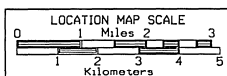
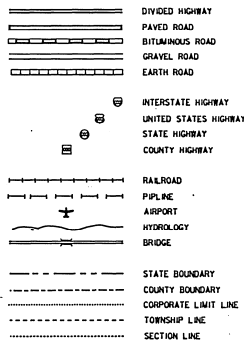


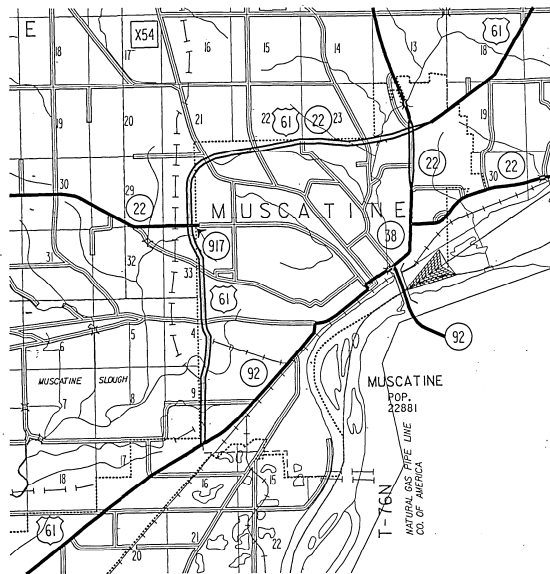
CONVENTIONAL SIGNS



IOWA
DEPARTMENT OF TRANSPORTATION
Project Development Division
PLANS OF PROPOSED IMPROVEMENTS ON THE
PRIMARY ROAD SYSTEM
MUSCATINE COUNTY
BRIDGE PAINTING
ON IA 92 OVER
MISSISSIPPI RIVER & R.R.

SCALE: As Noted

The standard specifications, series of 1997 of the Iowa Department of Transportation, shall apply to construction work on this project.
(PLUS CURRENT SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS)



R-2W

DESIGN NO. 197

THIS AS BUILT PLAN INCLUDES			
YEAR	WORK	CONTRACTOR	PROJ. INSPECTOR
1997	BRIDGE PAINTING	MFG CONST	MCCRAIL

Form 1000B (12-97)

I hereby certify that this project was constructed in accordance with the contract documents, the "as-built" plans were prepared under my supervision, and that I am a duly Licensed Professional Engineer under the laws of the State of Iowa.

Project Engineer: GARY A. NOVEY Date: 2-11-10

My license renewal date is December 31, 2011

Year: _____ Contractor: _____ Project Inspector: _____

REVISED: 5-14-97; BEAM END REPAIRS, HANDHOLE TREATMENT AND RETROFIT DETAILS MODIFIED. SEE SHEETS 3, 5, 6, 7, 8, 13, 14, 15 AND 16 OF 16.

STATE	FHWA REGION	F.Y.	SHEET	TOTAL
IOWA	7		1	16
PROJECT NUMBER				
STP-92-9(99)--2C-70				
R.O.W. PROJECT NUMBER				
PIN				
89-70-020-1				

INDEX OF SHEETS

NO.	DESCRIPTION
1	TITLE SHEET
1A	REVISION SHEET
2	ROAD ESTIMATE SHEET
3	BRIDGE ESTIMATE SHEET
3-16	BRIDGE DESIGN NO. 197

DESIGN DATA RURAL			
1997 AADT	4960	V.P.D.	
201 AADT		V.P.D.	
201 DHV		V.P.H.	
TRUCKS	6	%	
ESALs per day			

VALUE ENGINEERING SAVES

REFER TO THE GENERAL NOTES ON SHEET 3 OF 16

STANDARD ROAD PLANS

IDENT	DATE	IDENT	DATE
RS-2	4-30-96		
RS-3	12-3-96		
RS-6	8-20-96		

STANDARD BRIDGE PLANS

STANDARD	ISSUED	REVISED

REVISIONS

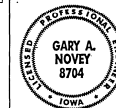
See Revision Sheet 1A

I hereby certify that this Engineering document was prepared by me or under my direct personal supervision and that I am a Licensed Professional Engineer under the laws of the State of Iowa.

Gary A. Novey

Signature: Gary A. Novey Date: 5/14/97

Pages or sheets covered by this set:
1 & 3 thru 16



LETTING DATE

PROJECT DIRECTORY NAME:

THE SHEET OF

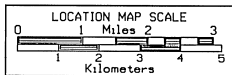
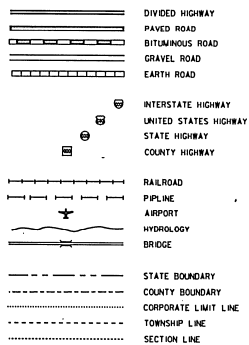
FILE NO. 29148

MUSCATINE COUNTY

PROJECT NO. STP-92-9(99)--2C-70

05-02-97 GAN 197 MUSCATINE (OHMAN)
CADD FILE: 700197.S00

CONVENTIONAL SIGNS



IOWA
DEPARTMENT OF TRANSPORTATION
Project Development Division
PLANS OF PROPOSED IMPROVEMENTS ON THE
PRIMARY ROAD SYSTEM
MUSCATINE COUNTY
BRIDGE PAINTING
ON IA 92 OVER
MISSISSIPPI RIVER & R.R.

SCALE: As Noted

The standard specifications, series of 1897 of the Iowa Department of Transportation, shall apply to construction work on this project.
(PLUS CURRENT SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS)



DESIGN NO. 197

* 150 *

101-4 DESIGN DATA RURAL			
1997 AADT	4960	V.P.D.	
201 AADT		V.P.D.	
201 DHV		V.P.H.	
TRUCKS	6	%	
ESALs per day			

STATE	FHWA REGION	F.Y.	SHEET	TOTAL
IOWA	7		1	16
PROJECT NUMBER				
STP-92-9(99)--2C-70				
R.O.W. PROJECT NUMBER				
PIN				
89-70-020-1				

INDEX OF SHEETS

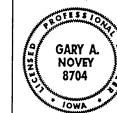
NO.	DESCRIPTION
1	TITLE SHEET
2	ROAD ESTIMATE SHEET
3	BRIDGE ESTIMATE SHEET
3-16	BRIDGE DESIGN NO. 197

VALUE ENGINEERING SAVES

REFER TO THE GENERAL NOTES ON SHEET 3 OF 16

STANDARD ROAD PLANS				STANDARD BRIDGE PLANS		
IDENT	DATE	IDENT	DATE	STANDARD	ISSUED	REVISED
RS-2	4-30-96					
RS-3	12-3-96					
RS-6	8-20-96					

REVISIONS



I hereby certify that this Engineering document was prepared by me or under my direct personal supervision and that I am a Licensed Professional Engineer under the laws of the State of Iowa.

Gary A. Novey

Signature

Date 2/10/97

Pages or sheets covered by this seal:

1, 3 through 16

LETTING DATE 05-02-97

PROJECT DIRECTORY NAME:

FILE NO. 29148

MUSCATINE COUNTY

PROJECT NO. STP-92-9(99)--2C-70

05-02-97 GAN 197 MUSCATINE (OHMAN)

CADD FILE#700197.S02

SHEET NO. 1

LISTING OF PROJECT REVISIONS

DATE	SHEET NUMBER	DESCRIPTION OF REVISIONS	DATE	SHEET NUMBER	DESCRIPTION OF REVISIONS
5-15-97	1A OF 16	REVISION SHEET ADDED.			
	3 OF 16	VARIOUS QUANTITIES CHANGED.			
	5 OF 16	REPAIR LOCATIONS MODIFIED.			
	6 & 7 OF 16	REPAIR LOCATIONS MODIFIED. END PATCH REPAIR PROCEDURE ADDED.			
	8 & 13 OF 16	NOTES MODIFIED.			
	14 OF 16	RETROFIT LOCATIONS MODIFIED.			
	15 & 16 OF 16	NOTES MODIFIED.			
5-15-97		REASON: PREBID CONFERENCE DISCUSSION AND ADDITIONAL FIELD INFORMATION.			

MUSCATINE COUNTY
DESIGN NO. 197
REVISION SHEET

FILE NO. 29148

MUSCATINE COUNTY

PROJECT NUMBER	STATE	FYRA	FISCAL	SHEET	TOTAL
STP-92-9(99)--2C-70	IA	REGION	YEAR	NO.	SHEETS
	7			1A	16

CADD FILE NO. R700197.SIA

FINAL ESTIMATED ROADWAY QUANTITIES					100-DA 03-29-94
CONSTRUCTION USE ONLY	ITEM CODE	ITEM	UNIT	TOTAL	AS BUILT QUAN.
	2527-9263130	REMOVABLE TAPE MARKING	STA	4.3	4.300 ✓
	2528-8400256	TEMPORARY TRAFFIC SIGNALS	EACH	3	3.000 ✓
	2528-8445110	TRAFFIC CONTROL	LS	1	1.000 ✓
	2528-8445112	FLAGGERS	DAY	10	10.000 ✓

ESTIMATE REFERENCE INFORMATION		100-4 03-29-94
Data listed below is for informational purpose only and shall not constitute a basis for any extra work orders.		
ITEM CODE	DESCRIPTION	
2527-9263130	REMOVABLE TAPE MARKING For placement of stop lines according to RS-6.	

STANDARD ROAD PLANS						105-4 12-03-96
The following Standard Road Plans shall be considered applicable to construction work on this project.						
NUMBER	DATE	NUMBER	DATE	NUMBER	DATE	
RS-2	04-30-96					
RS-3	12-03-96					
RS-6	08-20-96					

TABULATION OF TEMPORARY TRAFFIC SIGNALS						108-28 04-30-96
NO.	LOCATION STATION	NUMBER SET-UPS	TYPE			REMARKS
			One Lane Traffic	Haul Road	Intersection	
	For RS-6	3	X			

TRAFFIC CONTROL PLAN				108-23 04-04-99																				
1. Through traffic will be maintained on the project at all times. 2. Traffic control on this project shall be found in accordance with the RS series of Standard Road Plans found in Tab. 105-4 on the Title Sheet and/or appropriate Detail Sheets included in the plans. For additional complementary information, refer to Part VI of the Manual on Uniform Traffic Control Devices and the current Standard Specifications. 3. All traffic control devices shall be furnished, erected, maintained, and removed by the contractor. 4. Where possible, all post mounted signs shall be placed at least 2 feet beyond the curb or edge of shoulder. 5. The location for storage of equipment by the contractor during non-working hours shall be as approved by the engineer in charge of construction. 6. The engineer may require modifications to the pavement marking details shown. Conflicting permanent edge lines, center lines, or lane lines shall be removed. As applicable, permanent edge lines, center lines, and lane lines shall be placed before the roadway is returned to normal traffic. The current Standard Specifications and supplemental specifications shall apply. 7. Proposed sign spacing may be modified as approved by the engineer to meet existing field conditions or to prevent obstruction of the motorist's view of permanent signing. 8. Permanent signing that conveys a message contrary to the message of the temporary signing and not applicable to the working conditions shall be covered by the contractor when directed by the engineer. 9. Proposed changes in the traffic control plan shall be reviewed with the Office of Construction before changes are made. 10. Until January 1, 1998 the contractor will be allowed to use the old or new version of the following signs when either sign is called for in the contract documents. (The exception is that the new Symbol Signal Ahead sign shall be used instead of the old word message sign on signalized haul roads.) New and old versions of a particular sign may not be used together on the same project. All work performed after January 1, 1998 shall use the new version of the signs. <table style="width:100%; border: none;"> <tr> <td style="width:33%;">OLD SIGN</td> <td style="width:33%;">ID</td> <td style="width:33%;">NEW SIGN</td> <td style="width:33%;">ID</td> </tr> <tr> <td>SIGNAL AHEAD</td> <td>W3-3</td> <td>SYMBOL SIGNAL AHEAD</td> <td>W3-3</td> </tr> <tr> <td>LOW SHOULDER</td> <td>W8-9</td> <td>SHOULDER DROP-OFF</td> <td>W8-9a</td> </tr> <tr> <td>CENTERLINE DROP-OFF</td> <td>Special</td> <td>UNEVEN LANES</td> <td>W8-11</td> </tr> <tr> <td>BE PREPARED TO STOP</td> <td>Special</td> <td>BE PREPARED TO STOP</td> <td>W20-7b</td> </tr> </table>					OLD SIGN	ID	NEW SIGN	ID	SIGNAL AHEAD	W3-3	SYMBOL SIGNAL AHEAD	W3-3	LOW SHOULDER	W8-9	SHOULDER DROP-OFF	W8-9a	CENTERLINE DROP-OFF	Special	UNEVEN LANES	W8-11	BE PREPARED TO STOP	Special	BE PREPARED TO STOP	W20-7b
OLD SIGN	ID	NEW SIGN	ID																					
SIGNAL AHEAD	W3-3	SYMBOL SIGNAL AHEAD	W3-3																					
LOW SHOULDER	W8-9	SHOULDER DROP-OFF	W8-9a																					
CENTERLINE DROP-OFF	Special	UNEVEN LANES	W8-11																					
BE PREPARED TO STOP	Special	BE PREPARED TO STOP	W20-7b																					

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 licensed Professional Engineers under the laws of the State of Iowa. <i>Daniel E. Ohman</i> 2/14/97 Signature Date Daniel E. Ohman Printed or Typed Name My license renewal date is December 31, 19__98__ Pages or sheets covered by this seal: <u>2 of 16</u>			

DESIGN DATA RURAL		12-03-96 101-4
1997 AADT	4960	V.P.D.
20 AADT		V.P.D.
20 DHV		V.P.H.
TRUCKS	6 %	
Daily Design		
Year ESALs		

DESIGN NO. 197
FILE NO. 29148

OFFICE OF DESIGN • CADD • PRODUCED	STATE OF IOWA	FHWA REGION 7	FISCAL YEAR	MUSCATINE	COUNTY	PROJECT NUMBER	STP-92-9(99)--2C-70	SHEET NUMBER	2 of 16
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6-FEB-1997 16:01 shanson /usr/htsvr1/s/users/design/road5/shanson/k70092099.c01

GENERAL NOTES :

THIS DESIGN IS FOR REPAIRS TO THE EXISTING MISSISSIPPI RIVER BRIDGE AT MUSCATINE IOWA ON IOWA #92 OVER THE MISSISSIPPI RIVER. PLANS OF THE EXISTING STRUCTURE AND SHOP DRAWINGS MAY BE OBTAINED AT THE AMES OFFICE OF THE IOWA D.O.T.-PROJECT DEVELOPMENT DIVISION.

REPAIRS SHALL CONSIST OF THE FOLLOWING :

1. REPAIR TO PRESTRESSED CONCRETE BEAM ENDS IN THE CONCRETE APPROACH SPANS.
2. CONCRETE REPAIRS TO THE SUBSTRUCTURE AND PIER DIAPHRAGMS IN THE CONCRETE APPROACH SPANS.
3. CLEANING AND PAINTING ZONES IN THE MAIN TRUSS SPAN AND IN THE STEEL GIRDER SPANS.
4. FURNISHING AND INSTALLING HANDHOLE SCREENS AT DESIGNATED LOCATIONS.
5. RETROFIT GIRDERS AT FLOORBEAM LOCATIONS IN THE STEEL GIRDER APPROACH SPANS.
6. RETROFIT LATERAL GUSSET PLATES AT FLOORBEAM LOCATIONS (EXCEPT AT PIERS) IN THE STEEL GIRDER APPROACH SPANS.

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

UTILITY COMPANIES WHOSE FACILITIES ARE KNOWN TO BE WITHIN THE CONSTRUCTION LIMITS, SHALL BE NOTIFIED BY THE BRIDGE CONTRACTOR OF THE CONSTRUCTION STARTING DATE. SEE SPECIAL PROVISIONS FOR ADDITIONAL INFORMATION ON UTILITIES.

THE CONCRETE REPAIR QUANTITY IS BASED ON THE AREAS SHOWN. THE ACTUAL REPAIR AREAS SHALL BE DETERMINED BY THE ENGINEER AT THE TIME OF CONSTRUCTION. ALL COSTS ASSOCIATED WITH REPAIRING THE SUBSTRUCTURE AND PIER DIAPHRAGMS AS NOTED AND SHOWN SHALL BE INCLUDED IN THE PRICE BID FOR "CONCRETE REPAIR".

CONTRACTOR IS ADVISED TO VERIFY THE EXTENT OF REPAIRS REQUIRED ON BOTH SIDES AT EACH END OF THE PRESTRESSED CONCRETE BEAMS, SEE BEAM END REPAIR DETAILS AND NOTES ON DESIGN SHEET 6.

THE BID ITEM "GIRDER RETROFIT" SHALL INCLUDE ALL COSTS OF LABOR, EQUIPMENT AND MATERIAL REQUIRED TO RETROFIT THE GIRDERS AT THE FLOORBEAM CONNECTIONS AT ~~74~~ LOCATIONS AS SHOWN AND SEQUENCED ON DESIGN SHEETS 12 & 13.

THE BID ITEM "GUSSET PLATE RETROFIT" SHALL INCLUDE ALL COSTS OF LABOR, EQUIPMENT AND MATERIAL REQUIRED TO RETROFIT THE GUSSET PLATES AT THE FLOORBEAM CONNECTIONS AT ~~74~~ LOCATIONS AS SHOWN AND SEQUENCED ON DESIGN SHEET 14.

70 FOR THE NUMBER OF RETROFIT PROCEDURES PERFORMED FOR THE GUSSET PLATE RETROFIT AND GIRDER RETROFIT THE CONTRACTOR WILL BE PAID THE CONTRACT UNIT PRICE.

A SCRAPE SAMPLE WAS TAKEN FROM AN AREA OF THIS BRIDGE TO GET AN INDICATION OF THE EXISTENCE OF AND LEVEL OF TOTAL CHROMIUM AND TOTAL LEAD. ANALYSIS OF TOTAL LEAD ON THIS SAMPLE WAS 32400 PARTS PER MILLION (PPM). ANALYSIS OF TOTAL CHROMIUM ON THIS SAMPLE WAS 2980 PPM. THESE ANALYSES SHOW THE EXISTENCE OF THESE TWO TOXIC CONSTITUENTS. LEVELS INDICATED BY THESE TESTS COULD CREATE CONDITIONS ABOVE REGULATORY LIMITS FOR HEALTH AND SAFETY REQUIREMENTS. NO OTHER CONSTITUENTS WERE ANALYZED. THE BIDDER SHOULD NOT RELY ON THE DEPARTMENT'S TESTING AND ANALYSIS FOR ANY PURPOSE OTHER THAN AS AN INDICATION OF THE EXISTENCE OF THESE TWO TOXIC CONSTITUENTS.

THE BRIDGE CONTRACTOR IS ENCOURAGED TO TAKE FULL ADVANTAGE OF SPECIFICATION 1105.15--VALUE ENGINEERING INCENTIVE PROPOSAL. A PAMPHLET AND CONCEPTUAL PROPOSAL FORM WILL BE AVAILABLE AT THE PRECONSTRUCTION CONFERENCE.

THE BID ITEM "HANDHOLE SCREENS" SHALL INCLUDE THE COST OF ALL LABOR AND MATERIAL, INCLUDING THE NEW 1 INCH STEEL PLATE REQUIRED FOR MODIFYING THE EXISTING HANDHOLE SCREENS AS NOTED AND SHOWN ON DESIGN SHEET 11. FOR THE NUMBER OF HANDHOLE SCREENS PLACED, THE CONTRACTOR WILL BE PAID THE CONTRACT UNIT PRICE.

FOR EXPLANATION OF THE FOLLOWING ITEMS:

BRIDGE CLEANING
BLAST CLEANING OF STRUCTURAL STEEL
CONTAINMENT
PAINT WASTE TRANSPORT AND DISPOSAL
ZONE PAINTING OF STRUCTURAL STEEL
REFER TO THE "SPECIAL PROVISIONS FOR BRIDGE CLEANING AND ZONE PAINTING".

DESIGN STRESSES :

DESIGN STRESSES FOR THE FOLLOWING MATERIALS ARE IN ACCORDANCE WITH THE AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, SERIES OF 1996.
REINFORCING STEEL IN ACCORDANCE WITH SECTION 8, GRADE 60.
CONCRETE IN ACCORDANCE WITH SECTION 8, $f'_c = 3500$ PSI.
STRUCTURAL STEEL IN ACCORDANCE WITH SECTION 10, ASTM A-36.

SPECIFICATIONS :

CONSTRUCTION : IOWA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS, SERIES OF 1997, PLUS CURRENT SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS, INCLUDING SPECIAL PROVISIONS FOR BRIDGE CLEANING AND ZONE PAINTING.

DESIGNED BY S.K. GUPTA CHECKED BY
DETAILED BY B. RYSAVY CADD FILE H70197.601

REVISED : 5-14-97; VARIOUS QUANTITIES CHANGED.

FINAL TOTAL ESTIMATED BRIDGE QUANTITIES

ITEM CODE	ITEM	UNIT	TOTAL	AS BUILT QUANTITY
2426-6772013	REPAIR BEAM ENDS	EACH	25,000	40,000
2426-6772016	CONCRETE REPAIR	SF	23,000 ✓	23,000 ✓
2427-0686010	BRIDGE CLEANING	LS	1,000	1,000 ✓
2508-0805000	BLAST CLEANING OF STRUCTURAL STEEL	LS	1,000	1,000 ✓
2508-0850000	ZONE PAINTING OF STRUCTURAL STEEL	LS	1,000	1,000 ✓
2508-0970000	CONTAINMENT	LS	1,000	1,000 ✓
2508-0990000	PAINT WASTE TRANSPORT AND DISPOSAL	LS	1,000	1,000 ✓
2520-3350015	FIELD OFFICE	EACH	1,000	1,000 ✓
2533-4980005	MOBILIZATION	LS	1,000	1,000 ✓
2599-9999005	HANDHOLE SCREENS	EACH	25,000	240,000 ✓
2599-9999010	GIRDER RETROFIT	EACH	25,000	74,000 ✓ (7400)
2599-9999010	GUSSET PLATE RETROFIT	EACH	25,000	72,000 ✓ (7200)
2599-9999005	REMOVED COST FOR BEAM REPAIR	EACH	40,000	40,000 ✓
2599-9999005	GALVANIZED HANDHOLE SCREENS	EACH	240,000	240,000 ✓
2527-9263150	REMOVED PUNT. MHS.	STA	13,500	13,500 ✓
2577-9263110	PAINTED PUNT. MHS.	STA	13,500	13,500 ✓
2599-9999010	SITE PREPARATION	LS	1,000	1,000 ✓
2599-9999010	TORON PLATES	LS	1,000	1,000 ✓
2599-9999010	TELEPHONE SERVICE	LS	1,000	1,000 ✓

2599-9999005 EXCLUDED COST OF ALL LANE & MILE REPAIRS IN THE 2011 B. S. PLAN

SMALL

NOTE :
ROADWAY QUANTITIES ARE SHOWN ELSEWHERE IN THESE PLANS.

TRAFFIC CONTROL PLAN

NOTE : THE ROADWAY WILL BE OPEN TO THRU TRAFFIC. REFER TO THE TRAFFIC CONTROL PLAN SHOWN ELSEWHERE IN THESE PLANS.

DESIGN HISTORY AT THIS SITE

DES. NO.	TYPE OF WORK
170	ORIGINAL DESIGN
694	RETROFIT RAIL AND BRIDGE OVERLAY
197	ZONE PAINT AND BEAM REPAIR

LOCATION:

IOWA #92 OVER
MISSISSIPPI RIVER & R.R.
SECTION 35
T-77 N R-2 W
MUSCATINE TWP.
MUSCATINE COUNTY, IOWA
ROCK ISLAND COUNTY, ILLINOIS

BRIDGE MAINT. NO. 7075.TS092

RAILROAD CROSSING NO. 09713
FRA CROSSING NO. 607203K

MISSISSIPPI RIVER BRIDGE AT MUSCATINE IOWA NOTES & QUANTITIES

FEBRUARY, 1997

MUSCATINE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - PROJECT DEVELOPMENT DIVISION
DESIGN SHEET NO. 1 OF 14 FILE NO. 29148 DESIGN NO. 197

MUSCATINE COUNTY

PROJECT NUMBER

STP-92-9 (99)-2C-70

STATE

REGION

FISCAL

YEAR

SHEET

TOTAL

SHEETS

16

GENERAL NOTES :

THIS DESIGN IS FOR REPAIRS TO THE EXISTING MISSISSIPPI RIVER BRIDGE AT MUSCATINE IOWA ON IOWA #92 OVER THE MISSISSIPPI RIVER, PLANS OF THE EXISTING STRUCTURE AND SHOP DRAWINGS MAY BE OBTAINED AT THE AMES OFFICE OF THE IOWA D.O.T.-PROJECT DEVELOPMENT DIVISION. REPAIRS SHALL CONSIST OF THE FOLLOWING :

1. REPAIR TO PRESTRESSED CONCRETE BEAM ENDS IN THE CONCRETE APPROACH SPANS.
2. CONCRETE REPAIRS TO THE SUBSTRUCTURE AND PIER DIAPHRAGMS IN THE CONCRETE APPROACH SPANS.
3. CLEANING AND PAINTING ZONES IN THE MAIN TRUSS SPAN AND IN THE STEEL GIRDER SPANS.
4. FURNISHING AND INSTALLING HANDHOLE SCREENS AT DESIGNATED LOCATIONS.
5. RETROFIT GIRDERS AT FLOORBEAM LOCATIONS IN THE STEEL GIRDER APPROACH SPANS.
6. RETROFIT LATERAL GUSSET PLATES AT FLOORBEAM LOCATIONS (EXCEPT AT PIERS) IN THE STEEL GIRDER APPROACH SPANS.

CONSTRUCTION SHALL BE DONE IN STAGES, WITH AT LEAST ONE LANE OF TRAFFIC MAINTAINED AT ALL TIMES IN ACCORDANCE WITH "TRAFFIC CONTROL PLAN NOTE". UTILITY COMPANIES WHOSE FACILITIES ARE KNOWN TO BE WITHIN THE CONSTRUCTION LIMITS, SHALL BE NOTIFIED BY THE BRIDGE CONTRACTOR OF THE CONSTRUCTION STARTING DATE. SEE SPECIAL PROVISIONS FOR ADDITIONAL INFORMATION ON UTILITIES.

THE CONCRETE REPAIR QUANTITY IS BASED ON THE AREAS SHOWN. THE ACTUAL REPAIR AREAS SHALL BE DETERMINED BY THE ENGINEER AT THE TIME OF CONSTRUCTION. ALL COSTS ASSOCIATED WITH REPAIRING THE SUBSTRUCTURE AND PIER DIAPHRAGMS AS NOTED AND SHOWN SHALL BE INCLUDED IN THE PRICE BID FOR "CONCRETE REPAIR".

CONTRACTOR IS ADVISED TO VERIFY THE EXTENT OF REPAIRS REQUIRED ON BOTH SIDES AT EACH END OF THE PRESTRESSED CONCRETE BEAMS, SEE BEAM END REPAIR DETAILS AND NOTES ON DESIGN SHEET 6.

THE BID ITEM "GIRDER RETROFIT" SHALL INCLUDE ALL COSTS OF LABOR, EQUIPMENT AND MATERIAL REQUIRED TO RETROFIT THE GIRDERS AT THE FLOORBEAM CONNECTIONS AT 76 LOCATIONS AS SHOWN AND SEQUENCED ON DESIGN SHEETS 12 & 13.

THE BID ITEM "GUSSET PLATE RETROFIT" SHALL INCLUDE ALL COSTS OF LABOR, EQUIPMENT AND MATERIAL REQUIRED TO RETROFIT THE GUSSET PLATES AT THE FLOORBEAM CONNECTIONS AT 72 LOCATIONS AS SHOWN AND SEQUENCED ON DESIGN SHEET 14.

FOR THE NUMBER OF RETROFIT PROCEDURES PERFORMED FOR THE GUSSET PLATE RETROFIT AND GIRDER RETROFIT THE CONTRACTOR WILL BE PAID THE CONTRACT UNIT PRICE.

A SCRAPE SAMPLE WAS TAKEN FROM AN AREA OF THIS BRIDGE TO GET AN INDICATION OF THE EXISTENCE OF AND LEVEL OF TOTAL CHROMIUM AND TOTAL LEAD. ANALYSIS OF TOTAL LEAD ON THIS SAMPLE WAS 32400 PARTS PER MILLION (PPM). ANALYSIS OF TOTAL CHROMIUM ON THIS SAMPLE WAS 2980 PPM. THESE ANALYSES SHOW THE EXISTENCE OF THESE TWO TOXIC CONSTITUENTS. LEVELS INDICATED BY THESE TESTS COULD CREATE CONDITIONS ABOVE REGULATORY LIMITS FOR HEALTH AND SAFETY REQUIREMENTS. NO OTHER CONSTITUENTS WERE ANALYZED. THE BIDDER SHOULD NOT RELY ON THE DEPARTMENT'S TESTING AND ANALYSIS FOR ANY PURPOSE OTHER THAN AS AN INDICATION OF THE EXISTENCE OF THESE TWO TOXIC CONSTITUENTS.

THE BRIDGE CONTRACTOR IS ENCOURAGED TO TAKE FULL ADVANTAGE OF SPECIFICATION 1105.15--VALUE ENGINEERING INCENTIVE PROPOSAL. A PAMPHLET AND CONCEPTUAL PROPOSAL FORM WILL BE AVAILABLE AT THE PRECONSTRUCTION CONFERENCE.

THE BID ITEM "HANDHOLE SCREENS" SHALL INCLUDE THE COST OF ALL LABOR AND MATERIAL, INCLUDING THE NEW 1/4 INCH STEEL PLATE REQUIRED FOR MODIFYING THE EXISTING HANDHOLE SCREENS AS NOTED AND SHOWN ON DESIGN SHEET 11. FOR THE NUMBER OF HANDHOLE SCREENS PLACED, THE CONTRACTOR WILL BE PAID THE CONTRACT UNIT PRICE.

FOR EXPLANATION OF THE FOLLOWING ITEMS:

BRIDGE CLEANING
BLAST CLEANING OF STRUCTURAL STEEL
CONTAINMENT
PAINT WASTE TRANSPORT AND DISPOSAL
ZONE PAINTING OF STRUCTURAL STEEL

REFER TO THE "SPECIAL PROVISIONS FOR BRIDGE CLEANING AND ZONE PAINTING".

DESIGN STRESSES :

DESIGN STRESSES FOR THE FOLLOWING MATERIALS ARE IN ACCORDANCE WITH THE AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, SERIES OF 1996.
REINFORCING STEEL IN ACCORDANCE WITH SECTION 8, GRADE 60.
CONCRETE IN ACCORDANCE WITH SECTION 8, $f'_c = 3500$ PSI.
STRUCTURAL STEEL IN ACCORDANCE WITH SECTION 10, ASTM A-36.

SPECIFICATIONS :

CONSTRUCTION : IOWA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS, SERIES OF 1997, PLUS CURRENT SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS, INCLUDING SPECIAL PROVISIONS FOR BRIDGE CLEANING AND ZONE PAINTING.

TOTAL ESTIMATED BRIDGE QUANTITIES

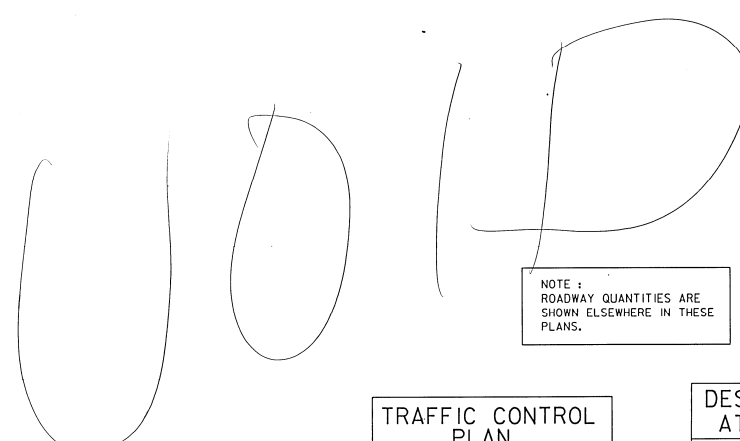
	ITEM CODE	ITEM	UNIT	TOTAL	AS BUILT QUANTITY
	2426-6772013	REPAIR BEAM ENDS	EACH	29.000	
	2426-6772016	CONCRETE REPAIR	SF	23.000	
	2427-0686010	BRIDGE CLEANING	LS	1.000	
	2508-0805000	BLAST CLEANING OF STRUCTURAL STEEL	LS	1.000	
	2508-0850000	ZONE PAINTING OF STRUCTURAL STEEL	LS	1.000	
	2508-0970000	CONTAINMENT	LS	1.000	
	2508-0990000	PAINT WASTE TRANSPORT AND DISPOSAL	LS	1.000	
	2520-3350015	FIELD OFFICE	EACH	1.000	
	2533-4980005	MOBILIZATION	LS	1.000	
	2599-9999005A	HANDHOLE SCREENS	EACH	56.000	
	2599-9999005B	GIRDER RETROFIT	EACH	76.000	
	2599-9999005C	GUSSET PLATE RETROFIT	EACH	72.000	

ITEM CODE

2426-6772013
2599-9999005A

ESTIMATE REFERENCE INFORMATION

INCLUDES COST OF APPLYING CONCRETE SEALER.
INCLUDES COST OF ALL LABOR AND MATERIAL REQUIRED INCLUDING 471 LB. OF STRUCTURAL STEEL.



NOTE :
ROADWAY QUANTITIES ARE
SHOWN ELSEWHERE IN THESE
PLANS.

TRAFFIC CONTROL PLAN

NOTE : THE ROADWAY WILL BE OPEN TO THRU TRAFFIC. REFER TO THE TRAFFIC CONTROL PLAN SHOWN ELSEWHERE IN THESE PLANS.

DESIGN HISTORY AT THIS SITE

DES. NO.	TYPE OF WORK
170	ORIGINAL DESIGN
694	RETROFIT RAIL AND BRIDGE OVERLAY
197	ZONE PAINT AND BEAM REPAIR

LOCATION:

IOWA #92 OVER
MISSISSIPPI RIVER & R.R.
SECTION 35
T-77 N R-2 W
MUSCATINE TWP.
MUSCATINE COUNTY, IOWA
ROCK ISLAND COUNTY, ILLINOIS

BRIDGE MAINT. NO. 7075.75092
RAILROAD CROSSING NO. 09713
FRA CROSSING NO. 607203K

DESIGN FOR REPAIRS TO MISSISSIPPI RIVER BRIDGE AT MUSCATINE IOWA NOTES & QUANTITIES

FEBRUARY, 1997

MUSCATINE COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - PROJECT DEVELOPMENT DIVISION
DESIGN SHEET NO. 1 OF 14 FILE NO. 29148 DESIGN NO. 197

DESIGNED BY S.K. GUPTA
CHECKED BY R.R. SAVY
CADD FILE: h70197.e01

MUSCATINE COUNTY

PROJECT NUMBER

STP-92-9 (99)--2C-70

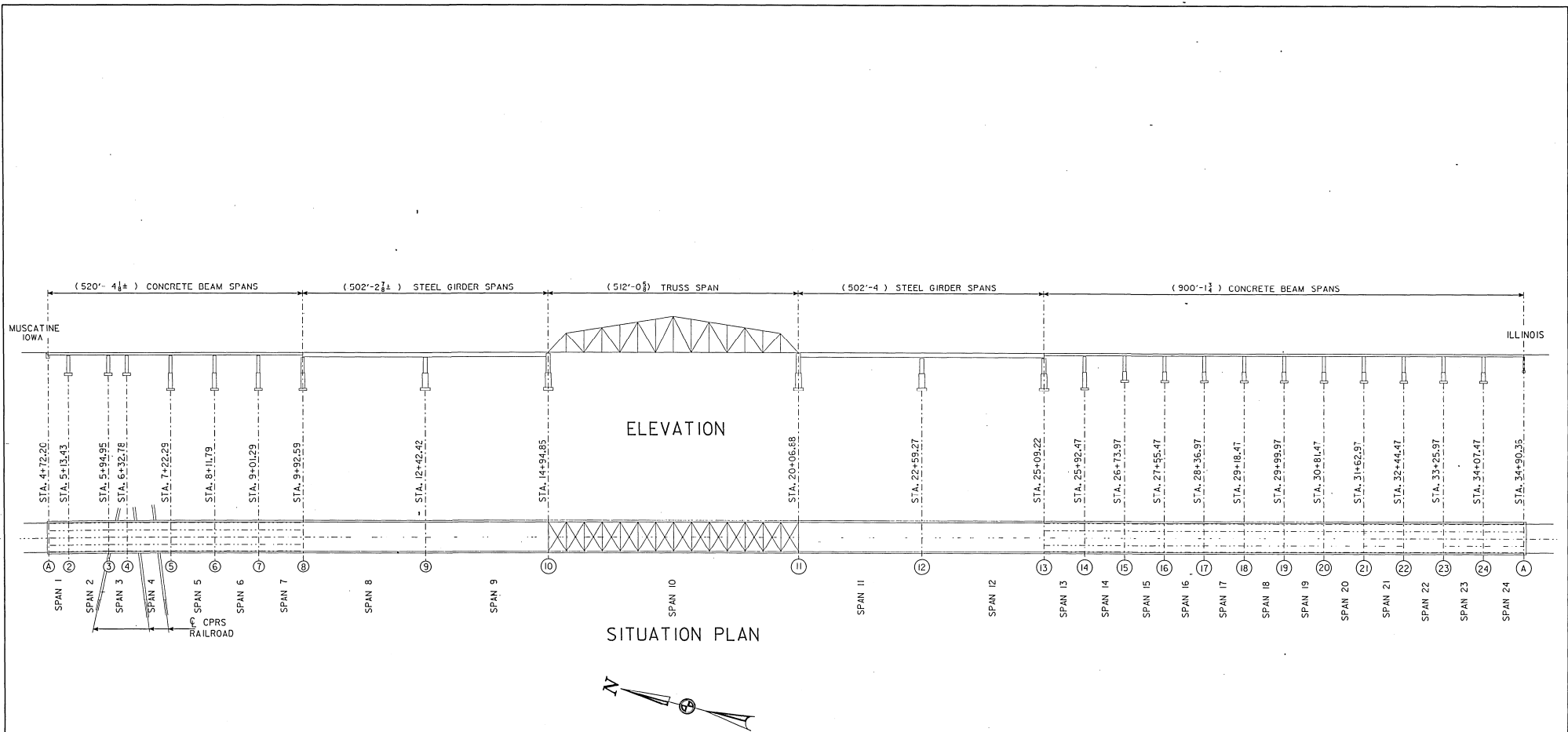
STATE
IOWA

FUND
REGION
7

FISCAL
YEAR

SHEET
NO.
3

TOTAL
SHEETS
16



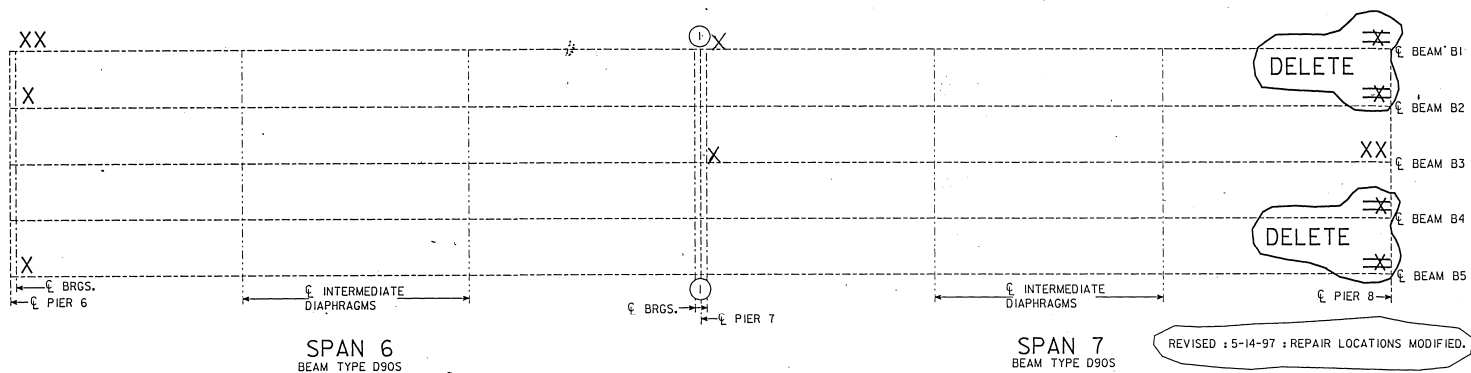
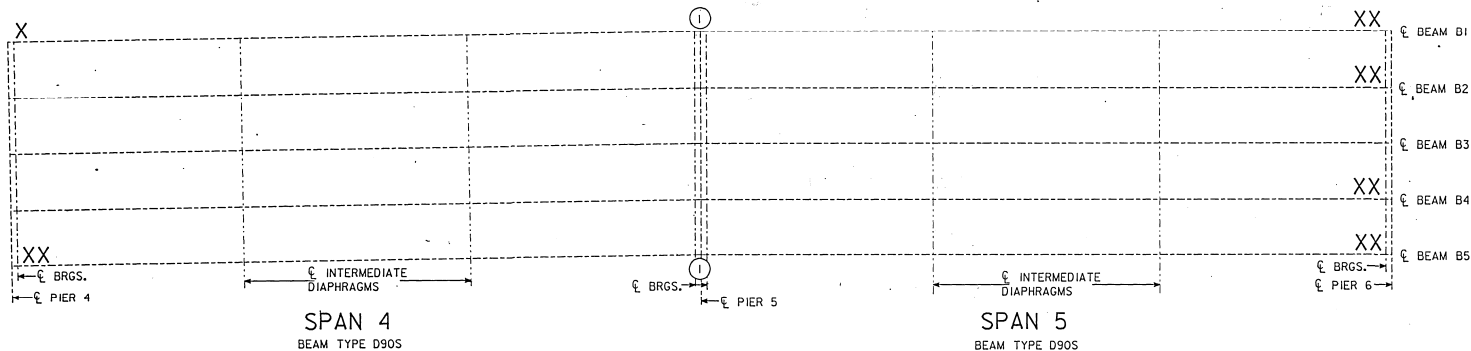
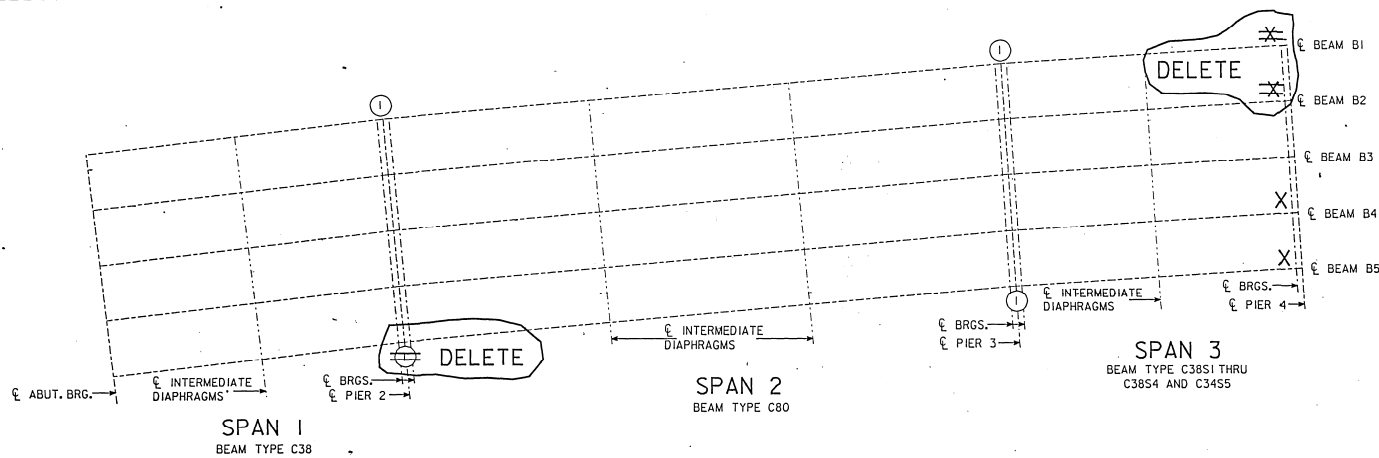
DESIGN FOR REPAIRS TO
MISSISSIPPI RIVER BRIDGE
AT
MUSCATINE IOWA
SITUATION PLAN
FEBRUARY, 1997
MUSCATINE COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - PROJECT DEVELOPMENT DIVISION
DESIGN SHEET NO. 2 OF 14 FILE NO. 29148 DESIGN NO. 197

STATE	FED. REGION	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	7		4	16

DESIGNED BY S.K. GUPTA CHECKED BY
 DETAILED BY R.R. SAVY CADD FILE h70197.s02

MUSCATINE COUNTY

PROJECT NUMBER



LEGEND :
BEAM END REPAIR : X = SHALLOW REPAIR
 XX = REGULAR REPAIR
① INDICATES LOCATION OF REPAIRS AT
PIER DIAPHRAGM, SEE DESIGN SHT. 7
FOR REPAIR DETAILS.

DESIGN FOR REPAIRS TO
MISSISSIPPI RIVER BRIDGE
AT
MUSCATINE IOWA
CONCRETE BEAM REPAIR DETAILS
FEBRUARY, 1997
MUSCATINE COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - PROJECT DEVELOPMENT DIVISION
DESIGN SHEET NO. 3 OF 14 FILE NO. 29148 SHEET NO. 197

DESIGNED BY S.K. GUPTA
CHECKED BY B. RYSAVY
CADD FILE h70197.s03

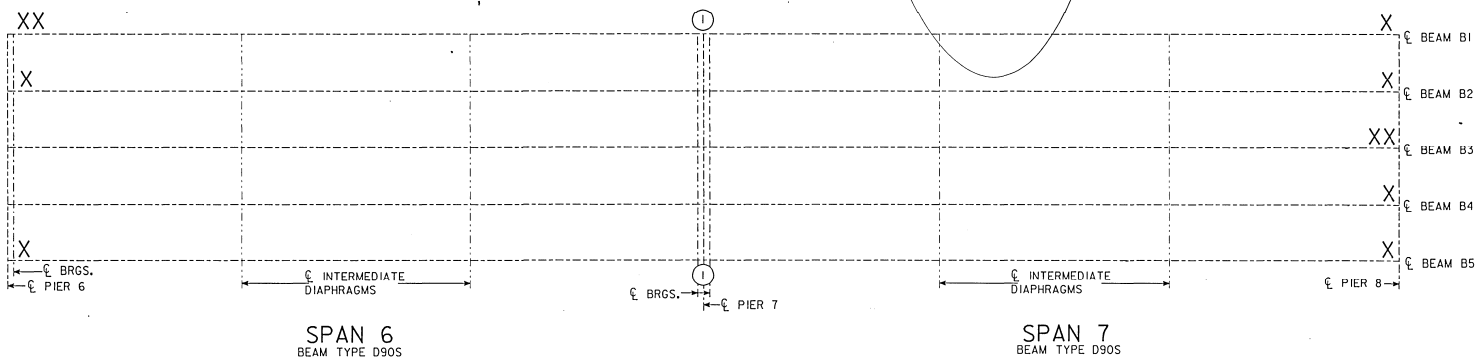
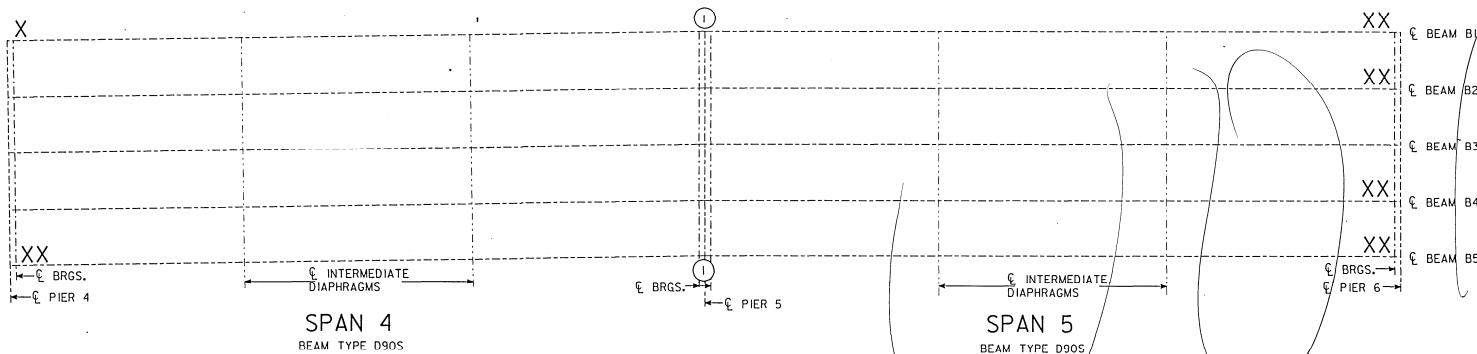
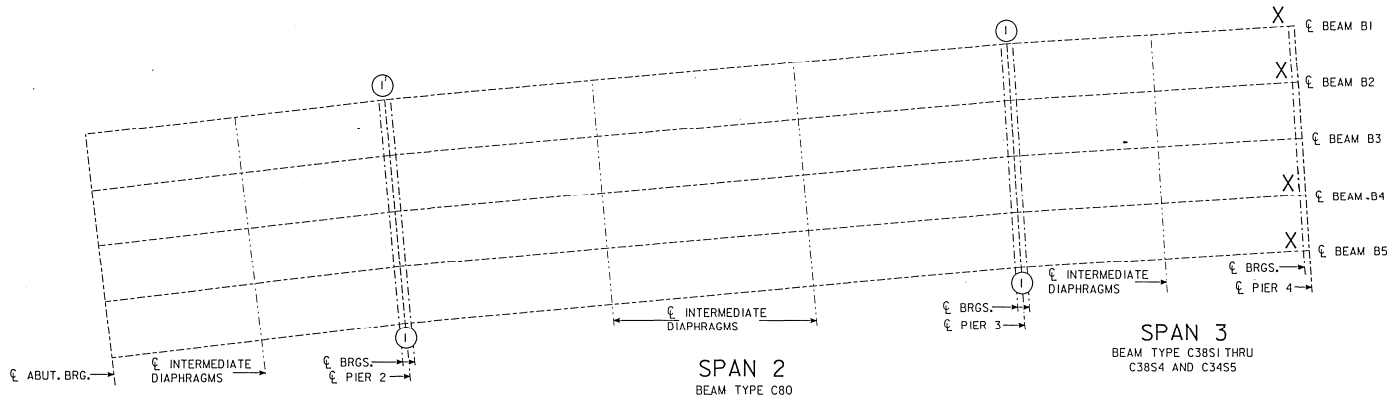
MUSCATINE COUNTY

PROJECT NUMBER

STATE	FUND REGION	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	7		5	16

PLAN VIEWS SHOWING REPAIR LOCATIONS

REVISED : 5-14-97 : REPAIR LOCATIONS MODIFIED.



PLAN VIEWS SHOWING REPAIR LOCATIONS

LEGEND :
 BEAM END REPAIR : X = SHALLOW REPAIR
 XX = REGULAR REPAIR
 ① INDICATES LOCATION OF REPAIRS AT
 PIER DIAPHRAGM, SEE DESIGN SHT. 7
 FOR REPAIR DETAILS.

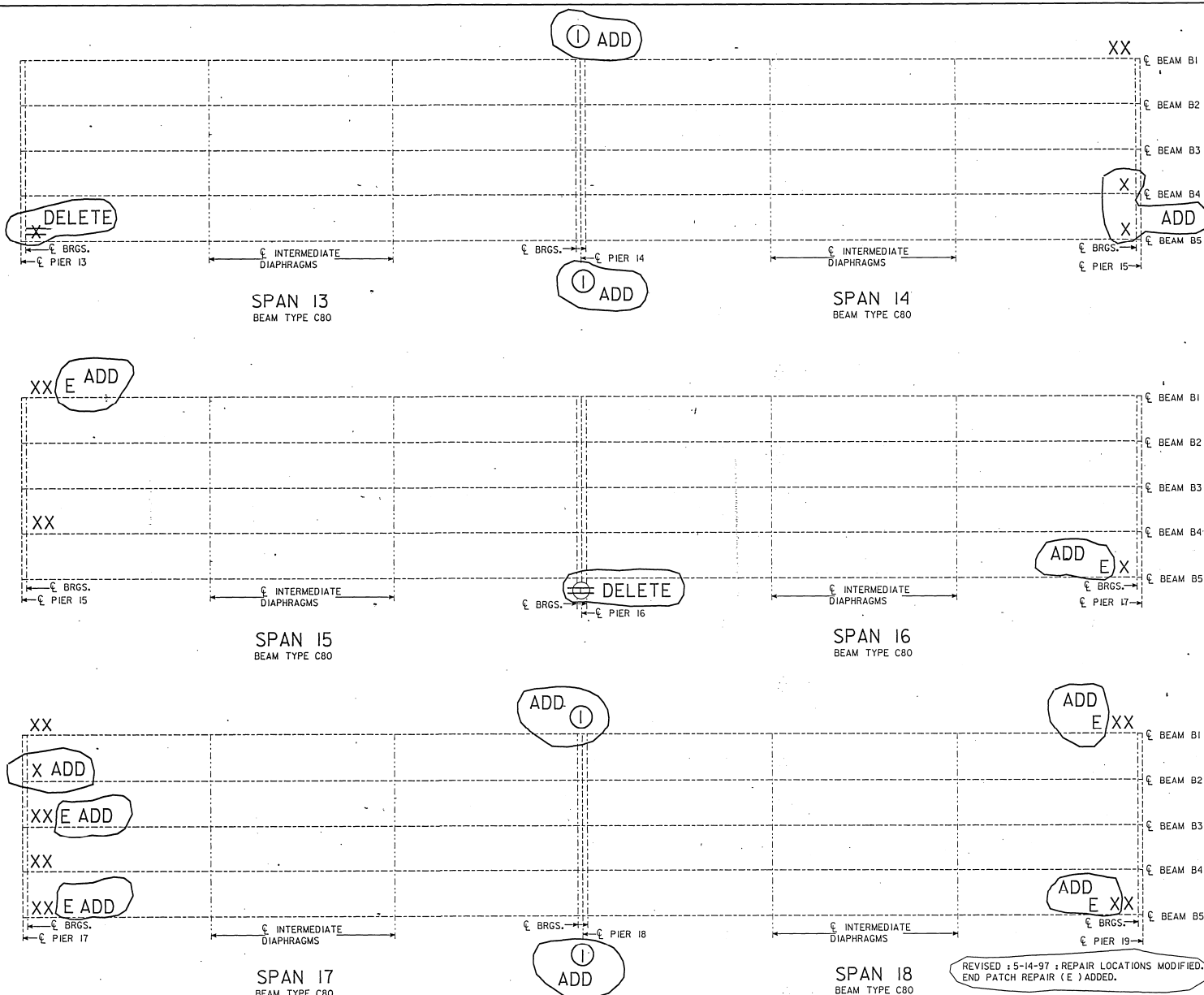
DESIGN FOR REPAIRS TO
MISSISSIPPI RIVER BRIDGE
 AT
MUSCATINE IOWA
CONCRETE BEAM REPAIR DETAILS
 FEBRUARY, 1997
MUSCATINE COUNTY
 IOWA DEPARTMENT OF TRANSPORTATION - PROJECT DEVELOPMENT DIVISION
 DESIGN SHEET NO. 3 OF 14 FILE NO. 29148 DESIGN NO. 197

DESIGNED BY S.K. GUPTA CHECKED BY _____
 DETAILED BY B. RYSAV CADD FILE HT0197.S03

MUSCATINE COUNTY

PROJECT NUMBER

STATE	FED. REGION	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	7		3	14



E = END PATCH REPAIR
(REMOVE EXISTING PATCH &
REPLACE WITH MASTER BUILDERS
EMACO P22 OR SIKATOP ARMATEC
110 WITH A FINISH COAT OF
SIKATOP 123 PLUS)

LEGEND :
BEAM END REPAIR : X = SHALLOW REPAIR
XX = REGULAR REPAIR
① INDICATES LOCATION OF REPAIRS AT
PIER DIAPHRAGM, SEE DESIGN SHT. 7
FOR REPAIR DETAILS.

DESIGN FOR REPAIRS TO
MISSISSIPPI RIVER BRIDGE
AT
MUSCATINE IOWA
CONCRETE BEAM REPAIR DETAILS
FEBRUARY, 1997
MUSCATINE COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - PROJECT DEVELOPMENT DIVISION
DESIGN SHEET NO. 4 OF 14 FILE NO. 2914B DESIGN NO. 197

REVISED : 5-14-97 : REPAIR LOCATIONS MODIFIED,
END PATCH REPAIR (E) ADDED.

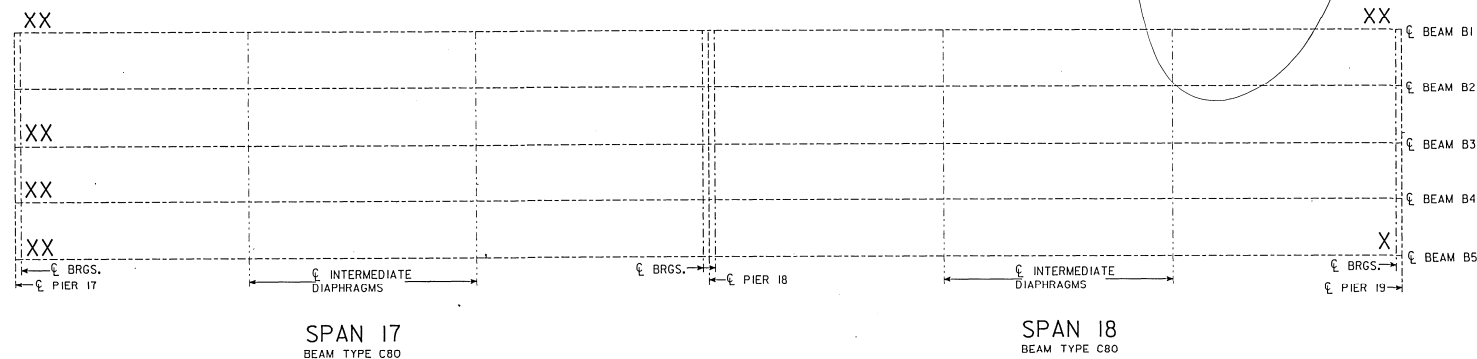
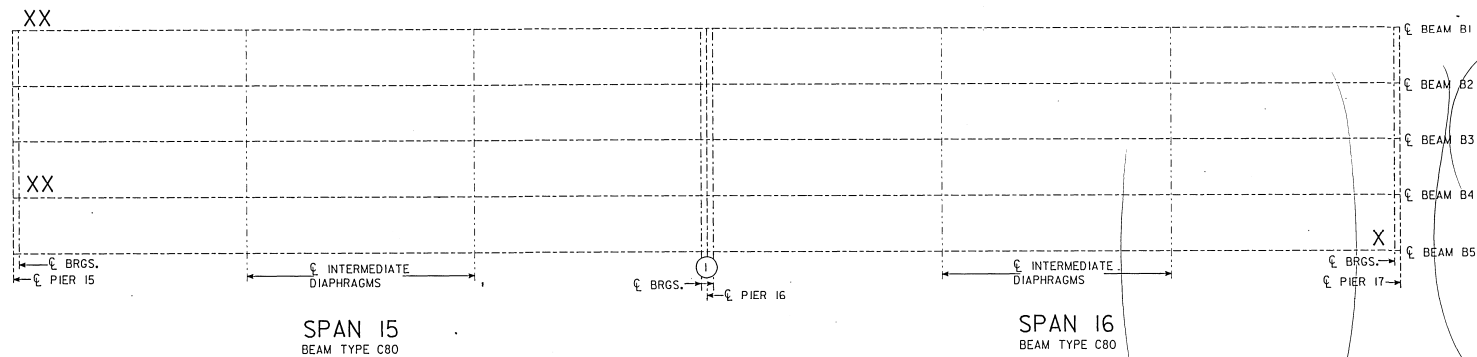
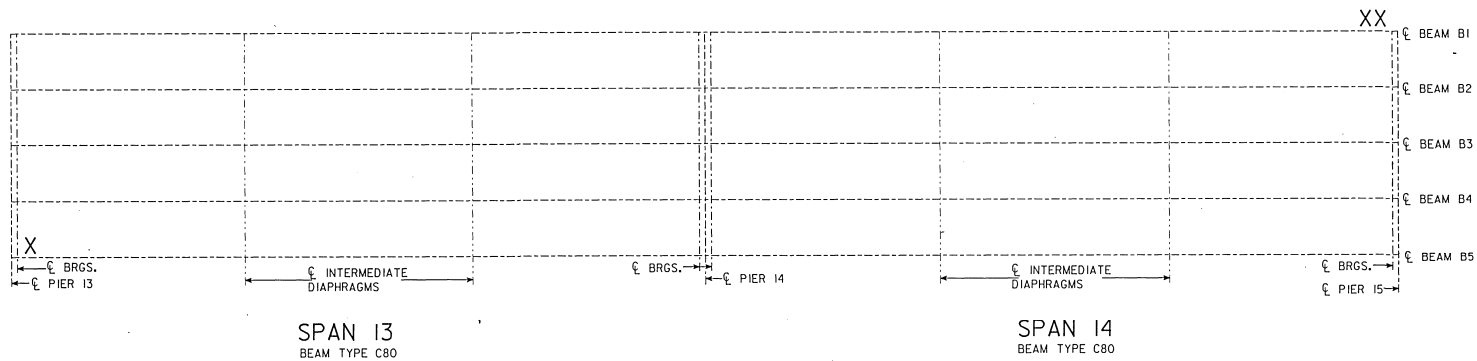
PLAN VIEWS SHOWING REPAIR LOCATIONS

DESIGNED BY S.K. GUPTA CHECKED BY
DETAILED BY B. RYSAVY CADD FILE h70197.s04

MUSCATINE COUNTY

PROJECT NUMBER

STATE	FEDERAL REGION	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	7		6	16



PLAN VIEWS SHOWING REPAIR LOCATIONS

LEGEND :
BEAM END REPAIR : X = SHALLOW REPAIR
XX = REGULAR REPAIR
① INDICATES LOCATION OF REPAIRS AT
PIER DIAPHRAGM, SEE DESIGN SHT. 7
FOR REPAIR DETAILS.

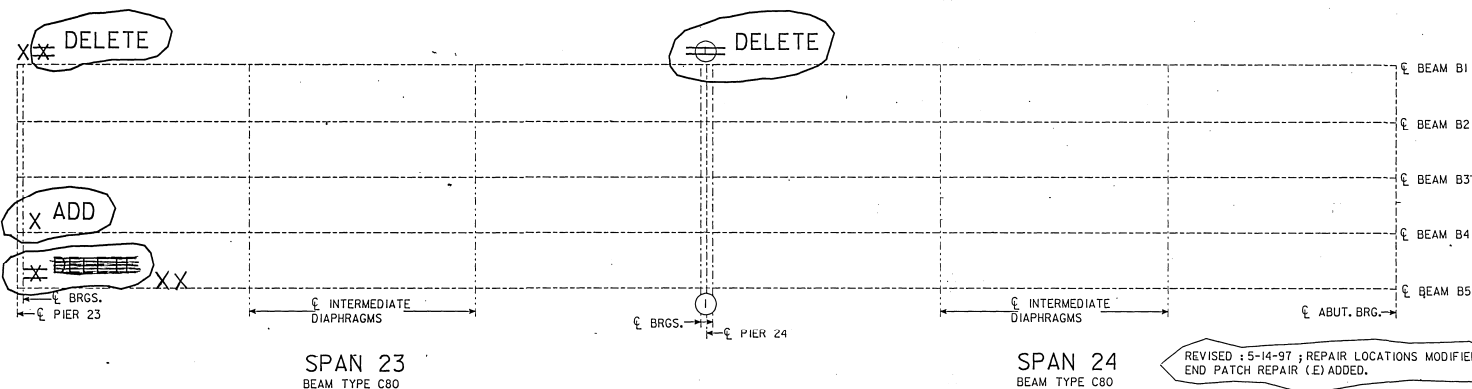
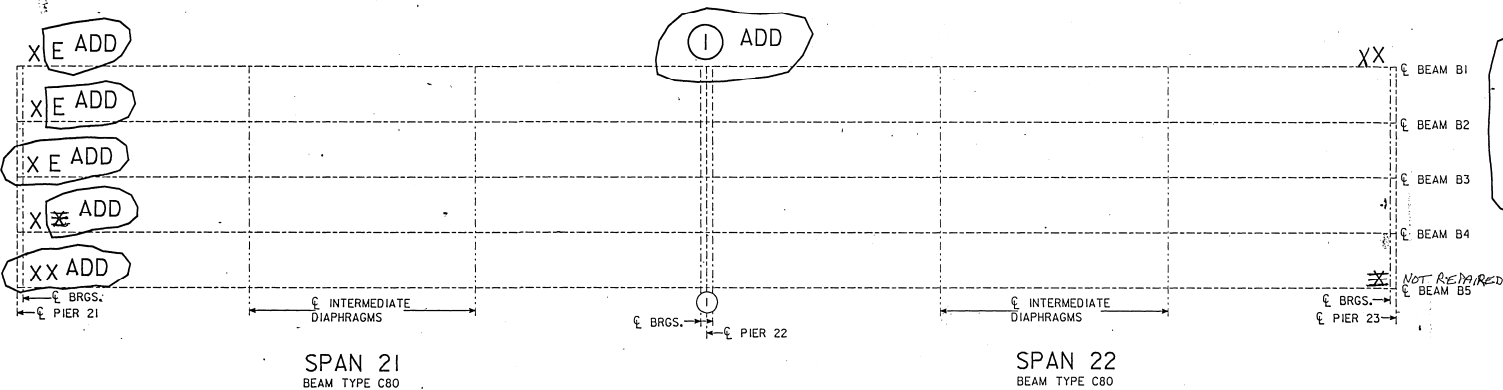
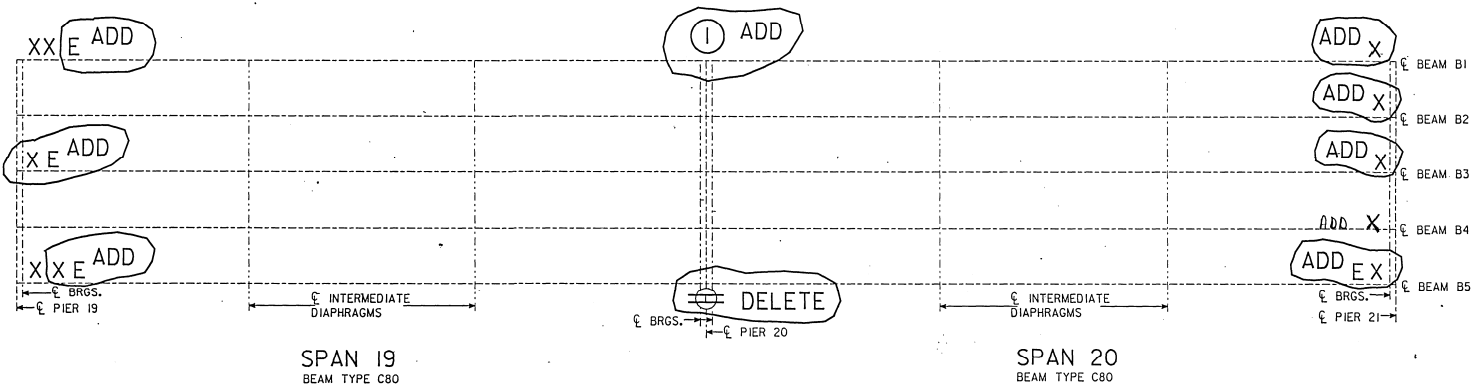
DESIGN FOR REPAIRS TO
MISSISSIPPI RIVER BRIDGE
AT
MUSCATINE IOWA
CONCRETE BEAM REPAIR DETAILS
FEBRUARY, 1997
MUSCATINE COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - PROJECT DEVELOPMENT DIVISION
DESIGN SHEET NO. 4 OF 14 FILE NO. 29148 DESIGN NO. 197

DESIGNED BY S.K. GUPTA
CHECKED BY R. RYSAVY
CADD FILE H70197.S04

MUSCATINE COUNTY

PROJECT NUMBER

STATE	FEDERAL REGION	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	7		6	16



E = END PATCH REPAIR
(REMOVE EXISTING PATCH &
REPLACE WITH MASTER BUILDERS
EMACO P22 OR SIKATOP ARMATEC
110 WITH A FINISH COAT OF
SIKATOP 123 PLUS)

LEGEND :
BEAM END REPAIR : X = SHALLOW REPAIR
XX = REGULAR REPAIR
I INDICATES LOCATION OF REPAIRS AT
PIER DIAPHRAGM, SEE DESIGN SHT. 7
FOR REPAIR DETAILS.

DESIGN FOR REPAIRS TO
MISSISSIPPI RIVER BRIDGE
AT
MUSCATINE IOWA
CONCRETE BEAM REPAIR DETAILS
FEBRUARY, 1997
MUSCATINE COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - PROJECT DEVELOPMENT DIVISION
DESIGN SHEET NO. 5 OF 14 FILE NO. 23148 DESIGN NO. 197

DESIGNED BY S.K. GUPTA
CHECKED BY H. RYSAVY
CADD FILE h70197.s05

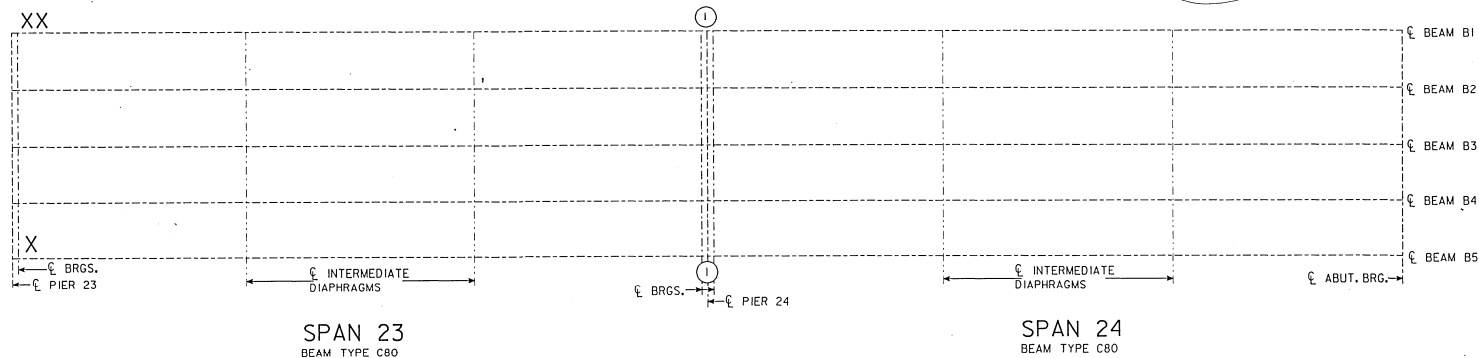
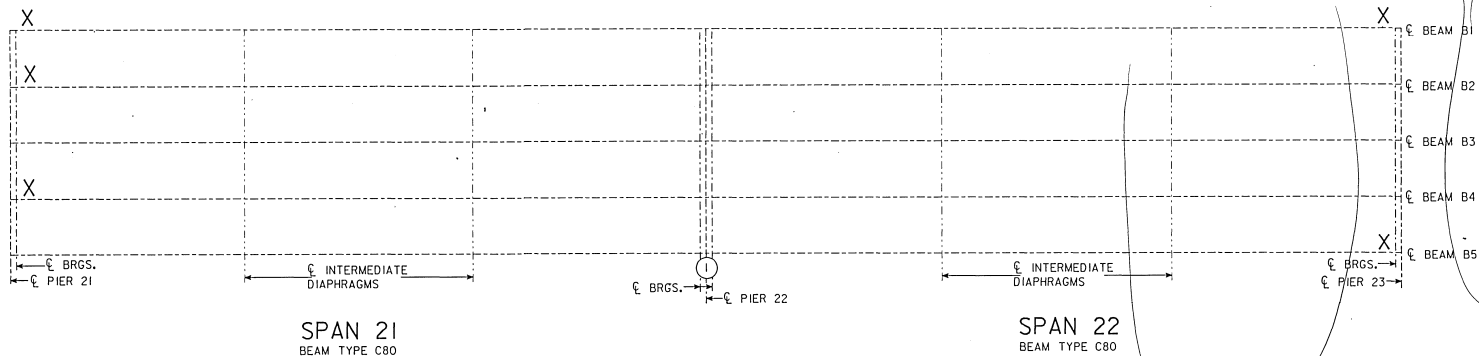
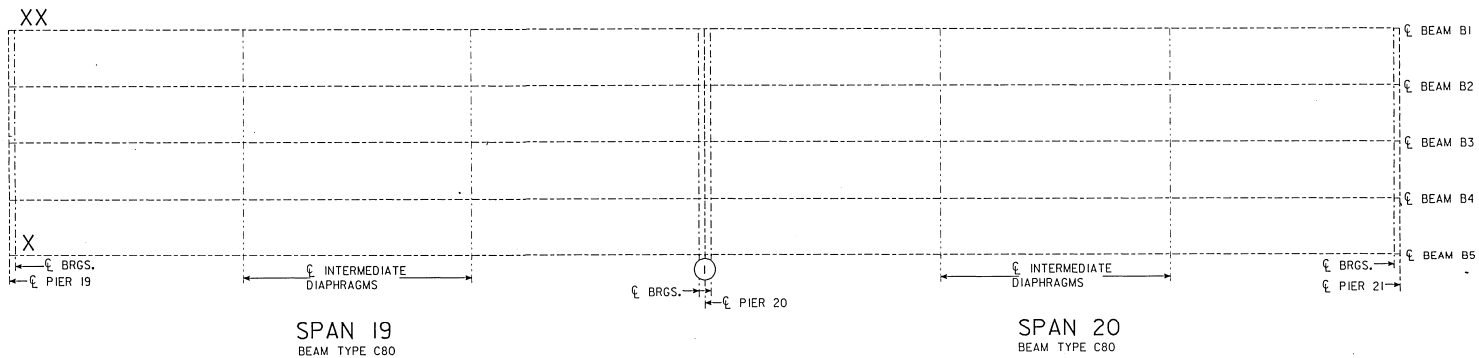
MUSCATINE COUNTY

PROJECT NUMBER

STATE IOWA FISCAL YEAR 7 SHEET NO. 7 TOTAL SHEETS 16

PLAN VIEWS SHOWING REPAIR LOCATIONS

REVISED : 5-14-97 ; REPAIR LOCATIONS MODIFIED.
END PATCH REPAIR (E) ADDED.



LEGEND :

BEAM END REPAIR : X = SHALLOW REPAIR
XX = REGULAR REPAIR

① INDICATES LOCATION OF REPAIRS AT
PIER DIAPHRAGM, SEE DESIGN SHT. 7
FOR REPAIR DETAILS.

DESIGN FOR REPAIRS TO
MISSISSIPPI RIVER BRIDGE
AT
MUSCATINE IOWA
CONCRETE BEAM REPAIR DETAILS
FEBRUARY, 1997
MUSCATINE COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - PROJECT DEVELOPMENT DIVISION
DESIGN SHEET NO. 5 OF 14 FILE NO. 29148 DESIGN NO. 197

PLAN VIEWS SHOWING REPAIR LOCATIONS

DESIGNED BY S.K. GUPTA CHECKED BY
DETAILED BY R. RYSAVY CADD FILE h70197.s05

MUSCATINE COUNTY

PROJECT NUMBER

STATE	FEDERAL REGION	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	7		7	16

GENERAL BEAM END REPAIR NOTES :

ALL COSTS ASSOCIATED WITH REPAIRING THE ENDS OF PRESTRESSED CONCRETE BEAMS SHALL BE INCLUDED IN THE PRICE BID FOR "REPAIR BEAM ENDS". THE CONTRACTOR WILL BE PAID THE CONTRACT UNIT PRICE FOR EACH BEAM END REPAIRED. A TOTAL OF 9 BEAM ENDS ARE DESIGNATED TO BE REPAIRED OF WHICH 4 ARE DESIGNATED TO HAVE REGULAR REPAIR AREAS AND 5 ARE DESIGNATED TO HAVE SHALLOW REPAIR AREAS AS SHOWN ON DESIGN SHEETS 3, 4 & 5. BEAM ENDS DESIGNATED ARE BASED ON FIELD REVIEW, ADDITIONAL BEAM ENDS MAY REQUIRE REPAIR AT THE TIME OF CONSTRUCTION.

TEMPORARY BLOCKING SUPPORTS UNDER THE CONCRETE DIAPHRAGMS WILL BE REQUIRED WHENEVER REMOVAL FOR CONCRETE REPAIR RESULTS IN LOSS OF BEARING AT THE BEAM ENDS.

OF 15% OR MORE

PRESTRESSED CONCRETE BEAM END REPAIR NOTES :

THE SPALLED AREAS OF PRESTRESSED BEAM ENDS SHALL BE REPAIRED AS FOLLOWS :

1. REMOVE SPALLED AND DETERIORATED CONCRETE. REMOVAL TOOLS SHALL BE LIMITED TO 15 LB. CHIPPING HAMMERS AND TO HAND TOOLS. IF CONCRETE REMOVAL RESULTS IN MORE THAN HALF THE DIAMETER OF ANY REINFORCING BAR OR PRESTRESSING STRAND BEING EXPOSED THEN REMOVAL SHALL CONTINUE TO A MINIMUM OF $\frac{1}{2}$ INCH BEHIND THE BAR OR STRAND. IF REMOVAL EXTENDS DEEPER THAN $\frac{1}{2}$ INCH BEHIND THE FIRST INTERIOR STRAND CONTACT THE ENGINEER PRIOR TO PROCEEDING WITH REPAIR. EXTREME CARE SHALL BE EXERCISED DURING CONCRETE REMOVAL SO THAT EXPOSED STRANDS AND REINFORCING BARS ARE NOT DAMAGED. ANY DAMAGE DONE TO THE STRANDS OR BARS BY THE CONTRACTOR SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE STATE. AREAS TO BE REPAIRED SHALL BE DETERMINED BY THE ENGINEER USING VISUAL AND AUDIBLE INSPECTION.

2. SAW CUT VERTICAL EDGES OF REMOVAL AREA $\frac{1}{2}$ INCH DEEP AND CHIP SQUARE. SANDBLAST OR HYDROBLAST CONCRETE SURFACES IN THE REPAIR AREA AND THE EXPOSED STEEL TO REMOVE ALL RUST. REMOVE ALL DUST AND DEBRIS RESULTING FROM CHIPPING AND BLASTING BY USING CLEAN COMPRESSED AIR.

3. APPLY TWO COATS OF PROTECTIVE COATING (SIKATOP 109 ARMATEC OR MASTER BUILDERS EMACO P22) TO THE EXPOSED PRESTRESSING STRANDS OR REINFORCING BARS ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.

4. APPLY PATCHING MATERIAL. TYPE OF MATERIAL AND APPLICATION OF MATERIAL DEPENDS UPON THE EXTENT OF CONCRETE REMOVAL. THE TWO TYPES OF REPAIR ARE TO BE AS FOLLOWS :

A. SHALLOW REPAIR :

SHALLOW REPAIR AREAS ARE THOSE WHERE CONCRETE REMOVAL DOES NOT RESULT IN REINFORCING BARS OR PRESTRESSING STRANDS BEING EXPOSED FOR MORE THAN HALF THEIR DIAMETERS. PATCHING MATERIAL SHALL BE SIKAREPAIR 123 PLUS OR MASTER BUILDERS MASTERPATCH 230 VP. PATCHING MATERIALS SHALL CONTAIN ONE OF THE FOLLOWING CORROSION INHIBITORS : RHEOCRETE 222 PLUS (1 GALLON/CU.YD.), DCI CALCIUM NITRIDE (4 TO 6 GALLON/CU.YD.) OR ARMATEC 2000 (ONE PINT/CU.YD.). APPLY PATCHING MATERIAL TO MATCH ORIGINAL BEAM SURFACE. PATCH NEED NOT BE FORMED. FOLLOW MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS REGARDING COMPATIBILITY OF PATCHING MATERIAL AND CORROSION INHIBITOR AS WELL AS FOR MIXING, PLACING AND CURING.

B. REGULAR REPAIR :

REGULAR REPAIR AREAS ARE THOSE WHERE CONCRETE REMOVAL EXTENDED BEHIND THE REINFORCING BARS AND/OR PRESTRESSING STRANDS. THESE AREAS ARE TO BE PLACED USING FORMS TO MATCH THE ORIGINAL BEAM SURFACE. PATCHING MATERIAL SHALL BE ONE OF THE FOLLOWING GROUTS : MASTER BUILDERS, EMACO 577-CR OR SIKATOP III PLUS. PATCHING MATERIAL SHALL CONTAIN ONE OF THE FOLLOWING CORROSION INHIBITORS : RHEOCRETE 222 PLUS (1 GALLON/CU.YD.), DCI CALCIUM NITRIDE (4 TO 6 GALLON/CU.YD.) OR ARMATEC 2000 (ONE PINT/CU.YD.). FOLLOW MANUFACTURER'S RECOMMENDATIONS REGARDING COMPATIBILITY OF PATCHING MATERIAL AND CORROSION INHIBITOR AS WELL AS FOR MIXING, PLACING AND CURING. FORMS ARE TO REMAIN IN PLACE FOR SEVEN DAYS.

5. APPLY CONCRETE SEALER TO 6 FEET OF THE ENDS OF THE REPAIRED BEAMS AS SHOWN ON THIS SHEET. IN ACCORDANCE WITH SECTION 4139 OF THE STANDARD SPECIFICATIONS, ALL COSTS ASSOCIATED WITH SEALING OF THE BEAM ENDS IS TO BE INCLUDED IN THE PRICE BID FOR "REPAIR BEAM ENDS".

BEAM END REPAIR SHALL BE DONE WHILE TRAFFIC IS RESTRICTED TO THE OPPOSITE SIDE OF THE BRIDGE DECK. REFER TO THE TRAFFIC CONTROL PLAN FOR APPROPRIATE TRAFFIC SETUP.

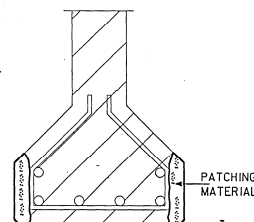
DELETE

ADD :
REMOVAL WILL INCLUDE
EXISTING EPOXY PATCHING
MATERIAL AT BEAM ENDS
WHERE SPECIFIED

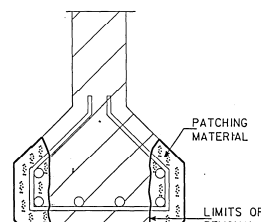
ADD : SIKAREPAIR 123 PLUS OR MASTER BUILDERS MASTERPATCH 230 VP

REPLACE

5. SANDBLAST 6 FEET OF THE ENDS OF THE REPAIRED BEAMS AS SHOWN ON THIS SHEET. THE SANDBLASTING SHALL BE A LIGHT BLAST JUST ENOUGH TO EXPOSE THE FINE AGGREGATES. ALL COSTS ASSOCIATED WITH SANDBLASTING IS TO BE INCLUDED IN THE PRICE BID FOR "REPAIR BEAM ENDS".

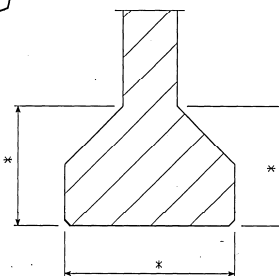


SHALLOW REPAIR AREAS



REGULAR REPAIR AREAS

NOTE : THE REPAIR AREAS SHOWN IS SCHEMATIC ONLY. THE ACTUAL AREA TO BE REPAIRED WILL BE DETERMINED BY THE ENGINEER. FOR LOCATION OF BEAM ENDS TO BE REPAIRED SEE DESIGN SHEETS 3, 4 & 5.



SANDBLAST THE LIMITS OF CONCRETE SEALER SANDBLASTING

APPLY CONCRETE SEALER TO THE EXPOSED SURFACES OF THE BOTTOM FLANGE WITHIN THE LIMITS SHOWN TO 6 FEET OF THE BEAM ENDS.

REVISED : 5-14-97 ; NOTES MODIFIED.

DESIGN FOR REPAIRS TO
MISSISSIPPI RIVER BRIDGE
AT
MUSCATINE IOWA
BEAM END REPAIR DETAILS & NOTES
FEBRUARY, 1997
MUSCATINE COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - PROJECT DEVELOPMENT DIVISION
DESIGN SHEET NO. 6 OF 14 FILE NO. 29148 DESIGN NO. 197

DESIGNED BY S.K. GUPTA CHECKED BY
DETAILED BY R.R. SAVY CADD FILE h70197.s06

MUSCATINE COUNTY

PROJECT NUMBER

STATE IOWA REGION 7 FISCAL YEAR 99 SHEET NO. 6 TOTAL SHEETS 16

GENERAL BEAM END REPAIR NOTES :

ALL COSTS ASSOCIATED WITH REPAIRING THE ENDS OF PRESTRESSED CONCRETE BEAMS SHALL BE INCLUDED IN THE PRICE BID FOR "REPAIR BEAM ENDS". THE CONTRACTOR WILL BE PAID THE CONTRACT UNIT PRICE FOR EACH BEAM END REPAIRED. A TOTAL OF 29 BEAM ENDS ARE DESIGNATED TO BE REPAIRED OF WHICH 15 ARE DESIGNATED TO HAVE REGULAR REPAIR AREAS AND 14 ARE DESIGNATED TO HAVE SHALLOW REPAIR AREAS AS SHOWN ON DESIGN SHEETS 3, 4 & 5. BEAM ENDS DESIGNATED ARE BASED ON FIELD REVIEW, ADDITIONAL BEAM ENDS MAY REQUIRE REPAIR AT THE TIME OF CONSTRUCTION.

TEMPORARY BLOCKING SUPPORTS UNDER THE CONCRETE DIAPHRAGMS WILL BE REQUIRED WHENEVER REMOVAL FOR CONCRETE REPAIR RESULTS IN LOSS OF BEARING AT THE BEAM ENDS.

PRESTRESSED CONCRETE BEAM END REPAIR NOTES :

THE SPALLED AREAS OF PRESTRESSED BEAM ENDS SHALL BE REPAIRED AS FOLLOWS :

1. REMOVE SPALLED AND DETERIORATED CONCRETE. REMOVAL TOOLS SHALL BE LIMITED TO 15 LB. CHIPPING HAMMERS AND TO HAND TOOLS. IF CONCRETE REMOVAL RESULTS IN MORE THAN HALF THE DIAMETER OF ANY REINFORCING BAR OR PRESTRESSING STRAND BEING EXPOSED THEN REMOVAL SHALL CONTINUE TO A MINIMUM OF $\frac{1}{4}$ INCH BEHIND THE BAR OR STRAND. IF REMOVAL EXTENDS DEEPER THAN $\frac{1}{4}$ INCH BEHIND THE FIRST INTERIOR STRAND CONTACT THE ENGINEER PRIOR TO PROCEEDING WITH REPAIR. EXTREME CARE SHALL BE EXERCISED DURING CONCRETE REMOVAL SO THAT EXPOSED STRANDS AND REINFORCING BARS ARE NOT DAMAGED. ANY DAMAGE DONE TO THE STRANDS OR BARS BY THE CONTRACTOR SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE STATE. AREAS TO BE REPAIRED SHALL BE DETERMINED BY THE ENGINEER USING VISUAL AND AUDIBLE INSPECTION.

2. SAW CUT VERTICAL EDGES OF REMOVAL AREA $\frac{1}{4}$ INCH DEEP AND CHIP SQUARE. SANDBLAST OR HYDROBLAST CONCRETE SURFACES IN THE REPAIR AREA AND THE EXPOSED STEEL TO REMOVE ALL RUST. REMOVE ALL DUST AND DEBRIS RESULTING FROM CHIPPING AND BLASTING BY USING CLEAN COMPRESSED AIR.

3. APPLY TWO COATS OF PROTECTIVE COATING (SIKATOP 108 ARMATEC OR MASTER BUILDERS EMACO P22) TO THE EXPOSED PRESTRESSING STRANDS OR REINFORCING BARS ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.

4. APPLY PATCHING MATERIAL. TYPE OF MATERIAL AND APPLICATION OF MATERIAL DEPENDS UPON THE EXTENT OF CONCRETE REMOVAL. THE TWO TYPES OF REPAIR ARE TO BE AS FOLLOWS :

A. SHALLOW REPAIR :

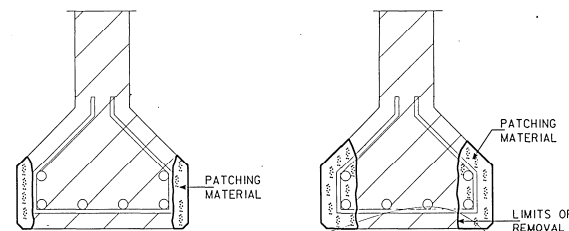
SHALLOW REPAIR AREAS ARE THOSE WHERE CONCRETE REMOVAL DOES NOT RESULT IN REINFORCING BARS OR PRESTRESSING STRANDS BEING EXPOSED FOR MORE THAN HALF THEIR DIAMETERS. PATCHING MATERIAL SHALL BE SIKAREPAIR 123 PLUS OR MASTER BUILDERS MASTERPATCH 230 VP. PATCHING MATERIALS SHALL CONTAIN ONE OF THE FOLLOWING CORROSION INHIBITORS : RHEOCRETE 222 PLUS (1 GALLON/CU.YD.), DCI CALCIUM NITRIDE (4 TO 6 GALLON/CU.YD.) OR ARMATEC 2000 (ONE PINT/CU.YD.). APPLY PATCHING MATERIAL TO MATCH ORIGINAL BEAM SURFACE. PATCH NEED NOT BE FORMED. FOLLOW MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS REGARDING COMPATIBILITY OF PATCHING MATERIAL AND CORROSION INHIBITOR AS WELL AS FOR MIXING, PLACING AND CURING.

B. REGULAR REPAIR :

REGULAR REPAIR AREAS ARE THOSE WHERE CONCRETE REMOVAL EXTENDED BEHIND THE REINFORCING BARS AND/OR PRESTRESSING STRANDS. THESE AREAS ARE TO BE PLACED USING FORMS TO MATCH THE ORIGINAL BEAM SURFACE. PATCHING MATERIAL SHALL BE ONE OF THE FOLLOWING GROUTS : MASTER BUILDERS EMACO S77-OR OR SIKATOP 111 PLUS. PATCHING MATERIAL SHALL CONTAIN ONE OF THE FOLLOWING CORROSION INHIBITORS : RHEOCRETE 222 PLUS (1 GALLON/CU.YD.), DCI CALCIUM NITRIDE (4 TO 6 GALLON/CU.YD.) OR ARMATEC 2000 (ONE PINT/CU.YD.). FOLLOW MANUFACTURER'S RECOMMENDATIONS REGARDING COMPATIBILITY OF PATCHING MATERIAL AND CORROSION INHIBITOR AS WELL AS FOR MIXING, PLACING AND CURING. FORMS ARE TO REMAIN IN PLACE FOR SEVEN DAYS.

5. APPLY CONCRETE SEALER TO 6 FEET OF THE ENDS OF THE REPAIRED BEAMS AS SHOWN ON THIS SHEET, IN ACCORDANCE WITH SECTION 4139 OF THE STANDARD SPECIFICATIONS. ALL COSTS ASSOCIATED WITH SEALING OF THE BEAM ENDS IS TO BE INCLUDED IN THE PRICE BID FOR "REPAIR BEAM ENDS".

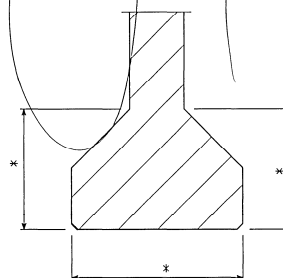
BEAM END REPAIR SHALL BE DONE WHILE TRAFFIC IS RESTRICTED TO THE OPPOSITE SIDE OF THE BRIDGE DECK. REFER TO THE TRAFFIC CONTROL PLAN FOR APPROPRIATE TRAFFIC SETUP.



SHALLOW REPAIR AREAS

REGULAR REPAIR AREAS

NOTE : THE REPAIR AREAS SHOWN IS SCHEMATIC ONLY. THE ACTUAL AREA TO BE REPAIRED WILL BE DETERMINED BY THE ENGINEER. FOR LOCATION OF BEAM ENDS TO BE REPAIRED SEE DESIGN SHEETS 3, 4 & 5.



LIMITS OF CONCRETE SEALER

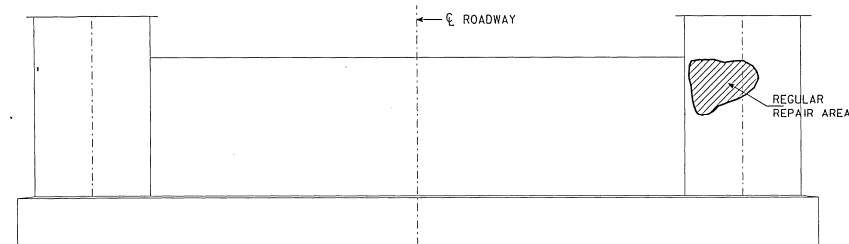
- * APPLY CONCRETE SEALER TO THE EXPOSED SURFACES OF THE BOTTOM FLANGE WITHIN THE LIMITS SHOWN TO 6 FEET OF THE BEAM ENDS.

DESIGN FOR REPAIRS TO					
MISSISSIPPI RIVER BRIDGE					
AT					
MUSCATINE IOWA					
BEAM END REPAIR DETAILS & NOTES					
FEBRUARY, 1997					
MUSCATINE COUNTY					
IOWA DEPARTMENT OF TRANSPORTATION - PROJECT DEVELOPMENT DIVISION					
DESIGN SHEET NO. 6	OF 14	FILE NO. 29148	DESIGN NO. 197		
STATE	REGION	FISCAL YEAR	SHEET NO.	TOTAL SHEETS	
IOWA	7		5	16	

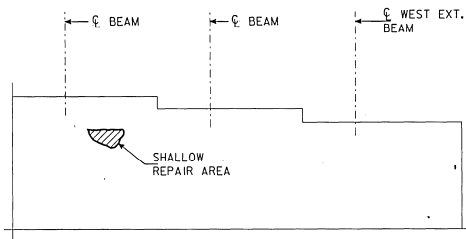
DESIGNED BY S.K. GUPTA CHECKED BY
 PREPARED BY R. RYSAVY CAD FILE h70197.s06

MUSCATINE COUNTY

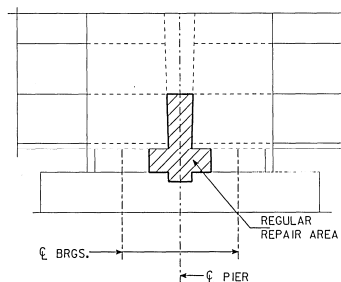
PROJECT NUMBER



PART ELEVATION - PIER #8
(LOOKING SOUTH)



PART ELEVATION - PIER 19
(SHOWING SOUTH FACE OF PIER CAP)



PIER DIAPHRAGM
REPAIR DETAILS

NOTE: DETAIL IS FOR AREAS DESIGNATED AS ①
ON DESIGN SHEETS 3,4 & 5.

A NUMBER OF AREAS ON THE NORTH AND SOUTH FACES OF THE PIER DIAPHRAGMS BETWEEN BEAMS ARE ALSO SPALLED. THE INTENT OF THIS DESIGN IS TO NOT REPAIR THOSE AREAS. ONLY THE AREAS ON THE ENDS (EAST AND WEST) OF THE DIAPHRAGM AS DESIGNATED ABOVE WILL BE REPAIRED.

NOTE:
FOR DEFINITION AND DETAILS OF REGULAR AND SHALLOW REPAIR
SEE DESIGN SHEET 8.

DESIGN FOR REPAIRS TO
MISSISSIPPI RIVER BRIDGE
AT
MUSCATINE IOWA
CONCRETE REPAIR AREAS

FEBRUARY, 1997

MUSCATINE COUNTY

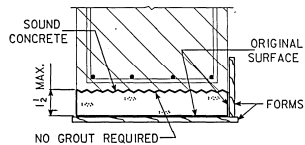
IOWA DEPARTMENT OF TRANSPORTATION - PROJECT DEVELOPMENT DIVISION
DESIGN SHEET NO. 7 OF 14 FILE NO. 29148 DESIGN NO. 197

DESIGNED BY S.K. GUPTA CHECKED BY
REDETAILED BY B. RYSAVY CADD FILE h70197.s07

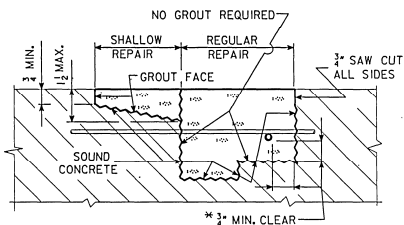
MUSCATINE COUNTY

PROJECT NUMBER

STATE	FHWA REGION	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	7		9	16

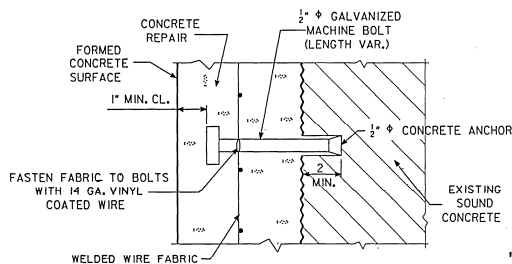


SHALLOW REPAIR
BOTTOM SURFACE



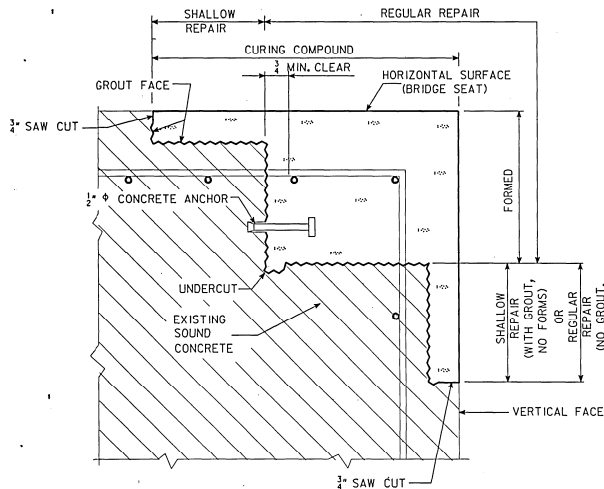
REPAIR DEFINITION

* INDICATES CLEARANCE FOR AN UN-BONDED REBAR.

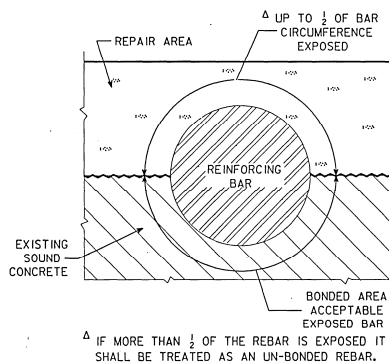


ANCHOR DETAIL

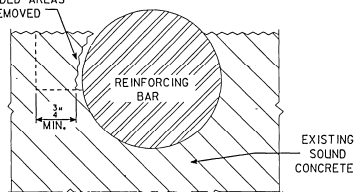
FOR SPACING AND USE OF CONCRETE ANCHORS
AND WWF SEE THE STANDARD NOTES.



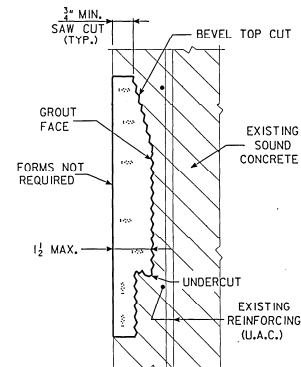
CORNER REPAIR



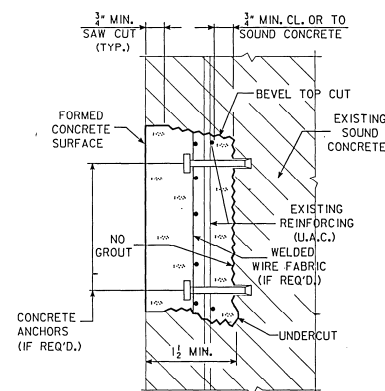
ALL UN-BONDED AREAS
TO BE REMOVED



CONCRETE REMOVAL
ADJACENT TO REINFORCING



SHALLOW REPAIR
VERTICAL FACE



REGULAR REPAIR
VERTICAL FACE

STANDARD NOTES:

THE SPALLED AND HOLLOW AREAS OF THIS BRIDGE EXCEPT FOR BEAM END REPAIRS AS NOTED AND SHOWN IN THESE PLANS SHALL BE REPAIRED AS FOLLOWS:
ALL THE COSTS OF EQUIPMENT AND MATERIALS REQUIRED TO REPAIR THE SPALLED AND HOLLOW AREAS OF THIS BRIDGE SHALL BE INCLUDED IN THE PRICE BID FOR "CONCRETE REPAIR" EXCEPT FOR THOSE INCLUDED IN BEAM END REPAIR.
THE PRICE BID FOR "CONCRETE REPAIR" SHALL INCLUDE THE COST OF ALL CONCRETE ANCHORS AND MESH REQUIRED BY THE PLANS.

THE ENGINEER SHALL DETERMINE AND OUTLINE BY VISUAL AND AUDIBLE INSPECTION THE ACTUAL AREAS OF THE CONCRETE REPAIRS. THE CONTRACTOR SHALL BE PAID FOR THE ACTUAL AMOUNT OF REPAIRS MADE ON A SQUARE FOOT BASIS BASED ON THE PRICE BID PER SQUARE FOOT.
ALL EXISTING REINFORCING BARS THAT ARE EXPOSED BY CONCRETE REMOVAL SHALL BE CLEANED AND CAREFULLY INCORPORATED INTO THE NEW WORK, EXCEPT BADLY DETERIORATED EXISTING REINFORCING WHICH SHALL BE REPLACED AS DIRECTED BY THE ENGINEER.

THE CONCRETE ANCHORS REQUIRED SHALL HAVE A MINIMUM PULL OUT OF 5000 LBS. BASED ON 4000 PSI CONCRETE. AN ANCHOR MEETING THE REQUIREMENTS OF IOWA D.O.T. MATERIALS LM. 453.09 AND THE PULL OUT LOAD ABOVE IS REQUIRED. THE ANCHORS SHALL BE GALVANIZED AND SHALL BE INSTALLED ACCORDING TO RECOMMENDATIONS OF THE MANUFACTURER. THE COST OF FURNISHING AND INSTALLING THE CONCRETE ANCHORS SHALL BE INCLUDED IN THE PRICE BID FOR "CONCRETE REPAIR".

THE WELDED WIRE FABRIC SHALL BE ASTM A185 AND GALVANIZED AS PER ASTM A-641. THE WWF WIRES SHALL BE SPACED 3 X 3 OR 4 X 4 AND THE WIRES SHALL HAVE A NOMINAL AREA OF 0.014 TO 0.029 SQUARE INCHES INCLUSIVE, EXAMPLE "WWF 3 X 3 - W1.4 X W2.9".

WHERE REINFORCEMENT HAS BEEN EXPOSED AND CLEARANCE AROUND THE PERIPHERY OF THE EXISTING BAR IS PROVIDED NO SUPPLEMENTAL REINFORCING IS REQUIRED, EXCEPT WHERE EXISTING REINFORCEMENT DENSITY AND PATTERN ARE SUCH THAT INDIVIDUAL OPEN SPACES BETWEEN BARS ARE OF 1.5 SQUARE FOOT OR LARGER. FOR THIS CONDITION 1/2\"/>

SEE "STRUCTURAL CONCRETE REPAIR" IN CURRENT STANDARD SPECIFICATIONS FOR MORE INFORMATION CONCERNING THIS WORK.

NOTE: WELDED WIRE FABRIC OR CONCRETE ANCHORS ARE NOT REQUIRED FOR PIER DIAPHRAGM REPAIRS.

CONCRETE PLACEMENT QUANTITIES			
MARK	TYPE	UNITS	QUANTITY
①	SHALLOW REPAIR *	SQ. FT.	5 ✓
②	REGULAR REPAIR **	SQ. FT.	18 ✓
		TOTAL (SQ. FT.)	23 ✓

* REPAIR AT PIER #19 SEE DESIGN SHEET 7.

** REPAIRS AT PIER DIAPHRAGMS AND AT PIER #8, SEE DESIGN SHEET 7.

ESTIMATED CONCRETE REPAIR QUANTITIES		
DESCRIPTION	UNITS	AMOUNT
CONCRETE REPAIR	SQ. FT.	23 ✓

DESIGN FOR REPAIRS TO
MISSISSIPPI RIVER BRIDGE
AT
MUSCATINE IOWA
CONCRETE REPAIRS

MUSCATINE COUNTY

FEBRUARY, 1997

IOWA DEPARTMENT OF TRANSPORTATION - PROJECT DEVELOPMENT DIVISION
DESIGN SHEET NO. 8 OF 14 FILE NO. 29148 DESIGN NO. 197

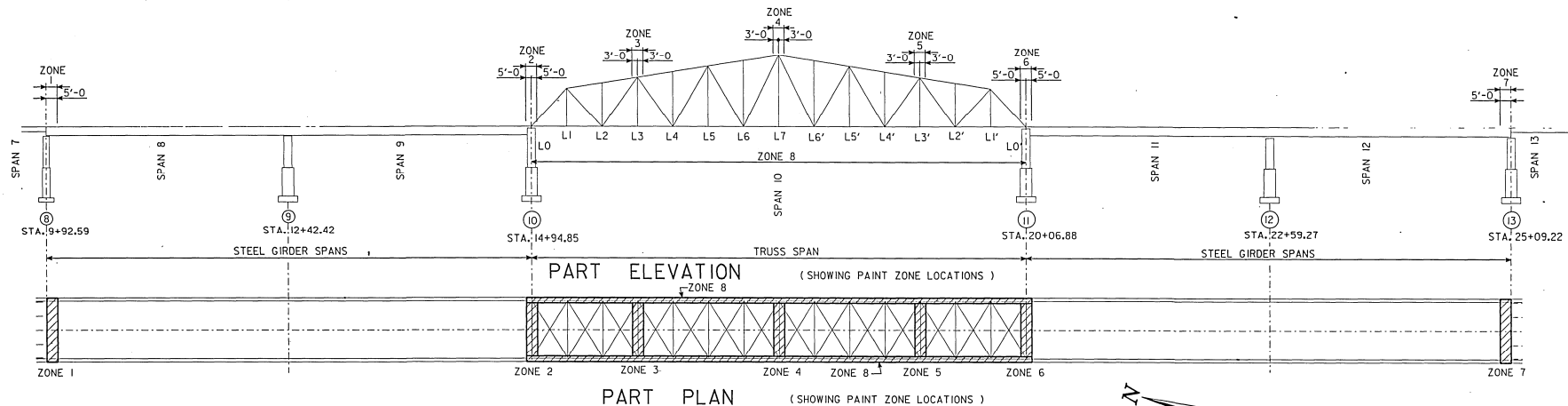
DESIGNED BY S.K. GUPTA CHECKED BY
DETAILED BY ARSADY CADD FILE H70197.300

STANDARD SHEET 1045

MUSCATINE COUNTY

PROJECT NUMBER

STATE IOWA FISCAL YEAR 1997 SHEET NO. 10 TOTAL SHEETS 16



ZONE #1
ALL STEEL FROM THE END OF THE GIRDERS AT PIER 8 TO THE SECOND VERTICAL STIFFENER LOCATED ±5 FEET SOUTH OF THE CENTERLINE OF PIER 8, INCLUDING THE NORTH SIDE OF THE STIFFENER. THE BEARINGS FOR THE STEEL GIRDERS AND THE CONCRETE BEAMS ARE INCLUDED.
NOTE A APPLIES.

ZONE #2
ALL STEEL BELOW THE BOTTOM OF THE DECK BETWEEN THE SECOND VERTICAL STIFFENER LOCATED ±5 FEET NORTH OF THE END OF THE GIRDERS AT PIER 10 AND A LOCATION 5 FEET SOUTH OF THE CENTERLINE OF PIER 10. THIS INCLUDES THE SOUTH SIDE OF THE ABOVE STIFFENER, THE LATERAL PLATES AND ANGLES ATTACHED TO THE BOTTOM CHORD, AND THE END 2 FEET OF THE DIAGONAL BRACES. THE TRUSS CHORDS AND GUSSET PLATES ARE NOT INCLUDED. THEY ARE INCLUDED IN ZONE #8. THE BEARING UNITS ARE INCLUDED.
NOTE B APPLIES.

ZONE #3, 4 & 5
ALL STEEL BELOW THE BOTTOM OF THE DECK AT THE STRINGER RELIEF JOINT FROM A POINT 3 FEET NORTH TO A POINT 3 FEET SOUTH OF THE CENTERLINE OF THE FLOORBEAM. THIS INCLUDES THE LATERAL PLATES AND ANGLES ATTACHED TO THE BOTTOM CHORD AND THE END 2 FEET OF THE DIAGONAL BRACES. THE TRUSS CHORDS AND GUSSET PLATES ARE NOT INCLUDED. THEY ARE INCLUDED IN ZONE #8.

ZONE #6
ALL STEEL BELOW THE BOTTOM OF THE DECK BETWEEN A POINT LOCATED 5 FEET NORTH OF THE CENTERLINE OF PIER 11 AND THE SECOND VERTICAL STIFFENER LOCATED ±5 FEET SOUTH OF PIER 11. THIS INCLUDES THE NORTH SIDE OF THE ABOVE STIFFENER, THE LATERAL PLATES AND ANGLES ATTACHED TO THE BOTTOM CHORD AND THE END 2 FEET OF THE DIAGONAL BRACES. THE TRUSS CHORDS AND GUSSET PLATES ARE NOT INCLUDED. THEY ARE INCLUDED IN ZONE #8. THE BEARING UNITS ARE INCLUDED.
NOTE B APPLIES.

ZONE #7
ALL STEEL FROM THE END OF THE GIRDERS AT PIER 13 TO THE SECOND VERTICAL STIFFENER LOCATED ±5 FEET NORTH OF THE CENTERLINE OF PIER 13, INCLUDING THE SOUTH SIDE OF THE STIFFENER. THE BEARINGS FOR THE STEEL GIRDERS AND THE CONCRETE BEAMS ARE INCLUDED.
NOTE C APPLIES.

ZONE #8
INSIDE AND OUTSIDE OF THE BOTTOM CHORD OF THE UPSTREAM AND DOWNSTREAM TRUSSES BETWEEN PIERS 10 AND 11. THIS ZONE ALSO INCLUDES THE FOLLOWING ITEMS AT EACH BOTTOM CHORD PANEL POINT, EXCEPT THOSE ITEMS ALREADY IN ZONES #2 THRU #6:

1. BOTH VERTICAL GUSSET PLATES.
2. END 2 FEET OF THE FLOORBEAM.
3. TOP AND BOTTOM LATERAL PLATES.
4. END OF LATERAL BRACES TO A POINT 3 INCHES BEYOND THE LATERAL PLATES.
5. INSIDE AND OUTSIDE THE VERTICAL AND DIAGONAL CHORDS (FROM THE BOTTOM END TO 6 INCHES BEYOND THE EDGE OF THE GUSSET PLATES).
6. MISCELLANEOUS CONNECTION PLATES AND BOLTS.

NOTE A :
THE PORTIONS OF THE BRACING FOR THE END SUPPORT GIRDER, WHICH LIE OUTSIDE ZONE #1, SHALL BE SPOT CLEANED (WITH POWER HAND TOOLS) AND PAINTED AS DESCRIBED IN THE SPECIAL PROVISIONS. THE BRACING MEMBERS ARE LOCATED BETWEEN THE END SUPPORT GIRDER AND A POINT ±17 FEET SOUTH OF THE CENTERLINE OF PIER #8.

NOTE B :
THE GALVANIZED STEEL FOR THE FINGER JOINTS AND DRAIN TROUGH IS NOT PART OF THE ZONE PAINTING. HOWEVER, CORRODED AREAS ON THE GALVANIZED STEEL BELOW THE FINGER JOINTS, WHICH ARE ACCESSIBLE, SHALL BE CLEANED AND SPOT PAINTED AS DESCRIBED IN THE SPECIAL PROVISIONS.

NOTE C :
THE PORTIONS OF THE BRACING FOR THE END SUPPORT GIRDER, WHICH LIE OUTSIDE ZONE #7, SHALL BE SPOT CLEANED (WITH POWER HAND TOOLS) AND PAINTED AS DESCRIBED IN THE SPECIAL PROVISIONS. THE BRACING MEMBERS ARE LOCATED BETWEEN THE END SUPPORT GIRDER AND A POINT ±17 FEET NORTH OF THE CENTERLINE OF PIER #13.

ZONE PAINTING AREA ESTIMATE

ZONE	SQUARE FEET
1, 7	4300
2, 6	4400
3, 4, 5	3300
8	21400
TOTAL	33400

THE TOTAL AREA OF STRUCTURAL STEEL IN THE ZONES DESIGNATED TO BE PAINTED IS ESTIMATED TO BE 33,400 SQ. FT.

NOTE :
SEE SUPERSTRUCTURE DETAILS ON DESIGN SHEET 10 FOR CROSS SECTIONS.

DESIGN FOR REPAIRS TO
MISSISSIPPI RIVER BRIDGE
AT
MUSCATINE IOWA
ZONE PAINTING NOTES & DETAILS
FEBRUARY, 1997
MUSCATINE COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - PROJECT DEVELOPMENT DIVISION
DESIGN SHEET NO. 9 OF 14 FILE NO. 29148 DESIGN NO. 197

DESIGNED BY S.K. GUPTA CHECKED BY HT0197.509
DETAILED BY B. D. SARKAR CAD FILE

MUSCATINE COUNTY

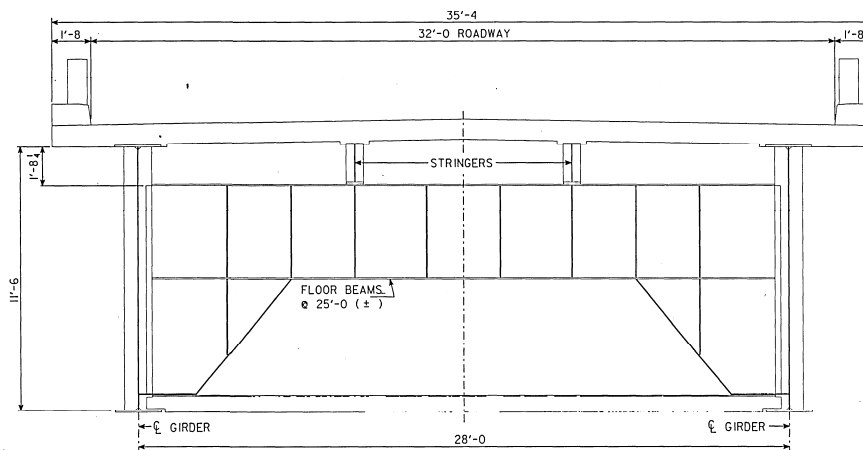
PROJECT NUMBER

STATE
IOWA

FEEDBACK
7

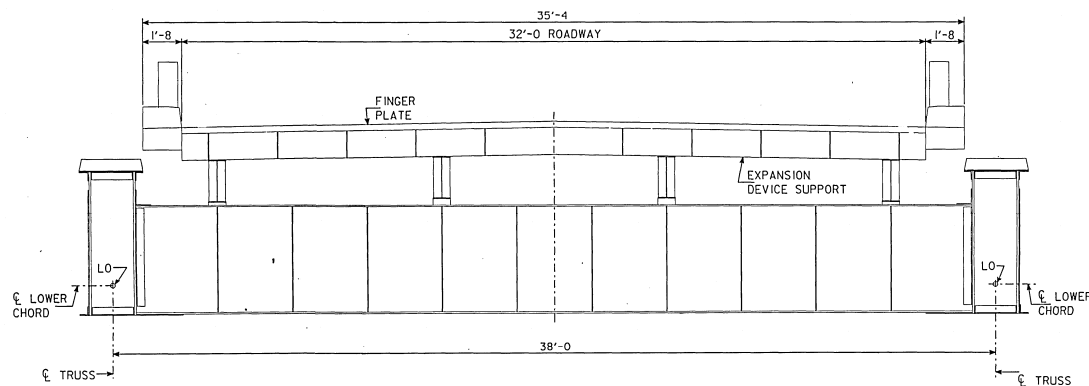
SHEET
11

TOTAL SHEETS
16



TYPICAL CROSS SECTION AT STEEL GIRDER SPAN

NOTE : THIS VIEW INCLUDED FOR INFORMATION ONLY.



TYPICAL CROSS SECTION AT TRUSS SPAN

NOTE : THIS VIEW INCLUDED FOR INFORMATION ONLY.

DESIGN FOR REPAIRS TO
MISSISSIPPI RIVER BRIDGE
AT
MUSCATINE IOWA
SUPERSTRUCTURE DETAILS

FEBRUARY, 1997

MUSCATINE COUNTY

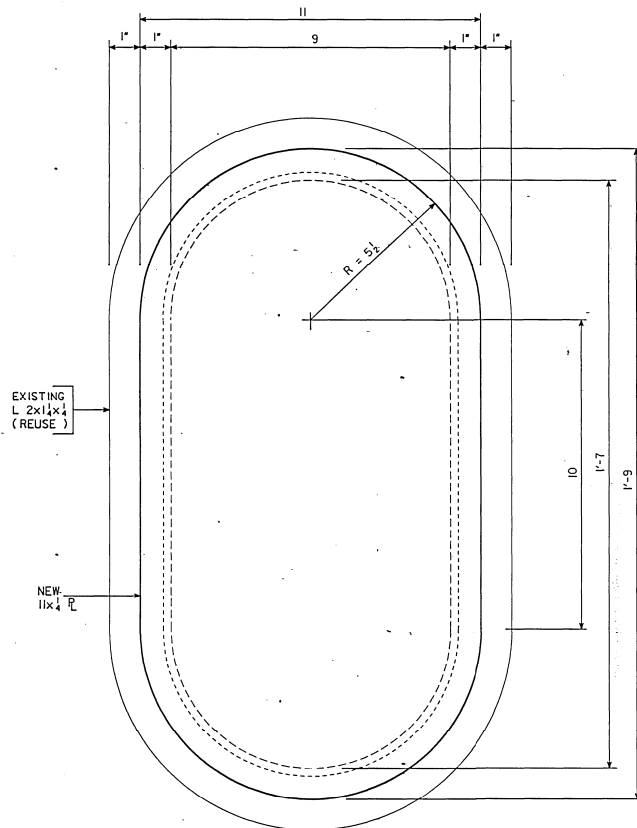
IOWA DEPARTMENT OF TRANSPORTATION - PROJECT DEVELOPMENT DIVISION
DESIGN SHEET NO. 10 OF 14 FILE NO. 29148 DESIGN NO. 197

DESIGNED BY S.K. GUPTA CHECKED BY
DETAILS BY R.P. SALVY CAD FILE h70197.s10

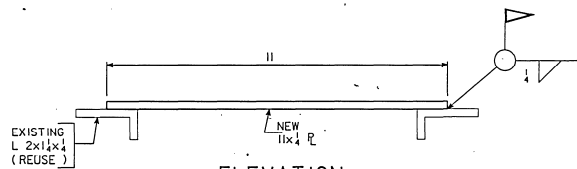
MUSCATINE COUNTY

PROJECT NUMBER

STATE	FEMA REGION	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	7		12	16



PLAN



ELEVATION
(CHAIN AND HOOK BOLT NOT SHOWN)
56 REQUIRED

ADD :
3. CLEAN EXISTING CHAIN & ANGLE BEFORE RE-GALVANIZING. A NEW CHAIN MAY BE USED IF THE CONTRACTOR ELECTS TO DO SO.

ADD :
5. GALVANIZE NEW PLATE AND THE ANGLE & CHAIN.

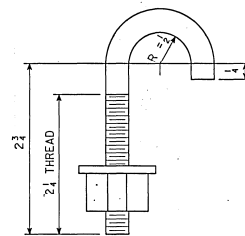
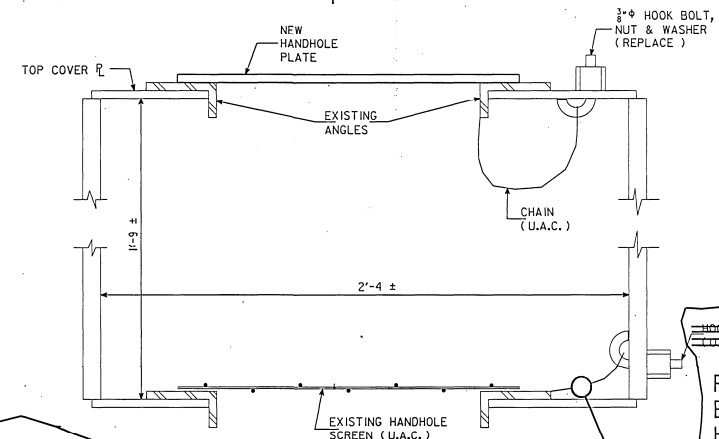
HANDHOLE SCREEN NOTES :

THE EXISTING HANDHOLE SCREENS AT ACCESS HOLES ON TOP OF THE BOTTOM CHORD OF MEMBERS L0 TO L0' ARE TO BE REPLACED WITH NEW PLATES AS DETAILED AND NOTED.

1. REMOVE NUTS AND HOOK BOLTS.
2. CUT WELD BETWEEN ANGLE AND HANDHOLE SCREEN. DISCARD THE EXISTING SCREEN AND THE HOOK BOLT, NUT AND WASHER. DO NOT CUT WELD BETWEEN CHAIN AND ANGLE.
3. BLAST CLEAN EXISTING CHAIN AND ANGLE TO REMOVE ANY RUST AND TO REMOVE THE EXISTING GALVANIZING.
4. WELD NEW PLATE TO ANGLE AS DETAILED.
5. PAINT NEW PLATE AND ANGLE. PAINTING SHALL BE INCLUDED IN ZONE 0 SHOWN ON DESIGN SHEET 9.
6. REINSTALL USING ONE NEW HOOK BOLT, NUT AND WASHER AT EACH SCREEN.
7. A TOTAL OF 240 HANDHOLE SCREEN ASSEMBLIES ARE REQUIRED.

240

DELETE



3/8" HOOK BOLT
(WITH NUT & WASHER)
56 REQUIRED

ADD :
CONNECT EXISTING CHAIN TO THE HOOK BOLT IN THE TOP COVER PLATE. PROVIDE ADDITIONAL CHAIN AS NEEDED.

REMOVE EXISTING HOOK BOLT

REVISED : 5-14-97 ; NOTES MODIFIED.

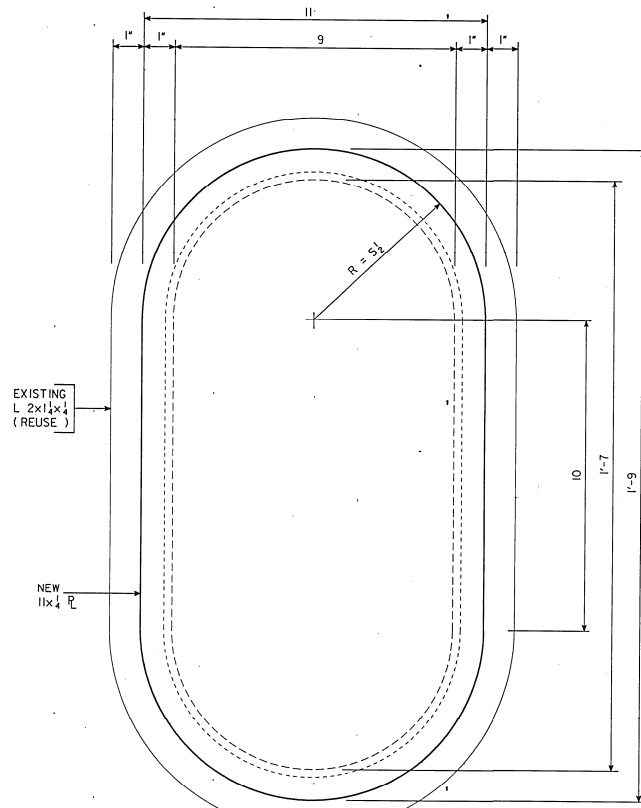
DESIGN FOR REPAIRS TO
MISSISSIPPI RIVER BRIDGE
AT
MUSCATINE IOWA
HANDHOLE SCREEN MODIFICATION DETAILS
FEBRUARY, 1997
MUSCATINE COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - PROJECT DEVELOPMENT DIVISION
DESIGN SHEET NO. 11 OF 14 FILE NO. 29148 DESIGN NO. 197

DESIGNED BY S.K. GUPTA CHECKED BY
DETAILED BY B. R. SAVI CADD FILE h70197.s11

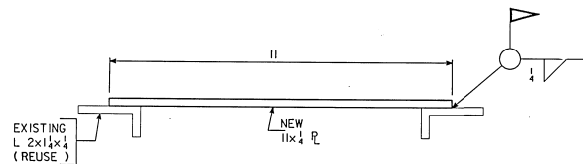
MUSCATINE COUNTY

PROJECT NUMBER

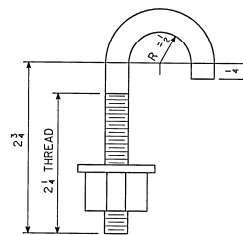
STATE	REGION	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	7		12	16



PLAN



ELEVATION
(CHAIN AND HOOK BOLT NOT SHOWN)
56 REQUIRED

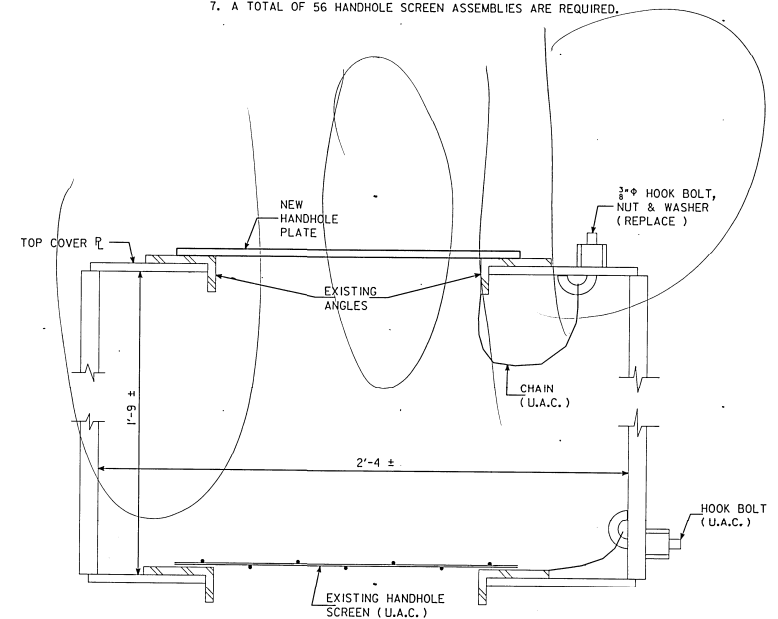


3/8" Φ HOOK BOLT
(WITH NUT & WASHER)
56 REQUIRED

HANDHOLE SCREEN NOTES :

THE EXISTING HANDHOLE SCREENS AT ACCESS HOLES ON TOP OF THE BOTTOM CHORD OF MEMBERS L0 TO L0' ARE TO BE REPLACED WITH NEW PLATES AS DETAILED AND NOTED.

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2. CUT WELD BETWEEN ANGLE AND HANDHOLE SCREEN. DISCARD THE EXISTING SCREEN AND THE HOOK BOLT, NUT AND WASHER. DO NOT CUT WELD BETWEEN CHAIN AND ANGLE.
3. BLAST CLEAN EXISTING CHAIN AND ANGLE TO REMOVE ANY RUST AND TO REMOVE THE EXISTING GALVANIZING.
4. WELD NEW PLATE TO ANGLE AS DETAILED.
5. PAINT NEW PLATE AND ANGLE. PAINTING SHALL BE INCLUDED IN ZONE 8 SHOWN ON DESIGN SHEET 9.
6. REINSTALL USING ONE NEW HOOK BOLT, NUT AND WASHER AT EACH SCREEN.
7. A TOTAL OF 56 HANDHOLE SCREEN ASSEMBLIES ARE REQUIRED.



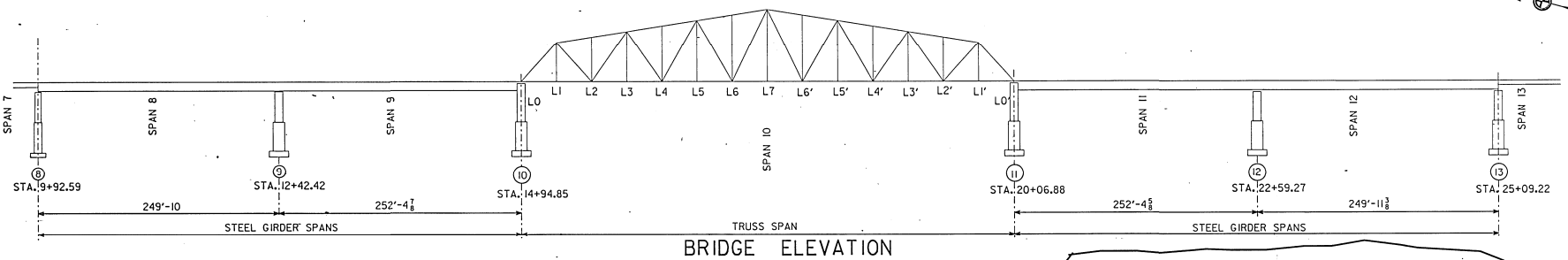
DESIGN FOR REPAIRS TO
MISSISSIPPI RIVER BRIDGE
AT
MUSCATINE IOWA
HANDHOLE SCREEN MODIFICATION DETAILS
FEBRUARY, 1997
MUSCATINE COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - PROJECT DEVELOPMENT DIVISION
DESIGN SHEET NO. 11 OF 14 FILE NO. 29148 DESIGN NO. 197

DESIGNED BY S.K. GUPTA CHECKED BY h70197.sll
DETAILED BY B. ZYSAVY CADD FILE

MUSCATINE COUNTY

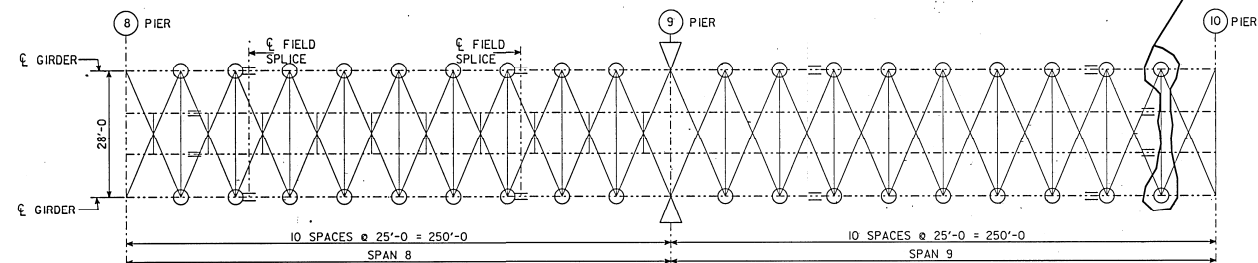
PROJECT NUMBER

STATE	FHWA REGION	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	7		23	76

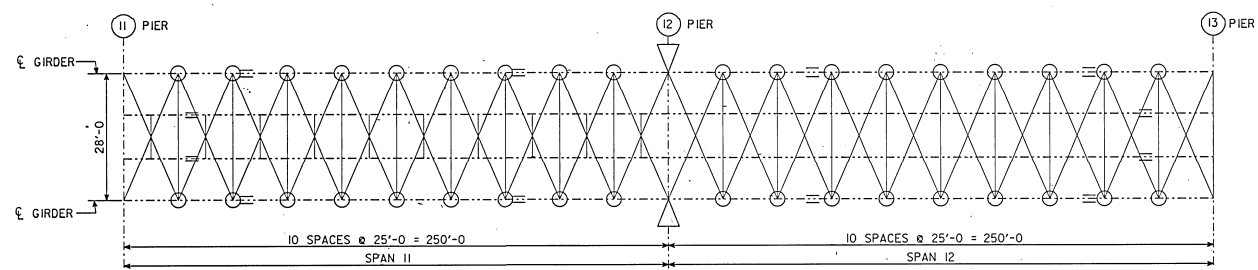


BRIDGE ELEVATION

THESE WERE INSTALLED AS SAMPLES ON 4-7 & 4-8-97.



FRAMING PLAN
(STEEL GIRDER SPANS)



FRAMING PLAN
(STEEL GIRDER SPANS)

NOTES :

- INDICATES BOTH THE GIRDER RETROFIT AND THE GUSSET PLATE RETROFIT AT THE FLOOR BEAM CONNECTION IN ACCORDANCE WITH DETAILS SHOWN ON DESIGN SHEETS 13 & 14.
- △ INDICATES GIRDER RETROFIT AT THE FLOOR BEAM CONNECTION IN ACCORDANCE WITH DETAILS SHOWN ON DESIGN SHEET 13.

NOTE :
GIRDER RETROFIT AT THE FLOOR BEAM CONNECTION REQUIRED AT ~~ALL~~ LOCATIONS.
LATERAL GUSSET PLATE RETROFIT AT THE FLOOR-BEAM CONNECTION REQUIRED AT ~~ALL~~ LOCATIONS.

74

70

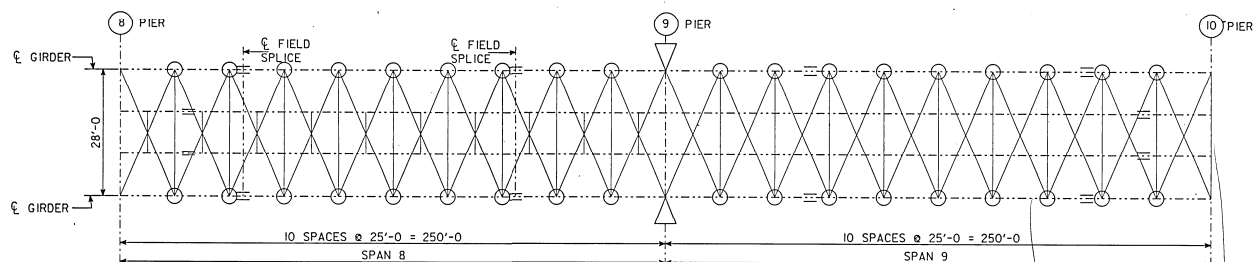
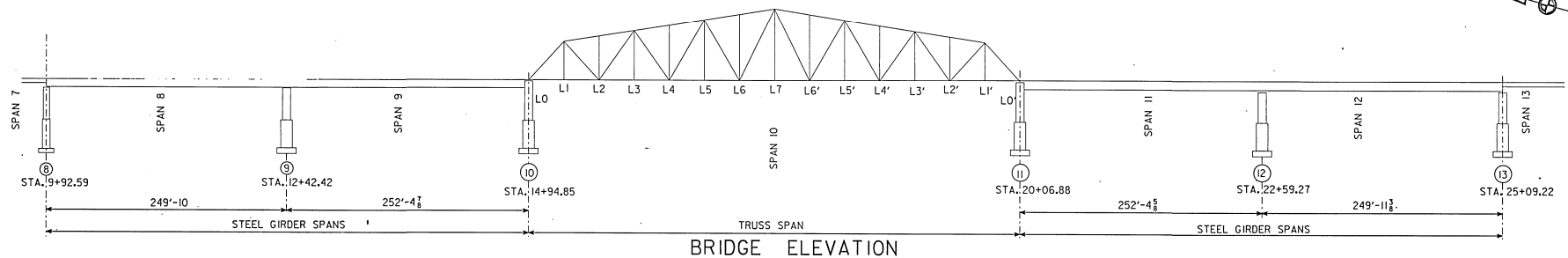
REVISED : 5-14-97 ; RETROFIT LOCATIONS MODIFIED.

DESIGN FOR REPAIRS TO
MISSISSIPPI RIVER BRIDGE
AT
MUSCATINE IOWA
RETROFIT DETAILS-STEEL GIRDER SPANS
FEBRUARY, 1997
MUSCATINE COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - PROJECT DEVELOPMENT DIVISION
DESIGN SHEET NO. 12 OF 14 FILE NO. 29148 DESIGN NO. 197

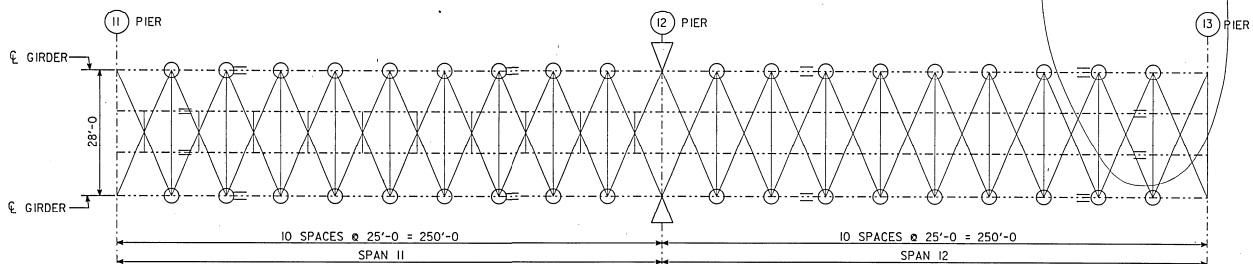
STATE	FED. REGION	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	7		14	16

DESIGNED BY S.K. GUPTA CHECKED BY R.R. SAVY
DETAILED BY R.R. SAVY CADD FILE h70197.s12

MUSCATINE COUNTY PROJECT NUMBER



FRAMING PLAN
(STEEL GIRDER SPANS)



FRAMING PLAN
(STEEL GIRDER SPANS)

NOTE :
GIRDER RETROFIT AT THE FLOOR BEAM CONNECTION REQUIRED AT 76 LOCATIONS.
LATERAL GUSSET PLATE RETROFIT AT THE FLOOR BEAM CONNECTION REQUIRED AT 72 LOCATIONS.

NOTES :

INDICATES BOTH THE GIRDER RETROFIT AND THE GUSSET PLATE RETROFIT AT THE FLOOR BEAM CONNECTION IN ACCORDANCE WITH DETAILS SHOWN ON DESIGN SHEETS 13 & 14.

INDICATES GIRDER RETROFIT AT THE FLOOR BEAM CONNECTION IN ACCORDANCE WITH DETAILS SHOWN ON DESIGN SHEET 13.

DESIGN FOR REPAIRS TO
MISSISSIPPI RIVER BRIDGE
AT
MUSCATINE IOWA
RETROFIT DETAILS-STEEL GIRDER SPANS
FEBRUARY, 1997

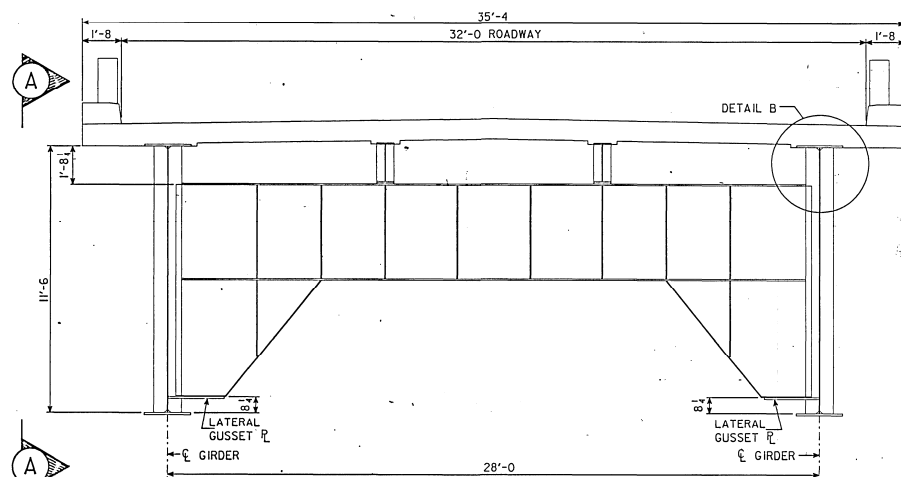
MUSCATINE COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - PROJECT DEVELOPMENT DIVISION
DESIGN SHEET NO. 12 OF 14 FILE NO. 29148 DESIGN NO. 197

DESIGNED BY S.K. GUPTA CHECKED BY
DETAILED BY B. RYSAVY CADD FILE h70197.s12

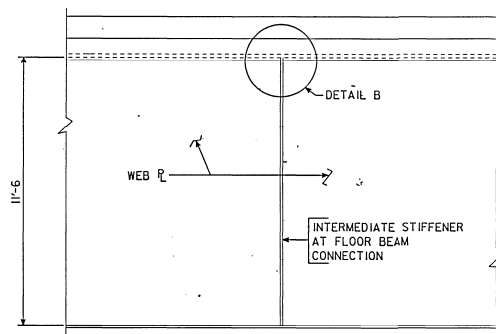
MUSCATINE COUNTY

PROJECT NUMBER

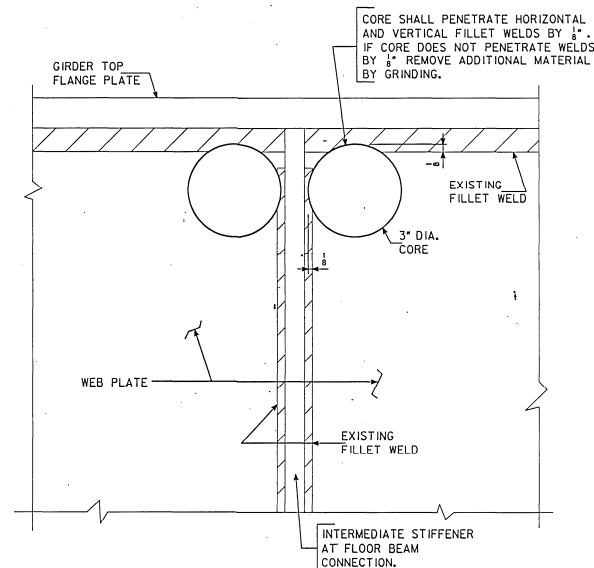
STATE	FEMA REGION	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	7		14	16



TYPICAL SECTION AT FLOOR BEAM CONNECTION



VIEW A - A
AT FLOOR BEAM CONNECTION



DETAIL B

NOTES : THE SEQUENCE FOR PERFORMING GIRDER RETROFIT WORK IS AS FOLLOWS :

1. CORE 3 INCH DIAMETER HOLES THROUGH WEB PLATE ADJACENT TO THE TOP FLANGE AS SHOWN IN DETAIL B. CORE HOLE SHALL PENETRATE THE HORIZONTAL AND VERTICAL FILLET WELDS APPROXIMATELY $\frac{1}{8}$ INCH. IF CORE DOES NOT PENETRATE WELD BY $\frac{1}{8}$ INCH, REMOVE ADDITIONAL MATERIAL BY GRINDING. REMOVE ALL BURRS FROM CORED OR GROUND SURFACE. SURFACE SHALL HAVE A ROUGHNESS AVERAGE (Ra) OF 500 OR LESS.
2. OBTAIN APPROVAL OF ENGINEER BEFORE PROCEEDING.
3. THE EXPOSED STEEL SURFACES AROUND THE DRILLED HOLES SHALL BE CLEANED OF FOREIGN MATERIAL USING HAND BRUSHES AND THIS REMOVED MATERIAL SHALL BE COLLECTED AND DISPOSED OF IN ACCORDANCE WITH SPECIAL PROVISIONS ARTICLE SP-97-006.02C.

DELETE

~~THE EXISTING PAINT AROUND THE DRILLED HOLES SHALL BE REMOVED BY HAND TOOL METHODS, IN ACCORDANCE WITH SSPC-SP2 AS NOTED IN SPECIAL PROVISIONS ARTICLE SP-97-006.02C.~~

5. THE EXPOSED STEEL SURFACES SHALL BE PAINTED USING COLD GALVANIZED COMPOUND Z.R.C. OR BRITE ZINC.

COST OF CLEANING AND PAINTING OF THE RETROFIT AREAS SHALL BE INCLUDED IN THE UNIT BID ITEM "GIRDER RETROFIT".
CUTTING, GRINDING OR DRILLING OF HOLES ON THE EXISTING STRUCTURAL STEEL OF THE BRIDGE SHALL BE PERFORMED WHEN THE AIR TEMPERATURE AND STEEL TEMPERATURE ARE BELOW 40° F.

NO

DELETE

~~TRAFFIC WILL BE RESTRICTED TO THE OPPOSITE SIDE OF THE BRIDGE DECK DURING RETROFITTING OPERATION. REFER TO THE TRAFFIC CONTROL PLAN FOR APPROPRIATE TRAFFIC SETUPS.~~

REPLACE

4. SHARP CORNERS AT THE DRILLED HOLES SHALL BE GROUND DULL TO HOLD PAINT.

ADD

6. NO TORCHWORK WILL BE ALLOWED FOR GIRDER RETROFIT WORK.

REVISED : 5-14-97; NOTES MODIFIED.

DESIGN FOR REPAIRS TO
MISSISSIPPI RIVER BRIDGE
AT
MUSCATINE IOWA
GIRDER RETROFIT DETAIL

FEBRUARY, 1997

MUSCATINE COUNTY

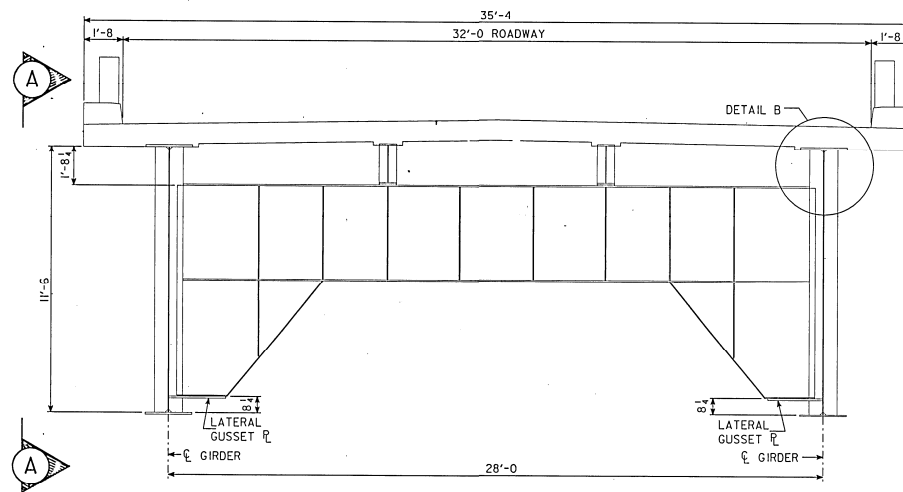
IOWA DEPARTMENT OF TRANSPORTATION - PROJECT DEVELOPMENT DIVISION
DESIGN SHEET NO. 13 OF 14 FILE NO. 29148 DESIGN NO. 197

DESIGNED BY S.K. GUPTA CHECKED BY
DETAILED BY R. R. SAVY CADD FILE 170197.s13

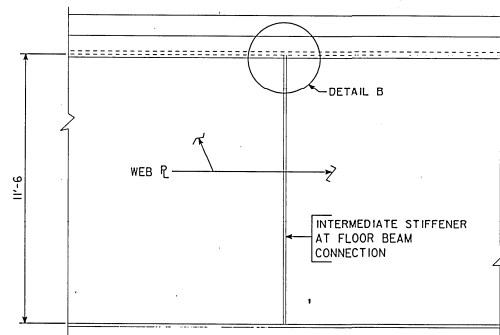
MUSCATINE COUNTY

PROJECT NUMBER

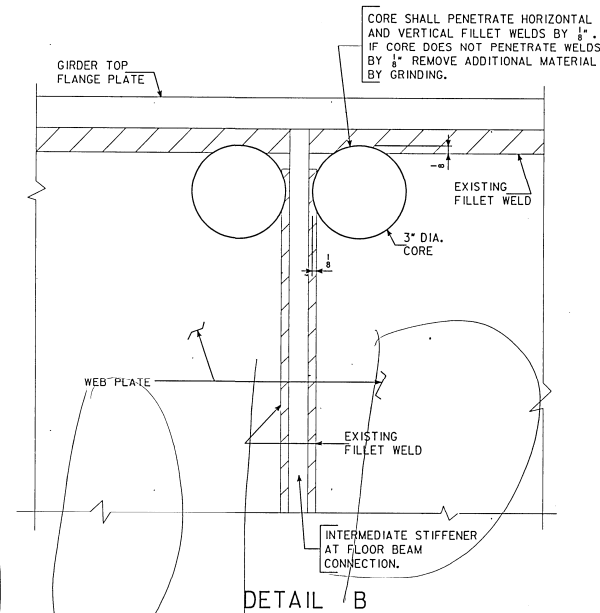
STATE	FEMA REGION	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	7		15	16



TYPICAL SECTION AT FLOOR BEAM CONNECTION



VIEW A - A
AT FLOOR BEAM CONNECTION



NOTES : THE SEQUENCE FOR PERFORMING GIRDER RETROFIT WORK IS AS FOLLOWS :

1. CORE 3 INCH-DIAMETER HOLES THROUGH WEB PLATE ADJACENT TO THE TOP FLANGE AS SHOWN IN DETAIL B. CORE HOLE SHALL PENETRATE THE HORIZONTAL AND VERTICAL FILLET WELDS APPROXIMATELY $\frac{1}{4}$ INCH. IF CORE DOES NOT PENETRATE WELD BY $\frac{1}{4}$ INCH, REMOVE ADDITIONAL MATERIAL BY GRINDING. REMOVE ALL BURRS FROM CORED OR GROUND SURFACE. SURFACE SHALL HAVE A ROUGHNESS AVERAGE (Ra) OF 500 OR LESS.
2. OBTAIN APPROVAL OF ENGINEER BEFORE PROCEEDING.
3. THE EXPOSED STEEL SURFACES AROUND THE DRILLED HOLES SHALL BE CLEANED OF FOREIGN MATERIAL USING HAND BROOMS AND THIS REMOVED MATERIAL SHALL BE COLLECTED AND DISPOSED OF IN ACCORDANCE WITH SPECIAL PROVISIONS ARTICLE SP-97-006.02C.
4. THE EXISTING PAINT AROUND THE DRILLED HOLES SHALL BE REMOVED BY HAND TOOL METHODS, IN ACCORDANCE WITH SSPC-SP2 AS NOTED IN SPECIAL PROVISIONS ARTICLE SP-97-006.02E.
5. THE EXPOSED STEEL SURFACES SHALL BE PAINTED USING COLD GALVANIZED COMPOUND Z.R.C. OR BRITE-ZINC.

COST OF CLEANING AND PAINTING OF THE RETROFIT AREAS SHALL BE INCLUDED IN THE UNIT BID ITEM "GIRDER RETROFIT".

NO TORCHWORK, CUTTING, GRINDING OR DRILLING OF HOLES ON THE EXISTING STRUCTURAL STEEL OF THE BRIDGE SHALL BE PERFORMED WHEN THE AIR TEMPERATURE AND STEEL TEMPERATURE ARE BELOW 40° F.

TRAFFIC WILL BE RESTRICTED TO THE OPPOSITE SIDE OF THE BRIDGE DECK DURING RETROFITTING OPERATION. REFER TO THE TRAFFIC CONTROL PLAN FOR APPROPRIATE TRAFFIC SETUPS.

DESIGN FOR REPAIRS TO
MISSISSIPPI RIVER BRIDGE
AT
MUSCATINE IOWA
GIRDER RETROFIT DETAIL

FEBRUARY, 1997

MUSCATINE COUNTY

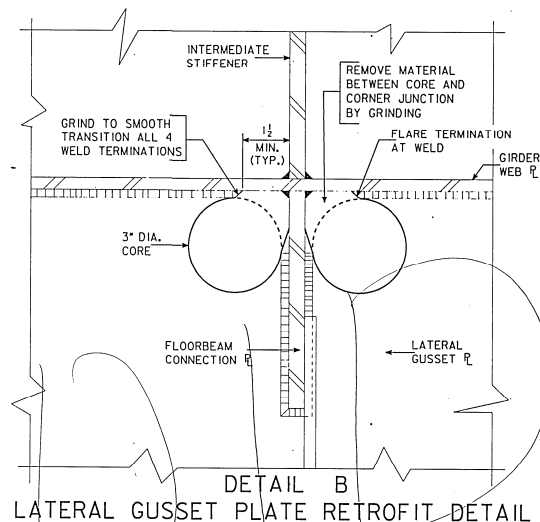
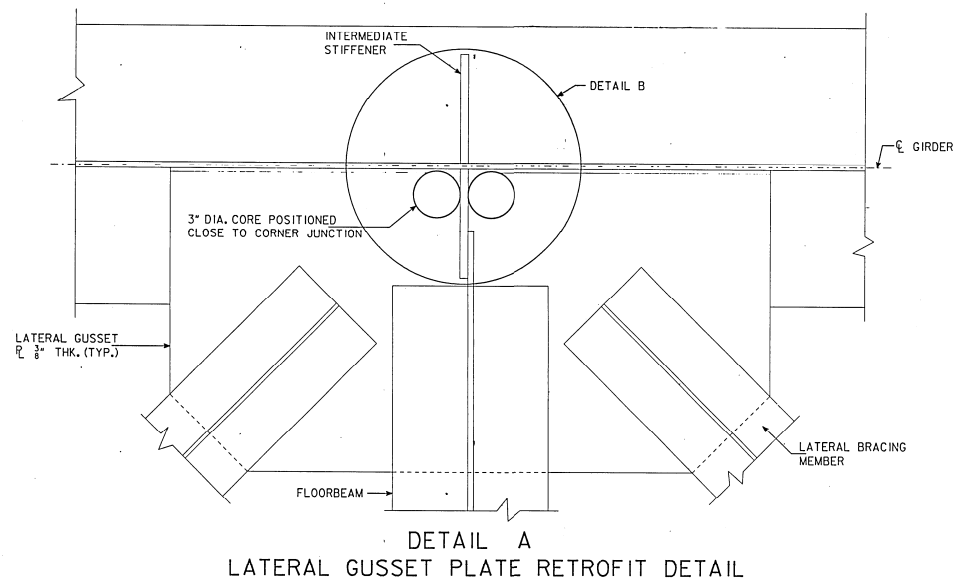
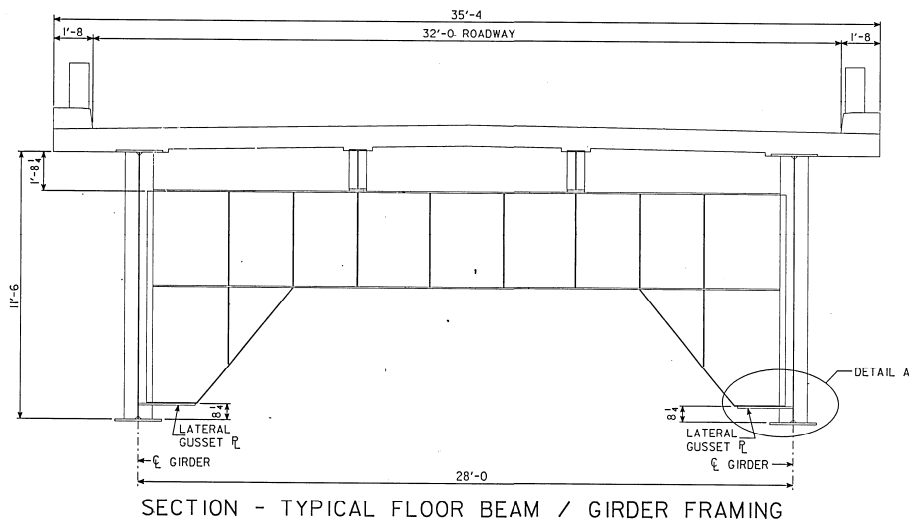
IOWA DEPARTMENT OF TRANSPORTATION - PROJECT DEVELOPMENT DIVISION
DESIGN SHEET NO. 13 OF 14 FILE NO. 29148 DESIGN NO. 197

DESIGNED BY S.K. GUPTA CHECKED BY
REVIEWED BY B. RYSAVY CADD FILE h70197.sj3

MUSCATINE COUNTY

PROJECT NUMBER

STATE	FEDERAL REGION	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	7		15	16



NOTES: THE SEQUENCE FOR PERFORMING LATERAL GUSSET PLATE RETROFIT WORK IS AS FOLLOWS:

1. CORE 3 INCH DIAMETER HOLES POSITIONED CLOSE TO CORNER JUNCTION THROUGH $\frac{3}{8}$ INCH THICK LATERAL GUSSET PLATE AS SHOWN IN DETAILS A AND B.
2. REMOVE MATERIAL BETWEEN CORE AND JUNCTION OF FLOOR BEAM CONNECTION PLATE AND GIRDER WEB PLATE BY GRINDING, AS SHOWN IN DETAIL B. FLARE TERMINATION OF GRINDING TO A MAXIMUM SLOPE OF 1:2.5. GROUND SURFACE SHALL HAVE A ROUGHNESS AVERAGE (Ra) OF 250 OR LESS.
3. REMOVE ALL BURRS FROM CUT EDGE AND CHECK FOR IRREGULARITIES. CORED SURFACE SHALL HAVE A ROUGHNESS AVERAGE (Ra) OF 500 OR LESS.
4. OBTAIN APPROVAL OF ENGINEER BEFORE PROCEEDING.
5. THE EXPOSED STEEL SURFACES AROUND THE DRILLED HOLES SHALL BE CLEANED OF FOREIGN MATERIAL USING HAND BROOMS AND THIS REMOVED MATERIAL SHALL BE COLLECTED AND DISPOSED OF IN ACCORDANCE WITH SPECIAL PROVISIONS ARTICLE SP-97-006.02C.
6. THE EXISTING PAINT AROUND THE DRILLED HOLES SHALL BE REMOVED BY HAND TOOL METHODS, IN ACCORDANCE WITH SSPC-SP2 AS NOTED IN SP ARTICLE SP-97-006.02E.
7. THE EXPOSED STEEL SURFACES SHALL BE PAINTED USING COLD GALVANIZED COMPOUND Z.R.C. OR BRITE ZINC.

COST OF CLEANING AND PAINTING OF THE RETROFIT AREAS SHALL BE INCLUDED IN THE UNIT BID ITEM "GUSSET PLATE RETROFIT".

NO TORCHWORK, CUTTING, GRINDING OR DRILLING OF HOLES ON THE EXISTING STRUCTURAL STEEL OF THE BRIDGE SHALL BE PERFORMED WHEN THE AIR TEMPERATURE AND STEEL TEMPERATURE ARE BELOW 40° F. TRAFFIC WILL BE RESTRICTED TO THE OPPOSITE SIDE OF THE BRIDGE DECK DURING RETROFITTING OPERATION. REFER TO THE TRAFFIC CONTROL PLAN FOR APPROPRIATE TRAFFIC SETUPS.

DESIGN FOR REPAIRS TO
MISSISSIPPI RIVER BRIDGE
 AT
MUSCATINE IOWA
LATERAL GUSSET PL RETROFIT DETAILS
 FEBRUARY, 1997
MUSCATINE COUNTY
 IOWA DEPARTMENT OF TRANSPORTATION - PROJECT DEVELOPMENT DIVISION
 DESIGN SHEET NO. 14 OF 14 FILE NO. 29148 DESIGN NO. 197

DESIGNED BY S.K. GUPTA CHECKED BY _____
 DETAILED BY B. RYSAVY CADD FILE HT0197.S14

MUSCATINE COUNTY

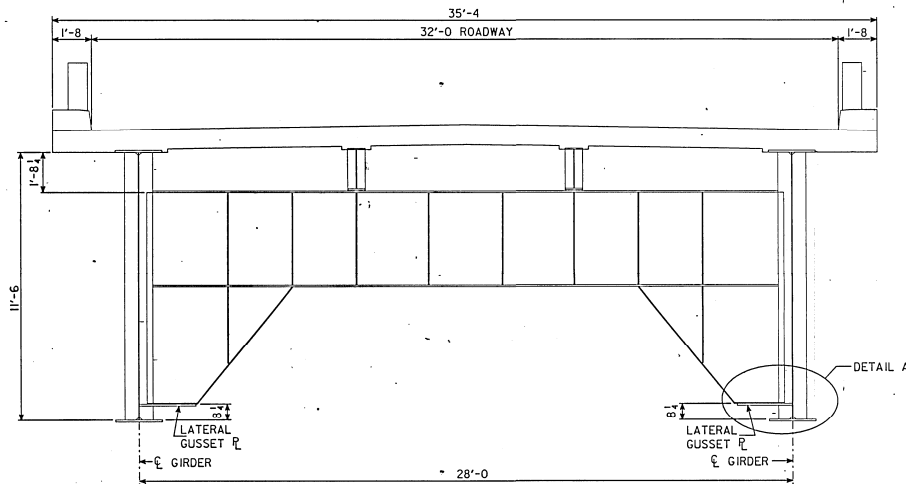
PROJECT NUMBER

STATE
 IOWA

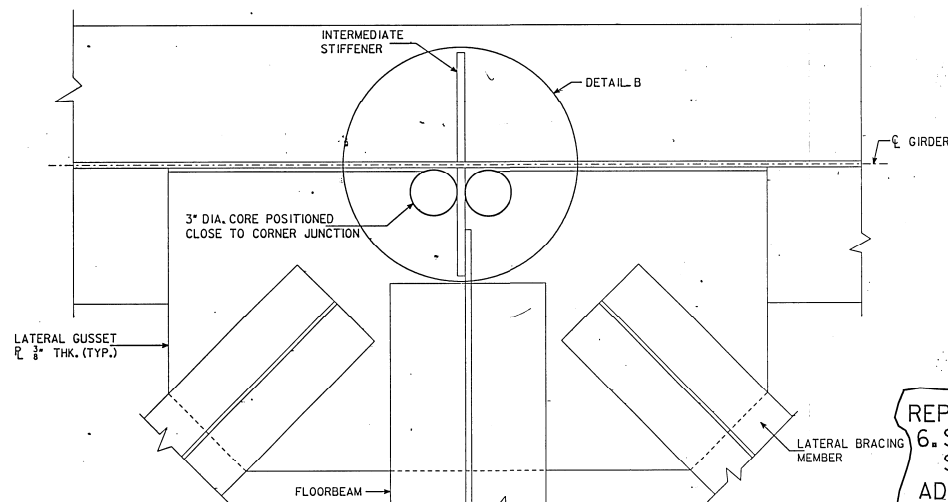
FEDERAL
 REGION
 7

SHEET
 NO.
 16

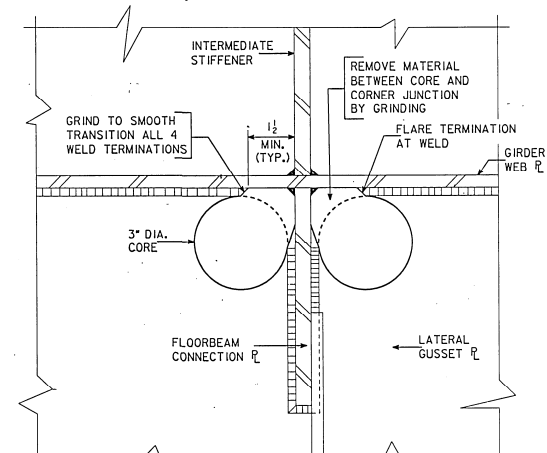
TOTAL
 SHEETS
 16



SECTION - TYPICAL FLOOR BEAM / GIRDER FRAMING



DETAIL A
LATERAL GUSSET PLATE RETROFIT DETAIL



DETAIL B
LATERAL GUSSET PLATE RETROFIT DETAIL

NOTES : THE SEQUENCE FOR PERFORMING LATERAL GUSSET PLATE RETROFIT WORK IS AS FOLLOWS :

1. CORE 3 INCH DIAMETER HOLES POSITIONED CLOSE TO CORNER JUNCTION THROUGH $\frac{1}{2}$ INCH THICK LATERAL GUSSET PLATE AS SHOWN IN DETAILS A AND B.
2. REMOVE MATERIAL BETWEEN CORE AND JUNCTION OF FLOOR BEAM CONNECTION PLATE AND GIRDER WEB PLATE BY GRINDING, AS SHOWN IN DETAIL B. FLARE TERMINATION OF GRINDING TO A MAXIMUM SLOPE OF 1:2.5. GROUND SURFACE SHALL HAVE A ROUGHNESS AVERAGE (Ra) OF 250 OR LESS.
3. REMOVE ALL BURRS FROM CUT EDGE AND CHECK FOR IRREGULARITIES. CORED SURFACE SHALL HAVE A ROUGHNESS AVERAGE (Ra) OF 500 OR LESS.
4. OBTAIN APPROVAL OF ENGINEER BEFORE PROCEEDING.
5. THE EXPOSED STEEL SURFACES AROUND THE DRILLED HOLES SHALL BE CLEANED OF FOREIGN MATERIAL USING HAND BROOMS AND THIS REMOVED MATERIAL SHALL BE COLLECTED AND DISPOSED OF IN ACCORDANCE WITH SPECIAL PROVISIONS ARTICLE SP-97-006.02C.
6. THE EXISTING PAINT AROUND THE DRILLED HOLES SHALL BE REMOVED BY HAND TOOL METHOD, IN ACCORDANCE WITH SSPC-SP2 AS NOTED IN SP ARTICLE SP-97-006.02C.
7. THE EXPOSED STEEL SURFACES SHALL BE PAINTED USING COLD GALVANIZED COMPOUND Z.R.C. OR BRIT ZINC.

COST OF CLEANING AND PAINTING OF THE RETROFIT AREAS SHALL BE INCLUDED IN THE UNIT BID ITEM "GUSSET PLATE RETROFIT".

NO ~~NO TORCHWORK~~ CUTTING, GRINDING OR DRILLING OF HOLES ON THE EXISTING STRUCTURAL STEEL OF THE BRIDGE SHALL BE PERFORMED WHEN THE AIR TEMPERATURE AND STEEL TEMPERATURE ARE BELOW 40° F.

~~TRAFFIC WILL BE RESTRICTED TO THE OPPOSITE SIDE OF THE BRIDGE DECK DURING RETROFITTING OPERATION. REFER TO THE TRAFFIC CONTROL PLAN FOR APPROPRIATE TRAFFIC SETUPS.~~

DELETE

NO

DELETE

REPLACE
6. SHARP CORNERS AT THE DRILLED HOLES SHALL BE GROUND DULL TO HOLD PAINT.
ADD
8. NO TORCHWORK WILL BE ALLOWED FOR GUSSET PLATE RETROFIT WORK.

REVISED : 5-14-97, NOTES MODIFIED.

DESIGN FOR REPAIRS TO					
MISSISSIPPI RIVER BRIDGE					
AT					
MUSCATINE IOWA					
LATERAL GUSSET PLATE RETROFIT DETAILS					
FEBRUARY, 1997					
MUSCATINE COUNTY					
IOWA DEPARTMENT OF TRANSPORTATION - PROJECT DEVELOPMENT DIVISION					
DESIGN SHEET NO.	14	OF	14	FILE NO.	29148
DESIGN NO.	197				
STATE	IOWA	REGION	7	FISCAL YEAR	
SHEET NO.	16	TOTAL SHEETS	16		

DESIGNED BY	S.K. GUPTA	CHECKED BY	
DETAILS BY	R.R. SAVY	CADD FILE	h70197.s14

MUSCATINE COUNTY

PROJECT NUMBER