Highway Division

PLANS OF PROPOSED IMPROVEMENTS ON THE

PRIMARY ROAD SYSTEM
BLACK HAWK COUNTY

BRIDGE NEW - PPCB
VIKING ROAD OVER IA 58

THE IOWA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION, SERIES 2016, PLUS APPLICABLE GENERAL SUPPLEMENTAL SPECIFICATIONS, DEVELOPMENTAL SPECIFICATIONS, SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS SHALL APPLY TO CONSTRUCTION WORK ON THIS PROJECT.

DESIGN NO. 317

DESIGN DATA URBAN

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INDEX OF SEALS

STRUCTURAL DESIGN

Michael P. Caven

I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iow.

12-19-2017
### ESTIMATED BRIDGE QUANTITIES - DESIGN NO. 317

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**Design No. 317**

**Project Number:** 20160-00090014

**County:** Black Hawk County

**Department of Transportation:** Iowa Highway Division

**Estimation Reference Information - Design No. 317 (Cont.)**

- Includes all costs associated with furnishing and installing the pavers in accordance with these plans and the method of measurement and basis of payment is each aesthetic arch furnished and installed. See Design Sheets 40 and 41.

- Includes furnishing and installing the barrier rails as detailed in these plans, including connections, brackets, and support rails as required. See Design Sheet 42 for additional information. The cost of installation is included in the contract. See Design Sheet 43 for additional details.

- Includes all costs associated with furnishing and plating the island surface/drainage system, including excavation, punching, and placing. See Design Sheet 44 for additional information.

- Includes the construction of all concrete barriers and rails, including connections, brackets, and support rails as required. See Design Sheet 45 for additional information. The cost of installation is included in the contract.
THESE BRIDGE PLANS LABEL ALL REINFORCING STEEL WITH ENGLISH NOTATION.
FAINT LINES ON PLANS INDICATE EXISTING FEATURES.
GRADE 36, GRADE 50, AND GRADE 50W (AASHTO M270 GRADE 36, GRADE 50, AND PRESTRESSED BEAM STIRRUPS.
PLANS SHALL NOT BE ASSUMED SUFFICIENT TO BRACE PRESTRESSED BEAMS DURING PARTIALLY OR FULLY INSTALLED PERMANENT BRACING AS SHOWN IN THESE DESIGN INTERMEDIATE BRACING AS NEEDED TO ENSURE PRESTRESSED BEAM STABILITY.
SUFFICIENT TEMPORARY ANCHOR BRACING AT BEAM ENDS AND TEMPORARY CONCRETE BEAMS DURING ERECTION AND CONSTRUCTION UP THROUGH THE CONCRETE DESIGNING, FURNISHING, INSTALLING AND REMOVAL. ALL MATERIAL USED FOR SHORING SHALL REMAIN THE PROPERTY OF THE CONTRACTOR. SHORING IS TO BE REMOVED ONLY CONSTRUCTION. SEE STAGING DETAILS IN ROADWAY PLANS FOR ADDITIONAL INFORMATION.

**GENERAL NOTES:**
THIS DESIGN IS FOR THE CONSTRUCTION OF A 115'-0 X 228'-0 SINGLE SPAN PRESTRESSED CONCRETE BEAM BRIDGE ON A 95°-0 CURVE WITH A 228'-0 CENTER LINE.
THIS DESIGN IS DESIGNED FOR HL-93 LOADING, PLUS 20 LBS. PER SQUARE FOOT OF ROADWAY FOR FUTURE WEARING SURFACE.
THIS BRIDGE IS DESIGNED FOR 0° SKEW.
NOTES:
NOTES:
NOTES:
NOTES:
NOTES:
SHOP DRAWING SUBMITTALS
SHOP DRAWING SUBMITTALS
SHOP DRAWING SUBMITTALS
SHOP DRAWING SUBMITTALS
SHOP DRAWING SUBMITTALS

**TRAFFIC CONTROL PLAN:**
VEHICLES ROAD AND IOWA 58 TO REMAIN OPEN DURING CONSTRUCTION.

**SEQUENCING NOTES:**
SEE ROADWAY PLANS. NOTICE NO. 05/08/6-3L-07 FOR DETAILED SEQUENCING BETWEEN BRIDGE, RETAINING WALLS, AND ROADWAY ELEMENTS.
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* Incidental to “Concrete Barrier Railings, Aesthetic”.

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CONSTRUCTION STAGING CROSS-SECTION - STAGE 6 BRIDGE CONSTRUCTION/TRAFFIC Lanes

CONSTRUCTION STAGING CROSS-SECTION - STAGE 6 BRIDGE CONSTRUCTION
CONSTRUCTION STAGING CROSS-SECTIONS - STAGE 7 BRIDGE CONSTRUCTION/TRAFFIC LANES

(LOOKING EAST)
AESTHETIC NOTES:

- ALL TEXTURED CONCRETE SURFACES SHOULD BE ELEVATED ON PARAPETS WHERE NOT PARAPET WALLS ARE ELEVATED. ALL TEXTURED CONCRETE SHOULD BE FINISHED WITH MINERAL SILICATE PAINT AS ShOWN ON THE PLANS.

- TEXTURED CONCRETE PANEL NOTES:

  - THE TEXTURED CONCRETE PANEL WALLS SHOULD BE FINISHED WITH MINERAL SILICATE PAINT AS ShOWN ON THE PLANS.

- PAINTED CONCRETE PANEL NOTES:

  - ALL TEXTURED CONCRETE SURFACES SHOULD BE ELEVATED ON PARAPETS WHERE NOT PARAPET WALLS ARE ELEVATED. ALL TEXTURED CONCRETE SHOULD BE FINISHED WITH MINERAL SILICATE PAINT AS ShOWN ON THE PLANS.

- TEXTURED CONCRETE PANEL NOTES:

  - THE TEXTURED CONCRETE PANEL WALLS SHOULD BE FINISHED WITH MINERAL SILICATE PAINT AS ShOWN ON THE PLANS.

- PAINTED CONCRETE PANEL NOTES:

  - ALL TEXTURED CONCRETE SURFACES SHOULD BE ELEVATED ON PARAPETS WHERE NOT PARAPET WALLS ARE ELEVATED. ALL TEXTURED CONCRETE SHOULD BE FINISHED WITH MINERAL SILICATE PAINT AS ShOWN ON THE PLANS.
1. At Bridge Abutment
   - Specifications for 0° skew
   - 115'-0 x 228'-0 Pretensioned Prestressed Concrete Beam Bridge

2. Bridge Construction Stages
   - Stage 5
   - 228'-0 Bridge Construction
   - Stage 6
   - 115'-0 Bridge Construction

3. Typical Longitudinal Cross-Section
   - At Bridge Abutment
   - Note: Retaining Wall Plans Not Shown for Clarity

4. Closure Wall Details
   - Retaining Wall Details Shown, Other Corners Similar

5. Details on This Sheet:
   - See detail 'A' for more information

6. Foundation Layout
   - Notations for Anchors Not Shown

7. Typical Retaining Wall
   - Soldier Pile Retaining Wall
   - Design No. 517 @ STA. 26+02.20
   - Design No. 417 @ STA. 27+02.26

8. Construction Information
   - Viking Road
   - Black Hawk County
   - Iowa Department of Transportation - Highway Division

9. Design Information
   - Design for 0° Skew
   - Black Hawk County
   - Project Number: NHSX-058-1(94)--3H-07
   - Sheet Number: 9
   - December, 2017
ABUTMENT NOTES:

For locations of 8g1, 8g2, & 8g4 reinforcing bars, see design sheets 13 & 14.

For pile notes, see design sheet 9.

For abutment elevations, see design sheet 11.

For additional Zorn scoring reinforcing details, see design sheets 10 & 11.

Pile anchor bolts are to be located as shown.

Concrete must be placed around the pile cap to ensure proper bonding of pile and cap.

The spiral at the top of each pile is to be a turn of No. 2 bar, 2" diameter, with 3 - 4 1/8" spacers punched to hold spiral.

REINFORCING BAR IS TO BE 2" UNLESS OTHERWISE NOTED OR SHOWN.
### TABLE OF ABUTMENT ELEVATIONS

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### TABLE OF ABUTMENT STEPS

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**ABUTMENT STEP DIAGRAM**

*West & East Abutment - Looking East/Outgoing*
NOTES:

LAP 5a and 5b 2'-8" WIL-IN TOP AND BOTTOM OF DECK CONCRETE DECK SLAB SHALL BE PLACED IN SECTIONS AND SEQUENCES INDICATED.

ANTICIPATED SLAB DEFLECTIONS ARE BASED ON THE INDICATED POUR SEQUENCES. CHANGING THE SEQUENCES WILL RESULT IN DIFFERENT ESTIMATED DEFLECTIONS THAN TABULATED IN THESE SEQUENCES INDICATED.

CONCRETE DECK SLAB SHALL BE PLACED IN SECTIONS AND LAP 5a AND 5b 2'-8" MIN. IN TOP AND BOTTOM OF DECK.

DESIGN SHEET 18.
SEE DETAIL F ON DESIGN SHEET 18.

S T A G E  5  B R I D G E  C O N S T R U C T I O N
S T A G E  6  B R I D G E  C O N S T R U C T I O N

DESIGN FOR 0° SKEW

115'-0 X 228'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

BL A C K  H A W K  C O U N T Y

I O W A  D E P A R T M E N T  O F  T R A N S P O R T A T I O N -  H I G H W A Y  D I V I S I O N

D E C E M B E R, 2 0 1 7

DESIGN SHEET NO. SHEET NUMBER

PROJECT NUMBER FILE NO.

DESIGN TEAM ARCON

BLACK HAWK COUNTY PROJECT NUMBER

I O W A  D E P A R T M E N T  O F  T R A N S P O R T A T I O N -  H I G H W A Y  D I V I S I O N

DESIGN SHEET NO. SHEET NUMBER

PROJECT NUMBER FILE NO.

BLACK HAWK COUNTY

I O W A  D E P A R T M E N T  O F  T R A N S P O R T A T I O N -  H I G H W A Y  D I V I S I O N

DESIGN SHEET NO. SHEET NUMBER

PROJECT NUMBER FILE NO.

BLACK HAWK COUNTY

DECEMBER, 2017
115'-0 X 228'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE
THEUS BAY SHORE ROAD
DECEMBER, 2017
BLACK HAWK COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
PROJECT NUMBER: NHSX-058-1(94)--3H-07
DESIGN FOR 0° SKEW
115'-0 SIMPLE SPAN

NOTES:
FOR LOCATION OF SECTION B-B, SEE DESIGN SHEET 16.
FOR LOCATIONS OF FERRULE INSERTS, SEE DESIGN SHEET 16.
GALVANIZED STEEL FERRULE LOOP INSERT SHALL HAVE A MINIMUM 2,000 LBS. SAFE WORKING LOAD.

LIGHTING CONDUIT DETAILS, SEE DESIGN SHEET 52 & 53.)
ADDITIONAL CONDUIT LOCATION INFORMATION. FOR TUNNEL 7'-0 BEAM SPA. LOCATION. SEE DESIGN SHEET 16 FOR
(SHOWING TYP. LOCATION OF 3½ OR 4½ CONDUIT AT)
INTERMEDIATE CONCRETE JOINT AT TOP OF PERMISSIBLE CONSTRUCTION

DESIGN SHEET NO.
FILE NO.
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
PROJECT NUMBER
SHEET NUMBER
DESIGN TEAM
BLACK HAWK COUNTY
PROJECT NUMBER: NHSX-058-1(94)--3H-07
DESIGN FOR 0° SKEW
115'-0 X 228'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE
THEUS BAY SHORE ROAD
DECEMBER, 2017
BLACK HAWK COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
PROJECT NUMBER: NHSX-058-1(94)--3H-07
DESIGN FOR 0° SKEW
115'-0 SIMPLE SPAN

NOTE:
section f-f
concrete pole base and concrete diaphragm - looking north
pole base and anchor bolt assembly - looking east
prestressed concrete beam bridge
115'-0 x 228'-0 pretensioned prestressed concrete beam bridge
black hawk county
iowa department of transportation - highway division
project number na-00-000
sheet number 11

notes:
the chairman concrete and weight of reinforcing steel is included in stage 3 and stage 4 quantities on design sheet 46.
the traffic pole and pedestrian pole base concrete and reinforcing is included in stage 4 quantities on design sheet 46.
all reinforcing steel is epoxy coated and grade 60.

cost of furnishing and installing poles, underdriveway conduit (including conduit supports, junction boxes, and lighting conductor) is included in project work

contractor shall coordinate all conduit routing paths and junction box locations with the details shown in design sheet 15 and junction box locations with the details shown in design sheet 19.

all anchor bolt material shall come with the requirements of the anchor bolts.

the ultimate tensile strength of an anchor bolt should be a minimum 10% of the ultimate tensile strength of the anchor bolt and shall develop at least 50% of the specified yield strength of the anchor bolt being used.

anchor bolts shall be proof load of a minimum 60 kips each.

the minimum thread engagement of an anchor bolt into a coupler shall be one half of the coupler length.

helming of anchor bolts shall not be allowed. the contractor shall submit a template from the manufacturer/fabricator for proper placement and coordination of the anchor bolts.

see design sheets 51, 52, and 53 for additional anchor details.

contractor to verify and coordinate anchor bolts/plate/side length and location with the manufacturer/supplier prior to casting into concrete.

the "structural steel" bid item.

the "n" and "p" sheets for project number

the chairman concrete and weight of reinforcing steel is included in stage 3 and stage 4 quantities on design sheet 46.

the traffic pole and pedestrian pole base concrete and reinforcing is included in stage 4 quantities on design sheet 46.

all reinforcing steel is epoxy coated and grade 60.

cost of furnishing and installing poles, underdriveway conduit (including conduit supports, junction boxes, and lighting conductor) is included in project work

contractor shall coordinate all conduit routing paths and junction box locations with the details shown in design sheet 15.

all anchor bolt material shall come with the requirements of the anchor bolts.

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see design sheets 51, 52, and 53 for additional anchor details.

contractor to verify and coordinate anchor bolts/plate/side length and location with the manufacturer/supplier prior to casting into concrete.

the "structural steel" bid item.

the "n" and "p" sheets for project number

the chairman concrete and weight of reinforcing steel is included in stage 3 and stage 4 quantities on design sheet 46.
ISLAND PAVER DRAIN NOTES:

The drain frames and grates shall be ferrous castings, metal used in the manufacture of castings shall conform to ASTM A48-83, for gray iron castings. The castings shall be square openings with smooth finish of castings. The metal castings shall be smooth and free of defects. Grates shall be capable of carrying AASHTO HL-93 loading. Galvanizing of the grates is not required.

4 Island drains required. See "DRAIN LOCATIONS" table on this sheet for locations.

CUT TRANSVERSE & LONGITUDINAL BAR STEEL REINFORCEMENT 2" clear from drain frame.

The engineered fabric shall be in accordance with Article 4196.01, B, 2 of the Standard Specifications. The engineered fabric shall be placed over a stainless steel screen with 4" square openings. All edges of the screen shall be smooth and continuous and fit tightly against the top of the drain casting and the bottom of the grate. Place screen into drain casting first, then place engineered fabric over the screen and 6" beyond the rim of the casting on all four sides of the grate. The stainless steel support screen shall be similar to the pattern shown.

Cost for Island paver drain as detailed in these plans is included in the bid item "Bridge Drainage System".

NOTE: PATTERN AND DIRECTION OF GRATE OPENINGS SHALL BE SIMILAR TO THE PATTERN SHOWN.
DRAIN PIPE DETAILS

SECTION R-R

DOWNSPOUT NOTES:
- Use 8½" flexible, hulless reinforced thermosetting resin piping (RTRP) conforming to ASTM D2996 & D2310.
- Contractor to field verify all dimensions.
- Install clean-outs at locations as needed.
- See Design Sheet 25 for invert elevations at B.F. of abutment & at storm sewer structure.
- Construct concrete collars at connection of 8½" RTRP and 10½" PVC storm sewer pipe at all four locations. Install up to a 90° degree drop fitting and up to a 120° long drop fitting using the outside of the abutment at each location as required. For connection to 10½" RCP Storm sewer pipe, see roadway project No. HSIPX-058-1(94)-3H-07 for details.
- Cut/displace bar reinforcement at abutment expansion to clear 8½" PVC sleeve of 1½" minimum. Adjust elevation of sleeve or field bend beam coils as required.
- Include concrete grout material between 8½ PVC sleeve and drain pipe.
- The bid item "bridge drainage system" shall include all costs associated with furnishing and installing Island surface / Island paver drains and piping as detailed on these plans.
- 8½" flexible, hulless reinforced thermosetting resin piping (RTRP) conforming to ASTM D2996 & D2310.
- The 8½" downsoput piping shall be reinforced thermosetting resin piping (RTRP) conforming to ASTM D2996 & D2310.
- Contractor to field verify all dimensions.

SECTION Q-Q

The Island surface drain shall be constructed using standard 8½" flexible, hulless reinforced thermosetting resin piping (RTRP) conforming to ASTM D2996 & D2310. Contractor to field verify all dimensions.

SECTION P-P

Island surface drain details, see Design Sheet 20.

SECTION S-S

Design for other sheet

115'-0 X 228'-0 Prestressed Concrete Beam Bridge
115'-0 Simple Span

Black Hawk County
Project Name: IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
Design Sheet No. 22, Vol. 3
File No. 14052901
Sheet No. 23
TOP OF SLAB ELEVATIONS

BENCHMARK NO.: #520 - STA. 25+82.9 VIKING ROAD, 62.2’ RT., FOUND "X" ON NORTHERLY BOLT OF FIRE HYDRANT IN SW QUADRANT OF VIKING ROAD & IA 58, ELEV. 962.270 (= AS-BUILT PLAN BM #203, ELEV. 962.37)

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NOTE: LOCATION OF TOP OF SLAB ELEVATIONS SHOWN ON THIS SHEET. AT THE ENCIRCLED LETTERS AND NUMBERS DESIGN SHEET 26 FOR ELEVATIONS LOCATED SEE "TOP OF SLAB ELEVATIONS" TABLE ON

STAGE 5 BRIDGE CONST.

8 BEAM SPA. @ 7'-0 = 56'-0
10 BEAM SPA. @ ABOUT 8'-2 … = 82'-0
12 BEAM SPA. @ 7'-0 " = 84'-0

NOTES: X CONSTRUCTION VIKING ROAD & P.G.L. CROWN LINE

CONSTRUCTION NORTH LONGIT. CONST. JT. & STAGE CONSTRUCTION LINE

SOUTH LONGIT. CONST. JT.

NORTH EDGE OF DECK (EOD)

SOUTH EDGE OF DECK (EOD)

NORTH GUTTER LINE

SOUTH GUTTER LINE

CROWN LINE

 LOCATION OF TOP OF SLAB ELEVATIONS
### TOP OF SLAB ELEVATIONS

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**NOTE:**
- Elevations given in this table are to top of slab at all locations. The top of slab locations are shown on location of top of slab elevations detail on Design Sheet 25.
- Bench Mark No.: #520 - STA. 25+82.9 Viking Road, 62.2' RT., found "X" on northwesterly bolt of fire hydrant in SW quadrant of Viking Road & IA 58, Elev. 962.270 (= AS-BUILT Plan BM #203, Elev. 962.37).

---

**DESIGN NO.:**
- **COUNTY:** Black Hawk
- **PROJECT NUMBER:** 3176
- **C.L. No.:** 31298
- **DECEMBER, 2017**

**DESIGN FOR 0° SKEW**
### TABLE OF BEAM LINE HAUNCH ELEVATIONS

<p>| Beam Line | C/L | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z |   |
|           |     | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10| 11| 12|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|           | 963.34 | 963.83 | 962.87 | 962.77 | 963.27 | 963.18 | 961.63 | 962.83 | 961.86 | 962.74 | 962.79 | 963.02 | 963.83 | 962.68 | 962.91 | 962.74 | 963.38 | 962.95 | 963.55 | 963.28 | 962.99 | 962.95 | 963.46 | 962.10 | 962.22 | 963.50 | 963.37 | 962.51 | 962.91 | 962.63 | 963.80 | 962.28 | 963.37 | 962.74 | 963.44 | 962.58 | 962.64 | 962.59 | 963.87 | 962.11 | 963.84 | 961.97 | 963.36 | 963.65 | 962.84 | 963.04 | 961.90 | 963.03 | 962.75 | 963.06 | 962.51 | 963.25 | 963.38 | 962.39 | 963.71 | 963.30 | 962.54 | 963.52 | 963.36 | 963.26 | 962.41 | 963.33 | 963.33 | 962.70 | 963.62 | 963.31 | 962.87 | 962.88 | 963.04 | 962.33 | 963.09 | 961.32 | 962.45 | 97.24 | 963.97 | 963.78 | 962.75 | 962.37 | 963.05 | 961.95 | 963.52 | 962.16 | 962.48 | 963.31 | 962.61 | 962.51 | 962.40 | 962.16 | 962.19 | 961.97 | 963.26 | 963.45 | 962.40 | 962.16 | 962.19 | 961.97 | 963.26 | 963.45 |</p>
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</tbody>
</table>

**Notes:**

- Reinforcing shall be provided for strain exceeding 3%. See Design Sheet 24 for details.
SLAB THICKNESS DIAGRAM AND DETAILS

SLAB THICKNESS AT BEAMS (T)

SLAB THICKNESS DETAILS

TYPICAL SLAB AND HAUNCH DETAIL

NOTES FOR DISTANCES "D", "E", & "F" SEE "SLAB THICKNESS & CAMBER AT BEAMS" TABLE ON DESIGN SHEET 30.

BEAM CAMBER DATA

* FOR SLAB THICKNESS OVER BEAMS, SEE HAUNCH AND CAMBER DETAILS.

CONSTRUCTION INFORMATION TO AID THE CONTRACTOR IN SETTING THE FIELD HAUNCHES REQUIRED FOR ESTIMATE CONCRETE QUANTITIES. REFER TO DESIGN SHEETS 27 & 28 FOR ADDITIONAL INFORMATION TO SET THE FIELD HAUNCHES REQUIRED FOR CONSTRUCTION.

BLACK HAWK COUNTY

DESIGN FOR 0° SKEW 115'-0 X 228'-0 PRETENSIONED Prestressed Concrete Beam Bridge 115'-0 SIMPLE SPAN

DECEMBER, 2017
### Beam Line Distance

<table>
<thead>
<tr>
<th>Beam Line</th>
<th>Distance</th>
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<tbody>
<tr>
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### Span 1

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### Beam Line Distance

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<th>Beam Line</th>
<th>Distance</th>
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### Span 1

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</tbody>
</table>

For location of distances D, E, & F, see design sheet 28.
**Lifting Loop Detail**

**Lifting Loop and Overhang Table**

**Specifications**

**Design Stresses**

**Bent Bar Details**

**Reinforcing Bar List**

**BTC Beam Data**

**Bridge Design.**

**Ties to be detailed on specific standard sheet 4700 (modified).**

**Beam Notes:**

**Alternate Bar Notes:**

**Benton Bar Details:**

**Reinforcing Bar List:**

**BTC Beam Data:**

**Design for other beams 115'-0 x 228'-0 pretensioned prestressed concrete beam bridge 115'-0 simple span**

**BTC Beam Details:**

**Black Hawk County:**

**Iowa Department of Transportation - Highway Division**

**Design Sheet No:**

**Sheet Name:**
STEEL DIAPHRAGMS, TYP. FOR ALL BEAMS

1½ BOLT HOLES FOR INTERMEDIATE STRANDS

2 STRANDS

STRAIGHT

13 @ 2 = 2'-2

SECTION A-A

4'-0 @ 2

2 STRANDS

STRAIGHT

2

EPOXY COATED BARS

TYP. 1½ CL.

1½ CL.

5a2 BARS IN LIEU OF 5a1 AND STRANDS IF USED LOCATION OF FOUR ~`5b1

1½ CL.

5b2

(Alternate)

SECTION A-A

S T R A N D S

DEFORMED

3 @ 2

END OF BEAM

DIMENSIONS AT SECTION C-C

5a1

4 e 1

4 h 1

4 d 1

6 b 4

SECTION B-B

1'-2

4 c 1

4 h 1

4 d 1

4 e 1

2 @ 6"

5a1

4 h 1 BARS

~`6b3

TYP. 2

5a2 BARS IN LIEU OF 5a1 AND STRANDS IF USED LOCATION OF FOUR

~`5b1

1½ CL.

1½ CL.

5a2

5a1

4 h 1 BARS

6 LINES

TOP FLANGE LONGITUDINAL BAR LAYOUT

THE TOP FLANGE BEAM CONCRETE ARE TO BE CHAMFERED 2" AS SHOWN AT BOTH ENDS OF THE BEAM

TOP VIEW

BEAM SECTION PROPERTIES

BTC BEAM CROSS SECTION

NOTE: BEAM COIL TIES AT ABUTMENTS REQUIRED FOR ALL BEAMS.

TYP. AT THE FOLLOWING BEAMS:

57'-0"

57'-0"

3

3

NOTE: SEE DESIGN SHEET 24 FOR LOCATION OF STEEL INTERMEDIATE DIAPHRAGMS AND CONCRETE DIAPHRAGMS.

LOCATION OF FOUR STRANDS OF EACH IN LINE OF 5a1 AND 5a2 BARS

BEAM Coil TIE AND ROUGHENED SURFACE LOCATIONS

NOTE: BEAM COIL TIES AT ABUTMENTS REQUIRED FOR ALL BEAMS.

NOTE: BEAM COIL TIES AT ABUTMENTS REQUIRED FOR ALL BEAMS.
PEDESTAL NOTES:

Minimum clear distance from face of concrete to near reinforcing bar is to be 2", unless concrete notes on sheet. Contractor to coordinate all conduit routing paths and junction box locations with the details shown in the TV sheets for project number NHSX-058-19207-11-07.

CONCRETE PLACEMENT SUMMARY

<table>
<thead>
<tr>
<th>Location</th>
<th>Stage 5 TOTAL</th>
<th>Stage 6 TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>North Concrete Pedestals</td>
<td>2 @ 10.5 CU. YD. EACH</td>
<td>240</td>
</tr>
<tr>
<td>South Concrete Pedestals</td>
<td>2 @ 10.5 CU. YD. EACH</td>
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ARCHITECTURAL SURFACE TREATMENT SUMMARY

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<th>Location</th>
<th>Stage 5 TOTAL</th>
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</thead>
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<tr>
<td>North Concrete Pedestals</td>
<td>2 @ 1.20 S.F. EACH</td>
<td>240</td>
</tr>
<tr>
<td>South Concrete Pedestals</td>
<td>2 @ 1.20 S.F. EACH</td>
<td>240</td>
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REINFORCING BAR LIST-FOUR PEDESTALS

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<tr>
<th>Bar</th>
<th>Location</th>
<th>Shape</th>
<th>Length</th>
<th>Weight</th>
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<tbody>
<tr>
<td>5c2 Vertical</td>
<td>1'-0</td>
<td>56</td>
<td>563</td>
<td>56</td>
</tr>
<tr>
<td>4c3 Vertical</td>
<td>1'-0</td>
<td>36</td>
<td>36</td>
<td>36</td>
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<td>4c1 Horizontal</td>
<td>0</td>
<td>30</td>
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Note: Reinforcing steel quantities are included in the superstructure reinforcing bar list on Design Sheet 19.

Steel Conduit

2"½ Rigid Steel Conduit

CONTRACTOR TO COORDINATE ALL CONDUIT ROUTING PATHS AND JUNCTION BOX LOCATIONS WITH THE DETAILS SHOWN IN THE TV SHEETS FOR PROJECT NUMBER NHSX-058-19207-11-07.

BENT BAR DETAILS

5c1

4c3

4d1

NOTE: REINFORCING STEEL QUANTITIES ARE INCLUDED IN THE SUPERSTRUCTURE REINFORCING BAR LIST ON DESIGN SHEET 19.

EPoxy Coated Reinforcing Steel

EPOXY COATED REINFORCING STEEL TOTAL (LBS.)

North Concrete Pedestals: 6.67 LBS.
South Concrete Pedestals: 6.67 LBS.
PLAN - BARRIER & RAILING

(BARRIER ON SOUTH SIDE OF BRIDGE SHOWN, BARRIER ON NORTH SIDE OF BRIDGE SIMILAR)

ELEVATION - BARRIER & RAILING

(LOOKING NORTH AT OUTSIDE ELEVATION OF BARRIER ON SOUTH SIDE OF BRIDGE, BARRIER ON NORTH SIDE OF BRIDGE SIMILAR)

BARRIER RAIL NOTES:

* Maximum clear distance from face of concrete to near reinforcing bar is to be 2 inches otherwise noted or shown.
* All barrier rail reinforcing steel is to be epoxy coated.

For aesthetic details and notes, see design sheet 7.

NOTE: AESTHETIC STEEL ARCH NOT SHOWN FOR CLARITY IN ELEVATION VIEW.

SECTION A-A

For steel rail details, see design sheet 37.
ELEVATION - BARRIER & RAILING
Looking North at Outside Elevation of Barrier on South Side of Bridge. Barrier on North Side of Bridge Similar. Aesthetic Treatment Not Shown for Clarity.

NOTE: 3 - 5d1 BARS REQUIRED PER BAR LINE.

BARRIER RAIL DETAILS.
FOR DETAILS, SEE DESIGN SHEET 34.

SECTION B-B
SHAPING REINFORCEMENT DETAIL FOR BARRIER RAIL. SEE SECTION AND ON DESIGN SHEET 38 FOR ADDITIONAL BARRIER RAIL DETAILS.

CONCRETE PLACEMENT SUMMARY

<table>
<thead>
<tr>
<th>SECTION</th>
<th>STAGE 5 TOTAL</th>
<th>STAGE 6 TOTAL</th>
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<tbody>
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<td>North Barrier Rail</td>
<td>5.05 ft.</td>
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<tr>
<td>South Barrier Rail</td>
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CONCRETE BARRIER RAIL QUANTITIES

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<th>STAGE 6 QUANTITY</th>
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<td>Concrete Barrier Rail, Aesthetic</td>
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NOTE: ALL DIMENSIONS ARE OUT TO OUT. D = PIN DIAMETER.

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
PROJECT NUMBER: NHSX-058-1(94)--3H-07
DESIGN TEAM: ADCOM
BLACK HAWK COUNTY
DESIGN FOR 0° SKEW
115'-0 X 228'-0 PRESTENTIONED PRESTRESSED CONCRETE BEAM BRIDGE
STA. 27+02.26, CONST. VIKING ROAD
DECEMBER, 2017
BLACK HAWK COUNTY
DESIGN SHEET NO. 317
FILE NO. 31298
SHEET NUMBER: 37

REINFORCING BAR LIST-TWO BARRIER RAILS

<table>
<thead>
<tr>
<th>BAR LOCATION</th>
<th>SHAPE</th>
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REINFORCING STEEL - TOTAL (LBS.)

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<tr>
<td>Stainless Steel</td>
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<tr>
<td>Epoxy Coated Stainless Steel</td>
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BENT BAR DETAILS

FOR DETAILS & NOTES, SEE DESIGN SHEETS 37-39.

EXPERIMENTAL MATERIAL
1" PREFORMED EXP. JT. MATERIAL

SECTION A-A" ON DESIGN SHEET 35 FOR ADDITIONAL SHOWING REINFORCEMENT DETAILS FOR BARRIER RAIL. SEE INSIDE FACE OF BARRIER PEDESTAL (TYP.) FOR DETAILS TYP. & NOTES, SEE DESIGN SHEETS 37-39.
DETAIL CONSTRUCTION DETAILS

SECTION A-A

TYPICAL RAILING PANEL

SECTION B-B

SECTION C-C

SECTION D-D

SECTION E-E

PEDESTRIAN RAILING DETAILS

NOTES:
- WASHERS EACH LOCKNUTS AND HD BOLTS W/ "½ x 2" HEX BOLTS NOT SHOWN
- "½ x 2" HOLES THROUGH POST
- "½ x 3" SLOTTED HOLE (TYP.)
- L5 x 3 x … x 0'-2 (TYP.)
- "½ x 3" HOLES THROUGH POST
- L5 x 3 x … x 0'-2 (TYP.)
- "½ x 3" HOLES THROUGH POST
- L5 x 3 x … x 0'-2 (TYP.)
- "½ x 3" HOLES THROUGH POST
- L5 x 3 x … x 0'-2 (TYP.)
- "½ x 3" HOLES THROUGH POST
- L5 x 3 x … x 0'-2 (TYP.)

NOTE: FOR BASE DETAIL, SEE DESIGN SHEET 38.

NORTH HAWK COUNTY

DESIGN FOR 0° SKEW

115'-0 X 228'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

STA. 27+02.26, | CONST. VIKING ROAD

NOVEMBER, 2017

DESIGN FOR 0° SKEW

NORTH HAWK COUNTY

DESIGN FOR 0° SKEW

115'-0 X 228'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

STA. 27+02.26, | CONST. VIKING ROAD

NOVEMBER, 2017

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NOVEMBER, 2017

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NORTH HAWK COUNTY

DESIGN FOR 0° SKEW

115'-0 X 228'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

STA. 27+02.26, | CONST. VIKING ROAD

NOVEMBER, 2017

DESIGN FOR 0° SKEW
NOTES:

FOR RAILING NOTES, SEE DESIGN SHEET 39.

POST TOP DETAILS

SECTION G-G

BASE PLATE DETAILS

RAILING ELEVATION

SHIM DETAIL

NOTE: PROVIDE (2)-\( \frac{1}{2} \text{"} \) GALVANIZED STEEL SHIMS FOR EACH RAIL POST, TO BE USED AS REQUIRED.
PEDESTRIAN RAILING NOTES:

1. All railing members shall be flat and straight after fabrication and galvanizing to within 1/8" in. 4 ft. tolerances without damage to the railing.

2. Chain link fabric and accessories are to be PVC coated in accordance with ASTM F 153, Class 2B. Color shall be black in accordance with ASTM F 153. Chain link fabric shall be 72-inch wide by 5-inch high with knuckled selvages top and bottom. Fittings shall be in accordance with the standard specifications. Install chain link fabric to the outside of the railing as shown in the plans and tie to rail framing members to eliminate all sagging and slack in the fabric, not to exceed the vertical fabric.

3. Submit shop drawings of all components of the railing for approval.

4. Include all costs associated with the railing and anchors in the price bid for "structural steel pedestrian hand railing".

5. Powder coating shall include the use of degassing-grade polyester powder and an anti-blistering agent. Minimum coating coverage at railing component corners shall be 3 mils when measured in accordance with ASTM E 372. Submit the powder coating manufacturer's color sample to the Iowa DOT office of bridges and structures for review and approval prior to powder coating.

6. Protect all powder coated rails from damage during shipping, handling, and installation.

7. Following installation, repair any damage to the powder coated finish in accordance with the coating manufacturer's recommendations. Submit the coating manufacturer's written field report and records of the inspection prior to the final product being installed. Failure to complete the finish, the finished surface shall be uniform in color, sheen, texture and being across all components. Surface area may be judged by visual observation of the radiation and from distances not less than 10 inches from the surface area depending on the components involved. The surfaces may not be accepted by the engineer until checked and returned to an approved powder coating shop, and shall be completely stripped of powder coating and replaced in accordance with the coating manufacturer's instructions at no additional cost to the project.

PEDESTRIAN RAILING POWDER COATING NOTES:

1. Following galvanizing, the rails, splice sleeves, wires, bars, posts, base plates, and rail connection hardware shall be prepared for powder coating in accordance with ASTM D 3664, then powder coated by an approved powder coating shop meeting the requirements listed in this section. Powder coating materials shall be compatible with the galvanized coating. Powder coating hardware shall include the use of degassing-grade polyester powder and an anti-blistering agent. Minimum coating coverage at railing component corners shall be 3 mils when measured in accordance with ASTM E 372. Submit the powder coating manufacturer's color sample to the Iowa DOT office of bridges and structures for review and approval prior to powder coating.

2. Protect the railings during shipping, handling, and installation.

3. Following installation, repair any damage to the powder coated finish in accordance with the coating manufacturer's recommendations. Submit the coating manufacturer's written field report and records of the inspection prior to the final product being installed. Failure to complete the finish, the finished surface shall be uniform in color, sheen, texture and being across all components. Surface area may be judged by visual observation of the radiation and from distances not less than 10 inches from the surface area depending on the components involved. The surfaces may not be accepted by the engineer until checked and returned to an approved powder coating shop, and shall be completely stripped of powder coating and replaced in accordance with the coating manufacturer's instructions at no additional cost to the project.

RAILING INSTALLATION NOTES:

1. Contractor shall verify dimensions of the concrete prior to commencing final layout and installation of railing, with the engineer of any discrepancies in concrete dimensions prior to railing installation.

2. All railing posts and panels shall be set firmly in base plates as necessary to set posts plumb.

3. The concrete slab anchors shall be set in drilled holes, the holes are to be a minimum of 3" deep. The exact group anchors shall be used as bored anchors and shall be in accordance with applicable codes. The standard specifications and concrete specifications for the materials to be used shall be in accordance with the coating manufacturer's recommendations and shall comply with ASTM D 3664. The final product shall be installed. Failure to complete the finish, the finished surface shall be uniform in color, sheen, texture and being across all components. Surface area may be judged by visual observation of the radiation and from distances not less than 10 inches from the surface area depending on the components involved. The surfaces may not be accepted by the engineer until checked and returned to an approved powder coating shop, and shall be completely stripped of powder coating and replaced in accordance with the coating manufacturer's instructions.

RAILING MOCKUP NOTES:

1. Construct a mockup railing panel for review by the engineer, for the purposes of the mockup, the typical 10' x 10' deck and the posts shall be fabricated according to the requirements in these plans. Actual railing production may not proceed until final approval of the mockup if the mockup is not installed and approved according to the direction of the engineer and meets the requirements and methods for the mockup. The mockup shall be identical to those proposed for the actual railings for the project. The mockup shall be reviewed at the project site for comparison to actual railings as they are delivered. Protect the mockup railing from damage during storage period, if approved for use, install the mockup as part of the final railing.

2. Include all costs associated with the mockup in the price bid for "structural steel pedestrian hand railing".

3. Design for 0° skew.
STEEL ARCH CONNECTION DETAILS

PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE

STA. 27+02.26, | CONST. VIKING ROAD

BASE PLATE
HSS 6 x 8 x 1

MEMBER
HSS 6 x 12 x 1

BASE PLATE
HSS 6 x 8 x 1

BASE PLATE
HSS 6 x 12 x 1

BASE PLATE
HSS 6 x 8 x 1

SHIM DETAIL
GALVANIZED STEEL SHIM

NOTE: PROVIDE (2)-½" GALVANIZED STEEL SHIMS FOR EACH ARCH POST, TO BE USED AS REQUIRED.
NOTE: PAVEMENT SET " ABOVE FINAL ELEVATION TO ALLOW FOR SETTLEMENT.

NOTE: PAVERS SET " ABOVE FINAL ELEVATION TO ALLOW FOR SETTLEMENT.

NOTE: PAVERS SET " ABOVE FINAL ELEVATION TO ALLOW FOR SETTLEMENT.

NOTE: PAVERS SET " ABOVE FINAL ELEVATION TO ALLOW FOR SETTLEMENT.
**SIDEWALK COMPLIANCE**

SEE DESIGN SHEETS 46 & 48.

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<th>POINT TO POINT</th>
<th>SIDEWALK DESIGNATION</th>
<th>DISTANCE</th>
<th>ELEVATION</th>
<th>SLOPE</th>
<th>ACCEPTABLE CONSTRUCTED RANGE</th>
<th>MEASURED SLOPE</th>
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<th>REMARKS</th>
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<td>CROSSWALK CROSS SLOPE - YIELD CONDITION</td>
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* DOES NOT INCLUDE CURB

STATION: 115'-0  SIMPLE SPAN
PROJECT NUMBER: 113-10 317
FILE NO.: 11X-0 X 22X-0 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE
BLACK HAWK COUNTY  07-23-2017 SOUTHERN IOWA
BLACK HAWK COUNTY  09-07-2017 SOUTHERN IOWA
Table of Approved Spray-On Waterproof Membranes

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<td>DECKGUARD</td>
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<tr>
<td>D.S. BROWN</td>
<td>MASTERSEAL HLM 5000</td>
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</table>

Notes:
- For location of Detail D Callout, see Design Sheets 43 & 44.
- For location of Section A-A, see Design Sheets 47 & 48.
- See Special Provision "PCC Pavers" for additional details.

Black Hawk County

Design for 0° skew

115'-0 x 228'-0 Pretensioned Prestressed Concrete Beam Bridge
115'-0 Simple Span

Raised Island Details

BLACK HAWK COUNTY

Iowa Department of Transportation – Highway Division

DESIGN NO. 56-10-94-92-19
PROJECT NO. 94-058-059
FILE NO. 317
BLACK HAWK COUNTY

Sheet Number: 14

Section A-A
CONDUCT CLAMP (TYP.)


CONSTRUCTION SHALL CONFORM TO THE CURRENT IOWA D.O.T. STANDARD AND SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS.

CONDUCT INSTALLATION SHALL BE IN ACCORDANCE WITH ARTICLE 250, §8 of the STANDARD SPECIFICATIONS.

COST OF FURNISHING AND INSTALLING UNDERDECK CONDUIT, FERRULE LOOP INSERTS, CONDUIT HANGERS, CONDUIT BRACKETS, JUNCTION BOXES, LUMINAIRE HANGER ASSEMBLIES, CONDUIT CLAMPS, AND LUMINAIRES IS PART OF PROJECT NUMBER HSIPX-058-I(92)--3L-07 AND IS INCLUDED IN THE LUMP SUM COST OF THE "TUNNEL LIGHTING" PAY ITEM.

CONTRACTOR TO COORDINATE ALL CONDUIT ROUTING PATHS AND JUNCTION BOX LOCATIONS WITHIN 1'-0 MAXIMUM FROM ANY JUNCTION BOX, FLEXIBLE CONDUIT OR CHANGE IN DIRECTION.

ALL CONDUIT ATTACHED TO THE BRIDGE DECK AND TOP OF THE RETAINING WALL SET SHALL BE RIGID GALVANIZED (RGC).

ALL TUNNEL LUMINAIRES MUST BE CENTERED IN THE BEAM BAY AS INDICATED ON THE PLANS UNLESS OTHERWISE DIRECTED BY THE ENGINEER. LUMINAIRE SETBACK SHALL BE AS INDICATED IN THE PLANS. SEE THE "P" SHEETS FOR PROJECT NUMBER HSIPX-058-I(92)--3L-07.

BLACK HAWK COUNTY

DESIGN FOR 0° SKEW

FILE NO.

CONSTRUCTION SHALL CONFORM TO THE CURRENT IOWA D.O.T. STANDARD AND SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS.

CONDUCT INSTALLATION SHALL BE IN ACCORDANCE WITH ARTICLE 250, §8 of the STANDARD SPECIFICATIONS.

COST OF FURNISHING AND INSTALLING UNDERDECK CONDUIT, FERRULE LOOP INSERTS, CONDUIT HANGERS, CONDUIT BRACKETS, JUNCTION BOXES, LUMINAIRE HANGER ASSEMBLIES, CONDUIT CLAMPS, AND LUMINAIRES IS PART OF PROJECT NUMBER HSIPX-058-I(92)--3L-07 AND IS INCLUDED IN THE LUMP SUM COST OF THE "TUNNEL LIGHTING" PAY ITEM.

CONTRACTOR TO COORDINATE ALL CONDUIT ROUTING PATHS AND JUNCTION BOX LOCATIONS WITHIN 1'-0 MAXIMUM FROM ANY JUNCTION BOX, FLEXIBLE CONDUIT OR CHANGE IN DIRECTION.

ALL CONDUIT ATTACHED TO THE BRIDGE DECK AND TOP OF THE RETAINING WALL SET SHALL BE RIGID GALVANIZED (RGC).

ALL TUNNEL LUMINAIRES MUST BE CENTERED IN THE BEAM BAY AS INDICATED ON THE PLANS UNLESS OTHERWISE DIRECTED BY THE ENGINEER. LUMINAIRE SETBACK SHALL BE AS INDICATED IN THE PLANS. SEE THE "P" SHEETS FOR PROJECT NUMBER HSIPX-058-I(92)--3L-07.
ABUTMENT BACKFILL PROCESS:

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

After the subgrade has been shaped, the geotextile fabric shall be installed in accordance with the details shown. The fabric is to be placed on the subgrade backwall, excavation face, and excavation face to a height that will be approximately 1 to 2 feet higher than the height of the proposed backfill placement as shown in the "fabric" details on this sheet. The fabric is placed such to allow an approximate 1 foot and is to be pinned in place. The fabric shall be extended to the abutment of being laid in the fabric and secured to the complete with blow-in concrete nails. The fabric is placed against the excavation face shall be pinned.

When the fabric is in place the subgrade shall be placed directly on the fabric at the time of the subgrade excavation, a 1/2" lift will need to be cut in the fabric at the point where the subgrade exits the fabric near the end of excavation.

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

The remaining work involves backfilling with floodable and porous backfill. For Class 20 floodable backfill, the floodable backfill material shall be placed in accordance with the standard specifications. The floodable backfill shall be placed in individual lifts, surface finished, and compacted to ensure full consolidation. Limit the loose lifts to no more than 2 feet of thickness.

Subgrade finishing for each floodable backfill lift at the point of the subgrade and to the low point where the subgrade exits the fabric. To ensure uniform surface floodable water running full in a 2-inch diameter hose should be sprayed in successive 6-foot to 8-foot increments until the required full thickness of the subgrade backfill has been completed.

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

The cost of water required for flooding, subgrades, porous backfill, floodable backfill, and geotextile fabric furnished at the bridge abutments will be included in the contract unit price bid for structural concrete.

NOTE:

SUBGRAD. SMALL SLOPE DOWNSTREAM. 2% FROM APPROACH ROADWAY. 2% FROM HIGH END WHEN OUTLETING AT THE END OF THE ABUTMENT. THE GEOTEXTILE FABRIC WILL BE IN ACCORDANCE WITH ARTICLE 954.45 (E. ABUT.) = 953.91 (W. ABUT.) & SUBDRAIN INVERT ELEV. BASED ON 1H:1V. EXTEND GEOTEXTILE FABRIC SLOPE ENDS OF EXCAVATION AT 2% SLOPE AWAY FROM THE ABUTMENT FOOTING AND WINGS. NOTE: GEOTEXTILE FABRIC WILL BE ATTACHED AGAINST THE EXCAVATION FACE SHALL BE PINNED.

Macadam Stone Notes:

The bridge beam foreplane shall be compacted and shaped as shown on this work. Shaping will include excavation, removal of the existing subgrade shown in the section, and as directed by the engineer. The beam foreplane shall be paved, and the existing geotextile fabric and macadam stone are placed.

The geotextile fabric shall be in accordance with Article 954.45, 1H:1V. The standard specifications for the geotextile fabric is IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION. For additional information and details see design sheet 55 for wall details, see road plans, and see wall details see road plans, see wall details see road plans. (GRADING SURFACES) ARE SHOWN IN ACCORDANCE WITH THE DETAILS SHOWN. THE GEOTEXTILE FABRIC SHALL BE ATTACHED AGAINST THE EXCAVATION FACE SHALL BE PINNED.

Backfill Details:

NOTE: GEOTEXTILE FABRIC WILL BE ATTACHED AGAINST THE EXCAVATION FACE SHALL BE PINNED.
THERMAL ISOLATION PADS NOTES:
A thermal isolation pad system shall be installed at the back face of each abutment as detailed on this sheet. It shall consist of a geocomposite foundation drain with filter fabric and an expanded polystyrene EPS insulation block with vapor barrier. See table for approved materials.

The intent of the thermal isolation pad system is to isolate the abutment from the adjacent soil to promote a uniform temperature between the deck and the abutment footing. It will be part of a research project being conducted by Iowa State University.

The Big Item thermal isolation pad includes all materials, labor, and equipment necessary to perform the installation and is not for foundation drainage. To keep the drain pipes from penetrating into the insulation, the geocomposite material shall be installed into the flex pipe against the insulation. The geocomposite drain shall be held in place with concrete fasteners placed in the cup of the geocomposite drain. The geocomposite drain shall be secured with a tie to the abutment wall to prevent movement. Engineering fabric shall be used to line the top of the geocomposite drain and insulation as shown in the details on this sheet. Engineering fabric shall also be placed along the vertical side faces of the geocomposite drain at each end of the abutment where it is exposed. The engineering fabric along the side faces should extend horizontally in each way from geocomposite drain and extend 2'-0 horizontally at the bottom of excavation and folded over 2'-0. The top of the fabric shall be overlapped in a similar fashion at material joints, material joins shall be placed to keep joints of the geocomposite drain. The fabric shall be secured to prevent movement. Engineering fabric shall be in accordance with article 2 of the standard specification.

VAPOR BARRIER MEMBRANE NOTES:
The EPS insulation blocks shall be fully wrapped with a 15 mil vapor barrier that provides moisture chemical protection and is marketed for below grade use. The vapor barrier shall overlap a minimum of 1 foot at all seam locations. Seams shall be joined with a tape approved by the manufacturer.

PROTECTION NOTES:
The contractor shall protect the thermal isolation pad system from damage during construction operations and tenant vacating, tenant vacating is not function of any type of the vapor barrier. The insulation blocks shall be secured in place to prevent movement or placing of flexible back fill is used. Steel roadway plates shall be used to span from the abutment flange to the back fill soils and load areas are removed over the temperature isolation pad system before the approach pavement is in place.

COST FOR PROTECTION IS INCIDENTAL TO THE BIG ITEM THERMAL ISOLATION PAD SYSTEM. DAMAGE RESULTING FROM FAILURE TO PROTECT THE THERMAL ISOLATION PAD SYSTEM SHALL BE REPAIRED BY THE CONTRACTOR AS DIRECTED BY THE ENGINEER AT NO ADDITIONAL COST TO THE STATE.

INSULATION NOTES:
The insulation shall be a closed cell expanded polystyrene (EPS) material marketed for below-grade applications. The minimum compressive strength of the material shall be in accordance with approved methods. Testing methods ASTM C578, the insulation shall be new and free of dust, surface wetting, etc., and free of defects. Insulation shall be unwrapped and removed as required by the engineer.

The insulation shall be wrapped with a minimum R-value of 60 at 70 degrees F. Each way from geocomposite drain and extend 2'-0 horizontally at the bottom of excavation and folded over 2'-0. The top of the insulation shall be overlapped in a similar fashion at material joints, material joins shall be placed to keep joints of the geocomposite drain. The fabric shall be secured to prevent movement. Engineering fabric shall be in accordance with article 2 of the standard specification.

A THERMAL ISOLATION PAD DETAILS
BLACK HAWK COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
BLACK HAWK COUNTY 8740056-0003 UNITED STATES
DESIGN TEAM: ARCON
FILE NO. 317
PLAN: SOUTH GORE AREA PCC PAVERS

PCC PAVER NOTES:
1. REFER TO SPECIAL PROVISIONS FOR PCC PAVERS.
2. ESTABLISH CENTER LINE OF PAVER FIELD AT TRAFFIC SIGNAL BASE AND WORK EAST AND WEST FROM CENTER LINE.
3. ADJUST BANDING LOCATION 4'-4" TO ALLOW FOR FULL PAVERS BETWEEN BANDS.
4. WHERE POSSIBLE AT EDGES USE PAVERS AT LEAST 1 LENGTH. CUT SECOND PAVER FROM EDGE TO ALLOW FOR PAVERS OF 1 OF A PAVER IN LENGTH.

PAVER PATTERN ENLARGEMENT A
(AT CONCRETE EDGER)

CENTER BAND ON TRAFFIC SIGNAL BASE AND CENTER OF DECORATIVE ARCH

SEE PAVER PATTERN ENLARGEMENT B, SHEET 58

CENTER BAND ON DECORATIVE ARCH POSTS

CENTER BAND ON CONCRETE PEDISTALS

SEE PAVER PATTERN ENLARGEMENT C, SHEET 58

PCC PAVER LEGEND
- PCC PAVERS TYPE 1
  HERRINGBONE PATTERN
- PCC PAVERS TYPE 2
  RUNNING BOND PATTERN
- PCC PAVERS TYPE 3
  SEE PAVER PATTERN ENLARGEMENTS

DESIGN FOR 5 SHEET
115'-0 X 228'-0 PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE
115'-0 SPAN

P.C.C. PAVER PATTERN

BLACK HAWK COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 58 OF 52
FILE NO. 12259
DESIGN NO. 213

DATE: 09/28/2017
SHEET NUMBER: 57

DRAWN BY: J. A. HERMAN
CHECKED BY: J. W. MULHERN
APPROVED: J. W. MULHERN
INCHES ON SHEET: 4" = 1'-0"
PLAN: NORTH GORE AREA PCC PAVERS

1. REFER TO SPECIAL PROVISIONS FOR PCC PAVERS.
2. ESTABLISH CENTER LINE OF PAVER FIELD AT TRAFFIC SIGNAL BASE AND WORK EAST AND WEST FROM CENTER LINE.
3. ADJUST BANDING LOCATIONS H-4" TO ALLOW FOR FULL PAVERS BETWEEN BANDS.
4. WHERE POSSIBLE AT EDGES USE PAVERS AT LEAST 1/2 LENGTH. CUT SECOND PAVER FROM EDGE TO ALLOW FOR PAVERS OF 1/2 OF A PAVER IN LENGTH.

PCC PAVER LEGEND
- HERRINGBONE PATTERN
- RUNNING BOND PATTERN
- SEE PAVER PATTERN ENLARGEMENTS

115'-0" X 228'-0" PRETENSIONED PRESTRESSED CONCRETE BEAM BRIDGE
115'-0" SPAN
P.C.C. PAVER PATTERN
BLACK HAWK COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
BLACK HAWK COUNTY
PROJECT NUMBER: NH94-001
SHEET NO.: 50
SHEET NUMBER: 58

NOTE: THIS DIAGRAM IS NOT TO SCALE.