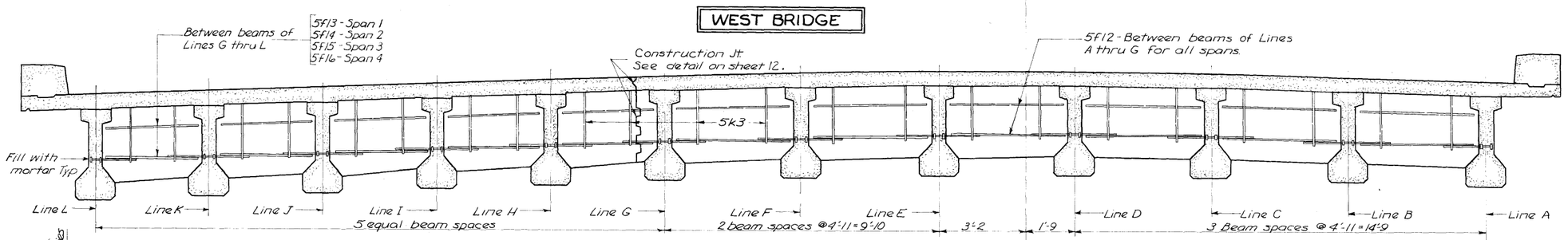
SECTION NEAR ABUTMENT - Looking North



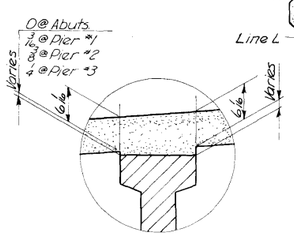
SECTION NEAR PIER Looking North
Railing Not Shown

* Indicates nominal dimensions

WEST BRIDGE



SECTION NEAR MID SPAN - Looking North
Slab and curb reinforcing and railing not shown.



DETAIL 3

Note: Detail 3 is typical at beams in Lines H, I, J, K & L. There is no slab thickening anticipated between these beams due to the haunch. The bottom of the slab is to be formed to the top of the beams in lines A thru G and the anticipated slab thickening for this portion of the slab is shown on sheet 15. The nominal slab thickness at ℄ of beam is to be 6/16 on lines A thru G.

Note: Top transverse reinforcing is to be parallel to and 1½" clear below top of slab. Bottom longitudinal reinforcing steel is to be parallel to and 1" clear above bottom of slab. Top and bottom reinforcing steel is to be supported by individual bar chairs spaced at not more than 3'-0 centers longit. and trans.

Design for 1° 13' 30" Skew

DUAL 219'-7 x 39'-6 VAR. PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGES

38'-11½ & 43'-1½ End Spans — 2-68'-9 Interior Spans
Concrete Floor & Substructure — Tubular Handrail

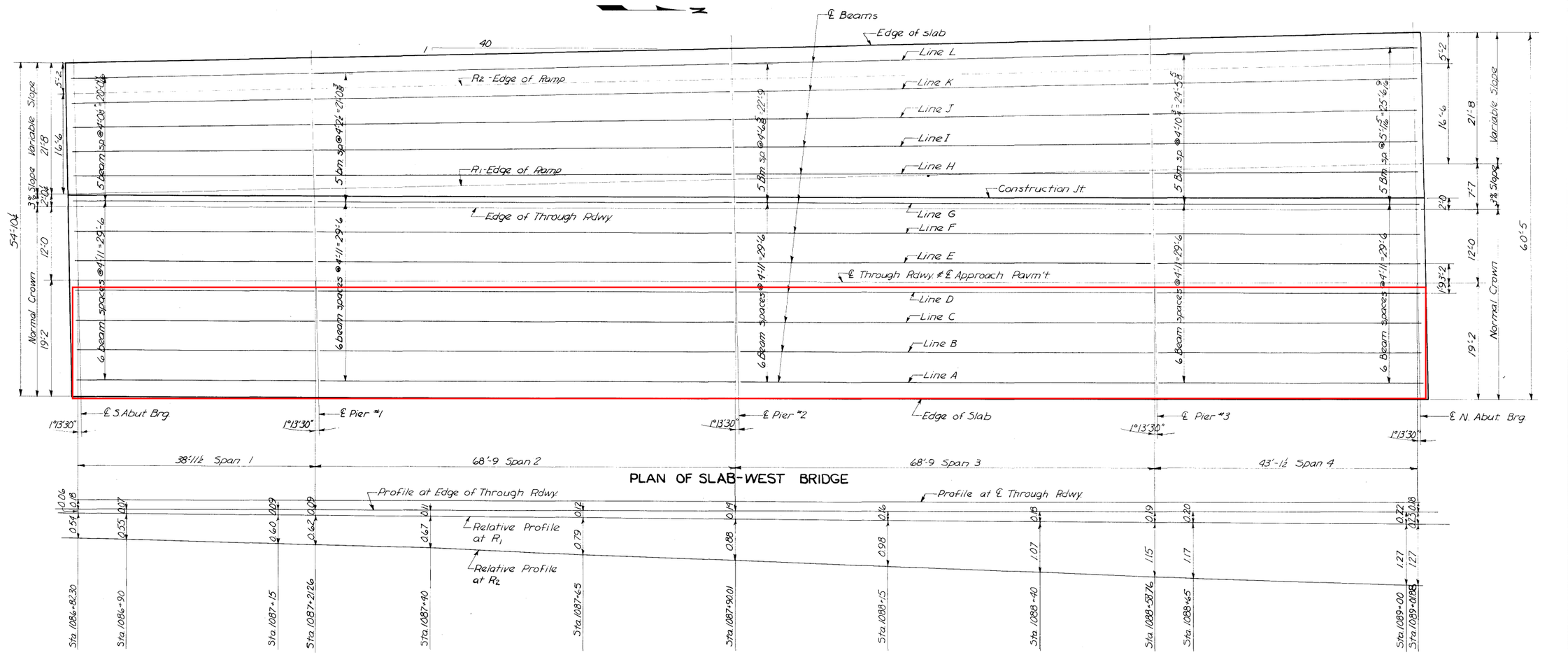
SUPERSTRUCTURE DETAILS

Sta. 1088+28.60 Rt. Lane I-29 — Project No. I-IG-29-5(17)78 xx A3-9
Sta. 479+87.80 Lt. Lane U.S. #30

HARRISON COUNTY

Iowa — State — Highway — Commission
December, 1965 — Sheet 13 of 21

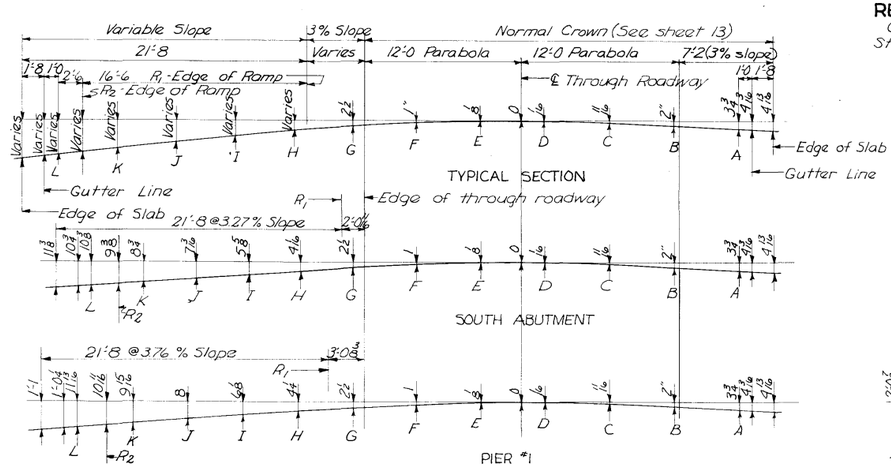
Design No. 465 — Harrison County — File No. 20676

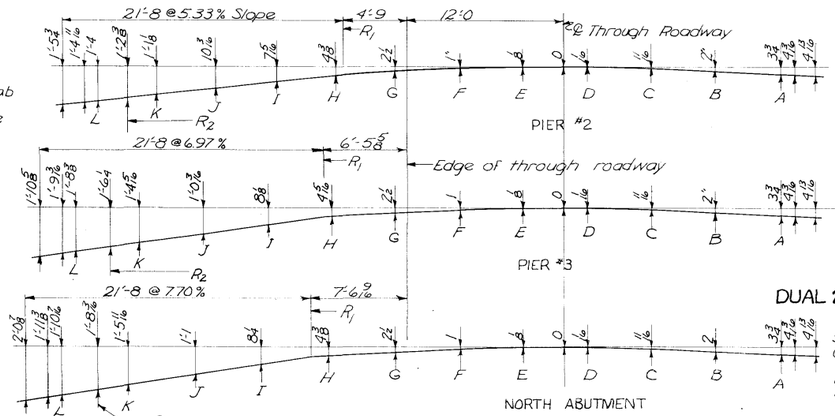


PLAN OF SLAB-WEST BRIDGE

RELATIVE PROFILE GRADE LINES

Grade data shown for ramp was obtained from I.S.H.C. Standard Road Plan RW-2





CROWN ORDINATES

Shown normal to center-line roadway - looking north

Design for 1°13'30" Skew

DUAL 219'-7 × 39' & VAR. PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGES

38'-11½ & 43'-1½ End Spans — 2-68'-9 Interior Spans

Concrete Floor & Substructure — Tubular Handrail

SUPERSTRUCTURE DETAILS

Sta.: 1088+28.60 Rt. Lane I-29 — Proj. No. I-IG 29-5(7)78**43-9

Sta.: 479+87.80 Lt. Lane U.S. #30

HARRISON COUNTY

Iowa : State Highway Commission

December, 1965 — Sheet 14 of 21

Design No. 465 — Harrison County — File No. 20676

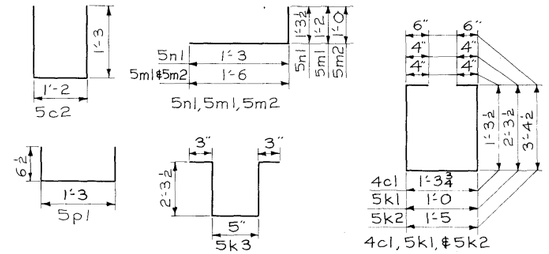
REINFORCING STEEL~WEST BRIDGE

Bar	Location	Shape	Nº	Length	Weight
6a1	Slab, Transverse, Bottom	—	328	28'-4	13,959
6a2	" , " , Top	—	327	30'-7	15021
6a3	" , " , Bottom	—	71	28'-9	3066
6a4	" , " , "	—	61	29'-9	2726
6a5	" , " , "	—	57	30'-9	2633
6a6	" , " , "	—	61	31'-9	2909
6a7	" , " , "	—	78	33'-0	3866
6a8	" , " , Top	—	71	26'-6	2826
6a9	" , " , "	—	61	27'-6	2520
6a10	" , " , "	—	57	28'-6	2440
6a11	" , " , "	—	61	29'-6	2703
6a12	" , " , "	—	77	30'-9	3556
5b1	Slab & Curb, Longit S. End Span	—	109	32'-5	3685
5b2	" " , " Over Piers	—	327	17'-8	6025
5b3	" " , " Center Span	—	436	27'-2	12354
5b4	" " , " N. End Span	—	109	36'-7	4159
7b5	Top Slab & " " over piers	—	186	14'-0	5323
4c1	Curb, Hoops	⊏	368	4'-4	1065
5c2	Curb, Transverse	⊏	222	3'-6	810
6c3	Curb, Drains, Longit.	—	12	17'-0	306
5f1	Abut. Diaph.-Between Bms. A-G	—	24	4'-2	104
5f2	S. Abut. Diaph.-Between Bms. G-L	—	10	3'-3	34
5f3	N. Abut. Diaph.-Between Bms. G-L	—	10	4'-4	45
5f4	Pier Diaph.-Bott. Between Bms. A-G	—	36	3'-3	122
5f5	Pier Diaph.-Top, Between Bms. A-G	—	36	4'-2	156
5f6	Pier #1 Diaph.-Bott. Between Bms G-L	—	10	2'-7	27
5f7	Pier #2 Diaph.-Bott Between Bms G-L	—	10	2'-11	30
5f8	Pier #3 Diaph.-Bott Between Bms G-L	—	10	3'-3	34
5f9	Pier #1 Diaph.-Top Between Bms G-L	—	10	3'-6	37
5f10	Pier #2 Diaph.-Top Between Bms G-L	—	10	3'-10	40
5f11	Pier #3 Diaph.-Top Between Bms G-L	—	10	4'-2	43
5f12	Interm. Diaph.-Between Bms A-G	—	96	4'-2	417
5f13	Interm. Diaph.-Span 1-Betw. Bms G-L	—	20	3'-4	70
5f14	Interm. Diaph.-Span 2-Betw. Bms G-L	—	20	3'-8	76
5f15	Interm. Diaph.-Span 3-Betw. Bms G-L	—	20	4'-0	83
5f16	Interm. Diaph.-Span 4-Betw. Bms G-L	—	20	4'-3	89
5h1	S. Abut. Diaph., Longit.	—	10	28'-0	292
5h2	N. Abut. Diaph., Longit.	—	10	30'-9	321
5h3	Abut. Diaph., Longit.	—	4	27'-9	116
5h4	Pier Diaph., Longit.	—	6	28'-5	178
5k1	Abut Diaph., Hoops	⊏	44	5'-11	272
5k2	Pier Diaph., Hoops	⊏	72	8'-10	663
5k3	Interm. Diaph., Hoops	⊐	88	5'-2	474
5m1	Abut. Diaph., Transverse	L	30	2'-7	81
5m2	Abut. Diaph; Transverse	L	48	2'-5	121
5n1	Abut. Diaph., Ends	L	8	2'-6	21
5p1	Pier Diaph.	L	150	2'-2	339
4s1	End Post, Vertical	—	32	2'-10	61
4t1	End Post, Horizontal	—	16	3'-8	39
	2 Light Post Bases (See sheet 20)				376
	Total lbs				96,713

REINFORCING STEEL~EAST BRIDGE

Bar	Location	Shape	Nº	Length	Weight
6a1	Slab, Transverse Top	—	327	24'-1	11,829
6a2	Slab, Transverse Bottom	—	656	21'-8	21,348
6a3	Slab, Transverse Top	—	327	19'-3	9455
5b1	Slab & Curb, Longit, S. End Span	—	80	32'-5	2705
5b2	Slab & Curb, Longit, Over Piers	—	240	17'-8	4422
5b3	Slab & Curb, Longit, Center Span	—	320	27'-2	9,067
5b4	Slab & Curb, Longit, N. End Span	—	80	36'-7	3052
7b5	Top Slab & Curb " over piers	—	141	14'-0	4035
4c1	Curb, Hoops	⊏	368	4'-4	1,065
5c2	Curb, Transverse	⊏	222	3'-6	810
6c3	Curb, Drains, Longit.	—	12	17'-0	306
5f1	Abut. Diaph.-Between Bms.	—	32	4'-1	136
5f2	Pier Diaph-Between Bms. Bott	—	48	3'-2	159
5f3	Interm. Diaph-Between Bms.	—	128	4'-1	545
5f4	Pier Diaph.-Between Bms Top	—	48	4'-1	204
5h1	Abut. Diaph. Longit.	—	20	21'-7	450
5h2	Abut. Diaph. Longit.	—	2	37'-11	79
5h3	Pier Diaph.	—	6	20'-9	130
5k1	Abut. Diaph. Hoops	⊏	32	5'-11	197
5k2	Pier Diaph. Hoops	⊏	54	8'-10	498
5k3	Intermediate Diaph. Hoops	⊐	64	5'-2	345
5m1	Abut. Diaph. Transverse	L	24	2'-7	65
5m2	Abut. Diaph. Transverse	L	32	2'-5	81
5n1	Abut. Diaph. Ends	L	8	2'-6	21
5p1	Pier Diaph.	L	114	2'-2	258
	1 Light Post Base (see sheet 20)				188
4s1	End Post Vertical	—	32	2'-10	61
4t1	End Post Horizontal	—	16	3'-8	39
	Total lbs.				71,550

BENT BAR DETAILS



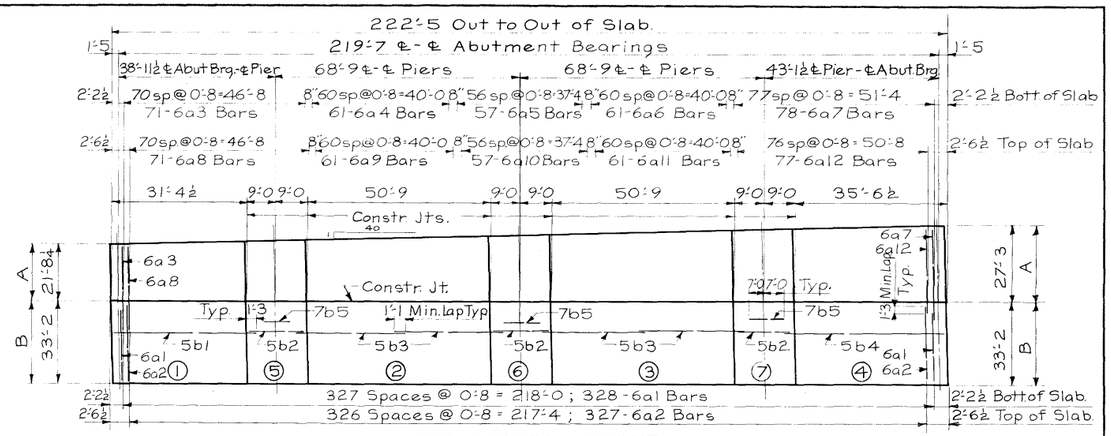
Note: All dimensions are out to out.

CONCRETE PLACEMENT QUANTITES

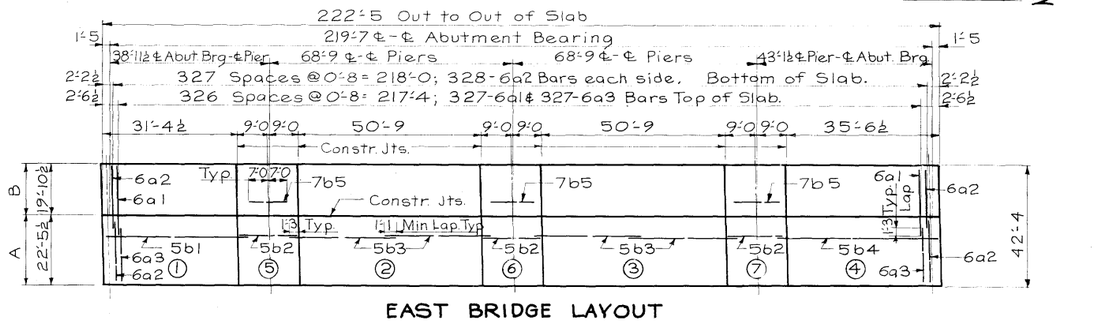
	West Bridge A	West Bridge B	East Bridge A	East Bridge B
Section 1	16.3	24.8	16.8	14.9
Section 2	23.8	33.5	22.7	20.1
Section 3	25.6	33.5	22.7	20.2
Section 4	22.2	27.4	18.6	16.5
Section 5	11.4	17.0	11.5	10.3
Section 6	12.4	17.3	11.7	10.4
Section 7	13.4	17.1	11.6	10.3
Curb & Light Post base	15.9	13.8	14.7	13.8
End Post	0.75	0.75	0.75	0.75
Total	141.75	185.15	131.05	117.25

ESTIMATED QUANTITIES~TWO SUPERSTR.

Item		Unit	West Bridge Quantity	East Bridge Quantity	Total
Structural Concrete C1 'D'		Cu Yds	326.9	248.3	575.2
Reinforcing Steel		lbs	96,713	71,550	168263
Pretensioned	B-1 (42'-6)	Nº	12	9	21
Prestressed	B-99 (38'-4)	Nº	12	9	21
Concrete Beams	B-7 (67'-6)	Nº	24	18	42



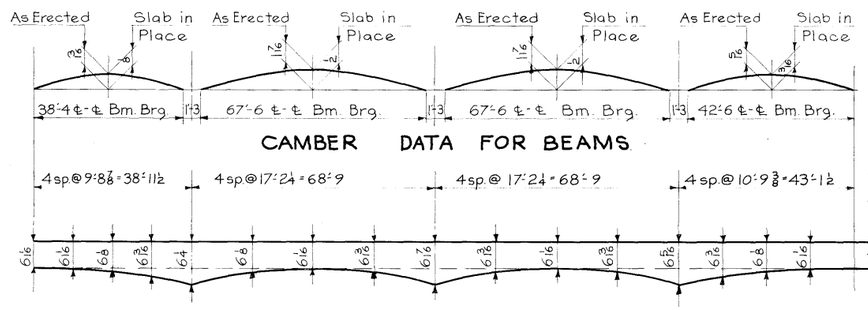
WEST BRIDGE LAYOUT



EAST BRIDGE LAYOUT

CONCRETE PLACEMENT DIAGRAM SHOWING SLAB REINFORCING

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 posseses the necessary equipment and facilities to accomplish the required result. Curbs may be placed continuously. The use of a finishing machine will not be required on the "A" portion of the slab of the West Bridge.



SLAB THICKNESS DIAGRAM

The slab thickness shown are based on the anticipated beam camber remaining after placing the slab and are not guaranteed for construction. To meet the final grade line, slab is to be thickened to compensate for deficient beam camber and thinned a maximum of ⅛" for excess beam camber.

Design for 1°13'30" Skew

DUAL 219'-7x39' & VARIABLE PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGES

38'-11½ & 43'-1½ End Spans — 2-68'-9 Interior Spans

Concrete Floor & Substructure — Tubular Handrail

SUPERSTRUCTURE DETAILS

Sta.: 1088+28.60 Rt. Lane I-29 — Proj. Nº I-IG-29-5(7)78××43-9

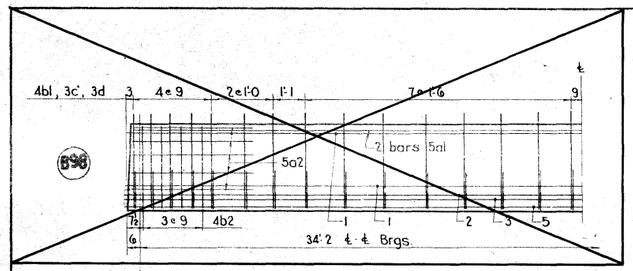
Sta.: 479+87.80 Lt. Lane U.S.-30

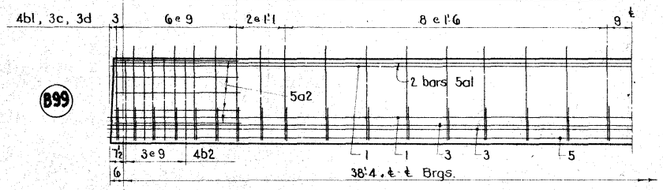
HARRISON COUNTY

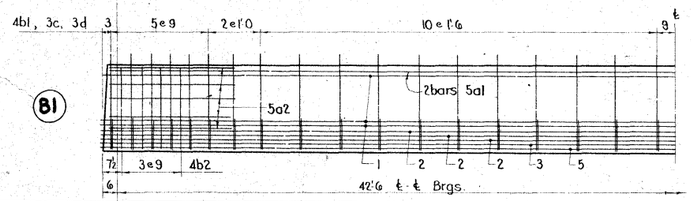
IOWA STATE HIGHWAY COMMISSION

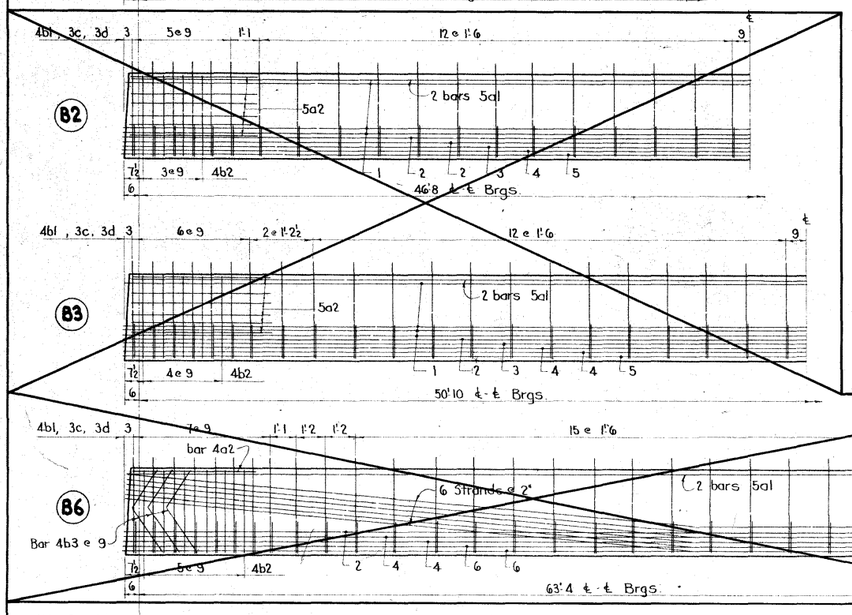
December, 1965 — Sheet 15 of 21

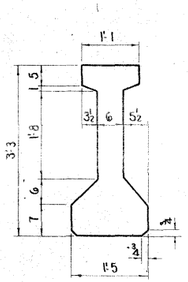
Design Nº 465 — Harrison County — File Nº 20676





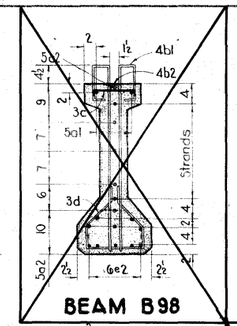




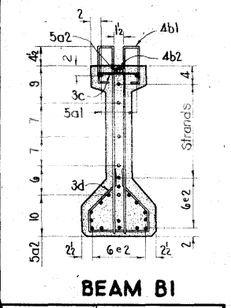


BEAM B

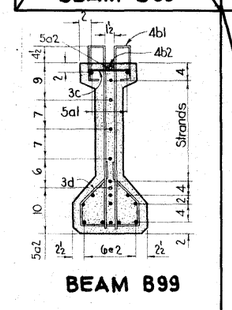
A = 382.5 sq. in.
Ȳ = 17.06 in.
I = 62,001 in.⁴



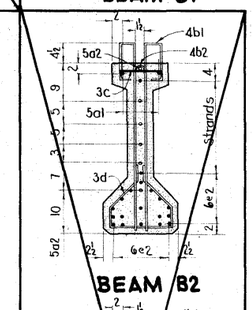
BEAM B98



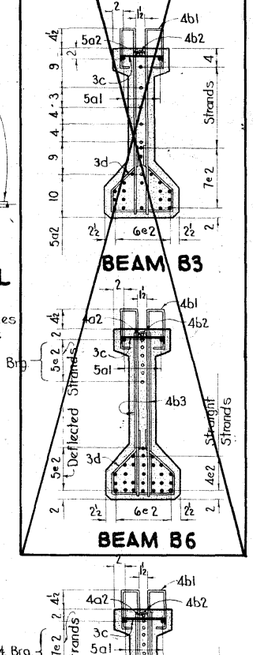
BEAM B1



BEAM B99

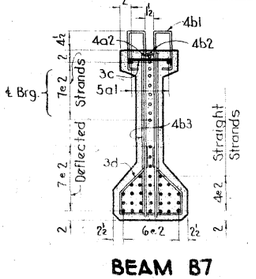


BEAM B2



BEAM B3

BEAM B6



BEAM B7

COIL TIE DETAIL

Number and location of coil ties to be as detailed on specific designs.

REINFORCING BAR LIST

Beam		B98		B99		B1		B2		B3		B6		B7	
Span		34'2		38'4		42'6		46'8		50'10		63'4		67'6	
Bar	Shape	N°	Length	N°	Length	N°	Length	N°	Length	N°	Length	N°	Length	N°	Length
5a1	——	7	34'9	7	38'11	4	27'6	4	28'7	4	29'8	4	39'11	4	35'0
4a2	——	—	—	—	—	—	—	—	—	—	—	2	4'6	2	4'6
5a2	——	10	5'0	10	5'0	10	5'0	12	5'3	12	5'6	—	—	—	—
4b1	□	60	4'8	68	4'8	72	4'8	76	4'8	84	4'8	104	4'8	112	4'8
4b2	⊂⊃	8	6'2	8	6'2	8	6'2	8	6'2	10	6'2	12	6'2	12	6'2
4b3	⋀	—	—	—	—	—	—	—	—	—	—	12	3'5	12	3'5
3c	⊓	30	1'2	34	1'2	36	1'2	38	1'2	42	1'2	52	1'2	56	1'2
3d	∠	60	2'4	68	2'4	72	2'4	76	2'4	84	2'4	104	2'4	112	2'4

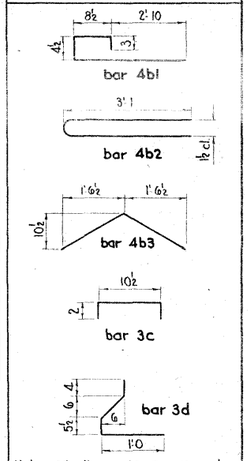
BEAM DATA

Beam		B98	B99	B1	B2	B3	B6	B7
Span		34'2	38'4	42'6	46'8	50'10	63'4	67'6
Initial Prestress	Kips	227	246	321	359	416	529	605
Strand Size		7/16	7/16	7/16	7/16	7/16	7/16	7/16
Straight Strands		12	13	17	19	22	22	24
Deflected Strands		—	—	—	—	—	6	8
Hold Down Stress	Kips	—	—	—	—	—	11.5	12.2
Camber	in.	.17	*.21	*.34	.46	.57	.116	*1.46
② D.L. Deflection in. (5'0 Spc'g)		.06	.11	.15	.23	.32	.75	.97
② D.L. Deflection in. (6'6 Spc'g)		.08	.13	.20	.29	.41	.95	1.22
② D.L. Deflection in. (7'3 Spc'g)		.09	.13	.22	.32	.46	1.04	1.35
Reinforcing Steel	lbs.	410	453	481	521	576	658	699
Concrete	c.y.	3.43	3.87	4.28	4.69	5.10	6.33	6.74

② Due to weight of slab

It is anticipated that the beam camber immediately after releasing strands will be as follows: B99 - .12in.; B1 - .19in.; B7 - .80in.

BENT BAR DETAILS



Note All dimensions are out to out except as shown

NOTES:

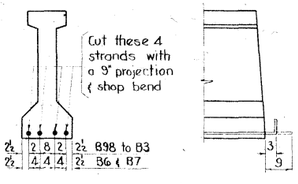
Unless otherwise specified an allowance of .0005L is to be made on all beams for shrinkage and elastic shortening.
All deflected strands are to be held down at the third points of the beams except that the hold down point may be moved toward the center of the beam a distance not to exceed .05 span at the producer's option.
Tops of beams are to be scored transversely at about 3" centers with a pointed tool. Scores are to be ⅛" deep.
Hold down devices and procedure for tensioning and detensioning must be approved by the Engineer.
Bearing details will be as detailed on specific design.
Unless otherwise noted, the cost of bearing details, including masonry plates and/or neoprene pads, coil ties, coil rods and lifting loops is to be included in the price bid for prestressed concrete beams.
Strand ends which will be encased in concrete in the finished structure are to be cut with a 1" projection with the exception of four strands at the pier end of the beam which are to be cut with a 9" projection and bent as detailed.
Strand ends which will be exposed in the finished structure are to be cut flush and painted with 2 coats of red lead at plant.

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:
Reinforcing steel in accordance with Section 1.4.12 "Reinforcement" for Intermediate, Hard, or Rail Steel Grade.
Concrete in accordance with Section 1.13.7 f'c = 5000 p.s.i. Prestressing Steel in accordance with Sec. 113.7 f's = 250,000 p.s.i.

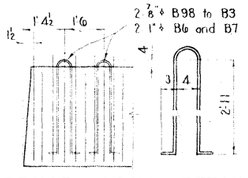
SPECIFICATIONS:

Design: A.A.S.H.O. Series 1961.
Construction: Standard Specifications of the Iowa State Highway Commission, current series, plus current Special Provisions and current Supplemental Specifications.

MAXIMUM SPACING OF BEAMS FOR SPANS SHOWN			
Loading		Future W. S.	Maximum Spacing
H20 S16	(Primary)	19 p.s.f.	5'0
H20	(Secondary)	19 p.s.f.	6'6
H15	(Secondary)	19 p.s.f.	7'3

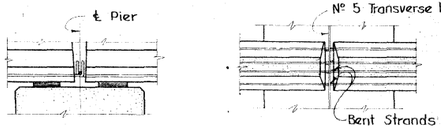


BEAM END DETAIL AT PIER



LIFTING LOOP DETAILS

Lifting loops are to be structural grade steel. Alternate types may be substituted with approval of the Engineer.



STRAND DETAIL AT PIER

Design for 1° 13' 30" Skew

DUAL 219'-7x39'-6 VARIABLE PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGES

38'-11½ & 43'-1½ End Spans — 2-68'-9 Interior Spans
Concrete Floor & Substructure — Tubular Handrail

BEAM DETAILS

Station: 1088+28.60 on I-29
479+87.80 on US #30
Proj. N° I-IG-29-5(7)78**43-97

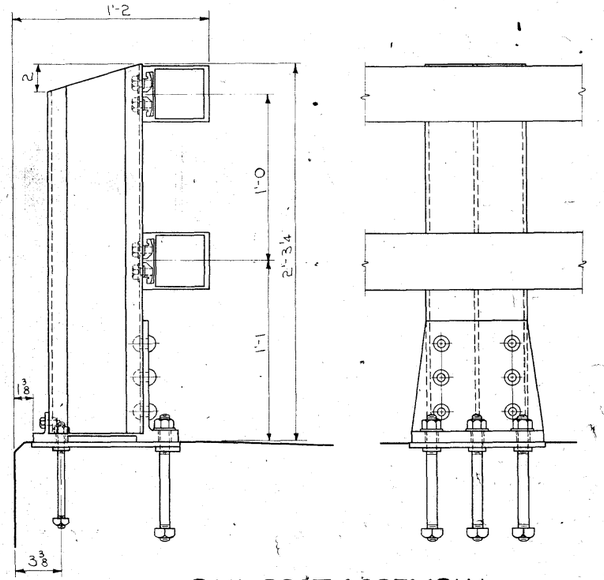
HARRISON COUNTY

Iowa State Highway Commission
December, 1965
Sheet 16 of 21

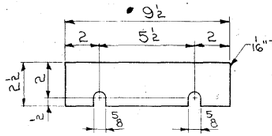
Design N° 465 Harrison County File N° 20676

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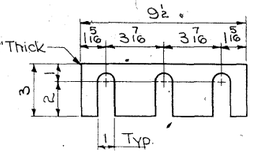
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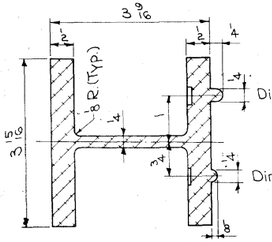
RAIL POST ASSEMBLY



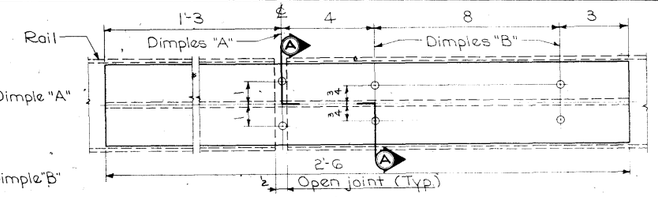
SHIM "A" DETAIL



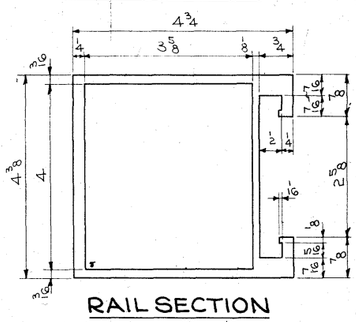
SHIM "B" DETAIL



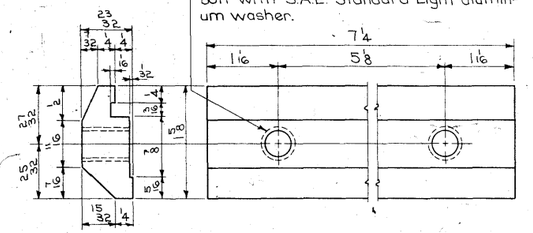
SECTION A-A



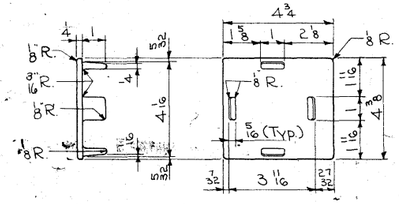
RAIL SPLICE DETAIL



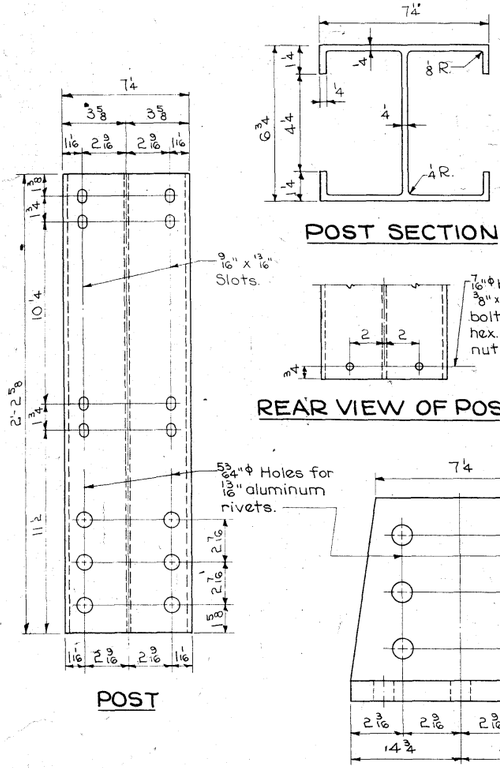
RAIL SECTION



CLAMP BAR DETAILS



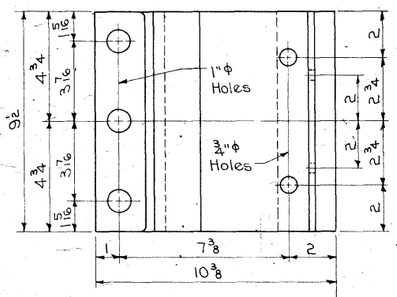
RAIL END CAP DETAILS

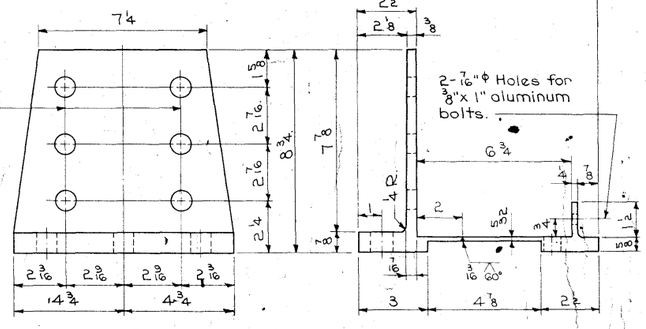


POST

POST SECTION

REAR VIEW OF POST





POST BASE PLATE DETAILS

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 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.

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. 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.

Material for anchor bolt assembly plate shall be aluminum alloy permanent mold casting complying with A.S.T.M. B-108 Alloy SG70A-T6 (AA Alloy 356-T6).

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.

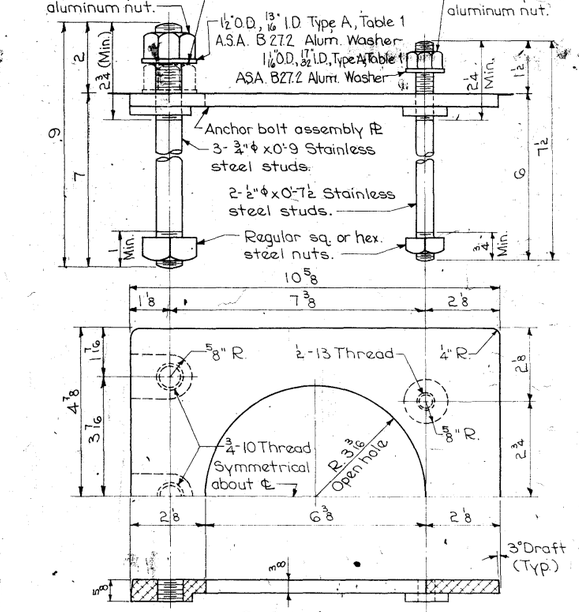
Material for clamp bar bolt shall be stainless steel A.S.T.M. A-193, Grade B8.

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

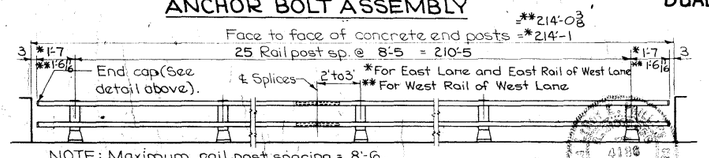
Ends of rail sections to be sawed or milled. Cut ends to be true, smooth and free from burrs or ragged edges.

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.



ANCHOR BOLT ASSEMBLY



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	854.3 Lin.Ft.

Design for 1° 13' 30" Skew

DUAL 219'-7" x 39'-6" & VARIABLE PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGES

38'-11½" & 43'-1½" End Spans — Concrete Floor & Substructure

2-68'-9" Interior Spans — Tubular Handrail

ALUMINUM HANDRAIL DETAILS

Station: 1088+28.60 Rt. Lane I-29 Proj. No. I-IG-29-5(7)78**43-9
479+87.80 Lt. Lane U.S.*30

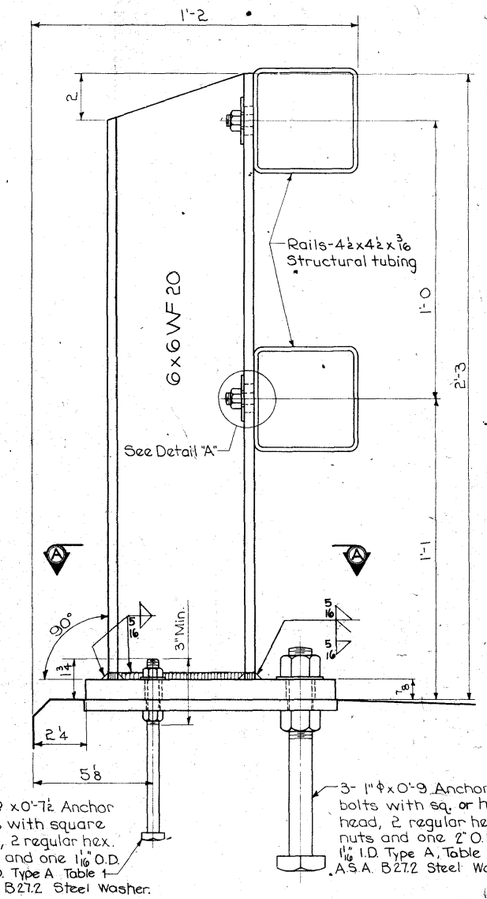
HARRISON COUNTY

IOWA STATE HIGHWAY COMMISSION

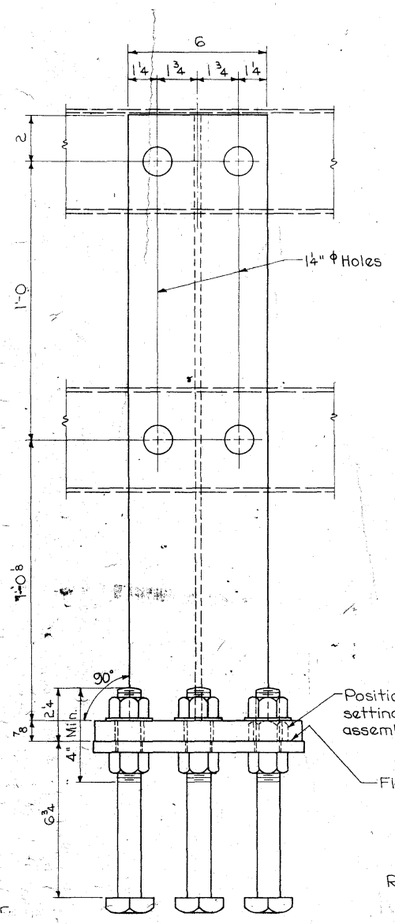
December, 1965 STANDARD RAIL SHEET 1012 Sheet 17 of 21

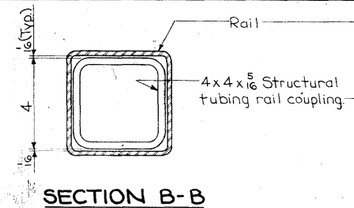
Design No. 465 Harrison County File No. 20676

1012

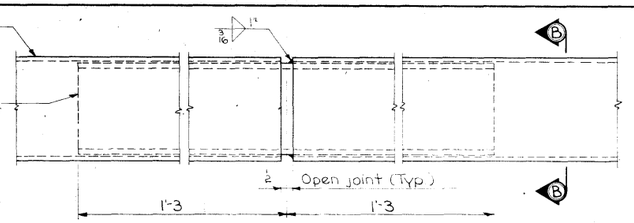


RAIL POST

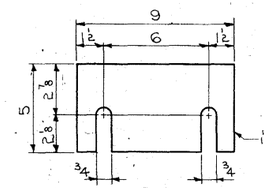




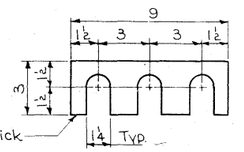
SECTION B-B



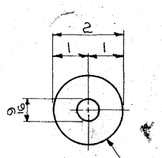
TYPICAL SPLICE JOINT

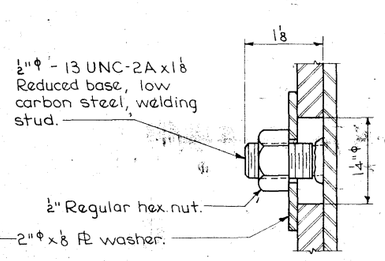


SHIM "A" DETAIL



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.

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.

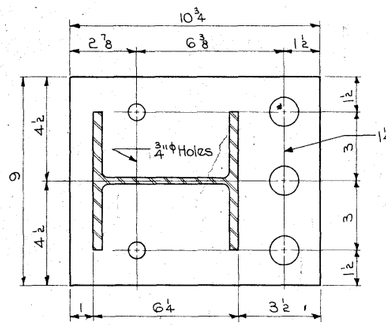
Welding shall be in accordance with Section 2408.15 of the Standard Specifications.

Handling, storage and installation of steel handrail shall be in accordance with Section 2414.06 of the Standard Specifications. Rail studs shall be provided with adequate protection during shipment.

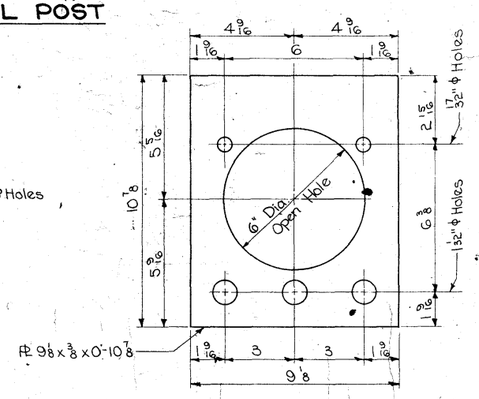
One shim "A" and one shim "B" is to be furnished for each post, to be used as required.

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".

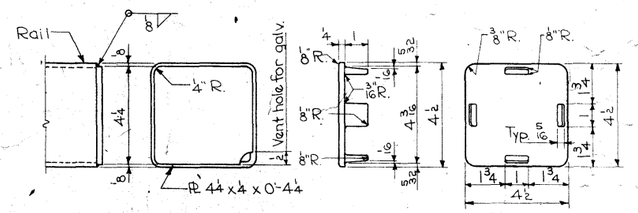
No painting will be required.



SECTION A-A

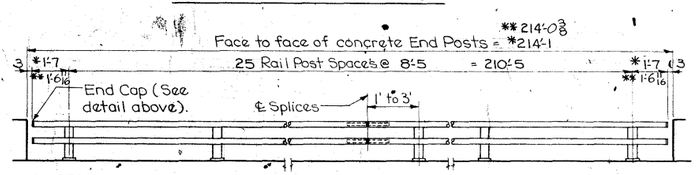


ANCHOR CAGE DETAILS



END CAP "A" END CAP "B"

RAIL END CAP DETAILS



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

*For East Lane and East Rail of West Lane.
**For West Rail of West Lane.

TYPICAL ELEVATION OF RAILING AND RAIL POST LAYOUT

DESIGN SPECIFICATIONS:

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

STEEL HANDRAIL QUANTITIES		
Steel Handrail	854.3	Lin. Ft.

Design for 1°13'30" Skew

DUAL 219'-7 x 39' VARIABLE PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGES

38'-11½ & 43'-1½ End Spans — 2-68'9 Interior Spans
Concrete Floor & Substructure — Tubular Handrail

STEEL HANDRAIL DETAILS

1088+28.60 Rt. Lane I-29
Station: 479+87.80 Lt. Lane US 30 Proj. No. I-IG-29-5(7)78 ** 43-9

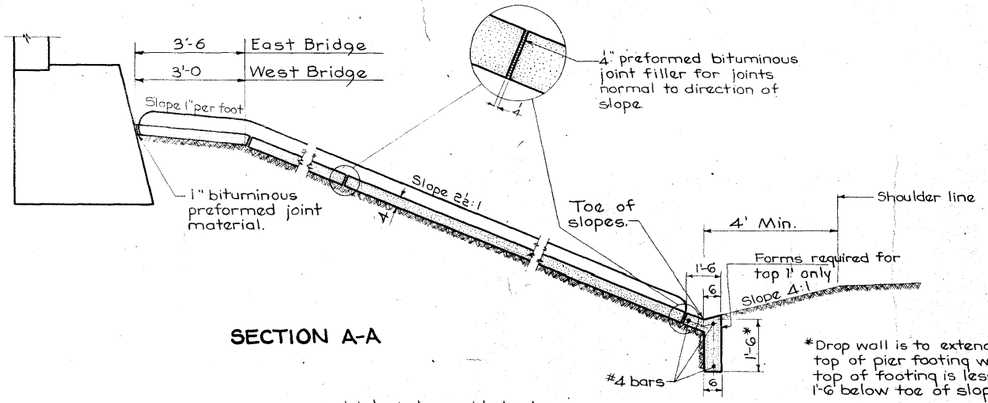
HARRISON COUNTY

IOWA STATE HIGHWAY COMMISSION

December, 1965 STANDARD RAIL SHEET 1013 — Sheet 18 of 21

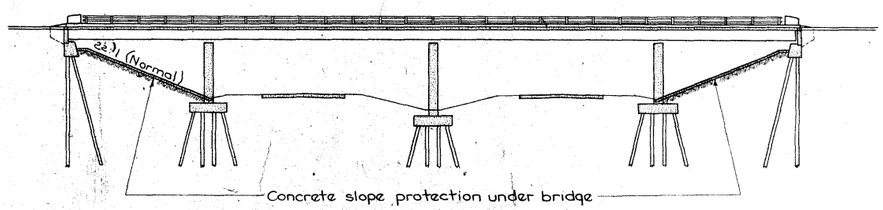
Design No. 465 — Harrison County — File No. 20676

1013

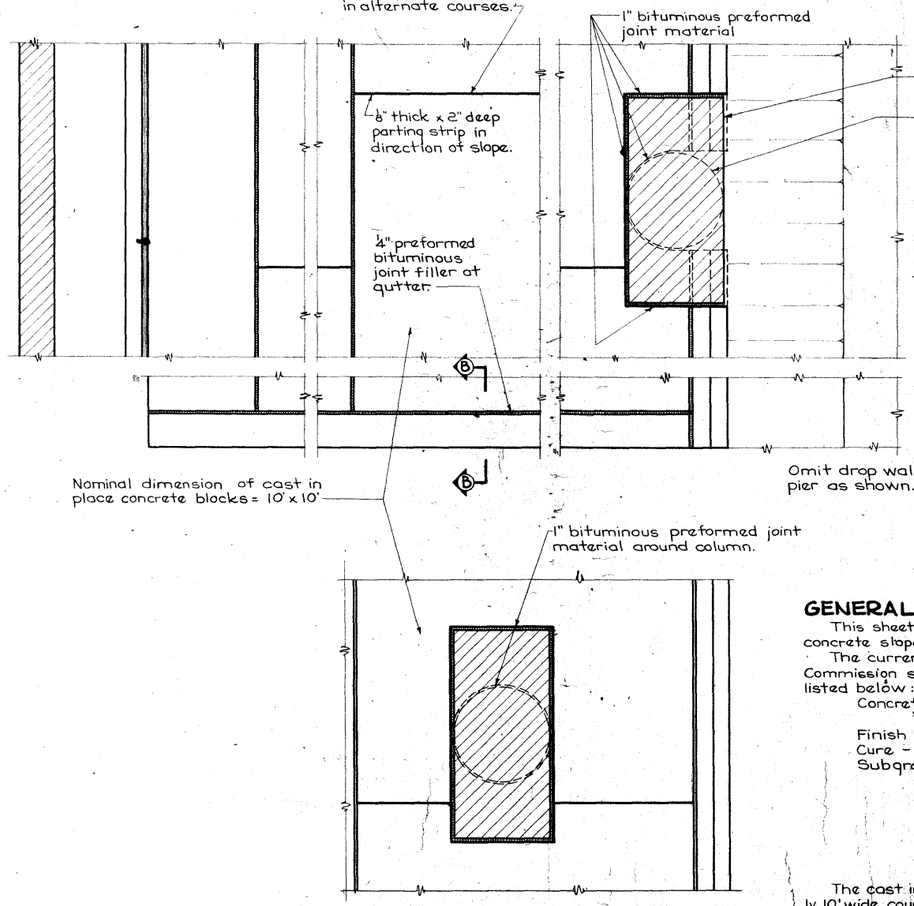


SECTION A-A

*Drop wall is to extend to top of pier footing when top of footing is less than 1'-6" below toe of slopes.

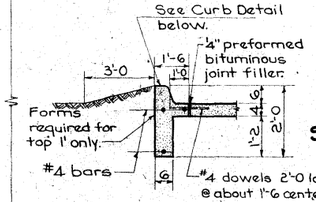


LONGITUDINAL SECTION ALONG ℄ OF ROADWAY

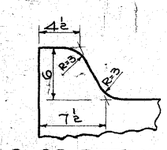


PART SLOPE PROTECTION PLAN (0° SKEW) FOR COLUMNS IN SLOPE

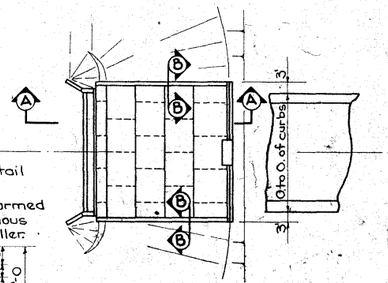
Scale: ½" = 1'-0



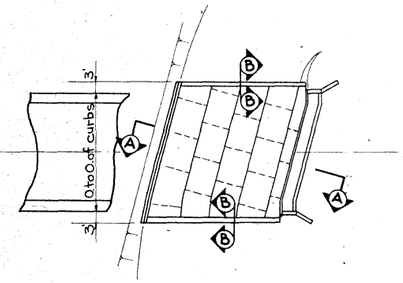
SECTION B-B



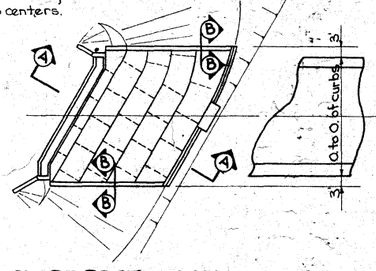
CURB DETAIL



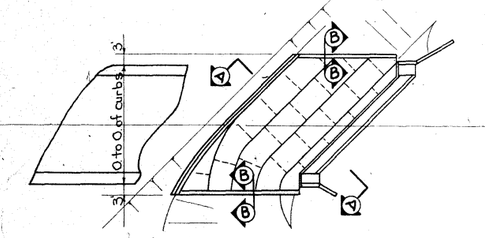
SLOPE PROTECTION LAYOUT 0° SKEW



SLOPE PROTECTION LAYOUT 15° SKEW



SLOPE PROTECTION LAYOUT 30° SKEW



SLOPE PROTECTION LAYOUT 45° SKEW

GENERAL NOTES:

This sheet shows details for placing portland cement concrete slope protection under overhead structures.

The current specifications of the Iowa Highway Commission shall apply with modifications or additions listed below:

Concrete - Class C Structural.

Finish - Class 1, Floated Surface Finish.
Cure - Cure as per current specifications.
Subgrade Preparation - The subgrade is to be shaped and compacted so that finished slope protection will be similar to examples shown on this sheet. The subgrade shall be firm when concrete is placed. Sprinkling required shall be done early enough so that concrete is not placed on a muddy subgrade. No subgrade paper will be required.

The cast in place concrete is to be poured in approximately 10' wide courses, but all courses on one slope should have approximately equal widths. Adjacent courses shall not be poured within 15 hours of one another. The joints in the direction of the slope are to be staggered about ½ block width.

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

Where erosion control work is completed the Contractor shall be responsible for any plant materials destroyed adjacent to slope protection area. The Contractor shall replant, reseed and remulch all areas disturbed adjacent to slope protection areas in accordance with section 2601 of Standard Specifications, Series of 1964, at his expense.

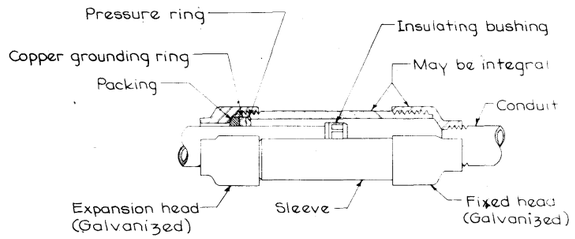
SLOPE PROTECTION QUANT	
W. Lane, South Slope	272
W. Lane, North Slope	303
E. Lane, South Slope	237
E. Lane, North Slope	247
Total, sq. yd.	1059

Revised 10-29-64: Revised for 1964 Standard Specs.
Revised 1-19-61 Curb dowel bars added.
Revised 7-21-60 Corrected for 1960 Standard Specifications.
Revised 2-15-60 Precast block construction deleted. Curb added to sides.
Revised 9-15-59 Statement concerning erosion control added.
Revised 9-4-59 Statement concerning disposal of excess earth added.

Design For
CONCRETE SLOPE PROTECTION
HARRISON COUNTY
Project Nº I-IG-29-5(7)78**43-9
IOWA STATE HIGHWAY COMMISSION
Sheet 19 of 21
December, 1965

Design Nº 465 Harrison County File Nº 20676

1006

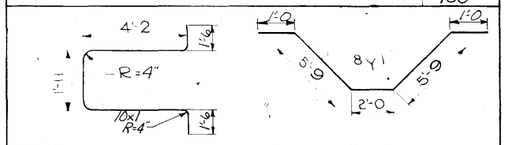


RM-2, TYPE 1 EXPANSION FITTING

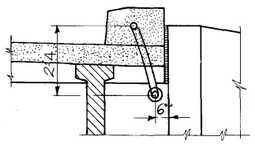
Expansion chamber length is $\frac{3}{8}$ in.
1 required each end of each bridge

REINFORCING BAR LIST — ONE BASE

Bar	Location	Shape	No	Length	Weight
10x1	Pole Anchors		2	12'-3	105
8y1	Curb Anchors		2	15'-6	83
				Total lb.	188

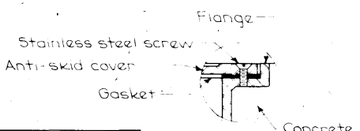


NOTE: Dimensions are out to out of bar. Radii to ℄ of bar.



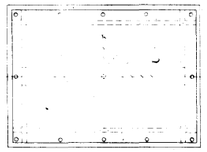
SECTION B-B

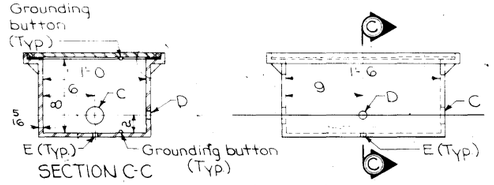
Note: Extend 2"ϕ conduit along abutment wing a sufficient amount to clear the shoulder line. End of conduit is 3'-0 below ground surface.



Bossed For	Hole	For Conduit Size
5 threads	C	2"ϕ Rigid Steel
None	D	1"ϕ Rigid Steel
None	E	½"ϕ (Copper Pipe)

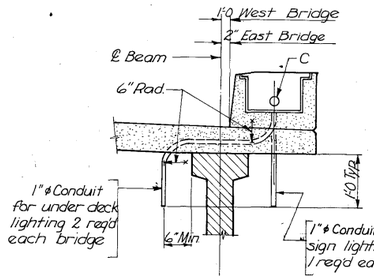
NOTE: The grounding buttons are to be blind drilled and tapped for $\frac{3}{8}$"ϕ 0'-0¾ bolts.





RM-9, TYPE 1 JUNCTION BOX

RAINTIGHT, CAST IRON — FLUSH MOUNT



SECTION THROUGH JUNCTION BOX FOR UNDERDECK ℄ SIGN LIGHTING

LIGHTING NOTES:

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

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

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

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

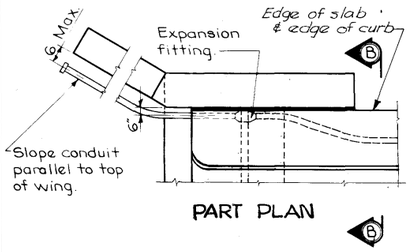
All entrance holes in junction boxes except for drain pipes shall be tapped for the specified conduit size. Grounding buttons shall be located approximately 3" from the inside surface of the box wall, and not closer than 3" to the edge of any hole in the box floor. Holes for drain pipe shall be placed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

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

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

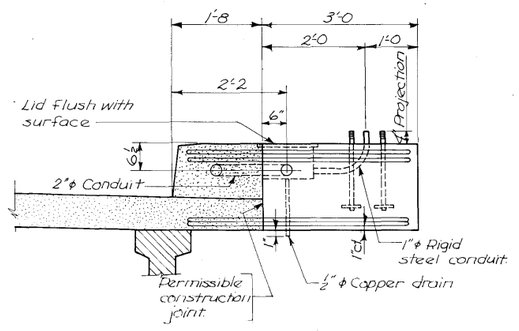
The length of conduit installed shall be measured in feet by the Engineer.

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

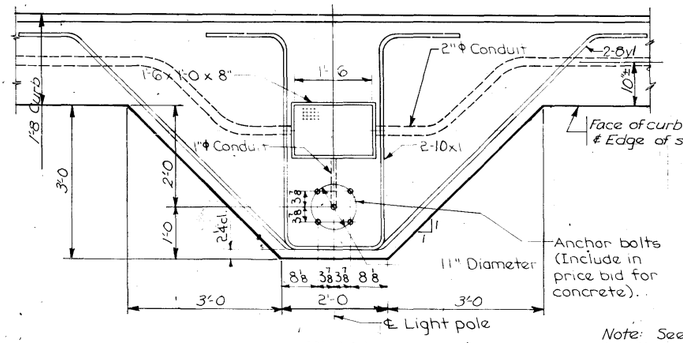


PART PLAN

End Post Removed.

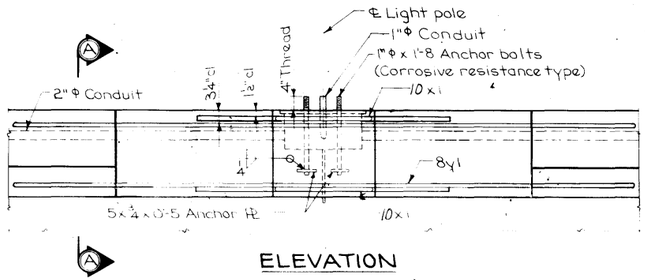


SECTION A-A



PLAN

Note: See Situation Plan, sheet 2, for location of light post bases

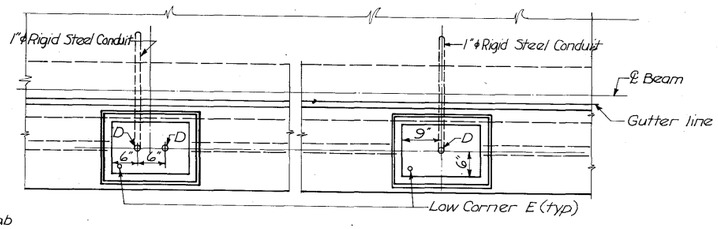


ELEVATION

TOTAL ESTIMATED QUANTITIES 2 - BASES

Item	Amount
2"ϕ Rigid Steel Conduit *	484 LF

*Quantity includes 461.0 LF of 2"ϕ conduit and 23.0 LF of 1"ϕ conduit



UNDERDECK ℄ SIGN LIGHTING
1 @ Sta. 1087+30 W. Curb, W. Bridge
1 @ Sta. 1088+52 E. Curb, E. Bridge

UNDERDECK LIGHTING
1 @ Sta. 1088+30 W. Curb, W. Bridge
1 @ Sta. 1087+32.5 E. Curb, E. Bridge

PLAN OF JUNCTION BOX - TYPE 1

Design For 1° 13' 30" Skew

DUAL 219'-7" x 39 ℄ VARIABLE PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGES

38'-11½ ℄ 43'-1½ *End Spans* — 2-68'-9 *Interior Spans*
Concrete Floor ℄ Substructure — *Tubular Handrail*

LIGHTING DETAILS

Station 1088+28.60 Rt. Lane I-29
479+87.80 Lt. Lane U.S. #30
Proj. No I-IG-29-5(7)78 xx 43-9

HARRISON COUNTY

IOWA STATE HIGHWAY COMMISSION

December 1965

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Revised 3-8-65 Sheet Redrawn.
Revised 5-12-65 Boss for holes added.
Revised 9-3-65 Alternate location for "D" holes added.