

12/05/9

DECK REPAIR AND RETROFIT RAIL

HARRISON COUNTY

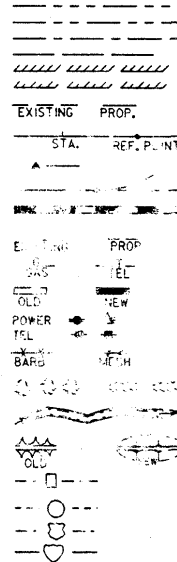
IR-29-5(59)86--12-43

43-029-40

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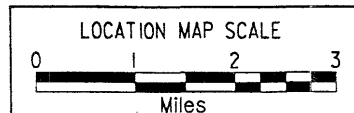
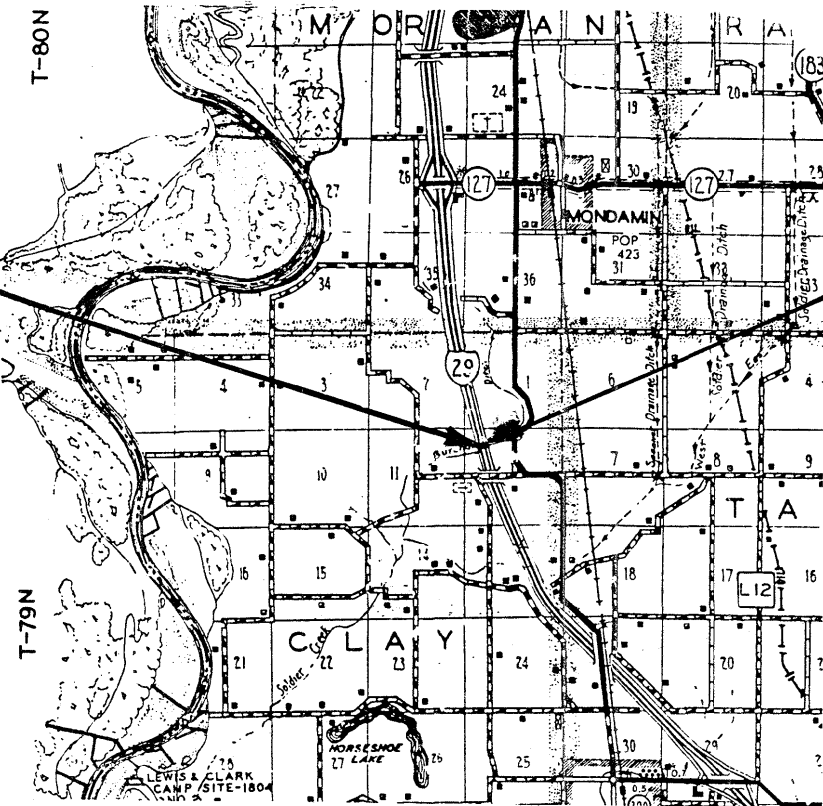
CONVENTIONAL SIGNS



885

STATE LINE
COUNTY LINE
TOWNSHIP LINE
SECTION LINE
CORPORATION LINE
URBAN BOUNDARY
R.O.W. LINES
SURVEY LINES
SECTION CORNER
PROPOSED PROFILE GRADE
RAILROAD
FIELD CORNER
UNDEVELOPED LOTS
TOWNSHIP
UTAH BOUNDARY
FENCES
BUSHES OR BRUSH
STEEL
CITY
LOCAL ROAD NUMBER
PRIMARY ROAD NUMBER
U.S. ROAD NUMBER
INTERSTATE ROAD NUMBER

T-80N
T-79N



IOWA
DEPARTMENT OF TRANSPORTATION
Highway Division

PLANS OF PROPOSED IMPROVEMENTS ON THE
INTERSTATE ROAD SYSTEM
HARRISON COUNTY
DECK REPAIR AND RETROFIT RAIL
INTERSTATE 29 - OVER BURCHAM CREEK
2.8 MILES SOUTH OF IOWA 127

SCALE: As Noted

The standard specifications, series of 1984 of the Iowa Department of Transportation, shall apply to construction work on this project.

(PLUS CURRENT SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS)

CONSTRUCTION PLANS SHOWING PROJECT AS BUILT

Plan Preparation Supervised By: Jerry R. Ames
Resident Construction Engineer
Date 12/27/94 Iowa Reg. No. 7232

REVIEWED AND FORWARDED TO AMES

Tony B. Jagerowicz Date 8-22-95
NWITC Construction Engineer

One 50% Reduced and Two Full-Size Prints To Be Made and Returned To

JAMES BUMP
District Engineer

AFTER MICROFILMING RETURN ORIGINAL
TO DISTRICT NO. 3

YEAR	WORK	CONTRACTOR	PROJ. INSPECTOR
1990	STRUCTURE	GRAMER ASSOC.	
1990	ACC. SHOULDERS	DELTA ASPHALT	
	FILE NO 885		LESTER DAVIS

* 150*

STATE	FHWA REGION	F.Y.	SHEET	TOTAL
IOWA	7		1	16
PROJECT NUMBER				
IR-29-5(59)86--12-43				
R.O.W. PROJECT NUMBER				
PIN				
89-43-050-1				

INDEX OF SHEETS

NO.	DESCRIPTION
1	TITLE SHEET
2	ESTIMATE SHEET
3-11	BRIDGE DESIGN NO. 989
~~12~~	~~BRIDGE DESIGN NO. 1289~~
13-18	ROAD SHEETS

STANDARD ROAD
PLANS

IDENT	DATE	IDENT	DATE
RE-2A	02-17-87	RE-69	08-08-89
RE-2B	04-04-89	RH-50	08-08-89
RE-7	05-13-86	RH-51	08-08-89
RE-12A	10-11-88	RH-52	08-08-89
RE-12B	10-11-88	RK-17	02-17-87
RE-47	11-10-87	RL-11	10-11-88
RE-48A	08-20-85	RL-12	04-04-89
RE-52	08-08-89	RS-62	10-11-88
RE-53	10-11-88	RS-63A	08-08-89
RE-65	04-04-89		
RE-67	04-04-89		
RE-68	08-08-89		

STANDARD BRIDGE
PLANS

STANDARD	ISSUED	REVISED

REVISIONS



Iowa Department
of Transportation

AUTHORIZED FOR LETTING

Debra A. Anderson 10-4-89
DEPUTY CHIEF ENGINEER DATE

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.

Name Walter A. Anderson
Iowa Registration No. 4449 Date 10/19/89

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
APPROVED

FOR THE DIVISION ADMINISTRATOR DATE

I HEREBY CERTIFY THAT THESE PLANS WERE 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
DATE 10/13/89 GARY A. NOVEY REG. NO. 8704

*INCLUDES BRIDGE AND ROAD QUANTITIES

DESIGN 989	OVER BURCHAM CREEK	STATION 1655+40.00	
HARRISON COUNTY	MAINTENANCE NO. 4386.5R029		
SECTION 12	T 79 N R 45 W	CLAY TOWNSHIP	
DESIGN FOR REPAIRS TO NORTHBOUND LANE OF TWIN 115'-0 X 39' CONTINUOUS CONCRETE SLAB BRIDGE			
GROUP 1			
ESTIMATE OF QUANTITIES			
NO.	ITEM	UNIT	TOTAL
1	CLASS A BRIDGE FLOOR REPAIR	SO. YDS.	78.74
2	BRIDGE FLOOR OVERLAY	SO. YDS.	823
3	TEMPORARY BARRIER RAIL - FURNISH ONLY	LIN. FT.	420
4	TEMPORARY BARRIER RAIL - PLACE ONLY	LIN. FT.	820
5	CONCRETE SEALER AS PER PLAN	SO. FT.	440
6	CONCRETE BARRIER RAIL - CAST IN PLACE	LIN. FT.	243.0
7	REMOVAL OF EXISTING HANDRAIL	L.S.	\$ 2,000.00
8	TRAFFIC CONTROL	L.S.	\$ 2,000.00
9	TEMPORARY FLOODLIGHTING	L.S.	\$ 2,000.00
10	REMOVE & REINSTALL STEEL BEAM GUARDRAIL	LIN. FT.	50
11	REMOVAL OF FORMED STEEL GUARDRAIL	LIN. FT.	475
12	REMOVAL OF POSTS	NO.	60
13	REMOVAL OF END ANCHORAGE	NO.	2
14	REMOVAL OF OBJECT MARKER	NO.	2
15	TYPE 3 OBJECT MARKER	NO.	2
16	FORMED STEEL BEAM GUARDRAIL	LIN. FT.	150
17	FORMED STEEL THRIE BEAM GUARDRAIL	LIN. FT.	93.75
18	BEAM GUARDRAIL POSTS	NO.	53
19	RE-69 BEAM GUARDRAIL END ANCHORAGE	NO.	3
20	RE-52 BEAM GUARDRAIL END ANCHORAGE	NO.	1
21	RE-53 BEAM GUARDRAIL END ANCHORAGE	NO.	1
22	3/4" TYPE "B" ASPHALT CEMENT CONCRETE BASE		
	CLASS 1	TONS	110.53
23	PAVEMENT MARKINGS	STA.	73.70
24	FULL DEPTH PATCH BY COUNT	NO.	0.0
25	FULL DEPTH PATCH BY AREA	SO. YDS.	0.0
26	EF JOINT ASSEMBLY	NO.	0.0
27	TRIPLE YELLOW OBJECT MARKER, AS PER PLAN	NO.	3
28	EMBANKMENT IN PLACE	CU. YDS.	15
29	MOBILIZATION	Lump Sum	\$ 3,000.00
30	FLAGGERS	DAY	0.50

ESTIMATE REFERENCE INFORMATION	
Data listed below is for informational purposes only and shall not constitute a basis for any extra work orders	
ITEM NO.	DESCRIPTION
1	INCLUDES 8 SO. YDS. OF CURB REPAIR.
1-2	SEE RK-17 AND RH-50 FOR DETAILS. QUANTITY ESTIMATE FOR 2-60' APPROACHES AT NORTHBOUND BRIDGE.
3-4	ALL TEMPORARY BARRIER RAIL SHALL BE NOMINAL 10' LONG CONCRETE UNITS.
6	INCLUDES 1069 L.F. OF NO. 5 BAR AND 1075 L.F. OF NO. 6 BAR OF EPOXY COATED REINFORCING STEEL, AND 15.3 CU. YDS. OF CLASS D CONCRETE.
8	FOR NORTHBOUND BRIDGE SEE TRAFFIC CONTROL LAYOUT SHEET TCP1.
9	SEE DETAIL SHEET 570-2 AND TRAFFIC CONTROL LAYOUT FOR MORE INFORMATION.
10-14	AS DIRECTED BY THE ENGINEER. SEE TAB. 110-7 FOR LOCATION AND INFORMATION. TO BE EXECUTED AS PER 204-2, 204-3 213-1 AND JRA-1.
15, 27	SEE TAB. 108-17 FOR MORE INFORMATION.
16-21	AS DIRECTED BY THE ENGINEER. SEE TAB. 108-8A, 107-23 AND 108-19. ALSO SEE 204-1 AND 251-2.
22	QUANTITY ESTIMATED FOR 4-3' X 195' X 8" ACC SHOULDER STRENGTHENING ADJACENT TO PAVEMENT. THIS STRENGTHENING WILL REMAIN IN PLACE UPON COMPLETION OF PROJECT. AC, TACK, TRENCHING, ETC. TO BE INCIDENTAL TO PRICE BID. SEE TCP-1 LAYOUT SHEET.
23	SEE TAB. 108-22 AND TCP-1 LAYOUT SHEET.
24-26	FOR REPLACEMENT OF PR JOINTS AS DIRECTED BY THE ENGINEER. SEE TAB. 102-6C.

(GROUP) DIVISION 1		
8001 Removal of CURB	ONLY	2
8002 OFFSET BRACKETS	ONLY	2
(GROUP) DIVISION 2		
8003 Removal of CURB	ONLY	2
8004 OFFSET BRACKETS	ONLY	2

DESIGN 1289	OVER BURCHAM CREEK	STATION 1655+40.00	
HARRISON COUNTY	MAINTENANCE NO. 4386.5L029		
SECTION 12	T 79 N R 45 W	CLAY TOWNSHIP	
DESIGN FOR REPAIR TO SOUTHBOUND LANE OF TWIN 115'-0 X 39' CONTINUOUS CONCRETE SLAB BRIDGE			
GROUP 2			
ESTIMATE OF QUANTITIES			
NO.	ITEM	UNIT	TOTAL
31	CONCRETE BARRIER RAIL - CAST IN PLACE	LIN. FT.	243
32	REMOVAL OF EXISTING HANDRAIL	L.S.	\$ 2,000.00
33	TRAFFIC CONTROL	L.S.	\$ 2,000.00
34	REMOVE & REINSTALL STEEL BEAM GUARDRAIL	LIN. FT.	25
35	REMOVAL OF FORMED STEEL GUARDRAIL	LIN. FT.	112.5
36	REMOVAL OF POSTS	NO.	61
37	REMOVAL OF END ANCHORAGE	NO.	2
38	REMOVAL OF OBJECT MARKER	NO.	2
39	TYPE 3 OBJECT MARKER	NO.	2
40	FORMED STEEL BEAM GUARDRAIL	LIN. FT.	175
41	FORMED STEEL THRIE BEAM GUARDRAIL	LIN. FT.	93.75
42	BEAM GUARDRAIL POSTS	NO.	53
43	RE-69 BEAM GUARDRAIL END ANCHORAGE	NO.	3
44	RE-52 BEAM GUARDRAIL END ANCHORAGE	NO.	1
45	RE-53 BEAM GUARDRAIL END ANCHORAGE	NO.	1
46	TRIPLE YELLOW OBJECT MARKER, AS PER PLAN	NO.	3
47	EMBANKMENT IN PLACE	CU. YDS.	15
48	MOBILIZATION	Lump Sum	\$ 1,000.00
49	FLAGGERS	DAY	0.0

ESTIMATE REFERENCE INFORMATION	
Data listed below is for informational purposes only and shall not constitute a basis for any extra work orders	
ITEM NO.	DESCRIPTION
1	INCLUDES 14.4 CU. YDS. OF CLASS D CONCRETE AND 2639 LBS. OF EPOXY COATED REINFORCING STEEL. REINFORCING STEEL COMPRISED OF 1069 L.F. OF #5 BAR & 1015 L.F. OF #6 BAR.
3	FOR SOUTHBOUND BRIDGE, USE RS-62 AND RS-63A LAYOUTS.
4-8	AS DIRECTED BY THE ENGINEER. SEE TAB. 110-7 FOR LOCATION AND INFORMATION. TO BE EXECUTED AS PER 204-2, 204-3, 213-1 AND JRA-1.
9, 16	SEE TAB. 108-17 FOR MORE INFORMATION.
10-15	AS DIRECTED BY THE ENGINEER. SEE TAB. 108-8A, 107-23 AND 108-19. ALSO SEE 204-1 AND 251-2

BRIDGE & ROAD
ESTIMATE SHEET

GENERAL NOTES:

THIS DESIGN IS FOR REPAIRS TO THE EXISTING 115'-0x39' CONTINUOUS CONCRETE SLAB BRIDGE ON I-29 NORTHBOUND LANE, ORIGINAL DESIGN 1965, HARRISON COUNTY. PLANS OF THE EXISTING STRUCTURE MAY BE OBTAINED AT THE AMES OFFICE OF THE HIGHWAY DIVISION.

- REPAIRS SHALL CONSIST OF THE FOLLOWING:
- 1. BRIDGE FLOOR REPAIR.
 - 2. BRIDGE FLOOR OVERLAY.
 - 3. REMOVAL AND DISPOSAL OF EXISTING ALUMNUM HANDRAIL AND CONCRETE END POSTS.
 - 4. REPAIR OF EAST CURB.
 - 5. CONSTRUCTION OF CAST-IN-PLACE CONCRETE BARRIER RAIL.
 - 6. APPLICATION OF CONCRETE SEALER.
 - 7. A.C. REMOVAL ON BRIDGE APPROACHES AND P.P.C. OVERLAY PER ROAD STANDARD RK-17
 - 8. INSTALLATION OF APPROACH FORMED BEAM GUARDRAIL AND POSTS.
- PRESENT FLOOR THICKNESS IS ABOUT 19 INCHES. THE CONTRACTOR SHALL EXERCISE EXTREME CARE IN ORDER TO PREVENT UNNECESSARY REMOVAL OF CONCRETE BELOW THE TOP OF THE TOP REINFORCING. THE ENERGY OF HAND TOOLS SHALL BE RESTRICTED NEAR THE BOTTOM OF THE DESIGNATED CLASS A REPAIR AREAS IN ORDER TO PREVENT UNBONDING OF REINFORCING. NO CONCRETE SHALL BE REMOVED BELOW THE TOP OF THE TOP LONGITUDINAL REINFORCING WITHOUT PRIOR PERMISSION FROM THE BRIDGE ENGINEER.

CONSTRUCTION SHALL BE DONE IN STAGES, WITH AT LEAST ONE LANE OF TRAFFIC MAINTAINED AT ALL TIMES IN ACCORDANCE WITH "TRAFFIC CONTROL PLAN" NOTE.

SURFACE RAISE, AS SHOWN ON THE PLANS, SHALL BE CONSIDERED A MINIMUM. IN ORDER TO LIMIT THE ADDITIONAL DEAD LOAD, SURFACE RAISE SHALL BE RESTRICTED TO A MAXIMUM OF 1/2" MORE THAN SHOWN ON THE PLANS. PROFILE MAY BE ADJUSTED TO THE EXTENT POSSIBLE WITHIN THESE LIMITS.

ALL DIMENSIONS AND DETAILS SHOWN ON THESE PLANS PERTINENT TO NEW CONSTRUCTION SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR BEFORE STARTING CONSTRUCTION.

EXISTING BRIDGE RAIL IS NOT TO BE REMOVED UNTIL AUTHORIZED BY THE ENGINEER.

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

QUANTITY OF "CONCRETE SEALER, AS PER PLAN" IN SQUARE FEET, TO BE PAID FOR WILL BE COMPUTED FROM MEASUREMENTS OF AREAS ACTUALLY COVERED. PLAN QUANTITY IS BASED ON P.C. CONCRETE FLOOR OVERLAY.

REMOVALS AND DISPOSALS OF ITEMS SCHEDULED FOR REMOVAL SHALL BE IN ACCORDANCE WITH SECTION 2401 OF THE SPECIFICATIONS. ANY DAMAGE TO ANY STEEL OR CONCRETE NOT TO BE REMOVED SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND REPAIRED BY HIM AT NO EXTRA COST TO THE STATE.

AREAS OF CURB DESIGNATED BY THE ENGINEER, ARE TO BE REPAIRED AS CLASS A BRIDGE FLOOR REPAIR EXCEPT THAT THE UPPER OR OUTER LIMIT SHALL BE THE ORIGINAL SURFACE. NO OVERLAY QUANTITY WILL BE INCLUDED FOR THE CURB AREA. THE REPAIR AREAS WITHOUT OVERLAY SHALL RECEIVE A SURFACE FINISH PER ART. 2403.23, AND THEY SHALL RECEIVE A CURE AS SPECIFIED FOR BRIDGE FLOOR OVERLAY. THE ENGINEER MAY RELAX THE SLUMP REQUIREMENTS OF STIFF MIX TO A MAXIMUM OF 2 1/2 INCHES IN FORMING THE BATTER FACE. A MANUAL TYPE SCREED OR METAL PLATE WITH APPROVED VIBRATORS ATTACHED WILL BE REQUIRED FOR HORIZONTAL CURB SURFACES.

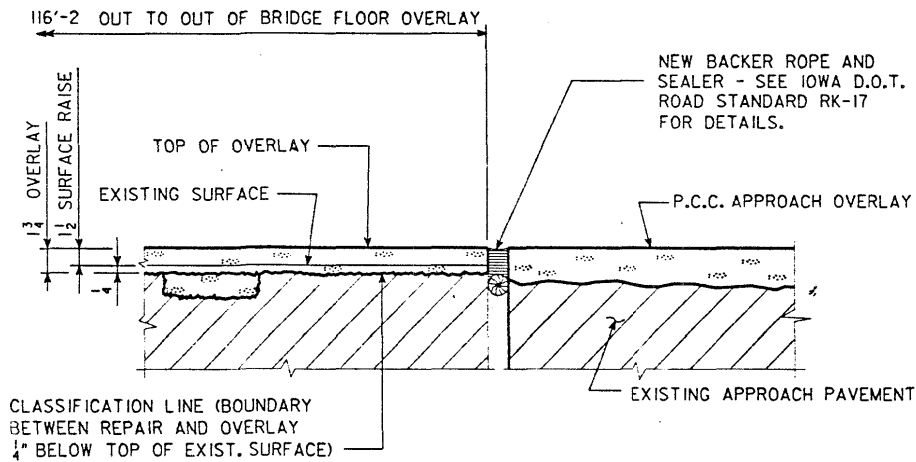
THE CONTRACTOR SHALL PLACE PORTLAND CEMENT CONCRETE OVERLAY ON THE BRIDGE APPROACH PAVEMENT AS NOTED AND SHOWN ON STANDARD ROAD PLAN RK-17. PAYMENT FOR THIS WORK SHALL BE AS NOTED ON STANDARD ROAD PLAN RK-17.

THE CONTRACTORS ATTENTION IS DIRECTED TO THE FACT THAT ALL OF THE CAST IN PLACE BARRIER RAIL REINFORCING BARS ARE TO BE EPOXY COATED. SEE THE EPOXY COATED REINFORCING BAR LIST IN THESE PLANS.

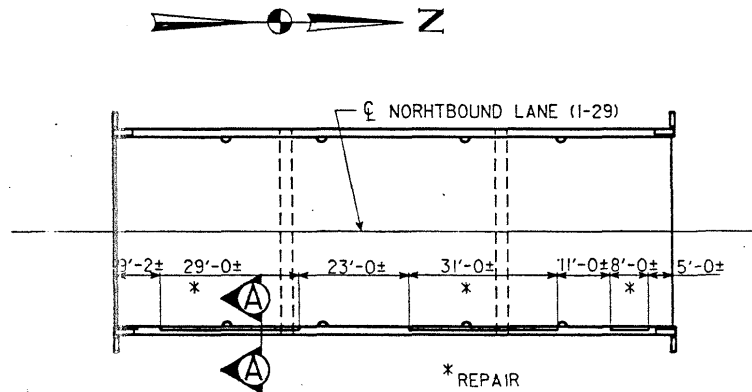
THE BID ITEM "REMOVAL OF EXISTING HANDRAIL" SHALL INCLUDE ALL COSTS ASSOCIATED WITH DISMANTLING THE EXISTING HANDRAIL (APPROXIMATELY 217 L.F. AND 26 POSTS), AND REMOVAL OF FOUR CONCRETE END POSTS, THE HANDRAILS ARE TO BECOME THE PROPERTY OF THE CONTRACTOR.

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). NO PAYMENT FOR OVERHAUL WILL BE ALLOWED FOR MATERIAL TO THESE SITES.

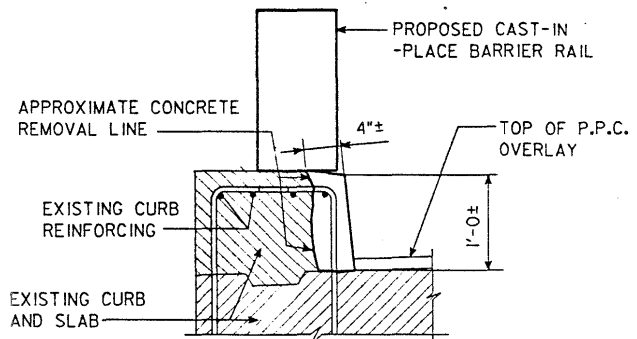
PLAN QUANTITY FOR CLASS A BRIDGE FLOOR REPAIR IS ESTIMATED AS 10% OF THE TOTAL BRIDGE FLOOR AREA, PLUS 8 SQ. YD. FOR CURB REPAIR. SHADED AREAS SHOWN ON THE "SURVEY PLOT" REPRESENT CLASS A BRIDGE FLOOR REPAIR FOUND BY THE DELAMTEC PLOT. ACTUAL SPALLED AND HOLLOW AREAS AS DETERMINED BY THE ENGINEER AT THE TIME OF CONSTRUCTION, SHALL BE REPAIRED. THE ENTIRE CONCRETE SURFACE OF THE BRIDGE FLOOR, INCLUDING AREAS OVER BRIDGE FLOOR REPAIR, SHALL HAVE BRIDGE FLOOR OVERLAY.



PART LONGITUDINAL SECTION ALONG ROADWAY BOTH ABUTMENTS



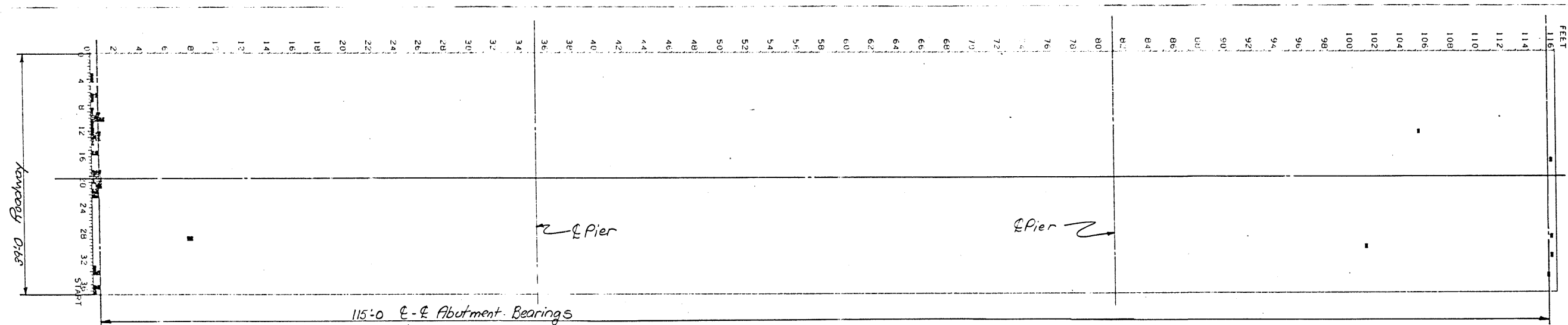
PLAN SHOWING APPROX. LOCATIONS OF CURB REPAIR



SECTION A-A

NOTE: ACTUAL LOCATION AND LIMITS OF CONCRETE REPAIR AND REMOVAL WILL BE DETERMINED BY THE ENGINEER AT THE TIME OF CONSTRUCTION.

DESIGN FOR REPAIR TO NORTHBOUND LANE OF
TWIN 115'-0x39' CONTINUOUS
CONCRETE SLAB BRIDGE
35'-0 END SPANS 45'-0 CENTER SPAN
GENERAL NOTES
STATION: 1655+40.00 (I-29) SEPTEMBER, 1989
HARRISON COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 2 OF 9 FILE NO. 27886 DESIGN NO. 989



IOWA D.O.T.
DELAMINATION MAP
4386-r029

8/1/89 Delamination at 400 mV
Length = 115 Feet 9 Inches Width = 37 Feet 6 Inches
Total Area = 4340.63 Square Feet Percentage Bad = 0.23%

SURVEY PLOT

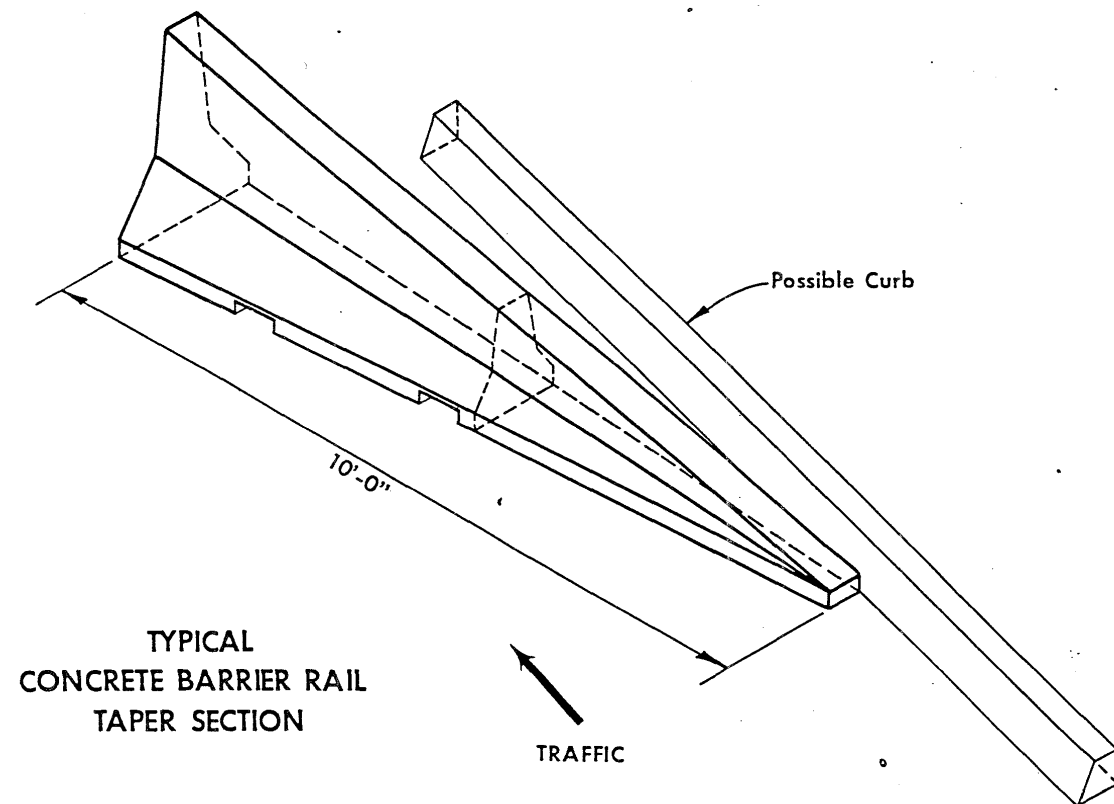
Design For Repair To Northbound Lane Of
**TWIN 115'-0x39' CONTINUOUS
CONCRETE SLAB BRIDGE**
35'-0 End Spans 45'-0 Center Span
SURVEY PLOT
Station: 1655+40.00 (4 I-29) September, 1989
HARRISON COUNTY
IOWA DEPARTMENT OF TRANSPORTATION-HIGHWAY DIVISION
Design Sheet No.: 3 Of 9 File No.: 27886 Design No.: 989

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

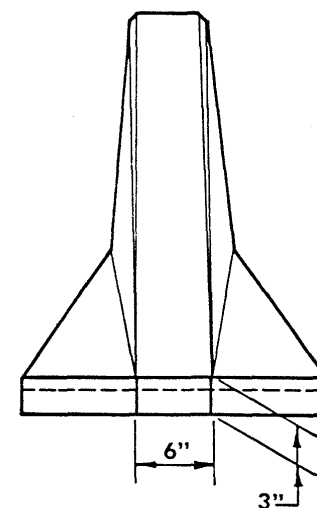
HARRISON COUNTY

PROJECT NUMBER

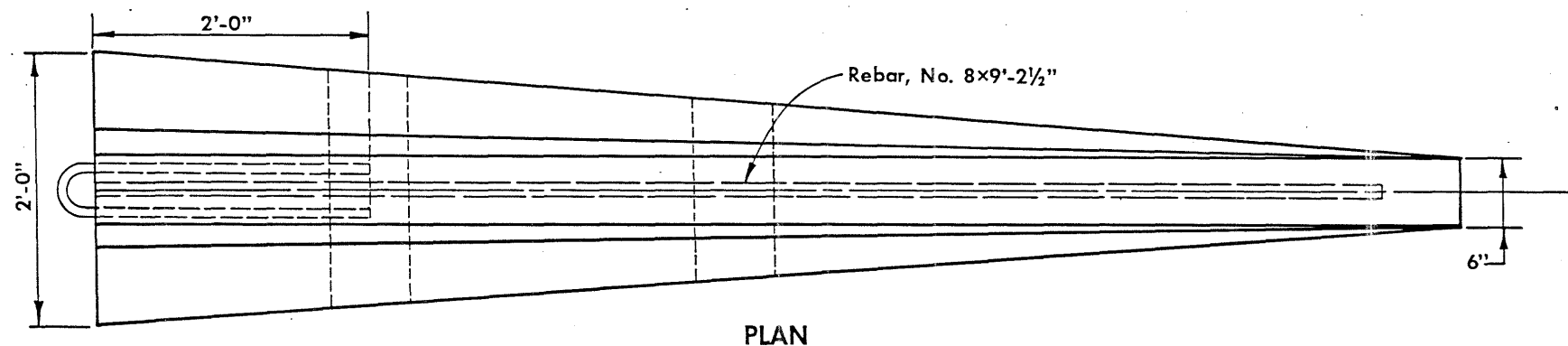
STATE	IOWA	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	7		5	18



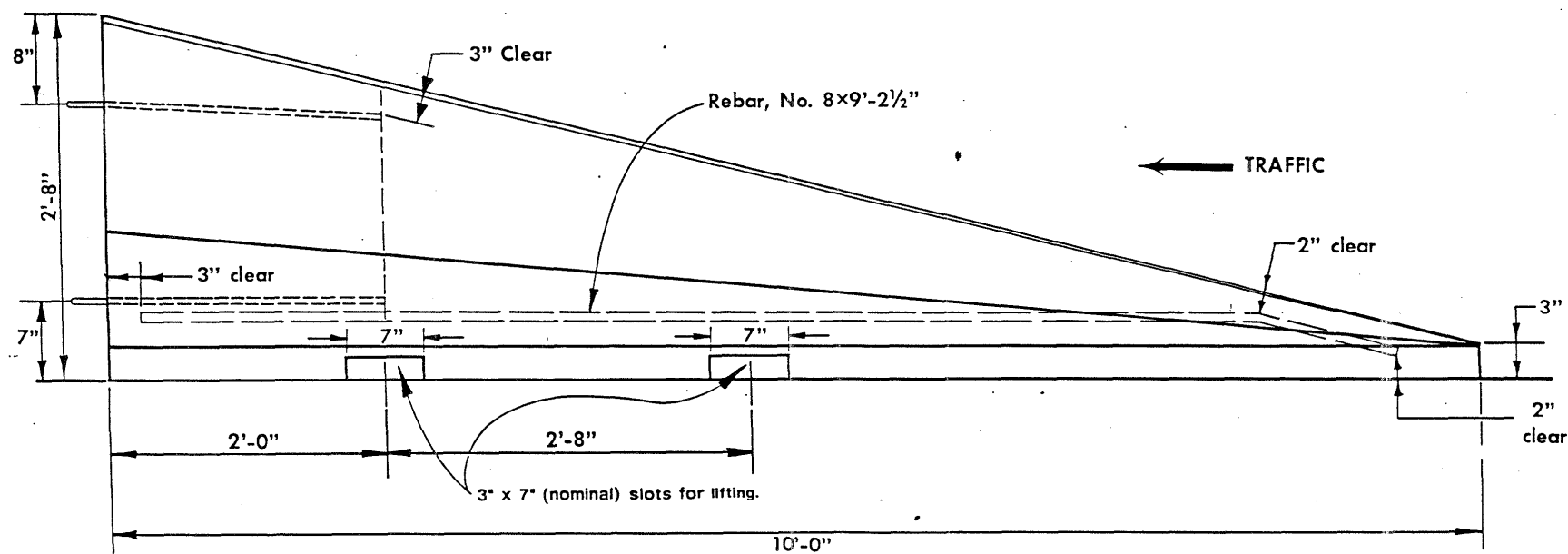
TYPICAL
CONCRETE BARRIER RAIL
TAPER SECTION



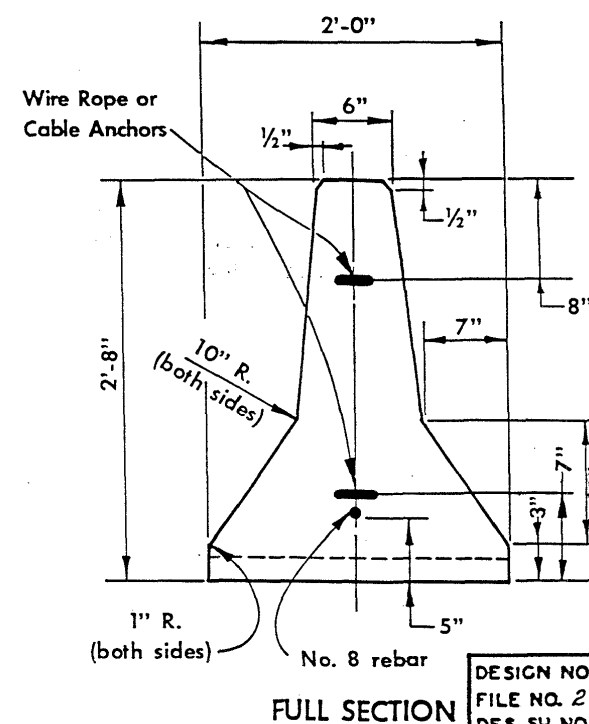
FRONT ELEVATION



PLAN



SIDE ELEVATION



FULL SECTION

GENERAL NOTES:
Details shown hereon are for the construction of a precast concrete barrier rail taper section. Details shown are typical. Alternate design details may be submitted to the engineer for approval prior to construction.

Concrete shall be Class 'D' Structural Concrete placed and finished in conformance with current standard specifications for "Structural Concrete". Approximately 0.486 cu. yds. of Class 'D' Structural Concrete will be required for each taper section.

DETAIL SHEET

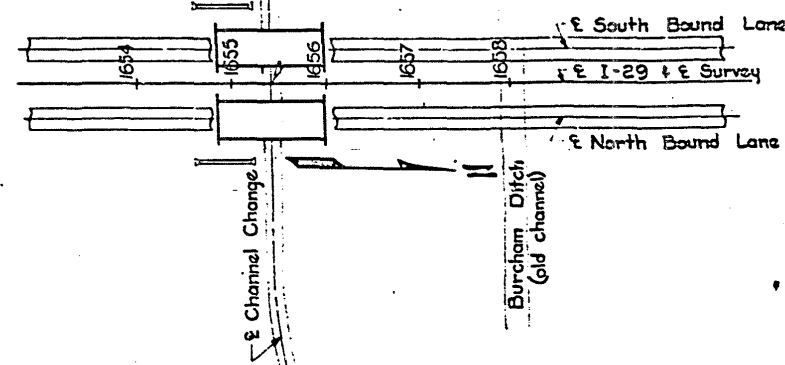
540-1

Revision Date 05-10-88

CONCRETE BARRIER RAIL TAPER SECTION
(Pre-Cast)

DESIGN NO. 989
FILE NO. 27886
DES. SH. NO. 6 OF 9

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.

THIS SHEET FROM ORIGINAL
DESIGN IS INCLUDED FOR
INFORMATION ONLY.

TOTAL ESTIMATED QUANTITIES

Item	2 Superstr. 4 Abuts.	Total
Structural Concrete Class D	642.2	652
Reinforcing Steel	130,854	129,899
Aluminum Handrail		434.6 LF
Steel Handrail		434.6 LF
Granular Backfill		140
4" Tile Subdrain		236 LF
Cresosoted Piling		40 @ 45'
Class 20 Excavation		128
16" P10A Type Furnish	40 @ 70'	2800 LF
16" P10A Type II Drive	40 @ 70'	2800 LF
16" P10A Type III or IV	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.

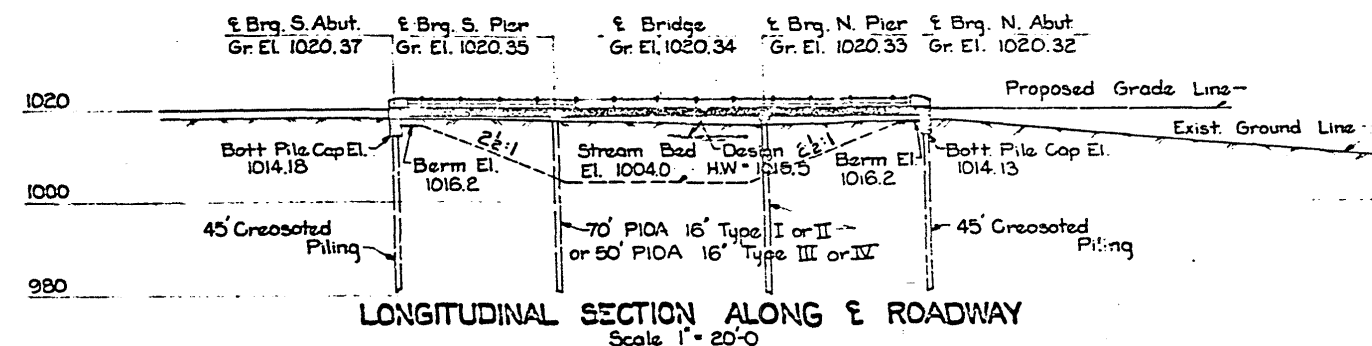
Construction = Standard Specifications of the I.S.H.C. series of 1964, plus current special provisions and supplemental specifications.

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

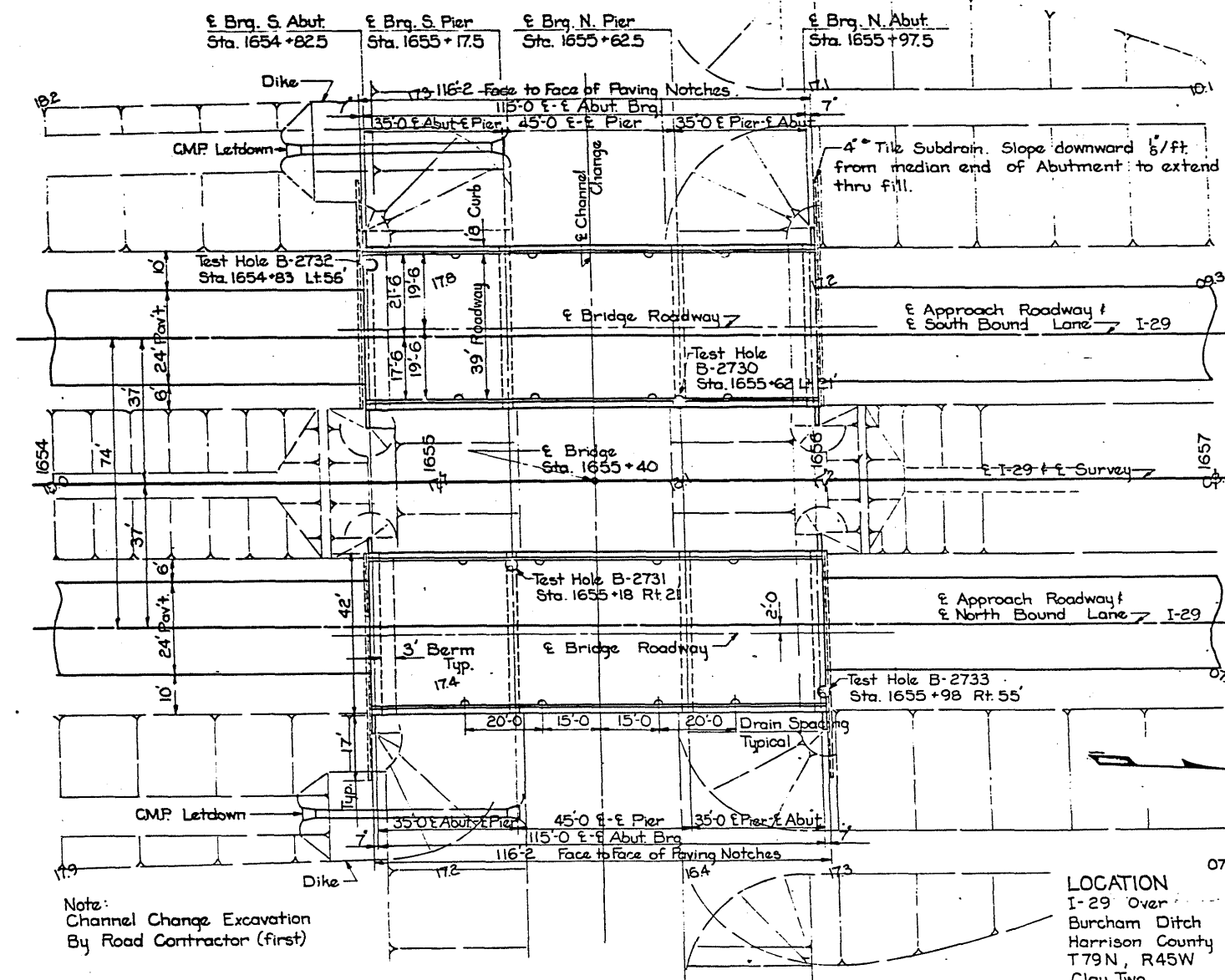
GRADE DATA

-0.04%

Bench Mark: No. 122 Sta. 1652+95 - 5' I Pin in Ground 28' Rt El. 1018.22



LONGITUDINAL SECTION ALONG ROADWAY
Scale 1" = 20'-0"



Note:
Channel Change Excavation
By Road Contractor (first)

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

SITUATION PLAN
Scale 1" = 20'-0"

LOCATION

I-29 Over
Burcham Ditch
Harrison County
T79N, R45W
Clay Twp.
Section 12

TWIN 115'x39' CONTINUOUS CONCRETE SLAB BRIDGE

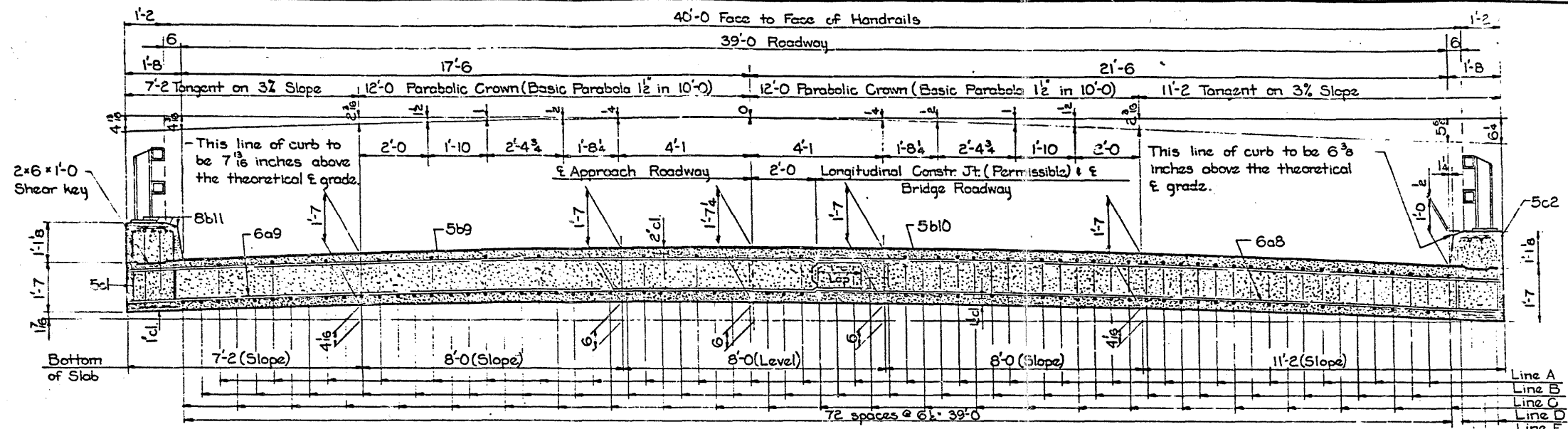
35'-0 End Spans 45'-0 Center Span
Concrete Floor & Substructure Tubular Handrail

GENERAL & SITUATION PLANS
Station 1655+40 Proj. No. I-16-29-5(9)85-43-9
HARRISON COUNTY

Iowa State Highway Commission
January 1966 Sheet 1 of 6

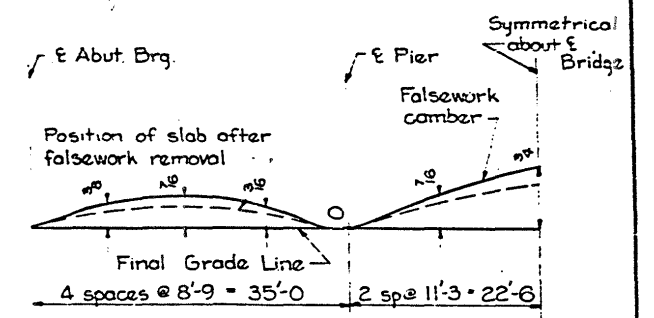
Design No. 1965 Harrison County File No. 20677

Detailed & Traced by: [Signature] 9 of 18 Checked by: WAL



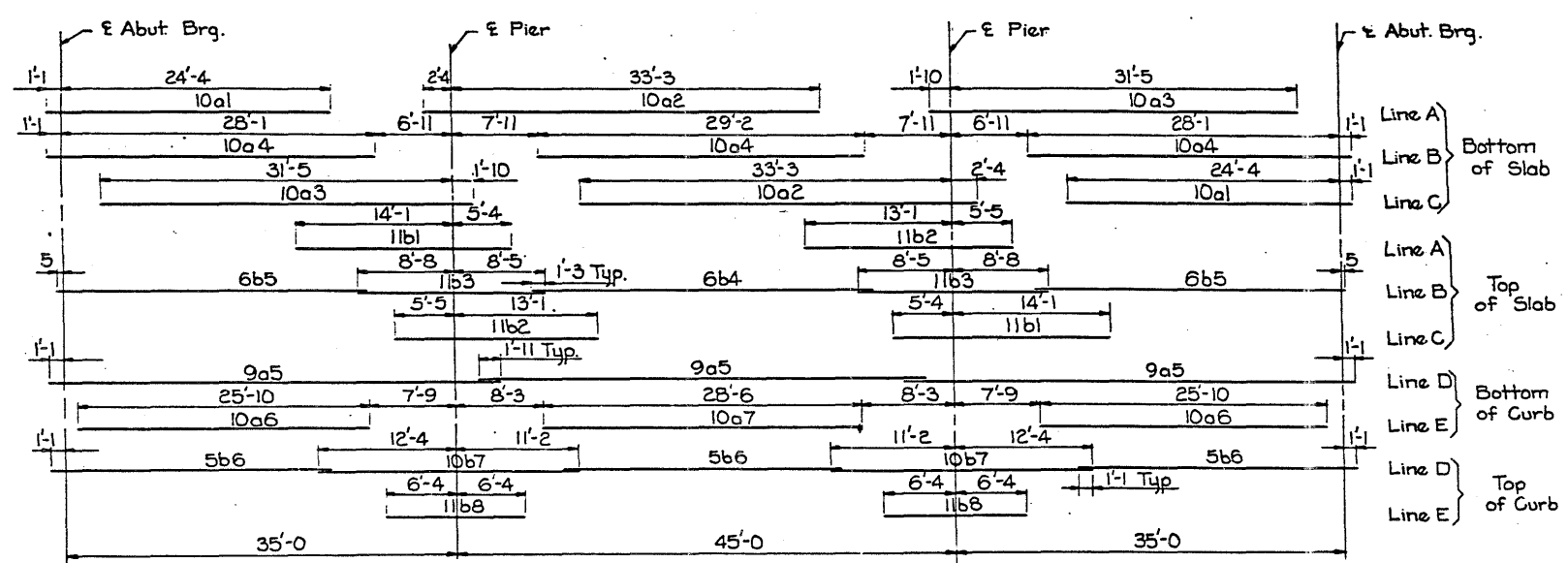
HALF SECTION NEAR ABUTMENT

HALF SECTION NEAR PIER



CAMBER DIAGRAM

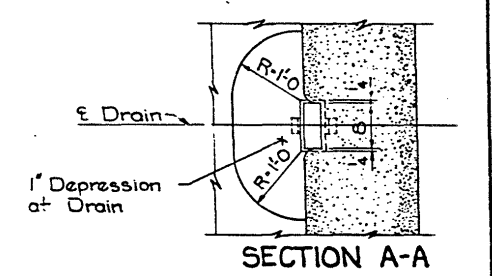
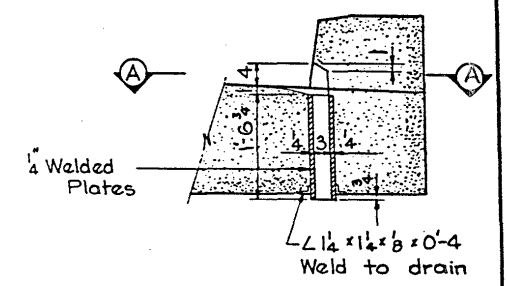
Note: This diagram shows the camber required for the anticipated ultimate dead load deflection and includes plastic flow. These figures do not include any allowance for settlement of forms.



PLACEMENT FOR LONGITUDINAL REINFORCEMENT

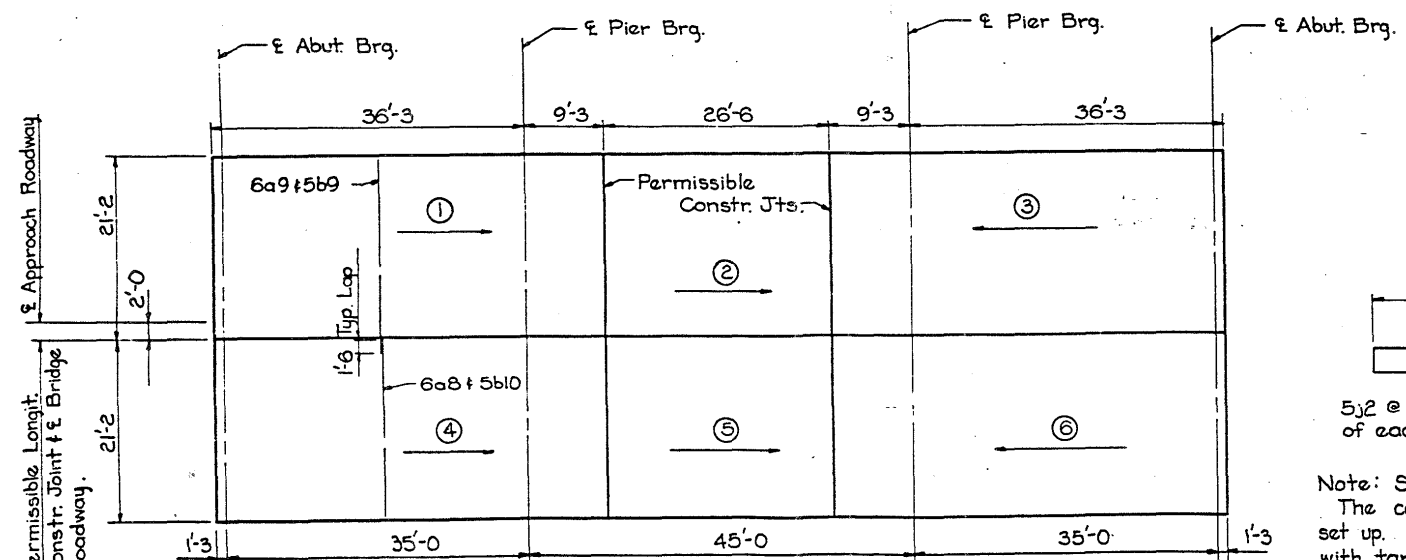
CONCRETE PLACEMENT QUANT.		
Sections 1+3	2 @ 59.3	118.6 cy.
Sections 4+6	2 @ 59.1	118.2 cy.
Section 2	33.1	33.1 cy.
Section 5	33.0	33.0 cy.
Curbs	2 @ 7.4	14.8 cy.
End Posts		1.5 cy.
Pavement Block		1.9 cy.
Total		321.1 cy.

THIS SHEET FROM ORIGINAL DESIGN IS INCLUDED FOR INFORMATION ONLY.

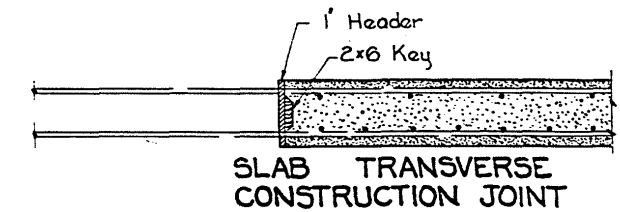


FLOOR DRAIN DETAILS

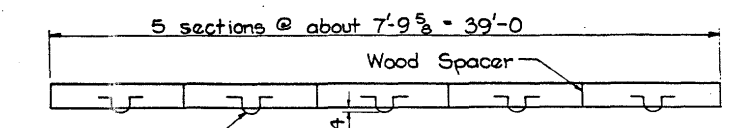
16 Drains required, WT = 32 lbs. each. For location of drains see Situation Plan on sheet 1. Cost of drains to be included in price bid for concrete. A 4"x8" outside dimension rolled tube with 1/4" walls may be substituted for the welded drain shown above.



CONCRETE PLACEMENT DETAILS
(Showing typical slab transverse bar placement)



SLAB TRANSVERSE CONSTRUCTION JOINT



PLAN OF PAVING BLOCK

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 5j1 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

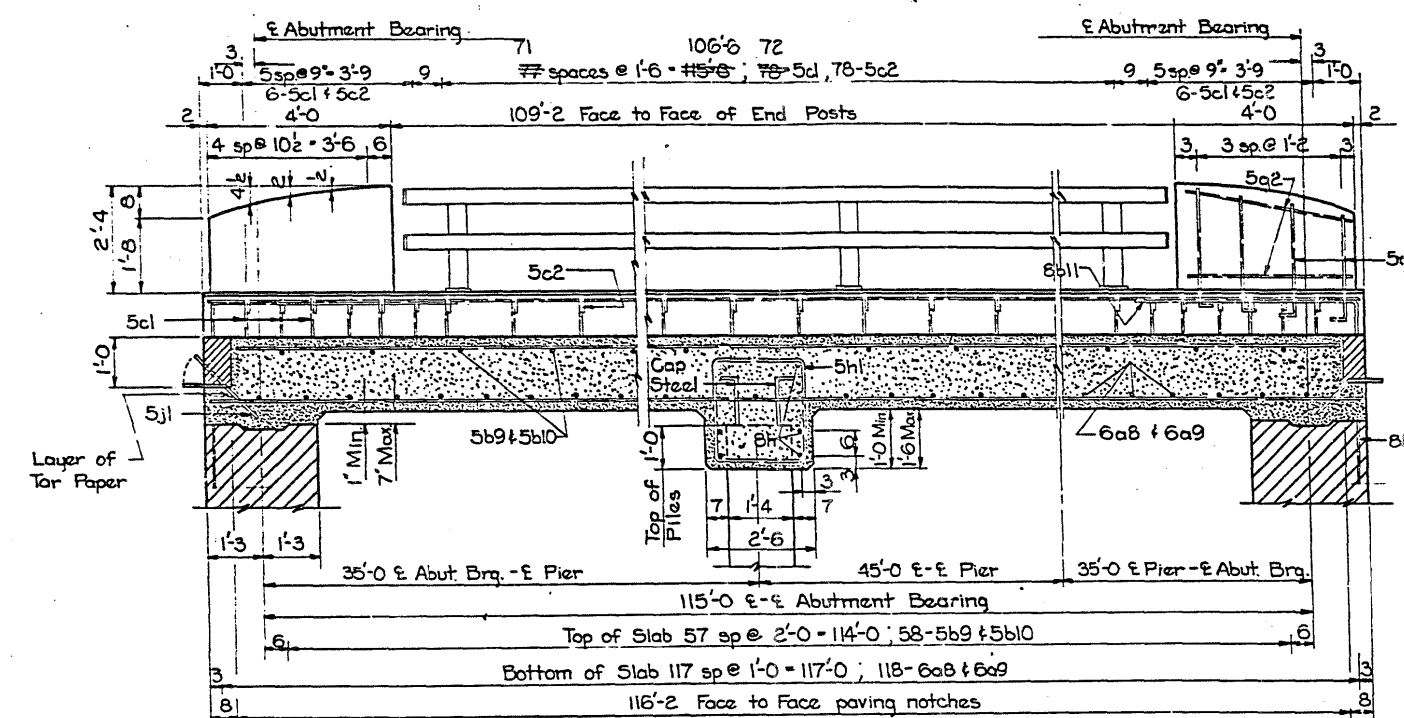
35'-0" End Spans 45'-0" Center Span
Concrete Floor & Substructure Tubular Handrail
SUPERSTRUCTURE DETAILS
Station 1655+40 Proj. N° I-IG-29-5(9)85-43-9
HARRISON COUNTY
Iowa State Highway Commission
January 1966 Sheet 3 of 6

DESIGN NO. 989
FILE NO. 27886
DES. SH. NO. 8 OF 9

Design N° 1965 Harrison County File N° 29677

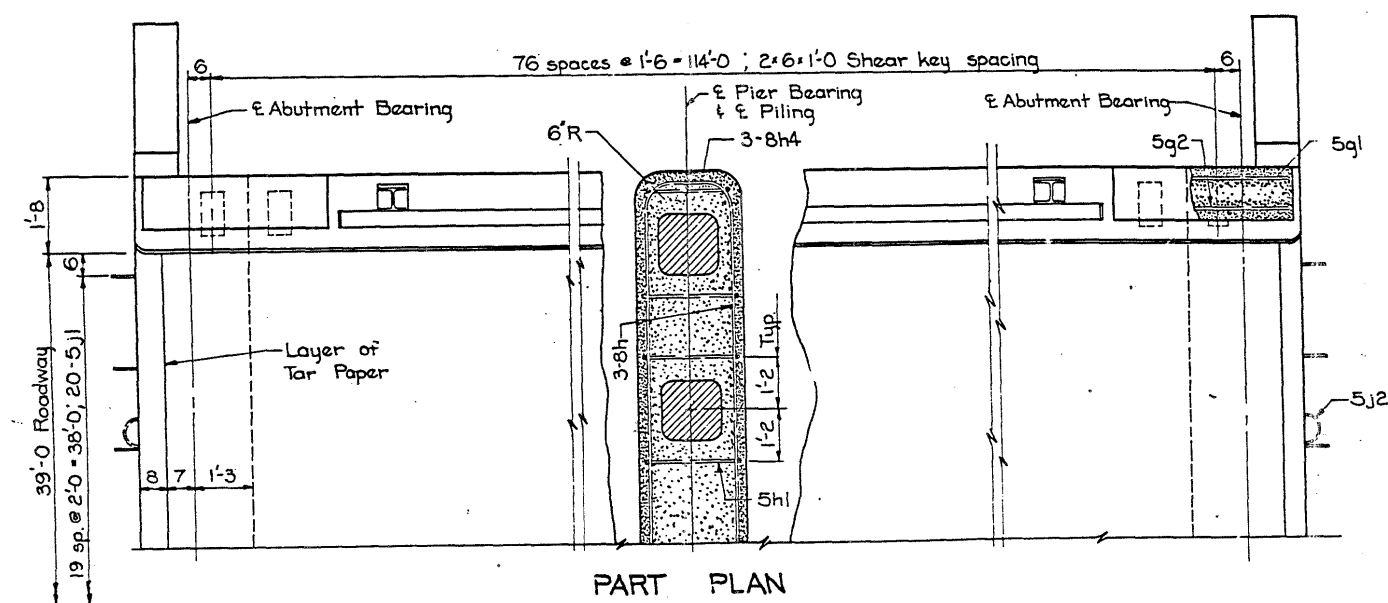
Detailed by: *SW* Traced by: *SW* Checked by: *WAL*

Bench Mark: N^o 122 Sta. 1652+95 - 5' I Pin in Ground 25 Rt. El. 1018.22

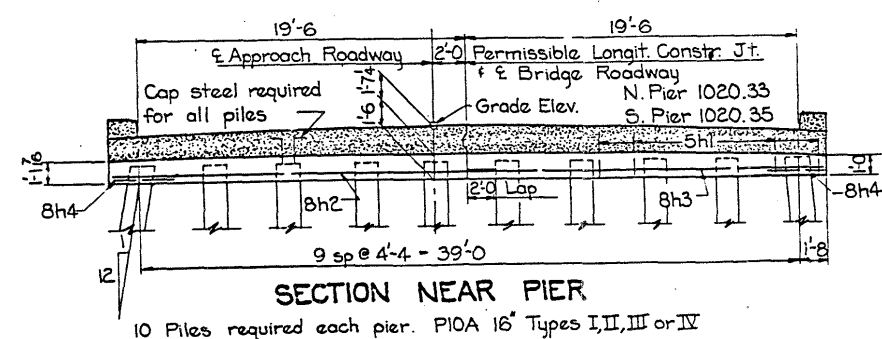


LONGITUDINAL SECTION NEAR CURB

Note: For rail post spacing see Sheets 5 & 6



PART PLAN



SECTION NEAR PIER

10 Piles required each pier. P10A 16" Types I, II, III or IV

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.

THIS SHEET FROM ORIGINAL DESIGN IS INCLUDED FOR INFORMATION ONLY.

Revised 8-31-66: bar 8b1 and additional 5c1 & 5c2 added, Quantity Changed.

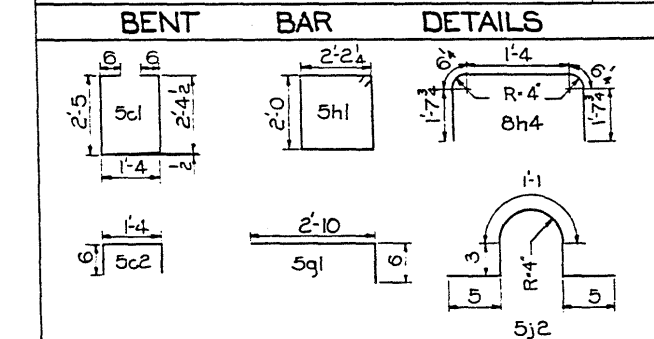
DESIGN NO. 989
FILE NO. 27886
DES. SH. NO. 9 OF 9

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 2" of wearing surface.
All exposed corners of 90° or sharper are to be filleted with a 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 1 1/2" 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.

REINFORCING STEEL-ONE SUPERSTRUCTURE					
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'-32"	1185
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 Total 65427 64949



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

SUPERSTRUCTURE QUANT.-ONE BRIDGE

Item		Amount
Structural Concrete Class D		3211 cu.
Reinforcing Steel		65427 64949 lbs.
16" P10A Piling	Type I, II	20 @ 70' 1,400 LF
	Type III, IV	20 @ 70' 1,400 LF
	Type I, II	20 @ 50' 1,000 LF
	Type III, IV	20 @ 50' 1,000 LF

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

35'-0" End Spans 45'-0" Center Span
Concrete Floor & Substructure Tubular Handrail
SUPERSTRUCTURE DETAILS
Station 1655+40 Proj. N^o I-IG-29-5(9)85-43-9
HARRISON COUNTY
Iowa State Highway Commission
January 1966 Sheet 4 OF 6

Design N^o 1965 Harrison County File N^o 20677

Detailed & Traced by: JLL 11 of 18 Checked by: AL

TRAFFIC CONTROL PLAN

108-23
11-10-83

1. Through traffic will be maintained on the project at all times.
2. Traffic control on this project shall be in accordance with the RS series of Standard Road Plans found in Tab. 105-4 and appropriate Detail Sheets. For additional complementary information, refer to current supplemental specifications for traffic control.
3. Where possible, all post mounted signs shall be placed a minimum of 2 feet clear of the shoulder.
4. As directed by the engineer, the contractor shall cover existing signing that conflicts with construction zone signing.
5. All traffic control devices shall be furnished, erected, maintained and removed by the contractor.
6. The engineer may require modification of or additions to pavement marking details shown. Conflicting permanent edgelines or lanelines shall be removed and replaced with appropriate temporary lines. As applicable, permanent edgelines and lanelines shall be restored before the roadway is returned to normal traffic. Current 1984 Standard Specifications shall apply.
7. The location for storage of equipment by the contractor during non-working hours will be as approved by the engineer in charge of construction.
8. Proposed sign spacing may be modified, as approved by the engineer, to meet existing field restrictions or to prevent obstruction of the motorist's view of permanent signing.
9. Proposed changes in the traffic control plan (includes layout sheets) shall be reviewed with the Office of Construction before changes are made.
10. The bid item 'Traffic Control' shall include the cost for all traffic control measures required of the contractor except for those which are separate bid items or are incidental to other bid items.

204-1
1-20-84

The installation of each continuous piece of guardrail shall be completely functional within five consecutive working days. The following shall apply unless modified by the engineer:

Grading work, if necessary, shall be completed prior to the removal of any existing guardrail or the installation of new guardrail.

Removal of any existing guardrail and installation of new posts and beam rail, except for the approach end section, shall be completed on the same working day. Beam rail shall be fully connected to all posts and protected with a Type E terminal section plus Type II barricade with Type A warning light.

Not later than the next working day, concrete for the end anchorage (RE-52 or RE-53) shall be poured.

204-2
1-20-84

All holes resulting from operations of the contractor, including removal of guardrail posts, fence posts, utility poles, or foundation studies, shall be filled and consolidated to finished grade as directed by the engineer to prevent future settlement. The voids shall be filled as soon as practical--preferably the day created and not later than the following day. Any portion of the right-of-way or project limits (including borrow areas and operation sites) disturbed by any such operations shall be restored to an acceptable condition. This operation shall be considered incidental to other bid items in project.

JRA-1

If there is any usable guardrail (as determined by the engineer) remaining after the reinstallation is completed, it shall be hauled to and stockpiled at the local maintenance garage in an approved manner. The remaining rail and posts are to become the property of the contractor and disposed of as per 213-1. This work shall not be paid for separately, but included in the price bid for this project.

ESTIMATE REFERENCE INFORMATION

100-4
1-23-85

Data listed below is for informational purposes only and shall not constitute a basis for any extra work orders.

ITEM NO.	DESCRIPTION
1.	For southbound bridge, use RS-62 and RS-63A layouts. For northbound bridge, see Traffic Control Layout Sheet, TCP1.
2.	See Detail Sheet 570-2 and traffic control layout for more information.
3-7.	As directed by the engineer. See Tab. 110-7 for location and information. To be executed as per 204-2, 204-3, 213-1 and JRA-1.
8,22.	See Tab. 108-17 for more information.
9-14.	As directed by the engineer. See Tab. 108-8A, 107-23 and 108-19. Also see 204-1 and 251-2.
15-16.	See RK-17 and RH-53 for details. Quantity estimate for 2-60' approaches at northbound bridge.
17.	Quantity estimated for 4-3' x 195' x 8" ACC shoulder strengthening adjacent to pavement. This strengthening will remain in place upon completion of project. AC, tack, trenching, etc. to be incidental to price bid. See TCP-1 layout sheet.
18.	See Tab. 108-22 and TCP-1 layout sheet.
19-21.	For replacement of PR Joints as directed by the engineer. See Tab. 102-6C.

204-3
8-20-85

All formed steel beam railing and posts that are to be removed and reinstalled on this project shall meet the approval of the engineer before reinstalling. Painted steel beam railing and painted posts shall not be used on this project.

04-04-85 213-1

It shall be the contractor's responsibility to provide waste areas or disposal sites for excess material (excavated material or broken concrete) which is not desirable to be incorporated into the work involved on this project. No payment for overhaul will be allowed for material hauled to these sites. No material shall be placed within the right of way, unless specifically stated in the plans or approved by the Engineer.

221-4
1-20-84

In order to avoid any unnecessary surface breaks or premature spalling the contractor is cautioned to exercise extreme care when performing any of the necessary saw cutting operations for the proposed pavement removal.

251-2
6-22-84

The contractor is hereby notified that removal of any existing traffic markers, warning devices or guardrail barriers shall be scheduled subject to the approval of the engineer. The contractor may be required to place temporary warning devices at certain locations where replacement features are not installed the same day during which any such removals take place.

EROSION CONTROL:

Following completion of work on this project seeding, fertilizing, and mulching of all disturbed areas shall be done as directed by the engineer.

SEEDING:

3 lbs. of Fescue, Kentucky 31 per 1000 sq. ft.

FERTILIZER:

15 lbs of 15-15-15 (or equivalent) chemically combined fertilizer per 1000 sq. ft.

MULCH:

70 lbs. of dry cereal straw per 1,000 sq. ft. All mulch to be consolidated into the soil with the mulch tiller.

The preparation of the seedbed, furnishing and application of seed and fertilizer to all disturbed areas on this project shall be considered incidental to work on this project and no extra compensation will be allowed.

STANDARD ROAD PLANS

105-4
6-17-77

The following Standard Road Plans shall be considered applicable to construction work on this project.

IDENT	DATE	IDENT	DATE	IDENT	DATE
RE-2A	02-17-87	RE-52	08-08-89	RH-51	08-08-89
RE-2B	04-04-89	RE-53	10-11-88	RH-52	08-08-89
RE-7	05-13-86	RE-65	04-04-89	RK-17	02-17-87
RE-12A	10-11-88	RE-67	04-04-89	RL-11	10-11-88
RE-12B	10-11-88	RE-68	08-08-89	RL-12	04-04-89
RE-47	11-10-87	RE-69	08-08-89	RS-62	10-11-88
RE-48A	08-20-85	RH-50	08-08-89	RS-63A	08-08-89

ESTIMATED ROAD QUANTITIES

100-0
11-10-83

NO	ITEM	UNIT	BRIDGES		TOTAL
			Des. No. 989 (NB)	Des. No. 1289 (SB)	
1	Traffic Control	Lump Sum	Lump Sum	Lump Sum	See TCP
2	Temporary Floodlighting	Lump Sum	Lump Sum		Lump Sum
3	Remove & Reinstall Steel Beam Guardrail	Lin. Ft.	50	25	75
4	Removal of Formed Steel Guardrail	Lin. Ft.	475	112.5	587.5
5	Removal of Posts	No.	60	61	121
6	Removal of End Anchorage	No.	2	2	4
7	Removal of Object Marker	No.	2	2	4
8	Type 3 Object Marker	No.	2	2	4
9	Formed Steel Beam Guardrail	Lin. Ft.	150	175	325
10	Formed Steel Thrie Beam Guardrail	Lin. Ft.	93.75	93.75	187.5
11	Beam Guardrail Posts	No.	53	53	106
12	RE-69 Beam Guardrail End Anchorage	No.	3	3	6
13	RE-52 Beam Guardrail End Anchorage	No.	1	1	2
14	RE-53 Beam Guardrail End Anchorage	No.	1	1	2
15	Bridge Floor Overlay	Sq. Yds.	320		320
16	Class "A" Bridge Floor Repair	Sq. Yds.	75		75
17	3/4" Type "B" Asphalt Cement Concrete Base				
	Class 1	Tons	110		110
18	Pavement Markings	Sta.	33.83		33.83
19	Full Depth Patch by Count	No.	4		4
20	Full Depth Patch by Area	Sq. Yds.	32		32
21	EF Joint Assembly	No.	4		4
22	Triple Yellow Object Marker, As Per Plan	No.	3	3	6
23	Embankment in place	Cu. Yds.	15	15	30
SEE SHEET 2 FOR AS BUILT QUANTITIES					

101-4

DESIGN DATA RURAL

1989 AADT 6620 V.P.D.
200 AADT V.P.D.
200 DHV V.P.H.
TRUCKS %

ROADWAY DESIGN



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.

Name John R. Abrams
Iowa Registration No. 7229 Date 8/29/89

File No 27886 Design No 989 & 1289