Earthwork
<table>
<thead>
<tr>
<th>NO.</th>
<th>DATE</th>
<th>TITLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>EW-101</td>
<td>10-17-17</td>
<td>Embankment and Rebuilding Embankments</td>
</tr>
<tr>
<td>EW-102</td>
<td>10-20-15</td>
<td>Allowable Placement of Unsuitable Soil in Embankments</td>
</tr>
<tr>
<td>EW-105</td>
<td>04-21-15</td>
<td>Reshaping Slopes and Ditches</td>
</tr>
<tr>
<td>EW-110</td>
<td>10-20-15</td>
<td>Ditch Blocks and Dikes</td>
</tr>
<tr>
<td>EW-201</td>
<td>04-19-16</td>
<td>Bridge Berm Grading without Recoverable Slope (Barnroof Section)</td>
</tr>
<tr>
<td>EW-202</td>
<td>04-19-16</td>
<td>Bridge Berm Grading without Recoverable Slope (Non-Barnroof Section)</td>
</tr>
<tr>
<td>EW-203</td>
<td>10-20-20</td>
<td>Bridge Berm Grading with Recoverable Slope (Non-Barnroof Section)</td>
</tr>
<tr>
<td>EW-204</td>
<td>10-20-20</td>
<td>Bridge Berm Grading with Recoverable Slope (Barnroof Section)</td>
</tr>
<tr>
<td>EW-210</td>
<td>10-20-15</td>
<td>Standard Wing Dikes</td>
</tr>
<tr>
<td>EW-211</td>
<td>10-17-17</td>
<td>Special Grading at Side Piers</td>
</tr>
<tr>
<td>EW-212</td>
<td>10-20-15</td>
<td>Settlement Plate</td>
</tr>
<tr>
<td>EW-301</td>
<td>04-20-21</td>
<td>Guardrail Grading</td>
</tr>
<tr>
<td>EW-302</td>
<td>10-20-15</td>
<td>Special Shaping for High Tension Cable Guardrail at Median Obstacles</td>
</tr>
<tr>
<td>EW-401</td>
<td>10-20-15</td>
<td>Temporary Stream Crossing, Causeway, or Equipment Pad</td>
</tr>
<tr>
<td>EW-402</td>
<td>04-18-17</td>
<td>Temporary Stream Diversion</td>
</tr>
<tr>
<td>EW-403</td>
<td>04-18-17</td>
<td>Temporary Erosion Control Measures</td>
</tr>
<tr>
<td>EW-501</td>
<td>10-20-15</td>
<td>Rural Entrance</td>
</tr>
<tr>
<td>EW-502</td>
<td>04-18-17</td>
<td>Safety Ramp</td>
</tr>
<tr>
<td>EW-503</td>
<td>10-20-15</td>
<td>Side Road Grading</td>
</tr>
</tbody>
</table>
Refer to contract documents for removal limits and allowable placement areas for excavated material.

When the material is to be deposited in the same area, excavate area shown, then spread and recouple material according to specifications.

LEGEND

Area of Plowing and Shaping

Possible Tabulation:

107-31
Place unsuitable soil as detailed for the particular type of soil described in Section 2102 of the Standard Specifications. Project plan details or specific directions of the Engineer may require placement of topsoil or other unsuitable soil by methods other than those shown. Refer also to plan cross sections and soil survey sheets for additional information.

In new embankments greater than 20 feet in height, only Select, Suitable Class 10, or Type 'C' Unsuitable material will be allowed below that 20 foot depth.
Minor slope and ditch reshaping resulting from normal seedbed preparation will not be paid for separately.

1. Move material to or from areas immediately adjacent to slope to re-establish original slope template. Prepare slope according to Article 2601.03, B, 4, a of the Standard Specifications.

2. Remove or place Class 10 material to re-establish original slope template. In areas of Class 10 placement, furnish topsoil and place according to Section 2105 of the Standard Specifications. Prepare slope according to Article 2601.03, B, 4, a of the Standard Specifications.

3. Move material to or from areas immediately adjacent in order to re-establish original ditch template. Prepare ditch according to Articles 2601.03, H, 1, a, b, and c of the Standard Specifications. Reshape ditch according to Section 2125 of the Standard Specifications.

4. Remove or place Class 10 material to re-establish original ditch template. In areas of Class 10 placement, furnish topsoil and place according to Section 2105 of the Standard Specifications. Prepare ditch according to Articles 2601.03, H, 1, a, b, and c of the Standard Specifications.

Possible Contract Items:
- Slope Reshaping
- Reshaping Ditches
- Class 10 Excavation
- Topsoil, Furnish and Spread
Variation in dike construction will be allowed to adapt to local conditions when necessary.

Type F dike for letdown structures may vary in length and plan in different locations. Tie ends of dike into natural ground at the elevation of top of dike unless specified otherwise.

Refer to detail road plans and tabulation of drainage structures for exact information on location, top elevation, shape, or any variation from this plan for dikes.

Coordinate dike construction with project provisions for erosion control as directed by the Engineer.

Necessary material for construction of dikes is included in "Estimate of Quantities" for excavation.

Payment for "Excavation of the class specified" is full compensation for construction of dikes as indicated herein according to the Standard Specifications.

DESCRIPTION OF DIKES

Type M - Normal ditch block for median or roadway side ditches.

Type G - Ditch block using established ditch grades. For median or side ditches.

Type F - Dike for letdowns or other structures away from roadway area. Refer to project plans for details.

1. Design Ditch Grade to accomplish purpose of Ditch Block. Maximum slope approximately 10:1 relative to roadway grade.

2. No greater than 10:1.

3. 8:1 slope relative to approach roadway for any portion of dike constructed within 50' of edge of roadway with approaching traffic. Any portion of dike beyond 50' from edge of roadway may vary from 8:1 to a maximum of 2.5:1 at 100' from roadway.

4. 18'' unless specified otherwise.

TYPICAL SECTION A-A

TYPICAL SECTION B-B

TYPICAL SECTION C-C

TYPICAL SECTION D-D
Grading surface:
Refer to berm slope location table in project plans for locations of A, B, W and possible other points.

1. Variable slope.
2. Bridge Berm slope may vary and is determined by the A and B points. Slope is normally 2.5:1 or flatter.
3. Refer to contract documents for limits of the slope protection.

PLAN VIEW OF BRIDGE BERM
(BARNROOF FORESLOPE)
Bridge Berm slope may vary and is determined by the A and B points.
Refer to contract documents for limits of the slope protection.
Refer to BR series for longitudinal subgrade slope.
Temporary grading slope.
g = Pavement cross slope.
This image can be viewed in 3D on the ERL or at our website http://www.iowadot.gov/design/stdrdpln.htm.
PLAN VIEW OF BRIDGE BERM
(NON-BARNROOF FORESLOPE)

Grading Surface:
Refer to berm slope location table in project plans for locations of A, B, W and possible other points.

1. Variable slope.
2. Bridge berm slope may vary and is determined by the A and B points. Slope is normally 2.5:1 or flatter.
3. Refer to contract documents for limits of the slope protection.

Possible Slope Protection

Outside Edge of Bridge Deck

Transition Slope

Normal Foreslope

Subgrade Hinge Breakline

10:1 Foreslope Breakline

3:1

25'

Roadway

EW-202

STANDARD ROAD PLAN

BRIDGE BERM GRADING
WITHOUT RECOVERABLE SLOPE
(NON-BARNROOF SECTION)
Bridge Berm slope may vary and is determined by the A and B points.

Refer to contract documents for limits of the slope protection.

Refer to BR series for longitudinal subgrade slope.

Temporary grading slope.

10:1 = Pavement cross slope.
This image can be viewed in 3D on the ERL or at our website http://www.iowadot.gov/design/stdrdpln.htm

This image can be viewed in 3D on the ERL or at our website http://www.iowadot.gov/design/stdrdpln.htm

This image can be viewed in 3D on the ERL or at our website http://www.iowadot.gov/design/stdrdpln.htm

REVISION
04-15-16
SHEET 3 of 3

APPROVED BY DESIGN METHODS ENGINEER

BRIDGE BERM GRADING
WITHOUT RECOVERABLE SLOPE
(NON-BARNROOF SECTION)
Possible Tabulation:

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Roadway Pavement</td>
<td>Normal Shoulder</td>
</tr>
<tr>
<td>2</td>
<td>Bridge Deck</td>
<td>Outside Edge of &quot;Paved Shoulder, P.C. Concrete&quot;</td>
</tr>
<tr>
<td>3</td>
<td>Possible Shoulder Protection</td>
<td></td>
</tr>
</tbody>
</table>

Grading Surface:
Refer to berm slope location table in project plans for locations of A, B, C, W and possible other points.

The cost of removal, stockpiling and placement of macadam stone shall be considered incidental to "Paved Shoulder, P.C. Concrete".

1. Special shaping.
2. Bridge Berm slope may vary and is determined by the A and B points. Slope is normally 2.5:1 or flatter.
3. Refer to contract documents for limits of the slope protection.

Plan View of Bridge Berm (Non-Barnroof Foreslope)
Bridge Berm slope may vary and is determined by the A and B points. Slope is normally 2.5:1 or flatter.

Refer to contract documents for limits of the slope protection.

Refer to BR series for longitudinal subgrade slope.

Temporary grading slope.

\( g = \) pavement cross slope.

---

**SECTION C-C**

**SECTION B-B**

**SECTION A-A**
Bridge Berm slope may vary and is determined by the A and B points. Slope is normally 2:5:1 or flatter.

Width of bridge slab = 3' on each side. Build 6" sloped curb to to this width. Refer to PV-102 for curb details.

Includes curb runoff length. Refer to PV-102 for curb runoff details.

Match typical shoulder slope.

See typical cross-sections for details of paved shoulder.

Approximate location of bridge subdrain.

Refer to DR-306 subdrain outlet. When flow of subdrain does not require an outlet at both ends, cap the end without an outlet in a method approved by the Engineer.

2 times typical shoulder width

"X" distance based on station difference between points C2 and C3.

S' offset unless otherwise noted on the Bridge Situation Plan. 4' offset minimum.

PLAN VIEW OF BRIDGE BERM AREA

SUBDRAIN LAYOUT TYPES

TYPE 'A'

TYPE 'B'

TYPE 'C'

EDGE OF SHOULDER

ROADWAY PAVEMENT

3:1 SLOPE

50'

Width of bridge slab + 3' on each side. Build 6" sloped curb to this width. Refer to PV-102 for curb details.

Includes curb runoff length. Refer to PV-102 for curb runoff details.

Match typical shoulder slope.

See typical cross-sections for details of paved shoulder.

Approximate location of bridge subdrain.

Refer to DR-306 subdrain outlet. When flow of subdrain does not require an outlet at both ends, cap the end without an outlet in a method approved by the Engineer.

2 times typical shoulder width

"X" distance based on station difference between points C2 and C3.

S' offset unless otherwise noted on the Bridge Situation Plan. 4' offset minimum.
See typical cross-sections for details of paved shoulder.

5' offset unless otherwise noted on the Bridge Situation Plan. 4' offset minimum.

If roadway pavement is newly-constructed PCC, use BT-1 or BT-2 joint. If roadway pavement is existing PCC, use BT-3, BT-4, or BT-5 joint. Refer to PV-101 joint details.

6" sloped curb. Refer to PV-102 curb details

Roadway subdrain location. Use caution when excavating. Maintain porous material in trench to bottom of roadway pavement.

Remove and stockpile macadam stone. Carefully separate the macadam stone from the surrounding soil. Preserve the integrity of the engineering fabric.

Toe of the berm. Refer to A points on the berm slope location table.

\[\text{Face of Pavement (4.0% Typical)}\]

\[\text{Porous Backfill} \]

\[\text{Subbase if Applicable} \]

\[\text{Roadway Pavement} \]

\[\text{Subgrade Surface} \]

\[\text{Engineering Fabric} \]

\[\text{Macadam Stone} \]

\[\text{Special Backfill} \]

\[\text{4" Longitudinal Subdrain} \]

\[\text{Plan. 4' offset minimum.} \]

\[\text{5' offset unless otherwise noted on the Bridge Situation Plan. 4' offset minimum.} \]

\[\text{If roadway pavement is newly-constructed PCC, use BT-1 or BT-2 joint. If roadway pavement is existing PCC, use BT-3, BT-4, or BT-5 joint. Refer to PV-101 joint details.} \]

\[\text{6" sloped curb. Refer to PV-102 curb details} \]

\[\text{Roadway subdrain location. Use caution when excavating. Maintain porous material in trench to bottom of roadway pavement.} \]

\[\text{Remove and stockpile macadam stone. Carefully separate the macadam stone from the surrounding soil. Preserve the integrity of the engineering fabric.} \]

\[\text{Toe of the berm. Refer to A points on the berm slope location table.} \]
This image can be viewed in 3D on the ERL or at our website http://www.iowadot.gov/design/stdrdpln.htm

This image can be viewed in 3D on the ERL or at our website http://www.iowadot.gov/design/stdrdpln.htm

BRIDGE BERM GRADING
WITH RECOVERABLE SLOPE
(NON-BARNROOF SECTION)
Grading Surface:
Refer to berm slope location table in project plans for locations of A, B, C, W and possible other points.

The cost of removal, stockpiling and placement of macadam stone shall be considered incidental to "Paved Shoulder, P.C. Concrete".

1. Special shaping.
2. Face of Bridge Berm slope may vary and is determined by the A and B points. Slope is normally 2.5:1 or flatter.
3. Refer to contract documents for limits of the slope protection.

Possible Tabulation:

<table>
<thead>
<tr>
<th>Possible Slope Protection A</th>
<th>Possible Slope Protection B</th>
<th>Possible Slope Protection C</th>
</tr>
</thead>
<tbody>
<tr>
<td>6:1 Foreslope Breakline</td>
<td>6:1 Foreslope Breakline</td>
<td>6:1 Foreslope Breakline</td>
</tr>
<tr>
<td>10:1 Foreslope Breakline</td>
<td>10:1 Foreslope Breakline</td>
<td>10:1 Foreslope Breakline</td>
</tr>
<tr>
<td>Subgrade Hinge Breakline</td>
<td>Subgrade Hinge Breakline</td>
<td>Subgrade Hinge Breakline</td>
</tr>
<tr>
<td>Normal Shoulder</td>
<td>Normal Shoulder</td>
<td>Normal Shoulder</td>
</tr>
</tbody>
</table>

**PLAN VIEW OF BRIDGE BERM (BARNROOF FORESLOPE)**

**Possible Tabulation:**

| 104-9 |

**STANDARD ROAD PLAN**

**EW-204**

**SHEET 1 of 5**

**REVISED:** 10-20-20

**APPROVED BY DESIGN METHODS ENGINEER**

**BRIDGE BERM GRADING**

**WITH RECOVERABLE SLOPE**

**(BARNROOF SECTION)**
Bridge Berm slope may vary and is determined by the A and B points. Slope is normally 2.5:1 or flatter.

Refer to contract documents for limits of the slope protection.

Refer to BR series for longitudinal subgrade slope.

Temporary grading slope.

g = pavement cross slope.
PLAN VIEW OF BRIDGE BERM AREA

Bridge Beam slope may vary and is determined by the A and B points. Slope is normally 2.5:1 or flatter.

Width of bridge slab < 3' on each side, Build 6" sloped curb to this width. Refer to PV-102 for curb details.

Includes curb runout length. Refer to PV-102 for curb runout details.

Match typical shoulder slope.

See typical cross-sections for details of paved shoulder.

Approximate location of bridge subdrain.

Refer to DR-306 subdrain outlet. When flow of subdrain does not require an outlet at both ends, cap the end without an outlet in a method approved by the Engineer.

2 times typical shoulder width.

"X" distance based on station difference between points C2 and C3.

5' offset unless otherwise noted on the Bridge Situation Plan. 4' offset minimum.

SUBDRAIN LAYOUT TYPES

TYPE 'A'

TYPE 'B'

TYPE 'C'

Includes curb runout length. Refer to PV-102 for curb runout details.

Approve by Design Methods Engineer.

Includes curb runout length. Refer to PV-102 for curb runout details.

Approve by Design Methods Engineer.
1. See typical cross-sections for details of paved shoulder.
2. 5' offset unless otherwise noted on the Bridge Situation Plan. 4' offset minimum.
3. If roadway pavement is newly-constructed PCC, use BT-1 or BT-2 joint. If roadway pavement is existing PCC, use BT-3, BT-4, or BT-5 joint. Refer to PV-101 joint details.
4. 6' sloped curb. Refer to PV-102 curb details.
5. Roadway subdrain location. Use caution when excavating. Maintain porous material in trench to bottom of roadway pavement.
6. Remove and stockpile macadam stone. Carefully separate the macadam stone from the surrounding soil. Preserve the integrity of the engineering fabric.
7. Toe of the berm. Refer to A Points on the berm slope location table.
8. Shoulder slope (4.0% Typical).
9. 6" sloped curb. Refer to curb details.
10. Refer to joint details.
11. PV-102
12. EW-204
13. STANDART ROAD PLAN
14. WITH RECOVERABLE SLOPE
15. (BARNROOF SECTION)
For guidelines to determine wing dike lengths or when to use wing dikes, see the Office of Bridges and Structures' Preliminary Design Bridge Manual.

Build wing dikes with an additional skew angle of 20 degrees to the skew angle of the bridge. The location method will be similar when the direction of flow or skew is opposite that indicated.

Necessary materials for construction of the dikes are included on the tabulation of "Estimate of Quantities" for excavation. Price bid for "Excavation of the class specified" is full compension for construction of dikes as indicated hereon.

1. Match the bridge top of berm elevation unless noted otherwise.
2. Construct portions of wing dikes within 50 feet of the edge of the traffic lane for the approach traffic with a slope of 3:1 parallel to traffic. Construct the stream side slope of the wing dike to 2.5:1 or flatter as shown.

1. Match the bridge top of berm elevation unless noted otherwise.
2. Construct portions of wing dikes within 50 feet of the edge of the traffic lane for the approach traffic with a slope of 3:1 parallel to traffic. Construct the stream side slope of the wing dike to 2.5:1 or flatter as shown.

<table>
<thead>
<tr>
<th>SKEW ANGLE 8</th>
<th>DIMENSION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0' Thru 30'</td>
<td>3.5' / Sec 0</td>
</tr>
<tr>
<td>30' Thru 45'</td>
<td>4.5' / Sec 0</td>
</tr>
<tr>
<td>More than 45'</td>
<td>3.0' / Sec 0</td>
</tr>
</tbody>
</table>

**SECTION R-R**

**SECTION A-A**

**TYPICAL PLAN VIEW OF DIKE CONSTRUCTION AT SKewed BRIDGE**

**TYPICAL PLAN VIEW OF DIKE CONSTRUCTION AT NON-SKEWED BRIDGE**
Earthwork for construction of the grading at side piers has been included in the tabulation of earthwork quantities. Drainage structure requirements in conjunction with the grading at side piers have also tabulated elsewhere in the plans.

Possible Contract Items:
- Longitudinal Subdrain (Shoulder), 4-inch Subdrain Outlet (DR-306)

Possible Tabulation:
- 104-12

When a subdrain installation does not have a subdrain outlet on the end, cap that end with methods approved by the Engineer.

1) \( \text{AL} \) or \( \text{TL} \) is the length measured from the edge of the bridge slope protection to a point on the shoulder edge.

2) See typical section on Standard Road Plan DR-306.

3) \( \text{W} \) is the length measured from the shoulder edge to the toe of the berm in the area of bridge slope protection.

<table>
<thead>
<tr>
<th>Block Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Edge of Shoulder</td>
<td>10:1</td>
</tr>
<tr>
<td>Edge of Traveled Lane</td>
<td>10:1</td>
</tr>
<tr>
<td>Subdrain Outlet</td>
<td>6:1</td>
</tr>
<tr>
<td>Engineered</td>
<td>( \text{W/2} )</td>
</tr>
</tbody>
</table>

5" Clearance
24" Max
4" Slotted Subdrain
4'' Slotted Subdrain
Porous Backfill
Class "A" Crushed Stone

Possible Tabulation:

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Possible Values</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

APPROVED BY DESIGN METHODS ENGINEER

DESIGNER INFORMATION
Guardrail may or may not be attached to face of obstacle.

1. Match slope of adjacent shoulder.
2. Measured from Location Station.
3. Distance from edge of normal shoulder to toe of 10:1 slope.

Possible Tabulation:

<table>
<thead>
<tr>
<th>Feet</th>
<th>Feet</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>39</td>
</tr>
<tr>
<td>6</td>
<td>43</td>
</tr>
<tr>
<td>7</td>
<td>47</td>
</tr>
<tr>
<td>8</td>
<td>50</td>
</tr>
<tr>
<td>9</td>
<td>54</td>
</tr>
<tr>
<td>10</td>
<td>57</td>
</tr>
<tr>
<td>11</td>
<td>61</td>
</tr>
<tr>
<td>12</td>
<td>65</td>
</tr>
<tr>
<td>13</td>
<td>69</td>
</tr>
<tr>
<td>14</td>
<td>72</td>
</tr>
<tr>
<td>15</td>
<td>76</td>
</tr>
<tr>
<td>16</td>
<td>80</td>
</tr>
<tr>
<td>17</td>
<td>83</td>
</tr>
<tr>
<td>18</td>
<td>87</td>
</tr>
<tr>
<td>19</td>
<td>91</td>
</tr>
<tr>
<td>20</td>
<td>95</td>
</tr>
</tbody>
</table>

Guardrail installation line at or within 10 feet of shoulder

**LEGEND**
- Forestope at Guardrail
- Trench - 10:1
- Match adjacent shoulder

**STANDARD ROAD PLAN**

**GUARDRAIL INSTALLATION LINE AT OR WITHIN 10 FEET OF SHOULDER**
GUARDRAIL INSTALLATION LINE WITHIN SHOULDERS

LEGEND
- Foreslope at Guardrail
- Slope - 10:1
- Match adjacent shoulder.

SECTION C-C
- Edge of Normal Shoulder
- Earth Fill
- Foreslope at Guardrail
- 5 minute length

SECTION D-D
- Edge of Normal Shoulder
- Earth Fill
- Foreslope at Guardrail
- 5 minute length

PLAN

- Match slope of adjacent shoulder.
- Measured from Location Station.
- Distance from edge of normal shoulder to toe of 10:1 slope.

GUARDRAIL GRADING

GUARDRAIL INSTALLATION LINE WITHIN SHOULDER

OBJECT

LOCATION STATION

SLOPE TRANSITION

25 Constant Slope Transition

20' Constant Slope Transition
GUARDRAIL INSTALLATION LINE BEYOND 10 FEET FROM SHOULDER

LEGEND
- Foreslope at Guardrail
- Slope: 10:1
- Match adjacent shoulder.

GUARDRAIL GRADING

<table>
<thead>
<tr>
<th>Location Station</th>
<th>Feet</th>
<th>Feet</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>39</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>43</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>47</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>54</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>57</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>61</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>65</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>69</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>72</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>76</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>80</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>83</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>87</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>91</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>95</td>
<td></td>
</tr>
</tbody>
</table>
Earth Fill

SECTION E-E

Installation Line

Proposed Culvert

PLAN

LEGEND

Slope - 10:1
Slope - 8:1

FILL OVER PIPE CULVERT


3

Slope - 10:1 preferred; no steeper than 6:1.

See sheets 1, 2, or 3 for unshaded areas.

© 2021 Iowa Department of Transportation

REVISION: 04-20-21

GUARDRAIL GRADING
Provide positive drainage through the median obstacle area.  
1. Refer to Tabulation 108-9A and BA-361.  

Possible Contract Items:
- Topsoil
- Embankment in Place
- Excavation, Class 10

Possible Tabulations:
- 107-24
- 108-9A
Obtain the Engineer's approval for installation locations.

1. Construct an earth file at the toe of the roadway for areas where a roadway ditch, silt ditch or silt dike is not provided. This Toe Fillet is incidental to "Roadway and Borrow Excavation".

2. Windrow of excavated and compacted silt material or deposited and compacted earth.

Possible Contract Items:
- Silt Ditch
- Silt Dike
- Silt Basin

Possible Tabulations:
- 100-13
- 100-14
- 100-15
Smoothly shape and round surface and slopes of entrances where practical to provide minimal hazard to an out of control vehicle from through roadway.

Earthwork and material used for construction of entrances are included in estimate of quantities.

1. Locate entrance pipe culverts to coincide with the line of the toe of backslopes as shown. Some special shaping of ditch may be required to fit culvert. Refer to tabulation of entrance pipe culverts and cross sections for details of installation.

2. Smooth transition to 6:1 at R.O.W. line. If foreslopes of existing entrance are 6:1 or flatter, transition to existing entrance foreslopes.

3. Smooth transition from 6:1 to existing foreslope if existing foreslopes steeper than 6:1.

4. 3:1 for new entrance. Existing slope for existing entrance.

5. 3% for new entrance. Existing slope for existing entrance.

Possible Contract Items:
Aprons, Unclassified Entrance Pipe
Excavation, Class 10

Possible Tabulation:

102-3
Possible Contract Items:

- Aprons, Unclassified
- Culvert, Unclassified Entrance Pipe
- Excavation, Class 10

Possible Tabulation:

102-3

1. Slope 10:1 or flatter without pipe, 8:1 or flatter with pipe.
For normal foreslopes steeper than 6:1.

For normal foreslopes 6:1 or flatter.