LETTING DATE October 10, 1972

FN-149-2(13)--21-48

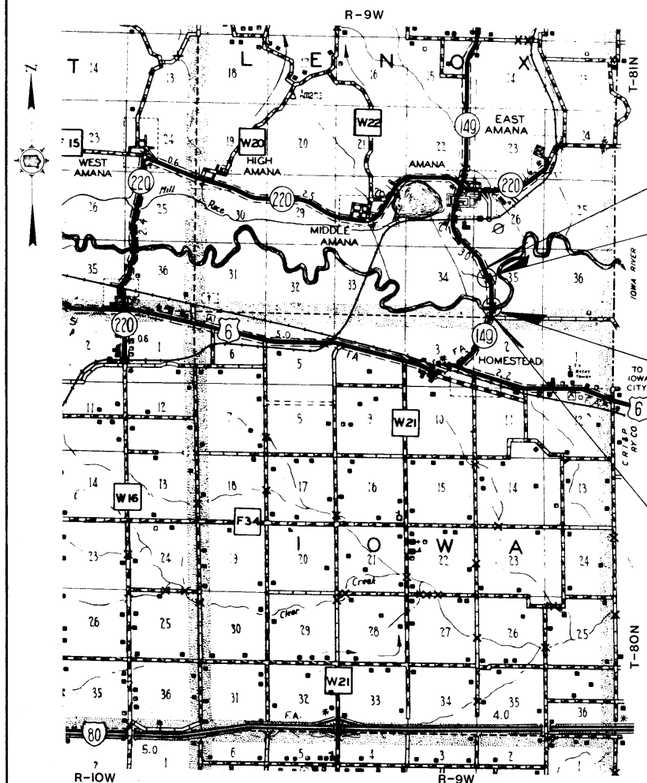
BRIDGES & CULVERTS

IOWA COUNTY

21

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
PIPE LINE
CULVERTS
TELEPHONE, TELEGRAPH OR TRANSMISSION LINES
PRIMARY ROAD NUMBERS
U.S. ROAD NUMBERS
INTERSTATE ROAD NUMBERS



STATE OF IOWA

STATE HIGHWAY COMMISSION

DESIGN FOR

BRIDGES CULVERTS

PRIMARY ROAD SYSTEM

IOWA COUNTY

PROJECT FN-149-2(13)--21-48

THIS PLAN INCLUDES STRUCTURE BRIDGE DESIGN #772 WELDON CROS. 1973 AND 1974

FROM THE EAST JUNCTION OF U.S. 6 AND IA. 149 TO THE SOUTH CITY LIMITS OF AMANA

THE IOWA STATE HIGHWAY COMMISSION STANDARD SPECIFICATIONS FOR CONSTRUCTION WORK, SERIES OF 1972, SHALL APPLY TO WORK ON THIS PROJECT

MILEAGE SUMMARY			STATE CONTROL SECTION NO.
LOCATION	LIN. FT.	MILES	
BRIDGES:			
STA. 77+75	445.83	0.084	
~~STA. 100+25~~	~~693.33~~	~~0.131~~	48-1400

DESIGN STRESSES:

DESIGN STRESSES FOR THE FOLLOWING MATERIALS ARE IN ACCORDANCE WITH AASHO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, SERIES OF 1969.
CONCRETE IN ACCORDANCE WITH SECTION 1.5.1 $f'c$ = 3500 psi.
REINFORCING STEEL IN ACCORDANCE WITH SECTION 1.5.1, fs = 20,000 psi.
STRUCTURAL STEEL IN ACCORDANCE WITH SECTION 1.7.1
ASTM A-36, fs = 20,000 psi.
PRESTRESSING STEEL IN ACCORDANCE WITH SEC. 1.6.7, fs = 270,000 psi.
PRESTRESS CONCRETE IN ACCORDANCE WITH SEC. 1.6.7, fc = 5,000 psi.

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

PROJECT NO. FN-149-2(13)--21-48
F.A.P. NO. FN-149-2(15)--21-48

INDEX OF SHEETS

SHEET NO.	TITLE	DES. SHT. NO.
1	TITLE SHEET	
A	REVISION SHEET	
2	ESTIMATE OF QUANTITIES	
3	SITUATION PLAN	1 OF 16
4	GENERAL PLAN	2 OF 16
5	SOUNDING DATA	3 OF 16
6	PIER DETAILS	4 OF 16
7	PIER DETAILS	5 OF 16
8	ABUTMENT DETAILS	6 OF 16
9	ABUTMENT DETAILS	7 OF 16
10	SUPERSTRUCTURE DETAILS	8 OF 16
11	SUPERSTRUCTURE DETAILS	9 OF 16
12	SUPERSTRUCTURE DETAILS	10 OF 16
13	SUPERSTRUCTURE DETAILS	11 OF 16
14	BEAM DETAILS	12 OF 16
15	BEAM DETAILS	13 OF 16
16	BEAM DETAILS	14 OF 16
17	ALUMINUM HANDRAIL	15 OF 16
18	STEEL HANDRAIL	16 OF 16
DESIGN NO 772		
19	SITUATION PLAN	1 OF 13
20	GENERAL PLAN	2 OF 13
21	SOUNDING DATA	3 OF 13
22	PIER DETAILS	4 OF 13
23	ABUTMENT DETAILS	5 OF 13
24	ABUTMENT DETAILS	6 OF 13
25	SUPERSTRUCTURE DETAILS	7 OF 13
26	SUPERSTRUCTURE DETAILS	8 OF 13
27	SUPERSTRUCTURE DETAILS	9 OF 13
28	SUPERSTRUCTURE DETAILS	10 OF 13
29	BEAM DETAILS	11 OF 13
30	ALUMINUM HANDRAIL	12 OF 13
31	STEEL HANDRAIL	13 OF 13
~~DESIGN NO 872~~		

CONSTRUCTION PLANS
SHOWING PROJECT AS BUILT
Plan Preparation Supervised By: Duane R Rhurch 3-25-75
Res. Constr. Eng. Date
Reviewed & Forwarded to Ames By:
Dis. Constr. Eng. Date
No. of Copies (Full 2 ~~Sepia~~) to be mailed & returned to:
VAN. R. SNYDER District Engineer
After Microfilming Return Original to District No. 6

RM 39

DESIGN DATA RURAL		
1973 AADT	2500	V.P.D.
1993 AADT	3900	V.P.D.
1993 DHV	450	V.P.H.
DIRECTIONAL	52	%
TRUCKS	7	%
DESIGN V	70	M.P.H.
CLASS III ACCESS CONTROL		

REVISED:
SEE FOLLOWING SHEET 1A

APPROVED
DEPUTY CHIEF ENGINEER DATE
IOWA HIGHWAY COMMISSION

STANLEY CONSULTANTS
INTERNATIONAL CONSULTANTS IN ENGINEERING, ARCHITECTURE, PLANNING, AND MANAGEMENT

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
APPROVED
DIVISION ENGINEER DATE

SHEET NO. 1 OF 31

DESIGN 772 ~~872~~ IOWA COUNTY PROJECT FN-149-2(13)--21-48 FILE 24550

LISTING OF PROJECT REVISIONS

DATE	SHEET NUMBER	DESCRIPTION OF REVISIONS
Jan. 16, '73		Design 772
	Sheet 1A of 31	This sheet added to project (Revision Sheet).
	Sheets 12&16 of 31	Beam Coil Tie locations changed.
	Sheet 1 of 31	Sheet 1A added to "Index of Sheets."
		REASON: Location of coil ties changed so that they will not interfere with the beam strands.

DATE	SHEET NUMBER	DESCRIPTION OF REVISIONS

fold

REVISION SHEET

IOWA COUNTY *File No. 24550*

PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
FN-149-2(13)--21-48	IOWA	5		1-A	31

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED UNDER MY SUPERVISION AND THAT ENGINEERING DECISIONS WITH REGARD TO THE DESIGN WERE MADE BY ME OR BY OTHER DULY REGISTERED PROFESSIONAL ENGINEERS UNDER THE LAWS OF THE STATE OF IOWA.

Wayne B Tyner

DATE AUGUST 10, 1972, IOWA REG. NO. 4014

IN LETTING OF October 10-1972

DESIGN 772 — IOWA 149 OVER IOWA RIVER — STATION 77+75

IOWA COUNTY

SECTION 35 — T-81N — R-9W — LENOX TWP.

DESIGN FOR
441'-0" X 44' PRETENSIONED PRESTRESSED
CONCRETE BEAM BRIDGE

~~ACUTAL~~ ESTIMATE OF QUANTITIES ACTUAL

NO.	ITEM		UNIT	TOTAL
1	STRUCTURAL CONCRETE		CU. YDS.	1523.0
2	REINFORCING STEEL		LBS.	284,894
3	STRUCTURAL STEEL		LBS.	9,852
4	PRETENSIONED PRESTRESSED CONCRETE BEAMS	D75	NO.	14
		D95	NO.	21
5	ALUMINUM HANDRAIL ~~OR~~ ~~STEEL HANDRAIL~~		L.F.	909.3
			~~L.F.~~	~~909.3~~
6	CREOSOTED WOOD PILING		L.F.	7,103.25
7	CREOSOTED WOOD TEST PILING 1 @ 30'		L.S.	LUMP SUM
8	5" X 5 1/4" PREFORMED ELASTIC NEOPRENE JOINT		L.F.	103
9	CLASS 20 EXCAVATION		C.Y.	614
10	CLASS 21 EXCAVATION		C.Y.	997
11	4" Φ TILE SUBDRAIN		L.F.	156
12	GRANULAR BACKFILL		C.Y.	228
13	REMOVAL OF EXISTING BRIDGE		L.S.	LUMP SUM

ITEM 1 INCLUDES 865.0 C.Y. CLASS "C" CONCRETE FOR SUBSTRUCTURE AND 659.0 C.Y. CLASS "D" CONCRETE FOR SUPERSTRUCTURE.

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED UNDER MY SUPERVISION AND THAT ENGINEERING DECISIONS WITH REGARD TO THE DESIGN WERE MADE BY ME OR BY OTHER DULY REGISTERED PROFESSIONAL ENGINEERS UNDER THE LAWS OF THE STATE OF IOWA.

Wayne B Tyner

DATE AUGUST 10, 1972, IOWA REG. NO. 4014

IN LETTING OF October 10-1972

DESIGN 872 — IOWA 149 OVER IOWA RIVER OVERFLOW CHANNEL. — STATION 100+25

IOWA COUNTY

SECTION 35 — T-81N — R-9W — LENOX TWP.

DESIGN FOR
588'-6" X 44' PRETENSIONED PRESTRESSED
CONCRETE BEAM BRIDGE

ESTIMATE OF QUANTITIES

NO.	ITEM		UNIT	TOTAL
1	STRUCTURAL CONCRETE		CU.YDS.	1770.4
2	REINFORCING STEEL		LBS.	357,341
3	STRUCTURAL STEEL		LBS.	37,222
4	PRETENSIONED PRESTRESSED CONCRETE BEAMS-B67		NO.	70
5	ALUMINUM HANDRAIL OR STEEL HANDRAIL		L.F.	1,400.3
			L.F.	1,400.3
6	CREOSOTED WOOD PILING		L.F.	9,680
7	CREOSOTED WOOD TEST PILING 1 @ 30'		L.S.	LUMP SUM
8	4" X 4 1/4" PREFORMED ELASTIC NEOPRENE JOINT		L.F.	309
9	CLASS 20 EXCAVATION		C.Y.	264
10	CLASS 21 EXCAVATION		C.Y.	1,117
11	CLASS 10 CHANNEL EXCAVATION		C.Y.	2,470
12	4" Φ TILE SUBDRAIN		L.F.	224
13	GRANULAR BACKFILL		C.Y.	228
14	REMOVAL OF EXISTING BRIDGE		L.S.	LUMP SUM

ITEM 1 INCLUDES 774.9 C.Y. CLASS "C" CONCRETE FOR SUBSTRUCTURE AND 1009.1 C.Y. CLASS "D" CONCRETE FOR SUPERSTRUCTURE.

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 THESE PLANS WERE PREPARED UNDER MY SUPERVISION AND THAT ENGINEERING DECISIONS WITH REGARD TO THE DESIGN WERE MADE BY ME OR BY OTHER DULY REGISTERED PROFESSIONAL ENGINEERS UNDER THE LAWS OF THE STATE OF IOWA.

DATE _____, 19___, IOWA REG. NO. _____

IN LETTING OF October 10-1972

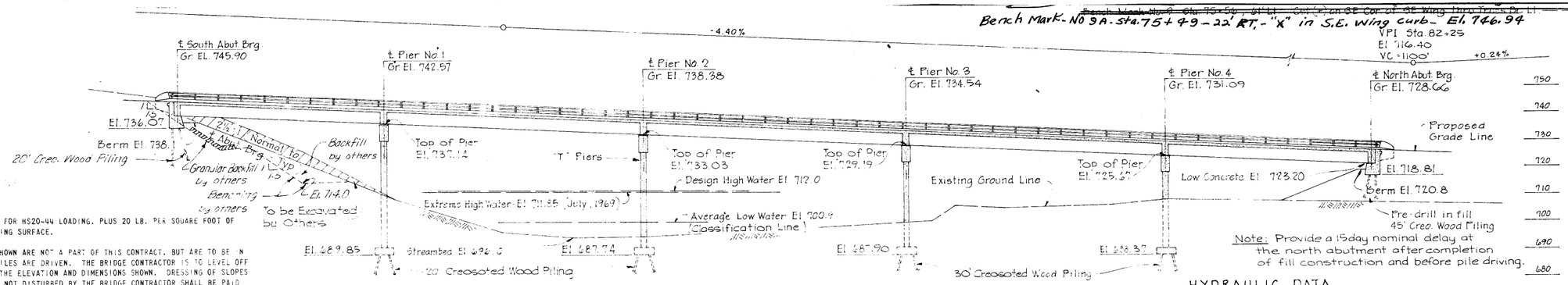
DESIGN	LOCATION SECTION	LOCATION TOWNSHIP	LOCATION STATION	DESCRIPTION SIZE AND TYPE	ESTIMATE OF QUANTITIES: STRUCTURAL CONCRETE CLASS "C" C.Y.	REINFORCING STEEL LBS.	EXCAVATION CLASS C.Y.	CONCRETE ARCH PIPE CULVERT	CONCRETE ARCH PIPE CULVERT NUMBERS	SECTIONS	SUBDRAIN TILE QUALITY	GRADE ELEV.	CONNECTED PIPE CULVERT NUMBER	REMOVALS

DESIGNS 772 & 872 — IOWA COUNTY

PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
FN-149-2(13)--21-48	IOWA	5		2	31

Bench Mark No. 8 Sta. 75+54, 61 Lt. Cut Σ on SE Cor. of SE Wing Thru Fill Sta. 77+00, 61 Lt. El. 742.60

Bench Mark-No 9A. Sta. 75+49-22' RT.-"X" in S.E. Wing curb- El. 746.94



Note: Provide a 15day nominal delay at the north abutment after completion of fill construction and before pile driving.

LONGITUDINAL SECTION ALONG ℄

Scale: 1" = 20'-0"

HYDRAULIC DATA

D.A. = 2864 Sq. Miles
Design Q = 17,200 c.f.s.
Gradient = 0.0005'/'

LOCATION

Ia. 149 Over Iowa River
Iowa County
T-81N R-13W
Lenox Twp.
Section 35

GENERAL NOTES:

THIS BRIDGE IS DESIGNED FOR HS20-44 LOADING. PLUS 20 LB. PER SQUARE FOOT OF ROADWAY FOR FUTURE WEARING SURFACE.

THE APPROACH FILLS AS SHOWN ARE NOT A PART OF THIS CONTRACT, BUT ARE TO BE IN PLACE BEFORE ABUTMENT PILES ARE DRIVEN. THE BRIDGE CONTRACTOR IS TO LEVEL OFF AND SHAPE THE BERMS TO THE ELEVATION AND DIMENSIONS SHOWN. DRESSING OF SLOPES OUTSIDE THE BRIDGE AREA NOT DISTURBED BY THE BRIDGE CONTRACTOR SHALL BE PAID FOR AS EXTRA WORK.

EXISTING BRIDGE TO BECOME PROPERTY OF THE BRIDGE CONTRACTOR. BRIDGE CONTRACTOR TO REMOVE EXISTING BRIDGE IN ACCORDANCE WITH IOWA STATE HIGHWAY COMMISSION STANDARD SPECIFICATIONS. PIERS AND ABUTMENTS ARE TO BE REMOVED TO 1'-0" BELOW FINISHED GROUND LINE OR STREAM BED ELEVATIONS.

N. ABUTMENT PILES ARE TO BE DRIVEN IN OVERSIZE HOLES DRILLED THROUGH THE FILL TO ELEV. 697.00. THE MINIMUM DIAMETER OF THE DRILLED HOLES IS TO BE 4" GREATER THAN THE DIAMETER OF THE PILE 3 FEET FROM THE BUTT. VOIDS AROUND THE PILES ARE TO BE FILLED WITH DRY SAND. NO SEPARATE PAYMENT WILL BE MADE FOR DRILLING HOLES OR FILLING VOIDS SINCE IT IS CONSIDERED INCIDENTAL TO DRIVING PILES.

DESIGN STRESSES:

DESIGN STRESSES FOR THE FOLLOWING MATERIALS ARE IN ACCORDANCE WITH AASHO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, SERIES OF 1969.

CONCRETE IN ACCORDANCE WITH SECTION 1.5.1 f'c = 3500 psi.

REINFORCING STEEL IN ACCORDANCE WITH SECTION 1.5.1 fs = 20.000 psi.

STRUCTURAL STEEL IN ACCORDANCE WITH SECTION 1.7.1 ASTM A-36. fs = 20.000 psi.

PRESTRESSING STEEL IN ACCORDANCE WITH SEC. 1.6.7. fs = 270.000 psi.

PRESTRESS CONCRETE IN ACCORDANCE WITH SEC. 1.6.7. fc = 5.000 psi.

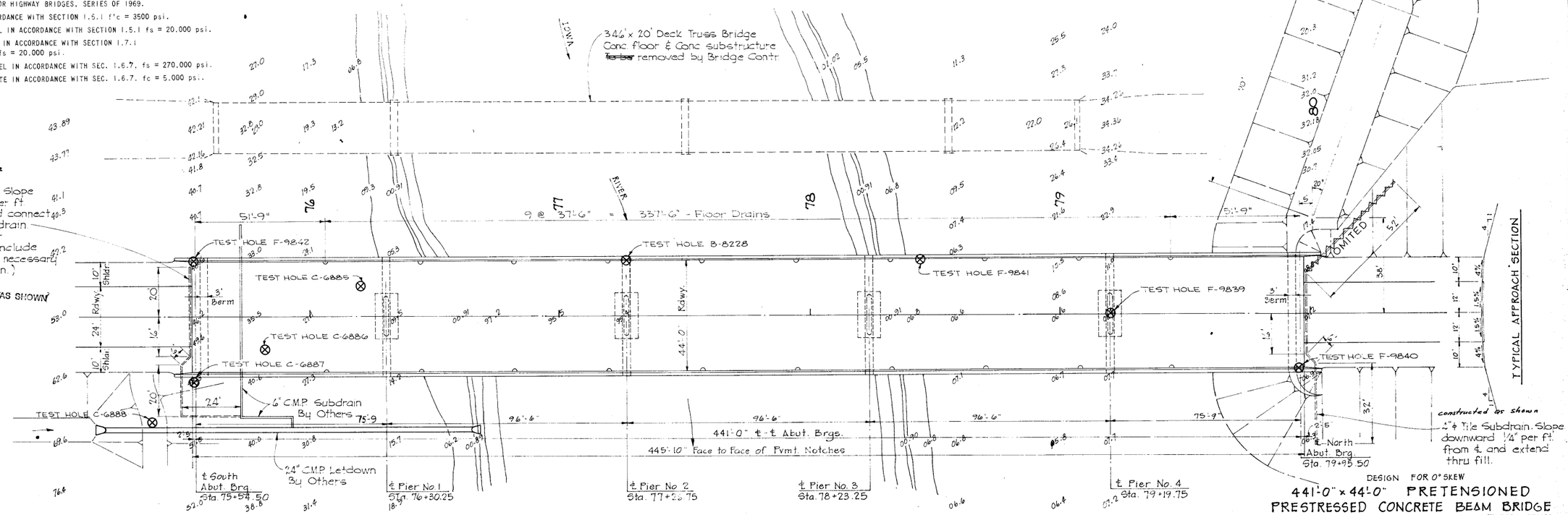
SPECIFICATIONS:

DESIGN: AASHO. SERIES OF 1969

CONSTRUCTION: STANDARD SPECIFICATIONS OF THE IOWA STATE HIGHWAY COMMISSION. SERIES OF 1972. PLUS CURRENT SPECIAL PROVISIONS AND SUPPLEMENTAL SPECIFICATIONS.

TEST PILE NOTE:

THE LENGTHS SHOWN FOR CREOSOTED PILING ARE ESTIMATED LENGTHS FOR BIDDING PURPOSES ONLY. ONE TEST PILE SHALL BE DRIVEN AT PIER #4 (SEE SHEET 5) BEFORE ORDERING ADDITIONAL PILING. BEFORE DRIVING THE TEST PILE THE AREA AT THE TEST PILE IS TO BE EXCAVATED TO THE PROPOSED FOOTING ELEVATION. PILING LENGTHS WILL BE DETERMINED FROM TEST PILE RESULTS.



SITUATION PLAN.

Scale: 1" = 20'-0"

Traffic Count: 3900VPD 1993
INRC Approved - Order No. 72-150 dated June 6, 1972

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

Wayne R. Tyner

DATE 4/24/72 REGIST. NO. 4014

WAYNE R. TYNER 4014 IOWA PROFESSIONAL ENGINEER

DESIGN FOR 0° SKEW

441'-0" x 44'-0" PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

75'-9" END SPANS 96'-6" INTERIOR SPANS
CONCRETE FLOOR & SUBSTRUCTURE

SITUATION PLAN

STATION 77+75 IA 149 OVER IOWA RIVER

IOWA COUNTY

IOWA STATE HIGHWAY COMMISSION

DES. SHT. NO. 1 OF 16 FILE NO. 24550 DES. NO. 772

IOWA COUNTY | PROJECT NUMBER FN-149-2(13)--21-48

STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	5		3	31

IOWA TWP.
T-80N R-9W
SEC. 2

LENOX TWP.
T-81N R-9W
SEC. 35

~~BENCH MARK NO. 9 STA. 99+56, 61' LT. CUT (-) ON SE COR. OF SE WING INFL. TRANS. PR LT. EL. 746.50~~
Bench Mark No. 9A. Sta. 75+49 - 23' Rt. "X" in S.E. Wing curb El. 746.94

N

Δ = 39°01' LT.
Ds = 5°15'
Ls = 300'
Ts = 730.73'
Es = 102.09'
P = 2.29'
K = 149.96'
Xc = 299.75'
Yc = 9.16'
LT = 200.09'
ST = 100.08'
Lc = 299.89'

Δc = 28°31' LT.
D = 3°30'
T = 416.00'
L = 814.76'
E = 52.03'
R = 1637.02'

Δ = 20°31' LT.
Ds = 2°48'45"
Ls = 250'
Ts = 586.04'
Es = 42.4'
P = 1.02'
K = 124.99'
Xc = 249.94'
Yc = 4.09'
LT = 166.69'
ST = 83.36'
Lc = 249.98'

Δ = 14°53'30" LT.
D = 2°15'
T = 332.80'
L = 661.85'
E = 21.6'
R = 2546.48'

SC 64+17.12
153' ℄ RES ENT
~~#16 OHLF SIGNAL FLASHER~~
℄ ENT 24"x39' CONC PIPE
3-2'x5'6" RCB
24"x73' CMP
CS 65+32.13
72+32.13 (BACK) EQUATION
72+31.88 (AHEAD)
+111.4 - 21.2 2 LT. R.O.W. MKR.
GAR 31'
HOUSE
24"x100' CMP
RIVER
IOWA
2" NATURAL GAS
+109.2 - 0.8' LT. R.O.W. MKR.
TS 84+76.82
SC 87+26.82
TS 89+26.82 ℄ ENT.
CS 93+86.67
IA # 149
P.I. 65+48.10
~~#11 SS RT METER FOR FLASHER~~
+249.99.8 RT. R.O.W. MARKER
APPROX. TWP.
STA 62+41
2'x3'x238' RCB
DA =
STA 64+59.5
2'x3.5'x162' RCB
DA =
POT 107+99.52 (S.R.) POST 32.36' BACK OF ST 72+32.13 (M.L.)
24"x82' CMP
CABIN
LATRINE
LUMINAIRES
TRAILER HOUSE
CABIN
℄ ENT.
+97.6 - 0.8' RT. R.O.W. MKR.
P.I. 90+62.86

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

TOTAL ~~ESTIMATED~~ ACTUAL QUANTITIES

ITEM NO.	ITEM		UNIT	2 ABUT.	4 PIERS	SUPERSTR.	TOTAL	
1	STRUCTURAL CONCRETE		C.Y.	111.0	754.0	659.0	~~1524.0~~	1523.0
2	REINFORCING STEEL		LBS.	12,132	114,530	158,232	284,894 ✓	
3	STRUCTURAL STEEL		LBS.	-	-	9852	9852 ✓	
4	PRETENSIONED PRESTRESSED CONCRETE BEAMS	D75	NO.	-	-	14	14 ✓	
		D95	NO.	-	-	21	21 ✓	
5	ALUMINUM HANDRAIL ~~+ OR + STEEL HANDRAIL~~		L.F.	-	-	909.3	909.3 ✓	
			~~L.F.~~	-	-	~~909.3~~	~~909.3~~	
6	CREOSOTED WOOD PILING		L.F.	23 @ 20', 23 @ 45'	121 @ 20', 111 @ 30'	-	~~7245~~	7103.25
7	CREOSOTED WOOD TEST PILE 1 @ 30'		L.S.				LUMP SUM ✓	
8	5" X 5 1/4" PREFORMED ELASTIC NEOPRENE JOINT		L.F.	-	-	103	103 ✓	
9	CLASS 20 EXCAVATION		C.Y.	204	410	-	614 ✓	
10	CLASS 21 EXCAVATION		C.Y.	-	997	-	997 ✓	
11	4"ø TILE SUBDRAIN		L.F.	-	-	-	~~208~~	156
12	GRANULAR BACKFILL		C.Y.	228	-	-	228 ✓	
13	REMOVAL OF EXISTING BRIDGE						LUMP SUM ✓	

ITEM 1 INCLUDES 865.0 C.Y. CLASS "C" CONCRETE FOR SUBSTRUCTURE AND 659.0 C.Y. CLASS "D" CONCRETE FOR SUPERSTRUCTURE.

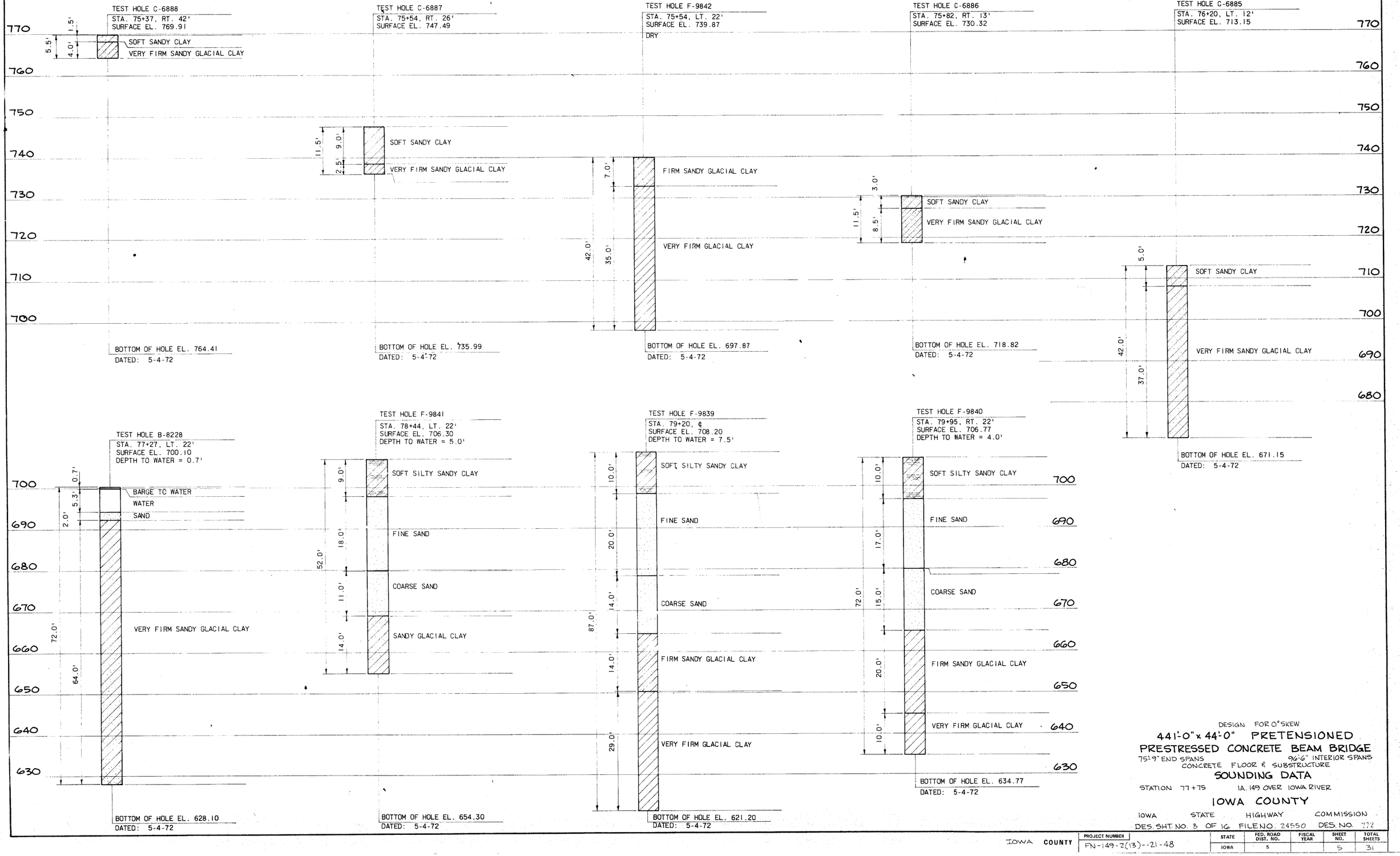
LOCATION
IA 149 OVER IOWA RIVER
IOWA COUNTY
T-81N R-9W
LENOX TWP.
SECTION 35

Sta. 77+35 - 75' Lt.
346'x20' Deck Truss Bridge
DA = 2,864 Sq. Miles
Bridge Contractor to build 44'x44'
Pretensioned Prestressed
Concrete Beam Bridge
At Sta. 77+75.

WAYNE R. TINDER 4014 REGISTERED PROFESSIONAL ENGINEER

DESIGN FOR 0° SKEW
44'-0" x 44'-0" PRETENSIONED
PRESTRESSED CONCRETE BEAM BRIDGE
75'-9" END SPANS 96'-6" INTERIOR SPANS
CONCRETE FLOOR & SUBSTRUCTURE
GENERAL PLAN
STATION 77+75 IA 149 OVER IOWA RIVER
IOWA COUNTY
IOWA STATE HIGHWAY COMMISSION
DES. SHT. NO. 2 OF 16 FILE NO. 24550 DES. NO. 772

IOWA COUNTY	PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	FN-149-2(13)--21-48	IOWA	5		4	54



DESIGN FOR 0° SKEW

441'-0" x 44'-0" PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

75'-9" END SPANS 96'-6" INTERIOR SPANS

CONCRETE FLOOR & SUBSTRUCTURE

SOUNDING DATA

STATION 77+75 IA. 149 OVER IOWA RIVER

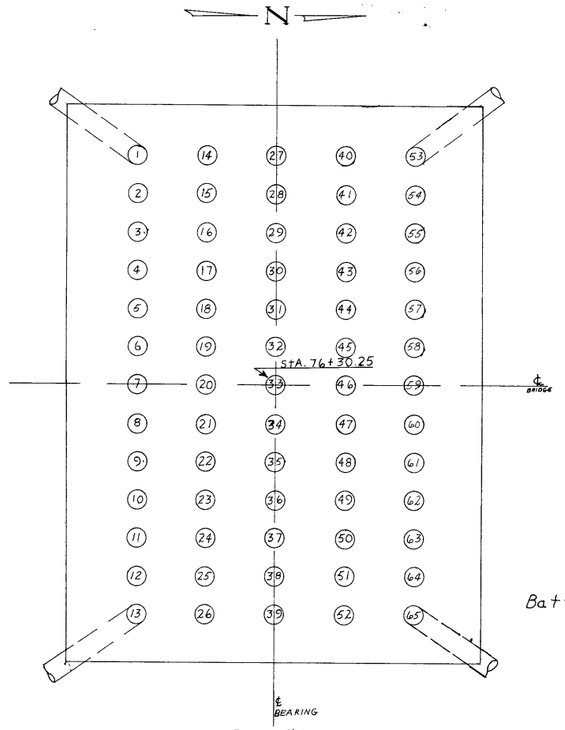
IOWA COUNTY

IOWA STATE HIGHWAY COMMISSION

DES. SHT. NO. 3 OF 16 FILE NO. 24550 DES. NO. 772

IOWA COUNTY

PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
FN-149-2(13)--21-48	IOWA	5		5	31



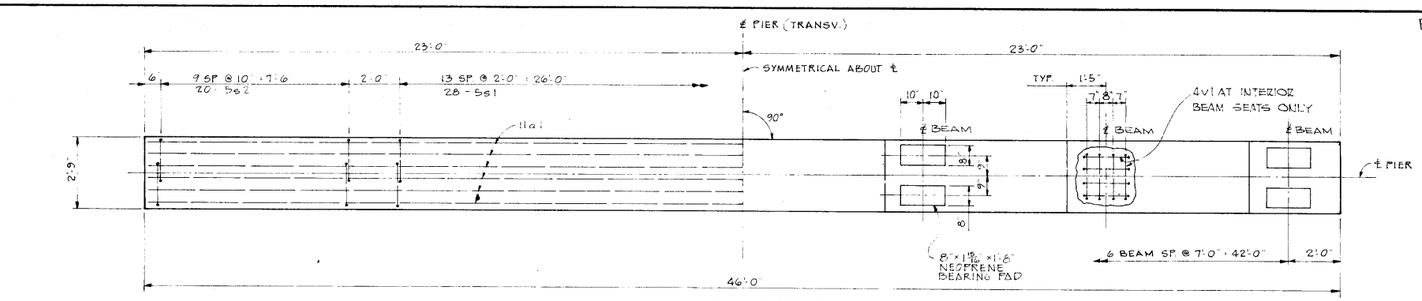
Batter 1/4

Pier #1

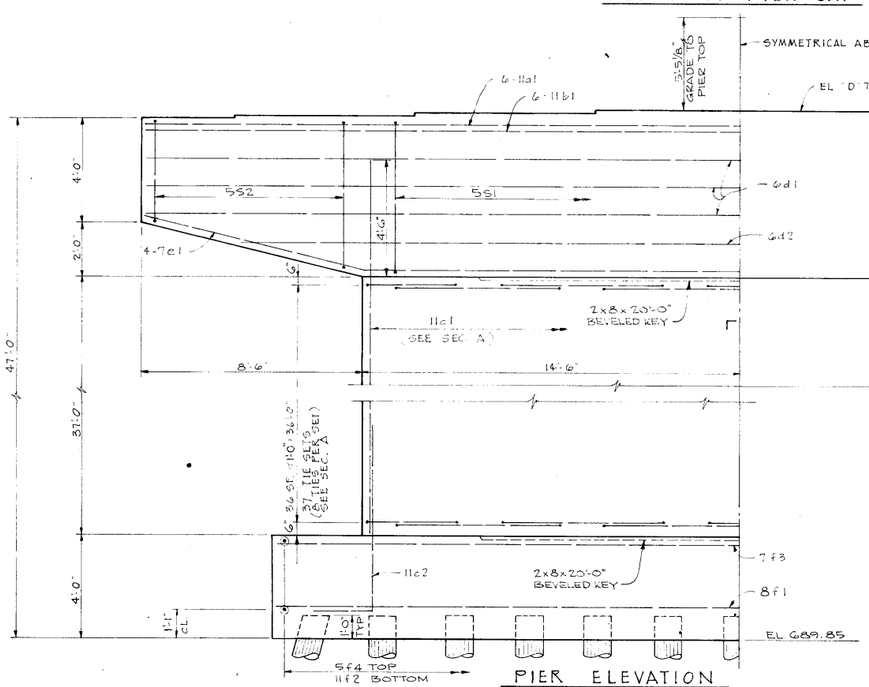
PIER # 1						
PILE NO.	DATE DRIVEN	LENGTH IN LEADS	LENGTH CUT-OFF	LENGTH IN STRUCT.	AVE. PEN. S BLOWS	BEARING IN TONS
B 1	8-16-73	20	0.7	19.3	0.900	21.6
2	"	20	0.5	19.5	1.000	21.2
3	"	20	0.6	19.4	0.825	24.2
4	"	20	0.7	19.3	0.875	23.2
5	"	20	0.7	19.3	0.825	24.2
6	"	20	0.8	19.2	0.800	24.9
7	"	20	1.3	18.7	0.800	24.9
8	"	20	1.2	18.8	0.900	22.9
9	"	20	1.6	18.4	0.650	28.6
10	8-17-73	20	0.4	19.6	0.850	23.8
11	"	20	0.8	19.2	0.850	23.8
12	"	20	0.6	19.4	0.750	26.0
B 13	"	20	3.5	16.5	0.850	22.5
14	8-16-73	20	1.9	18.1	0.750	26.0
15	"	20	0.6	19.4	0.550	31.8
16	"	20	9.9	10.1	—	REFUSAL
17	"	20	0.9	19.1	0.625	29.3
18	"	20	1.0	19.0	0.650	28.6
19	"	20	1.3	18.7	0.800	24.9
20	"	20	4.1	15.9	0.850	23.8
21	"	20	2.4	17.6	—	REFUSAL
22	"	20	0.5	19.5	0.850	23.8
23	8-17-73	20	0.6	19.4	0.900	22.9
24	"	20	4.9	15.1	—	REFUSAL
25	"	20	1.0	19.0	0.700	27.2
26	"	20	2.2	17.8	0.800	24.9
27	8-16-73	20	1.2	18.8	0.975	21.5
28	"	20	0.6	19.4	0.950	22.0
29	"	20	0.7	19.3	0.900	22.9
30	"	20	1.0	19.0	0.950	22.0
31	"	20	5.6	14.4	—	REFUSAL
32	"	20	1.0	19.0	0.700	27.2
33	"	20	1.3	18.7	0.550	31.8
34	"	20	0.8	19.2	0.950	22.0
35	8-17-73	20	0.9	19.1	0.750	26.0
36	"	20	1.1	18.9	0.900	22.9
37	"	20	1.2	18.8	0.800	24.9
38	"	20	1.2	18.8	0.450	35.7
39	"	20	0.8	19.2	0.950	22.0
40	8-16-73	20	0.1	19.9	1.000	21.2
41	"	20	5.6	14.4	—	REFUSAL
42	"	20	0.8	19.2	0.950	22.0
43	"	20	0.6	19.4	0.825	24.2
44	"	20	0.7	19.3	0.900	22.9
45	"	20	1.3	18.7	0.900	22.9
46	8-17-73	20	0.5	19.5	0.750	26.0
47	"	20	1.0	19.0	0.550	31.8
48	"	20	1.3	18.7	0.800	24.9
49	"	20	1.3	18.7	0.500	33.6
50	"	20	0.9	19.1	0.900	22.9
51	"	20	0.7	19.3	0.925	22.3
52	"	20	0.8	19.2	0.775	25.3
B 53	8-16-73	20	1.4	18.6	0.900	21.6
54	"	20	1.2	18.8	0.800	24.9
55	"	20	1.2	18.8	0.750	26.0
56	"	20	0.9	19.1	0.725	26.5
57	"	20	1.0	19.0	0.450	35.7
58	"	20	0.7	19.3	0.850	23.8
59	8-17-73	20	0.6	19.4	0.850	23.8
60	"	20	0.3	19.7	0.800	24.9
61	"	20	0.4	19.6	0.700	27.2
62	"	20	4.9	15.1	—	REFUSAL
63	"	20	1.3	18.7	0.850	23.8
64	"	20	1.4	18.6	1.000	21.2
B 65	"	20	6.0	14.0	0.800	23.5
TOTALS		1300.0	99.0	12080		

Note: B - Batter piling.

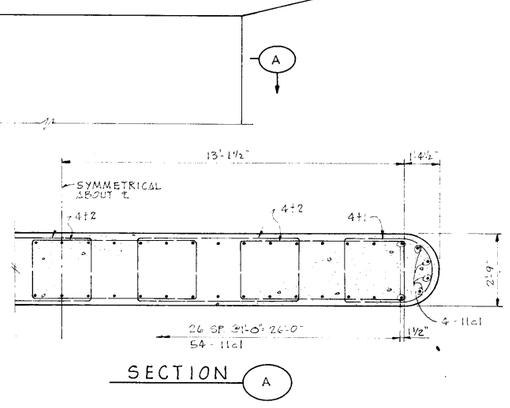
BENCH MARK: ~~No. 9 STA. 75+49.5, 46.0' LT. ON S.E. COR. OF S.E. WING CURB ELEV. 746.60~~ SEE SHEET 2
No. 9A. Sta. 75+49-22' RT. - "X" in S.E. wing curb Elev. 746.94



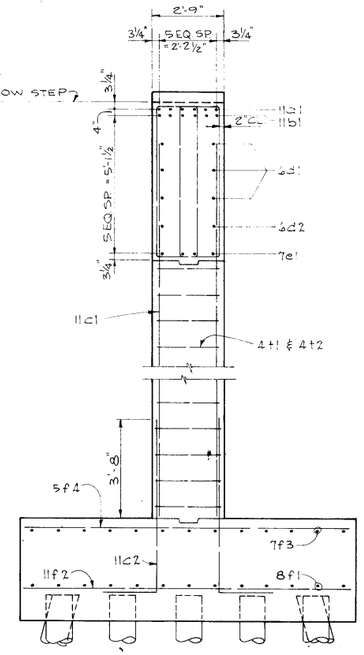
PLAN OF PIER CAP



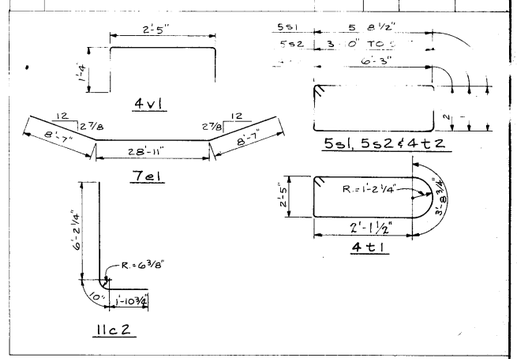
PIER ELEVATION

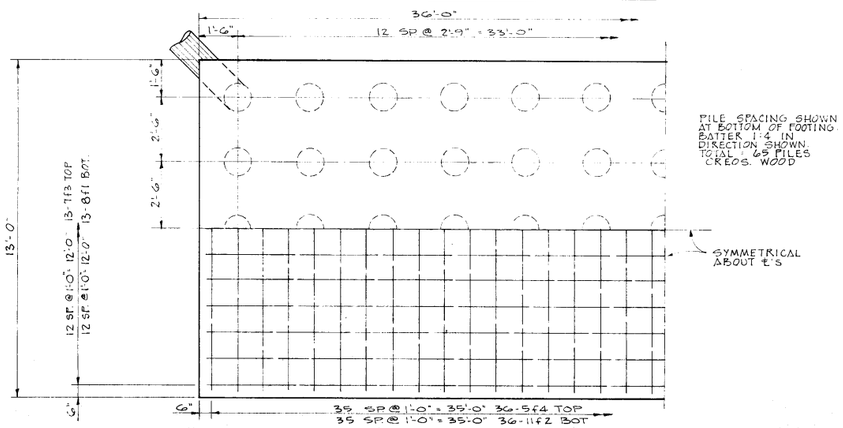


SECTION A



℄ SECTION





FOOTING PLAN & PLAN SECTION

PIER NOTES:

ALL EXPOSED CORNERS 90° OR SHARPER ARE TO BE FILLETED WITH A 3/4" DRESSED AND BEVELED STRIP.

REINFORCING STEEL TO BE SECURELY WIRED IN PLACE BEFORE CONCRETE IS POURED.

MINIMUM CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR IS TO BE 2" UNLESS OTHERWISE NOTED OR SHOWN.

PILES ARE TO BE DRIVEN TO FULL PENETRATION IF PRACTICABLE, BUT TO NOT LESS THAN 20 TONS NOR MORE THAN 40 TONS BEARING VALUE PER PILE

BILL OF REINFORCING STEEL

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
11a1	CAP, LONGITUDINAL TOP	——	6	45'-8"	① 1546
11b1	CAP, LONGITUDINAL TOP	——	6	45'-8"	① 1546
11c1	COLUMN, VERT.	——	62	41'-4"	① 4,549
11c2	COLUMN, DOWELS	⌐	62	8'-11"	2937
6d1	CAP, LONGITUDINAL, SIDES	——	6	45'-8"	② 425
6d2	CAP, LONGITUDINAL, SIDES	——	2	38'-9"	116
7e1	CAP, LONGITUDINAL, BOTT.	⌣	4	46'-1"	③ 391
8f1	FOOTING, LONGITUDINAL, BOTT.	——	13	35'-8"	1238
11f2	FOOTING, TRANSV., BOTT.	——	36	12'-8"	2423
7f3	FOOTING, LONGITUDINAL, TOP	——	13	35'-8"	948
5f4	FOOTING, TRANSV., TOP	——	36	12'-8"	476
5s1	CAP HOOPS	□	28	15'-5"	450
5s2	CANTILEVER HOOPS	□	40	11-8 • 15-2	560
4v1	COLUMN TIES	▭	74	11'-3"	556
4t2	COLUMN TIES	▭	222	18'-0"	2669
4v1	BEAM SEAT (INTERIOR BEAMS ONLY)	⌐	40	4'-11"	131
	TOTAL				30,961

① INCLUDES ALLOWANCE FOR 2'-10" LAP
② INCLUDES ALLOWANCE FOR 1'-6" LAP
③ INCLUDES ALLOWANCE FOR 1'-9" LAP

CONCRETE QUANTITIES	
PIER CAP	27.2 ✓
COLUMN	107.1 ✓
FOOTING	67.4 ✓
TOTAL	201.7 ✓

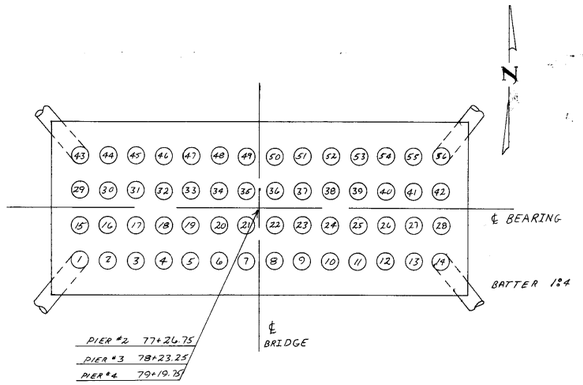
ACTUAL
~~ESTIMATED~~ QUANTITIES

ITEM	UNIT	
STRUCTURAL CONCRETE CL "C"	C.Y.	201.7 ✓
REINFORCING STEEL	LBS.	30,961 ✓
EXCAVATION CLASS 20	C.Y.	245 ✓
EXCAVATION CLASS 21	C.Y.	257 ✓
CREOSOTED PILING	L.F.	65@20' ✓

DESIGN FOR 0° SKEW
441'-0" x 44'-0" PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE
75'-9" END SPANS 96'-6" INTERIOR SPANS
CONCRETE FLOOR & SUBSTRUCTURE
PIERS 1 DETAILS
STATION 77+75 IA. 149 OVER IOWA RIVER
IOWA COUNTY
IOWA STATE HIGHWAY COMMISSION
DES. SHT. NO. 4 OF 16 FILE NO. 24550 DES. NO. 772

WAYNE E. TINKEY 4014 REGISTERED PROFESSIONAL ENGINEER IOWA

IOWA COUNTY	PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	FN-149-2(13)--21-48	IOWA	5		6	31



Note:
Piers 2, 3, & 4 are all designed the same. Piling are numbered in the same order.

B = Batter piling

PIER 2

PILE NO.	DATE DRIVEN	LENGTH IN LEADS	LENGTH CUT-OFF	LENGTH IN STRUCT.	AVE. PEN 5 BLOWS	BEARING IN TONS
B 1	8-6-73	20	0.6	19.4	0.700	30.9
2	"	20	3.8	16.2	—	REFUSAL
3	"	20	0.6	19.4	0.950	26.4
4	"	20	0.7	19.3	1.000	25.4
5	8-3-73	20	5.2	14.8	—	REFUSAL
6	"	20	0.5	19.5	1.200	22.1
7	"	20	0.8	19.2	1.350	20.2
8	"	20	0.9	19.1	1.200	22.1
9	"	20	0.7	19.3	1.200	22.1
10	"	20	0.7	19.3	1.200	22.1
11	8-6-73	20	1.2	18.8	0.750	31.2
12	"	20	0.4	19.6	0.800	29.8
13	"	20	0.0	20.0	0.950	26.4
B 14	"	20	0.2	19.8	0.750	29.5
15	"	20	0.6	19.4	0.850	28.6
16	"	20	0.6	19.4	0.700	32.7
17	"	20	0.6	19.4	0.600	36.1
18	"	20	0.6	19.4	0.850	28.6
19	8-3-73	20	0.6	19.4	0.950	26.4
20	"	20	0.5	19.5	1.030	24.9
21	"	20	0.7	19.3	0.900	27.4
22	"	20	0.9	19.1	1.150	22.9
23	"	20	0.5	19.5	1.350	20.2
24	"	20	0.6	19.4	0.850	28.6
25	8-6-73	20	0.4	19.6	0.800	29.8
26	"	20	0.6	19.4	0.950	26.4
27	"	20	0.0	20.0	1.000	25.4
28	"	20	0.0	20.0	1.000	25.4
29	"	20	0.6	19.4	0.950	26.4
30	"	20	0.1	19.9	0.950	26.4
31	"	20	0.5	19.5	0.700	32.7
32	"	20	0.4	19.6	1.000	25.4
33	8-3-73	20	1.3	18.7	0.800	29.8
34	"	20	0.3	19.7	1.150	22.9
35	"	20	0.4	19.6	1.350	20.2
36	"	20	0.7	19.3	0.950	26.4
37	"	20	0.6	19.4	1.250	21.4
38	"	20	0.7	19.3	1.350	20.2
39	8-6-73	20	0.6	19.4	0.850	28.6
40	"	20	1.1	18.9	0.850	28.6
41	"	20	0.0	20.0	1.050	24.5
42	"	20	1.4	18.6	—	REFUSAL
B 43	"	20	0.6	19.4	0.850	27.0
44	"	20	0.4	19.6	0.950	26.4
45	"	20	0.2	19.8	1.100	23.7
46	"	20	3.1	16.9	0.900	27.4
47	8-3-73	20	0.3	19.7	1.050	24.5
48	"	20	0.4	19.6	0.825	29.1
49	"	20	0.7	19.3	1.000	25.4
50	"	20	0.7	19.3	1.300	20.8
51	"	20	0.5	19.5	1.200	22.1
52	"	20	0.2	19.8	0.850	28.6
53	8-6-73	20	0.2	19.8	0.950	26.4
54	"	20	0.7	19.3	0.850	28.6
55	"	20	0.0	20.0	0.950	26.4
B 56	"	20	0.8	19.2	0.850	27.0
TOTALS		1120.0	41.0	1079.0		

PIER 3

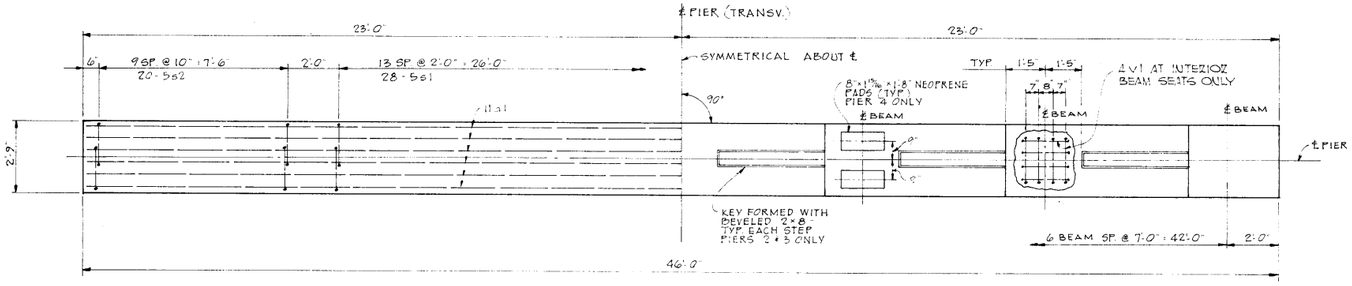
PILE NO.	DATE DRIVEN	LENGTH IN LEADS	LENGTH CUT-OFF	LENGTH IN STRUCT.	AVE. PEN 5 BLOWS	BEARING IN TONS
B 1	6-25-73	30	1.8	28.2	0.700	28.9
2	"	30	0.9	29.1	0.900	25.7
3	"	30	1.1	28.9	0.900	25.7
4	"	30	1.2	28.2	0.950	24.7
5	6-26-73	30	1.0	29.0	0.800	27.9
6	"	30	0.8	29.2	0.850	26.8
7	"	30	0.8	29.2	0.575	34.7
8	"	30	0.8	29.2	1.100	22.2
9	"	30	1.2	28.8	0.450	40.2
10	"	30	4.6	25.4	0.200	58.4
11	6-27-73	30	1.1	28.9	0.750	29.2
12	"	30	1.2	28.8	0.950	24.7
13	"	30	0.8	29.2	0.700	30.6
B 14	"	30	1.7	28.3	0.700	28.9
15	6-25-73	30	0.4	29.6	1.100	22.2
16	"	30	1.0	29.0	0.850	26.8
17	"	30	0.9	29.1	1.050	22.9
18	"	30	1.2	28.8	0.600	33.8
19	6-26-73	30	0.8	29.2	0.500	37.8
20	"	30	1.3	28.7	0.650	32.1
21	"	30	1.1	28.9	0.800	27.9
22	"	30	0.9	29.1	0.900	25.7
23	"	30	1.4	28.6	0.700	30.6
24	"	30	1.3	28.7	0.600	33.8
25	6-27-73	30	1.6	28.4	0.650	32.1
26	"	30	1.3	28.7	0.700	30.6
27	"	30	1.0	29.0	0.750	29.2
28	"	30	0.8	29.2	0.600	33.8
29	5-25-73	30	0.9	29.1	0.925	25.2
30	"	30	1.2	28.8	0.800	27.9
31	"	30	1.1	28.9	0.600	33.8
32	"	30	1.3	28.7	0.700	30.6
33	6-26-73	30	0.9	29.1	0.550	35.7
34	"	30	0.9	29.1	0.600	33.8
35	"	30	0.9	29.1	0.900	25.7
36	"	30	1.1	28.9	0.700	30.6
37	"	30	1.2	28.8	0.750	29.2
38	"	30	1.1	28.9	0.800	27.9
39	"	30	1.3	28.7	1.050	22.9
40	6-27-73	30	0.8	29.2	0.600	33.8
41	"	30	1.8	28.2	1.250	20.1
42	"	30	0.9	29.1	0.450	40.2
B 43	5-25-73	30	1.3	28.7	0.900	24.3
44	"	30	1.3	28.7	0.800	27.9
45	6-25-73	30	1.2	28.8	0.750	29.2
46	6-26-73	30	1.3	28.7	0.600	33.8
47	"	30	1.0	29.0	0.850	26.8
48	"	30	1.3	28.7	0.700	30.6
49	"	30	1.3	28.7	0.550	35.7
50	"	30	1.2	28.8	0.550	35.7
51	"	30	1.3	28.7	0.750	29.2
52	"	30	1.4	28.6	0.700	30.6
53	"	30	1.5	28.5	0.900	25.7
54	6-27-73	30	0.9	29.1	0.825	27.3
55	"	30	1.1	28.9	0.600	33.8
B 56	"	30	1.5	28.5	0.650	30.6
TOTALS		1680.0	67.0	1613.0		

PIER 4

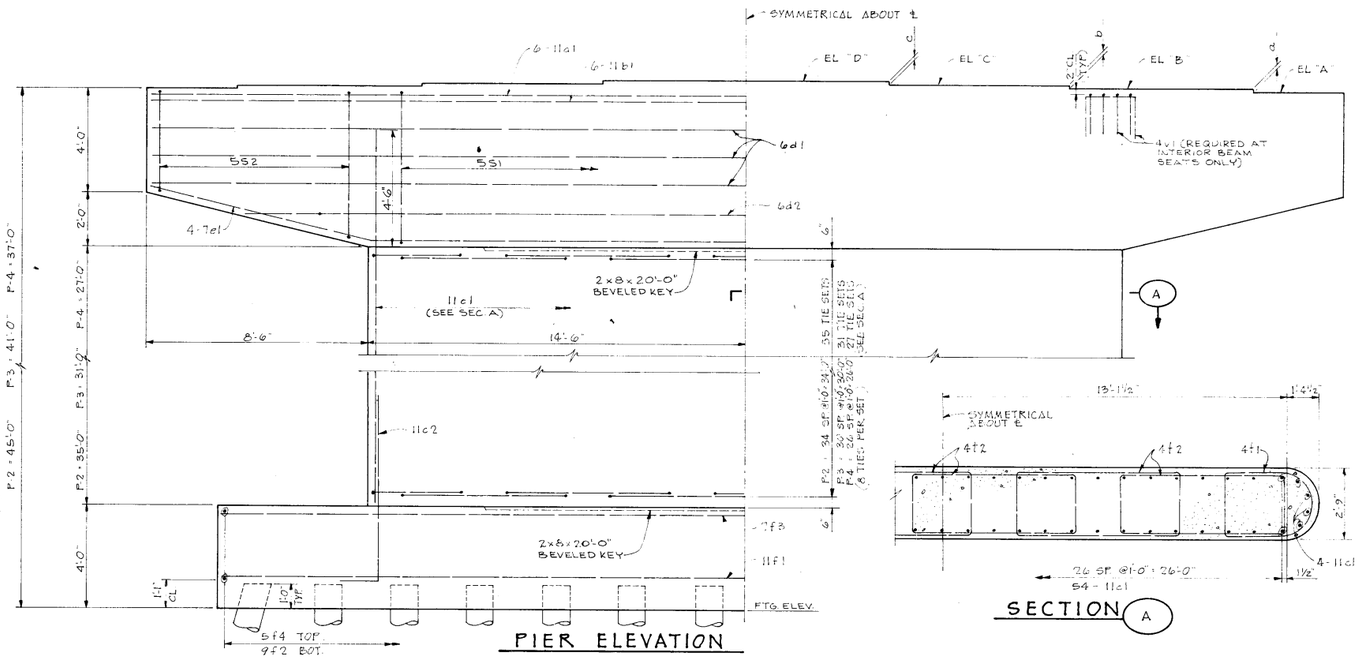
PILE NO.	DATE DRIVEN	LENGTH IN LEADS	LENGTH CUT-OFF	LENGTH IN STRUCT.	AVE. PEN 5 BLOWS	BEARING IN TONS
B 1	2-21-73	30	1.7	28.3	0.850	36.2
2	2-22-73	30	1.4	28.6	1.300	25.0
3	"	30	0.9	29.1	1.350	24.1
4	"	30	0.8	29.2	1.350	24.1
5	"	30	0.8	29.2	1.200	27.1
6	"	30	0.8	29.2	0.850	38.3
7	"	30	0.6	29.4	1.350	24.1
8	2-24-73	30	0.8	29.2	1.100	29.6
9	"	30	12.8	17.2	0.925	35.2
10	"	30	16.0	14.0	0.850	38.3
11	2-23-73	30	0.9	29.1	1.200	27.1
12	"	30	0.4	29.6	1.450	22.4
13	"	30	0.3	29.7	1.200	27.1
B 14	2-21-73	30	0.7	29.3	1.050	29.3
15	"	30	1.3	28.7	0.950	34.3
16	"	30	1.3	28.7	1.300	25.0
17	"	30	0.8	29.2	1.150	28.3
18	"	30	1.2	28.8	1.150	28.3
19	2-22-73	30	1.0	29.0	1.000	32.5
20	"	30	0.8	29.2	0.950	34.3
21	"	30	0.8	29.2	1.150	28.3
22	2-26-73	30	1.2	28.8	0.975	33.4
23	"	30	0.8	29.2	0.800	40.7
24	2-23-73	30	2.7	27.3	0.800	40.7
25	"	30	0.8	29.2	1.050	31.0
26	"	30	0.6	29.4	1.000	32.5
27	"	30	0.4	29.6	1.250	26.0
28	"	30	0.7	29.3	1.550	21.0
29	2-21-73	30	1.8	28.2	1.250	26.0
30	"	30	1.1	28.9	1.100	29.6
31	"	30	0.5	29.5	1.250	26.0
32	"	30	1.6	28.4	0.750	43.4
33	2-22-73	30	1.0	29.0	1.350	24.1
34	"	30	0.7	29.3	1.250	26.0
35	"	30	1.2	28.8	0.975	33.4
P 36	1-31-73	30	2.3	27.7	1.150	28.3
37	2-23-73	30	1.6	28.4	0.675	48.2
38	"	30	7.4	22.6	0.550	59.2
39	"	30	0.8	29.2	1.080	30.1
40	"	30	0.6	29.4	0.950	34.3
41	"	30	1.0	29.0	1.100	29.6
42	"	30	0.8	29.2	1.200	27.1
B 43	2-21-73	30	1.2	28.8	0.950	32.4
44	"	30	1.3	28.7	1.050	31.0
45	2-22-73	30	1.3	28.7	1.150	28.3
46	"	30	1.3	28.7	1.100	29.6
P 47	2-22-73	30	9.0	21.0	0.575	56.6
48	"	30	1.0	29.0	1.150	28.3
49	"	30	1.3	28.7	1.100	29.6
50	"	30	1.2	28.8	1.150	28.3
51	2-23-73	30	1.0	29.0	1.150	28.3
52	"	30	6.8	23.2	0.550	59.2
53	"	30	1.2	28.8	0.950	32.3
54	"	30	0.6	29.4	0.950	34.3
55	"	30	0.4	29.6	1.100	29.6
B 56	"	30	0.8	29.2	1.000	30.9
TOTALS		1680.0	104.1	1575.9		

*TEST PILING

BENCH MARK: ~~TOP OF STA. 5+80.0, 5'-0" RT. ON ℄ OF PIER #4~~

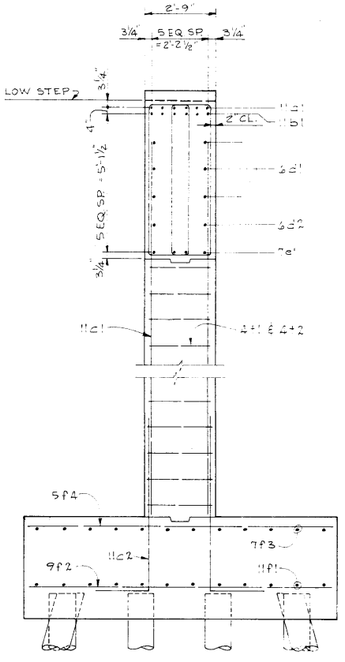


PLAN OF PIER CAP

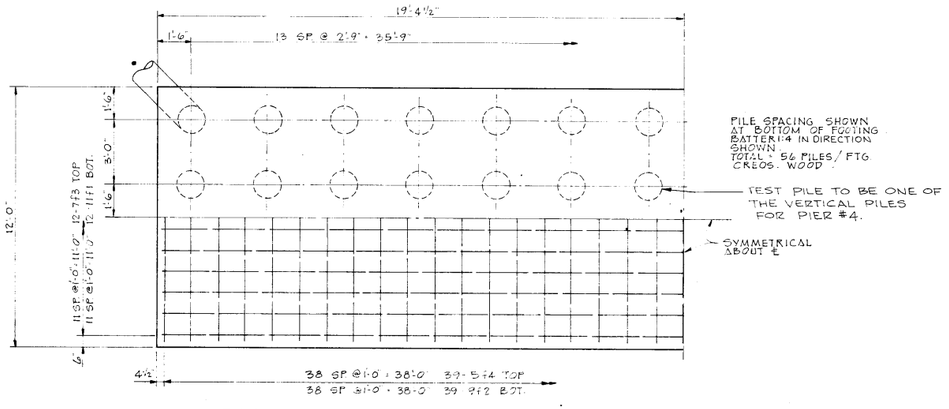


PIER ELEVATION

SECTION (A)



℄ SECTION



FOOTING PLAN AND PLAN SECTION

PIER NOTES:

ALL EXPOSED CORNERS 90° OR SHARPER ARE TO BE FILLETED WITH A 3/4" DRESSED AND BEVELED STRIP.

REINFORCING STEEL TO BE SECURELY WIRED IN PLACE BEFORE CONCRETE IS POURED.

MINIMUM CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR IS TO BE 2" UNLESS OTHERWISE NOTED OR SHOWN.

PILES ARE TO BE DRIVEN TO FULL PENETRATION IF PRACTICABLE, BUT TO NOT LESS THAN 20 TONS NOR MORE THAN 40 TONS BEARING VALUE PER PILE.

BILL OF REINFORCING STEEL

BAR	LOCATION	SHAPE	NO	LENGTH	WEIGHT PIER 2	WEIGHT PIER 3	WEIGHT PIER 4
11a1	CAP, LONGIT., TOP		6	45'-8"	① 1546	① 1546	① 1546
11b1	CAP, LONGIT., TOP		6	45'-8"	① 1546	① 1546	① 1546
11c1	COLUMN, VERT. PIER 2		62	39'-4"	12,957	-	-
11c1	COLUMN, VERT. PIER 3		62	35'-4"	-	11,639	-
11c1	COLUMN, VERT. PIER 4		62	31'-4"	-	-	10,321
11c2	COLUMN DOWELS		62	8'-11"	2937	2937	2937
6d1	CAP, LONGIT., SIDES		6	45'-8"	② 425	② 425	② 425
6d2	CAP, LONGIT., SIDES		2	38'-9"	116	116	116
7e1	CAP, LONGIT., BOTT.		4	46'-1"	③ 391	③ 391	③ 391
11f1	FOOTING, LONGIT., BOTT.		12	38'-5"	2449	2449	2449
9f2	FOOTING, TRANSV., BOTT.		39	11'-8"	1547	1547	1547
7f3	FOOTING, LONGIT., TOP		12	38'-5"	942	942	942
5f4	FOOTING, TRANSV., TOP		39	11'-8"	475	475	475
5s1	CAP HOOPS		28	15'-5"	450	450	450
5s2	CANTILEVER HOOPS		40	11-8 • 15-2	560	560	560
4t1	COLUMN TIES, PIER 2		70	11'-3"	526	-	-
4t1	COLUMN TIES, PIER 3		62	11'-3"	-	466	-
4t1	COLUMN TIES, PIER 4		54	11'-3"	-	-	406
4t2	COLUMN TIES, PIER 2		210	18'-0"	2525	-	-
4t2	COLUMN TIES, PIER 3		186	18'-0"	-	2236	-
4t2	COLUMN TIES, PIER 4		162	18'-0"	-	-	1948
4v1	BEAM SEAT (INTERIOR BEAMS ONLY)		40	4'-11"	131	131	131
	TOTAL				29,523	27,856	26,190

① INCLUDES ALLOWANCE FOR 2'-10" LAP
② INCLUDES ALLOWANCE FOR 1'-6" LAP
③ INCLUDES ALLOWANCE FOR 1'-9" LAP

TABLE OF ELEVATIONS AND STEPS

	EL. A	EL. B	EL. C	EL. D	STEP a	STEP b	STEP c	FTG ELEV.	GRADE TO PIER TOP
PIER 2	[illegible]	732.84	732.95	733.03	1 1/4"	1 1/4"	1"	687.74	5'-4 3/16"
PIER 3	728.90	[illegible]	[illegible]	729.[illegible]	1 1/4"	1 1/4"	1"	687.90	5'-4 3/16"
PIER 4	725.37	725.46	725.59	725.67	1 1/4"	1 1/4"	1"	688.37	5'-5 1/8"

CONCRETE QUANTITIES

	PIER 2	PIER 3	PIER 4
PIER CAP	27.2	27.2	27.2
COLUMN	101.3	89.7	78.1
FOOTING	67.2	67.2	67.2
TOTAL (C.Y.)	195.7	184.1	172.5

~~ESTIMATED~~ ACTUAL QUANTITIES

ITEM	UNIT	PIER 2	PIER 3	PIER 4
STRUCTURAL CONCRETE CL. C	C.Y.	195.7	184.1	172.5
REINFORCING STEEL	LB	29,523	27,856	26,190
EXCAVATION CLASS 20	C.Y.	-	-	165
EXCAVATION CLASS 21	C.Y.	183	267	290
CREOSOTED PILING	L.F.	56@20'	56@30'	55@30'
CREOSOTED TEST PILE	L.S.	-	-	LUMP SUM

DESIGN FOR 0° SKEW

41'-0" × 44'-0" PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

75'-9" END SPANS 96'-6" INTERIOR SPANS

CONCRETE FLOOR & SUBSTRUCTURE

PIERS 2, 3 & 4 DETAILS

STATION 77+75 IA. 149 OVER IOWA RIVER

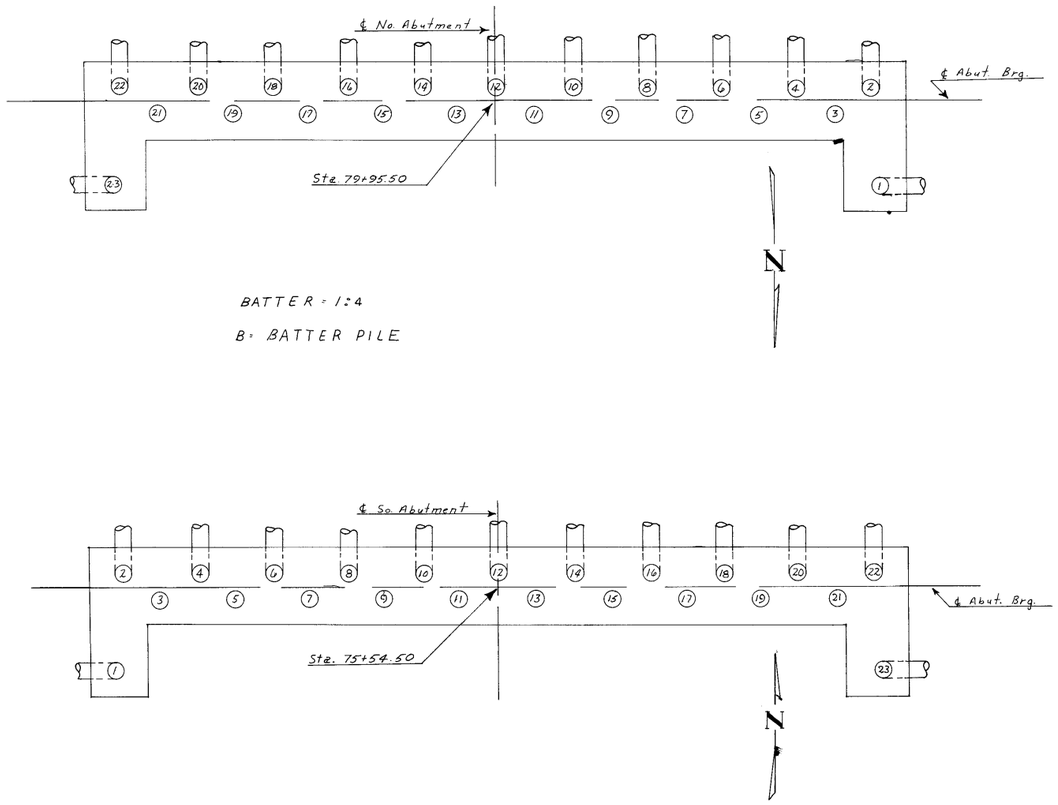
IOWA COUNTY

IOWA STATE HIGHWAY COMMISSION

DES. SHT. NO. 5 OF 16 FILE NO. 24550 DES. NO. 772

IOWA COUNTY | PROJECT NUMBER FN-149-2(13)--21-48

STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	5		7	31



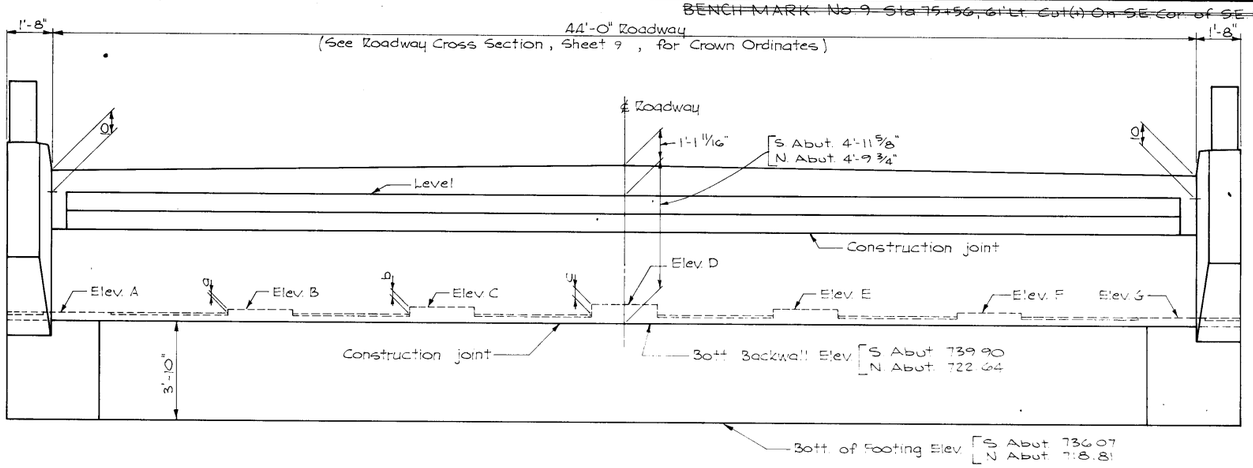
NORTH ABUTMENT

PILE NO.	DATE DRIVEN	LENGTH IN LEADS	LENGTH CUT-OFF	LENGTH IN STRUCT.	AVE. PEN. 5 BLOWS	BEARING IN TONS
B 1	8-31-73	45	10.2	34.8	—	REFUSAL
B 2	"	45	1.0	44.0	0.600	33.1
3	"	45	0.6	44.4	0.850	27.7
B 4	"	45	1.2	43.8	0.800	27.3
5	"	45	2.5	42.5	0.550	36.9
B 6	"	45	0.8	44.2	0.625	32.2
7	"	45	9.8	35.2	—	REFUSAL
B 8	"	45	1.2	42.8	0.600	33.1
9	"	45	9.5	35.5	—	REFUSAL
B 10	"	45	1.2	43.8	0.600	33.1
11	"	45	3.3	41.7	0.975	40.3
B 12	"	45	1.9	43.1	0.550	34.9
13	"	45	3.4	41.6	0.750	30.2
B 14	8-30-73	45	0.9	44.1	0.600	33.1
15	8-31-73	45	3.2	41.8	0.550	36.9
B 16	8-30-73	45	1.0	44.0	0.900	25.2
17	"	45	1.3	43.7	1.000	24.6
B 18	"	45	0.8	44.2	1.080	22.0
19	"	45	1.3	43.7	0.900	26.6
B 20	"	45	1.2	43.8	1.000	27.3
21	"	45	1.2	43.8	0.950	25.6
B 22	"	45	1.0	44.0	0.900	25.2
B 23	"	45	1.6	43.4	0.900	25.2
TOTALS		1035.0	60.1	974.9		

SOUTH ABUTMENT

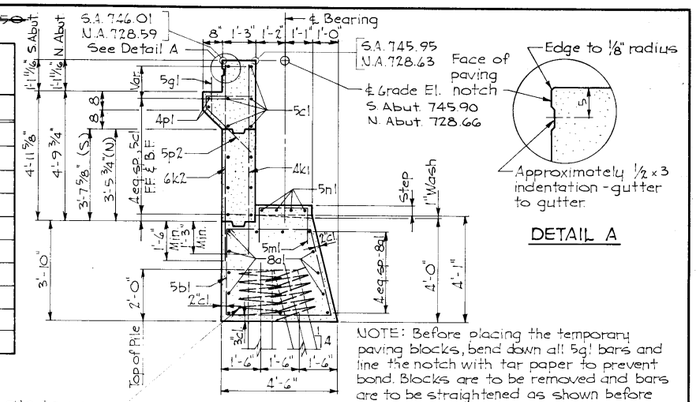
PILE NO.	DATE DRIVEN	LENGTH IN LEADS	LENGTH CUT-OFF	LENGTH IN STRUCT.	AVE. PEN. 5 BLOWS	BEARING IN TONS
B 1	8-29-73	20	3.1	16.9	0.350	39.6
B 2	8-28-73	20	0.3	19.7	0.700	25.8
3	"	20	4.9	15.1	0.425	36.9
B 4	"	20	2.2	17.8	—	REFUSAL
5	"	20	0.0	20.0	0.350	40.8
B 6	"	20	0.6	19.4	0.450	32.8
7	"	20	2.7	17.3	0.300	43.9
B 8	"	20	0.6	19.4	0.300	41.6
9	"	20	2.4	17.6	0.400	38.1
B 10	"	20	3.8	16.2	0.375	37.3
11	"	20	4.2	15.8	0.350	40.8
B 12	"	20	5.5	14.5	—	REFUSAL
13	"	20	5.9	14.1	—	REFUSAL
B 14	8-29-73	20	1.4	18.6	0.600	28.5
15	"	20	1.4	18.6	0.400	38.1
B 16	"	20	3.0	17.0	0.450	32.8
17	"	20	0.2	19.8	0.700	27.2
B 18	"	20	0.7	19.3	0.500	31.8
19	"	20	1.2	18.8	0.400	38.1
B 20	"	20	1.7	18.3	0.500	31.8
21	"	20	2.6	17.4	0.450	35.7
B 22	"	20	1.9	18.1	0.500	31.8
B 23	"	20	1.9	18.1	0.550	30.0
TOTALS		460.0	52.2	407.8		

~~BENCH MARK No. 9 Sta 75+56, 61' Lt. Cut(+) On SE Cor. of SE Wing Thru Truss Br Lt. El. 742.50~~

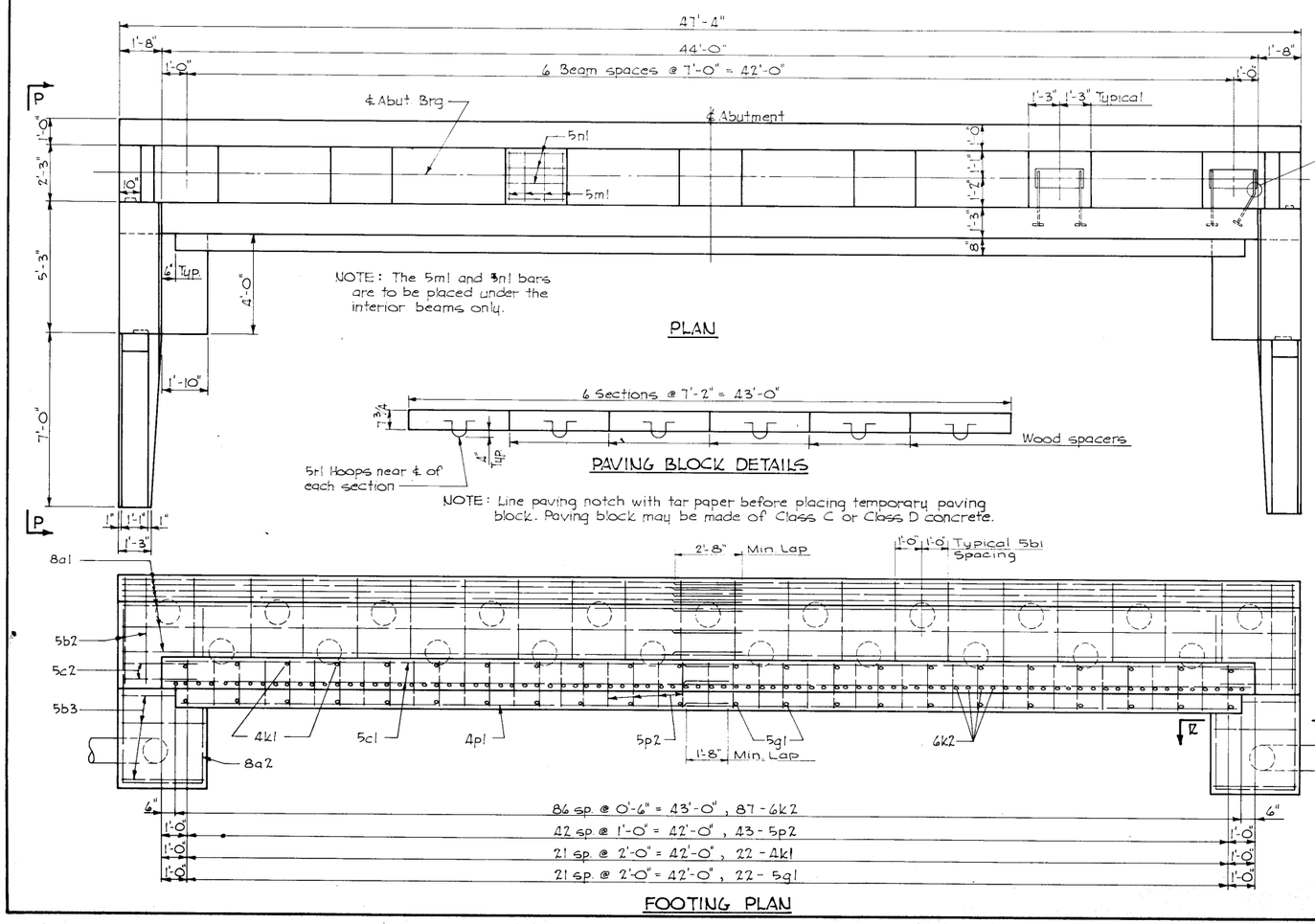


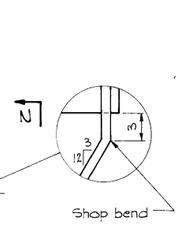
REAR ELEVATION

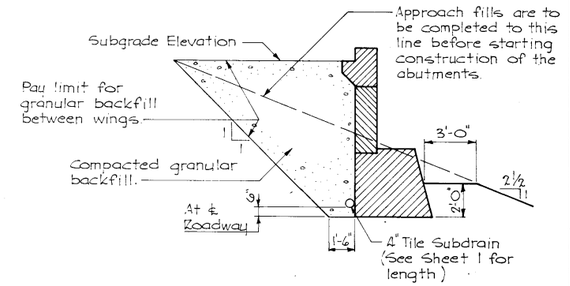
TABLE OF ELEVATIONS AND STEPS		
	S. Abut.	N. Abut.
Elev. A	740.15	722.89
Elev. B	740.25	722.99
Elev. C	740.36	723.10
Elev. D	740.44	723.18
Elev. E	740.36	723.10
Elev. F	740.25	722.99
Elev. G	740.15	722.89
Step a	1¼"	1¼"
Step b	2½"	2½"
Step c	3½"	3½"



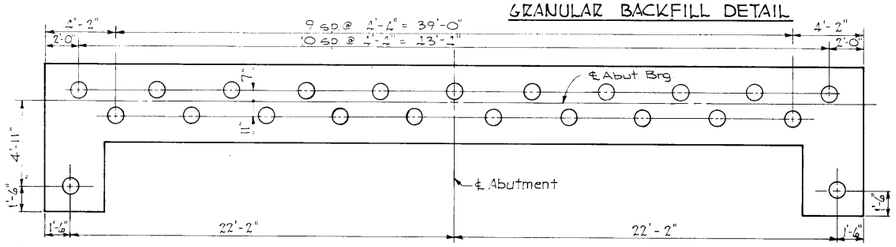
SECTION AT ℄ EXPANSION DEVICE NOT SHOWN





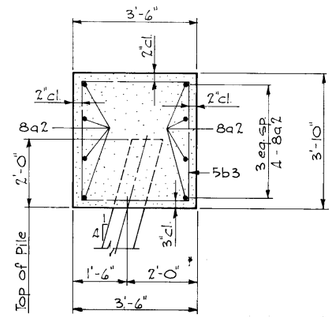


GRANULAR BACKFILL DETAIL



PILE PLAN

NOTE: Pile dimensions are at bottom of footing. Batter piles 1:4 in direction shown. Furnish 23 creosoted wood piles at each abutment.



SECTION E-E

DESIGN FOR 0° SKEW

44'-0" x 44'-0" PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

75'-9" END SPANS 96'-6" INTERIOR SPANS

CONCRETE FLOOR & SUBSTRUCTURE

ABUTMENT DETAILS

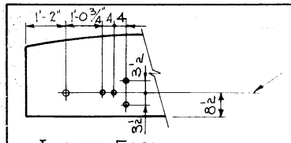
STATION 77+75 IA 149 OVER IOWA RIVER

IOWA COUNTY

IOWA STATE HIGHWAY COMMISSION

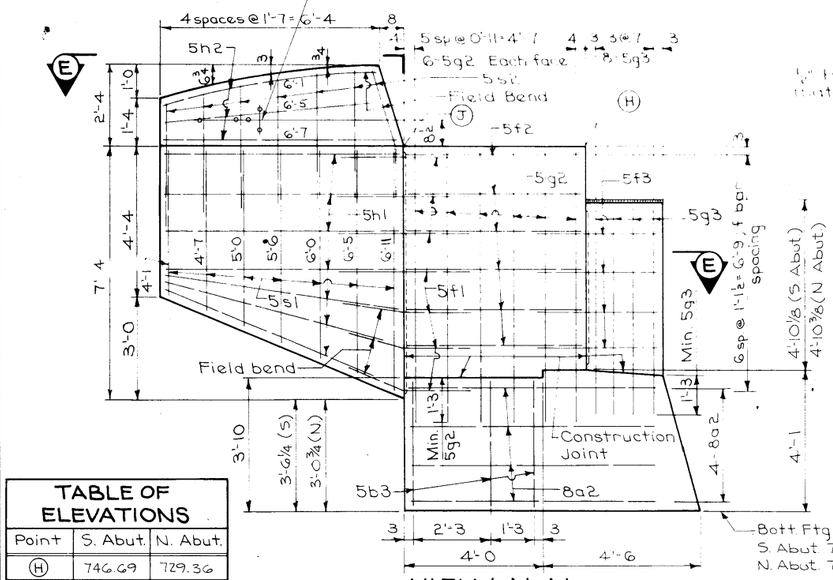
DES. SHT. NO. G OF 16 FILE NO. 24550 DES. NO. 772

IOWA COUNTY	PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	FN-149-2(13)--21-48	IOWA	5		8	31



Provide 5 Threaded Steel Inserts with solid bottom to fit ⅝"ϕ x 2" Galvanized Cap Screws with Galvanized Round Washers. Cost of Inserts to be included in price bid for "Structural Concrete". Screws and washers are not a part of this contract.

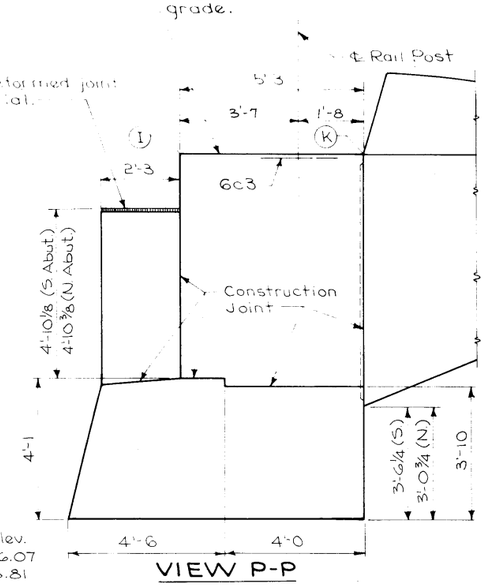
~~TENTH MARK NO 9 STA 75+56, 6' LT. Sta (+) BK SE COR OF SE Wing Thru Truss Brdg. EL 742.58~~



VIEW N-N

This surface is parallel to and 8 13/16 above the theoretical ℄ grade.

½" preformed joint material.



VIEW P-P

TABLE OF ELEVATIONS		
Point	S. Abut.	N. Abut.
H	746.69	729.36
I	746.69	729.36
J	746.92	729.20
K	746.92	729.20

ABUTMENT NOTES:

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

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

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

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

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

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

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

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

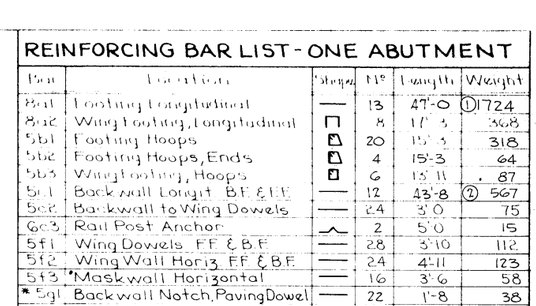
Construction joint keyways are to be formed with beveled 2 x 6's.

Wood piles are to be driven to full penetration, if practicable, but to not less than 20 tons nor more than 40 tons bearing capacity.

REINFORCING BAR LIST - ONE ABUTMENT

Bar	Location	Shape	No	Length	Weight
8a1	Footing Longitudinal	—	13	47'-0	① 724
8a2	Wing Footing, Longitudinal	⊓	8	17'-3	368
5b1	Footing Hoops	▯	20	15'-3	318
5b2	Footing Hoops, Ends	▯	4	15'-3	64
5b3	Wing Footing, Hoops	▯	6	15'-11	87
5h1	Backwall Longit B.F. & E.F.	—	12	43'-8	② 567
5c2	Backwall to Wing Dowels	—	24	3'-0	75
6c3	Rail Post Anchor	⌒	2	5'-0	15
5f1	Wing Dowels F.F. & B.F.	—	28	3'-10	112
5f2	Wing Wall Horiz. F.F. & B.F.	—	24	4'-11	123
5f3	*Maskwall Horizontal	—	16	3'-6	58
*5g1	Backwall Notch, Paving Dowel	—	22	1'-8	38
5g2	Wing Wall, Vertical	—	24	8'-0	200
5g3	Maskwall, Vertical	—	16	6'-2	103
5h1	Wing, Horizontal	—	28	6'-8	195
5h2	End Post, Horizontal	—	12	Varies	80
4c1	Backwall, Vertical, F.F.	—	22	7'-2	105
4c2	Backwall, Vertical, B.F.	—	87	7'-5	969
5m1	Beam Steps, Transv.	⌐	20	4'-5	92
5n1	Beam Steps, Longit.	—	20	2'-2	45
4p1	Backwall Notch, Longit.	—	2	42'-8	② 59
5p2	Backwall Notch, Vertical	⌐	43	4'-1	183
5r1	Paving Block Lifting Loops	⊓	6	2'-3	14
5s1	Wing, Vertical	—	28	Varies	161
5s2	End Post-Wing, Vert.	—	28	3'-7	105
	Pile Spirals, ¼"ϕ rod	ⓞ	23	38'-6	148
	Spiral Spacers, ⅞ @ 0.69	—	46	1'-10	58
	① Includes allowance for 2'-8"	lap			
	② Includes allowance for 1'-8"	lap			
	*Structural Grade			Total (lb.)	6066

BENT BAR DETAILS



NOTE:
All dimensions are out to out. Radii to ℄ bar.

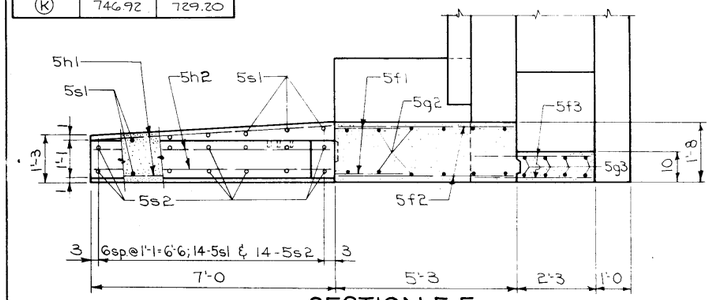
CONCRETE PLACEMENT QUANTITIES ONE ABUTMENT

Location	Unit	Quantity
Footing And Steps	c.y.	30.8
Backwall Above Construction Joint	c.y.	5.8
Backwall Below Construction Joint	c.y.	7.2
Wingwalls	c.y.	4.4
Maskwalls	c.y.	0.7
End Posts 2 @ 0.55	c.y.	1.1
*Paving Block	c.y.	0.5
Wings 2 @ 2.25	c.y.	4.5
Total	c.y.	55.0

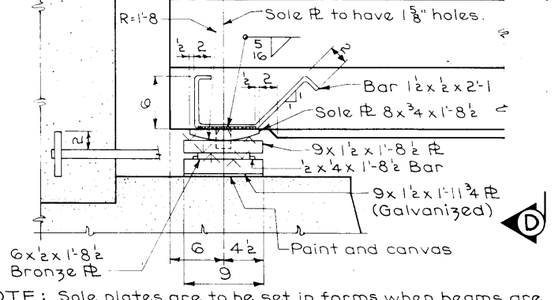
* Paving block may be Class C or Class D concrete.

~~ESTIMATED~~ ACTUAL QUANTITIES - TWO ABUTMENTS

Item	Unit	Quantity
Structural Concrete Class C	c.y.	110.0
Reinforcing Steel	lb.	12,132
Class 20 Excavation	c.y.	204
Granular Backfill	c.y.	228
Creosoted Wood Piling 23 @ 20' & 23 @ 45'	L.F.	~~1495~~ 1382.7

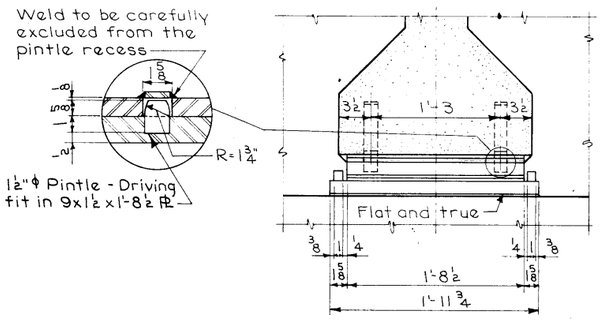


SECTION E-E

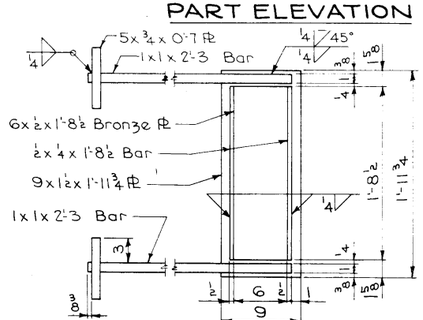


NOTE: Sole plates are to be set in forms when beams are cast and formed out below as shown to exclude concrete.

PART ELEVATION



SECTION D-D



PLAN OF MASONRY ℄ AND BRONZE ℄

ABUTMENT BEARING NOTES:

Bronze ℄ shall be lubricated in accordance with ISHC Specifications Article 4190.03 (Sliding surface only). Top edges of bronze ℄ shall be beveled ⅛". Masonry plates to be galvanized after welding.

Surfaces marked "V" shall be finished ASA 250 and surfaces marked "V" shall be finished ASA 125. Masonry plates are to be set in paint and canvas.

Pintle plates and masonry plates are a part of the superstructure Structural Steel Quantity. Unit price bid for Structural Steel shall include allowance for cost of bronze plates. Cost of anchored curved sole plates is to be included in price bid for Pretensioned Prestressed Concrete Beams.

ABUTMENT BEARING DETAILS

DESIGN FOR 0° SKEW

44'-0" x 44'-0" PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

75'-9" END SPANS 96'-6" INTERIOR SPANS

CONCRETE FLOOR & SUBSTRUCTURE

ABUTMENT DETAILS

STATION 77+75 IA 149 OVER IOWA RIVER

IOWA COUNTY

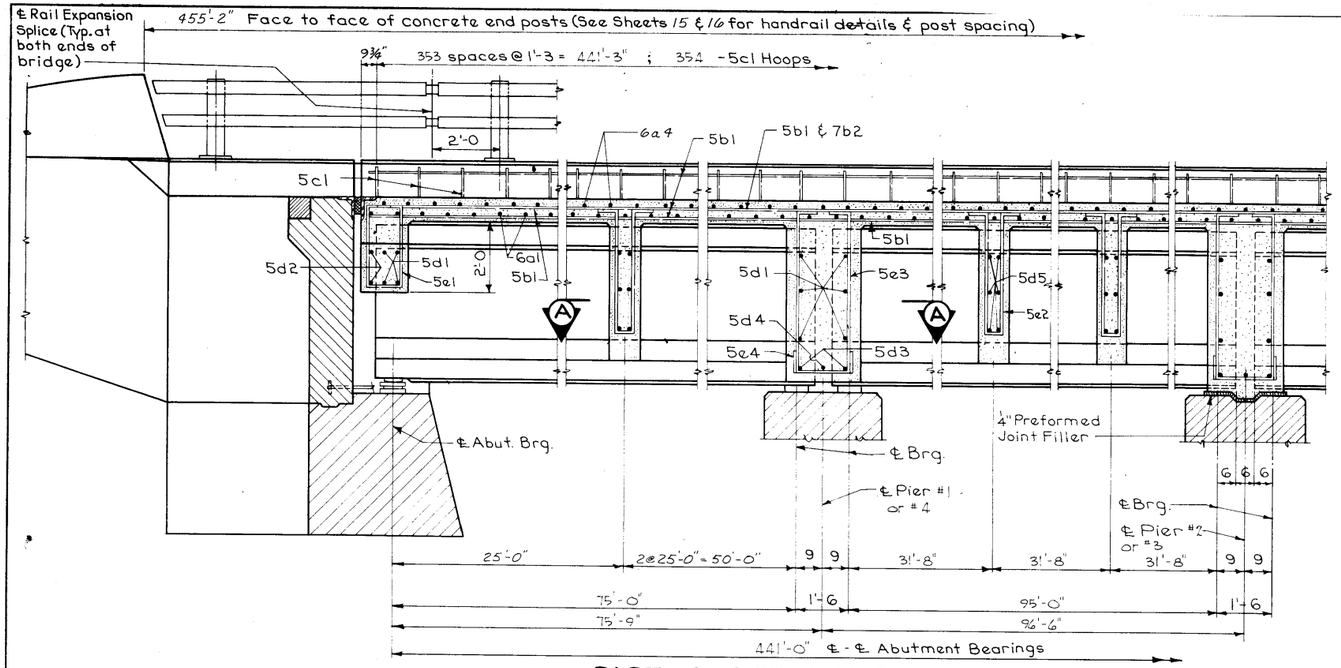
IOWA STATE HIGHWAY COMMISSION

Design Sheet No.: 7 Of 16 File No.: 24550 Design No.: 772

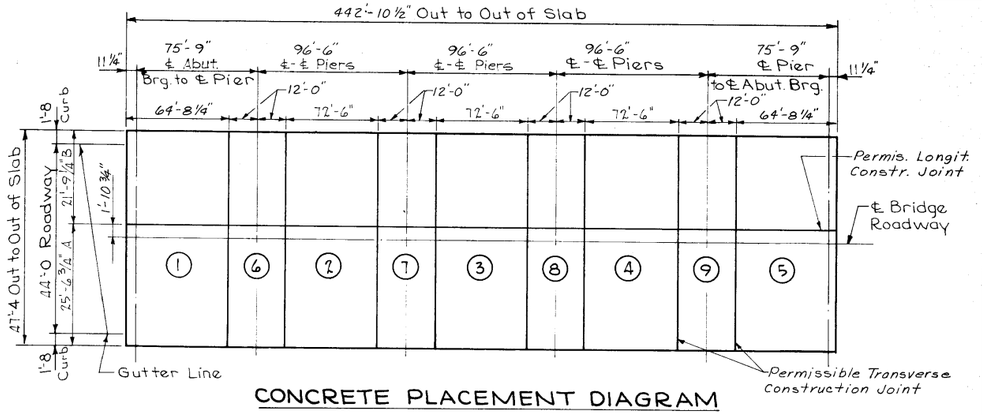
DESIGNED
DETAILED BY:
TRACED BY
CHECKED BY

RDWY. - PPCB ("D" BEAMS - STUB ABUT.) - ABUTMENT - 0° OR SMALL SKEW | STANDARD SHEET | IOWA COUNTY

PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
FN-149-2(13)--21-48	IOWA	5		9	31

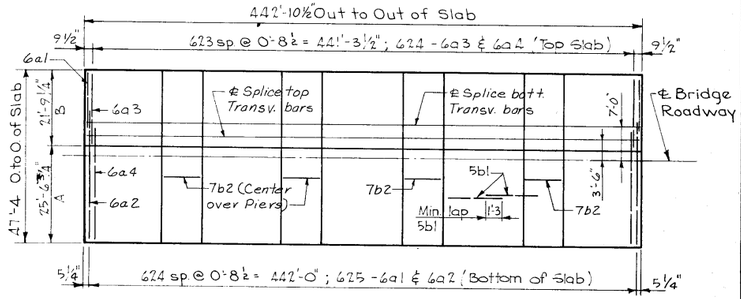


PART LONGITUDINAL SECTION NEAR CURB

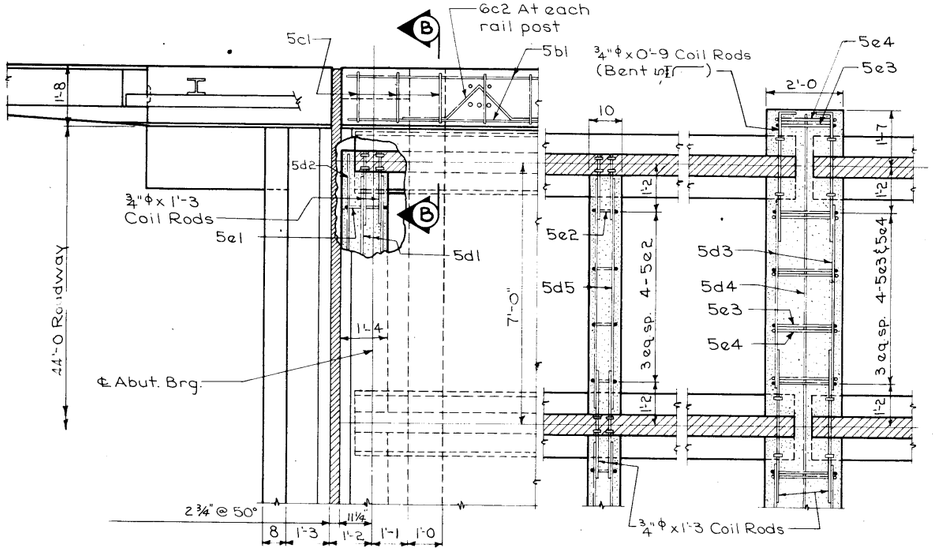


CONCRETE PLACEMENT DIAGRAM

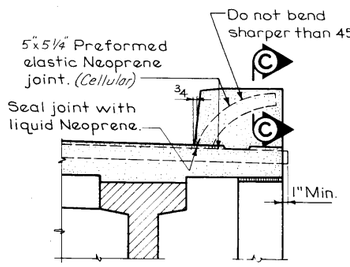
NOTE: Roadway slab shall be placed in sections and in sequence indicated by encircled numbers on placement diagram, and preferably at intervals not exceeding 24 hours. Curbs may be placed continuously. Alternate procedures for placing concrete may be submitted for approval, together with a statement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



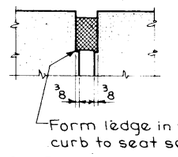
SLAB REINFORCING LAYOUT



PART PLAN — PART SECTION A-A

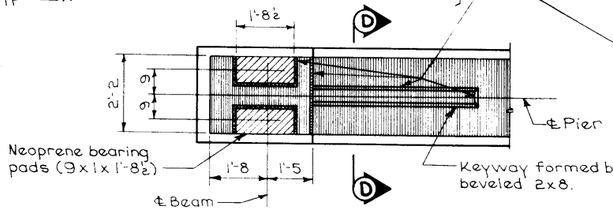


SECTION B-B



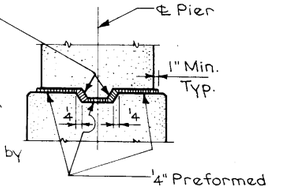
SECTION C-C

1" Thick strips of compressible material around bearing pads, face of steps, sides and ends of keyways. Compressible material shall conform to A.A.S.H.O. Specifications, M-153 (Type III).



PART PLAN

NOTE: Cost of all preformed joint and compressible materials is to be included in price bid for concrete.



SECTION D-D

PIER TOP DETAILS - PIER 2 & 3

DESIGN FOR 0° SKEW

441'-0" x 44'-0" PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

75'-9" END SPANS 96'-6" INTERIOR SPANS

CONCRETE FLOOR & SUBSTRUCTURE

SUPERSTRUCTURE DETAILS

STATION 77+75 IA 149 OVER IOWA RIVER

IOWA COUNTY

IOWA STATE HIGHWAY COMMISSION

Design Sheet No.: 8 Of 16 File No.: 24550 Design No.: 772

Revised 4-18-72: Nomenclature of Expansion Joint ch.; ged.

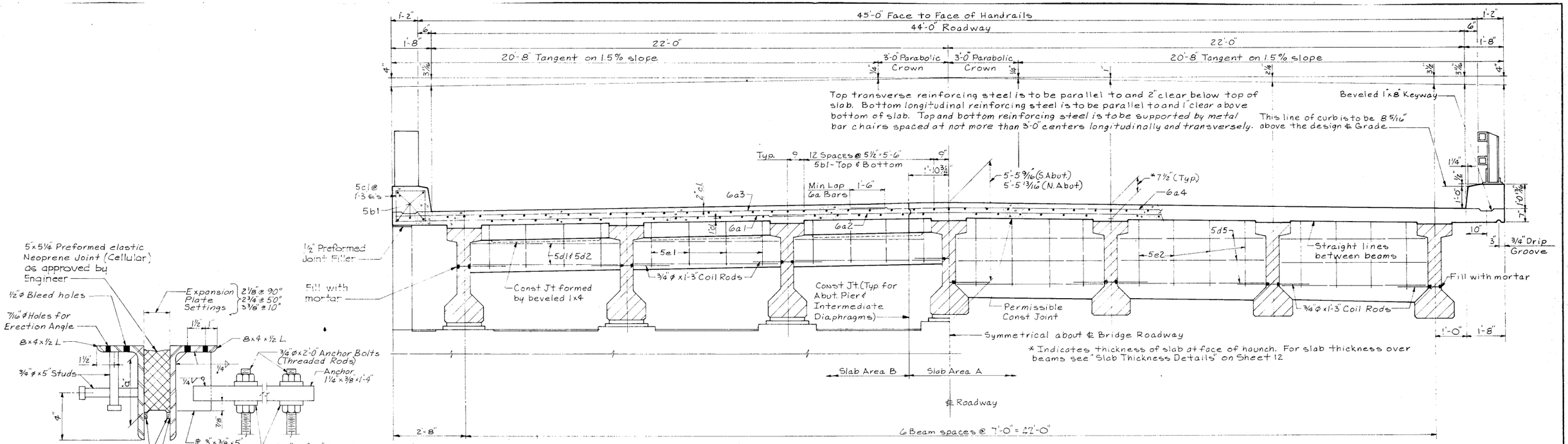
DESIGNED BY — DETAILED BY — TRACED BY — CHECKED BY

44' RDWY - PPCB ("D" BEAMS - STUB ABUT) - LONGIT. SECTION

STANDARD SHEET

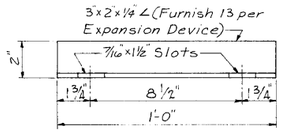
IOWA COUNTY

PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
FN-149-2(13)--21-48	IOWA	5		10	31

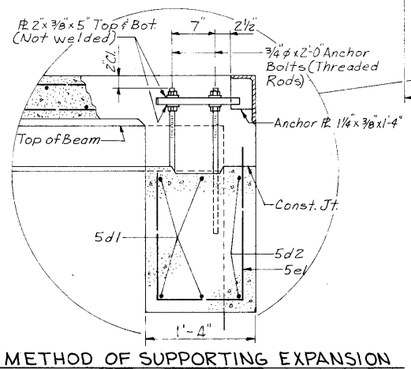


NOTE: The distance ("a") from top of slab to compression seal retainer bar shall be consistent with the recommendation of the seal manufacturer. Drawings of the seal to be used showing the size, type, and manufacturer are to be furnished with the shop drawings for the expansion device.

SECTION A-A

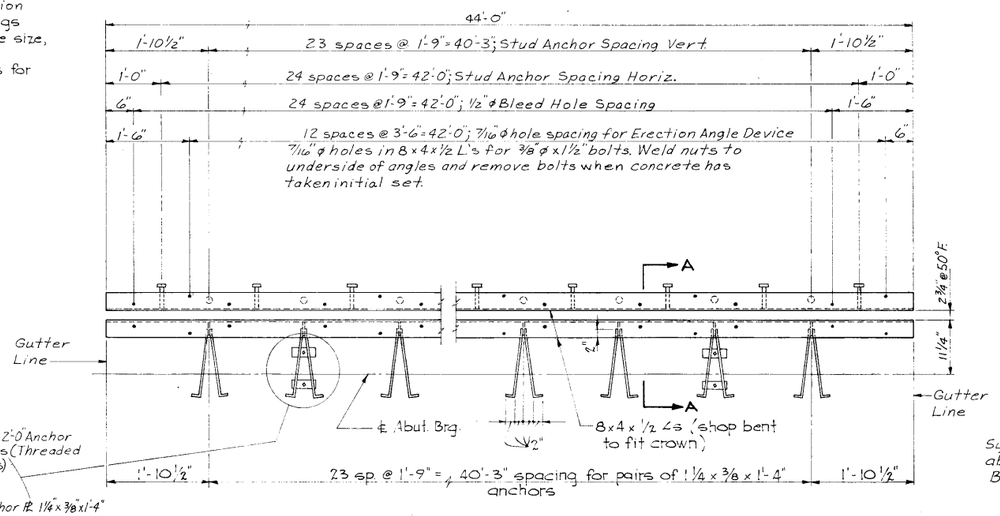


ERECTION ANGLE FOR EXPANSION DEVICE



METHOD OF SUPPORTING EXPANSION DEVICE DURING CONSTRUCTION

HALF SECTION NEAR ABUTMENT



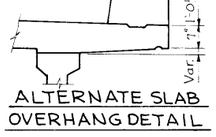
EXPANSION DEVICE DETAILS

(Two Required - Weight = 2078 Lbs. each)

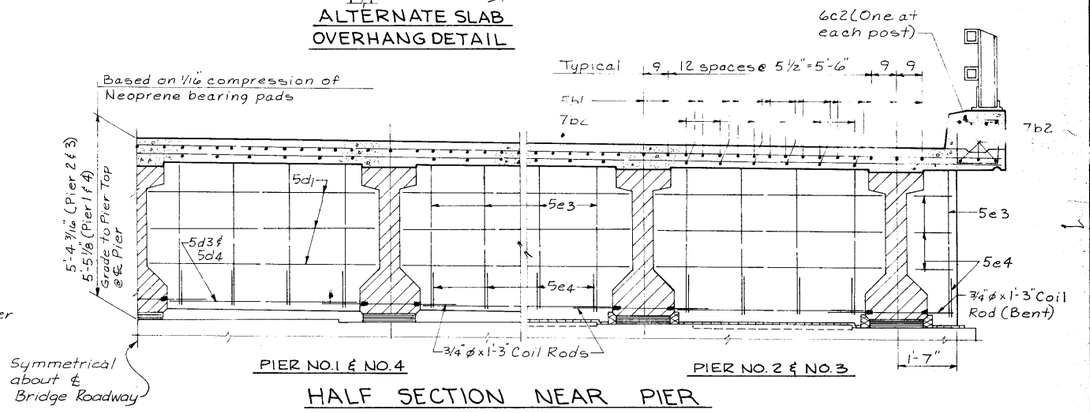
NOTE: Expansion device, except erection angles and anchor bolt assemblies, is to be galvanized after welding.

One set of anchor bolts is required between each pair of beams. Six sets are required for each expansion device. Anchor bolt sets are to be symmetrical about ℄ roadway.

HALF SECTION NEAR MID SPAN



ALTERNATE SLAB OVERHANG DETAIL



HALF SECTION NEAR PIER

DESIGN FOR 0° SKEW

441'-0" x 44'-0" PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

75'-9 END SPANS 96'-6 INTERIOR SPANS

CONCRETE FLOOR & SUBSTRUCTURE

SUPERSTRUCTURE DETAILS

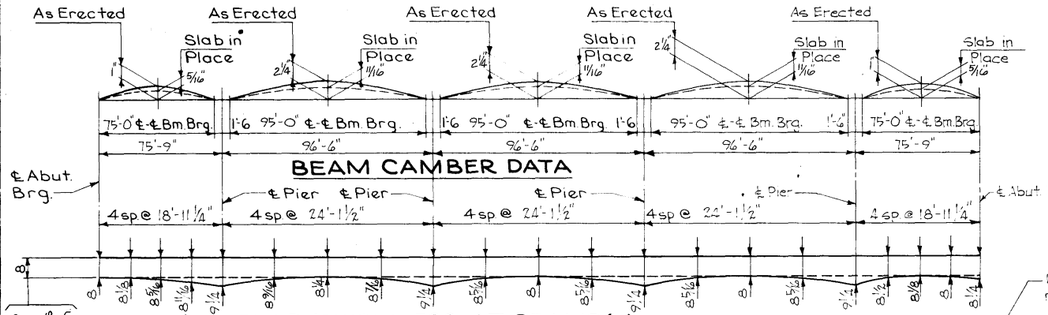
STATION 77+75 IA. 149 OVER IOWA RIVER

IOWA COUNTY

IOWA STATE HIGHWAY COMMISSION

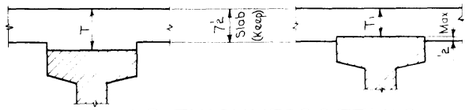
DES. SHT. NO. 9 OF 16 FILE NO. 24550 DES. NO. 772

IOWA COUNTY	PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	FN-149-2(13)--21-48	IOWA	5		11	31



BEAM CAMBER DATA

SLAB THICKNESS AT BEAMS(T)



SLAB THICKNESS DETAILS

NOTE: The slab thickness (T) at beams is based on the anticipated beam camber remaining after placing the slab, but is not guaranteed for construction. If beam is under cambered, increase slab thickness (T) at beams to compensate. If beam is over cambered, the slab thickness (T) may be decreased to a maximum of ½" embedment at the beam (T₁). If more than ½" embedment is required, or if the haunch exceeds 2", the grade line is to be revised

SUPERSTRUCTURE NOTES:

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

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

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

Cost of pier bearing material is to be included in price bid for prestressed concrete beams.

All beams are to be set vertical.

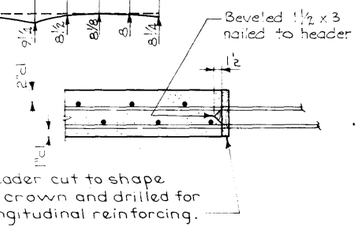
Forms for the slab and curbs are to be supported by the prestressed beams.

The pier diaphragm concrete is to be placed monolithically with the floor slab.

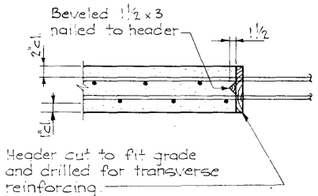
Clear distance from face of concrete to near reinforcing bar shall be 2 inches unless otherwise noted or shown. All reinforcing bars are to be securely wired in place and adequately supported on bar chairs before concrete is placed.

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

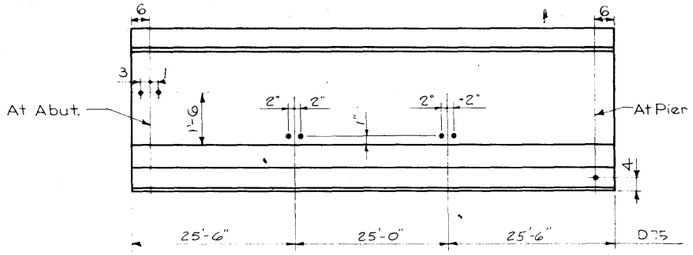
No allowance will be made for the additional concrete required to form the slab overhang when using the alternate method.



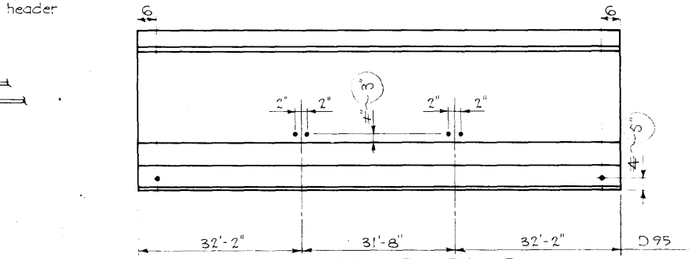
TRANSVERSE SLAB CONSTRUCTION JOINT



LONGITUDINAL SLAB CONSTRUCTION JOINT



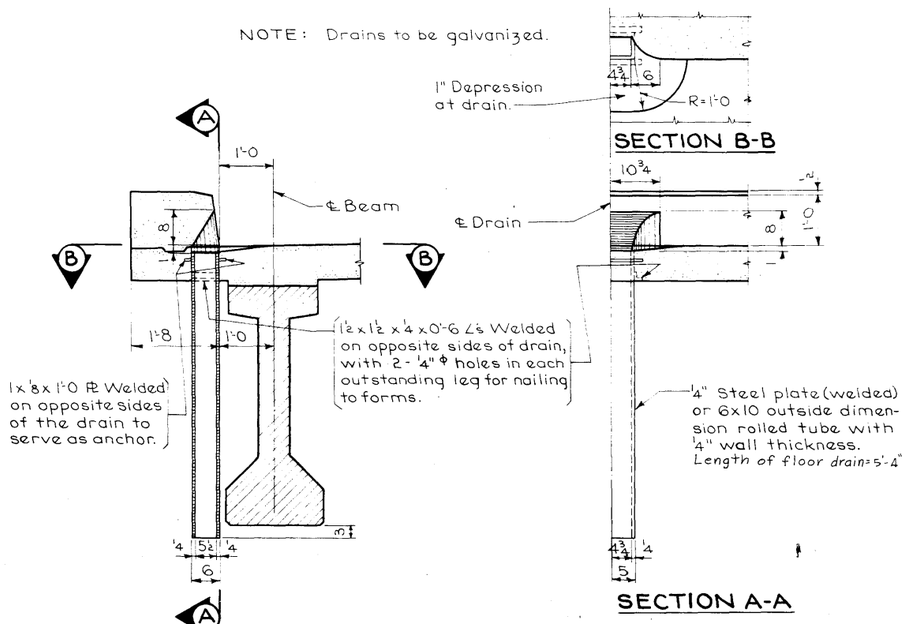
END SPANS



INTERIOR SPANS

BEAM COIL TIE LOCATION

Revised: 1-16-73 Beam Coil Tie locations changed



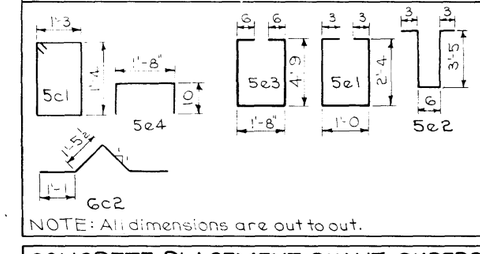
DRAIN DETAILS

NOTE: 20 Drains required. See "Situation Plan" for location. Weight = 142 lb. each; to be included in "Structural Steel" quantity.

REINFORCING STEEL-SUPERSTRUCTURE

Bar	Location	Shape	№	Length	Weight
6a1	Slab Transv. Bottom	——	625	17'-3"	16,193
6a2	Slab Transv. Bottom	——	625	31'-3"	29,336
6a3	Slab Transv. Top	——	624	20'-9"	19,448
6a4	Slab Transv. Top	——	624	27'-9"	26,009
5b1	Slab And Curb Longit	——	1261	35'-3"	46,362
7b2	Slab & Curb Longit.- Over Piers	——	160	23'-8"	7740
5c1	Curb Hoops		708	5'-11	4369
6c2	Rail Post Anchor		104	5'-0	781
5d1	Abut. & Pier Diaph. -	——	132	-	1218
5d2	Abutment Diaph.-Longit.	——	8	21'-9"	-
5d3	Pier Diaph. - Longit.	——	28	4'-10"	242
5d4	Pier Diaph. - Longit.	——	8	23'-1"	193
5d5	Intermediate Diaph.-Longit.	——	360	6'-1"	2284
5e1	Abutment Diaph.- Hoops		48	5'-10	292
5e2	Intermediate Diaph.-Hoops		240	7'-6	1877
5e3	Pier Diaph.-Hoops		104	11'-10"	1284
5e4	Pier Diaph.-Ties		128	3'-2"	423
				Total (lb.)	158,232

BENT BAR DETAILS



NOTE: All dimensions are out to out.

CONCRETE PLACEMENT QUANT.-SUPERSTRUCTURE

Item	Unit	Side A	Side B	Total
Section 1 Slab And Diaphragm	C.Y.	46.0	39.1	85.1
Section 2 Slab And Diaphragm	C.Y.	48.8	41.4	90.2
Section 3 Slab And Diaphragm	C.Y.	48.6	41.3	89.9
Section 4 Slab And Diaphragm	C.Y.	48.6	41.3	89.9
Section 5 Slab And Diaphragm	C.Y.	46.0	39.0	85.0
Section 6 Slab And Diaphragm	C.Y.	21.9	18.6	40.5
Section 7 Slab And Diaphragm	C.Y.	22.3	18.9	41.2
Section 8 Slab And Diaphragm	C.Y.	22.2	18.9	41.1
Section 9 Slab And Diaphragm	C.Y.	21.9	18.6	40.5
Curbs 2 @ 442'-10½"	C.Y.	27.8	27.8	55.6
			Total (C.Y.)	659.0

~~ESTIMATED~~ ACTUAL QUANTITIES - SUPERSTRUCTURE

Item		Unit	Quantity
Structural Concrete Class D		C.Y.	659.0
Structural Steel		lb.	9852
Reinforcing Steel		lb.	158,232
5" Preformed Elastic Neoprene Joint (Cellular)		L.F.	103
Pretensioned Prestressed Concrete Beams	D75	№	12
	D95	№	21

DESIGN FOR 0° SKEW

441'-0" x 44'-0" PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

75'-9" END SPANS 96'-6" INTERIOR SPANS

CONCRETE FLOOR & SUBSTRUCTURE

SUPERSTRUCTURE DETAILS

STATION 77+75 : 39 OVER IOWA RIVER

IOWA COUNTY

IOWA STATE HIGHWAY COMMISSION

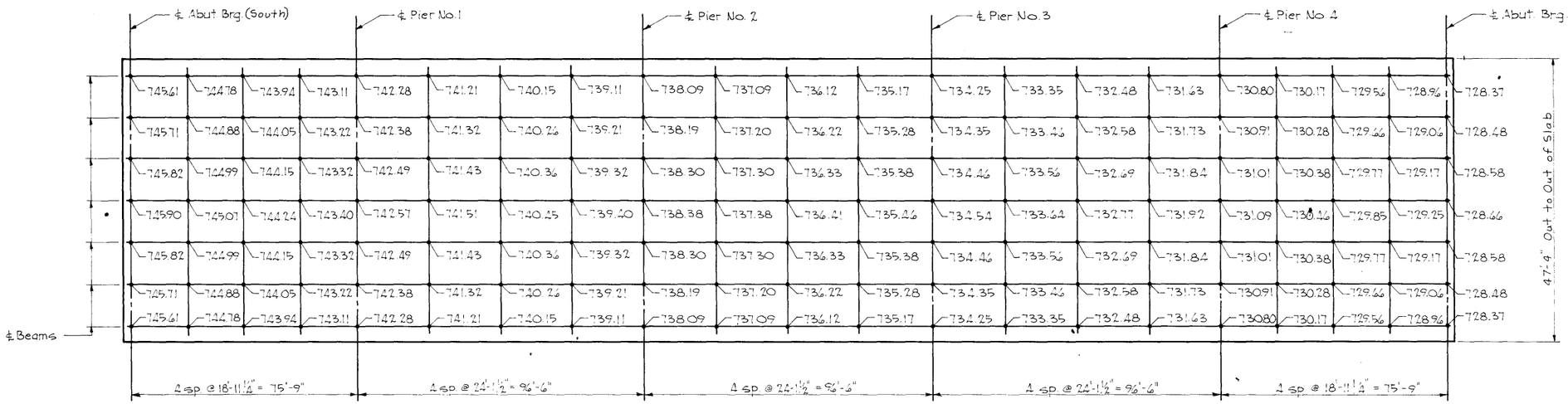
Design Sheet No.: 10 Of 16 File No.: 24550 Design No.: 772

Revised 4-18-72: Coil tie location changed at abutment.

DESIGNED BY:	TRACED BY	ROWY. - PPCB ("D" BEAMS - STUB ABUT.)	SUPERSTR. DETAILS - QUANTITIES	STANDARD SHEET 4231	IOWA COUNTY	PROJECT NUMBER	STATE	SEC. ROAD OR ST. NO.	FISCAL YEAR	SHEET NO.	TOTAL
DETAILED BY:	CHECKED BY:					FN-149-2(13)--2I-48	IOWA			12	31

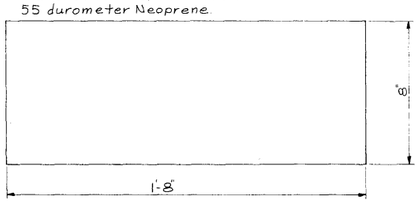
BENCH MARK : ~~M.B. 9 SE'LY 35.56' 6" LIP CURB AT SE CORNER OF MID-RD. BRIDGE, ELEV. = 742.50~~

NEED B.M. ELEV.

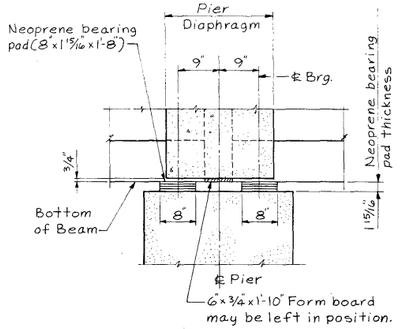


TOP SLAB ELEVATIONS

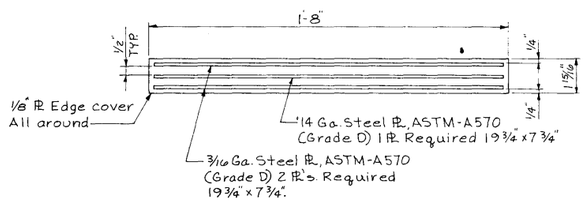
NOTE:
Material for Neoprene Pads to be of 55 durometer Neoprene.



PLAN OF BEARING PAD



SECTION THRU PIER DIAPHRAGM
PIERS 1 & 4



NEOPRENE BEARING PAD DETAILS
PIERS 1 & 4

DESIGN FOR 0° SKEW

441'-0" x 44'-0" PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

75'-9" END SPANS 96'-6" INTERIOR SPANS

CONCRETE FLOOR & SUBSTRUCTURE

SUPERSTRUCTURE DETAILS

STATION 77 +75 IA. 149 OVER IOWA RIVER

IOWA COUNTY

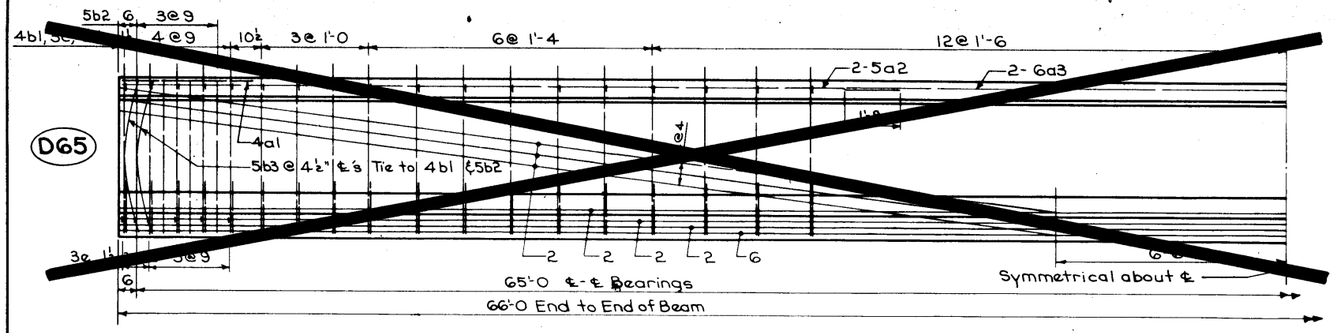
IOWA STATE HIGHWAY COMMISSION

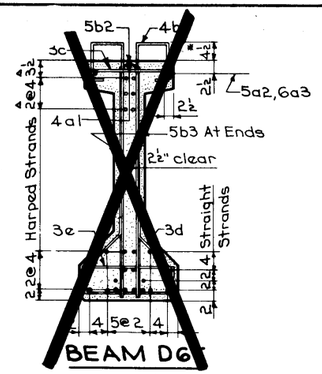
DES. SHEET NO. 11 OF 16 FILE NO. 24550 DES. NO 772

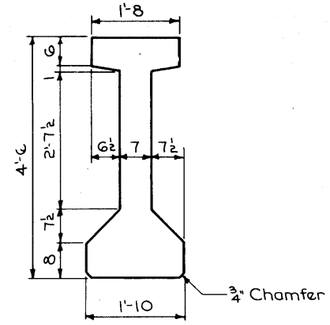
IOWA COUNTY

PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
FN-149-2(13)--21-48	IOWA	5		13	31

Revised (2-1-69): Number of strands and stirrup spacings at beam end changed in D8.
Number of draped strands changed in D9.
Revised 3-6-69: Beam designation numbers changed.

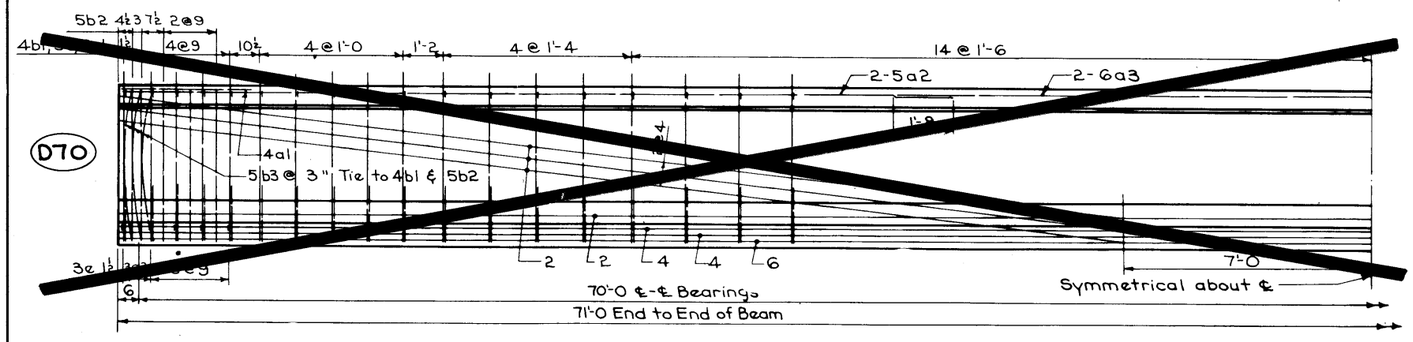


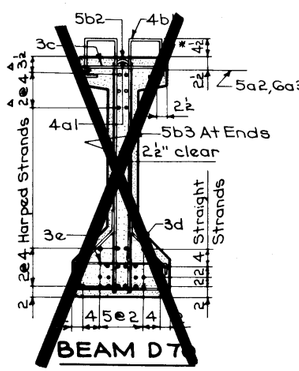


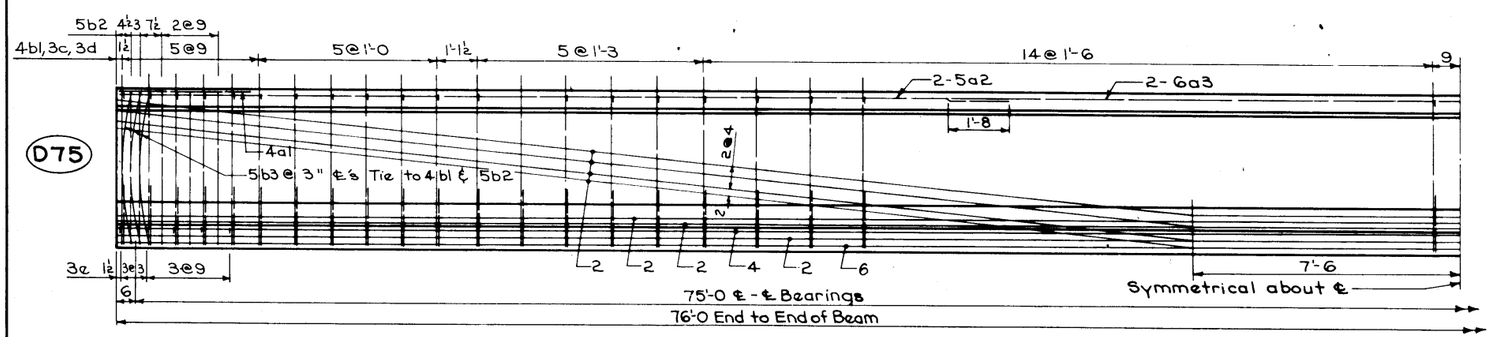


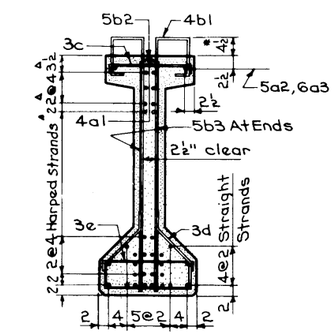
TYPICAL "D" BEAM CROSS SECTION

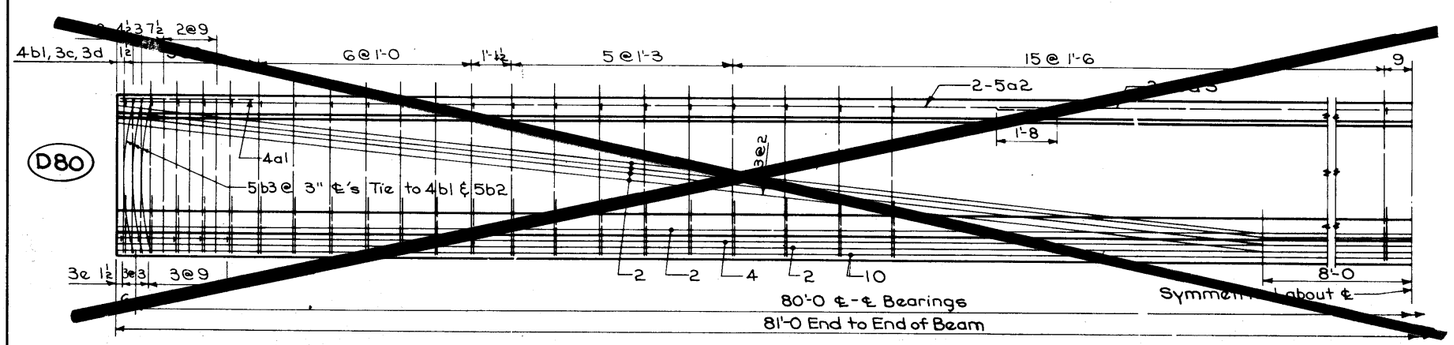
Area = 638.75 in.²
Ȳb = 24.35 in.
I = 214,975 in.⁴

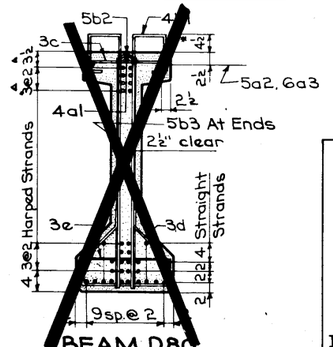












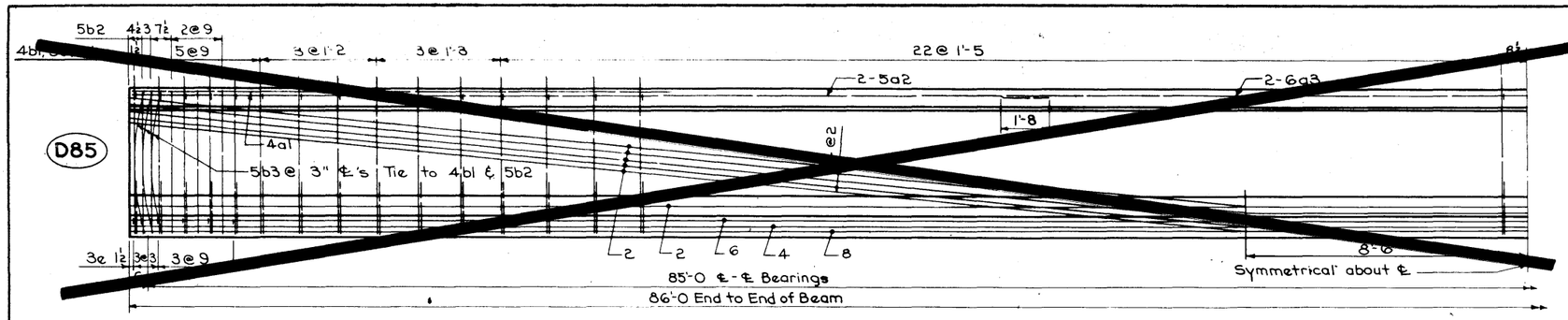
△ DIMENSIONS AT END OF BEAM
* KEEP

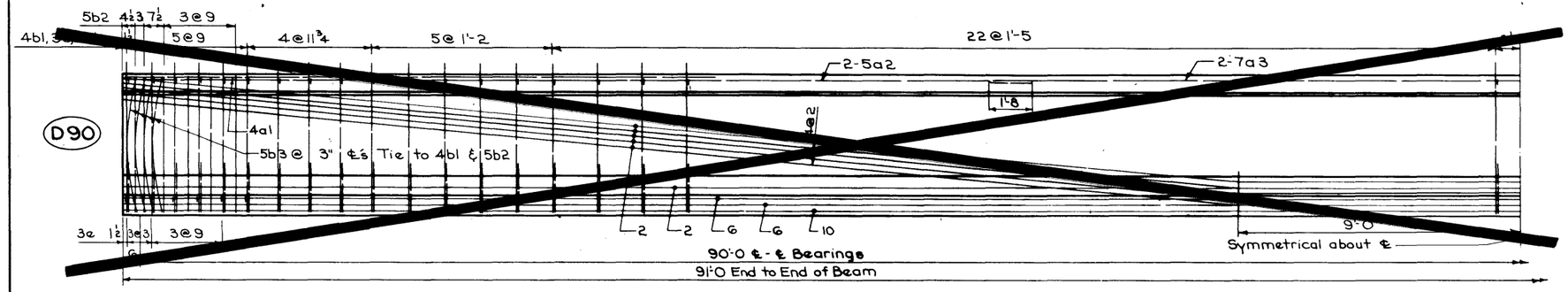
DESIGN FOR 0° SKEW
44'-0" x 44'-0" PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE
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CONCRETE FLOOR & SUBSTRUCTURE
BEAM DETAILS
STATION 77+75 IA 149 OVER IOWA RIVER
IOWA COUNTY
IOWA STATE HIGHWAY COMMISSION
Design Sheet № 12 Of 16 File № 24550 Design № 772

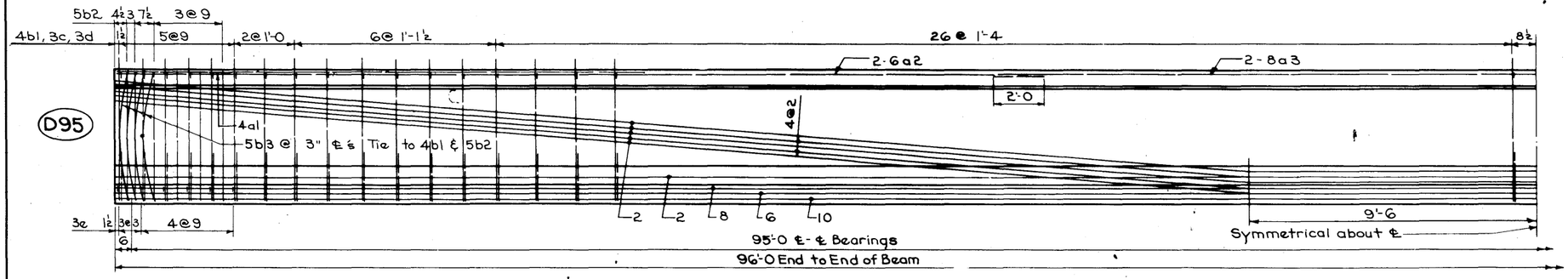
DESIGNED BY: TRACED BY:
DETAILED BY: CHECKED BY:

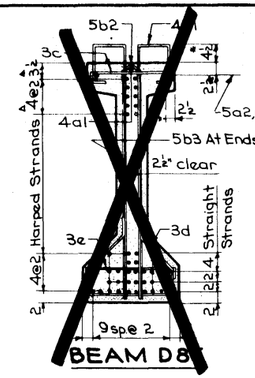
PRESTRESSED BEAM DETAILS - PC68D | STANDARD SHEET 4068 | IOWA COUNTY

PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
FN-149-2(13)--21-48	IOWA	5		14	31

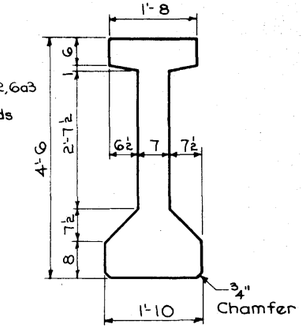




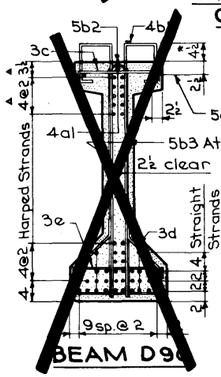




BEAM D85

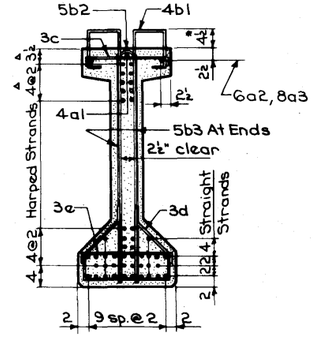


TYPICAL "D" BEAM CROSS SECTION



BEAM D90

Area = 638.75 in.²
Ȳb = 24.35 in.
I = 214,975 in.⁴



BEAM D95

BEAM D

△ DIMENSIONS AT END OF BEAM
* KEEP

DESIGN FOR 0° SKEW

441'-0" x 44'-0" PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

75'-9" END SPANS 96'-6" INTERIOR SPANS

CONCRETE FLOOR & SUBSTRUCTURE

BEAM DETAILS

STATION 77+75 IA 149 OVER IOWA RIVER

IOWA COUNTY

IOWA STATE HIGHWAY COMMISSION

Design Sheet № 13 Of 16 File № 24550 Design № 772

Revised (2-1-69): Number of strands in D11, D12 and D13 changed.
Revised 3-6-69: Beam designation numbers changed.
Revised 8-22-63: Length of Bar 4a1 in Beams D95, D90 and D85 changed.

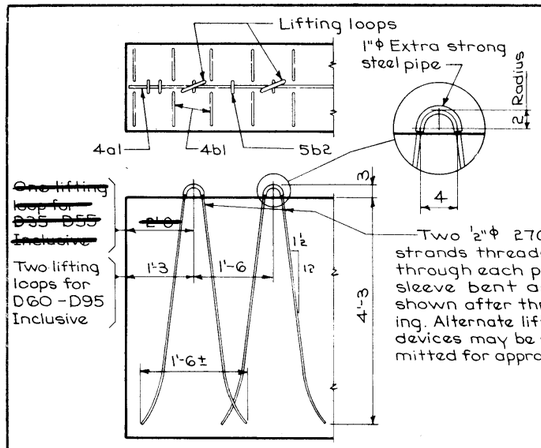
DESIGNED BY: _____ TRACED BY: _____
DETAILED BY: _____ CHECKED BY: _____

PRESTRESSED BEAM DETAILS - PC 68D

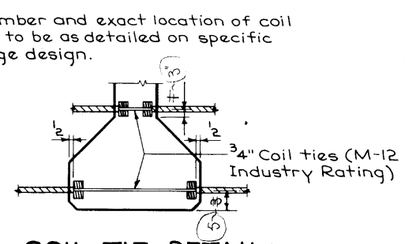
STANDARD SHEET 4669

IOWA COUNTY

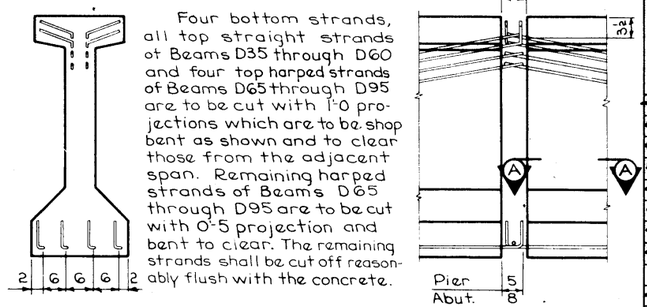
PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
FN-149-2(13)--21-48	IOWA	5		15	51



LIFTING LOOP DETAIL



COIL TIE DETAIL



STRAND PROJECTION AT BEAM ENDS WHEN EMBEDDED IN CONCRETE END DIAPHRAGMS

BEAM DATA

Beam	Span Length ℄-℄ Bearing	Overall Beam Length (L)	Strand Size	№ Of Strands Straight	№ Of Strands Harped	Total Initial Prestress Kips	Hold Down Force - Kips	Camber (in.) At Release	Camber (in.) After Losses	Deflection (in.) Δ_D Immediate① (Elastic) Δ_I	Deflection (in.) Δ_D Time② (Plastic) Δ_T	Permissible Spacing H20 Loading	Permissible Spacing HS20 Loading	Weight (Tons)	Concrete (C.Y.)	Reinforcing Steel - (lb)
~~D35~~	~~33'-0~~	~~36'-0~~	~~½"ϕ~~	~~14~~		~~404.6~~		~~0.08~~	~~0.12~~	~~0.02~~	~~0.01~~	~~8'-6~~	~~7'-6~~	~~12.0~~	~~3.9~~	~~447~~
~~D40~~	~~43'-0~~	~~46'-0~~	~~½"ϕ~~	~~14~~		~~404.6~~		~~0.10~~	~~0.13~~	~~0.04~~	~~0.01~~	~~8'-6~~	~~7'-6~~	~~13.6~~	~~6.7~~	~~450~~
~~D45~~	~~48'-0~~	~~51'-0~~	~~½"ϕ~~	~~14~~		~~404.6~~		~~0.11~~	~~0.16~~	~~0.07~~	~~0.02~~	~~8'-6~~	~~7'-6~~	~~15.3~~	~~7.8~~	~~511~~
~~D50~~	~~50'-0~~	~~53'-0~~	~~½"ϕ~~	~~18~~		~~482.4~~		~~0.16~~	~~0.22~~	~~0.11~~	~~0.03~~	~~8'-6~~	~~7'-6~~	~~17.0~~	~~8.4~~	~~555~~
~~D55~~	~~55'-0~~	~~58'-0~~	~~½"ϕ~~	~~19~~		~~543.1~~		~~0.18~~	~~0.26~~	~~0.17~~	~~0.04~~	~~8'-6~~	~~7'-6~~	~~18.6~~	~~9.2~~	~~631~~
~~D60~~	~~60'-0~~	~~63'-0~~	~~½"ϕ~~	~~21~~		~~600.9~~		~~0.23~~	~~0.32~~	~~0.23~~	~~0.06~~	~~8'-6~~	~~7'-6~~	~~20.3~~	~~10.0~~	~~674~~
~~D65~~	~~65'-0~~	~~68'-0~~	~~½"ϕ~~	~~16~~	~~6~~	~~569.2~~	~~21.9~~	~~0.40~~	~~0.50~~	~~0.33~~	~~0.08~~	~~8'-6~~	~~7'-6~~	~~22.0~~	~~10.8~~	~~868~~
~~D70~~	~~70'-0~~	~~73'-0~~	~~½"ϕ~~	~~16~~	~~8~~	~~659.6~~	~~20.1~~	~~0.62~~	~~0.91~~	~~0.44~~	~~0.11~~	~~8'-6~~	~~7'-6~~	~~23.8~~	~~11.7~~	~~980~~
D75	75'-0	76'-0	½"ϕ	16	8	693.6	23.7	0.68	1.00	0.57	0.14	~~8'-6~~	7'-6	25.3	12.5	1030
~~D80~~	~~80'-0~~	~~81'-0~~	~~½"ϕ~~	~~18~~	~~8~~	~~734.1~~	~~23.5~~	~~0.89~~	~~1.22~~	~~0.74~~	~~0.18~~	~~8'-6~~	~~7'-6~~	~~27.0~~	~~13.8~~	~~1086~~
~~D85~~	~~85'-0~~	~~86'-0~~	~~½"ϕ~~	~~20~~	~~10~~	~~867.0~~	~~21.9~~	~~1.09~~	~~1.50~~	~~0.95~~	~~0.22~~	~~8'-6~~	~~7'-6~~	~~28.8~~	~~14.1~~	~~1134~~
~~D90~~	~~90'-0~~	~~91'-0~~	~~½"ϕ~~	~~24~~	~~10~~	~~982.8~~	~~24.1~~	~~1.46~~	~~2.01~~	~~1.16~~	~~0.25~~	~~8'-6~~	~~7'-6~~	~~30.4~~	~~15.0~~	~~1288~~
D95	95'-0	96'-0	½"ϕ	26	10	1040.4	23.4	1.59	2.26	1.42	0.35	~~8'-6~~	7'-6	31.9	15.8	1479

① Deflections due to weight of slab and diaphragm. The deflections shown are for a slab weight of 703 #/ft. (7½" slab and 7'-6 beam spacing) and diaphragm weight of 2556 lb. at ℄ of span for D35 to D60 inclusive and at ⅓ points for D65 to D95 inclusive. For different slab and diaphragm weights, deflections will be directly proportional.

② Total beam deflection at ℄ of span, Δ_D, due to weight of slab and diaphragms for detailing purpose:
(A) $\Delta_D = \Delta_I + \Delta_T$ for simple span.
(B) $\Delta_D = \Delta_I + \frac{3}{4}\Delta_T$ for end spans of continuous bridge.
(C) $\Delta_D = \Delta_I + \frac{1}{2}\Delta_T$ for interior spans of continuous bridge.

NOTES:

These beams are designed for AASHO live loads as indicated in above table with an allowance of 20 lb. per square foot of roadway for future wearing surface.

All prestressing strands are to be ½" ϕ 270K grade.

Unless, otherwise noted all beams are to be increased in length by .00055 L to compensate for elastic shortening, creep and shrinkage.

Hold down points for harped strands may be moved toward ends of beam a distance of .025 L maximum at producer's option.

Tops of beams are to be struck off level and artificially roughened as directed by the Iowa Highway Commission Materials Department.

Bearings shall be as detailed on other design sheets.

Beams to be used in bridges made continuous by the poured in place floor are to be at least 28 days old before the floor is placed unless a shorter curing time is approved by the Bridge Engineer.

Contact surfaces between beam and abutment and pier diaphragms shall be roughened by sandblasting or other approved means to improve bond.

DESIGN STRESSES:

Design Stresses for the following materials are to be in accordance with AASHO Standard Specifications for Highway Bridges, Series of 1969:

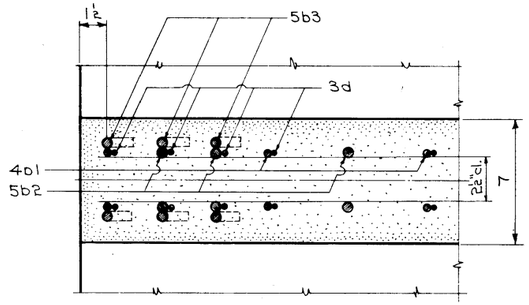
Reinforcing Steel in accordance with Section 1.5.1
$f's$ = 20,000 psi.

Prestressing Steel and Concrete in accordance with Section 1.6.7 $f's$ = 270,000 psi.; $f'c$ = 5,000 psi.

SPECIFICATIONS:

CONSTRUCTION: Standard Specifications of the Iowa State Highway Commission, Series of 1972, with current applicable Special Provisions and Supplemental Specifications.

DESIGN: AASHO, Series of 1969, with minor modifcations.

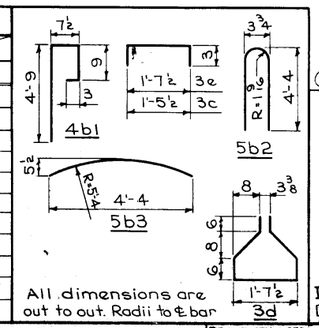


SECTION A-A SHOWING PLACEMENT OF STIRRUPS NEAR END OF BEAM

REINFORCING BAR LIST

Beam / Span		D35 35'-0		D40 40'-0		D45 45'-0		D50 50'-0		D55 55'-0		D60 60'-0		D65 65'-0		D70 70'-0		D75 75'-0		D80 80'-0		D85 85'-0		D90 90'-0		D95 95'-0	
Bar	Shape	№	Length	№	Length	№	Length	№	Length	№	Length	№	Length	№	Length	№	Length	№	Length	№	Length	№	Length	№	Length	№	Length
4a1	—	2	4'-0	2	4'-0	2	4'-0	2	4'-0	—	—	—	—	2	4'-0	2	4'-0	2	4'-0	2	4'-0	2	16'-0	2	18'-0	2	20'-0
a2	—	—	—	—	—	—	—	—	—	—	—	—	—	5/2	22'-1	5/2	23'-7	5/2	25'-1	5/2	26'-7	5/2	28'-7	5/2	30'-1	6/4	31'-11
a3	—	—	—	—	—	—	—	—	—	—	—	—	—	6/2	25'-0	6/2	27'-0	6/2	29'-0	6/2	31'-0	6/2	32'-0	7/3	33'-0	8/2	36'-0
4b1	⊏	66	6'-2	74	6'-2	74	6'-2	86	6'-2	94	6'-2	102	6'-2	106	6'-2	114	6'-2	124	6'-2	132	6'-2	136	6'-2	148	6'-2	160	6'-2
5b2	⊂	6	8'-9	6	8'-9	6	8'-9	6	8'-9	8	8'-9	8	8'-9	8	8'-9	10	8'-9	10	8'-9	10	8'-9	10	8'-9	12	8'-9	12	8'-9
5b3	—	4	4'-5	4	4'-5	4	4'-5	4	4'-5	8	4'-5	8	4'-5	8	4'-5	12	4'-5	12	4'-5	12	4'-5	12	4'-5	16	4'-5	16	4'-5
3c	⌐	33	1'-11	37	1'-11	39	1'-11	43	1'-11	47	1'-11	51	1'-11	53	1'-11	57	1'-11	62	1'-11	66	1'-11	68	1'-11	74	1'-11	80	1'-11
3d	⏃	36	5'-5	36	5'-5	38	5'-5	42	5'-5	47	5'-5	51	5'-5	53	5'-5	57	5'-5	62	5'-5	66	5'-5	68	5'-5	74	5'-5	80	5'-5
3e	⌐	12	2'-1	12	2'-1	12	2'-1	12	2'-1	12	2'-1	12	2'-1	12	2'-1	12	2'-1	14	2'-1	14	2'-1	14	2'-1	14	2'-1	16	2'-1

A/B
A=Size
B=№



All dimensions are out to out. Radii to ℄ bar

Revised: 1-16-73 Beam Coil Tie locations changed

DESIGN FOR 0° SKEW

441'-0" x 44'-0" PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

75'-9" END SPANS 96'-6" INTERIOR SPANS
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BEAM DETAILS

STATION 77+75 IA 149 OVER IOWA RIVER

IOWA COUNTY

IOWA STATE HIGHWAY COMMISSION
Design Sheet № 14 Of 16 File № 24550 Design № 772

Revised (21-69): Section A-A added. Beam data and Reinforcing Bar List revised.
Revised 3-6-69: Beam designation numbers changed.
Revised 8-22-69 Length of Bar 4a1 and total reinforcing steel quantities for Beams D95, D90 and D85 changed.
Revised 1-14-70: Design Stresses & Specifications updated.

DESIGNED BY: _____ TRACED BY: _____
DETAILED BY: _____ CHECKED BY: _____

PRESTRESSED BEAM DETAILS - PC68D

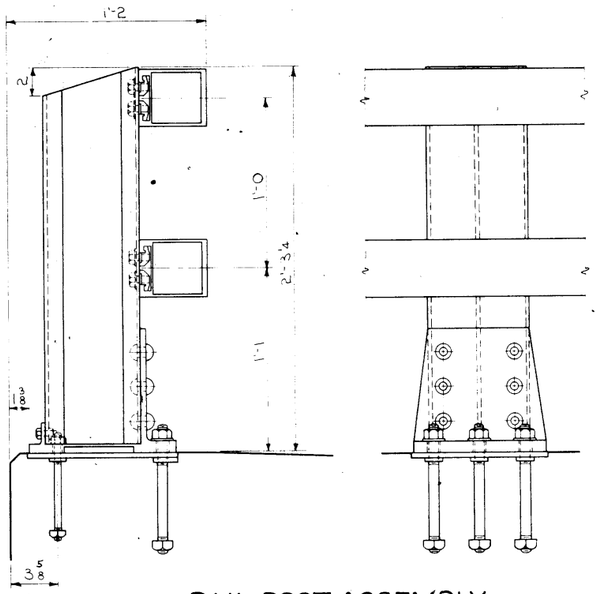
STANDARD SHEET 4070

IOWA COUNTY

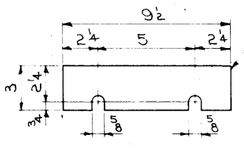
PROJECT NUMBER	STATE	FED. ROAD DIST. №	FISCAL YEAR	SHEET №	TOTAL SHEETS
FN-149-2(13)--21-48	IOWA	5		16	31

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

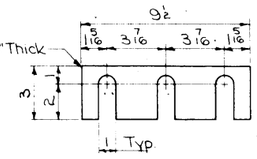
Revised 12-26-68: Added explanation for material for clampbar bolt.
Revised 6-7-67: Red lead shop coat paint note added.
Revised 5-2-67: Material specifications for aluminum and stainless steel changed.
Revised 10-13-66: Note concerning 2"ϕ drain holes added.
Revised 9-19-66: Gage of holes in Post Base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



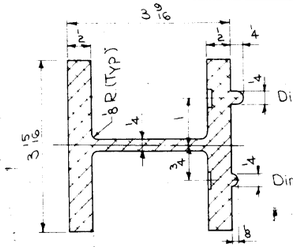
RAIL POST ASSEMBLY



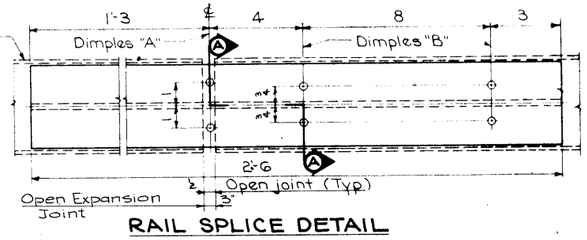
SHIM "A" DETAIL



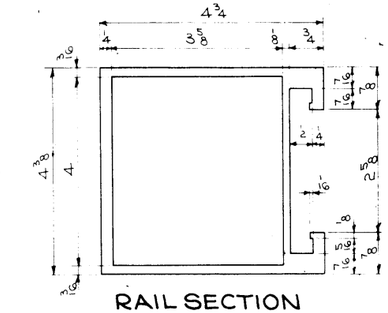
SHIM "B" DETAIL



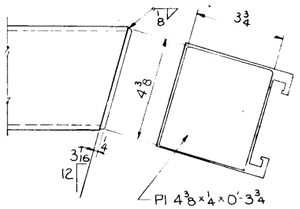
SECTION A-A



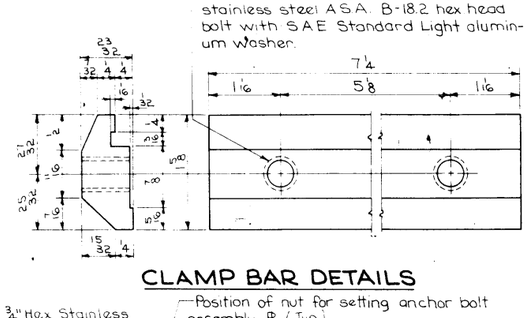
RAIL SPLICE DETAIL



RAIL SECTION

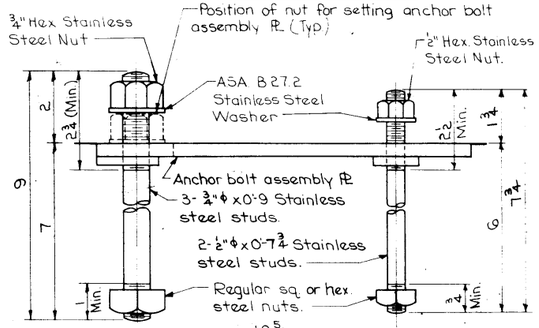


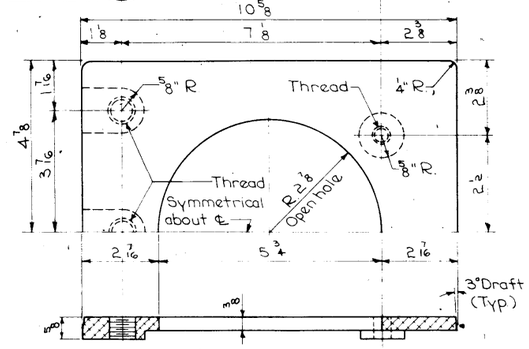
RAIL END CAP DETAILS



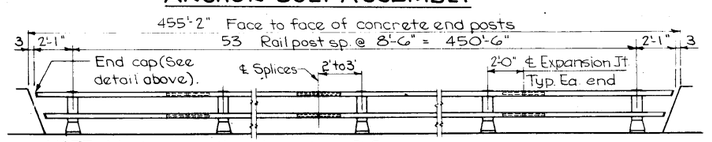
-½-13 UNC-2B Thread for ½-13 UNC-2A x 1" stainless steel A.S.A. B-18.2 hex head bolt with S.A.E. Standard Light aluminum washer.

CLAMP BAR DETAILS



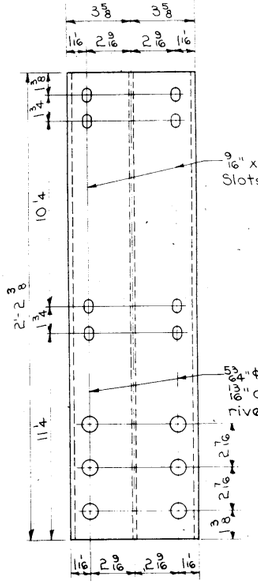


ANCHOR BOLT ASSEMBLY

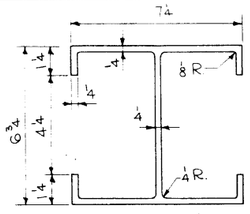


NOTE: Maximum rail post spacing = 8'-6.

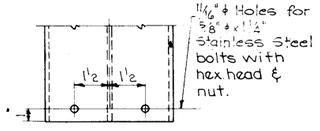
TYPICAL ELEVATION OF RAILING AND RAIL POST LAYOUT



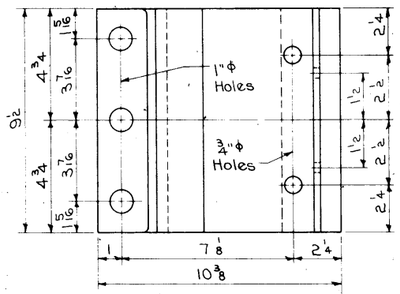
POST

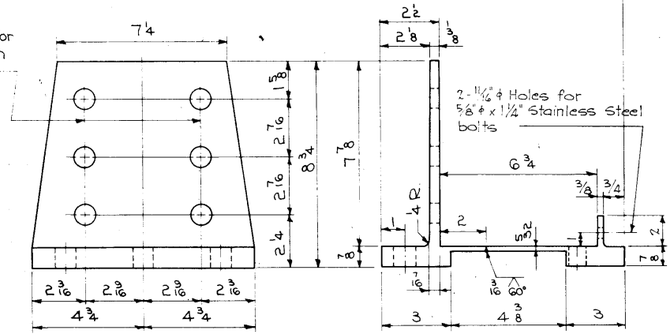


POST SECTION



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 and clamp bar shall be ASTM B-221 Alloy 6061-T6. Material for aluminum nuts shall be ASTM B-211 Alloy 6061-T6 or 6262-T9. Material for the aluminum bolts shall be ASTM B-211 Alloy 2024-T4.

Material for aluminum washers and shims shall be ASTM B-209; Alloy Alclad 2024-T3 for washers and Alloy 1100-0 for shims.

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

Material for steel nuts shall be A.S.T.M. A-307 Grade A, and shall conform to A.S.A. B-18.2. Threads shall comply with A.S.A. B-1.1 for UNC threads series, class 2B fit.

The anchor bolt assembly plate shall be a flat and true aluminum alloy permanent mold casting complying with ASTM B-108 Alloy SG70 A or B. Condition F is acceptable. Suitable alternates will be considered for approval.

The entire surfaces of anchor bolt assembly plate and the shims are to be given one shop coat of zinc chromate shop coat paint or red lead shop coat paint.

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

Material for clamp bar bolt shall be stainless steel A.S.T.M. A-193, Grade B8 (Carbide solution treated) or ASTM A-276 Type 430 (Annealed - hot or cold finished).

The material for the stainless steel nuts and washers shall be non-magnetic stainless steel. The stainless steel nuts shall be hexagonal, finished and shall comply with A.S.A. B-18.2. Threads shall comply with A.S.A. B-1.1 for UNC threads series, class 2B fit.

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

Material for aluminum rivets shall be A.S.T.M. B-316 or B-221 Alloy 6061-T6. Rivets shall be button head, cone point and cold driven.

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

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

DESIGN SPECIFICATIONS:

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

ALUMINUM HANDRAIL QUANTITIES		
Aluminum Handrail	909.3	Lin. Ft.

DESIGN FOR 0° SKEW
441'-0" x 44'-0" PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE
75'-9" END SPANS 96'-6" INTERIOR SPANS
CONCRETE FLOOR & SUBSTRUCTURE
ALUMINUM HANDRAIL DETAILS
STATION 77+75 IA 149 OVER IOWA RIVER
IOWA COUNTY

IOWA STATE HIGHWAY COMMISSION
Design Sheet No 15 Of 16 File No 24550 Design No 772

DESIGNED BY: TRACED BY:
DETAILED BY: CHECKED BY:
ALUMINUM HANDRAIL DETAILS

STANDARD SHEET 1012 A | IOWA COUNTY | PROJECT NUMBER FN-149-2(13)--21-48

STATE	FED ROAD DIST. No	FISCAL YEAR	SHEET No	TOTAL SHEETS
IOWA	5		17	31