MUSCATINE COUNTY - IOWA AND ROCK ISLAND COUNTY - ILLINOIS

UN-92-9(19)--41-70

LETTING DATE

August 18, 1970

CONVENTIONAL SIGNS

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

JUL 15 1970

STATE OF IOWA
STATE HIGHWAY COMMISSION

PLANS OF PROPOSED IMPROVEMENT
ON THE

PRIMARY ROAD SYSTEM

MISSISSIPPI RIVER BRIDGE

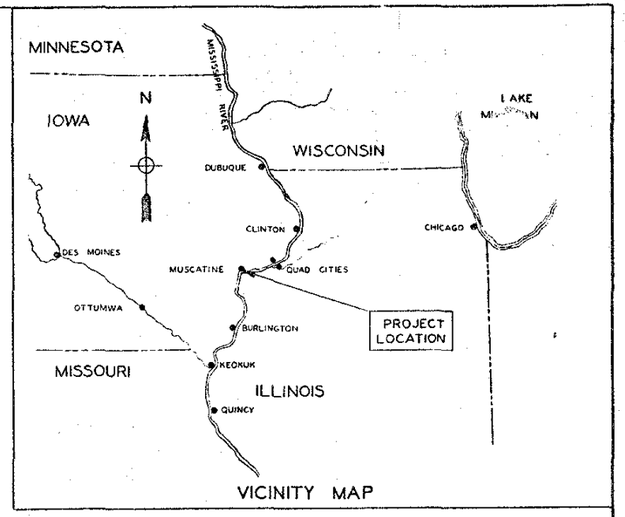
SUBSTRUCTURE DIVISION I

UN-92-9(19)--41-70

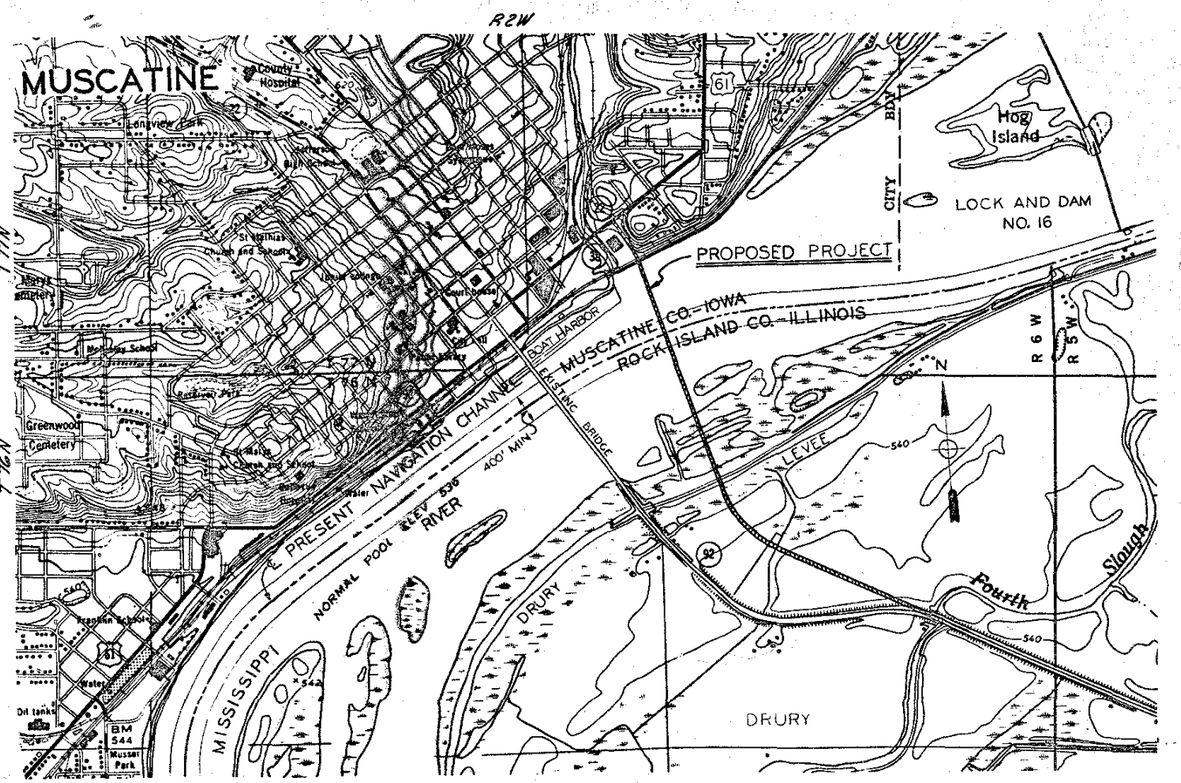
IOWA NO. 92 IN MUSCATINE, IOWA
MUSCATINE COUNTY - IOWA
AND
ROCK ISLAND COUNTY - ILLINOIS
SCALES: AS NOTED

DETAIL PLANS REDUCED IN SIZE (DO NOT SCALE)

THE IOWA STATE HIGHWAY COMMISSION STANDARD SPECIFICATIONS FOR CONSTRUCTION WORK, SERIES OF 1964 SHALL APPLY TO WORK ON THIS PROJECT
Plus Current Supplemental Specifications & Special Provisions



VICINITY MAP



LOCATION MAP
SCALE 1"=1000'

Substructure - Div. I Sheets 1 thru 62
Superstructure - Div. II Sheets 63 thru 131

NO MILEAGE SUMMARY
STATE CONTROL SECTION NUMBER
70-1000

APPROVED:
R. H. Owen
DEPUTY CHIEF ENGINEER
IOWA STATE HIGHWAY COMMISSION
DATE: 7/13/70

REVISED:

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.
Gordon R. Pennington
DATE May 22 19 70 IOWA REG. NO. 5286

GORDON R. PENNINGTON REGISTERED 5286 IOWA PROFESSIONAL ENGINEER

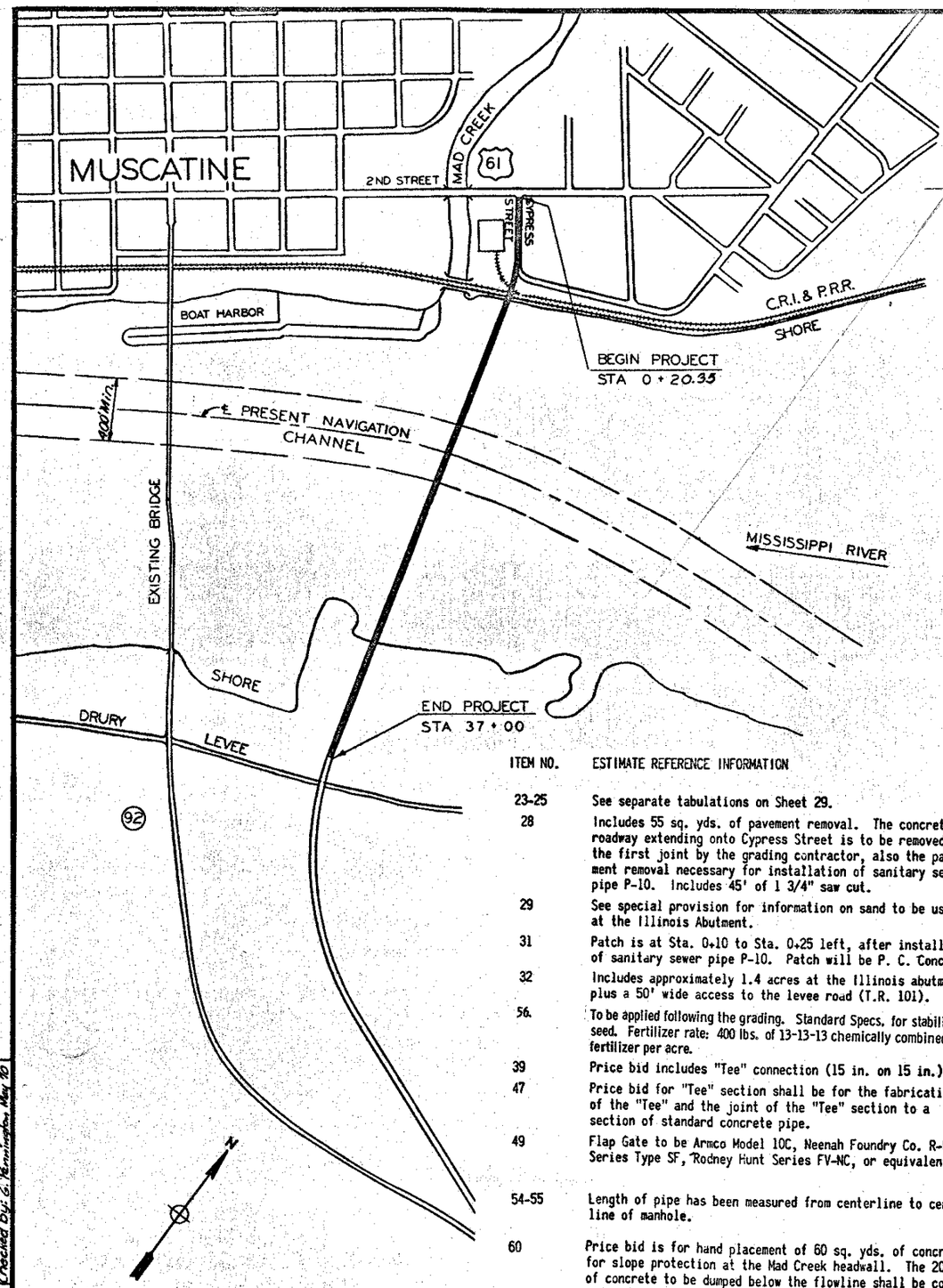
110

SVERDRUP & PARCEL AND ASSOCIATES, Inc.
CONSULTING ENGINEERS
ST. LOUIS, MISSOURI

Design No. 170 File No. 23800 Des. Sh. No 1 of 61

DKS 7/7/70 C.P. 7-7-70

7075.78092



ESTIMATE OF QUANTITIES

	ITEM	UNIT	QUANTITY	Project Sheet Number	Design Sheet Number	INDEX OF SHEETS
				1	1	Title Sheet
				2	2	Location Plan and Estimate of Quantities
	BRIDGE SUBSTRUCTURE					BRIDGE SUBSTRUCTURE
1	Structural Concrete Class C	Cu. Yd.	5,709.7	3	3	General Plan and Elevation
2	Reinforcing Steel	Lbs.	593,886	4	4	General Notes - Bridge
3	10BP42 Steel Furnish	Lin. Ft.	868	5	5	Log of Borings
4	Bearing Piling Drive	Lin. Ft.	840	6	6	Log of Borings
5	14BP73 Steel Furnish	Lin. Ft.	3,618	7	7	Log of Borings and Substructure Layout
6	Bearing Piling Drive	Lin. Ft.	3,384	8	8	Abutment 1
7	Class 20 Excavation	Cu. Yd.	375	9	9	Piers 2, 3 and 4
8	Class 21 Excavation	Cu. Yd.	189	10	10	Piers 5, 6, 7 and 14
9	Class 22 Excavation	Cu. Yd.	413	11	11	Piers 8 and 13
10	Cofferdam Pier 5	L. S.	-------	12	12	Piers 9 and 12
11	Cofferdam Pier 6	L. S.	-------	13	13	Pier 10
12	Cofferdam Pier 7	L. S.	-------	14	14	Pier 11
13	Cofferdam Pier 8	L. S.	-------	15	15	Piers 15, 16 and 17
14	Cofferdam Pier 9	L. S.	-------	16	16	Piers 18 thru 24
15	Cofferdam Pier 10	L. S.	-------	17	17	Abutment 25
16	Cofferdam Pier 11	L. S.	-------	18	18	Bar List
17	Cofferdam Pier 12	L. S.	-------	19	19	Bar List
18	Cofferdam Pier 13	L. S.	-------	20	20	Bar List
19	Cofferdam Pier 14	L. S.	-------			
20	Subfoundation Boring	Lin. Ft.	60.0			ROADWAY APPROACH - GRADING AND DRAINAGE
21	Granular Backfill	Cu. Yd.	105	21	21	General Notes - Roadway Approach
22	4" ø Tile Subdrain	Lin. Ft.	108	22	22	Typical Sections
22a	Creosoted Piling	Lin. Ft.	264	23	23	Plan Sheet (Iowa Approach)
				24	24	Profile Sheet (Iowa Approach)
	ROADWAY APPROACH - GRADING AND DRAINAGE			25	25	Plan and Profile (Illinois Approach)
23	Class 10 Excavation, Roadway and Borrow	Cu. Yd.	57,787	26	26	Stake-out Diagram
24	Compacting Embankment with Moisture & Density Control	Cu. Yd.	3,120	27	27	Slope Protection at East Abutment
				28	28	Details - Drainage
				29	29	Tabulation of Storm & Sanitary Sewer, Earthwork & Misc.
25	Removal of Existing Structures	L. S.	See Tab.	30-31	30-31	Sewer Profiles
26	Removal of Sidewalk	Sq. Yd.	360	32	32	Right-of-way Strip Map
27	Removal of Old Drives	Sq. Yd.	1,060	33	33	Details of RA-1 Light Duty Box Manhole
28	Removal of Old Concrete Wall	Cu. Yd.	27	34	34	Details of RA-2 Heavy Duty Box Manhole
29	Backfill, Select Sand	Cu. Yd.	11,073	35	35	Details of RA-3 Curb Intake (Shallow Well)
30	Not used			36	36	Details of RA-13 Intake Grates
31	Patches, Full Depth	Sq. Yd.	1.1	37	37	Details of RA-30 Sanitary Sewer Manhole
32	Clearing and Grubbing	L. S.	-------	38	38	Details of RA-26 Cast Manhole Covers (heavy)
	(STORM SEWER WORK)			39	39	Details of RA-27 Cast Manhole Covers (light)
33	Manhole, RA-1	Each	2	40	40	Details of RA-35 Open Ditch Intake
34	Manhole, RA-2	Each	1	41	41	Details of RC-1 Erosion Control (Ditches)
35	Intake, RA-3	Each	3	42	42	Details of RA-31 Sanitary Sewer
36	Intake, RA-35	Each	1	43	43	Details of RF-1 Concrete Culvert Pipe
37	Intake, E-2	Each	1	44	44	Details of RF-3 Concrete Pipe Aprons
38	Sewer, 1500 D Storm 12 In. Dia.	Lin. Ft.	8	45	45	Details of RF-4 Concrete Pipe Culvert
39	Sewer, 1500 D Storm, 15 In. Dia.	Lin. Ft.	230	46	46	Details of RF-21 Culvert Pipe Tee Sections
40	Sewer, 2000 D, Storm 15 In. Dia.	Lin. Ft.	76	47	47	Details of RL-1 Embankment
41	Sewer, 1500 D Storm, 24 In. Dia.	Lin. Ft.	217	48	48	Details of E-2 Intake
42	Sewer, 2000 D Storm, 24 In. Dia.	Lin. Ft.	88	49-55	49-55	Cross Sections
43	Sewer, 3000 D Storm, 24 In. Dia.	Lin. Ft.	79	56	56	Cross Section & Soil Profile
44	Aprons Concrete 12 In. Dia. (RF-3 Type 1)	Each	1	58-62	57-61	Cross Sections
45	Aprons Concrete 15 In. Dia. (RF-3 Type 1)	Each	2	57	50A	Possible Borrow Areas
46	Aprons Concrete 24 In. Dia. (RF-3 Type 1)	Each	1			
47	Tee-Sections, Concrete Pipe 15 In. on 15 In.	Each	1			
48	Sewer, Corr. Metal Storm, 15 In.	Lin. Ft.	83			
49	Gate, Outlet Control, Flap, 24 In.	Each	1			
50	Elbows, Corr. Metal Pipe, 15 In. Dia. 21°	Each	2			
51	(Not used)					
	(SANITARY SEWER WORK)					
52	Manhole, RA-30 Sanitary Sewer	Each	1			
53	Manhole, RA-31 Sanitary Sewer	Each	1			
54	Sewer, Clay Sanitary - 8 In. Dia.	Lin. Ft.	302			
55	Sewer, Extra Strength Clay - Sanitary 8 In. Dia.	Lin. Ft.	55			
	(EROSION CONTROL)					
56	Stabilizing Crop Seeding and Fertilizing	Acres	2.0			
57	Not Used					
58	Revetment, Class D (Rip Rap)	Ton	3660			
59	Gutter, Special Concrete	Lin.Ft.	405			
60	Revetment, Class "A" Concrete Rubble.	Sq. Yd.	60			

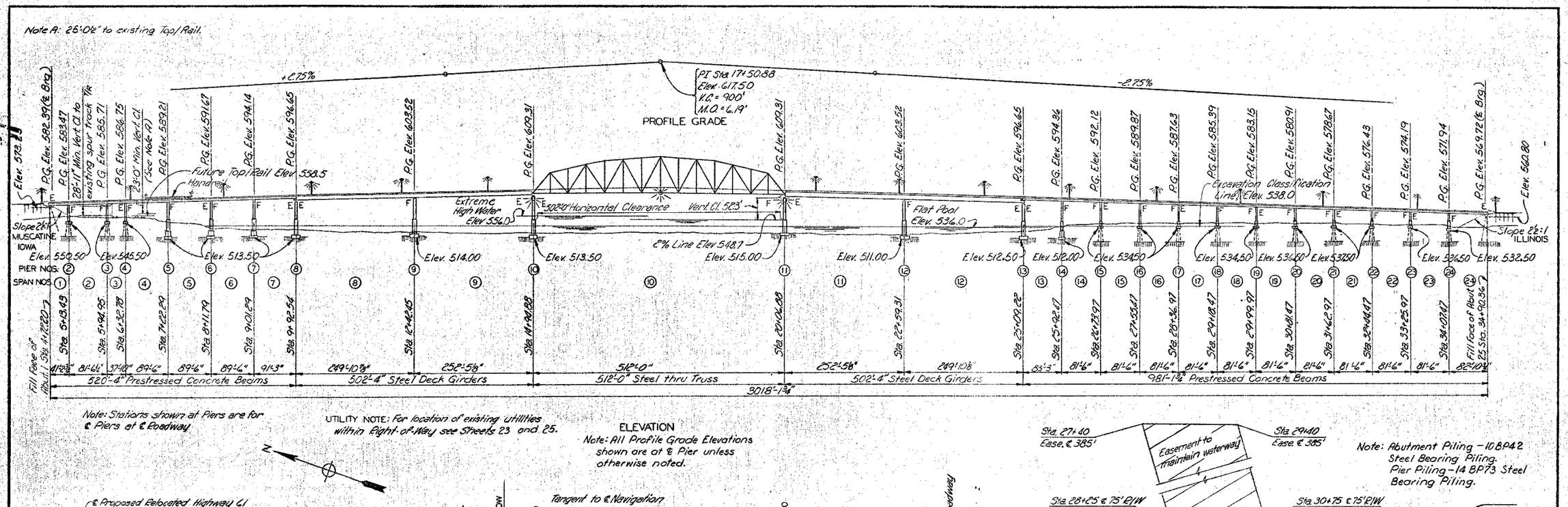
ITEM NO.	ESTIMATE REFERENCE INFORMATION
23-25	See separate tabulations on Sheet 29.
28	Includes 55 sq. yds. of pavement removal. The concrete roadway extending onto Cypress Street is to be removed to the first joint by the grading contractor, also the pavement removal necessary for installation of sanitary sewer pipe P-10. Includes 45' of 1 3/4" saw cut.
29	See special provision for information on sand to be used at the Illinois Abutment.
31	Patch is at Sta. 0+10 to Sta. 0+25 left, after installation of sanitary sewer pipe P-10. Patch will be P. C. Concrete.
32	Includes approximately 1.4 acres at the Illinois abutment plus a 50' wide access to the levee road (T.R. 101).
56	To be applied following the grading. Standard Specs. for stabilizing crop seed. Fertilizer rate: 400 lbs. of 13-13-13 chemically combined commercial fertilizer per acre.
39	Price bid includes "Tee" connection (15 in. on 15 in.)
47	Price bid for "Tee" section shall be for the fabrication of the "Tee" and the joint of the "Tee" section to a section of standard concrete pipe.
49	Flap Gate to be Armco Model 10C, Neenah Foundry Co. R-5050 Series Type SF, Rodney Hunt Series FV-NC, or equivalent.
54-55	Length of pipe has been measured from centerline to centerline of manhole.
60	Price bid is for hand placement of 60 sq. yds. of concrete for slope protection at the Mad Creek headwall. The 20 c.y. of concrete to be dumped below the flowline shall be considered incidental.
59	See Sheet No. 28 for details of special gutter.

2600 Drawn by: M. Herbello Feb. 1969
6837C Checked by: G. Ramisofer May 70

SVERDRUP & PARCEL AND ASSOCIATES, Inc.
CONSULTING ENGINEERS
ST. LOUIS, MISSOURI

MISSISSIPPI RIVER BRIDGE
LOCATION PLAN AND
ESTIMATE OF QUANTITIES
MUSCATINE COUNTY
IOWA STATE HIGHWAY COMMISSION

DESIGN NO. 170 FILE NO. 23800 DES. SH. NO. 2 OF 61

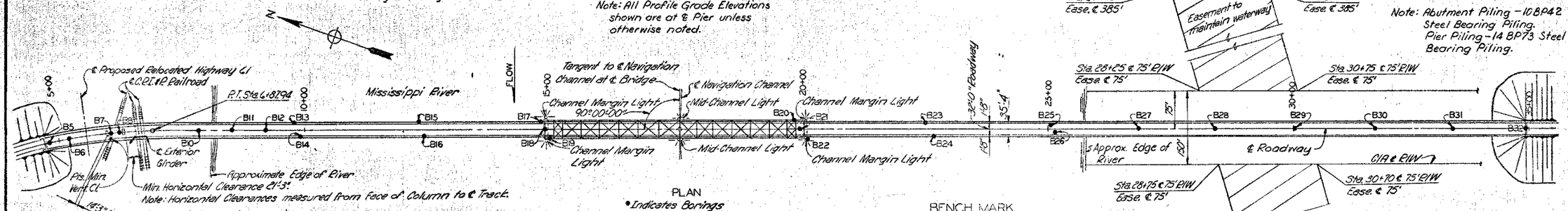


Note: Stations shown at Piers are for ℄ Piers at ℄ Roadway

UTILITY NOTE: For location of existing utilities within Right-of-Way see Sheets 23 and 25.

ELEVATION

Note: All Profile Grade Elevations shown are at ℄ Pier unless otherwise noted.



PLAN

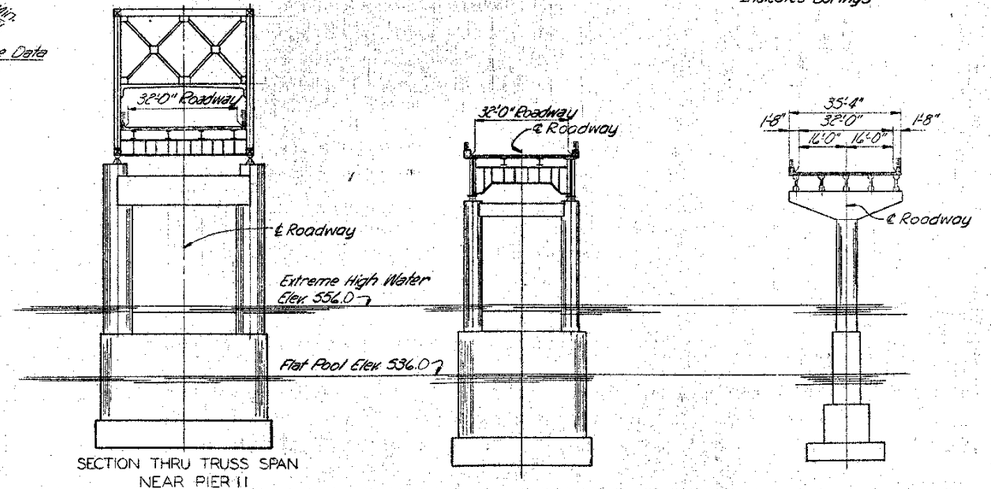
• Indicates Borings

Note: Abutment Piling – 10 BP 42 Steel Bearing Piling.
Pier Piling – 14 BP 73 Steel Bearing Piling.

Horizontal Curve Data
P.I. Sta. 6+90.00
Δ = 20°00'00"
D = 5°00'00"
T = 202.06'
L = 400.0'
R = 1145.92'

BENCH MARK

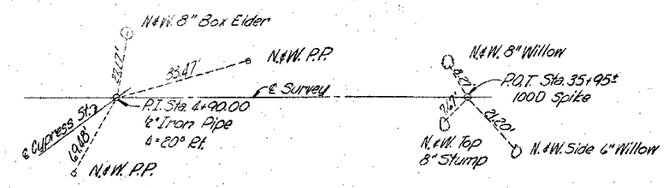
U.S.G.S. B.M. "551 Pile Adjusted C. of E., Muscatine at Hwy. Bridge over Miss. River, in the North End of the Pier Nearest the Shore, and about 6" above ground. By a Geological Survey Standard Disc, Stamped 551. Elev. 550.83



SECTION THRU TRUSS SPAN NEAR PIER 11

SECTION THRU GIRDER SPAN NEAR PIER 12

SECTION THRU PRESTRESSED BEAM SPAN NEAR PIER 14



ALIGNMENT CONTROL POINT REFERENCES

Note: N&W indicates nail & washer.
P.P. indicates Power Pole.

RIGHT OF WAY NOTE: Work this Sheet with Sheets 23 and 25 for Right-of-Way Limits for this Contract.

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.

Gordon R. Pennington

DATE April 2 1970 IOWA REG. NO. 5286

GORDON R. PENNINGTON REGISTERED 5286 IOWA PROFESSIONAL ENGINEER

Note: Do not scale this drawing. Follow dimensions.

SVERDRUP & PARCEL AND ASSOCIATES, Inc.
CONSULTING ENGINEERS
ST. LOUIS, MISSOURI

Drawn By: J.M. Lobsham, Jan. 1969
Checked By: D. Sandhaindch, Feb. 1969

MISSISSIPPI RIVER BRIDGE

GENERAL PLAN AND ELEVATION

MUSCATINE COUNTY
IOWA STATE HIGHWAY COMMISSION

DESIGN NO. 170 FILE NO. 23800 DES. SH. NO. 3 OF 61

PROJECT NO. UM-92-9(19)--41-70 PROJECT SH. NO. 3 OF 131

GENERAL NOTES

SPECIFICATIONS:
Design: The American Association of State Highway Officials Specifications for Highway Bridges, 1969 Edition and Interim Specifications 1970.
Construction: Standard Specifications of the Iowa State Highway Commission Series 1964, current supplemental specifications, and Special Provisions.
Loads: HS20-44 Live Load, Two lane, and alternate loading designated by B.P.R.'s P.P.M. 20-4, Section 4C.
An allowance of 20 lbs/sq ft of roadway for future wearing surface is included in dead load.

Special Loads:
Barge Impact: 1,000,000 lbs applied at Elevation 548, normal to the center line of Roadway.
Sheet Ice: 20,000 lb per ft applied at Elevation 536, parallel to the center line of Roadway.
The special loads indicated were applied to the main piers, similar loads of lessor intensity were applied to the other piers located in the river.
Flow Ice: 57,600 lbs per ft applied at Elevation 536, normal to center line of Roadway.

DESIGN STRESSES:
Concrete: In accordance with Section 1.5.1 of the A.A.S.H.O. (1969) Specifications, $f'c = 3,500$ psi, $n = 10$.
Reinforcement: In accordance with Section 1.5.1 of the A.A.S.H.O. Specifications $f_s = 20,000$ psi.
Footings on Rock: 10 tsf.
Piling: 9,000 psi on tip.

CONCRETE: All exposed corners of 90° or sharper are to be formed with a 3/4" dressed and beveled fillet.

REINFORCEMENT: Reinforcing bars shall be billet steel conforming to ASTM A615, Grade 40.
All dimensions to reinforcing steel on detail drawings are to ℄ of bar except where clear distance is noted from the face of concrete. All reinforcing steel shall be lapped a minimum of 24 bar diameters unless otherwise shown or noted.

ABUTMENTS: Abutments 1 and 25 shall be constructed to the limits shown on the plans.

APPROACH FILLS AND BERMS: The Contractor shall level off and shape the berms to the elevations and dimensions shown.

SUBDRAINS: The Contractor shall install the 4"Ø tile subdrain at each abutment as detailed.

PILING: Steel Bearing Piles shall be driven to practical refusal and seated in limestone. Seating shall be done with a diesel hammer of at least 26000 ft lbs of rated energy operating at full capacity, or a gravity hammer having an effective weight of at least (A) pounds and driving energy of not less than (B) foot pounds nor more than (C) foot pounds.

Pile Size	A	B	C
10BP42	6000 lbs	38000 lbs	40000 lbs
14BP73	7000 lbs	45000 lbs	50000 lbs

Treated Timber Piles shall be prebored in accordance with Art. 2501.20 of the standard specifications to a depth of 32 ft. Piles shall then be driven to a plan length or to a maximum of 24 tons bearing, whichever is achieved first.

SUBFOUNDATION BORING: Subfoundation borings shall be made at Piers 5, 6, 8, 9 and 14, and elsewhere if necessary, in accordance with the Special Provisions.

COFFERDAMS: Cofferdam construction will be required at Piers 5 thru 14. (See Special Provisions)

CONSTRUCTION ADJACENT TO RAILROADS: Contractor shall maintain a minimum horizontal clearance of 8'-0" and 22' vertical during construction of piers adjacent to railroad tracks. Sheeting *and bracing will be required when necessary to protect railroad* tracks and embankments during the construction of piers. Contractor shall submit shoring plans to the Chicago, Rock Island and Pacific Railroad for approval before any work is started.

UTILITIES: Utilities within the construction limits will be relocated by others prior to construction under this Contract.

MISCELLANEOUS: The Contractor shall submit construction plans to the Commander, Second Coast Guard District, St. Louis, Missouri for approval prior to construction on navigable water. The Contractor shall comply with the requirements for temporary lighting or marking as required by the Coast Guard.
The cost of this work shall be considered incidental to the construction and no separate payment will be allowed.

SUBSTRUCTURE-ESTIMATED QUANTITIES

Item		Unit	Abut. 1	Pier 2	Pier 3	Pier 4	Pier 5	Pier 6	Pier 7	Pier 8	Pier 9	Pier 10	Pier 11	Pier 12	Pier 13	Pier 14	Pier 15	Pier 16	Pier 17	Pier 18	Pier 19	Pier 20	Pier 21	Pier 22	Pier 23	Pier 24	Abut. 25	Total
Structural Concrete Class C		Cu. Yd.	33.8	52.3	56.5	59.2	169.3	171.0	172.7	433.8	586.3	995.3	1058.8	616.8	441.8	177.7	80.6	79.1	77.6	65.2	63.9	60.8	57.4	56.0	55.6	57.9	30.3	5709.7
Reinforcing Steel		Lbs.	3661	8595	9407	9637	25377	25695	26006	28015	48009	77493	99720	49323	28387	25898	14511	14235	13939	12774	12477	11897	11474	11230	11111	11500	3495	593886
10BP42 Steel	Furnish	Lin. Ft.	434	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	434	868
Bearing Piling	Drive	Lin. Ft.	420	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	420	840
14BP73 Steel	Furnish	Lin. Ft.	—	333	315	315	—	—	—	—	—	—	—	—	—	—	243	243	243	252	270	279	279	288	288	270	—	3618
Bearing Piling	Drive	Lin. Ft.	—	315	297	297	—	—	—	—	—	—	—	—	—	—	225	225	225	234	252	261	261	270	270	252	—	3384
Class 20 Excavation		Cu. Yd.	—	40	44	34	*	*	*	*	*	*	*	*	*	*	32	32	24	20	20	33	31	31	28	6	—	375
Class 21 Excavation		Cu. Yd.	—	—	—	—	*	*	*	*	*	*	*	*	*	*	28	28	28	23	23	10	3	3	9	34	—	189
Class 22 Excavation		Cu. Yd.	—	—	—	—	11	11	11	33	28	72	130	84	22	11	—	—	—	—	—	—	—	—	—	—	—	413
Subfoundation Boring		Lin. Ft.	—	—	—	—	12.0	12.0	—	12.0	12.0	—	—	—	—	12.0	—	—	—	—	—	—	—	—	—	—	—	60.0
Granular Backfill		Cu. Yd.	55	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	50	105
4"Ø Tile Subdrain		Lin. Ft.	53	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	55	108
Creosoted Piling		Lin. Ft.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	264	264

NOTE: For Steel Bearing Piles the "Furnish" length shown provides an allowance of 2 ft. per pile for overdriving.
* Excavation included in price bid for Cofferdam. See Special Provisions.

2220 Drawn By: L. Glaser, May 1970
7052.3 Checked By: R. Beck, May 1970

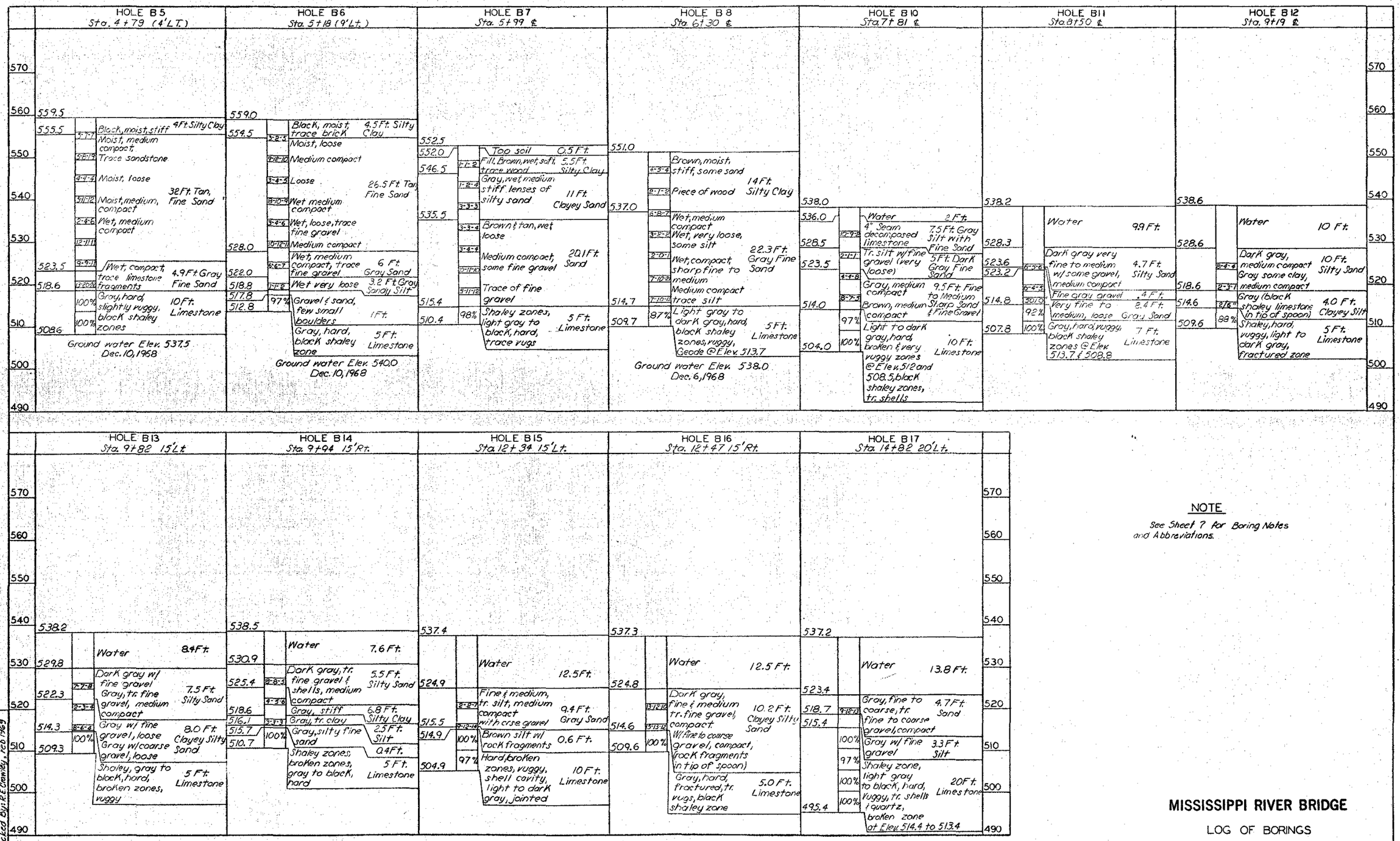
SVERDRUP & PARCEL AND ASSOCIATES, Inc.
CONSULTING ENGINEERS
ST. LOUIS, MISSOURI

MISSISSIPPI RIVER BRIDGE

GENERAL NOTES

MUSCATINE COUNTY
IOWA STATE HIGHWAY COMMISSION

DESIGN NO. 170 FILE NO. 23800 DES. SH. NO. 4 OF 61



NOTE

See Sheet 7 for Boring Notes and Abbreviations.

Drawn By: F. Russell, Feb. 1969
Checked By: R.E. Crawley, Feb. 1969

SVERDRUP & PARCEL AND ASSOCIATES, Inc.
CONSULTING ENGINEERS
ST. LOUIS, MISSOURI

Note: Do not scale this drawing. Follow dimensions.

MISSISSIPPI RIVER BRIDGE

LOG OF BORINGS

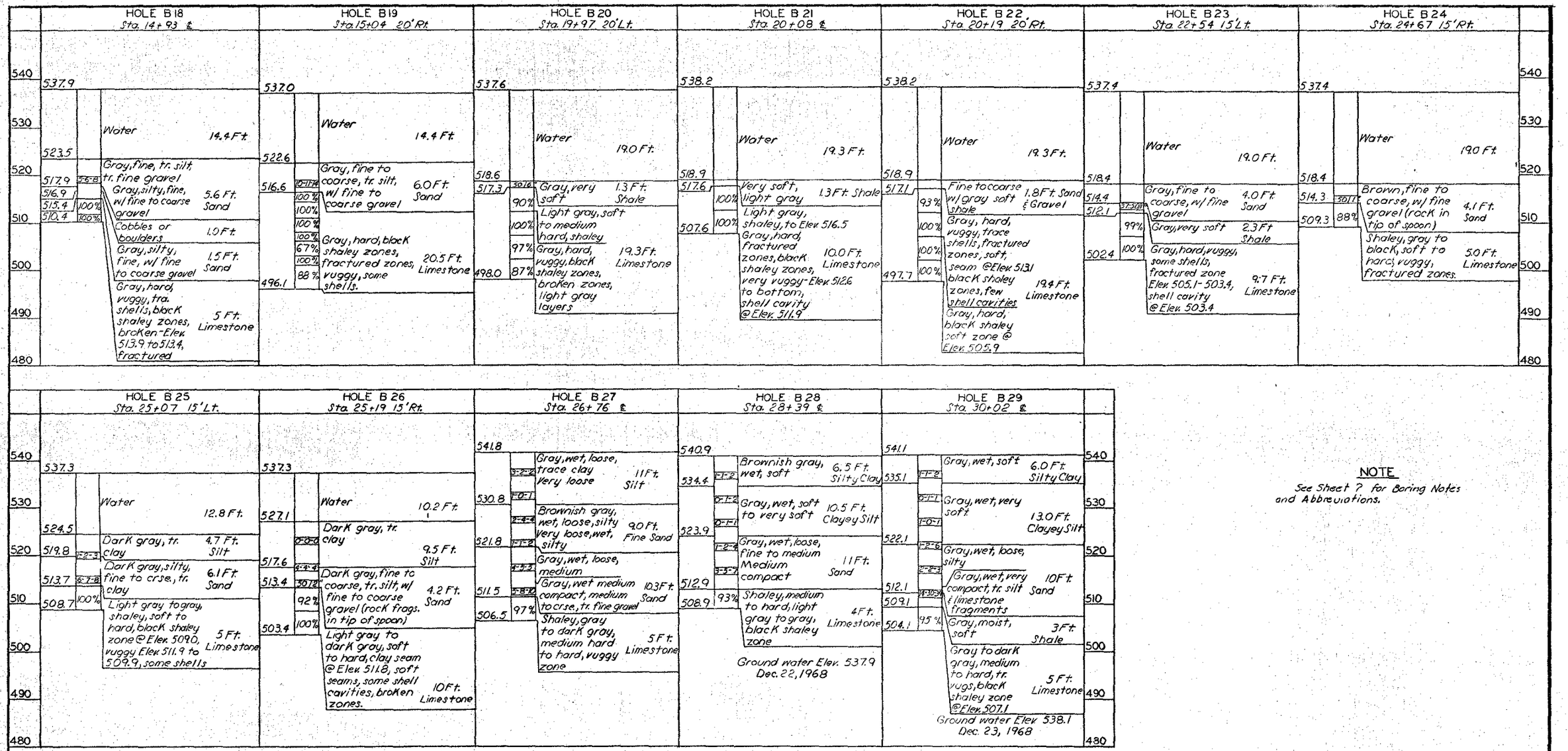
MUSCATINE COUNTY

IOWA STATE HIGHWAY COMMISSION

DESIGN NO. 170 FILE NO. 23800 DES. SH. NO. 5 OF 61

PROJECT UN-92-9(19)--41-70 PROJECT SH. NO. 5 OF 131

2600
69523



NOTE

See Sheet 7 for Boring Notes and Abbreviations.

Drawn By: F. Russell, Feb. 69
Checked By: R.E. Crawley, Feb. 1969

2600
69345

SVERDRUP & PARCEL AND ASSOCIATES, Inc.
CONSULTING ENGINEERS
ST. LOUIS, MISSOURI

Note: Do not scale this drawing. Follow dimensions.

MISSISSIPPI RIVER BRIDGE

LOG OF BORINGS

MUSCATINE COUNTY

IOWA STATE HIGHWAY COMMISSION

DESIGN NO. 170 FILE NO. 23800 DES. SH. NO. 6 OF 61

PROJECT UN-92-9(19)--41-70 PROJECT SH. NO. 6 OF 131

HOLE B-30
Sta. 31+65 ℄

Water at Elev. 533.7
Jan. 2, 1969

Elev.	Blows	Description	Thickness	Material
543.2				
536.2	1-1-2	Brown, wet, soft	7.0 Ft.	Silty Clay
533.7	1-1-4	Black, wet, medium stiff	2.5 Ft.	Clayey Silt
	2-2-4	Gray, wet, loose, tr. silt	23.0 Ft.	Sand
	2-2-3			
	2-4-5			
	2-4-5			
510.7				
505.7	75%	Shaley, medium hard to hard, light gray to gray, vuggy zone	5 Ft.	Limestone

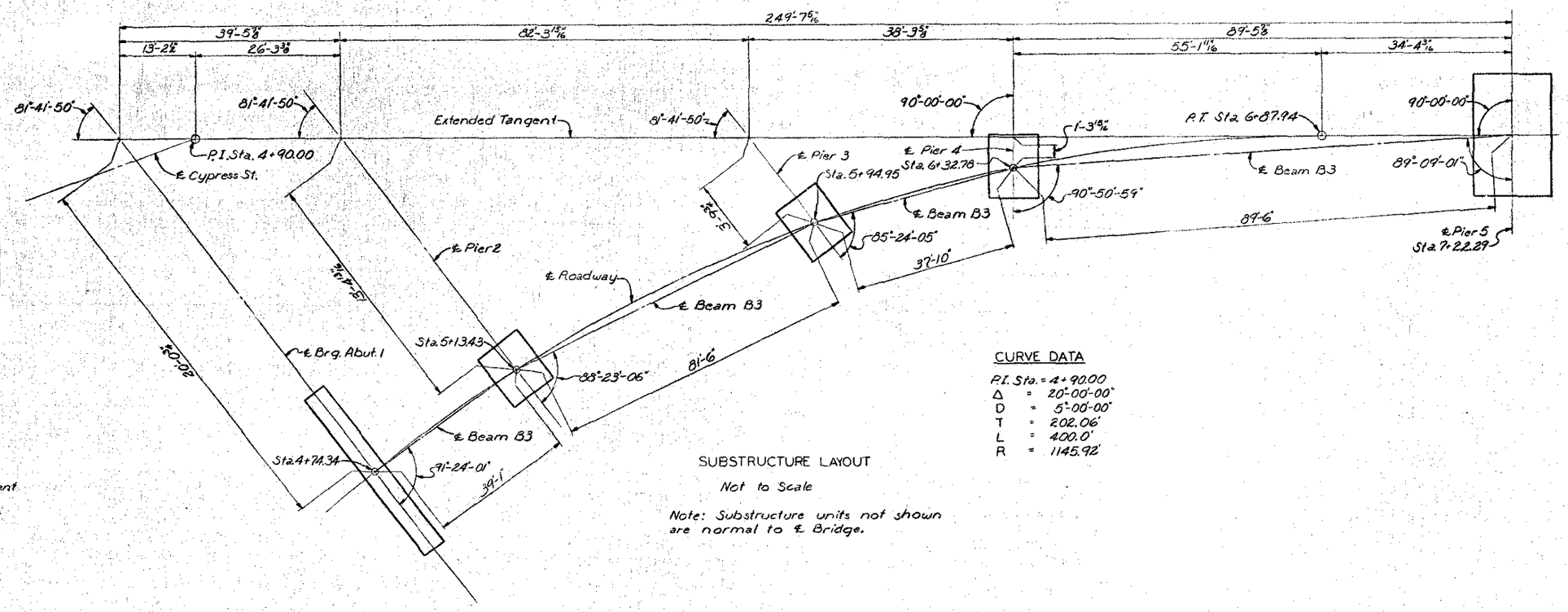
HOLE B-31
Sta. 33+28 ℄

Water at Elev. 536.5
Jan. 4, 1969

Elev.	Blows	Description	Thickness	Material
542.5				
536.5	1-2-3	Brown, wet, medium stiff	6.0 Ft.	Silty Clay
533.5	2-4-4	Black, wet medium stiff	3.0 Ft.	Clayey Silt
	1-1-1	Gray, wet, loose, fine to medium	10.5 Ft.	Sand
523.0	1-1-1	Black, wet, soft, seams of organic wood	2.0 Ft.	Clayey Silt
521.0	1-3-7	Gray, wet, loose, fine to medium	12.0 Ft.	Sand
	8-12-14	Gray, wet, medium compact, fine to crse.		
509.0				
504.0	98%	Gray, vuggy, soft shaley zone at Elev. 506.9	5.0 Ft.	Limestone

HOLE B-32
Sta. 34+91 ℄

Elev.	Blows	Description	Thickness	Material
538.2				
535.2	3-5-5	Black, wet, soft	3.0 Ft.	Silty Clay
	2-2-2	Brown, wet, loose, fine to coarse		
	2-4-5	Brown and gray, wet, very loose, fine to medium	30.7 Ft.	Sand
	8-8-8	Gray, wet, loose, fine to medium		
	1-2-2			
	2-4-4	Gray, wet, loose, fine to coarse		
504.5				
499.5	100%	Gray to dark gray, hard, vuggy, soft shaley zone at Elev. 502.6	5.0 Ft.	Limestone



SUBSTRUCTURE LAYOUT

Not to Scale

Note: Substructure units not shown are normal to ℄ Bridge.

CURVE DATA

P.I. Sta. = 4+90.00
Δ = 20°-00'-00"
D = 5°-00'-00"
T = 202.06'
L = 400.0'
R = 1145.92'

BORING NOTES

Boring data are furnished for information only and may or may not represent the actual conditions which will be found when the work is executed. (See Special Provisions)
Percentages given in the vertical columns represent the % of core recovery.
Numbers shown in the vertical columns without a % sign are the number of blows required to drive a 2" O.D. sampling tube six inches, using a 140 lb. weight falling 30 inches.
Borings 5 thru 29 were made during the month of December, 1968. Borings 30, 31 & 32 were made in January, 1969.
See Sheets 5 and 6 for additional boring logs.

ABBREVIATIONS

Tr. Trace of
Crse. Coarse
Frags. Fragments
w/ with
Elev. Elevation

Drawn by: M. Herbello Feb. 1969
Checked by: O.B.S. & P.E.C. Feb. 1969

SVERDRUP & PARCEL AND ASSOCIATES, Inc.
CONSULTING ENGINEERS
ST. LOUIS, MISSOURI

Note: Do not scale this drawing. Follow dimensions.

MISSISSIPPI RIVER BRIDGE

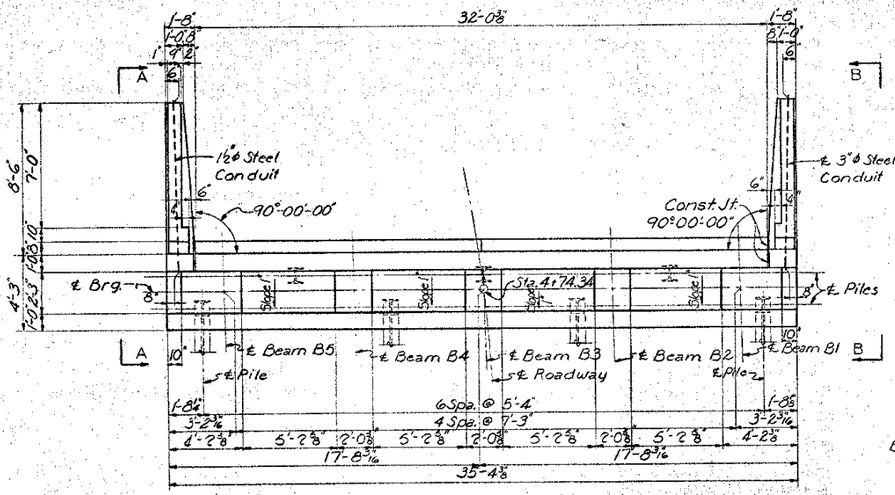
LOG OF BORINGS AND SUBSTRUCTURE LAYOUT

MUSCATINE COUNTY
IOWA STATE HIGHWAY COMMISSION

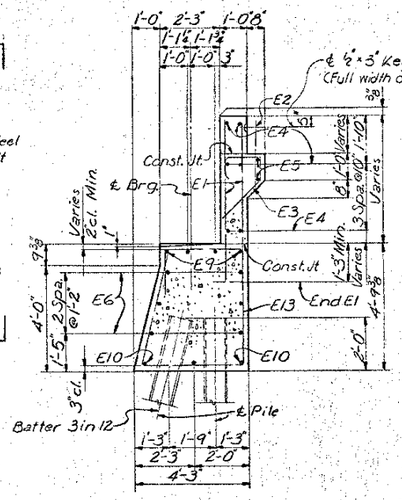
DESIGN NO. 170 FILE NO. 23800 DES. SH. NO. 7 OF 61

PROJECT UN-92-9(19)--41-70 PROJECT SH. NO. 7 OF 131

2600
69555

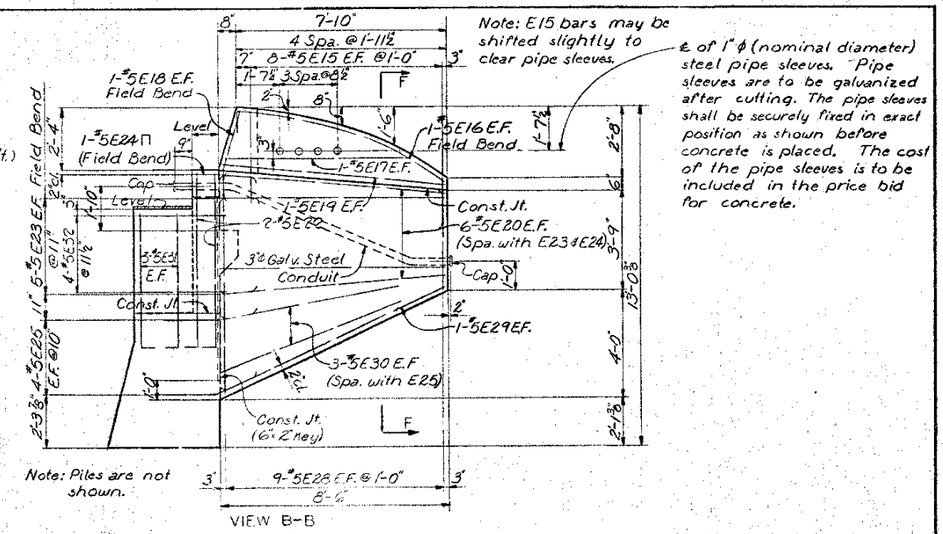


PLAN

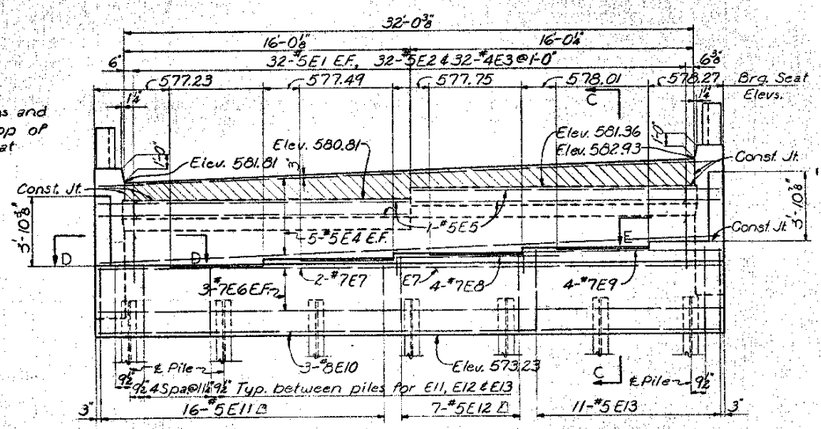


Note: All clearances are 2" except as shown.

SECTION C-C



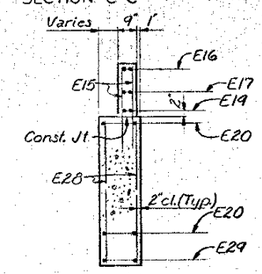
VIEW B-B



ELEVATION

(Looking back station)

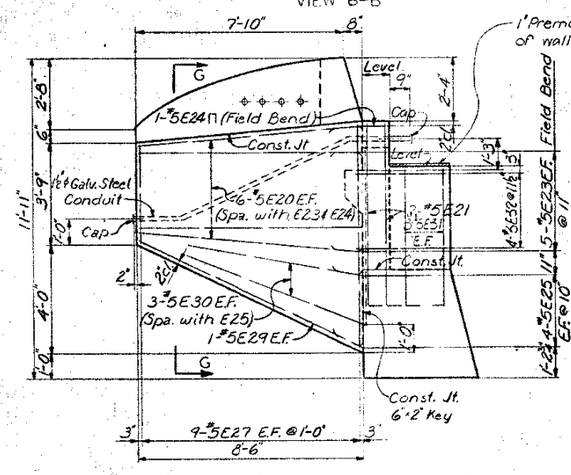
Note: Concrete within sectioned area is to be placed by Superstructure Contractor.



SECTION F-F

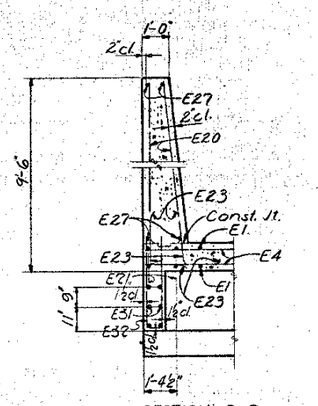
(Section G-G similar)

Note: 7-10BP42 piles required. Estimated length = 60 ft. Estimated pile tip elevation = 517.5. Piling are designed for a bearing of 54 tons.



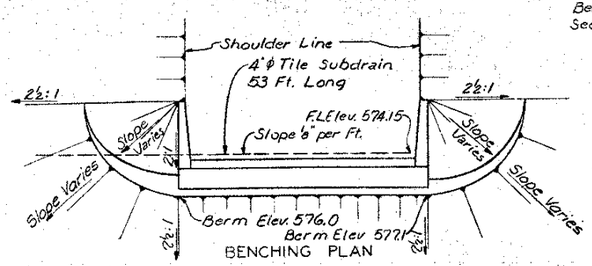
VIEW A-A

Note: Piles are not shown. End Post details and reinforcing are same as in View B-B.



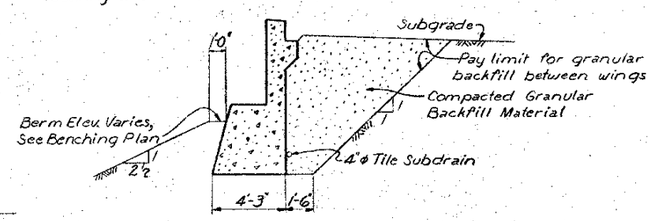
SECTION D-D

Note: Section E-E similar and opposite hand



BENCHING PLAN

Note: The excavation necessary for installation of subdrain shall be included in price bid for 4" ϕ tile subdrain.



LIMITS OF GRANULAR BACKFILL

Note:
The Contractor is to backfill behind abutment between wings to subgrade elevation with granular backfill material complying with Section 4133 of the Standard Specifications. The remainder of the abutment excavation is to be backfilled with soil.

Note: Do not scale this drawing. Follow dimensions.

NOTES

For Substructure Layout, see Sheet 7.
E.F. indicates Each Face.
Top of backwall to conform to grade and cross slope of roadway.
Steel conduits shall be paid for in other items of work.

2600	Drawn by: M. Herbello	Feb. 1969
6-R238	Checked by: W.J. Goddis	Feb. 1969

SVERDRUP & PARCEL AND ASSOCIATES, Inc.
CONSULTING ENGINEERS
ST. LOUIS, MISSOURI

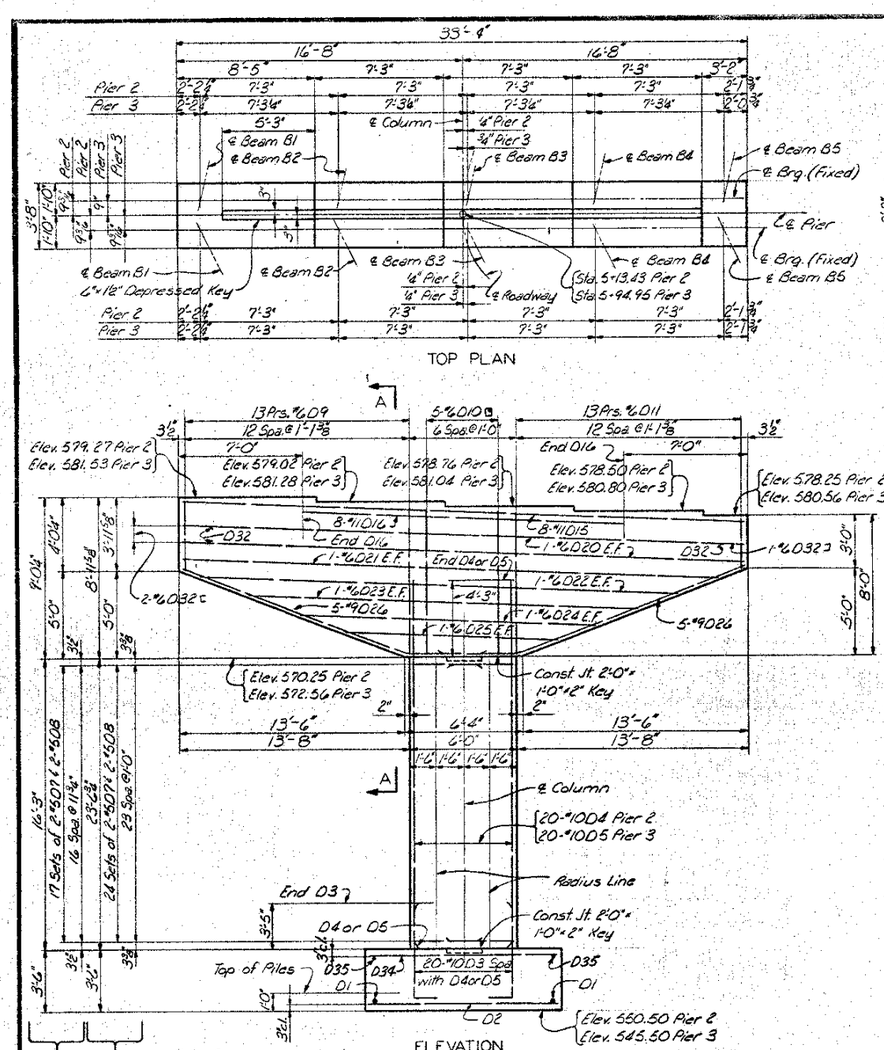
MISSISSIPPI RIVER BRIDGE

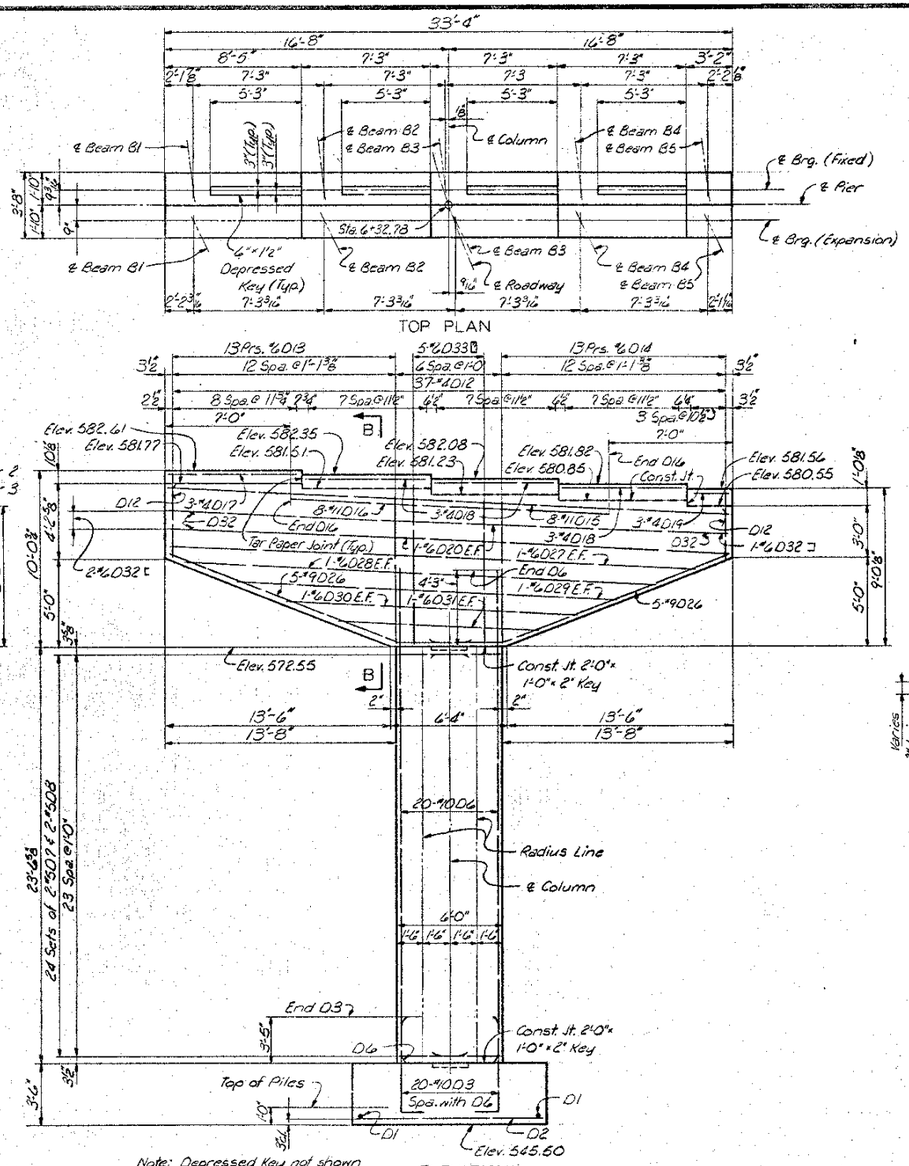
ABUTMENT 1

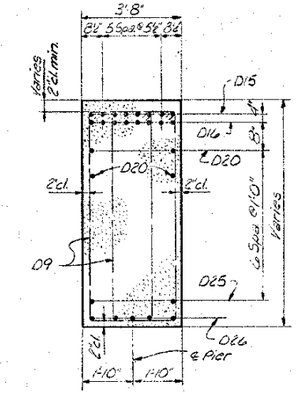
MUSCATINE COUNTY

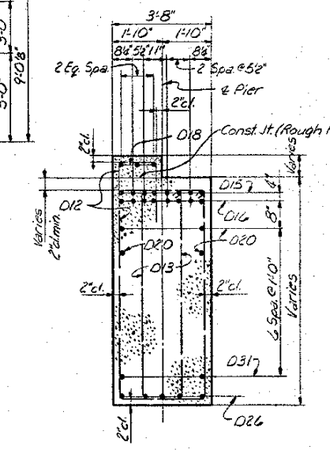
IOWA STATE HIGHWAY COMMISSION

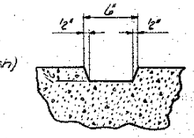
DESIGN NO. 170 FILE NO. 23800 DES. SH. NO. 8 OF 61

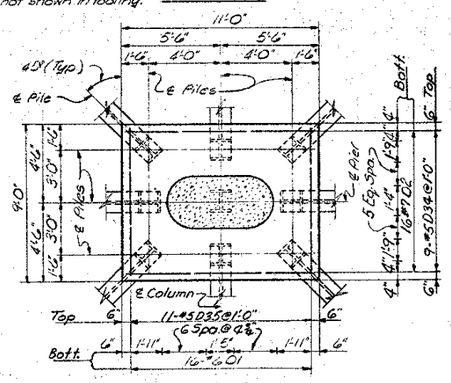












PILE DATA

Pier	Estimated Pile Tip Elev.	Estimated Length
2	518.5	33 Ft.
3	515.0	32 Ft.
4	514.5	32 Ft.

9-14BP73 piles required per footing, 8 battered and 1 vertical.
Pile spacing is measured along bottom of footing.
Batter piles 2 in 12 in direction shown on footing plan.
Piling are designed for a bearing of 96 Tons.

NOTES

E.F. indicates Each Face.
For Substructure Layout, see Sheet 7.

Tar Paper joints in Pier 4 shall consist of 2 layers of 55# roofing felt. Cost of tar paper joints shall be included in price bid for other items of work.

Note: Do not scale this drawing. Follow dimensions.

SVERDRUP & PARCEL AND ASSOCIATES, Inc.
CONSULTING ENGINEERS
ST. LOUIS, MISSOURI

2600 Drawn By: D.J. Strama, Feb. 1969
6-25-67 Checked By: W.J. Geddes, Feb. 1969

MISSISSIPPI RIVER BRIDGE

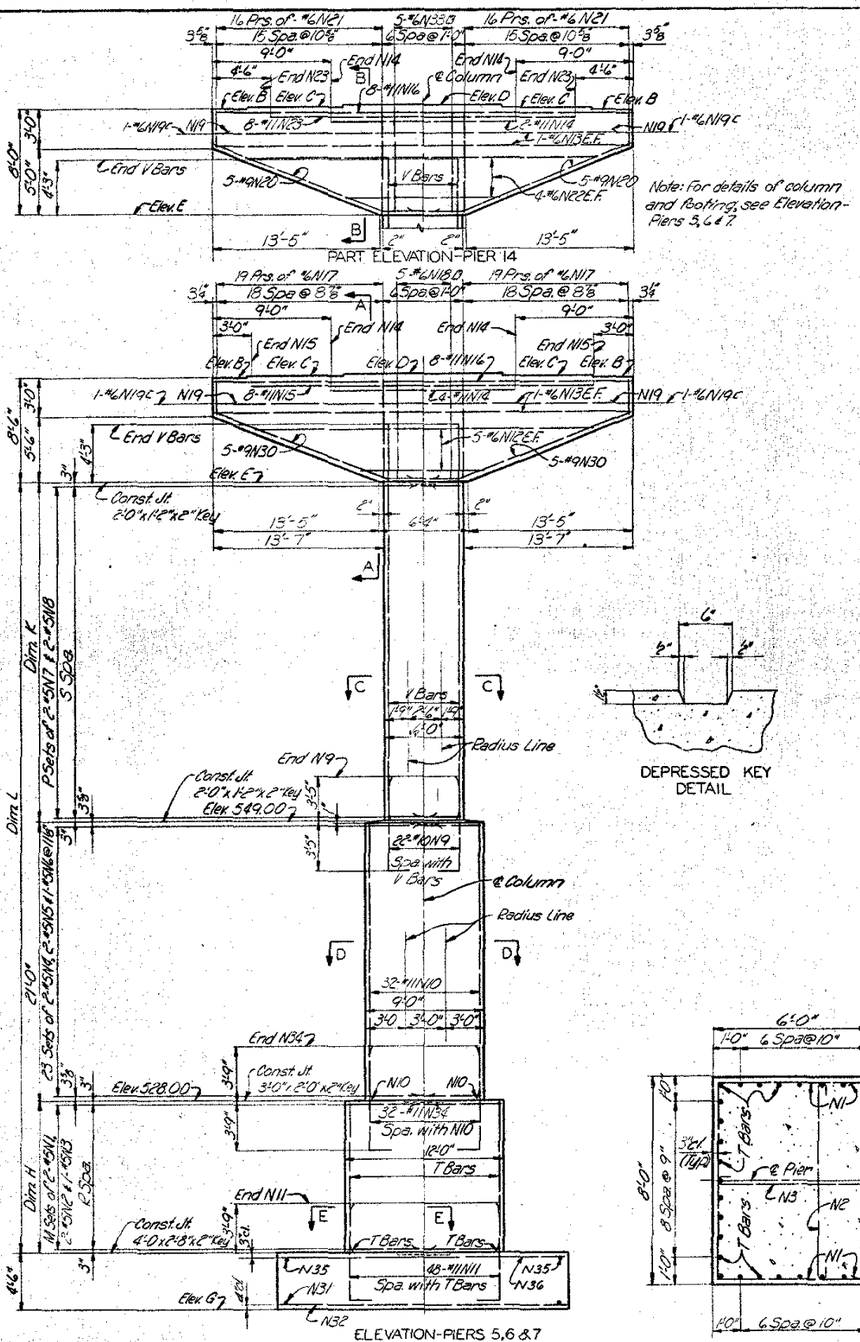
PIERS 2, 3 AND 4

MUSCATINE COUNTY

IOWA STATE HIGHWAY COMMISSION

DESIGN NO. 170 FILE NO. 23800 DES. SH. NO. 9 OF 61

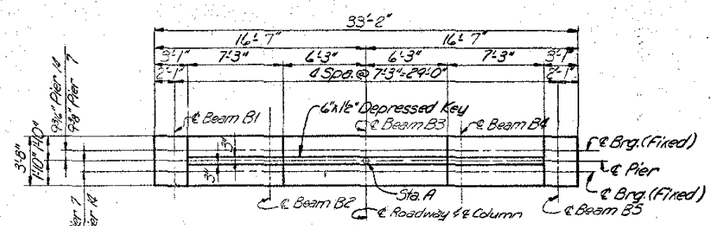
PROJECT UN-92-9(19)--41-70 . PROJECT SH. NO. 9 OF 131



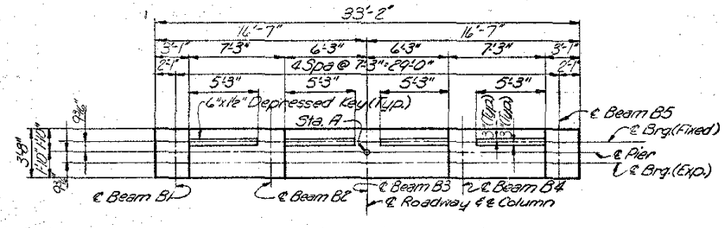
ELEVATION-PIERS 5, 6 & 7
(Looking Up-Station)

Note: Depressed Key not shown in beam.

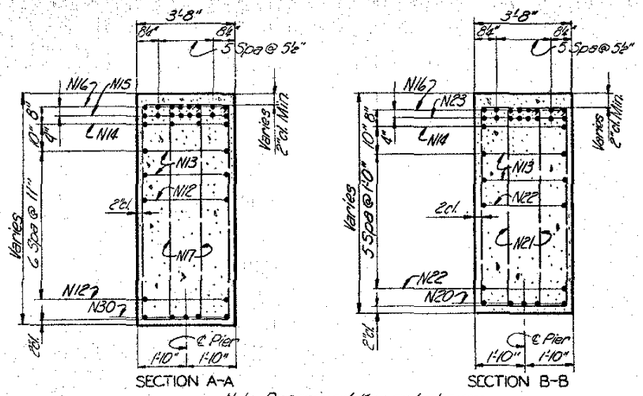
DEPRESSED KEY DETAIL



TOP PLAN-PIERS 7 & 14



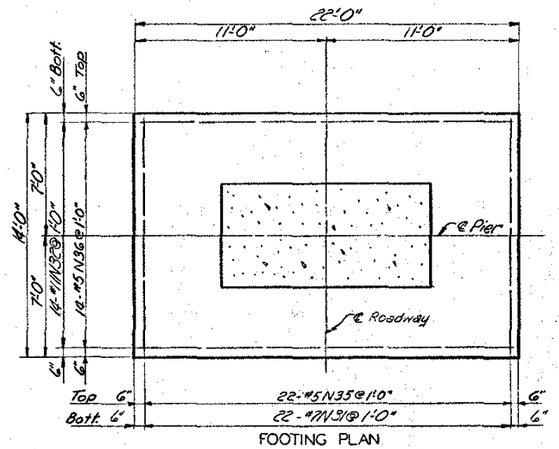
TOP PLAN-PIER 6



SECTION A-A

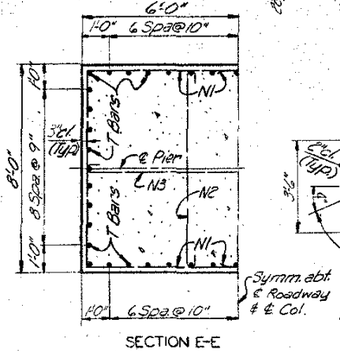
SECTION B-B

Note: Depressed Key not shown.

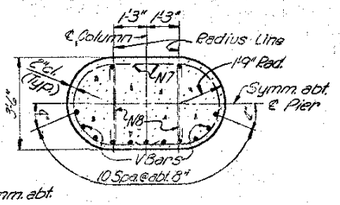


FOOTING PLAN

Note: Shaft reinforcing not shown.

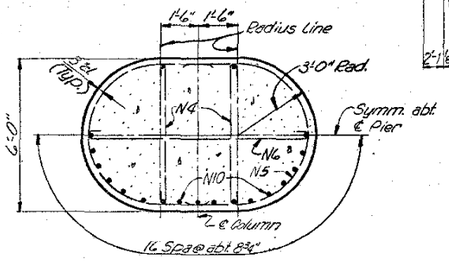


SECTION E-E



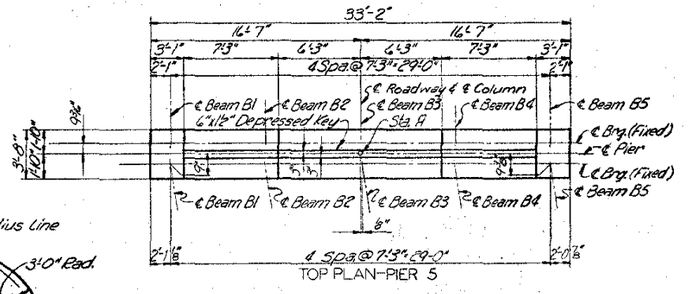
SECTION C-C

Note: Spacing of V Bars is measured along inside of N7.



SECTION D-D

Note: Spacing of N10 is measured along inside of N5



TOP PLAN-PIER 5

NOTES

E.F. indicates Each Face.
For Substructure Layout, see Sheet 2

Maximum Footing Design Pressure For Piers 5, 6, 7 & 14 is 6.4 Tons / Sq. ft.

TABLE OF PIER VARIABLES

	Pier 5	Pier 6	Pier 7	Pier 14
Sta. A	7+22.29	8+11.79	9+01.29	25+92.47
Elev. B	583.45	585.91	588.37	589.41
Elev. C	583.56	586.02	588.43	589.52
Elev. D	583.65	586.11	588.57	589.60
Elev. E	574.95	577.41	579.87	581.41
Elev. G	513.50	513.50	513.50	512.00
Dim. H	10'-0"	10'-0"	10'-0"	11'-6"
Dim. K	25'-11⅜"	28'-4⅞"	30'-10½	32'-4⅞"
Dim. L	56'-11⅜"	59'-4⅞"	61'-10½	64'-10⅜"
M Sets	11	11	11	12
P Sets	26	29	32	33
R Spa.	10 @ abt. 11⅛"	10 @ abt. 11⅛"	10 @ abt. 11⅛"	11 @ 1'-0"
S Spa.	25 @ abt. 1'-0"	28 @ abt. 1'-0"	31 @ abt. 1'-3¼"	32 @ abt. 1'-0"
T Bars	48-#11 N24	48-#11 N24	48-#11 N24	48-#11 N25
V Bars	22-#10 N26	22-#10 N27	22-#10 N28	22-#10 N29

12-20-70	Drawn By: J. M. Lobsiger, Jan. 1969
6-25-70	Checked By: W. J. Goddis, Feb. 1969

SVERDRUP & PARCEL AND ASSOCIATES, Inc.
CONSULTING ENGINEERS
ST. LOUIS, MISSOURI

Note: Do not scale this drawing. Follow dimensions.

MISSISSIPPI RIVER BRIDGE

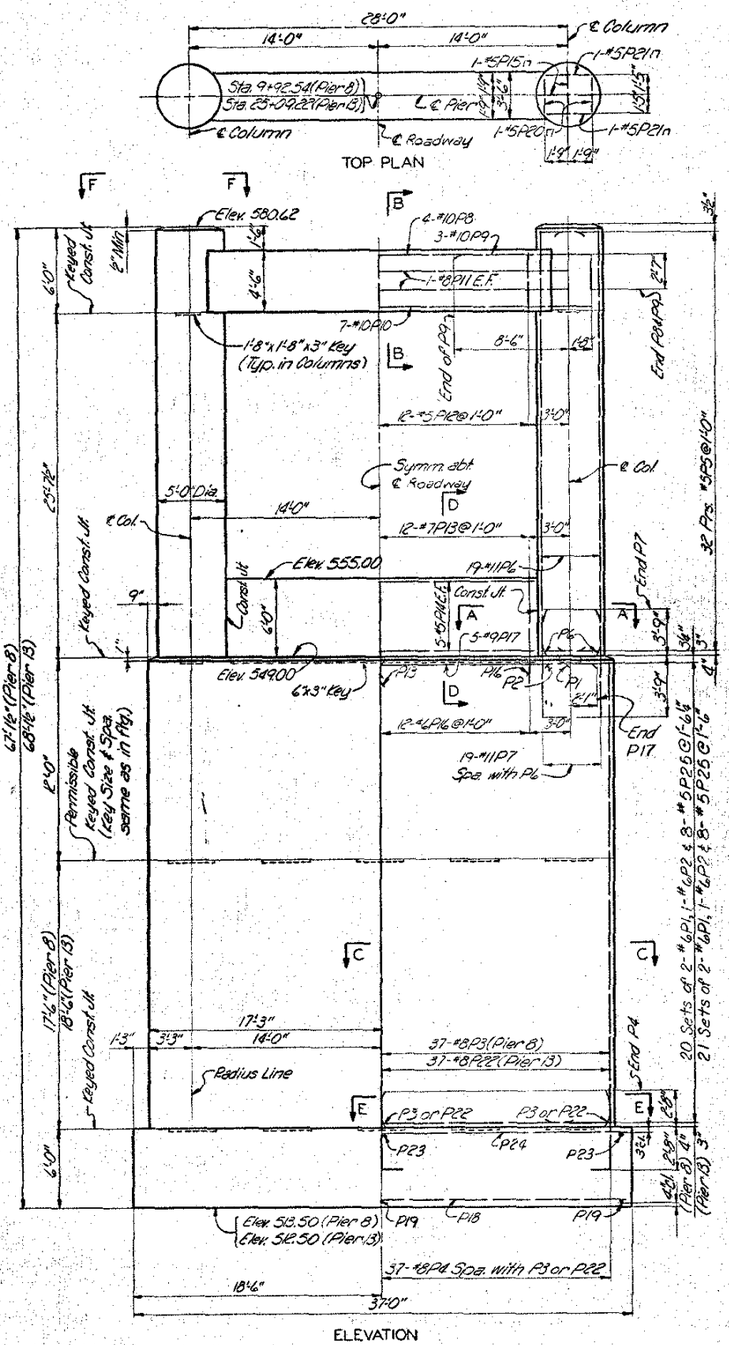
PIERS 5, 6, 7 & 14

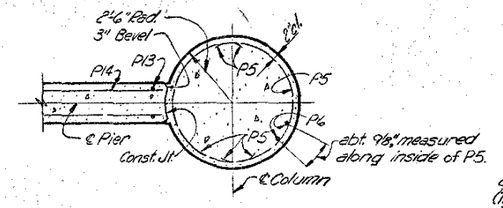
MUSCATINE COUNTY

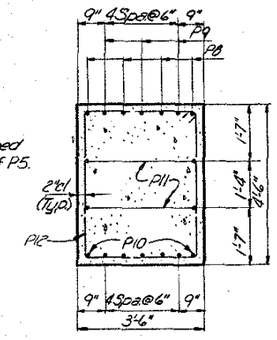
IOWA STATE HIGHWAY COMMISSION

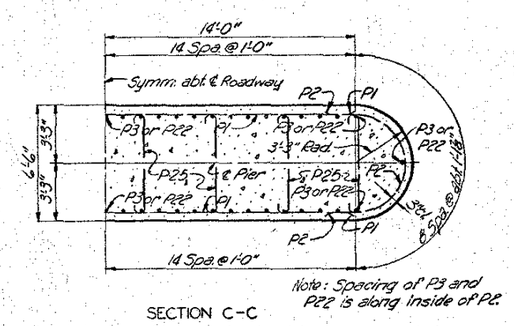
DESIGN NO. 170 FILE NO. 23800 DES. SH. NO. 10 OF 61

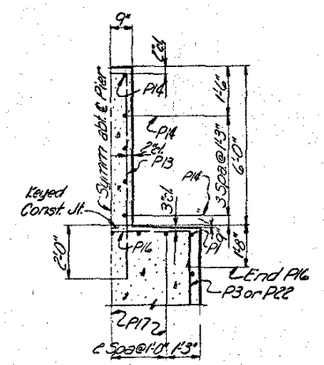
PROJECT UN-92-9(19)--41-70 PROJECT SH. NO. 10 OF 131

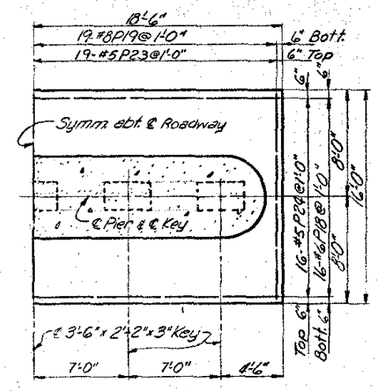


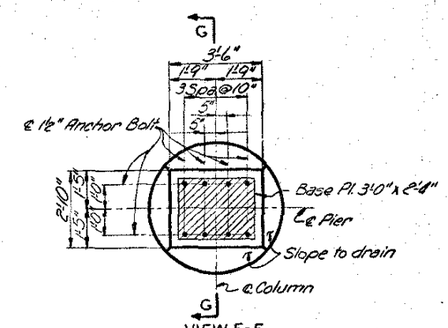


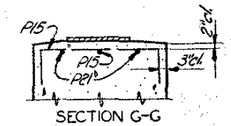












NOTES

E.F. indicates each face.

Note: Do not scale this drawing. Follow dimensions.

MISSISSIPPI RIVER BRIDGE

PIERS 8 AND 13

MUSCATINE COUNTY

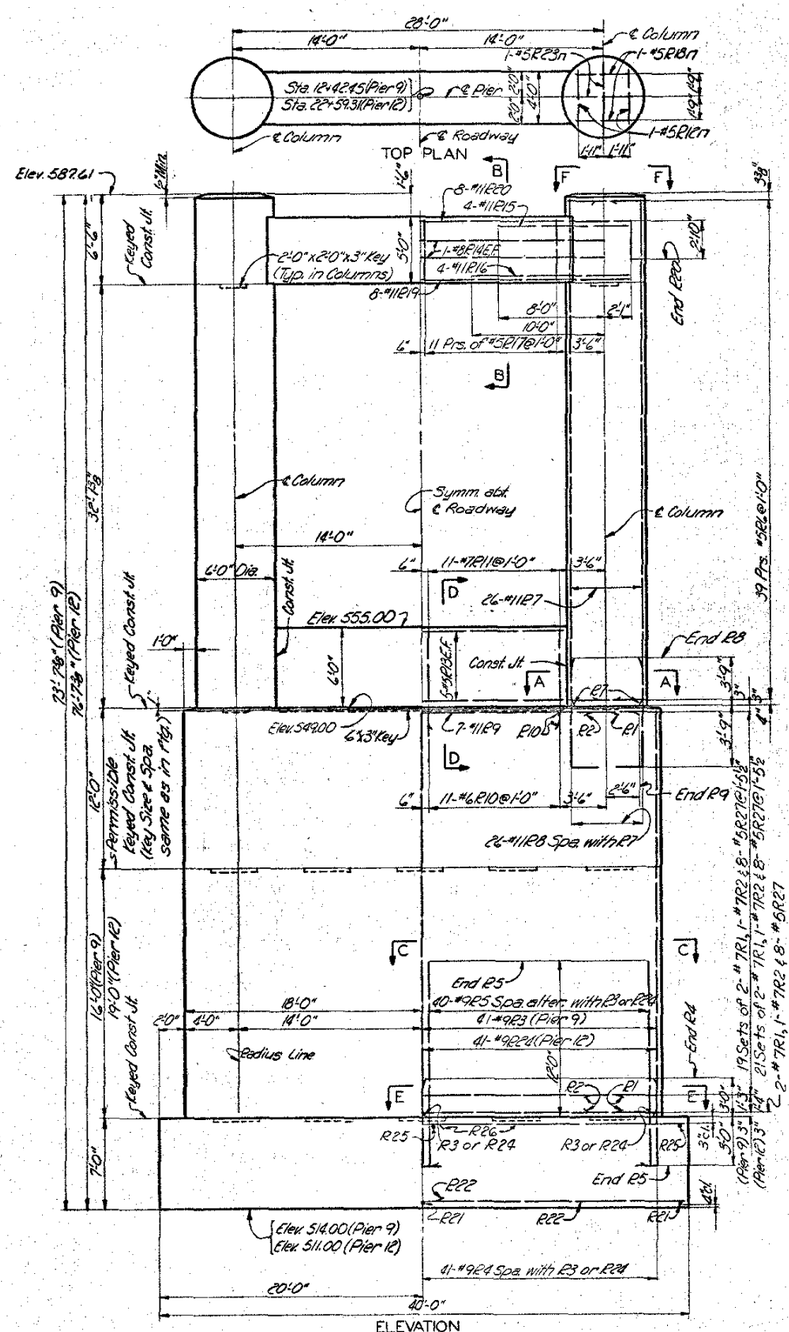
IOWA STATE HIGHWAY COMMISSION

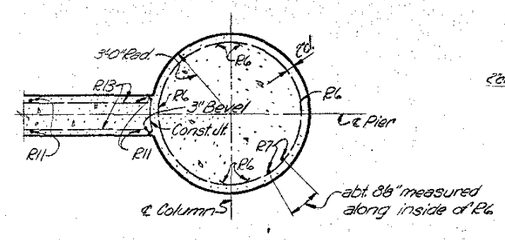
DESIGN NO. 170 · FILE NO. 23800 DES. SH. NO. 11 OF 61

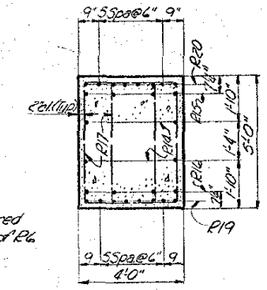
PROJECT UN-92-9(19)--41-70 PROJECT SH. NO. 11 OF 131

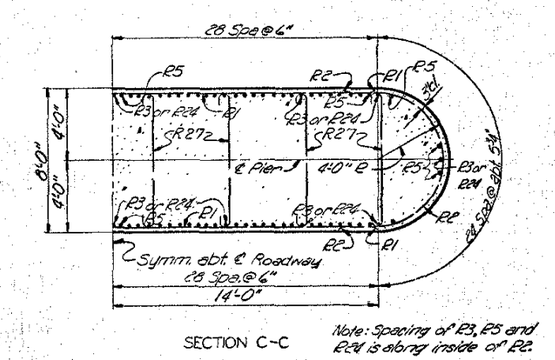
2600	Drawn By: M. Colshaw, Jan. 1969
69535	Checked By: W.J. Goodis, Feb. 1969

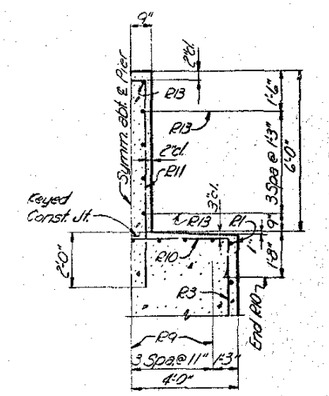
SVERDRUP & PARCEL AND ASSOCIATES, Inc.
CONSULTING ENGINEERS
ST. LOUIS, MISSOURI

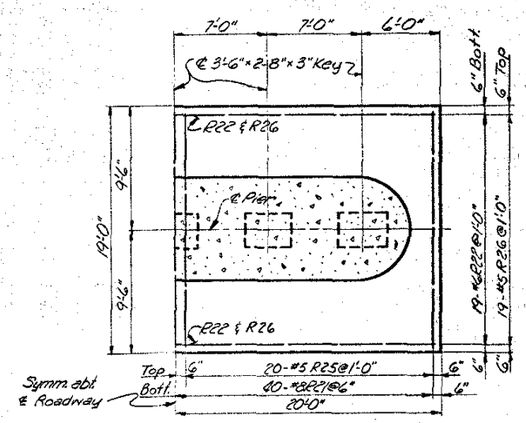


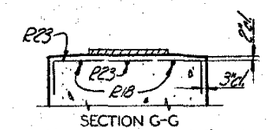


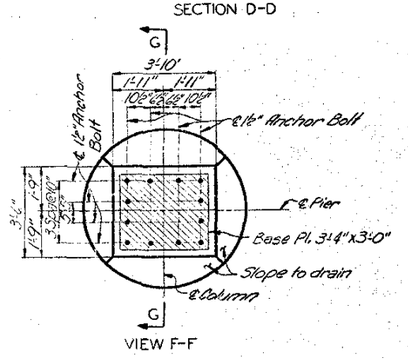












NOTES

E.F. indicates each face.

MISSISSIPPI RIVER BRIDGE

PIERS 9 AND 12

MUSCATINE COUNTY

IOWA STATE HIGHWAY COMMISSION

DESIGN NO. 170 FILE NO. 23800 DES. SH. NO. 12 OF 61

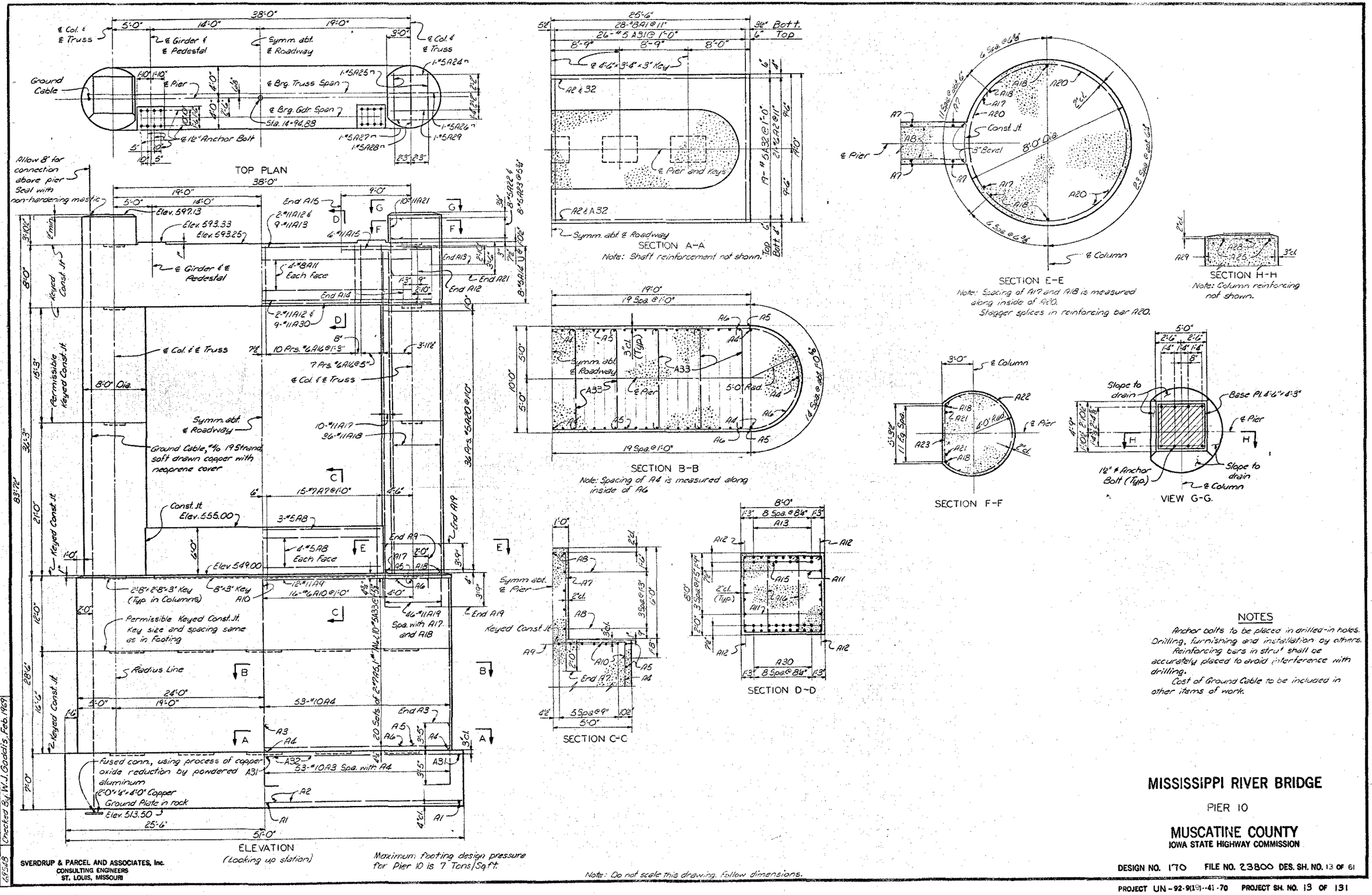
PROJECT LIN-92-9(15)--41-70 PROJECT SH. NO. 12 OF 131

Drawn By: J. McLoshan, Jan. 1969
Checked By: W. J. Gaddis, Feb. 1969

2200
29536

SVERDRUP & PARCEL AND ASSOCIATES, Inc.
CONSULTING ENGINEERS
ST. LOUIS, MISSOURI

Note: Do not scale this drawing. Follow dimensions.

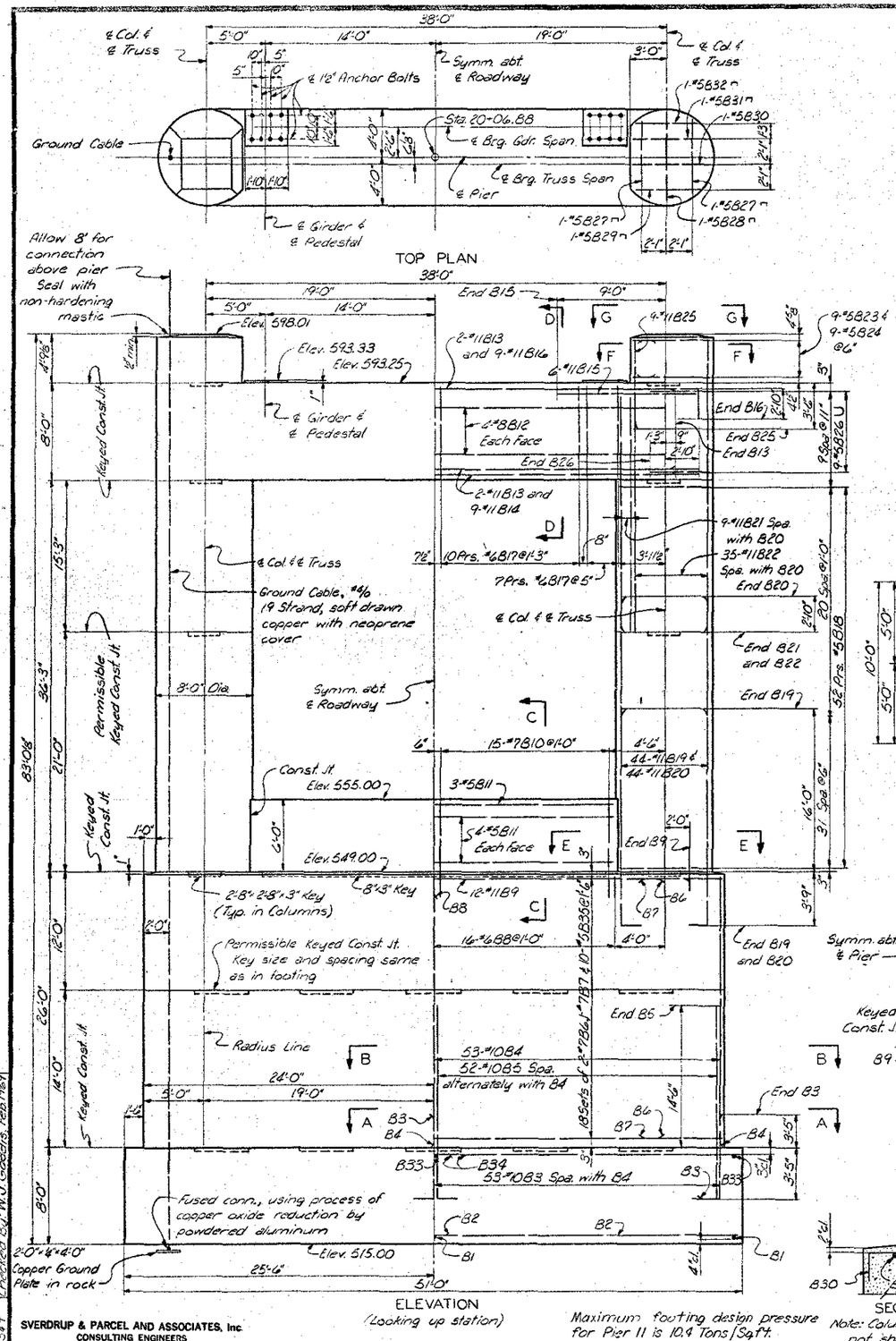


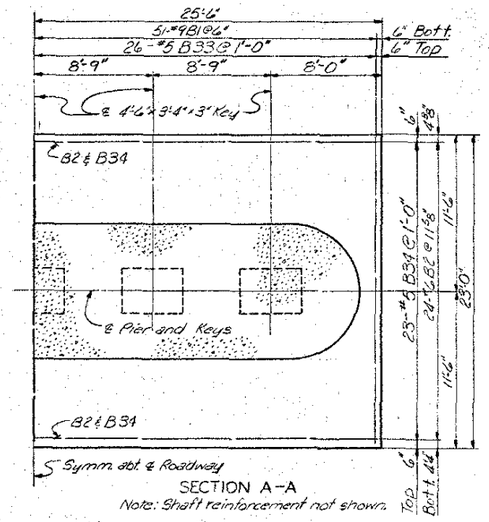
NOTES

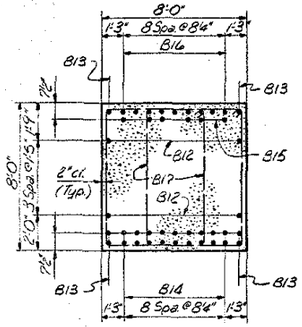
Anchor bolts to be placed in drilled-in holes. Drilling, furnishing and installation by others.

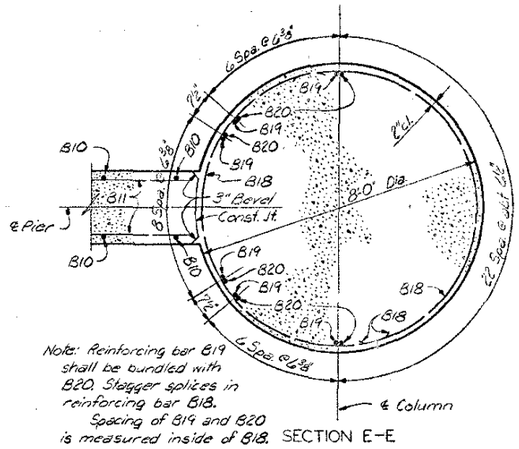
Reinforcing bars in strut shall be accurately placed to avoid interference with drilling.

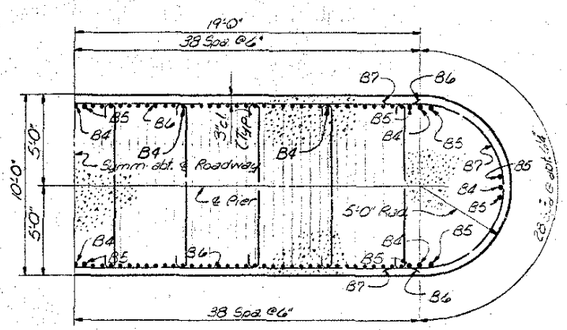
Cost of Ground Cable to be included in other items of work.

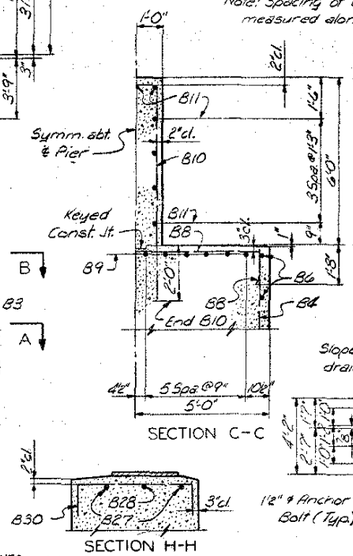


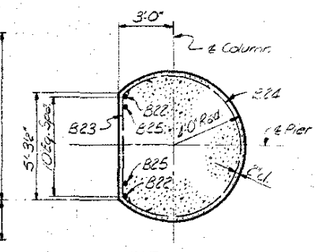


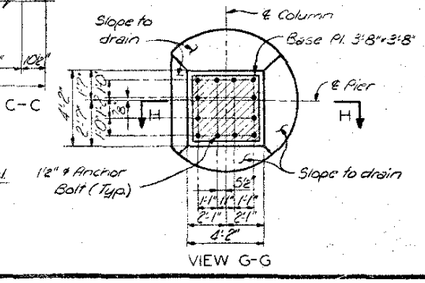












NOTES

Anchor bolts to be placed in drilled-in holes. Drilling, furnishing and installation by others.

Reinforcing bars in strut shall be accurately placed to avoid interference with drilling.

Cost of Ground Cable to be included in other items of work.

MISSISSIPPI RIVER BRIDGE

PIER 11

MUSCATINE COUNTY

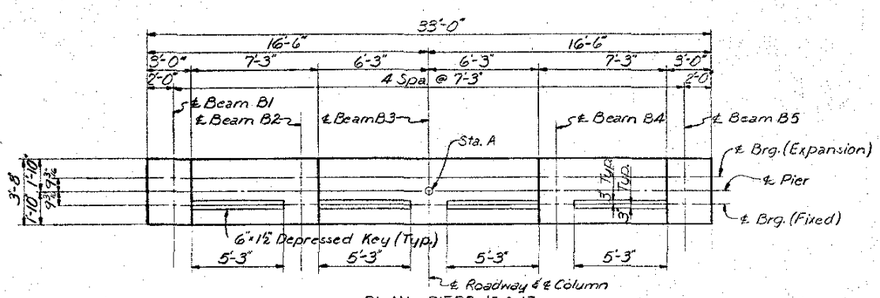
IOWA STATE HIGHWAY COMMISSION

SVERDRUP & PARCEL AND ASSOCIATES, Inc.
CONSULTING ENGINEERS
ST. LOUIS, MISSOURI

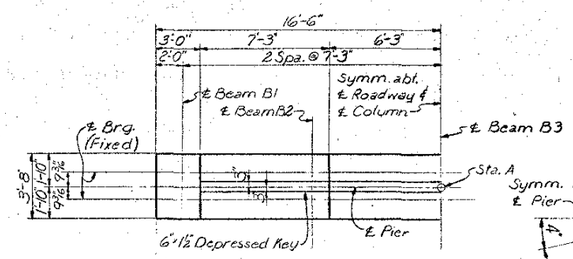
Drawn By: D.J. Schamp, Feb. 1969
Checked By: W.U. Goodlis, Feb. 1969

DESIGN NO. 170 FILE NO. 23800 DES. SH. NO. 14 OF 61

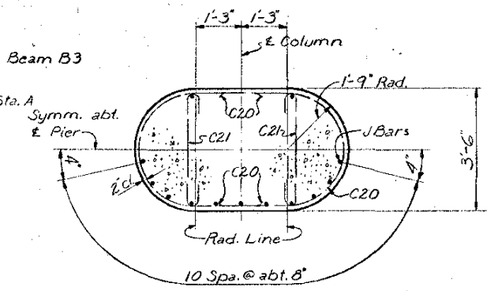
PROJECT UN-92-9(19)--41-70 PROJECT SH. NO. 14 OF 131



PLAN - PIERS 15 & 17

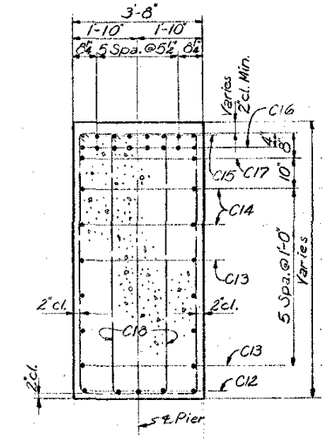


HALF PLAN - PIER 16

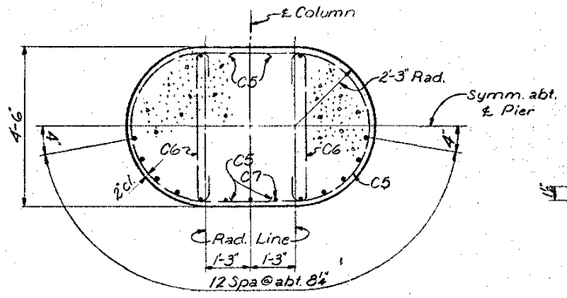


SECTION B-B

Note: Spacing of J Bars is measured along inside of C20.

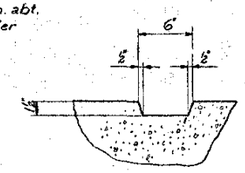


SECTION A-A

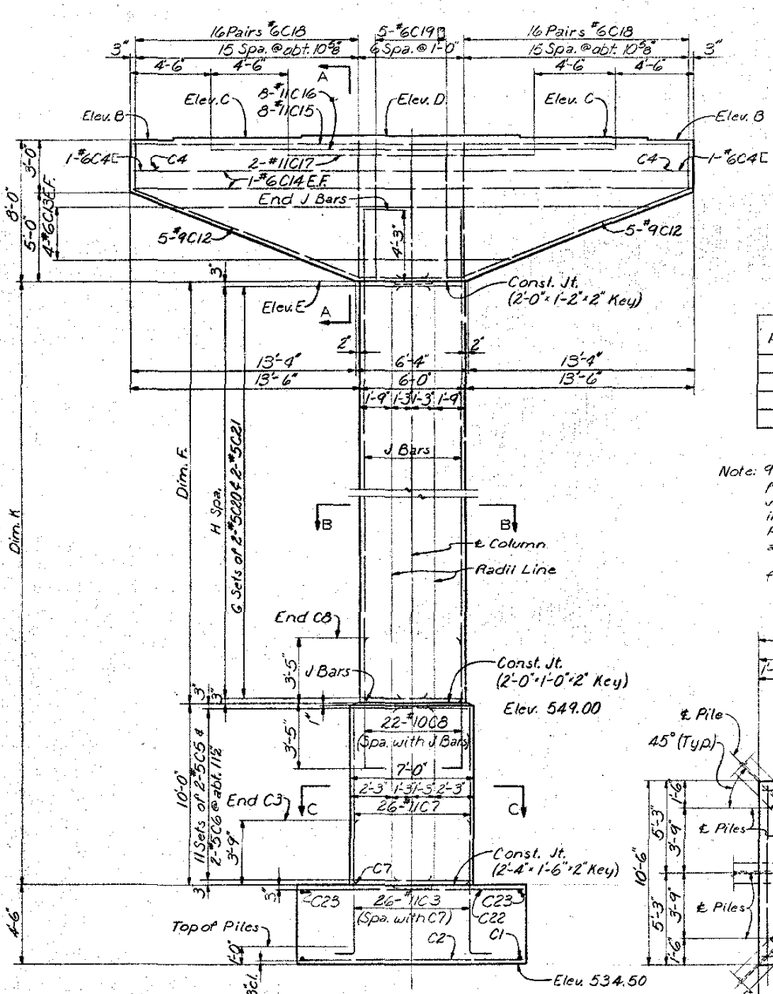


SECTION C-C

Note: Spacing of C7 is measured along inside of C5.



DEPRESSED KEY DETAIL



ELEVATION

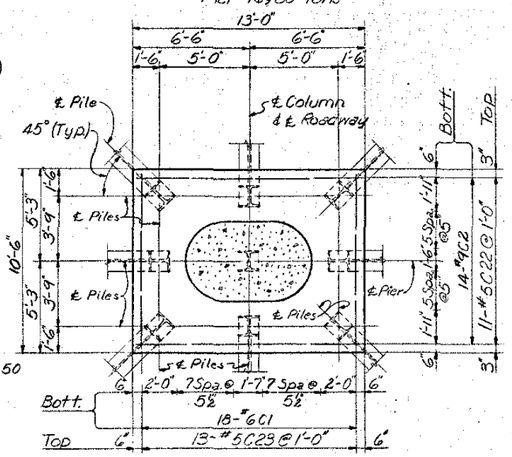
(Looking Upstation)

Note: Piles not shown in footing. Depressed key not shown in beam.

PILE DATA

Pier	Estimated Pile Tip Elev.	Estimated Length
15	511.5	24 Ft.
16	511.0	25 Ft.
17	512.5	23 Ft.

Note: 9-14BP73 piles required per footing, 8 battered and 1 vertical. Batter piles 2 in 12 in direction shown. Pile spacing is measured along bottom of footing. Piling are designed for the following bearing:
Piers 15 & 17, 77 Tons
Pier 16, 80 Tons



FOOTING PLAN

TABLE OF PIER VARIABLES

	Pier 15	Pier 16	Pier 17
Sta. A	26+73.97	27+55.47	28+36.97
Elev. B	587.17	584.93	582.69
Elev. C	587.28	585.04	582.79
Elev. D	587.36	585.12	582.88
Elev. E	579.17	576.93	574.69
Dim. F	30'-2"	27'-11⅛"	25'-8¼"
G Sets	31	29	26
H Spa.	30 @ abt. 11⅞"	28 @ abt. 11⅞"	25 @ abt. 1'-0⅛"
J Bars	22-#10C9	22-#10C10	22-#10C11
Dim. K	40'-2"	37'-11⅛"	35'-8¼"

NOTES

E.F. indicates Each Face.
For Substructure Layout, see Sheet 7.

Note: Do not scale this drawing. Follow dimensions.

2600	Drawn by: M. Herbello, Jan. 1969
69522	Checked by: W.J. Goddis, Feb. 1969

SVERDRUP & PARCEL AND ASSOCIATES, Inc.
CONSULTING ENGINEERS
ST. LOUIS, MISSOURI

MISSISSIPPI RIVER BRIDGE

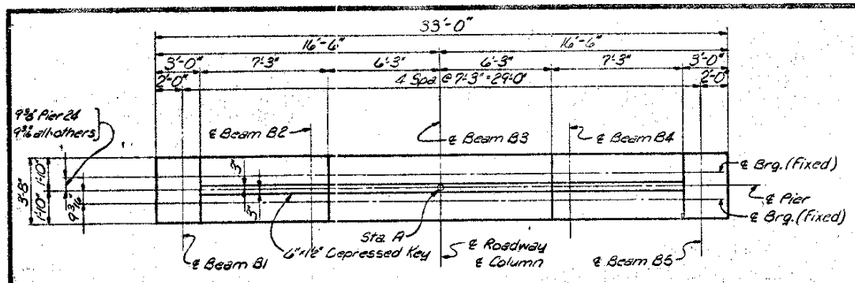
PIERS 15, 16 AND 17

MUSCATINE COUNTY

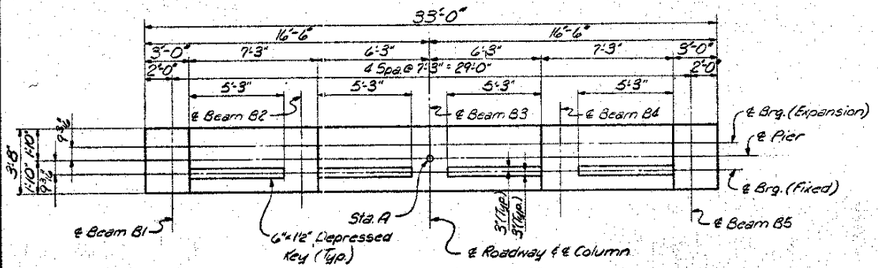
IOWA STATE HIGHWAY COMMISSION

DESIGN NO. 170 FILE NO. 23800 DES. SH. NO. 15 OF 61

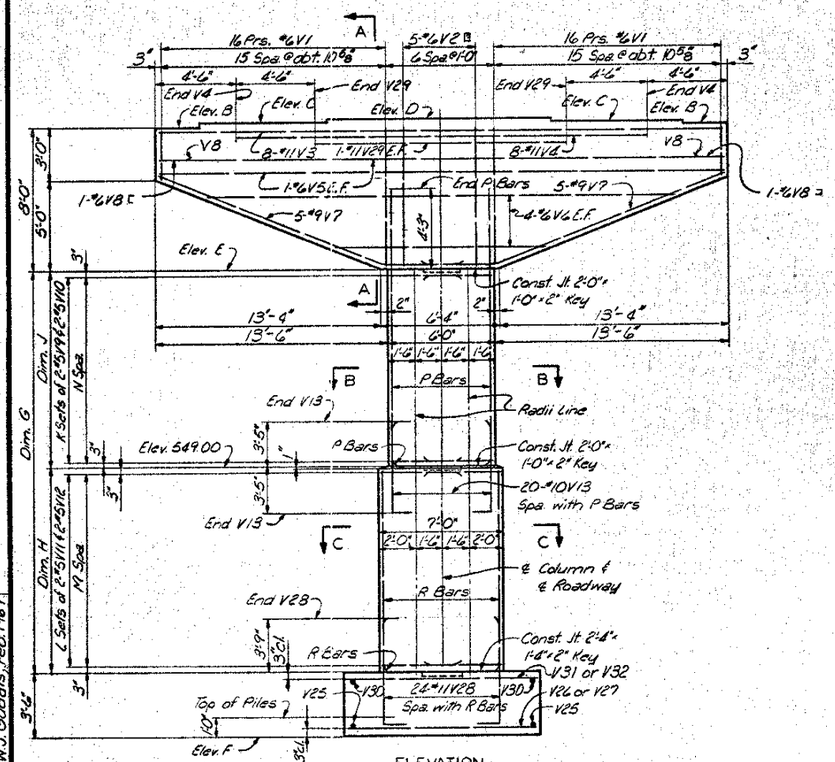
PROJECT UN-92-9(19)--41-70 PROJECT SH. NO. 15 OF 131



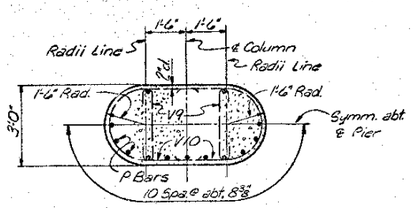
TOP PLAN – PIERS 18, 20, 22 & 24



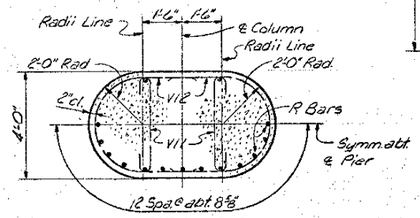
TOP PLAN – PIERS 19, 21 & 23



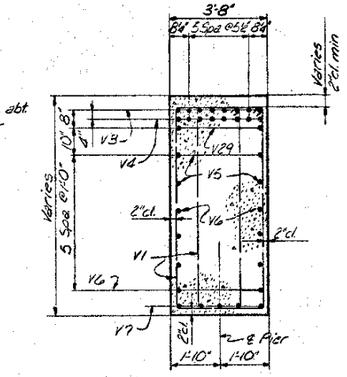
ELEVATION
(Looking up station)
Note: Depressed Key not shown in beam.
Piles not shown in footing.



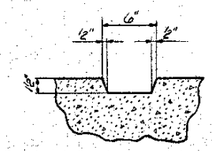
SECTION B-B
Note: Spacing of P Bars is measured along inside of V10.



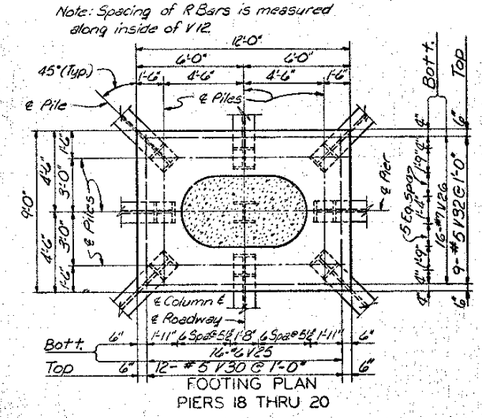
SECTION C-C
Note: Spacing of R Bars is measured along inside of V12.



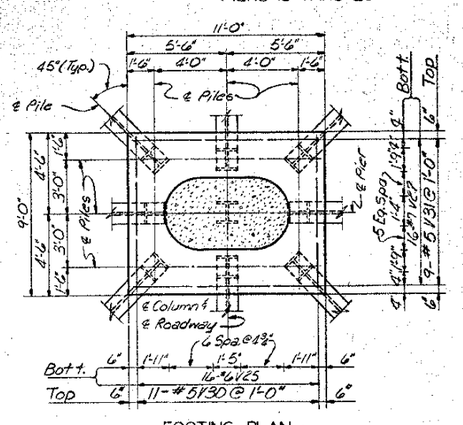
SECTION A-A
Note: Depressed Key not shown.



DEPRESSED KEY DETAIL



FOOTING PLAN
PIERS 18 THRU 20



FOOTING PLAN
PIERS 21 THRU 24

TABLE OF PIER VARIABLES

	Pier 18	Pier 19	Pier 20	Pier 21	Pier 22	Pier 23	Pier 24
Sta. A	29+18.47	29+99.97	30+81.47	31+62.97	32+44.47	33+25.99	34+07.47
Elev. B	580.44	578.20	575.96	573.72	571.48	569.24	567.00
Elev. C	580.55	578.31	576.07	573.83	571.59	569.35	567.11
Elev. D	580.64	578.40	576.16	573.92	571.67	569.43	567.19
Elev. E	572.44	570.20	567.96	565.72	563.48	561.24	559.00
Elev. F	534.50	534.50	536.50	537.50	537.50	536.50	532.50
Dim. G	34'-5⅛"	32'-2⅝"	27'-11½"	24'-8⅜"	22'-5⅜"	21'-2⅞"	23'-0"
Dim. H	11'-0"	11'-0"	9'-0"	8'-0"	8'-0"	9'-0"	13'-0"
Dim. J	23'-5⅛"	21'-2⅝"	18'-11½"	16'-8⅜"	14'-5⅜"	12'-2⅞"	10'-0"
K Sets	26	22	19	17	15	13	11
L Sets	11	11	9	9	9	9	13
M Spa.	10 @ abt. 1'-0½"	10 @ abt. 1'-0½"	8 @ abt. 1'-0⅝"	8 @ 1'-1⅛"	8 @ 1'-1⅛"	8 @ abt. 1'-0⅝"	12 @ 1'-0½"
N Spa.	25 @ abt. 11"	21 @ abt. 11⅞"	18 @ abt. 1'-0⅛"	16 @ abt. 1'-0⅝"	14 @ abt. 1'-0"	12 @ abt. 11⅛"	10 @ abt. 11½"
P Bars	20-#10 V14	20-#10 V15	20-#10 V16	20-#10 V17	20-#10 V18	20-#10 V19	20-#10 V20
R Bars	24-#11 V21	24-#11 V21	24-#11 V22	24-#11 V23	24-#11 V23	24-#11 V22	24-#11 V24

PILE DATA

Pier	Estimated Pile Tip Elev.	Estimated Length
18	511.5	24 Ft.
19	509.5	26 Ft.
20	509.0	29 Ft.
21	510.5	28 Ft.
22	510.0	29 Ft.
23	509.0	29 Ft.
24	508.0	26 Ft.

9-14BP73 piles required per footing, 8 battered and 1 vertical.
Pile spacing is measured along bottom of footing.
Batter piles 2 in 12 in direction shown on footing plans.
Piling are designed for the following bearings:
Piers 18 thru 22, 78 Tons
Piers 23 & 24, 80 Tons.

NOTES
E.F. indicates Each face.
For Substructure Layout, see Sheet 7.

Drawn By: D.J. Schrenk, Jan. 1969	2600
Checked By: W.J. Gaddis, Feb. 1969	69534

SVERDRUP & PARCEL AND ASSOCIATES, Inc.
CONSULTING ENGINEERS
ST. LOUIS, MISSOURI

Note: Do not scale this drawing. Follow dimensions.

MISSISSIPPI RIVER BRIDGE

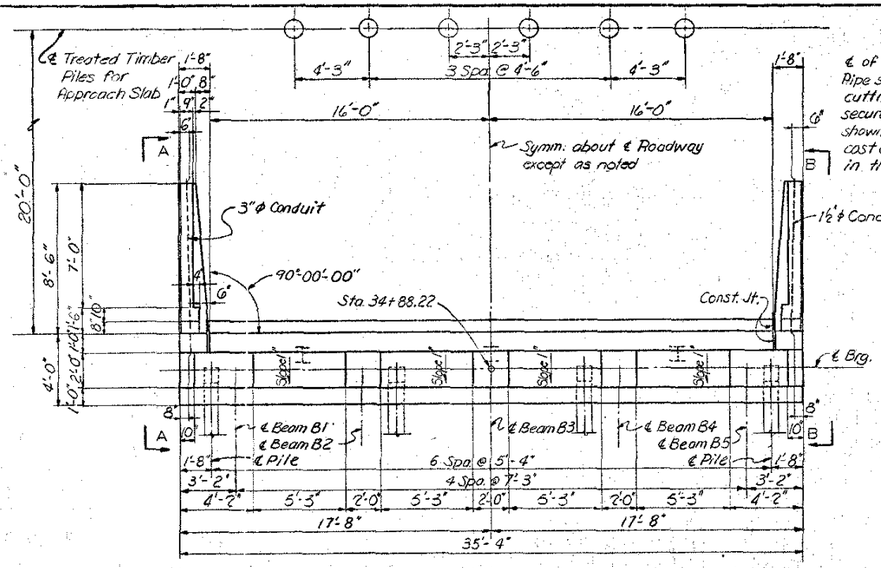
PIERS 18 THRU 24

MUSCATINE COUNTY

IOWA STATE HIGHWAY COMMISSION

DESIGN NO. 170 FILE NO. 23800 DES. SH. NO. 16 OF 61

PROJECT UN-92-9(19)--41--70 PROJECT SH. NO. 16 OF 131

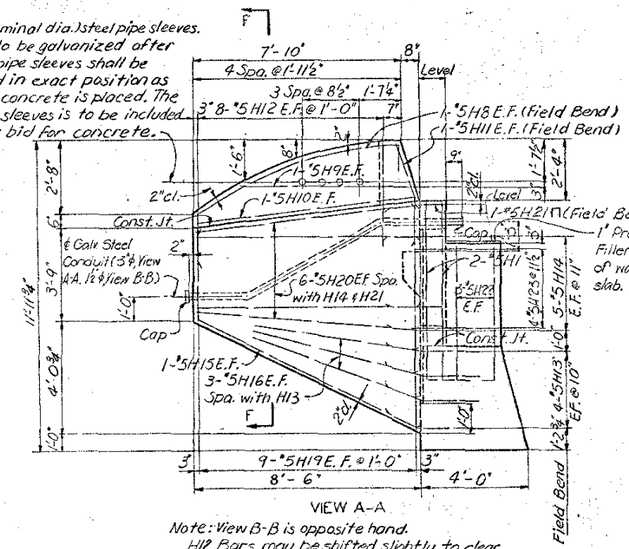


PLAN

Note: 6-Treated Timber Piles required. Required Length = 44 ft. Pile Tip Elev. = 623.68.

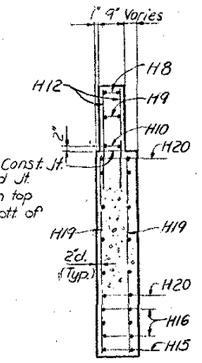
Note: 7-10BP42 Piles required. Estimated Length = 60 ft. Estimated Pile Tip Elev. = 603.5 Piling are designed for a bearing of 54 tons.

℄ of 1"φ (nominal dia.) steel pipe sleeves. Pipe sleeves to be galvanized after cutting. The pipe sleeves shall be securely fixed in exact position as shown before concrete is placed. The cost of pipe sleeves is to be included in the price bid for concrete.



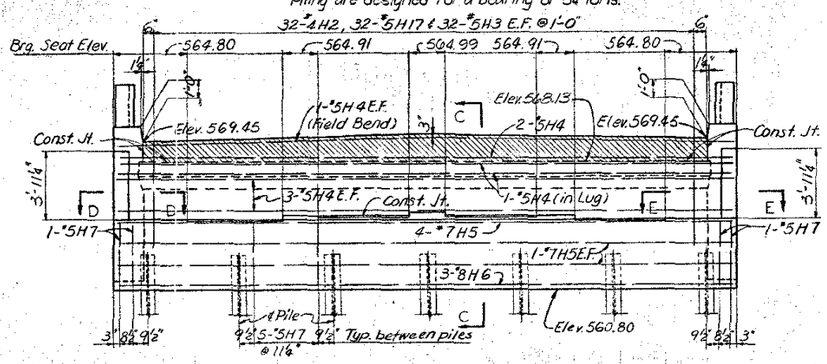
VIEW A-A

Note: View B-B is opposite hand. H12 Bars may be shifted slightly to clear pipe sleeves.



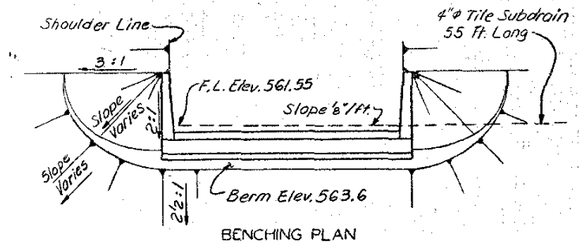
SECTION F-F

Note: 6-Treated Timber Piles required. Required Length = 44 ft. Pile Tip Elev. = 623.68.



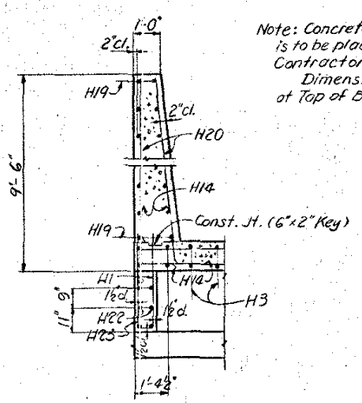
ELEVATION

Note: Concrete within sectioned area is to be placed by Superstructure Contractor. Dimensions and Elevations shown at Top of Backwall are at Front Face.



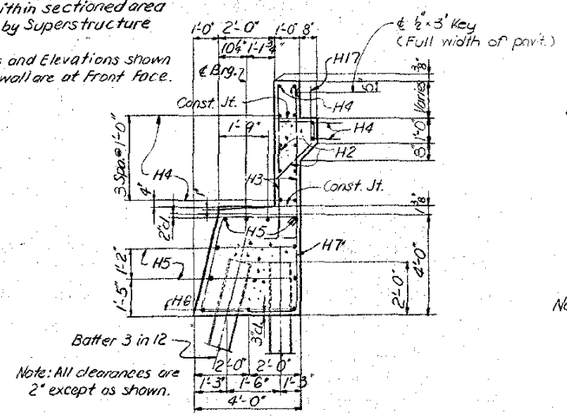
BENCHING PLAN

Note: The excavation necessary for installation of subdrain shall be included in price bid for 4"φ tile subdrain.



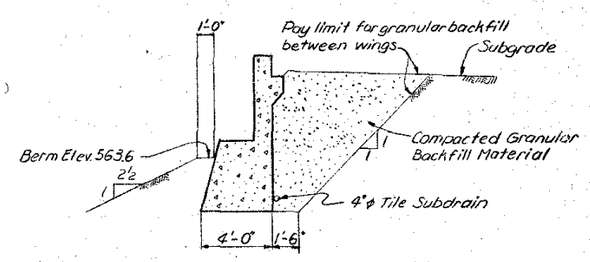
SECTION D-D

Note: Section E-E is opposite hand.



Note: All clearances are 2" except as shown.

SECTION C-C



LIMITS OF GRANULAR BACKFILL

Note:
The Contractor is to backfill behind abutment between wings to subgrade elevation with granular backfill material complying with Section 4133 of the Standard Specifications. The remainder of the abutment excavation is to be backfilled with soil.

NOTES

For Substructure Layout, see Sheet 2.
E.F. indicates Each Face.
Top of backwall to conform to grade and cross slope of roadway.
Steel conduit shall be paid for in other items of work.

Note: Do not scale this drawing. Follow dimensions.

SVERDRUP & PARCEL AND ASSOCIATES, Inc.
CONSULTING ENGINEERS
ST. LOUIS, MISSOURI

2600 Drawn By: D. Chern, Feb. 1969
6953 Checked By: W.J. Geddis, Feb. 1969

MISSISSIPPI RIVER BRIDGE

ABUTMENT 25

MUSCATINE COUNTY

IOWA STATE HIGHWAY COMMISSION

DESIGN NO. 170 FILE NO. 23800 DES. SH. NO. 17 OF 61

PROJECT UN-92-9(19)--41-70 PROJECT SH. NO. 17 OF 131

ABUTMENT 1

MARK	NO. REQ'D	SIZE NO.	LENGTH FT-IN	TYPE	LOCATION	A FT-IN	B FT-IN	C FT-IN	D FT-IN	G FT-IN	H FT-IN	K FT-IN	R FT-IN
E 1	64	5	6- 8	2	BACKWALL	9	5-11			---			
E 2	32	5	1- 9	ST	LUG								
E 3	32	4	4- 7	16	BACKWALL	7 1/2	1- [illegible]	9	1-10 5/8		1- 4	1- 4	
E 4	10	5	35- 0	ST	DO								
E 5	4	5	17- 4	ST	DO								
E 6	6	7	35- 0	ST	BR. SEAT								
E 7	2	7	18- 3	ST	DO								
E 8	4	7	10- 0	2	DO	1- 0 1/2	9- 0			---			
E 9	4	7	12- 1	2	DO	1- 0 1/2	11- 1			---			
E 10	3	8	35- 0	ST	DO								
E 11	16	5	15- 0	SP	DO								
E 12	7	5	16- 6	SP	DO								
E 13	11	5	16- 9	SP	DO								
E 14					NOT USED								
E 15	32	5	VARIES	ST	WINGWALL	4 SERIES	OF 8	BARS (	2- 5	TO	3- 5	)	
E 16	4	5	9- 3	17	DO		1- 3	8- 0	---				
E 17	4	5	6- 9	ST	DO								
E 18	4	5	3- 5	ST	DO								
E 19	4	5	8- 2	ST	DO								
E 20	24	5	8- 2	ST	DO								
E 21	4	5	7- 5	2	BACKWALL	9	6- 8			---			
E 22	4	5	7- 6	2	DO	9	6- 9			---			
E 23	20	5	3- 4	17	WINGWALL		1- 3	2- 1	---				
E 24	2	5	5- 4	17	BACKWALL		2- 1	1- 2	2- 1				
E 25	16	5	3- 6	ST	BR. SEAT								
E 26					NOT USED								
E 27	18	5	VARIES	ST	WINGWALL	2 SERIES	OF 9	BARS (	3- 7	TO	8- 1	)	
E 28	18	5	VARIES	ST	DO	2 SERIES	OF 9	BARS (	3- 7	TO	8- 1	)	
E 29	4	5	9- 1	ST	DO								
E 30	12	5	7- 0	ST	DO								
E 31	12	5	5- 8	2	CLOS WALL	9	4- 1			---			
E 32	8	5	7- 5	17			3- 5	7	3- 5				

PIERS 2, 3 AND 4

MARK	NO. REQ'D	SIZE NO.	LENGTH FT-IN	TYPE	LOCATION	A FT-IN	B FT-IN	C FT-IN	D FT-IN	G FT-IN	H FT-IN	K FT-IN	R FT-IN
D 1	48	6	8- 6	ST	FOOTING								
D 2	48	7	10- 6	ST	DO								
D 3	60	10	7-11	2	DO	1- 6 1/2	6- 5			---			
D 4	20	10	20- 6	ST	COLUMN								
D 5	20	10	27-10	ST	DO								
D 6	20	10	27-10	ST	DO								
D 7	130	5	8- 6	10	DO	2- 2	4- 2 1/4	2- 2					1- 3 3/8
D 8	130	5	3-10	1	DO	7	2- 8			7			
D 9	52	6	VARIES	SP	CAP	4 SERIES	OF 13	BARS (	13- 8	TO	22- 8	)	
D 10	10	6	VARIES	SP	CAP	2 SERIES	OF 5	BARS (	23-10	TO	24- 2	)	
D 11	52	6	VARIES	SP	CAP	4 SERIES	OF 13	BARS (	11- 8	TO	22- 4	)	
D 12	37	4	5- 6	17	CAP		2- 0	1- 6	2- 0				
D 13	26	6	VARIES	SP	CAP	2 SERIES	OF 13	BARS (	14- 4	TO	23- 0	)	
D 14	26	6	VARIES	SP	CAP	2 SERIES	OF 13	BARS (	11- 7	TO	22- 6	)	
D 15	24	11	33- 0	ST	CAP								
D 16	24	11	19- 4	ST	DO								
D 17	3	4	8- 1	ST	DO								
D 18	9	4	6-11	ST	DO								
D 19	3	4	2-10	ST	DO								
D 20	12	6	33- 0	ST	DO								
D 21	4	6	31- 3	ST	DO								
D 22	4	6	28- 9	ST	DO								
D 23	4	6	22- 8	ST	DO								
D 24	4	6	17- 5	ST	DO								
D 25	4	6	11- 6	ST	DO								
D 26	30	9	18- 6	19	DO		4- 2	14- 4	---		1- 7 5/8	3-10	
D 27	2	6	31- 7	ST	DO								
D 28	2	6	28- 9	ST	DO								
D 29	2	6	23- 3	ST	DO								
D 30	2	6	17- 8	ST	DO								
D 31	2	6	12- 7	ST	DO								
D 32	9	6	6- 2	17	DO		1- 6	3- 2	1- 6				
D 33	5	6	VARIES	SP	DO	1 SERIES	OF 5	BARS (	24- 1	TO	24- 5	)	
D 34	27	6	10 6	ST	FOOTING								
D 35	88	5	8 6	ST	FOOTING								

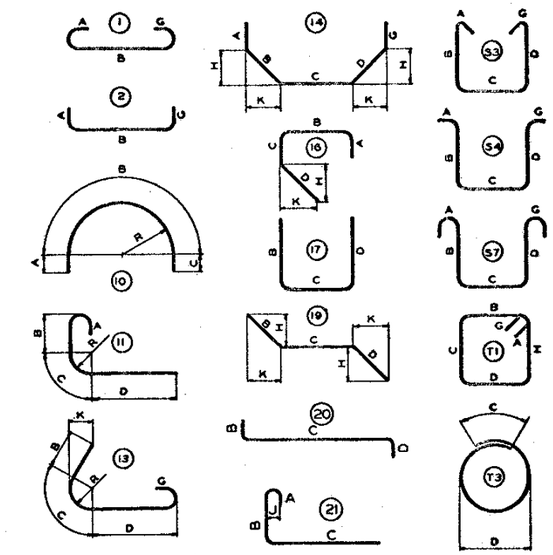
PIERS 5, 6, 7 AND 14

MARK	NO. REQ'D	SIZE NO.	LENGTH FT-IN	TYPE	LOCATION	A FT-IN	B FT-IN	C FT-IN	D FT-IN	G FT-IN	H FT-IN	K FT-IN	R FT-IN
N 1	90	5	20- 4	17	COLUMN		6- 5	7- 6	6- 5				
N 2	90	5	8- 8	1	DO	7	7- 6			7			
N 3	45	5	12- 8	1	DO	7	11- 6			7			
N 4	184	5	6- 8	1	DO	7	5- 6			7			
N 5	184	5	13- 0	10	DO	2- 2	8- 7 5/8	2- 2					2- 8 3/8
N 6	92	5	9- 8	1	DO	7	8- 6			7			
N 7	240	5	8-10	10	DO	1-11	4-11 5/8	1-11					1- 6 3/8
N 8	240	5	4- 4	1	DO	7	3- 2			7			
N 9	88	10	8- 4	2	DO	1- 6 1/2	6-10			---			
N 10	128	11	20-10	ST	DO								
N 11	192	11	9- 5	2	DO	1- 8 1/2	7- 9			---			
N 12	30	6	VARIES	ST	CAP	6 SERIES	OF 5	BARS (	11- 6	TO	29- 0	)	
N 13	16	6	32-10	ST	DO								
N 14	14	11	18- 2	ST	DO								
N 15	24	11	27- 2	ST	DO								
N 16	32	11	32-10	ST	DO								
N 17	288	6	VARIES	SP	DO	12 SERIES	OF 13	BARS (	11-10	TO	22- 8	)	
N 18	15	6	24- 2	T1	DO	7	8- 2	3- 4	8- 2	7	3- 4		
N 19	8	6	6- 2	17	DO		1- 6	3- 2	1- 6				
N 20	10	9	18- 4	19	DO		4- 2	14- 2	---		1- 7 5/8	3-10	
N 21	64	6	VARIES	SP	DO	4 SERIES	OF 16	BARS (	11-10	TO	21- 8	)	
N 22	8	6	VARIES	ST	DO	2 SERIES	OF 4	BARS (	12- 2	TO	28- 2	)	
N 23	8	11	24- 2	ST	DO								
N 24	144	11	9-10	ST	COLUMN								
N 25	48	11	11- 4	ST	DO								
N 26	22	10	30- 3	ST	DO								
N 27	22	10	32- 9	ST	DO								
N 28	22	10	35- 2	ST	DO								
N 29	22	10	36- 8	ST	DO								
N 30	30	9	18-10	19	CAP		4- 6	14- 4	---		1- 9 1/2	4- 1 1/2	
N 31	88	7	13- 6	ST	FOOTING								
N 32	56	11	21- 6	ST	DO								
N 33	5	6	23- 2	T1	CAP	7	3- 4	7- 8	3- 4	7	7- 8		
N 34	128	11	9- 2	2	COLUMN	1- 8 1/2	7- 6			---			
N 35	88	5	13- 6	ST	FOOTING								
N 36	56	5	21- 6	ST	FOOTING								

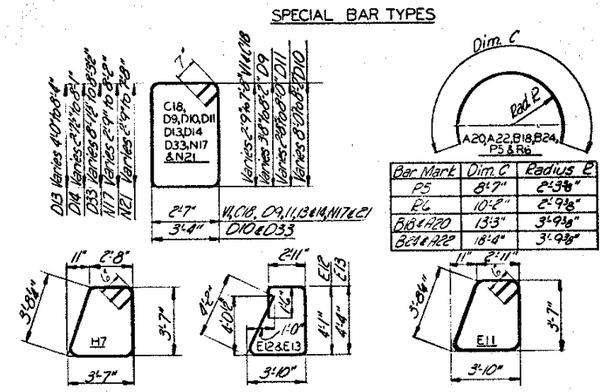
PIERS 8 AND 13

MARK	NO. REQ'D	SIZE NO.	LENGTH FT-IN	TYPE	LOCATION	A FT-IN	B FT-IN	C FT-IN	D FT-IN	G FT-IN	H FT-IN	K FT-IN	R FT-IN
P 1	82	6	28- 0	ST	SHAFT								
P 2	82	6	12- 5	10	DO	1- 6	9- 5 1/8	1- 6					2-11 1/4
P 3	72	8	29- 3	ST	DO								
P 4	144	8	6- 6	2	FOOTING	1- 2 1/2	5- 4			---			
P 5	256	5	8- 7	SP	COLUMNS								
P 6	76	11	31- 6	ST	DO								
P 7	76	11	9- 2	2	SHAFT	1- 8 1/2	7- 6			---			
P 8	8	10	36- 6	17	STRUT		2- 7	31- 4	2- 7				
P 9	12	10	12- 9	17	DO		2- 7	10- 2	---				
P 10	14	10	31- 4	ST	DO								
P 11	8	8	28- 0	ST	DO								
P 12	46	5	15- 8	T1	DO	6	3- 2	4- 2	3- 2	6	4- 2		
P 13	46	7	16-10	17	WALL		7-10	1- 2	7-10				
P 14	20	5	23- 0	ST	DO								
P 15	8	5	7-10	17	COLUMN		1- 8	4- 6	1- 8				
P 16	46	6	8-10	17	SHAFT		1- 6	5-10	1- 6				
P 17	10	9	32- 2	ST	DO								
P 18	32	6	36- 6	ST	FOOTING								
P 19	74	8	15- 6	ST	DO								
P 20	8	5	6- 2	17	COLUMN		1- 8	2-10	1- 8				
P 21	8	5	6-10	17	DO		1- 8	3- 6	1- 8				
P 22	72	8	30- 3	ST	SHAFT								
P 23	74	5	15- 6	ST	FOOTING								
P 24	32	5	36- 6	ST	FOOTING								
P 25	328	5	7- 2	1	SHAFT	7	6- 0			7			

STANDARD BAR TYPES



SPECIAL BAR TYPES



Bar Mark	Dim. C	Radius R
P5	8'-7"	2'-3⅜"
R6	10'-2"	2'-9⅜"
B18 & A20	13'-3"	3'-9⅜"
B24 & A22	18'-4"	3'-9⅜"

NOTES

All dimensions are out to out, except "R" which is to inside of bend.

All bends shown are bent around a standard mandrel, except where radius "R" is indicated.

Figures in circles indicate standard bar types from A.C.I. "Manual of Standard Practice for Detailing Reinforced Concrete Structures."

Dimensioning, and bending for bent bars shall conform to recommendations indicated in A.C.I. "Manual of Standard Practice for Detailing Reinforced Concrete Structures."

A dash in the appropriate dimension column indicates that a hook or portion of a standard bar type is to be omitted.

Bars marked "SP" in the type column require special bending, see detail.

Bending dimensions may be considered as approximate not necessarily adding to exact total length of bar.

MISSISSIPPI RIVER BRIDGE

BAR LIST

MUSCATINE COUNTY

IOWA STATE HIGHWAY COMMISSION

DESIGN NO. 170 FILE NO. 23800 DES. SH. NO. 18 OF 61

PROJECT UN-92-9(19)--41-70 PROJECT SH. NO. 18 OF 131

22.00 Drawn By: J. McCashen, Mar. 1969
69595 Checked By: R. Hammer Jr. Mar. 1969

SVERDRUP & PARCEL AND ASSOCIATES, Inc.
CONSULTING ENGINEERS
ST. LOUIS, MISSOURI

Note: Do not scale this drawing. Follow dimensions.

PIERS 9 AND 12

MARK	NO. REQ'D	SIZE NO.	LENGTH FT-IN	TYPE	LOCATION	A FT-IN	B FT-IN	C FT-IN	D FT-IN	G FT-IN	H FT-IN	K FT-IN	R FT-IN
R 1	84	7	28- 0	ST	SHAFT								
R 2	84	7	15- 3	10	DO	1- 9	11- 9 3/8	1- 9					3- 8 1/8
R 3	80	9	27- 9	ST	DO								
R 4	160	9	7- 4	2	FOOTING	1- 4 1/2	6- 0			---			
R 5	160	9	16- 4	2	DO	1- 4 1/2	15- 0			---			
R 6	312	5	10- 2	SP	COLUMN								
R 7	104	11	38- 5	ST	DO								
R 8	104	11	9- 2	2	SHAFT	1- 8 1/2	7- 6			---			
R 9	14	11	33- 0	ST	DO								
R 10	44	6	10- 4	17	DO		1- 6	7- 4	1- 6				
R 11	44	7	16-10	17	WALL		7-10	1- 2	7-10				
R 12	8	5	6-10	17	COLUMN		1- 8	9- 6	1- 8				
R 13	20	5	21- 8	ST	WALL								
R 14	8	8	28- 0	ST	STRUT								
R 15	16	11	10- 1	ST	DO								
R 16	16	11	12- 1	ST	DO								
R 17	88	5	15-10	T1	DO	6	2- 9	4- 8	2- 9	6	4- 8		
R 18	8	5	7- 2	17	COLUMN		1- 8	3-10	1- 8				
R 19	16	11	32- 2	ST	STRUT								
R 20	16	11	37-10	17	DO		2-10	32- 2	2-10				
R 21	158	8	18- 6	ST	FOOTING								
R 22	76	6	20- 6	ST	DO								
R 23	8	5	8-10	17	COLUMN		1- 8	5- 6	1- 8				
R 24	80	9	30- 9	ST	SHAFT								
R 25	80	5	18- 6	ST	FOOTING								
R 26	76	5	20-5	ST	DO								
R 27	336	5	8- 8	1	SHAFT	7	7- 6			7			

PIER 10

MARK	NO. REQ'D	SIZE NO.	LENGTH FT-IN	TYPE	LOCATION	A FT-IN	B FT-IN	C FT-IN	D FT-IN	G FT-IN	H FT-IN	K FT-IN	R FT-IN
A 1	56	8	18- 6	ST	FOOTING								
A 2	42	6	26- 0	ST	DO								
A 3	104	10	8- 4	2	DO	1- 6 1/2	6-10			---			
A 4	104	10	28- 3	ST	SHAFT								
A 5	40	7	38- 0	ST	DO								
A 6	40	7	18- 5	10	DO	1- 9	14-11	1- 9					4- 8 1/8
A 7	30	7	17- 4	17	DO		7-10	1- 8	7-10				
A 8	11	5	30- 0	ST	WALL								
A 9	12	11	42- 0	ST	SHAFT								
A 10	31	6	12- 4	17	DO		1- 6	9- 4	1- 6				
A 11	8	8	38- 0	ST	STRUT								
A 12	6	11	39- 6	ST	DO								
A 13	9	11	49- 4	17	DO		2-10	43- 8	2-10				
A 14	16	5	14- 6	10	DO	1- 3	12- 0 1/2	1- 3					3- 9 3/8
A 15	12	11	11-10	ST	DO								
A 16	68	6	27- 6	T1	DO	7	5- 6	7- 6	5- 6	7	7- 8		
A 17	20	11	44- 0	ST	COLUMN								
A 18	72	11	47-11	ST	DO								
A 19	92	11	9- 2	2	DO	1- 8 1/2	7- 6			---			
A 20	144	5	13- 3	SP	DO								
A 21	20	11	7- 2	ST	DO								
A 22	16	5	18- 4	SP	DO								
A 23	16	5	7- 8	14	DO	---	1- 3	5- 2	1- 3	---	1- 0	9	
A 24	2	5	7- 9	17	DO		1- 3	5- 3	1- 3				
A 25	4	5	8- 5	17	DO		1- 3	5-11	1- 3				
A 26	2	5	8-11	17	DO		1- 3	6- 5	1- 3				
A 27	2	5	7- 0	17	DO		1- 3	4- 6	1- 3				
A 28	2	5	10- 0	17	DO		1- 3	7- 6	1- 3				
A 29	2	5	8- 8	17	DO		1- 3	6- 2	1- 3				
A 30	18	11	43- 8	ST	STRUT								
A 31	51	5	18- 6	ST	FOOTING								
A 32	38	5	25- 11	ST	DO								
A 33	200	5	10- 8	1	SHAFT	7	9- 6			7			

PIER 11

MARK	NO. REQ'D	SIZE NO.	LENGTH FT-IN	TYPE	LOCATION	A FT-IN	B FT-IN	C FT-IN	D FT-IN	G FT-IN	H FT-IN	K FT-IN	R FT-IN
B 1	101	9	22- 6	ST	FOOTING								
B 2	48	6	26- 0	ST	DO								
B 3	104	10	8- 4	2	DO	1- 6 1/2	6-10			---			
B 4	104	10	25- 9	ST	SHAFT								
B 5	104	10	19- 4	2	FOOTING	1- 6 1/2	17-10			---			
B 6	36	7	38- 0	ST	SHAFT								
B 7	36	7	18- 5	10	DO	1- 9	14-11	1- 9					4- 8 1/8
B 8	31	6	12- 4	17	DO		1- 6	9- 4	1- 6				
B 9	12	11	42- 0	ST	DO								
B 10	30	7	17- 4	17	DO		7-10	1- 8	7-10				
B 11	11	5	30- 0	ST	WALL								
B 12	8	8	38- 0	ST	STRUT								

PIER 11 (cont'd)

MARK	NO. REQ'D	SIZE NO.	LENGTH FT-IN	TYPE	LOCATION	A FT-IN	B FT-IN	C FT-IN	D FT-IN	G FT-IN	H FT-IN	K FT-IN	R FT-IN
B 13	6	11	39- 6	ST	DO								
B 14	18	11	43- 8	ST	DO								
B 15	12	11	11-10	ST	DO								
B 16	9	11	49- 4	17	DO		2-10	43- 8	2-10				
B 17	68	6	27- 6	T1	DO	7	5- 6	7- 8	5- 6	7	7- 8		
B 18	208	5	13- 3	SP	COLUMN								
B 19	88	11	21- 5	2	DO	1- 8 1/2	19- 9			---			
B 20	88	11	29- 3	2	DO	1- 8 1/2	27- 7			---			
B 21	18	11	23- 1	ST	DO								
B 22	70	11	27-10	ST	DO								
B 23	18	5	7- 8	14	DO	---	1- 3	5- 2	1- 3	---	1- 0	9	
B 24	18	5	19- 3	SP	DO								
B 25	18	11	8- 0	ST	DO								
B 26	18	5	14- 6	10	DO	1- 3	12- 0 1/2	1- 3					3- 9 3/8
B 27	4	5	8- 9	17	COLUMN		1- 3	6- 3	1- 3				
B 28	2	5	10- 0	17	DO		1- 3	7- 6	1- 3				
B 29	2	5	7-10	17	DO		1- 3	5- 4	1- 3				
B 30	2	5	9- 0	17	DO		1- 3	6- 6	1- 3				
B 31	2	5	8- 8	17	DO		1- 3	6- 2	1- 3				
B 32	2	5	7- 6	17	DO		1- 3	5- 0	1- 3				
B 33	51	5	22- 6	ST	FOOTING								
B 34	46	5	25-11	ST	DO								
B 35	180	5	10- 8	1	SHAFT	7	9- 6			7			

PIERS 15, 16 AND 17

MARK	NO. REQ'D	SIZE NO.	LENGTH FT-IN	TYPE	LOCATION	A FT-IN	B FT-IN	C FT-IN	D FT-IN	G FT-IN	H FT-IN	K FT-IN	R FT-IN
C 1	54	6	10- 0	ST	FOOTING								
C 2	42	9	12- 6	ST	DO								
C 3	78	11	9- 5	2	DO	1- 8 1/2	7- 9			---			
C 4	6	6	6- 2	17	CAP		1- 6	3- 2	1- 6				
C 5	66	5	20- 5	10	COLUMN	1-11	6- 6 1/2	1-11					2- 0 3/8
C 6	66	5	5- 8	2	DO	9	4- 2			9			
C 7	78	11	9-10	ST	DO								
C 8	66	10	8- 4	2	DO	1- 6 1/2	6-10			---			
C 9	22	10	34- 6	ST	DO								
C 10	22	10	32- 2	ST	DO								
C 11	22	10	29-11	ST	DO								
C 12	30	9	18- 3	19	CAP		4- 2	14- 1	---		1- 7 5/8	3-10	
C 13	24	6	VARIES	ST	CAP	6 SERIES	OF 4	BARS (	12- 0	TO	27- 11	)	
C 14	12	6	32- 8	ST	CAP								
C 15	24	11	32- 8	ST	CAP								
C 16	24	11	24- 0	ST	CAP								
C 17	6	11	15- 0	ST	CAP								
C 18	192	6	VARIES	SP	CAP	12 SERIES	OF 16	BARS (	11-10	TO	21- 8	)	
C 19	15	6	23- 2	T1	CAP	7	3- 4	7- 8	3- 4	7	7- 8		
C 20	172	5	8-10	10	COLUMN	1-11	4-11 5/8	1-11					1- 6 3/8
C 21	172	5	4- 4	1	DO	7	3- 2			7			
C 22	33	5	12-6	ST	FOOTING								
C 23	39	5	10-0	ST	DO								

PIERS 18 THRU 24

MARK	NO. REQ'D	SIZE NO.	LENGTH FT-IN	TYPE	LOCATION	A FT-IN	B FT-IN	C FT-IN	D FT-IN	G FT-IN	H FT-IN	K FT-IN	R FT-IN
V 1	448	6	VARIES	SP	CAP	28 SERIES	OF 16	BARS (	11-10	TO	21- 8	)	
V 2	35	6	23- 2	T1	DO	7	3- 4	7- 8	3- 4	7	7- 8		
V 3	56	11	32- 8	ST	DO								
V 4	56	11	24- 0	ST	DO								
V 5	28	6	32- 8	ST	DO								
V 6	56	6	VARIES	ST	DO	14 SERIES	OF 4	BARS (	12- 0	TO	27- 11	)	
V 7	70	9	18- 3	19	DO		4- 2	14- 1	---		1- 7 5/8	3-10	
V 8	14	6	6- 2	17	DO		1- 6	3- 2	1- 6				
V 9	246	5	3-10	1	COLUMN	7	2- 8			7			
V 10	246	5	8- 6	10	DO	2- 2	4- 2 1/4	2- 2					1- 3 3/8
V 11	142	5	4-10	1	DO	7	3- 8			7			
V 12	142	5	10- 1	10	DO	2- 2	5- 9 1/8	2- 2					1- 9 3/8
V 13	140	10	8- 4	2	DO	1- 6 1/2	6-10			---			
V 14	20	10	27- 8	ST	DO								
V 15	20	10	25- 5	ST	DO								
V 16	20	10	23- 3	ST	DO								
V 17	20	10	21- 0	ST	DO								
V 18	20	10	18- 9	ST	DO								
V 19	20	10	16- 6	ST	DO								
V 20	20	10	14- 3	ST	DO								
V 21	48	11	10-10	ST	DO								
V 22	48	11	8-10	ST	DO								
V 23	48	11	7-10	ST	DO								
V 24	24	11	12-10	ST	DO								

Note: For Standard Bar Types, Special Bar Types, and Notes see Sheet 18.

Note: Do not scale this drawing. Follow dimensions.

Drawn By: J.M. Lobstein Mar 1969
Checked By: R.E. Hammer Jr. Mar 69

SVERDRUP & PARCEL AND ASSOCIATES, Inc.
CONSULTING ENGINEERS
ST. LOUIS, MISSOURI

MISSISSIPPI RIVER BRIDGE

BAR LIST

MUSCATINE COUNTY
IOWA STATE HIGHWAY COMMISSION

DESIGN NO. 170 FILE NO. 23800 DES. SH. NO. 19 OF 61

PROJECT UN-92-9(19)--41-70 PROJECT SH. NO. 19 OF 131

MARK	NO. REQ'D	SIZE NO.	LENGTH FT-IN	TYPE	LOCATION	A FT-IN	B FT-IN	C FT-IN	D FT-IN	G FT-IN	H FT-IN	K FT-IN	R FT-IN
PIERS 18 THRU 24 (cont'd)													
V 25	112	6	8- 6	ST	FOOTING								
V 26	48	7	11- 6	ST	DO								
V 27	64	7	10- 6	ST	DO								
V 28	168	11	8- 5	2	DO	1- 8 1/2	6- 9			---			
V 29	14	11	15- 0	ST	CAP								
V 30	80	5	8- 6	ST	FOOTING								
V 31	36	5	10- 6	ST	DO								
V 32	27	5	11- 6	ST	DO								
ABUTMENT 25													
H 1	8	5	7- 6	2	BACKWALL	9	6- 9			---			
H 2	32	4	4- 7	16	DO	7 1/2	1- 4	9	1-10 1/2		1- 3 3/4	1- 4	
H 3	64	5	6- 6	2	DO	9	5- 9			---			
H 4	12	5	35- 0	ST	DO								
H 5	8	7	35- 0	ST	BR.SEAT								
H 6	3	8	35- 0	ST	DO								
H 7	34	5	14- 6	SP	DO								
H 8	4	5	9- 6	17	WINGWALL		1- 3	8- 3	---				
H 9	4	5	6- 9	ST	DO								
H 10	4	5	8- 2	ST	DO								
H 11	4	5	3- 5	ST	DO								
H 12	32	5	VARIES	ST	DO	4 SERIES	OF 8	BARS (	2- 5	TO	3- 5	)	
H 13	16	5	3- 6	ST	DO								
H 14	20	5	3- 4	17	DO		1- 3	2- 1	---				
H 15	4	5	9- 3	ST	DO								
H 16	12	5	7- 0	ST	DO								
H 17	32	5	1- 9	ST	LUG								
H 18					NOT USED								
H 19	36	5	VARIES	ST	WINGWALL	4 SERIES	OF 9	BARS (	3- 7	TO	8- 4	)	
H 20	24	5	8- 2	ST	DO								
H 21	2	5	5- 4	17	BACKWALL		2- 1	1- 2	2- 1				
H 22	12	5	5- 9	2		9	5- 0			---			
H 23	8	5	7- 1	17			8- 3	7	3- 3				

Note: For Standard Bar Types, Special Bar Types and Notes see Sheet 18

2400 Drawn By: J.M. Lotshaw, Mar. 1969
6958 Checked By: F. Hammer Jr., Mar. 69

SVERDRUP & PARCEL AND ASSOCIATES, Inc.
CONSULTING ENGINEERS
ST. LOUIS, MISSOURI

Note: Do not scale this drawing. Follow dimensions.

MISSISSIPPI RIVER BRIDGE

BAR LIST

MUSCATINE COUNTY
IOWA STATE HIGHWAY COMMISSION

DESIGN NO. 170 FILE NO. 23800 DES. SH. NO. 20 OF 61

PROJECT UN-92-9(19)--41-70 PROJECT SH. NO. 20 OF 131

GENERAL NOTES - ROADWAY APPROACH

General

There will be no payment on the project for overhaul.

The City and utility companies shall have access to the project *during construction to make any extension of services. No claims for* additional compensation will be allowed to the Contractor for any interference or delay caused by such work. The Contractor shall notify the utility companies of the construction starting date.

Construction identification signs to be erected on this project shall remain in place through the completion of all succeeding contracts programmed for future work at this location.

It shall be the Contractor's responsibility to provide waste areas or disposal sites for excess material which is not desirable to be incorporated in the work involved on this project. (Excavation or broken concrete).

The price bid for removal of existing structures shall be full compensation for labor, tools, equipment needed to excavate existing building foundations, the removal of such and then backfilling and compacting the excavation to meet current specifications. Also included is all debris within the project limits deemed necessary to be removed by the Engineer. Debris as defined herein shall consist of any structure, building or manufactured product in whole or part, accumulated fragments, ruins, trash or rubbish.

The Contractor shall exercise care in compacting the embankment around the utility pole at Station 4+30, Rt. 83'

Connecting Pipe to Existing Structures

Where indicated by the plans, new pipe shall be joined to the existing manhole. These connections shall be made in conformity with the following requirements:

An opening for the new pipe shall be made through the wall of the existing structure at the proper location and grade by cutting or other suitable means. The opening shall be of sufficient size to permit the end of the new pipe to be properly fitted into place, flush with the inner face of the existing masonry or as nearly so as the Engineer considers practicable. After the pipe is in place, the opening around the pipe shall be sealed watertight. The method of sealing shall be approved by the Engineer.

Any portion of an existing structure that is damaged in joining the new pipe shall be repaired or replaced with new materials matching the old.

Direct payment will not be allowed for this work. All costs, including cost of all materials, and the furnishing of equipment, tools, labor, and the incidental work shall be considered as included in and completely covered by the contract prices bid for other items of work.

Building New Manholes on Existing Sewers

This will involve cutting the existing pipe as necessary to provide inlet and outlet connections to the new structure. The Contractor will be required to provide any temporary by-pass lines around construction which may be required to maintain continuous sewer service at all times.

The cost of maintaining service, including the furnishing of all materials, cutting pipe, and all equipment, tools, labor, and work incidental thereto, shall be considered as included in and completely covered by the prices bid for other items of work.

Blocking Abandoned Sewers and Drainage Pipes

Where indicated on the plans or as directed by the Engineer, existing sewer and drainage pipes which have been or are to be abandoned or left in place shall be completely blocked with permanent bulkheads composed of either Class X Concrete or Brick Masonry. Salvaged brick may be used, provided they are sound and meet the approval of the Engineer.

Direct payment will not be made for blocking abandoned pipes and sewers but all costs of materials, labor, tools, equipment and incidental work shall be considered completely covered by the unit prices bid for other items of work

Utilities

Underground facilities, structures and utilities have been plotted from available surveys and records, and therefore, their locations must be considered approximate only. It is possible there may be others, the existence of which is presently not known or shown. It is the Contractor's responsibility to determine their existence and exact location and to avoid damage thereto.

Borrow Area - Illinois

The Contractor is to provide his own borrow for Class 10 Excavation and selected sand backfill on the Illinois side of this project. No payment for overhaul will be allowed.

Four possible borrow areas on the Illinois side of the river were investigated. The first is around Hog Island (which is located in the river upstream from the proposed bridge site). The second is the wooded area west of Abutment 25, between the levee and the river, the third is the farm land area between Stations 44 and 59, the fourth is the bluff along Illinois Route 92 about 0.8 miles from the end of the project. For general information on the investigated borrow areas see sheet #56A

No borrow excavation should be made within 100 feet of the embankment toe.

Borrow Area - Iowa

The borrow area on the Iowa side of the river has been designated and is shown on the plan and cross sections.

Cypress Street Pavement Removal

The asphaltic concrete pavement on Cypress Street between Station 0+33± to 0+85, approximately 185 S.Y., shall be removed and buried in fill. Between Station 0+85 to 5+40, the pavement shall be broken up and left in place.

Direct payment will not be allowed for this work. All costs, including the furnishing of equipment, tools, labor, and the incidental work shall be considered as included in and completely covered by the contract prices bid for other items of work.

Removal of Pavements and Drives

Removal and disposal of all old pavement and drives shall include all curb, and such removal of other street items necessary to clear the new work. 40 cu. yds. to be used for slope protection at the Mad Creek headwall. 152 cu. yds. to be hauled to waste areas obtained by the Contractor.

Removal of Walks, Etc.

Removal and disposal of old walks, steps and retaining walls containing 89 c.y. to be hauled to waste areas obtained by the Contractor.

Pipe Stubs

Pipe stubs are to be placed to the line and elevation shown on the plans. All stubs shall be provided with temporary stoppers or bulkheads similar to those shown on Structure RF-21 and installed to the satisfaction of the Engineer. Cost of temporary stoppers or bulkheads are considered to be included in the contract price bid for the pipe.

Pavement Replacement

Where indicated on the plans or as directed by the Engineer, existing pavement which has been removed for construction of sewers shall be replaced with a pavement patch.

Placing of Class D Revetment

Class D Revetment shall be placed in such manner as to produce a reasonably well-graded mass of stone, and shall be constructed to the lines and grades shown. It shall be placed to its full course thickness at one operation. Placing of material shall begin at the lower elevations and progress up the slope. The larger stones shall be well distributed throughout the mass and the finished protection shall be free from pockets of small stones and clusters of large stones. Placing by methods likely to cause segregation of the various sizes will not be permitted. No hand placing is intended except a limited amount may be required to secure the results specified above.

Mad Creek Culvert Headwall

Broken concrete is to be placed at the headwall on Mad Creek as shown on the plans or as directed by the Engineer. The individual pieces of broken concrete shall be placed by hand, flat upon the slope. The pieces shall be laid with close joints, the larger pieces being placed in the lower courses. Any open joints shall be filled with spalls throughly rammed into place. The material shall be made from newly broken, sound, concrete pavement or other suitable concrete debris from demolished concrete construction having a minimum thickness of 6 inches between unbroken surfaces. Concrete showing excessive popping, spalling, cracking, or any other type of disintegration indicating poor resistance to weathering, shall not be acceptable. No reinforcing steel or other such material shall be protuding from the broken pieces.

The broken concrete to be placed in the fill below the flow line may be dumped.

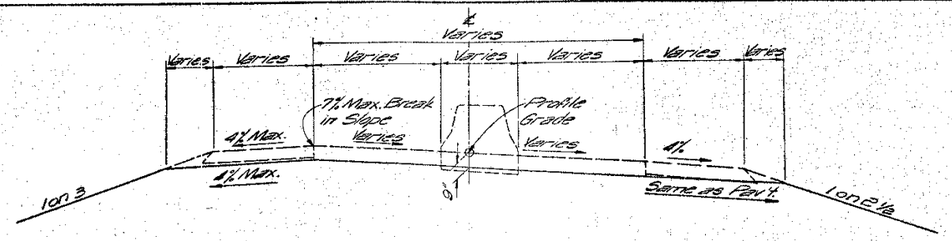
The pieces shall have a maximum weight per piece of 150 pounds and not more than 5 percent shall weigh less than 3 pounds per piece. The material shall be evenly graded and 30 to 70 percent of the material shall weigh 75 pounds or more per piece.

GENERAL NOTES
ROADWAY APPROACH

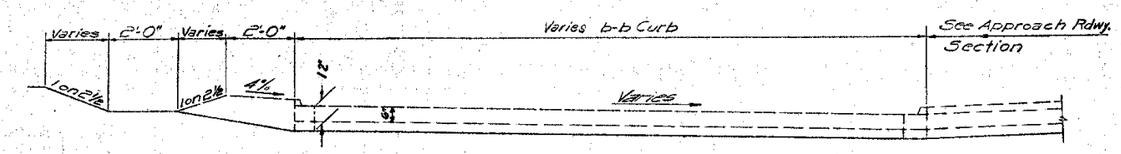
Design No. 170 File No. 23800 Des. Sh. No. 21 of 61

COUNTY	PROJECT NUMBER	STATE	FED ROAD DIST NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
MUSCATINE	UN 92-9 (19)--41-70	IOWA	6	1970	21	131

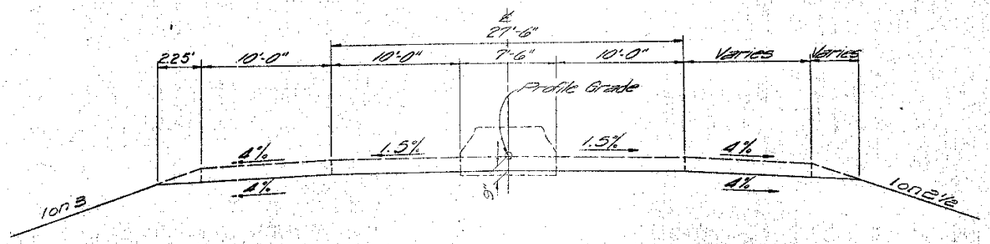
SSE6149 0092



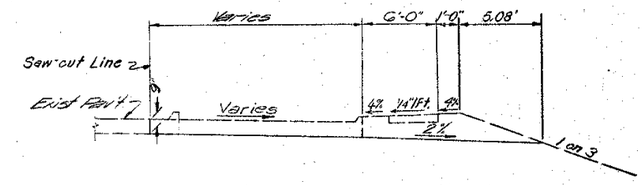
APPROACH ROADWAY
STA. 3+75± TO STA. 4+72±



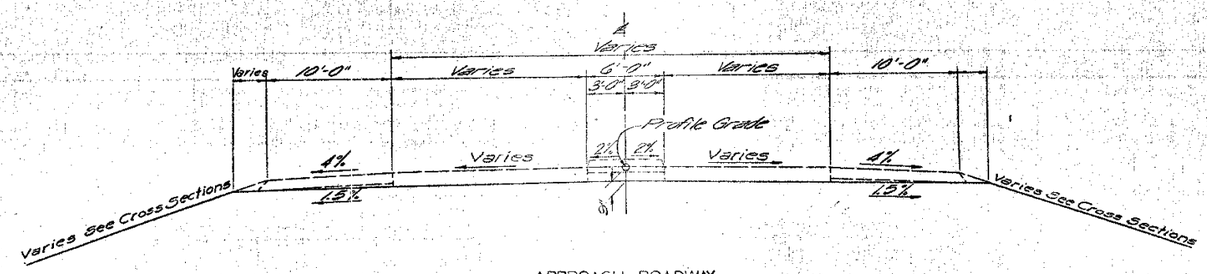
PARKING LOT
STA. 0+49± TO STA. 1+49±



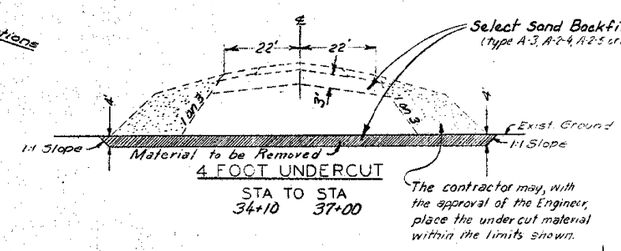
APPROACH ROADWAY
STA. 3+25± TO STA. 3+75±



SECOND STREET WIDENING
STA. 7+6638 TO STA. 9+2638



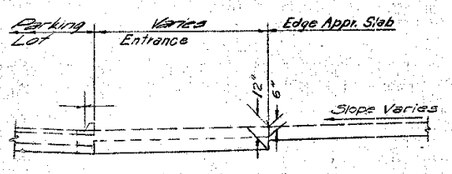
APPROACH ROADWAY
STA. 0+77± TO STA. 3+25±



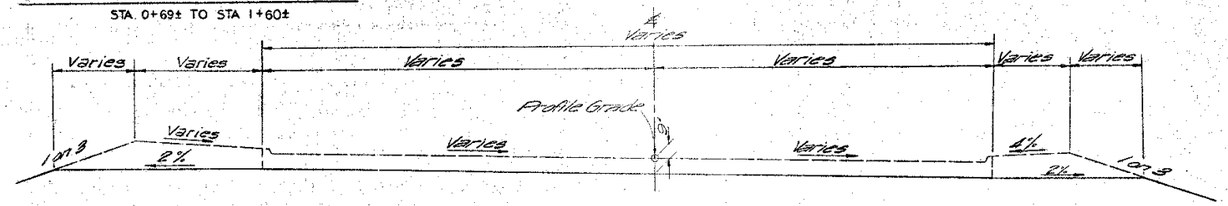
4 FOOT UNDERCUT
STA TO STA
34+10 37+00

The contractor may, with the approval of the Engineer, place the undercut material within the limits shown.

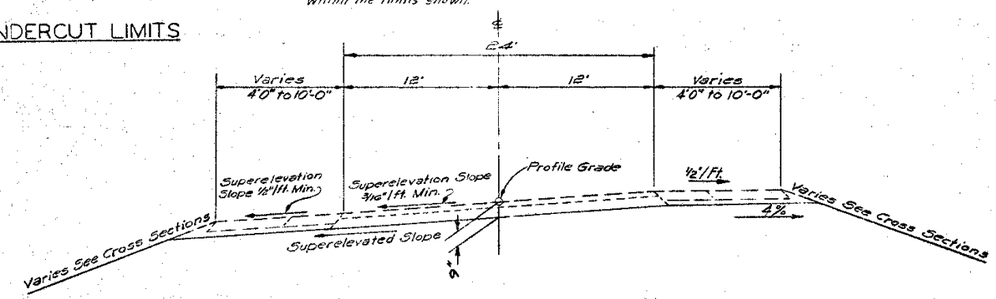
UNDERCUT LIMITS



PARKING LOT ENTRANCE PAVEMENT
STA. 0+69± TO STA 1+60±



APPROACH ROADWAY
STA. 0+22± TO STA. 0+77±



APPROACH ROADWAY
STA. 34+90± TO STA. 35+50

* NOTES:

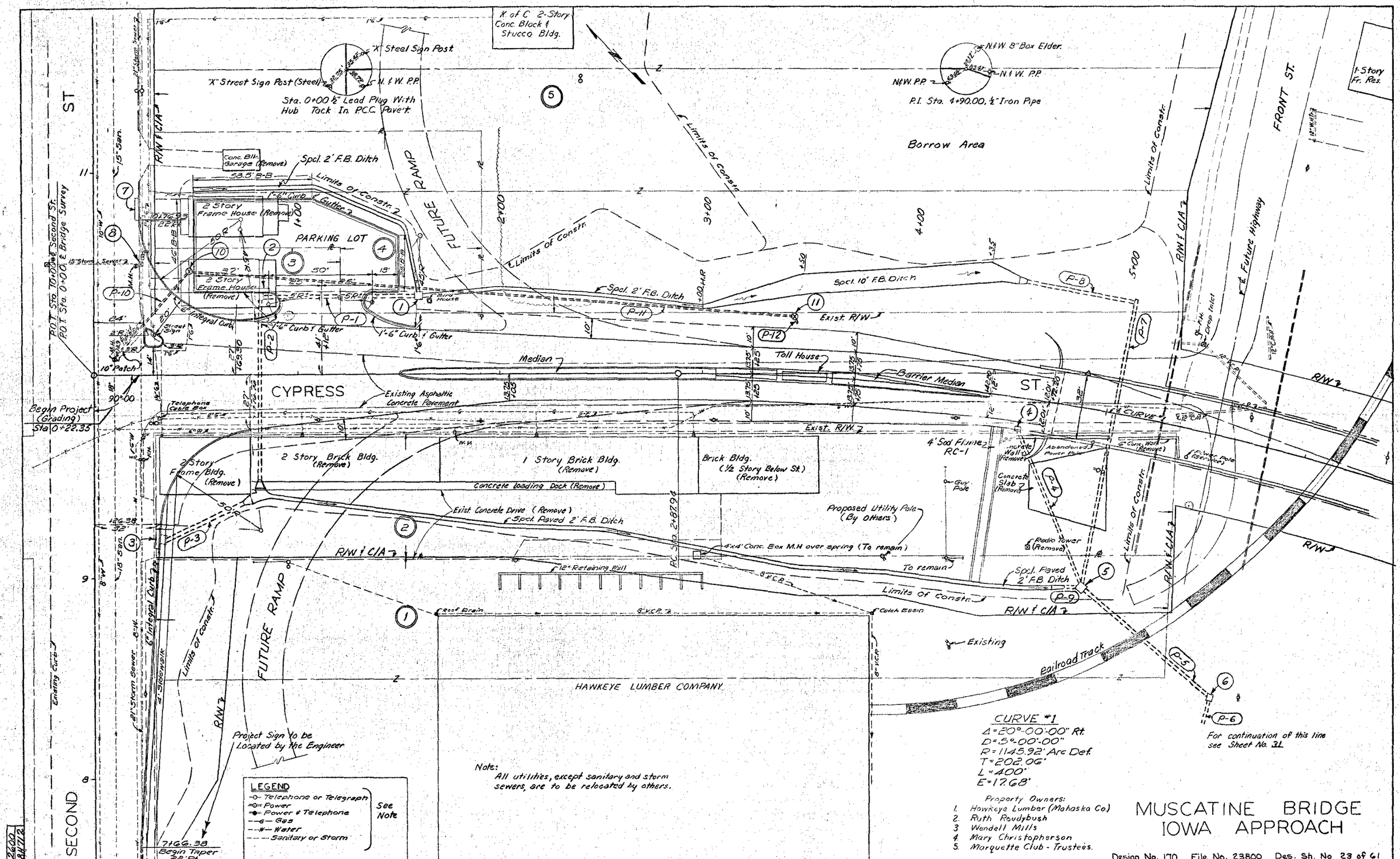
1. Typical sections are intended to show general features and materials of the prop. construction.
2. On high side of superelevated pavements the shoulder slope shall be maintained at the normal slope of 0.040 ft. per ft. unless this slope produces a grade break with adjacent pavement of more than 7%. The shoulder slope shall be determined by a 7% break with adjacent pavement unless this super would create a slope flatter than 1%. The grade break should then be reduced and a slope of at least 1% on the shoulder provided.
   On the low side of superelevated curves the shoulder slope shall be maintained at normal slope of 0.040 ft. per ft. unless the adjacent pavement slope is steeper in which case the shoulder will slope at the same slope as adjacent pavement.
3. Proposed construction.
   a. 9" P.C.C. pavement on mainline. Paved & stabilized shoulders (Variable, 10' Typical) Sta. 0+22± to 4+72±
   b. Parking Lot - 3" A.C. Surface, 8" Asphalt Treated Base & 6" Soil Aggregate Subbase.
   c. Concrete approach slab Sta. 34+90.36 to 35+30±. 3" asphaltic concrete pavement with 6" base course from Sta 35+30± to 35+50.

TYPICAL SECTIONS

Design No. 170 File No. 23800 Des. Sh. No. 22 of 61

COUNTY	PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
MUSCATINE	UN 92-9(19)--41-70	IOWA	5	1970	22	131

23800
691288



Note:
All utilities, except sanitary and storm sewers, are to be relocated by others.

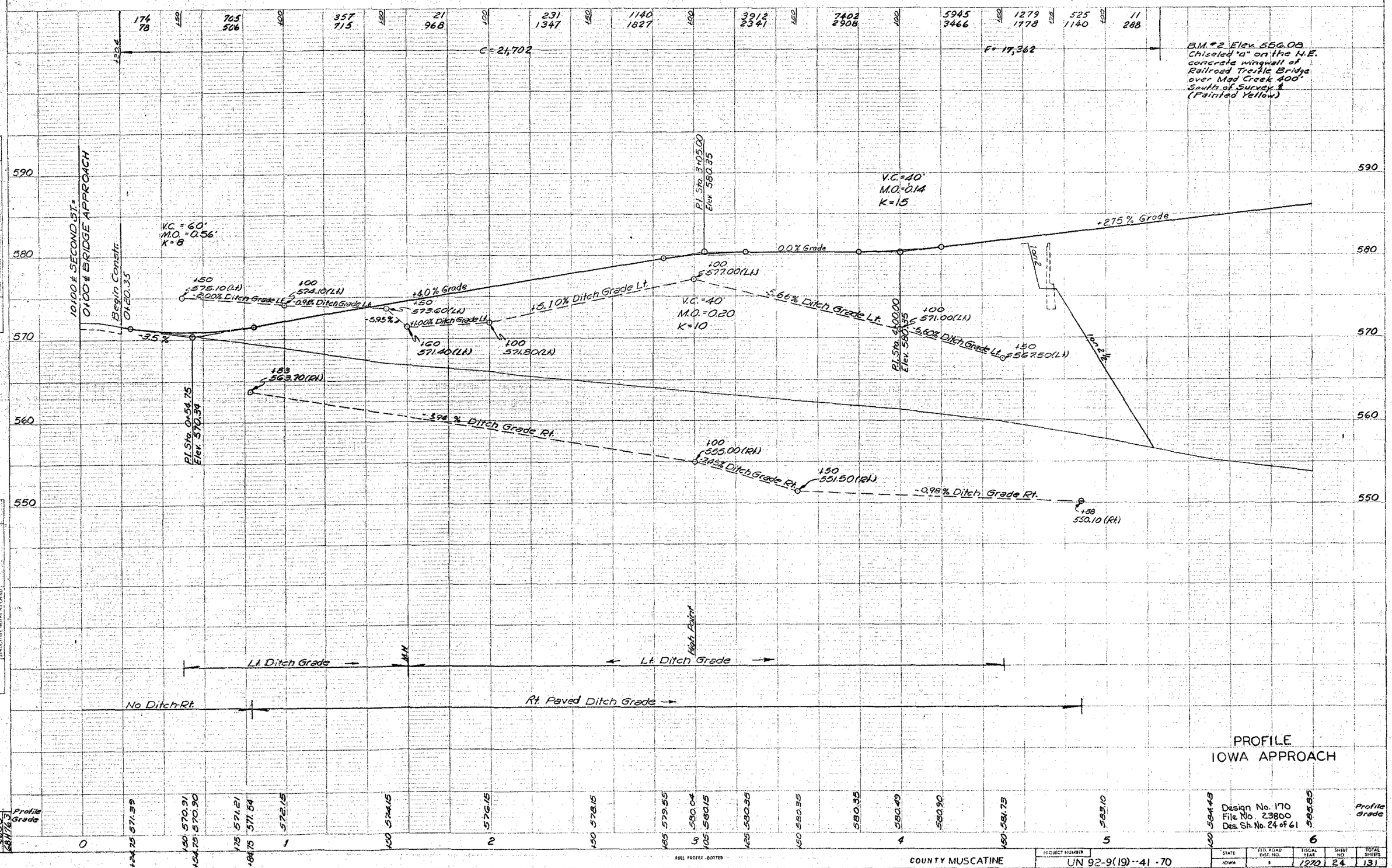
CURVE #1
Δ=20°-00'-00" Rt.
D=5°-00'-00"
R=1145.92' Arc Def.
T=202.06'
L=400'
E=17.68'

Property Owners:
1. Hawkeye Lumber (Mahaska Co)
2. Ruth Roudybush
3. Wendell Mills
4. Mary Christopherson
5. Marquette Club - Trustees.

MUSCATINE BRIDGE IOWA APPROACH

Design No. 170 File No. 23800 Des. Sh. No 23 of 61

COUNTY	PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
MUSCATINE	UN 92-9(19)--41-70	IOWA	6	1970	23	131


174 78
705 506
357 715
21 968
231 1347
1140 1827
3912 2341
7402 2908
5945 3466
1279 1778
525 1140
11 288
C=21,702
F=17,362
B.M. #2 Elev. 556.08
Chiseled "a" on the N.E. concrete wingwall of Railroad Trestle Bridge over Mad Creek 400' South of Survey ℄ (Painted Yellow)
10+00 ℄ SECOND ST.
0+00 ℄ BRIDGE APPROACH
Begin Constr. 0+20.35
V.C. = 6.0'
M.O. = 0.56'
K = 8
+50 575.10 (Lt)
-2.00% Ditch Grade Lt.
+00 574.10 (Lt)
-0.98% Ditch Grade Lt.
-3.5%
+4.0% Grade
+50 573.60 (Lt)
-5.95%
+1.00% Ditch Grade Lt.
+60 571.40 (Lt)
+00 571.80 (Lt)
+5.10% Ditch Grade Lt.
P.I. Sta. 3+05.00 Elev. 580.35
+00 577.00 (Lt)
V.C. = 40'
M.O. = 0.20
K = 10
0.0% Grade
-5.66% Ditch Grade Lt.
V.C. = 40'
M.O. = 0.14
K = 15
P.I. Sta. 4+00.00 Elev. 580.35
+00 571.00 (Lt)
-6.60% Ditch Grade Lt.
+50 567.50 (Lt)
+2.75% Grade
1 on 2
1 on 2½
+83 563.70 (Rt)
P.I. Sta. 0+54.75 Elev. 570.34
-3.94% Ditch Grade Rt.
+00 555.00 (Rt)
-2.45% Ditch Grade Rt.
+50 551.50 (Rt)
-0.98% Ditch Grade Rt.
+88 550.10 (Rt)
590
580
570
560
550
Lt. Ditch Grade
M.H.
High Point
Lt. Ditch Grade
No Ditch Rt.
Rt. Paved Ditch Grade
Profile Grade
2600 68H 76.3
0
+24.75 571.39
+50 570.91
+34.75 570.90
+75 571.21
+84.75 571.54
1
572.15
+50 574.15
2
576.15
+50 578.15
+85 579.55
3
+05 580.04
580.15
+25 580.35
+50 580.35
580.35
4
580.49
580.90
+50 581.73
5
583.10
+50 584.48
6
585.85
Profile Grade
FULL PROFILE - DOTTED
COUNTY MUSCATINE
PROJECT NUMBER UN 92-9(19)--41 -70
STATE IOWA
FED. ROAD DIST. NO. 5
FISCAL YEAR 1970
SHEET NO. 24
TOTAL SHEETS 131
Design No. 170
File No. 23800
Des. Sh. No. 24 of 61
PROFILE
IOWA APPROACH
PLAN
PROFILE
Standard Blue Print Co.—HWY. PROF. Sheet

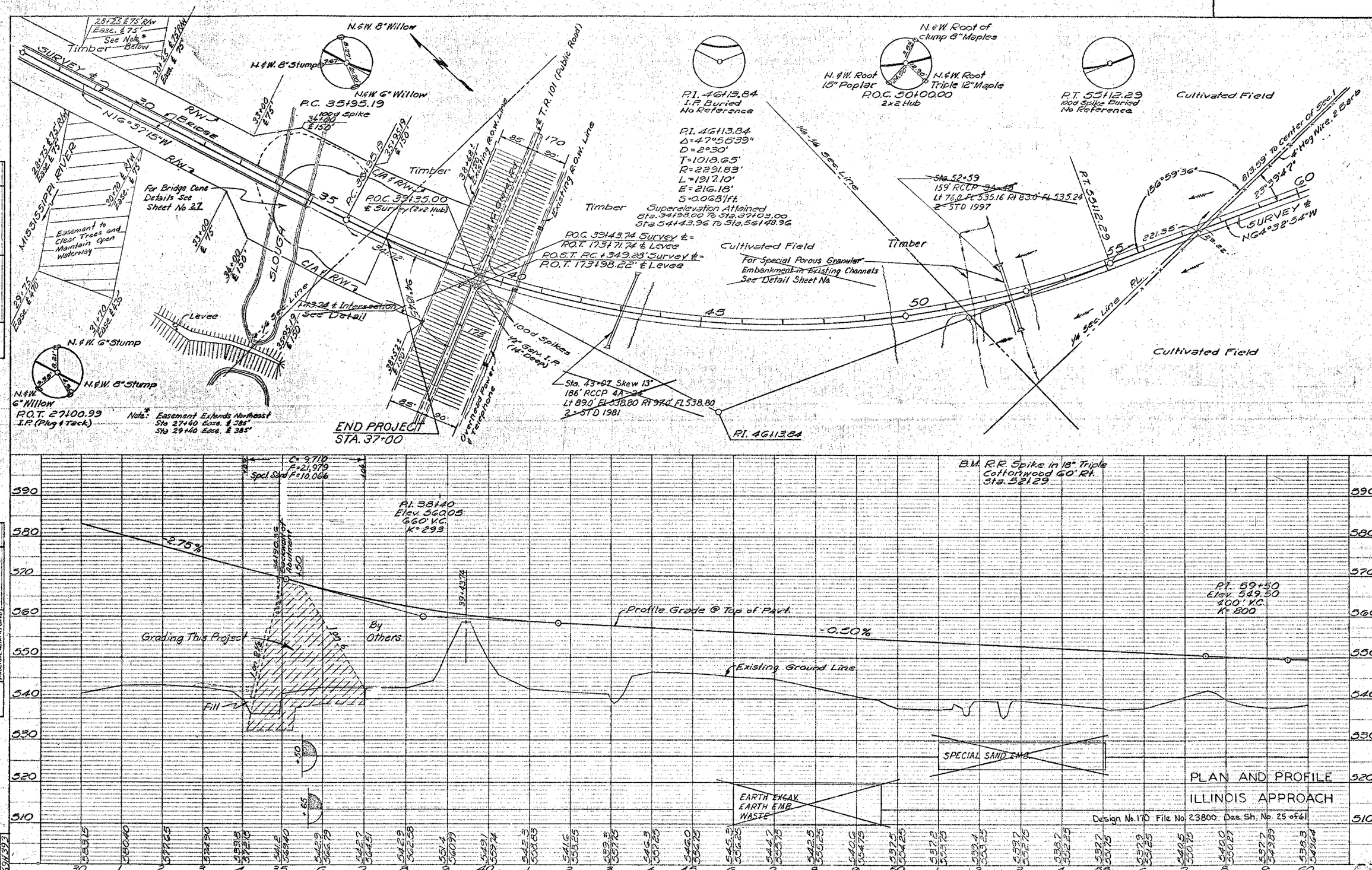


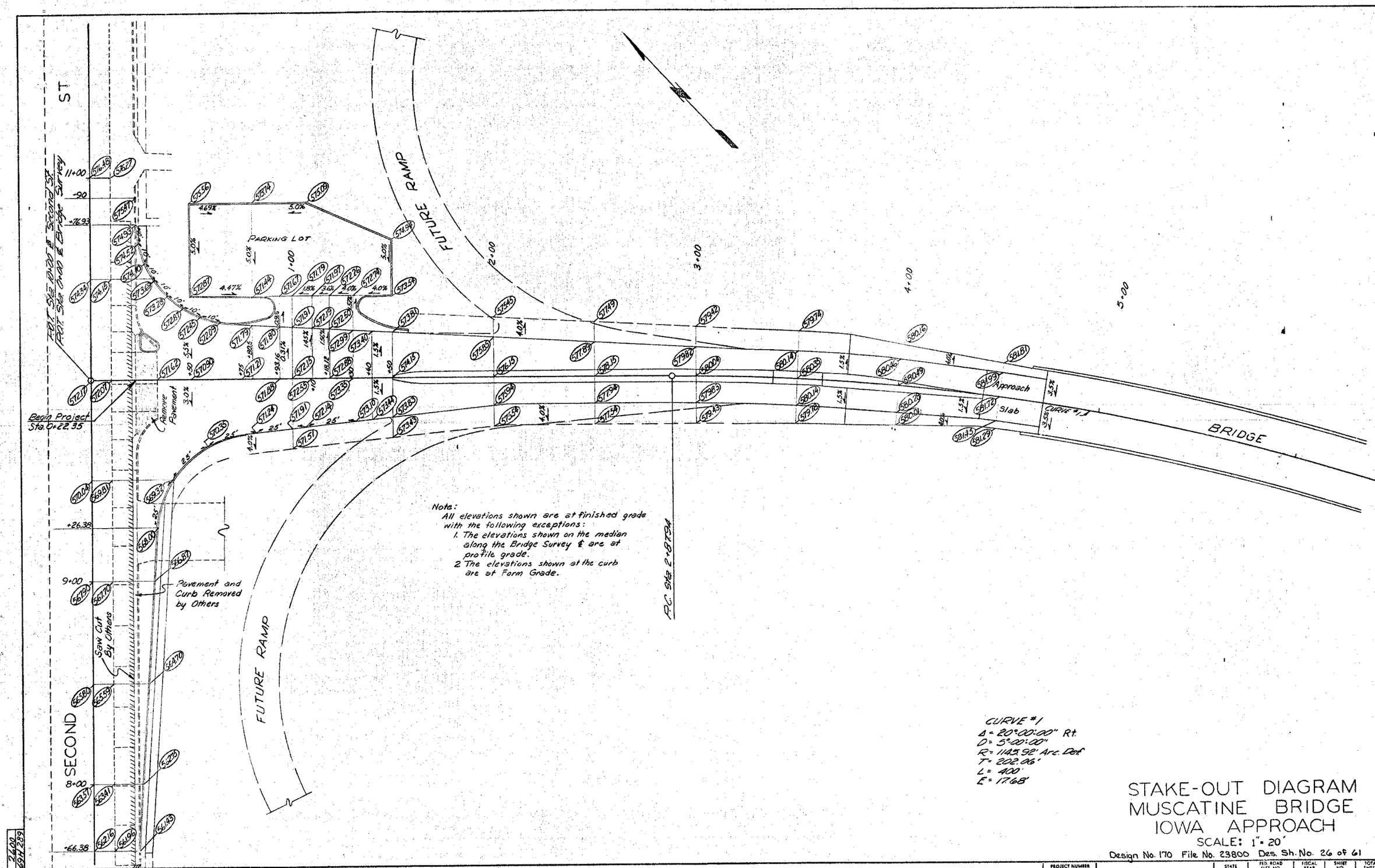
PLATE 1 . SINGLE PLAN AND PROFILE . DOTTED

PLAN AND PROFILE
ILLINOIS APPROACH

Design No. 170 File No. 23800 Des. Sh. No. 25 of 61

MUSCATINE COUNTY UN 92-9(19)--41-70

STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	8	1970	26	131



Note:
All elevations shown are at finished grade with the following exceptions:
1. The elevations shown on the median along the Bridge Survey ℄ are at profile grade.
2. The elevations shown at the curb are at Form Grade.

CURVE #1
Δ = 20°00'00" Rt.
D = 5°00'00"
R = 1145.92' Arc. Def.
T = 202.06'
L = 400'
E = 17.68'

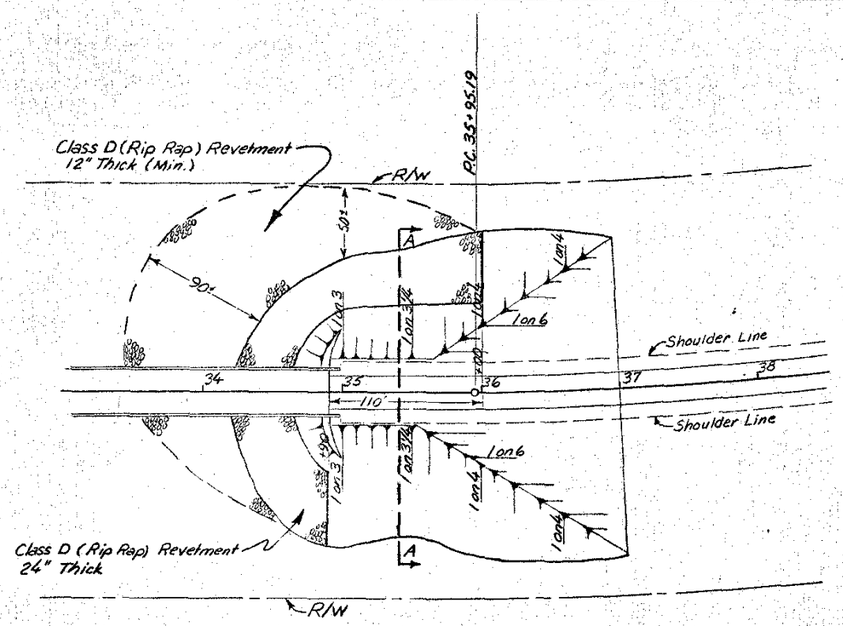
STAKE-OUT DIAGRAM
MUSCATINE BRIDGE
IOWA APPROACH

SCALE: 1" = 20'

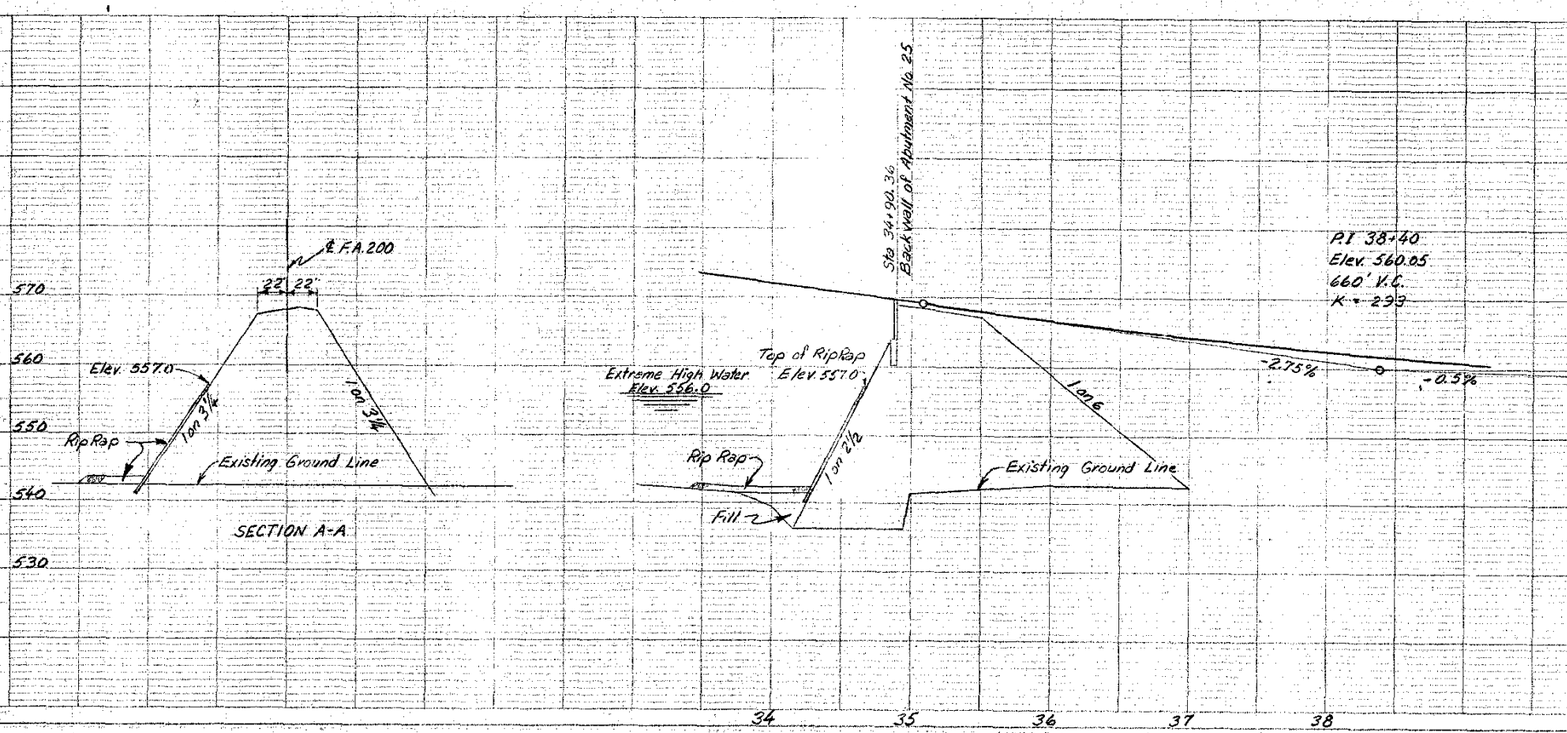
Design No. 170 File No. 23800 Des. Sh. No. 26 of 61

COUNTY	PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
MUSCATINE	UN 92-9(19)--41-70	IOWA	5	1970	26	131

SLOPE PROTECTION AT ABUTMENT



NOTE:
See General Note for placing of Revetment.



SLOPE PROTECTION
AT EAST ABUTMENT

Design No. 170 File No. 23800 Des. Sh. No. 27 of 61

MUSCATINE COUNTY UN 92-9(19)--41-70

STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	9	1970	27	131

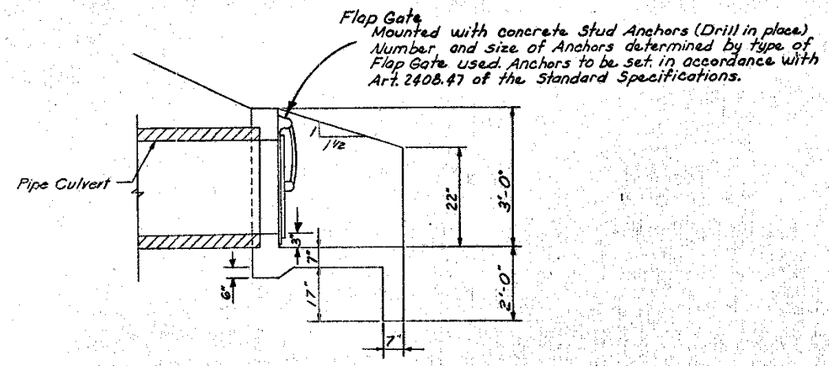
PLAN — SURVEYED, PLOTTED, DRAWN, QUANTITIES CHECKED, INT. OF WK. CHECKED, NOTE BOOK NO., BY, DATE 9-26-68

PROFILE — SURVEYED, PLOTTED, DRAWN, QUANTITIES CHECKED, G.M. NOTED, STRUCTURE NOTE & PIG CHKD, NOTE BOOK NO., BY, DATE

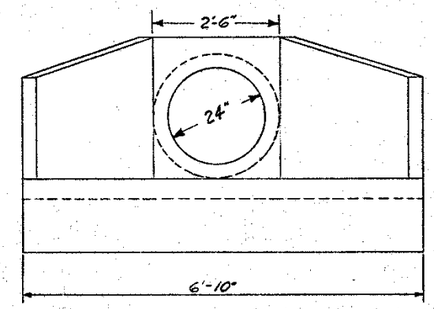
2600
697.391

SINGLE YEAR FED. PROFILE - DOTTED

INTAKE TYPE	"A"	"B"
RA-3	5'-0"	3'-0"
E-2	3'-6"	2'-5"

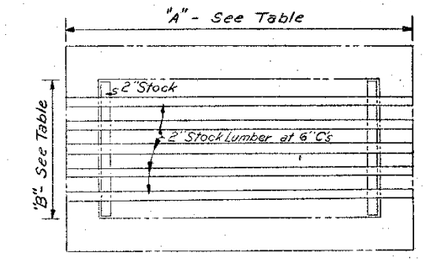


Section F-F

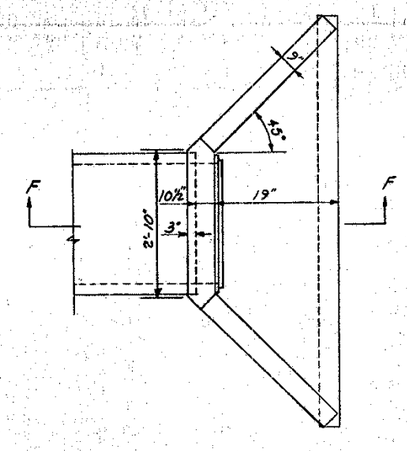


End View

PLAIN CONCRETE HEADWALL FOR
24" DIA. PIPE CULVERT



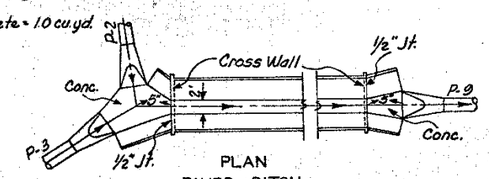
TEMPORARY WOOD GRATE
DETAILS



Plan

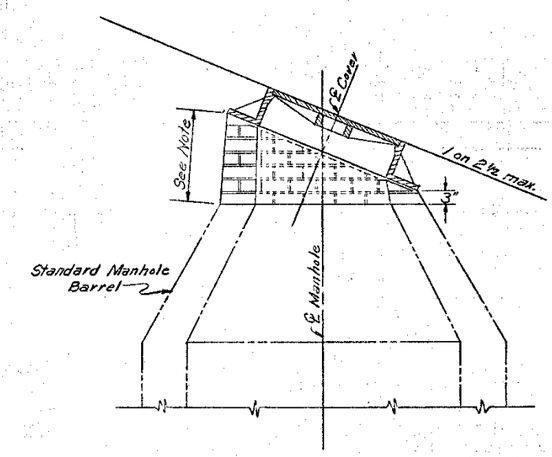
Notes:
Build apron parallel to grade line of pipe. Class "C" structural concrete to be used throughout. Entire headwall shall be poured monolithically.

Class "C" structural concrete - 1.0 cu.yd.

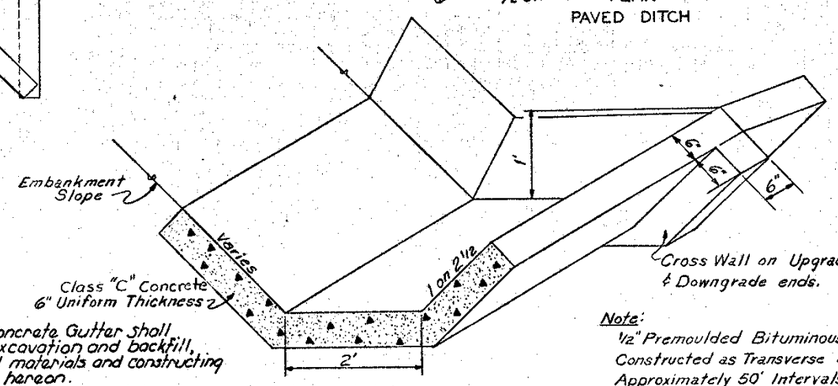


PLAN
PAVED DITCH

Notes:
Manholes located in earth slopes shall be built up as shown using brick or other approved materials. Slope of frame is to match slope of proposed grading.
For details of proposed grading see Cross Sections, Plan & Profile sheets or Typical Sections.



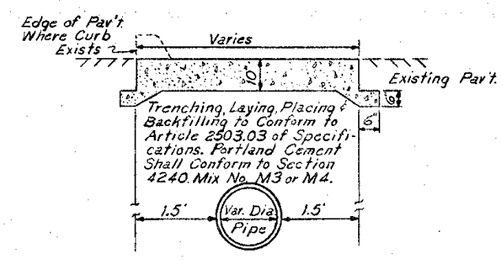
MANHOLE MODIFICATION
FOR EARTH SLOPES
NOT TO SCALE



Price bid for Special Concrete Gutter shall include all necessary excavation and backfill, as well as furnishing all materials and constructing paved gutter as detailed hereon.

PAVED FLAT BOTTOM DITCH

Note:
½" Premoulded Bituminous Joint to be Constructed as Transverse Joint at Approximately 50' Intervals with Transverse Construction Joints at Intermediate 10' Intervals.



DRAINAGE
DETAILS

DETAILS OF FULL DEPTH PATCH

Design No. 170 File No. 23800 Des. Sh. No. 28 of 61

COUNTY	PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
MUSCATINE	UN 92-9(19)--41-70	IOWA	6	1970	28	131

EARTHWORK SUMMARY

LOCATION	STATION TO STATION		CLASS 10 EXCAVATION	FILL IN PLACE	3' SPECIAL SAND EMBANKMENT	MOISTURE & DENSITY CONTROL
Iowa Approach	0+22.35	5+25	21,702	17,362		3,120
Borrow Required for Fill (In Place + 25% Shrink Factor)				21,702 Cu. Yds.**		
Illinois Approach			9,710*	21,979	10,066	
Fill (In Place + 20% Shrink Factor)				26,375 Cu.Yds.		
Select Sand Backfill (In Place + 10% Shrink Factor)				11,073 Cu.Yds.		
Borrow Required				37,448 Cu.Yds.***		

* Undercut material is not to be used in fill unless approved by the Engineer.

**Borrow area designated on plans.

EMBANKMENT WITH MOISTURE AND DENSITY CONTROL
(SEE ART. 2107.05 ST'D. SPEC'S. FOR 1964) 103-1

MOISTURE CONTENT SHALL BE WITHIN THE LIMITS OF MINUS 3 AND PLUS 1 PERCENTAGE POINTS OF OPTIMUM FOR MAXIMUM DENSITY WITHIN THE AREA DESCRIBED AND LISTED BELOW.

LOCATION STATION	TO STATION	DEPTH FT.	COMPACTION CU.YDS.	REMARKS
0+22.35	0+90±	2		
0+90±	4+65±	3	(3,900)	

Notes for Drainage Tables

General Notes

Elevations shown are as follows:

Pavement Intakes - Flowline of Gutter
Gutter Intakes - Flowline of Gutter
Ditch Intakes - Flowline of Ditch
Manhole - Center of Barrel at Top of Cover
EA = Denotes End of Apron
Length + A = Length + Apron

Notes

2. Structures shall be constructed to conform to minimum depth requirements of Standard Spec. at Iowa State Highway Commission Art. 2503.03-D and filled with invert concrete to the elevation of outlet flowline. Invert concrete shall be considered as incidental to construction and payments shall be included in unit price for the structure.
3. Length of pipe measured from centerline to centerline manhole.
4. Outlet pipe P-2 into ditch 56.5' Rt. Station 0+31 centerline Bridge Survey 1-RF-3 Conc. Pipe Apron
5. Outlet pipe P-3 into ditch 77' Rt. Station 9+39 baseline Second Street 1-RF-3 Conc. Pipe Apron
6. Outlet pipe P-6 into Mad Creek 91' Rt. Station 3+41 baseline D (centerline South Bound Track) 1 - Headwall with Flap Gate.
7. Outlet pipe P-10 at existing Sanitary Manhole No. 129
8. For details, see Sewer Profiles
9. Existing RA-3 inlet to be removed and RA-2 manhole to be constructed over sewer pipe
10. RA-3 intake to be constructed over existing 21" storm sewer.

11. Includes 4" x 4" Cast Iron Pipe Stub, P-12.

MANHOLES AND INLETS

CODE	LOCATION	DESCRIPTION	FORM LINE ELEVATION	BOTTOM ELEVATION	REMARKS
1	1+60 39' Lt. Bridge Sur. C.L.	RA-35 Intake	571.40	567.21	
2	0+81 39' Lt. Bridge Sur. C.L.	RA-3 Intake	571.44	564.01	
3	9+19 34' Rt. 2nd Street B.L.	RA-3 Intake	567.53	563.79	See Note 2
4	4+58 15' Rt. Bridge Sur. C.L.	E-2 Intake	581.55	577.38	
5	5+04 87' Rt. Bridge Sur. C.L.	RA-1 Manhole	553.00	545.70	
6	5+84 125.5' Rt. Bridge Sur. C.L.	RA-1 Manhole	551.75	545.28	
7	0+23 81' Lt. Bridge Sur. C.L.	RA-3 Intake	575.10	570.86	See Note 10
10	0+46 51' Lt. Bridge Sur. C.L.	RA-30 Manhole (Std.)	573.90	568.06	
11	3+44 29' Lt. Bridge Sur. C.L.	RA-31 Manhole (Drop)	577.50	569.87	See Note 11
8	0+23 55' Lt. Bridge Sur. C.L.	RA-2 Manhole	573.99	570.13	See Note 9

SEWERS

CODE	FROM	TO	CLASS OF PIPE	SIZE (in.)	LENGTH (ft.)	GRADE (%)	INVERT INLET	ELEVATION DISCHARGE	REMARKS
P-1	1	2	2000D	15"	76'	0.60	567.40	566.93	
P-2	2	Outlet	2000D	24"	88'+A	0.60	564.26	563.70	See Note 4
P-3	3	Outlet	1500D	15"	40'+A	0.60	563.98	563.70	See Notes 2 & 5
P-4	4	5	C.M.P.	15"	83'	40.00	577.55	545.96	See Note 8
P-5	5	6	3000D	24"	79'	0.50	545.95	545.55	
P-6	6	Hdwl.	1500D	24"	217'	0.50	545.53	544.45	See Note 6
P-7	Tee	5	1500D	15"	141'	8.60	558.22	546.38	
P-8	EA	Tee	1500D	15"	49'+A	17.20	567.50	558.22	
P-9	EA	5	1500D	12"	8'+A	10.00	550.10	549.98	
P-10	10	Ex.M.H. #129	C.P.	8"	55'	0.60	568.16	567.83	See Notes 3 & 7
P-11	11	10	C.P.	8"	302'	0.60	569.97	568.16	See Note 3

REMOVAL OF EXISTING STRUCTURES

Location	Description
0 + 30 Rt.	45' x 28' 2 Stry. Frame Bldg.
0 + 46.5 Lt.	36.5' x 20' 2 Stry. Frame Bldg.
0 + 46 5 Lt.	34.5' x 24' 2 Stry. Frame Bldg.
0 + 75 Lt.	18' x 10' Conc. Blk. Garage
0 + 75 Rt.	95' x 22' 2 Stry. Brick Bldg.
1 + 70 Rt.	127.5' x 22' 1 Stry. Brick Bldg.
2 + 57.5 Rt.	60' x 28' ½ Stry. Brick Bldg.

Disposal of the above structures shall be the responsibility of the Contractor. (See General Notes.)

2600
691337

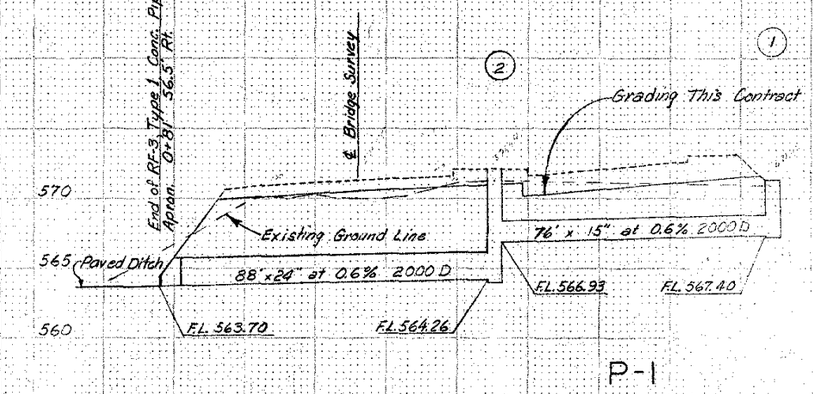
TABULATION OF STORM & SANITARY SEWER, EARTHWORK & MISC.

Design No. 170 File No. 23800 Dwg. Sh. No. 29 of 61

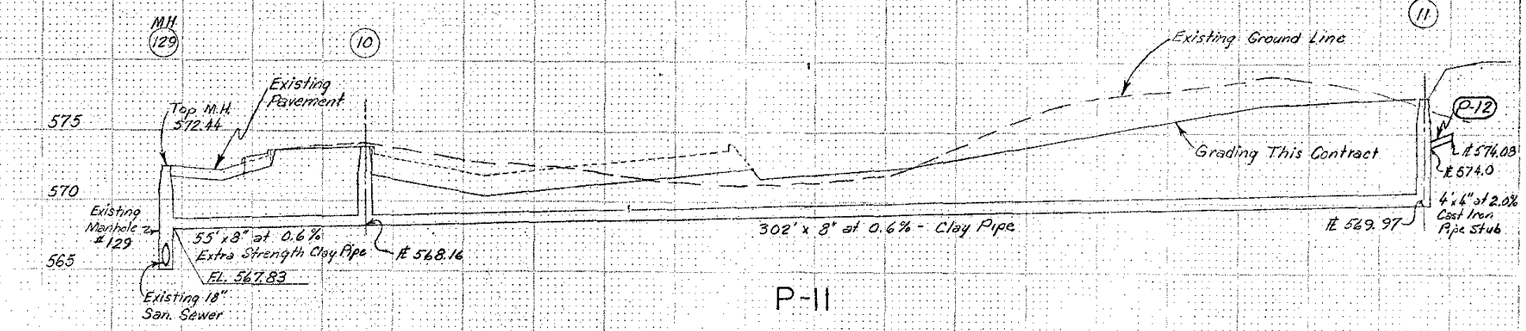
COUNTY MUSCATINE

PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
UN 92-9(19)--41-70	IOWA		1970	29	131

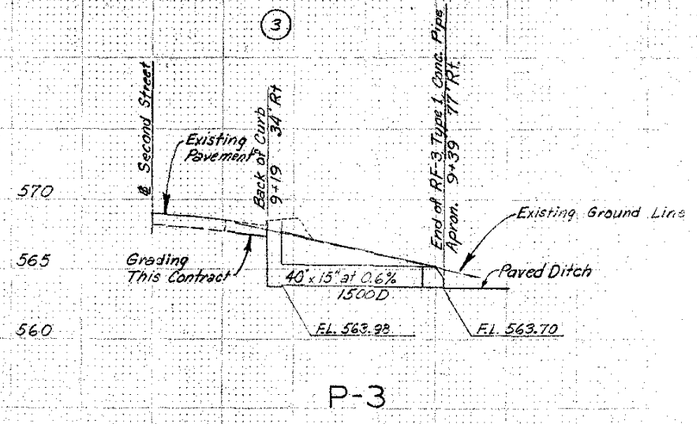
UN 92-9(19)--41-70
MUSCATINE COUNTY



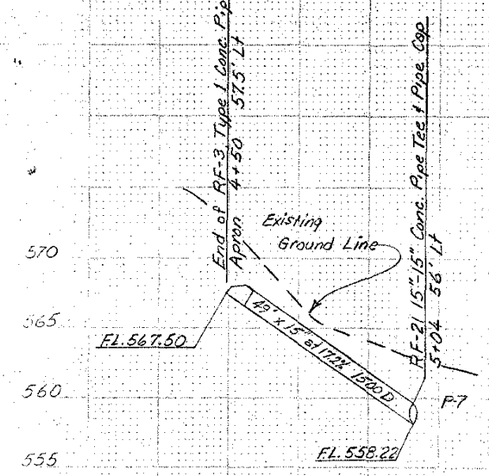
P-2 P-1



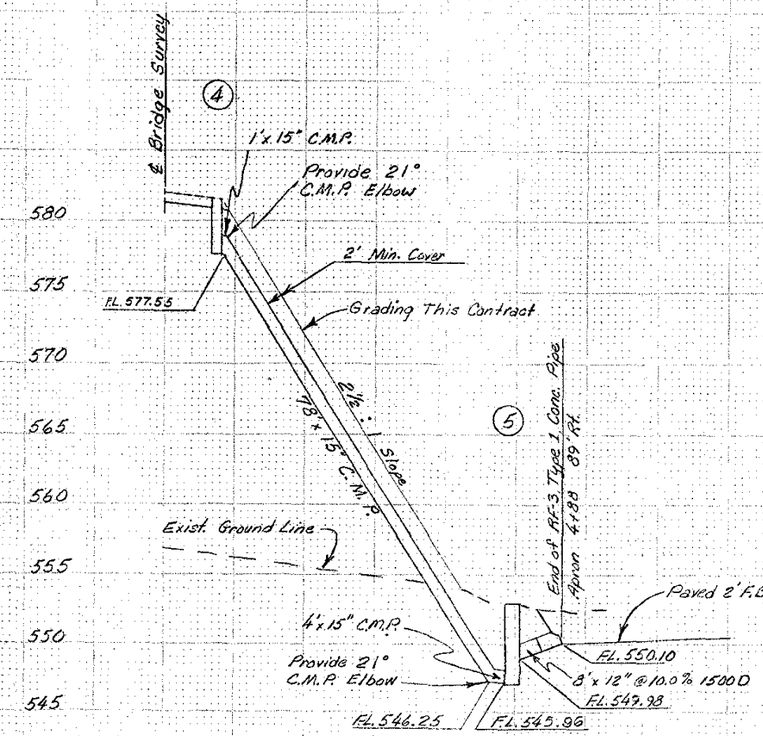
P-10 P-11



P-3



P-8



P-4 P-9

SCALE: VERT: 1" = 5'
HORIZ: 1" = 20'

PIPES
P-1, P-2, P-3, P-4,
P-8, P-9, P-10, P-11

SEWER PROFILES

Design No. 170 File No 23800 Des. Sh. No. 30 of 61

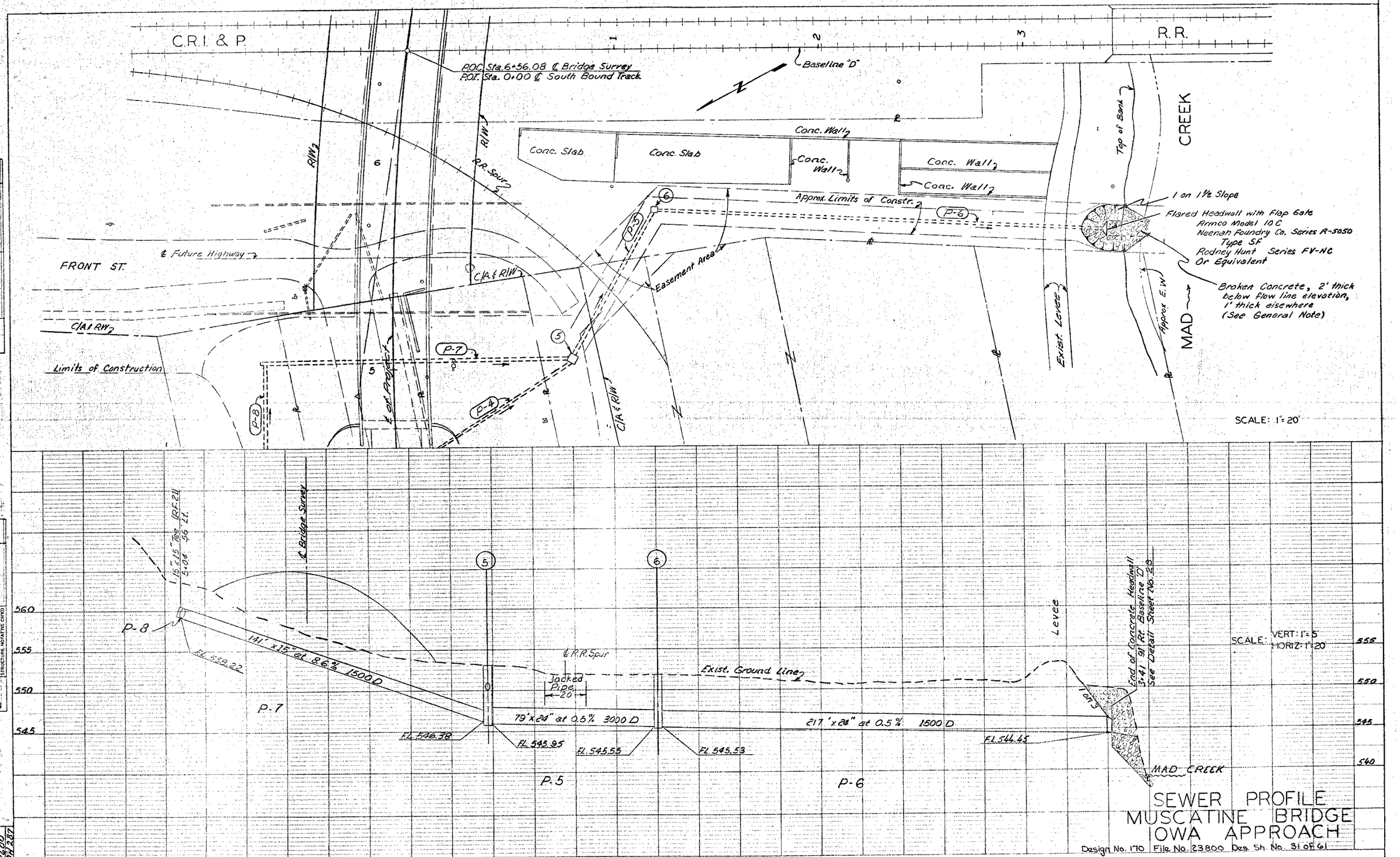
STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	3	1970	30	121

FINAL SURVEY — SURVEYED / PLOTTED / TEMPLATE / AREA / CROSS SECTIONS — NOTE BOOK NO.

ORIGINAL SURVEY — SURVEYED / PLOTTED / TEMPLATE / AREA / CROSS SECTIONS — NOTE BOOK NO.

23800
694-301

PLATE 3—FUNCTIONAL CROSS SECTION—WITH METRIC
NATIONAL TRACING PAPER DIVISION



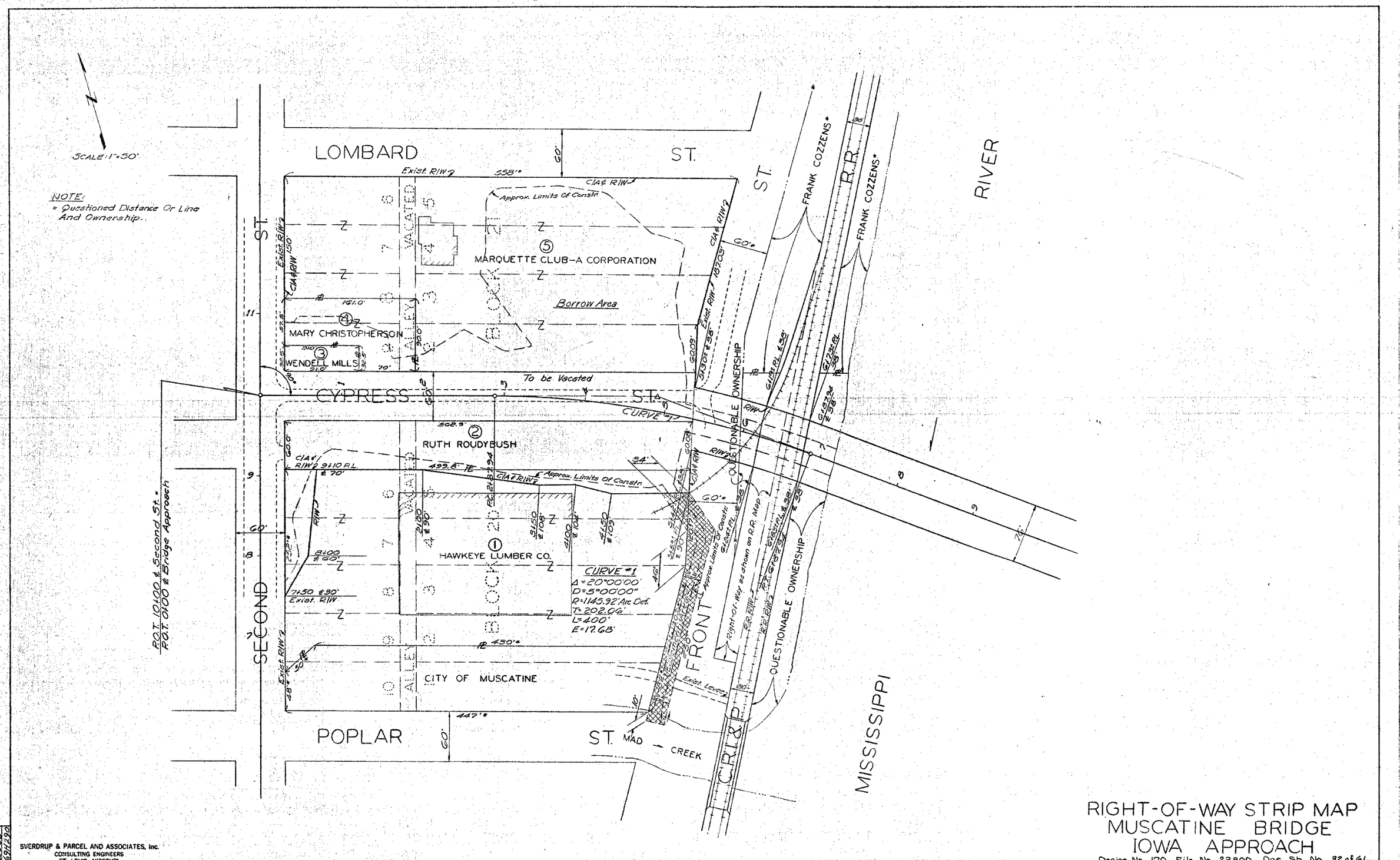
PLAN — SURVEYED / PLOTTED / ALIGNMENT CHECKED / NOTE BOOK / NO. / DATE / BY

PROFILE — SURVEYED / PLOTTED / GRADES CHECKED / NOTE BOOK / NO. / DATE / STRUCTURE NOTATING CHKD

2600 63N 287

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

PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
UN 92-9(19)--41-70	IOWA	5	1970	31	131



SVERDRUP & PARCEL AND ASSOCIATES, Inc.
CONSULTING ENGINEERS
ST. LOUIS, MISSOURI

RIGHT-OF-WAY STRIP MAP
MUSCATINE BRIDGE
IOWA APPROACH

Design No. 170 File No. 23800 Des. Sh. No. 32 of 61

COUNTY	PROJECT NUMBER	STATE	FED ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
MUSCATINE	UN 92-9(19)--41-70	IOWA	5	1970	32	131

MUSCATINE COUNTY - IOWA AND ROCK ISLAND COUNTY - ILLINOIS

UN-92-9(19)--41-70

LETTING DATE August 18, 1970

CONVENTIONAL SIGNS

JUL 15 1970

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

STATE OF IOWA
STATE HIGHWAY COMMISSION

PLANS OF PROPOSED IMPROVEMENT
ON THE

PRIMARY ROAD SYSTEM

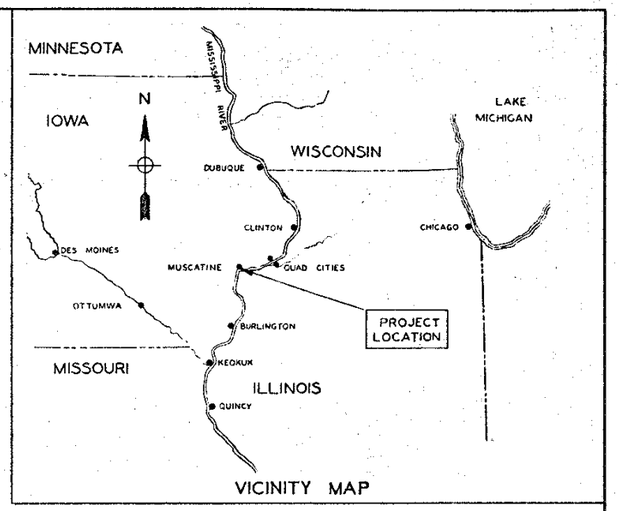
MISSISSIPPI RIVER BRIDGE

SUPERSTRUCTURE DIVISION II

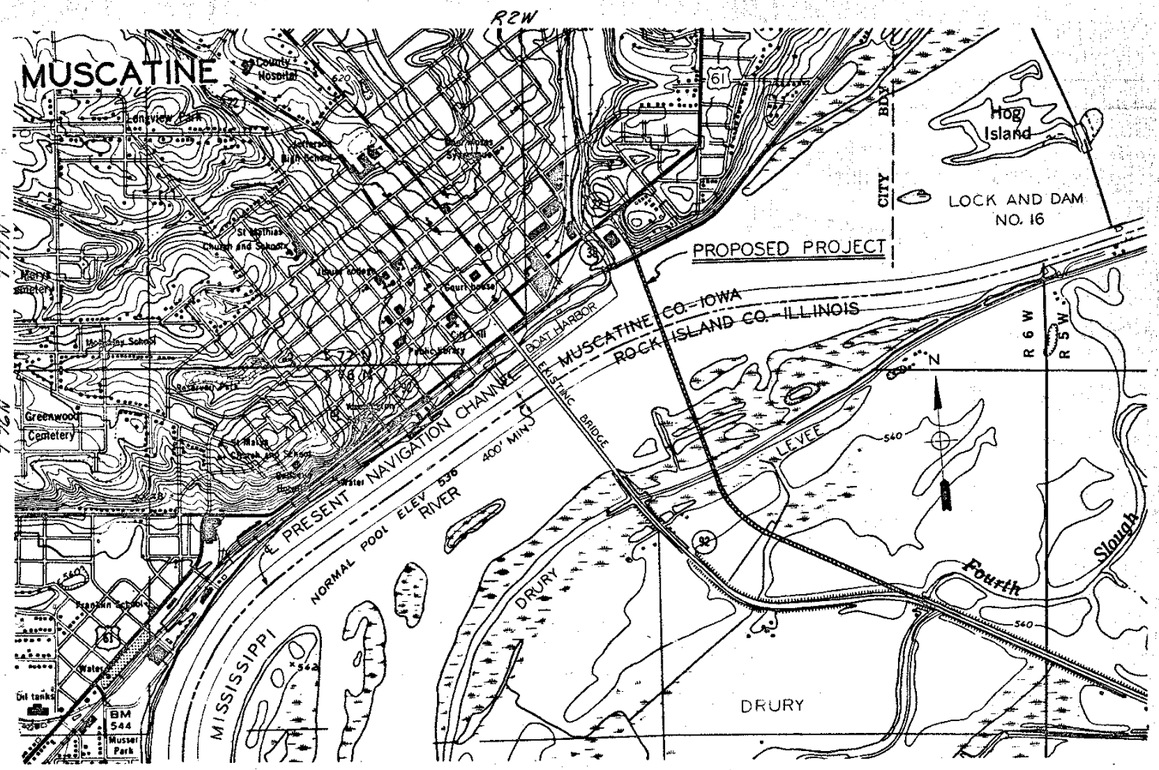
UN-92-9(19)--41-70

IOWA NO. 92 IN MUSCATINE, IOWA
MUSCATINE COUNTY - IOWA
AND
ROCK ISLAND COUNTY - ILLINOIS
SCALES: AS NOTED

THE IOWA STATE HIGHWAY COMMISSION STANDARD SPECIFICATIONS
FOR CONSTRUCTION WORK, SERIES OF 1964 SHALL
APPLY TO WORK ON THIS PROJECT
Plus Current Supplemental Specifications & Special Provisions



VICINITY MAP



LOCATION MAP
SCALE 1"=1000'

NO MILEAGE SUMMARY
STATE CONTROL SECTION NUMBER
70-1000

APPROVED:
See Sheet #1
DEPUTY CHIEF ENGINEER
IOWA STATE HIGHWAY COMMISSION
DATE:

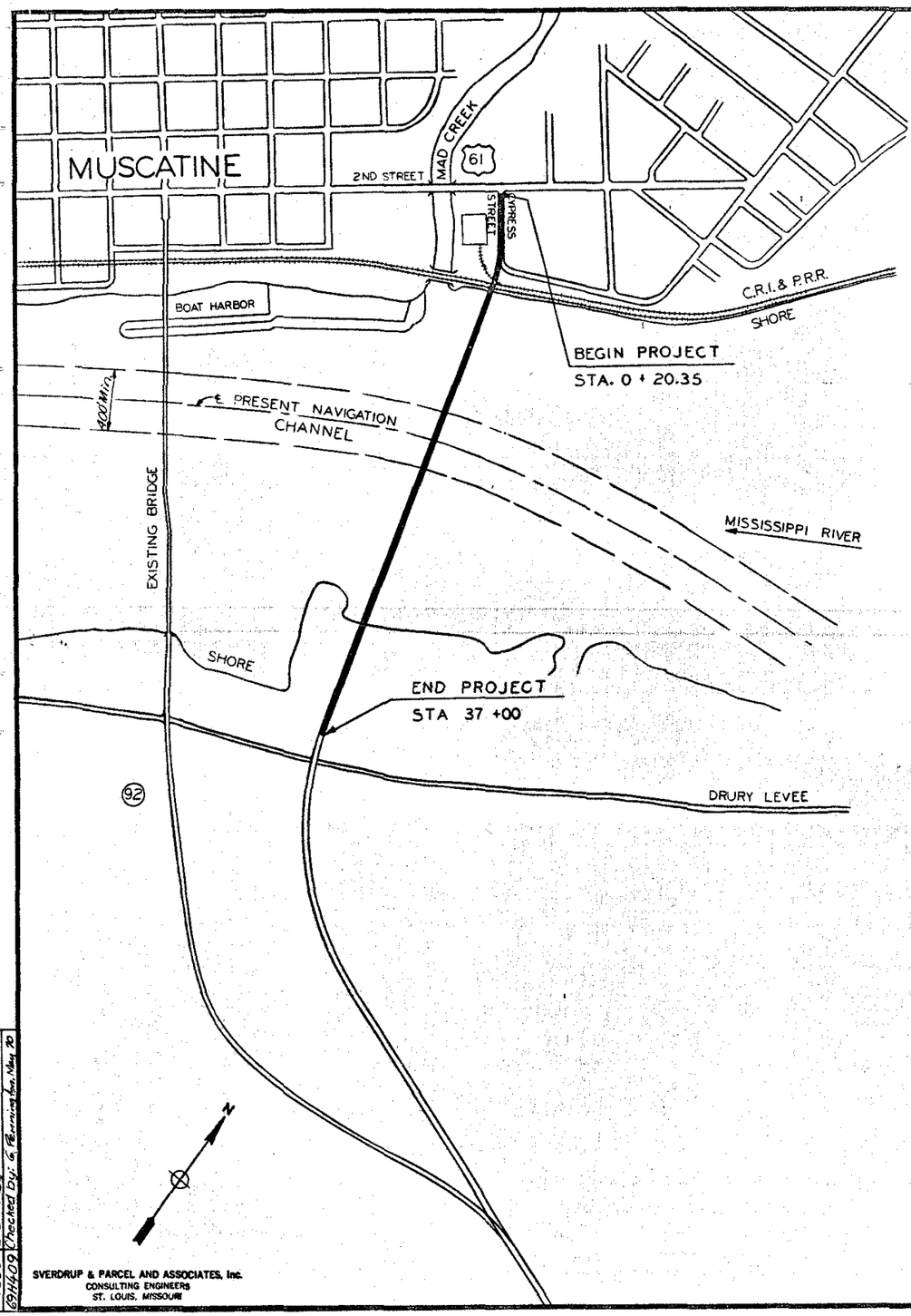
REVISED:

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.
Gordon R. Pennington
DATE May 22 19 70 IOWA REG. NO. 5286

GORDON R. PENNINGTON REGISTERED 5286 IOWA PROFESSIONAL ENGINEER

SVERDRUP & PARCEL AND ASSOCIATES, Inc.
CONSULTING ENGINEERS
ST. LOUIS, MISSOURI

Design No. 170 File No. 23800 Des. Sh. No. 1 of 74



INDEX OF SHEETS

Project Sheet Number		Design Sheet Number	
G3	Sheet	1	Title
G4	Sheet	2	Location Plan
G5	Sheet	3	Estimate of Quantities
G6	Sheet	4	General Notes
			BRIDGE SUPERSTRUCTURE
G7	Sheet	5	General Plan and Elevation
G8	Sheet	6	Concrete Beam Spans - Framing Plan Spans 1 thru 7
G9	Sheet	7	Concrete Beam Spans - Framing Plan Spans 13 thru 24
70	Sheet	8	Concrete Beam Spans - Beam Details
71	Sheet	9	Concrete Beam Spans - Beam Details
72	Sheet	10	Concrete Beam Spans - Diaphragms
73	Sheet	11	Concrete Beam Spans - Bearing Details
74	Sheet	12	Steel Girder Spans - Framing Plan
75	Sheet	13	Steel Girder Spans - Girder Details
76	Sheet	14	Steel Girder Spans - Floor System and Lateral Bracing
77	Sheet	15	Steel Girder Spans - Shoes
78	Sheet	16	Truss Span - Stress Sheet
79	Sheet	17	Truss Span - Floor System
80	Sheet	18	Truss Span - Sway Frames and Portal
81	Sheet	19	Truss Span - Joint Details L0 to L3
82	Sheet	20	Truss Span - Joint Details L4 to L7
83	Sheet	21	Truss Span - Shoes
84	Sheet	22	Roadway Expansion Devices at Piers 8, 11 and 13
85	Sheet	23	Roadway Expansion Device at Pier 10
86	Sheet	24	Abutment Details and Roadway Joint Details
87	Sheet	25	Slab - Concrete Beam Spans
88	Sheet	26	Slab - Steel Girder and Truss Spans
89	Sheet	27	Slab - Cross Sections
90	Sheet	28	Slab Forming Elevations
91	Sheet	29	Drainage
92	Sheet	30	Lighting Details and Telephone Conduit Details
93	Sheet	31	Aluminum Handrail Details
94	Sheet	32	Aluminum Handrail Details
95	Sheet	33	Navigation Lighting and Clearance Gage
96	Sheet	34	Electrical Details
97	Sheet	35	Electrical Details
98	Sheet	36	Bar List
—	Sheet	37	(Not used)

Project Sheet Number		Design Sheet Number	
			ROADWAY APPROACH - Paving
99	Sheet	38	Typical Sections
100	Sheet	39	Plan Sheet
101	Sheet	40	Profile Sheet
102	Sheet	41	Stake-Out Diagram
103	Sheet	42	Joint Layout
104	Sheet	43	Toll Booth
105	Sheet	44	Toll Plaza
106	Sheet	45	Details
107	Sheet	46	Concrete Barrier Median Details
108	Sheet	47	Sign Locations
109	Sheet	48	Sign Cross Sections
—	Sheet	49	Not Used
—	Sheet	50	Not Used
110	Sheet	51	Details of RE-2 Beam Rail-Terminal Sections
111	Sheet	52	Details of RE-7 Delineator Installation
112	Sheet	53	Details of RE-12 Formed Steel Beam Railing and Posts for Blocked-Out Guard Rail
113	Sheet	54	Details of RE-30 Guard Rail - Bridge Connection
114	Sheet	55	Details of RE-32 Typical Guard Rail Installation
115	Sheet	56	Details of RE-33 Beam Guard Rail End Anchorage
—	Sheet	57	Not Used
116	Sheet	58	Details of RH-2 P.C. Concrete Pavement Joints
117	Sheet	59	Details of RH-15 Approved Dowel Support Chairs
118	Sheet	60	Details of RH-22 Concrete Pavement
119	Sheet	61	Details of RH-36 Asphalt Paved Shoulders
120	Sheet	62	Details of RH-37 Stabilized Shoulders
121	Sheet	63	Details of RJ-20 Soil Aggregate Subbase
122	Sheet	64	Details of RJ-21 Asphalt Treated Base
123	Sheet	65	Details of RJ-31 Type "B" Asphaltic Concrete Base (Pav't)
124	Sheet	66	Details of RK-8 Reinforced Concrete Bridge Approach Section
—	Sheet	67	Not Used.
125 - 131	Sheet	68-74	Inc. Cross Sections

2600 Drawn by: M. Herbello Feb. 1969
9/14/09 Checked by: G. Fleming for May 70

SVERDRUP & PARCEL AND ASSOCIATES, Inc.
CONSULTING ENGINEERS
ST. LOUIS, MISSOURI

Note: Do not scale this drawing. Follow dimensions.

MISSISSIPPI RIVER BRIDGE

LOCATION PLAN

MUSCATINE COUNTY

IOWA STATE HIGHWAY COMMISSION

DESIGN NO. 170 FILE NO. 23800 DES. SH. NO. 2 OF 74

Muscatine Co. Project No. UN- -92-9(19)--41-70 PROJECT SH. NO. G4 OF 131

TABULATION OF EXPANSION JOINTS

Location	Type	No.	Lin. Ft.
0+20.35 Lt.	E	1	123
0+20.35 Rt.	E	1	243
3+06.5 AHD	E	2	30
3+36.5	E	2	3.75
3+63.5	E	2	3.75
3+63.5 AHD	E	2	80
0+80.35	ED	2	26.5
3+25	ED	2	10
3+75	ED	2	10
3+36.5	ED	2	30

TABULATION OF SIGNS

Standard No.	Quantity
M1-3	5
M1-4	5
M2-1	2
M3-1	1
M3-2	3
M4-1	2
M4-3	1
M4-5	1
R1-3	2
R4-9	1
W3-2	4
Special Signs (See Detail Sheet No. 45)	
18" x 24"	2
18" x 30"	3
24" x 30"	2

Note:
Lump sum bid to include posts, hardware, and installation of signs. Posts and hardware to be type used or approved by the Iowa State Highway Commission.

ESTIMATE REFERENCE INFORMATION

Item No.	Description
11-13	The weight of all Roadway Expansion Devices (Finger type), all Roadway Expansion Joints (Armor angles at neoprene seals) and all drainage material except castings is included in Structural Steel A36, Girders and Structural Steel Low Alloy, Girders.
11-12	The weight of High Strength and Rough Bolts is included in Structural Steel A36.
16	The breakdown of *Iron &* Steel Castings is as follows: Grade 70-36 34,200 lbs. Grade 80-40 18,600 lbs. Grade 65-45 *9,800* lbs.
20	To include removal of the pavement and curb along 2nd Street, separated by the saw out. Sidewalk and driveway to be removed, Sta. 0+77 to 11+21, Rt. Baseline 2nd Street.
21	Includes 639 lin. ft. of 6" integral Curb. Also includes 106 sq. yds. of 9" P.C. Concrete Paved Shoulder.
23	*Includes 173 tons of Asphalt Concrete Base in the Parking* Lot, and 54 tons for shoulders, Sta. 3+75 to Sta. 4+72.
29	*Includes 13 gal of tack coat for Asphalt-Paved Shoulder and 144 gal of Prime & Tack Coat for Asphaltic Conc. Base.*
30	Includes 300 lin. ft. of 1'-6" Curb and Gutter around the Parking Lot, Sta. 0+69.30 to Sta. 1+58±. Also includes 11 lin. ft. of 2'-6" Curb and Gutter beginning right of Sta. 4+49 and 33 lin. ft. of 2'-6" Curb and Gutter on 2nd street right of Sta. 10+88 to Sta. 11+21.
32	The median from Sta. 1+50 to Sta. 3+06.5 contains 83 sq. yds. and the island left of Sta. 0+30 contains 5 sq. yds. of concrete
33	Backfill is material under paved median Sta. 1+50 to Sta. 3+06.5.
35	Includes 190 cu. yds. of earth along 2nd St. and around the parking lot.
37	Includes 64-8" x 8" x 6' posts and 6-10" x 10" x 6' posts.
39	The contract price bid for P.C. Concrete Barrier Median will include all materials and labor required for the construction of the Concrete Barrier Median from Sta. 3+06.5 to Sta. 3+36.5 and Sta. 3+63.5 to Sta. 4+42.2
43.	Sod ditch - Sta. 3+00 to 4+50 Lt. Sod flume - Sta. 4+50 Rt.
44.	Included for placement of Jute Mesh over sod.
46	Lump sum bid for Toll Plaza includes all materials and labor necessary for construction of all items between Sta. 3+25 and Sta. 3+75 except the paved shoulder, the 9 in. P.C. Concrete Pavement, and the Barrier Median extending into this area.
24&25	*Quantity for Soil Aggregate Subbase in Parking Lot estimated for a 26' wide section. See Standard RJ-31.*

ESTIMATE OF QUANTITIES

No.	Item			Unit	Quantities
	BRIDGE SUPERSTRUCTURE				
1	Structural Concrete, Class D			Cu.Yd.	3,360.5
2	Reinforcing Steel			Lbs.	960,545
3		Standard	C38	No.	5
4			C80	No.	65
5		Special	C38S1	No.	1
6	Pretensioned		C38S2	No.	1
7	Prestressed		C38S3	No.	1
8	Concrete		C38S4	No.	1
9	Beams		C34S5	No.	1
10			C90S	No.	20
11	Structural Steel - A36	Girders		Lbs.	*1,213,100*
12		Truss		Lbs.	1,094,600
13	Structural Steel	Girders		Lbs.	733,100
14	Low Alloy	Truss		Lbs.	874,300
15	Structural Steel - A514	Girders		Lbs.	87,400
16	*Iron &* Steel Castings.			Lbs.	*62,600*
17	Aluminum Handrail			L.F.	5,038
18	Roadway and Navigation Lighting			*L.S.*	*1*
	ROADWAY APPROACH - PAVING				
20	Removal of Old Pavement and Curb			Sq.Yd.	113
21	Pavement Standard or Slip Form, P.C. Conc. (Class C, 9")			Sq.Yd.	2,001
22	Stabilized Shoulder Material (*Chemically Treated*)			Tons	154
23	*Base, Type "B" Class 2 Asphaltic Concrete*			Tons	227
24	*Subbase, Construction of Soil-Aggregate*			*Miles*	*0.04*
25	*Granular Material*			Tons	*90*
26	*Not Used*				
27	*Not Used*				
28	*Not Used*				
29	Prime or Tack Coat Bitumen or Both			Gal.	*157*
30	Curb & Gutter, P.C. Concrete, As per plan			L.F.	344
31	Sidewalk, P.C. Concrete, 4 in.			*Sq.Ft.*	*936*
32	Median, 6 in. P.C. Concrete			Sq. Yd.	88
33	Backfill, Granular			Ton	41
34	Reinforced Concrete Bridge Approach Section			Sq. Yd.	80
35	Shoulder Const., Earth			Sta.	7
36	Formed Steel Beam Railing			L.F.	*412.5*
37	Beam Guard Rail Posts			Each	*70*
38	Beam Guard Rail End Anchorage			Each	2
39	Barrier Median, P.C. Concrete, Class "C", As per plan			Cu.Yd.	68
40	*Not Used*				
41	*Not Used*				
42	*Seeding, Fertilizing and Mulching*			*Acres*	2
43	*Sodding*			*Squares*	*20*
44	*Special Ditch Control (Jute Mesh over Sod)*			*Squares*	*20*
45	*Signing*			L.S.	See Tab.
	TOLL PLAZA AND EQUIPMENT				
46	Toll Plaza			L.S.	1
47	Toll Equipment			L.S.	1

42. Erosion control measures following completion of the paving and super structure. Includes seeding, fertilizing and mulching.

Seed Mixture:

Fescue Ky. 31	40 lbs. per acre
Bluegrass, Ky.	10 lbs. per acre
Birdsfoot Trefoil (Empire)	5 lbs. per acre
Crownvetch (Emerald or Penngift)	*10 lbs. per acre*
Ryegrass, Perennial	5 lbs. per acre

Fertilizer Rate: 650 lbs. of 13-13-13 chemically combined commercial fertilizer per acre.

Mulch Rate: 2 tons of wood excelsior mulch per acre.

MISSISSIPPI RIVER BRIDGE

ESTIMATE OF QUANTITIES

MUSCATINE COUNTY

IOWA STATE HIGHWAY COMMISSION

DESIGN NO. 170 FILE NO. 23800 DES. SH. NO. 3 OF 74

Muscatine Co. Project No. UN-92 9(9)--41-70 PROJECT SH. NO. 65 OF 131

2600
69H401

GENERAL NOTES
BRIDGE SUPERSTRUCTURE

SPECIFICATIONS

DESIGN: The American Association State Highway Officials Specification for Highway Bridges, 1965 Edition and Interim Specifications 1966-1967.

CONSTRUCTION: Standard Specifications of the Iowa State Highway Commission Series 1964, current supplemental specifications, and Special Provisions.

LOADINGS: HS20-44 live load (two lanes) and alternate loading designated by B.P.R.'s P.P.M. 20-4, Section 4C.

An allowance of 20 lbs./sq. ft. of roadway for future wearing surface is included in dead load.

DESIGN UNIT STRESSES:

METALS:

Structural Carbon Steel; per Art. 1.7.1 AASHO Specification

High Strength Low Alloy Structural Steel; per Art. 1.7.1 AASHO Specification for 50,000 psi minimum yield for all thicknesses.

High-Yield Strength, Quenched and Tempered Steel; as follows:

Tension in extreme fibers of built-up sections subject to bending, net section - - - - - - - - - 45,000 psi

Compression in extreme fibers of built-up sections subject to bending, gross section:

Compression flange supported laterally its full length by embedment in concrete or by other means - - - - - - - - - - - - - - - - - 45,000 psi

Compression flange partially supported or unsupported laterally (l/b not greater than 21) - - - - - - - - - - - - - - - $45{,}000 - 47.5\frac{l^2}{b^2}$ psi

Shear in plate girder webs, gross section 27,000 psi

Weld metal stress, section through throat of fillet welds - - - - - - - - - - - - - - - - - - 14,700 psi

REINFORCED CONCRETE:

Concrete: f'c = 3,500 psi, fc = 1,400 psi, n = 10

Reinforcing Steel; fs = 20,000 psi

PRESTRESSED CONCRETE:

Concrete; f'c = 5,000 psi

Prestressing Steel; f's = 270,000 psi

STRUCTURAL STEEL DESIGNATION:

Members and material designated as (A.S.) shall be High Strength Low Alloy Structural Steel. Members and materials designated as (Q.T.) shall be High-Yield Strength, Quenched and Tempered Steel. All other members and materials shall be Structural Carbon Steel.

CONNECTORS:

Shop and field connections shall be made with High Strength Bolts except where welding is indicated and at drainage system and handrail connections.

Rough Bolts shall be used at drainage system and handrail connections as shown on the plans.

MATERIALS:

STRUCTURAL STEEL:

STRUCTURAL CARBON STEEL shall conform to ASTM Specification A36-69.

HIGH STRENGTH LOW ALLOY STRUCTURAL STEEL shall have 50,000 psi minimum yield point. See Special Provisions.

HIGH-YIELD STRENGTH QUENCHED AND TEMPERED STEEL shall conform to ASTM Specification A514-69a or A517-69a.

BOLTS:

High-Strength Bolts shall conform to ASTM Specification A325-68. Rough Bolts shall conform to ASTM Specification A307-68.

PREFORMED COMPRESSION JOINT SEALS:

See Special Provisions.

PREFORMED JOINT FILLER:

Preformed joint filler shall conform to AASHO Specification M 153 (Type III).

REINFORCING STEEL:

Reinforcing steel shall be billet steel conforming to ASTM Specification A615-68, Grade 40.

PRESTRESSING STEEL:

Prestressing Steel shall be 1/2" Φ 270K grade.

NEOPRENE BEARING PADS:

Neoprene bearing pads shall be elastomeric bearings subject to the requirements of Section 1.12 of the AASHO Specifications. The bearings shall be laminated (consisting of layers of elastomer restrained at their interfaces by bonded laminates). The elastomer portion of the of the elastomeric compound shall be 100% virgin chloroprene (neoprene) meeting the requirements of Table B of Section 2.25 of the AASHO Specifications, with 55 durometer nominal hardness. The material used for the steel laminates shall comply with Section 2.25 of the AASHO Specifications, or to ASTM (1010 to 1020). There shall be a minimum of 1/4 inch bedding surface on both the top and bottom of the bearing.

Payment for neoprene bearing pads to be included in price bid for Pretensioned Prestressed Concrete Beams.

Bearing Pads shall have the following minimum number of laminates:

Pads, 3-21/32" thickness : 6 Laminates
All other pads : 5 Laminates

Laminates near the surface shall be 3/16" minimun thickness and interior laminates shall be 14 gage minimum thickness.

CONCRETE:

All cast-in-place concrete shall be Class D.

The bridge slabs as shown include 1/2" of wearing surface.

All exposed edges 90° or sharper shall be chamfered 3/4" unless otherwise shown.

Cost of preformed joint filler and preformed compression joint seals are to be included in the price bid for concrete.

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

REINFORCEMENT:

All dimensions to reinforcing steel on the detail drawings are to center-line of bar except where clear distance is noted from the face of concrete. All reinforcing steel shall be lapped a minimum of 24 bar diameters unless otherwise shown or noted.

FABRICATION:

Fabrication shall be in accordance with the requirements of the Standard Specifications as revised and supplemented by the Special Provisions.

WELDING:

All welding shall be in accordance with AWS D2.0-69, Specifications for Welded Highway and Railway Bridges of the American Welding Society except as modified by the Standard Specifications and Special Provisions.

SPAN LENGTHS:

Span Lengths shown on the plans are those required for the final structure at 50°F.

CONSTRUCTION ADJACENT TO RAILROAD:

Contractor shall maintain a minimum horizontal clearance of 8'-0" and a minimum vertical clearance of 22'-0" during the construction adjacent to the railroad tracks. The Contractor shall submit erection plans to the Chicago Rock Island & Pacific Railroad for approval. See Special Provisions.

CONSTRUCTION ON NAVIGATIONAL WATERS:

The Contractor shall submit construction plans to the Commander, Second Coast Guard District, St. Louis, Missouri for approval prior to construction over navigable water. The Contractor shall comply with the requirements for navigational clearances and temporary lighting or marking as required by the Coast Guard.

The cost of this work shall be considered incidental to the construction and no separate payment will be allowed.

GENERAL NOTES
ROADWAY APPROACH

GENERAL:

It shall be the contractor's responsibility to provide waste areas or disposal sites for excess material which is not desirable to be incorporated in the work involved on this project (excavation or broken concrete).

Plan and Profile sheets included in the project are for purpose of alignment, location and specific directions for the work to be performed under this contract. Irrelevant data on these sheets are not be to considered a part of this contract.

CONSTRUCTION IDENTIFICATION SIGNS:

Construction identification signs presently in place on the site of this project shall be maintained by the contractor in a condition approved by the Engineer. Any work connected with maintaining the signs in acceptable condition shall not be paid for as such and shall be considered incidental to any other work on the project.

INCIDENTAL WORK:

Blading, shaping, providing additional embankment material, or any other incidental work in bringing the embankment to proper grade shall be considered incidental and shall be considered as included in and completely covered by the contract prices bid for other items of work.

SAW CUT:

The Contractor is cautioned to exercise extreme care when performing the necessary saw cutting operations for the proposed pavement removal, so as to avoid any unnecessary surface breaks or premature spalling.

RAISED MEDIAN:

The edge of the raised median 3.75 feet left and right of the centerline from Station 3+36.5 to Station 3+63.5 is on a chord rather than an arc.

NEW WALKS:

New concrete walks to be of width to fit walks in place and be 4" thick. Expansion material to be 1" thick and of same quality as required for pavement. New or replaced concrete sidewalks across unpaved driveways shall be 6" thick and of sidewalk mix. Sidewalk mix to be C5.

SIGNING:

Signs No. 1 and 3 shall be located by the Engineer at approximately the location indicated on the plans.

Sign No. 11 shall be mounted on the superstructure of the bridge at approximately the location indicated on the plans or as directed by the Engineer.

MARKINGS:

The painting of parking lot stripes, stop lines, curb markings, etc., are not a part of this contract.

NEW PAVEMENT

PRICE BID ON NEW CONCRETE PAVEMENT SHALL INCLUDE ALL INTEGRAL CURB, ALL STREET RETURNS, SPECIAL AREAS, AREAS OF REPAIRS TO CONNECTING PAVEMENTS AND THE ADJUSTMENT OF SERVICE CASTINGS. (THE ADJUSTMENT OF SERVICE CASTINGS TO BE ACCORDING TO ARTICLE 2301.15 - 1964 IOWA HIGHWAY COMMISSION STANDARD SPECIFICATIONS).

109-4

UTILITY COMPANIES, WHOSE FACILITIES ARE SHOWN ON THE PLANS OR KNOWN TO BE WITHIN CONSTRUCTION LIMITS, SHALL BE NOTIFIED BY THE CONTRACTOR OF THE CONSTRUCTION STARTING DATE.

2600
69234

SVERDRUP & PARCEL AND ASSOCIATES, Inc.
CONSULTING ENGINEERS
ST. LOUIS, MISSOURI

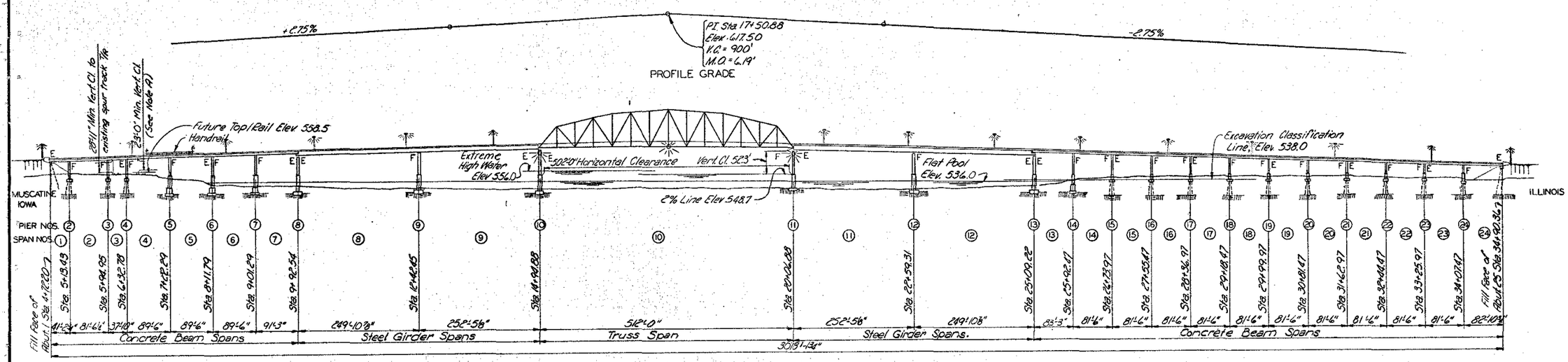
MISSISSIPPI RIVER BRIDGE

GENERAL NOTES

MUSCATINE COUNTY
IOWA STATE HIGHWAY COMMISSION

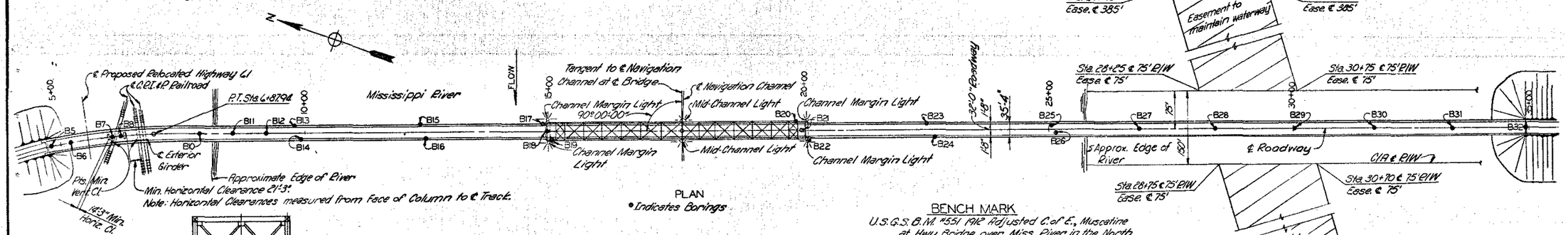
DESIGN NO. 170 FILE NO. 23800 DES. SH. NO. 4 OF 74

Note A: 25'-0½" to existing Top/Rail.



Note: Stations shown at Piers are for ℄ Piers at ℄ Roadway

ELEVATION



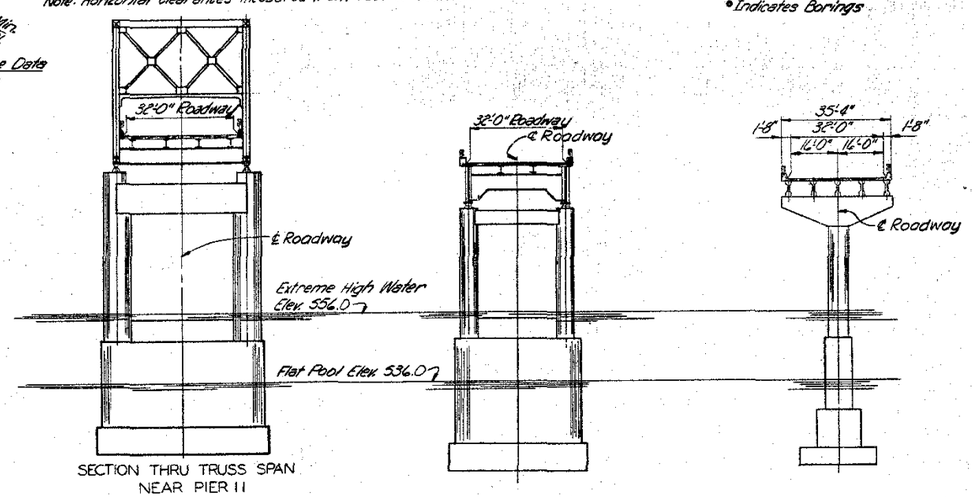
PLAN

• Indicates Borings

Horizontal Curve Data
P.I. Sta. 6+90.00
Δ = 20°00'00"
D = 5°00'00"
T = 202.06'
L = 400.0'
R = 1145.92'

BENCH MARK

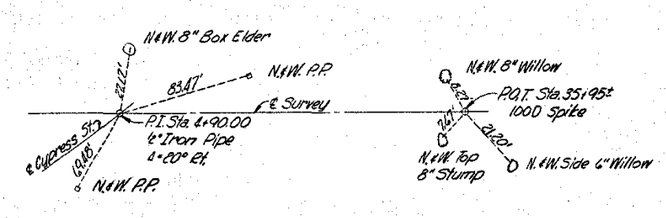
U.S.G.S. B.M. "551 1912 Adjusted C. of E., Muscatine at Hwy. Bridge over Miss. River, in the North End of the Pier Nearest the Shore, and about 6' above ground. By a Geological Survey Standard Disc, Stamped 551. Elev. 550.83



SECTION THRU TRUSS SPAN NEAR PIER 11

SECTION THRU GIRDER SPAN NEAR PIER 12

SECTION THRU PRESTRESSED BEAM SPAN NEAR PIER 14



ALIGNMENT CONTROL POINT REFERENCES

Note: N&W indicates nail & washer.
P.P. indicates Power Pole.

Note: Do not scale this drawing. Follow dimensions.

7/2/70	Drawn By: J. Mlosfsky Jan. 1969
6/23/70	Checked By: O. Sandheinrich, Feb. 1969

SVERDRUP & PARCEL AND ASSOCIATES, Inc.
CONSULTING ENGINEERS
ST. LOUIS, MISSOURI

MISSISSIPPI RIVER BRIDGE

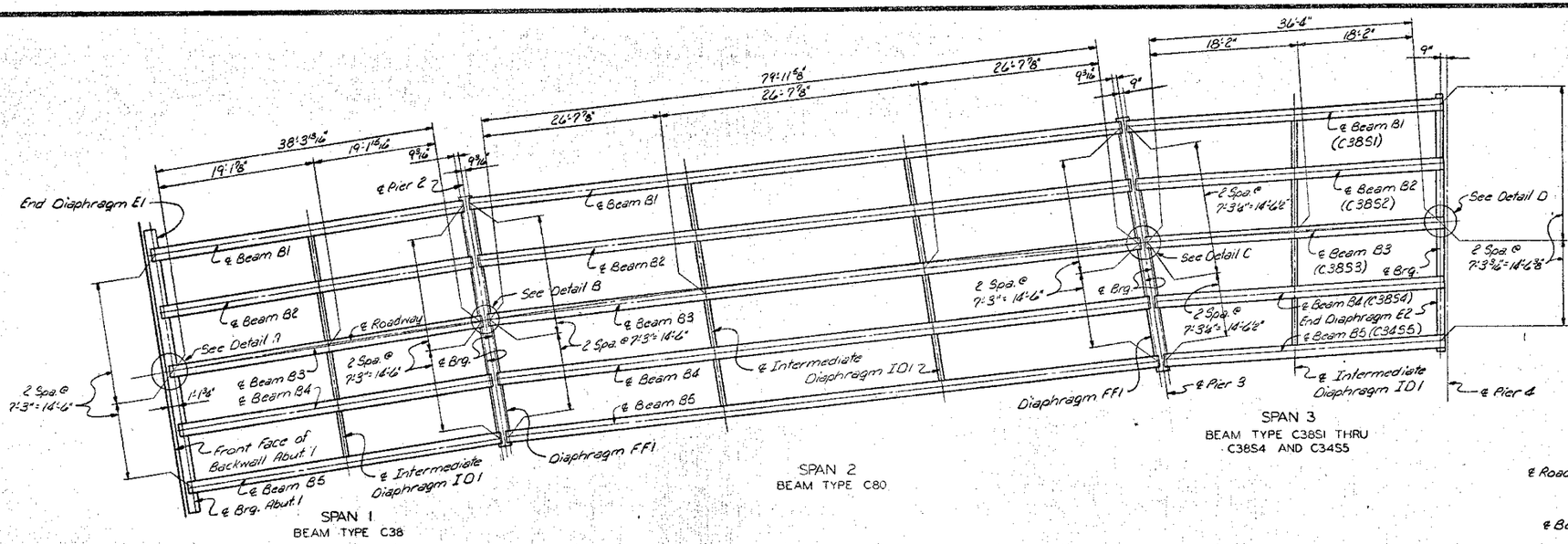
GENERAL PLAN AND ELEVATION

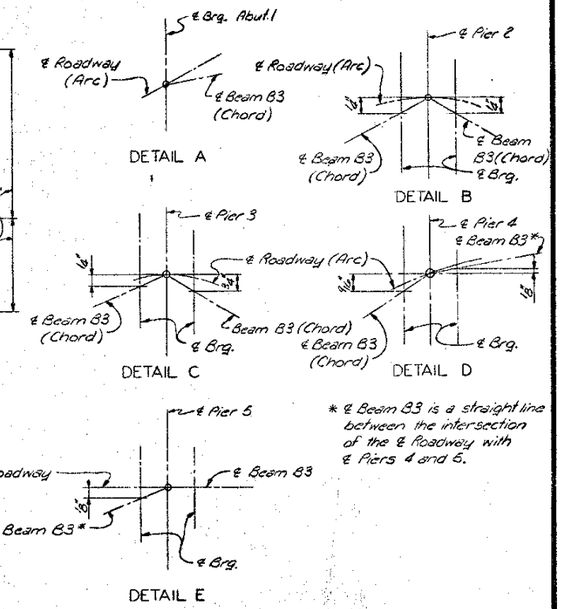
MUSCATINE COUNTY

IOWA STATE HIGHWAY COMMISSION

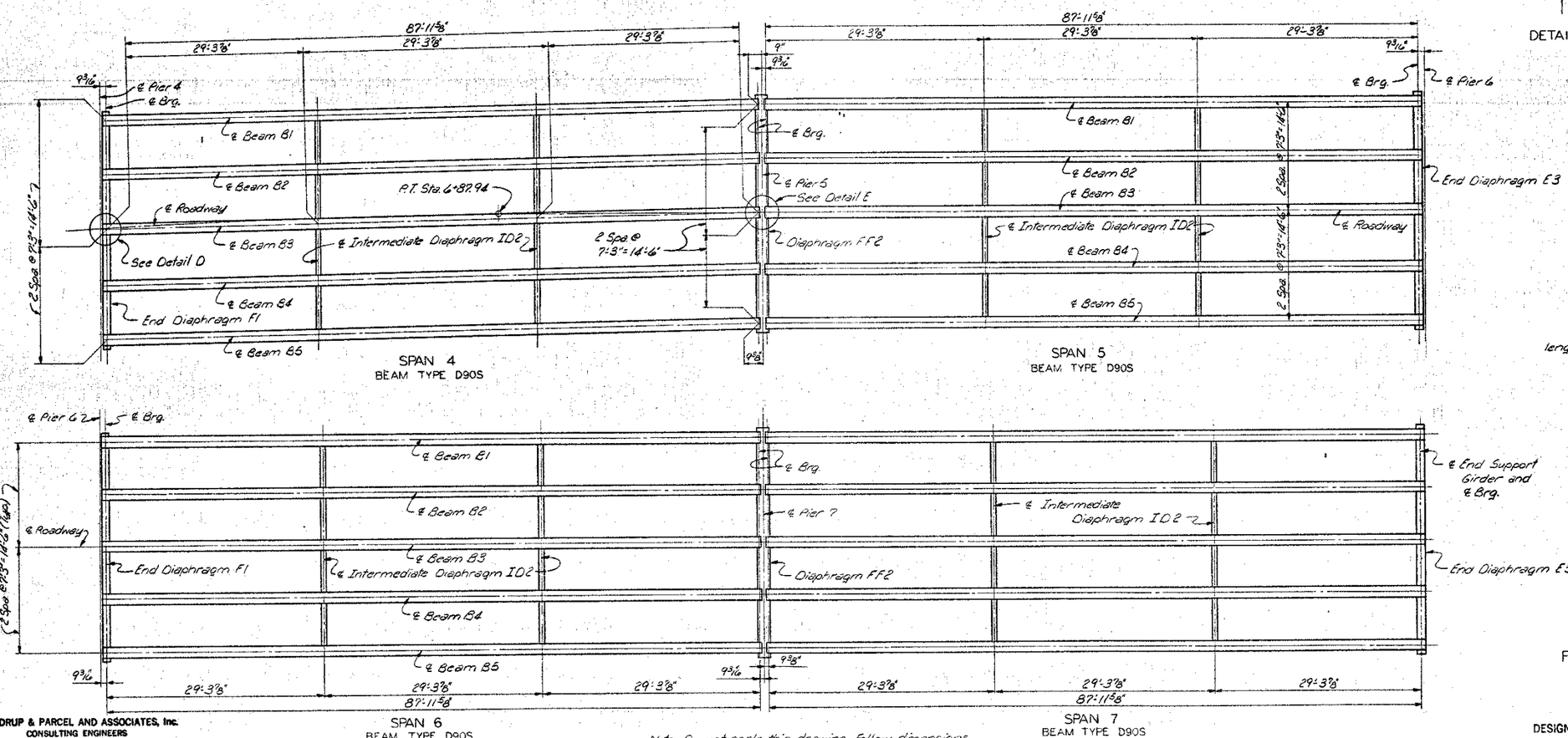
DESIGN NO. 170 FILE NO. 23800 DES. SH. NO. 5 OF 74

PROJECT UN-92-9(19)--41-70 PROJECT SH. NO. 67 OF 131





* ℄ Beam B3 is a straight line between the intersection of the ℄ Roadway with ℄ Piers 4 and 5.



NOTES

Dimensions are measured horizontally. Span lengths are measured along ℄ Beam B3.

Note: Do not scale this drawing. Follow dimensions.

2-6-70	Drawn By: D.J. Schramp, Mar. 1969
6-25-70	Checked By: M.J. Goodlis, Mar. 1969

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MISSISSIPPI RIVER BRIDGE

CONCRETE BEAM SPANS

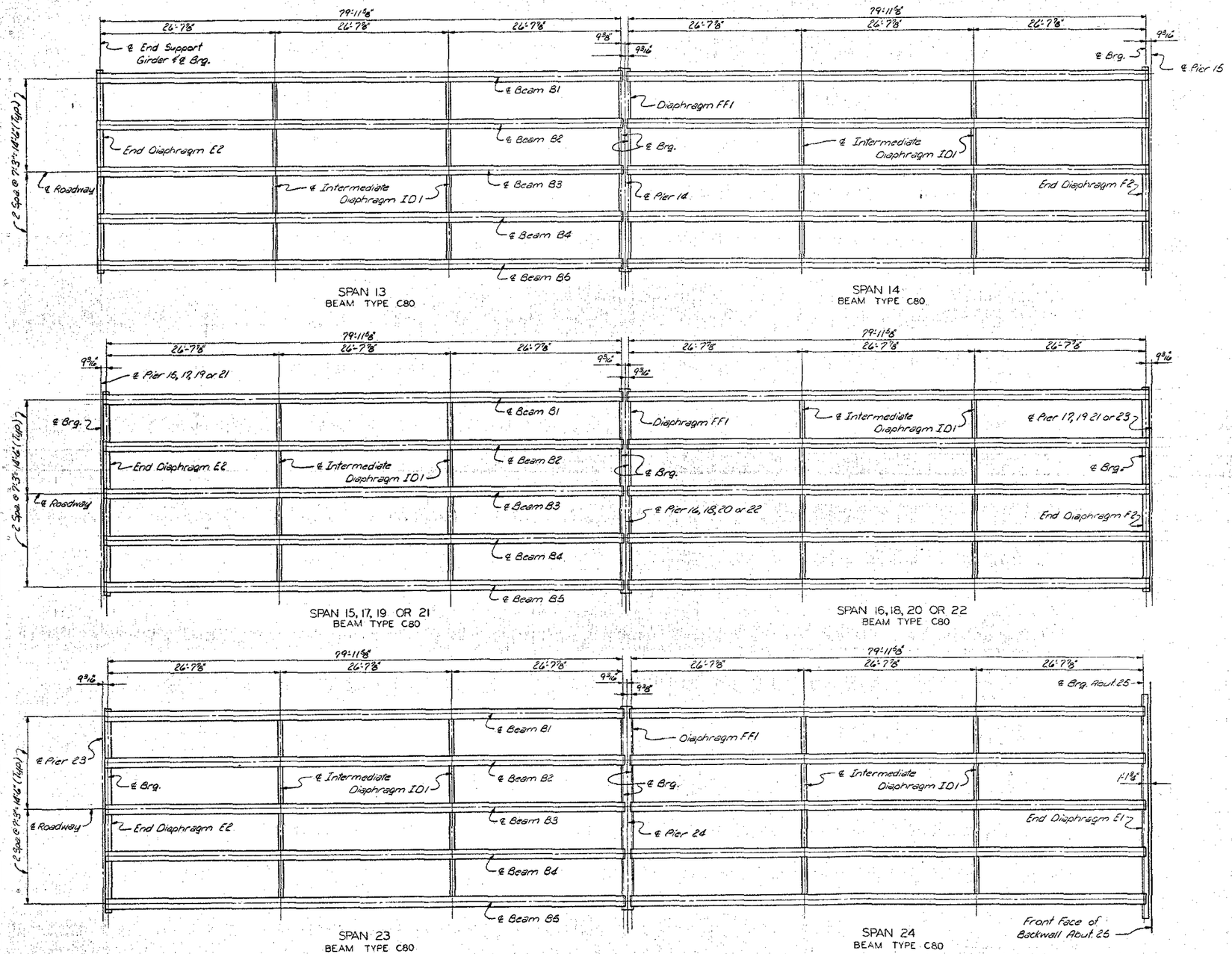
FRAMING PLAN SPANS 1 THRU 7

MUSCATINE COUNTY

IOWA STATE HIGHWAY COMMISSION

DESIGN NO. 170 FILE NO. 23800 DES. SH. NO. 5 OF 74

PROJECT UN-92-9(19)--41-70 PROJECT SH. NO. 68 OF 131



NOTES

Dimensions are measured horizontally.

MISSISSIPPI RIVER BRIDGE

CONCRETE BEAM SPANS

FRAMING PLAN SPANS 13 THRU 24

MUSCATINE COUNTY

IOWA STATE HIGHWAY COMMISSION

DESIGN NO. 170 FILE NO. 23800 DES. SH. NO. 7 OF 74

PROJECT UN-92-9(19)--41--70 PROJECT SH. NO. 69 OF 131

23800	Drawn By: D.J. Schrenta, Mar. 1969
6-5-117	Checked By: W.J. Gaddis, Mar. 1969

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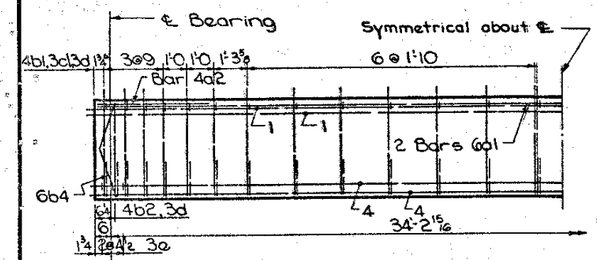
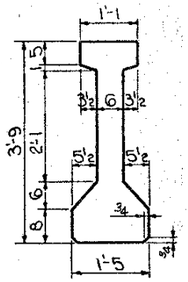
ST. LOUIS, MISSOURI

Note: Do not scale this drawing. Follow dimensions.



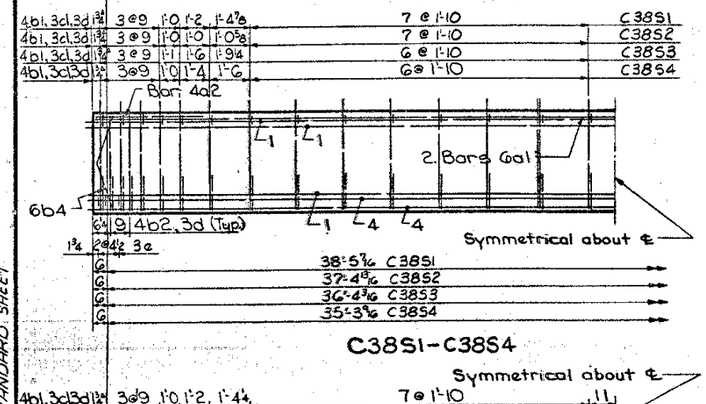
C34S5



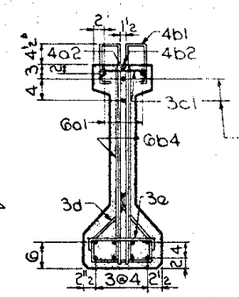
BEAM C34S5, C38 S1-4, C38

A = 429.5 sq in.
Y_b = 19.52 in.
I = 93,474 in⁴

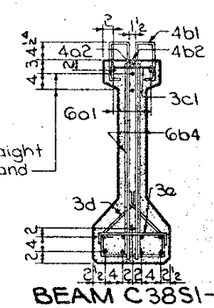
** Where deflecting strands interfere with placement, some in-place bending may be necessary.



C38S1-C38S4

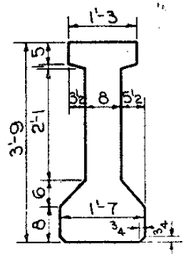


BEAM C34S5



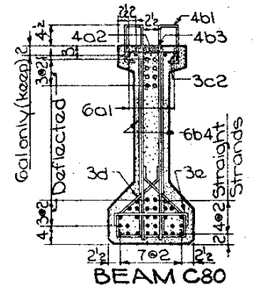
BEAM C38S1-4, C38

C38

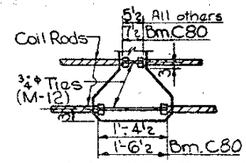


BEAM C80

A = 519.5 in²
Y_b = 20.04 in
I = 108,512 in⁴

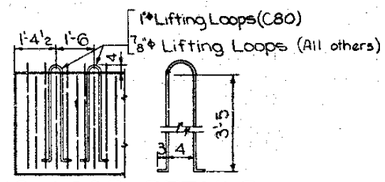


BEAM C80



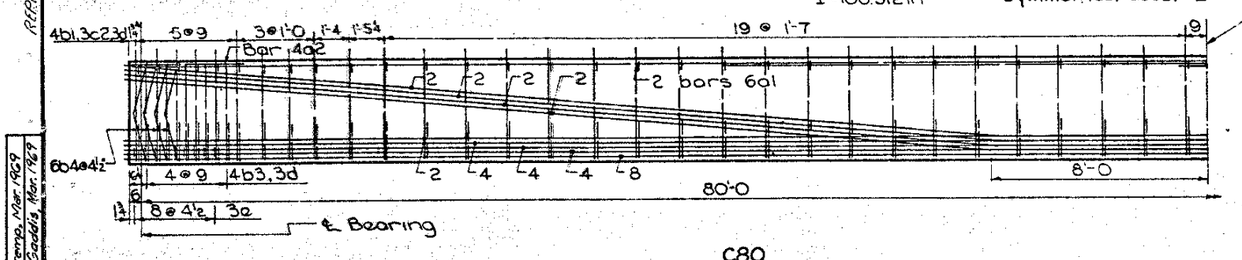
COILTIE DETAILS

Number and location of of coil ties to be as detailed on Sheet 11.

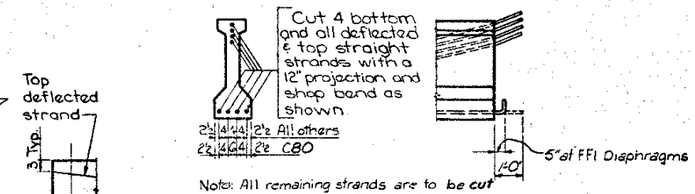


LIFTING LOOP DETAILS

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



C80

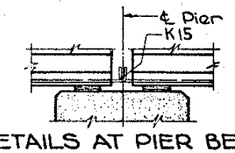


Note: All remaining strands are to be cut reasonably flush with concrete.

BEAM END DETAIL AT FF DIAPHRAGM

NOTE: Dimensions for the location of the deflected strands are at ℄ of beam and end of beam.
△ Keep

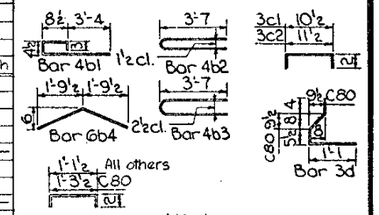
NOTE: Bars 4b1, 6b4 and 3d are to be placed in pairs.



DETAILS AT PIER BEFORE PLACING FF DIAPHRAGM

REINFORCING BAR LIST

Beam	Type	C34S5		C38S1		C38S2		C38S3		C38S4		C38		C80	
	Number	B5		B1		B2		B3		B4		B1-B5		B1-B5	
Span		34'-2 15/16		38'-5 7/16		37'-4 13/16		36'-4 3/16		35'-3 9/16		38'-4		80'-0	
Bar	Shape	No.	length	No.	length	No.	length	No.	length	No.	length	No.	length	No.	length
6a1		2	35'-0	2	39'-2	2	38'-2	2	37'-1	2	36'-0	2	39'-1	4	41'-4
4a2		2	4'-0	2	4'-0	2	4'-0	2	4'-0	2	4'-0	2	4'-0	2	4'-0
4b1		52	5'-2	56	5'-2	56	5'-2	52	5'-2	52	5'-2	56	5'-2	120	5'-2
4b2		2	7'-2	4	7'-2	4	7'-2	4	7'-2	4	7'-2	4	7'-2	—	—
4b3		—	—	—	—	—	—	—	—	—	—	—	—	10	7'-4
6b4		4	3'-9	4	3'-9	4	3'-9	4	3'-9	4	3'-9	4	3'-9	16	3'-9
3c1		26	1'-1	28	1'-1	28	1'-1	26	1'-1	26	1'-1	28	1'-1	—	—
3c2		—	—	—	—	—	—	—	—	—	—	—	—	60	1'-2
** 3d		56	2'-8	64	2'-8	64	2'-8	60	2'-8	60	2'-8	64	2'-8	140	2'-10
3a		6	1'-5	6	1'-5	6	1'-5	6	1'-5	6	1'-5	6	1'-5	18	1'-7



All dimensions are out to out except as shown.

BEAM DATA

Beam	C34S5	C38S1	C38S2	C38S3	C38S4	C38	C80
Span	34'-2 15/16	38'-5 7/16	37'-4 13/16	36'-4 3/16	35'-3 9/16	38'-4	80'-0
Initial Prestress Kips	289	318	318	318	318	318	867
Size Strands	½	½	½	½	½	½	½
Straight Strands	10	11	11	11	11	11	22
Deflected Strands	—	—	—	—	—	—	8
Hold Down Stress Kips	—	—	—	—	—	—	20.0
Camber②	.08 / .12	.12 / .17	.12 / .17	.12 / .17	.12 / .17	.12 / .17	.16 / .220
① D.L. Deflection③ in. (7'-3 Spc.g.)	.06 / .02	.08 / .02	.08 / .02	.08 / .02	.08 / .02	.08 / .02	.22 / .51
Reinforcing Steel lbs.	392	437	434	412	409	435	992
Concrete C.Y.	3.89	4.36	4.24	4.12	4.01	4.35	10.82

① Due to weight of slab and diaphragms

② Upper figure is the beam camber at release. Lower figure is the beam camber just before slab is placed.

③ Upper figure is the elastic deflection of beam due to weight of slab. Lower figure is the deflection due to the combined effect of creep due to weight of slab and shrinkage of slab. Total deflection of beam is upper figure + 75% of lower figure for end spans and upper figure + 50% of lower figure for interior spans.

NOTES

For Prestressed Concrete Beam Notes, see Sheet 9.

Note: Do not scale this drawing. Follow dimensions.

REPRODUCED IN PART FROM IOWA STANDARD SHEET

2600	Drawn By: D.J. Schramp, Mar. 1969
695118	Checked By: W.J. Gaddis, Mar. 1969

SVERDRUP & PARCEL AND ASSOCIATES, Inc.
CONSULTING ENGINEERS
ST. LOUIS, MISSOURI

MISSISSIPPI RIVER BRIDGE

CONCRETE BEAM SPANS

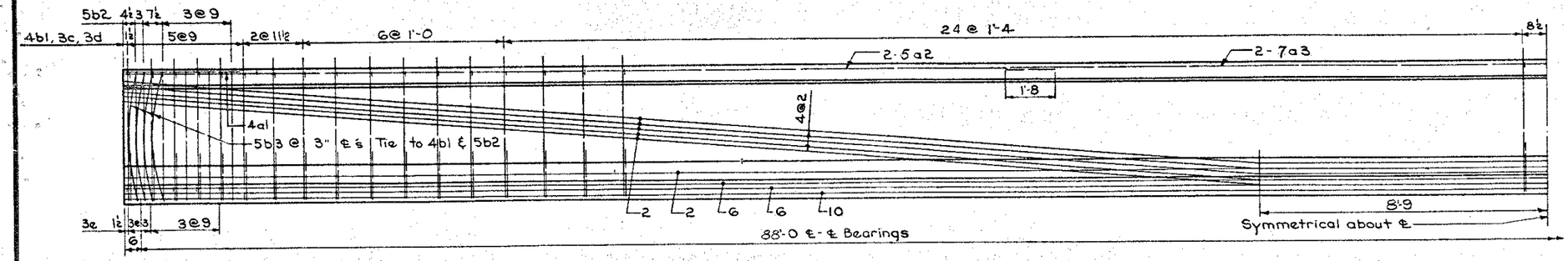
BEAM DETAILS

MUSCATINE COUNTY

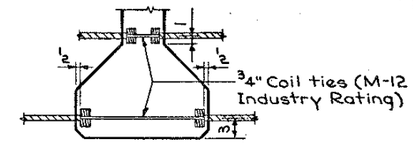
IOWA STATE HIGHWAY COMMISSION

DESIGN NO. 170 FILE NO. 23800 DES. SH. NO. 8 OF 74

PROJECT UN-92-9(19)--41-70 PROJECT SH. NO. 70 OF 131

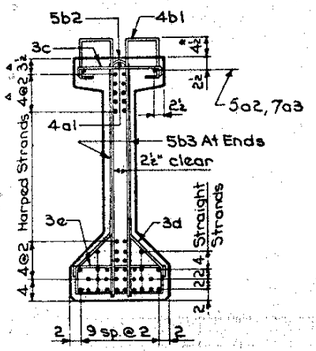


Number and exact location of coil ties to be as detailed on Sheet 11.

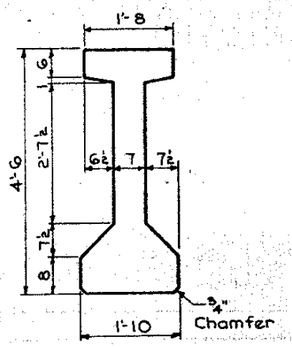


COIL TIE DETAIL

D90S



BEAM D90S



BEAM D90S

Area = 638.75 in.²
$\bar{Y}_b$ = 24.35 in.
I = 214,975 in.⁴

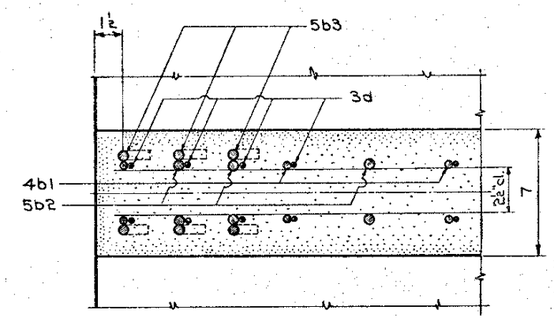
△ DIMENSIONS AT END OF BEAM
* KEEP

BEAM DATA

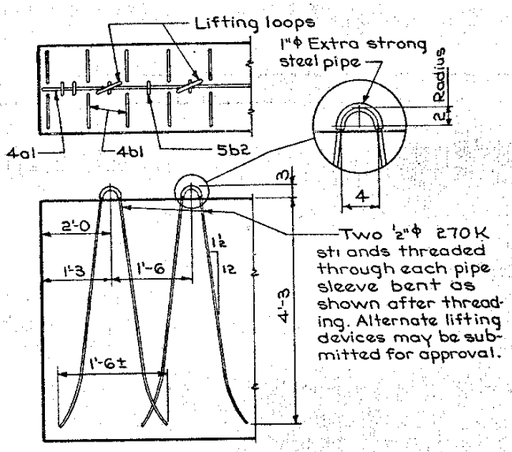
Beam	Span Length ℄-℄ Bearing	Overall Beam Length (L)	Strand Size	Nº Of Strands		Total Initial Prestress Kips	Hold Down Force - Kips	Camber (in.)				Deflection (in.) Δ_D				Weight (Tons)		Concrete (C.Y.)	Reinforcing Steel - (lb.)
				Straight	Harped			At Release		After Losses		Immediate① (Elastic) Δ_I		Time② (Plastic) Δ_T					
D90S	88'-0	89'-0	1/2"φ	24	10	982.6	25.8	1.39		2.00		1.06		0.27		29.6		14.6	1281

① Deflections due to weight of slab and diaphragm.

② Total beam deflection at centerline of span, Δ_D equals $\Delta_I + 3/4\ \Delta_T$.

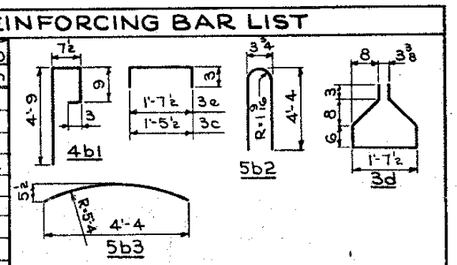


SECTION A-A SHOWING PLACEMENT OF STIRRUPS NEAR END OF BEAM



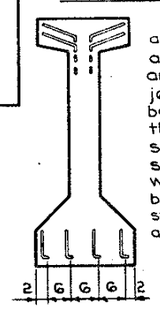
REINFORCING BAR LIST

Bar	Shape	Nº	Length
4a1	—	2	4'-0
5a2	—	4	29'-1
7a3	—	2	34'-0
4b1	⊓	152	6'-2
5b2	⊂	12	8'-9
5b3	—	16	4'-5
3c	⊓	76	1'-11
3d	△	76	4'-11
3e	⊓	14	2'-1

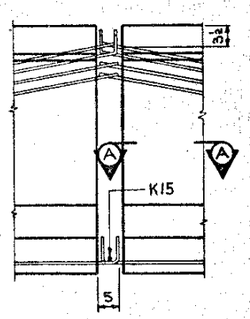


All dimensions are out to out. Radii to ℄ bar.

LIFTING LOOP DETAIL



Four bottom strands, all top straight strands and four top harped strands are to be cut with 1'-0 projections which are to be shop bent as shown and to clear those from the adjacent span. Remaining harped strands are to be cut with 0'-5 projection and bent to clear. The remaining strands shall be cut off reasonably flush with the concrete.



STRAND PROJECTION AT BEAM ENDS WHEN EMBEDDED IN CONCRETE FF DIAPHRAGMS

Note: Do not scale this drawing. Follow dimensions.

PRESTRESSED CONCRETE BEAM NOTES

Unless otherwise noted lengths of all beams shall be increased 0.0005L to compensate for creep shrinkage and elastic shortening.

Hold down points for deflected strands may be moved towards the ends of beams a distance of 0.025L maximum at the producer's option.

Tops of beams are to be struck off level and roughened.

All strands are to be 1/2" ø 270 kip grade.

Beams for continuous bridges shall be at least 28 days old before the slab is placed except as otherwise approved by the Engineer.

The portions of the prestress beams that are to be embedded in the diaphragms shall be roughened by sandblasting or other approved methods to provide suitable bond between the beam and the diaphragm in accordance with Article 2403.15 of the specifications.

All strands not extended beyond end of beam are to be cut off reasonably flush with the concrete.

MISSISSIPPI RIVER BRIDGE
CONCRETE BEAM SPANS
BEAM DETAILS
MUSCATINE COUNTY
IOWA STATE HIGHWAY COMMISSION

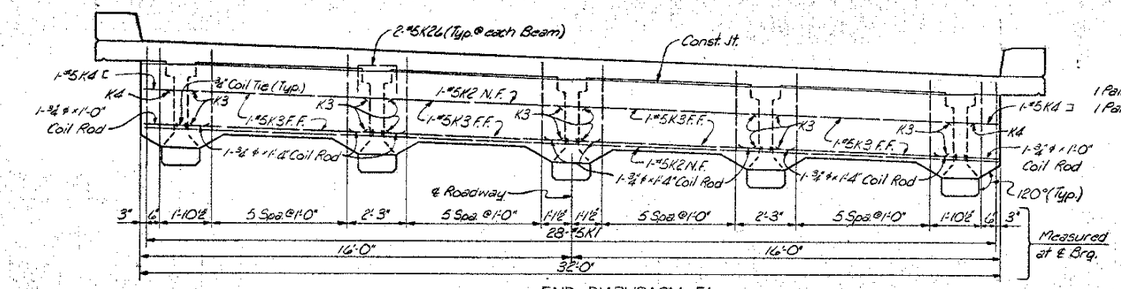
DESIGN NO. 170 FILE NO. 23800 DES. SH. NO. 9 OF 74

PROJECT UN-52-9(19)--41-70 PROJECT SH. NO. 71 OF 131

SVERDRUP & PARCEL AND ASSOCIATES, Inc.
CONSULTING ENGINEERS
ST. LOUIS, MISSOURI

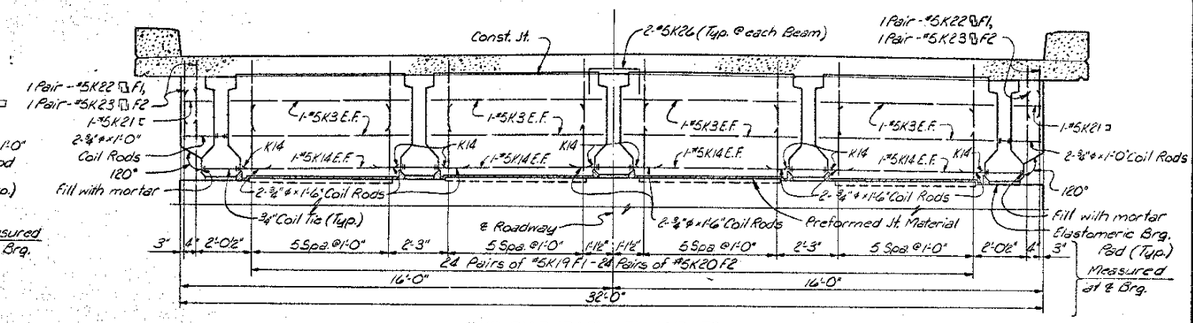
2000 Drawn By: D.J. Schrema, Mar. 1969
6-95119 Checked By: W.J. Gaddis, Mar. 1969

REPRODUCED IN PART FROM IOWA STANDARD SHEET



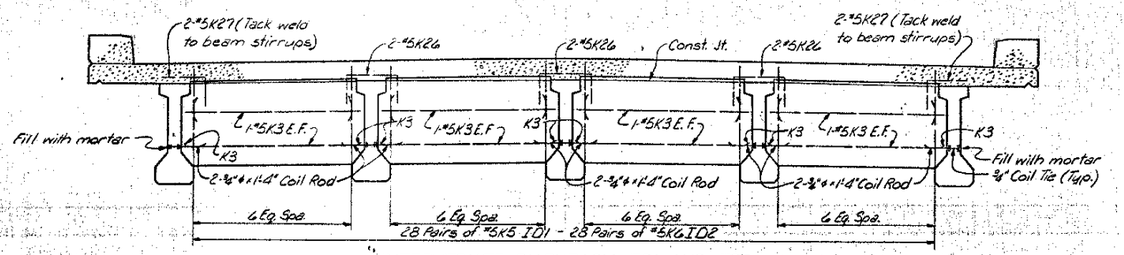
END DIAPHRAGM E1

Note: End Diaphragm at Abutment 1 shown, Abutment 2 is similar.



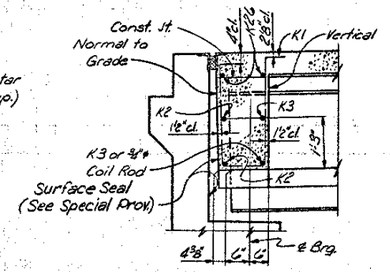
END DIAPHRAGM F1 AND F2

Note: End Diaphragm F2 shown, F1 same except as noted.

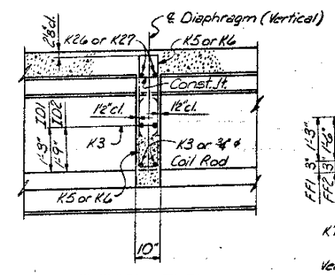


INTERMEDIATE DIAPHRAGM ID1 AND ID2

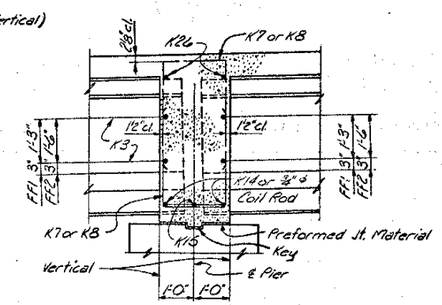
Note: Intermediate Diaphragm ID1 shown, ID2 same except as noted.



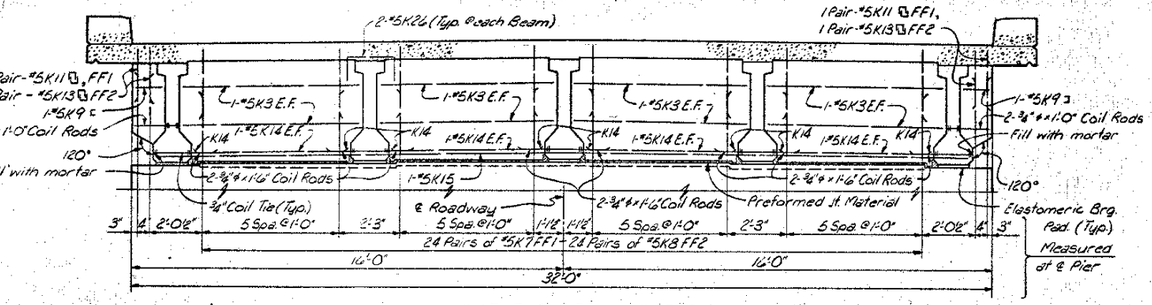
SECTION THRU END DIAPHRAGM E1



SECTION THRU INTERMEDIATE DIAPHRAGMS

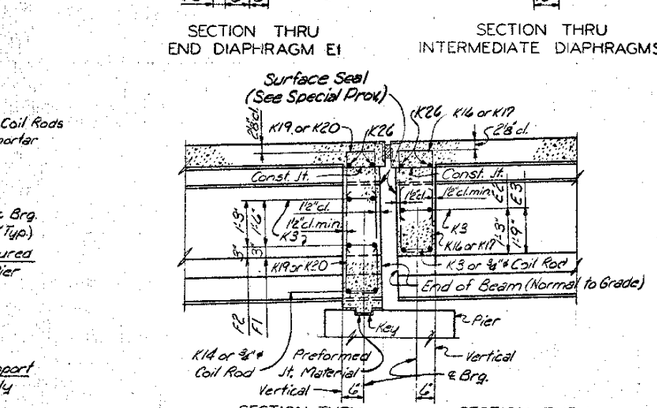


SECTION THRU FF DIAPHRAGMS



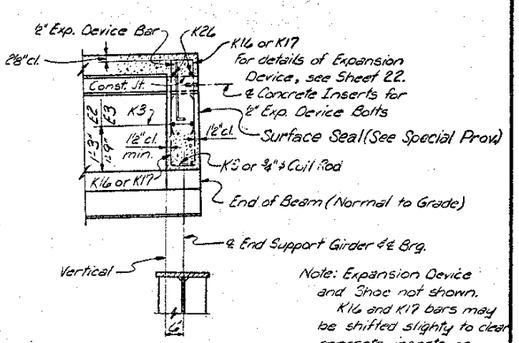
DIAPHRAGM FF1 AND FF2

Note: Diaphragm FF1 shown, FF2 same except as noted.



SECTION THRU END DIAPH. F1 AND F2

SECTION THRU END DIAPH. E2 AND E3 AT PIERS

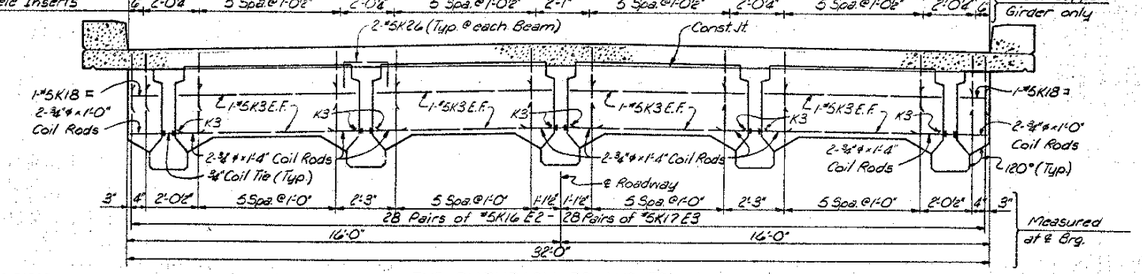


SECTION THRU END DIAPH. E2 AND E3 AT HINGE

Note: Expansion Device and Shoe not shown. K16 and K17 bars may be shifted slightly to clear concrete inserts or expansion device bars.

½" Exp. Device Bar	6" 2'-0"	3 Spa. @ 1'-9" 2'-0" 3 Spa. @ 1'-9" 2'-0" 3 Spa. @ 1'-9" 2'-0" 3 Spa. @ 1'-9" 2'-0" 6"
Concrete Inserts	6" 2'-0½"	5 Spa. @ 1'-0½" 2'-0½" 5 Spa. @ 1'-0½" 2'-1" 5 Spa. @ 1'-0½" 2'-0½" 5 Spa. @ 1'-0½" 2'-0½" 6"

At End Support Girder only



END DIAPHRAGM E2 AND E3

Note: End Diaphragm E2 shown, E3 same except as noted.

NOTES

N.F. indicates Near Face.
F.F. indicates Far Face.
E.F. indicates Each Face.
Bearing Pads not shown in sections.
Bridge Rail not shown in elevations.
For Key and Preformed Jt. Material details, see Sheet 11.

Note: Do not scale this drawing. Follow dimensions.

2.2.00	Drawn By: D.J. Schramp, Feb. 1969	
6-9-67	Checked By: W.J. Goodells, Mar. 1969	

SVERDRUP & PARCEL AND ASSOCIATES, Inc.
CONSULTING ENGINEERS
ST. LOUIS, MISSOURI

MISSISSIPPI RIVER BRIDGE

CONCRETE BEAM SPANS

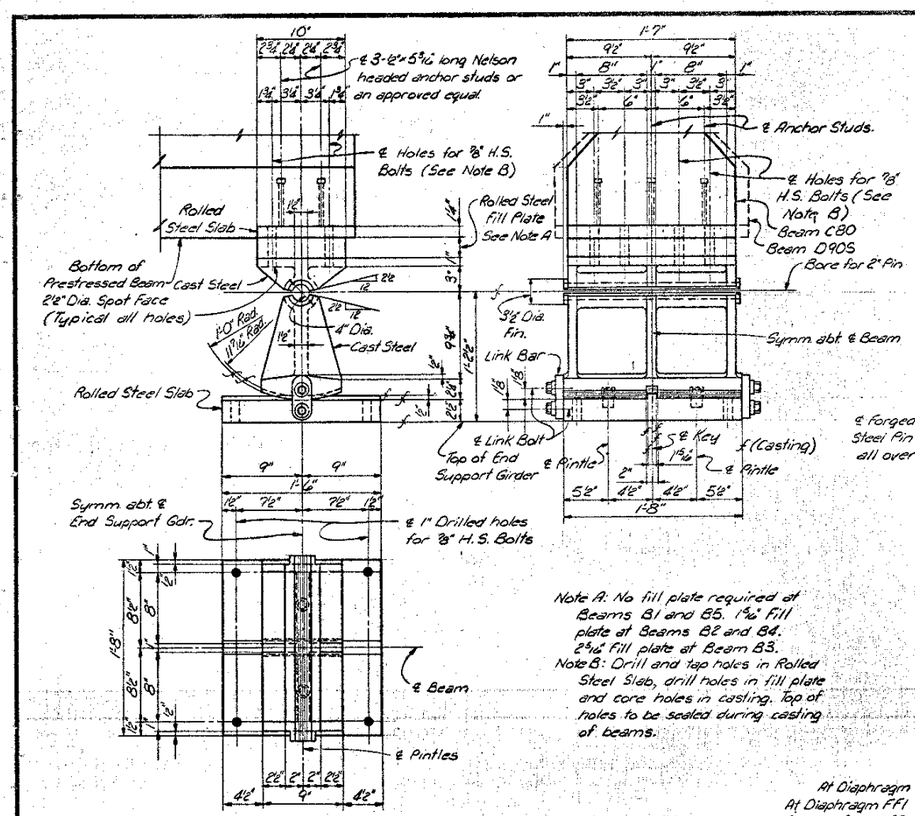
DIAPHRAGMS

MUSCATINE COUNTY

IOWA STATE HIGHWAY COMMISSION

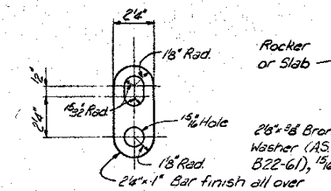
DESIGN NO. 170 FILE NO. 23800 DES. SH. NO. 10 OF 74

PROJECT UN-92-9(19)--41-70 PROJECT SH. NO. 72 OF 131

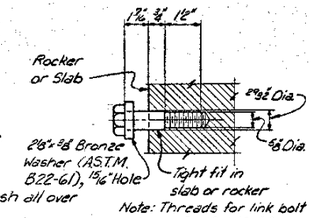


Note A: No fill plate required at Beams B1 and B5. 1⅝" Fill plate at Beams B2 and B4. 2⅝" Fill plate at Beam B3.
Note B: Drill and tap holes in Rolled Steel Slab, drill holes in fill plate and core holes in casting. Top of holes to be sealed during casting of beams.

EXPANSION SHOE FOR PRESTRESSED BEAMS AT HINGES NEAR PIERS 8 AND 13
(10 Required)

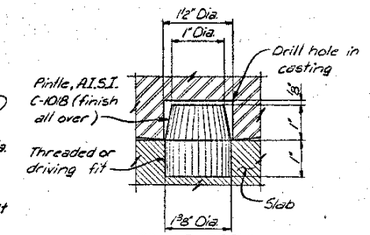


LINK BAR
(20 required)

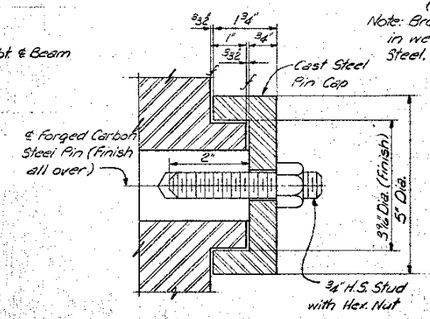


Note: Threads for link bolt to be ¾-10UNC-2A.

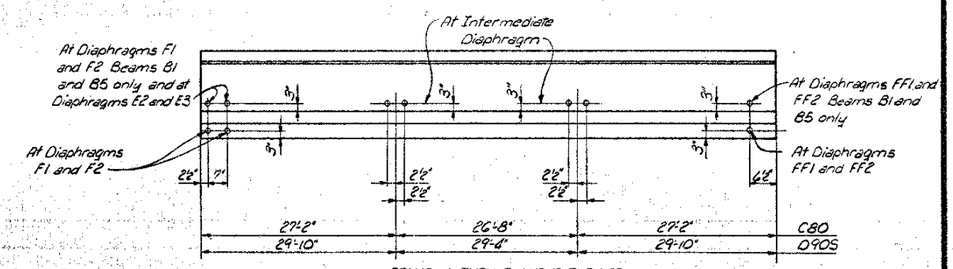
LINK BOLT
(40 required)
Note: Bronze washers are included in weight of Structural Carbon Steel.



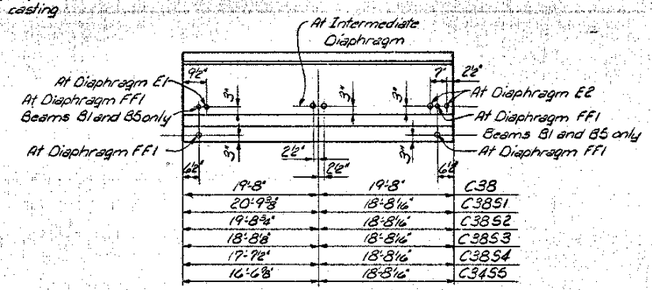
PINTLE DETAIL
(20 required)



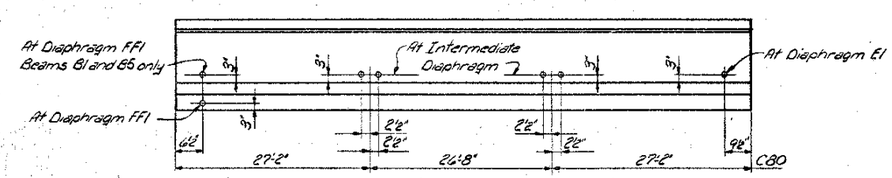
PIN CAP



SPANS 4 THRU 7 AND 13 THRU 23
LOCATION OF BEAM COIL TIES



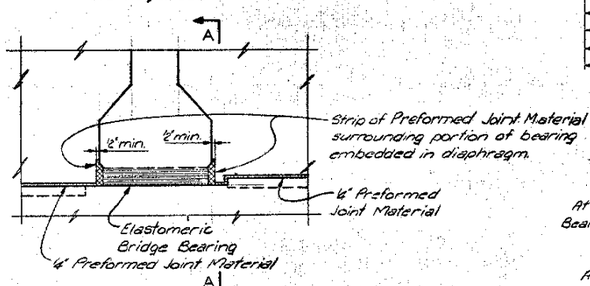
SPANS 1 AND 3
LOCATION OF BEAM COIL TIES



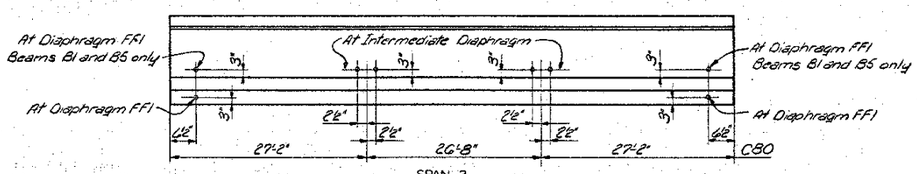
SPAN 24
LOCATION OF BEAM COIL TIES

TABLE OF ELASTOMERIC BRIDGE BEARINGS		
Location	No. Required	Size
Spans 1-3	30	18"×9"×2⅛"
Spans 4-7	35	20"×8"×3 3/32"
Spans 13-24	115	18"×10"×3⅛"

Note: Elastomeric Bridge Bearings shall be High Expansion Standard Elastomeric Bridge Bearings as manufactured by the Industrial Products Division of General Tire and Rubber Company, or an approved equal. See General Notes on Sheet 4.

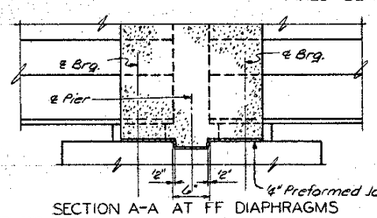


FIXED BEARING DETAIL

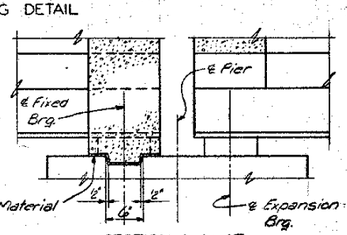


SPAN 2
LOCATION OF BEAM COIL TIES

Note: Bearing Pads shall be fixed in place prior to diaphragm placing to assure proper positioning.



SECTION A-A AT FF DIAPHRAGMS



SECTION A-A AT F AND E DIAPHRAGMS

NOTES

For Shoe Notes, see Sheet 15.
Payment for furnishing and placing preformed joint material and compressible material at Elastomeric Bridge Bearings shall be included in price bid for Concrete.
Payment for Elastomeric Bridge Bearings shall be included in price bid for Beams.
Payment for Expansion Shoes at Hinges shall be by price bid for Structural Steel except the portions embedded in the beam shall be included in the price bid for Beams.

Note: Do not scale this drawing. Follow dimensions.

ROCKER SETTING		
Hinge at	Pier 8	Pier 13
Temperature at time of setting (F)		
50°	0	0
90°	+1"	+1"
10°	-1"	-1"

MISSISSIPPI RIVER BRIDGE

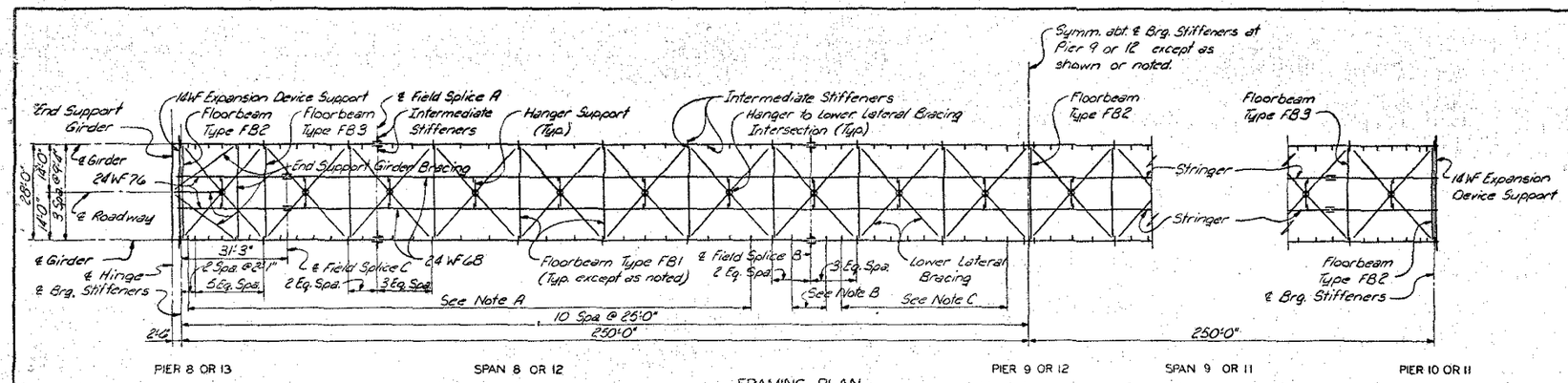
CONCRETE BEAM SPANS
BEARING DETAILS
MUSCATINE COUNTY
IOWA STATE HIGHWAY COMMISSION

SVERDRUP & PARCEL AND ASSOCIATES, Inc.
CONSULTING ENGINEERS
ST. LOUIS, MISSOURI

26.00 | Drawn By: D.J. Schrems, Mar. 1969 | Checked By: W.J. Goodrich, Mar. 1969

DESIGN NO. 170 FILE NO. 23800 DES. SH. NO. 11 OF 74

PROJECT UN-92-9(39)--41-70 PROJECT SH. NO. 73 OF 131



FRAMING PLAN

Note: Lateral Braces are ST 7WF21.8.
Intermediate Stiffeners are Pl. 8"×½" except at field splices, use 2 Ls 7×4×7/16.

Note A: Weld intermediate stiffener pls. to top flange only between floorbeams.
Note B: Weld intermediate stiffener pls. to top and bottom flange.
Note C: Weld intermediate stiffener pls. to bottom flange only between floorbeams.

GIRDER STRUCTURAL STEEL NOTES

Longitudinal dimensions are measured along top of girder web except as noted.

Girders are to be cambered for full dead load excluding future wearing surface.

Bearing stiffeners and intermediate stiffeners are normal to grade.

Intermediate stiffeners shall be continuous between flanges and are to be equally spaced between floorbeams unless otherwise noted. Intermediate stiffeners may be shifted slightly to clear shop splices.

Longitudinal stiffeners are on the exterior face of girders and are discontinuous at bearing stiffeners, intermediate stiffeners and field splices as shown.

All field connections to be made with ⅞" high strength bolts unless otherwise noted.

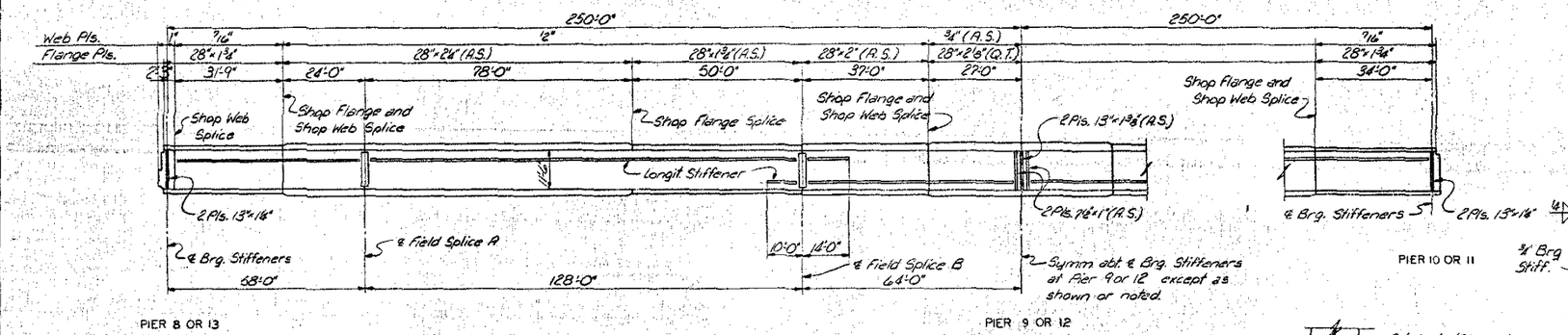
For details of girder shoes, see Sheet 15. For details of beam shoes at end support girder, see Sheet 11.

For details of roadway expansion devices, see Sheet 22 & 23.

Shop coat of paint is to be omitted on the top flange and other steel surfaces in contact with concrete.

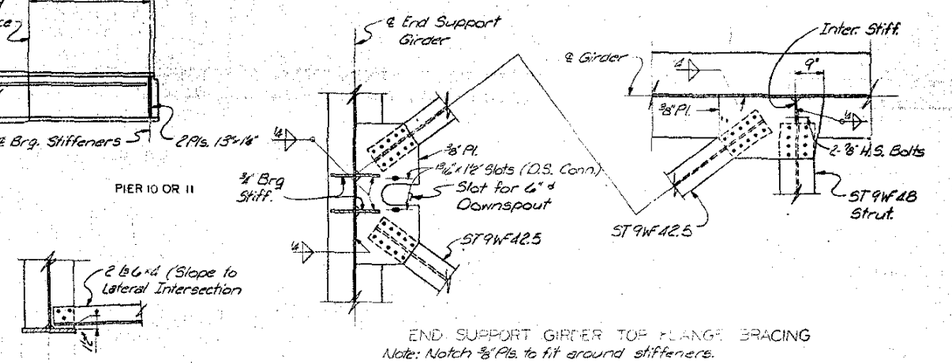
Bottom flanges are to be perpendicular to webs at reaction points.

Where tight fit is shown on the plans see "Web Stiffeners", Section 2408.17(B) of the Specifications.



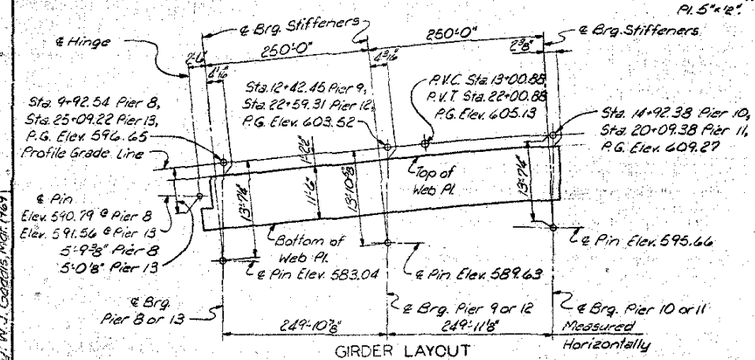
GIRDER ELEVATION

Note: Field Splice flange plates and intermediate stiffeners not shown.
Longitudinal stiffener is Pl. 6"×⅜" where web is ¾" (A.S.), elsewhere longitudinal stiffener is Pl. 5"×½".

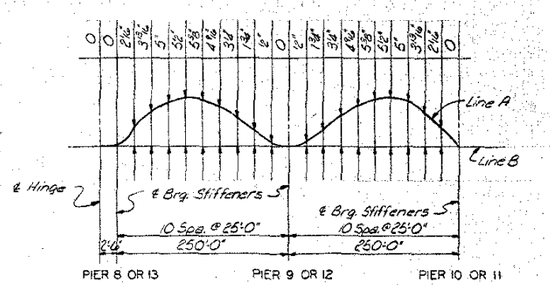


END SUPPORT GIRDER TOP FLANGE BRACING

Note: Notch ⅜" Pls. to fit around stiffeners.

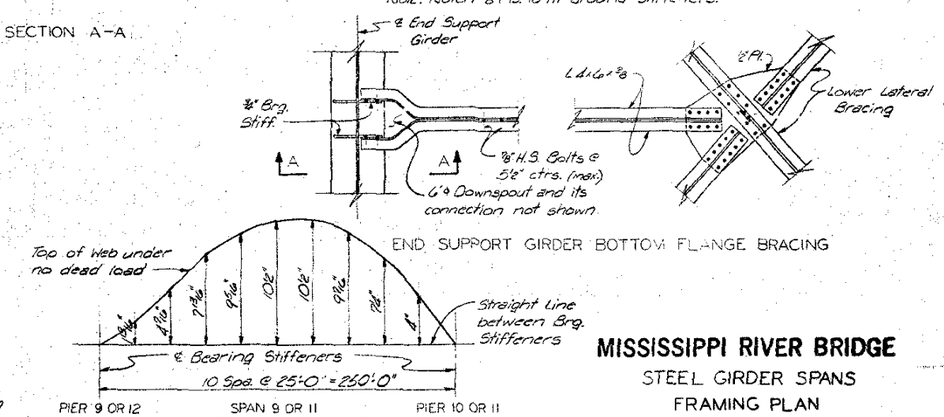


GIRDER LAYOUT



DEAD LOAD DEFLECTION DIAGRAM

Note: Line A indicates top of web plate before dead load deflection occurs.
Line B indicates top of web plate after calculated deflection has occurred under full dead load.
The dead load deflection due to weight of steel only equals about 30% of the above ordinates.



END SUPPORT GIRDER BOTTOM FLANGE BRACING

GIRDER CAMBER DIAGRAM

Note: Camber diagram for Spans 8 or 12 same as Dead Load Deflection Diagram.

MISSISSIPPI RIVER BRIDGE

STEEL GIRDER SPANS

FRAMING PLAN

MUSCATINE COUNTY

IOWA STATE HIGHWAY COMMISSION

DESIGN NO. 170 FILE NO. 23800 DES. SH. NO. 12 OF 74

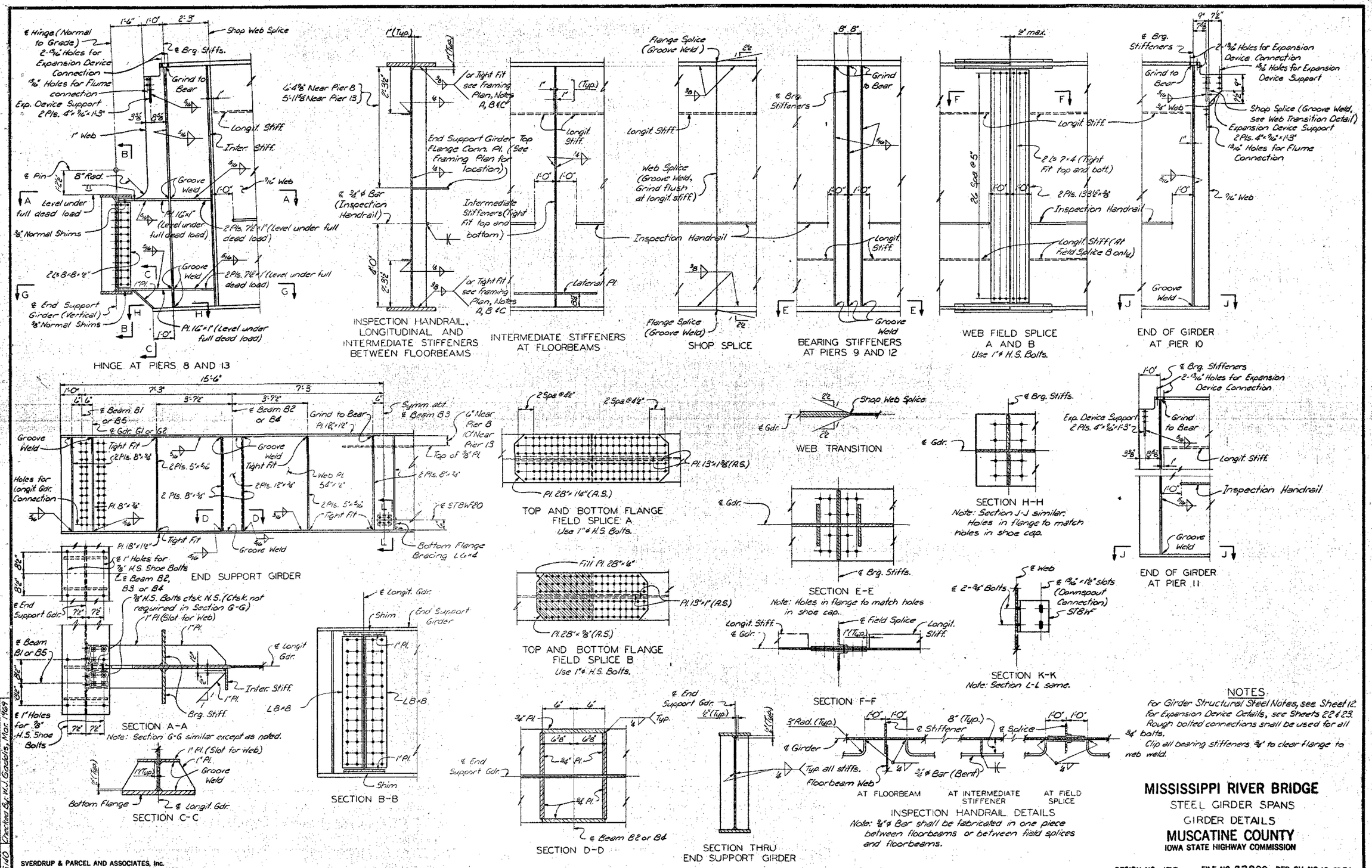
PROJECT UN-92-9(19)--41-70 PROJECT SH. NO. 74 OF 131

Drawn By: O.J. Schreno, Mar. 1969
Checked By: W.J. Gaddis, Mar. 1969

SVERDRUP & PARCEL AND ASSOCIATES, Inc.
CONSULTING ENGINEERS
ST. LOUIS, MISSOURI

Note: Do not scale this drawing. Follow dimensions.

2600
69S135



NOTES

For Girder Structural Steel Notes, see Sheet 12.
For Expansion Device Details, see Sheets 22 & 23.
Rough bolted connections shall be used for all 3/4" bolts.
Clip all bearing stiffeners 3/8" to clear flange to web weld.

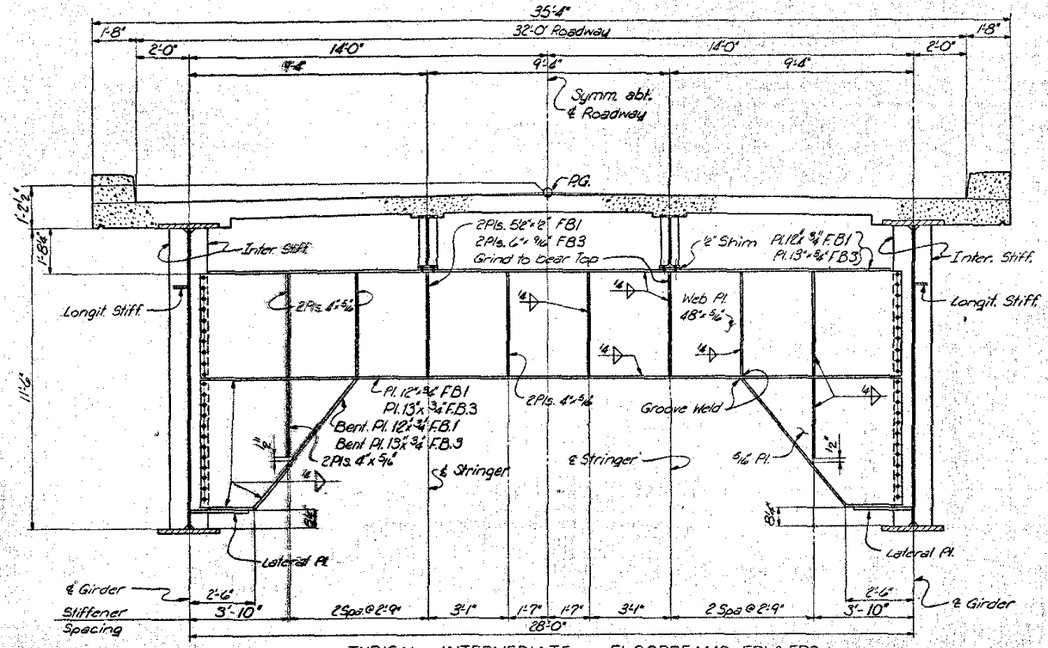
MISSISSIPPI RIVER BRIDGE
STEEL GIRDER SPANS
GIRDER DETAILS
MUSCATINE COUNTY
IOWA STATE HIGHWAY COMMISSION

SVERDRUP & PARCEL AND ASSOCIATES, Inc.
CONSULTING ENGINEERS
ST. LOUIS, MISSOURI

Drawn By: D.L. Schroeing, Mar. 1969
Checked By: W.J. Gadella, Mar. 1969

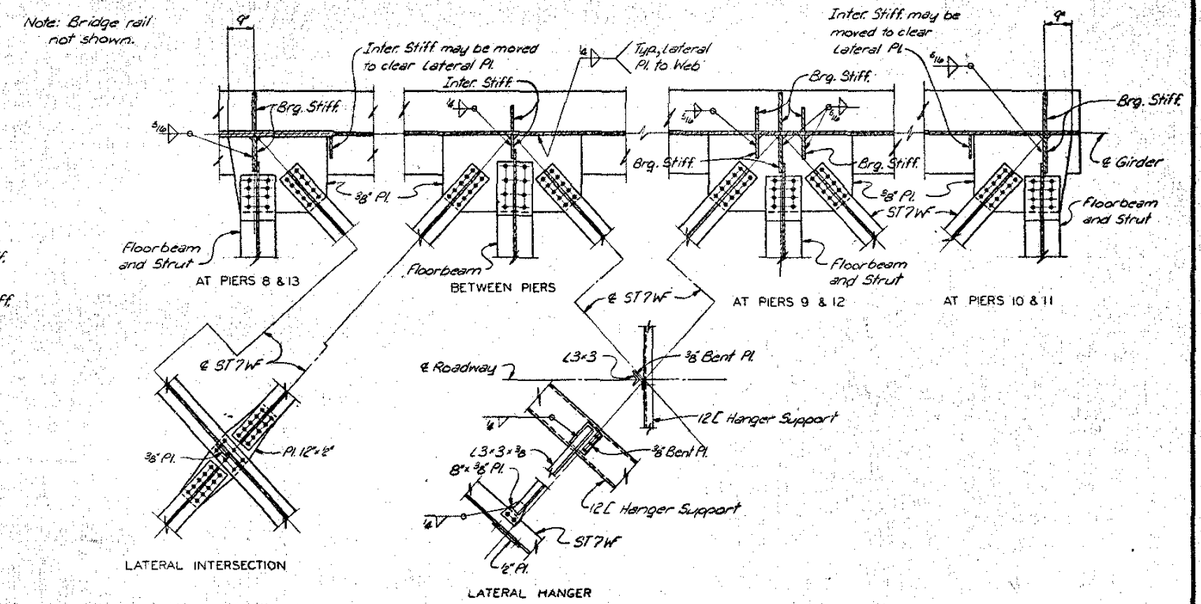
DESIGN NO. 170 FILE NO. 23800 DES. SH. NO. 13 OF 74

PROJECT UN-92-9(19)--41-70 PROJECT SH. NO. 75 OF 131



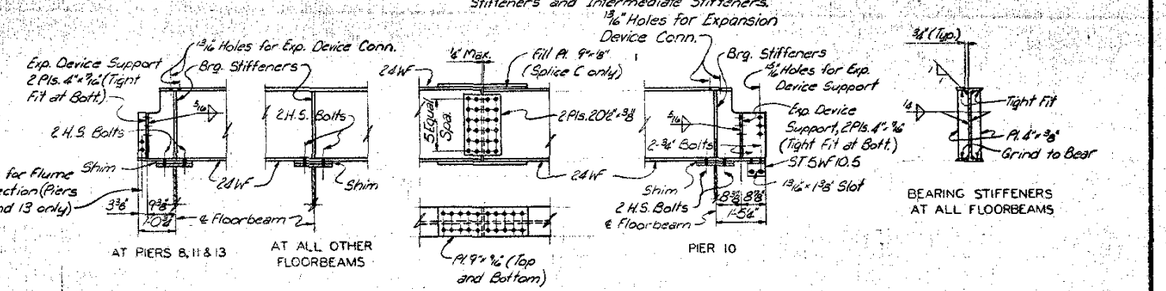
TYPICAL INTERMEDIATE FLOORBEAMS FB1 & FB3

Note: All floorbeam stiffeners are tight fit, except as shown. Clip all stiffeners 3/8" to clear flange to web weld.



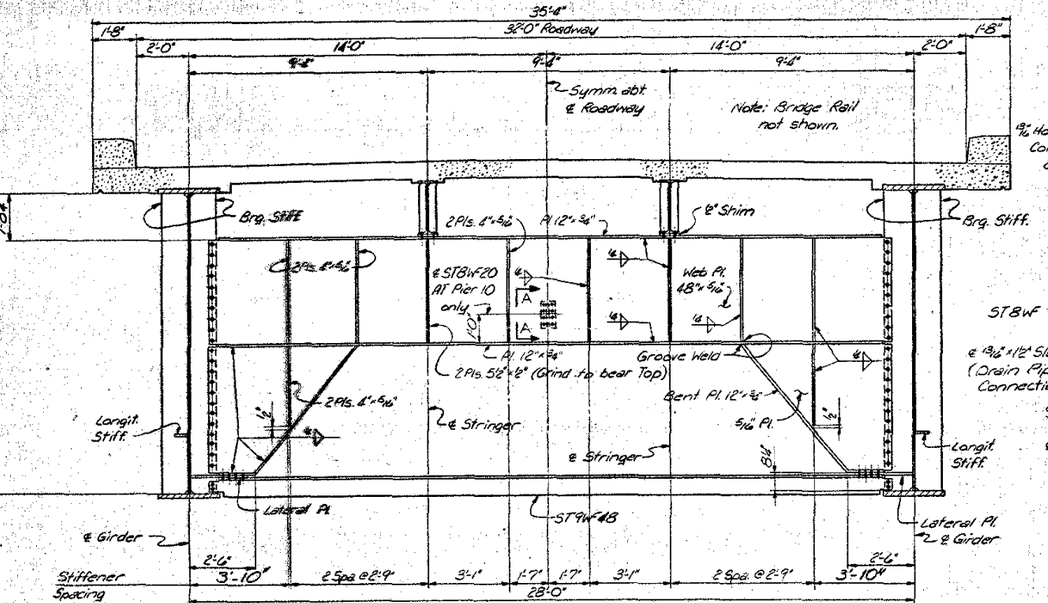
LATERAL BRACING

Note: Lateral plates may be groove welded to web and stiffeners where accessible from one side only.
Lateral plates shall be notched to fit around Bearing Stiffeners and Intermediate Stiffeners.



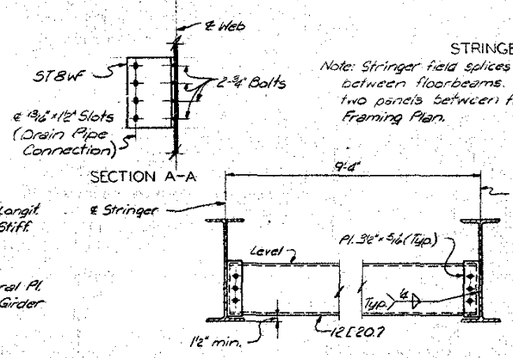
STRINGER DETAILS

Note: Stringer field splices shall be located near the 1/4 point between floorbeams. Stringers shall be a minimum of two panels between field splices except as shown in Framing Plan.



FLOORBEAM FB2

Note: All floorbeam stiffeners are tight fit, except as shown. Clip all stiffeners 3/8" to clear flange to web weld.



Note: Lateral hanger not shown.

NOTES

For Girder Structural Steel Notes, see Sheet 12.
For Expansion Device Details, see Sheets 22 and 23.
Rough bolted connections shall be used for all 3/8" bolts.

2600	Drawn By: D.J. Strong, Mar. 1969
6/5/69	Checked By: W.J. Saddler, Mar. 1969

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CONSULTING ENGINEERS
ST. LOUIS, MISSOURI

Note: Do not scale this drawing. Follow dimensions

MISSISSIPPI RIVER BRIDGE

STEEL GIRDER SPANS

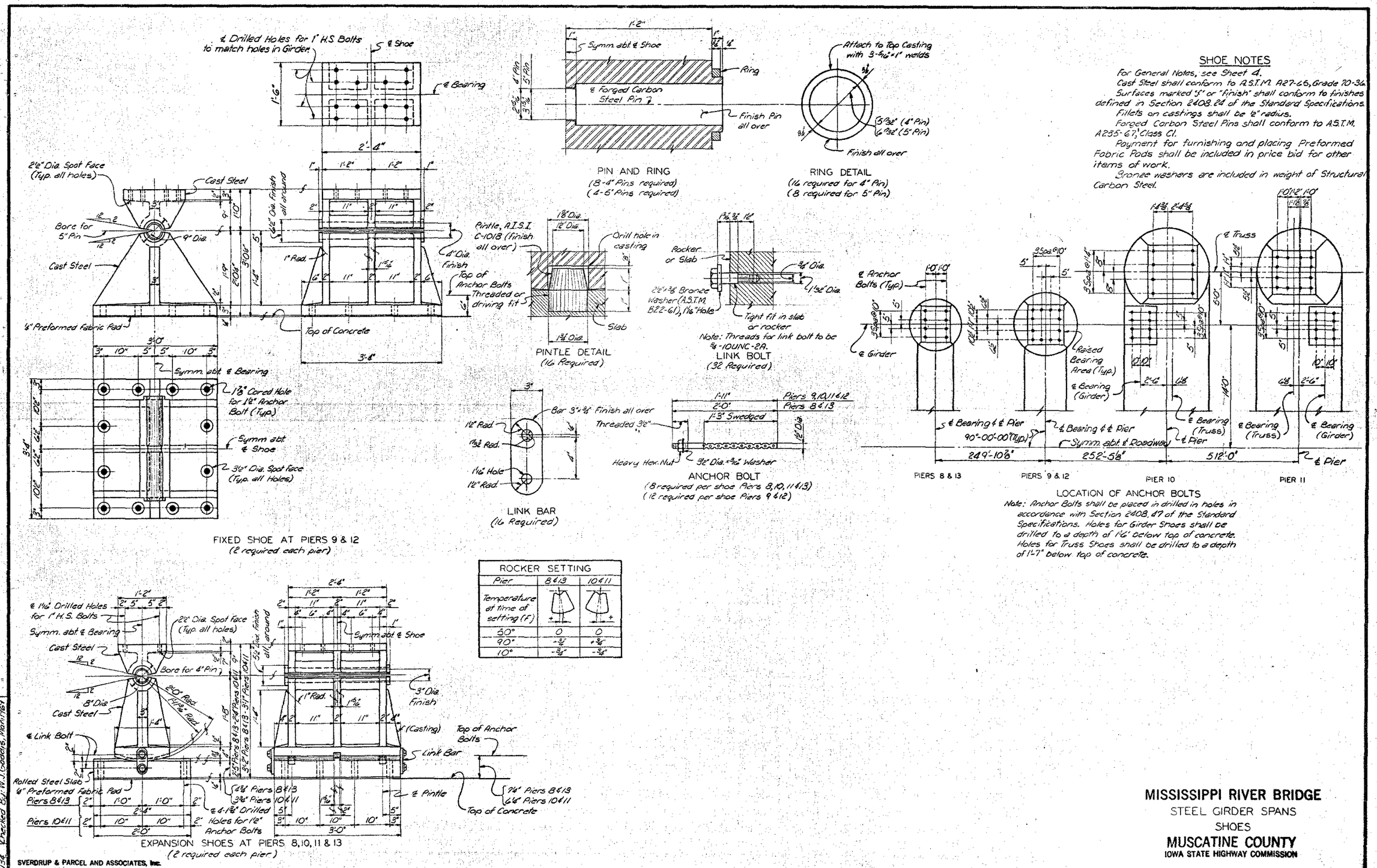
FLOOR SYSTEM AND LATERAL BRACING

MUSCATINE COUNTY

IOWA STATE HIGHWAY COMMISSION

DESIGN NO. 170 FILE NO. 23800 DES. SH. NO. 14 OF 74

PROJECT UN-92-9(191)--41-70 PROJECT SH. NO. 16 OF 131



SHOE NOTES

For General Notes, see Sheet 4.

Cast Steel shall conform to A.S.T.M. A27-65, Grade 70-36.

Surfaces marked "S" or "finish" shall conform to finishes defined in Section 2408.24 of the Standard Specifications.

Fillets on castings shall be ½" radius.

Forged Carbon Steel Pins shall conform to A.S.T.M. A235-67, Class C1.

Payment for furnishing and placing Preformed Fabric Pads shall be included in price bid for other items of work.

Bronze washers are included in weight of Structural Carbon Steel.

ROCKER SETTING		
Pier	8 & 13	10 & 11
Temperature at time of setting (F)	+	+
50°	0	0
90°	-¾"	+¾"
10°	-¾"	-¾"

Note: Do not scale this drawing. Follow dimensions.

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CONSULTING ENGINEERS
ST. LOUIS, MISSOURI

2600 | Drawn By: C.J. Schramm, Mar. 1969
6-25-68 | Checked By: W.J. Goddis, Mar. 1969

MISSISSIPPI RIVER BRIDGE
STEEL GIRDER SPANS
SHOES
MUSCATINE COUNTY
IOWA STATE HIGHWAY COMMISSION

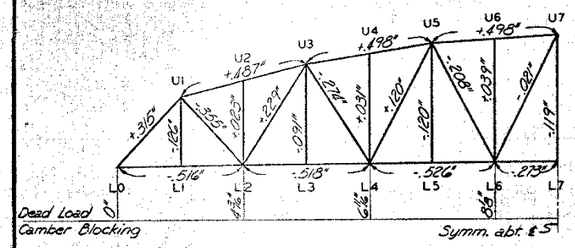
DESIGN NO. 170 FILE NO. 23800 DES. SH. NO. 15 OF 74

PROJECT UN-92-9(19)--41-70 PROJECT SH. NO. 77 OF 131

TABLE OF TRUSS MEMBERS AND STRESSES

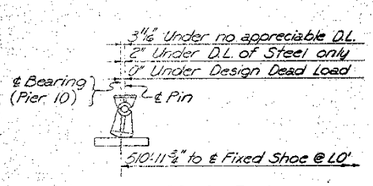
Member	Dead Load DL	Live Load LL	Impact I	75% Wind on Structure W	30% W + WLL	Design Stresses Group I	Group II	Group III	Area Furnished (Sq. In.) Eff. Gr.	Net	ℓ/r	Material Type	Make-up
L0-L2	990T	188T	19T	346C	146C	1197T	1336T	1342T	52.50	45.75		A.S.	2 Pls. 28"x3/4", 2 Cov. Pls. 22"x7/16"
L2-L4	1715T	327T	33T	639C	269C	2075T	2354T	2344T	94.50	81.00		A.S.	2 Pls. 28"x1 5/16", 2 Cov. Pls. 22"x7/16"
L4-L6	1980T	373T	37T	808C	339C	2390T	2788T	2729T	108.50	92.75		A.S.	2 Pls. 28"x1 3/8", 2 Cov. Pls. 22"x7/16"
L6-L7	2057T	386T	39T	847C	355C	2482T	2904T	2837T	108.50	92.75		A.S.	2 Pls. 28"x1 3/8", 2 Cov. Pls. 22"x7/16"
U1-U3	1525C	290C	29C	47C	2C	1844C	1572C	1846C	95.38	——	45	A.S.	2 Pls. 28"x1 1/4", 2 Cov. Pls. 22"x7/16"
*U3-U5	1930C	364C	36C	117C	20C	2330C	2047C	2350C	114.38	——	46	A.S.	2 Pls. 28"x1 3/8", 2 Cov. Pls. 22"x7/16"
U5-U7	2070C	389C	39C	145C	27C	2498C	2213C	2525C	121.38	——	46	A.S.	2 Pls. 28"x1 3/8", 2 Cov. Pls. 22"x7/16"
L0-U1**	1470C	278C	28C	139C	53C	1776C	1609C	1829C	100.38	——	66	A.S.	2 Pls. 28"x1 3/8", 2 Cov. Pls. 22"x7/16"
U1-L2	730T	151T	15T	——	——	896T	——	——	10.50	34.88	—	A.S.	2 Pls. 24"x3/8", 2 Cov. Pls. 22"x7/16"
L2-U3	435C	112C	11C	——	——	558C	——	——	48.00	——	97		2 Pls. 24"x3/8", 2 Cov. Pls. 22"x1/2"
U3-L4	370T	100T	10T	——	——	480T	——	——	29.19	24.69	—		2 Pls. 20"x1/2", 2 Cov. Pls. 22 1/2"x3/8"
L4-U5	150C	79C	8C	——	——	237C	——	——	34.25	——	112		2 Pls. 22"x1/2", 2 Cov. Pls. 22 1/2"x1/2"
U5-L6	185T	85T	9T	——	——	279T	——	——	24.19	20.81	—		2 Pls. 20"x3/8", 2 Cov. Pls. 22 1/2"x3/8"
L6-U7	25T	72T	7T	——	——	104T	——	——	34.25	28.63	117		2 Pls. 22"x1/2", 2 Cov. Pls. 22 1/2"x1/2"
	*21T	66C	7C	——	——	52C	——	——					
U1-L1	133T	76T	23T	——	——	232T	——	——	18.85	16.88	—		2 Pls. 12"x7/16", 1 Web Pl. 22 1/2"x3/8"
U3-L3	109T	76T	23T	——	——	208T	——	——	19.69	17.72	—		2 Pls. 12"x7/16", 2 Cov. Pls. 22 1/2"x3/8"
*U5-L5	121T	76T	23T	——	——	220T	——	——	19.69	17.72	—		2 Pls. 12"x7/16", 2 Cov. Pls. 22 1/2"x3/8"
U7-L7	114T	76T	23T	——	——	213T	——	——	19.69	17.72	—		2 Pls. 12"x7/16", 2 Cov. Pls. 22 1/2"x3/8"
U2-L2	26C	——	——	——	——	26C	——	——	18.19	——	118		2 Pls. 12"x3/8", 2 Cov. Pls. 22 1/2"x3/8"
U4-L4	30C	——	——	——	——	30C	——	——	20.44	——	126		2 Pls. 15"x3/8", 2 Cov. Pls. 22 1/2"x3/8"
U6-L6	33C	——	——	——	——	33C	——	——	20.44	——	141		2 Pls. 15"x3/8", 2 Cov. Pls. 22 1/2"x3/8"
R L0	1150	220	22	±104	±40	1392	1254	1432					

C = Compression, T = Tension, WLL = Wind on Live Load.
* indicates 85% DL considered effective for reversal.
** indicates member designed for axial load plus bending.
Allowable stresses for combinations of loading:
Group I = DL + LL + I @ 100% normal unit stress.
Group II = DL + W @ 125% normal unit stress.
Group III = DL + LL + I + 30% W + WLL @ 125% normal unit stress.
All stresses and reactions are given in kips.
Impact loadings are 10% of LL except for hangers which are 30%.



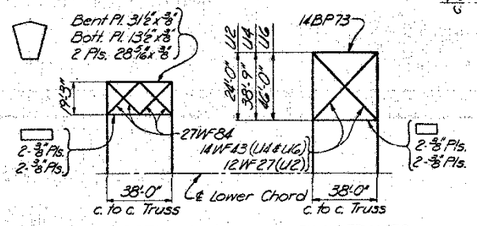
DEAD LOAD CAMBER DIAGRAM

Note: Corrections indicated are to be applied to the length of members. (+) indicates lengthening, (-) indicates shortening.
The blocking dimensions given are the position of lower chord joints above the geometric shape to provide for design dead load deflection.

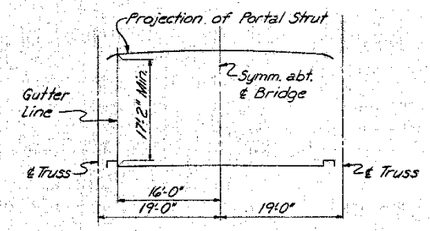


SHOE SETTING AT L0

Note: Dimensions shown are measured at 50°F, see rocker temperature correction setting.



PORTAL L0-U1 SWAY FRAMES

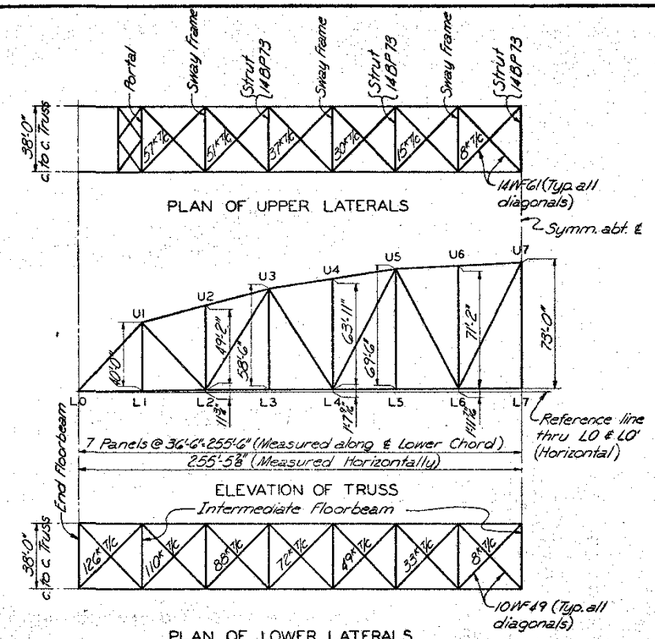


OVERHEAD CLEARANCE DIAGRAM

Note: Overhead clearance at sway frames is greater.

ROCKER TEMPERATURE CORRECTION SETTING	
Temp. at time of setting (F)	℄ Pin — ℄ Brg.
50°	0 *
90°	+1 3/8" *
10°	-1 3/8" *

* Under Design Dead Load.



Note: The geometric shape of the truss shall be determined from the dimensions given above. The angular relationship between members for fabrication shall be in accordance with this shape. All truss verticals and floorbeams are to be normal to grade. Lower chord offsets are measured normal to reference line thru L0 and L0'. Lengths of members are to be adjusted for camber as given in the camber diagram. All chords shall be fabricated straight between splices.

TRUSS NOTES

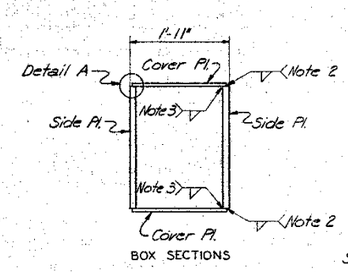
CONNECTORS: All bolts in truss gussets plates shall be 1" high strength bolts, all other bolts shall be 7/8" high strength bolts except as otherwise shown on the drawings. Where inside splice plates at truss joints extend beyond the gusset plates, they shall be connected with 1" high strength bolts. Shop and field connectors may be interchanged.

NET SECTION: In truss tension members ③ indicates the number of holes out to maintain net section. Where "M.N.S." is noted, sufficient pitch shall be provided to maintain net section in a staggered chain of holes on the face indicated.

PERFORATED PLATES: All truss members shall have 10"x20" perforations in both cover plates, except the upper chord and L0-U1 shall have 10"x20" perforations in the bottom cover plates only. In members having both cover plates perforated, the perforations shall be opposite each other. All perforations shall be spaced approximately 4'-0" on center.

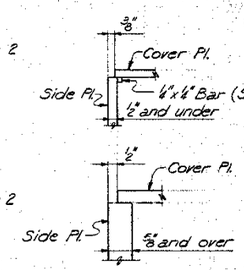
CAMBER: Trusses shall be cambered for the design dead load, including future wearing surface. Floorbeams are not to be cambered.

DRAIN HOLES: Provide 1" drain holes at about 4'-0" centers in H section upper chord struts.

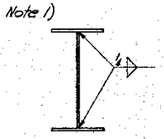


BOX SECTIONS

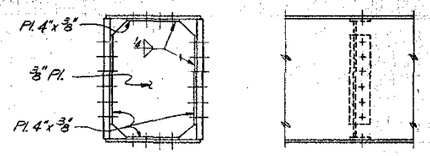
See Sheet 18 for welding of portal strut @ U1



DETAIL A



MEMBER U1-L1



INTERMEDIATE DIAPHRAGM

Note: Provide intermediate diaphragms between panel points for all box section truss members at a maximum spacing of 15'-0". Maintain Net Section for all tension members.

WELDING DETAILS

TABLE OF MINIMUM FILLET WELD SIZE	
Material thickness of thicker part joined	Minimum size of fillet weld
to 3/4" incl.	1/4"
over 3/4" to 1 1/2"	5/16"
over 1 1/2"	3/8"

Note 1: The 1/4"x1/4" bar is required as a backup bar for welding. The bar is to be continuous and may be tack welded to either the side plate or cover plate. The backup bars shall be omitted for the length of inside fillet welds called for in Note 3.
Note 2: Use Table of Minimum Fillet Weld Size.
Note 3: The inside fillet weld shall be the same size as the outside weld called for in Note 2 and shall extend from the end of the member to 1'-0" beyond the edge of the gusset plate on chord members at joint L0, and all verticals and diagonals.

Note: Do not scale this drawing. Follow dimensions.

SVERDRUP & PARCEL AND ASSOCIATES, Inc.
CONSULTING ENGINEERS
ST. LOUIS, MISSOURI

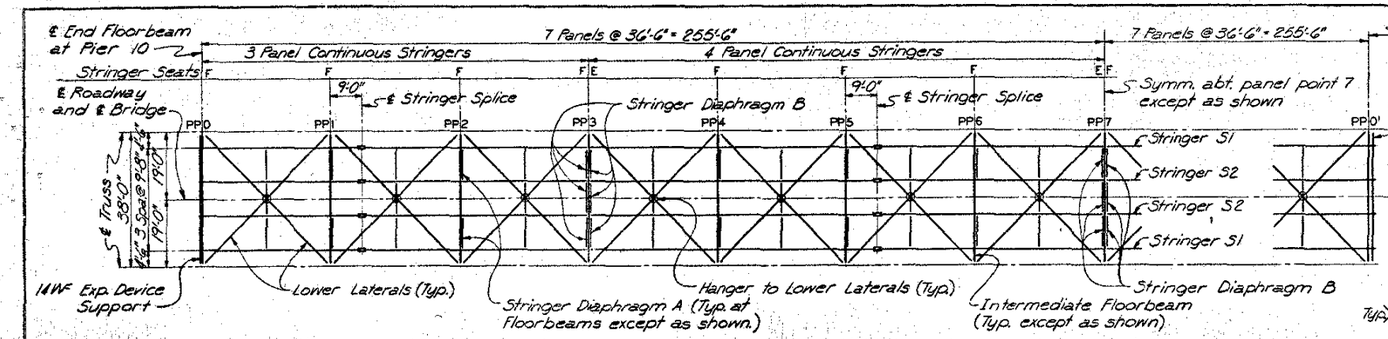
Drawn by: P.W. Clark, March 1969
Checked by: M.C. Zuroski, May 1969

MISSISSIPPI RIVER BRIDGE

TRUSS SPAN
STRESS SHEET
MUSCATINE COUNTY
IOWA STATE HIGHWAY COMMISSION

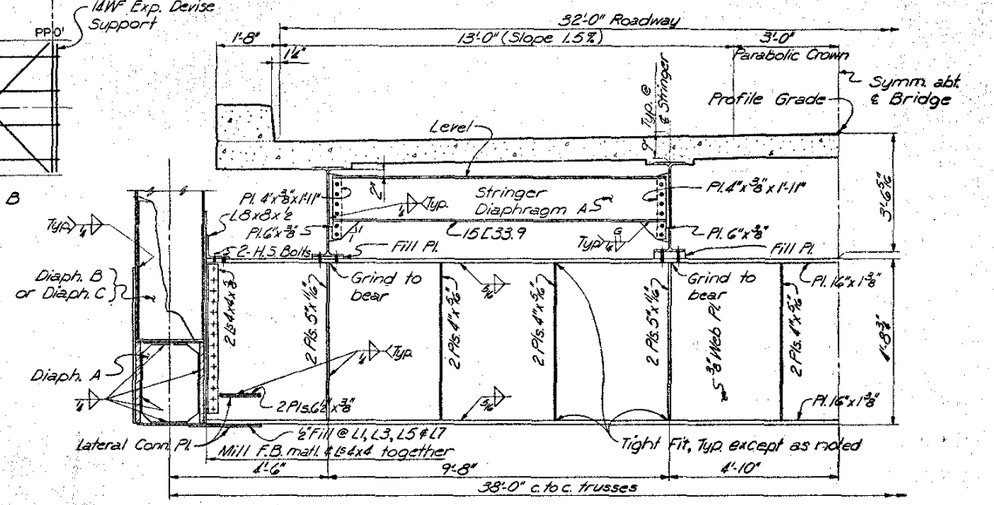
DESIGN NO. 170 FILE NO. 23800 DES. SH. NO. 16 OF 74

PROJECT UN-92-9(19)--41-70 PROJECT SH. NO. 78 OF 181



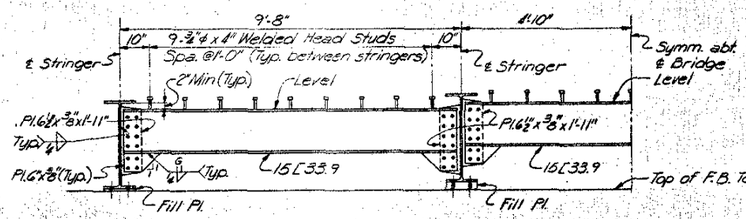
FLOOR FRAMING PLAN

All stringers are 30WF108.
Longitudinal dimensions are measured along ℄ Lower Chord.



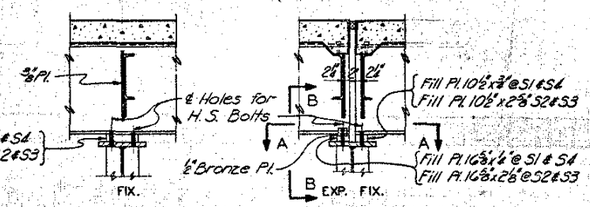
HALF CROSS SECTION AT INTERMEDIATE FLOORBEAM

Note: Dimension from Profile Grade to top of floorbeam at ℄ Bridge includes 3/16" dead load deflection of floorbeam.



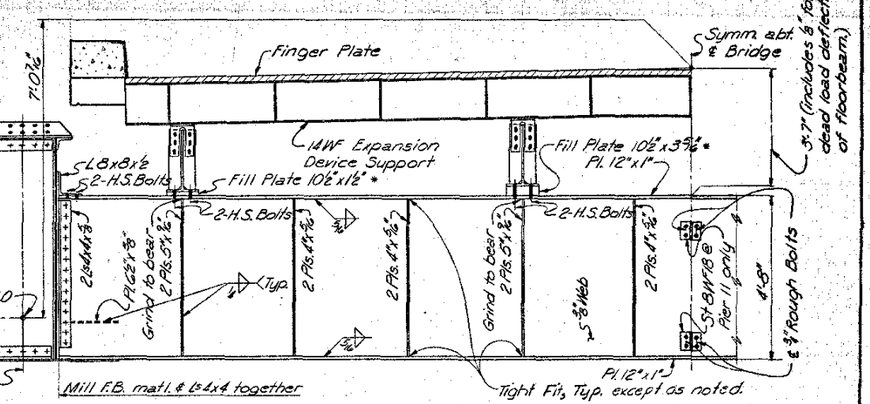
STRINGER DIAPHRAGM B

Note: Detail shown at Intermediate Floorbeam with fixed stringer seats. For details of expansion seats see Sections A-A and B-B.



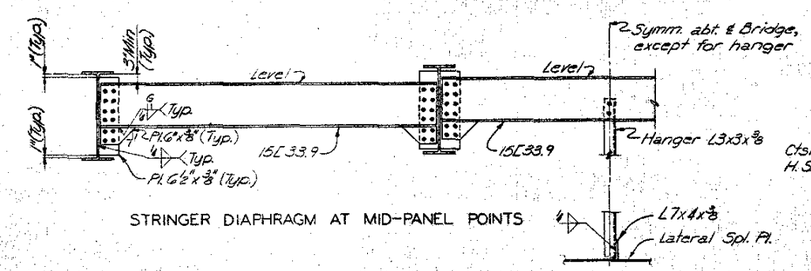
STRINGER SEATS AT INTERMEDIATE FLOORBEAMS

Note: Fill Plate thicknesses include 1/16" dead load deflection of floorbeam at S1 and 3/16" dead load deflection at S2.

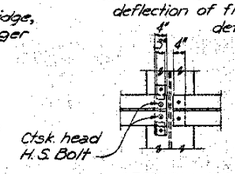


HALF CROSS SECTION AT END FLOORBEAM

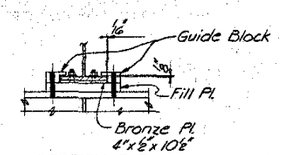
* Dimension includes 1/16" dead load deflection of floorbeam at S1 and 1/8" dead load deflection at S2.



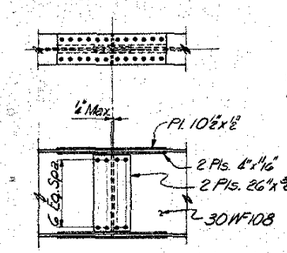
STRINGER DIAPHRAGM AT MID-PANEL POINTS



SECTION A-A

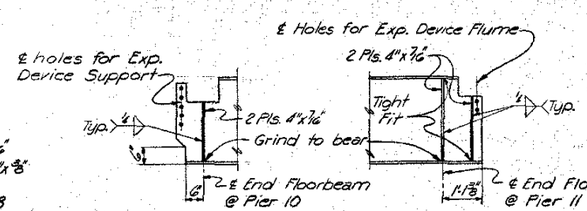


SECTION B-B



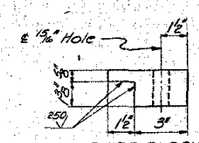
STRINGER SPLICE

Note: Top and bottom flange splices are the same.



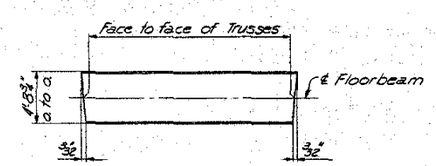
END OF STRINGER DETAILS

Note: See Sheets 22 and 23 for Expansion Device Details.



GUIDE BLOCK

(24 Required)



INTERMEDIATE FLOORBEAM BEVEL DIAGRAM

Bevel ends of all intermediate floorbeams as shown so the trusses will be vertical after calculated floorbeam dead load deflection (excluding future wearing surface) has occurred.

NOTES

All bolted connections shown shall be made with 7/8" High Strength Bolts, except as shown at end floorbeam.

Where tight fit is shown on the plans see "Web Stiffeners", Section 2408.17(B) of the Specifications.

MISSISSIPPI RIVER BRIDGE

TRUSS SPAN

FLOOR SYSTEM

MUSCATINE COUNTY

IOWA STATE HIGHWAY COMMISSION

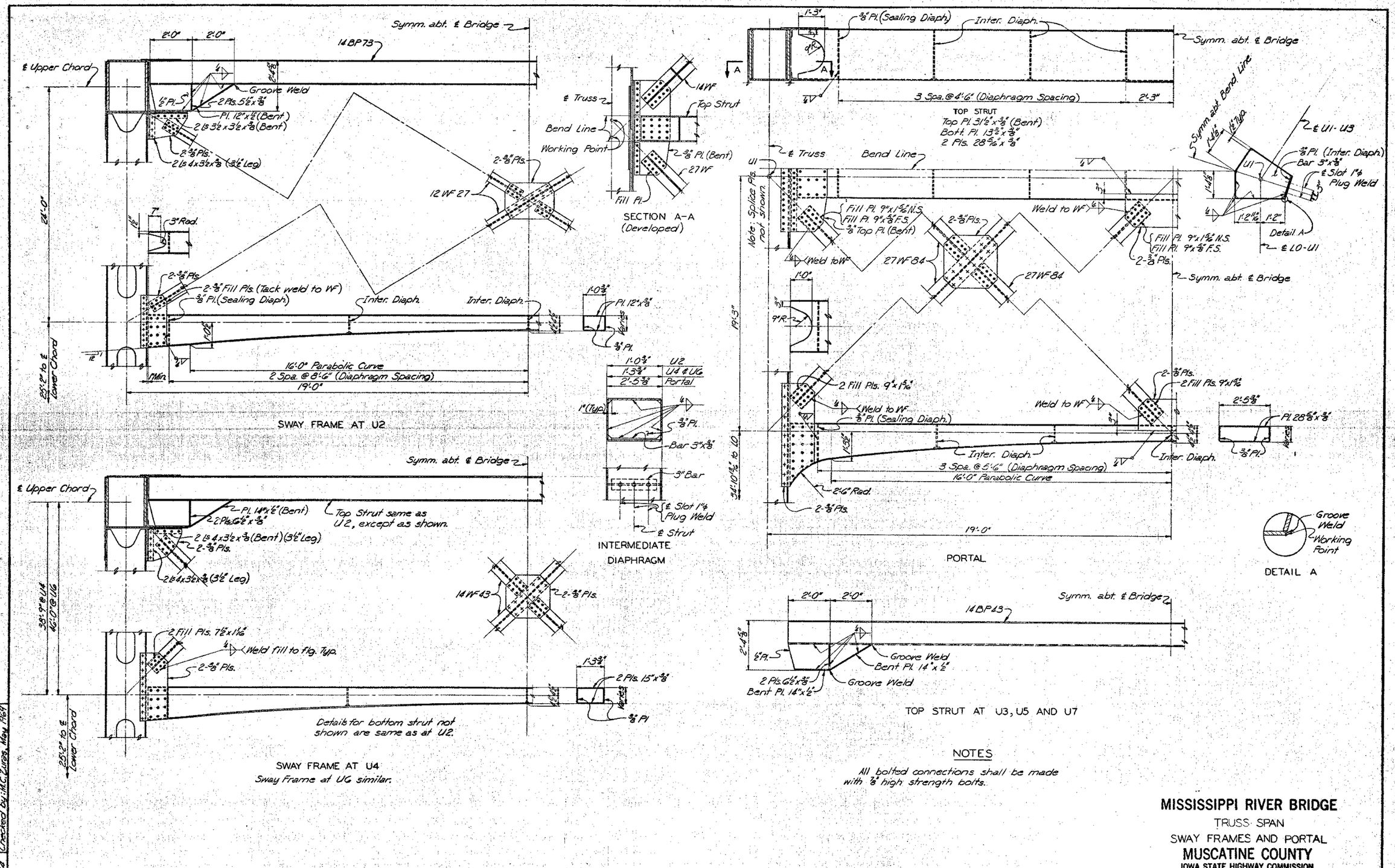
2600	Drawn by: P.W. Clark	Feb. 1969
695 Td	Checked by: M.C. Zuross	Nov. 1969

SVERDRUP & PARCEL AND ASSOCIATES, Inc.
CONSULTING ENGINEERS
ST. LOUIS, MISSOURI

Note: Do not scale this drawing. Follow dimensions.

DESIGN NO. 170 FILE NO. 23800 DES. SH. NO. 17 OF 74

PROJECT UN-92-9(19)--41-70 PROJECT SH. NO. 79 OF 131



NOTES

All bolted connections shall be made with ⅞" high strength bolts.

Drawn by: P.W. Clark, Feb. 1969
Checked by: M.C. Eurys, May 1969

SVERDRUP & PARCEL AND ASSOCIATES, Inc.
CONSULTING ENGINEERS
ST. LOUIS, MISSOURI

Note: Do not scale this drawing. Follow dimensions.

MISSISSIPPI RIVER BRIDGE

TRUSS SPAN

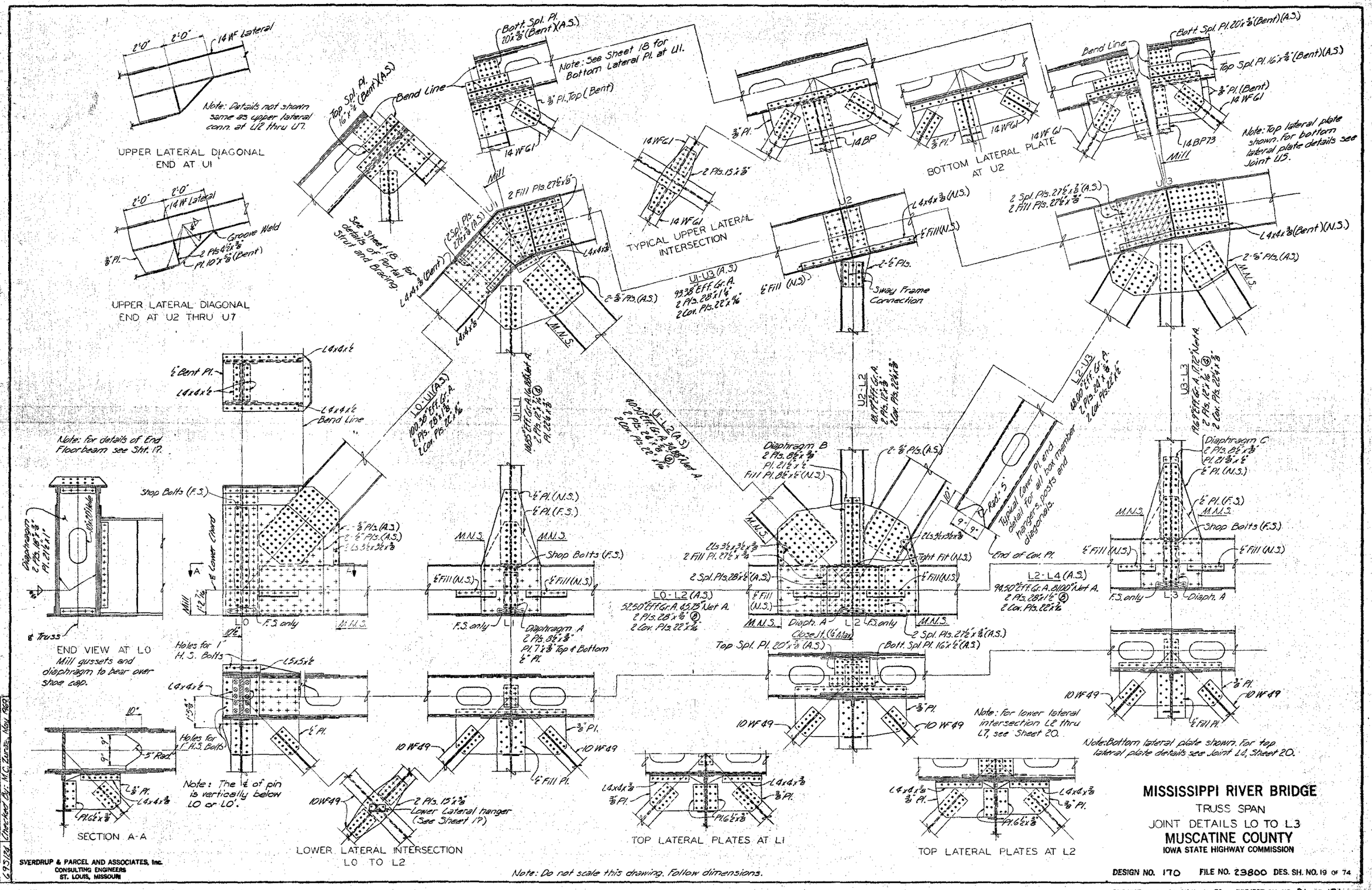
SWAY FRAMES AND PORTAL

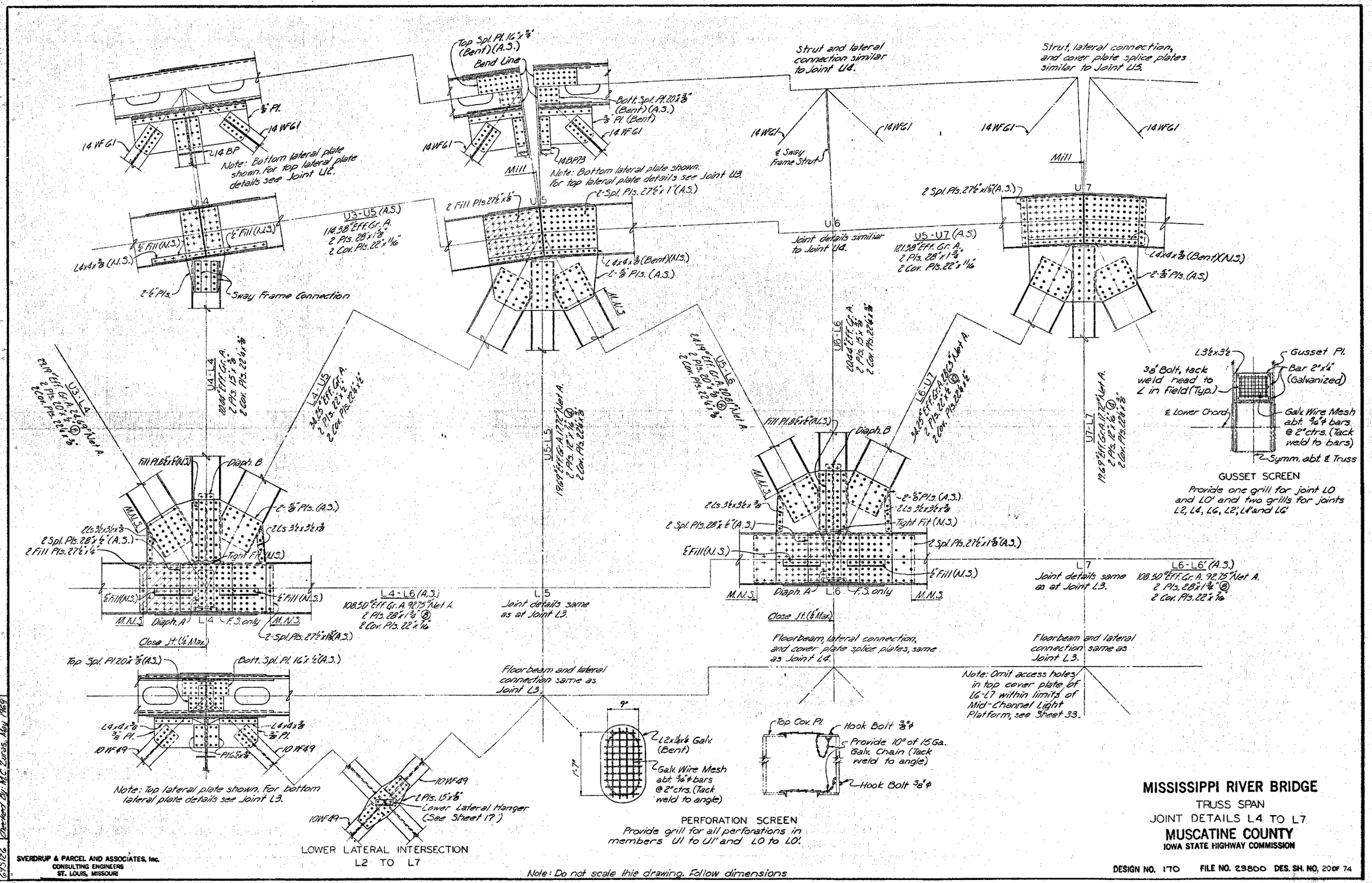
MUSCATINE COUNTY

IOWA STATE HIGHWAY COMMISSION

DESIGN NO. 170 FILE NO. 23800 DES. SH. NO. 18 OF 74

PROJECT UN-92-9(19)--41-70 PROJECT SH. NO. 80 OF 181


UPPER LATERAL DIAGONAL END AT U1
Note: Details not shown same as upper lateral conn. at U2 thru U7.
14 WF Lateral
UPPER LATERAL DIAGONAL END AT U2 THRU U7
Groove Weld
2 Pls 4½x⅜
Pl. 10"x⅜ (Bent)
Top Spl. Pl. 16"x⅜ (Bent) (A.S.)
Bend Line
Bott. Spl. Pl. 20"x⅜ (Bent) (A.S.)
Note: See Sheet 18 for Bottom Lateral Pl. at U1.
⅜" Pl., Top (Bent)
14 WF61
Mill
2 Fill Pls. 27½"x⅝"
See Sheet 18 for details of Portal Strut and Bracing.
2 Spl. Pls. 27½"x⅝" (A.S.)
L4x4x⅜ (Bent)
L4x4x⅜
2-⅝" Pls. (A.S.)
M.N.S.
U1-U3 (A.S.)
93.38" Eff. Gr. A.
2 Pls. 28"x1¼"
2 Cov. Pls. 22"x9/16"
TYPICAL UPPER LATERAL INTERSECTION
2 Pls. 15"x⅜"
14 BP
BOTTOM LATERAL PLATE AT U2
14 BP73
Note: Top lateral plate shown. For bottom lateral plate details see Joint U5.
2 Spl. Pls. 27½"x⅝" (A.S.)
2 Fill Pls. 27½"x⅝"
L4x4x⅜ (Bent) (N.S.)
L4x4x⅜ (N.S.)
½" Fill (N.S.)
2-½" Pls.
Sway Frame Connection
½" Fill (N.S.)
L4x4x½
½" Bent Pl.
Bend Line
Note: For details of End Floorbeam see Sht. 17.
L0-U1 (A.S.)
100.20" Eff. Gr. A.
2 Pls. 28"x⅜"
2 Cov. Pls. 22"x9/16"
U1-L1
100.5" Eff. Gr. A. 96.85" Net A.
2 Pls. 12"x9/16"
Pl. 22"x⅜"
U1-L2 (A.S.)
110.30" Eff. Gr. A. 94.85" Net A.
2 Pls. 24"x9/16"
2 Cov. Pls. 22"x9/16"
U2-L2
101.77" Eff. Gr. A.
2 Pls. 12"x⅜"
2 Cov. Pls. 22"x⅜"
L2-U3
100.00" Eff. Gr. A.
2 Pls. 24"x9/16"
2 Cov. Pls. 22"x½"
U3-L3
116.9" Eff. Gr. A. 112.2" Net A.
2 Pls. 12"x9/16"
2 Cov. Pls. 22"x⅜"
Diaphragm B
2 Pls. 8½"x⅜"
Pl. 21½"x½"
Fill Pl. 8½"x½" (N.S.)
2-⅝" Pls. (A.S.)
Typical lower Pl. end detail for all box members, hangers, posts and diagonals.
Rad. 5"
End of Cov. Pl.
Diaphragm C
2 Pls. 8½"x⅜"
Pl. 21⅜"x½"
½" Pl. (N.S.)
½" Pl. (F.S.)
Shop Bolts (F.S.)
½" Fill (N.S.)
2 Ls. 3½x3½x⅜
2 Fill Pl. 27½"x¾"
2 Spl. Pls. 28"x½" (A.S.)
Tight Fit (N.S.)
L2-L4 (A.S.)
94.50" Eff. Gr. A. 81.00" Net A.
2 Pls. 28"x½"
2 Cov. Pls. 22"x½"
2 Spl. Pls. 27½"x⅝" (A.S.)
Top Spl. Pl. 20"x⅜" (A.S.)
Bott. Spl. Pl. 16"x½" (A.S.)
Note: For lower lateral intersection L2 thru L7, see Sheet 20.
Note: Bottom lateral plate shown. For top lateral plate details see Joint L4, Sheet 20.
Diaphragm A
2 Pls. 8½"x⅜"
Pl. 7"x⅜" Top & Bottom
½" Pl.
L0-L2 (A.S.)
52.50" Eff. Gr. A. 45.75" Net A.
2 Pls. 28"x⅜"
2 Cov. Pls. 22"x9/16"
Diaph. A
Close fit (½" Max)
F.S. only
M.N.S.
L0
L1
L2
L3
Shop Bolts (F.S.)
½" Fill (N.S.)
½" Pl. (N.S.)
½" Pl. (F.S.)
⅜" Pls. (A.S.)
2-½" Pls. (A.S.)
2 Ls. 3½x3½x⅜
½" Lower Chord
Mill
1'-2 7/16"
Diaphragm C
2 Pls. 8½"x⅜"
Pl. 21⅜"x½"
Pl. 21⅜"x½"
Diaphragm B
2 Pls. 8½"x⅜"
Pl. 21½"x½"
Pl. 21½"x½"
Pl. 21⅜"x½"
Pl. 21⅜"x½"
Diaphragm A
2 Pls. 8½"x⅜"
Pl. 7"x⅜"
Pl. 7"x⅜"
Pl. 7



28020	Drawn By: S.A. Meerpes, Mar. 1969	
6/5/26	Checked By: M.C. Zuras, May 1969	

SVERDRUP & PARCEL AND ASSOCIATES, Inc.
CONSULTING ENGINEERS
ST. LOUIS, MISSOURI

MISSISSIPPI RIVER BRIDGE

TRUSS SPAN

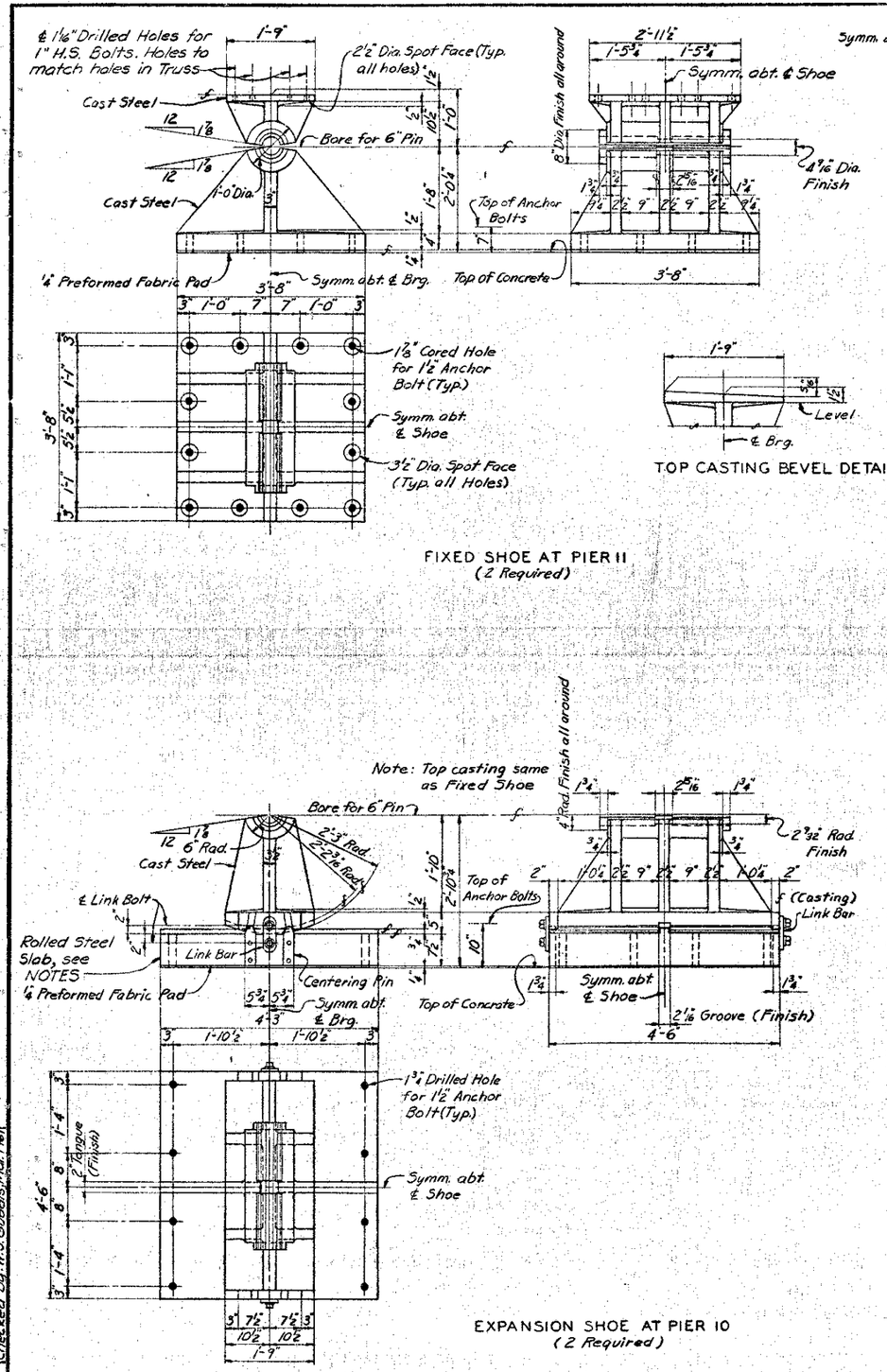
JOINT DETAILS L4 TO L7

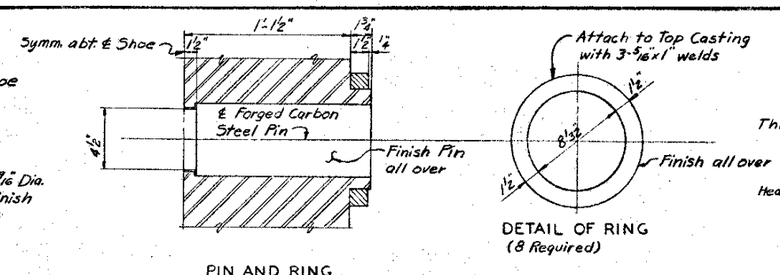
MUSCATINE COUNTY

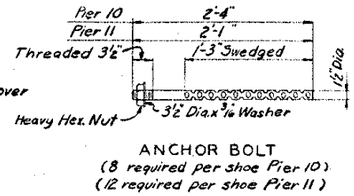
IOWA STATE HIGHWAY COMMISSION

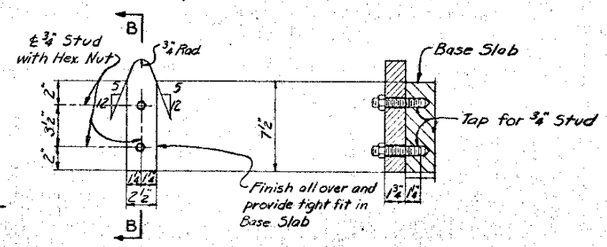
DESIGN NO. 170 FILE NO. 23800 DES. SH. NO. 20 OF 74

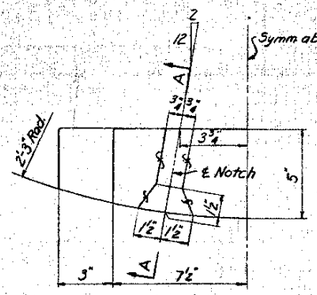
PROJECT UN-92-9(19)--41-70 PROJECT SH. NO. 82 OF 131

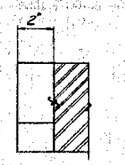


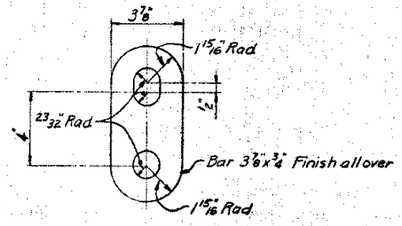


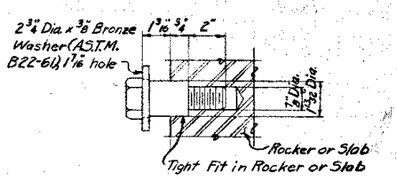












Note: Threads for Link Bolt to be 7/8"-9 UNC-2A.

NOTES

For General Notes, see Sheet 4.

Cast Steel shall conform to A.S.T.M. A148-65, Grade 80-40.

Surfaces marked "f" shall conform to finishes defined in Section 2408.2.4 of the Standard Specifications.

Fillets on castings shall be 3/4" radius.

For Location of Anchor Bolts, see Sheet 15.

For Expansion Shoe setting diagrams, see Sheet 16.

Forged Carbon Steel Pins shall conform to A.S.T.M. A 235-67, Class C1.

Base Slab for Expansion Shoe shall be high strength low alloy structural steel conforming to A.S.T.M. A588-69. (Minimum Yield Point = 42,000 p.s.i. for thicknesses over 5").

Bronze washers are included in weight of Structural Carbon Steel.

Note: Do not scale this drawing. Follow dimensions.

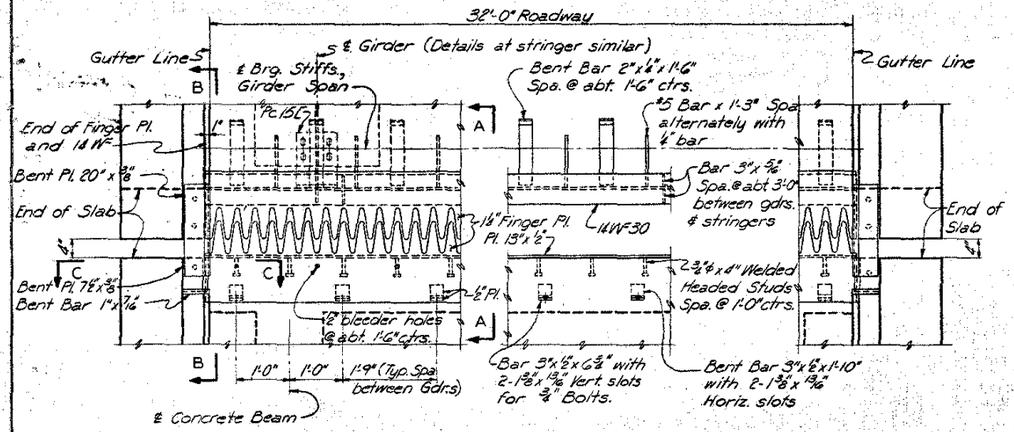
SVERDRUP & PARCEL AND ASSOCIATES, Inc.
CONSULTING ENGINEERS
ST. LOUIS, MISSOURI

2600 Drawn By: D. Peer, March 1969
595133 Checked By: H.J. Gobels, Mar. 1969

MISSISSIPPI RIVER BRIDGE
TRUSS SPAN
SHOES
MUSCATINE COUNTY
IOWA STATE HIGHWAY COMMISSION

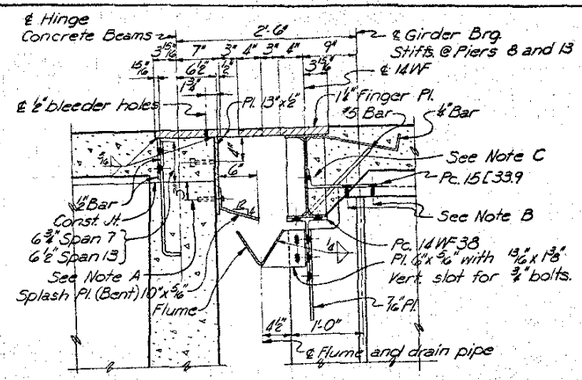
DESIGN NO. 170 FILE NO. 23800 DES. SH. NO. 21 OF 74

PROJECT UN-92-9(19)--41-70 PROJECT SH. NO. 83 OF 131

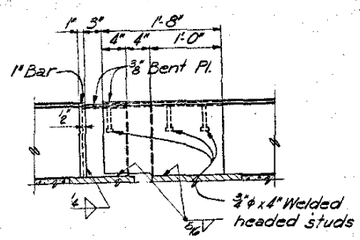


PART PLAN-DEVICE AT PIERS 8 AND 13

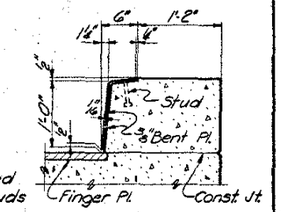
Note: Details and material at both curbs are the same. Flume, splash plate and flume connections are not shown.



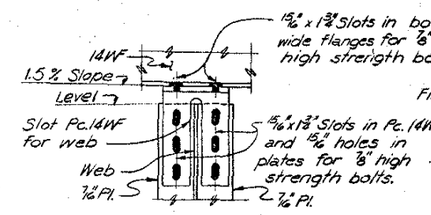
SECTION A-A



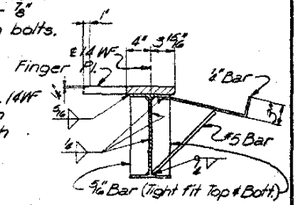
SECTION B-B



SECTION C-C

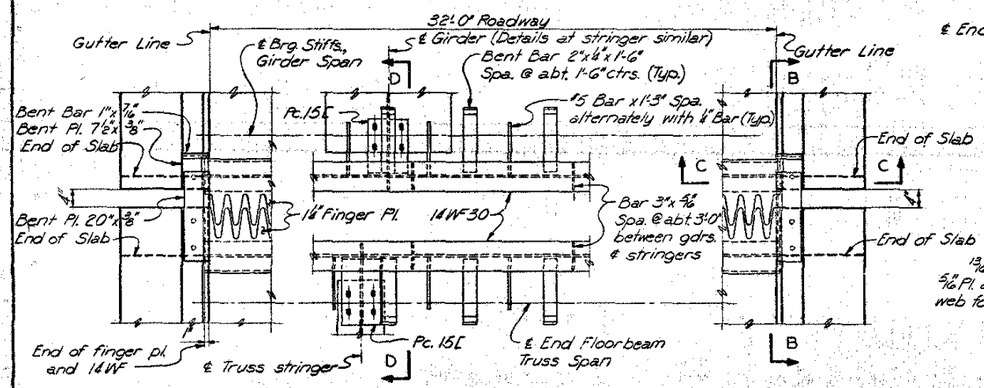


VIEW OF Pc. 14WF



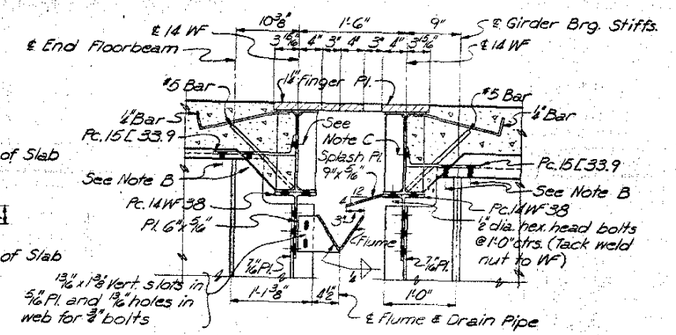
SECTION THRU FINGER PLATE (Supported by 14WF)

Note A: Concrete inserts for ½" bolts, 1"φ holes in ½" Pl. & 9/16"φ holes in splash plates; for spacing of inserts see Sheet 10.
Note B: Provide 13/16"x1½" Slots in Pc. 15[and 13/16" holes in girder or stringer for ¾" bolts.
Note C: Provide 15/16"x1½" Slots in 14WF and 13/16" holes in Pc. 15[for 2-¾" bolts.

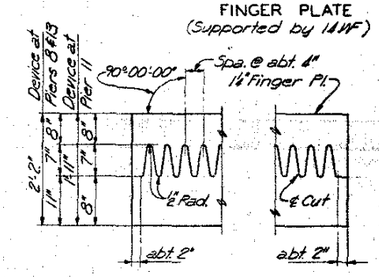


PART PLAN-DEVICE AT PIER 11

Note: Details and material at both curbs are the same. Flume, splash plate and flume connections are not shown.



SECTION D-D

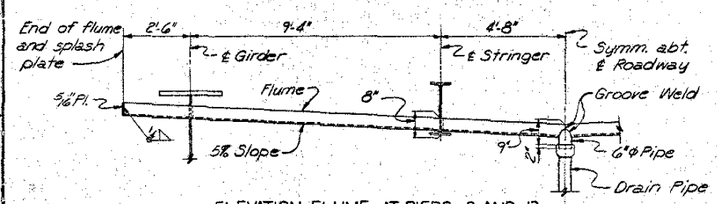


FINGER PLATE CUTTING PLAN

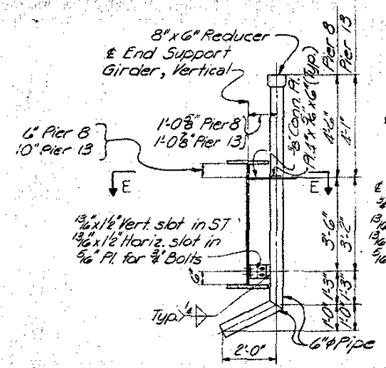
Note: Dimensions shown for finger plate cutting include a ⅛" allowance for flame cutting.

NOTES

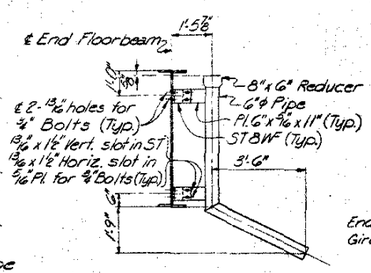
For expansion device notes see Sheet 23.



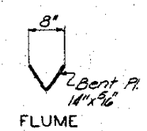
ELEVATION-FLUME AT PIERS 8 AND 13



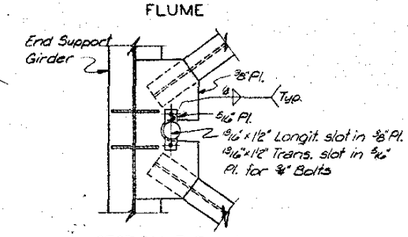
DRAIN PIPE PIERS 8 AND 13



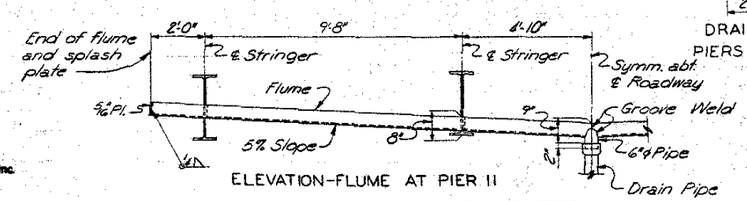
DRAIN PIPE PIER 11



FLUME



SECTION E-E



ELEVATION-FLUME AT PIER 11

Note: Do not scale this drawing. Follow dimensions.

SVERDRUP & PARCEL AND ASSOCIATES, Inc.
CONSULTING ENGINEERS
ST. LOUIS, MISSOURI

2600 | Drawn by: P.W. Clark, March, 1969
6951-56 | Checked by: W.J. Gaddis, April 1969

MISSISSIPPI RIVER BRIDGE

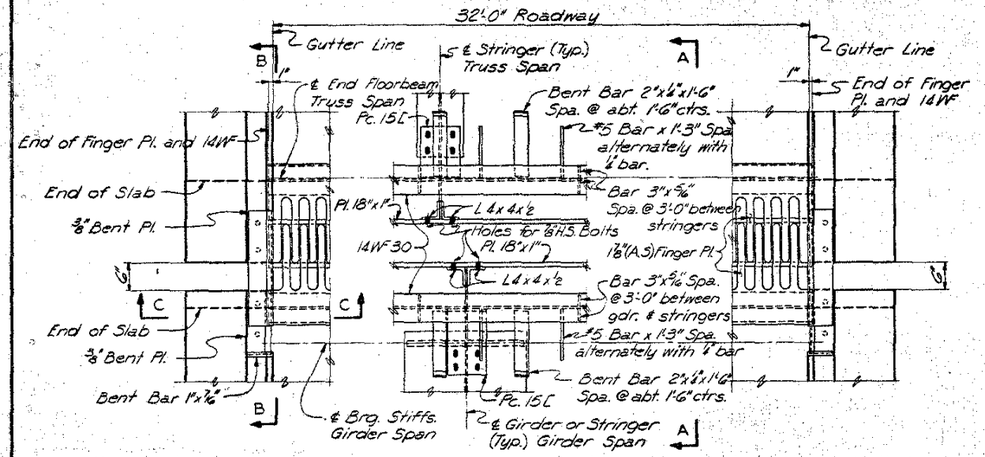
ROADWAY EXPANSION DEVICES AT PIERS 8, 11 AND 13

MUSCATINE COUNTY

IOWA STATE HIGHWAY COMMISSION

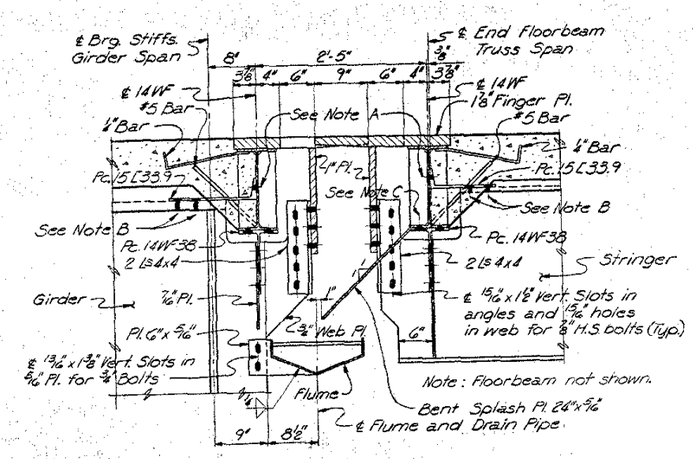
DESIGN NO. 170 FILE NO. 23800 DES. SH. NO. 22 OF 74

PROJECT UN-92-9(19)--41-70 PROJECT SH. NO. 84 OF 131



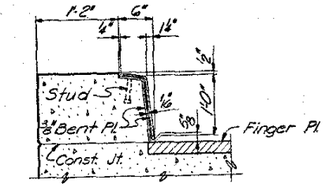
PART PLAN-DEVICE AT PIER 10

Note: Details and material at both curbs are the same. Flume, splash plate and flume connections are not shown.

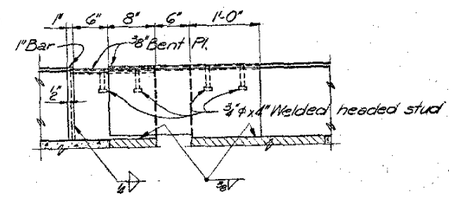


SECTION A-A

Note: Girder shown, girder span stringer similar except as shown in Section D-D.

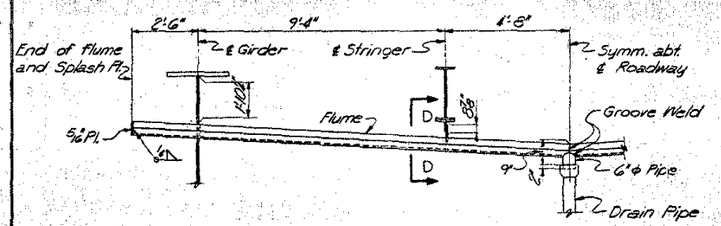


SECTION C-C

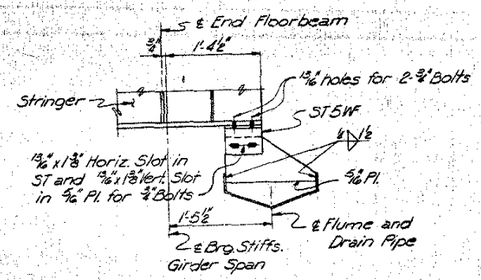


SECTION B-B

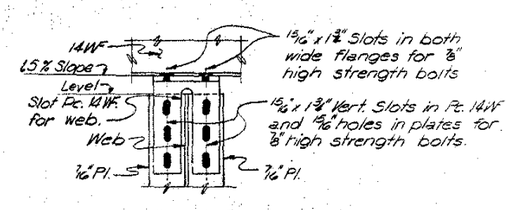
Note A: Provide 13/16"x1½" Slots in 14WF and 13/16" holes in Pc. 15C for 2-¾" bolts.
Note B: Provide 13/16"x1½" Slots in Pc. 15C and 13/16" holes in girder or stringer for ¾" bolts.
Note C: Provide ½" bolts, spaced at 1'-0" centers, for splash plate connection. Tack weld nut to wide flange.



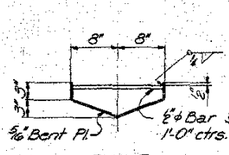
ELEVATION-FLUME AT PIER 10



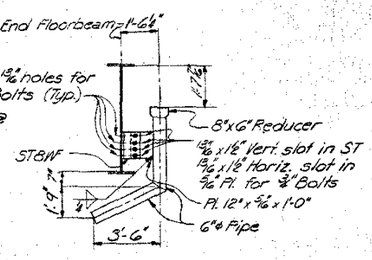
SECTION D-D



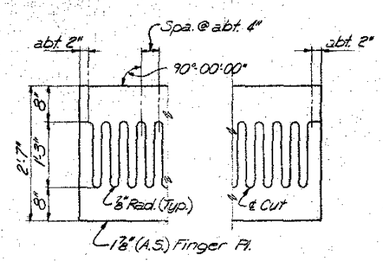
VIEW OF Pc. 14WF



FLUME

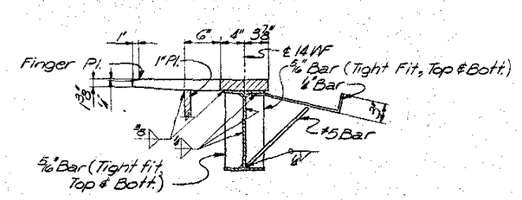


DRAIN PIPE



FINGER PLATE CUTTING PLAN

Note: Dimensions shown for finger plate cutting include a ⅛" allowance for flame cutting.



SECTION THRU FINGER PLATE

NOTES

Expansion devices are shown in the normal position at a temperature of 50°F.

Expansion devices shall be fabricated and erected to fit crown of roadway.

All material for expansion devices is included in the quantities for Structural Steel and is to be paid for as such.

Expansion device shall be fabricated in one section.

Lengths of drain pipe shown are approximate and shall be field checked after installation of flumes.

Pipe shall be spliced with full penetration butt welds.

Rough bolted connections shall be used for all ½" and ¾" bolts.

Galvanize expansion devices, flumes, drain pipes, splash plates and their assemblies.

MISSISSIPPI RIVER BRIDGE

ROADWAY EXPANSION DEVICE AT PIER 10

MUSCATINE COUNTY

IOWA STATE HIGHWAY COMMISSION

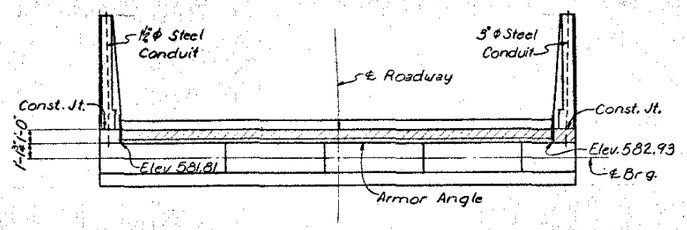
DESIGN NO. 170 FILE NO. 23800 DES. SH. NO. 23 OF 74

PROJECT UN-92-9(19)--41-70 PROJECT SH. NO. 85 OF 131

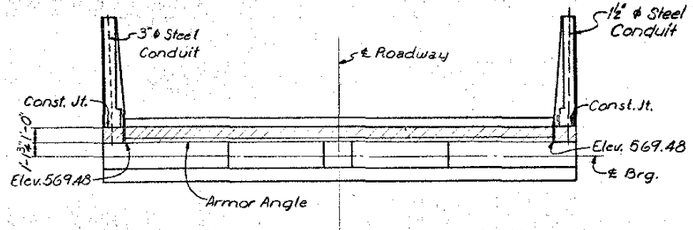
23800 Drawn by: P.K. Clark April, 1969
6-25-71 Checked by: W.J. Gadola April 1969

SVERDRUP & PARCEL AND ASSOCIATES, Inc.
CONSULTING ENGINEERS
ST. LOUIS, MISSOURI

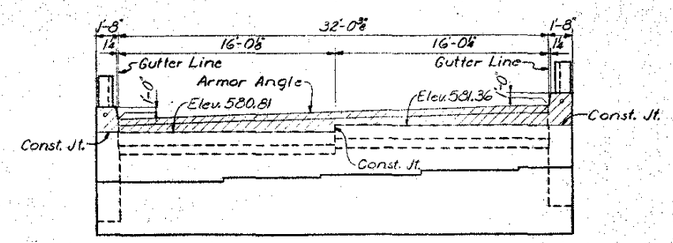
Note: Do not scale this drawing. Follow dimensions.



PLAN
Elevations are at Gutter Line.

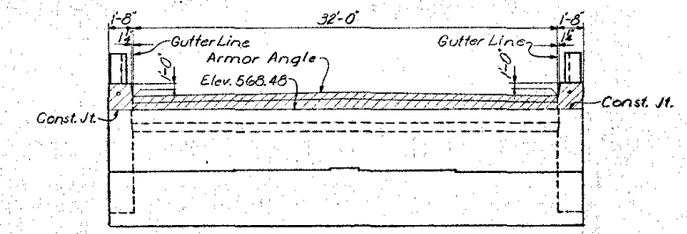


PLAN
Elevations are at Gutter Line.



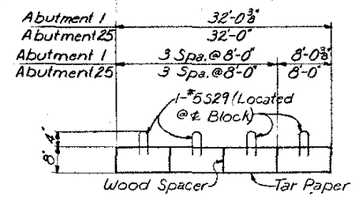
ELEVATION
ABUTMENT 1

Note:
Concrete within sectioned area is to be placed with Superstructure.

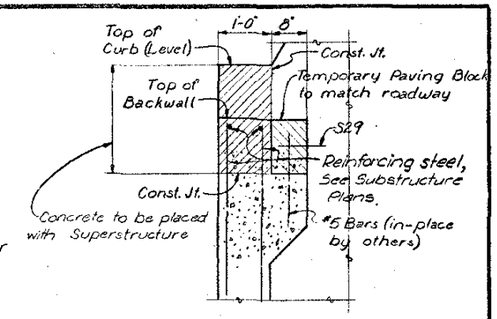


ELEVATION
ABUTMENT 25

Note:
Concrete within sectioned area is to be placed with Superstructure



PLAN OF PAVING BLOCKS

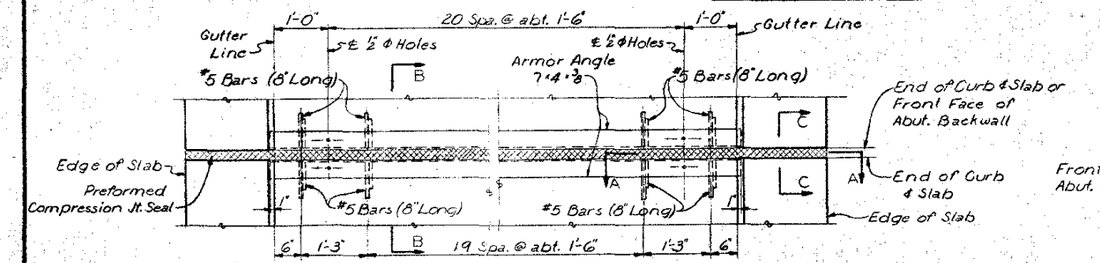


Note: Expansion joint is not shown.

SECTION THRU
ABUTMENT BACKWALL

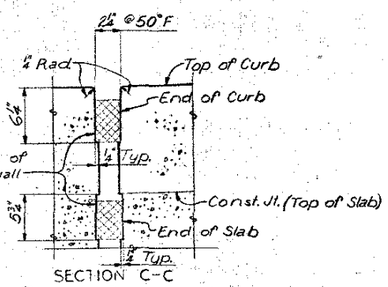
Note: Bend down all in-place #5 bars and line notch with tar paper to prevent bond before placing temporary paving blocks.

ABUTMENT DETAILS

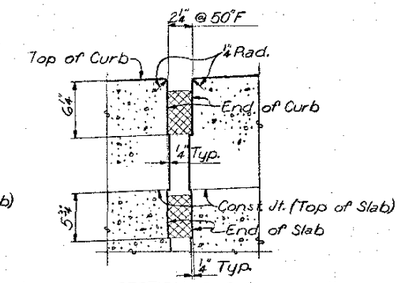


PART PLAN OF ROADWAY JOINT

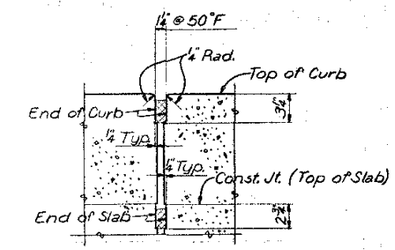
Note: 4"×4 23/32" preformed compression joint seal required for concrete beam spans.
2"×2⅛" preformed compression joint seal required for truss spans.
Other seals of the same type and of the same same nominal size may be used with the approval of the Engineer.



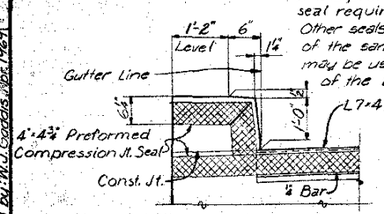
SECTION C-C
(Concrete Beam Spans, Abutments 1 and 25 only)



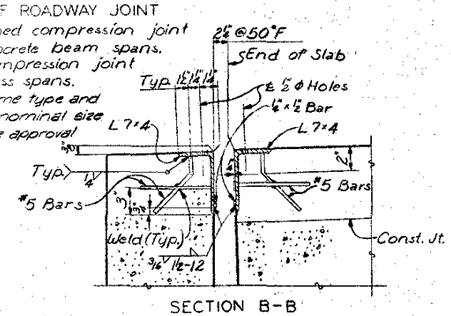
SECTION C-C
(Concrete Beam Spans)



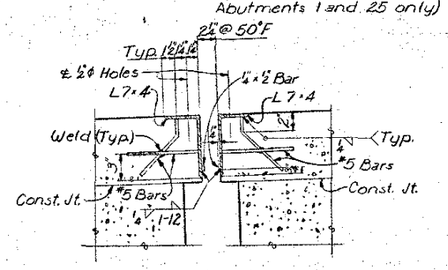
SECTION C-C
(Truss Span)



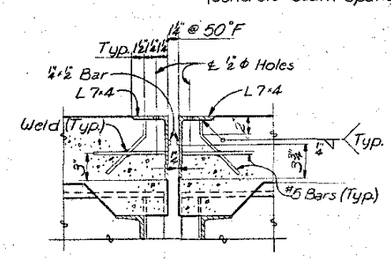
SECTION A-A



SECTION B-B
(Concrete Beam Spans, Abutments 1 and 25 only)
Note: Compression seal is not shown.



SECTION B-B
(Concrete Beam Spans)
Note: Compression seal is not shown.



SECTION B-B
(Truss Span)
Note: Compression seal is not shown.

ROADWAY JOINT DETAILS
Note: Do not scale this drawing. Follow dimensions.

NOTES

Top of backwalls are to conform to grade and cross slope of roadway.
Armor angles shall be fabricated to conform to grade and cross slope of roadway.
Payment for furnishing and placing preformed compression joint seal shall be made under price bid for other items of work.
Payment for armor angles as detailed shall be included in price bid for Structural Steel.

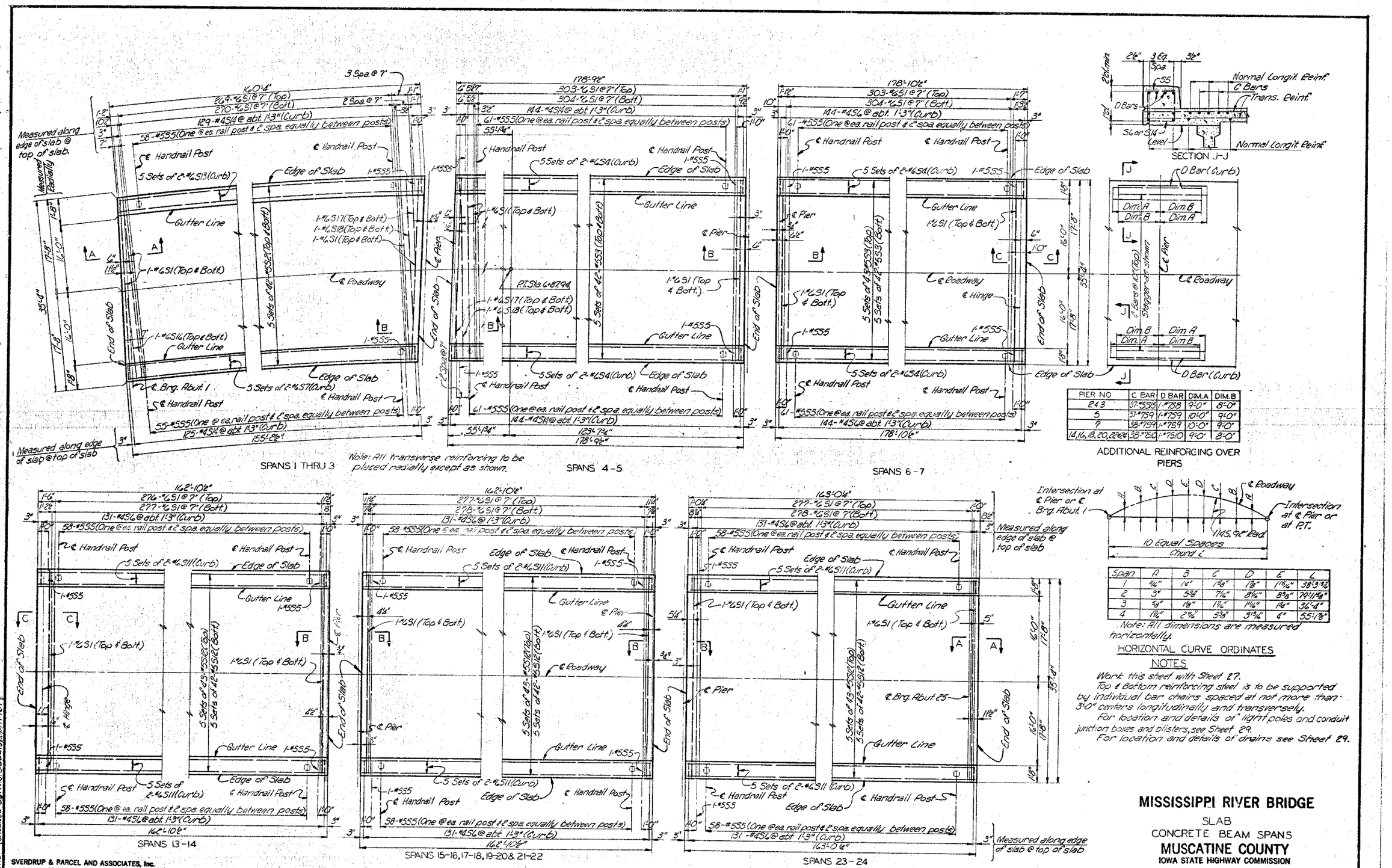
MISSISSIPPI RIVER BRIDGE
ABUTMENT DETAILS AND
ROADWAY JOINT DETAILS
MUSCATINE COUNTY
IOWA STATE HIGHWAY COMMISSION

SVERDRUP & PARCEL AND ASSOCIATES, Inc.
CONSULTING ENGINEERS
ST. LOUIS, MISSOURI

22600 Drawn by: M. Herbello, March 1969
69510 Checked by: W.J. Gaddis, Nov. 1969

DESIGN NO. 170 FILE NO. 23800 DES. SH. NO. 24 OF 74

PROJECT UN-92-9(19)--41-70 PROJECT SH. NO. 86 OF 131



PIER NO	C BAR	D BAR	DIM. A	DIM. B
2 & 3	37-#5 @ 6	1-#7 @ 8	9'-0"	8'-0"
5	37-#7 @ 9	1-#7 @ 9	10'-0"	9'-0"
7	38-#7 @ 9	1-#7 @ 9	10'-0"	9'-0"
14, 16, 18, 20, 22 & 24	38-#7 @ 10	1-#7 @ 10	9'-0"	8'-0"

ADDITIONAL REINFORCING OVER PIERS

Span	A	B	C	D	E	L
1	11/16"	1'4"	1'5/8"	1'7/8"	1'11 9/16"	38'-3 9/16"
2	3"	5 3/8"	7 1/16"	8 1/16"	8 3/8"	79'-1 7/8"
3	5/8"	1 7/8"	1 11/16"	1 11/16"	1 3/4"	36'-4"
4	1 1/16"	2 9/16"	3 3/8"	3 15/16"	4"	55'-1 7/8"

Note: All dimensions are measured horizontally.

HORIZONTAL CURVE ORDINATES

NOTES

Work this sheet with Sheet 27.

Top & Bottom reinforcing steel is to be supported by individual bar chairs spaced at not more than 3'-0" centers longitudinally and transversely.

For location and details of light poles and conduit junction boxes and blisters, see Sheet 29.

For location and details of drains see Sheet 29.

Note: Do not scale this drawing. Follow dimensions.

Drawn By: J.M. Lotshaw - Mar. 1969
Checked By: W.J. Gadeis - Apr. 1969

SVERDRUP & PARCEL AND ASSOCIATES, Inc.
CONSULTING ENGINEERS
ST. LOUIS, MISSOURI

MISSISSIPPI RIVER BRIDGE

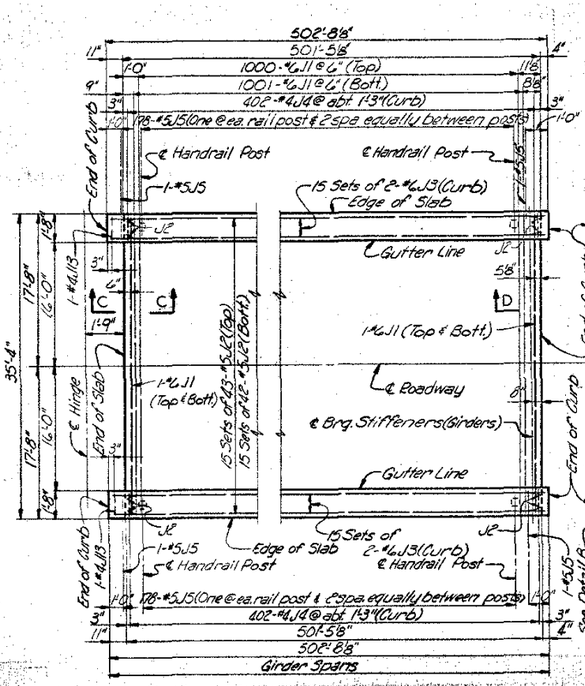
SLAB
CONCRETE BEAM SPANS

MUSCATINE COUNTY

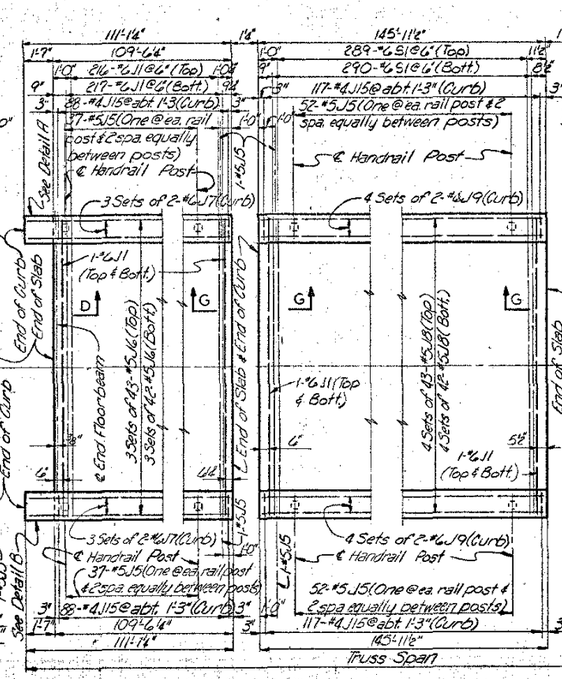
IOWA STATE HIGHWAY COMMISSION

DESIGN NO. 170 FILE NO. 23800 DES. SH. NO. 25 OF 74

PROJECT UN-92-9(19)--41-70 PROJECT SH. NO. 87 OF 131



SPANS 8 – 9



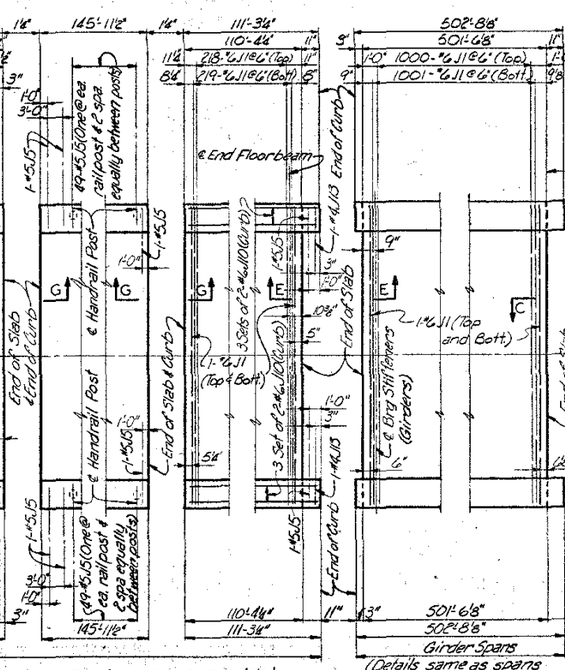
PANELS 1,2&3

PANELS 4 THRU 7

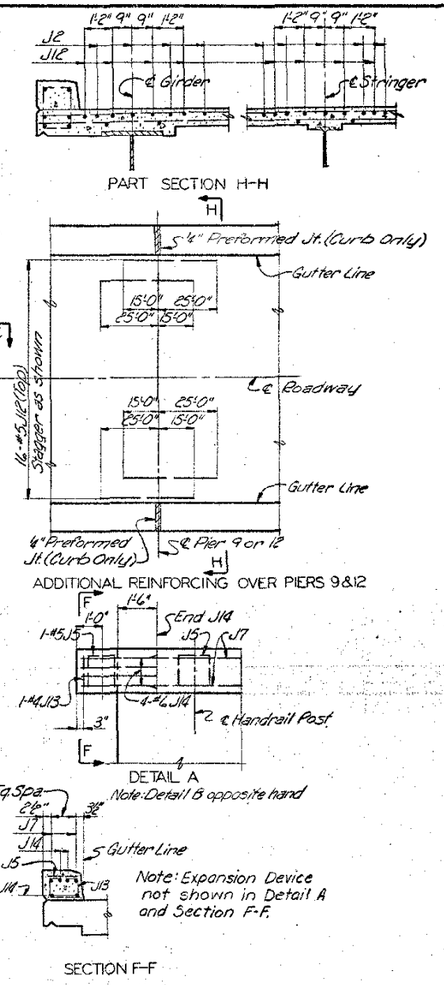
SPAN 10

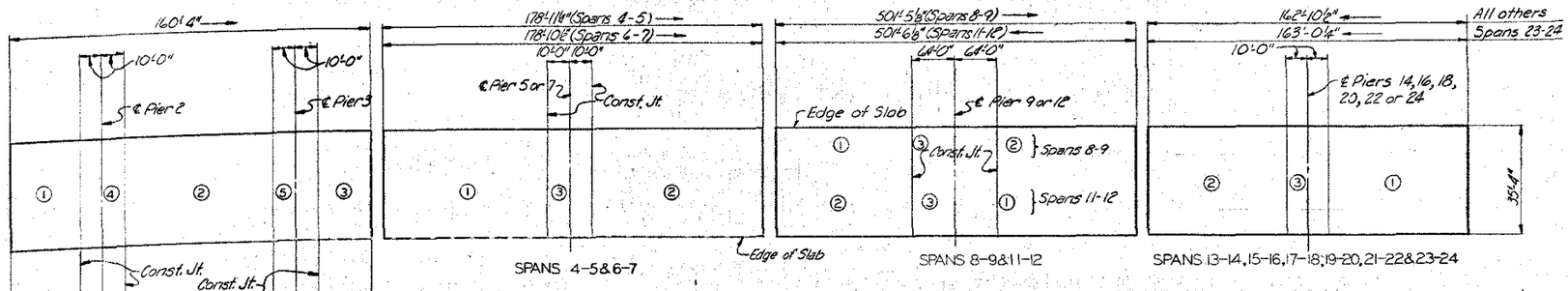
PANELS 7 THRU 4 (Details same as Panels 4 thru 7 except as shown)

PANELS 3,2&1 (Details same as Panels 1,2&3 except as shown.)



SPANS 11 – 12





CONCRETE PLACEMENT DIAGRAM

Note: If transverse joints are used the encircled numbers indicate the sequence in which the sections are to be placed, preferably at intervals not exceeding 24 hours. Alternate procedures for placing slab concrete may be submitted for approval, together with a statement of the proposed method, and evidence that the Contractor possesses the necessary equipment and facilities to accomplish the required result. Safety curbs shall be placed continuously.

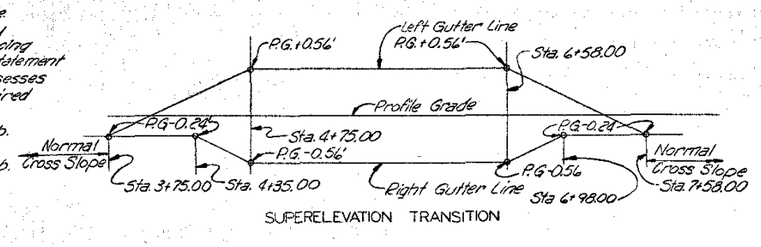
Concrete on truss to be placed continuously between ends of slab.

The order of placing is at the option of the Contractor.

All dimensions are measured along edge of slab @ top of slab.

Span lengths are from end to end of slab.

Arrows indicate direction of placing.



SUPERELEVATION TRANSITION

NOTES

Work this sheet with Sheet 27.
All longitudinal dimensions are measured along top of slab.

Note: Do not scale this drawing. Follow dimensions.

2-2-70	Drawn By: J.M. Colstrank - Mar. 1969	
2-25-70	Checked By: W.J. Geddes - Apr. 1969	

SVERDRUP & PARCEL AND ASSOCIATES, Inc.
CONSULTING ENGINEERS
ST. LOUIS, MISSOURI

MISSISSIPPI RIVER BRIDGE

SLAB

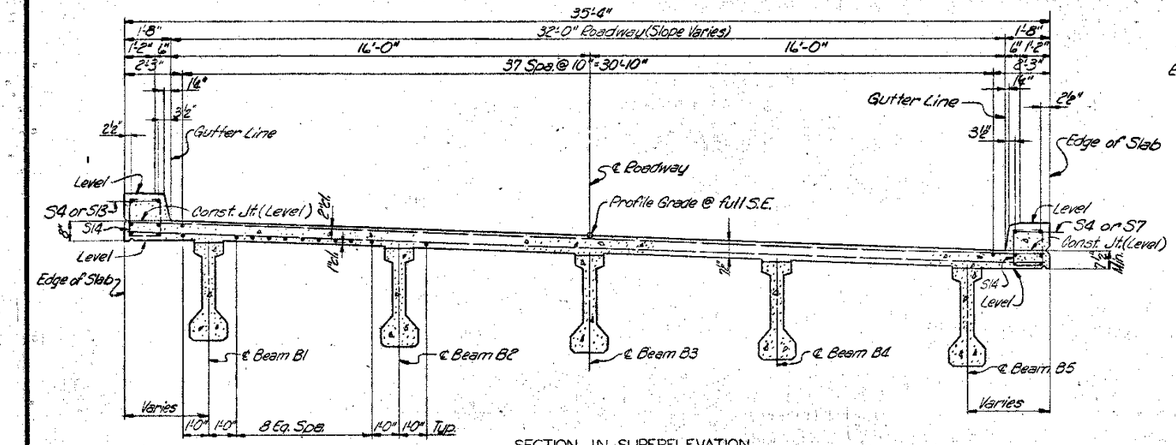
STEEL GIRDER AND TRUSS SPANS

MUSCATINE COUNTY

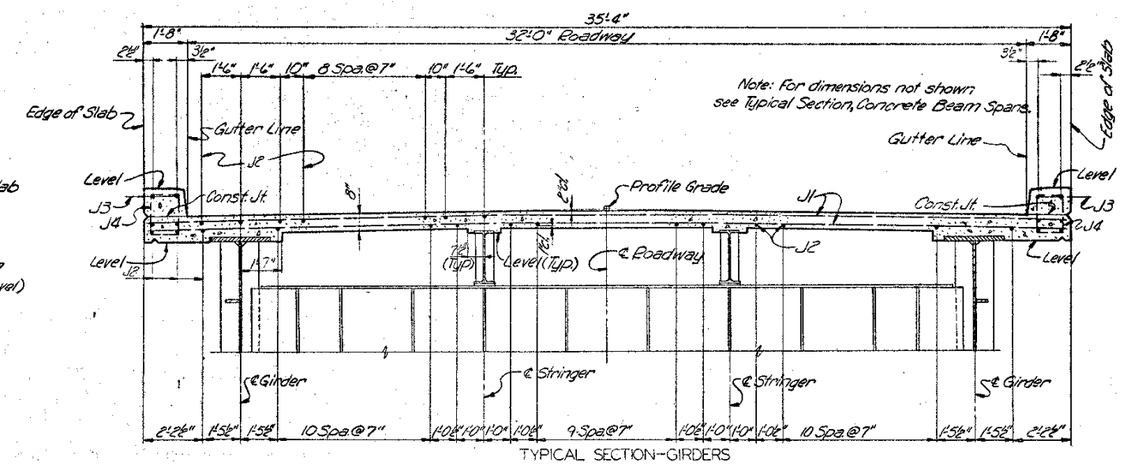
IOWA STATE HIGHWAY COMMISSION

DESIGN NO. 170 FILE NO. 23800 DES. SH. NO. 26 OF 74

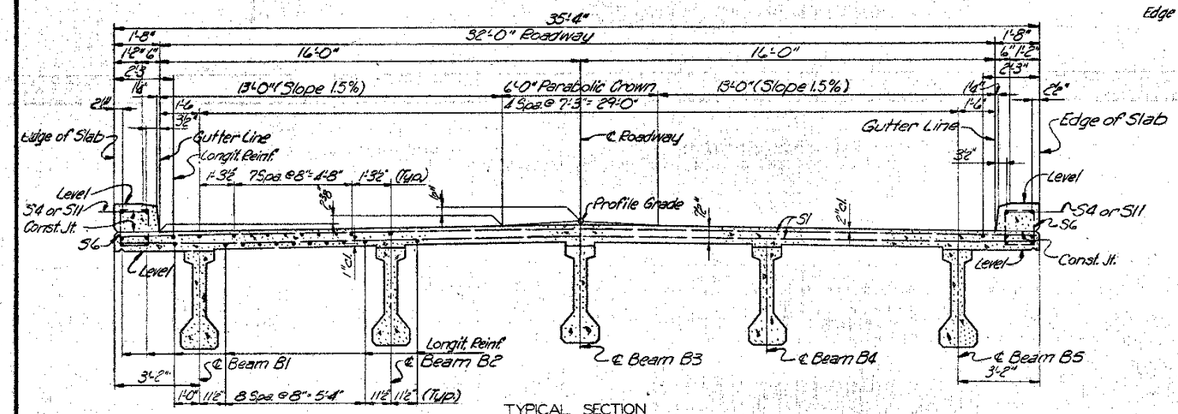
PROJECT UN-92-9(19)--41-70 PROJECT SH. NO. 88 OF 131



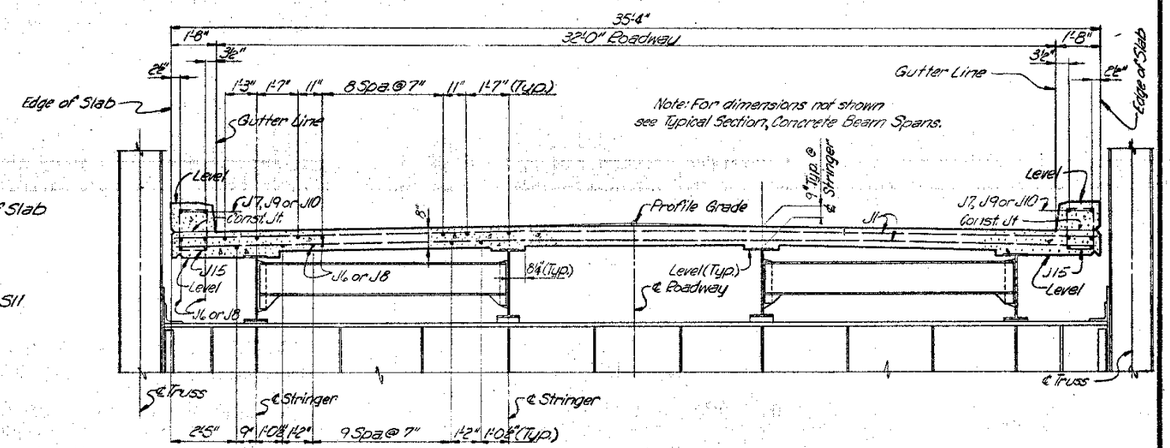
SECTION IN SUPERELEVATION
(Spans 1 thru 5)



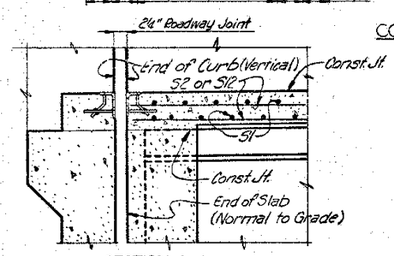
TYPICAL SECTION-GIRDERS



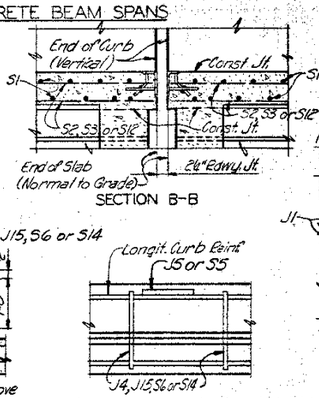
TYPICAL SECTION
CONCRETE BEAM SPANS



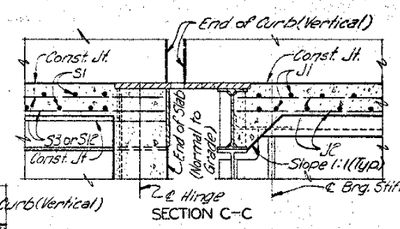
TYPICAL SECTION-TRUSS
STEEL SPANS



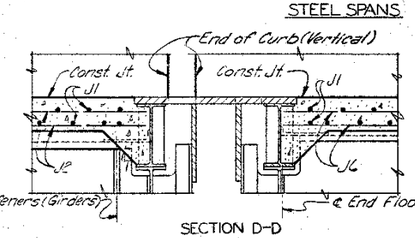
SECTION A-A



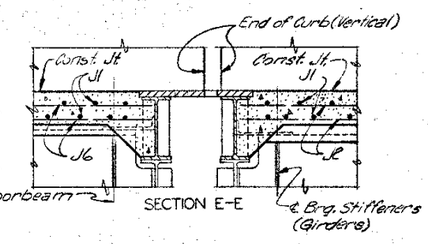
SECTION B-B



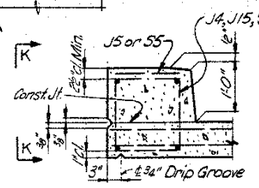
SECTION C-C



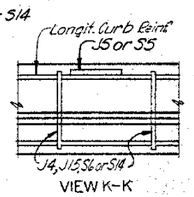
SECTION D-D



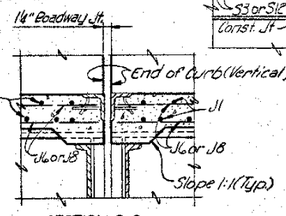
SECTION E-E



TYPICAL CURB SECTION



VIEW K-K



SECTION G-G

NOTES

Work this sheet with Sheets 25 & 26.
Handrail not shown in cross sections, see Sheets 31 & 32.
Compression joint seals not shown in Sections A-A, B-B and G-G.
For slab forming elevations, see Sheet 28.

Note: Do not scale this drawing. Follow dimensions.

MISSISSIPPI RIVER BRIDGE

SLAB
CROSS SECTIONS

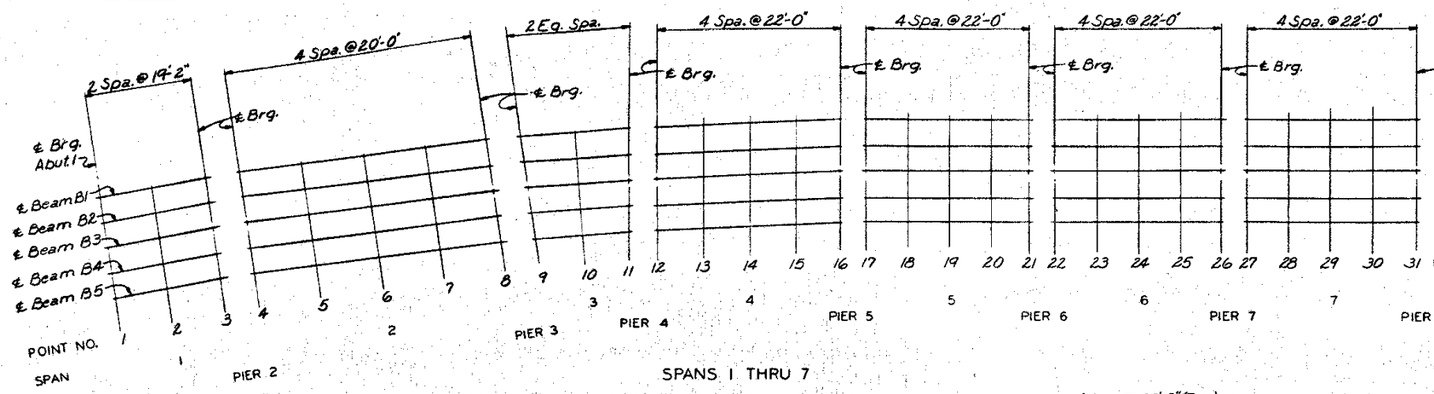
MUSCATINE COUNTY
IOWA STATE HIGHWAY COMMISSION

DESIGN NO. 170 FILE NO. 23800 DES. SH. NO. 27 OF 74

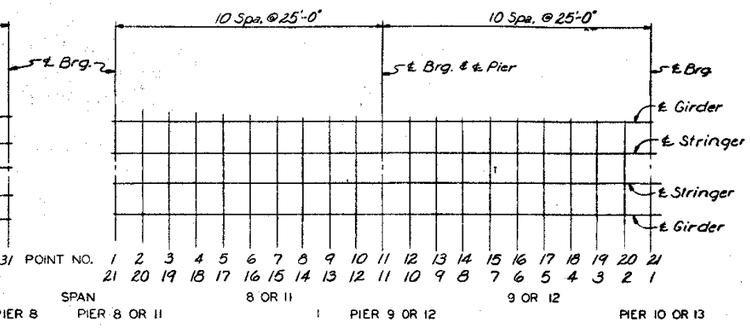
PROJECT UN-92-9(19)--41-70 PROJECT SH. NO. 89 OF 131

SVERDRUP & PARCEL AND ASSOCIATES, Inc.
CONSULTING ENGINEERS
ST. LOUIS, MISSOURI

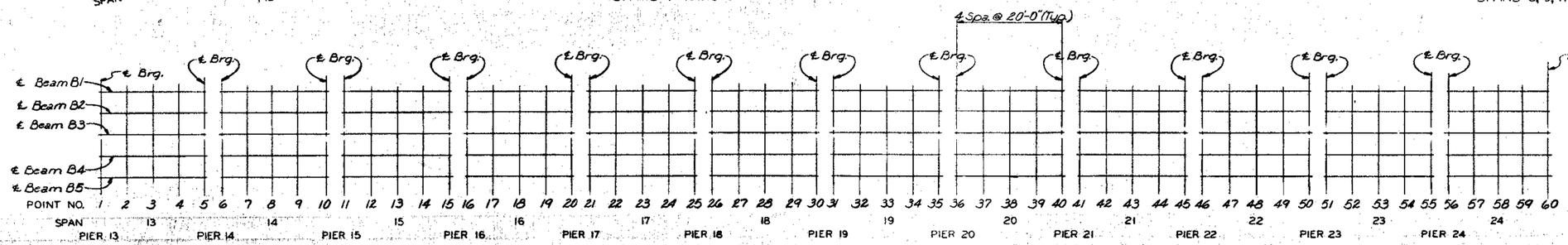
2-2-00 Drawn By: J.M. Colshaw, Mar. 1969
6-25-125 Checked By: W.J. Goodis, Apr. 1969



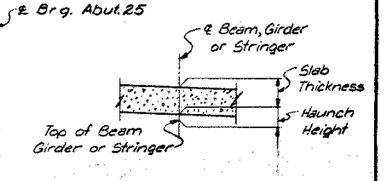
SPANS 1 THRU 7



SPANS 8, 9, 11 AND 12



SPANS 13 THRU 24



SLAB FORMING ELEVATIONS

SPANS 1 thru 7

SPAN	PT. NO.	BEAM B1	BEAM B2	BEAM B3	BEAM B4	BEAM B5
1	1	582.92	582.66	582.39	582.14	581.88
	2	583.44	583.18	582.92	582.67	582.41
	3	583.96	583.70	583.45	583.19	582.94
2	4	584.00	583.74	583.49	583.23	582.98
	5	584.61	584.36	584.11	583.86	583.60
	6	585.18	584.93	584.68	584.43	584.18
	7	585.70	585.45	585.21	584.96	584.72
	8	586.17	585.93	585.59	585.45	585.21
3	9	586.21	585.97	585.73	585.49	585.25
	10	586.74	586.49	586.23	585.98	585.73
	11	587.26	586.99	586.73	586.47	586.20
4	12	587.30	587.03	586.77	586.51	586.25
	13	587.96	587.70	587.44	587.18	586.92
	14	588.44	588.26	588.07	587.89	587.70
	15	588.87	588.76	588.65	588.55	588.44
	16	589.24	589.22	589.18	589.08	588.97
5	17	589.27	589.25	589.22	589.13	589.02
	18	589.79	589.86	589.90	589.81	589.70
	19	590.33	590.44	590.53	590.44	589.33
	20	590.91	591.02	591.11	591.02	590.91
	21	591.44	591.54	591.63	591.54	591.44
6	22	591.48	591.59	591.67	591.59	591.48
	23	592.16	592.27	592.36	592.27	592.16
	24	592.79	592.90	592.99	592.90	592.79
	25	593.37	593.48	593.57	593.48	593.37
	26	593.90	594.01	594.09	594.01	593.90
7	27	593.94	594.05	594.14	594.05	593.94
	28	594.62	594.73	594.82	594.73	594.62
	29	595.25	595.36	595.45	595.36	595.25
	30	595.83	595.94	596.03	595.94	596.83
	31	596.36	596.47	596.56	596.47	596.36

SPANS 8-9 and 11-12

SPAN	PT. NO.	GIRDER	STRINGER
8 or 12	1	596.44	596.58
	2	597.24	597.38
	3	598.03	598.17
	4	598.79	598.93
	5	599.51	599.65
	6	600.19	600.33
	7	600.82	600.96
	8	601.44	601.58
	9	602.04	602.18
	10	602.65	602.79
9 or 11	11	603.31	603.45
	12	604.02	604.16
	13	604.78	604.92
	14	605.55	605.69
	15	606.27	606.41
	16	606.92	607.06
	17	607.50	607.64
	18	608.00	608.14
	19	608.42	608.56
	20	608.67	608.91
	21	609.06	609.20

SPANS 13 thru 18

SPAN	PT. NO.	BEAM B1 or B5	BEAM B2 or B4	BEAM B3
13	1	596.36	596.47	596.55
	2	595.90	596.01	596.10
	3	595.38	595.49	595.58
	4	594.80	594.91	595.00
	5	594.16	594.27	594.36
14	6	594.12	594.23	594.31
	7	593.66	593.77	593.85
	8	593.14	593.25	593.33
	9	592.56	592.67	592.75
	10	591.92	592.03	592.11
15	11	591.88	591.99	592.07
	12	591.42	591.53	591.61
	13	590.90	591.01	591.09
	14	590.32	590.43	590.51
	15	589.68	589.79	589.87
16	16	589.64	589.74	589.83
	17	589.18	589.29	589.37
	18	588.66	588.77	588.85
	19	588.08	588.19	588.27
	20	587.44	587.55	587.63
17	21	587.39	587.50	587.59
	22	586.94	587.04	587.13
	23	586.42	586.52	586.61
	24	585.84	585.94	586.03
	25	585.20	585.30	585.39
18	26	585.15	585.26	585.35
	27	584.69	584.80	584.89
	28	584.17	584.28	584.37
	29	583.59	583.70	583.79
	30	582.95	583.06	583.15

SPANS 19 thru 24

SPAN	PT. NO.	BEAM B1 or B5	BEAM B2 or B4	BEAM B3
19	31	582.91	583.02	583.11
	32	582.45	582.56	582.65
	33	581.93	582.04	582.13
	34	581.35	581.46	581.55
	35	580.71	580.82	580.91
20	36	580.67	580.78	580.87
	37	580.21	580.32	580.41
	38	579.60	579.80	579.89
	39	579.11	579.22	579.31
	40	578.47	578.58	578.67
21	41	578.43	578.54	578.62
	42	577.97	578.08	578.17
	43	577.45	577.56	577.65
	44	576.87	576.98	577.07
	45	576.23	576.34	576.43
22	46	576.19	576.30	576.38
	47	575.73	575.84	575.92
	48	575.21	575.32	575.40
	49	574.63	574.74	574.82
	50	573.99	574.10	574.18
23	51	573.95	574.06	574.14
	52	573.49	573.60	573.68
	53	572.97	573.08	573.16
	54	572.39	572.50	572.58
	55	571.75	571.86	571.94
24	56	571.71	571.81	571.90
	57	571.25	571.36	571.44
	58	570.73	570.84	570.92
	59	570.15	570.26	570.34
	60	569.51	569.62	569.70

NOTES

Slab forming elevations are not given for the truss span (Span 10). The slab shall be constructed to finished grade elevations to maintain an 8" slab thickness with 1" minimum haunches at the stringers.

The spacing of points shown is measured along the top of beams, girders or stringers.

Elevations given are top of slab elevations before any concrete is placed. Included in the elevations are the calculated deflections for the dead load of diaphragms, slab, curbs and railings.

Top of beam, girder or stringer elevations shall be determined in the field in their final position at the points indicated prior to placing any concrete. Haunch heights at the respective points are the difference between the given elevation and this elevation less the slab thickness.

For the precast concrete spans the design minimum haunch is 4". Excessive camber in the beams will reduce the haunch. In such cases, the grade shall be adjusted when the beam flange encroaches more than ½" into the slab.

For the steel girder spans, the theoretical height between top of slab and bottom of girder top flange is 1'-0" at ℄ girder. The minimum acceptable dimension is 11", the maximum 1'-2". The theoretical height between top of slab and bottom of stringer top flange is 9½" at ℄ stringer. This dimension may vary from 8⅝" to 10½" and be acceptable. Dimensions beyond these max. or min. allowables shall be reported to the Engineer for method of adjustment.

2600 Drawn by: M. Herbolla March 1969
695145 Checked by: J. A. Liebsch Apr. 1969

SVERDRUP & PARCEL AND ASSOCIATES, Inc.
CONSULTING ENGINEERS
ST. LOUIS, MISSOURI

Note: Do not scale this drawing. Follow dimensions.

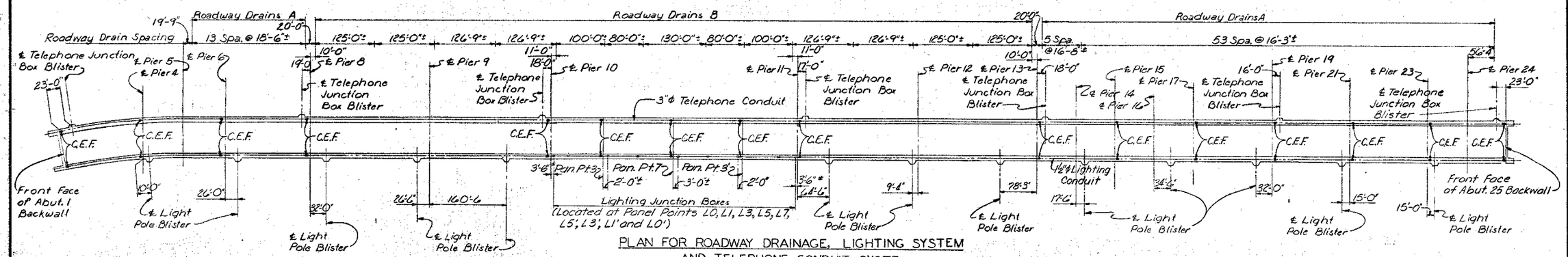
MISSISSIPPI RIVER BRIDGE

SLAB FORMING ELEVATIONS

MUSCATINE COUNTY
IOWA STATE HIGHWAY COMMISSION

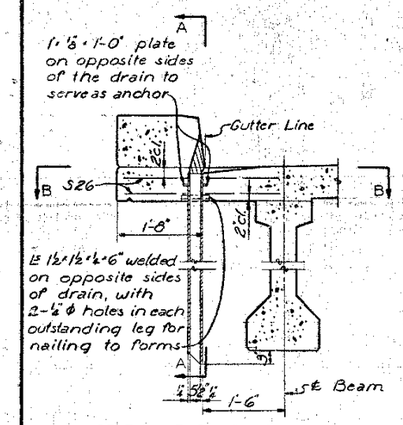
DESIGN NO. 170 FILE NO. 23800 DES. SH. NO. 28 OF 74

PROJECT UN-92-9(19)--41-70 PROJECT SH. NO. 90 OF 131

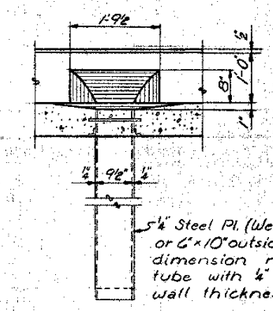


PLAN FOR ROADWAY DRAINAGE, LIGHTING SYSTEM AND TELEPHONE CONDUIT SYSTEM

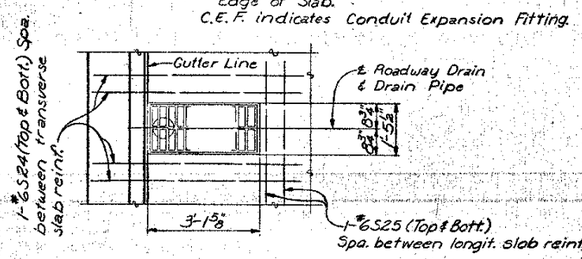
Note: Roadway Drains A & B are located at the upstream and downstream curbs.
All dimensions are measured along Edge of Slab.
C.E.F. indicates Conduit Expansion Fitting.



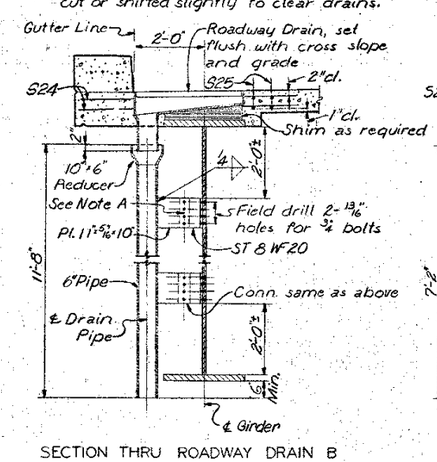
SECTION THRU ROADWAY DRAIN A
(146 Required)



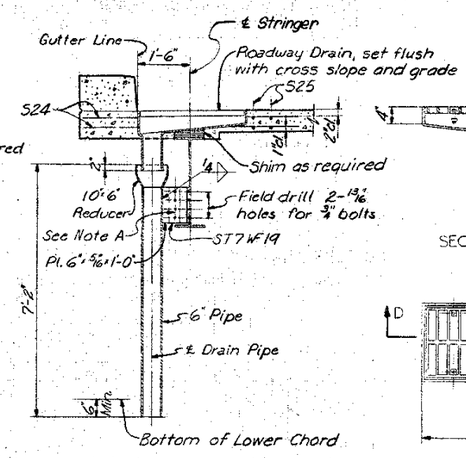
SECTION A-A



ROADWAY DRAIN B REINFORCING PLAN
Note: Normal slab reinforcement may be cut or shifted slightly to clear drains.

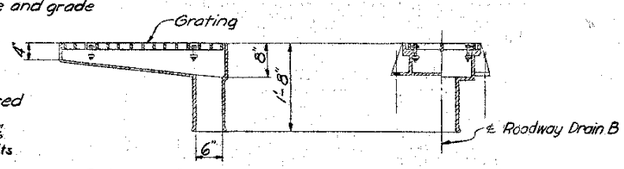


SECTION THRU ROADWAY DRAIN B
GIRDER SPANS



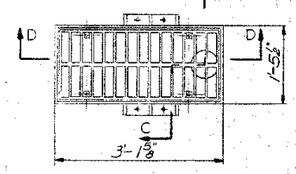
SECTION THRU ROADWAY DRAIN B
TRUSS SPAN

Note A: 13/16" holes in ST, 13/16" x 1½" horiz. slots in 5/16" Pl. for ¾" bolts.



SECTION D-D

SECTION C-C



ROADWAY DRAIN B
(28 Required)

DRAINAGE NOTES

Roadway Drains B are to be as manufactured by Neenah Foundry Co., Cat. No. 4014-A, or an approved equal. Material shall be ductile iron conforming to ASTM A536-67, Grade 65-45.

Pipe shall be spliced with full penetration butt welds.

Rough bolted connections shall be used for all ¾" bolts.

Drain Pipe shall conform to ASTM A53-69a, Type S.

Drains A are to be galvanized after fabrication.

Normal slab reinforcement may be shifted slightly to clear drains.

NOTES

Work this sheet with Sheet 30.

ROADWAY DRAINS

Note: Do not scale this drawing. Follow dimensions.

SVERDRUP & PARCEL AND ASSOCIATES, Inc.
CONSULTING ENGINEERS
ST. LOUIS, MISSOURI

26.00 | Drawn by: M. Herbella, March 1969
6.75 | Checked by: W. J. Gadalis, May 1969

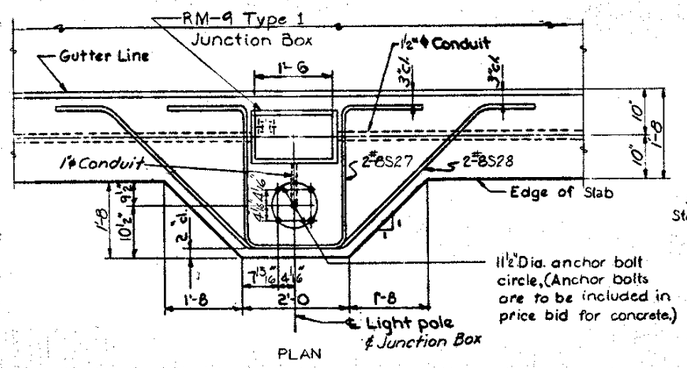
MISSISSIPPI RIVER BRIDGE

DRAINAGE

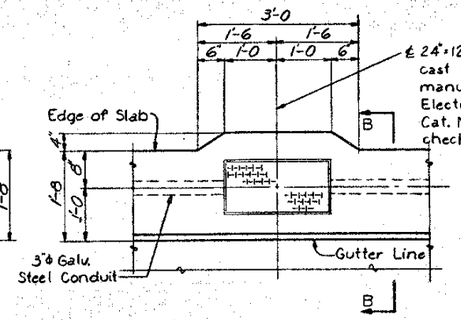
MUSCATINE COUNTY
IOWA STATE HIGHWAY COMMISSION

DESIGN NO. 170 FILE NO. 23800 DES. SH. NO. 29 OF 74

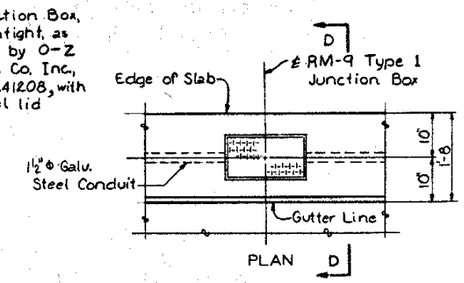
PROJECT UN-92-9(19)--41-70 PROJECT SH. NO. 91 OF 131



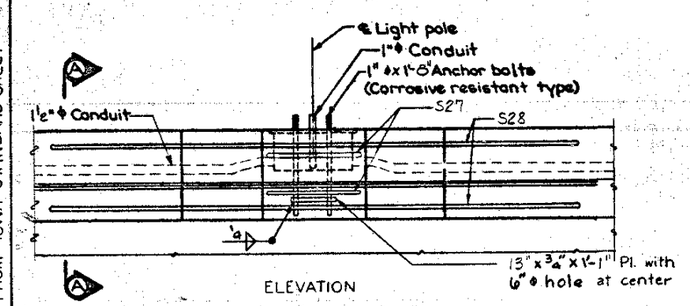
PLAN



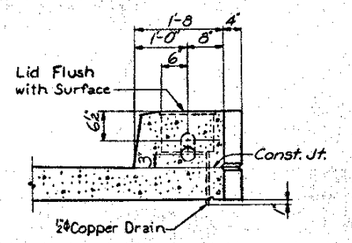
PLAN



PLAN

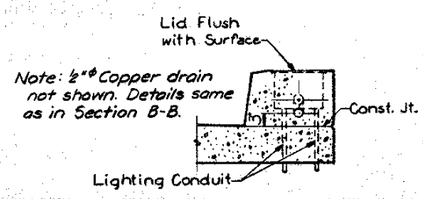


ELEVATION



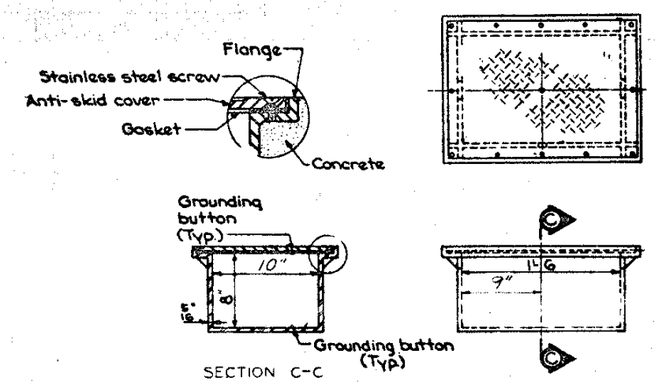
SECTION B-B

TELEPHONE JUNCTION BOX BLISTER



SECTION D-D

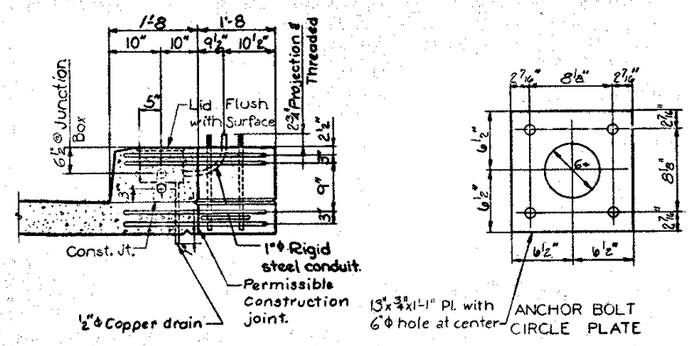
LIGHTING JUNCTION BOX



SECTION C-C

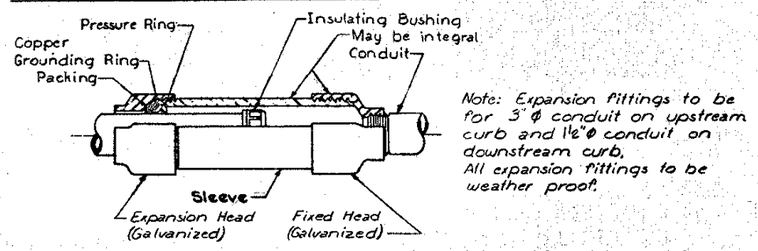
RM-9 TYPE 1, JUNCTION BOX

Note: Conduit holes are not shown. The grounding buttons are to be blind drilled and tapped for ⅜"φ x 0'-0¾ bolts.



SECTION A-A

LIGHT POLE BLISTER



Note: Expansion fittings to be for 3" φ conduit on upstream curb and 1½"φ conduit on downstream curb. All expansion fittings to be weather proof.

CONDUIT EXPANSION FITTING

EXPANSION FITTING TABLE		
Location		Expansion Chamber Length
Concrete Beam Spans	Abut. 1	4"
	Pier 4	4"
	Pier 6	4"
Girder Spans	Pier 8	6"
	Pier 10	14"
Truss Span	Pan. Pt. L3	2"
	Pan. Pt. L7	2"
	Pan. Pt. L3	2"
Girder Spans	Pier 11	6"
	Pier 13	6"
Concrete Beam Spans	Pier 15	4"
	Pier 17	4"
	Pier 19	4"
	Pier 21	4"
	Pier 23	4"
	Abut. 25	4"

NOTES:

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

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

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

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

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

Location of the ℄ of junction boxes may be shifted ± 1'-0 to avoid interfering with the handrail post anchor bolts and base plate.

All conduit shall be hot dip galvanized steel.

Note: Do not scale this drawing. Follow dimensions.

MISSISSIPPI RIVER BRIDGE

LIGHTING DETAILS AND TELEPHONE CONDUIT DETAILS

MUSCATINE COUNTY

IOWA STATE HIGHWAY COMMISSION

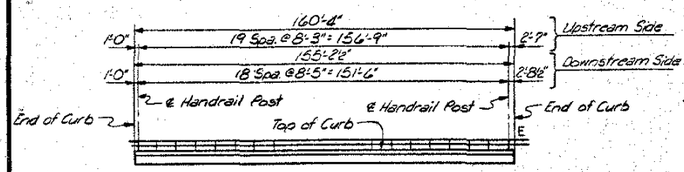
DESIGN NO. 170 FILE NO. 23800 DES. SH. NO. 30 OF 74

PROJECT UN-92-9(19)--41-70 PROJECT SH. NO. 92 OF 131

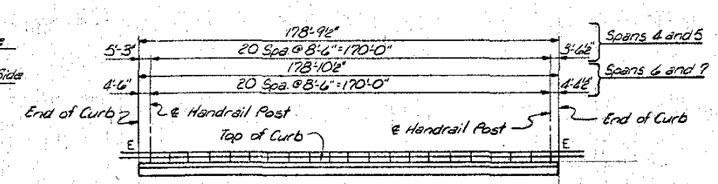
SVERDRUP & PARCEL AND ASSOCIATES, Inc.
CONSULTING ENGINEERS
ST. LOUIS, MISSOURI

2600 Drawn by: M. Herbellin, April 1969
69S170 Checked by: W.J. Gadalis, May 1969

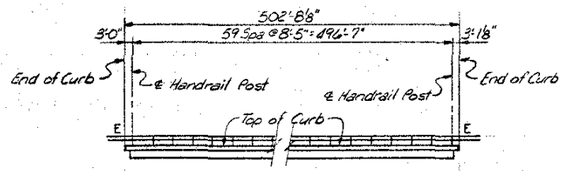
REPRODUCED IN PART FROM IOWA STANDARD SHEET



ELEVATION HANDRAIL POST SPACING
SPANS 1 THRU 3

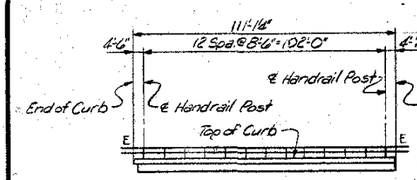


ELEVATION HANDRAIL POST SPACING
SPANS 4 THRU 7

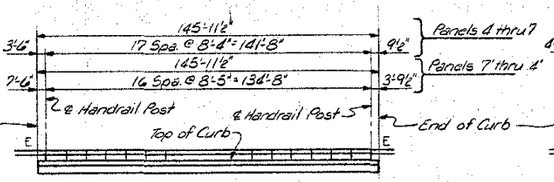


ELEVATION HANDRAIL POST SPACING
SPANS 8 – 9

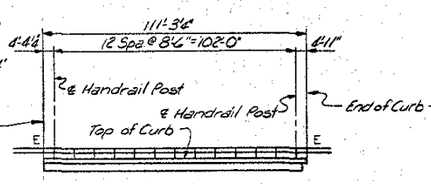
Note: E in Handrail Post Spacing Elevation indicates expansion fitting. For type and location see details on this sheet.



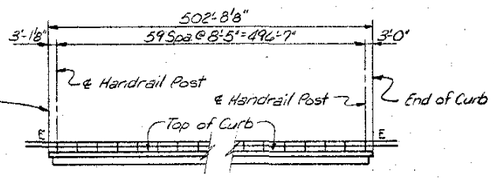
ELEVATION HANDRAIL POST SPACING
SPAN 10, PANELS 1 THRU 3



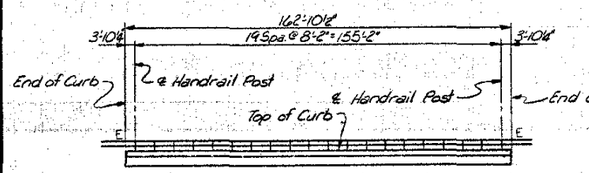
ELEVATION HANDRAIL POST SPACING
SPAN 10, PANELS 4 THRU 4'



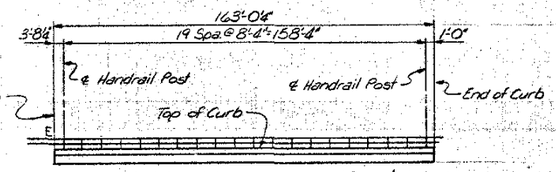
ELEVATION HANDRAIL POST SPACING
SPAN 10, PANELS 3' THRU 1'



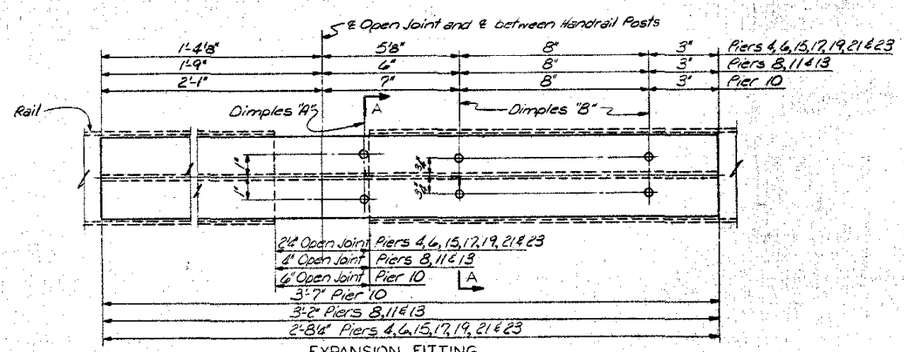
ELEVATION HANDRAIL POST SPACING
SPANS 11 – 2



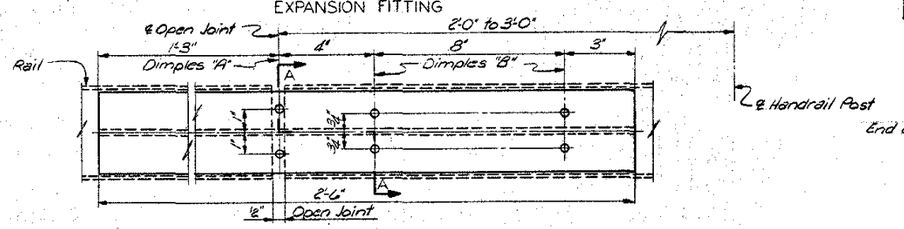
ELEVATION HANDRAIL POST SPACING
SPANS 13–14, 15–16, 17–18, 19–20 & 21–22



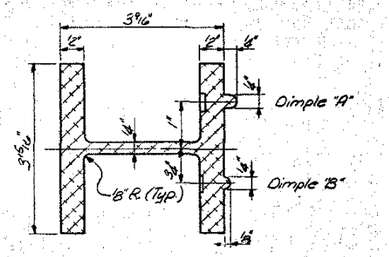
ELEVATION HANDRAIL POST SPACING
SPANS 23 – 24



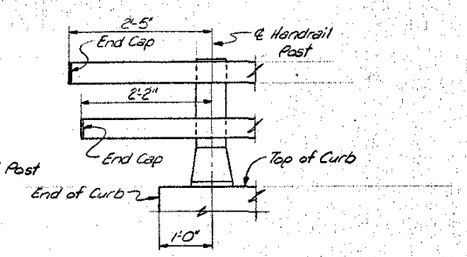
EXPANSION FITTING



RAIL SPLICE AND TRUSS EXPANSION FITTING



SECTION A-A



END OF RAIL DETAILS
AT ABUTMENTS 1 AND 25

NOTES

All longitudinal dimensions are measured along top of curb.
Work this sheet with Sheet 32.
Handrail Posts shall be set normal to grade.

Drawn By: D.J. Schrenna, April 1969
Checked By: W.J. Goddis, April 1969
2-20-70
2-13-70

SVERDRUP & PARCEL AND ASSOCIATES, Inc.
CONSULTING ENGINEERS
ST. LOUIS, MISSOURI

Note: Do not scale this drawing. Follow dimensions.

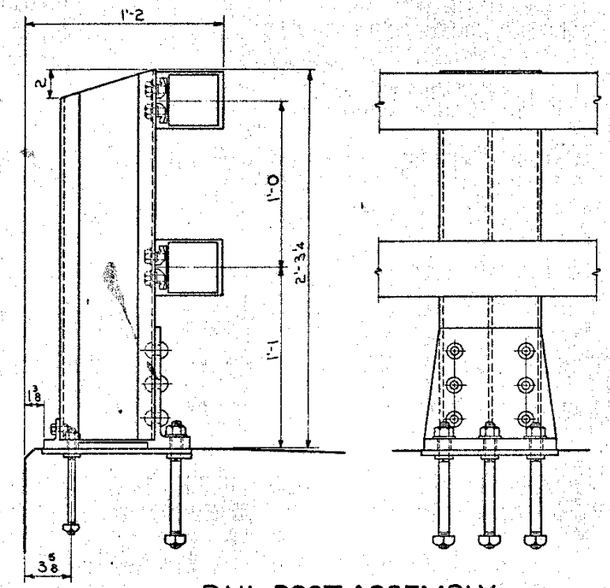
MISSISSIPPI RIVER BRIDGE

ALUMINUM HANDRAIL DETAILS

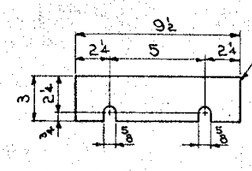
MUSCATINE COUNTY
IOWA STATE HIGHWAY COMMISSION

DESIGN NO. 170 FILE NO. 23800 DES. SH. NO. 31 OF 74

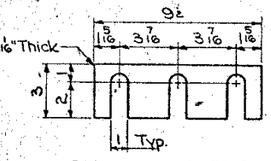
PROJECT UN-92-9(19)--41-70 PROJECT SH. NO. 93 OF 131



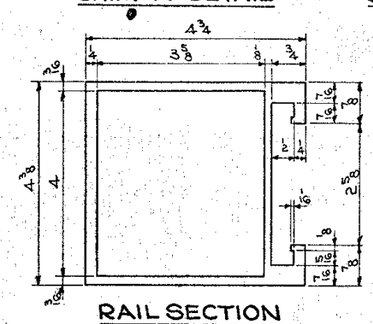
RAIL POST ASSEMBLY



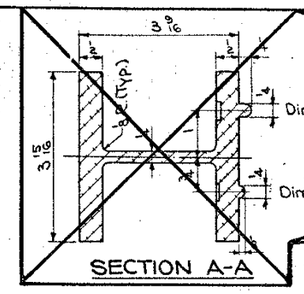
SHIM "A" DETAIL



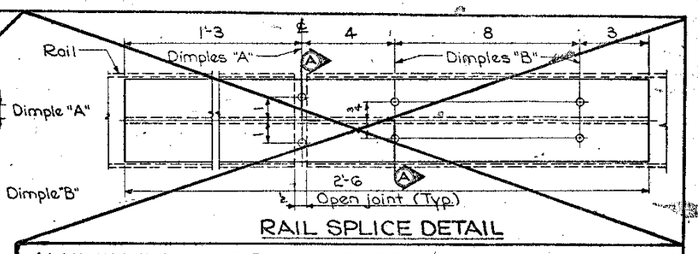
SHIM "B" DETAIL



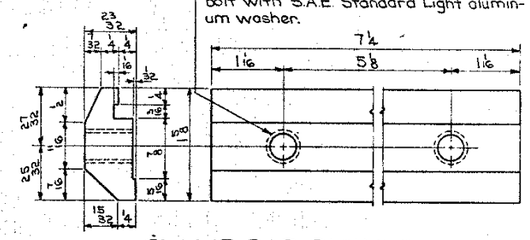
RAIL SECTION



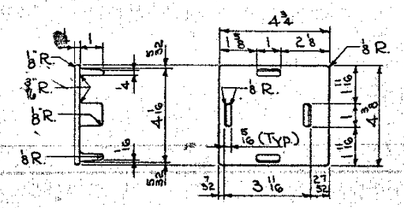
SECTION A-A



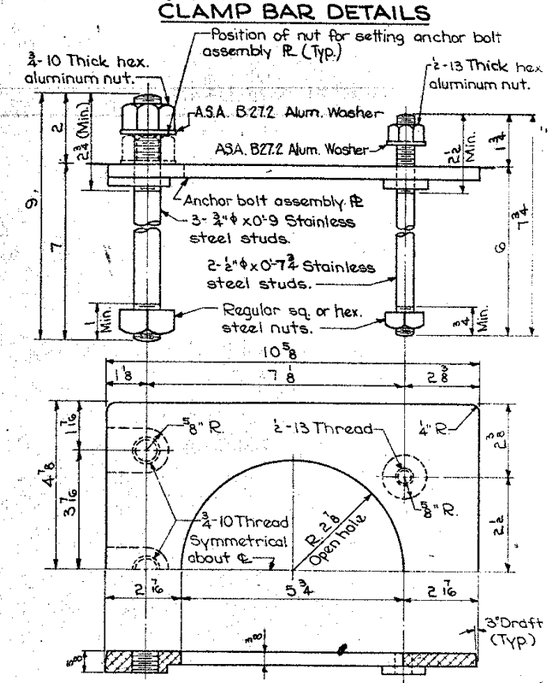
RAIL SPLICE DETAIL



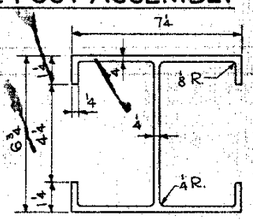
CLAMP BAR DETAILS



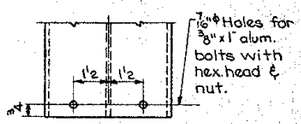
RAIL END CAP DETAILS



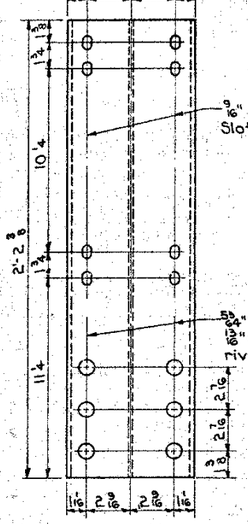
ANCHOR BOLT ASSEMBLY



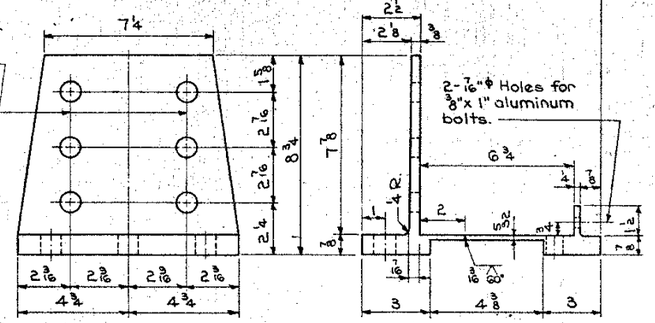
POST SECTION



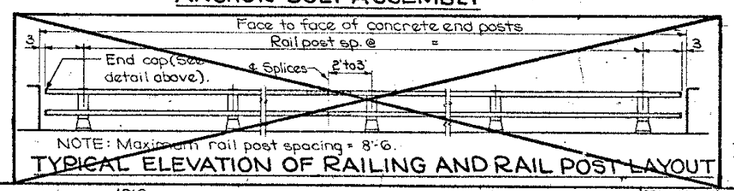
REAR VIEW OF POST



POST



POST BASE PLATE DETAILS



TYPICAL ELEVATION OF RAILING AND RAIL POST LAYOUT

ALUMINUM HANDRAIL NOTES:

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

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

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. The aluminum nuts shall be thick, hexagonal, finished and shall comply with A.S.A. B-18.2. Threads shall comply with A.S.A. B-1.1 for UNC threads series, class 2B fit.

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

The anchor bolt assembly plate shall be a flat and true aluminum alloy permanent mold casting complying with ASTM B-108 Alloy 5G70 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).

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

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

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 $\frac{1}{2}$"ϕ drain hole is to be provided, 3 inches in from the end, at the bottom side of the end sections of all rails.

DESIGN SPECIFICATIONS:

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

ALUMINUM HANDRAIL QUANTITIES	
Aluminum Handrail	Lin. Ft.

Revised 12-26-68: Added explanation for material for clamp bar bolt.
Revised 6-7-67: Red lead shop coat paint note added.
Revised 5-12-67: Material specifications for aluminum and stainless steel changed.
Revised 10-13-66: Note concerning $\frac{1}{2}$"ϕ drain hole added.
Revised 9-23-66: Gage of holes in Post Base Plate changed.
Revised 8-19-66: Post Base Plate and Anchor Bolt Assembly Plate details changed.
Revised 7-25-66: Caulking at posts eliminated.
Revised 3-14-66: Minor changes made.

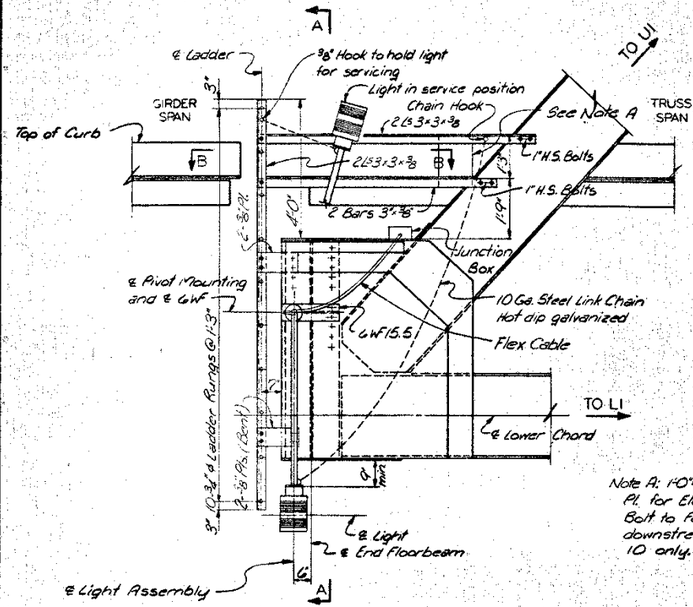
REPRODUCED FROM IOWA STANDARD SHEET

MISSISSIPPI RIVER BRIDGE
ALUMINUM HANDRAIL DETAILS
MUSCATINE COUNTY

IOWA STATE HIGHWAY COMMISSION
DESIGN NO. 170 FILE NO. 23800 DES. SH. NO. 32 OF 74

1012	COUNTY	PROJECT NUMBER	STATE	FED. ROAD DIST. No.	FISCAL YEAR	SHEET No.	TOTAL SHEETS
		N-92-9(19)-41-70	IOWA		1970	94	131

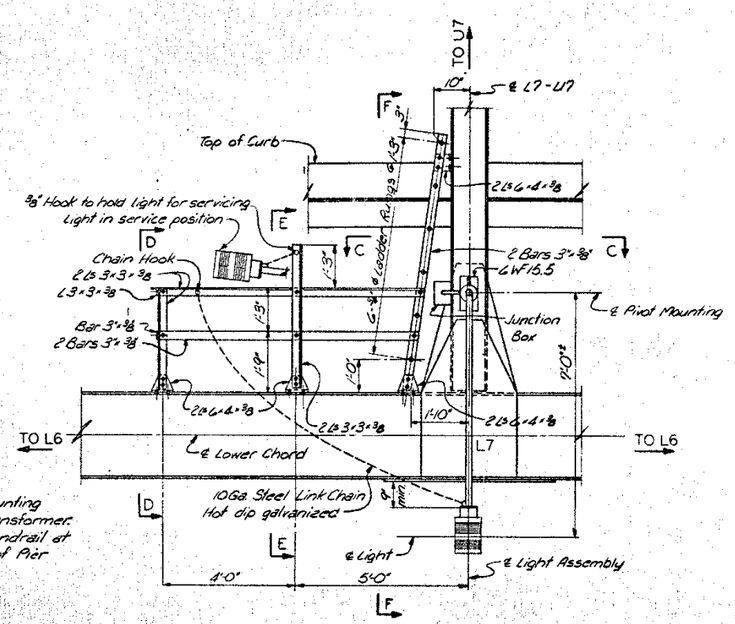
DIETZGEN NO. 181 ARCHITECT



CHANNEL MARGIN LIGHT PLATFORM
NEAR PANEL POINT L0

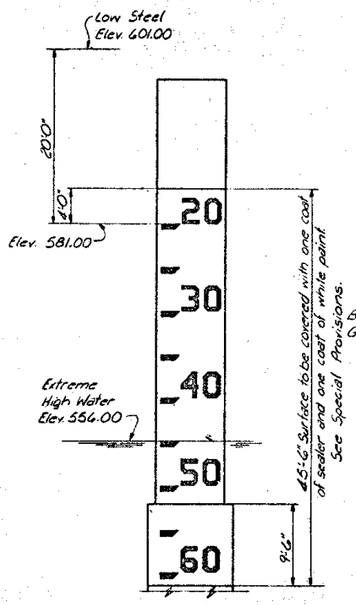
Note: Downstream side at Pier 10 or upstream side at Pier 11 shown.
Upstream side at Pier 10 or downstream side at Pier 11 opposite hand.

Note A: 1'-0"x5/16"x1'-6" Mounting Pl. for Electrical Transformer. Bolt to Far Side Handrail at downstream side of Pier 10 only.



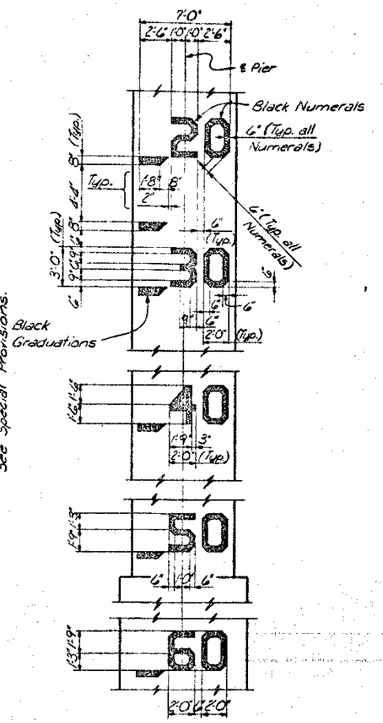
MID-CHANNEL LIGHT PLATFORM
NEAR PANEL POINT L7

Note: Downstream side shown. Upstream side opposite hand.



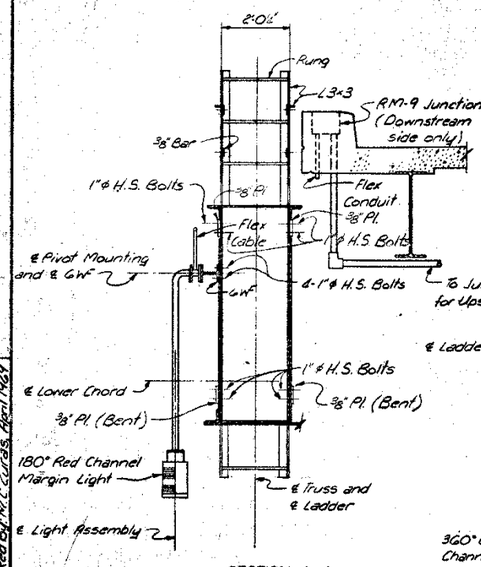
ELEVATION

Note: Clearance Gage to be located on the upstream side of Pier 10 and the downstream side of Pier 11.



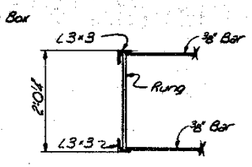
DETAIL OF
GRADUATIONS & NUMERALS

CLEARANCE GAGE

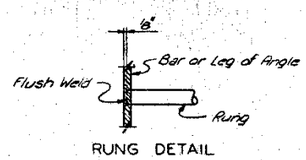


SECTION A-A

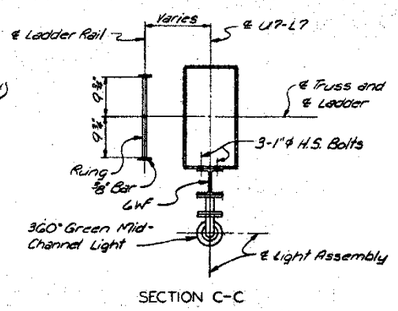
Note: Floorbeam and truss members L0-U1 and L0-L2 not shown.



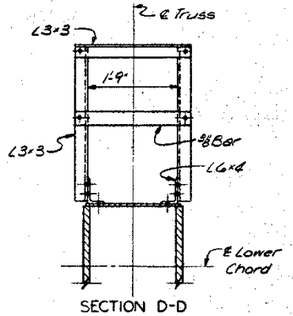
SECTION B-B



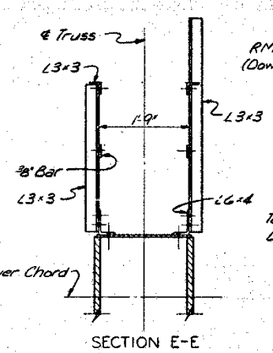
RUNG DETAIL



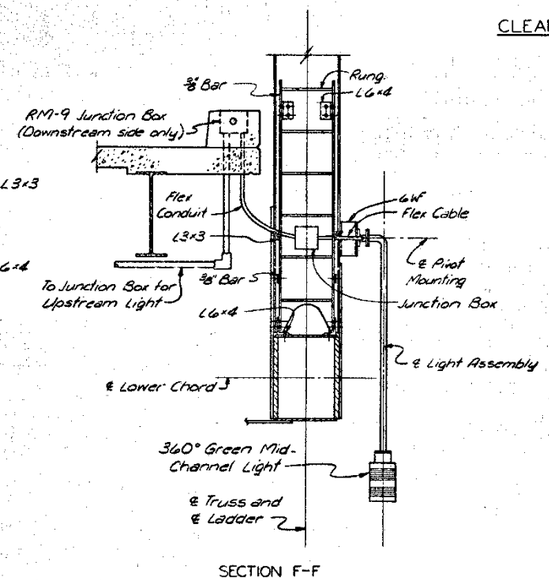
SECTION C-C



SECTION D-D



SECTION E-E



SECTION F-F

Note: Floorbeam not shown.

NOTES

Work this sheet with Sheets 29, 34 and 35.
All conduit is rigid type except as noted.
All connections to truss shall be made with 7/8" ϕ High Strength Bolts except as noted. All other connections shall be made with 3/4" ϕ High Strength Bolts.

Drawn By: D.J. Stocema, April 1969
Checked By: N.E. Curtis, April 1969

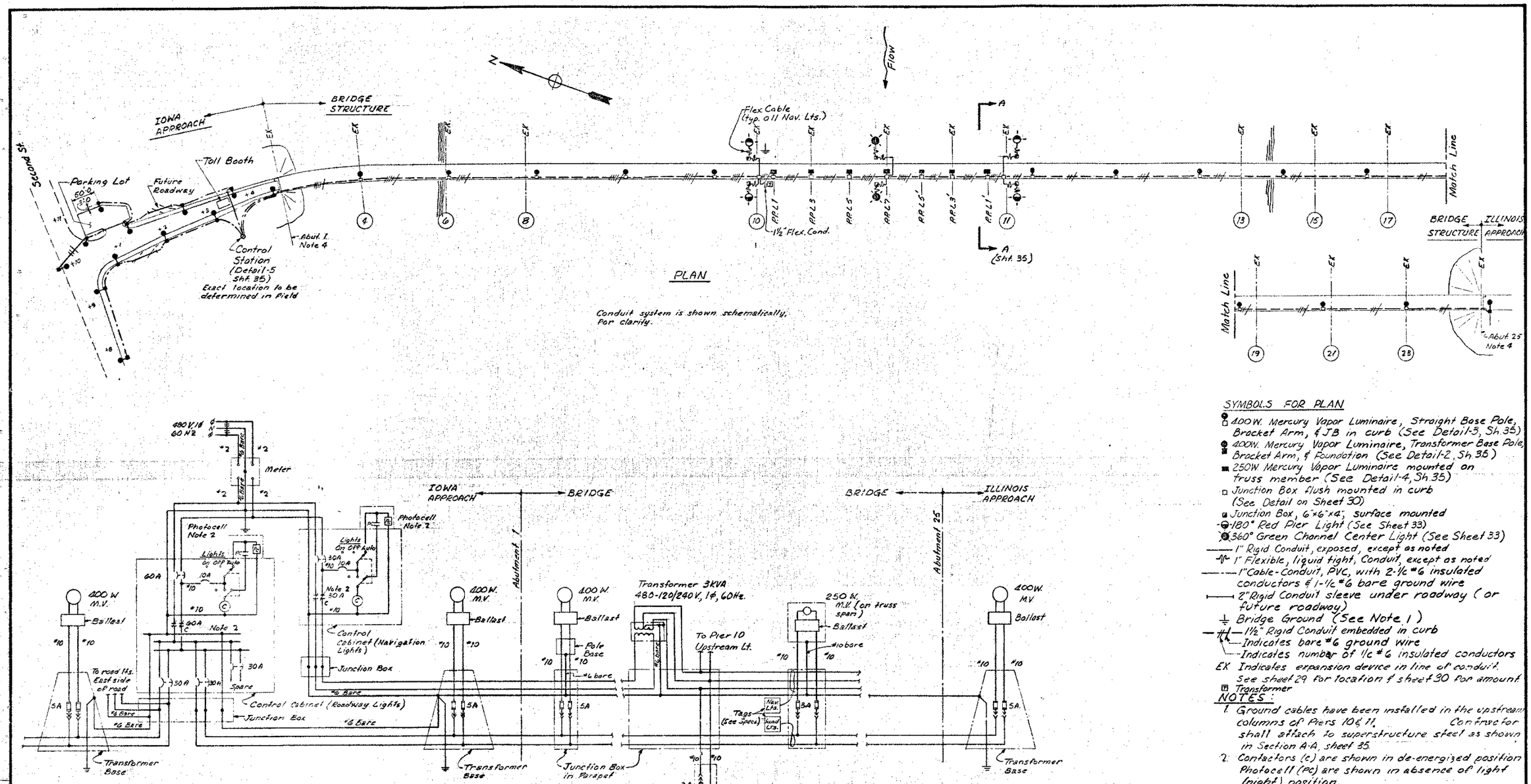
SVERDRUP & PARCEL AND ASSOCIATES, Inc.
CONSULTING ENGINEERS
ST. LOUIS, MISSOURI

Note: Do not scale this drawing. Follow dimensions.

MISSISSIPPI RIVER BRIDGE
NAVIGATION LIGHTING
AND CLEARANCE GAGE
MUSCATINE COUNTY
IOWA STATE HIGHWAY COMMISSION

DESIGN NO. 170 FILE NO. 23800 DES. SH. NO. 33 OF 74

PROJECT IN-92-9(19)--41-70 PROJECT SH. NO. 95 OF 131



PLAN

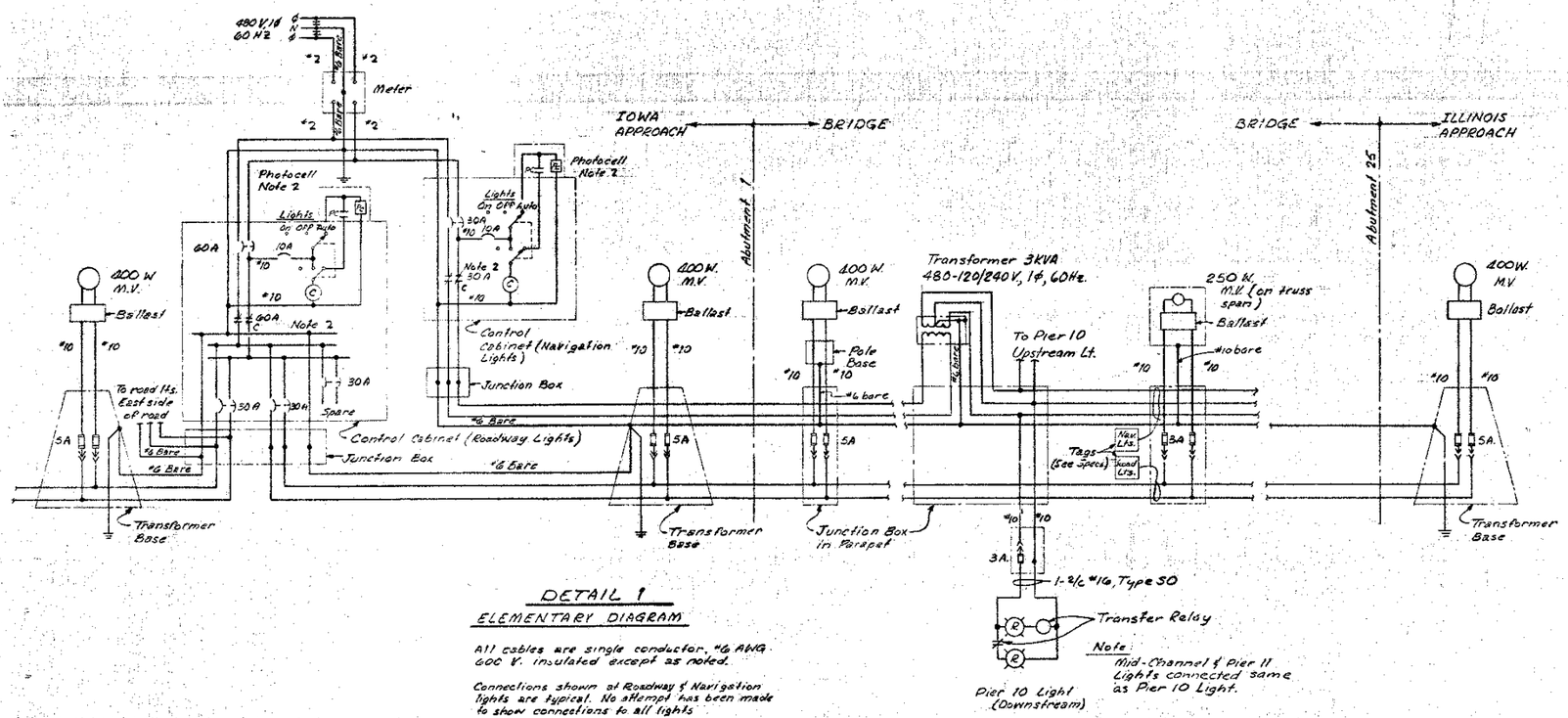
Conduit system is shown schematically, for clarity.

SYMBOLS FOR PLAN

- 400W. Mercury Vapor Luminaire, Straight Base Pole, Bracket Arm, & JB in curb (See Detail-3, Sh. 35)
- 400W. Mercury Vapor Luminaire, Transformer Base Pole, Bracket Arm, & Foundation (See Detail-2, Sh. 35)
- 250W Mercury Vapor Luminaire mounted on truss member (See Detail-4, Sh. 35)
- Junction Box flush mounted in curb (See Detail on Sheet 30)
- Junction Box, 6"x6"x4", surface mounted
- 180° Red Pier Light (See Sheet 33)
- 360° Green Channel Center Light (See Sheet 33)
- 1" Rigid Conduit, exposed, except as noted
- 1" Flexible, liquid tight, Conduit, except as noted
- 1" Cable-Conduit, PVC, with 2-1/c #6 insulated conductors & 1-1/c #6 bare ground wire
- 2" Rigid Conduit sleeve under roadway (or future roadway)
- Bridge Ground (See Note 1)
- 1½" Rigid Conduit embedded in curb
- Indicates bare #6 ground wire
- Indicates number of 1/c #6 insulated conductors
- EX Indicates expansion device in line of conduit. See sheet 29 for location & sheet 30 for amount
- Transformer

NOTES:

1. Ground cables have been installed in the upstream columns of Piers 10 & 11. Contractor shall attach to superstructure steel as shown in Section A-A, sheet 35.
2. Contactors (c) are shown in de-energized position. Photocell (PC) are shown in absence of light (night) position.
3. Fuses shall be type KTK 600V. All fuse holders shall be Bussman Mfg. Co. "Tron" in-the-line waterproof type. In addition, fuseholders in transformer bases (on approaches) shall have "break-away" feature.
4. Conduit through Abutment previously installed.



DETAIL 1

ELEMENTARY DIAGRAM

All cables are single conductor, #6 AWG 600 V. insulated except as noted.

Connections shown at Roadway & Navigation lights are typical. No attempt has been made to show connections to all lights.

Note:
Mid-Channel & Pier 11 Lights connected same as Pier 10 Light.

MISSISSIPPI RIVER BRIDGE

ELECTRICAL DETAILS

MUSCATINE COUNTY

IOWA STATE HIGHWAY COMMISSION

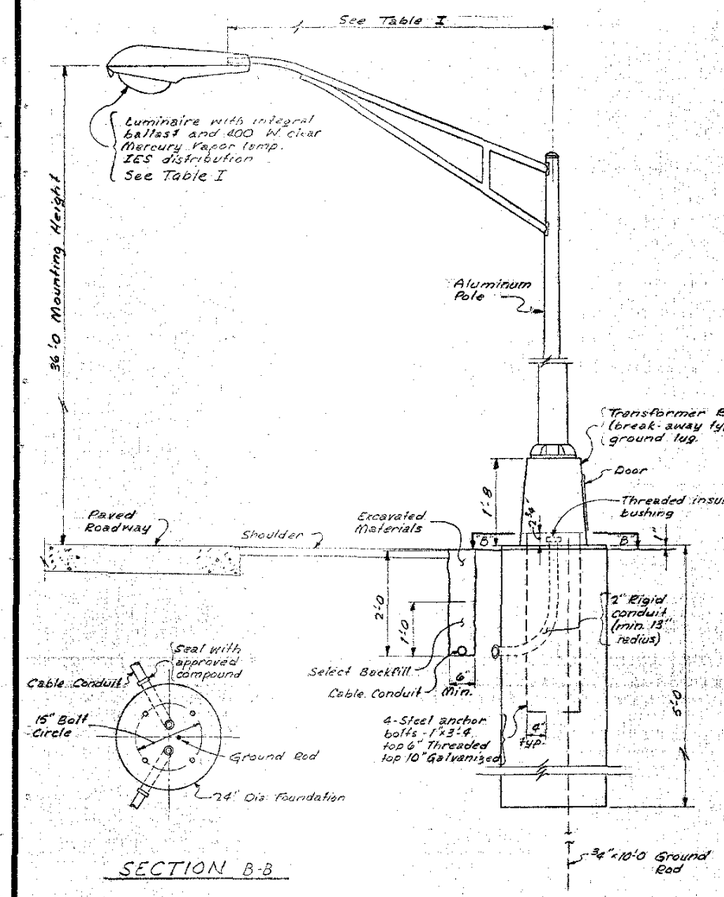
SVERDRUP & PARCEL AND ASSOCIATES, Inc.
CONSULTING ENGINEERS
ST. LOUIS, MISSOURI

Drawn By: W.J. Pokorjak May 1969
Checked By: R. Prass May 1969

Note: Do not scale this drawing. Follow dimensions.

DESIGN NO. 170 FILE NO. 23800 DES. SH. NO. 34 OF 74

PROJECT UN-92-9(19)--41--70 PROJECT SH. NO. 96 OF 131

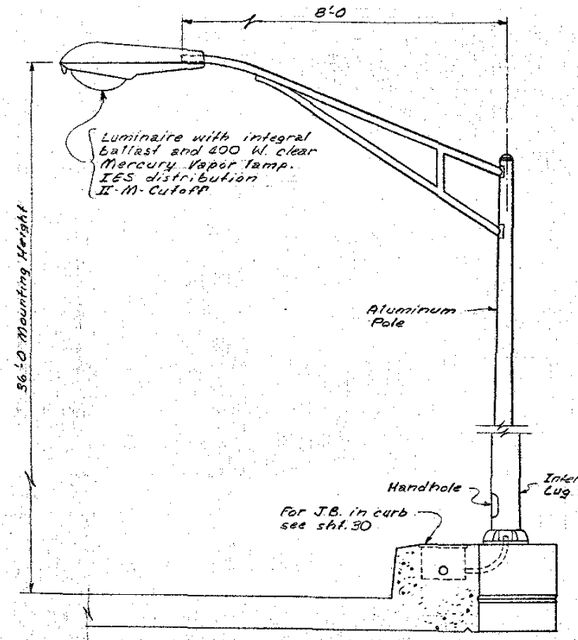


SECTION B-B

DETAIL-2

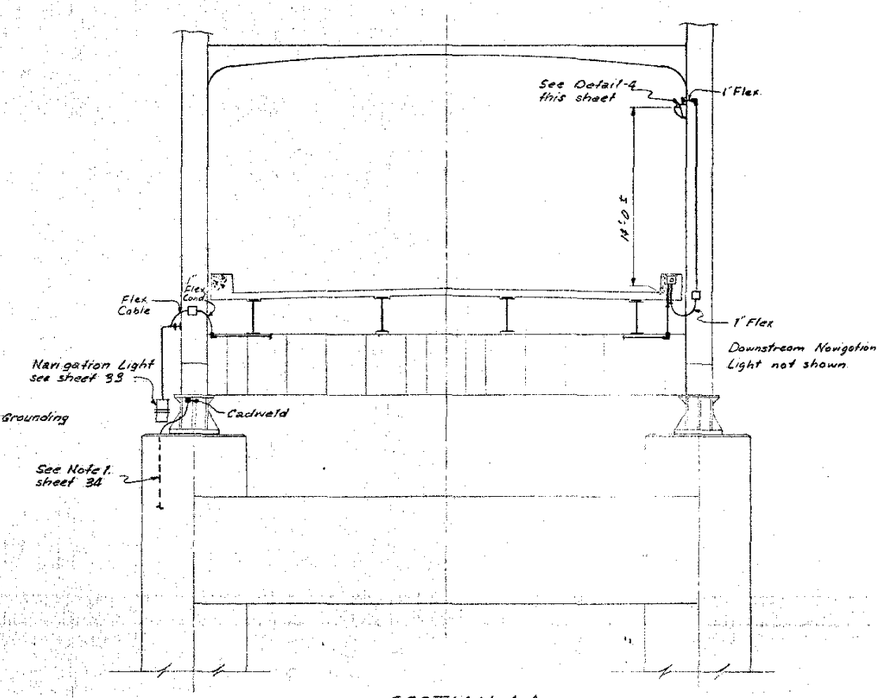
LIGHT STANDARD ON CONCRETE FOUNDATION

(For Location, See Table I)



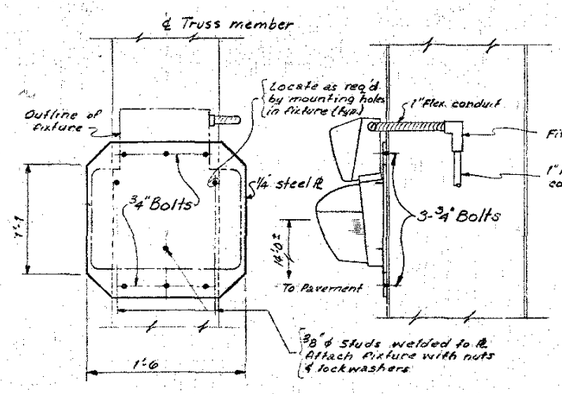
DETAIL-3

LIGHT STANDARD ON BRIDGE STRUCTURE



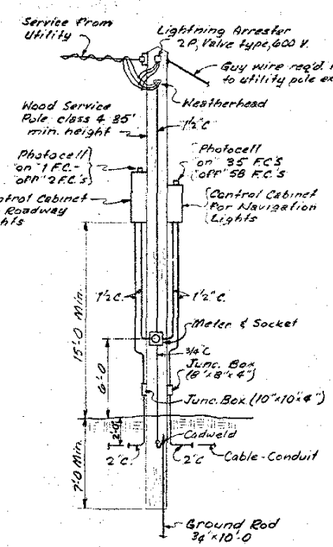
SECTION A-A

(Sheet-33)



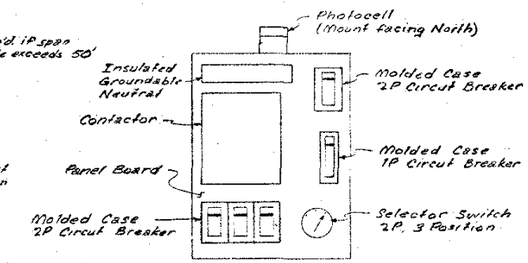
DETAIL-4

LUMINAIRE ON TRUSS SPAN



DETAIL-5

CONTROL STATION



DETAIL-6

CONTROL CABINET FOR ROADWAY LIGHTS

(Shown with Door Removed)

Control cabinet for Navigation Lights, similar. Detail 1, Sh. 34.

Enclosure dimensions shall be minimum required for proper component placement and wire clearance for voltage used.

"As-Built" elementary diagram shall be mounted to inside face of cabinet door.

TABLE I

LOCATION	STATION	OFFSET	BRACKET ARM	LUMINAIRE LIGHT DISTRIBUTION
Second Street	7+66	31'-Rt.	12'-0	II-M-Cutoff
Second Street	9+26	43'-Rt.	12'-0	III-M-Cutoff
Second Street	10+00	29'-Lt.	12'-0	III-M-Cutoff
Iowa Approach	0+94	37'-Rt.	12'-0	III-M-Cutoff
Iowa Approach	2+07	30'-Rt.	15'-0	III-M-Cutoff
Iowa Approach	3+13	26'-Rt.	12'-0	III-M-Cutoff
Iowa Approach	4+55	19'-Rt.	8'-0	II-M-Cutoff
Iowa Approach	0+53	38'-Lt.	8'-0	III-M-Cutoff
Iowa Approach	1+48	31'-Lt.	8'-0	III-M-Cutoff
Iowa Approach	2+66	27'-Lt.	12'-0	III-M-Cutoff
Iowa Approach	3+75	27'-Lt.	15'-0	III-M-Cutoff
Illinois Approach	35+10	20'-Rt.	12'-0	II-M-Cutoff
Parking Lot	See Plan	See Plan	8'-0	III-M-Cutoff

Drawn By: W.T. Palucka May '70
Checked By: R. Press May '70

2600

SVERDRUP & PARCEL AND ASSOCIATES, Inc.
CONSULTING ENGINEERS
ST. LOUIS, MISSOURI

Note: Do not scale this drawing. Follow dimensions.

MISSISSIPPI RIVER BRIDGE

ELECTRICAL DETAILS

MUSCATINE COUNTY

IOWA STATE HIGHWAY COMMISSION

DESIGN NO. 170 FILE NO. 23800 DES. SH. NO. 35 OF 74

PROJECT UN-92-9(19)--41-70 PROJECT SH. NO. 97 OF 131

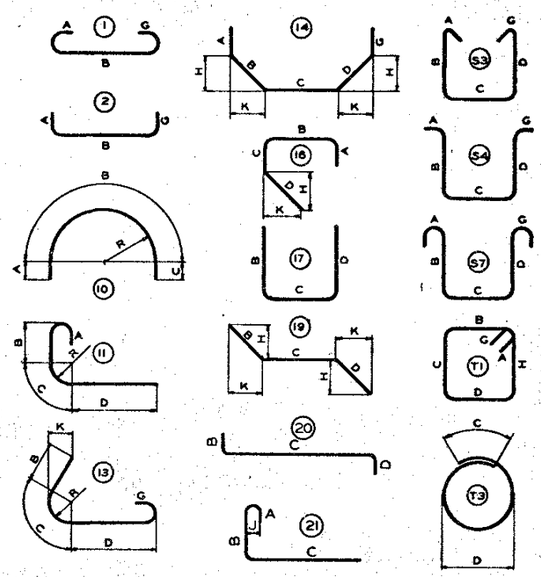
MARK	NO. REQ'D	SIZE NO.	LENGTH FT-IN	TYPE	LOCATION	A FT-IN	B FT-IN	C FT-IN	D FT-IN	G FT-IN	H FT-IN	K FT-IN	R FT-IN
K 1	56	5	8- 2	SP	DIAPHRAGM								
K 2	4	5	31- 9	ST	DO								
K 3	1008	5	6- 5	ST	DO								
K 4	4	5	3- 0	17	DO		1- 0	1- 0	1- 0				
K 5	1568	5	4- 9	17	DO		2- 1	7	2- 1				
K 6	448	5	5- 5	17	DO		2- 5	7	2- 5				
K 7	384	5	7- 3	17	DO		2- 9	1- 9	2- 9				
K 8	96	5	7-11	17	DO		3- 1	1- 9	3- 1				
K 9	20	5	3- 0	17	DO		8	1- 7 3/4	8				
K 10					NOT USED								
K 11	64	5	5-11	17	DIAPHRAGM		2- 1	1- 9	2- 1				
K 12					NOT USED								
K 13	16	5	6- 7	17	DIAPHRAGM		2- 5	1- 9	2- 5				
K 14	136	5	5- 2	ST	DO								
K 15	10	5	30- 3	ST	DO								
K 16	392	5	4-11	17	DO		2- 1	9	2- 1				
K 17	112	5	5- 7	17	DO		2- 5	9	2- 5				
K 18	18	5	2- 0	17	DO		8	8	8				
K 19	96	5	6- 9	17	DO		3- 1	7	3- 1				
K 20	240	5	6- 1	17	DO		2- 9	7	2- 9				
K 21	14	5	1-11	17	DO		8	7	8				
K 22	16	5	5- 5	17	DO		2- 5	7	2- 5				
K 23	40	5	4- 9	17	DO		2- 1	7	2- 1				
K 24					NOT USED								
K 25					NOT USED								
K 26	496	5	5- 0	17	DIAPHRAGM		1- 3	2- 6	1- 3				
K 27	144	5	3- 6	21	DO	—	1- 3	2- 3					
S 1	5125	6	35- 1	ST	SLAB								
S 2	420	5	33- 0	ST	DO								
S 3	845	5	36- 9	ST	DO								
S 4	40	6	36- 9	ST	CURB								
S 5	1085	5	3- 8	17	DO		1- 3	1- 2	1- 3				
S 6	1860	4	5- 0	SP	DO								
S 7	10	6	32- 3	ST	DO								
S 8	8	7	17- 0	ST	DO								
S 9	88	7	19- 0	ST	SLAB&CURB								
S 10	252	7	17- 0	ST	DO								
S 11	120	6	33- 9	ST	CURB								
S 12	2550	5	33- 7	ST	SLAB								
S 13	10	6	33- 3	ST	CURB								
S 14	542	4	5- 0	SP	DO								
S 15	74	5	17- 0	ST	SLAB								
S 16	2	6	17- 0	ST	DO								
S 17	4	6	12- 0	ST	DO								
S 18	4	6	22- 0	ST	DO								
S 19					NOT USED								
S 20					NOT USED								
S 21					NOT USED								
S 22					NOT USED								
S 23					NOT USED								
S 24	128	6	6- 2	ST	SLAB								
S 25	64	6	4- 6	ST	DO								
S 26	292	6	7- 2	17	DO		3- 0	1- 2	3- 0				
S 27	26	8	10- 7	SP	DO								
S 28	26	8	11- 2	SP	DO								
S 29	8	5	2- 3	10	LUG	6	1- 2 1/2	6					4
J 1	6054	6	35- 1	ST	SLAB								
J 2	2550	5	34- 7	ST	DO								
J 3	120	6	34-11	ST	CURB								
J 4	1608	4	5- 6	SP	DO								
J 5	1086	5	3- 8	17	DO		1- 3	1- 2	1- 3				
J 6	510	5	37- 6	ST	SLAB								
J 7	12	6	37-11	ST	CURB								
J 8	680	5	37- 4	ST	SLAB								
J 9	32	6	37- 7	ST	CURB								
J 10	12	6	38- 0	ST	DO								
J 11					NOT USED								
J 12	32	5	40- 0	ST	SLAB								
J 13	8	4	3- 8	SP	CURB								
J 14	8	6	2-11	ST	DO								
J 15	820	4	5- 3	SP	DO								

SVERDRUP & PARCEL AND ASSOCIATES, Inc.
CONSULTING ENGINEERS
ST. LOUIS, MISSOURI

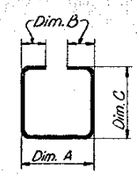
26-00
6-95-208

Drawn By: D.L. Naughton, May 1969
Checked By: W.J. Godolis, May 1969

STANDARD BAR TYPES

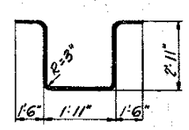


SPECIAL BAR TYPES

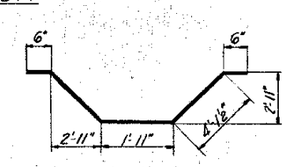


Bar	Dim. A	Dim. B	Dim. C
J4	1'-3¾"	5"	1'-8⅞"
J13	1'-3¾"	5"	9"
J15	1'-3¾"	5"	1'-6½"
S6 & S14	1'-3¾"	5"	1'-5"

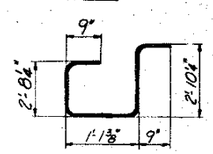
J4, J13, J15, S6, & S14



S27



S28



K1

NOTES

All dimensions are out to out, except "R" which is to inside of bend.

All bends shown are bent around a standard mandrel, except where radius "R" is indicated.

Figures in circles indicate standard bar types from A.C.I. "Manual of Standard Practice for Detailing Reinforced Concrete Structures."

Dimensioning, bending and hooks for bent bars shall conform to recommendations indicated in A.C.I. "Manual of Standard Practice for Detailing Reinforced Concrete Structures."

A dash in the appropriate dimension column indicates that a hook or portion of a standard bar type is to be omitted.

Bars marked "SP" in the type column require special bending, see detail.

Bending dimensions may be considered as approximate not necessarily adding to exact total length of bar.

Note: Do not scale this drawing. Follow dimensions.

MISSISSIPPI RIVER BRIDGE

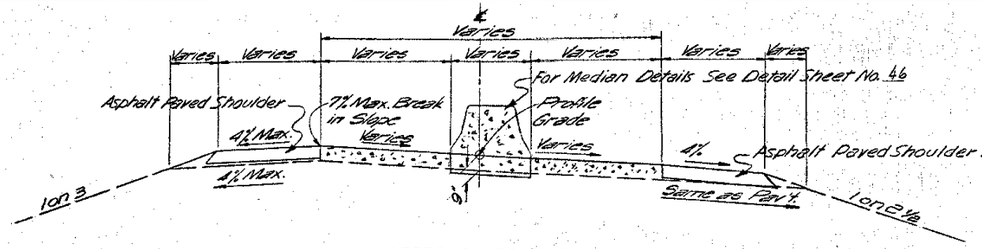
BAR LIST

MUSCATINE COUNTY

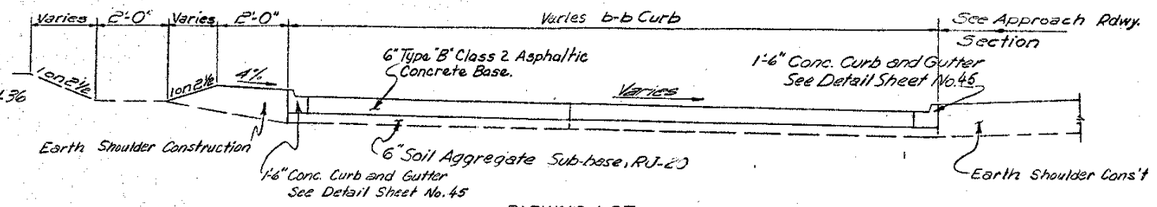
IOWA STATE HIGHWAY COMMISSION

DESIGN NO. 170 FILE NO. 23800 DES. SH. NO. 36 OF 74

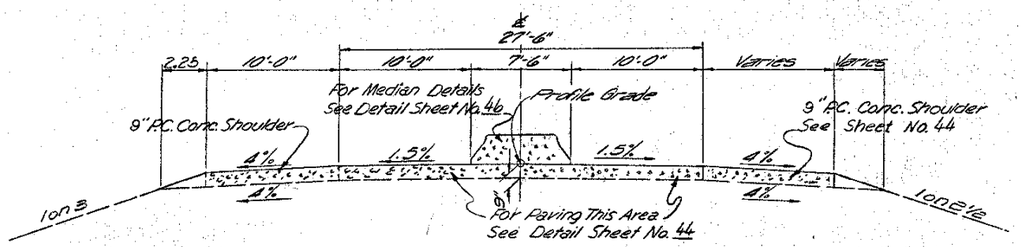
PROJECT UN-92-9(19)--41-70 PROJECT SH. NO. 98 OF 131



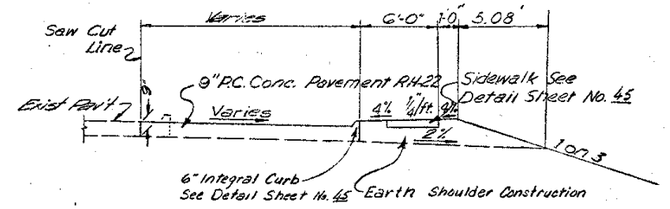
APPROACH ROADWAY
STA. 3+75 TO STA. 4+72.20



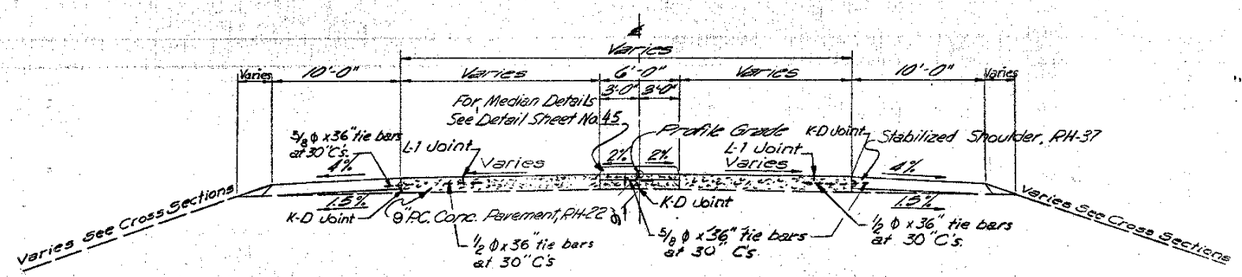
PARKING LOT
STA 0+49± TO STA 1+49±



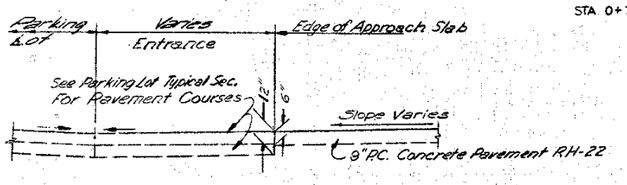
APPROACH ROADWAY
STA. 3+25 TO STA. 3+75



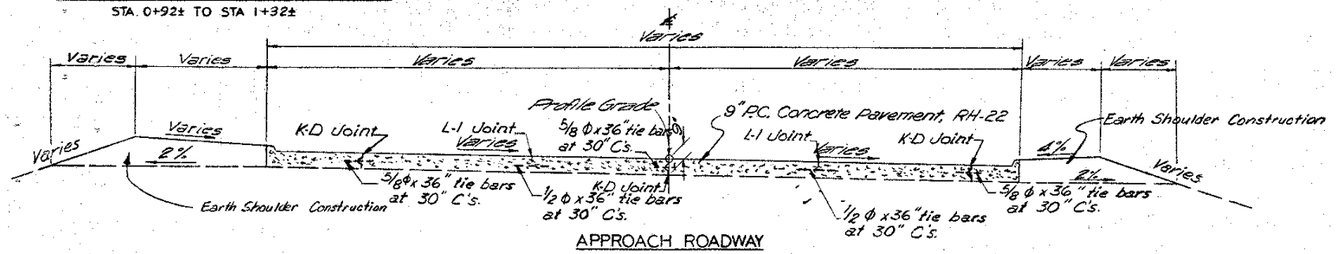
SECOND STREET WIDENING
STA. 7+66.38 TO STA. 9+26.38



APPROACH ROADWAY
STA. 0+77± TO STA. 3+25



PARKING LOT ENTRANCE PAVEMENT
STA. 0+92± TO STA 1+32±



APPROACH ROADWAY
STA. 0+22± TO STA. 0+77±

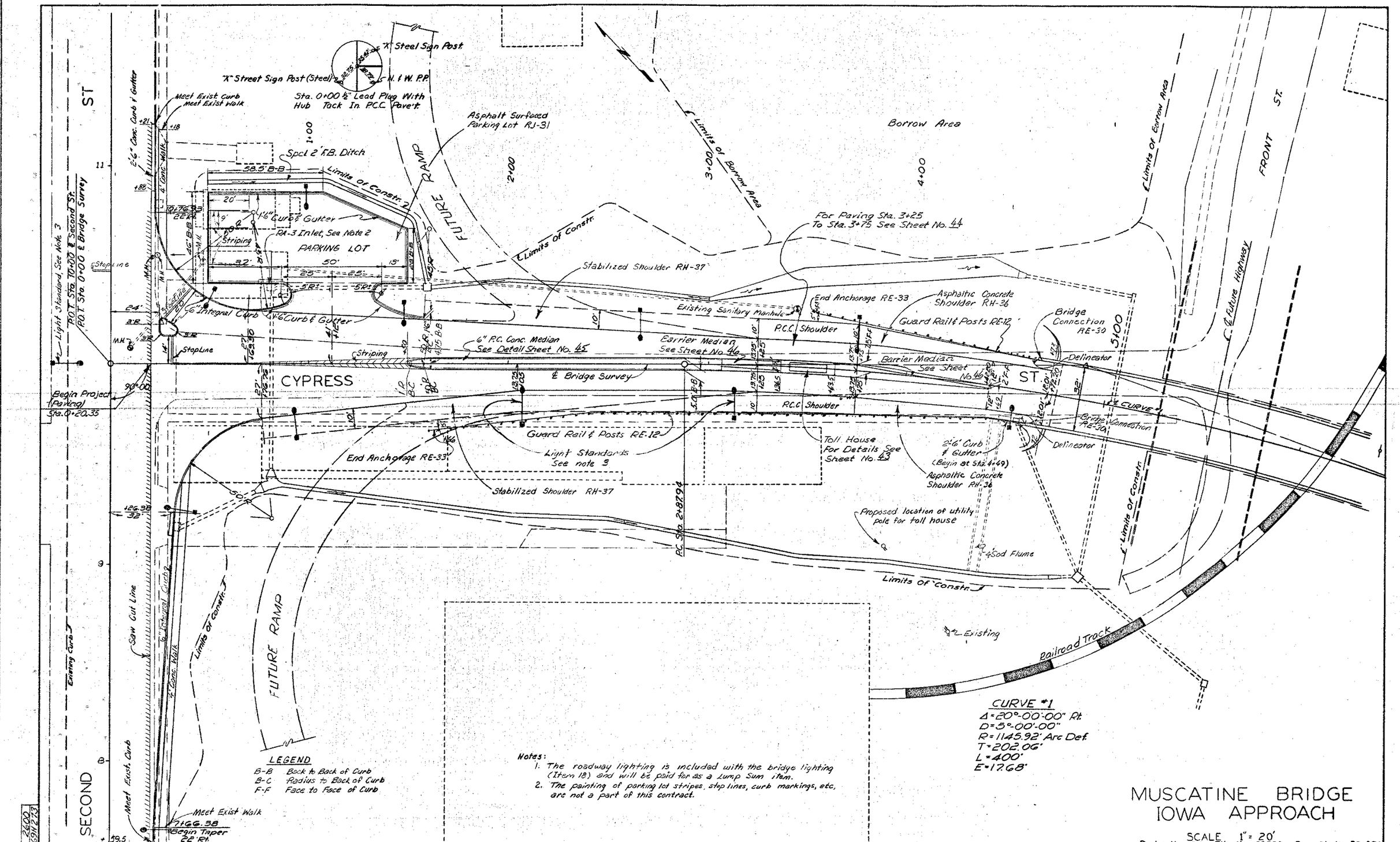
* NOTES:

1. Typical sections are intended to show general features and materials of the prop. construction.
2. On high side of superelevated pavements the shoulder slope shall be maintained at the normal slope of 0.040 ft. per ft. unless this slope produces a grade break with adjacent pavement of more than 7%. The shoulder slope shall be determined by a 7% break with adjacent pavement unless this super would create a slope flatter than 1%. The grade break should then be reduced and a slope of at least 1% on the shoulder provided.
   On the low side of superelevated curves the shoulder slope shall be maintained at normal slope of 0.040 ft. per ft. unless the adjacent pavement slope is steeper, in which case the shoulder will slope at the same slope as adjacent pavement.
3. Slab to be thickened at treadles. See Sheet No. 44

TYPICAL SECTIONS

Design No. 170 File No. 23800 Des. Sh. No. 38 of 74

COUNTY	PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
MUSCATINE	UN 92-9(19)--41-70	IOWA	5	1970	94	181



LEGEND

B-B Back to Back of Curb
B-C Radius to Back of Curb
F-F Face to Face of Curb

Notes:

1. The roadway lighting is included with the bridge lighting (Item 18) and will be paid for as a Lump Sum item.
2. The painting of parking lot stripes, step lines, curb markings, etc, are not a part of this contract.

CURVE #1

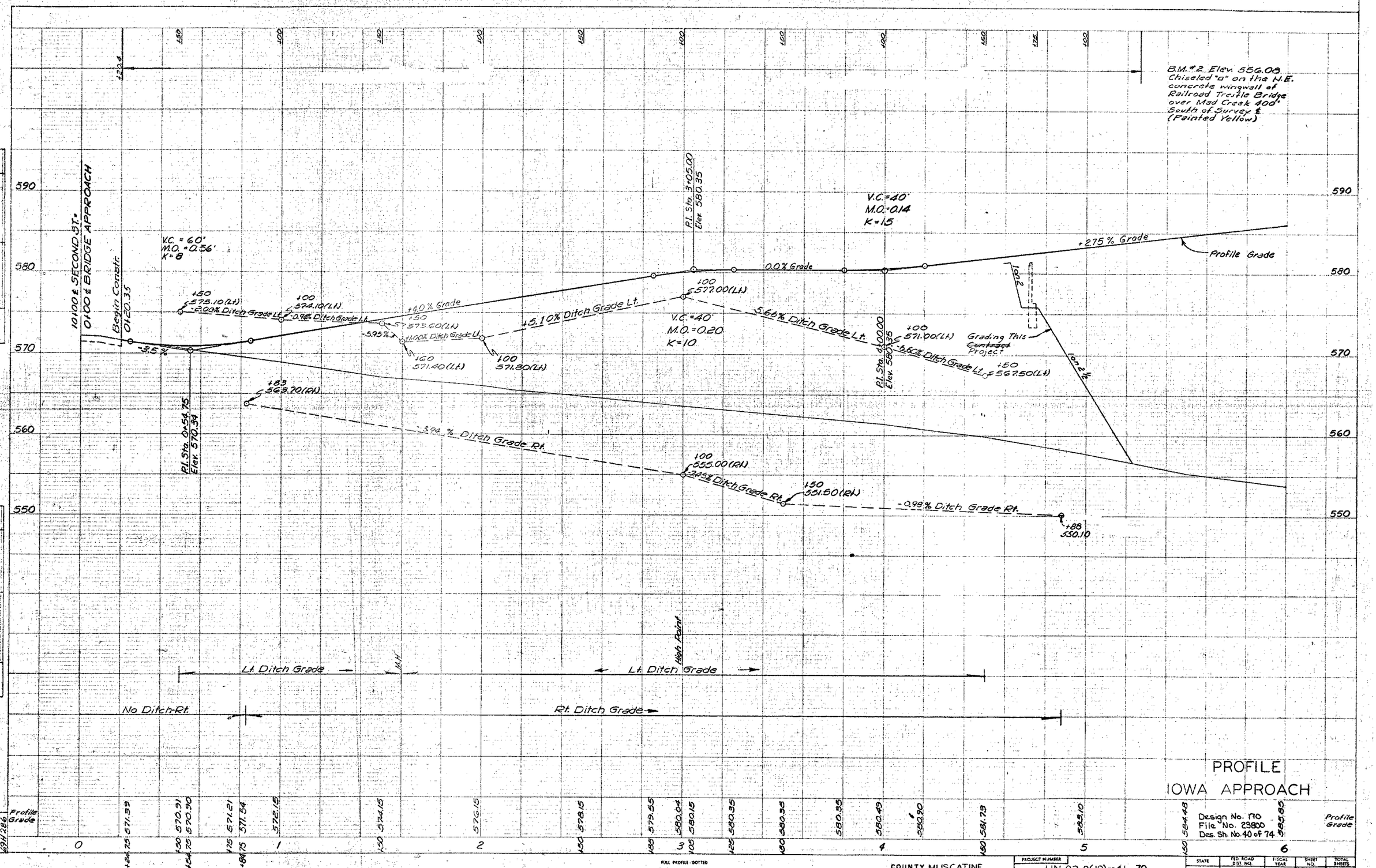
Δ = 20°-00'-00" Rt.
D = 5°-00'-00"
R = 1145.92' Arc Def.
T = 202.06'
L = 400'
E = 17.68'

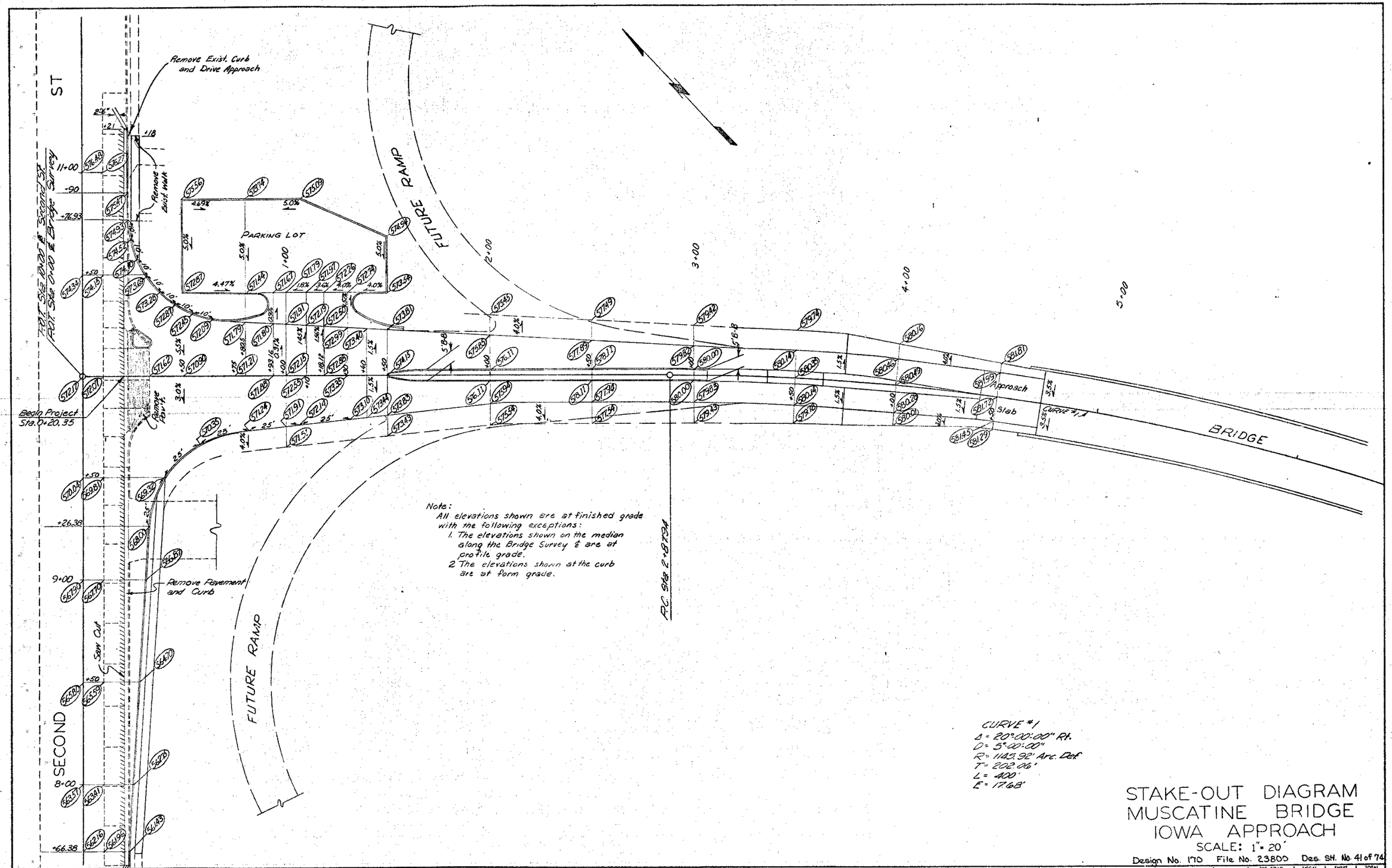
MUSCATINE BRIDGE
IOWA APPROACH

SCALE 1" = 20'

Design No. 170 File No. 23800 Des. Sh. No. 39 of 74

COUNTY	PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
MUSCATINE	UN 92-9(9)--41-70	IOWA	5	1970	100	131


B.M. #2 Elev. 556.08
Chiseled "a" on the N.E. concrete wingwall of Railroad Trestle Bridge over Mad Creek 400' South of Survey ℄
(Painted Yellow)
10+00 ℄ SECOND ST.
0+00 ℄ BRIDGE APPROACH
Begin Constr.
0+20.35
V.C. = 6.0'
M.O. = 0.56'
K = 8
1+50
575.10 (Lt)
-5.00% Ditch Grade Lt.
1+00
574.10 (Lt)
-0.98% Ditch Grade Lt.
+4.0 % Grade
1+50
573.60 (Lt)
-5.95%
+1.00% Ditch Grade Lt.
1+60
571.40 (Lt)
1+00
571.80 (Lt)
+5.10% Ditch Grade Lt.
-3.5%
1+83
563.70 (Rt)
-3.94 % Ditch Grade Rt.
P.I. Sta. 0+54.75
Elev. 570.34
P.I. Sta. 3+05.00
Elev. 580.35
1+00
577.00 (Lt)
0.0% Grade
V.C. = 40'
M.O. = 0.20
K = 10
5.66% Ditch Grade Lt.
V.C. = 40'
M.O. = 014
K = 15
+2.75 % Grade
Profile Grade
P.I. Sta. 4+00.00
Elev. 580.35
1+00
571.00 (Lt)
-6.60% Ditch Grade Lt.
1+50
567.50 (Lt)
Grading This ~~Contract~~ Project
1 on 2
1 on 2 ½
1+00
555.00 (Rt)
-2.48% Ditch Grade Rt.
1+50
551.50 (Rt)
-0.98% Ditch Grade Rt.
1+88
550.10
High Point
Lt. Ditch Grade
Lt. Ditch Grade
No Ditch Rt.
Rt. Ditch Grade
590
580
570
560
550
Profile Grade
571.39
570.91
570.90
571.21
571.54
572.15
574.15
576.15
578.15
579.55
580.04
580.15
580.35
580.35
580.35
580.49
580.90
581.73
583.10
584.48
585.85
0
1
2
3
4
5
6
FULL PROFILE - DOTTED
COUNTY MUSCATINE
PROJECT NUMBER
UN 92-9(19)--41 -70
STATE
IOWA
FED. ROAD DIST. NO.
FISCAL YEAR
1970
SHEET NO.
101
TOTAL SHEETS
131
PROFILE
IOWA APPROACH
Design No. 170
File No. 23800
Des. Sh. No. 40 of 74
PLAN
PROFILE
Standard Blue Print Co.—HYWT. PROF. Sheet

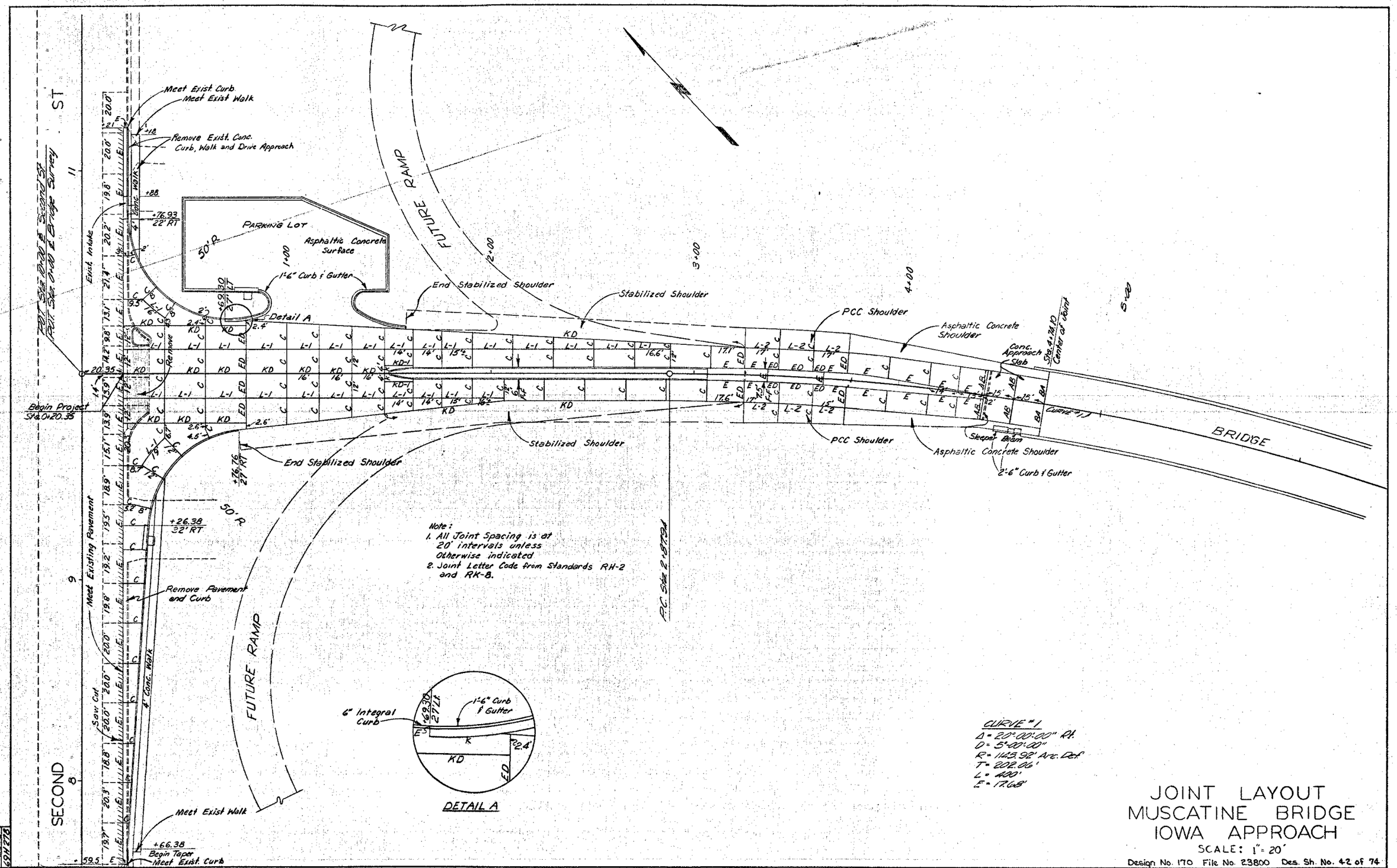


STAKE-OUT DIAGRAM
MUSCATINE BRIDGE
IOWA APPROACH

SCALE: 1" = 20'

Design No. 170 File No. 23800 Des. SH. No. 41 of 74

COUNTY	PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
MUSCATINE	UN 92-9(19)--41-70	IOWA	8	1970	102	131



Note:
1. All Joint Spacing is at 20' intervals unless Otherwise indicated
2. Joint Letter Code from Standards RH-2 and RK-8.

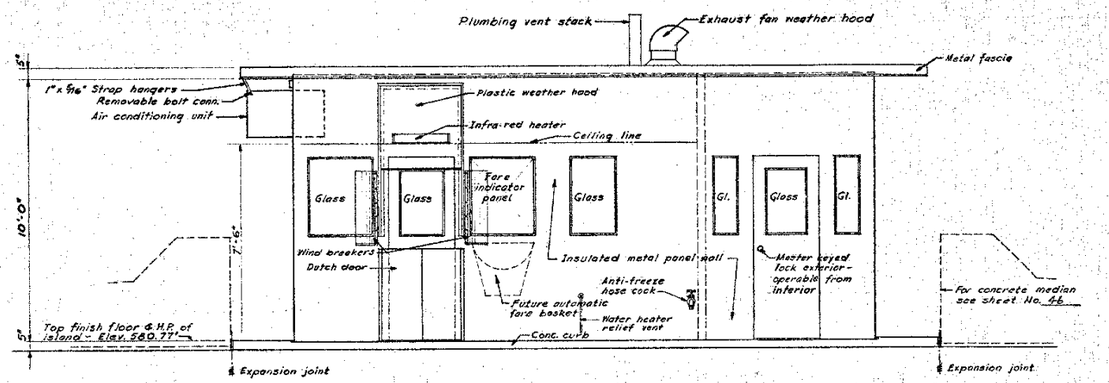
CURVE #1
Δ = 20°-00'-00" Rt.
D = 5°-00'-00"
R = 1145.92' Arc. Def.
T = 202.06'
L = 400'
E = 17.08'

JOINT LAYOUT
MUSCATINE BRIDGE
IOWA APPROACH

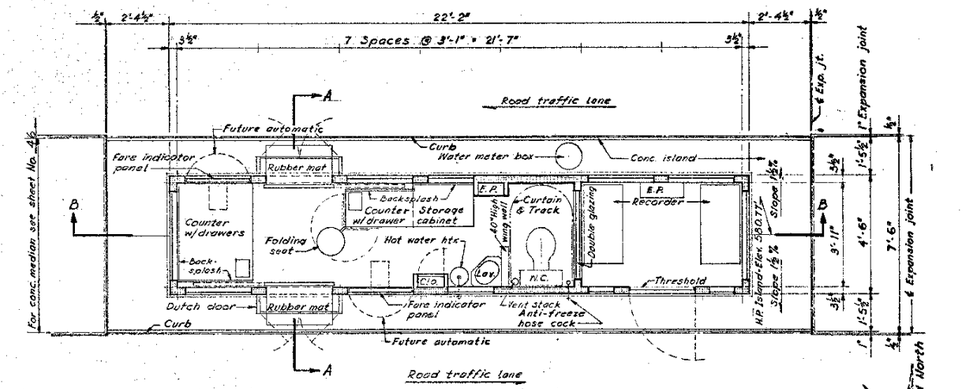
SCALE: 1" = 20'

Design No. 170 File No. 23800 Des. Sh. No. 4-2 of 74

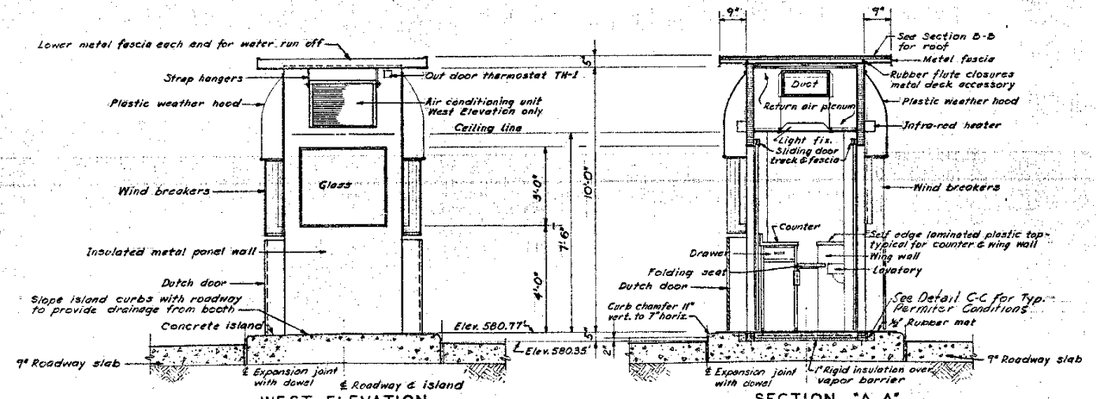
COUNTY	PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
MUSCATINE	UN 92-9(19)--41-70	IOWA	6	1970	103	131



SOUTH ELEVATION
Scale: 3/8" = 1'-0"

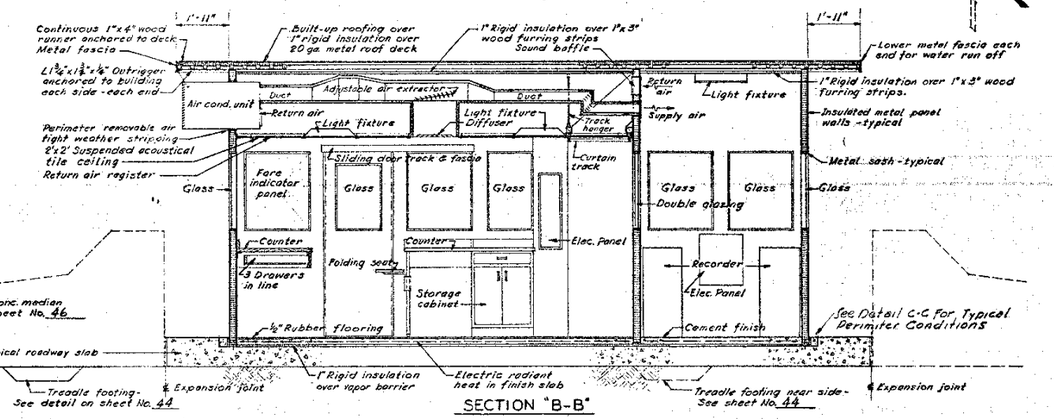


PLAN
Scale: 3/8" = 1'-0"

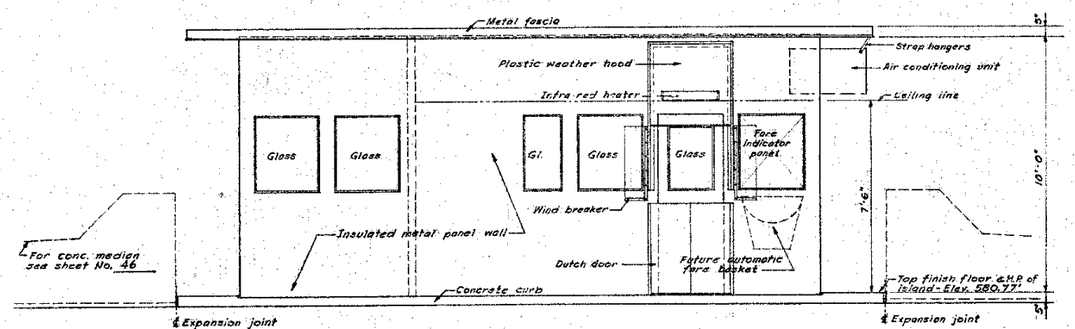


WEST ELEVATION
(EAST ELEVATION SIMILAR)
Scale: 3/8" = 1'-0"

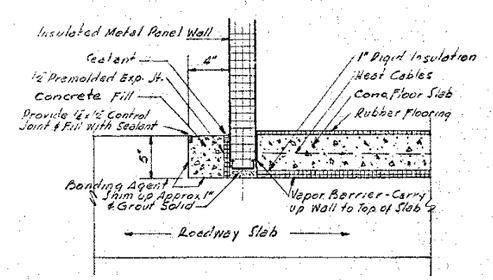
SECTION "A-A"
Scale: 3/8" = 1'-0"



SECTION "B-B"
Scale: 3/8" = 1'-0"



NORTH ELEVATION
Scale: 3/8" = 1'-0"



DETAIL "C-C"
Scale 1½" = 1'-0"

MISSISSIPPI RIVER BRIDGE

TOLL BOOTH

MUSCATINE COUNTY

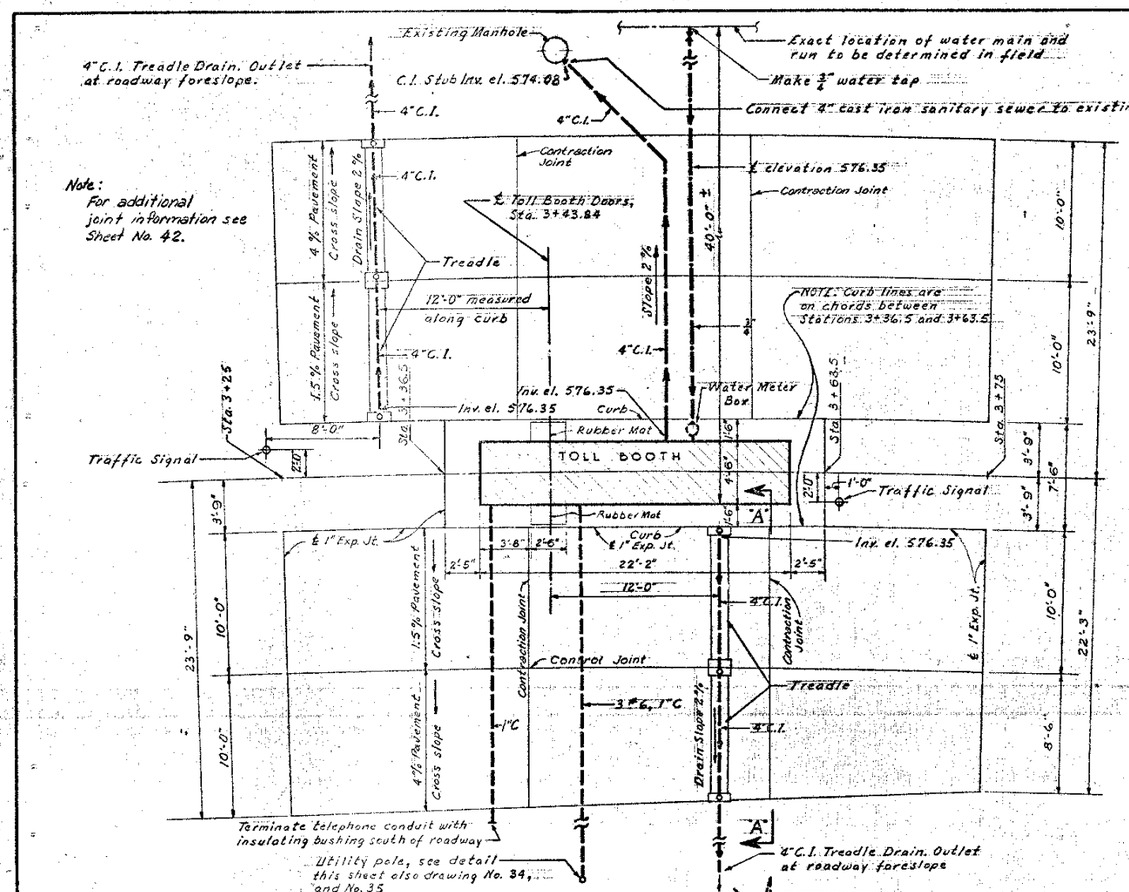
IOWA STATE HIGHWAY COMMISSION

DESIGN NO. 170 FILE NO. 23800 DES. SH. NO. 43 OF 74

PROJECT NO. UN-92-9(19)--41-70 PROJECT SH. NO. 104 OF 131

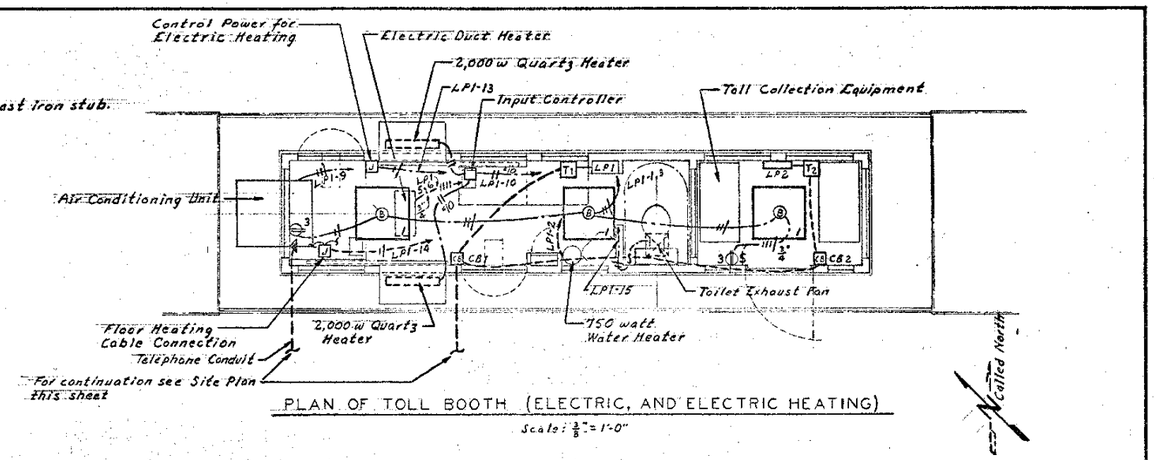
2600 DRAWN BY: C.L. Allen
69 A 88 CHECKED BY: G.R. Pennington

SVERDRUP & PARCEL AND ASSOCIATES, Inc.
CONSULTING ENGINEERS
ST. LOUIS, MISSOURI



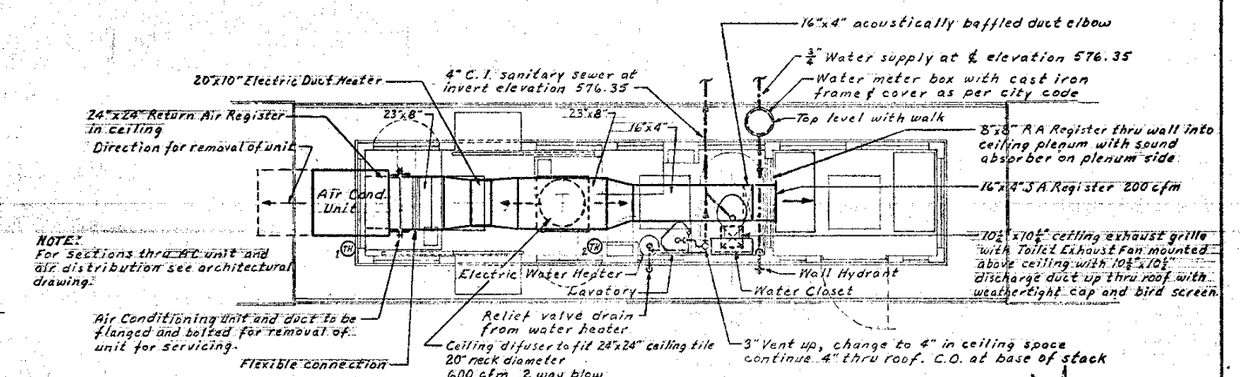
SITE PLAN

Scale: 1" = 5'-0"



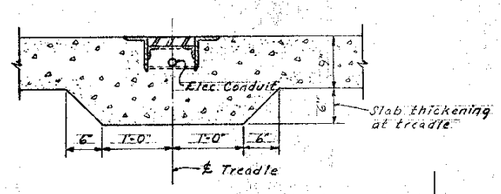
PLAN OF TOLL BOOTH (ELECTRIC, AND ELECTRIC HEATING)

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



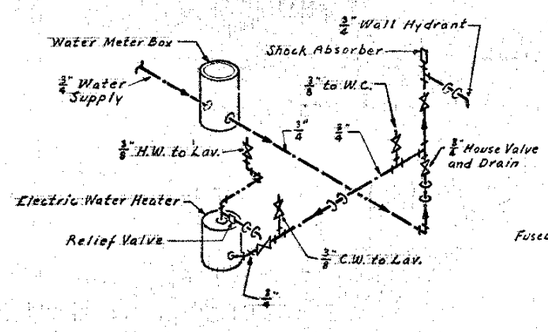
PLAN OF TOLL BOOTH (AIR CONDITIONING, AND PLUMBING)

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



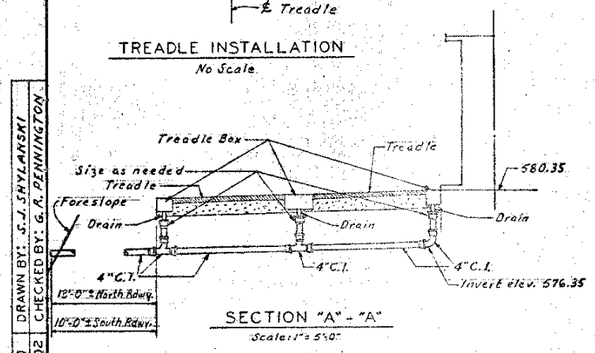
TREADLE INSTALLATION

No Scale



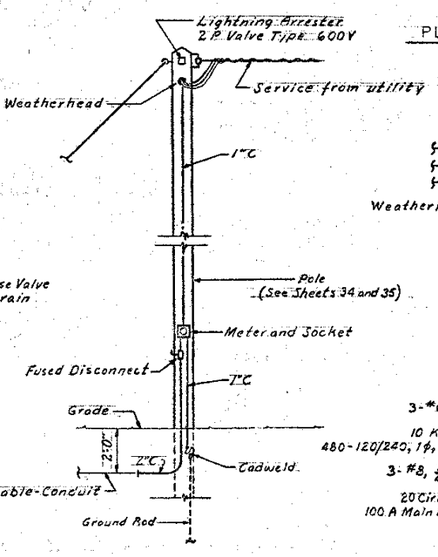
ISOMETRIC OF WATER SUPPLY

No Scale



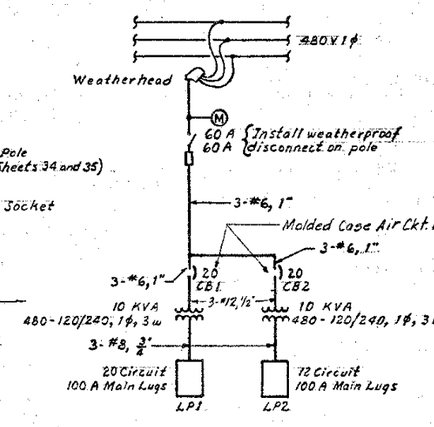
SECTION "A" - "A"

Scale: 1" = 5'-0"



UTILITY POLE

No Scale



ELECTRICAL ONE LINE DIAGRAM

No Scale

LEGEND

- Conduit exposed
- Conduit concealed in floor or wall
- Conduit concealed in ceiling or suspended ceiling
- Home run to panel LP1 = Lighting Panel No. 6 = Circuit No. Hachures indicate number of #12 conductors (Long hachure indicates neutral)
- Duplex 20A Receptacle
- Telephone Outlet Box
- Sewer line underground or below floor showing flow arrow
- Cold Water Line underground or below floor showing flow arrow
- Hot Water Line
- Thermostat

NOTE: Electrical work for toll collection equipment not shown, it shall be incorporated in accordance with toll equipment manufacturer's recommendations. See specifications.

MISSISSIPPI RIVER BRIDGE

TOLL PLAZA

MUSCATINE COUNTY

IOWA STATE HIGHWAY COMMISSION

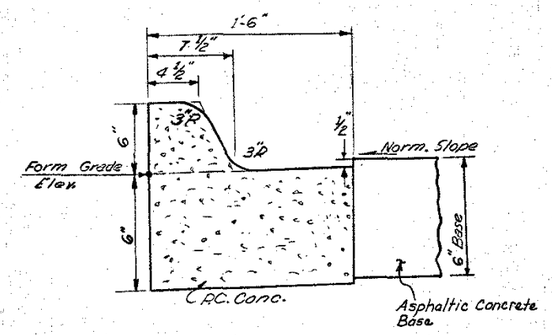
DESIGN NO. 170 FILE NO. 23800 DES. SH. NO. 44 OF 74

DRAWN BY: S.J. SHYLANSKI
CHECKED BY: G.A. DENNINGTON

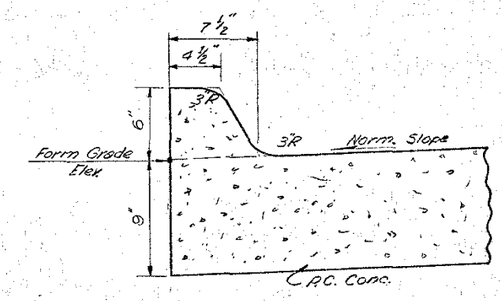
2600
69 B 202

SVERDRUP & PARCEL AND ASSOCIATES, Inc.
CONSULTING ENGINEERS
ST. LOUIS, MISSOURI

Project No. UN - 92-9(19)--41-70 PROJECT SH. NO. 105 OF 131

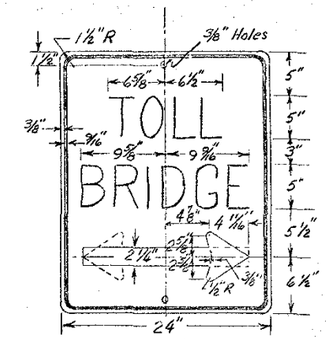


1'-6" P.C. CONCRETE CURB & GUTTER UNIT DETAILS

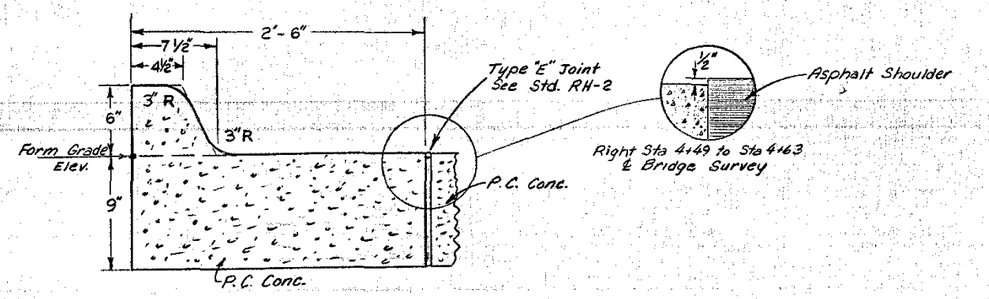


Sta. 0+22± Lt. to 0+70± Lt. ℄ Bridge Survey
Sta. 0+22± Rt. to 0+77± Rt. ℄ Bridge Survey

6" INTEGRAL CURB DETAILS

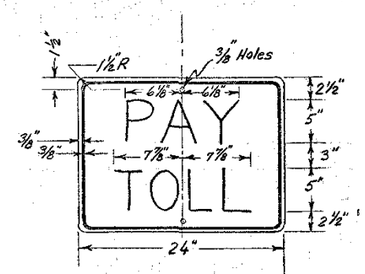


5" Series "C" Letters *
SIGN NO. 2a Sta. 7+50± ℄
SIGN NO. 3a Sta. 11+00± ℄

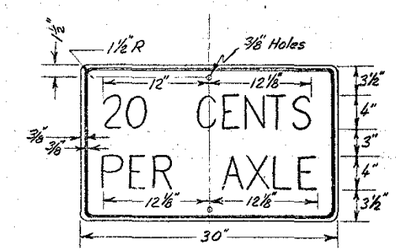


Sta. 10+88 to Sta. 11+21 ℄ 2nd St.

2'-6" P.C. CONCRETE CURB & GUTTER UNIT DETAILS

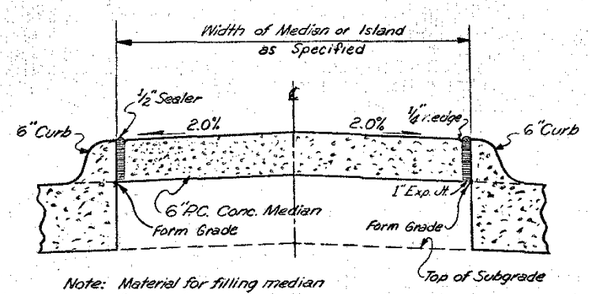


5" Series "D" Letters *
SIGN NO. 9B Sta. 2+22 ℄
SIGN NO. 11B Sta. 5+50± ℄



4" Series "C" Letters *
SIGN NO. 2B Sta. 7+50± ℄
SIGN NO. 3B Sta. 11+00± ℄
SIGN NO. 11C Sta. 5+50± ℄

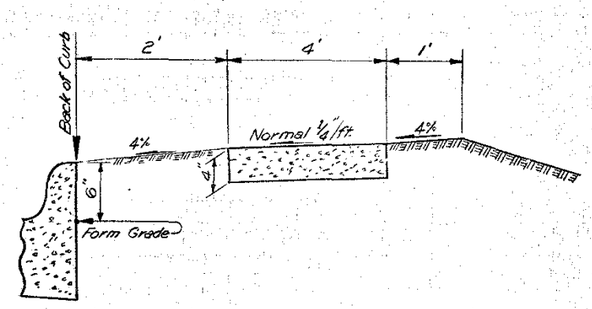
*NOTE:
Border and legend are to be black silk screen print on a reflectorized white background. Sheet material is to be .063 Aluminum.



Note: Material for filling median from subgrade to bottom of concrete, is included in "Estimate of Quantities" as Backfill, Granular.

TYPICAL PAVED MEDIAN DETAILS

STA. 1+50 TO STA. 3+06.5
℄ Traffic Island



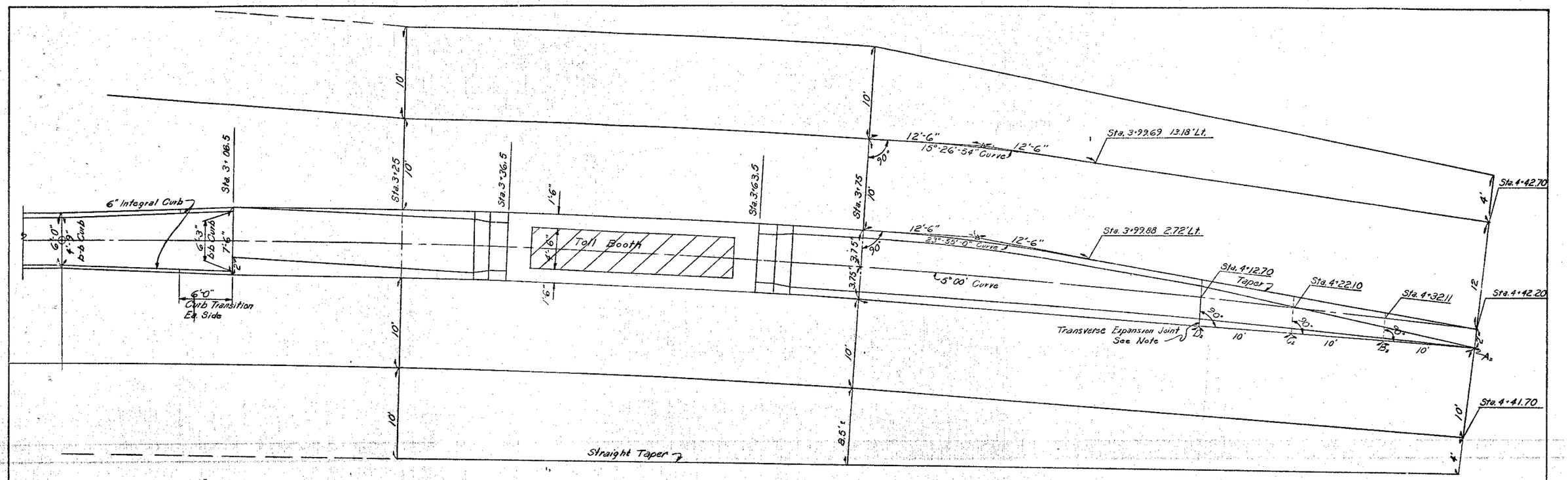
TYPICAL SIDEWALK DETAILS
℄ 2ND. STREET

STA. 7+66 TO STA. 9+49
STA. 10+56 TO STA. 11+18

DETAILS

Design No. 170 File No. 23800 Des. Sh. No. 45 of 74

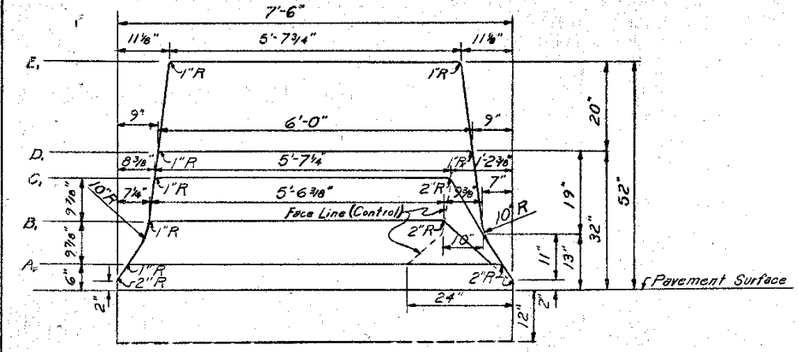
COUNTY	PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
MUSCATINE	UN 92-9(19)--41-70	IOWA	6	1970	106	131



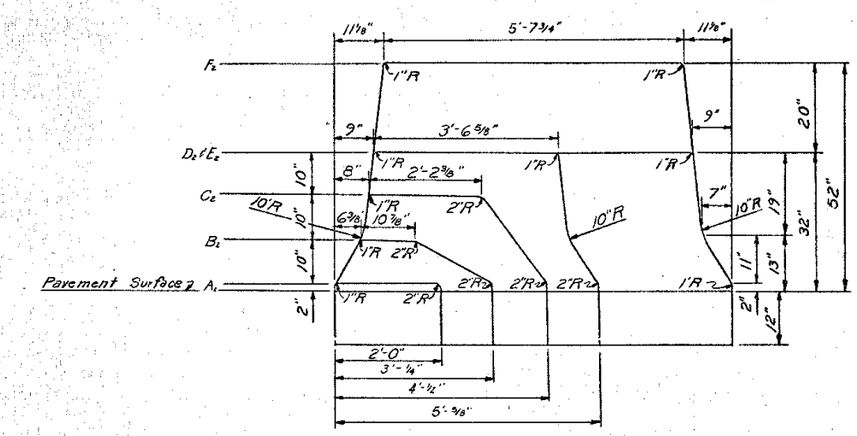
PLAN

Note:

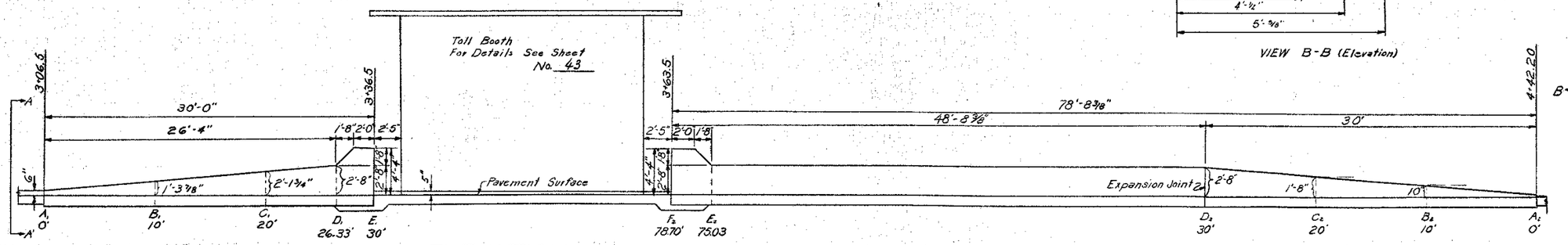
Place ½" Transverse Expansion joint for the full depth and width of concrete median. Traverse joint shall be filled with preformed joint filler, which complies with the requirements for type II filler in A.A.S.H.O. Specification M-153, recessed ¼" in from the faces and top of the median.



VIEW A-A (Elevation)



VIEW B-B (Elevation)



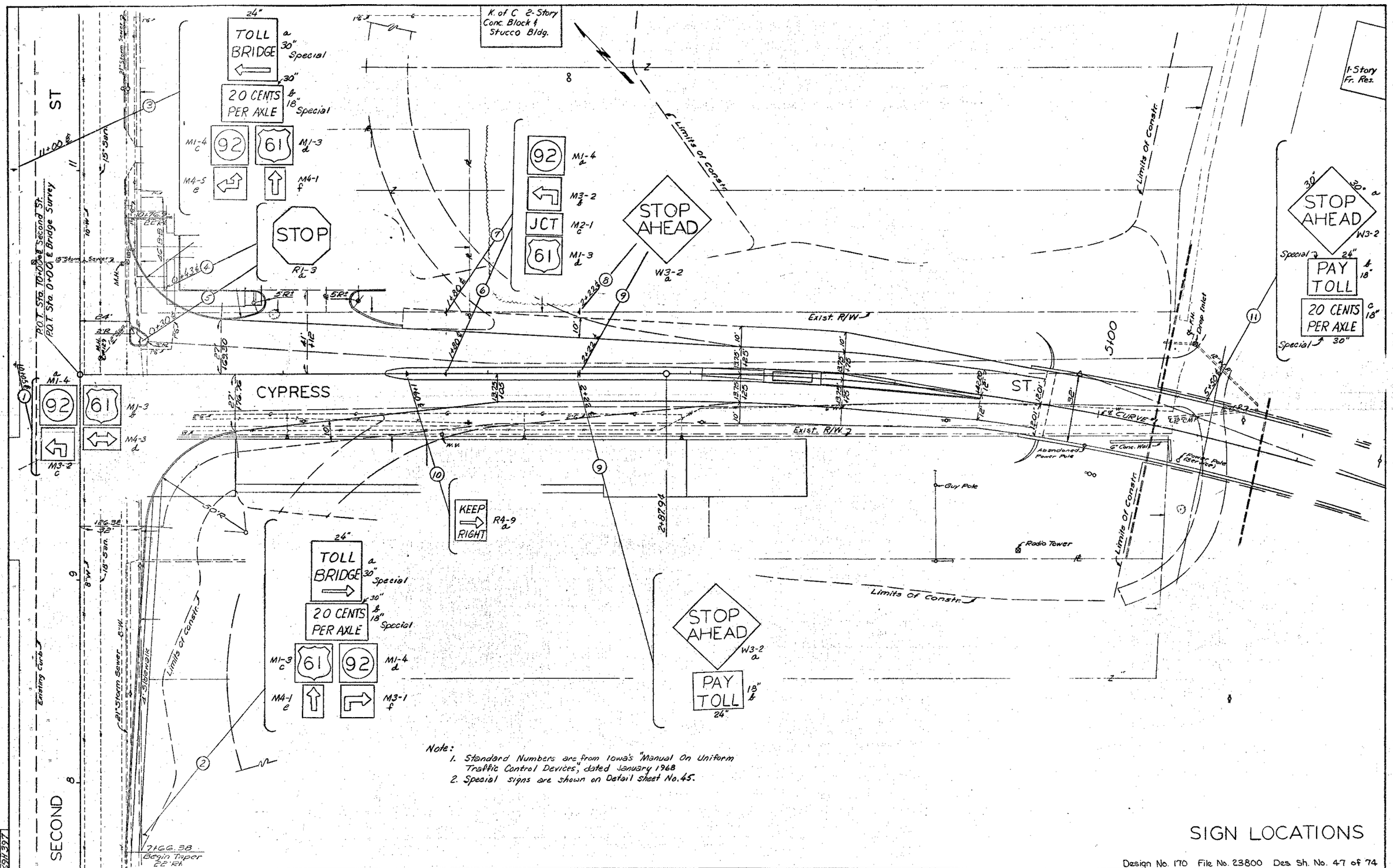
ELEVATION

CONCRETE BARRIER MEDIAN DETAILS

Design No. 170 File No. 23800 Des. Sh. No. 46 of 74

COUNTY	PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
Muscatine	UN 92-9(19)--41-70	IOWA	5	1970	107	131

23800
69 276



SIGN LOCATIONS

Design No. 170 File No. 23800 Des. Sh. No. 47 of 74

COUNTY	PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
MUSCATINE	UN 92-9(19)--41-70	IOWA	5	1970	108	131