

(1). For construction activities the primary permittee must sample all receiving water(s), or

all outfall(s), or a combination of receiving water(s) and outfall(s). Samples taken for the

purpose of compliance with this permit shall be representative of the monitored activity

and representative of the water quality of the receiving water(s) and/or the storm water

(a). The upstream sample for each receiving water(s) must be taken immediately

upstream of the confluence of the first storm water discharge from the permitted activity

(i.e., the discharge farthest upstream at the site) but downstream of any other storm water

discharges not associated with the permitted activity. Where appropriate, several

upstream samples from across the receiving water(s) may need to be taken and the

arithmetic average of the turbidity of these samples used for the upstream turbidity value.

(b). The downstream sample for each receiving water(s) must be taken downstream of the

confluence of the last storm water discharge from the permitted activity (i.e., the discharge

farthest downstream at the site) but upstream of any other storm water discharge not

downstream samples from across the receiving water(s) may need to be taken and the

arithmetic average of the turbidity of these samples used for the downstream turbidity

(c). Ideally the samples should be taken from the horizontal and vertical center of the

(d). Care should be taken to avoid stirring the bottom sediments in the receiving water(s)

(g). Permittees do not have to sample sheetflow that flows onto undisturbed natural areas

or areas stabilized by the project. For purposes of this section, stabilized shall mean, for

unpaved areas and areas not covered by permanent structures and areas located outside

the waste disposal limits of a landfill cell that has been certified by EPD for waste disposal,

100% of the soil surface is uniformly covered in permanent vegetation with a density of

70% or greater, or equivalent permanent stabilization measures (such as the use of rip

ap, gabions, permanent mulches or geotextiles) have been used. Permanent vegetation

shall consist of: planted trees, shrubs, perennial vines; a crop of perennial vegetation

(h). All sampling pursuant to this permit must be done in such a way (including generally

accepted sampling methods, locations, timing, and frequency) as to accurately reflect

whether storm water runoff from the construction site is in compliance with the standard

(1). The primary permittee must sample in accordance with the Plan at least once for each

rainfall event described below. For a qualifying event, samples must be taken within

(a) the accumulation of the minimum amount of rainfall for the qualifying event, if the storm

water discharge to a monitored receiving water or from a monitored outfall has begun at or

(b) the beginning of any storm water discharge to a monitored receiving water or from a

monitored outfall, if the discharge begins after the accumulation of the minimum amount of

(2). However, where manual and automatic sampling are impossible (as defined in this

permit), or are beyond the permittee's control, the permittee shall take samples as soon as

possible, but in no case more than twelve (12) hours after the beginning of the storm

(a). For each area of the site that discharges to a receiving stream, the first rain event that

reaches or exceeds 0.5 inch and allows for monitoring during normal business hours*

(Monday thru Friday, 8:00 AM to 5:00 PM and Saturday 8:00 AM to 5:00 PM, excluding all

non-working Federal holidays, when construction activity is being conducted by the

primary permittee) that occurs after all clearing and grubbing operations have been

(b). In addition to (a) above, for each area of the site that discharges to a receiving stream,

the first rain event that reaches or exceeds 0.5 inch and allows for monitoring during

normal business hours* that occurs either 90 days after the first sampling event or after all

(c). At the time of sampling performed pursuant to (a) and (b) above, if BMPs are found to

be properly designed, installed and maintained, no further action is required. If BMPs in

any area of the site that discharges to a receiving stream are not properly designed,

installed and maintained, corrective action shall be defined and implemented within two

(2) business days, and turbidity samples shall be taken from discharges from that area of the site for each subsequent rain event that reaches or exceeds 0.5 inch during normal

business hours* until the selected turbidity standard is attained, or until post-storm event

(d). Existing construction activities, i.e., those that are occurring on or before the effective

08-21-2015 of this permit, that have met the sampling required by (a) above shall sample

n accordance with (b). Those existing construction activities that have met the sampling

required by (b) above shall not be required to conduct additional sampling other than as

'. Non-storm water discharges. Except for flows from fire fighting activities, sources of

Part III.A.2. of this permit that are combined with storm water discharges associated with

construction activity must be identified in the Plan. The Plan shall identify and ensure the

implementation of appropriate pollution prevention measures for the non-storm water

*Note that the permittee may choose to meet the requirements of (a) and (b) above by

collecting turbidity samples from any rain event that reaches or exceeds 0.5 inch and

inspections determine that BMPs are properly designed, installed and maintained; and

completed in the drainage area of the location selected as the sampling location;

mass grading operations have been completed in the drainage area of the

location selected as the sampling location, whichever comes first;

allows for monitoring at any time of the day or week.

a seeding of target crop perennials appropriate for the region. Final stabilization applies

(e). The sampling container should be held so that the opening faces upstream.

appropriate for the time of year and region; or a crop of annual vegetation and

associated with the permitted activity. Where appropriate, several

receiving water(s) or the storm water outfall channel(s).

(f). The samples should be kept free from floating debris.

set forth in Parts III.D.3. or III.D.4.., whichever is applicable.

(3). Sampling by the permittee shall occur for the following events:

or in the outfall storm water channel.

to each phase of construction.

d. Sampling Frequency.

forty-five (45) minutes of:

prior to the accumulation, or

rainfall for the qualifying event.

water discharge.

c. Sampling Points.

outfalls using the following minimum guidelines:

(E&S CHECKLIST #'s 2, 12, & 13)

(2) "I CERTIFY UNDER PENALTY OF LAW THAT THIS PLAN WAS PREPARED AFTER A SITE VISIT TO THE LOCATIONS DESCRIBED HEREIN BY MYSELF OR MY AUTHORIZED AGENT,

08-21-2015

CERTIFICATION #

: IF PERMANENT VEGETATION FALL IN A PERIOD OF TIME WHEN PERMANENT GRASSING IS NOT ALLOWED. THE SITE SHALL BE PERMANENTLY GRASSED AT THE BEGINNING OF THE NEXT GRASSING SEASON. k st TEMPORARY EROSION CONTROL STRUCTURES SHALL BE REMOVED AFTER PERMANENT GRASS HAS BEEN ESTABLISHED.

SECONDARY PERMITTEES

SECONDARY PERMITTEE SIGNATURES:

PORTION OF THE PLAN APPLICABLE TO THEIR SITE.

CONSTRUCTION ACTIVITY BEGINS.

of construction until such time as a NOT is submitted in accordance with Part VI:

a. A copy of all Notices of Intent submitted to EPD;

d. A copy of all monitoring information, results, and reports required by this permit; e. A copy of all inspection reports generated in accordance with Part IV.D.4.a. of this

accordance with Part III.D.2. of this permit; and

monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, Erosion, Sedimentation and Pollution Control Plans, records of all data used to complete the Notice of Intent to be covered by this permit and all other records required by this permit shall be retained by the permittee who either produced or used it for a period of at least three years from the 08-21-2015 that the NOT is submitted in accordance with Part VI of this permit. These records must be maintained at the permittee's primary place of business or at a designated alternative location once the construction activity has ceased at the permitted site. This period may be extended by request of the EPD at any time upon written notification to the

The discharge of washdown water into stormdrains, streams, rivers, etc. is strictly

Contractor shall coordinate with site superintendent to excavate a pit deep enough to contain the washdown water.

NOT wash out the drum.

Contractor shall insure washdown water goes into and stays in the pit. NEVER allow washdown water to enter a stormdrain.

Pit shall be backfilled and smoothed out to proposed grade.

and carry to a disposal site.

NO RESIDENTIAL AREAS, LAKES, WETLANDS, OR STREAMS WILL BE ADVERSE IMPACTS EXPECTED DUE TO THE PROPOSED DEVELOPMENT.

		IX B	# 18)	ONAL	E						
	Sı	Surface Water Drainage Area, square miles									
Site Size Acres	0- 4.99	5- 9.99	10- 24.99	25- 49.99	50- 99.99	100- 249.99	250- 499.99	500+			
1.0-10	75	150	200	400	750	750	750	750			
10.01-25	50	100	100	200	300	500	750	750			
25.01-50	50	50	100	100	200	300	750	750			
50.01-100	50	50	50	100	100	150	300	600			
100.01+	50	50	50	50	50	100	200	100			

X. EROSION CONTROL / NPDES CERTIFICATION STATEMENT

I CERTIFY THAT THE PERMITEE'S EROSION. SEDIMENTATION AND POLLUTION CONTROL PLAN PROVIDES FOR AN APPROPRIATE AND COMPREHENSIVE SYSTEM OF BEST MANAGEMENT PRACTICES REQUIRED BY THE GEORGIA WATER QUALITY CONTROL ACT AND DOCUMENT "MANUAL FOR EROSION AND SEDIMENT CONTROL IN GEORGIA." (MANUAL) PUBLISHED BY THE STATE SOIL AND WATER CONSERVATION COMMISSION AS OF JANUARY 1 OF THE YEAR IN WHICH THE LAND DISTURBING ACTIVITY WAS PERMITTED. PROVIDES FOR THE SAMPLING OF THE RECEIVING WATER(S) OR THE SAMPLING OF THE STORM WATER OUTFALLS. AND THAT THE DESIGNED SYSTEM OF BEST MANAGEMENT PRACTICES AND SAMPLING METHODS IS EXPECTED TO MEET THE REQUIREMENTS CONTAINED IN THE GENERAL NPDES PERMIT NO. GAR 100001."

UNDER MY DIRECT SUPERVISION.

KNOWLEDGE AND BELIEF, TRUE, ACCURATE, AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION, INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT FOR KNOWING VIOLATIONS."

GSWCC LEVEL II DESIGN PROFESSIONAL

XI. ACTIVITY SCHEDULE	(E&S	CHECKLIST # 27)				
BE	GINNING: _	OCT. 1, 20	15	ENDING:	APRIL 1, 2	2016
BE ACTIVITY ACTIVITY TART CONSTRUCTION	MONTH 1	MONTH 2	MONTH 3	MONTH 4	MONTH 5	MONTH 6
TART CONSTRUCTION						
33.13C						
PIL						
NS BALIKERRORR						
_						
INSTALLATION OF UTILITIES						
TEMPORARY GRASSING						
PAVING/BASE						
PERMANENT VEGETATION 🛠						
MAINTENANCE OF EROSION CONTROL MEASURES						
REMOVE TEMPORARY ** STRUCTURES						
END OF CONSTRUCTION						

XII. RETENTION OF RECORDS

1. The primary permittee shall retain the following records at the construction site or the records shall be readily available at a designated alternate location from commencement

b. A copy of the Erosion, Sedimentation and Pollution Control Plan required by this permit; c. The design professional's report of the results of the inspection conducted in accordance with Part IV.A.5 of this permit;

f. A copy of all violation summaries and violation summary reports generated in

g. Daily rainfall information collected in accordance with Part IV.D.4.a.(1)(c) of this permit. Copies of all Notices of Intent, Notices of Termination, reports, plans, monitoring reports,

Washdown only tools, concrete mixer chutes, hoppers, and rear of the vehicle. DO

If a pit is not accessible, contractor shall washdown into a wheelbarrow or container

THE DESIGN PROFESSIONAL WHO PREPARED THE ES&PC PLAN WILL INSPECT THE INSTALLATION OF BMP'S WITHIN 7 DAYS AFTER INITIAL

THE APPLICABLE PORTION OF ES&PC PLAN IS TO BE PROVIDED TO EACH

SECONDARY PERMITTEE PRIOR TO THE SECONDARY CONDUCTING ANY

CONSTRUCTION ACTIVITY AND EACH SECONDARY WILL SIGNED THE PLAN OR

AMENDMENTS/REVISIONS TO THE ES&PC PLAN WHICH HAVE SIGNIFICANT EFFECT ON BMP'S WITH A HYDRAULIC COMPONENT WILL BE CERTIFIED BY THE DESIGN PROFESSIONAL.



STEVEN A. ROWLAND, P.E. (GA PE# 25853) GEORGIA LEVEL II CERTIFIED DESIGN PROFESSIONAL CERTIFICATION NO. 155 EXPIRES: 06/04/2017

E THOMA I DRIVE, N 151 AND MACON-BIBB

1501 Bass Road, Suite B Macon, GA 31210 (478) 262-3750 mobile ven@rowland-engineering.co www.rowland-engineering.com

DATE: 08-21-2015 PROJ NO: DRAWN BY:

ESPCP NOTES

(PAGE 1 OF 2)

TRIBUTARY TO ROCKY CREEK. THIS SITE IS LOCATED AT: LATITUDE 32.83865° N, LONGITUDE 83.69595° W.

ANY PERSON DESIRING COVERAGE UNDER THIS PERMIT AS EITHER A PRIMARY PERMITTEE. A

SECONDARY PERMITTEE OR A TERTIARY PERMITTEE MUST SUBMIT A NOTICE OF INTENT (NOI) TO THE EPD AND THE NOI MUST BE RECEIVED BY THE EPD IN ACCORDANCE WITH THE REQUIREMENTS OF PART II, USING NOI FORMS PROVIDED BY THE EPD (OR EXACT PHOTOCOPY THEREOF), IN ORDER FOR STORM WATER DISCHARGES FROM CONSTRUCTION SITES TO BE AUTHORIZED. A NOTICE OF INTENT FOR SECONDARY PERMITTEE COVERAGE CAN BE SUBMITTED EITHER CONCURRENTLY WITH OR AFTER SUBMITTAL OF A NOTICE OF INTENT BY THE PRIMARY PERMITTEE. THE PRIMARY PERMITTEE SHALL PROVIDE A COPY OF THE ES&PC PLAN AND ANY SUBSEQUENT REVISIONS TO EACH SECONDARY PERMITTEE. EACH SECONDARY PERMITTEE SHALL SIGN THIS SHEET IN THE SPACE PROVIDED, ACKNOWLEDGING THEIR RECEIPT OF THE PLAN, AND THE PRIMARY SHALL RETAIN THE SIGNED SHEET IN THEIR RECORDS.

II. EROSION, SEDIMENT AND POLLUTION CONTROL PLAN

This plan shall include, as a minimum, Best Management Practices, including sound conservation and engineering practices to prevent & minimize erosion & resultant sedimentation, which are consistent with those practices contained in the "Manual for Erosion & Sediment Control in Georgia" (current year edition), published by the State Soil & Water Conservation Commission (706-542-3065) as well as the following:

- Stripping of vegetation, regrading, and other development activities shall be conducted in such a manner so as to minimize erosion, maintain the original vegetative cover, and disturb only that part
- of the site absolutely necessary at the time. 2. Cut and fill operations shall be kept to a minimum.
- . Development plans must conform to topography and soil type, so as to create the lowest oracticable erosion potential.
- . Whenever feasible, natural vegetation shall be retained, protected & supplemented, including protection of trees and preservation of mature vegetation.
- . The disturbed area and the duration of exposure to erosive elements shall be kept to a practicable 6. Disturbed soil shall be stabilized as quickly as practicable. Stabilization measures shall be initiated
- no more than 14 days after the construction activity has temporarily or permanently ceased, except when precluded by snow cover or other adverse weather conditions, when precluded by snow cover or other adverse weather conditions, then stabilization measures shall be initiated as soon as practicable.
- Temporary seeding or mulching shall be employed to protect exposed critical areas during development. Other measures may include geotextiles, sod stabilization, vegetative buffer strips, filter strips; protection of trees, permanent seeding, and preservation of mature vegetation.
- 3. Permanent vegetation & structural erosion control measures shall be installed as soon as practicable. Structural practices may include silt fences; earth berms; drainage swales lined with grass, stone or timbers; pipe slope drains; level flow spreaders; storm drain inlet protection & storm
- drain outlet rock protection. Mulch - Use dry straw or dry hay of good quality and free of weed seeds. Dry straw will be applied at the rate of 2 tons per acre. dry hay will be applied at the rate of 2-1/2 tons per acre. Grass - Shoulder to have permanent grassing hulled bermuda or fescue.
- 9. To the extent necessary, sediment in run-off water shall be trapped by the use of debris basins, silt traps, sediment traps, check dams, reinforced soil retaining systems, gabions or similar measures until the disturbed area is stabilized. 10. Adequate provisions shall be provided to minimize damage from surface water to the cut face of
- excavations or the sloping surfaces of fills. Sediment basins, sediment traps, silt fences, or equivalent sediment controls are required for all side slope and down slope boundaries. 11. Cuts and fills shall not endanger adjoining property.
- 12. Fills shall not encroach upon natural water courses or constructed channels in a manner so as to adversely affect other property owners. 13. Grading equipment shall cross flowing streams by the means of bridges or culverts, except when such methods are not feasible, provided in any case that such crossings shall be kept to a minimum. 14. Provisions shall be provided for treatment or control of any source of sediments and adequate

sedimentation control facilities to retain sediments on site or preclude sedimentation of adjacent

(E&S CHECKLIST #'s 15 & 17)

waters beyond the levels specified in the permit.

III. ACTIVITIES WITHIN STREAM BUFFERS

Except as provided in (#2) below, no construction activities shall be conducted within a 25 ft-buffer along the banks of all state waters, as measured horizontally from the point where vegetation has been

wrested by normal stream flow or wave action. No construction activities shall be conducted within a 50-foot buffer, as measured horizontally from the point where vegetation has been wrested by normal stream flow or wave action, along the banks

of any state waters classified as "trout stream." 3. Except as provided above, for buffers required pursuant to (#1 and #2), no construction activities shall be conducted within a buffer and a buffer shall remain in its natural, undisturbed, state of regetation until all land-disturbing activities on the construction site are completed. Between the time final stabilization of the site is achieved and upon the submittal of a notice of termination, a buffer may be thinned or trimmed of vegetation as long as a protective vegetative cover remains to protect water quality and aquatic habitat and a natural canopy is left in sufficient quantity to keep shade on the

stream bed. . No solid materials, including building materials, shall be discharged to waters of the state, except

as authorized by a section 404 permit. . Off-site vehicle tracking of dirt, soils, and sediments and the generation of dust shall be eliminated or minimized to the maximum extent practical. A best management practice for this is the use of a construction exit, being a stone stabilized pad located at any point where traffic will be leaving a construction site to a public right-of-way. Geotextile underliners are required to stabilize and support the pad aggregates. The stone aggregate size is 1.5 to 3.5 inches and is to be a minimum pad thickness of 6 inches. Pad width should not be less than 20 feet and should be of sufficient length to perform the function of removing sediment, but no less than 50 feet. Wheels must be cleaned to

IV. WASTE PICKUP AND DISPOSAL

emove mud prior to entrance onto public rights-of-way.

Worksite Housekeeping

Maintain good housekeeping practices at the project jobsite and equipment/material storage locations. Regularly pick up and dispose of waste, and recyclables. Waste Pickup and Disposal

<u> Hazardous Wastes</u>

All hazardous waste materials will be disposed of in the manner specified by local, state, and/or federal regulations and by the manufacturer of such products. The job site superintendent, who will also be responsible for seeing that these practices are followed, will instruct site personnel in these practices. Material Safety Data Sheets (MSDS's) for each substance with hazardous properties that is used on the job site will be obtained and used for the proper management of potential wastes that may result from these products. Ah MSDS will be posed in the immediate area where such product is sorted and/or used and another copy of each MSDS will be maintained in the ESPCP file at the jobsite construction trailer office. Each employee who must handle a substance with hazardous properties will instructed on the use of MSDS sheets and the specific information in the applicable MSDS for the product he/she is using, particularly regarding spill control techniques. The contractor will implement the Spill Prevention Control and Countermeasures (SPCC) Plan found within this ESPCP and will train all personnel in the proper cleanup and handling of spilled materials. No spilled hazardous materials or hazardous wastes will be allowed to come in contact with stormwater discharges. If such contact occurs, the stormwater discharge will be contained on site until appropriate measures in compliance with state and federal regulations are taken to dispose of such contaminated stormwater. It shall be the responsibility of the job site superintendent to properly train all personnel in the use of the SPCC plan.

Sanitary Wastes

the completion of this project.

A minimum of one portable sanitary unit will be provided for every ten (10) workers on the site. All sanitary waste will be collected from the portable unites a minimum of one time per week by a licensed portable facility provider in complete compliance with local and state regulations. All sanitary waste units will be located in an area where the likelihood of the unit contributing to stormwater discharge is negligible. Additional containment BMP's must be implemented, such as gravel bags or specially designed plastic skid contributing to stormwater discharges. The location of sanitary waste units must be identified on the Erosion Control Plan – Phase 2 plan sheet, by the contractor once the locations have been determined. Sanitary sewer will be provided by the city or by an individual septic system at

Equipment Maintenance: Ensure equipment is working properly and free from leaks. Material Storage: Store containers, drums, and bags away from direct traffic routes, in accordance with manufacturer's recommendations, and in a manner to protect against contamination of storm water.

POL Spills and Leaks: Minor spills and leaks from construction equipment are a source of potential discharge. Do not use water to clean up spills and dirt from pavements. Spill Kits: Have a full-service spill kit on site for minor leaks and drips. Spills kits should include absorbent pads, spill booms, personnel protection equipment, and disposal bags.

Drip Pan Use During Fueling: Use drip pans and absorbent rags when fueling construction equipment and providing emergency maintenance on equipment. Absorbents are to be handled in accordance with the Resource Conservation and Recovery Act (RCRA) regulations.: Use drip pans under heavy equipment left idle for two Drip Pan Use During Vehicle Storage or more calendar

<u>Visual Inspections</u>: Visually inspect construction equipment daily for leaks and spills. HAZMAT Storage: Store hazardous materials (including fuel) on site in covered areas with secondary containment (for example, flammable locker). Containers/tanks for fuel (mogas/diesel) should have secondary containment that meets regulatory requirements. Protecting Storm Drains: Do not dispose of waste in a storm drain (for

example paint, oil, concrete, etc.) <u>Vehicle Operation</u>: Do not operate leaking equipment. Provide emergency repair to prevent further leaks.

VI. INSPECTIONS: (E&S CHECKLIST #'s 14 & 28)

THE PERMITTEE SHALL PERFORM INSPECTIONS OF ITS SITES IN ACCORDANCE WITH THE FOLLOWING INSPECTION SCHEDULE UNTIL A NOTICE OF TERMINATION IS SUBMITTED TO THE EPD.

(1) Each day when any type of construction activity has taken place at a primary permittee's site, certified personnel provided by the primary permittee shall inspect: (a) all areas at the primary permittee's site where petroleum products are stored, used, or handled for spills and leaks from vehicles and equipment; (b) all locations at the primary permittee's site where vehicles enter or exit the site for evidence of off-site sediment tracking; and (c) measure rainfall

once each 24 hour period at the site. These inspections must be conducted until a Notice of Termination is submitted.

(2) Certified personnel (provided by the primary permittee) shall inspect the following at least once every seven (7) calendar days and within 24 hours of the end of a storm that is 0.5 inches rainfall or greater (unless such storm ends after 5:00 PM on any Friday or on any non-working Saturday, non-working Sunday or any non-working Federal holiday in which case the inspection shall be completed by the end of the next business day and/or working day, whichever occurs first): (a) disturbed areas of the primary permittee's construction site that have not undergone final stabilization; (b) areas used by the primary permittee for storage of materials that are exposed to precipitation that have not undergone final stabilization; and (c) structural control measures. Erosion and sediment control measures identified in the Plan applicable to the primary permittee's site shall be observed to ensure that they are operating correctly. Where discharge locations or points are accessible, they shall be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving water(s). For areas of a site that have undergone final stabilization, the permittee must comply with Part IV.D.4.a.(3). These inspections must be conducted until a Notice of

(3). Certified personnel (provided by the primary permittee) shall inspect at least once per month during the term of this permit (i.e., until a Notice of Termination is received by EPD) the areas of the site that have undergone final stabilization. These areas shall be inspected for evidence of, or the potential for, pollutants entering the drainage system and the receiving water(s). Erosion and sediment control measures identified in the Plan shall be observed to ensure that they are operating correctly. Where discharge locations or points are accessible, they shall be inspected to

ascertain whether erosion control measures are effective in preventing significant impacts to receiving water(s). (4). Based on the results of each inspection, the site description and the pollution prevention and control measures identified in the Erosion, Sedimentation and Pollution Control Plan, the Plan shall be revised as appropriate not later than seven (7) calendar days following each inspection. Implementation of such changes shall be made as soon as

(5). A report of each inspection that includes the name(s) of personnel making each inspection, the 08-21-2015(s) of each inspection, major observations relating to the implementation of the Erosion, Sedimentation and Pollution Control Plan, and actions taken in accordance with Part IV.D.4.a.(4). of the permit shall be made and retained at the site or be readily available at a designated alternate location until the entire site or that portion of a construction project that has been phased has undergone final stabilization and a Notice of Termination is submitted to EPD. Such reports shall identify any incidents of non-compliance. Where the report does not identify any incidents of non-compliance, the report shall contain a certification that the construction site is in compliance with the Erosion, Sedimentation and

Pollution Control Plan and this permit. The report shall be signed in accordance with Part V.G. of this permit.

practical but in no case later than seven (7) calendar days following each inspection.

This permit requires the monitoring of nephelometric turbidity in receiving water(s) or outfalls in accordance with this permit. This paragraph shall not apply to any land disturbance associated with the construction of single-family homes which are not part of a subdivision or planned common development unless five (5) acres or more will be disturbed.

(E&S CHECKLIST #'s 29 & 31)

The following procedures constitute EPD's guidelines for sampling turbidity. a. Sampling Requirements shall include the following:

VII. STORM WATER SAMPLING:

Termination is submitted.

(1) A USGS topographic map, a topographic map or a drawing (referred to as a topographic map) that is a scale equal to or more detailed than a 1:24000 map showing the location of the site or the stand alone construction; (a) the location of all perennial and intermittent streams and other water bodies as shown on a USGS topographic map and all other perennial and intermittent streams and other water bodies located during mandatory field verification, into which the storm water is discharged and (b) the receiving water and/or outfall sampling locations. When the permittee has chosen to use a USGS topographic map and the receiving water(s) is not shown on the USGS topographic map, the location of the receiving water(s) must be hand-drawn on the USGS topographic map from where the storm water(s) enters the receiving water(s) to the point where the receiving water(s) combines with the first blue line stream shown on the USGS topographic map;

(2). A written narrative of site specific analytical methods used to collect, handle and analyze the samples including quality control/quality assurance procedures. This narrative must include precise sampling methodology for each

sampling location; (3). When the permittee has determined that some or all outfalls will be monitored, a rationale must be included for the NTU limit(s) selected from Appendix B. This rationale must include the size of the construction site, the calculation of the size of the surface water drainage area, and the type of receiving water(s) (i.e., trout stream or supporting warm

water fisheries); and (4). Any additional information EPD determines necessary to be part of the Plan. EPD will provide written notice to the

permittee of the information necessary and the time line for submittal. b. Sample Type. All sampling shall be collected by "grab samples" and the analysis of these samples must be conducted in accordance with methodology and test procedures established by 40 CFR Part 136 (unless other test procedures have been approved); the guidance document titled "NPDES Storm Water Sampling Guidance Document

EPA 833-B-92-001" and guidance documents that may be prepared by the EPD. (1). Sample containers should be labeled prior to collecting the samples.

(2). Samples should be well mixed before transferring to a secondary container.

(3). Large mouth, well cleaned and rinsed glass or plastic jars should be used for collecting samples. The jars should be cleaned thoroughly to avoid contamination.

(4). Manual, automatic or rising stage sampling may be utilized. Samples required by this permit should be analyzed immediately, but in no case later than 48 hours after collection. However, samples from automatic samplers must be collected no later than the next business day after their accumulation, unless flow through automated analysis is utilized. Dilution of samples is not required. Samples may be analyzed directly with a properly calibrated turbidimeter Samples are

not required to be cooled. (5). Sampling and analysis of the receiving water(s) or outfalls beyond the minimum frequency stated in this permit must be reported to EPD as specified in Part IV.E.

VIII. REPORTING

component(s) of the discharge.

non-storm water listed in

required by (c) above.

1. The applicable permittees are required to submit a summary of the monitoring results to the EPD at the address shown in Part II.C. by the fifteenth day of the month following the reporting period. Reporting periods are months during which samples are taken in accordance with this permit. Sampling results shall be in a clearly legible format. Upon written notification, EPD may require the applicable permittee to submit the sampling results on a more frequent basis. Sampling and analysis of any storm water discharge(s) or the receiving water(s) beyond the minimum frequency stated in this permit must be reported in a similar manner to the EPD. The sampling reports must be signed in accordance with Part V.G. Sampling reports must be submitted to EPD until such time as a NOT is submitted in accordance with Part VI.

2. All written correspondence required by this permit shall be submitted by return receipt certified mail (or similar service) to the appropriate District Office of the EPD according to XIII. WASHDOWN AREAS (E&S CHECKLIST # 23) the schedule in Appendix A of this permit. The permittee shall retain a copy of the proof of submittal at the construction site or the proof of submittal shall be readily available at a 1 designated location from commencement of construction until such time as a NOT is submitted in accordance with Part VI.

3. All monitoring results shall include the following information:

e. The name(s) of the individual(s) who performed the analyses;

d. The time(s) analyses were initiated;

a. The 08-21-2015, exact place, and time of sampling or measurements; b. The name(s) of the individual(s) who performed the sampling and measurements; c. The 08-21-2015(s) analyses were performed;

h. Results which exceed 1000 NTU shall be reported as "exceeds 1000 NTU."

f. References and written procedures, when available, for the analytical techniques or g. The results of such analyses, including the bench sheets, instrument readouts, computer disks or tapes, etc., used to determine these results.

DATE:_

DATE:

DATE:

C-4.0

1501 Bass Road, Suite B

Macon, GA 31210

(478) 262-3750 mobile

teven@rowland-engineering.co www.rowland-engineering.com



ESPCP NOTES (PAGE 2 OF 2)

UNIFORM CODING SYSTEM FOR SOIL EROSION AND SEDIMENT CONTROL PRACTICES

STRUCTURAL PRACTICES

	31	RUCTU	KAL F	RACTICES							
CODE	PRACTICE	DETAIL	MAP SYMBOL	DESCRIPTION							
(Cq)	CHECKDAM		F	A small temporary barrier or dam constructed across a swale, drainage ditch or area of concentrated flow.							
		P Q		Improving, constructing or stabilizing an open channel, existing stream, o							
(Ch)	CHANNEL STABILIZATION		1	ditch.							
Co	CONSTRUCTION EXIT		(LABEL)	A crushed stone pad located at the construction site exit to provide a place for removing mud from tires thereby protecting public streets.							
Cr	CONSTRUCTION ROAD STABILIZATION		©.	A travelway constructed as part of a construction plan including access roads, subdivision roads, parking areas and other on-site vehicle transportation routes.							
Dc	STREAM DIVERSION CHANNEL	A temporary channel constructed to convey flow around a construction is being constructed.									
Di	DIVERSION		An earth channel or dike located above, below, or across a slope to divert runoff. This may be a temporary or permanent structure.								
(Dn1)	TEMPORARY DOWNDRAIN STRUCTURE		(LABEL)	A flexible conduit of heavy-duty fabric or other material designed to safel conduct surface runoff down a slope. This is temporary and inexpensive.							
Dn2	PERMANENT DOWNDRAIN STRUCTURE		Dn2 (LABEL)	A paved chute, pipe, sectional conduit or similar material designed to safely conduct surface runoff down a slope.							
Fr	FILTER RING			A temporary stone barrier constructed at storm drain inlets and pond outlets.							
Ga	GABION			Rock filter baskets which are hand-placed into position forming soil stabilizing structures.							
Gr	GRADE STABILIZATION STRUCTURE		Gr)	Permanent structures installed to protect channels or waterways where otherwise the slope would be sufficient for the running water to form gullies.							
Lv	LEVEL SPREADER		\rightarrow	A structure to convert concentrated flow of water into less erosive sheet flow. This should be constructed only on undisturbed soils.							
Rd	ROCK FILTER DAM		5	A permanent or temporary stone filter dam installed across small streams or drainageways.							
Re	RETAINING WALL		Re	A wall installed to stabilize cut and fill slopes where maximum permissible slopes are not obtainable. Each situation will require special design.							
Rt	RETRO FITTING		Rt (LABEL)	A device or structure placed in front of a permanent stormwater detention pond outlet structure to serve as a temporary sediment filter.							
Sd1)	SEDIMENT BARRIER	7		A barrier to prevent sediment from leaving the construction site. It may be sandbags, bales of straw or hay, brush, logs and poles, gravel, or a silt fence.							
Sd2	INLET SEDIMENT TRAP		(INDICATE TYPE)	An impounding area created by excavating around a storm drain drop inlet. The excavated area will be filled and stabilized on completion of construction activities.							
Sd3	TEMPORARY SEDIMENT BASIN		Gd3	A basin created by excavation or a dam across a waterway. The surface water runoff is temporarily stored allowing the bulk of the sediment to drop out.							
Sd4	TEMPORARY SEDIMENT TRAP			A small temporary pond that drains a disturbed area so that sediment can settle out. The principle feature distinguishing a temporary sediment trap from a temporary sediment basin is the lack of a pipe or riser.							
Sk	FLOATING SURFACE SKIMMER		Sk) (LABEL)	A buoyant device that releases/drains water from the surface of sediment ponds, traps, or basins at a controlled rate of flow.							
Spb	SEEP BERM		(Spb)	Linear control device constructed as a diversion perpendicular to the direction of runoff to enhance dissipation and infiltration, while creating multiple sedimentation chambers with the employment of intermediate dikes.							

STRUCTURAL PRACTICES

CODE	PRACTICE	DETAIL	MAP SYMBOL	DESCRIPTION
Sr	TEMPORARY STREAM CROSSING		(ABEL)	A temporary bridge or culvert-type structure protecting a stream or watercourse from damage by crossing construction equipment.
St	STORMDRAIN OUTLET PROTECTION		St)	A paved or short section of riprap channel at the outlet of a storm drain system preventing erosion from the concentrated runoff.
Su	SURFACE ROUGHENING		⊢Su)-I	A rough soil surface with horizontal depressions on a contour or slopes left in a roughened condition after grading.
Tc	TURBIDITY CURTAIN	M	Te	A floating or staked barrier installed within the water (it may also be referred to as a floating boom, silt barrier, or silt curtain).
Тр	TOPSOILING		(SHOW STRIPING AND STORAGE APERS)	The practice of stripping off the more fertile soil, storing it, then spreading it over the disturbed area after completion of construction activities.
Tr	TREE PROTECTION	0	(DENOTE TREE CENTERS)	To protect desirable trees from injury during construction activity.
Wt	VEGETATED WATERWAY OR STORMWATER CONVEYANCE CHANNEL		←←)	Paved or vegetative water outlets for diversions, terraces, berms, dikes or similar structures.

CODE	PRACTICE	DETAIL	MAP SYMBOL	DESCRIPTION
Bf	BUFFER ZONE		Bf (LABEL)	Strip of undisturbed original vegetation, enhanced or restore vegetation or the reestablishment of vegetation surrounding disturbance or bordering streams.
Cs	COASTAL DUNE STABILIZATION (WITH VEGETATION)	केस्ट्रास्ट्रहस्त्रहस् _र व	Cs	Planting vegetation on dunes that are denuded, artificially co re-nourished.
Ds1	DISTURBED AREA STABILIZATION (WITH MULCHING ONLY)		Ds1	Establishing temporary protection for disturbed areas where may not have a suitable growing season to produce an erosi retarding cover.
Ds2	DISTURBED AREA STABILIZATION (WITH TEMP SEEDING)		Ds2	Establishing a temporary vegetative cover with fast growing son disturbed areas.
Ds3	DISTURBED AREA STABILIZATION (WITH PERM SEEDING)	11, 1, 2 × 3	Ds3	Establishing a permanent vegetative cover such as trees, sh vines, grasses, or legumes on disturbed areas.
Ds4	DISTURBED AREA STABILIZATION (SODDING)		Ds4	A permanent vegetative cover using sods on highly erodable eroded lands.
Du	DUST CONTROL ON DISTURBED AREAS		Du	Controlling surface and air movement of dust on construction roadways and similar sites.
FI-Co	FLOCCULANTS AND COAGULANTS		FI-Co	Substance formulated to assist in the solids/liquid separation suspended particles in solution.
Sb	STREAMBANK STABILIZATION (USING PERM VEGETATION)		Sb	The use of readily available native plant materials to maintai enhance streambanks, or to prevent, or restore and repair si streambank erosion problems.
Ss	SLOPE STABILIZATION		Ss	A protective covering used to prevent erosion and establish or permanent vegetation on steep slopes, shore lines, or cha
Tac	TACKIFIERS AND BINDERS		Tac	Substance used to anchor straw or hay mulch by causing the material to bind together.

EROSION, SEDIMENTATION & POLLUTION CONTROL PLAN CHECKLIST STAND ALONE CONSTRUCTION PROJECTS

Project Na

Project Name: City/County: <u>I</u>		
Plan Page #	Included Y/N	TO BE SHOWN ON ES&PC PLAN
4.1	Y	1 The applicable Erosion, Sedimentation and Pollution Control Plan Checklist established by the Commission as of January 1 of the year in which the land-disturbing activity was permitted. (The completed Checklist must be submitted with the ES&PC Plan or the Plan will not be reviewed)
ALL	Y	2 Level II certification number issued by the Commission, signature and seal of the certified design professional. (Signature, seal and Level II number must be on each sheet pertaining to ES&PC plan or the Plan will not be reviewed)
	NA	3 Limits of disturbance shall be no greater than 50 acres at any one time without prior written authorization from the EPD District Office. If EPD approves the request to disturb 50 acres or more at any one time, the plan must include at least 4 of the BMPs listed in Appendix 1 of this checklist.* (A copy of the written approval by EPD must be attached to the plan for the plan to be reviewed.)
1.0	Υ	4 The name and phone number of the 24-hour local contact responsible for erosion, sedimentation and pollution controls.
1.0	Υ	5 Provide the name, address and phone number of primary permittee.
1.0	Υ	6 Note total and disturbed acreage of the project or phase under construction.
4.0	Υ	7 Provide the GPS location of the construction exit for the site. Give the Latitude and Longitude in decimal degrees.
ALL	Υ	8 Initial date of the Plan and the dates of any revisions made to the Plan including the entity who requested the revisions.
1.0	Υ	9 Description of the nature of construction activity.
1.0	Υ	10 Provide vicinity map showing site's relation to surrounding areas. Include designation of specific phase, if necessary.
4.0	Υ	11 Identify the project receiving waters and describe all sensitive adjacent areas including streams, lakes, residential areas, wetlands, etc. which may be affected.
4.0	Υ	12 Design professional's certification statement and signature that the site was visited prior to development of the ES&PC Plan as stated on page 15 of the permit.
4.0	Υ	13 Design professional's certification statement and signature that the permittee's ES&PC Plan provides for an appropriate and comprehensive system of BMPs and sampling to meet permit requirements as stated on page 15 of the permit.*
4.0	Y	14 Clearly note the statement that "The design professional who prepared the ES&PC Plan is to inspect the installation of the initial sediment storage requirements and perimeter control BMPs within 7 days after installation."*
4.0	Y	15 Clearly note the statement that "Non-exempt activities shall not be conducted within the 25 or 50-foot undisturbed stream buffers as measured from the point of wrested vegetation without first acquiring the necessary variances and permits."
4.0	Y	16 Clearly note the statement that "Amendments/revisions to the ES&PC Plan which have a significant effect on BMPs with a hydraulic component must be certified by the design professional."*
4.0	Y	17 Clearly note the statement that "Waste materials shall not be discharged to waters of the State, except as
		authorized by a contant 404 normit 11*

authorized by a section 404 permit."*

stabilized with mulch or temporary seeding."

of the drum at the construction site is prohibited.*

24 Provide BMPs for the remediation of all petroleum spills and leaks.

18 Clearly note statement that "The escape of sediment from the site shall be prevented by the installation of

19 Clearly note statement that "Erosion control measures will be maintained at all times. If full implementation of the

21 Any construction activity which discharges storm water into an Impaired Stream Segment, or within 1 linear mile

22 If a TMDL Implementation Plan for sediment has been finalized for the Impaired Stream Segment (identified in

item 21 above) at least six months prior to submittal of NOI, the ES&PC Plan must address any site-specific

upstream of and within the same watershed as, any portion of an Biota Impaired Stream Segment must comply with Part III. C. of the Permit. Include the completed Appendix 1 listing all the BMPs that will be used for those

approved plan does not provide for effective erosion control, additional erosion and sediment control measures

erosion and sediment control measures and practices prior to land disturbing activities."

Y 20 Clearly note the statement "Any disturbed area left exposed for a period greater than 14 days shall be

shall be implemented to control or treat the sediment source."

areas of the site which discharge to the Impaired Stream Segment.*

conditions or requirements included in the TMDL Implementation Plan.*

4.0 Y 23 BMPs for concrete washdown of tools, concrete mixer chutes, hoppers and the rear of the vehicles. Washout

4.0

4.0

4.0

4.0

4.0 Y	25 Description of the measure water that will occur after	es that will be installed during construction operations have	-	control pollutants in storm
4.0 Y	26 Description of the practices	·	·	discharges.*
4.0 Y	27 Description and chart or ti	meline of the intended seque	ence of major activities which	disturb soils for the major
	portions of the site (i.e., init	•	storage BMPs, clearing and o	•
4.0 Y	28 Provide complete requirer	ments of inspections and rec	ord keeping by the primary p	permittee.*
4.0 Y	29 Provide complete requirer	ments of sampling frequency	and reporting of sampling re	esults.*
4.0 Y	30 Provide complete details fo	or retention of records as pe	er Part IV.F. of the permit.*	
4.0 Y	31 Description of analytical m	ethods to be used to collect	and analyze the samples fror	m each location.*
4.0 Y	32 Appendix B rationale for N	ITU values at all outfall sam	pling points where applicable	.*
4.2 - 4.4 Y	33 Delineate all sampling loca storm water is discharged	•	ttent streams and other water	bodies into which
4.2 - 4.4 Y	34 A description of appropria	te controls and measures th	at will be implemented at the o	construction site including:
	(1) initial sediment storage	requirements and perimete	r control BMPs, (2) intermedi	iate grading and drainage
	* *		ere there will be no mass grad	,
	all of the BMPs into a sing	•	1Ps, and final BMPs are the s	arrie, the plan may combine
4.2 - 4.4 Y	35 Graphic scale and North a	•		
4.2 - 4.4 Y	36 Existing and proposed cor	ntour lines with contour lines	s drawn at an interval in acco	rdance with the following:
	Map Scale	Ground Slope	Contour Intervals, ft.	
	1 inch = 100ft or	Flat 0 - 2%	0.5 or 1	
	larger scale	Rolling 2 - 8% Steep 8% +	1 or 2 2,5 or 10	
		G00p 070	2,0 01 10	ı
NA NA	37 Use of alternative BMPs w	nhose performance has bee	n documented to be equivale	ent to or superior to
		•	onal (unless disapproved by	•
	and Water Conservation (Commission). Please refer t	o the Alternative BMP Guidar	nce Document found at
	www.gaswcc.org.			
4.2 - 4.4 Y	38 Delineation of the applicab buffers required by the Lo		rbed buffers adjacent to state ly note and delineate all area	•
4.2 - 4.4 Y	39 Delineation of on-site wetla	ands and all state waters loc	ated on and within 200 feet o	f the project site.
4.2 - 4.4 Y	40 Delineation and acreage of	of contributing drainage basi	ins on the project site.	
4.2 - 4.4 Y	41 Provide hydrology study a	and maps of drainage basin	s for both the pre- and post-o	developed conditions.*
4.2 Y	42 An estimate of the runoff co	pefficient or peak discharge	flow of the site prior to and aft	er construction activities are
	completed.			
4.3 Y	43 Storm-drain pipe and weir	velocities with appropriate	outlet protection to accommod	late discharges without
	erosion. Identify/Delineate	e all storm water discharge p	points.	
4.2 - 4.3 Y	44 Soil series for the project s	site and their delineation.		
4.2 - 4.4 Y	45 The limits of disturbance fo	r each phase of construction	n.	
4.2 Y	46 Provide a minimum of 67 of	•	•	
	·		ment traps for each common o	•
	•		all land disturbance activities ung the decision to use equival	
		,	e plan for each common drai	

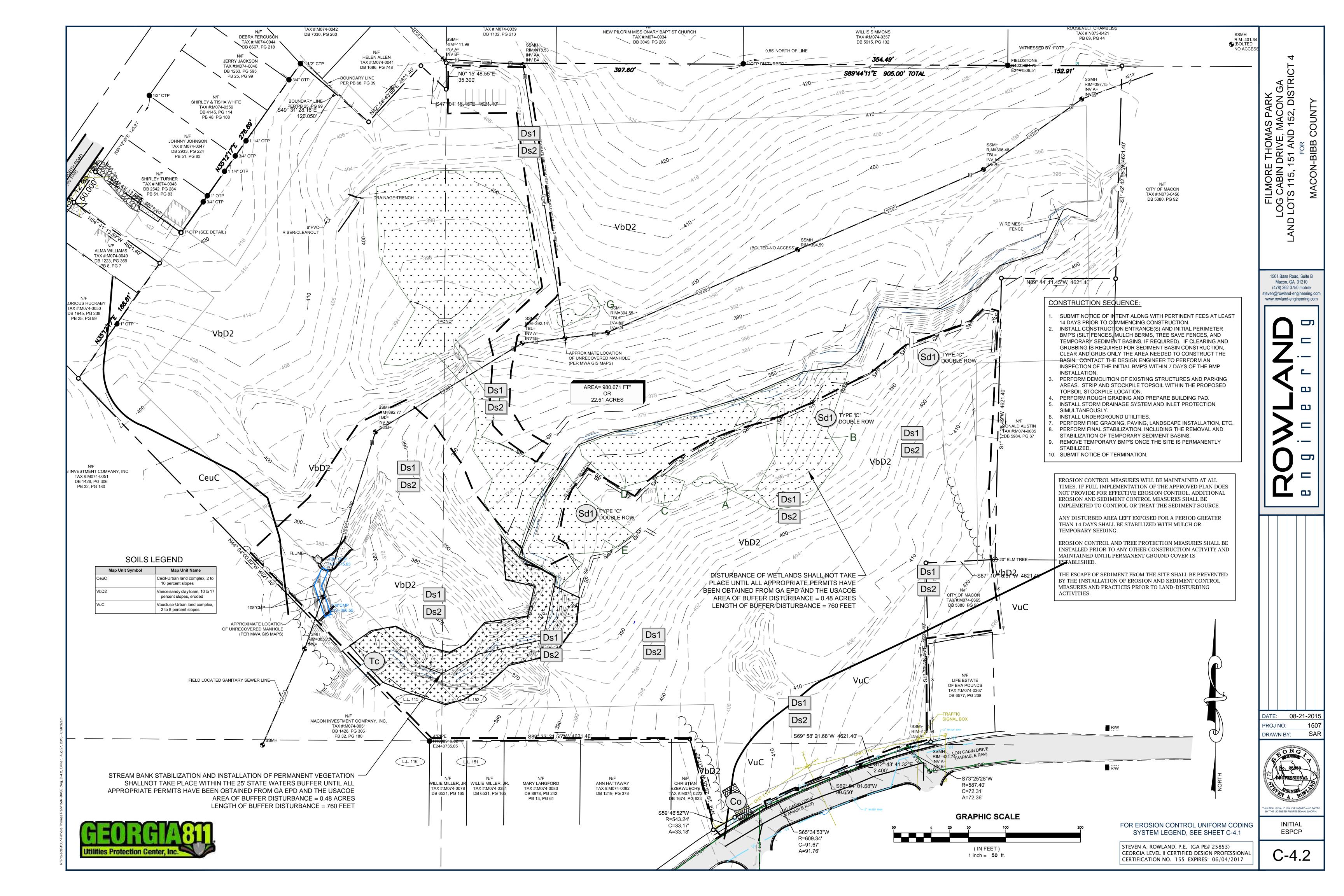
nporary sediment basin, nage location. Sediment final stabilization of the controls when a sediment basin is not attainable must be included in the plan for each common drainage location in which a sediment basin is not provided. A written justification as to why 67 cubic yards of storage is not attainable must also be given. Worksheets from the Manual included for structural BMPs and all calculations used by the storage design professional to obtain the required sediment when using equivalent controls. When discharging from sediment basins and impoundments, permitees are required to utilize outlet structures that withdraw water from the surface, unless infeasible. If outlet structures that withdraw water from the surface are not feasable, a written justification explaining this decision must be included in the plan.

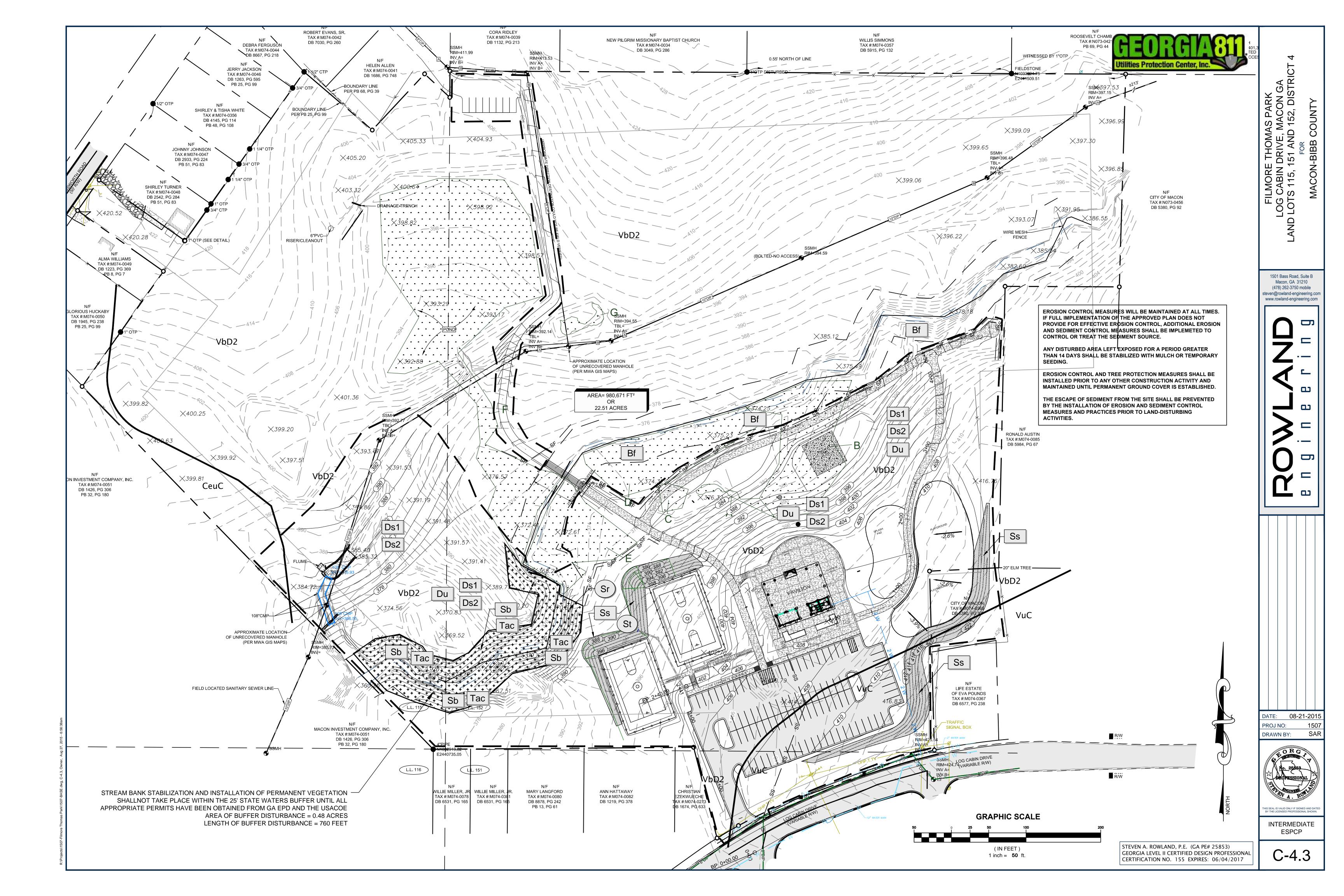
.2 - 4.4		Υ	47 Location of Best Management Practices that are consistent with and no less stringent than the Manual for
			Erosion and Sediment Control in Georgia. Use uniform coding symbols from the Manual, Chapter 6, with
			legend.
.0 - 8.6		Υ	48 Provide detailed drawings for all structural practices. Specifications must, at a minimum, meet the guidelines set

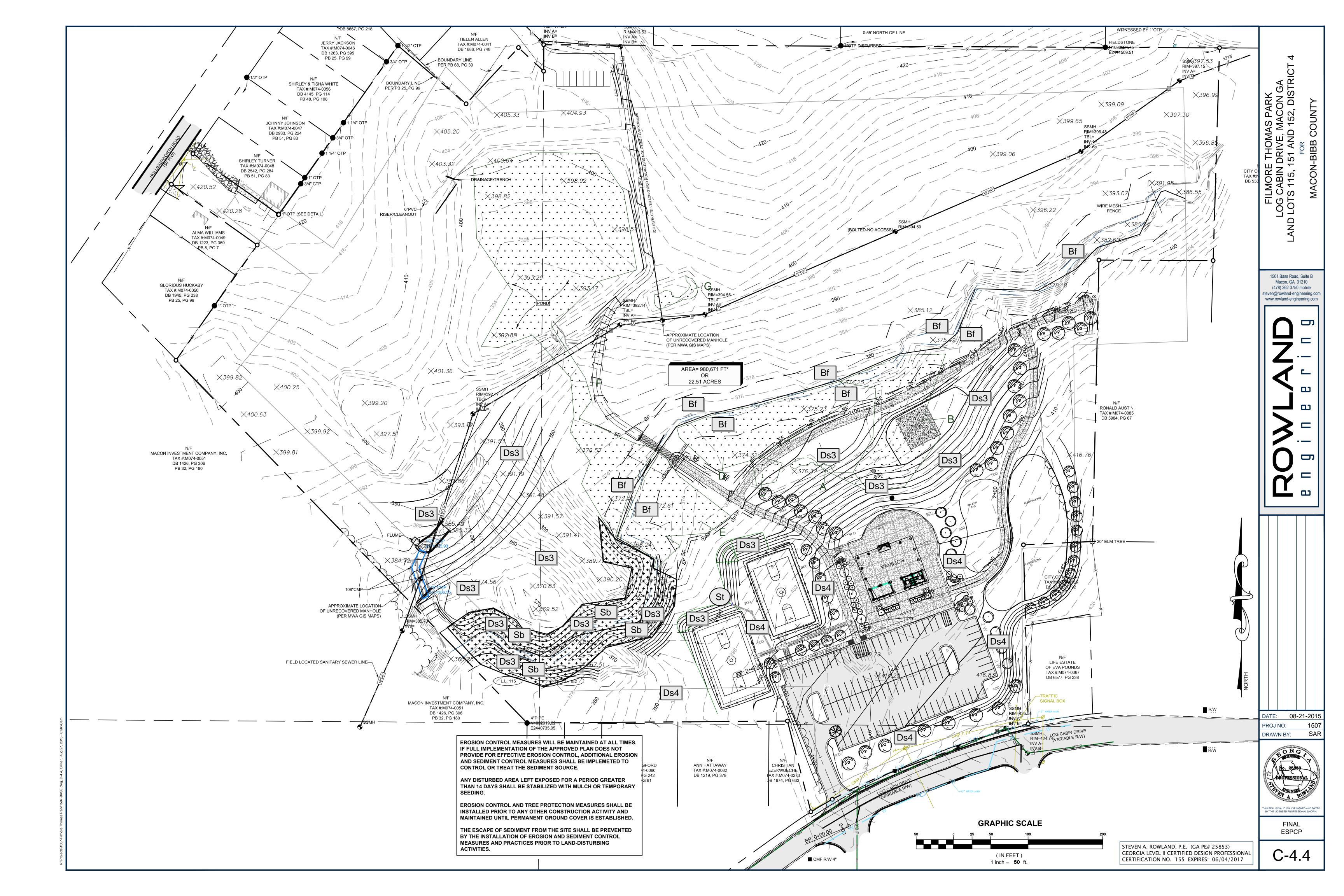
forth in the Manual for Erosion and Sediment Control in Georgia. 8.0 - 8.2 Y 49 Provide vegetative plan, noting all temporary and permanent vegetative practices. Include species, planting dates and seeding, fertilizer, lime and mulching rates. Vegetative plan shall be site specific for appropriate time of the year that seeding will take place and for the appropriate geographic region of Georgia.

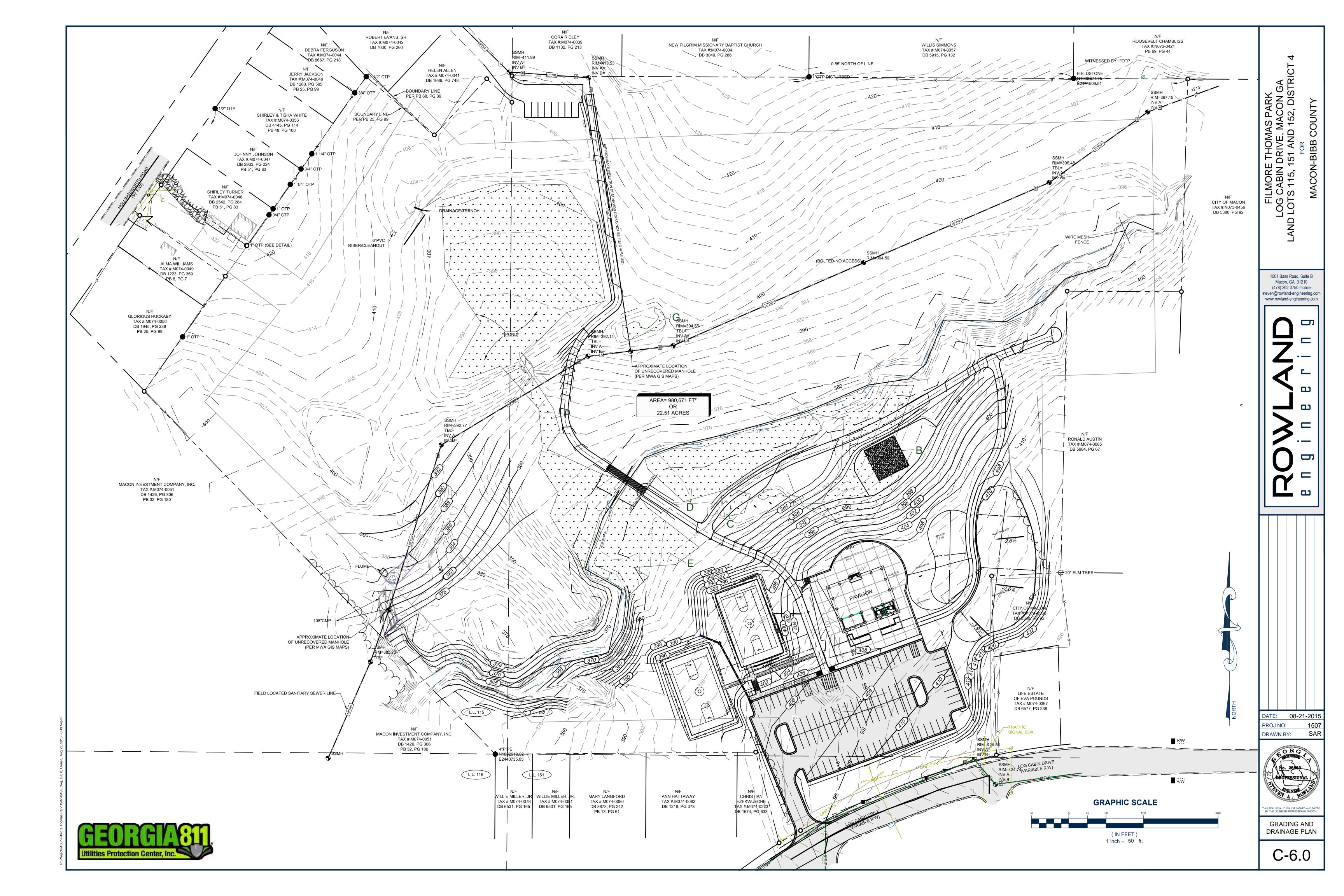
> *If using this checklist for a project that is less than 1 acre and not part of a common development but within 200 ft of a perennial stream the * checklist items would be N/A.

STEVEN A. ROWLAND, P.E. (GA PE# 25853) GEORGIA LEVEL II CERTIFIED DESIGN PROFESSIONAL CERTIFICATION NO. 155 EXPIRES: 06/04/2017









REQUIREMENT FOR REGULATORY COMPLIANCE

Mulch or temporary grassing shall be applied to all exposed areas within 14 days of disturbance. Mulch can be used as a singular erosion control device for up to six months, but it shall be applied at the appropriate depth, depending on the material used, anchored, and have a continuous 90% cover or greater of the soil surface. Maintenance shall be required to maintain appropriate depth and 90% cover. Temporary vegetation may be employed instead of mulch if the area will remain undisturbed for less than six months. If an area will remain undisturbed for greater than six months, permanent vegetative techniques shall be employed. Refer to Ds2 -Disturbed Area Stabilization (With Temporary Seeding), Ds3 -Disturbed Area Stabilization (With

Permanent Seeding), and Ds4 - Disturbed Area Stabilization (With

SPECIFICATIONS MULCHING WITHOUT SEEDING

This standard applies to grades or cleared areas where seedings may not have a suitable growing season to produce an erosion retardant cover, but can be stabilized with a mulch cover.

Site Preparation

1. Grade to permit the use of equipment for applying and anchoring mulch. 2. Install needed erosion control measures as required such as dikes, diversions, berms, terraces and sediment barriers.

3. Loosen compact soil to a minimum depth of 3 inches.

Mulching Materials

Select one of the following materials and apply at the depth indicated: 1. Dry straw or hay shall be applied at a depth of 2 to 4 inches providing complete soil coverage. One advantage of this material is easy application. 2. Wood waste (chips, sawdust or bark) shall be applied at a depth of 2 to 3 inches. Organic material from the clearing stage of development should remain on site, be chipped, and applied as mulch. This method of mulching

can greatly reduce erosion control costs. 3. Cutback asphalt (slow curing) shall be applied at 1200 gallons per acre (or 1/4

4. Polyethylene film shall be secured over banks or stockpiled soil material for temporary protection. This material can be salvaged and reused.

Applying Mulch

When mulch is used without seeding, mulch shall be applied to provide full coverage of the exposed area.

- 1. Dry straw or hay mulch and wood chips shall be applied uniformly by hand or by mechanical equipment.
- 2. If the area will eventually be covered with perennial vegetation, 20-30 pounds of nitrogen per acre in addition to the normal amount shall be applied to offset the uptake of nitrogen caused by the decomposition of the organic mulches.
- 3. Cutback asphalt shall be applied uniformly. Care should be taken in areas of pedestrian traffic due to problems of 'tracking in" or damage to shoes, clothing, etc. 4. Apply polyethylene film on exposed areas.

Anchoring Mulch

1. Straw or hay mulch can be pressed into the soil with a disk harrow with the disk set straight or with a special "packer disk." Disks may be smooth or serrated and should be 20 inches or more in diameter and 8 to 12 inches apart. The edges of the disk should be dull enough not to cut the mulch but to press it into the soil leaving much of it in an erect position. Straw or hay mulch shall be anchored immediately after application. Straw or hay mulch spread with special blower-type equipment may be anchored with emulsified asphalt (Grade AE-5 or SS-1). The asphalt emulsion shall be sprayed onto the mulch as it is ejected from the machine. Use 100 gallons of emulsified asphalt and 100 gallons of water per ton of mulch. Tackifers and binders can be substituted for emulsified asphalt. Please refer to specification Tb - Tackifers and Binders. Plastic mesh or netting with mesh no larger than one inch by one inch shall be installed according to manufacturer's specifications. 2. Netting of the appropriate size shall be used to anchor wood waste. Openings of the netting shall not be larger than the average size of the wood waste chips. 3. Polyethylene film shall be anchor trenched at the top as well as incrementally as

Dust Control on Disturbed Areas

METHOD AND MATERIALS

A. TEMPORARY METHODS

Mulches. See standard Ds1- Disturbed Area Stabilization (With Mulching Only). Synthetic resins may be used instead of asphalt to bind mulch material. Refer to standard Tb-Tackifiers and Binders.

Resins such as Curasol or Terratack should be used according to manufacturer's recommendations.

Vegetative Cover. See standard Ds2- Disturbed Area Stabilization (With Temporary Seeding).

Spray-on Adhesives. These are used on mineral soils (not effective on muck soils). Keep traffic off these areas. Refer to standard Tb-Tackifiers and Binders.

Tillage. This practice is designed to roughen and bring clods to the surface. It is an emergency measure which should be used before wind erosion starts. Begin plowing on windward side of site. Chisel-type plows spaced about 12 inches apart, spring-toothed harrows, and similar plows are examples of equipment which may produce the desired effect.

Irrigation. This is generally done as an emergency treatment. Site is sprinkled with water until the surface is wet. Repeat as needed.

Barriers. Solid board fences, snowfences, burlap fences, crate walls, bales of hay and similar material can be used to control air currents and soil blowing. Barriers placed at right angles to prevailing currents at intervals of about 15 times their height are effective in controlling wind erosion.

Calcium Chloride. Apply at rate that will keep surface moist. May need

B. PERMANENT METHODS.

Permanent Vegetation. See standard Ds3-Disturbed Area Stabilization (With Permanent Vegetation). Existing trees and large shrubs may afford valuable protection if left in place.

Topsoiling. This entails covering the surface with less erosive soil material. See standard Tp- Topsoiling.

Stone. Cover surface with crushed stone or coarse gravel. See standard Cr-Construction Road Stabilization.



CONSTRUCTION SPECIFICATIONS

It is recommended that the entrance area be excavated to a depth of 3 inches and be cleared of all vegetation and roots.

Diversion Ridge

On sites where the grade toward the paved area is greater than 2%, a diversion ridge 6 to 8 inches high with 3:1 side slopes shall be constructed across the foundation approximately 15 feet above the road.

Geotextile

The geotextile underliner must be placed the full length and width of the entrance. Geotextile selection shall be based on AASHTO M288-98 specification: 1. For subgrades with a CBR greater than or equal to 3 or shear strength greater than 90 kPa, geotextile must meet requirements of section AASHTO M288-96 Section 7.3, Separation Requirements. 2. For subgrades with a CBR between 1 and 3 or sheer strength between 30

and 90 kPa, geotextile must meet requirements of section AASHTO M288-96 Section 7.4, Stabilization Requirements.

MAINTENANCE

The exit shall be maintained in a condition which will prevent tracking or flow of mud onto public rights-ofway. This may require periodic top dressing with 1.5-3.5 inch stone, as conditions demand, and repair and/or cleanout of any structures to trap sediment. All materials spilled, dropped, washed, or tracked from vehicles or site onto roadways or into storm drains must be removed

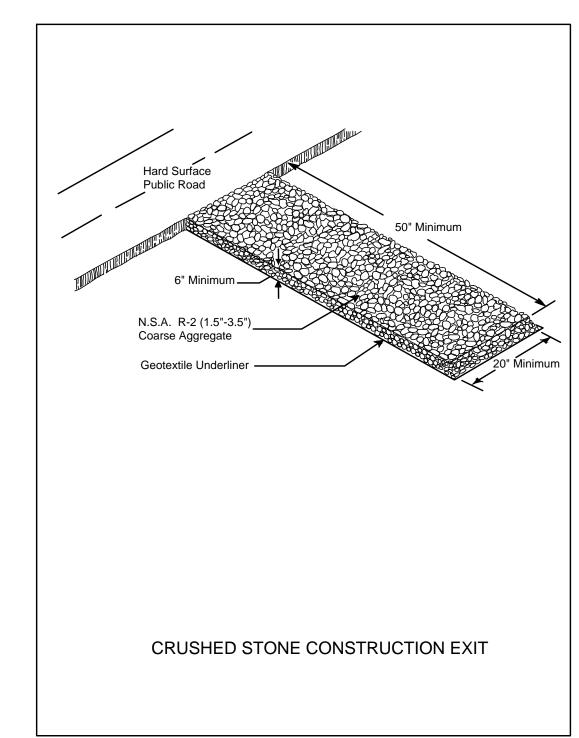


Figure 6-11.1

Disturbed Area Stabilization (With Mulching Only)

REQUIREMENT FOR REGULATORY COMPLIANCE

Mulch or temporary grassing shall be applied to all exposed areas within 14 days of disturbance. Temporary grassing, instead of mulch, can be applied to rough graded areas that will be exposed for less than six months. If an area is expected to be undisturbed for longer than six months, permanent perennial vegetation shall be used. If optimum planting conditions for temporary grassing is lacking, mulch can be used as a singular erosion control device for up to six months but it shall be applied at the appropriate depth, anchored, and have a continuous 90% cover or greater of the soil

surface. Refer to specification Ds1-Disturbed Area Stabilization (With Temporary Seeding).

CONDITIONS

Temporary vegetative measures should be coordinated with permanent measures to assure economical and effective stabilization. Most types of temporary vegetation are ideal to use as companion crops until the permanent vegetation is established. Note: Some species of temporary vegetation are not appropriate for companion crop plantings because of their potential to out-compete the desired species (e.g. annual ryegrass). Contact NRCS or the local SWCD for more information.

SPECIFICATIONS

Grading and Shaping

Excessive water run-off shall be reduced by properly designed and installed erosion control practices such as closed drains, ditches, dikes, diversions, sediment barriers and others. No shaping or grading is required if slopes can be stabilized by hand-seeded vegetation or if hydraulic seeding equipment is to be used. Seedbed Preparation

When a hydraulic seeder is used, seedbed preparation is not required. When using conventional or handseeding, seedbed preparation is not required if the soil material is loose and not sealed by rainfall. When soil has been sealed by rainfall or consists of smooth cut slopes, the soil shall be pitted, trenched or otherwise scarified to provide a place for seed to lodge and germinate.

Lime and Fertilizer

Agricultural lime is required unless soil tests indicate otherwise. Apply agricultural lime at a rate of one ton per acre. Graded areas require lime application. Soils can be tested to determine if fertilizer is needed. On reasonably fertile soils or soil material, fertilizer is not required. For soils with very low fertility, 500 to 700 pounds of 10-10-10 fertilizer or the equivalent per acre (12-16 lbs./1000 sq.ft.) shall be applied. Fertilizer should be applied before land preparation and incorporated with a disk, ripper or chisel.

Select a grass or grass-legume mixture suitable to the area and season of the year. Seed shall be applied uniformly by hand, cyclone seeder, drill, culti-packer-seeder, or hydraulic seeder (slurry including seed and fertilizer). Drill or cultipacker seeders should normally place seed one-quarter to one-half inch deep. Appropriate depth of planting is ten times the seed diameter. Soil should be "raked" lightly to cover seed with soil if seeded by hand.

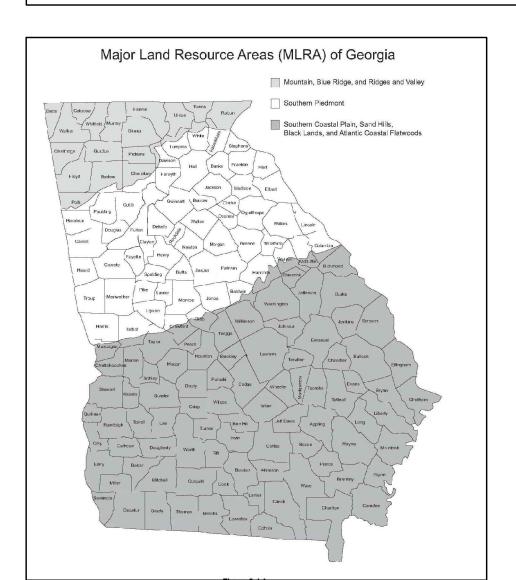
Mulching

Temporary vegetation can, in most cases, be established without the use of mulch. Mulch without seeding should be considered for short term protection. Refer to Ds1- Disturbed Area Stabilization (With Mulching Only).

During times of drought, water shall be applied at a rate not causing runoff and erosion. The soil shall be thoroughly wetted to a depth that will insure germination of the seed. Subsequent applications should be made when needed.

PLAN	NT, PLANTING F		I.1 - Temporary Co _ANTING DATED F				-					CON	MPA	NIO	N CI	ROPS 1/
Species	Broa	dcast 2/ - PLS 3/ Per 1000 sq. ft.	Rescurce <u>Area 4/</u>	PI (S	lanti Solid	ng D line	ates s inc	s by	Res Plan e op te pe	ourc ting	e A Date	rea es date	<u>s</u>			<u>Remarks</u>
		Provide announce		J	F	М	Α	М	J	J	Α	S	0	N	D	
BARLEY Horduem vulgare) alone in mixture	3 bu. (144 lbs.) 1/2 bu.	C 3.3 lb. 0.6 lb.	M-L P												au	14,000 seed per pound. Winterhardy. Use on productive soils.
	(24 lbs.)			J	F	М	Α	М	J	J	Α	s	0	N	D	
LESPEDEZA, ANNUAL Lespedeza striata) alone in mixtures	40 lbs. 10 lbs.	0,9 lb. 0.2 lb.	M-L P C	 J	F		A	М	J	J	Α	S	0	Z	D	200,000 seed per pound. N volunteer for several years. Use inoculant EL.
OVEGRASS, WEEPING Eragrostis curvula) alone in mixtures	4 lbs. 2 lbs.	0.1 lb. 0.05 lb.	M-L P C	J	 F		A	М	J	ij	A	S	0	Z	D	1,500,000 seed per pound. May last for several years. I with Sericea lespedeza.
MILLET, BROWNTOP Panicum fasciculatum) alone in mixtures	40 lbs. 10 lbs.	C 0.9 lb. 0.2 lb.	M-L P		,			141	3)				137,000 seed per pound. Quick dense cover. Will pro too much competition in mixtures if seeded at high rates.
<u>Species</u>		idcast <u>2/ - PLS 3/</u> Per 1000 sa. ft.	Rescurce <u>Area 4/</u>					<u>Remarks</u>								
				J	F	М	Α	М	J	J	Α	S	0	Ν	D	
/ILLET, PEARL Pennesetum glaucum) alone	50 lbs.	1.1 lb.	M-L P C													88,000 seed per pound. Q dense cover. May reach 5 in height. Notrecommends for mixtures.
DATS Avena sativa) alone	4 bu. (128 lbs.)	2.9 lb.	M-L P C	J	F	M	Α	М	J	J	Α	S	0	Z	D	13,000 seed per pound. Us on productive soils. Not as winterhardy as rye or barle
in mixtures RYE	1 bu. (32 lbs.)	0.7 lb.	M-L	J	F	М	Α	М	J	J 	Α	s	0	Z	D	
Secale cereale) alone in mixture	3 bu. (168 lbs.) 1/2 bu.	3.9 lb. 0.6 lb.	P C	,0000					1		-		_	ga.		18,000 seed per pound. Q cover. Drought tolerant and winterhardy.
RYEGRASS, ANNUAL Lolium temulentum) alone	(28 lbs.) 40 lbs.	C 0.9 lb.	M-L P	J	F 	M	A 	М	J	J	A 	s		Z	D	227,000 seed per pound. Dense cover. Very compet and is not to be used in mixt
SUDANGRASS Sorghum Sudanese) alone	60 lbs.	1.4 lb	M-L P C					.*!				1	J			55,000 seed per pound. Go on droughty sites. <u>Not</u> recommended for mixtures

<u>Species</u>		dcast 2/ - PLS 3/ Per 1000 sq. ft.	Resource <u>Area 4/</u>	Planting Dates by Resource Areas Planting Dates (Solid lines indicate optimum dates, dotted lines indicate permissible but marginal dates.)							Remarks						
				J	F	М	Α	М	J	J	Α	S	0	N	D	Ц	
FRITICALE X-Triticosecale) alone in mixtures	3 bu (144 lbs.) 1/2 bu. (24 lbs.)	3.3 lb. 0.6 lb.	С	J	F	м	А	М	J	J	А	s	0	N	D		Use on lower part of Souther Coastal Plain and in Atlantic Coastal Flatwoods only.
MHEAT Triticum Aestivum) alone in mixtures	3 bu (180 lbs.) 1/2 bu. (30 lbs.)	4.1 lb. 0.7 lb.	M-L P C														15,000 seed per pound.



Pm Polyacrylamides

PLANNING CONSIDERATIONS

Anionic PAM is available in emulsions, powders, and gel bars or logs. It is required that other Best Management Practices be used in combination with anionic PAM. The use of seed and mulch for additional erosion protection beyond the life of the anionic PAM is recommended. Repeat application if disturbance occurs to target area. The following are additional recommendations relating to design which may enhance the use of or avoid problems with the

1. Use setbacks when applying anionic PAM near natural waterbodies.

2. Consider that decreased performance can occur due to ultra-violet light and time after mixing when applying anionic PAM. 3. In flow concentration channels, the effectiveness of anionic PAM for stabilization decreases.

4. Mulch to protect seed, if seed is applied with anionic PAM. 5. Never add water to PAM, add PAM slowly to water. If water is added to PAM, "globs" can form which can clog dispensers. This signifies incomplete dissolving of the PAM and therefore increases the risk of under-application.

CRITERIA

6. NOT ALL POLYMERS ARE PAM.

Application rates shall conform to manufacturer's guidelines for application. 1. Only the anionic form of PAM shall be used. Cationic PAM is toxic and shall NOT be used. 2. PAM and PAM mixtures shall be environmentally benign, harmless to fish, wildlife, and plants. PAM and PAM mixtures shall be noncombustible.

3. Anionic PAM, in pure form, shall have less than or equal to 0.05% acrylamide monomer by weight, as established by the Food and Drug Administration and the Environmental Protection

4. To maintain less than or equal to 0.05% of acrylamide monomer, the maximum application rate of PAM, in pure form, shall not exceed 200 pounds/acre/year. Do not over apply PAM. Excessive application of PAM can lower infiltration rate or suspend solids in water, rather than promoting settling.

5. Users of anionic PAM shall obtain and follow all Material Safety Data Sheet requirements and manufacturer's recommendations.

6. Additives such as fertilizers, solubility promoters or inhibitors, etc. to PAM shall be non-toxic. 7. The manufacturer or supplier shall provide written application methods for PAM and PAM mixtures. The application method shall insure uniform coverage to the target and avoid drift to non-target areas including waters of the state. The manufacturer or supplier shall also provide written instructions to insure proper safety, storage, and mixing of the product. 8. Gel bars or logs of anionic PAM mixtures may be used in ditch systems. This application shall meet the same testing requirement as anionic PAM emulsions and powders.

9. To prevent exceeding the acrylamide monomer limit in the event of a spill, the anionic PAM in pure form shall not exceed 200 pounds/batch at 0.05% acrylamide monomer (AMD) or 400 pounds/batch at 0.025% AMD.

OPERATION AND MAINTENANCE

Maintenance will consist of reapplying anionic PAM to disturbed areas including high use traffic areas which interfere in the performance of this practice.



STEVEN A. ROWLAND, P.E. (GA PE# 25853) GEORGIA LEVEL II CERTIFIED DESIGN PROFESSIONAL CERTIFICATION NO. 155 EXPIRES: 06/04/2017

DATE: 08-21-2015 PROJ NO:

PARK ACON GA 52, DISTRICT

FILMORE LOG CABIN D

1501 Bass Road, Suite B

Macon, GA 31210

(478) 262-3750 mobile

steven@rowland-engineering.co

www.rowland-engineering.com

MACON-BIBB

DRAWN BY:

ESPCP-BMP

DETAILS

vegetation shall consist of: planted trees, shrubs, perennial vines; a crop of perennial vegetation appropriate for the region, such that within the growing season a 70% coverage by perennial vegetation shall be achieved. Final stabilization applies to each phase of construction. For linear construction projects on land used for agricultural or silvicultural purposes, final stabilization may be accomplished by stabilizing the disturbed land for its agricultural or silvicultural use. Until this standard is satisfied and permanent control measures and facilities are operational, interim stabilization measures and temporary erosion and sedimentation control measures shall not be removed.

CONDITIONS

Permanent perennial vegetation is used to provide a protective cover for exposed areas including cuts, fills, dams, and other denuded areas.

PLANNING CONSIDERATIONS

1. Use conventional planting methods where possible.

2. When mixed plantings are done during marginal planting periods, companion crops shall be used.

3. No-till planting is effective when planting is done following a summer or winter annual cover crop. Sericea lespedeza planted no-till into stands of rye is an excellent procedure.

4. Block sod provides immediate cover. It is especially effective in controlling erosion adjacent to concrete flumes and other structures. Refer to Specification Ds4-Disturbed Area Stabilization (With Sodding).

5. Irrigation should be used when the soil is dry or when summer plantings are done.6. Low maintenance plants, as well as natives, should be used to ensure long-lasting erosion control.

7. Mowing should not be performed during the quail nesting season (May to September).

 ${\bf 8.} \ Wildlife \ plantings \ should \ be \ included \ in \ critical \ area \ plantings.$

Wildlife Plantings

Commercially available plants beneficial to wildlife species include the following:

Mast Bearing Trees

Beech, Black Cherry, Blackgum, Chestnut, Chinkapin, Hackberry, Hickory, Honey Locust, Native Oak, Persimmon, Sawtooth Oak and Sweetgum.

All trees that produce nuts or fruits are favored by many game species. Hickory provides nuts used mainly by squirrels and bear.

Shrubs and Small Trees

Bayberry, Bicolor Lespedeza, Crabapple, Dogwood, Huckleberry or Native Blueberry, Mountain Laurel, Native Holly, Red Cedar, Red Mulberry, Sumac, Wax Myrtle, Wild Plum and Blackberry. Plant in patches without tall trees to develop stable shrub communities.

All produce fruits used by many kinds of wildlife, except for lespedeza which produces seeds used by quail and songbirds.

Grasses, Legumes, Vines and Temporary Cover

Bahiagrass, Bermudagrass, Grass-Legume mixtures, Partridge Pea, Annual Lespedeza, Orchardgrass (for mountains), Browntop Millet (for temporary cover), and Native grapes.

Provides herbaceous cover in clearings for a game bird brood-rearing habitat. Appropriate legumes such as vetches, clovers, and lespedezas may be mixed with grass, but they may die out after a few years.

CONSTRUCTION SPECIFICATIONS

Grading and Shaping

Grading and shaping may not be required where hydraulic seeding and fertilizing equipment is to be used. Vertical banks shall be sloped to enable plant establishment. When conventional seeding and fertilizing are to be

done, grade and shape where feasible and practical, so that equipment can be used safely and efficiently during seedbed preparation, seeding, mulching and maintenance of the vegetation. Concentrations of water that will cause excessive soil erosion shall be diverted to a safe outlet. Diversions and other treatment practices shall conform with the appropriate standards and specifications.

Lime and Fertilizer Rates and Analysis

Agricultural lime is required at the rate of one to two tons per acre unless soil tests indicate otherwise. Graded areas require lime application. If lime is applied within six months of planting permanent perennial vegetation,

additional lime is not required. Agricultural lime shall be within the specifications of the Georgia Department of Agriculture.

Lime spread by conventional equipment shall be "ground limestone." Ground limestone

is calcitic or dolomitic limestone ground so that 90 percent of the material will pass through a 10-mesh sieve, not less than 50 percent will pass through a 50-mesh sieve and not less than 25 percent will pass through a 100-mesh sieve. Agricultural lime spread by hydraulic seeding equipment

shall be "finely ground limestone." Finely ground limestone is calcitic or dolomitic limestone ground so that 98 percent of the material will pass through a 20-mesh sieve and not less than 70 percent will pass through a 100-mesh sieve. It is desirable to use dolomitic limestone in the Sand Hills,

Southern Coastal Plain and Atlantic Coast Flatwoods MLRAs. (See Figure 6-4.1)
Agricultural lime is generally not required where only
trees are planted. Initial fertilization, nitrogen, topdressing, and maintenance
fertilizer requirements for each species or combination of species are listed in Table

Lime and Fertilizer Application

When hydraulic seeding equipment is used, the initial fertilizer shall be mixed with seed, innoculant (if needed), and wood cellulose or wood pulp fiber mulch and applied in a slurry. The innoculant, if needed, shall be mixed with the seed prior to being placed into the hydraulic seeder. The slurry mixture will be agitated during application to keep the ingredients thoroughly

mixed. The mixture will be spread uniformly over the area within one hour after being placed in the hydroseeder. Finely ground limestone will be mixed with water and applied immediately after mulching is completed or in

combination with the top dressing. When conventional planting is to be done, lime and fertilizer shall be applied uniformly in one of the following

1. Apply before land preparation so that it will be mixed with the soil during seedbed preparation.

2. Mix with the soil used to fill the holes, distribute in furrows.

3. Broadcast after steep surfaces are scarified, pitted or trenched.4. A fertilizer pellet shall be placed at root depth in the closing hole beside each pine tree seedling.

Plant Selection

Refer to Tables 6-4.1, 6-5.2, 6-5.3 and 6-5.4 for approved species. Species not listed shall be approved by the State Resource Conservationist of the Natural Resources Conservation Service before they are used. Plants shall be selected on the basis of species characteristics, site and soil conditions, planned use and maintenance of the area;

time of year of planting, method of planting; and the needs and desires of the land user. Some perennial species are easily established and can be planted alone. Examples of these are Common Bermuda, Tall Fescue, and Weeping Lovegrass. Other perennials, such as Bahia Grass and Sericea Lespedeza, are slow to become established and should be planted with another perennial

species. The additional species will provide quick cover and ample soil protection until the

target perennial species become established.
For example, Common seeding combinations are
1) Weeping Lovegrass with Sericea Lespedeza (scarified) and
2) Tall Fescue with Sericea Lespedeza (unscarified).

Plant selection may also include annual companion crops. Annual companion crops should be used only when the perennial species are not planted during their optimum planting period. A common mixture is Brown Top Millet with Common Bermuda in mid-summer. Care should be taken in selecting companion crop species and seeding rates because annual crops will compete

with perennial species for water, nutrients, and growing space. A high seeding rate of the companion crop may prevent the establishment of perennial species. Ryegrass shall not be used in any seeding mixtures containing perennial species due to its ability to out-compete desired species

containing perennial species due to its ability chosen for permanent perennial cover.

Seed Quality

The term "pure live seed" is used to express the quality of seed and is not shown on the label. Pure live seed, PLS, is expressed as a percentage of the seeds that are pure and will germinate. Information on percent germination

and purity can be found on seed tags. PLS is determined by multiplying the percent of pure seed with the percent of germination; i.e., (PLS = % germination x % purity)

EXAMPLE:

Common bermuda seed
70% germination, 80% purity
PLS = 70% germination x 80% purity
PLS = 56%

The percent of PLS helps you determine the amount of seed you need. If the seeding rate is 10 pounds PLS and the bulk seed is 56 % PLS, the bulk seeding rate is:

10 lbs. PLS/acre = 17.9 lbs/acre

You would need to plant 17.9 lbs/acre to provide 10 lbs/acre of pure live seed.

Seedbed Preparation

Seedbed preparation may not be required where hydraulic seeding and fertilizing equipment is to be used. When conventional seeding is to be used, seedbed preparation will be done as follows:

Broadcast plantings

1. Tillage at a minimum, shall adequately loosen the soil to a depth of 4 to 6 inches; alleviate compaction; incorporate lime and fertilizer; smooth and firm the soil; allow for the proper placement of seed, sprigs, or plants; and allow

for the anchoring of straw or hay mulch if a disk is to be used.

2. Tillage may be done with any suitable equipment.

2. Tillage may be done with any suitable equipment.
 3. Tillage should be done on the contour where feasible.
 4. On slopes too steep for the safe operation of tillage equipment, the soil surface shall

be pitted or trenched across the slope with appropriate hand tools to provide two places 6 to 8 inches apart in which seed may lodge and germinate. Hydraulic seeding may also be used.

Individual Plants

1. Where individual plants are to be set, the soil shall be prepared by excavating holes, opening furrows, or dibble planting.

opening furrows, or dibble planting.

2. For nursery stock plants, holes shall be large enough to accommo08-21-2015 roots without crowding.

3. Where pine seedlings are to be planted, subsoil under the row 36 inches deep on the contour four to six months prior to planting.

Subsoiling should be done when the soil is dry, preferably in August or September.

Innoculants

All legume seed shall be inoculated with appropriate nitrogen-fixing bacteria. The innoculant shall be a pure culture prepared specifically for the seed species and used within the 08-21-2015s on the container. A mixing medium recommended by the manufacturer shall be used to bond the innoculant to the seed. For conventional seeding, use twice the amount of innoculant recommended by the manufacturer. For hydraulic seeding, four times the amount of innoculant recommended by the manufacturer shall be used.

All inoculated seed shall be protected from the sun and high temperatures and shall be planted the same day inoculated. No inoculated seed shall remain in the hydroseeder longer than one hour.

Planting

Hydraulic Seeding

Mix the seed (innoculated if needed), fertilizer, and wood cellulose or wood pulp fiber mulch with water and apply in a slurry uniformly over the area to be treated. Apply within one hour after the mixture is made. Conventional Seeding Seeding will be done on a freshly prepared and firmed seedbed. For broadcast planting, use a culti-packerseeder, drill, rotary seeder, other mechanical seeder, or hand seeding to distribute the seed uniformly over the area to be treated. Cover the seed lightly with 1/8 to 1

hand seeding to distribute the seed uniformly over the area to be treated. Cover the seed lightly with 1/8 to 1/4 inch of soil for small seed and 1/2 to 1 inch for large seed when using a cultipacker or other suitable equipment.

No-Till Seeding

No-till seeding is permissible into annual cover crops when planting is done following maturity of the cover crop or if the temporary cover stand is sparse enough to allow adequate growth of the permanent (perennial) species. No-till seeding shall be done with appropriate no-till seeding equipment. The seed must be uniformly distributed and planted at the proper depth.

Individual Plants

Shrubs, vines and sprigs may be planted with appropriate planters or hand tools. Pine trees shall be planted manually in the subsoil furrow. Each plant shall be set in a manner that will avoid crowding the roots. Nursery stock plants shall be planted at the same depth or slightly deeper than they grew at the nursery. The tips of vines and sprigs must be at or slightly above

the ground surface. Where individual holes are dug, fertilizer shall be placed in the bottom of the hole, two inches of soil shall be added and the plant shall be set in the hole.

Mulching

Mulch is required for all permanent vegetation applications. Mulch applied to seeded areas shall achieve 75%

soil cover. Select the mulching material from the following and apply as indicated:

1. Dry straw or dry hay of good quality and free of weed seeds can be used. Dry straw shall be applied at the rate of 2 tons per acre. Dry hay shall be applied at a rate of 2 1/2 tons per acre.

2. Wood cellulose mulch or wood pulp fiber shall be used with hydraulic seeding. It shall be applied at the rate of 500 pounds per acre. Dry straw or dry hay shall be applied (at the rate indicated above) after hydraulic seeding.

3. One thousand pounds of wood cellulose or wood pulp fiber, which includes a tackifier, shall be used with hydraulic seeding on slopes 3/4:1 or steeper.

4. Sericea lespedeza hay containing mature seed shall be applied at a rate of three tons per acre.5. Pine straw or pine bark shall be applied at a thickness of 3 inches for bedding purposes. Other suitable materials in sufficient quantitymay be used where ornamentals or other ground covers are planted. This is not appropriate for seeded areas.

6. When using temporary erosion control blankets or block sod, mulch is not required.
7. Bituminous treated roving may be applied on planted areas on slopes, in ditches or dry waterways to prevent erosion. Bituminous treated roving shall be applied within 24 hours after an area has been planted. Application rates and materials must meet Georgia Department of Transportation specifications.

Wood cellulose and wood pulp fibers shall not contain germination or growth inhibiting factors. They shall be evenly dispersed when agitated in water. The fibers shall contain a dye to allow visual metering and aid in uniform application during seeding.

Applying Mulch

Straw or hay mulch will be spread uniformly within 24 hours after seeding and/or planting. The mulch may be spread by blower-type spreading equipment, other spreading equipment or by hand. Mulch shall be applied to cover 75% of the soil surface. Wood cellulose or wood fiber mulch shall be applied uniformly with hydraulic seeding equipment.

Anchoring Mulch

Anchor straw or hay mulch immediately after application by one of the following methods:

1. Emulsified asphalt can be (a) sprayed uniformly onto the mulch as it is ejected from the blower machine or

(b) sprayed on the mulch immediately following mulch application when straw or hay is spread by methods other than special blower equipment. The combination of asphalt emulsion and

water shall consist of a homogeneous mixture satisfactory for spraying. The mixture shall consist of 100 gallons of grade SS-1h or CSS-1h emulsified asphalt and 100 gallons of water per ton of mulch. Care shall be taken at all times to protect state waters, the public, adjacent property, pavements, curbs,

sidewalks, and all other structures from asphalt discoloration.

2. Hay and straw mulch shall be pressed into the soil immediately after the mulch is spread. A special "packer disk" or disk harrow with the disks set straight may be used. The disks may be smooth or serrated and should be 20 inches or more in diameter and 8 to 12 inches apart. The edges of the disks shall be dull enough to press the mulch into the ground without cutting

it, leaving much of it in an erect position. Mulch shall not be plowed into the soil.3. Synthetic tackifiers or binders approved by GDOT shall be applied in conjunction with or immediately after the mulch is spread. Synthetic tackifiers shall be mixed and applied according to manufacturer's specifications.

Refer to Tb - Tackifiers and Binders.
4. Rye or wheat can be included with Fall and Winter plantings to stabilize the mulch. They shall be applied at a rate of one-quarter to onehalf bushel per acre.

5. Plastic mesh or netting with mesh no larger than one inch by one inch may be needed to anchor straw or hay mulch on unstable soils and concentrated flow areas. These materials shall be installed and anchored according to manufacturer's specifications.

Bedding Material

Mulch is used as a bedding material to conserve moisture and control weeds in nurseries, ornamental beds, around shrubs, and on bare areas on lawns.

Material Depth

Grain straw 4" to 6" Grass Hay 4" to 6" Pine needles 3" to 5" Wood waste 4" to 6"

Irrigation

Irrigation will be applied at a rate that will not cause runoff.

Topdressing

Topdressing will be applied on all temporary and permanent (perennial) species planted alone or in mixtures with other species. Recommended rates of application are listed in Table 6-5.1.

Second Year and Maintenance Fertilization

determine more accurate requirements if desired.

Second year fertilizer rates and maintenance fertilizer rates are listed in Table 6-5.1.

Lime Maintenance Application Apply one ton of agricultural lime every 4 to 6 years or as indicated by soil tests. Soil tests can be conducted to

Use and Management

Mow Sericea lespedeza only after frost to ensure that the seeds are mature. Mow between November and
March. Bermudagrass, Bahiagrass and Tall Fescue may be mowed as desired. Maintain at least 6 inches of top
growth under any use and management. Moderate use of top growth is beneficial after establishment. Exclude

traffic until the plants are well established. Because of the quail nesting season, mowing should not take place between May and September.

TYPE OF SPECIES	YEAR	ANALYSIS OR EQUIVALENT N-P-K	RATE	N TOP DRESSING RATE
1. Cool season grasses	First Second Maintenance	6-12-12 6-12-12 10-10-10	1500 lbs./ac. 1000 lbs./ac. 400 lbs./ac.	50-100 lbs./ac. 1/2
2. Cool season grasses and legumes	First Second Maintenance	6-12-12 0-10-10 0-10-10	1500 lbs./ac. 1000 lbs./ac. 400 lbs./ac.	0-50 lbs./ac. 1/ — —
3. Ground covers	First Second Maintenance	10-10-10 10-10-10 10-10-10	1300 lbs./ac. 3/ 1300 lbs./ac. 3/ 1100 lbs./ac.	
4. Pine seedlings	First	20-10-5	one 21-gram pellet per seedling placed in the closing hole	_
5. Shrub Lespedeza	First Maintenance	0-10-10 0-10-10	700 lbs./ac. 700 lbs./ac. 4/	
Temporary cover crops seeded alone	First	10-10-10	500 lbs./ac.	30 lbs./ac. 5/
7. Warm season grasses	First Second Maintenance	6-12-12 6-12-12 10-10-10	1500 lbs./ac. 800 lbs./ac. 400 lbs./ac.	50-100 lbs./ac. 2/6, 50-100 lbs./ac. 2/ 30 lbs./ac.
Warm season grasses and legumes	First Second Maintenance	6-12-12 0-10-10 0-10-10	1500 lbs./ac. 1000 lbs./ac. 400 lbs./ac.	50 lbs./ac./6/

Table 6-5.3. Durable Shrubs and Ground Covers for Permanent Cover

Common Name	Scientific Name	Mature Height	Plant Spacing	Comments
Cherokee Rose	Rosa laevigata	2 ft.	5 ft.	Rampant grower. No for restricted spaces. State flower.
Memoria Rose	Rosa weuchuriana	2 ft.	5 ft.	Rampant grower.
St. Johnswort	Hypericum calycenum	8-12 in.	3 ft.	Semi-shade.
Anthony Waterer Spirea	Spirea bumalda	3-4 ft.	5 ft.	Sun.
Thunberg Spirea	Spirea thinbergii	3-4 ft.	5 ft.	Sun.

Table 6-5.4. Trees for Erosion Control

SITE	SOIL MATERIAL	COMMON SOILS	PLANTING TREE SPECIES 1/	SPACING	PLANTING DATES 3/
Borrow areas, graded areas, and spoil material	Sandy	Lakeland, Troup	Loblolly pine (Pinus taeda)	2/	M-L,P 12/1-3/15 C 12/1-3/1
			Longleaf pine (Pinus palustris)		
	Loamy	Orangeburg, Tifton	Loblolly pine	2/	M-L,P 12/1-3/15 C 12/1-3/1
			Slash pine		
	Clay	Cecil, Faceville	Loblolly pine	2/	M-L,P 12/1-3/15 C 12/1-3/1
		7 3.33 7 1113	Slash pine		, , , , , , ,
			Virginia pine (Pinus virginiana)		
Streambanks			Willows 4/ (Salix species)	2 ft x 2 ft	ALL 11/15-3/1:

1/Other trees and shrubs listed on Table 6-5.3 may be interplanted with the pines for improved wildlife benefits.

2/Type of Planting	Tree Spacing	No. of Trees Per Acre
Trees alone	4 ft. x 4 ft.	2722
Trees in combination with grasses and/	6 ft. x 6 ft.	1210

1/ Apply in spring following seeding.

3/ Apply in 3 split applications.

5/ Apply to grass species only.

4/ Apply when plants are pruned.

2/ Apply in split applications when high rates are used.

6/ Apply when plants grow to a height of 2 to 4 inches.

or other plants
3/M-L represents the Mountains; Blue Ridge; and Ridges and Vallevs MLRAs

- M-L represents the Mountains; Blue Ridge; and I
- P represents the Southern Piedmont MLRA

 C represents the Southern Coastal Plain; Sand Hills; Black Lands; and Atlantic Coast Flatwoods MLRAs

 (See Figure 6.44)

(See Figure 6-4.1).

4/Fertilization of companion crop is ample for this species.



STEVEN A. ROWLAND, P.E. (GA PE# 25853) GEORGIA LEVEL II CERTIFIED DESIGN PROFESSIONAL CERTIFICATION NO. 155 EXPIRES: 06/04/2017 FILMORE THOMAS PARK LOG CABIN DRIVE, MACON GA AND LOTS 115, 151 AND 152, DISTRICT

1501 Bass Road, Suite B

Macon, GA 31210

(478) 262-3750 mobile

even@rowland-engineering.co

www.rowland-engineering.com

MACON-BIBB

DATE: 08-21-2015
PROJ NO: 1507

DRAWN BY:

NO. 25853

DROPESSIONAL

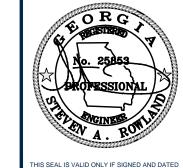
A. ROTHER

A. ROTHER

AS SEAL IS VALID ONLY IF SIGNED AND DATED

ESPCP-BMP DETAILS

steven@rowland-engineering.com www.rowland-engineering.com



ESPCP-BMP DETAILS

C-8.2

Disturbed Area Stabilization (With Permanent Vegetation)
Continued from previous page...

	T	т	**											ER		
<u>Species</u>		adcast <u>s 1/ - PLS 2/</u> Per 1000 <u>sq. ft.</u>	Resource <u>Area 3/</u>	(S	Solic	ing [d line d line narg	s ind	dica dica	Plan te op te p	iting otimi	<u>Dat</u> um d	<u>es</u> date				<u>Remarks</u>
				J	F	М	Α	М	J	J	Α	S	0	N	D	
BAHIA, PENSACOLA Paspalum notatum)			P C											·•···		166,000 seed per pund. Low growing. Sod forming. Slow to
alone or with temporary cover	60 lbs.	1.4 lb.														establish. Plant with a companion crop. Will spread into bermuda pastures and lawns. Mix with Sericea
with other perennials	30 lbs.	0.7 lb.		J	F	М	Α	М	J	J	Α	S	0	N	D	lespedeza or weeping lovegrass
BAHIA, WILMINGTON Paspalum notatum)			M-L P													
alone or with temporary cover	60 lbs.	1.4 lb.														Same as above.
with other perennials	30 lbs.	0.7 lb.		a	F	М	A	М	J	J	A	s	0	N	D	
ERMUDA, COMMON Cynodon dactylon) Iulled seed			P C		700											1,787,000 seed per pound.
alone	10 lbs.	0.2 lb.														Quick cover. Low growing and sod forming. Full sun.
with other perennials	6 lbs.	0.1 lb.				VARIABANA AMARANA AMARANA AMARANA					1					Good for athletic fields.
<u>Species</u>		dcast 1/ - PLS 2/ Per 1000 sq. ft.	Resource <u>Area 3/</u>	(S	olid otted ut m	ng D line d line nargi	s inc s inc nal c	E dicated dicated	Plante op te pe s.)	ting timu ermi:	Date m d ssib	<u>es</u> late le	ıs,			<u>Remarks</u>
ERMUDA, COMMON			Р	J	F	М	Α	М	J	J	Α	S	O	N	D	
Cynodon dactylon) Unhulled seed			С										-			
with temporary cover	10 lbs.	0.2 lb.														Plant with winter annuals.
with other perennials	6 lbs.	0.1 lb.		Ŧ	F	М	Λ	М	F	J	٨	0		N	D	Plant with tall fescue.
ERMUDA SPRIGS Synodon dactylon)	40 cu. ft. or sod plugs	Y services your	M-L	J				IVI	J	3	A	3	U	IN	ט	A cubic foot contains approximately 650 sprigs. A bushel contains 1.25
Coastal, Common, Midland, or Tift 44																cubic feet or approximately 800 sprigs.
Coastal, Common, or Tift 44			P C						*******						••••	Same as above.
Tift 78			С	 J	 F	 M	Α	M	J	 J		s	0	N	 D	Southern Coastal Plain only.
ENTIPEDE Eremochloa ophiuroides)	Block so	d only	P C													Drought tolerant. Full sun or partial shade. Effective adjacent to concrete and in concentrated flow areas. Irrigation is needed until fully established. Do not plant near pastures. Winterhardy as far north as Athens and Atlanta.
<u>Species</u>		ndcast 1/ - PLS 2/ Per 1000 sq. ft.	Resource <u>Area 3/</u>	(S	olid	ng D line: d line nargi M	s inc	E dicate dicat	Plant e op te pe	ting l timu	<u>Date</u> m d	<u>es</u> late le	es,	N	D	<u>Remarks</u>
CROWNVETECH Coronilla varia)																100,000 seed per pound. Dense growth. Drought tolerant and
with winter annuals or cool season grasses	15 lbs.	0.3 lb.	M-L P													fire resistant. Attractive rose, pink, and white blossoms spring to late fall. Mix with 30 pounds of Tall fescue or 15 pounds of rye. Inoculate seed with M
					E	М	А	M		J	Δ	2	٥	Ν	D	inoculant. Use from North Atlanta and Northward.
ESCUE, TALL estuca arundinacea)				3		181		r#1		¥	e ¥		J		٠,	227,000 seed per pound. Use alone only on better sites.
alone	50 lbs.	1.1 lbs.	M-L P													Not for droughty soils. Mix with perennial lespedezas or crownvetch. Apply topdressing
with other perennials	30 lbs.	0.7 lb.		1	TI.	M	Α	М	_	J	Α	Q.		N	D	in spring following fall plantings. Not for heavy use areas or athletic fields.
UDZU Pueraria thumbergiana)				J	Ľ,	IVI	A	IVI	J	J	А	0	J	IN	ט	Rapid and vigorous growth.
plants or crowns	3' - 7' a	anart	ALL													Excellent in gully erosion control. Will climb. Good

Species Species LESPEDEZA, SERICEA (Lespedeza cuneata)		oadcast es 1/ - PLS 2/ Per 1000 sq. ft.	Resource <u>Area 3/</u>	(S	Solid otted	line line	s ind	<u>l</u> dicat	Plar te o .te p	sour nting ptim erm	<u>Da</u> um issi	<u>tes</u> dat ble		N	N	D	<u>Remarks</u>
scarified	60 lbs.	1.4 lbs.	M-L P C														350,000 seed per pound. Widely adapted. Low maintenance. Mix with weeping lovegrass, common bermuda, bahia, or tall fescue. Takes 2 to 3 years to become fully established. Excellent on roadbanks. Inoculate seed with EL inoculant.
unscarified	75 lbs.	1.7 lb.	M-L P C									- -			-		Mix with Tall fescue or winter annuals.
seed-bearing hay	3 tons	138lb.	M-L P C														Cut when seed is mature, but before it shatters. Add Tall fescue or winter annuals.
<u>Species</u>		oadcast es 1/ - PLS 2/ Per 1000 sq. ft.	Resource <u>Area 3/</u>	(S	Solid otted ut m	line I line	s inc es in nal	<u>l</u> dicat	Plar te o te p	sour nting ptim perm	<u>Da</u> um issi	tes dat ble					<u>Remarks</u>
LESPEDEZA Ambro virgata (Lespedeza virgata DC) or Appalow (Lespedeza cuneata [Dumont] G. Don)				J	,	IVI	A	IVI	J	J		0					300,000 seed per pound. Height of growth is 18 to 24 inches. Advantageous in urban areas. Spreading-type growth has bronze coloration. Mix with Weeping lovegrass, Common
scarified	60 lbs.	1.4 lb.	M-L P C														bermuda, bahia, tall fescue or winter annuals. Do not mix with Sericea lespedaza. Slow to develop solid stands. Inoculate seed with EL inoculate.
unscarified	75 lbs.	1.7 lb.	M-L P C	J	F	 	A	М	 J	J	Α	S	0	N		D	seed with EL Inoculate.
LESPEDEZA, SHRUB (Lespedeza bicolor) (Lespedeza thumbergii) plants	3	'' x 3'	M-L P C	J	F			м					0		1	D	Provide wildlife food and cover.
LOVEGRASS, WEEPING (Eragrostis curvula) alone with other perennials	4 lbs. 2 lbs.	0.1 lb. 0.05 lb.	M-L P C										1986				1,500,000 seed per pound. Quick cover. Drought tolerant. Grows well with Sericea lespedeza on roadbanks.
<u>Species</u>		oadcast <u>es 1/ - PLS 2/</u> Per 1000 <u>sq. ft.</u>	Resource <u>Area 3/</u>	Planting Dates by Resource Areas Planting Dates (Solid lines indicate optimum dates, dotted lines indicate permissible but marginal dates.)				<u>Remarks</u>									
MAIDENCANE				J	-	M	A	М	J	J	P	3	0	1	ч	ט	For very wet sites. May clog
(Panicum hemitomon) sprigs	2' x 3	'spacing	ALL	J	F	М	 A	M	J	J	А	S	0		1	D	channels. Dig sprigs from local sources. Use along river banks and shorelines.
PANICGRASS, ATLANTIC COASTAL (Panicum amarum var. amarulum)	20 lbs.	0.5 lb.	P C	J	F	M		M					0			D	Grows well on coastal sand dunes, borrow areas, and gravel pits. Provides winter cover for wildlife. Mix with Sericea lespedeza except on sand dunes.
REED CANARY GRASS (Phalaris arundinacea) alone with other perennials	50 lbs. 30 lbs.	1.1 lb. 0.7 lb.	M-L P														Grows similar to tall fescue.
SUNFLOWER, 'AZTEC' MAXIMILLIAM (Helianthus maximiliani)	10 lbs.	0.2 lb.	M-L P C	J	F	M	A 	M	J	J	А	S	0	N	1	D	227,000 seed per pound. Mix with weeping lovegrass or other low-growing grasses or legumes.

Table 6-5.3. Durable Shrubs and Ground Covers for Permanent Cover

Ground covers include a wide range of low-growing plants planted together in considerable numbers to cover large areas of the landscape. Ground covers grow slower than grasses. Weeds are likely to compete, especially the first year. Maintenance is needed to insure survival. These ground covers will not be used unless proper maintenance is planned. Maintain mulch at three-inch thickness until plants provide adequate cover.

Fall planting is encouraged because the need for constant watering is reduced and plants have time to establish new

Name	Scientific Name	Mature Height	Plant Spacing	Comments
Albelia	Abelia grandiflora	3-4 ft.	5 ft.	Also a prostrate form 2 feet high. Sun, semi-shade. Semi- evergreen.
Carolina Yellow Jessamine	Gelsemium sempervirens	low	3 ft.	Vine. Yellow, trumpet- like flowers. Hardy, one of best vines. Ever- green.
				Native to Georgia.
Carpet Blue	Ajuga reptans	2-4 in.	3 ft.	Needs good drainage, partial shade. Blue or white flowers. Evergreen.
Bearberry Cotoneaster	Cotoneaster dammeri	2-4 ft.	5 ft.	White flowers, red fruit. Sun. Evergreen.
Ground Cover Cotoneaster	Cotoneaster salicifoluis 'Repens'	1-2 ft.	5 ft.	White flowers, red fruit. Sun. Evergreen.
Rock Cotoneaster	Cotoneaster horizontalis	1-2 ft.	5 ft.	Semi-evergreen. Sun.
Virginia Creeper	Parthenocissue quinquefolia	low	3 ft.	Red in fall. Vine. Deciduous. Native to Georgia.
Daylily	Hemerocallis spp.	2-3 ft.	2 ft.	Many flower colors. Full sun. Very hardy.
English Ivy	Hedera helix	low	3 ft.	Shade only. Climbs.
Compacta Holl y	llex crenata 'Compacta'	3-4 ft.	5 ft.	Sun, semi-shade.
Chinese Holly	llex cornuta 'Rotunda'	3-4 ft.	5 ft.	Very durable. Sun, semi-shade.
Dwarf Burford Holly	Ilex burfordii 'Nana'	5-8 ft.	8 ft.	
Dwarf Yaupon Holly	llex vomitoria 'Nana'	3-4 ft.	5 ft.	Very durable, sun, semi-shade.
	00)			6-5

Table 6-5.3. Durable Shrubs and Ground Covers for Permanent Cove	e

Common Name	Scientific Name	Mature Height	Plant Spacing	Comments
Repandens Holly	llex crenata 'Repandens'	2-3 ft.	5 ft.	Sun, semi-shade.
Andorra Juniper	Juniperus horizontalis 'Plumosa'	2-3 ft.	5 ft.	Excellent for slopes. Sun.
Andorra Compacta Juniper	Juniperus horizontalis 'Plumosa com- pacta'	1-2 ft.	5 ft.	More compact than andora.
Blue Chip Juniper	Juniperus horizontalis 'Blue Chip'	8-10 in.	4 ft.	
Blue Rug Juniper	Juniperus horizontalis 'Wiltonii'	4-6 in.	3 ft.	Very low. Sun.
Parsons Juniper	Juniperus davurica 'Expansa' (Squamata Parsoni)	18-24 in.	5 ft.	One of the best, good winter cover.
Pfitzer Juniper	Juniperus chinensis 'Pfitzerana'	6-8 ft.	6 ft.	Needs room.
Prince of Wales Juniper	Juniperus horizontalis 'Prince of Wales'	8-10 in.	4 ft.	Feathery appearance
Sargent Juniper	Juniperus chinensis 'Sargentii'	1-2 ft.	5 ft.	Full sun. Needs good drainage. Good winte color.
Shore Juniper	Juniperus conferta	2-3 ft.	5 ft.	Emerald Sea or Blue Pacific cultivars are good.
Liriope	Liriope muscari	8-10 in.	3 ft.	
Creeping Liriope	Liriope spicata	10-12 in.	1 ft.	Spreads by runners.
Big Leaf Periwinkle	Vinca major	12-15 in.	4 ft.	Lilac flowers in spring Semi-shade.
Common Periwinkle	Vinca minor	5-6 in.	4 ft.	Lavender-blue flowers in spring. Semi-shade
54				GaSWCC (Amended - 200

1501 Bass Road, Suite B

Macon, GA 31210

(478) 262-3750 mobile

Disturbed Area Stabilization (With Sodding)

CONSTRUCTION SPECIFICATIONS INSTALLATION

Bring soil surface to final grade. Clear surface of trash, woody debris, stones and clods larger than 1". Apply sod to soil surfaces only and not frozen surfaces, or gravel type soils. Topsoil properly applied will help guarantee a stand. Don't use topsoil recently treated with herbicides or soil sterilants. Mix fertilizer into soil surface. Fertilize based on soil tests or Table 6-6.1.

Table 6-6.1. Fertilizer Requirements for Soil Surface Application Fertilizer

Fertilizer Type	Fertilizer Rate (lbs/acre)	Fertilizer Rate (lbs /sq ft)	Season
10-10-10	1000	.025	Fall

Agricultural lime should be applied based on soil tests or at a rate of 1 to 2 tons per acre.

Installation

Lay sod with tight joints and in straight lines. Don't overlap joints. Stagger joints and do not stretch sod (See Figure 6-6.2)

On slopes steeper than 3:1, sod should be anchored with pins or other approved methods. Installed sod should be rolled or tamped to provide good contact between sod and soil. Irrigate sod and soil to a depth of 4" immediately after installation. Sod should not be cut or spread in extremely wet or dry weather. Irrigation should be used to supplement rainfall for a minimum of 2-3 weeks.

MATERIALS

Sod selected should be certified. Sod grown in the general area of the project is

1. Sod should be machine cut and contain 3/4" (+ or -1/4") of soil, not including shoots or thatch.

2. Sod should be cut to the desired size within + or -5%. Torn or uneven pads should

3. Sod should be cut and installed within 36 hours of digging.

4. Avoid planting when subject to frost heave or hot weather if irrigation is not

5. The sod type should be shown on the plans or installed according to Table 6-6.2. See Figure 6-4.1 for your Resource Area.

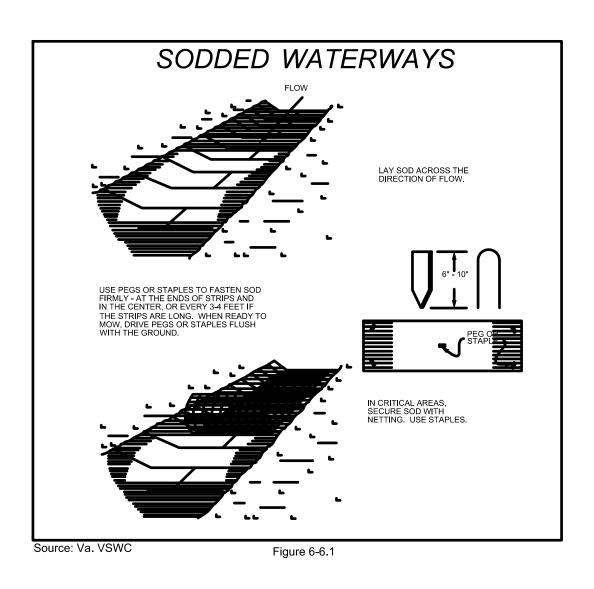
Table 6-6.	2. Sod Planti	ng Requiren	nents
Grass	Varieties	Resource Area	Growing Season
Bermudagrass	Common Tifway Tifgreen Tiflawn	M-L,P,C P,C P,C P,C	Warm Weather
Bahiagrass	Pensacola	P,C	Warm Weather
Centipede	. 	P,C	Warm Weather
St. Augustine	Common Bitterblue Raleigh	С	Warm Weather
Zoysia	Emerald Myer	P,C	Warm Weather
Tall Fescue	Kentucky	M-L,P	Cool Weather

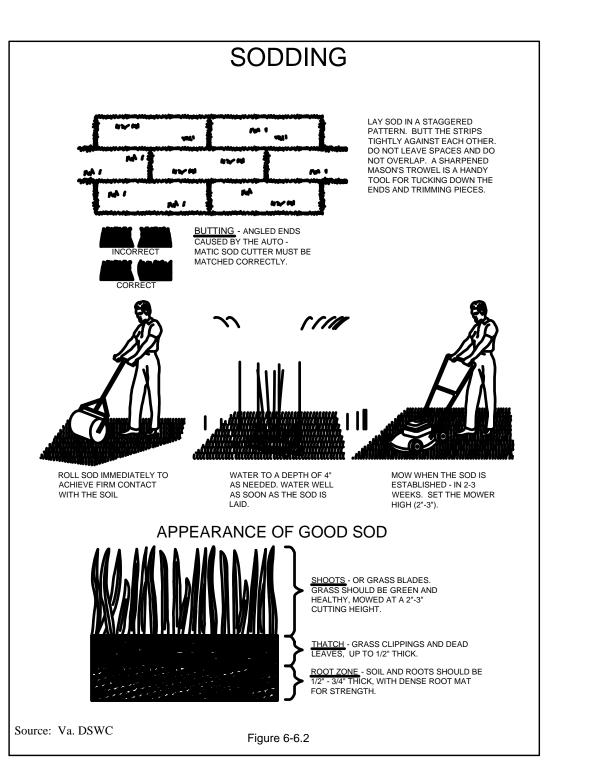
MAINTENANCE

Re-sod areas where an adequate stand of sod is not obtained. New sod should be mowed sparingly. Grass height should not be cut less than 2"-3" or as specified

(See Figure 6-6.2). Apply one ton of agricultural lime as indicated by soil test or every 4-6 years. Fertilize grasses in accordance with soil tests or Table 6-6.3.

Types of Species	Planting Year	Fertilizer (N-P-K)	Rate (lbs./acre)	Nitrogen Top Dressing Rate (lbs./acre)
Cool	First	6-12-12	1500	50-100
season	Second	6-12-12	1000	3=3
grasses	Maintenance	10-10-10	400	30
Warm	First	6-12-12	1500	50-100
season	Second	6-12-12	800	50-100
grasses	Maintenance	10-10-10	400	30





Mb | Matting and Blankets

PLANNING CONSIDERATIONS

Care must be taken to choose the type of blanket or matting which is most appropriate for the specific needs of a project. Two general types of blankets and mats are discussed within this specification. Due to the abundance of erosion control matting and blanket products available, all of the advantages, disadvantages, and specifications of all manufactured products will not be discussed in this manual. Manufacturer's instructions and recommendations, as well as a site visit by designer and plan reviewer is highly recommended to determine a product's appropriateness.

Temporary Erosion Control Blankets

This includes temporary "combination" blankets (rolled erosion control blankets - RECB) consisting of a plastic netting which covers and is intertwined with a natural organic or manmade mulch; or, a jute mesh which is typically homogeneous in design and can act alone as a soil stabilization blanket. Temporary blankets as a minimum shall be used to stabilize concentrated flow areas with a velocity less than 5 ft/sec and slopes 2.5:1 or steeper with a height of 10 feet or greater. Because temporary blankets will deteriorate in a short period of time, they provide no enduring reduction in erosion protection.

Benefits of using erosion control blankets include the following:

Materials

All blanket and matting materials shall be on the Georgia Department of Transportation Qualified Products List (QPL # 62 for blankets, QPL # 49 for matting). All blankets shall be nontoxic to vegetation and to the germination of seed and shall not be injurious to the unprotected skin of humans. At a minimum, the plastic netting shall be intertwined with the mulching material/fiber to maximize strength and provide for ease of handling.

Machine produced temporary combination blankets shall have a consistent thickness with the organic material evenly distributed over the entire blanket area. All combination blankets shall have a minimum width of 48 inches. Machine produced combination blankets include the following:

a. Straw blankets are combination blankets that consist of weed-free straw from agricultural crops formed into a blanket. Blankets with a top side of photodegradable plastic mesh with a maximum mesh size of 5/16 x 5/16 inch and sewn to the straw with biodegradable thread is appropriate for slopes. The blanket shall have a minimum thickness of 3/8 inch and minimum dry weight of 0.5 pounds per square yard.

b. Excelsior blankets are combination blankets that consist of curled wood excelsior (80% of fibers are six inches or longer) formed into a blanket. The blanket shall have clear markings indicating the top side of the blanket and be smolder resistant. Blankets shall have photodegradable plastic mesh having a $\,$ maximum mesh size of 1 1/2 x 3 inches. The blanket shall have a minimum thickness of 1/4 of an inch and

a minimum dry weight of 0.8 pounds per square yard. Slopes require excelsior matting with the top side of the blanket covered in the plastic mesh, and for waterways, both sides of the blanket require plastic mesh.

c. Coconut fiber blankets are combination blankets that consist of 100% coconut fiber formed into a blanket. The minimum thickness of the blanket shall be 1/4 of an inch with a minimum dry weight of 0.5 pounds per square yard. Blankets shall have photodegradable plastic mesh, with a maximum mesh size of 5/8 x 5/8 inch and sewn to the fiber with a breakdown resistant synthetic yarn. Plastic mesh is required on both sides of the blanket if used in waterways. A maximum of two inches is allowable for the stitch pattern and row spacing.

d. Wood fiber blankets are combination blankets that consist of reprocessed wood fibers that do not possess or contain any growth or germination inhibiting factors. The blanket shall have a photodegradable plastic mesh, with a maximum mesh size of 5/8 x 3/4 inch, securely bonded to the top of the mat. The blanket shall have a minimum dry weight of 0.35 pounds per square yard. A maximum of two inches is allowable for the stitch pattern and row spacing. This practice shall be applied only to slopes.

e. Jute Mesh can be applied to slopes. Jute mesh with a 48 inch width shall show between 76 and 80 warpings and a one yard length shall show between 39 to 43 weftings. The woven mesh shall be at least 45 inches wide. Yarn shall have a unit weight of at least 0.9 pounds per square yard, but not more than 1.5 pounds per

Permanent Matting

ASTM D 822)

Permanent matting shall consist of a lofty web of mechanically or melt bonded polymer nettings, monofilaments or fibers which are entangled to form a strong and dimensionally stable matrix. Polymer welding, thermal or polymer fusion, or the placement of fibers between two high strength, biaxially oriented nets bound securely together by parallel lock stitching with polyolefin, nylon or polyester threads are all appropriate bonding methods. Mats shall maintain their shape before, during, and after installation, under dry or water saturated conditions. Mats must be stabilized against ultraviolet degradation and shall be inert to chemicals normally encountered in a natural soil environment. The mat shall conform to the following physical properties:

Property Minimum Value Thickness 0.5 inch 0.6 PSY Weight Roll Width 38 inches Tensile Strength Length (50% elongation) 15 lbs./in. Length (ultimate) 20 lbs./in. 5 lbs./in. Width (50% elongation) Width (ultimate) 10 lbs./in. (ASTM D 1682 - 6" strip) Ultraviolet Stability

(1000 hrs. in an Atlas ARC Weatherometer, ASTM G 23, Type D in accordance with

After the site has been shaped and graded to the approved design, prepare a friable seedbed relatively free from clods and rocks more than one inch in diameter, and any foreign material that will prevent contact of the soil stabilization mat with the soil surface. Surface must be smooth to ensure proper contact of blankets or matting to the soil surafce. If necessary, redirect any runoff from the ditch or slope during

The following are considered appropriate stapling and staking materials.

Temporary Blankets

This includes straw, excelsior, coconut fiber, and wood fiber blankets. Staples shall be used to anchor temporary blankets. U-shaped wire (11 gauge or greater) staples with legs at least 6 inches in length and a crown of one inch or appropriate biodegradable

staples can be used. Staples shall be of sufficient thickness for soil penetration without undue distortion.

Permanent Matting

Sound wood stakes, 1 x 3 inches stock sawn in a triangular shape, shall be used. Depending on the compaction of the soil, select stakes with a length from 12 to 18 inches. U-shaped staples shall be 11 gauge steel or greater, with legs at a minimum of 8 inches length with a 2 inch crown.

Lime, fertilizer and seed shall be applied in accordance with seeding or other type of planting plan completed prior to installation of temporary combination blankets or jute mesh. For permanent mats, the area must be brought to final grade, plowed, limed, and fertilized. After the permanent mat has been installed and backfilled, the entire area shall be grassed. Refer to specification Ds3 - Disturbed Area Stabilization (With Permanent Vegetation).

Installation

See Figure 6-7.1 for typical installation guidelines. Follow manufacturer's recommendations for laying and stapling.

Maintenance

All erosion control blankets and matting should be inspected periodically following installation, particularly after rainstorms to check for erosion and undermining. Any dislocation or failure should be repaired immediately. If washouts or breakage occurs, reinstall the material after repairing damage to the slope or ditch. Continue to monitor these areas until they become permanently stabilized.

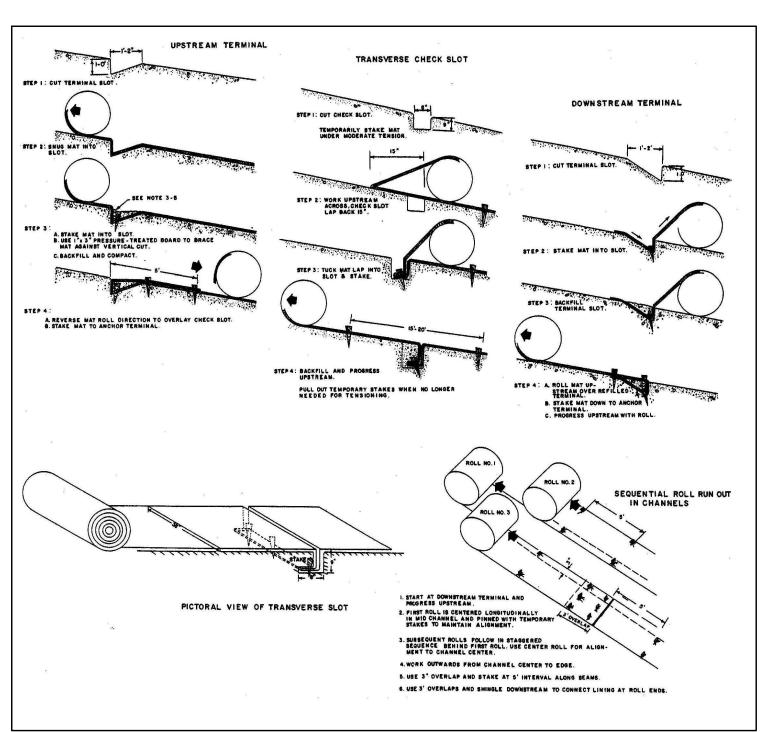


Figure 6-7.1 - Typical Installation Guidelines for Matting and Blankets

08-21-201 PROJ NO: DRAWN BY:

> ESPCP-BMP DETAILS

fill provided they have a non-erodible outlet.

Filter Fabric with Supporting Frame (\$d2-F)

This method of inlet protection is applicable where the inlet drains a relatively flat area (slope no greater than 5%) and shall not apply to inlets receiving concentrated flows, such as in street or highway medians. As shown in Figure 6-21.1, Type C silt fence supported by steel posts shall be used. The stakes shall be spaced evenly around the perimeter of the inlet a maximum of 3 feet apart, and securely driven into the ground, approximately 18 inches deep. The fabric shall be entrenched 12 inches and backfilled with crushed stone or compacted soil. Fabric and wire shall be securely

fastened to the posts, and fabric ends must be overlapped a minimum of 18 inches or wrapped together around a post to provide a continuous fabric barrier around the inlet.

Baffle Box Sd2-B

For inlets receiving runoff with a higher volume or velocity, a baffle box inlet sediment trap should be used. As shown in Figure 6-21.2, the baffle box shall be constructed of 2" x 4" boards spaced a maximum of 1

apart or of plywood with weep holes 2 inches in diameter. The weep holes shall be placed approximately 6 inches on center vertically and horizontally. Gravel shall be placed outside the box, all around the inlet, to a

of 2 to 4 inches. The entire box is wrapped in Type C filter fabric that shall be entrenched 12 inches and backfilled.

Block and Gravel Drop Inlet Protection Sd2-Bg

This method of inlet protection is applicable where heavy flows are expected and where an overflow capacity is necessary to prevent excessive ponding around the structure. As shown in Figure 6-21.3, one block is placed on each side of the structure on its side in the bottom row to allow pool drainage. The foundation should be excavated at least 2 inches below the crest of the storm drain. The bottom row of blocks are placed against the edge of the storm drain for lateral support and to avoid washouts when overflow occurs. If needed, lateral support may be given to subsequent rows by placing 2" x 4" wood studs through block openings. Hardware cloth or comparable wire mesh with 1/2 inch openings shall be fitted over all block openings to hold gravel in place. Clean gravel should be placed 2 inches below the top of the block on a 2:1 slope or flatter and smoothed to an even grade. DOT #57 washed stone is recommended

Gravel Drop Inlet Protection (\$d2-G)

This method of inlet protection is applicable where heavy concentrated flows are expected. As shown in Figure 6-21.4, stone and gravel are used to trap sediment. The slope toward the inlet shall be no steeper than 3:1. A minimum 1 foot wide level stone area shall be left between the structure and around the inlet to prevent gravel from entering the inlet. On the slope toward the inlet, stone 3 inches in diameter and larger should be used. On the slope away from the inlet, 1/2 to 3/4 inch gravel (#57 washed stone) should be used at a minimum thickness of 1 foot.

Sod Inlet Protection Sd2-S

This method of inlet protection is applicable only at the time of permanent seeding, to protect the inlet from sediment and mulch material until permanent vegetation has become established. As shown in Figure 6-21.6, the sod shall be placed to form a turf mat covering the soil for a distance of 4 feet from each side of the inlet structure. Sod strips shall be staggered so that adjacent strip ends are not aligned.

Excavated Inlet Sediment Trap

The sediment trap shall be placed immediately around the inlet. The excavation shall be constructed immediately outside of the sediment trap and provide a minimum depth of 1.5 feet for sediment storage.

Curb Inlet Protection Sd2-P

Once pavement has been installed, a curb inlet filter shall be installed on inlets receiving runoff from disturbed areas. This method of inlet protection shall be removed if a safety hazard is created. One method of curb inlet protection uses "pigs-in-ablanket" - 8-inch concrete blocks wrapped in filter fabric. See Figure 6-21.5. Another method uses gravel bags constructed by wrapping DOT #57 stone with filter fabric, wire, plastic mesh, or equivalent material. A gap of approximately 4 inches shall be left between the inlet filter and the inlet to allow for overflow and prevent hazardous ponding in the roadway. Proper installation and maintenance are crucial due to possible ponding in the roadway, resulting in a hazardous condition. Several other methods are available to prevent the entry of sediment into storm drain inlets. Figure 6-21.7 shows of one of these alternative methods.

MAINTENANCE

The trap shall be inspected daily and after each rain and repairs made as needed. Sediment shall be removed when the sediment has accumulated to one-half the height of the trap. Sediment shall be removed from curb inlet protection immediately. For excavated inlet sediment traps, sediment shall be removed when one-half of the sediment storage capacity has been lost to sediment accumulation. Sod inlet protection shall be maintained as specified in Ds4 - Disturbed Area Stabilization (With Sodding). Sediment shall not be washed into the inlet. It shall be removed from the sediment trap and disposed of and stabilized so that it will not enter the inlet, again. When the contributing drainage area has been permanently stabilized, all materials and any sediment shall be removed, and either salvaged or disposed of properly. The disturbed area shall be brought to proper grade, then smoothed and compacted. Appropriately stabilize all disturbed areas around the inlet.

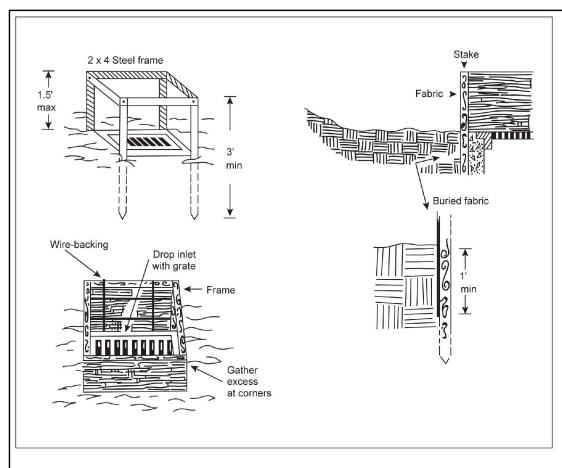
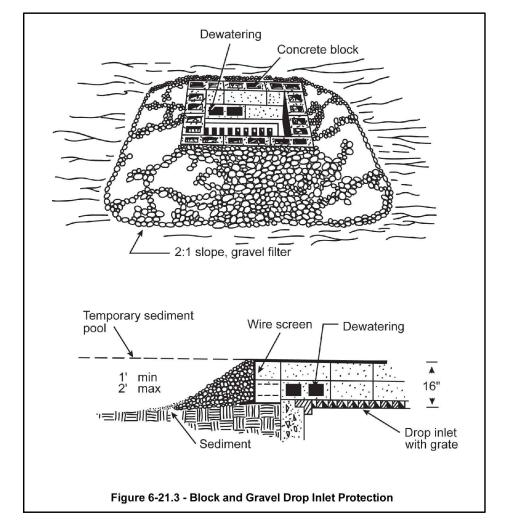
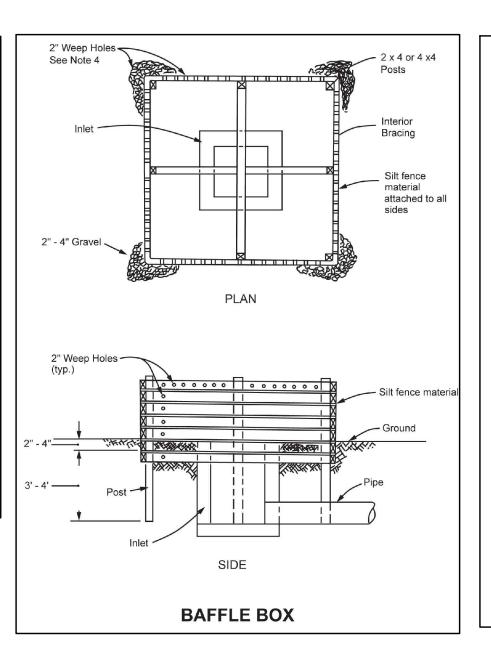
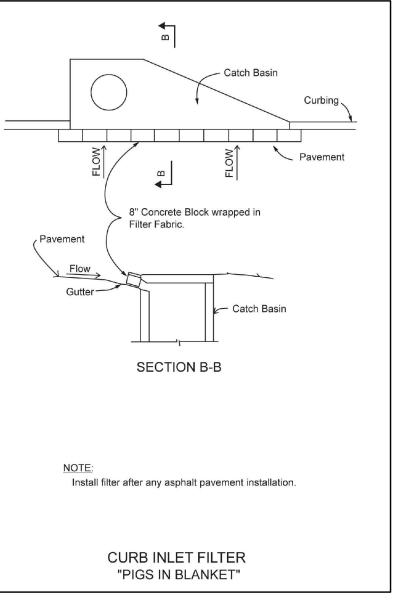
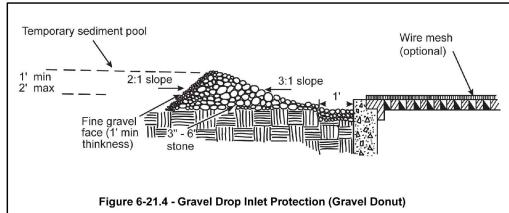


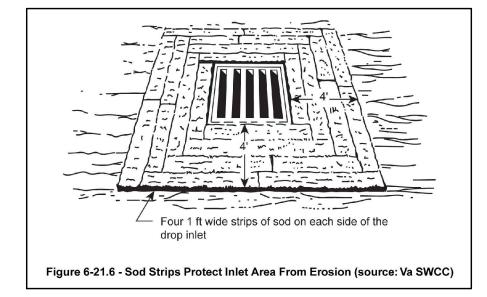
Figure 6-21.1 - Fabric and Supporting Frame For Inlet Projection













(St) Storm Drain Outlet Protection

CONSTRUCTION SPECIFICATIONS

1. Ensure that the subgrade for the filter and riprap follows the required lines and grades shown in the plan. Compact any fill required in the subgrade to the density of the surrounding undisturbed material. Low areas in the subgrade on undisturbed soil may also be filled by increasing the riprap thickness.

2. The riprap and gravel filter must conform to the specified grading limits shown on the plans. 3. Geotextile must meet design requirements and be properly protected from punching or tearing during installation. Repair any damage by removing the riprap and placing another piece of filter fabric over the damaged area. All connecting joints should overlap a minimum of 1 ft. If the damage is extensive, replace the entire filter fabric.

4. Riprap may be placed by equipment, but take care to avoid damaging the filter. 5. The minimum thickness of the riprap should be 1.5 times the maximum stone diameter.

6. Construct the apron on zero grade with no overfall at the end. Make the top of the riprap at the downstream end level with the receiving area or slightly below it. 7. Ensure that the apron is properly aligned with the receiving stream and preferably straight

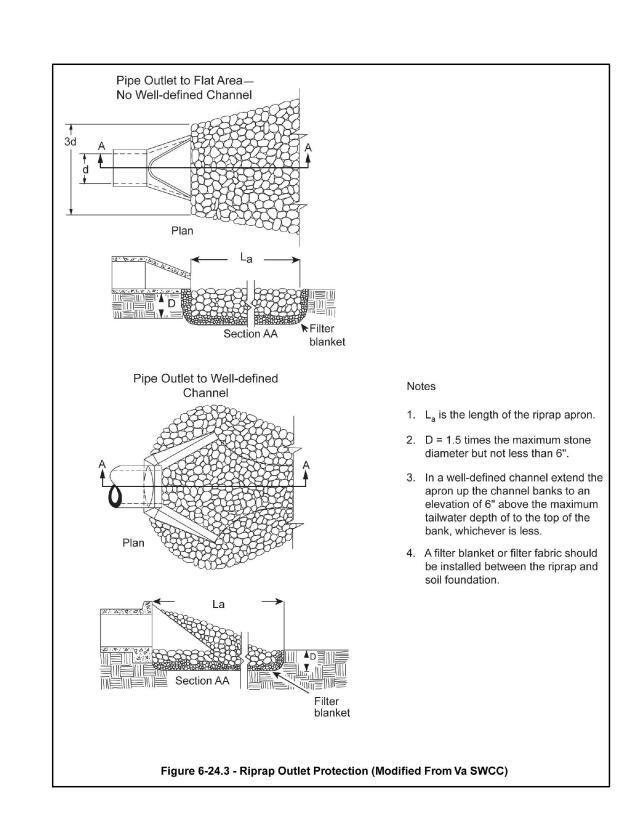
throughout its length. If a curve is needed to fit site conditions, place it in the upper section of the apron. 8. Immediately after construction, stabilize all disturbed areas with vegetation. 9. Stone quality - Select stone for riprap from field stone or quarry stone. The stone should be

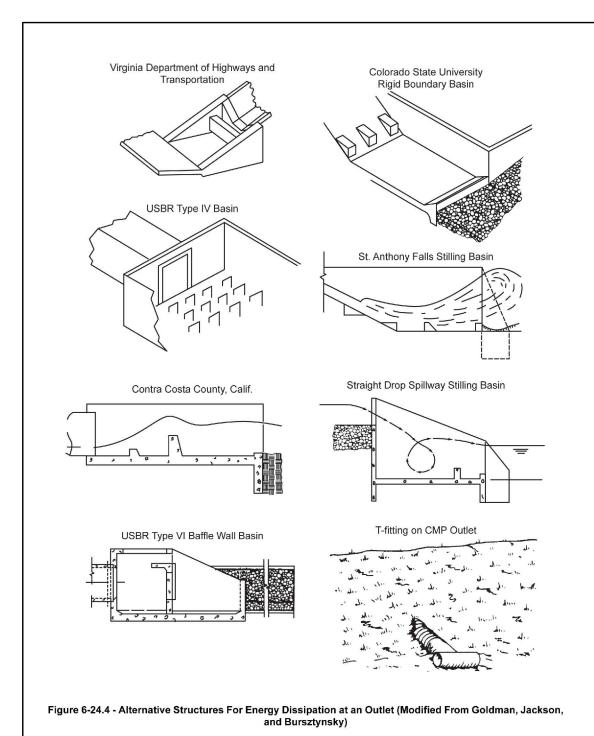
hard, angular, and highly weather-resistant. The specific gravity of the individual stones should be at least 2.5.

10. Filter - Install a filter to prevent soil movement through the openings in the riprap. The filter should consist of a graded gravel layer or a synthetic filter cloth. See Appendix C; p. C-1.

MAINTENANCE

Inspect riprap outlet structures after heavy rains to see if any erosion around or below the riprap has taken place or if stones have been dislodged. Immediately make all needed repairs to prevent further damage.





CONSTRUCTION SPECIFICATIONS

Materials - Topsoil should be friable and loamy, free of debris, objectionable weeds and stones and contain no toxic substance that may be harmful to plant growth. A pH range of 5.0-7.5 is acceptable. Soluble salts should not exceed 500 ppm.

Testing - Field exploration should be made to determine whether the quantity and quality of surface soil

Stripping - Stripping should be confined to the immediate construction area. A 4 to 6 inch stripping depth is common, but may vary depending on the particular soil.

Topsoil pH - If pH value is less than 6.0, lime shall be applied and incorporated with the topsoil to adjust the pH to 6.5 or higher. Topsoils containing soluble salts greater than 500 parts per million shall not be

Stockpiles - The location of topsoil stockpiles should not obstruct natural drainage or cause off-site environmental damage.

Stabilization - Stockpiles shall be contained by sediment barriers to prevent sedimentation on adjacent areas. Stockpiles shall be stabilized in accordance with specifications Ds1 and Ds2 - Disturbed Area Stabilization (With Mulching) and (With Temporary Grassing), respectively, or Pm -Polyacrylamide or Tb - Tackifiers and Binders.

Site Preparation (Where topsoil is to be added)

Topsoiling - When topsoiling, maintain needed erosion control practices such as diversions, grade stabilization structures, berms, dikes, level spreaders, waterways, sediment basins, etc. Grading - Grades on the areas to be topsoiled which have been previously established shall be maintained. Liming - Soil tests should be used to determine the pH of the soil. Where the pH of the subsoil is 5.0 or less or composed of heavy clays, agricultural limestone shall be spread at the rate of 100 pounds per 1,000 square feet. Lime shall be distributed uniformly over designated areas and worked into the soil in conjunction with tillage operations as described in the following procedure.

Bonding - Use one of the following methods to insure bonding of topsoil and subsoil:

1. Tilling - After the areas to be topsoiled have been brought to grade, and immediately prior to dumping and spreading the topsoil, the subgrade shall be loosened by discing or scarifying to a depth of at least 3 inches to permit bonding of the topsoil to the subsoil.

2. Tracking - Passing a bulldozer over the entire surface area of the slope to leave horizontal depressions. **Applying Topsoil**

1. Topsoil should be handled only when it is dry enough to work without damaging soil structure. 2. A uniform application of 5 inches (unsettled) is recommended, but may be adjusted at the discretion of the engineer or landscape architect.

Table 6-26.1. Cubic Yards Of Topsoil Required For **Application To Various Depths**

OI
-

	Application To Various De	pths
Depth (Inches)	Per 1,000 Square Feet	Per Acre
1	3.1	134
2	6.2	268
3	9.3	403
4	12.4	537
5	15.5	672
6	18.6	806

08-21-201 PROJ NO:

PARK ACON GA 52, DISTRICT

FILMORE G CABIN D DTS 115, 15

1501 Bass Road, Suite B

Macon, GA 31210

(478) 262-3750 mobile

even@rowland-engineering.co

www.rowland-engineering.com

MACON-BIBB



ESPCP-BMP **DETAILS**

