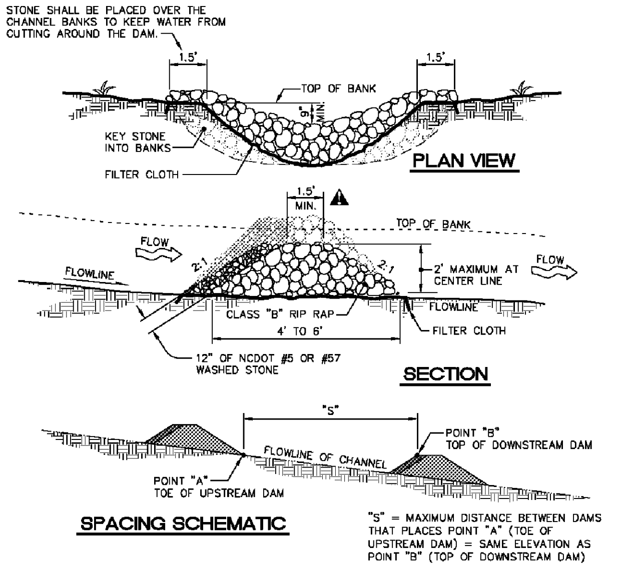


PURPOSE

To reduce erosion in a drainage channel by reducing the velocity of flow.

DESIGN CRITERIA

1. Drainage area is limited to one half acre.
2. Keep a maximum height of 2 feet at the center of the check dam.
3. Keep the center of the check dam at least 9 inches lower than the outer edges at natural ground elevation.
4. Keep the side slopes of the check dam at 2:1 or flatter.
5. Ensure that the maximum spacing between check dams places the toe of the upstream check dam at the same elevation as the top of the downstream check dam.
6. Stabilize outflow areas along channel to resist erosion.
7. Use NCDOT Class B stone and line upstream side of the check dam with NCDOT #5 or #57 washed stone
8. Key the stone into the ditch banks and extend it beyond the abutments a minimum of 1.5 feet to avoid washouts from overflow around the dam.

CONSTRUCTION SPECIFICATIONS

9. Place stone to the lines and dimensions shown in the plans on a filter fabric foundation.
10. Keep the center stone section at least 9 inches below the natural ground level where the dam abuts the channel banks.
11. Extend stone at least 1.5 feet beyond the ditch banks to keep water from cutting around the ends of the check dam.
12. Set spacing between check dams to assure that the elevation at the top of the lower dam is the same as the toe elevation of the upper check dam.
13. Protect the channel after the lowest check dam from heavy flow that could cause erosion.
14. Make sure that the channel reach above the most upstream check dam is stable.
15. Ensure that other areas of the channel, such as culvert entrances below the check dams, are not subject to damage or blockage from displaced stones.

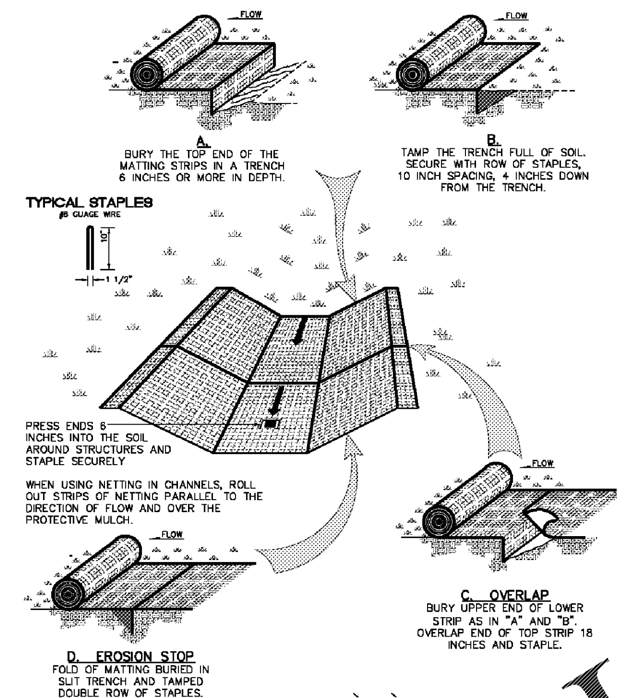
MAINTENANCE

16. Inspect check dams and channels at least weekly and after each significant (1/2 inch or greater) rainfall event and repair immediately. Clean out sediment, straw, limbs, or other debris that could clog the channel when needed.
17. Anticipate submergence and deposition above the check dam and erosion from high flows around the edges of the check dam. Correct all damage immediately. If significant erosion occurs between check dams, additional measures can be taken such as, installing a protective rip rap liner in that portion of the channel. (See detail 353.08)
18. Remove sediment accumulated behind the check dams as needed to prevent damage to channel vegetation, allow the channel to drain through the stone check dam and prevent large flows from carrying sediment over the check dam. Add stones to check dams as needed to maintain design height and cross section.

NOTES

19. Do not use check dams in intermittent or perennial streams.
20. Contractor to verify / comply with NCDENR Erosion and Sediment Control Planning and Design Manual (Latest revision), detail 6.83.

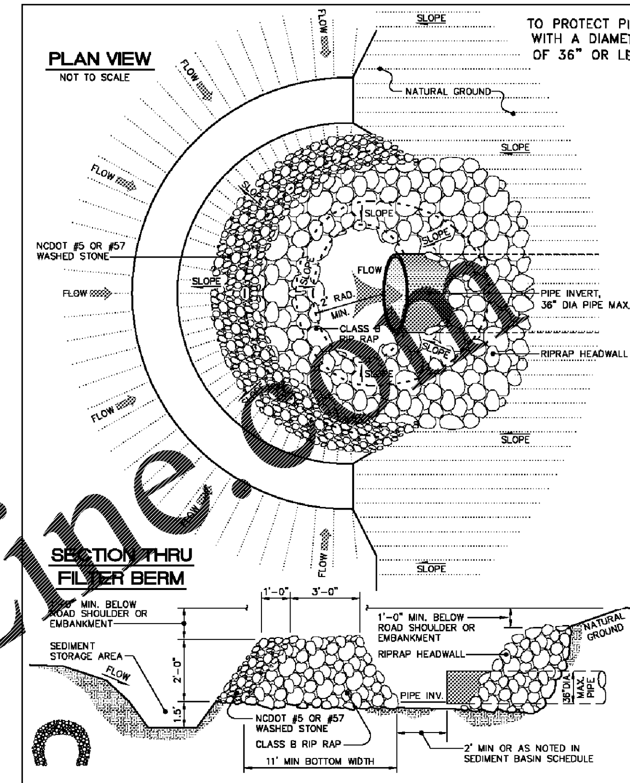
ROCK CHECK DAM DETAIL



NOTES:

1. Apply lime, fertilizer and seed before laying the net or mat.
2. Start laying the net from the top of the channel or slope and unroll it down the grade. Allow netting to lay loosely on the soil but without wrinkles – do not stretch. Mat or blanket – type product should provide at least 30% coverage of the surface where it is applied.
3. To secure the net, bury the upslope end in a slot or trench no less than 6 inches deep, cover with soil, and tamp firmly as shown. Staple the net every 12 inches across the top end and every 3 foot around the edges and bottom. Where 2 strips of net are layed side by side, the adjacent edges should be overlapped 3 inches and stapled together. Each strip of netting should also be stapled down the center, every 3 foot. Do not stretch the net when applying staples.
4. To join two strips, cut a trench and anchor the end to the new net. Overlap the end of the previous roll 18 inches as shown and staple every 12 inches just below the anchor slot.
5. Maintenance: Inspect all mulches periodically, after rainstorms to check for rill erosion, dislocation or failure. When erosion is observed, apply additional mulch. If washout occurs, repair the slope grade, reseed, and reinstall mulch. Continue inspections until vegetation is firmly established.

STANDARD CHANNEL STABILIZATION



THIS DETAIL IS USED TO SUPPLEMENT SEDIMENT TRAPS OR BASINS AT THE PIPE OUTLET OR USED IN COMBINATION WITH AN EXCAVATED STORAGE AREA TO SERVE AS A TEMPORARY SEDIMENT TRAP

NOTE: THIS MEASURE MAY NOT BE INSTALLED IN AN INTERMITTENT OR PERENNINAL STREAM

CONSTRUCTION SPECIFICATION

1. Clear the area of all debris that might hinder excavation and disposal of spoil.
2. Install the Class B or Class I riprap in a semi-circle around the pipe inlet. The stone should be built up higher on each end were it ties into the embankment. The minimum crest width of the riprap should be 3 feet, with a minimum bottom width of 11 feet. The minimum height should be 2 feet, but also 1 foot lower than the shoulder of the embankment or diversions.
3. A 1-foot thick layer of NC DOT #5 or #57 stone should be placed on the outside slope of the riprap.
4. Unless otherwise indicated on the sediment basin schedule, the sediment storage area should be excavated around the outside of the stone horseshoe 18 inches below natural grade.
5. When the contributing drainage area has been stabilized, fill depression and establish final grading elevation, compact area properly, and stabilize with ground cover.

MAINTENANCE

Inspect rock pipe inlet protection at least weekly and after each significant (1/2 inch or greater) rainfall event and repair immediately. Remove sediment and restore the sediment storage are to its original dimensions when the sediment has accumulated to one-half the design depth of the trap. Place the sediment that is removed in the designated disposal area and replace the contaminated part of the gavel facing.

Check the structure for damage. Any riprap displaced from the stone horseshoe must be replaced immediately.

After all the sediment-producing areas have been permanently stabilized, remove the structure and all the unstable sediment. Smooth the area to blend with the adjoining areas and provide permanent ground cover (Surface Stabilization).

STANDARD HORSESHOE INLET PROTECTION

SEEDING (PERM.)

SEEDBED PREPARATION

PRIOR TO THE SEEDING, THE CONTRACTOR SHALL CUT AND SATISFACTORILY DISPOSE OF WEEDS AND OTHER UNACCEPTABLE GROWTH ON THE AREAS TO BE SEEDED. UNEVEN AND ROUGH AREAS, AND OTHER MINOR IRREGULARITIES WHICH CANNOT BE OBLITERATED BY NORMAL SEEDBED PREPARATION OPERATIONS, SHALL BE SHAPED AND SMOOTHED AS DIRECTED BY THE ENGINEER TO PROVIDE FOR MORE EFFECTIVE SEEDING AND FOR EASE OF SUBSEQUENT MOWING OPERATIONS.

THE SOIL SHALL THEN BE SCARIFIED OR OTHERWISE LOOSENED TO A DEPTH OF NOT LESS THAN 5 INCHES EXCEPT AS OTHERWISE PROVIDED BELOW OR OTHERWISE DIRECTED BY THE ENGINEER. CLODS SHALL BE BROKEN AND THE TOP 2 TO 3 INCHES OF SOIL SHALL BE WORKED INTO AN ACCEPTABLE SEEDBED BY THE USE OF SOIL PULVERIZERS, DRAGS, OR HARROWS, OR BY OTHER METHODS APPROVED BY THE ENGINEER. ALL ROCK AND DEBRIS 2 INCHES OR LARGER SHALL BE REMOVED ON CUT CUT OR FILL SLOPES WHICH ARE 3:1 OR FLATTER , MEDIANS, SHOULDERS, AND DITCH SLOPES PRIOR TO THE APPLICATION OF SEED AND FERTILIZER.

SEEDBED PREPARATION WITHIN 2 FEET OF THE EDGE OF ANY PAVEMENT SHALL BE LIMITED TO A DEPTH OF 2 TO 3 INCHES.

THE PREPARATION OF SEEDBEDS SHALL NOT BE DONE WHEN THE SOIL IS FROZEN, EXTREMELY WET, OR WHEN THE ENGINEER DETERMINES THAT IT IS IN AN OTHERWISE UNFAVORABLE WORKING CONDITION.

SEEDBED PREPARATION

SEEDING (PERMANENT)

SUMMER MARCH 1– AUGUST 31 SEEDING MIXTURE		WINTER SEPTEMBER 1– FEBRUARY 28	
SPECIES	RATE(LB/ACRE)	SPECIES	RATE (LB/ACRE)
BERMUDA GRASS (HULLED)	35	BERMUDA GRASS (UNHULLED)	35
CENTIPEDE	10	TALL FESCUE	50
GERMAN/BROWNTOP MILLET GRAIN	10	ANNUAL RYE	10

SEEDING (TEMPORARY)

SUMMER MARCH 1– AUGUST 31 SEEDING MIXTURE		WINTER SEPTEMBER 1– FEBRUARY 28	
SPECIES	RATE(LB/ACRE)	SPECIES	RATE (LB/ACRE)
GERMAN/BROWNTOP MILLET GRAIN	40	ANNUAL RYE	20
		OATS	50

SOIL AMENDMENTS

APPLY LIME AND FERTILIZER ACCORDING TO SOIL TEST PROVIDED TO ENGINEER FOR APPROVAL, OR APPLY 4,000 LB/ACRE GROUND AGRICULTURAL LIMESTONE AND 500 LB/ACRE 10–10–10 FERTILIZER FOR SUMMER SEEDING. FOR WINTER SEEDING APPLY LIME AND FERTILIZER ACCORDING TO SOIL TEST PROVIDED TO ENGINEER FOR APPROVAL OR APPLY 2000 LB/ACRE GROUND AGRICULTURAL LIMESTONE AND 700 LBS/ACRE OF 10–10–10 FERTILIZER

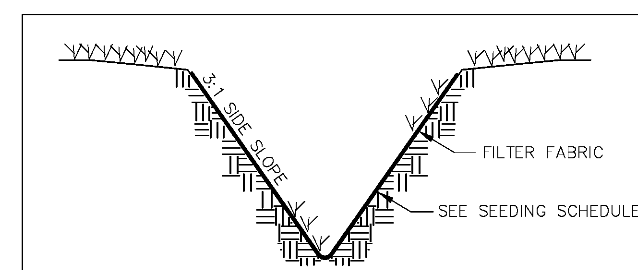
APPLY 4,000 LB/ACRE GRAIN STRAW OR EQUIVALENT COVER OF ANOTHER SUITABLE MULCH. ANCHOR STRAW BY TACKING WITH ASPHALT, NETTING, OR ROVING OR BY CRIMPING WITH A MULCH ANCHORING TOOL. TACKING RATE TO BE 0.10 GALLONS PER SQUARE YARD. A DISK WITH BLADES SET NEARLY STRAIGHT CAN BE USED AS A MULCH ANCHORING TOOL. IF CRIMPING IS USE THE ABOVE STRAW APPLICATION RATE SHALL BE DOUBLED AND APPLIED IN TWO LAYERS OF 4000 LB/ACRE WITH THE FIRST LAYER CRIMPED.

MAINTENANCE

IF GROWTH IS LESS THAN FULLY ADEQUATE, REFERTILIZE IN THE SECOND YEAR, ACCORDING TO SOIL TESTS OR TOPDRESS WITH 500 LB/ACRE 10–10–10 FERTILIZER. MOW AS NEEDED WHEN SERICEA IS OMITTED FROM THE MIXTURE. RESEED, FERTILIZE, AND MULCH DAMAGED AREAS IMMEDIATELY.

CONTRACTOR IS RESPONSIBLE FOR MOWING, RESEEDING, FERTILIZING AND LIMING IF ADEQUATE GROUND COVER IS NOT OBTAINED AT NO COST TO OWNER.

TYPICAL SEEDING SCHEDULE



TYPICAL DITCH DETAIL

Get Plans @ www.LDILine.com

NORTH CAROLINA PROFESSIONAL SEAL 10180 ENGINEER RONNIE L. SUTTON 4-4-19

TRC Stamp:	City Council Stamp:	Revision	Date	By

Herring–Sutton & Associates, P.A.
Engineers – Surveyors – Planners
2201 Nash Street NW, Wilson, North Carolina 27896 (252) 291–8887

– Holiday Inn Express –
City of Wilson, N.C.

Sedimentation and Erosion Control Details

Date: July 2018	
Scale: None	Map No.
Drawn by: twh	2018–4260L
Sheet No. DT–5	