Environmental Protection (#2)

Mobilization

Bridge Painting (Organic Zinc w/ Acrylic System)

Bridge Painting Calcium System / Alkyd System

Bridge Repair

<table>
<thead>
<tr>
<th>ITEM</th>
<th>QUANTITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>As-built</td>
<td>Lump Sum</td>
</tr>
<tr>
<td>Environmental Protection (#1)</td>
<td>Lump Sum</td>
</tr>
<tr>
<td>Environmental Protection (#2)</td>
<td>Lump Sum</td>
</tr>
<tr>
<td>Bridge Repair Organic Zinc w/ Acrylic System</td>
<td>Lump Sum</td>
</tr>
<tr>
<td>Bridge Repair Calcium System / Alkyd System</td>
<td>Lump Sum</td>
</tr>
<tr>
<td>Bridge Repair</td>
<td>Lump Sum</td>
</tr>
</tbody>
</table>

BOLT(2) All bolts, nuts, and hardened washers shall conform to the heavy hex structural requirements of ASTM A325, Type 1, and carbon steel shall be used. All structural welds shall be made in accordance with the latest edition of AWS F598. No burnouts will be made for high strength bolts used for temporary or erection connections. This work is subject to the bid item, "Bridge Repair, Lump Sum." 8)

BOLTED CONNECTIONS: All fasteners should have structural bolts for the main connections. The fasteners are to be used per the latest revision of the bid item, "Bridge Repair, Lump Sum." 8)

Use Direct Tension Indicators (DTI) on all high strength bolts. Place the DTI under the bolt head and turn the nuts tightly. This method is preferred wherever possible. Place the protrusions on the DTI's under the end of the bolt head. Place a hardened washer under the nut. See KDOT Specifications.

EXISTING STRUCTURE: Plans of the existing structure are on file and available for inspection by qualified architects at the State Bridge Office, KDOT, Eisenhower State Office Building, 100 SW Harrison, Topeka, KS.

EXISTING DIMENSION VERIFICATION: Dimensions of the existing structure are based on old plans. Verify by field measurement, the as-built dimensions of the existing structure and submit such verification in writing to the Engineer. The verification will include sketches, drawings, photographs and measurements as needed to clearly define the actual dimensions that will be incorporated in the new construction.

ENVIRONMENTAL PROTECTION: Use protection as shown in the KDOT Specifications. The Environmental Protection Classification of Class A. Protection is required for sounding and painting approximately 665 sq. ft. of interior confined space surfaces and 2,030 sq. ft. of exterior surfaces.

LEAD CONTENT TEST: This structure contains lead paint.

The approximate area of existing bridge steel to be painted is 2,695 sq. ft. This is for Bridge Painting (Calcium Sulfonate / Alkyd System) as shown in plans is included in the bid item, "Bridge Repair," Lump Sum. All materials removed from the existing structure shall be saved and included in the bid item, "Bridge Repair," Lump Sum. All materials removed from the existing structure shall save and include in the bid item, "Bridge Repair," Lump Sum.

TRAFFIC CONTROL: Traffic Control required shall be per KDOT Specifications. Only one lane of the bridge shall be closed at a time. Lane closures are only allowed between Robe and San. Lane closures shall require flagger control or Flagger and pilot car, and must be coordinated with KDOT. The area shown in plans is included in the bid item, "Bridge Repair," Lump Sum. A Combined Professional Engineer is not required.

TEMPERATURE: The design temperature for all dimensions is 60°F.

KDOT has a Joint Use Agreement for an area under the west approach span. Contractor shall coordinate with the owner listed below prior to mobilization or performing work in this area.

BENT NO. 92-52-18.48 (026) (018) (008)

KANSAS DEPARTMENT OF TRANSPORTATION

BENT NO. 92-52-18.48 (026) (018) (008)

BREED INDIAN, Paint interior areas of structural steel on the arches shown on "Locations of Bridge Painting at Arches" sheet and all structural steel at hinges near Bent No. 4 and Bent No. 13 to the limits shown on "Bridge Repair" Detail sheet in conformance with KDOT Specifications. The structural steel has a paint history of:

2) Repaint system - Epoxy-Urethane  Date: 1995.
3) TCLP value is 148 mg/L  Report Date: 03/2010.
4) The area shown on "Locations of Bridge Painting at Arches" sheet is included in the bid item, "Bridge Repair, Lump Sum." 8)

KANSAS DEPARTMENT OF TRANSPORTATION

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### Bridge Painting Areas

<table>
<thead>
<tr>
<th>Location No.</th>
<th>Description</th>
<th>Approximate Area (Sq. Ft.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Clean and Paint Interior of Tie Girder A</td>
<td>65</td>
</tr>
<tr>
<td>2</td>
<td>Clean and Paint Interior of Tie Girder B</td>
<td>35</td>
</tr>
<tr>
<td>3</td>
<td>Clean and Paint Interior of Stringer A</td>
<td>30</td>
</tr>
<tr>
<td>4</td>
<td>Clean and Paint Interior of Stringer B</td>
<td>30</td>
</tr>
<tr>
<td>5</td>
<td>Clean and Paint Interior of Stringer C</td>
<td>30</td>
</tr>
<tr>
<td>6</td>
<td>Clean and Paint Interior of Stringer D</td>
<td>30</td>
</tr>
<tr>
<td>7</td>
<td>Clean and Paint Interior of Floor Beam</td>
<td>70</td>
</tr>
<tr>
<td>8</td>
<td>Clean and Paint Interior of Floor Beam</td>
<td>70</td>
</tr>
<tr>
<td>9</td>
<td>Clean and Paint Interior of Floor Beam</td>
<td>70</td>
</tr>
<tr>
<td>10</td>
<td>Clean and Paint Interior of Floor Beam</td>
<td>70</td>
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<tr>
<td>11</td>
<td>Clean and Paint Interior of Floor Beam</td>
<td>70</td>
</tr>
<tr>
<td>12</td>
<td>Clean and Paint Interior of Tie Girder A</td>
<td>20</td>
</tr>
<tr>
<td>13</td>
<td>Clean and Paint Interior of Tie Girder B</td>
<td>20</td>
</tr>
<tr>
<td>14</td>
<td>Clean and Paint Interior of Tie Girder C</td>
<td>20</td>
</tr>
<tr>
<td>15</td>
<td>Clean and Paint Interior of Tie Girder D</td>
<td>20</td>
</tr>
</tbody>
</table>

### Bridge Painting Areas

<table>
<thead>
<tr>
<th>Location No.</th>
<th>Description</th>
<th>Approximate Area (Sq. Ft.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>16</td>
<td>Clean and Paint Stringers and Floor Beam</td>
<td>175</td>
</tr>
<tr>
<td>17</td>
<td>Clean and Paint Stringers and Floor Beam</td>
<td>175</td>
</tr>
<tr>
<td>18</td>
<td>Clean and Paint Stringers and Floor Beam</td>
<td>175</td>
</tr>
<tr>
<td>19</td>
<td>Clean and Paint Stringers and Floor Beam</td>
<td>175</td>
</tr>
<tr>
<td>20</td>
<td>Clean and Paint Stringers and Floor Beam</td>
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<tr>
<td>21</td>
<td>Clean and Paint Stringers and Floor Beam</td>
<td>175</td>
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<tr>
<td>22</td>
<td>Clean and Paint Stringers and Floor Beam</td>
<td>175</td>
</tr>
<tr>
<td>23</td>
<td>Clean and Paint Stringers and Floor Beam</td>
<td>175</td>
</tr>
<tr>
<td>24</td>
<td>Clean and Paint Stringers and Floor Beam</td>
<td>175</td>
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<td>25</td>
<td>Clean and Paint Stringers and Floor Beam</td>
<td>175</td>
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<tr>
<td>26</td>
<td>Clean and Paint Stringers and Floor Beam</td>
<td>175</td>
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<tr>
<td>27</td>
<td>Clean and Paint Stringers and Floor Beam</td>
<td>175</td>
</tr>
<tr>
<td>28</td>
<td>Clean and Paint Stringers and Floor Beam</td>
<td>175</td>
</tr>
</tbody>
</table>

**Note:** Locations and areas of cleaning and painting are approximated. Approximately 10% extra area was added to each location to account for growth while blast cleaning. Extents of cleaning and painting will be determined by the Engineer.

- **Total Includes:**
  - 665 Sq. Ft. for Interior Cleaning and Painting
  - 575 Sq. Ft. for Exterior Cleaning and Painting

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**KANSAS DEPARTMENT OF TRANSPORTATION**

**State:** Kansas

**Project No.:** 92-52 KA-5619-01

**Year:** 2020

**Sheet No.:** 4

**LOCATIONS OF BRIDGE PAINTING AT ARCHES**

Centennial Bridge Over Missouri River

Br. No. 92-52 BL-48 (226)

Leavenworth Co.
PARTIAL PLAN AT HINGE NEAR BENT NO. 4

Notes:
Existing structure is indicated by a light dashed line. Extents of cleaning and painting are indicated by a thick, solid line.

* See "Section A-A" for removal and replacement details.

PARTIAL PLAN AT HINGE NEAR BENT NO. 13

Notes:
Existing structure is indicated by a light dashed line. Extents of cleaning and painting are indicated by a thick, solid line.

* See "Section A-A" for removal and replacement details.

SECTION A-A - REMOVAL
Girder A shown, Girder B similar.

SECTION A-A - REPAIR
Girder A shown, Girder B similar.

Notes:
All new angles and bent plates shall be A709 Grade 36 steel. All materials, labor, incidentals and A325 bolts necessary to install the angles and plates shall be included in the bid item "Bridge Repair".

Welding to the Girder is not allowed. The Contractor shall submit repair and/or replacement procedures and sequence to the Engineer for approval before beginning any repairs or replacements.

The Contractor shall field verify all dimensions before fabrication.
1) Design Speed: Those items delegated to temporary traffic control should be
designed and installed using the posted/legible speed of the roadway prior to
work starting.

2) Minimum Lane Width: Lane widths shall be a minimum of 11' (measured
between centerlines of pavement markings) or as shown on the plans, or as
directed by the engineer. A lane width less than 11' may require restricted
roadway width signing.

3) Consideration should be made to separate pedestrian and, if needed, bicycle
movements from both work site activity and vehicular traffic. Unless a
reasonable safe route that does not involve crossing the roadway can be
provided, pedestrians should be appropriately directed with advance signing
that encourages them to cross to the opposite side of the roadway. In urban
and suburban areas with high vehicular traffic volumes, these signs should be
placed at intersections (other than midblock locations) so that pedestrians
are not confronted with midblock work sites that will induce them to attempt
skirting the work site or entering a midblock crossing.

4) When existing pedestrian facilities are disrupted, closed, or relocated, the
temporary facilities shall be detectable and include accessibility features
consistent with the features present in the existing pedestrian facility.

5) When the driving surface open to traffic is milled or is a temporary surface
made of loose material, or when directed by the engineer a W8-15 (Grooved
Pavement) or W8-7 (Loose Gravel) sign shall be used on mainline approaches.
This sign should be placed a "C" distance after the W20-1 (Road Work Ahead)
sign. A W8-15p motorcycle plaque shall be used to supplement the W8-15 or
W8-7 sign. All signs shall be displayed as long as the condition is present.

6) Alternative temporary rumble strip options may be available. Please contact
the Temporary Traffic Control Unit for more information at 785-296-1179 or
785-296-1183.

**TYPICAL WORK ZONE COMPONENTS**

- **When concrete barrier system is used, portable channelizing devices
  are not needed along the barrier section.**

**Taper Formulas:**

- Shoulder Taper = 1/3 L
- Shifting Taper = 1/2 L

**Channelizing Device**

- **Pavement Marking (Temporary)**
- **Inertial Barrier System**
- **Concrete Safety Barrier System**

**Buffer Space**

- **Length [ft]**
  - 115
  - 125
  - 200
  - 250
  - 300
  - 350
  - 400

**Minimum advance warning sign spacing (in feet):**

<table>
<thead>
<tr>
<th>SPEED (MPH)</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>URBAN (40 MPH OR LOWER)</td>
<td>100</td>
<td>700</td>
<td>700</td>
</tr>
<tr>
<td>URBAN (45 MPH OR HIGHER)</td>
<td>350</td>
<td>350</td>
<td>350</td>
</tr>
<tr>
<td>RURAL (55 MPH OR LOWER)</td>
<td>500</td>
<td>500</td>
<td>500</td>
</tr>
<tr>
<td>RURAL (60 MPH OR HIGHER)</td>
<td>750</td>
<td>750</td>
<td>750</td>
</tr>
<tr>
<td>EXPRESSWAY/INTERSTATE</td>
<td>1000</td>
<td>1500</td>
<td>2000</td>
</tr>
</tbody>
</table>

4) **Posted speed prior to work starting**

The minimum spacing between signs shall be no less than 100, unless directed by the engineer.

The spacing between any signs may be increased beyond the minimum values in the table above as approved by the engineer in order to maximize visibility.

4) **Posted speed prior to work starting**

Neither work activity nor storage of equipment, vehicles, or material should occur in the
buffer space. When a protection vehicle is placed in advance of the work zone, only the
space upstream of the vehicle constitutes the buffer space.

If temporary concrete safety barrier system is used to separate approaching traffic from
the work space, the barrier system shall be considered part of the activity area. A
full lane width should be available throughout the length of the buffer space. See typical
work zone components above.
The stripes shall slope downward to the traffic side for channelization.

For rails less than 36" long, 4" wide stripes may be used.

The direction indicator barricade shall be used in series to direct the motorist into the intended lane of travel.

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FIGURE 1: TYPICAL SIGNING FOR ROAD CLOSURE (MAINLINE OR SIDE ROAD)

Note: Signs shown for one approach to work zone.

FIGURE 2: TYPICAL SIGNING FOR SIDE ROAD OPEN

Note: Signs shown for one approach to intersection (work zone)

FIGURE 3: TYPICAL SIGNING FOR ROAD CLOSURE - LOCAL TRAFFIC ACCESS

Note: Signs shown for one approach to work zone.

ROAD CLOSED GENERAL NOTES

As shown in Figure 1, at the point where thru traffic must detour and local traffic can proceed to the work zone, the R11-3A (ROAD CLOSED # MILES AHEAD LOCAL TRAFFIC ONLY) or R11-4 (ROAD CLOSED LOCAL TRAFFIC ONLY or ROAD CLOSED TO THRU TRAFFIC) sign shall be used with Type 3 barricades (winged position), placed on the shoulders of roadway.

As shown in Figure 3, when local traffic must be allowed access into the work zone, Type 3 barricades shall be used to close the entire width of the pathway. A second line of Type 3 barricades shall be placed just beyond the last access point in the work zone, to complete the closure of the roadway.

The R11-3A (ROAD CLOSED # MILES AHEAD LOCAL TRAFFIC ONLY) sign shall be used when the distance to the point of complete closure of the roadway is less than 1 mile.

The R11-4 (ROAD CLOSED # MILES AHEAD LOCAL TRAFFIC ONLY) sign shall be used when the distance to the point of complete closure of the roadway is 1 mile or greater.

The words "THRU TRAFFIC" (or "THRU TRAFFIC") may be substituted for the words "ROAD CLOSED" on the R11-3A or R11-4 sign as applicable.
See TE710 for Additional Details and Requirements.

Notes:

- Place two bolts at both ends of the splice through the holes nearest the ends of the splice.
- Use manufacturer recommended spacers over the bolts between the spliced pieces of U-Channel.

Details for 2", 2 1/2", or 2 3/4", sign posts:
Place bolts in the same corner along each sign post.
Notes:

No traffic control is required if the Work Space is located outside of the clear zone.

For operations of 60 minutes or less, all signs and channelizing devices may be eliminated if a vehicle with high-intensity rotating, flashing, oscillating, or strobe lights is used.

4. Omit taper if paved shoulder is less than 6’ wide.
Use TE73 for flagger or pilot car on roadways with concrete shoulders greater than 8 ft. Noted:

Trucks hauling material to the project should STOP at the Flagger. After stopping, upon approval of the Engineer, trucks may be allowed to move around the Flagger.

Place a Flagger at all highway and major collector intersections and at grade railroads intersections with lights and gates in the work space to control traffic crossing the tracks to the left of the gate arm. The need for a Flagger at minor side road intersections shall be determined by the Engineer. Place a W20-7 (Flagger symbol) sign on each side road that is controlled by a Flagger.

Existing signs shall not be covered or removed between Flagger stations.

Temporary rumble strips may be used in lieu of road in channelizing devices when the roadway is less than or equal to 30' including paved shoulders. When the existing at-cumstances exist, the Area Engineer may select to eliminate both the road in channelizers and the rumble strips.

- Minimum six (6) channelizers spaced at 30' intervals.
- Optional rumble strips may be placed. One set between the W20-1 and W20-4, and one set between the R4-1 and W20-4, on each approach.
- Not required on substantial maintenance projects [10].
- The KG20-5 (WAIT FOR PILOT CAR) sign shall be mounted on an approved portable support and not attached to the existing stop sign post.

The KG20-5 sign shall be placed immediately in front of the existing stop sign, a minimum of 12" below the bottom of the stop sign. The sign should be removed or covered when there is no pilot car.

Typical signing for highway or major collector approach to work space.

Typical signing for a minor side road approach to work space.

Channelizing Devices
- Ahead, 1500 ft. or 1 Mile
- Ahead, 1500 ft., 750 ft., or 1/2 Mile
- Speed to be determined by the Engineer
- Type A Low Intensity Warning Light
- Temporary Portable Rumble Strips

Roadway with Gate Arms

Centerline Between R4-1 & Flagger

Lead in Channelizing Devices Connection on W20-1 & Flagger

Approach to Work Space

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Typical signing for highway or major collector approach to work space.

Typical signing for a minor side road approach to work space.

Channelizing Devices
- Ahead, 1500 ft. or 1 Mile
- Ahead, 1500 ft., 750 ft., or 1/2 Mile
- Speed to be determined by the Engineer
- Type A Low Intensity Warning Light
- Temporary Portable Rumble Strips

Roadway with Gate Arms

Centerline Between R4-1 & Flagger

Lead in Channelizing Devices Connection on W20-1 & Flagger

Approach to Work Space
### Summary of Traffic Control Devices

All traffic control devices shall be placed in accordance with the applicable KDOT Traffic Control Standards. The contractor shall provide all signs and other traffic control devices for proper traffic control of all construction activities. Quantities listed are estimates only. Contractor operations may require additional signs and traffic control devices. This will be subsidiary to the bid item "Traffic Control (Lump Sum)."

#### Recapitulation of Quantities

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work Zone Signs (0 to 9.25 Sq.Ft.)</td>
<td>Each</td>
<td>Per Day</td>
</tr>
<tr>
<td>Work Zone Signs (9.26 to 16.25 Sq.Ft.)</td>
<td>Each</td>
<td>Per Day</td>
</tr>
<tr>
<td>Work Zone Signs (16.26 &amp; Over)</td>
<td>Each</td>
<td>Per Day</td>
</tr>
<tr>
<td>Work Zone Barricades (Type 3 - 4' to 12')</td>
<td>Each</td>
<td>Each</td>
</tr>
<tr>
<td>Channelizer (Fixed)</td>
<td>Each</td>
<td>Each</td>
</tr>
<tr>
<td>Channelizer (Portable)</td>
<td>Each</td>
<td>Each</td>
</tr>
<tr>
<td>Work Zone Warning Light (Red Type &quot;B&quot; High Intensity)</td>
<td>Each</td>
<td>Each</td>
</tr>
<tr>
<td>Work Zone Warning Light (Type &quot;A&quot; Low Intensity)</td>
<td>Each</td>
<td>Each</td>
</tr>
<tr>
<td>Arrow Display</td>
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<tr>
<td>Portable Changeable Message Sign</td>
<td>Each</td>
<td>Each</td>
</tr>
<tr>
<td>Prevented Marking (Temporary)</td>
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<td>Each</td>
</tr>
<tr>
<td>4&quot; Solid (Type I)</td>
<td>Sta./Line</td>
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</tr>
<tr>
<td>4&quot; Solid (Type II)</td>
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<td>4&quot; Broken (8.0') (Type I)</td>
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<tr>
<td>4&quot; Broken (8.0') (Type II)</td>
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</tr>
<tr>
<td>4&quot; Broken (3.0') (Type I)</td>
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</tr>
<tr>
<td>4&quot; Broken (3.0') (Type II)</td>
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</tr>
<tr>
<td>4&quot; Dotted Extension (Type I)</td>
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</tr>
<tr>
<td>4&quot; Dotted Extension (Type II)</td>
<td>Sta./Line</td>
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<tr>
<td>Solid Line Masking Tape</td>
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</tr>
<tr>
<td>Flexible Raised Pavement Marker (4&quot; Broken (8.0')</td>
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<td></td>
</tr>
<tr>
<td>Flexible Raised Pavement Marker (4&quot; Broken (3.0')</td>
<td>Sta./Line</td>
<td></td>
</tr>
<tr>
<td>Pavement Marking Removal</td>
<td>Lin. Ft.</td>
<td></td>
</tr>
<tr>
<td>Work Zone Sign (Special) (4 to 12')</td>
<td>Each</td>
<td>Each</td>
</tr>
<tr>
<td>Work Zone Sign (36.25 Sq.Ft. &amp; Less)</td>
<td>Each</td>
<td>Each</td>
</tr>
<tr>
<td>Work Zone Sign (Special) (16.25 SQ.Ft. &amp; Over)</td>
<td>Each</td>
<td>Each</td>
</tr>
<tr>
<td>Traffic Sign Installation (Temporary)</td>
<td>Lump Sum</td>
<td></td>
</tr>
<tr>
<td>Traffic Control (Fixed Set-Up)</td>
<td>Lump Sum</td>
<td></td>
</tr>
<tr>
<td>Temporary Barricade</td>
<td>#</td>
<td>Each</td>
</tr>
</tbody>
</table>
| **NOTE:** The portable changeable message signs shall be placed 5 working days before work starts, informing the traveling public of the project. The notice to proceed shall be issued when the signs are placed, but no other work shall be allowed.