Note
1. Any damage caused by the contractor's operation shall be repaired or replaced at the contractor's expense.

2. This project is considered "routine maintenance that disturbs less than 5 acres" according to section 1.1a of the NPDES General permit. The contractor is required to follow Section 901.3a(2) of standard specifications. Stabilization is required before moving to the next location.

3. After existing guardrail is removed, post holes shall be filled with sand and compacted. Supplying and placing the sand shall be subsidiary to the bid Removal of Steel Plate Guardrail.

4. The City of Wichita may be constructing an HMA Overlay through the limits of this project. The Contractor shall coordinate their operations with the City of Wichita and their contractor to complete all proposed work.
GENERAL NOTES

REPAIR OF EXISTING SLOPES: All Contractor generated rutting or other damage to foreslopes or other areas outside of the pavement shall be repaired and reseeded by the Contractor with KDOT approved materials at their expense.

EARTHWORK MATERIALS: All proposed fill materials shall be approved by the Engineer prior to use.

TRAFFIC CONTROL: The Contractor shall submit a traffic control plan to the Engineer for review and approval prior to work starting. All culvert extension work shall be completed behind existing guardrail prior to its removal. Existing shoulders shall be closed based on KDOT Standard Drawings for "Shoulder Work".

SALVAGEABLE MATERIAL: Prior to removal of all existing guardrail, posts, end terminals and hardware; KDOT and/or City of Wichita forces will inspect and have the option to salvage any material removed from the project. Material designated for salvage shall be stockpiled on the project site for removal by others. Material not salvaged will become the property of the Contractor and be disposed of on sites provided by the Contractor.

REMOVE AND RESET SIGN: See plan sheets for location of signs to be removed and reset. Footings, Posts, and Placement shall be in accordance with KDOT Standard Drawings.

REMOVAL OF EXISTING STRUCTURES: Item includes removal of existing wingwalls, end sections, and other appurtenances necessary for construction. Remove existing headwalls 6' below proposed ground.

QUANTITIES: Items not listed separately in the Summary of Quantities, but are required to complete the construction will not be paid for separately, but are Subsidiary to other items.
NOTE: Removal of existing wingwalls is included in the bid item "Removal of Existing Structures".
NOTE: Removal of existing structures is included in the bid item "Removal of Existing Structures".

PROJ. NO. 15-87 KA-565-01
SEDGWICK CO.
KANSAS DEPARTMENT OF TRANSPORTATION

Sta. 633+13.96 Const.
Manhole, 60.49' Lt.
Install 12.5 Sq. Ft. x 6.0' Storm Sewer (RCPHE)(SE)
With Type IV End Section (6:1) Lt.
See Sh. Nos. 2, 7, 16, 17, 19, 20

Sta. 633+48.01 Extend Lt. & Rt.
4"x3"x118' RCB with
12.5 Sq. Ft. x 2.0' Storm Sewer (RCPHE)(Rotate 20° RT.)
& Type IV End Section Lt. (6:1)
12.5 Sq. Ft. x 10.0' Storm Sewer (RCPHE)(Rotate 30° RT.)
& Connect to Manhole Lt. (E)
See Sh. Nos. 2, 7, 17, 19, 20

Water Line City of Wichita
Fiber Optic Cable Century Link

Sta. 635+63 to 634+88.39 Lt.
Remove Exist. Steel Plate Guardrail

Sanitary Sewer City of Wichita
Note: 635+10.00 to 634+88.39 Lt.

NOTE: Removal of existing structures is included in the bid item "Removal of Existing Structures".

NOTE: Remove tree and roots at Sta. 633±15. Removal, backfill, and compaction is included in the bid item "Cleaning and Grubbing".
NOTE: Removal of existing end section is included in the bid item “Removal of Existing Structures”.
NOTE: Removal of existing wingwalls is included in the bid item "Removal of Existing Structures".
NOTE: Removal of existing end section is included in the bid item "Removal of Existing Structures".
NOTE: Removal of existing wingwalls is included in the bid item "Removal of Existing Structures".

NOTE: Remove tree and roots at Sta. 633+15 ft. Removal, backfill, and compaction is included in the bid item "Clearing and Grubbing".

NOTE: A 60.49 ft. Manhole with 0.5% slope is located at Sta. 661+60 (SITE #1).
Sta. 633+86.90 - Sta. 655+98.83

K-15 CROSS SECTIONS

SITE #1

Sta. 633+86.90

SITE #2

Sta. 655+98.83

KANSAS DEPARTMENT OF TRANSPORTATION

SEDGWICK CO.

K-15 CROSS SECTIONS

SITE #1

Sta. 633+86.90

SITE #2

Sta. 655+98.83

KANSAS DEPARTMENT OF TRANSPORTATION

SEDGWICK CO.

K-15 CROSS SECTIONS

SITE #1

Sta. 633+86.90

SITE #2

Sta. 655+98.83

KANSAS DEPARTMENT OF TRANSPORTATION

SEDGWICK CO.
CULVERT SUMMARY

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<th>Crown</th>
<th>Gravel</th>
<th>Design F.H.</th>
<th>Slope</th>
<th>Wing</th>
<th>Guard</th>
<th>Soil</th>
<th>Splice</th>
<th>Splice L.</th>
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**BAR SCHEDULE**

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**SUMMARY OF QUANTITIES**

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<th>3&quot;</th>
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<td>Steel</td>
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</tr>
<tr>
<td>Soil</td>
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</table>

**GENERAL NOTES**

- Use reinforcing steel conforming to Grade 4.0 Concrete.
- Minimum cover for Grade 4.0 concrete:
  - 11" for all bars
- Grade 4.0 Concrete shall be placed in the top slab above the construction joint.
- Concrete for Grade 4.0 shall be placed in the top slab above the construction joint.
- Minimum Splice Length:
  - #4: 1'-5"
  - #5: 1'-6"

**PLAN**

- The plan shows the proposed RC. Location of RCs shall be as indicated in the plan.
- The plan includes any required construction details.

**ELEVATION**

- The elevation shows the proposed RC. Location of RCs shall be as indicated in the plan.
- The elevation includes any required construction details.
SINGLE 7 FT X 2 FT, RCB

12.0 FT EXT, LT, RCB

GENERAL NOTES

PROJ. NO. 15-87 KA-5615-01

SEDGWICK CO.

SINGLE 7 FT X 2 FT, RCB

12.0 FT EXT, LT, RCB

KANSAS DEPARTMENT OF TRANSPORTATION

SEDGWICK CO.

12
GENERAL NOTES

SPECIFICATIONS: All Materials and Construction shall conform to the 2015 Standard Specifications and Special Provisions of the State Road and Bridge Construction of the Kansas Department of Transportation.

UNIT STRESSES: Structural Steel (A572) fy = 50,000 psi fy = 36,000 psi

Pipe (A53):
- 6" O.D. with fy = 36,000 psi

STRUCTURAL STEEL: All Structural Steel for the Piping shall conform to ASTM Designation A53, Type E, or S, Grade B, Schedule 40. All other Structural Steel shall conform to ASTM Designation A36. All of the A53 and A36 Structural Steel shall be Galvanized according to ASTM Designation A653 and shall be Subsidiary to "Structural Steel".

FASTENERS: All Fasteners shall be Subsidiary to "Structural Steel" conforming to ASTM Designation A572 or A36 and shall be Galvanized according to ASTM Designation A653.

RELIEF: The Contractor shall show on the shop drawing(s) the procedure and sequence of welding to be followed in the shop. Shop details shall be submitted to the Bureau of Design, Road Section, for review.

DIMENSIONS: All dimensions shall be checked in the field prior to fabrication and to the pouring of concrete. Bolt holes may be performed in the side wall and head wall in lieu of drilling.

GENERAL NOTES

STRUCTURAL STEEL MATERIALS

<table>
<thead>
<tr>
<th>ITEM</th>
<th>QUANT.</th>
<th>UNIT</th>
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<tbody>
<tr>
<td>Headwall Connection Plate</td>
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<td>6 x 6</td>
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<tr>
<td>Wingwall Connection Plate</td>
<td>6</td>
<td>1/2 x 1/8</td>
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<tr>
<td>Bolt (3/4&quot; x 4&quot;)</td>
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<td>Each</td>
</tr>
<tr>
<td>Bolt (1/2&quot; x 8&quot;)</td>
<td>6</td>
<td>Each</td>
</tr>
<tr>
<td>Bolt (1/2&quot; x 6&quot;)</td>
<td>2</td>
<td>Each</td>
</tr>
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</table>

NOTES: No washers & nuts are Subsidiary

PIPE RUNNERS

<table>
<thead>
<tr>
<th>ITEM</th>
<th>QUANT.</th>
<th>UNIT</th>
<th>QUANT.</th>
<th>UNIT</th>
<th>QUANT.</th>
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NOTES: Quantities shown are for one grate only.

QUANTITIES

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<th>ITEM</th>
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<tr>
<td>Structural Steel</td>
<td>506#</td>
<td>Lbs.</td>
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NOTES: Quantities shown are for one grate only.

KANSAS DEPARTMENT OF TRANSPORTATION

SINGLE 7 FT X 2 FT RCB

KA-56-50-01

SEDGWICK CO.

PROJ. NO. 15-87 KA-56-50-01

KANSAS DEPARTMENT OF TRANSPORTATION

CULVERT OPENING PROTECTION

LT. 12, STA. 662+46.77
7" x 2" RCB
**Concrete Manhole:**

- **Concrete Grade:** 3.0 (AE) or mix used in concrete pavement may be used throughout.
- **Flow Floor of manhole shall be shaped as shown in various "EXAMPLES" with unreinforced Concrete Grade 3.0.**
- **Top reinforcing bars shall be adjusted accordingly.**
- **All castings shall be gray iron and shall comply with the KDOT Standard Specifications.**
- **Weights of cast iron may be used.**
- **Rings with four equally spaced tabs will be permitted.**
- **Weight of cast iron may be used.**

**Examples:**

- **Floor of manhole shall be shaped as shown in the examples to increase hydraulic efficiency.**
- **Plan - Floor (Example I)**
- **Plan - Floor (Example III)**
- **Plan - Floor (Example IV)**
- **Section A-A (Example I)**
- **Section B-B (Example I)**
- **Section C-C (Example IV)**
- **Step Details**
  - *Steps shall be uniformly spaced. Spacing shall be 1/2" maximum and 1/8" minimum.*
  - *10" min. head width.*

**KDOT Graphics Certified:**

- **CONCRETE MANHOLE REINFORCED**
- **MANHOLE RING**
- **MANHOLE COVER AND RING**
- **HEAVY TYPE**
- **LIGHT TYPE**

**Notes:**
- Use Concrete Grade 3.0 throughout. All exposed edges shall be finished with an edging tool.
- At the contractors option Concrete Grade 3.0 (AE) or mix used in concrete pavement may be used throughout.
- In general, pipes will enter and leave manhole at various positions. Where possible, head bars are located as shown.
- Floor of manhole shall be shaped as shown in various "EXAMPLES" with unreinforced Concrete Grade 3.0. Manhole opening and steps, where used, shall be sized to afford easy access to top of shaped invert.
- Top reinforcing bar shall be adjusted accordingly.
- All castings shall be gray iron and shall comply with the KDOT Standard Specifications.
- No deductions in concrete quantities shall be made for pipe openings or additions to concrete quantities shall be made for shaping floor of manholes.
- Top of manhole shall be sloped slightly to approximately fit the ground line or other condition as directed by the Engineer.
- Dimensions and weights of cast iron as shown on this sheet are minimum. Larger dimensions and/or heavier weights of cast iron may be used.
- The Contractor has the option of using precast manholes, as approved by the Engineer.
- All castings are cast iron.
- Weight or castings are limited to allow for fillets and overruns.
- Change step dimensions as shown.
- All manhole castings are cast iron.
- Weight of castings includes no allowance for fillets and overruns.
- Rings with four equally spaced tabs will be permitted. Weight of cast iron may be used.
- Note: Either Type A or Type B may be used.
### PIPE CULVERT SUMMARY

<table>
<thead>
<tr>
<th>Station</th>
<th>Type</th>
<th>Size or Bid Designation</th>
<th>Flow Line</th>
<th>Horizontal Roadway</th>
<th>Degree of Rotation</th>
<th>Lin. Ft. of Pipe</th>
<th>Height of Fill (max.)</th>
<th>Concrete Pipe AASHTO Class No.</th>
<th>Remarks</th>
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<tr>
<td>633+13.96, Lt.</td>
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<td>1304.39</td>
<td>Lt. 58.86</td>
<td>6.0</td>
<td>2</td>
<td>III</td>
<td>Connect to MH</td>
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<td>Lt. 58.86</td>
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**NOTE:** Unless otherwise noted, minimum pipe gauge & corrugations to be as shown in RD660.

### DRAINAGE STRUCTURES

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<tr>
<th>STATION</th>
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<th>TYPE</th>
<th>Gr. 4.0</th>
<th>REINF. STEEL (LBS)</th>
<th>FOUND. SYBLZ. (Cu. Yds.)</th>
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### TYPICAL GRADING PLAN

**MANHOLE**

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<td>W</td>
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**BILL OF MATERIALS**

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<th>BAR LENGTHS</th>
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**MANHOLE LOCATIONS**

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<th>TOP ELEV.</th>
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**SUMMARY OF PIPE CULVERTS**

<table>
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<th>PROJ. NO.</th>
<th>KANSAS DEPARTMENT OF TRANSPORTATION</th>
<th>SEDGWICK CO.</th>
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<tr>
<td>15-87 KA-565-01</td>
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<td>17</td>
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The culvert type shall meet the KDOT Pipe Policy & Standard Specifications. Culverts shall be fabricated from CE (Galvanized) or ACS (Aluminum) steel meeting the requirements of the Standard Specifications. When required additional toe plate extensions shall be punched in drilled to end section apron in with \( \frac{3}{4} \)" diameter galvanized bolts. Steel for toe plate extension shall be the same gauge and steel type as end section. Dimensions shall be overall width, height, and thickness to fit with. Type 1 and Type 3 end sections are not to be used. Safety bars shall be fabricated from steel plate meeting the requirements of the Standard Specifications. Safety bars shall be hot-dipped galvanized after fabrication. Installation shall be performed in accordance with the Standard Specifications.

All work and materials required for construction and installation of safety pipes and sections shall be included in the bid item. End Section (Type IV)

See Rev. RD660 for details of corrugated metal pipe.

**GENERAL NOTES**

- Corrugated steel meeting the requirements of the corresponding rise and span in accordance with applicable ASTM Specifications may be substituted for the normally required 3" x 1" corrugated pipe when fill height over top of pipe is equal to or less than 4'.
FERTILIZER: A ratio and application rate that equals or exceeds the required, minimum rate per acre of:

- N - Nitrogen Rate of Application
- P - Phosphorous Rate of Application
- K - Potassium Rate of Application

The Contractor will be required to finish areas of excavation, borrow, and embankment in accordance with the specifications. Areas that require installation or construction of temporary water pollution control measures will be finished in responsible fashion to ensure proper placement of seed and grass mix shown on the plans or as established by the Engineer.

GENERAL NOTES

The entire disturbed area exceeding the paved or surfaced areas, areas fully graded and areas of reconstructed surface or other decorative vegetation shall be fertilized when required, seeded, and mulched. Soil preparation shall be defined in the Standard Specifications.

Temporary seeding shall be done during any time of the year that the soil is suitable for the desired species. The total disturbed area is to be finished with the temporary seed mix containing the following:

- Mowing and/or cultivation is required when necessary to maintain the appearance of the area.
- The soil grade is to be maintained to the required grade for aesthetic purposes.
- The slope rate is to be maintained to the required grade for aesthetic purposes.
- The soil mix is to be maintained to the required grade for aesthetic purposes.

SUMMARY OF SEEDING / EROSION CONTROL QUANTITIES

The Soil Erosion Mix is to be applied under the Class 1 or Class 2 erosion control measure.

The Soil Erosion Mix consists of the Shoulder Area of the Permanent Seed Mix used on the project.
TEMPORARY EROSION AND POLLUTION CONTROL

SECTION A - A

- Wire Staples: 6” long x 1” (min.) @ 3’ on/c.
- Silt fence fabric over Chicken wire backing.
- Cross pieces (see notes)

SECTION C - C

- Curb inlet protection
  1. If multiple gravel bags are required, place them in such a way that no gaps are evident.
  2. Height of bags (1’ minimum diameter) must not be above top of curb.
  3. Alternative products may be used other than gravel bags such as the "Gutter Buddy". Products must be approved by the Engineer.
  4. Curb inlet protection will be measured and paid for as Filter Sock.

Material Requirements

- Use 100% shredded mulch or other non-hygienic biodegradable material as filter sock.
- No compost or fines.
- No top or fiber.

Drop inlet protection

Lost Wash

- Use wash with 1/4” screenings or larger.
- Wash must allow water infiltration but shall not fill in without.
SILT FENCE:
1. Stakes shall be 4' (min.) long and one of the following materials:
   a. Hardwood: 1-1/2" x 1-1/2"
   b. Southern Urn (No. 8) - 2" x 2" x 8'
   c. Steel U, T, L or C Section - 3/8", per Y'-Y'
   d. Synthetic - same strength as wood stakes.
2. Attach fence fabric with 3" zip ties within the top 18" of the fence.
3.Alternate attachment methods may be approved by the Engineer on a performance basis.
4. Use of high flow material is acceptable.
5. Refer to plan sheets to estimate the length of silt fence required.

BIODEGRADABLE LOG OR FILTER SOCK
1. Place biodegradable logs or filter sock tightly together minimum overlap of 18''.
2. Wood stakes shall be 2'' x 2'' (nom).
3. Refer to plan sheets to estimate length of biodegradable log and filter sock required.
4. Each log or sock installed above filter sock should be tamped into the ground at a minimum of 25% of its height. Complete filter sock should be placed on smooth prepared ground with no gaps between the sock and soil.
5. Length of stakes should be 2 times the height of the log at a minimum with maximum ground embedded equal to the height of the log/sack.

GENERAL NOTES
1) Slope intertions shall be placed along contour lines, with a short section turned upgrade at each end of the barrier.
2) The maximum length of the slope intertions shall not exceed 250 feet, and the barrier ends need to be staggered.
3) Interactions designed by Contractor's specifications, including improper maintenance or lack of maintenance, shall be repaired immediately by Contractor at no additional cost to KDOT.
4) Agricultural products, such as native prairie hay, used for erosion control, are not allowed on the Kansas Department of Transportation properties.
5) Revisions to this document shall be executed through the Department of Transportation CAD/Drone Office.
GENERAL NOTES

1) The choice of ditch check methods is at the option of the Contractor.

2) Use only rock checks in situations where the ditch slope is 6 percent or greater.

3) Ditch checks damaged by Contractor's negligence, including improper maintenance or lack of maintenance, shall be repaired by Contractor at no extra cost to KDOT.

Typical Arrangement of Ditch Checks
ROCK DITCH CHECK NOTES

1. Rock shall be clean aggregate, D50 = 6".
2. Place rock in such manner that water will flow over, not around, ditch check.
3. Do not use rock ditch checks in clear zone.
4. Section I: The ditch area shall be maintained to fit any existing trees. Prior to placement of the rock, the ditch shall be excavated to the dimensions of the Rock Ditch Check and to a minimum depth of 6' (1500mm). After placement of the rock, boredom and compact any over excavated soil in ditch grates. This work shall be subject to the bid, then Temporary Ditch Check (Rock).
5. Aggregate associated with the rock may be sealed as two to seven feet, if approved by the Engineer.
6. The Engineer may approve the use of larger aggregates for the downstream portion of the check when conditions warrant.
7. When the use of larger rock is approved, the upstream portion of the check should be constructed of 200 - 8" or smaller.

BIODEGRADABLE LOG DITCH CHECK NOTES

1. Use as many biodegradable log sections as necessary to ensure water does not flow around end of ditch check.
2. Develop sections a minimum of 15 feet.
3. Ditches shall be sealed or sheeted according to Section 0144 of the Standard Specifications. Length of log shall be a minimum of 12 times the diameter of the log.
4. Use Erosion Control Class 1 or 2 as the downstream apron when desired.
5. A downstream apron is required when directed by the Engineer. Apron material will be paid at the contract unit price.
6. Each log or wood treated compost filter should be placed into the ground, at a elevation, above the ground surface. The logs or wood treated compost filter should be spaced on smooth, prepared ground with no gaps between the soil and rock.
The top of the blanket should be Year 0

Plot Location:

SHS

REVISION SHS

PROJECT NO.

When spaces are necessary, overlap each other a minimum of 6 inches, with anchors catching the edges of both blankets.

Splice Seam. When spaces are necessary, overlap each other a minimum of 6 inches in direction of water flow. Stagger splice seams.

INSTALLATION DETAILS FOR EROSION CONTROL CLASS I

Erosion control blankets shall be laid in the direction of the slope, beginning at the bottom of the slope, in order for blanket to be in contact with the soil, by backfilling, tamping and seeding.

1. ANCHOR SLOTS. The top of the blanket shall be anchored at the top of the slope and anchored in place with anchors 6 inches apart. The slots should be 6 inches wide x 6 inches deep, with the blanket anchored in the bottom of the slot, then backfilled, tamped and seeded.

2. LONGLATINAL SEAM. The edge of the blanket should overlap each other a minimum of 6 inches, with anchors catching the edges of both blankets.

3. SPlice SEAM. When spaces are necessary, overlap each other a minimum of 6 inches in direction of water flow. Stagger splice seams.

4. TERMINAL FOLD. The bottom edge of the blanket shall be turned under a minimum of 6 inches, then anchored in place with anchors 9 inches apart.

5. TYPICAL ANCHOR. Anchor design shall be as recommended by the manufacturer.

6. STAPLE CHECK. Establish Staples in 2 rows on center apart. Staples Checks shall be 30 apart.

NOTE: Agricultural products, such as native prairie hay, used for mulching and erosion control practices, excluding wood based mulches, shall meet the North American Weed Free Forage Standards. Single panel rig and sheet staple is acceptable.
GENERAL NOTES
All structural steel shall conform to ASTM A36 or A572 Grade 50. Alternatives using ASTM A606 or A441 Grade 50 or other approved steels may be substituted for ASTM A36 steel. All structural steel shall be galvanized in accordance with ASTM A123 after fabrication.

High-strength bolts, nuts, and washers shall conform to ASTM A325 and shall be coated in accordance with the coating specifications.

The bolt matrix plate shall be a 30 gauge sheet steel and galvanized in accordance with ASTM A123 after fabrication. If galvanized sheet steel is used, no other galvanization is required.

Commercial grade concrete may be substituted for sign support footings.

PROCEDURE FOR ASSEMBLY OF BASE CONNECTION

1. Assemble sign post base plate to stub post base plate with bolts, nuts, washers, and bolt retainer plate. Washers are to be installed on top of the sign post base plate, bottom of the stub post base plate, and the bolt retainer plate.

2. Punch hole by varying thickness of washers between sign post base plate and stub post base plate.

NOTE: No washers or shims are to be placed between the bolt retainer plate and stub post base plate.

3. Tighten all bolts to the maximum possible with a 12 to 15-inch wrench to field washers and prime and clean field threads. Loosen each bolt in turn and tighten in a systematic order to the prescribed torque (see table). Do not over-tighten.

4. Drill the hole at each junction with nut using a center punch to prevent nut loosening.

NOTE TO THE ENGINEER

The intent of the "AASHTO Roadside Design Guide" and these plans is to have a 4'-0" less projection above the finished ground line after impact.

All dimensions are in inches. Unless otherwise noted.
### GENERAL NOTES

- Fuse plate steel shall conform to ASTM A36 (no substitutions will be allowed). All other structural steel shall conform to ASTM A36 or A572 Grade 345. Alternates using ASTM A588 or A449 Grade 345 or other approved steels may be substituted for ASTM A572 steel. All structural steel shall be galled in accordance with ASTM A572 after painting.
- All high strength bolts, nuts, and washers shall conform to ASTM A490 and shall be coated in accordance with the coating specifications.
- The fuse plate shall be centered on the saw cut and the steel post.
- It is permissible to close the ends of the structural tubing tie bar with a steel plate.

### STEEL BEAM BREAKAWAY POSTS

#### DETAILS FOR STEEL BEAM BREAKAWAY POSTS

**Sheet 2 of 2**

<table>
<thead>
<tr>
<th>POST SIZE</th>
<th>BOLT SIZE</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>J</th>
<th>K</th>
<th>L</th>
<th>M</th>
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Dimensions "A" and "B" are hole diameters. Dimensions "C" through "M" are hole dimensions. Dimensions "N" through "Z" in the fitting detail are notch dimensions.

---

**FUSE PLATE**

**DETAIL "A"**

**TIE BAR CLAMP**

**STRUCTURAL TUBE TIE BAR**

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All dimensions are in inches, unless otherwise noted.

---
**INSTALLATION PROCEDURES**

1. Plumb and drive post anchor into the ground 18" if anchor sleeve is required, or to the specified height above the ground line.

2. Install anchor sleeve (if required) on the post anchor and align the post below the ground line. Plumb the post to the specified height above the ground line and drive post anchor into the ground.

3. Install sign post into the post anchor.

**PERFORATED SQUARE STEEL TUBE POST (PSST)**
1) Design Speed: These items delegated to temporary traffic control should be designed and installed using the posted/actual speed of the roadway prior to work starting.

2) Minimum Lane Width: Lane widths shall be a minimum of 11' (measured between centers 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 signs.

3) Consideration should be made to separate pedestrian and, if needed, bicycle movements from both work zone 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-vehicle traffic volumes, these signs should be placed at intersections (rather than midblock locations) so that pedestrians are not confronted with midblock work sites that would induce them to attempt walking the work site or making a midblock crossing.

4) When pedestrian facilities are changed, closed, or relocated, the temporary facilities shall be0 denoted and include accessibility features consistent with the features present in the existing pedestrian facility.

5) When the driving surface opens to traffic is milled or is a temporary surface made of loose materials, or when directed by the engineer a W-15 (Graveled Pavement) or WY7 (Loose Gravel) sign shall be used on mainline approaches. This sign should be placed 0.5" above the W-20 (Road Work Ahead) sign. The sign should be placed as far forward as practical. Where the W-15 sign is used, the WY7 signs. All signs shall be displayed as long as the condition is present.

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

Minimum advance warning sign spacing (in feet)

<table>
<thead>
<tr>
<th>SPEED (MPH)</th>
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<th>C</th>
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<td>25-30</td>
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<tr>
<td>70-75</td>
<td>165</td>
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</tr>
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</table>


deferred speed prior to work starting

The deferral speed of 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.

Channelizer Placement:
1) The spacing between devices in transition area (290') should not exceed a distance in feet equal to 1/2 the posted speed limit in mph prior to work starting.
2) The spacing between devices in the advanced warning area and the activity area should not exceed a distance in feet equal to two times the posted speed limit in mph prior to work starting.
3) Channelizing devices shall be placed for optimum visibility, normally at right angles to the traffic flow.
4) Place directional indicator bollards in series to direct traffic onto the new path. The arrow sign should not be visible to opposing traffic.
5) Alternating diagonal orange and white striping must slope downward in the direction traffic is expected to pass.
For widths less than 36", 4"-wide stripes may be used.
All stripes shall slope downward to the traffic side for channelization.

**DRUM**

**CONICAL DELINEATOR**

**TUBULAR MARKER**

**TRAFFIC CONE**

**TYPE 2 BARRICADE**

**VERTICAL PANEL**

**DIRECTION INDICATOR BARRICADE**

**PEDESTRIAN CHANNELIZER**

1. Support device shall not project beyond the detection plate into the pathway.
2. Drum and delineator plates are optional for continuous walls.
3. Stripes on pedestrian channelizers to prevent displacement and to provide continuous guidance through or around work.
4. Delineator plates shall be firm, stable, and slip resistant.
5. Treat height differentials > 1/2" in the surfaces of alternate path with a 2% stable, and slip resistant temporary ramp having a slope of 12:1 or flatter, and having a width equal to the alternate path.
6. Use alternating orange/white on interconnected devices.

**Channelizing Devices**

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<tr>
<th>Item</th>
<th>Location</th>
<th>Portable</th>
<th>Conical Delineator</th>
<th>Portable Conical Delineator</th>
<th>Drum</th>
<th>Drum Delineator</th>
<th>Drum Delineator</th>
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</tr>
</tbody>
</table>

1. Not allowed on centerline delineation along freeways or expressways.
2. The stripes shall slope downward to the traffic side for channelization.
3. May be used upon the approval of the engineer.
4. Use alternating orange/white on interconnected devices.
Traffic Control

SIGN LAYOUT INFORMATION

END ROAD WORK
6' 6" 48' 24"
K203-0

WAIT FOR PILOT CAR
6' 6" 48' 24"
K203-3

GROOVED PAVEMENT
3 4" 36' 00"
W-15

LOOSE GRAVEL
3 5" 36' 00"
W-73

UNEVEN LANES
3 5" 36' 00"
W-11

SHOULDER DRIP-OFF
30' 24"
W-177 (Optional)

NB US-75 CLOSED
10 6" 100' 00"
SP-10

US-75 CLOSED
LOWER CASE:
UPPERCASE:
6' 6" 48' 24"
4' 9" 48' 24"

RURAL

1) Ground mounted signs shall be mounted at a minimum height of 5 feet measured from the bottom of sign to the near edge of the pavement.
2) Large signs having an area exceeding 50 square feet installed on multiple breakaway posts shall be mounted a minimum of 7 feet above the ground.
3) The height of the secondary sign mounted below another sign may be 4 feet measured from the bottom of the sign to the near edge of the pavement. Signs shall not overlap each other.

URBAN

1) Signs shall be mounted at a minimum height of 7 feet measured from the bottom of sign to the near edge of the pavement.
2) Neither portable nor permanent sign supports should be placed on sidewalks or areas designated for pedestrian or bicycle traffic.
3) Signs mounted lower than 7 feet should not project more than 4 feet from pedestrian facilities.
4) The height from the secondary sign mounted below another sign may be 6 feet measured from the bottom of sign to the near edge of the pavement. Signs shall not overlap each other.
5) Large signs having an area exceeding 50 square feet installed on multiple breakaway posts shall be mounted a minimum of 7 feet above the ground.
6) Construction warning signs shall be a minimum of 2 feet measured from the top of the protection barrier to the bottom of the sign and shall not protrude into the roadway nor shall it project beyond the back of curb.

THE INFORMATIONAL SIGNS ARE NOT TO INTERFERENCE WITH THE TRAFFIC CONTROL SIGNS FOR THE PROJECT.

When the sign width is equal to or greater than 10" and three or more wood posts may be used with a maximum of 4 between the centers of each post. All signs less than 10" in width shall use a maximum of two wood poles.

In the case of hitting rock when driving posts:
1) Shift the sign location. Do not create alternative minimum sign spacing.
2) With the Engineer's approval, use acceptable alternative sign stands.

Typically, there are two sets of informational signs installed per project one for each direction of traffic.

Install signs a minimum of 502 feet in advance of the road work ahead signs. The Engineer may designate a more appropriate location if conditions dictate.
Notes:

For work in the median, install signs and channelizing devices for each direction of traffic according to the applicable typical paving.

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 a high-intensity rotating flashing, oscillating, or strobe light is used.

Omit taper if paved shoulder is less than 6' wide.

Eliminate W7-3a if shoulder is closed for less than 2 miles.
### Recapitulation of Quantities

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity</th>
<th>Unit</th>
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<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>
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<td>Per Day</td>
</tr>
<tr>
<td>Work Zone Signs (16.26 Sq Ft &amp; Over)</td>
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<tr>
<td>Work Zone Barricades (Type 3 - 4' to 12')</td>
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</tr>
<tr>
<td>Work Zone Barricades (Pedestrian)</td>
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<tr>
<td>Channelizer (Fixed)</td>
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<tr>
<td>Channelizer (Portable)</td>
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<td>Per Day</td>
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<td>Channelizer (Pedestrian)</td>
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<td>Per Day</td>
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<tr>
<td>Work Zone Warning Light (Type &quot;A&quot; Low Intensity)</td>
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<td>Work Zone Warning Light (Red Type &quot;B&quot; High Intensity)</td>
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<tr>
<td>Portable Changeable Message Sign</td>
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<tr>
<td>Pavement Marking (Temporary)</td>
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<tr>
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<td>Symbol (Type II)</td>
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<tr>
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### Work Zone Signs *

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### Barricades *

- **Type 3 (4' to 12')** Pedestrian

### Channelizing Devices *

- Fixed
- Portable
- Pedestrian

### Lighted Devices *

- Work Zone Warning Light (Type "A" Low Intensity) 8
- Work Zone Warning Light (Red Type "B" High Intensity)
- Arrow Display 2
- Portable Changeable Message Sign

**NOTE:** Signing quantities allow for outside lane closure as directed by the Engineer. See TE744 for details.

* Quantity most used on the project at any one time