

DISTURBANCE LIMITATIONS FOR VARIOUS SLOPE CONDITIONS

All land-disturbing activity for which an erosion and sedimentation control plan has not been approved prior to December 2, 2008 that requires a plan or a residential lot disturbance permit must meet the following slope standards.

- (1) Steep slopes
 - (a) No land-disturbing activity in excess of 5,000 square feet shall occur on any steep slope, except to the extent it is necessary and otherwise permitted by state law to be used for septic system needs, or for roadway crossings or utilities, where no practicable alternative exists; provided, however, that this limitation shall not apply to subdivision lots which have sketch, preliminary or final approval prior to December 2, 2008.
 - (b) All land-disturbing activity that will be permitted within areas of steep slopes as defined by this chapter and identified on the county GIS map must include the following standards on the erosion and sedimentation control plan and all site work must conform to these standards.
 - Erosion and sedimentation control devices. The person conducting the land-disturbing activity shall provide erosion and sedimentation control devices and practices that are sufficient to retain the sediment generated by the land-disturbing activity within the limits of disturbance during construction. All devices and practices must be designed in accordance with this chapter.
 - Ground cover. The person conducting the land-disturbing activity shall provide temporary or permanent ground cover sufficient to restrain erosion within seven calendar days following completion of any phase of grading or any period of inactivity. The provisions for ground cover must be provided regardless of weather conditions, weekends, holidays, equipment malfunction and/or any extenuating circumstance.
 - Phasing. Land-disturbing activities must be phased so that no more than one acre of land will be disturbed on steep slopes at any time.
 - Scale and contours. The scale of the erosion and sedimentation control plan must not exceed one inch equals 30 feet and must produce a legible document. Existing and proposed grades shall be depicted at contour intervals of two feet.
 - Inspections. All land-disturbing activity conducted on steep slopes must be visually inspected by the financially-responsible person as specified in § 164.12(i). Copies of the inspections must be provided to the county erosion and sedimentation control staff. Any erosion observed during these inspections must be immediately repaired and stabilized with temporary or permanent stabilization.

- (2) Moderate slopes. All land-disturbing activity that will be conducted within areas of moderate slopes as defined by this chapter and identified on the county GIS map must include the following standards on the erosion and sedimentation control plan, and all site work must conform to these standards.
 - (a) Erosion and sedimentation control devices. The person conducting the land-disturbing activity shall provide erosion and sedimentation control devices and practices that are sufficient to retain the sediment generated by the land-disturbing activity within the limits of disturbance during construction. All devices and practices must be designed in accordance with this chapter.
 - (b) Ground cover. The person conducting the land-disturbing activity shall provide temporary or permanent ground cover sufficient to restrain erosion within ten calendar days following completion of any phase of grading or any period of inactivity. The provisions for ground cover must be provided regardless of weather conditions, weekends, holidays, equipment malfunction and/or any extenuating circumstance.
 - (c) Phasing. Land-disturbing activities must be phased so that no more than ten acres of land will be disturbed on moderate slopes at any time.
 - (d) Scale and contours. The scale of the erosion and sedimentation control plan must not exceed one inch equals 50 feet and must produce a legible document. Existing and proposed grades shall be depicted at contour intervals of two feet.
 - (e) Inspections. All land-disturbing activity conducted on moderate slopes must be visually inspected by the financially-responsible person as specified in § 164.12(i). Copies of the inspections must be provided to the county erosion and sedimentation control staff. Any erosion observed during these inspections must be immediately repaired and stabilized with temporary or permanent stabilization.

- (3) Gradual slopes. All land-disturbing activity that will be conducted within areas of gradual slopes as defined by this chapter and identified on the county GIS map must include the following standards on the erosion and sedimentation control plan, and all site work must conform to these standards.
 - (a) Erosion and sedimentation control devices. The person conducting the land-disturbing activity shall provide erosion and sedimentation control devices and practices that are sufficient to retain the sediment generated by the land-disturbing activity within the limits of disturbance during construction. All devices and practices must be designed in accordance with this chapter.
 - (b) Ground cover. The person conducting the land-disturbing activity shall provide temporary or permanent ground cover sufficient to restrain erosion within 15 calendar days following completion of any phase of grading or any period of inactivity. The provisions for ground cover must be provided regardless of weather conditions, weekends, holidays, equipment malfunction and/or any extenuating circumstance.
 - (c) Phasing. Land-disturbing activities must be phased so that no more than 15 acres of land will be disturbed on gradual slopes at any time.
 - (d) Scale and contours. The scale of the erosion and sedimentation control plan must not exceed one inch equals 50 feet and must produce a legible document. Existing and proposed grades shall be depicted at contour intervals of two feet.
 - (e) Inspections. All land-disturbing activity conducted on gradual slopes must be visually inspected by the financially-responsible person as specified in § 164.12(i). Copies of the inspections must be provided to the county erosion and sedimentation control staff. Any erosion observed during these inspections must be immediately repaired and stabilized with temporary or permanent stabilization.

- (4) Step slopes variance. (a) A property owner may apply to the Board of Commissioners for a variance from the requirements of division (B)(1) above. (b) In order for the Board of Commissioners to grant the variance the applicant has the burden of proving the following:
 - The proposed land-disturbing activity on the steep slopes will not result in:
 - Significantly increased velocity of flow, deposit of sediment or erosion;
 - Significant threats to water quality;
 - The removal of significant wildlife or plant habitat; or
 - A public nuisance.
 - The provisions of this section's steep slope requirements leave the owner no legally reasonable use of the property; and
 - A failure to grant the variance would result in hardship.

- (5) Installation. **NOTE: Sediment fence captures sediment by backing up water to allow deposition. It is relatively ineffective for filtration because it clogs too rapidly. The sedimentation pool behind the fence is very effective and may reduce the need for expensive sediment basins and traps.** To use sediment fence effectively, provide access to the locations where sediment accumulates and provide reinforced, stabilized outlets for emergency overflow (Figure 6.62c). Sediment fence is most effective when used in conjunction with other practices such as perimeter dikes or diversions.

- (6) Location. Locate the fence at least 10 ft from the toe of steep slopes to provide sediment storage and access for cleanout (Figure 6.62b). The fence line should be nearly level through most of its length to impound a broad, temporary pool. Stabilized outlets are required for bypass flow, unless fence is designed to retain all runoff from the 10-yr storm (Figure 6.62b). The fence line may run slightly off level (grade less than 1%) if it terminates in a level section with a stabilized outlet, diversion, basin, or sediment trap. There must be no gully along the fence or at the ends. Sediment fence should not be used as a diversion.

- (7) Construction. Dig a trench approximately 8 inches deep and 4 inches wide, or a V-trench, in the line of the fence as shown in Figure 6.62d. Drive posts securely, at least 18 inches into the ground, on the downstream side of the trench. Space posts a maximum of 8 ft if fence is supported by wire, 6 ft if extra-strength fabric is used without support wire. Adjust spacing to place posts at low points along the fence line. Fasten support wire fence to uplope side of posts, extending 6 inches into the trench as shown in Figure 6.62d. Attach continuous length of fabric to uplope side of fence posts. Avoid joints, particularly at low points in the fence line. Where joints are necessary, fasten fabric securely to support posts and overlap to the next post.

Seedbed Preparation:

- Chisel compacted areas and spread topsoil three inches deep over adverse soil conditions, if available.
- Rip the entire area to six inches deep.
- Remove all loose rock, roots, and other obstructions leaving surface reasonable smooth and uniform.
- Apply agricultural lime, fertilizer and superphosphate uniformly and mix with soil (see Appendix).
- Continue tillage until a well-pulverized, firm reasonably uniform seedbed is prepared four to six inches deep.
- Seed on a freshly prepared seedbed and cover seed lightly with seeding equipment or outcrop after seeding.
- Mulch immediately after seeding and anchor mulch.
- Inspect all seeded areas and make necessary repairs for seedings within the planting season, if possible. If stand should be over 60% damaged, reestablish following the original time, fertilizer and seeding rates.
- Consult EFS Environmental Engineers on maintenance treatment and fertilization after permanent cover is established.

Mixture:
 Agricultural Limestone: 2 tons/acre (3 tons/acre in clay soils)
 Fertilizer: 1,000 lbs/acre - 15-10-10
 Superphosphate: 500 lbs/acre - 20% analysis
 Mulch: 2 tons/acre - small grain straw
 Anchor: Asphalt Emulsion at 300 gals/acre

Seeding Schedule

PERMANENT		
Date	Type	Planting Rate
Aug 15 - Nov 1	Tall Fescue	300 lbs/acre
Nov 1 - Mar 1	Tall Fescue & Abruzzi Rye	300 lbs/acre
Mar 1 - Apr 15	Tall Fescue	300 lbs/acre
Apr 15 - Jun 30	Hulled Common Bermudagrass	25 lbs/acre
Jul 1 - Aug 15	Tall Fescue AND Browntop Millet or Sorghum - Sudan Hybrids **	125 lbs/acre (Tall Fescue); 35 lbs/acre (Browntop Millet); 30 lbs/acre (Sorghum - Sudan Hybrids)

TEMPORARY		
Date	Type	Planting Rate
Mar 1 - Jun 1	Sericea Lespedeza (scarified) and use the following combinations:	50 lbs/acre (Sericea Lespedeza);
Mar 1 - Apr 15	Add Tall Fescue	120 lbs/acre
Mar 1 - Jun 30	Or add Hulled Common Bermudagrass	25 lbs/acre
Jun 1 - Sept 1	Tall Fescue AND Browntop Millet or Sorghum - Sudan Hybrids **	120 lbs/acre (Tall Fescue); 35 lbs/acre (Browntop Millet); 30 lbs/acre (Sorghum - Sudan Hybrids)
Sept 1 - Mar 1	Sericea Lespedeza (unhulled - unscarified) AND Tall Fescue	70 lbs/acre (Sericea Lespedeza); 120 lbs/acre (Tall Fescue)
Nov 1 - Mar 1	And Abruzzi Rye	25 lbs/acre

Consult EFS Environmental Engineer for additional information concerning other alternatives for vegetation of denuded areas. The above vegetation rates are those which do well under location conditions; other seeding rate combinations are possible.

** TEMPORARY: Reseed according to optimum season for desired permanent vegetation. Do not allow temporary cover to grow over 12" in height before mowing, otherwise fescue may be shaded out.

CONSTRUCTION SEQUENCE

- OBTAIN GRADING PERMIT / FINAL APPROVAL FROM CHATHAM COUNTY ENVIRONMENTAL HEALTH.
- CONTACT THE CHATHAM COUNTY EROSION CONTROL SECTION AT 919-645-8343 TO SET UP A PRE-CONSTRUCTION MEETING PRIOR TO ANY LAND DISTURBANCE WORK PERFORMED.
- INITIAL INSTALLATION OF EROSION CONTROL STA 10+00 TO STA 23+45 (UP TO STREAM CROSSING)
- INSTALL, IN ORDER OF THIS SEQUENCE: DELINEATE THE PROPOSED TREE/LINE/DISTURBED LIMIT LINE AND INSTALL ALL PROPOSED SILT FENCING FROM ENTRANCE TO STA 23+45 ALONG WITH TEMPORARY CONSTRUCTION ENTRANCE.

CONTRACTOR SHALL INSTALL THE TEMPORARY SKIMMER BASIN CLEAR ONLY AS NECESSARY TO ACCESS THIS AREA AND TO CONSTRUCT THE DEVICES. ONCE THE PREVIOUS MEASURES ARE INSTALLED, CLEAR ONLY AS REQUIRED TO INSTALL TEMPORARY DIVERSION BERMS/ DITCHES AND GRAVEL DIVERSION DIKES TO SKIMMER BASIN. THE CONTRACTOR SHALL STABILIZE ALL DIVERSIONS AND SKIMMER BASINS IMMEDIATELY UPON THEIR CONSTRUCTION. TSB-1 IS TO REMAIN IN PLACE DURING ROAD CONSTRUCTION UNTIL ALL UPSTREAM AREAS ARE STABILIZED.

ALL MEASURES SHALL BE INSTALLED AND INSPECTED FOR COMPLIANCE PRIOR TO INITIATING STREAM CROSSING

STREAM CROSSING

- WETLAND CROSSINGS SHALL NOT BE INSTALLED UNTIL ALL REQUIRED 404 AND 401 PERMITS HAVE BEEN OBTAINED. CONTRACTOR IS TO INSTALL THE TEMPORARY COFFER DAM, INLET / OUTLET PROTECTION AND SILT FENCE WHEN THE WEATHER FORECAST CALLS FOR THREE- FOUR CONSECUTIVE DAYS OR MORE OF DRY WEATHER. CONTRACTOR SHALL INSTALL COFFER DAM, BY-PASS PIPING WITH BY-PASS PUMPING PRIOR TO BEGINNING INSTALLATION OF HEADWALLS OR PERMANENT CULVERT. PRECAST HEADWALLS AND PIPE SHALL BE ON-SITE. THE BY-PASS PIPING AND PUMPING SHALL REMAIN IN PLACE UNTIL HEADWALLS AND DRAINAGE PIPE IS INSTALLED AND FUNCTIONAL.

ONCE STREAM CROSSING IS COMPLETE AND HEADWALLS AND PIPE BACKFILLED AND COVERED, IMMEDIATELY STABILIZE SLOPES UPSTREAM OF SILT FENCE AND PLACE STONE ON TRAVEL PATH TO INSURE ALL AREAS ARE STABLE. ALL DISTURBED AREAS SHALL BE INSTALLED AND INSPECTED FOR COMPLIANCE PRIOR TO INITIATING INSTALLATION OF REMAINING EROSION CONTROL MEASURES IN PHASE 1.

REMAINDER OF PROJECT

- CONTRACTOR SHALL INSTALL THE PERMANENT RISER BASIN AND CLEAR ONLY AS NECESSARY TO ACCESS THESE AREAS AND TO CONSTRUCT THESE DEVICES. ONCE THE PREVIOUS MEASURES ARE INSTALLED, CLEAR ONLY AS REQUIRED TO INSTALL TEMPORARY DIVERSION BERMS/ DITCHES AND GRAVEL DIVERSION DIKES TO THESE SEDIMENT TRAPS / RISER BASINS/ SKIMMER BASINS AND OTHER TEMPORARY MEASURES AS SHOWN ON THE APPROVED PLAN. THE CONTRACTOR SHALL STABILIZE ALL DIVERSIONS, RISER BASINS, AND SKIMMER BASINS IMMEDIATELY UPON THEIR CONSTRUCTION.

ALL MEASURES SHALL BE INSTALLED AND INSPECTED FOR COMPLIANCE PRIOR TO COMMENCEMENT OF ANY FURTHER R.O.W. CLEARING/GRUBBING AND EXCAVATION.

- REQUEST FINAL APPROVAL BY ENVIRONMENTAL INSPECTOR. IF THE INSPECTOR IS SATISFIED WITH UPSTREAM PERMANENT GROUND COVER, BEGIN REMOVING TEMPORARY EROSION CONTROL MEASURES, REMOVE THE SEDIMENT TRAPS AND ALL UNSTABLE SEDIMENT. AFTER STABILIZATION HAS OCCURRED REMOVE SEDIMENT FROM RISER BASIN/WATER QUALITY POND AND CONVERT TO PERMANENT STRUCTURE.

*CONTRACTOR TO REESTABLISH TEMPORARY DIVERSION SWALES AT THE END OF EACH DAY TO ENSURE DRAINAGE TO THE APPROPRIATE STRUCTURE.

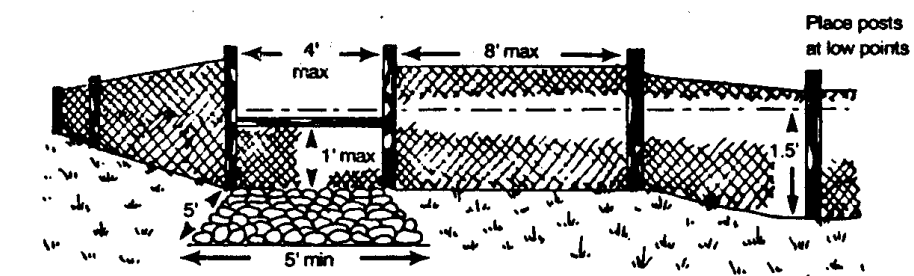


Figure 6.62c Perspective of reinforced, stabilized outlet for sediment fence.

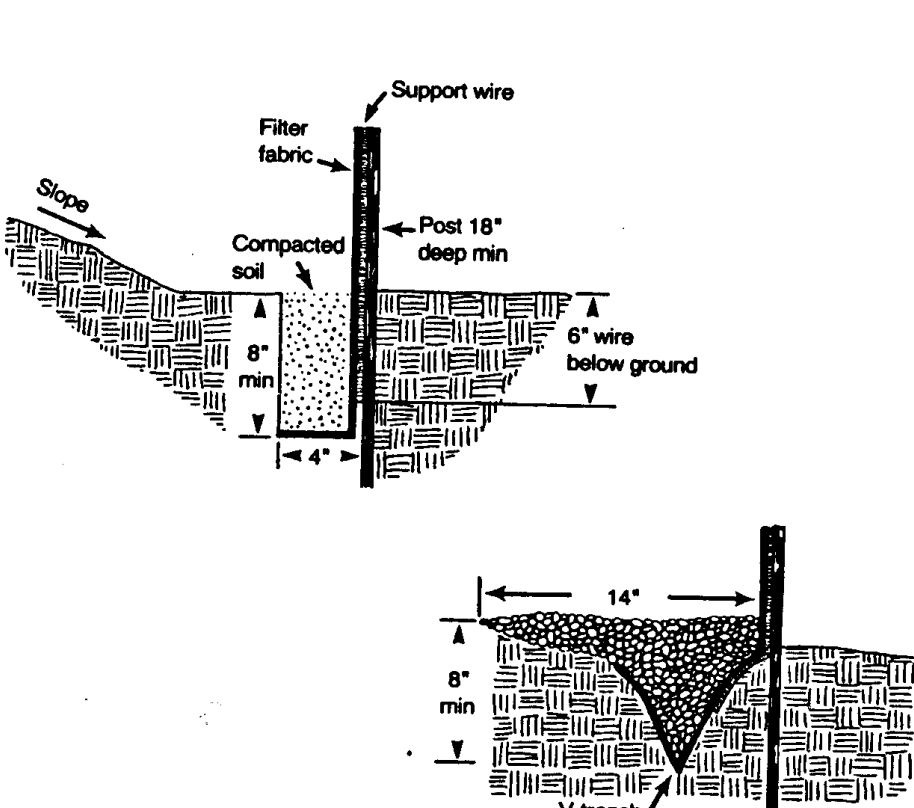
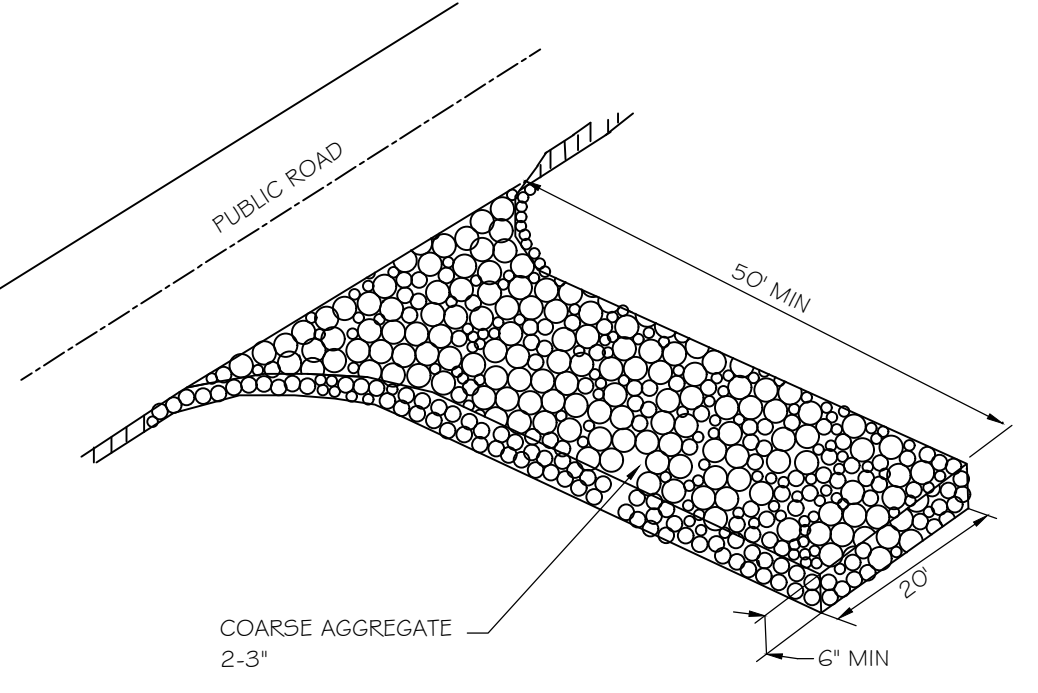


Figure 6.62d Detail of sediment fence installation.

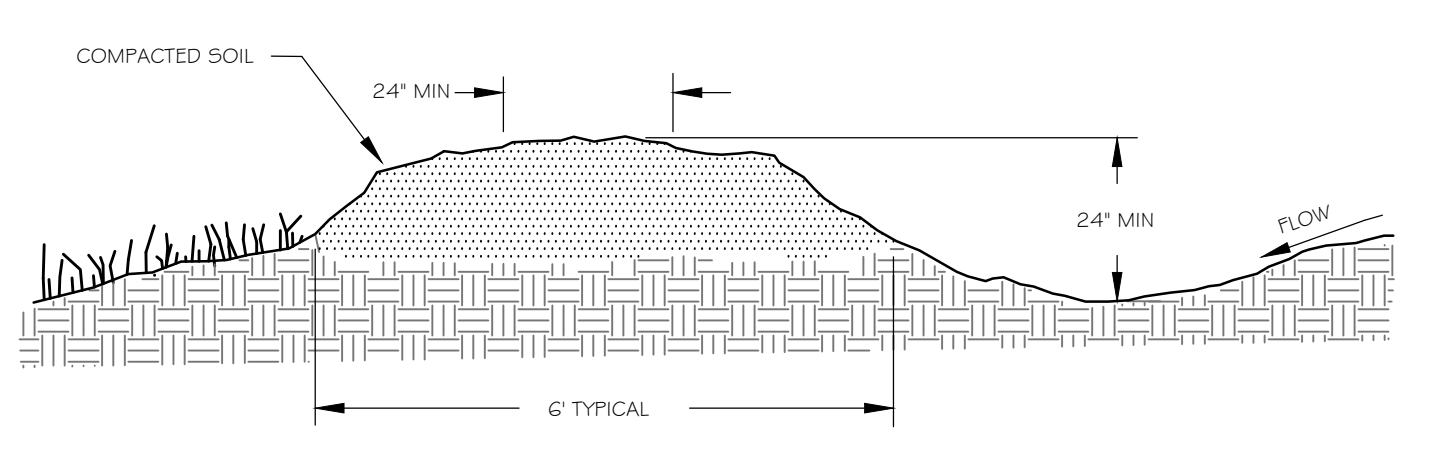
REINFORCED SILT FENCE OUTLET

NOTES:

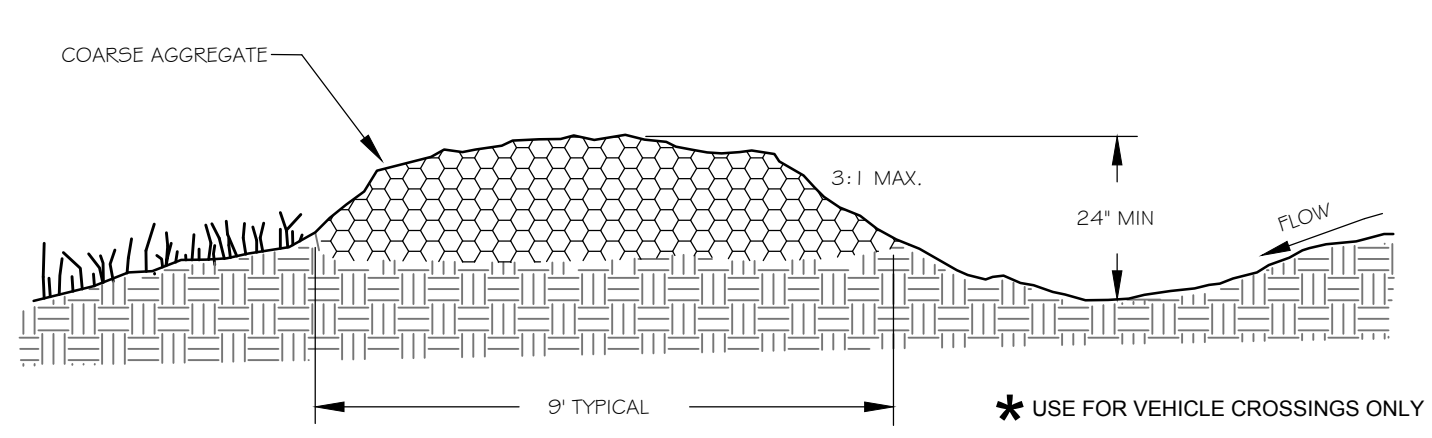
- GRAVEL PAD TO BE 20' x 50' AND 6" THICK MINIMUM
- TURNING RADIUS SUFFICIENT TO ACCOMMODATE LARGE TRUCKS IS TO BE PROVIDED.
- ENTRANCE(S) SHOULD BE LOCATED TO PROVIDE FOR MAXIMUM UTILITY BY ALL CONSTRUCTION VEHICLES.
- MUST BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR DIRECT FLOW OF MUD ONTO STREETS. PERIODIC TOPDRESSING WITH STONE SILL BE NECESSARY; KEEP SOME HANDY.
- ANY MATERIAL WHICH STILL MAKES IT ONTO THE ROAD MUST BE CLEANED UP IMMEDIATELY.



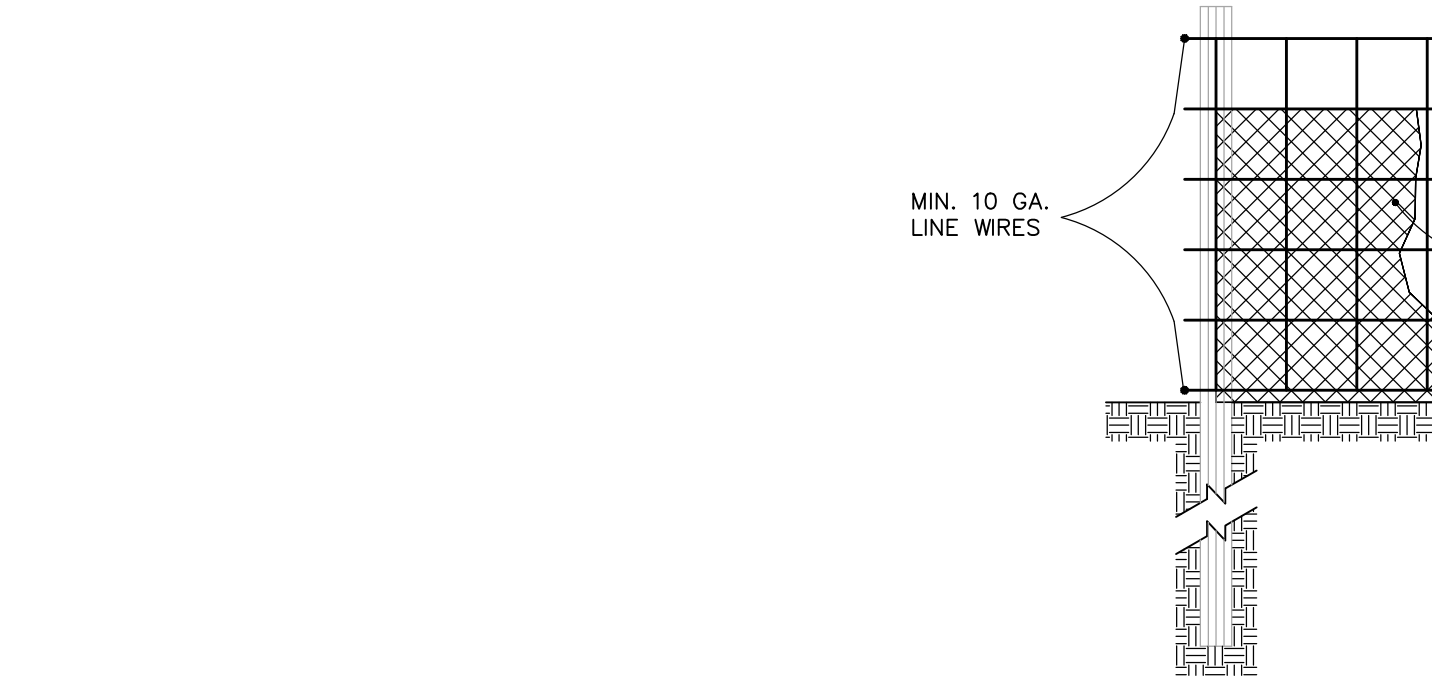
TEMPORARY CONSTRUCTION ENTRANCE



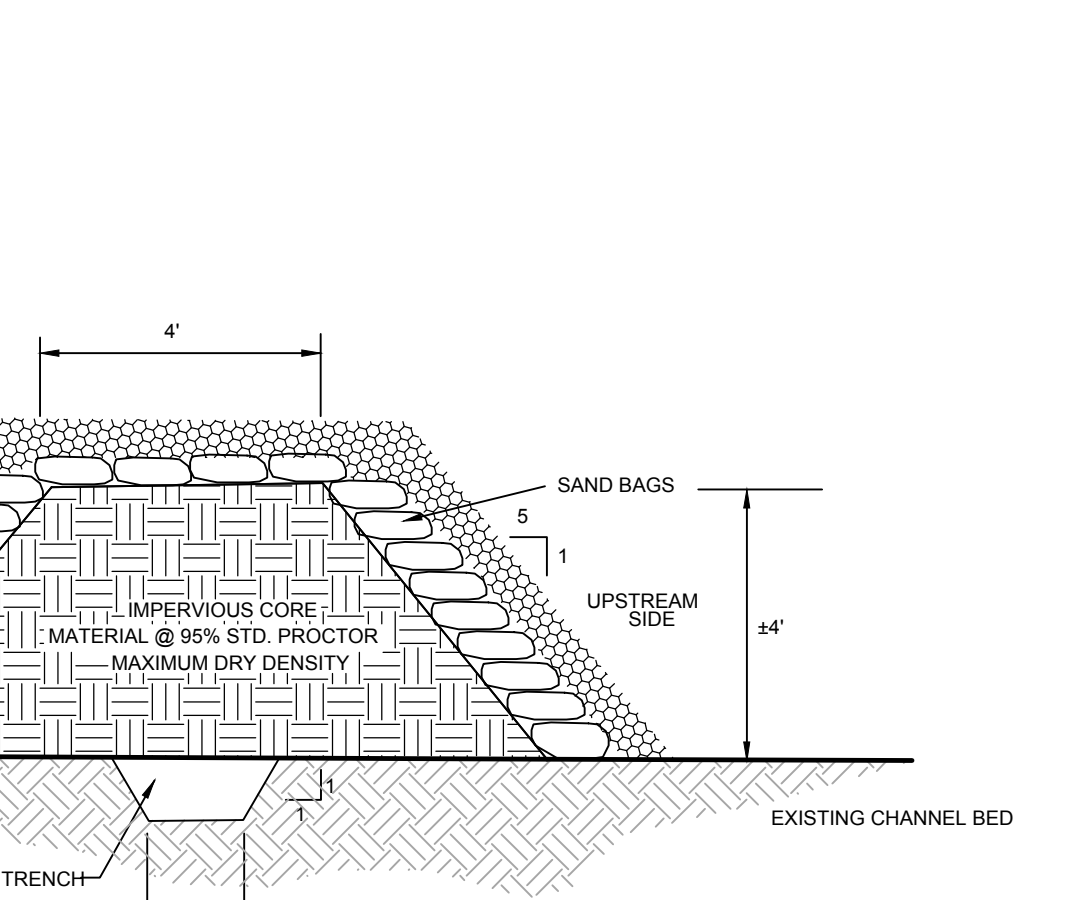
TEMPORARY DIVERSION BERM/SWALE



TEMPORARY GRAVEL DIVERSION DIKE

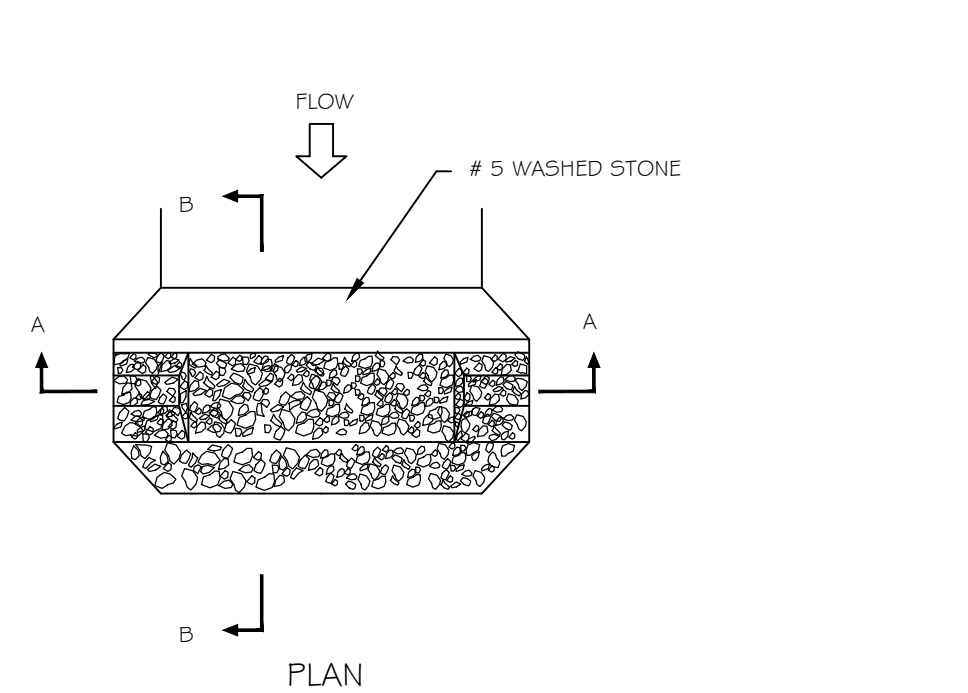


TEMPORARY COFFER DAM

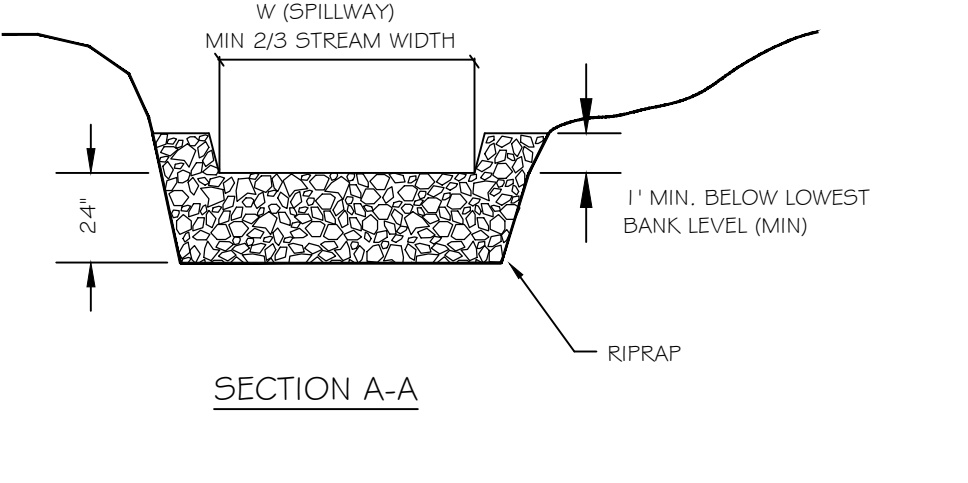


- WORK IN CREEK SHALL BE PLANNED TO MINIMIZE THE NUMBER OF DAYS OF DISTURBANCE.
- THE CONTRACTOR IS TO OBSERVE THE LOCAL WEATHER FORECASTS AND NOT BEGIN WORK IN THE CREEK UNLESS AT LEAST THREE DAYS WITHOUT RAIN IS ANTICIPATED.
- ALL DISTURBED CREEK BED AND BANKS ARE TO BE STABILIZED PRIOR TO THE END OF EACH WORK DAY.

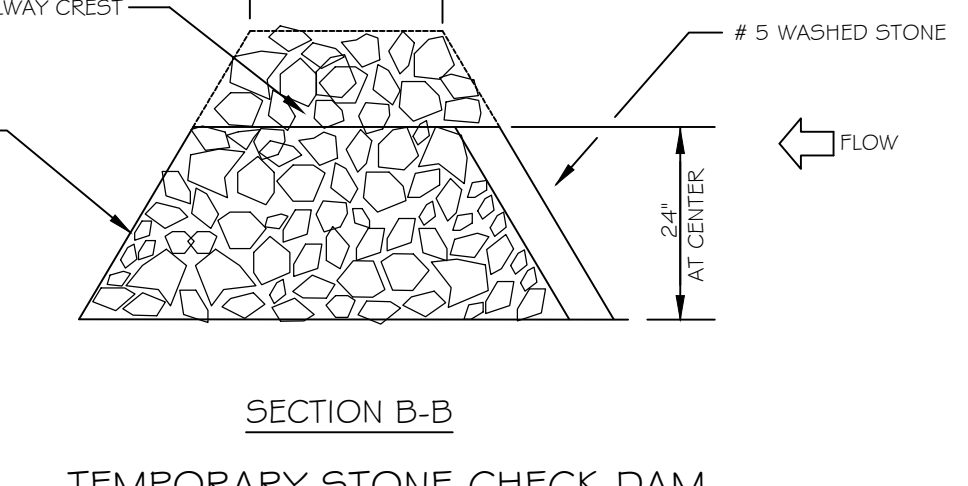
STANDARD TEMPORARY SILT FENCE



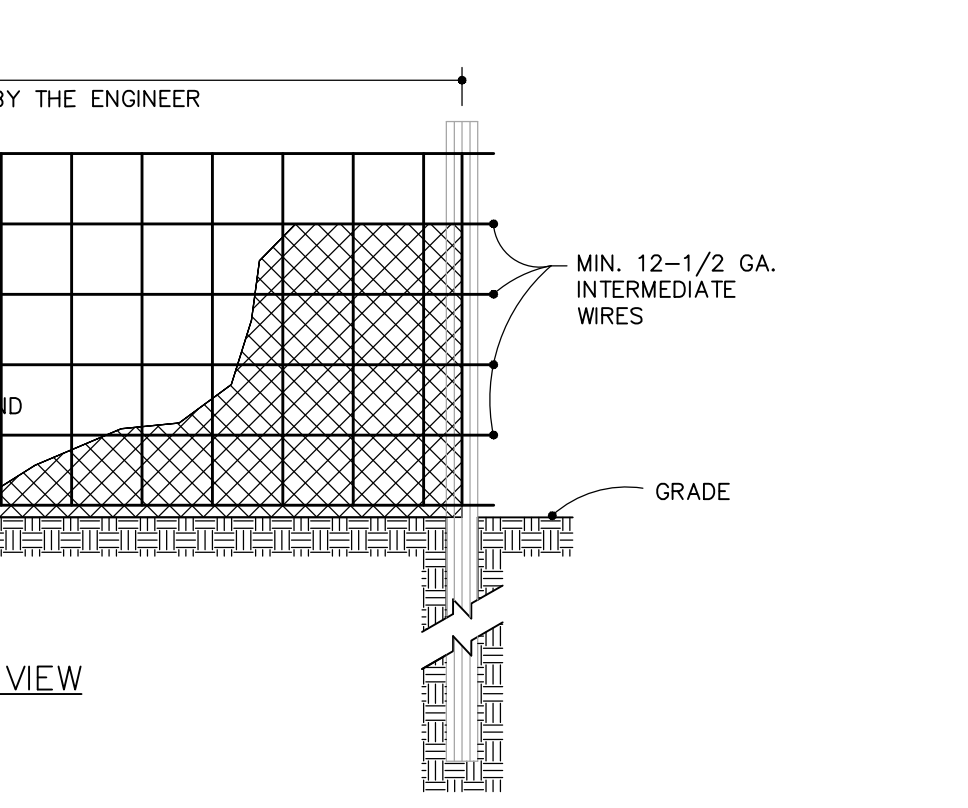
TEMPORARY STONE CHECK DAM



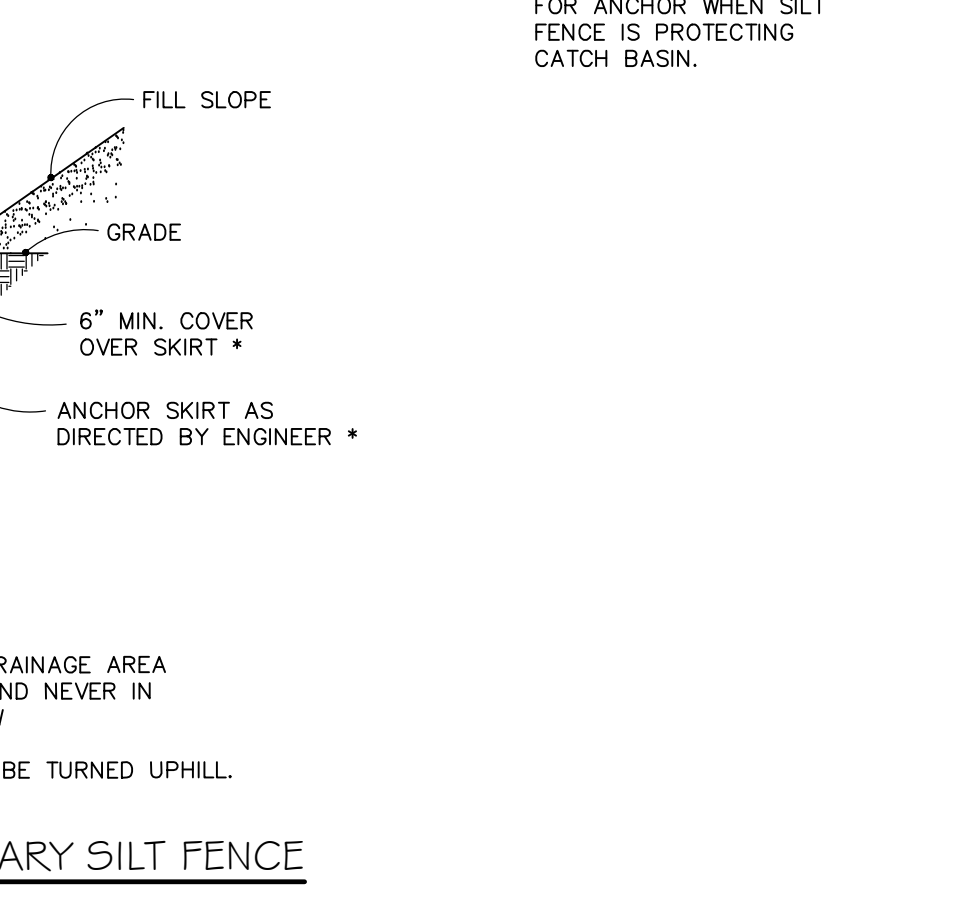
TEMPORARY STONE CHECK DAM



TEMPORARY STONE CHECK DAM



STANDARD TEMPORARY SILT FENCE



- WORK IN CREEK SHALL BE PLANNED TO MINIMIZE THE NUMBER OF DAYS OF DISTURBANCE.
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- ALL DISTURBED CREEK BED AND BANKS ARE TO BE STABILIZED PRIOR TO THE END OF EACH WORK DAY.

STANDARD TEMPORARY SILT FENCE

NO.	REVISIONS	DATE
1.	REVISED PER CHATHAM COUNTY E/C COMMENTS.	08/14/17
2.	REVISED PER E/C & STORM DRAINAGE COMMENTS.	07/14/17

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STONECREST AT NORWOOD SUBDIVISION
 CONSTRUCTION DRAWINGS
 EROSION CONTROL DETAILS

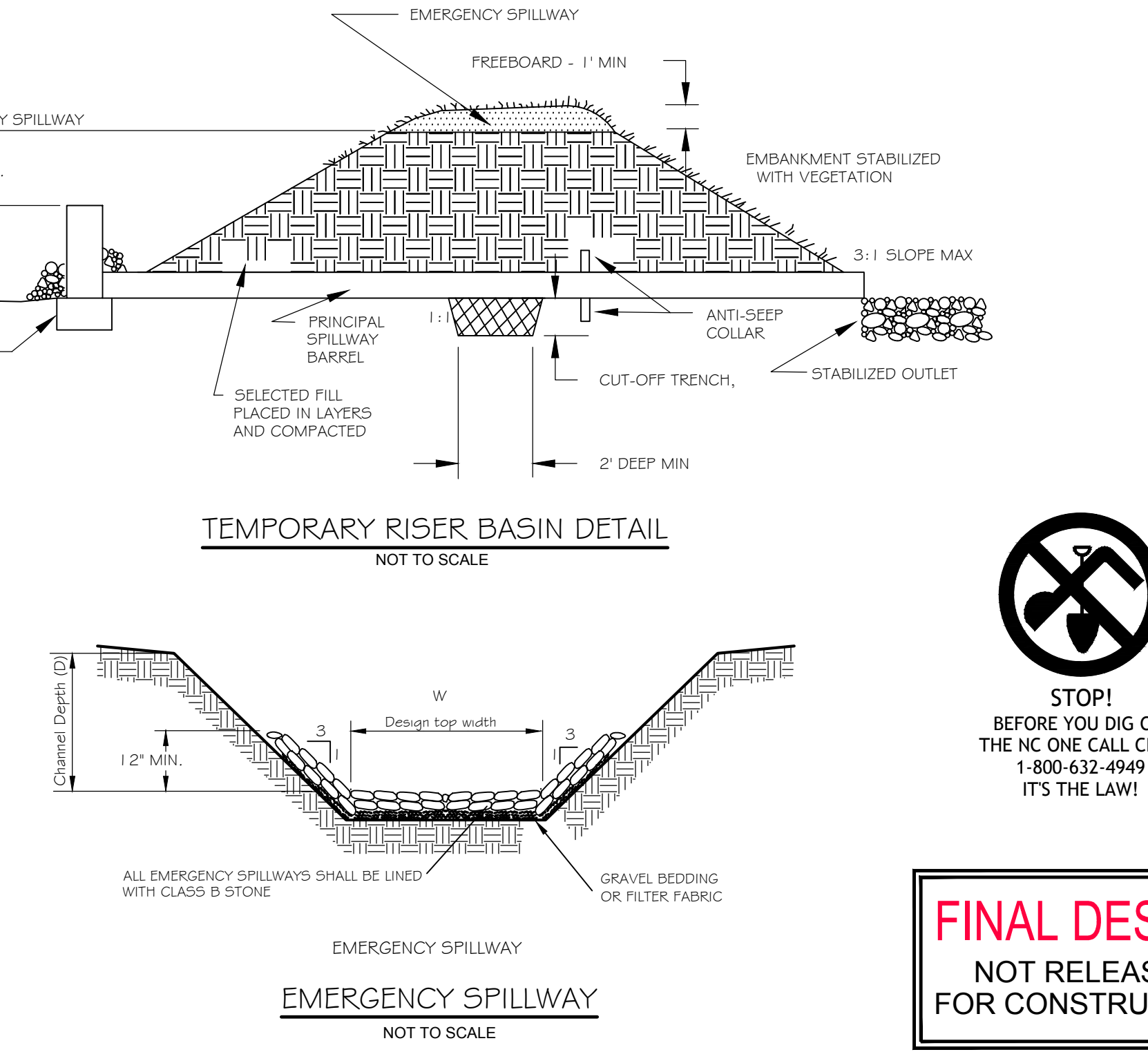
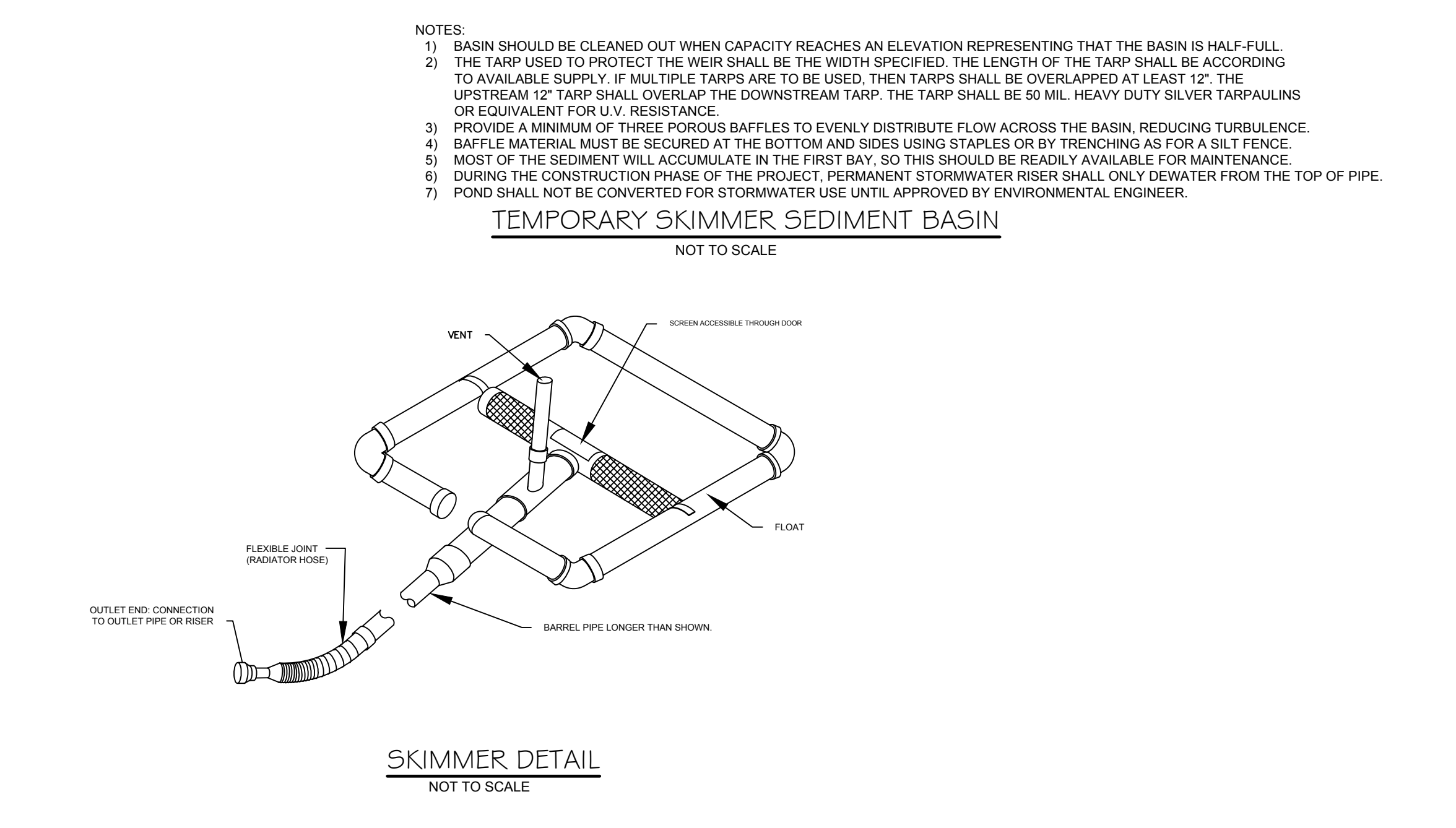
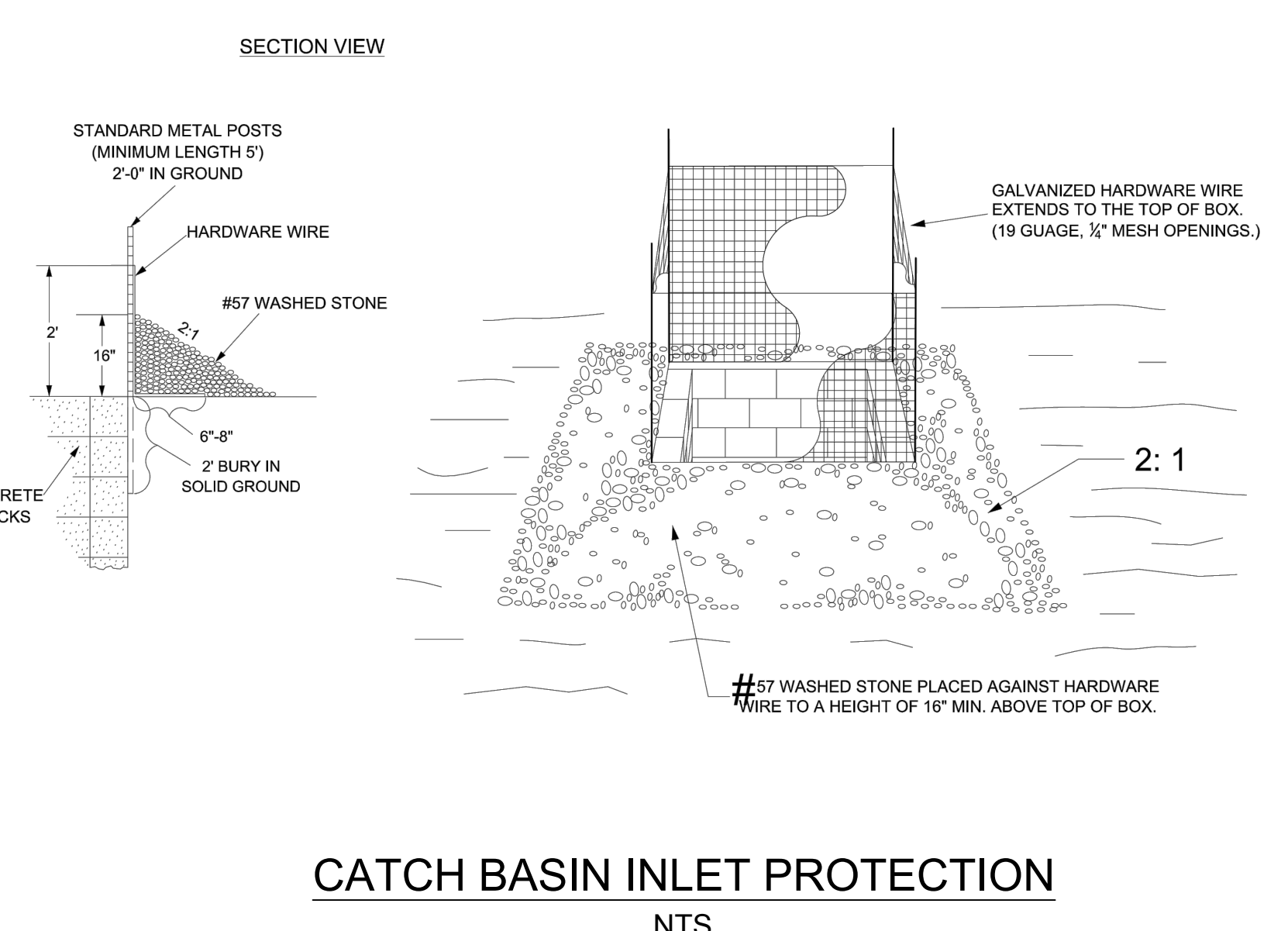
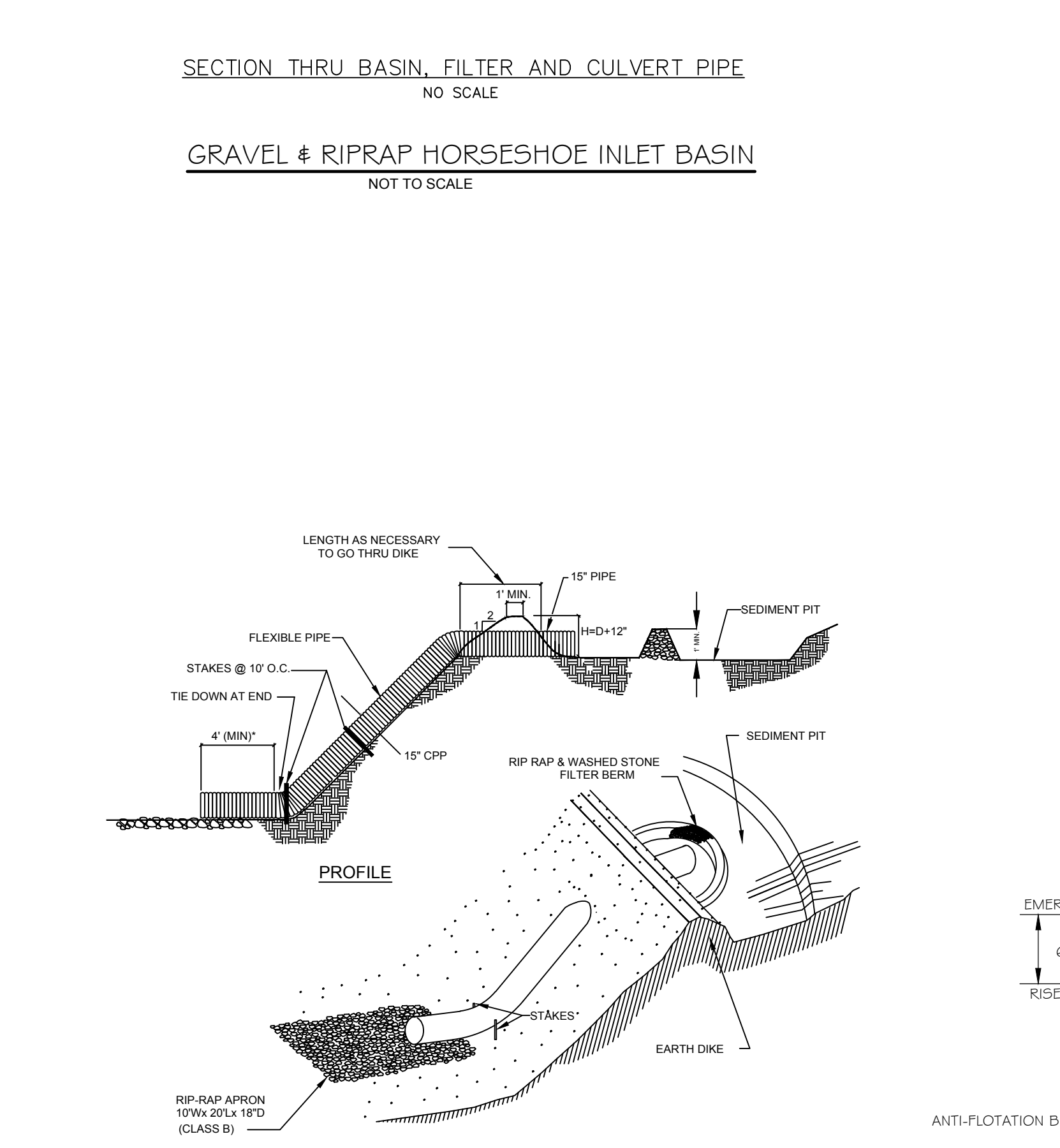
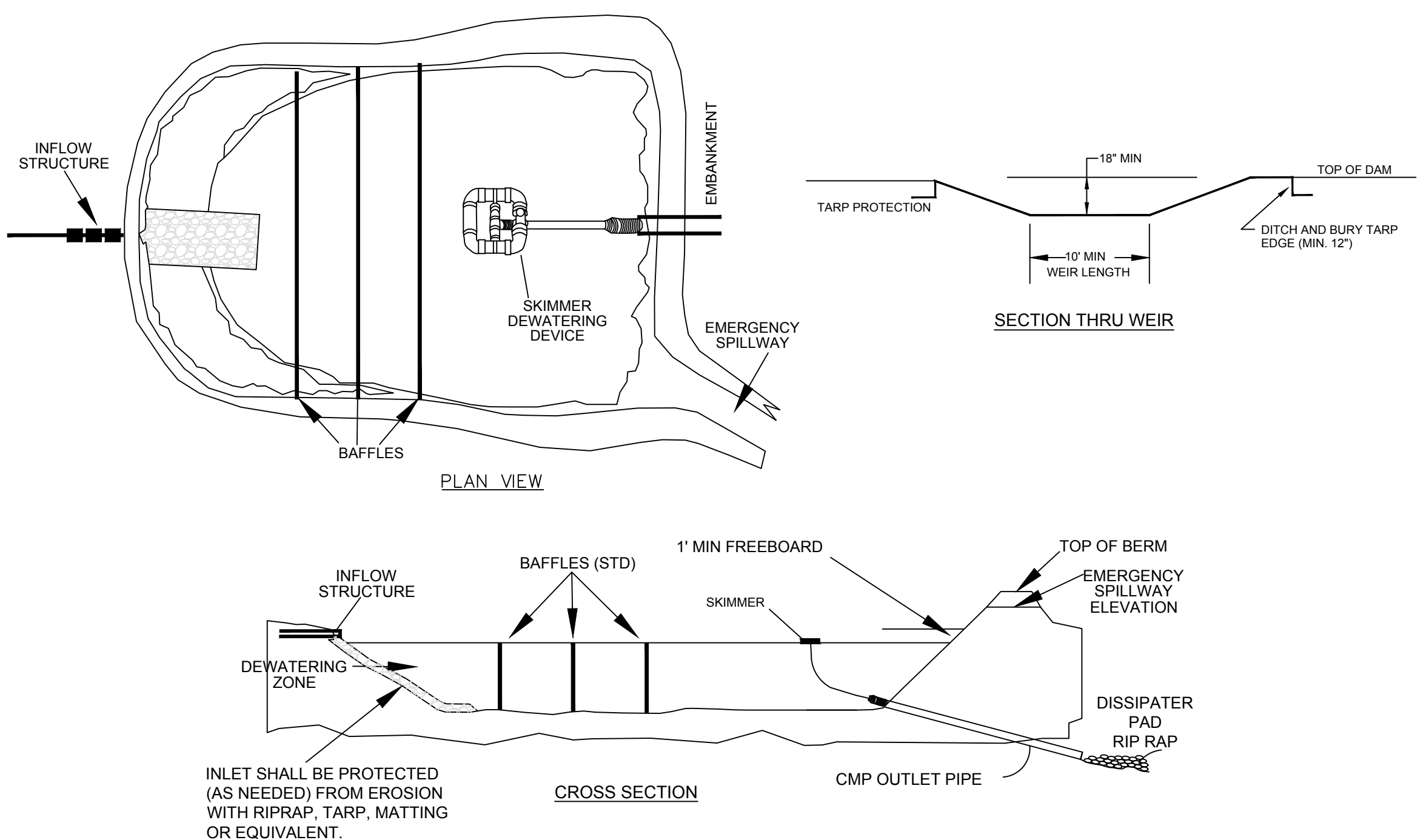
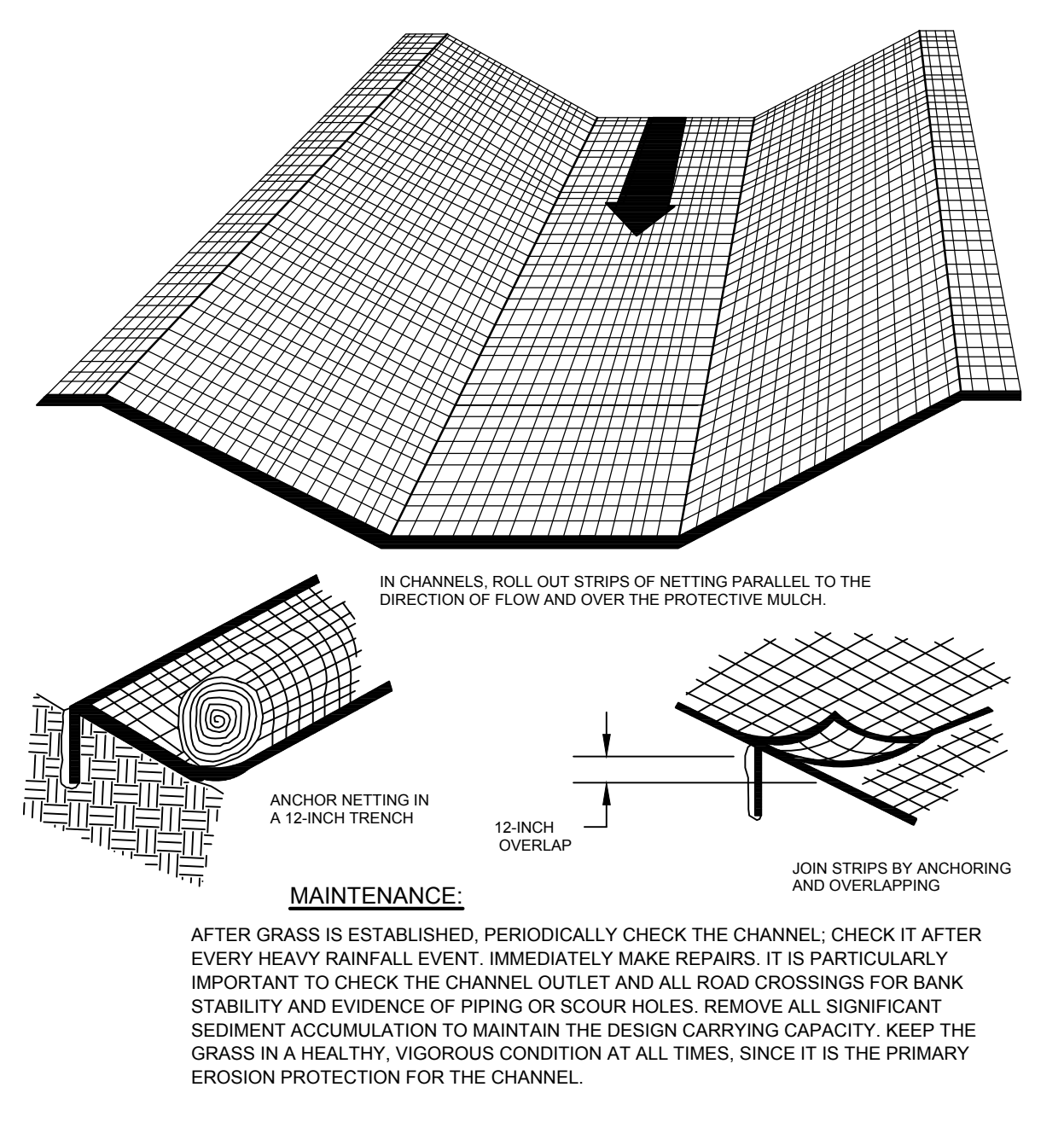
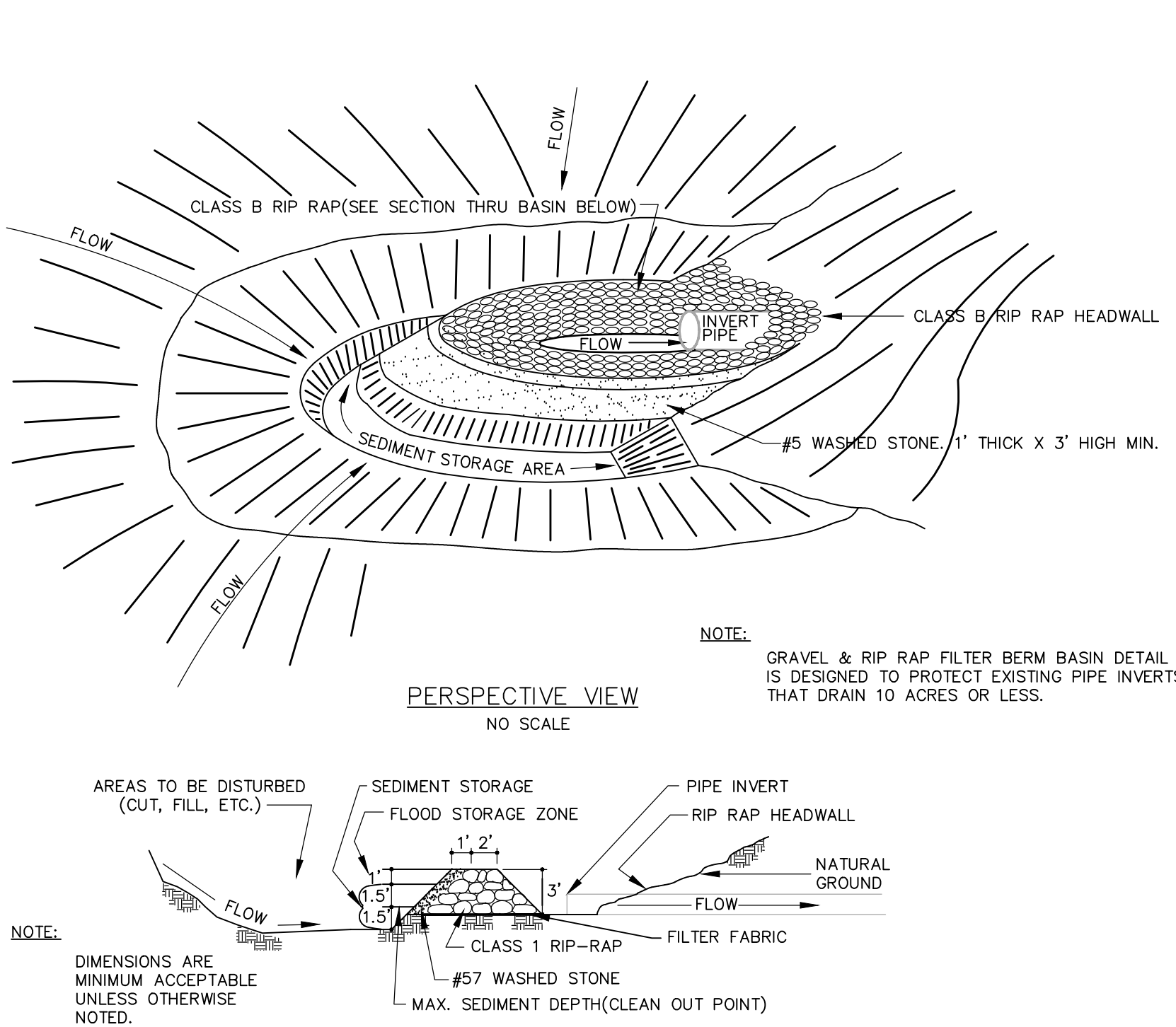
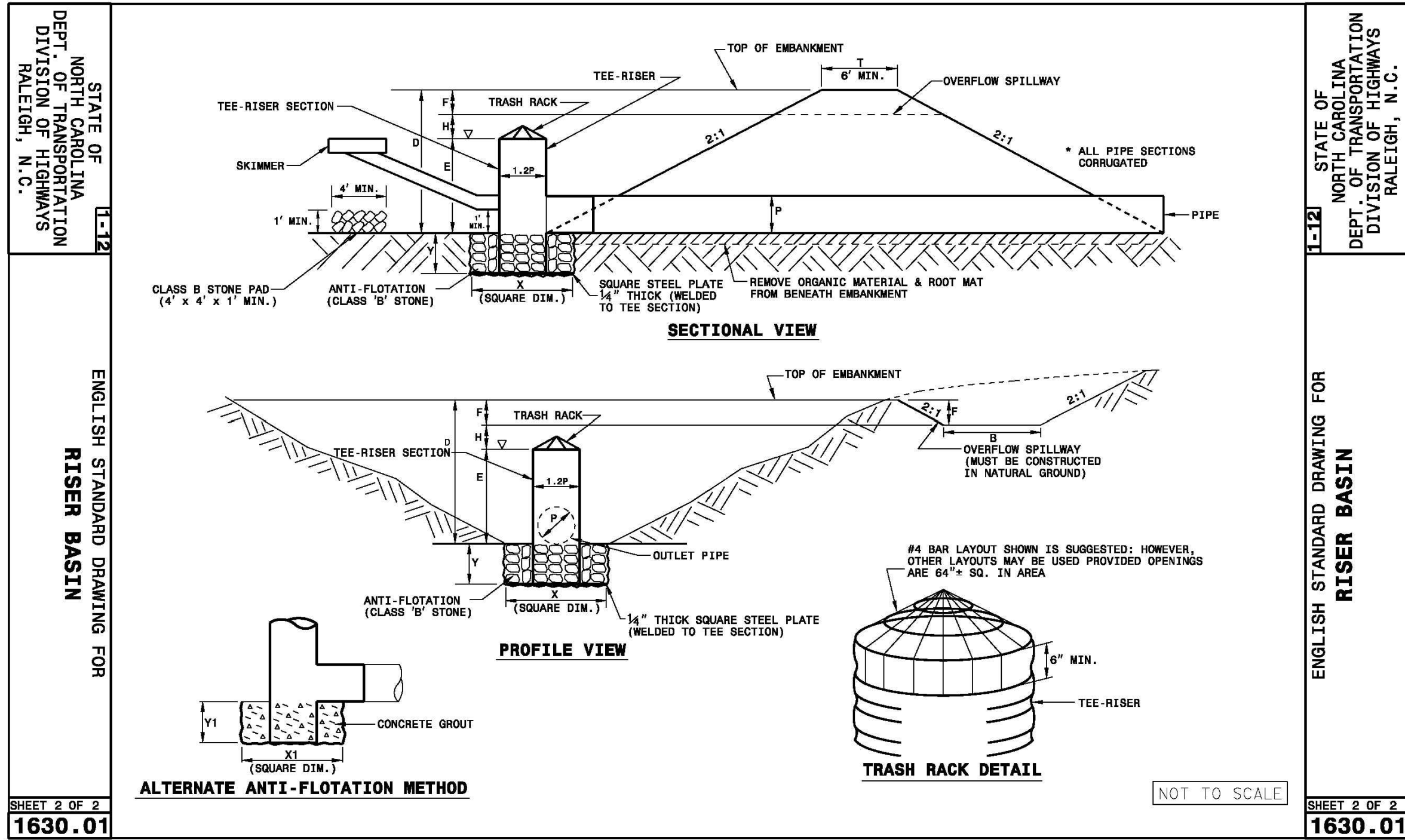
CHATHAM COUNTY, NC

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FINAL DESIGN
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 FOR CONSTRUCTION





STOP!
BEFORE YOU DIG CALL
THE NC ONE CALL CENTER
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IT'S THE LAW!

FINAL DESIGN
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08/14/17	DATE
1	REVISIONS
2	REVISED PER EIC & STORM DRAINAGE COMMENTS
1	REVISED PER CHATHAM COUNTY EIC COMMENTS
NO.	NO.

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STONECREST AT NORWOOD SUBDIVISION
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