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</tr>
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</table>

### SUMMARY OF QUANTITIES

**SOUTHBOUND U.S. 69 OVER MARAIS DES CYGNES RIVER**  
**BRIDGE NO. 69-54-15.19 (058)**

<table>
<thead>
<tr>
<th>ITEM</th>
<th>UNITS</th>
<th>TOTAL QUANTITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rock Excavation</td>
<td>Cu. Yd.</td>
<td>3</td>
</tr>
<tr>
<td>Concrete Pavement (10&quot;Uniform)(AE)(Br. App.)</td>
<td>Sq. Yd.</td>
<td>11</td>
</tr>
<tr>
<td>Removal of Existing Structures</td>
<td>Lump Sum</td>
<td>L.S.</td>
</tr>
<tr>
<td>Concrete (Grade 4,0XAE)(SA)</td>
<td>Cu. Yd.</td>
<td>7.4</td>
</tr>
<tr>
<td>Reinarcing Steel (Grade 60XEPoxy Coated)</td>
<td>Lbs.</td>
<td>1,350</td>
</tr>
<tr>
<td>Expansion Joint (Strip Seal Assembly)</td>
<td>Lin. Ft.</td>
<td>94</td>
</tr>
<tr>
<td>Area Prepared for Patching</td>
<td>Sq. Yd.</td>
<td>10</td>
</tr>
<tr>
<td>Area Prepared for Patching (Full Depth)</td>
<td>Sq. Yd.</td>
<td>5</td>
</tr>
<tr>
<td>Reinarcing Steel (Repair)(Grade 60XEPoxy)(Set Price)</td>
<td>Lbs.</td>
<td>1</td>
</tr>
<tr>
<td>Mobilization</td>
<td>Lump Sum</td>
<td>L.S.</td>
</tr>
<tr>
<td>Mobilization (DBE)</td>
<td>Lump Sum</td>
<td>L.S.</td>
</tr>
</tbody>
</table>

See Traffic Control Summary of Devices & Recap of Quantities sheet for traffic control and temporary pavement marking items.

- ☒ Includes removal of designated portion of the approach slab at Abutment No. 1.
- ✗ Includes concrete and reinforcing steel for patching the approach slab at Abutment No. 1.
- ✩ Includes removal of concrete from designated portions of the slab and abutment backwalls near the expansion joints.
- ◉ Includes concrete near the expansion joints.
- △ Includes reinforcing steel near the expansion joints.
GENERAL NOTES

EXISTING STRUCTURE: Plans of the existing structure are on file and available for inspection by qualified bidders at the State Bridge Office, KDOT, Eisenhower State Office Building, 700 SW Harrison, Topeka, KS. All plans at the site will become the property of the Contractor and be removed prior to the final acceptance by the Engineer. The plans will be returned to the State Office Building.

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

TEMPORARY CONSTRUCTION LOADS: The Contractor will not stock pile construction materials, debris/rubble or place equipment weighing more than 20 tons or greater than bridge posted load limits on the bridge without prior written approval by the KDOT Area Engineer. For bridges with high traffic volumes, the Contractor will provide plans showing the location, quantity and weight of the proposed materials, debris or equipment weighing more than 20 tons or greater than bridge posted load limit. These plans will bear the Seal of the Contractor’s Engineer before approval is granted. The Contractor’s Engineer will use AASHTO Specifications for limitations on structural capacities, as the structure is found in the field.

DIMENSIONS: All dimensions shown on the design plans are horizontal dimensions unless otherwise noted. Make necessary allowances for roadway grade and cross slope.

QUANTITIES: Items not listed separately in the Summary of Quantities are subsidiary to other items in the proposal.

BROKEN CONCRETE: Waste the broken concrete from the existing bridge on sites provided by the Contractor and approved by the Engineer. This work shall be subsidiary to the bid item “Removal of Existing Structure”.

REMOVAL OF EXISTING STRUCTURE: The bid item “Removal of Existing Structure”, Lump Sum, includes the removal of designated portions of the slab and abutment backwall near the expansion joints, and any other portions designated for removal as shown on the plans.

At the concrete removal area clearly mark the location of the existing girder top flanges on top of the existing deck concrete before sawing or removing any concrete. Concrete sawing shall be limited to a maximum depth of 2 inches. Do not use drop-type pavement breakers. Do not use a hoe or ram directly above any girder or within 1’-0” of either edge of a girder top flange. Use a jackhammer no heavier than 15 lb. to remove concrete above and within 1’-0” of either side of a girder top flange.

Damage to the existing structural steel caused by procedures not conforming to the above recommendations shall be repaired as directed by the Engineer at the Contractor’s expense (no cost to the State). Any costs incurred for testing or Engineering evaluations will be included in the Contractor’s expense for repair.

All materials removed from the existing structure shall become the property of the Contractor and be removed from the site.

ROCK EXCAVATION: Rock excavation shall include the removal of designated portions of the approach slab at Abutment No. 1.

REINFORCING STEEL: All reinforcing steel dimensions are to the centerline of bars unless otherwise noted. All reinforcing steel shall conform to the requirements of ASTM A615, Grade 60. Where non-coated bars come in contact with epoxy coated bars, they need not be coated.

REPAIR OF EPOXY COATED REINFORCING STEEL: Replace any epoxy coating that is removed from the reinforcing steel during the concrete removal process. Thoroughly clean damaged areas with a stiff wire brush to remove dirt and damaged coating. Apply an approved patching material in accordance with manufacturer’s recommendations. Avoid dripping any patching material onto existing concrete that will have new concrete placed against it. See KDOT Specifications.

CONCRETE: Concrete is bid as Concrete (Grade 40) (SA) (SA). Bevel all exposed edges of all concrete with a 3/4” triangular molding, except as otherwise noted on the plans. Concrete mix shall be designed using KDOT prequalified materials and shall attain design strength before the bridge is to be open to traffic.

EPOXY BONDING AGENT: Prepare all existing concrete surfaces which will be in contact with new concrete with an approved Epoxy Bonding Agent in accordance with the manufacturer’s recommendations. This is subsidiary to the bid item “Expansion Joint (Strip Seal Assembly)”.

DESIGN SPECIFICATIONS: AASHTO Specifications, 2002 Edition and latest Interim Specifications, Load Factor Design

UNIT STRESSES:
Concrete (Grade 40) (AE) (SA) f’c = 4 ksi
Reinforcing Steel (Grade 60) (Epoxy Coated) fy = 60 ksi

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

STRIP SEAL: The strip seal extrusions in the bridge deck shall be "Wabo Type R" steel shape or an approved equivalent. Material for the extrusions shall be solid extruded or hot rolled steel. No weathering steel or aluminum will be allowed. Grips shall be prime-coated with an inorganic zinc primer. The gland cavity shall not be prime coated. The Strip Seal gland shall be a Model SE-500 capable of 5” total movement. The gland shall accommodate a maximum opening of at least 3 ½” on a 27”(4’7”) skew (3 ½” perpendicular to the joint) at Abutment No. 1. The gland shall accommodate a maximum opening of at least 4 ½” on a 20” (3’8”) skew (4 ½” perpendicular to the joint) at Abutment No. 2. The gland shall be factory molded for horizontal bends of 15° or more. The pay length for the strip seal assembly is based on out to out of the extrusion.
GENERAL NOTES

DEMOLITION PLANS: This is a Category A Demolition. Submit detailed Demolition Plans to the Field Engineer per KDOT Specifications. No Demolition work will begin without approved Demolition Plans. A Licensed Professional Engineer is not required.

REINFORCING IN BRIDGE DECK: Care should be exercised to prevent cutting, stretching or damaging exposed reinforcing steel. Extreme care should be exercised to avoid breaking the bond between the reinforcing steel and concrete where bars are partially exposed yet remain anchored in sound concrete. Reinforcing steel damaged, cut or deteriorated shall be replaced as directed by the Engineer. Do not wedge chipping hammer bit against reinforcement. See table for replacement bar size and minimum splice length required. Replacement of bars damaged by the Contractor shall be at no cost to the State.

WELDING: Material, Fabrication and Construction shall conform to KDOT Specifications. On the shop drawings, show a code or symbol in the tail of the weld symbol that refers to an approved, pre-qualified weld procedure.

SAW CUTS: All saw cuts shall be subsidiary to other items in the contract.
Dimensions measured along Profile Grade Line

- Clean Bearing Seat
- Seal Joint
- Remove and Replace Strip Seal Assembly
- Remove and Reconstruct Bridge Approach Slab

Plan
131'-164'-131' Continuous Composite Steel Plate Girder Spans (Skew Varies)
Abutments on Pile Footings, Column Bent Piers, 40'-0' Roadway

Notes:
- Construction shall be phased. One lane of southbound US-69 shall remain open to traffic at all times.
- Dimensions shown are conversions of metric dimensions on 2005 bridge plans.

Reseat the joint at the End of Wearing Surface and between the wingwall and approach slab. Seal the joint between the approach slab patch and the existing approach slab. This work shall be subsidiary to the bid item "Concrete Pavement (10" Uniform/ACI/Bd. App.)".

+ Clean all dirt and debris off the top of the bearing seat. This work shall be subsidiary to the bid item "Removal of Existing Structures".

KANSAS DEPARTMENT OF TRANSPORTATION
PROJ. NO. 69-54 KA-5532-01
LINN CO.
BRIDGE NO. 69-54-15 (058)
**PLAN ABUTMENT NO. 1**

(Abutment No. 2 similar, except as shown)

---

- **Phase 1 Removal**
- **Phase 2 Removal**

---

**LEGEND**

---

**REMOVAL DETAILS**

---

**KANSAS DEPARTMENT OF TRANSPORTATION**

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**PROJ. NO. 69-54 KA-5532-01**

---

**BRIDGE NO. 69-54-1519 (058)**

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**LINN CO.**

---

**5/1/2020**

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**I:\KAC\PRJ\0000170595\DGNSHEETS\06_Br058 Removal Details_01.dgn**

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**Plot Date:**

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**5/1/2020**

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**Plot File:**

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**5/1/2020**

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**16105 W. 113th Street**

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**Suite 107**

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**Lenexa, KS 66219**

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**SECTION A-A**

Note:
All existing reinforcing to remain shall be thoroughly cleaned. Reinforcing steel damaged, cut or deteriorated shall be replaced as directed by the Engineer.

**SECTION B-B**

(About No. 1 shown, About No. 2 similar)

This work is included in the item "Rock Excavation".

Note:
Existing reinforcing to remain shall be thoroughly cleaned. Reinforcing steel damaged, cut or deteriorated shall be replaced as directed by the Engineer.

**REMOVAL DETAILS**

<table>
<thead>
<tr>
<th>REMOVAL DETAILS</th>
<th>PROJ. NO. 69-54 KA-5532-01</th>
<th>KANSAS DEPARTMENT OF TRANSPORTATION</th>
</tr>
</thead>
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<tr>
<td>BRIDGE NO. 69-54-1519 (058)</td>
<td>Linn Co. 7</td>
<td></td>
</tr>
</tbody>
</table>
Approach Slab

**Bridge Slab**

**Approach Slab**

1'-0"

40'-0"

(Phase 1)

20'-0"

(Phase 2)

20'-0"

**Corral Rail**

**Face of Splice (Typ.)**

**Mechanical Bar**

**Longitudinal Center Joint**

1'-0"

24'-9"

**Center Joint**

**Longitudinal**

2'-6"

**spa. at**

2'-6"

1'-8"

**Abut. No. 1**

**Abut. No. 2**

**Exp. Joint**

2-#5A3 at Abut. No. 1

2-#5A2 (Abut. 2)

2-#5A1 (Abut. 1)

2-#5A22 (Abut. 2)

2-#5A12 (Abut. 1)

#6S21 (Abut. 2)

#6S11 (Abut. 1)

#6A22 (Abut. 2)

#6A12 (Abut. 1)

#6A21 (Abut. 1)

#6A11 (Abut. 1)

#6D1

**Backer Rod**

**Joint Sealant**

**SAWCUT DETAIL**

**PLAN ABUTMENT NO. 1**

(Aboutment No. 2 similar, except as shown)

**Tie bar to existing longitudinal reinforcing steel in Top of Slab**

(about 1'-8" ctrs. at Abut. No. 1, about 1'-7" ctrs. at Abut. No. 2)

**Cut bars in field as needed to provide 1" min. clear to corral rail posts.**

**Tie bar to existing vertical reinforcing steel at about 1'-0" ctrs.**

**Reseal the joint at the End of Wearing Surface end between the wingwall and approach slab. Seal the joint between the approach slab patch and the existing approach slab. Use hot pour joint filler or other approved material. This work shall be subsidiary to the bid item “Concrete Pavement (10" Uniform)(AE)(Br. App.).”**

**At Abutment No. 1, Phase 1, if the Contractor elects to pour the approach slab patch concurrently with the expansion device pour, the Contractor shall sawcut and seal these joints after the concrete has cured.**

**Contractor shall sawcut and seal these joints after concurrently with the expansion device pour.**

**This work is included in the item “Concrete Pavement (10" Uniform)(AE)(Br. App.).”**

**Cut bars in field as needed to provide 1" min. clear to corral rail posts.**
**SECTION C-C**

(About. No. 1 shown, About. No. 2 similar)

- **Exp. Joint**
  - Abut. 1 & 2
  - 1'-0"

- **Ex. Joint**
  - (Strip Seal Assembly)
  - 1'-6"

- **Fume Overlay**
  - Exist. 1 1/2" Silica
  - #6S bar or #6D1

- **Rein. to Remain (Typ.)**
  - Tie bar to existing longitudinal reinforcing steel in Top of Slab. Cant bar as needed.
  - Tie bar to existing vertical reinforcing steel.

- **Rein. to Remain (Typ.)**
  - Exist. Transv.

- **Exist. Vert. Rein.**
  - Tie bar to existing vertical reinforcing steel.

- **Fume Overlay**
  - Exist. 1 1/2" Silica
  - to Remain (Typ.)

- **Rein. to Remain (Typ.)**

- **Sandblast**
  - (Center in Slab)

- **Compaction**
  - 6" Compaction (Type AAKMR-5-5)

- **Concrete Pavement**
  - 10' Uniform

- **Concrete Pavement**
  - 10' Uniform

- **Concrete Pavement**
  - 10' Uniform

- **Concrete Pavement**
  - 10' Uniform

- **Concrete Pavement**
  - 10' Uniform

- **Concrete Pavement**
  - 10' Uniform

- **Concrete Pavement**
  - 10' Uniform

**SECTION D-D**

(About. No. 1 shown, About. No. 2 similar)

- **Exp. Joint**
  - Abut. 1 & 2
  - 1'-0"

- **Ex. Joint**
  - (Strip Seal Assembly)
  - 1'-6"

- **Fume Overlay**
  - Exist. 1 1/2" Silica
  - #6S bar or #6D1

- **Rein. to Remain (Typ.)**
  - Tie bar to existing longitudinal reinforcing steel in Top of Slab. Cant bar as needed.
  - Tie bar to existing vertical reinforcing steel.

- **Rein. to Remain (Typ.)**
  - Exist. Transv.

- **Rein. to Remain (Typ.)**

- **Fume Overlay**
  - Exist. 1 1/2" Silica
  - to Remain (Typ.)

- **Rein. to Remain (Typ.)**

- **Sandblast**
  - (Center in Slab)

- **Compaction**
  - 6" Compaction (Type AAKMR-5-5)

- **Concrete Pavement**
  - 10' Uniform

- **Concrete Pavement**
  - 10' Uniform

- **Concrete Pavement**
  - 10' Uniform

- **Concrete Pavement**
  - 10' Uniform

- **Concrete Pavement**
  - 10' Uniform

- **Concrete Pavement**
  - 10' Uniform

**SUMMARY OF QUANTITIES**

**Concrete (Grade 4.0)(AE)(SA)**

- Abut. No. 1: 3.8 Cu. Yd.
- Abut. No. 2: 3.6 Cu. Yd.
- Total: 7.4 Cu. Yd.

**SUMMARY OF QUANTITIES**

**Reinforcing Steel (Grade 60)(Epoxy Coated)**

- Abut. No. 1: 690 Lbs.
- Abut. No. 2: 660 Lbs.
- Total: 1,350 Lbs.
**EXTRACTION ELEVATION AT ABUTMENT NO. 1**

*Looking North*

- Phase 1 Extraction: 24'8 1/4"
- Phase 2 Extraction: 23'8 1/4"
- Gutter Line
- Strip Seal Extrusion
- Omit in Gland Cavity
- 1/2" x 6" headed stud anchors (in pairs)
- Bridge
- Extrusion Field Splice
- Slope = 5.56% (along Exp. Jt.)

23 Spa. 1'-0" - 23'-0"

**EXTRACTION ELEVATION AT ABUTMENT NO. 2**

*Looking North*

- Phase 1 Extraction: 23'5 3/4"
- Phase 2 Extraction: 22'5 3/4"
- Gutter Line
- Strip Seal Extrusion
- Omit in Gland Cavity
- 1/2" x 6" headed stud anchors (in pairs)
- Bridge
- Extrusion Field Splice
- Slope = 5.78% (along Exp. Jt.)

22 Spa. 1'-0" - 22'-0"

**SUMMARY OF QUANTITIES**

<table>
<thead>
<tr>
<th>Expansion Joint (Strip Seal Assembly)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Abut. No. 1</td>
<td>48.4 Lin. Ft.</td>
</tr>
<tr>
<td>Abut. No. 2</td>
<td>46.0 Lin. Ft.</td>
</tr>
<tr>
<td>Total</td>
<td>94.4 Lin. Ft.</td>
</tr>
</tbody>
</table>
PLAN OF STRIP SEAL ERECTION ANGLE

At Abutment No. 1, Phase 1, if the Contractor elects to pour the approach slab patch concurrently with the expansion device pour, the length of the strip seal erection angles shall be increased as needed.

NOTE:
Immediately prior to placing the concrete (Grade 4.0) (AE) (SA) around the Strip Seal Extrusion, the existing concrete surface at the concrete removal line shall be cleaned and roughened. The erection angles shall be securely bolted to the extrusion. The extrusion shall be in the same plane and recessed 3/4" below the top of the roadway. The erection angles shall be removed as soon as the new concrete will support the assembly without allowing any settlement or tilting. Following the removal of the erection angles, remove the stud bolts on the extrusions and grind flush. The stud bolts, nuts and washers, and erection angles, labor and materials used to install and remove the erection angles shall be subsidiary to the bid item "Expansion Joint (Strip Seal Assembly)."

NOTE:
The strip seal extrusion shall be a "Wabo" Type "R" steel shape or approved equivalent as shown in the details. All items shown on the Expansion Joint Details sheets are included in the bid item "Expansion Joint (Strip Seal Assembly)." All welds on the extrusion shall be 1/4" continuous fillet welds, unless otherwise noted.
The type of traffic delineator to be used is found in the traffic control sheets.

* See "Traffic Control, Construction Sequence at Bridge" sheet for traffic lane and roadway widths.

Girder Spacing /4 or as directed by the Engineer.

* PATCHING SEQUENCE: When large areas of full depth patches are needed, they shall be patched in segments. If full depth patches intrude into this effective flange width area, the segments shall be a maximum of 8'-0" in length parallel to the centerline of bridge with a minimum of 8'-0" parallel to the centerline of bridge between segments. After the initial patches have cured, the areas between the initial segments shall be patched. The segmental patching will not be required if adequate shoring is provided to support the deck, curbs and beams. (See "SEQUENCE DETAIL" on this sheet).

### SUMMARY OF QUANTITIES

<table>
<thead>
<tr>
<th>ITEM</th>
<th>UNITS</th>
<th>QUANTITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Area Prepared for Patching</td>
<td>Sq. Yd.</td>
<td>10</td>
</tr>
<tr>
<td>Area Prepared for Patching (Full Depth)</td>
<td>Sq. Yd.</td>
<td>5</td>
</tr>
<tr>
<td>Reinforcing Steel (Repair) (Grade 60) (Epoxy) (Set Price)</td>
<td>Lbs.</td>
<td>1</td>
</tr>
</tbody>
</table>
NOTE: Patching for this project is to be limited to the spalled surfaces of the deck or impending spalls, as determined by the Engineer. No partial depth or full depth patching is expected, but a set unit price is to be provided in the contract for "Area Prepared for Patching" and "Area Prepared for Patching (Full Depth)."

AREA PREPARED FOR PATCHING: This item shall consist of removing unsound concrete and asphalt patches from the bridge deck, cleaning reinforcing bars, and filling the removed patched areas with concrete. Quantity shown is an estimate of the areas involved. The exact areas shall be determined by tapping, before, during and after chipping operation to ensure that all unsound concrete has been removed. See KDOT Specifications.

FULL DEPTH PATCHING: Forms shall be provided to enable placement of the concrete in areas of full depth removal of bridge slab. The forms may be suspended from existing reinforcing bars by wire ties or a method approved by the Engineer may be used. See KDOT Specifications for method of measurement and basis of payment.

REINFORCING IN BRIDGE DECK: Care should be exercised to prevent cutting, stretching or damaging exposed reinforcing steel. Extreme care should be exercised to avoid breaking the bond between the reinforcing steel and concrete where bars are partially exposed yet remain anchored in sound concrete. Reinforcing steel damaged, cut or deteriorated shall be replaced as directed by the Engineer. Do not wedge chipping hammer bit against reinforcement. See table for replacement bar size and minimum splice length required. Replacement of bars damaged by the Contractor shall be at no cost to the State.

REPAIR OF EPOXY COATED REINFORCING STEEL: Replace any epoxy coating damaged or removed from the reinforcing steel during the concrete removal process. Thoroughly clean damaged areas with a stiff wire brush to remove dirt and damaged coating. Apply an approved patching material in accordance with the manufacturer's recommendations. Avoid dripping any patching material on the existing concrete. See KDOT Specifications.

**MINIMUM REBAR SPLICE LENGTHS**

<table>
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<tr>
<th>Bar Size</th>
<th>Gr. 40</th>
<th>Gr. 60</th>
</tr>
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<tbody>
<tr>
<td>#4</td>
<td>12&quot;</td>
<td>16&quot;</td>
</tr>
<tr>
<td>#5</td>
<td>13&quot;</td>
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<tr>
<td>#6</td>
<td>16&quot;</td>
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<td>#10</td>
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<td>40&quot;</td>
</tr>
<tr>
<td>#11</td>
<td>40&quot;</td>
<td>45&quot;</td>
</tr>
</tbody>
</table>

Note: Minimum splice length corresponding to the grade of existing reinforcing in the deck.

Where it is necessary to remove concrete to bottom layer of reinforcing steel, a full depth patch shall be required.

Fume Overlay
Existing 1/8" Silica
Chip to Near Vertical
Surface 1/8" Deep
Min.

Top Reinforcing Steel

**PARTIAL DEPTH PATCHING**

<table>
<thead>
<tr>
<th>Modern</th>
<th>Bar Size</th>
<th>Gr. 40</th>
<th>Gr. 60</th>
</tr>
</thead>
<tbody>
<tr>
<td>#4</td>
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</tbody>
</table>

Note: Minimum splice length corresponding to the grade of existing reinforcing in the deck.

Where it is necessary to remove concrete to bottom layer of reinforcing steel, a full depth patch shall be required.
### ABUTMENT NO. 1

**BILL OF REINFORCING STEEL**

**Grade 60 (Epoxy Coated)**

<table>
<thead>
<tr>
<th>Bar Schedule</th>
<th>Mark</th>
<th>Size</th>
<th>Number</th>
<th>Length</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Straight Bars</strong></td>
<td>A11</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td></td>
<td>A12</td>
<td>6</td>
<td>4</td>
<td>(22'-11&quot;)</td>
</tr>
<tr>
<td></td>
<td>S11</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td></td>
<td>S12</td>
<td>6</td>
<td>3</td>
<td>(22'-11&quot;)</td>
</tr>
<tr>
<td></td>
<td>D1</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
</tbody>
</table>

* See Coupled Rebar Table

**Coupled Bars**

<table>
<thead>
<tr>
<th>Coupled Bars</th>
<th>Mark</th>
<th>Size</th>
<th>Number</th>
<th>Length</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Coupled End Rebar</strong></td>
<td>A11</td>
<td>6</td>
<td>4</td>
<td>(23'-5&quot;)</td>
</tr>
<tr>
<td></td>
<td>S11</td>
<td>6</td>
<td>3</td>
<td>(23'-5&quot;)</td>
</tr>
</tbody>
</table>

**Coupled End Rebar** *(Place in Phase 1 Const.)*

**Coupled Bar** *(Place in Phase 2 Const.)*

The mechanically fastened bar lengths are calculated to the center of the coupling device. The mechanical splice system shall meet the requirements of KDOT Specifications. The additional material and labor for the mechanical splices shall be subsidiary to "Reinforcing Steel (Grade 60) (Epoxy Coated)."

### ABUTMENT NO. 2

**BILL OF REINFORCING STEEL**

**Grade 60 (Epoxy Coated)**

<table>
<thead>
<tr>
<th>Bar Schedule</th>
<th>Mark</th>
<th>Size</th>
<th>Number</th>
<th>Length</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Straight Bars</strong></td>
<td>A21</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td></td>
<td>A22</td>
<td>6</td>
<td>4</td>
<td>(21'-9&quot;)</td>
</tr>
<tr>
<td></td>
<td>S21</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td></td>
<td>S22</td>
<td>6</td>
<td>3</td>
<td>(21'-9&quot;)</td>
</tr>
<tr>
<td></td>
<td>D1</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
</tbody>
</table>

* See Coupled Rebar Table

**Coupled Bars**

<table>
<thead>
<tr>
<th>Coupled Bars</th>
<th>Mark</th>
<th>Size</th>
<th>Number</th>
<th>Length</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Coupled End Rebar</strong></td>
<td>A21</td>
<td>6</td>
<td>4</td>
<td>(22'-3&quot;)</td>
</tr>
<tr>
<td></td>
<td>S21</td>
<td>6</td>
<td>3</td>
<td>(22'-3&quot;)</td>
</tr>
</tbody>
</table>

**Coupled End Rebar** *(Place in Phase 1 Const.)*

**Coupled Bar** *(Place in Phase 2 Const.)*

### ABUTMENT NO. 1 APPROACH SLAB

**27.24° Skew**

**BILL OF MATERIALS**

<table>
<thead>
<tr>
<th>Bar Schedule</th>
<th>a</th>
<th>b</th>
<th>b1</th>
<th>b2</th>
<th>c</th>
<th>c1</th>
<th>c2</th>
<th>e</th>
<th>e1</th>
<th>f</th>
<th>g</th>
</tr>
</thead>
<tbody>
<tr>
<td>No.</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Size</td>
<td>*5</td>
<td>*5</td>
<td>*5</td>
<td>*5</td>
<td>*5</td>
<td>*5</td>
<td>*5</td>
<td>*5</td>
<td>*6</td>
<td>*4</td>
<td>*6</td>
</tr>
<tr>
<td>Length</td>
<td>(14'-3&quot;)</td>
<td>(11'-0&quot;)</td>
<td>(13'-10&quot;)</td>
<td>(10'-8&quot;)</td>
<td>(3'-0&quot;)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Reinforcing Steel (Grade 60) (Epoxy Coated) 264 lbs.

Concrete Pavement (10" Uniform, KAEP/Br. Appr.) 11 Sq. Yds.

Expansion Joint, Membrane Sealant Lin. Ft.

Pressure Relief Joint, Membrane Sealant Lin. Ft.

Quantities listed for one approach slab only. Approach slab reinforcing steel is shown for information only. The approach slab reinforcing steel shall be subsidiary to the bid item "Concrete Pavement (10" Uniform) (AE/Br. Appr.)."
Reference is made to the latest edition of the CRSI "Manual of Standard Practice" for recommended industry practices concerning reinforcing steel.

Use only the following types of bar supports:

1) Wire Bar Supports:
   a) Epoxy coated reinforcing; Class 1 Protection
   b) Non-epoxy coated reinforcing; Class 1, 2, or 3 Protection

2) Plastic Bar Supports

3) Supplementary bars

When securing epoxy coated reinforcement, use tie wires or metal clips that are epoxy or plastic coated.

Do not weld reinforcing steel to bar supports or to other reinforcing steel. Snap weld spacer frames for haunched slabs.

Tie bars at all intersections around the perimeter of each mat and at not less than 2'-0" centers or at every intersection, whichever is greater.

Where more than one length of bar support is required, lap the end legs so they are locked or tied together.

Use proper height supports to maintain the distance between the reinforcing and the formed surface or the top surface of deck slabs within 1/4" of that indicated on the plans.

Spacings shown are maximums. Use sufficient supports, as determined by the Engineer, to retain the reinforcing steel in position.

Construct any platforms, required for the support of workers and/or equipment during concrete placement, directly on the forms and not on the reinforcing steel.

Designs and arrangements of Supports or Spacers other than as shown on this sheet, may be used with the permission of the Engineer.
MARKING TO REMAIN
EXISTING PAVEMENT

US-69 (SOUTHBOUND)

MASKING, PHASE 1 AND PHASE 2

TRAFFIC CONTROL, PAVEMENT MARKING
MASKING, PHASE 1 AND PHASE 2

PROJ. NO. 69-54 KA-5532-01

KANSAS DEPARTMENT
OF TRANSPORTATION

BRIDGE NO. 69-54-15.19 (058)
PHASE 1 - SECTION THRU BRIDGE
(Looking North)

40'-0" Bridge Roadway Width

20'-0" 1'-0"
4'-1/2" 14'-0" Available for Traffic

1'-0" Shy 12'-0" Lane
1'-0" Shy

Remove and Replace Strip
Seal Assemblies

6.00%

Concrete Removal Limit of Phase 1
Slab Haunch at Abutment

PHASE 2 - SECTION THRU BRIDGE
(Looking North)

40'-0" Bridge Roadway Width

16'-0" Available for Traffic

2'-0" 1'-0"
1'-0" Shy

2'-1/2" 2'-0" Lane
1'-0" Shy

Remove and Replace Strip
Seal Assemblies

6.00%

Concrete Removal Limit of Phase 2
Slab Haunch at Abutment

6.00%

Concrete Removal at Abutment Slab Haunch
SUMMARY OF TRAFFIC CONTROL DEVICES (EACH PER DAY)

* Quantity most used on the project at any one time

<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>230</td>
<td>Each Per Day</td>
</tr>
<tr>
<td>Work Zone Signs (9.26 to 16.25 Sq.Ft.)</td>
<td>1,350</td>
<td>Each Per Day</td>
</tr>
<tr>
<td>Work Zone Signs (16.26 Sq.Ft. &amp; Over)</td>
<td>380</td>
<td>Each Per Day</td>
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<tr>
<td>Work Zone Barricades (Type 3 - 4' to 12')</td>
<td>80</td>
<td>Each Per Day</td>
</tr>
<tr>
<td>Work Zone Barricades (Pedestrian)</td>
<td></td>
<td>Each Per Day</td>
</tr>
<tr>
<td>Channelizer (Portable)</td>
<td>4,050</td>
<td>Each Per Day</td>
</tr>
<tr>
<td>Channelizer (Pedestrian)</td>
<td></td>
<td>Each Per Day</td>
</tr>
<tr>
<td>Work Zone Warning Light (Type 'A' Low Intensity)</td>
<td>530</td>
<td>Each Per Day</td>
</tr>
<tr>
<td>Work Zone Warning Light (Red Type 'B' High Intensity)</td>
<td>80</td>
<td>Each Per Day</td>
</tr>
<tr>
<td>Arrow Display</td>
<td>80</td>
<td>Each Per Day</td>
</tr>
<tr>
<td>Portable Changeable Message Sign</td>
<td></td>
<td>Each Per Day</td>
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<tr>
<td>Pavement Marking (Temporary)</td>
<td></td>
<td>Lin. Ft.</td>
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<tr>
<td>4&quot; Solid (Type I)</td>
<td>87.0</td>
<td>Sta./Line</td>
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<tr>
<td>4&quot; Solid (Type II)</td>
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<td>Sta./Line</td>
</tr>
<tr>
<td>4&quot; Broken (6.0') (Type I)</td>
<td></td>
<td>Sta./Line</td>
</tr>
<tr>
<td>4&quot; Broken (6.0') (Type II)</td>
<td></td>
<td>Sta./Line</td>
</tr>
<tr>
<td>4&quot; Broken (3.0') (Type I)</td>
<td></td>
<td>Sta./Line</td>
</tr>
<tr>
<td>4&quot; Broken (3.0') (Type II)</td>
<td></td>
<td>Sta./Line</td>
</tr>
<tr>
<td>4&quot; Dotted Extension (Type I)</td>
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<td>Sta./Line</td>
</tr>
<tr>
<td>4&quot; Dotted Extension (Type II)</td>
<td></td>
<td>Sta./Line</td>
</tr>
<tr>
<td>Solid (Line Masking Tape)</td>
<td>26.5</td>
<td>Sta./Line</td>
</tr>
<tr>
<td>Broken (Line Masking Tape)</td>
<td>10.0</td>
<td>Sta./Line</td>
</tr>
<tr>
<td>Symbol (Type I)</td>
<td></td>
<td>Each</td>
</tr>
<tr>
<td>Symbol (Type II)</td>
<td></td>
<td>Each</td>
</tr>
<tr>
<td>Flexible Raised Pavement Marker (4&quot; Broken (8.0'))</td>
<td></td>
<td>Sta./Line</td>
</tr>
<tr>
<td>Flexible Raised Pavement Marker (4&quot; Broken (3.0'))</td>
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<td>Sta./Line</td>
</tr>
<tr>
<td>Pavement Marking Removal</td>
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<td>Lin. Ft.</td>
</tr>
<tr>
<td>Concrete Safety Barrier (Type F3)(Temporary)</td>
<td>900</td>
<td>Lin. Ft.</td>
</tr>
<tr>
<td>Concrete Safety Barrier (Type F3)(Temporary - Relocate)</td>
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<td>Lin. Ft.</td>
</tr>
<tr>
<td>Inertial Barrier System (TL-2)</td>
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<td>Each</td>
</tr>
<tr>
<td>Inertial Barrier System (TL-3)</td>
<td>1</td>
<td>Each</td>
</tr>
<tr>
<td>Replacement Modules (IBS)</td>
<td>15</td>
<td>Each</td>
</tr>
<tr>
<td>Work Zone Sign (Special) (16.25 Sq. Ft. &amp; Less)</td>
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<td>Each</td>
</tr>
<tr>
<td>Work Zone Sign (Special) (16.26 Sq. Ft. &amp; More)</td>
<td></td>
<td>Each</td>
</tr>
<tr>
<td>Rigid Raised Pavement Marker (Type I)</td>
<td>1</td>
<td>Each</td>
</tr>
<tr>
<td>Rigid Raised Pavement Marker (Type II)</td>
<td>1</td>
<td>Each</td>
</tr>
<tr>
<td>Traffic Signal Installation (Temporary)</td>
<td>Lump Sum</td>
<td>Lump Sum</td>
</tr>
<tr>
<td>Traffic Control (Initial Set Up)</td>
<td></td>
<td>Lump Sum</td>
</tr>
<tr>
<td>Traffic Control</td>
<td>1</td>
<td>Lump Sum</td>
</tr>
<tr>
<td>Flagger (Set Price)</td>
<td>1</td>
<td>Hour</td>
</tr>
</tbody>
</table>

SUMMARY OF TRAFFIC CONTROL DEVICES (EACH)

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work Zone Sign (Special)</td>
<td></td>
<td>Lin. Ft.</td>
</tr>
<tr>
<td>Sign No.</td>
<td></td>
<td>Lin. Ft.</td>
</tr>
</tbody>
</table>

TRAFFIC CONTROL SUMMARY OF DEVICES AND RECAPITULATION OF QUANTITIES

PROJ. NO. 69-54 KA-5532-01
BRIDGE NO. 69-54-15.19 (058)
This drawing details general configurations for Inertial Barrier Systems. Some project specific conditions may require variations which are designed to meet prevailing criteria.

Use Inertial Barrier System consisting of the units as shown for the specified design speed, all hardware and attachments.

Install Inertial Barrier System on a flat, stable base with cross-slope no steeper than 10:1. See Manufacturer's recommendations for module materials and method of installation.

See standard specifications for mixture to fill modules requirements.

Provide a 6" spacing between modules and one foot between the end of concrete barrier or other rigid object.

When installed as part of project traffic control, the bid item "Inertial Barrier" includes the original installation and required relocations.

Keep available replacement modules to replace any size module used on site, Engineer's direction. Inertial Barrier System modules damaged by the Contractor during relocation of Inertial Barrier System are replaced at the Contractor's expense.

Module weights shown are in pounds.

Install 270 square inches of Type II High Performance (vertical, rectangular or diamond shape) reflective sheeting on first module of Inertial Barrier System facing traffic.

Where sufficient space is available the Inertial Barrier System module weights shown are in pounds.

Install 270 square inches of Type II High Performance (vertical, rectangular or diamond shape) reflective sheeting on first module of Inertial Barrier System facing traffic.

Where sufficient space is available the Inertial Barrier System may be aligned at an angle, not to exceed 10°, in the direction of approach traffic.

No portion of the system shall encroach into the approach traffic lane.

GENERAL NOTE

When two-way traffic is adjacent to only one side of Concrete Barrier or Obstacle, these additional modules will be placed on the Traffic Side of Concrete Barrier or Obstacle. Traffic adjacent to both sides of the Concrete Barrier or Obstacle requires an additional set of modules each side if approach traffic is exposed to the back portion of the Inertial Barrier. These additional modules are not required along the sides of Concrete Barrier or Obstacle when it's location is outside the Clear Zone or one-way directional traffic.

When installed as part of project traffic control, the bid item "Inertial Barrier" includes the original installation and required relocations.

See standard specifications for mixture to fill modules requirements.

Contractor's expense.

When installed as part of project traffic control, the bid item "Inertial Barrier" includes the original installation and required relocations.

Keep available replacement modules to replace any size module used on site, Engineer's direction. Inertial Barrier System modules damaged by the Contractor during relocation of Inertial Barrier System are replaced at the Contractor's expense.

Module weights shown are in pounds.

When installed as part of project traffic control, the bid item "Inertial Barrier" includes the original installation and required relocations.

Keep available replacement modules to replace any size module used on site, Engineer's direction. Inertial Barrier System modules damaged by the Contractor during relocation of Inertial Barrier System are replaced at the Contractor's expense.

Module weights shown are in pounds.

Install 270 square inches of Type II High Performance (vertical, rectangular or diamond shape) reflective sheeting on first module of Inertial Barrier System facing traffic.

Where sufficient space is available the Inertial Barrier System module weights shown are in pounds.

Install 270 square inches of Type II High Performance (vertical, rectangular or diamond shape) reflective sheeting on first module of Inertial Barrier System facing traffic.

Where sufficient space is available the Inertial Barrier System may be aligned at an angle, not to exceed 10°, in the direction of approach traffic.

No portion of the system shall encroach into the approach traffic lane.
ELEVATION (SECTION)

† Marked End

4" diameter - 11 gauge steel round mechanical tubing sleeve. These holes are optional.

△ V Notch is optional

NOTE: At no time shall the barriers be lifted, moved, etc.
DETAILS OF BARRIER CONNECTION

REINFORCING A615 Gr. 60

<table>
<thead>
<tr>
<th>Bar</th>
<th>Bar Size</th>
<th>Shape</th>
<th>No. of Bars</th>
<th>Length Ft.</th>
<th>Weight Lbs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>a1</td>
<td>#4</td>
<td></td>
<td>12</td>
<td>6'-0&quot;</td>
<td>48.1</td>
</tr>
<tr>
<td>a2</td>
<td>#6</td>
<td></td>
<td>5</td>
<td>2'-11&quot;</td>
<td>26.3</td>
</tr>
<tr>
<td>b1</td>
<td>#5</td>
<td></td>
<td>7</td>
<td>12'-2&quot;</td>
<td>88.8</td>
</tr>
</tbody>
</table>

LOOP ASSEMBLY

| d1  | #6       |       | 2           | 8'-5"      | 25.3        |
| d2  | #6       |       | 2           | 7'-7"      | 22.8        |
| d3  | #6       |       | 2           | 8'-6"      | 25.5        |

Concrete Quantity = 1.3 C.Y.
(Dimensions are out to out of bars unless otherwise noted.)
GENERAL NOTES:

MATERIAL: Use ASTM A615, Grade 60 reinforcing bars, except for the loop bars (d₁, d₂, and d₃). The loop bars (d₁, d₂, and d₃) shall be ⅜" smooth steel bars with a minimum yield of 60 ksi, a tensile strength of not less than 1.25 times the yield strength, and a minimum 14% elongation in 8 inches, and passing a 180 degree bend test using a 3.5 D pin bend diameter. The loops shall be installed within 1½" of the plan dimensions. Use air-entrained concrete with f'c = 5,000 p.s.i.

SECTION: The section furnished must generally comply with dimensions shown. Requests for minor variations in section geometry and attachments may be submitted to the Engineer for approval.

LIFTING SLOTS: Lifting slots shall be constructed where specified on the plans to facilitate the drainage of water after installation on the roadway.

TEMPORARY CONCRETE SAFETY BARRIER: Furnishing and placing of all materials when required and all labor and equipment required to position the temporary barrier shall be included in the Contract unit price bid for "Concrete Safety Barrier (Type F3) (Temporary)". Any relocation of the barrier required for the project shall be paid in accordance with the Special Provisions under the bid item "Concrete Safety Barrier (Type F3) (Temporary-Relocate)". Unless otherwise noted on the Plans, the Temporary Concrete Safety Barrier shall become the property of the Contractor and shall be removed from the site upon acceptance of the completed project.

Approximate weight of one unit equals 2.7 tons.

PLACEMENT: Barrier shall be placed on a paved surface. All loose dirt and sand shall be removed from the roadway surface just prior to placement of the barrier.

After the barrier is placed and the connection pin is inserted, tension or pull the barrier such that the installation is taut and the connection pin cannot freely move vertically. If the connection pin or loop bar assembly are damaged during the tensioning process, it is the responsibility of the Contractor to repair the damaged area or replace the temporary barrier section.

MARKING: The left end (†) of each barrier shall be permanently marked by stamping or forming into the barrier the following information:

- Type F3
- Manufacturer code (as specified by KDOT Bureau of Const. & Maint.)
- Date manufactured (month and year)

DELINEATION: Delineators shall be spaced on 50' centers, except through curves where they shall be spaced on 25' centers. See Standard Drawing RD610 for additional details.

The delineation shall be mounted on the side of the Temporary Concrete Safety Barrier with two delineators at each location. Each delineator shall have a minimum height-to-width ratio of 1.75, and a minimum reflective surface area of 7 sq. in.. The delineators shall be affixed to the Temporary Concrete Safety Barrier as recommended by the manufacturer.

Delineators shall be attached to bridge rail or other structures in construction zones where roadway is narrowed and traffic is adjacent to the structure. The method and location of placement shall be similar to permanent barrier delineation.

When traffic flow is in one direction, the delineators shall be yellow when used on the left, white when used on the right. When traffic flow is in both directions delineators shall be placed back-to-back, and shall correspond to the color of the edge line.

The work and materials required for the installation of delineators as mentioned shall be subsidiary to the bid item "Concrete Safety Barrier (Type F3) (Temporary)"

If necessary, include Standard Drawing RD622A for Taper Section, Standard Drawing RD622B for anchor and tie down details, Standard Drawing RD622C for Bridges with thermal expansion of 1½" or greater and Standard Drawing RD622D for Barrier Layouts.

The Contractor shall be responsible for maintaining a clear area, shown as dimension 'A' on Standard Drawing RD622B. The clear area is located behind the Temporary Concrete Safety Barrier and shall be kept free of any equipment, material stockpiles or other obstacles.

For non-anchored roadway applications, dimension 'A' shall be a minimum of 2'-0".

MARKING: The left end (†) of each barrier shall be permanently marked by stamping or forming into the barrier the following information:

- Type F3
- Manufacturer code (as specified by KDOT Bureau of Const. & Maint.)
- Date manufactured (month and year)

DELINEATION: Delineators shall be spaced on 50' centers, except through curves where they shall be spaced on 25' centers. See Standard Drawing RD610 for additional details.

The delineation shall be mounted on the side of the Temporary Concrete Safety Barrier with two delineators at each location. Each delineator shall have a minimum height-to-width ratio of 1.75, and a minimum reflective surface area of 7 sq. in.. The delineators shall be affixed to the Temporary Concrete Safety Barrier as recommended by the manufacturer.

Delineators shall be attached to bridge rail or other structures in construction zones where roadway is narrowed and traffic is adjacent to the structure. The method and location of placement shall be similar to permanent barrier delineation.

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If necessary, include Standard Drawing RD622A for Taper Section, Standard Drawing RD622B for anchor and tie down details, Standard Drawing RD622C for Bridges with thermal expansion of 1½" or greater and Standard Drawing RD622D for Barrier Layouts.

The Contractor shall be responsible for maintaining a clear area, shown as dimension 'A' on Standard Drawing RD622B. The clear area is located behind the Temporary Concrete Safety Barrier and shall be kept free of any equipment, material stockpiles or other obstacles.

For non-anchored roadway applications, dimension 'A' shall be a minimum of 2'-0".