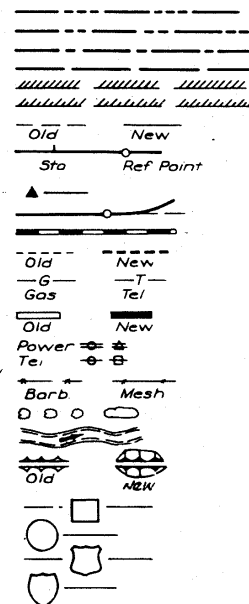


BRIDGE REPAIR
FN-3-5(34)--21-12

BUTLER COUNTY

- 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.

CONVENTIONAL SIGNS



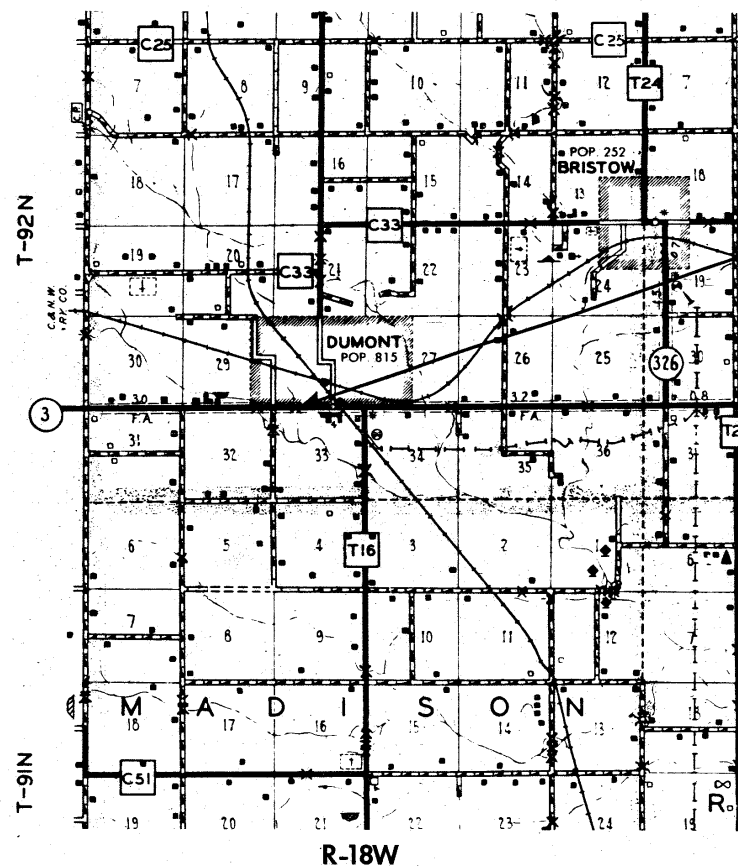
IOWA
DEPARTMENT OF TRANSPORTATION
Highway Division

PLANS OF PROPOSED IMPROVEMENT ON THE
PRIMARY ROAD SYSTEM
BUTLER COUNTY
BRIDGE REPAIR

IOWA 3 OVER HARTGRAVES CREEK OVERFLOW W. OF DUMONT

SCALES AS NOTED

THE STANDARD SPECIFICATIONS, SERIES OF 1977
OF THE IOWA DEPARTMENT OF TRANSPORTATION,
APPLIED SHALL APPLY TO CONSTRUCTION WORK ON THIS PROJECT
(PLUS CURRENT SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS)



R-18W

LOCATION MAP



CONSTRUCTION PLANS SHOWING PROJECT AS BUILT
Prepared by David K. Rober Date 3-11-86
Approved and Forwarded to Ames
Ala. Hansen Date 3/16/86
After Final Price Print Return This Copy to:
Robert I. Borte District Engineer
Prime Contractor: Cramer Bros. Inc.
Contract Amount: \$30,215.50 1985

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-2	8-16-74	RE-12	4-20-79	RE-52	12-5-80
RE-7	8-6-82	RE-47	8-24-79	RE-57	6-8-79
				RL-11	4-20-79

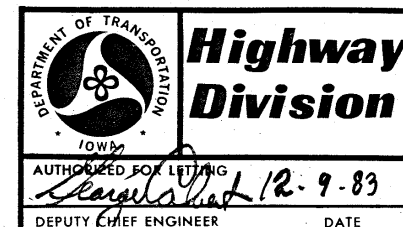
120

STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	3		1	7
PROJECT NUMBER				
FN-3-5(34)--21-12				
R.O.W. PROJECT NUMBER				
PRELIMINARY ENGINEER NUMBER				

INDEX OF SHEETS

NO.	DESCRIPTION
1	TITLE SHEET
2	FINAL QUANTITY SHEET ESTIMATE SHEET
3-7	DESIGN NO. 480

DEPARTMENT OF TRANSPORTATION, HIGHWAY DIVISION
STANDARDS REQUIRED (Available at Bridge Design Services)
STANDARD ISSUED 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
2797 11-30-83
IOWA REGISTRATION NUMBER DATE

U.S. DEPT. TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
APPROVED
DIVISION ENGINEER 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.

11/30/83
DATE
WM. A. LUNDQUIST
REG. NO. 4449

IN LETTING OF

JANUARY 17, 1984

DESIGN NO. 480

BUTLER COUNTY

SECTION 28 - 33

OVER OVERFLOW OF HARTGRAVES CREEK

MAINT. NO. 1294.15003

T-92N R-18W

STA. 119+46.0

PITTSFORD TWP.

DESIGN FOR REPAIR TO A

33' x 30' SINGLE SPAN CONCRETE

SLAB BRIDGE

FINAL

ESTIMATE OF QUANTITIES

NO.	ITEM	UNIT	TOTAL
1	CLASS A BRIDGE FLOOR REPAIR	SQ. YD.	26.00
2	BRIDGE FLOOR OVERLAY	SQ. YD.	118.73
3	REMOVAL OF ASPHALTIC CONCRETE SURFACING	SQ. YD.	120.40
4	EPOXY SEALER FOR CONCRETE	SQ. FT.	136.40
5	CONCRETE BARRIER RAIL - CAST IN PLACE	LIN. FT.	69.00
6	REMOVALS AS PER PLAN	L.S.	2,000.00
7	TRAFFIC CONTROL	L.S.	3,000.00
8	PAVEMENT MARKINGS	STA.	0.80

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	
8	INCLUDES 0.1 STA. OF PERMANENT YELLOW PAVEMENT MARKINGS AND 0.7 STA. OF PERMANENT WHITE PAVEMENT MARKINGS.	

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.

11/30/83
DATE
Jed W. Walker
IOWA REG. NO. 4989

FINAL ESTIMATE OF ROADWAY QUANTITIES			
No.	ITEM	UNIT	TOTAL
9	Guardrail, Formed Steel Beam	Lin. Ft.	250
10	Guardrail Posts, Beam	No.	52
11	Guardrail End Anchorage, Beam RE-52	No.	4
12	Remove & Reinstall Object Markers	No.	4
13	Delineator, Single White	No.	14
14	Delineator, Triple Yellow Vertical	No.	8
15	Embankment-In-Place	Cu. Yds.	20

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	
10	Includes 12 posts 10' x 10", 32 posts 8" x 8" and 8 posts 6" x 8".	
14	Contractor ^{did} shall furnish and install an 8203 guardrail marker at each corner of the guardrail installation as detailed on this sheet. Furnishing and installation of 8203 guardrail markers shall ^{was} be considered incidental to this bid item.	
15	Contractor ^{did} shall furnish required material. Quantity ^{was} is estimate only and payment will ^{was} be made on the actual volume of material placed.	

GENERAL NOTES

This design is for repair to the 33' x 30' single span concrete slab bridge, original design number 257 Butler County. Plans of the existing structure may be obtained at the Ames Office of the Highway Division. Repairs shall consist of bridge floor repair, bridge floor overlay, new Cast In Place Barrier Rail and formed steel beam guardrail.

The present floor thickness is about 1'-4 3/4" ± at the C with about 1 3/4" ± of A.C. overlay on top of the floor. It is the intent of this design that the contractor completely remove the 1 3/4" A.C. overlay from the bridge floor, repair unsound concrete and re-surface the entire floor with bridge floor overlay. The top of the bridge floor overlay is to match the existing grade and no grade raise is involved. The contractor shall exercise extreme care in order to prevent unnecessary removal of concrete below the top of the reinforcing. The energy of hand tools shall be restricted near the bottom of the designated Class A repair areas in order to prevent unnecessary unbonding of reinforcing. No concrete shall be removed below the top of the longitudinal reinforcing without prior permission from the Bridge Engineer.

No preliminary floor survey is shown. The plan quantity for "Class A Bridge Floor Repair" is estimated as 50% of the floor area. The actual quantity will be determined by the engineer after the 1 3/4" ± of A.C. overlay has been removed. Actual spalled and hollow areas, as determined by the engineer, shall be repaired. The entire concrete surface of the floor, including areas over Class A repair, shall have Bridge Floor Overlay. The 2" overlay shown on the plans shall be considered a minimum. In order to limit the additional dead load, the 2" overlay shall be restricted to a maximum of 1/2 inch more than shown on the plans. The profile shall be adjusted to the extent possible within these limits.

Any A.C. patchwork that may be necessary in the approach pavement at the joint with the bridge floor will be placed by local Highway Division Maintenance forces. The contractor shall give adequate prior notice so that the A.C. may be placed during normal working hours and working days of maintenance.

Faint lines on tracings and prints indicate existing portions of the structure. The price bid for "Removal of Asphaltic Concrete Surfacing" shall be considered full compensation for removal and disposal of the existing 1 3/4" ± of A.C. overlay to the limits detailed on design sheet 2.

Since not raising grade Section 2413 of the Iowa D.O.T. Specifications, Series 1977, plus current Special Provisions and Supplemental Specifications shall apply except as amended by these General Notes.

The lump sum bid for "Removals As Per Plan" shall include all costs associated with the removal and disposal of the existing end posts and wings (down to top of curb) at all four corners and all concrete posts and rails.

Removals and disposals shall be in accordance with Section 2401 of the Standard Specifications.

The bridge shall be closed to traffic during construction.

DESIGN STRESSES:

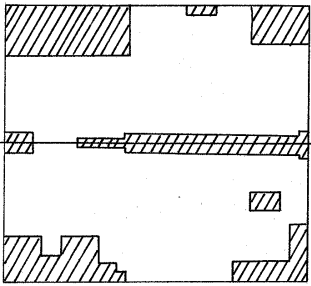
Design stresses for the following materials are in accordance with the AASHTO Standard Specifications for Highway Bridges, Series of 1977.
Reinforcing Steel in accordance with Section 1.5, Grade 40 and Grade 60.
Concrete in accordance with Section 1.5, f'c = 3,500 psi.

SPECIFICATIONS:

Design: AASHTO Series of 1977.
Construction: Iowa Department of Transportation Specification, Series of 1977, plus current Supplemental Specifications and Special Provisions.

TRAFFIC CONTROL PLAN

- Iowa 3 shall be closed to traffic.
- Iowa 3 shall have a slat fence barricade or plastic safety fence preceded by a Type III barricade for each direction of travel at the bridge. The Type III barricade shall contain a "Road Closed" sign and two Type "A" warning lights. The Type III barricade shall be preceded by "Road Closed 500 Feet" and "Road Closed 1000 Feet" signs.
- All traffic control devices shall be furnished, erected, maintained, and removed by the contractor.
- The location for storage of equipment by the contractor during non-working hours shall be as approved by the engineer in charge of construction.
- Permanent edgelines and lanelines shall be placed before the roadway is opened to traffic. Supplemental Specification 925 shall apply.
- The bid item "Traffic Control" shall include the cost for all traffic control measures required of the contractor except those which are separate bid items or are incidental to other bid items.



Class "A" Repair Areas

ORDER OF PLACEMENT

- Lt. Lane Poured From East to West Continuous.
- Rt. Lane Poured From West to East Continuous.

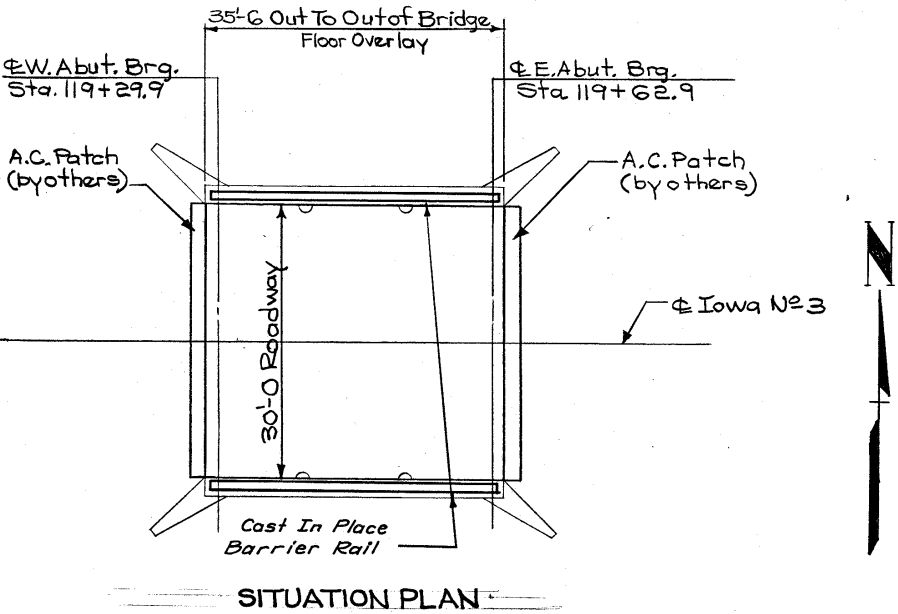
OVERLAY DENSITY

Sta. *	Side	E. dist.	Density
0+25	Lt.	12'	101.6
0+15	Lt.	2'	101.6
0+05	Lt.	13'	99.9
0+05	Rt.	11'	102.5
0+15	Rt.	12'	101.8
0+25	Rt.	5'	101.4

* West end of deck assumed 0+00 for construction only.

TRANSVERSE GROOVING

- Texture rake 1/8" tines @ 3/4" centers.
- Lt. Lane Average Depth was 3/32".
- Rt. Lane Average Depth was 3/32".



SITUATION PLAN

See Plan Sheet 2 For Final Quantities

TOTAL ESTIMATED QUANTITIES

Item No.	Item	Unit	Quantity
1	Class A Bridge Floor Repair	Sq. Yd.	59
2	Bridge Floor Overlay	Sq. Yd.	118
3	Removal Of Asphaltic Concrete Surfacing	Sq. Yd.	118
4	Epoxy Sealer For Concrete	Sq. Ft.	121
5	Concrete Barrier Rail - East In Place	Lin. Ft.	69.0
6	Removals As Per Plan	L.S.	Lump Sum
7	Traffic Control	L.S.	Lump Sum
8	Pavement Markings	Sta.	0.8

ESTIMATE REFERENCE INFORMATION

- Includes 0.1 Sta. of permanent yellow pavement markings and 0.7 Sta. of permanent white pavement markings.

NOTE:

For "ESTIMATE ROADWAY QUANTITIES" see Design Sheet 4.

EPOXY SEALER FOR CONCRETE

In addition to requirements of Art. 2413.09, an epoxy sealer shall be applied to the curbs. The epoxy sealer material and application shall comply with Materials I.M. 491.12. Before application of epoxy, new concrete surfaces must be cured and all surfaces must be 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 shall be applied prior to any other surface treatment application. For portland cement concrete floor repair, Par. 2413.02A., the epoxy sealer shall be 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.

LOCATION:

Iowa No 3
Over Overflow Of W. Fork
Cedar River (Hartgrave Creek)
Sections 28-33
Pittsford Township
Butler County
T 92 N R 18 W
Maintenance No 1294.15003

Design For Repair To A
33'-0 x 30' SINGLE SPAN CONCRETE
SLAB BRIDGE

SITUATION PLAN AND NOTES

Station: 119+46.4 March 1983

BUTLER COUNTY

IOWA DEPARTMENT OF TRANSPORTATION-HIGHWAY DIVISION

Design Sheet No.: 1 Of 5 File No.: 26348 Design No.: 480

DESIGNED BY: Ron Welch
DETAILED BY: Otis Tvedt, Jr.

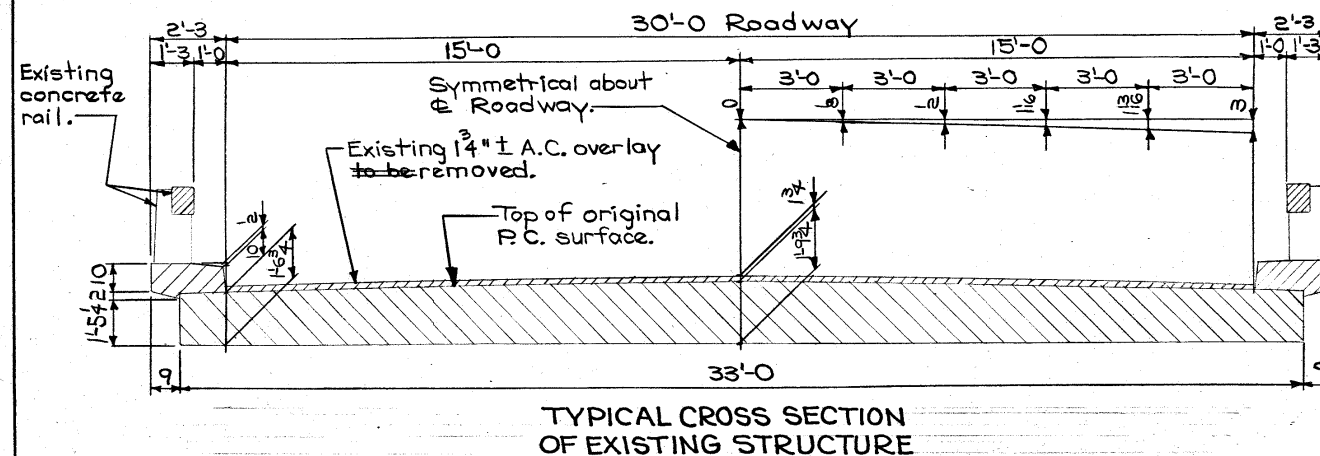
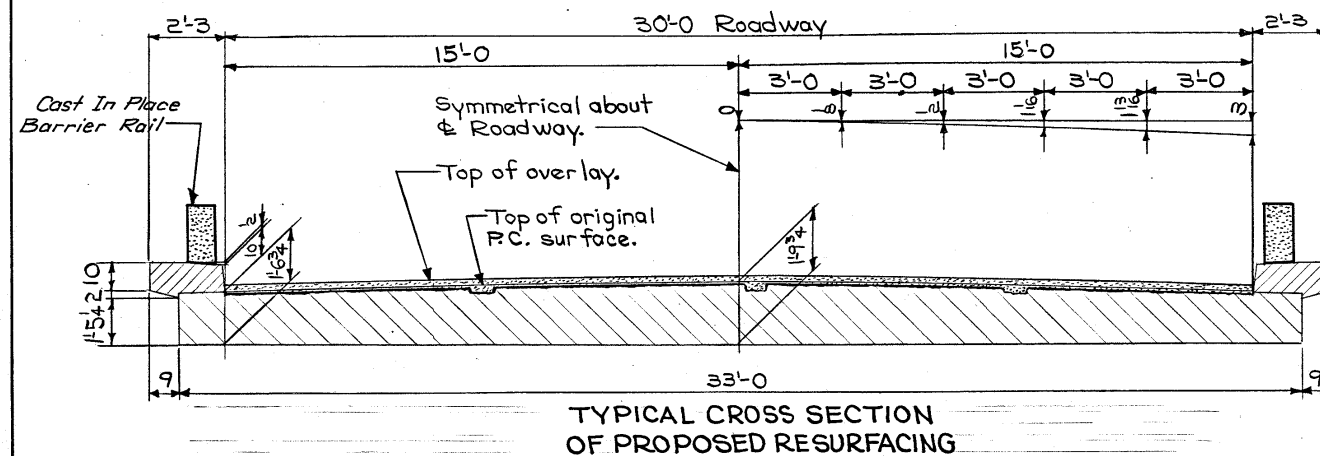
TRACED BY:
CHECKED BY:

SECTION LEADER: Wilton A. Lundquist

BUTLER COUNTY

PROJECT NUMBER
FN-3-5 (34) -- 21 - 12

STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	5		3	7



The Contractor ~~may~~ removed a minimum of the existing approach pavement and overlay to facilitate construction of the floor overlay. This A.C. ~~shall~~ be replaced by others.

Surface of existing A.C. overlay approach pavement.

Existing 1" Preformed Joint Material (U.A.C.), unless otherwise directed by the Engineer. Typical at both ends.

35'-6" Out To Out Of Bridge Floor Overlay

Top of overlay.

Top of Original P.C. Surface.

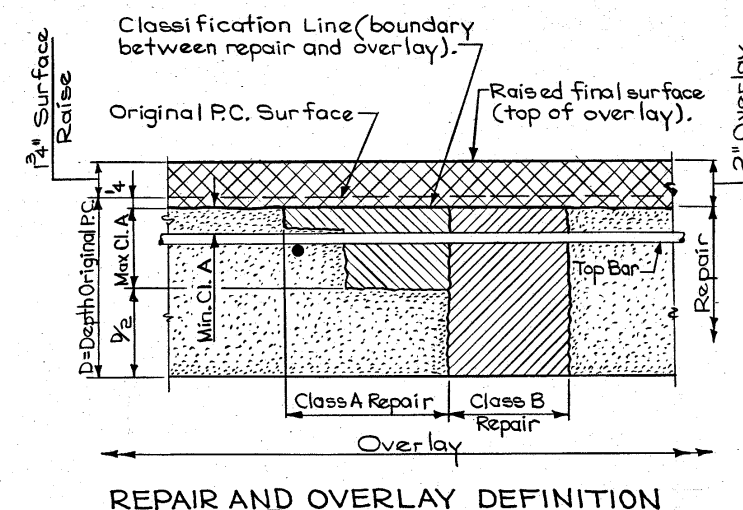
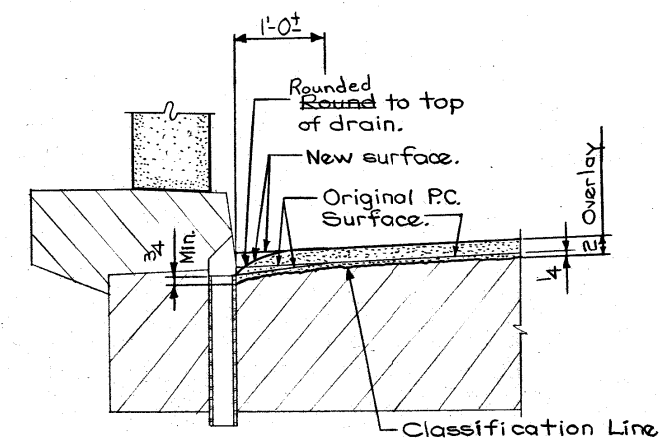
The Contractor ~~may~~ removed a minimum of the existing approach pavement and overlay to facilitate construction of the floor overlay. This A.C. ~~shall~~ be replaced by others.

Surface of existing A.C. Overlay approach pavement.

Classification Line (boundary between repair and overlay 4" below existing surface).

Existing 1" Preformed Joint Material (U.A.C.).

PART LONGITUDINAL SECTION ALONG ROADWAY



Design For Repair To A
33'-0" x 30' SINGLE SPAN CONCRETE
SLAB BRIDGE
REPAIR DETAILS
Station: 119+46.4 March 1983
BUTLER COUNTY
IOWA DEPARTMENT OF TRANSPORTATION-HIGHWAY DIVISION
Design Sheet No.: 2 Of 5 File No.: 26348 Design No.: 480

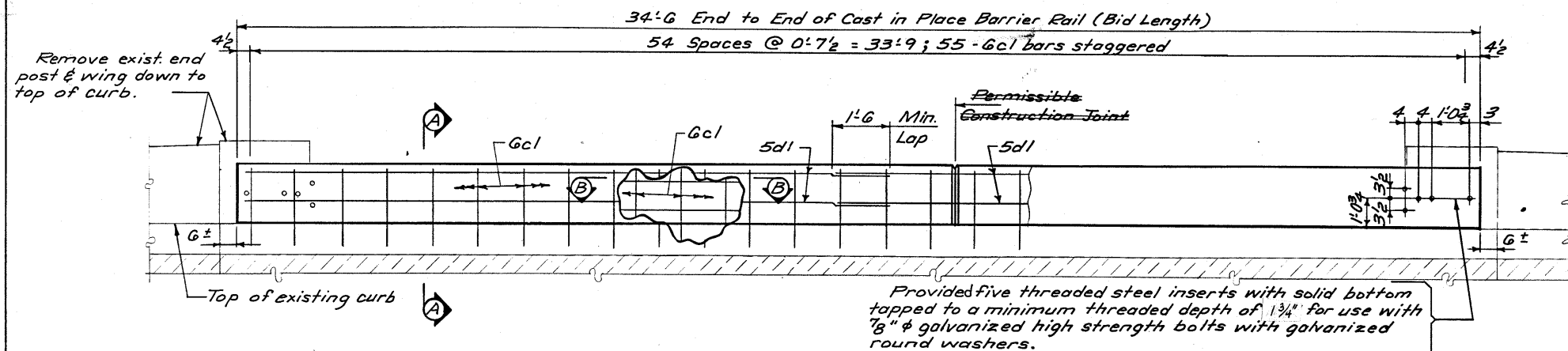
DESIGNED BY: Ron Welch
CHECKED BY: Otis Tweed, Jr.

TRACED BY:
CHECKED BY:

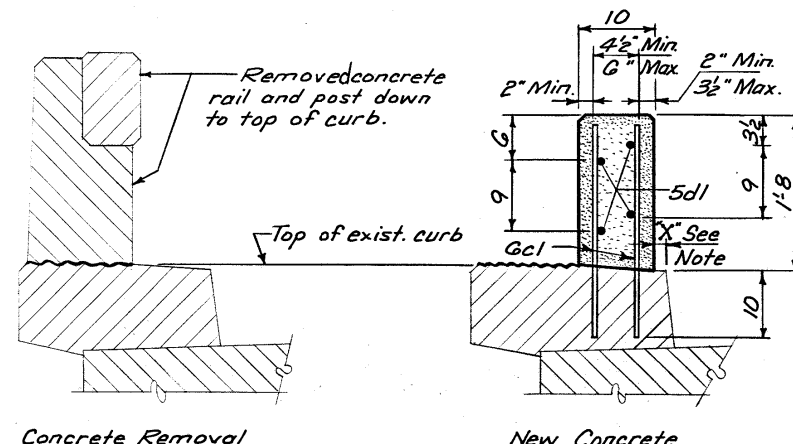
BUTLER COUNTY

PROJECT NUMBER

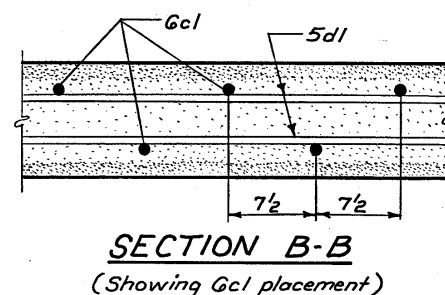
STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	6		4	7



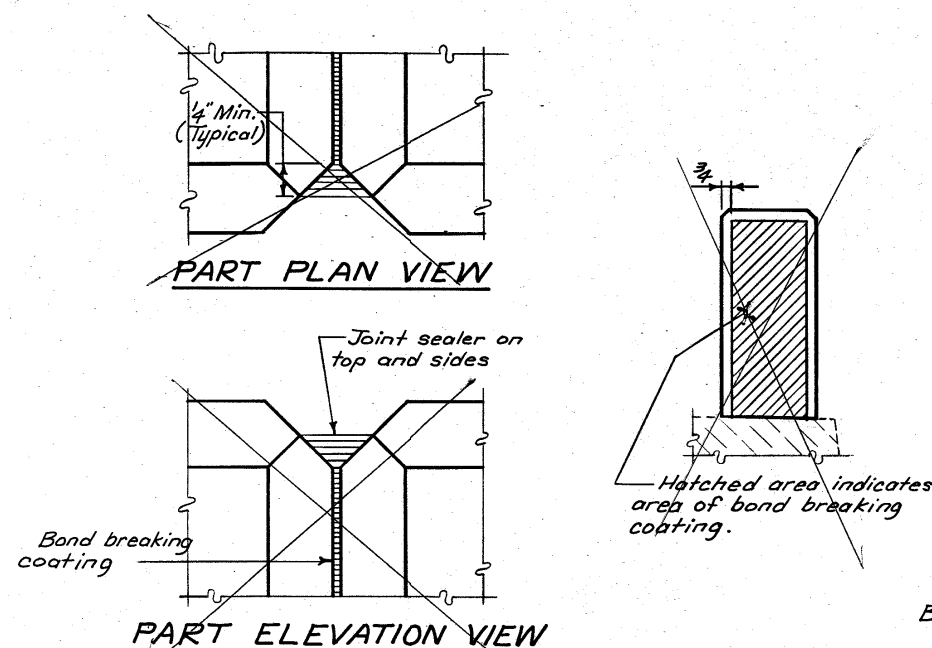
ELEVATION OF CAST IN PLACE BARRIER RAIL



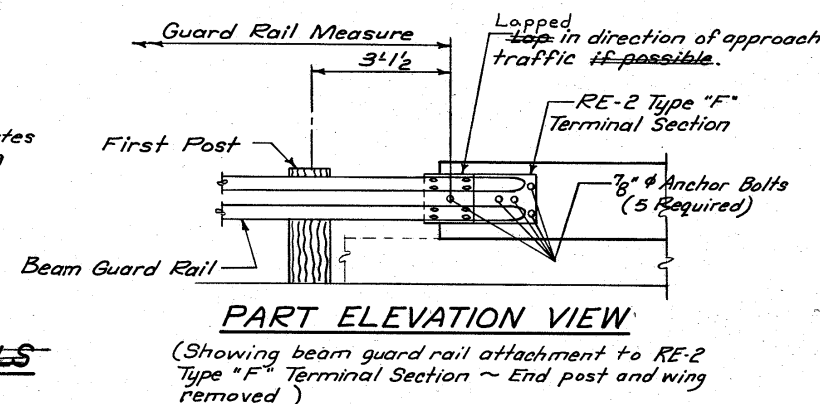
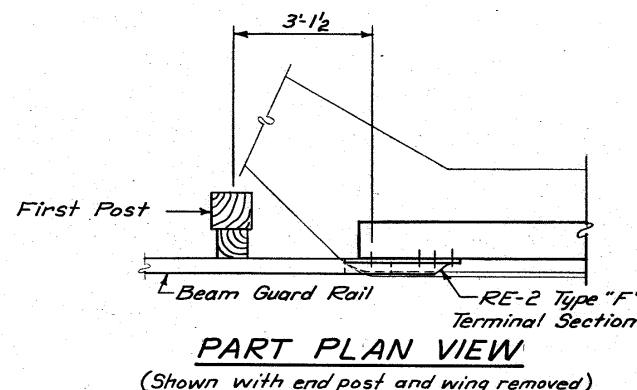
NOTE: On each side of bridge, Dimension "X" ^{was 3"} ~~can be a minimum of 1" and a maximum of 3", but must be constant for full length of bridge.~~



NOTE: The existing end posts, wings and rail posts ^{were} ~~are to be removed down to top of curb. The existing reinf. bars in the portion of the curb and wings shall be cut off flush with the curb and wing surfaces and the remaining exposed ends shall be painted with two coats of zinc rich paint. Cost is to be included in the price bid for "Removals As Per Plan".~~



CAST IN PLACE BARRIER RAIL JOINT DETAILS



DOWEL SETTING NOTE
THE GCL BARS ^{WERE} ~~SHALL BE~~ SET AS DOWELS IN DRILLED HOLES. HOLES ^{WERE} ~~SHALL BE~~ 10" DEEP. THE DOWELS ^{WERE} ~~SHALL BE~~ INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. ^{ONE OF THE TWO} ~~ONE OF THE TWO~~ FOLLOWING SYSTEMS ^{WAS} ~~SHALL BE~~ USED AS A BONDING AGENT FOR THE DOWELS:
1) EPOXY SYSTEM. DRILLED HOLES ^{WERE} ~~SHALL BE~~ 7" Ø. THE EPOXY GROUT ^{WAS} ~~SHALL BE~~ ONE OF THOSE APPROVED IN THE IOWA D.O.T. MATERIALS I.M. 491.11.
2) GROUT SYSTEM. DRILLED HOLES ^{WERE} ~~SHALL BE~~ 2" Ø. THE HYDRAULIC CEMENT GROUT ^{WAS} ~~SHALL BE~~ ONE OF THOSE APPROVED IN MATERIALS I.M. 491.13.

EPOXY REINFORCING STEEL ~ TWO RAILS

Bar	Location	Shape	Nº	Length	Weight
Gcl	Rail, Vertical	—	110	2'4	385
5dl	Rail, Longitudinal	—	8	34'2	285
Total Lbs					670

CONCRETE PLACEMENT SUMMARY

Concrete	Total
69'0 @ 0.05 cu. yds. per lin. ft.	3.5

FINAL ESTIMATED QUANTITIES

Item	Unit	Quantity
Concrete Barrier Rail - Cast In Place	Lin. Ft.	69.0

CAST IN PLACE BARRIER RAIL NOTES:

MINIMUM CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR ^{WAS} ~~IS TO BE~~ 2" UNLESS OTHERWISE NOTED OR SHOWN.
ALL EXPOSED CORNERS 90° OR SHARPER ^{WERE} ~~ARE TO BE~~ FILLETED WITH A 3/4" DRESSED AND BEVELED STRIP.
TOP OF THE CAST IN PLACE BARRIER RAIL ^{WAS} ~~IS TO BE~~ PARALLEL TO THE THEORETICAL G GRADE.
THE PERMISSIBLE CONSTRUCTION JOINTS ^{WERE} ~~ARE TO BE~~ PLACED BETWEEN VERTICAL BARS AT A MINIMUM SPACING OF 20 FEET. CONSTRUCTION JOINT CONTACT SURFACES ^{WERE} ~~ARE TO BE~~ COATED WITH AN APPROVED BOND BREAKER. COST OF JOINT SEALER AND BOND BREAKER ^{WAS} ~~SHALL BE~~ CONSIDERED INCIDENTAL TO OTHER CONSTRUCTION.
THE CAST IN PLACE BARRIER RAIL ^{WAS} ~~IS TO BE~~ BID ON A LINEAL FOOT BASIS MEASURED FROM END TO END OF RAIL. THE NUMBER OF LINEAL FEET OF CAST IN PLACE BARRIER RAIL INSTALLED ^{WERE} ~~SHALL BE~~ PAID FOR AT THE CONTRACT PRICE BID PER LINEAL FOOT BASED ON PLAN QUANTITIES. PRICE BID FOR CAST IN PLACE BARRIER RAIL ^{WAS} ~~SHALL BE~~ FULL COMPENSATION FOR FURNISHING ALL MATERIAL, INCLUDING REINFORCING STEEL, AND ALL OF EQUIPMENT REQUIRED TO ERECT THE RAIL IN ACCORDANCE WITH THESE PLANS AND CURRENT SPECIFICATIONS.
ALL CAST IN PLACE BARRIER RAIL CONCRETE ^{WAS} ~~IS TO BE~~ CLASS D.
THE JOINT SEALER ^{WAS} ~~SHALL CONFORM TO~~ FED. SPEC. TT-560230 OR TT-560237 FOR TYPE H, CLASS A OR B.
ALL REINFORCING ^{WAS} ~~IS TO BE~~ EPOXY COATED. THE EPOXY COATING ^{WAS} ~~SHALL BE~~ IN ACCORDANCE WITH ARTICLE 4151.03B OF THE STANDARD SPECIFICATIONS.
ANCHOR BOLTS ^{WERE} ~~SHALL CONFORM TO~~ REQUIREMENTS OF ASTM A325 OR A449 AND ^{WERE} ~~SHALL BE~~ GALVANIZED IN COMPLIANCE WITH ASTM A153. ANCHOR BOLTS ^{WERE} ~~SHALL BE~~ INSTALLED IN THREADED STEEL INSERTS HELD IN PROPER POSITION BY USE OF AN ASSEMBLY SET IN THE CONCRETE ^{WAS} ~~AND ALLOWING FOR A MINIMUM EMBEDMENT OF 2 1/2" FOR THE ANCHOR BOLTS. THE COMPONENTS AND PROCEDURE SHALL BE SUBJECT TO THE APPROVAL OF THE ENGINEER.~~
THE COST OF THE RE-2 TYPE F TERMINAL SECTIONS, THREADED STEEL INSERTS AND ANCHOR BOLTS ^{WERE} ~~SHALL BE~~ INCLUDED IN PRICE BID FOR "CONCRETE BARRIER RAIL - CAST IN PLACE".

Design For Repair To A
33'0 x 30' SINGLE SPAN CONCRETE
SLAB BRIDGE
CAST IN PLACE BARRIER RAIL DETAILS
Station: 119 + 46.4 March 1983
BUTLER COUNTY
IOWA DEPARTMENT OF TRANSPORTATION-HIGHWAY DIVISION
Design Sheet No.: 3 Of 5 File No.: 26348 Design No.: 480