

IOWA  
DEPARTMENT OF TRANSPORTATION  
Highway Division

PLANS OF PROPOSED IMPROVEMENT ON THE  
PRIMARY ROAD SYSTEM

DUBUQUE COUNTY

SUPERSTRUCTURE  
DUBUQUE COUNTY-IOWA AND GRANT COUNTY-WISCONSIN  
CITY ISLAND BRIDGE IN DUBUQUE

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

For Design Stresses see Design Sheet 3 of 45

CONSTRUCTION PLANS SHOWING PROJECT AS BUILT

Plan Preparation Supervised By: William J. Campbell  
Resident Construction Engineer  
Date MARCH 23, 1982 Iowa Reg. No. 4190

REVIEWED AND FORWARDED TO AMES

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

District Engineer

AFTER MICROFILMING RETURN ORIGINAL  
TO DISTRICT NO.

THIS AS BUILT PLAN INCLUDES

| YEAR | WORK           | CONTRACTOR               | PROJ. INSPECTOR |
|------|----------------|--------------------------|-----------------|
| 1981 | SUPERSTRUCTURE | HARRIS STRUCT. STEEL CO. | JOHN J. THURN   |
|      |                |                          |                 |
|      |                |                          |                 |

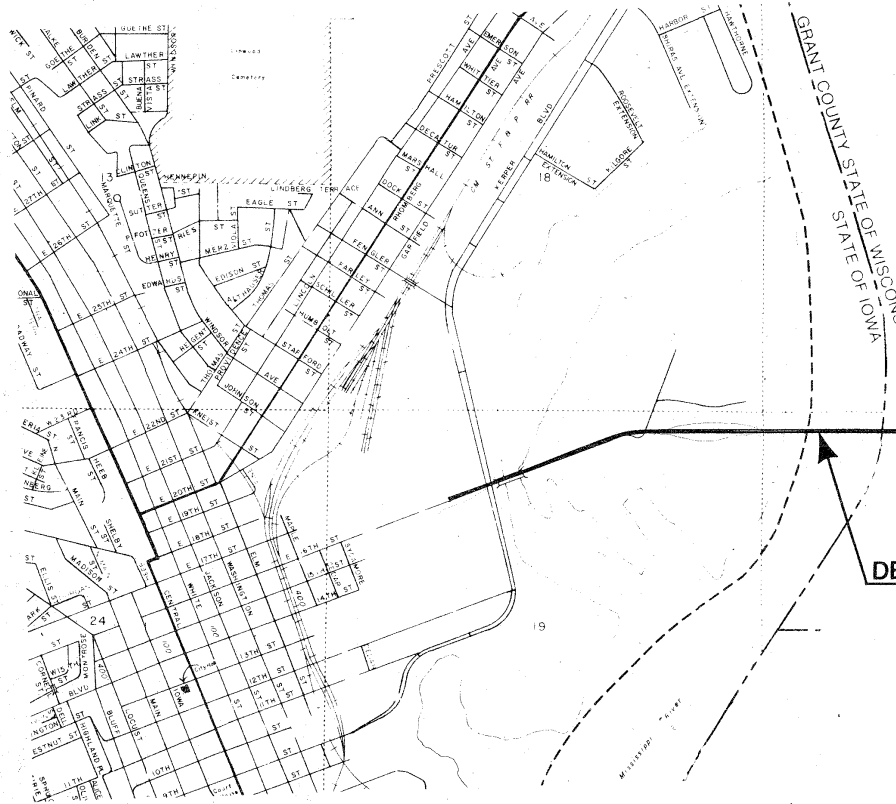
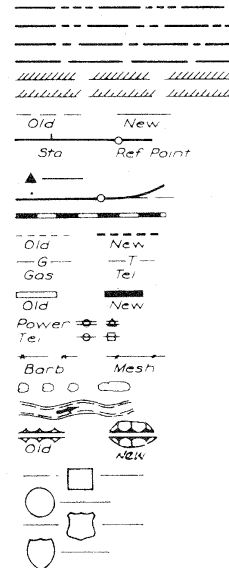
DES NO 1279

CONVENTIONAL SIGNS

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

Sec. Corner  
Profile Grade  
Railroad  
Field Tile  
Underground Lines  
Culverts  
Utility Poles  
Fences  
Trees Or Brush  
Stream  
Dike

County Road No.  
Primary Road No.  
U. S. Road No.  
Interstate Road No.



LOCATION MAP



PART OF THE CITY OF  
DUBUQUE  
T-89N R-3E  
DUBUQUE TWP.

| INDEX OF SHEETS |                                  |
|-----------------|----------------------------------|
| NO.             | DESCRIPTION                      |
| 1               | TITLE SHEET                      |
| 1A              | REVISION SHEET                   |
| 2A              | SHEET INDEX AND FINAL QUANTITIES |
| 3-45            | BRIDGE DESIGN NO. 1279           |
| 2               | VOID                             |

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

RECEIVED  
FEB 22 1983  
RESIDENT MAINT. OFF  
DUBUQUE, IOWA

REVISED

SEE FOLLOWING SHEET 1A

47 Sheets

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.

IOWA REGISTRATION NUMBER DATE



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

LETTING DATE APRIL 1, 1980

STATE CONTROL SECTION NUMBER 31-2000

FILE NO. 25896

DUBUQUE COUNTY

PROJECT NO. BRF-561-4(4)--38-31

SHEET NO. 1 OF 45

LISTING OF PROJECT REVISIONS

| DATE     | SHEET NUMBER  | DESCRIPTION OF REVISIONS                                                                                                                                                                                                              | DATE | SHEET NUMBER | DESCRIPTION OF REVISIONS |
|----------|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|--------------|--------------------------|
| 7-28-80  |               | Design 1279                                                                                                                                                                                                                           |      |              |                          |
|          | 1A of 45      | This sheet added to project (Revision Sheet).                                                                                                                                                                                         |      |              |                          |
|          | 49 of 45      | Dimensions as identified by  in Elevation & Link Plate Detail of Live Load Support are changed.                                                      |      |              |                          |
|          | 36 of 45      | Note 'No Outside Weld' is deleted from elevation view of Arch End.                                                                                                                                                                    |      |              |                          |
|          | 23 of 45      | Camber diagram & vertical curve ordinates for Girders 1 thru 67 at Pl. 1 thru 11 are corrected. 'Notes' is revised. All changes are identified by  . |      |              |                          |
|          | 14 of 45      | Rust clip detail is deleted. This deletion also applies to rust clips shown on sheets 15, 16, 17, 19, 20, 21, 22 & 24.                                                                                                                |      |              |                          |
|          | 1 of 45       | Sheet 1A added to "Index of Sheets".                                                                                                                                                                                                  |      |              |                          |
|          |               | REASON: Rust clip deleted since bridge is being painted. Detailing errors in camber diagram & vertical curve ordinates and dimensions in Elevation & Link Plate Detail. 'No Outside Weld' note was erroneously left on plans.         |      |              |                          |
| 12-22-80 |               | Design 1279                                                                                                                                                                                                                           |      |              |                          |
|          | 37 of 45      | Note concerning rope sockets, anchor sockets, jam nuts and roller pins added.                                                                                                                                                         |      |              |                          |
|          |               | REASON: Omission in plan detail. Open wire rope sockets, threaded anchor sockets, jam nuts and 1/2" roller pins shall be galvanized according to ASTM A153. No change in quantities.                                                  |      |              |                          |
| 2-25-81  |               | Design 1279                                                                                                                                                                                                                           |      |              |                          |
|          | 12 of 45      | Telephone conduit spacings changed as marked by  .                                                                                                   |      |              |                          |
|          | 14 & 45 of 45 | All changes as marked by  are related to telephone conduits.                                                                                        |      |              |                          |
|          |               | REASON: Contractor requested a change in the spacing of the telephone conduits for ease of installation. U bolt dimension changed due to error on plans. No change in quantities.                                                     |      |              |                          |
| 3-5-81   |               | Design 1279                                                                                                                                                                                                                           |      |              |                          |
|          | 40 of 45      | All changes as marked by  are related to Live Load Support detail.                                                                                 |      |              |                          |
|          |               | REASON: Changed details at Live Load Support for ease of welding fabrication. No change in quantities.                                                                                                                                |      |              |                          |

REVISION SHEET

File No. 25896

DUBUQUE COUNTY

PROJECT NUMBER  
BRF-561-4(4)-38-31

|       |                     |             |           |              |
|-------|---------------------|-------------|-----------|--------------|
| STATE | FED. ROAD DIST. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
| IOWA  | 6                   |             | 1-A       | 45           |

SHEET INDEX

| SHEET NO. | TITLE                                    | SHEET NO. | TITLE                                         |
|-----------|------------------------------------------|-----------|-----------------------------------------------|
| 1         | TITLE SHEET                              | 24        | SPAN 12 FRAMING PLAN, GIRDER                  |
| 2         | SHEET INDEX AND ESTIMATED QUANTITIES     |           | ELEVATIONS, CAMBER, MOMENTS AND               |
| 3         | GENERAL NOTES AND ANCHOR BOLT PLAN       |           | REACTIONS AND FINISHED ELEVATIONS             |
| 4         | GENERAL PLAN AND ELEVATION               | 25        | GIRDER SPANS - DETAILS                        |
|           | SPANS 1 THRU 6                           | 26        | GIRDER SPANS - CROSS FRAMES                   |
| 5         | GENERAL PLAN AND ELEVATION               | 27        | GIRDER SPANS - HINGE DETAILS                  |
|           | SPAN 7                                   | 28        | GIRDER SPANS - BEARINGS                       |
| 6         | GENERAL PLAN AND ELEVATION               | 29        | GIRDER SPANS - BEARINGS AND                   |
|           | SPANS 8 THRU 12                          |           | ANCHOR BOLTS                                  |
| 7         | LOG OF BORINGS                           | 30        | TIED ARCH - SPAN 7                            |
| 8         | LOG OF BORINGS                           |           | ARCH GEOMETRY                                 |
| 9         | LOG OF BORINGS                           | 31        | TIED ARCH - SPAN 7                            |
| 10        | LOG OF BORINGS                           |           | STRESS SHEET                                  |
| 11        | PIER 12                                  | 32        | TIED ARCH - SPAN 7                            |
| 12        | ABUTMENT 13                              |           | FLOOR SYSTEM AND STRINGER DETAILS             |
| 13        | ABUTMENT 13 DETAILS AND SUBSTRUCTURE     | 33        | TIED ARCH - SPAN 7                            |
|           | BAR LIST                                 |           | FLOOR BEAMS                                   |
| 14        | FRAMING PLAN AND GIRDER ELEVATION        | 34        | TIED ARCH - SPAN 7                            |
|           | SPANS 1 AND 2                            |           | ARCH RIB AND TIE GIRDER AT TO                 |
| 15        | FRAMING PLAN AND GIRDER ELEVATION        | 35        | TIED ARCH - SPAN 7                            |
|           | SPANS 2 AND 3                            |           | ARCH RIB AND TIE GIRDER MATERIAL              |
| 16        | FRAMING PLAN AND GIRDER ELEVATION        |           | AND SPLICES                                   |
|           | SPANS 4 AND 5                            | 36        | TIED ARCH - SPAN 7                            |
| 17        | FRAMING PLAN AND GIRDER ELEVATION        |           | ARCH RIB AND TIE GIRDER AT T16 AND DIAPHRAGMS |
|           | SPANS 5 AND 6                            | 37        | TIED ARCH - SPAN 7                            |
| 18        | GIRDER SPANS 1 THRU 6                    |           | HANGERS AND ACCESSORIES                       |
|           | CAMBER, MOMENTS AND REACTIONS AND        | 38        | TIED ARCH - SPAN 7                            |
|           | FINISHED ELEVATIONS                      |           | LOWER LATERALS                                |
| 19        | FRAMING PLAN AND GIRDER ELEVATION-SPAN 8 | 39        | TIED ARCH - SPAN 7                            |
|           | AND STEEL GIRDER STRUCTURAL STEEL NOTES  |           | UPPER LATERALS                                |
| 20        | FRAMING PLAN AND GIRDER ELEVATION        | 40        | TIED ARCH - SPAN 7                            |
|           | SPAN 9                                   |           | FIXED BEARINGS AND LIVE LOAD SUPPORTS         |
| 21        | FRAMING PLAN AND GIRDER ELEVATION        | 41        | TIED ARCH - SPAN 7                            |
|           | SPAN 10                                  |           | EXPANSION BEARINGS                            |
| 22        | FRAMING PLAN AND GIRDER ELEVATION        | 42        | TIED ARCH - SPAN 7                            |
|           | SPAN 11                                  |           | NAVIGATION LIGHT ACCESS                       |
| 23        | GIRDER SPANS 8 THRU 11                   | 43        | TIED ARCH - SPAN 7                            |
|           | CAMBER, MOMENTS AND REACTIONS AND        |           | NAVIGATION LIGHT ACCESS                       |
|           | FINISHED ELEVATIONS                      | 44        | TELEPHONE CONDUIT                             |
|           |                                          | 45        | TELEPHONE CONDUIT                             |
|           |                                          |           | SPLICING PLATFORMS                            |

VOID

| SUBSTRUCTURE - ESTIMATED QUANTITIES |          |         |             |        |
|-------------------------------------|----------|---------|-------------|--------|
| ITEM                                | UNIT     | PIER 12 | ABUTMENT 13 | TOTAL  |
| Structural Concrete Class C         | Cu. Yd.  | 573.1   | 147.3       | 720.4  |
| Reinforcing Steel Grade 60          | Lb.      | 56,800  | 20,780      | 77,580 |
| Class 23 Excavation                 | Cu. Yd.  | 200     | 111         | 311    |
| Granular Backfill                   | Cu. Yd.  |         | 137         | 137    |
| 4" Tile Subdrain                    | Lin. Ft. |         | 92          | 92     |

|              |               |     |
|--------------|---------------|-----|
| Mobilization | % of Estimate | *** |
|--------------|---------------|-----|

| SUPERSTRUCTURE - ESTIMATED QUANTITIES |       |           |             |            |            |
|---------------------------------------|-------|-----------|-------------|------------|------------|
| ITEM                                  | UNIT  | SPANS 1-6 | SPAN 7      | SPANS 8-12 | TOTAL      |
| Structural Steel                      | Lb.   | 4,251,187 | 5,700,749 * | 3,334,943  | 13,286,879 |
| Telephone Conduit and Splicing Cages  | L. S. |           |             |            | 1 **       |

\* Includes 5,100,193 Lbs. A-588, 347,477 Lbs. A-36, 68,564 Lbs. Socketed 2"  $\phi$  A-603 Bridge Rope, 55,815 Lbs. Castings and 128,700 Lbs. miscellaneous metal.  
These quantities do not include 25,716 Lbs. of arch rib and tie girder mock-up sections.  
\*\* Includes 11,260 L.F. 4"  $\phi$  conduit and 14,005 Lbs. miscellaneous metal in splicing cages and access.  
\*\*\* For both Substructure & Superstructure. See Supplemental Specification 839.

VOID

Revision (3-4-80) This sheet is voided. This sheet is to be superseded by Sh. 2A.

I hereby certify that this plan, specification or report 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.  
Signed *Gordon R. Pennington* Date *Dec. 12, 1979*  
GORDON R. PENNINGTON, P.E. Iowa Reg. No. 5286



MISSISSIPPI RIVER BRIDGE  
SHEET INDEX AND  
VOID ESTIMATED QUANTITIES  
DUBUQUE COUNTY, IOWA - GRANT COUNTY, WISCONSIN  
IOWA DEPARTMENT OF TRANSPORTATION

NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

DESIGN NO. 1279 FILE NO. 25896 DES. SH. NO. 2 OF 45

PROJECT BRP-561-4(4)-38-31 PROJECT SH. NO. 2 OF 45

DRAWN BY: M. Mize May, 1979  
CHECKED BY: R.C. Hunt. July, 1979

SVERDRUP & PARCEL AND ASSOCIATES, Inc.  
CONSULTING ENGINEERS  
ST. LOUIS, MO.

## SHEET INDEX

| SHEET NO. | TITLE                                                 | SHEET NO. | TITLE                                                                                          |
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| 6         | SPAN 7                                                | 29        | GIRDER SPANS - BEARINGS AND ANCHOR BOLTS                                                       |
| 7         | GENERAL PLAN AND ELEVATION                            | 30        | TIED ARCH - SPAN 7                                                                             |
| 8         | SPAN 8 THRU 12                                        | 31        | ARCH GEOMETRY                                                                                  |
| 9         | LOG OF BORINGS                                        | 32        | TIED ARCH - SPAN 7                                                                             |
| 10        | LOG OF BORINGS                                        | 33        | STRESS SHEET                                                                                   |
| 11        | LOG OF BORINGS                                        | 34        | TIED ARCH - SPAN 7                                                                             |
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| 13        | PIER 12                                               | 36        | TIED ARCH - SPAN 7                                                                             |
| 14        | ABUTMENT 13                                           | 37        | ARCH RIB AND TIE GIRDER AT T0                                                                  |
| 15        | ABUTMENT 13 DETAILS AND SUBSTRUCTURE                  | 38        | TIED ARCH - SPAN 7                                                                             |
| 16        | BAR LIST                                              | 39        | ARCH RIB AND TIE GIRDER MATERIAL AND SPLICES                                                   |
| 17        | FRAMING PLAN AND GIRDER ELEVATION                     | 40        | TIED ARCH - SPAN 7                                                                             |
| 18        | SPAN 1 AND 2                                          | 41        | ARCH RIB AND TIE GIRDER AT T16 AND DIAPHRAGMS                                                  |
| 19        | FRAMING PLAN AND GIRDER ELEVATION                     | 42        | TIED ARCH - SPAN 7                                                                             |
| 20        | SPAN 2 AND 3                                          | 43        | HANGERS AND ACCESSORIES                                                                        |
| 21        | FRAMING PLAN AND GIRDER ELEVATION                     | 44*       | TIED ARCH - SPAN 7                                                                             |
| 22        | SPAN 4 AND 5                                          | 45*       | LOWER LATERALS                                                                                 |
| 23        | FRAMING PLAN AND GIRDER ELEVATION                     |           | TIED ARCH - SPAN 7                                                                             |
|           | SPAN 5 AND 6                                          |           | UPPER LATERALS                                                                                 |
|           | GIRDER SPANS 1 THRU 6                                 |           | TIED ARCH - SPAN 7                                                                             |
|           | CAMBER, MOMENTS AND REACTIONS AND FINISHED ELEVATIONS |           | FIXED BEARINGS AND LIVE LOAD SUPPORTS                                                          |
|           | FRAMING PLAN AND GIRDER ELEVATION-SPAN 8              |           | TIED ARCH - SPAN 7                                                                             |
|           | AND STEEL GIRDER STRUCTURAL STEEL NOTES               |           | EXPANSION BEARINGS                                                                             |
|           | FRAMING PLAN AND GIRDER ELEVATION                     |           | TIED ARCH - SPAN 7                                                                             |
|           | SPAN 9                                                |           | NAVIGATION LIGHT ACCESS                                                                        |
|           | FRAMING PLAN AND GIRDER ELEVATION                     |           | TIED ARCH - SPAN 7                                                                             |
|           | SPAN 10                                               |           | NAVIGATION LIGHT ACCESS                                                                        |
|           | FRAMING PLAN AND GIRDER ELEVATION                     |           | TELEPHONE CONDUIT                                                                              |
|           | SPAN 11                                               |           | TELEPHONE CONDUIT                                                                              |
|           | GIRDER SPANS 8 THRU 11                                |           | SPLICING PLATFORMS                                                                             |
|           | CAMBER, MOMENTS AND REACTIONS AND FINISHED ELEVATIONS |           |                                                                                                |

Revision (3-4-80) This sheet is added. This sheet is to supersede Sheet 2.

NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

## GROUP I PIER 12, ABUTMENT 13 &amp; APPROACH SPANS

| NO. | Item                              | Unit          | Pier 12 | Abut. 13 | Spans 1-6 | Spans 8-12 | Total          |
|-----|-----------------------------------|---------------|---------|----------|-----------|------------|----------------|
| 1   | Mobilization                      | % of Estimate |         |          |           |            | \$5,805.00 *** |
| 2   | Structural Concrete Class C       | C.Y.          | 591.6   | 149.7    | -         | -          | 741.3          |
| 3   | Reinforcing Steel Grade 60        | Lb.           | 56,800  | 20,780   | -         | -          | 77,580         |
| 4   | Class 23 Excavation               | C.Y.          | 218.5   | 113.4    |           |            | 331.9          |
| 5   | Granular Backfill                 | C.Y.          | -       | 137      | -         | -          | 137            |
| 6   | 4" Tile Subdrain                  | Lin. Ft.      | -       | 94       | -         | -          | 94             |
| 7   | Telephone Conduits & Splice Cages | L.S.          | -       | -        |           |            | 0              |
| 8   | Structural Steel                  | Lb.           | -       | -        | 4,251,187 | 3,334,943  | 7,586,130      |
| 9   | TRAINEE REIMBURSEMENT HOURS       |               |         |          |           |            | 461            |

③ Includes 8,570 L.F. 4" φ conduit & 13,825 Lbs. of misc. metal.

## GROUP II TIED ARCH SPAN (Span 7)

| NO. | Item                 | Unit          | Span 7    | Total           |
|-----|----------------------|---------------|-----------|-----------------|
| 10  | Mobilization         | % of Estimate |           | \$36,883.00 *** |
| 11  | Telephone Conduits ① | L.S.          |           | 0               |
| 12  | Structural Steel ②   | Lb.           | 5,700,749 | 5,700,749       |

① Includes furnishing and installing conduit expansion joints @ P1 & P8 (See Sh. 44). Also includes 2690 L.F. 4" φ conduit and 180 Lbs. of misc. metal.

② Includes 5,100,193 Lbs. A588, 347,477 Lbs. A36, 68,564 Lbs. Socketed 2" φ A-603 Bridge Rope, 55,815 Lbs. castings & 128,700 misc. metals. These quantities do not include 25,716 Lbs. of arch rib & tie girder mock-up sections. Also includes railings on Piers 7 & 8.

\*\*\* See Supplemental Specification 839

| NO.  | DESCRIPTION                                                                         | UNIT     | TOTAL       |
|------|-------------------------------------------------------------------------------------|----------|-------------|
| 8001 | CHANGE WELDING PROCEDURES ON LOWER HANGERS                                          | EACH     | 29          |
| 8002 | PERFORM MONITORING ULTRASONIC TESTING                                               | LUMP SUM | \$3,000.00  |
| 8003 | REMOVE AND REPLACE WOVEN WIRE FENCE                                                 | LUMP SUM | \$1,288.00  |
| 8004 | FURNISH AND PLACE A TYPE II BARRICADE                                               | LUMP SUM | \$385.70    |
| 8005 | REIMBURSE CONTRACTOR FOR FABRICATION AND DELIVERY OF TELEPHONE CONDUIT FOR GROUP I  | LUMP SUM | \$45,408.00 |
| 8006 | REIMBURSE CONTRACTOR FOR FABRICATION AND DELIVERY OF TELEPHONE CONDUIT FOR GROUP II | LUMP SUM | \$90,193.00 |
| 8007 | CHANGE HOLE SPACINGS IN STRUCTURAL STEEL                                            | LUMP SUM | \$3,348.00  |

MISSISSIPPI RIVER BRIDGE  
SHEET INDEX AND  
FINAL QUANTITIES

DUBUQUE COUNTY, IOWA - GRANT COUNTY, WISCONSIN

IOWA DEPARTMENT OF TRANSPORTATION

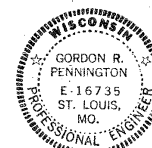
DESIGN NO. 1279 FILE NO. 25896 DES. SH. NO. 2A OF 45

PROJECT BRP-561-4 (4)-38-31 PROJECT SH. NO. 2A OF 45

DRAWN BY: M. Nize May, 1979  
CHECKED BY: R. C. Hunt July, 1979

SVERDRUP & PARCEL AND ASSOCIATES, Inc.  
CONSULTING ENGINEERS  
ST. LOUIS, MO.

I hereby certify that this plan, specification or report 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.  
Signed: Gordon R. Pennington Date: Dec. 12, 1979  
GORDON R. PENNINGTON, P.E. Iowa Reg. No. 5286



# CONSTRUCTION SPECIFICATIONS:

IOWA DEPARTMENT OF TRANSPORTATION, SERIES OF 1977, STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION, CURRENT SUPPLEMENTAL SPECIFICATION AND SPECIAL PROVISIONS.

## DESIGN SPECIFICATION:

THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES" TWELFTH EDITION, 1977 AND ARTICLE 1.7.17 OF THE 1979 INTERIM SPECIFICATIONS.

## DESIGN LOADS:

DEAD LOAD: WEIGHT OF STRUCTURE INCLUDING AN ALLOWANCE OF 20 POUNDS PER SQUARE FOOT OF ROADWAY FOR FUTURE WEARING SURFACE

LIVE LOAD: INTERSTATE HIGHWAY BRIDGE LOADING, HS20-44 AND

ALTERNATE MILITARY LOADING

REPETITIVE LOAD: AASHTO CASE II FOR REDUNDANT AND NONREDUNDANT STRUCTURES

WIND LOAD: AS SPECIFIED IN AASHTO SPECIFICATIONS AND IS CONSIDERED AN UNBROKEN MOVING LOAD. IDENTICAL LOADED LENGTH OF WIND-ON-LIVE LOAD AND WIND-ON-STRUCTURE IS USED.

THERMAL FORCE: AS SPECIFIED IN AASHTO SPECIFICATIONS CONSISTENT WITH A COLD CLIMATE.

SEISMIC FORCE: AS SPECIFIED IN AASHTO SPECIFICATIONS, EQUIVALENT STATIC FORCE METHOD, ZONE 1, WITH A COMBINED RESPONSE COEFFICIENT OF  $C=0.06$ .

## CONCRETE:

CONCRETE FOR SUBSTRUCTURE UNITS, PIER 12 AND ABUTMENT 13, SHALL BE CLASS C.

ALL EXPOSED CORNERS OF  $90^\circ$  OR SHARPER ARE TO BE FORMED WITH A  $3/4"$  DRESSED AND BEVELED FILLET.

## REINFORCEMENT:

REINFORCING BARS SHALL CONFORM TO ASTM A615, GRADE 60, ASTM A616, GRADE 60 OR ASTM A617, GRADE 60.

ALL DIMENSIONS TO REINFORCING STEEL ON DETAIL DRAWINGS ARE TO CENTERLINE OF BAR EXCEPT WHERE CLEAR DISTANCE IS NOTED FROM THE FACE OF CONCRETE. ALL REINFORCING STEEL IS LAPPED IN ACCORDANCE WITH AASHTO SPECIFICATION 1.5.22 UNLESS OTHERWISE SHOWN OR NOTED.

## DESIGN UNIT STRESSES FOR REINFORCED CONCRETE:

CLASS C CONCRETE  $f'_c = 1,400$  PSI  $n=10$   
REINFORCING STEEL  $f'_s = 24,000$  PSI

## STRUCTURAL CARBON STEEL:

STRUCTURAL CARBON STEEL SHALL CONFORM TO ASTM A36.  
(ARCH SPAN UPPER LATERAL BRACING AND MISCELLANEOUS METAL)

## STRUCTURAL LOW-ALLOY STEEL:

STRUCTURAL LOW-ALLOY STEEL SHALL CONFORM TO ASTM A588.  
(ALL STEEL UNLESS OTHERWISE NOTED)

## HIGH STRENGTH BOLTS:

HIGH STRENGTH BOLTS SHALL BE FRICTION TYPE AND SHALL CONFORM TO ASTM A325, TYPE 3 UNLESS OTHERWISE SHOWN OR NOTED.

## BASIC DESIGN UNIT STRESSES FOR STEEL:

ALLOWABLE TENSION  
STRUCTURAL CARBON STEEL  $f_s = 20,000$  PSI  
STRUCTURAL LOW-ALLOY STEEL  $f_s = 27,000$  PSI

## ZINC COATED STEEL STRUCTURAL WIRE ROPE:

ZINC COATED STEEL STRUCTURAL WIRE ROPE SHALL CONFORM TO ASTM A603, CLASS C COATING OUTER WIRES, CLASS A COATING INNER WIRES, 2" NOMINAL DIAMETER, MINIMUM BREAKING STRENGTH 177 TONS.

## GENERAL NOTES

### CAMBER:

GIRDER SPANS ARE CAMBERED FOR FULL DEAD LOAD AND VERTICAL CURVE ORDINATES EXCLUDING FUTURE WEARING SURFACE.

ARCH SPAN SHALL BE FABRICATED TO THE FINAL GEOMETRIC SHAPE UNDER FULL DEAD LOAD EXCLUDING FUTURE WEARING SURFACE. A FABRICATION ALLOWANCE SHALL BE MADE FOR SHORTENING OF THE RIB AND LENGTHENING OF THE TIE AND HANGERS UNDER FULL DEAD LOAD EXCLUDING FUTURE WEARING SURFACE. (SEE SPECIAL PROVISIONS)

### JACKING PROVISIONS:

PROVISIONS HAVE BEEN MADE FOR JACKING THE DEAD LOAD OF STEEL ONLY, OF THE ARCH SPAN, AT PIERS 7 AND 8.

### SPAN LENGTHS:

ALL SPAN LENGTHS SHOWN ARE AT A NOMINAL TEMPERATURE OF  $50^\circ$  F.

### CONNECTIONS:

ALL SHOP AND FIELD CONNECTIONS, OTHER THAN WELDED OR AS NOTED, SHALL BE MADE WITH  $7/8"$  HIGH STRENGTH BOLTS.

SHOP BOLTS ARE SHOWN ON THE PLANS BY THE SYMBOL (O), AND FIELD BOLTS BY (●). SHOP AND FIELD CONNECTIONS MAY BE INTERCHANGED AT THE OPTION OF THE CONTRACTOR.

### WELDING:

ALL WELDING SHALL CONFORM TO THE SUPPLEMENTAL SPECIFICATIONS FOR STRUCTURAL STEEL 860 AND THE SPECIAL PROVISIONS SP286.

A COMPLETE PENETRATION GROOVE WELD SHALL BE USED WHENEVER THE TERM "GROOVE WELD" IS USED ON THE PLANS.

FOR PAINTED ASTM A588 STEEL, THE WELD METAL WILL NOT REQUIRE CORROSION RESISTANCE AND COLORING CHARACTERISTICS SIMILAR TO THAT OF THE BASE METAL.

### PAINTING OF METAL WORK:

Only parts of arch span and approach spans shall receive a shop coat of paint after fabrication. See Special Provision for specific painted areas.

### ERECTION:

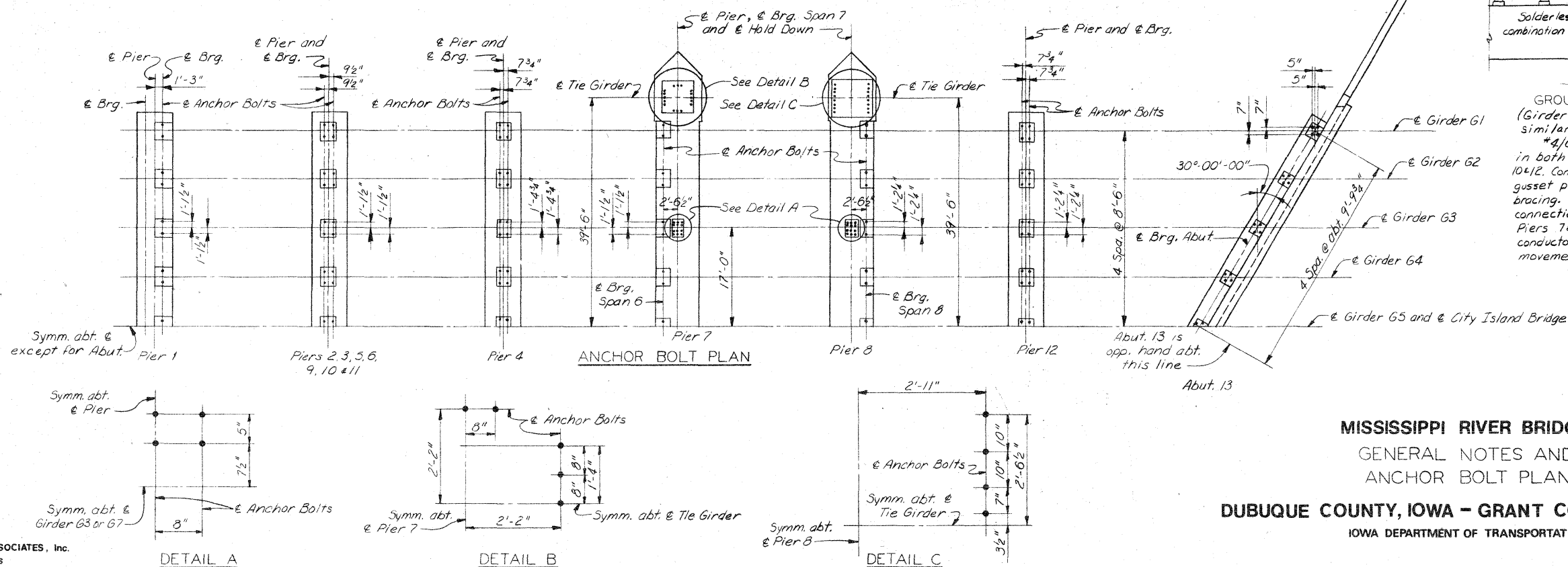
SEE SPECIAL PROVISIONS FOR NAVIGATIONAL CONSIDERATIONS AND CONSTRUCTION IN NAVIGABLE WATERS.

THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER COMPLETE PLANS OF HIS PROPOSED ERECTION SCHEMES FOR THE WORK SHOWING ERECTION LOADS AND STRESSES. ANY MATERIAL ORDERED PRIOR TO THE REVIEW OF THE ERECTION SCHEME BY THE ENGINEER SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

ERECTION STRESSES SHALL BE COMPOSED OF THE DEAD LOAD STRESSES OF THE STRUCTURE AND ERECTION EQUIPMENT PLUS THE STRESSES FROM A 45 POUND PER SQUARE FOOT WIND ON THE STRUCTURE AND ERECTION EQUIPMENT AS SEEN IN ELEVATION. ERECTION STRESSES SHALL NOT EXCEED NORMAL UNIT STRESSES BY MORE THAN  $33 \frac{1}{3}$  PERCENT.

NO PAYMENT WILL BE MADE FOR ANY EXTRA MATERIAL REQUIRED DUE TO ERECTION CONDITIONS.

REVIEW OF THE ERECTION PLANS SHALL NOT RELIEVE THE CONTRACTOR OF HIS FULL RESPONSIBILITY FOR THE SAFETY OF THE ERECTION SCHEME USED.



## MISSISSIPPI RIVER BRIDGE

## GENERAL NOTES AND ANCHOR BOLT PLAN

## DUBUQUE COUNTY, IOWA - GRANT COUNTY, WISCONSIN

IOWA DEPARTMENT OF TRANSPORTATION

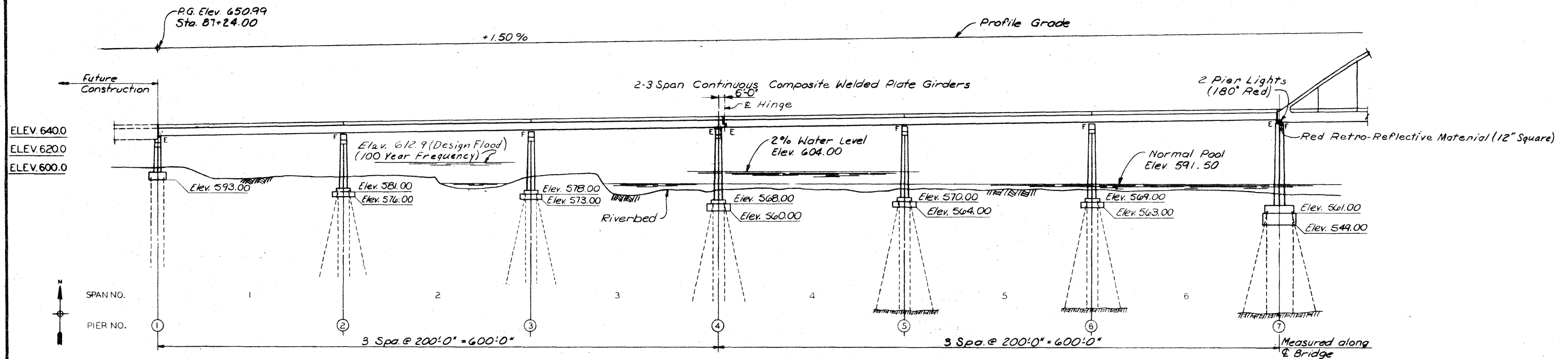
DESIGN NO. 1279 FILE NO. 25896 DES. SH. NO. 3 OF 45

PROJECT BRP-561-4(4)-38-31 PROJECT SH. NO. 3 OF 45

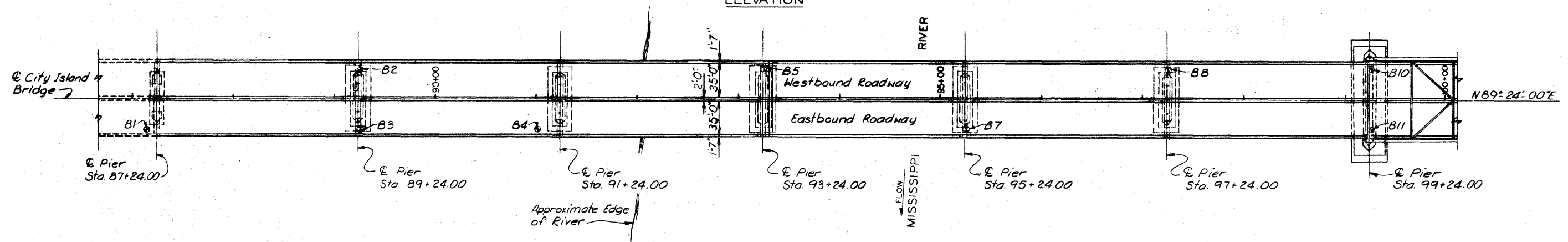
NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

5818  
DRAWN BY: Michelle A. Mize May, 1979  
CHECKED BY: R. C. Hunt, May, 1979  
79S242

SVERDRUP & PARCEL AND ASSOCIATES, Inc.  
CONSULTING ENGINEERS  
ST. LOUIS, MO.

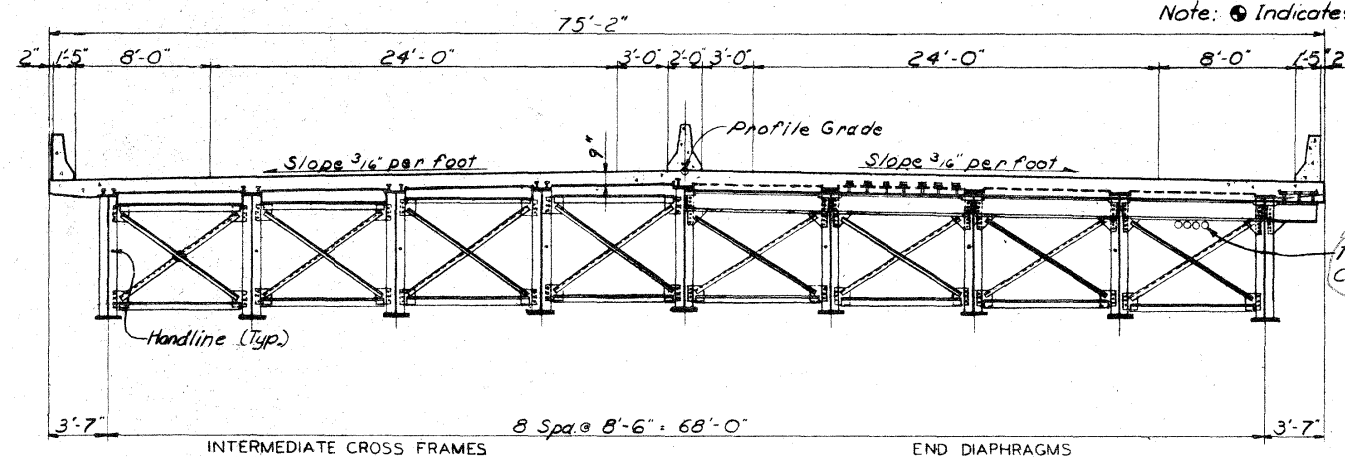


ELEVATION

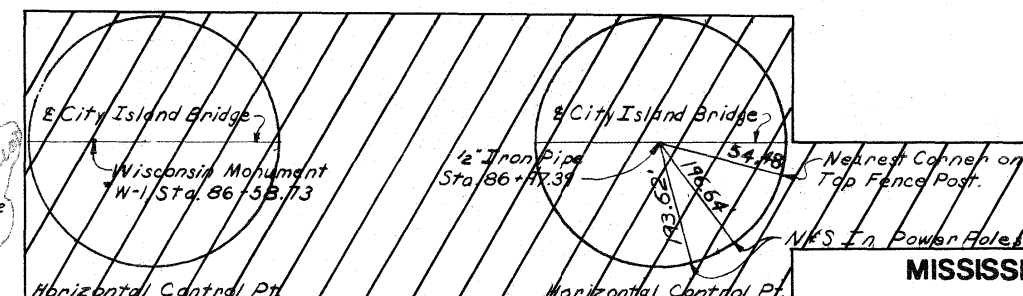


PLAN

Note: ● Indicates Boring.



TYPICAL CROSS SECTION APPROACHES



Bench/Mark: Chiselled 'X' on 1\"/>

MISSISSIPPI RIVER BRIDGE  
GENERAL PLAN AND ELEVATION  
SPANS 1 THRU 6

DUBUQUE COUNTY, IOWA - GRANT COUNTY, WISCONSIN  
IOWA DEPARTMENT OF TRANSPORTATION

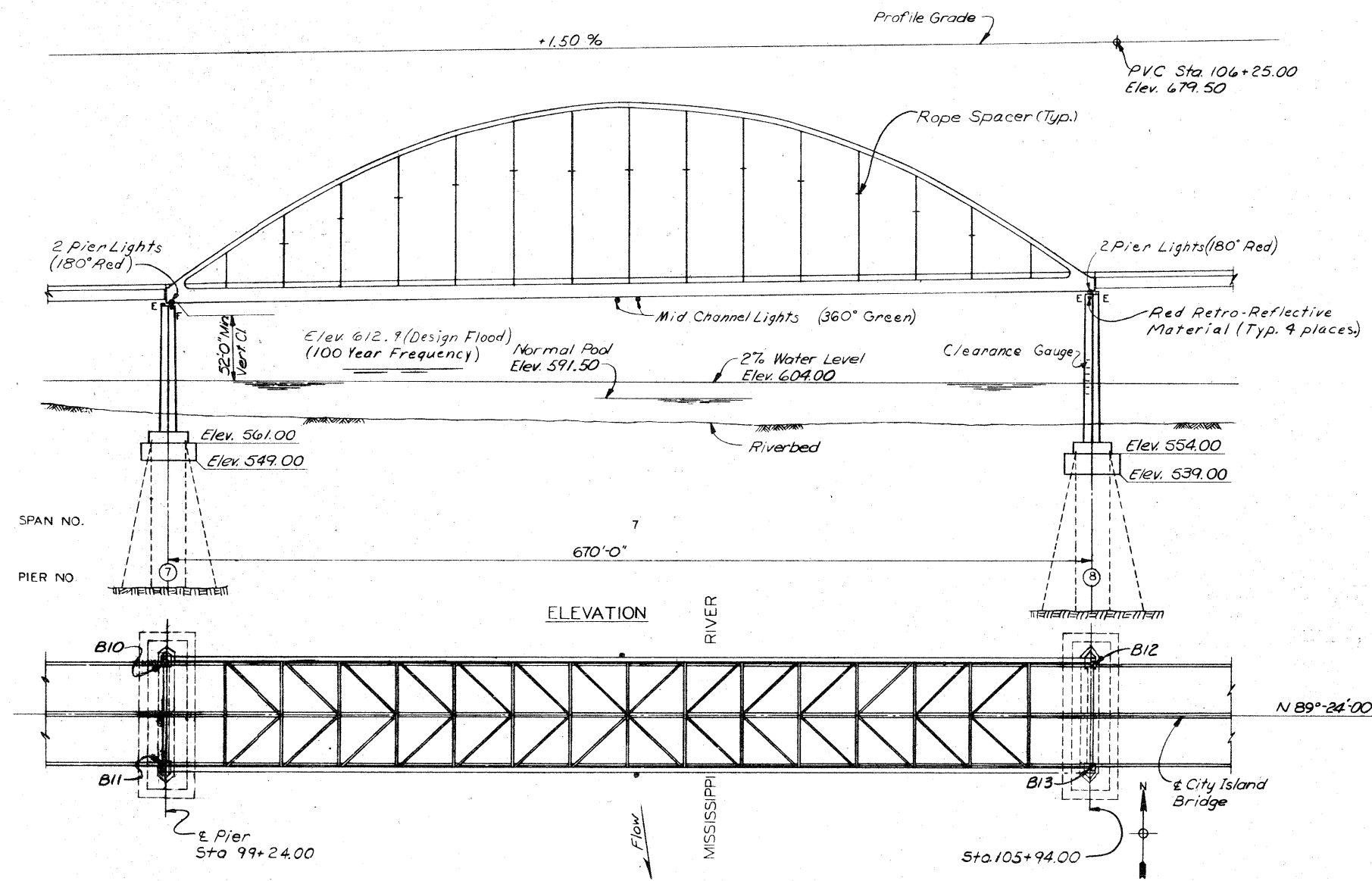
NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

DESIGN NO. 1279 FILE NO. 25896 DES. SH. NO. 4 OF 45

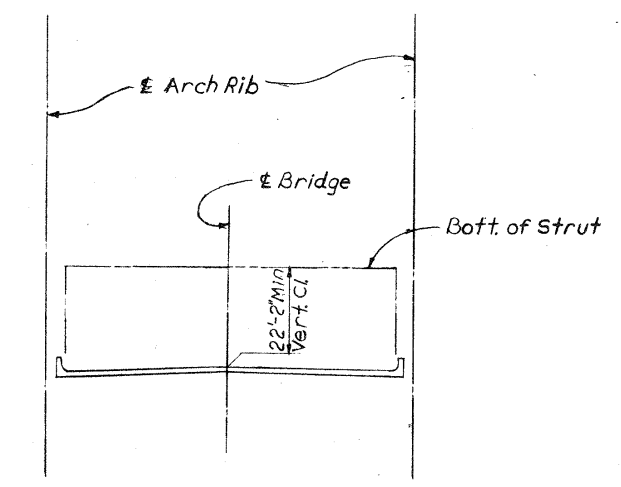
PROJECT BRP-561-4(4)-38-31 PROJECT SH. NO. 4 OF 45

5818  
DRAWN BY: T. Simmons, July, 1978  
CHECKED BY: J.G. Oliver, Sept. 1978  
785/87

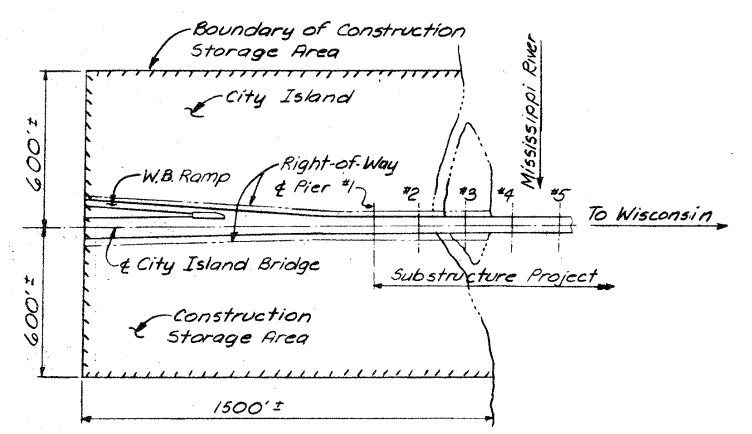
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ST. LOUIS, MO.



ELEV. 640.00  
ELEV. 620.00  
ELEV. 600.00



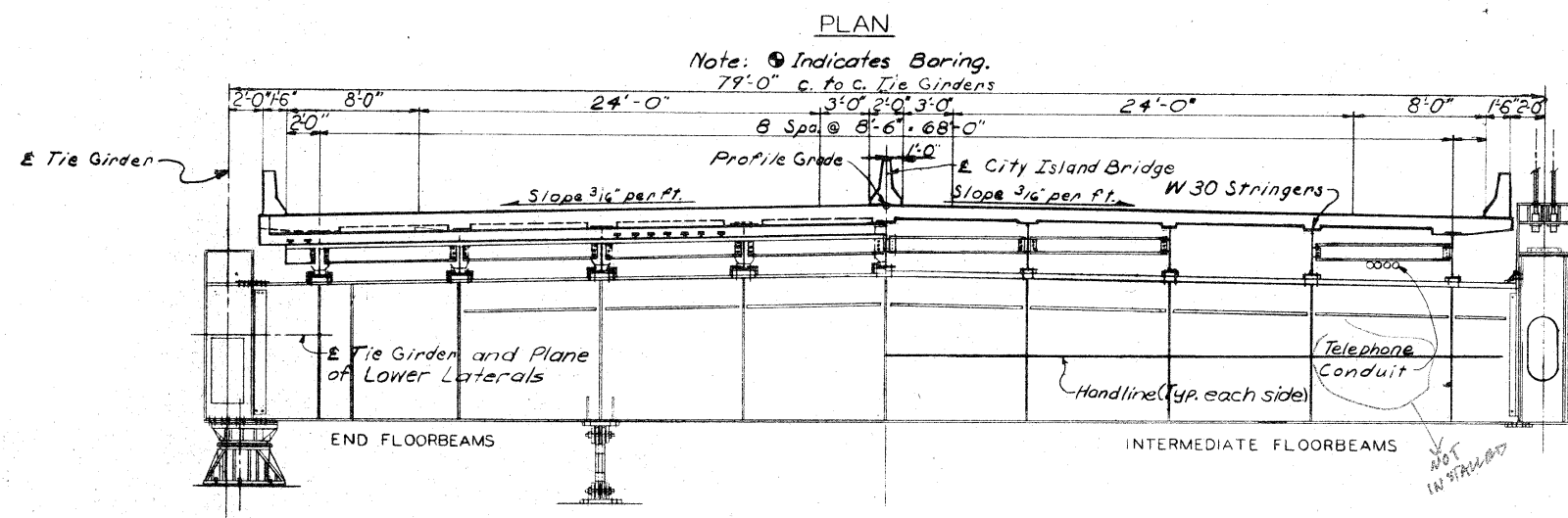
VERTICAL CLEARANCE DIAGRAM



LAYOUT OF CONSTRUCTION STORAGE AREA ON CITY ISLAND

| NO. | PERMANENT BENCH MARKS                                                                           | DESCRIPTION | ELEV.  |
|-----|-------------------------------------------------------------------------------------------------|-------------|--------|
| 8B  | STA. 85+85, 38' RIGHT, I.D.O.T. B.M. IN S.W. TOP OF WING ON MISS. BRIDGE                        |             | 651.03 |
| 11  | STA. 91+25, 38' LEFT, I.D.O.T. B.M. IN NORTH BARRIER RAIL OVER PIER 3                           |             | 659.12 |
| 12  | STA. 95+24, 38' LEFT, I.D.O.T. B.M. IN NORTH BARRIER RAIL OVER PIER 5                           |             | 665.21 |
| 13  | STA. 97+24, 38' LEFT, "X" IN TOP OF BOLT IN EAST LIGHT PEDESTAL BEFORE ARCH, NORTH BARRIER RAIL |             | 670.11 |

MB-61-6 (2) 192-77-31



TYPICAL CROSS SECTION

**MISSISSIPPI RIVER BRIDGE**  
GENERAL PLAN AND ELEVATION  
SPAN 7

**DUBUQUE COUNTY, IOWA - GRANT COUNTY, WISCONSIN**  
IOWA DEPARTMENT OF TRANSPORTATION

DRAWN BY: T. Simmons July, 1978  
CHECKED BY: J.G. Oliver, Oct. 1978  
765103

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ST. LOUIS, MO.

NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.



5818  
783255  
DRAWN BY: T. Simmons Sept. 1978  
CHECKED BY: J.G. Oliver Sept. 1978

| BORING NO. B-1<br>Station 87+15 Offset 30' Rt. |        |                                                                           | BORING NO. B-1<br>(Cont'd) |       |                                                                                | BORING NO. B-2<br>Station 89+25 Offset 30' Lt. |       |                     | BORING NO. B-2<br>(Cont'd)                                             |     |                   | BORING NO. B-3<br>Station 89+25 Offset 30' Rt. |       |                                   | BORING NO. B-3<br>(Cont'd)                                           |       |                                                                                           |
|------------------------------------------------|--------|---------------------------------------------------------------------------|----------------------------|-------|--------------------------------------------------------------------------------|------------------------------------------------|-------|---------------------|------------------------------------------------------------------------|-----|-------------------|------------------------------------------------|-------|-----------------------------------|----------------------------------------------------------------------|-------|-------------------------------------------------------------------------------------------|
| ELEV                                           |        |                                                                           | ELEV                       |       |                                                                                | ELEV                                           |       |                     | ELEV                                                                   |     |                   | ELEV                                           |       |                                   | ELEV                                                                 |       |                                                                                           |
| 610                                            | 611.6' |                                                                           | 440                        | 111   | Sand-very dense, brown,<br>fine to coarse, little<br>gravel<br>Trace of Gravel | 610                                            |       |                     | 440                                                                    | 35  |                   | 610                                            |       |                                   | 470                                                                  | 35    |                                                                                           |
|                                                |        | 4" Gravel (Road)                                                          |                            |       |                                                                                |                                                |       |                     |                                                                        |     |                   |                                                |       |                                   |                                                                      | 34    | Dense                                                                                     |
|                                                |        | Sand-medium dense, brown,<br>fine to medium                               |                            |       |                                                                                |                                                |       |                     |                                                                        |     |                   |                                                |       |                                   |                                                                      |       |                                                                                           |
| 600                                            | 599.6  | 19                                                                        | 430                        | 33    | Dense                                                                          | 600                                            | 599.3 |                     | 430                                                                    | 35  |                   | 600                                            | 599.0 |                                   | 460                                                                  |       |                                                                                           |
|                                                | 598.6  | 18                                                                        |                            |       |                                                                                |                                                | 596.8 |                     |                                                                        |     |                   |                                                | 594.5 |                                   |                                                                      |       |                                                                                           |
|                                                | 596.6  | 4                                                                         |                            |       |                                                                                |                                                | 2     | Black sandy Topsoil |                                                                        |     |                   |                                                | 4     | Mottled Silt-brown<br>Little Sand |                                                                      | 28    | Sand-Fine to medium, medium<br>dense, brown<br>Trace of gravel<br>Trace of silt           |
|                                                |        | Sand-gray, fine to medium                                                 |                            |       |                                                                                |                                                | 590.8 | 2                   | Sand-medium, very loose,<br>brown                                      |     |                   |                                                | 589.5 | 4                                 | 450                                                                  |       |                                                                                           |
| 590                                            |        | Silt-black, organic                                                       | 420                        | 33    | Layers of Gravel                                                               | 590                                            | 589.3 | 20                  | Some layers of gray<br>silt, Trace of organic<br>material              | 420 | 16                |                                                | 588.0 | 11                                |                                                                      | 41    | Dense<br>Layers of gravel                                                                 |
|                                                |        | Sand-very loose, gray, fine<br>to medium                                  |                            |       |                                                                                |                                                | 586.8 | 4                   | Gravel-medium dense<br>trace of sand & silt                            | 410 | 27                |                                                |       | 3                                 |                                                                      |       |                                                                                           |
|                                                |        | Loose, trace of wood<br>and silt                                          | 410                        | 63    |                                                                                |                                                |       | 8                   | Sand-loose, gray, little<br>silt, trace of silt<br>seams               | 400 | 140               |                                                |       | 4                                 | Very Loose-Trace of<br>organic material in<br>bolt. of s.s.          | 29    | Medium dense                                                                              |
| 580                                            | 578.6  | 10                                                                        |                            |       |                                                                                | 580                                            |       | 10                  |                                                                        |     |                   |                                                |       | 17                                | Medium dense                                                         |       |                                                                                           |
|                                                |        | Sand-Medium dense, gray,<br>fine to coarse<br>Trace of gravel and<br>wood | 400                        | 36    |                                                                                | 570                                            | 569.3 | 13                  | Sand-fine to coarse, loose,<br>gray, trace of silt                     | 400 |                   |                                                |       | 17                                | Medium dense, trace of<br>gravel                                     | 113   | Sand-fine to medium, very<br>dense, brown<br>Trace of gravel and silt<br>Layers of gravel |
|                                                |        |                                                                           |                            |       |                                                                                |                                                |       | 14                  | Sand-medium dense,<br>gray, fine to coarse,<br>trace of gravel         | 390 | 126               |                                                |       | 17                                | Medium dense                                                         | 422.0 | Sand-fine to coarse, brown<br>little gravel<br>Med. dense trace of silt                   |
| 570                                            |        |                                                                           | 390                        | 36    |                                                                                | 560                                            |       | 27                  | Trace of silt, Seam<br>of silty clay                                   |     |                   |                                                |       | 20                                |                                                                      |       |                                                                                           |
|                                                | 563.1  | 27                                                                        |                            |       |                                                                                |                                                | 552.8 | 27                  |                                                                        |     |                   |                                                |       | 27                                |                                                                      |       |                                                                                           |
| 560                                            |        | Sand-Medium dense, brown,<br>fine to coarse, little<br>gravel             | 380                        | 43    | Dense                                                                          | 550                                            |       | 22                  | Sand-medium dense, brn,<br>medium to coarse,<br>Trace of little gravel | 380 | 381.8             |                                                |       | 27                                | Medium dense                                                         |       |                                                                                           |
|                                                |        |                                                                           |                            |       |                                                                                |                                                |       | 16                  |                                                                        |     | 76%<br>60%<br>94% |                                                |       | 27                                | Medium dense                                                         |       |                                                                                           |
| 550                                            |        |                                                                           | 370                        |       |                                                                                | 540                                            |       | 16                  |                                                                        |     | 100%              |                                                |       | 16                                | Medium dense                                                         |       |                                                                                           |
|                                                |        |                                                                           |                            |       |                                                                                |                                                |       |                     |                                                                        |     | 100%              |                                                |       | 27                                | Medium dense                                                         |       |                                                                                           |
| 540                                            |        |                                                                           | 360                        | 361.6 | 21                                                                             | 530                                            |       | 14                  |                                                                        |     | 363.3             |                                                |       |                                   |                                                                      |       |                                                                                           |
|                                                |        |                                                                           |                            |       |                                                                                |                                                |       |                     |                                                                        |     |                   |                                                |       | 32                                |                                                                      |       |                                                                                           |
| 530                                            |        |                                                                           | 350                        | 26    | Sand-medium dense,<br>gray, fine to coarse,<br>little silt                     | 520                                            |       | 26                  |                                                                        |     |                   |                                                |       | 34                                |                                                                      |       |                                                                                           |
|                                                |        |                                                                           |                            |       |                                                                                |                                                |       |                     |                                                                        |     |                   |                                                |       |                                   |                                                                      |       |                                                                                           |
| 520                                            |        |                                                                           | 340                        | 341.1 | 33                                                                             | 510                                            | 510.3 | 38                  |                                                                        |     |                   |                                                |       | 36                                | Sand-fine to medium,<br>dense, gray, little silt,<br>Trace of gravel |       |                                                                                           |
|                                                |        |                                                                           |                            |       |                                                                                |                                                |       |                     |                                                                        |     |                   |                                                |       | 38                                | Gravel Layer                                                         |       |                                                                                           |
| 510                                            |        |                                                                           |                            |       |                                                                                |                                                |       |                     |                                                                        |     |                   |                                                |       | 38                                | Gravel Layer                                                         |       |                                                                                           |
|                                                |        |                                                                           |                            |       |                                                                                |                                                |       |                     |                                                                        |     |                   |                                                |       |                                   |                                                                      |       |                                                                                           |
| 500                                            |        |                                                                           |                            |       |                                                                                |                                                |       |                     |                                                                        |     |                   |                                                |       |                                   |                                                                      |       |                                                                                           |
|                                                |        |                                                                           |                            |       |                                                                                |                                                |       |                     |                                                                        |     |                   |                                                |       |                                   |                                                                      |       |                                                                                           |
| 490                                            | 491.6  | 43                                                                        |                            |       |                                                                                | 490                                            |       | 47                  |                                                                        |     |                   |                                                |       |                                   |                                                                      |       |                                                                                           |
|                                                |        | Sand-dense, brown, fine to<br>coarse, little gravel                       |                            |       |                                                                                |                                                |       |                     |                                                                        |     |                   |                                                |       |                                   |                                                                      |       |                                                                                           |
| 480                                            |        |                                                                           |                            |       |                                                                                | 480                                            |       | 26                  |                                                                        |     |                   |                                                |       |                                   |                                                                      |       |                                                                                           |
|                                                |        |                                                                           |                            |       |                                                                                |                                                |       |                     |                                                                        |     |                   |                                                |       |                                   |                                                                      |       |                                                                                           |
| 470                                            |        |                                                                           |                            |       |                                                                                | 470                                            |       | 41                  |                                                                        |     |                   |                                                |       |                                   |                                                                      |       |                                                                                           |
|                                                |        |                                                                           |                            |       |                                                                                |                                                |       |                     |                                                                        |     |                   |                                                |       |                                   |                                                                      |       |                                                                                           |
| 460                                            |        |                                                                           |                            |       |                                                                                | 460                                            |       | 35                  |                                                                        |     |                   |                                                |       |                                   |                                                                      |       |                                                                                           |
|                                                |        | Very dense                                                                |                            |       |                                                                                |                                                |       |                     |                                                                        |     |                   |                                                |       |                                   |                                                                      |       |                                                                                           |
| 450                                            | 451.6  | 53                                                                        |                            |       |                                                                                | 450                                            |       | 41                  |                                                                        |     |                   |                                                |       |                                   |                                                                      |       |                                                                                           |
|                                                |        |                                                                           |                            |       |                                                                                |                                                |       |                     |                                                                        |     |                   |                                                |       |                                   |                                                                      |       |                                                                                           |

NOTES  
For Boring Notes see Des. Sh. No. 9

## MISSISSIPPI RIVER BRIDGE

### LOG OF BORINGS

DUBUQUE COUNTY, IOWA - GRANT COUNTY, WISCONSIN  
IOWA DEPARTMENT OF TRANSPORTATION

SVERDRUP & PARCEL AND ASSOCIATES, Inc.  
CONSULTING ENGINEERS  
ST. LOUIS, MO.

NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

DESIGN NO. 1279 FILE NO. 25896 DES. SH. NO. 7 OF 45

PROJECT BRP-561-4(4)-38-31 PROJECT SH. NO. 7 OF 45

| ELEV. | BORING B4<br>Sta. 91+02 30' Rt.                                         | ELEV. | BORING B5<br>Sta. 93+25 30' Lt.                                                | ELEV. | BORING B5<br>(Cont'd)                                                     | ELEV. | BORING B7<br>Sta. 95+25 30' Rt.                                         | ELEV.                                                                                                                                                                             | BORING B8<br>Sta. 97+25 30' Lt.                                                      | ELEV.                                                                          | BORING B10<br>Sta. 99+25 35' Lt. | ELEV. | BORING B11<br>Sta. 99+25 35' Rt. | ELEV. |
|-------|-------------------------------------------------------------------------|-------|--------------------------------------------------------------------------------|-------|---------------------------------------------------------------------------|-------|-------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|----------------------------------|-------|----------------------------------|-------|
| 590   | 594.0<br>591.3<br>Water<br>Sand- Very loose, brown,<br>fine to coarse   | 590   | 595.0<br>589.3<br>588.3<br>Water<br>Silt- Very loose, black, sandy,<br>organic | 400   | 399.3<br>44<br>383.3<br>75%<br>45%<br>70%<br>367.8<br>0%<br>End of Boring | 600   | 598.0<br>Water                                                          | 595.4<br>588.1<br>10<br>5<br>11<br>10<br>18<br>21<br>12<br>11<br>22<br>18<br>19<br>18<br>19<br>28<br>25<br>38<br>43<br>34<br>32<br>45.5<br>502*<br>100%<br>439.2<br>End of Boring | 596.2<br>Water                                                                       | 600.7<br>Water                                                                 | 600                              | 600   |                                  |       |
| 580   | 5<br>Seams of silt                                                      | 580   | 5<br>Sand- Very loose, brown,<br>fine to medium                                | 390   | 44<br>Sand- Dense, brown,<br>fine to coarse<br>Some gravel                | 590   | Water                                                                   | 588.1<br>10<br>Sand- Loose, brown, fine<br>to coarse<br>Trace of gravel                                                                                                           | 596.2<br>Water                                                                       | 579.0<br>Water                                                                 | 590                              | 590   |                                  |       |
| 570   | 2<br>Layers of organic<br>silt. Very loose                              | 570   | 6<br>Bits of wood<br>To grey loose                                             | 380   | 75%<br>Limestone- Grey<br>Shale- Layers, brown & green                    | 580   | 582.3<br>2<br>Sand- Very loose, brown<br>fine to coarse                 | 5<br>Trace of gravel                                                                                                                                                              | 575.9<br>2<br>Sand- Very loose, brown,<br>fine to coarse<br>Trace of gravel & shells | 567.0<br>2<br>Sand- Loose, grey, fine to<br>coarse. Trace of gravel            | 580                              | 580   |                                  |       |
| 560   | 6<br>Loose, brown, fine<br>to coarse                                    | 560   | 9<br>To grey loose                                                             | 370   | 45%<br>70%<br>End of Boring                                               | 570   | 6<br>Loose<br>Some gravel                                               | 11<br>Medium dense                                                                                                                                                                | 562.4<br>2<br>Silt- Layer, black to grey,<br>organic sandy                           | 561.0<br>4<br>Sand- Loose, grey, fine to<br>coarse. Trace of gravel            | 570                              | 570   |                                  |       |
| 550   | 10<br>Trace of gravel                                                   | 550   | 10<br>Medium dense                                                             | 360   | 367.8<br>0%<br>End of Boring                                              | 560   | 8<br>Little gravel                                                      | 18<br>Sand- Medium dense, grey,<br>fine to coarse. Trace<br>of gravel, shells & wood<br>Dense layer coarse gravel                                                                 | 550.4<br>28<br>Sand- Medium dense, brown,<br>fine to coarse<br>Trace of gravel       | 550.4<br>28<br>Sand- Medium dense, brown,<br>fine to coarse<br>Trace of gravel | 560                              | 560   |                                  |       |
| 540   | 14<br>Sand- Medium dense, brown,<br>fine to coarse<br>Trace of gravel   | 540   | 11<br>Loose layers of silt                                                     |       |                                                                           | 550   | 558.3<br>12<br>Sand- Firm, brown, fine<br>to coarse<br>Trace of gravel  | 21<br>Sand- Medium dense, fine<br>to coarse<br>Trace of gravel<br>To grey<br>Layers grey silt<br>Layers fine silt<br>To brown<br>Layers, coarse<br>gravel                         | 550.4<br>28<br>Sand- Medium dense, brown,<br>fine to coarse<br>Trace of gravel       | 550.4<br>28<br>Sand- Medium dense, brown,<br>fine to coarse<br>Trace of gravel | 550                              | 550   |                                  |       |
| 530   | 17<br>Dense. Little gravel                                              | 530   | 12<br>Medium dense                                                             |       |                                                                           | 540   | 14<br>Layer of silt<br>Layer of gravel                                  | 11<br>Layer of silt<br>Layer of gravel                                                                                                                                            | 550.4<br>28<br>Sand- Medium dense, brown,<br>fine to coarse<br>Trace of gravel       | 550.4<br>28<br>Sand- Medium dense, brown,<br>fine to coarse<br>Trace of gravel | 540                              | 540   |                                  |       |
| 520   | 17<br>Medium dense                                                      | 520   | 15<br>Sand- Firm, brown, fine to<br>coarse                                     |       |                                                                           | 530   | 17<br>Layer of silt<br>Layer of gravel                                  | 18<br>Layer of silt<br>Layer of gravel                                                                                                                                            | 550.4<br>28<br>Sand- Medium dense, brown,<br>fine to coarse<br>Trace of gravel       | 550.4<br>28<br>Sand- Medium dense, brown,<br>fine to coarse<br>Trace of gravel | 530                              | 530   |                                  |       |
| 510   | 19<br>Trace of silt                                                     | 510   | 23<br>Layers of gravel                                                         |       |                                                                           | 520   | 19<br>Layer of silt<br>Layer of gravel                                  | 18<br>Layer of silt<br>Layer of gravel                                                                                                                                            | 550.4<br>28<br>Sand- Medium dense, brown,<br>fine to coarse<br>Trace of gravel       | 550.4<br>28<br>Sand- Medium dense, brown,<br>fine to coarse<br>Trace of gravel | 520                              | 520   |                                  |       |
| 500   | 514.3<br>50<br>Sand- Dense, brown, fine<br>to coarse<br>Trace of gravel | 500   | 32<br>Sand- Dense, brown, fine<br>to coarse<br>Layers of gravel                |       |                                                                           | 510   | 20<br>Sand- Brown, fine to<br>coarse<br>Medium dense<br>Trace of gravel | 28<br>Sand- Brown, fine to<br>coarse<br>Medium dense<br>Trace of gravel                                                                                                           | 550.4<br>28<br>Sand- Medium dense, brown,<br>fine to coarse<br>Trace of gravel       | 550.4<br>28<br>Sand- Medium dense, brown,<br>fine to coarse<br>Trace of gravel | 510                              | 510   |                                  |       |
| 490   | 80<br>Very dense                                                        | 490   | 37<br>Very dense                                                               |       |                                                                           | 500   | 27<br>Dense                                                             | 25<br>Dense                                                                                                                                                                       | 550.4<br>28<br>Sand- Medium dense, brown,<br>fine to coarse<br>Trace of gravel       | 550.4<br>28<br>Sand- Medium dense, brown,<br>fine to coarse<br>Trace of gravel | 500                              | 500   |                                  |       |
| 480   | 21<br>Medium dense layer                                                | 480   | 36<br>Medium dense layer                                                       |       |                                                                           | 490   | 38<br>Dense                                                             | 38<br>Dense                                                                                                                                                                       | 550.4<br>28<br>Sand- Medium dense, brown,<br>fine to coarse<br>Trace of gravel       | 550.4<br>28<br>Sand- Medium dense, brown,<br>fine to coarse<br>Trace of gravel | 490                              | 490   |                                  |       |
| 470   | 40<br>Dense                                                             | 470   | 30<br>Dense                                                                    |       |                                                                           | 480   | 38<br>Dense                                                             | 43<br>Dense                                                                                                                                                                       | 550.4<br>28<br>Sand- Medium dense, brown,<br>fine to coarse<br>Trace of gravel       | 550.4<br>28<br>Sand- Medium dense, brown,<br>fine to coarse<br>Trace of gravel | 480                              | 480   |                                  |       |
| 460   | 474.3<br>43<br>Sand- Dense, brown, fine<br>to medium<br>Trace of gravel | 460   | 26<br>Sand- Firm, brown, fine<br>to coarse                                     |       |                                                                           | 470   | 478.3<br>30<br>Sand- Dense, brown, fine<br>to coarse<br>Trace of gravel | 34<br>Sand- Dense, brown, fine<br>to coarse<br>Trace of gravel                                                                                                                    | 476.4<br>34<br>Sand- Dense, brown, fine<br>to coarse<br>Trace of gravel              | 476.4<br>34<br>Sand- Dense, brown, fine<br>to coarse<br>Trace of gravel        | 470                              | 470   |                                  |       |
| 450   | 42<br>Trace of gravel                                                   | 450   | 42<br>Trace of gravel                                                          |       |                                                                           | 460   | 30<br>Trace of gravel                                                   | 30<br>Trace of gravel                                                                                                                                                             | 476.4<br>34<br>Sand- Dense, brown, fine<br>to coarse<br>Trace of gravel              | 476.4<br>34<br>Sand- Dense, brown, fine<br>to coarse<br>Trace of gravel        | 460                              | 460   |                                  |       |
| 440   | 45<br>Very dense                                                        | 440   | 60<br>Very dense                                                               |       |                                                                           | 450   | 29<br>Limestone- Grey<br>Layers of grey<br>shale                        | 32<br>Limestone- Grey<br>Layers of grey<br>shale                                                                                                                                  | 476.4<br>34<br>Sand- Dense, brown, fine<br>to coarse<br>Trace of gravel              | 476.4<br>34<br>Sand- Dense, brown, fine<br>to coarse<br>Trace of gravel        | 450                              | 450   |                                  |       |
| 430   | 97<br>Very dense                                                        | 430   | 58<br>Very dense                                                               |       |                                                                           | 440   | 453.3<br>100%<br>End of Boring                                          | 437.8<br>End of Boring                                                                                                                                                            | 455.5<br>502*<br>100%<br>End of Boring                                               | 455.5<br>502*<br>100%<br>End of Boring                                         | 440                              | 440   |                                  |       |
| 420   | 413.8<br>70.4<br>Limestone- Grey<br>Weathered                           | 420   | 40<br>Sand- Dense, brown, fine<br>to coarse<br>Some gravel<br>Very dense       |       |                                                                           | 430   | 437.8<br>End of Boring                                                  | 437.8<br>End of Boring                                                                                                                                                            | 455.5<br>502*<br>100%<br>End of Boring                                               | 455.5<br>502*<br>100%<br>End of Boring                                         | 430                              | 430   |                                  |       |
| 410   | 405.1<br>End of Boring                                                  | 410   | 65<br>Very dense                                                               |       |                                                                           | 420   | 437.8<br>End of Boring                                                  | 437.8<br>End of Boring                                                                                                                                                            | 455.5<br>502*<br>100%<br>End of Boring                                               | 455.5<br>502*<br>100%<br>End of Boring                                         | 420                              | 420   |                                  |       |
| 400   | 400                                                                     | 400   | 28<br>Very dense                                                               |       |                                                                           | 410   | 437.8<br>End of Boring                                                  | 437.8<br>End of Boring                                                                                                                                                            | 455.5<br>502*<br>100%<br>End of Boring                                               | 455.5<br>502*<br>100%<br>End of Boring                                         | 410                              | 410   |                                  |       |
|       |                                                                         |       | 29<br>Very dense                                                               |       |                                                                           | 400   | 437.8<br>End of Boring                                                  | 437.8<br>End of Boring                                                                                                                                                            | 455.5<br>502*<br>100%<br>End of Boring                                               | 455.5<br>502*<br>100%<br>End of Boring                                         | 400                              | 400   |                                  |       |

# MISSISSIPPI RIVER BRIDGE

LOG OF BORINGS

DUBUQUE COUNTY, IOWA - GRANT COUNTY, WISCONSIN  
IOWA DEPARTMENT OF TRANSPORTATION

NOTES  
For Boring Notes, see Des. Sh. No. 9

NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

DESIGN NO. 1279 FILE NO. 25896 DES. SH. NO. 8 OF 45

PROJECT BRP-561-4 (4)-38-31 PROJECT SH. NO. 8 OF 45

DRAWN BY: W. In-Albon Sept. 1978  
CHECKED BY: J.G. Oliver, Sept. 1978  
5818  
70 S 258

SYVERDRUP & PARCEL AND ASSOCIATES, Inc.  
CONSULTING ENGINEERS  
ST. LOUIS, MO.

| ELEV. | BORING B12<br>Sta. 105+95 35' Lt. |     |                                                                                                                                                                 | BORING B13<br>Sta. 105+95 35' Rt. |         |                                                                            | BORING B15<br>Sta. 108+05 30' Rt. |         |                                                                                     | BORING B16<br>Sta. 110+15 30' Lt. |         |                                                                              | ELEV. |
|-------|-----------------------------------|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|---------|----------------------------------------------------------------------------|-----------------------------------|---------|-------------------------------------------------------------------------------------|-----------------------------------|---------|------------------------------------------------------------------------------|-------|
| 600   | 600.9                             |     |                                                                                                                                                                 | 597.9                             |         |                                                                            | 597.9                             |         |                                                                                     | 595.8                             |         |                                                                              | 600   |
| 590   |                                   |     | Water                                                                                                                                                           |                                   |         | Water                                                                      |                                   |         | Water                                                                               |                                   |         |                                                                              | 590   |
| 580   |                                   |     |                                                                                                                                                                 |                                   |         |                                                                            | 577.7                             |         |                                                                                     | 582.3                             |         |                                                                              | 580   |
|       | 574.2                             |     |                                                                                                                                                                 | 574.2                             |         |                                                                            |                                   |         |                                                                                     | 579.3                             |         |                                                                              |       |
| 570   |                                   | 4   | Sand - Fine, very loose, grey<br>Little silt<br>Loose - Trace of silt<br>Trace of gravel<br>6" Layer silt-black organic<br>Trace of fibers & wood<br>Med. dense |                                   | 5       | Sand - Loose, brown to grey, fine to medium, poor recovery<br>Medium dense |                                   | 2       | Sand - Very loose, brown, fine to coarse<br>Layers of organic silt<br>Trace of wood |                                   | 2       | Silt - Very loose, black organic<br>Trace of shells                          |       |
| 560   |                                   | 10  |                                                                                                                                                                 |                                   | 19      |                                                                            |                                   | 4       |                                                                                     |                                   | 3       | Sand - Very loose, grey fine to medium<br>Trace to little silt & shells      |       |
|       | 553.7                             | 11  |                                                                                                                                                                 | 562.2                             | 8       | Sand - Loose, grey, fine to coarse<br>Trace of gravel<br>Loose             |                                   | 5       | Sand - Loose, brown, fine to coarse                                                 |                                   | 4       | Sand - Loose, grey, fine to coarse<br>Trace of silt & shells<br>Medium dense | 570   |
| 550   |                                   | 22  | Sand - Medium dense, grey, fine to medium<br>Trace of shells                                                                                                    |                                   | 13      |                                                                            |                                   | 10      |                                                                                     |                                   | 12      |                                                                              |       |
|       | 543.7                             | 14  |                                                                                                                                                                 |                                   | 10      |                                                                            |                                   | 10      |                                                                                     |                                   | 18      |                                                                              | 560   |
| 540   |                                   | 13  | Sand - Medium dense, grey, fine to coarse<br>Trace of gravel                                                                                                    |                                   | 12      | Firm                                                                       |                                   | 6       |                                                                                     |                                   | 9       | Loose                                                                        |       |
| 530   |                                   | 25  |                                                                                                                                                                 |                                   | 15      |                                                                            |                                   | 9       |                                                                                     |                                   | 21      | Medium dense<br>Little gravel                                                | 550   |
| 520   | 522.7                             | 39  | Sand - Dense, grey, fine to medium coarse<br>Little gravel                                                                                                      |                                   | 17      |                                                                            |                                   | 14      | Firm                                                                                |                                   | 29      | Medium dense                                                                 | 540   |
| 510   |                                   | 17  |                                                                                                                                                                 |                                   | 20      | Loose<br>Layers of gravel<br>Firm                                          |                                   | 12      |                                                                                     |                                   | 21      | Medium dense                                                                 |       |
| 500   |                                   | 74  |                                                                                                                                                                 |                                   | 29      |                                                                            |                                   | 26      | Medium dense                                                                        |                                   | 38      | Sand - Dense, gray, fine to coarse<br>Little gravel                          | 530   |
| 490   |                                   | 23  |                                                                                                                                                                 |                                   | 29      |                                                                            |                                   | 22      |                                                                                     |                                   | 54      | Sand - Very dense, grey, fine<br>Sandstone - Very dense, yellowish brown     | 520   |
| 480   |                                   | 26  | Layers of gravel<br>Layers of fine brown sand                                                                                                                   |                                   | 24      |                                                                            |                                   | 34      | Dense                                                                               |                                   | 100/100 |                                                                              | 510   |
|       | 475.2                             | 53  | Sand - Medium dense, brown, fine to coarse. Little gravel                                                                                                       |                                   | 29      |                                                                            |                                   | 43      |                                                                                     |                                   | 100/100 |                                                                              | 500   |
| 470   |                                   | 53  | Sand - Very dense, brown, medium to coarse. Some gravel                                                                                                         |                                   | 36      |                                                                            |                                   | 47.2    | Limestone - Grey weathered                                                          |                                   | 96%     | Sandstone - White                                                            | 490   |
| 460   | 464.7                             | 27  | Sand - Medium dense, brown, fine to medium. Trace of gravel                                                                                                     |                                   | 60/4    | Layer of coarse gravel<br>Stone in shoe                                    |                                   | 20%     | Limestone - Very dense, grey, weathered with layers of sand                         |                                   | 20%     | Sandstone turns to brown<br>End of Boring                                    | 480   |
| 450   | 456.2                             | 46  | Sand - Dense, brown, fine to coarse. Little gravel                                                                                                              |                                   | 100/100 | No recovery, refusal of S.S.                                               |                                   | 83      | Very dense                                                                          |                                   |         |                                                                              | 470   |
|       |                                   |     | Layers of gravel                                                                                                                                                | 446.5                             | 100/100 |                                                                            |                                   | 100/100 | Sandstone - Very dense, white weathered                                             |                                   |         |                                                                              | 460   |
| 440   | 439.7                             | 38  |                                                                                                                                                                 |                                   | 100/100 | Limestone - Brown, weathered                                               |                                   | 100/100 |                                                                                     |                                   |         |                                                                              | 450   |
| 430   | 433.2                             | 60% | Limestone - Grey<br>Very fractured Limestone                                                                                                                    | 438.2                             | 85%     |                                                                            |                                   | 100/100 |                                                                                     |                                   |         |                                                                              | 440   |
|       |                                   | 40% | Sandstone - White<br>Fractured Limestone<br>jamed barrel                                                                                                        | 435.7                             | 50%     | Sand - Very dense, brown, silty                                            |                                   | 100/100 | End of Boring                                                                       |                                   |         |                                                                              | 430   |
| 420   |                                   | 80% |                                                                                                                                                                 |                                   | 100/100 | Sandstone - Very dense, white                                              |                                   |         |                                                                                     |                                   |         |                                                                              |       |
| 410   | 416.2                             | 56% | End of Boring                                                                                                                                                   | 423.0                             | 100/100 | End of Boring                                                              |                                   |         |                                                                                     |                                   |         |                                                                              | 420   |
|       |                                   |     |                                                                                                                                                                 |                                   |         |                                                                            |                                   |         |                                                                                     |                                   |         |                                                                              | 410   |

#### BORING NOTES

Boring data are furnished for information only and may or may not represent the actual conditions which may be found when the work is executed. Percentages given in the vertical columns represent the % of core recovery. Numbers shown in the vertical columns without a % sign are the number of blows required to drive a 2" O.D. sampling spoon one foot using a 140 lb. weight falling 30 inches. All borings were made during the months of May thru August 1978. Borings B6, B9, and B14 were eliminated from the boring program.

#### MISSISSIPPI RIVER BRIDGE

#### LOG OF BORINGS

DUBUQUE COUNTY, IOWA - GRANT COUNTY, WISCONSIN  
IOWA DEPARTMENT OF TRANSPORTATION

SVERDRUP & PARCEL AND ASSOCIATES, Inc.  
CONSULTING ENGINEERS  
ST. LOUIS, MO.

NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

DESIGN NO. 1279 FILE NO. 25896 DES. SH. NO. 9 OF 45

PROJECT BRP-561-4(4)---38-31 PROJECT SH. NO. 9 OF 45

DRAWN BY: W. In-Albon Sept. 1978  
CHECKED BY: J.G. Oliver, Sept. 1978  
5818  
78 S 239

| ELEV. | BORING B17<br>Sta. 110+15 30' Rt. |                                                   | BORING B18<br>Sta. 112+25 30' Lt. |       | BORING B19<br>Sta. 112+25 30' Rt.                                             |       | BORING B20<br>Sta. 114+35 30' Lt. |                                         | BORING B21<br>Sta. 114+29.5 30' Rt. |               | ELEV. |
|-------|-----------------------------------|---------------------------------------------------|-----------------------------------|-------|-------------------------------------------------------------------------------|-------|-----------------------------------|-----------------------------------------|-------------------------------------|---------------|-------|
| 620   |                                   |                                                   |                                   |       |                                                                               |       |                                   |                                         | 622.2                               |               | 620   |
| 610   |                                   |                                                   |                                   |       |                                                                               |       | 617.2                             |                                         | 619.7                               | Black topsoil | 610   |
| 600   |                                   |                                                   |                                   |       |                                                                               |       | 614.2                             | Black, silty topsoil- Boulders          | 100%                                | Limestone     | 600   |
|       |                                   |                                                   |                                   |       |                                                                               |       |                                   | 100%                                    | 100%                                |               |       |
|       |                                   |                                                   |                                   |       |                                                                               |       |                                   | 65%                                     | 100%                                | End of Boring |       |
|       |                                   |                                                   |                                   |       |                                                                               |       | 597.2                             | 98%                                     |                                     |               |       |
|       |                                   |                                                   |                                   |       |                                                                               |       |                                   | End of Boring                           |                                     |               |       |
| 590   | 595.6                             | Water                                             | 595.5                             | 591.6 | Water                                                                         | 591.6 | 591.6                             | Water                                   |                                     |               | 590   |
|       |                                   |                                                   |                                   | 2     | Silt - Very loose, Trace of wood & fibers & shells. Layers of grey, fine sand | 590.6 | 1                                 | Silt - Very loose, black organic        |                                     |               |       |
| 580   | 582.1                             |                                                   | 584.1                             | 2     |                                                                               | 587.1 |                                   | Sand - Very loose, fine to medium, grey |                                     |               | 580   |
|       | 581.1                             | Sand - Very loose, brown fine to medium           |                                   |       |                                                                               | 585.7 | 3                                 | Silt - Very loose, black organic        |                                     |               |       |
|       |                                   | S.S. Sank by its own Weight                       |                                   |       |                                                                               | 584.1 | 3                                 | Silt - Very loose, dark grey, sandy     |                                     |               |       |
| 570   | 572.1                             | Silt - Very loose, black organic                  |                                   |       |                                                                               |       | 3                                 | Sand - Very loose, grey, silty          |                                     |               |       |
|       | 567.1                             | Sand - Loose, grey, fine to medium                |                                   |       |                                                                               |       |                                   | Some gravel, brown                      |                                     |               |       |
|       |                                   | Trace of shells & gravel                          |                                   |       |                                                                               |       |                                   |                                         |                                     |               |       |
| 560   |                                   | Sand - Loose, fine. Little Sand                   |                                   |       |                                                                               |       |                                   |                                         |                                     |               |       |
|       | 556.1                             | Wood                                              |                                   |       |                                                                               |       |                                   |                                         |                                     |               |       |
|       |                                   | Trace of wood. Little gravel                      |                                   |       |                                                                               |       |                                   |                                         |                                     |               |       |
| 550   |                                   | Medium dense                                      |                                   |       |                                                                               |       |                                   |                                         |                                     |               |       |
|       |                                   | Sand - Medium dense, fine to medium, grey         |                                   |       |                                                                               |       |                                   |                                         |                                     |               |       |
| 540   |                                   | Poor recovery                                     |                                   |       |                                                                               |       |                                   |                                         |                                     |               |       |
|       |                                   | Poor recovery                                     |                                   |       |                                                                               |       |                                   |                                         |                                     |               |       |
|       |                                   | Poor recovery                                     |                                   |       |                                                                               |       |                                   |                                         |                                     |               |       |
| 530   | 530.1                             |                                                   |                                   |       |                                                                               |       |                                   |                                         |                                     |               |       |
|       |                                   | Sand & Gravel - Very dense, brown, fine to coarse |                                   |       |                                                                               |       |                                   |                                         |                                     |               |       |
| 520   |                                   |                                                   |                                   |       |                                                                               |       |                                   |                                         |                                     |               |       |
| 510   | 512.1                             |                                                   |                                   |       |                                                                               |       |                                   |                                         |                                     |               |       |
|       |                                   | Sandstone - Very dense, yellowish brown           |                                   |       |                                                                               |       |                                   |                                         |                                     |               |       |
| 500   |                                   | 0%                                                |                                   |       |                                                                               |       |                                   |                                         |                                     |               |       |
|       |                                   | Layer of grey sandstone                           |                                   |       |                                                                               |       |                                   |                                         |                                     |               |       |
|       | 493.8                             | 15%                                               |                                   |       |                                                                               |       |                                   |                                         |                                     |               |       |
| 490   |                                   | End of Boring                                     |                                   |       |                                                                               |       |                                   |                                         |                                     |               |       |
| 480   |                                   |                                                   |                                   |       |                                                                               |       |                                   |                                         |                                     |               |       |

NOTES  
For Boring Notes, see Des. Sh. No. 9

| ELEV. | PROBE P1<br>Sta. 112+45 30' Rt. |                                        | PROBE P2<br>Sta. 112+45 30' Lt. |                                        | PROBE P3<br>Sta. 112+05 30' Rt. |                                        | PROBE P4<br>Sta. 112+05 30' Lt. |                                        | ELEV. |
|-------|---------------------------------|----------------------------------------|---------------------------------|----------------------------------------|---------------------------------|----------------------------------------|---------------------------------|----------------------------------------|-------|
| 590   | 595.0                           |                                        | 595.0                           |                                        | 595.0                           |                                        | 595.0                           |                                        | 590   |
|       | 591.4                           | Water                                  | 591.2                           | Water                                  | 590.4                           | Water                                  | 590.4                           | Water                                  |       |
| 580   |                                 |                                        |                                 |                                        |                                 |                                        |                                 |                                        | 580   |
|       | 575.5                           | 15 blows for zero Refusal on Limestone | 573.4                           | 15 blows for zero Refusal on Limestone | 572.4                           | 15 blows for zero Refusal on Limestone | 571.8                           | 15 blows for zero Refusal on Limestone |       |
| 570   |                                 |                                        |                                 |                                        |                                 |                                        |                                 |                                        | 570   |

SVERDRUP & PARCEL AND ASSOCIATES, Inc.  
CONSULTING ENGINEERS  
ST. LOUIS, MO.

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MISSISSIPPI RIVER BRIDGE  
LOG OF BORINGS  
DUBUQUE COUNTY, IOWA - GRANT COUNTY, WISCONSIN  
IOWA DEPARTMENT OF TRANSPORTATION

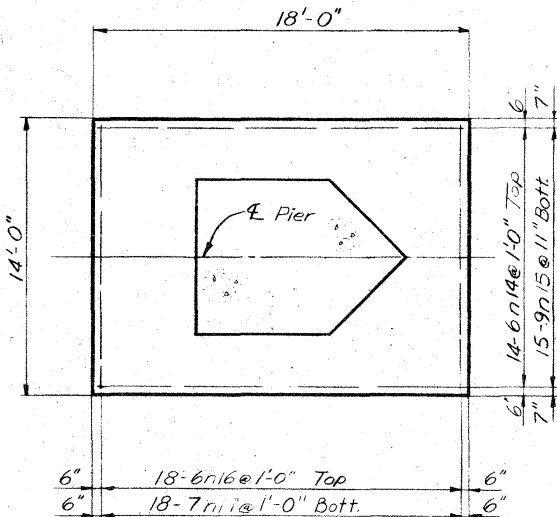
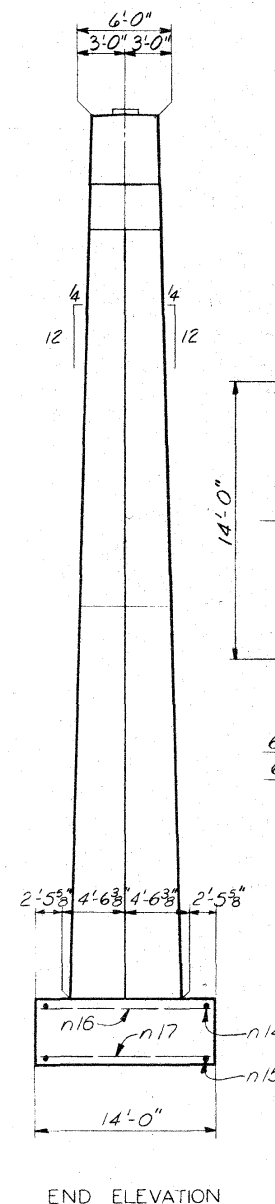
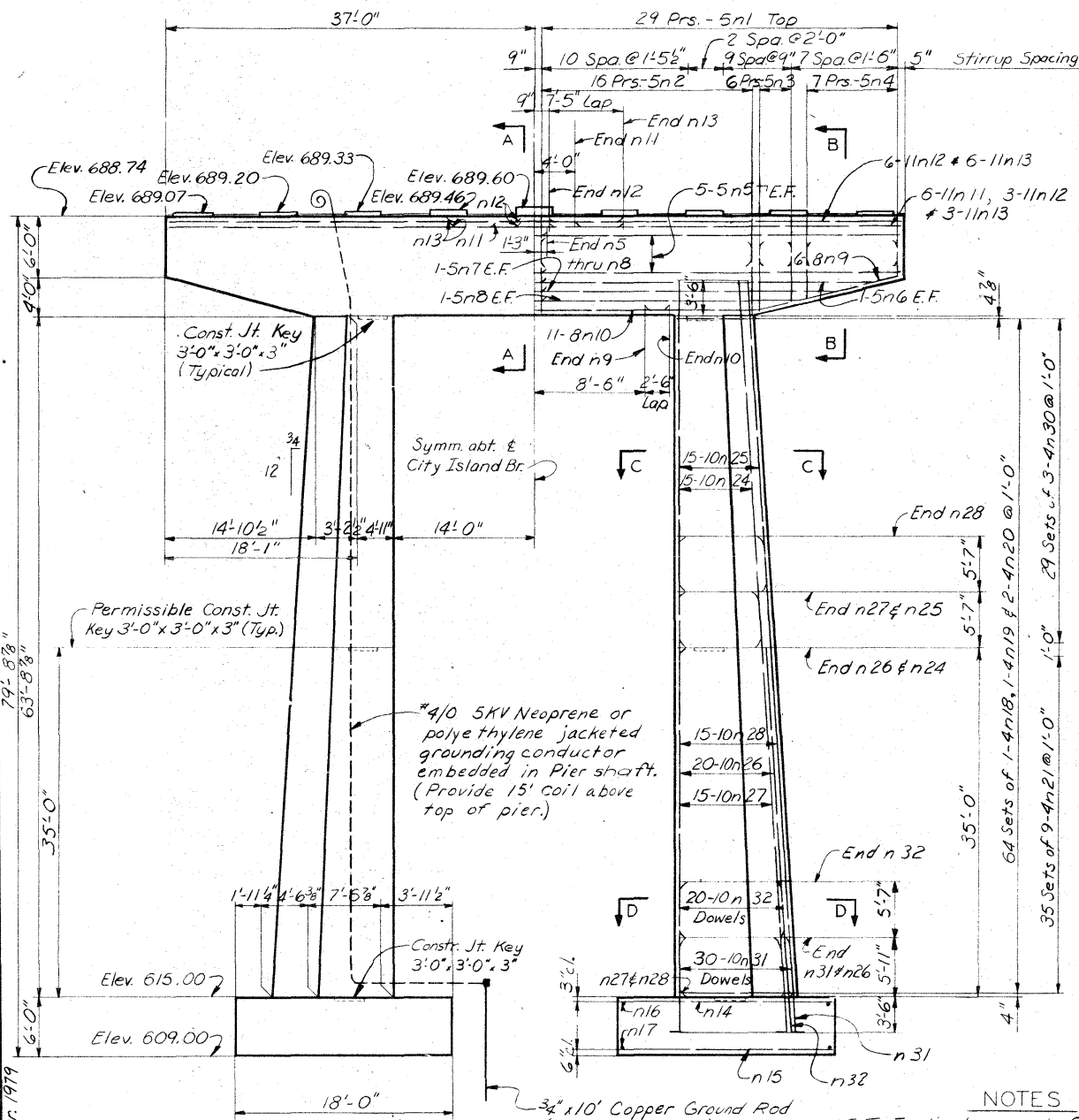
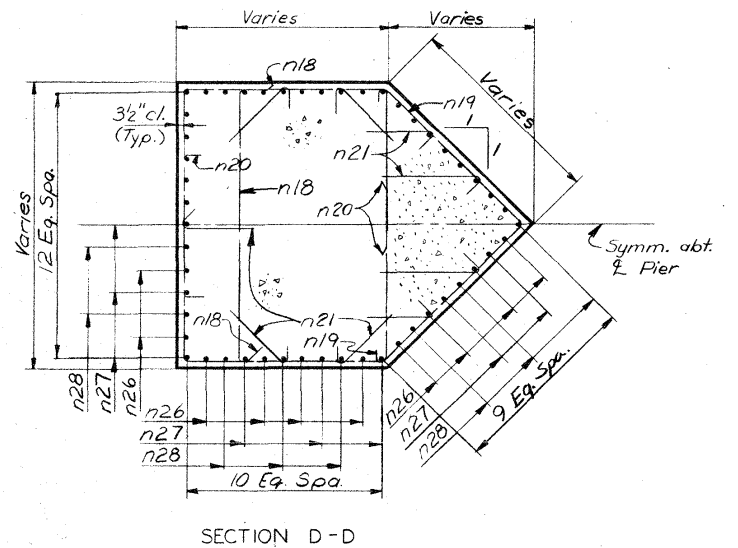
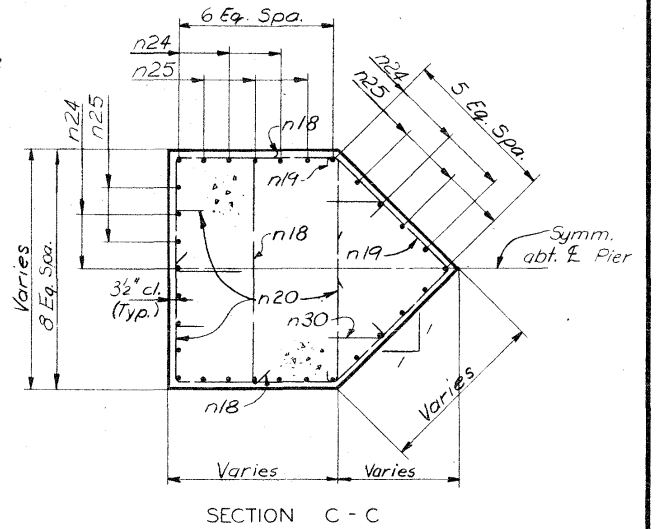
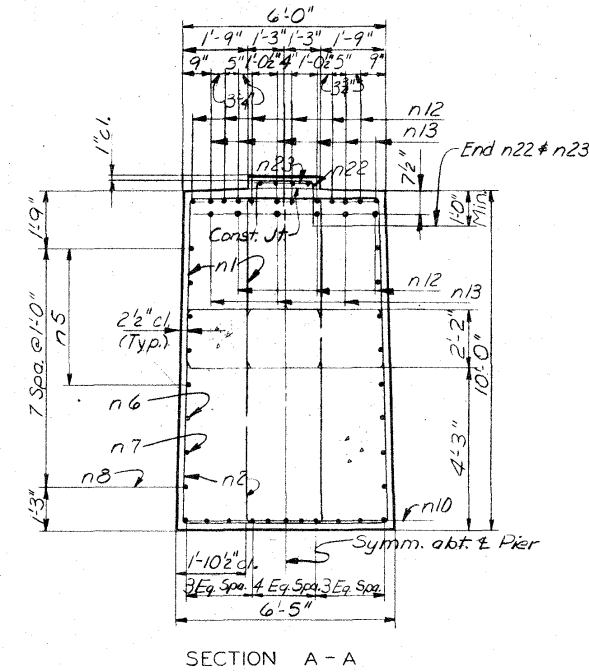
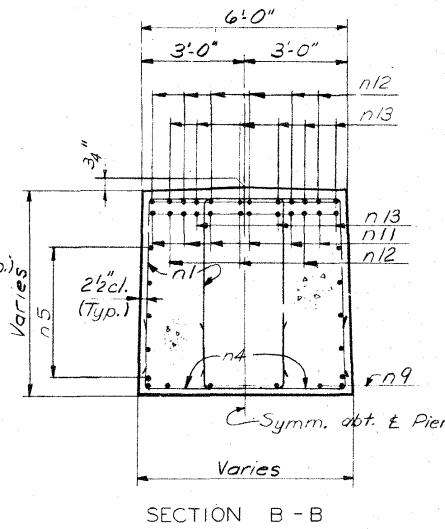
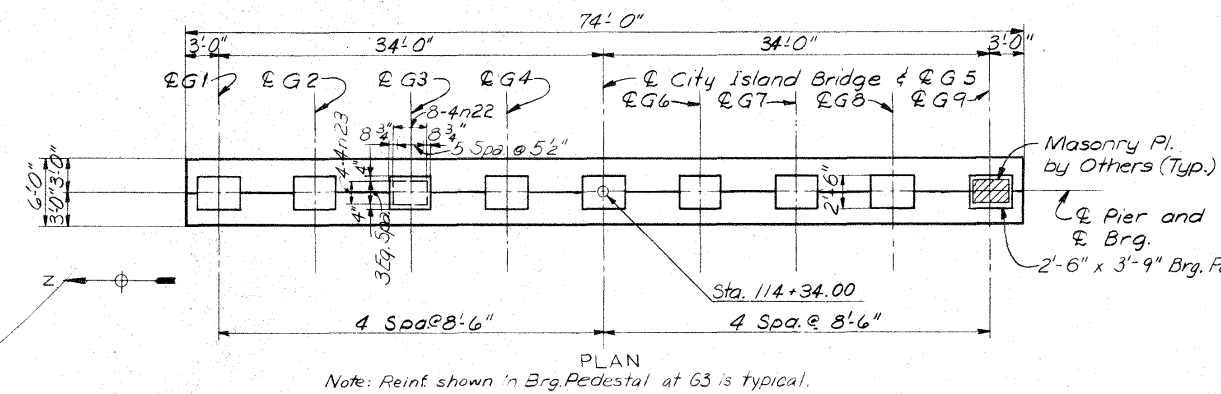
5818  
7851/7  
DRAWN BY: D. Richardson, May 1978  
CHECKED BY: T. Sanders, July 1978  
R.C.H. Mar 1979

SVERDRUP & PARCEL AND ASSOCIATES, Inc.  
CONSULTING ENGINEERS  
ST. LOUIS, MO.

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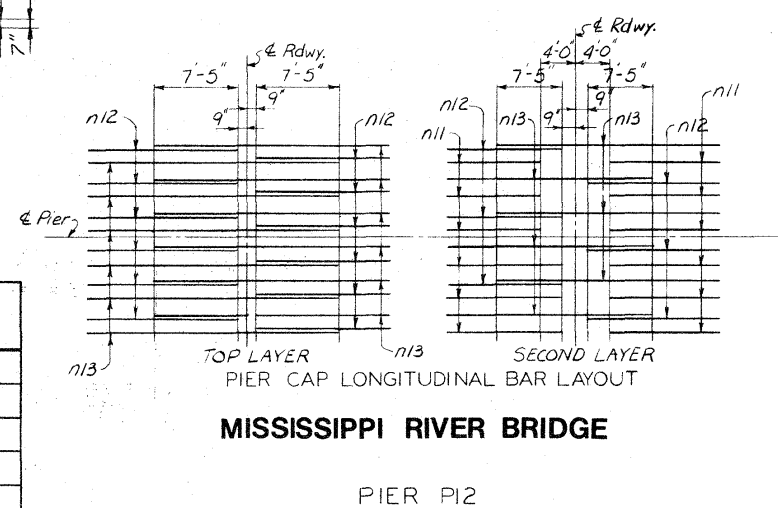
DESIGN NO. 1279 FILE NO. 25896 DES. SH. NO. 11 OF 45

PROJECT BRP-561-4 (4)-38-31 PROJECT SH. NO. 11 OF 45



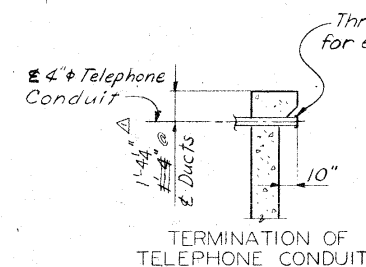
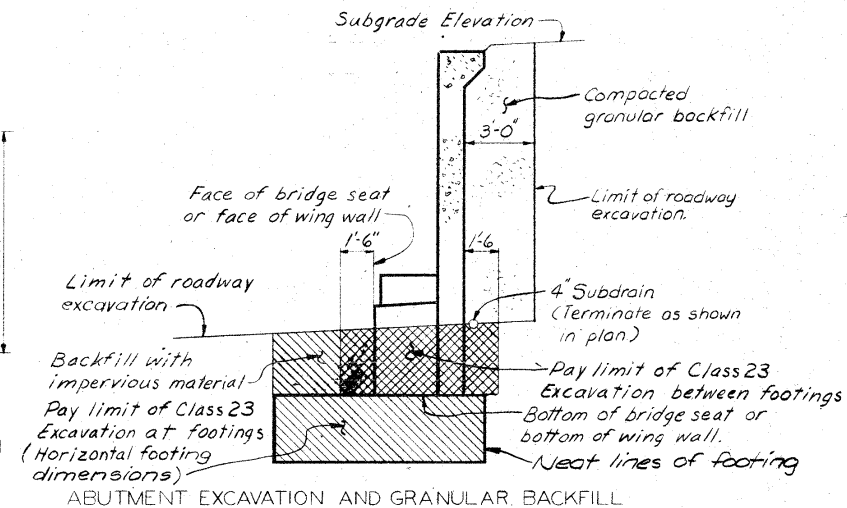
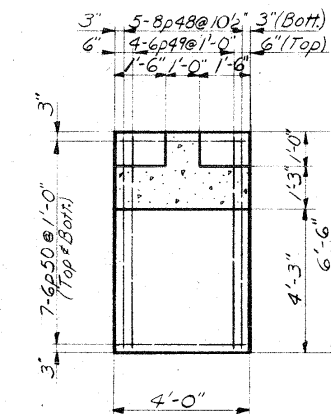
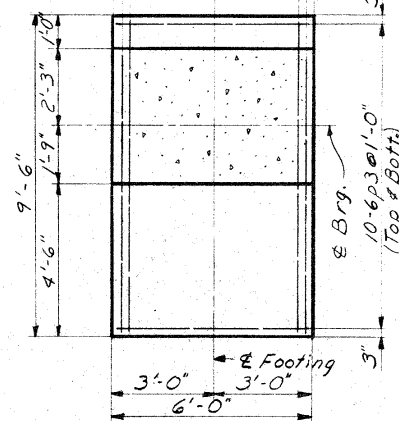
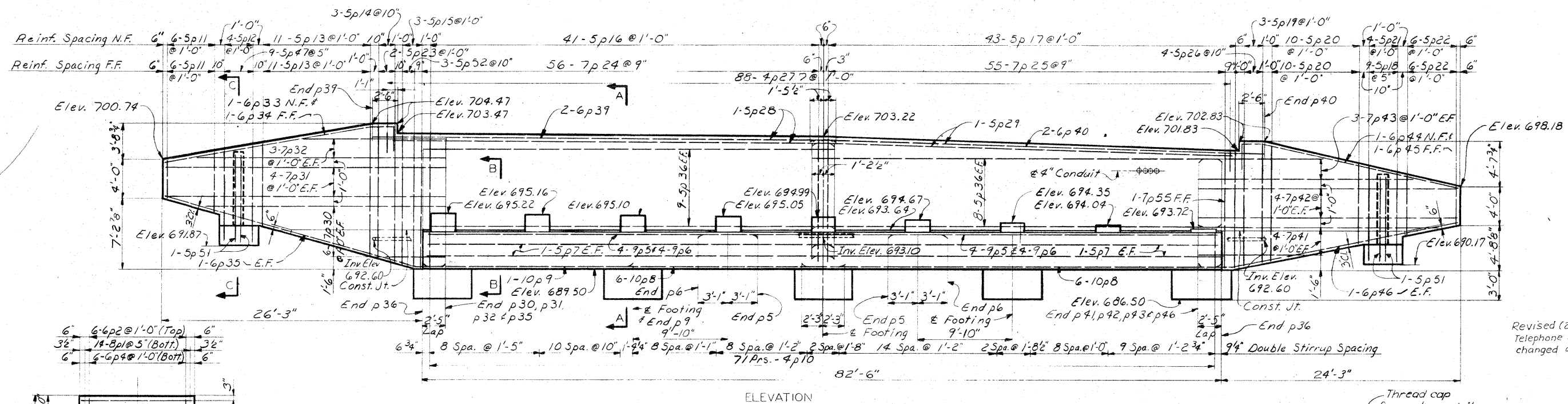
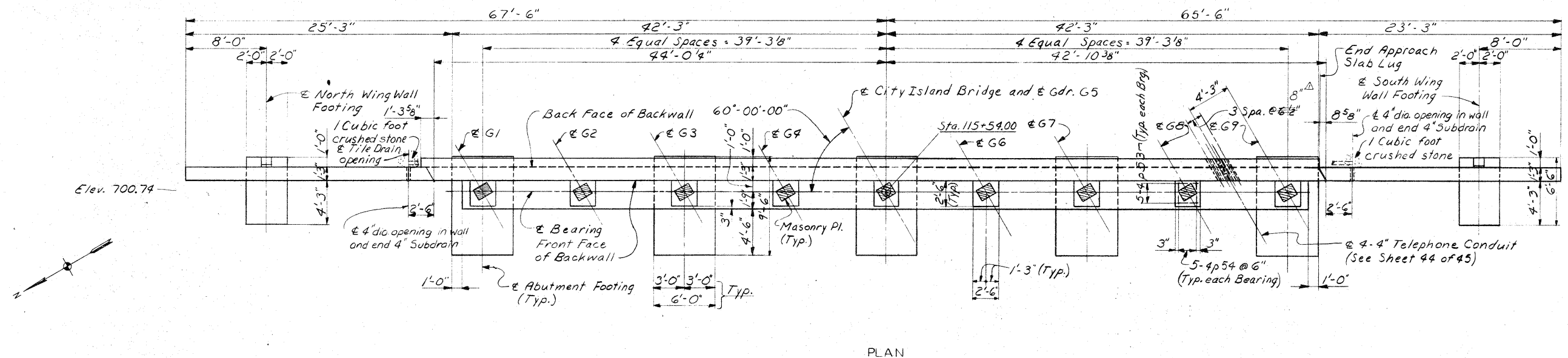
| FINAL Concrete Quantities |               |
|---------------------------|---------------|
| Cap                       | 158.5 Cu. Yd. |
| Columns                   | 302.6 Cu. Yd. |
| Shaft                     | —             |
| Footings                  | 130.5 Cu. Yd. |
| Total                     | 591.6 Cu. Yd. |

Maximum Design Bearing  
9.15 Tons per Square Foot



DUBUQUE COUNTY, IOWA - GRANT COUNTY, WISCONSIN  
IOWA DEPARTMENT OF TRANSPORTATION

NOTES  
E.F. Indicates each face.  
The final 6" of footing excavation  
shall be to the next lines of the  
footing.



| FINAL CONCRETE QUANTITIES |                |
|---------------------------|----------------|
| Backwall & Wing Wall      | 77.0 Cu. Yds.  |
| Bridge Seat               | 34.8 Cu. Yds.  |
| Footings                  | 37.9 Cu. Yds.  |
| Total                     | 149.7 Cu. Yds. |

Maximum Design Bearing  
7.2 Tons per Square Foot.

## MISSISSIPPI RIVER BRIDGE

ABUTMENT 13

DUBUQUE COUNTY, IOWA - GRANT COUNTY, WISCONSIN

IOWA DEPARTMENT OF TRANSPORTATION

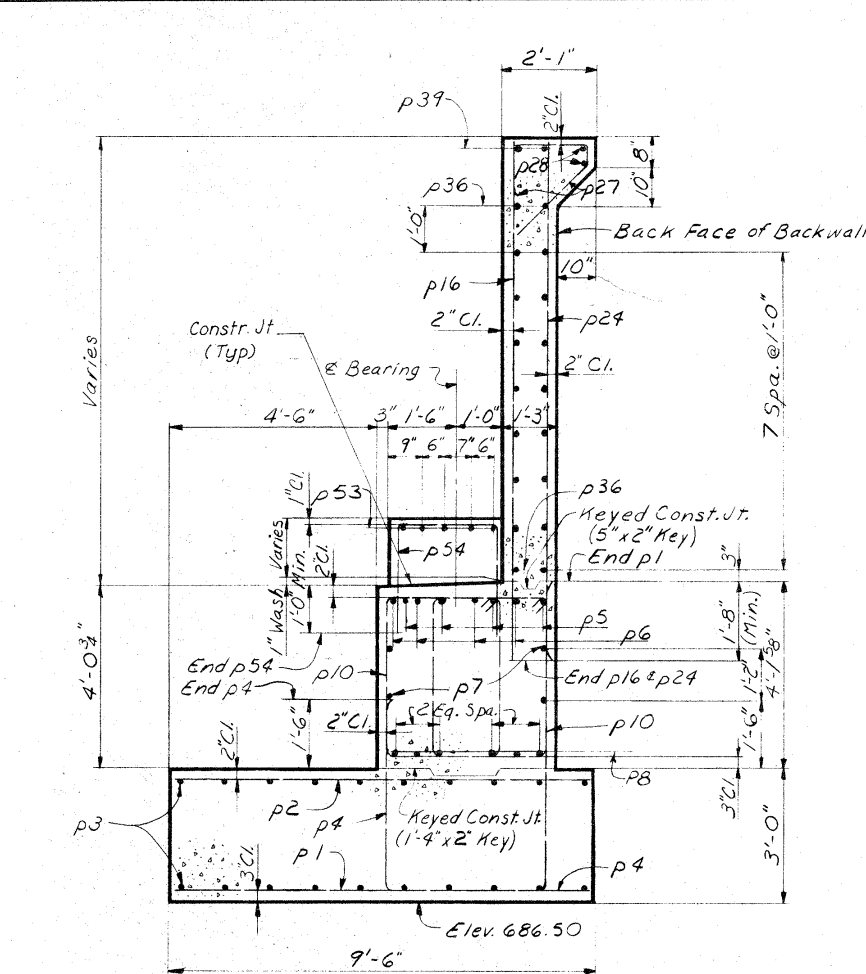
**SVERDRUP & PARCEL AND ASSOCIATES, Inc.**  
CONSULTING ENGINEERS  
ST. LOUIS, MO.

**NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.**

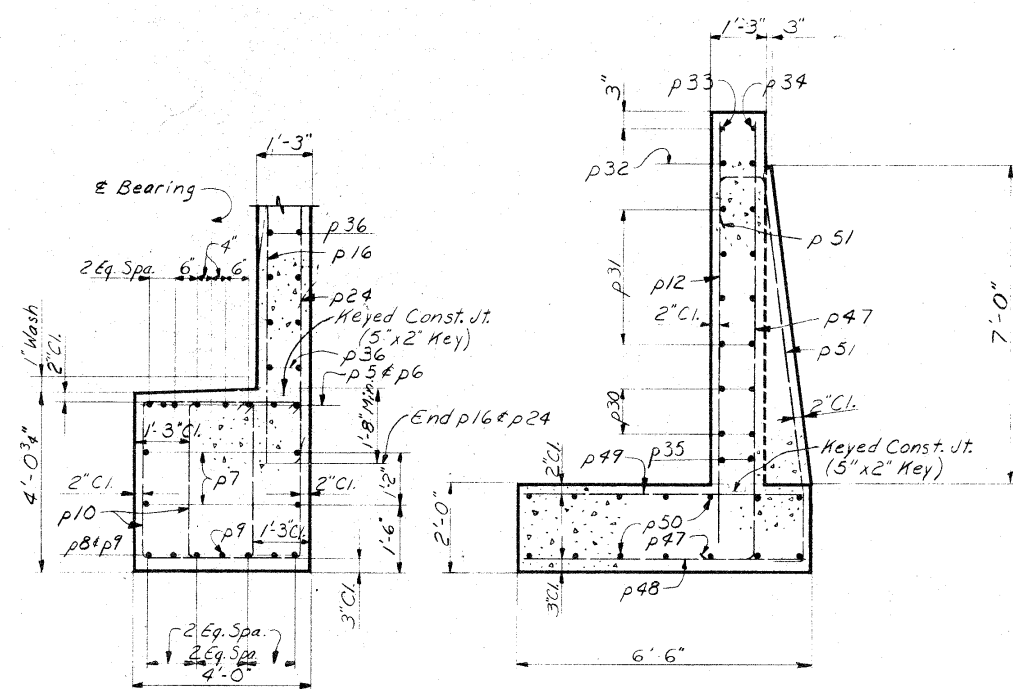
DESIGN NO. 1279 FILE NO. 25896 DES. SH. NO. 12 OF 45

PROJECT BRF-561-4 (4)-38-31 PROJECT SH. NO. 12 OF 45

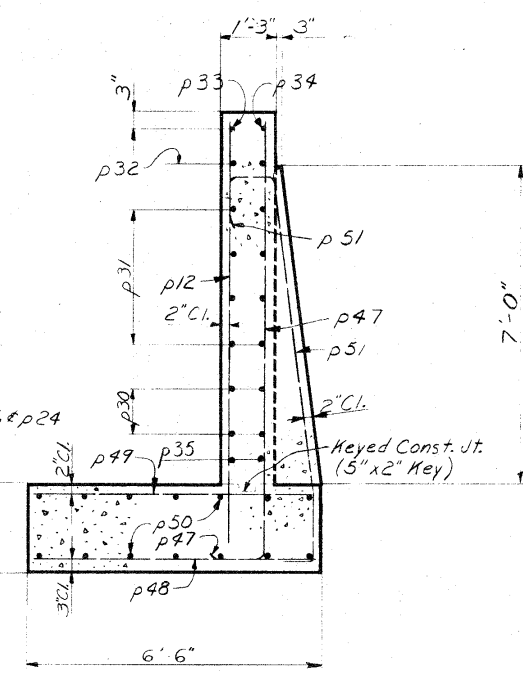
14



SECTION A-A  
Note: Telephone conduit not shown.

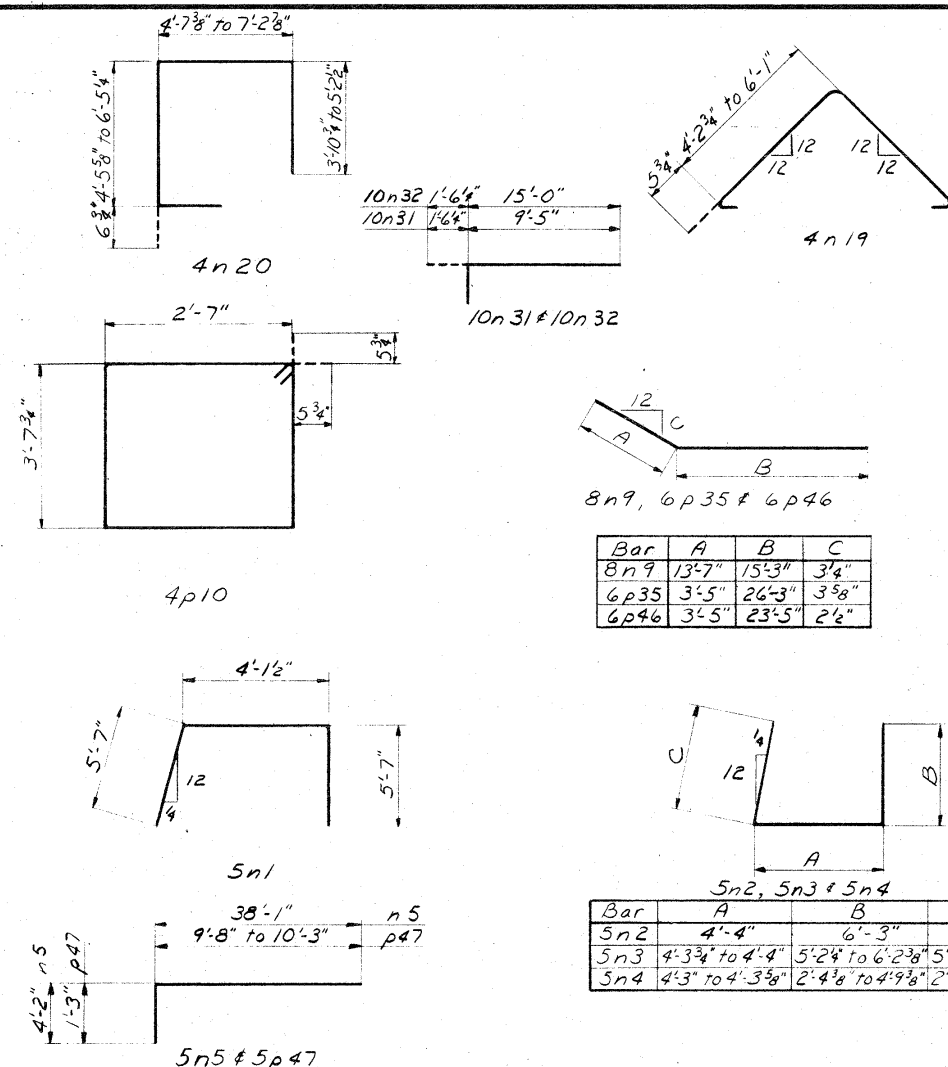


SECTION B-B



SECTION C-C

Note: Section thru south wing wall  
Footing similar.



SECTION A-A

4p27, 6p33, 6p34, 6p44 & 6p45

| Bar  | A    | B     | C     | D      | E     |
|------|------|-------|-------|--------|-------|
| 4p27 | 6'3" | 1'-9" | 5'-2" | 2'-2"  | 12"   |
| 6p33 | —    | 2'-4" | 2'-1" | 21'-0" | 2'-8" |
| 6p34 | —    | 2'-4" | 1'-8" | 21'-0" | 2'-8" |
| 6p44 | —    | 2'-4" | 2'-4" | 20'-4" | 2'-8" |
| 6p45 | —    | 2'-4" | 2'-9" | 20'-4" | 2'-8" |

4n22, 4n23, 8p1, 6p4 & 4p54

| Bar  | B      | C         | D      |
|------|--------|-----------|--------|
| 4n22 | 1'-10" | 2'-3 1/2" | 1'-10" |
| 4n23 | 1'-10" | 3'-5"     | 1'-10" |
| 8p1  | 6'-10" | 8'-2"     | —      |
| 6p4  | 4'-3"  | 4'-8"     | —      |
| 4p54 | 2'-7"  | 2'-3"     | 2'-7"  |

8n9, 6p35 & 6p46

| Bar  | A      | B      | C     |
|------|--------|--------|-------|
| 8n9  | 13'-7" | 15'-3" | 3'-4" |
| 6p35 | 3'-5"  | 26'-3" | 3'-8" |
| 6p46 | 3'-5"  | 23'-5" | 2'-6" |

5n2, 5n3 & 5n4

| Bar | A                  | B                      | C                      |
|-----|--------------------|------------------------|------------------------|
| 5n2 | 4'-4"              | 6'-3"                  | 6'-3"                  |
| 5n3 | 4'-3 3/4" to 4'-4" | 5'-2 1/4" to 6'-2 3/8" | 5'-2 1/4" to 6'-2 3/8" |
| 5n4 | 4'-3" to 4'-3 3/4" | 2'-4 1/8" to 4'-9 3/8" | 2'-4 1/8" to 4'-9 3/8" |

| BAR LIST-PIER P12   |                                          |       |         |     |        | BAR LIST-ABUTMENT I3 |           |       |                                               |          |          |
|---------------------|------------------------------------------|-------|---------|-----|--------|----------------------|-----------|-------|-----------------------------------------------|----------|----------|
| BAR                 | LOCATION                                 | SHAPE | LENGTH  | NO. | WEIGHT | BAR                  | LOCATION  | SHAPE | LENGTH                                        | NO.      | WEIGHT   |
| 5n1                 | Cap                                      | U     | 15'-0"  | 116 | 1815   | 5p15                 | Wing Wall | —     | Varies                                        | 3        | 42       |
| 5n2                 | do                                       | U     | 16'-7"  | 64  | 1107   | 5p16                 | Backwall  | —     | 11'-6"                                        | 41       | 492      |
| 5n3                 | do                                       | U     | Varies  | 24  | 386    | 5p17                 | do        | —     | 11'-1"                                        | 43       | 497      |
| 5n4                 | 4 Series of 6 Bars (4'-5" to 16'-5 1/2") | U     | Varies  | 28  | 326    | 5p18                 | Wing Wall | —     | Varies                                        | 9        | 88       |
| 5n5                 | Cap                                      | U     | 42'-1"  | 20  | 878    | 5p19                 | Wing Wall | —     | Varies                                        | 3        | 40       |
| 5n6                 | do                                       | U     | 34'-10" | 4   | 145    | 5p20                 | Wing Wall | —     | 1 Series of 3 Bars (12'-5" to 12'-10")        | 20       | 211      |
| 5n7                 | do                                       | U     | 31'-1"  | 4   | 130    | 5p21                 | Wing Wall | —     | Varies                                        | 4        | 39       |
| 5n8                 | do                                       | U     | 27'-5"  | 4   | 114    | 5p22                 | Wing Wall | —     | 2 Series of 10 Bars (8'-2" to 12'-1")         | 12       | 62       |
| 8n9                 | do                                       | U     | 28'-10" | 12  | 924    | 5p23                 | Wing Wall | —     | 2 Series of 6 Bars (3'-10" to 6'-0")          | 2        | 29       |
| 8n10                | do                                       | U     | 22'-0"  | 11  | 646    | 5p24                 | Wing Wall | —     | 1 Series of 4 Bars (9'-1" to 9'-9")           | 11-6"    | 56       |
| 11n11               | do                                       | U     | 32'-10" | 12  | 2093   | 5p25                 | Wing Wall | —     | Varies                                        | 11-1"    | 55       |
| 11n12               | do                                       | U     | 36'-1"  | 18  | 3451   | 5p26                 | Wing Wall | —     | Varies                                        | 4        | 53       |
| 11n13               | do                                       | U     | 45'-0"  | 18  | 4304   | 5p27                 | Wing Wall | —     | 1 Series of 4 Bars (12'-5" to 12'-11")        | 4        | 101      |
| 6n14                | Footing                                  | —     | 17'-6"  | 28  | 736    | 5p28                 | Wing Wall | —     | 2 Series of 64 Bars (6'-10 3/4" to 9'-6 1/4") | 4        | 284      |
| 9n15                | do                                       | —     | 17'-6"  | 30  | 1785   | 5p29                 | do        | —     | 4 Series of 64 Bars (13'-4" to 19'-2 3/8")    | 2        | 97       |
| 6n16                | do                                       | —     | 13'-6"  | 36  | 730    | 5p30                 | do        | —     | 2 Series of 64 Bars (9'-3 3/4" to 13'-0 1/4") | 2        | 91       |
| 7n17                | do                                       | —     | 13'-6"  | 36  | 993    | 5p31                 | Wing Wall | —     | 4 Series of 64 Bars (13'-4" to 19'-2 3/8")    | 12       | 413      |
| 4n18                | Column                                   | U     | Varies  | 128 | 702    | 5p32                 | Wing Wall | —     | 2 Series of 6 Bars (8'-0" to 25'-8")          | 8        | 466      |
| 4n19                | Column                                   | U     | Varies  | 128 | 955    | 5p33                 | Wing Wall | —     | 2 Series of 3 Bars (14'-8" to 25'-8")         | 6        | 247      |
| 4n20                | Column                                   | U     | Varies  | 256 | 2785   | 5p34                 | Wing Wall | —     | 2 Series of 3 Bars (14'-8" to 25'-8")         | 1        | 38       |
| 4n21                | Column                                   | U     | 3'-6"   | 630 | 1473   | 5p35                 | Wing Wall | —     | 2 Series of 3 Bars (14'-8" to 25'-8")         | 1        | 37       |
| 4n22                | Cap                                      | U     | 5'-9"   | 72  | 277    | 5p36                 | Wing Wall | —     | 2 Series of 3 Bars (14'-8" to 25'-8")         | 2        | 89       |
| 4n23                | do                                       | U     | 6'-10"  | 36  | 164    | 5p37                 | Wing Wall | —     | 2 Series of 3 Bars (14'-8" to 25'-8")         | 34       | 1507     |
| 10n24               | Column                                   | U     | 32'-3"  | 30  | 4163   | 5p38                 | Wing Wall | —     | 2 Series of 3 Bars (14'-8" to 25'-8")         | Not Used | Not Used |
| 10n25               | do                                       | U     | 32'-8"  | 30  | 3442   | 5p39                 | Wing Wall | —     | 2 Series of 3 Bars (14'-8" to 25'-8")         | Not Used | Not Used |
| 10n26               | do                                       | U     | 29'-1"  | 40  | 5006   | 5p40                 | Wing Wall | —     | 2 Series of 3 Bars (14'-8" to 25'-8")         | Not Used | Not Used |
| 10n27               | do                                       | U     | 40'-7"  | 30  | 5239   | 5p41                 | Wing Wall | —     | 2 Series of 3 Bars (14'-8" to 25'-8")         | Not Used | Not Used |
| 10n28               | do                                       | U     | 46'-2"  | 30  | 5960   | 5p42                 | Wing Wall | —     | 2 Series of 3 Bars (14'-8" to 25'-8")         | Not Used | Not Used |
| n29                 | Not Used                                 | —     | —       | —   | —      | 5p43                 | Wing Wall | —     | 2 Series of 3 Bars (14'-8" to 25'-8")         | Not Used | Not Used |
| 4n30                | Column                                   | U     | 3'-6"   | 174 | 407    | 5p44                 | Wing Wall | —     | 2 Series of 3 Bars (14'-8" to 25'-8")         | Not Used | Not Used |
| 10n31               | Footing                                  | —     | 10'-11" | 60  | 2818   | 5p45                 | Wing Wall | —     | 2 Series of 3 Bars (14'-8" to 25'-8")         | Not Used | Not Used |
| 10n32               | do                                       | —     | 16'-6"  | 40  | 2840   | 5p46                 | Wing Wall | —     | 2 Series of 3 Bars (14'-8" to 25'-8")         | Not Used | Not Used |
| Total Weight 56,794 |                                          |       |         |     |        | 5p47                 | Wing Wall | —     | 2 Series of 3 Bars (14'-8" to 25'-8")         | Not Used | Not Used |

| BAR LIST-ABUTMENT I3 |           |       |                                      |     |        | BAR LIST-ABUTMENT I3 |           |       |                                        |     |        |
|----------------------|-----------|-------|--------------------------------------|-----|--------|----------------------|-----------|-------|----------------------------------------|-----|--------|
| BAR                  | LOCATION  | SHAPE | LENGTH                               | NO. | WEIGHT | BAR                  | LOCATION  | SHAPE | LENGTH                                 | NO. | WEIGHT |
| 8p1                  | Footing   | U     | 14'-9"                               | 70  | 2757   | 6p44                 | Wing Wall | —     | 24'-10"                                | 1   | 37     |
| 6p2                  | do        | —     | 9'-2"                                | 30  | 413    | 6p45                 | do        | —     | 25'-3"                                 | 1   | 38     |
| 6p3                  | do        | —     | 5'-8"                                | 100 | 851    | 6p46                 | do        | —     | 26'-10"                                | 2   | 81     |
| 6p4                  | do        | —     | 8'-9"                                | 30  | 394    | 5p47                 | do        | —     | Varies                                 | 9   | 104    |
| 9p5                  | Seat      | —     | 34'-4"                               | 8   | 934    | 5p48                 | do        | —     | 1 Series of 9 Bars (10'-10" to 11'-5") | 10  | 165    |
| 9p6                  | do        | —     | 54'-0"                               | 8   | 1469   | 5p49                 | do        | —     | 6'-2"                                  | 8   | 74     |
| 5p7                  | do        | —     | 42'-4"                               | 8   | 353    | 6p50                 | do        | —     | 3'-8"                                  | 28  | 154    |
| 10p8                 | do        | —     | 43'-4"                               | 12  | 2238   | 5p51                 | do        | —     | 11'-6"                                 | 4   | 48     |
| 10p9                 | do        | —     | 21'-6"                               | 1   | 93     | 5p52                 | do        | —     | Varies                                 | 3   | 41     |
| 4p10                 | do        | —     | 13'-1"                               | 142 | 1241   | 5p53                 | do        | —     | 1 Series of 3 Bars (13'-0" to 13'-6")  | 45  | 65     |
| 5p11                 | Wing Wall | —     | Varies                               | 12  | 64     | 4p54                 | do        | —     | 2'-2"                                  | 45  | 215    |
| 5p12                 | Wing Wall | —     | 2 Series of 6 Bars (3'-11" to 6'-3") | 4   | 42     | 5p55                 | Backwall  | —     | 11'-11"                                | 1   | 12     |
| 5p13                 | Wing Wall | —     | Varies                               | 22  | 250    | Total Weight 20,783  |           |       |                                        |     |        |
| 5p14                 | Wing Wall | —     | 1 Series of 4 Bars (9'-8" to 10'-3") | 3   | 43     |                      |           |       |                                        |     |        |
|                      |           |       |                                      |     |        |                      |           |       |                                        |     |        |

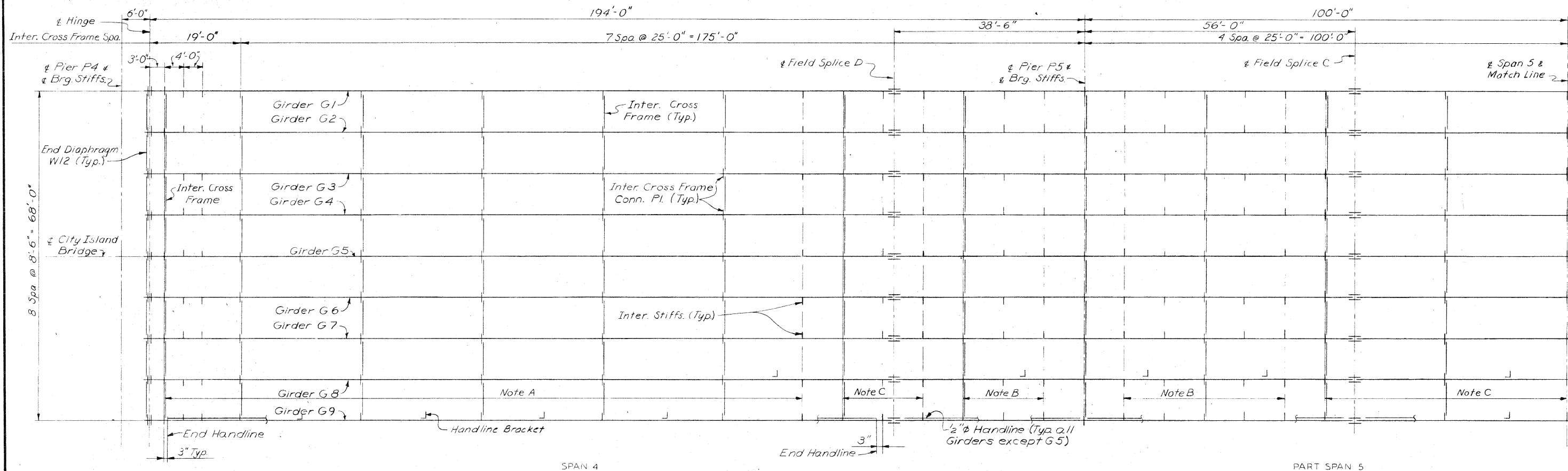
NOTES  
All dimensions are out to out.  
All bends shown are bent around a standard mandrel of D=6d<sub>b</sub> for #3 thru #8; D=8d<sub>b</sub> for #9, #10 & #11.  
Dimensioning, bending and hooks for bent bars shall conform to recommendations indicated in A.C.I. "Manual of Standard Practice for Detailing Reinforced Concrete Structures" except as noted.  
Bar lengths include deductions for bends.

MISSISSIPPI RIVER BRIDGE  
ABUTMENT I3 DETAILS  
AND SUBSTRUCTURE BAR LIST  
DUBUQUE COUNTY, IOWA - GRANT COUNTY, WISCONSIN  
IOWA DEPARTMENT OF TRANSPORTATION

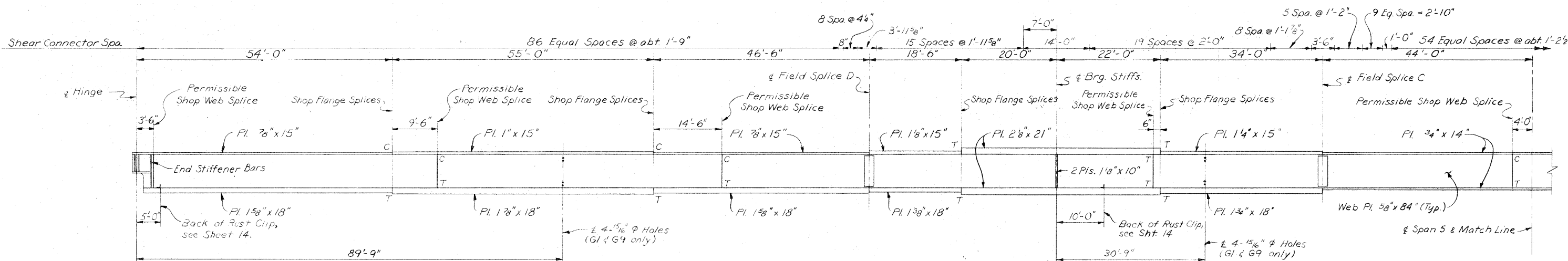
NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.







FRAMING PLAN



NOTES

Work this sheet with Des. Sh. No. 14 & 17

ELEVATION - GIRDERS G1 THRU G9  
Note: Field splice flange plates, intermediate stiffeners and handline not shown.

PIER P5

MISSISSIPPI RIVER BRIDGE  
FRAMING PLAN AND GIRDER ELEVATION  
SPANS 4 AND 5

DUBUQUE COUNTY, IOWA - GRANT COUNTY, WISCONSIN

IOWA DEPARTMENT OF TRANSPORTATION

5818  
DRAWN BY: G. Tylhurst  
CHECKED BY: R. C. Hunt  
June 1978  
April, 1979

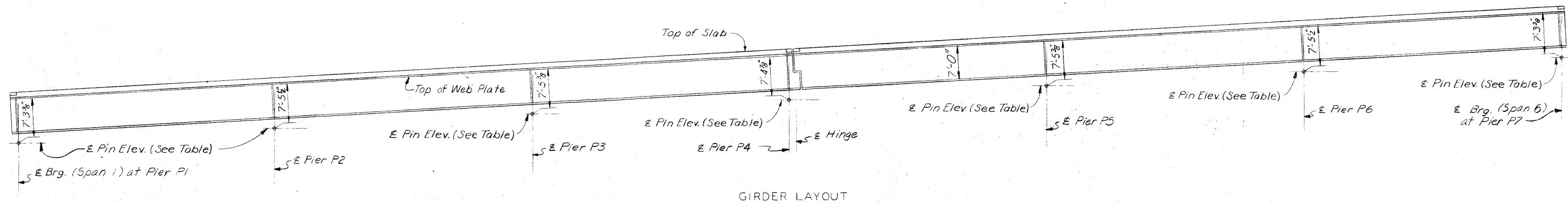
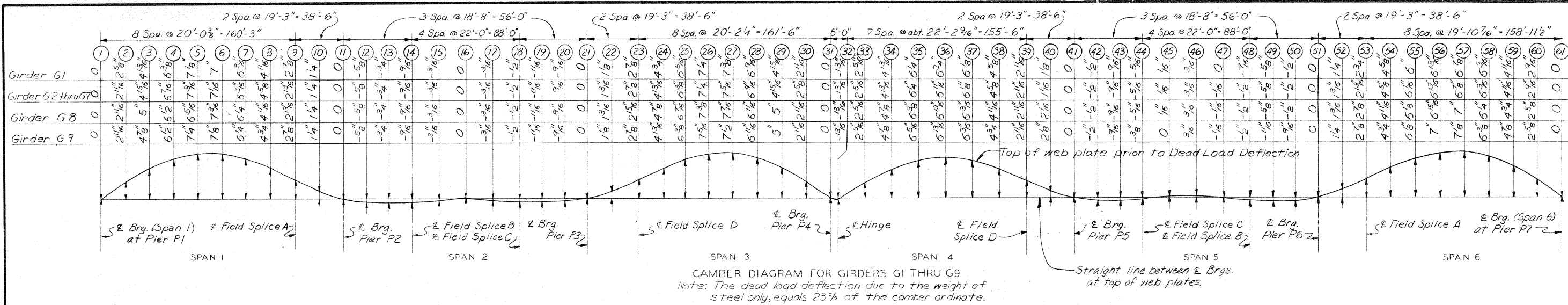
SVERDRUP & PARCEL AND ASSOCIATES, Inc.  
CONSULTING ENGINEERS  
ST. LOUIS, MO.

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DESIGN NO. 1279 FILE NO. 25896 DES. SH. NO. 16 OF 45

PROJECT BRP-561-(4)-38-31 PROJECT SH. NO. 16 OF 45





| ELEVATIONS - TOP OF SLAB |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |
|--------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Girder                   | 1       | 2       | 3       | 4       | 5       | 6       | 7       | 8       | 9       | 10      | 11      | 12      | 13      | 14      | 15      | 16      | 17      | 18      | 19      | 20      | 21      | 22      | 23      | 24      | 25      | 26      | 27      | 28      | 29      | 30      |         |
| G1&G9                    | 650.473 | 650.773 | 651.074 | 651.374 | 651.675 | 651.975 | 652.275 | 652.576 | 652.876 | 653.165 | 653.454 | 653.734 | 654.014 | 654.294 | 654.624 | 654.954 | 655.284 | 655.614 | 655.894 | 656.174 | 656.454 | 656.743 | 657.031 | 657.334 | 657.640 | 657.940 | 658.243 | 658.545 | 658.848 | 659.151 |         |
| G2&G8                    | 650.605 | 650.906 | 651.206 | 651.507 | 651.807 | 652.108 | 652.408 | 652.709 | 653.009 | 653.298 | 653.587 | 653.867 | 654.147 | 654.427 | 654.757 | 655.087 | 655.417 | 655.747 | 656.027 | 656.307 | 656.587 | 656.875 | 657.164 | 657.467 | 657.770 | 658.073 | 658.375 | 658.678 | 658.981 | 659.284 |         |
| G3&G7                    | 650.738 | 651.039 | 651.339 | 651.640 | 651.940 | 652.241 | 652.541 | 652.841 | 653.142 | 653.431 | 653.719 | 653.999 | 654.279 | 654.559 | 654.889 | 655.219 | 655.549 | 655.879 | 656.159 | 656.439 | 656.719 | 657.008 | 657.297 | 657.600 | 657.903 | 658.205 | 658.508 | 658.811 | 659.114 | 659.417 |         |
| G4&G6                    | 650.871 | 651.172 | 651.472 | 651.772 | 652.073 | 652.373 | 652.674 | 652.974 | 653.275 | 653.564 | 653.852 | 654.132 | 654.412 | 654.692 | 655.022 | 655.352 | 655.682 | 656.012 | 656.292 | 656.572 | 656.852 | 657.141 | 657.430 | 657.733 | 658.035 | 658.338 | 658.641 | 658.944 | 659.247 | 659.549 |         |
| G5                       | 651.004 | 651.304 | 651.605 | 651.905 | 652.206 | 652.506 | 652.807 | 653.107 | 653.408 | 653.696 | 653.985 | 654.265 | 654.545 | 654.825 | 655.155 | 655.485 | 655.815 | 656.145 | 656.425 | 656.705 | 656.985 | 657.274 | 657.563 | 657.865 | 658.168 | 658.471 | 658.774 | 659.077 | 659.379 | 659.682 |         |
| Girder                   | 31      | 32      | 33      | 34      | 35      | 36      | 37      | 38      | 39      | 40      | 41      | 42      | 43      | 44      | 45      | 46      | 47      | 48      | 49      | 50      | 51      | 52      | 53      | 54      | 55      | 56      | 57      | 58      | 59      | 60      | 61      |
| G1&G9                    | 659.454 | 659.544 | 659.877 | 660.210 | 660.543 | 660.877 | 661.210 | 661.543 | 661.876 | 662.165 | 662.454 | 662.734 | 663.014 | 663.294 | 663.624 | 663.954 | 664.284 | 664.614 | 664.894 | 665.174 | 665.454 | 665.743 | 666.031 | 666.329 | 666.627 | 666.925 | 667.223 | 667.522 | 667.820 | 668.118 | 668.416 |
| G2&G8                    | 659.587 | 659.677 | 660.010 | 660.343 | 660.676 | 661.010 | 661.343 | 661.676 | 662.009 | 662.298 | 662.587 | 662.867 | 663.147 | 663.427 | 663.757 | 664.087 | 664.417 | 664.747 | 665.027 | 665.307 | 665.587 | 665.875 | 666.164 | 666.462 | 666.760 | 667.058 | 667.356 | 667.654 | 667.952 | 668.251 | 668.549 |
| G3&G7                    | 659.719 | 659.809 | 660.143 | 660.476 | 660.809 | 661.142 | 661.476 | 661.809 | 662.142 | 662.431 | 662.719 | 662.999 | 663.279 | 663.559 | 663.889 | 664.219 | 664.549 | 664.879 | 665.159 | 665.439 | 665.719 | 666.008 | 666.297 | 666.595 | 666.893 | 667.191 | 667.489 | 667.787 | 668.085 | 668.383 | 668.681 |
| G4&G6                    | 659.852 | 659.942 | 660.275 | 660.609 | 660.942 | 661.275 | 661.608 | 661.942 | 662.275 | 662.564 | 662.852 | 663.132 | 663.412 | 663.692 | 664.022 | 664.352 | 664.682 | 665.012 | 665.292 | 665.572 | 665.852 | 666.141 | 666.430 | 666.728 | 667.026 | 667.324 | 667.622 | 667.920 | 668.218 | 668.516 | 668.814 |
| G5                       | 659.985 | 660.075 | 660.408 | 660.741 | 661.075 | 661.408 | 661.741 | 662.074 | 662.408 | 662.696 | 662.985 | 663.265 | 663.545 | 663.825 | 664.155 | 664.485 | 664.815 | 665.145 | 665.425 | 665.705 | 665.985 | 666.274 | 666.563 | 666.861 | 667.159 | 667.457 | 667.755 | 668.053 | 668.351 | 668.649 | 668.947 |

| TABLE OF MOMENTS AND REACTIONS IN FOOT-KIPS AND KIPS |       |                         |        |        |        |        |        |                         |         |         |         |         |         |           |         |         |         |         |         |
|------------------------------------------------------|-------|-------------------------|--------|--------|--------|--------|--------|-------------------------|---------|---------|---------|---------|---------|-----------|---------|---------|---------|---------|---------|
| Girder                                               | Item  | Maximum Positive Moment |        |        |        |        |        | Maximum Negative Moment |         |         |         |         |         | Reactions |         |         |         |         |         |
|                                                      |       | Span 1                  | Span 2 | Span 3 | Span 4 | Span 5 | Span 6 | Pier P2                 | Pier P3 | Pier P4 | Pier P5 | Pier P6 | Pier P7 | Pier P1   | Pier P2 | Pier P3 | Pier P4 | Pier P5 | Pier P6 |
| G2 Thru G8                                           | NCDL  | 4182                    | 746    | 3896   | 3953   | 786    | 4156   | 6018                    | 5794    | 545     | 5651    | 6081    | 1071    | 308.5     | 300.8   | 2205    | 298.9   | 309.8   | 106.8   |
|                                                      | SDL   | 510                     | 199    | 479    | 472    | 192    | 512    | 586                     | 566     | 64      | 585     | 581     | 12.6    | 34.0      | 33.4    | 25.9    | 33.6    | 33.9    | 12.6    |
|                                                      | FWS   | 513                     | 201    | 483    | 475    | 193    | 515    | 590                     | 569     | 64      | 589     | 584     | 12.7    | 34.2      | 33.6    | 26.1    | 33.8    | 34.1    | 12.7    |
|                                                      | LL+I  | 3054                    | 2236   | 3056   | 2964   | 2154   | 3037   | 3055                    | 3024    | 369     | 3154    | 3012    | 79.7    | 162.7     | 162.2   | 135.7   | 162.0   | 161.6   | 79.6    |
|                                                      | Total | —                       | —      | —      | —      | —      | —      | 10249                   | 9953    | 1042    | 9979    | 10258   | 212.1   | 539.4     | 530.0   | 408.2   | 528.3   | 539.4   | 211.7   |
| G1 & G9                                              | NCDL  | 4152                    | 737    | 3868   | 3925   | 777    | 4127   | 5971                    | 5749    | 541     | 5606    | 6034    | 106.3   | 306.1     | 298.4   | 218.9   | 296.7   | 307.4   | 106.0   |
|                                                      | SDL   | 443                     | 171    | 416    | 410    | 165    | 444    | 514                     | 496     | 56      | 512     | 509     | 10.9    | 29.7      | 29.1    | 22.5    | 29.3    | 29.5    | 11.0    |
|                                                      | FWS   | 508                     | 196    | 478    | 471    | 189    | 510    | 590                     | 569     | 64      | 588     | 585     | 12.6    | 34.0      | 33.4    | 25.9    | 33.6    | 33.9    | 12.6    |
|                                                      | LL+I  | 2739                    | 2001   | 2741   | 2658   | 1929   | 2724   | 2766                    | 2737    | 331     | 2847    | 2727    | 67.8    | 142.5     | 142.1   | 118.1   | 141.9   | 141.6   | 67.7    |
|                                                      | Total | —                       | —      | —      | —      | —      | —      | 9841                    | 9551    | 992     | 9553    | 9855    | 197.6   | 512.3     | 503.0   | 385.4   | 504.5   | 512.4   | 197.3   |

| ELEVATIONS - PIN |         |         |         |         |         |         |         |
|------------------|---------|---------|---------|---------|---------|---------|---------|
| Girder           | Pier P1 | Pier P2 | Pier P3 | Pier P4 | Pier P5 | Pier P6 | Pier P7 |
| G1 & G9          | 642.191 | 644.995 | 648.006 | 651.048 | 654.006 | 656.995 | 660.134 |
| G2 & G8          | 642.324 | 645.128 | 648.139 | 651.180 | 654.139 | 657.128 | 660.267 |
| G3 & G7          | 642.457 | 645.261 | 648.271 | 651.313 | 654.271 | 657.261 | 660.400 |
| G4 & G6          | 642.590 | 645.394 | 648.404 | 651.446 | 654.404 | 657.394 | 660.533 |
| G5               | 642.723 | 645.527 | 648.537 | 651.579 | 654.537 | 657.527 | 660.666 |

**MISSISSIPPI RIVER BRIDGE**  
 GIRDER SPANS 1 THRU 6  
 CAMBER, MOMENTS AND REACTIONS  
 AND FINISHED ELEVATIONS  
**DUBUQUE COUNTY, IOWA - GRANT COUNTY, WISCONSIN**  
 IOWA DEPARTMENT OF TRANSPORTATION

Note: The Maximum Positive Moments shown are not additive.

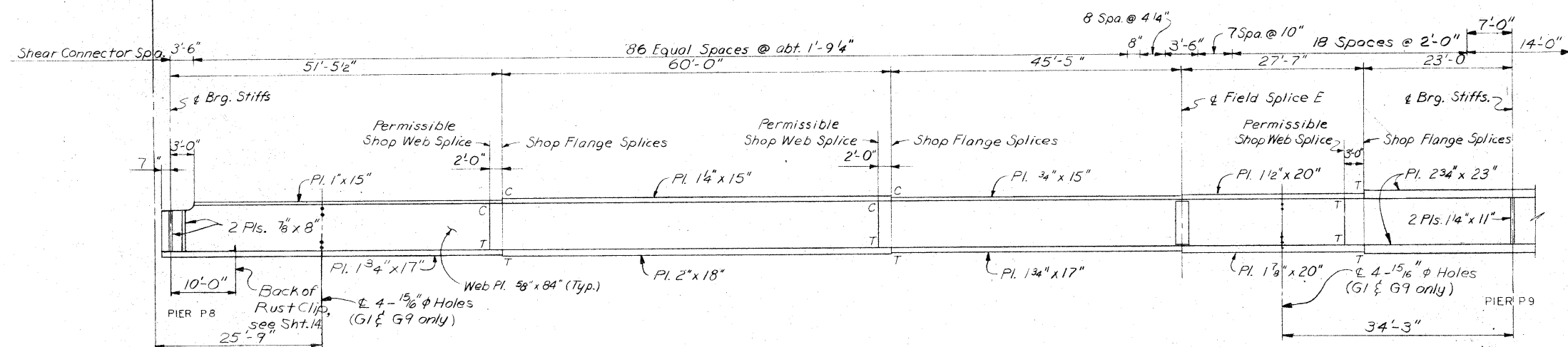
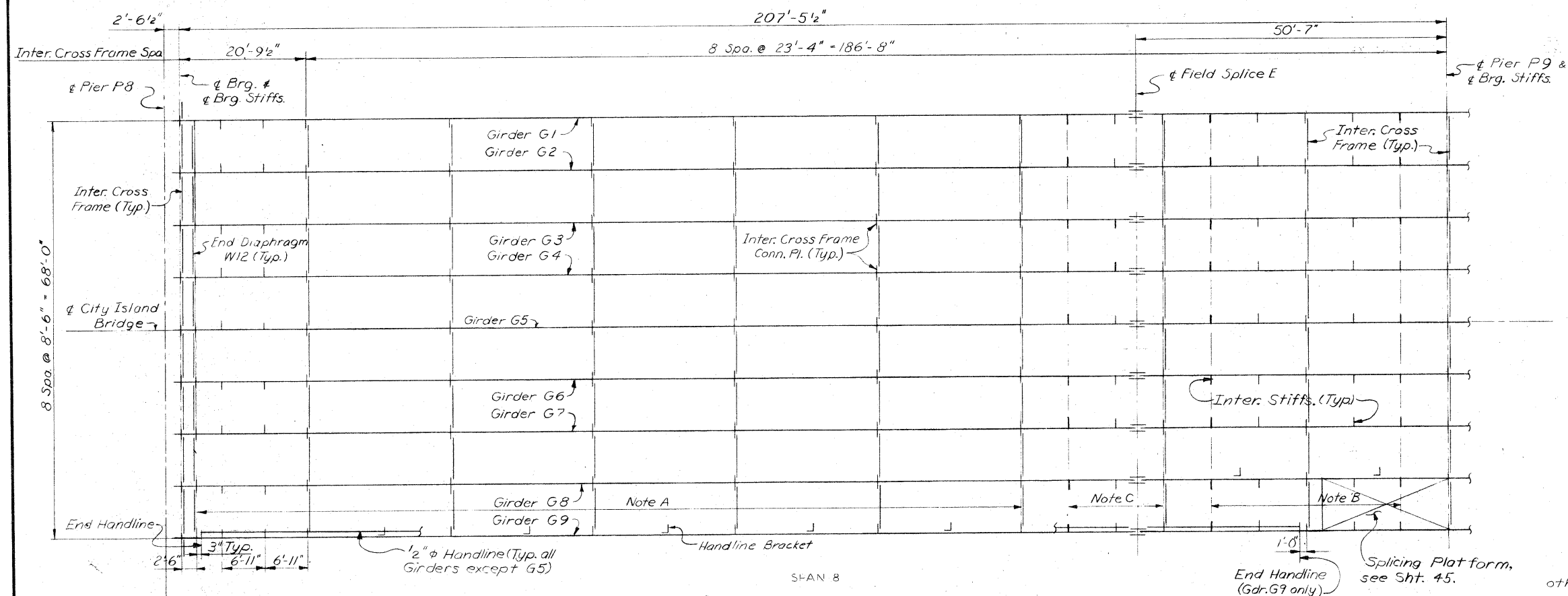
NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

SVERDRUP & PARCEL AND ASSOCIATES, Inc.  
 CONSULTING ENGINEERS  
 ST. LOUIS, MO.

DESIGN NO. 1279 FILE NO. 25896 DES. SH. NO. 18 OF 45

PROJECT BRP-561-4(4)-38-31 PROJECT SH. NO. 18 OF 45

DRAWN BY: G. Tyhurst August 1978  
 CHECKED BY: R.C. Hunt, April, 1979  
 5818 785237



NOTES

*Work this sheet with Des. Sh. No. 14.*

ELEVATION - GIRDERS G1 THRU G9  
Note: Field splice flange plates, intermediate stiffeners  
and handline not shown.

## STEEL GIRDER SPANS

## STRUCTURAL STEEL NOTES

Structural Steel for girder spans to be ASTM A588 unless otherwise noted.

All stiffeners, cross frame connections and field splices are normal to grade.

Shear connector studs are to be welded in the shop or field at the locations shown on the design plans and approved shop drawings.

Bottom flanges are to be perpendicular to webs at reaction points. Top and bottom flanges are to be perpendicular to webs at splices.

Fill thicknesses shown at field splices are based on nominal girder dimensions. These thicknesses are to be verified or adjusted during fabrication to secure a close fit. Each fill plate shall fit to the nearest  $\frac{1}{16}$ " in thickness. Single fills are required at all fill locations.

The Contractor, at his option, may incorporate additional field bolted splices for the girder spans. Additional splices, if used, shall be designed by the Contractor, and shall be submitted to the Engineer for review. No payment will be made for the extra material required for these splices.

# MISSISSIPPI RIVER BRIDGE

FRAMING PLAN AND GIRDER ELEVATION-SPAN 8

AND STEEL GIRDER STRUCTURAL STEEL NOTES

DUBUQUE COUNTY, IOWA - GRANT COUNTY, WISCONSIN

IOWA DEPARTMENT OF TRANSPORTATION

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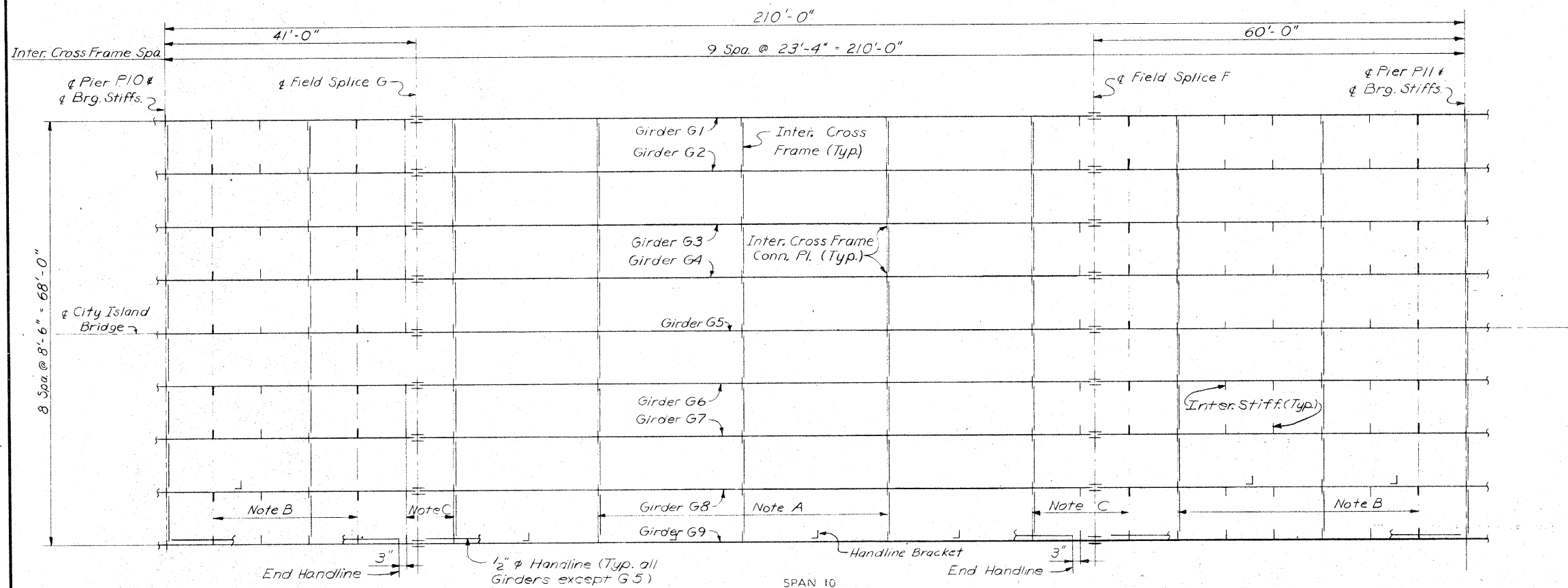
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DESIGN NO. 1279      FILE NO. 25896      DES. SH. NO. 19 OF 45

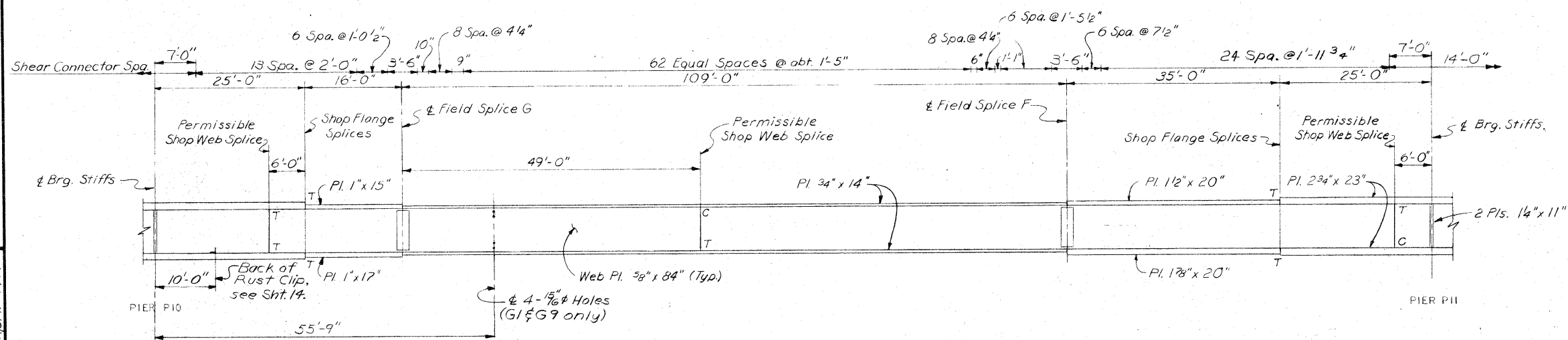
PROJECT BRF-561-4(4)-38-31 PROJECT SH. NO. 19 OF 45

|        |                        |             |
|--------|------------------------|-------------|
| 5818   | DRAWN BY: G. Tyhurst   | June 1978   |
| 285/67 | CHECKED BY: R.C. Hunt, | April, 1979 |





FRAMING PLAN



NOTES

Work this sheet with Des. Sh. No. 14

ELEVATION - GIRDERS G1 THRU G9  
Note: Field splice flange plates, intermediate stiffeners and handline not shown.

MISSISSIPPI RIVER BRIDGE

FRAMING PLAN AND GIRDER ELEVATION  
SPAN 10

DUBUQUE COUNTY, IOWA - GRANT COUNTY, WISCONSIN  
IOWA DEPARTMENT OF TRANSPORTATION

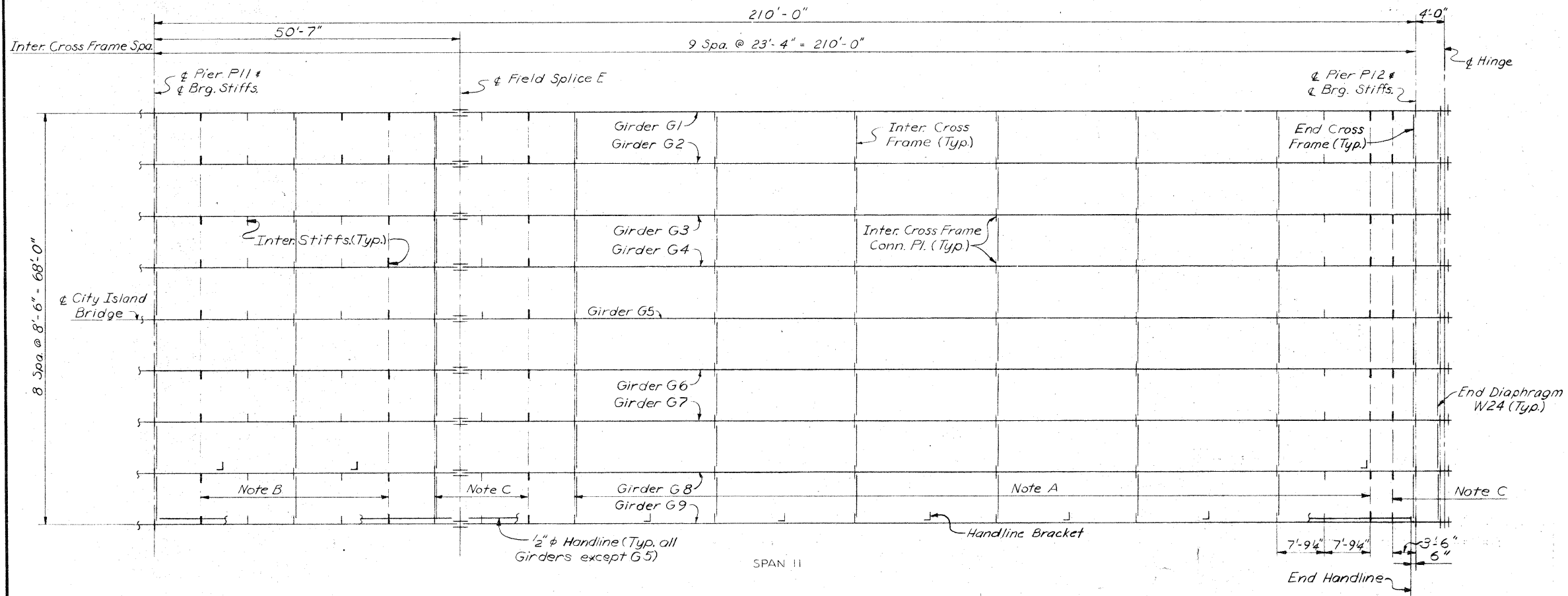
SVERDRUP & PARCEL AND ASSOCIATES, Inc.  
CONSULTING ENGINEERS  
ST. LOUIS, MO.

NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

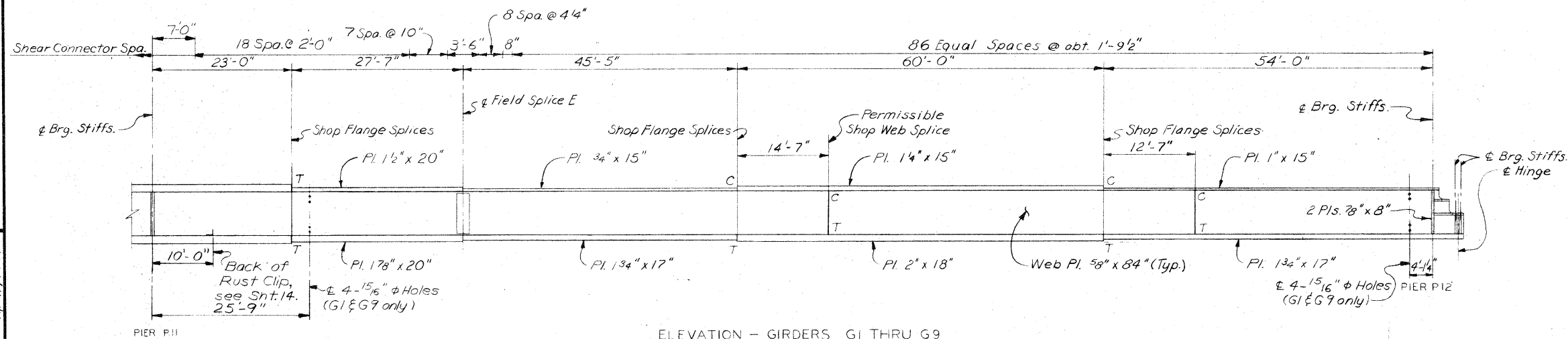
DESIGN NO. 1279 FILE NO. 25896 DES. SH. NO. 21 OF 45

PROJECT BRP-561-4 (4)-38-31 PROJECT SH. NO. 21 OF 45

5818 DRAWN BY: G. Tylhurst June 1978  
785179 CHECKED BY: R.C. Hunt April 1979



FRAMING PLAN



NOTES

Work this sheet with Des. Sh. No. 14.

ELEVATION - GIRDERS G1 THRU G9  
Note: Field splice flange plates, intermediate stiffeners and handline not shown.

MISSISSIPPI RIVER BRIDGE  
FRAMING PLAN AND GIRDER ELEVATION  
SPAN II

DUBUQUE COUNTY, IOWA - GRANT COUNTY, WISCONSIN  
IOWA DEPARTMENT OF TRANSPORTATION

SVERDRUP & PARCEL AND ASSOCIATES, Inc.  
CONSULTING ENGINEERS  
ST. LOUIS, MO.

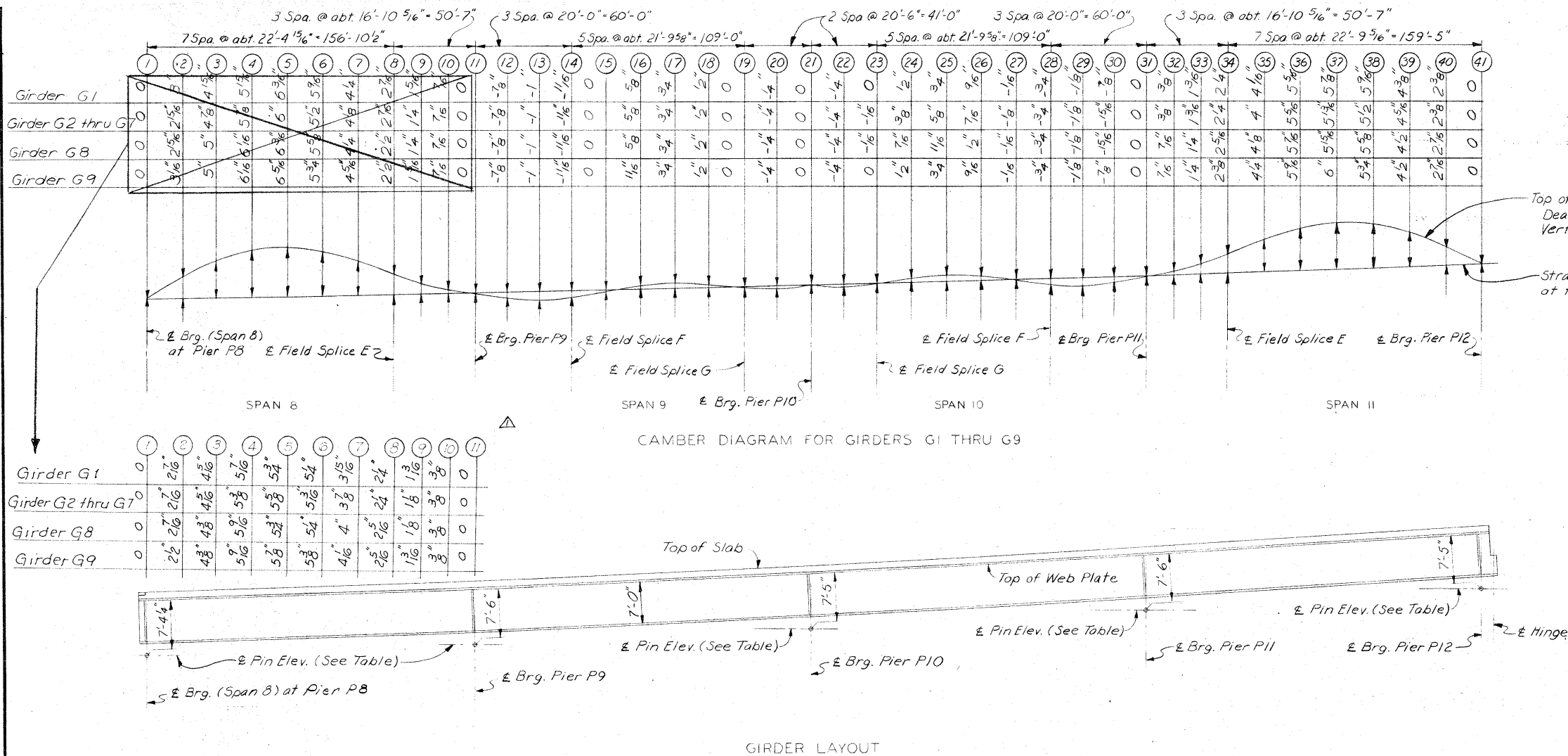
NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

DESIGN NO. 1279 FILE NO. 25896 DES. SH. NO. 22 OF 45

PROJECT BRP-561-4(4)-38-31 PROJECT SH. NO. 22 OF 45

5818  
DRAWN BY: G. Tyhurst  
CHECKED BY: R.C. Hunt,  
June 1978  
April, 1979

5818  
785251  
DRAWN BY: G. Tylhurst  
CHECKED BY: R.C. Hunt,  
September 1978  
April, 1979



| VERTICAL CURVE ORDINATES<br>GIRDERS G1 THRU G9 |          |     |          |
|------------------------------------------------|----------|-----|----------|
| Pt.                                            | Ordinate | Pt. | Ordinate |
| 1                                              | 0        | 22  | 9 1/16"  |
| 2                                              | 0        | 23  | 1 1/16"  |
| 3                                              | 3 3/8"   | 24  | 1 3/8"   |
| 4                                              | 1 5/16"  | 25  | 1 9/16"  |
| 5                                              | 1/16"    | 26  | 1 5/8"   |
| 6                                              | 1 3/16"  | 27  | 1 9/16"  |
| 7                                              | 1 3/8"   | 28  | 1 3/8"   |
| 8                                              | 1"       | 29  | 1"       |
| 9                                              | 3/4"     | 30  | 9/16"    |
| 10                                             | 7/16"    | 31  | 0        |
| 11                                             | 0        | 32  | 1/2"     |
| 12                                             | 9/16"    | 33  | 7/8"     |
| 13                                             | 1"       | 34  | 1 3/16"  |
| 14                                             | 1 3/8"   | 35  | 1 1/2"   |
| 15                                             | 1 9/16"  | 36  | 1 5/8"   |
| 16                                             | 1 5/8"   | 37  | 1 5/8"   |
| 17                                             | 1 9/16"  | 38  | 1 7/16"  |
| 18                                             | 1 3/8"   | 39  | 1 3/8"   |
| 19                                             | 1 1/16"  | 40  | 5/8"     |
| 20                                             | 9/16"    | 41  | 0        |
| 21                                             | 0        | -   | -        |

| Pt. | Ordinate |
|-----|----------|
| 1   | 0        |
| 2   | 1/2"     |
| 3   | 1"       |
| 4   | 1 5/16"  |
| 5   | 1 1/2"   |
| 6   | 1 9/16"  |
| 7   | 1 1/16"  |
| 8   | 1 3/16"  |
| 9   | 7/8"     |
| 10  | 1/2"     |
| 11  | 0        |

#### NOTES

Camber includes correction for vertical curve.  
The dead load deflection due to the weight of steel only, equals 23% of the full dead load deflection (camber ordinate ~~minus~~ the vertical curve ordinate.) plus  $\Delta$

Note: The Maximum Positive Moments shown are not additive.

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ST. LOUIS, MO.

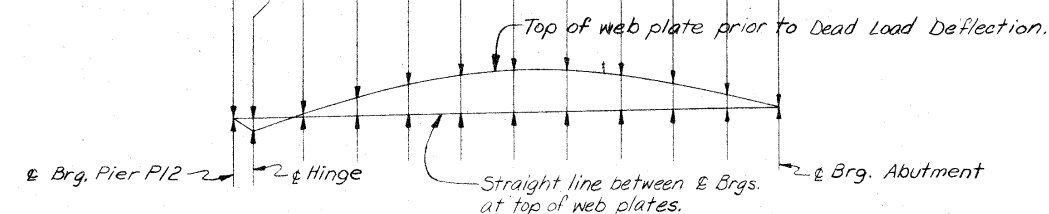
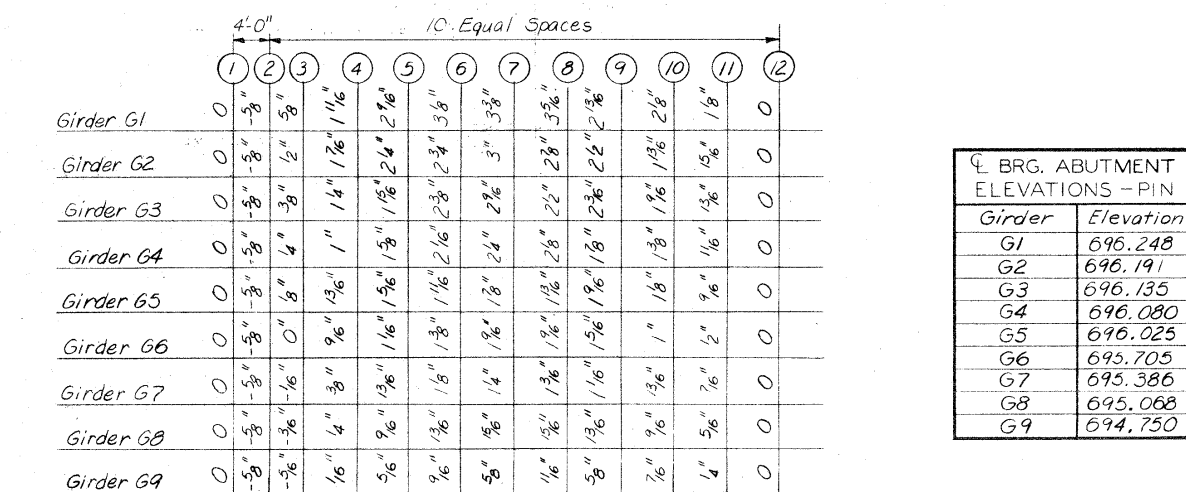
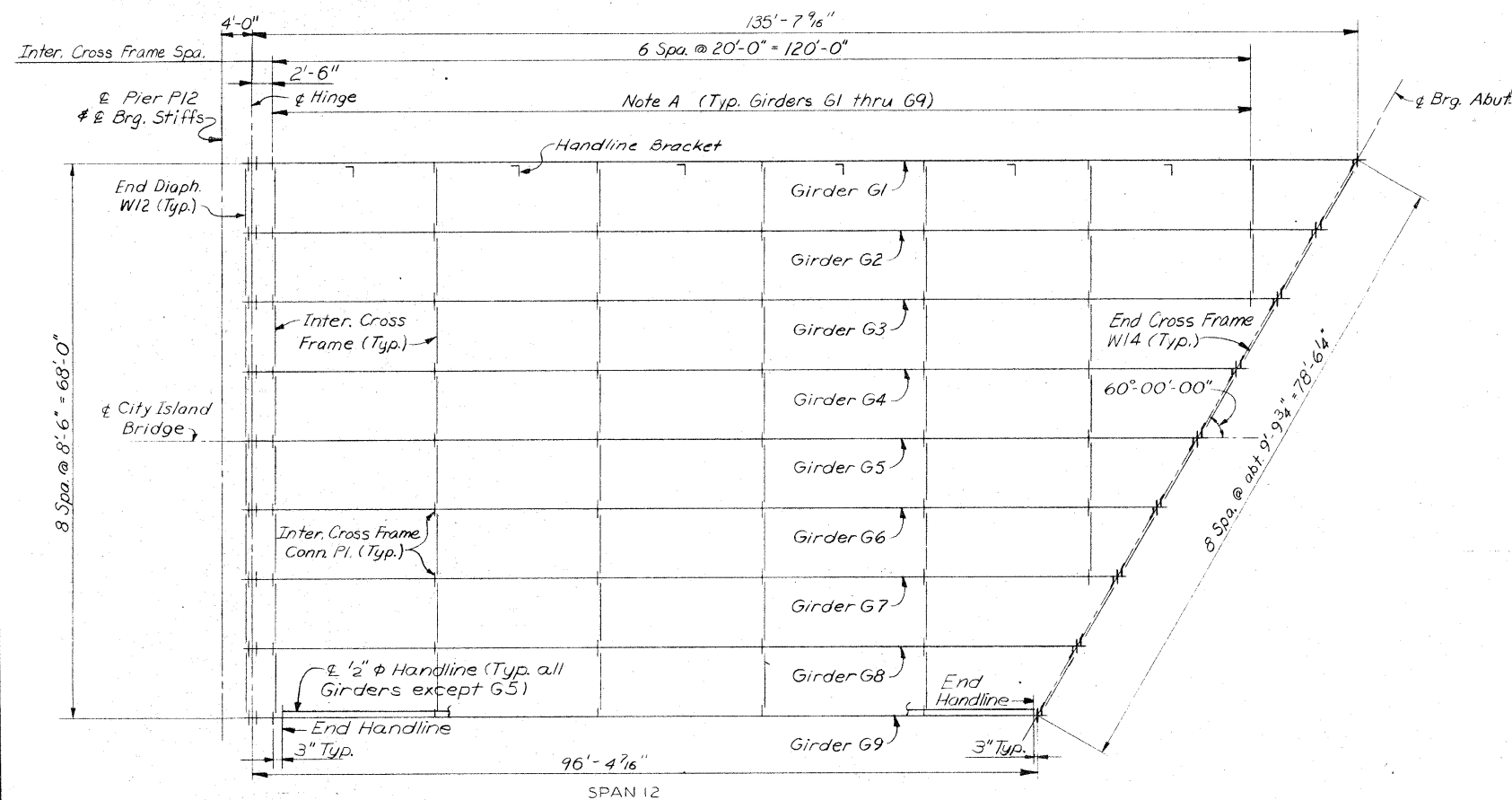
| TABLE OF MOMENTS AND REACTIONS IN FOOT-KIPS AND KIPS |       |                         |        |         |         |                         |          |          |          |           |         |          |          |          |
|------------------------------------------------------|-------|-------------------------|--------|---------|---------|-------------------------|----------|----------|----------|-----------|---------|----------|----------|----------|
| Girder                                               | Item  | Maximum Positive Moment |        |         |         | Maximum Negative Moment |          |          |          | Reactions |         |          |          |          |
|                                                      |       | Span 8                  | Span 9 | Span 10 | Span 11 | Pier P9                 | Pier P10 | Pier P11 | Pier P12 | Pier P8   | Pier P9 | Pier P10 | Pier P11 | Pier P12 |
| G2<br>Thru<br>G8                                     | NCDL  | 4117                    | 1337   | 1362    | 4007    | 8075                    | 4078     | 8014     | 224      | 106.3     | 356.2   | 244.5    | 354.5    | 173.5    |
|                                                      | SDL   | 499                     | 225    | 226     | 484     | 749                     | 466      | 746      | 28       | 12.3      | 36.6    | 29.0     | 36.5     | 20.6     |
|                                                      | FWS   | 516                     | 232    | 234     | 500     | 774                     | 481      | 771      | 29       | 12.7      | 37.9    | 30.0     | 37.7     | 21.2     |
|                                                      | LL+I  | 3265                    | 2388   | 2398    | 3253    | 3914                    | 3095     | 3929     | 204      | 81.7      | 175.3   | 160.0    | 175.4    | 115.5    |
| G1 & G9                                              | Total | -                       | -      | -       | -       | 13512                   | 8120     | 13460    | 485      | 213.0     | 606.0   | 463.5    | 604.1    | 330.8    |
|                                                      | NCDL  | 4176                    | 1356   | 1384    | 4052    | 8191                    | 4145     | 8122     | 253      | 107.8     | 361.1   | 248.3    | 359.3    | 183.3    |
|                                                      | SDL   | 498                     | 222    | 224     | 481     | 754                     | 467      | 751      | 29       | 12.3      | 36.6    | 29.0     | 36.5     | 20.9     |
|                                                      | FWS   | 514                     | 229    | 231     | 497     | 779                     | 483      | 776      | 30       | 12.7      | 37.9    | 30.0     | 37.7     | 21.6     |
|                                                      | LL+I  | 2927                    | 2138   | 2148    | 2916    | 3541                    | 2798     | 3554     | 183      | 69.6      | 153.4   | 140.1    | 154.0    | 101.1    |
|                                                      | Total | -                       | -      | -       | -       | 13265                   | 7893     | 13203    | 495      | 202.4     | 589.0   | 447.4    | 587.5    | 326.9    |

| ELEVATIONS - PIN |         |         |          |          |          |
|------------------|---------|---------|----------|----------|----------|
| Girder           | Pier P8 | Pier P9 | Pier P10 | Pier P11 | Pier P12 |
| G1 & G9          | 670.188 | 673.554 | 678.279  | 683.939  | 690.868  |
| G2 & G8          | 670.321 | 673.687 | 678.411  | 684.072  | 691.001  |
| G3 & G7          | 670.453 | 673.820 | 678.544  | 684.204  | 691.134  |
| G4 & G6          | 670.586 | 673.953 | 678.677  | 684.337  | 691.267  |
| G5               | 670.719 | 674.086 | 678.810  | 684.470  | 691.399  |

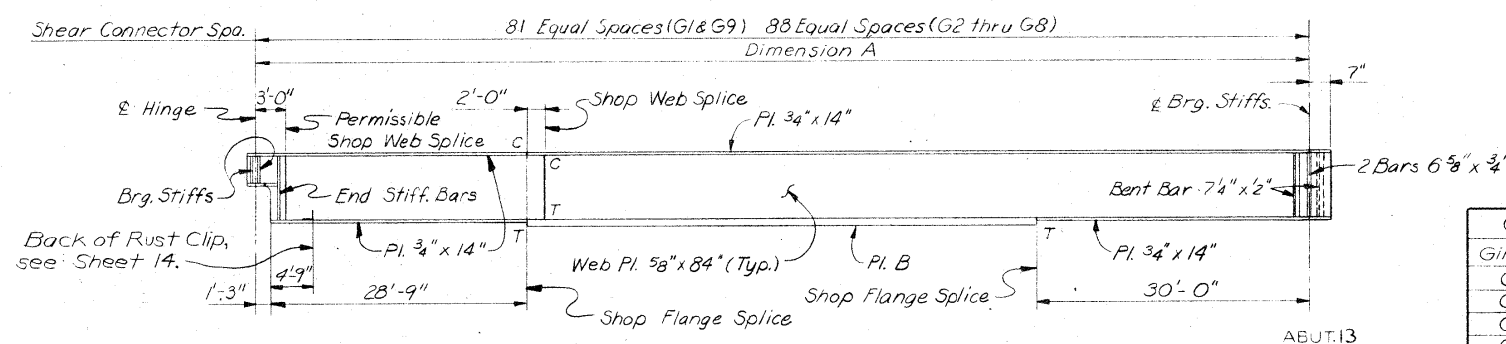
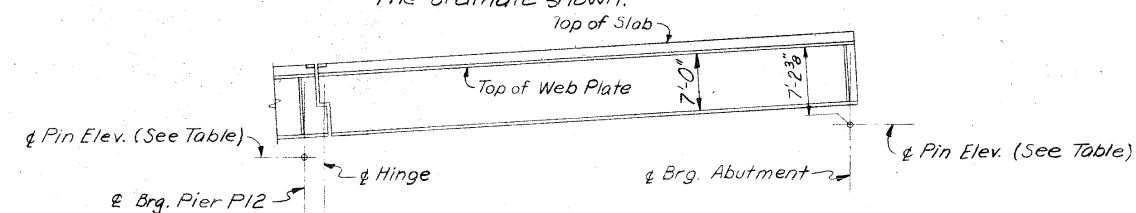
Revised (7-28-80) Camber diagram & vertical curve ordinates for Girders G1 thru G9 to Pt. 1 thru 11 are corrected. Notes is revised. All changes are identified by  $\Delta$ .

NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

MISSISSIPPI RIVER BRIDGE  
GIRDER SPANS 8 THRU 11  
CAMBER, MOMENTS AND REACTIONS  
AND FINISHED ELEVATIONS  
DUBUQUE COUNTY, IOWA - GRANT COUNTY, WISCONSIN  
IOWA DEPARTMENT OF TRANSPORTATION



*Note: Camber diagram includes correction for vertical curve. The dead load deflection due to the weight of steel only, equals 26 % of the ordinate shown.*



ELEVATION - GIRDERS G1 THRU G9  
Note: Handline not shown.

NOTES

Work this sheet with Des. Sh. No. 14 & 23

| GIRDER VARIABLES |              |              |
|------------------|--------------|--------------|
| Girder           | Dim. A       | Plate E      |
| G1               | 135'-7 7/8"  | 14" x 16     |
| G2               | 130'-8 1/8"  | 1 1/8" x 16  |
| G3               | 125'-9 3/4"  | 1" x 16"     |
| G4               | 120'-10 3/8" | 1" x 14"     |
| G5               | 116'-0"      | 7 1/8" x 14" |
| G6               | 111'-0"      | 3 1/2" x 14" |
| G7               | 106'-2 1/4"  | 3 1/2" x 14" |
| G8               | 101'-3 5/8"  | 3 1/2" x 14" |
| G9               | 96'-4 1/8"   | 3 1/2" x 14" |

| ELEVATIONS - TOP OF SLAB |         |         |         |         |         |         |         |         |         |         |         |         |
|--------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Girder                   | 1       | 2       | 3       | 4       | 5       | 6       | 7       | 8       | 9       | 10      | 11      | 12      |
| G1                       | 699.285 | 699.426 | 699.909 | 700.392 | 700.884 | 701.377 | 701.878 | 702.384 | 702.891 | 703.406 | 703.922 | 704.446 |
| G2                       | 699.418 | 699.559 | 700.024 | 700.489 | 700.963 | 701.440 | 701.922 | 702.405 | 702.896 | 703.391 | 703.886 | 704.389 |
| G3                       | 699.550 | 699.692 | 700.139 | 700.590 | 701.041 | 701.500 | 701.963 | 702.430 | 702.901 | 703.372 | 703.851 | 704.335 |
| G4                       | 699.683 | 699.824 | 700.254 | 700.687 | 701.123 | 701.563 | 702.007 | 702.451 | 702.902 | 703.357 | 703.816 | 704.278 |
| G5                       | 699.816 | 699.957 | 700.369 | 700.783 | 701.202 | 701.623 | 702.048 | 702.476 | 702.908 | 703.343 | 703.781 | 704.223 |
| G6                       | 699.683 | 699.824 | 700.218 | 700.615 | 701.015 | 701.417 | 701.827 | 702.236 | 702.648 | 703.064 | 703.482 | 703.903 |
| G7                       | 699.550 | 699.692 | 700.067 | 700.446 | 700.831 | 701.215 | 701.603 | 701.992 | 702.385 | 702.785 | 703.183 | 703.584 |
| G8                       | 699.418 | 699.559 | 699.917 | 700.281 | 700.644 | 701.010 | 701.382 | 701.753 | 702.126 | 702.502 | 702.884 | 703.265 |
| G9                       | 699.285 | 699.426 | 699.766 | 700.112 | 700.457 | 700.808 | 701.158 | 701.510 | 701.867 | 702.224 | 702.586 | 702.947 |

| TABLE OF MOMENTS AND REACTIONS IN FOOT-KIPS AND KIPS |                         |      |      |      |      |      |      |      |      |                       |       |       |       |       |       |       |       |       |
|------------------------------------------------------|-------------------------|------|------|------|------|------|------|------|------|-----------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| Item                                                 | Maximum Positive Moment |      |      |      |      |      |      |      |      | Reactions at Abutment |       |       |       |       |       |       |       |       |
|                                                      | G1                      | G2   | G3   | G4   | G5   | G6   | G7   | G8   | G9   | G1                    | G2    | G3    | G4    | G5    | G6    | G7    | G8    | G9    |
| NCDL                                                 | 3025                    | 2800 | 2594 | 2389 | 2183 | 2007 | 1830 | 1654 | 1498 | 88.3                  | 84.9  | 81.6  | 78.2  | 74.9  | 71.6  | 68.4  | 65.1  | 62.1  |
| SDL                                                  | 312                     | 290  | 270  | 249  | 229  | 211  | 192  | 174  | 158  | 9.2                   | 8.9   | 8.6   | 8.2   | 7.9   | 7.6   | 7.2   | 6.9   | 6.5   |
| FWS                                                  | 359                     | 333  | 310  | 286  | 263  | 242  | 221  | 200  | 181  | 10.5                  | 10.2  | 9.8   | 9.4   | 9.0   | 8.6   | 8.3   | 7.9   | 7.5   |
| LL+I                                                 | 1792                    | 1920 | 1844 | 1768 | 1692 | 1615 | 1539 | 1462 | 1243 | 56.7                  | 65.9  | 65.7  | 65.6  | 65.4  | 65.3  | 65.1  | 65.0  | 53.9  |
| Total                                                | 5488                    | 5343 | 5018 | 4692 | 4367 | 4075 | 3782 | 3490 | 3080 | 164.7                 | 169.9 | 165.7 | 161.4 | 157.2 | 153.1 | 149.0 | 144.9 | 129.4 |

**MISSISSIPPI RIVER BRIDGE**  
SPAN 12 FRAMING PLAN,  
GIRDER ELEVATIONS, CAMBER, MOMENTS  
AND REACTIONS AND FINISHED ELEVATIONS  
**DUBUQUE COUNTY, IOWA - GRANT COUNTY, WISCONSIN**  
IOWA DEPARTMENT OF TRANSPORTATION

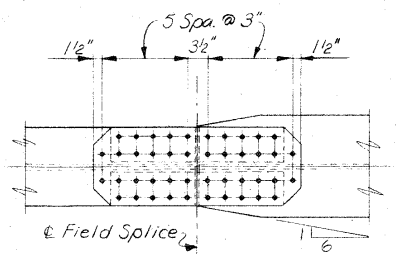
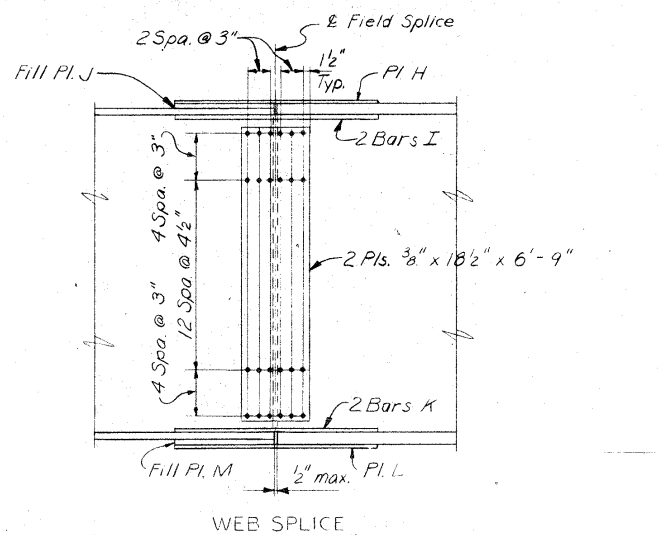
**NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.**

DESIGN NO. 1279 FILE NO. 25896 DES. SH. NO. 24 OF 45

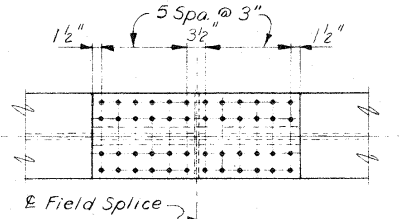
PROJECT ~~ERF~~-561-4(4)--38-31 PROJECT SH. NO. 24 OF 45

**SVERDRUP & PARCEL AND ASSOCIATES, Inc.**  
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ST. LOUIS, MO.

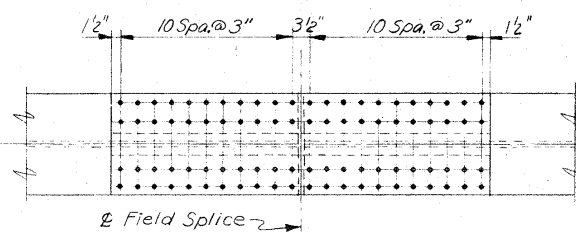
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|--------|------------------------|-------------|
| 5818   | DRAWN BY: G. Tyhurst   | October, 78 |
| 78S266 | CHECKED BY: R. C. Hunt | April, 1979 |



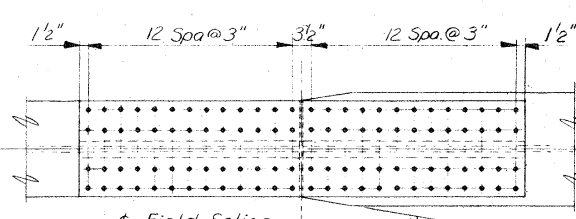
TOP & BOTT. FLG. SPLICE B, C, F, & G  
TOP FLG. SPLICE E



TOP FLG. SPLICE A & D

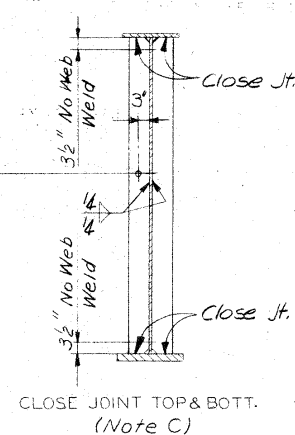
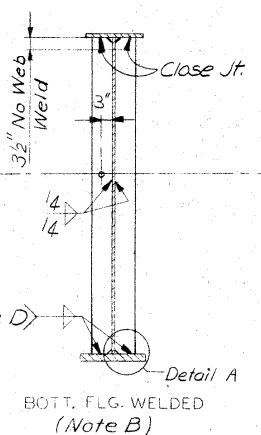
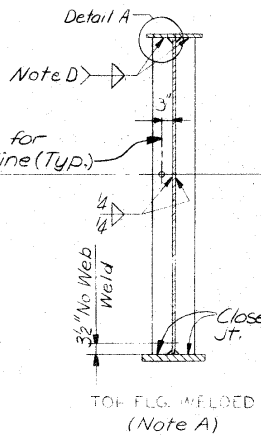
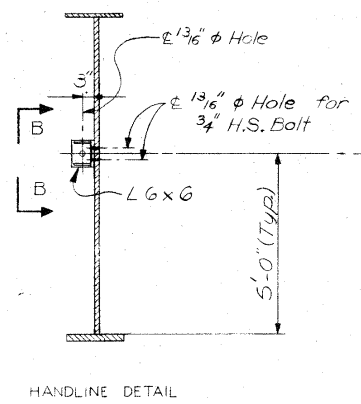
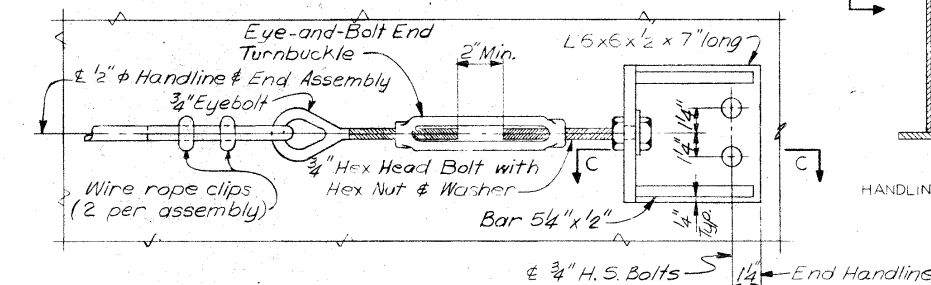
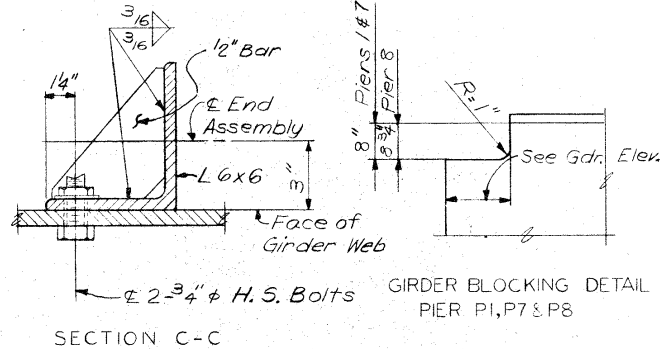
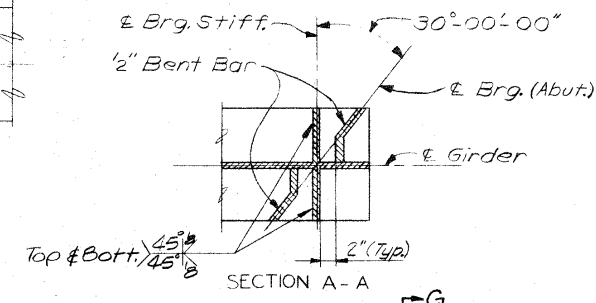
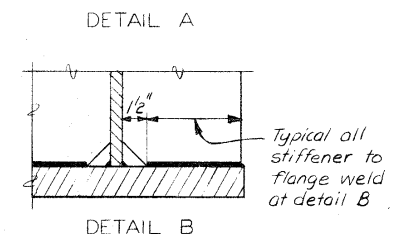
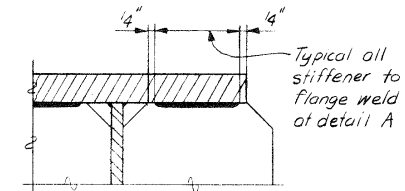


BOTT. FLG. SPLICE A & D

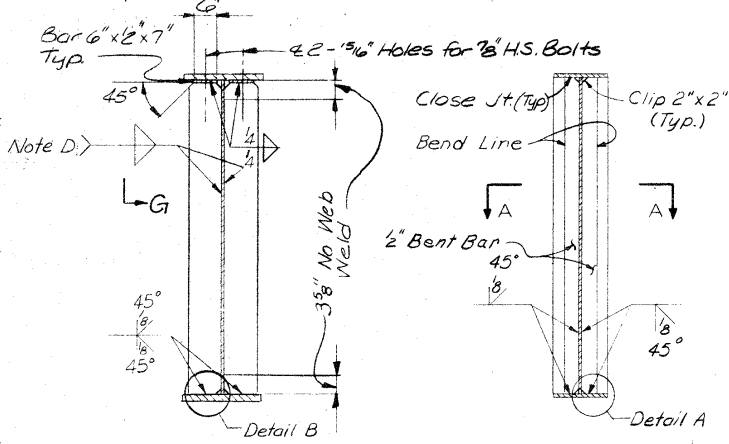


BOTT. FLG. SPLICE E

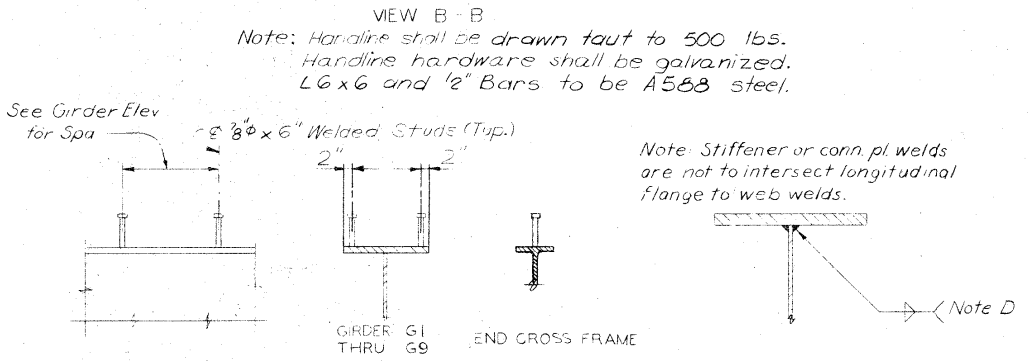
| FIELD SPLICE VARIABLES |            |          |         |          |         |          |          |
|------------------------|------------|----------|---------|----------|---------|----------|----------|
| Splice                 | No. Req'd. | Pl. H    | Bar I   | Pl. J    | Bar K   | Pl. L    | Pl. M    |
| A                      | 18         | 1/2"x15" | 6"x3/4" | 3/8"x15" | 7"x1"   | 7/8"x18" | 4"x18"   |
| B                      | 18         | 1/2"x14" | 6"x1/2" | 3/8"x14" | 6"x1/2" | 1/2"x14" | 1"x14"   |
| C                      | 18         | 1/2"x15" | 6"x1/2" | 1/2"x14" | 6"x1/2" | 1/2"x14" | 1"x14"   |
| D                      | 18         | 1/2"x15" | 6"x3/4" | 1/2"x15" | 7"x1"   | 7/8"x18" | 4"x18"   |
| E                      | 18         | 1/2"x15" | 6"x1/2" | 3/4"x15" | 7"x1/4" | 1"x17"   | 8"x17"   |
| F                      | 18         | 1/2"x14" | 6"x1/2" | 3/4"x14" | 6"x1/2" | 1/2"x14" | 1/8"x14" |
| G                      | 18         | 1/2"x14" | 6"x1/2" | 1/2"x14" | 6"x1/2" | 1/2"x14" | 4"x14"   |



INTERMEDIATE STIFFENERS  
Note: Clip stiff. 2"x2" top & bottom.



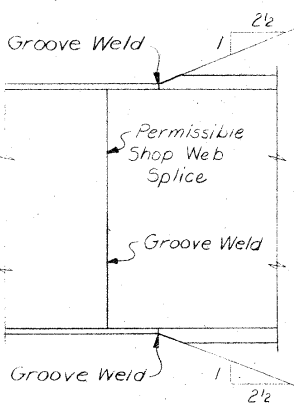
BEARING STIFFENERS  
Note: Clip stiff. 1 1/2"x1 1/2" top & bott.  
CONNECTION PLATES AT ABUTMENT I3  
Brg. stiff. not shown.



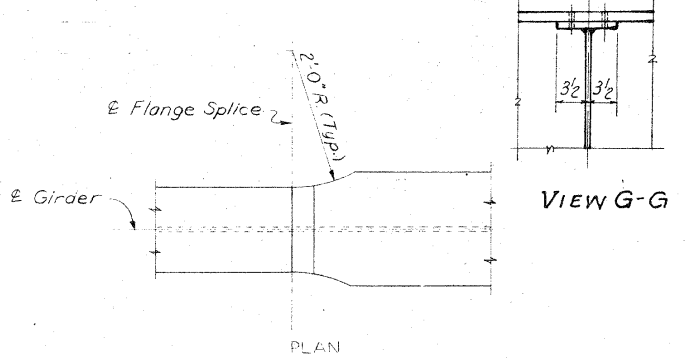
SHEAR CONNECTOR DETAILS

FLANGE TO WEB WELDING

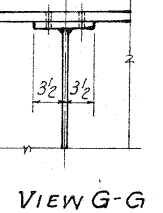
Note D: Size of fillet welds;  
For 3/4" Flange Pls. use 1/4"  
Flange Pls. over 3/4" to 1 1/2" use 5/16"  
Flange Pls. over 1 1/2" to 2 1/4" use 3/8"  
Flange Pls. over 2 1/4" to 6" use 1/2"



ELEVATION



SHOP SPLICE



VIEW G-G

NOTES  
Work this sheet with Des. Sh. No. 14 thru 17 & 19 thru 22 & 24  
Handline shall be 6 x 7 Zinc Coated Steel Structural  
Wire Rope conforming to ASTM A603, with Class A  
coating.

# MISSISSIPPI RIVER BRIDGE

## GIRDER SPANS-DETAILS

DUBUQUE COUNTY, IOWA - GRANT COUNTY, WISCONSIN  
IOWA DEPARTMENT OF TRANSPORTATION

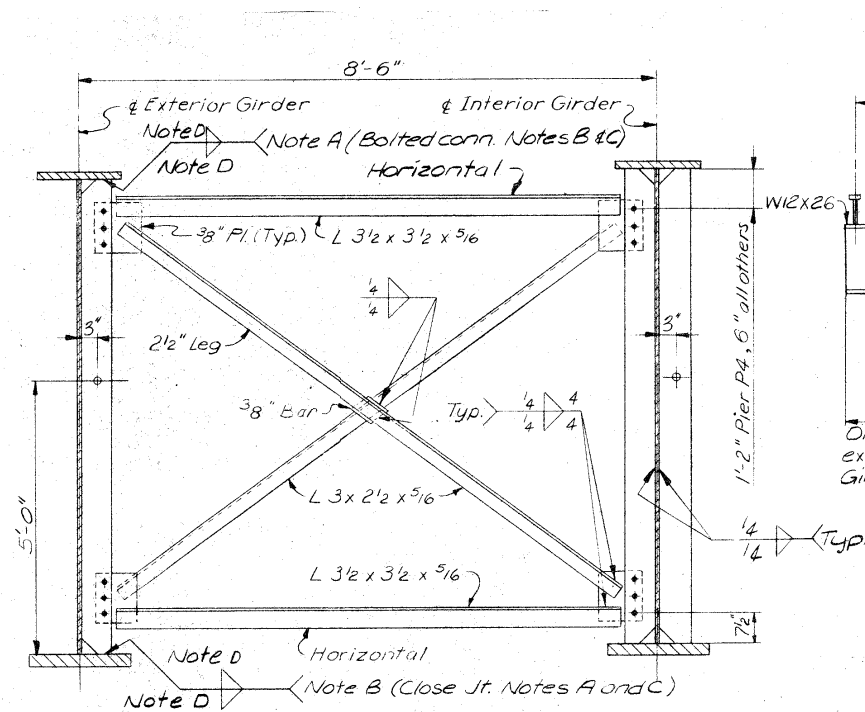
DRAWN BY: G. Tyhurst Aug 1978  
CHECKED BY: R.C. Hunt, April 1979  
5818 78S228

SVERDRUP & PARCEL AND ASSOCIATES, Inc.  
CONSULTING ENGINEERS  
ST. LOUIS, MO.

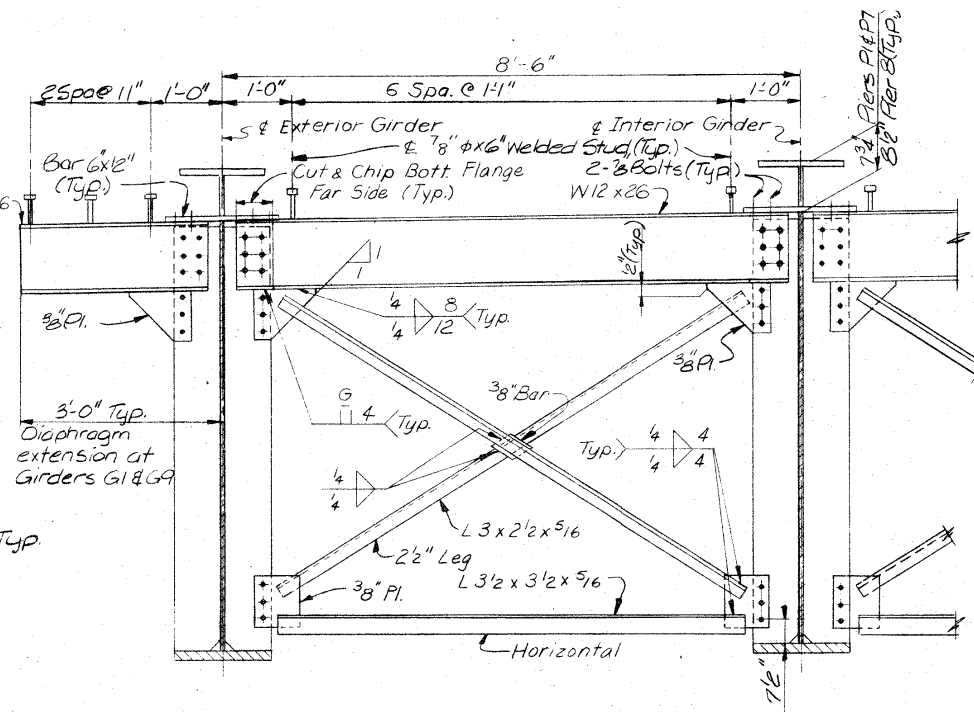
NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

DESIGN NO. 1279 FILE NO. 25896 DES. SH. NO. 25 OF 45

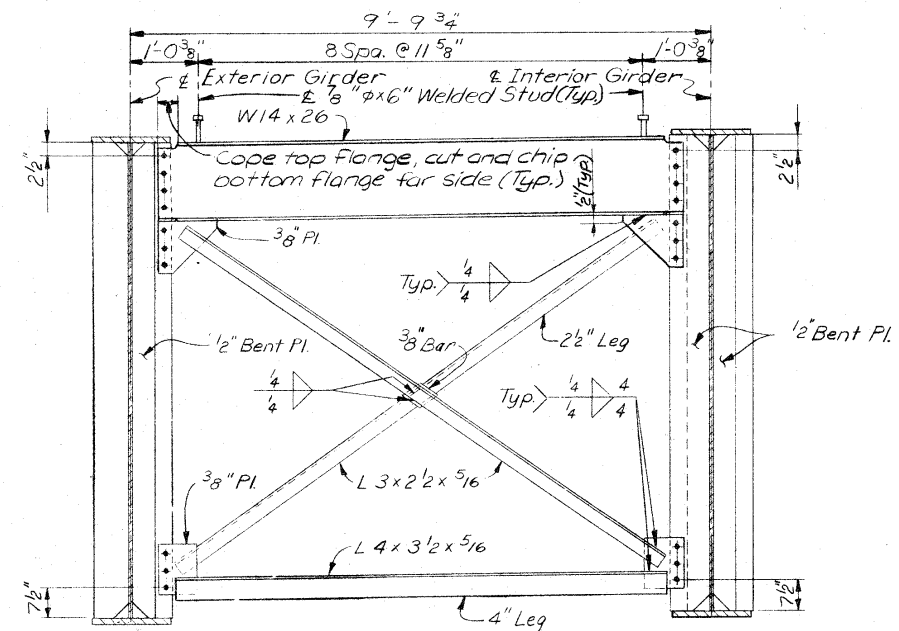
PROJECT BR-561-441-38-31 PROJECT SH. NO. 25 OF 45



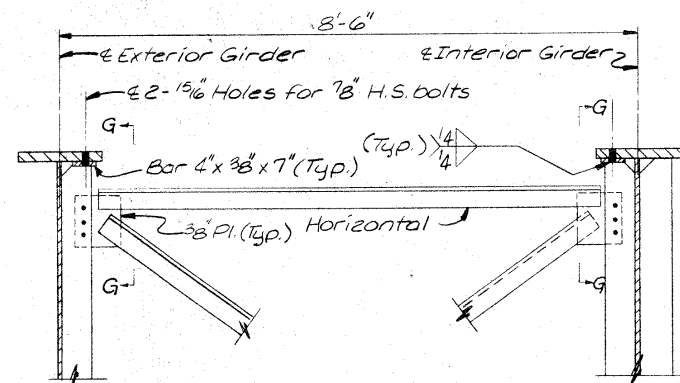
INTERMEDIATE CROSS FRAME  
 Note: For Note D see Des. Sh. No. 25.  
 For Note A, B, and C see Des. Sh. No. 14.  
 Clip intermediate cross frame  
 conn. plates 2"x2" top & bottom.



END CROSS FRAME AT PIERS P1 & P7  
 Note: End Diaphragm (W12) near Pier 8  
 same except cross frame not required.

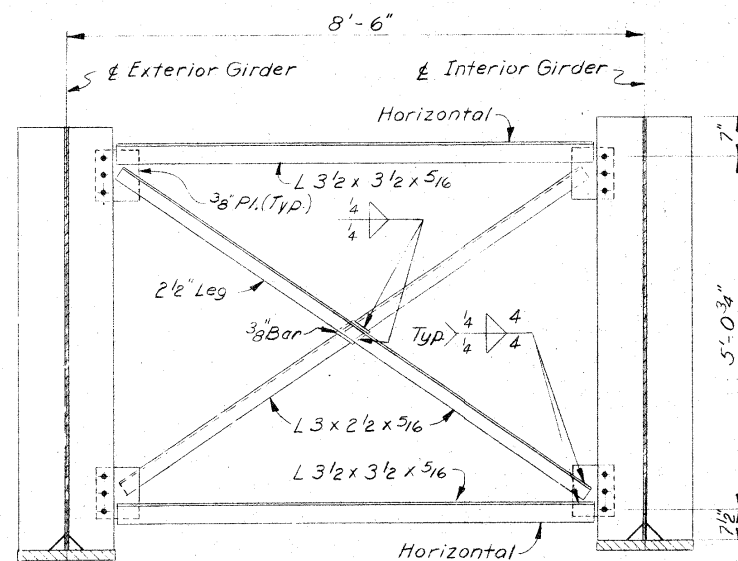


END CROSS FRAME AT ABUTMENT 13



PART SECTION  
 INTERMEDIATE CROSS FRAME  
 (Bolted Conn. Notes B & C)

See View G-G on Sh. 25



CROSS FRAME AT PIER 8

#### NOTES

Work this sheet with Des. Sh. No. 14  
 thru 17, 19 thru 22 & 24  
 For cross frames at telephone  
 conduit location, see Des. Sh. No. 44  
 For shear connector details,  
 see Des. Sh. No. 25  
 Minimum edge distance for all  
 bolted connections on this sheet  
 shall be 2".

#### MISSISSIPPI RIVER BRIDGE

GIRDER SPANS-CROSS FRAMES

DUBUQUE COUNTY, IOWA - GRANT COUNTY, WISCONSIN

IOWA DEPARTMENT OF TRANSPORTATION

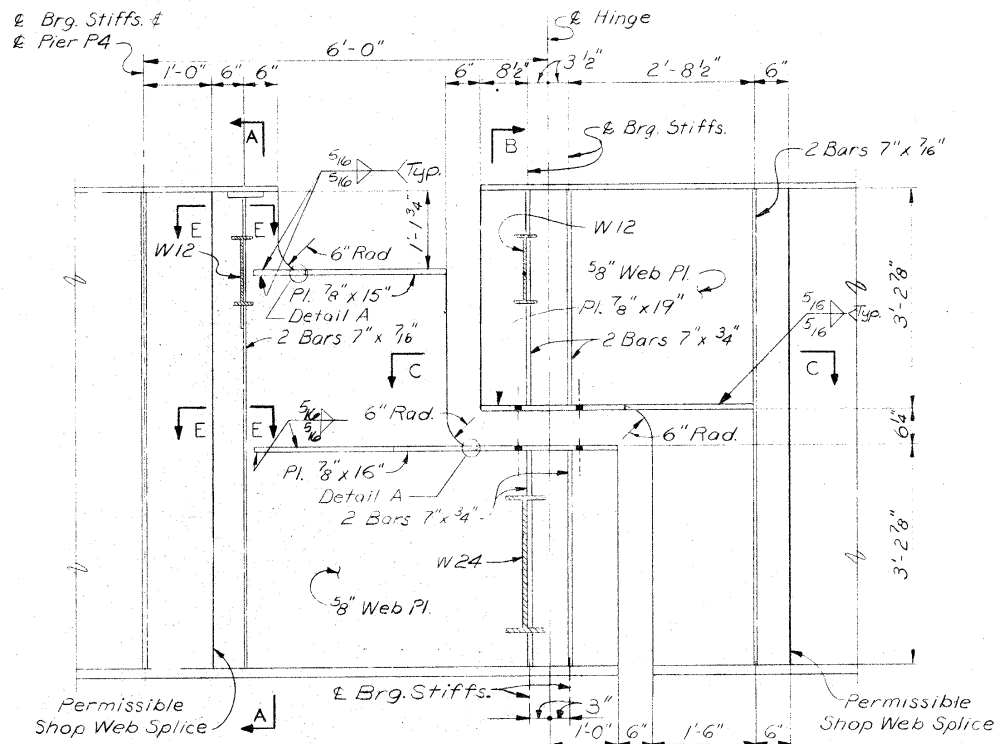
SVERDRUP & PARCEL AND ASSOCIATES, Inc.  
 CONSULTING ENGINEERS  
 ST. LOUIS, MO.

NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

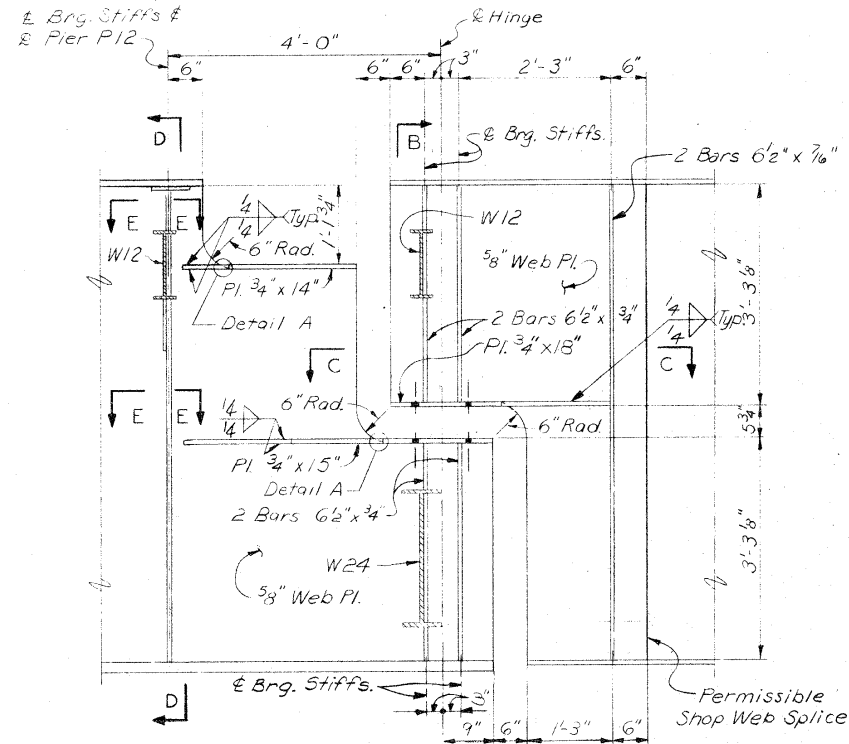
DESIGN NO. 1279 FILE NO. 25896 DES. SH. NO. 26 OF 45

PROJECT BRP-561-4 (4)-38-31 PROJECT SH. NO. 26 OF 45

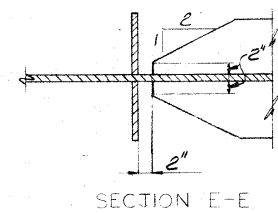
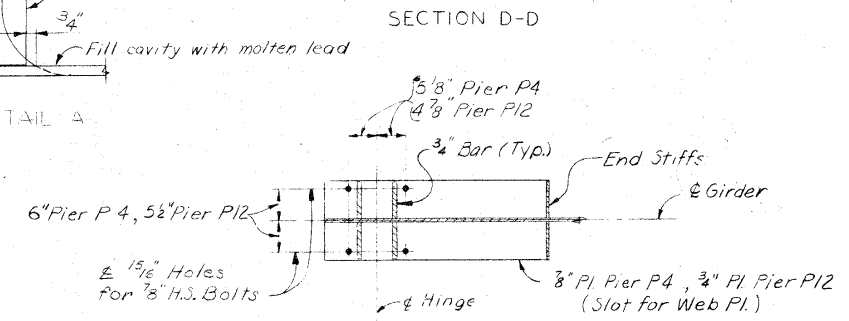
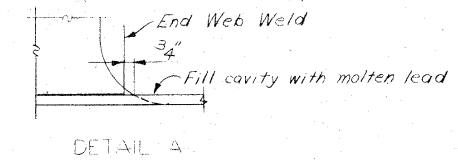
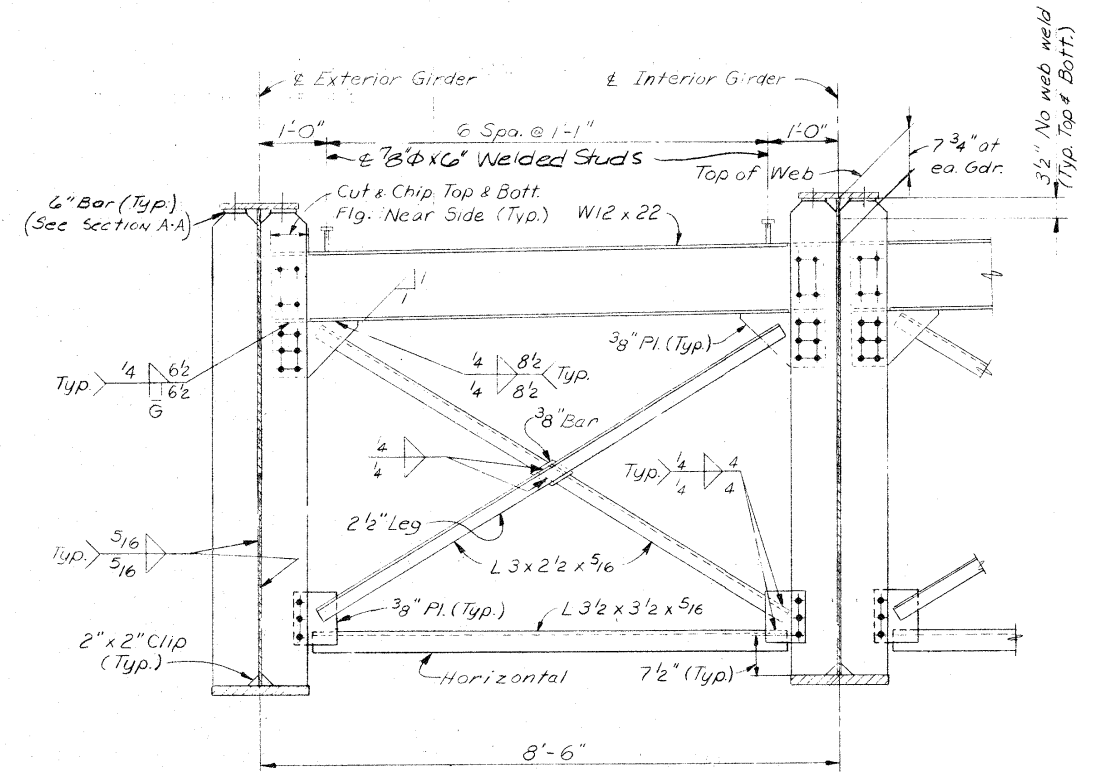
5818  
 785/92  
 DRAWN BY: G. Tyhurst July 1978  
 CHECKED BY: R.C. Hunt April, 1979



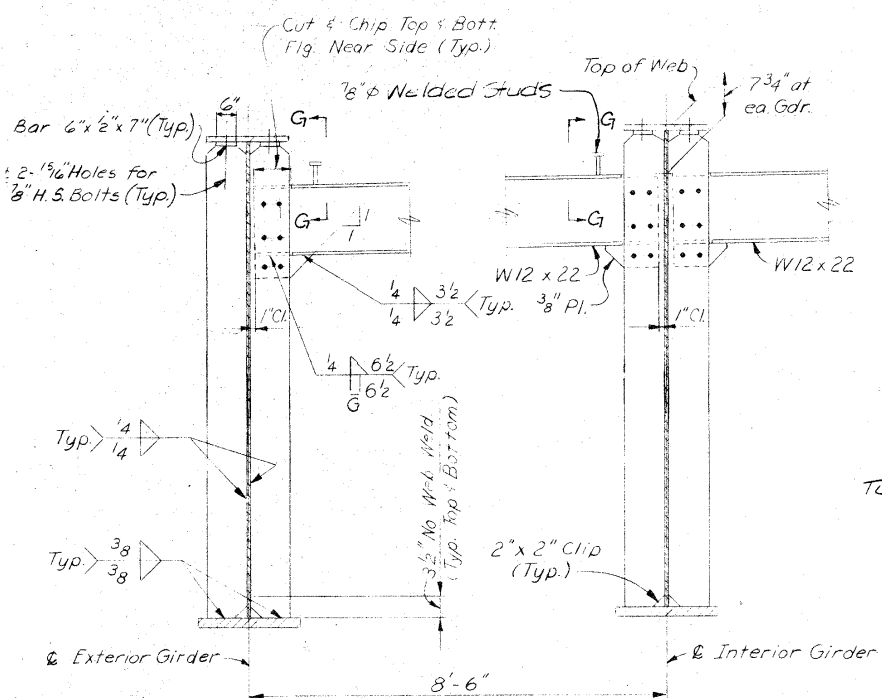
ELEVATION-HINGE NEAR PIER P4



ELEVATION-HINGE NEAR PIER P12

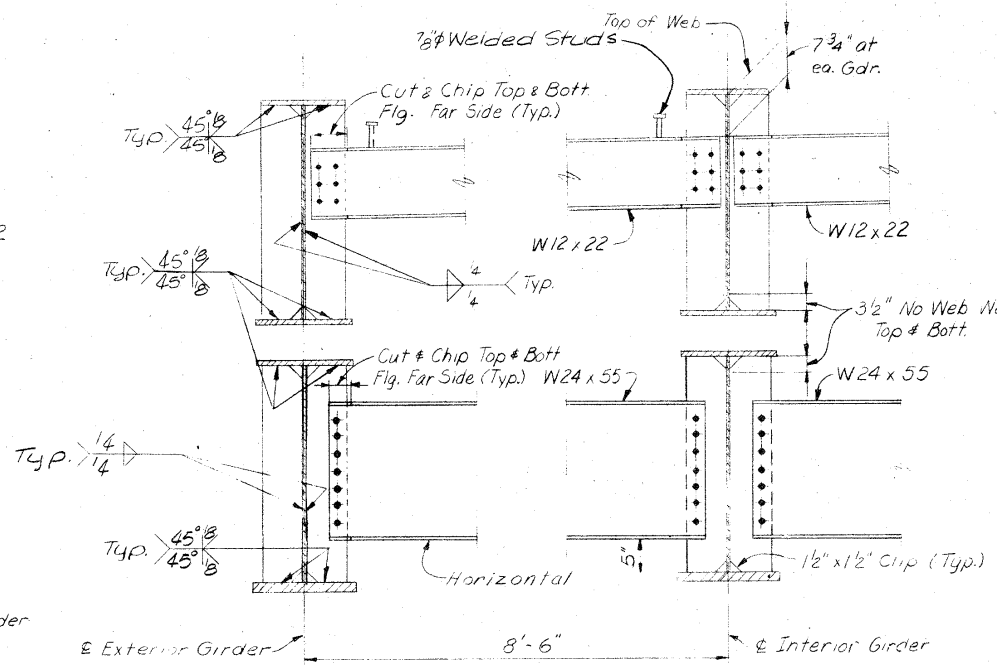


**NOTES**  
Work this sheet with Des. Sh. No. 15, 16, 22, 24, 25, & 26.



SECTION A-A  
Note: For shear connector spacing, see Section D-D.

See View G-G on Sh. 25



SECTION B-B  
Note: For shear connector spacing, see Section D-D.

Note: Min. edge distance of all bolted connections in Sections A-A, B-B & D-D shall be 2\"/>

**MISSISSIPPI RIVER BRIDGE**

**GIRDER SPANS-HINGE DETAILS**

**DUBUQUE COUNTY, IOWA - GRANT COUNTY, WISCONSIN**

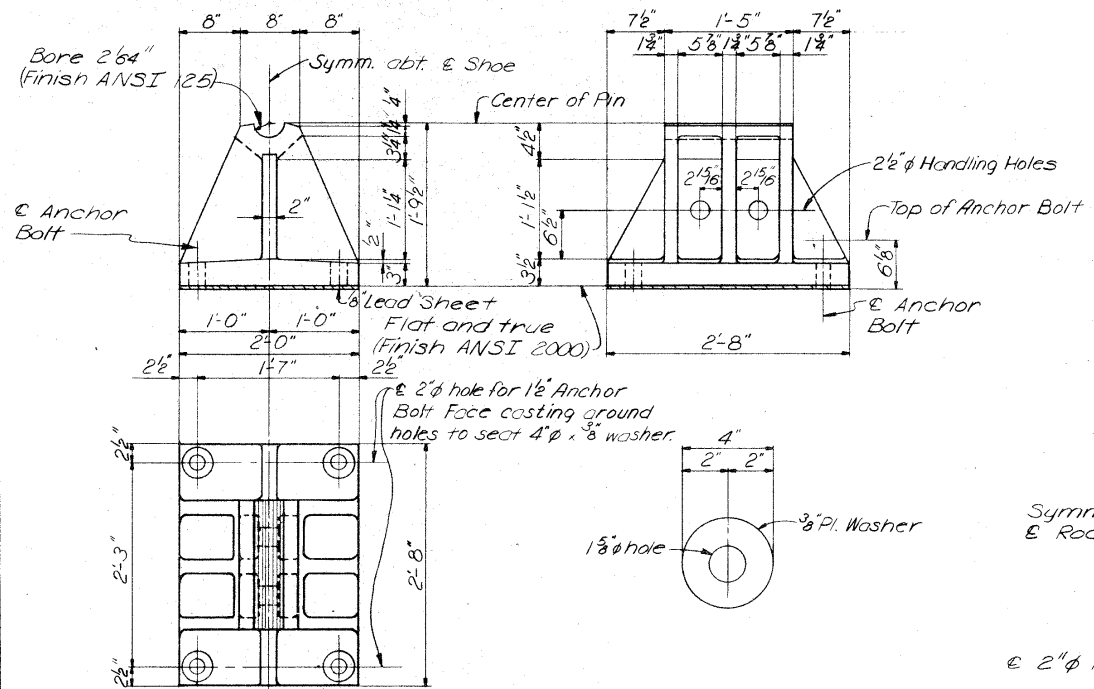
IOWA DEPARTMENT OF TRANSPORTATION

5818  
DRAWN BY: G. Tylhurst  
CHECKED BY: R. C. Hunt  
July 1978  
April, 1979

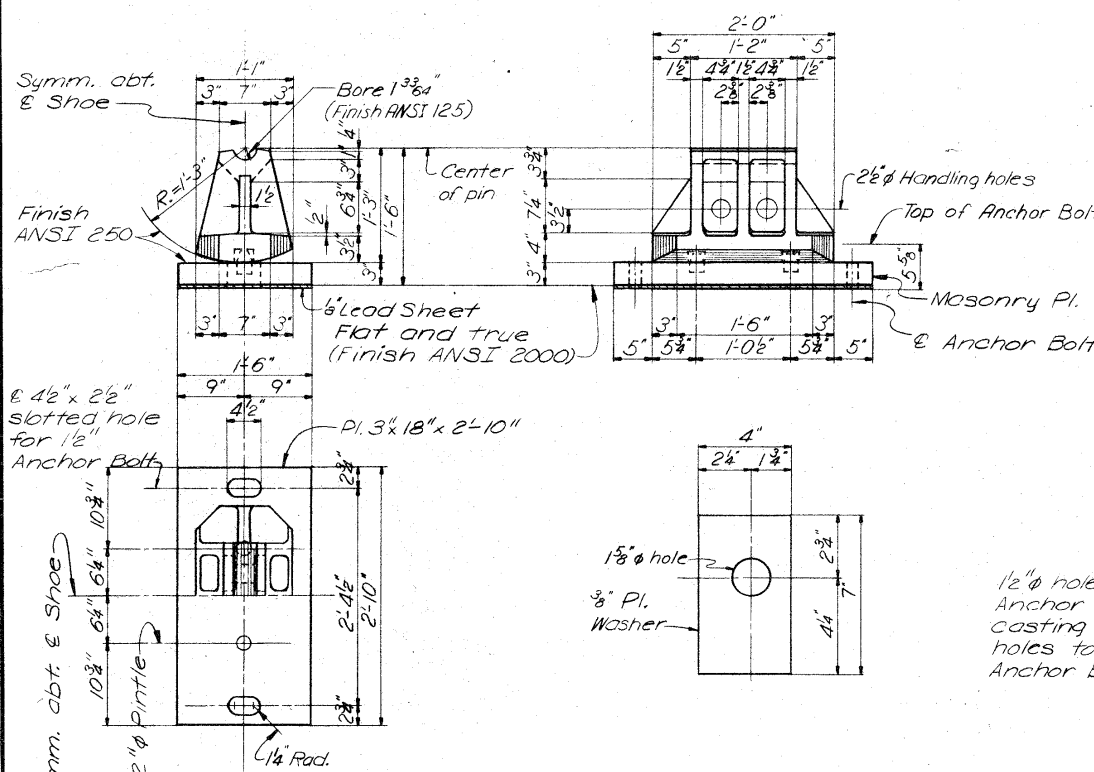
SVERDRUP & PARCEL AND ASSOCIATES, Inc.  
CONSULTING ENGINEERS  
ST. LOUIS, MO.

NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

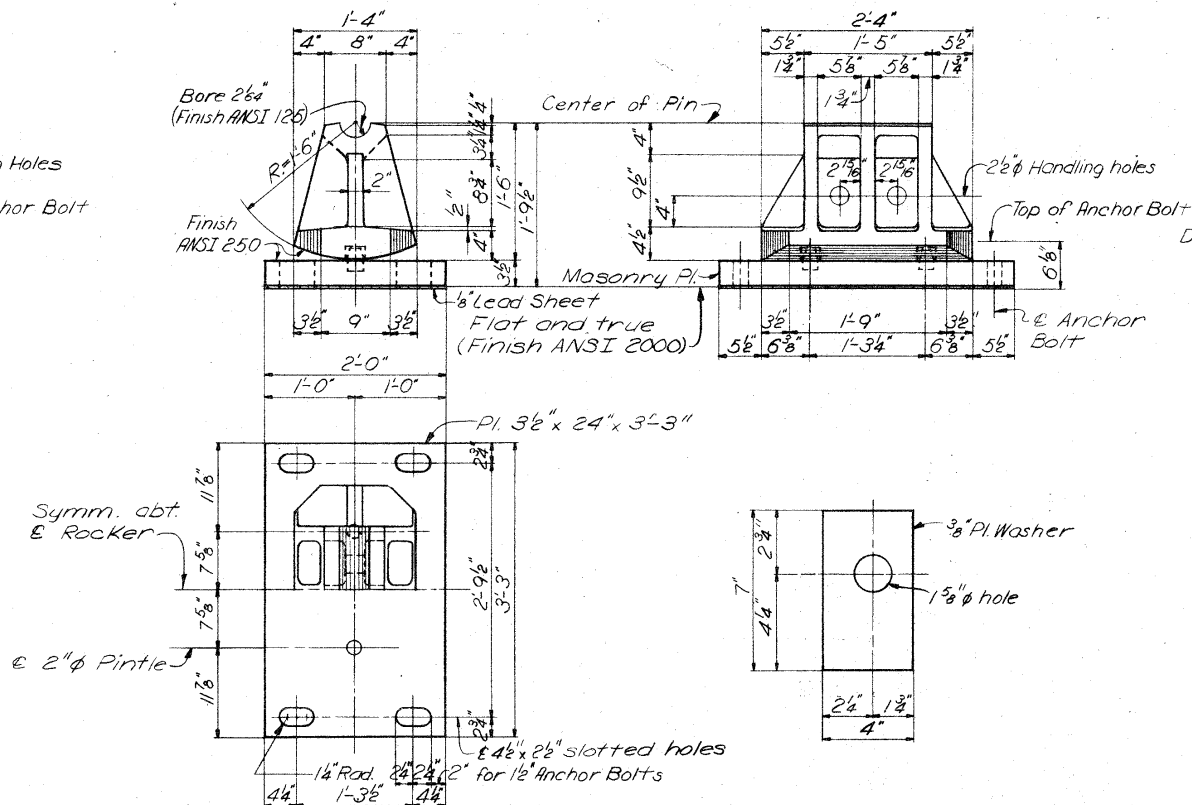
DESIGN NO. 1279 FILE NO. 25896 DES. SH. NO. 27 OF 45  
PROJECT BRP-561-4(4)-38-31 PROJECT SH. NO. 27 OF 45



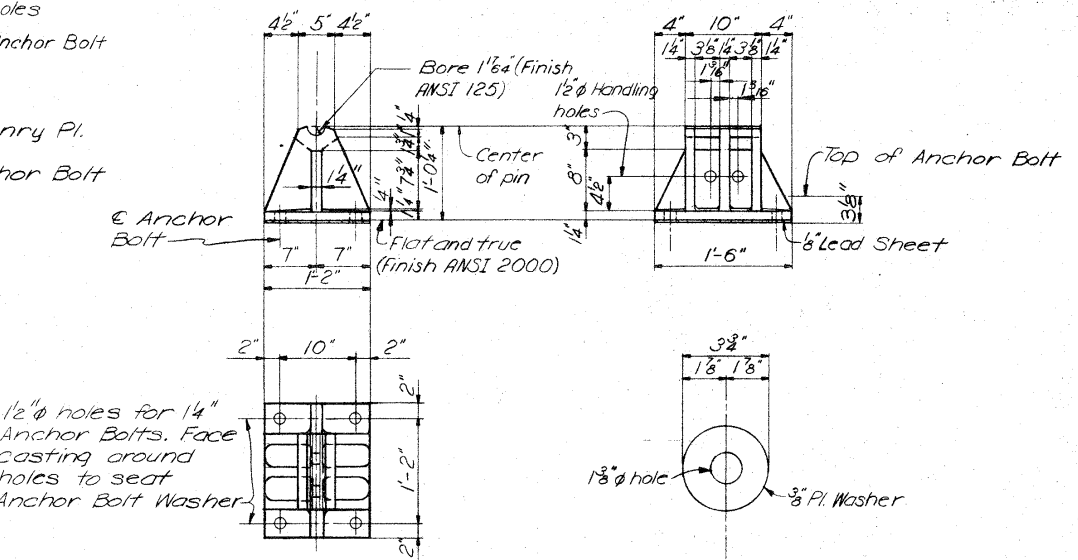
FIXED SHOE S5  
WT. = 1274 LB.



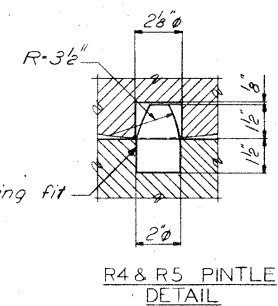
ROCKER R4  
WT. = 464 LB.  
MASONRY PLATE MP4P  
WT. = 462 LB.



ROCKER R5  
WT. = 776 LB.  
MASONRY PLATE MP5PA  
WT. = 808 LB.



FIXED SHOE S2  
WT. = 222 LB



R4 & R5 PINTLE  
DETAIL

# BEARING NOTES

The castings of S2, R3A, R4, R5 and S5 shall comply with Article 4153.04 of the IDOT Standard Specifications. Castings for S2 and R3A may be Gray Iron or Nodular Iron. Castings for R4, R5 and S5 shall be Nodular Iron Castings. Masonry plate marked MP3P shall comply with the requirements of ASTM A-36 steel. Masonry Plates marked MP4P and MP5PA shall be either Nodular Iron Castings complying with Article 4153.04 or structural steel complying with ASTM A-588, except that the supplementary requirement S, (Impact Properties) of AASHTO M222 shall not apply. All plates and bars shall comply with ASTM A-36. The pins shall comply with Article 4153.02 of the Standard Specifications and with the requirements of ASTM A-108 steel.

Anchor Bolts shall be set in accordance with Article 2408.47 of the Standard Specifications. Cost to be included in price bid for Structural Steel. All bearings are to be set on a 1/8 inch lead sheet in accordance with Article 2408.35 of the Standard Specifications. The weight of bearings shown does not include weight of paint. As soon as the surfacing process is done, the surfaces finished with an ANSI 125 finish shall be shop coated with an application of waterproof National Lubrication Grease Institute No. 3 multi-purpose grease. Just before the erection of the structural steel in the field, the shop coated surfaces are to be wiped clean and a field coat of N.L.G.I. No. 3 grease is to be applied. After masonry plates, rockers and shoes are in correct location, fill slotted holes around anchor bolts with a sulphur-based compound or epoxy resin adhesive in accordance with Article 2408.47 of the Standard Specifications.

# NOTES

Work this sheet with Des. Sh. No. 29

# MISSISSIPPI RIVER BRIDGE

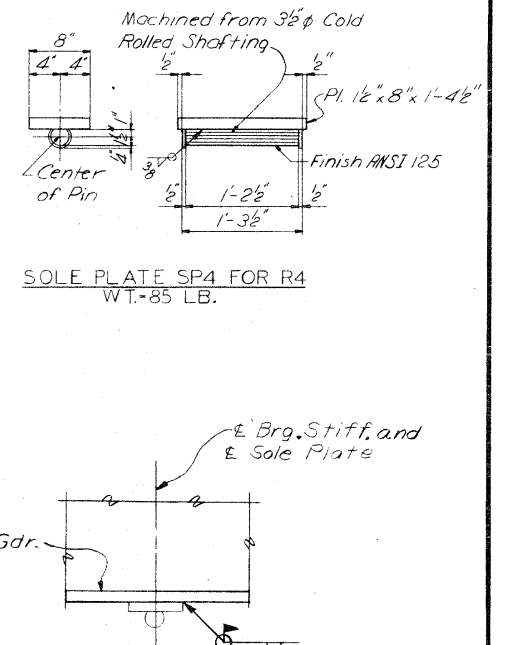
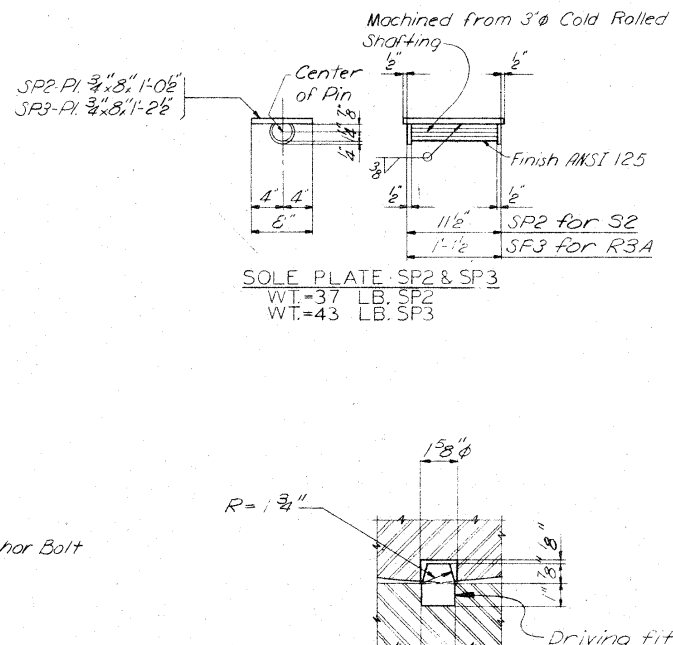
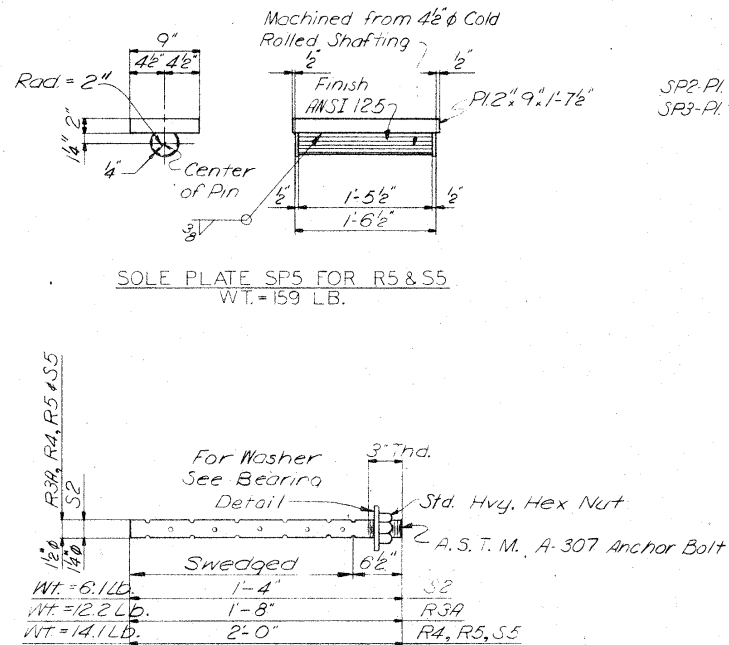
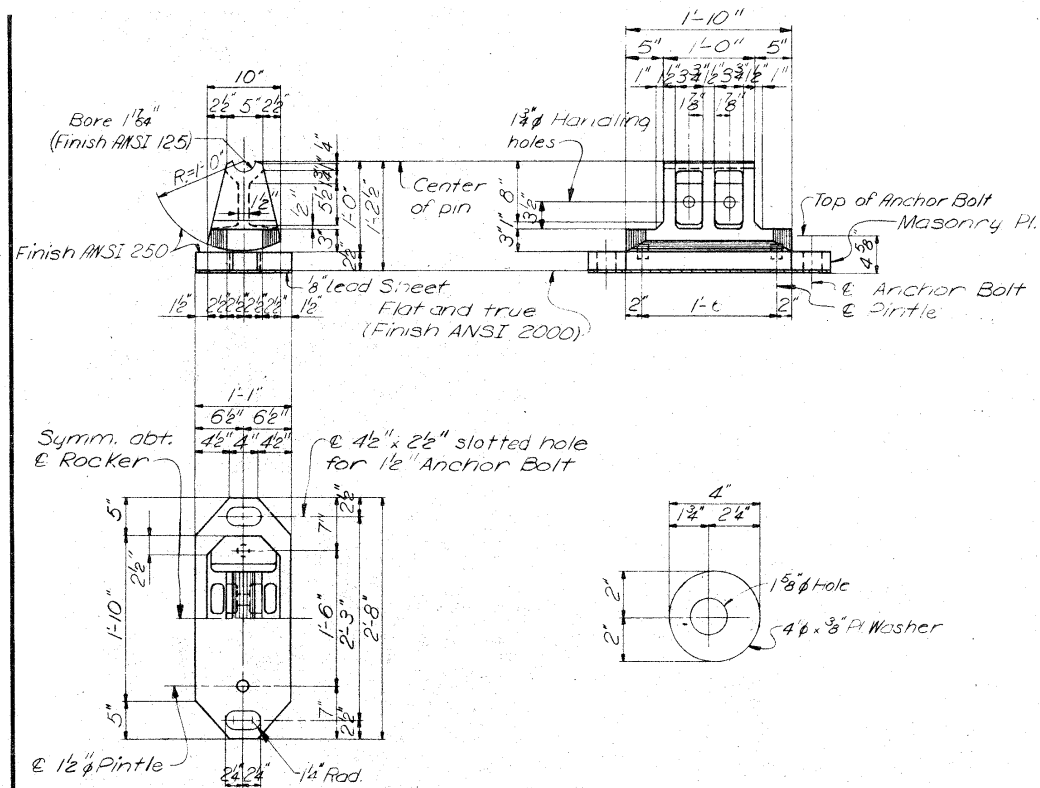
# GIRDER SPANS - BEARINGS

# DUBUQUE COUNTY, IOWA - GRANT COUNTY, WISCONSIN

# IOWA DEPARTMENT OF TRANSPORTATION

SVERDRUP & PARCEL AND ASSOCIATES, Inc.  
CONSULTING ENGINEERS  
ST. LOUIS, MO.

NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

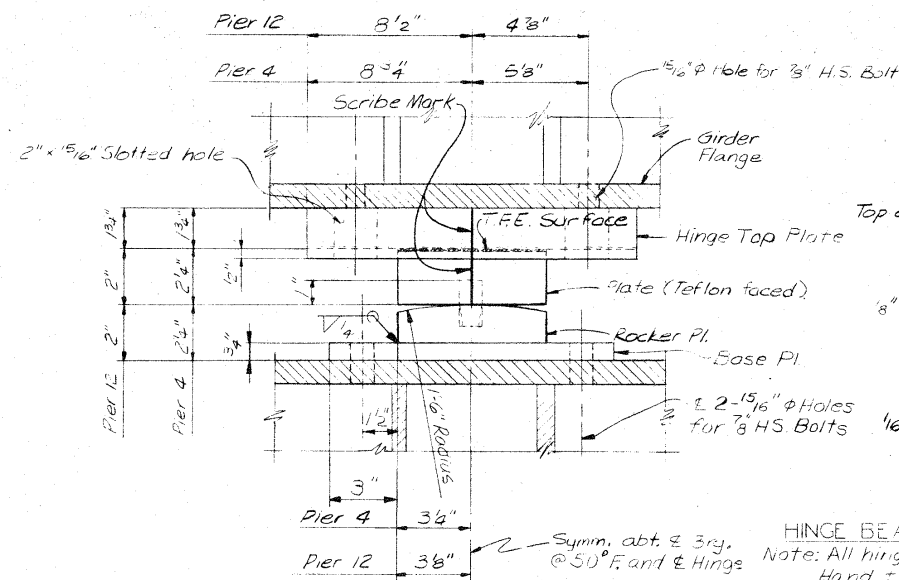


ANCHOR BOLT DETAILS  
Note: Weight shown includes the weight of anchor bolt, washer and nut.

R3A & HINGE PINTLE DETAIL

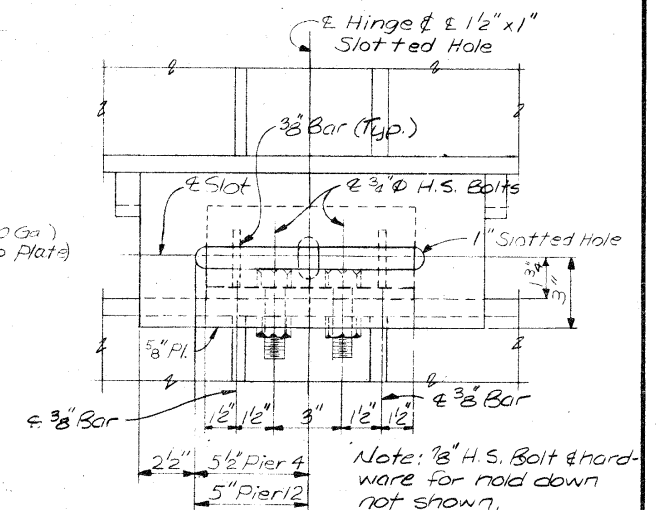
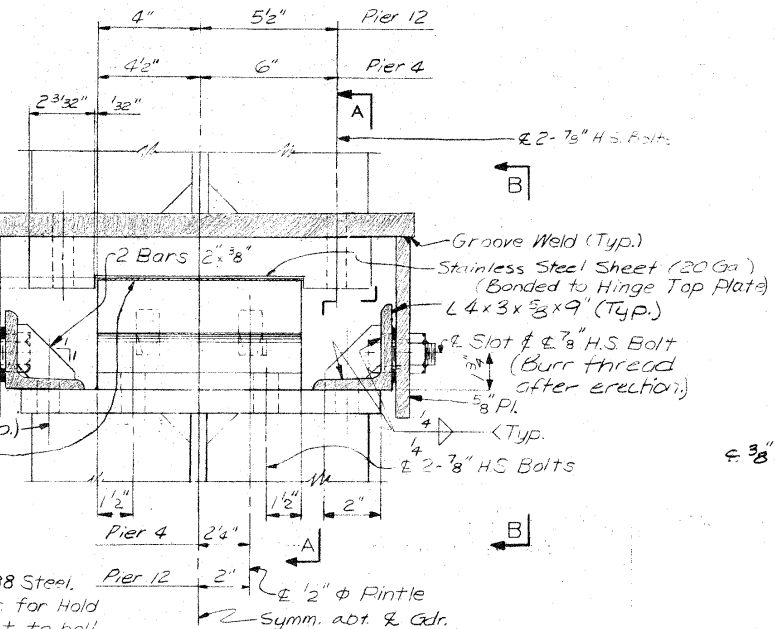
SOLE PLATE CONNECTION

| SHOE LOCATION TABLE |           |
|---------------------|-----------|
| Pier                | Shoe Type |
| 1                   | R3A       |
| 2                   | S5        |
| 3                   | S5        |
| 4                   | R5        |
| 5                   | S5        |
| 6                   | S5        |
| 7                   | R3A       |
| 8                   | R4        |
| 9                   | S5        |
| 10                  | S5        |
| 11                  | S5        |
| 12                  | R5        |
| Abut. 13            | S2        |



HINGE BEARING DETAILS

Note: All hinge material is A588 Steel. Hand tighten 7/8" H.S. Bolt for hold down and tack weld nut to ball.



VIEW B-B

NOTES

Work this sheet with Des. Sh. No 28 For material and bonding, see Special Provisions.

MISSISSIPPI RIVER BRIDGE

GIRDER SPANS  
BEARING AND ANCHOR BOLTS

DUBUQUE COUNTY, IOWA - GRANT COUNTY, WISCONSIN

IOWA DEPARTMENT OF TRANSPORTATION

DESIGN NO. 1279 FILE NO. 25896 DES. SH. NO. 29 OF 45

PROJECT BRP-561-4(4)-38-31 PROJECT SH. NO. 29 OF 45

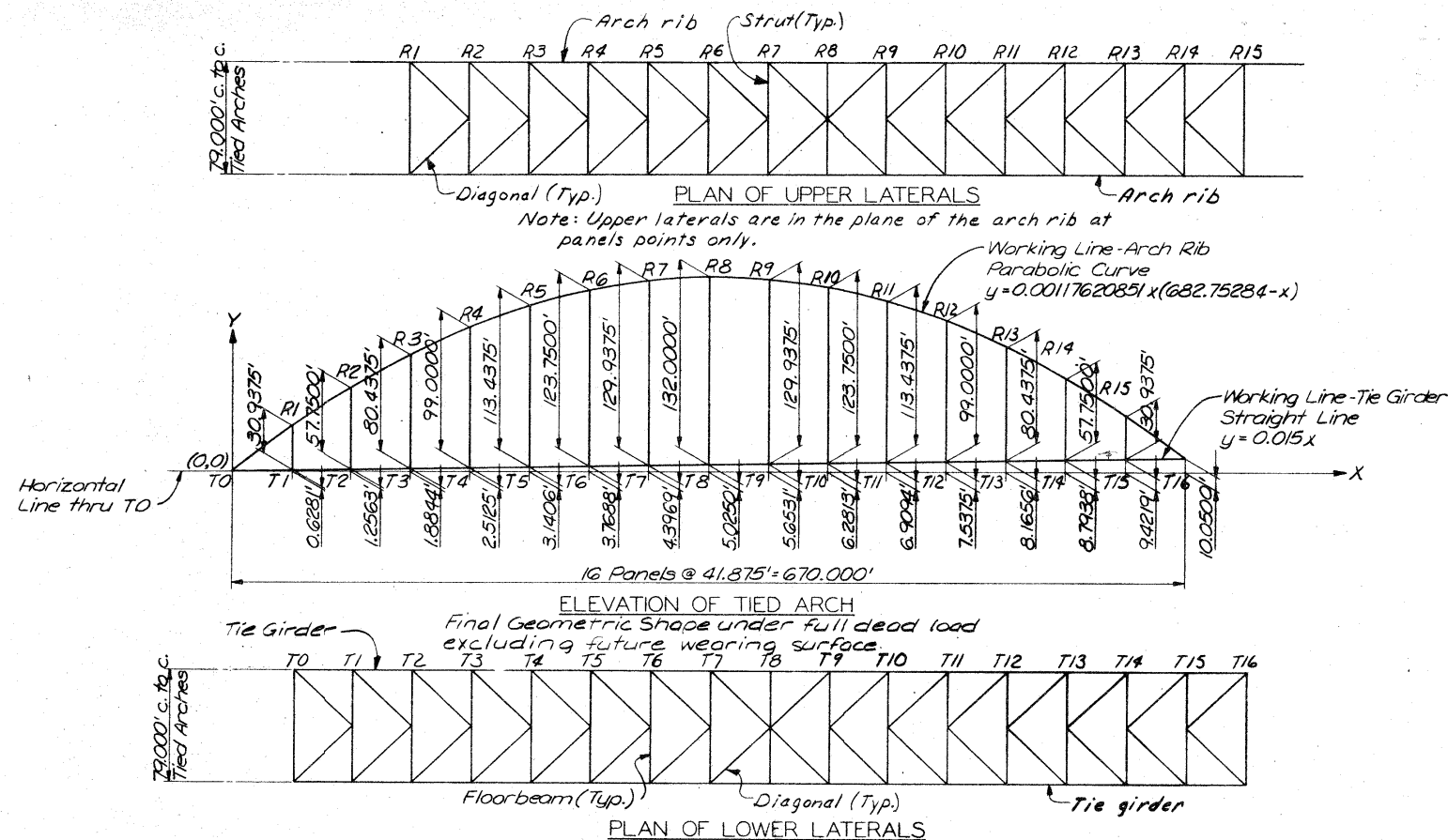
| ROCKER PLATE SETTING      |         |         |         |         |          |
|---------------------------|---------|---------|---------|---------|----------|
|                           | Pier P1 | Pier P4 | Pier P7 | Pier P8 | Pier P12 |
| Temp. at time of setting. | R3A     | R5      | R3A     | R4      | R5       |
| 10°F                      | -7/8"   | -15/16" | -15/16" | -1 1/2" | -1 1/8"  |
| 50°F                      | 0"      | 0"      | 0"      | 0"      | 0"       |
| 90°F                      | +7/8"   | +15/16" | +15/16" | +1 1/2" | +1 1/8"  |

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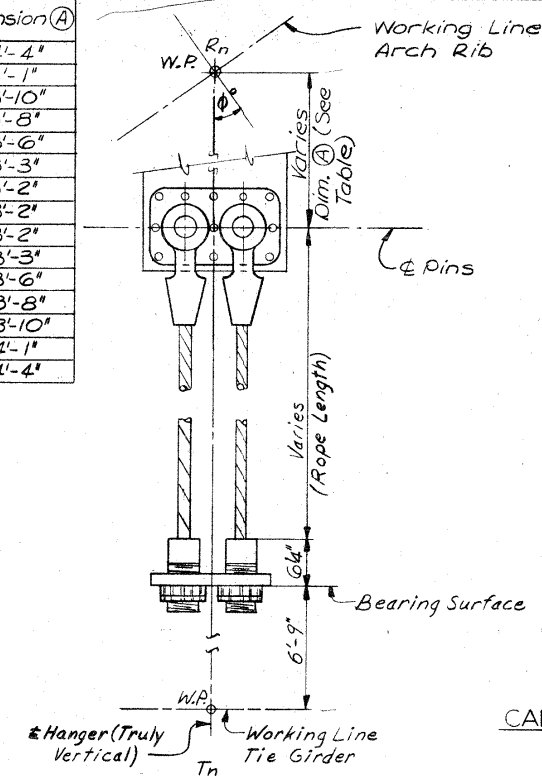
Note: For temperatures above 50°F set hinge top plate away from the fixed shoe of the unit in which the top plate is attached. For temperatures below 50°F set hinge top plate toward fixed shoe of the unit in which the top plate is attached. Settings for other temperatures are proportional for a 40° temperature change.

NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

DRAWN BY: 4/4/1978  
CHECKED BY: 4/4/1978  
5818



| Panel Point | Dimension (A) |
|-------------|---------------|
| R1          | 4'-4"         |
| R2          | 4'-1"         |
| R3          | 3'-10"        |
| R4          | 3'-8"         |
| R5          | 3'-6"         |
| R6          | 3'-3"         |
| R7          | 3'-2"         |
| R8          | 3'-2"         |
| R9          | 3'-2"         |
| R10         | 3'-3"         |
| R11         | 3'-6"         |
| R12         | 3'-8"         |
| R13         | 3'-10"        |
| R14         | 4'-1"         |
| R15         | 4'-4"         |



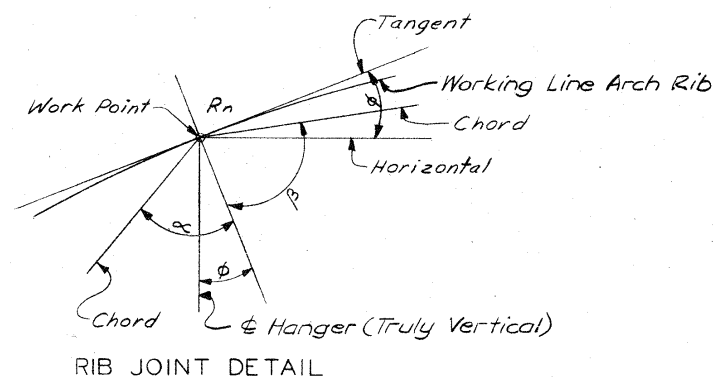
| HANGER ASSEMBLIES |                     |                   |                        |                        |                        |
|-------------------|---------------------|-------------------|------------------------|------------------------|------------------------|
| Panel Point       | Rib-Tie Dist. (Ft.) | Rope Length (Ft.) | Steel Elongation (Ft.) | Conc. Elongation (Ft.) | Total Elongation (Ft.) |
| 1                 | 30.938              | 19.334            | 0.015                  | 0.022                  | 0.037                  |
| 2                 | 57.750              | 46.396            | 0.033                  | 0.060                  | 0.093                  |
| 3                 | 80.438              | 69.334            | 0.048                  | 0.091                  | 0.139                  |
| 4                 | 99.000              | 88.062            | 0.059                  | 0.115                  | 0.174                  |
| 5                 | 113.438             | 102.667           | 0.071                  | 0.135                  | 0.206                  |
| 6                 | 123.750             | 113.229           | 0.080                  | 0.149                  | 0.229                  |
| 7                 | 129.937             | 119.499           | 0.088                  | 0.157                  | 0.245                  |
| 8                 | 132.000             | 121.562           | 0.091                  | 0.159                  | 0.250                  |

④ Vertical distance from W.R. of rib to W.R. of tie, under total dead load excluding FWS.  
 ⑤ Length under total dead load excluding FWS.  
 ⑥ Modulus of Elasticity for rope elongation equals 20,000,000 psi.

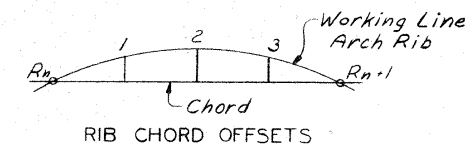
| STEEL D.L. ELEVATIONS |                         |            |                         |
|-----------------------|-------------------------|------------|-------------------------|
| Work Point            | Elev. of Rib W.R. (Ft.) | Work Point | Elev. of Tie W.R. (Ft.) |
| T0                    | 661.402                 | T0         | 661.402                 |
| R1                    | 693.043                 | T1         | 662.130                 |
| R2                    | 720.543                 | T2         | 662.856                 |
| R3                    | 743.916                 | T3         | 663.572                 |
| R4                    | 763.157                 | T4         | 664.275                 |
| R5                    | 778.268                 | T5         | 664.969                 |
| R6                    | 789.244                 | T6         | 665.646                 |
| R7                    | 796.080                 | T7         | 666.304                 |
| R8                    | 798.778                 | T8         | 666.940                 |
| R9                    | 797.336                 | T9         | 667.560                 |
| R10                   | 791.756                 | T10        | 668.158                 |
| R11                   | 782.037                 | T11        | 668.738                 |
| R12                   | 768.182                 | T12        | 669.300                 |
| R13                   | 750.197                 | T13        | 669.853                 |
| R14                   | 728.081                 | T14        | 670.394                 |
| R15                   | 701.837                 | T15        | 670.924                 |
| T16                   | 671.452                 | T16        | 671.452                 |

| ARCH GEOMETRY - TOTAL DEAD LOAD |                                       |                             |                      |                     |                    |         |                    |            |                                       |                             |                     |         |
|---------------------------------|---------------------------------------|-----------------------------|----------------------|---------------------|--------------------|---------|--------------------|------------|---------------------------------------|-----------------------------|---------------------|---------|
| Work Point                      | Horiz. Dist. From Coord. Center (Ft.) | Elevation of R/B W.R. (Ft.) | Angle $\alpha^\circ$ | Angle $\beta^\circ$ | Angle $\phi^\circ$ | Member  | Chord Length (Ft.) | Work Point | Horiz. Dist. From Coord. Center (Ft.) | Elevation of Tie W.R. (Ft.) | Member Length (Ft.) |         |
| T0                              | 0.0                                   | 661.402                     | —                    | 88.2426             | 38.7665            | T0-R1   | 52.440             | T0         | 0.0                                   | 661.402                     |                     |         |
| R1                              | 41.875                                | 692.967                     | 88.1575              | 88.0701             | 35.1667            | R1-R2   | 50.065             | T1         | 41.875                                | 662.030                     | R1-T1               | 30.938  |
| R2                              | 83.750                                | 720.408                     | 87.9810              | 87.8909             | 31.2177            | R2-R3   | 47.928             | T2         | 83.750                                | 662.658                     | R2-T2               | 57.750  |
| R3                              | 125.625                               | 743.724                     | 87.8008              | 87.7117             | 26.9095            | R3-R4   | 46.063             | T3         | 125.625                               | 663.286                     | R3-T3               | 80.438  |
| R4                              | 167.500                               | 762.914                     | 87.6249              | 87.5415             | 22.2460            | R4-R5   | 44.503             | T4         | 167.500                               | 663.914                     | R4-T4               | 99.000  |
| R5                              | 209.375                               | 777.980                     | 87.4632              | 87.3915             | 17.2507            | R5-R6   | 43.281             | T5         | 209.375                               | 664.542                     | R5-T5               | 113.438 |
| R6                              | 251.250                               | 788.921                     | 87.3281              | 87.2741             | 11.9703            | R6-R7   | 42.426             | T6         | 251.250                               | 665.171                     | R6-T6               | 123.750 |
| R7                              | 293.125                               | 795.736                     | 87.2313              | 87.2007             | 6.4758             | R7-R8   | 41.961             | T7         | 293.125                               | 665.799                     | R7-T7               | 129.937 |
| R8                              | 335.000                               | 798.427                     | 87.1829              | 87.1788             | 0.8594             |         |                    | T8         | 335.000                               | 666.427                     | R8-T8               | 132.000 |
| R9                              | 376.875                               | 796.992                     | 87.1883              | 87.2111             | 4.7735             | R8-R9   | 41.900             | T9         | 376.875                               | 667.055                     | R9-T9               | 129.938 |
| R10                             | 418.750                               | 791.433                     | 87.2466              | 87.2939             | 10.3158            | R9-R10  | 42.243             | T10        | 418.750                               | 667.683                     | R10-T10             | 123.750 |
| R11                             | 460.625                               | 781.749                     | 87.3518              | 87.4187             | 15.6700            | R10-R11 | 42.980             | T11        | 460.625                               | 668.311                     | R11-T11             | 113.437 |
| R12                             | 502.500                               | 767.939                     | 87.4931              | 87.5735             | 20.7581            | R11-R12 | 44.093             | T12        | 502.500                               | 668.939                     | R12-T12             | 99.000  |
| R13                             | 544.375                               | 750.005                     | 87.6585              | 87.7464             | 25.5262            | R12-R13 | 45.554             | T13        | 544.375                               | 669.567                     | R13-T13             | 80.438  |
| R14                             | 586.250                               | 727.946                     | 87.8360              | 87.9262             | 29.1438            | R13-R14 | 47.330             | T14        | 586.250                               | 670.196                     | R14-T14             | 57.750  |
| R15                             | 628.125                               | 701.761                     | 88.0160              | 88.1045             | 34.0017            | R14-R15 | 49.388             | T15        | 628.125                               | 670.824                     | R15-T15             | 30.938  |
| T16                             | 670.000                               | 671.452                     | 88.1911              | —                   | 37.7061            | R15-T16 | 51.693             | T16        | 670.000                               | 671.452                     |                     |         |

| ARCH GEOMETRY - FOR FABRICATION |          |          |          |         |                    |                     |              |                   |         |  |
|---------------------------------|----------|----------|----------|---------|--------------------|---------------------|--------------|-------------------|---------|--|
| Work Point                      | Angle α° | Angle β° | Angle φ° | Member  | Chord Length (Ft.) | Member Length (Ft.) | Panel Points | Rope Length (Ft.) |         |  |
| T0                              | —        | 88.2426  | 38.7665  | T0-R1   | 52.445             | T0-T1               | 41.861       |                   |         |  |
| R1                              | 88.1575  | 88.0701  | 35.1667  | R1-R2   | 50.088             | T1-T2               | 41.862       | 1                 | 19.297  |  |
| R2                              | 87.9810  | 87.8909  | 31.2177  | R2-R3   | 47.950             | T2-T3               | 41.863       | 2                 | 46.303  |  |
| R3                              | 87.8008  | 87.7117  | 26.9095  | R3-R4   | 46.083             | T3-T4               | 41.863       | 3                 | 69.195  |  |
| R4                              | 87.6249  | 87.5415  | 22.2460  | R4-R5   | 44.522             | T4-T5               | 41.863       | 4                 | 87.888  |  |
| R5                              | 87.4632  | 87.3915  | 17.2507  | R5-R6   | 43.300             | T5-T6               | 41.863       | 5                 | 102.461 |  |
| R6                              | 87.3281  | 87.2741  | 11.9703  | R6-R7   | 42.445             | T6-T7               | 41.861       | 6                 | 113.000 |  |
| R7                              | 87.2313  | 87.2007  | 6.4758   | R7-R8   | 41.979             | T7-T8               | 41.861       | 7                 | 119.254 |  |
| R8                              | 87.1829  | 87.1788  | 0.8594   | —       | —                  | —                   | —            | 8                 | 121.312 |  |
| R9                              | 87.1883  | 87.2111  | 4.7735   | R8-R9   | 41.918             | T8-T9               | 41.861       | 9                 | 119.254 |  |
| R10                             | 87.2466  | 87.2939  | 10.3158  | R9-R10  | 42.261             | T9-T10              | 41.861       | 10                | 113.000 |  |
| R11                             | 87.3518  | 87.4187  | 15.6700  | R10-R11 | 42.999             | T10-T11             | 41.863       | 11                | 102.461 |  |
| R12                             | 87.4931  | 87.5735  | 20.7581  | R11-R12 | 44.112             | T11-T12             | 41.863       | 12                | 87.888  |  |
| R13                             | 87.6585  | 87.7464  | 25.5262  | R12-R13 | 45.574             | T12-T13             | 41.863       | 13                | 69.195  |  |
| R14                             | 87.8360  | 87.9262  | 29.1438  | R13-R14 | 47.351             | T13-T14             | 41.863       | 14                | 46.303  |  |
| R15                             | 88.0160  | 88.1045  | 34.0017  | R14-R15 | 49.410             | T14-T15             | 41.862       | 15                | 19.297  |  |
| T16                             | 88.1911  | —        | 37.7061  | R15-T16 | 51.717             | T15-T16             | 41.861       |                   |         |  |



| RIB CHORD OFFSETS - FOR FABRICATION |         |         |         |        |        |
|-------------------------------------|---------|---------|---------|--------|--------|
| Offset To Chord (Ft.)               |         |         |         |        |        |
| Chord                               | Point 1 | Point 2 | Point 3 |        |        |
|                                     | Dist.   | Offset  | Dist.   | Offset | Dist.  |
| T0-R1                               | 13.349  | 0.309   | 26.543  | 0.412  | 39.581 |
| R1-R2                               | 12.734  | 0.324   | 25.327  | 0.432  | 37.778 |
| R2-R3                               | 12.176  | 0.338   | 24.226  | 0.451  | 36.150 |
| R3-R4                               | 11.682  | 0.352   | 23.257  | 0.469  | 34.724 |
| R4-R5                               | 11.262  | 0.364   | 22.436  | 0.485  | 33.522 |
| R5-R6                               | 10.923  | 0.374   | 21.780  | 0.499  | 32.573 |
| R6-R7                               | 10.673  | 0.382   | 21.305  | 0.509  | 31.896 |
| R7-R8                               | 10.520  | 0.386   | 21.023  | 0.515  | 31.509 |
| R8-R9                               | 10.466  | 0.387   | 20.941  | 0.516  | 31.425 |
| R9-R10                              | 10.514  | 0.389   | 21.062  | 0.511  | 31.695 |
| R10-R11                             | 10.663  | 0.377   | 21.383  | 0.503  | 32.162 |
| R11-R12                             | 10.907  | 0.368   | 21.895  | 0.490  | 32.963 |
| R12-R13                             | 11.241  | 0.356   | 22.584  | 0.474  | 34.028 |
| R13-R14                             | 11.657  | 0.342   | 23.435  | 0.456  | 35.333 |
| R14-R15                             | 12.147  | 0.328   | 24.432  | 0.437  | 36.852 |
| R15-T16                             | 12.702  | 0.314   | 25.556  | 0.418  | 38.561 |



**MISSISSIPPI RIVER BRIDGE**  
 TIED ARCH-SPAN 7  
 ARCH GEOMETRY  
**DUBUQUE COUNTY, IOWA - GRANT COUNTY, WISCONSIN**  
 IOWA DEPARTMENT OF TRANSPORTATION

NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

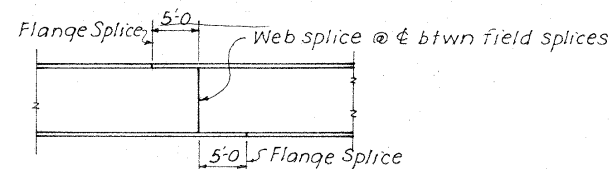
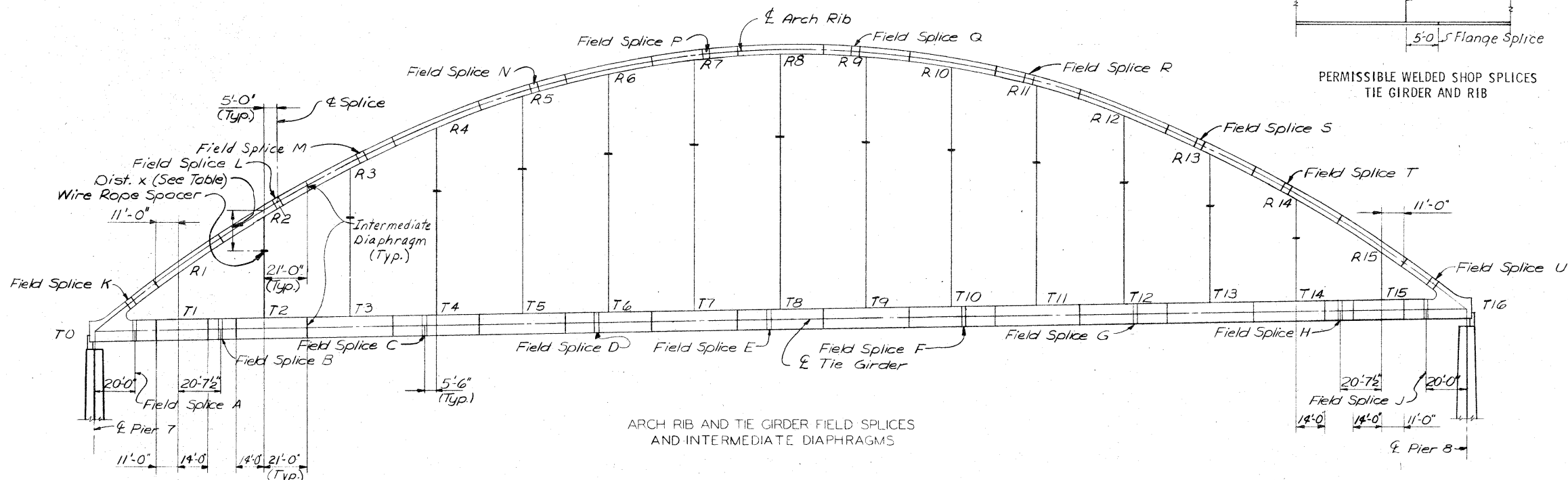
DESIGN NO. 1279 FILE NO. 25896 DES. SH. NO. 30 OF 45

PROJECT BRP-561-4(4)-38-31 PROJECT SH. NO. 30 OF 45

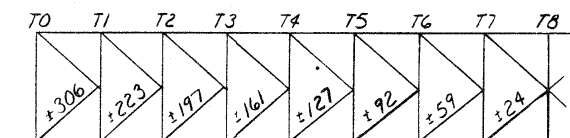
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 CHECKED BY: [Signature]  
 785275

SVERDRUP & PARCEL AND ASSOCIATES, Inc.  
 CONSULTING ENGINEERS  
 ST. LOUIS, MO.

| Hanger  | R2#R14 | R3#R13 | R4#R12 | R5#R11 | R6#R10 | R7#R9  | R8     |
|---------|--------|--------|--------|--------|--------|--------|--------|
| Dist. x | 19'-0" | 27'-0" | 33'-0" | 38'-0" | 41'-0" | 43'-0" | 44'-0" |



PERMISSIBLE WELDED SHOP SPLICES  
TIE GIRDER AND RIB



LOWER LATERAL BRACING FORCES



UPPER LATERAL BRACING FORCES

NOTES

See Des. Sh. No. 37 for Rope Spacer Details.

| MEMBER FORCES OF TIE-GIRDER |     |                   |        |             |        |             |        |             |        |               |        |
|-----------------------------|-----|-------------------|--------|-------------|--------|-------------|--------|-------------|--------|---------------|--------|
| Member                      | Jt. | Total DL+LL+I FWS |        | FWS         |        | Live Load   |        | Impact      |        | Total DL+LL+I |        |
|                             |     | Axial Force       | Moment | Axial Force | Moment | Axial Force | Moment | Axial Force | Moment | Axial Force   | Moment |
|                             | T0  | +3680             | -1500  | +295        | -240   | +397        | -333   | +36         | -31    | +4408         | -2104  |
|                             | T1  | +3680             | +1500  | +295        | +117   | +136        | +4759  | +20         | +711   | +4131         | +7087  |
|                             | T2  | +3680             | +1500  | +295        | +110   | +187        | +7807  | +25         | +1038  | +4187         | +10455 |
|                             | T3  | +3680             | +1500  | +295        | +188   | +193        | +9454  | +26         | +1257  | +4194         | +12399 |
|                             | T4  | +3680             | +1500  | +295        | +92    | +247        | +9553  | +30         | +1142  | +4252         | +12287 |
|                             | T5  | +3680             | +1500  | +295        | +249   | +252        | +8820  | +30         | +1055  | +4257         | +11624 |
|                             | T6  | +3680             | +1500  | +295        | +235   | +304        | +7124  | +33         | +774   | +4312         | +9633  |
|                             | T7  | +3680             | +1500  | +295        | +298   | +326        | +5236  | +39         | +626   | +4340         | +7660  |
|                             | T8  | +3680             | +1921  | +295        | +73    | +351        | +4176  | +42         | +499   | +4368         | +6669  |
|                             | T9  | +3680             | +1500  | +295        | +298   | +325        | +5187  | +39         | +620   | +4339         | +7605  |
|                             | T10 | +3680             | +1500  | +295        | +235   | +304        | +7036  | +33         | +765   | +4312         | +9536  |
|                             | T11 | +3680             | +1500  | +295        | +249   | +252        | +8736  | +30         | +1045  | +4257         | +11530 |
|                             | T12 | +3680             | +1500  | +295        | +92    | +247        | +9477  | +30         | +1134  | +4252         | +12203 |
|                             | T13 | +3680             | +1500  | +295        | +188   | +195        | +9372  | +26         | +1245  | +4196         | +12305 |
|                             | T14 | +3680             | +1500  | +295        | +108   | +190        | +7632  | +25         | +1014  | +4190         | +10254 |
|                             | T15 | +3680             | +1500  | +295        | +114   | +138        | +4618  | +21         | +690   | +4134         | +6922  |
|                             | T16 | +3680             | -1500  | +295        | -238   | +399        | -316   | +37         | -29    | +4411         | -2083  |

Sign Convention: Axial loads in kips, Pos. = Tension, Neg. = Compression.  
Bending moment in ft.-kips, Pos. = Tension in bottom of section,  
Neg. = Compression in bottom of section.

| MEMBER FORCES OF ARCH-RIB |     |                   |        |             |        |             |        |             |        |               |        |
|---------------------------|-----|-------------------|--------|-------------|--------|-------------|--------|-------------|--------|---------------|--------|
| Member                    | Jt. | Total DL+LL+I FWS |        | FWS         |        | Live Load   |        | Impact      |        | Total DL+LL+I |        |
|                           |     | Axial Force       | Moment | Axial Force | Moment | Axial Force | Moment | Axial Force | Moment | Axial Force   | Moment |
| T0-R1                     | T0  | -4611             | +1209  | -368        | +240   | -498        | +333   | -46         | +31    | -5523         | +1813  |
| T0-R1                     | R1  | -4593             | +828   | -368        | +77    | -179        | +743   | -27         | +111   | -5167         | +1759  |
| R1-R2                     | R2  | -4393             | +1146  | -353        | +94    | -230        | +1136  | -31         | +151   | -5007         | +2527  |
| R2-R3                     | R3  | -4202             | +1135  | -338        | +105   | -224        | +1299  | -30         | +173   | -4794         | +2712  |
| R3-R4                     | R4  | -4038             | +1058  | -325        | +106   | -272        | +1280  | -33         | +153   | -4668         | +2597  |
| R4-R5                     | R5  | -3904             | +1142  | -314        | +110   | -267        | +1181  | -32         | +141   | -4517         | +2574  |
| R5-R6                     | R6  | -3797             | +1023  | -305        | +100   | -314        | +975   | -34         | +106   | -4450         | +2204  |
| R6-R7                     | R7  | -3723             | +699   | -299        | +94    | -330        | +724   | -39         | +87    | -4391         | +1604  |
| R7-R8                     | R8  | -3685             | +1500  | -296        | +192   | -352        | +737   | -42         | +88    | -4375         | +2517  |
| R9-R10                    | R9  | -3708             | +827   | -298        | +94    | -329        | +720   | -39         | +86    | -4374         | +1727  |
| R10-R11                   | R10 | -3771             | +1064  | -303        | +100   | -312        | +968   | -34         | +105   | -4420         | +2237  |
| R11-R12                   | R11 | -3868             | +1145  | -311        | +110   | -265        | +1175  | -32         | +141   | -4476         | +2571  |
| R12-R13                   | R12 | -3994             | +1067  | -321        | +106   | -270        | +1276  | -32         | +153   | -4617         | +2602  |
| R13-R14                   | R13 | -4149             | +1134  | -334        | +105   | -222        | +1319  | -29         | +175   | -4734         | +2733  |
| R14-R15                   | R14 | -4334             | +1156  | -349        | +96    | -229        | +1264  | -30         | +168   | -4942         | +2684  |
| R15-T16                   | R15 | -4528             | +840   | -362        | +80    | -180        | +861   | -27         | +129   | -5097         | +1910  |
| R15-T16                   | R16 | -4545             | +1201  | -362        | +238   | -493        | +316   | -45         | +29    | -5445         | +1784  |

| STRINGER MOMENTS AND REACTIONS <sup>0</sup> |                    |     |    |       |                  |      |       |
|---------------------------------------------|--------------------|-----|----|-------|------------------|------|-------|
| Panel Point                                 | Moments (Ft. Kips) |     |    |       | Reactions (Kips) |      |       |
|                                             | DL                 | LL  | I  | Total | DL               | LL   | Total |
| 0                                           | —                  | —   | —  | —     | 23.1             | 40.7 | 12.2  |
| 0.4#3.6                                     | 191                | 294 | 88 | 573   | —                | —    | —     |
| 1#3                                         | 265                | 211 | 63 | 539   | 67.2             | 51.5 | 15.5  |
| 1.5#2.5                                     | 90                 | 235 | 70 | 395   | —                | —    | —     |
| 2                                           | 176                | 195 | 59 | 430   | 54.6             | 50.7 | 15.2  |
| 4                                           | —                  | —   | —  | —     | 46.2             | 42.9 | 12.9  |
| 4.4#7.6                                     | 191                | 294 | 88 | 573   | —                | —    | —     |
| 5#7                                         | 265                | 211 | 63 | 539   | 67.2             | 51.5 | 15.5  |
| 5.5#6.5                                     | 90                 | 235 | 70 | 395   | —                | —    | —     |
| 6                                           | 176                | 195 | 59 | 430   | 54.6             | 50.7 | 15.2  |
| 8                                           | —                  | —   | —  | —     | 46.2             | 42.9 | 12.9  |

<sup>0</sup> Values for interior stringers are given. Multiply dead load values by 0.93 and live load values by 0.90 for exterior stringers.

| FLOORBEAM MOMENTS AND REACTIONS |                            |      |     |       |                              |       |       |
|---------------------------------|----------------------------|------|-----|-------|------------------------------|-------|-------|
| FB @ PP                         | Maximum Moments (Ft. Kips) |      |     |       | Maximum End Reactions (Kips) |       |       |
|                                 | DL                         | LL   | I   | Total | DL                           | LL    | Total |
| 0                               | 2562                       | 2172 | 543 | 5277  | 122.9                        | 97.5  | 24.4  |
| 1                               | 6633                       | 2744 | 686 | 10063 | 318.2                        | 123.2 | 30.8  |
| 2                               | 5470                       | 2645 | 661 | 8776  | 262.4                        | 118.7 | 29.7  |
| 3                               | 6633                       | 2744 | 686 | 10063 | 318.2                        | 123.2 | 30.8  |
| 4                               | 4693                       | 2288 | 572 | 7553  | 225.1                        | 102.9 | 25.7  |
| 5                               | 6633                       | 2744 | 686 | 10063 | 318.2                        | 123.2 | 30.8  |
| 6                               | 5470                       | 2645 | 661 | 8776  | 262.4                        | 118.7 | 29.7  |
| 7                               | 6633                       | 2744 | 686 | 10063 | 318.2                        | 123.2 | 30.8  |
| 8                               | 4693                       | 2288 | 572 | 7553  | 225.1                        | 102.9 | 25.7  |

| PANEL POINT LOADS (KIPS) |  |          |       |       |       |       |       |       |       |
|--------------------------|--|----------|-------|-------|-------|-------|-------|-------|-------|
| Panel Point              |  | 0        | 1     | 2     | 3     | 4     | 5     | 6     | 7     |
| Rib Load                 |  | Steel    | 32.8  | 64.4  | 70.9  | 71.6  | 70.5  | 70.0  | 66.2  |
| Tie Load                 |  | Steel    | 57.0  | 103.3 | 101.5 | 107.5 | 97.4  | 101.5 | 103.3 |
|                          |  | Concrete | 79.8  | 232.1 | 188.6 | 232.1 | 159.6 | 232.1 | 159.6 |
|                          |  | FWS      | 11.5  | 33.5  | 27.2  | 33.5  | 23.0  | 33.5  | 27.2  |
| Tie Total                |  |          | 148.3 | 368.9 | 317.3 | 373.1 | 280.0 | 373.1 | 368.9 |
| Rib-Tie Total Dead Load  |  |          | 181.1 | 433.3 | 388.2 | 444.7 | 350.5 | 443.1 | 383.5 |
| Live Load                |  |          | —     | 49.6  | 49.6  | 82.9  | 49.6  | 49.6  | —     |
| Max. Tie Loading         |  |          | —     | 6.6   | 6.6   | 11.0  | 6.6   | 6.6   | —     |
| Total LL+I               |  |          | —     | 56.2  | 56.2  | 93.9  | 56.2  | 56.2  | —     |
| Total DL+Tie LL+Tie I    |  |          | 181.1 | 489.5 | 444.4 | 538.6 | 406.7 | 499.3 | 430.1 |
| Live Load                |  |          | —     | 49.6  | 82.9  | 49.6  | 49.6  | 49.6  | —     |
| Max. Rib Loading         |  |          | —     | 6.6   | 11.0  | 6.6   | 6.6   | 6.6   | —     |
| Total LL+I               |  |          | —     | 56.2  | 93.9  | 56.2  | 56.2  | 56.2  | —     |
| Total DL+Rib LL+Rib I    |  |          | 181.1 | 489.5 | 482.1 | 500.9 | 406.7 | 499.3 | 430.1 |

SVERDRUP & PARCEL AND ASSOCIATES, Inc. Includes weight of rib, rib bracing & hangers.  
CONSULTING ENGINEERS Includes weight of tie, tie bracing, floorbeams & stringers.  
ST. LOUIS, MO.

| HANGER FORCES (KIPS) |          |             |          |      |     |       |
|----------------------|----------|-------------|----------|------|-----|-------|
| Hanger               | Steel DL | DL+LL+I FWS | Total DL | LL   | I   | Total |
| T1-R1                | 120.7    | 298.8       | 324.4    | 34.9 | 3.2 | 362.5 |
| T2-R2                | 110.3    | 309.6       | 338.3    | 40.8 | 3.8 | 382.9 |
| T3-R3                | 105.1    | 307.9       | 337.1    | 40.5 | 3.7 | 381.3 |
| T4-R4                | 103.2    | 303.8       | 332.7    | 40.0 | 3.7 | 376.4 |
| T5-R5                | 106.6    | 309.0       | 338.1    | 41.4 | 3.8 | 383.3 |
| T6-R6                | 109.3    | 311.9       | 341.1    | 42.4 | 3.9 | 387.4 |
| T7-R7                | 113.1    | 315.9       | 345.1    | 37.9 | 3.5 | 386.5 |
| T8-R8                | 115.7    | 316.4       | 345.3    | 47.3 | 4.4 | 397.0 |
| T9-R9                | 113.1    | 315.9       | 345.1    | 37.9 | 3.5 | 386.5 |
| T10-R10              | 109.3    | 311.9       | 341.1    | 42.5 | 3.9 | 387.5 |
| T11-R11              | 106.6    | 309.0       | 338.1    | 41.5 | 3.8 | 383.4 |
| T12-R12              | 103.2    | 303.8       | 332.7    | 39.9 | 3.7 | 376.3 |
| T13-R13              | 105.1    | 308.0       | 337.2    | 39.7 | 3.6 | 380.5 |
| T14-R14              | 110.2    | 309.4       | 338.1    | 42.0 | 3.9 | 384.0 |
| T15-R15              | 120.5    | 299.1       | 324.8    | 36.4 | 3.4 | 364.6 |

| ARCH SECTION PROPERTIES |          |                      |                      |
|-------------------------|----------|----------------------|----------------------|
|                         | Flange F | A (in <sup>4</sup> ) | I (in <sup>4</sup> ) |
| Rib                     | 2 1/2"   | 340.5                | 170900               |
|                         | 2"       | 320.0                | 154700               |
|                         | 1 3/4"   | 299.0                | 138800               |
| Tie                     | 1 3/4"   | 328.0                | 711800               |

MISSISSIPPI RIVER BRIDGE

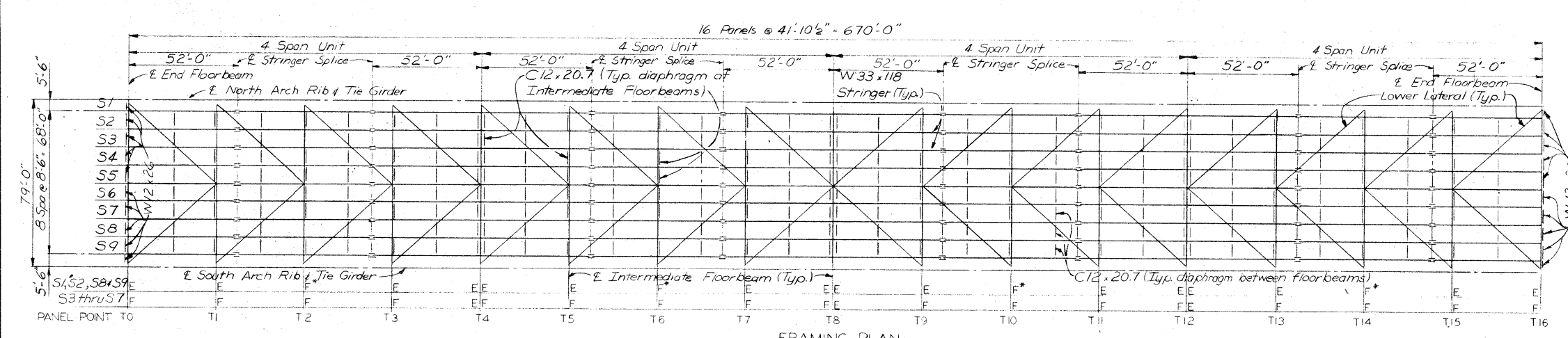
TIED ARCH-SPAN 7  
STRESS SHEET

DUBUQUE COUNTY, IOWA - GRANT COUNTY, WISCONSIN  
IOWA DEPARTMENT OF TRANSPORTATION

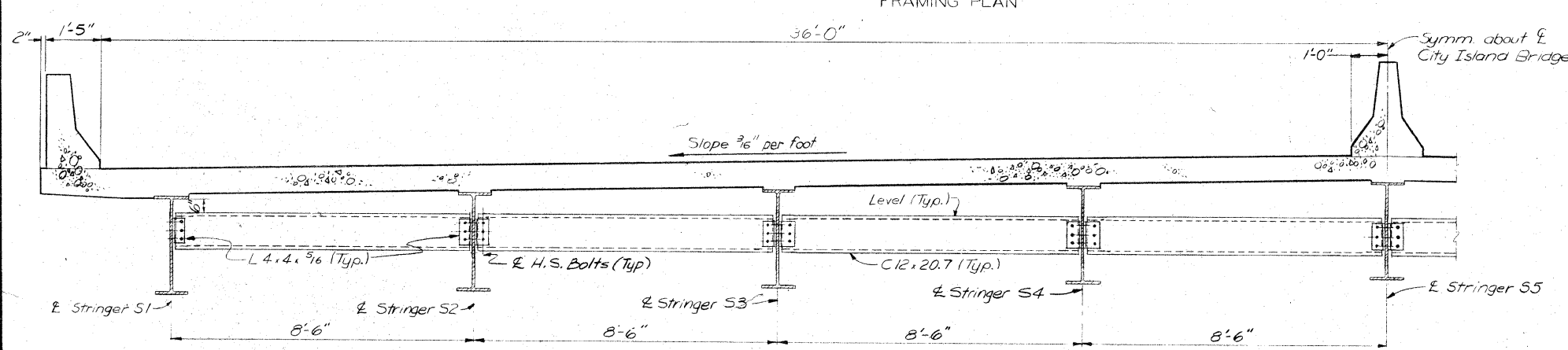
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DESIGN NO. 1279 FILE NO. 25896 DES. SH. NO. 31 OF 45

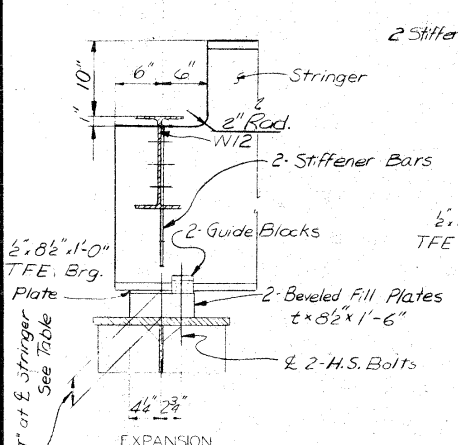
PROJECT BRP-561-4(4)-38-31 PROJECT SH. NO. 31 OF 45



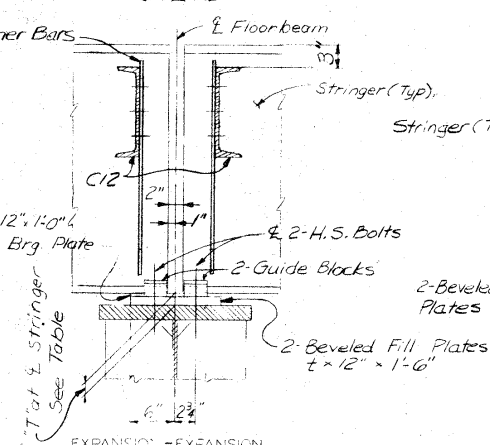
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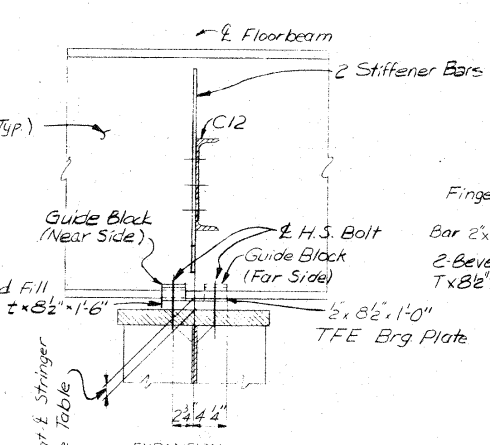
PART CROSS SECTION NEAR E PANEL



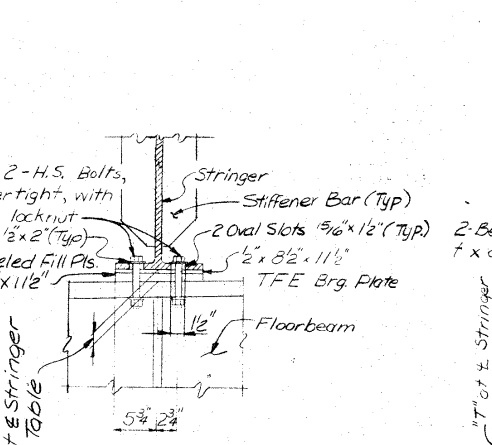
EXPANSION STRINGER SEATS AT END FLOORBEAM



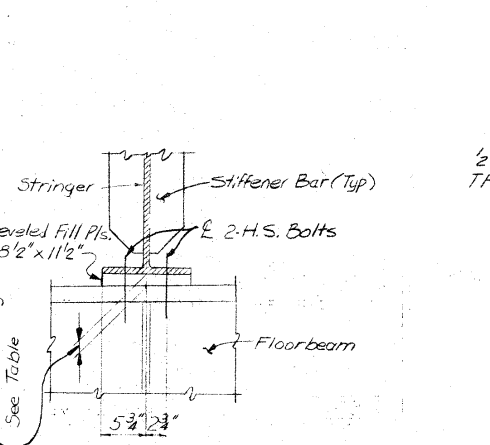
EXPANSION - EXPANSION STRINGER SEATS AT INTERIOR FLOORBEAMS



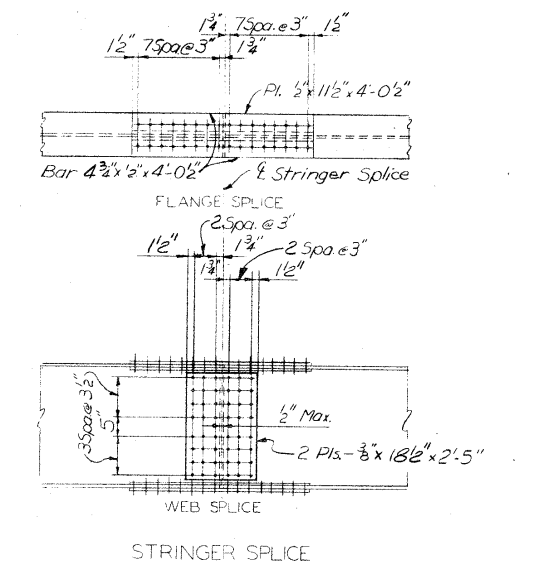
EXPANSION STRINGER SEATS AT INTERIOR FLOORBEAMS



FIXED X STRINGER SEATS AT END AND INTERIOR FLOORBEAMS

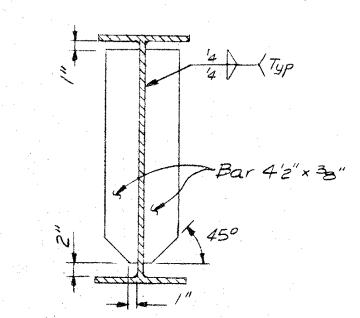


FIXED STRINGER SEATS AT END AND INTERIOR FLOORBEAMS

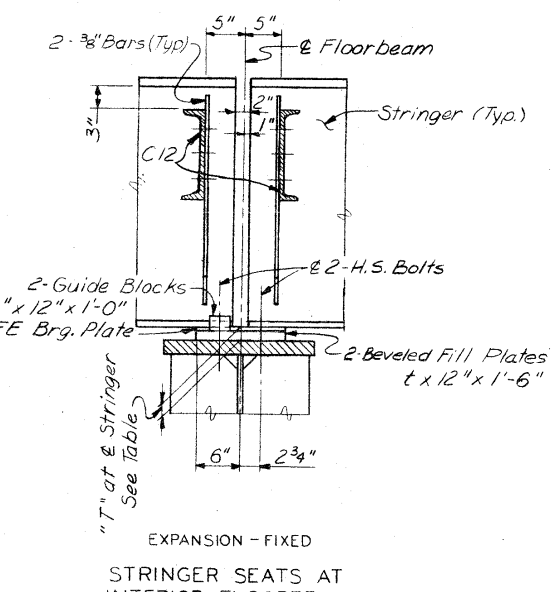


STRINGER SPLICE

Note:  
E = Expansion Seat  
F = Fixed Seat



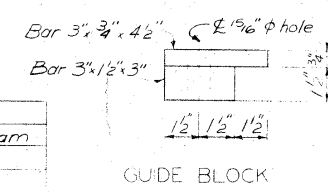
STRINGER STIFFENERS



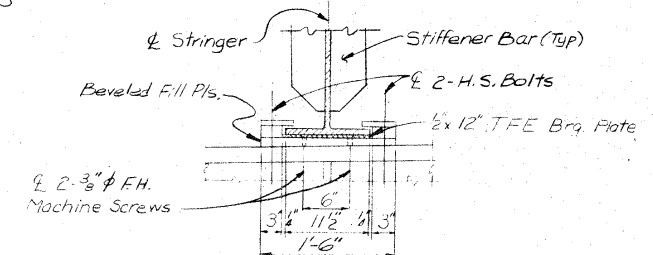
EXPANSION - FIXED STRINGER SEATS AT INTERIOR FLOORBEAMS

| T" AT E STRINGER |                |               |
|------------------|----------------|---------------|
|                  | Int. Floorbeam | End Floorbeam |
| S1-S4, S6-S9     | 1 1/2"         | 3 1/2"        |
| S5               | 1 1/2"         | 3 3/4"        |

Note: Dimension "T" = Top of Floorbeam to Bottom of Stringer



GUIDE BLOCK



EXPANSION SEAT DETAILS

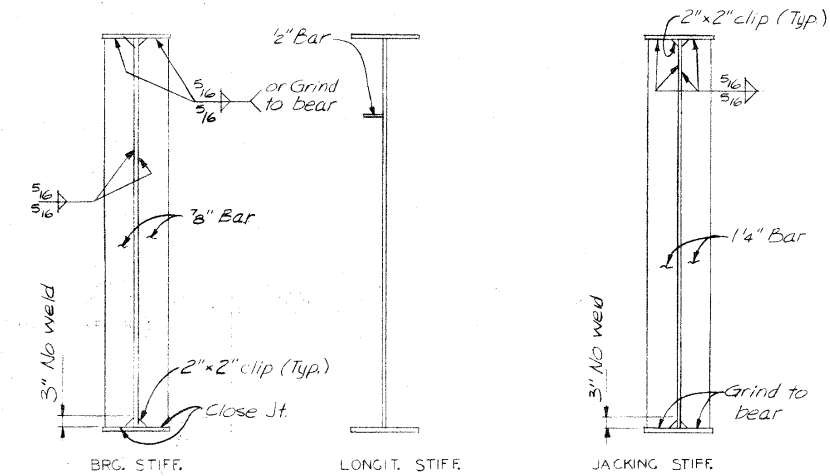
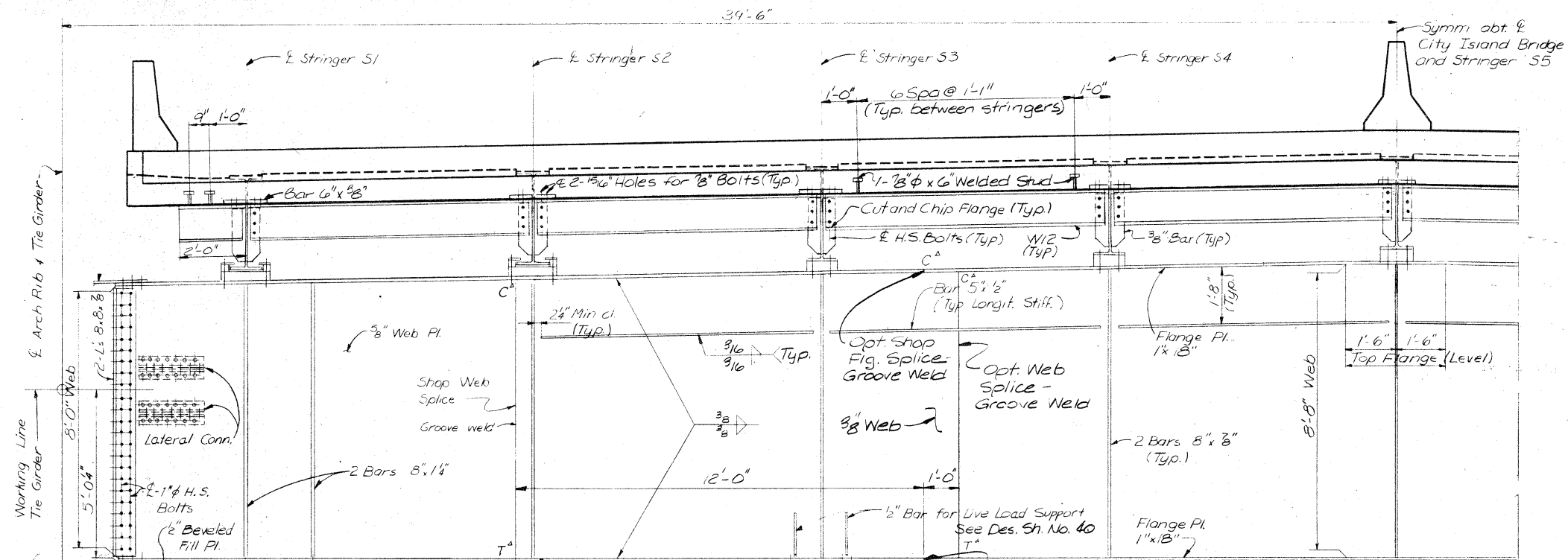
MISSISSIPPI RIVER BRIDGE  
TIED ARCH-SPAN 7  
FLOOR SYSTEM AND STRINGER DETAILS

DUBUQUE COUNTY, IOWA - GRANT COUNTY, WISCONSIN  
IOWA DEPARTMENT OF TRANSPORTATION

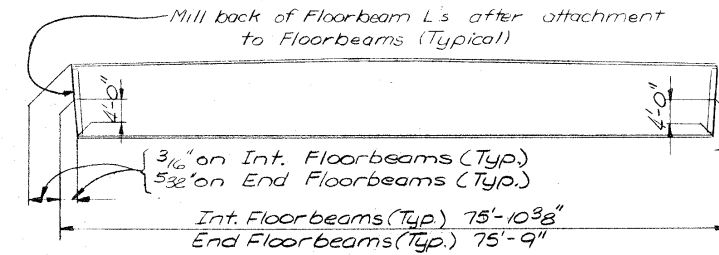
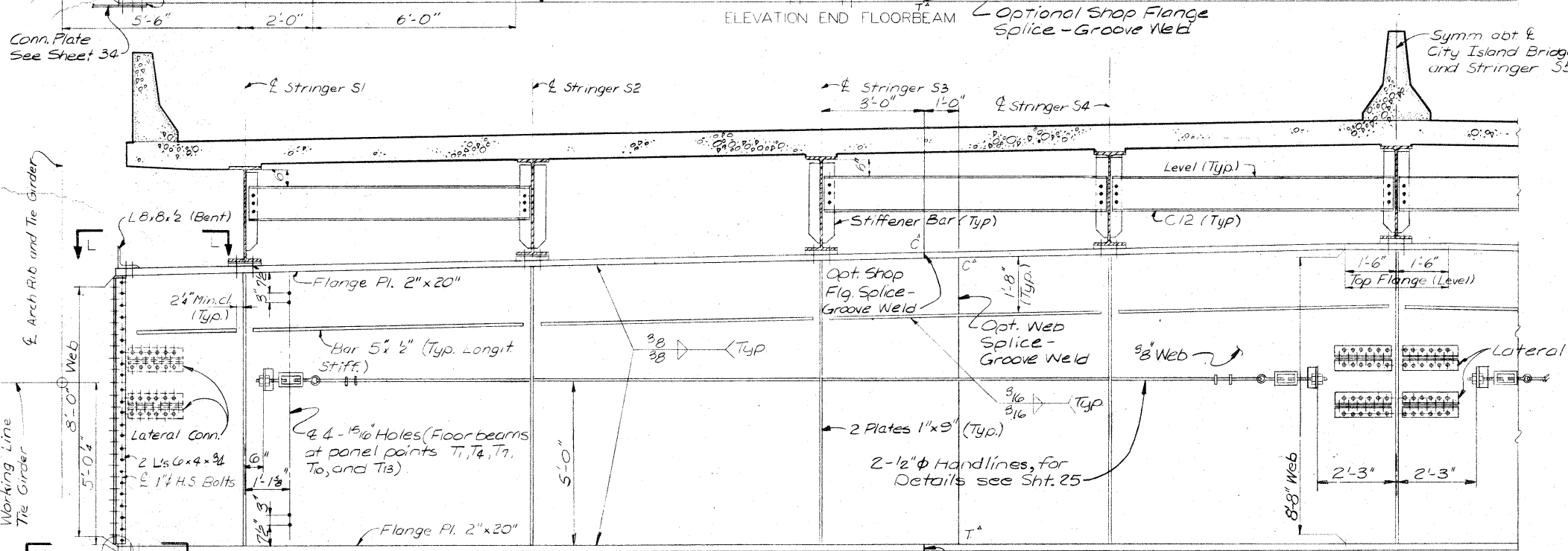
NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

DRAWN BY: T. Inman July, 1978  
CHECKED BY: J. W. W. [Signature]  
5818 785204

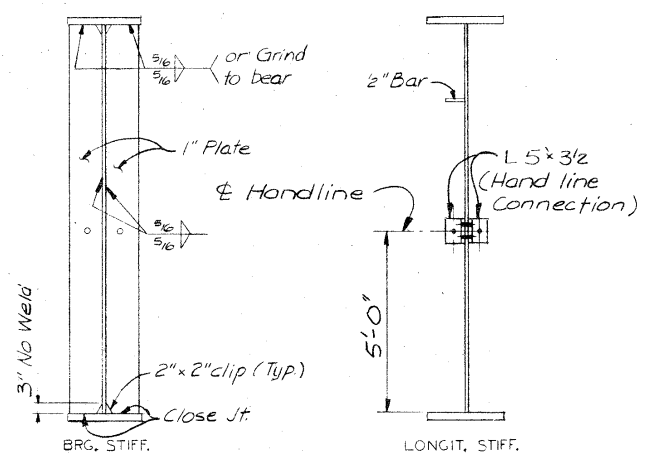
SVERDRUP & PARCEL AND ASSOCIATES, Inc.  
CONSULTING ENGINEERS  
ST. LOUIS, MO.



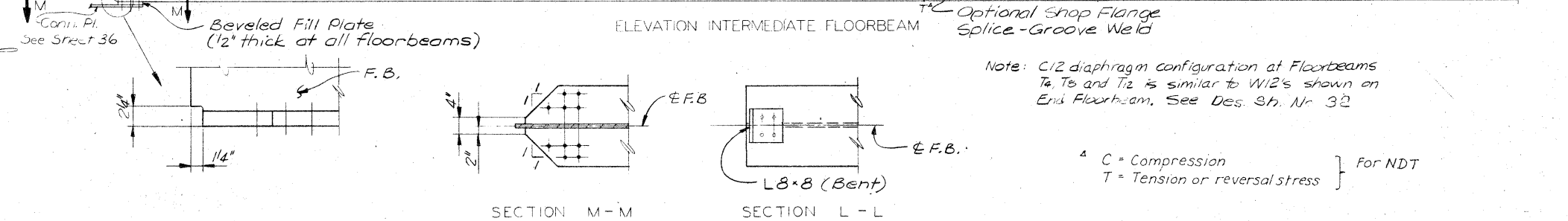
END FLOORBEAM STIFFENERS



FLOORBEAM BEVEL DIAGRAM



INTERMEDIATE FLOORBEAM STIFFENERS



Note: C12 diaphragm configuration at Floorbeams T4, T5 and T12 is similar to W12's shown on End Floorbeam. See Des. Sh. Nr 32

C = Compression  
T = Tension or reversal stress } For NDT

# MISSISSIPPI RIVER BRIDGE

TIED ARCH-SPAN 7

FLOORBEAMS

DUBUQUE COUNTY, IOWA - GRANT COUNTY, WISCONSIN

IOWA DEPARTMENT OF TRANSPORTATION

NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

DESIGN NO. 1279 FILE NO. 25896 DES. SH. NO. 33 OF 45

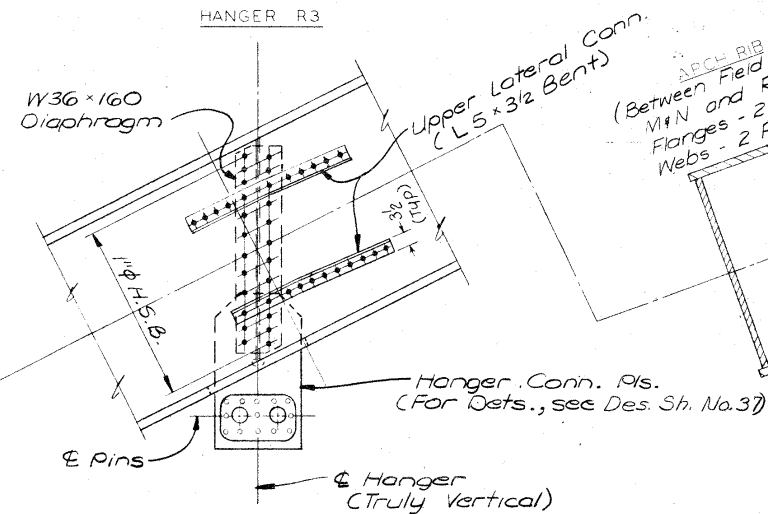
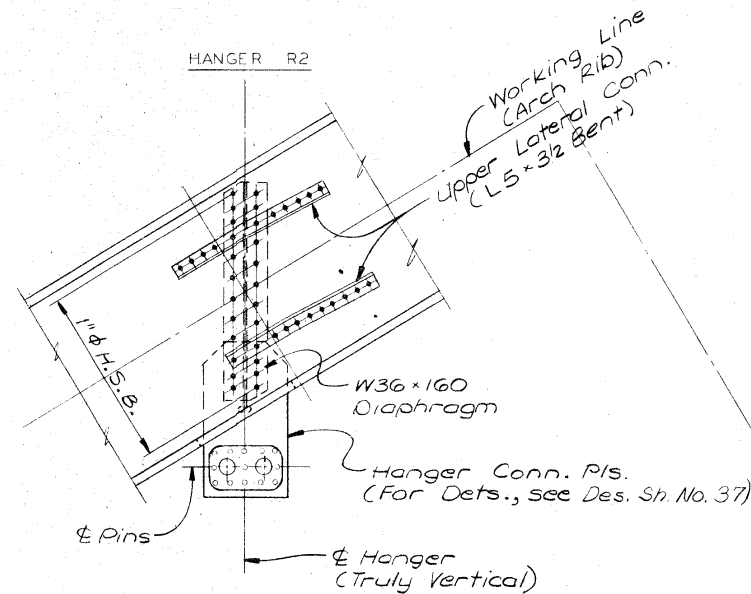
PROJECT BRP-561-4(4)-38-31 PROJECT SH. NO. 33 OF 45

DRAWN BY: T. Inman, August, 1978  
CHECKED BY: [Signature]  
5818 785210

SVERDRUP & PARCEL AND ASSOCIATES, Inc.  
CONSULTING ENGINEERS  
ST. LOUIS, MO.



NOTE: For all W36 diaphragms in the tie girders, arch ribs and arch ends, the outside face of both flanges must be parallel to each other and perpendicular to web.



ARCH RIB (Between Field Splices M & N and R & S)  
Flanges - 2 Pls. 2"x41"  
Webs - 2 Pls. 1/2"x52"

ARCH RIB (Between Field Splices N & R)  
Flanges - 2 Pls. 3/4"x41"  
Webs - 2 Pls. 1/2"x52"

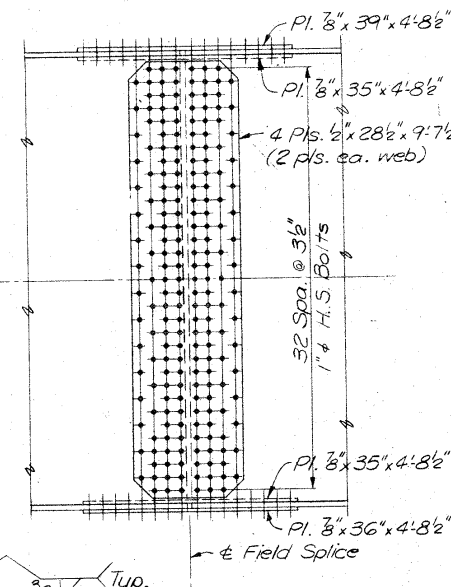
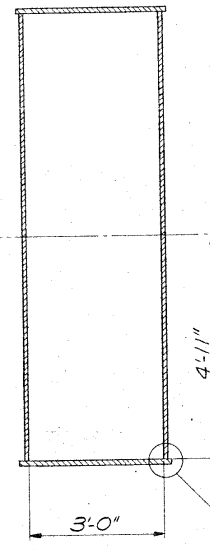
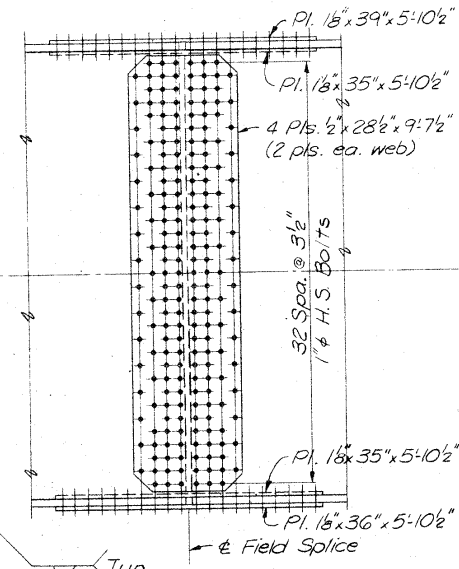
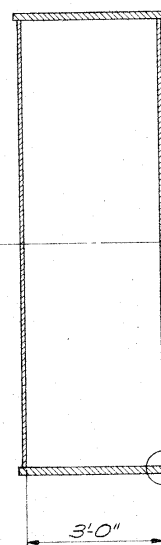
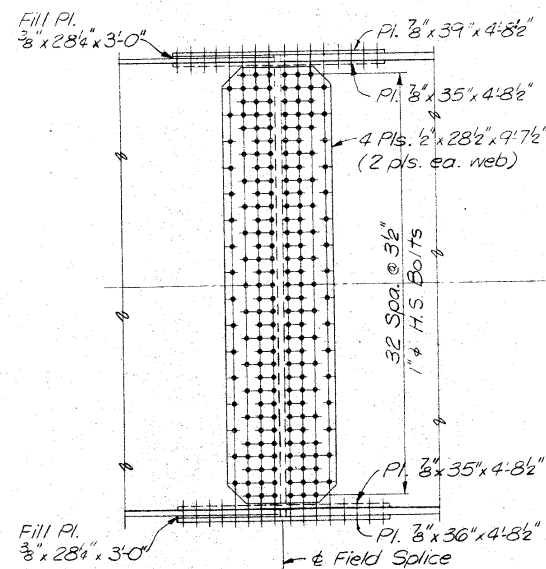
FIELD SPICE B (Splices D, F & H same)

TIE GIRDER (Between Field Splices B & D and F & H)  
Flanges - 2 Pls. 1 3/4"x39"  
Webs - 2 Pls. 1 3/8"x118"

FIELD SPICE C (Splice G same)

TIE GIRDER (Between Field Splices D & F)  
Flanges - 2 Pls. 1 3/8"x39"  
Webs - 2 Pls. 1 3/8"x118"

FIELD SPICE E



Hanger Conn. Pls. (For Dets., see Des. Sh. No. 37)

HANGER R7

W36x160 Diaphragm

Upper Lateral Conn. (L5x3/2 Bent)

Hanger (Truly Vertical)

NOTES  
For Location of Field Splices  
See Des. Sh. No. 31

# MISSISSIPPI RIVER BRIDGE

TIED ARCH-SPAN 7

ARCH RIB AND TIE GIRDER MATERIAL AND SPLICES  
DUBUQUE COUNTY, IOWA - GRANT COUNTY, WISCONSIN  
IOWA DEPARTMENT OF TRANSPORTATION

NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

DESIGN NO. 1279 FILE NO. 25896 DES. SH. NO. 35 OF 45

PROJECT BRP-561-4 (4)-38-31 PROJECT SH. NO. 35 OF 45

DRAWN BY: T. Sanders, Sept. 1973  
CHECKED BY: M. W. B.

SVERDRUP & PARCEL AND ASSOCIATES, Inc.  
CONSULTING ENGINEERS  
ST. LOUIS, MO.

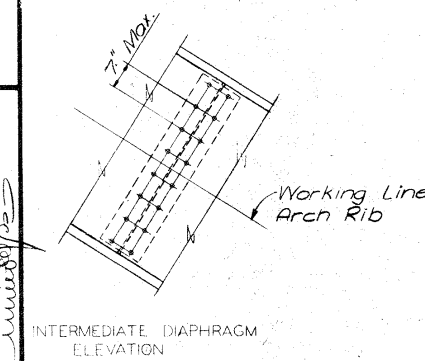
5818  
DESIGNED BY: T. Sanders & G. Dee, Sept. 1979  
CHECKED BY: [Signature]

SVERDRUP & PARCEL AND ASSOCIATES, Inc.  
CONSULTING ENGINEERS  
ST. LOUIS, MO.

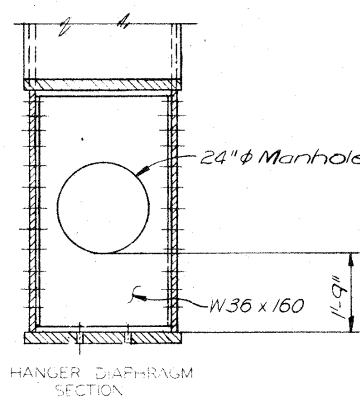
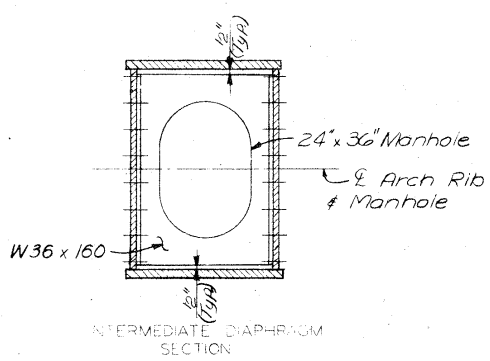
NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

DESIGN NO. 1279 FILE NO. 25896 DES. SH. NO. 36 OF 45  
PROJECT BRP-561-4(4)-38-31 PROJECT SH. NO. 36 OF 45

| ARCH RIB-SPLICE VARIABLES |                        |                        |                        |               |
|---------------------------|------------------------|------------------------|------------------------|---------------|
| Splice                    | Pl. A                  | Pl. C                  | Fill Pl. B             | Spa. +        |
| L & T                     | 1/4" x 35" x 5'-3 1/2" | 1/4" x 41" x 5'-3 1/2" |                        | 8 Spa @ 3' 0" |
| M & S                     | 1/8" x 35" x 4'-8 1/2" | 1/8" x 41" x 4'-8 1/2" | 1/4" x 35" x 2'-4 1/2" | 7 Spa @ 3' 0" |
| N & R                     | 1" x 35" x 4'-11 1/2"  | 1" x 41" x 4'-11 1/2"  | 1/4" x 35" x 2'-0 1/2" | 6 Spa @ 3' 0" |
| P & Q                     | 1" x 35" x 4'-11 1/2"  | 1" x 41" x 4'-11 1/2"  |                        | 6 Spa @ 3' 0" |

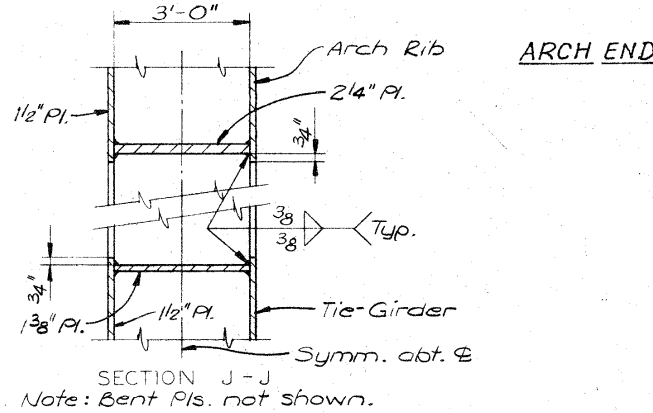
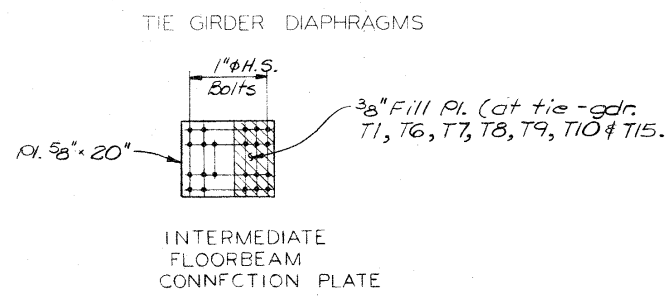
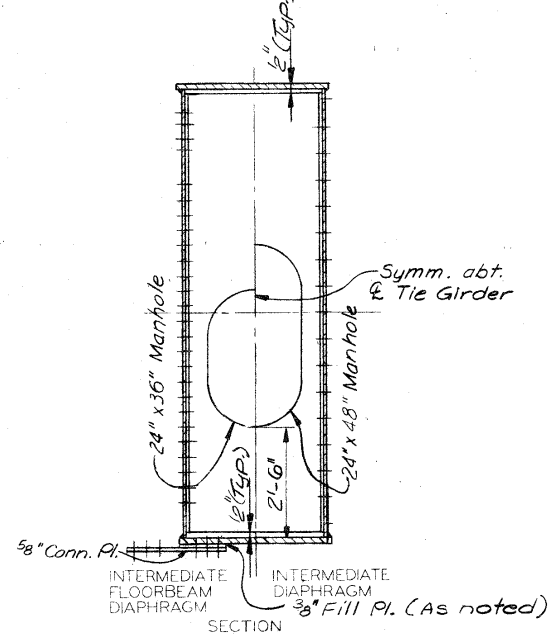
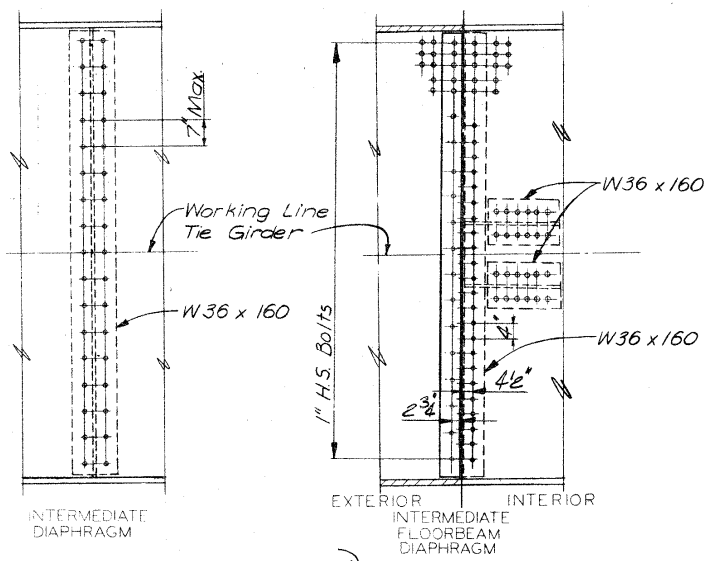
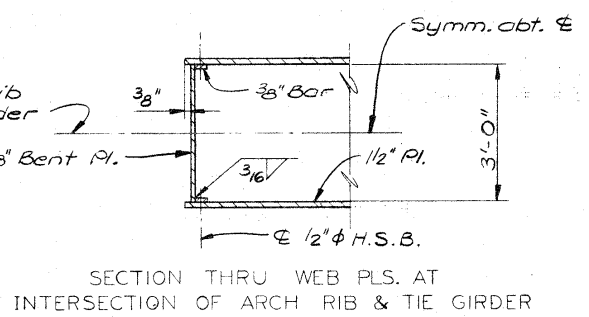
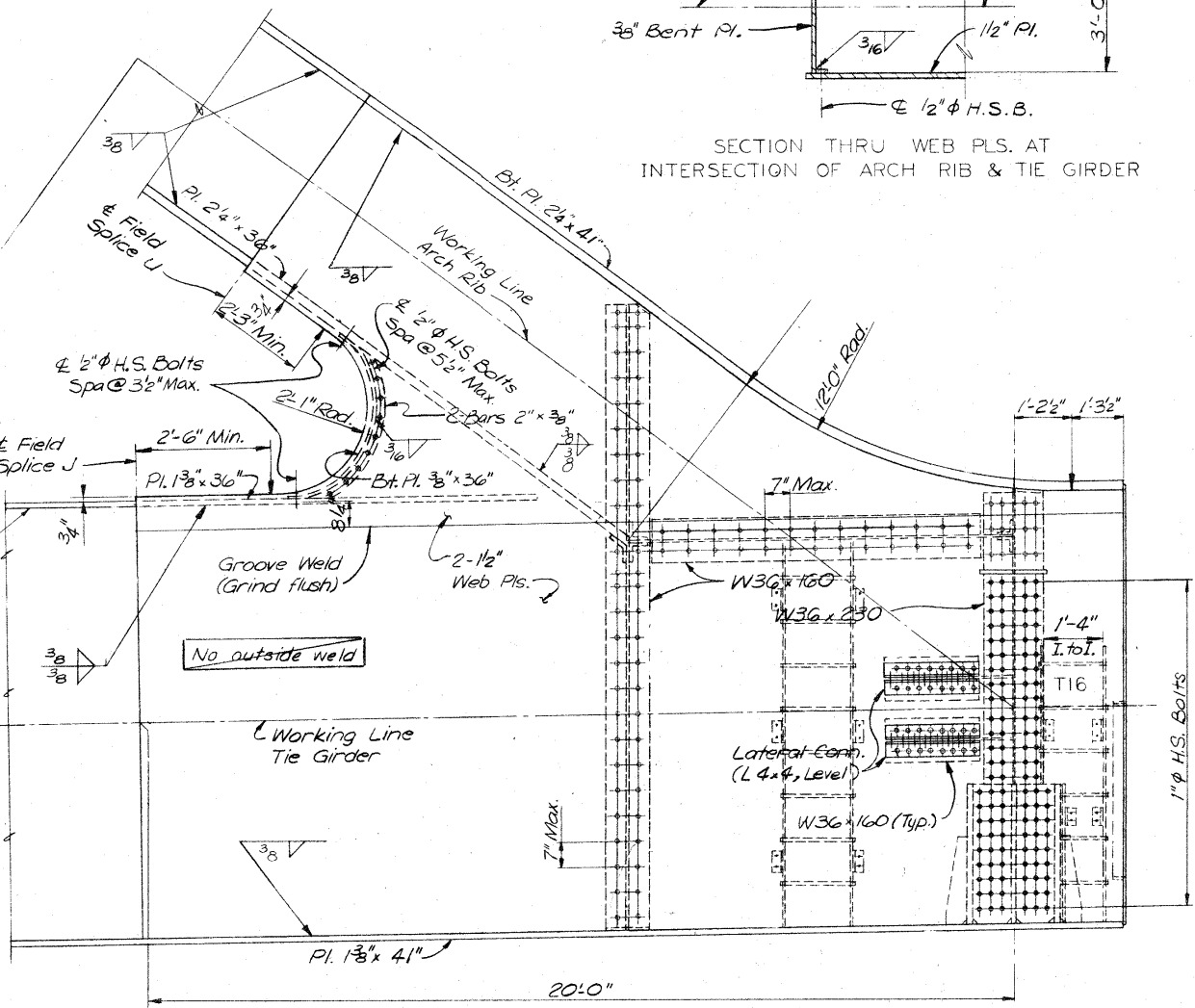
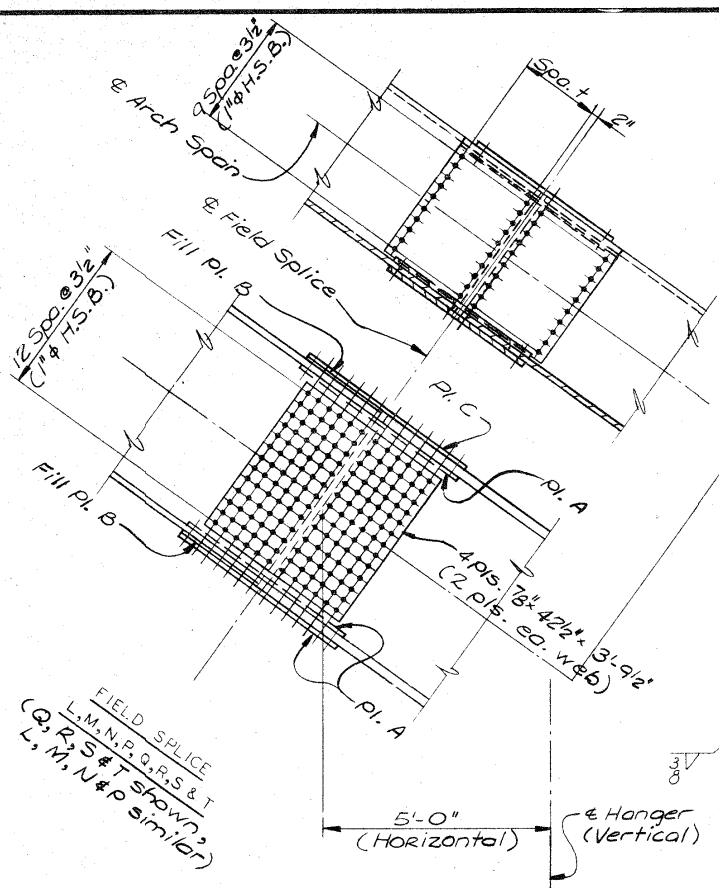


ARCH RIB DIAPHRAGMS



(For other Details See Des. Sh. No. 37)

Revision (7-28-80) Note 'No Outside Weld' is deleted from elevation view of Arch End.



NOTES

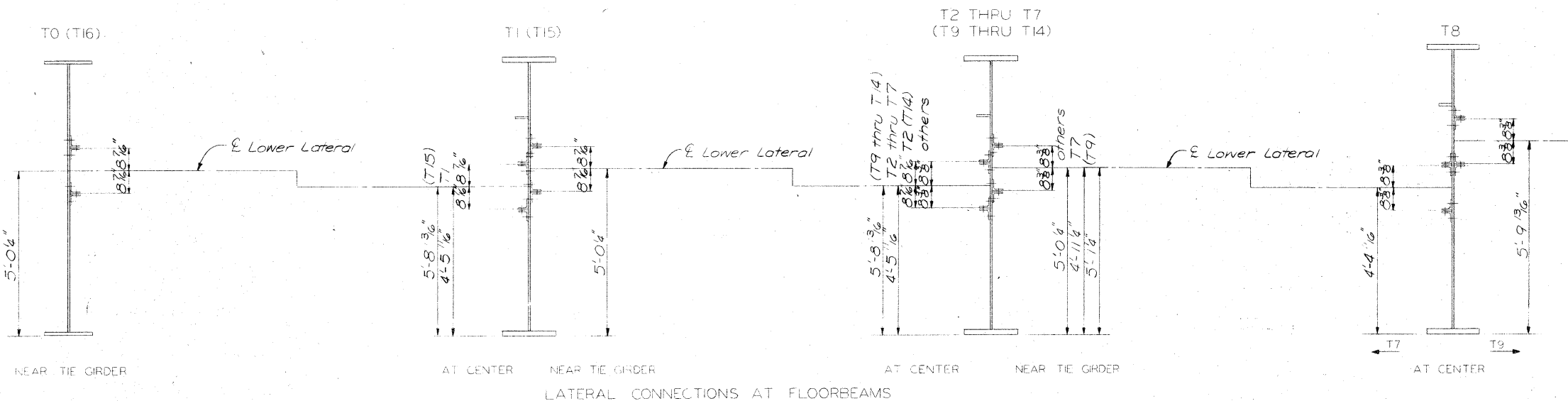
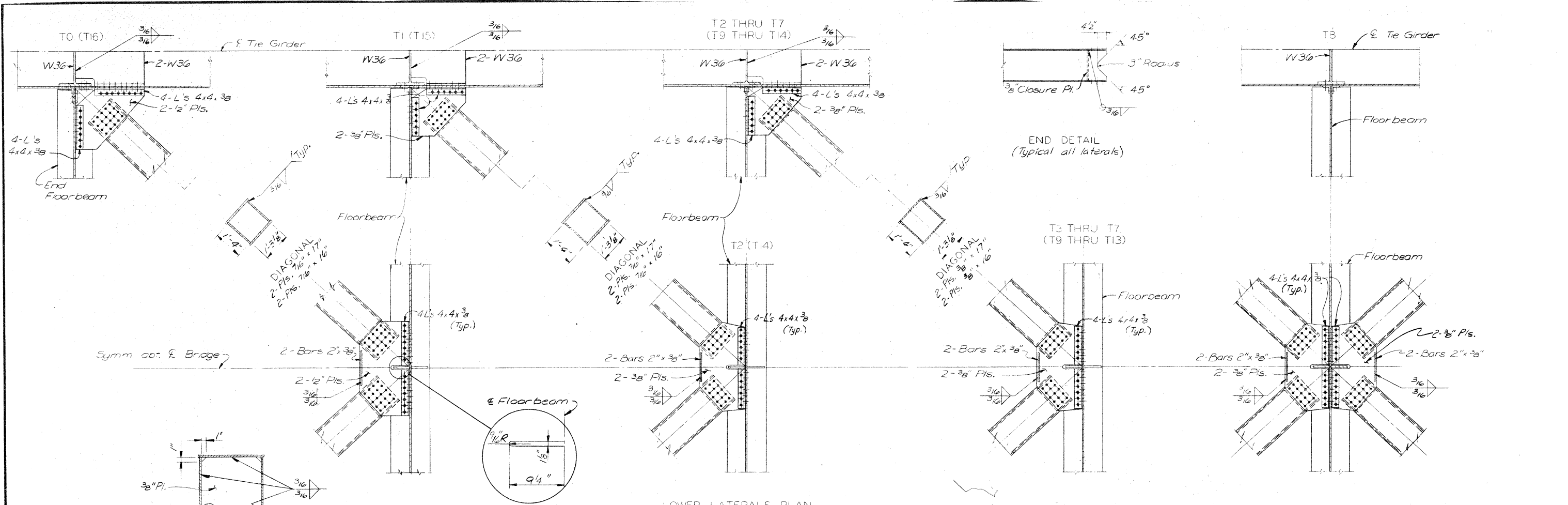
For location of Intermediate Diaphragms, see Des. Sh. No. 31.  
Arch Rib & Tie-Girder at T16 details are similar to those on Des. Sh. No. 34.

MISSISSIPPI RIVER BRIDGE  
TIED ARCH-SPAN 7  
ARCH RIB AND TIE GIRDER AT T16 AND DIAPHRAGMS  
DUBUQUE COUNTY, IOWA - GRANT COUNTY, WISCONSIN  
IOWA DEPARTMENT OF TRANSPORTATION



IOWA DEPARTMENT OF TRANSPORTATION

PROJECT BRF-561-4(4)-38-31 PROJECT SH NO 37 OF 45



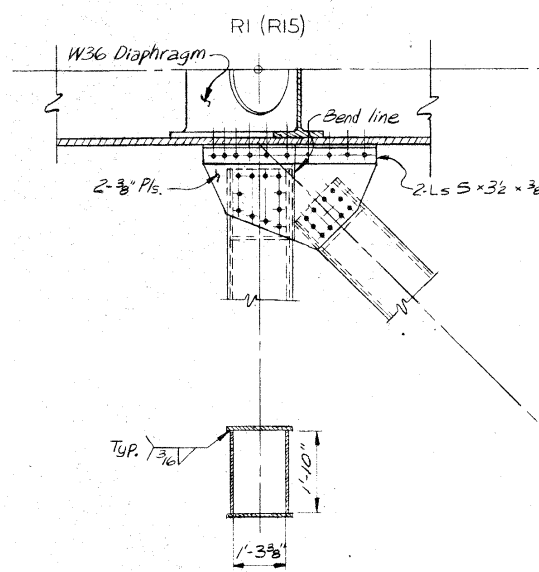
**MISSISSIPPI RIVER BRIDGE**  
**TIED ARCH-SPAN 7**  
**LOWER LATERALS**  
**DUBUQUE COUNTY, IOWA - GRANT COUNTY, WISCONSIN**  
**IOWA DEPARTMENT OF TRANSPORTATION**

5818  
 DRAWN BY: T. Inman  
 CHECKED BY: M. M. M. M.

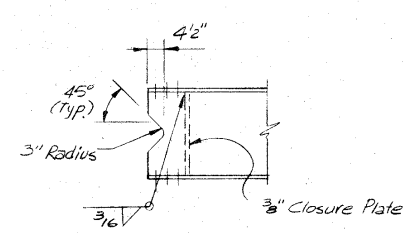
SVERDRUP & PARCEL AND ASSOCIATES, Inc.  
 CONSULTING ENGINEERS  
 ST. LOUIS, MO.

NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

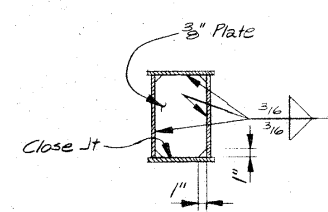
DESIGN NO. 1279 FILE NO. 25896 DES. SH. NO. 38 OF 45  
 PROJECT BRP-561-4(4)-38-31 PROJECT SH. NO. 38 OF 45



STRUT  
2-Pls. 3/8" x 17"  
2-Pls. 1/2" x 22"

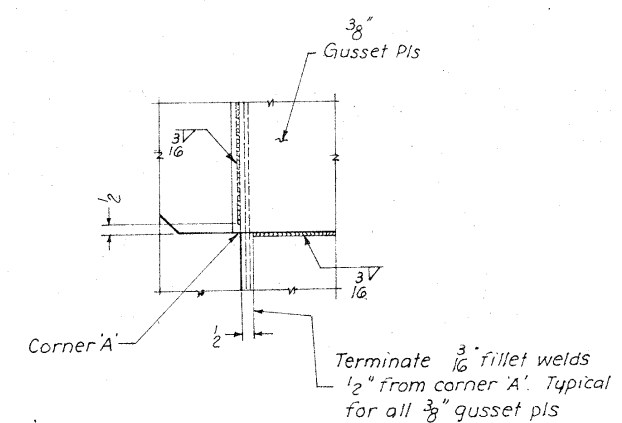
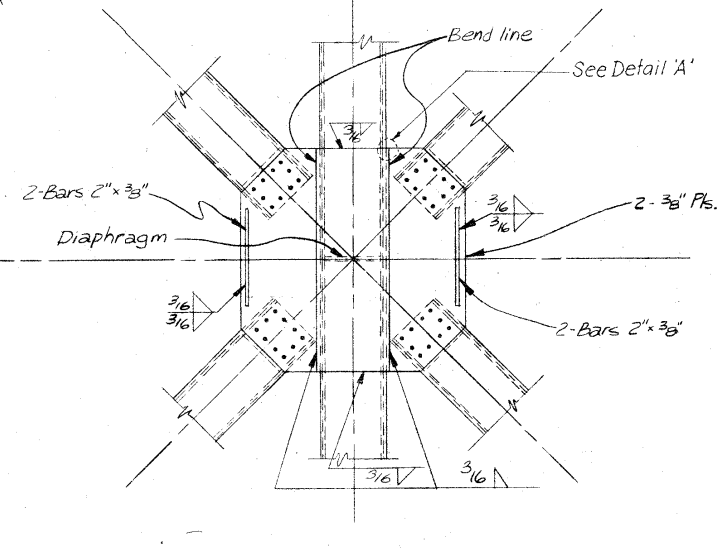
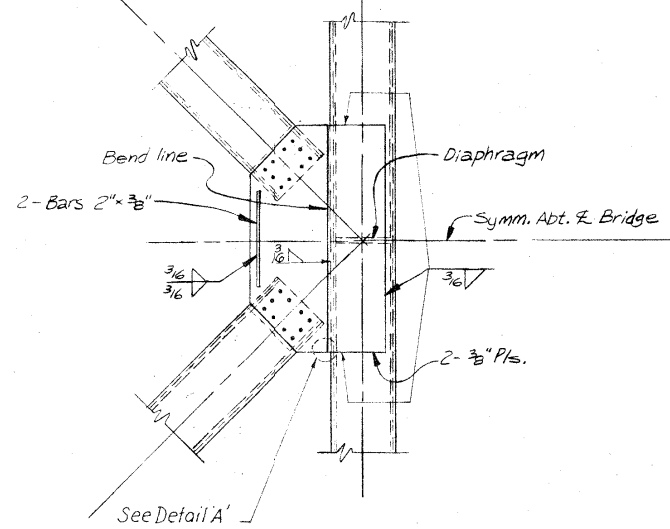
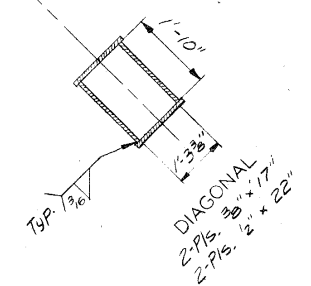
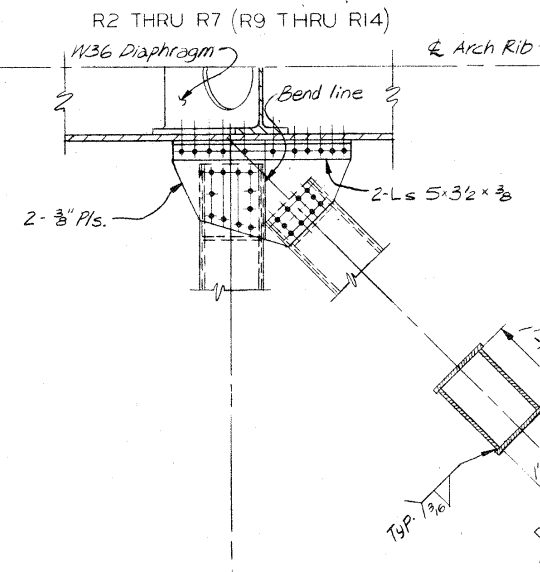


END DETAIL  
(Typ. all struts & diagonals)

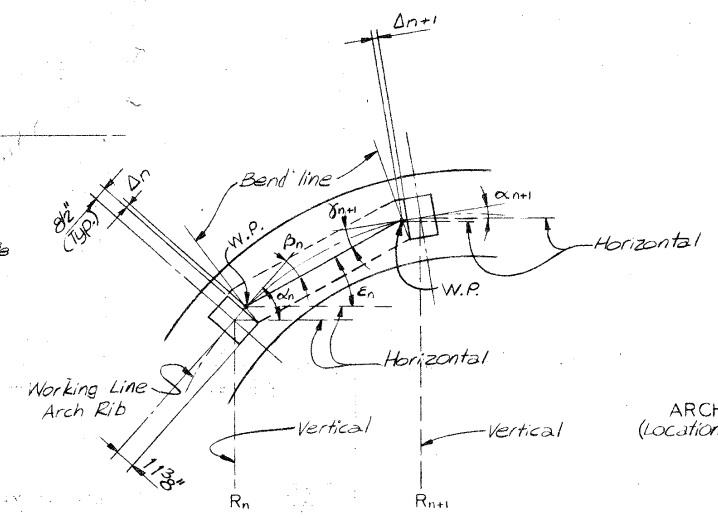
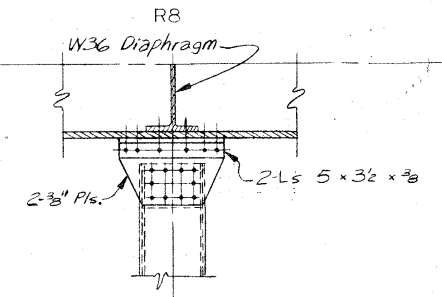


INTERMEDIATE DIAPHRAGM

Place diaphragms @ 8' and 18' either side of  $\epsilon$  in all struts.  
Place 2 diaphragms at equal spaces between end closure plates in all diagonals.



DETAIL 'A'



ARCH RIB PANEL DETAIL  
(Location of Struts and Diagonals)

| Panel   | UPPER LATERAL GEOMETRY |                  |                 |                  |                      |             |                 |          |  |
|---------|------------------------|------------------|-----------------|------------------|----------------------|-------------|-----------------|----------|--|
|         | $E_n^\circ$            | $\alpha_n^\circ$ | $\beta_n^\circ$ | $\gamma_n^\circ$ | $\alpha_{n+1}^\circ$ | $\Delta_n'$ | $\Delta_{n+1}'$ | WP to WP |  |
| R1-R2   | 33.2381                | 35.1667          | 1.9286          | 2.0204           | 31.2177              | 0.0160      | 0.0167          | 48.6165  |  |
| R2-R3   | 29.1101                | 31.2177          | 2.1076          | 2.2006           | 26.9095              | 0.0174      | 0.0182          | 46.4771  |  |
| R3-R4   | 24.6226                | 26.9095          | 2.2869          | 2.3766           | 22.2460              | 0.0189      | 0.0197          | 44.6088  |  |
| R4-R5   | 19.7889                | 22.2460          | 2.4571          | 2.5382           | 17.2507              | 0.0203      | 0.0210          | 43.0461  |  |
| R5-R6   | 14.6434                | 17.2507          | 2.6073          | 2.6731           | 11.9703              | 0.0216      | 0.0221          | 41.8218  |  |
| R6-R7   | 9.2452                 | 11.9703          | 2.7251          | 2.7694           | 6.4758               | 0.0225      | 0.0229          | 40.9655  |  |
| R7-R8   | 3.6768                 | 6.4758           | 2.7990          | 2.8174           | 0.8594               | 0.0232      | 0.0233          | 40.4997  |  |
| R8-R9   | 1.9620                 | 4.7735           | 2.8115          | 2.8214           | 0.8594               | 0.0233      | 0.0233          | 40.4380  |  |
| R10-R9  | 7.5631                 | 10.3158          | 2.7527          | 2.7896           | 4.7735               | 0.0228      | 0.0231          | 40.7815  |  |
| R11-R10 | 13.0228                | 15.6700          | 2.6472          | 2.7070           | 0.3158               | 0.0219      | 0.0224          | 41.5228  |  |
| R12-R11 | 18.2526                | 20.7581          | 2.5055          | 2.5826           | 15.6700              | 0.0207      | 0.0214          | 42.6359  |  |
| R13-R12 | 23.1861                | 25.5262          | 2.3401          | 2.4280           | 20.7581              | 0.0194      | 0.0201          | 44.0940  |  |
| R14-R13 | 27.7812                | 29.9438          | 2.1626          | 2.2550           | 25.5262              | 0.0179      | 0.0187          | 45.8778  |  |
| R15-R14 | 32.0120                | 34.0017          | 1.9827          | 2.0752           | 29.9438              | 0.0164      | 0.0172          | 47.9382  |  |

NOTES

1"  $\phi$  U.S. Bolts required at all arch rib connections.  
All material, except arch rib, shall be A36 Structural Steel.

MISSISSIPPI RIVER BRIDGE  
TIED ARCH-SPAN 7  
UPPER LATERALS

DUBUQUE COUNTY, IOWA - GRANT COUNTY, WISCONSIN  
IOWA DEPARTMENT OF TRANSPORTATION

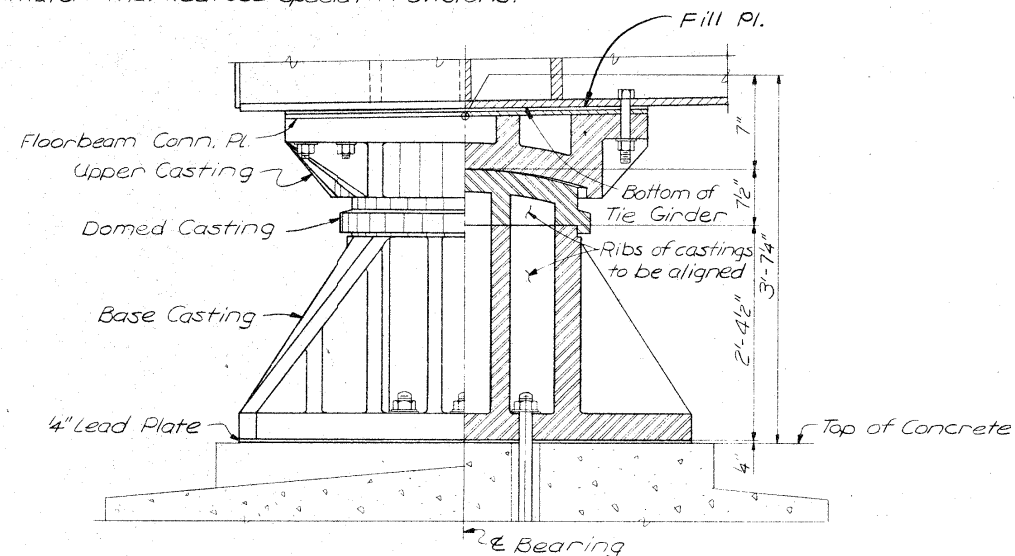
NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

DESIGN NO. 1279 FILE NO. 25896 DES. SH. NO. 39 OF 45  
PROJECT BRP-561-4(4)-38-31 PROJECT SH. NO. 39 OF 45

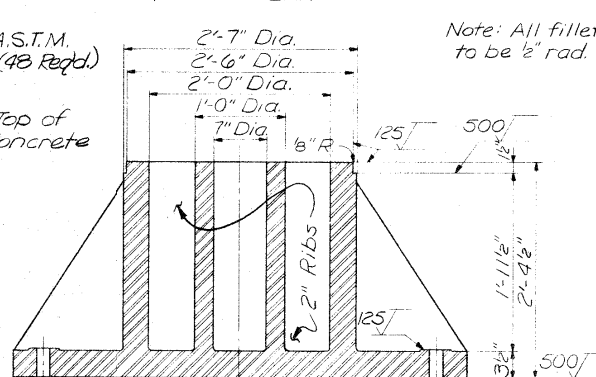
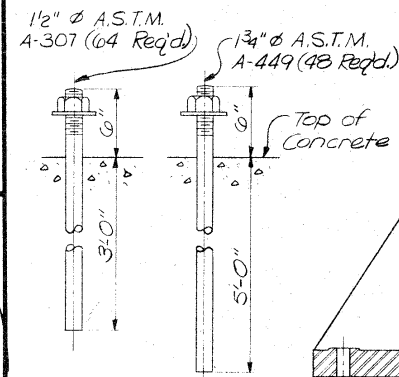
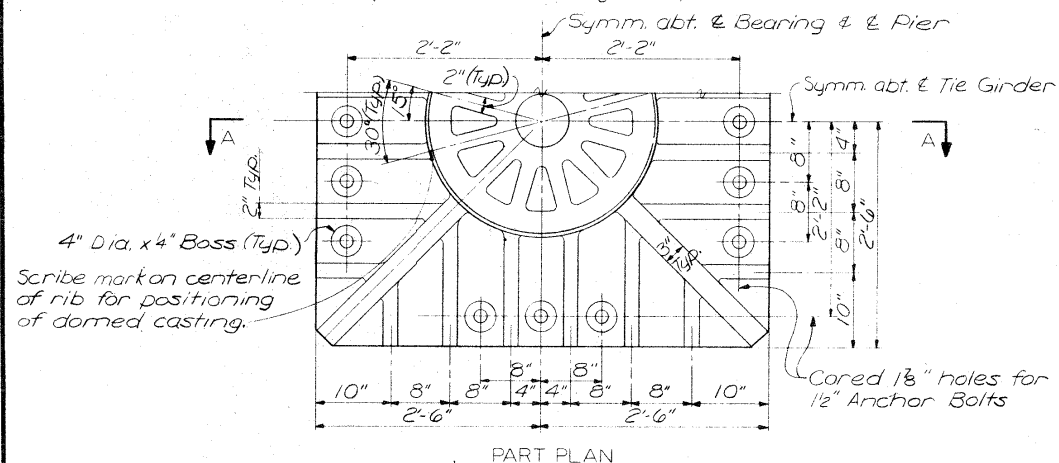
SVERDRUP & PARCEL AND ASSOCIATES, Inc.  
CONSULTING ENGINEERS  
ST. LOUIS, MO.

5818 DRAWN BY: Duane E. Merrill May, 1979  
195233 CHECKED BY: [Signature]

Note: Shoes shall be shop assembled and match-marked. See Special Provisions.



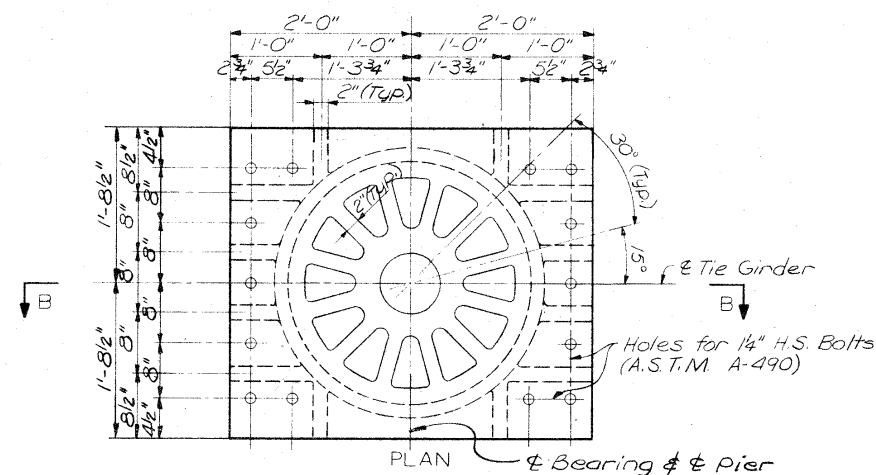
SECTIONAL ELEVATION  
FIXED SHOE ASSEMBLY AT PIER P7  
(2 Assemblies Required)



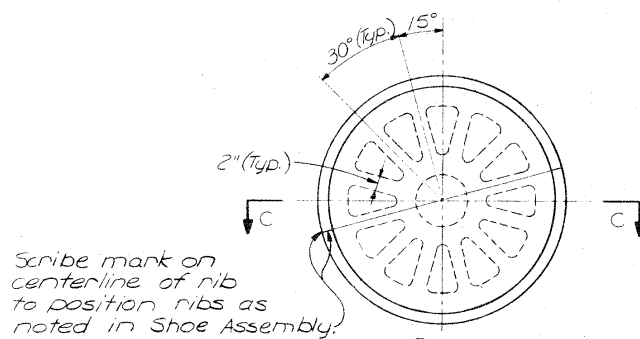
SECTION A-A  
BASE CASTING

Revised (3-5-81) All changes as marked by  $\Delta$  are related to Live Load Support Detail.

Revised (7-28-80) Dimensions, as identified by  $\Delta$ , in Elevation & Link Plate Detail of Live Load Support are changed.

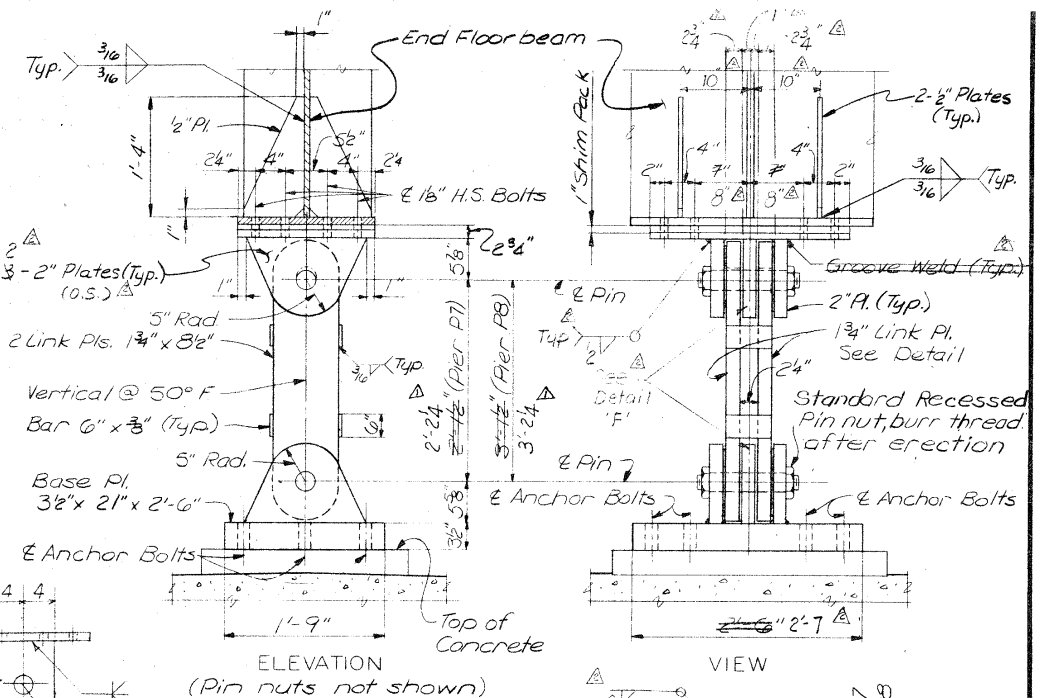


SECTION B-B  
UPPER CASTING  
(4 Required)

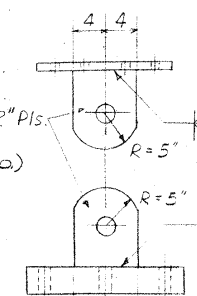


SECTION C-C  
DOMED CASTING  
(4 Required)

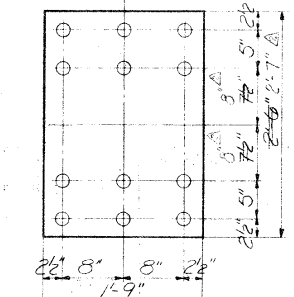
Note: All fillets to be  $\frac{1}{2}$ " R except as noted.



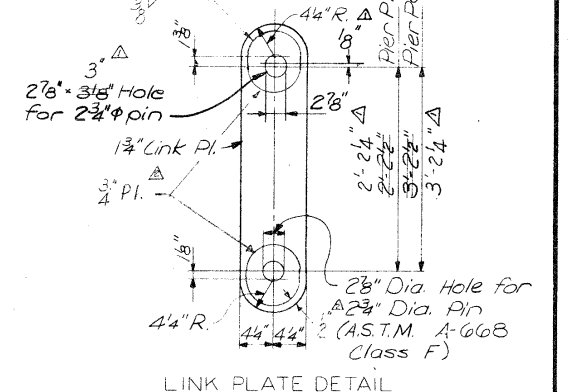
ELEVATION  
(Pin nuts not shown)



DETAIL 'E'



PLAN-BASE PLATE



LINK PLATE DETAIL

LIVE LOAD SUPPORT  
(4 Devices Required)

Mat'l. to be A.S.T.M. A 588 High-Strength Low-Alloy Steel.

NOTES

Except as otherwise shown, material shall be cast steel conforming to A.S.T.M. A486, Grade 90,  $F_y$  60,000 psi. An A.N.S.I. roughness finish of 500 will be acceptable where no degree of finish is indicated on machined surfaces of upper and lower bearing plates.

MISSISSIPPI RIVER BRIDGE

TIED ARCH-SPAN 7

FIXED BEARINGS AND LIVE LOAD SUPPORTS

DUBUQUE COUNTY, IOWA - GRANT COUNTY, WISCONSIN

IOWA DEPARTMENT OF TRANSPORTATION

ROLLER BEARING COVER  
Mat'l. to be A.S.T.M. A36  
(4 Required)

NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

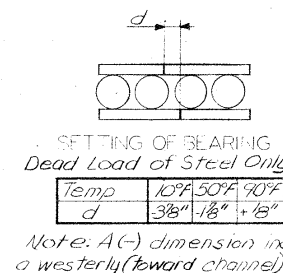
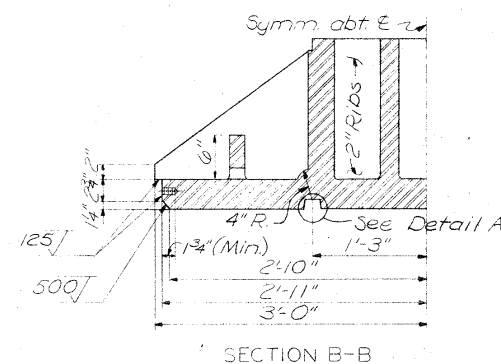
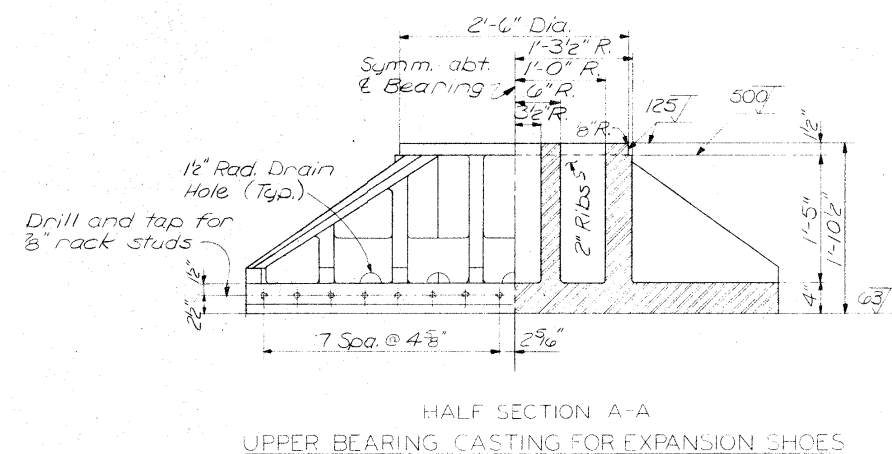
DESIGN NO. 1279 FILE NO. 25896 DES. SH. NO. 40 OF 45

PROJECT BRP-561-4(4)-38-31 PROJECT SH. NO. 40 OF 45

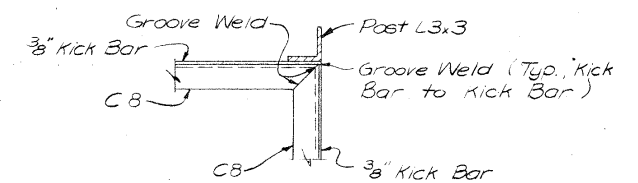
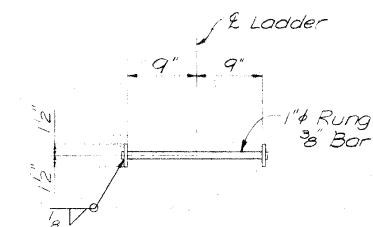
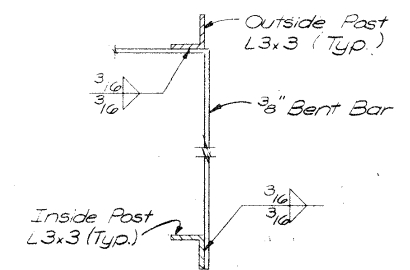
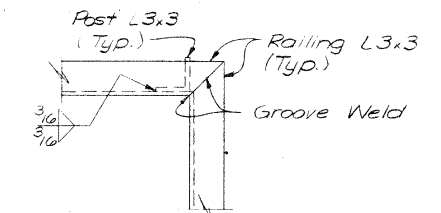
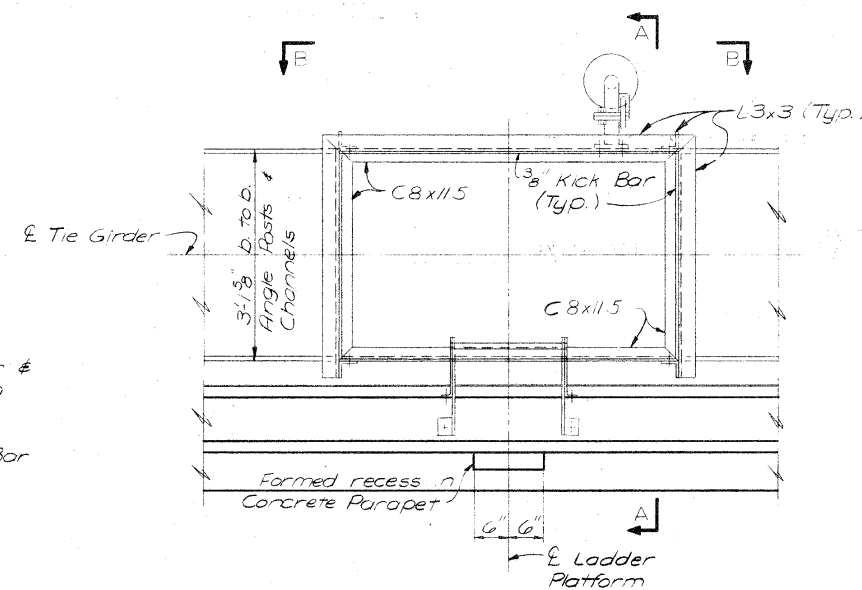
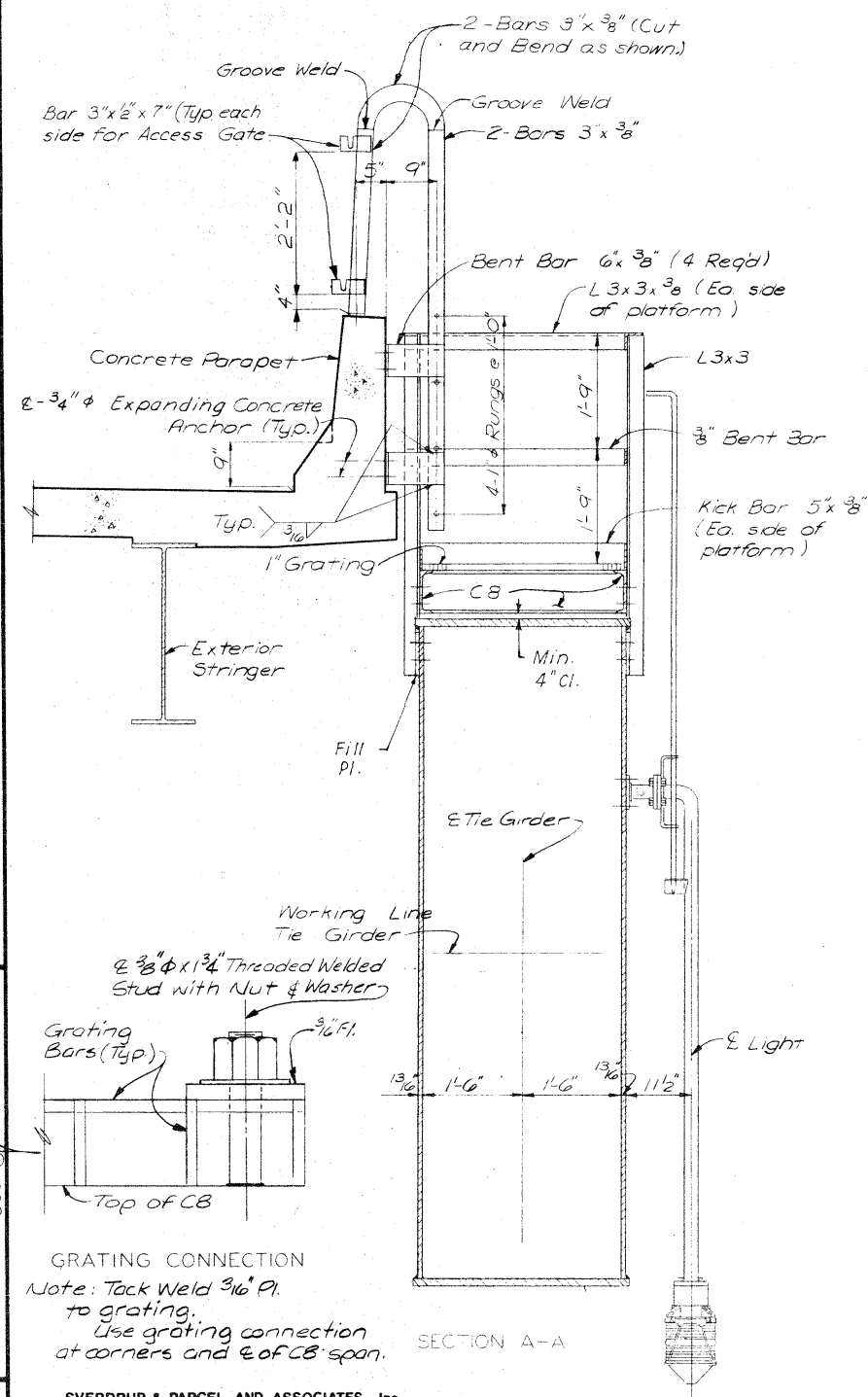
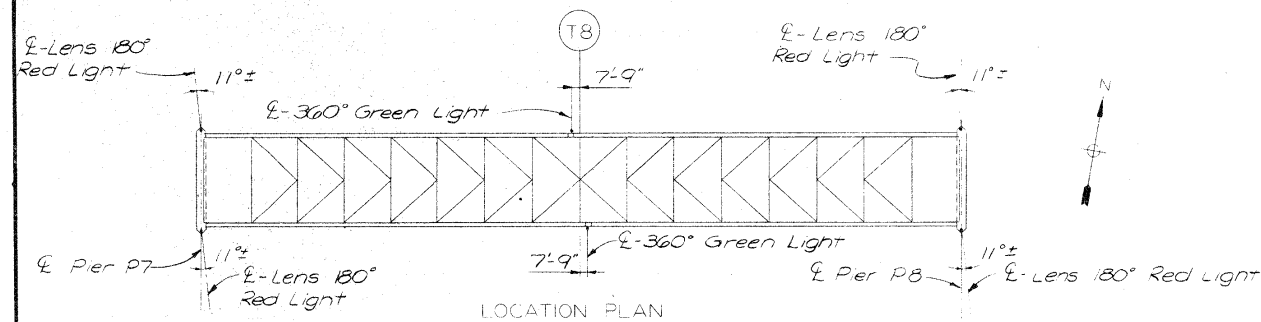
DRAWN BY: C. Mitchell, July 1978  
CHECKED BY: J. J. Smith, 12/25/82  
5818

SYVERDRUP & PARCEL AND ASSOCIATES, Inc.  
CONSULTING ENGINEERS  
ST. LOUIS, MO.

|        |                                   |
|--------|-----------------------------------|
| 5818   | DRAWN BY: C Mitchell, August 1978 |
| 285232 | CHECKED BY: <i>[Signature]</i>    |



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NOTES

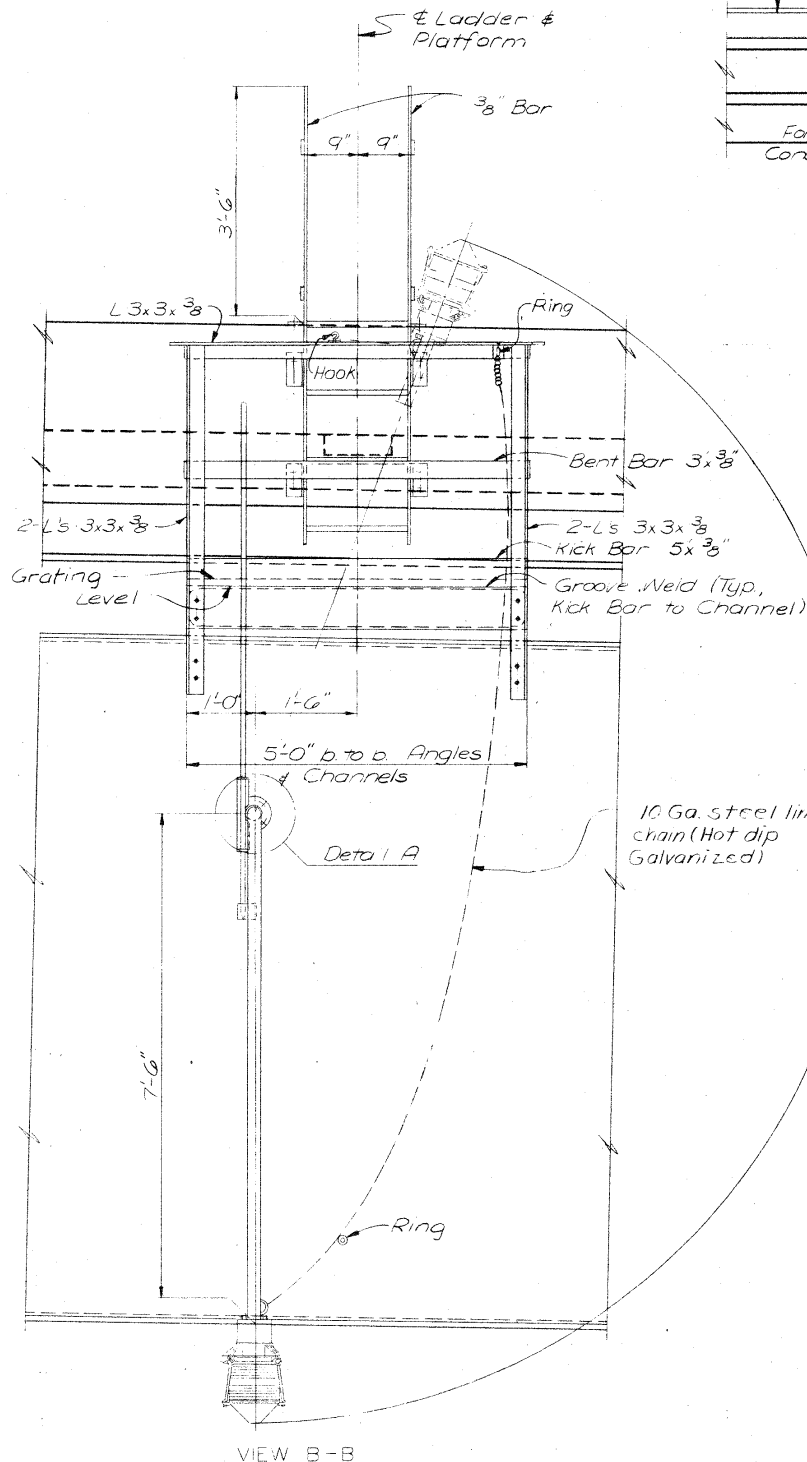
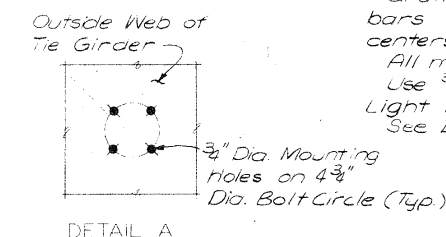
North Mid-Channel Light is shown; use similar details for South Mid-Channel Light.  
Ladders shall be furnished and stored under this contract for installation by others.

Swivel Suspension, Lantern, Locking Rod, Ring and Hook shown for orientation only.

Grating shall be 1' x 8" steel bars with main bars at 13 1/8" centers and spacer bars at 4" centers.

All material to be A.S.T.M. A36 Structural Steel  
Use  $\frac{3}{4}$ "  $\phi$  U.S. Bolts throughout the Navigation  
Light Access.

See Des. Sh. No. 43 for Access Gate Details.



NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

MISSISSIPPI RIVER BRIDGE

TIED ARCH- SPAN 7  
NAVIGATION LIGHT ACCESS

NAVIGATION LIGHT ACCESS

DUBUQUE COUNTY, IOWA - GRANT COUNTY, WISCONSIN

IOWA DEPARTMENT OF TRANSPORTATION

DESIGN NO. 1279 FILE NO. 25896 DES. SH. NO. 42 OF 45

PROJECT BRP-561-4(4)-38-31 PROJECT SH. NO. 42 OF 45

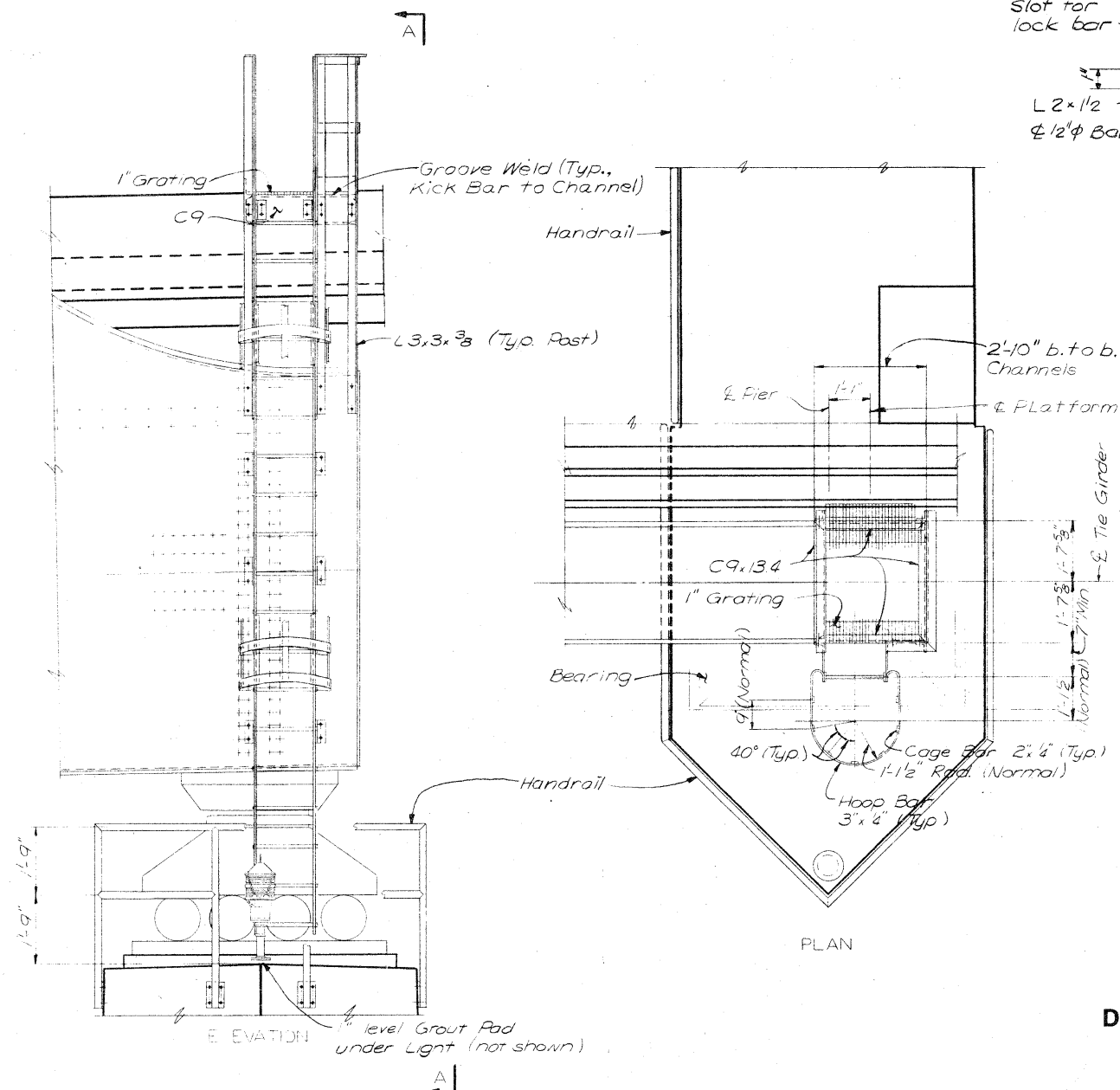
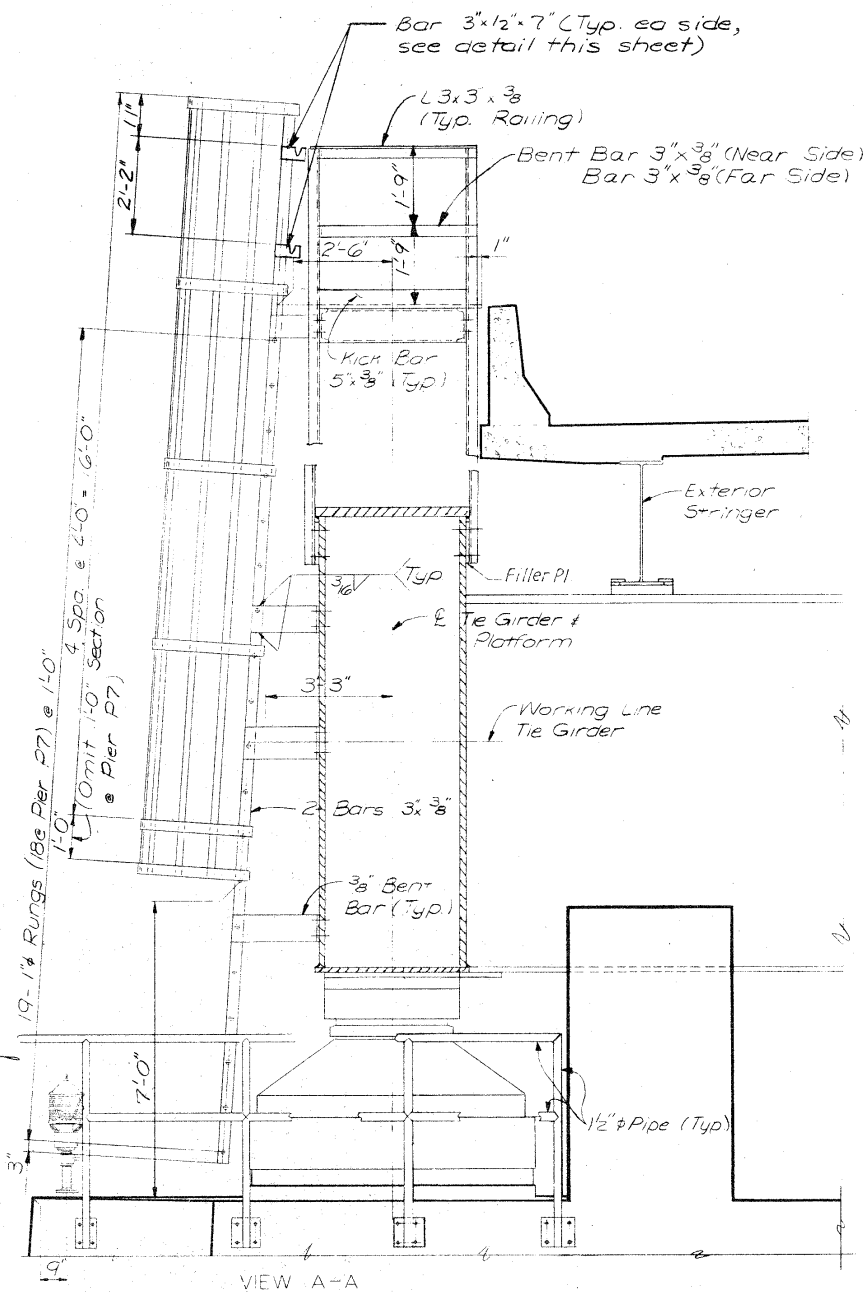
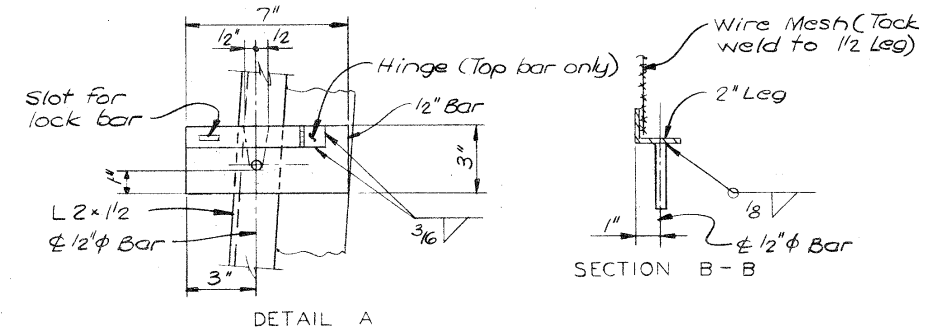
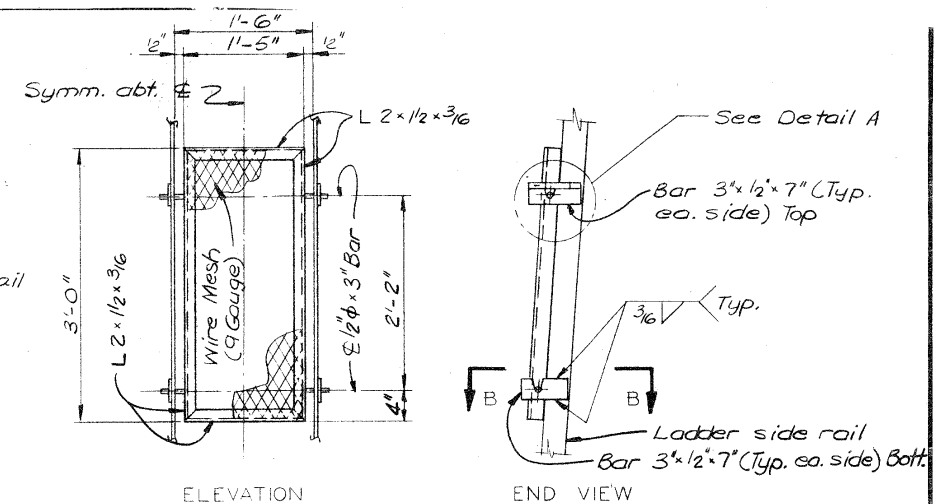
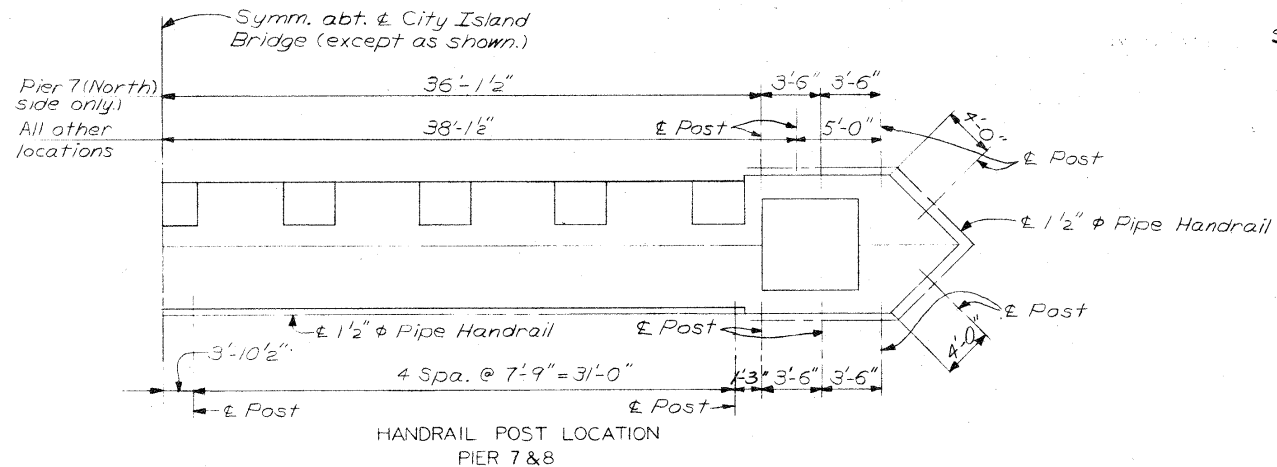
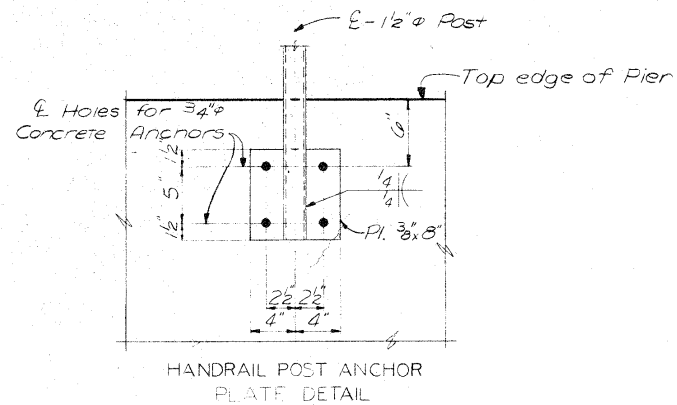
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|--------|---------------------|----------|
| 5818   | DRAWN BY: T. Inman  | Mar, '79 |
| 395100 | CHECKED BY: Y111111 | 4/10     |

CHECKED BY:

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ACCESS GATE  
(8 - Required)

## NOTES

Access to Pier P8 (South Side) shown, access to Pier P8 (North Side) and Pier P7 (Both Sides) similar, unless noted.  
Work this sheet with Des. Sh. No. 42.  
For Rung, Railing Angle, Railing Bar and Channel details, see Des. Sh. No. 42  
Ladders and Cages to be shop welded, minimum weld shall be  $\frac{3}{16}$ " continuous fillet weld.  
See Des. Sh. No. 45 for Railing around Pier P7 (South Side).  
Holes may be cut in  $\frac{3}{8}$ " Bent Bars to prevent interference with Ladder Rungs as required.  
Light shown for information only.  
All material for access gate shall be A36 structural steel.

## MISSISSIPPI RIVER BRIDGE

TIED ARCH - SPAN 7  
NAVIGATION LIGHT ACCESS

**DUBUQUE COUNTY, IOWA - GRANT COUNTY, WISCONSIN**  
IOWA DEPARTMENT OF TRANSPORTATION

5818 DRAWN BY: T. Inman, Mar, 1979  
95/28 CHECKED BY: [Signature]

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NOTE: DO NOT SCALE THIS DRAWING. FOLLOW DIMENSIONS.

DESIGN NO. 1279      FILE NO. 25896      DES. SH. NO. 43 OF 45

PROJECT BRF-561-4(4)-38-31 PROJECT SH. NO. 43 OF 45

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