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2. SOUTH DETENTION BASIN LAYOUT
3. NORTH DETENTION BASIN LAYOUT
4. SOUTH DETENTION BASIN GRADING
5. NORTH DETENTION BASIN GRADING
6. OUTLET STRUCTURE PLANS
7. OUTLET STRUCTURE DETAILS
8. PIPE SCHEDULES
9. END SECTIONS
10. SUMMARY OF QUANTITIES
11-22. TEMPORARY EROSION CONTROL
23. SEEDING
24-25. TRAFFIC CONTROL

STATE OF KANSAS
DEPARTMENT OF TRANSPORTATION
PLAN AND PROFILE OF PROPOSED
27 TE-0474-01
FEDERAL AID PROJECT
CITY OF ELLSWORTH
DOUBLE STORM WATER DETENTION BASINS
50 YEAR DESIGN
ELLSWORTH COUNTY

This project will remain open to traffic during construction.

CONVENTIONAL CODES

STATE OF KANSAS DEPARTMENT OF TRANSPORTATION

KANSAS DEPARTMENT OF TRANSPORTATION
archeological investigations unless buried in construction limits would require additional permitting regulations. A Kansas State Board of Agriculture would require material either stockpiled or disposed of in a flood plain. 

Material shrubs not shown to be removed and located Department of Health and Environment. Material is to be removed unless directed by the Engineer to be removed.

Excavation shown to be worked shall be washed on sites provided by the Contractor. These sites shall be approved by the Engineer as to suitability, appearance, and site location. Locations that in the opinion of the Engineer, will leave an unattractive appearance will not be approved.

All disposal sites must be approved by the Kansas Department of Health and Environment, material either stockpiled or disposed of in a flood plain would require a Kansas State Board of Agriculture permit. Any materials dumped in waters of the United States or wetlands are subject to U.S. Corps of Engineers permitting regulations. Any material buried or stockpiled beyond approved construction limits would require additional archaelogical investigations unless buried in a previously approved borrow location.

NOTES:

1. Disc golf baskets and concrete tee pads to be removed by City prior to construction.
2. Billboard in northwest corner of park to be removed by City prior to construction.
3. Contractor shall limit construction activity to north and west of sidewalk walking trail during construction of south detention basin.
4. Construction of south detention basin shall start after disc golf tournament in October.
OUTLET STRUCTURE DIKE DETAIL

NOTES:
1. Soil-riprap details are applicable to sloped areas. Refer to the plans for actual locations and limits.
2. Mix uniformly 65% riprap by volume with 35% approved soil by volume prior to placement.
3. Soil-riprap shall consist of a uniform mixture of soil and riprap without voids.
4. Place soil-riprap to result in securely interlocked rock at the design thickness and grade. Compact and level to eliminate all voids and rocks projecting above design riprap top grade.
5. Seed and place erosion control blanket per plans and specifications.

RIPRAP GRADATION

<table>
<thead>
<tr>
<th>Given Size (Inches)</th>
<th>Intermediate</th>
<th>350 Diameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>6</td>
<td>12</td>
</tr>
<tr>
<td>6</td>
<td>9</td>
<td>12</td>
</tr>
<tr>
<td>3</td>
<td>5</td>
<td>12</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>12</td>
</tr>
</tbody>
</table>

PLACEMENT:
1. Adjacent slopes of riprap and soil shall be created and grading done at the existing location, not at the location where soil-riprap is to be placed.
2. Mix thirty-five percent (35%) soil by volume with stockpiled riprap, using additional moisture and control procedures that ensure a homogenous mixture, where the soil fills the inherent voids in the riprap without displaying riprap.
3. With prior approval of ENGINEER, mixing the riprap and soil instead of premixing may be allowed if the refusal soil is granular. Then place the top layer with surface rocks that are largely 50 or greater, filling voids as necessary with smaller planted riprap.
4. The mixture shall be consolidated by large vibratory equipment or toebucket to create a tight, dense interlocking mass.
5. The soil shall be further wetted to encourage void filling with soil.
6. Large voids shall be filled with rock and small voids filled with soil.
7. Excessively thick zones of soil prone to washing away shall not be created (for example, no thicknesses greater than six (6) inches).
8. For buried soil-ripraps, the top surface shall be covered with six (6) inches of topsoil such that no rock points are protruding.
9. The final surface shall be thoroughly wetted for good compaction, smoothed and compacted by vibrating equipment; the surface shall then be level raked to receive planting or seeding.
PIPE CULVERT SUMMARY

<table>
<thead>
<tr>
<th>Station</th>
<th>Type</th>
<th>ID No.</th>
<th>Size or Bid Design No.</th>
<th>Flow Line</th>
<th>Degree of Rotation</th>
<th>Height of Pipe</th>
<th>Length of Pipe</th>
<th>Pipe Gauge</th>
<th>Pipe Corrugations</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>14+40.0</td>
<td>RD659</td>
<td>6</td>
<td>36&quot;</td>
<td>0°</td>
<td>0°</td>
<td>1556.50</td>
<td>30'</td>
<td>CS</td>
<td>ACS</td>
<td></td>
</tr>
<tr>
<td>14+46.78</td>
<td>RD659</td>
<td>6</td>
<td>42&quot;</td>
<td>0°</td>
<td>0°</td>
<td>1558.50</td>
<td>30'</td>
<td>CS</td>
<td>ACS</td>
<td></td>
</tr>
<tr>
<td>154+45.5</td>
<td>RD659</td>
<td>6</td>
<td>36&quot;</td>
<td>0°</td>
<td>0°</td>
<td>1558.50</td>
<td>30'</td>
<td>CS</td>
<td>ACS</td>
<td></td>
</tr>
<tr>
<td>154+52.3</td>
<td>RD659</td>
<td>6</td>
<td>36&quot;</td>
<td>0°</td>
<td>0°</td>
<td>1558.50</td>
<td>30'</td>
<td>CS</td>
<td>ACS</td>
<td></td>
</tr>
</tbody>
</table>

- The plans otherwise noted, minimum pipe gauge & corrugations to be as shown in RD660.
- See Summary of Quantities for End Section information.
- Only include floor elevations for embedded pipes. See RD660 for details. For structures not embedded, the floor elevations may be omitted.

**Notes:**
- **Design side slope to intersect inside diameter of pipe outside of Clear Zone.**
- **Provide End Sections of the same material and coating type as the pipe.**
- **Type IV End Sections are only made of CS or ACS.**
- **When inside diameter of pipe is 60" or less, provide End Sections of the same material and coating type as the pipe.**

**PLAN**
(Showing Rotation about €)

- **Angle of Rotation** (Left angle shown)
- **Direction of Stationing**
- **Edge of Shoulder**
- **Edge of Pavement**

**SECTION**

- **Plan View**
- **Profile View**
- **Cross Section**

**NOTES:**
- **When inside diameter of pipe is 36" or less, provide End Sections of the same material and coating type as the pipe.**
- **Provide End Sections of the same material and coating type as the pipe.**
- **Type IV End Sections are only made of CS or ACS.**
- **When inside diameter of pipe is 60" or less, provide End Sections of the same material and coating type as the pipe.**

**SUMMARY of PIPE CULVERTS**

<table>
<thead>
<tr>
<th>Type</th>
<th>Length of Pipe</th>
<th>Side Slope</th>
<th>Flow Line</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| When inside diameter of pipe is 36" or less: Provide End Sections of the same material and coating type as the pipe.**
### END SECTION (TYPE |) NOMINAL DIMENSIONS

<table>
<thead>
<tr>
<th>Diameter</th>
<th>Area Sq. Ft.</th>
</tr>
</thead>
<tbody>
<tr>
<td>8&quot;</td>
<td>Greater than or equal to 10.1</td>
</tr>
<tr>
<td>6&quot;</td>
<td>Greater than or equal to 7.0</td>
</tr>
<tr>
<td>4&quot;</td>
<td>Greater than or equal to 4.0</td>
</tr>
<tr>
<td>54&quot;</td>
<td>Greater than or equal to 22.7</td>
</tr>
<tr>
<td>48&quot;</td>
<td>Greater than or equal to 17.9</td>
</tr>
<tr>
<td>42&quot;</td>
<td>Greater than or equal to 13.7</td>
</tr>
<tr>
<td>36&quot;</td>
<td>Greater than or equal to 10.1</td>
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<td>30&quot;</td>
<td>Greater than or equal to 7.0</td>
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<tr>
<td>24&quot;</td>
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<tr>
<td>22.7&quot;</td>
<td>Greater than or equal to 2.0</td>
</tr>
<tr>
<td>17.9&quot;</td>
<td>Greater than or equal to 1.0</td>
</tr>
</tbody>
</table>

### END ELEVATION (TYPE |)

- **Section AA:**
  - INLET END:
    - **Greatest than or equal to 1:**
    - **KANSAS STATE:**
      - **NOTE:** There shall be no payment for gain in length due to joint fit tolerance.

- **PLAN VIEW:**
  - **Project:**
    - **Note:** There shall be no payment for gain in length due to joint fit tolerance.

- **ELEVATION SECTION:**
  - **INLET END:**
  - **OUTLET END:**
  - **Horizontal Roadway Lt.:**
  - **Horizontal Roadway Rt.:**
  - **Vertical Pipe Lt.:**
  - **Vertical Pipe Rt.:**
  - **Note:** Refer to the KDOT Design Manual, Volume 1 (Part C), Road Section, "Elements of Drainage & Culvert Design" for structural pipe design information which includes: corrugations, sizes, gauges, maximum minimum fill heights and classes of pipe.
### Earthwork Recapitulation

<table>
<thead>
<tr>
<th>Bridge Number</th>
<th>Station</th>
<th>See Sheet No.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1-1-91</td>
<td>R.J.S</td>
</tr>
</tbody>
</table>

#### Bridge Quantiites

- **Total Lots:** 10

#### Recaptulation of Road Quantities

<table>
<thead>
<tr>
<th>Description</th>
<th>Quantity</th>
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<tbody>
<tr>
<td>Mobilization</td>
<td></td>
</tr>
<tr>
<td>Mobilization (DBE)</td>
<td></td>
</tr>
<tr>
<td>Clearing and Grubbing</td>
<td></td>
</tr>
<tr>
<td>Common Excavation</td>
<td></td>
</tr>
<tr>
<td>Compaction of Earthwork (Type B) (MR-90)</td>
<td></td>
</tr>
<tr>
<td>Water (Grading) (Set Price)</td>
<td></td>
</tr>
</tbody>
</table>

#### Summary of Quantities

- **Total Lots:** 10

### Drainage Structures

<table>
<thead>
<tr>
<th>Location</th>
<th>Type</th>
<th>Size</th>
<th>Cross Section</th>
<th>Entrance Pipe Size</th>
<th>End Section Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Detention Basin</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>South Berm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>North Berm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>North Detention Basin</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Slope Protection (Special)

- **SOIL RIPRAP:**
- **SLOPE PROTECTION (SPECIAL):**

For Temporary Erosion & Pollution Control Quantities See Sheet No. 13
For Traffic Control & Quantities See Sheet No. 10
FERTILIZER: A ratio and application rate that equals or exceeds the required minimum rate per acre of N, P₂O₅, K₂O listed in Summary of Quantities will be acceptable.

- * = Nitrogen Rate of Application
- ** = Phosphorous Rate of Application
- *** = Potassium Rate of Application

The Contractor will be required to furnish areas of excavation, borrow, and embankment in accordance with the specifications. Areas that require installation or construction of temporary water pollution controls will be furnished in reasonable time conformity to the alignment, grade and access section shown on the plans or as established by the Engineer.

GENERAL NOTES:
The entire disturbed area, excepting the paved or surfaced areas, steep rocky slopes and areas of unpermitted native sod or other desirable vegetation must be fertilized (limed when required), seeded, and mulched. Temporary seeding shall conforms to the Standard Specifications. Temporary seeding shall be done during any time of the year that the soil can be cultivated. After the temporary seeding has been completed on the entire project, permanent seeding shall be done during the normal seeding season.

mulch shall be spread uniformly over all disturbed areas and packed in the soil, unless otherwise noted on the plans. The rate of application per acre is in place, for the mulching materials is generally as follows:

1/5 - 1/2 Tons per Acre = 1/5" base depth spread uniformly per acre.

Other vegetative mulches are acceptable only with the Engineer's concurrence.

The above rates is a guide, it will be at the discretion of the Engineer to determine what rate is sufficient for adequate protection of newly seeded areas.

SOIL EROSION MIX

The Soil Erosion Mix is to be placed under the Class 1 and/or Class 2 erosion control material. The Soil Erosion Mix consists of the Shoulder Area of the Permanent Seed Mix used on the project.

NOTE: Projects less than 1 acre shall be bid as "Seeding" by the lump sum. See Permanent Seeding Summary of Seeding Quantities sheet LASO for further details.

Geotextile (Erosion Control) shall be removed prior to placement of permanent slope protection.

Regent and Silt Fence are the approved wheatgrass products.

* - If the soil disturbed area of the project, not just the seeding area, is 1 acre or more, then these bid items shall be included.

** - List size of material.

The amount of mulch and mulch tacking slurry in the bid quantities is estimated. Acres of Seeding 1.5 X 2 Tons/ACRE. The estimated quantity includes existing associated with both temporary and permanent seeding operations. The Final mulch and/ or mulch tacking slurry required shall be determined in the field. The bid item for mulching and mulch tacking slurry shall be paid according to the Standard Specifications.
## Erosion Control - Class I, Type C

<table>
<thead>
<tr>
<th>Location</th>
<th>SQ YARD</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Detention</td>
<td>3783.2</td>
</tr>
<tr>
<td>North Detention</td>
<td>270.3</td>
</tr>
<tr>
<td>South Berm</td>
<td>5431.7</td>
</tr>
<tr>
<td>North Berm</td>
<td>234.1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>9719.3</td>
</tr>
</tbody>
</table>

## Erosion Control - Class 2, Type E

<table>
<thead>
<tr>
<th>Location</th>
<th>SQ YARD</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Detention</td>
<td>249.1</td>
</tr>
<tr>
<td>North Detention</td>
<td>162.9</td>
</tr>
<tr>
<td>South Berm</td>
<td>86.2</td>
</tr>
</tbody>
</table>

**Total Erosion Control (Class 2, Type E) = 498.2 SQ YARD**
1. Temporary Slope Drain and Temporary Berm may be placed on either project forebays or precast benches.

2. Discharge of Slope Drains shall be into stabilized ditches or areas or into Sediment Basins.

3. Pipe shall be secured in place as approved by Engineer.

4. Temporary Berms under 2,000 feet shall be bid by SM Prices.

5. Other Approved Material: Rock Dissipator or earthwork operations progress.

Temporary Slope Drain shall be placed to match height of slope as shown on Project Plans.

Pipe size may vary, as required by project conditions.

Temporary Berm shall flow through the pipes without overtopping (OHW) flows designated in the Contract Documents.

Place 1 pipe buried 6" into 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 channel bottom such that ordinary high water (OHW) flows designated in the Contract Documents shall pass through the pipes without overtopping the crossing.

Temporary Stream Crossing (AVC) may be placed on either project forebays or precast benches.

The crossing shall be bid by SM Prices.

Temporary Stream Crossing (Articulated Concrete Blocks) may be placed on either project forebays or precast benches.

Temporary Stream Crossing (AGGREGATE) may be placed on either project forebays or precast benches.

ARTIFICIAL CONCRETE BLOCKS w/ Filter Fabric

Clean Aggregate Fill

Steel Pipe

Clean Aggregate Fill

Clean Aggregate Fill

Clean Aggregate Fill

Sediment Basin
**Temporary Inlet Sediment Barrier**

**Silt Fence Method**

**Plan**
- Cross pieces shall be of same material as stakes.
- southern pine (No. 2) - 2" x 2"; or
- hardwood - 1" x 1"; or
- steel U, T, L, or C section - 0.95 lbs. per ft.
- synthetic - same strength as wood stakes.
- Note: 25% of log shall be also hold fill material in place.
- Mesh must allow water infiltration but use mesh with " openings or larger.
- Use of high flow material is acceptable.
- Tightly overlap ends.
- Wire staples: 6" long.
- Bags = synthetic net 1.5 mm mesh or burlap bags.
- Rock = approximately 1" to 2" diameter.
- Note: a minimum of 6 inches must be used or burlap bags.

**Section A - A**
- Cross pieces shall be of same material as stakes.
- Attach fence fabric securely on 6" centers (max).
- Stake every 4'.
- Use of high flow material is acceptable.
- Material requirements:
  - Do not use material which prohibits water infiltration.
  - Do not use material which prevents fill from flowing.

---

**Temporary Sediment Control**

**Temporary Inlet Sediment Barrier (Silt Fence Method)**

**Plan**

- Cross pieces shall be of same material as stakes.
- southern pine (No. 2) - 2" x 2"; or
- hardwood - 1" x 1"; or
- steel U, T, L, or C section - 0.95 lbs. per ft.
- synthetic - same strength as wood stakes.
- Note: 25% of log shall be also hold fill material in place.
- Mesh must allow water infiltration but use mesh with " openings or larger.
- Use of high flow material is acceptable.
- Tightly overlap ends.
- Wire staples: 6" long.
- Bags = synthetic net 1.5 mm mesh or burlap bags.
- Rock = approximately 1" to 2" diameter.
- Note: a minimum of 6 inches must be used or burlap bags.

**Section A - A**

- Cross pieces shall be of same material as stakes.
- Attach fence fabric securely on 6" centers (max).
- Stake every 4'.
- Use of high flow material is acceptable.
- Material requirements:
  - Do not use material which prohibits water infiltration.
  - Do not use material which prevents fill from flowing.
**SILT FENCE**

- **NO SCALE**

**GENERAL NOTES**

1. Stake shall be 4' (min.) long and one of the following materials:
   - Hardwood - 1 3/4" x 3/4";
   - Southern Pine No. 2 - 2" x 2";
   - Steel U, T, or C Section - .95 lbs. per 1'-0";
   - Synthetic - same strength as wood stakes.
2. Attach fence fabric with 3 zip ties within the top 8" of the fence.
3. Attach additional methods may be approved by the Engineer on a performance basis.
4. Use of high flow material is acceptable.

**INSTALLATION NOTES**

1. Place biodegradable logs or filter sock tightly together minimum overlap of 18".
2. Wood stakes shall be 2" x 2" (nom.).
3. Place to plan sheets to estimate length of biodegradable log and filter sock required.
4. Each log or sock (except compact filter sock) should be keyed into the ground at a minimum of 30" of its height. Compact filter socks should be placed an area prepared ground with no gaps between the sock and soil.
5. Length of stakes shall be 5 times the height of the log at a minimum with minimum ground embedment equal to the height of the log / sock.

**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 (except compact filter sock) should be keyed into the ground at a minimum of 30" of its height. Compact filter socks should be placed an area prepared ground with no gaps between the sock and soil.
5. Length of stakes shall be 5 times the height of the log at a minimum with minimum ground embedment equal to the height of the log / sock.

**BIOREGRADABLE LOG MATERIAL (LOW FLOW) (HIGH FLOW)**

- Wood Compost / Excelsior / Wood Chips / Coconut Fiber
- Straw / Compost / Excelsior / Wood Chips / Coconut Fiber
- Excelsior / Wood Chips / Coconut Fiber
- Straw / Compost / Excelsior / Wood Chips / Coconut Fiber
- Straw/Compost

**SILT FENCE BARRIER**

- **NO SCALE**

**SECTION A - A**

- Silt Fence Fabric
- Soil or Gravel Backfill in Anchor Trench
- Plastic 6" or other material approved by the field engineer, 150 lb. tensile strength located in top 8".
- Plastic 6" or other material approved by the field engineer, 150 lb. tensile strength located in top 8".
- Direction of Flow
- OR
- Geotextile fabric
- Tire compaction zone

**SECTION B - B**

- Biodegradable Log or Filter Sock Slope Interruptions
- 1' high, 1' diameter biodegradable log section or 6" Filter Sock (Optional)
- Downstream Apron
- Direction of Flow
- 1' high, 1' diameter biodegradable log section or 6" Filter Sock (Optional)
- Downstream Apron
- Direction of Flow
- 1' high, 1' diameter biodegradable log section or 6" Filter Sock (Optional)
- Downstream Apron

**BIODEGRADABLE LOG SLOPE INTERRUPTIONS**

- Biodegradable Log or Filter Sock Slope Interruptions
- 180° min. overlap of filters

**GENERAL NOTES**

1. Slope interruptions shall be placed along contour lines, with a short section turned up or at each end of the barrier.
2. The maximum length of the slope interruptions shall not exceed 355 feet and the barrier units need to be staggered.
3. Intermittent by Contractor or at no additional cost to KDOT.
4. Agricultural products, such as native prairie hay, used for mulching and erosion control practices, excluding wood based mulch, shall meet the North American Wood Free Forestry Standards.
Typical Arrangement of Ditch Checks

TYPICAL DITCH CHECK LAYOUT PLAN

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.

NOTE: Use this spacing for rock ditches except Rock Ditch Checks.

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. Excavation: The ditch area shall be reshaped to fill any eroded areas. 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" (150mm). After placement of the rock, backfill and compact any over excavated soil to ditch grades. This work shall be subsidiary to the old stream ditch checks (High Flow Ditches).
5. Aggregate excavated on site may be used as an alternate to the 6" rock, 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 their use.
7. When the use of larger rock is approved, the upstream portion of the check should be constructed of D50 = 6" or smaller.

Temporary Rock Ditch Check Spacing

<table>
<thead>
<tr>
<th>Ditch Elevation</th>
<th>Spacing</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>10'</td>
</tr>
<tr>
<td>2</td>
<td>20'</td>
</tr>
<tr>
<td>3</td>
<td>30'</td>
</tr>
<tr>
<td>4</td>
<td>40'</td>
</tr>
</tbody>
</table>

(Note: 50' spacing only for rock ditch checks)

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. Overlap sections a minimum of 10'.
3. Stakes shall be wood or steel according to Section 2114 of the Standard Specifications. Length of stakes shall be a minimum of 2 x the diameter of the log.
4. Use Erosion Control (Class 1) (Type C) as the downstream apron when required.
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 sock (except compost filter socks) should be keyed into the ground at a minimum of 25% of its height. Compost filter socks should be placed on smooth prepared ground with no gaps between the sock and soil.

Biodegradable Log Ditch Check

1. Use as many biodegradable log sections as necessary to ensure water does not flow around end of ditch check.
2. Overlap sections a minimum of 10'.
3. Stakes shall be wood or steel according to Section 2114 of the Standard Specifications. Length of stakes shall be a minimum of 2 x the diameter of the log.
4. Use Erosion Control (Class 1) (Type C) as the downstream apron when required.
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 sock (except compost filter socks) should be keyed into the ground at a minimum of 25% of its height. Compost filter socks should be placed on smooth prepared ground with no gaps between the sock and soil.
Sediment Storage Basin Locations

<table>
<thead>
<tr>
<th>Station to Station</th>
<th>Side</th>
<th>Required Storage Capacity</th>
</tr>
</thead>
</table>

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 orifice shall be sized to provide drawdown time to 2 to 5 days and approved by the engineer.
4. Other skimmer designs maybe used that dewaters from the surface at a controlled rate. The design must be approved by the engineer.

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, aggregates, and all other incidentals necessary to construct the basin, shall be paid as "Temporary Sediment Basin".
2) Lengths and top dimensions shall be determined in the field by the Engineer.
3) The orifice shall be sized to provide the required drawdown time to 2 to 5 days and approved by the engineer.
4) Other skimmer designs maybe used that dewaters from the surface at a controlled rate. The design must be approved by the engineer.

Sediment Storage Basin (Plan)

CROSS SECTION EMERGENCY SPILLWAY

CONCRETE ANTI-SEEP COLLAR

SECTION A-A

Sediment Storage Basin (Elevation)

SEDIMENT STORAGE BASIN LOCATIONS

STATE   KANSAS
PROJECT NO. 852H
YEAR    2020
DATE   09/24/2013
DESIGNED   Scott H. Shields
DESIGN CK.   7/17/13
DETAILED   REVISED STANDARD
DETAIL CK.   MRM
QUANTITIES   SHS
QUAN.CK.   9/3/13
APP'D   Added Skimmer Dewatering Device
FHWA APPROVAL   (See note 3)
CADD   11-SEP-2020 09:57
CADD CK.   jb ec k m a n
STANDARD FILE: la 8 5 2 h .d g n
PLOTTED BY:
PLOT LOCATION: 11-S EP -2020
PLOT DATE: 11-SEP-2020

Other notes:
- Principal spillway
- Orifice
- Skimmer dewatering device required and must be used regardless the size of the drainage area.
INSTALLATION DETAILS FOR EROSION CONTROL CLASS I

Erosion Control Blanket shall be laid loosely in the direction of the slope, beginning at the bottom of the slope, in order for blanket to be in contact with the soil. Blanket shall be anchored in the bottom of the slots, then backfilled, tamped and seeded.

1. ANCHOR SLOT: The top of the blanket should be "slotted" 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 positioned in the bottom of the slot, then backfilled, tamped and seeded.

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

3. SPLICE SEAM: When splices are necessary, overlap end a minimum of 8 inches in direction of water flow.

4. TERMINAL FOLD: The bottom edge of the blanket shall be turned under a minimum of 4 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 Staples in 2 rows 4" on center apart. Staple Checks - shall be 30' apart.

NOTE: Agricultural products, such as native prairie hay, used for mulching and erosion control practices, excluding wood based mulch, shall meet the North American Weed Free Forage Standards. Single post ring and shank staple is acceptable.
INSTALLATION DETAILS FOR EROSION CONTROL CLASS 2

Erosion Control Mats shall be laid loosely in the direction of the flow, with the first course at the centerline of channel, where applicable. In order for the mat to be in contact with the soil, lay the mat loosely, avoiding stretching.

1. **ANCHOR FOLD:** The top of the mat should be folded under, buried and secured with approved anchors placed 6 inches apart. The top edge of the mat should be buried in a slot 6 inches wide x 6 inches deep. Anchored is the bottom of the slot, backfilled and the mat folded over the top as shown in detail.

2. **LONGITUDINAL SEAMS:** The edgewise edges of the mat should overlap a minimum of 6 inches, with anchors catching the edges of both mats.

3. **SPLICE SEAM:** When splices are necessary, overlap end applicable. Stagger splice seams.

4. **STAPLE CHECK:** Establish Staples in 2 rows 4" on center apart. Staple Checks shall be 30 apart.

5. **EDGE ANCHOR:** Lay outside edge of mat into trench at top of side slope. Anchor at 3 foot intervals along trench.

6. **TERMINUS:** The bottom edge of the mat shall be anchored in place with anchors spaced at 9 inch intervals along the terminating edge.

7. **TYPICAL ANCHORS:** Anchor design shall be as recommended by the manufacturer.
SUMMARY OF SEEDING QUANTITIES

<table>
<thead>
<tr>
<th>SHOULDER MIX</th>
<th>NORTH SHOULDER</th>
<th>SOUTH SHOULDER</th>
<th>EAST SHOULDER</th>
<th>WEST SHOULDER</th>
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<tbody>
<tr>
<td>Seed (Western Wheatgrass Seed)</td>
<td>300 lbs</td>
<td>300 lbs</td>
<td>300 lbs</td>
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<tr>
<td>Seed (Switchgrass Seed)</td>
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<td>256 lbs</td>
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<tr>
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<td>6.4 lbs</td>
<td>6.4 lbs</td>
<td>6.4 lbs</td>
<td>6.4 lbs</td>
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<tr>
<td>Soil Stabilizer</td>
<td>32.0 lbs</td>
<td>32.0 lbs</td>
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<tr>
<td>Mulch</td>
<td>20.2 lbs</td>
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<td>20.2 lbs</td>
<td>20.2 lbs</td>
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SUMMARY OF SEEDING QUANTITIES

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<th>TOTAL</th>
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<tr>
<td>30</td>
<td>300 lbs</td>
<td>300 lbs</td>
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<tr>
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<td>300 lbs</td>
<td>300 lbs</td>
<td>300 lbs</td>
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</tbody>
</table>

Package and deliver the wildflower seed separately from the grass seed mix. Package and deliver the Tall Drop Seed separately from the grass seed and the wildflower seed mix. The Tall Drop Seed is to be placed in the disturbed area and covered with a minimum of 1" of mulch. Place the Tall Drop Seed in a separate (1/2"") sand box and place the sand (using the sand drill) on the soil surface.

OPTION: Broadcast Tall Drop Seed on the soil surface.

GENERAL NOTES

The active disturbed areas, consisting of the paved or surfaced areas, deep ruts, mounds or areas of undisturbed native varieties, and other desirable vegetation should be fertilized, limed and mulched when necessary to provide adequate protection. No permanent seedings shall be made except where approved by the Engineer.

In areas of loose or mounded soil, soil erosion precautions should be taken to prevent the seed from being washed away. The total mulch required shall be determined in the field. The bid item for mulching shall be paid for according to the specifications.

*Average seeding rate shown is based on supplier's recommended seeding rates for type of seed planted (unhulled, hulled, hulled-coated, unhulled-coated).
1) Design Speed: Those items delegated to temporary traffic control should be designed and installed using the posted/legally 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 lighting.

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 does not involve crossing the roadway can be provided, pedestrian should be appropriately directed with advance signing that encourages them to cross to the opposite side of the roadway. In urban and suburban areas with high vehicular traffic volumes, these signs should be placed at intersections (other than midblock locations) so that pedestrians are not confronted with midblock work sites that will induce them to attempt skirting the work site or making a midblock crossing.

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

5) When the driving surface is open to traffic is rolled or as a temporary surface made of loose material, or when directed by the engineer a W8-15 (Dotted Pavement) or W8-7 (Loose Gravel) sign shall be used on mainline approaches.

6) Alternative temporary rumble strip options may be available. Please contact.

7) The spacing between any signs may be increased less than 100', unless directed by the engineer.

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

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

10) The spacing between devices in the advanced warning area and the transition area should not exceed a distance in feet equal to 1/2 the posted speed limit in mph prior to work starting.

11) The spacing between devices in transition area (taper) should not exceed a distance in feet equal to two times the posted speed limit in mph prior to work starting.

12) The spacing between devices in the transition area should not exceed a distance in feet equal to two times the posted speed limit in mph prior to work starting.

13) 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.

14) 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.

15) Channelizing devices shall be placed for optimum visibility, normally at right angles to the traffic flow.

16) Place directional indicator barricades in series to direct traffic onto a reasonable safe route that does not involve crossing the roadway can be provided, pedestrians should be appropriately directed with advance signing that encourages them to cross to the opposite side of the roadway. In urban and suburban areas with high vehicular traffic volumes, these signs should be placed at intersections (other than midblock locations) so that pedestrians are not confronted with midblock work sites that will induce them to attempt skirting the work site or making a midblock crossing.

17) Channelizer spacing info

<table>
<thead>
<tr>
<th>SPEED (MPH)</th>
<th>A</th>
<th>B</th>
<th>C</th>
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</thead>
<tbody>
<tr>
<td>URBAN (40 MPH ON LOWER)</td>
<td>100</td>
<td>700</td>
<td>700</td>
</tr>
<tr>
<td>URBAN (45 MPH ON U-HIGHER)</td>
<td>950</td>
<td>590</td>
<td>590</td>
</tr>
<tr>
<td>RURAL (55 MPH ON GRD/RWY)</td>
<td>750</td>
<td>350</td>
<td>350</td>
</tr>
<tr>
<td>RURAL (60 MPH ON U-HIGHER)</td>
<td>750</td>
<td>350</td>
<td>350</td>
</tr>
<tr>
<td>EXPRESSWAY/HIGHWAY</td>
<td>1000</td>
<td>1500</td>
<td>1500</td>
</tr>
</tbody>
</table>

- **Taper Formulas:**
  - L = WS /60 for speeds of 40 MPH or less
  - L = WS /60 for speeds of 40 MPH or less
  - S = Numerical value of posted speed
  - W = Width of offset feet
  - Where: W

- **Channelizer Placement:**
  - (1) The spacing between devices 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 barricades 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.

- **Buffer Space**

<table>
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<tr>
<th>SPEED (MPH)</th>
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<th>25</th>
<th>30</th>
<th>35</th>
<th>40</th>
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<th>50</th>
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<th>60</th>
<th>65</th>
<th>70</th>
<th>75</th>
</tr>
</thead>
<tbody>
<tr>
<td>LENGTH (ft)</td>
<td>115</td>
<td>135</td>
<td>150</td>
<td>190</td>
<td>255</td>
<td>305</td>
<td>360</td>
<td>425</td>
<td>490</td>
<td>570</td>
<td>645</td>
<td>720</td>
</tr>
</tbody>
</table>

- **Buffer Space:**
  - Neither work activity nor storage of equipment, vehicles, or material should occur in the buffer space.
  - When a protection vehicle is placed in advance of the work space, the only the space upstream of the vehicle constitutes the buffer space.
  - If temporary concrete safety barrier system is used to separate approaching traffic from the work space, the barrier system shall be considered part of the activity area. A full lane width should be available throughout the length of the buffer space. See typical work zone components above.
The stripes shall slope downward to the traffic side for channelization.

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

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

The stripes shall slope downward in the direction traffic is to pass.

### Location

<table>
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<tr>
<th>Portable</th>
<th>Fixed</th>
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<tbody>
<tr>
<td>Item</td>
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<tr>
<td>Drum</td>
<td></td>
</tr>
<tr>
<td>Conical Delineator</td>
<td></td>
</tr>
<tr>
<td>Vertical Panels</td>
<td></td>
</tr>
<tr>
<td>Direction Indicator Barricade</td>
<td></td>
</tr>
<tr>
<td>Type 2 Barricade</td>
<td></td>
</tr>
<tr>
<td>Traffic Cones</td>
<td></td>
</tr>
<tr>
<td>Traffic Cones</td>
<td></td>
</tr>
</tbody>
</table>

### Portable

- Drum: Yes Yes Yes Yes Yes [1] Yes Yes Yes
- Conical Delineator: No No No No No No No No
- Vertical Panels: No No No Yes No No No No
- Direction Indicator Barricade: No No No No No No No No
- Type 2 Barricade: No No No No No No No No
- Traffic Cones: No No No No No No No No
- Traffic Cones: No No No No No No No No

### Fixed

- Tubular Markers: No No No No No No No No
- Tubular Markers: No No No No No No No No
- Vertical Panels: No No No No No No No No
- Vertical Panels: No No No No No No No No

Notes:
1. Support device shall not project beyond the detection plate into the pathway.
2. Hand trailing edges and detection plates are optional for continuous walls.
3. Interconnect pedestrian channelizers to prevent displacement and to provide continuous guidance through or around work.
4. Alternate pathways shall be firm, stable, and slip resistant.
5. Treat height differentials > 1/2" in the surfaces of alternate paths with a firm, stable, and slip resistant temporary ramp having a slope of 1:10 or flatter and having a width equal to the alternate path.
6. Use alternating orange/white on interconnected devices.

### Diagrams

- **DRUM**
- **CONICAL DELINEATOR**
- **TUBULAR MARKER**
- **TRAFFIC CONE**
- **TYPE 2 BARRICADE**
- **VERTICAL PANEL**
- **DIRECTION INDICATOR BARRICADE**
- **PEDESTRIAN CHANNELIZER**
Note: Signs shown for one approach to work zone.

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

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

FIGURE 2: TYPICAL SIGNING FOR SIDE ROAD OPEN

Note: Signs shown for one approach to work zone.

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

### ROAD CLOSED GENERAL NOTES

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

As shown in Figure 3, when local traffic must be allowed access into the work zone, Type 3 barricades shall be longitudinally staggered to maintain the appearance of a closed roadway. A second line of end to end Type 3 barricades shall be placed just beyond the last access point in the work zone, to completely close the roadway.

The R11-4 (ROAD CLOSED TO THRU TRAFFIC or ROAD CLOSED LOCAL TRAFFIC ONLY) sign shall not be used when the distance to the point of complete closure of the roadway is less than 1 mile.

The words "THRU EXIT OUT" or "THRU EXIT O/S" may be substituted for the words "ROAD CLOSED" on the R11-3a or R11-4 sign where applicable.

When barricades are placed end-to-end or staggered, a Type "A" low intensity warning light shall be mounted to the vertical post near each outside corner of the end barricades.
**PERFORATED SQUARE STEEL TUBE (P.S.S.T.) POST SETUP**

- **Post Anchor**
- **Sign Post**
- **Ground Line**
- **Undisturbed Earth or Compacted Fill**

**TE710 for Additional Details and Requirements**

**WOOD POST SETUP**

- **Ground Line**
- **Undisturbed Earth or Compacted Fill**

**3 LB/F U-CHANNEL SETUP**

- **Sign Post**
- **Ground Line**
- **Post Anchor**
- **Jam Nut**

**Notes:**

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

**Details for 2", 2 1/2", or 2 1/2" sign posts:**

Place bolts in the same corner along each sign post.
Notes:

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

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

4. Omit taper if paved shoulder is less than 8' wide.

Channelizing Device
= Ahead, 1500 ft, or 1 Mile

*SHOULDER WORK*

TRAFFIC CONTROL

UNDIVIDED ROADWAY
### SUMMARY OF TRAFFIC CONTROL DEVICES

#### EACH PER DAY

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity</th>
<th>Unit</th>
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<tbody>
<tr>
<td>Work Zone Sign (Special)</td>
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</tr>
<tr>
<td>Work Zone Sign (0 to 9.25 Sq Ft)</td>
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<tr>
<td>Work Zone Sign (9.26 to 16.25 Sq Ft)</td>
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<tr>
<td>Work Zone Sign (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>
<td>Channelizer (Fixed)</td>
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<td>Channelizer (Portable)</td>
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<tr>
<td>Channelizer (Pedestrian)</td>
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<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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<td>Arrow Display</td>
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<td>Portable Changeable Message Sign</td>
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### SIDEWALK PLAN

Note: Close walking trail during construction of south basin.

ADA COMPLIANT DETECTABLE PEDESTRIAN BARRICADE.

---

### RECAPITULATION OF QUANTITIES

<table>
<thead>
<tr>
<th>Device Type</th>
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<th>Unit</th>
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<tr>
<td>Work Zone Signs (0 to 9.25 Sq Ft)</td>
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<td>Channelizer (Fixed)</td>
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**TRAFFIC CONTROL SUMMARY OF DEVICES RECAPITULATION OF QUANTITIES**

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<thead>
<tr>
<th>Device Type</th>
<th>Quantity</th>
<th>Unit</th>
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<tr>
<td>Work Zone Signs (0 to 9.25 Sq Ft)</td>
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<td>Work Zone Barricades (Type 3 - 4 to 12')</td>
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<td>Channelizer (Fixed)</td>
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<td>Work Zone Warning Light (Type &quot;A&quot; Low Intensity)</td>
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**KANSAS DEPARTMENT OF TRANSPORTATION**

**TRAFFIC CONTROL DEVICES**

**SUMMARY OF QUANTITIES**

**DETAILED QUANTITIES**

**KANSAS STATE PROJECT NO. 2020 06/01/15**