



***STORM WATER***

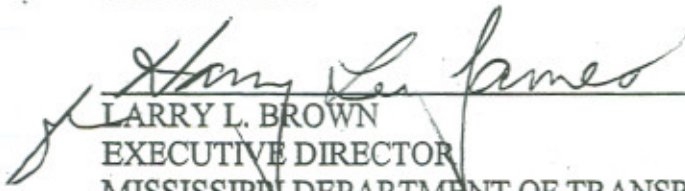
***POLLUTION PREVENTION PLAN***

***June 2004***

# STORM WATER POLLUTION PREVENTION PLAN



APPROVED:

  
LARRY L. BROWN  
EXECUTIVE DIRECTOR

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

9-20-04  
DATE



STATE OF MISSISSIPPI

HALEY BARBOUR

GOVERNOR

MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY

CHARLES H. CHISOLM, EXECUTIVE DIRECTOR

October 25, 2004

Leroy Crisco  
Mississippi Department of Transportation  
P O Box 1850  
Jackson, Mississippi 39215-0385

Dear Mr. Crisco:

Re: MDOT, Storm Water Management Plan  
Requirement to Revised Storm Water Pollution  
Prevention Plan (SWPPP), Coverage No.  
MSRMS4024

Thank you for meeting with us on August 31, 2004 and again on September 23, 2004 to discuss MDEQ's comments on modifications to the Mississippi Department of Transportation's Storm Water Pollution Prevention Plan (SWPPP). We have completed our review of the revised SWPPP and believe it to substantially address MDEQ's August 3, 2004 comments.

Section 4A - page 25 of MDOT's Storm Water Management Program requires the SWPPP to be modified and updated and we appreciate the efforts made by MDOT in the revision process. We recommend the SWPPP be further modified as technology improves, new products become available, diagrams are improved, and knowledge is gained through experience. If there are any questions please do not hesitate to contact me or Kenneth LaFleur at 601/961-5171.

Respectfully,

A handwritten signature in black ink, appearing to read "Jim Morris".

Jim Morris, Chief  
General Permits Branch

OFFICE OF POLLUTION CONTROL

POST OFFICE BOX 10385 • JACKSON, MISSISSIPPI 39289-0385 • TEL: (601) 961-5171 • FAX: (601) 354-6612 • [www.deq.state.ms.us](http://www.deq.state.ms.us)

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## INTRODUCTION

This document is the revised and updated Storm Water Pollution Prevention Plan (SWPPP) for the Mississippi Department of Transportation (MDOT). The SWPPP meets the requirements of the MDOT Storm Water Management Plan (SWMP), Section 4.0 A.1 (BMP Task 1), and the Environmental Protection Agency (EPA) Phase II Storm Water Rule, 40 CFR Parts 122, 123 and 124, or the National Pollutant Discharge Elimination System (NPDES) Permit Regulations.

The Mississippi Department of Environmental Quality (MDEQ) Permit Board approved the Construction Storm Water, General NPDES Permit on July 14, 1992, for a period ending March 27, 2000. The permit was reissued March 28, 2000, and expires March 27, 2005. Implementation of this permitting process began October 1, 1992, when MDEQ approved MDOT's initial SWPPP. Currently, MDOT's construction projects are regulated by two (2) MDEQ Construction General Permits. The Small Construction General Permit (Permit No. MSR 15) which governs project sizes of one (1) to five (5) acres and the Large Construction General Permit (Permit No. MSR 10) for projects five (5) acres or more. Relative to the MDOT, the purpose of these permits are for the control of soil erosion runoff via storm water discharges associated with highway construction so that the environmental risks to adjacent areas, properties and receiving water bodies will be significantly decreased. This SWPPP is updated in response to these Construction General Permits.

The term, Eligibility, is given for discharges composed entirely of storm water from construction activities disturbing one (1) or more acres of surface area. When a discharge meets this criteria of being eligible, it is considered as being a new storm water discharge (eligible highway construction project activities) and when the disturbed area is five (5) or more acres, it is required that the owners and/or Contractors submit a Construction Notice of Intent (CNOI) application form to the Chief, Environmental Permit Division, Mississippi Department of Environmental Quality (MDEQ),

Office of Pollution Control (OPC) for approval before commencement of any construction activities. When the disturbed area is one (1) acre or more but less than five (5) acres and prior to the commencement of construction activities, the Contactor must furnish the Project Engineer a completed copy of the Small Construction Notice of Intent (SCNOI) for the Project Engineer's records. The SCNOI shall be submitted to the MDEQ only upon request from MDEQ.

Consideration of the CNOI application is predicated on an approved Storm Water Pollution Prevention Plan (SWPPP, meeting the requirements of the General NPDES Permit) also having been submitted. The CNOI shall be submitted by the MDOT at least 45 days prior to the commencement of construction.

In addition to the CNOI application form, there is also the CNOI certification form "Prime Contractor Certification" (Form No.2), a Contractor's sign off certifying that the Contractor is responsible to meet the General NPDES Permit conditions. This form is to be completed and signed after the award of the project contract, and returned to the Chief, Environmental Permits Division, MDEQ, OPC before the commencement of construction.

The intent of this MDOT Storm Water Pollution Prevention Plan in conjunction with the MDOT standard Specifications for Road and Bridge Construction (Standard Specifications), Contract Documents, Contract Projects Plans, Design Manual, Roadway Design Standard and Special Design Drawings, and all amendments to these, is to comply with requirements of the General NPDES Permit in the prevention of adverse pollution of storm water discharges.



## GENERAL REQUIREMENTS

The Storm Water Pollution Prevention Plan (SWPPP) consists of certain controls and BMP's appropriate for the Construction activities and implementation procedures. The purpose of these various controls shall: (1) divert upslope surface water around disturbed areas of the site as shown in the drawing, TEC-2; (2) implement downslope and perimeter controls before any major site work; implement within seven calendar days the appropriate temporary or permanent vegetative practices when work is discontinued for 30 days or more; limit the exposure of disturbed areas to the shortest amount of time practicable; (3) minimize the amount of surface area that must be disturbed at any one time and not to exceed 750,000 square feet (17.2 acres) without prior approval by the engineer-in-charge as required in Subsection 107.22.2 of the Standard Specifications; (4) implement best management practices to mitigate adverse impacts from storm water runoff similar to that shown in the drawings EC-1, PD-1, DT-1&1A, TEC-1,2,3,4 & 4A & 5 according to the MDOT Design Manual Chapter VIII, and the Standard Specification Sections 107 ad 210, and any other MDOT Contract Documents; and (5) remove sediment from storm water before it leaves the site by the appropriate methods depicted on the previously mentioned drawings and guidelines.

Erosion and sediment controls consisting of temporary covering and lining materials, vegetative, and structural practices shall be designed to preserve vegetation or timely revegetate disturbed areas and divert stormwater from exposed soils, store flows, or otherwise limit runoff from exposed areas respectively.

Post construction control measures shall include on-site infiltration, flow attenuation in vegetated swales and natural depressions, and retention structures. Velocity dissipation devises may

be required at the outfall of these structures and along the outfall channels to provide non-erosive flows.

Other controls shall minimize off-site vehicle tracking of sediments and ensure compliance with applicable State or local waste disposal, sanitary sewer, or septic systems regulations.

The owner or Contractor in disturbing an area shall implement controls as needed to prevent erosion and adverse impacts to receiving streams prior to beginning work.

A rain gage shall be set up on-site during construction. Within 24 hours after commencement of a rainfall event greater than or equal to a two-year, 24-hour storm event, 6 inches on the Gulf Coast to 4 inches at the Tennessee state border, an inspection of all erosion controls and other SWPPP requirements shall be performed during the permit coverage in compliance with Part IV.B, of the permit.

Storm water discharges through municipal separate storm sewer systems within the following counties; Desoto, Forrest, Lamar, Hancock, Harrison, Jackson, Hinds, Madison & Rankin have special requirements imposed. Discharges must comply with the municipal storm water management programs when such information is made available to the owner or contractor.

Other controls of importance may include but are not limited to items such as: (1) the use and placement of riprap in ditches/channels and culvert outfalls, and underlaying riprap with geotextile filter fabric when appropriate, as described in the Standard Specification Section 815, and drawings DT-1; (2) berms, mulching, linings, matting, hay baling, or silt fencing of bare and/or steep slopes as in Sections 215-218, 234 & 235 of the Standard Specifications, and drawings DT-1 & 1A, and TEC-1 & 2; (3) slope surface roughening by running a bulldozer up and down slopes perpendicular to the roadway to slow down the water coming down the slopes; (4) encompassing various stockpiles such as fill or topsoil materials with hay bales or silt fencing as in Section 234 & 235 of the Standard



Specifications, and drawings TEC-1; (5) for temporary storage of petroleum and chemicals, rubbish, clean out from concrete trucks, clean out from stripping equipment and any other waste construction materials contain within the immediate confined limits, preventing infiltration and prevent runoff with appropriate Best Management Practices (BMP) until the final project clean up and proper disposal of these materials; (6) installing temporary erosion control measures for construction waterway crossings, and entrances and exists of construction sites, such as, temporary culverts and roadbeds, berms, and brush barriers, hay bale and silt fence checks or enclosures along these travelways as in drawing TEC-1 & 2; (7) stabilizing one disturbed area before disturbing another as mentioned previously and described in Section 107 of the Standard Specifications; (8) and properly maintaining, cleaning/repairing (good housekeeping) the site and erosion prevention controls.

The contractor shall be independently responsible for the storm water pollution prevention of all operations the Contractor performs outside the Right-of Way of the project. Mining operations require a separate mining storm water general permit coverage from the MDEQ.

Storm water discharges shall meet the non-numeric limitations of being free from debris, oils, scum, and other floating materials; eroded soils and other materials that came from objectionable deposits; suspended solids, turbidity, and color at levels inconsistent with receiving waters; chemicals in concentration causing violations of State Water Quality Criteria.

Inspection of all temporary and vegetative, erosion, and sediment control and other protective measures and SWPPP requirements shall be performed during permit coverage at least once every seven calendar days; after the commencement of a two-year, 24-hour storm event as referred previously; and otherwise as often as necessary to ensure appropriate erosion and sediment controls being properly and adequately constructed and maintained by the Contractor. As a minimum, the Project Engineer and the Contractor shall conduct one (1) joint inspection per month.



These inspections must be reported on copies of the form, "Monthly Inspection Report and Certification Form For Erosion and Sediment Controls," Part VII, of the permit. A copy of the report forms (shown following the "General Requirements" section) are to be submitted to the Project Engineer postmarked no later than the 15<sup>th</sup> day of the month following the previous month's inspection(s). Failure to submit these reports shall result in the Project Engineer withholding progress payments to the Contractor until such time the reports are submitted. The applicable rain gage records with follow up inspections shall be shown on these report forms. For Permit No. MSR10, the Contractor shall keep the completed inspection forms until such time the project, accepted and documented by the Engineer for maintenance release, is ready for termination of reporting and permit coverage as described in Part IV.H. All monthly inspection forms must be attached to the completed Notice of Termination (NOT) of Coverage form (provided in Part VIII.) when submitted to the Office of Pollution Control for termination of reporting and permit coverage. For Permit No. MSR15, the Contractor shall keep the completed inspection forms until such time the project is accepted and documented by the Engineer for maintenance release. The permit will be terminated at this time unless otherwise notified by the OPC.

Noncompliance reporting, and anticipated and unanticipated noncompliance, shall be regulated as specified in Part IV.E of the permit.

All records resulting from activities required by the permit shall be retained at least three (3) years from the date of the CNOI, inspections, or reports.

As a minimum, the controls must be in accordance with the Standard Specifications, Contract Documents, Contract Project Plans, Design Manual, Roadway Design Standard Drawings, Special Design Drawings, and all amendments thereto; the latest edition of "Planning and Design Manual for the Control of Erosion, Sediment & Stormwater", MDEQ, MSSWCC, U.S. Department of Agriculture SCS, Jackson, MS; or other pre-approved pollution prevention control design manuals. In accordance with Subsection 107.22.1 of the Standard Specifications, Contractors Protection Plan, at the preconstruction conference or prior to starting any work on the project the contractor shall submit to the Engineer for approval, an erosion control plan to supplement permanent erosion control work required under the contract. Work shall not be started until an erosion control plan is approved by the Engineer.

This plan include applicable Sections of the Standard Specifications, Erosion Control Section of the Design Manual, Chapter VIII, Roadway Design Standard Drawings and Special Design Drawings of temporary and permanent erosion control items and installation procedures, a copy of the Monthly Inspection Report and Certification Form for Erosion and Sediment Controls, a copy of the Monthly Siltation Inspection Worksheet Form, and a copy of the Prime Contractor Certification (Form No. 2)

This plan will be updated by addendum as viable temporary and permanent erosion control items and installation procedures become available.

For any additional information, contact The Mississippi Department of Transportation, Roadway Design Division, (601) 359-7250.



**Part VII.****MONTHLY INSPECTION REPORT AND CERTIFICATION FORM  
FOR EROSION AND SEDIMENT CONTROLS**

Inspections must be done weekly and  
after a Two-Year, 24-Hour Rainfall (4 inches at the Tenn. Border to 6 inches on the Gulf Coast)

Construction Storm Water General NPDES Permit No. MSR10 \_\_\_\_\_ County: \_\_\_\_\_  
(Fill in your Certificate of Coverage Number & County where Project is Located)  
(Please Print)

Owner and/or Prime Contractor: \_\_\_\_\_  
Project Name: \_\_\_\_\_  
Street Address: \_\_\_\_\_  
City: \_\_\_\_\_  
Startup Date: \_\_\_\_\_

Inspection Log

Date and Time	After a 2-Year, 24-Hour Rain?	Rain Gauge Measurement (inches)	Any Deficiencies Observed?	Inspector(s)
_____	Yes or No	_____	Yes or No	_____
_____	Yes or No	_____	Yes or No	_____
_____	Yes or No	_____	Yes or No	_____
_____	Yes or No	_____	Yes or No	_____
_____	Yes or No	_____	Yes or No	_____

Deficiencies Noted During any Inspection (give date(s); attach additional sheets if necessary):

\_\_\_\_\_

\_\_\_\_\_

Corrective Action Taken or Planned (give date(s)); (attach additional sheets if necessary):

\_\_\_\_\_

\_\_\_\_\_

Based upon this inspection which I or personnel under my direct supervision conducted, I certify that all erosion and sediment controls have been implemented and maintained, except for those deficiencies noted above, in accordance with the Storm Water Pollution Prevention Plan filed with the Office of Pollution Control and sound engineering practices as required by the above referenced permit.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

Authorized Name (Print)

Signature

Date

These reports shall be submitted as required in the permit, to:

Chief, Environmental Permits Division  
MS Department of Environmental Quality, Office of Pollution Control  
P.O. Box 10385  
Jackson, Mississippi 39289-0385

# MISSISSIPPI DEPARTMENT OF TRANSPORTATION

## Monthly Siltation Inspection Worksheet

MSR No.

Report No.

Date	Project No.	County
Contractor		Contractor Inspector
Total Rainfall for Period		MDOT Inspector

### Silt Fence

Location	New	Maint.

Location	New	Maint.

### Hay Bales

Location	New	Maint.

Location	New	Maint.

### Slope Drains

Location	New	Maint.

Location	New	Maint.

### Silt Basins

Location	New	Maint.

Location	New	Maint.

### Rip Rap Berms

Location	New	Maint.

Location	New	Maint.

### Brush Dikes

Location	New	Maint.

Location	New	Maint.



# PRIME CONTRACTOR CERTIFICATION

By completing and submitting this form to MDEQ the prime contractor is certifying that (1) they have operational control over the erosion and sediment control specifications (including the ability to make modifications to such specifications) and (2) has day-to-day operational control of those activities at the site necessary to ensure compliance with the SWPPP and applicable permit conditions. The owner(s) of the property and the prime contractor associated with regulated construction activity on the property have joint and several responsibility for compliance with the permit. Notwithstanding any permit condition to the contrary, the coverage recipient and any person who causes pollution of waters of the state or places waste in a location where they are likely to cause pollution of any waters of the state shall remain responsible under applicable federal and state laws and regulations, and applicable permits.

## PRIME CONTRACTOR INFORMATION

PRIME CONTRACTOR CONTACT PERSON: \_\_\_\_\_ PHONE NUMBER: \_\_\_\_\_  
 PRIME CONTRACTOR COMPANY: \_\_\_\_\_  
 PRIME CONTRACTOR STREET (P.O. BOX): \_\_\_\_\_  
 PRIME CONTRACTOR CITY: \_\_\_\_\_ STATE: \_\_\_\_\_ ZIP: \_\_\_\_\_

## OWNER INFORMATION

OWNER CONTACT PERSON: \_\_\_\_\_ PHONE NUMBER: \_\_\_\_\_  
 OWNER COMPANY NAME: \_\_\_\_\_

## PROJECT INFORMATION

CONSTRUCTION STORM WATER GENERAL PERMIT COVERAGE NUMBER: **MSR10** \_\_\_\_\_  
 PROJECT NAME: \_\_\_\_\_  
 DESCRIPTION OF CONSTRUCTION ACTIVITY: \_\_\_\_\_  
 PHYSICAL SITE ADDRESS (If the physical address is not available indicate the nearest named road. For linear projects, indicate the beginning of the project and identify all counties the project traverses.)  
 STREET: \_\_\_\_\_  
 CITY: \_\_\_\_\_ COUNTY: \_\_\_\_\_

I certify that I am the prime contractor for this project and will comply with all the requirements in the above referenced general NPDES permit. I further certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my 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.

Prime Contractor Signature<sup>1</sup> \_\_\_\_\_

Date Signed \_\_\_\_\_

Printed Name<sup>1</sup> \_\_\_\_\_

Title \_\_\_\_\_

<sup>1</sup>This application shall be signed according to the General Permit, Part V.E., as follows:

- For a corporation, by a responsible corporate officer.
- For a partnership, by a general partner.
- For a sole proprietorship, by the proprietor.
- For a municipal, state or other public facility, by principal executive officer, mayor, or ranking elected official.
- Duly Authorized Representative.

This Prime Contractors Certification form shall be submitted to:

Chief, Environmental Permits Division  
 MS Department of Environmental Quality, Office of Pollution Control  
 P.O. Box 10385  
 Jackson, Mississippi 39289-0385



## **SECTION 107 - LEGAL RELATIONS AND RESPONSIBILITY TO PUBLIC**

**107.01--Laws to Be Observed.** The Contractor shall keep fully informed and comply with all Federal, State and local laws, ordinances, regulations and all orders and decrees of bodies or tribunals having jurisdiction or authority which affect those engaged or employed on the work or affect the conduct of the work. The Contractor shall protect and indemnify the State and its representatives against all claims or liability arising from or based on the violation of such laws, ordinances, regulations, orders or decrees whether by himself, his employees, subcontractors and employees or agents thereof.

**107.12--Protection and Restoration of Property and Landscape.** The Contractor shall be responsible for the preservation of public and private property and shall protect from disturbance or damage all land monuments, historical markers, and property marks and shall not move them until the Engineer has witnessed or otherwise referenced their location.

The Contractor shall be responsible for all damage or injury to public or private property of any character resulting from any act, omission, neglect, misconduct, inefficiency, method of executing the work or non-execution thereof or due to defective work or materials.

The Contractor shall take sufficient precaution to prevent pollution of streams, lakes and reservoirs with any harmful materials including but not limited to fuels, oils, bitumens, calcium chloride, and poisons. The Contractor shall schedule and conduct grading operations, production of materials from material pits or quarry sites exclusive of commercially operated sources, construction of haul roads, hauling operations and other operations so as to prevent or minimize the pollution of adjacent property, ditches, streams, lakes and reservoirs with mineral or organic sediment. Pollution causing injury or damage within the intent of this subsection shall be subject to the restoration requirements and provisions herein set forth.

The Contractor shall restore the property, at no additional costs to the State, to a condition equal to that existing before the damage or injury, or shall make good such damage or injury in an acceptable manner.

In case of failure on the part of the Contractor to restore or make good such damage or injury, the Engineer may, upon forty-eight hours written notice, proceed to repair, rebuild or otherwise restore such property and the cost thereof shall be deducted from monies due or which may become due the Contractor. In the event no such monies are available, the amount shall be charged against the Contractor's Surety.

Nothing within this subsection shall be construed to relieve the Contractor from his responsibilities under the requirements of Subsection 107.01.

**107.17--Contractor's Responsibility for Work.** Until release of maintenance in accordance with Subsection 105.16, the Contractor shall have the charge and care thereof and shall take every precaution against injury or damage by action of the elements or from any other cause,



whether arising from the execution or the nonexecution of the work. The Contractor shall rebuild, repair, restore and make good, in accordance with the requirements of the contract, all injuries or damages to the work occasioned by any of the above causes before release of maintenance and shall bear the expense thereof.

If the Engineer determines the work has been properly prosecuted, constructed, protected and maintained and significant damage to the work is determined to be caused by unforeseeable occurrences beyond control of and without the fault or negligence of the Contractor, including but not restricted to acts of nature, of the public enemy or of governmental authorities, the Contractor will be paid for repairing such damage at the contract unit prices for applicable items involved in making repairs.

When contract items are not applicable to repair of work damaged from such cause, a supplemental agreement may be entered into or such repairs may be accomplished under the provisions of Subsection 109.04, Extra and Force Account Work.

If the Engineer determines that such repair work has not been properly prosecuted and maintained or determines that the Contractor has not taken all reasonable measures to provide adequate protection for partially completed or completed repair work, payment for repairs will not be made.

Damage to items of construction, caused by the traveling public on a project or section(s) of a project open to traffic, shall be repaired by the Contractor. The Contractor will be paid for repairing such damage to certain acceptably installed items of construction at the contract unit price(s) for the applicable item(s) used in the repair. An acceptably installed item shall be complete-in-place meeting the requirements of the specifications. The acceptably installed items of construction eligible to receive payment for repair of damage caused by the traveling public shall be items used for signing, safety and traffic control. The eligible items shall be limited to traffic signal systems, signs and sign supports, lighting items, guard rail items, delineators, impact attenuators, median barriers, bridge railing or permanent pavement markings. If damage to the above items necessitate only minor repairs, in lieu of total replacement, the work shall be performed in accordance with Subsection 109.04, or as directed by the Engineer. Damage not meeting the requirements to qualify for repair payment shall be repaired at no additional cost to the State.

In case of suspension of work from any cause whatsoever, the Contractor shall be responsible for the work and shall take the precautions necessary to prevent damage to the work, provide for normal drainage, erect necessary temporary structures, signs or other facilities; shall maintain the work in such a manner as to fully carry out his responsibility for maintaining traffic as required under the contract; shall properly and continuously maintain in an acceptable growing condition all living material in newly established plantings, seedings, and soddings furnished under the contract, and shall take adequate precautions to protect new tree growth and other vegetative growth against injury. Except when the suspension is ordered by the Engineer for the sole benefit of the Department, all such protection and maintenance shall be performed by the Contractor without additional cost to the State.



**107.22--Environmental Protection.** In addition to the applicable provisions of Subsections 107.01 and 107.12, occupancy by the Contractor of any lands, whether on or off the right-of-way, for the performance of any work under the contract, or preparation therefore, shall be contingent upon provisions being made and carried out for the prevention or minimization of siltation, pollution from soil erosion, and air pollution. Accordingly, it is the intent of the contract that erosion be prevented by the establishment of all necessary temporary and permanent erosion control features as the work progresses from beginning to completion. The primary objective shall be to establish and maintain all permanent erosion control features as soon as possible. Until such time, each operation shall include the effective use of temporary measures as necessary to maintain ground surface conditions so as to prevent or minimize siltation or pollution.

**107.22.1--Contractor's Protection Plan.** At the preconstruction conference or prior to starting any work on the project, the Contractor shall submit to the Engineer for approval, an erosion control plan to supplement permanent erosion control work required under the contract. As a minimum, the plan shall include the following:

1. Plan profile sheets, 11" x 17" or larger, of the entire project showing the locations of erosion control devices (pay items) such as silt fence, hay bales, silt basins, slope drains, etc. Also, showing the locations of other Contractor absorbed measures such as brush barriers, diversion berms, etc. that the Contractor may elect to use to prevent siltation.
2. A plan for disposal of waste materials, if applicable.
3. A detailed schedule of operations at locations of high siltation potential to clearly indicate how siltation of streams, lakes and reservoirs and the interruption of normal stream flows will be held to a practical and feasible minimum.

The plan shall be updated as needed during the progress of the project. Work shall not be started until an erosion control plan is approved by the Engineer.

The Engineer will have the authority to suspend all work and/or withhold payments for failure of the Contractor to carry out provisions of the erosion control plan and/or proper maintenance thereof.

**107.22.2--Clearing and Grubbing, Haul Roads, Waste Areas, Plant Sites or Other Areas Occupied by the Contractor.** Clearing and grubbing on erodible areas, construction and maintenance of haul roads, plant sites or other areas occupied by the Contractor in connection with the work shall include adequate protection for preventing excessive erodible material from entering water or waterways on land not occupied by the Contractor and preventing dust created by hauling equipment.



Temporary measures as necessary shall be employed by the Contractor from the beginning of the work. These measures may consist of the expeditious use of brush, vegetation or other residue from clearing and grubbing, temporary or permanent terraces, berms, dikes, dams, sediment basins or other effective means of containing sediment. All temporary or permanent erosion control features shall be maintained in an effective manner so long as essential to the abatement of siltation.

After temporary features are no longer useful or needed, such features shall be removed and the area restored or prepared for subsequent work. All temporary protection shall be the responsibility of the Contractor, and measurement for direct payment will not be made unless otherwise provided in the contract.

Unless otherwise determined by the Engineer from a study of overall job conditions, the exposed surface area of erodible material at any one time for each of the separate operations of this subsection shall not exceed 750,000 square feet without prior approval by the Engineer.

In addition to the applicable requirements of the Mississippi Department of Environmental Quality, Office of Pollution Control, the burning of waste vegetation resulting from site or right-of-way clearing shall meet the following requirements:

- (a) Starter and auxiliary fuels must not cause excessive visible emissions (rubber tires, etc. are prohibited).
- (b) Must be permitted by local ordinance.
- (c) The burning must be conducted at least 500 yards from an occupied dwelling; this restriction may be reduced to 50 yards if forced draft air is provided for combustion.
- (d) The burning must be conducted at least 500 yards from commercial airport property, private airfields or marked aircraft approach corridors except when a lesser distance is authorized by the airport authority.
- (e) Must not produce a traffic hazard.
- (f) Burning will not be allowed during a High Fire Danger Alert issued by the Mississippi Forestry Commission or an Emergency Air Pollution Episode Alert issued by the Mississippi Department of Environmental Quality, Office of Pollution Control.

**107.22.3--Pit Operations.** The Contractor shall schedule, arrange and conduct pit operations in such a manner to prevent siltation or pollution of ditches, streams, lakes, reservoirs and adjacent property with sediment, fuels, oils or other objectionable materials.

**107.22.4--Structures, Grading, and Other Construction.** The Contractor shall perform all work required under the contract in such manner and with such protective features to control and contain siltation within the limits of the work. Performance in the designated or directed



sequence and the providing of all erosion protection for which pay items are not included in the contract shall be considered as included in prices bid for other items of work.

The Contractor shall prevent or minimize undesirable siltation in connection with excavation, construction and backfill of structures. Such temporary measures as are indicated herein for clearing and grubbing or other measures such as covering of excavated materials, lining channels, constructing bulkheads or other effective measures shall be employed.

The Engineer will limit the areas of excavation, borrow, and embankment operations commensurate with the Contractor's capability and progress in keeping the finish grading, seeding, mulching, and other such permanent erosion control measures current. Should seasonal limitations make such coordination unrealistic, temporary erosion control measures shall be used to the extent feasible and justified. The exposed surface area of erodible material at any one time for each grading operation shall not exceed 750,000 square feet without prior approval by the Engineer.

The Engineer may increase or decrease the areas of erodible material to be exposed at any one time by clearing and grubbing, excavation, borrow and fill operations as determined by his analysis of project conditions.

It is the intent of these specifications that the work shall proceed in a manner and sequence to ensure the earliest possible establishment of permanent erosion control items.

**107.22.5--Special Temporary Erosion Control.** The plans may designate special temporary erosion control work such as fast growing grasses or other designated temporary features for problem areas during grading, paving or other construction work. Unless otherwise provided, quantities for such temporary features shown on the plans will be included in items for which bids are to be received. Such quantities may include, with appropriate notes on the plans, estimated quantities for emergency temporary erosion control work. Any such emergency temporary erosion control will be authorized and used only under conditions or causes created solely by the State or unforeseeable causes beyond the control of the Contractor. The Engineer shall be the sole judge as to the use and payment of emergency temporary erosion control work.

The Contractor shall perform all designated temporary work as indicated on the plans or provided in the contract or as directed by the Engineer at the time and in the manner deemed to provide the most effective deterrent to siltation. Unforeseen special emergency erosion control features not contemplated in the plans or contract documents and determined by the Engineer to be essential for the prevention of siltation and pollution for conditions or causes created solely by the State or unforeseeable causes beyond the control of the Contractor shall be performed as Extra Work.

**107.22.6--All Operations.** It shall be fully understood that nothing in this subsection shall be construed in any manner to relieve the Contractor from any of his responsibilities for the establishment of permanent roadside development items and other permanent work specified for erosion control in the sequence and manner included in other provisions and requirements of the contract.



**107.23--Material Pits.** The Contractor is reminded of the Mississippi Surface Mining and Reclamation Act and the Rules and Regulations adopted to implement this act. Questions or problems concerning the Act or the Rules and Regulations should be directed to the Mississippi Department of Environmental Quality, Office of Geology, Jackson, Mississippi.

The Contractor shall, before a new pit is opened or an existing pit is enlarged, furnish the Engineer with a copy of the "Notification of Exempt Operations" or a copy of the Class II permit approval, permanent or temporary, from the Mississippi Department of Environmental Quality, Office of Geology and a letter from the Mississippi Department of Archives and History, Historic Preservation Division, Jackson, Mississippi stating that the pit site is satisfactory from an archaeological and historical standpoint. All costs involved in obtaining clearance shall be borne by the Contractor. Delays encountered in obtaining clearance will not be a reason for extension of contract time. This requirement is not applicable to commercial sources.

The Contractor is further reminded of the Clean Water Act Amendments requiring National Pollutant Discharge Elimination System (NPDES) permits for discharges composed entirely of storm water from active or inactive surface mining operations, excluding work areas covered by a U. S. Army Corps of Engineers Clean Water Act Section 404 Permit. Questions or problems concerning NPDES permits should be directed to the Mississippi Department of Environmental Quality (MDEQ), Office of Pollution Control, Industrial Branch, Jackson, Mississippi.

The Contractor shall, before a regulated area is opened or enlarged as a material pit, obtain from MDEQ the necessary Mining Storm Water NPDES Permit(s) authorizing the discharge of storm water subject to the terms and conditions of said permit. All costs involved in obtaining the permit(s) shall be borne by the Contractor. Delays encountered in obtaining the permit(s) will not be a reason for extension of contract time.

For regulated commercial sources, the owner(s) shall bear the responsibility for meeting the requirements of the NPDES permitting process.



## SECTION 210 - ROADSIDE DEVELOPMENT

**210.01--General Provisions.** Where the term "plant establishment" is used, it shall be understood to mean the work and time necessary to provide fully established, healthy vegetation.

Where the term "dormant" is used, it shall be understood to mean the temporary inactive stage of a living plant or seed. When the term "dormant season" is used, it shall be understood to mean a period of time during the year when germination and growth is not expected. It shall be further understood that the limits of the dormant season for each kind of plant shall be determined by the State Manager of Roadside Development or his authorized representative.

Planting and establishment of vegetation shall be performed at the earliest practicable time consistent with other operations to provide that the maximum permanent or temporary vegetation is established as quickly as possible.

The Contractor shall schedule his work so finishing of all areas requiring vegetation can begin as soon as practicable behind the controlling item of work. Finishing of such areas and the planting shall progress at the same rate as the controlling item of work. The Contractor shall perform plant establishment throughout the life of the contract.

The Contractor, upon written notification by the Engineer of noncompliance with the preceding two paragraphs, will have 48 hours (excluding Sunday) to correct the situation and comply with the specifications.

Upon failure of the Contractor to comply with the written notification, the Engineer will suspend any or all operations in progress as deemed necessary to insure compliance and may deduct from all subsequent estimates an amount equal to 30 percent of the value of all erosion control items completed between the suspension date and subsequent date of compliance. By execution of the contract, the Contractor agrees that such deduction will not be made as a penalty but as agreed reduction in pay for deficient performance by having failed to provide the Department with the maximum possible ground cover as intended under the contract.

## Chapter 8

### SPECIAL DESIGN ELEMENTS

This chapter discusses the design criteria, procedures and responsibilities for the special design elements that must be addressed by the highway designer. Proper design of these elements will contribute to highway-safety and aesthetics and will improve the operational efficiency of the facility.

#### 8-1.0 ROADSIDE DEVELOPMENT

##### 8-1.01 Erosion Control

###### 8-1.01.01 Vegetation

Most highway projects will require that certain erosion control measures be implemented (e.g., providing vegetation cover on disturbed and barren soil areas). This will prevent soil erosion and improve the appearance of the roadside. The "Vegetation Schedule" sheet that is prepared by the designer will specify the work items to be performed, the pay item numbers, the rates of application, the seasonal requirements and any special notes related to the project. The vegetation schedule may include the following items:

1. topsoil application,
2. ground preparation,
3. fertilizing,
4. seeding,
5. mulching,
6. solid sodding,
7. watering, and
8. insect pest control.

A typical vegetation schedule is illustrated in Figure 8-1A. Vegetation schedules are included with the detail sheets at contract plan assembly. Typical erosion control details are provided in the *Roadway Design Standard Drawings*.

###### 8-1.01.02 Responsibility

The responsibility for erosion control design belongs to the design squad assigned to each project. The design squad will prepare a vegetation schedule sheet that will become a part of the contract plans. The squad leader will determine the disturbed area to be vegetated and will estimate quantities for each item listed on the vegetation schedule.

###### 8-1.01.03 Estimating Quantities

The erosion control items should be included sequentially (i.e., by the pay item number) in the summary of quantities for the project. The procedures for estimating erosion control items are as follows:

1. Topsoil. Normally, the station limits requiring topsoil will be specified on the vegetation schedule. The total quantity of topsoil (cubic yards) is determined by multiplying each area (square feet) by its required topsoil thickness (feet) and dividing by 27 to convert to cubic yards. The cumulative sum of these calculations will yield the total quantity of topsoil required for the project. This value then should be multiplied by a factor of 1.25 to account for a 25% shrinkage in material. Topsoil that is furnished from within the right-of-way is paid for on a square yard basis for placement.



VEGETATION SCHEDULE						
EROSION CONTROL ITEMS		SEASONAL APPLICATIONS — RATES AND DATES				REQUIREMENTS
		SPRING & SUMMER		FALL & WINTER		
Pay Item No.	Items	Rates	Dates	Rates	Dates	
211-B	Topsoil for Slope Treatment (LVM)	4 in. thick	March 1 to September 1	4 in. thick	September 1 to March 1	Topsoil required on slope areas (sandy) at approximate station limits listed below or as directed by the engineer.
212-B	Standard Ground Preparation	per square yard	March 1 to September 1	per square yard	September 1 to March 1	Ground preparation required on areas to receive solid sodding or seeding, as applicable.
213-A①	Agricultural Limestone	3 tons/acre	March 1 to September 1	3 tons/acre	September 1 to March 1	Limestone shall be mechanically spread uniformly and incorporated into the soil prior to planting.
213-B	Combination Fertilizer (13-13-13)	1000 lbs/acre	March 1 to September 1	1000 lbs/acre	September 1 to March 1	Fertilizer shall be mechanically spread uniformly and incorporated into the soil prior to planting.
213-C①	Superphosphate	1000 lbs/acre (est.)	March 1 to December 1	—	—	Superphosphate (for bid item purposes).
214-A②	Seeding (bermudagrass)	20 lbs/acre	March 1 to September 1	20 lbs/acre	September 1 to March 1	Seed required on disturbed areas. Unhulled seed may be required during the dormant season as directed.
214-A②	Seeding (bahiagrass)	25 lbs/acre	March 1 to September 1	25 lbs/acre	September 1 to March 1	Seed required on disturbed areas.
214-A③	Seeding (tall fescue)	—	—	20 lbs/acre	August 1 to April 1	Seed required on disturbed areas.
214-A④	Seeding (sericea lespedeza)	25 lbs/acre	March 1 to September 1	25 lbs/acre	September 1 to March 1	See note ⑤ below.
214-A⑤	Seeding (crimson clover)	—	—	20 lbs/acre	August 1 to April 1	Seed required on disturbed areas.
215-A	Vegetative Material for Mulch	2 tons/acre (est.)	March 1 to September 1	2 tons/acre (est.)	September 1 to March 1	The engineer will designate the rates of application (see Subsection 215.03.3).
216-A	Solid Sodding	per square yard	March 1 to September 1	per square yard	September 1 to March 1	Solid sod required on areas specified in the contract or by the engineer.
219-A	Watering	20 gallons/square yd (est.)	March 1 to September 1	20 gallons/square yd (est.)	September 1 to March 1	To be used as directed in planting and establishing solid sod.
220-A⑥	Insect Pest Control	per acre	—	per acre	—	See Section 220.

① All areas that have been vegetated, under this contract for at least sixty (60) days, shall receive additional application(s) of fertilizer(s) of the type(s) and rate(s) of applications as determined by soil tests or as directed during the growing seasons the contract is in force. Ground preparation will not be required for the additional applications. Payment for all fertilizers acceptably applied as an additional application(s) will be made in accordance with superphosphate bid item 213-C.

② Proposal quantities estimated on the basis that 100% of the area will be seeded.

③ Proposal quantities estimated on the basis that 50% of the area will be seeded.

④ Quantity estimated on the basis 50% of the area vegetated may require treatment.

⑤ Sow, in addition to other specified seeds, on high fill and backslope areas selected by engineers during construction. Proposal quantities estimated on the basis that 50% of the area will be seeded.

⑥ The actual rate/acre to be determined by soil test during construction.

TOPSOIL MAY BE REQUIRED	
FROM STATION	TO STATION
9+00.000	9+85.000
10+00.000	14+75.000
20+00.000	22+35.000
23+85.000	25+50.000

TEMPORARY EROSION CONTROL ITEMS REQUIRED FOR DETOURS		
ITEMS	RATES	SEASONAL LIMITATIONS
Standard Ground Preparation	—	—
Combination Fertilizer (13-13-13)	500 lbs/acre	—
Seeding (bermudagrass)	10 lbs/acre	—
Seeding (tall fescue)	20 lbs/acre	August 1 to April 1
Vegetative Material for Mulch	2 tons/acre	—

#### EXAMPLE VEGETATION SCHEDULE

Figure 8-1A



2. Ground Preparation. The total area of ground preparation (square yards) may include seeding and/or solid sodding as specified on the vegetation schedule. The method of determining the disturbed area for standard ground preparation is employed by measuring from 10 ft outside the construction limits to the limits shown on the typical sections. Quantity measurements may be taken either from the slopes illustrated in the cross-sections or directly from the plan sheets. Areas measured along slopes will be increased by 25%. Areas measured from the plan sheets will be increased by 50%. This adjusted quantity will be used for the Standard Ground Preparation pay item.
3. Fertilizer. The quantity of fertilizer (tons) is determined by first converting the area of ground preparation (square yards) to an equivalent area in acres and then multiplying this value by the rate of application (tons per acre) for each fertilizer type (e.g., agricultural limestone, combination fertilizer and superphosphate).
4. Seeding. The quantity of seed (pounds) is determined by first subtracting the solid-sodding area from the ground-preparation area and converting the resulting area (square yards) to an equivalent area in acres. This value then is multiplied by the rate of application (pounds per acre) for each seed type. The estimated percent of the area to be seeded is provided on the vegetation schedule.
5. Mulching. The quantity of vegetative material for mulch (tons) is determined by first subtracting the solid-sodding area from the ground-preparation area and converting the resulting area (square yards) to an equivalent area in acres. This value then is multiplied by the rate of application (tons per acre) of mulch.
6. Watering. The quantity of water (gallons) is determined by first multiplying the area of required solid-sodding (square yards) by the rate of application (gallons per square yards) of water and then rounding this value to the nearest whole thousand gallons.

7. Insect Pest Control. The quantity of insect-pest-control area (acres) is determined by first converting the ground-preparation area (square yards) to an equivalent area in acres and then dividing the resulting value by two.

#### 8-1.02 Special Side Ditch Treatment

##### 8-1.02.01 Responsibility

Certain physical conditions (e.g., steep ditch gradients and large volumes of surface runoff) make it difficult to establish vegetation before erosion occurs. Under these conditions, special side ditch treatments may be necessary. The designer should conduct the analysis and design the appropriate side ditch treatment in accordance with the criteria and procedures found in the following sections. Before determining the erosion control ditch treatment, the erosion resistance of the soil (e.g., average, highly erosive) should be obtained from an authoritative source and recorded in the project file. Where unusual conditions exist, the designer may consult with the Hydraulics Section for guidance in the design of ditches, channels and other erosion control measures.

##### 8-1.02.02 Design Criteria

The main factors affecting ditch design include:

1. type of soil,
2. ditch gradient,
3. surface runoff (drainage area), and
4. ditch side slopes.

The alternative side ditch treatments in order of increasing effectiveness for erosion control are as follows:



1. normal seeding and mulching,
2. ditch liners,
3. solid sod or bituminous treated roving,
4. soil reinforcing mats,
5. riprap, or
6. paved ditches.

#### 8-1.02.03 Ditch Gradient

To analyze side ditch treatments, the designer should plot ditch grades on a working profile copy. The gradients should be plotted for all side ditches and for situations where the natural ground slopes toward the toe of fill. A close approximation from the cross sections will be sufficiently accurate. Notations should be made on the working profile copy to indicate where the side ditch flow is released and carried away by a natural drainage channel or intercepted by a drop inlet or cross drain culvert.

#### 8-1.02.04 Drainage Areas

The drainage area should be outlined on the working plan copy to display the entire area that contributes surface runoff to the ditch. This area should include any portion of the pavement surface which is sloped toward the ditch, all construction slopes and any area beyond the construction limits that drains toward the ditch. Table 8-1A provides criteria for side ditch treatments based on the computed drainage area.

#### 8-1.02.05 Ditch Treatment Design

The design of side ditch treatment normally will involve the following steps:

1. Select the proper columns in Table 8-1A.
2. Select the appropriate ditch grade (percent) in Table 8-1A.

3. Identify the maximum permissible area for each type of treatment.
4. Start the area determination process at the upstream end of the drainage area and continue until the area reaches the upper limit for normal seeding and mulching (no special treatment). The ditch liner treatment will begin at this location.
5. Continue the area determination method until the upper limit for ditch liner treatment is reached. The solid sod or bituminous treated roving will begin at this point.
6. Continue the area determination method until the upper limit for solid sod or bituminous treated roving is reached. Where soils permit, increase this upper limit by 25% and begin the soil reinforcing mat treatment until this new limit is reached. Otherwise, begin either riprap or paved ditch treatment and continue to the point of termination.
7. Where the ditch reaches an outlet, the designer should end the indicated ditch treatment and start the area determination method from a zero reading at the upstream end of the next drainage area. Ditch treatments are generally run to the nearest 25-ft interval.

Details of typical ditch treatments are provided in the *Roadway Design Standard Drawings*. When moderate capacity is required, the simple "V" shape ditch should be used. For situations involving relatively large volumes of surface runoff, a flat bottom ditch with the appropriate treatment should be considered.

Generally, concrete should be specified when paved ditches are required. Bituminous paving will be specified where unusual soil conditions may adversely affect concrete. The designer will be advised of these conditions by the District.

Table 8-1A  
CRITERIA FOR SIDE DITCH TREATMENT

UPPER AREA LIMIT FOR SIDE DITCH TREATMENT (acres)①②													
Ditch Grade (%) ⑤	Foreslope — Backslope 6:1 — 6:1 10:1 — 3:1			Foreslope — Backslope 6:1 — 4:1 6:1 — 3:1			Foreslope — Backslope 4:1 — 4:1			Foreslope — Backslope 4:1 — 3:1			Ditch Grade (%) ⑤
	No Treatment	Ditch Liner	Bituminous Treated ③ Roving ④	No Treatment	Ditch Liner	Bituminous Treated ③ Roving ④	No Treatment	Ditch Liner	Bituminous Treated ③ Roving ④	No Treatment	Ditch Liner	Bituminous Treated ③ Roving ④	
0.2	1.73	3.14	7.39	1.43	2.62	6.15	1.14	2.08	4.87	0.99	1.83	4.22	0.2
0.3	1.73	3.56	9.07	1.46	2.97	7.51	1.16	2.37	5.98	1.01	2.05	5.19	0.3
0.4	1.83	3.98	10.45	1.51	3.24	8.65	1.21	2.62	6.87	1.04	2.27	5.98	0.4
0.5	1.75	4.00	10.67	1.46	3.31	8.87	1.16	2.64	7.02	1.01	2.30	6.10	0.5
0.6	1.53	3.51	9.49	1.26	2.92	7.86	1.01	2.32	6.25	0.89	2.03	5.46	0.6
0.7	1.33	3.14	8.55	1.09	2.57	7.02	0.89	2.08	5.61	0.77	1.80	4.87	0.7
0.8	1.24	2.87	7.81	1.04	2.40	6.45	0.82	1.90	5.14	0.72	1.66	4.45	0.8
0.9	1.14	2.64	7.19	0.94	2.20	5.98	0.74	1.73	4.74	0.67	1.53	4.13	0.9
1.0	1.04	2.45	6.72	0.84	2.03	5.56	0.69	1.63	4.42	0.59	1.41	3.85	1.0
1.5	0.77	1.88	5.19	0.62	1.53	4.30	0.49	1.24	3.41	0.44	1.09	2.97	1.5
2.0	0.62	1.56	4.37	0.52	1.28	3.61	0.40	1.01	2.89	0.37	0.91	2.50	2.0
2.5	0.52	1.36	3.83	0.42	1.11	3.16	0.35	0.89	2.52	0.30	0.77	2.20	2.5
3.0	0.44	1.16	3.36	0.40	0.99	2.79	0.30	0.79	2.22	0.27	0.69	1.93	3.0
3.5	0.42	1.09	3.09	0.35	0.91	2.57	0.27	0.72	2.03	0.25	0.62	1.78	3.5
4.0	0.37	0.96	2.72	0.30	0.79	2.25	0.25	0.64	1.79	0.22	0.54	1.56	4.0
4.5	0.35	0.89	2.52	0.27	0.74	2.10	0.22	0.59	1.66	0.20	0.49	1.46	4.5
5.0	0.30	0.82	2.35	0.27	0.69	1.98	0.20	0.54	1.58	0.17	0.47	1.36	5.0
5.5		0.57	2.25		0.47	1.85		0.37	1.48		0.32	1.28	5.5
6.0		0.49	2.03		0.42	1.71		0.32	1.33		0.30	1.16	6.0
7.0		0.44	1.80		0.37	1.48		0.30	1.21		0.27	1.04	7.0
8.0		0.37	1.51		0.32	1.26		0.25	0.99		0.22	0.86	8.0
9.0		0.32	1.26		0.27	1.06		0.20	0.84		0.20	0.74	9.0
10.0		0.25	1.01		0.22	0.84		0.17	0.67		0.15	0.59	10.0

## Notes:

- ① Values in this table are the upper limits for each particular type of side ditch treatment. Riprap or paving is required beyond the limits of these values.  
 ② Values in this table are for average erosion resistant soils. For highly-erosive soils, use only 60% of the upper area limit.  
 ③ Values in this column are the upper area limits for bituminous treated roving. For solid sod, use 80% of the upper area limit.  
 ④ Where soils permit, increase bituminous treated roving by 25% for soil reinforcing mat. Riprap or paving will begin beyond this limit.  
 ⑤ Ditch grades exceeding 3% require area reductions when definite drainage areas are unknown. Riprap or paving should begin where abrupt changes in ditch grades occur (e.g., 2.0%± to 6.0%±).



The location and type of special ditch treatments should be provided on the plan sheets. Table 8-1B provides the plan sheet symbols and the unit of measure for each type of side ditch treatment. If plan sheet information (e.g., the topography, construction notes, survey data) causes the sheet to become difficult to read, the designer may omit the ditch treatment symbols and prepare an itemized list of quantities that will identify each type of treatment by stationing.

### 8-1.03 Other Erosion Control

#### 8-1.03.01 Slope Paving







To prevent erosion, concrete slope paving should be provided underneath bridges at grade-separated structures. The details of slope paving are normally provided on the bridge sheets, and the quantities are included in the Bridge Summary of Quantities.

For typical rural projects, the slope paving is limited to the area beneath the bridge, extending 4 ft outside the vertical limits of the bridge as shown in "Illustration (A)" of Figure 8-1B. For urban areas, additional slope paving should be provided to wrap around the ends of the embankment as shown in "Illustration (B)" of Figure 8-1B. Details and quantities for the additional wrap around slope paving should be provided on the roadway plans. The portion of the slope paving that is 4 ft outside the vertical limits of the bridge is a roadway item and that portion beneath and within this 4-ft limit of the bridge is a bridge item.

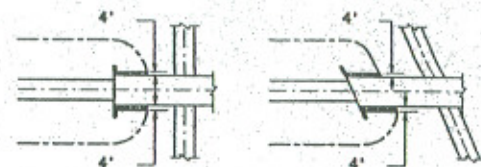
For divided highways with 88 ft or less between the centerlines of the roadways, the slope paving is continuous between the two bridge ends as shown in "Illustration (C)" of Figure 8-1B. When the centerlines are separated by more than 88 ft, the slope paving should follow the limits of the single bridge examples.

Table 8-1B

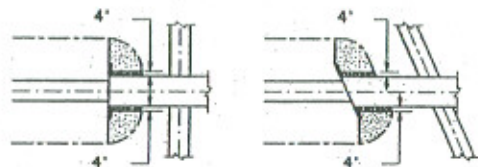
### SYMBOLS AND UNIT OF MEASURE FOR SIDE DITCH TREATMENTS

Ditch Treatment	Plan Sheet Symbol	Unit of Measure
Ditch Liner		square yard
Solid Sod		square yard
Bituminous Treated Roving		square yard
Soil Reinforcing Mat		square yard
Riprap		ton
Paved Ditch (PC concrete)		cubic yard
Paved Ditch (bituminous)	varies	ton

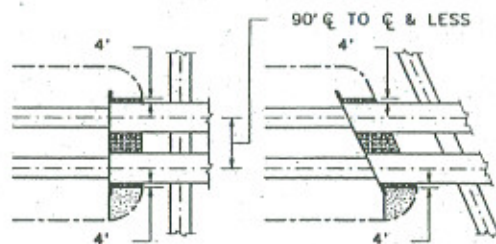
Note: Press on tapes may be used for the plan sheet symbols.



SLOPE PAVING AT BRIDGE STRUCTURES (RURAL)  
ILLUSTRATION (A)



SLOPE PAVING AT BRIDGE STRUCTURES (URBAN)  
ILLUSTRATION (B)



SLOPE PAVING AT DIVIDED HIGHWAY BRIDGES  
ILLUSTRATION (C)

LEGEND

- BRIDGE ITEM  
ROADWAY ITEM

SLOPE PAVING AT BRIDGE STRUCTURES  
Figure 8-1B

### 8-1.03.02 Riprap

To prevent excessive erosion, riprap may be required at various locations within the highway right-of-way. The designer may consult with the Hydraulics Section for guidance in the use of riprap. The following locations should be evaluated for riprap treatment:

1. culvert outfall and intake ends,
2. bends in stream channels,
3. abrupt flowline changes,
4. excessive flowline grades,
5. the point of confluence of two or more streams or channels, and
6. existing erosion problem areas.

### 8-1.04 Landscaping and Rest Area Development

#### 8-1.04.01 Responsibilities

Roadside development work may be specified during the project planning process. This work may include landscaping of the roadside or development of roadside rest areas. The architect in the Roadway Design Division is responsible for the design of these projects and the preparation of contract plans.

For landscaping work, the contract plans will normally include:

1. a title sheet and general layout,
2. a summary of quantities,
3. a vegetation schedule,
4. plan sheets showing individual plantings, and
5. the applicable *Roadway Design Standard Drawings* (e.g., Typical Planting Details for Trees and Shrubs).



For roadside rest areas, the contract plans should include additional details on:

1. site preparation,
2. buildings,
3. water and sewer installations, and
4. other facilities.

Site preparation for rest areas may be included in the contract plans for construction of the highway facility.

#### 8-1.04.02 Safety Considerations

Adequate clearance between the travelway and roadside obstacles is an important safety consideration. The roadside clear zone must be free of any obstructions. The application of the clear zone criteria is presented in Section 9-2.0.

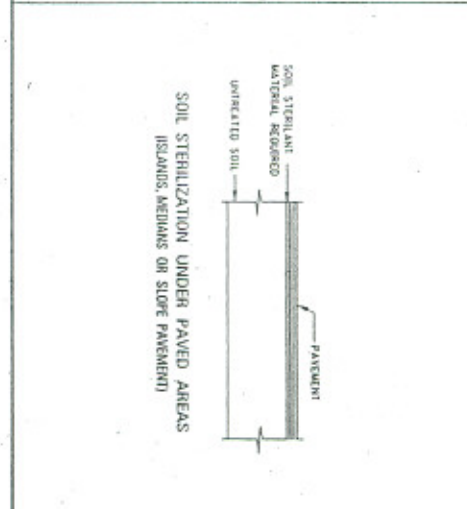
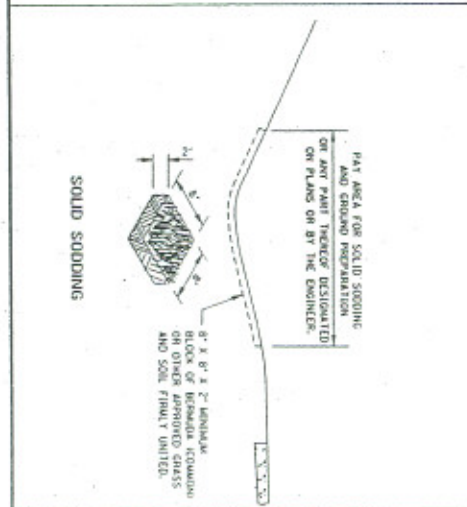
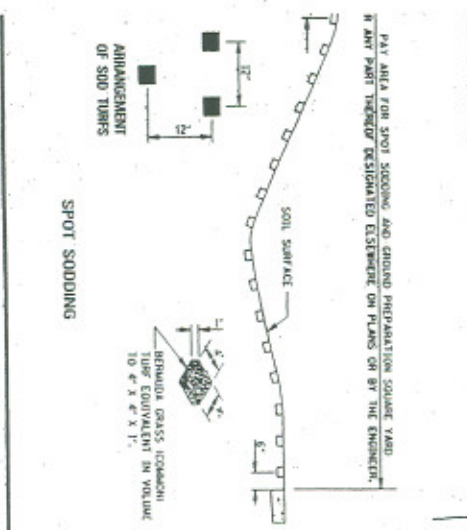
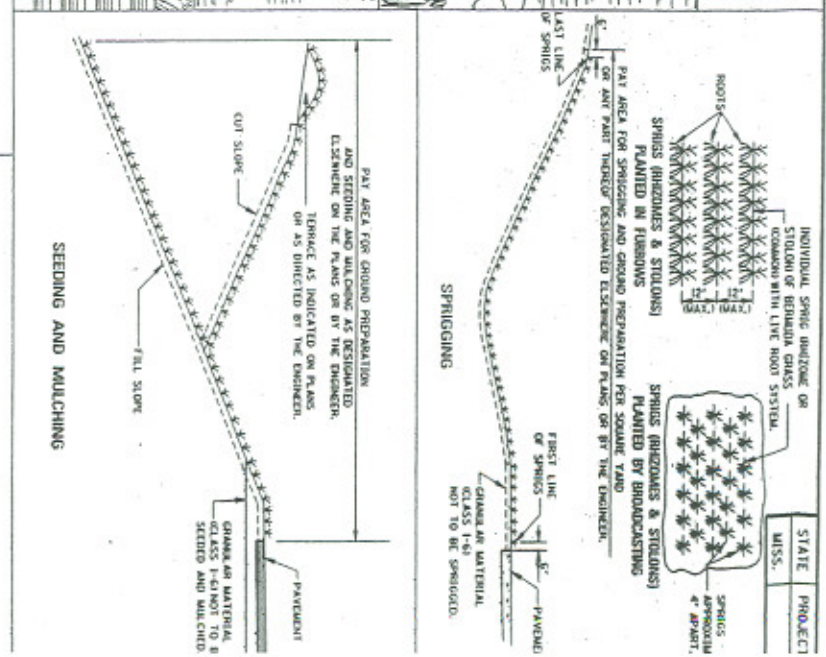
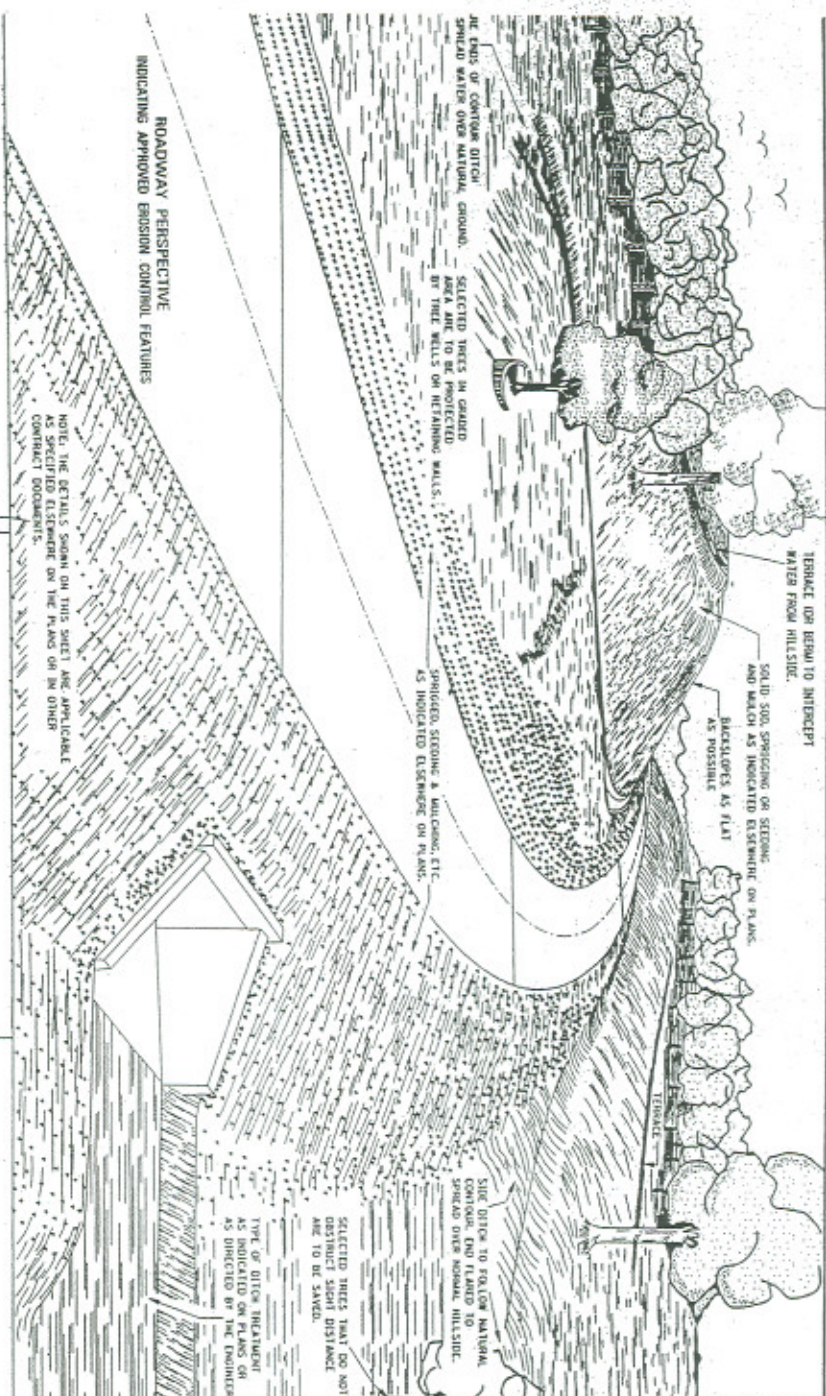
Large trees are potential hazards and should not be maintained within the required clear zone. The designer should consider removing or relocating trees from within the required clear zone. This is an especially important consideration at grade points, low fills, shallow cuts, diverging roadways and other locations where a vehicle is more likely to leave the roadway. In addition, the planting and maintenance of trees and shrubs, especially at intersections, interchanges and roadside parks, should be conducted so that a driver's line of sight to signs and decision points is not obscured and that the required sight distance is maintained.

#### 8-2.0 ACCESSIBILITY FOR HANDICAPPED INDIVIDUALS

Many highway elements can affect the accessibility and mobility of handicapped individuals. These include sidewalks, parking lots, buildings at transportation facilities, overpasses and underpasses. The Department's accessibility criteria complies with the 1990 *Americans with Disabilities Act* (ADA) and the *ADA Accessibility Guidelines for Buildings and Facilities* (ADA Guidelines). The following

sections present accessibility criteria from the *ADA Guidelines* which specifically apply to highway-related facilities. Designers are required to meet the criteria presented in these sections. When other agencies or local codes contain accessibility standards which exceed the *ADA Guidelines*, then the stricter criteria may be required. This will be determined on a case-by-case basis.





GENERAL NOTE:  
1. CONSTRUCTION AND TRANSVERSE MEASUREMENTS FOR THE PAY AREA SHALL BE TAKEN ALONG THE SLOPES.

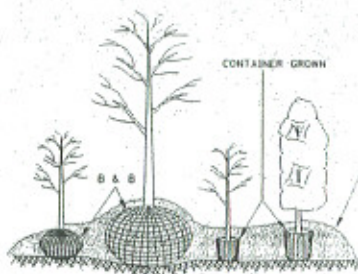
MISSISSIPPI DEPARTMENT OF TRANSPORTATION  
ROADWAY DESIGN DIVISION  
STANDARD PLAN

EROSION CONTROL

DATE: \_\_\_\_\_ REVISION: \_\_\_\_\_ BY: \_\_\_\_\_  
ISSUE DATE: OCTOBER 1, 1998

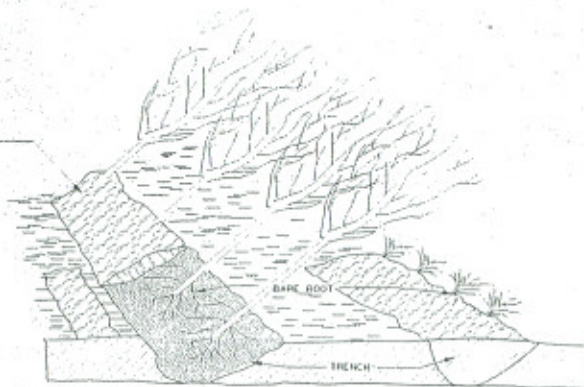
Sheet 14





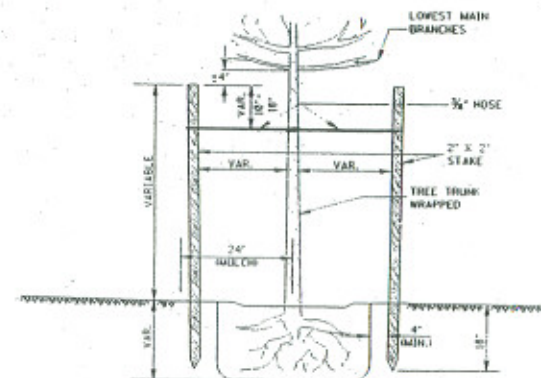
B & B AND CONTAINER GROWN PLANTS

SOIL, SAND/ST. OR OTHER APPROVED MATERIALS

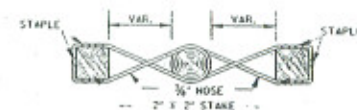


BARE ROOT PLANTS

NOTE: METHOD OF "HEELING IN" BEFORE PLANTING CONSISTS OF PLACING THE PLANTS IN A TRENCH AND COVERING THE ROOTS WITH DIRT. THIS MAY BE DONE ON TRUCK FOR EASE OF MOVEMENT. SAND/ST. OR OTHER APPROVED MATERIAL MAY BE USED. ROOTS MUST BE KEPT MOIST AT ALL TIMES.



ELEVATION

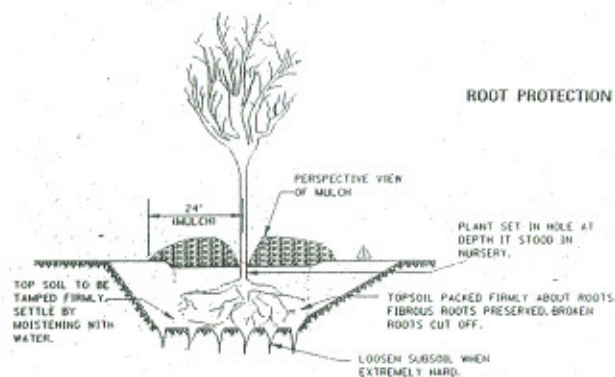


PLAN

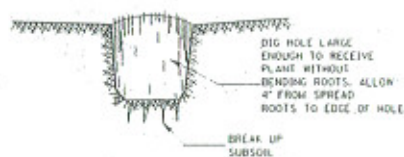
#### DOUBLE VERTICAL STAKING METHOD

NOTE: ALL TREES SHALL BE STAKED OR CUYED. THE TRUNK OF ALL SMOOTH BARKED TREES SHALL BE WRAPPED. LARGE SHRUBS TO BE STAKED AND WRAPPED WHEN SPECIFIED ON PLANS.

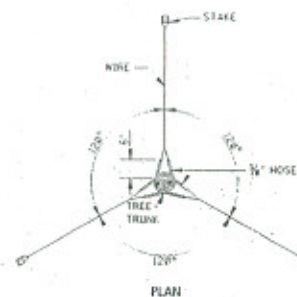
#### ROOT PROTECTION ("HEELING-IN") DURING STORAGE



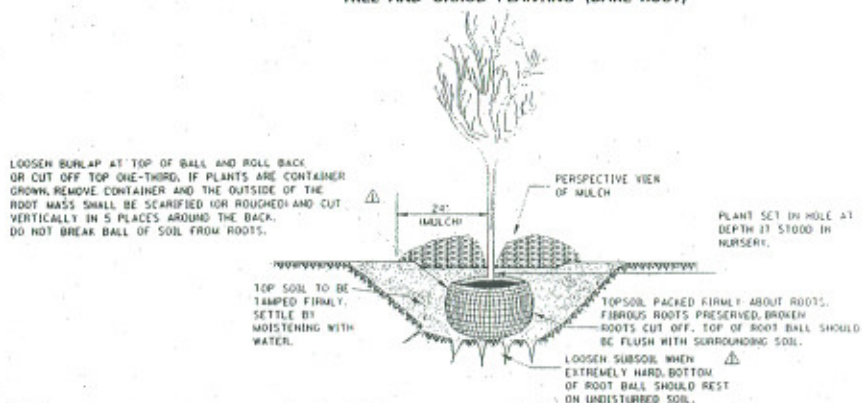
TREE AND SHRUB PLANTING (BARE ROOT)



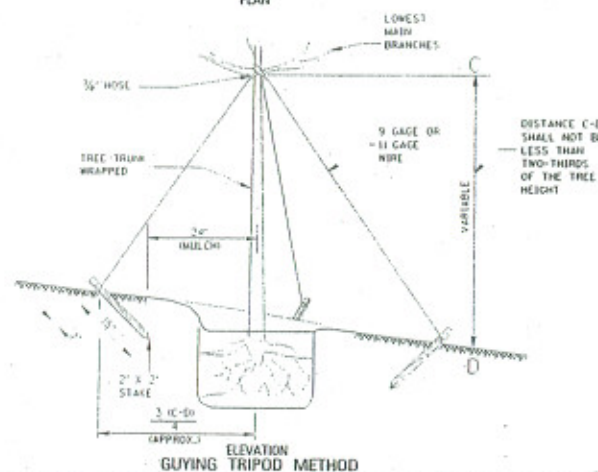
BREAK UP SUBSOIL



PLAN



TREE AND SHRUB PLANTING (B & B OR CONTAINER GROWN)



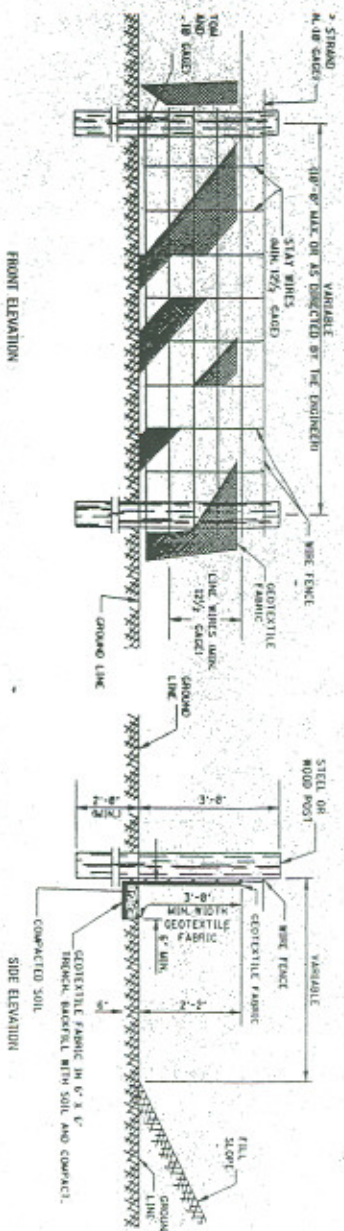
ELEVATION  
CUYING TRIPOD METHOD

#### GENERAL NOTES:

1. THE TYPE(S), RATE(S) OF APPLICATION AND PLACEMENT OF FERTILIZER AND MULCH SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE PLANS AND SPECIFICATIONS.
2. TENSION IN CUY WIRES WILL BE SUCH AS TO ALLOW SOME SWAYING MOTION IN TREE.

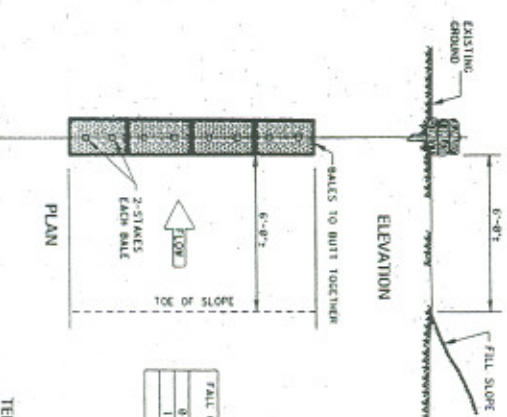
MISSISSIPPI DEPARTMENT OF TRANSPORTATION ROADWAY DESIGN DIVISION STANDARD PLAN			
TYPICAL PLANTING DETAILS FOR TREES & SHRUBS			
DATE	ISSUE DATE	OCTOBER 1, 1998	



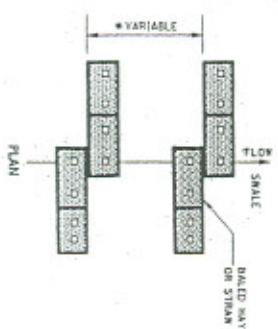


- NOTES:
1. WIRE SHALL BE MINIMUM OF 32" IN WIDTH AND SHALL HAVE A MINIMUM OF 6 LINE WIRES WITH 12" SLAY SPACING.
  2. GEOTEXTILE FABRIC SHALL BE A MINIMUM OF 12" IN WIDTH AND SHALL BE FASTENED ACCORDATELY TO THE WIRE AS DIRECTED BY THE ENGINEER.
  3. STEEL POST SHALL BE 3'-0" IN HEIGHT AND OF THE SILENT-FASTENER ANGLE STEEL TYPE. WIRE FENCE SHALL BE FASTENED TO WOODEN POST WITH NOT LESS THAN 3 CAGES. WIRE STAPLES 7" LONG.
  4. GEOTEXTILE FABRIC MEETING THE TYPE II MATERIAL REQUIREMENTS AND INSTALLED ACCORDING TO SPECIFICATIONS MAY BE USED WITHOUT WIRE FENCE.

### TEMPORARY SILT FENCE

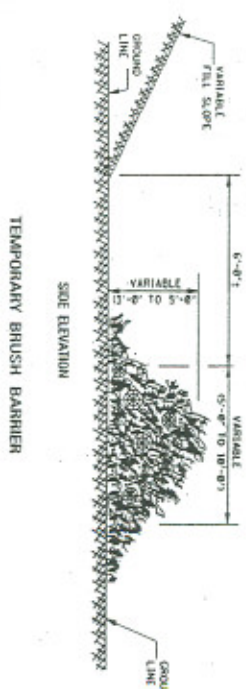
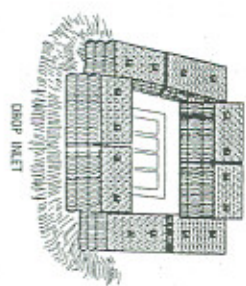
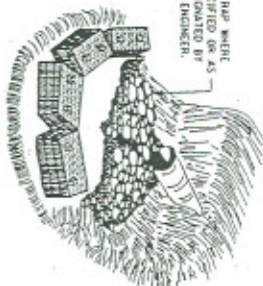


TAIL OF DITCH	DISTANCE
8 - 1	100'
1 - 2	50'
3/2	25'



### TEMPORARY EROSION CHECKS USING HAY OR STRAW BALES

NOTE: ENTER ALL BALES BY MINIMUM INTO GROUND AND STAKE (2' X 2' X 36") SECURELY.



- NOTES:
1. BRUSH BARRIER TO BE USED WHERE NATURAL GROUND IS LEVEL OR SLOPING AWAY FROM PROJECT.
  2. PLACE BRUSH LOG AND TREE LAYS APPROXIMATELY PARALLEL TO TOE OF FILL SLOPE WITH SOME OF THE HEAVIER MATERIALS BEING PLACED ON TOP TO PROPERLY SECURE THE BARRIER AS DETAILED AT LOCATIONS SHOWN ON PLANS OR AS DIRECTED BY THE ENGINEER.
  3. TO ALLOW WATER TO FLOW THROUGH BRUSH BARRIER, INTERMEDIATE THE BRUSH LOG AND TREE LAYS SO AS NOT TO FORM A SOLID DAM.

### TEMPORARY BRUSH BARRIER

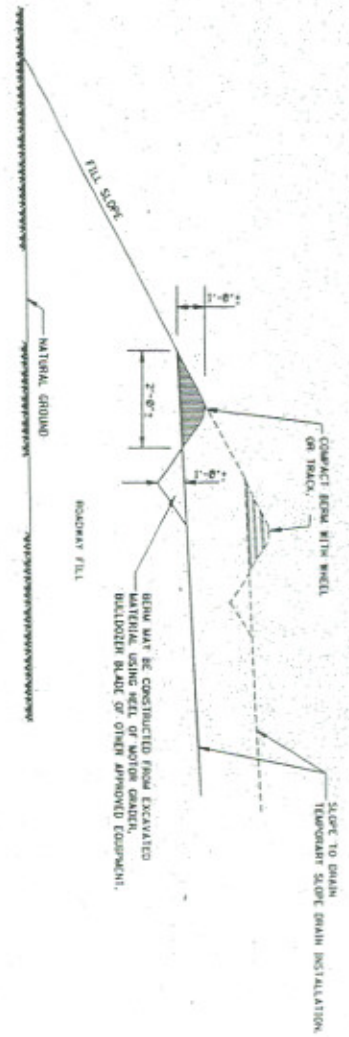
- GENERAL NOTES:
1. THE CONTRACTOR SHALL BE REQUIRED TO FURNISH ALL MATERIALS AND PERFORM ALL WORK FOR THE PROPER INSTALLATION, MAINTENANCE AND REMOVAL OF TEMPORARY EROSION CONTROL MEASURES NECESSARY TO CONTROL EROSION.
  2. TEMPORARY BRUSH BARRIERS SHALL BE USED AS REQUIRED BUT WILL NOT BE MEASURED FOR SEPARATE PAYMENT.
  3. THE USE OF TEMPORARY EROSION CONTROL MEASURES OTHER THAN TEMPORARY BRUSH BARRIERS WILL ONLY BE REQUIRED AND MEASURED FOR SEPARATE PAYMENT WHEN APPROPRIATE PAY ITEMS IS INCLUDED IN THE BID SCHEDULE OF THE PROPOSAL.

REVISION	DATE	ISSUE DATE	OCTOBER 1, 1998
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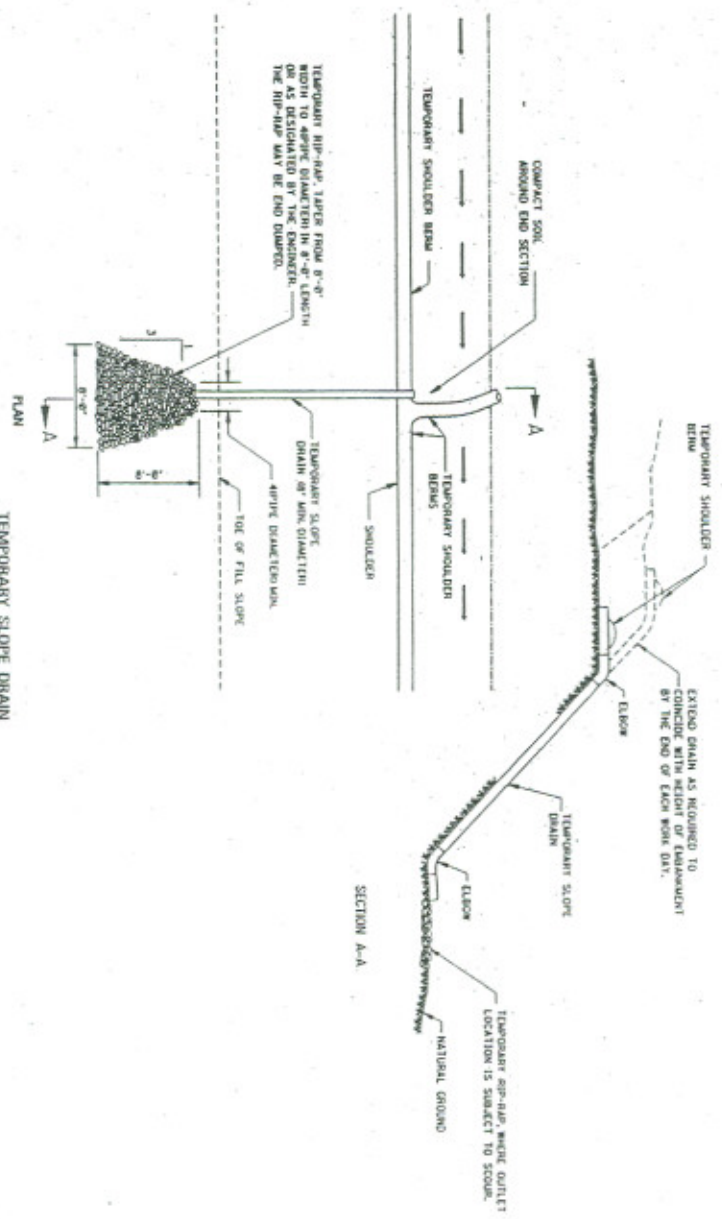
MISSISSIPPI DEPARTMENT OF TRANSPORTATION  
ROADWAY DESIGN DIVISION  
STANDARD PLAN  
TYPICAL TEMPORARY  
EROSION CONTROL  
MEASURES  
(SILT FENCE, HAY BALES  
& BRUSH BARRIER)



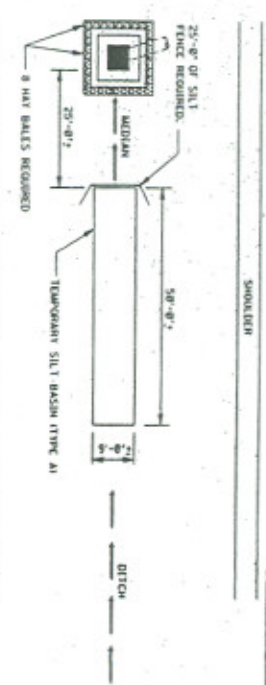




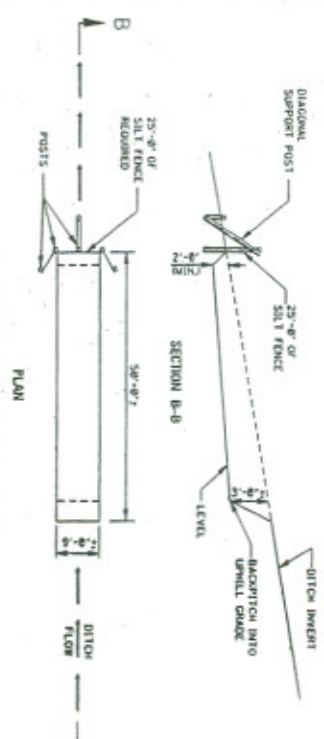
TEMPORARY SHOULDER BEHM



TEMPORARY SLOPE DRAIN



TEMPORARY MEDIAN SILT BASIN (TYPE A)

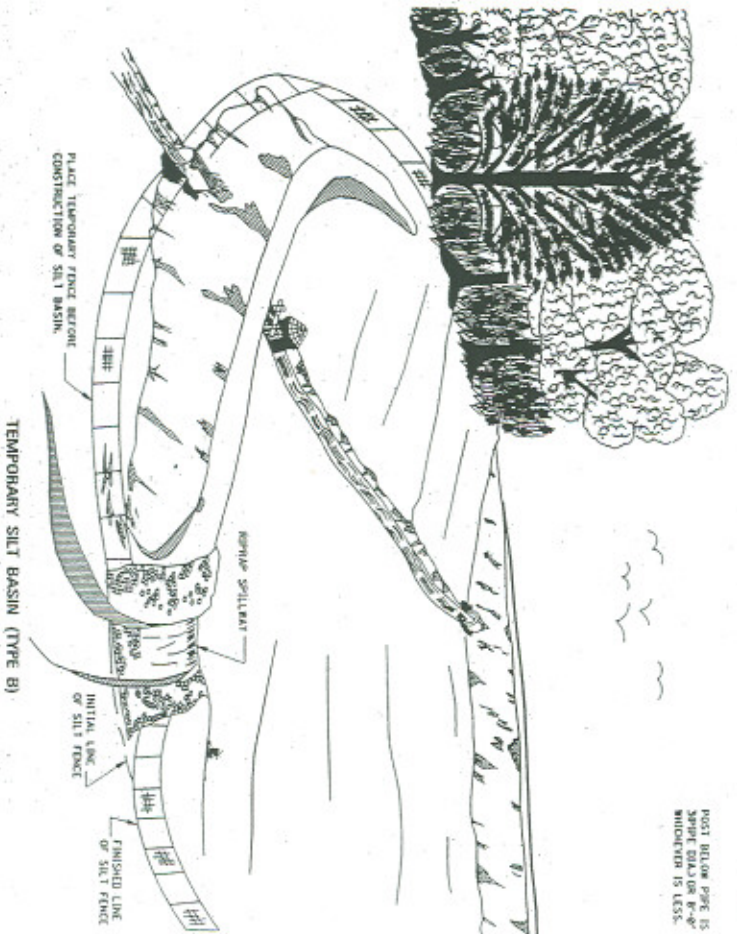
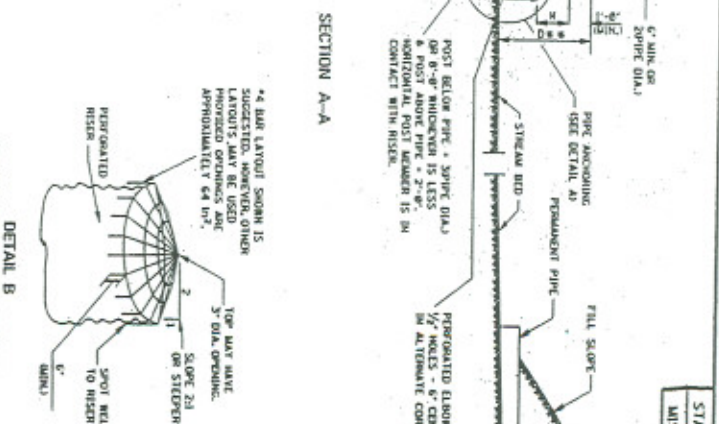
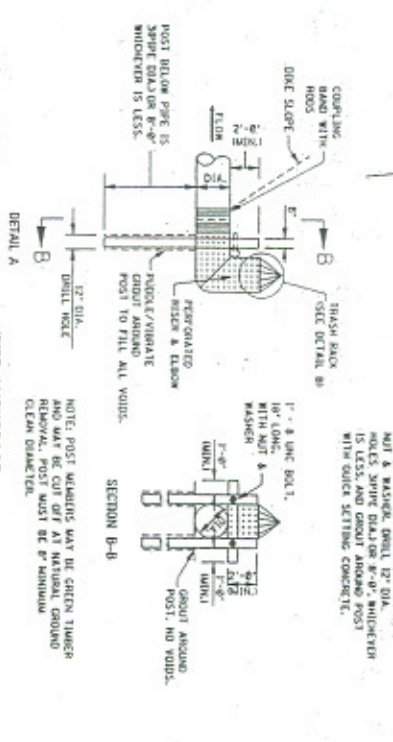
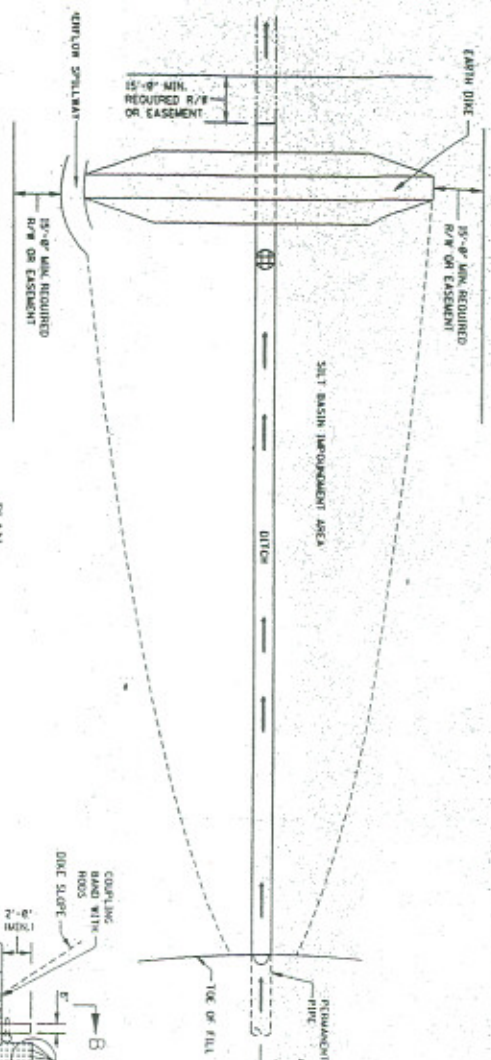


TEMPORARY SILT BASIN (TYPE A)

- GENERAL NOTES:
1. THE CONTRACTOR SHALL BE REQUIRED TO FURNISH ALL MATERIALS AND PERSONNEL FOR THE PROPER INSTALLATION, MAINTENANCE AND REMOVAL OF TEMPORARY EROSION CONTROL MEASURES NECESSARY TO CONTROL SILTATION.
  2. THE USE OF TEMPORARY EROSION CONTROL MEASURES SHOWN ON THIS SHEET SHALL ONLY BE INCURRED AND REQUIRED FOR STABLE EROSION WHEN AN APPROPRIATE PAY ITEM IS INCLUDED IN THE BID SCHEDULE OF THE PROPOSAL.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION	
ROADWAY DESIGN DIVISION	
STANDARD PLAN	
TYPICAL TEMPORARY EROSION CONTROL MEASURES (SLOPE DRAIN AND TYPE A SILT BASIN)	
REVISION	DATE
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PIPE	WELD COMPOSITIONS OF SILENT BEAM TYPE BR			# COUPLING BEADS
	* * U (17-100)	* N (17-100)	* AREA (17-100)	
15"	4-6"	1-0"	3.0	12
18"	5-6"	3-6"	5.50	12
20"	5-6"	1-6"	10.00	12
24"	6-6"	1-6"	10.00	24
30"	6-6"	1-6"	20.00	24
42"	7-6"	2-6"	40.00	24
48"	8-6"	2-6"	60.00	24

- NOTES:
- \* 1. IMPROBANT SURFACE AREAS ARE MEASURED AT ELEVATION OF TOP OF LEAD RISER.
  - \*\* 2. RISER REQUIRED WHERE MINIMUM "O" DIMENSION IS EXCEEDED. LENGTH OF RISER IS EQUAL TO THE AMOUNT THAT MINIMUM "O" DIMENSION IS EXCEEDED.
  - \* 3. COUPLING RODS TO BE  $\frac{1}{2}$ " DIAMETER MINIMUM WITH LOCKS.

DATE	REVISION	BY
ISSUE DATE: OCTOBER 1, 1998	<p>MISSISSIPPI DEPARTMENT OF TRANSPORTATION  ROADWAY DESIGN DIVISION  STANDARD PLAN</p> <p>TYPICAL TEMPORARY  EROSION CONTROL  MEASURES  (TYPE B SILT BASIN)</p>	
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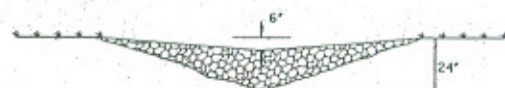
STATE	PROJECT
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CHECK DAMS SHOULD BE CONSTRUCTED OF STONE AND SHALL BE NO MORE THAN 2 FOOT HEIGHT. THE CENTER OF THE CHECK DAM SHALL BE AT LEAST 6 INCHES LOWER THAN THE OUTER EDGE.

COVER THE SLOPE WITH THE CHECK DAM AND SET THE HEIGHT OF THE OUTER EDGES SO THAT RUNOFF WILL NOT FLOW AROUND EITHER DAM.

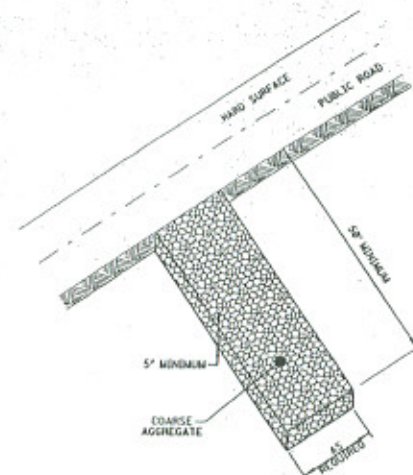
SPACE THE CHECK DAMS SO THAT THE CENTER OF EACH CHECK DAM IS THE SAME ELEVATION AS THE BOTTOM OF THE CHECK DAM IMMEDIATELY ABOVE IT.



"L" = THE DISTANCE SUCH THAT POINTS 'A' AND 'B' ARE OF EQUAL ELEVATION



ROCK CHECK DAM



IF GRAVEL PAD IS INSUFFICIENT TO REMOVE DIRT FROM TIRES, THEN TIRES MUST BE WASHED BEFORE VEHICLE LEAVES SITE.

PUBLIC ROADS MUST BE SWEEP AS REQUIRED TO KEEP THEM FREE OF SEDIMENT AND STONE.

EXCAVATE A PAD THAT IS AT LEAST 50 FEET LONG, EXTENDS THE FULL WIDTH OF THE CONSTRUCTION ROAD AND IS 6 INCHES DEEP.

LAY DOWN FILTER FABRIC.

BACKFILL WITH COARSE GRAVEL (1.5 TO 3 INCH STONES).

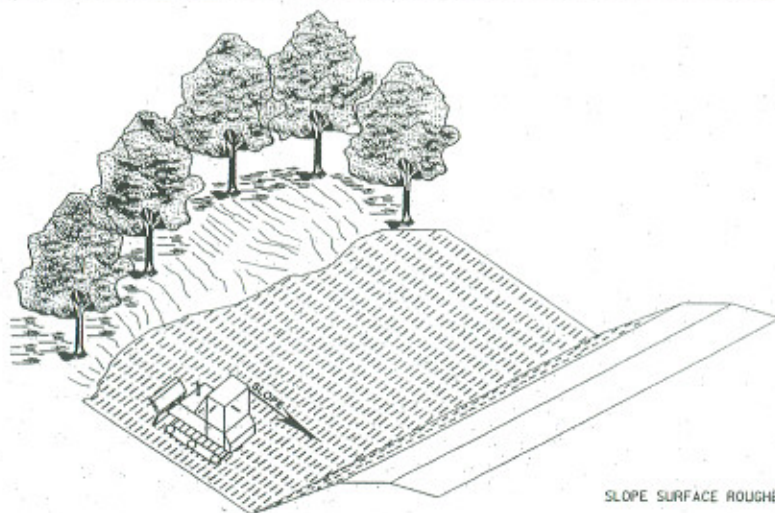
WIDEN PAD AT CONNECTION WITH ROAD TO PROVIDE FOR TURNING RADIUS OF TRUCKS.

COARSE WOOD CHIPS THAT WON'T FLOAT AWAY MAY BE USED AT THE ENTRANCE TO A SINGLE FAMILY RESIDENCE CONSTRUCTION SITE.

SWEEP PAVED ROAD DAILY TO REMOVE DIRT AND STONE.

REDRESS STONE AS CONDITIONS DEMAND DO NOT LET FILTER FABRIC BE EXPOSED.

CONSTRUCTION ENTRANCE



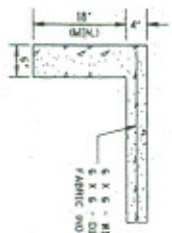
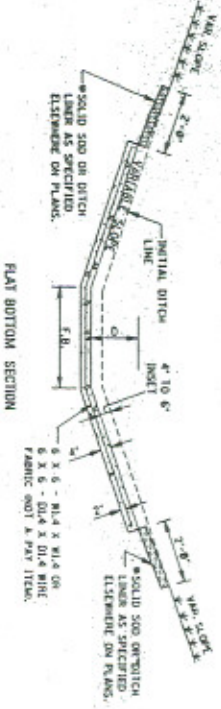
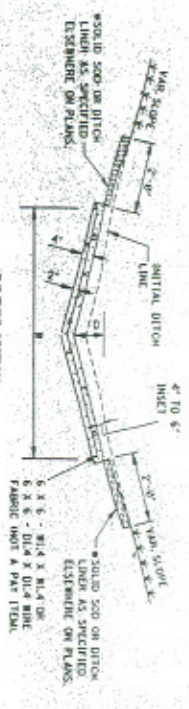
ANY IMPLEMENT, SUCH AS A DISK OF TILLER, WHICH IS SAFELY OPERATED ON THE SLOPE, CAN BE USED. A BULLDOZER CAN GROOVE A SLOPE BY BEING DRIVEN UP AND DOWN THE SLOPE (RATHER THAN ALONG THE SLOPE) THUS CREATING GROVES PERPENDICULAR TO THE SLOPE WITH ITS TRACKS.

CUT GROOVES ON THE CONTOUR (PERPENDICULAR TO SLOPE). MINIMUM DEPTH OF GROOVE SHALL BE 4 INCHES WITH A MINIMUM OF 25 INCH SPACING.

SLOPE SURFACE ROUGHENING

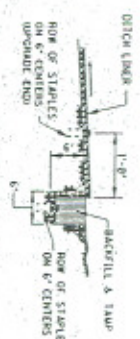
MISSISSIPPI DEPARTMENT OF TRANSPORTATION			
TEMPORARY EROSION CONTROL MEASURES			
DATE	DESIGN TEAM	CHECKED	DATE
FILENAME			

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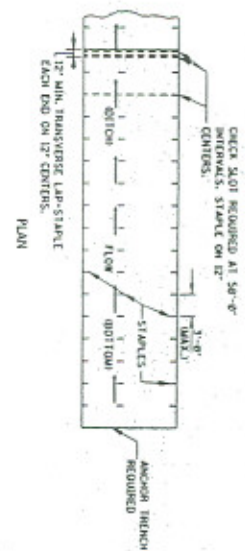


CONCRETE PAVED DITCH

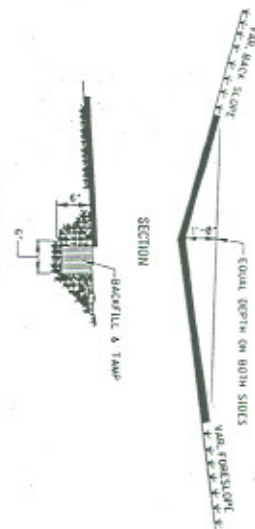
- NOTES:
1. CONCRETE PAVED DITCHES SHALL BE SPACED AT 20'-0" INTERVALS. THE DEPTHS SHALL BE CUT TO A DEPTH OF NOT LESS THAN 1'.
  2. DIMENSIONS D & W ARE AS FOLLOWS:



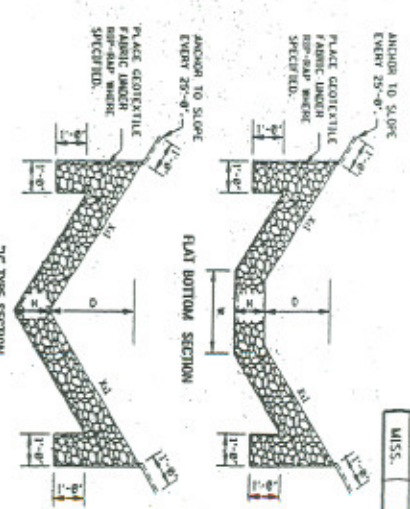
NOTE: ANCHOR TRENCH REQUIRED AT THE BEGINNING AND ENDING OF EACH AREA TO BE COVERED, EXCEPT DOWNSTREAM END ADDING A STRUCTURE.



DITCH LINER TREATMENT  
(EXCESSION BLANKET, JOINT MESH OR EROSION CONTROL FABRIC)  
NOTE: DITCHES TREATED WITH DITCH LINER WILL BE TREATED PRIOR TO TREATMENT, UNLESS OTHERWISE INDICATED.



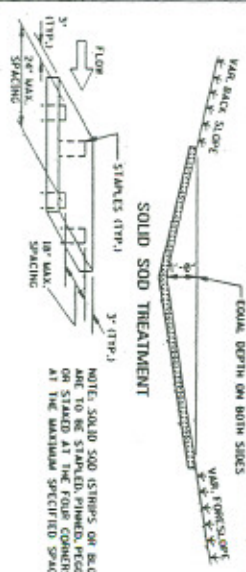
BITUMINOUS TREATED ROVING  
NOTE: UPGRADE AND COMPARATIVE ENDS OF THE BITUMINOUS TREATED ROVING SHALL BE BURIED IN A 6\"/>



NOTES:

1. DIMENSIONS D, W AND X ARE VARIABLE AND ARE SHOWN ELSEWHERE ON THE PLANS.
2. THE RIP-RAP SIZE AND MINIMUM DEPTH "V" FOR RIP-RAP TREATMENT ARE AS FOLLOWS:

RIP-RAP SIZE	MINIMUM DEPTH "V"
1/2"	12"
3/4"	18"
1"	24"



GENERAL NOTE:  
1. FOR LOCATION OF APPROPRIATE DITCH TREATMENTS, SEE PLAN SHEET DEDICATED BY THE FOLLOWING LEGEND OR AS DIRECTED BY THE ENGINEER.  
2. DIMENSIONS D, W AND X ARE VARIABLE AND ARE SHOWN ELSEWHERE ON THE PLANS.

MISSISSIPPI DEPARTMENT OF TRANSPORT,  
ROADWAY DESIGN DIVISION  
STANDARD PLAN

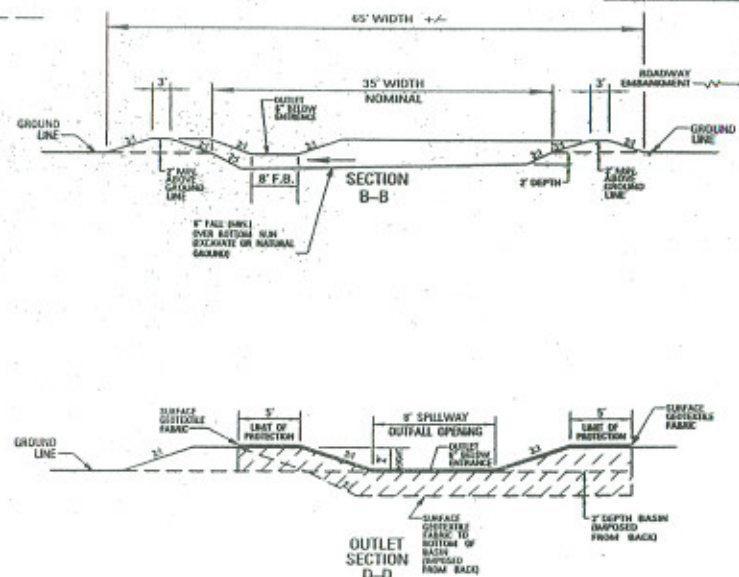
DETAILS OF TYPICAL  
DITCH TREATMENTS

ISSUE DATE, OCTOBER 1, 1998



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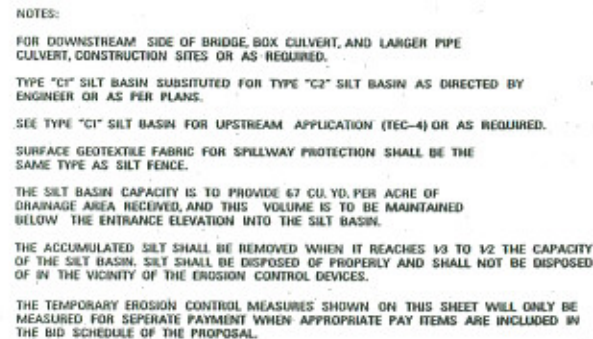
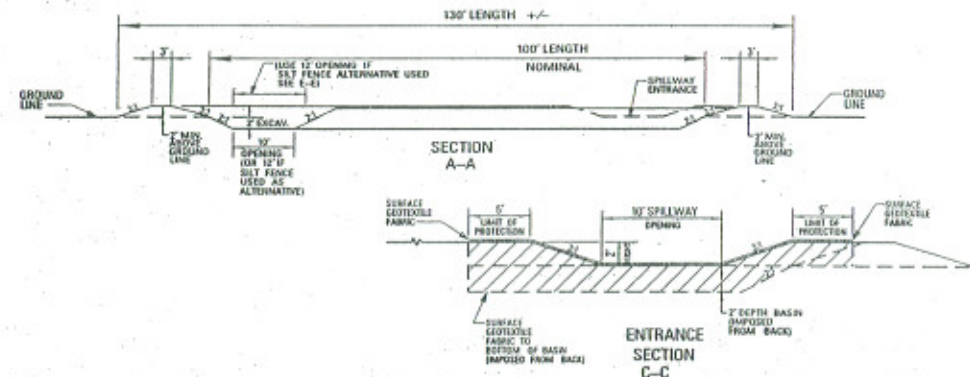


NOTES:

1. FOR UPSTREAM SIDE OF BRIDGE, BOX CULVERT, AND LARGER PIPE CULVERT CONSTRUCTION SITES OR AS REQUIRED (MAY BE DOWNSTREAM).
2. TYPE "C1" SILT BASIN SUBSTITUTED FOR TYPE "C2" SILT BASIN AS DIRECTED BY ENGINEER OR AS PER PLANS.
3. SEE TYPE "C2" SILT BASIN FOR DOWNSTREAM APPLICATION PRIMARILY (TEC-4A).
4. SURFACE GEOTEXTILE FABRIC FOR SPILLWAY PROTECTION SHALL BE THE SAME TYPE AS SILT FENCE.
5. THE SILT BASIN CAPACITY IS TO PROVIDE 67 CU. YD. PER ACRE OF DRAINAGE AREA RECEIVED, AND THIS VOLUME IS TO BE MAINTAINED BELOW THE ENTRANCE ELEVATION INTO THE SILT BASIN.
6. THE TEMPORARY EROSION CONTROL MEASURES SHOWN ON THIS SHEET WILL ONLY BE MEASURED FOR SEPARATE PAYMENT WHEN APPROPRIATE PAY ITEMS ARE INCLUDED IN THE BID SCHEDULE OF THE PROPOSAL.
7. THE ACCUMULATED SILT SHALL BE REMOVED WHEN IT REACHES V3 TO V2 THE CAPACITY OF THE SILT BASIN. SILT SHALL BE DISPOSED OF PROPERLY AND SHALL NOT BE DISPOSED OF IN THE VICINITY OF THE EROSION CONTROL DEVICES.

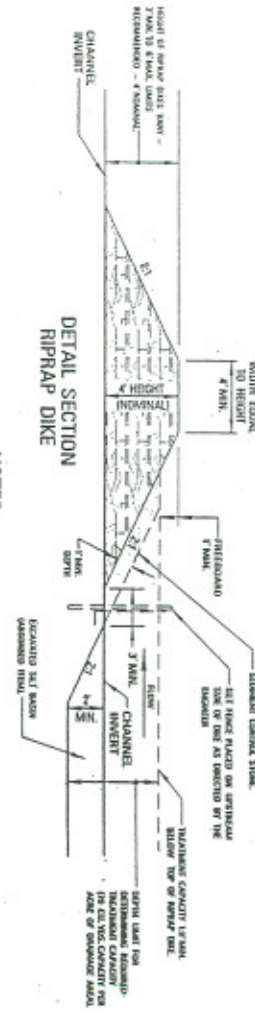
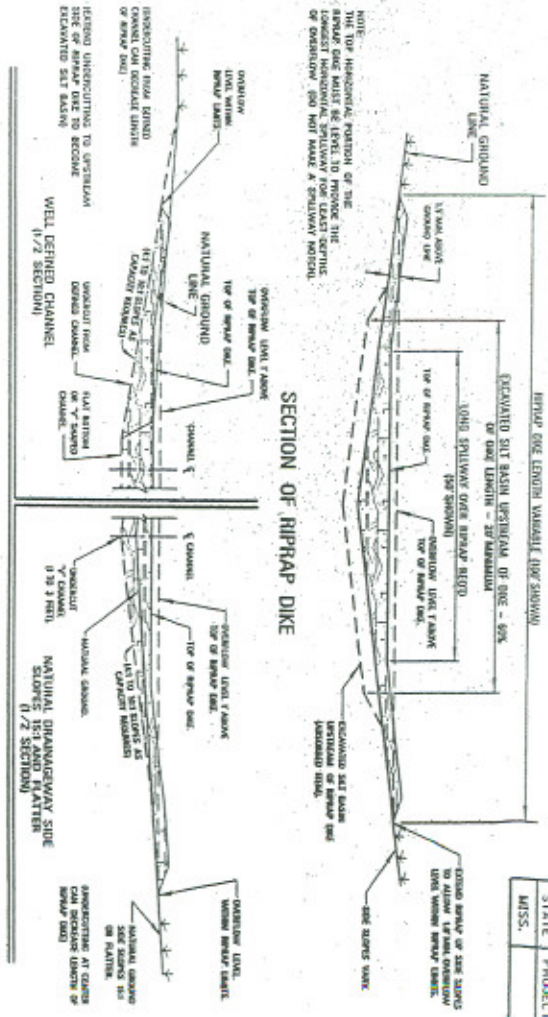
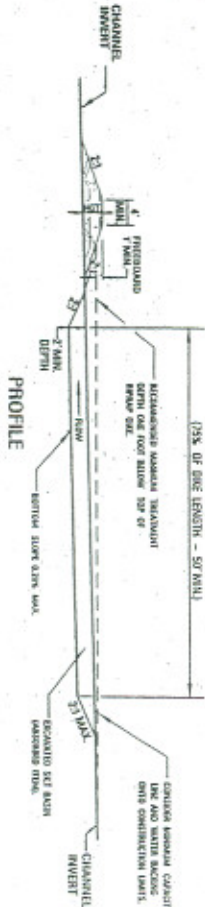
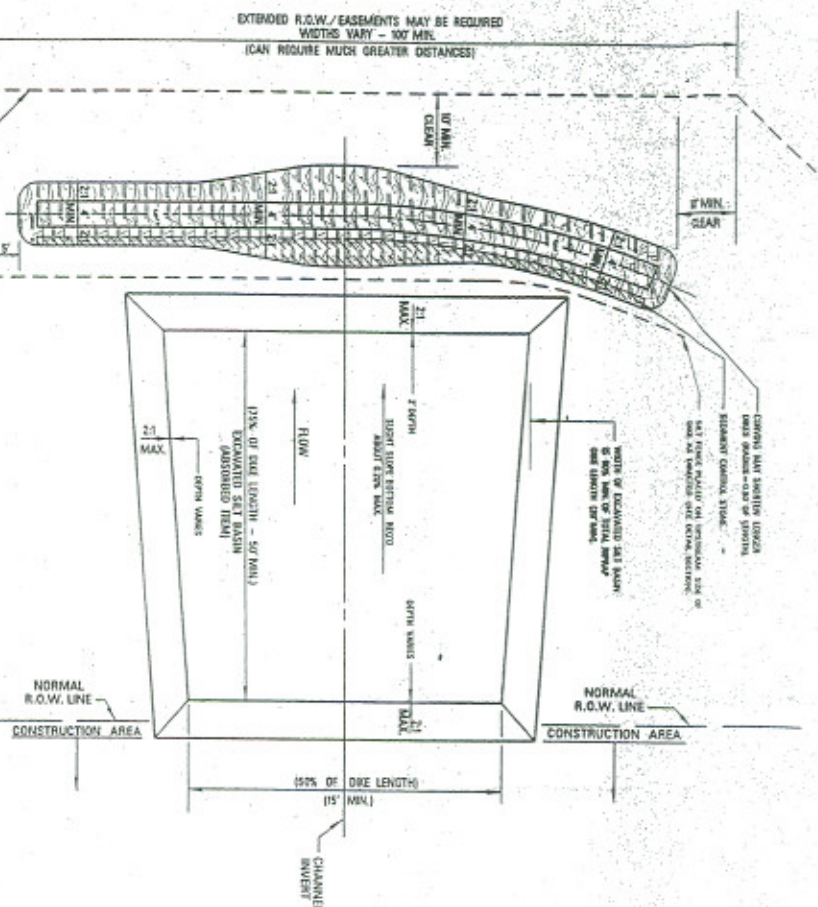
<div style="writing-mode: vertical-rl; transform: rotate(180deg);"> REVISION </div>	MISSISSIPPI DEPARTMENT OF TRANSPORTATION TYPICAL TEMPORARY EROSION CONTROL MEASURES (TYPE "C1" SILT BASIN) (UPSTREAM OF ROADWAY PRIMARILY CAN BE USED DOWNSTREAM) PROJ. NO.: COUNTY:	WORKING IN TEC- SHEET NO.
	FILENAME: dms/tec-c1.dgn	
	DESIGN TEAM:	DATE:





MISSISSIPPI DEPARTMENT OF TRANSPORTATION	
TYPICAL TEMPORARY EROSION CONTROL MEASURES	
(TYPE "C2" SILT BASIN DOWNSTREAM OF ROADWAY WITH BAFFLE)	
PROJ. NO.:	
COUNTY:	
FILENAME:	dans/tec-c2.dgn
DESIGN YEAR:	DATE:





- NOTES**
1. RIPPAP FOR SALT BASINS ARE TO BE PLACED IN SURFACE CHANNELS TO SOLIDIFY FLOOD OR LESS, BUT NO LONG-STREAMS, JUST BEFORE THE WATER DISCHARGE. THE RIPPAP SHALL BE PLACED IN THE CHANNELS WHOSE FLOOD AS REQUIRED. ALTERNATIVE TYPES OF SALT BASINS SHALL BE AS DIRECTED BY THE ENGINEER WHERE RIPPAP FOR SALT BASINS MAY BE REQUIRED.
  2. THE REQUIRED SIZE/CAPACITY OF THE RIPPAP FOR SALT BASINS IS TO BE DETERMINED BY THE ENGINEER. THE RIPPAP SHALL BE PLACED IN THE CHANNELS WHOSE FLOOD AS REQUIRED. ALTERNATIVE TYPES OF SALT BASINS SHALL BE AS DIRECTED BY THE ENGINEER WHERE RIPPAP FOR SALT BASINS MAY BE REQUIRED.
  3. THE CONTRACTOR SHALL BE REQUIRED TO FURNISH ALL MATERIALS, INCLUDING ALL WORK FOR THE RIPPAP INSTALLATION, MAINTENANCE, AND REMOVAL OF TEMPORARY EROSION CONTROL MEASURES NECESSARY TO CONSTRUCT, MAINTAIN, AND RESTORE THE BASIN TO ITS ORIGINAL EFFECTIVE DESIGN CAPACITY.
  4. AFTER THE RIPPAP FOR THE SALT BASIN HAS BEEN SET, THE POINTS OF THE RIPPAP SHALL BE MEASURED AND THE RIPPAP SHALL BE SET AS DIRECTED BY THE ENGINEER. THE RIPPAP SHALL BE SET AS DIRECTED BY THE ENGINEER. THE RIPPAP SHALL BE SET AS DIRECTED BY THE ENGINEER.
  5. RIPPAP FOR THE TYPE D SALT BASIN SHALL BE 300 LB RIPPAP AND SHALL BE PAID FOR - PER TON.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION  
TYPICAL TEMPORARY EROSION  
CONTROL MEASURES  
(TYPE "D" SALT BASIN)  
(RIPPAP FOR SALT BASIN)

PROJ. NO.:  
COUNTY:  
FILE NAME: GDS/TCC-CL-0507  
SHEET NO.



