STATE OF KANSAS
DEPARTMENT OF TRANSPORTATION
PLAN AND PROFILE OF PROPOSED
64 C-5000-01
FEDERAL AID PROJECT
MORRIS COUNTY

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DESIGN DESIGNATION
AADT = 40 vpd
Design Speed = 35 mph

CONVENTIONAL SIGNS

GROSS LENGTH OF PROJECT 900 FT.
EXCEPTIONS 0.00 FT.

NET LENGTH OF PROJECT 900.00 FT. 0.17 MILES
NET LENGTH OF BRIDGES 122.68 FT. 0.02 MILES
NET LENGTH OF ROAD 777.12 FT. 0.15 MILES

Note: Road shall be closed to traffic during construction of this project.
General notes:
The guardrail element is flanged, and shop bent.
See Standard Drawing 10611 for notes applying to guardrail posts.
See Standard Drawing 10618 for details of Type II and Terminal.
Use wood breakaway posts through curved section of guardrail. All
other posts may be either wood or steel with no mixing of types.
Steel tube and stud plates to be placed prior to the installation of the wood
anchor assembly post.
Use Type II Terminal at entrances or locations where end-on impacts
with the terminal are not considered to occur.
Use a crosshatch end terminal at all locations and appropriate
length of guardrail to satisfy length of need requirements.

31/2" Minimum length for three beam transition. See Standard Drawings R3612 & R3613.
25-0' Minimum length for Webex with rural transition. See Standard Drawing R3615.

ANVIL CABLE 1/2" Steel plate

1/2" Steel plate

Wood post inserted in steel tube.

SOIL PLATE

6" x 6" x 24"

1/2" Steel plate

Anchor plate

Steel cable assembly

Bearing plate

Steel tube

6"x8"x8" wood post (Modified as shown and preservative treated after drilling)

No block-out on breakaway post.

3/4" a bolt Centered in post

6"x6"x6" standard pipe in 2 1/2" hole

3/4" a bolt with hex nut and washer

1" stud with nut, backwasher and washer

1/4" bolt holes

1/2" holes

3/4" x 1 1/2" Machine bolt with hex nut and two (2) washers.

1/2" Hole

Bend to Tr.

Steel beam guardrail

MODIFIED SECTION B-B

STEEL TUBE

CABLE ASSEMBLY

(40,000 lbs. min. breaking strength)
Tighten cable to last tension.

1/2" Steel tube

1/2" Nut, backwasher, and washer

Steel swage connected

1/2" Swage

1/2" nut, backwasher and washer

1/8" x 1 1/2" steel stud

1/8" x 1" stud

1/8" x 1/2" stud

1/4" x 1/2" stud

1/4" x 1/2" stud

Fascia plate to wood post with #10 x 2" zinc plated screw

BEARING PLATE

SECTION A-A

( Typical through curved portion of guardrail)

3/4" x 3/4"

1 1/4" 

2 1/2"

3/4" 

1"

8 1/2"

2 1/2"

2 1/2"

1 1/4"

1"

1 1/4"

1"

1 1/4"

1"

1 1/4"

1"

1 1/4"

1"

1 1/4"

1"

1 1/4"

1"

1 1/4"

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1 1/4"

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1 1/4"

1"

1 1/4"

1"

1 1/4"

1"

1 1/4"

1"

1 1/4"

1"

1 1/4"

1"
GENERAL NOTE

Terminal end posts consist of a wood post inserted into a steel tube see details on this sheet.

The steel conduit may be driven with an approved driving device. Set steel tube and soil plate before installing wood anchor post assembly. Do not drive steel soil tubes with wood post in the tube. Shield tube and satisfactorily compact around steel soil tubes placed in drilled holes to prevent tube settlement.

Galvanize all steel parts after fabrication.

Lap guardrail splice, including terminal connectors, in the direction of traffic, where traffic is temporarily carried in the opposite direction of final configuration, lap splice in the direction of the permanent traffic.

All work and materials required for the installation of the Bantam Terminal Type II are considered supplementary to the detail of Steel Plate Guardrail. Include Type II end terminal in pay length of Steel Plate Guardrail.

**GUARDRAIL END TERMINAL**

**TYPE II**

**GENERAL NOTE**

Terminal end posts consist of a wood post inserted into a steel tube see details on this sheet.

The steel tubes may be driven with an approved driving device. Set steel tube and soil plate before installing wood anchor post assembly. Do not drive steel soil tubes with wood post in the tube. Shield tube and satisfactorily compact around steel soil tubes placed in drilled holes to prevent tube settlement.

Galvanize all steel parts after fabrication.

Lap guardrail splice, including terminal connectors, in the direction of traffic, where traffic is temporarily carried in the opposite direction of final configuration, lap splice in the direction of the permanent traffic.

All work and materials required for the installation of the Bantam Terminal Type II are considered supplementary to the detail of Steel Plate Guardrail. Include Type II end terminal in pay length of Steel Plate Guardrail.

**GUARDRAIL END TERMINAL**

**TYPE II**
### SPIRAL (HELICAL) CORRUGATION

For all sizes of round and oval pipe having (product如果有必要) corrugations, the end sections and connecting bands shall be as shown above.

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<td>21.3</td>
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<td>Flange Width</td>
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<td>Flange Depth</td>
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</tr>
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</table>

### CONNECTION DETAIL

**UNIVERSAL REFORMED END with H-7 or H-10 HUGGER BAND**

For H-7 or H-10 HUGGER BAND (12" thru 36") or H-10 HUGGER BAND (12" thru 120")

**DETAILS FOR H-7 or H-13 HUGGER BAND**

**BOLT AND STRAP CONNECTOR Assembly**

- **Bolt and Strap Connector Assembly**

**DETAILS FOR H-12 or H-13 HUGGER BAND**

**UNIVERSAL REFORMED END with HUGGER BAND**

**METAL END SECTION for ROUND & ARCH METAL CULVERTS (TYPE I) & PIPE GAUGE TABLES**

**R244C**
Transition to round pipe.

For all normal of End Section, except when structures shall be alternated. In that case End Sections shall be subject to the item "Drainage Structure No. 1".

Minimum waterway area is calculated at the inside of the bevel.

**END SECTION (TYPE I) NOMINAL DIMENSIONS**

<table>
<thead>
<tr>
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**SIDE TAPERED INLET SECTION (TYPE III) NOMINAL DIMENSIONS**

<table>
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<tr>
<th>Dim.</th>
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<th>F</th>
<th>C</th>
<th>H</th>
<th>J</th>
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<td>5</td>
<td>3.5</td>
<td>5</td>
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Dimensions for alternate shapes shall be equal to or greater than those shown in the tables, unless otherwise shown.
PVC Pipe

1/2" Dia. threaded rod over top of End Section

Rod holder

(1/2"A/CSCA/C) End Section

A

W

A

Overall Width

PLAN
(Illustrated with Type 2 Connector on 12" or larger)

1/2" Dia. threaded rod over top of End Section Slide Lugs to be bolted to End Section.

1/2" Dia. threaded rod over top of End Section Slide Lugs to be bolted to End Section.

105°

Tapered split

Bell

Diatomite seal (gasket) (seat tight @ 16)

PVC BELL & SPIGOT CONNECTION
SOIL TIGHT JOINT

Reinforced edge

Toe Plate Extension (Opt.) (Same gauge as End Section)

FRONT ELEVATION

PVC pipe length

TYPICAL SECTION
CORRUGATED PVC PIPE

Smooth Interior Wall

Corrugated Outside Wall

DETAILS OF CORRUGATED PVC PIPE

1/2" Dia. threaded rod over top of End Section Slide Lugs to be bolted to End Section.

1/2" Dia. threaded rod over top of End Section Slide Lugs to be bolted to End Section.

105°

Tapered split

Bell

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PVC BELL & SPIGOT CONNECTION
SOIL TIGHT JOINT

Reinforced edge

Toe Plate Extension (Opt.) (Same gauge as End Section)

FRONT ELEVATION

PVC pipe length

TYPICAL SECTION
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Corrugated Outside Wall

DETAILS OF CORRUGATED PVC PIPE

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PVC BELL & SPIGOT CONNECTION
SOIL TIGHT JOINT

Reinforced edge

Toe Plate Extension (Opt.) (Same gauge as End Section)

FRONT ELEVATION

PVC pipe length

TYPICAL SECTION
CORRUGATED PVC PIPE

Smooth Interior Wall

Corrugated Outside Wall

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SOIL TIGHT JOINT

Reinforced edge

Toe Plate Extension (Opt.) (Same gauge as End Section)

FRONT ELEVATION

PVC pipe length

TYPICAL SECTION
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Smooth Interior Wall

Corrugated Outside Wall

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Bell

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PVC BELL & SPIGOT CONNECTION
SOIL TIGHT JOINT

Reinforced edge

Toe Plate Extension (Opt.) (Same gauge as End Section)

FRONT ELEVATION

PVC pipe length

TYPICAL SECTION
CORRUGATED PVC PIPE

Smooth Interior Wall

Corrugated Outside Wall

DETAILS OF CORRUGATED PVC PIPE

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Bell

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PVC BELL & SPIGOT CONNECTION
SOIL TIGHT JOINT

Reinforced edge

Toe Plate Extension (Opt.) (Same gauge as End Section)

FRONT ELEVATION

PVC pipe length

TYPICAL SECTION
CORRUGATED PVC PIPE

Smooth Interior Wall

Corrugated Outside Wall

DETAILS OF CORRUGATED PVC PIPE

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FRONT ELEVATION

PVC pipe length

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Smooth Interior Wall

Corrugated Outside Wall

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1/2" Dia. threaded rod over top of End Section Slide Lugs to be bolted to End Section.

105°

Tapered split

Bell

Diatomite seal (gasket) (seat tight @ 16)

PVC BELL & SPIGOT CONNECTION
SOIL TIGHT JOINT

Reinforced edge

Toe Plate Extension (Opt.) (Same gauge as End Section)

FRONT ELEVATION

PVC pipe length

TYPICAL SECTION
CORRUGATED PVC PIPE

Smooth Interior Wall

Corrugated Outside Wall

DETAILS OF CORRUGATED PVC PIPE
### PIPE CULVERT SUMMARY

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<th>Type</th>
<th>Date of Fill</th>
<th>Length of Flow</th>
<th>Depth of Flow</th>
<th>Height of Flow</th>
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<td>12 ft</td>
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</table>

- Unless otherwise noted, minimum pipe gage # configuration to be as shown in sketch.
- See Summary of Committee for fill section information.
- Only include plans descriptions for embankment fill. See FORM A for details. For structures not embanked, the four elements may be deleted.

#### PLAN
(Showing Rotation about R)

- Design side slope to intersect inside diameter of pipe outside of Clear Zone.

---

**Diagram Notes:**
- **A:** Unless otherwise specified in the plans, all pipe types may not be allowed at a location of the inflow and outflow. The maximum allowable side slope shall be less than the minimum allowed to exist.
- **B:** Where grade of pipe is 10% or less.
- **C:** Type IV End Sections are only made of CS or A23.
- **D:** Submit Shop Drawing for connection for review.
# Summary of Quantities

<table>
<thead>
<tr>
<th>Item</th>
<th>Location</th>
<th>Excavation</th>
<th>Concrete</th>
<th>Reinforcing Steel</th>
<th>Grid</th>
<th>Fire Protection</th>
<th>Geotextile Fabric</th>
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**Note:** All quantities are included in the Superstructure. Summary of Filling Abutment No. 2 14.0’ (TM) 14.0’ (TM) 14.0’ (TM) 14.0’ (TM) 14.0’ (TM)

## General Notes

**CHANNEL IMPREGNATION AND CURTAIN:** The Contractor shall excavate the required area, construct the bridge, and complete the engineering of the bridge as shown prior to the construction of the new bridge.

**LAYOUT:** Complete the engineering of all as-plotted shown on the Bridge Location sheet prior to the alignment of the bridge. The bridge construction system shall be shown prior to the construction of the new bridge.

**BACKFILL:** Complete the backfill of the embankments according to the bridge location sheet prior to the alignment of the bridge. The bridge construction system shall be shown prior to the construction of the new bridge.

## Design Data


**FINISHED GRADE:** 10% to 40%.

**UNIT STRESSES:** Concrete (Grade 32) 42 psi 42 psi | Concrete (Grade 42) 60 psi 60 psi | Reinforcing Steel (Grade 42) 90 ksi 90 ksi | Design Load (Mg) Strength | Service | Fatigue | Abutment 58.5 42.5 90.0 | LRID Design Factoring Pressure | Strength | Service |

**Curing:** Curing of concrete shall be in accordance with KDOT Specifications.

**AASHTO INFORMATION:** (not yet determined)

## Design Specifications


**LOAD AND STRESS FACTORS:**

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<th>Operating</th>
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CONCRETE PLACING SEQUENCE DIAGRAM

When long span steel beams having a concrete dead load deflection greater than 1/4" are used or when timber framework with greater than 12'-0" clear span is used, follow the placing sequence shown. Segmental, combined or continuous pours are allowed, but stop a discontinuous pour at a construction joint short of a pier.

When timber framework with 12'-0" or less clear span is used, the Contractor, subject to the approval of the Engineer, may use a continuous pour or may discontinue the pour at any construction joint shown.

The Contractor may place the curtail line continuously from one end of the bridge to the other.

DEAD LOAD CARRIER DIAGRAM AT TENTH POINTS

Long Term Deflections = Initial Deflections x 1.5
(Initial Deflections Based on \( e_0 = 0.644 \times 10^{-6} \) p.u.l.
(lumber values in feet)

Note: E elevations are taken from Crown Grade.

Note: The change in elevation from Crown Grade to the edge of slab is +0.024
# Recapitulation of Road Quantities

### Recapitulation of Bridge Quantities

## Station to Station

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<th>VMF</th>
<th>CONTR. FURN.</th>
<th>CU.YDS.</th>
<th>VMF</th>
<th>CU.YDS.</th>
<th>VMF</th>
<th>CU.YDS.</th>
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## Expiration

### Common Excavation

<table>
<thead>
<tr>
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## Compaction

<table>
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<tr>
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## Through Cuts

<table>
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<tr>
<th>Type</th>
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## Initial Consolidation

<table>
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<tr>
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</table>

## Cutting Environment

- Guardrail, Steel Plate
- Guardrail End Terminals (SRT) (Alt. 1)
- Guardrail End Terminals (FLEAT) (Alt. 2)
- Signing Board Markings Type 3
- Slope Protection (Shot Rock)
- Entrance Pipe (Ft.)
- End Sections (ea.)
- Cross Road Pipe (24")
- Temporary Surfacing Material (Aggregate) (Set Price)
- Weather (Grading) (Set Price)
- Field Office and Laboratory (Type C)
- Compaction of Earthwork (Type B) (MR-90)
- Mobilization (DBE)
- Contractor Construction Staking
- Temporary Erosion and Pollution Control Quantities
- Seeding Quantities
- Tree Removal (For Information Only)
- Excavation (For Information Only)
- Removal of Existing Structures
- Slope Protection (Shot Rock)
- Drainage Structures
- Signing Object Markers (Type 3)

### General Note

- See Sheet No. 17 for Bridge Quantities.
- See Sheet No. 30 for Erosion Control (Class 1, Type D) Quantities.
- See Sheet No. 31 for Erosion Control (Class 1, Type D) Quantities.
- See Sheet No. 40 for Traffic Control Quantities.

### Summary of Quantities

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
<th>Quantity</th>
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</thead>
<tbody>
<tr>
<td>Earthwork</td>
<td>SLOPE PROTECTION (Shot Rock)</td>
<td>23.6</td>
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<tr>
<td></td>
<td>TREE REMOVAL (For Information Only)</td>
<td>15</td>
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<td></td>
<td>REMOVAL OF EXISTING STRUCTURES (For Information Only)</td>
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<td></td>
<td>Drainage Structures</td>
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<td></td>
<td>Guardrail, Steel Plate</td>
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<td>Guardrail End Terminals (FLEAT) (Alt. 2)</td>
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<td>Guardrail, Steel Plate</td>
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<td></td>
<td>Slope Protection (Shot Rock)</td>
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<tr>
<td></td>
<td>Entrance Pipe (Ft.)</td>
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<tr>
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<td>End Sections (ea.)</td>
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<td></td>
<td>Cross Road Pipe (24&quot;)</td>
<td>25.00</td>
</tr>
<tr>
<td></td>
<td>Temporary Surfacing Material (Aggregate) (Set Price)</td>
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<td></td>
<td>Weather (Grading) (Set Price)</td>
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<tr>
<td></td>
<td>Field Office and Laboratory (Type C)</td>
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</tr>
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</table>

### Additional Notes

- See Sheet No. 46 for Traffic Control Quantities.
- See Sheet No. 17 for Bridge Quantities.
- See Sheet No. 39 for Seeding Quantities.
- See Sheet No. 31 for Erosion Control (Class 1, Type D) Quantities.
<table>
<thead>
<tr>
<th>C/S</th>
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<td>2/7/16</td>
<td>0/0</td>
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</tr>
</tbody>
</table>

TOTAL EROSION CONTROL CLASS I TYPE D

2/7/16

RAILROAD DEPARTMENT OF TRANSPORTATION

EROSION CONTROL
SEEDING-SOILING

RAIL2A-EC
Typical Profile of Temporary Slope Drain

Temporary Slope Drain and Temporary Barriers may be used on either project
Trenches or project backdams.

1. Temporary Slope Drain and Temporary Barriers shall be
constructed in accordance with the project backdams.

2. Pipe shall be placed in a manner as approved by
Engineer.

3. Barriers under 2,000 feet shall be bid by Soil Price.

Temporary Stream Crossing (Articulated Concrete Blocks)

Pipe sizes may vary.

Place 1 pipe buried 6' below stream bottom, in the
lowest point of the channel to allow the passage
of aquatic organisms with additional pipes
placed along the remainder of the stream.

See KSOT Specifications for more information.

Temporary Stream Crossing (Aggregate)

Pipe sizes may vary.

Place 1 pipe buried 6' below stream bottom, in the
lowest point of the channel to allow the passage
of aquatic organisms, with additional pipes
placed along the remainder of the stream.

See KSOT Specifications for more information.
GENERAL NOTES

1. The choice of ditch check method 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 its extra cost to KDOT.
ROCK DITCH CHECK NOTES
1. Rock shall be clean aggregate, 2 to 6.
2. Place rock in such manner that water will flow over and around rock check.
3. Do not use rock check in clear zones.
4. Exposed. The exposed area shall be placed in a manner to ensure that the rock is exposed as required by the Engineer.
5. Contaminated. Any contaminated soil shall be removed.
6. Temporary Ditch Check (Rocks).
7. Aggregate placed on site may be used as an alternative to rock, if approved by the Engineer.
8. The Engineer may approve the use of larger aggregate for the downstream portion of the check when conditions warrant their use.
9. When the use of larger rock is approved, the upstream portion of the check shall be constructed of 2 to 6 or smaller.
NOTES:
1. Temporary Sediment Basins shall be constructed at locations as directed by the Engineer or as approved in the SWPPP Schedule. All work and materials necessary, including, but not limited to the fill materials, compaction, drainage pipes, aggregate and all other materials necessary to construct the basin, shall be paid as "Temporary Sediment Basins".
2. Lengths and top dimensions shall be determined in the field by the Engineer.
3. Silt fence, sedimentation devices required and must be used regardless the size of the drainage area.

Sediment Storage Basin Locations

<table>
<thead>
<tr>
<th>Station to Station</th>
<th>Size</th>
<th>Required Storage Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SUMMER SEDIMENTATION DEVICE

Notes:
1. All P.V.C. pipes are to be schedule 40.
2. HDPE flexible drain pipes is to be attached to the pond outlet structure with water-tight connections.
3. The outlet shall be sized to provide drawdown time to 2 to 5 days and approved by the Engineer.
4. Other sedimentation designs may be used and shall be approved by the Engineer.
INSTALLATION DETAILS FOR EROSION CONTROL CLASS 1

Erosion Control Blankets shall be laid tassily in the direction of the slope, beginning at the bottom of the slope, in order for placement to be in contact with the soil by planter hastily, avoiding smearing.

1.ANCHOR SLOT: The top of the blanket should be "flamed" on 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 placed on the bottom of the slot, then backfilled, tamped and seeded.

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

3.SPICE SEAM: When splices are necessary, overlap a minimum of 8 inches in direction of water flow. Splicer splice sequence.

4.TERMINAL FOLD: The bottom edge of the blanket shall be turned under a minimum of 3 inches, then anchored in place with anchors 9 inches apart.

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

6.STAPLE CHECK: Establish Splices in 2 rows 4" on center apart. Staple Checks - shall be 20 apart.

NOTE: Agricultural products, such as native profile mix, used for mulching and erosion control practices, exclusive weed barrier mats, shall meet the North American Weed Free Forage Standards. Single precision and staple staples is acceptable.
GENERAL NOTES

The native wildflower area contains a diverse mix of native species, which provide habitat and food for birds and other wildlife. The project area is part of a larger ecosystem that includes riparian areas, wetlands, and agricultural lands. It is important to maintain the integrity of this ecosystem by minimizing the impact of construction activities.

A native wildflower area is designed to provide habitat for a variety of wildlife, including birds, butterflies, and other insects. The native wildflower area is located at a site that has a diverse range of plant species, including grasses, forbs, and shrubs. The native wildflower area is designed to support a variety of plant species, including grasses, forbs, and shrubs.

NATIVE WILDFLOWER MIX 1

NATIVE WILDFLOWER MIX 2

Package and deliver the native wildflower seed separately from the grass seed. Package and deliver the native wildflower seed separately from the grass seed. Package and deliver the native wildflower seed separately from the grass seed.

SUMMARY OF SEEDING QUANTITIES

<table>
<thead>
<tr>
<th>Seed Type</th>
<th>Quantity</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.5&quot; Grass Seed</td>
<td>100</td>
<td>lb</td>
</tr>
<tr>
<td>2&quot; Grass Seed</td>
<td>50</td>
<td>lb</td>
</tr>
<tr>
<td>2.5&quot; Grass Seed</td>
<td>25</td>
<td>lb</td>
</tr>
<tr>
<td>Native Wildflower</td>
<td>15</td>
<td>lb</td>
</tr>
<tr>
<td>Total</td>
<td>180</td>
<td>lb</td>
</tr>
</tbody>
</table>

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<thead>
<tr>
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<th>Quantity</th>
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<tbody>
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<tr>
<td>Total</td>
<td>180</td>
<td>lb</td>
</tr>
</tbody>
</table>

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<td>15</td>
<td>lb</td>
</tr>
<tr>
<td>Total</td>
<td>180</td>
<td>lb</td>
</tr>
</tbody>
</table>
1) Design Speed: Those areas delegated to temporary traffic control should be designed and installed using the posted/legal 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 signage.

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 signage 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 (barring then McLain's location) so that pedestrians are not confronted with two-lane work sites that will induce them to attempt crossing the work site or making a midblock crossing.

4) When existing pedestrian facilities are dismantled, closed, or relocated, the temporary facilities shall be detectable and provide 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 W-15 (10500 Pounds) or W-30 (6800 Pounds) sign shall be used. For median approaches, the sign should be placed a distance of 10 feet in front of the W-20 (Hard Work Median) sign. A W-50 motorcycle plaque shall be used to supplement the W-15 or W-50 signs. 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 780-294-1183.

**TYPICAL WORK ZONE COMPONENTS**

- When concrete barrier systems are used, portable channelizing devices are not needed along the tangent barrier system.

<table>
<thead>
<tr>
<th>SPEED (MPH)</th>
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<th>B</th>
<th>C</th>
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<tr>
<td>URBAN (40 MPH OR LOWER)</td>
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<td>100</td>
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<tr>
<td>URBAN (45 MPH OR HIGHER)</td>
<td>350</td>
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<td>350</td>
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<tr>
<td>RURAL (35 MPH OR LOWER)</td>
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<td>500</td>
<td>500</td>
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<tr>
<td>RURAL (50 MPH OR HIGHER)</td>
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<td>750</td>
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<tr>
<td>EXPRESWAY/FREeway</td>
<td>1000</td>
<td>1000</td>
<td>2640</td>
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</table>

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

- **Speed posted prior to work starting:**
  - The minimum spacing between signs shall be 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 maintain visibility.

- **Chevron Placement:**
  1. The spacing between devices in transition area (taper) 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 advance 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. More directional arrow barricades in series to direct traffic onto the new path. The arrow sign should not be visible to opposing traffic.

- **Buffer Space:**
  - The minimum distance prior to work starting:
    - Neither work activity nor storage of equipment, vehicles, or materials should occur in the buffer space. When a protection vehicle is placed in advance of the work area, the only space upstream of the vehicle coincides the buffer space.
    - If temporary concrete safety barrier systems are used to separate approaching traffic from the work space the barrier system shall be consistent with the buffer area. A full width should be available throughout the length of the buffer space.
### TRAFFIC CONTROL CHANNELIZING DEVICES

**DRUM**
- Approx. 36 in. high
- Width: 6 in. max., 3 to 6 in. min.

**CONICAL DELINEATOR**
- 42 in. high
- Width: 6 in. max., 6 to 8 in. min.

**TUBULAR MARKER**
- Striping as shown for up to 42 in.

**TRAFFIC CONE**
- White
- 2 in. wide

**TYPE 2 BARRICADE**
- White
- 24 in. high

**VERTICAL PANEL**
- 52 in. high

**DIRECTION INDICATOR BARRICADE**
- 36 in. high

**PEDESTRIAN CHANNELIZER**

<table>
<thead>
<tr>
<th>Item</th>
<th>Location</th>
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</thead>
<tbody>
<tr>
<td>Drum</td>
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<td>Conical Delineator</td>
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<tr>
<td>Vertical Panels</td>
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<tr>
<td>Direction Indicator Barricade</td>
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<tr>
<td>Type 2 Barricade</td>
<td>No</td>
</tr>
<tr>
<td>Traffic Cones</td>
<td>No</td>
</tr>
<tr>
<td>Trolley Markers</td>
<td>No</td>
</tr>
<tr>
<td>Vertical Panels</td>
<td>Yes</td>
</tr>
</tbody>
</table>

1. Support device shall not project beyond the detection plate into the pathway.
2. Hand holding edges and detection plates are optional for continuous width.
3. Integrate pedestrian channels to prevent displacement and to provide continuous guidance through or around work.
4. Alternate pathways shall be firm, stable, and slip resistant.
5. Trench height dwellings = 1/2 in. in the surface of alternate paths with a firm, 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.

*(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) Daytime operations only.*
**SIGN LAYOUT INFORMATION**

**END ROAD WORK**
- Size: 6" C
- Paver/Freeway
- Depth: 8" D
- Orientation: 48° x 48°

**WAIT FOR PILOT CAR**
- Size: 6" C
- Paver/Freeway
- Depth: 48° x 48°

**GROOVED PAVEMENT**
- Size: 6" C
- Paver/Freeway
- Depth: 48° x 48°

**LOOSE GRAVEL**
- Size: 6" C
- Paver/Freeway
- Depth: 48° x 48°

**NEXT MILE**
- Size: 6" C
- Paver/Freeway
- Depth: 48° x 48°

**SHOULDER DROP-OFF**
- Size: 6" C
- Paver/Freeway
- Depth: 48° x 48°

**NB US-75 CLOSED FOLLOW DETOUR**
- Size: 6" C
- Paver/Freeway
- Depth: 8° D

**US-75 CLOSED NORTH OF TOPEKA FOLLOW DETOUR**
- Size: 6" C
- Paver/Freeway
- Depth: 8° D

---

**RURAL**

1) Ground-mounted signs shall be mounted at a minimum height of 7' measured from the bottom of the 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' above the ground.

3) The height of the secondary sign mounted below another sign may be 4' 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' measured from the bottom of the sign to the near edge of the pavement.

2) Neither portable nor permanent sign supports shall be located on sidewalks or areas designated for pedestrian or bicycle traffic.

3) Signs mounted lower than 7' should not project more than 4' into pedestrian facades.

4) The height from the secondary sign mounted below another sign may be 4' measured from the bottom of the 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' above the ground.

6) Pedestrian detour signing shall be a minimum of 2' measured from the top of the pedestrian pathway to the bottom of the sign and shall not protrude into the walkway nor project beyond the back of curb.

---

**FINES DOUBLE IN WORK ZONES**

Dimensions in inches

<table>
<thead>
<tr>
<th>Width</th>
<th>Height</th>
<th>Depth</th>
<th>Spacing</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-0&quot;</td>
<td>4-5&quot;</td>
<td>4-0&quot;</td>
<td>0-0&quot;</td>
</tr>
</tbody>
</table>

**LETTER SPACINGS**

Spacings are to start of next letter

<table>
<thead>
<tr>
<th>Type of Sign</th>
<th>Letters</th>
<th>Spacing</th>
</tr>
</thead>
<tbody>
<tr>
<td>FINES</td>
<td>6-0&quot;</td>
<td>6-0&quot;</td>
</tr>
<tr>
<td>DOUBLE</td>
<td>6-0&quot;</td>
<td>2-0&quot;</td>
</tr>
<tr>
<td>WORK ZONES</td>
<td>6-0&quot;</td>
<td>2-0&quot;</td>
</tr>
</tbody>
</table>

---

**NOTES:**

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

Install signs a minimum of 500' in advance of the road work ahead sign. The engineer may designate a more appropriate location if conditions dictate.

The informational signs are not to interfere with the traffic control signs for the project.
PERFORATED SQUARE STEEL TUBE (P.S.T.) POST SETUP

WOOD POST SETUP

3 LB/F U-CHANNEL SETUP

Details for 2", 2½", or 2½" sign posts
Place bolts in the same corner along each sign post.

Notes:
Please 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 splice pieces of U-Channel.