EROSION AND SEDIMENT CONTROL

FIELD GUIDE

2011

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

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Temporary Silt Fence

1605.01

IS

A fabric fence which reduces water flow and retains sediment in order to prevent off-site sediment.

USE

At the toe of a fill section where sediment runoff can be contained and stored within project limits. Do not install across a stream, ditch, waterway or any area of concentrated flow.

CONSTRUCT

Metal posts to be 5 ft. in height (3 ft. above ground) and space them 8 ft. apart with wire or 6 ft. apart without wire. Bury fabric a minimum of 8 in. deep and 4 in. along the base of the trench. An 18 in. overlap is required when splicing.

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Special Sediment Control Fence

1606.01

IS

A hardware cloth device with sediment control stone at the base of the hardware cloth. It reduces water flow and retains sediment.

USE

At the toe of fill sections or other areas where silt fence will not function adequately to control sediment. Use in environmentally sensitive areas and in areas of inadequate right-of-way in place of silt ditch.

CONSTRUCT

Using a 4 ft. wire mesh (24 ga., 1/4 in.) folded 2 ft. vertical and 2 ft. along the ground surface with sediment control stone on top to a minimum depth of 1 ft. Posts to be 5 ft. in height, (3 ft. above ground) spaced 3 ft. apart.

Temporary Silt Ditch

1630.03

IS

A small ditch or channel that intercepts water flow from slopes and directs the runoff into a basin, sediment dam and/or rock silt check.

USE

At the toe of a fill slope where vertical fill height exceeds 3 ft. or along a stream bank to divert water flow into a controlled outlet.

CONSTRUCT

The ditch to be 1 ft. min. depth with a 2:1 side slope. Stabilize waste material/berm with seed and mulch.

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Temporary Diversion

1630.05

IS

An excavated channel with a berm on its lower side that directs runoff into a basin, through a sediment dam or through rock silt checks.

USE

At the perimeter of a project site and below a slope during clearing and grubbing to temporarily control water flow patterns and to divert runoff into a sediment control structure. Maintain structure in place until the installation of final drainageways.

CONSTRUCT

To 1 ft. – 6 in. deep min. with 2:1 side slopes. Stabilize waste material/berm with seed and mulch.

Temporary Slope Drain with Earthen Berm

1622.01

IS

A berm with a flexible pipe that carries concentrated runoff down a cut or fill slope without causing erosion. The earthen berm channels runoff into the slope drain, while a riprap pad or silt basin at the outlet dissipates the energy.

USE

Above cut or fill slopes where runoff flowing over the slope would cause erosion if left unchecked.

CONSTRUCT

With a minimum 12 in. diameter flexible pipe, installing stakes alongside on a 10 ft. max. spacing. A standard T-section may be installed for multi-direction flow and elbows at inlets for single-direction flow.

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Riser Basin
1630.01

IS
An earthen embankment which captures runoff leaving a drainage turnout that serves a large project site drainage area. A riser pipe drains the basin and an overflow spillway controls any runoff that might exceed riser capacity.

USE
At a site with concentrated water flow where other erosion control devices are inadequate.
Do not use in a perennial stream.

CONSTRUCT
To a sediment storage volume of at least 3600 cubic ft. per acre of disturbed area (for drainage areas less than 100 acres).

Silt Basin, Type B

1630.02

IS

A defined pit or basin which collects sediment flowing through a drainageway (often built in conjunction with temporary rock silt checks in order to slow water velocity).

USE

In a drainage ditch with temporary rock silt checks or adjacent to a drainage inlet with stone inlet protection. Maintain until vegetation becomes established.

CONSTRUCT

Basin width variable to the size of the drainageway, so that the basin's length equals twice its width, and its depth is a minimum of 2 ft. Storage capacity is 3600 cubic ft. per disturbed acre. Clean basin regularly.

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Temporary Rock Silt Check, Type A

1633.01

IS

A small dam with a weir outlet that uses a naturally-formed storage area to trap sediment (rather than an excavated pit).

USE

At the outlet of a temporary diversion, temporary slope drain, temporary silt ditch, drainage ditch or channel that outlets off the project site.

CONSTRUCT

Of Class B stone lined with sediment control stone. Install a weir at the center of the dam that is approximately 2/3 of the channel width. The weir should be at least 4 ft. long for a drainage area of 1 acre or less.

Temporary Rock Silt Check, Type B

1633.02

IS

A small dam with a centered weir that limits erosion in a drainage ditch and helps to reduce the water velocity.

USE

During construction in a channel, roadside ditch outlet, temporary silt ditch or temporary diversion ditch where grade meets and/or exceeds 2.5%.

CONSTRUCT

Of Class B stone, with a preferred spacing so that the elevation at the top of the lower dam is the same as the toe elevation of the upper dam.

Temporary Rock Sediment Dam, Type A

1634.01

IS

A large dam structure with a weir outlet that traps sediment at drainage turnouts just prior to the point where runoff leaves the project site.

USE

Along the perimeter of a construction site, at drainage turnouts serving large areas or at natural drainage turnouts forming small valleys.

CONSTRUCT

With Class I riprap lined with sediment control stone on the upstream side (minimum 2:1 side slope upstream, 3:1 min. downstream). The dam must not be higher than 8 ft. with the weir 1 ft. below top of dam. Apron length (below weir) should be approximately equal to the height of the dam.

Temporary Rock Sediment Dam, Type B

1634.02

IS

A small dam with a weir outlet and built-in sediment basin.

USE

At the outlet of a temporary diversion, temporary slope drain, temporary silt ditch, drainage ditch or channel to trap sediment before runoff leaves the project site. Do not use in a live stream.

CONSTRUCT

Of Class B stone lined with sediment control stone. Basin should be 3600 cubic ft. per disturbed acre, and dam weir length variable to the drainage area (minimum 4 ft. for 1 acre or less). Apron length should be approximately equal to the height of the dam, with minimum 2:1 side slope.

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Rock Pipe Inlet Sediment Trap, Type A

1635.01

IS

A horseshoe-shaped device which prevents sediment from entering a pipe structure.

USE

At a pipe inlet that receives flow from one or more directions and is at least 30 ft. from a vehicular travel lane.

CONSTRUCT

Of Class B stone lined with sediment control stone. Surround the structure with a sediment storage area built to 3600 cubic ft. per disturbed acre. The dam must be a minimum 18 in. high.

Rock Pipe Inlet Sediment Trap, Type B

1635.02

IS

A horseshoe-shaped device that prevents sediment from entering a pipe structure.

USE

At a pipe inlet no greater than 24 inches in diameter that receives flow from one or more directions, and in areas where a Rock Pipe Inlet Sediment Trap, Type A would be unsafe due to adjacent traffic.

CONSTRUCT

Of Class A stone lined with sediment control stone. Surround the structure with a sediment storage area built to 3600 cubic ft. per disturbed acre. The dam must be a minimum 18 in. high.

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Skimmer Basin

IS

A temporary basin with a trapezoidal spillway lined with filter fabric and equipped with a floating skimmer.

USE

In sensitive watershed areas and in locations where the drainage area is too large for standard rock weir outlet.

CONSTRUCT

Basin with a Faircloth Skimmer at the outlet, a trapezoidal emergency spillway lined with filter fabric, and 3 coir fiber baffles. Storage capacity is 1800 cubic ft. per disturbed acre and surface area must accommodate the 10-year storm runoff. Limit the dam height to 5 ft.

Stilling Basin

1630.04

IS

An earthen basin that settles sediment in water being pumped.

USE

At a construction site where there is a diverted stream or whenever sediment-laden water must be settled before being returned to a natural stream. Never pump sediment-laden water directly into a stream.

CONSTRUCT

Basin to ½ the volume of the site to be pumped. The basin length (min.) should be 2 times the width with 3 coir fiber baffles dividing the basin length into quarters.

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Rock Inlet Sediment Trap, Type A

1632.01

IS

A doughnut-shaped dam at a drop inlet which serves a large drainage area.

USE

At a drop inlet that receives heavy water flow and is at least 30 ft. from a vehicular travel lane. The structure can be modified to accommodate a drop inlet receiving water from only one direction.

CONSTRUCT

Of Class B stone lined with sediment control stone offset from the box 1 ft.-6 in. The dam must be a minimum 2 ft. high. Install a sediment storage area around the structure's perimeter built to 3600 cubic ft. per disturbed acre.

Rock Inlet Sediment Trap, Type B

1632.02

IS

A doughnut-shaped stone dam at a drop inlet that serves a small drainage area.

USE

At a drop inlet that receives moderate to heavy flow, and in areas where a Rock Inlet Sediment Trap, Type A would be unsafe due to adjacent traffic.

CONSTRUCT

Of Class A stone lined with sediment control stone offset from the inlet box 1 ft. 6 in. Surround the structure with a sediment storage area built to 3600 cubic ft. per disturbed acre. The dam must be a minimum 18 in. high.

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Rock Inlet Sediment Trap, Type C

1632.03

IS

A wire-mesh hardware cloth, drop inlet protective structure with a small doughnut-shaped stone installation at the base of the wire.

USE

To surround a catch basin in a curb and gutter section or a drop inlet receiving light to moderate flow.

CONSTRUCT

Using a 4 ft. wire mesh (24 ga., ¼ in.) folded 2 ft. vertical and 2 ft. along the ground surface with sediment control stone on top to a minimum depth of 1 ft. Posts to be 5 ft. in height, (3 ft. above ground) spaced 4 ft. max. apart, offset 1 ft. - 6 in. from box.

Coir Fiber Baffle

IS

A porous barrier used to reduce the velocity of runoff, within a basin or sediment trap, which allows the settling of sediment before being discharged off site.

USE

In all sediment dams, silt basins, and skimmer basins at drainage outlets.

CONSTRUCT

Of coir fiber mat attached to steel T-posts to be 5 ft. in height (3 ft. above ground) in the basin or storage area. Install 3 baffles in the erosion control device at a spacing of ¼ the basin length, but if basin length is less than 20 ft., only 2 baffles need to be installed at a spacing of 1/3 the basin length.

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Gravel Construction Entrance

1607.01

IS

A stone pad where vehicles enter and leave a construction site.

USE

At all points of ingress and egress from the work area to clean vehicle tires.

CONSTRUCT

Using Class A stone, or other coarse aggregate approved by the Engineer to a depth of 8 in. Minimum dimensions are 50 ft. long by 12 ft. wide with a sufficient radius to accommodate large trucks. For safety, pad may be moved back 20 ft. with ABC stone placed adjacent to public road with Engineer's approval.

Special Stilling Basin

1630.06

IS

A water permeable fabric bag that traps sand, silt, and fines as sediment laden water is pumped from a construction site.

USE

As a portable stilling basin at sites with limited right-of-way or where topography restricts the installation of a conventional stilling basin.

CONSTRUCT

Using a minimum size of 10 ft. x 15 ft. bag with a maximum 8 in. spout for receiving pump discharge. Place on a rock pad lined with filter fabric and 8 in. of sediment control stone.

Temporary Stream Crossing

IS

A temporary structure that allows construction equipment to cross a stream without harming or eroding the banks.

USE

At a stream where the construction equipment must cross.

CONSTRUCT

By laying a temporary pipe in the stream in which the pipe size is determined in the field. Backfill with Class B rip rap to a minimum height of 12 in. above top of pipe. Underlay temporary pipe and rip rap with Type II filter fabric. Place #57 stone to a minimum depth of 6 in. on top of Class B rip rap. Construct the approaches to the stream crossing at a 10:1 grade.

Wattle with Polyacrylamide (PAM)

IS

A tubular device that consists of excelsior or coir (coconut) fibers encased in all natural or synthetic netting.

USE

In temporary and permanent ditches to reduce runoff velocity and incorporate PAM in the form of powder into the runoff.

CONSTRUCT

Using a minimum size diameter wattle of 12 in. Install wattles using 2 ft. stakes and 12 in. staples on top of a 9 ft. section of erosion control matting. Wattles can be used with or without PAM.

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Silt Check Type A with Excelsior Matting and Polyacrylamide (PAM)

IS

A small stone dam with a centered weir and Excelsior Matting and PAM.

USE

In temporary and permanent ditches to reduce runoff velocity and incorporate PAM in the form of powder into the runoff.

CONSTRUCT

Of Class B stone lined with sediment control stone. Construct a weir at the center of the dam that is approximately 2/3 of the channel width. Install Excelsior Matting over sediment control stone and anchor the corners with Class B stone. Place PAM over top of matting at the weir section.

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