

BRIDGE REPAIR
IN-35-4(64)11-15-85

STORY COUNTY

Story I-35 #80

- CONVENTIONAL SIGNS
- STATE LINE
 - COUNTY LINE
 - TOWNSHIP LINE
 - SECTION LINE
 - CORPORATION LINE
 - URBAN BOUNDARY
 - R.O.W. LINES
 - SURVEY LINES
 - SECTION CORNER
 - PROPOSED PROFILE GRADE
 - RAILROAD
 - FIELD 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
- EXISTING PROP.
STA. REF. POINT
- EXISTING PROP.
OLD NEW
POWER TEL
BARB WESH

IOWA
DEPARTMENT OF TRANSPORTATION
Highway Division
PLANS OF ~~PROPOSED~~ IMPROVEMENTS ON THE
INTERSTATE ROAD SYSTEM
STORY COUNTY
BRIDGE REPAIR
ON INTERSTATE 35 NORTHBOUND BRIDGE
-OVER U.S. 30 - EAST OF AMES

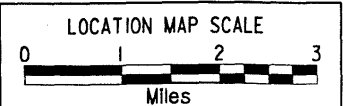
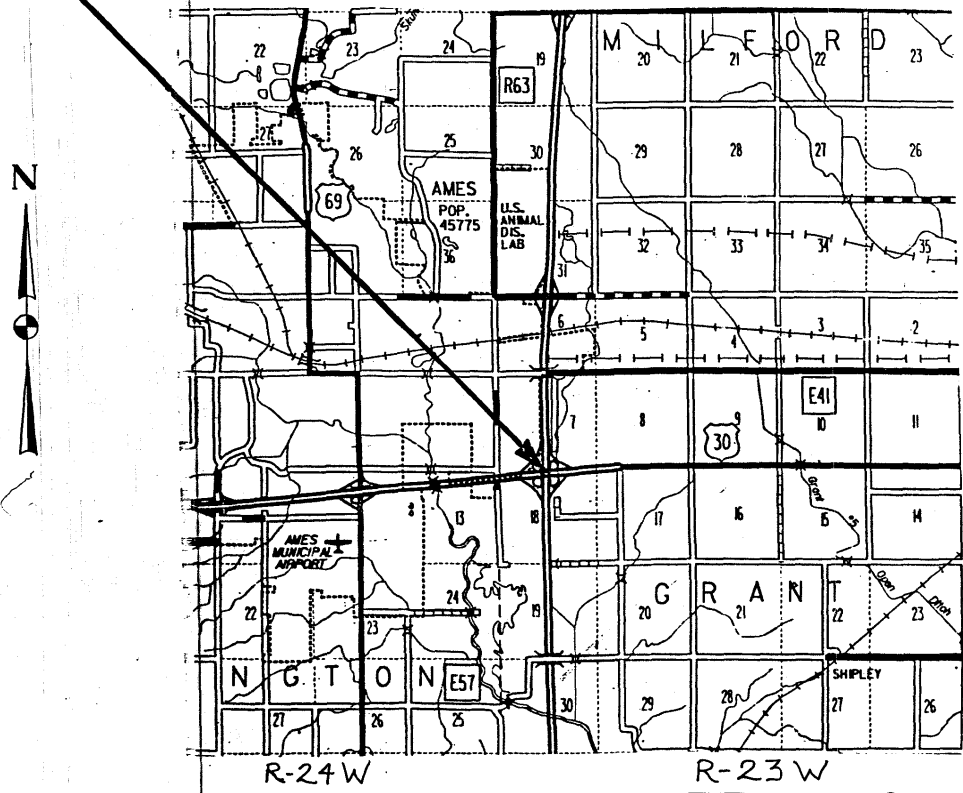
SCALES: As Noted

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	17
PROJECT NUMBER				
IN-35-4(64)11-15-85				
R.O.W. PROJECT NUMBER				
PIN				
90-85-150-1				

INDEX OF SHEETS	
NO.	DESCRIPTION
1	TITLE SHEET
2	BRIDGE ESTIMATE SHEET ^{FINAL QUANTITIES}
2-14 15-17	BRIDGE DESIGN NO. 590 ROAD SHEETS

DESIGN NO. 590



THIS AS BUILT PLAN INCLUDES			
YEAR	WORK	CONTRACTOR	PROJ. INSPECTOR
1990	BRIDGE REPAIR	CRAMER & ASSOC.	KEN JENSEN

150

T-83 N

NAME	DUTIES	IN	OUT
MITCH DILLAVOU	PROJ INSP	7 MAY 90	28 MAY 90
DAVID MARTIN	INSP	7 MAY 90	28 MAY 90
MUHAMMAD ZUBI	INSP	21 MAY 90	28 MAY 90

CORRECTED BY: Norm Hockett 1/4/91
CHECKED BY: Howard Spencer 1/4/91

CONSTRUCTION PLANS
SHOWING PROJECT AS BUILT
Plan Preparation Supervised By: Robert J. Meeks Date 3-27-91
Reviewed & Forwarded to Ames By: Robert J. Meeks Date 4-10-91
No. of Copies (Full 3 50%) to be made & returned to:
Ken Meeks District Engineer
After Microfilming Return Original to District No. 1

STANDARD ROAD PLANS	
IDENT	DATE
RS-62	10/11/88
RS-63A	08/08/89
RS-63B	08/08/89
RS-65A	11/15/88
RS-65B	08/08/89
RS-2	10/11/88
RS-3	11/15/88

STANDARD BRIDGE PLANS		
STANDARD	ISSUED	REVISED

REVISIONS

Iowa Department of Transportation

AUTHORIZED FOR LETTING
Ken J. Anderson 1-26-90
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 Ken J. Anderson
Iowa Registration No. 4443 Date 1/25/90

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
APPROVED
FOR THE DIVISION ADMINISTRATOR DATE

GENERAL NOTES

IT IS THE INTENT OF THIS DESIGN TO REPLACE THE EAST EXTERIOR BEAM WHICH SPANS BETWEEN PIERS 2 AND 3 OF THE NORTHBOUND I-35 BRIDGE. THE BEAM WAS DAMAGED BY A HIGH LOAD BEING TRANSPORTED WEST ON U.S. 30 HIGHWAY BELOW. REPAIRS SHALL CONSIST OF REMOVAL AND REPLACEMENT OF A PORTION OF CAST IN PLACE BARRIER RAIL, CURB, SLAB AND ONE PRESTRESSED BEAM AS DETAILED.

NORTHBOUND I-35 TRAFFIC WILL BE RESTRICTED TO TWO LANES AND WESTBOUND U.S. 30 TRAFFIC WILL BE RESTRICTED TO ONE LANE DURING THE CONSTRUCTION PERIOD, AS DETAILED AND NOTED ON THESE PLANS.

THE ORIGINAL DESIGN NUMBER FOR THIS BRIDGE IS 1162 STORY COUNTY. THE ABUTMENTS WERE MODIFIED AND THE DECK OVERLAID UNDER DESIGN NUMBER 580 STORY COUNTY. PLANS FOR THIS BRIDGE ARE AVAILABLE AT THE AMES OFFICE OF THE IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION.

HEAVY CONSTRUCTION EQUIPMENT WILL NOT BE ALLOWED ON THE BRIDGE DURING CONSTRUCTION UNLESS PRIOR WRITTEN APPROVAL OF THE ENGINEER IS OBTAINED. APPROVAL SHALL BE OBTAINED BY SUBMITTING A WRITTEN REQUEST TO THE ENGINEER. THE REQUEST SHALL INCLUDE THE FOLLOWING:

- A DETAILED PLAN ADEQUATELY DESCRIBING THE EQUIPMENT AND HOW IT IS PROPOSED TO BE USED. THIS PLAN SHALL CONTAIN, AS A MINIMUM, THE FOLLOWING INFORMATION.
 - THE CONFIGURATION AND WEIGHT OF THE EQUIPMENT PROPOSED TO BE PLACED ON THE BRIDGE, INCLUDING THE DEAD LOAD WEIGHT OF ALL WHEELS/AXLES.
 - THE PROPOSED LOCATION(S) OF THE EQUIPMENT ON THE BRIDGE DURING ALL LIFTING OPERATIONS.
 - THE WEIGHT OF ALL PROPOSED LIFTS TO BE MADE BY THE EQUIPMENT.
 - THE LOAD OF ALL WHEELS/AXLES/OUTRIGGERS RESULTING FROM THE PROPOSED LIFTING OPERATIONS, DURING ALL CRITICAL PHASES OF THE LIFTING OPERATIONS.
- THE NECESSARY CALCULATIONS TO VERIFY THAT NO COMPONENT OF THE BRIDGE WILL BE OVERSTRESSED DURING THE PROPOSED USE OF THE EQUIPMENT ON THE BRIDGE. THE CALCULATIONS SHALL BE CERTIFIED BY A PROFESSIONAL ENGINEER CURRENTLY LICENSED TO PRACTICE ENGINEERING IN THE STATE OF IOWA.

EXTRA WORK ORDERS

NO.	TUBULAR	DESCRIPTION	UNIT	TOTAL
2001	PIPER	MARKERS (TRAFFIC)	L. S.	\$ 220.00
2002	REDRILL & FINISH	SHIM PLATES	L. S.	\$ 194.00
2003	PRICE ADJUSTMENT		L. S.	-\$ 500.00

TOTAL		FINAL		QUANTITIES	
Item No.	Item	Units	Total		
1	Structural Concrete	cu.yds.	15.2		
2	Reinforcing Steel	lbs.	3,436		
3	Prestensioned Prestressed Concrete Beam	B 67 R No.	1		
4	Temporary Barrier Rail-Furnish Only	lin. ft.	660		
5	Temporary Barrier Rail-Place Only	lin. ft.	660		
6	2" Rigid Steel Conduit	lin. ft.	70.6		
7	Removals, as per plan	L.S.	\$ 6000.00		
8	Cast-in-Place Barrier Rail	lin. ft.	70.6		
9	Removal of Existing Handrail	L.S.	\$ 500.00		
10	Remove & Re-install Sign, as per plan	L.S.	\$ 400.00		
11	Traffic Control	L.S.	\$ 4000.00		
12	MOBILIZATION	L.S.	\$ 5000.00		
13	FLAGGERS	DAYS	3.5		

Item No.	Estimate	Reference Information:
1	All concrete to be "Class D". Includes Preformed Joint Material.	
3	Includes all 3/4" coil rods & coil ties and 2-8"x1"x1'-6 1/2 neoprene bearing pads.	
8	Includes 290 L.F. of #5 bar and 273 L.F. of #6 bar.	
6	Includes all splice materials.	
10	Includes the removal and hauling of the existing temporary "West 30" sign.	

CONSTRUCTION SEQUENCE

THE BRIDGE CONTRACTOR SHALL PERFORM THE REPAIR WORK IN ACCORDANCE WITH THE FOLLOWING PROCEDURES, OR AS DIRECTED BY THE ENGINEER.

- ERECT SIGNS AND PLACE TEMPORARY BARRIER RAIL ON NORTHBOUND LANE OF I-35 SO THAT NORTHBOUND TRAFFIC WILL BE RESTRICTED TO TWO LANES WHICH ARE SHIFTED AWAY FROM THE REPAIR AREA.
- CAREFULLY REMOVE ALUMINUM HANDRAIL AND POSTS FROM THE EAST CURB FOR THE FULL LENGTH OF BRIDGE.
- THE 1" CONDUIT IN WHICH THE WIRE FOR THE UNDERDECK LIGHTING IS RUN, WILL NEED TO BE REMOVED AND REINSTALLED.
- USING BARRICADES, CHANNEL WESTBOUND U.S. 30 TRAFFIC INTO ONE LANE, SEE DESIGN SHEET FOR SIGNING LAYOUT FOR LANE CLOSURE. REMOVE PORTION OF CAST-IN-PLACE BARRIER RAIL, CURB, SLAB AND DIAPHRAGMS NECESSARY TO EXPOSE LENGTH OF REINFORCEMENT, AS NOTED AND SHOWN, TO BE INCORPORATED INTO NEW CONCRETE. CARE SHALL BE TAKEN SO THAT NO DEBRIS FALLS ONTO TRAVELED WAY.
- REPEAT PROCEDURE NO. 4 FOR OTHER LANE.
- CAREFULLY REMOVE CAST-IN-PLACE BARRIER RAIL, CURB, SLAB AND BEAM AS ONE UNIT. SINCE THE PRESTRESSED BEAM IS IN EXTREMELY POOR CONDITION A STRONG BACK OR OTHER APPARATUS MAY BE REQUIRED TO LIFT THE CAST-IN-PLACE BARRIER RAIL, CURB, SLAB AND BEAM AS ONE UNIT. NORTHBOUND I-35 AND WESTBOUND U.S. 30 MAY BE CLOSED FOR ABOUT 15 MINUTES DURING THE REMOVAL, AS APPROVED BY THE ENGINEER.
- SET NEW PRESTRESSED BEAM IN PLACE. NORTHBOUND I-35 AND WESTBOUND U.S. 30 MAY BE CLOSED FOR ABOUT 15 MINUTES WHILE PLACING THE NEW BEAM ON THE PIERS.
- PLACE NEW CONCRETE SLAB, DIAPHRAGMS, CURB AND CAST-IN-PLACE BARRIER RAIL.

AN ALTERNATE CONSTRUCTION SEQUENCE MAY BE SUBMITTED TO THE BRIDGE ENGINEER FOR APPROVAL.

THE BID ITEM "PRETENSIONED PRESTRESSED CONCRETE BEAM" SHALL INCLUDE ALL COSTS INVOLVED IN FURNISHING AND PLACING A NEW BEAM AND TWO - 8X11'-6 1/2 NEOPRENE BEARING PADS ONTO THE PIERS.

THE LUMP SUM BID "REMOVALS, AS PER PLAN" IS TO INCLUDE THE COST OF REMOVING A PORTION OF THE CAST-IN-PLACE BARRIER RAIL, CURB, SLAB, CONCRETE DIAPHRAGM, SOME REINFORCING STEEL AND THE DAMAGED PRESTRESSED BEAM. ALL BROKEN CONCRETE, DAMAGED PRESTRESSED CONCRETE BEAM AND REINFORCING BARS REMOVED FROM THIS BRIDGE SHALL BE DISPOSED OF OFF THE HIGHWAY RIGHT-OF-WAY ON A WASTE AREA PROVIDED BY THE BRIDGE CONTRACTOR. REMOVAL AND DISPOSAL OF THE CONCRETE SHALL BE IN ACCORDANCE WITH SECTION 2401 OF THE STANDARD SPECIFICATIONS. THE COST OF WASTING THE REMOVED MATERIAL IS ALSO INCLUDED IN THE PRICE BID FOR "REMOVALS, AS PER PLAN." NO OVERHAUL WILL BE ALLOWED.

THE BRIDGE SLAB AND DIAPHRAGM SHALL BE PLACED MONOLITHICALLY USING "CLASS D" STRUCTURAL CONCRETE. THE "CLASS D" STRUCTURAL CONCRETE SHALL BE FINISHED TO MATCH THE EXISTING BRIDGE SLAB SURFACE. THE CURB AND CAST-IN-PLACE BARRIER RAIL SHALL ALSO BE "CLASS D" STRUCTURAL CONCRETE.

ALL REINFORCEMENT SUPPLIED IS TO BE GRADE 60.

INSTALLATION OF THE 2" CONDUIT SHALL COMPLY WITH ARTICLE 2523.10, ELECTRIC DUCTS. THE CONTRACT UNIT PRICE PER LINEAL FOOT OF CONDUIT SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIAL (INCLUDING THE SPLICE MATERIAL FOR THE 2" CONDUIT), LABOR AND ANY WORK INCIDENTAL TO THE INSTALLATION. THE LENGTH OF CONDUIT INSTALLED SHALL BE MEASURED IN FEET BY THE ENGINEER. THE ELECTRIC WIRE INSIDE THE CONDUIT CAN ONLY BE SPLICED AT EXISTING JUNCTION BOXES.

CONDUIT CONSTRUCTION SHALL CONFORM TO THE CURRENT IOWA D.O.T. STANDARD SPECIFICATIONS AND CURRENT SUPPLEMENTAL SPECIFICATIONS FOR HIGHWAY LIGHTING.

THE LUMP SUM BID FOR "REMOVAL OF EXISTING HANDRAIL" SHALL INCLUDE ALL COSTS ASSOCIATED WITH DISMANTLING THE EXISTING ALUMINUM HANDRAIL (APPROXIMATELY 226.1 L.F. AND 29 POSTS) FROM THE EAST CURB OF THE NORTHBOUND BRIDGE AND CUTTING OFF AND PAINTING THE EXISTING ANCHOR BOLTS, IF REQUIRED. THE HANDRAIL IS TO BECOME THE PROPERTY OF THE BRIDGE CONTRACTOR AND IS TO BE REMOVED FROM THE SITE BY HIM.

THE LUMP SUM BID FOR "REMOVE AND RE-INSTALL SIGN AS PER PLAN" SHALL INCLUDE ALL COSTS ASSOCIATED WITH THE REMOVAL OF THE EXISTING "I-35 SOUTH" SIGN FROM THE CURB AND PRESTRESSED BEAM ANCHORAGES. THE SIGN IS TO BE STORED DURING THE REMOVAL AND REPLACEMENT OF THE BARRIER RAIL, CURB, CONCRETE SLAB, DIAPHRAGMS AND PRESTRESSED BEAM. AFTER THE NEW CONCRETE HAS ATTAINED THE PROPER STRENGTH THE SIGN IS TO BE RE-INSTALLED. ALSO INCLUDED IN THE BID IS THE COST OF ALL SHIMS, STAINLESS STEEL ANCHOR BOLTS AND THE CONCRETE ANCHORS. THIS BID ITEM SHALL ALSO INCLUDE THE COST OF REMOVING THE EXISTING TEMPORARY BLACK AND WHITE "WEST 30" SIGN AND HAULING IT TO THE IOWA DOT MAINTENANCE YARD, WHICH IS LOCATED EAST OF THE BRIDGE SITE ON U.S. 30.

IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO MAINTAIN DUSK-TO-DAWN OPERATION OF THE UNDERDECK LIGHTING DURING THE CONSTRUCTION PERIOD.

THE EXISTING CIRCUITRY SHALL BE RESTORED TO SATISFACTORY OPERATING CONDITION AFTER THE BRIDGE REPAIR WORK IS COMPLETED.

THE COST OF MAINTAINING THE UNDERDECK LIGHTING AND THE REMOVAL AND REINSTALLATION OF THE 1" CONDUIT AND ELECTRIC WIRE, FROM BENEATH THE CURB, IS CONSIDERED INCIDENTAL TO OTHER WORK AND NO DIRECT PAYMENT WILL BE MADE THEREFOR.

ANY DAMAGES TO EXISTING LIGHTING EQUIPMENT DUE TO CONSTRUCTION OPERATIONS SHALL BE CORRECTED AT THE CONTRACTORS EXPENSE.

THE ELECTRIC WIRE INSIDE THE CONDUIT CAN ONLY BE SPLICED AT EXISTING JUNCTION BOXES.

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
PRESTRESSED CONCRETE BEAMS, SEE DESIGN SHEET 9.

SPECIFICATIONS:

DESIGN: AASHTO SERIES OF 1983.

CONSTRUCTION: IOWA DEPARTMENT OF TRANSPORTATION SPECIFICATION, SERIES OF 1988, PLUS CURRENT SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS.

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

1-22-90
DATE

Gene J. Pollmann
GENE J. POLLMANN

REG. NO. 4060

TRAFFIC CONTROL PLAN

108-23

04-04-89

- Through traffic will be maintained on I-35 SB and US 30 EB at all times. Traffic on I-35 NB and US 30 WB will be closed for a short period when replacing beams (see note 3). All other times traffic will be maintained according to TCP-3, RS-62, RS-63A, RS-63B, RS-65A, and RS-65B. For additional complementary information, refer to current supplemental specifications for traffic control.
- The N.E. loop (NB to WB) will be closed for contractor storage, during construction. Traffic intending to use the NE loop will be detoured to 13th Street and rerouted SB back to US30.
- Temporary road closure shall be in accordance with Detail Sheet 521-15A. Closure shall be during off-peak traffic hours. Time and duration of closure shall be as determined by the engineer.
- Where possible, all post mounted signs shall be placed a minimum of 2 feet clear of the shoulder.
- As directed by the engineer, the contractor shall cover existing signing that conflicts with construction zone signing.
- All traffic control devices shall be furnished, erected, maintained and removed by the contractor.
- The location for overnight storage of equipment by the contractor shall be approved by the engineer in charge of construction. Parking of private vehicles on interstate right-of-way will not be allowed. Parking of unattended equipment within the median or overnight storage of equipment within 50' of the edge of pavement will not be allowed.
- 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.
- Proposed changes in the traffic control plan (includes layout sheets) shall be reviewed with the Office of Construction before changes are made.
- The bid item "Traffic Control" shall include the cost of all traffic control measures required of the contractor except for those which are separate bid items or are incidental to other bid items.

LOCATION:

I-35 over U.S. 30
Section 7 & 18
T-83 N R-23 W
Grant Twp.
Story County
Maintenance No. 8511.8R035

Design For Repairs to 4°50'30" Skew (NBL)
DUAL 232'-1" x 40' PRETENSIONED PRESTRESSED
CONCRETE BEAM BRIDGES
43'-1 1/2" x 51'-5 1/2" End Spans 2'-68'-9" Interior Spans

GENERAL NOTES & QUANTITIES
Stations: 573+83.63 I-35
Stations: 1365+21.62 US30
January, 1990
STORY COUNTY

IOWA DEPARTMENT OF TRANSPORTATION-HIGHWAY DIVISION

Design Sheet No.: 1 Of 15 File No.: 28039 Design No.: 590

DESIGNED BY: M. J. Flemer
DETAILED BY: D. A. Wright

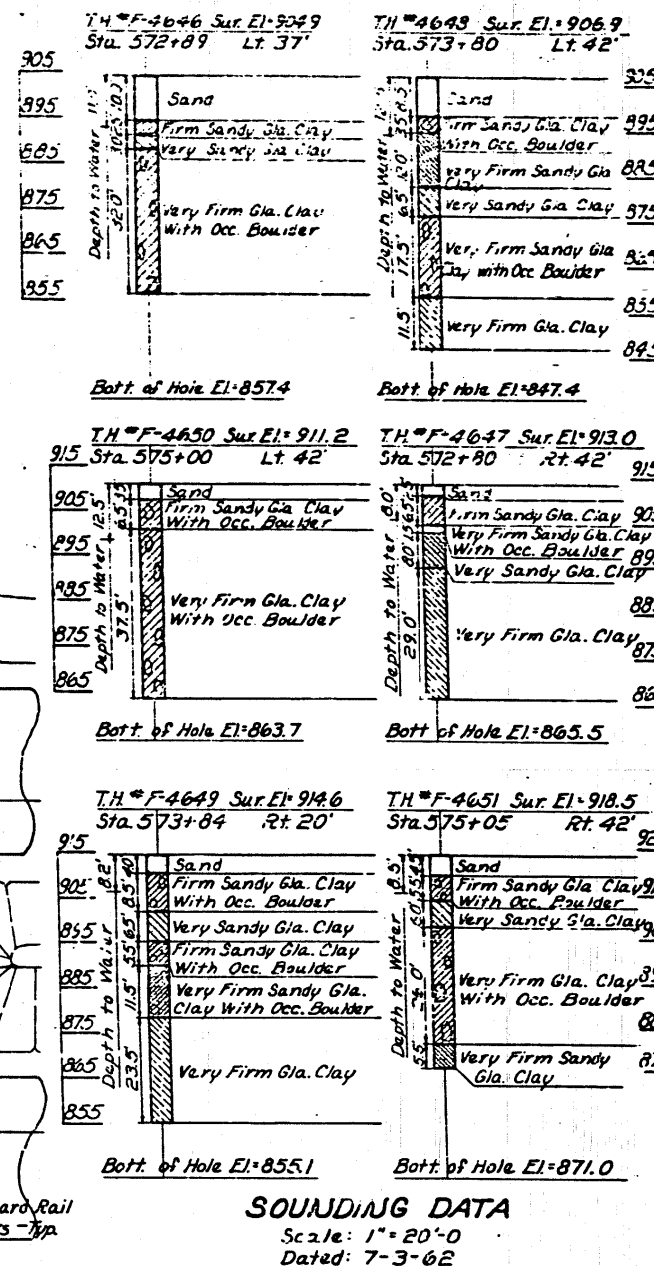
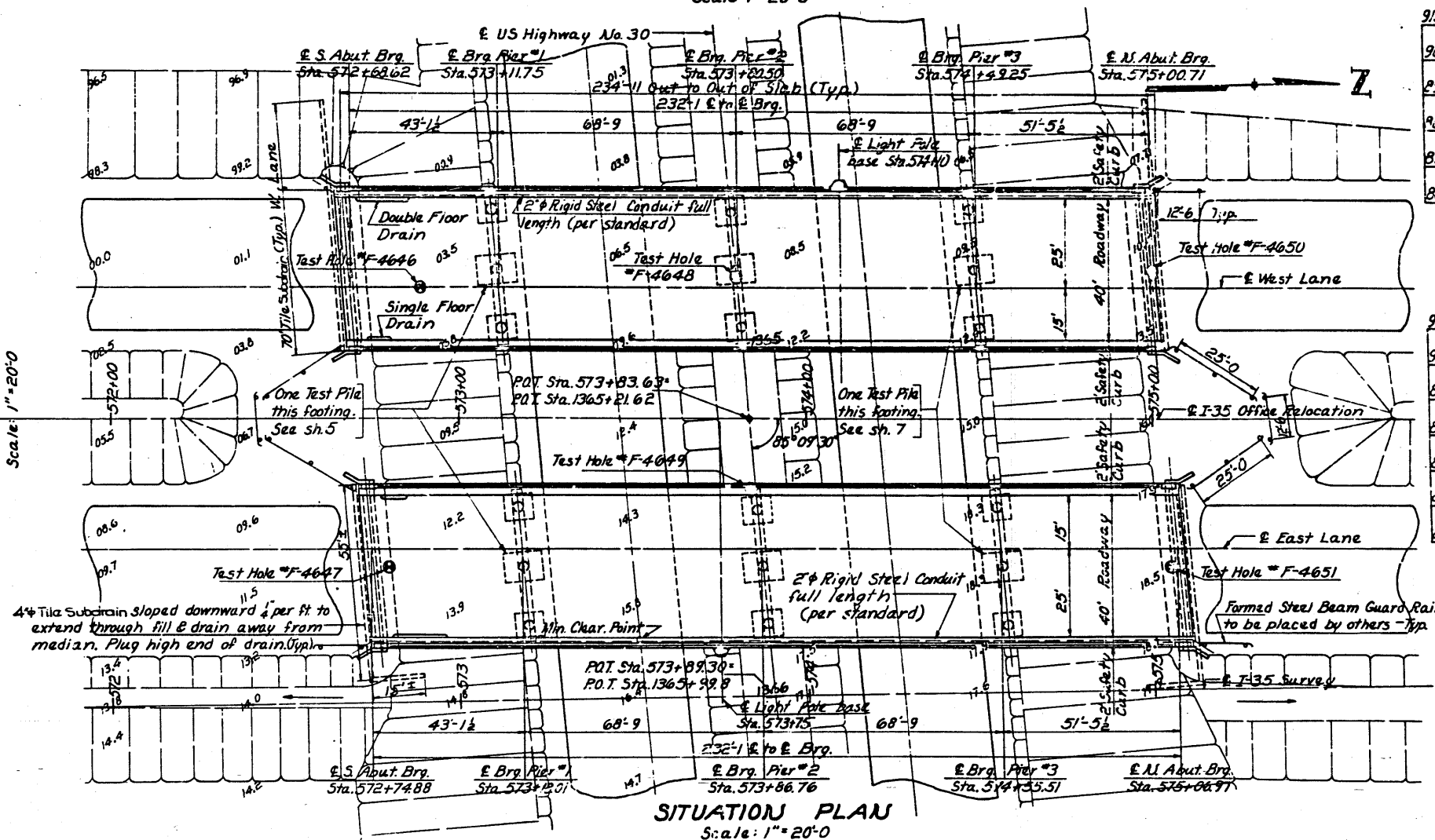
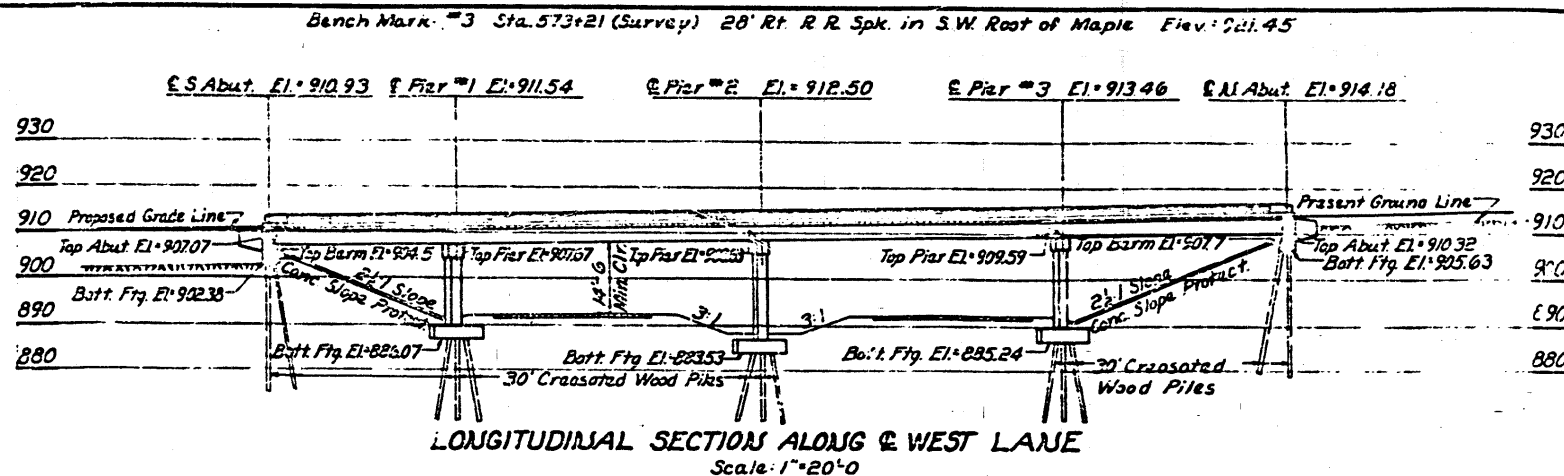
TRACED BY:
CHECKED BY: J. Denny

Section Leader: Gene Pollmann

STORY COUNTY

PROJECT NUMBER: IN-35-4(64) III--15-85

STATE: IOWA REGION: FISCAL YEAR: SHEET NO: TOTAL SHEETS: 15



LOCATION:
Section 7 & 18
T-83N R-23W
Grant TWP
Story County
On I-#35
Over US #39

DESIGN NO. 590
FILE NO. 28039
DES. SH. NO. 2 OF 15

Design for 4°50'30" Skew
**DUAL 232'-1x40' PRETENSIONED PRESTRESSED
CONCRETE BEAM BRIDGES**

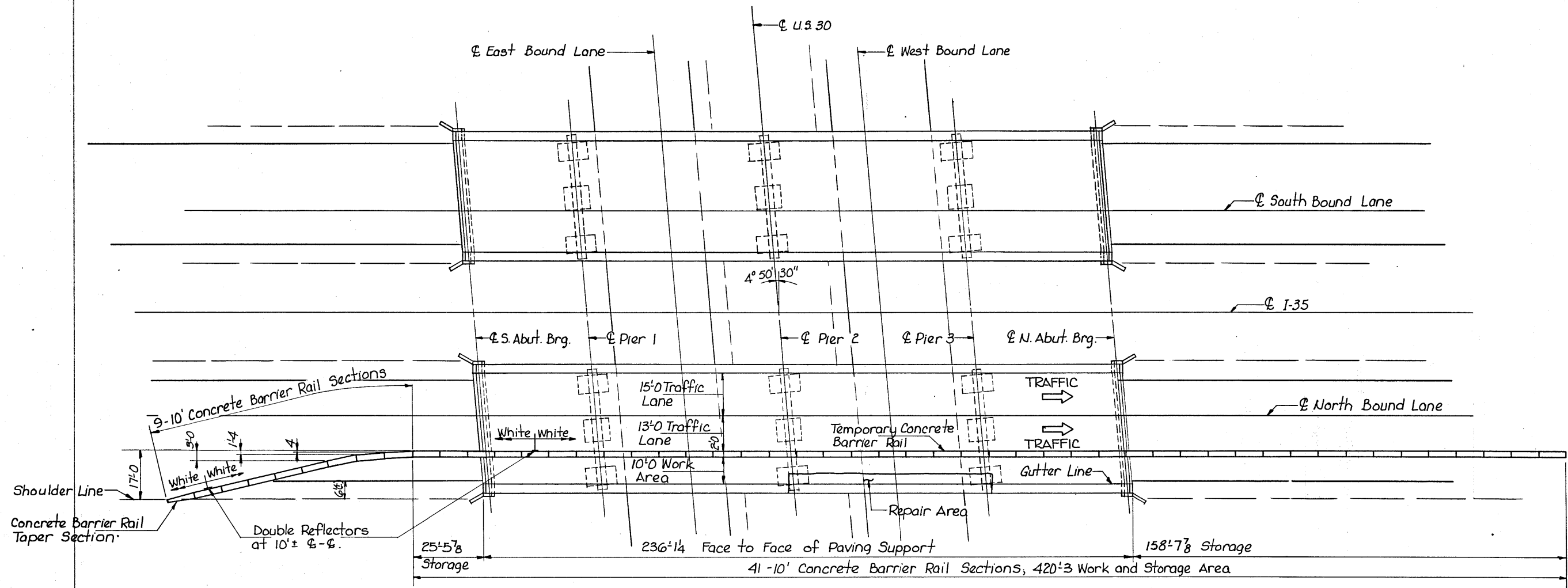
43'-1/2 & 51'-5 1/2 End Spans
Concrete Floor & Substructure

SITUATION PLAN
Station: 573+83.63 on Interstate 35
Station: 1365+21.62 on US 30 Proj. No. I-35-4(9)110
STORY COUNTY

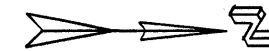
Iowa State Highway Commission
November 1962 Sheet 2 of 14

Design No. 1162	Story County	File No. 21522
Designed by: <i>W.H.</i>	Traced by: <i>AAA</i>	Checked by: <i>M.L.F.</i>

 $2/15$



SITUATION PLAN
(Showing Concrete Temporary Barrier Rail Layout.)



LOCATION:
On I-35 over U.S. 30
Section 7 & 18
T-83N R-23W
Grant Twp
Story County

ESTIMATED QUANTITY		
Item	Unit	Quantity
Temporary Barrier Rail Concrete, Furnish Only	L.F.	500
Temporary Barrier Rail Concrete, Place Only	L.F.	500

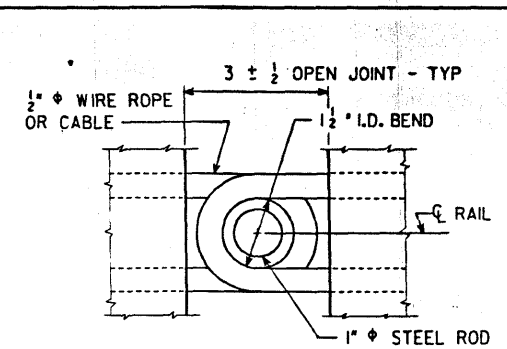
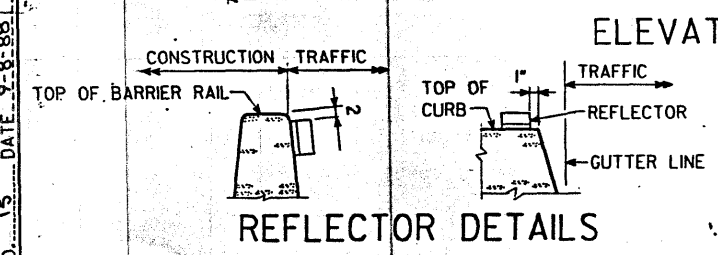
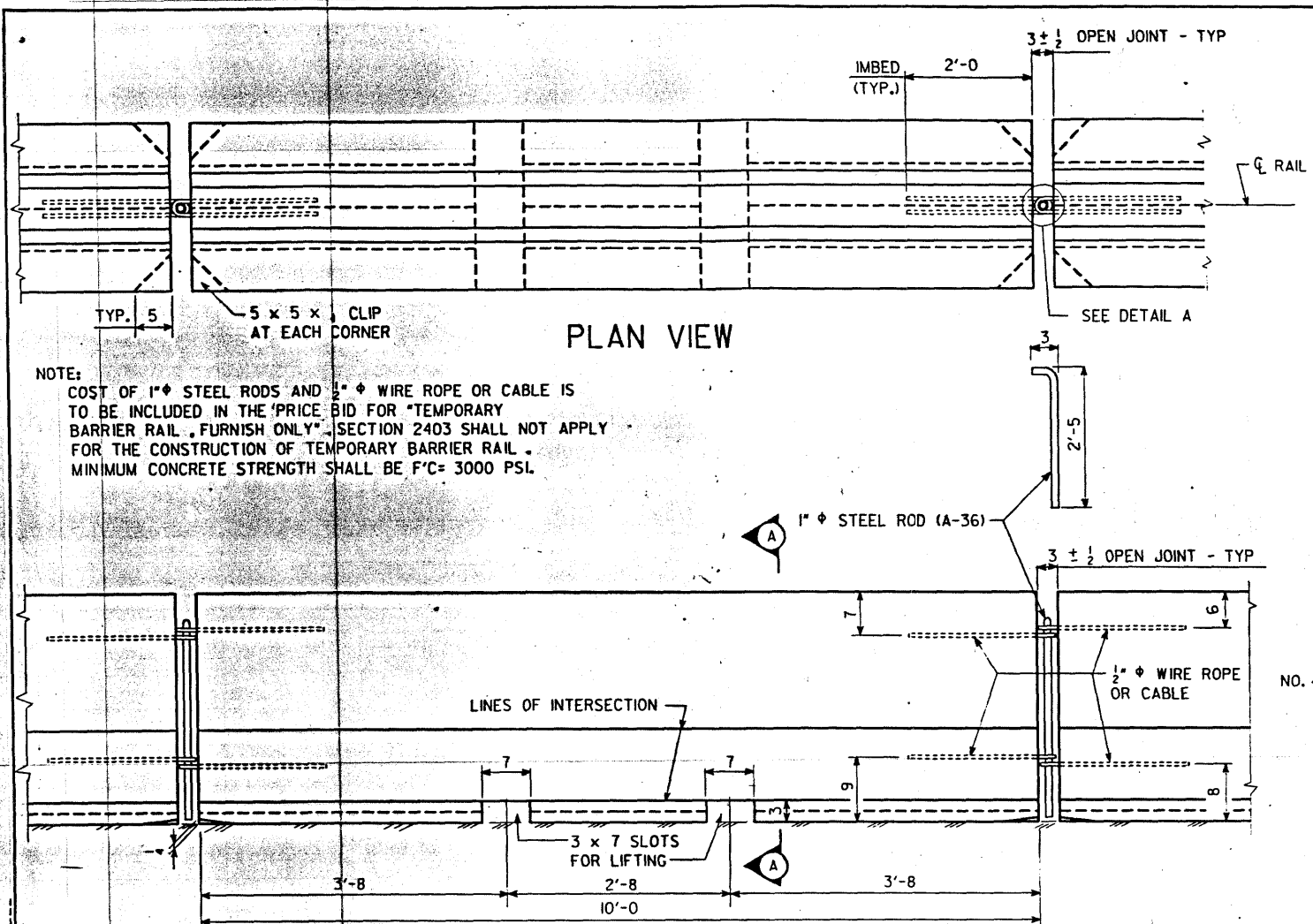
Design For Repairs To a 4°50'30" Skew (N.B.L.)
DUAL 232'-1x40' PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGES
43'-1/2' & 51'-5 1/2' End Spans 2-68'-9" Interior Spans
SITUATION PLAN & T.B.R. LAYOUT
Sta. 573+83.63 I-35 January, 1990
Sta. 1365+21.62 U.S. 30
STORY COUNTY
IOWA DEPARTMENT OF TRANSPORTATION-HIGHWAY DIVISION
Design Sheet No.: 3 Of 15 File No.: 28039 Design No.: 590

DESIGNED BY: M. J. Hemmer TRACED BY: _____
DETAILED BY: E. Opava CHECKED BY: J. Deming

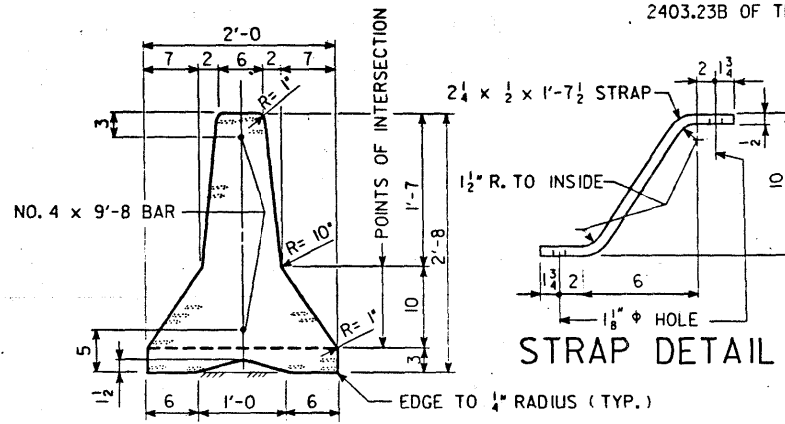
STORY COUNTY

PROJECT NUMBER

STATE	FHWA Region	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	7		4	17

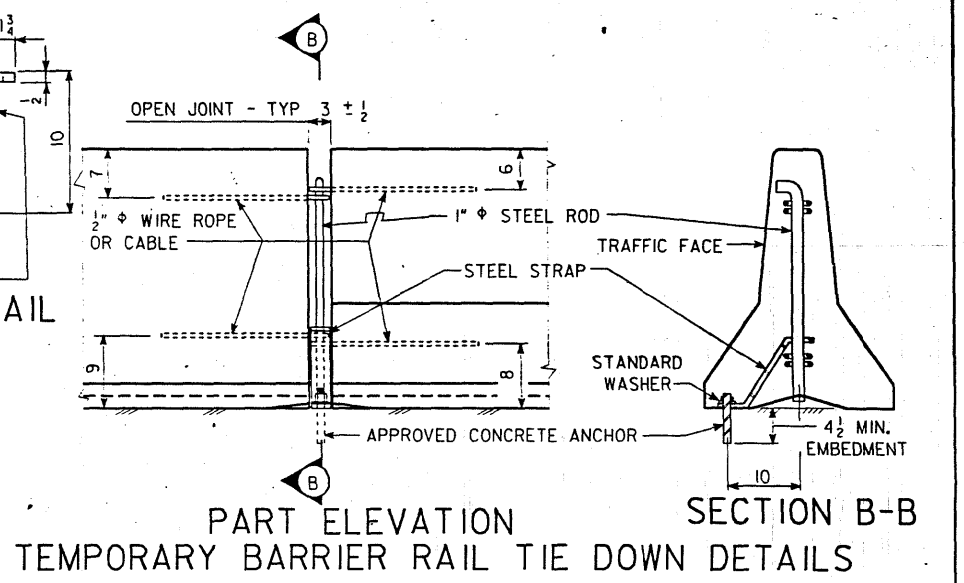


DETAIL A
WIRE ROPE OR CABLE TO BE 1/2" WITH A MINIMUM BREAKING STRENGTH OF 20,000 POUNDS.



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 FEET, THEREFORE CONCRETE BARRIER RAIL SECTIONS ARE REQUIRED FOR BRIDGE END "B".
ALL COSTS FOR TIE DOWNS SHALL BE INCLUDED IN THE PRICE BID FOR TEMPORARY BARRIER RAIL, PLACE ONLY.
TIE-DOWNS ARE REQUIRED ONLY WHERE THE TEMPORARY BARRIER RAIL IS ADJACENT TO A DROP-OFF. HOLES FOR CONCRETE ANCHORS MAY BE DRILLED AFTER POSITIONING TEMPORARY BARRIER RAIL. CONCRETE ANCHORS ARE TO BE SET SO THAT THE ANCHORS CAN BE REMOVED AT LEAST 1 1/2" BELOW THE CONCRETE SURFACE AND THE REMAINING HOLE FILLED WITH A NEAT MIXTURE OF SAND-CEMENT GROUT. CONCRETE ANCHORS ARE TO BE REMOVED, WITHOUT DAMAGING THE SURROUNDING CONCRETE, ONLY AFTER THE TEMPORARY BARRIER RAIL IS NO LONGER NEEDED AT THE PARTICULAR LOCATION.
CONCRETE ANCHORS ARE TO BE A MINIMUM OF 3/4" AND AS OTHERWISE SPECIFIED IN CURRENT OFFICE OF MATERIALS I.M. 453.09 WITH A PULL-OUT STRENGTH OF 16,000 LBS. BASED ON 4,000 P.S.I. CONCRETE.
SURFACE FINISH FOR TEMPORARY CONCRETE BARRIER RAIL SHALL BE IN ACCORDANCE WITH ARTICLE 2403.23B OF THE STANDARD SPECIFICATIONS.



Design For Repairs To a 4°50'30" Skew (N.B.L.)
DUAL 232'-1x40' PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGES
 43'-1/2' ± 51'-5 1/2' End Spans 2'-68'-9 Interior Spans
TEMPORARY BARRIER RAIL-CONCRETE
 Sta. 573+83.63 I-35 January, 1990
 Sta. 1365+21.62 U.S.30
STORY COUNTY
 IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
 DESIGN SHEET NO. 4 OF 15 FILE NO. 28039 DESIGN NO. 590

STATE	FWHA REGION	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	7		5	17

DATE 2-9-88
 ARCH. TAPE NO. 15
 THIS SHEET REDRAWN, DEVICE: ZH401(200.004)

DESIGNED BY M. J. Flanner TRACED BY J. Denny
 DETAILED BY E. G. Graw CHECKED BY J. Denny
 TEMPORARY BARRIER RAIL-CONCRETE STANDARD 1033

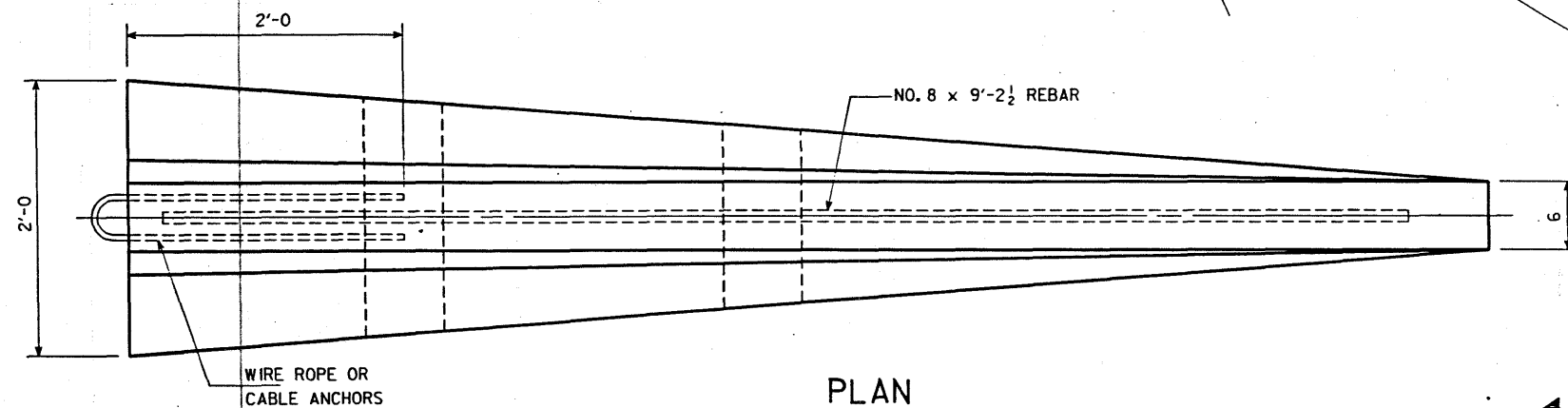
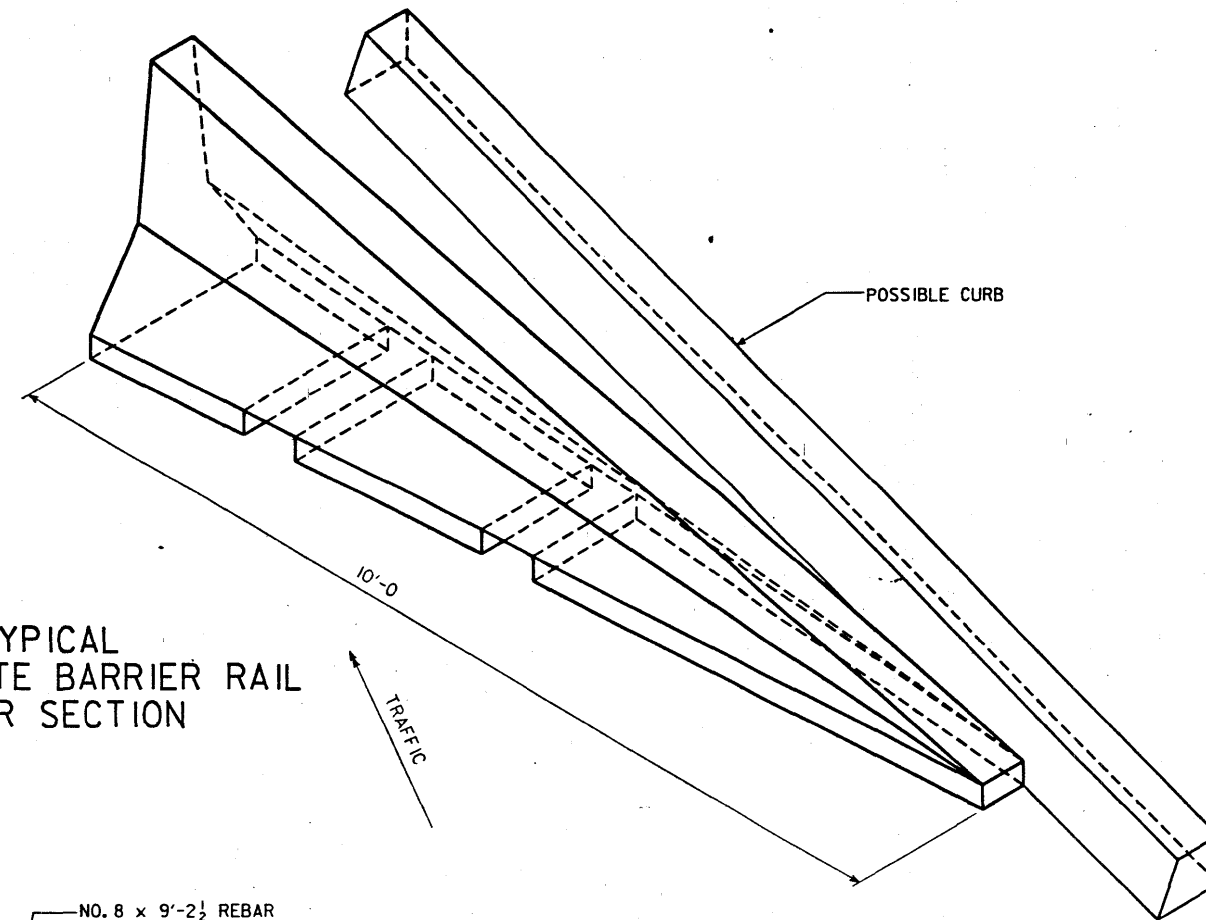
STORY COUNTY PROJECT NUMBER

GENERAL NOTES:

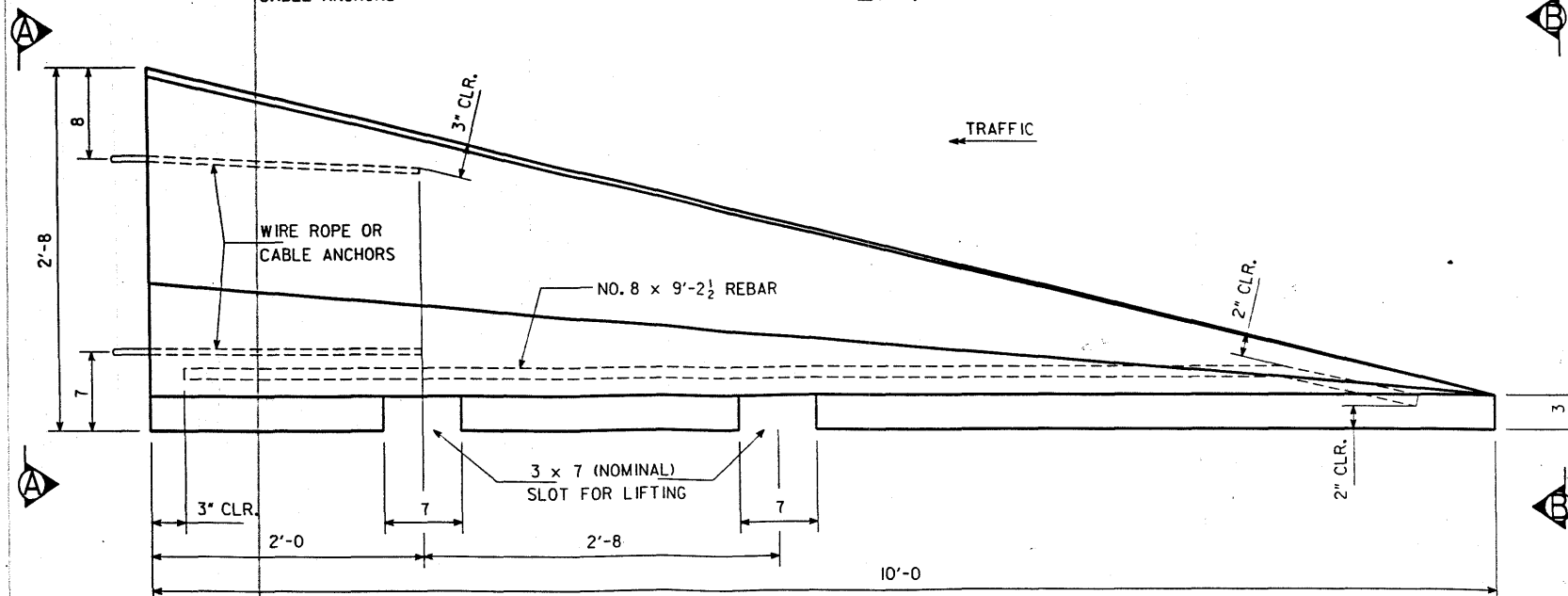
DETAILS SHOWN HEREON ARE FOR THE CONSTRUCTION OF A PRECAST CONCRETE BARRIER RAIL TAPER SECTION. DETAILS SHOWN ARE TYPICAL. ALTERNATE DESIGN DETAILS MAY BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION.

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.

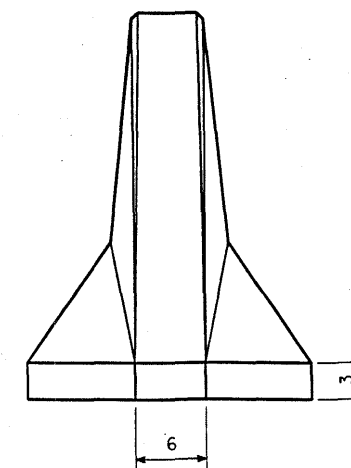
TYPICAL CONCRETE BARRIER RAIL TAPER SECTION



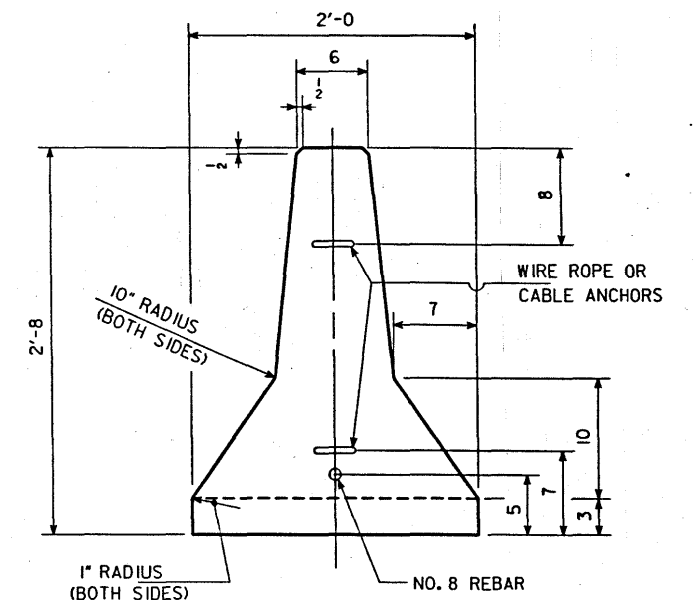
PLAN



SIDE ELEVATION

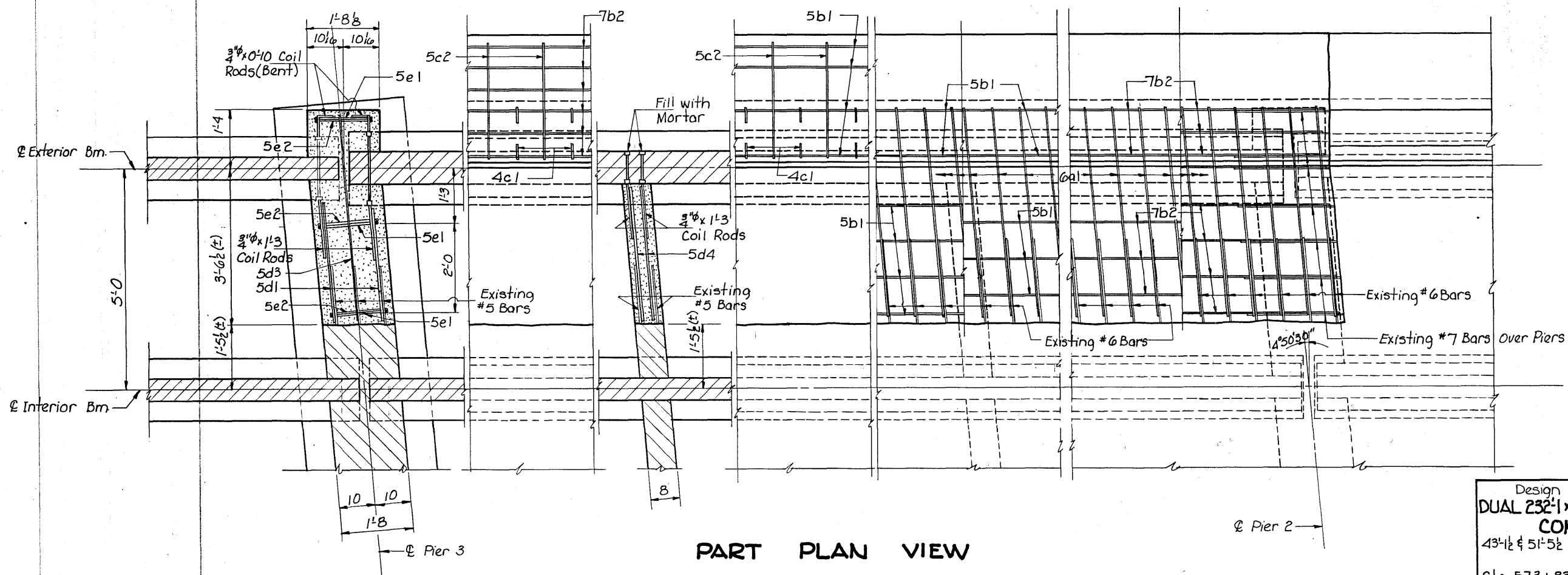
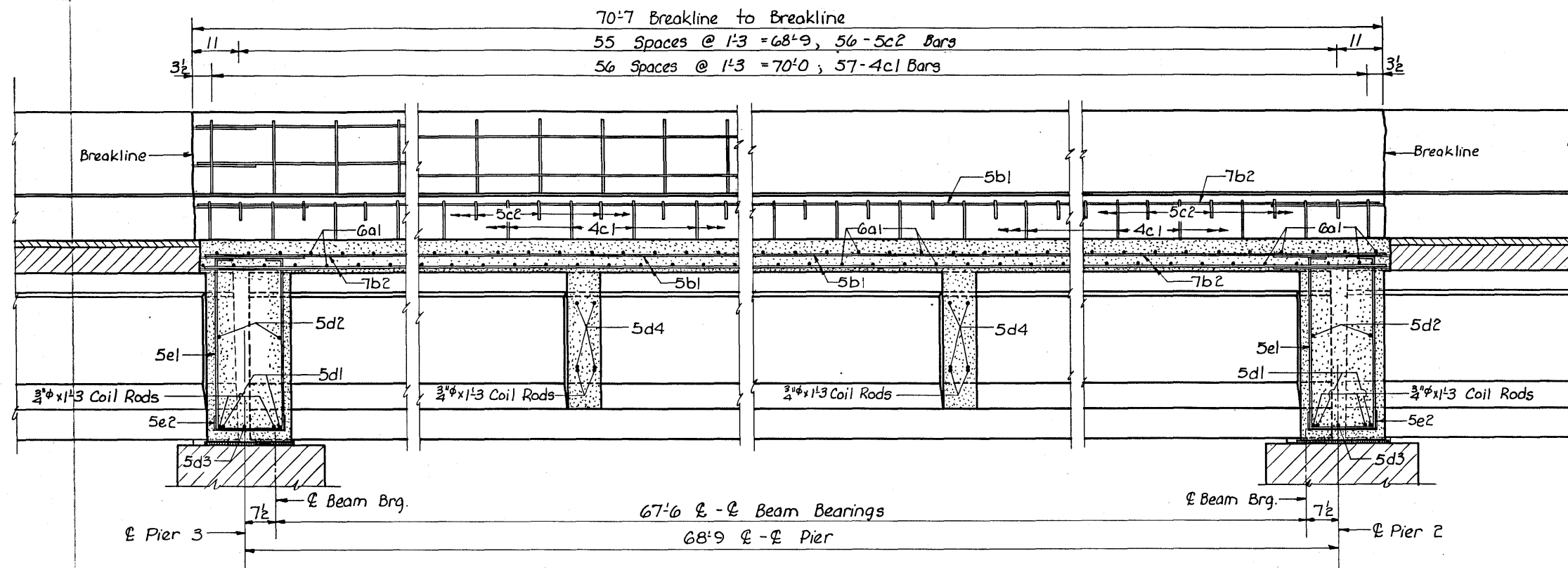


FRONT VIEW B-B



END VIEW A-A

Design For Repairs To a 4°50'30" Skew (N.B.L.)
**DUAL 232'x40' PRETENSIONED PRESTRESSED
 CONCRETE BEAM BRIDGES**
 43'-1 1/2' & 51'-5 1/2' End Spans 2-68'-9" Interior Spans
CONCRETE BARRIER RAIL TAPER SECTION
 Sta. 573+83.63 I-35 January, 1990
 Sta. 1365+21.62 U.S. 30
STORY COUNTY
 IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
 DESIGN SHEET NO. 5 OF 15 FILE NO. 28039 DESIGN NO. 590



Design For Repairs To a 4°50'30" Skew (N.B.L.)
DUAL 232'-1 x 40' PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGES
 43'-1/2' & 51'-5 1/2' End Spans 2-68'-9" Interior Spans
REPAIR DETAILS
 Sta. 573+83.63 I-35 January, 1990
 Sta. 1365+21.62 U.S.30
STORY COUNTY
 IOWA DEPARTMENT OF TRANSPORTATION-HIGHWAY DIVISION
 Design Sheet No.: 7 Of 15 File No.: 28039 Design No.: 590

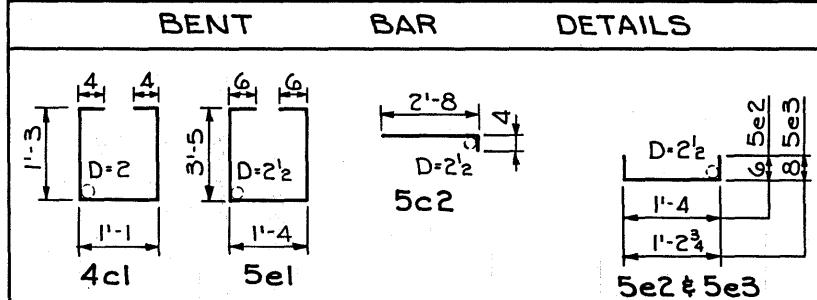
DESIGNED BY: M. L. Klemmer
 TRACED BY:
 DETAILED BY: E. J. G. G. G.
 CHECKED BY: J. D. G. G.

STORY COUNTY

PROJECT NUMBER

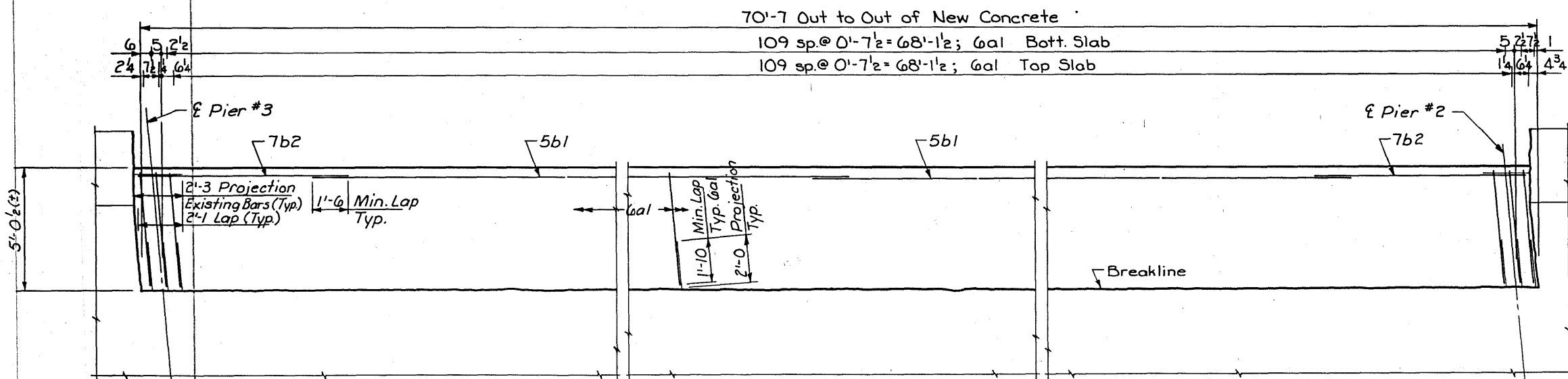
STATE	FHWA Region	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	7		8	17

REINFORCING BAR LIST					
Bar	Location	Shape	No.	Length	Weight
6a1	Slab, Transverse, Top & Bott	—	226	4'-9"	1,612
5b1	Slab, Longitudinal, Top & Bott	—	26	28'-10"	782
7b2	Slab & Curb, Longit., Top & Bott @ Pier	—	32	8'-7"	561
4c1	Curb, Hoop	□	57	4'-3"	162
5c2	Curb, Transv.	—	56	3'-0"	175
5d1	Pier Diaph., Between Beams	—	4	2'-5"	10
5d2	Pier Diaph., Between Beams	—	4	2'-10"	12
5d3	Pier Diaph., Between Beams	—	2	4'-7"	10
5d4	Interm. Diaph., Between Beams	—	8	2'-10"	24
5e1	Pier Diaph., Hoops	□	6	9'-2"	57
5e2	Pier Diaph., Ties	—	6	2'-4"	15
5e3	Pier Diaph., Ties	—	6	2'-7"	16
Total (lbs.)					3,436



NOTE: All dimensions are out to out. D= Pin Diameter

CONCRETE PLACEMENT QUANTITIES	
Location	Quantity
Slab & Diaphragms	8.7
Curb	6.5
Total (cu.yds.)	15.2



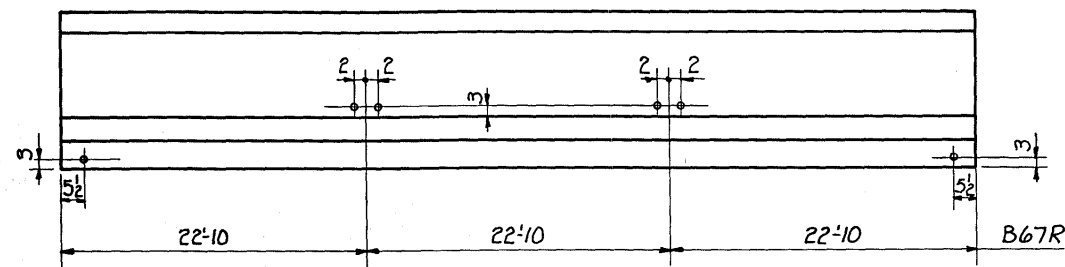
SLAB REINFORCING LAYOUT



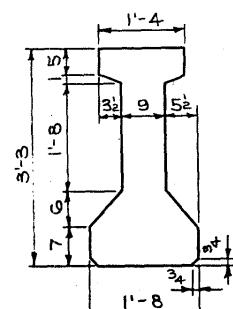
Design For Repairs to 4°50'30" Skew (N.B.L.)
DUAL 232'-1x40' PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGES
43'-1 1/2' & 51'-5 1/2' End Spans 2-68'-9" Interior Spans
REPAIR DETAILS
Station: 573+83.63 I-35 January, 1990
Station: 1365+21.62 U.S.30
STORY COUNTY
IOWA DEPARTMENT OF TRANSPORTATION-HIGHWAY DIVISION
Design Sheet No.: 8 Of 15 File No.: 28039 Design No.: 590

Revised 5-2-75: Beams B63-67 widened 1". Strands added to Beams B55, 59 and 67. R. Designation added to revised beams.
Revised 5-10-75: New sheet made.
Revised 5-2-75: Note concerning roughening of beams at diaphragms changed.

NOTE: Dimensions for the location of the deflected strands are at ϕ of beam and end of beam.



BEAM COIL TIE LOCATION

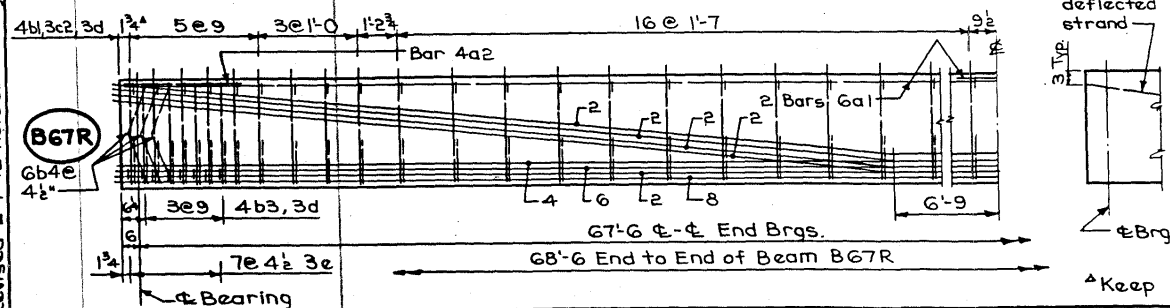


BEAM
B67R

$$\begin{aligned} A &= 499.5 \text{ in.}^2 \\ Y_b &= 17.63 \text{ in.} \\ I &= 77,364 \text{ in.}^4 \end{aligned}$$

NOTE:

Bars 4b1, 6b4
and 3d are to be
placed in pairs.



REINFORCING BAR LIST

[illegible]

- * Where deflecting strands interfere with placement, some in-place bending may be necessary.

BEAM DATA

	Beam								B67R
	Span								G7-6
	Initial Prestress Kips								809
	Size Strands								1/2
	Straight Strands								20
	Deflected Strands								8.
	Hold Down Force Kips								19.5
	Camber @								1.24
(1)	D.L. Deflection @ in. (7'-6 Spc.)								1.01
(1)	D.L. Deflection @ in. (8'-0 Spc.)								1.14
(1)	D.L. Deflection @ in. (8'-6 Spc.)								1.21
	Reinforcing Steel lb.								821
	Concrete cu.								8.80

- ① Due to weight of 8" slab and diaphragms.
- ② Upper figure is the beam camber at release. Lower figure is the beam camber just before slab is placed.
- ③ Upper figure is the elastic deflection of beam due to weight of 8" slab. Lower figure is the deflection due to the combined effect of creep due to weight of slab and shrinkage of slab. Total deflection of the beam is upper figure + 75% of lower figure for end spans and upper figure + 50% of lower figure for interior spans.

NOTES :

Unless otherwise noted lengths of all beams shall be increased .0005L to compensate for creep shrinkage and elastic shortening.

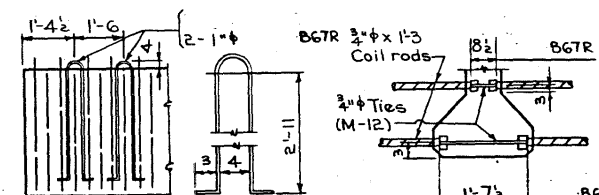
All deflected strands are to be held down at 4 points except that the hold down point may be moved toward the end of the beam a distance not to exceed .05 span at the producer's option.

Top of beams are to be struck off level and artificially roughened in accordance with the IDOT Materials Department recommendations.

Bearing details will be as detailed on the Bridge Design sheets.
All strands are to be $\frac{1}{2}$ " ϕ 270 kip grade.

Beams for continuous bridges shall be at least 4 weeks old before the slab is placed except as otherwise approved by the Engineer.

The portions of the prestress beams that are to be embedded in the abutment and pier diaphragms shall be roughened for a distance of 10" from the beam end by sand blasting or other approved methods to provide suitable bond between the beam and the diaphragm in accordance with Article 2403.15 of the specifications.

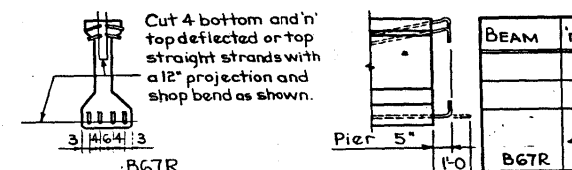


LIFTING LOOP DETAILS

Lifting loops are to be structural grade steel. Alternate types may be substituted with the approval of the Engineer.

COIL TIE DETAILS

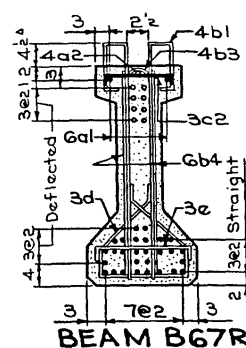
Number and location of coil ties to be as detailed on specific designs.



BEAM END DETAIL AT PIER

MAXIMUM SPACING OF BEAMS FOR SPANS SHOWN

Loading	Future W.S.	Slab Thickness	Maximum Spacing
H520 (Primary)	20 pcf	8"	7'-6"
H20 (Primary)	20 pcf	8"	8'-0"
H15 (Secondary)	—	8"	8'-6"



DETAILS AT PIER BEFORE
PLACING PIER DIAPHRAGM

DESIGN STRESSES:

Design stresses for the following materials are to be in accordance with A.A.S.H.T.O. Standard Specifications for Highway Bridges, Series of 1977:

Reinforcing steel in accordance with Section 1.6.6(B), $f_y = 20,000$ psi.
Concrete in accordance with Section 1.6.6(B), $f_c = 5000$ psi.
Prestressing steel in accordance with Section 1.6.6(A),
 $f_p = 270,000$ psi.

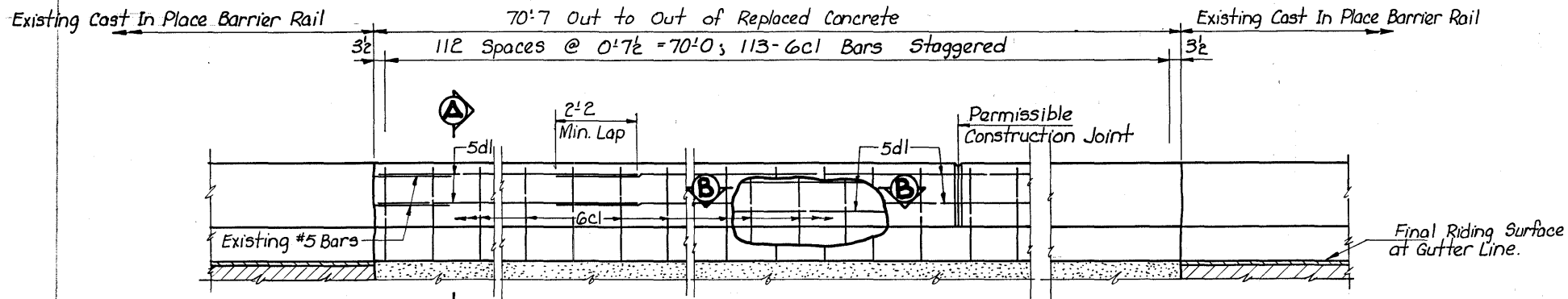
SPECIFICATIONS:

DESIGN: A.A.S.H.T.O. Series of 1977.
CONSTRUCTION: Standard Specifications of the Iowa
Department Of Transportation, current Series, plus current
special provisions and supplemental specifications.

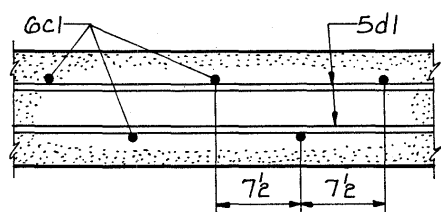
Design For Repairs To a 4°50'30" Skew (N.B.L.)
**DUAL 232' x 40' PRETENSIONED PRESTRESSED
 CONCRETE BEAM BRIDGES**
 43+1/2 & 51+5/8 End Spans 2-68'-9" Interior Spans
BEAM DETAILS B67R

Sta. 573+83.63 I-35
Sta. 1365+21.62 U.S. 30

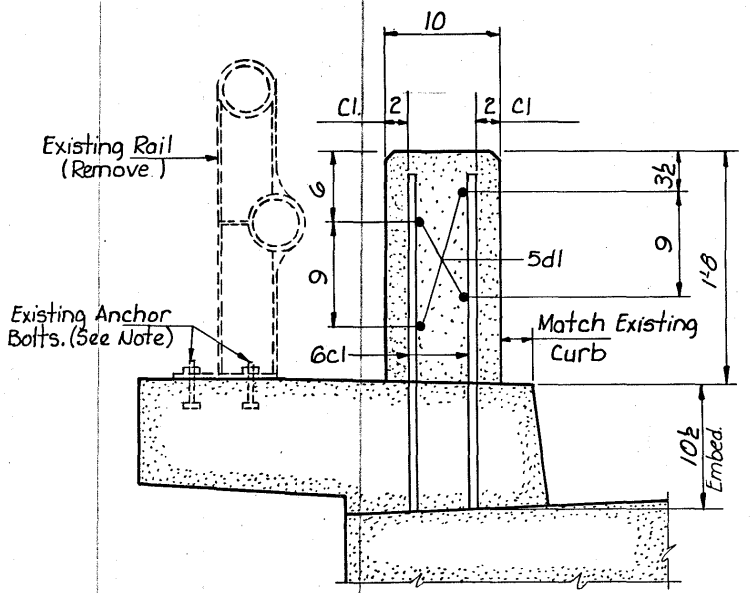
STORY COUNTY
IOWA DEPARTMENT OF TRANSPORTATION, HIGHWAY DIVISION
Design Sheet No.: 9 Of 15 File No.: 28039 Design No.: 590



ELEVATION OF CAST IN PLACE BARRIER RAIL

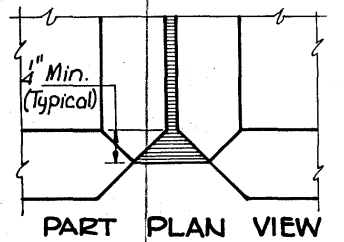


SECTION B-B
(Showing 6cl Placement)

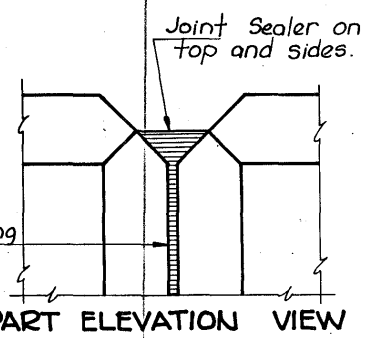


SECTION A-A

NOTE:
EXISTING ANCHOR BOLTS SHALL BE CUT OFF FLUSH WITH OR SLIGHTLY BELOW THE 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.



PART PLAN VIEW



PART ELEVATION VIEW

CAST IN PLACE BARRIER RAIL JOINT DETAIL

EPOXY REINFORCING STEEL BAR LIST

Bar	Location	Shape	No.	Length	Lin. Ft.	Weight
6cl	Rail, Vertical	—	113	2'-5	273	410
5dl	Rail, Horizontal	—	8	36'-3	290	302
Total (lbs.)						712

CONCRETE PLACEMENT SUMMARY

Concrete	Total
70.6 @ 0.051 Cu Yds. Per Lin. Ft.	3.6

ESTIMATED QUANTITY

Item	Units	Quantity
Cast In Place Barrier Rail	Lin. Ft.	70.6

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 3/4" DRESSED AND BEVELED STRIP.
TOP OF THE CAST IN PLACE BARRIER RAIL IS TO BE PARALLEL TO THE THEORETICAL GRADE.
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 THE 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 BREAKLINE TO BREAKLINE IN 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 STRUCTURAL CONCRETE.
THE JOINT SEALER SHALL CONFORM TO FEDERAL SPECIFICATIONS TT-S00230 OR TT-S00227 FOR TYPE II, CLASS A OR B.
ALL REINFORCING IS TO BE EPOXY COATED. THE EPOXY COATING SHALL BE IN ACCORDANCE WITH ARTICLE 4151.03B OF THE STANDARD SPECIFICATIONS.

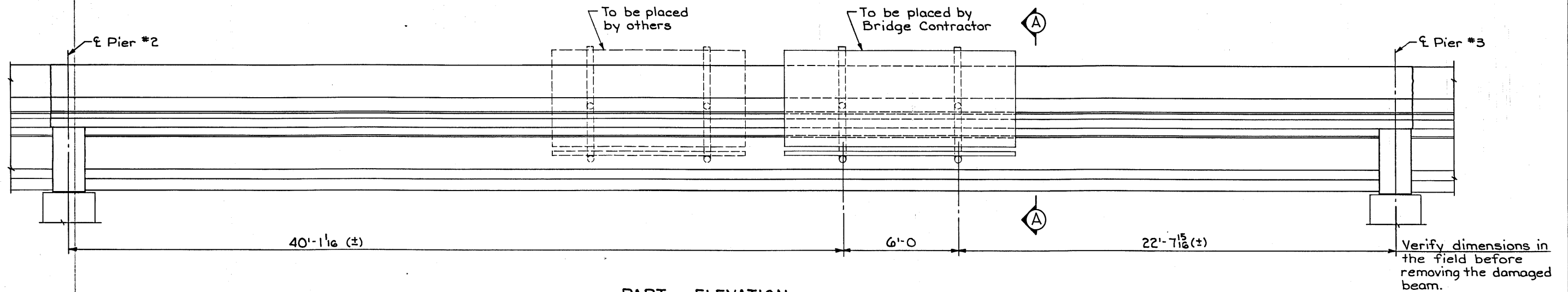
Design For Repairs To a 4°50'30" Skew (N.B.L.)
DUAL 232'-1x40' PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGES
43'-1 1/2' & 51'-5 1/2' End Spans 2-68'-9" Interior Spans
CAST IN PLACE BARRIER RAIL DETAILS
Sta. 573+83.63 I-35 January, 1990
Sta. 1365+21.62 U.S.30
STORY COUNTY
IOWA DEPARTMENT OF TRANSPORTATION-HIGHWAY DIVISION
Design Sheet No.: 10 Of 15 File No.: 28039 Design No.: 590

65219 10/00/01 WORK SHEET 000 31446

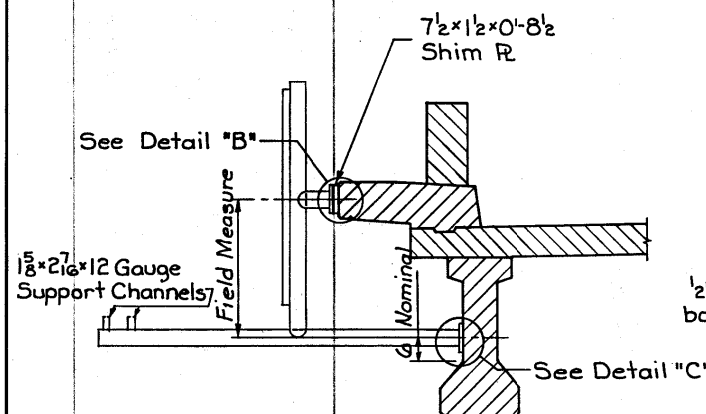
DESIGNED BY: *M. J. Flemmer* TRACED BY: *J. Denny*
DETAILED BY: *E. G. Gault* CHECKED BY: *J. Denny*

STORY COUNTY

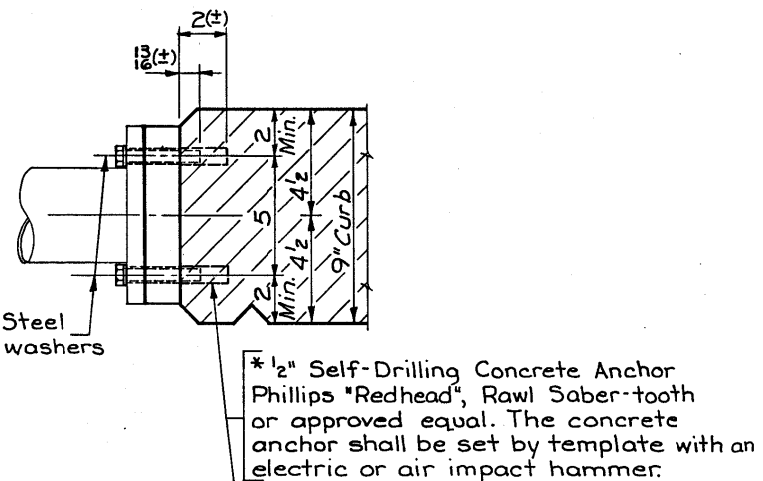
STATE	FWA Region	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	7		11	17



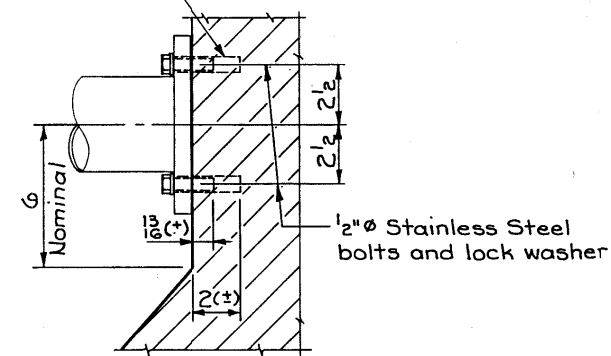
PART ELEVATION



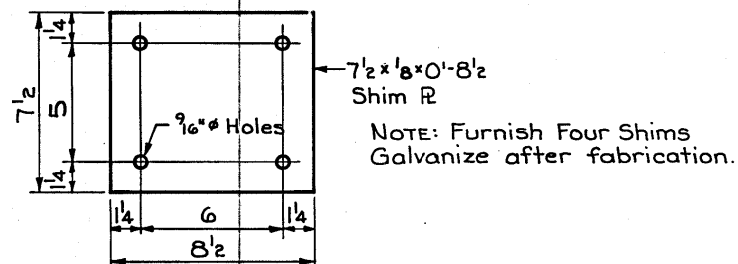
SECTION A-A



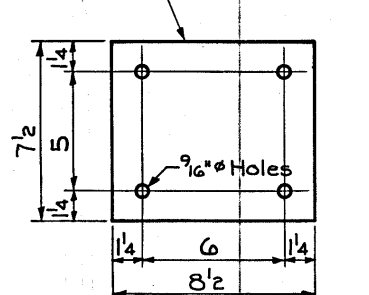
DETAIL "B"



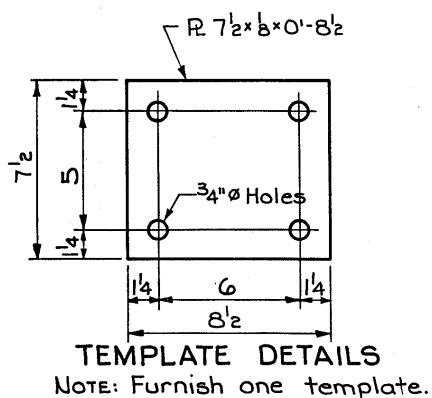
DETAIL "C"



SHIM DETAILS



TEMPLATE DETAILS



TEMPLATE DETAILS

Design For Repairs to 4'50'30" Skew (N.B.L.)
DUAL 232'-1 x 40' PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGES
 43'-1 1/2 & 51'-5 1/2 End Spans 2-68'-9 Interior Spans
REPAIR DETAILS
 Station: 573+83.63 I-35
 Station: 1365+21.62 U.S. 30
STORY COUNTY
 IOWA DEPARTMENT OF TRANSPORTATION-HIGHWAY DIVISION
 Design Sheet No.: 11 Of 15 File No.: 28039 Design No.: 590

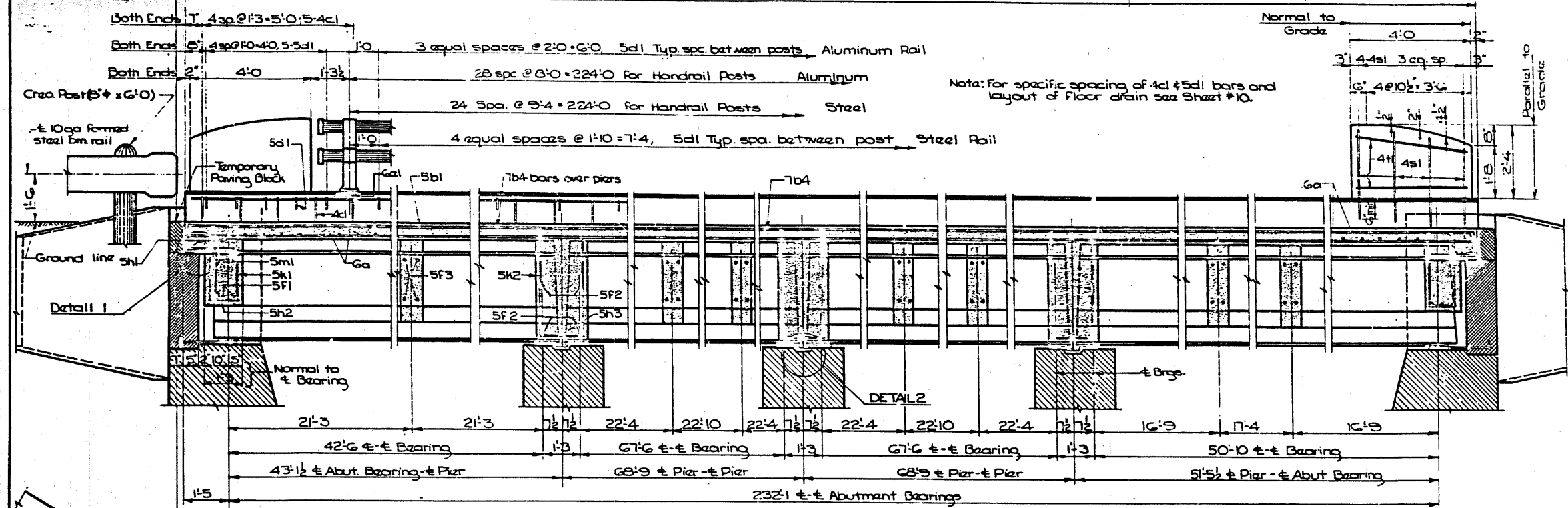
DESIGNED BY: *M. L. Flemmer*
 DETAILED BY: *D. A. Wright*
 TRACED BY: *J. D. Denny*
 CHECKED BY: *J. D. Denny*

STORY COUNTY

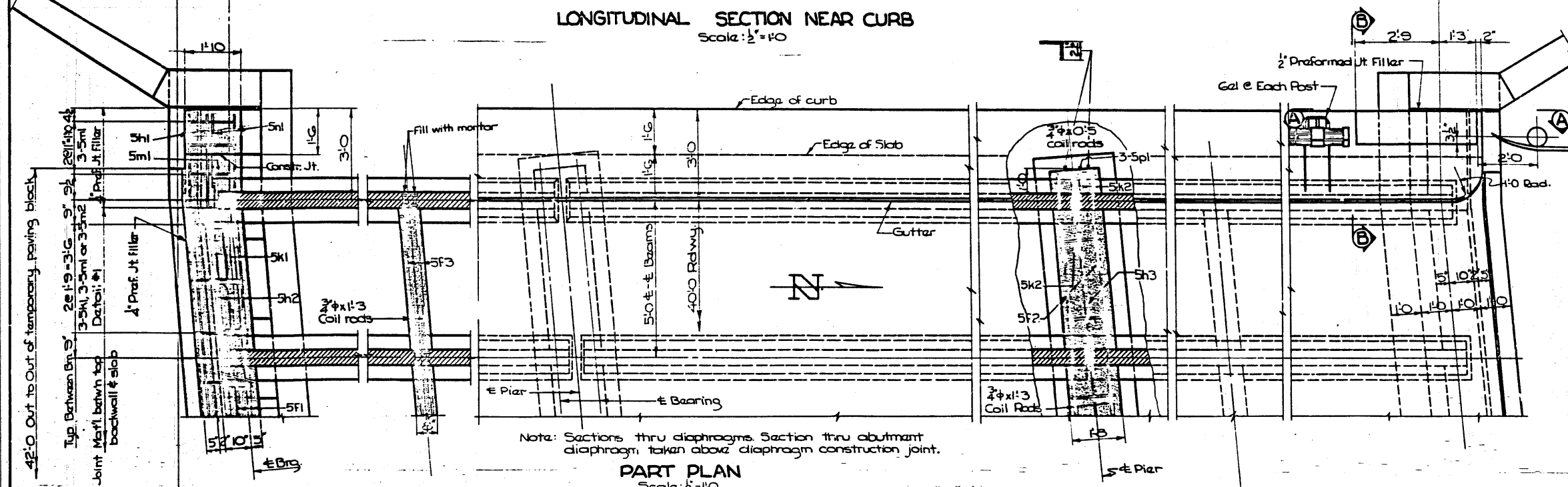
PROJECT NUMBER

STATE	FHWA Region	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
IOWA	7		12	17

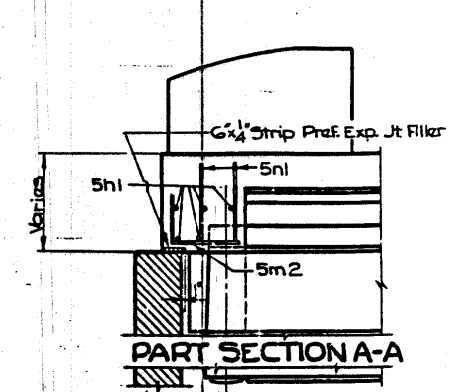
234-11 Out to Out of State



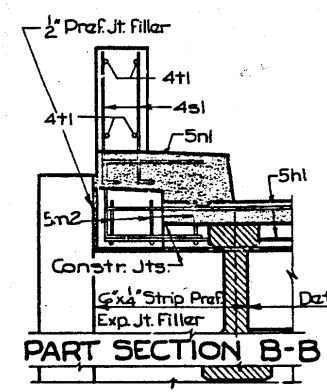
LONGITUDINAL SECTION NEAR CURB
Scale: $\frac{1}{2}'' = 1'-0$



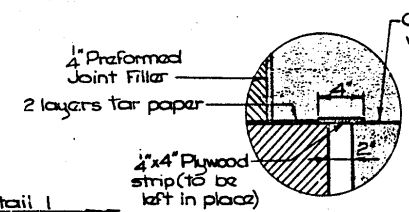
PART PLAN
Scale: $\frac{1}{2}'' = 1'-0''$



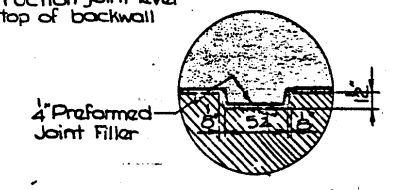
PART SECTION A-A



PART SECTION B-B



DETAIL 1

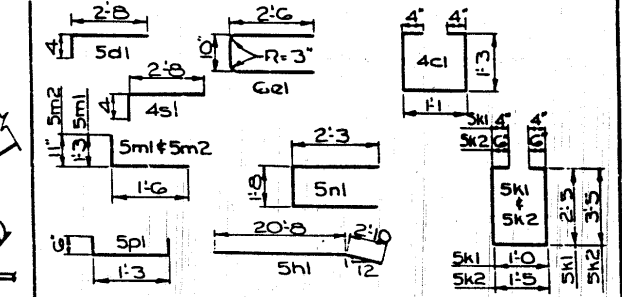


DETAIL 2

Scale: $1\frac{1}{2}" = 1'-0"$

REINFORCING STEEL - ONE SUPERSTR.						
Bar	Location	Shape	N ^o	Length	Weight	
6a1	Slab Transverse Top	—	370	24'-3"	13477	
6a2	" " "	—	370	19'-10"	10222	
6a3	" " " Bottom	—	742	22'-0"	21518	
5b1	Slab+Curb Long. All Spans	—	353	37'-8"	13200	
5b2	" " " Ctr. Spans	—	68	8'-8"	3271	
5b3	" " " End Spans	—	84	9'-5"	3255	
7b4	" " " Over Piers	—	291	15'-8"	9319	
4c1	Curb, Hoops	⌈	311	4'-0"	391	
5d1	Curb, Transverse	⌈	256	2'-11"	779	
6a1	Rail Post Anchors	⌈	58	5'-6"	479	
5f1	Abut Diaph. Between Bms	—	32	4'-3"	142	
5f2	Pier " " "	—	96	3'-4"	334	
5f3	Interm. " " "	—	224	4'-3"	993	
5h1	Abut Diaph. Longitudinal	—	20	23'-6"	490	
5h2	" " "	—	2	39'-6"	92	
5h3	Pier " " "	—	6	21'-6"	135	
5k1	Abut " Hoops	⌈	48	6'-2"	309	
5k2	Pier " "	⌈	54	8'-11"	502	
5m1	Abut " Transverse	⌈	42	2'-3"	117	
5m2	" " "	⌈	18	2'-4"	44	
5n1	Curb Transverse - ends	⌈	8	6'-0"	50	
5p1	Pier Diaph.	⌈	18	2'-1"	39	
4s1	End Post Vertical	⌈	32	2'-11"	62	
4t1	" " Horizontal	⌈	16	3'-8"	39	
6w1	Curb, Long. @ Double Drain	—	6	16'-6"	149	
6w2	" " " Single Drain	—	6	8'-6"	77	

BENT BAR DETAILS



Note: All dimensions are out to out Radii to $\frac{1}{4}$ of bar

* Total shown for aluminum railing. For reinforcing steel changes due to use of steel railing see Steel Handrail Detail Sheet 13.

THIS SHEET FROM ORIGINAL
DESIGN IS INCLUDED FOR
INFORMATION ONLY.

DESIGN NO. 590
FILE NO. 28039
DES. SH. NO. 12 OF 15

Design For 4* 50' 30" Skew
DUAL 232'1 x 40' PRETENSIONED PRESTRESSED
CONCRETE BEAM BRIDGES
43'1/2 and 5'5 1/2 End Spans
Concrete Floor & Substructure
68'9 Center Spans
Tubular Rails
SUPERSTRUCTURE DETAILS
Station 513+83.63 on Interstate #35
Station 1365+21.62 on U.S. #30
Proj. N° T-35-4(9)110
STORY COUNTY
Iowa State Highway Commission
November 1962
Sheet B of 14

Design 1162 Story County File N^o 21522 136
Designed by: *Thal* ~~_____~~ h.u.: (\$) Checked by: M. L. F.

