J40–06 CONTINUOUS CONCRETE SLAB BRIDGE STANDARDS
INDEX FOR J40-06 STANDARDS:

J40-44-06  ABUTMENT BACKFILL DETAILS - 0° SKEWS
J40-43-06  OPEN BARRIER RAIL DETAILS
J40-42-06  OPEN BARRIER RAIL DETAILS
J40-39-06  BARRIER RAIL END SECTION
J40-38-06  BARRIER RAIL DETAILS
J40-36-06  BARRIER RAIL DETAILS
J40-35-06  BARRIER RAIL DETAILS
J40-33-06  ABUTMENT DETAILS 45° SKEW - STEEL PILING
J40-32-06  ABUTMENT DETAILS 30° SKEW - STEEL PILING
J40-31-06  ABUTMENT DETAILS 15° SKEW - STEEL PILING
J40-30-06  ABUTMENT DETAILS 15° SKEW - TIMBER PILING
J40-29-06  ABUTMENT DETAILS 0° SKEW - TIMBER PILING
J40-28-06  ABUTMENT DETAILS 0° SKEW - TIMBER PILING
J40-27-06  ABUTMENT DETAILS 0° SKEW - TIMBER PILING
J40-26-06  ABUTMENT DETAILS 0° SKEW - TIMBER PILING
J40-25-06  ABUTMENT DETAILS 0° SKEW - TIMBER PILING
J40-24-06  ABUTMENT DETAILS 0° SKEW - TIMBER PILING
J40-23-06  ABUTMENT DETAILS 0° SKEW - TIMBER PILING
J40-22-06  ABUTMENT DETAILS 0° SKEW - TIMBER PILING
J40-21-06  ABUTMENT DETAILS 0° SKEW - TIMBER PILING
J40-20-06  ABUTMENT DETAILS 0° SKEW - TIMBER PILING
J40-19-06  ABUTMENT DETAILS 0° SKEW - TIMBER PILING
J40-18-06  ABUTMENT DETAILS 0° SKEW - TIMBER PILING
J40-17-06  ABUTMENT DETAILS 0° SKEW - TIMBER PILING
J40-16-06  ABUTMENT DETAILS 0° SKEW - TIMBER PILING
J40-15-06  ABUTMENT DETAILS 0° SKEW - TIMBER PILING
J40-14-06  ABUTMENT DETAILS 0° SKEW - TIMBER PILING
J40-13-06  ABUTMENT DETAILS 0° SKEW - TIMBER PILING
J40-12-06  ABUTMENT DETAILS 0° SKEW - TIMBER PILING
J40-11-06  ABUTMENT DETAILS 0° SKEW - TIMBER PILING
J40-10-06  ABUTMENT DETAILS 0° SKEW - TIMBER PILING
J40-09-06  ABUTMENT DETAILS 0° SKEW - TIMBER PILING
J40-08-06  ABUTMENT DETAILS 0° SKEW - TIMBER PILING
J40-07-06  ABUTMENT DETAILS 0° SKEW - TIMBER PILING
J40-06-06  ABUTMENT DETAILS 0° SKEW - TIMBER PILING
J40-05-06  ABUTMENT DETAILS 0° SKEW - TIMBER PILING
J40-04-06  ABUTMENT DETAILS 0° SKEW - TIMBER PILING
J40-03-06  ABUTMENT DETAILS 0° SKEW - TIMBER PILING
J40-02-06  ABUTMENT DETAILS 0° SKEW - TIMBER PILING
J40-01-06  ABUTMENT DETAILS 0° SKEW - TIMBER PILING

GENERAL NOTES:

THE IOWA DOT BRIDGE STANDARDS, IF PROPERLY USED, PROVIDE THE STRUCTURAL PLAN NECESSARY TO CONSTRUCT THREE SPAN 40' ROADWAY CONTINUOUS CONCRETE SLAB BRIDGES WITH LENGTHS OF 70'-0, 80'-0, 90'-0, 100'-0, 110'-0, 120'-0, 130'-0, AND 140'-0.

These bridges may be built on a 0°, 15°, 30°, or 45° skew. These plans show the bridges skewed in one direction. All dimensions and details will be the same for the opposite skew.

These standards give most of the information necessary to build these bridges. However, the following additional information is required for use on primary routes. For details that the designer may not require all sheets to be provided:
1. TITLE SHEET WITH ENGINEER SEAL
2. SITE PLAN SHOWING CLASS 20 DRAINAGE FOR BRIDGE CROSS SECTION
3. SITE PLAN SHOWING CLASS 20 DRAINAGE FOR BRIDGE CROSS SECTION
4. PLAN DETAIL SHOWING CLASS 20 DRAINAGE FOR BRIDGE CROSS SECTION
5. SITE PLAN SHOWING CLASS 20 DRAINAGE FOR BRIDGE CROSS SECTION
6. SITE PLAN SHOWING CLASS 20 DRAINAGE FOR BRIDGE CROSS SECTION
7. SITE PLAN SHOWING CLASS 20 DRAINAGE FOR BRIDGE CROSS SECTION
8. SITE PLAN SHOWING CLASS 20 DRAINAGE FOR BRIDGE CROSS SECTION
9. SITE PLAN SHOWING CLASS 20 DRAINAGE FOR BRIDGE CROSS SECTION
10. SITE PLAN SHOWING CLASS 20 DRAINAGE FOR BRIDGE CROSS SECTION

The Iowa Department of Transportation, Office of Bridges and Structures, and Iowa State University Research, for pile foundations the designer will need to determine the construction control method, contract length, and driving target elevation. The Iowa Department of Transportation, Office of Bridges and Structures, and Iowa State University Research, for pile foundations the designer will need to determine the construction control method, contract length, and driving target elevation.

For clarity, most sections shown on the following sheets are shown with barred rail only. Only sections will be identical for open rail design with any modifications shown on sheet E-405 and E-405A.

These bridges are designed for 20-kip loading plus 20 kip of future roadway for primary highway surface. Control of cracking by distribution of reinforcement for slab design based on the Iowa DOT specifications. Note that when approach pavement is to be placed, the temporary paving blocks shall be removed and a proper joint for expansion shall be provided between the bridge and the approach pavement.

The floor slab as shown includes 1" internal wearing surface. The abutments for these bridges are built integral with the superstructure. Therefore, it is important that a proper joint for expansion be provided between the bridge and the approach pavement when approach pavement is needed.

The abutment design utilized on these bridges restricts their use in the following manner:
1. These bridges are not to be used when point bearing for the abutment steel is required. Therefore, all abutments shall be used all bridges.
2. Foundation piles, or other means of support at a distance less than 10 feet from the bottom of footing.
3. Pile caps on all bridges.
4. Pile caps on all bridges.
5. Pile caps on all bridges.
6. Pile caps on all bridges.
7. Pile caps on all bridges.
8. Pile caps on all bridges.
9. Pile caps on all bridges.
10. Pile caps on all bridges.

The superstructure details of these standards have been designed for the use of both function and point bearing piles. It is necessary that the pile length for both the abutment and pier piles be determined by the bridge design manual. The internal abutments and pile bents for these standards have been designed for the use of various types of pile foundations as follows:

For piles subject to scour, the design bearing shall be obtained below scour depth. If no scour occurs, the design bearing shall be shown on the front sheet.

Keystone dimensions shown on the plans are based on normal dimensions unless stated otherwise. In addition, theレベル (level) on the keystone shall be limited to a maximum of 10 degrees from vertical.

These bridge plans label all reinforcing steel with English notation that is I from dimension bar, ⅠIA from dimension bar, ⅠIB from dimension bar, ⅡA from dimension bar, ⅡB from dimension bar, and Ⅲ from dimension bar.

INDEX AND GENERAL NOTES
CONCRETE SEALER LIMITS FOR OPEN RAILS

Concrete sealer shall be applied to both sides of bridge slab on the top, edge of slab and under the slab. The concrete sealer shall also be applied to the open rail on the top, traffic face side, bottom of rail, and on all sides of the open rail post.

The concrete sealer limits are shown in the detail and shall apply to the full length of bridge. Concrete sealer shall be applied in accordance with Article 451.01, of the standard specifications.

NOTE: DOUBLE DRIP GROOVES FOR OPEN RAILS OPTION ONLY.

NOTE: TOP LONGITUDINAL REINFORCING STEEL IS TO BE PARALLEL TO AND 1'-0" CLEAR OF OPEN RAIL. BOTTOM LONGITUDINAL REINFORCING STEEL IS TO BE PARALLEL TO AND 2'-6" CLEAR OF SLAB. REINFORCING STEEL IS TO BE SECURELY WIRED IN PLACE AND ADEQUATELY SUPPORTED ON BOTH SIDES BEFORE CONCRETE IS PLACED. BAR CHAIR REQUIREMENTS SHALL APPLY FOR BAR CHAIRS.
### Bill of Reinforcing Steel for Superstructure - to Bridge

#### Estimated Quantities for Superstructure - to Bridge

<table>
<thead>
<tr>
<th>Section</th>
<th>Material</th>
<th>Quantity</th>
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<tbody>
<tr>
<td>Pier Cap, Top Longitudinal</td>
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<tr>
<td>Pier Cap, Bottom Longitudinal</td>
<td></td>
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<tr>
<td>Slab, Diagonals, at Abutment</td>
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</tr>
<tr>
<td>Slab, Transverse at Abutment</td>
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<tr>
<td>Slab Transverse Bottom</td>
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</tr>
<tr>
<td>Slab Longitudinal Top, at Rail</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Slab Longitudinal Bottom, at Rail</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Notes:
- All dimensions are out to out, D = pin diameter.
- All reinforcing steel shall be epoxy coated.

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#### Bending Bar Details

- Bending bar details are included for fabrication and installation.
- Dimensions are accurate to the nearest 0.1 inch.
CONCRETE SEALER LIMITS FOR OPEN RAILS

Concrete sealer shall be applied to both sides of barrier rail on the top edge of slab and under the slab. The concrete sealer shall also be applied to the open rail on the top, traffic face side, bottom of rail, and on all sides of the open rail post.

The concrete sealer limits are shown in the detail and shall apply to the full length of bridge.

Concrete sealer shall be applied in accordance with Article 4040, Section 5 of the Standard Specifications.

HALF SECTION NEAR ABUTMENT

SLAB CROSS-SECTIONAL AREA

FOR SLAB RAIL =       SQ. FT.

SLAB CROSS-SECTIONAL AREA

FOR OPEN RAIL =       SQ. FT.

NOTE: DOUBLE DROP GROOVES FOR OPEN RAIL OPTION ONLY.

HALF SECTION NEAR PIER

SLAB CROSS-SECTIONAL AREA

FOR SLAB RAIL =       SQ. FT.

SLAB CROSS-SECTIONAL AREA

FOR OPEN RAIL =       SQ. FT.

NOTE: DOUBLE DROP GROOVES FOR OPEN RAIL OPTION ONLY.

FORM CAMBER DIAGRAM

This diagram shows the form camber required to compensate for the anticipated ultimate dead load deflection. The above dimensions do not include any allowance for form deflection or falsework settlement.

IOWA DOT
Highway Division

CONTINUOUS CONCRETE SLAB BRIDGES

NOVEMBER, 2006

SUPERSTRUCTURE DETAILS

80'-0 BRIDGE

J40-04-06
### Bill of Reinforcing Steel for Superstructure - 80' Bridge

#### Location

<table>
<thead>
<tr>
<th>Location</th>
<th>Shape</th>
<th>Lin. Ft.</th>
<th>C.Y.</th>
<th>Sp.</th>
<th>Weight</th>
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<tbody>
<tr>
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<td>8e1</td>
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<td>6c6</td>
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<tr>
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<td>6d1</td>
<td>5c6</td>
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<tr>
<td>Pier Cap, Top Transverse</td>
<td>30°</td>
<td>5e2</td>
<td>6d2</td>
<td>5c7</td>
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<td>Pier Cap, Bottom Transverse</td>
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<td>6d3</td>
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</table>

### Standard Design - 40' Roadway, 3 Span Bridges

- **Continuous Concrete Slab Bridges**
- **November, 2006**

### Estimated Quantities for Superstructure - 80' Bridge

#### Bent Bar Details

- **Total Length**
  - 8h2
  - 6e3
  - 5n3

### Notes

- All dimensions are cut to 0.5 in. diameter.
- The transverse bars are detailed with a 4 in. lap. The contractor's option, this lap may be eliminated by furnishing full length bars with no reduction in pay length for same.

### Iowa DOT

- Highway Division
- Standard Design - 40' Roadway, 3 Span Bridges
- Continuous Concrete Slab Bridges
- November, 2006

---

**Bill of Reinforcing Steel for Superstructure - 80' Bridge**

<table>
<thead>
<tr>
<th>Location</th>
<th>Shape</th>
<th>Lin. Ft.</th>
<th>C.Y.</th>
<th>Sp.</th>
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<td>5e3</td>
<td>6d3</td>
<td>5c8</td>
<td>53,273</td>
</tr>
</tbody>
</table>

### Notes

- All reinforcing steel shall be epoxy coated.
- The transverse bars are detailed with a 4 in. lap. The contractor's option, this lap may be eliminated by furnishing full length bars with no reduction in pay length for same.
CONCRETE SEALER

LIMITS FOR OPEN RAILS

Concrete sealer shall be applied to both sides of
bridge slab on the top edge of slab and under the
slab. The concrete sealer shall also be applied to
the open rail on the top, traffic face side, bottom
of rail, and on all sides of the open rail post.

The concrete sealer limits are shown in the detail
and shall apply to the full length of bridge.
Concrete sealer shall be applied in accordance
with Article 400, 451.01 of the Standard
Specifications.

HALF SECTION NEAR ABUTMENT

HALF SECTION NEAR PIER

SLAB CROSS-SECTIONAL AREA

FOR OPEN RAIL - 512 SQ. FT.

SLAB CROSS-SECTIONAL AREA

FOR BARRIER RAIL - 512 SQ. FT.

NOTE: TOP LONGITUDINAL REINFORCING STEEL IS TO BE PARALLEL TO AND 2'-1" CLEAR BEHIND THE OPEN RAIL. BOTTOM LONGITUDINAL REINFORCING STEEL IS TO BE PARALLEL TO AND 8'-0" CLEAR ABOVE BOTTOM OF SLAB. REINFORCING STEEL IS TO BE SECURELY WIRED IN PLACE AND ADEQUATELY SUPPORTED ON BOTH SIDES OF CONCRETE SLAB.  SMALL APPEAR FOR BAR CHAIRS.

NOTE: TOP LONGITUDINAL REINFORCING STEEL IS TO BE PARALLEL TO AND 3'-0" CLEAR BELOW TOP OF SLAB. GROOVE (`TYP.`) 5" DOUBLE DRIP 6" GROOVE (`TYP.`)

TOP OF SLAB

SLAB

PLACEMENT FOR LONGITUDINAL REINFORCEMENT

IF PERMISSIBLE LONGITUDINAL JOINT IS USING BARS ON A ROADWAY邙 MAY BE SHIFTED TO CLEAR JOINT BY 1'-0".

6c BARS @ 1'-0" CENTERS (`1'-10 MIN. LAP`)

6d BARS @ 1'-0" CENTERS (`2'-2 MIN. LAP`)

5j1 BARS @ 1'-0" CENTERS

TOP OF SLAB wollen`=

SLAB

...`RAIL OPTION ONLY.

*`NOTE: DOUBLE DRIP GROOVES FOR OPEN RAIL OPTION ONLY.

1'-0" INDENTATION

1"x8x0'-8"

TOP OF SLAB

SLAB

SLAB CROSS-SECTIONAL AREA

FOR OPEN RAIL - 512 SQ. FT.

SLAB CROSS-SECTIONAL AREA

FOR BARRIER RAIL - 512 SQ. FT.

TOP OF SLAB

SLAB

PLACEMENT FOR LONGITUDINAL REINFORCEMENT

IF PERMISSIBLE LONGITUDINAL JOINT IS USING BARS ON A ROADWAY邙 MAY BE SHIFTED TO CLEAR JOINT BY 1'-0".

6c BARS @ 1'-0" CENTERS (`1'-10 MIN. LAP`)

6d BARS @ 1'-0" CENTERS (`2'-2 MIN. LAP`)

5j1 BARS @ 1'-0" CENTERS

TOP OF SLAB wollen`=

SLAB

...`RAIL OPTION ONLY.

*`NOTE: DOUBLE DRIP GROOVES FOR OPEN RAIL OPTION ONLY.

1'-0" INDENTATION

1"x8x0'-8"

TOP OF SLAB

SLAB

SLAB CROSS-SECTIONAL AREA

FOR OPEN RAIL - 512 SQ. FT.

SLAB CROSS-SECTIONAL AREA

FOR BARRIER RAIL - 512 SQ. FT.

TOP OF SLAB

SLAB

PLACEMENT FOR LONGITUDINAL REINFORCEMENT

IF PERMISSIBLE LONGITUDINAL JOINT IS USING BARS ON A ROADWAY邙 MAY BE SHIFTED TO CLEAR JOINT BY 1'-0".

6c BARS @ 1'-0" CENTERS (`1'-10 MIN. LAP`)

6d BARS @ 1'-0" CENTERS (`2'-2 MIN. LAP`)

5j1 BARS @ 1'-0" CENTERS

TOP OF SLAB wollen`=

SLAB

...`RAIL OPTION ONLY.

*`NOTE: DOUBLE DRIP GROOVES FOR OPEN RAIL OPTION ONLY.

1'-0" INDENTATION

1"x8x0'-8"

TOP OF SLAB

SLAB

SLAB CROSS-SECTIONAL AREA

FOR OPEN RAIL - 512 SQ. FT.

SLAB CROSS-SECTIONAL AREA

FOR BARRIER RAIL - 512 SQ. FT.

TOP OF SLAB

SLAB

PLACEMENT FOR LONGITUDINAL REINFORCEMENT

IF PERMISSIBLE LONGITUDINAL JOINT IS USING BARS ON A ROADWAY邙 MAY BE SHIFTED TO CLEAR JOINT BY 1'-0".

6c BARS @ 1'-0" CENTERS (`1'-10 MIN. LAP`)

6d BARS @ 1'-0" CENTERS (`2'-2 MIN. LAP`)

5j1 BARS @ 1'-0" CENTERS

TOP OF SLAB wollen`=

SLAB

...`RAIL OPTION ONLY.

*`NOTE: DOUBLE DRIP GROOVES FOR OPEN RAIL OPTION ONLY.

1'-0" INDENTATION

1"x8x0'-8"
# BILL OF REINFORCING STEEL FOR SUPERSTRUCTURE - 90° BRIDGE

## SUPERSTRUCTURE DETAILS

### STANDARD DESIGN - 40' ROADWAY, 3 SPAN BRIDGES

### CONTINUOUS CONCRETE SLAB BRIDGES

### NOVEMBER, 2006

### IOWA DOT

### Highway Division

### J40-07-06

## BILL OF REINFORCING STEEL FOR SUPERSTRUCTURE - 90° BRIDGE

### ESTIMATED QUANTITIES FOR SUPERSTRUCTURE - 90° BRIDGE

### WITH MONOLITHIC VIEW CAP

<table>
<thead>
<tr>
<th>ITEM</th>
<th>QTY</th>
<th>DESCRIPTION</th>
</tr>
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<tbody>
<tr>
<td>SUPERSTRUCTURE</td>
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<td>90° BRIDGE</td>
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<tr>
<td>HORIZONTAL STEEL CONCRETE TRAVELER</td>
<td>20</td>
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<tr>
<td>TRANVERSE ENDS</td>
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### WITH MONOLITHIC VIEW CAP

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<td>10</td>
<td>10</td>
</tr>
</tbody>
</table>

### NOTE:

All reinforcing steel shall be epoxy coated.

The transverse details are detailed with a splice lap. At the contractor's option, this lap may be eliminated by furnishing full-length bars with no reduction in pay weight for same.

### NOTE:

All dimensions are cut to cut, o.d. pin diameter.

---

### BENT BAR DETAILS

**NOTE:**

Bar lengths are 10'-0" except as shown. Bar sizes are 6#4, 8#2, 8#3, 10#1. Bar details are shown. All reinforcing steel shall be epoxy coated.

---

### REVISED 07-09 - OPEN RAIL REIN. QTYs CHANGED WHICH CHANGED TOTAL REIN. QTYs.

**NOTE:**

Bar lengths are 10'-0" except as shown. Bar sizes are 6#4, 8#2, 8#3, 10#1. Bar details are shown. All reinforcing steel shall be epoxy coated.

---

### BAR LENGTHS

<table>
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<tr>
<td>TRANSVERSE ENDS</td>
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### NOTE:

All dimensions are cut to cut, o.d. pin diameter.

---

### ESTIMATED QUANTITIES FOR SUPERSTRUCTURE - 90° BRIDGE

### WITH MONOLITHIC VIEW CAP

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<tr>
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<td>TRANVERSE ENDS</td>
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<tr>
<td>TRANVERSE ENDS</td>
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</table>

### NOTE:

All reinforcing steel shall be epoxy coated.

The transverse details are detailed with a splice lap. At the contractor's option, this lap may be eliminated by furnishing full-length bars with no reduction in pay weight for same.

### NOTE:

All dimensions are cut to cut, o.d. pin diameter.
## Bill of Reinforcing Steel for Superstructure - 100' Bridge

### Overall Details

**Location:** [Location Information]

**Materials:**
- Reinforcing Steel: Epoxy Coated

### Reinforcing Steel Bar Details

<table>
<thead>
<tr>
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<th>Bar Type</th>
<th>Location</th>
<th>Coverage</th>
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<tr>
<td>6c4</td>
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</table>

### Slab Details

#### Slab Transverse Ends

- Top: [Detailed Information]
- Bottom: [Detailed Information]

#### Slab Longitudinal Ends

- Top, at Rail: [Detailed Information]
- Bottom, at Rail: [Detailed Information]

### Pier Cap Details

- Top Longitudinal: [Detailed Information]
- Bottom Longitudinal: [Detailed Information]

### Additional Notes

- All reinforcing steel shall be properly protected.
- The bar sizes are subject to change based on the design.
- All details are subject to the final approval by the engineer.
CONCRETE SEALER
LIMITS FOR OPEN RAILS

Concrete sealer shall be applied to both sides of bridge slab on the top side of slab and under the slab. The concrete sealer shall also be applied to the open rail on the top, traffic face side, bottom of rail, and on all sides of the open rail post.

The concrete sealer limits are shown in the detail and shall apply to the full length of bridge. Concrete sealer shall be applied in accordance with Article 2403.03, P, of the Standard Specifications.

The concrete sealer limits are shown in the detail and shall apply to the full length of bridge. Concrete sealer shall be applied in accordance with Article 2403.03, P, of the Standard Specifications.

FORM CAMBER DIAGRAM

This diagram shows the form camber required to compensate for the anticipated ultimate dead load deflection. The above dimensions do not include any allowance for form deflection or falsework settlement.

HALF SECTION NEAR ABUTMENT
HALF SECTION NEAR PIER

SLAB CROSS-SECTIONAL AREA
FOR OPEN RAIL = (4800 SFT)

SLAB CROSS-SECTIONAL AREA
FOR BARRIER RAIL = (4800 SFT)

NOTE: TOP LONGITUDINAL REINFORCING STEEL IS TO BE PARALLEL TO AND 2'/0" LONG SLOT IN OPEN RAIL. BOTTOM LONGITUDINAL REINFORCING STEEL IS TO BE PARALLEL TO AND 1'/0" CLEAR ABOVE BOTTOM OF SLAB. REINFORCING STEEL IS TO BE SECURITY MENDED IN PLACE AND ADEQUATELY SUPPORTED ON BAR CHAIRS BEFORE CONCRETE IS PLACED AND ADEQUATELY SUPPORTED ABOVE BOTTOM OF SLAB. REINFORCING STEEL IS TO BE PARALLEL TO AND 2'/0" CLEAR BELOW TOP OF SLAB. REINFORCING STEEL IS TO BE PARALLEL TO AND 1'/0" CLEAR BELOW TOP OF SLAB. REINFORCING STEEL IS TO BE SECURELY WIREBLED IN PLACE AND ADEQUATELY SUPPORTED ON BAR CHAIRS BEFORE CONCRETE IS PLACED AND ADEQUATELY SUPPORTED ABOVE BOTTOM OF SLAB. REINFORCING STEEL IS TO BE PARALLEL TO AND 2'/0" CLEAR BELOW TOP OF SLAB. REINFORCING STEEL IS TO BE SECURELY WIREBLED IN PLACE AND ADEQUATELY SUPPORTED ON BAR CHAIRS BEFORE CONCRETE IS PLACED AND ADEQUATELY SUPPORTED ABOVE BOTTOM OF SLAB. REINFORCING STEEL IS TO BE PARALLEL TO AND 2'/0" CLEAR BELOW TOP OF SLAB. REINFORCING STEEL IS TO BE SECURELY WIREBLED IN PLACE AND ADEQUATELY SUPPORTED ON BAR CHAIRS BEFORE CONCRETE IS PLACED AND ADEQUATELY SUPPORTED ABOVE BOTTOM OF SLAB. REINFORCING STEEL IS TO BE PARALLEL TO AND 2'/0" CLEAR BELOW TOP OF SLAB. REINFORCING STEEL IS TO BE SECURELY WIREBLED IN PLACE AND ADEQUATELY SUPPORTED ON BAR CHAIRS BEFORE CONCRETE IS PLACED AND ADEQUATELY SUPPORTED ABOVE BOTTOM OF SLAB. REINFORCING STEEL IS TO BE PARALLEL TO AND 2'/0" CLEAR BELOW TOP OF SLAB. REINFORCING STEEL IS TO BE SECURELY WIREBLED IN PLACE AND ADEQUATELY SUPPORTED ON BAR CHAIRS BEFORE CONCRETE IS PLACED AND ADEQUATELY SUPPORTED ABOVE BOTTOM OF SLAB. REINFORCING STEEL IS TO BE PARALLEL TO AND 2'/0" CLEAR BELOW TOP OF SLAB. REINFORCING STEEL IS TO BE SECURELY WIREBLED IN PLACE AND ADEQUATELY SUPPORTED ON BAR CHAIRS BEFORE CONCRETE IS PLACED AND ADEQUATELY SUPPORTED ABOVE BOTTOM OF SLAB.
CONCRETE SEALER
LIMITS FOR OPEN RAILS
CONCRETE SEALER SHALL BE APPLIED TO BOTH SIDES OF BRIDGE SLAB. THE CONCRETE SEALER SHALL ALSO BE APPLIED TO THE OPEN RAIL ON THE TOP, TRAFFIC FACE SIDE, BOTTOM OF RAIL, AND ON ALL SIDES OF THE OPEN RAIL POSTS.

THE CONCRETE SEALER LIMITS ARE SHOWN IN THE DETAIL AND SHALL APPLY TO THE FULL LENGTH OF BRIDGE. CONCRETE SEALER SHALL BE APPLIED IN ACCORDANCE WITH ARTICLE 2403.03 OF THE STANDARD SPECIFICATIONS.

FORM CAMBER DIAGRAM
THIS DIAGRAM SHOWS THE FORM CAMBER REQUIRED TO COMPENSATE FOR THE ANTICIPATED ULTIMATE DEAD LOAD DEFLECTION. THE ABOVE DIMENSIONS DO NOT INCLUDE ANY ALLOWANCE FOR FORM DEFLECTION OR FALSEWORK SETTLEMENT.
CONCRETE SEALER LIMITS FOR OPEN RAILS

Concrete sealer shall be applied to both sides of bridge slab on the top, edge of slab, and under the slab. The concrete sealer shall also be applied to the open rail on the top, traffic face side, bottom of rail, and on all sides of the open rail post.

The concrete sealer limits are shown in the detail and shall apply to the full length of bridge. Concrete sealer shall be applied in accordance with Article 4520, 3 of the Standard Specifications.

HALF SECTION NEAR ABUTMENT

HALF SECTION NEAR PIER

SLAB CROSS-SECTIONAL AREA

FOR OPEN RAIL = 78 SQ. FT.

FOR BARRIER RAIL = 72 SQ. FT.

PLACEMENT FOR LONGITUDINAL REINFORCEMENT

5d BARS @ 1'-0 CENTERS (`2'-2 MIN. LAP`) 6c BARS @ 1'-0 CENTERS (`1'-10 MIN. LAP`) 5j1 BARS @ 1'-0 CENTERS

PARABOLIC CROWN ORDINATES

2.0% SLOPE

PLACEMENT FOR LONGITUDINAL REINFORCEMENT

20'-0 (`40'-6 ROADWAY FOR OPEN RAIL`) 20'-3 (`40'-0 ROADWAY FOR BARRIER RAIL`) 20'-3

TOP NO. 1 RAIL TO CLEAR JOINT BY 1" ROADWAY MAY BE SHIFTED JOINT IS USED, BARS ON |

IF PERMISSIBLE LONGITUDINAL JOINT IS TO USE, BARS ON L ROADWAY MAY BE SHIFTED TO CLEAR JOINT BY 1" 65 BARS @ 1'-0 CENTERS (2'-2 MIN. LAP) 50 BARS @ 1'-0 CENTERS (1'-10 MIN. LAP)

STEREOTYPICAL BS 55 PLATE FOR OPEN RAILoption

TOP OF SLAB

LEVEL 1'-4

LEVEL 1'-7

POST JOINT UNDER ROUGHENED GUTTER LINE

HALF SECTION NEAR ABUTMENT

HALF SECTION NEAR PIER

SLAB CROSS-SECTIONAL AREA

FOR OPEN RAIL = 78 SQ. FT.

FOR BARRIER RAIL = 72 SQ. FT.

CONCRETE SEALER LIMITS FOR OPEN RAILS

Concrete sealer shall be applied to both sides of bridge slab on the top, edge of slab, and under the slab. The concrete sealer shall also be applied to the open rail on the top, traffic face side, bottom of rail, and on all sides of the open rail post.

The concrete sealer limits are shown in the detail and shall apply to the full length of bridge. Concrete sealer shall be applied in accordance with Article 4520, 3 of the Standard Specifications.

HALF SECTION NEAR ABUTMENT

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5d BARS @ 1'-0 CENTERS (`2'-2 MIN. LAP`) 6c BARS @ 1'-0 CENTERS (`1'-10 MIN. LAP`) 5j1 BARS @ 1'-0 CENTERS

PARABOLIC CROWN ORDINATES

2.0% SLOPE

PLACEMENT FOR LONGITUDINAL REINFORCEMENT

20'-0 (`40'-6 ROADWAY FOR OPEN RAIL`) 20'-3 (`40'-0 ROADWAY FOR BARRIER RAIL`) 20'-3

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The concrete sealer limits are shown in the detail and shall apply to the full length of bridge. Concrete sealer shall be applied in accordance with Article 4520, 3 of the Standard Specifications.

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HALF SECTION NEAR PIER

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PARABOLIC CROWN ORDINATES

2.0% SLOPE

PLACEMENT FOR LONGITUDINAL REINFORCEMENT

20'-0 (`40'-6 ROADWAY FOR OPEN RAIL`) 20'-3 (`40'-0 ROADWAY FOR BARRIER RAIL`) 20'-3

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STEREOTYPICAL BS 55 PLATE FOR OPEN RAILoption

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LEVEL 1'-4

LEVEL 1'-7

POST JOINT UNDER ROUGHENED GUTTER LINE

HALF SECTION NEAR ABUTMENT

HALF SECTION NEAR PIER

SLAB CROSS-SECTIONAL AREA

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The concrete sealer limits are shown in the detail and shall apply to the full length of bridge. Concrete sealer shall be applied in accordance with Article 4520, 3 of the Standard Specifications.

HALF SECTION NEAR ABUTMENT

HALF SECTION NEAR PIER

SLAB CROSS-SECTIONAL AREA

FOR OPEN RAIL = 78 SQ. FT.

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5d BARS @ 1'-0 CENTERS (`2'-2 MIN. LAP`) 6c BARS @ 1'-0 CENTERS (`1'-10 MIN. LAP`) 5j1 BARS @ 1'-0 CENTERS

PARABOLIC CROWN ORDINATES

2.0% SLOPE

PLACEMENT FOR LONGITUDINAL REINFORCEMENT

20'-0 (`40'-6 ROADWAY FOR OPEN RAIL`) 20'-3 (`40'-0 ROADWAY FOR BARRIER RAIL`) 20'-3

TOP NO. 1 RAIL TO CLEAR JOINT BY 1" ROADWAY MAY BE SHIFTED JOINT IS USED, BARS ON |

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POST JOINT UNDER ROUGHENED GUTTER LINE

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The concrete sealer limits are shown in the detail and shall apply to the full length of bridge. Concrete sealer shall be applied in accordance with Article 4520, 3 of the Standard Specifications.
### Bill of Reinforcing Steel for Superstructure - 130' Bridge

#### Location

<table>
<thead>
<tr>
<th>Location</th>
<th>Bar</th>
<th>No.</th>
<th>Diameter</th>
<th>Length</th>
<th>Weight</th>
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<tr>
<td><strong>Pier Cap, Bottom Longitudinal</strong></td>
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<tr>
<td><strong>Slab, Transverse at Abutment</strong></td>
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<tr>
<td><strong>Slab Transverse Ends, Top</strong></td>
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<tr>
<td><strong>Slab Transverse Ends, Bottom</strong></td>
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<tr>
<td><strong>Slab Longitudinal, Top</strong></td>
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<tr>
<td><strong>Slab Longitudinal, Bottom</strong></td>
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#### Reinforcing Steel Epoxy Coated

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<tr>
<th>Material Description</th>
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<tbody>
<tr>
<td>Scenario A</td>
<td>398.1</td>
</tr>
<tr>
<td>Scenario B</td>
<td>398.3</td>
</tr>
</tbody>
</table>

#### Bent Bar Details

![Bent Bar Details Diagram]

#### Estimating Quantities for Superstructure - 130' Bridge

<table>
<thead>
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<td>Scenario B</td>
<td>398.3</td>
</tr>
</tbody>
</table>
**Form Camber Diagram**

This diagram shows the form camber required to compensate for the anticipated ultimate dead load deflection. The above dimensions do not include any allowance for form deflection or falsework settlement.

**Concrete Sealer Limits for Open Rails**

Concrete sealer shall be applied to both sides of bridge slab on the top, side, and under the slab. The concrete sealer shall also be applied to the open rail on the top, traffic face side, bottom of rail, and on all sides of the open rail post.

The concrete sealer limits are shown in the detail and shall apply to the full length of bridge. Concrete sealer shall be applied in accordance with Article 4030, § 3 of the Standard Specifications.

**Superstructure Details**

**Continuous Concrete Slab Bridges**

November, 2006
BILL OF REINFORCING STEEL FOR SUPERSTRUCTURE - 140' BRIDGE

LOCATION

SLAB TRANSVERSE ENDS, TOP
SLAB TRANSVERSE TOP
SLAB TRANSVERSE ENDS, BOTTOM
SLAB LONGITUDINAL TOP, AT RAIL
SLAB LONGITUDINAL TOP
SLAB LONGITUDINAL BOTTOM, AT RAIL
SLAB LONGITUDINAL BOTTOM
PIER CAP, TOP LONGITUDINAL
PIER CAP, BOTTOM LONGITUDINAL
SLAB, TRANSVERSE AT ABUTMENT

* INCLUDES 4 WINGS @ 0.68 C.Y. EACH; EXCLUDES RAIL CONCRETE.

PAY WEIGHT FOR SAME.

THE TRANSVERSE RAYS ARE DETAILED WITH A SLIP LAY, AT THE CONTRACTOR'S OPTION, THIS LAY MAY BE ELIMINATED BY FURNISHING FULL LENGTH BARS WITH NO REDUCTION IN PAY WEIGHT FOR SAME.

NOTES:
- ALL DIMENSIONS ARE OUT TO CUT, 0.5 INCH PUNCHED
- ALL REINFORCING STEEL SHALL BE EPOXY COATED.

SUB TOTAL - LBS
BEARING RAIL - SEE LIST ON SHEET J40-222.B-CNCL
63,675
BEARING CAPS - SEE LIST ON SHEET J40-223.B-CNCL
2592
TOTAL - LBS
WITH MONOLITHIC BEARING CAP
106,994
WITH MONOLITHIC BEARING CAP
106,064
TOTAL - LBS
WITH MONOLITHIC BEARING CAP
106,994
WITH MONOLITHIC BEARING CAP
106,064
SAME AS ABOVE EXCEPT ALL 9" BARS (SELECTED)
106,994
WITH MONOLITHIC BEARING CAP
106,064

NOTE:
- ALL DIMENSIONS ARE OUT TO CUT, 0.5 INCH PUNCHED
- ALL REINFORCING STEEL SHALL BE EPOXY COATED.

THE TRANSVERSE RAYS ARE DETAILED WITH A SLIP LAY, AT THE CONTRACTOR'S OPTION, THIS LAY MAY BE ELIMINATED BY FURNISHING FULL LENGTH BARS WITH NO REDUCTION IN PAY WEIGHT FOR SAME.
BILL OF REINFORCING STEEL FOR SUPERSTRUCTURE - 150' BRIDGE

LOCATION

| SHEET | LOCATION | BAR DIA. | BAR LENGTH | REINFORCING STEEL | CONCRETE | OPEN RAIL | OPEN RAIL
|-------|----------|----------|------------|-------------------|----------|-----------|-----------
| SB1   | SB1      | 10†      | 2'-10†     | 8h2               | 6e3      | 5n3       |
| SB1   | SB1      | 8h2      | 2'-10†     | 8e1               | 8e2      | 5n3       |
| SB1   | SB1      | 6h4      | 2'-10†     | 6e4               |          |           |
| SB1   | SB1      | 4h5      | 2'-10†     |                   |          |           |
| SB1   | SB1      | 3h6      | 2'-10†     |                   |          |           |
| SB1   | SB1      | 2h7      | 2'-10†     |                   |          |           |
| SB1   | SB1      | 1h8      | 2'-10†     |                   |          |           |

BENT BAR DETAILS

NOTE: ALL DIMENSIONS ARE OUT TO CUT, 0.5 IN. CENTERLINE.

NOTES:

- ALL REINFORCING STEEL SHALL BE EPOXY COATED.
- THE TRANSVERSE REBARS ARE DETAILLED WITH A SPLICE LAP, BY FURNISHING FULL LENGTH BARS WITH NO REDUCTION IN PAY WEIGHT FOR SAME.
- THE CONTRACTOR'S OPTION, THE LAP MAY BE ELIMINATED.
45° SKEW

TRANSVERSE REINFORCING STEEL LAYOUT

NOTE: 60 BARS ARE TO PASS UNDER 60 BARS IN CONFLICT AREAS.

45° TRANSV. REINFORCEMENT DIMENSION TABLE

<table>
<thead>
<tr>
<th>BRIDGE</th>
<th>&quot;A&quot;</th>
<th>&quot;B&quot;</th>
<th>&quot;C&quot;</th>
<th>&quot;D&quot;</th>
<th>&quot;E&quot;</th>
<th>&quot;F&quot;</th>
<th>&quot;G&quot;</th>
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<tbody>
<tr>
<td>70' BRIDGE</td>
<td>47</td>
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NOTE: 5D BARS ARE TO PASS UNDER 8E BARS IN CONFLICT AREAS.

WEIGHT OF ONE FLOOR DRAIN

<table>
<thead>
<tr>
<th>SPAN</th>
<th>10-0</th>
<th>15-0</th>
<th>20-0</th>
<th>25-0</th>
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<th>35-0</th>
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<tr>
<td>10'-0</td>
<td>57</td>
<td>105</td>
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<td>15'-0</td>
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<td>148</td>
<td>193</td>
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<td>274</td>
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NOTE: DRAINS ARE TO BE GALVANIZED. INCLUDE COST OF DRAINS IN PRICE BID FOR "STRUCTURAL CONCRETE." 4 DRAINS REQUIRED.

CONSTRUCTION JOINTS

PERMISSIBLE TRANSVERSE CONSTRUCTION JOINTS

NOTE: 5D BARS ARE TO PASS UNDER 8E BARS IN CONFLICT AREAS.

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CONSTRUCTION JOINTS

PERMISSIBLE TRANSVERSE CONSTRUCTION JOINTS

NOTE: 5D BARS ARE TO PASS UNDER 8E BARS IN CONFLICT AREAS.
MONOLITHIC PIER CAP DETAILS
ALL BRIDGES
CONTINUOUS CONCRETE SLAB BRIDGES

PIER NOTES:
ALL MONOLITHIC PIER CAP REINFORCING AND CONCRETE IS INCLUDED IN SUPERSTRUCTURE ESTIMATE OF QUANTITIES.
THE MINIMUM CLEAR DISTANCE FROM THE FACE OF THE CONCRETE TO NEAR REINFORCING BAR IS TO BE 2" UNLESS OTHERWISE NOTED OR SHOWN.
THE MINIMUM CLEAR DISTANCE FROM THE FACE OF THE CONCRETE TO NEAR REINFORCING BAR IS TO BE 2" UNLESS OTHERWISE NOTED OR SHOWN.
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PILE ORIENTATION DETAIL FOR TYPE 3 TRESTLE BENT PILES

half section below slab

Note: Numbers of piles and spacings shown are for a 70'-0 bridge.
CAP DIMENSIONS ARE TYPICAL FOR ALL BRIDGES.
70'-0, 80'-0 & 90'-0 BRIDGES

100'-0 BRIDGE

110'-0 BRIDGE

120'-0 BRIDGE

130'-0 BRIDGE

140'-0 & 150'-0 BRIDGES

HALF SECTION NEAR PIER

Showing stirrup spacing and number of piles

Note: Bottom of cap elevations will be required at the end of roadway and at each interior pile.

TYPICAL CAP SECTION

MONOLITHIC PIER CAP DETAILS

CONTINUOUS CONCRETE SLAB BRIDGES

November, 2006

HIGHWAY BRIDGE METHODS SECTION

STANDARD DESIGN - 40' ROADWAY, 3 SPAN BRIDGES

J40-26-06

MONOLITHIC PIER CAP DETAILS

ALL BRIDGES

IOWA DOT

Highway Division
PIE CAP DETAIL

TYP. HALF PLAN VIEW

NOTE: NUMBER OF PILES AND STIRRUPS SHOWN ARE FOR A 70'-0 BRIDGE. CAP DIMENSIONS ARE TYPICAL FOR ALL BRIDGES.
**ABUTMENT NOTES:**

The concrete and reinforcing steel for the wings is included with the superstructure.

Details on this sheet are to be used only when abutments are placed on timber piers.

The minimum clear distance from the face of the abutment to the road surface shall be 7.5 feet unless otherwise noted on sheets, and piles shall be driven to full penetration if practicable but in no case to a bearing value less than shown in design plans. Thinner piles shall not be driven to more than 90 tons. All reinforcing steel is to be grade 60.

Abutment piles were designed for NL-93 loading with an allowance for 20 pounds per square foot future wearing surface.

---

**NUMBER OF PILES AND ABUTMENT DESIGN LOADS**

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<th>Bridge Length</th>
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<th>30'-0</th>
<th>40'-0</th>
<th>50'-0</th>
<th>60'-0</th>
<th>70'-0</th>
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<th>110'-0</th>
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<th>130'-0</th>
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<th>150'-0</th>
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<th>585</th>
<th>623</th>
<th>666</th>
<th>708</th>
<th>750</th>
<th>792</th>
<th>834</th>
<th>879</th>
<th>924</th>
<th>969</th>
<th>1016</th>
<th>1062</th>
<th>1108</th>
<th>1154</th>
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</table>

---

**NOTE:** Wing reinforcing and rail not shown. 641-6t1, 641-6t2, and 6e are included with superstructure quantities.
**Pile Plan - 0° Skew Wood Piling**

- **70°-0 & 80°-0 Bridges**
  - 9 pile spaces @ about 4'-0 = 40'-0
  - Typical 5s1 spacing
  - Between piles 1'-0

- **90°-0 & 100°-0 Bridges**
  - 11 pile spaces @ about 4'-0 = 40'-0
  - Typical 5s1 spacing
  - Between piles 1'-0

- **110°-0 Bridge**

- **120°-0 & 130°-0 Bridges**
  - 12 pile spaces @ 4'-0 = 40'-0
  - Typical 5s1 spacing
  - Between piles 1'-0

- **140°-0 Bridge**
  - 14 pile spaces @ about 2'-10 = 40'-0
  - Typical 5s1 spacing
  - Between piles 1'-0

- **150°-0 Bridge**
  - 15 pile spaces @ 2'-8 = 40'-0
  - 11 pile spaces @ about 3'-8 = 40'-0

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**IOWA DOT Highway Division**

**Standard Design - 40’ roadway, 3 span bridges**

**Slab Bridges**

**Continuous Concrete**

**November, 2006**
ABUTMENT NOTES:

- The concrete and reinforcing steel for the wings is included with the superstructure.
- Details on this sheet are to be used only when abutments are placed on timber piles.
- The minimum clear distance from the face of the concrete to near reinforcing bar is to be 2 inches unless otherwise noted or shown. Timber piles shall be driven to full penetration if practicable. If not, the cutting edge length must show on design plans. Timber piles shall not be driven to more than 70% TCA.
- All reinforcing steel is to be Grade 60. Piling - number
- Slab - number
- FDS - number

<table>
<thead>
<tr>
<th>Bridge Length</th>
<th>Piling - Number</th>
<th>Slab - Number</th>
<th>FDS - Number</th>
<th>Comments</th>
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<td></td>
</tr>
<tr>
<td>70'-0</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>80'-0</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>90'-0</td>
<td>4</td>
<td>2</td>
<td>2</td>
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</tr>
<tr>
<td>100'-0</td>
<td>4</td>
<td>2</td>
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</tr>
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<td>110'-0</td>
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<td>2</td>
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<td>130'-0</td>
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<td>140'-0</td>
<td>4</td>
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<tr>
<td>150'-0</td>
<td>4</td>
<td>2</td>
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</table>

- The wings reinforcing and rail are not shown.
- Spacers punched 3" pitch, with 3-"x"x" spacers. 7 turns of #2 BAR, 21" DIA., at rail and top of each pile.
- Reinforcing bar is to be 2 inches from edge unless otherwise noted or shown.
- All reinforcing steel is to be Grade 60.

- 15° skew - timber piling - number

- The minimum clear distance from the face of the concrete to near reinforcing bar is to be 2 inches unless otherwise noted or shown. Timber piles shall be driven to full penetration if practicable. If not, the cutting edge length must show on design plans. Timber piles shall not be driven to more than 70% TCA.
- All reinforcing steel is to be Grade 60.
PILE PLAN - 15° SKEW WOOD PILING

STANDARD DESIGN - 40' ROADWAY, 3 SPAN BRIDGES
SLAB BRIDGES
CONTINUOUS CONCRETE
NOVEMBER, 2006

15° SKEW - TIMBER PILING

REVISED 11-08
REVISION NUMBER: NO TRANSLATION
APPROVED BY BRIDGE ENGINEER
**ABUTMENT NOTES:**

- The concrete and reinforcing steel for the wings is included with the superstructure.
- Details on this sheet are to be used only when abutments are placed on timber piles.
- The minimum clear distance from the face of the concrete to near reinforcing bar is to be 2 inches unless otherwise noted on the plan.
- Timber piles shall be driven to full penetration if practicable, but in no case to a bearing value less than shown on design plans. Timber piles shall not be driven to more than 160 tons.
- All reinforcing steel is to be grade 60.
- Abutment piling was designed for HL-93 loading with an allowance for dynamic load. The concrete and reinforcing steel for the wings is included with the superstructure.

**ABUTMENT DETAILS:**

- The concrete and reinforcing steel for the wings is included with the superstructure.
- Details on this sheet are to be used only when abutments are placed on timber piles.
- The minimum clear distance from the face of the concrete to near reinforcing bar is to be 2 inches unless otherwise noted on the plan.
- Timber piles shall be driven to full penetration if practicable, but in no case to a bearing value less than shown on design plans. Timber piles shall not be driven to more than 160 tons.
- All reinforcing steel is to be grade 60.
- Abutment piling was designed for HL-93 loading with an allowance for dynamic load. The concrete and reinforcing steel for the wings is included with the superstructure.

**NUMBER OF PILES AND ABUTMENT DESIGN LOADS**

<table>
<thead>
<tr>
<th>PILING NUMBER</th>
<th>5s2</th>
<th>6t2</th>
<th>8r1</th>
<th>8r2</th>
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<tbody>
<tr>
<td>30° SKEW - TIMBER PILING</td>
<td>203</td>
<td>135</td>
<td>966</td>
<td>406</td>
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<td>39 SPA.</td>
<td>44</td>
<td>88</td>
<td>87</td>
<td>792</td>
</tr>
</tbody>
</table>

*Note: This value is not the final design load used in the field for driving piles.*
ABUTMENT NOTES:

The concrete and reinforcing steel for the wings is included with the superstructure.

Details on this sheet are to be used only when abutments are placed on timber piles.

The minimum clear distance from the face of the concrete to near reinforcing bar is to be 2 inches unless otherwise noted on this detail.

Timber piles shall be driven to full penetration if practical but in no case to a bearing value less than shown in design plans. Timber piles shall not be driven to more than 110% of the design load.

All reinforcing steel is to be Grade 60.

Abutment piling was designed for HL-93 loading with an allowance for 20 lbs./ft² of future wearing surface.

NOTE: The bottom of footing is to be sloped to compensate for grade on this skewed abutment. Therefore bottom of footing elevations will be required at each exterior pile.

SECTION NORMAL TO ABUTMENT AT G.

SECTION NORMAL TO ABUTMENT AT GUTTERLINE.

DETAIL "A"
45° SKEW - TIMBER PILING

ABUTMENT DETAILS

<table>
<thead>
<tr>
<th>ROADWAY</th>
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<tbody>
<tr>
<td>1'-0</td>
</tr>
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<td>1'-0</td>
</tr>
<tr>
<td>1'-3</td>
</tr>
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<td>1'-3</td>
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<td>1'-3</td>
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<td>1'-3</td>
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<td>1'-3</td>
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PILE PLAN - 45° SKEW
WOOD PILING

<table>
<thead>
<tr>
<th>NUMBER OF PILES AND ABUTMENT DESIGN LOADS</th>
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</thead>
<tbody>
<tr>
<td>PILE LENGTH</td>
</tr>
<tr>
<td>PILING - NUMBER</td>
</tr>
<tr>
<td>STRENGTH 1 DESIGN LOAD - KIPS</td>
</tr>
<tr>
<td>INCLUDES DYNAMIC LOAD ALLOWANCE</td>
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NOTE: PU, STRENGTH 1 DESIGN LOAD (KIPS) IS NOT THE VALUE USED IN THE FIELD FOR DRIVING PILES.
### Bill of Reinforcing Steel - One Abutment - 0° Skew

<table>
<thead>
<tr>
<th>Location</th>
<th>Description</th>
<th>Length (FT)</th>
<th>No.</th>
<th>Weight (LBS)</th>
<th>Location</th>
<th>Description</th>
<th>Length (FT)</th>
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<th>Weight (LBS)</th>
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<tbody>
<tr>
<td></td>
<td>ABUTMENT FOOTING LONGITUDINAL</td>
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<td>1</td>
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<td>ABUTMENT FOOTING LONGITUDINAL</td>
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</tr>
<tr>
<td></td>
<td>ABUTMENT FOOTING HOOPS</td>
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<td>493</td>
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<td>493</td>
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<td>386</td>
<td>SPIRAL SPACERS</td>
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### Bill of Reinforcing Steel - One Abutment - 15° Skew

<table>
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<tr>
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<th>No.</th>
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### Estimated Quantities - One Abut, - 0° Skew

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<td>ABUTMENT FOOTING LONGITUDINAL</td>
<td>25'-4</td>
<td>1</td>
<td>568</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ABUTMENT FOOTING HOOPS</td>
<td>22'-1</td>
<td>10</td>
<td>386</td>
<td>ABUTMENT FOOTING HOOPS</td>
<td>22'-1</td>
<td>10</td>
<td>386</td>
<td></td>
</tr>
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<td>SPIRAL SPACERS</td>
<td>21'-11</td>
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<td>SPIRAL SPACERS</td>
<td>21'-11</td>
<td>10</td>
<td>386</td>
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### Estimated Quantities - One Abut, - 30° Skew

<table>
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<tr>
<th>Location</th>
<th>Description</th>
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<th>No.</th>
<th>Weight (LBS)</th>
<th>Location</th>
<th>Description</th>
<th>Length (FT)</th>
<th>No.</th>
<th>Weight (LBS)</th>
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<td>1</td>
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<td>1</td>
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<td></td>
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<td>10</td>
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</tr>
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<td>21'-11</td>
<td>10</td>
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<td>SPIRAL SPACERS</td>
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</tbody>
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### Estimated Quantities - One Abut, - 45° Skew

<table>
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<th>Location</th>
<th>Description</th>
<th>Length (FT)</th>
<th>No.</th>
<th>Weight (LBS)</th>
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<td>SPIRAL SPACERS</td>
<td>21'-11</td>
<td>10</td>
<td>386</td>
<td></td>
</tr>
</tbody>
</table>

### Bent Bar Details

- **5s1 & 5s2**: 6t2
- **5s1**: 6t2
- **5s2**: 6t2

**Note**: Dimensions are cut to cut, 0 = pin diameter.
ABIUM NOTES:

ALL PILING ARE HP 10 X 42.

THE CONCRETE AND REINFORCING STEEL FOR THE WINGS IS INCLUDED WITH THE SUPERSTRUCTURE.

DETAILS ON THIS SHEET ARE TO BE USED ONLY WHEN ABUTMENTS ARE PLACED ON STEEL PILES.

THE MINIMUM CLEAR DISTANCE FROM THE FACE OF THE CONCRETE TO NEAR THE ABUTMENT DETAILS IS INCLUDED WITH SUPERSTRUCTURE QUANTITIES.

STEEL PILING ARE TO BE DRIVEN TO FULL PENETRATION IF NOT SHOWN.

THE REAR ELEVATION IS INCLUDED WITH SUPERSTRUCTURE QUANTITIES.

NOTE:  WING REINFORCING IS NOT SHOWN.

6t1 DOWELS, 6e3 HAIRPINS & 6e4 DIAGONALS IN SLAB

JOINT CONSTRUCTION

CONTINUOUS CONCRETE SLAB BRIDGES

STANDARD DESIGN - 40' ROADWAY, 3 SPAN BRIDGES

NOTE:  SLAB DETAILS ARE INCLUDED WITH SUPERSTRUCTURE QUANTITIES.

6e3, 6e4 AND 8e ARE INCLUDED IN SLAB

NUMBER OF PILES AND ABUTMENT DESIGN LOADS

<table>
<thead>
<tr>
<th>BRIDGE LENGTH</th>
<th>0'-6</th>
<th>1'-0</th>
<th>1'-6</th>
<th>2'-0</th>
<th>3'-0</th>
<th>4'-0</th>
<th>5'-0</th>
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</thead>
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<tr>
<td>NUMBER OF PILES</td>
<td>6</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NUMBER OF SPANS</td>
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<tr>
<td>DESIGN LOAD (KIPS)</td>
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<td>666</td>
<td></td>
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</table>

6 INCLUDES DYNAMIC LOAD ALLOWANCE

NOTE:  STRENGTH I DESIGN LOAD DEPITS IS NOT THE VALUE USED IN THE FIELD FOR DRIVING PILES.

0° SKEW - STEEL PILING

J40-39-06

ABUTMENT DETAILS

0° SKEW - STEEL PILING

150'-0 BRIDGE

PILE PLAN - 0° SKEW

SECTION NORMAL TO ABUTMENT AT GUTTERLINE

SECTION NORMAL TO ABUTMENT AT 0° SKEW

PLAN VIEW

REAR ELEVATION

PLAN VIEW

ABUTMENT DETAILS

0° SKEW - STEEL PILING

J40-39-06

ABUTMENT DETAILS

0° SKEW - STEEL PILING

J40-39-06
ABUTMENT NOTES:

ALL PILING ARE HP 10 X 42.

THE CONCRETE AND REINFORCING STEEL FOR THE ABUTMENT IS INCLUDED WITH THE SUPERSTRUCTURE. DETAILS ON THIS SHEET ARE TO BE USED ONLY WHEN ABUTMENTS ARE PLACED ON STEEL PILES. IF ROCK IS ENCOUNTERED CLOSER THAN 12" REINFORCEMENT POSTING, SPECS, ANALYSIS MAY BE REQUIRED.

THE MINIMUM CLEAR DISTANCE FROM THE FACE OF THE CONCRETE TO NEAR BOTTOM OF FOOTING ELEVATIONS WILL BE REQUIRED AT EACH EXTERIOR PILE.

NOTE: THE BOTTOM OF FOOTING IS TO BE SLOPED TO COMPENSATE FOR GRADE ON THIS SKEWED ABUTMENT. THEREFORE STEEL ABUTMENTS TYPES SHALL BE DRIVEN TO FULL PENETRATION IF PRACTICABLE BUT IN NO CASE TO A BEARING VALUE LESS THAN SHOWN IN DESIGN PLANS.

ALL REINFORCING STEEL IS TO BE GRADE 60.

ABUTMENT PILING HAS BEEN DESIGNED FOR HL-93 LOADING WITH AN ALLOWANCE FOR 20 LBS. PER SQ.FT. FUTURE WEARING SURFACE.

NOTE: WING REINFORCING AND SLAB NOT SHOWN. BARS AND SLAB ARE INCLUDED WITH SUPERSTRUCTURE QUANTITIES.

ABUTTING CONSTRUCTION JOINTS ON THIS SKEWED ABUTMENT REQUIRE SPECIAL ANALYSIS.

STANDARD DESIGN - 40' ROADWAY, 3 SPAN BRIDGES
CONTINUOUS CONCRETE SLAB BRIDGES

J40-40-06

November, 2006
ABUTMENT NOTES:

THE CONCRETE AND REINFORCING STEEL FOR THE WINGS IS INCLUDED WITH THE SUPERSTRUCTURE.

DETAILED INFORMATION ON THIS SHEET IS TO BE USED ONLY WHEN ABUTMENTS ARE PLACED ON STEEL PILES. IF ROCK IS ENCOUNTERED CLOSER THAN 17' BELOW ABUTMENT FOUNDATION, SPECIAL ANALYSIS MAY BE REQUIRED.

THE MINIMUM CLEAR DISTANCE FROM THE FACE OF THE CONCRETE TO NEAR REINFORCING BAR IS TO BE 2 INCHES UNLESS OTHERWISE NOTED ON SHEET.

STEEL ABUTMENT PILES SHALL BE DRIVEN TO FULL PENETRATION IF PRACTICABLE BUT IN NO CASE TO A BEARING VALUE LESS THAN SHOWN IN DESIGN PLANS.

NOTE: THE BOTTOM OF FOOTING IS TO BE SLOPED TO COMPENSATE FOR GRADE ON THIS SKewed ABUTMENT. THEREFORE BOTTOM OF FOOTING ELEVATIONS WILL BE REQUIRED AT EACH EXTERIOR PILE.

STEEL ABUTMENT PILES SHALL BE DRIVEN TO FULL PENETRATION IF PRACTICABLE BUT IN NO CASE TO A BEARING VALUE LESS THAN SHOWN IN DESIGN PLANS.

NOTE: PU, STRENGTH 1 DESIGN LOAD (KIPS) IS NOT THE VALUE USED IN THE FIELD FOR DRIVING PILES.

~`INCLUDING DYNAMIC LOAD ALLOWANCE

THE MINIMUM CLEAR DISTANCE FROM THE FACE OF THE CONCRETE TO NEAR REINFORCING BAR IS TO BE 2 INCHES UNLESS OTHERWISE NOTED ON SHEET.

NOTE: THE BOTTOM OF FOOTING IS TO BE SLOPED TO COMPENSATE FOR GRADE ON THIS SKewed ABUTMENT. THEREFORE BOTTOM OF FOOTING ELEVATIONS WILL BE REQUIRED AT EACH EXTERIOR PILE.

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NOTE: THE BOTTOM OF FOOTING IS TO BE SLOPED TO COMPENSATE FOR GRADE ON THIS SKewed ABUTMENT. THEREFORE BOTTOM OF FOOTING ELEVATIONS WILL BE REQUIRED AT EACH EXTERIOR PILE.

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NOTE: PU, STRENGTH 1 DESIGN LOAD (KIPS) IS NOT THE VALUE USED IN THE FIELD FOR DRIVING PILES.

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~`INCLUDING DYNAMIC LOAD ALLOWANCE

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STEEL ABUTMENT PILES SHALL BE DRIVEN TO FULL PENETRATION IF PRACTICABLE BUT IN NO CASE TO A BEARING VALUE LESS THAN SHOWN IN DESIGN PLANS.

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STEEL ABUTMENT PILES SHALL BE DRIVEN TO FULL PENETRATION IF PRACTICABLE BUT IN NO CASE TO A BEARING VALUE LESS THAN SHOWN IN DESIGN PLANS.

NOTE: PU, STRENGTH 1 DESIGN LOAD (KIPS) IS NOT THE VALUE USED IN THE FIELD FOR DRIVING PILES.
ABUTMENT NOTES:

ALL PILING ARE HP 10 x 42.

THE CONCRETE AND REINFORCING STEEL FOR THE WINGS IS INCLUDED WITH THE SUPERSTRUCTURE.

DETAILS ON THIS SHEET ARE TO BE USED ONLY WHEN ABUTMENTS ARE PLACED ON STEEL PILES IN ROCK ENCOUNTERED CLOSER THAN 36" BELOW ABUTMENT FOOTING. SPECIAL ANALYSIS MAY BE REQUIRED.

THE MINIMUM CLEAR DISTANCE FROM THE FACE OF THE CONCRETE TO NEAR REINFORCEMENT BARS IS TO BE 2 INCHES UNLESS OTHERWISE NOTED ON SHEET. STEEL ABUTMENT PILES SHALL BE DRIVEN TO FULL PENETRATION IF REINFORCING BAR IS TO BE 2 INCHES UNLESS OTHERWISE NOTED OR SHOWN.

ALL REINFORCING STEEL IS TO BE GRADE 60.

ABUTMENT PILING WAS DESIGNED FOR HL-93 LOADING WITH AN ALLOWANCE FOR 20 LBS. PER SQ. FT. FUTURE WEARING SURFACE.

ABUTMENT DETAILS

45° SKEW - STEEL PILING

J40-42-06

CONTINUOUS CONCRETE SLAB BRIDGES

NOVEMBER, 2006

IOWA DOT
Highway Division

STANDARD DESIGN - 40' ROADWAY, 3 SPAN BRIDGES

PLAN VIEW

SECTION NORMAL TO ABUTMENT AT Q

SECTION NORMAL TO ABUTMENT AT GUTTERLINE

REAR ELEVATION

NOTE: THE BOTTOM OF FOOTING IS TO BE SLOPED TO COMPENSATE FOR GRADE ON THIS SKewed ABUTMENT. THEREFORE BOTTOM OF FOOTING ELEVATIONS WILL BE SLOPED TO COMPENSATE FOR GRADE.
PILE PLAN - 45° SKEW STEEL PILING

<table>
<thead>
<tr>
<th>BRIDGE LENGTH</th>
<th>NUMBER OF PILES</th>
<th>PU, STRENGTH 1 DESIGN LOAD - KIPS</th>
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<tbody>
<tr>
<td>70'-0</td>
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<td>538</td>
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<td>80'-0</td>
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<td>9</td>
<td>641</td>
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<td>110'-0</td>
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<td>679</td>
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<td>120'-0</td>
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<td>130'-0</td>
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<td>150'-0</td>
<td>10</td>
<td>888</td>
</tr>
<tr>
<td>160'-0</td>
<td>10</td>
<td>938</td>
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NOTE: PU, STRENGTH 1 DESIGN LOAD (KIPS) IS NOT THE VALUE USED IN THE FIELD FOR DRIVING PILES.

INCLUDES DYNAMIC LOAD ALLOWANCE

NOTE: NUMBER OF SHOWN PILES IS NOT THE VALUE USED IN THE FIELD FOR DRIVING PILES.
BILL OF REINFORCING STEEL - ONE ABUTMENT - 0° SKEW

<table>
<thead>
<tr>
<th>LOC.</th>
<th>SPACING/MATERIAL</th>
<th>NO.</th>
<th>WEIGHT</th>
</tr>
</thead>
<tbody>
<tr>
<td>100'-0</td>
<td>8G12A3</td>
<td>1</td>
<td>2723</td>
</tr>
<tr>
<td>80'-0</td>
<td>8G12A3</td>
<td>1</td>
<td>2184</td>
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<tr>
<td>130'-0</td>
<td>5G12A3</td>
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BILL OF REINFORCING STEEL - ONE ABUTMENT - 15° SKEW

<table>
<thead>
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</thead>
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<tr>
<td>100'-0</td>
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<td>2723</td>
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<tr>
<td>80'-0</td>
<td>6G12A3</td>
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<td>2342</td>
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BILL OF REINFORCING STEEL - ONE ABUTMENT - 30° SKEW

<table>
<thead>
<tr>
<th>LOC.</th>
<th>SPACING/MATERIAL</th>
<th>NO.</th>
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</thead>
<tbody>
<tr>
<td>100'-0</td>
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</tbody>
</table>

BILL OF REINFORCING STEEL - ONE ABUTMENT - 45° SKEW

<table>
<thead>
<tr>
<th>LOC.</th>
<th>SPACING/MATERIAL</th>
<th>NO.</th>
<th>WEIGHT</th>
</tr>
</thead>
<tbody>
<tr>
<td>100'-0</td>
<td>6G12A3</td>
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</tbody>
</table>

NOTE: THE PILE SPIRALS AND SPIRAL SPACERS ARE TO BE NON-COATED REINFORCING BUT MAY BE EPOXY COATED AT THE CONTRACTOR'S OPTION AND EXPENSE.

REVISION HISTORY

- REVIS D 07-09 - CONCRETE QUANTITIES CHANGED.
- NOTE: THE PILE SPIRALS AND SPIRAL SPACERS ARE TO BE NON-COATED REINFORCING BUT MAY BE EPOXY COATED AT THE CONTRACTOR'S OPTION AND EXPENSE.

BILL OF REINFORCING STEEL - ONE ABUTMENT - 15° SKEW

<table>
<thead>
<tr>
<th>LOC.</th>
<th>SPACING/MATERIAL</th>
<th>NO.</th>
<th>WEIGHT</th>
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</thead>
<tbody>
<tr>
<td>100'-0</td>
<td>6G12A3</td>
<td>1</td>
<td>2723</td>
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<tr>
<td>80'-0</td>
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<td>2342</td>
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BILL OF REINFORCING STEEL - ONE ABUTMENT - 30° SKEW

<table>
<thead>
<tr>
<th>LOC.</th>
<th>SPACING/MATERIAL</th>
<th>NO.</th>
<th>WEIGHT</th>
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</thead>
<tbody>
<tr>
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<td>4G12A3</td>
<td>1</td>
<td>2723</td>
</tr>
</tbody>
</table>

BILL OF REINFORCING STEEL - ONE ABUTMENT - 45° SKEW

<table>
<thead>
<tr>
<th>LOC.</th>
<th>SPACING/MATERIAL</th>
<th>NO.</th>
<th>WEIGHT</th>
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</thead>
<tbody>
<tr>
<td>100'-0</td>
<td>6G12A3</td>
<td>1</td>
<td>2723</td>
</tr>
</tbody>
</table>

NOTE: THE PILE SPIRALS AND SPIRAL SPACERS ARE TO BE NON-COATED REINFORCING BUT MAY BE EPOXY COATED AT THE CONTRACTOR'S OPTION AND EXPENSE.
**Barrier Rail Joint Details**

**Continuous Concrete Slab Bridges**

- **BARRIER RAIL NOTES:**
  - The barrier rail is to be placed on a level surface with the rail surface perpendicular to the traffic direction.
  - The barrier rail is to be bolted to the supporting elements with an approved bond breaker.

**Barrier Rail Dimensions and Numbers**

<table>
<thead>
<tr>
<th>Slab Bridge</th>
<th>Slab Bridge Width</th>
<th>Slab Bridge Length</th>
<th>Slab Bridge Height</th>
<th>Slab Bridge Material</th>
<th>Slab Bridge Construction</th>
<th>Slab Bridge Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slab Bridge 1</td>
<td>10 ft</td>
<td>100 ft</td>
<td>1 ft 6 in</td>
<td>Reinforced Concrete</td>
<td>Reinforced Concrete</td>
<td>Reinforced Concrete</td>
</tr>
<tr>
<td>Slab Bridge 2</td>
<td>15 ft</td>
<td>150 ft</td>
<td>1 ft 10 in</td>
<td>Reinforced Concrete</td>
<td>Reinforced Concrete</td>
<td>Reinforced Concrete</td>
</tr>
</tbody>
</table>

**Dimensions:**

- **ELEVATION OF BARRIER RAIL:**
  - The barrier rail is to be elevated at a minimum of 6 in above the top of the slab.

**Construction Notes:**

- The barrier rail is to be placed using the slipform method.
- The cross sectional area of the standard section of the barrier rail is to be included with the superstructure reinforcing steel.

**Revision History:**

- **07-09 - Article Number for Concrete Change**
- **07-2016 - Removed Barrier Rail Note Stating All Barrier Rail Reinforcing Steel Is to Be Included with the Superstructure Reinforcing Steel.**
EPOXY REINFORCING STEEL-TWO BARRIER RAILS

CONCRETE BARRIER RAIL QUANTITIES

<table>
<thead>
<tr>
<th>BRIDGE LENGTH</th>
<th>UNIT</th>
<th>10°</th>
<th>20°</th>
<th>30°</th>
<th>40°</th>
<th>50°</th>
<th>60°</th>
<th>70°</th>
<th>80°</th>
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</thead>
<tbody>
<tr>
<td>CONCRETE BARRIER RAILING 6° SK EW</td>
<td>LF.</td>
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<td>18.0</td>
<td>20.0</td>
<td>22.0</td>
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<td>26.0</td>
<td>28.0</td>
<td>30.0</td>
</tr>
<tr>
<td>CONCRETE BARRIER RAILING 10° SK EW</td>
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<td>16.0</td>
<td>18.0</td>
<td>20.0</td>
<td>22.0</td>
<td>24.0</td>
<td>26.0</td>
<td>28.0</td>
<td>30.0</td>
</tr>
<tr>
<td>CONCRETE BARRIER RAILING 18° SK EW</td>
<td>LF.</td>
<td>16.0</td>
<td>18.0</td>
<td>20.0</td>
<td>22.0</td>
<td>24.0</td>
<td>26.0</td>
<td>28.0</td>
<td>30.0</td>
</tr>
</tbody>
</table>

REINFORCING QUANTITIES SHOWN ARE BASED ON 45° SKEW BID LENGTHS.
SUBDRAIN DETAILS

OUTLET DETAILS

MIN. DRILLED HOLES FOR ATTACHMENT PIN

TOP VIEW
FRONT VIEW

GUARD DETAILS

REMOVABLE RODENT TUBING

POLYETHYLENE SUBDRAIN

4½ PERFORATED METAL

2. INSERT 1'-0 OF THE 4½ SUBDRAIN INTO CMP.

OF 1'-0 INTO CMP.

( COUPLER MUST BE INSERTED A MINIMUM

1. USE AN INSIDE FIT REDUCER COUPLER

MATERIALS I.M. 443.01  

GUARD. SEE REMOVABLE RODENT ( TUBING )

CORRUGATED ( POLYETHYLENE SUBDRAIN

4½ PERFORATED

6 '-0

2

ABUTMENT FACE

TOE OF SLOPE

PROTECTION LAYOUT 0° SKEW

PROTECTION LAYOUT SKEWED

REFER TO SITUATION PLAN FOR NORTH ARROW.

SUBDRAIN
OUTLET

SUBDRAIN
OUTLET

SUBDRAIN
OUTLET

REMOVED GRANULAR BACKFILL DETAILS.

LATEST REVISION DATE

APPROVED BY Bridge Engineer

CONTINUOUS CONCRETE SLAB BRIDGES

STATE OF IOWA DOT
Highway Division

November 2006

J40-50-06
**MIN.**

**NOMINAL**

**MAX.**

**4" x 6" TREATED TIMBER EDGING DETAILS**

**SECTION A-A**

**MACADAM STONE WING ARMORING NOTES:**

MACADAM STONE SHALL BE PLACED ALONG THE USE OF THE WING AND ARMOR FOOTING. THIS IS TYPICAL AT EACH CORNER OF THE BRIDGE UNLESS OTHERWISE NOTED ON THESE PLANS. THE MACADAM STONE AT THESE LOCATIONS SHALL BE UNDERLAYERED WITH ENGINEERING FABRIC AND BE IN ACCORDANCE WITH ARTICLE 4122.02, OF THE STANDARD SPECIFICATIONS.

THE BRIDGE SUPERFLOTOE SHALL BE COMPACTED AND SHAPED AS SHOWN ON THESE PLANS. THE SUPERFLOTOE AND AS DIRECTED BY THE ENGINEER, THE SUPERFLOTOE SHALL BE FIRM WHEN THE ENGINEERING FABRIC AND MACADAM STONE ARE PLACED.

THE ENGINEERING FABRIC SHALL BE IN ACCORDANCE WITH ARTICLE 4196.01, B, 3, OF THE STANDARD SPECIFICATIONS. IF THE ENGINEERING FABRIC IS LAPPED THE LAPS SHALL BE A MINIMUM OF ONE FOOT IN LENGTH, SINGLE FASHION WITH UP SLOPE LAP PIECE ON TOP AND STAPLED FOR CONTINUITY.

THE MACADAM STONE SHALL BE IN ACCORDANCE WITH ARTICLE 4122.02, OF THE STANDARD SPECIFICATIONS FOR COARSE MATERIAL (NO CHOKE STONE IS ALLOWED). WOOD PRESERVATIVE TREATMENT FOR THE TIMBER EDGING SHALL MEET THE REQUIREMENTS FOR GUARDRAIL POSTS, SAWED FOUR SIDES, AND BE IN ACCORDANCE WITH SECTION A-A OF THE STANDARD SPECIFICATIONS.

THE MACADAM STONE MUST BE DEPOSITED, SPREAD, CONSOLIDATED, AND SHAPED BY MEANINGFUL MECHANICAL OR HAND METHODS THAT WILL PROVIDE UNIFORM DEPTH AND DENSITY AND PROVIDE UNIFORM SURFACE APPEARANCE. PAYMENT FOR THE BRIDGE WING ARMORING SHALL BE INCIDENTAL TO THE BASIC ITEM STRUCTURAL CONCRETE GRADED AND SHALL INCLUDE COSTS OF ALL MATERIAL AND LABOR TO CONSTRUCT THE WING ARMORING AS SHOWN ON THESE PLANS.
ABUTMENT BACKFILL PROCESS:

The base of the excavation subgrade behind the abutment is to be graded with a 4% slope away from the abutment footing and a 2% cross slope in the direction of the subdrain outlet. This excavation shaping is to be done prior to beginning installation of the geotextile and backfill material.

After the subdrain has been installed, the geotextile fabric shall be installed in accordance with the details shown in the fabric is intended to be installed in the base of the excavation and extended vertically all of the abutment backwall, abutment wing walls, and excavation face to a height that will be approximately 3 to 5 feet below the height of the porous backfill placement as shown in the “Backfill Details” on this sheet. The strips of the fabric placed shall overlap approximately 2 feet and shall be pinned in place. The fabric shall be attached to the abutment by using拉丁语填充 in the fabric and secured to the concrete with shallow concrete nails. The fabric placed against the excavation face shall be pinned.

When the fabric is in place, the subdrain shall be installed directly on the fabric at the top of the rear excavation slope. A slot will need to be cut in the fabric at the point where the subdrain exits the fabric near the end of the abutment wing wall.

Porous backfill is then placed and leveled, no compaction is required.

The remaining work involves backfilling with floodable backfill, surface flooding, and vibratory compaction. The floodable backfill material shall be in accordance with the standard specifications. The floodable backfill shall be placed in individual lifts, surface followed, and compacted with vibratory compaction to ensure full consolidation. Lifts can be no more than 2 feet in thickness.

Start surface flooding for each floodable backfill lift at the high point of the subdrain and proceed to the low point where the subdrain exits the fabric. To ensure uniform surface flooding, water flooding will be done in a 6-inch diameter hole with 1" water at 30 psi to impact increments for 3 minutes within each increment.

Floodable backfill lift compaction begins by floodable backfill placement. Compaction shall proceed until the required full thickness of the abutment backfill has been completed.

Water required for flooding, subdrains, porous backfill, floodable backfill, and the porous backfill furnished at the bridge abutments shall not be considered separately for payment.

The cost of water required for flooding, subdrains, porous backfill, floodable backfill, and the porous backfill furnished at the bridge abutments shall be included in the contract unit price bid for structural concrete.
ABUTMENT BACKFILL PROCESS:

The base of the excavation subsurface behind the abutment is to be graded with a 4% slope away from the abutment footing and a 2% cross slope in the direction of the subdrain outlet. This excavation subsurface is to be done prior to beginning installation of the geotextile and backfill material.

After the subdrain has been installed, the geotextile fabric shall be installed in accordance with the details shown on the plans. The fabric is to be installed in the base of the excavation extended vertically of the abutment backwall, abutment wing walls, and excavation face to a height that will be approximately 1 ft. foot higher than the height of the finished subgrade, backfill, and compaction as shown in the "Backfill Details" on this sheet. The limits of the fabric placed shall overlap approximately 1 foot and shall be pinned in place. The fabric shall be attached to the subdrain by using latex bonded in the fabric and secured to the abutment with a slotted concrete wall. The fabric placed against the excavation face shall be pinned.

When the fabric is in place, the subdrain shall be installed directly on the fabric at the toe of the rear excavation slope. A slot will need to be cut in the fabric at the point where the subdrain exits the fabric near the end of the abutment wing wall.

Porous backfill is then placed and secured; no compaction is required.

The remaining work involves backfilling with floodable backfill, surface flooding, and vibratory compaction. The floodable backfill material shall be in accordance with the standard specifications. The floodable backfill shall be placed in individual lifts, surface flooded, and compacted with vibratory compaction to ensure full consolidation. Limit the loose lifts to no more than 2 feet in thickness.

Start surface flooding for each floodable backfill lift at the high point of the subdrain and proceed to the low point where the subdrain exits the fabric to ensure uniform surface flooding. Water running full in a 2-inch diameter hose should be sprayed in successive 6-foot to 8-foot increments for 5 minutes within each increment.

Floodable backfill lift placement, flooding, and compaction shall proceed until the required full thickness of the abutment backfill has been completed.

Water required for flooding, subdrains, porous backfill, floodable backfill, and geotextile fabric furnished at the bridge abutments shall not be measured separately for payment.

NOTE: Subdrain slope continues 2 ft from approaching roadway when outletting both sides of the abutment. Subdrain slope continues 2 ft from high end when outletting at one end of the abutment.

The geotextile fabric shall be in accordance with Article 14.5 of the standard specifications. The geotextile fabric is lifted the last lift shall be a minimum of 2 feet in length, single folded width of slope top fabric on top and stapled for continuity.

NOTE: See subdrain details sheet for details not shown on this sheet which are pertinent to this structure.