JEFFERSON COUNTY
MISSOURI
DEPARTMENT OF PUBLIC WORKS

WHITEHEAD ROAD
BRIDGE REPLACEMENT
OVER TRIBUTARY TO COTTER CREEK
SECTION 16 TOWNSHIP T40N, RANGE 4E
PROJECT NO. STP-5403(675)
BRIDGE NO. 26400141

DEMAND CRITERIA

1. A POSITIVE GUIDE CURVE IS REQUIRED TO ATTAIN THE DESIRED MINIMUM SPEEDS ON THE BRIDGE REHABILITATION.
2. SUFFICIENT CLEARANCES ARE REQUIRED TO ATTAIN THE DESIRED MINIMUM SPEEDS ON THE BRIDGE REHABILITATION.
3. A POSITIVE GUIDE CURVE IS REQUIRED TO ATTAIN THE DESIRED MINIMUM SPEEDS ON THE BRIDGE REHABILITATION.
4. SUFFICIENT CLEARANCES ARE REQUIRED TO ATTAIN THE DESIRED MINIMUM SPEEDS ON THE BRIDGE REHABILITATION.

DESIGNATION

FUNCTIONAL CLASSIFICATION

CABINET ROAD
GUIDED/GOING SPEED

30 MPH
DESIGN SPEED

30 MPH
CURVE RADIUS

305 (Diameter)
NUMBER OF Lanes (in)

1
WIDTH

13.1 FT.

LENGTH OF PROJECT

DESIGNATED LENGTH

150 FT.
EASEMENTS

10 FT.
APPROXIMATELY

10 FT.
EQUATION AND DEVIATION

NONE
TOTAL LENGTH OF PROJECT

150 FT.
KEY LENGTH OF PROJECT

150 FT.

LOCAL UTILITY COMPANIES

NATIONAL EAGLE INDUSTRIES

ADDRESS

4630 EAGLE INDUSTRIES

DATE RECEIVED

05-01-2019

APPROVED BY

JEFFERSON COUNTY, MISSOURI

DATE

05-01-2019

PROJECT SITE MAP

SCALE 1" = 100'

VICTORY MAP

NOT TO SCALE

PROJECT NO.

STP-5403(675)

DIA. 7-02

COVER SHEET

BRIDGE NO. 26400141

DEPARTMENT OF PUBLIC WORKS
JEFFERSON COUNTY, MISSOURI

COVER SHEET

BRIDGE NO. 26400141
FEDERAL PROJECT NO. STP-5403(675)
BRIDGE REPL.

CDD PROJECT NO.

17109

DRAWING NO.

T-001
GENERAL NOTES:
1. REMOVE ALL WATER FEATURES, INCLUDING EXCAVATED MATERIAL, BRUSH, FRENCH DRAIN, AND EXISTING DRAINAGE, DURING CONSTRUCTION. REMOVE PROTECTIVE DEVICES TO PREVENT DAMAGING TO EXISTING FACILITIES. PROTECT EXISTING FACILITIES FROM DAMAGE DURING CONSTRUCTION. REMOVE ADEQUATELY TO PREVENT DAMAGE TO EXISTING FACILITIES. REMOVE EXISTING UTILITY MASTERS, VALVES, OR BOXES. RESTORE SERVICE TO PREVIOUS CONDITIONS USING EQUAL MATERIALS.

2. CONTRACTOR SHALL REMOVE ALL PROFILES, SURVEYS, ELEVATION NOTES, PROJECTS, OR DOCUMENTATION THAT IS CONCERNED WITH THE CONTRACTOR'S RESPONSIBILITIES TO PREVENT DAMAGE TO EXISTING FACILITIES. REMOVE EXISTING UTILITY MASTERS, VALVES, OR BOXES. RESTORE SERVICE TO PREVIOUS CONDITIONS USING EQUAL MATERIALS.

3. CONTRACTOR SHALL COMPACT SOIL AND CORRECT CONSTRUCTION MATERIALS IN ACCORDANCE WITH GOOD ENGINEERING PRACTICE. RESTORE SERVICE TO PREVIOUS CONDITIONS USING EQUAL MATERIALS.

4. CONTRACTOR SHALL COMPACT SOIL AND CORRECT CONSTRUCTION MATERIALS IN ACCORDANCE WITH GOOD ENGINEERING PRACTICE. RESTORE SERVICE TO PREVIOUS CONDITIONS USING EQUAL MATERIALS.

5. CONTRACTOR SHALL COMPACT SOIL AND CORRECT CONSTRUCTION MATERIALS IN ACCORDANCE WITH GOOD ENGINEERING PRACTICE. RESTORE SERVICE TO PREVIOUS CONDITIONS USING EQUAL MATERIALS.

6. CONTRACTOR SHALL COMPACT SOIL AND CORRECT CONSTRUCTION MATERIALS IN ACCORDANCE WITH GOOD ENGINEERING PRACTICE. RESTORE SERVICE TO PREVIOUS CONDITIONS USING EQUAL MATERIALS.

7. KNOWN UTILITIES AND FACILITIES ADJACENT TO OR WITHIN THE WORK AREA ARE SHOWN ON DRAWINGS AND TO DETERMINE THE PRESENCE OF THOSE NOT SHOWN. IMMEDIATE AND RESPONSIBILITY IS ASSUMED BY EITHER THE OWNER OR THE ENGINEER FOR THEIR ACCURACY.

8. RESTORATION OF THE SITE SHALL BE MADE WITH “IN KIND” MATERIALS. RESTORATION AS PROMPTLY AS POSSIBLE AND PAY FOR REPAIR.

9. CONTRACTOR SHALL SEED ALL GRASS AREAS DISTURBED BY THE CONSTRUCTION UNLESS OTHERWISE SPECIFIED, (SEE PLANS AND SPECIFICATION FOR DETAILS), AREA OF DISTURBANCE REQUIRED.

10. CONTRACTOR SHALL REMOVE AND REPLACE IN EQUAL OR BETTER THAN ORIGINAL CONDITION, SMALL STRUCTURES SUCH AS FENCES, AND SIGNPOSTS THAT INTERFERE WITH WORK, OR ARE DAMAGED DURING THE WORK, RESTORE THEM TO ORIGINAL CONDITION.

11. CONTRACTOR SHALL KEEP ALL PAVEMENTS CLEAN AND FREE OF MUD, ROCK, AND DEBRIS DURING CONSTRUCTION. COST SHALL BE CONSIDERED INCIDENTAL TO OTHER ITEMS.

12. CONTRACTOR SHALL NOTIFY PROPERTY OWNERS (PREFERABLY IN PERSON) 24 HOURS IN ADVANCE OF THE DATE WORK WILL BEGIN OR ENDS, TO INCLUDE RESTORATION NOTES.

13. CONSTRUCTION OPERATIONS AND ARE FOR THE PROTECTION OF THE CONTRACTOR AND THE OWNER. THE RECORDS WILL PROVIDE A MEANS OF DETERMINING WHETHER AND TO WHAT EXTENT OF ANY DAMAGE WHICH MAY OCCUR AS A RESULT OF THE CONTRACTOR'S OPERATIONS. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE PROJECT.

14. ALL REPAIRS ARE TO BE MADE WITH “IN KIND” MATERIALS. RESTORATION AS PROMPTLY AS POSSIBLE AND PAY FOR REPAIR.

15. MAINTAIN PROPER STORAGE OF HAZARDOUS MATERIALS, IF ANY, ONSITE.

16. CONTRACTOR SHALL PROVIDE A MEANS OF DETERMINING WHETHER AND TO WHAT EXTENT OF ANY DAMAGE WHICH MAY OCCUR AS A RESULT OF THE CONTRACTOR'S OPERATIONS. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE PROJECT.

17. CONTRACTOR SHALL PROVIDE A MEANS OF DETERMINING WHETHER AND TO WHAT EXTENT OF ANY DAMAGE WHICH MAY OCCUR AS A RESULT OF THE CONTRACTOR'S OPERATIONS. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE PROJECT.

18. CONTRACTOR SHALL PROVIDE A MEANS OF DETERMINING WHETHER AND TO WHAT EXTENT OF ANY DAMAGE WHICH MAY OCCUR AS A RESULT OF THE CONTRACTOR'S OPERATIONS. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE PROJECT.

19. CONTRACTOR SHALL PROVIDE A MEANS OF DETERMINING WHETHER AND TO WHAT EXTENT OF ANY DAMAGE WHICH MAY OCCUR AS A RESULT OF THE CONTRACTOR'S OPERATIONS. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE PROJECT.

20. CONTRACTOR SHALL PROVIDE A MEANS OF DETERMINING WHETHER AND TO WHAT EXTENT OF ANY DAMAGE WHICH MAY OCCUR AS A RESULT OF THE CONTRACTOR'S OPERATIONS. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE PROJECT.

21. CONTRACTOR SHALL PROVIDE A MEANS OF DETERMINING WHETHER AND TO WHAT EXTENT OF ANY DAMAGE WHICH MAY OCCUR AS A RESULT OF THE CONTRACTOR'S OPERATIONS. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE PROJECT.
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*Note that final design quantities.*
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**Department of Public Works**
GENERAL NOTES:

1. REMOVED ALL EXISTING ROADBED WITHIN LIMITS OF WORK.
2. CLEARING & GRUBBING / SEEDING & MULCHING SHALL OCCUR AND BE MINIMIZED WITHIN THE CONSTRUCTION EASEMENTS AND PROPOSED RIGHT-OF-WAY AREAS.
3. CONTRACTOR TO TAKE CAREFUL MEASURES THAT TREES IDENTIFIED AS "TO BE PROTECTED" ARE NOT TO BE DAMAGED DURING CONSTRUCTION ACTIVITIES.

PROTECTED TREES ARE SUITABLE HABITATS AND/OR PROTECT AGAINST BANK SCOURING.

KEYED NOTES:

- PROPOSED BRIDGE STRUCTURE (SEE DWG. B-101)
- EXISTING BRIDGE DECK, ABUTMENTS, AND RAILING TBR&R
- PROPOSED TYPE 2 ROCK BLANKET (SEE DWG. C-301)
- PROPOSED TYPE A CRASHWORTHY END TERMINAL - TEST LEVEL 1, 25'-9 1/2" (4 EA)
- PROPOSED BRIDGE ANCHOR SECTION (4 EA), TRANSITION SECTION (4 EA)
- TO BE PROTECTED, TBP
- PROPOSED DRAINAGE DITCH, GRADE TO DRAIN
- PROPOSED FIELD ENTRANCE (STA 4+67 RIGHT) WITH 15" CMP (30 LF). CULVERT FLOWLINES TO MEET PROPOSED DITCH GRADES. (SEE DWG. C-301 FOR "ENTRANCE" DETAIL)

DEPARTMENT OF PUBLIC WORKS
PROPOSED ENTRANCE SHALL MATCH EXISTING GRADE AND ELEVATION.

EXISTING ENTRANCE LENGTH VARIES SEE PLAN

SCALE: 1" = 4'-0"

MAINLINE STA 4+67 RIGHT SHOULDER OF ROAD

6" TYPE 5 AGGREGATE (TYP.) PREPARED SUBGRADE (TYP.) LC 22' WIDTH

ASPHALT SURFACE 2% SLOPE 2% SLOPE TYPICAL SECTION - ENTRANCE

SCALE: 1" = 4'-0"

A-4" ASPHALT BP-1 (TYP.) 3:1 FILL SLOPE 3:1 FILL SLOPE 22' WIDTH AGGREGATE SURFACE 45° A

PREPARED SUBGRADE (TYP.) LC 2" ASPHALT BP-1 8" ASPHALT BASE 4" TYPE 5 AGGREGATE BASE (TYP.) 2% SLOPE 2% SLOPE TYPICAL SECTION - NORMAL SCALE: 1" = 4'-0"

STA 4+80 THRU 6+55 2'-0" 2'-0" 2'-0"

SEE EDGE DETAIL THIS SHEET

GUARD RAIL NOTES:
1. INSTALL GUARDRAIL PER MANUFACTURERS' SPECIFICATIONS.
2. INSTALL POST PER MANUFACTURERS' SPECIFICATIONS.

TYPICAL DETAIL - GUARDRAIL NOT TO SCALE

MIN. GUARD RAIL NOTES:

18.00 MIN.

TYPICAL SECTION - TAPER SCALE: 1"= 4'-0"

STA 4+50 THRU 4+80 STA 6+55 THRU 7+10

14" TYPE 5 AGGREGATE BASE

4" TYPE 5 AGGREGATE BASE

PREPARED SUBGRADE (TYP.) 1'-9" 3'-8" 1'-0"

TYPICAL PAVEMENT - EDGE DETAIL NOT TO SCALE

3:1 FILL SLOPE 3:1 FILL SLOPE 3:1 SLOPE 3:1 FILL SLOPE

TYPICAL DETAIL - TYPE 2 ROCK BLANKET - CREEK BANKS

3'-0" MIN DEPTH

10'-0" MAX.

2X2 CONSTRUCTION GRADE LUMBER, 4' LONG

FASTEN WITH 3-50 LB DIAGONAL CABLE TIES WITHIN TOP 8" OF FABRIC

6" MIN. TRENCH FABRIC AND WIRE MESH TRENCH TO BE BACKFILLED AND COMPACTED

BURY 1' OF FABRIC ALONG BOTTOM AND EDGE OF TRENCH 24" MIN.

24" MIN.

6"

TYPICAL CREEK SECTION

TYPICAL DETAIL - SILT FENCE DETAIL

WOVEN FABRIC OVER WIRE MESH (9 GA, 6X6 MESH)

10'-0" MAX.

2X2 CONSTRUCTION GRADE LUMBER, 4' LONG

FASTEN WITH 3-50 LB DIAGONAL CABLE TIES WITHIN TOP 8" OF FABRIC

6" MIN. TRENCH FABRIC AND WIRE MESH TRENCH TO BE BACKFILLED AND COMPACTED

BURY 1' OF FABRIC ALONG BOTTOM AND EDGE OF TRENCH 24" MIN.

24" MIN.

6"
GENERAL NOTES:

1. CONTRACTOR SHALL DESIGN, INSTALL, MAINTAIN EROSION CONTROL MEASURES DURING CONSTRUCTION AS NECESSARY TO CONTROL AND PREVENT POLLUTION OF WATERSHEDS AND GULLIES AS DIRECTED BY THE COUNTY PUBLIC WORKS DEPARTMENT.

2. CONTRACTOR TO PLACE WASHDOWN STATION AT THE CONSTRUCTION SITE ENTRANCE TO THE PROJECT SITE.

3. EROSION CONTROL MEASURES SHALL BE INSPECTED IMMEDIATELY AFTER RAINFALL EVENTS OF 1 INCH OR MORE.

4. EROSION CONTROL MEASURES SHALL BE REMOVED OR REPLACED AS NECESSARY TO ENSURE FULLY ESTABLISHED AFTER THE COMPLETION OF THE PROJECT.

5. SEEDING SHALL OCCUR UPON THE IMMEDIATE COMPLETION OF EROSION ACTIVITIES.

6. THE CONTRACTOR IS RESPONSIBLE FOR PLACEMENT OF EROSION CONTROL MEASURES AS DIRECTED BY THE COUNTY PUBLIC WORKS DEPARTMENT.

7. CONTRACTOR TO TAKE CAREFUL MEASURES THAT TREES IDENTIFIED AS "TO BE PROTECTED" ON C-101 ARE NOT TO BE DAMAGED DURING CONSTRUCTION ACTIVITIES.

PROTECTED TREES ARE SUITABLE HABITATS AND OR PROTECT AGAINST BANK SCOURING.

TYPE 2 ROCK BLANKET (592 CY)
SILT FENCE (545 LF)
ROCK DITCH CHECK (5 LF)
**GENERAL NOTES:**
1. CONTRACTOR TO MAINTAIN TRAFFIC CONTROL DURING CONSTRUCTION.
2. TRAFFIC Control MAY BE REVISED PER JEFFERSON COUNTY PUBLIC WORKS DEPARTMENT APPROVAL.
3. LOCAL RESIDENTS SHALL HAVE ACCESS TO THEIR PROPERTY DURING CONSTRUCTION.
4. ALL SIGNS SHALL BE SIZED FOR CONVENTIONAL ROAD, UNLESS NOTED OTHERWISE.
5. ALL SIGNS SHALL CONFORM TO THE CURRENT EDITION OF THE MUTCD.
6. CONTRACTOR TO COORDINATE WITH COUNTY BEFORE SIGN PLACEMENT. DISTANCES FOR R11-3b SIGN TO BE DETERMINED BEFORE SIGN PLACEMENT.
7. ARROW SIGNS (M4-9 & M4-10) SHALL BE SELECTED (LEFT OR RIGHT OR STRAIGHT AHEAD) IN THE CORRECT DIRECTION OF THE DETOUR ROUTE.
8. MAINTAIN ACCESS FOR ALL LOCAL PROPERTY OWNERS DURING CONSTRUCTION.

### TRAFFIC DETOUR DIRECTION

<table>
<thead>
<tr>
<th>TEMPORARY DETOUR SIGN</th>
</tr>
</thead>
<tbody>
<tr>
<td>TYPE 3 MOVABLE BARRICADE</td>
</tr>
<tr>
<td>R11-4</td>
</tr>
<tr>
<td>(6 EA)</td>
</tr>
<tr>
<td>W20-3</td>
</tr>
<tr>
<td>36&quot; x 36&quot;</td>
</tr>
<tr>
<td>(2 EA)</td>
</tr>
<tr>
<td>W20-2</td>
</tr>
<tr>
<td>36&quot; x 36&quot;</td>
</tr>
<tr>
<td>(2 EA)</td>
</tr>
<tr>
<td>M4-9</td>
</tr>
<tr>
<td>30&quot; x 24&quot;</td>
</tr>
<tr>
<td>(2 EA)</td>
</tr>
<tr>
<td>M4-8</td>
</tr>
<tr>
<td>24&quot; x 12&quot;</td>
</tr>
<tr>
<td>(2 EA)</td>
</tr>
<tr>
<td>M4-8a</td>
</tr>
<tr>
<td>24&quot; x 18&quot;</td>
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<tr>
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<tr>
<td>M4-10</td>
</tr>
<tr>
<td>48&quot; x 18&quot;</td>
</tr>
<tr>
<td>(2 EA)</td>
</tr>
<tr>
<td>W20-3</td>
</tr>
<tr>
<td>36&quot; x 36&quot;</td>
</tr>
<tr>
<td>(2 EA)</td>
</tr>
<tr>
<td>R11-3b</td>
</tr>
<tr>
<td>60&quot; x 30&quot;</td>
</tr>
<tr>
<td>(2 EA)</td>
</tr>
<tr>
<td>D3-1</td>
</tr>
<tr>
<td>24&quot; x 12&quot;</td>
</tr>
<tr>
<td>(2 EA)</td>
</tr>
</tbody>
</table>

*SEE NOTE #7*
GENERAL NOTES:
1. CLEARING & GRUBBING / SEEDING & MULCHING SHALL OCCUR AND BE MINIMIZED WITHIN THE CONSTRUCTION EASEMENTS AND PROPOSED RIGHT-OF-WAY AREAS.
**General Notes:**

<table>
<thead>
<tr>
<th>Design Specifications:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design Loadings:</td>
</tr>
</tbody>
</table>

**Design Loading:**

- **Vehicle Type:** Light Truck (L-101) & Heavy Truck (H-201)
- **Design Miles:**
  - **Slot:** 60 ft
  - **Secondary:** 120 ft

**Superstructure:**

- *Material:* Reinforced Concrete Beam
- *Type:* Simply-supported, Non-composite for dead load; Composite for live load.

**Joint Filler:**

- Sponge rubber expansion and partition joint filler, except as noted.
- All joint filler shall be in accordance with Sec 1057 for preformed forms.

**Reinforcing Steel:**

- Minimum yield strength 40,000 psi and shall be 1/16" unless otherwise shown.

**Traffic Control:**

- Structure shall be phased during construction.

**Hydrologic Data:**

- \( Overtopping Flood Frequency = \frac{1}{500} \text{ years} \)
- \( Overtopping Flood Discharge = \text{N/A} \)
- \( Freeboard = 1.7 \text{ ft} \)
- \( Average Velocity thru Opening = 6.7 \text{ ft/s} \)
- \( Base Flood Discharge = 1630 \text{ cfs} \)
- \( Base Flood Elevation = 559.4 \)
- \( Design Flood (D.F.) Elevation = 559.4 \)
- \( Design Flood Discharge = 1630 \text{ cfs} \)
- \( Design Flood Frequency = 100 \text{ years} \)
- \( Equivalent Fluid Pressure = 45 \text{ lb/ft}^2 \)
- \( Earth = 120 \text{ lb/ft}^2 \)
- \( Future Wearing Surface = 35 \text{ lb/sq ft} \)
- \( Vehicular = HL-93 \)
- \( Seismic Design Category = B \)
- \( 2011 \text{ AASHTO Guide Specifications for LRFD Seismic Bridge Design} \)
- \( 2013 \text{ Interim Revisions AASHTO Guide Specifications for LRFD Seismic Bridge Design} \)

**Reinforcing Steel (Grade 60):**

- \( f_y = 50,000 \text{ psi} \)
- \( f_c' = 4,000 \text{ psi} \)

**Reinforcing Steel (Grade 60):**

- \( f_y = 60,000 \text{ psi} \)
- \( f_c' = 4,000 \text{ psi} \)

**Superstructure:**

- *Material:* Reinforced Concrete Beam
- *Type:* Simply-supported, Non-composite for dead load; Composite for live load.

**Foundation Data:**

- **Type:** Pile
- **Load:** Not specified
- **Size:** Not specified

**Estimated Quantities for Slab on Concrete Beam:**

<table>
<thead>
<tr>
<th>Item</th>
<th>Unit</th>
<th>Class</th>
<th>Substrate</th>
<th>Superstrate</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slab on Concrete Beam</td>
<td>cu. yd</td>
<td>138</td>
<td>138</td>
<td>138</td>
<td></td>
</tr>
<tr>
<td>Reinforcing Steel</td>
<td>lbs</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td></td>
</tr>
</tbody>
</table>

**Hydrologic Data:**

- **Project No.:** B-062
- **Date:** August 20, 2019
- **Department:** Public Works
- **Location:** On One Campbell Plaza, St. Louis, Missouri 63139
- **Certificate of Authority #:** 1721

**Notes:**

- This drawing is not to scale, follow dimensions.
- Items marked with an asterisk (*) are included in the estimated quantities.
General Notes:

- No details of the end bent No. 1 are shown on Sheet No. B-005.
- The pile slope of the bent shall be tied to the primary roadway.
- All vertical reinforcing bars in the bent shall be placed parallel to the primary roadway.
- All U-bars, P-v bars, and #5-H105 shall be placed parallel to the primary roadway.
- For details of vertical drain at the end of the bent, see Sheet No. B-006.
- For details of End Bent No. 1 not shown, see Sheets No. B-003 & B-005.
- All vertical reinforcing bars in the bent shall be placed parallel to the primary roadway.
- All U-bars, P-v bars, and #5-H105 shall be placed parallel to the primary roadway.
- For details of vertical drain at the end of the bent, see Sheet No. B-006.
- For details of End Bent No. 1 not shown, see Sheets No. B-003 & B-005.

Substructure Quantity Table for Bent No. 1

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Unit</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base</td>
<td>Coversheet</td>
<td>sq. ft</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>Reinforced Concrete Slab</td>
<td>cu. yard</td>
<td>60</td>
</tr>
<tr>
<td>Pile Slope for Piling</td>
<td>Linear foot</td>
<td>56</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Pile Slope for Piling</td>
<td>Linear foot</td>
<td>56</td>
</tr>
<tr>
<td></td>
<td>Substructure</td>
<td>cu. yard</td>
<td>60</td>
</tr>
</tbody>
</table>

Note: These quantities are included in the detailed substructure quantities on Sheet No. B-002.
Rotate #8-H108 & #6-H109 bars in field so end hooks clear beams.

For details of Conduit System, see Sheet No. B-016.

For details of Bridge Approach Slab, see Sheet No. B-020.

For location of Sections A-A, B-B, C-C & D-D, see Sheet No. B-004.

For location of Elevations E-E & F-F, see Sheet No. B-003.

For location of #5-H106 (Strand Tie Bar), see Sheets No. B-010 & B-011.

For details of Vertical Drain at End Bents, see Sheet No. B-006.

see Sheet No. B-018.

For details and reinforcement of the Safety Barrier Curb, bend #6-F101 & #6-F103 bars in field to clear beams.

For details of End Bent No. 1 not shown, see Sheets No. B-003 & B-004.
General Notes:

- All drain pipe shall be sloped 1\% to 2\%.
- Drain pipe may be either 6-inch diameter corrugated metallic-coated steel pipe, 4-inch diameter corrugated polyvinyl chloride (PVC) drain pipe, or 4-inch diameter corrugated polyethylene (PE) drain pipe.

Drain pipe shall be placed at fill face and inside face of end bent. The pipe shall slope to lowest grade of ground line, also missing the bottom beam of end bent by a minimum of 1 1/2 inches.

Perforated pipe shall be placed at fill face and inside face of end bent and plain pipe shall be used where the vertical drain ends to the exit at ground line.

Notes:
- This drawing is not to scale. Follow dimensions.
- One Campbell Plaza
  St. Louis, Missouri 63139
  T. 314-781-7770
  F. 314-781-9075
  Missouri State Certificate of Authority #1721

Timothy Nugent, P.E.
August 20, 2019

One Campbell Plaza
T. 314-781-7770
F. 314-781-9075
Missouri State Certificate of Authority #1721

CDG ENGINEERS
DEPARTMENT OF PUBLIC WORKS
PROJECT NO.
CDG PROJECT NO.
DATE
APPROVED
DESCRIPTION
REV.
DRAWING NO.
TRN
DB
WHITHEAD ROAD BRIDGE REPLACEMENT
BRIDGE NO.
PROJECT NO.
STP-5403 (675)
MO# PE-2003001080
**Sheet No. B-002.** These quantities are included in the Estimated Quantities table on Sheet No. B-002.

**General Notes:**
- For details of Class 1 Excavation, see Sheet No. B-007 & B-009.
- Pre-Bore for Piling Galvanized Structural Steel Pile (14 in.)
- All vertical reinforcing bars in the structure shall be placed parallel to roadway.
- For Sections A-A, B-B, C-C & D-D see Sheets No. B-007 & B-009.
- For details of End Bent No. 2 not shown, see Sheet No. B-008.
- For details of Vertical Drain at End Bents, see Sheet No. B-006.
- Substructure beams or caps shall be field adjusted to clear piles by at least 1 1/2".

**Substructure Quantity Table for Bent No. 2**

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Unit</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note: This drawing is not to scale. Follow dimensions.*
General Notes:

For details of End Bent No. 2 not shown, see Sheets No. B-007 & B-008.

Rotate #8-H208 & #6-H209 bars in field so end hooks clear beams.

For details of Conduit System, see Sheet No. B-016.

For details of Bridge Approach Slab, see Sheet No. B-020.

For location of Sections A-A, B-B, C-C & D-D, see Sheet No. B-008.

For location of Elevations E-E & F-F, see Sheet No. B-007.

For location of #5-H206 (Strand Tie Bar), see Sheets No. B-010 & B-011.

For details of Vertical Drain at End Bents, see Sheet No. B-006.

For details and reinforcement of the Safety Barrier Curb, see Sheet No. B-018.

Bend #6-F201 & #6-F203 bars in field to clear beams.

For details of End Bent No. 2 not shown, see Sheets No. B-007 & B-008.
**Dimensions**

- **Dimensions (in.):**
  - 1200 x 792

**Strand Arrangement**

- Use 20 strands with an initial prestress force of 1055 kips.
- All strands are fully bonded unless otherwise shown.
- Use 24 strands with an initial prestress force of 1055 kips.
- (+) Indicates prestressing strand.
- (-) Indicates non-prestressing strand.
- All bars shall be Grade 60, epoxy coated, except for Sec 1029.

**Table of Strand Instructions**

<table>
<thead>
<tr>
<th>NO.</th>
<th>SIZE</th>
<th>ACTUAL</th>
<th>BILL OF REINFORCING STEEL - EACH BEAM</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td>SHAPE 19</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td>SHAPE 20</td>
</tr>
<tr>
<td>3</td>
<td></td>
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<td>SHAPE 21</td>
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<tr>
<td>4</td>
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<td>SHAPE 19</td>
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<td>5</td>
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<td>6</td>
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<td>SHAPE 21</td>
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<td>7</td>
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<td>17</td>
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<td>SHAPE 20</td>
</tr>
<tr>
<td>18</td>
<td></td>
<td></td>
<td>SHAPE 21</td>
</tr>
</tbody>
</table>

**General Notes**

- Concrete for prestressed beams shall be Class A-1 with f'c = 8,000 psi and f'ci = 6,500 psi.
- Pretensioned members shall be in accordance with Sec 1029.
- For Beam Camber Diagram see Sheet No. B-013.
- Void filler shall be non-absorptive cellular polystyrene, according to ASTM C 578, designed to be effectively taped or spliced together.
- Beams shall be finished similarly in accordance with Sec 1029, except as noted.

**Details of Spread Box Beams**

- Span (1-2)

**Notes:**

- This drawing is not to scale. Follow dimensions.
DETAILS OF SPREAD BOX BEAMS

Strand Details at Beam Ends

End of Beam

STRAIN DETAILS AT BEAM ENDS

1 1/2" x 4" Welded Studs

Three

LOCATION OF LIFTING LOOPS

Bearing

End of Beam

PART PLAN SHOWING LOCATION OF LIFTING LOOPS

Fabricator shall be responsible for location and design of lifting devices.

BEARING PLATE DETAILS

Galvanize the 1/2" bearing plates (ASTM A709 Grade 36) in accordance with ASTM A123.

Cost of furnishing, galvanizing, and installing the 1/2" bearing plate (ASTM A709 Grade 36) and welded studs in the prestressed box beam will be considered completely covered by the contract unit price for Prestressed Concrete Spread Box Beam.

Fabricator shall be responsible for location and design of lifting devices.

FOR LOCATION OF COIL TIES AT CONCRETE BENT DIAPHRAGMS, SEE SHEETS NO. B-003 AND B-007.

Note: Work this sheet with Sheet No. B-010.

3/4" Strain Tie Rods

Coil ties shall be held in place in the forms by slotted wire-setting-studs projecting thru forms. Studs are to be left in place or replaced with temporary plugs until beams are erected, then replaced by coil tie rods.

For location of coil ties at concrete bent diaphragms, see Sheets No. B-003 and B-007.

Note: Work this sheet with Sheet No. B-010.

3/4" (Min.)

( Typical)

1 1/8" (Optional)

1/4" (Typical)

1 1/8" (Optional)

A709 Grade 36)

COIL TIES

Cost of 3/4" coil tie rods placed in diaphragms will be considered completely covered by the contract unit price for Prestressed Concrete Spread Box Beam.

Coil tie rods shall be made in-place in the forms by slotted wire-setting-studs projecting thru forms. Studs are to be left in place or replaced with temporary plugs until beams are erected, then replaced by coil tie rods.

Details of Strand Instructions

Strands and reinforcement not shown for clarity.

Fabricator shall be responsible for location and design of lifting devices.

Note: Work this sheet with Sheet No. B-010.

6" 6" 2'-0"

15"

Lifting Loop

3/4" Drain Hole

1 1/8"

2'-6" long *

#5 Strand Tie Bar

6" #5 - U1 Bars (Typical)

4" #5 - U2 Bars (Typical)

3 - #5 - S6 (Typical)

2'-0"

51'-2"

6"

#5 Bars and #4 C Bars spaced as shown on Sheet No. B-010

Length of coil tie rods at exterior beams at end bents = 2'-0".

ALL BEAMS AT END BEAMS

DETAILS OF SPREAD BOX BEAMS

Note: This drawing is not to scale. Follow dimensions.

STRAND DETAILS AT BEAM ENDS

1 1/2" x 4" Welded Studs

Three

LOCATION OF LIFTING LOOPS

Bearing

End of Beam

Details of Coil Ties

Cost of #4/7" coil tie rods placed in diaphragms will be considered completely covered by the contract unit price for Prestressed Concrete Spread Box Beam.

Coil tie rods shall be made in-place in the forms by slotted wire-setting-studs projecting thru forms. Studs are to be left in place or replaced with temporary plugs until beams are erected, then replaced by coil tie rods.

FOR LOCATION OF COIL TIES AT CONCRETE BENT DIAPHRAGMS, SEE SHEETS NO. B-003 AND B-007.

Note: Work this sheet with Sheet No. B-010.

3/4" Strain Tie Rods

Coil ties shall be held in place in the forms by slotted wire-setting-studs projecting thru forms. Studs are to be left in place or replaced with temporary plugs until beams are erected, then replaced by coil tie rods.

FOR LOCATION OF COIL TIES AT CONCRETE BENT DIAPHRAGMS, SEE SHEETS NO. B-003 AND B-007.

Note: Work this sheet with Sheet No. B-010.

3/4" (Min.)

( Typical)

1 1/8" (Optional)

1/4" (Typical)

1 1/8" (Optional)

A709 Grade 36)
### Theoretical Slab Haunching Diagram (Estimated at 90 Days)

#### Conversion Factors for Beam Camber (Estimated at 90 Days):
- 0.25 pt. = 0.7125 x 0.5 pt.
- 0.50 pt. = 0.7125 x 1.0 pt.
- 0.75 pt. = 0.7125 x 1.5 pt.

#### Beam Camber Diagram

**Notes:**
- If beam camber is different from that shown in the camber diagram, in order to maintain minimum slab thickness, an adjustment of the slab haunches, an increase in slab thickness or a raise in grade uniformly throughout the structure shall be necessary. No payment will be made for additional labor or materials required for variation in haunching, slab thickness or grade.
- Concrete in the slab haunches is included in the Estimated Quantities for Slab on Concrete Beam.

#### Typical Slab Elevations Diagram

**Notes:**
- This drawing is not to scale. Follow dimensions.
**SECTION THRU SLAB**

- Full depth slab
- Symm. crown & structure

**Slab Construction Joint**
- Radiused edging tool
- Finish each side of joint with 1/4" radiused edging tool
- Adj. const. joint

**Key to:**
- Const. Jt.
- #5-S4
- #6-S2
- #5-S3
- #5-S5

**Notes:**
- For details of prestressed panels, see Sheet No. B-012.
- For reinforcement of Safety Barrier Curb not shown, see Sheets No. B-017 to B-019.
- For Plan of Slab Showing Reinforcement, see Sheet No. B-014.
- For theoretical bottom of slab elevations, girder camber diagram and theoretical slab hunching diagram, see Sheet No. B-013.
- Bridge slab shall be poured upgrade.

**Details:**
- Detail A
- Detail B

**Optional Shifting Top Bars at Barrier**
- Contractor may shift bar to #10 if needed.
- Contractor may shift or place bars as needed for #4 for in barrier (4 ft. bar spacing).

**Materials:**
- 8 1/4" Drip Groove (Typ.)
- Parabolic Crown
- Box Beam (4" min. bar spacing)
- Box Beam (4" min. bar spacing)
- Box Beam (4" min. bar spacing)

**Reinforcement:**
- Top bars at barrier
- Optional shifting

**Bridge Slab Replacement**

- Whitehead Road Bridge Replacement
- Project No. STP-5403 (675)
Notes:

1. Junction boxes shall be rigid non-metallic Schedule 40 ANSI approved for outdoor use. Painted boxes shall be approved for outdoor use. Junction boxes shall be installed at filled joints.
2. Expansion fittings shall be used where necessary. Junction boxes shall be installed at filled joints. Junction boxes shall be installed at filled joints.
3. All conduits shall be rigid non-metallic Schedule 40 ANSI approved for outdoor use. Painted boxes shall be approved for outdoor use. Junction boxes shall be installed at filled joints.
4. Junction boxes shall be rigid non-metallic Schedule 40 ANSI approved for outdoor use. Painted boxes shall be approved for outdoor use. Junction boxes shall be installed at filled joints.
5. Junction boxes shall be rigid non-metallic Schedule 40 ANSI approved for outdoor use. Painted boxes shall be approved for outdoor use. Junction boxes shall be installed at filled joints.
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8. Junction boxes shall be rigid non-metallic Schedule 40 ANSI approved for outdoor use. Painted boxes shall be approved for outdoor use. Junction boxes shall be installed at filled joints.
10. Junction boxes shall be rigid non-metallic Schedule 40 ANSI approved for outdoor use. Painted boxes shall be approved for outdoor use. Junction boxes shall be installed at filled joints.

*This drawing is not to scale. Follow dimensions.*
PART ELEVATION OF SAFETY BARRIER CURB

CONVENTIONAL-FORMED SAFETY BARRIER CURB

Notes:
1. This drawing is not to scale. Follow dimensions.
2. Slab = 2.27 sq. ft.

General Notes:
- Top of safety barrier curb shall be built parallel to grade with top edge normal to grade.
- Any exposed edges of safety barrier curb shall have either a 1/2-inch radius or a 3/8-inch bevel, unless otherwise noted.
- Concrete traffic barrier delineators will be considered completely covered by the contract unit price for safety barrier curb per linear foot.
- Measurement of safety barrier curb is to the nearest linear foot for each device, measured along the outside edge of the project in plan and as shown on the contract plans.
- Concrete traffic barrier delineators shall be placed on both sides of the safety barrier curb as shown in plan and as shown on the contract plans, and in accordance with Sec 617. Installations of delineators with base sections in the outer lane that are not in accordance with Sec 617 shall be at the contractor's option.
- Joint sealant and backer rods shall be in accordance with Sec 717 for silcone joint sealant for saw cut joints.
- Concrete traffic barrier delineators shall be furnished as one bar as shown in the contractor's option.
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Details:
- Top of safety barrier curb shall be built parallel to grade with top edge normal to grade.
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DETAILED OF GUARD RAIL ATTACHMENT

General Notes:
Concrete safety barrier detail drawings shall be placed on top of the safety barrier curb as shown on this drawing. All drawings shall be designed in accordance with Missouri Standard Plans 617.10 and in accordance with Sec 617. Delineators on bridges with two-lane, concrete traffic barrier delineators shall be placed on top of the safety barrier curb as shown on General Notes. Missouri Standard Plans 617.10 and in accordance with Sec 617. Delineators on bridges with two-lane, concrete traffic barrier delineators shall be placed on top of the safety barrier curb as shown on General Notes.

Reinforcing Steel:
Minimum clearance 4 reinforcing steel shall be 1 1/2" except as shown for bars embedded 1'4" end bent. Use a minimum lap of 2 1/2" between K9 and K10 or K13 bars.

CONVENTIONAL-FORMED SAFETY BARRIER CURB AT END BENTS

(Left barrier curb shown, right barrier curb similar)

DETAILS OF GUARD RAIL ATTACHMENT

Notes: This drawing is not 40 scale, follow dimensions.
General Notes:

- Top of safety barrier curb shall be built parallel to grade with barrier curb joints located 4" and centered to grade to provide.
- All exposed edges of safety barrier curb shall have either a 1/2-inch radius or a 3/8-inch bevel. Unless otherwise noted.

- Payment for all concrete and reinforcement, including wall plates, will be computed on the basis of $2,500 per linear foot for Safety Barrier Curb per linear foot.

- Concrete in the safety barrier curb shall be Class B-1.

Measurement of safety barrier curb is to the nearest linear foot for each structure, measured along the outside top of slab from end of wing to end of wing.

Concrete traffic barrier delineators shall be placed on top of the safety barrier curb, as shown on Missouri Standard Plans 617.10 and in accordance with Sec 617. Conduits on bridges shall be protected with conduit casing if required, and shall be considered completely covered by the contract unit price for safety barrier curb.

Joint sections and backer rods shall be in accordance with Sec 717 for saw cut and formed joints.

For slip-formed option, all sides of the safety barrier curb shall have a vertically broomed finish.

For details of Conduit System (left Barrier Curb only), see Sheet No. B-016.

Note: This drawing is not to scale. Follow dimensions.
Concrete Slab Only:

All concrete for the bridge approach slab shall be in accordance with Sec 503.4(2) 6000 psi. The reinforcing steel in the bridge approach slab shall be epoxy coated Grade 60 x 4#/ft.

Longitudinal construction joints in bridge approach slab shall be aligned with longitudinal construction joints in bridge slab.

Minimum diameters to reinforcing steel shall be 1 1/2" unless otherwise shown.

The reinforcing steel in the bridge approach slab shall be continuous, the minimum rebar reinforcing steel may be made continuous by top splicing the #6 bars 23". All joint filler shall be in accordance with Sec 507 for performance fiber expansion joint filler except as noted. Payment for furnishing all materials, labor and expenses as necessary to construct the approach slab and incidental work as shown on this sheet, covered by the contract unit price for Bridge Approach Slab (Minor Road) per square yard.

Payment for furnishing all materials, labor and expenses as necessary to construct the approach slab and incidental work as shown on this sheet, covered by the contract unit price for Bridge Approach Slab (Minor Road) per square yard.

See Missouri Standard Plans Drawing 609.00 for details of Type A Curb. A Seal joint between vertical face of bridge approach slab and a 3" 3/4" Joint Seals for Sill Cap and Filler Joint in accordance with Sec 437. Timers shall not be allowed with asphalt pavement.

Integral end bent shown, non-integral end bent similar.

DETAILED CONCRETE SLAB

Removal of timber header when concrete pavement is placed.

NOTE: ASPHALT APPROACH SLAB OPTION IS NOT ALLOWED.

General Notes:

Bridge approach slab shall be concrete slab. Asphalt slab is not allowed on this project. The contractor shall pour and finish the bridge slab before placing the bridge approach slab.

Concrete approach slab shall be continuous. The transverse saw cuts shall be 11#/2", unless otherwise shown. Minimum clearance to reinforcing steel shall be 1 1/2" unless otherwise shown.

Payment for furnishing all materials, labor and expenses as necessary to construct the approach slab and incidental work as shown on this sheet, covered by the contract unit price for Bridge Approach Slab (Minor Road) per square yard.

See Missouri Standard Plans Drawing 609.00 for details of Type A Curb. A Seal joint between vertical face of bridge approach slab and a 3" 3/4" Joint Seals for Sill Cap and Filler Joint in accordance with Sec 437. Timers shall not be allowed with asphalt pavement.
### BILL OF REINFORCING STEEL

#### SUPERTRUCTURE

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### BILL OF REINFORCING STEEL

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### Bill of Reinforcing Steel

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<th>Size (in.)</th>
<th>Mask Location</th>
<th>Length (in.)</th>
<th>Angle</th>
<th>Weight (lbs)</th>
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<td>5/8</td>
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<td>10.00</td>
<td>90°</td>
<td>1.50</td>
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**Notes:**
- This drawing is not to scale. Follow dimensions.
- The above bill of reinforcing steel is for the Whitehead Road Bridge Replacement Project.

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**Bill of Materials**

<table>
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<tr>
<th>Description</th>
<th>Size</th>
<th>Length</th>
<th>Weight (lbs)</th>
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<tbody>
<tr>
<td>Slab Bond</td>
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<td>Barrier Curve</td>
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<tr>
<td>Slip Form</td>
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**Dimensions:**

- Slab Bond: 5.00 in. length, 90° angle, 0.50 lbs weight.
- Barrier Curve: 7.00 in. length, 90° angle, 1.00 lbs weight.
- Slip Form: 10.00 in. length, 90° angle, 1.50 lbs weight.

---

**Drawing Scale:**

- 1/50 = 1'-0".

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**Bill of Reinforcing Steel**

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**Dimensions:**

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- Slip Form: 10.00 in. length, 90° angle, 1.50 lbs weight.

---

**Drawing Scale:**

- 1/50 = 1'-0".
**PART PLAN SHOWING PILE NUMBERING FOR RECORDING AS-BUILT PILE DATA**

<table>
<thead>
<tr>
<th>Pile No.</th>
<th>Length in (ft)</th>
<th>Computed Axial Nominal Compressive (kips)</th>
<th>Computed Axial Compressive (kips)</th>
<th>Remarks</th>
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**Notes:**
- This sheet to be completed by County construction personnel.

---

**As-Built Pile Data**

- Include in remarks column.
- Pile type and grade.
- Driven 30 proof load refused.
- This drawing is not to scale. Follow dimensions.