Erosion and Sediment Control Construction Phasing.
General Notes

1. The project is to be constructed in three phases.
2. The Erosion and sediment control plan sheet 7 shows the overall plan with drainage areas, Denuded areas identified for the 3 phases of construction
3. Sheet 8 shows separate construction phases as Phase I, Phase II and Phase III. Phase I construction will include partial grading of phase II which includes the grading of lots 29 and lot 30. The top soil storage area for phase 1 shall stay protected and be used for phase II.

Construction of Phase I:

Note: In construction of phase I, installation of the skimmer sediment basin/detention basin shall be coordinated with construction staging. Contractor shall review phase I construction Sequence and the 4 steps for construction of skimmer sediment basin/detention basin.

1. Construction of phase I of the project comprises of construction of road including grading, drainage, sidewalk and asphalt pavement. It includes partial grading of phase II road and lots 29 and lot 30. The excavation from phase II road shall be used for construction phase I road embankment
2. Silt Fence Installation: Silt fence as shown on the Erosion and Sediment Control plans Phase I shall be installed first. Clear enough area to install all silt fence and silt stone filters including silt fence around wetland area as shown on the plan
3. Install Construction Entrance as shown on the approved plans
4. Install Check dams in the ditch along Highway 87 as shown on the approved plans
5. Installation of Skimmer Sediment Basin/Detention Pond: After completing installation of silt fence on the project limits of phase one begin installation of skimmer sediment basin. The sediment basin shall be used for erosion and sediment control purposes and at the end of phase I construction, sediment basin shall be converted to retention pond to control the first 1/2" of runoff for the whole project.
6. The drainage basin/retention pond shall be installed in 4 steps. Step 1 and step 2 shall be install before the start of any grading operation on phase I in order to prepare it for erosion and sediment control of phase I. Step 3 and step 4 shall be installed at the later stages of phase I to convert drainage basin into retention pond. (See steps construction on this plan)
7. Begin construction operations including clearing and grubbing, grading, slopes and side ditches.
   - Install temporary diversion ditches to divert runoff from denuded area to the skimmer sediment basin with check dams as shown on the approved plans. Diversion ditches shall be adjusted as grading operations progress.
   - All slops greater than 3:1 shall be stabilized within 7 days. Other areas shall be stabilized within 14 days.
8. Remove temporary pipe and stabilize disturbed area caused by removal operation (See step 4B of Skimmer sediment basin/detention basin construction)
9. Install pavement, clean debris, seed and mulch and stabilize remaining disturbed area
10. Clean skimmer sediment basin. Remove skimmer and open detention basin for normal operations
11. Stabilize area included in phase II used as part of phase I. Keep erosion control devices that were installed in phase I and maintain them as required until work on phase II begins

Step 1. Installation of Temporary 18" pipe (See Erosion and Control Plan sheet 8 of 10).
- Install silt fence as shown on plan step 1
- Install temporary pipe from across the road
- Extend pipe to outside denuded area. The temporary pipe function is to divert clean runoff water away from construction area.
- Silt fence shall be installed above the temporary pipe on both ends to confine construction area runoff

Step 2. Installation of Skimmer Sediment Basin/Detention Pond Install embankment/excavation of skimmer sediment basin as shown on plan step 2. Embankment slopes shall be Min. 2:1 specified in the Erosion and Sediment Control Design and Construction Standards Manual".
- Install embankment as shown on erosion control plan step 2
- Install skimmer and emergency spillway as per approved design plans
- Seed and mulch all denuded area caused by the construction of skimmer sediment basin/detention pond. Ground stabilization shall be installed within 7 days on slopes exceeding 3:1

Note: (Step 3 shall be installed in the later stages of grading operations)

Step 3. Installation of permanent detention basin drainage structure and spread level while keeping skimmer sediment basin in operation
- Keep skimmer and emergency spillway in operation
- Isolate corner of the sediment basin as shown on the approved plans, step 3.
- Construct the permanent detention basin drainage structure as shown on the plans
- Construct level spreader as per plan details

Step 4A. Construction of 24" pipe and Drainage Structure at the Inlet of pipe
- Construct 24" RCP across the road at the location as shown on the approved plans
- Construct drainage structure at the inlet of 24" RCP. Construction shall be as per approved plan details.
- Install inlet protection device on drainage structure
- Keep system inactive to out of project runoff until all road grading operation is completed and disturbed area of the project stabilized

Step 4B. Removal of temporary pipe, remove
- Remove temporary pipe
- Stabilize all disturbed area caused by removal of temporary pipe
- After completion of wall grading clean skimmer sediment basin/detention basin and stabilize all denuded area on the project
- Remove skimmer and open detention pond for detention operations.

Erosion and Sediment Control Construction Phasing.

Construction of Phase II

1. Construction of phase II of the project comprises of construction of road including grading, drainage, sidewalk and asphalt pavement. Partial grading of phase II was completed as a part of phase I. The stock pile designated for phase I shall be also used for phase II as shown on plan
2. Silt Fence Installation: Silt fence as shown on the Erosion and Sediment Control plans Phase II shall be installed first. Any silt fence installed as a part of phase I shall be inspected and repaired. Clear enough area to install all silt fence and silt stone filters
3. Install Construction Entrance as shown on the approved plans
4. Install sediment pits 2.1 and 2.2 as shown on the locations as shown on plans per erosion and sediment control details
5. Begin construction operations including clearing and grubbing, grading, slopes and side ditches.
   - Install temporary diversion ditches to divert runoff from denuded area to sediment pits with check dams as shown on the approved plans. Diversion ditches shall be adjusted as grading operations progress.
   - All slops greater than 3:1 shall be stabilized within 7 days. Other areas shall be stabilized within 14 days.
6. Install pavement, clean debris, seed and mulch and stabilize remaining disturbed area
7. Stabilize all disturbed area before removing erosion and sediment control devices.

Construction of Phase III

1. Construction of phase III of the project comprises of construction water and sewer, road including grading, drainage, sidewalk and asphalt pavement
2. Silt Fence Installation: Silt fence as shown on the Erosion and Sediment Control plans Phase III shall be installed first. Isolate phase III on the completed area of phase II by silt fence. Clear enough area to install all silt fence and silt stone filters
3. Install Construction Entrance as shown on the approved plans
4. Install sediment pits 3.1 and 3.2 as shown on the locations as shown on plans per erosion and sediment control details
5. Begin construction operations including clearing and grubbing, grading, slopes and side ditches as well as water and sewer operations
   - Install temporary diversion ditches to divert runoff from denuded area to sediment traps with check dams as shown on the approved plans. Diversion ditches shall be adjusted as grading operations progress.
   - All slops greater than 3:1 shall be stabilized within 7 days. Other areas shall be stabilized within 14 days.
6. Install pavement, clean debris, seed and mulch and stabilize remaining disturbed area
7. Stabilize all disturbed area before removing erosion and sediment control devices

Erosion and Sediment Control Construction and Maintenance Notes

1. The Contractor shall designate an Erosion and Sediment Control Coordinator for the site
2. Hold Pre-Construction Meeting at least one week before the start of any construction operation. Invite NCDENR, LQS and Town of Pittsboro Coordinator.
3. Start construction by installing E& SC devices as per Whispering Meadows Subdivision Construction Sequence shown on the Erosion and Sediment Control design and detail sheets.
4. Start construction operations as outlined in the Whispering Meadows Subdivision Construction Sequence for construction of road, stormwater and utilities. "(refer to E&SC plans and detail sheets)"
5. Adjust E&SC devices as outlined in the Subdivision construction sequence in order to perform properly with the new grades.
6. When Changes in construction activities sequence are needed, amend E&SC Practices to maintain management control. Consult with the Project Engineer before making the changes.
7. All graded areas will be seeded , fertilized and mulched to maintain a vigorous, dense vegetative cover within 15 working days or 21 calendar days (whichever is shorter) of completion of any phase of grading. If work on the project ceases for more than the aforementioned length of time, all disturbed areas shall have temporary vegetative ground cover established and erosion control practices maintained.
8. All erosion and sediment control practices will be inspected weekly and after rainfall events. Needed repairs will be made immediately.
9. Estimated time before final stabilization is 6 months.
10. Estimated disturbed area is 1.56 Acres.
11. After site is stabilized, temporary sediment traps, temporary diversions, construction entrance and construction staging and material stockpile areas and other erosion control devices shall be removed, restored to original and permanently vegetated. Contractor must receive permission by the Project Inspector before removing any E&SC devices.
12. Contractor is responsible for installation, maintenance and removal of all temporary E&SC devices on the project.
13. This plan in no way covers improvements to any lot or lots. If any single developer/builder disturbs 1+ acre(s) on any combination of contiguous lots, a standalone E&SC plan for that activity should be submitted to and approved by Division of Land Quality (DENR).

`14. Area to be permanently stabilized with vegetation is 0.6 acres.

Maintenance of Erosion and Sediment Control Practices

1. The Contractor Shall check all erosion and sediment control practices for stability and operation following every runoff producing rainfall but in no case less than once every week. Any needed repairs will be made immediately by the Contractor to maintain all practices as designed. Also per National Pollutant Discharge Elimination System (NPDES) General Stormwater Permit, a rain gauge must be installed on site. The rain gauge must be kept onsite and inspection by the Contractor must be made and logged after every half inch rainfall and once a week.
2. The Contractor shall remove sediment from Sediment traps when storage capacity has been approximately 50% filled. Gravel shall be cleaned or replaced when the sediment pool no longer drains properly.
3. The Contractor shall remove sediment from behind silt fence when it becomes (0.5) feet deep at the fence. Silt fence will be repaired as necessary to maintain a barrier.
4. The Contractor shall fertilize, reseed as necessary, and mulch all seeded areas according to seeding specifications in the plans to maintain a vigorous, dense vegetative cover.
5. The Contractor shall provide ground cover on exposed slopes or other areas within 21 calendar days of completion of any phase of grading. Permanent ground cover is to be provided for all disturbed areas within 21 calendar days or sooner following completion of construction or development

NDPES PERMIT NOTES:

Notes: Construction of the project must comply to the General NPDES and the Changes in the NPDES Permit entitled "Major Elements of DWQ Construction General Permit effective August 03, 2011

1.

NPDES Stormwater Discharge Permit for Construction Activities (NCGO1) — NCDENR/Division of Water Quality

NEW STABILIZATION TIMEFRAMES
(Effective Aug. 3, 2011)

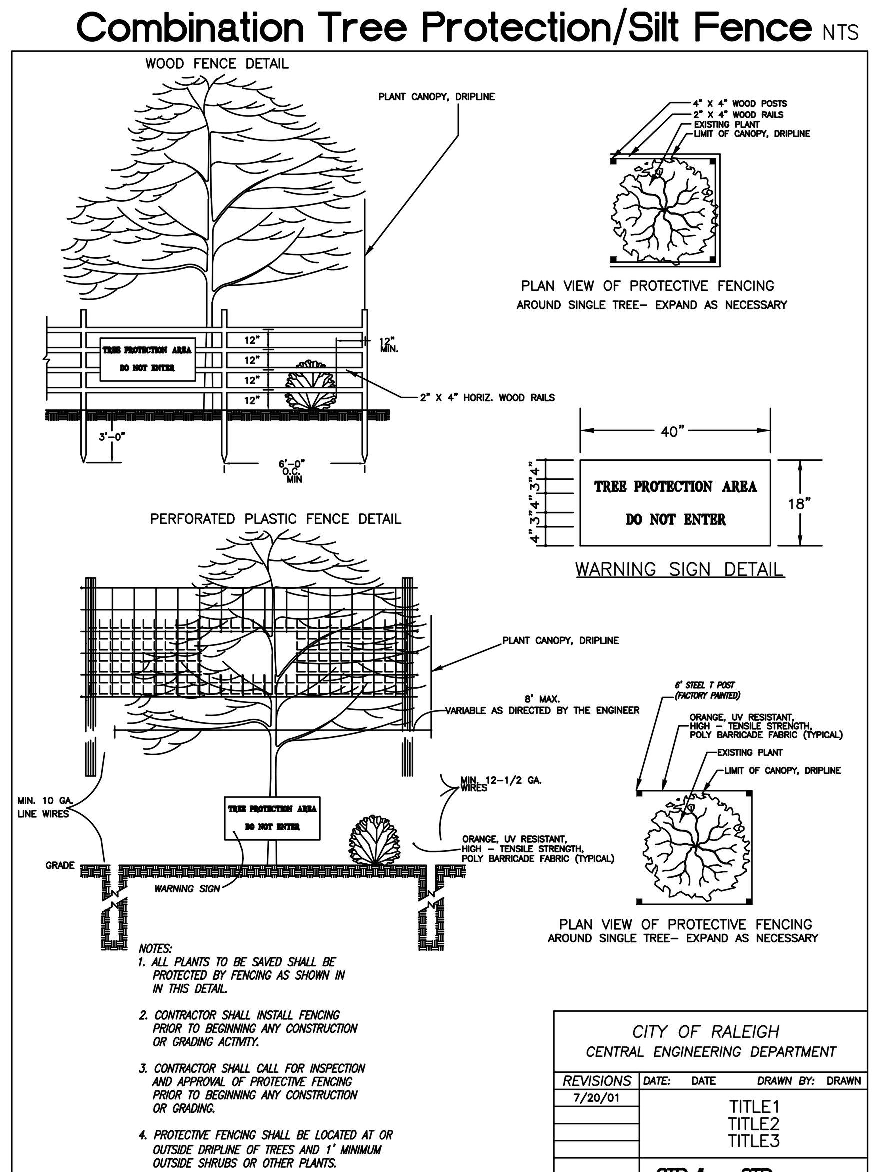
Site Area Description	Stabilization	Timeframe Exceptions
Perimeter dikes, swales, ditches, slopes	7 days	None
High Quality Water (HQW) Zones	7 days	None
Slopes steeper than 3:1	7 days	If slopes are 10' or less in length and are not steeper than 2:1, 14 days are allowed.
Slopes 3:1 or flatter	14 days	7 days for slopes greater than 50' in length.
All other areas with slopes flatter than 4:1	14 days	None, except for perimeters and HQW Zones.

2. Construction and building wastes handling:
   - No paint or liquid wastes in stream or storm drains.
   - Dedicated areas for demolition, construction and other wastes must be located 50' from storm drains and streams unless no reasonable alternatives are available.
   - Earthen-material stockpiles must be located 50' from storm drains and streams unless no reasonable alternatives are available.
   - Concrete material must be controlled to avoid contact with surface waters, wetlands and/or buffers.
3. Inspection:
   - For weekly inspection and rain gauge requirements see E&SC notes on the plans.
   - Inspections are required during "normal business" hours.
   - Inspection reports must be available on-site during business hours unless a site-specific exemption is approved.
   - Records must be kept for 3 years and available upon request.
   - Electronically-available records may be substituted under certain conditions.

Notification of Land Resources Sediment and Erosion control Self-Inspection Program:

The Sedimentation Pollution Control Act was amended in 2006 to require that persons responsible for Land-disturbing activities inspect a project after each phase of the project to make sure that the approved erosion and sedimentation control plan is being followed. Rules detailing the documentation of these inspections took effect in October 1, 2010. The self-inspection program is separate from the weekly self-monitoring program of the NPDES Stormwater Permit for Construction Activities. The focus of the self-inspection report is the installation and maintenance of erosion and sedimentation control measures according to the approved plan. The inspections must be conducted after each phase of the project, and continue until permanent ground cover is established in accordance with NCGS 113A-54H and 15A NCAC 4B.0131. The self-inspection report form is available as an Excel spreadsheet from http://www.dir.enr.state.nc.us/phags/sedimenation-new.htm. If you have questions or cannot access the form, please contact NCDNR Division of Land Resources at (919) 791-4200

Combination Tree Protection/Silt Fence NTS



01 Tree Protection Fence

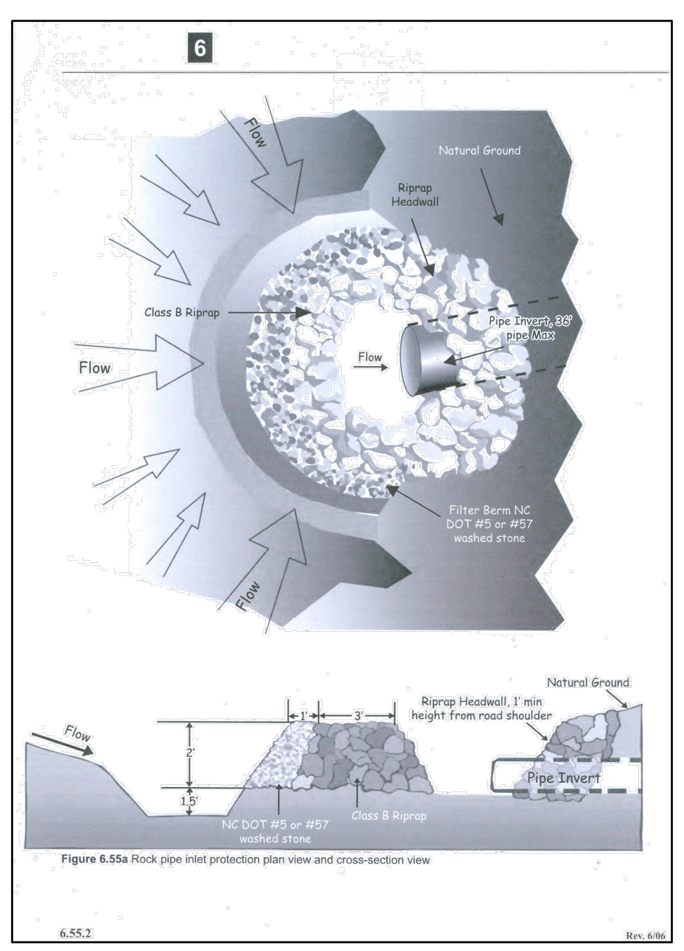


Figure 6.55a Rock pipe inlet protection plan view and cross-section view

6.55.2 Rev. 6/06

ROCK INLET PROTECTION

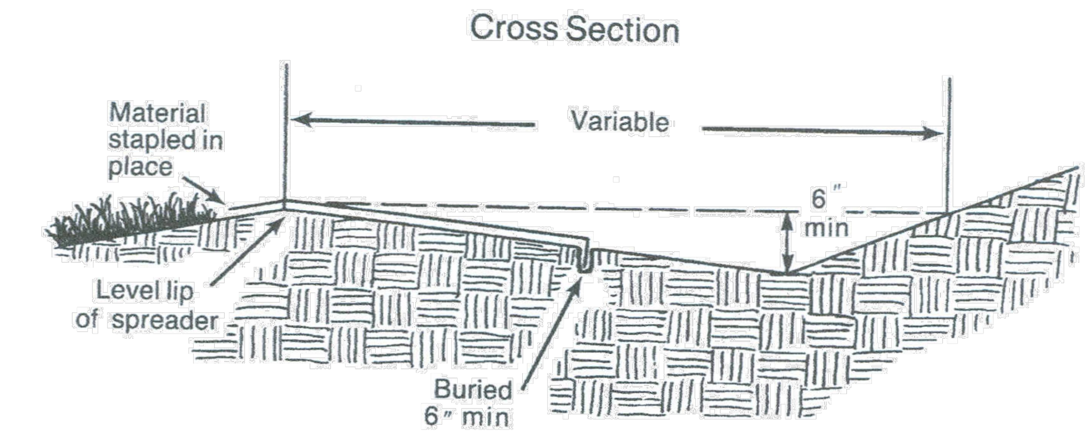


Figure 6.40b Detail of level spreader cross section.

5. Disperse runoff from the spreader across a properly stabilized slope not to exceed 10%. Make sure the slope is sufficiently smooth to keep flow from concentrating.

6. Immediately after its construction, appropriately seed and mulch the entire disturbed area of the spreader.

Maintenance Inspect level spreaders after every rainfall until vegetation is established, and promptly make needed repairs. After the area has been stabilized, make periodic inspections, and keep vegetation in a healthy, vigorous condition.

References *Surface Stabilization*
6.10, Temporary Seeding
6.11, Permanent Seeding

Runoff Control Measures
6.20, Temporary Diversions
6.21, Permanent Diversions

6

Level Spreader (not to scale)

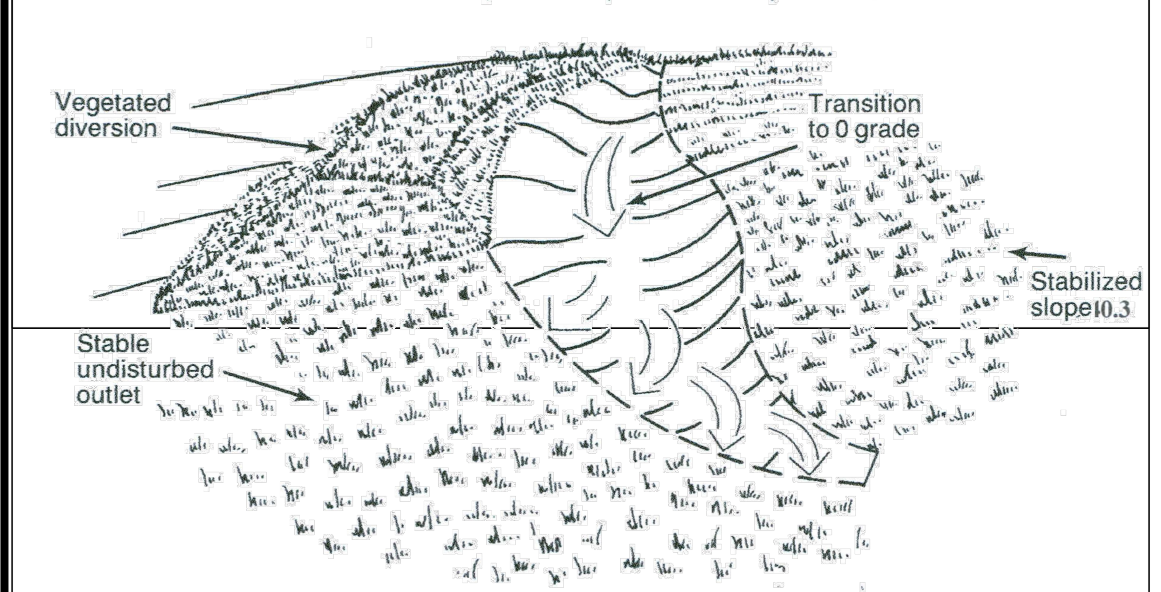


Figure 6.40a Level spreader is designed to disperse small volumes of concentrated flow across stable slopes.

Grade—The grade of the last 20 feet of the diversion channel should provide a smooth transition from channel grade to level at the spreader. The grade of the spreader should be 0%.

Spreader lip—Construct the level lip on undisturbed soil to uniform height and zero grade over the length of the spreader. Protect it with an erosion-resistant material, such as fiberglass matting, to prevent erosion and allow vegetation to become established.

Outlet area—The outlet disposal area must be generally smooth and well-vegetated with a maximum slope of 10%.

Vegetate all disturbed areas.

Construction Specifications

1. The matting should be a minimum of 4 feet wide extending 6 inches over the lip and buried 6 inches deep in a vertical trench on the lower edge. The upper edge should butt against smooth cut sod and be securely held in place with closely spaced heavy duty wire staples at least 12 inches long.

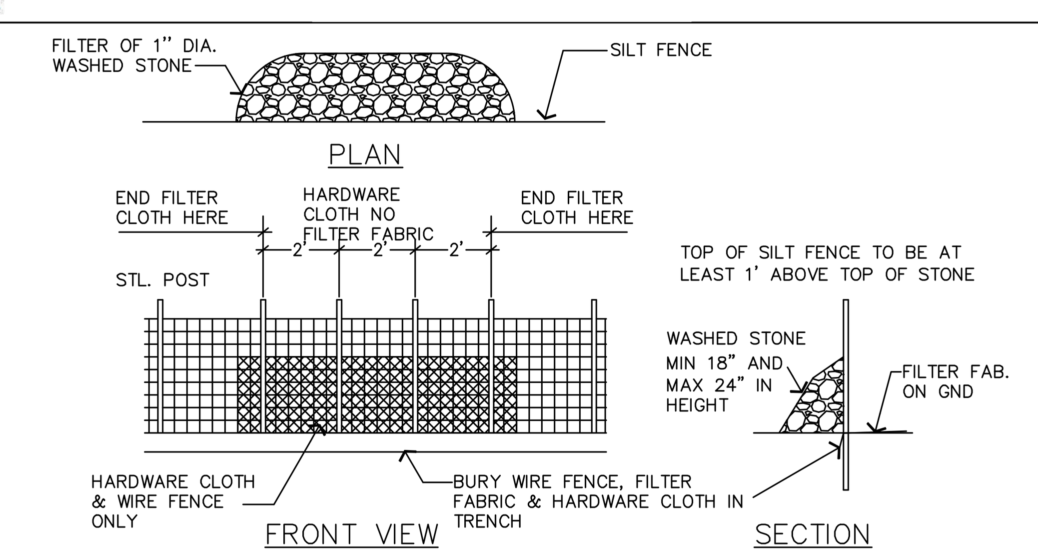
2. Ensure that the spreader lip is level for uniform spreading of storm runoff.

3. Construct the level spreader on undisturbed soil (**not** on fill).

4. Construct a 20-foot transition section from the diversion channel to blend smoothly to the width and depth of the spreader.

10.3

6.40.2



06 Silt Fence Outlet NTS

SEEDING SCHEDULE ON SHOULDERS AND SLOPES

TEMPORARY SEEDING SCHEDULE

SEEDING DATES	SPECIES	RATE	FERTILZER
JAN 1–MAY 1	RYE *	120 LB/ACRE	750 LB/ACRE 10–10–10
	ANNUAL LESPEDEZA (KOBE) *	50 LB/ACRE	750 LB/ACRE 10–10–10
MAY 1–AUGUST 15	GERMAN MILLET *	40 LB/ACRE	750 LB/ACRE 10–10–10
AUGUST 15–DEC 31	RYE (GRAIN) **	120 LB/ACRE	1,000 LB/ACRE 10–10–10
OMIT ANNUAL LESPEDEZA WHEN DURATION OF TEMPORARY COVER IS NOT TO EXTEND BEYOND JUNE.			

SOIL AMENDMENTS

FOLLOW RECOMMENDATIONS OF SOIL TESTS OR APPLY 2 TONS/ACRE GROUND AGRICULUTURAL LIMESTONE.

MULCH

APPLY 4,000 LB/ACRE STRAW. ANCHOR STRAW BY TACKING WITH ASPHALT, NETTING OR A MULCH ANCHORING TOOL. A DISK WITH BLADES SET NEARLY STRAIGHT CAN BE USED AS A MULCH ANCHORING TOOL.

MAINTENANCE

* RE-FERTILIZE IF GROWTH IS NOT FULLY ADEQUATE. RE-SEED, RE-FERTILIZE AND MULCH IMMEDIATELY FOLLOWING EROSION OR OTHER DAMAGE.

** REPAIR AND RE-FERTILIZE DAMAGED AREAS IMMEDIATELY. TOP-DRESS WITH 50 LB/ACRE OF NITROGEN IN MARCH. IF IT IS NECESSARY TO EXTEND TEMPORARY COVER BEYOND JUNE 15, OVER SEED WITH 50 LB/ACRE OF KOBE IN LATE FEBRUARY OE EARLY MARCH.

PERMANENT SEEDING SCHEDULE

SHOULDERS, SIDE DITCHES, SLOPES (MAX. 3:1)		
SEEDING DATES	SPECIES	RATE
AUGUST 15–NOV 1	TALL FESCUE	300 LB/ACRE
NOV 1–MARCH 1	TALL FESCUE AND	50 LB/ACRE
NOV 1–MARCH 1	ABRUZZIE RYE	50 LB/ACRE
MARCH 1–APRIL 15	TALL FESCUE	300 LB/ACRE
APRIL 15–JUNE 30	HULLED COMMON BERMUDAGRASS	25 LB/ACRE
JULY 1–AUGUST 15	TALL FESCUE	120 LB/ACRE
JULY 1–AUGUST 15	BROWN TOP BILLET	35 LB/ACRE

SHOULDERS, SIDE DITCHES, SLOPES (3:1 TO 2:1)		
SEEDING DATES	SPECIES	RATE
MARCH 1–JUNE 1	SERICEA LESPEDEZA AND	50 LB/ACRE
MARCH 1–APRIL 15	SCARIFY AND ADD TALL FESCUE	120 LB/ACRE
MARCH 1–JUNE 30	OR ADD WEEPING LOVE GRASS	10 LB/ACRE
JUNE 1–SEPT 1	TALL FESCUE AND	120 LB/ACRE
JUNE 1–SEPT 1	BROWN TOP MILLET	35 LB/ACRE
SEPT 1–MARCH 1	SERICEA LESPEDEZA AND	70 LB/ACRE
SEPT 1–MARCH 1	TALL FESCUE	120 LB/ACRE
NOV 1–MARCH 1	ADD ABRUZZIE RYE	25 LB/ACRE

AVAILABLE INFORMATION FOR ALTERNATIVES

CONSULT CONSERVATION ENGINEER OR SOIL CONSERVATION SERVICE FOR ADDITIONAL INFORMATION CONCERNING OTHER ALTRENATIVES FOR VEGETATION OR DENUDED AREAS. THE ABOVE VEGETATION ARE THOSE WHICH DO WELL UNDER LOCAL CONDITIONS; OTHER SEEDING RATE COMBINATIONS ARE POSSIBLE.

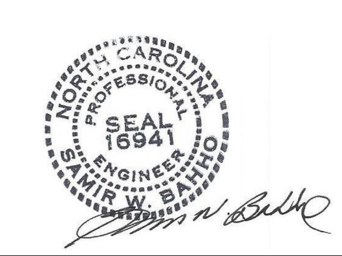
SEEDING PREPARATION

1. CHISEL COMPACTED AREAS AND SPREAD TOPSOIL 3 INCHES DEEP OVER ADVERSE SOIL CONDITIONS, IF AVAILABLE.
2. RIP THE ENTIRE AREA TO 6 INCHES DEPTH.
3. REMOVE ALL LOOSE ROCK, ROOTS AND OTHER OBSTRUCTIONS LEAVING SURFACE SMOOTH AND UNIFORM.
4. APPLY AGRICULTURAL LIME, FERTILIZER AND SUPER PHOSPHATE UNIFORMLY AND MIX WITH SOIL (SEE BELOW *).
5. CONTINUE TILLAGE UNTIL WELL PULVERIZED, FIRM AND REASONABLY UNIFORM SEEDBED IS PREPARED 4 TO 6 INCHES DEEP.
6. SEED ON A FRESHLY PREPARED SEEDBED AND COVER SEED LIGHTLY WITH SEEDING EQUIPMENT OR CULTIPACK AFTER SEEDING.
7. MULCH IMMEDIATELY AFTER SEEDING AND ANCHOR MULCH.
8. INSPECT ALL SEEDED AREAS AND MAKE NECESSARY REPAIRS OR RESEEDINGS WITHIN THE PLANTING SEASON, IF POSSIBLE. IF GRANDSTAND SHOULD BE OVER 60% DAMAGED, RE-ESTEABLISH FOLLOWING ORIGINAL LIME FERTILIZER AND SEEDING RATES.
9. CONSULT CONSERVATION INSPECTOR ON MAINTENANCE TREATMENT AND FERTILIZATION AFTER PERMANENT COVER IS ESTABLISHED.

* APPLY THE FOLLOWING AS A PART OF PERMANENT SEEDING OPERATION:

1. AGRICULTURAL LIMESTONE AT A RATE OF 2 TONS/ACRE
2. FERTILIZER 10–10–10 ANALYSIS AT 800–1000 LB/ACRE
3. SUPER PHOSPHATE AT 500 LB/ACRE OF 20% ANALYSIS SUPER PHOSPHATE
4. MULCH AT RATE OF 2 TONS (APPROXIMATELY 80 BALES) OF SMALL GRAIN STRAW/ACRE
5. ANCHOR OR TACK WITH LIQUID ASPHALT AT A RATE OF 400 GAL/ACRE OR EMULSIFIED ASPHALT AT 300 GAL/ACRE

11/14/2016



PRELIMINARY PLAN
DO NOT USE FOR CONSTRUCTION
FOR REVIEW BY LOCAL OFFICIALS
AND STATE OF NORTH CAROLINA.

SAMIR W. BAHHO, PE
CIVIL & STRUCTURAL ENGINEERING SERVICES, PLLC.
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RALEIGH, NORTH CAROLINA 27606
TEL: (919) 851-1642
BUSINESS LICENSE P-0537

PROJECT:
WHISPERING MEADOWS SUBDIVISION
OWNER: WINDSTAR PROPERTIES, LLC.
EROSION & SEDIMENT CONTROL
CENTER TOWNSHIP CHATHAM COUNTY NORTH CAROLINA
DETAILS

REVISIONS

NO.	DATE	DESCRIPTION	BY:
1	03.13	EROSION AND SEDIMENT CONTROL PHASING PLAN	REB
2	04.13	ADD EROSION CONTROL COMMENTS	REB

DATE: 10.04.11	SCALE: NOTED
DESIGNED: SWB	CHECKED: SWB
DRAWN: REB	APPROVED: WM
SHEET: E&SC DETAILS 10 OF 10	
CAD FILE: WM	
PROJECT NO: 2011.09	