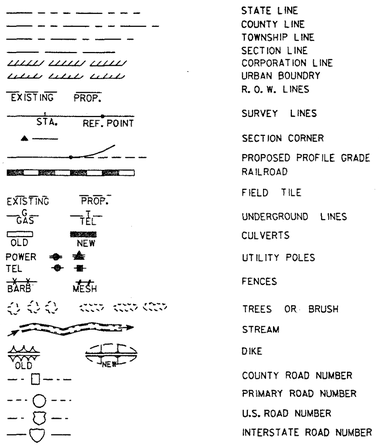
BRIDGE DECK REPAIR

FN-61-2(35)--21-29

DES MOINES COUNTY

2/28/9

CONVENTIONAL SIGNS



STATE LINE
COUNTY LINE
TOWNSHIP LINE
SECTION LINE
CORPORATION LINE
URBAN BOUNDRY
R. O. W. LINES
SURVEY LINES
SECTION CORNER
PROPOSED PROFILE GRADE
RAILROAD
FIELD TILE
UNDERGROUND LINES
CULVERTS
UTILITY POLES
FENCES
TREES OR BRUSH
STREAM
DIKE
COUNTY ROAD NUMBER
PRIMARY ROAD NUMBER
U.S. ROAD NUMBER
INTERSTATE ROAD NUMBER

RECEIVED
APR 11 1992
District 5 Office

IOWA

DEPARTMENT OF TRANSPORTATION

Highway Division

PLANS OF PROPOSED IMPROVEMENTS ON THE

PRIMARY ROAD SYSTEM

DES MOINES COUNTY

BRIDGE DECK REPAIR

ON U.S.61 - OVER SKUNK RIVER - AT LEE COUNTY LINE

SCALES: 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)

STATE	FHWA REGION	F.Y.	SHEET	TOTAL
IOWA	7		1	19

PROJECT NUMBER

FN-61-2(35)--21-29

R.O.W. PROJECT NUMBER

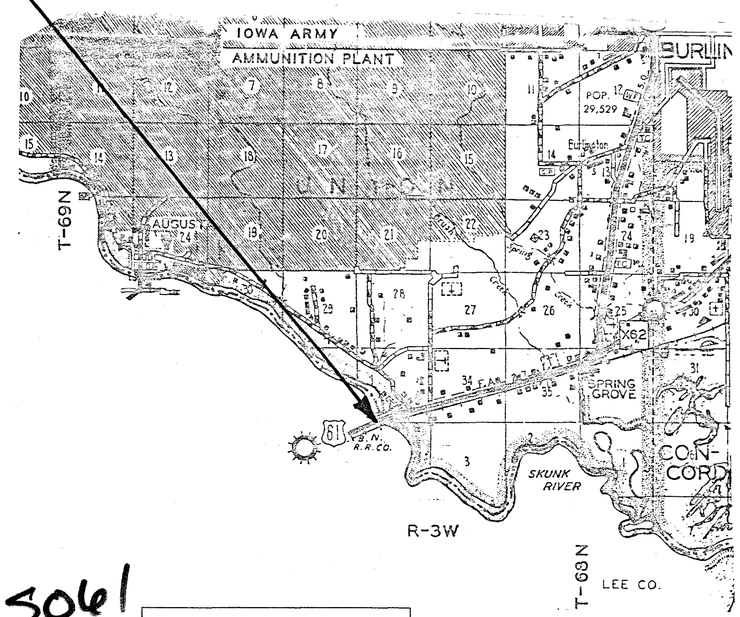
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89-29-010-1

INDEX OF SHEETS

NO.	DESCRIPTION
1	TITLE SHEET
2	ESTIMATE SHEET
3-13	BRIDGE DESIGN NO. 389
14-19	ROAD SHEETS

DESIGN NO. 389



LOCATION MAP SCALE
0 1 2 3
Miles

29 32.7 5061

890231
0035666 133/RKE

STANDARD ROAD PLANS

IDENT	DATE	IDENT	DATE
RF-19E	2-17-87		
RH-2A	2-28-89		
RH-2B	2-28-89		
RK-19A	2-28-89		
RK-19F	2-28-89		
RS-2	10-11-88		
RS-3	11-15-88		

STANDARD BRIDGE PLANS

STANDARD	ISSUED	REVISED

THIS AS BUILT PLAN INCLUDES

YEAR	WORK	CONTRACTOR	PROJ. INSPECTOR
1989	STRUCTURES	MUSCATINE BRIDGE	TOM McKAY

CONSTRUCTION PLANS SHOWING PROJECT AS BUILT

Plan Preparation Supervised By: J. W. Demelo
Resident Construction Engineer

Date 3/26/90 Iowa Reg. No. 4397

REVIEWED AND FORWARDED TO AMES

P. E. Todd
District Construction Engineer Date 1-28-91

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

Tom McDonald
District Engineer

AFTER MICROFILMING RETURN ORIGINAL TO DISTRICT NO. 5

REVISIONS

Iowa Department of Transportation

AUTHORIZED FOR LETTING
R. Cal. Carlson 12-30-88
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 Lisa A. Lindquist
Iowa Registration No. 4448 Date 12/27/88

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
APPROVED

FOR THE DIVISION ADMINISTRATOR DATE

LETTING DATE FEB.28,1989 STATE CONTROL SECTION NUMBER 29-0400 FILE NO. 27753 DES MOINES COUNTY PROJECT NO. FN-61-2(35)--21-29 SHEET NO. 1

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

12-27-88 (DATE) — LeRoy Phillips (LEROY PHILLIPS) — REG. NO. 4138

DESIGN NO. 389	OVER SKUNK RIVER	STATION: 450+12.5
DES MOINES COUNTY	MAINT. NO. 2932.7S061	
SECTION 33	T-69 N R-3 W	UNION TOWNSHIP

DESIGN FOR REPAIRS TO
685' X 44' CONTINUOUS WELDED
GIRDER BRIDGE

~~ESTIMATE OF~~ QUANTITIES

NO.	ITEM	UNIT	TOTAL
1	CLASS A BRIDGE FLOOR REPAIR	SQ. YD.	418.43
2	BRIDGE FLOOR OVERLAY	SQ. YD.	3362.78
3	TEMPORARY BARRIER RAIL - FURNISH ONLY	L.F.	640
4	TEMPORARY BARRIER RAIL - PLACE ONLY	L.F.	2540
5	CONCRETE SEALER AS PER PLAN	SQ. FT.	3351.66
6	CONCRETE BARRIER RAIL - CAST IN PLACE	L.F.	1443
7	STRUCTURAL STEEL	LBS.	4485
8	(3/4")TYPE 'B' ACC BASE COURSE CLASS 1	TONS	200.60
9	GRANULAR SHOULDERS TYPE 'B'	TONS	25.16
10	PAVEMENT MARKINGS	STA.	140.29
11	TRAFFIC CONTROL	LUMP SUM	2000.00
12	TEMPORARY FLOODLIGHTING	LUMP SUM	1000.00
13	TEMPORARY SIGNALS	LUMP SUM	2000.00
14	SPECIAL BACKFILL	TONS	231.755
15	BRIDGE APPROACH SECTION	SQ. YDS.	522.53
16	REMOVAL OF PAVEMENT	SQ. YDS.	500.35
17	'EF' JOINT ASSEMBLY	NO.	4
18	REMOVAL OF EXISTING HANDRAIL	L.S.	3000.00
19	MOBILIZATION	L.S	4000.00
20	FLAGGERS	DAYS	18
8001	PRICE ADJUSTMENT-SMOOTHNESS	L.S.	238.10 C.R

ESTIMATE REFERENCE INFORMATION

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

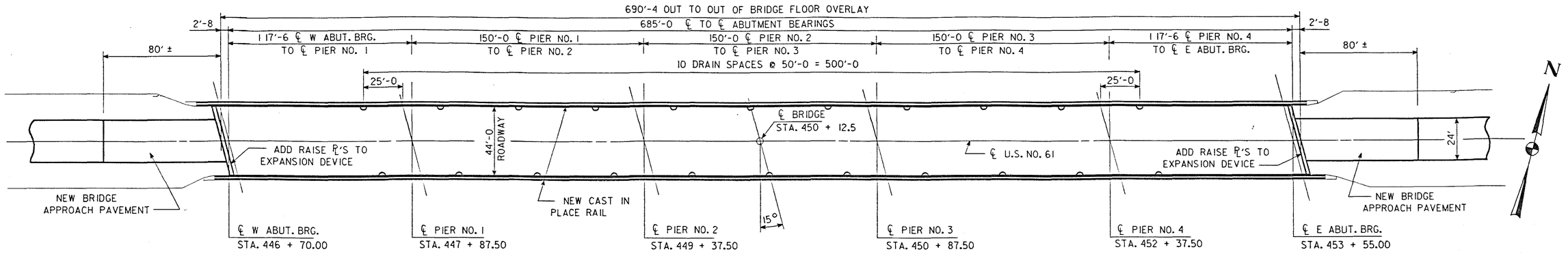
ITEM NO.	DESCRIPTION
3 & 4	ALL TEMPORARY BARRIER RAIL SHALL BE NOMINAL 10' LONG CONCRETE UNITS.
6	INCLUDES 6011 L.F. OF NO. 5 BAR AND 5409 L.F. OF NO. 6 BAR OF EPOXY COATED REINFORCING STEEL, AND 73.6 CU. YD. OF CLASS D STRUCTURAL CONCRETE.
8	FOR SHOULDER STRENGTHENING. SEE TCP-2. 4' X ~~165'~~ 245' FROM EACH END OF THE BRIDGE. TRENCH EXCAVATION, TACK, AND ASPHALT CEMENT TO BE INCIDENTAL. SPECIFICATION 1109.03 SHALL NOT APPLY.
9	FOR SHOULDER SWEETENING AS DIRECTED BY THE ENGINEER. SPECIFICATION 1109.03 SHALL NOT APPLY.
10	SEE TAB. 108.22.
12 & 13	SEE DETAIL SHEETS TCP-2 AND 570-2.
14 & 15	SEE TAB. 112-6.
16	ESTIMATED AT 80' X 24' ON EACH END OF THE BRIDGE.
17	SEE DETAIL SHEET 532-9.

CHANGES AS SHOWN

ESTIMATE SHEET

FILE NO. 27753 JUDY 12/29/88 DES MOINES COUNTY PROJECT NO. FN-61-2(35)--21-29

STATE	FHWA REGION	F.Y.	SHEET	TOTAL
IOWA	7		2	19



SITUATION PLAN

TOTAL ~~ESTIMATED~~ BRIDGE QUANTITIES

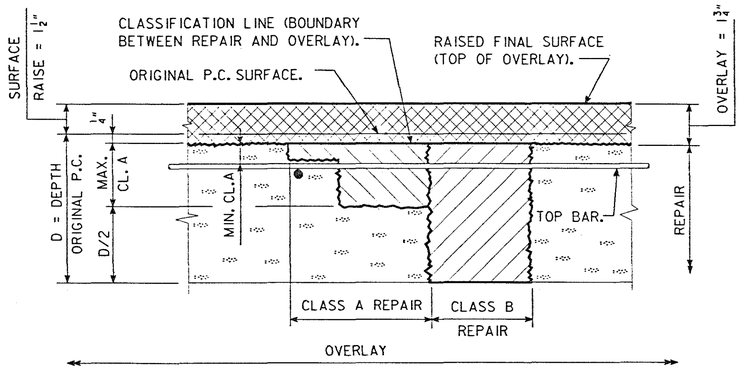
ITEM NO.	ITEM	UNIT	QUANTITY
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7	STRUCTURAL STEEL	LBS.	4485
8	REMOVAL OF EXISTING HANDRAIL	L.S.	200.60

ESTIMATE REFERENCE INFORMATION

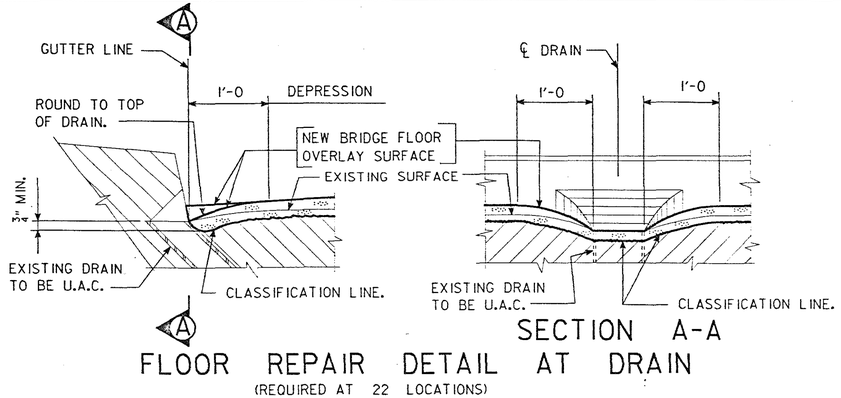
ITEM NO.

3 & 4 ALL TEMPORARY BARRIER RAIL SHALL BE NOMINAL 10' LONG CONCRETE UNITS.

6 INCLUDES 6011 L.F. OF NO. 5 BAR AND 5409 L.F. OF NO. 6 BAR OF EPOXY COATED REINFORCING STEEL AND 73.6 CU. YD. OF CLASS D STRUCTURAL CONCRETE.



REPAIR AND OVERLAY DEFINITION



SECTION A-A

FLOOR REPAIR DETAIL AT DRAIN

(REQUIRED AT 22 LOCATIONS)

NOTE:
FOR ROADWAY QUANTITIES
SEE ELSEWHERE ON THESE PLANS.

SPECIFICATIONS:

CONSTRUCTION: IOWA DEPARTMENT OF TRANSPORTATION SPECIFICATION, SERIES OF 1984, PLUS CURRENT SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS.

DESIGN STRESSES:

DESIGN STRESSES FOR THE FOLLOWING MATERIALS ARE IN ACCORDANCE WITH THE AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, SERIES OF 1983.
REINFORCING STEEL IN ACCORDANCE WITH SECTION 8, GRADE 60.
CONCRETE IN ACCORDANCE WITH SECTION 8, f'c = 3,500 PSI.
STRUCTURAL STEEL IN ACCORDANCE WITH SECTION 10. ASTM A-36.

LOCATION:

MAINTENANCE NO. 2932.7S061
U.S. NO. 61 OVER
THE SKUNK RIVER
T69N R3W
UNION TWP
SECTION 33
DES MOINES COUNTY

CHANGES AS SHOWN

DESIGN HISTORY AT THIS SITE

DES. NO.	TYPE OF WORK
468	ORIGINAL DESIGN
389	FLOOR OVERLAY

DESIGN FOR REPAIR TO

685'-0 x 44' CONTINUOUS WELDED GIRDER BRIDGE

117'-6 END SPANS 150'-0 INTERIOR SPANS

SITUATION PLAN AND QUANTITIES

STA. 450 + 12.5 NOVEMBER 1988

DES MOINES COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 1 OF 11 FILE NO. 27753 DESIGN NO. 389

DESIGNED BY Ron Welch TRACED BY DARWIN BACKOUS
DETAILED BY DARWIN BACKOUS CHECKED BY
SECTION LEADER: L. Bliss

DECK REPAIR - QUANTITIES | STANDARD SHEET 1038 | DES MOINES COUNTY

PROJECT NUMBER	STATE	FHWA REGION	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
FN - 61 - 2 (35) - - 21 - 29	IOWA	7		3	19

H29038900.SOI DEVICE : ZHAO:(200,004) ARCH. TAPE NO. DATE

HSTD01038.SOI--LEP; THIS SHEET REDRAWN, DEVICE:ZHAO:(200,004) ARCH.TAPE NO. DATE

GENERAL NOTES:

THIS DESIGN IS FOR THE REPAIR TO AN EXISTING 685' x 44' CONTINUOUS WELDED PLATE GIRDER BRIDGE, DESIGN NO. 468 DES MOINES COUNTY. PLANS OF THE EXISTING STRUCTURE MAY BE OBTAINED AT THE AMES OFFICE OF THE IOWA D.O.T. - HIGHWAY DIVISION. REPAIRS SHALL CONSIST OF BRIDGE FLOOR REPAIR AND OVERLAY, ADDING RAISE PL'S, CAST IN PLACE BARRIER RAIL AND APPROACH PAVEMENT.

PRESENT FLOOR THICKNESS IS ABOUT 8 INCHES. THE CONTRACTOR SHALL EXERCISE EXTREME CARE IN REMOVING CONCRETE IN ORDER TO PREVENT UNNECESSARY UNBONDING OF REINFORCING STEEL.

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 $\frac{1}{2}$" 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.

BEFORE PROCEEDING WITH BRIDGE FLOOR OVERLAY AND BRIDGE FLOOR REPAIR THE CONTRACTOR MAY COMPLETE ALL STAGES OF OTHER CONSTRUCTION. ANY CONSTRUCTION SHALL HAVE STAGE LIMITS, TEMPORARY BARRIER RAIL AND TRAFFIC CONTROL AS DETAILED ON THESE PLANS. TEMPORARY BARRIER RAIL AND TRAFFIC CONTROL MAY BE ADJUSTED TO FIT THE ACTUAL WORK AND STORAGE AREA. WHEN BACKWALLS AND/OR APPROACH SECTIONS ARE TO BE REBUILT TO A RAISED SURFACE, AND WHEN FLOOR OVERLAY IS NOT A PART OF THE SAME STAGE, THE CONTRACTOR SHALL PROVIDE FOR PROFILE TRANSITION WITH A.C. SURFACING. PROFILE TRANSITION SHALL BE TAPERED AT A RATE OF 25' FOR $1\frac{1}{2}$ INCHES OF RAISE. THE A.C. TRANSITION MATERIAL SHALL BE A COMMERCIAL GRADE HOT SURFACING MIX OR A MIX APPROVED BY THE ENGINEER. A.C. MAY BE PLACED BY HAND METHODS AND MAY BE COMPACTED BY ANY APPROVED METHOD. ALL COSTS FOR ADDITIONAL TRAFFIC CONTROL, REPOSITIONING OF BARRIER AND A.C. SURFACING SHALL BE BORNE BY THE CONTRACTOR.

FAINT LINES ON PRINTS AND ON TRACINGS INDICATE EXISTING PORTION OF THE BRIDGE.

THE TOP OF ABUTMENT BACKWALLS BETWEEN GUTTER LINES AS SHOWN SHALL BE REPAIRED IN ACCORDANCE WITH THE SPECIFICATIONS FOR CLASS A BRIDGE FLOOR REPAIR AND BRIDGE FLOOR OVERLAY WITH THE FOLLOWING EXCEPTIONS:

1. THE LOWER LIMIT FOR CLASS A BRIDGE FLOOR REPAIR SHALL BE TO SUITABLE EXISTING CONCRETE, AS DETERMINED BY THE ENGINEER, BUT TO AT LEAST 2 INCHES BELOW THE BOTTOM LIMIT FOR BRIDGE FLOOR OVERLAY.
2. IF MACHINE FINISHING FOR THE TOP OF BACKWALL IS NOT PRACTICABLE, A MANUAL TYPE SCREED OR METAL PLATE, WITH APPROVED VIBRATORS ATTACHED, SHALL BE USED.

THE EXPOSED TOP OF BACKWALL AREAS AS SHOWN HAVE BEEN INCLUDED IN THE QUANTITIES SHOWN FOR CLASS A BRIDGE FLOOR REPAIR AND FOR BRIDGE FLOOR OVERLAY.

THE $1\frac{1}{2}$" THICK RAISE PLATES FOR THE EXPANSION DEVICE ARE TO BE BLAST CLEANED AND PAINTED AFTER FIELD WELDING TO THE EXISTING EXPANSION PLATE. THE BLAST CLEANING PREPARATION IS TO COMPLY WITH THE STEEL STRUCTURES PAINTING COUNCIL SPECIFICATIONS SSPC-SP7, BSAL. THE RAISE PLATES ARE TO BE GIVEN ONE COAT OF RUST-OLEUM PRIMER AND ONE COAT OF RUST-OLEUM FINAL COAT OR AN APPROVED EQUAL PRIMER AND FINAL COAT. THE COLOR OF THE DRY PAINT SHOULD APPROXIMATE THE COLOR OF CONCRETE.

THE BID ITEM "STRUCTURAL STEEL" SHALL INCLUDE ALL COSTS ASSOCIATED WITH FURNISHING AND INSTALLING RAISE PLATES FOR EXPANSION DEVICES AS SHOWN.

QUANTITY OF "CONCRETE SEALER, AS PER PLAN" IN SQUARE FEET, TO BE PAID FOR WILL BE COMPUTED FROM MEASUREMENTS OF AREAS ACTUALLY COVERED AND ARTICLE 1109.03 SHALL NOT APPLY. PLAN QUANTITY IS BASED ON P.C. CONCRETE FLOOR OVERLAY.

AREAS OF CURB INDICATED ON THE "SURVEY PLOT" OR 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 $2\frac{1}{2}$ 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 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.

PLAN QUANTITY OF FLOOR REPAIR IS BASED ON THE SHADED AND BOUNDED AREAS SHOWN ON THE "SURVEY PLOT" IN THESE PLANS. SHADED AREAS REPRESENT CLASS A BRIDGE FLOOR REPAIR FOUND BY DELAMTEC PLOT. BOUNDED AREAS INCLUDE AC PATCH AREAS NOT RECORDED BY THE DELAMTEC AND/OR THE SQUARING UP OF THE REPAIR AREAS. 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.

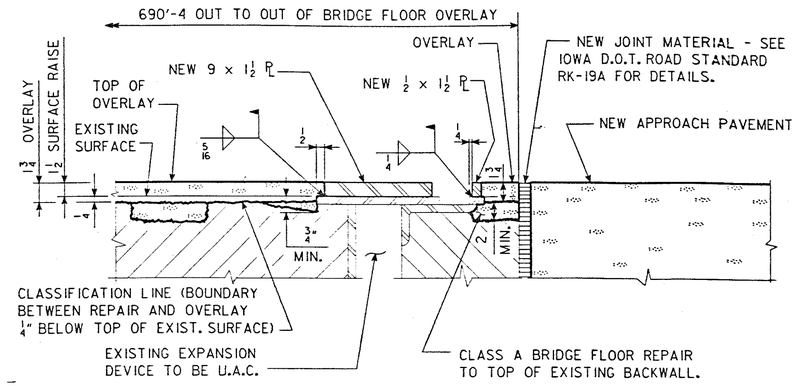
THE BID ITEM "REMOVAL OF EXISTING HANDRAIL" SHALL INCLUDE ALL COSTS ASSOCIATED WITH DISMANTLING THE EXISTING HANDRAIL (APPROXIMATELY 1417 L.F. AND 170 POSTS). THE HANDRAILS ARE TO BECOME THE PROPERTY OF THE CONTRACTOR.

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.

THE EXISTING FORMED STEEL BEAM GUARD RAIL AT BOTH ABUTMENTS SHALL BE USED AS CONSTRUCTED AND SHALL BE CONNECTED TO THE CAST IN PLACE CONCRETE RAIL.

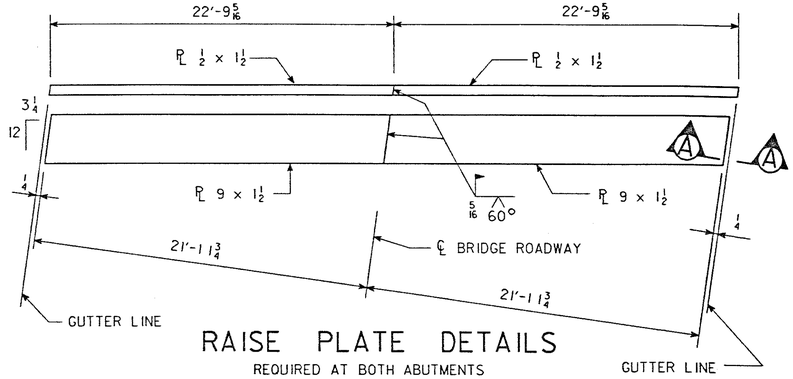
EXISTING BRIDGE RAIL IS NOT TO BE REMOVED UNTIL AUTHORIZED BY THE ENGINEER.

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.



PART LONGITUDINAL SECTION ALONG ROADWAY

BOTH ABUTMENTS

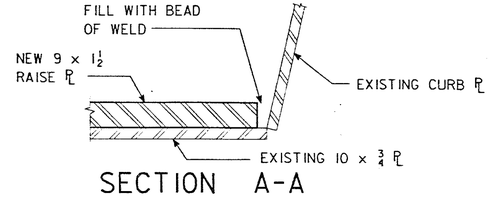


RAISE PLATE DETAILS

REQUIRED AT BOTH ABUTMENTS

RAISE PLATE NOTES:

RAISE PLATES ARE TO BE INSTALLED IN STAGES OVER ONE HALF OF THE BRIDGE AT A TIME. RAISE PLATES FOR EACH STAGE ARE TO BE IN PLACE BEFORE THE NEW BRIDGE FLOOR OVERLAY FOR THAT STAGE IS PLACED.



SECTION A-A

DESIGN FOR REPAIR TO

685'-0 x 44' CONTINUOUS WELDED GIRDER BRIDGE

117'-6 END SPANS — 150'-0 INTERIOR SPANS

GENERAL NOTES & REPAIR DETAILS

STA. 450 + 12.5 — NOVEMBER 1988

DES MOINES COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 2 OF 11 — FILE NO. 27753 — DESIGN NO. 389

-CONSTRUCTED AS PER PLAN

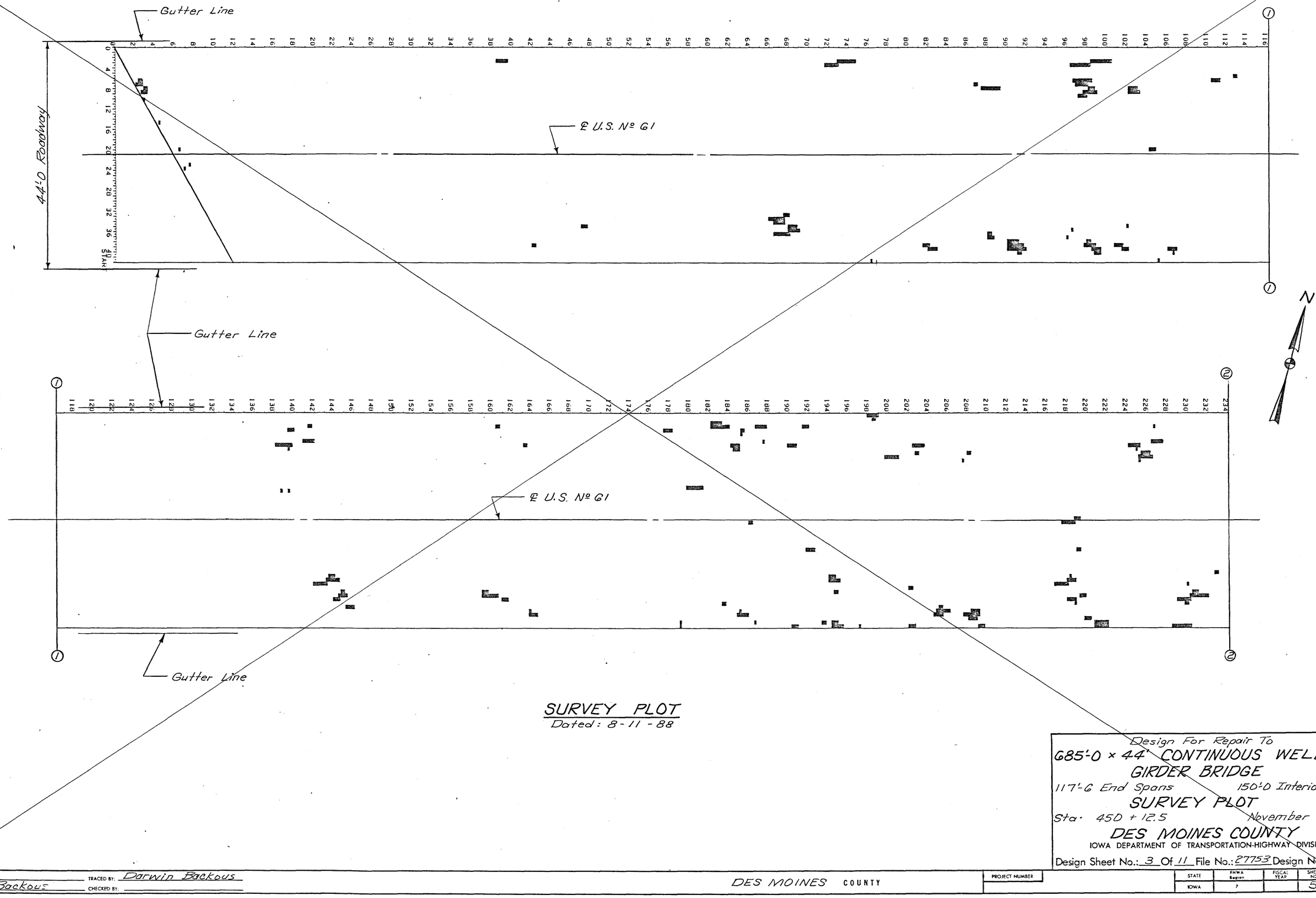
DESIGNED BY Ron Welch — TRACED BY DARWIN BACKOUS

DETAILED BY DARWIN BACKOUS — CHECKED BY

DES MOINES COUNTY — PROJECT NUMBER

STATE	FHWA REGION	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	7		4	19

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SURVEY PLOT
Dated: 8-11-88

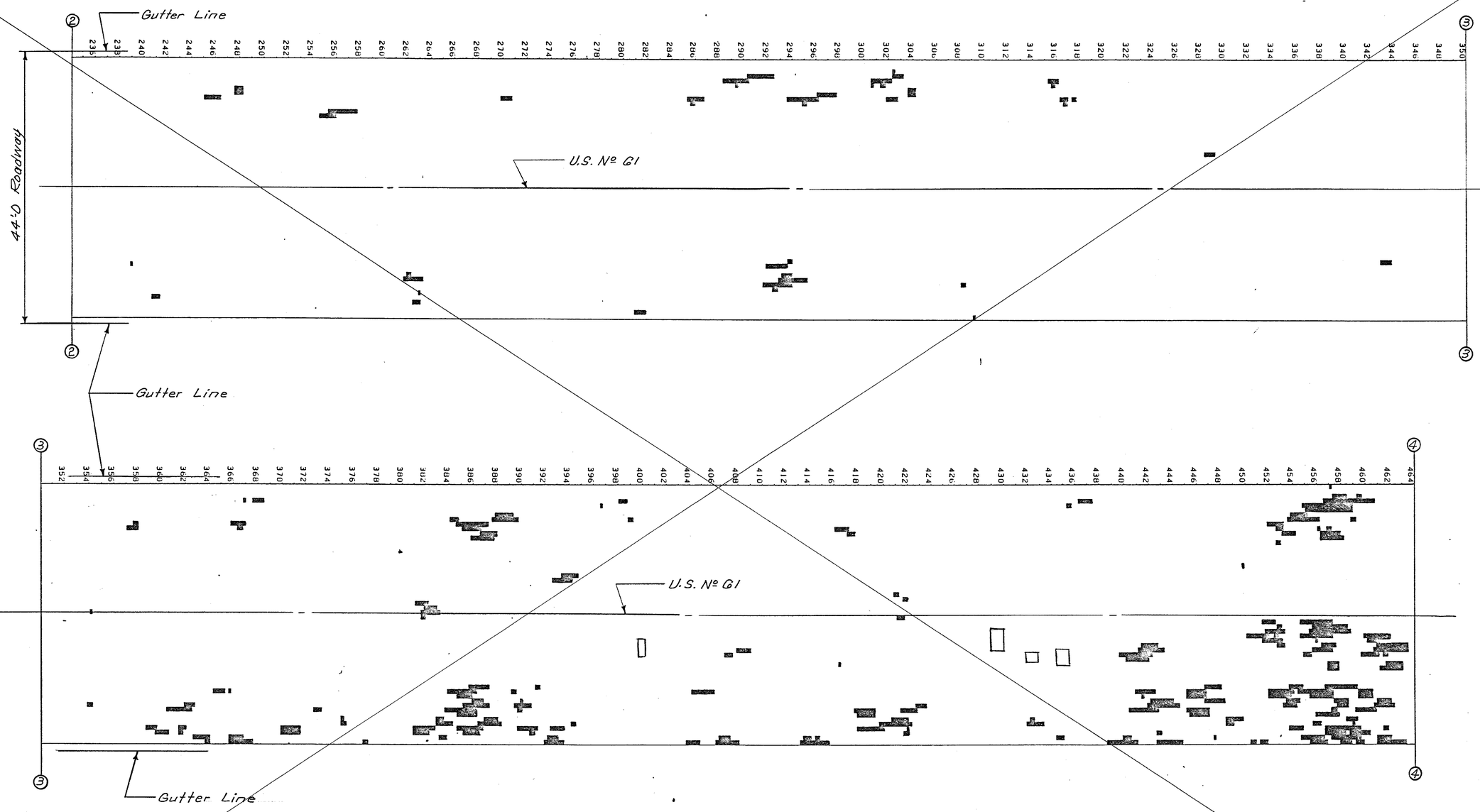
Design For Repair To
685'-0 x 44' CONTINUOUS WELDED GIRDER BRIDGE
117'-6 End Spans 150'-0 Interior Spans
SURVEY PLOT
Sta. 450 + 12.5 November 1988
DES MOINES COUNTY
IOWA DEPARTMENT OF TRANSPORTATION-HIGHWAY DIVISION
Design Sheet No.: 3 Of 11 File No.: 27753 Design No.: 389

DESIGNED BY: TRACED BY: Darwin Backous
DETAILED BY: Darwin Backous CHECKED BY:

DES MOINES COUNTY

PROJECT NUMBER	STATE	FHWA Region	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	IOWA	7		5	19

65219 BRIDGE WORK SHEET 08/31/88
DRIVING



SURVEY PLOT

Dated: 8-11-88

Design For Repair To

685'-0 x 44' CONTINUOUS WELDED GIRDER BRIDGE

117'-6 End Spans 150'-0 Interior Spans

SURVEY PLOT

Sta. 450 + 12.5 November 1988

DES MOINES COUNTY

IOWA DEPARTMENT OF TRANSPORTATION-HIGHWAY DIVISION

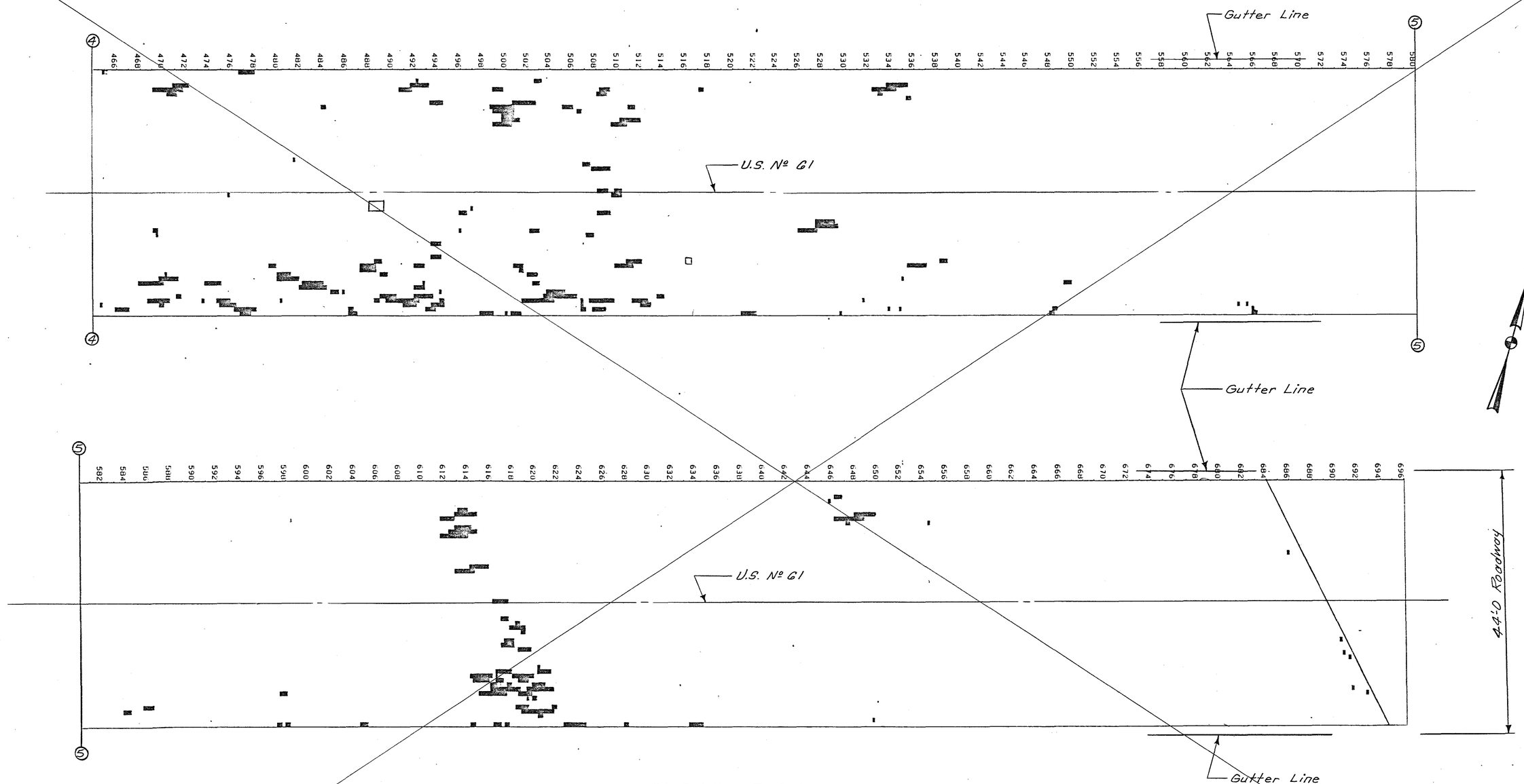
Design Sheet No.: 4 Of 11 File No.: 27753 Design No.: 389

DESIGNED BY: DETAILED BY: Darwin Backous TRACED BY: Darwin Backous CHECKED BY:

DES MOINES COUNTY

PROJECT NUMBER	STATE	FHWA Region	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	IOWA	7		6	19

BRUNING 65219 BRIDGE WORK SHEET 00 21440



SURVEY PLOT

Dated: 8-11-88

Design For Repair To

685'-0 x 44' CONTINUOUS WELDED GIRDER BRIDGE

117'-6 End Spans 150'-0 Interior Spans

SURVEY PLOT

Sta. 450 + 12.5 November 1988

DES MOINES COUNTY

IOWA DEPARTMENT OF TRANSPORTATION-HIGHWAY DIVISION

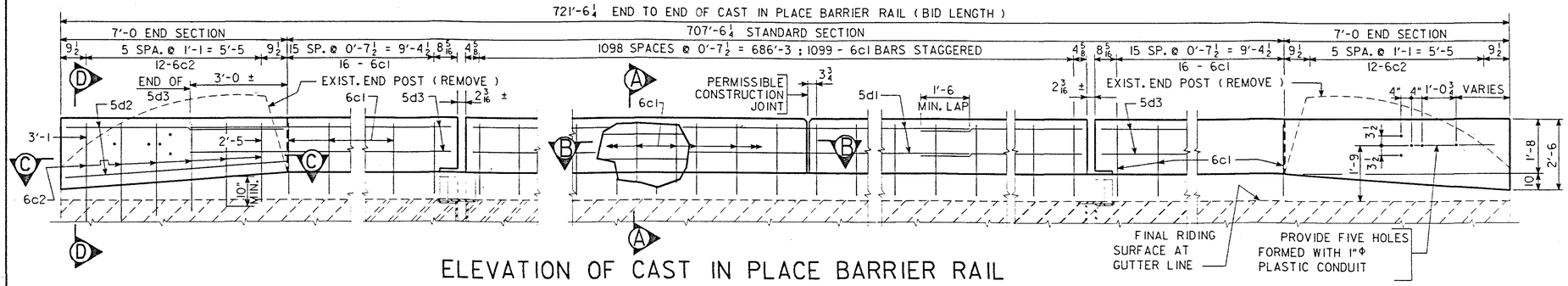
Design Sheet No.: 5 Of 11 File No.: 27753 Design No.: 389

DESIGNED BY: DETAILED BY: Darwin Backous TRACED BY: Darwin Backous CHECKED BY:

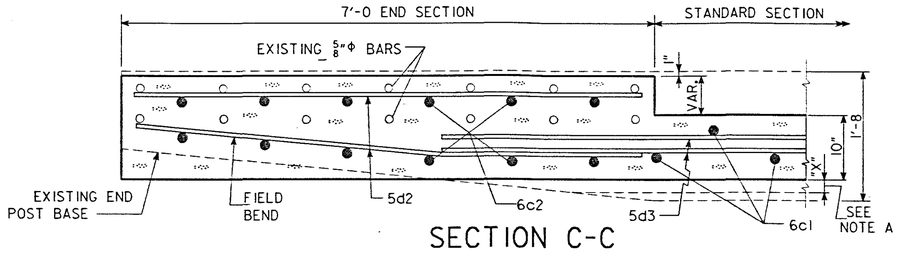
DES MOINES COUNTY

PROJECT NUMBER	STATE	FHWA Region	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	IOWA	7		7	19

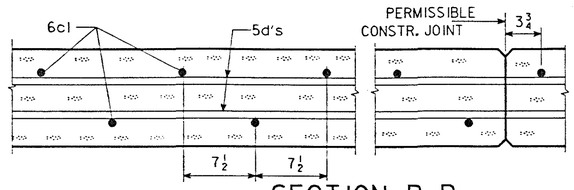
65219 WOOD WORK SHEET 8931466



ELEVATION OF CAST IN PLACE BARRIER RAIL

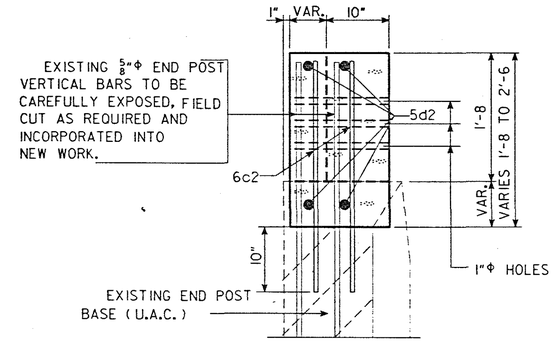


SECTION C-C

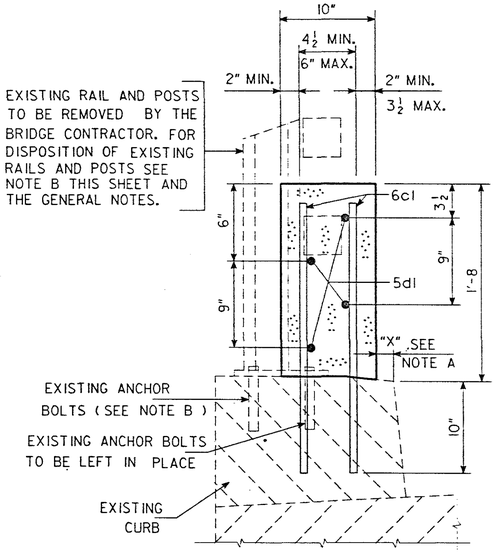


SECTION B-B

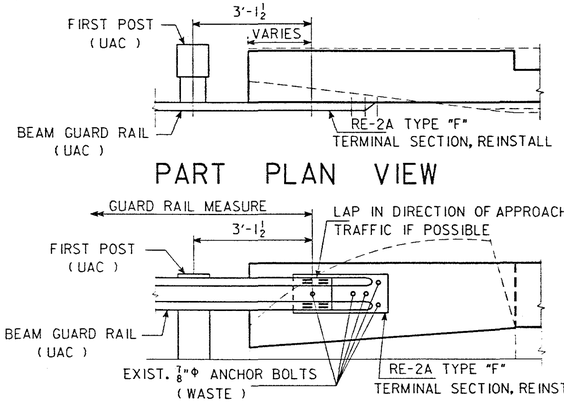
(SHOWING 6c1 PLACEMENT)



SECTION D-D



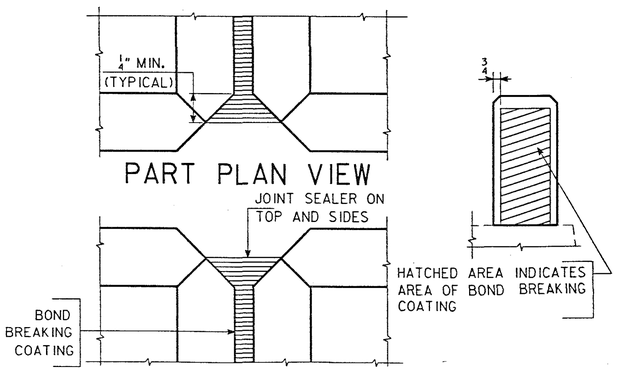
PART SECTION A-A



PART PLAN VIEW

PART ELEVATION VIEW

(SHOWING BEAM GUARD RAIL ATTACHMENT TO RE-2A TYPE "F" TERMINAL SECTION)



PART ELEVATION VIEW CAST IN PLACE BARRIER RAIL JOINT DETAILS

NOTE A :
ON EACH SIDE OF BRIDGE, DIMENSION "X" SHALL BE A MINIMUM OF 1" AND A MAXIMUM OF 3", BUT MUST BE CONSTANT FOR FULL LENGTH OF BRIDGE. HOWEVER APPROXIMATELY 10 LINEAR FEET AT EITHER END OF RAIL LENGTH SHALL BE TRANSITIONED TO MATCH BEAM GUARD RAIL ATTACHMENT.

NOTE B :
EXISTING ANCHOR BOLTS SHALL BE CUT OFF FLUSH WITH OR SLIGHTLY BELOW CONCRETE SURFACE AND THE REMAINING EXPOSED ENDS PAINTED WITH TWO COATS OF ZINC RICH PAINT. IF THE EXISTING ANCHOR BOLTS ARE STAINLESS STEEL THEY MAY BE LEFT IN POSITION AT THE CONTRACTOR'S OPTION SUBJECT TO THE APPROVAL OF THE ENGINEER.

DOWEL SETTING NOTE :
THE 6c BARS SHALL BE SET AS DOWELS IN DRILLED HOLES. HOLES ARE TO BE 10" DEEP. THE DOWELS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. ONE OF THE 2 FOLLOWING SYSTEM SHALL BE USED AS A BONDING AGENT FOR THE DOWELS :

A. EPOXY GROUT SYSTEM IN ACCORDANCE WITH STANDARD SPECIFICATIONS ARTICLE 2301.15 AND CURRENT SUPPLEMENTAL SPECIFICATIONS OF THE IOWA D.O.T.- HIGHWAY DIVISION.
B. HYDRAULIC CEMENT GROUT SYSTEMS. DRILLED HOLES ARE TO BE 2½ TIMES THE DOWEL DIAMETER AND ARE TO BE BLOWN CLEAN WITH COMPRESSED AIR IMMEDIATELY PRIOR TO PLACING GROUT. THE HYDRAULIC CEMENT GROUT SHALL BE ONE OF THOSE APPROVED IN MATERIALS I.M. 491.13 AND SHALL BE USED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

EPOXY REINFORCING STEEL - TWO RAILS

BAR	LOCATION	SHAPE	N°.	LENGTH	LIN. FT.	WEIGHT
6c1	RAIL , VERTICAL	——	2262	2'-4	5277	7926
6c2	END SECTIONS, VERTICAL	——	48	SHOWN	132	198
5d1	STANDARD SECTION, LONGIT.	——	144	39'-7	5700	5945
5d2	END SECTION, LONGIT.	——	16	6'-8	107	111
5d3	ST'D. SECTION, END, LONGIT.	——	16	12'-9	204	213
				TOTAL (lbs.)		14393

CONCRETE PLACEMENT SUMMARY

SECTION		TOTAL
END SECTIONS	4 @ 0.7 CU.YDS. PER SECTION	2.8
STANDARD SECTIONS	1415.1 L.F. @ 0.05 C.Y./LIN.FT.	70.8
	TOTAL (CU.YDS.)	73.6

ESTIMATAED QUANTITY - TWO RAILS

ITEM	UNITS	QUANTITY
RAIL , CONCRETE BARRIER (CAST IN PLACE)	LIN.FT.	1443.0

CAST IN PLACE BARRIER RAIL NOTES:

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

ALL EXPOSED CORNERS 90° OR SHARPER ARE TO BE FILLETED WITH A ¾" DRESSED AND BEVELED STRIP.

THE PERMISSIBLE CONSTRUCTION JOINTS ARE TO BE PLACED BETWEEN VERTICAL BARS AT A MINIMUM SPACING OF 20 FEET. CONSTRUCTION JOINT CONTACT SURFACES ARE TO BE COATED WITH AN APPROVED BOND BREAKER.

COST OF JOINT SEALER AND BOND BREAKER SHALL BE CONSIDERED INCIDENTAL TO OTHER CONSTRUCTION.

THE CAST IN PLACE BARRIER RAIL 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 WILL BE PAID FOR AT THE CONTRACT PRICE PER LINEAL FOOT BASED ON PLAN QUANTITIES. PRICE BID FOR CAST IN PLACE BARRIER RAIL SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIAL, INCLUDING REINFORCING STEEL, AND ALL OF THE EQUIPMENT AND LABOR REQUIRED TO ERECT THE RAIL IN ACCORDANCE WITH THESE PLANS AND CURRENT SPECIFICATIONS.

ALL CAST IN PLACE BARRIER RAIL CONCRETE IS TO BE CLASS D.

ALL REINFORCING STEEL IS TO BE GRADE 60 AND EPOXY COATED.

THE JOINT SEALER SHALL CONFORM TO FED. SPEC. TT-S00230 OR TT-S00227 FOR TYPE II, CLASS A OR B.

ANY REMOVALS AND DISPOSALS REQUIRED SHALL BE IN ACCORDANCE WITH SECTION 2401 OF THE STANDARD SPECIFICATIONS. ANY DAMAGE TO OTHER PORTIONS OF THE EXISTING STRUCTURE NOT NOTED FOR REMOVAL SHALL BE THE RESPONSIBILTY OF THE CONTRACTOR AND SHALL BE REPAIRED BY HIM AT NO COST TO THE STATE.

ALL COSTS PERTAINING TO THE REMOVAL AND DISPOSAL OF THE CONCRETE END POSTS AND REMOVAL AND PAINTING OF THE RAIL POST ANCHOR BOLTS SHALL BE INCLUDED IN THE PRICE BID FOR CONCRETE BARRIER RAIL (CAST IN PLACE).

-CONSTRUCTED AS PER PLAN

DESIGN FOR REPAIR TO
685'-0 x 44' CONTINUOUS WELDED GIRDER BRIDGE
117'-6 END SPANS — 150'-0 INTERIOR SPANS

CAST IN PLACE BARRIER RAIL DETAILS

STA. 450 + 12.5 — NOVEMBER 1988

DES MOINES COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 6 OF 11 — FILE NO. 27753 — DESIGN NO. 389

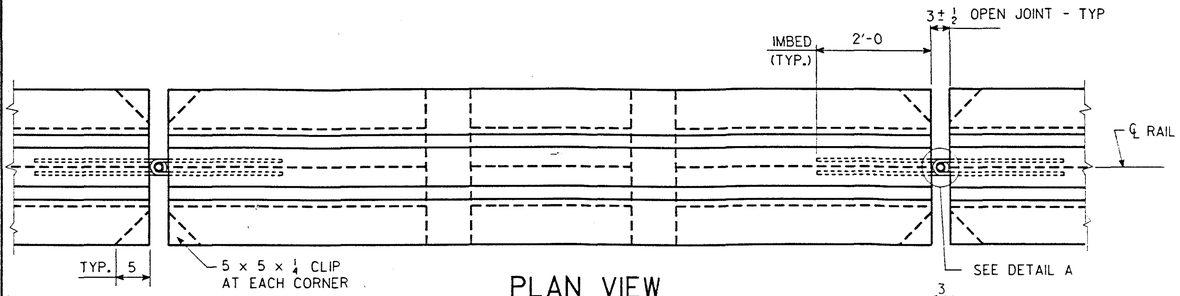
DESIGNED BY Ron Welch — TRACED BY DARWIN BACKOUS
DETAILED BY DARWIN BACKOUS — CHECKED BY

CAST IN PLACE BARRIER RAIL	STANDARD SHEET 1031A	DES MOINES COUNTY	PROJECT NUMBER

STATE	TENTA REGION	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	7		8	19

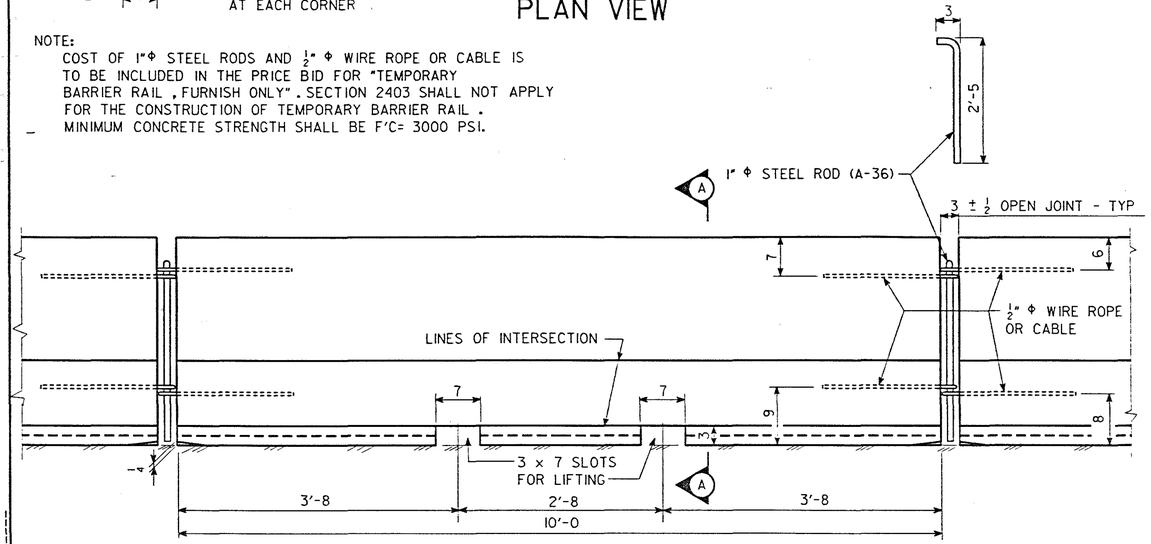
H29038900.S03 — DEVICE : ZHA0:(200,004) ARCH. TAPE NO. _____ DATE _____

HSTD1031A.S01--WRJ:THIS SHEET REDRAWN, DEVICE:ZGAH:(200,003)ARCH.TAPE N°._____DATE_____

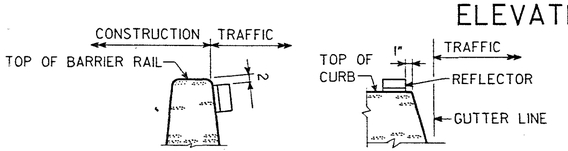


PLAN VIEW

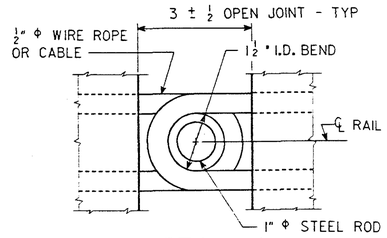
NOTE:
COST OF 1"Φ STEEL RODS AND ½" Φ WIRE ROPE OR CABLE IS TO BE INCLUDED IN THE PRICE BID FOR "TEMPORARY BARRIER RAIL , FURNISH ONLY". SECTION 2403 SHALL NOT APPLY FOR THE CONSTRUCTION OF TEMPORARY BARRIER RAIL . MINIMUM CONCRETE STRENGTH SHALL BE F'C= 3000 PSI.



ELEVATION VIEW

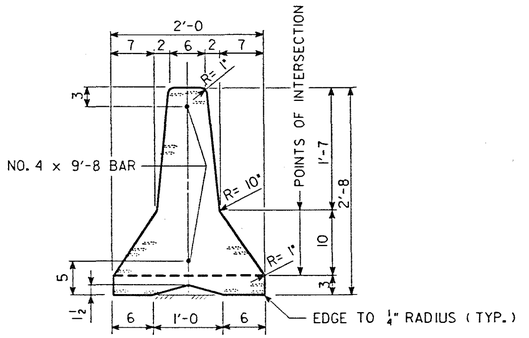


REFLECTOR DETAILS



DETAIL A

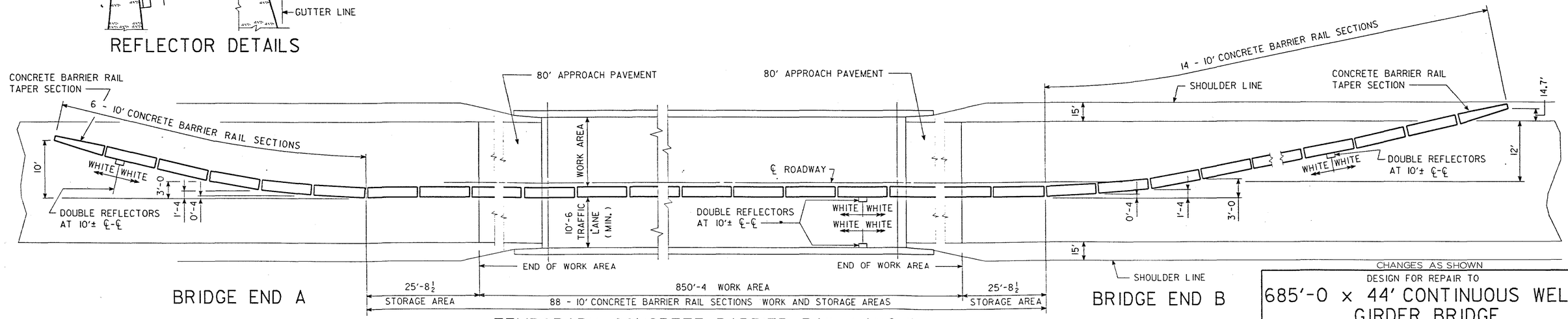
WIRE ROPE OR CABLE TO BE ½" Φ, WITH A MINIMUM BREAKING STRENGTH OF 20,000 POUNDS.



SECTION A-A

CONTRACTOR MAY ADD EXTRA REINFORCING BARS TO INCREASE THE SERVICE LIFE OF THE RAIL SECTIONS.

NOTE:
BARRIER IS TO BECOME THE PROPERTY OF THE CONTRACTOR AT THE COMPLETION OF WORK AND REMOVED FROM THE SITE BY HIM.
NO STATIONARY EQUIPMENT OR CONSTRUCTION MATERIAL IS TO BE PLACED IN FRONT OF THE TEMPORARY BARRIER RAIL AT ANY TIME .
TRAFFIC REFLECTORS SHALL BE A RETRO-REFLECTIVE TYPE, APPROVED BY THE ENGINEER, AND THEY SHALL BE LOCATED AS SHOWN ON THIS SHEET. THE CONTRACTOR SHALL MAINTAIN THE REFLECTORS AND SHALL PROMPTLY REPLACE ANY MISSING OR DAMAGED UNITS. ALL COSTS FOR FURNISHING, INSTALLING AND MAINTAINING REFLECTORS SHALL BE INCLUDED IN THE PRICE BID FOR "TEMPORARY BARRIER RAIL,PLACE ONLY".
REFER TO OTHER DETAILS, NOTES, AND QUANTITY ITEMS ELSEWHERE IN THESE PLANS FOR TRAFFIC CONTROL TO BE ESTABLISHED IN CONJUNCTION WITH THE TEMPORARY BARRIER RAIL.
SHOULDER WIDTH AT THIS BRIDGE SITE IS 15 FEET, THEREFORE 14 CONCRETE BARRIER RAIL SECTIONS ARE REQUIRED FOR BRIDGE END "B".
SURFACE FINISH FOR TEMPORARY CONCRETE BARRIER RAIL SHALL BE IN ACCORDANCE WITH ARTICLE 2403.23B OF THE STANDARD SPECIFICATIONS.



BRIDGE END A

BRIDGE END B

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°.

~~ESTIMATED~~ QUANTITIES

ITEM	AMOUNT
TEMPORARY BARRIER RAIL, FURNISH ONLY	640 L.F.
TEMPORARY BARRIER RAIL, PLACE ONLY	2540 L.F.

ITEM REFERENCE:
ALL TEMPORARY BARRIER RAIL SHALL BE NOMINAL 10' LONG CONCRETE UNITS.

CHANGES AS SHOWN

DESIGN FOR REPAIR TO

685'-0 x 44' CONTINUOUS WELDED GIRDER BRIDGE

117'-6 END SPANS — 150'-0 CENTER SPAN

TEMPORARY BARRIER RAIL - CONCRETE

STA. 450 + 12.5 — NOVEMBER 1988

DES MOINES COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 7 OF 11 — FILE NO. 27753 — DESIGN NO. 389

STATE	FHWA REGION	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	7		9	19

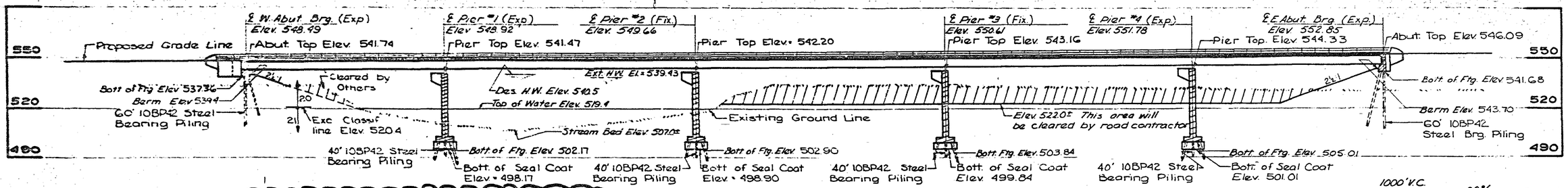
DESIGNED BY Ron Welch — TRACED BY DARWIN BACKOUS
DETAILED BY DARWIN BACKOUS — CHECKED BY

TEMPORARY BARRIER RAIL-CONCRETE | STANDARD 1033 | DES MOINES COUNTY | PROJECT NUMBER

H29038900.S04 — DEVICE : ZHAO:(200,004) ARCH. TAPE NO. _____ DATE _____

HSTD01033.S01--LEP; THIS SHEET REDRAWN, DEVICE:ZHAO:(200,004) ARCH.TAPE NO. 15 DATE 9-8-88

Bench Mark #18 Sta. 416+88 Set R.R Spk. IN N. side 30" Cottonwood on ℄ Elev. 534.91

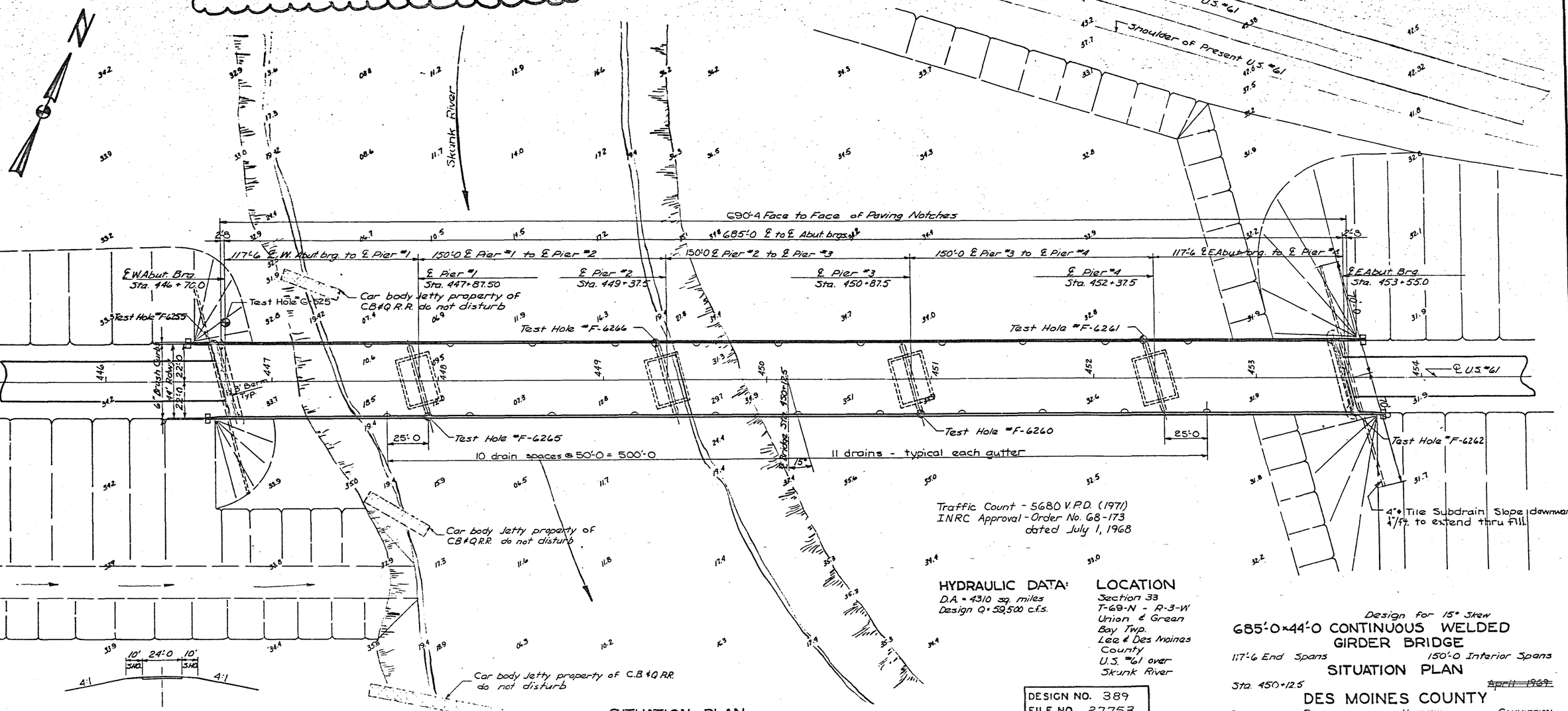


LONGITUDINAL SECTION ALONG ℄ ROADWAY
Scale: 1"=30'-0

THIS SHEET FROM ORIGINAL DESIGN IS INCLUDED FOR INFORMATION ONLY.

1000' V.C.
-0.24% +1.20%
P.I. Sta. 451+00
Elev. 549.50

VERTICAL CURVE DATA
U.S. #61



Traffic Count - 5680 V.P.D. (1971)
INRC Approval - Order No. 68-173 dated July 1, 1968

HYDRAULIC DATA:
D.A. = 4310 sq. miles
Design Q = 59,500 c.f.s.

LOCATION
Section 33
T-69-N - R-3-W
Union & Green Bay Twp.
Lee & Des Moines County
U.S. #61 over Skunk River

TYPICAL APPROACH SECTION
Scale: 1"=30'-0

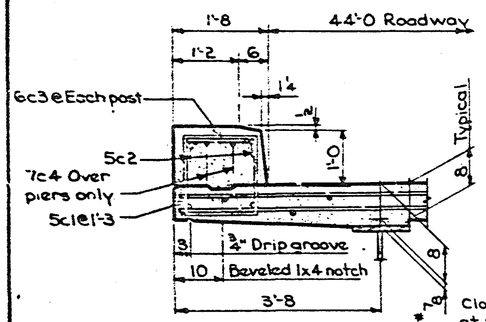
SITUATION PLAN
Scale: 1"=30'-0

DESIGN NO. 389
FILE NO. 27753
DES. SH. NO. 8 OF 11

Design for 15° Skew
685'-0 x 44'-0 CONTINUOUS WELDED GIRDER BRIDGE
117'-6 End Spans 150'-0 Interior Spans
SITUATION PLAN
Sta. 450+12.5
~~April 1969~~
DES MOINES COUNTY
IOWA STATE HIGHWAY COMMISSION
Design No. ~~468~~ File No. ~~23016~~ Des. sh. ≡ of ~~≡~~

DESIGNED BY: W. J. Lundquist
DETAILED BY:
TRACED BY: Alice Hillsdale
CHECKED BY: M. Isaac
SECTION LEADER William A. Lundquist
DES MOINES COUNTY
PROJECT NUMBER ~~FN-020-1-29~~

STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	5			~~19~~



CURB DETAILS

SUPERSTRUCTURE NOTES:

This bridge is designed for HS20-44 loading, plus 20 pounds per square foot of roadway for future wearing surface.

Minimum clear distance from edge of bar to face of concrete is to be 2" unless otherwise noted or shown.

The floor slab as shown includes ½" of wearing surface.

All field connections are to be bolted using "High Tensile Strength Bolts". Unless otherwise noted, all open holes are to be $\frac{15}{16}$"ϕ and all bolts are to be ⅞"ϕ.

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

All paint is to be omitted on tops of top flanges and on other steel surfaces in contact with concrete. Parts inaccessible after erection are to be given three coats of paint in the shop.

Forms for the slab and curb are to be supported by the girders.

Fill thicknesses shown on plans are based on the nominal girder dimensions. These thicknesses are to be verified or adjusted during fabrication to secure a close fit. Each fill plate shall fit to the nearest 1/16" in thickness and single plates are required at any fill location. Girders are to be truly square at splice points with flanges perpendicular to webs.

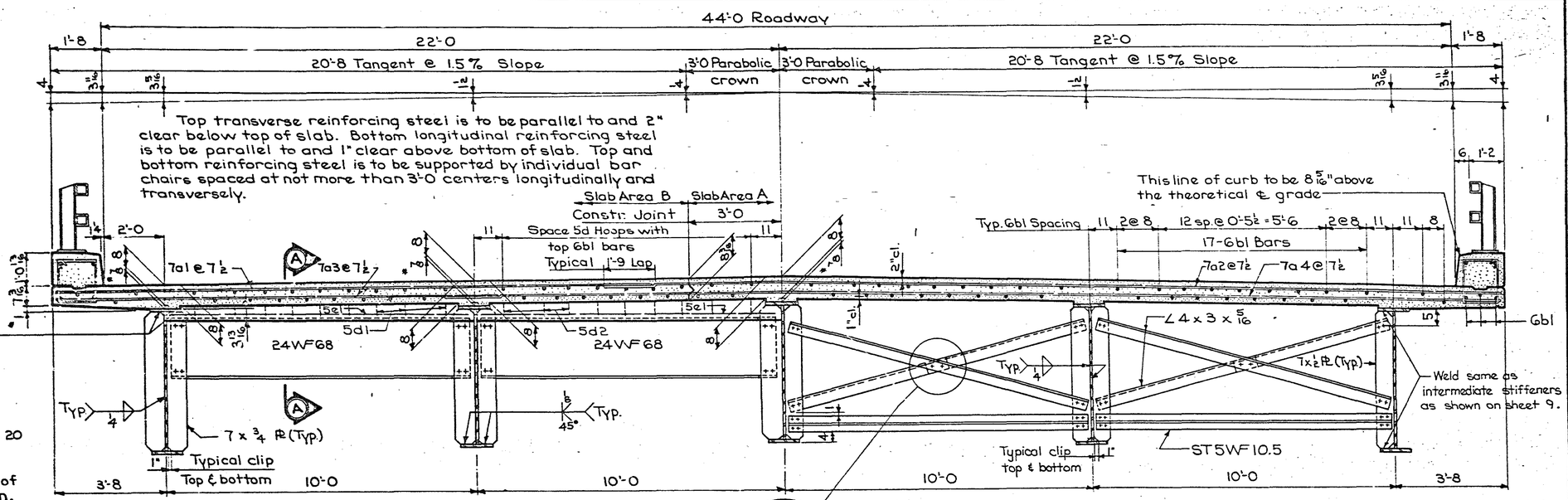
The design drawings indicate AWS prequalified welded joints, and unless otherwise noted the design joint details are for manual shielded metal-arc welding. Alternate joint details may be submitted for approval.

The stiffener to flange welds are not to intersect the longitudinal flange to web welds.

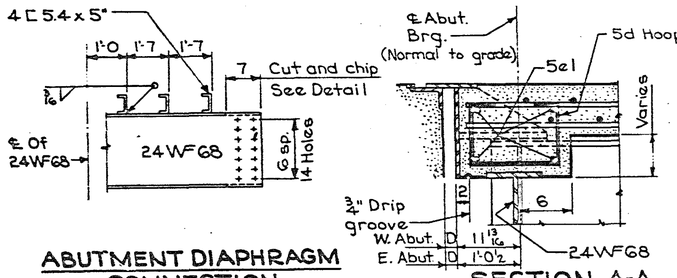
Magnetic particle inspection of welds, in accordance with Article 2408.15 of the Standard Specifications, will be required for the web to flange welds and the bearing stiffener welds of the girders.

The stiffener to flange welds are not to intersect the longitudinal flange to web welds.

Faying surfaces of diaphragm connections are to be given the shop coat of paint.



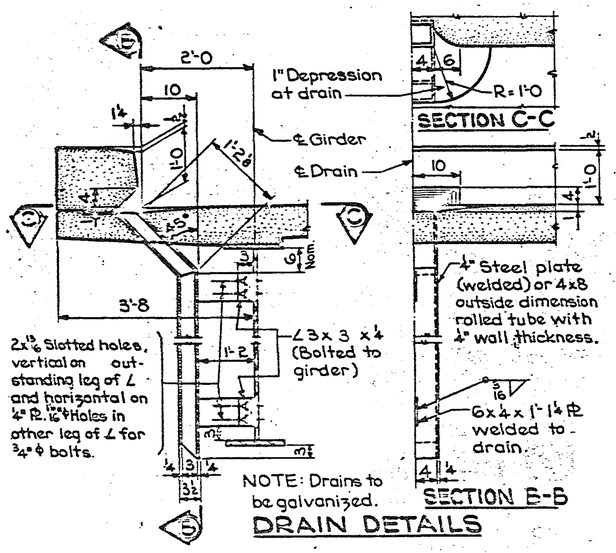
HALF SECTION NEAR ABUTMENT



ABUTMENT DIAPHRAGM CONNECTION

SECTION A-A

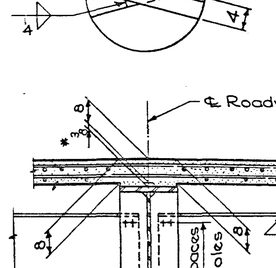
For "D" see sheet 9 of 19



DRAIN DETAILS

HALF INTERMEDIATE SECTION

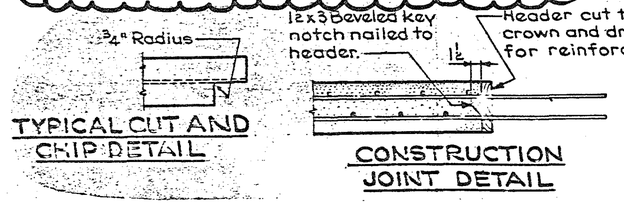
NOTE: Bottom of slab is a straight line between tops of haunches.



* The haunch dimensions shown are nominal haunch dimensions at bearings. For the slab thickness over the beam at any location the nominal haunch dimension is to be increased by the amount indicated on the "Haunch Thickening Diagram" shown on Sheet 10 and may be further increased or decreased a maximum of ¼" due to beam camber inaccuracies.

PART SECTION NEAR PIER

THIS SHEET FROM ORIGINAL DESIGN PLANS TO SHOW EXISTING ROADWAY CROSS SECTION, SLAB THICKNESS AND CROWN ORDINATES.



TYPICAL CUT AND CHIP DETAIL

CONSTRUCTION JOINT DETAIL

AREA OF SLAB:
Area A = 18.056 sq.ft.
Area B = 13.937 sq.ft.
AREA OF ONE CURB = 1.689 sq.ft.

DESIGN NO. 389
FILE NO. 27753
DES. SH. NO. 9 OF 11

Design For 15° Skew
685'-0 x 44'-0 CONTINUOUS WELDED GIRDER BRIDGE
117'-6 End Spans . 150'-0 Interior Spans
SUPERSTRUCTURE DETAILS
Station 450 + 12.5
~~April 1969~~
DES MOINES COUNTY
IOWA STATE HIGHWAY COMMISSION
Design Sheet No: # Of # File No: ~~29015~~ Design No: ~~455~~

DESIGNED BY: W. A. Lundquist
DETAILED BY: Darwin Backous
TRACED BY:
CHECKED BY: H. Tsai

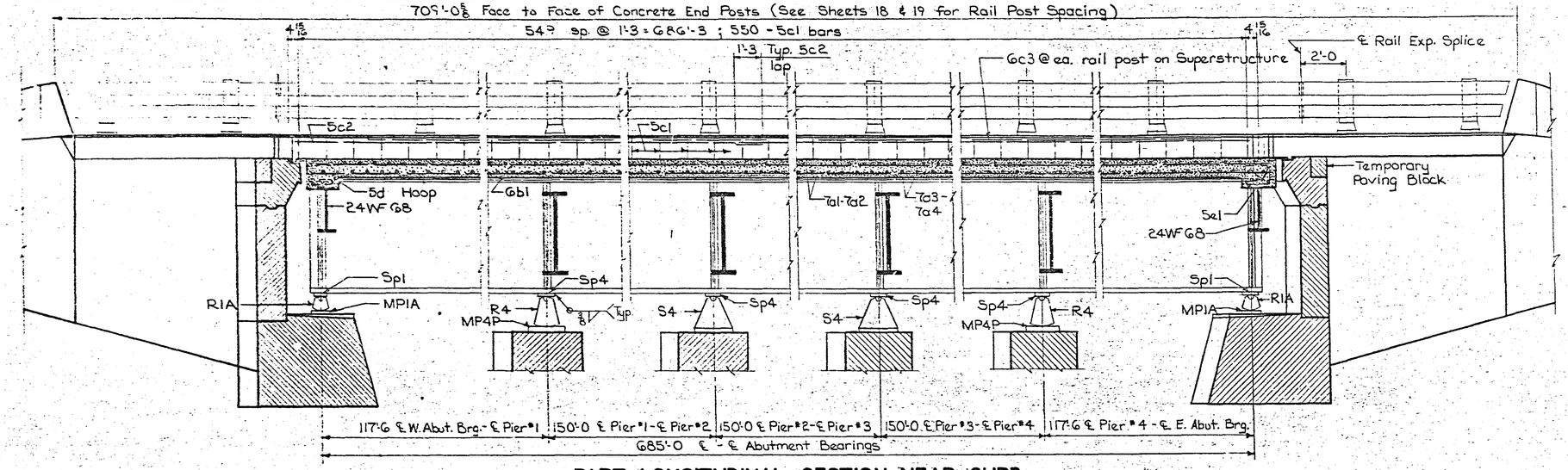
WELDED GIRDER CROSS SECTION - 44' ROADWAY

STANDARD SHEET 4072

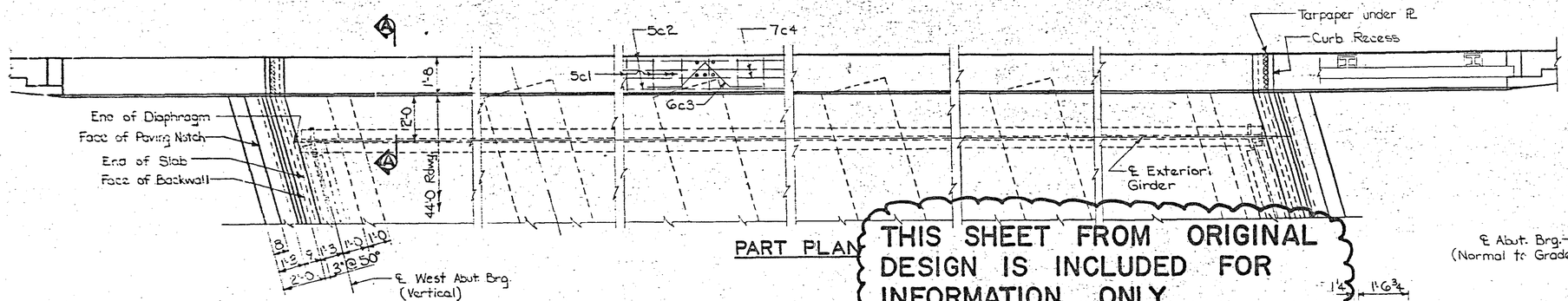
DES MOINES COUNTY

PROJECT NUMBER

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

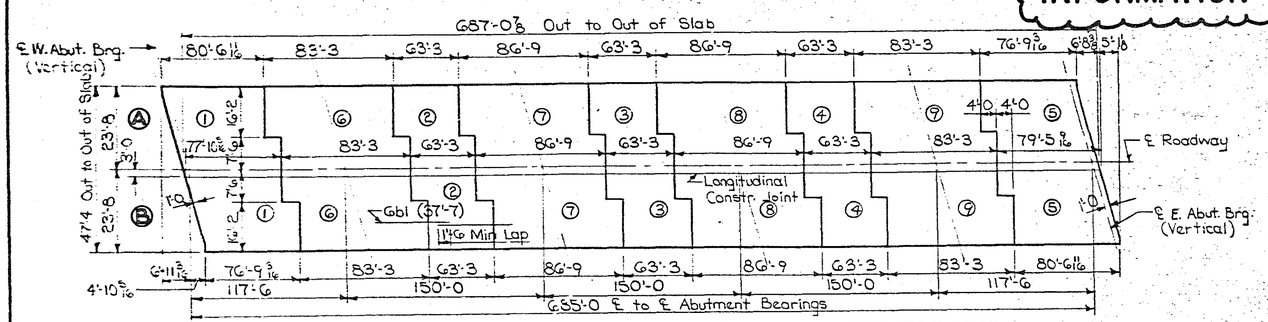


PART LONGITUDINAL SECTION NEAR CURB



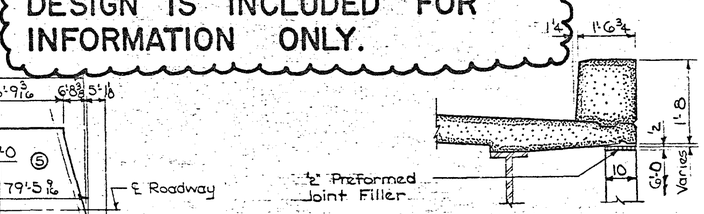
PART PLAN

THIS SHEET FROM ORIGINAL DESIGN IS INCLUDED FOR INFORMATION ONLY.

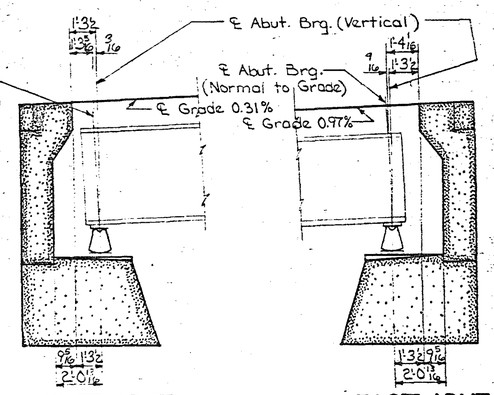


CONCRETE PLACEMENT DIAGRAM & LONGIT. REINFORCING

NOTE: Roadway slab shall be placed in sections and in sequence indicated by encircled numbers on placement diagram and preferably at intervals not exceeding 24 hours. Curbs may be placed continuously. All slab reinforcing steel is to be in place before any section is poured. Alternate procedures for placing concrete may be submitted for approval, together with a statement of the proposed method, and evidence that the Contractor possesses the necessary equipment and facilities to accomplish the required result.



SECTION A-A



WEST ABUT. EAST ABUT.
PART LONGITUDINAL SECTION

Showing grade variations along ℄ bridge at abutments.

REINFORCING BAR LIST

Bar	Location	Shape	No.	Length	Weight
7a1	Slab Transverse Top	—	1091	19'-5	43300
7a2	" " "	—	1087	29'-5	65360
7a3	" " Bottom	—	1094	14'-5	32238
7a4	" " "	—	1085	34'-5	76328
7a5	" " Top	—	8	Varies	170
7a6	" " "	—	11	Varies	335
7a7	" " "	—	7	Varies	137
7a8	" " "	—	12	Varies	370
7a9	" " Bottom	—	5	Varies	83
7a10	" " "	—	13	Varies	436
7a11	" " "	—	4	Varies	56
7a12	" " "	—	14	Varies	531
Gb1	Slab Longit. Top & Bottom	—	1482	37'-7	83658
5c1	Curb Hoops	▭	1100	5'-10	6692
5c2	Curb Longitudinal	—	76	37'-5	2966
Gc3	Rail Post Anchors	⌒	162	5'-0	1217
7c4	Slab & Curb Longit. @ Piers	—	152	30'-0	9321
5d1	Slab Hoops @ Abut.	⊓	36	3'-0	113
5d2	" " " "	⊓	36	3'-4	125
5e1	" Trans. " "	—	32	10'-0	334
				Total (lbs.)	323770

BENT BAR DETAILS



NOTE: All dimensions are out to out.

ESTIMATED QUANTITIES – SUPERSTR.

Item	Unit	Quantity
Structural Concrete - Class "C"	Cu. Yd.	902.4
Reinforcing Steel	Lbs.	323,770
Structural Steel	Lbs	1,067,420

CONCRETE PLACEMENT QUANTITIES

Location	Unit	A	B	Total
①	cu. yd.	53.5	40.8	94.3
②	cu. yd.	42.3	32.6	74.9
③	cu. yd.	42.3	32.6	74.9
④	cu. yd.	42.3	32.6	74.9
⑤	cu. yd.	53.1	41.3	94.4
⑥	cu. yd.	55.7	43.0	98.7
⑦	cu. yd.	58.0	44.8	102.8
⑧	cu. yd.	58.0	44.8	102.8
⑨	cu. yd.	55.7	43.0	98.7
Curbs 2@ 43	cu. yd.			86.0
			Total (cu. yds)	902.4

Design For 15° Skew

685'-0 × 44'-0 CONTINUOUS WELDED GIRDER BRIDGE

117'-6 End Spans 150'-0 Interior Spans

SUPERSTRUCTURE DETAILS

Station 450 + 12.5 ~~April 1969~~

DES MOINES COUNTY
IOWA STATE HIGHWAY COMMISSION

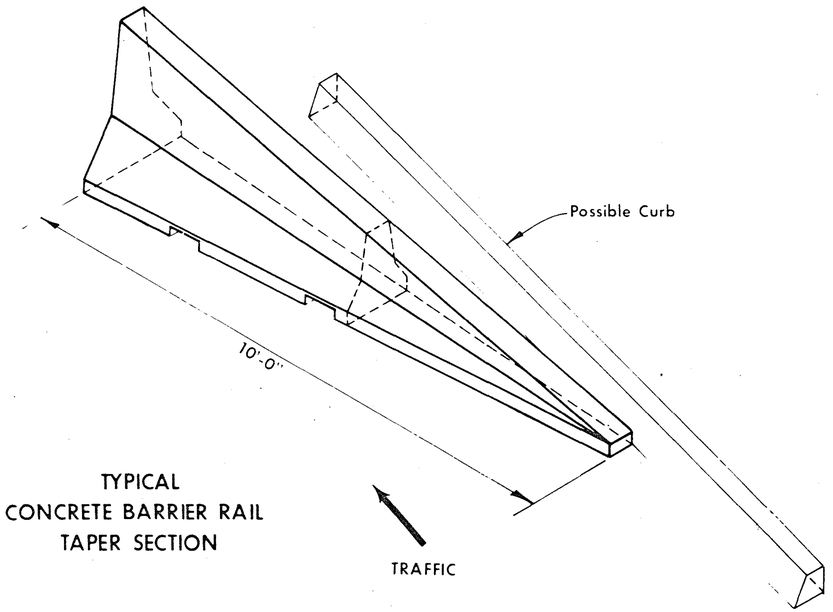
Design Sheet No: 18 Of 19 File No: ~~FN-020(6)--2H-77~~ Design No: ~~4669~~

DESIGN NO. 389
FILE NO. 27753
DES. SH. NO. 100F 1:1

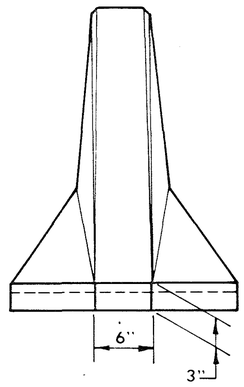
DESIGNED BY: W. A. Lundquist
DETAILED BY: Darwin Backous
TRACED BY:
CHECKED BY: H. Tsai

DES MOINES COUNTY

PROJECT NUMBER	STATE	FED. ROAD DIST. NO	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
~~FN-020(6)--2H-77~~	IOWA	5		18	19



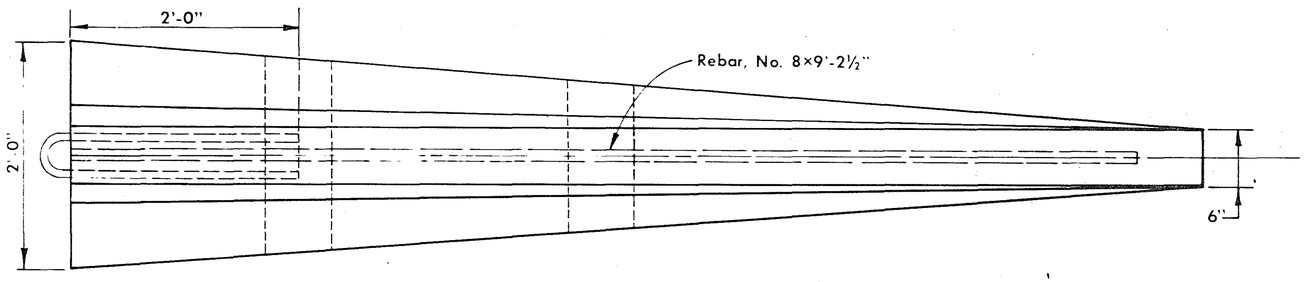
TYPICAL
CONCRETE BARRIER RAIL
TAPER SECTION



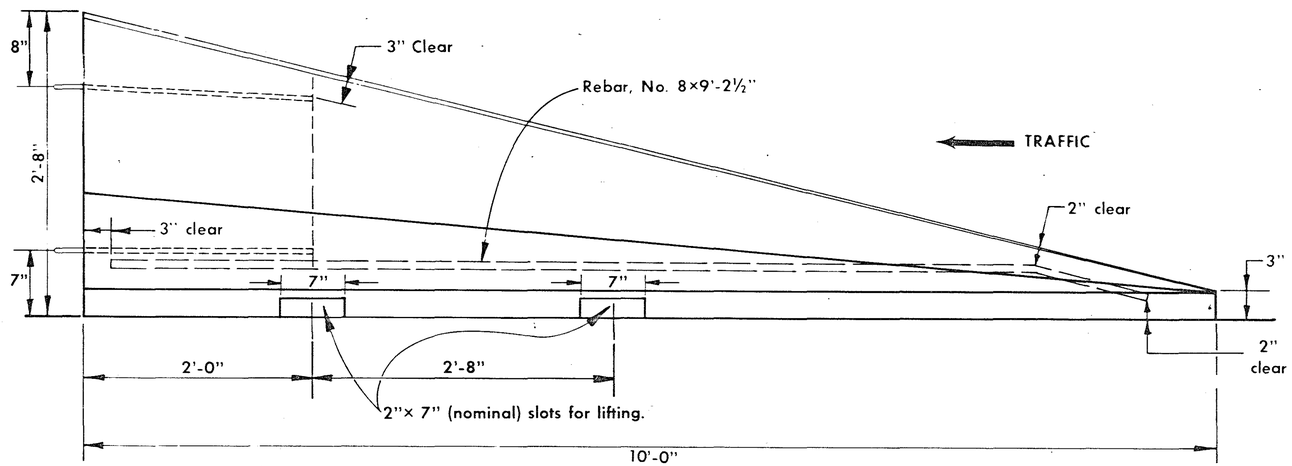
FRONT ELEVATION

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.

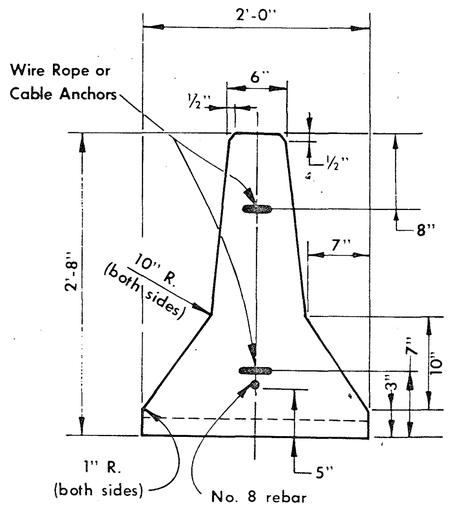
Concrete shall be Class 'D' Structural Concrete placed and finished in conformance with current standard specifications for "Structural Concrete". Approximately 0.486 cu. yds. of Class 'D' Structural Concrete will be required for each taper section.



PLAN



SIDE ELEVATION



FULL SECTION

DESIGN NO. 389
FILE NO. 27753
DES. SH. NO. 11 OF 11

DETAIL SHEET 540-1

Revision Date 11-10-83

CONCRETE BARRIER RAIL TAPER SECTION

(Pre-Cast)

DES MOINES COUNTY

PROJECT NUMBER	STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	IOWA	5		13	19

JRA-2

Removal and reattachment of guardrail to accomodate the bridge rail retrofit will be considered incidental to the price bid for this project.

6-22-84 251-2

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.

213-1

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

08-30-88 213-7

The Contractor shall dispose of removed Asphalt Cement Concrete in a method approved by the Iowa Department of Natural Resources.

The following are approved methods :

1. In an embankment above the water table.
2. In a stockpile for future recycling.
3. Crushed with or without Portland Cement Concrete and used for shoulder or base material.
4. In an approved landfill.

ESTIMATE REFERENCE INFORMATION

100-4
01-23-85

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

ITEM NO.	DESCRIPTION
1.	For shoulder strengthening. See TCP-2. 4' X ~~165'~~ 245' from each end of the bridge. Trench excavation, tack, and asphalt cement to be incidental. Specification 1109.03 shall not apply.
2.	For shoulder sweetening as directed by the engineer. Specification 1109.03 shall not apply.
3.	See Tab. 108-22.
5,6.	See Detail Sheets TCP-2 and 570-2.
7,8.	See Tab. 112-6.
9.	Estimated at 80' X 24' on each end of the bridge.
10.	See Detail Sheet 532-9.

~~ESTIMATED~~ ROADWAY QUANTITIES

100-00
01-20-84

NO.	ITEM	UNIT	TOTAL
1	3/4" Type 'B' ACC Base Course Class 1	Tons	200.60
2	Granular Shoulders Type 'B'	Tons	25.16
3	Pavement Markings	Sta.	140.29
4	Traffic Control	LumpSum	2000.00
5	Temporary Floodlighting	LumpSum	1000.00
6	Temporary Signals	LumpSum	2000.00
7	Special Backfill	Tons	231.755
8	Bridge Approach Section	Sq.Yds.	522.53
9	Removal of Pavement	Sq.Yds.	500.35
10	'EF' Joint Assembly	No.	4

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.

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.

DESIGN DATA RURAL

1987 AADT 6080 V.P.D.

ROADWAY DESIGN

REGISTERED PROFESSIONAL ENGINEER
JOHN R. ABRAMS
7229
IOWA

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 11-22-88

STANDARD ROAD PLANS

105-4
06-17-77

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

NUMBER	DATE	NUMBER	DATE	NUMBER	DATE
RF-19E	2-17-87	RK-19A	2-28-89	RS-2	10-11-88
RH-2A	2-28-89	RK-19F	2-28-89	RS-3	11-15-88
RH-2B	2-28-89				

CHANGES AS SHOWN

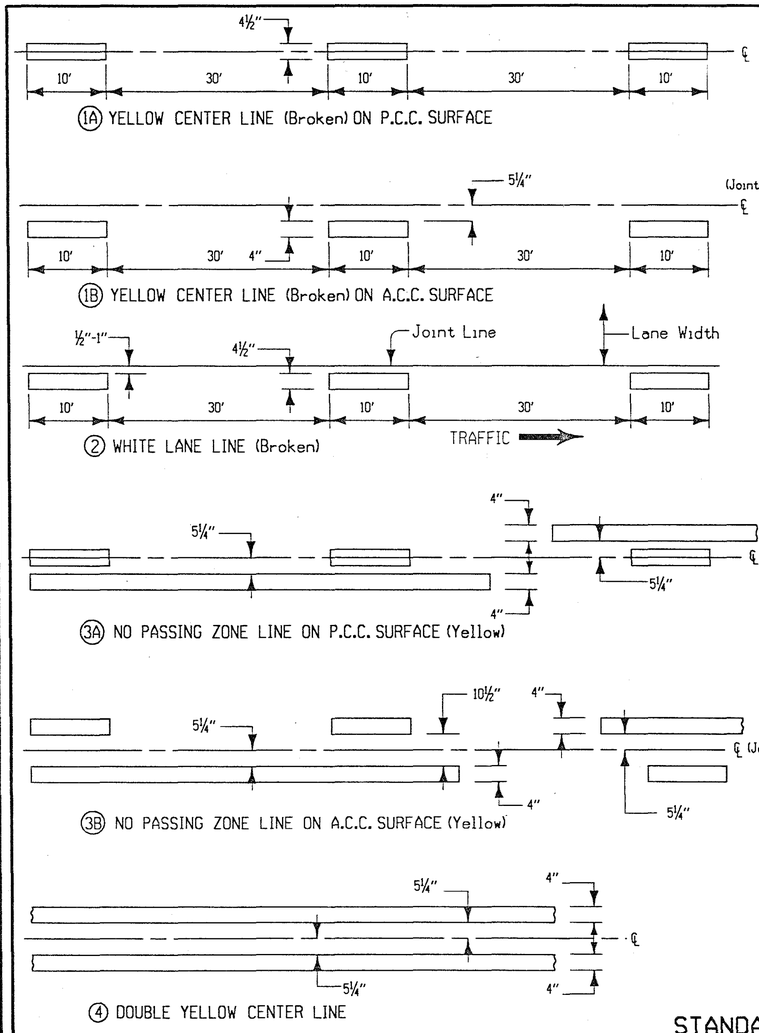
DESIGN NO. 389
FILE NO. 27753

TABULATION OF PAVEMENT MARKINGS

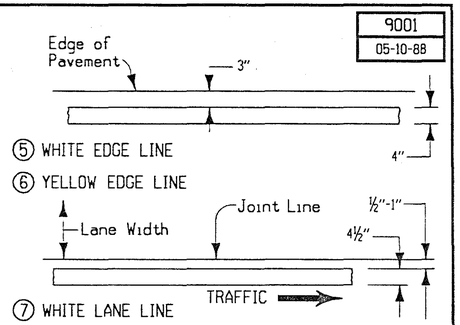
108-22
01-19-88

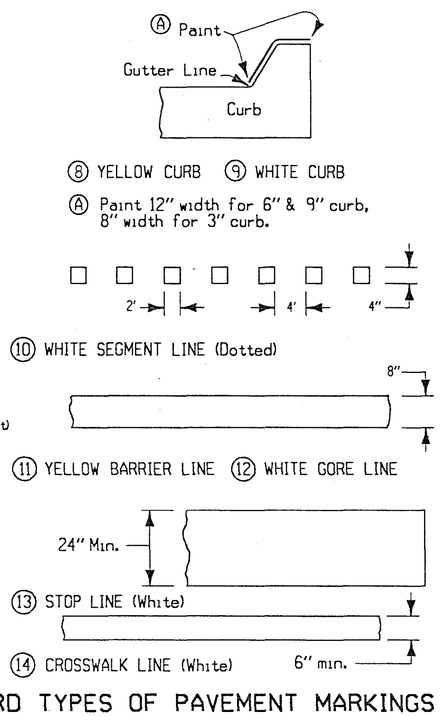
(1A) Yellow Center Line (Broken) on P.C. Pavement
(1B) Yellow Center Line (Broken) on A.C. Pavement
(2) White Lane Line (Broken)
(3A) No-Passing Zone Line on P.C. Pavement
(3B) No-Passing Zone Line on A.C. Pavement
(4) Double Yellow Center Line
(5) White Edge Line
(6) Yellow Edge Line
(7) White Lane Line
(8) Yellow Curb
(9) White Curb
(10) White Segment Line (Dotted)
(11) Yellow Barrier Line
(12) White Gore Line
(13) Stop Line
(14) Crosswalk Line
(15) Symbols

LOCATION				LENGTH (In Stations)																	REMARKS
Road Ident.	Station to Station	Side L	Side R	(1A)	(1B)	(2)	(3A)	(3B)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	
U.S. 61	450+12.5							38.66		6.34								0.223			Place temp
				6.76				40.05		23.6								0.223			Remove temp
				12.44						24.16											Place perm
																					Remove perm
LENGTH SUBTOTALS				19.2				78.71		54.1								0.446			
QUANTITY FACTORS				.25	.25	.25	1	1	2	1	1	1			1/3	2	2	6	1.5		
TOTALS				4.80				78.71		54.1								2.68			140.29



9001
05-10-88





STANDARD TYPES OF PAVEMENT MARKINGS

TABULATION OF BRIDGE APPROACH SECTION

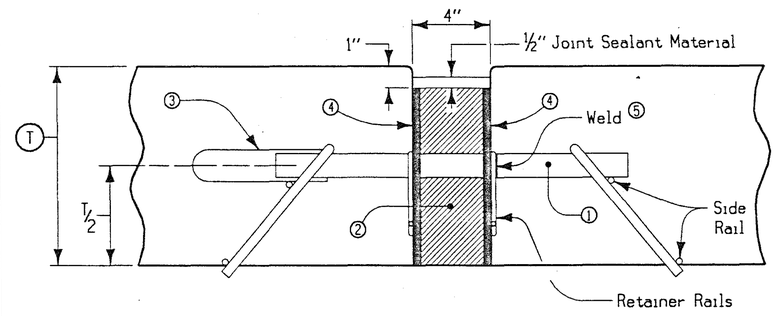
(Refer to Standard Road Plan RF-19D, RF-19E, RK-16, RK-19A, RK-19B, RK-19C, RK-19D, RK-19E, or RK-19F)

• Not a bid item

112-6
08-30-88

LOCATION		APPROACH PAVEMENT					SUBDRAIN				APPROACH SUBGRADE		
Bridge Station	End	Case	(PN) for case "C"	(T) Thickness Inches	Non-Reinf. Pave. Area Sq. Yds.	Reinf. Pave. Area Sq. Yds.	Perforated Subdrain• 4" Lin. Ft.	Subdrain Outlet• Station	Subdrain Outlet• Side	Porous Backfill• Cu. Yds.	Class 'A' Crushed Stone Backfill• Cu. Yds.	Special Backfill Tons	Engineering Fabric• Sq. Yds.	REMARKS
450+12.5	N	A		10	159.49	100.55	44	454+35	W	2.5	0.2	125.09	308	
450+12.5	S	A		10	160.57	101.98	44	445+90	W	2.5	0.2	106.665	308	

7225
02-28-89

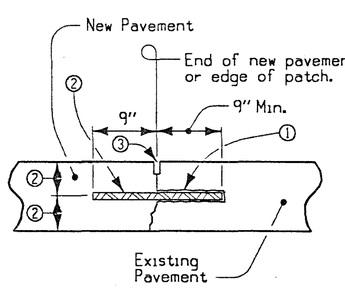


Typical Section Thru Joint

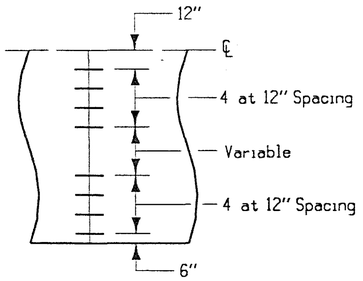
① 1½" X 18" Epoxy Coated Dowels at 12" centers. Entire assembly shall be asphalt coated.
② 3½" Preformed Polyethylene Joint Material with pre drilled holes for 1½" dowels.
③ Expansion tubes, must allow for 4" of travel place alternately across joint. Expansion tubes to be approved by the engineer.
④ Spacer (1/4" Plywood or Pressed Wood).
⑤ Weld Side Opposite Expansion Tube.

'EF' JOINT
4" Doweled Expansion Joint

7226
08-30-88



Typical Section Thru Joint



Typical Half Plan

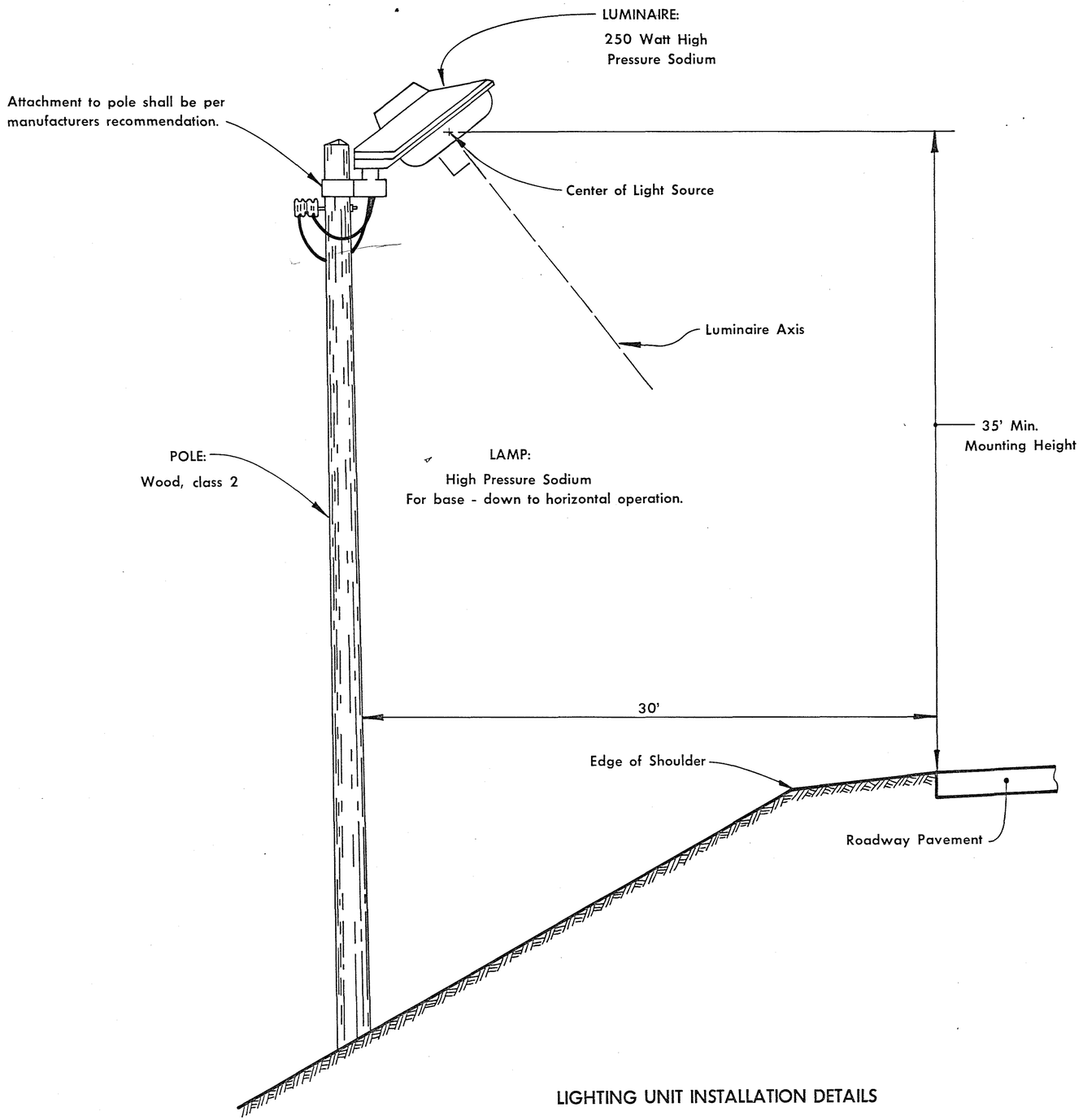
Notes:
① Embed 8-18" long epoxy coated bars a minimum depth of 9" into existing pavement by utilizing an epoxy grout. Refer to Materials Instructional Memorandum for approved methods and materials.
② Place bar at one half depth of sound concrete.
③ Saw and seal according to Road Standard RH-2B, Detail 'D'.

Exist. Pav't. Thickness	Joint Type	Tie Bar Size	Hole Size
10" or Less	RT-1	#9	1¼" Diam.
Over 10"	RT-2	#10	1⅜" Diam.

'RT-1' or 'RT-2' JOINT
Abutting Pavement Joint Rigid Tied

CHANGES AS SHOWN

DESIGN NO. 389
FILE NO. 27753



LIGHTING UNIT INSTALLATION DETAILS

GENERAL NOTES:

Temporary floodlighting will be required on this project. The lighting shall conform to current Standard Specifications for floodlighting, Sections 2528.08 and 2528.12(D) except as modified hereon.

Temporary floodlighting shall consist of either a pole mounted luminaire as illustrated hereon or a luminaire mounted on portable type equipment. Location of the 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. Luminaire axis shall be directed to within the limits of the near traffic lane unless specified otherwise.

The luminaire shall be designed to operate without a mastarm. The "Expressway" luminaire by the Holophane Division of Manville, Inc. or the "Interstate" luminaire by the American Electric Division of I.T.T. are the approved luminaires.

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 "Temporary 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 07-21-87

TEMPORARY FLOODLIGHTING

(Offset)

DESIGN NO. 389
FILE NO. 27753

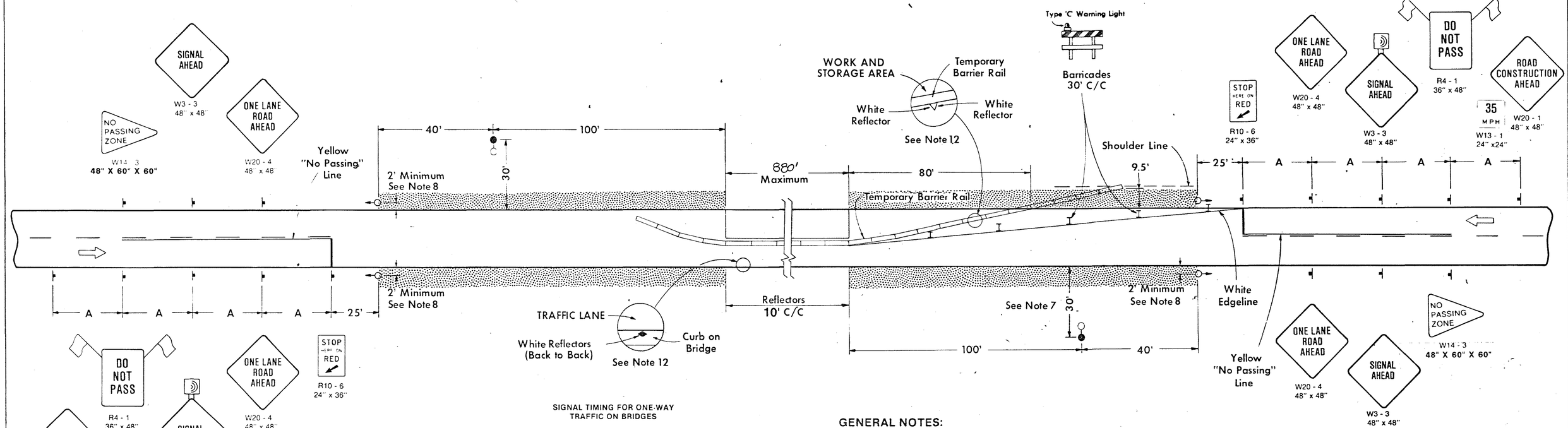
BRUNING 44 131 65300

I.D.O.T. #000-316920

DES MOINES COUNTY

PROJECT NUMBER	STATE	FHWA Region	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	IOWA	7		16	19

Speed Limit (See Note 3)	Approximate Sign Spacing
	'A'
35	250'
45	350'
55	500'



LEGEND

- Traffic Sign
- Type I Barricade (4' wide) (Type "C" Steady Burn Warning Light Required For Nighttime Use) (To Be Weighted)
- Temporary Safety Lighting (Floodlighting)
- Type "B" High Intensity Flashing Warning Light
- Work and Storage Area
- Traffic Signal
- A.C.C. Shoulder Strengthening (4' X 8")

SIGNAL TIMING FOR ONE-WAY TRAFFIC ON BRIDGES

STOPLINE TO STOPLINE DISTANCE		INTERVALS 1	2	3	4	5	6	CYCLE LENGTH	
	SIGNAL 1	Red	Red	Red	Green	Yellow	Red		
	SIGNAL 2	Green	Yellow	Red	Red	Red	Red		
1200'	Secs.	18	3.6	23.4	18	3.6	23.4	90 Secs.	MINIMUMS (Operating Speeds = 35 mph)
	%	20	4	26	20	4	26	100 %	
750'	Secs.	23.8	3.4	15.3	23.8	3.4	15.3	85 Secs.	
	%	28	4	18	28	4	18	100%	
650'	Secs.	21.0	3.0	13.5	21.0	3.0	13.5	75 Secs.	
	%	28	4	18	28	4	18	100%	
550'	Secs.	17.6	3.2	11.7	17.6	3.2	11.7	65 Secs.	
	%	27	5	18	27	5	18	100%	
450'	Secs.	14.8	3.3	9.4	14.8	3.3	9.4	55 Secs.	
	%	27	6	17	27	6	17	100%	
850'	Secs.	26.4	3.6	36.0	26.4	3.6	30.0	120 Secs.	MAXIMUMS (Operating Speeds = 20 mph)
	%	22	3	25	22	3	25	100%	
750'	Secs.	28.8	4.8	26.4	28.8	4.8	26.4	120 Secs.	
	%	24	4	22	24	4	22	100%	
650'	Secs.	25.2	4.2	23.1	25.2	4.2	23.1	105 Secs.	
	%	24	4	22	24	4	22	100%	
550'	Secs.	20.7	4.5	19.8	20.7	4.5	19.8	90 Secs.	
	%	23	5	22	23	5	22	100%	
450'	Secs.	19.2	4.0	16.8	19.2	4.0	16.8	80 Secs.	
	%	24	5	21	24	5	21	100%	

GENERAL NOTES:

1. Engineer may reduce the advisory speed if deemed appropriate.
2. Refer to Supplemental Specifications for Traffic Control for additional requirements.
3. Speed Limit refers to the legally established speed limit before construction and not the advisory speed during construction.
4. Contractor shall be responsible for placement and removal of white edgelines, yellow "No Passing" lines and 12-inch wide stop lines. Dashed yellow centerline or yellow "No Passing" line between the stop lines shall be removed prior to the beginning of construction and replaced before opening to two-way traffic. Reflectors shall be removed before opening to two-way traffic.
5. Contractor shall set signal timing within limits of table with approval of engineer.
6. For Temporary Floodlighting see Design Detail 570-2.
7. Pole for Temporary Floodlighting shall be offset 30 feet from the traveled way unless there are right-of-way restrictions.
8. Traffic signal shall be placed a minimum of 2 feet from the face of the curb or the edge of the pavement.
9. Clearance on overhead wiring for signals and floodlighting shall be a minimum 17 feet. Auxiliary poles used to furnish power to signals or floodlights shall be offset 30 feet from the traveled way unless there are right-of-way restrictions.
10. This layout is not appropriate when ADT (Average Daily Traffic) exceeds 5,000 vehicles.
11. Details for the Temporary Barrier Rail are included elsewhere in the plans.
12. Reflectors will be mounted back-to-back on each 10-foot section of Temporary Barrier Rail. Reflectors shall face oncoming traffic as indicated.

DESIGN NO. 389
FILE NO. 27753

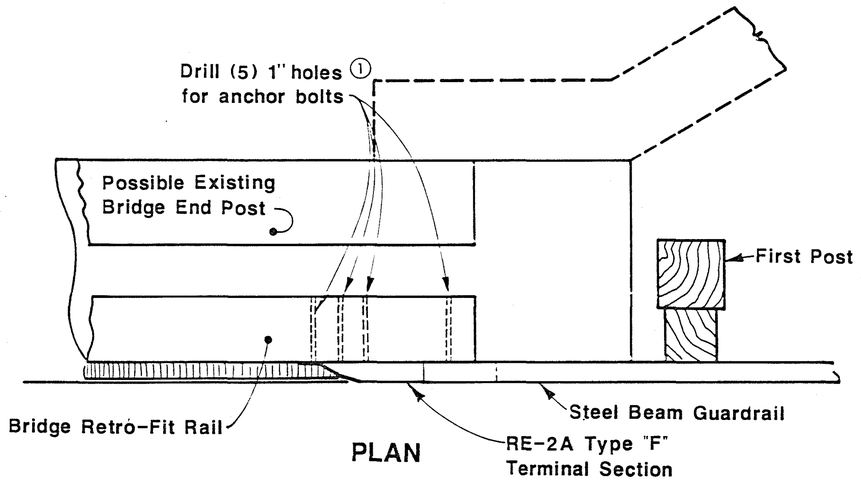
DETAIL SHEET TCP-2

TRAFFIC CONTROL LAYOUT
ONE-WAY TRAFFIC ON BRIDGES
FOR 10-FOOT APPROACH SHOULDERS

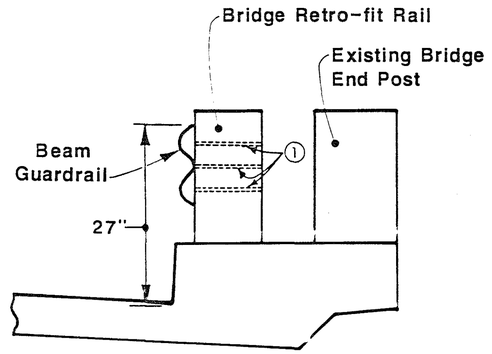
DES MOINES COUNTY

PROJECT NUMBER

STATE	FED. ROAD DIST. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	5		17	19

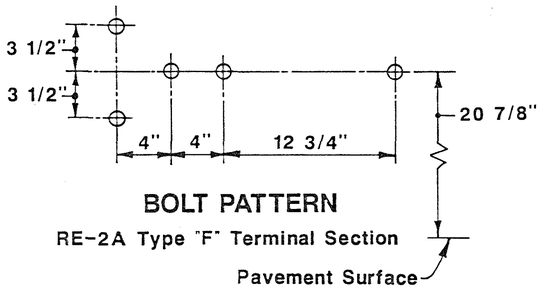


PLAN



TYPICAL SECTION

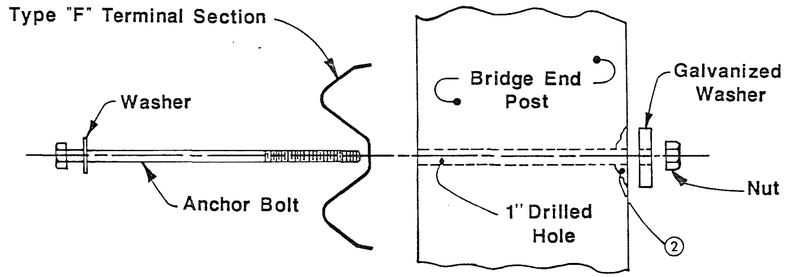
① Drill 1" Holes for Anchor Bolts if insert' is not present.



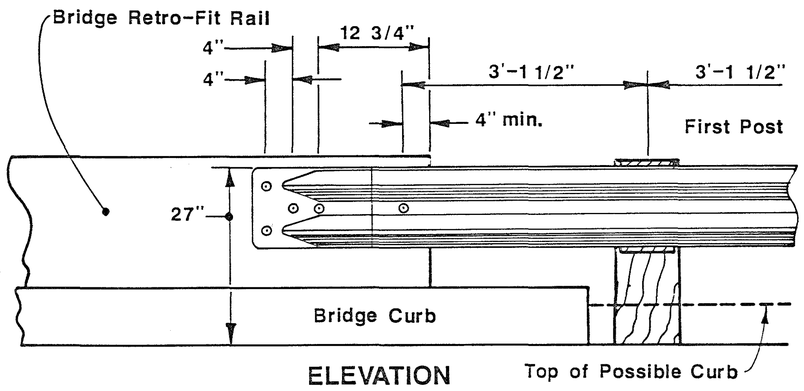
BOLT PATTERN

RE-2A Type "F" Terminal Section

Pavement Surface



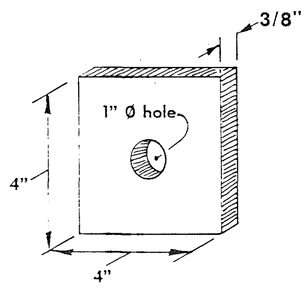
TYPICAL ATTACHMENT DETAIL



ELEVATION



LAPPING PROCEDURE



DETAIL OF GALVANIZED STEEL WASHER

GENERAL NOTES:

Details shown hereon are for making a connection between approach guardrail and the retro fit concrete bridge rail. This type may be used at either end of any bridge (one-way or two-way).

Refer to other appropriate standard road plans and detail project plans, including Tabulation of Guardrail Installations for additional installation requirements. Exact details of the installation shall be as directed by the engineer.

Horizontal and vertical alignment of guardrail in the area immediately adjacent to the bridge shall be adjusted to a smoothly curved line with no abrupt changes.

Anchor bolts shall conform to requirement of ASTM A325 or A449 and shall be galvanized in compliance with ASTM A-153. Threads may be chased after galvanizing. A bolt shall be installed in each of the 5 holes of the RE-2A Type "F" Terminal Section as detailed hereon.

Washers shall be made of steel and shall meet the dimensional requirements of A.N.S.I. B27.2 Type A Plain washers.

Any materials not specifically detailed hereon shall be in accordance with other appropriate Standard Road Plans as well as current Standard Specifications.

The 540-16 Guardrail-Bridge Connection shall not be measured for payment. The construction detailed hereon, including the furnishing of the RE-2A, Type "F" Terminal Section, shall be considered incidental to other guardrail work on the project.

LIST OF MATERIALS FOR THE 540-16 CONNECTION

- 5 - Approved 7/8" x Sufficient Length H.S. Hex Bolts.
- 5 - Galvanized 15/16" I.D., 2 1/2" O.D., 5/32" Thick Washers.
- 5 - Galvanized Steel Washers (4" x 4" x 3/8").
- 1 - RE-2A Type "F" Terminal Section.

Treated wood shims to offset railing from end post may be required. Shims shall be installed as directed by the engineer to align the face of rail to within 1" of the gutter line. Wood shall be treated in accordance with current Standard and supplemental Specifications.

② Area on back face spalled in drilling hole will be grouted before placement of washer for bolt installation. The grout shall consist of equal parts by weight of portland cement and concrete sand, mixed with sufficient water to form a paste.

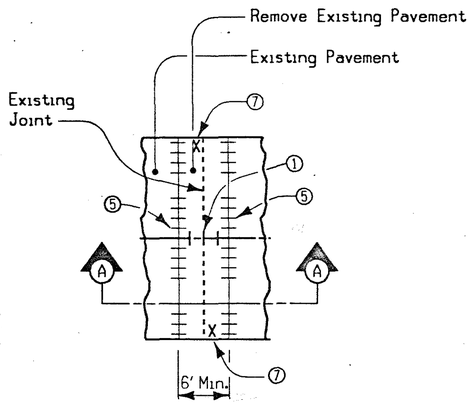
DETAIL SHEET 540-16

Revision Date 01-19-88

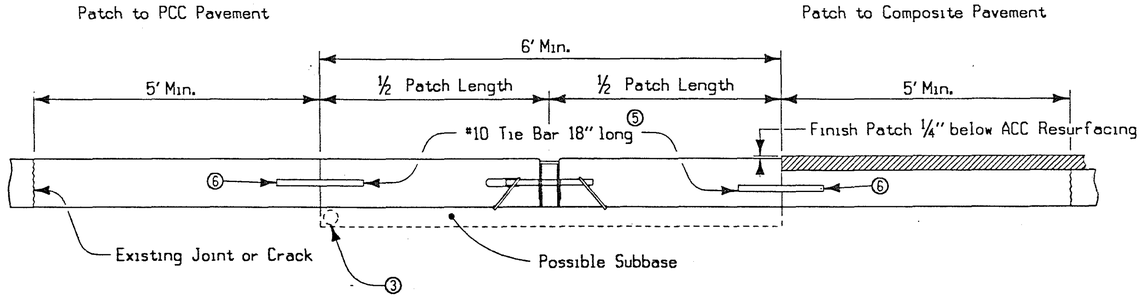
DETAILS OF GUARDRAIL CONNECTION TO BRIDGE RETRO-FIT RAIL

DESIGN NO. 389
FILE NO. 27753

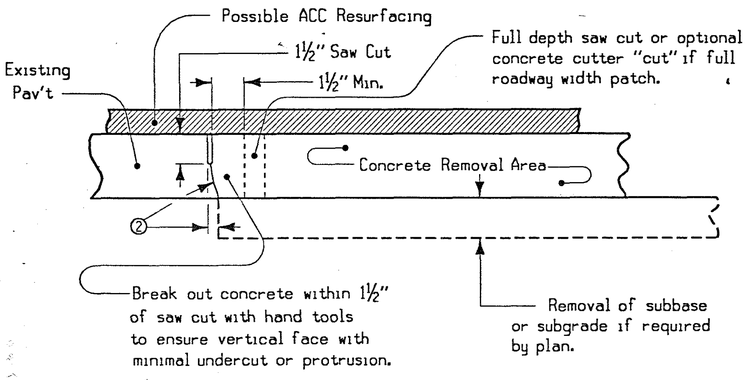
STATE OF IOWA	FHWA REGION 7	FISCAL YEAR		DES MOINES COUNTY	PROJECT NUMBER	SHEET NUMBER 18	TOTAL SHEETS 19



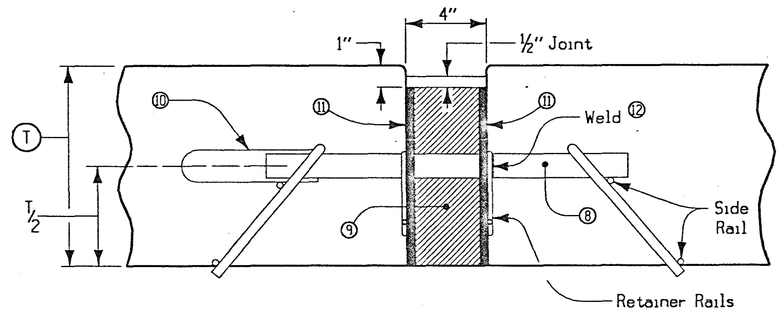
Full Roadway Width Patch



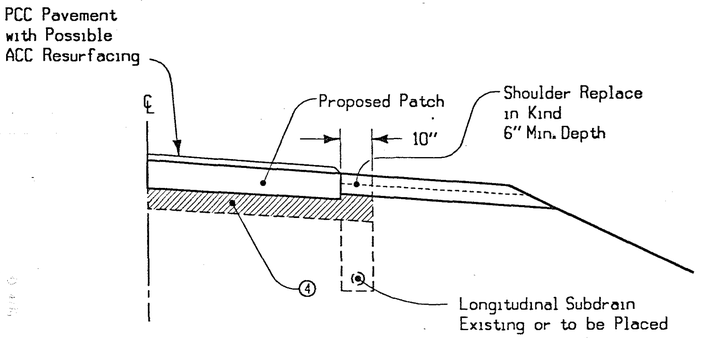
SECTION A-A
Doweled PCC Pavement



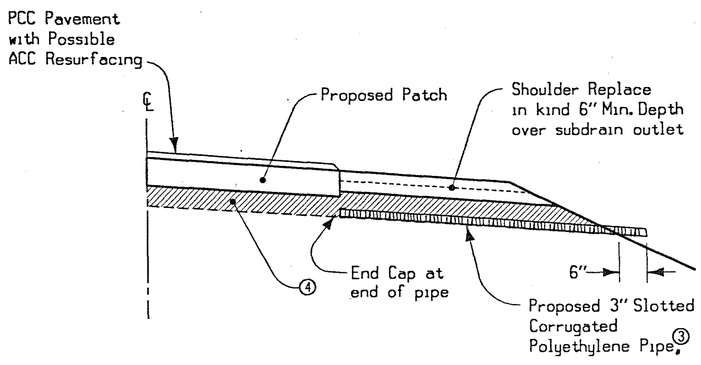
Pavement Removal Details



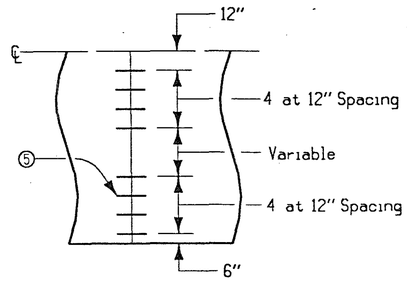
'EF' Joint
4" Doweled Expansion Joint



Granular Subbase and Subdrain
(When Required by Plan)
If Longitudinal Subdrain is Present or is to be Placed



Granular Subbase and Subdrain
(When Required by Plan)
Without Longitudinal Subdrain



TYPICAL HALF PLAN
Detail "A"

GENERAL NOTES:

Full Depth Patch with EF Joint shall be placed after the final lift of asphalt has been placed. Depth of patch shall be 12 inches unless otherwise noted on plan.

Full Depth Patch and EF Joint shall be placed full width of the roadway. If roadway has PCC shoulders; CF Joint shall be extended across shoulder *(see Road Standard RH-2A).* Cost of placing CF Joint is incidental to EF Joint.

Full Depth Patch shall be placed and paid for according to full depth patch specification and detail sheet 532-4 except as noted on this sheet.

The price bid for "EF Joint Assembly" shall be full compensation for furnishing and placing each 12' lane width joint. Joints placed in taper locations and less than 12 foot width shall be counted as a complete joint assembly.

1. **Place tie bars #5×36 inch at 30 inch centers.**
2. **The face of the patch should be near vertical. Protrusions less than 2 inches need not be removed if uniformly tapered from bottom of saw cut to bottom of patch. A step or ledge on this face is not allowed.**
3. **If longitudinal subdrain *(shoulder)* is not to be placed or if not present on side or roadway to be patched, then place proposed 3 inch slotted corrugated pipe at low end of patch.**
4. **6 inch granular subbase if required by plan. When placed, granular subbase shall extend over longitudinal subdrain, if present.**
5. **Use 8 - #10×18" long bars as shown in Detail "A".**
6. **Place bar at one half depth of sound concrete.**
7. **A "X" shall be placed in the plastic concrete near the EF Joint at the outside edge of pavement.**
8. **1½"×18" Epoxy Coated Dowels at 12" centers. Entire assembly shall be asphalt coated.**
9. **3½" Preformed Polyethylene Joint Material with pre-drilled holes for 1½" dowels.**
10. **Expansion tubes, must allow for 4" of travel, place alternately across joint. Expansion tubes to be approved by the engineer.**
11. **Spacer *(¼" Plywood or Pressed Wood).***
12. **Weld Side Opposite Expansion Tube.**

Iowa Department of Transportation
Highway Division

NO.	DATE	DETAIL SHEET	532-9
NEW	05-10-88		

REVISION: NEW

FULL DEPTH PATCH WITH "EF" JOINT IN PCC

DESIGN NO. 389
FILE NO. 27753

ROAD DESIGN • CADD • PRODUCED	STATE OF IOWA	FHWA REGION 7	FISCAL YEAR	DES MOINES COUNTY	PROJECT NUMBER	SHEET NUMBER 19	TOTAL SHEETS 19