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Iowa Department of Transportation
Highway Division

PLANS OF PROPOSED IMPROVEMENTS ON THE

INTERSTATE ROAD SYSTEM

POLK COUNTY

BRIDGE REPLACEMENT - STEEL GIRDER
ON 9TH ST. OVER

1-235

THE IOWA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION DATES 2001, PLUS APPLICABLE GENERAL, SUPPLEMENTAL, DEVELOPMENTAL, SPECIFICATIONS, SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS SHALL APPLY TO CONSTRUCTION WORK ON THIS PROJECT.

VALUE ENGINEERING SAVES, REFER TO THE GENERAL NOTES IN THESE PLANS.

INDEX OF SEALS

SHEET NO. NAME TYPE
1 ROBERT A. MAGLIOLA STRUCTURAL DESIGN
5 KILE CL. BERS GEOTECHNICAL DESIGN
45 WILLIAM D. TUCKER STRUCTURAL DESIGN

DESIGN DATA URBAN (1-235)

TRUCKS 45 TONS

1996 LMT 8.8,000, V.P.D.
2025 LMT 10,000, V.P.D.

REVISES

POLK COUNTY PROJECT NUMBER IM-235-2 (313) 8-13-77

FILE NO. 29850 POLK COUNTY PROJECT NUMBER IM-235-2 (313) 8-13-77

TOTAL SHEETS 4

PROJECT NUMBER IM-235-2 (313) 8-13-77

REFERENCE SHEET NO. 2604

POLK COUNTY PROJECT NUMBER IM-235-2 (313) 8-13-77

INDEX OF SHEETS

NO. DESCRIPTION
1 TITLE SHEET
2 BRIDGE ESTIMATE SHEET
2A BRIDGE GENERAL NOTES
2-4 NAVIGATION NO. 2404
43 UTILITY ESTIMATE SHEET
44-44 UTILITY SHEETS
45-50 FENCE SHEETS
51-57 CIP WALL DESIGN NO. 2604

INDEX OF SEALS

SHEET NO. NAME PAGE NUMBER
1 ROBERT A. MAGLIOLA 3-11
5 KILE CL. BERS 3-11
46 WILLIAM D. TUCKER 3-11
<table>
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POLK COUNTY
DESIGN NO. 2406
REVISION SHEET
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

FILE NO. 29552    POLK COUNTY    PROJECT NUMBER
IM-235-223-358-13-77    SHEET NUMBER 1A
## ESTIMATED BRIDGE QUANTITIES

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**SPECIFICATIONS:**
- IOWA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAY & BRIDGE CONSTRUCTION SERIES OF 2000 PLUS APPLICABLE GENERAL SUPPLEMENTAL SPECIFICATIONS, DEVELOPMENTAL SPECIFICATIONS, SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS INCLUDING SUPPLEMENTAL SPECIFICATIONS FOR "DRILLED SHAFTS AND "CLEANING, SURFACE PREPARATION AND PAINTING OF GALVANIZED SURFACES", DEVELOPMENTAL SPECIFICATIONS FOR "HIGH PERFORMANCE CONCRETE FOR STRUCTURES" AND "WATER MAINS DES HOSES WATER WORKS" AND SPECIAL PROVISIONS FOR "WATER MAIN BRIEFS CROSSING DES HOSES WATER WORKS" SHALL APPLY TO CONSTRUCTION WORK ON THIS PROJECT.

**DESIGN STRESSES:**
- CONCRETE IN ACCORDANCE WITH SECTION 5, Fc = 28 MPa, EXCEPT AS NOTED.
- ALL PIECE DRILLED SHAFT CONCRETE IS TO HAVE A 28 DAY STRENGTH OF Fc = 28 MPa.
- ALL PIECE CONCRETE IS TO HAVE A 28 DAY DESIGN STRENGTH OF Fc = 28 MPa.
- ALL DECK AND BARRIER RAIL CONCRETE IS TO HAVE A 28 DAY DESIGN STRENGTH OF Fc = 31 MPa.
GENERAL NOTES:

This design involves the construction of a 94.0 m x variable width continuous welded plate girder bridge on 9th Street over I-235.

The construction sequence for this bridge shall be in accordance with the staging plans in the roadway plans. I-235, in accordance with the staging plans in the roadway plans. I-235, in accordance with the staging plans in the roadway plans.

The delay in the construction of certain bridge components will be considered to facilitate the construction of the adjacent roadway. Refer to 235-1026091-03-77 for the required sequence.

Paint lines on plans indicate the existing structure.

The City and Utility Companies whose facilities are shown on the plans are known to be within the construction limits shall be notified by the bridge contractor of the construction staging date.

This bridge is designed for 96,000 lb. plus 9600 lb. for future wearing surface.

The bridge contractor is encouraged to take full advantage of specification 105.15 — value engineering incentive proposal pamphlet and conceptual proposal form will be available at the preconstruction conference.

All dimensions in millimeters unless otherwise noted or shown.

All elevations on these plans shown in meters.

It shall be the bridge contractor's responsibility to provide sites for excess excavated material. No payment for overhead will be allowed for material hauled to these sites.

Sediment from active traffic lane will not be permitted to temporary storage. Dust piles may be necessary to prevent the spread of dust. Temporary dust piles shall be removed after completion.

Structural concrete shall be protected from staining by a wrapping of polyethylene or similar materials which is attached in place and kept in a serviceable condition until after the deck has been placed. If substructure concrete is stained, the stains shall be removed by methods approved by the bridge contractor. All costs associated with the protection and any required cleaning of the structure concrete shall be included in the price bid for "structural steel." This structure shall be built with weathering steel. All structural steel, except as noted, shall conform to ASTM A588, grade 240.5. Paint requirements for this structure shall be in accordance with the standard specification 240.5.30.

Concrete barrier rails placed in accordance with this method may require the use of a Class II or Class III concrete. The concrete shall be in accordance with the standard specification 240.5.30.

Concrete is not permitted for concrete barrier rails placed in accordance with this method.

Rustication groove details are shown in the plans. The contractor shall submit rustication groove layouts for all required surfaces. The engineer will determine the appropriate layout. All cost associated with concrete rustication shall be considered incidental to the bid item "high-performance structural concrete."

All coarse aggregate for structural concrete shall be crushed limestone.

Original plans indicate that batters piles at existing pier foundations are battered 0.607 m and are 4.5 m long. Given unsound construction tolerances and the proximity of the footing to the drilled shafts, the contractor should be prepared to accommodate the required pile depths during drilling and include the cost in "drilled shafts, 90 mm dia."

Construction activities near the estes property 94.0 m away shall not create vibrations in excess of a peak particle velocity of 0.15 m/sec. The Iomega DOT will install monitoring devices (seismographs) and continuously monitor vibrations, peak particle velocity, and duration. The contractor shall be held responsible for any damage to the equipment. The Iomega DOT will determine the location and the sensitivity of the equipment. The contractor shall provide a pre-construction plan 30 days prior to initial construction in the 9th St. area.

The plans shall include the following:

1. Construction methods and equipment that will be used to minimize vibration.
2. Alternative equipment and methods to be used in case of a vibration event.
3. Site communications methods and equipment.
4. Daily activity logging to ensure timely shut down and identification of cause.

The contractor shall provide a pre-construction plan 30 days prior to initial construction in the 9th St. area.

The plans shall describe the following:

1. Construction methods and equipment that will be used to minimize vibration.
2. Alternative equipment and methods to be used in case of a vibration event.
3. Site communications methods and equipment.
4. Daily activity logging to ensure timely shut down and identification of cause.

The Iomega DOT and its seismic consultant will determine the location of the monitoring devices (seismographs). The contractor shall provide a pre-construction plan 30 days prior to initial construction in the 9th St. area.

The plans shall be in accordance with the standard specification 240.5.30.
### Estimated Bridge Quantities

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Item Code</th>
<th>Item Description</th>
<th>Unit</th>
<th>Estimated Quantity</th>
<th>As Built Quantity</th>
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</table>

### Design Stresses

Design stresses for the following materials are in accordance with the AASHTO Specified values. Design stresses are based on the following assumptions:

- Concrete: As specified in Section 6, Fc = 24 MPa, except as noted.
- Reinforcing steel: As specified in Section 6, Grade 40C.
- All stirrup concrete is to have a 28-day strength of Fc = 24 MPa.
- All reinforcing steel is to have a 28-day stress of Fc = 24 MPa.
- All deck and barrier rail concrete is to have a 28-day strength of Fc = 24 MPa.

### Design History at This Site

- Original Design
- Deck Overlay Repair
- Deck Overlay Repair
- Replacement Bridge

### Traffic Control Note

Refer to the Traffic Control Plan shown in Item No. 230-293-029637-03.

Pollution Prevention Plan is shown in Item No. 230-293-029637-03.

### Roadway Quantities

Quantities are shown in Item No. 230-293-029637-03.

---

**Notes & Quantities**

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<td>230-293-029637</td>
<td>Variable Continous Welded Girder Bridge W/2-2.4m Sidewalk</td>
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**Station**: 230E-284070 (E) 1255.1 |

**Polk County**

**SPECIFICATIONS:**


**TRAFFIC CONTROL NOTE:**

Refer to the traffic control plan shown in I-225/235/252/263/223/239/110-119.

**DESIGN STRESSES:**


**DESIGN HISTORY AT THIS SITE**

Design No. | Type of Work |
--- | --- |
119 | Repair and Overlay Repair |
256 | Pier Column Repair |
294 | Deck Over Repair, Steel Rail & Fence |
2406 | Replace Bridge |

**POLLUTION PREVENTION PLAN IS SHOWN IN I-225/225/226/227-01-10.**

**ROADWAY QUANTITIES AS SHOWN IN I-225/225/226/227-01-10.**

**DESIGN FOR STRENGTH 50/75% (L/L):**

94.0 m x VARIABLE CONTINUOUS WELDED GIRDER BRIDGE W/ 2-2.4m SIDEWALK

**NOTES & QUANTITIES I**

Station +2005+2056.670 | 15th St. |
Station +2056+5650.00 | 1-223 |

October 2003

**POLK COUNTY**

DESIGN SHEET NO. 119, FILE NO. 7822, SHEET NO. 2, IOWA DEPARTMENT OF TRANSPORTATION, HIGHWAY DIVISION.
GENERAL NOTES:

THIS DESIGN INVOLVES THE CONSTRUCTION OF A 940 m x VARIABLE WIDTH CONTINUOUS WELDED PLATE GIRDER BRIDGE ON 9TH STREET OVER I-225.

THE CONSTRUCTION SEQUENCE FOR THIS BRIDGE SHALL BE IN ACCORDANCE WITH THE STAGING NOTE IN THE ROADWAY PLANS, 04-016-025-0209/K-03-75, DELAY IN THE CONSTRUCTION OF CERTAIN BRIDGE COMPONENTS WILL BE REQUIRED TO FACILITATE THE CONSTRUCTION OF THE ADJACENT ROADWAY. REFER TO SECTION 04-016-037-0209/K-03-77 FOR THE REQUIRED SEQUENCING.

FAINT LINES ON PLANS INDICATE THE EXISTING STRUCTURE.

THE CITY AND UTILITY COMPANIES WHOSE FACILITIES ARE SHOWN ON THE PLANS OR SHOWN TO BE WITHIN THE CONSTRUCTION LIMITS SHALL BE NOTIFIED BY THE BRIDGE CONTRACTOR OF THE CONSTRUCTION STARTING DATE.

THIS BRIDGE IS DESIGNED FOR MR50 LOAD, PLUS 960 PSF FOR FUTURE WEARING SURFACE.

THE BRIDGE CONTRACTOR IS ENCOURAGED TO TAKE FULL ADVANTAGE OF SPECIFICATION S I.D.S. (INCENTIVE DESIGN SPECIFICATION) AND PREPARE CONCEPTUAL DESIGN PROPOSAL, SUBMITTED TO THE PRECONSTRUCTION CONFERENCE.

ALL DIMENSIONS IN MILLIMETERS (mm) UNLESS OTHERWISE NOTED ON DRAWINGS.

ALL ELEVATIONS ON THESE PLANS SHOWN IN METERS (m).

ALL STATIONS SHOWN IN METERS (m).

IT SHALL BE THE BRIDGE CONTRACTOR'S RESPONSIBILITY TO PROVIDE SITES FOR EXCESS EXCAVATED MATERIAL. NO PAYMENT FOR EXCESS MATERIAL WILL BE ALLOWED FOR MATERIAL HAULABLE TO THESE SITES.

SLOPPING OF EARTH FORM UNDER AN ACTIVE TRAFFIC LANE WILL NOT BE PERMITTED. THE TEMPORARY SLOPING DIRECTIVE FOR CMEP IS TO SLOPE IN A DURING CONSTRUCTION. THE CONTRACTOR IS REQUIRED TO SUBMIT A SLOPING PLAN TO THE ENGINEER FOR APPROVAL. COST OF SLOPING IS NOT ACCOUNTED FOR.Q.

SUBSTRUCTURE CONCRETE SHALL BE PROTECTED FROM STAINING BY A WRAPPING OF POLYETHYLENE OR SIMILAR MATERIALS WHICH SHALL BE LEFT IN PLACE AND KEPT IN A SERVICEABLE CONDITION UNTIL THE EARTH HAS BEEN PLACED. IF SUBSTRUCTURE CONCRETE IS STAINED, THE STAINS SHALL BE REMOVED BY METHODS APPROVED BY ENGINEER. ALL COSTS ASSOCIATED WITH THE PROTECTION AND ANY REQUIRED CLEANING OF THE SUBSTRUCTURE CONCRETE SHALL BE INCLUDED IN THE PRICE BID FOR STRUCTURAL STEEL.

THIS STRUCTURE WILL BE BUILT WITH STRUCTURAL STEEL. ALL STRUCTURAL STEEL, EXCEPT AS NOTED, SHALL CONFORM TO ASTM GRADE 4135 OR SIMILAR. ALL PAINTING REQUIREMENTS FOR THIS STRUCTURE SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS.

CONCRETE BARRIER RAILS PLACED USING THE SLIP FORM METHOD WILL REQUIRE THE USE OF A CLASS B CONCRETE IN ACCORDANCE WITH ARTICLE 2013.03.08.09 OF THE STANDARD SPECIFICATION. CLASS D CONCRETE IS NOT PERMITTED FOR CONCRETE BARRIER RAILS PLACED USING THE SLIP FORM METHOD.

RUSTICATION GROOVE DETAILS ARE SHOWN ON THE PLANS. THE CONTRACTOR SHALL SUBMIT RUSTICATION GROOVE LAYOUTS FOR ALL REQUIRED SURFACES TO THE ENGINEER PRIOR TO CONSTRUCTION. ALL COSTS ASSOCIATED WITH CONCRETE RUSTICATIONS SHALL BE INCLUDED IN THE BID.

ALL COARSE AGGREGATE FOR STRUCTURAL CONCRETE SHALL BE CRUSHED LIMESTONE.

ORIGINAL DESIGN STAI NING INDICATES THAT SLOTTED PLATES AT DINING PIER FOUNDATIONS ARE SLOTTED 0.015m AND ARE 1.64 IN. GIVEN UNKNOWN CONSTRUCTION TOLERANCE AND THE PROBABILITY OF THE FOOTING TO THE DRILLED SHAFTS, THE CONTRACTOR SHOULD BE PREPARED TO ADJUST MOISTURE CONTENT DURING DRILLING AND INCLUDE THE COST IN "CONCRETE DRILLED SHAFTS, 1000 LBS. DIAM."

CONSTRUCTION ACTIVITIES NEAR THE ESTATE PROPERTY (3408-7th St.) WILL BE PERMITTED. THE PROPERTY (3408-7th St.) AND FORMER FIRE STATION #1 (1000-7th St.) SHALL NOT CREATE VIBRATIONS IN EXCESS OF A PEAK PARTICLE VELOCITY OF 0.3 INCHES PER SECOND. THE IOWA DOT WILL INSTALL MONITORING DEVICES DURING THE CONSTRUCTION PERIOD. THE CONTRACTOR SHALL IMMEDIATELY SHUT DOWN OPERATIONS IF THE PEAK PARTICLE VELOCITY THRESHOLD IS REACHED OR EXCEEDED. DURATION OF VIBRATION LIMITS WILL BE NO COMPENSATION FOR DURATION OF PROCESS OR EQUIPMENT TO REDUCE VIBRATION LEVELS TO MEET THE NOTED VIBRATION LIMIT. ALL CONSTRUCTION ACTIVITY AFTER REJECTION REMAINS GOVERNED BY THE PREVIOUSLY RECOMMENDED CONSTRUCTION LIMIT.

THE CONTRACTOR SHALL PROVIDE A PRE-CONSTRUCTION PLAN 30 DAYS PRIOR TO INITIAL CONSTRUCTION IN THE 9TH ST. AREA.

THE PLAN SHALL DESCRIBE THE FOLLOWING:

1. CONSTRUCTION METHODS AND EQUIPMENT THAT WILL BE USED TO MINIMIZE VIBRATION

2. ALTERNATIVE EQUIPMENT AND METHODS TO BE USED IN CASE OF A VIBRATION EVENT

3. SITE COMMUNICATIONS METHODS AND EQUIPMENT

4. DAILY ACTIVITY LOGGING TO ENFORCE TIMELY SHUT DOWN AND IDENTIFICATION OF CAUSE.

THE CONTRACTOR SHALL PLACE A CHAIN LINK FENCE BETWEEN THE CONSTRUCTION AREA AND THE ESTATE PROPERTIES (3408-7th St.)
NOTES:
1. RUSTICATION GROOVES ARE NOT REQUIRED BELOW GROUND LINE.
2. RUSTICATION GROOVES SHALL TERMINATE 50mm FROM CORNER.
ABUTMENT NOTES:

MINIMUM CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR
REINFORCING BAR IS TO BE 50 MM UNLESS OTHERWISE NOTED OR SHOWN.
THE DESIGN BEARING FOR THE ABUTMENT PILINGS AND DRILLED SHAFTS
IS 345 MPa.

IF NECESSARY TO PREVENT DAMAGE TO THE END OF THE BRIDGE
DECK OR BACKFILL, CONSTRUCTION EQUIPMENT, AN APPROPRIATE
METHOD OF PROTECTION APPROVED BY THE ENGINEER SHALL BE
PROVIDED BY THE BRIDGE CONTRACTOR AT NO EXTRA COST TO THE STATE.

REAR ELEVATION - SOUTH ABUTMENT STEP DIAGRAM

NORTH ABUTMENT

STEEL BEARING PILINGS AND DRILLED SHAFTS REQUIRED: 13-NP400/12'S & 12-DRILLED SHAFTS AT S. ABUTMENT
12-NP400/12'S & 26-DRILLED SHAFTS AT N. ABUTMENT
TOTAL = 25-NP400/12'S STEEL BEARING PILINGS 25-DRILLED SHAFTS

CMP BLOCKING DETAIL

DIE REQUIRED AT TOP AND BOTTOM OF CMP, BOTTOM BLOCKING SHALL BE TREATED MATERIAL.
AND SHALL REMAIN IN PLACE, TOP BLOCKING SHALL BE REMOVED PRIOR TO BACKFILLING INSIDE
THE CMP COST FOR THIS WORK SHALL BE INCLUDED IN THE PRICE BID FOR PILING CASING.

94.0 m × VARIABLE CONTINUOUS WELDED
GIRDER BRIDGE W/ 2-2.4m SIDEWALK
ABUTMENT DETAILS

STATION: 20259+00.870 (E 9th ST)  OCTOBER 2016
POLK COUNTY
1230 DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 12 - R.  PILE NO. 222022 - SHEET NO. 12 - HOAP
PART REAR ELEVATION AT SOUTH ABUTMENT

NOTES:

1. Shift #2 bars in F.P. as necessary to miss girders and/or hole. Shift #1 bars in F.P. to miss hole.
2. Place #3 bars parallel to longitudinal steel.
3. For section thru abutment, view B-B. See design sheet 11.

DESIGNED BY: EJ
CHECKED BY: EJ
REVISED BY: EJ
DATE: 10/01/2002

94.0 m x VARIABLE CONTINUOUS WELDED GIRDER BRIDGE W/ 2-2.4m SIDEWALK
25.7m/28.0m/31.0m/37.0m/40.0m SPANS

SOUTH ABUTMENT DETAILS
STATION (2+029+00) EL (66.630 ft)
OCTOBER 2005
POLK COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. (2) OF (4)

POLK COUNTY
PROJECT MANAGER

H-235-2001-13-17

SHEET NUMBER 13
SLOPE PROTECTION NOTE:
The slope protection fore slope shall be of gravel. The engineer’s fabric shall meet the requirements of marshalls. All grading and pavement shall be in accordance with the engineer’s fabric. For slopes over 4%, the wash gravel should be placed and compacted by mechanical and hand methods that will provide uniform depth and density and provide uniform surface appearance.

GRANULAR BACKFILL DETAIL & SLOPE PROTECTION DETAIL:
A special backfill may be substituted for granular backfill.

MSE GUTTER DRAIN DETAIL:
300 psi 100 REDUCER TEE (BY OTHERS)
CONNECT PIPE DRAIN TO MSE GUTTER DRAIN
WALL RETAINING WALL (SUBMITTED FOR GRANULAR BACKFILL)
STRUCTURAL STEEL LAYOUT

NOTE:
CONTRACTOR MAY ELIMINATE ONE OR MORE FIELD SPlices
PROVIDED THAT THE APPROPRIATE SHOP DRAWINGS ARE
SUBMITTED FOR APPROVAL AND ALL DRAWING CHECK
CRITERIA ARE MET. PAYMENT WILL BE MADE BASED ON PLATE
LENGTHS AND SIZES SHOWN IN THE PLANS AND NO ADDITIONAL
COMPENSATION WILL BE PROVIDED.
GIRDER A SHEAR STUD SPACING
94.0 m x VARIABLE CONTINUOUS WELDED GIRDER BRIDGE W/ 2-24m SIDEWALK
15.3000, 0.0000, 31.100 SPANS

SUPERSTRUCTURE DETAILS
STATION +2000 = 35.000 + TYP SLT
STATION + 2935 = 35.125

POLK COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 24, FOR 29
FILE NO. 1114092
DESIGN NO. 2406

DETAILS OF SPLICES #1 & #2
DETAILS OF SPLICE #3
DETAILS OF SPLICE #4
GIRDERS A AND K DEAD LOAD DEFLECTION DIAGRAM

Note: Encircled numbers indicate anticipated deflection due to slab and soil except first two only.

GIRDERS A AND K AS FABRICATED WITH WEBS HORIZONTAL

Note: Does not include the deflection due to steel or concrete.

GIRDERS A AND K HAUNCH THICKENING DIAGRAM

For estimating purposes only.

1. The haunch dimension shown is the minimum haunch dimension near the abutment bearings, and is used as a basis along with the dead load deflection and girder parameters to determine the theoretical haunch thickening diagram. This haunch thickening diagram is used by the designer to set bridge seat elevations and estimate concrete quantities. Refer to the haunch data detail sheet for additional information to aid the contractor in setting the field haunches required for construction.
GIRDERS B & J DEAD LOAD DEFLECTION DIAGRAM

NOTE: ENCIRCLED NUMBERS INDICATE ANTICIPATED DEFLECTION DUE TO CONCRETE ONLY. INCLUDES DEFLECTIONS DUE TO CONCRETE BARRIERS & SIDEWALKS.

GIRDERS B & J AS FABRICATED WITH WEBS HORIZONTAL

NOTE: DOES NOT INCLUDE DEFLECTION DUE TO STEEL OR CONCRETE.

TYPICAL SLAB & HAUNCH DETAIL

X THE HAUNCH DIMENSION SHOWN IS THE NOMINAL HAUNCH DIMENSION NEAR THE ABUTMENT BEARINGS AND IS USED AS A BASIS ALONG WITH THE DEAD LOAD DEFLECTION AND GIRDERS PARAMETERS TO DETERMINE THE THEORETICAL HAUNCH THICKENING DIAMETER. THIS HAUNCH THICKENING DIAMETER IS USED BY THE DESIGNER TO SET BRIDGE Seat ELEVATIONS AND ESTIMATE CONCRETE QUANTITIES. REFER TO THE CONSTRUCTION DETAIL SHEET FOR ADDITIONAL INFORMATION TO AIDS THE CONTRACTOR IN SETTING THE FIELD HAUNCHES REQUIRED FOR CONSTRUCTION.
### TABLE OF BEAM LINE HAUNCH ELEVATIONS

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<th>η PIER 2</th>
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### MISCELLANEOUS DATA TABLE (mm)

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**Notes:**
1. To calculate field haunch needed at each location, survey the beam tops consistent with the spacing given on the top of slab and beam line haunch elevations. An elevation datum on design sheet will be the reference for this survey. The survey will be the beam elevation. Field haunch details and beam line haunch elevation includes allowances for slab thicknesses and any anticipated deflections due to slab and/or beam deflections. The survey of the beam top will be referenced to the reference elevation. The elevation of the haunch per the survey will be added to the elevation of the haunch to determine the haunch reinforcement needed.
2. Beam seat elevations are set based on theoretical camber and beam deflections. The haunch seats are 2x2x17 at each joint. The elevation of the beams seat is determined using surveys of top of beam elevations and beam line haunch elevation. Data allows for maximum and minimum seat height and field haunch elevations are given in the miscellaneous data table. Cross slope adjustments will aid the contractor in determining actual formed haunch dimensions at the edges of the top flange.
SLAB LONGITUDINAL REINFORCING LAYOUT AND CONCRETE PLACEMENT DIAGRAM

WATER MAIN CONCRETE INSERT LAYOUT

NOTES:
ROADWAY SLAB SHALL BE PLACED IN THE NUMERICAL SEQUENCE INDICATED.

FOR CONSTRUCTION JOINT DETAILS SEE DESIGN SHEET 34.

EACH NUMBERED SET SHALL BE PLACED AS FOLLOWS:
2) EIGHTER EAST OR WEST SIDE MAY BE PLACED FIRST.
3) THE CLOSURE SHALL BE PLACED AFTER THE EAST AND WEST SIDES HAVE BEEN PLACED.
4) TRANSVERSE CONCRETE INSERTS BETWEEN GIRDERS 6 AND 8 SHALL NOT BE PLACED UNTIL THE CLOSURE HAS BEEN COMPLETED.
5) THE CONTRACTOR MAY SUBMIT AN ALTERNATIVE COURSE SEQUENCE FOR THE ENGINEER'S APPROVAL.

IF THE PERMISSIBLE LONGITUDINAL CONSTRUCTION JOINTS ARE UTILIZED, THE CLOSURE MORTAR SHALL BE PLACED IN ONE CONTINUOUS COURSE AFTER THE EXTERIOR CONCRETE PLACEMENT IS COMPLETE.

ABUTMENT END POSTS NOT SHOWN.

SEE DESIGN SHEET 43 FOR WATER MAIN SECTION B-B.
TOP TRANSVERSE REINFORCING LAYOUT

BOTTOM TRANSVERSE REINFORCING LAYOUT

SECTION A-A

HEADER REINFORCEMENT LAYOUT

NOTES:

TRANSVERSE SLAB REINFORCING MAY BE SPLICED WITH ADDITIONAL LAPS LOCATED AS FOLLOWS:

TOP BARS = LAP MINIMUM BETWEEN BEAMS 800 mm (32"")
NO LAPS WILL BE ALLOWED IN THE EXTERIOR BAYS.
BOTTOM BARS = LAP OVER BEAMS MIN. LAP = 300 mm (12"")
NO LAPS WILL BE ALLOWED OVER THE EXTERIOR BEAMS.
PAYMENT FOR REINFORCING BARS SHALL BE BASED ON NO ADDITIONAL SPLICES,
AND NO ALLOWANCE SHALL BE MADE FOR THE ADDITIONAL LENGTH OF BAR
REQUIRED FOR THE USE OF ADDITIONAL SPLICES.
ADMINISTRATION MASONRY NOT SHOWN.

GIRDER A OR B
GIRDER B OR J
GIRDER C OR K

940 m x VARIABLE CONTINUOUS WELDED GIRDER BRIDGE W/ 2-2.4m SIDEWALK
SUPERSTRUCTURE DETAILS
STATION: 2000+870 (13th ST) OCTOBER 2023
POLK COUNTY
DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 22, SHEET NO. 2900 - DESIGN NO. 2305.42
POLK COUNTY
M-205-001138-13-77 SHEET NUMBER 33
INSIDE ELEVATION OF WEST BARRIER RAIL LAYOUT

EAST BARRIER RAIL-SIMILAR (OPPOSITE HAND)

CONCRETE BARRIER NOTES:
- All dimensions are in millimeters (mm) unless otherwise noted or shown.
- Minimum clear distance from face of concrete to near reinforcing bar is to be 20 mm unless otherwise noted or shown.
- All exposed corners 90° or sharper are to be filleted with 20 mm radius.
- The precast splice construction joints are to be placed between vertical bars at a minimum spacing of 600 mm; construction joint contact surfaces are to be coated with an approved bond breaker.
- Cost of the joint sealant and bond breaker shall be considered incidental to the construction.
- The joint sealant shall be a white no-sag latex caulking sealer.
- All barrier concrete shall be to the nearest 25 mm spacing of 600 mm; construction joint contact surfaces are to be coated with an approved bond breaker.
- Cost of the joint sealant and bond breaker shall be considered incidental to the construction.

RUSTICATION GROOVE DETAIL

NOTES: Place horizontal rustication groove over barrier face, see Section A-A.

CONCRETE PLACEMENT SUMMARY

Bridge Barrier Rail 244.4 m at 0.328 m/m
End Sections 4.4 m at 0.328 m/m

4.00
7.00
10.00
13.00
14.00

** Measured along edge of sidewalk

CONCRETE RAIL DETAIL

Portion of slab extending 315 mm above sidewalk top

PART PLAN VIEW

BARRIER RAIL JOINT DETAILS

PART ELEVATION VIEW
EXTERIOR ELEVATION - EAST BARRIER RAIL - LOOKING WEST

CONDUIT PLACEMENT SUMMARY

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<th>ITEM</th>
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<td>S. LIGHT POLE BASE #</td>
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<td>5 mm RIGID STEEL PIER 2 CONDUIT</td>
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PART SECTION D-D

PART PLAN AT END POST

NOTES:
SEE DESIGN SHEET 36 FOR CONDUIT IN WEST BARRIER RAIL.
SEE DESIGN SHEET 40 FOR JUNCTION BOX DETAILS.

DESIGN FOR 94.0 m X VARIABLE CONTINUOUS WELDED GIRDER BRIDGE W/ 2-2.4m SIDEWALK

POLK COUNTY - DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

Sheet Number: 40
DEMONSTRATION SHAFT PLAN
SECTION A-A

DEMONSTRATION SHAFT NOTES:

DRAWING IS NOT TO SCALE/FOLLOW DIMENSIONS.

THE MINIMUM CAPACITY OF THE 300mm DIA. OSTERBERG CELL SHALL BE 4500 KN IN EACH DIRECTION.

THE OSTERBERG CELL SHALL HAVE A MINIMUM STROKE OF 100mm.

STRAIN GAUGES AND COMPRESSION TELL TALES ARE REQUIRED TO MONITOR THE PERFORMANCE OF THE LOAD TEST. STRAIN GAUGE AND ENCASED COMPRESSION TELL TALES LOCATIONS ARE PRELIMINARY AND ARE SUBJECT TO CHANGE BY THE CONTRACTING AUTHORITY AND APPOINTED ENGINEER.

A COMPLETE COPY OF THE RECORD LOG AND TEST RESULTS ARE AVAILABLE UPON WRITTEN REQUEST TO THE CONTRACTING AUTHORITY.

THE ILLUSTRATED LOAD TEST DESIGN IS PRELIMINARY.

FINAL DESIGN OF THE DEMONSTRATION SHAFT SHALL BE SUBJECT TO APPROVAL BY THE CONTRACTING AUTHORITY AND THE APPOINTED ENGINEER.

TRENCH PIPE SHALL BE LOWERED IN THE HOLE AT THE SAME TIME AS THE DEMONSTRATION LOAD TEST. TO EXHAUST THE TRENCH, PIPE WILL EXTEND TO THE BOTTOM OF THE HOLE FOR CONCRETE PLACEMENT.
### ESTIMATED UTILITY QUANTITIES

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<th>ITEM NO.</th>
<th>ITEM CODE</th>
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**Estimate Reference Information**

1. Includes all costs to furnish and install expansion couplings and longitudinal water main restrainer.
2. Includes all costs to furnish and install steel casing and stainless steel casing check.
3. Includes all costs to furnish and install stainless steel concrete inserts, rods, nuts, washers, header straps and saddles.
4. See developmental specifications for water main and special provisions for water main bridge crossing.
FENCE NOTES:

All frame assemblies are to be set normal to grade. Contractor shall verify dimensions of concrete parapet and end installation of fence. Contractor shall notify engineer of any discrepancies in concrete dimensions prior to fence installation.

ANCHORAGE shall be accurately placed to provide correct alignment of fence. Anchors are to be 105 cm diameter threaded rods, 53 cm long, grade 250, and shall use one of the following anchoring systems:

1. Hi-Tec-Hi-Peace with 170 cm minimum embedment depth
2. Simpson Strong-Tie Acrylic-Tie with 170 cm minimum embedment depth
3. Styro-Tite-Style with 240 cm minimum embedment depth

All anchoring hardware is to be galvanized per the standard specifications.

Structural steel posts shall comply with ASTM A490, grade 36 ksi. Standard pipe shall comply with ASTM A53 grade B. All other structural steel materials shall comply with ASTM A490, grade 250 minimum.

No single wire in the welded wire mesh shall be welded to the frame at both ends of the wire.

All bumpers and sharp corners of steel fence components shall be ground smooth prior to galvanizing and painting.

All structural steel tube, pipe and base plate assemblies as shown in the plans are to be painted after galvanizing in accordance with the supplemental specification 'Cleaning, Surface Preparation and Painting of Galvanized Surfaces'. Paint color is to match Federal Standard Color No. 22121 (Mil). Paint shall be excluded from surfaces of steel, angle, panel, and portion of posts above the 122 cm (4’ pipe) as shown in the plans by means of masking. Paint edge shall be along clean, straight lines at masked surfaces.

Wire mesh panels and associated channel and angle frame exists on bridge prior to commercial paint or coating. All panels are to be galvanized after fabrication in accordance with the standard specifications. All fence hardware shall be galvanized per the standard requirements.

The welded wire mesh panels shall be hot-dip galvanized in accordance with ASTM A645, grade 250. Standard practices shall be followed in accordance with ASTM A 153 and ASTM A 380. Prepare cleaned panels surfaces to abrasive blast cleaning to a minimum of SP-3 or Delta Blast Cleaning Grade 1. Hot-dip galvanized panels will be processed utilizing a "dry-kettle".

Panels will be prefilled prior to the galvanizing bath using an excess tank of zinc galvanizing/immersion cadmium. The use of a "top-foil" blanket on the hot zinc bath will not be permitted, when hardening panels in the galvanizing bath. A fill of 50 cm is allowed. The panels are coated such that all surfaces of the assembly receive the zinc coating with as little excess zinc as possible. The cladding will be manipulated in order to properly drain away all excess galvanizing solution. Air cool panels to ambient temperature before storing. Galvanized stored panels will not be stored dry. Four thickened spacers are installed in each panel. Edges, doors, and corners. When galvanized panels are to be stored and outdoor storage is indicated, covered panels shall be raised from the ground and properly separated to provide free air access. All parts of the surface shall also be sealed in a manner which will provide maximum drainage to prevent the formation of "white rust" in the storage area, the galvanizer shall provide to the engineer all galvanizing process-related quality control documents including, but not limited to: coating materials certification, visual examinations and coating thickness examinations prior to final acceptance.

All painted surfaces shall be protected immediately after paint has cured. Protection material shall be adequate to prevent damage to the painted surfaces during handling, shipping, and to the installation site and curing. The installation of the fence, protection shall not be removed until potential damage to the paint is limited to assembly surfaces only. Touch-up repair of damaged paint is to be done in accordance with the supplemental specification 'Cleaning, Surface Preparation and Painting of Galvanized Surfaces'.

All fence members shall be flat and straight after fabrication and galvanizing to within 5 mm in 5 m by mechanical means without damage to the zinc coating.

Galvanizing shall be white or light grey material. Weathering for outdoor use. Use of paint to be determined by the engineer in accordance with the standard specifications.

All costs associated with the fence including the anchorage and painting shall be included in the price bid for 'steel fencing, welded wire mesh'.

QUANTITIES

<table>
<thead>
<tr>
<th>ITEM</th>
<th>UNITS</th>
<th>AMOUNT</th>
</tr>
</thead>
<tbody>
<tr>
<td>STEEL, FENCE, WELDED WIRE MESH</td>
<td>m</td>
<td>113.5</td>
</tr>
</tbody>
</table>

DESIGN STATION: +2009.00 H=59.54 DESIGN STATION: +2133.00 H=59.54

IDOT DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 35, SHEET 1 OF 1

POST BASE PLATE DETAILS

NOTE: FOR LOCATION OF FRAME DETAIL 'D' SEE DESIGN SHEET 35A.
PART PLAN OF WEST FENCE NEAR BRIDGE CENTER
(MESH PANEL FRAMES NOT SHOWN)

WEST FENCE PIPE BEND DETAILS

CURVED FENCE SECTION NOTES:
CURVED PARAPET OCCURS JUST SOUTH OF THE BRIDGE CENTER ON BOTH EAST AND WEST SIDES. SEE DETAIL PHOTOS FOR MORE INFORMATION.

ALL FENCE POSTS SHALL BE MOUNTED ON THE CENTERLINE OF THE CURVED PARAPET. FENCE SHALL HAVE STRAIGHT POSTS IN ALIGNMENT OF PARAPET TERSE TO OCCUR ONLY AT THE BENDS IN THE CURVED PIPE AT PIPE SPlice LOCATIONS AND AT MESH FRAME MOUNTING ANGLES AT POSTS.

EAST FENCE PIPE BEND DETAILS

BENT PLATE DETAILS

DESIGN BY: NEIL CHROMA
DRAWN BY: S. OAKUM

POLK COUNTY
DESIGN SHEET NO. 10, SHEET NO. 50

DESIGN NO. 3450
OCTOBER, 2005

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

94.0 M X VARIABLE CONTINUOUS WELDED GIRDER BRIDGE # 2-2.4M SIDEWALK
POLK COUNTY
STATE: 52S-W-570-X-X-960-3, 2-2.4M, 60-F, 120-F, 120-F

PART PLAN AT WEST FENCE ENDS
(102 MM PIPE NOT SHOWN)

DESIGN FOR 60° 30' 20" G.A.L.)