Erosion Control
## Erosion Control

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Provide necessary excavation at locations where silt conditions require shaping of a ditch to provide a proper type of area for installation of wood excelsior mat for special ditch control.

Ensure ground surface adjacent to any channels is shaped to facilitate natural drainage into the protected area.

Use all excavated material to fill low areas, gullies, backslope scour, and otherwise facilitate the free flow of surface water into the channel as directed by the Engineer. Alignment should be smooth and avoid abrupt changes.

1. Install anchor slot at the beginning (upstream end) of all wood excelsior mat installations.
2. Place staples alternately in rows approximately 24 inches apart. Approximately 30 staples required per square (100 sq. ft.) of wood excelsior mat.
3. Space Check Slots in ditch channel so that one occurs within each 50 feet on slopes of more than 4%.
4. Stagger Junction Slots (end of rolls).
5. Do not use Junction Slots or Check Slots when Wood Excelsior Mat is placed over Turf Reinforced Mat.

Possible Contract Item:
Special Ditch Control, Wood Excelsior Mat

Possible Tabulation:
100-22
Through ditches or borrow areas, construct sod channels at the low point. Use all excavated material to fill low areas to facilitate the free flow of surface water into the channel. Alignment should be smooth and avoid abrupt changes.

Provide necessary excavation at locations where silt conditions require shaping of a ditch to provide a proper type of area for installation of sod for special ditch control. Dispose excavated material in adjacent area as directed by the Engineer.

At locations where erosion has created gullies in ditches or backslopes, fill and compact gullies in lifts not more than 8-inches thick.

Unless specifically required otherwise by the Engineer, install wire stakes or wood stakes. Stagger wire stakes as shown. Minimum 33 stakes per square. Use wood stakes in sod flumes when designated by the Engineer. When directed by the Engineer, longer stakes may be required for certain soil conditions to properly hold sod in place.

Work for providing proper ditches will not be paid for directly but is incidental to other work on the project.

Shaping and grading work necessary to prepare the ground for sodding adjacent to concrete surfaces will not be paid for separately but is incidental to other work on the project. Such grading and shaping may include the removal and disposal of excess earth, as directed by the Engineer, in order to obtain satisfactory drainage and appearance for the finished work.

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The work of providing suitable earth surface for placement of slope protection is incidental to preparation of seedbed.

Ensure that ground surfaces adjacent to any channels are shaped to facilitate natural drainage into the protected area.

Excelsior mat for backslope protection is installed with strips placed approximately perpendicular to roadway. Locations for slope protection are shown on detail plans.

Excelsior mat for foreslope protection is installed with strips placed approximately parallel to roadway. The location, width, and number of strips are specified on project plans.

- Space top row of staples at 18 inch centers, bottom row at 36 inch centers, and all others at 24 inch centers. Approximately 30 staples required per square (100 sq. ft) of wood excelsior mat.
- Where erosive gullies have developed in backslope, fill with soil and compact prior to placement of mat.
- Where excelsior mat is to be placed as Special Ditch Control, install slope protection to facilitate placement of the ditch control as indicated (Alternate B). Where there is no Special Ditch Control, install slope protection as shown (Alternate A).
- 4 feet unless specified otherwise for foreslope protection.
- If erosive rill has developed adjacent to shoulder material, fill with suitable soil and compact prior to placement of mat.

Possible Contract Item:
Slope Protection, Wood Excelsior Mat

Possible Tabulation:
100-22

wood excelsior mat
for slope protection

EC-103
STANDARD ROAD PLAN
SHEET 1 of 1
10-26-15
APPROVED BY DESIGN METHODS ENGINEER

REVISIONS:
Removed language from general notes already in the Specifications.
Modified drawings. Added Possible Contract Item and Possible Tabulation.
ANALYZE A-A
over Soil Fill
Seed and Fertilize
(3' min.)

TRM
(Wood Excelsior Mat)

Special Ditch Control

Possible Tabulation:

Turf Reinforcement Mat

Possible Contract Items:

EC-101

Flow

24''

Staples

TERMINAL END

W

100-22

Flow Line

FLOW

6'' min.

Tamp soil firmly

TRM

Flow

Wood Excelsior Mat

Terrioi

Wood Excelsior Mat

STAMP

Staples

JUNCTION SLOT (TRM)

LAP JOINT (TRM)

TRM

3''

3''

3''

Install anchor slot at the beginning (upstream end) of all mat installations.

Place staples alternately in rows approximately 24 inches apart. Approximately 30 staples required per square (100 sq. ft.) of each type of mat.

Stagger Junction Slots.

Plan

(flow)

36''

plan

24''

30''

Possible Contract Items:

Turf Reinforcement Mat

Possible Tabulation:

100-22
Refer to Standard Road Plan EC-104 for the placement of the TRM.

1. Place at same thickness as surrounding area. Refer to T Sheets to determine topsoil thickness for the surrounding area.

Possible Contract Items:
- Transition Mat

Possible Tabulation:
103.09
Install all silt fence using a silt fence machine. Use manual (trench) installation if physical conditions prohibit machine installation.

For machine installation, compact by driving over each side of silt fence at least two times with a rubber-tired vehicle.

For manual installation, compact with a mechanical or pneumatic tamper.

Place silt fence continuously up to a maximum length of 200 feet. For every segment of silt fence that is placed, flair up the slope the last 20 feet of the segment to contain runoff as shown.

1. Embed all posts 28 inches below the ground line.
2. Embed all posts 28 inches below the ground line.
3. Secure top of engineering fabric to steel posts using cable ties (50 lb.) or wire passing through or encompassing the belt. See attachment to post.
4. For manual installation only, fold engineering fabric along bottom of trench.
5. Refer to Tab. 100-17.

Possible Contract Items:
- Silt Fence
- Silt Fence for Ditch Checks

Possible Tabulations:
- 100-17
- 100-18
PLAN FOR DITCH CHECK (TYPE 1)

1. Secure top of engineering fabric to steel posts using cable ties (50 lb.) or wire passing through or encompassing the belt. See attachment to post.
2. For manual installation only, fold engineering fabric along bottom of trench.
3. Embed all posts 28 inches below the ground line.
4. Locate posts at toe of foreslope and toe of backslope and space remaining posts equally.
5. Minimum end span (in feet) = 2 X Foreslope (H:V).
7. Refer to Tab. 100-18

DITCH CHECK - MACHINE INSTALLATION

DITCH CHECK - MANUAL INSTALLATION

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STANDARD ROAD PLAN
EC-201
SHEET 2 OF 6

REVISED 10-15-19
APPROVED BY DESIGN METHODS ENGINEER
SILT FENCE
1. Secure top of engineering fabric to steel posts using cable ties (50 lb.) or wire passing through or encompassing the belt. See attachment to post.
2. Embed all posts 28 inches below the ground line.
3. Locate posts at toe of foreslope and toe of backslope and space remaining posts equally.
4. Minimum end span (in feet) = 2 X Foreslope (H:V).
5. Place posts shown in Detail 'A' to transition from transverse to parallel installation. Place one post at the back slope intercept and the other beyond the intercept.
6. Refer to Tab. 100-18

PLAN FOR SILT DITCH (SHALLOW DITCH SECTION-TYPE 4)

See Detail 'A'

Perimeter Silt Fence (see EC-201)

SHEET 4 of 6

REVISIONS:
Modified circle note 1.
APPROVED BY DESIGN METHODS ENGINEER
Secure top of engineering fabric to steel posts using cable ties (50 lb.) or wire passing through or encompassing the belt. See attachment to post.

Embed all posts 28 inches below the ground line.

Minimum end span (in feet) = 2 X Foreslope (H:V).

Locate posts at toe of foreslope. Locate posts at 4 foot spacing.

Place posts as shown in Detail 'B' to transition from transverse to parallel installation. The parallel portion of the installation should approximately parallel the intercept of the foreslope.

Refer to Tab. 100-18

Minimum end span (in feet) = 2 X Foreslope (H:V).

Locate posts at toe of foreslope. Locate posts at 4 foot spacing.

Place posts as shown in Detail 'B' to transition from transverse to parallel installation. The parallel portion of the installation should approximately parallel the intercept of the foreslope.

Refer to Tab. 100-18
Keep silt curtain as close to work area as possible.

Depth of curtain is the dimension of the curtain fabric extending below the flotation, i.e. hanging in the water.

Install according to Hanging Installation unless specified otherwise.

Possible Tabulation:
100-10
Possible Contract Items:
Clean-out of Floating Silt Curtain
(Containment)
Floating Silt Curtain (Containment)
Floating Silt Curtain (Hanging)
Maintenance of Floating Silt Curtain

LEGEND
- Carrier Float
- Buoy
- Undisturbed Vegetation
- Disturbed Soil

Disturbed Area within Stream
Disturbed Area Adjacent to Stream
Still Water Only

EC-202
SHEET 1 of 2
STANDARD ROAD PLAN
S 02-21-14
REVISION
APPROVED BY DESIGN METHODS ENGINEER
FLOATING SILT CURTAIN
When Containment Installation is specified, it will be in combination with a Hanging Installation that is paid for separately.
Not intended for use in perennial or intermittent streams.

Fill and compact rills and gullies (see Detail 'B') prior to placing Perimeter and Slope Sediment Control Device. Ensure ground surface is smooth in order to provide continuous contact with Perimeter and Slope Sediment Control Device. Minor ground shaping may be required. Filling and compacting rills and gullies, and minor ground shaping, is incidental to Perimeter and Slope Sediment Control Device.

Overlap joints per Detail 'A'. Turn the lower 10 feet of each run up the slope to help contain runoff. When placed such that runoff is conveyed along the device, additional run-ups and/or means may be required to reduce erosion along the device. Run-ups will be included in the installation length.

Extra material required to install overlaps will not be included in the installation length.

Space stakes at 4 foot maximum spacing. Use minimum actual stake size 3/4" X 1" wood stakes.

Possible Contract Item:
Perimeter and Slope Sediment Control Device

Possible Tabulation:
100-19
SLOPE PROTECTION

Installation Length (measured along device)

Top of Slope or Undisturbed Area

Perimeter and Slope Sediment Control Device

Filler Material

LEGEND
- Contour Lines
- Flow
- Wood Stake

SECTION A-A

Installation

3. Space stakes at 4 foot maximum spacing. Use minimum actual stake size 1" X 2" wood stakes.

4. Install Slope Protection perpendicular to slope (parallel to contours). Overlap joints per Detail 'A'. Run the last 10 feet of each device up the slope to prevent flow runaround. Run-ups will be included in the installation length.
INSTALLATION IN DITCH (measured along device)
Reconstructed Flow Line

SECTION A-A

PLAN

EXCAVATION SECTION

DITCH CHECK SECTION

LONGITUDINAL SECTION AT CENTERLINE OF DITCH

TYPE 1
(Rock Ditch Check)

PLAN

SECTION A-A

ISOMETRIC VIEW

TYPICAL SECTION

LOWER ANCHOR SLOT

UPPER ANCHOR SLOT

TYPE 3
(Rock Flume)

STAPLE

(No. 11 wire)

STAPLE

(No. 12 centers)

Possible Contract Items:
- Erosion Stone
- Class E Revetment
- Engineering Fabric

Possible Tabulation:
100-23

Class 10 excavation required to install Rock Erosion Control is incidental and will not be paid for separately.

Possible Contract Items:
- Erosion Stone
- Class E Revetment
- Engineering Fabric

Possible Tabulation:
100-23

Class 10 excavation required to install Rock Erosion Control is incidental and will not be paid for separately.
SPLASH BASIN UNDER BRIDGE DRAIN

PLAN

TYPICAL SECTION

SPLASH BASIN AT PIPE CULVERT OUTLET

PLAN

TYPICAL SECTION

ISOMETRIC VIEW

TYPICAL SECTION

STAPLE

(No. 11 wire)

TYPE 4
(Rock Splash Basin)

TYPE 5
(Rock Slope Protection)

REVISION
10-18-16

Standard Road Plan
EC-301

IOWA DOT

STANDARD ROAD PLAN
EC-301

SHEET 2 of 2

(REC)

REVISED
Sheet not revised by Type 3 and Type 4 installations. Deleted old note 2 and renumbered old note 3 as new note 2. Added designer info button.

APPROVED BY DESIGN METHODS ENGINEER

Standard Road Plan
EC-301

1. Center splash basin directly under bridge drain.
2. Staples at 12 inch centers.
Use Class D Revetment to construct Rock Check Dam.

Possible Contract Items:
- Rock Check Dam
- Maintenance of Rock Check Dam
- Removal of Rock Check Dam

Possible Tabulation:

- 100-32

Obtain the Engineer's approval for location and length of stabilized entrances prior to constructing.

2. Use aggregate meeting Gradation No. 13a of Section 4109 of the Standard Specifications.
3. Depth may need to be increased depending on the weight of contractor vehicles and equipment.
Refer to detail project plans for additional information regarding planting location and layout.

When no specific requirement is indicated, complete planting as directed by the Engineer.

Till entire area to be mulched with a rotary tiller or other method approved by the Engineer.

Rake smooth the entire area to be mulched and ensure it is free of vegetation, debris, clods and rocks. Form a 2 inch deep basin around plants to retain water. Plant plants at the same depth as they were in the nursery.

Follow mulch material and depth as designated on the plans. Pull mulch back ½ inch to 1 inch from the plants to allow air circulation at a uniform depth to reflect the 2 inch basin.

Pruning consists of removing dead, broken, and irregular branches only. Do not prune the tops of plants unless it is to remove dead or broken material.

Use steel posts complying with Article 4154.09 of the Standard Specifications for staking. For trees 5 feet in height and less use posts 5 feet in length. For trees taller than 5 feet use posts 7 feet in length.

Replaced DOT logo with new version.
Native Grass Seeding

RURAL - 2 LANE

Native Grass Seeding

RURAL MULTI-LANE

Native Grass Seeding

Seeding in Rural Areas
1. Ensure Riser Pipe remains vertical.

2. Dimensions shown are minimums.

3. When Temporary Sediment Control Basin is removed, if basin has not silted in to designed ditch grade, use topsoil to bring up to designed ditch grade.

Dimensions shown are minimums.

Possible Contract Items:
- Temporary Sediment Control Basin
- Maintenance of Temporary Sediment Control Basin
- Removal of Temporary Sediment Control Basin

Incidental to Temporary Sediment Control Basin:
- Erosion Stone
- Pipe
- Excavated Earth Material

Possible Tabulation:
100-33

Possible Table:

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<tr>
<td>Ditch Bottom Width</td>
<td>6&quot;</td>
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<tr>
<td>Riser Pipe</td>
<td>2&quot;</td>
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<td>Ditch Bottom</td>
<td>7'</td>
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<tr>
<td>Elevation</td>
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<tr>
<td>Detail &quot;A&quot;</td>
<td>2&quot; bp</td>
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<tr>
<td>Excavated Earth Material</td>
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1. Trim frame as needed to tightly fit in the intake throat.
2. Overlap fabric a minimum of 3 inches and securely fasten.
4. Woven material meeting the requirements of Table 4196.01-1 of the Standard Specifications, except a maximum apparent opening size US Sieve No. 10 and a minimum flow rate of 145 gallons per minute per square foot.
5. Insert sediment filter to create a compression fit in the intake throat. If overflow opening is not present after inserting filter, trim filter fabric so opening is present.

Possible Tabulation:
- Removal of Open-throat Curb Intake Sediment Filter
- Maintenance of Open-throat Curb Intake Sediment Filter
- Possible Contract Items:
  - 100-36

Possible Diagrams:
- Sediment Filter Cross Section
- Sediment Filter Placement