

CONVENTIONAL SIGNS

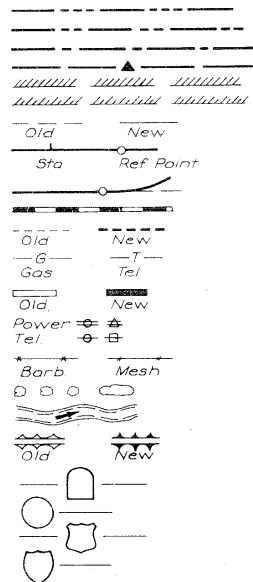
State Line
Co. Line
Twp. Line
Sec. Line
Corp. Line
Urban Bdry.
R.O.W. Lines
Survey Line

Profile Grade
Railroad
Field Tile
Underground Lines

Culverts
Utility Poles

Fences
Trees Or Brush
Stream
Dike

County Road No.
Primary Road No.
U. S. Road No.
Interstate Road No.



STATE OF IOWA
STATE HIGHWAY COMMISSION

PLANS OF PROPOSED IMPROVEMENT
ON THE

INTERSTATE ROAD SYSTEM
BRIDGES AND CULVERTS
HARRISON COUNTY

ON I-29 FROM MODALE NORTHERLY TO MONDAMIN
THE IOWA STATE HIGHWAY COMMISSION STANDARD SPECIFICATIONS
FOR CONSTRUCTION WORK, SERIES OF 1964 SHALL
APPLY TO WORK ON THIS PROJECT
Plus current Supplement Specifications and Special Provisions

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

Concrete in accordance with Section 1.4.11 f'c = 3500 psi.
Reinforcing Steel in accordance with Section 1.4.12
"Reinforcement" for intermediate, Hard, or Rail
Steel Grade.
Prestressed Concrete in accordance with Section 1.13.7
f'c = 5000 psi.
Prestressing Steel in accordance with Section 1.13.7
f's = 250,000 psi.

MILE AGE SUMMARY			
105-1			
DIV.	LOCATION	LIN. FT.	MILES
	BRIDGE AT STA. 1589+30.00	101.385	.019
	BRIDGE AT STA. 1740+34	91.188	.017
	BRIDGE AT STA. 1655+40	116.167	.022
	TOTAL		.058

DESIGN DESIGNATION
INTERSTATE
HIGHWAY

1966 AADT 4754 V.R.D.
1986 AADT 8224 V.P.D.
1996 DMV 1103 V.P.M.
DIRECTIONAL 60 %
TRUCKS 11 %
DESIGN V 70 M.P.H.

FULL CONTROL OF ACCESS
SHALL BE EXERCISED ON
THIS PROJECT.

REVISED:
SEE FOLLOWING SHEET 1A

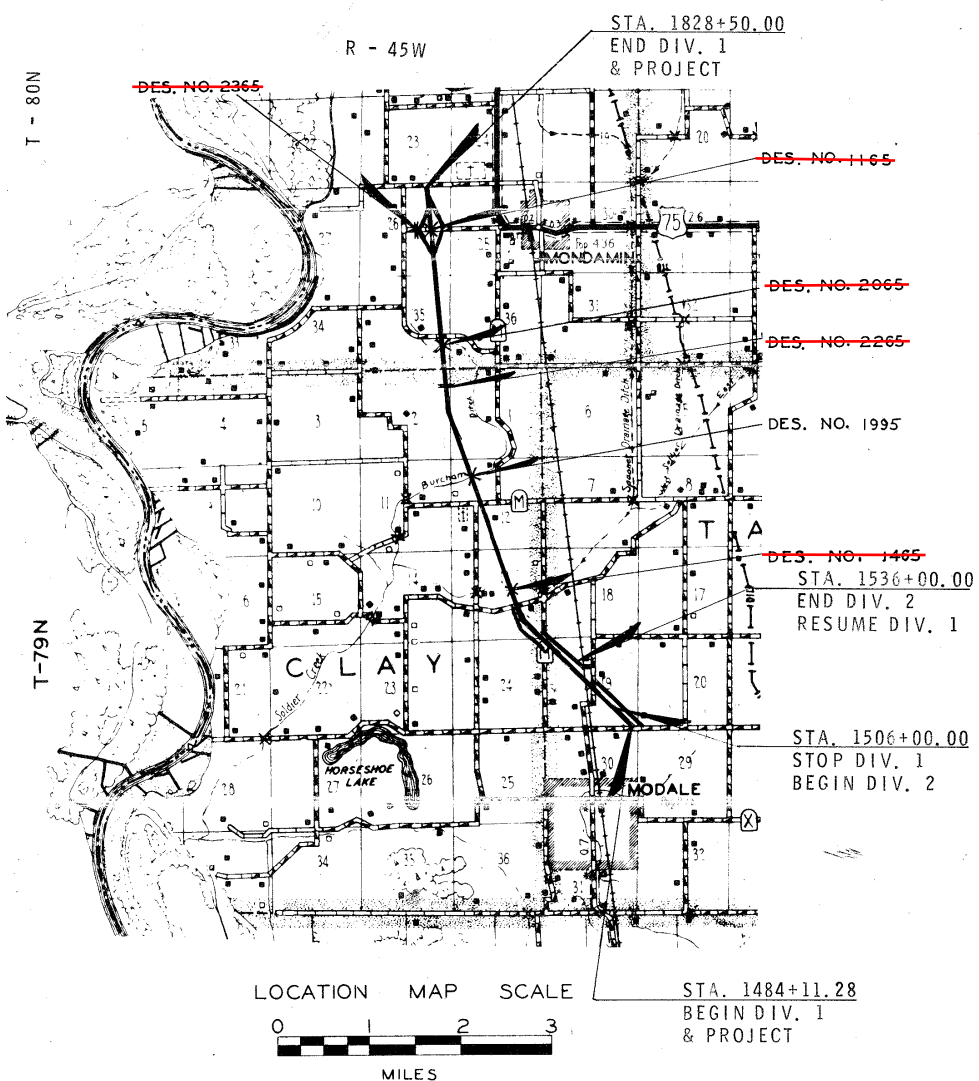
INDEX OF SHEETS	
105-3	
NO.	DESCRIPTION
1	TITLE SHEET
2	ESTIMATE
3	MISCELLANEOUS SHEET
4-12	BRIDGE DESIGN NO. 1165
13-18	BRIDGE DESIGN NO. 1465
19-24	BRIDGE DESIGN NO. 1965
25-30	BRIDGE DESIGN NO. 2065
31	SITUATION PLAN DESIGN NO. 2265
32	SITUATION PLAN DESIGN NO. 2365
1A	TABULATION OF REVISIONS

IOWA STATE HIGHWAY COMMISSION
STANDARDS
(AVAILABLE AT I. S. H. C. STOREROOM)

STANDARDS	ISSUED	REVISED
P10A	1959	
CFP	1945	
C6F	1952	1955
C8F	1952	1955
CBH-00	1960	
F8J11	1964	1964

CONSTRUCTION PLANS SHOWING PROJECT "AS BUILT"
THREE COPIES PREPARED BY John Risch DATE FEB 4 1970
ONE COPY APPROVED AND FORWARDED TO AMES:
John Risch DATE FEB 11, 1970
DIST. CONSTR. ENGR.

COPIES SENT TO:
Walter Morris
John Risch
—DISTRICT ENGINEER
—RES. MAINT. ENGR.



APPROVED
DE M. Risch 4-566
DIRECTOR OF ENGINEERING
IOWA HIGHWAY COMMISSION
DATE

DEPARTMENT OF COMMERCE
BUREAU OF PUBLIC ROADS
APPROVED
DIVISION ENGINEER
DATE

LISTING OF PROJECT REVISIONS

DATE	SHEET NUMBER	DESCRIPTION OF REVISIONS	DATE	SHEET NUMBER	DESCRIPTION OF REVISIONS
Aug. 31, '66		Design 2065			
	Sheet 28 of 32	Bars 8b10 and additional bars 5c1 & 5c2 added.			
	Sheet 27 of 32	Bars 8b10 and additional bars 5c1 and 5c2 added and quantity changed accordingly.			
	Sheet 25 of 32	Reinforcing steel quantity changed.			
		Design 1965:			
	Sheet 22 of 32	Bar 8b11 and additional 5c1 and 5c2 added and quantity changed accordingly.			
	Sheet 21 of 32	Bar 8b11 added.			
	Sheet 19 of 32	Reinforcing steel quantity changed.			
		Design 1465:			
	Sheet 16 of 32	Bar 8b9 and additional 5f1 and 5f2 bars added and quantity changed accordingly.			
	Sheet 15 of 32	Bar 8b9 added.			
	Sheet 13 of 32	Reinforcing steel quantity changed.			
	Sheet 2 of 32	Reinforcing steel quantity changed on designs 1465, 1965 and 2065.			
	Sheet 1A of 32	This sheet added (Tabulation of Revisions).			
	Sheet 1 of 32	Sheet 1A added to "Index of Sheets".			

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT PERSONAL SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF IOWA.

Donald K. Schulze
DONALD K. SCHULZE

DATE 4-1-66 REG. NO. 2793

DESIGN 1165 ON LOCAL ROAD OVER STA. 11802+71.90 (LOCAL ROAD)
SECTION 26 I-29 STA. 1802+71.90 (I-29)
T - 80N R - 45W MORGAN TOWNSHIP

DESIGN FOR 7°15' SKEW
215'-5 X 28' PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

ESTIMATE OF QUANTITIES		
ITEM	UNIT	TOTAL
1) Structural Concrete	Cu. Yds.	337.8 ✓
Reinforcing Steel	Lbs.	74 337 ✓
Aluminum Handrail	L.F.	418.9 ✓
Steel Handrail	L.F.	418.9 ✓
Pretensioned Prestressed Concrete Beams	No.	10 ✓
Creosoted Piling	L.F.	3420.3 ✓
Class 20 Excavation	Cu. Yds.	278 ✓
Granular Backfill	Cu. Yds.	85 ✓
Concrete Slope Protection	Sq. Yd.	400 ✓
4" φ Tile Subdrain	L.F.	168 ✓

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Donald K. Schulze
DONALD K. SCHULZE

DATE 4-1-66 REG. NO. 2793

DESIGN 1465 I-29 OVER STA. 1589+30.00
SECTION 13 OLD SOLDIER DRAINAGE DITCH
T - 79N R - 45W CLAY TOWNSHIP

DESIGN FOR 15° SKEW
DUAL 100' X 39' CONTINUOUS CONCRETE SLAB BRIDGE

ESTIMATE OF QUANTITIES		
ITEM	UNIT	TOTAL
Structural Concrete Class "D"	Cu. Yds.	556.0 ✓
Reinforcing Steel	Lbs.	130,358 ✓
Aluminum Handrail	L.F.	375.0 ✓
Steel Handrail	L.F.	375.0 ✓
Granular Backfill	Cu. Yds.	124 ✓
4" φ Tile Subdrain	L.F.	218 220 ✓
10 BP42 Steel	L.F.	1389 1080 ✓
Bearing Piling	L.F.	2364 1080 ✓
Class 10 Channel Excavation	Cu. Yds.	620 ✓
Class 20 Excavation	Cu. Yds.	140 ✓
16" P10A	L.F.	1540 ✓
Piling	L.F.	1540 ✓
Type III or IV	L.F.	1204 ✓

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Donald K. Schulze
DONALD K. SCHULZE

DATE 4-1-66 REG. NO. 2793

DESIGN 1965 I-29 OVER STA. 1655+40
SECTION 12 BURCHAM DITCH
T - 79N R - 45W CLAY TOWNSHIP

DESIGN FOR
TWIN 115' X 39' CONTINUOUS CONCRETE SLAB BRIDGE

ESTIMATE OF QUANTITIES		
ITEM	UNIT	TOTAL
Structural Concrete Class "D"	Cu. Yds.	707.4 ✓
Reinforcing Steel	Lbs.	144,006 ✓
Aluminum Handrail	L.F.	434.6 ✓
Steel Handrail	L.F.	434.6 ✓
Granular Backfill	Cu. Yds.	140 ✓
4" φ Tile Subdrain	L.F.	230 236 ✓
Creosoted Piling	L.F.	1775.3 ✓
Class 20 Excavation	Cu. Yds.	128 ✓
16" P10A	L.F.	2800 ✓
Piling	L.F.	2800 ✓
Type III or IV	L.F.	2000 ✓

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT PERSONAL SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF IOWA.

Donald K. Schulze
DONALD K. SCHULZE

DATE 4-1-66 REG. NO. 2793

DESIGN 2065 I-29 OVER BURCHAM DITCH STA. 1740+34
SECTION 35 T - 80N R - 45W MORGAN TOWNSHIP

DESIGN FOR 12° SKEW
DUAL 90' X 39' CONTINUOUS CONCRETE SLAB BRIDGE

ESTIMATE OF QUANTITIES		
ITEM	UNIT	TOTAL
Structural Concrete Class "D"	Cu. Yds.	478.2 ✓
Reinforcing Steel	Lbs.	108,404 ✓
Aluminum Handrail	L.F.	334.9 ✓
Steel Handrail	L.F.	334.9 ✓
Granular Backfill	Cu. Yds.	144 ✓
4" φ Tile Subdrain	L.F.	243 244 ✓
Creosoted Piling	L.F.	1530 1665 ✓
16" P10A	L.F.	1540 ✓
Piling	L.F.	1540 ✓
Type III or IV	L.F.	1260 ✓
Class 20 Excavation	Cu. Yds.	136 ✓

1) 189.1 cu. yds. of Structural Concrete Class "D" for Superstructure and 148.7 cu. yds. of Class "C" for Substructure.

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

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

Dale E. Derby RE. IOWA REGISTRATION NO. 3049 DATE 4-1-66

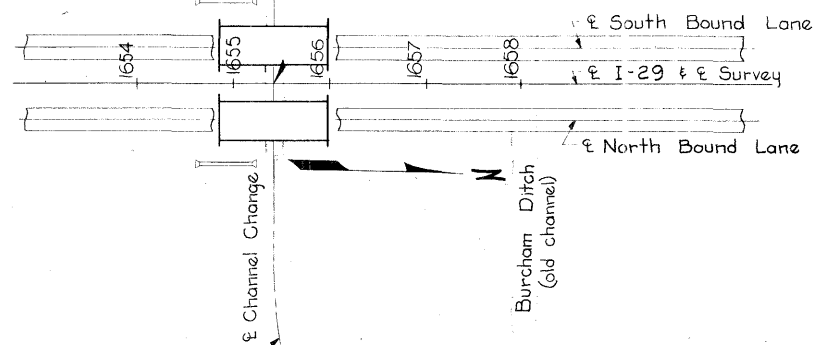
DALE E. DERBY

DESIGN	LOCATION			DESCRIPTION	ESTIMATE OF QUANTITIES				
	SECTION	TOWNSHIP	STATION		STRUC. CONC. CL. "C" CU. YD.	REINF. STEEL LBS.	EXCAVATION - C.Y.	REMOVALS	
				SIZE AND TYPE	CL. 20	CL. 24	CL. 10 CHAN.		
2265	2	CLAY	1710+75	6' X 8' X 151' Reinforced Concrete Box Culvert	172.2	20 390	883		
2365	26	MORGAN	11795+76	8' X 6' X 73' Reinforced Concrete Box Culvert with Stub Flume	89.8	14 320	263	53	
				TOTAL	262.0	34 710	1146	53	

Revised 8-31-66: Designs 1465, 1965 & 2065; Reinforcing steel quantity changed.

Title 29/2
mak 40 Extra

Station 1655+40 Proposed
Twin 115'x39' Continuous Concrete
Slab Bridge



GENERAL PLAN
Scale 1" = 100'-0"

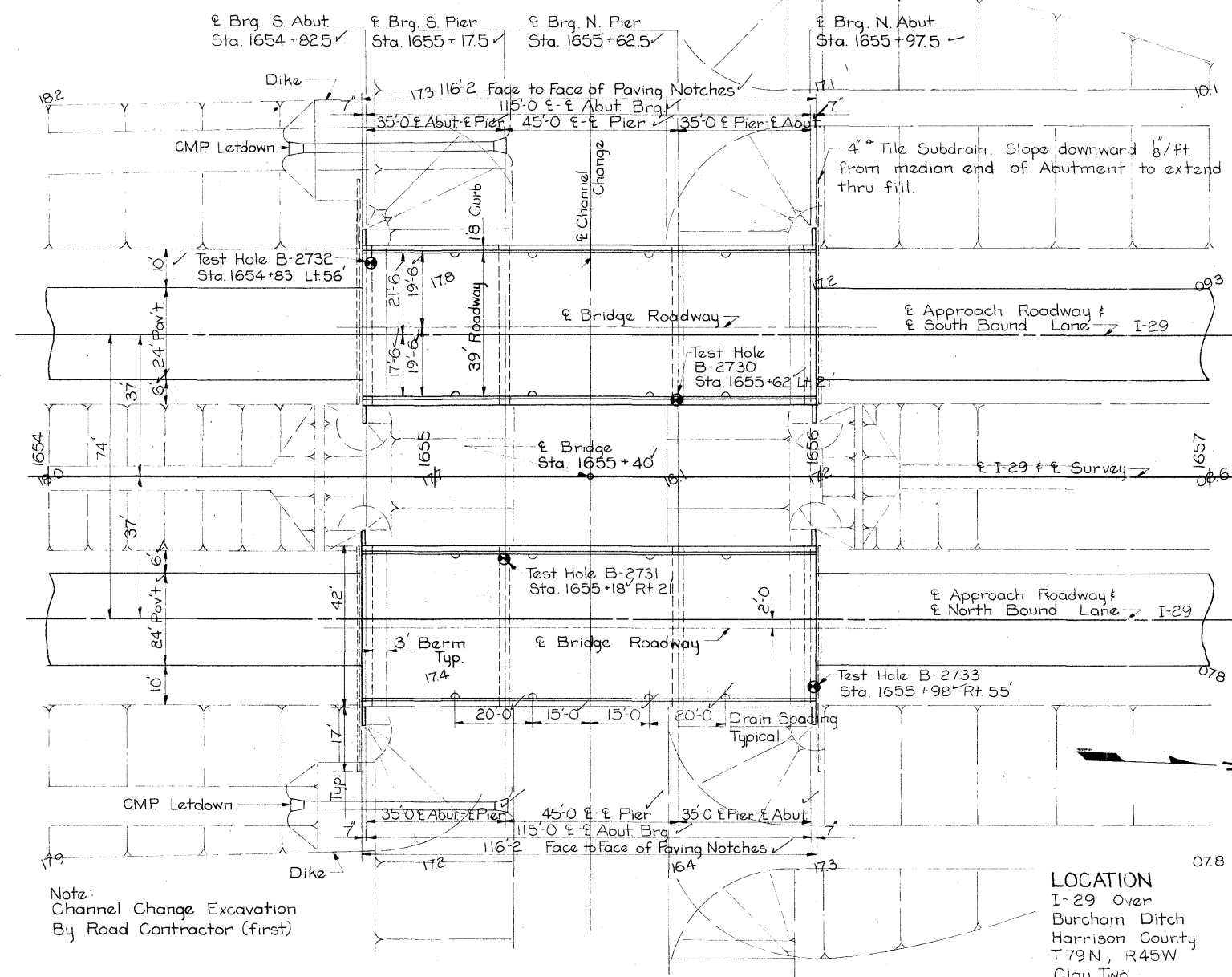
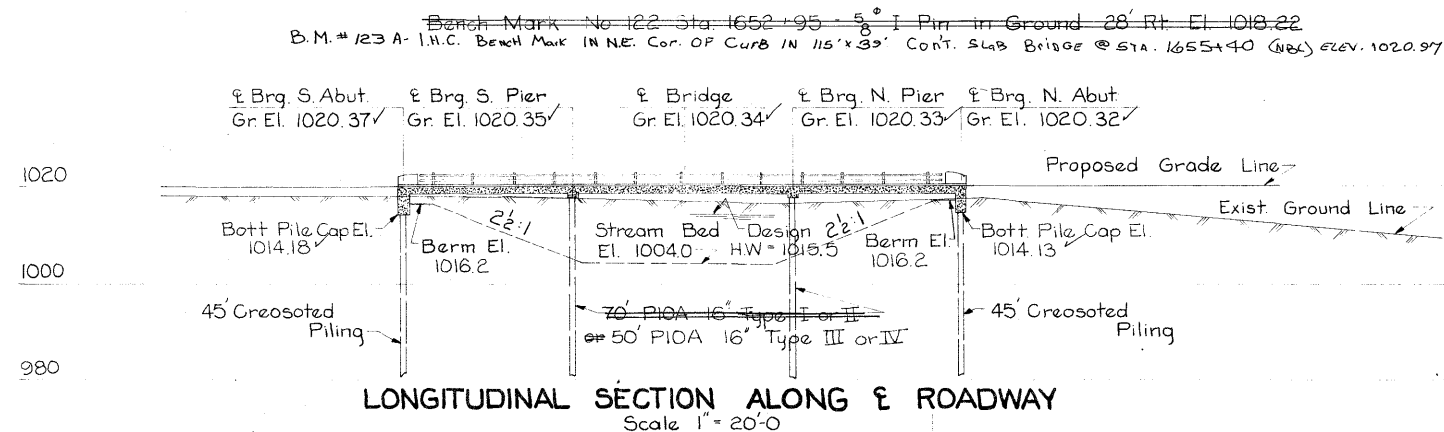
GENERAL NOTES:

These bridges are designed for H20-S16-44 loading and alternate loading designated in B.P.R. PPM 20-4, Section 4c, plus an allowance of 19 lbs per sq. ft. of roadway for future wearing surface.

The Bridge Contractor is to install the 4" tile subdrain behind each abutment as shown on the Situation Plan. The price bid for tile subdrain is to include the excavation necessary for installation.

The approach fills are not a part of this contract but are to be in place and compacted before abutment piles are driven. The Bridge Contractor is to level off and shape the berms to the elevations and dimensions shown.

GRADE DATA
-0.04%



HYDRAULIC DATA
Drainage Area = 5250 AcF
Design Q = 1500 cfs

SITUATION PLAN
Scale 1" = 20'-0"

LOCATION
I-29 Over
Burcham Ditch
Harrison County
T 79N, R 45W
Clay Twp.
Section 12

TWIN 115'x39' CONTINUOUS CONCRETE SLAB BRIDGE

35'-0" End Spans 45'-0" Center Span
Concrete Floor & Substructure Tubular Handrail
GENERAL & SITUATION PLANS
Station 1655+40 Proj. N° I-16-29-5(9)35 ** 43-9

Iowa State Highway Commission
January 1966 Sheet 1 of 6

Design N° 1965 Harrison County File N° 20677

TOTAL ESTIMATED QUANTITIES			
Item	2 Superstr.	4 Abuts.	Total
Structural Concrete Class D	642.2	65.2	707.4 cy
Reinforcing Steel	130,854	13,152	143,006 lbs
Aluminum Handrail			434.6 LF
Steel Handrail			434.6 LF
Granular Backfill		140	140 cy
4" Tile Subdrain			236 LF
Creosoted Piling		40 @ 45'	1800 LF
Class 20 Excavation		128	128 cy
16" P10A	40 @ 70'		2800 LF
Piling	40 @ 70'		2800 LF
	40 @ 50'		2000 LF

DESIGN STRESSES:

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

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

Concrete in accordance with Section 1.4.11. $f'_c = 3500$ psi.

SPECIFICATIONS:

Design = A.A.S.H.O. Series of 1961.
Construction = Standard Specifications of the I.S.H.C. series of 1964, plus current special provisions and supplemental specifications.

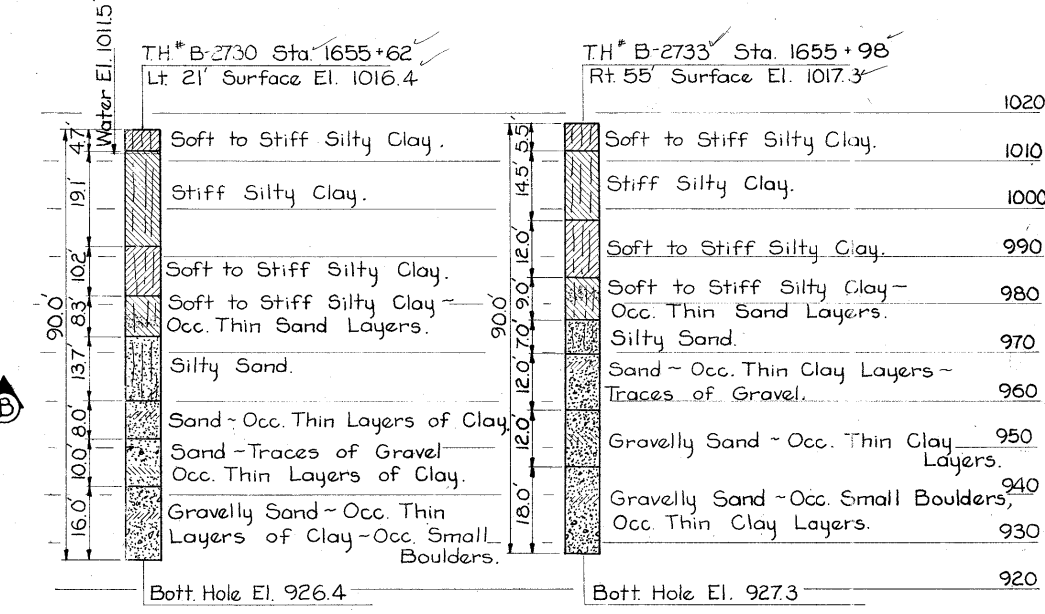
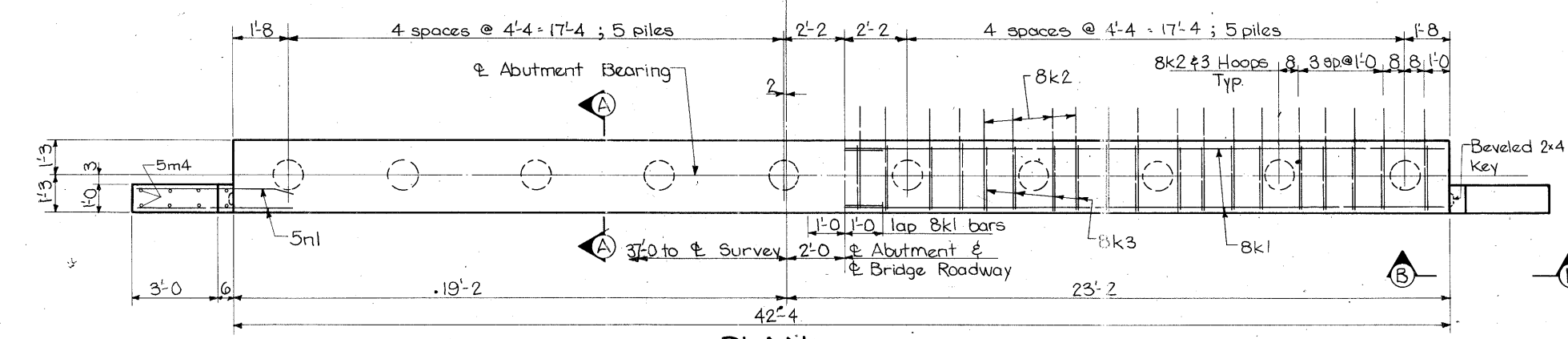
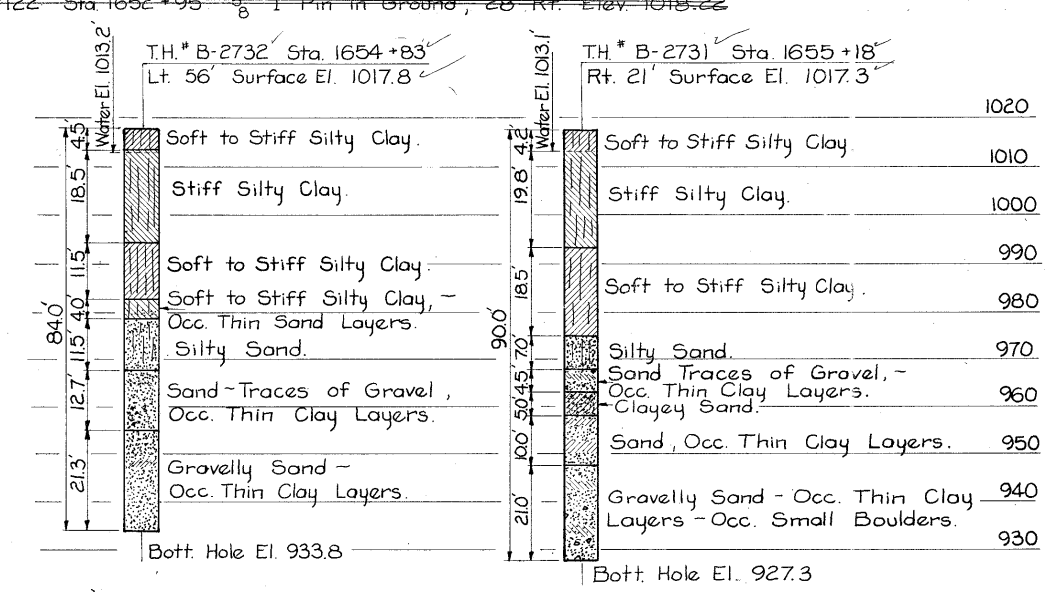
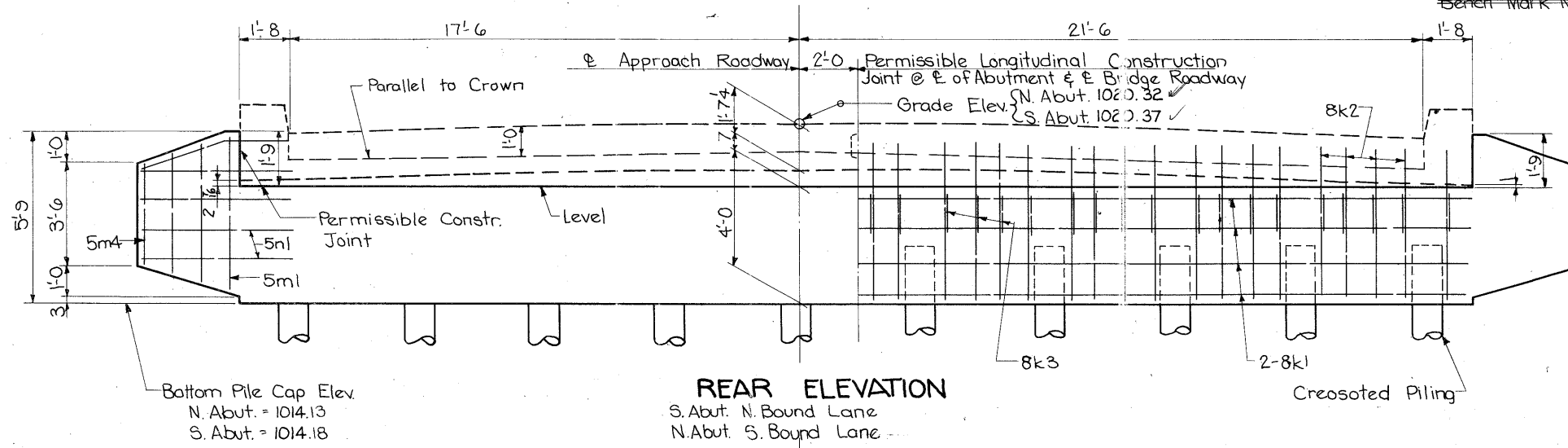
Revised 8-31-66: Reinforcing
Steel Quantity Changed.

EXPLANATION OF CONTRACT VARIANCES

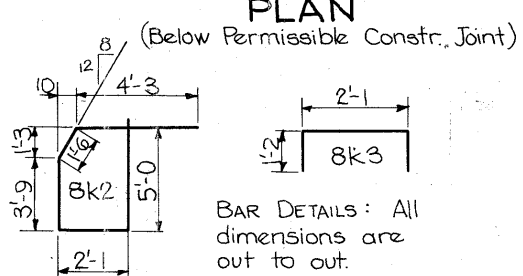
EWO #1 INCREASE-STEEL REINFORCING 956 *lbs.*

ITEM NO. 20-SUBDRAIN TILE, 4 IN DIA. UNDERRUN 6.0' 1.¢ OR 2.54 ACTUAL
FIELD MEASUREMENT.

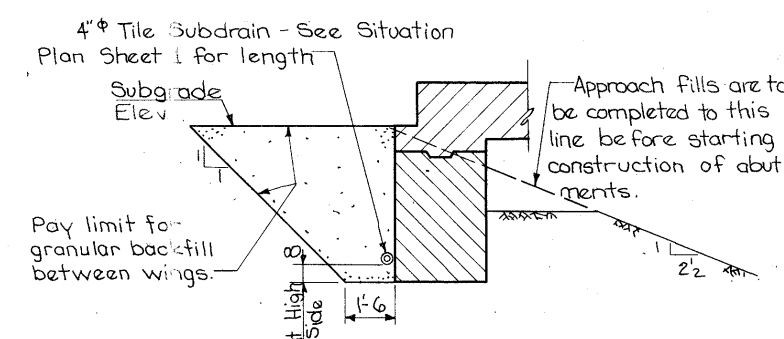
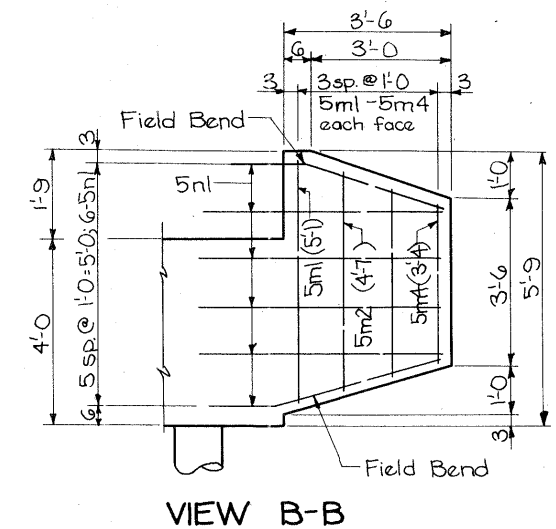
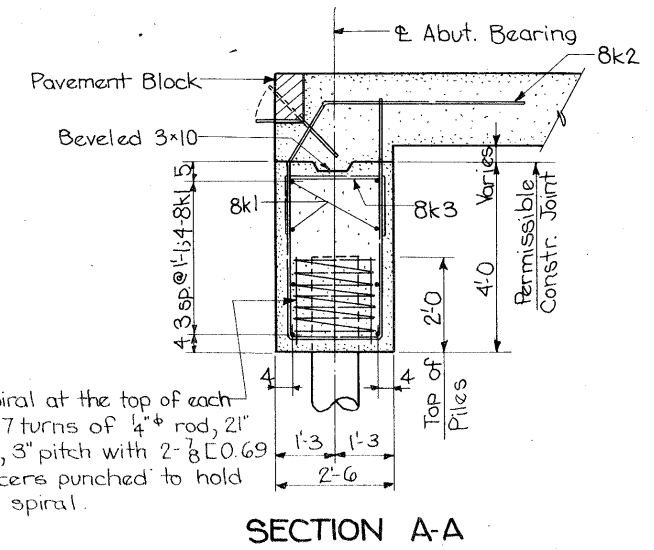
ITEM NO. 21-PILING, CREOSOTED. UNDERRUN 24.7 1.¢ OR 137%. IT WAS NOT NECESSARY
TO DRIVE THE PLAN LENGTHS OF PILING IN ORDER TO OBTAIN ADEQUATE BEARING.



REINFORCING STEEL - ONE ABUT.					
Bar	Location	No.	Shape	Length	Weight
8k1	Pile Cap Longit.	16		22'-0"	940
8k2	" Hoops	38		16'-2"	1640
8k3	" Hairpins	38		4'-2"	423
5m1-4	Wing Vertical B.F. & F.F.	16		Varies	71
5n1	" Horizontal " " "	24		5'-0"	125
4"	φ Spirals	10		38'-6"	64
3"	φ C Spacers @ 0.69 lb/ft.	20		1'-10"	25
					3288



QUANTITIES - ONE ABUT.		
Item	Unit	Amount
Structural Conc. Class D	C.Y.	16.3
Reinforcing Steel	Lbs.	3288
Class 20 Excavation	C.Y.	32
Crescoted Piling 10x45	L.F.	450
Granular Backfill	C.Y.	35



ABUTMENT NOTES:

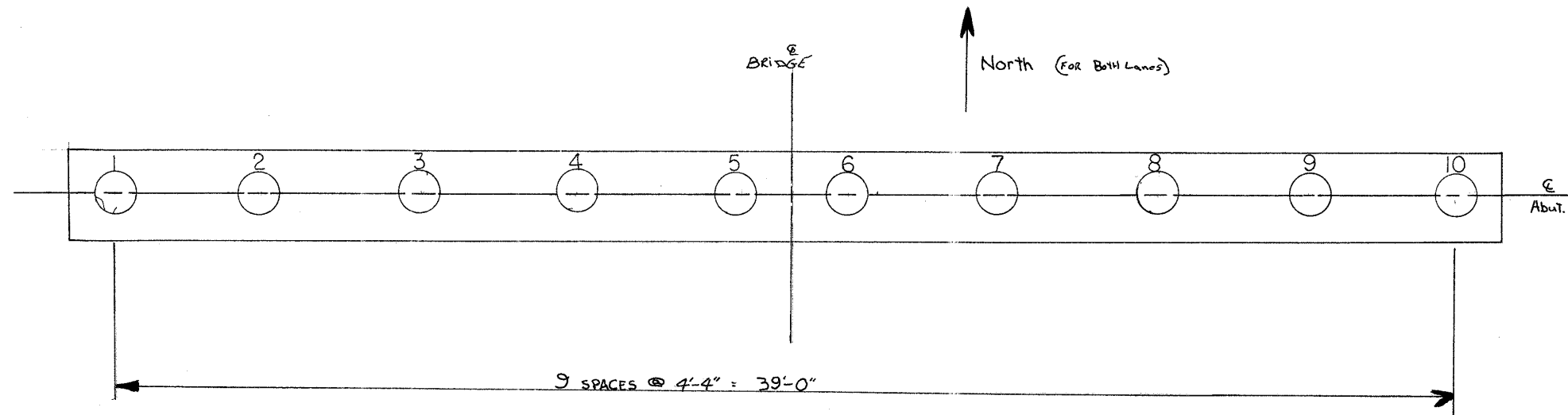
All backfill behind the abutment between wings (42'-6") is to be granular backfill. The remainder of the abutment excavation is to be backfilled with soil.

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

The construction joint between pile cap and superstructure is optional.

The details shown on this sheet are for the South Abutment - Northbound Lane and the North Abutment Southbound Lane only. The details for the North Abutment Northbound Lane and South Abutment Southbound Lane are opposite hand from this sheet.

Design For
TWIN 115' x 39' CONTINUOUS CONCRETE SLAB BRIDGE
35'-0" End Spans 45'-0" Center Span
Concrete Floor & Substructure Tubular Handrail
ABUTMENT DETAILS
Station 1655+40 Proj. No. I-IG-29-5(9)85 ** 43-9
HARRISON COUNTY
Iowa State Highway Commission
January 1966 Sheet 2 OF 6



South Abutment East Lane

Pile No.	DATE DRIVEN	LENGTH IN LEADS NEAREST FOOT	LENGTH IN CUT OFF	LENGTH IN STRUCTURE	AVE. PEN. LAST 10 BLOWS	BEARING IN TONS
1	11-3-66	45	1.0	44.0	2000	52.9
2	" " "	45	1.3	43.7	1375	66.8
3	" " "	45	4.5	40.5	1625	60.5
4	" " "	45	1.2	43.8	2500	45.3
5	" " "	45	1.1	43.9	2500	45.3
6	" " "	45	0.8	44.2	2500	45.3
7	" " "	45	4.6	40.4	1000	79.4
8	" " "	45	6.2	38.8	1000	79.4
9	" " "	45	6.0	39.0	1375	66.8
10	" " "	45	3.6	41.4	1625	60.5
Total		450	30.3	419.7		

South Abutment West Lane

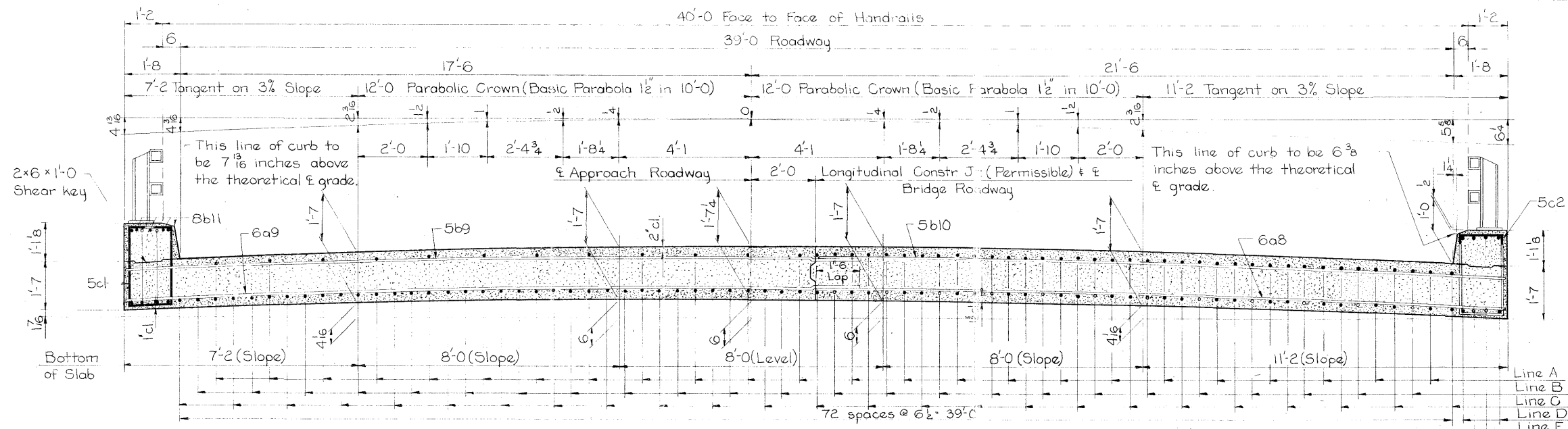
Pile No.	DATE DRIVEN	LENGTH IN LEADS NEAREST FOOT	LENGTH IN CUT OFF	LENGTH IN STRUCTURE	AVE. PEN. LAST 10 BLOWS	BEARING IN TONS
1	11-3-66	45	0.3	39.7	1375	66.8
2	" " "	45	1.2	43.8	2000	52.9
3	" " "	45	4.2	40.8	1375	66.8
4	" " "	45	5.0	42.0	1375	66.8
5	" " "	45	0.9	44.1	2750	42.3
6	" " "	45	6.0	39.0	2750	42.3
7	" " "	45	0.7	44.3	2000	52.9
8	" " "	45	3.2	41.8	1000	79.4
9	" " "	45	1.2	43.8	2500	45.3
10	" " "	45	0.6	44.4	2750	42.3
TOTAL		450	26.3	423.7		

North Abutment East Lane

Pile No.	DATE DRIVEN	LENGTH IN LEADS NEAREST FOOT	LENGTH IN CUT OFF	LENGTH IN STRUCTURE	AVE. PEN. LAST 10 BLOWS	BEARING IN TONS
1	11-18-66	45	0.2	44.8	450	28.9
2	" " "	45	0.4	44.6	400	31.7
3	" " "	45	1.1	43.9	400	31.7
4	11-17-66	45	2.6	42.4	425	30.2
5	" " "	45	0.9	44.1	300	39.7
6	" " "	45	0.6	44.4	300	39.7
7	" " "	45	0.6	44.4	425	30.2
8	" " "	45	0.9	44.1	375	33.4
9	" " "	45	0.8	44.2	375	33.4
10	" " "	45	0.5	44.5	375	33.4
		450	8.6	441.4		

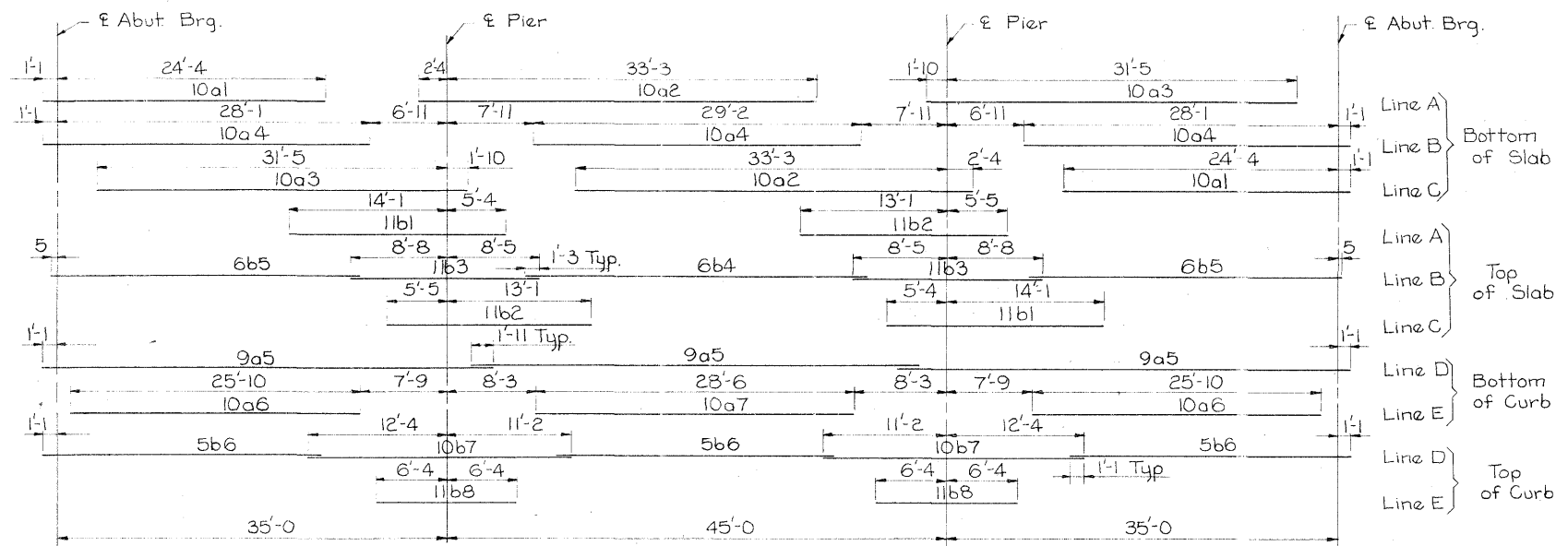
North Abutment West Lane

Pile No.	DATE DRIVEN	LENGTH IN LEADS NEAREST FOOT	LENGTH IN CUT OFF	LENGTH IN STRUCTURE	AVE. PEN. LAST 10 BLOWS	BEARING IN TONS
1	11-18-66	45	1.0	44.0	300	39.7
2	" " "	45	0.9	44.1	275	42.3
3	" " "	45	0.9	44.1	275	42.3
4	" " "	45	1.0	44.0	300	39.7
5	" " "	45	1.5	43.5	250	45.3
6	" " "	45	1.0	44.0	250	45.3
7	" " "	45	0.9	44.1	200	52.9
8	" " "	45	0.8	44.2	250	45.3
9	" " "	45	0.8	44.2	300	39.7
10	" " "	45	0.5	44.5	350	35.3
		450	9.5	440.5		



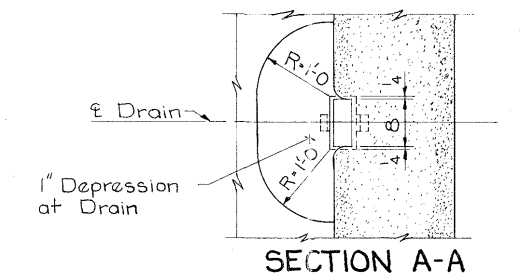
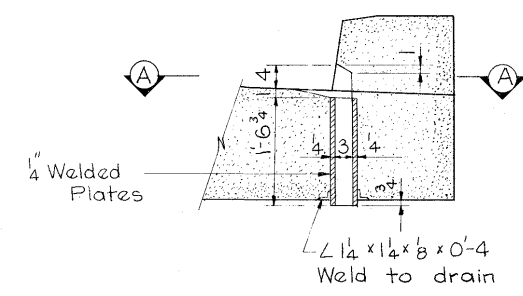
HALF SECTION NEAR ABUTMENT

HALF SECTION NEAR PIER



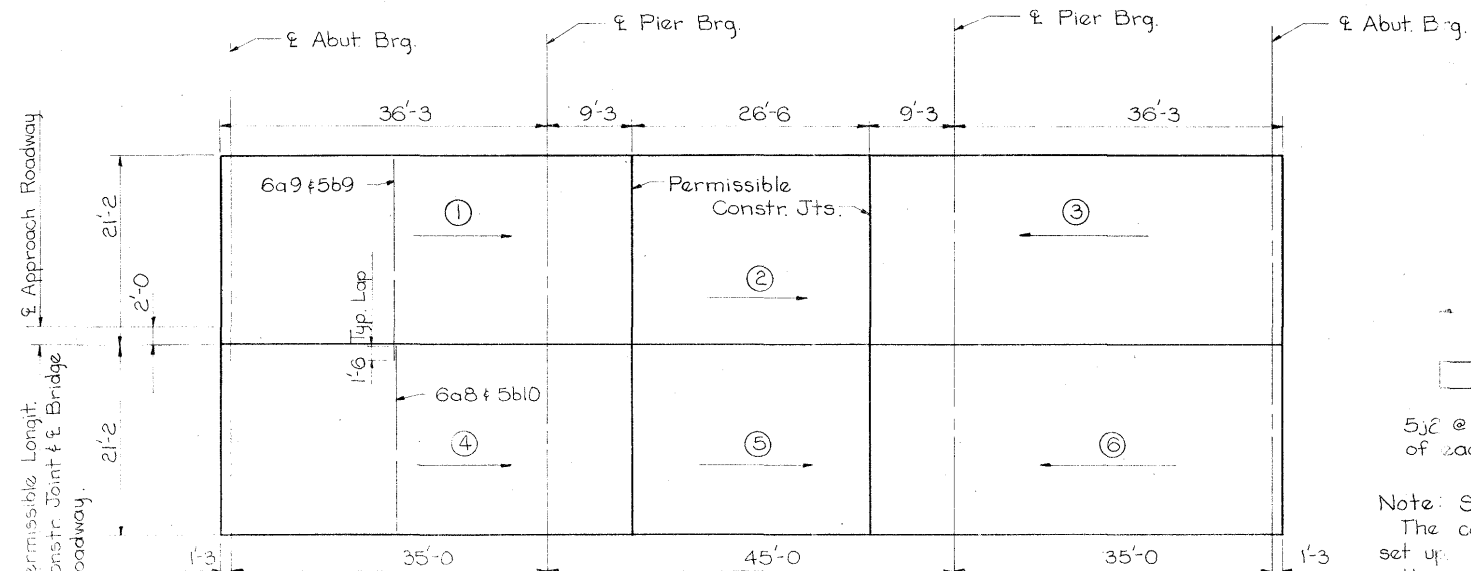
PLACEMENT FOR LONGITUDINAL REINFORCEMENT

CONCRETE PLACEMENT QUANT.	
Sections 1 & 3 2@ 59.3	118.6 cy.
Sections 4 & 6 2@ 59.1	118.2 cy.
Section 2 33.1	33.1 cy.
Section 5 33.0	33.0 cy.
Curbs 2@ 7.4	14.8 cy.
End Posts	1.5 cy.
Pavement Block	1.9 cy.
Total	321.1 cy.

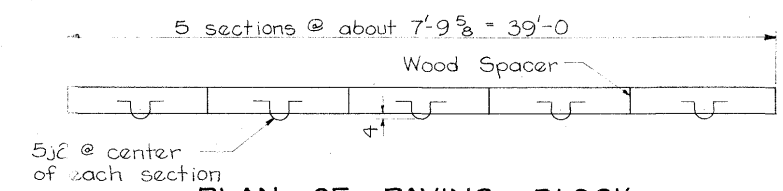
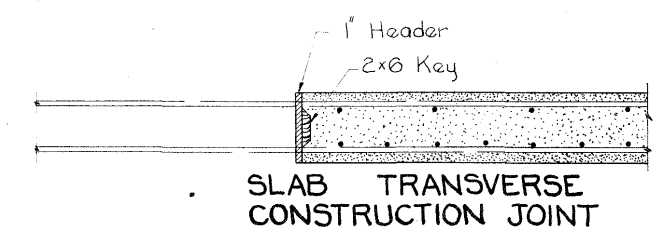


FLOOR DRAIN DETAILS

16 Drains required, Wt = 32 lbs. each.
For location of drains see Situation Plan on sheet 1. Cost of drains to be included in price bid for concrete. A 4x8 outside dimension rolled tube with 1/4 walls may be substituted for the welded drain shown above.



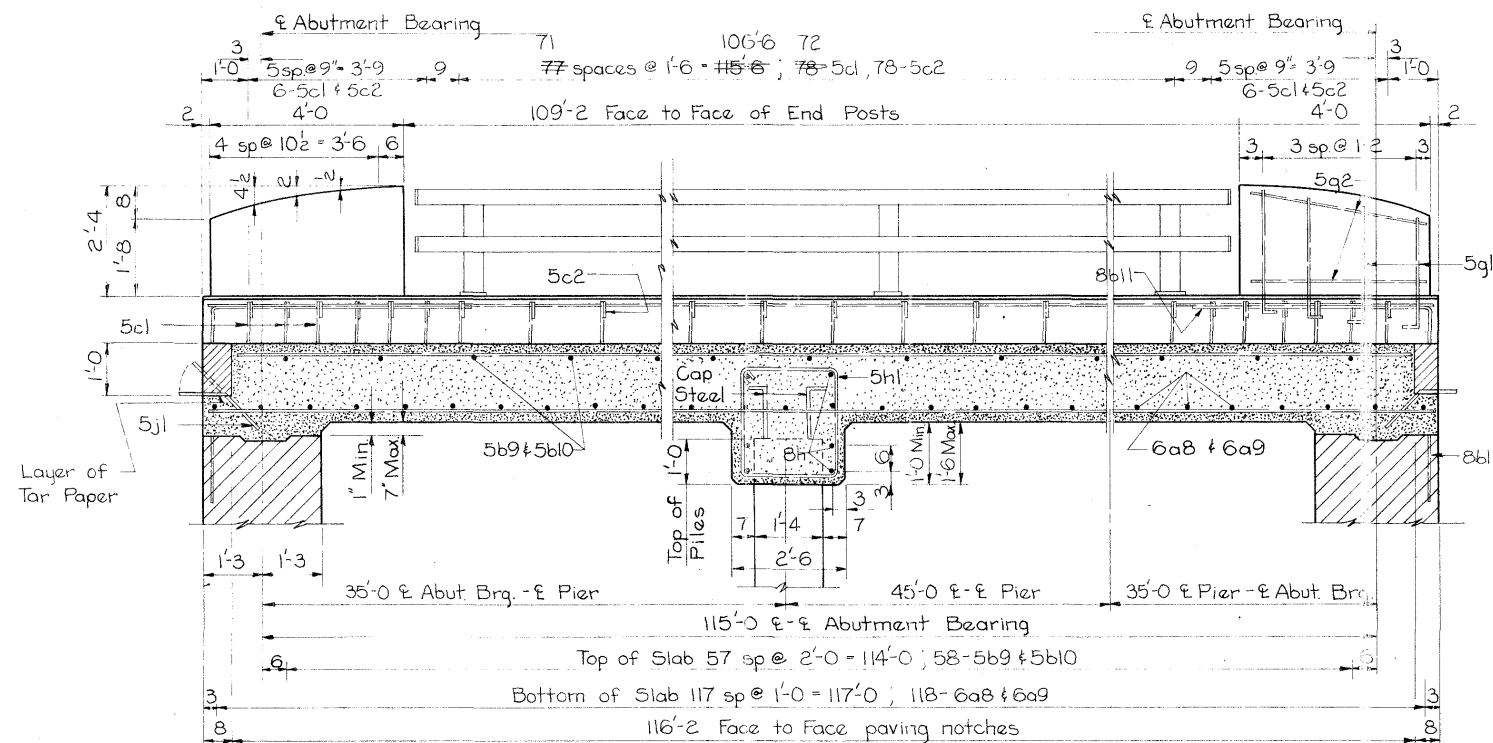
CONCRETE PLACEMENT DETAILS
(Showing typical slab transverse bar placement)



Note: See Superstructure Reinforcing Bar List for bar details.
The concrete paving block is to be placed after the slab & curb have set up. Bend down 5c1 bars (structural grade) and line the notch with tar paper to prevent bond. The block is to be removed and the bars straightened as shown on the Longitudinal Section Near Curb on Sheet N° 4 before paving is poured.

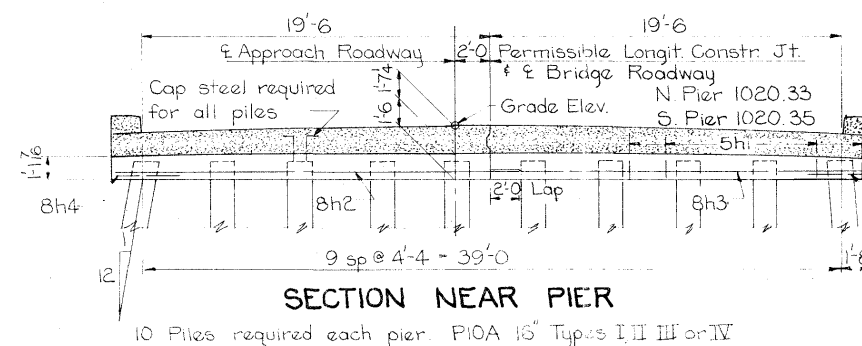
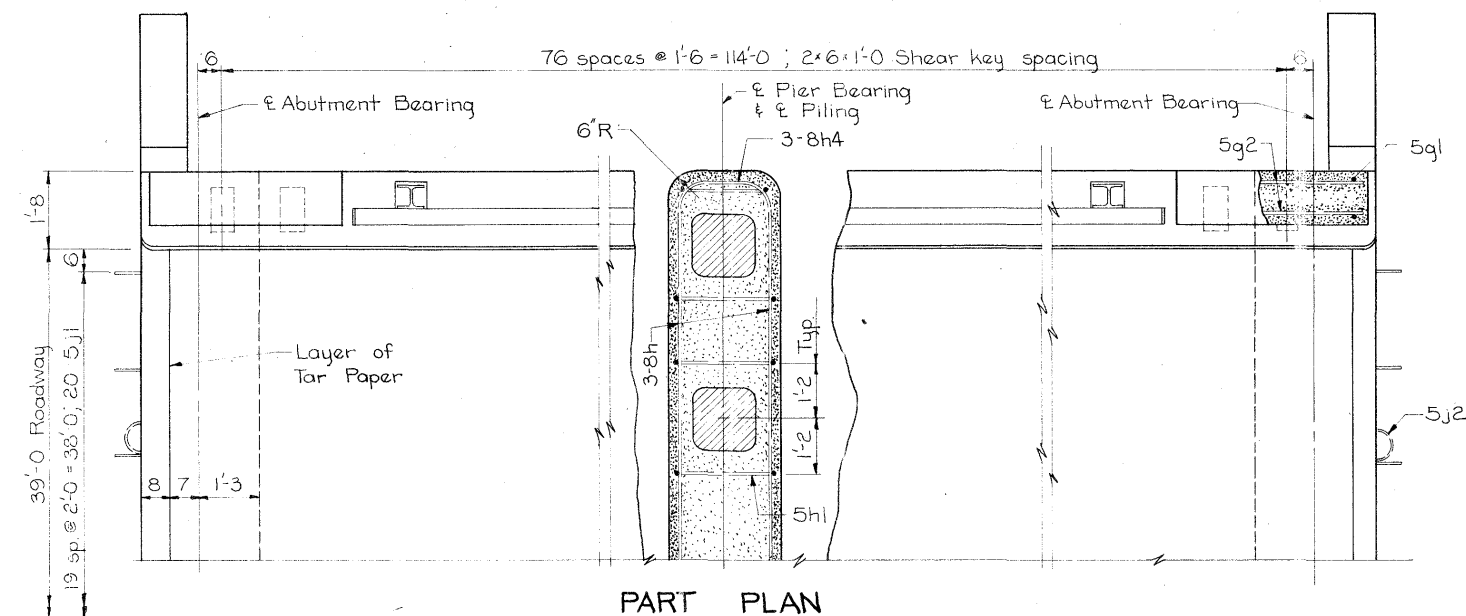
Design for
TWIN 115'x39' CONTINUOUS CONCRETE SLAB BRIDGE
35'-0 End Spans 45'-0 Center Span
Concrete Floor & Substructure Tubular Handrail
SUPERSTRUCTURE DETAILS
Station 1655+40 Proj. N° I-IG-29-5(9)85 ** 43-9
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REINFORCING STEEL-ONE SUPERSTRUCTURE



LONGITUDINAL SECTION NEAR CURB

Note: For rail post spacing see Sheets 5 & 6



Note :

Drive the Pier Piles to full penetration if practicable, but to not less than 36 tons bearing capacity. The Pier Piles are to be 16' concrete trestle piles (Type I, II, III or IV) as detailed on I.S.H.C. Standard P10A dated June 1959.

Cap steel is required and shall be included in the price bid for piling.

SUPERSTRUCTURE NOTES:

This bridge is designed for H20-S16-44 loading and the alternate loading designated in B.P.R. PPM 20-4 Section 4c, plus an allowance of 19 lbs. per sq. ft. of roadway for future wearing surface.

The floor slab as shown includes $\frac{1}{2}$ of wearing surface.

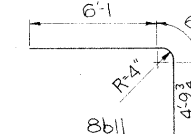
All exposed corners of 90° or sharper are to be filleted with a $\frac{3}{4}$ " dressed and beveled strip.

All reinforcing is to be securely wired in place and adequately supported on bar chairs spaced at not over 3'-0" centers longitudinally and transversely before concrete is placed.

Minimum clear distance from face of concrete to near reinforcing bar shall be 12" unless otherwise noted or shown.

Curbs are to be placed while the slab is supported by falsework. Each curb may be placed in one continuous pour. Falsework shall not be removed until curbs have developed a modulus of rupture of 600 p.s.i. or more.

The slab is to be placed in the sections as shown on Sheet N^o 3 and in the order indicated by the circled numbers. The arrows indicate the direction of pour. The interval between placing sections shall preferably not exceed 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 results.



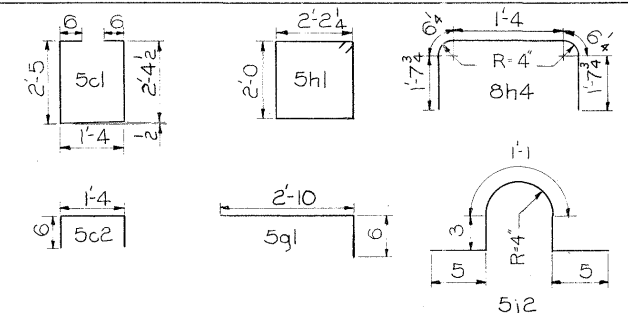
Bar	Location	Shape	No	Length	Weight
10a1	Bottom of Slab Longit	---	49	25'-5	5359
10a2	" " "	---	49	35'-7	7500
10a3	" " "	---	49	33'-3	7009
10a4	" " "	---	72	29'-2	9036
9a5	Bottom Curb Longit.	---	12	40'-4	1646
10a6	" " "	---	8	25'-10	889
10a7	" " "	---	4	28'-6	491
6a8	Bottom Slab Transverse	---	118	20'-10	3692
6a9	" " "	---	118	22'-8	4017
11b1	Top Slab Longit.	---	49	19'-5	5055
11b2	" " "	---	49	18'-6	4816
11b3	" " "	---	48	17'-1	4357
6b4	" " "	---	24	30'-8	1105
6b5	" " "	---	48	28'-0	2019
5b6	" Curb "	---	12	24'-10	311
10b7	" " "	---	8	23'-6	809
11b8	" " "	---	8	12'-8	538
5b9	Top Slab Transverse	---	58	22'-8	1371
5b10	" " "	---	58	20'-10	1260
5c1	Curb Hoops	168	156	6'-9 1/2	1106
5c2	Ties	168	156	2'-2	352
5g1	End Post Vertical	---	32	3'-3	108
5g2	" " Horizontal	---	16	3'-8	61
5h1	Pier Drop Panel Hoops	---	40	9'-1	379
8h2	" " " Longit.	---	12	22'-8	726
8h3	" " " "	---	12	20'-4	650
8h4	" " " End	---	12	5'-8	181
*5j1	Pavement Dowels	---	40	2'-0	83
5j2	" Block Hoops	---	10	2'-3	23
8b11	Top Curb Longit.	---	12	11'-5	366

*Structural Grade	
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~~1106~~	1190
~~352~~	380

65427
~~64949~~

BENT BAR DETAILS



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

SUPERSTRUCTURE QUANT.-ONE BRIDGE

Item				Amount
Structural Concrete Class D				321.1 c.y.
Reinforcing Steel				55427 ~~64,949~~ lbs.
16" P10A Piling	Type I, II	Furnish	20 @ 70'	1,400 L.F.
	or	Drive	20 @ 70'	1,400 or L.F.
			20 @ 50'	1,000 L.F.
	Type III, IV			

Revised 8-31-66: bar 8b11 and additional 5c1 & 5c2 added, Quantity Changed.

TWIN 115' x 39' ^{Design For} CONTINUOUS CONCRETE
SLAB BRIDGE

35'-0" End Spans	45'-0" Center Span
Concrete Floor & Substructure	Tubular Handrail

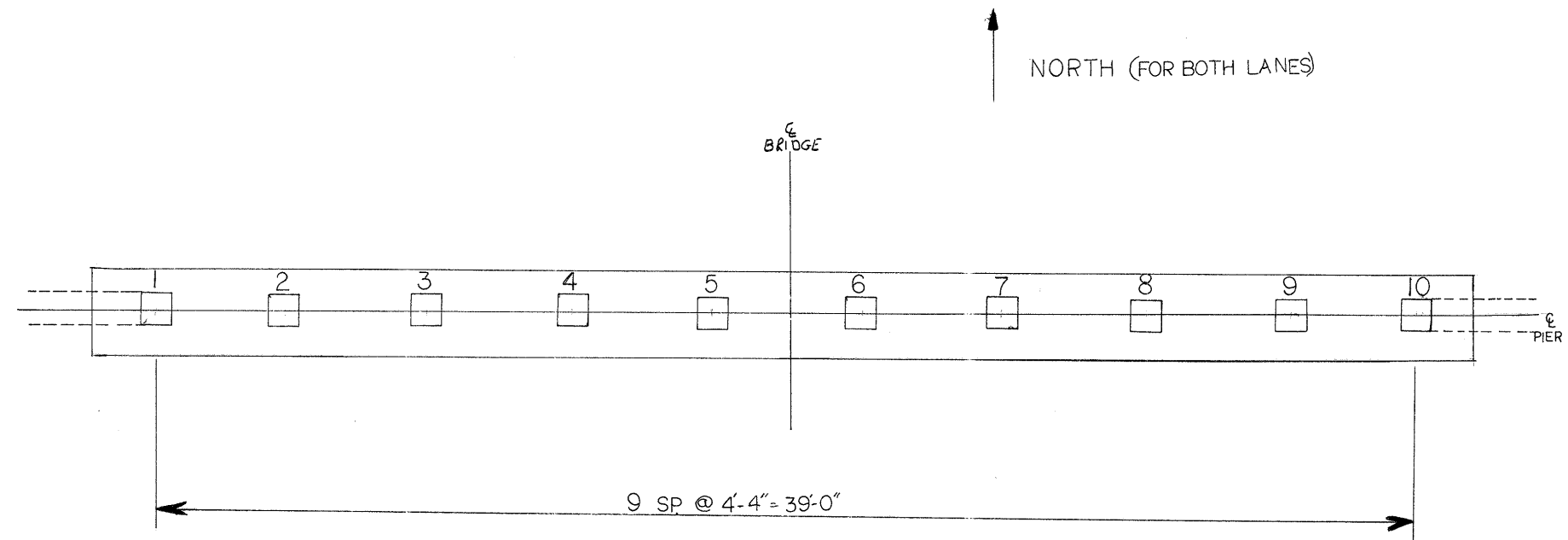
SUPERSTRUCTURE DETAILS

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Design N° 1965 Harrison County File N° 20677



NORTH PIER WEST LANE

PILE NO.	DATE DRIVEN	LENGTH IN LEADS NEAREST FOOT	AVE. PEN. LAST 10 BLOWS IN	BEARING IN TONS
B 1	11-6-66	500 0.0	1000	547
2	" " "	500 0.0	1000	547
3	" " "	500 0.0	1000	547
4	" " "	500 0.0	0875	583
5	" " "	500 0.0	0375	795
6	11-15-66	500 0.0	0250	875
7	" " "	500 0.0	0250	875
8	" " "	500 0.0	0625	673
9	" " "	500 0.0	0750	625
B 10	11-16-66	500 0.0	1375	460
TOTAL		5000 0.0	—	5000

NORTH PIER EAST LANE

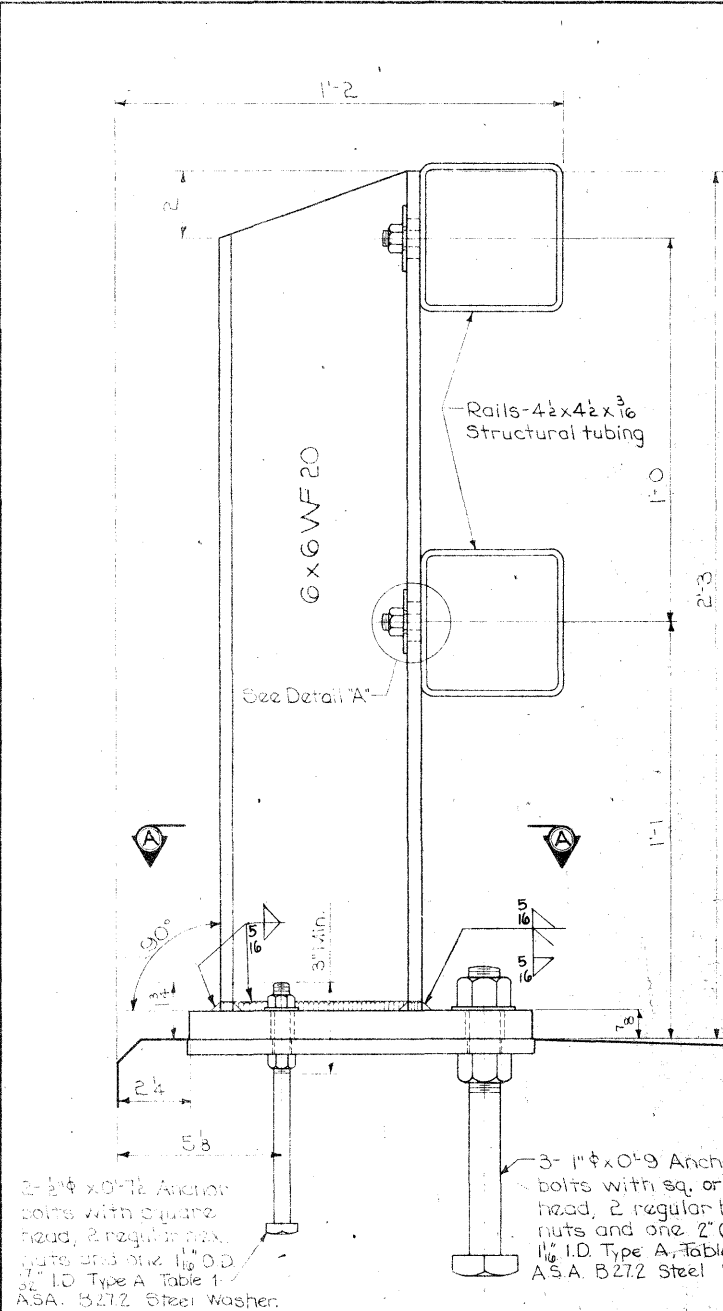
PILE NO.	DATE DRIVEN	LENGTH IN LEADS NEAREST FOOT	AVE. PEN. LAST 10 BLOWS IN	BEARING IN TONS
B 1	11-11-66	50 0.0	500	1125 51.4
2	" " "	50 0.0	500	1125 51.4
3	11-10-66	50 0.0	500	0875 58.3
4	" " "	50 0.0	500	2000 36.4
5	11-11-66	50 0.0	500	1625 41.6
6	" " "	50 0.0	500	0875 58.3
7	11-10-66	50 0.0	500	1125 51.4
8	" " "	50 0.0	500	0750 62.5
9	" " "	50 0.0	500	0750 62.5
B 10	11-11-66	50 0.0	500	1125 51.4
TOTAL		500 0.0	5000	

SOUTH PIER WEST LANE

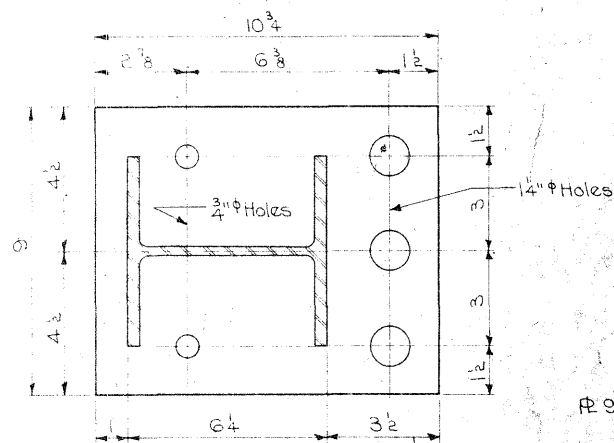
PILE NO.	DATE DRIVEN	LENGTH IN LEADS NEAREST FOOT	AVE. PEN. LAST 10 BLOWS IN	BEARING IN TONS
B 1	11-4-66	50 0.0	500	0750 62.5
2	11-2-66	50 0.0	500	0750 62.5
3	" " "	50 0.0	500	1000 54.7
4	" " "	50 0.0	500	1250 48.6
5	11-4-66	50 0.0	500	1000 54.7
6	" " "	50 0.0	500	0625 67.3
7	11-2-66	50 0.0	500	0625 67.3
8	" " "	50 0.0	500	1000 54.7
9	" " "	50 0.0	500	0750 62.5
B 10	11-4-66	50 0.0	500	1250 48.6
TOTAL		500 0.0	5000	

SOUTH PIER EAST LANE

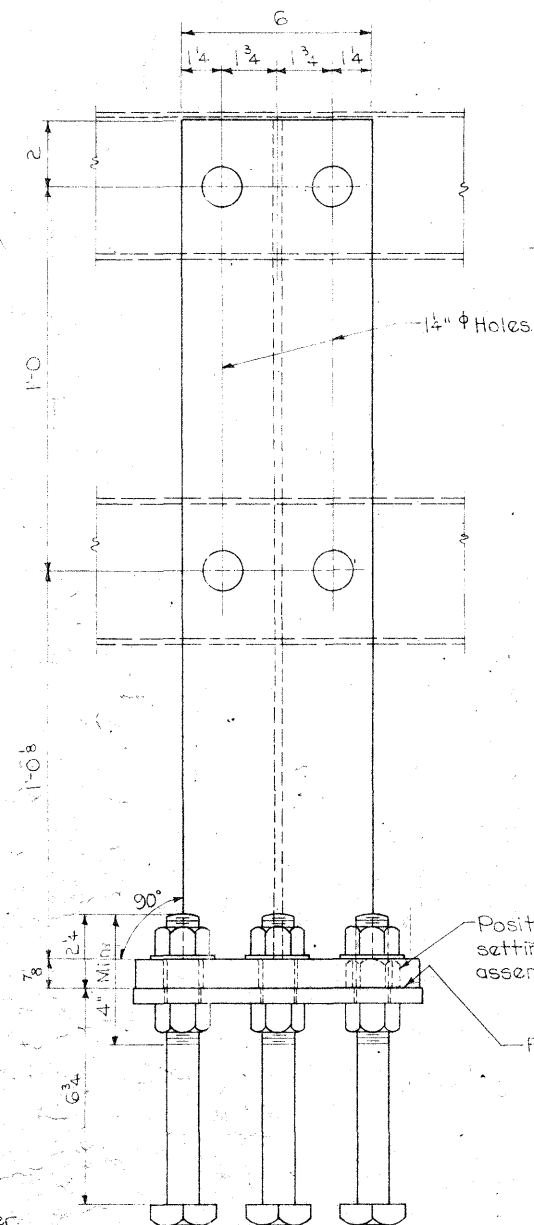
PILE NO.	DATE DRIVEN	LENGTH IN LEADS NEAREST FOOT	AVE. PEN. LAST 10 BLOWS IN	BEARING IN TONS
B 1	10-28-66	50 0.0	500	0750 62.5
2	10-27-66	50 0.0	500	0625 67.3
3	" " "	50 0.0	500	0625 67.3
4	" " "	50 0.0	500	0750 62.5
5	10-28-66	50 0.0	500	0625 67.3
6	" " "	50 0.0	500	1375 46.0
7	10-27-66	50 0.0	500	0625 67.3
8	" " "	50 0.0	500	0875 58.3
9	" " "	50 0.0	500	0875 58.3
B 10	10-28-66	50 0.0	500	0625 67.3
TOTAL		500 0.0	5000	



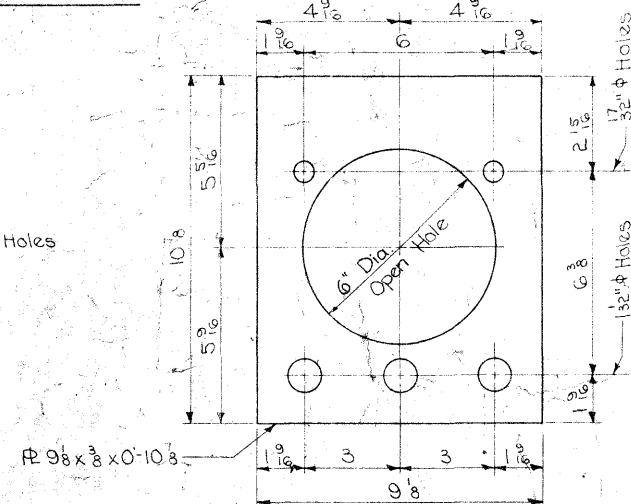
RAIL POST



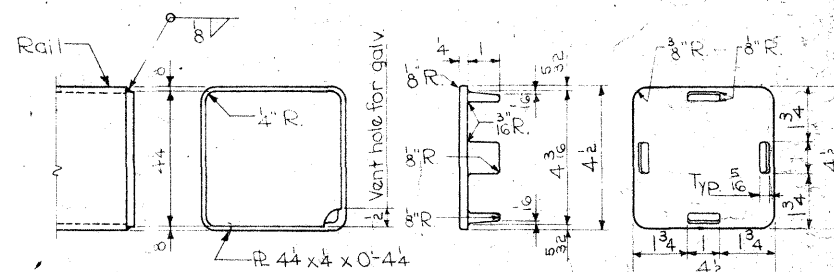
SECTION A-A



ANCHOR CAGE DETAILS

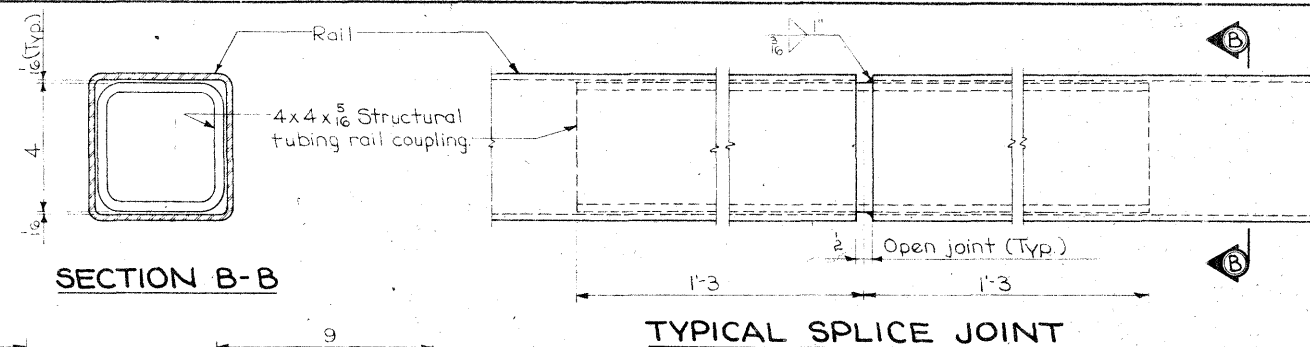


RAIL END CAP DETAILS



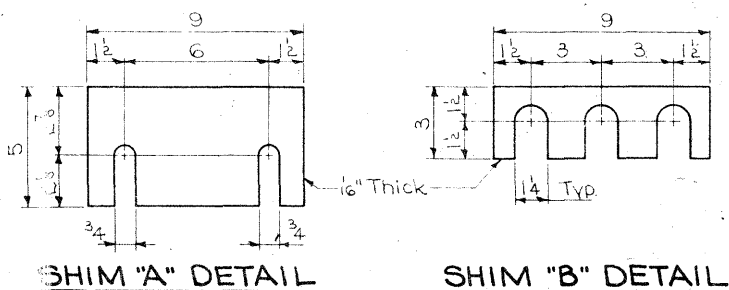
NOTE
Maximum rail post spacing = 8'-6".

TYPICAL ELEVATION OF RAILING AND RAIL POST LAYOUT



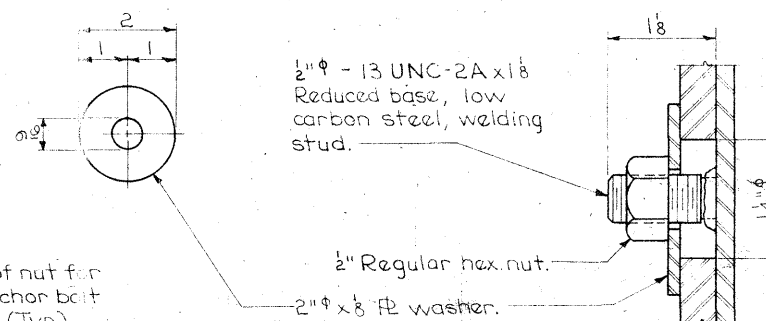
SECTION B-B

TYPICAL SPLICE JOINT



SHIM "A" DETAIL

SHIM "B" DETAIL



DETAIL "A"

STEEL HANDRAIL NOTES:

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

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

Material for rail tubing, post, base plate and anchor cage shall be A.S.T.M. A-36 and are to be galvanized after fabrication to A.S.T.M. A-123.

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

Material for anchor bolts and nuts, and rail to post attachment nuts shall be A.S.T.M. A-307 - G1T, Grade A.

Anchor bolts and nuts, rail to post attachment nuts, end caps, washers and shims are to be galvanized to A.S.T.M. A-153.

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

Welding shall be in accordance with Section 2406.15 of the Standard Specifications.

Handling, storage and installation of steel handrail shall be in accordance with Section 2414.06 of the Standard Specifications.

Rail studs shall be provided with adequate protection during shipment.

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

A surface is considered to be "Flat and True" when the deviation from a straight edge placed on this surface in any position, is less than 1/16".

No painting will be required.

DESIGN SPECIFICATIONS:

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

STEEL HANDRAIL QUANTITIES		
Steel Handrail	434.6	Lin. Ft.

Design For
TWIN 115' x 39' CONTINUOUS CONCRETE SLAB BRIDGE

35'-0" End Spans 45'-0" Center Span
Concrete Floor & Substructure Tubular Handrail

STEEL HANDRAIL DETAILS

Station 1655+40 Proj. No. I-16-29-5(9)65 ** 43-9

HARRISON COUNTY

Iowa STATE HIGHWAY COMMISSION

January 1966 STANDARD RAIL SHEET 103 Sheet 6 of 6

Design No. 1965 Harrison County File No. 20677

