

BRIDGE REPAIR
FR-34-3(16)--2G-02

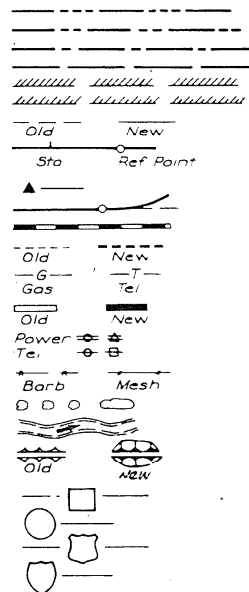
ADAMS COUNTY

CONVENTIONAL SIGNS

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

Sec. Corner
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.



IOWA
DEPARTMENT OF TRANSPORTATION

Highway Division

PLANS OF PROPOSED IMPROVEMENT ON THE

PRIMARY ROAD SYSTEM

ADAMS COUNTY

BRIDGE REPAIR

2 LOCATIONS ON U.S. 34 - OVER W. PLATT RIVERS 2.5 & 1.5 MI. W. OF IA. 25

SCALES AS NOTED

THE STANDARD SPECIFICATIONS, SERIES OF 1977
OF THE IOWA DEPARTMENT OF TRANSPORTATION,
SHALL APPLY TO CONSTRUCTION WORK ON THIS PROJECT

(PLUS CURRENT SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS)

NO MILEAGE SUMMARY

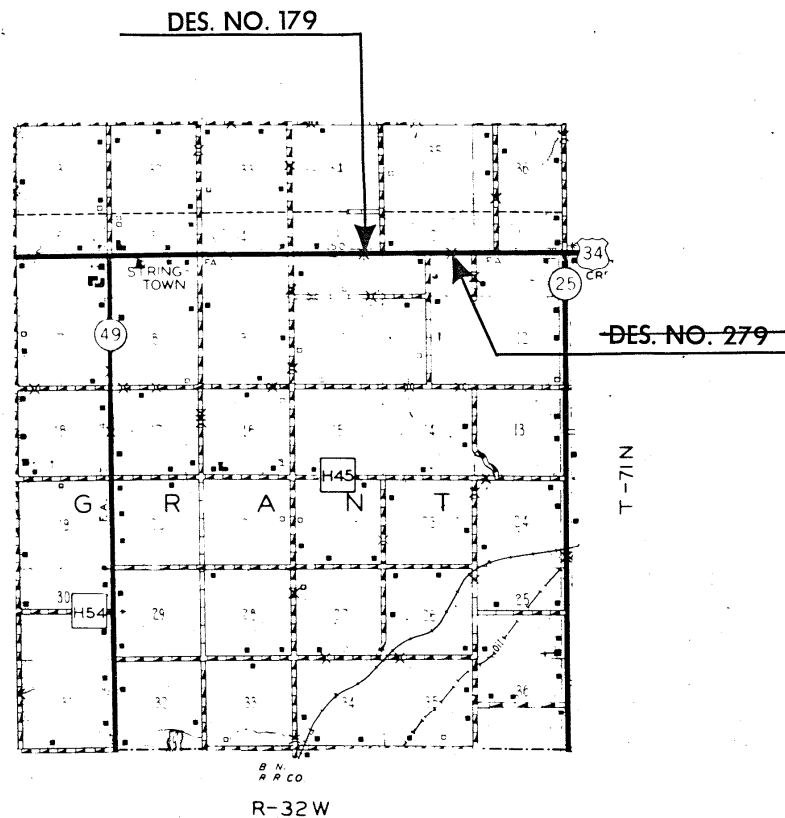
THIS AS BUILT PLAN INCLUDES			
YEAR	WORK	CONTRACTOR	PROJ. INSPECTOR
1980	Struct. - Bridge Repair	Waterloo Constr. Co., Inc.	R. Foster

STANDARD

The following Standard Specifications
construction work on this project

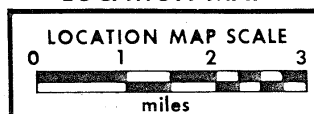
IDENT	DATE	IDENT	DATE
RE-2	8-16-74	RE-12	4-20-79
RE-7	5-16-75	RE-47	8-24-79

RE-48A	9-22-78
RE-52	8-24-79
RE-57	6-8-79



R-32 W

LOCATION MAP



CONSTRUCTION PLANS SHOWING PROJECT AS BUILT

Plan Preparation Supervised By: William B. Burger
Resident Construction Engineer

Date 12/8/82 Iowa Reg. No. 3359

REVIEWED AND FORWARDED TO AMES

Van R. Snyder Date 12/14/82
District Construction Engineer

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

VAN R. SNYDER
District Engineer

AFTER MICROFILMING RETURN ORIGINAL
TO DISTRICT NO. 4

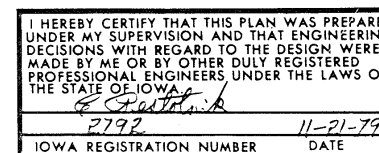
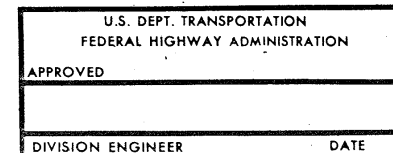
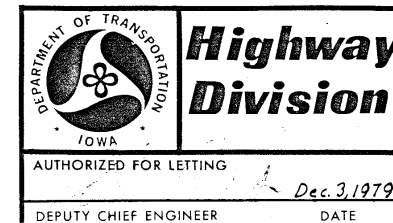
STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	1	1	1	1
PROJECT NUMBER				
FR-34-3(16)--2G-02				
R.O.W. PROJECT NUMBER				
PRELIMINARY ENGINEER NUMBER				

INDEX OF SHEETS

NO.	DESCRIPTION
1	TITLE SHEET
2	ESTIMATE SHEET
3-8	BRIDGE REPAIR DESIGN NO. 179

DEPARTMENT OF TRANSPORTATION, HIGHWAY DIVISION
STANDARDS REQUIRED (Available at Bridge Design Services)

STANDARD ISSUED REVISED



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.

DATE: 11/1/79 JAMES R. SASSAMAN REG. NO. 2663

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.

DATE: 11/1/79 Fred W. Walker 4989 Nov. 21, 1979 IOWA REGISTRATION NUMBER DATE

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.

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DATE: 11/1/79 Fred W. Walker 4989 Nov. 21, 1979 IOWA REGISTRATION NUMBER DATE

IN LETTING OF January 16, 1980	DESIGN NO. 179	OVER W. PLATT RIVER	STATION: 624 + 73.00
	ADAMS COUNTY	MAINT. NO. 0273.85034	
	SECTION 3	T-7IN R-32W	GRANT TWP.
	DESIGN FOR REPAIR TO 50'-0 X 30' I-BEAM BRIDGE		
	QUANTITIES		
	NO.	ITEM	UNIT TOTAL
	1	Bridge floor overlay	Sq. Yds. 175 ✓
	2	Class A Bridge Floor Repair	Sq. Yds. 175 ✓
	3	Structural Steel	Lbs. 248 ✓
	4	Removal of Asphaltic Concrete Surfacing	Sq. Yds. 175 ✓

ROAD QUANTITIES 100.0			
NO.	ITEM	UNIT	TOTAL
1	GUARDRAIL, FORMED STEEL BEAM	LIN. FT.	275 ✓
2	GUARDRAIL POSTS, BEAM	NO.	56 ✓
3	GUARDRAIL END ANCHORAGES, BEAM RE-52	NO.	4 ✓
4	GUARDRAIL, BRIDGE CONNECTION MODIFIED	NO.	4 ✓
5	DELINEATORS, SINGLE WHITE	NO.	14 ✓
6	DELINEATORS, TRIPLE AMBER VERTICAL	NO.	12 ✓
7	OBJECT MARKER, TYPE 3	NO.	4 ✓

REFERENCE INFORMATION 100.4			
Data listed below is for informational purposes only and shall not constitute a basis for any extra work orders.			
ITEM NO.	DESCRIPTION		
2.	Includes 12 posts 10x10, 36 posts 8x8, and 8 posts 6x8.		
4.	See Sheet No. 8 for details		
5. 6&7.	See Tabulation. Sheet 7 of 14.		
7.	Four of the existing object markers shall be selected by the engineer for reuse at this location. The remaining existing object markers shall be removed and stored for pickup by State Maintenance Forces. This work shall be considered incidental to the bid item.		

REFERENCE INFORMATION 100.4	
Data listed below is for informational purposes only and shall not constitute a basis for any extra work orders.	
ITEM NO.	DESCRIPTION
7	Traffic signals are to be removed and are to remain property of the Contractor.

E.W.D.		
No.	Description	Amount
1 M	Repair and/or Replace Edge Rut Sections	\$500.00
1	Remove Asphaltic Conc. Approach Sections - 86 S.Y.	\$1,161.00

DESIGN NO. 279	OVER W. PLATT RIVER	STATION: 676 + 56.40
ADAMS COUNTY	MAINT. NO. 0274.85034	
SECTION: 2	T-7IN R-32W	GRANT TWP.
DESIGN FOR REPAIRS TO 70'-0 X 30' CONTINUOUS I-BEAM BRIDGE		
ESTIMATE QUANTITIES		
NO.	ITEM	UNIT TOTAL
1	Bridge Floor Overlay	Sq. Yds. 240
2	Class A Bridge Floor Repair	Sq. Yds. 240
3	Structural Steel	Lbs. 352
4	Removal of Asphaltic Concrete Surfacing	Sq. Yds. 240
5	Floodlighting	L. S. \$3000.00
6	Traffic Control	L. S. \$3000.00
7	Traffic Control Signals, Furnish & Install	L. S. \$3000.00
8	Pavement Marking	Station 79.35
9	Temporary Barrier Rail - Concrete	Lin. Ft. 266
10	Epoxy Sealer for Concrete	Sq. Ft. 247

ESTIMATE REFERENCE INFORMATION 100.4	
Data listed below is for informational purposes only and shall not constitute a basis for any extra work orders.	
ITEM NO.	DESCRIPTION
7	Traffic signals are to be removed and are to remain property of the contractor.

ROAD QUANTITIES 100.0			
NO.	ITEM	UNIT	TOTAL
1	Guardrail, formed Steel Beam	Lin. Ft.	275
2	Guardrail Posts, Beam	No.	56
3	Guardrail End Anchorages, Beam RE-52	No.	4
4	Guardrail, Bridge Connection Modified	No.	4
5	Delineator, Single White	No.	14
6	Delineator, Triple Amber Vertical	No.	12
7	Object Marker, Type 3	No.	4

ESTIMATE REFERENCE INFORMATION 100.4			
Data listed below is for informational purposes only and shall not constitute a basis for any extra work orders.			
ITEM NO.	DESCRIPTION		
2.	Includes 12 posts 10x10, 36 posts 8x8, and 8 posts 6x8.		
4.	See Sheet No. 14 for details.		
5. 6&7.	See Tabulation. Sheet 13 of 14.		
7.	Four of the existing object markers shall be selected by the engineer for reuse at this location. The remaining existing object markers shall be removed and stored for pickup by State Maintenance Forces. This work shall be considered incidental to the bid item.		

E.W.D.		
No.	Description	Amount
1 M	Repair and/or Replace Edge Rut Sections	\$500.00
1	Remove Asphaltic Conc. Approach Sections - 86 S.Y.	648.00
2	Bridge Floor Repair, C.I.B. 17.89 S.Y.	4,293.60

ESTIMATE SHEET

GENERAL NOTES:

This design is for repair to the existing 50' x 30' I-Beam Bridge. The original bridge was a 50' x 20' Pony Truss Span (I.H.C. Design No. 4721 & 2329, Adams County) and was replaced with a 50' x 30' I-Beam Span on modified abutments (Design No. 158, Adams County). Plans of the existing structure may be obtained at the Ames office of the Iowa D.O.T. - Highway Division. Repairs consist of bridge floor repair, bridge floor overlay, removing A.C. surfacing, extending drains, adding epoxy sealer to gutters and face of curbs, sealing joints at ends of bridge, and installing guard rail at ends of bridge.

STRUCTURAL STEEL

The unit price bid for "Structural Steel" include all costs associated with furnishing and installing the drain extensions as noted and shown on Design Sheet 3 of 7. Drains are galvanized. Steel is ASTM A-36.

STAGE CONSTRUCTION

Construction done in stages with at least one lane of traffic maintained at all times in accordance with "Traffic Control Plan" note. Floodlights required as noted in "Traffic Control Plan."

BRIDGE FLOOR REPAIR

This bridge has an existing Asphaltic Concrete overlay about 1 1/2 inches thick. Therefore no preliminary audible and visual survey or corrosion potential readings were taken. The entire bridge floor repaired as Class A Bridge Floor Repair.

The entire Portland Cement Concrete bridge floor surface shall have Bridge Floor Overlay. Surface raise as shown on the plans shall be considered a minimum. In order to limit additional dead load, surface raise shall be restricted to a maximum of 1/2 inch more than that shown on the plans. Profile adjusted to the extent possible within these limits.

The present floor thickness is about 6 inches. The Bridge Contractor required to exercise care in removing concrete in order to prevent unnecessary unbonding of reinforcing steel.

REMOVAL OF A.C. OVERLAY

The unit bid price for "Removal of Asphaltic Concrete Surfacing" include the removal and disposal of the existing Asphaltic Concrete overlay (about 1 1/2" thick) from the bridge deck.

The existing Asphaltic Concrete overlay may be removed by any method acceptable to the engineer. The Asphaltic Concrete removed the property of the Bridge Contractor.

EPOXY SEALER FOR CONCRETE

In addition to requirements of Art. 2413.09, an epoxy sealer applied to the curbs. The epoxy sealer material and application comply with Materials I.M. 491.12. Before application of epoxy, new concrete surfaces cured and all surfaces sound, clean and dry. As directed by the engineer, old surfaces may require removal of unsound material by sandblast and/or hand methods. Epoxy sealer applied prior to any other surface treatment application. For portland cement concrete floor repair, Par. 2413.02A., the epoxy sealer applied along each gutter line, extending one foot onto the roadway and up the batter face of the curb. For latex-modified concrete floor repair, 2413.02B., the epoxy sealer shall be applied to the batter face of each curb, end to end, but it shall not be applied on the roadway. Other areas requiring epoxy sealer may be designated elsewhere on these plans. Quantity of "Epoxy Sealer for Concrete" in square feet, to be paid for will be computed from measurements of areas actually covered and Art. 1109.03 shall not apply. Plan quantity is based on PC Concrete floor repair.

TRAFFIC CONTROL PLAN

Traffic control for bridge repair conform to Detail Sheet 520-5 of Suppl. Spec. 854, dated Oct. 2, 1979. Pavement marking application and removal comply with applicable portions of Suppl. Spec. 856. Details for temporary floodlighting and temporary barrier rail, ancillary to this traffic control, are shown and noted in these plans.

Traffic control for guardrail construction conform to Detail Sheet 520-3, Suppl. Spec. 854, if traffic control for bridge repair is not in effect. During periods of inactivity, when work on the shoulders is unfinished but there is no encroachment onto the roadway, the engineer may resume normal traffic and require traffic control conforming to Detail Sheet 520-2, Suppl. Spec. 854.

The engineer may require modifications of, or additions to, pavement marking details shown by Spec. 854. Conflicting permanent edge lines removed and replaced. Temporary edge lines may be required for diversion of traffic onto the shoulder. In compliance with Art. 356.07, quantity of "Pavement Marking" to be paid for will be computed from measurement of markings actually applied or removed, and such quantity may vary substantially from the amount shown on the plans.

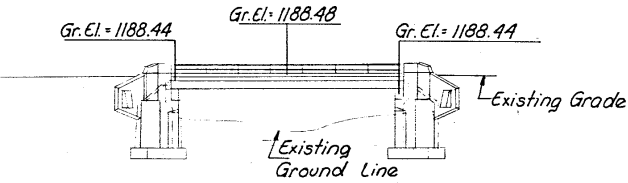
Except for the items of "Temporary Barrier Rail", "Traffic Control Signals", "Floodlighting" and "Pavement Marking", the lump sum bid for "Traffic Control" include all costs for furnishing, placing, maintaining and removing all materials and devices necessary to accomplish traffic control as shown and specified.

The contractor is hereby notified that removal of any existing traffic markers, warning devices or guardrail barriers subject to the approval of the engineer. The contractor 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.

On this project the shoulder widths on the approach roadway are 11 feet.

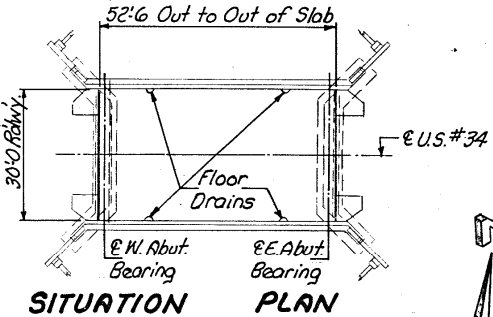
APPROACHES

The Asphaltic Concrete runoff taper at each end of the bridge placed by local Highway Division Maintenance forces before traffic is shifted to new construction. The Bridge Contractor shall give adequate prior notice so that Asphaltic Concrete may be placed during normal working hours and working days of Maintenance.



ELEVATION

NOTE: GRADE ELEVATIONS AND DIMENSIONS ARE TAKEN FROM PLANS OF EXISTING BRIDGE.



SITUATION PLAN

LOCATION:

U.S. 34 over
W. Platte River
Section 3
T-71 N R-32 W
Grant Twp.
Adams County

SPECIFICATIONS:

Construction: Iowa Department of Transportation Specifications, Series of 1977, plus current Supplemental Specifications and Special Provisions, including:
Spec. 854 "Supplemental Specifications for Traffic Controls"
Spec. 856 "Supplemental Specifications for Pavement Marking"

* SEE DESIGN SHEET 5 OF 6 FOR ROAD QUANTITIES.

* TOTAL		BRIDGE QUANTITIES	
Item No.	Item	Units	Quantity
1	Bridge Floor Overlay	sq. yds.	175
2	Class A Bridge Floor Repair	sq. yds.	175
3	Structural Steel	lbs.	248
4	Removal of Asphaltic Concrete Surfacing	sq. yds.	175
5	Floodlighting	l.s.	\$3000.00
6	Traffic Control	l.s.	\$3000.00
7	Traffic Control Signals, Furnish & Install	l.s.	\$3000.00
8	Pavement Marking	station	72.1
9	Temporary Barrier Rail - Concrete	lin. ft.	240
10	Epoxy Sealer for Concrete	sq. ft.	180

Item No. 7 Traffic signals to be removed and to remain property of the Contractor.

REFERENCE INFORMATION:

7 Traffic signals to be removed and to remain property of the Contractor.

DESIGNED BY: J. Phillips
DETAILED BY: R. Rysovy

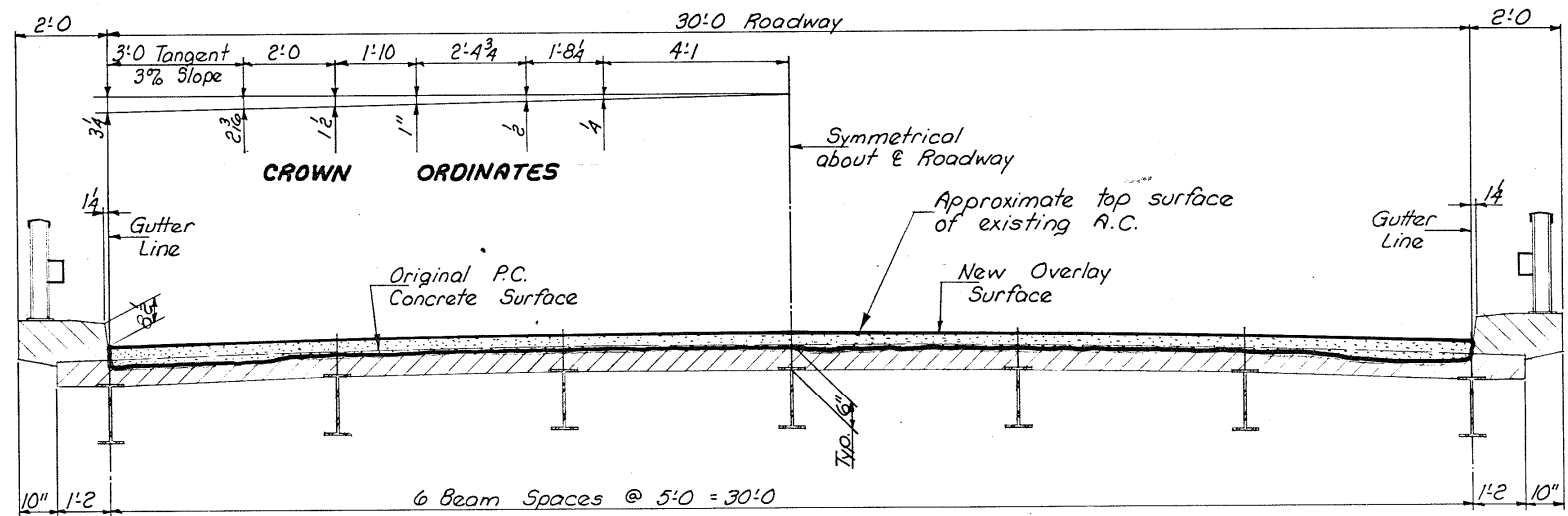
TRACED BY: [Signature]
CHECKED BY: [Signature]

SECTION LEADER: J. Sussman

ADAMS COUNTY

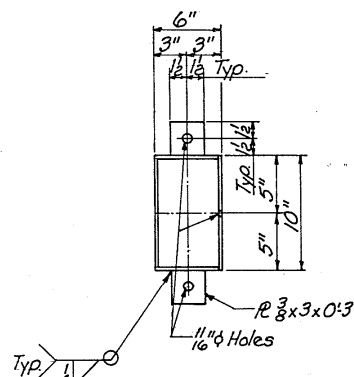
PROJECT NUMBER: FR-34-3(16)-26-02

STATE: IOWA
FED. ROAD DIST. NO.: 5
FISCAL YEAR: [Blank]
SHEET NO.: 3
TOTAL SHEETS: 8

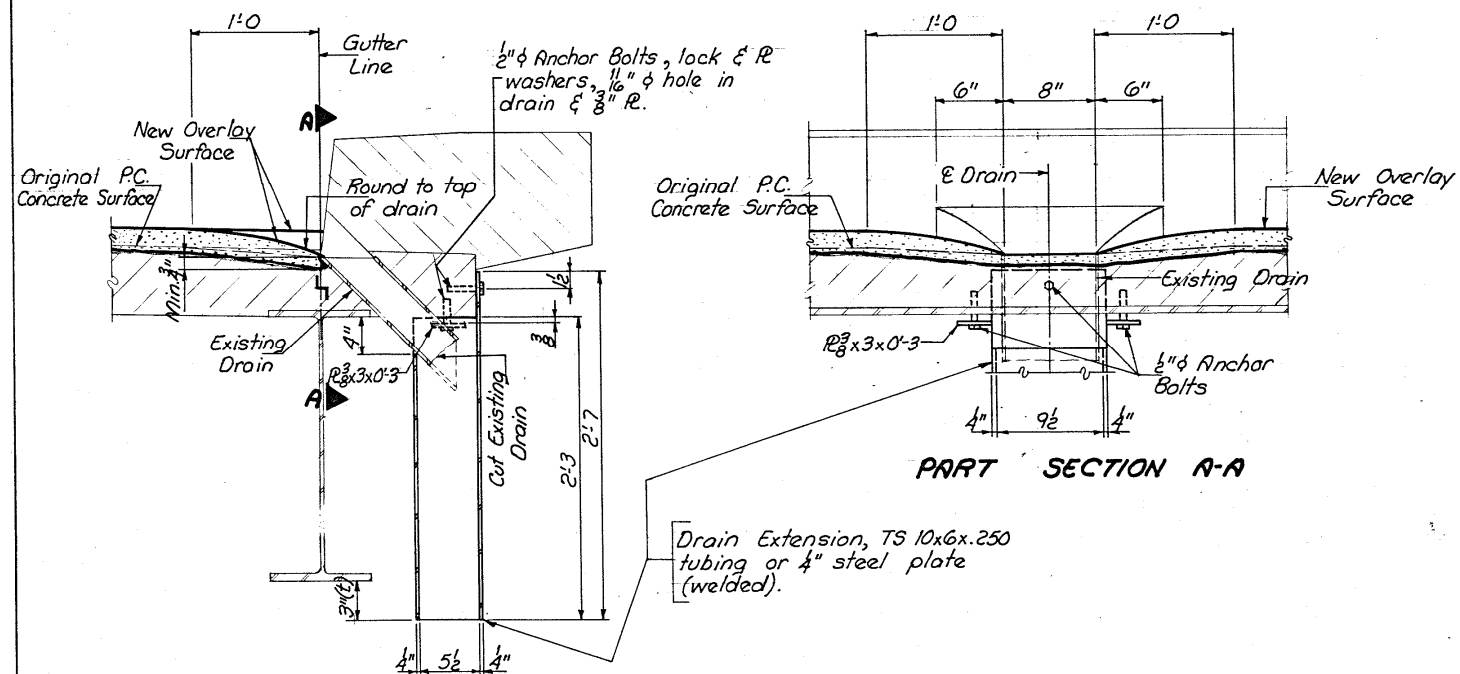


TYPICAL CROSS SECTION

Note: New Overlay Surface is $\frac{1}{2}$ inches above and parallel to Original P.C. Concrete Surface.
Crown Ordinates shown are from plans of existing bridge.

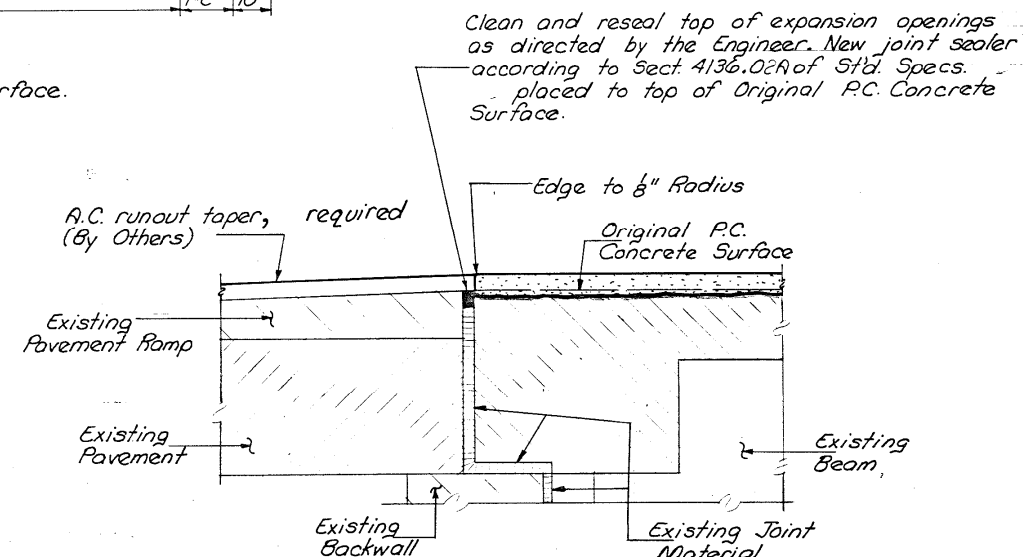


PART PLAN OF DRAIN

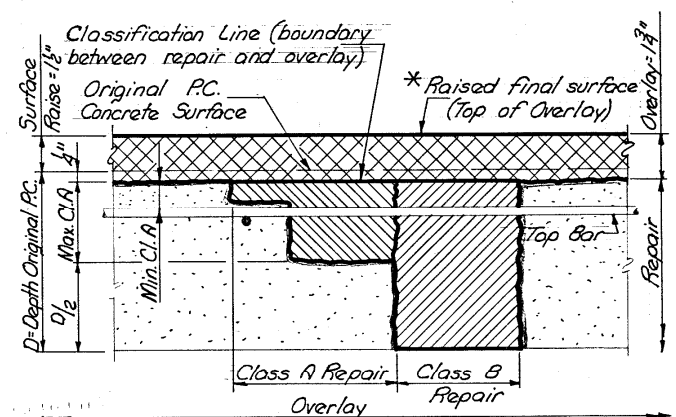


DRAIN EXTENSION DETAILS

Note: 4 Drain Extensions required. Weight = 62 lbs. each.
anchor bolts shifted slightly to clear reinforcing. The $\frac{1}{2}$ " anchor bolts of 5,000 pounds based on 4000 psi concrete. A stud type anchor bolt which meets the requirements of Iowa D.O.T. Materials I.M. 453.09 and the pull out strength above is required. The anchor bolts may have either a electro plated coating or a galvanized coating and installed according to the recommendations of the manufacturer. Drain extensions ~~are~~ galvanized after welding.



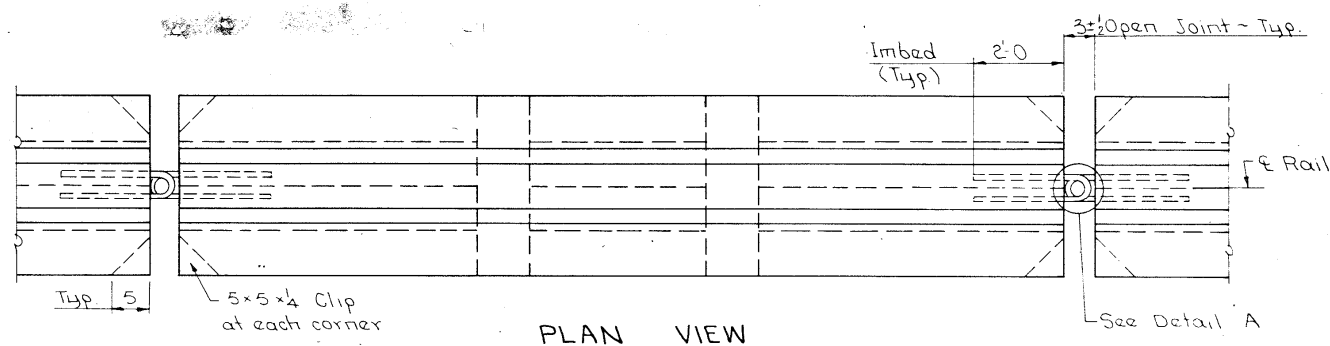
PART SECTION THRU ABUTMENTS



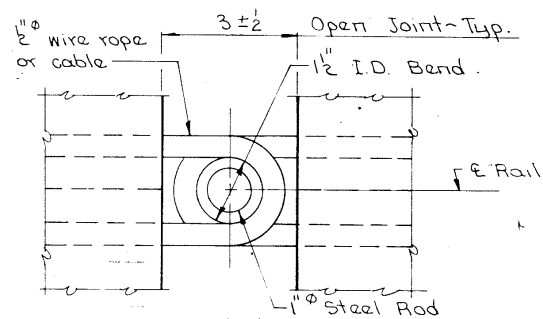
REPAIR AND OVERLAY DEFINITION

* Final surface of overlay will be approximately the top surface of the existing A.C.

Design For Repairs To	
50'-0" x 30' I-BEAM BRIDGE	
Bridge Maintenance No. 0273.85034	
REPAIR DETAILS	
Station: 624+73.00	November, 1979
ADAMS COUNTY	
IOWA DEPARTMENT OF TRANSPORTATION-HIGHWAY DIVISION	
Design Sheet No.: 2	Of 6 File No.: 86219 Design No.: 179



PLAN VIEW

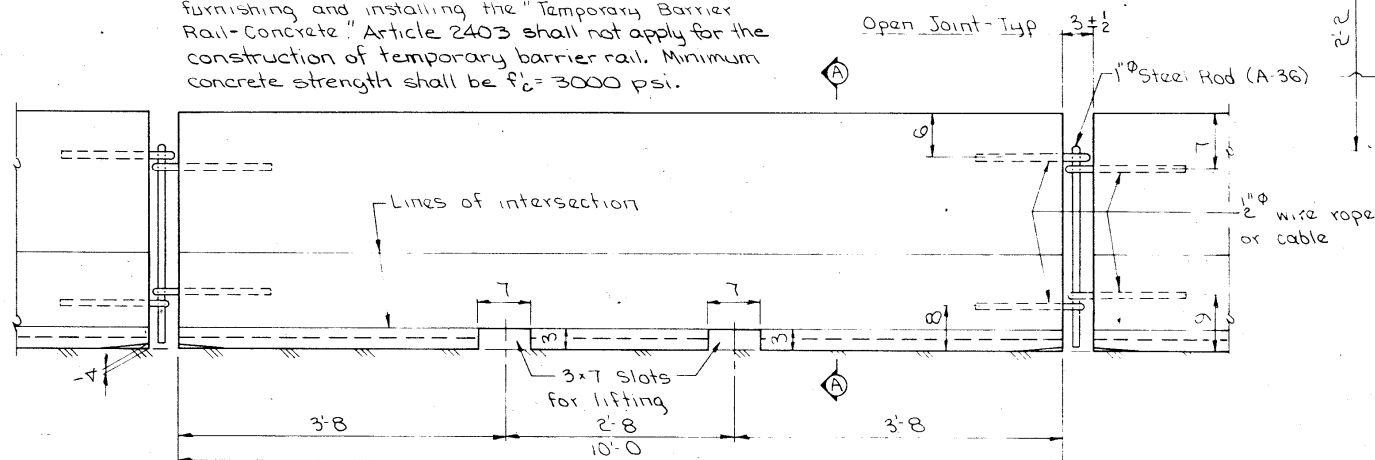


DETAIL A

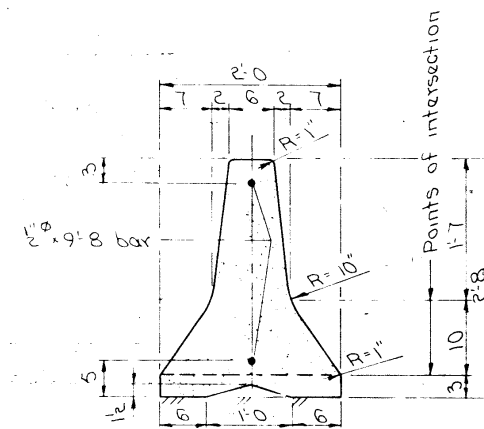
Wire rope or cable to be 1/2" with a minimum breaking strength of 20,000 pounds.

NOTE:

Cost of 1" steel rods and 1/2" wire rope or cable to be considered incidental to furnishing and installing the "Temporary Barrier Rail-Concrete." Article 2403 shall not apply for the construction of temporary barrier rail. Minimum concrete strength shall be $f'_c = 3000$ psi.

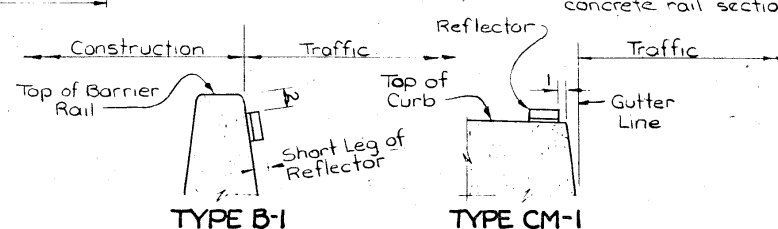


ELEVATION VIEW



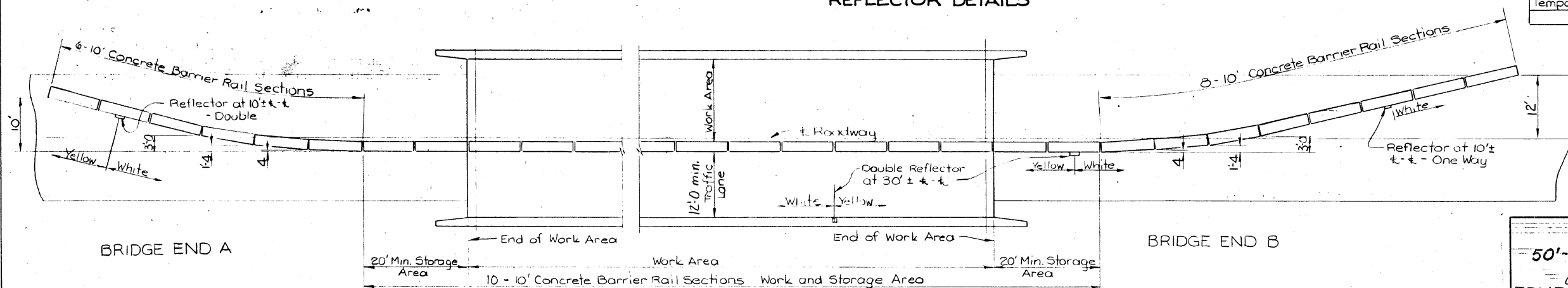
SECTION A-A

Contractor may add extra reinforcing bars to increase the service life of concrete rail sections.



REFLECTOR DETAILS

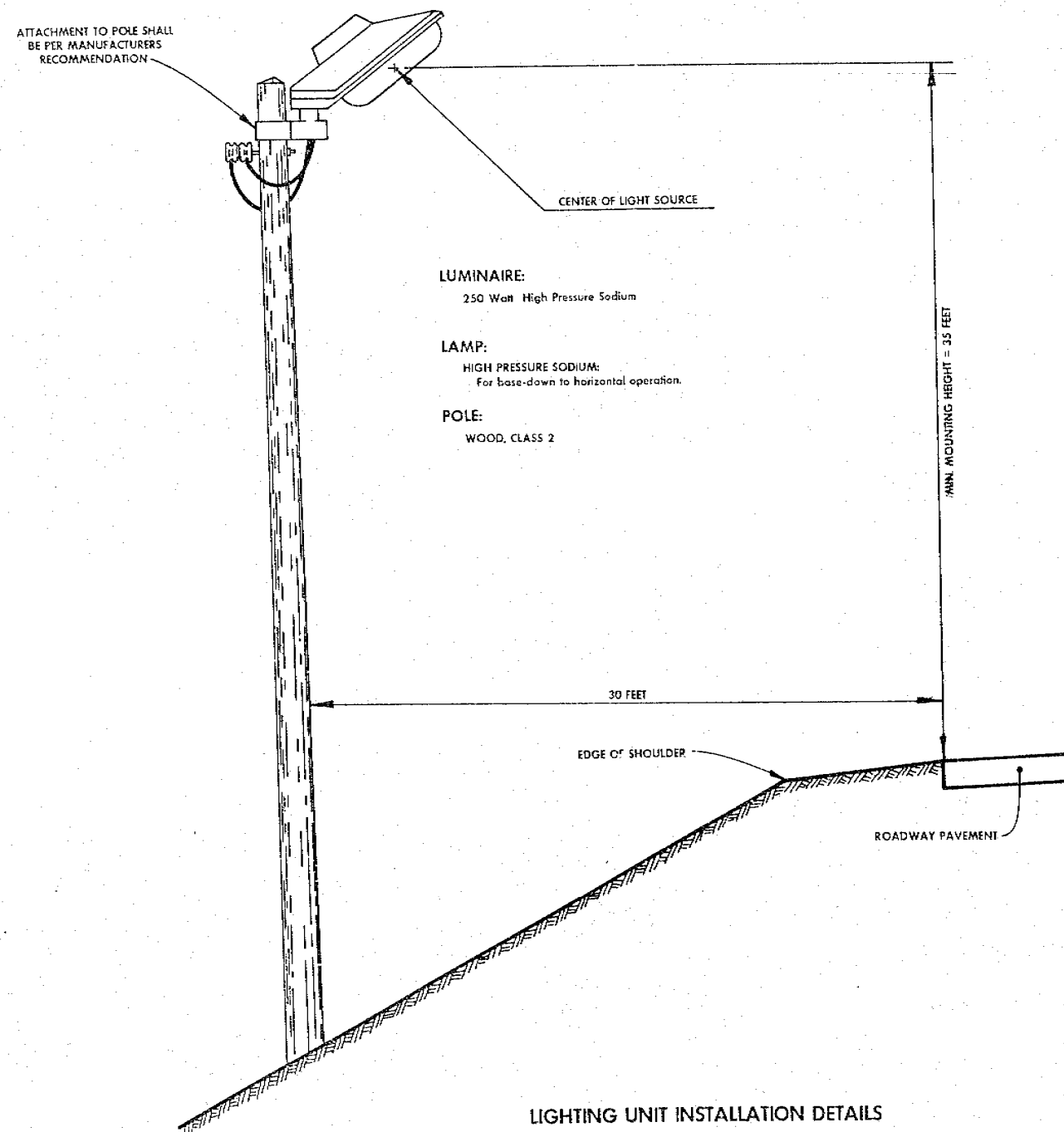
ESTIMATED QUANTITIES	
Item	Amount
Temporary Barrier Rail - Concrete	246 L.F.



TEMPORARY CONCRETE BARRIER RAIL LAYOUT FOR TWO WAY TRAFFIC

Note: The layout shown is for one stage of construction and would be the same for the other stage by rotating 180°.

Design For Reppirs To	
50'-0" x 30' I-BEAM BRIDGE	
Bridge Maintenance No. 0223.85034	
TEMPORARY BARRIER RAIL-CONCRETE	
Station: 624+73.00 November, 1977	
ADAMS COUNTY	
IOWA DEPARTMENT OF TRANSPORTATION-HIGHWAY DIVISION	
Design Sheet No.: 3 Of 6 File No.: 26219 Design No.: 179	



GENERAL NOTES:

Temporary floodlighting will be required on this project. The lighting shall conform to current Standard Specifications for floodlighting, Sections 2413.12 and 2413.14 except as modified hereon.

Location of the pole for temporary floodlighting shall be as shown in the Traffic Control Plan or as determined by the engineer. The contractor shall determine pole length by field measurement to obtain specified mounting height.

The luminaire shall be designed to operate without a mastarm such as the "Expressway" luminaire by the Holophane Division of Johns-Manville, Inc. or the "Interstate" luminaire by the American Electric Division of I.T.T.

Aerial lighting circuits shall be aluminum or A.C.S.R. triplex. Underground lighting circuits shall be type U.S.E. or U.F. All circuit design and materials shall be approved by the engineer before installation commences.

Price bid for "Floodlighting" shall include all costs for furnishing, installing, maintaining and servicing the Temporary Floodlighting Units, all costs for electrical energy, and the cost of removing all lighting materials from the construction site.

DETAIL SHEET

570-2

Revision Date NEW 10-26-79

TEMPORARY FLOODLIGHTING
(Offset)

Design Sht. 4 of 6 File No. 26219 Design No. 179

ADAMS COUNTY

PROJECT NUMBER

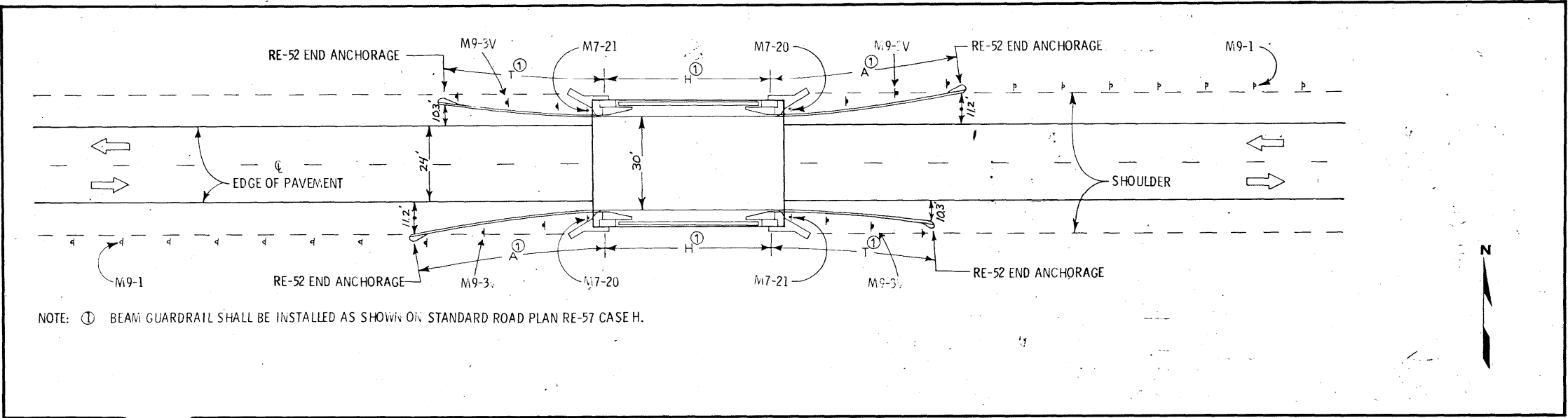
DATE
BY
CHECKED
DATE

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 is 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.

All concrete work, once started at a particular site, shall be completed without delay. Concrete end anchorages shall be placed and cured as specified prior to any removal of existing guardrail. Upon completion of the cure time for concrete end anchorages (RE-52), construction of the new installation shall be completed within 3 working days unless the lane adjacent to the work area is closed to traffic as required by Design Detail Sheet 520-5.

REFERENCE INFORMATION		100-4
Data listed below is for informational purposes only and shall not constitute a basis for any extra work orders.		
ITEM NO.	DESCRIPTION	
2.	Includes 12 posts 10x10, 36 posts 8x8, and 8 posts 6x8.	
4.	See Sheet No. 8 for details.	
5, 6, & 7.	See Tabulation.	
7.	Four of the existing object markers shall be selected by the engineer for reuse at this location. The remaining existing object markers shall be removed and stored for pickup by State Maintenance Forces. This work shall be considered incidental to the bid item.	

PROJECT QUANTITIES				100-0
NO.	ITEM	UNIT	TOTAL	
1	GUARDRAIL, FORMED STEEL BEAM	LIN. FT.	275	
2	GUARDRAIL POSTS, BEAM	NO.	56	
3	GUARDRAIL END ANCHORAGES, BEAM RE-52	NO.	4	
4	GUARDRAIL, BRIDGE CONNECTION MODIFIED	NO.	4	
5	DELINEATORS, SINGLE WHITE	NO.	14	
6	DELINEATORS, TRIPLE AMBER VERTICAL	NO.	12	
7	OBJECT MARKER, TYPE 3	NO.	4	



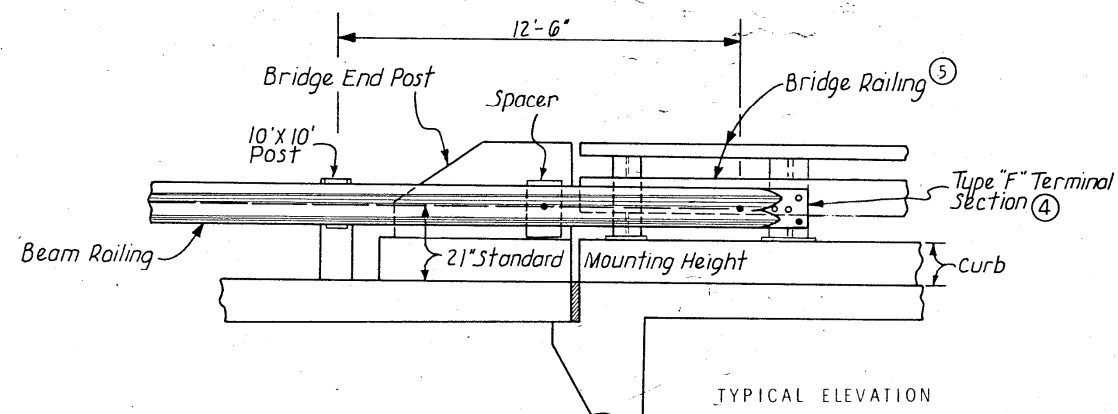
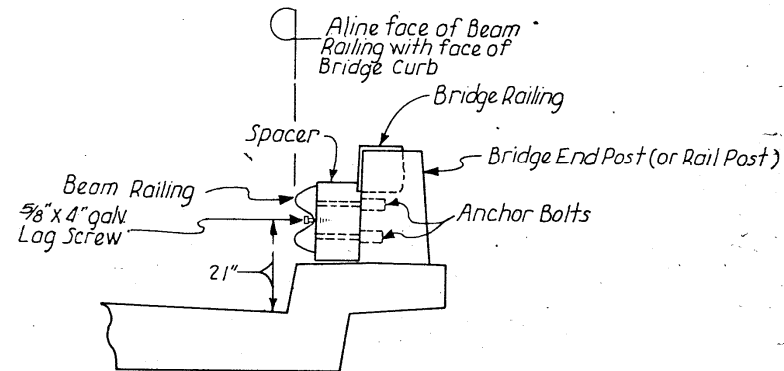
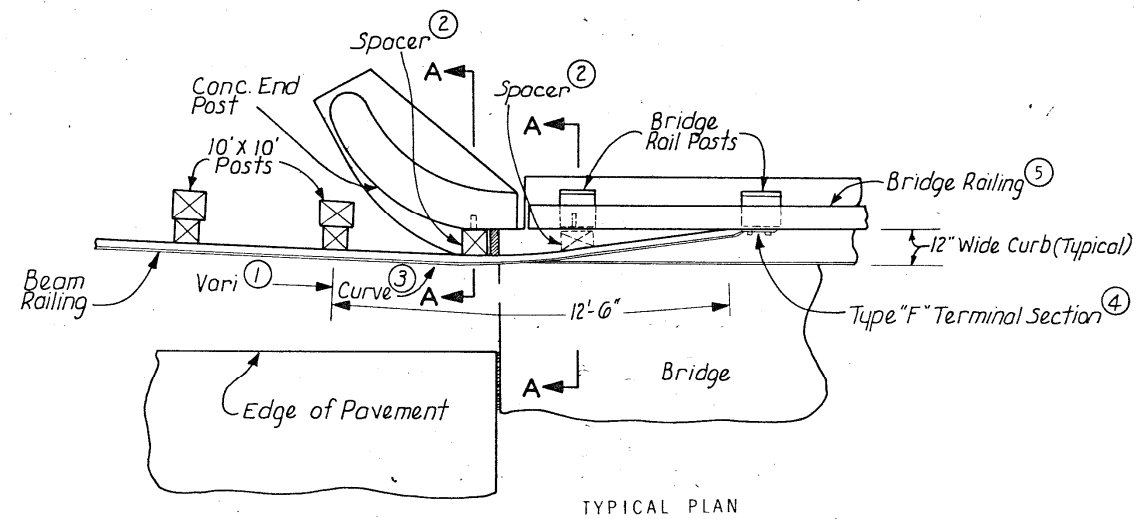
NOTE: ① BEAM GUARDRAIL SHALL BE INSTALLED AS SHOWN ON STANDARD ROAD PLAN RE-57 CASE H.

TABULATION OF DELINEATORS AND OBJECT MARKERS					108-17
Refer to Standard Road Plan RE-48A-B and RE-29 C.					9-22-78
LOCATION STATION	TYPE	SINGLE WHITE DELINEATOR	TRIPLE AMBER VERTICAL	TYPE 3 OBJECT MARKERS	REMARKS
624+73 Lt.	1	7	6	2	
624+73 Rt.	1	7	6	2	

TABULATION OF "W" BEAM GUARDRAIL INSTALLATIONS																	108-8		
(Refer to appropriate Standard Road Plans)																	6-15-79		
LOCATION		STANDARD ROAD PLAN	FORMED STEEL BEAM RAIL				BEAM GUARDRAIL POST			SPECIAL CONNECTION		END ANCHORAGE		BRIDGE END ANCHORAGE		L2	REMARKS		
No.	Station		(A)	(T)	(H)	Total	8"x8" Single Spacer	10"x10" Single Spacer	6"x8" No Spacer										
			Case	Lin. Ft.	Case	Lin. Ft.	Lin. Ft.	Lin. Ft.				Type	No.	Type	No.			Type	No.
	624+73 Lt.	RE-57	H	75	H	62.5		137.5	18	6	4			RE-52	2	Mod.	2		
	624+73 Rt.	RE-57	H	75	H	62.5		137.5	18	6	4			RE-52	2	Mod.	2		

Design No. 179
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ADAMS COUNTY

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.	
Fred W. Walker 4989 Oct 23, 1979 IOWA REGISTRATION NUMBER DATE	



Modified Bridge Connection shall be utilized for various types of bridge end post and railing combinations where specified in project plans or as otherwise required by the engineer. Material requirements for each connection:

1. 12'-6" section of formed steel beam railing.
2. One or more Spacers as necessary.
3. Appropriate mounting hardware.

Notes:

1. Standard approach guardrail installed to this point as indicated in detail project plans.
2. Spacer appropriately sized and shaped wood or galvanized steel. Two spacers required unless approved otherwise by the engineer. Spacer attached to end post with 2 approved 5/8" anchor bolts.
3. Railing field curved to a smooth curve as directed by the engineer. No kinks in rail or breaks in galvanizing allowed.
4. Type F terminal section attached to existing bridge railing or post using at least three 5/8" anchor bolts or hex head machine bolts as necessary.
5. Existing bridge railing may be steel or concrete.

The price bid for "Modified Bridge Connection" considered full compensation for construction essentially as detailed hereon. Some modification required to adapt to various style of bridges. The contractor may submit alternate design details for approval.

MODIFIED BRIDGE CONNECTION

Design Sht. 6 of 6 File No. 26219 Design No. 179

ADAMS COUNTY

PROJECT NUMBER

STATE

CWA

YEAR

8

3/4