JAN 13, 59

CONVENTIONAL SIGNS

CITY LIMITS
STATE OR COUNTY LINES
SECTION LINES
FENCE LINES
RIGHT OF WAY LINES
GUARD RAIL
TRAVELED WAY
BASE OR SURVEY LINE
RAILROADS
PRESENT TILE DRAINS
PROPOSED TILE DRAINS
CULVERTS
TELEPHONE, TELEGRAPH OR TRANSMISSION LINES
PRIMARY ROAD NUMBERS — 15
U. S. ROAD NUMBERS — 65

STATE OF IOWA

STATE HIGHWAY COMMISSION

DESIGNS FOR BRIDGES AND CULVERT

ON THE

INTERSTATE ROAD SYSTEM

I.-IG PROJECT NO. 80-4(2)142

FROM A POINT IN SE1/4NE1/4SEC. 18-79-23, EAST BY NORTHEAST TO A POINT JUST WEST OF WEST LINE OF SW1/4 SEC. 12-79-23

POLK COUNTY

SCALES PLAN 1 INCH = 100 FT.
PROFILE HOR. 1 INCH = 100 FT. VERT. 1 INCH = 10 FT.

THE IOWA STATE HIGHWAY COMMISSION STANDARD SPECIFICATIONS FOR CONSTRUCTION WORK, SERIES OF 1956, SHALL APPLY TO WORK ON THIS PROJECT

CONSTRUCTION PLANS SHOWING PROJECT AS BUILT
PREPARED BY [illegible] RESIDENT ENGINEER
DATE 4-12-61 NO. OF COPIES PREPARED 2

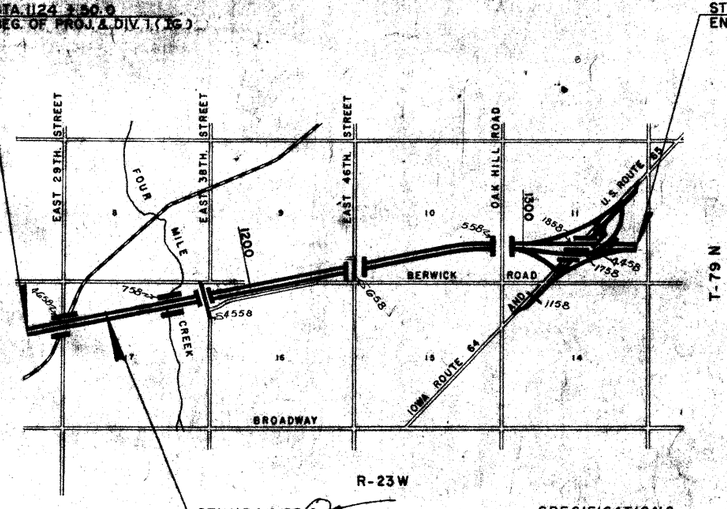
Construction Plans Showing Project as Built
Prepared by [illegible] Resident Engr.
Date 4-5-63 No. of copies prepared 2
This copy approved and forwarded to Ames
Date
Other copy delivered to Division Maintenance Engineer
Date FEB 1 1963
Signed Steiner Silence Dist. Engineer

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS.
5	IOWA	I-IG-01-4(2)		1	187

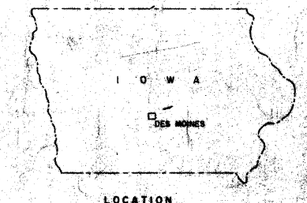
I-IG-80-4(2)142

STA. 1124+30.9
BEG. OF PROJ. & DIV. 1 (IG)

STA. 1341+54.30
END OF PROJ. & DIV. 2 (I)



STA. 1134+30.6
END DIV. 1 (IG) & BEG. DIV. 2 (I)



LOCATION

SPECIFICATIONS:
ALL MATERIAL AND CONSTRUCTION TO BE IN ACCORDANCE WITH IOWA STATE HIGHWAY COMM. STANDARD SPECIFICATIONS SERIES 1956, PLUS CURRENT SPECIAL PROVISIONS.

THESE BRIDGES WILL REQUIRE BRIDGE SIGN ASSEMBLIES FURNISHED AND PLACED BY OTHERS, AS SPECIFIED IN S & T INSTRUCTIONS NO. 11, REVISED MARCH 1, 1956.

RECOMMENDED:
[illegible] 9/3/58
PRINCIPAL DATE
BROWN ENGINEERS
CONSULTING ENGINEERS, N.Y., N.Y.

APPROVED:
CHIEF ENGINEER DATE
IOWA HIGHWAY COMMISSION

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

offls. dand 12/22/58

G+I JAN 13/59

SHEET 1 OF 2 SHEETS

IN LETTING OF JAN. 13 TH 1959

SECTION: 10 EAST LINE — STA. 1293+01.21 ℄ INTERSTATE
DESIGN: 558 — TWP. DELAWARE

223'-9 x 24' PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE 0º-54'-30" SKEW

ESTIMATE OF QUANTITIES

CONCRETE	337.3	CU. YD.
REINFORCING STEEL	53,100	LBS.
STRUCTURAL STEEL	14,028	LBS.
PRESTR. CONC. BEAMS 42'-6"	12	BMS.
PRESTR. CONC. BEAMS 67'-6"	12	BMS.
TREATED WOOD PILES 20@40' & 54@35'	2690	LIN. FT.
EXCAVATION CLASS 20	242	CU. YD.
* FORMED STL. BEAM RAIL	75	LIN. FT.
CREOSOTED 8"ø X 6'-0" POSTS	10	EACH

* BID PRICE TO INCLUDE COST OF ALL SPECIAL BOLTS. 10 END POST BOLTS AND 8 CURVED END TERMINALS.

IN LETTING OF JAN. 13 TH 1959

SECTION: 9-10 — STA. 1239+54.26 ℄ INTERSTATE
DESIGN: 658 — TWP. DELAWARE

223'-9 x 24' PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE 11º-12'-55" SK.

ESTIMATE OF QUANTITIES

CONCRETE	344.4	CU.YD.
REINFORCING STEEL	53,976	LBS.
STRUCTURAL STEEL	14,028	LBS.
PRESTRESSED CONC BMS. 42'-6"	12	BMS.
PRESTRESSED CONC BMS. 67'-6"	12	BMS.
TREATED WOOD PILES 20@40' & 54@35'	2690	LIN FT.
EXCAVATION CLASS 20	244.0	CU.YD.
TREATED POSTS 8"ø X 6'-0"	10	EACH
* FORMED STEEL BEAM WG. RAILS	75	LIN. FT.

* BID PRICE TO INCLUDE COST OF ALL SPECIAL BOLTS. 10 END POST BOLTS AND 8 CURVED END TERMINALS.

IN LETTING OF JAN. 13 TH 1959

SECTION: 17 — STA. 1174+05 ℄ INTERSTATE
DESIGN: 758 — TWP. DELAWARE

TWIN 188'-4 x 42' PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE 16º 54' SKEW

ESTIMATE OF QUANTITIES

CONCRETE	1047.0	~~1038.2~~	CU.YD.
REINFORCING STEEL		140,066	LBS.
STRUCTURAL STEEL		23,704	LBS.
PRESTRESSED CONC. BEAMS 67'-6"		22	BMS.
PRESTRESSED CONC BEAMS 59'-2"		44	BMS
EXCAVATION CLASS 20		393.6	CU.YD.
EXCAVATION CLASS 21		770	CU.YD
FURNISHED 10 BP 42 PILES		3244	LIN.FT.
DRIVING 10 BP 42 PILES		3244	LIN. FT.

IN LETTING OF JAN. 13 TH 1959

SECTION: 11 — STA. 32+83.5 (℄ IA. RTE. 64 & U.S. 65)
DESIGN: 1158 — TWP. CLAY

7'x 7' R.C.BOX CULVERT EXT.

ESTIMATE OF QUANTITIES

CONCRETE	110.2	CU.YD.
REINFORCING STEEL	12,215	LBS.
CLASS 20 EXCAVATION	157.0	CU.YD.
REMOVE PORTIONS PRES. CULV AS PER PLAN	LUMP	SUM

MILEAGE SUMMARY:

DESIGN 558 BR. AT STA. 1293+01.21 ℄ INTERSTATE = 226'7" = .043 MI.
DESIGN 658 BR. AT STA. 1239+54.26 ℄ INTERSTATE = 226'7¾" = .043 MI.
DESIGN 758 BR. AT STA. 1174+05.00 ℄ INTERSTATE = 191'-3½" = .036 MI.
DESIGN 1758 BR. AT STA. 1314+59.34 = 25'-5¼" = .048 MI.
DESIGN 1858 BR. AT STA. 1316+62.55 = 276'-10⅞" = .052 MI.
DESIGN 4458 BR. AT STA. 1326+96.11 ℄ INTERSTATE = 213'-2¼" = .040 MI.
DESIGN 4558 BR. AT STA. 1181+53.00 ℄ INTERSTATE = 226'-8¼" .043 MI.
DESIGN 4658 BR. AT STA. 1131+87.84 ℄ INTERSTATE = 318'-3¾" = .061 MI.

TOTAL MILEAGE = 366 MI

IN LETTING OF JAN. 13 TH 1959

SECTION: 11 — STA. 1314+59.34
DESIGN: 1758 — TWP. CLAY

246'-6 x 42' CONTINUOUS I-BEAM BRIDGE 35º 50' 04" SKEW

ESTIMATE OF QUANTITIES

CONCRETE	676.3	CU.YD.
REINFORCING STEEL	137,545	LBS.
* STRUCTURAL STEEL	285,084	LBS.
TREATED WOOD PILES 130 @ 30'	3900	LIN. FT.
EXCAVATION CLASS 20	561	CU.YD.
LIGHTING CONDUIT 2"ø	280	LIN. FT.

* INCLUDES "LIGHTING DETAILS" QUANTITIES

IN LETTING OF JAN. 13 TH 1959

SECTION: 11 — STA. 1316+62.55
DESIGN: 1858 — TWP. CLAY

271'- 6 x 30' CONTINUOUS I-BEAM BRIDGE 42º 13' 30" SKEW

ESTIMATE OF QUANTITIES

* CONCRETE	550.8	CU.YD.
* REINFORCING STEEL	106,540	LBS.
* STRUCTURAL STEEL 239316	~~232,270~~	LBS.
TREATED WOOD PILES 100@30'	3,000	LIN. FT.
EXCAVATION CLASS 20	488	CU.YD.
LIGHTING CONDUIT 2"ø	295	LIN. FT.

* INCLUDES "LIGHTING DETAILS" QUANTITIES

IN LETTING OF JAN. 13 TH 1959

DESIGN: 4458 — STA. 31327+72.96 ℄ RAMP "C"
SECTION: 11 — 1326+96.11 ℄ INTERSTATE
TWP. CLAY

205'-10 x 28' SIMPLE SPAN I-BEAM BRIDGE 47º 10' 31" SKEW

ESTIMATE OF QUANTITIES

* CONCRETE	531.7	CU. YD.
* REINFORCING STEEL	83,470	LBS.
* STRUCTURAL STEEL	255,122	LBS.
TREATED WOOD PILES 83@30' & 30@35'	3,540	LIN. FT.
EXCAVATION CLASS 20	575	CU.YD.
LIGHTING CONDUIT 2"ø	242	LIN. FT.

* INCLUDES "LIGHTING DETAIL" QUANTITIES

IN LETTING OF JAN. 13 TH 1959

DESIGN: 4558 — STA. 1181+53.00 ℄ INTERSTATE
SECTION: 17 — TWP. DELAWARE

223'-9 x 24' PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE 15º 00' 00" SKEW

ESTIMATE OF QUANTITIES

CONCRETE	342.1	CU. YD.
REINFORCING STEEL	54,795	LBS.
STRUCTURAL STEEL	14,968	LBS.
PRESTRESSED CONC. BEAM 42'-6"	12	BEAMS
PRESTRESSED CONC. BEAM 67'-6"	12	BEAMS
TREATED WOOD PILES 20@30' 54@25'	1,950	LIN. FT.
EXCAVATION CLASS 20	222	CU. YD.
* FORMED STEEL BEAM RAIL	75	LIN. FT.
CREOSOTED 8"ø X 6'-0" POSTS	10	EACH

* BID PRICE TO INCLUDE COST OF ALL SPECIAL BOLTS AND 8 CURVED END TERMINALS.

IN LETTING OF JAN. 13 TH 1959

DESIGN 4658 — STA. 1131+87.84 ℄ INTERSTATE
SECTION 17 & 18 — TWP. DELAWARE

315'-5 x 42' & 280'-0 x 42' PRETENSIONED PRESTRESSED CONC. BM. BRIDGE 11º 04' SK.

ESTIMATE OF QUANTITIES

CONCRETE	1685.0	~~1586.0~~	CU.YD.
REINFORCING STEEL		331,107	LBS.
STRUCTURAL STEEL		320	LBS.
TREATED WOOD PILES 76@30'		2280	LIN. FT.
10 BP 42 STEEL PILES FURNISH 60@35' 120@30'		5100	LIN. FT.
10 BP 42 STEEL PILES DRIVE 60@25' 120@30'		5100	LIN. FT.
ALUMINUM HANDRAIL		1159	LIN. FT.
PRESTRESSED CONC. BEAMS 42'-6"		22	BMS.
PRESTRESSED CONC. BEAMS 46'-8"		22	BMS.
PRESTRESSED CONC. BEAMS 50'-10"		11	BMS.
PRESTRESSED CONC. BEAMS 55'-0"		22	BMS.
PRESTRESSED CONC. BEAMS 59'-2"		22	BMS.
PRESTRESSED CONC. BEAMS 63'-4"		22	BMS.
EXCAVATION CLASS 20		1,096	CU.YD.

No bridge work for this Design available at this time -12-17-59-

Small Prints of Design No. 6158 - 5'x3" R.C.B. Culvert 17
set - Sta 46+84 - Hwy 64 & 65 - to be attached to this page
Concrete quantities taken from office file book # 130.
Concrete = 10.4 cu. yds.
steel = 855 lbs
Class 20 Excav. = 7 - cu. yds
Removal = Lump Sum
$1,032.80

Revised 7-15-59: Des. 4658 - Superstructure Concrete Estimate changed to include Diaphragms.
Revised 5-7-59: Des. 1858 Structural Steel estimate corrected.
Revised 4-2-59: Des. 758 Concrete Quantity changed.
Revised 1-2-59: Sheet 8 Des. 4458 Polk "Turned Bolts" note deleted.
Revised 12-22-58 Bridge mileage design 1858 and 4658 and total mileage corrected.

APPROVED

CHIEF ENGINEER DATE
IOWA HIGHWAY COMMISSION

DEPARTMENT OF COMMERCE
BUREAU OF PUBLIC ROADS

APPROVED

DIVISION ENGINEER DATE

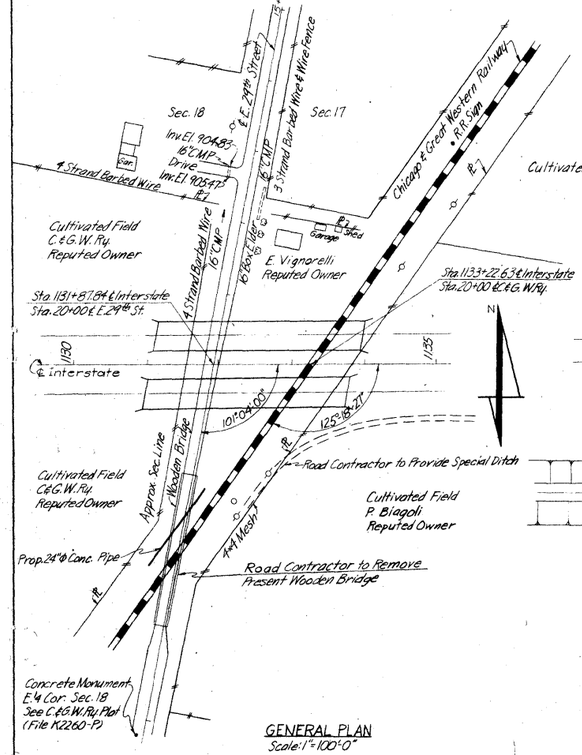
SHEET 1 OF 2

POLK COUNTY PROJECT NO. I-IG-01-4(2) FILE NO. 18856

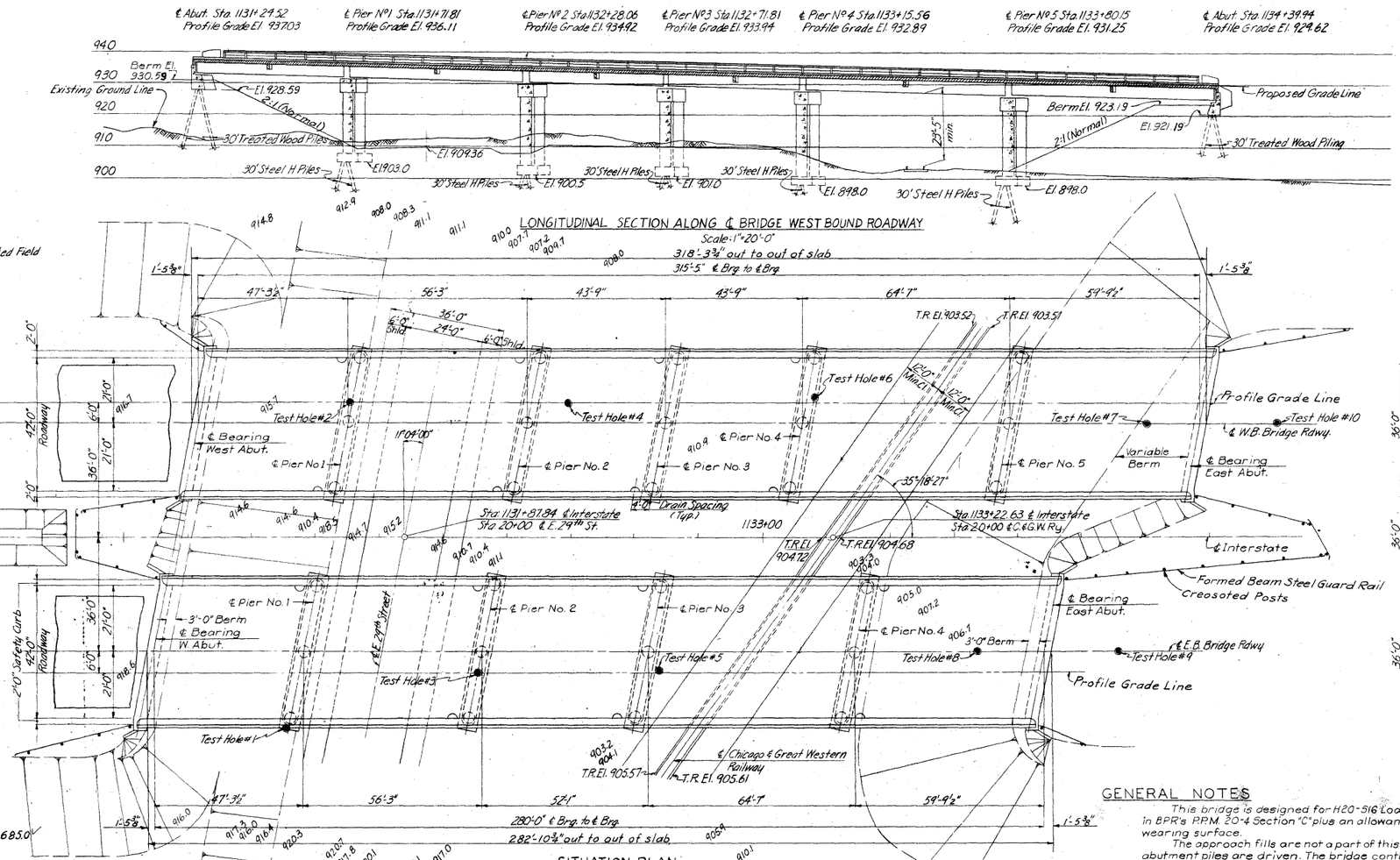
NOTE: All Stations and Grades on Profile Grade Line.

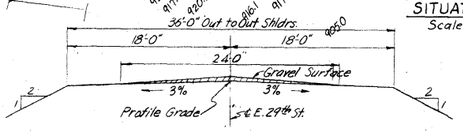
~~Bench Mark N° 187 Sta 1133+46 R.R. Spike in N. Side Pole, W. Side E. 29th St. El. 904.04, El. 918.56~~

Bench Mark: No. 187 Brass plug in S.W. wingwall of South Bridge EL. 937.47

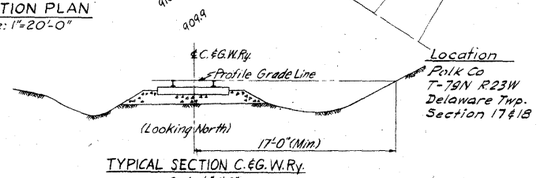


GENERAL PLAN
Scale: 1"=100'-0"

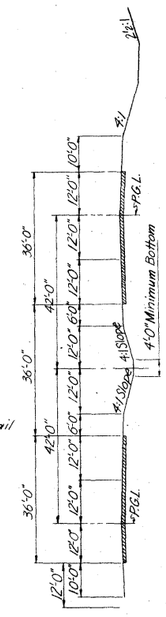




TYPICAL SECTION E. 29th ST.
Scale: ⅛"=1'-0"

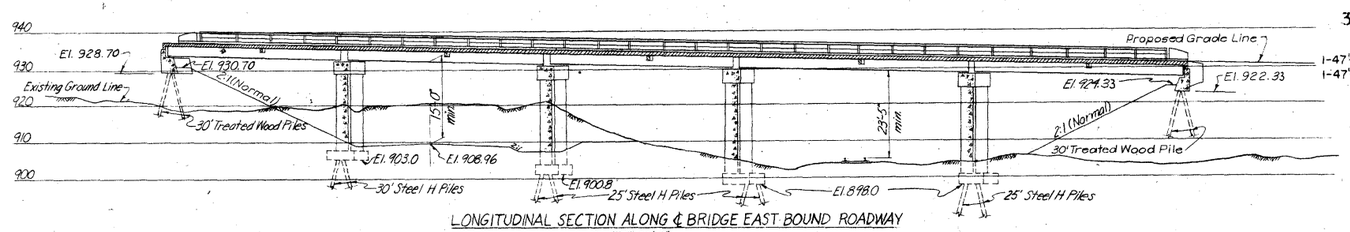


TYPICAL SECTION C.&G.W.Ry.
Scale: ⅛"=1'-0"



TOTAL ESTIMATED QUANTITIES

ITEM	UNIT	4 ABUTS.	9 PIERS	SUPER ST.	TOTAL	
Concrete	Cu.Yds.	131.2	815.4	738 ~~453.4~~	~~1586.0~~	1,685.0
Reinforcing Steel	Lbs.	14,096	151,822	165,189	331,107	✓
Structural Steel	Lbs.	——	——	320	320	✓
Treated Wood Piles	Lin.Ft.	76 @ 30'	——	——	~~2280~~	1,641.6
10BP42 Steel Piles, Furnish	Lin.Ft.	——	60 @ 25' 120 @ 30'	——	~~5100~~	5,162.8
10BP42 Steel Piles, Drive	Lin.Ft.	——	60 @ 25' 120 @ 30'	——	~~5,100~~	4,474.9
Aluminum Handrail	Lin.Ft.	——	——	1,159	1,159	✓
Prestressed Conc. Beams 42'-6"	Bms.	——	——	22	22	✓
Prestressed Conc. Beams 46'-8"	Bms.	——	——	22	22	✓
Prestressed Conc. Beams 50'-10"	Bms.	——	——	11	11	✓
Prestressed Conc. Beams 55'-0"	Bms.	——	——	22	22	✓
Prestressed Conc. Beams 59'-2"	Bms.	——	——	22	22	✓
Prestressed Conc. Beams 63'-4"	Bms.	——	——	22	22	✓
Excavation Class 20	Cu.Yds.	97	999	——	1096	✓
Gravel	Ton		21.45		21.45	



LONGITUDINAL SECTION ALONG ℄ BRIDGE EAST BOUND ROADWAY
Scale: 1"=20'-0"

Revised 7/15/59 — Superstructure Concrete Estimate changed to include Diaphragms.

GENERAL NOTES

This bridge is designed for H20-S16 Loading and Alternate Loading designated in BPR's P.R.M. 20-4 Section "C" plus an allowance of 191bs. per square foot for future wearing surface.

The approach fills are not a part of this estimate but are to be in place before abutment piles are driven. The bridge contractor is to level off and shape the berms to the elevation shown.

Excavation for pier assumed from finished ground line.

Concrete for East Abutments is not to be placed until one month before anticipated delivery date of superstructure elements to the job site.

Formed Beam Guard Rail and Creosoted Posts at the end of the bridge are to be furnished and placed by others and are not a part of this estimate

SPECIFICATIONS

Design: A.A.S.H.O., Series of 1957, and U.S. Bureau of Public Roads Design Criteria for Prestressed Concrete Bridges, 1955.
Construction: Standard Specifications of the Iowa State Highway Commission, Series of 1956, plus Current Special Provisions.

DESIGN FOR 11°-04'-00" SKEW

315'-5"x42' & 280'-0"x42' PRE-TENSIONED PRESTRESSED CONCRETE BEAM BRIDGES

1-47'-3½" & 1-59'-9½" END SPANS 1-64'-7", 1-56'-3" & 2-43'-9" INTERMEDIATE SPANS
1-47'-3½" & 1-59'-9½" END SPANS 1-64'-7", 1-56'-3" & 1-52'-1" INTERMEDIATE SPANS

CONCRETE FLOOR AND SUBSTRUCTURE-ALUMINUM RAIL

INTERSTATE OVER E. 29TH ST. & C.G.W. RY.

GENERAL & SITUATION PLAN

STATION 1131+87.84 ℄ INTERSTATE PROJ. NO. I-IG-01-4(2) [I-IG-80-4(2)142]

POLK COUNTY

DESIGNED BY BROWN ENGINEERS, NEW YORK, N.Y. FOR
IOWA STATE HIGHWAY COMMISSION

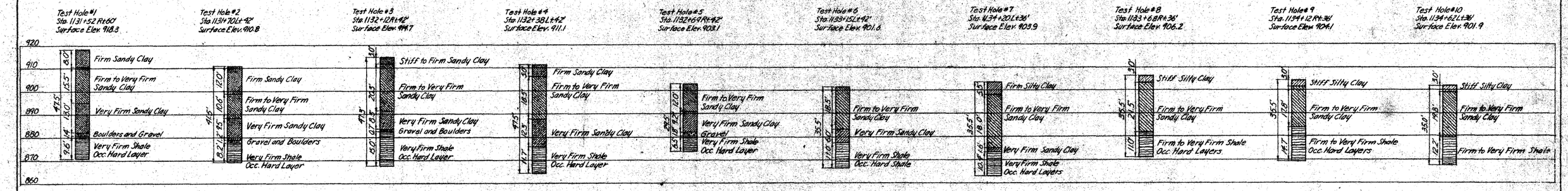
SEPTEMBER 1958 SHEET 1 OF 9

IN CHARGE OF L.G.
MADE BY J.K.
TRACED BY L.K.
CHECKED BY G.R.

DESIGN NO. 4658 POLK CO. FILE NO. 18856

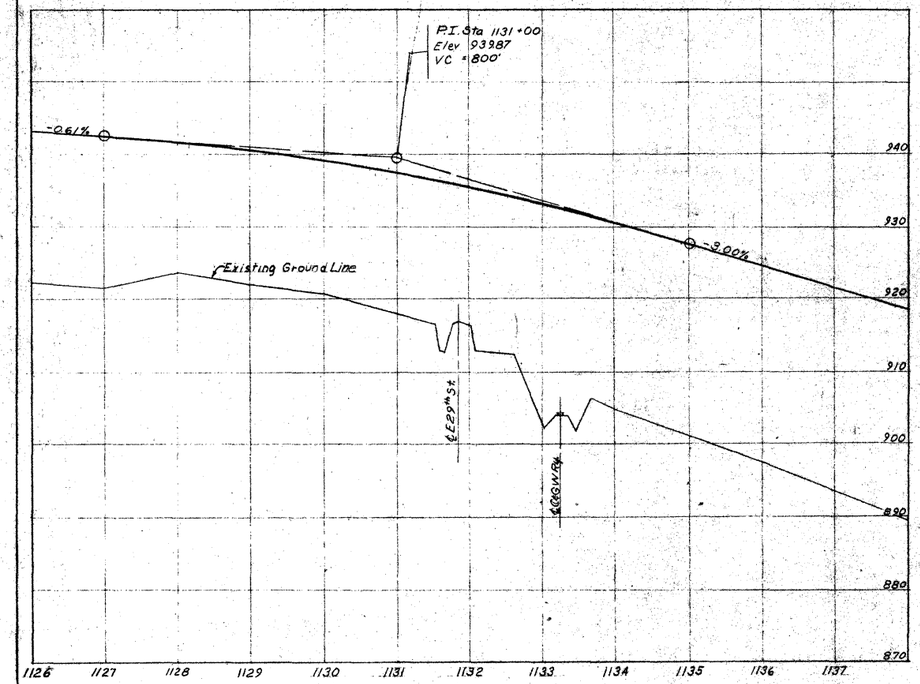
~~Bench Mark No 187 Sta 1133+16 RR Spike in N. Side Pole W. Side E 29th St 60' Rt. El 918.56~~

Bench Mark: No 187 Brass plug in S.W. wing wall of South Bridge EL. 937.47



SOUNDING DATA

Scale: 1"=20'-0"
Dated: May 28, 1957



INTERSTATE PROFILE

Scale: 1"=10' Vert.
1"=100' Horiz.

IN CHARGE OF L.G.
MADE BY I.H.
TRACED BY I.H.
CHECKED BY G.R.

DESIGN FOR 11°-04'-00" SKEW

315'-5"x42' & 280'-0"x42' PRE-TENSIONED PRESTRESSED CONCRETE BEAM BRIDGES

1-47'-3 1/2" & 1-59'-9 1/2" END SPANS 1-64'-7", 1-56'-3" & 2-43'-9" INTERMEDIATE SPANS
1-47'-3 1/2" & 1-59'-9 1/2" END SPANS 1-64'-7", 1-56'-3" & 1-52'-1" INTERMEDIATE SPANS

CONCRETE FLOOR AND SUBSTRUCTURE-ALUMINUM RAIL

INTERSTATE OVER E. 29TH ST. & C.G.W. RY.

SOUNDING DATA

STATION 1131+87.84 ℄ INTERSTATE PROJ. NO. I-IG-01-4(2) [I-IG-80-4(2)142]

POLK COUNTY

DESIGNED BY BROWN ENGINEERS, NEW YORK, N.Y. FOR

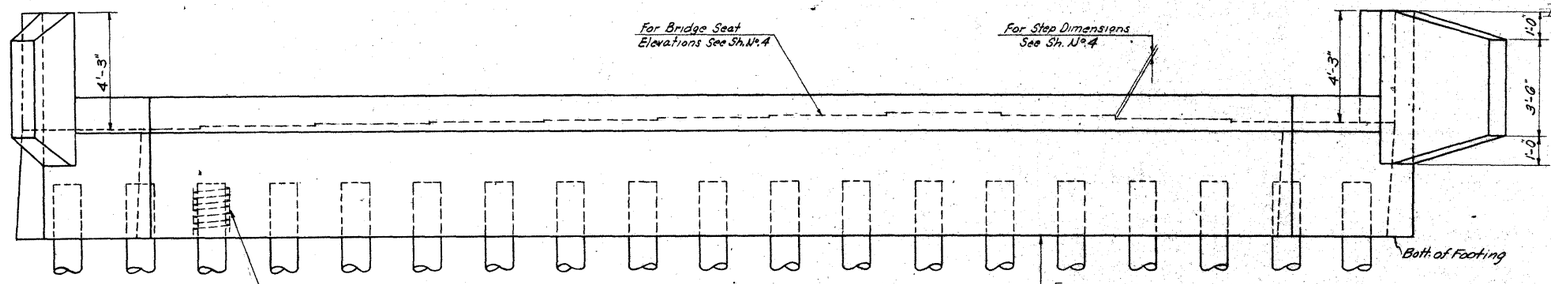
IOWA STATE HIGHWAY COMMISSION

SEPTEMBER 1958 SHEET 2 OF 9

DESIGN NO. 4658 POLK CO. FILE NO. 18856

~~Bench Mark No. 187 Sta. 1133+46 R.R. Spike in N. Side Pole W. Side E. 29th St. 60' Rt. El. 941.56~~

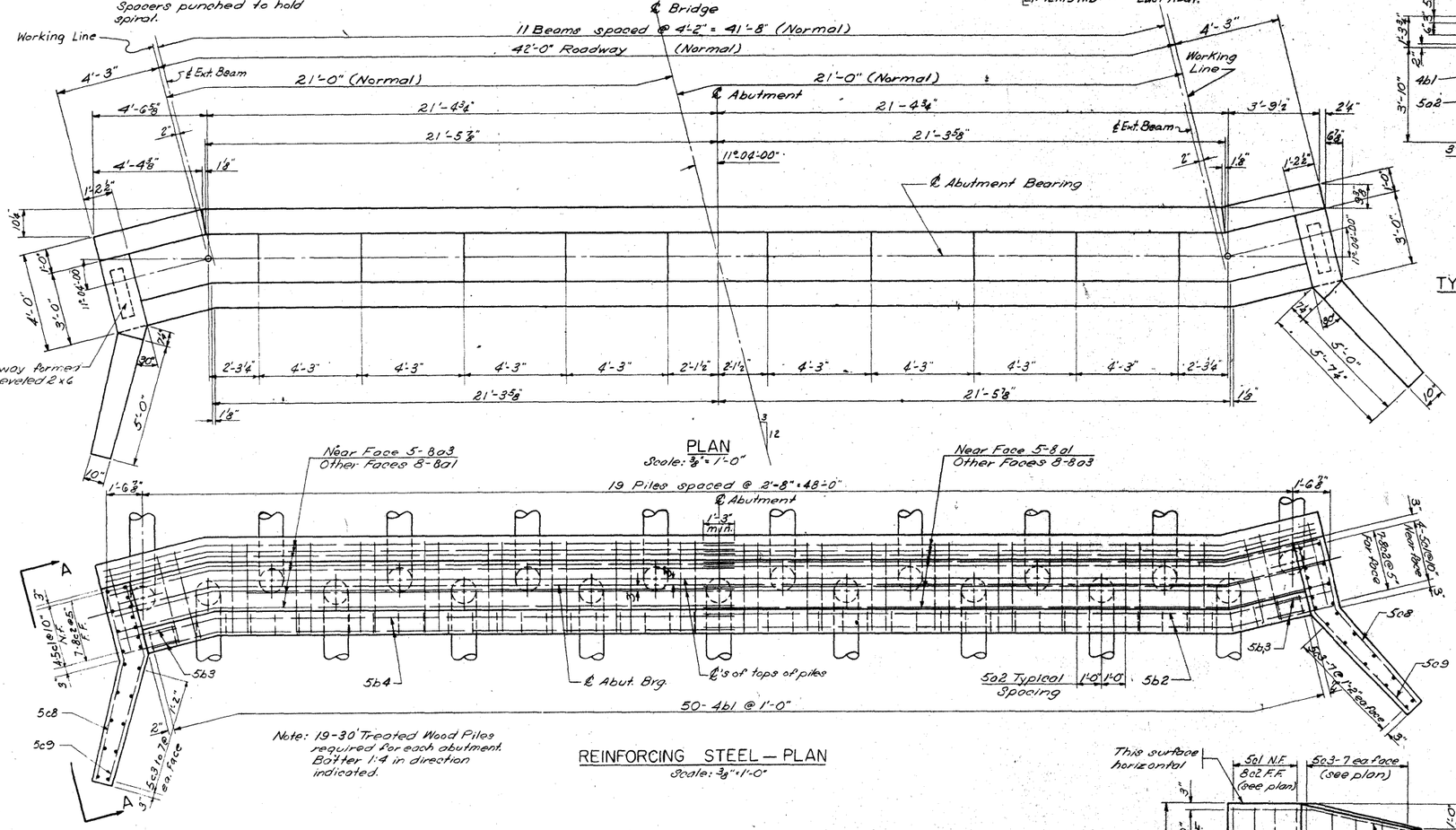
Bench Mark: No. 187 Brass plug in S.W. wingwall of South Bridge EL 937.47



Note: Spiral at the top of each Pile - 7 turns of ½" rod 21" dia. 3" pitch with 2-⅜" [OGS Spacers punched to hold spiral.

REAR ELEVATION
Scale: ⅜" = 1'-0"

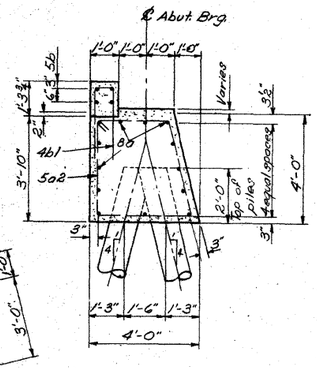
℄ Bridge
El. 928.70 E.B. Rdwy. West Abut.
El. 922.93 E.B. " East Abut.
El. 928.59 W.B. " West Abut.
El. 921.19 W.B. " East Abut.



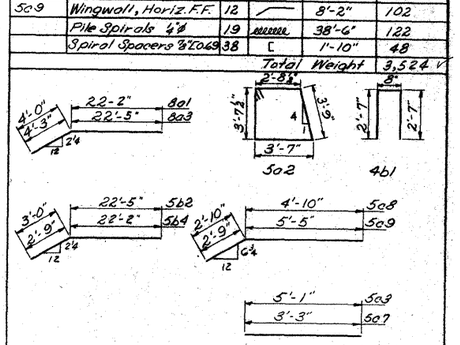
Note: 19-30' Treated Wood Piles required for each abutment. Batter 1:4 in direction indicated.

PLAN
Scale: ⅜" = 1'-0"

REINFORCING STEEL — PLAN
Scale: ⅜" = 1'-0"



TYPICAL SECTION
Scale: ⅜" = 1'-0"



BAR DETAILS
All dimensions are out to out.

BILL OF REINF. STEEL — ONE ABUTMENT

Mark	Location	No.	Shape	Length	Weight
8a1	Footing, Longit.	13		26'-2"	908
5a2	Footing, Hoops	38		14'-6"	575
8a3	Footing, Longit.	13		26'-8"	926
4b1	Backwall, Hairpins	50		5'-10"	195
5b2	Backwall, Longit.	4		25'-5"	106
5b3	Backwall, Dowels	8		2'-3"	19
5b4	Backwall, Longit.	4		24'-11"	104
5a1	Wingwall, Vert. N.F.	8		5'-2"	43
8a2	Wingwall, Vert. F.F.	14		5'-2"	193
5a3-7	Wingwall, Vert.	20		Varies	87
5a8	Wingwall, Horiz. N.F.	12		7'-8"	96
5a9	Wingwall, Horiz. F.F.	12		8'-2"	102
	Pile Spirals 4"ø	19		38'-6"	122
	Spiral Spacers ⅜"ø OGS	38		1'-10"	48
			Total	Weight	3,524 V

CONCRETE PLACEMENT (ONE ABUT.)

Footing	27.8 cy.
Backwall	2.2 cy.
Wingwalls	2.8 cy.
Total	32.8 cy. V

ESTIMATED QUANTITIES (FOUR ABUTS.)

Concrete	131.2 cy. V
Reinforcing Steel	14,096 lb. V
Treated Wood Piles 76 @ 30'	2280 L.F.
Class 20 Excavation	97 cy. V

ABUTMENT NOTES

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

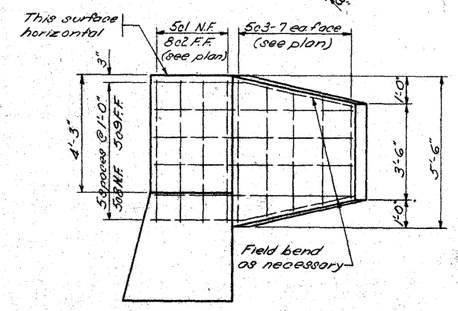
Reinforcing steel is to be securely wired in place before concrete is poured.

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

Piling is to be driven to full penetration if practicable but to at least 20 ton bearing value.

SPECIFICATIONS

Design: A.A.S.H.O., Series of 1957.
Construction: Iowa State Highway Commission Standard Specifications, Series of 1956, plus current special provisions.



VIEW A-A
Scale: ⅜" = 1'-0"

DESIGN FOR 11°-04'-00" SKEW

315'-5"x42' & 280'-0"x42' PRE-TENSIONED PRESTRESSED CONCRETE BEAM BRIDGES

1-47'-3½" & 1-59'-9½" END SPANS 1-64'-7", 1-56'-3" & 2-43'-9" INTERMEDIATE SPANS
1-47'-3½" & 1-59'-9½" END SPANS 1-64'-7", 1-56'-3" & 1-52'-1" INTERMEDIATE SPANS

CONCRETE FLOOR AND SUBSTRUCTURE-ALUMINUM RAIL

INTERSTATE OVER E. 29TH ST. & C.G.W. RY.

ABUTMENTS

STATION 1131+87.84 ℄ INTERSTATE PROJ. NO. I-IG-01-4(2) [I-IG-80-4(2)142]

POLK COUNTY

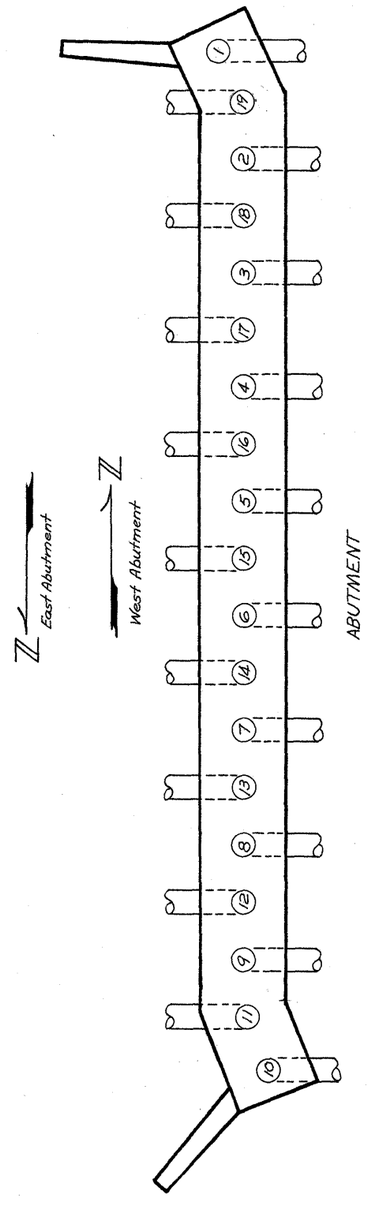
DESIGNED BY BROWN ENGINEERS, NEW YORK, N.Y. FOR

IOWA STATE HIGHWAY COMMISSION

SEPTEMBER 1958 SHEET 3 OF 9

IN CHARGE OF L.G.
MADE BY E.E.R.
TRACED BY E.E.R.
CHECKED BY M.R.

DESIGN NO. 4658 POLK CO. FILE NO. 18856



No	Date	Length in Leads	Length of Cutoff	Length in Structure	Batter	Drop	Av. Pen. in last 5 blows	Bearing
West Abutment E.B.								
1	5-25-59	30'	0.6	29.4	1:4	10'	0.55	36.8
2	5-25-59		1.0	29.0			0.55	36.8
3	5-25-59		0.8	29.2			0.60	34.9
4	5-25-59		0.8	29.2			0.55	36.8
5	5-25-59		0.7	29.3			0.45	41.4
6	5-25-59		1.0	29.0			1.25	20.7
7	5-25-59		0.8	29.2			1.10	22.8
8	5-26-59		1.0	29.0			0.60	34.9
9	5-26-59		0.9	29.1			0.45	41.4
10	5-26-59		0.8	29.2			0.60	34.9
11	5-25-59		0.6	29.4			0.63	33.8
12	5-25-59		1.3	28.7			0.40	44.2
13	5-25-59		0.7	29.3			0.50	39.0
14	5-25-59		0.4	29.6			0.50	39.0
15	5-25-59		0.5	29.5			0.50	39.0
16	5-25-59		2.3	27.7			0.40	44.2
17	5-25-59		0.0	30.0			0.75	30.1
18	5-25-59		0.9	29.1			0.40	44.2
19	5-25-59	↓	0.5	29.5	↓	↓	0.55	36.8
East Abutment E.B.								
1	7-25-59	30'	2.2	27.8	1:4	10'	0.40	43.6
2	7-25-59		1.0	29.0			0.40	43.6
3	7-25-59		1.0	29.0			0.25	54.4
4	7-25-59		11.0	19.0			1.00	24.2
5	7-25-59		0.8	29.2			0.35	46.7
6	7-25-59		1.0	29.0			0.50	38.4
7	7-25-59		2.3	27.7			0.35	46.7
8	7-25-59		4.2	25.8			0.65	32.7
9	7-25-59		4.5	25.5			0.35	46.7
10	7-25-59		4.6	25.4			0.70	31.1
11	7-24-59		1.1	28.9			0.35	46.7
12	7-24-59		0.5	29.5			0.50	38.4
13	7-24-59		0.6	29.4			0.50	38.4
14	7-24-59		3.8	26.2			0.25	54.4
15	7-24-59		0.8	28.2			0.60	38.4
16	7-24-59		0.7	29.3			0.50	38.4
17	7-24-59		0.6	29.4			0.65	32.7
18	7-24-59		0.7	29.3			0.65	32.7
19	7-24-59	↓	0.6	29.4	↓	↓	0.65	32.7
West Abutment W.B.								
1	6-2-59	30'	0.6	29.4	1:4	10'	0.90	26.5
2	6-2-59		0.5	29.5			0.65	33.1
3	6-2-59		0.3	29.7			0.90	26.5
4	6-2-59		0.6	29.4			0.80	28.8
5	6-2-59		0.9	29.1			0.70	31.6
6	6-2-59		0.7	29.3			1.15	22.1
7	6-2-59		0.8	29.2			0.80	28.8
8	6-2-59		0.6	29.4			0.80	28.8
9	6-2-59		0.9	29.1			0.80	28.8
10	6-2-59		1.0	29.0			0.60	34.9
11	6-1-59		0.8	29.2			0.40	44.2
12	6-1-59		0.2	29.8			0.50	39.0
13	6-1-59		0.5	29.5			0.80	28.8
14	6-1-59		0.5	29.5			0.65	33.1
15	6-2-59		0.6	29.4			0.55	36.8
16	6-2-59		0.4	29.6			0.80	28.8
17	6-2-59		0.3	29.7			0.70	31.6
18	6-2-59		0.4	29.6			0.70	31.6
19	6-2-59	↓	0.2	29.8	↓	↓	0.65	33.1
East Abutment W.B.								
1	7-27-59	30'	1.4	28.6	1:4	10'	0.35	46.7
2	7-27-59		3.2	26.8			1.08	22.8
3	7-27-59		0.6	29.4			0.95	25.1
4	7-27-59		0.4	29.6			0.70	31.1
5	7-27-59		0.0	30.0			0.95	25.1
6	7-28-59		1.1	28.9			0.35	46.7
7	7-28-59		1.2	28.8			1.10	22.5
8	7-28-59		0.8	29.2			1.05	23.3
9	7-28-59		0.6	29.4			0.60	34.4
10	7-28-59		0.6	29.4			0.80	28.4
11	7-28-59		0.3	29.7			1.00	24.2
12	7-28-59		3.0	27.0			0.85	27.2
13	7-28-59		1.0	28.0			0.75	29.7
14	7-28-59		0.9	29.1			0.75	29.7
15	7-28-59		0.6	29.4			0.85	27.2
16	7-28-59		0.6	29.4			0.60	34.4
17	7-28-59		0.9	29.1			0.80	28.4
18	7-28-59		0.9	29.1			0.80	28.4
19	7-28-59	↓	0.9	29.1	↓	↓	1.00	24.2

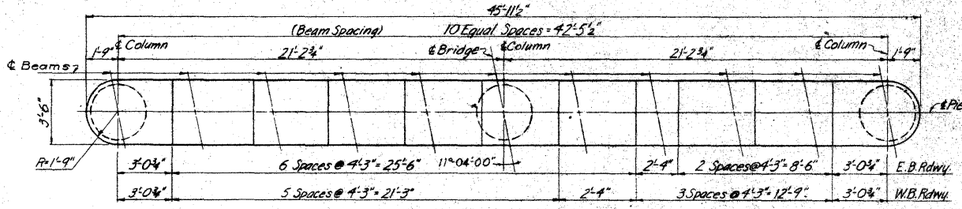
DATA

Type of piling : Treated Southern Yellow Pine
Type of hammer : Gravity I.H.C. #742
Weight of hammer :
Gross ..... 3830 lb
Eff. ..... 3750 lb
Weight of cap ..... 1110 lb
Weight of pile ..... 1164 lb
Full penetration or 20 ton minimum bearing
Pile bearing formula: $P = \frac{2WH}{S+0.35} \times \frac{WK}{W+M}$

P = pile bearing, in tons
H = height of hammer drop, in feet
W = weight of hammer, in tons
M = weight of cap plus pile, in tons
S = average penetration, in inches
K = batter factor (0.946 for 1:4)

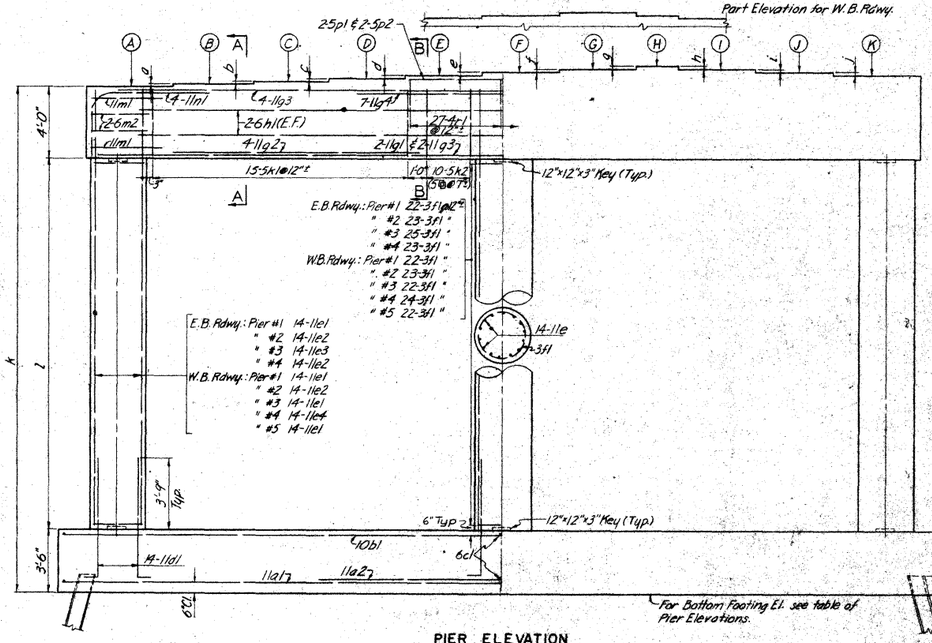
~~Bench Mar.: No 167 Brass plug in S.W. Side Pole N. Side E. Ry. Sig. Br. 90' Rt. El. 918.96~~

Bench Mark: No 167 Brass plug in S.W. wingwall of South Bridge El. 931.77



PLAN OF CAP

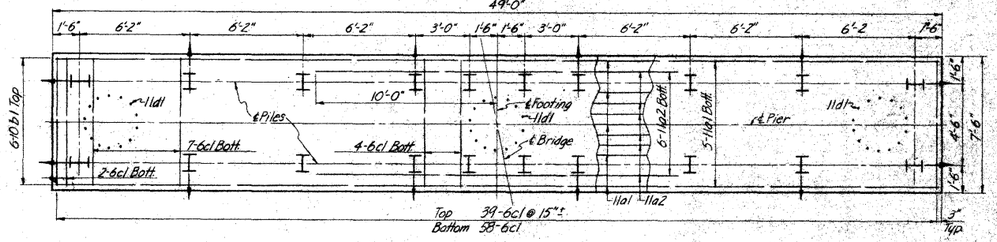
Scale: ¼"=1'-0"



PIER ELEVATION

Scale: ¼"=1'-0"

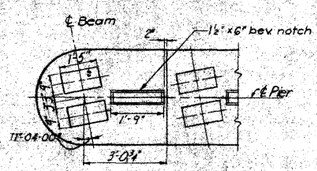
Shown for E.B. Rdwy looking East
Shown for W.B. Rdwy looking West



FOOTING PLAN

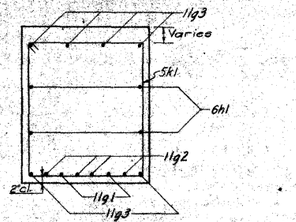
Scale: ¼"=1'-0"

Notes:
20-10BP42 steel piles required for each pier footing. Batter piles shown thus ⊢⊣ 1:4 in direction indicated.
25'-10BP42 steel piles required for E.B. Rdwy. Piers #2, 3, and 4.
30'-10BP42 steel piles required for E.B. Rdwy. Pier #1, and W.B. Rdwy. Piers #1, 2, 3, 4, and 5.



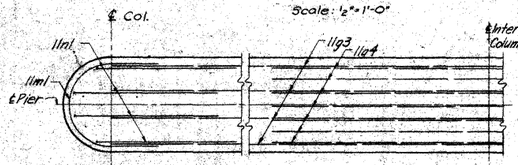
PART PLAN

Scale: ⅜"=1'-0"



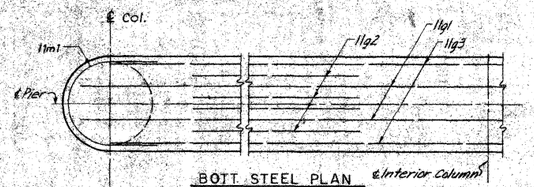
SECTION A-A

Scale: ½"=1'-0"



TOP STEEL PLAN

Scale: ⅜"=1'-0"

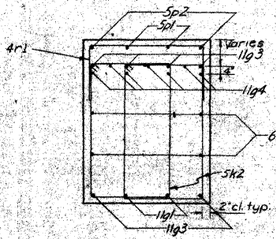


BOTT STEEL PLAN

Scale: ⅜"=1'-0"

END ELEVATION

Scale: ¼"=1'-0"



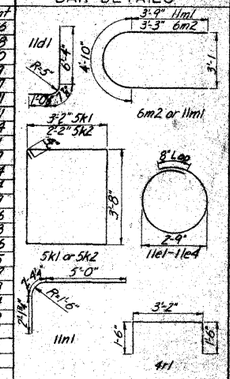
SECTION B-B

Scale: ½"=1'-0"

BILL OF REINFORCING STEEL — NINE PIERS					
Mark	Location	Shape	No.	Length	Weight
11a1	Footing Longitudinal - Bott.	——	45	48'-6"	11,396
11a2	" " "	——	54	20-0	5,738
10b1	" " - Top	——	54	48-6	11,270
6c1	" Transverse - T&B	——	873	1-0	9,179
11d1	Footing to Column Dowels	L	378	8-0	16,067
11e1	Columns - Vertical	——	168	24-9	22,091
11e2	" "	——	126	26-1	17,461
11e3	" "	——	42	27-8	6,174
11e4	" "	——	42	26-8	3951
3f1	Columns Hoops	○	618	9-4	2,169
11g1	Cap Longitudinal - Bott.	——	18	45-0	4,304
11g2	" " "	——	72	13-6	5,164
11g3	" " - T&B	——	54	42-5	12,169
11g4	" " - Top	——	63	16-0	5,356
6h1	" " - Sides	——	36	40-0	2,163
5k1	" Hoops	□	270	14-4	4,036
5k2	" "	□	180	12-4	2,315
11m1	" End Noses	⊂	36	12-4	2,359
6m2	" " "	⊂	36	11-4	613
11n1	" Corners	⌐	72	9-6	3634
5p1	" Longitudinal - Top	——	18	27-7	518
5p2	" " "	——	18	26-4	494
4r1	" Hairpins	⌐	243	6-2	1001
				Total	151,822

All dimensions are out to out

BAR DETAILS



ESTIMATED QUANTITIES E.B. RDWY. — FOUR PIERS						
Item	Pier 1	Pier 2	Pier 3	Pier 4	Total	
Concrete in Footing	47.6 C.Y.	47.6 C.Y.	47.6 C.Y.	47.6 C.Y.	——	
" " Column	16.7 C.Y.	17.6 C.Y.	18.8 C.Y.	17.6 C.Y.	——	
" " Cap	26.2 C.Y.	26.2 C.Y.	26.3 C.Y.	26.3 C.Y.	——	
Total Concrete	90.5 C.Y.	91.4 C.Y.	92.7 C.Y.	91.5 C.Y.	366.1 C.Y.	✓
Reinforcing Steel	16,641 Lbs.	16,948 Lbs.	17,324 Lbs.	16,948 Lbs.	67,861 Lbs.	✓
10BP42 Steel Piles, Furnish	20@30'	20@25'	20@25'	20×25'	2,100 L.F.	21 / 17.8
" " " , Drive	20@30'	20@25'	20@25'	20×25'	2,100 L.F.	20 / 82.3
Class 20 Excavation	111 C.Y.	111 C.Y.	111 C.Y.	111 C.Y.	444 C.Y.	✓

ESTIMATED QUANTITIES W.B. RDWY. — FIVE PIERS							
Item	Pier 1	Pier 2	Pier 3	Pier 4	Pier 5	Total	
Concrete in Footing	47.6 C.Y.	47.6 C.Y.	47.6 C.Y.	47.6 C.Y.	47.6 C.Y.	——	
" Column	16.6 C.Y.	17.7 C.Y.	16.5 C.Y.	18.0 C.Y.	16.7 C.Y.	——	
" Cap	25.2 C.Y.	25.2 C.Y.	25.2 C.Y.	25.1 C.Y.	25.1 C.Y.	——	
Total Concrete	89.4 C.Y.	90.5 C.Y.	89.3 C.Y.	90.7 C.Y.	89.4 C.Y.	449.3 C.Y.	✓
Reinforcing Steel	16,641 Lbs.	16,948 Lbs.	16,641 Lbs.	17,090 Lbs.	16,641 Lbs.	83,961 Lbs.	✓
10BP42 Steel Piles, Furnish	20@30'	20@30'	20@30'	20@30'	20@30'	3000 L.F.	30 / 45.0
" " " , Drive	20@30'	20@30'	20@30'	20@30'	20@30'	3000 L.F.	29 / 44.7
Class 20 Excavation	111 C.Y.	111 C.Y.	111 C.Y.	111 C.Y.	111 C.Y.	555 C.Y.	✓

PIER NOTES

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

Reinforcing steel is to be securely wired in position before concrete is placed. Edge distance from face of concrete to ℄ of near bar is to be 2" unless otherwise noted.

Piling is to be driven to full penetration if practicable but in no case to less than 37 ton bearing capacity.

SPECIFICATIONS

Construction: Iowa State Highway Commission Standard Specifications, Series of 1958, plus current special provisions.
Design: A.A.S.H.O., Series of 1957.

PIER ELEVATIONS														
		A	B	C	D	E	F	G	H	I	J	K	Bot. H. Ftg.
E.B. Rdwy. —	Pier #1	931.77	931.92	932.06	932.20	932.34	932.44	932.50	932.51	932.46	932.40	932.30	903.00
" " "	Pier #2	930.61	930.75	930.89	931.04	931.18	931.28	931.34	931.36	931.33	931.25	931.15	900.80
" " "	Pier #3	929.41	929.56	929.70	929.84	929.99	930.09	930.15	930.17	930.14	930.09	929.99	898.00
" " "	Pier #4	927.86	928.01	928.15	928.30	928.44	928.55	928.61	928.65	928.60	928.53	928.43	898.00
W.B. Rdwy. —	Pier #1	931.66	931.76	931.88	931.99	932.10	932.16	932.19	932.17	932.11	932.00	931.86	903.00
" " "	Pier #2	930.49	930.59	930.70	930.81	930.92	930.98	931.00	930.98	930.92	930.81	930.67	900.50
" " "	Pier #3	929.54	929.66	929.75	929.86	929.96	930.03	930.05	930.03	929.97	929.85	929.72	901.00
" " "	Pier #4	928.44	928.54	928.65	928.75	928.86	928.92	928.94	928.92	928.85	928.73	928.60	898.00
" " "	Pier #5	926.80	926.91	927.01	927.11	927.23	927.28	927.30	927.28	927.21	927.09	926.95	898.00

PIER DIMENSIONS													
		a	b	c	d	e	f	g	h	k	l	m	n
E.B. Rdwy. —	Pier #1	1'-0"	1'-6"	1'-0"	1'-6"	1'-0"	1'-6"	3'-6"	3'-0"	1'-4"	28'-9¼"	21'-3¼"	
" " "	Pier #2	1'-6"	1'-6"	1'-6"	1'-6"	1'-6"	1'-6"	3'-6"	3'-0"	1'-4"	28'-9¼"	22'-3¼"	
" " "	Pier #3	1'-3"	1'-3"	1'-3"	1'-3"	1'-3"	1'-3"	4'-0"	3'-6"	1'-3"	29'-5"	23'-11"	
" " "	Pier #4	1'-3"	1'-3"	1'-3"	1'-3"	1'-3"	1'-3"	4'-0"	3'-6"	1'-3"	29'-10⅞"	22'-4⅞"	
W.B. Rdwy. —	Pier #1	1'-0"	1'-6"	1'-0"	1'-6"	1'-0"	1'-6"	3'-6"	3'-0"	1'-4"	28'-8"	21'-2"	
" " "	Pier #2	1'-6"	1'-6"	1'-6"	1'-6"	1'-6"	1'-6"	4'-0"	3'-6"	1'-6"	30'-0"	22'-6"	
" " "	Pier #3	1'-3"	1'-3"	1'-3"	1'-3"	1'-3"	1'-3"	4'-0"	3'-6"	1'-3"	29'-6⅛"	21'-0⅛"	
" " "	Pier #4	1'-3"	1'-3"	1'-3"	1'-3"	1'-3"	1'-3"	4'-0"	3'-6"	1'-3"	30'-3⅝"	22'-11⅝"	
" " "	Pier #5	1'-3"	1'-3"	1'-3"	1'-3"	1'-3"	1'-3"	4'-0"	3'-6"	1'-3"	29'-9⅝"	21'-3⅝"	

DESIGN FOR 11°-04'-00" SKEW

315'-5"x42' & 280'-0"x42' PRE-TENSIONED PRESTRESSED CONCRETE BEAM BRIDGES

1-47'-3½" & 1-59'-9½" END SPANS 1-64'-7", 1-56'-3" & 2-43'-9" INTERMEDIATE SPANS
1-47'-3½" & 1-59'-9½" END SPANS 1-64'-7", 1-56'-3" & 1-52'-1" INTERMEDIATE SPANS

CONCRETE FLOOR AND SUBSTRUCTURE - ALUMINUM RAIL

INTERSTATE OVER E. 29TH ST. & C.G.W. RY.

PIERS

STATION 1131+87.84 ℄ INTERSTATE PROJ. NO. I-IG-01-4(2) [I-IG-80-4(2)142]

POLK COUNTY

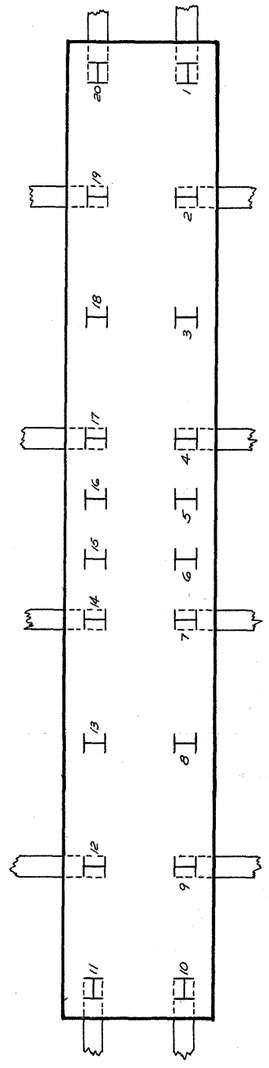
DESIGNED BY BROWN ENGINEERS, NEW YORK, N.Y. FOR

IOWA STATE HIGHWAY COMMISSION

SEPTEMBER 1958 SHEET 5 OF 9

In Charge Of: L.G.
Made By: I.K.
Traced By: I.K.
Checked By: G.R.

DESIGN NO. 4658 POLK CO. FILE NO. 18856



Pier (Typical)

Pier Nº 1 E.B.

No	Date	Length in Leads	Length of Cutoff	Length in Structure	Batter	Drop	Av. Pen. in last 5 blows	Bearing
1	3-24-59	30'	1.8	28.2	1:4	10'	0.25	48.6
2	3-24-59		1.4	28.6	1:4		0.25	48.6
3	3-24-59		3.9	26.1	Vert.		0.25	51.4
4	3-24-59		5.4	24.6	1:4		0.25	48.6
5	3-24-59		3.9	26.1	Vert.		0.20	56.1
6	3-24-59		6.4	23.6	Vert		0.30	47.4
7	3-24-59		7.2	22.8	1:4		0.25	48.6
8	3-24-59		4.4	25.6	Vert		0.28	49.0
9	3-24-59		3.2	26.8	1:4		0.25	48.6
10	3-24-59		7.3	22.7	1:4		0.15	58.3
11	3-24-59		6.8	23.2	1:4		0.25	48.6
12	3-24-59		3.5	26.5	1:4		0.25	48.6
13	3-23-59		6.3	21.7	Vert		0.18	58.2
14	3-24-59		6.6	23.4	1:4		0.20	53.0
15	3-23-59		6.1	23.9	Vert		0.23	53.2
16	3-23-59		2.6	27.4	Vert		0.25	51.4
17	3-24-59		5.8	24.2	1:4		0.20	53.0
18	3-23-59		2.2	27.8	Vert		0.25	51.4
19	3-24-59		2.8	27.2	1:4		0.23	50.3
20	3-24-59	▼	2.3	27.7	1:4	▼	0.23	50.3

Pier Nº 2 E.B.

No	Date	Length in Leads	Length of Cutoff	Length in Structure	Batter	Drop	Av. Pen. in last 5 blows	Bearing
1	2-21-59	29.2	1.4	27.8	1:4	10'	0.48	35.3
2	2-21-59	29	1.9	27.1	1:4		0.43	37.6
3	2-20-59	25	1.0	24.0	Vert.		0.55	35.4
4	2-21-59		1.2	23.8	1:4		0.48	36.3
5	2-20-59		1.0	24.0	Vert.		0.45	39.8
6	2-20-59		1.1	23.9	Vert		0.45	39.8
7	2-21-59		1.3	23.7	1:4		0.50	35.4
8	2-20-59		0.8	24.2	Vert		0.43	40.8
9	2-20-59		1.6	23.4	1:4		0.38	41.2
10	2-21-59		4.1	20.9	1:4		0.25	50.1
11	2-21-59		4.4	20.6	1:4		0.28	47.8
12	2-21-59		1.9	23.1	1:4		0.28	47.8
13	2-20-59		0.6	24.4	Vert		0.50	37.4
14	2-21-59	▼	1.1	23.9	1:4		0.48	36.3
15	2-21-59	28.9	3.1	25.8	Vert		0.40	41.4
16	2-21-59	28.5	2.5	26.0	Vert		0.43	39.9
17	2-21-59	28.6	1.4	27.2	1:4		0.40	40.0
18	2-21-59	29.4	2.5	26.9	Vert		0.40	41.3
19	2-21-59	29.2	1.8	27.4	1:4		0.45	36.7
20	2-21-59	31.5	2.7	28.8	1:4	▼	0.40	38.5

Pier Nº 3 E.B.

No	Date	Length in Leads	Length of Cutoff	Length in Structure	Batter	Drop	Av. Pen. in last 5 blows	Bearing
1	2-19-59	29.7	2.1	27.6	1:4	10'	0.28	37.0
2	2-19-59	29.9	1.9	28.0	1:4		0.25	38.7
3	2-12-59	26	0.9	25.1	Vert.		0.30	39.2
4	2-19-59	28.8	1.7	27.1	1:4		0.25	39.1
5	2-12-59	26	0.8	25.2	Vert		0.30	39.2
6	2-12-59	26	0.8	25.2	Vert		0.28	40.4
7	2-19-59	29.8	1.8	28.0	1:4		0.23	40.1
8	2-12-59	26	0.5	25.5	Vert		0.33	37.4
9	2-19-59	29.9	1.3	28.6	1:4		0.25	38.7
10	2-13-59	26	1.9	24.1	1:4		0.25	40.1
11	2-13-59		1.2	24.8	1:4		0.20	43.8
12	2-13-59		1.0	25.0	1:4		0.30	37.1
13	2-12-59		1.0	25.0	Vert		0.30	39.2
14	2-13-59		1.2	24.8	1:4		0.20	43.8
15	2-12-59		1.0	25.0	Vert		0.25	42.5
16	2-12-59		1.0	25.0	Vert		0.33	37.4
17	2-13-59		1.0	25.0	1:4		0.20	43.8
18	2-12-59	▼	0.6	25.4	Vert		0.28	40.4
19	2-19-59	31.3	1.3	30.0	1:4		0.25	38.3
20	2-19-59	29	2.1	26.9	1:4	▼	0.28	37.2

Pier Nº 4 E.B.

No	Date	Length in Leads	Length of Cutoff	Length in Structure	Batter	Drop	Av. Pen. in last 5 blows	Bearing
1	3-20-59	27.9	1.0	26.9	1:4	10'	0.40	39.4
2	3-20-59	35.4	5.7	29.7	1:4		0.30	43.4
3	3-19-59	30.2	1.1	29.1	Vert.		0.33	45.3
4	3-20-59	26.4	1.1	25.3	1:4		0.30	46.0
5	3-20-59	37.4	8.5	28.9	Vert		0.35	42.1
6	3-20-59	38.1	8.8	29.3	Vert.		0.25	49.0
7	3-20-59	37.7	8.1	29.6	1:4		0.25	46.4
8	3-20-59	28.8	0.5	28.3	Vert.		0.40	41.5
9	3-20-59	36.7	10.6	26.1	1:4		0.30	42.8
10	3-20-59	36.5	11.0	25.5	1:4		0.30	42.8
11	3-20-59	36.4	10.8	25.6	1:4		0.33	41.3
12	3-20-59	27.0	1.0	26.0	1:4		0.30	45.7
13	3-19-59	27.2	0.8	26.4	Vert.		0.38	43.0
14	3-20-59	31.4	1.1	30.3	1:4		0.30	44.5
15	3-19-59	27.0	1.6	25.4	Vert.		0.35	44.8
16	3-19-59	30.1	0.8	29.3	Vert.		0.38	42.2
17	3-20-59	35.1	5.8	29.3	1:4		0.25	47.1
18	3-19-59	29.3	0.9	28.4	Vert.		0.38	42.4
19	3-20-59	36.5	5.9	30.6	1:4		0.30	42.8
20	3-20-59	27.5	1.5	26.0	1:4	▼	0.38	40.6

Pier Nº 1 W.B.

No	Date	Length in Leads	Length of Cutoff	Length in Structure	Batter	Drop	Av. Pen. in last 5 blows	Bearing
1	3-27-59	30'	0.3	29.7	1:4	10'	0.33	42.9
2	3-28-59		0.4	29.6	1:4		0.38	39.9
3	3-27-59		0.7	29.3	Vert.		0.47	37.6
4	3-28-59		0.3	29.7	1:4		0.28	46.2
5	3-27-59		0.7	29.3	Vert.		0.40	41.2
6	3-27-59		0.9	29.1	Vert.		0.43	39.6
7	3-28-59		0.0	30.0	1:4		0.20	53.0
8	3-27-59		1.0	29.0	Vert.		0.38	42.3
9	3-28-59		0.8	29.2	1:4		0.43	37.4
10	3-28-59		0.7	29.3	1:4		0.43	37.4
11	3-28-59		1.5	28.5	1:4		0.30	44.8
12	3-27-59		0.9	29.1	1:4		0.35	41.6
13	3-27-59		0.9	29.1	Vert.		0.38	42.3
14	3-27-59		0.5	29.5	1:4		0.40	38.9
15	3-27-59		0.7	29.3	Vert.		0.38	42.3
16	3-27-59		0.5	29.5	Vert.		0.30	47.5
17	3-27-59		0.8	29.2	1:4		0.30	44.8
18	3-27-59		0.9	29.1	Vert.		0.43	39.6
19	3-27-59		0.7	29.3	1:4		0.38	39.9
20	3-27-59	▼	0.7	29.3	1:4	▼	0.43	37.6

Pier Nº 2 W.B.

No	Date	Length in Leads	Length of Cutoff	Length in Structure	Batter	Drop	Av. Pen. in last 5 blows	Bearing
1	4-3-59	36.4	4.8	31.6	1:4	10'	0.38	38.4
2	4-3-59	34.5	4.3	30.2	1:4		0.33	41.8
3	4-1-59	30	1.0	29.0	Vert.		0.40	41.2
4	4-2-59		0.9	29.1	1:4		0.38	39.9
5	4-2-59		0.7	29.3	Vert.		0.43	39.6
6	4-2-59		0.8	29.2	Vert.		0.43	39.6
7	4-2-59		0.9	29.1	1:4		0.38	39.9
8	4-2-59		0.8	29.2	Vert.		0.38	42.3
9	4-2-59		0.8	29.2	1:4		0.30	44.8
10	4-2-59		1.0	29.0	1:4		0.50	34.3
11	4-2-59		1.2	28.8	1:4		0.35	41.7
12	4-2-59		0.9	29.1	1:4		0.43	37.4
13	4-2-59		0.9	29.1	Vert.		0.38	42.3
14	4-2-59		1.1	28.9	1:4		0.30	44.8
15	4-2-59		0.8	29.2	Vert.		0.43	39.6
16	4-1-59		0.8	29.2	Vert.		0.40	41.2
17	4-2-59	▼	0.8	29.2	1:4		0.45	36.4
18	4-3-59	37.5	7.7	29.8	Vert.		0.33	44.1
19	4-1-59	30.0	0.9	29.1	1:4		0.43	37.4
20	4-3-59	34.7	3.3	31.4	1:4	▼	0.30	43.6

Pier Nº 3 W.B.

No	Date	Length in Leads	Length of Cutoff	Length in Structure	Batter	Drop	Av. Pen. in last 5 blows	Bearing
1	3-4-59	30.0	1.4	28.6	1:4	10'	0.35	41.6
2	3-9-59	49.1	16.9	32.2	1:4		0.20	47.6
3	3-4-59	54.5	22.0	32.5	Vert		0.20	48.7
4	3-9-59	36.9	5.3	31.6	1:4		0.28	44.5
5	3-4-59	45.6	12.7	32.9	Vert.		0.13	58.5
6	3-4-59	52.0	20.4	31.6	Vert.		0.20	49.5
7	3-9-59	35.9	3.7	32.2	1:4		0.33	41.5
8	3-4-59	44.4	12.4	32.0	Vert		0.20	51.6
9	3-9-59	39.3	7.3	32.0	1:4		0.25	46.0
10	3-9-59	41.8	9.3	32.5	1:4		0.28	43.3
11	3-9-59	37.8	5.9	31.9	1:4		0.28	44.2
12	3-4-59	46.6	14.4	32.2	1:4		0.28	42.1
13	3-4-59	48.5	16.6	31.9	Vert.		0.30	42.6
14	3-4-59	50.4	19.1	31.3	1:4		0.25	43.2
15	3-4-59	39.8	8.0	31.8	Vert.		0.30	44.8
16	3-4-59	30.0	0.3	29.7	Vert.		0.33	45.4
17	3-4-59	42.7	9.8	32.9	1:4		0.25	45.1
18	3-4-59	50.5	18.5	32.0	Vert.		0.20	49.9
19	3-4-59	54.3	20.5	33.8	1:4		0.28	40.3
20	3-4-59	30.0	1.0	29.0	1:4	▼	0.38	39.9

Pier Nº 4 W.B.

No	Date	Length in Leads	Length of Cutoff	Length in Structure	Batter	Drop	Av. Pen. in last 5 blows	Bearing
1	2-18-59	30	0.9	29.1	1:4	10'	0.23	40.4
2	2-18-59		0.7	29.3	1:4		0.23	40.4
3	2-16-59		0.9	29.1	Vert.		0.13	51.0
4	2-18-59		0.8	29.2	1:4		0.25	38.8
5	2-16-59		0.9	29.1	Vert		0.15	49.2
6	2-16-59		0.8	29.2	Vert		0.20	44.6
7	2-17-59		0.6	29.4	1:4		0.20	42.7
8	2-17-59		1.2	28.8	Vert		0.23	42.3
9	2-17-59		0.7	29.3	1:4		0.30	35.7
10	2-17-59	▼	1.1	28.9	1:4		0.30	35.7
11	2-18-59	34	4.1	29.9	1:4		0.20	40.8
12	2-17-59	30	0.9	29.1	1:4		0.20	42.7
13	2-17-59		1.1	28.9	Vert		0.25	40.8
14	2-17-59		0.7	29.3	1:4		0.25	38.8
15	2-16-59		0.8	29.2	Vert		0.20	44.6
16	2-16-59		0.8	29.2	Vert		0.18	46.3
17	2-18-59		1.1	28.9	1:4		0.25	38.8
18	2-17-59		0.8	29.2	Vert		0.18	46.3
19	2-18-59		0.9	29.1	1:4		0.23	40.4
20	2-18-59	▼	1.0	29.0	1:4	▼	0.23	40.4

Pier Nº 5 W.B.

No	Date	Length in Leads	Length of Cutoff	Length in Structure	Batter	Drop	Av. Pen. in last 5 blows	Bearing
1	3-16-59	30'	2.1	27.9	1:4	10'	0.33	42.9
2	3-14-59		2.7	27.3	1:4		0.28	46.2
3	3-14-59		2.7	27.3	Vert.		0.33	45.4
4	3-16-59		2.1	27.9	1:4		0.30	44.8
5	3-14-59		2.7	27.3	Vert.		0.30	47.5
6	3-14-59		2.6	27.4	Vert.		0.30	47.5
7	3-16-59		2.2	27.8	1:4		0.33	42.9
8	3-14-59		2.7	27.3	Vert.		0.25	51.4
9	3-16-59		2.3	27.7	1:4		0.20	52.9
10	3-16-59		2.3	27.7	1:4		0.25	48.6
11	3-16-59		1.9	28.1	1:4		0.35	41.6
12	3-16-59		2.3	27.7	1:4		0.30	44.8
13	3-14-59		3.0	27.0	Vert.		0.30	47.5
14	3-16-59		1.7	28.3	1:4		0.35	41.6
15	3-14-59		2.6	27.4	Vert.		0.28	48.9
16	3-14-59		2.6	27.4	Vert.		0.30	47.5
17	3-16-59		2.0	28.0	1:4		0.25	48.6
18	3-14-59		2.7	27.3	Vert.		0.30	47.5
19	3-17-59		2.2	27.8	1:4		0.23	50.2
20	3-16-59	▼	2.5	27.5	1:4	▼	0.28	46.2

DATA

Length in leads : As indicated
Type of piling : Steel 10BP42
Type of hammers : Gravity
Weight of hammers :

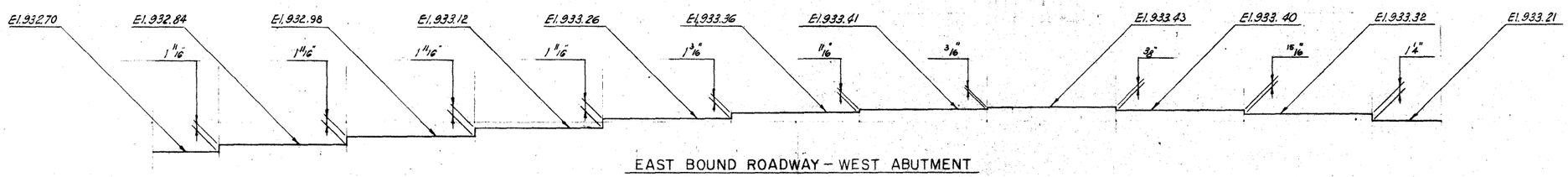
Pier Nº 3 E.B. & 4 W.B.	Remaining Piers
Gross ..... 2875 lb	3830 lb
Eff. ..... 2800 lb	3750 lb
Weight of caps ..... 725 lb	1832 lb

Weight of pile ..... Length x 42 lb.
Full penetration or 37 tons minimum bearing
Pile bearing formula : $P = \frac{2WH}{S+0.35} \times \frac{WK}{W+M}$

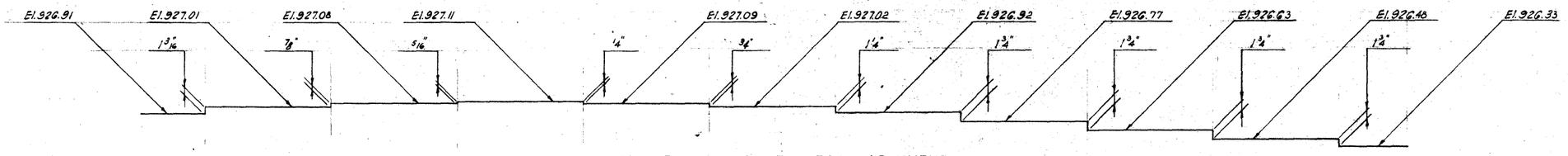
P = pile bearing, in tons
H = height of hammer drop, in feet
W = weight of hammer, in tons
M = weight of cap plus pile, in tons
S = average penetration, in inches
K = batter factor (0.946 for 1:4)

~~Bench Mark No.187 Sta.1133+46 R.R. Spike in N. Side Pole W. Side E. 29th St. 60'Rt. El. 918.58~~

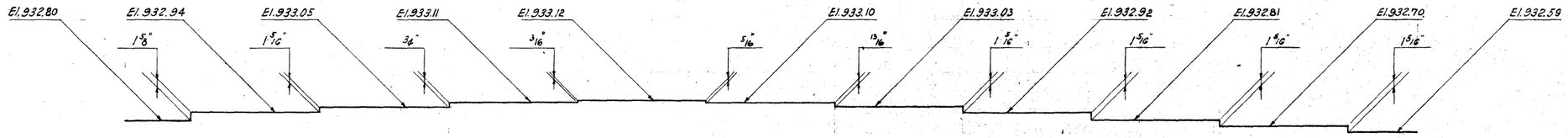
Bench Mark: No.187 Brass plug in S.W. wingwall of South Bridge EL. 937.47



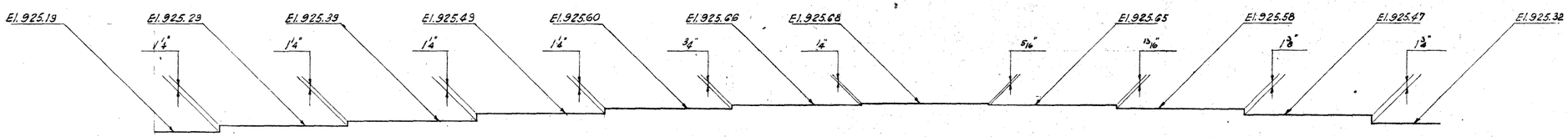
EAST BOUND ROADWAY – WEST ABUTMENT



EAST BOUND ROADWAY – EAST ABUTMENT



WEST BOUND ROADWAY – WEST ABUTMENT



WEST BOUND ROADWAY – EAST ABUTMENT

PART REAR ELEVATIONS

(Elevations shown are Bridge Seat Elevations)

NOTE: For details of Abutments see Sheet No. 3

DESIGN FOR 11°-04'-00" SKEW

315'-5"x42' & 280'-0"x42' PRE-TENSIONED PRESTRESSED CONCRETE BEAM BRIDGES

1-47'-3 1/2" & 1-59'-9 1/2" END SPANS 1-64'-7" 1-56'-3" & 2-43'-9" INTERMEDIATE SPANS
1-47'-3 1/2" & 1-59'-9 1/2" END SPANS 1-64'-7" 1-56'-3" & 1-52'-1" INTERMEDIATE SPANS

CONCRETE FLOOR AND SUBSTRUCTURE-ALUMINUM RAIL

INTERSTATE OVER E. 29TH ST. & C.G.W. RY.

ABUTMENT ELEVATIONS

STATION 1131+87.84 ℄ INTERSTATE PROJ.NO. I-IG-01-4(2) [I-IG-80-4(2)142]

POLK COUNTY

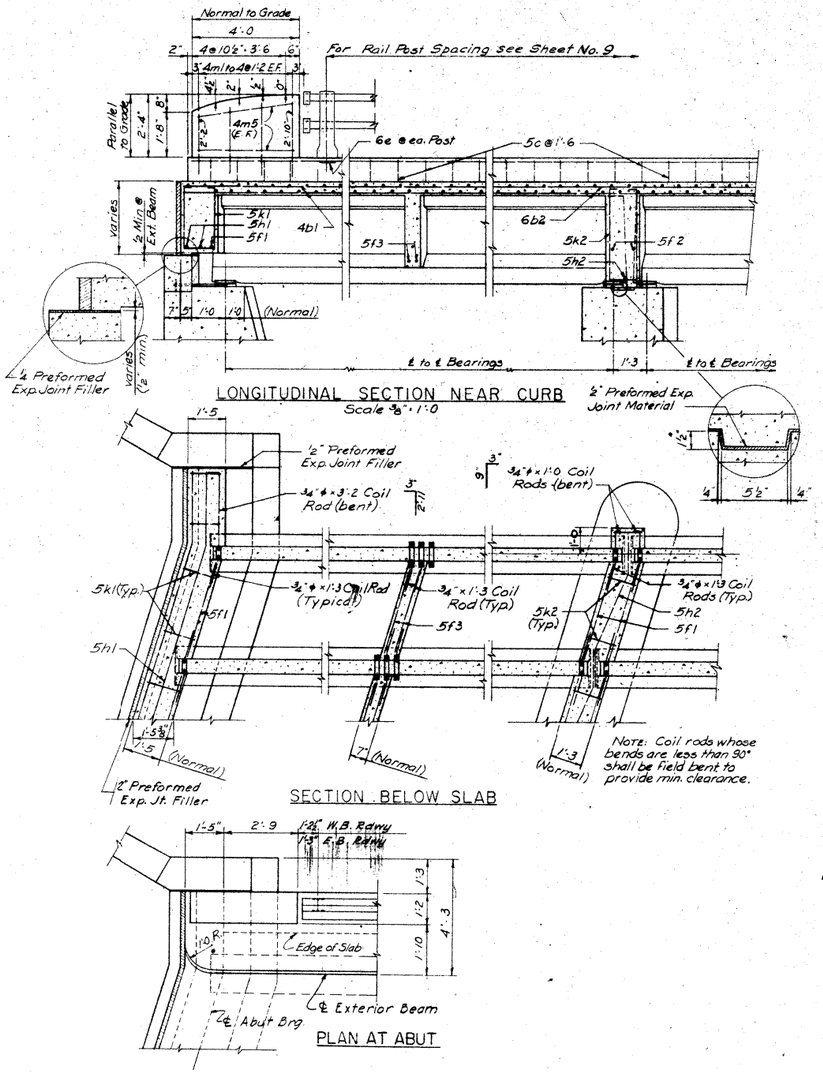
DESIGNED BY BROWN ENGINEERS, NEW YORK, N.Y. FOR

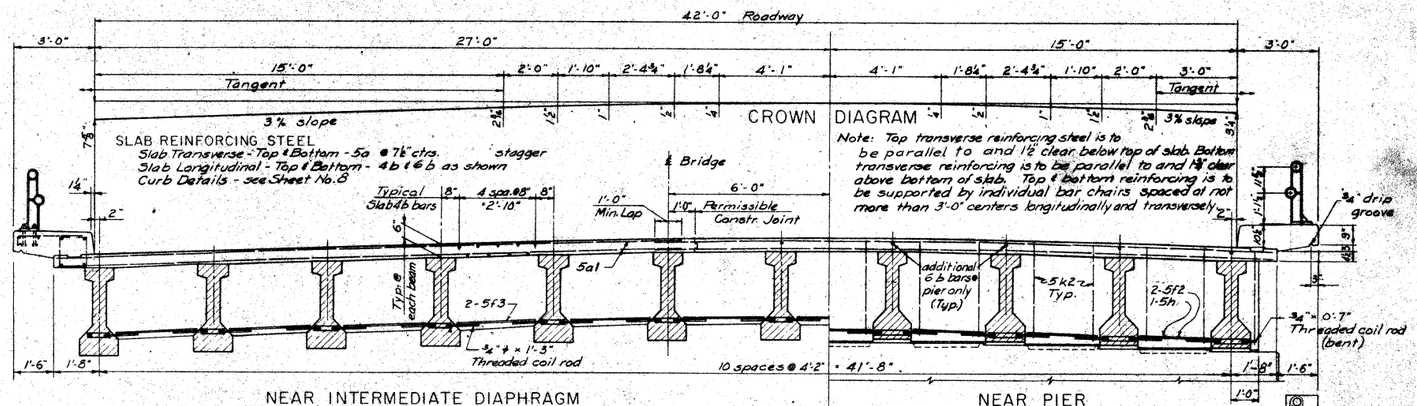
IOWA STATE HIGHWAY COMMISSION

SEPTEMBER 1958 SHEET 4 OF 9

In Charge Of: L.G.
Made By: M.R.&F.P.K.
Traced By: M.R.&F.P.K.
Checked By: P.S.

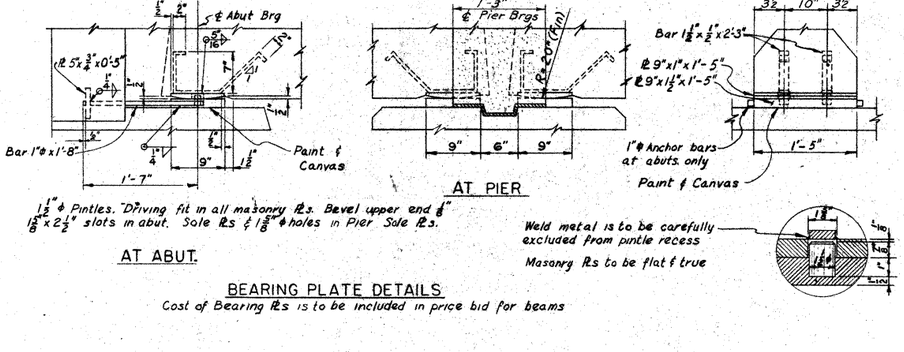
DESIGN NO. 4658 POLK CO. FILE NO. 18856





ROADWAY SECTIONS
Scale: ⅜" = 1'-0"

The abutment masonry plates are to be set so that the pintles will be centered in the slotted holes of sole plates. Sole plates are to be set in forms when beams are cast and formed out as shown.



BEARING PLATE DETAILS
Cost of Bearing Rs is to be included in price bid for beams

SUPERSTRUCTURE NOTES

This bridge is designed for H20-S16-44 loading and Alternate Loading designated in BPR's PRM 20-4 Section C plus 19 lbs. per square foot of roadway for future wearing surface.

Concrete in slab is to have a 28 day crushing strength of 3500 psi, 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 precautions are to be taken to secure complete bond between beams and slab.

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

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

Forms for slab are to be supported by the prestressed beams.

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

Masonry plates are to be flat and true and are to be set in specification red lead and canvas.

Beams are to be set vertically.

SPECIFICATIONS

Design: A.A.S.H.O., Series of 1957, and U.S. Bureau of Public Roads Design Criteria for Prestressed Concrete Bridges, 1955.

Construction: Standard Specifications of the Iowa State Highway Commission, Series of 1956, plus current Special Provisions.

DESIGN FOR 11°-04'-00" SKEW

315'-5"x42' & 280'-0"x42' PRE-TENSIONED PRESTRESSED CONCRETE BEAM BRIDGES

1-47'-3½" & 1-59'-9½" END SPANS 1-64'-7", 1-56'-3" & 2-43'-9" INTERMEDIATE SPANS
1-47'-3½" & 1-59'-9½" END SPANS 1-64'-7", 1-56'-3" & 1-52'-1" INTERMEDIATE SPANS

CONCRETE FLOOR AND SUBSTRUCTURE - ALUMINUM RAIL

INTERSTATE OVER E. 29TH ST. & C.G.W. RY

SUPERSTRUCTURE DETAILS - 1

STATION 1131+87.84 ℄ INTERSTATE PROJ. NO. I-IG-01-4(2) [I-IG-80-4(2)142]

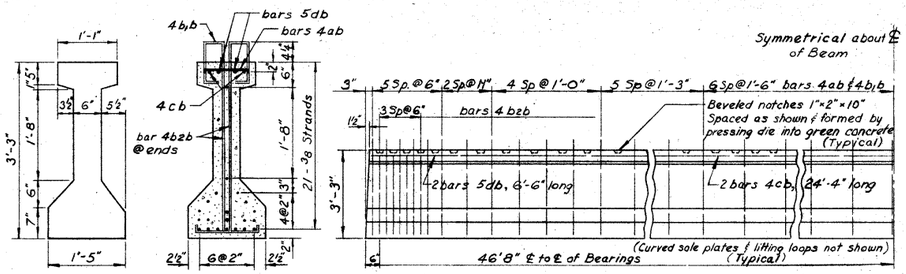
POLK COUNTY

DESIGNED BY BROWN ENGINEERS, NEW YORK, N.Y. FOR IOWA STATE HIGHWAY COMMISSION

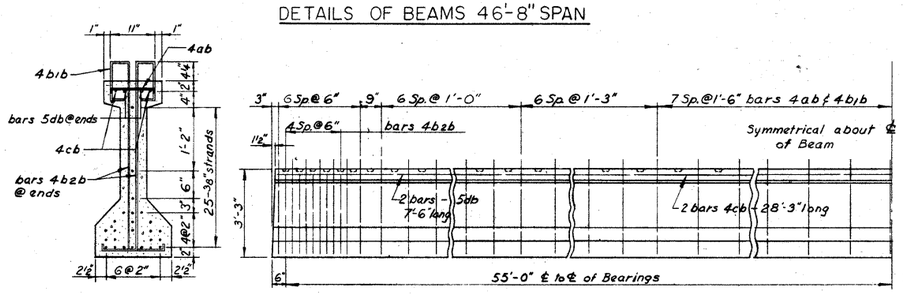
SEPTEMBER 1958 SHEET 6 OF 9

In Charge Of: L.G.
Made By: F.P.K.
Traced By: F.P.K.
Checked By: G.R.

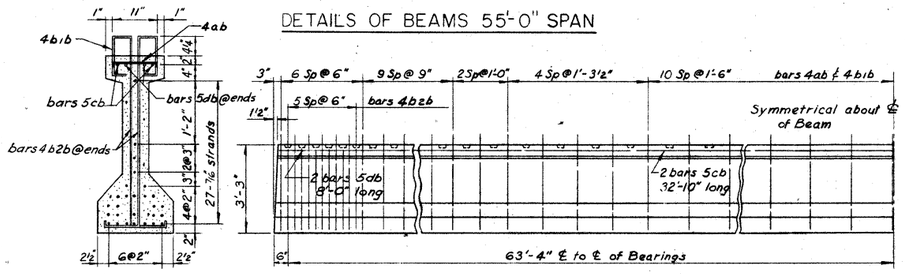
DESIGN NO. 4658 POLK CO. FILE NO. 18856



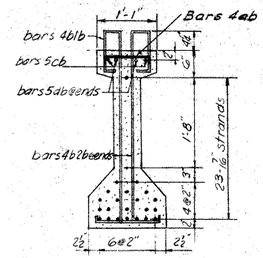
DETAILS OF BEAMS 46'-8" SPAN

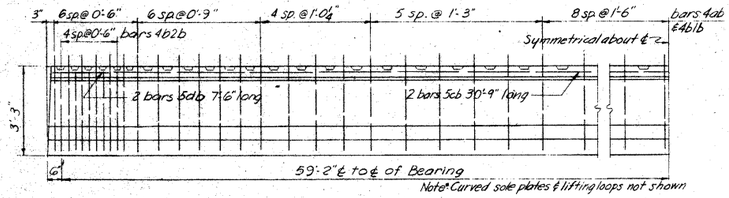


DETAILS OF BEAMS 55'-0" SPAN



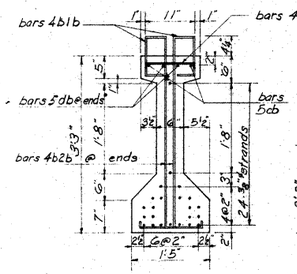
DETAILS OF BEAMS 63'-4" SPAN

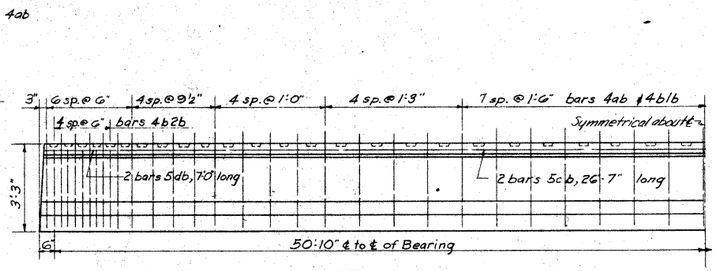




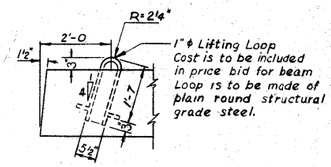
Note: Curved sole plates & lifting loops not shown

DETAILS OF BEAMS 59'-2" SPAN

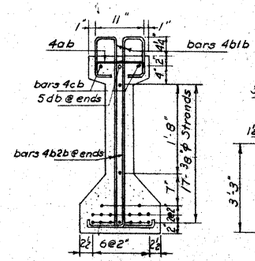


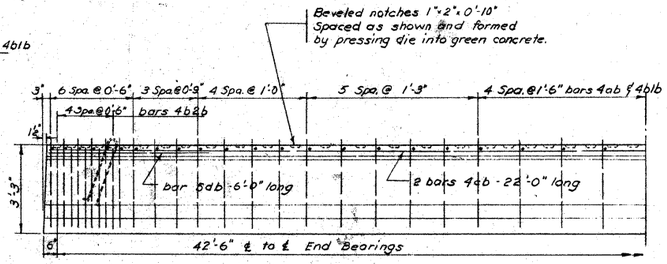


DETAILS OF BEAMS 50'-10" SPAN



LIFTING LOOP

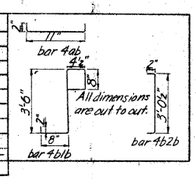




DETAILS OF BEAMS 42'-6" SPAN

BILL OF REINFORCING STEEL – ONE BEAM

Bar	Shape	42'-6"			46'-8"			50'-10"			55'-0"			59'-2"			63'-4"		
		No.	Length	Weight	No.	Length	Weight	No.	Length	Weight	No.	Length	Weight	No.	Length	Weight	No.	Length	Weight
4ab	⌐	45	1'-2	35	45	1'-2"	35	51	1'-2"	40	53	1'-2"	41	59	1'-2"	46	63	1'-2"	51
4b,b	⊓	90	5'-5"	326	90	5'-5"	326	102	5'-5"	369	106	5'-5"	384	118	5'-5"	427	126	5'-5"	455
4b2b	⌐	20	3'-3"	43	16	3'-3"	34	20	3'-3"	43	20	3'-3"	43	20	3'-3"	43	24	3'-3"	53
4cb	—	4	22'-0	59	4	24'-4"	65	—	—	—	4	28'-3"	76	—	—	—	—	—	—
5cb	—	—	—	—	—	—	—	4	26'-7"	111	—	—	—	4	30'-9"	128	4	32'-10"	137
5db	—	—	—	—	4	6'-6"	27	4	7'-0"	29	—	—	—	4	7'-6"	31	4	8'-0"	33
5db	—	2	6'-0	12	—	—	—	—	—	—	4	7'-6"	31	—	—	—	—	—	—
Total Weight				475			487			592			575			675			729



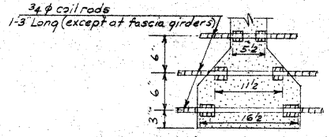
BEAM DATA

Span	Depth	Strands	Conc. C.Y.	Reinf. Steel-lbs.	Struct. Steel-lbs.	Initial Prestress	Camber	
							As erected	Slab in place
42'-6"	3'-3"	17-3/8"ϕ	4.26	4.75	229	238 K	5/16"	1/4"
46'-8"	3-3	21-3/8"ϕ	4.68	4.87	249	294	7/16"	7/16"
50'-10"	3-3	24-3/8"ϕ	5.08	5.92	229	336	11/16"	9/16"
55'-0"	3-3	25-3/8"ϕ	5.51	5.75	229	350	13/16"	5/8"
59'-2"	3-3	23-7/8"ϕ	5.92	6.75	249	435	1 3/16"	13/16"
63'-4"	3-3	27-7/8"ϕ	6.32	7.29	229	510	1 7/16"	1 3/16"

WEIGHT OF BEAMS

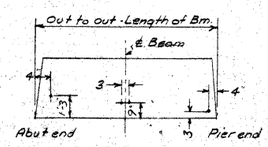
Beam	Weight
42'-6"	17,400
46-8	19,000
50-10	20,700
55-0	22,300
59-2	24,000
63-4	25,700

Coil rods shown below shall be similar to and equal to those manufactured by the Superior Concrete Accessories Co., Inc. of Chicago and the Richmond Screw Anchor Co of St. Joseph, Mo.



Coil ties are to be type M-12 (Manufacturers Designation)

Coil ties are to be held in place in forms by slotted coil setting studs projecting through forms. Studs are to be left in place until beams are erected when they are to be replaced with coil rods. Cost of coil ties and rods is to be included in price bid for beams



Location of ties

COIL TIE DETAILS

NOTES ON PRESTRESSED BEAMS

Construction of prestressed units is to be in accordance with Section 2406A with the following added provisions; when stress is released it is to be done gradually by means of jacks. If steam curing is used, the initial prestress shown is to be increased 6%.

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1-47'-3½" & 1-59'-9½" END SPANS 1-64'-7", 1-56'-3" & 1-52'-1" INTERMEDIATE SPANS

CONCRETE FLOOR AND SUBSTRUCTURE-ALUMINUM RAIL

INTERSTATE OVER E. 29TH ST. & C.G.W. RY.

SUPERSTRUCTURE DETAILS - 2

STATION 1131+87.84 ℄ INTERSTATE PROJ. NO. I-IG-01-4(2) [I-IG-80-4(2)142]

POLK COUNTY

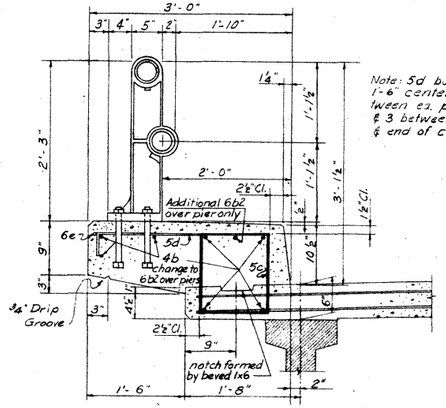
DESIGNED BY BROWN ENGINEERS, NEW YORK, N.Y. FOR

IOWA STATE HIGHWAY COMMISSION

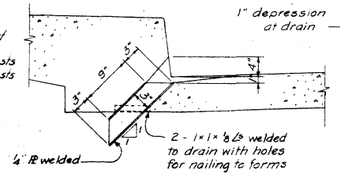
SEPTEMBER 1958 SHEET 7 OF 9

DESIGN NO. 4658 POLK CO. FILE NO. 18856

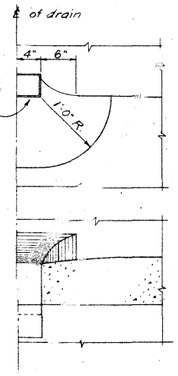
In Charge Of: L.G.
Made By: F.P.K.
Traced By: F.P.K.
Checked By: G.R.

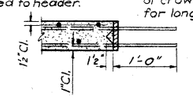


Note: 5d bars @ about 1'-6" centers (4 between ea. pair of posts & 3 between end posts & end of curbs.)



Note: See Situation Plan, Sheet #1, for drain spacing.
Wt. of drains = 20 lbs.





FLOOR CONSTR. JOINT

RAIL AND CURB DETAILS

Scale: 1"=1'-0"

DRAIN DETAILS

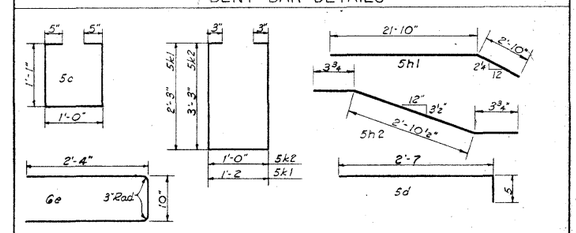
Scale: 1"=1'-0"

CONC. PLACEMENT QUANTITIES				
Section	Quantity - W.B. Rdwy.		Quantity - E.B. Rdwy.	
①	~~34.1~~	41.3	~~34.1~~	41.5
②	~~32.4~~	34.3	~~32.4~~	34.3
③	~~22.3~~	24.5	~~30.3~~	32.1
④	~~22.9~~	25.1	~~40.8~~	42.0
⑤	~~40.2~~	42.0	~~45.7~~	53.1
⑥	~~45.8~~	52.9	~~15.9~~	21.6
⑦	~~15.9~~	21.7	~~15.9~~	21.6
⑧	~~15.9~~	21.7	~~16.7~~	22.4
⑨	~~15.4~~	21.2	~~15.8~~	22.3
⑩	~~16.7~~	22.6		
⑪	~~15.8~~	22.5		
2 Curbs	~~59.3~~	60.7	~~52.7~~	54.0
4 Parapets	1.5		1.5	
Total	~~338.2~~	392.0	~~301.2~~	346.4 ✓

BILL OF REINFORCING STEEL

E. 29TH STREET			W.B. ROADWAY			E.B. ROADWAY		
Mark	Location	Shape	No.	Length	Weight	No.	Length	Weight
5a1	Slab Transverse T & B	—	2034	23'-6"	49854	1810	23'-6"	44,364
4b1	Slab & Curb Long'l T&B	—	208	41'-0"	5,697	208	41'-0"	5,697
4b2	Slab & Curb Long'l T&B	—	208	28'-3"	3,925	—	—	—
4b3	Slab & Curb Long'l T&B	—	—	—	—	104	36'-7"	2,542
4b4	Slab & Curb Long'l T&B	—	104	49'-1"	3,410	104	49'-1"	3,410
4b5	Slab & Curb Long'l T&B	—	104	53'-6"	3,717	104	53'-6"	3,717
6b6	Slab & Curb Long. over Pier	—	585	17'-9"	15,596	468	17'-9"	12,477
5c	Curb Dowels	⊓	424	4'-0"	1,769	378	4'-0"	1,577
5d	Curb Transverse	⌐	332	3'-0"	1,039	284	3'-0"	889
6e	Rail Post Tie	⊃	82	5'-6"	667	70	5'-6"	578
5f1	Abutment Diaphragm (Short)	—	20	3'-5"	71	20	3'-5"	71
5f2	Pier Diaphragm (Short)	—	100	2'-8"	278	80	2'-8"	222
5f3	Intermediate Diaphragm (Short)	—	120	3'-0"	375	100	3'-0"	313
5h2	Pier Diaphragm (Short)	⌒	50	5'-6"	287	40	5'-6"	229
5k1	Abutment Diaphragm Hoops	▯	48	6'-2"	309	48	6'-2"	309
5k2	Pier Diaphragm Hoops	▯	110	5'-10"	669	88	5'-10"	535
4m1-4	Parapet - Vertical	—	8 Sets of 4	2'-2" to 2'-10"	53	8 Sets of 4	2'-2" to 2'-10"	53
4m5	Parapet - Horizontal	—	16	3'-8"	39	16	3'-8"	39
5h1	Abutment Diaphragm (Long)	⌒	8	24'-8"	206	8	24'-8"	206
			Total		87,961 ✓		Total	77,228 ✓

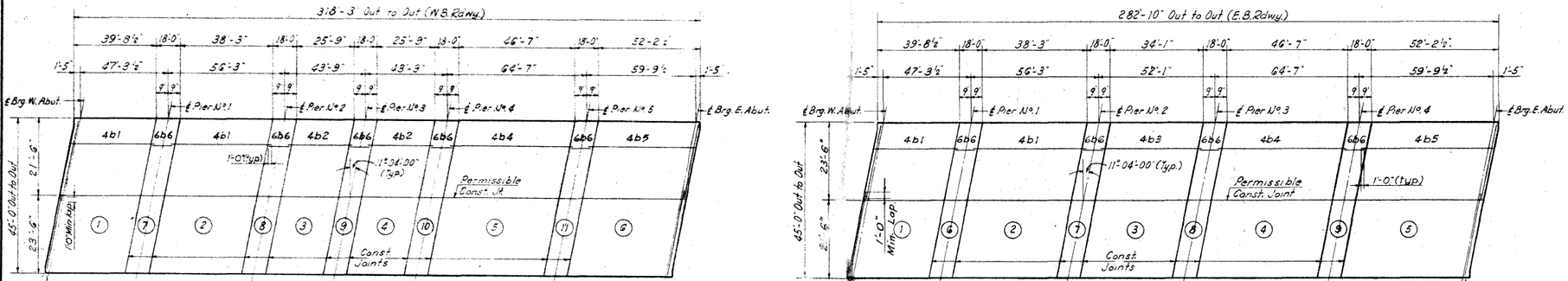
BENT BAR DETAILS



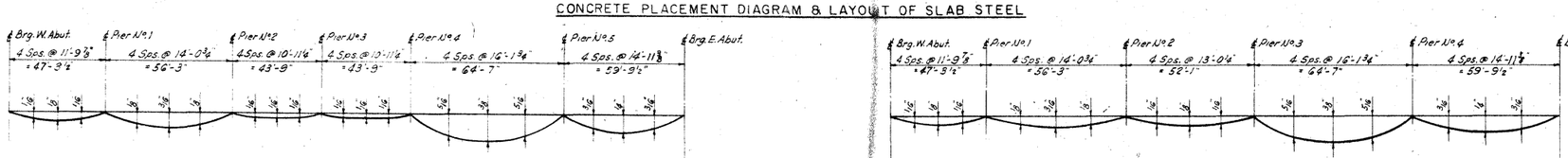
Note: All bar dimensions are out to out of bar.

ESTIMATED QUANTITIES-2 SUPERSTRUCTURES

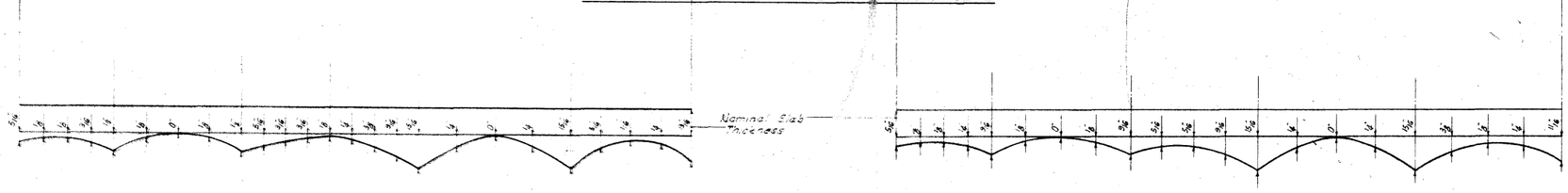
Item	Unit	Quantity-W.B.Rdwy.	Quantity-E.B.Rdwy.
Concrete	Cu.Yd.	3920 ~~338.2~~ ✓	346.4 ~~301.2~~ ✓
Reinforcing Steel	Lbs.	87,961 ✓	77,228 ✓
Structural Steel	Lbs.	160 ✓	160 ✓
Prestressed Concrete Beams 42'-6"	Beams	22 ✓	—
Prestressed Concrete Beams 46'-8"	Beams	11 ✓	11 ✓
Prestressed Concrete Beams 50'-10"	Beams	—	11 ✓
Prestressed Concrete Beams 55'-0"	Beams	11 ✓	11 ✓
Prestressed Concrete Beams 59'-2"	Beams	11 ✓	11 ✓
Prestressed Concrete Beams 63'-4"	Beams	11 ✓	11 ✓
Aluminum Handrail	L.F.	615 ✓	544 ✓



CONCRETE PLACEMENT DIAGRAM & LAYOUT OF SLAB STEEL



ANTICIPATED DEFLECTION DUE TO WEIGHT OF SLAB



SLAB THICKENING DIAGRAM

(For Estimating Purposes Only)

NOTE: The finish slab is to be thickened as shown to compensate for dead load deflection due to weight of slab and for the difference between permanent camber and actual camber of beams as erected. Maximum thickening not to exceed ½". Screeds are to be adjusted accordingly before placing slab.

DESIGN FOR 11°-04'-00" SKEW

315'-5"x42' & 280'-0"x42' PRE-TENSIONED PRESTRESSED CONCRETE BEAM BRIDGES

1-47'-3 1/2" & 1-59'-9 1/2" END SPANS 1-64'-7", 1-56'-3" & 2-43'-9" INTERMEDIATE SPANS
1-47'-3 1/2" & 1-59'-9 1/2" END SPANS 1-64'-7", 1-56'-3" & 1-52'-1" INTERMEDIATE SPANS

CONCRETE FLOOR AND SUBSTRUCTURE-ALUMINUM RAIL

INTERSTATE OVER E. 29TH ST. & C.G.W. RY.

SUPERSTRUCTURE DETAILS - 3

STATION 1131+87.84 ℄ INTERSTATE PROJ. NO. I-IG-01-4(2) [I-IG-80-4(2)142]

POLK COUNTY

DESIGNED BY BROWN ENGINEERS, NEW YORK, N.Y. FOR

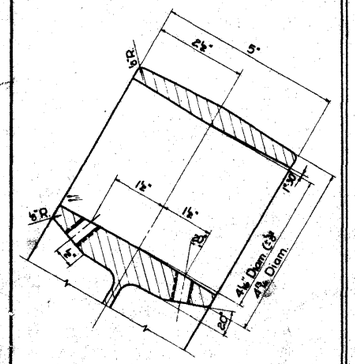
IOWA STATE HIGHWAY COMMISSION

SEPTEMBER 1958 SHEET 8 OF 9

In Charge Of: L.G.
Made By: J.K.
Traced By: J.L.
Checked By: G.R. & P.S.

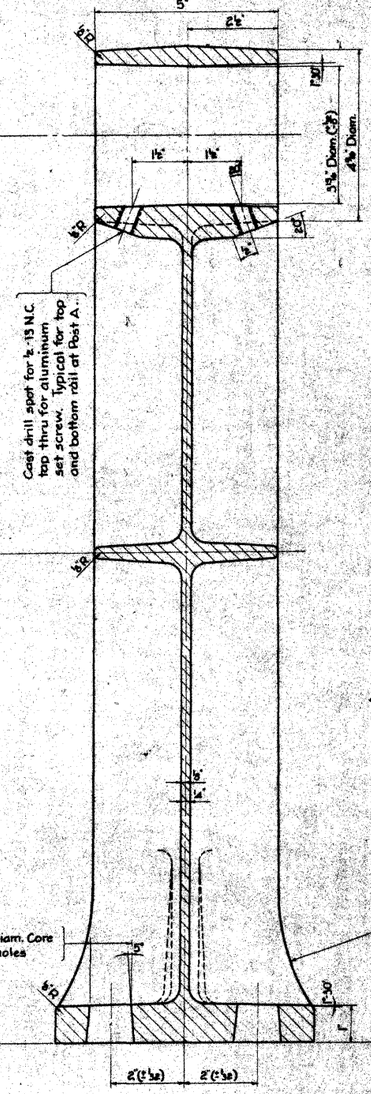
Revised 7/15/59 - Superstructure Concrete Estimate changed to include Diaphragms.

DESIGN NO. 4658 POLK CO. FILE NO. 18856

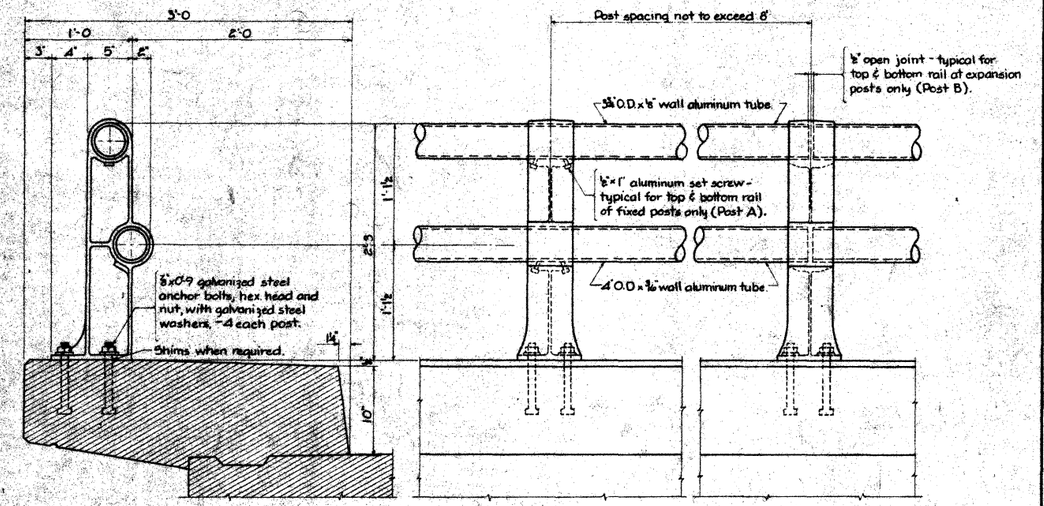


PART SECTION B-B

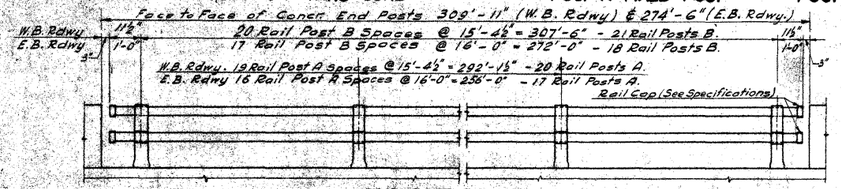
SECTION C-C



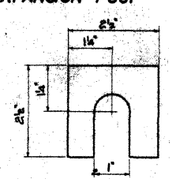
SECTION A-A



SECTION THRU CURB POST "A" FIXED POST POST "B" EXPANSION POST



RAIL POST LAYOUT



ALUMINUM SHIM DETAIL

Note: Provide 4-⅛" thick shims at each post.

RAIL POST CASTING DETAILS

Scale: 6"=1'-0

Note: All draft angles not shown are to be 5°.
All unmarked fillets are to be ⅜".
All gates, risers and seams are to be trimmed flush.

Note:
The ¾" parting strip is to be finished with a 120 grit finish or an approved equal. All other surfaces are to have a uniformly polished or burnished finish.

SPECIFICATIONS

1. DESCRIPTION OF BID ITEM
   A. Aluminum handrail is to be bid on a lineal foot basis. The price bid for "Aluminum Handrail" shall consist of furnishing, fabricating, erecting (including the setting of anchor bolts) and cleaning all metal handrail, in accordance with these plans and specifications.
2. COMPONENT PARTS AND MATERIALS
   A. Aluminum Bridge Rail Tubing
      (1) Aluminum tubing shall comply with the A.S.T.M. Specification B 235 - 54 T alloy 6351 A condition T6 (commercial designation 6061 - T6). The aluminum tubing shall be fabricated in two panel sections as detailed. The rail shall be fixed at alternate posts with set screws and allowed to expand at adjacent posts.
      (2) The aluminum rail tubing shall be closed at the ends next to the concrete end posts, as detailed, by means of cast caps or plugs or by means of welded end plates. The cast caps or plugs shall comply with the material specifications as outlined for post castings.
   B. Aluminum Rail Post Castings
      (1) Aluminum post castings shall comply with:
         a. The A.S.T.M. Specification B 108 - 54 T alloy 5671 CA condition T6 for aluminum alloy permanent mold castings (commercial designation - aluminum alloy permanent mold castings 356 - T6) or:
         b. The A.S.T.M. Specification B 26 - 54 T alloy 5670 A condition T6 for aluminum alloy sand castings (commercial designation - aluminum alloy sand castings 356 - T6).
      (2) The post castings shall have smooth and even surfaces, free from shrinkage cracks, oxide inclusions and other defects.
      (3) The post castings shall follow the outlines and dimensions as detailed. Minor changes such as draft angles and radii for fillets and corners shall be permitted. Shop drawings for post castings must be submitted and approved by the Engineer before castings are made.
      (4) The post casting surfaces as seen in front and back elevations shall be finished with a 220 grit belt finish or an approved equal except no finishing shall be required if castings are made in such a way that these surfaces are smooth and unmarred, and provide an appearance satisfactory to the Engineer.
      (5) Before setting posts, the entire base of the post casting shall be coated with an aluminum corrugated caulking compound of knife grade consistency 1/16 inch thick (Type C - 1).
   C. Aluminum Set Screws for Posts A.
      (1) Aluminum set screws shall comply with the A.S.T.M. Specification B 211 - 54 T alloy 2024 A (commercial designation 2024 - T4 with No. 205 alumilite finish). The finished bolts and nuts shall be supplied in the T - 4 temper and shall be given an anodic coating of at least 0.002" in thickness and chromate sealed. The set screws shall have a hexagon socket head and oval point.
3. CONSTRUCTION
   A. The specifications for construction shall be the Standard Specifications of the Iowa State Highway Commission, Series of 1956, plus current Special Provisions with the added provisions:
      (1) The anchor bolts for the aluminum posts shall be set at the line and elevations shown on the plans. They shall be firmly held in place by suitable templates that will assure their correct position during the placement of concrete. Aluminum shims, as detailed, shall be used if necessary to insure the correct elevation of the rails.
      (2) The cast aluminum posts and the aluminum tube rails shall be carefully handled during their unloading, handling, and erection. Members that are marred, disfigured or damaged to the extent that they impair their usefulness or appearance shall be rejected and replaced at the contractors expense.
      (3) The aluminum handrail shall be stored above ground upon suitable platforms and kept free from dirt, grease, and contact with dissimilar metals. The stored aluminum handrail shall be protected from moisture as far as practical.
      (4) After erection, rails and posts and the concrete around the post bases shall be thoroughly cleaned of all dirt, grease, caulking compound and other foreign material by an approved means and to the satisfaction of the Engineer.
   G. Aluminum Shims
      (1) Aluminum shims shall comply with the A.S.T.M. Specification B - 209 - 54 T alloy 996 A condition C (commercial designation - 1100 - O).

ALUMINUM HANDRAIL QUANTITIES	
Aluminum Handrail ℄ to ℄ End Posts	1159 lin.ft.

DESIGN FOR 11°-04'-00" SKEW

315'-5"x42' & 280'-0"x42' PRE-TENSIONED PRESTRESSED CONCRETE BEAM BRIDGES

1-47'-3½" & 1-59'-9½" END SPANS 1-64'-7" 1-56'-3" & 2-43'-9" INTERMEDIATE SPANS
1-47'-3½" & 1-59'-9½" END SPANS 1-64'-7" 1-56'-3" & 1-52'-1" INTERMEDIATE SPANS

CONCRETE FLOOR AND SUBSTRUCTURE - ALUMINUM RAIL

INTERSTATE OVER E. 29TH ST. & C.G.W. RY.

ALUMINUM HANDRAIL

STATION 1131+87.84 ℄ INTERSTATE PROJ. NO. I-IG-01-4(2) [I-IG-80-4(2)42]

POLK COUNTY

DESIGNED BY BROWN ENGINEERS, NEW YORK, N.Y. FOR
IOWA STATE HIGHWAY COMMISSION

SEPTEMBER 1958 SHEET 9 OF 9

In Charge Of: L.G.
Made By:
Traced By: V.M.
Checked By: G.R.

DESIGN NO. 4658 POLK CO. FILE NO. 18856