

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT			1. CONTRACT ID CODE J	PAGE OF PAGES 1 2
2. AMENDMENT/MODIFICATION NO. 0001	3. EFFECTIVE DATE 29-Jul-2003	4. REQUISITION/PURCHASE REQ. NO. W807PM-3142-8153	5. PROJECT NO.(If applicable)	
6. ISSUED BY CODE DACW38 VBURG CONSOL CONTRACTING 4155 CLAY ST VICKSBURG MS 39183-3435		7. ADMINISTERED BY (If other than item 6) CODE See Item 6		
8. NAME AND ADDRESS OF CONTRACTOR (No., Street, County, State and Zip Code)			<input checked="" type="checkbox"/>	9A. AMENDMENT OF SOLICITATION NO. DACW38-03-B-0033
			<input checked="" type="checkbox"/>	9B. DATED (SEE ITEM 11) 30-Jun-2003
			<input type="checkbox"/>	10A. MOD. OF CONTRACT/ORDER NO.
			<input type="checkbox"/>	10B. DATED (SEE ITEM 13)
CODE	FACILITY CODE	11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS		
<input checked="" type="checkbox"/> The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offer <input checked="" type="checkbox"/> is extended, <input type="checkbox"/> is not extended. Offer must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended by one of the following methods: (a) By completing Items 8 and 15, and returning <u> 1 </u> copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.				
12. ACCOUNTING AND APPROPRIATION DATA (If required)				
13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.				
A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.				
B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(B).				
C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:				
D. OTHER (Specify type of modification and authority)				
E. IMPORTANT: Contractor <input type="checkbox"/> is not, <input type="checkbox"/> is required to sign this document and return _____ copies to the issuing office.				
14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.) Reference Invitation for Bids No. DACW38-03-B-0033 for Flood Control, Mississippi River and Tributaries, Yazoo Basin, Yalobusha River Watershed, Chickasaw County, MS, Demonstration Erosion Control Project, Box Culvert Grade Control Structures, BC-02-02, scheduled to open 31 Jul 03, 1400 Hours, is amended as follows: <div style="text-align: center;">Bid Opening Date and Time</div> <p>A new bid opening date and time of 12 Aug 03, 1400 Hours, is hereby established. Make necessary pen and ink changes.</p> <p>See Page 2 for Continuation.</p>				
Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.				
15A. NAME AND TITLE OF SIGNER (Type or print)		16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)		
		TEL: _____ EMAIL: _____		
15B. CONTRACTOR/OFFEROR	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA	16C. DATE SIGNED	
_____ (Signature of person authorized to sign)		BY _____ (Signature of Contracting Officer)	29-Jul-2003	

SECTION SF 30 BLOCK 14 CONTINUATION PAGE

SUMMARY OF CHANGES

TECHNICAL SPECIFICATIONS

The Technical Specifications, from Section 00800 GENERAL CONTRACT REQUIREMENTS completely through Section 3308 CONCRETE, are revised so that each section is numbered separately at the bottom of the page. No changes have been made to the text of the Technical Specifications except as noted below for Section 01356 STORM WATER POLLUTION PREVENTION PLAN.

SECTION 01356, STORM WATER POLLUTION PREVENTION PLAN, is reissued in its entirety. The section has been revised to agree with the MS Storm Water Small Construction Permit (added by this amendment).

STORM WATER CONSTRUCTION GENERAL PERMIT – The State of Mississippi Department of Environmental Quality (MDEQ), Storm Water Construction General Permit, attached at the end of Section 01356 STORM WATER POLLUTION PREVENTION PLAN, is deleted and replaced by MDEQ, Storm Water Small Construction General Permit.

DRAWINGS

DRAWING NOS. 4, 15, and 26 are reissued.

Pages revised by this amendment have the notation “Reissued by Amendment 0001” at the bottom of the page.

Encls: As Noted Above.

DOCUMENT TABLE OF CONTENTS
DIVISION 00 - DOCUMENTS
SECTION 00800
SPECIAL CONTRACT REQUIREMENTS

PART 1 GENERAL

- 1.1 COMMENCEMENT, PROSECUTION, AND COMPLETION OF WORK (APR 1984)
- 1.2 LIQUIDATED DAMAGES-CONSTRUCTION (SEPT 2000)
- 1.3 CONTRACT DRAWINGS AND SPECIFICATIONS (AUG 2000)
- 1.4 PERFORMANCE OF WORK BY THE CONTRACTOR (APR 1984)
- 1.5 WORK TO BE PERFORMED BY CONTRACTOR'S OWN ORGANIZATION
- 1.6 PHYSICAL DATA (APR 1984)
- 1.7 EQUIPMENT OWNERSHIP AND OPERATING EXPENSE SCHEDULE (MAR 1995)
- 1.8 COMMAND OVERSIGHT
- 1.9 YEAR 2000 COMPLIANCE
- 1.10 SECURITY REQUIREMENTS FOR UNCLASSIFIED CONTRACTS

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

-- End of Document Table of Contents --

SECTION 00800

SPECIAL CONTRACT REQUIREMENTS

PART 1 GENERAL

1.1 COMMENCEMENT, PROSECUTION, AND COMPLETION OF WORK (APR 1984)

The Contractor shall be required to (a) commence work under this contract within 10 calendar days after the date the Contractor receives the notice to proceed, (b) prosecute the work diligently, and (c) complete the entire work ready for use not later than 360 calendar days after the date the Contractor receives the notice to proceed. The time stated for completion shall include final cleanup of the premises. (FAR 52.211-10)

1.2 LIQUIDATED DAMAGES-CONSTRUCTION (SEPT 2000)

(a) If the Contractor fails to complete the work within the time specified in the contract, the Contractor shall pay liquidated damages to the Government in the amount of \$490.00 for each calendar day of delay until the work is completed or accepted.

(b) If the Government terminates the Contractor's right to proceed, liquidated damages will continue to accrue until the work is completed. These liquidated damages are in addition to excess costs of repurchase under the Termination clause. (FAR 52.211-12)

1.3 CONTRACT DRAWINGS AND SPECIFICATIONS (AUG 2000)

(a) The Government will provide to the Contractor, without charge, one set of contract drawings and specifications, except publications incorporated into the technical provisions by reference, in electronic or paper media as chosen by the Contracting Officer.

(b) The Contractor shall --

- (1) Check all drawings furnished immediately upon receipt;
- (2) Compare all drawings and verify the figures before laying out the work;
- (3) Promptly notify the Contracting Officer of any discrepancies;
- (4) Be responsible for any errors which might have been avoided by complying with this paragraph (b); and
- (5) Reproduce and print contract drawings and specifications as needed.

(c) In general --

- (1) Large-scale drawings shall govern small scale drawings; and
- (2) The Contractor shall follow figures marked on drawings in preference to scale measurements.

(d) Omissions from the drawings or specifications or the misdescription of details of work which are manifestly necessary to carry out the intent of the drawings and specifications, or that are customarily performed, shall not relieve the Contractor from performing such omitted or misdescribed details of the work. The Contractor shall perform such details as if fully and correctly set forth and described in the drawings and specifications.

(e) The work shall conform to the specifications and the contract drawings identified on the following index of drawings:

FILE NO. YYA-15-303

DRAWING TITLE	DRAWING NO.
INDEX, LOCATION, AND VICINITY MAP	1
MUD CREEK	
SITE PLAN - EXISTING CONDITIONS	2
SITE PLAN - COMPLETED PROJECT	3
CROSS SECTIONS	4
CROSS SECTIONS AND DETAILS	5
TRAFFIC CONTROL PLAN AND DETAILS	6
CONCRETE PLANS, SECTIONS AND DETAILS 1 OF 6	7
CONCRETE PLANS, SECTIONS AND DETAILS 2 OF 6	8
CONCRETE PLANS, SECTIONS AND DETAILS 3 OF 6	9
CONCRETE PLANS, SECTIONS AND DETAILS 4 OF 6	10
CONCRETE PLANS, SECTIONS AND DETAILS 5 OF 6	11
CONCRETE PLANS, SECTIONS AND DETAILS 6 OF 6	12
NARON CREEK	
SITE PLAN - EXISTING CONDITIONS	13
SITE PLAN - COMPLETED PROJECT	14
CROSS SECTIONS	15
CROSS SECTIONS AND DETAILS	16
TRAFFIC CONTROL PLAN AND DETAILS	17
CONCRETE PLANS, SECTIONS AND DETAILS 1 OF 6	18
CONCRETE PLANS, SECTIONS AND DETAILS 2 OF 6	19
CONCRETE PLANS, SECTIONS AND DETAILS 3 OF 6	20
CONCRETE PLANS, SECTIONS AND DETAILS 4 OF 6	21
CONCRETE PLANS, SECTIONS AND DETAILS 5 OF 6	22
CONCRETE PLANS, SECTIONS AND DETAILS 6 OF 6	23
TOPASHAW CREEK	
SITE PLAN - EXISTING CONDITIONS	24
SITE PLAN - COMPLETED PROJECT	25
CROSS SECTIONS	26
CROSS SECTIONS AND DETAILS	27
TRAFFIC CONTROL PLAN AND DETAILS	28
CONCRETE PLANS, SECTIONS AND DETAILS 1 OF 6	29
CONCRETE PLANS, SECTIONS AND DETAILS 2 OF 6	30
CONCRETE PLANS, SECTIONS AND DETAILS 3 OF 6	31
CONCRETE PLANS, SECTIONS AND DETAILS 4 OF 6	32
CONCRETE PLANS, SECTIONS AND DETAILS 5 OF 6	33
CONCRETE PLANS, SECTIONS AND DETAILS 6 OF 6	34
GEOTECHNICAL BORING LEGEND	35
GEOTECHNICAL BORING LOG	36
STORM WATER PREVENTION PLAN AND DETAILS	37

(DFARS 252.236-7001)

1.4 PERFORMANCE OF WORK BY THE CONTRACTOR (APR 1984)

The Contractor shall perform on the site and with its own organization, work equivalent to at least twenty (20) percent of the total amount of work to be performed under the contract. This percentage may be reduced by a supplemental agreement to this contract if, during performing the work, the Contractor requests a reduction and the Contracting Officer determines that the reduction would be to the advantage of the Government. (FAR 52.236-1)

1.5 WORK TO BE PERFORMED BY CONTRACTOR'S OWN ORGANIZATION

Within 10 days after award, the successful bidder/contractor must furnish the Contracting Officer a description of the items of work which will be performed with its own forces and the estimated cost of those items. (See paragraph PERFORMANCE OF WORK BY THE CONTRACTOR.)

1.6 PHYSICAL DATA (APR 1984)

Data and information furnished or referred to below is for the Contractor's information. The Government shall not be responsible for any interpretation of or conclusion drawn from the data or information by the Contractor.

(a) The indications of physical conditions on the drawings and in the specifications are the result of site investigations by surveys and borings.

(b) Weather Conditions. Information with respect to temperatures and precipitation may be obtained from the National Weather Service.

(c) Transportation Facilities.

(1) Roads. Interstate 55, U.S. Highway No. 51, Mississippi State Highway No. 8, and local roads serve the general area.

(2) Railroads. The Canadian National/Illinois Central Railroad serves the general area.

(d) Floods. High water stages or events are not to be considered a "flood," and damages resulting therefrom are not compensable under Section 01000 GENERAL CONTRACT REQUIREMENTS, paragraph DAMAGE TO WORK unless high water stages or events exceed Elevation 99.69 m NGVD at the structure site on Naron Creek, Elevation 102.39 m NGVD at the structure site on Mud Creek, or Elevation 94.26 m NGVD at the structure site on Topashaw Creek, all measured at the downstream limits of the respective Government-furnished rights-of-way.

(e) Additional Data. Additional data consisting of additional cross sections, records of borings, and boring samples are available for inspection at:

U.S. Army Engineer District, Vicksburg
4155 Clay Street
Vicksburg, Mississippi 39183-3435

(FAR 52.236-4)

1.7 EQUIPMENT OWNERSHIP AND OPERATING EXPENSE SCHEDULE (MAR 1995)

(a) This clause does not apply to terminations. See 52.249-5000, Basis for settlement of proposals and FAR Part 49.

(b) Allowable cost for construction and marine plant and equipment in sound workable condition owned or controlled and furnished by a contractor or subcontractor at any tier shall be based on actual cost data for each piece of equipment or groups of similar serial and series for which the Government can determine both ownership and operating costs from the contractor's accounting records. When both ownership and operating costs cannot be determined for any piece of equipment or groups of similar serial or series equipment from the contractor's accounting records, costs for that equipment shall be based upon the applicable provisions of EP 1110-1-8, Construction Equipment Ownership and Operating Expense Schedule, Region III. Working conditions shall be considered to be average for determining equipment rates using the schedule unless specified otherwise by the contracting officer. For equipment not included in the schedule, rates for comparable pieces of equipment may be used or a rate may be developed using the formula provided in the schedule. For forward pricing, the schedule in effect at the time of negotiations shall apply. For retroactive pricing, the schedule in effect at the time the work was performed shall apply.

(c) Equipment rental costs are allowable, subject to the provisions of FAR 31.105(d)(ii) and FAR 31.205-36. Rates for equipment rented from an organization under common control, lease-purchase arrangements, and sale-leaseback arrangements, will be determined using the schedule, except that actual rates will be used for equipment leased from an organization under common control that has an established practice of leasing the same or similar equipment to unaffiliated lessees.

(d) When actual equipment costs are proposed and the total amount of the pricing action exceeds the small purchase threshold, the contracting officer shall request the contractor to submit either certified cost or pricing data, or partial/limited data, as appropriate. The data shall be submitted on Standard Form 1411, Contract Pricing Proposal Cover Sheet. (EFARS 52.231-5000)

NOTE: EP-1110-1-8, "Construction Equipment Ownership and Operating Expense Schedule" is available on the internet at <http://www.usace.army.mil/inet/usace-docs/eng-pamphlets/ep.htm>, or may be purchased from the Government Printing Office on CD-ROM by calling (202) 512-1800.

1.8 COMMAND OVERSIGHT

Although the U.S. Army Corps of Engineers has decided that effective 1 Oct 93 District and operating Major Subordinate Commanders will no longer be Contracting Officers, the Commanders will be expected to exercise oversight on (approve) critical decisions on this contract, including contract award (see FAR Clause 52.204-1, "Approval of Contract"), settlement actions and alternate dispute resolution (ADR).

1.9 YEAR 2000 COMPLIANCE

In accordance with FAR 39.106, the Contractor shall ensure that with respect to any design, construction, goods, or services under this contract as well as any subsequent task/delivery orders issued under this contract

(if applicable), all information technology contained therein shall be Year 2000 compliant. Specifically, the contractor shall:

(a) Perform, maintain, and provide an inventory of all major components to include structures, equipment, items, parts, and furnishing under this contract and each task/delivery order which may be affected by the Year 2000 compliance requirement.

(b) Indicate whether each component is currently Year 2000 compliant or requires an upgrade for compliance prior to government acceptance.

1.10 SECURITY REQUIREMENTS FOR UNCLASSIFIED CONTRACTS

All Contractor employees (U.S. citizens and Non- U.S. citizens) working under this contract who require access to Automated Information Systems (AIS), (stand alone computers, network computers/systems, e-mail) shall, at a minimum, be designated into an ADP-III position (non-sensitive) in accordance with DoD 5220-22-R, Industrial Security Regulation. The investigative requirements for an ADP-III position are a favorable National Agency Check (NAC), SF-85P, Public Trust Position. The contractor shall have each applicable employee complete a SF-85P and submit to the Security Officer, ATTN: CEMVK-PM, 4155 Clay Street, Vicksburg, MS 39183-3435 within three (3) working days after award of any contract or task order, and shall be submitted prior to the individual being permitted access to an AIS. Contractors that have a commercial or government entity (CAGE) Code and Facility Security Clearance through the Defense Security Service shall process the NACs and forward visit requests/results of NAC to the Security Officer, ATTN: CEMVK-PM, 4155 Clay Street, Vicksburg, MS 39183-3435. For those contractors that do not have a CAGE Code or Facility Security Clearance, Security Officer, ATTN: CEMVK-PM, 4155 Clay Street, Vicksburg, MS 39183-3435 Security Office will process the investigation in coordination with the Contractor and contract employees.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

-- End of Section --

SECTION TABLE OF CONTENTS
DIVISION 01 - GENERAL REQUIREMENTS
SECTION 01000
GENERAL CONTRACT REQUIREMENTS

PART 1 GENERAL

- 1.1 REFERENCES
- 1.2 PARTNERING
- 1.3 RIGHTS-OF-WAY
- 1.4 PRECONSTRUCTION CONFERENCE
- 1.5 NOTIFICATION OF AREA ENGINEER BEFORE BEGINNING WORK
- 1.6 ORDER OF WORK
- 1.7 PROGRESS CHART
- 1.8 DESIGNATED BILLING OFFICE
- 1.9 PAYMENT INVOICES
- 1.10 TEMPORARY PROJECT FENCING
- 1.11 PROJECT SIGN (APR 1991)
- 1.12 MINIMUM REQUIRED INSURANCE
- 1.13 WORK IN QUARANTINED AREA
- 1.14 CERTIFICATES OF COMPLIANCE
- 1.15 PROCESS FOR OBTAINING CURRENT REQUIREMENTS OF THE U.S. ARMY CORPS
OF ENGINEERS SAFETY AND HEALTH REQUIREMENTS MANUAL (EM 385-1-1)
- 1.16 SAFETY SIGN
- 1.17 ACCIDENT PREVENTION PLAN
- 1.18 DAILY INSPECTIONS
- 1.19 ACCIDENT INVESTIGATIONS AND REPORTING
- 1.20 ACCOMMODATIONS FOR GOVERNMENT REPRESENTATIVES
- 1.21 MACHINERY AND MECHANIZED EQUIPMENT
- 1.22 VEHICLE WEIGHT LIMITATIONS
- 1.23 PUBLIC UTILITIES
- 1.24 DAMAGE TO WORK
- 1.25 ENERGY CONSERVATION
- 1.26 TIME EXTENSIONS FOR UNUSUALLY SEVERE WEATHER
- 1.27 CONTROL OF ACCESS TO CONSTRUCTION AREAS
- 1.28 MAINTENANCE OF TRAFFIC
- 1.29 HARBOR MAINTENANCE FEE
- 1.30 COUNTY ROAD CLOSURE

PART 2 PRODUCTS

PART 3 EXECUTION

-- End of Section Table of Contents --

SECTION 01000

GENERAL CONTRACT REQUIREMENTS

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

CODE OF FEDERAL REGULATIONS (CFR)

19 CFR 24.24	Harbor Maintenance Fee
33 CFR 156	Oil and Hazardous Material Transfer Operations

1.2 PARTNERING

The Government encourages formation of informal project partnerships on all projects. A project partnership strives to utilize a cooperative working relationship to jointly establish and effectively reach mutual project execution goals. The partnering process will in no way relax or stiffen the requirements of the contract, but will enhance the likelihood of success through improved working relationships. The possibility of an informal partnership may be discussed at the Pre-construction Conference for this project.

1.3 RIGHTS-OF-WAY

a. The rights-of-way for the work to be constructed under this contract, within the limits indicated on the drawings, will be provided by the Government without cost to the Contractor. If these rights-of-way are used by the Contractor, he shall, at his own expense, do all work necessary to make such rights-of-way suitable for traveling to and from the worksite. Upon completion of the Contractor's work, any such rights-of-way furnished by the Government shall be left in a condition satisfactory to the Contracting Officer.

b. When so directed by the Contracting Officer, the Contractor shall, without expense to the Government and at any time during the progress of the work when it is not being actively used for contract operations, promptly vacate and clean up any part of the Government grounds or rights-of-way that have been allotted to or have been in use by the Contractor.

c. The Contractor shall not obstruct any existing roads on lands controlled by the United States except with written permission of the Contracting Officer and shall maintain such roads in as good condition as exists at the time of commencement of work under this contract.

d. The Contractor shall procure, without expense to the Government, all additional lands, access roads, or rights-of-way necessary for his use in the performance of the work or as required by his method of

operation. The Contractor shall submit written evidence to the Contracting Officer that he has obtained the rights-of-way from the property owners. The written evidence shall consist of an authenticated copy of the conveyance under which the Contractor acquired such rights-of-way, prepared and executed in accordance with the laws of the State in which the land is located. The Contractor shall also obtain from the owners a release for the Government for any damages which may result from his use of such rights-of-way. The written conveyance and release shall be provided to the Government prior to use of Contractor obtained additional lands, access roads, or rights-of-way. If temporary rights-of-way are obtained by the Contractor the period of time for those rights shall coincide with Section 00800 SPECIAL CONTRACT REQUIREMENTS, paragraph COMMENCEMENT, PROSECUTION AND COMPLETION OF WORK, plus a reasonable time for any extension granted for the completion of the work. Any agreements or permits with levee boards, counties, parishes, municipalities, or other political subdivisions for moving material and equipment will be the responsibility of the Contractor and will be obtained at no expense to the Government. Any delays to the Contractor resulting from delays in procuring such additional lands, access roads, rights-of-way, or permits for moving material and equipment for his work under this contract will not be a basis for any claim for increase in the cost of this contract. The Contractor shall make his own investigations to determine the conditions, restrictions and difficulties which may be encountered in acquiring such rights-of-way and in the transportation of material and equipment. In addition, the Contractor shall be solely liable for any and all damages and claims of any nature whatsoever arising from or growing out of the acquisition and use of rights-of-way, etc., other than those furnished by the Government.

e. Notwithstanding any language or drawings to the contrary in this contract, the United States will not provide access or rights-of-way over any public lands and will not be responsible for acquiring such.

f. The Contractor shall repair at no expense to the Government, any and all damage to any existing roads when such damage is a result of his operations under this contract. (CEMVK-OC, 1989)

1.4 PRECONSTRUCTION CONFERENCE

a. A preconstruction conference will be arranged by the Area Engineer as soon after contract award as possible, and the conference will be conducted before work is allowed to commence. The Area Engineer will notify the Contractor of the time, date, and location for the meeting. At this conference, the Contractor will be oriented with respect to contract administration procedures, lines of authority, and construction matters. All known subcontractors performing at least 20 percent of the contract are required to attend this conference. Additional conferences may be established by the Area Engineer for any major subcontractors unknown at the time of the initial conference.

b. Submission by the Contractor of the items listed below will determine the date of the conference. The following items shall be submitted to the Area Engineer for review at least seven (7) calendar days prior to the preconstruction conference:

- (1) Accident Prevention Plan
- (2) Environmental Protection Plan

(3) Quality Control Plan

c. The Contractor shall bring to this conference, in completed form the following:

(1) Letter of superintendent appointment and authority

(2) List of subcontractors

d. The Contractor should bring to this conference, or at least be prepared to discuss, the following:

(1) Submittal register

(2) Progress chart or Network Analysis System (as applicable)

e. Minutes of this conference will be taken and prepared by the Area Engineer and sent to the Contractor for his concurrence and signature.

1.5 NOTIFICATION OF AREA ENGINEER BEFORE BEGINNING WORK

At least 7 days before beginning work, and at least one day before resuming work after a period of 7 days or more when no work has been performed, the Contractor shall notify U.S. Army Corps of Engineers, Mr. Sam Horton, Area Engineer, Greenwood Area Office, P.O. Box 946, Greenwood, Mississippi 38935-0946, telephone (662) 453-5531.

1.6 ORDER OF WORK

The work shall be carried on in accordance with the Progress Chart (schedule) required by paragraph (a) of the Contract Clause SCHEDULES FOR CONSTRUCTION CONTRACTS.

Construction shall be limited to no more than one structure site at any given time. When work at any one site is substantially complete, then work at another site may begin. For this purpose, work at a site will be considered substantially complete when all work at the site except erosion control has been completed and accepted by the Government. Any proposed variance from this order of work must be approved by the Contracting Officer in writing.

1.7 PROGRESS CHART

The progress chart required by provisions of paragraph (a) of the Contract Clause SCHEDULES FOR CONSTRUCTION CONTRACTS shall be prepared on ENG FORM 2454, copies of which will be furnished to the Contractor by the Government. Three (3) copies of the schedule will be required. The Progress Chart shall be periodically updated.

1.8 DESIGNATED BILLING OFFICE

The designated billing office for this contract shall be U.S. Army Corps of Engineers, Greenwood Area Office, P.O. Box 946, Greenwood, Mississippi 38935-0946.

1.9 PAYMENT INVOICES

a. The Federal Acquisition Regulation requires that the "REMIT TO"

address on the invoice match the "REMIT TO" address on the contract or a proper notice of assignment. The Payment Office will verify a match of the "REMIT TO" address in the contract and Contractor's invoice prior to payment. If the addresses do not match, the invoice will be determined improper and returned to the Contractor for correction and resubmission. If an invoice is improperly returned, the original invoice receipt date shall be used as the basis for determining interest to be paid in accordance with the PROMPT PAYMENT ACT.

b. Among other things, the Contract Clause PROMPT PAYMENT FOR CONSTRUCTION CONTRACTS requires that a proper invoice for payment include substantiation of the amounts requested. As required in Office of Management and Budget, Circular A-125 (Rev.), PROMPT PAYMENT, dated December 12, 1989, substantiation of the amount requested for progress payments under construction contracts includes the following:

- (1) An itemization of the amounts requested related to the various elements of work required by the contract covered by the payment request;
- (2) A listing of the amount included for work performed by each subcontractor under the contract;
- (3) A listing of the total amount of each subcontract under the contract;
- (4) A listing of the amounts previously paid to each such subcontractor under the contract; and,
- (5) Additional supporting data in a form and detail required by the contracting officer.

c. Failure to include the above information in a Contractor's invoice will result in the invoice being considered defective under the provisions of the PROMPT PAYMENT FOR CONSTRUCTION CONTRACTS clause of the contract, and it will be returned to the Contractor for correction and resubmission. (CEMVK-OC, 1997)

1.10 TEMPORARY PROJECT FENCING

Temporary project fencing as required by Section 4, "Temporary Facilities", paragraph 04.A.04 of EM 385-1-1, U.S. Army Corps of Engineers Safety and Health Requirements Manual, is not required on this project.

1.11 PROJECT SIGN (APR 1991)

The Contractor shall fabricate, erect and maintain one sign for project identification. The sign shall be displayed and positioned for reading by passing viewers. The exact location is subject to Contracting Officer's approval. Information for the right side of the project sign shall be as follows:

Title	DEMONSTRATION EROSION CONTROL PROJECT BOX CULVERT GRADE CONTROL STRUCTURES BC-02-02
Project:	FLOOD CONTROL, MISSISSIPPI RIVER AND TRIBUTARIES YALOBUSHA RIVER WATERSHED

CHICKASAW COUNTY, MISSISSIPPI

Contract No: DACW38-03-C-0XXX

Contractor: (Contractor's name and city)

The project identification sign shall meet the requirements specified in the U.S. Army Corps of Engineers Sign (USACES) Standards Manual, EP 310-1-6a and EP 310-1-6b. A copy of the sign standards manual is available for review at the office of the Vicksburg District Sign Program Manager and questions concerning manufacture and installation of the project identification sign may be addressed to:

Vicksburg District Sign Program Manager (Lawran Richter)
ATTN: CEMVK-OD-MN
4155 Clay Street
Vicksburg, MS 39183-3435
Telephone: (601) 631-5287

1.12 MINIMUM REQUIRED INSURANCE

The following paragraph is applicable if the services involved are performed on a Government Installation. Government Installation is defined as property where the Government holds by fee simple title, by construction rights-of-way, or perpetual easement, etc., an interest in real property. See Contract Clause INSURANCE-WORK ON A GOVERNMENT INSTALLATION.

- a. Workmen's Compensation and Employer's Liability Insurance. The Contractor shall comply with all applicable workmen's compensation Statutes of the State of Mississippi and shall furnish evidence of Employer's Liability Insurance in an amount of not less than \$100,000.
- b. General Liability Insurance. Bodily injury liability insurance in the minimum limits of \$500,000 per occurrence on the comprehensive form of policy.
- c. Automobile Liability Insurance. Minimum limits of \$200,000 per person and \$500,000 per occurrence for bodily injury and \$20,000 per occurrence for property damage. This insurance shall be on the comprehensive form of policy and shall cover the operation of all automobiles used in performance of the contract.

1.13 WORK IN QUARANTINED AREA

The work called for by this contract involves activities in counties quarantined by the Department of Agriculture to prevent the spread of certain plant pests which may be present in the soil. The Contractor agrees that all construction equipment and tools to be moved from such counties shall be thoroughly cleaned of all soil residues at the construction site with water under pressure and that hand tools shall be thoroughly cleaned by brushing or other means to remove all soil. In addition, if this contract involves the identification, shipping, storage, testing, or disposal of soils from such quarantined area, the Contractor agrees to comply with the provisions of ER 1110-1-5, "Plant Pest Quarantined Areas and Foreign Soil Samples" attachments, a copy of which will be made available by the Contracting Officer upon request. The Contractor agrees to assure compliance with this obligation by all subcontractors.

1.14 CERTIFICATES OF COMPLIANCE

Any certificates required for demonstrating proof of compliance of material with specification requirements shall be executed in accordance with Section 01330 SUBMITTAL PROCEDURES. Each certificate shall be signed by an official authorized to certify on behalf of the manufacturing company and shall contain the name and address of the Contractor, the project name and location, and the quantity and date or dates of shipment or delivery to which the certificates apply. Copies of laboratory test reports submitted with certificates shall contain the name and address of the testing laboratory and the date or dates of the tests to which the report applies. Certification shall not be construed as relieving the Contractor from furnishing satisfactory material, if, after tests are performed on selected samples, the material is found not to meet the specific requirements.

1.15 PROCESS FOR OBTAINING CURRENT REQUIREMENTS OF THE U.S. ARMY CORPS OF ENGINEERS SAFETY AND HEALTH REQUIREMENTS MANUAL (EM 385-1-1)

Contractors are required to comply with the latest version, and all posted changes, of the U.S. Army Corps of Engineers Safety and Health Requirements Manual in effect on the issue date of this solicitation. EM 385-1-1 and changes are available on the Internet at <http://www.hq.usace.army.mil> (at the HQ home page, select "Safety and Occupational Health", and then select "EM 385-1-1" for the manual, or "Changes to EM" for the most recent changes to the manual). Prior to making an offer, offerors should check the referenced website for the latest changes. No separate payment will be made for compliance with the requirements of this paragraph, or for compliance with other safety requirements of the contract.

1.16 SAFETY SIGN

The Contractor shall fabricate, erect and maintain a safety sign at the site, as located by the Contracting Officer. The sign shall be erected as soon as practicable, but not later than 15 calendar days after the date established for commencement of work. The data required shall be current. The safety sign shall meet the requirements specified in the U.S. Army Corps of Engineers Sign (USACES) Standards Manual, EP 310-1-6a and EP 310-1-6b. A copy of the sign standards manual is available for review at the office of the Vicksburg District Sign Program Manager and questions concerning manufacture and installation of the safety sign may be addressed to:

Vicksburg District Sign Program Manager (Lawran Richter)
ATTN: CEMVK-OD-MN
4155 Clay Street
Vicksburg, MS 39183-3435
Telephone: (601) 631-5287

1.17 ACCIDENT PREVENTION PLAN

Refer to Contract Clause ACCIDENT PREVENTION (Alternate I). Within 15 days after receipt of award of the contract, an Accident Prevention Plan shall be submitted to the Contracting Officer for review and acceptance. The plan shall be prepared in the following format:

- a. An executed MVD FORM 358-R, "Administrative Plan" (available upon request), see Appendix A, "Minimum Basic Outline for Accident Prevention Plan" of EM 385-1-1.

- b. An executed MVD FORM 359-R, "Activity Hazard Analysis" (available upon request), see paragraph 01.A.09 and figure 1-1 of EM 385-1-1.
- c. A copy of company policy statement regarding accident prevention.
- d. When marine plant and equipment are in use under a contract, the method of fuel oil transfer shall be submitted on MVD Form 414R Fuel Oil Transfer, (available upon request). (Refer to 33 CFR 156.)
- e. The Contractor shall not commence physical work at the site until the plan has been accepted by the Contracting Officer, or his authorized representative. At the Contracting Officer's discretion, the Contractor may submit his Activity Hazard Analysis only for the first phase of construction provided that it is accompanied by an outline of the remaining phases of construction. All remaining phases shall be submitted and accepted prior to the beginning of work in each phase. Also, refer to Section 1, "Program Management", paragraph 01.B, "Indoctrination and Training" of EM 385-1-1.

1.18 DAILY INSPECTIONS

Refer to Section 01451 CONTRACTOR QUALITY CONTROL and Contract Clause INSPECTION OF CONSTRUCTION. The Contractor shall perform daily safety inspections and record them on the forms approved by the Contracting Officer. Reports of daily inspections shall be maintained at the job site. The reports shall be records of the daily inspections and resulting actions. As a minimum each report shall include the following:

- a. Phase(s) of construction underway during the inspection
- b. Locations or areas inspections were made.
- c. Results of inspection, including nature of deficiencies observed and corrective actions taken, or to be taken, date, and signature of the person responsible for its contents.

1.19 ACCIDENT INVESTIGATIONS AND REPORTING

Refer to EM 385-1-1, Section 1, "Program Management", paragraph 01.D, "Accident Reporting and Recordkeeping". Accidents shall be investigated and reports completed by the immediate supervisor of the employee(s) involved and reported in writing to the Contracting Officer or his representative within one working day after the accident occurs.

1.20 ACCOMMODATIONS FOR GOVERNMENT REPRESENTATIVES

- a. Accommodations. The Contractor shall furnish and maintain a temporary building for the exclusive use of the Government Representatives and shall move the building from the vicinity of one part of the work to another as the work progresses. The building shall be of light, but weatherproof construction, approximately 11.1 square meters in size with not less than 2.1 meters of headroom. It shall have a substantial workbench along one side and sufficient number of windows to admit ample working light. Windows shall be arranged to open and to be securely fastened from the inside. The door shall be of wood panel or solid core construction and be equipped with a padlock and heavy duty hasp bolted to the door. Insect screens shall be provided for windows. Glass panels in windows shall be equipped with bars or heavy mesh screens which will prevent easy access to the

building through these panels. The Contractor shall heat the building by means of heaters and shall cool the building by means of an air conditioning unit. Electric current shall also be provided for operation of lights, appliances, and electric calculators at 115 volts AC. Electric current may be provided by use of a portable generator. A minimum of two wall outlets and two ceiling drops shall be provided in the building. One office desk and a minimum of two chairs shall be provided in the building. Telephone service with two exclusive lines solely for Government use shall be furnished to the Government Representative building. Toilet facilities shall be provided within the building or adjacent thereto. The building shall remain the property of the Contractor and upon completion of all work under the contract shall be removed as provided in the Contract Clause OPERATIONS AND STORAGE AREAS. An office trailer meeting the above requirements will be acceptable.

b. Janitor Services. The Contractor shall furnish daily janitorial services for the above office and perform any required maintenance of subject facility and adjacent grounds during the entire life of the contract. Toilet facilities shall be clean and sanitary at all times. Services shall be performed at such a time and in such a manner to least interfere with the operations but will be accomplished only when the office is in daily use. The Contractor shall also provide daily trash collection and cleanup of the building and adjacent outside areas, and shall dispose of all discarded debris in a manner approved.

c. No separate measurement or payment will be made for providing and maintaining the prescribed building, accommodations, utilities and janitor services, and all costs associated therewith shall be distributed throughout the existing bid items. Should the Contractor refuse, neglect, or delay compliance with the above requirements, the specific facilities may be furnished and maintained by the Contracting Officer, and the cost thereof will be deducted from any amount due or to become due the Contractor.

1.21 MACHINERY AND MECHANIZED EQUIPMENT

Machinery and mechanized equipment used under this contract shall comply with the following:

a. When mechanized equipment is operated on floating plant, the Contractor shall provide positive and acceptable means of preventing this equipment from moving or falling into the water. The type of equipment addressed by this clause includes front-end loaders, bulldozers, trucks (both on- and off-road), backhoes, hydraulic excavators (track hoes), and similar equipment. If the Contractor plans to use such equipment on floating plant, an activity hazard analysis must be developed for this feature of work. The plan must include a detailed explanation of the type or types of physical barriers, curbs, structures, etc., which will be incorporated to protect the operator and prevent the equipment from entering the water. Nonstructural warning devices may be considered for situations where the use of structural barriers is determined to be impracticable. The activity hazard analysis must thoroughly address the procedure and be submitted to the Corps for review and acceptance prior to start of this feature of work.

b. The stability of crawler, truck, and wheel-mounted cranes shall be assured.

(1) The manufacturer's load-rating chart may be used to determine the maximum allowable working load for each particular crane's boom angle provided a test load, with a boom angle of 0.35 rads, confirms the manufacturer's load-rating table.

(2) Stability tests are required if:

(i) there is no manufacturer's load-rating chart securely fixed to the operator's cab;

(ii) there has been a change in boom or other structural member or,

(iii) there has been a change in the counterweight.

The test shall consist of lifting a load with the boom in the least stable undercarriage position and at an angle of 0.35 rads above the horizontal. The test shall be conducted under close supervision on a firm, level surface. The load that tilts the machine shall be identified as the test load. The test load moment

(N-m)

shall then be calculated by multiplying the horizontal distance (in meters) from the center of rotation of the machine to the test load, times the test load (in N). Three-fourths of this test-load moment shall then be used to compute the maximum allowable operating loads for the boom at 0.35, 0.70, 1.05 and 1.40 rads above horizontal. From these maximum allowable operating loads, curve shall be plotted and posted in the cab of the machine in sight of the operator. These values shall not be exceeded except in the performance test described below. The test load shall never exceed 100 percent of the manufacturer's maximum rated capacity.

(3) In lieu of the test and computations above, the crane may be load tested for stability at each of the four boom positions listed above.

c. Performance tests shall be performed in accordance with Section 16, "Machinery and Mechanized Equipment" of EM 385-1-1, U.S. Army Corps of Engineers Safety and Health Requirements Manual, except as specified below. Performance tests shall be conducted after each stability test, when the crane is placed in service on a project, and at least every 12 months.

(1) When conducting a performance load test which is required of a new crane or a crane in which load sustaining parts have been altered, replaced, or repaired (excluding replacement of the rope), the test load shall be as specified in ASME/ANSI B30 Series. That is, for overhead, gantry, portal, pillar, tower, monorail, and underhung cranes, the test load shall not exceed 125 percent of the manufacturer's load rating capacity chart at the configuration of the test; and for hammerhead tower, mobile, and floating cranes and boom trucks, the test load shall not exceed 110 percent of the manufacturer's load rating capacity chart at the configuration of the test.

(2) When conducting a performance load test which is required because a crane is reconfigured, or reassembled after disassembly,

or because the crane requires an annual load test, the test loads shall not exceed 100 percent of the manufacturer's load rating capacity chart at the configuration of the test.

(3) All load tests are required to be conducted in accordance with the manufacturer's recommendations.

d. Inspections shall be made which will ensure a safe and economical operation of both cranes and draglines with inspection documented. Copies of the inspections and tests shall be available at the job site for review. All stability and performance tests on cranes and all complete dragline inspections shall be witnessed by the Contracting Officer or his authorized representative.

e. A complete dragline inspection shall be made:

(1) at least annually;

(2) prior to the dragline being placed in operation; and

(3) after the dragline has been out of service for more than 6 months.

f. All heavy equipment moved onto the worksite shall be inspected for compliance with this contract. Some MVD Inspection forms are attached at the end of this section. All completed forms, including abatement schedule of any violations, shall be maintained at the job site for continued review and update as needed.

1.22 VEHICLE WEIGHT LIMITATIONS

Vehicle weight limitations for operation on rural roads and bridges may affect the prosecution of work in this contract. The Contractor will be responsible for obtaining all necessary licenses and permits in accordance with the Contract Clause PERMITS AND RESPONSIBILITIES. Current information regarding road and bridge weight limits may be obtained by contacting the Mississippi Department of Transportation and the president of the county Board of Supervisors for the counties through which equipment and materials will be transported as a result of this contract.

1.23 PUBLIC UTILITIES

a. The locations, if any, shown on the contract drawings for public utilities are approximate only. The exact locations of such facilities shall be determined in the field by the Contractor prior to commencing construction operations.

b. Prior to performing work in the proximity of any utility, the Contractor shall contact the utility owner.

c. The Contractor's attention is directed to the possibility that he may encounter public utilities within the project limits which may be buried and the existence of which are not presently known. Should any such utilities be encountered, the Contractor shall immediately notify the Contracting Officer, or his field representative, for a determination of whether the utilities shall be removed, relocated or altered.

d. Unless otherwise noted or determined, the Contractor shall make his

own arrangements with the owners of public utilities for relocating or altering utility facilities as may be necessary to permit construction of the work under this contract. The Contractor shall also be responsible for the replacement, if necessary, of the facilities to their permanent location after the completion of the construction work. An equitable adjustment to this contract for necessary utility relocation or alteration activities will be made in accordance with the Contract Clause CHANGES. However, prior to the implementation of any such relocation or alteration activities, the Contractor shall obtain the approval of the Contracting Officer or his field representative.

e. In the event the Contracting Officer chooses to arrange for such removals, relocations or alterations to be done by others, the Contractor shall cooperate fully in accordance with the Contract Clause OTHER CONTRACTS.

1.24 DAMAGE TO WORK

a. The responsibility for damage to any part of the permanent work shall be as set forth in the Contract Clause PERMITS AND RESPONSIBILITIES. However, if, in the judgement of the Contracting Officer, any part of the permanent work performed by the Contractor is damaged by flood (see Section 00800 SPECIAL CONTRACT REQUIREMENTS, paragraph PHYSICAL DATA, subparagraph FLOODS) or earthquake, which damage is not due to the failure of the Contractor to take reasonable precautions or to exercise sound engineering and construction practices in the conduct of the work, the Contractor shall make repairs as ordered by the Contracting Officer and full compensation for such repairs to permanent work will be made at the applicable contract unit or lump sum prices as fixed and established in the contract. If, in the opinion of the Contracting Officer, for any part of such damaged permanent work, there is no applicable contract unit or lump sum price, then an equitable adjustment pursuant to the Contract Clause CHANGES will be made as full compensation for the repairs for that part of the permanent work for which there is no applicable contract unit or lump sum price.

b. Except as herein provided, damage to all work (including temporary construction), utilities, materials, equipment, and plant shall be repaired to the satisfaction of the Contracting Officer, at the Contractor's expense, regardless of the cause of such damage.

1.25 ENERGY CONSERVATION

The Contractor shall ensure that construction operations are conducted efficiently and with the minimum use of energy.

1.26 TIME EXTENSIONS FOR UNUSUALLY SEVERE WEATHER

a. This provision specifies the procedure for determination of time extensions for unusually severe weather in accordance with Contract Clause DEFAULT (FIXED PRICE CONSTRUCTION). In order for the Contracting Officer to award a time extension under this paragraph, the following conditions must be satisfied:

(1) The weather experienced at the project site during the contract period must be found to be unusually severe, that is, more severe than the adverse weather anticipated for the project location during any given month.

(2) The unusually severe weather must actually cause a delay to the completion of the project. The delay must be beyond the control and without the fault or negligence of the Contractor.

b. The following schedule of monthly anticipated adverse weather delays is based on National Oceanic and Atmospheric Administration (NOAA) or similar data for the project location and will constitute the base line for monthly weather time evaluations. The Contractor's progress schedule must reflect these anticipated adverse weather delays in all weather dependent activities.

MONTHLY ANTICIPATED ADVERSE WEATHER DELAY
WORK DAYS BASED ON FIVE (5) DAY WORK WEEK

JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC

(6) (4) (5) (5) (5) (5) (5) (3) (3) (3) (4) (6)

c. Upon acknowledgement of the Notice to Proceed (NTP) and continuing throughout the contract, the Contractor shall record on the daily CQC report, the occurrence of adverse weather and resultant impact to normally scheduled work. Actual adverse weather delay days must prevent work on critical activities for 50 percent or more of the Contractor's scheduled work day. The number of actual adverse weather days shall include days impacted by actual adverse weather (even if adverse weather occurred in previous month), be calculated chronologically from the first to the last day of each month, and be recorded as full days. If the number of actual adverse weather delay days exceeds the number of days anticipated in paragraph b, above, the contracting officer will convert any qualifying delays to calendar days, giving full consideration for equivalent fair weather work days, and issue a modification in accordance with Contract Clause DEFAULT (FIXED PRICE CONSTRUCTION).

1.27 CONTROL OF ACCESS TO CONSTRUCTION AREAS

a. This paragraph supplements the Contract Clauses PERMITS AND RESPONSIBILITIES and OPERATIONS AND STORAGE AREAS.

b. It shall be the responsibility of the Contractor to prevent possible injury to visitors to the project site. Only personnel engaged in contract work and others authorized by the Contracting Officer shall be permitted to enter into the construction areas. Suitable barriers, warning signs and directives shall be placed by the Contractor to direct persons not engaged in the work away from the areas of danger. The Contractor shall be responsible for effective enforcement of this paragraph during the period of this contract.

1.28 MAINTENANCE OF TRAFFIC

a. The Contractor shall conduct his operations in such manner as to offer the least possible obstruction to the safe and satisfactory movement of traffic over the existing roads during the life of the contract.

b. The Contractor shall be responsible for providing, erecting, maintaining, and removal of all traffic signs, barricades, and other traffic control devices necessary for maintenance of traffic. See also

paragraph entitled ACCIDENT PREVENTION PLAN and the Contract Clause entitled ACCIDENT PREVENTION.

c. All barricades, warning signs, lights, temporary signals, other devices, flagmen, and signaling devices shall meet or exceed the minimum requirements of Mississippi DOT, Standard Specifications for Road and Bridge Construction. (See EM 385-1-1, U.S. Army Corps of Engineers Safety and Health Manual, 3 Section 21, Paragraph 21.1.09.) The Contractor is responsible for the protection, maintenance, and replacement of all existing signs, route markers, traffic control signals, and other traffic control features during the life of this contract.

d. Prior to the commencement of construction operations the Contractor shall submit for the acceptance of the Contracting Officer, complete details of his proposed plans for the maintenance of traffic and access through the construction area.

e. The requirements of this paragraph shall be met by the Contractor at no additional expense to the Government.

1.29 HARBOR MAINTENANCE FEE

a. Offerors or bidders contemplating use of U.S. ports in the performance of contract are subject to paying a harbor maintenance fee on cargo. Federal law establishes an ad valorem port use fee on commercial cargo imported into or exported from various U.S. ports. The fee is 0.125 percent (0.00125). Cargo to be used in performing work under contracts with the U.S. Government is not exempt from the fee, although certain exemptions do exist. Offerors are responsible for ensuring that the applicable fee and associated costs are taken into consideration in the preparation of their offers. Failure to pay the harbor maintenance fee may result in assessment of penalties by the Customs Service.

b. The statute is at Title 26 U.S. Code section 4461 and 4462. Department of Treasury Customs Service regulations implementing the statute, including a list of ports subject to the fee, are found at 19 CFR 24.24, Harbor Maintenance Fee. Additional information may be obtained from local U.S. Customs Service Offices or by writing to the Director, Budget Division, Office of Finance, Room 6328, U.S. Customs Service, 1301 Constitution Avenue, N.W., Washington, D.C. 20229.

1.30 COUNTY ROAD CLOSURE

a. At each structure site, a portion of a county road shall be removed and reconstructed as part of this contract. During construction that portion of the county road shall be closed to traffic.

b. Notwithstanding the paragraph RIGHTS-OF-WAY, subparagraph (e) and the Contract Clause PERMITS AND RESPONSIBILITIES, the Corps of Engineers will be responsible for obtaining a written agreement with county authorities granting permission for closure of the road and for the temporary use of county rights-of-way for construction of the project. Otherwise, the Contractor's responsibilities under these clauses remain the same.

c. The Contractor shall be responsible for providing, erecting, maintaining, and removal of all traffic signs, barricades, and other

traffic control devices for closure of the road throughout the duration of the project. See also the paragraph entitled ACCIDENT PREVENTION PLAN and the Contract Clause entitled ACCIDENT PREVENTION.

d. All barricades, warning signs, lights, temporary signals, other devices, flaggers, and signaling devices shall meet or exceed the minimum requirements contained in the U.S. Dept. of Transportation MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES. (See EM 385-1-1, U.S. Army Corps of Engineers Safety and Health Manual, Section 21, Paragraph 21.1.09.) The Contractor is responsible for the protection, maintenance, and replacement of all existing signs, route markers, traffic control signals, and other traffic control features during the life of this contract.

e. The requirements of this paragraph shall be met by the Contractor at no additional expense to the Government.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

-- End of Section --

SECTION TABLE OF CONTENTS
DIVISION 01 - GENERAL REQUIREMENTS
SECTION 01090
SOURCES FOR REFERENCE PUBLICATIONS

PART 1 GENERAL

1.1 REFERENCES

1.2 ORDERING INFORMATION

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

-- End of Section Table of Contents --

SECTION 01090

SOURCES FOR REFERENCE PUBLICATIONS

PART 1 GENERAL

1.1 REFERENCES

Various publications are referenced in other sections of the specifications to establish requirements for the work. These references are identified in each section by document number, date and title. The document number used in the citation is the number assigned by the sponsoring organization, e.g. UL 1 (1993; Rev thru Jan 1995) Flexible Metal Conduit. However, when the sponsoring organization has not assigned a number to a document, an identifying number has been assigned for convenience, e.g. UL's unnumbered 1995 edition of their Building Materials Directory is identified as UL-01 (1995) Building Materials Directory. The sponsoring organization number (UL 1) can be distinguished from an assigned identifying number (UL-01) by the lack of a dash mark (-) in the sponsoring organization assigned number.

1.2 ORDERING INFORMATION

The addresses of the organizations whose publications are referenced in other sections of these specifications are listed below, and if the source of the publications is different from the address of the sponsoring organization, that information is also provided. Documents listed in the specifications with numbers which were not assigned by the sponsoring organization should be ordered from the source by title rather than by number.

ACI INTERNATIONAL (ACI)

P.O. Box 9094
Farmington Hills, MI 48333-9094
Ph: 248-848-3700
Fax: 248-848-3801
Internet: <http://www.aci-int.org>

AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO)

444 N. Capital St., NW, Suite 249
Washington, DC 20001
Ph: 800-231-3475 202-624-5800
Fax: 800-525-5562 202-624-5806
Internet: <http://www.aashto.org>
NOTE: AASHTO documents with numbers beginning with M or T are available only in Standard Specifications for Transportation Materials and Methods of Sampling and Testing, 1998 @\$289.00\X; or AASHTO M documents are available in AASHTO HM.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

100 Barr Harbor Drive
West Conshohocken, PA 19428-2959
Ph: 610-832-9585

Fax: 610-832-9555
Internet: <http://www.astm.org>
NOTE: The annual ASTM Book of Standards (66 Vol) is
available for \$3500.00. Prices of individual standards vary.

AMERICAN WELDING SOCIETY (AWS)

550 N.W. LeJeune Road
Miami, FL 33126
Ph: 800-443-9353
Fax: 305-443-7559
Internet: <http://www.amweld.org>

CODE OF FEDERAL REGULATIONS (CFR)

Order from:
Government Printing Office
Washington, DC 20402
Ph: 202-512-1800
Fax: 202-275-7703
Internet: <http://www.pls.com:8001/his/cfr.html>

CORPS OF ENGINEERS (COE)

Order from:
U.S. Army Engineer Waterways Experiment Station
ATTN: Technical Report Distribution Section, Services
Branch, TIC
3909 Halls Ferry Rd.
Vicksburg, MS 39180-6199
Ph: 601-634-2571
Fax: 601-634-2506
NOTE: COE Handbook for Concrete and Cement (Documents w/prefix
CRD-C) (1949-present; 2 Vol) free to Government offices; \$10.00
plus \$8.00 per yr for 4 qtrly supplements to others). Individual
documents, single copies free. Order from address above.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

-- End of Section --

SECTION TABLE OF CONTENTS
DIVISION 01 - GENERAL REQUIREMENTS
SECTION 01270
MEASUREMENT AND PAYMENT

PART 1 GENERAL

1.1 LUMP SUM PAYMENT ITEMS

1.1.1 General

1.1.2 Lump Sum Items

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

-- End of Section Table of Contents --

SECTION 01270

MEASUREMENT AND PAYMENT

PART 1 GENERAL

1.1 LUMP SUM PAYMENT ITEMS

1.1.1 General

Payment items for the work of this contract for which contract lump sum payments will be made are listed in the BIDDING SCHEDULE and described below. All costs for items of work, which are not specifically mentioned to be included in a particular lump sum, shall be included in the listed lump sum item most closely associated with the work involved. The lump sum price and payment made for each item listed shall constitute full compensation for furnishing all plant, labor, materials, and equipment, and performing any associated Contractor quality control, submittal procedures, storm water pollution prevention, environmental protection, meeting safety requirements, tests and reports, and for performing all work required for which separate payment is not otherwise provided.

1.1.2 Lump Sum Items

a. "Box Culvert Grade Control Structure, Mud Creek Site"

(1) Payment will be made for all costs associated with constructing the box culvert grade control structure at the Mud Creek Site, including all work required at the site, and all work incidental thereto.

(2) Unit of measure: lump sum.

b. "Box Culvert Grade Control Structure, Naron Creek Site"

(1) Payment will be made for all costs associated with constructing the box culvert grade control structure at the Naron Creek Site, including all work required at the site, and all work incidental thereto.

(2) Unit of measure: lump sum.

c. "Box Culvert Grade Control Structure, Topashaw Creek Site"

(1) Payment will be made for all costs associated with constructing the box culvert grade control structure at the Topashaw Creek Site, including all work required at the site, and all work incidental thereto.

(2) Unit of measure: lump sum.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

-- End of Section --

SECTION TABLE OF CONTENTS
DIVISION 01 - GENERAL REQUIREMENTS
SECTION 01330
SUBMITTAL PROCEDURES

PART 1 GENERAL

- 1.1 SUBMITTAL IDENTIFICATION
- 1.2 SUBMITTAL CLASSIFICATION
 - 1.2.1 Government Approved
 - 1.2.2 Information Only
- 1.3 APPROVED SUBMITTALS
- 1.4 DISAPPROVED SUBMITTALS
- 1.5 WITHHOLDING OF PAYMENT

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

- 3.1 GENERAL
- 3.2 SUBMITTAL REGISTER
- 3.3 SCHEDULING
- 3.4 TRANSMITTAL FORM (ENG FORM 4025-R)
- 3.5 SUBMITTAL PROCEDURE
 - 3.5.1 Procedures
 - 3.5.2 Deviations
- 3.6 CONTROL OF SUBMITTALS
- 3.7 GOVERNMENT APPROVED SUBMITTALS
- 3.8 INFORMATION ONLY SUBMITTALS
- 3.9 STAMPS

-- End of Section Table of Contents --

SECTION 01330

SUBMITTAL PROCEDURES

PART 1 GENERAL

1.1 SUBMITTAL IDENTIFICATION

Submittals are identified by SD numbers and titles within each specification section where submittals are required as follows:

SD-01 Preconstruction Submittals

SD-03 Product Data

SD-04 Samples

SD-06 Test Reports

SD-07 Certificates

1.2 SUBMITTAL CLASSIFICATION

Submittals are classified as follows:

1.2.1 Government Approved

Government approval is required for extensions of design, critical materials, deviations, equipment whose compatibility with the entire system must be checked, and other items as designated by the Contracting Officer. Within the terms of the Contract Clause, SPECIFICATIONS AND DRAWINGS FOR CONSTRUCTION, they are considered to be "shop drawings."

1.2.2 Information Only

All submittals not requiring Government approval will be for information only. They are not considered to be "shop drawings" within the terms of the Contract Clause referred to above.

1.3 APPROVED SUBMITTALS

The Contracting Officer's approval of submittals shall not be construed as a complete check, but will indicate only that the general method of construction, materials, detailing and other information are satisfactory. Approval will not relieve the Contractor of the responsibility for any error which may exist, as the Contractor under the Contractor Quality Control (CQC) requirements of this contract is responsible for dimensions, the design of adequate connections and details, and the satisfactory construction of all work. After submittals have been approved by the Contracting Officer, no resubmittal for the purpose of substituting materials or equipment will be considered unless accompanied by an explanation of why a substitution is necessary.

1.4 DISAPPROVED SUBMITTALS

The Contractor shall make all corrections required by the Contracting Officer and promptly furnish a corrected submittal in the form and number of copies specified for the initial submittal. If the Contractor considers any correction indicated on the submittals to constitute a change to the contract, a notice in accordance with the Contract Clause, CHANGES, shall be given promptly to the Contracting Officer.

1.5 WITHHOLDING OF PAYMENT

Payment for materials incorporated in the work will not be made if required approvals have not been obtained.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.1 GENERAL

The Contractor shall make submittals as required by the specifications. The Contracting Officer may request submittals in addition to those specified when deemed necessary to adequately describe the work covered in the respective sections. Units of weights and measures used on all submittals shall be the same as those used in the contract drawings. Each submittal shall be complete and in sufficient detail to allow ready determination of compliance with contract requirements. Prior to submittal, all items shall be checked and approved by the Contractor's Quality Control (CQC) System Manager and each item shall be stamped, signed, and dated by the CQC System Manager indicating action taken. Proposed deviations from the contract requirements shall be clearly identified. Submittals shall include items such as: Contractor's, manufacturer's, or fabricator's drawings; descriptive literature including (but not limited to) catalog cuts, diagrams, operating charts or curves; test reports; test cylinders; samples; O&M manuals (including parts list); certifications; warranties; and other such required submittals. Submittals requiring Government approval shall be scheduled and made prior to the acquisition of the material or equipment covered thereby. Samples remaining upon completion of the work shall be picked up and disposed of in accordance with manufacturer's Material Safety Data Sheets (MSDS) and in compliance with existing laws and regulations.

3.2 SUBMITTAL REGISTER

At the end of this section is the Submittal Register listing items of equipment and materials for which submittals are required by the specifications; this list may not be all inclusive and additional submittals may be required. Columns "c" through "f" have been completed by the Government; the Contractor shall complete columns "a", and "g" thru "i" and submit the forms to the Contracting Officer for approval within 10 calendar days after Notice to Proceed. The approved Submittal Register will become the scheduling document and will be used to control submittals throughout the life of the contract. The Submittal Register and the progress schedules shall be coordinated.

3.3 SCHEDULING

Submittals covering component items forming a system or items that are interrelated shall be scheduled to be coordinated and submitted concurrently. Certifications to be submitted with the pertinent drawings shall be so scheduled. Adequate time (a minimum of 30 calendar days

exclusive of mailing time) shall be allowed and shown on the register for review and approval. No delay damages or time extensions will be allowed for time lost in late submittals.

3.4 TRANSMITTAL FORM (ENG FORM 4025-R)

The sample transmittal form (ENG Form 4025-R) attached to this section shall be used for submitting both Government approved and information only submittals in accordance with the instructions on the reverse side of the form. These forms will be furnished to the Contractor. This form shall be properly completed by filling out all the heading blank spaces and identifying each item submitted. Special care shall be exercised to ensure proper listing of the specification paragraph and/or sheet number of the contract drawings pertinent to the data submitted for each item.

3.5 SUBMITTAL PROCEDURE

Submittals shall be made as follows:

3.5.1 Procedures

Submittals shall be prepared, as specified, with four (4) copies and the original delivered to the Contracting Officer.

3.5.2 Deviations

For submittals which include proposed deviations requested by the Contractor, the column "variation" of ENG Form 4025-R shall be checked. The Contractor shall set forth in writing the reason for any deviations and annotate such deviations on the submittal. The Government reserves the right to rescind inadvertent approval of submittals containing unnoted deviations.

3.6 CONTROL OF SUBMITTALS

The Contractor shall carefully control his procurement operations to ensure that each individual submittal is made on or before the Contractor scheduled submittal date shown on the approved "Submittal Register."

3.7 GOVERNMENT APPROVED SUBMITTALS

Upon completion of review of submittals requiring Government approval, the submittals will be identified as having received approval by being so stamped and dated. Three (3) copies of the submittal will be retained by the Contracting Officer and one (1) copy of the submittal will be returned to the Contractor.

3.8 INFORMATION ONLY SUBMITTALS

Normally submittals for information only will not be returned. Approval of the Contracting Officer is not required on information only submittals. The Government reserves the right to require the Contractor to resubmit any item found not to comply with the contract. This does not relieve the Contractor from the obligation to furnish material conforming to the plans and specifications; will not prevent the Contracting Officer from requiring removal and replacement of nonconforming material incorporated in the work; and does not relieve the Contractor of the requirement to furnish samples for testing by the Government laboratory or for check testing by the Government in those instances where the technical specifications so

prescribe.

3.9 STAMPS

Stamps used by the Contractor on the submittal data to certify that the submittal meets contract requirements shall be similar to the following:

CONTRACTOR (Firm Name)
 _____ Approved
 _____ Approved with corrections as noted on submittal data and/or attached sheets(s).
 SIGNATURE: _____
 TITLE: _____
 DATE: _____

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 01 - GENERAL REQUIREMENTS

SECTION 01354

ENVIRONMENTAL PROTECTION

PART 1 GENERAL

1.1 DEFINITIONS

1.2 ENVIRONMENTAL PROTECTION REQUIREMENTS

1.2.1 Environmental Protection Plan

1.2.1.1 Protection of Features

1.2.1.2 Procedures

1.2.1.3 Permit or License

1.2.1.4 Drawings

1.2.1.5 Recycling and Waste Prevention Plan

1.2.1.6 Environmental Monitoring Plans

1.2.1.7 Traffic Control Plan

1.2.1.8 Surface and Ground Water

1.2.1.9 Noise Intrusion

1.2.1.10 Work Area Plan

1.2.1.11 Plan of Borrow Area(s)

1.2.1.12 Contaminant Prevention Plan

1.2.1.13 Storm Water Pollution Prevention Plan

1.3 ENVIRONMENTAL LITIGATION

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.1 PROTECTION OF ENVIRONMENTAL RESOURCES

3.1.1 Protection of Land Resources

3.1.1.1 Work Area Limits

3.1.1.2 Protection of Landscape

3.1.1.3 USDA Quarantined Considerations

3.1.1.4 Location of Contractor On-Site Facilities

3.1.1.5 Borrow Areas

3.1.1.6 Disposal of Solid Wastes

3.1.1.7 Disposal of Hazardous Wastes

3.1.1.8 Disposal of Discarded Materials

3.1.1.9 Disposal of Used Oils

3.1.2 Historical, Archaeological and Cultural Resources

3.1.3 Protection of Water Resources

3.1.3.1 Waste Water

3.1.3.2 Monitoring of Water Areas Affected by Construction Activities

3.1.4 Protection of Aquatic and Wildlife Resources

3.1.5 Protection of Air Resources

3.1.5.1 Particulates

3.1.5.2 Hydrocarbons and Carbon Monoxide

3.1.5.3 Volatile Organic Compound (VOC)

- 3.1.5.4 Odors
- 3.1.5.5 Monitoring Air Quality
- 3.2 NONCOMPLIANCE
- 3.3 CONTAINMENT AND CLEANUP OF CONTAMINANT RELEASES
- 3.4 POST CONSTRUCTION CLEANUP
- 3.5 RESTORATION OF LANDSCAPE DAMAGE
- 3.6 MAINTENANCE OF POLLUTION FACILITIES
- 3.7 TRAINING OF CONTRACTOR PERSONNEL IN POLLUTION CONTROL

-- End of Section Table of Contents --

SECTION 01354

ENVIRONMENTAL PROTECTION

PART 1 GENERAL

1.1 DEFINITIONS

Environmental pollution and damage is defined as the presence of chemical, physical, or biological elements or agents that adversely affect human health or welfare; unfavorably alter ecological balances of importance to life; or degrade the environment for aesthetic, cultural or historical purposes. Environmental protection is the prevention and/or control of pollution that develops during normal construction practice. The control of environmental pollution and damage requires consideration of air, water, soil, and land resources; and includes management of visual aesthetics; noise; solid, chemical, and liquid waste; radiant energy and radioactive materials; and other pollutants.

1.2 ENVIRONMENTAL PROTECTION REQUIREMENTS

A plan shall be developed to provide for environmental protective measures to prevent and/or control pollution that may develop during construction. The plan shall contain protective measures required to prevent or correct conditions that may develop during the construction. The liability for environmental noncompliance shall be borne by the Contractor.

1.2.1 Environmental Protection Plan

Within 15 days after receipt of Notice of Award of the contract and at least 7 days prior to the Preconstruction Conference, the Contractor shall submit in writing an Environmental Protection Plan. No physical work at the site shall begin until the Contracting Officer has approved the plan and provided specific authorization to start a phase of the work. Preparation and submittal of supplemental plan(s) may be necessary for later phases of work. A copy of the complete Environmental Protection Plan shall be maintained on-site at all times during the life of the contract. The environmental protection plan shall include but not be limited to the following.

1.2.1.1 Protection of Features

In accordance with Contract Clause PROTECTION OF EXISTING VEGETATION, STRUCTURES, EQUIPMENT, UTILITIES, AND IMPROVEMENTS, the Contractor shall develop methods for the protection of features to be preserved within authorized work areas. The Contracting Officer will prepare a list of resources needing protection and preservation (i.e., trees, shrubs, vines, grasses and ground cover, wetlands, landscape features, air quality, noise levels, surface and ground water quality, fish and wildlife, soil, historic, archaeological and cultural resources). The Contractor's plan shall identify methods to protect these and other resources present and specify measures to protect the environment should an accident, natural cause of pollution, or failure to follow the environmental protection plan occur during construction. The Contractor's plan shall specify how the quality and protective measures of these resources shall be monitored. Furthermore the Contractor's plan shall specify how and where waste shall

be disposed.

1.2.1.2 Procedures

The Contractor shall implement procedures to provide the required environmental protection and to comply with the applicable laws and regulations. The Contractor shall set out the procedures to be followed to correct pollution of the environment due to accident, natural causes or failure to follow the procedures set out in accordance with the environmental protection plan.

1.2.1.3 Permit or License

Notwithstanding the Contract Clause PERMITS AND RESPONSIBILITIES, the Government will obtain a National Pollution Discharge Elimination System (NPDES) Permit for storm water discharges from construction activities. The Contractor shall obtain all other needed permits or licenses. The Contractor shall be responsible for complying with all permits and licenses throughout the duration of this contract.

1.2.1.4 Drawings

The Contractor shall include drawings identifying the areas of limited use or nonuse and show locations of any proposed temporary excavations or embankments for haul roads, stream crossings, material storage areas, structures, sanitary facilities, stockpiles of earth materials, and disposal areas for excess earth material and unsuitable earth materials.

1.2.1.5 Recycling and Waste Prevention Plan

The Contractor shall submit as a part of the Environmental Protection Plan, a Recycling and Waste Prevention Plan.

1.2.1.6 Environmental Monitoring Plans

The Contractor shall include environmental monitoring plans for the job site which incorporate land, water, air and noise monitoring.

1.2.1.7 Traffic Control Plan

The Contractor shall include a traffic control plan for the job site. This plan shall focus on reducing erosion of temporary roadbeds by construction traffic, especially during wet weather, and reducing the amount of mud transported onto paved public roads by motor vehicles or runoff.

1.2.1.8 Surface and Ground Water

The Contractor shall establish methods of protecting surface and ground water during construction activities. These water courses, including but not limited to all rivers, streams, bayous, lakes, ponds, bogs, and wetlands, shall be protected from pollutants such as petroleum products, fuels, oils, lubricants, bentonite, bitumens, calcium chloride, acids, waste washings, sewage, chlorinated solutions, herbicides, insecticides, lime, wet concrete, cement, silt, or organic or other deleterious material. Chemical emulsifiers, dispersants, coagulants, or other cleanup compounds shall not be used without prior written approval from the Contracting Officer. Waters used to wash equipment shall be disposed to prevent entry into a waterway until treated to an acceptable quality. Fuels, oils, greases, bitumens, chemicals, and other nonbiodegradable materials shall be

contained with total containment systems and removed from the site for disposal in an approved manner.

1.2.1.9 Noise Intrusion

The Contractor shall exercise controls to minimize damage to the environment by noise from construction activities. All Contractor's, subcontractors', and suppliers' equipment used on or in the vicinity of the job site shall be equipped with noise suppression devices. Equipment not so suppressed and properly maintained must be approved for use in writing by the Contracting Officer. Areas that have noise levels greater than 85 dB continuous or 140 dB peak (unweighted) impulse must be designated as noise hazardous areas. These work areas must have caution signs displayed at the perimeter of the noise area indicating the presence of hazardous noise levels and requiring the use of hearing protection devices.

1.2.1.10 Work Area Plan

The Contractor shall include a work area plan showing the proposed activity in each portion of the area and identifying the areas of limited use or nonuse. The plan shall include measures for marking the limits of use areas.

1.2.1.11 Plan of Borrow Area(s)

The Contractor shall include a plan of borrow area(s) for the project.

1.2.1.12 Contaminant Prevention Plan

The Contractor shall identify potentially hazardous substances to be used on the job site and intended actions to prevent accidental or intentional introduction of such materials into the air, water or ground. The Contractor shall detail provisions to be taken regarding the storage and handling of these materials. The plan shall include, but not be limited to, plans for preventing polluted runoff from plants, parked equipment, and maintenance areas from entering local surface and ground water sources.

1.2.1.13 Storm Water Pollution Prevention Plan

As required in Section 01356 STORM WATER POLLUTION PREVENTION PLAN, the Contractor shall address the impact of construction upon erosion of the earth's surface and the introduction of pollutants into water courses. The Storm Water Pollution Prevention Plan shall include the Contractor's plan for controlling pollution, sediment and soil erosion and for disposing of wastes. The plan shall identify all temporary and permanent erosion and sediment control measures adopted such as soil stabilization, seeding, mulching, sprinkling, ditching, diking, draining, and constructing sedimentation basins, silt fences, straw bales and diversion ditches.

1.3 ENVIRONMENTAL LITIGATION

a. If the performance of all or any part of the work is suspended, delayed, or interrupted due to an order of a court of competent jurisdiction as a result of environmental litigation, as defined below, the Contracting Officer, at the request of the Contractor, shall determine whether the order is due in any part to the acts or omissions of the Contractor, or a Subcontractor at any tier, not required by the terms of the contract. If it is determined that the order is not due in any part to acts or omissions of the Contractor, or a Subcontractor

at any tier, other than as required by the terms of this contract, such suspension, delay, or interruption shall be considered as if ordered by the Contracting Officer in the administration of this contract under the terms of the SUSPENSION OF WORK clause of this contract. The period of such suspension, delay, or interruption shall be considered unreasonable, and an adjustment shall be made for any increase in the cost of performance of this contract (excluding profit) as provided in that clause, subject to all the provisions thereof.

b. The term "Environmental Litigation", as used herein, means a lawsuit alleging that the work will have an adverse effect on the environment or that the Government has not duly considered, either substantively or procedurally, the effect of the work on the environment.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.1 PROTECTION OF ENVIRONMENTAL RESOURCES

The Contractor shall protect the environmental resources, such as, but not limited to, historic, archaeological and cultural resources; land, water (rivers, streams, bayous, lakes, ponds, bogs, and wetlands), and air resources; and fish and wildlife resources within the project boundaries and those affected outside the limits of permanent work under this contract.

The Contractor shall furnish the Contracting Officer with written certification from the State Historic Preservation Officer that any use of a Contractor furnished borrow area (or any enlargement of an existing Contractor furnished borrow area) is satisfactory from an archeological and historic preservation standpoint. All costs involved in obtaining such certification shall be borne by the Contractor. No Contractor furnished borrow area will be approved without this certification.

3.1.1 Protection of Land Resources

In accordance with Contract Clause PROTECTION OF EXISTING VEGETATION, STRUCTURES, EQUIPMENT, UTILITIES, AND IMPROVEMENTS, the land resources within the project boundaries and those affected outside the limits of work under this contract shall be preserved in their present condition or be restored to an equivalent condition upon completion of the work. Prior to initiating any construction, the Contractor shall identify all land resources to be preserved within the work area, including those identified by the Contracting Officer. The Contractor shall not remove, cut, deface, injure, or destroy land resources including trees, shrubs, vines, grasses, topsoil, and landforms without permission from the Contracting Officer unless otherwise specified. No ropes, cables, or guys shall be fastened to or attached to any trees for anchorage unless specifically authorized. Where such special emergency use is permitted, the Contractor shall provide effective protection for land and vegetation resources at all times and shall be responsible for any subsequent damage as defined in the following subparagraphs.

3.1.1.1 Work Area Limits

Prior to any construction, the Contractor shall mark the areas within the designated work areas that are not required to accomplish work to be performed under this contract and which are to be protected. Isolated

areas within the general work area which are to be saved and protected shall be marked or fenced. Monuments and markers shall be protected during construction. Where construction operations are to be conducted during darkness, the markers shall be visible. The Contractor shall convey to his personnel the purpose of marking and protecting all necessary objects.

3.1.1.2 Protection of Landscape

Trees, shrubs, vines, grasses, landforms and other landscape features, indicated and defined on the drawings to be preserved shall be clearly identified by marking, fencing, or wrapping with boards, or any other approved techniques.

3.1.1.3 USDA Quarantined Considerations

See Section 01000 GENERAL CONTRACT REQUIREMENTS, paragraph WORK IN QUARANTINED AREA.

3.1.1.4 Location of Contractor On-Site Facilities

The Contractor's on-site field offices, staging areas, stockpile storage, and temporary buildings shall be placed in approved areas. Temporary movement or relocation of Contractor on-site facilities shall be only on approval by the Contracting Officer.

3.1.1.5 Borrow Areas

Borrow areas shall be managed by the Contractor to minimize erosion and to prevent sediment from entering rivers, streams, bayous, lakes, ponds, bogs, and wetlands, or affecting known or discovered cultural resource properties. All borrow areas outside the construction limits that are operated by the Contractor shall be reclaimed to provide for the protection and subsequent beneficial use of the mined and reclaimed land. Before obtaining material from any borrow source located outside the project limits, whether operated by the Contractor or by an independent supplier, the Contracting Officer shall be informed in writing of the location of such source(s), the names of the owner and operator, and the types and estimated quantities of materials to be obtained from each source.

3.1.1.6 Disposal of Solid Wastes

Solid wastes (not including clearing debris) shall be any waste excavated or generated by the Contractor. Solid waste shall be placed in containers and disposed on a regular schedule. All handling and disposal shall be conducted to prevent spillage and contamination. The Contractor shall transport all solid waste off government property and dispose properly. The Contractor shall participate in any State or local recycling programs to reduce the volume of solid waste materials at the source whenever practical.

3.1.1.7 Disposal of Hazardous Wastes

Hazardous waste shall be stored, removed from the work area, and disposed of in accordance with all applicable Federal, State, and local laws and regulations. Hazardous waste shall not be dumped onto the ground; into storm sewers; or open water courses, including but not limited to all rivers, streams, bayous, lakes, ponds, bogs, and wetlands; or into the sanitary sewer system. Fueling and lubrication of equipment and motor vehicles shall be conducted in a manner that affords the maximum protection

against spills and evaporation.

3.1.1.8 Disposal of Discarded Materials

Discarded materials that cannot be included in the solid waste category shall be handled as approved.

3.1.1.9 Disposal of Used Oils

Used oils and/or lubricants shall be disposed of in accordance with all Federal, State, and local laws and regulations. The Contractor shall collect used oil and/or lubricants in leak-tight containers, ensure that all openings on the containers are tightly sealed (including the drum ring and bung closures), and label the containers to clearly indicate contents. Disposal through a used oil recycler is required. The Contractor shall ensure that the recycler has all appropriate State and Federal permits.

3.1.2 Historical, Archaeological and Cultural Resources

The Contractor shall take precautions to preserve existing historical, archaeological and cultural resources. The Contractor shall install protection for these resources and shall be responsible for their preservation during this contract. If during construction activities the Contractor observes items that may have archaeological or historic value (e.g., when Native American human remains and associated objects are discovered), the Contractor shall stop work in the area, leave the items undisturbed, and immediately report the find to the Contracting Officer. Such items may include historic artifacts of glass, metal and ceramics, or prehistoric artifacts such as stone tools, ceramics, bone, and shell. The Contractor shall not judge the potential significance of any suspected cultural material, but shall report all findings to the Contracting Officer.

3.1.3 Protection of Water Resources

The Contractor shall keep construction activities under surveillance, management, and control to avoid pollution of surface and ground waters, including but not limited to all rivers, streams, bayous, lakes, ponds, bogs, and wetlands. All construction activities shall meet the requirements of the National Pollutant Discharge Elimination System (NPDES) General Permits for Storm Water Discharges from Construction Sites. Discharges of any pollutant into the water courses is strictly prohibited, unless accepted by the Contracting Officer.

3.1.3.1 Waste Water

Waste water directly derived from washing equipment, curing concrete, cleaning joints, or any other construction activities shall not be discharged into any natural water areas, including but not limited to all rivers, streams, bayous, lakes, ponds, bogs, and wetlands.

3.1.3.2 Monitoring of Water Areas Affected by Construction Activities

The Contractor shall be responsible for monitoring all water areas affected by construction activities. In the event that water quality violations result from the Contractor's operation, the Contractor shall suspend the operation or operations causing the pollution, and such suspension shall not form the basis for a claim against the Federal government.

3.1.4 Protection of Aquatic and Wildlife Resources

The Contractor shall keep construction activities under surveillance, management, and control to prevent interference with, disturbance to, and damage to aquatic resources and/or wildlife, including but not limited to all rivers, streams, bayous, lakes, ponds, bogs, and wetlands. Special emphasis shall be placed on protecting wetlands. Species that require specific attention as defined by law or specified by the Contracting Officer, along with measures for their protection, shall be listed by the Contractor prior to beginning of construction operations.

3.1.5 Protection of Air Resources

The Contractor shall keep construction activities under surveillance, management and control to minimize pollution of air resources. Special management techniques as set out below shall be implemented to control air pollution by the construction activities.

3.1.5.1 Particulates

Dust particles, aerosols, and gaseous by-products from all construction activities, disturbed areas, and/or processing and preparation of materials, such as from asphaltic batch plants, shall be controlled at all times, including weekends, holidays, and hours when work is not in progress. The Contractor shall maintain all excavations, stockpiles, haul roads, permanent and temporary access roads, plant sites, disposal sites, borrow areas, and all other work areas within or outside the project boundaries free from particulates which would cause air pollution standards specified in paragraph PROTECTION OF AIR RESOURCES to be exceeded or which would cause a hazard or a nuisance. Sprinkling, chemical treatment of an approved type, light bituminous treatment, baghouse, scrubbers, electrostatic precipitators, or other methods will be permitted to control particulates in the work area. Sprinkling shall be repeated at such intervals as to keep the disturbed area damp at all times.

3.1.5.2 Hydrocarbons and Carbon Monoxide

Hydrocarbons and carbon monoxide emissions from equipment shall be controlled to Federal, State, and local allowable limits at all times.

3.1.5.3 Volatile Organic Compound (VOC)

The Contractor shall comply with Federal, State, and local laws and regulations pertaining to emission of VOC vapors at all times.

3.1.5.4 Odors

Odors shall be controlled at all times for all construction activities, including processing and preparation of materials.

3.1.5.5 Monitoring Air Quality

Monitoring of air quality at the construction site(s) shall be the responsibility of the Contractor.

3.2 NONCOMPLIANCE

If the Contracting Officer notifies the Contractor in writing of any observed noncompliance with contract requirements or Federal, State, or local laws, regulations, or permits, the Contractor shall take all

necessary action to correct the noncompliance. Such notice, when delivered to the Contractor at the worksite, shall be deemed sufficient for the purpose of notification. If the Contractor fails to comply promptly, the Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action is taken. No time extensions will be granted or costs or damage allowed to the Contractor for any such suspension. (See also the Contract Clause PERMITS AND RESPONSIBILITIES.)

3.3 CONTAINMENT AND CLEANUP OF CONTAMINANT RELEASES

The Contractor shall provide the Contracting Officer for approval, a contaminant containment and cleanup plan including the procedures, instructions, and reports to be used in the event of an unforeseen substance release. This plan shall include as a minimum:

- a. The name of the individual who will be responsible for implementing and supervising the containment and cleanup.
- b. A list of materials and equipment to be immediately available at the job site, tailored to cleanup work of the potential hazard(s) identified.
- c. The names and locations of suppliers of containment materials and locations of additional fuel oil recovery, cleanup, restoration, and material placement equipment available in case of an unforeseen spill emergency.
- d. The methods and procedures to be used for expeditious contaminant cleanup.
- e. The name of the individual who will report any spills or hazardous substance releases and who will follow up with complete documentation. This individual shall immediately notify the Contracting Officer in addition to the legally required reporting channels when a reportable quantity spill of oil or hazardous substance occurs.

3.4 POST CONSTRUCTION CLEANUP

The Contractor shall clean up areas used for construction and remove all signs of temporary construction facilities; Contractor office, storage and staging areas; borrow areas, and all other areas used by the Contractor during construction. Furthermore, the disturbed areas shall be graded and filled as approved by Contracting Officer. Restoration of original contours is not required unless specified in another section. (See also the Contract Clause CLEANING UP.)

3.5 RESTORATION OF LANDSCAPE DAMAGE

All landscape features damaged or destroyed during construction operations that were not identified for removal shall be restored. Any vegetation or landscape feature damaged shall be restored as nearly as possible to its original condition. (See also the Contract Clause PROTECTION OF EXISTING VEGETATION, STRUCTURES, EQUIPMENT, UTILITIES, AND IMPROVEMENTS.)

3.6 MAINTENANCE OF POLLUTION FACILITIES

The Contractor shall maintain all constructed facilities and portable pollution control devices for the duration of the contract or for the length of time construction activities create the particular pollutant.

3.7 TRAINING OF CONTRACTOR PERSONNEL IN POLLUTION CONTROL

Contractor personnel shall be trained in environmental protection and conduct environmental protection meetings monthly. The training and meeting agenda shall include methods of detecting and avoiding pollution, wetland identification, familiarization with pollution standards, both statutory and contractual, and installation and care of facilities (vegetative covers, and instruments required for monitoring purposes) to insure adequate and continuous environmental pollution control. Personnel are to be informed of provisions for hazardous and toxic materials container labeling and for managing Material Safety Data Sheets (MSDS). Anticipated hazardous or toxic chemicals shall also be reviewed. Other items to be discussed shall include recognition and protection of archaeological sites, artifacts, and wetlands. The Contractor shall include training topics discussed and attendance as a part of his daily CQC Report.

-- End of Section --

SECTION TABLE OF CONTENTS
DIVISION 01 - GENERAL REQUIREMENTS
SECTION 01356
STORM WATER POLLUTION PREVENTION PLAN

PART 1 GENERAL

- 1.1 REFERENCES
- 1.2 SYSTEM DESCRIPTION
 - 1.2.1 Construction Notice of Intent
- 1.3 SUBMITTALS
- 1.4 SITE DESCRIPTION
 - 1.4.1 Nature of Construction Activity
 - 1.4.2 Major Activities Which Disturb Soils
 - 1.4.3 Estimated Areas Affected
 - 1.4.4 Runoff Coefficient
 - 1.4.5 Contract Drawings and Specifications
 - 1.4.6 Waters Affected
- 1.5 CONTROLS
 - 1.5.1 Erosion and Sediment Controls
 - 1.5.1.1 Stabilization Practices
 - 1.5.1.2 Structural Practices
 - 1.5.2 Storm Water Management
 - 1.5.2.1 Management Practices
 - 1.5.2.2 Methods
 - 1.5.3 Other Controls
 - 1.5.3.1 Waste Disposal
 - 1.5.3.2 Off-site Vehicle Tracking
 - 1.5.3.3 Compliance with Regulations

PART 2 PRODUCTS

- 2.1 FILTER FABRIC FOR SILT SCREEN FENCE
- 2.2 ACCEPTANCE REQUIREMENTS
 - 2.2.1 General
 - 2.2.2 Mill Certificates or Affidavits
 - 2.2.3 Testing
- 2.3 IDENTIFICATION, STORAGE AND HANDLING

PART 3 EXECUTION

- 3.1 MAINTENANCE
- 3.2 INSPECTIONS
 - 3.2.1 General
 - 3.2.2 Field Inspections
 - 3.2.3 Inspection Reports
 - 3.2.4 Monthly Inspection Report and Certification Form for Erosion and Sediment Controls
 - 3.2.5 Revisions to the SWPP Plan

-- End of Section Table of Contents --

SECTION 01356

STORM WATER POLLUTION PREVENTION PLAN

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

ASTM INTERNATIONAL (ASTM)

ASTM D 4354	(1999) Sampling of Geosynthetics for Testing
ASTM D 4439	(2002) Geosynthetics
ASTM D 4491	(1999a) Water Permeability of Geotextiles by Permittivity
ASTM D 4533	(1991; R 1996) Trapezoid Tearing Strength of Geotextiles
ASTM D 4632	(1991; R 1996) Grab Breaking Load and Elongation of Geotextiles
ASTM D 4751	(1999a) Determining Apparent Opening Size of a Geotextile
ASTM D 4759	(1988; R 1996) Determining the Specification Conformance of Geosynthetics
ASTM D 4873	(2002) Identification, Storage, and Handling of Geosynthetic Rolls and Samples

1.2 SYSTEM DESCRIPTION

Pursuant to the State of Mississippi Small Construction General Permit for storm water discharges from construction activities, the requirements contained herein shall constitute the Storm Water Pollution Prevention Plan, hereafter called the SWPP Plan for this contract. A copy of the State of Mississippi, Mississippi Department of Environmental Quality, Office of Pollution Control, Water Pollution Control, STORM WATER SMALL CONSTRUCTION GENERAL PERMIT is attached at the end of this section. The Contractor shall implement and diligently pursue all measures required herein. The purpose of the SWPP Plan is to control soil erosion and storm water runoff caused by the construction activities under this contract to the extent necessary to prevent sediment from accumulating in existing drainage ditches or streams, or leaving the contract rights-of-way. Requirements under this section of the specifications are supplemental to and shall become part of the overall Environmental Protection Plan required by Section 01354 ENVIRONMENTAL PROTECTION.

1.2.1 Construction Notice of Intent

A Small Construction Notice of Intent (SCNOI) is not required to be filed with the permitting agency unless requested by MDEQ. The Contractor will be provided with a copy of the original SCNOI at the Preconstruction Conference. The Contractor shall revise the copy of the original SCNOI by completing the Project Information, identifying the Contractor's name, address, and the individual having the day to day control over the project. The revised SCNOI, along with the Contractor's Storm Water Pollution Prevention Plan, shall be kept on-site and available for review for the duration of the contract.

1.3 SUBMITTALS

Government approval is required for all submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-07 Certificates

Filter Fabric

The Contractor shall submit a certificate of compliance attesting that the filter fabric meets the specified requirements.

1.4 SITE DESCRIPTION

1.4.1 Nature of Construction Activity

The work consists of furnishing all plant, labor, materials and equipment, and constructing three box culvert grade control structures in Chickasaw County, Mississippi. Principal features of work include clearing and grubbing, excavation and fill, removal of existing wooden bridge, removal of existing pipe culverts, control of water, precast concrete box culverts, cast-in-place concrete inlet and outlet headwalls, granular bedding material, backfill, engineering fabric, bedding stone, stone protection, granular surface course, erosion control, storm water pollution prevention and environmental protection. All units of measure are metric.

1.4.2 Major Activities Which Disturb Soils

The major activities which will disturb the soil at the site include clearing and grubbing, excavation, embankment, and grading.

1.4.3 Estimated Areas Affected

The area of each of the three construction sites is approximately 1.5 hectares. The area of soil that will be disturbed at each site is approximately 1.5 hectares.

1.4.4 Runoff Coefficient

The estimated runoff coefficient at each of the three sites will be 0.30 after construction activities are completed.

1.4.5 Contract Drawings and Specifications

The following features are shown on or can be determined from the contract

drawings and specifications:

- a. The approximate slopes after the major construction activities.
- b. Areas of soil disturbance.
- c. The location where stabilization practices are required.
- d. Surface waters.
- e. Typical best management practices which are anticipated to be used in the control of sediment and erosion control.

1.4.6 Waters Affected

The surface waters which may be affected by this contract are local streams as indicated on the drawings.

1.5 CONTROLS

The controls and measures required by the Contractor are described below.

1.5.1 Erosion and Sediment Controls

1.5.1.1 Stabilization Practices

a. General - The stabilization practices required to be implemented shall include permanent seeding, mulching, erosion control matting, protection of trees, preservation of mature vegetation, etc. However, the Contractor may, at his option and at no additional cost to the Government, provide a fall and winter temporary erosion control measure by seeding with rye grass or other approved winter grasses. The Contractor shall maintain a log of the dates when the major grading activities occur, (e.g. clearing and grubbing, excavation, embankment, and grading); when construction activities permanently cease on a portion of the site; and when stabilization practices are initiated, and shall attach this log to the SWPP Plan. Except as precluded by unsuitable conditions caused by the weather, stabilization practices shall be initiated as soon as practicable, but within no more than 14 days, in any portion of the site where construction activities have permanently ceased.

b. Interim Stabilization Practices - The interim stabilization practices required are described below.

(1) Only trees that are within the indicated limits to construct the permanent work shall be removed.

(2) Existing vegetative cover shall be preserved to the extent possible to reduce erosion.

c. Permanent Stabilization Practices - The permanent stabilization practices to be implemented are described below.

(1) Permanent seeding (erosion control) shall be established as soon as practicable after the final grading is completed.

(2) Mulch shall be placed on areas of permanent turfing treatment as specified.

(3) Erosion control matting shall be provided on areas as indicated on the drawings.

1.5.1.2 Structural Practices

a. General - Structural practices shall be implemented to divert flows from exposed soils, temporarily store flows, or otherwise control runoff in order to prevent sediments from accumulating in existing drainage ditches or streams, or leaving the contract rights-of-way. The Contractor shall implement the required structural practices and the necessary structural practices as may be required to control runoff for his construction methods and procedures. Structural practices shall be implemented in a timely manner during the construction process to minimize erosion and sediment runoff. Structural practices shall be removed after they have served their intended purpose and after their removal has been approved by the Contracting Officer.

b. Devices - Structural practices may include but shall not be limited to the following devices (typical details are shown on the drawings):

(1) Silt fences

(i) General

Filter fabric shall meet the requirements of PART 2 PRODUCTS, paragraph FILTER FABRIC.

Filter fabric shall contain ultraviolet ray inhibitors and stabilizers to provide a minimum of six months of expected usable construction life at a temperature range of -17.7 degrees C to 48.9 degrees C.

If wooden stakes are utilized for silt fence construction, they shall have a minimum diameter of 50 mm when oak is used and 100 mm when pine is used. Wooden stakes shall have a minimum length of 1.5 meters.

If steel posts (standard "U" or "T" section) are utilized for silt fence construction, they shall have a minimum weight of 2 kg per meter and a minimum length of 1.5 meters.

Wire fence reinforcement for silt fences using standard strength filter fabric shall be a minimum of 14 gauge and shall have a maximum mesh spacing of 152 mm.

(ii) Installation

The height of a silt fence shall be a minimum of 406 mm above the ground surface and shall not exceed 864 mm above the ground surface.

The filter fabric shall be purchased in a continuous roll cut to the length of the barrier to avoid the use of joints. When joints are unavoidable, filter fabric shall be spliced together only at a support post with a minimum 152 mm lap and securely sealed.

A trench shall be excavated approximately 100 mm wide and 100 mm deep on the upslope side of the proposed location of the measure.

When wire support is used, standard-strength filter fabric may be used. Posts for this type of installation shall be placed a maximum of 3 meters apart. The wire mesh fence shall be fastened securely to the upslope side of the posts using heavy duty wire staples at least 25 mm long, tie wires or hog rings. The wire shall extend into the trench a minimum of 50 mm and shall not extend more than 864 mm above the ground surface. The standard strength fabric shall be stapled or wired to the wire fence, and 200 mm of the fabric shall be extended into the trench. The fabric shall not be stapled to existing trees.

When wire support is not used, extra-strength filter fabric shall be used. Posts for this type of fabric shall be placed a maximum of 1.8 meters apart. The filter fabric shall be fastened securely to the upslope side of the posts using 25 mm long (minimum) heavy-duty wire staples or tie wires and 200 mm of the fabric shall be extended into the trench. The fabric shall not be stapled to existing trees.

The 100 mm by 100 mm trench shall be backfilled and the soil compacted over the filter fabric.

Silt fences shall be removed upon approval by the Contracting Officer.

(2) Straw Bales.

(i) Installation

Bales shall be placed in a single row, lengthwise on the contour, with ends of adjacent bales tightly abutting one another. Bale rows used to retain sediment shall be turned uphill at each end of each row.

All bales shall be either wire-bound or string-tied. Straw bales shall be installed so that bindings are oriented around the sides rather than along the tops and bottoms of the bales in order to prevent deterioration of the bindings.

The barrier shall be entrenched and backfilled. A trench shall be excavated the width of a bale and the length of the proposed barrier to a minimum depth of 100 mm. After the bales are staked and chinked (gaps filled by wedging), the excavated soil shall be backfilled against the barrier. Backfill soil shall conform to the ground level on the downhill side and shall be built up to 100 mm against the uphill side of the barrier.

Each bale shall be securely anchored by at least two stakes (minimum dimensions 50 mm x 50 mm x 1 m) or standard "T" or "U" steel posts (minimum weight of 2 kg per meter) driven through the bale. The first stake or steel post in each bale shall be driven toward the previously laid bale to force the bales together. Stakes or steel pickets shall be driven a minimum 0.5 meter deep into the ground to securely anchor the bales.

The gaps between bales shall be chinked (filled by wedging) with straw to prevent water from escaping between the bales. Loose straw may be scattered over the area immediately uphill from a

straw bale barrier to increase barrier efficiency.

Straw bale barriers shall be removed upon approval by the Contracting Officer.

(3) Diversion Dikes

(i) Installation

Diversion dikes shall have a maximum channel slope of 2 percent and shall be adequately compacted to prevent failure. The minimum height measured from the top of the dike to the bottom of the channel shall be 0.5 meter. The minimum base width shall be 1.8 meters and the minimum top width shall be 0.6 meters. Diversion dikes shall be located to minimize damages caused by construction operations and traffic.

c. Device Applicability

(1) Straw bales, silt fences, earth dikes, and drainage swales for diversion of runoff upstream from work areas.

(2) Straw bales, silt fences and earth dikes for retention of flow in drains.

(3) Stone outlet protection at culverts.

(4) Sediment containment by providing straw bales or silt fences along the toe of fill and cut slopes.

(5) Earth dikes for temporary sediment basins in major drainage channels downstream from work areas.

Structural practices shall be properly placed to effectively retain sediment immediately after completing each phase of work (e.g. clearing and grubbing, excavation, embankment, and grading) in each independent runoff area (e.g. after clearing and grubbing in an area between a ridge and drain). Structural practices shall be placed, and as work progresses, removed/replaced/relocated as needed for work to progress in each runoff area. Structural practices, to the extent necessary to prevent sediment from accumulating in existing drainage ditches or streams, or leaving the contract rights-of-way, shall be implemented as follows:

(1) Along the downhill perimeter edge of disturbed areas.

(2) Along the top of the slope or top bank of drainage ditches, channels, swales, etc. that traverse disturbed areas.

(3) Along the toe of cut slopes and fill slopes of the construction areas.

(4) Perpendicular to the flow in the bottom of existing drainage ditches, channels, swales, etc. that traverse disturbed areas or carry runoff from disturbed areas. Rows of straw bales or silt fences shall be spaced a maximum of 30 meters apart in such existing drains that are within the limits of the work.

(5) Perpendicular to the flow in the bottom of new drainage

ditches, channels, and swales. Rows of straw bales or silt fences shall be spaced a maximum of 60 meters apart in drains with slopes equal to or less than 5 percent and 30 meters apart in drains with slopes steeper than 5 percent.

(6) At the entrance to culverts that receive runoff from disturbed areas.

1.5.2 Storm Water Management

1.5.2.1 Management Practices

The storm water management practices that shall be permanently installed under this contract are as follows:

- a. Erosion control.
- b. Stone protection.
- c. Erosion control matting.

1.5.2.2 Methods

- a. Erosion control shall be in accordance with Section 02960 EROSION CONTROL.
- b. Stone protection shall be in accordance with Section 02380 STONE PROTECTION FOR STRUCTURES.
- c. Erosion control matting shall be in accordance with Section 02220 EROSION CONTROL MATTING.

1.5.3 Other Controls

1.5.3.1 Waste Disposal

No solid materials, including building materials, shall be discharged to waters of the United States, except as authorized by a Section 404 permit. Other requirements are included in Section 01354 ENVIRONMENTAL PROTECTION.

1.5.3.2 Off-site Vehicle Tracking

Off-site vehicle tracking of sediments shall be minimized.

1.5.3.3 Compliance with Regulations

The Contractor shall ensure and demonstrate compliance with applicable State or local waste disposal, sanitary sewer or septic system regulations.

PART 2 PRODUCTS

2.1 FILTER FABRIC FOR SILT SCREEN FENCE

The geotextile, as defined by ASTM D 4439, shall consist of polymeric filaments which are formed into a stable network such that filaments retain their relative positions. The filament shall consist of a long-chain synthetic polymer composed of at least 85 percent by weight of ester, propylene, or amide, and shall contain stabilizers and/or inhibitors added to the base plastic to make the filaments resistance to deterioration due to ultraviolet and heat exposure. The geotextile shall conform to the physical property requirements in paragraph ACCEPTANCE REQUIREMENTS,

subparagraph TESTING.

2.2 ACCEPTANCE REQUIREMENTS

2.2.1 General

All brands of geotextile to be used will be accepted on the following basis.

2.2.2 Mill Certificates or Affidavits

The mill certificate or affidavit shall attest that the filter fabric and factory seams meet chemical, physical, and manufacturing requirements specified. The mill certificate or affidavit shall specify the actual Minimum Average Roll Values and shall identify the fabric supplied by roll identification numbers.

2.2.3 Testing

If requested by the Contracting Officer, Government personnel shall collect filter fabric samples in accordance with ASTM D 4354 for testing to determine compliance with any or all of the requirements specified pursuant to ASTM D 4759 and the following table:

EXTRA STRENGTH FILTER FABRIC FOR SILT SCREEN FENCE

PHYSICAL PROPERTY	TEST PROCEDURE	REQUIREMENTS
Grab Tensile Strength	ASTM D 4632	45.4 kg min.
Elongation (%)	ASTM D 4632	30 % max.
Trapezoid Tear	ASTM D 4533	25 kg min.
Permittivity	ASTM D 4491	0.2 sec-1 min.
AOS (U.S. Std Sieve)	ASTM D 4751	20-100

NOTE: Standard strength filter fabric for silt screen fence shall meet the same minimum requirements for AOS and Permittivity as the extra strength filter fabric, but may have lower strengths for the remaining properties listed in the table.

2.3 IDENTIFICATION, STORAGE AND HANDLING

Filter fabric shall be identified, stored and handled in accordance with ASTM D 4873.

PART 3 EXECUTION

3.1 MAINTENANCE

The Contractor shall maintain the temporary and permanent vegetation, erosion and sediment control measures, and other protective measures in good and effective operating condition by performing routine inspections to determine condition and effectiveness, by restoration of destroyed vegetative cover, and by repair of erosion and sediment control measures and other protective measures. The following procedures shall be followed to maintain the protective measures identified in the SWPP Plan.

a. Silt Fences

Silt fences shall be inspected in accordance with paragraph INSPECTIONS. Any required repairs shall be made promptly. Close attention shall be paid to the repair of damaged silt fence resulting from end runs and undercutting. Should the fabric on a silt fence decompose or become ineffective, and the barrier is still necessary, the fabric shall be replaced promptly. Sediment deposits shall be removed when deposits reach one-third of the height of the barrier or a maximum height of 225 mm. When a silt fence is no longer required, it shall be removed. The immediate area occupied by the fence and any sediment deposits shall be shaped to an acceptable grade. The areas disturbed by this shaping shall receive erosion control in accordance with Section 02960 EROSION CONTROL.

b. Straw Bales

Straw bale barriers shall be inspected in accordance with paragraph INSPECTIONS. Close attention shall be paid to the repair of damaged bales, end runs and undercutting beneath bales. Necessary repairs to barriers or replacement of bales shall be accomplished promptly. Sediment deposits shall be removed when deposits reach one-half of the height of the barrier. When a straw bale barrier is no longer required, it shall be removed. The immediate area occupied by the bales and any sediment deposits shall be shaped to an acceptable grade. The areas disturbed by this shaping shall receive erosion control in accordance with Section 02960 EROSION CONTROL.

c. Diversion Dikes

Diversion dikes shall be inspected in accordance with paragraph INSPECTIONS. Close attention shall be paid to the repair of damaged diversion dikes and necessary repairs shall be accomplished promptly. When diversion dikes are no longer required, they shall be shaped to an acceptable grade. The areas disturbed by this shaping shall receive erosion control in accordance with Section 02960 EROSION CONTROL.

3.2 INSPECTIONS

3.2.1 General

The Contractor shall inspect disturbed areas of the construction site, areas used for storage of materials that are exposed to precipitation that have not been finally stabilized, stabilization practices, structural practices, other controls, and areas where vehicles exit the site at least once every seven (7) calendar days and within 24 hours of the end of any storm that produces 12 mm or more rainfall at the site. Where sites have been finally stabilized, such inspection shall be conducted at least once every month.

3.2.2 Field Inspections

Disturbed areas and areas used for material storage that are exposed to precipitation shall be inspected for evidence of, or the potential for, pollutants entering the drainage system. Erosion and sediment control measures identified in the SWPP Plan shall be observed to ensure that they are operating correctly. Discharge locations or points shall be inspected to ascertain whether storm water pollution prevention measures are effective in preventing significant impacts to receiving waters. Locations

where vehicles exit the site shall be inspected for evidence of offsite sediment tracking.

3.2.3 Inspection Reports

For each inspection conducted, the Contractor shall complete a Storm Water Pollution Prevention Plan Inspection Report form. The report shall be signed by the Contractor. The report shall be furnished to the Contracting Officer within 24 hours of the inspection as a part of the Contractor's daily CQC REPORT. A copy of the Storm Water Pollution Prevention Plan Inspection Report form is included at the end of this section. A log of the inspection dates shall be maintained on the job site and become a part of the SWPP Plan.

3.2.4 Monthly Inspection Report and Certification Form for Erosion and Sediment Controls

On the first working day of each month the Contractor shall complete, sign and attach to the SWPPP a Monthly Inspection Report and Certification Form for Erosion and Sediment Controls for the previous month's inspections. A copy of this form is found at the end of this section. On the first working day of each month, the Contractor shall also furnish one copy of the form to the Contracting Officer as part of the Contractor's daily CQC Report.

3.2.5 Revisions to the SWPP Plan

Based on the results of the inspection and immediately after the inspection, the Contractor shall provide to the Contracting Officer any recommended changes to the SWPP Plan. The Contracting Officer will approve or disapprove the proposed changes within seven (7) calendar days after receipt. Changes to the SWPP Plan shall be implemented within seven (7) calendar days following approval.

-- End of Section --

**State of Mississippi
Mississippi Department of
Environmental Quality (MDEQ)
Office of Pollution Control (OPC)
Water Pollution Control
STORM WATER
SMALL CONSTRUCTION GENERAL PERMIT**

THIS CERTIFIES THAT

**SMALL CONSTRUCTION PROJECTS (EQUAL TO OR GREATER THAN ONE
ACRE AND LESS THAN FIVE ACRES) ARE GRANTED PERMISSION TO
DISCHARGE STORM WATER ASSOCIATED WITH CONSTRUCTION ACTIVITY
UNDER THE TERMS AND CONDITIONS OF THIS PERMIT**

INTO

WATERS OF THE STATE OF MISSISSIPPI

in accordance with effluent limitations, inspection requirements and other conditions set forth in Parts I through VII hereof. This permit is issued in accordance with the provisions of the Mississippi Water Pollution Control Law (Section 49-17-1 et seq., Mississippi Code of 1972), and the regulations and standards adopted and promulgated thereunder, and under authority granted pursuant to Section 402(b) of the Federal Water Pollution Control Act.

MISSISSIPPI ENVIRONMENTAL QUALITY PERMIT BOARD

AUTHORIZED SIGNATURE

MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY

**Permit Issued: March 11, 2003
Permit Expires: February 29, 2008**

Permit No. MSR15

**STORM WATER SMALL CONSTRUCTION
GENERAL NPDES PERMIT**

TABLE OF CONTENTS

		<u>Page</u>
Part I.	Permit Applicability and Authorization	
	A. Permit Area.....	3
	B. Covered Discharges.....	3
	C. Obtaining Authorization.....	3
	D. On-going Construction Activities.....	3
	E. Allowable Non-Storm Water Discharges.....	3
	F. Responsibility for Permit Compliance.....	4
	G. This Permit Does Not Authorize.....	4
	H. Requiring an Individual Permit.....	4
Part II.	Small Construction Notice of Intent (SCNOI)	
	A. Small Construction Notice of Intent (SCNOI).....	4
	B. Where to Submit the Small Construction Notice of Intent if Requested.....	5
Part III.	Storm Water Pollution Prevention Plan (SWPPP)	
	A. SWPPP Development.....	5
	B. Compliance with Local Storm Water Ordinances.....	5
	C. SWPPP Details	
	1. Owner or Operator.....	5
	2. Erosion and Sediment Controls.....	5
	3. Non-Storm Water Discharges.....	6
	4. Housekeeping Practices.....	6
	5. Prepare Scaled Site Map.....	7
	6. Implementation Sequence.....	7
Part IV.	Limitations and Requirements	
	A. Non-Numeric Limitations.....	7
	B. Implementation Requirements.....	7
	C. Inspection Requirements.....	8
	D. Documentation of Inspections.....	8
	E. Retention of Records.....	8
	F. Noncompliance Reporting.....	8
	G. Termination of Permit Requirements.....	8
Part V.	Other Permit Conditions	
	A. Duty to Comply.....	8
	B. Continuation of the Expired General Permit and Coverages under the Permit.....	9
	C. Duty to Mitigate.....	9
	D. Duty to Provide Information.....	9
	E. Signatory Requirements.....	9
	F. Duly Authorized Representative.....	9
	G. Changes to Authorization.....	9
	H. Certification.....	9
	I. Oil and Hazardous Substance Liability.....	9
	J. Property Rights.....	9
	K. Transfers.....	10
	L. Severability.....	10
	M. Proper Operation and Maintenance.....	10
	N. Bypass Prohibition.....	10
	O. Upset Conditions.....	10
	P. Inspection and Entry.....	10
	Q. Permit Actions.....	10
Part VI.	Reopener Clause	
	A. Requirement to Obtain Individual Permit.....	10
	B. Permit Modification.....	10
Part VII.	Definitions	11
Part VIII.	Transfer of Small Construction General Permit Coverage and/or Name Change	13
Part IX.	Inspection and Certification Form for Small Construction Erosion and Sediment	15
Part X.	Small Construction Notice of Intent (SCNOI)	17

Total Pages with Cover - 17

Part I. Permit Applicability and Authorization

- A. Permit Area.** The permit covers all areas of the State of Mississippi.
- B. Covered Discharges.** Discharges composed entirely of storm water from small construction activities, except as noted in Part 1. E., including clearing, grading, excavating and other land disturbing activities equal to or greater than one (1) acre and less than five (5) acres.¹ These discharges are automatically designated as small construction activities under the National Pollutant Discharge Elimination System (NPDES) storm water program and are automatically covered under this permit. Small construction activities disturbing less than one (1) acre are designated if:
- The project is part of a larger common plan of development or sale with a cumulative planned disturbance of equal to or greater than one (1) acre and less than five (5) acres (for example, individual or commercial lots that are part of a subdivision or a commercial development that initially impacts less than one (1) acre but will ultimately exceed the one (1) acre threshold²), or
 - The Executive Director of the Mississippi Department of Environmental Quality (MDEQ) designates the construction activity based on the potential for contribution to a violation of a water quality standard or for significant contribution of pollutants to waters of the State.
- Small construction activity does not include routine maintenance that is performed to maintain the original line and grade, hydraulic capacity, and original purpose of the facility (for example, existing ditches, channels, or other similar storm water conveyances, as well as routine grading of existing dirt roads, asphalt overlays of existing roads, and other similar maintenance activities).
- C. Obtaining Authorization.** Owners or operators are authorized to discharge storm water associated with small construction activity under the terms and conditions of this permit upon commencement of small construction land disturbing activities (i.e., Construction may begin after development of the required Storm Water Pollution Prevention Plan (SWPPP) and the completion of the Small Construction Notice of Intent (SCNOI)).
- D. On-going Construction Activities.** Projects that are on-going as of March 10, 2003 and are equal to or greater than one (1) acre and less than five (5) and do not have coverage under Construction General Permit MSR10 must obtain coverage by complying with the terms and conditions of this permit.
- E. Allowable Non-Storm Water Discharges.** Owner or operators are authorized for the following non-storm water discharges. Except for flows from fire fighting activities, sources of non-storm water below that are combined with storm water discharges associated with construction activity must be identified in the Storm Water Pollution Prevention Plan (SWPPP). The SWPPP must identify and ensure the implementation of appropriate pollution prevention measures for the non-storm water component(s) of the discharge.
- Discharges from fire-fighting activities
 - Fire hydrant flushings
 - Waters used to wash vehicles where detergents are not used
 - Water used to control dust
 - Potable water sources including water line flushings
 - Routine external building wash down that does not use detergents
 - Pavement wash waters where spills or leaks of toxic or hazardous materials have not occurred (unless all spilled material has been removed) and where detergents are not used
 - Uncontaminated air conditioning or compressor condensate
 - Uncontaminated ground water or spring water
 - Foundation or footing drains where flows are not contaminated with process materials such as solvents

¹This includes the total area disturbed over the course of the project. For home sites - a minimum of 10,000 ft² per home site or the entire lot, if smaller, shall be included.

²For subdivision development, if the total acreage disturbed for the entire development is 5 acres or greater then all lots are covered by Mississippi's Storm Water Construction General Permit for construction activity over 5 acres (Large Construction).

F. **Responsibility for Permit Compliance.** The owner(s) of the property and any operator(s) associated with small construction activity on the property shall have joint and several responsibility for compliance with this permit.

G. **This Permit Does Not Authorize:**

- **Discharges of hazardous substances or oil.** This permit does not authorize the discharge of hazardous substances or oil resulting from an on-site spill.
- **Post Construction Discharges.** This permit does not authorize storm water discharges that originate from the site after construction activities have been completed and the site has undergone final stabilization.
- **Discharges Covered by Another Permit.** This permit does not authorize storm water discharges associated with construction activity that have been covered under an individual permit in accordance with Part I. H. of this permit.
- **Discharges Threatening Water Quality.** This permit does not authorize storm water discharges from construction sites that the Executive Director determines will cause, or have reasonable potential to cause or contribute to, violations of water quality standards. Where such determinations have been made, the Mississippi Environmental Quality Permit Board (Permit Board) may notify the owner or operator that an individual permit application is necessary in accordance with Part I. H. of this permit. However, the Permit Board may authorize coverage under this permit after appropriate controls and implementation procedures designed to bring the discharges into compliance with water quality standards have been included in the Storm Water Pollution Prevention Plan.
- **Discharges to Impaired Receiving Waters.** The SWPPP must specifically identify Best Management Practices (BMPs) which ensure storm water will not cause or contribute to non-attainment of a water quality standard. In cases where the Permit Board becomes aware of potential impairment due to small construction activities, the Permit Board may require the submittal of the SWPPP in order to ascertain whether the selected BMPs are sufficient to comply with requirements of this permit or any other requirements of the Permit Board. The list of impaired receiving waters may be found on the MDEQ web site at www.deq.state.ms.us or by calling 601-961-5171.

H. **Requiring an Individual Permit**

Upon notification of a small construction project, the Permit Board may require an alternate permit. The Permit Board may require any owner or operator of land disturbing activities of equal to or greater than one (1) acre and less than five (5) acres to apply for and obtain an individual NPDES permit. Any interested person may petition the Permit Board to take action under this paragraph. The Permit Board may require any small construction owner or operator to apply for an individual NPDES permit only if the owner or operator has been notified in writing. This notice shall include reasons for this decision, an application form and a filing deadline. The Permit Board may grant additional time upon request.

Part II. Small Construction Notice of Intent (SCNOI)

A. **Small Construction Notice of Intent (SCNOI).** Prior to the commencement of small construction activity, the owner or operator must complete a Small Construction Notice of Intent (SCNOI). The SCNOI and SWPPP described in Part III shall be submitted to the Mississippi Department of Environmental Quality (MDEQ) **only upon request from MDEQ**; however, the SCNOI and SWPPP must be maintained at the permitted site or locally available in case inspector review is necessary. Failure to complete a SCNOI prior to the commencement of construction activity or to submit a SCNOI when requested is a violation of State regulations. The SCNOI shall be retained by the owner or operator as required by Part IV. E. of this permit. Attachments to the SCNOI must include: a U.S. Geological Survey quadrangle map or copy (**only if required to be submitted to MDEQ**) showing site location and a Storm Water Pollution Prevention Plan (SWPPP).

- B. Where to Submit the Small Construction Notice of Intent, if Requested.** Complete and appropriately signed SCNOI forms must be submitted to:

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

Part III. Storm Water Pollution Prevention Plan (SWPPP)

- A. SWPPP Development.** A SWPPP shall be developed and implemented by the owner or operator of a small construction project. The SWPPP must include a description of appropriate control measures (i.e., BMPs) that will be implemented as part of the construction activity to control pollutants in storm water discharges.
1. The SWPPP shall be retained at the permitted site or locally available. A copy of the SWPPP must be made available to the MDEQ inspectors for review at the time of an on-site inspection.
 2. BMPs shall be in place upon commencement of construction.
 3. The Executive Director of MDEQ may notify the owner or operator at any time that the SWPPP does not meet the minimum requirements of this permit. After notification, the owner or operator shall amend the SWPPP, implement the changes and certify in writing to the Executive Director that the requested changes have been made. Unless otherwise provided by the Executive Director, the requested changes shall be made within 15 days.
 4. The owner or operator shall amend the SWPPP and implement the changes before there is a change in construction, operation, or maintenance, which may potentially effect the discharge of pollutants to State waters.
 5. The owner or operator shall amend the SWPPP and implement the changes if the SWPPP proves to be ineffective in controlling storm water pollutants including, but not limited to, significant sediment leaving the site and non-functioning BMPs.
- B. Compliance with Local Storm Water Ordinances.**
1. In addition to the requirements of this permit, the SWPPP shall be in compliance with all local storm water ordinances and shall provide a brief description of applicable local erosion and sediment controls and post-construction BMPs.
 2. When storm water discharges into a municipal storm sewer system, the owner or operator must make the SWPPP available to the municipal authority upon request.
- C. SWPPP Details.**
1. **Owner or Operator.** The SWPPP shall identify the “owner or operator” as defined in Part VII. of this permit. The operator’s name, complete mailing address and telephone number(s) shall be identified on the plan.
 2. **Erosion and Sediment Controls.** The owner or operator shall list and describe controls appropriate for the construction activities and the procedures for implementing such controls. Controls shall be designed to retain sediment onsite and should:
 - Divert upslope water around disturbed areas
 - Limit exposure of disturbed areas to the shortest time possible
 - Disturb the smallest area possible
 - Preserve existing vegetation where possible, especially trees
 - Preserve vegetated buffer zones around any creek, drain, lake, pond or wetland
 - Slow rainfall runoff velocities to prevent erosive flows

- Avoid disturbing sensitive areas such as:
 - Steep and/or unstable slopes
 - Land upslope of surface waters
 - Areas with erodible soils
 - Existing drainage channels
- Transport runoff down steep slopes through lined channels or piping
- Minimize the amount of cut and fill
- Re-vegetate disturbed areas as soon as possible
- Implement best management practices to mitigate adverse impacts from storm water runoff; and
- Remove sediment from storm water before it leaves the site by allowing runoff to pond in controlled areas to drop out sediment
- Filter runoff by using natural vegetation, brush barriers, silt fences, hay bales, etc.

At a minimum, the controls must be in accordance with the standards set forth in " Planning and Design Manual for the Control of Erosion, Sediment & Stormwater," or other recognized manual of design as appropriate for Mississippi. The planning and design manual can be obtained by calling 601/961-5171 or may be found electronically at Mississippi State's educational web site at <http://abe.msstate.edu/csd/p-dm/>. In addition, Mississippi's "Storm Water Pollution Prevention Plan (SWPPP) Guidance Manual for Construction Activities" is available by calling 601/961-5171 or on the MDEQ website at www.deq.state.ms.us. The erosion and sediment controls shall address the following minimum components.

- a. **Vegetative practices** shall be designed to preserve existing vegetation where possible and re-vegetate disturbed areas as soon as practicable after grading or construction. Such practices may include surface roughening, temporary seeding, permanent seeding, mulching, sod stabilization, vegetative buffer strips, and protection of trees.
 - b. **Structural practices** shall divert flows from exposed soils, store flows or otherwise limit runoff from exposed areas. Such practices may include construction entrance/exit, straw bale dikes, silt fences, earth dikes, brush barriers, drainage swales, check dams, subsurface drains, pipe slope drains, level spreaders, drain inlet protection, outlet protection, detention/retention basins, sediment traps, temporary sediment basins or equivalent sediment controls.
 - c. **Post construction control measures** shall be installed to control pollutants in storm water after construction is complete. These controls include, but are not limited to on-site infiltration of runoff, flow attenuation using open vegetated swales, exfiltration trenches and natural depressions, constructed wetlands and retention/detention structures. Where needed, velocity dissipation devices shall be placed at detention or retention pond outfalls and along the outfall channel to provide a non-erosive flow.
3. **Non-Storm Water Discharges.** Except for flows from fire fighting activities, sources of non-storm water listed in Part I. E. of this permit that are combined with storm water discharges associated with construction activity must be identified in the SWPPP. The SWPPP must identify and ensure the implementation of appropriate pollution prevention measures for the non-storm water component(s) of the discharge.
 4. **Housekeeping Practices.** The owner or operator shall describe and list practices appropriate to prevent pollutants from entering storm water from construction sites due to poor housekeeping. The owner or operator shall:
 - designate areas for equipment maintenance and repair and concrete chute wash off;
 - provide waste receptacles at convenient locations;
 - provide regular collection of waste;
 - provide protected storage areas for chemicals, paints, solvents, fertilizers, and other potentially toxic materials;
 - provide adequately maintained sanitary facilities; and
 - provide secondary containment around on-site fuel tanks.

Releases into the environment of hazardous substances, oil, and pollutants or contaminants, which pose a threat to applicable water quality standards or causes a film, sheen or discoloration of State waters, shall be reported to the:

- Mississippi Emergency Management Agency (601) 352-9100
- National Response Center 1-800-424-8802

5. **Prepare Scaled Site Map.** The owner or operator shall prepare a scaled site map showing total area of the site, original and proposed contours (if practicable), direction of flow of storm water runoff, adjacent receiving water bodies, north arrow, all erosion & sediment controls (vegetative and structural), post construction control measures as described in Part III. C. 2. of this permit, and an estimate of the pre and post construction runoff coefficients of the site (see runoff coefficients in Part VII.) and the increase in impervious area.
6. **Implementation Sequence.** The owner or operator shall prepare an orderly listing which coordinates the timing of all major land-disturbing activities together with the necessary erosion and sedimentation control measures planned for the project.

Part IV. Limitations and Requirements

A. Non-Numeric Limitations.

Storm water discharges shall be free from:

1. debris, oil, scum, and other floating materials other than in trace amounts
2. eroded soils and other materials that will settle to form objectionable deposits in receiving waters
3. suspended solids, turbidity and color at levels inconsistent with the receiving waters
4. chemicals in concentrations that would cause violation of State Water Quality Criteria in the receiving waters

B. Implementation Requirements.

The owner or operator shall:

1. implement the SWPPP as required;
2. install downslope and perimeter controls before any major land disturbing activities;
3. install needed erosion controls even if they may be located in the way of subsequent activities, such as utility installation, grading or construction. It shall not be an acceptable defense that controls were not installed because subsequent activities would require their replacement or cause their destruction;
4. implement controls as needed to prevent erosion and adverse impacts to receiving streams and shall install additional and/or alternative erosion and sediment controls when existing controls prove to be ineffective in preventing sediment from leaving the site;
5. maintain all erosion and sediment controls. As a minimum accumulated sediment shall be removed from controls when it reaches 1/3 to 1/2 the height of the control and properly disposed. Non-functioning controls shall be repaired, replaced or supplemented with functional controls within 24 hours of discovery or as soon as field conditions allow;
6. implement the appropriate temporary or permanent vegetative practices within seven calendar days when a disturbed area will be left undisturbed for thirty days or more;
7. minimize off-site vehicle tracking of sediments;

8. remove any off-site accumulations of sediment at a frequency sufficient to minimize offsite impacts (e.g., fugitive sediment in street could be washed into storm sewers by the next rain and/or pose a safety hazard to users of public streets); and
9. comply with applicable State or local waste disposal, sanitary sewer or septic system regulations.

C. Inspection Requirements. Inspection of all erosion controls and other SWPPP requirements shall be performed during land disturbing activities . Inspections shall be performed:

1. at least once a week;
2. within 24 hours of the end of a storm event of a half-inch or greater;
3. as often as is necessary to ensure that appropriate erosion and sediment controls have been properly constructed and maintained and determine if additional or alternative control measures are required.

D. Documentation of Inspections. All inspections required by Part IV. C. of this permit must be documented and certified according to Part V. H. of this permit (see Part IX Inspection Form). Documentation must include the day and time the inspection was performed, who performed the inspection, any deficiencies noted, and corrective action needed. Documentation of all inspections must be kept with the SWPPP. Inspections must continue until such time that planned construction activities have been completed, land disturbing activities have ceased and disturbed areas have been stabilized with no significant erosion occurring.

E. Retention of Records. All records, reports and information resulting from activities required by this permit shall be retained by the owner or operator, on-site if practicable, for a period of at least three years from the date construction was completed.

F. Noncompliance Reporting.

1. **Anticipated Noncompliance.** The owner or operator shall give at least 10 days advance notice, if possible, before any planned noncompliance with permit requirements. Giving notice of planned or anticipated noncompliance does not immunize the owner or operator from enforcement for that noncompliance.
2. **Unanticipated Noncompliance.** The owner or operator shall notify the MDEQ orally within 24 hours from the time he or she becomes aware of unanticipated noncompliance. A written report shall be provided to the MDEQ within 5 working days of the time he or she becomes aware of the circumstances. The report shall describe the cause, the exact dates and times, steps taken or planned to reduce, eliminate, or prevent reoccurrence and, if the noncompliance has not ceased, the anticipated time for correction.

G. Termination of Permit Requirements.

1. **If a SCNOI has not been requested by the Permit Board (SCNOI not submitted to MDEQ).** Upon successful completion of all permanent erosion and sediment controls, inspections and reporting requirements are no longer required. The owner or operator must record the date of completion of all permanent erosion and sediment controls on the final inspection report.
2. **If a SCNOI has been requested by the Permit Board (SCNOI submitted to MDEQ).** Upon successful completion of all permanent erosion and sediment controls for a small construction project a written notification of such shall be submitted to the MDEQ. All inspection forms described in Part IV. D. of this permit and provided in Part IX of this permit must be attached. Coverage is not terminated until done so in writing by the MDEQ.

Part V. Other Permit Conditions

A. Duty to Comply. Any permit noncompliance constitutes a violation of the Mississippi Air and Water Pollution Control Law and is grounds for enforcement action or requiring permit application in accordance with Part I. H. of this permit. It shall not be a defense in an enforcement action that it would have been necessary to halt or reduce the regulated activity in order to maintain compliance with the conditions of this permit.

- B. Continuation of the Expired General Permit and Coverages under the Permit.** All general permits and coverages shall remain in full force and effect until the Permit Board makes a final determination regarding any reissuance, modification, or revocation.
- C. Duty to Mitigate.** The owner or operator shall take all reasonable steps to minimize or prevent any discharge in violation of this permit, which is likely to adversely affect human health or the environment.
- D. Duty to Provide Information.** The owner or operator shall furnish to the Permit Board, within a reasonable time, any information that the Permit Board may request to determine compliance with this permit.
- E. Signatory Requirements.** All SCNOIs shall be signed as follows:
- 1. For a corporation** by a responsible corporate officer. For this permit, a responsible corporate officer means: **(a)** a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation; or **(b)** the manager of one or more manufacturing, production or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding \$25,000,000 (in second-quarter 1980 dollars) if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;
 - 2. For a partnership or sole proprietorship** by a general partner or the proprietor, respectively; or
 - 3. For a municipal, State, Federal, or other public agency** by either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes: **(a)** the chief executive officer of the agency, or **(b)** a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency.
- F. Duly Authorized Representative.** All reports required by this permit and other information requested by the Permit Board shall be signed by a person described in Part V. E., above, or by a duly authorized representative of that person. A person is duly authorized representative when:
- 1.** the authorization is made in writing by a person described in Part V. E., above, and submitted to the Permit Board, if requested;
 - 2.** the authorization specifies either an individual or a position having responsibility for the overall operation of the regulated activity, such as manager, owner or operator, superintendent or one having overall environmental responsibility (a duly authorized representative may be a named individual or any individual occupying a named position).
- G. Changes to Authorization.** If an authorization is no longer accurate because a different individual or position has permit responsibility, a new authorization satisfying the above requirements must be submitted to the Permit Board prior to or together with any reports, information or applications signed by the representative.
- H. Certification.** Any person signing documents under this section shall make the following certification: 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 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.
- I. Oil and Hazardous Substance Liability.** Nothing in this permit shall relieve the owner or operator from responsibilities, liabilities, or penalties under Section 311 of the Clean Water Act (CWA).
- J. Property Rights.** The issuance of this permit does not convey any property rights of any sort, nor any exclusive privileges, nor does it authorize any injury to private property nor any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations.

- K. Transfers.** Coverage under this permit is transferable after the former coverage recipient and new coverage recipient complete Form VIII. This form must be kept with your records. Submit to MDEQ only if an SCNOI has been submitted.
- L. Severability.** The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit shall not be affected thereby.
- M. Proper Operation and Maintenance.** The owner or operator shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the owner or operator to achieve compliance with the conditions of this permit including the storm water pollution prevention plan. Proper operation and maintenance includes adequate laboratory controls with appropriate quality assurance procedures and requires the operation of backup or auxiliary facilities when necessary to achieve compliance with permit conditions.
- N. Bypass Prohibition.** Bypass (see 40 CFR 122.41(m)) is prohibited and enforcement action may be taken against a owner or operator for a bypass, unless: **(a)** The bypass was unavoidable to prevent loss of life, personal injury, or severe property damage; **(b)** There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if the owner or operator should, in the exercise of reasonable engineering judgement, have installed adequate backup equipment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and **(c)** The owner or operator submitted notices per Part IV. G. of this permit.
- O. Upset Conditions.** An upset (see 40 CFR 122.41(n)) constitutes an affirmative defense to an action brought for noncompliance with technology-based permit limitations if a permittee shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence, that: **(1)** An upset occurred and the permittee can identify the specific cause(s) of the upset, **(2)** The permitted facility was at the time being properly operated, **(3)** The permittee submitted notices per Part IV. G. 2. of this permit, and **(4)** The permittee took remedial measures as required under Part V. C. of this permit. In any enforcement proceeding, the permittee has the burden of proof that an upset occurred. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.
- P. Inspection and Entry.** The owner or operator shall allow the MDEQ staff or an authorized representative, upon the presentation of credentials and other documents as may be required by law, to;
1. enter upon the premises where a regulated activity is located or conducted or where records must be kept under the conditions of this permit;
 2. have access to and copy at reasonable times any records that must be kept under the conditions of this permit; and
 3. inspect at reasonable times any facilities, equipment or project site.
- Q. Permit Actions.** This permit may be modified, revoked and reissued, or terminated for cause. A request by the owner or operator for permit modification, revocation and reissuance, or termination, or a certification of planned changes or anticipated noncompliance does not stay any permit condition.

Part VI. Reopener Clause

- A. Requirement to Obtain Individual Permit.** If there is evidence indicating potential or realized impacts on water quality due to storm water discharge covered by this permit, the owner or operator may be required to obtain individual permit in accordance with Part I. H. of this permit.
- B. Permit Modification.** Permit modification or revocation will be conducted according to 40 CFR 122.62, 122.63, 122.64 and 124.5.

Part VII. Definitions

Best Management Practices (BMPs) means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the discharge of pollutants to waters of the United States. BMPs also include treatment requirements, operating procedures, and practice to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

Control Measure as used in this permit, refers to any Best Management Practice or other method used to prevent or reduce the discharge of pollutants to waters of the United States.

Commencement of Construction Activities means the initial disturbance of soils associated with clearing, grading, or excavating activities or other construction-related activities.

Commission means the Mississippi Commission on Environmental Quality.

Clean Water Act “CWA” refers to the Federal Water Pollution Control Act, 33 U.S.C. section 1251 et seq.

Discharge of Storm Water Associated with Small Construction Activity as used in this permit, refers to a discharge of pollutants in storm water runoff from areas where soil disturbing activities (e.g., clearing, grading, or excavation), construction materials or equipment storage or maintenance (e.g., fill piles, borrow area, concrete truck washout, fueling), or other industrial storm water directly related to the construction process (e.g., concrete) are located.

Executive Director means the Executive Director of the Department of Environmental Quality.

Facility or Activity means any NPDES “point source” or any other facility or activity (including land or appurtenances thereto) that is subject to regulation under the NPDES program.

Large Construction Activity includes clearing, grading, and excavating resulting in a land disturbance that will disturb equal to or greater than five (5) acres of land or will disturb less than five (5) acres of total land area but is part of a larger common plan of development or sale that will ultimately disturb equal to or greater than five (5) acres. Large construction activity is covered by another general permit.

Larger Common Plan of Development or Sale means a contiguous area where multiple separate and distinct construction activities are occurring under one plan. The plan in a common plan of development or sale is broadly defined as any announcement or piece of documentation (including a sign, public notice or hearing, sales pitch, advertisement, drawing, permit application, zoning request, computer design, etc.) or physical demarcation (including boundary signs, lot stakes, surveyor markings, etc.) indicating that construction activities may occur on a specific plot.

Operator for the purpose of this permit and in the context of storm water associated with construction activity, means any party associated with a construction project that meets either of the following two criteria:

1. The party has operational control over construction plans and specifications, including the ability to make modifications to those plans and specifications; or
2. The party has day-to-day operational control of those activities at a project which are necessary to ensure compliance with a storm water pollution prevention plan for the site or other permit conditions (e.g., they are authorized to direct workers at a site to carry out activities required by the SWPPP or comply with other permit conditions). This definition is provided to inform permittees of MDEQ’s interpretation of how the regulatory definitions of “owner or operator” and “facility or activity” are applied to discharges of storm water associated with construction activity.

Owner or operator means the owner or operator of any “facility or activity” subject to regulation under the NPDES program.

Permit Board means the Mississippi Environmental Quality Permit Board established pursuant to Miss. Code Ann. § 49-17-28.

Pollutant is defined at 40 CFR 122.2. A partial listing from this definition includes: dredged spoil, solid waste, sewage, garbage, sewage sludge, chemical wastes, biological materials, heat, wrecked or discarded equipment, rock, sand, sediment, silt, cellar dirt, and industrial or municipal waste.

Runoff Coefficient means the fraction of total rainfall that will appear at the conveyance as runoff (see values below).

Successful Completion of all permanent erosion and sediment controls means when land disturbing construction activities have been completed and disturbed areas have been stabilized with no significant erosion occurring.

Small Construction Activity is defined at 40 CFR 122.26(b)(15) and incorporated here by reference. A small construction activity includes clearing, grading, and excavating resulting in a land disturbance that will disturb equal to or greater than one (1) acre and less than five (5) acres of land or will disturb less than one (1) acre of total land area but is part of a larger common plan of development or sale that will ultimately disturb equal to or greater than one (1) acre and less than five (5) acres. Small construction activity does not include routine maintenance that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of the facility.

Storm Water means rainfall runoff, snowmelt runoff, and surface runoff.

Storm Water Pollution Prevention Plan "SWPPP" means a plan that includes site map(s), an identification of construction/contractor activities that could cause pollutants in the storm water, and a description of measures or practices to control these pollutants.

Values of Runoff Coefficient C:

Lawns:

- Sandy soil, flat 2% 0.05-0.10
- Sandy soil, average, 2-7% 0.10-0.15
- Sandy soil, steep, 7% 0.15-0.20
- Heavy soil, flat, 2% 0.13-0.17
- Heavy soil, average, 2-7% 0.18-0.22
- Heavy soil, steep, 7% 0.25-0.35

Business:

- Downtown areas 0.70-0.95
- Neighborhood areas 0.50-0.70

Residential:

- Single family areas 0.30-0.50
- Multi units, detached 0.40-0.60
- Multi units, attached 0.60-0.75

Residential:

- Suburban 0.25-0.40
- Apartment dwelling areas 0.50-0.70

Industrial:

- Light areas 0.50-0.80
- Heavy areas 0.60-0.90

Parks, cemeteries 0.10-0.25

Playgrounds 0.20-0.35

Railroad yard areas 0.20-0.40

Unimproved areas 0.10-0.30

Streets:

- Asphalt 0.70-0.95
- Concrete 0.80-0.95
- Brick 0.70-0.85
- Drives and walks 0.75-0.85
- Roofs 0.75-0.95

Item X. Storm Water

(Check One)

The recipient certifies that they have received a copy of the SWPPP from the original owner.

The recipient is developing a new SWPPP.

If other environmental permits are involved please contact MDEQ at 601/961-5171 for the appropriate MDEQ transfer form or see MDEQ's web site at www.deq.state.ms.us

Submit to MDEQ only if an SCNOI has been submitted. If not submitted, you must keep this form with your records.

Note: This page is intentionally blank

Submit only upon request from MDEQ

Part X.



SMALL CONSTRUCTION NOTICE OF INTENT (SCNOI)

GENERAL NPDES PERMIT MSR15 ____ (Number to be assigned by MDEQ if submitted)

Prior to the commencement of small construction activity (see Small Construction General Permit Part I. B.), the owner or operator of a small construction project must complete this form and develop a Storm Water Pollution Prevention Plan (SWPPP) as required by Part III of Mississippi's Small Construction General Permit. **This SCNOI and SWPPP shall be submitted to the Mississippi Department of Environmental Quality (MDEQ) only upon request from MDEQ; however, the SCNOI and SWPPP must be maintained at the permitted site or locally available in case inspector review is necessary.** Attachments with this SCNOI must include: a USGS quad map or copy showing site location (only if required to be submitted to MDEQ) and a Storm Water Pollution Prevention Plan (SWPPP). All questions must be answered – answer "NA" if the question is not applicable.

PROJECT INFORMATION

OWNER CONTACT PERSON: _____

OWNER COMPANY NAME: _____

OWNER STREET (P.O. BOX): _____

OWNER CITY: _____

STATE: _____ **ZIP:** _____

OWNER PHONE # (INCLUDE AREA CODE): _____

OPERATOR (if different from owner) CONTACT PERSON: _____

OPERATOR COMPANY: _____

OPERATOR STREET (P.O. BOX): _____

OPERATOR CITY: _____

STATE: _____ **ZIP:** _____

OPERATOR PHONE # (INCLUDE AREA CODE): _____

PROJECT NAME: _____

DESCRIPTION OF CONSTRUCTION ACTIVITY: _____

ACREAGE DISTURBED (to be covered by this permit must be less than five (5) acres): _____

PHYSICAL SITE ADDRESS (IF NOT AVAILABLE INDICATE THE NEAREST NAMED ROAD):

STREET: _____

CITY: _____ **COUNTY:** _____

ZIP: _____

NEAREST NAMED RECEIVING STREAM: _____

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 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.

Signature¹ _____

Date Signed _____

Printed Name _____

Title _____

¹This application shall be signed according to the Small Construction General Permit, Part V. E.

If requested, mail to: Chief, Environmental Permits Division; Mississippi Department of Environmental Quality
P.O. Box 10385; Jackson, MS, 39289-0385

SECTION TABLE OF CONTENTS

DIVISION 01 - GENERAL REQUIREMENTS

SECTION 01451

CONTRACTOR QUALITY CONTROL

PART 1 GENERAL

1.1 REFERENCES

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.1 GENERAL REQUIREMENTS

3.2 QUALITY CONTROL PLAN

3.2.1 General

3.2.2 Content of the CQC Plan

3.2.3 Acceptance of Plan

3.2.4 Notification of Changes

3.3 COORDINATION MEETING

3.4 QUALITY CONTROL ORGANIZATION

3.4.1 Personnel Requirements

3.4.2 CQC Organization Staffing

3.4.2.1 CQC Staff

3.4.2.2 CQC System Manager

3.4.2.3 Supplemental Personnel

3.4.3 Organizational Changes

3.5 SUBMITTALS

3.6 CONTROL

3.6.1 Preparatory Phase

3.6.2 Initial Phase

3.6.3 Follow-up Phase

3.6.4 Additional Preparatory and Initial Phases

3.7 TESTS

3.7.1 Testing Procedure

3.7.2 Testing Laboratories

3.7.2.1 Capability Check

3.7.2.2 Capability Recheck

3.7.3 Onsite Laboratory

3.7.4 Furnishing or Transportation of Samples for Testing

3.8 COMPLETION INSPECTION

3.8.1 Punch-Out Inspection

3.8.2 Pre-Final Inspection

3.8.3 Final Acceptance Inspection

3.9 DOCUMENTATION

3.10 SAMPLE FORMS

3.11 NOTIFICATION OF NONCOMPLIANCE

-- End of Section Table of Contents --

SECTION 01451

CONTRACTOR QUALITY CONTROL

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D 3740	(2001) Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction
ASTM E 329	(2001a) Agencies Engaged in the Testing and/or Inspection of Materials Used in Construction

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.1 GENERAL REQUIREMENTS

The Contractor is responsible for quality control and shall establish and maintain an effective quality control system in compliance with the Contract Clause INSPECTION OF CONSTRUCTION. The quality control system shall consist of plans, procedures, and organization necessary to produce an end product which complies with the contract requirements. The system shall cover all construction operations, both onsite and offsite, and shall be keyed to the proposed construction sequence.

3.2 QUALITY CONTROL PLAN

3.2.1 General

The Contractor shall furnish for review by the Government, not later than 15 days after receipt of Notice of Award of the contract and at least 7 days prior to the Preconstruction Conference, the Contractor Quality Control (CQC) Plan proposed to implement the requirements of the Contract Clause INSPECTION OF CONSTRUCTION. The plan shall identify personnel, procedures, control, instructions, tests, records, and forms to be used. Construction will be permitted to begin only after acceptance of the CQC Plan or acceptance of an interim plan applicable to the particular feature of work to be started. Work outside of the features of work included in an accepted interim plan will not be permitted to begin until acceptance of a CQC Plan or another interim plan containing the additional features of work to be started.

3.2.2 Content of the CQC Plan

The CQC Plan shall include, as a minimum, the following to cover all construction operations, both onsite and offsite, including work by subcontractors, fabricators, suppliers, and purchasing agents:

- a. A description of the quality control organization, including a chart showing lines of authority and acknowledgment that the CQC staff shall implement the three phase control system for all aspects of the work specified. The staff shall include a CQC System Manager who shall report to the project manager or someone higher in the Contractor's organization. Project manager in this context shall mean the individual with responsibility for the overall management of the project including quality and production.
- b. The name, qualifications (in resume format), duties, responsibilities, and authorities of each person assigned a CQC function.
- c. A copy of the letter to the CQC System Manager signed by an authorized official of the firm which describes the responsibilities and delegates sufficient authorities to adequately perform the functions of the CQC System Manager, including authority to stop work which is not in compliance with the contract. The CQC System Manager shall issue letters of direction to all other various quality control representatives outlining duties, authorities, and responsibilities. Copies of these letters shall also be furnished to the Government.
- d. Procedures for laying out the work, verifying that the work has been constructed as required, and documenting the results of these quality control activities.
- e. Procedures for scheduling, reviewing, certifying, and managing submittals, including those of subcontractors, offsite fabricators, suppliers, and purchasing agents. These procedures shall be in accordance with Section 01330 SUBMITTAL PROCEDURES.
- f. Control, verification, and acceptance testing procedures for each specific test to include the test name, specification paragraph requiring test, feature of work to be tested, test frequency, and person responsible for each test. (Laboratory facilities will be approved.)
- g. Procedures for tracking preparatory, initial, and follow-up control phases and control, verification, and acceptance tests including documentation.
- h. Procedures for tracking construction deficiencies from identification through acceptable corrective action. These procedures shall establish verification that identified deficiencies have been corrected.
- i. Reporting procedures, including proposed reporting formats.
- j. A list of the definable features of work. A definable feature of work is a task which is separate and distinct from other tasks, and has separate control requirements. It could be identified by different trades or disciplines, or it could be work by the same trade in a different environment. Although each section of the specifications may generally be considered as a definable feature

of work, there are frequently more than one definable feature under a particular section. This list will be agreed upon during the coordination meeting.

3.2.3 Acceptance of Plan

Acceptance of the Contractor's plan is required prior to the start of construction. Acceptance is conditional and will be predicated on satisfactory performance during the construction. The Government reserves the right to require the Contractor to make changes in his CQC Plan and operations including removal of personnel, as necessary, to obtain the quality specified.

3.2.4 Notification of Changes

After acceptance of the CQC Plan, the Contractor shall notify the Contracting Officer in writing a minimum of seven (7) calendar days prior to any proposed change. Proposed changes are subject to acceptance by the Contracting Officer.

3.3 COORDINATION MEETING

After the Preconstruction Conference, before start of construction, and prior to acceptance by the Government of the CQC Plan, the Contractor shall meet with the Contracting Officer or Authorized Representative and discuss the Contractor's quality control system. The Contractor shall contact the Government to mutually schedule the Coordination Meeting at least 48 hours in advance of conducting the meeting. During the meeting, a mutual understanding of the system details shall be developed, including the forms for recording the CQC operations, control activities, testing, administration of the system for both on-site and off-site work, and the interrelationship of the Contractor's management and control with the Government's Quality Assurance. Minutes of the meeting shall be prepared by the Government and signed by both the Contractor and the Contracting Officer. The minutes shall become a part of the contract file. There may be occasions when subsequent conferences will be called by either party to reconfirm mutual understandings and/or address deficiencies in the CQC system or procedures which may require corrective action by the Contractor.

3.4 QUALITY CONTROL ORGANIZATION

3.4.1 Personnel Requirements

The Contractor shall identify an individual within his organization at the worksite who shall be responsible for overall management of CQC and have the authority; to act in all CQC matters for the Contractor. This CQC System Manager shall be on the site at all times during construction and will be employed by the Contractor, except as noted in the following. An alternate for the CQC System Manager will be identified in the plan to serve in the event of the System Manager's absence. Period of absence may not exceed 2 weeks at any one time, and not more than 30 workdays during a calendar year. The requirements for the alternate will be the same as for the designated CQC Manager.

3.4.2 CQC Organization Staffing

The Contractor shall provide a CQC staff which shall be at the worksite at all times during progress, with complete authority to take any action necessary to ensure compliance with the contract.

3.4.2.1 CQC Staff

The following are the minimum requirements for the CQC staff. These minimum requirements will not necessarily assure an adequate staff to meet the CQC requirements at all times during construction. The actual strength of the CQC staff may vary during any specific work period to cover the needs of the work period. When necessary for a proper CQC organization, the Contractor will add additional staff at no cost to the Government. This listing of minimum staff in no way relieves the Contractor of meeting the basic requirements of quality construction in accordance with contract requirements. All CQC staff members shall be subject to acceptance by the Contracting Officer.

3.4.2.2 CQC System Manager

The CQC System Manager shall be an experienced construction person with a minimum of 5 years experience in related work. The CQC System Manager, and alternate when serving as System Manager, shall perform no other duties in addition to quality control, except that he may also be project superintendent. The CQC System Manager and alternate shall have successfully completed the course, "Construction Quality Management for Contractors". This course is periodically offered at Vicksburg, MS. (The POC for this course is Mr. Kevin Pace at (601) 631-5121.)

3.4.2.3 Supplemental Personnel

A staff shall be maintained under the direction of the CQC System Manager to perform all CQC activities. The staff must be of sufficient size to ensure adequate CQC coverage of all work phases, work shifts, and work crews involved in the construction. These personnel may perform other duties, but must be fully qualified by experience and technical training to perform their assigned CQC responsibilities and must be allowed sufficient time to carry out these responsibilities. The CQC Plan will clearly state the duties and responsibilities of each staff member.

3.4.3 Organizational Changes

The Contractor shall obtain Contracting Officer's acceptance before replacing any member of the CQC staff. Requests shall include the names, qualifications, duties, and responsibilities of each proposed replacement.

3.5 SUBMITTALS

Submittals shall be made as specified in Section 01330 SUBMITTAL PROCEDURES. The Contractor shall be responsible for certifying that all submittals and deliverables are in compliance with the contract requirements.

3.6 CONTROL

The controls shall include at least three phases of control to be conducted by the CQC System Manager for all definable features of work, as follows:

3.6.1 Preparatory Phase

This phase shall be performed prior to beginning work on each definable feature of work, after all required plans/documents/materials are

approved/accepted, and after copies are at the work site. This phase shall include:

- a. A review of each paragraph of applicable specifications, reference codes, and standards. A copy of those sections of referenced codes and standards applicable to that portion of the work to be accomplished in the field shall be made available by the Contractor at the preparatory inspection. These copies shall be maintained in the field and available for use by Government personnel until final acceptance of the work.
- b. A review of the contract drawings.
- c. A check to assure that all materials and/or equipment have been tested, submitted, and approved.
- d. A check to assure that provisions have been made to provide required control inspection and testing.
- e. Examination of the work area to assure that all required preliminary work has been completed and is in compliance with the contract.
- f. A physical examination of required materials, equipment, and sample work to assure that they are on hand, conform to approved shop drawings or submitted data, and are properly stored.
- g. A review of the appropriate activity hazard analysis to assure safety requirements are met.
- h. Discussion of procedures for constructing the work including repetitive deficiencies. Document construction tolerances and workmanship standards for that feature of work.
- i. A check to ensure that the portion of the plan for the work to be performed has been accepted by the Contracting Officer.
- j. Discussion of the initial control phase.
- k. The Government shall be notified at least 48 hours in advance of beginning any of the required action of the preparatory control phase. This phase shall include a meeting conducted by the CQC System Manager and attended by the superintendent, other CQC personnel (as applicable), and the foreman responsible for the definable feature. The results of the preparatory phase actions shall be documented by separate minutes prepared by the CQC System Manager and attached to the daily CQC report. The Contractor shall instruct applicable workers as to the acceptable level of workmanship required in order to meet contract specifications.

3.6.2 Initial Phase

This phase shall be accomplished at the beginning of a definable feature of work. The following shall be accomplished:

- a. A check of preliminary work to ensure that it is in full compliance with contract requirements. Review minutes of the preparatory meeting.

- b. Verification of full contract compliance. Verify required control inspection and testing.
- c. Establish level of workmanship and verify that it meets minimum acceptable workmanship standards. Compare with sample panels as appropriate.
- d. Resolve all differences.
- e. Check safety to include compliance with and upgrading of the safety plan and activity hazard analysis. Review the activity analysis with each worker.
- f. The Government shall be notified at least 48 hours in advance of beginning the initial phase. Separate minutes of this phase shall be prepared by the CQC System Manager and attached to the daily CQC report. Exact location of initial phase shall be indicated for future reference and comparison with follow-up phases.
- g. The initial phase should be repeated for each new crew to work onsite, or any time acceptable specified quality standards are not being met.

3.6.3 Follow-up Phase

Daily checks shall be performed to assure continuing compliance with contract requirements, including control testing until completion of the particular feature of work. The checks shall be made a matter of record in the CQC documentation. Final follow-up checks shall be conducted and all deficiencies corrected prior to the start of additional features of work which may be affected by the deficient work. The Contractor shall not build upon nor conceal non-conforming work.

3.6.4 Additional Preparatory and Initial Phases

As determined by the Government, additional preparatory and initial phases shall be conducted on the same definable features of work if the quality of on-going work is unacceptable, if there are changes in the applicable CQC staff, onsite production supervision or work crew, if work on a definable feature is resumed after a substantial period of inactivity, or if other problems develop.

3.7 TESTS

3.7.1 Testing Procedure

The Contractor shall perform specified or required tests to verify that control measures are adequate to provide a product which conforms to contract requirements. Testing includes operation and acceptance tests when specified. The Contractor shall procure the services of a Corps of Engineers approved testing laboratory or establish an approved testing laboratory at the project site. The Contractor shall perform the following activities and record and provide the following data:

- a. Verify that testing procedures comply with contract requirements.
- b. Verify that facilities and testing equipment are available and comply with testing standards.

- c. Check test instrument calibration data against certified standards.
- d. Verify that recording forms and test identification control number system, including all of the test documentation requirements, have been prepared.
- e. Results of all tests taken, both passing and failing tests, shall be recorded on the CQC report for the date taken. Specification paragraph reference, location where tests were taken, and the sequential control number identifying the test will be given. If approved, actual test reports may be submitted later with a reference to the test number and date taken. An information copy of tests performed by an offsite or commercial test facility will be provided directly to the Contracting Officer. Failure to submit timely test reports as stated may result in nonpayment for related work performed and disapproval of the test facility for this contract.

3.7.2 Testing Laboratories

3.7.2.1 Capability Check

The Government reserves the right to check laboratory equipment in the proposed laboratory for compliance with the standards set forth in the contract specifications and to check the laboratory technician's testing procedures and techniques. Laboratories utilized for testing soils, concrete, asphalt, and steel shall meet criteria detailed in ASTM D 3740 and ASTM E 329.

3.7.2.2 Capability Recheck

If the selected laboratory fails the capability check, the Contractor will be assessed a charge of \$3,000.00 to reimburse the Government for each succeeding recheck of the laboratory or the checking of a subsequently selected laboratory. Such costs will be deducted from the contract amount due the Contractor.

3.7.3 Onsite Laboratory

The Government reserves the right to utilize the Contractor's control testing laboratory and equipment to make assurance tests, and to check the Contractor's testing procedures, techniques, and test results at no additional cost to the Government.

3.7.4 Furnishing or Transportation of Samples for Testing

Costs incidental to the transportation of samples or materials shall be borne by the Contractor. Samples of materials for test verification and acceptance testing by the Government shall be delivered to the Corps of Engineers Division Laboratory, f.o.b., at the following address:

U.S. Army Corps of Engineers
Engineer Research and Development Center (CEERD)
3909 Halls Ferry Road
Vicksburg, Mississippi 39180-6199

Coordination for each specific test, exact delivery location, and dates will be made through the Area Office.

3.8 COMPLETION INSPECTION

3.8.1 Punch-Out Inspection

Near the completion of the work, or any increment of the work established by a time stated in Section 00800 SPECIAL CONTRACT REQUIREMENTS, paragraph COMMENCEMENT, PROSECUTION, AND COMPLETION OF WORK, or stated elsewhere in the specifications, the CQC System Manager shall conduct an inspection of the work and develop a "punch list" of items which do not conform to the approved drawings and specifications. Such a list of deficiencies/uncompleted work shall be included in the CQC documentation, as required by paragraph DOCUMENTATION below, and shall include the estimated date by which the deficiencies/uncompleted work shall be corrected/completed. The CQC System Manager or staff shall make a second inspection to ascertain that all deficiencies/uncompleted work have been corrected/completed. Once this is accomplished, the Contractor shall notify the Government that the facility is ready for the Government "Pre-Final" inspection.

3.8.2 Pre-Final Inspection

The Government will perform the pre-final inspection to verify that the facility is complete and ready to be occupied. A Government Pre-Final Punch List may be developed as a result of this inspection. The Contractor's CQC System Manager shall ensure that all items on this list have been corrected before notifying the Government, so that a Final inspection with the customer can be scheduled. Any items noted on the Pre-Final inspection shall be corrected in a timely manner. These inspections and any deficiency corrections required by this paragraph will be accomplished within the time stated for completion of the entire work or any particular increment of the work if the project is divided into increments by separate completion dates.

3.8.3 Final Acceptance Inspection

The Contractor's Quality Control System Manager, his Superintendent or other primary personnel, and the Contracting Officer's Representative shall be in attendance at this inspection. The customer and other Government personnel may also be in attendance. In the event of unavailability of the Contractor's representative, the Contracting Officer may elect to conduct the final acceptance inspection as scheduled. The Contracting Officer will formally schedule the final acceptance inspection based upon the results of the pre-final inspection. At least 14 calendar days prior to the scheduled final acceptance inspection, the Contractor shall give Contracting Officer a written notice of completion. The notice shall include the Contractor's assurance that all items previously identified to the Contractor as being unacceptable and all remaining work under the contract will be completed and acceptable by the date scheduled for the final acceptance inspection. Failure of the Contractor to have all contract work acceptably complete for this inspection will be cause for the Contracting Officer to bill the Contractor for the Government's additional inspection costs in accordance with Contract Clause INSPECTION OF CONSTRUCTION in Section 00700 CONTRACT CLAUSES.

3.9 DOCUMENTATION

The Contractor shall maintain current records providing factual evidence that required quality control activities and/or tests have been performed. These records shall include the work of subcontractors and suppliers and

shall be on an acceptable form that includes, as a minimum, the following information:

- a. Contractor/subcontractor and their area of responsibility.
- b. Operating plant/equipment with hours worked, idle, or down for repair.
- c. Work performed each day, giving location, description, and by whom. When Network Analysis (NAS) is used, identify each phase of work performed each day by NAS activity number.
- d. Test and/or control activities performed with results and references to specifications/drawings requirements. The control phase shall be identified (Preparatory, Initial, Follow-up). List deficiencies noted along with corrective action.
- e. Quantity of materials received at the site with statement as to acceptability, storage, and reference to specifications/drawings requirements.
- f. Submittals and deliverables reviewed, with contract reference, by whom, and action taken.
- g. Off-site surveillance activities, including actions taken.
- h. Job safety evaluations stating what was checked, results, and instructions or corrective actions.
- i. Instructions given/received and conflicts in plans and/or specifications.
- j. Contractor's verification statement.

These records shall indicate a description of trades working on the project; the number of personnel working; weather conditions encountered; and any delays encountered. These records shall cover both conforming and deficient features and shall include a statement that equipment and materials incorporated in the work and workmanship comply with the contract. The original and one copy of these records in report form shall be furnished to the Government daily within 24 hours after the date covered by the report, except that reports need not be submitted for days on which no work is performed. As a minimum, one report shall be prepared and submitted for every 7 days of no work and on the last day of a no work period. All calendar days shall be accounted for throughout the life of the contract. The first report following a day of no work shall be for that day only. Reports shall be signed and dated by the CQC System Manager. The report from the CQC System Manager shall include copies of test reports and copies of reports prepared by all subordinate quality control personnel.

3.10 SAMPLE FORMS

Sample forms enclosed at the end of this section:

- a. CONSTRUCTION QUALITY MANAGEMENT REPORT
- b. PREPARATORY PHASE CHECKLIST FORM

c. INITIAL PHASE CHECKLIST FORM

3.11 NOTIFICATION OF NONCOMPLIANCE

The Contracting Officer will notify the Contractor of any detected noncompliance with the foregoing requirements. The Contractor shall take immediate corrective action after receipt of such notice. Such notice, when delivered to the Contractor at the work site, shall be deemed sufficient for the purpose of notification. If the Contractor fails or refuses to comply promptly, the Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to such stop orders shall be made the subject of claim for extension of time or for costs or damages by the Contractor.

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 02 - SITE WORK

SECTION 02109

CLEARING AND GRUBBING

PART 1 GENERAL

1.1 GENERAL REQUIREMENTS

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.1 CLEARING

3.1.1 General

3.1.2 Trees

3.1.3 Vegetation

3.1.4 Miscellaneous

3.1.4.1 Debris

3.1.4.2 Existing Fencing

3.1.4.3 Temporary Fencing

3.1.4.4 Existing Power Poles and Lines

3.1.5 Areas to be Cleared

3.1.5.1 General

3.1.5.2 Stockpile Areas

3.2 GRUBBING

3.2.1 General

3.2.2 Areas to be Grubbed

3.2.2.1 Embankments and Structures

3.2.3 Filling of Holes

3.3 BRIDGE AND PIPE CULVERT REMOVAL

3.4 DISPOSAL OF DEBRIS

3.4.1 General

3.4.2 Removal

-- End of Section Table of Contents --

SECTION 02109

CLEARING AND GRUBBING

PART 1 GENERAL

1.1 GENERAL REQUIREMENTS

Clearing and grubbing work for construction shall be completed prior to excavation or embankment construction. If regrowth of vegetation or trees occurs after clearing and grubbing and before construction, the Contractor will be required to clear and grub the area again prior to excavation or embankment construction. No payment will be made for this additional clearing and grubbing.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.1 CLEARING

3.1.1 General

Clearing, unless otherwise specified, shall consist of the complete removal above the ground surface of all trees, stumps, down timber, snags, brush, vegetation, trash, old piling, loose stone, abandoned structures, underground structures, fencing, existing bridges, and pipe culverts, and similar debris.

3.1.2 Trees

Trees shall be felled in such a manner as to avoid damage to trees to be left standing, to existing structures and installations and to those under construction, and with due regard for the safety of employees and others.

3.1.3 Vegetation

Vegetation to be removed shall consist of crops, grass, bushes, and weeds. This vegetation shall be removed to form a completely bare earth surface.

3.1.4 Miscellaneous

3.1.4.1 Debris

The Contractor shall remove all debris and other materials which remain after construction is complete. The Contractor shall remove debris in gullies and existing ditches as shown.

3.1.4.2 Existing Fencing

The Contractor shall remove any existing fencing within the confines of the contract rights-of-way as required to facilitate construction. After completion of the grade control structures and diversions, the Contractor shall replace the fencing in kind and shall erect it in a manner similar and at least equal to the removed fencing.

3.1.4.3 Temporary Fencing

The Contractor shall provide temporary fencing as required to keep livestock outside the construction limits. Temporary fencing shall be erected in a manner similar and at least equal to the removed fencing and existing fencing.

3.1.4.4 Existing Power Poles and Lines

See Section 01000 GENERAL CONTRACT REQUIREMENTS, paragraph PUBLIC UTILITIES.

3.1.5 Areas to be Cleared

3.1.5.1 General

The entire area of the excavation shall be cleared of all trees, brush, drift, miscellaneous debris, or other obstruction that would hinder excavation or grading, and subsequent construction operations. Clearing shall be limited to the absolute minimum necessary for construction of the work, together with strips 1.5 m wide contiguous thereto. Care shall be taken by the Contractor not to cut or injure any trees which do not unreasonably interfere with the construction. Growth around the work area shall be preserved to the maximum extent practicable. Clearing shall be limited to approved areas. All trees and brush within the areas authorized to be cleared shall be felled and together with drift and other debris shall be disposed of as directed in paragraph DISPOSAL OF DEBRIS.

3.1.5.2 Stockpile Areas

Areas for use as temporary stockpile areas, as approved, shall be cleared to the extent necessary to accommodate the materials and to preclude contamination of the materials.

3.2 GRUBBING

3.2.1 General

Grubbing shall consist of the removal of all stumps, roots, buried logs, and other unsuitable materials as described in Section 02226 EXCAVATION, FILL, BACKFILL, AND EMBANKMENT.

3.2.2 Areas to be Grubbed

3.2.2.1 Embankments and Structures

Grubbing shall be performed within the limits of the excavations and embankments and all structures together with the 1.5 m strips contiguous thereto. All roots and other projections over 38 mm in diameter shall be removed to a depth of 300 mm below the natural surface of the ground.

3.2.3 Filling of Holes

All holes caused by clearing and grubbing operations shall be backfilled with suitable material in 300 mm layers to the elevation of the adjacent ground surface, and each layer compacted to a density at least equal to that of the adjoining undisturbed materials.

3.3 BRIDGE AND PIPE CULVERT REMOVAL

The existing bridge and pipe culverts as indicated shall be completely removed. Piles shall be pulled. Disposal of the existing bridge and pipe culverts shall be in accordance with paragraph DISPOSAL OF DEBRIS. Barricades, warning signs and traffic control devices shall be in accordance with Section 01000 GENERAL CONTRACT REQUIREMENTS, paragraph COUNTY ROAD CLOSURE.

3.4 DISPOSAL OF DEBRIS

3.4.1 General

All debris resulting from construction operations at the structure site shall be disposed of by removal from the site. Not less than 7 days before removing clearing and grubbing debris from the site, the Contractor shall notify the Contracting Officer in writing of all proposed disposal sites. The Contracting Officer reserves the right to approve or disapprove the use of Contractor-furnished disposal areas based on the location of the areas and a determination of the overall impact the proposed disposal will have on the environment. Contractor-furnished disposal areas shall not be located in woodlands or wetlands. Disapproval by the Contracting Officer of Contractor-furnished disposal areas shall not form the basis of a claim against the Government. No separate payment will be made for Contractor-furnished disposal area(s).

3.4.2 Removal

The Contractor shall remove all debris resulting from clearing and grubbing operations from the Government furnished rights-of-way. The Contractor may, at his option, retain for his own use or dispose of by sale or otherwise, any such materials of value. The Government assumes no responsibility for the protection or safekeeping of any materials retained by the Contractor. Such materials shall be removed from the site of work before the date of completion of the work under these specifications. When debris from clearing or grubbing operations is placed on adjacent property, the Contractor shall obtain, without cost to the Government and in accordance with the Section 01000 GENERAL CONTRACT REQUIREMENTS, paragraph RIGHTS-OF-WAY, additional rights-of-way for such purposes. Such material shall be so placed so as not to interfere with roads, drainage or other improvements and in such a manner as to eliminate the possibility of its entering the completed project.

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 02 - SITE WORK

SECTION 02213

ENGINEERING FABRIC

PART 1 GENERAL

- 1.1 REFERENCES
- 1.2 SUBMITTALS
- 1.3 IDENTIFICATION, STORAGE, AND HANDLING

PART 2 PRODUCTS

- 2.1 MATERIALS
 - 2.1.1 Fabric
 - 2.1.2 Seams
 - 2.1.3 Temporary Securing Pins
 - 2.1.4 Straps and Anchorage Material
 - 2.1.5 Anchor Trench Backfill
- 2.2 ACCEPTANCE REQUIREMENTS
 - 2.2.1 Testing
 - 2.2.2 Mill Certificates or Affidavits

PART 3 EXECUTION

- 3.1 INSTALLATION OF ENGINEERING FABRIC

-- End of Section Table of Contents --

SECTION 02213

ENGINEERING FABRIC

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D 3950	(2000) Strapping, Nonmetallic (and Joining Methods)
ASTM D 4354	(1999) Sampling of Geosynthetics for Testing
ASTM D 4355	(1999) Deterioration of Geotextiles from Exposure to Ultraviolet Light and Water (Xenon-Arc Type Apparatus)
ASTM D 4439	(2000) Geosynthetics
ASTM D 4491	(1999a) Water Permeability of Geotextiles by Permittivity
ASTM D 4533	(1991; R 1996) Trapezoid Tearing Strength of Geotextiles
ASTM D 4632	(1991; R 1996) Grab Breaking Load and Elongation of Geotextiles
ASTM D 4751	(1999a) Determining Apparent Opening Size of a Geotextile
ASTM D 4759	(1988; R 1996) Determining the Specification Conformance of Geosynthetics
ASTM D 4833	(2000) Index Puncture Resistance of Geotextiles, Geomembranes, and Related Products
ASTM D 4873	(1997) Identification, Storage, and Handling of Geosynthetic Rolls
ASTM D 4884	(1996) Strength of Sewn or Thermally Bonded Seams of Geotextiles

1.2 SUBMITTALS

Government approval is required for all submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office

that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-07 Certificates

Engineering Fabric; G

The Contractor shall submit in triplicate, a mill certificate or affidavit signed by a legally authorized official from the company manufacturing the engineering fabric. Certificates shall identify the engineering fabric being furnished by roll identification number. Certificates of compliance attesting that the materials meet specification requirements shall be submitted in accordance with Section 01000 GENERAL CONTRACT REQUIREMENTS, paragraph CERTIFICATES OF COMPLIANCE.

SD-04 Samples

Fabric; G

Samples of engineering fabric shall be submitted for testing not less than 60 days prior to the beginning of installation of the engineering fabric. The sample average test results (weaker principle direction for mechanical tests) for a particular property for any individual roll tested within a lot shall meet or exceed the Minimum Average Roll Value (MARV) indicated in the manufacturer's certification.

1.3 IDENTIFICATION, STORAGE, AND HANDLING

The geotextile shall be identified, stored, and handled in accordance with ASTM D 4873.

PART 2 PRODUCTS

2.1 MATERIALS

2.1.1 Fabric

The engineering fabric shall be a nonwoven geotextile, as defined by ASTM D 4439, consisting of polymeric filaments which are formed into a stable network such that filaments retain their relative positions. The filament shall consist of a long-chain synthetic polymer composed of at least 85 percent by weight of ester, propylene, ethylene, or amide, and shall contain stabilizers and/or inhibitors added to the base plastic if necessary to make the filaments resistant to deterioration due to ultraviolet and heat exposure. The nonwoven engineering fabric shall conform to the physical property requirements tests in TABLE NO. 1 - PHYSICAL STRENGTH REQUIREMENTS, paragraph ACCEPTANCE REQUIREMENTS. The fabric rolls (strips) shall be manufactured in a minimum width of 3.7 m.

2.1.2 Seams

The seams of the engineering fabric shall be sewn with thread of a material meeting the chemical requirements given above for the engineering fabric. The contractor has the option of field sewing the sheets together to eliminate the overlapping of the sheets during field installation. The field seams shall be double sewn. Seams shall be tested in accordance with method ASTM D 4884. The strengths of the seam shall be not less than 80

percent of the required tensile strength (TABLE NO. 1 - PHYSICAL STRENGTH REQUIREMENTS) of the unaged fabric in any principal direction. Fabric and seams shall be aligned as specified in paragraph INSTALLATION OF ENGINEERING FABRIC.

2.1.3 Temporary Securing Pins

Temporary securing pins shall not be used.

2.1.4 Straps and Anchorage Material

The straps and anchorage material used to attach the engineering fabric to structures or pipes shall be stainless steel, or nonmetallic strapping meeting the requirements of ASTM D 3950, Type 1A, Grade 3; Type III, or Type IV, with a minimum breaking strength of 3480 N.

2.1.5 Anchor Trench Backfill

Anchor trench backfill shall be as specified in Section 02226 EXCAVATION, FILL, BACKFILL, AND EMBANKMENT, paragraph ANCHOR TRENCH BACKFILL.

2.2 ACCEPTANCE REQUIREMENTS

All brands of engineering fabric and all seams, except field sewn seams, will be accepted on the following basis.

2.2.1 Testing

Government personnel may collect engineering fabric samples in accordance with ASTM D 4354 for testing to determine compliance with any or all of the requirements in this specification pursuant to ASTM D 4759 and the following table:

TABLE NO. 1 - PHYSICAL STRENGTH REQUIREMENTS
Minimum Average Roll Values (MARV)

PHYSICAL PROPERTY	GRADE 2	TEST PROCEDURE
Tensile Strength (unaged fabric)	1.07 kN Minimum	ASTM D 4632
Elongation	25 percent Minimum	ASTM D 4632
Puncture Strength (unaged fabric)	0.51 kN Minimum	ASTM D 4833
Trapezoid Tear	0.40 kN Minimum	ASTM D 4533
Permittivity	Greater than 0.7 per sec	ASTM D 4491
Apparent Opening Size	Less than 70 sieve (212 µm)	ASTM D 4751
Ultraviolet Resistance	70 percent Minimum (percent of strength retained after 500 hrs)	ASTM D 4355

+ Unaged fabric is defined as fabric in the condition received from the manufacturer or distributor.

2.2.2 Mill Certificates or Affidavits

The mill certificates or affidavits for engineering fabric shall attest that the fabric and factory seams meet chemical, physical, and manufacturing requirements stated in this specification. The mill certificates or affidavits shall specify the actual Minimum Average Roll Values (MARV) and shall identify the fabric supplied by manufacturer's name and roll identification numbers.

PART 3 EXECUTION

3.1 INSTALLATION OF ENGINEERING FABRIC

The engineering fabric shall be placed in the manner and at the locations shown. At the time of installation, fabric shall be rejected if it has defects, rips, holes, flaws, deterioration or damage incurred during manufacture, transportation or storage. The surface to receive engineering fabric shall be relatively smooth and free of obstructions, depressions, debris, and soft or low density pockets of material. The fabric shall be placed with the long dimension (machine direction) of the engineering fabric parallel to the centerline of the channel and shall be laid smooth and free of tension, stress, folds, wrinkles, or creases. The panels (sheets or strips) shall be placed to provide a minimum overlap width of 600 mm after placement of the riprap for each joint with the upstream panel overlapping the downstream panel and with the panels placed on channel slopes with the upper panel overlapping the next lower panel. Weights (Riprap) shall be used to temporarily hold the fabric in such a manner as to prevent the wind or other disturbance from lifting the fabric or shifting the overlap. The perimeter of the engineering fabric shall be anchored into the foundation with a trench or attached to the structure. The trench at the top of the slope shall not be backfilled until the riprap is in place on the fabric. Anchor trench backfill shall be used to anchor the engineering fabric in the trench. When engineering fabric is penetrated by pipes, the engineering fabric shall be attached to the pipe with a strap. The engineering fabric, after being attached to the pipe, shall be in contact with the whole perimeter of the pipe. The strap shall be attached to the pipe parallel to the corrugations. The location of the attachment to the pipe shall be located so that engineering fabric shall be completely covered by a layer of the specified material. The fabric shall be protected at all times during construction from contamination by surface runoff and fabric so contaminated shall be removed and replaced with uncontaminated fabric at no cost to the Government. Wheeled and/or tracked vehicles used in the placement of riprap are not allowed directly onto fabric and shall be of such design that they will not damage the underlying engineering fabric. Any fabric damaged during its installation or during placement of riprap shall be replaced by the Contractor at no cost to the Government. The work shall be scheduled so that the covering of the fabric with a layer of the specified material is accomplished within 10 days after placement of the fabric. Failure to comply shall require replacement of the engineering fabric at no additional cost to the Government. The engineering fabric shall be protected from damage due to the placement of riprap or other materials by limiting the height of drop of the material to 1 m. Before placement of riprap, the Contractor shall demonstrate that the placement technique will prevent damage to the fabric.

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 02 - SITE WORK

SECTION 02220

EROSION CONTROL MATTING

PART 1 GENERAL

- 1.1 SUBMITTALS
- 1.2 EXCAVATION AND BACKFILL

PART 2 PRODUCTS

- 2.1 EROSION CONTROL MATTING MATERIALS
 - 2.1.1 General
 - 2.1.2 Backfill for Transverse Trenches
 - 2.1.3 Anchors

PART 3 EXECUTION

- 3.1 EROSION CONTROL MATTING

-- End of Section Table of Contents --

SECTION 02220

EROSION CONTROL MATTING

PART 1 GENERAL

1.1 SUBMITTALS

Government approval is required for all submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-03 Product Data

Erosion Control Matting

The Contractor shall submit signed copies of invoices from suppliers which show quantities and identify the material and manufacturer.

1.2 EXCAVATION AND BACKFILL

Excavation and backfill shall be as specified in Section 02226 EXCAVATION, FILL, BACKFILL, AND EMBANKMENT.

PART 2 PRODUCTS

2.1 EROSION CONTROL MATTING MATERIALS

2.1.1 General

The erosion control matting shall be a nominal 9.5 mm thick blanket of excelsior, wheat straw or other natural fiber bonded to a photo degradable mesh. The mats shall be rated by the manufacturer for use in vegetated channels having flow velocities of up to 1.5 meters per second.

2.1.2 Backfill for Transverse Trenches

Backfill in transverse trenches for anchoring erosion control matting shall be suitable material as specified in Section 02226 EXCAVATION, FILL, BACKFILL, AND EMBANKMENT, paragraph SUITABLE MATERIALS.

2.1.3 Anchors

Anchors for erosion control matting shall be as recommended by the manufacturer.

PART 3 EXECUTION

3.1 EROSION CONTROL MATTING

The erosion control matting shall be installed in accordance with the details shown on the drawings. Trenches shall be constructed as shown for anchoring erosion control matting. Prior to placing the matting, the

ground shall be graded to cross section shown with a maximum deviation of plus 50 mm. Edges and overlaps of the material shall be anchored at 1 meter intervals unless otherwise shown. Erosion control matting shall be anchored in trenches as shown.

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 02 - SITE WORK

SECTION 02226

EXCAVATION, FILL, BACKFILL, AND EMBANKMENT

PART 1 GENERAL

1.1 REFERENCES

PART 2 PRODUCTS

2.1 MATERIALS

2.1.1 Fill, Backfill and Embankment

2.1.1.1 General

2.1.1.2 Suitable Materials

2.1.1.3 Select Fill

2.1.1.4 Anchor Trench Backfill

PART 3 EXECUTION

3.1 EXCAVATION

3.1.1 General

3.1.2 Excavation for Structures and Channels

3.1.3 Disposal of Excavated Materials

3.1.3.1 Disposal of Discarded Materials

3.1.4 Stockpiling of Material

3.2 PLACEMENT

3.2.1 General

3.2.2 Foundation Preparation

3.2.3 Fill and Embankment

3.2.4 Backfill

3.3 COMPACTION

3.3.1 Fill and Embankment

3.3.2 Backfill

3.3.3 Structure Backfill

3.4 MOISTURE CONTROL

3.4.1 Fill and Embankment

3.4.2 Backfill

3.4.3 Structure Backfill

3.5 SLIDES

3.6 FIELD TESTING CONTROL

-- End of Section Table of Contents --

SECTION 02226

EXCAVATION, FILL, BACKFILL, AND EMBANKMENT

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D 698	(2000a) Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/cu. ft. (600 kN-m/cu. m))
ASTM D 1556	(2000) Density and Unit Weight of Soil in Place by the Sand-Cone Method
ASTM D 2167	(1994) Density and Unit Weight of Soil in Place by the Rubber Balloon Method
ASTM D 2216	(1998) Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
ASTM D 2487	(2000) Classification of Soils for Engineering Purposes (Unified Soil Classification System)
ASTM D 2922	(1996e1) Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)

PART 2 PRODUCTS

2.1 MATERIALS

2.1.1 Fill, Backfill and Embankment

2.1.1.1 General

The Government makes no guarantee that the quantity of required excavation is adequate to provide the quantity of suitable material needed for required fill, backfill and embankment. Material for select fill, fill, backfill and embankment shall be obtained from required excavation and/or furnished by the Contractor from off-site sources at no additional cost to the Government. Material furnished by the Contractor shall be as specified herein and shall be approved prior to being used. No frozen material shall be placed and material shall not be placed against frozen surfaces.

2.1.1.2 Suitable Materials

Suitable materials to be used for fill and backfill shall be clay (CL, CH)

or silt (ML) classified in accordance with ASTM D 2487. Suitable materials shall not contain masses of organic matter, sticks, branches, roots, trash and other debris.

2.1.1.3 Select Fill

Select fill shall be used under the roadway as shown on the drawings. Select fill shall be natural soil with a maximum PI of 20, maximum liquid limit of 35, a maximum organic content of 5 percent, and a maximum silt content of 65 percent. Select fill shall otherwise be considered road embankment in the execution section of this specification.

2.1.1.4 Anchor Trench Backfill

Anchor trench backfill shall be pervious material such as sands or gravels (SP, SW, GW, or GP) classified in accordance with ASTM D 2487.

PART 3 EXECUTION

3.1 EXCAVATION

3.1.1 General

Excavation shall consist of removal of material in preparing the foundation to the lines and grade shown. Wherever unsuitable foundation material is encountered, the unsuitable material shall be removed to the depth directed. Overexcavation will not be permitted except to remove unsuitable material as directed by the Contracting Officer. Backfill of authorized (required) overexcavation and of unauthorized overexcavation shall be as specified in paragraph PLACEMENT, subparagraph BACKFILL and paragraph COMPACTION, subparagraph BACKFILL. Excavated materials shall be disposed of as specified in paragraph DISPOSAL OF EXCAVATED MATERIALS. Payment for authorized overexcavation and backfill of authorized overexcavation will be made in accordance with the Contract Clause CHANGES. No payment will be made for unauthorized overexcavation or backfill of unauthorized overexcavation.

3.1.2 Excavation for Structures and Channels

The foundations for the structures, riprap and filters shall be excavated to the lines, grades and sections indicated. The channels at the end of pipes shall be excavated to the lines, grades and sections indicated within an allowable tolerance of plus or minus 150 mm. All foundations shall be solid, undisturbed or properly compacted material. The bottom of the excavation upon which concrete is to be placed shall be accurately finished to the dimensions prescribed or directed, within an allowable tolerance of plus 13 mm and minus 50 mm. Where disturbed by the Contractor's operations and elsewhere as required, the excavated surfaces shall be moistened with water or dried as necessary and tamped or rolled with suitable tools or equipment for the purpose of thoroughly compacting them and forming firm foundations upon or against which to place the concrete.

3.1.3 Disposal of Excavated Materials

Excavated materials which are not suitable for use as fill, or in excess of that required for fill, shall be disposed of by placing it in Contractor furnished upland disposal area(s) outside the Government furnished rights-of-way. The location and dimensions of the Contractor furnished disposal area(s) shall be approved prior to disposal of any material and

shall not be located in any river, stream, lake or wetland area. The Contractor shall obtain the rights-of-way for the disposal area(s) in accordance with the Section 01000 GENERAL CONTRACT REQUIREMENTS, paragraph RIGHTS-OF-WAY. No separate payment will be made for Contractor-furnished disposal area(s).

3.1.3.1 Disposal of Discarded Materials

Discarded material other than those which can be included in the solid waste category shall be disposed of as specified in paragraph EXCAVATION, subparagraph DISPOSAL OF EXCAVATED MATERIALS above.

3.1.4 Stockpiling of Material

Stockpiles of materials temporarily stored for later use shall be located in approved areas. Stockpiled material shall have a maximum height not to exceed 3 m, shall have end and side slopes not steeper than 1 vertical on 2 horizontal, and the surfaces of all stockpiles shall be sloped to drain readily and sealed by compacting. Excavation from stockpiles shall be made so as to maintain drainage at all times. No stockpiled material shall be placed within 15 meters of top bank of channel excavation or structure excavation. Excavated materials which are suitable for incorporation in the fill shall either be placed directly therein or stockpiled and subsequently used in the fill.

3.2 PLACEMENT

3.2.1 General

All fill and backfill associated with the channel, concrete structure and all embankment above the top of the concrete structure, including the road subgrade, shall be placed as fully compacted fill or backfill. Fill shall consist of the placement of material in embankment, channel side slopes and any other area where filling is required to obtain the lines and grades above the existing ground surfaces as shown. The foundation surface and any concrete surfaces shall be suitably moistened prior to placement of fill against them. Backfill shall not be placed against concrete less than 14 days after the concrete has been placed unless otherwise directed by the Contracting Officer.

3.2.2 Foundation Preparation

Immediately prior to the placement of fill or backfill material, the entire surface on or against which fill or backfill is to be placed shall be thoroughly broken to a depth of 150 mm. If for any cause this broken surface or other surface that is to receive fill or backfill becomes compacted in such a manner that a plane of seepage or weakness might be induced, if directed, it shall again be thoroughly broken before the depositing of material thereon at no additional cost to the Government. The foundation receiving fill, all partially completed fill or backfill shall be kept thoroughly drained. No fill or backfill shall be placed on any part of the foundation until such areas have been inspected and approved.

3.2.3 Fill and Embankment

The materials shall be placed or spread in layers, the first layer not more than 150 mm in thickness and the succeeding layers not more than 300 mm in thickness prior to compaction. The upper most 450 mm of embankment fill to

be placed directly under the road surface shall be placed in no more than 150 mm individual loose lifts prior to compaction. Layers shall slope to provide satisfactory drainage during construction. Benching into the slope of the existing embankment may be required in order to place and compact the material in horizontal layers. When the surface of any compacted layer is too smooth to bond properly with the succeeding layer, it shall be adequately scarified before the next layer is placed thereon.

3.2.4 Backfill

Backfill shall consist of the refill of excavation and holes to the existing ground surface or to the lines and grades shown, if below the existing ground surface, except for structure backfill as specified in paragraph COMPACTION, subparagraph STRUCTURE BACKFILL. Backfill material shall be deposited in 100 mm maximum thickness layers. No backfill shall be placed against slopes steeper than one (1) horizontal to one (1) vertical unless approved.

3.3 COMPACTION

3.3.1 Fill and Embankment

Fill and embankment material shall be compacted to at least 90 percent of maximum dry density as determined in accordance with ASTM D 698. The maximum dry density shall be determined by the Contractor from representative samples of each type of material in accordance with ASTM D 698. Test results shall be furnished to the Contracting Officer prior to placing material. Fill shall be constructed to the lines and grades shown on the drawings. A tolerance of plus or minus 50 mm will be permitted in the final dressing, provided there are no abrupt humps or depressions in surfaces, the slopes are uniform, and the fill is shaped to drain. Road embankment and all embankment above the top of the concrete structure shall be compacted to at least 95 percent of the maximum density as determined by the Contractor in accordance with ASTM D 698.

3.3.2 Backfill

Backfill material, not including structure backfill, shall be compacted with suitable tampers to at least the density of the adjacent undisturbed soil. A tolerance of plus or minus 50 mm will be permitted in the final dressing.

3.3.3 Structure Backfill

Structural fill and backfill should be placed in horizontal layers with maximum loose lift thickness of 150 mm for all embankment above the top of the concrete structure. Backfill at the structure foundation and slopes shall be compacted to at least 95 percent of the maximum dry density as determined by the Contractor in accordance with ASTM D 698.

3.4 MOISTURE CONTROL

3.4.1 Fill and Embankment

The moisture content shall be as uniform as practicable throughout any one layer of random materials. The upper and lower limits of moisture content shall not be more than 3 nor less than 2 percentage points, respectively, from the optimum moisture content. The optimum moisture content shall be determined by the Contractor from representative samples of each type of

material in accordance with ASTM D 698. Tests results shall be furnished to the Contracting Officer prior to placing material. The method of determining the moisture content shall be according to ASTM D 2216. Material that is too wet shall be spread on the backfill and permitted to dry, assisted by disking or harrowing, if necessary, until the moisture content is reduced to a value within the specified limits. When the material is too dry, the Contractor will be required to sprinkle each layer on the backfill. Harrowing or other approved methods will be required to work the moisture into the material until a uniform distribution of moisture is obtained. Water applied on a layer of backfill shall be accurately controlled in quantity so that free water will not appear on the surface during or subsequent to rolling. Should too much water be added to any part of the backfill so that the material is too wet to obtain the desired compaction, the rolling and all work on that section of the backfill shall be delayed until the moisture content of the material is reduced to a value within the specified limits and such delay shall not be the basis for a claim. If it is impracticable to obtain the specified moisture content by wetting or drying the material on the backfill, the Contractor may be required to prewet or dry back the material at the source. If the top or contact surfaces of a partial backfill section becomes too dry or too wet to permit suitable bond between these surfaces and the additional backfill to be placed thereon, the Contractor shall loosen the dried or wet materials by scarifying or disking to such depths required and shall dampen or dry the loosened material to an acceptable moisture content and shall compact this layer as provided in paragraph COMPACTION, to densities comparable to the underlying backfill or fill, at no additional cost to the Government.

3.4.2 Backfill

Moisture control shall be as specified in paragraph MOISTURE CONTROL, subparagraph FILL AND EMBANKMENT.

3.4.3 Structure Backfill

Moisture control shall be as specified in paragraph MOISTURE CONTROL, subparagraph FILL AND EMBANKMENT.

3.5 SLIDES

In case sliding occurs in any part of the prescribed excavation for the inlet or outlet channel during construction or after completion but prior to acceptance, the Contractor shall remove and repair such portions of the slides as directed. In case the slide is caused through fault or negligence of the Contractor, the slide shall be removed and repaired without cost to the Government. In case the slide is not caused through fault or negligence of the Contractor, an equitable adjustment pursuant to the Contract Clause CHANGES will be made for removing and repairing the slide.

3.6 FIELD TESTING CONTROL

Testing shall be the responsibility of the Contractor and shall be performed by an approved commercial testing laboratory or by the Contractor subject to approval. Field density and moisture content tests shall be performed on every other horizontal lift of material placed and as otherwise directed by the Contracting Officer. Field in-place density shall be determined in accordance with ASTM D 1556, ASTM D 2167, or ASTM D 2922. The calibration checks of both the density and moisture gages shall

be made at the beginning of a job on each different type of material encountered and at intervals as directed. The Contractor shall submit all results of control tests and reports as well as records of correction action taken in accordance with Section 01451 CONTRACTOR QUALITY CONTROL.

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 02 - SITE WORK

SECTION 02380

STONE PROTECTION FOR STRUCTURES

PART 1 GENERAL

- 1.1 REFERENCES
- 1.2 GOVERNMENT TESTING AND STUDIES
 - 1.2.1 Stone
 - 1.2.1.1 General
 - 1.2.1.2 Sources
- 1.3 SUBMITTALS

PART 2 PRODUCTS

- 2.1 RIPRAP
 - 2.1.1 General
 - 2.1.2 Evaluation Testing
 - 2.1.3 Gradation Test
 - 2.1.4 Riprap Stockpile
 - 2.1.5 Worksite Stockpile
 - 2.1.6 Off-site Stockpile

PART 3 EXECUTION

- 3.1 BASE PREPARATION
- 3.2 PLACEMENT OF FILTER LAYER
 - 3.2.1 General
 - 3.2.2 Engineering Fabric
- 3.3 PLACEMENT OF RIPRAP
 - 3.3.1 General
 - 3.3.2 Placement
- 3.4 TESTS
 - 3.4.1 General
 - 3.4.2 Reporting
 - 3.4.3 Standard Test Method for Gradation of Riprap

-- End of Section Table of Contents --

SECTION 02380

STONE PROTECTION FOR STRUCTURES

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM C 127 (1988; R 2001) Specific Gravity and Absorption of Coarse Aggregate

ASTM C 295 (1998) Petrographic Examination of Aggregate for Concrete

CORPS OF ENGINEERS (COE)

COE CRD-C 144 (1992) Resistance of Rock to Freezing and Thawing

COE CRD-C 169 (1997) Resistance of Rock to Wetting and Drying

1.2 GOVERNMENT TESTING AND STUDIES

1.2.1 Stone

1.2.1.1 General

All stone shall be durable material as approved by the Contracting Officer. In case an unlisted source is to be used, the Contractor shall show that an adequate quantity of material is available and provide quality test data. Stone shall be of a suitable quality to ensure permanence in the structure and in the climate in which it is to be used. It shall be free from cracks, seams and other defects that would tend unduly to increase its deterioration from natural causes. The stone shall be clean and reasonably free from earth and dust and shall contain no refuse.

1.2.1.2 Sources

Stone shall be furnished from any of the sources listed at the end of this section, or at the option of the Contractor may be furnished from any other source designated by the Contractor and accepted by the Contracting Officer, subject to the conditions herein stated. If the Contractor proposes to furnish stone from a source not currently listed at the end of this section, the Government will conduct a quarry investigation and evaluate the quality test data provided by the contractor to determine whether acceptable stone can be produced from the proposed source. Satisfactory service records on other work may be acceptable. In order for stone to be acceptable on the basis of service records, stone of a similar size must have been placed in a similar thickness and exposed to weathering

under similar conditions as are anticipated for this contract, and must have satisfactorily withstood such weathering for a minimum of 20 years.

a. List of Sources. On the basis of information and data available to the Contracting Officer, stone meeting the quality requirements of these specifications has been produced from the sources listed at the end of this section.

b. Selection of Source. The Contractor shall designate in writing only one source or one combination of sources from which he proposes to furnish stone. If the Contractor proposes to furnish stone from a source not listed at the end of this section, he may designate only a single unlisted source for stone and he shall notify the Contracting Officer at least 60 workdays before the stone leaves the quarry. It is the Contractor's responsibility to determine that the stone source or combination of sources selected is capable of supplying the quantities and gradation needed and at the rate needed to maintain the scheduled progress of the work. Samples for acceptance testing shall be provided in accordance with paragraph EVALUATION TESTING. If a source for stone so designated by the Contractor is not accepted for use by the Contracting Officer, the Contractor may not propose other sources but shall furnish the stone from a source listed at the end of this section at no additional cost to the Government.

c. Acceptance of Materials. Acceptance of a source of stone is not to be construed as acceptance of all material from that source. The right is reserved to reject materials from certain localized areas, zones, strata, or channels, when such materials are unsuitable for stone as determined by the Contracting Officer. Materials produced from a listed or unlisted source shall meet all the requirements herein.

1.3 SUBMITTALS

Government approval is required for all submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-06 Test Reports

Gradation Test; G

The gradation tests shall be submitted using the GRADATION TEST DATA SHEET enclosed at end of this section.

Evaluation Tests; G

Quality tests on the stone in accordance with paragraph EVALUATION TESTING shall be the responsibility of the Contractor and submitted for approval prior to delivery of such material to the worksite.

SD-07 Certificates

Riprap

Laboratory

Certificates of compliance attesting that the materials meet specification requirements shall be submitted to the Contracting Officer.

A copy of the testing laboratory's certification and inspection report shall be submitted along with actions taken to correct deficiencies.

PART 2 PRODUCTS

2.1 RIPRAP

2.1.1 General

Only quarried stone shall be used. Riprap quality shall be as specified in paragraph GOVERNMENT TESTING AND STUDIES, subparagraph STONE. Gradation shall conform to the table below. A maximum of 10 percent flat and elongated pieces will be acceptable. A flat and elongated piece of riprap is defined as a stone with either the width or thickness of the piece being less than one-third of the length.

TABLE I
(FOR RIPRAP "M40")

PERCENT LIGHTER BY WEIGHT (SSD)	LIMITS OF STONE WEIGHT, kg
100	40 - 20
50	20 - 10
15	10 - 2.5

2.1.2 Evaluation Testing

If the Contractor proposes to furnish stone from an unlisted source, the Contractor shall have evaluation tests performed on stone samples collected from the proposed source. The tests to which the stone shall be subjected include petrographic examination (ASTM C 295), specific gravity, unit weight, and absorption (ASTM C 127), resistance of stone to freezing and thawing (COE CRD-C 144), and if sandstone is used, resistance to wetting and drying in accordance with COE CRD-C 169.

a. Unit Weight and/or Absorption. Stone shall weigh more than 2,480 kg/cubic meter. The stone shall have an absorption less than 2 percent unless other tests and service records show that the stone is satisfactory. The method of test for unit weight and absorption will be ASTM C 127, except the unit weight will be calculated in accordance with Note No. 5 using bulk specific gravity, saturated surface dry.

b. Resistance to Freezing and Thawing. Stone when tested in accordance with COE CRD-C 144 shall have a loss of less than 5 percent.

c. Resistance to Wetting and Drying. This test shall only be required to be performed on sandstone samples. When tested in accordance with COE CRD-C 169 (35 cycles), there shall be a loss of less than one percent.

d. Samples. Samples of stone from a source not listed at the end of this section shall be taken by a representative of the Quarry under the supervision of the Contracting Officer for testing and acceptance prior

to delivery of any stone from this source to the site of the work. Samples shall consist of at least three pieces of stone, roughly cubical in shape and weighing not less than 34 kg each. The samples shall be shipped at the Contractor's expense to a laboratory certified by the Government to perform the required tests.

e. Tests. The tests shall be conducted by the Contractor in accordance with applicable Corps of Engineers methods of tests given in the Handbook for Concrete and Cement, and shall be performed at a laboratory certified by the Government. The cost of testing shall be borne by the Contractor.

2.1.3 Gradation Test

The Contractor shall perform a gradation test or tests on the riprap at the quarry in accordance with paragraph STANDARD TEST METHOD FOR GRADATION OF RIPRAP AND GRADED STONE. The sample shall be taken by the Contractor in the presence of the Contracting Officer. The Contractor shall notify the Contracting Officer not less than 3 days in advance of each test. In the event of unavailability of a Government representative; the Contractor shall perform the tests and certify to the Contracting Officer that the riprap shipped complies with the specifications. At least one gradation test shall be performed per 25,000 tons (metric) of each size of riprap placed, but not less than one test shall be performed. The gradation tests shall be reported using the forms, GRADATION TEST DATA SHEET and ENG FORM 4794-R, attached at end of this section. The Contractor shall designate on the test form that portion in tons (metric) of the lot tested which is applicable to this contract. Any deviation from the reported tonnage shall be corrected and recorded on a revised GRADATION TEST DATA SHEET. The sample shall consist of not less than 15 tons (metric) of M40 riprap, and shall be collected in a random manner which will provide a sample which accurately reflects the actual gradation arriving at the jobsite. Failure of the test on the initial sample and on an additional sample will be considered cause for rejection of the quarry and/or quarry process, and all riprap represented by the failed tests shall be set aside and not incorporated into the work. Any additional tests required because of the failure of an initial test sample will not be considered as one of the other required tests. If collected by the truckload, each truckload shall be representative of the gradation requirements. The Contracting Officer may direct additional testing of the riprap at the project site if the riprap appears by visual inspection, to be out of gradation. The Contracting Officer may direct this testing under the Contract Clause INSPECTION OF CONSTRUCTION. The Contractor shall provide all necessary screens, scales and other equipment, the operating personnel, and shall grade the sample. Certification and test results shall represent riprap shipped from the quarry. Certification and tests results must be received by the Contracting Officer at the jobsite before the riprap is used in the work.

2.1.4 Riprap Stockpile

Temporary storage of riprap at the worksite is not to be confused with off-site stockpiling of riprap. If the Contractor elects to provide off-site stockpiling areas, the Contracting Officer shall be notified by the Contractor of all such areas.

2.1.5 Worksite Stockpile

Riprap delivered to the work sites, which requires temporary storage

landward of top bank, shall be placed in a container suitable for storing the riprap without waste, or a sand-clay-gravel pad may be constructed for the storage area and removed upon completion of the work. If the sand-clay-gravel pad method is used, the pad shall have a minimum thickness of at least 150 mm. The container or sand-clay-gravel pad method shall be subject to approval prior to delivery of the riprap. Upon completion of the work, the storage areas shall be cleaned of all storage residues and returned to their natural condition. Temporary storage of riprap at the worksite will be allowed, provided the stream-side toe of the riprap be no closer than 20 m from the closest edge of the stream's top bank, and the amount shall not exceed 200 tons (metric). The Contractor's jobsite stockpile shall be a maximum of 3.6 m high and formed by a series of layers of truckload dumps, where the rock essentially remains where it is placed. Subsequent layers shall be started 3 m from the edge of the previous layer so that the rock will not roll down the edges of the previous layers. The first layer shall be a maximum of 2 m high. Any riprap which has become contaminated with soil, dirt, or refuse after being stockpiled, will not be put into the work unless the contaminating material has been removed from the riprap prior to placement.

2.1.6 Off-site Stockpile

The Contractor's off-site riprap stockpile shall be a maximum of 3.6 m high and formed by a series of layers of truckload dumps, where the rock essentially remains where it is placed. Subsequent layers shall be started 3 m from the edge of the previous layer so that the rock will not roll down the edges of the previous layers. The first layer shall be a maximum of 2 m high. Any riprap which has become contaminated with soil, dirt, or refuse after being stockpiled, will not be put into the work unless the contaminating material has been removed from the riprap prior to placement. In areas where riprap is stockpiled for placement, the area shall have excess rock removed prior to completion of work. All rock and spalls greater than 75 mm in diameter shall be removed. Where rocks may have become buried due to soft ground or operation of the equipment, the rock shall be disposed of as directed. After the rock has been removed, the storage area shall be graded, dressed, and filled to return the ground surface as near as practical to the condition that existed prior to construction.

PART 3 EXECUTION

3.1 BASE PREPARATION

Areas on which engineering fabric and riprap are to be placed shall be graded and/or dressed to conform to cross sections shown on the contract drawings within an allowable tolerance of plus 50 mm and minus 100 mm from the theoretical slope lines and grades. The prepared base shall be approved by the Contracting Officer. Where such areas are below the allowable minus tolerance limit they shall be brought to grade by fill with earth similar to the adjacent material and then compacted to a density equal to the adjacent in place material. Immediately prior to placing the engineering fabric, the prepared base will be inspected by the Contracting Officer and no material shall be placed thereon until that area has been approved.

3.2 PLACEMENT OF FILTER LAYER

3.2.1 General

A filter layer of engineering fabric shall be placed on the prepared base as described below, in accordance with the details shown on the contract drawings, and within the limits either shown on the contract drawings or staked in the field, to form a backing for the stone protection.

3.2.2 Engineering Fabric

Installation of engineering fabric shall be as specified in Section 02213 ENGINEERING FABRIC. Riprap stone shall be placed uniformly on the engineering fabric to the lines and grades as indicated on the contract drawings and in such manner as to avoid damage to the engineering fabric. Placing of crushed stone by methods which tend to segregate the particle sizes within the filter layer will not be permitted. Any damage to the surface of the engineering fabric during placement of riprap shall be repaired before proceeding with the work.

3.3 PLACEMENT OF RIPRAP

3.3.1 General

Riprap shall be placed on the engineering fabric within the limits shown on the drawings.

3.3.2 Placement

Riprap shall be placed in such manner as to produce a reasonably well graded mass of rock with the minimum practicable percentage of voids, and shall be constructed within the specified tolerance to the lines and grades shown on the drawings. A tolerance of plus 100 mm or minus 50 mm from the slope lines and grades shown on the drawings will be allowed in the finished surface of the riprap, except that either extreme of such tolerance shall not be continuous over an area greater than 18 square meters. The average tolerance of the entire job shall have no more than 50 percent of the tolerance specified above. No stone shall be dropped through air from a height greater than 1 m and stones heavier than 225 kg shall not be dropped from a height greater than 600 mm. The larger stones shall be well distributed and the entire mass of stones in their final position shall be roughly graded to conform to the gradation specified in paragraph RIPRAP, subparagraph GENERAL. The finished riprap shall be free from objectionable pockets of small stones and clusters of larger stones. Placing riprap in layers will not be permitted. Placing riprap by dumping into chutes or by similar methods likely to cause segregation of the various sizes will not be permitted. Placing riprap by dumping it at the top of the slope and pushing it down the slope will not be permitted. No equipment shall be operated directly on the completed stone protection system. The desired distribution of the various sizes of stones throughout the mass shall be obtained by selective loading of the material at the quarry or other source; by controlled dumping of successive loads during final placing, or by other methods of placement which will produce the specified results. All dump trucks used in placing the riprap shall be equipped with bottom hinged tailgates. The gate releasing mechanism shall be arranged so that it may be operated only from, at, or near the front of the truck. Rearranging of individual stones will be required to the extent necessary to obtain a reasonably well-graded distribution of stone sizes as specified above. The Contractor shall maintain the stone protection until accepted by the Contracting Officer and any material displaced by any cause shall be replaced at his expense to the lines and grades shown on the drawings.

3.4 TESTS

3.4.1 General

The Contractor shall perform gradation tests to assure compliance with contract requirements and shall maintain detailed records.

3.4.2 Reporting

Reporting shall be in accordance with paragraph GRADATION TEST.

3.4.3 Standard Test Method for Gradation of Riprap

- a. Select a representative sample (Note No. 1), weigh and dump on hard stand.
- b. Select specific sizes (see example) on which to run "individual weight larger than" test. (See Note No. 2). Procedure is similar to the standard aggregate gradation test for "individual weight retained".
- c. Determine the largest size stone in the sample. (100 percent size)
- d. Separate by "size larger than" the selected weights, starting with the larger sizes. Use reference stones, with identified weights, for visual comparison in separating the obviously "larger than" stones. Stones that appear close to the specific weight must be individually weighed to determine size grouping. Weigh each size group, either individually or cumulatively.
- e. Paragraph d above will result in "individual weight retained" figures. Calculate individual percent retained (heavier than) cumulative percent retained and cumulative percent passing (lighter than). Plot percent passing, along with the specification curve on ENG Form 4794-R.

NOTE NO. 1: Sample Selection: The most important part of the test and the least precise is the selection of a representative sample. No "standard" can be devised; larger quarry run stone is best sampled at the shot or stockpile by given direction to the loader; small graded stone is best sampled by random selection from the transporting vehicles. If possible, all parties should take part in the sample selection, and agree before the sample is run, that the sample is representative.

NOTE NO. 2: Selection of Size for Separation: It is quite possible and accurate to run a gradation using any convenient sizes for the separation, without reference to the specifications. After the test is plotted on a curve, then the gradation limits may be plotted. Overlapping gradations with this method are no problem. It is usually more convenient, however, to select points from the gradation limits, such as the minimum 50 percent size, the minimum 15 percent size, and one or two others, as separation points.

F O R
 E X A M P L E
 O N L Y

EXAMPLE GRADATION
 SPECIFICATIONS

STONE WEIGHT IN KG	PERCENT LIGHTER BY WEIGHT
180-75	100
75-35	50
35-15	15

EXAMPLE WORKSHEET

STONE SIZE KG	INDIVIDUAL WT. RETAINED	INDIVIDUAL PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	PERCENT PASSING
180	0	0	0	100
75	4,354	30	30	70
35	5,080	35	65	35
15	3,629	25	90	10
-15	1,451	10	100	-
TOTAL	<u>14,514</u> kg			

NOTE: Largest stone 114 kg

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 02 - SITE WORK

SECTION 02547

GRANULAR COURSES

PART 1 GENERAL

- 1.1 REFERENCES
- 1.2 SUBMITTALS
- 1.3 REGULATORY REQUIREMENTS
- 1.4 WEATHER LIMITATIONS

PART 2 PRODUCTS

- 2.1 AGGREGATES
 - 2.1.1 Granular Surface Course
- 2.2 SAMPLING AND TESTING
 - 2.2.1 Sampling
 - 2.2.2 Testing
 - 2.2.2.1 Gradation
 - 2.2.2.2 Liquid Limit and Plasticity Index
 - 2.2.3 Approval of Materials

PART 3 EXECUTION

- 3.1 EQUIPMENT
- 3.2 PREPARATION OF UNDERLYING COURSE OR SUBGRADE
- 3.3 GRADE CONTROL
- 3.4 GRANULAR SURFACE COURSE

-- End of Section Table of Contents --

SECTION 02547

GRANULAR COURSES

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referenced to in the text by basic designation only.

AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS
(AASHTO)

AASHTO T 27	(1999) Sieve Analysis of Fine and Course Aggregates
AASHTO T 89	(1996) Determining the Liquid Limit of Soils
AASHTO T 90	(2000) Determining the Plastic Limit and Plasticity Index of Soils
AASHTO T 99	(1995) Moisture-Density of Soils Using a 5.5 lb (2.5 kg) Rammer and a 12-in. (305 mm) Drop

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D 3740	(2001) Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction
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1.2 SUBMITTALS

Government approval is required for all submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-06 Test Reports

Sampling and Testing; G

Copies of test results for gradation, liquid limit, and plasticity index.

Approval of Materials; G

Source of materials shall be provided with test results.

1.3 REGULATORY REQUIREMENTS

The regulatory requirements listed below form a part of this specification to the extent referenced. The regulatory requirements are referred to in the text by basic designation only.

MISSISSIPPI STATE HIGHWAY DEPARTMENT (MS SHD)

MS SHD-01 (1990; Suppl 1991) Standard Specifications for Road and Bridge Construction

1.4 WEATHER LIMITATIONS

Granular courses shall not be constructed when the ambient temperature is below 1.7 degrees C, or on surfaces that are frozen or contain frost. It shall be the responsibility of the Contractor to protect, by approved method or methods, all areas of granular courses not accepted or covered by subsequent courses. Surfaces damaged by freezing, rainfall, or other weather conditions, or by the Contractor's use of the surface shall be brought to a satisfactory condition by the Contractor prior to the construction of subsequent courses or acceptance by the Government.

PART 2 PRODUCTS

2.1 AGGREGATES

Materials used for granular courses shall conform to the requirements of MS SHD-01, Section 703, "Aggregates" for the class and group of material specified.

2.1.1 Granular Surface Course

Granular surface course material shall meet the requirements of MS SHD-01, Section 703, "Aggregates", paragraph 703.07, "Granular Material", Class 1, Group E.

2.2 SAMPLING AND TESTING

Sampling and testing shall be the responsibility of the Contractor. Sampling and testing shall be performed by an approved commercial testing laboratory or by the Contractor, subject to approval. If the Contractor elects to establish testing facilities of his own, approval of such facilities shall be based on compliance with ASTM D 3740, and no work requiring testing will be permitted until the Contractor's facilities have been inspected and approved.

2.2.1 Sampling

Sampling for material gradation, liquid limit, and plastic limit tests shall be taken in conformance with AASHTO T 89 or AASHTO T 90.

2.2.2 Testing

2.2.2.1 Gradation

Aggregate gradation shall be determined in conformance with AASHTO T 27.

2.2.2.2 Liquid Limit and Plasticity Index

The liquid limit and plasticity index of the materials shall be determined in conformance with AASHTO T 89 and AASHTO T 90, respectively.

2.2.3 Approval of Materials

The source of materials to be used for producing aggregates for each granular course material shall be selected and reported 30 days prior to the time the material will be required in the work. The gradation, liquid limit, and plasticity index for each material shall also be submitted. Approval of sources not already approved by the Corps of Engineers will be based on an inspection. Tentative approval of the materials will be based on the test results from the aggregate source(s). Final approval of the materials will be based on tests for gradation, liquid limit, and plasticity index performed on samples taken from the completed and compacted course.

PART 3 EXECUTION

3.1 EQUIPMENT

All plant, equipment, and tools used in the performance of the work covered by this section will be subject to approval before the work is started and shall be maintained in satisfactory working condition at all times. The equipment shall be adequate and shall have the capability of producing the required compaction, and meeting the grade controls, thickness controls, and smoothness requirements set forth herein.

3.2 PREPARATION OF UNDERLYING COURSE OR SUBGRADE

Preparation of the underlying course or subgrade shall be in conformance with MS SHD-01, Section 321, "In-Grade Preparation".

3.3 GRADE CONTROL

During construction, the lines and grades including crown and cross slope indicated shall be maintained by means of line and grade stakes placed by the Contractor.

3.4 GRANULAR SURFACE COURSE

Granular surface course construction shall be in conformance with MS SHD-01, Section 304, "Granular Courses". The required density shall be at least 95 percent of the maximum laboratory density obtained by the Contractor in accordance with AASHTO T 99 for the full width of the granular surface course. The Contractor shall furnish maximum density test results to the Contracting Officer prior to compacting the granular surface course.

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 02 - SITE WORK

SECTION 02706

PRECAST CONCRETE BOX CULVERT

PART 1 GENERAL

- 1.1 REFERENCES
- 1.2 GENERAL
- 1.3 SUBMITTALS
- 1.4 MARKING

PART 2 PRODUCTS

- 2.1 REINFORCED CONCRETE BOX CULVERT
 - 2.1.1 Joints
 - 2.1.2 Tests, Inspections, and Verifications
 - 2.1.3 Fully Compacted Granular Material

PART 3 EXECUTION

- 3.1 PREPARATION
- 3.2 INSTALLATION
- 3.3 FULLY COMPACTED GRANULAR MATERIAL

-- End of Section Table of Contents --

SECTION 02706

PRECAST CONCRETE BOX CULVERT

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM C 1433	(2000a) Precast Reinforced Concrete Box Sections for Culverts, Storm Drains, and Sewers
ASTM C 1433M	(2000a) Precast Reinforced Concrete Box Sections for Culverts, Storm Drains, and Sewers (Metric)
ASTM D 698	(2000a) Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/cu. ft. (600 kN-m/cu. m.))

1.2 GENERAL

The Contractor shall use precast box culvert sections as specified herein and as shown on the drawings.

1.3 SUBMITTALS

Government approval is required for all submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-07 Certificates

Precast sections

The Contractor shall furnish to the Contracting Officer four copies of manufacturer's certificates attesting that the precast concrete box culvert sections meet the specified requirements. The certification shall include:

- a. Design strength of the box culvert, including concrete compressive strength test results, and material requirements.
- b. Test reports on steel and steel wire reinforcing and commencing tests for the concrete used in the manufacture of the box culvert.

1.4 MARKING

Each box culvert section shall be marked in accordance with ASTM C 1433M.

PART 2 PRODUCTS

2.1 REINFORCED CONCRETE BOX CULVERT

The box culvert shall conform to the requirements of ASTM C 1433 for reinforced concrete box sections, designed in accordance with Table 1, and Appendix X, for 8 feet by 8 feet by 6 feet, with 2 feet of earth cover.

2.1.1 Joints

The box culvert joints shall be of the tongue and groove type sealed with preformed joint compound or bituminous plastic cement. Preformed joint compound shall be in accordance with the box culvert manufacturer's recommendations.

2.1.2 Tests, Inspections, and Verifications

Tests will be waived upon acceptance of the manufacturer's certification that similar materials have been subjected to the required tests and that the materials furnished meet the requirements specified.

2.1.3 Fully Compacted Granular Material

The fully compacted granular material for box culvert shall be in accordance with the requirements of Section 02547 GRANULAR COURSES, except the classification of the material shall be Class 9, Group C.

PART 3 EXECUTION

3.1 PREPARATION

Just before each joint of box culvert is connected, the connecting surfaces of the joint shall be thoroughly cleaned and dried.

3.2 INSTALLATION

The box culvert shall be set to the line and grade shown on the drawings. Installation of joints and joint sealants shall be in accordance with the box culvert manufacturer's recommendations.

3.3 FULLY COMPACTED GRANULAR MATERIAL

The granular material for the culvert shall be placed and compacted in 150 mm layers. Each layer shall be compacted to at least 95 percent of maximum density as determined by the Contractor in accordance with ASTM D 698.

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 02 - SITE WORK

SECTION 02719

CORRUGATED METAL PIPE

PART 1 GENERAL

- 1.1 REFERENCES
- 1.2 GENERAL
- 1.3 SUBMITTALS

PART 2 PRODUCTS

2.1 MATERIALS

- 2.1.1 Corrugated Metal Pipe
 - 2.1.1.1 Pipe Ends
 - 2.1.1.2 Lifting Lugs
 - 2.1.1.3 Pipe Gage
 - 2.1.1.4 Pipe Lengths
- 2.1.2 Connecting Bands
 - 2.1.2.1 Pipe All Sizes
 - 2.1.2.2 Pipe 800 mm In Diameter or Or Less
 - 2.1.2.3 Tank Rods
 - 2.1.2.4 Bands
- 2.1.3 Test Reports and Bills of Lading

PART 3 EXECUTION

3.1 INSTALLATION

- 3.1.1 Pipe
- 3.1.2 Connecting Bands
- 3.1.3 Touch-up
- 3.2 PIPE TRENCH EXCAVATION
 - 3.2.1 General
 - 3.2.2 Disposition of Materials
 - 3.2.2.1 Suitable Materials
 - 3.2.2.2 Excess and Unsuitable Materials
- 3.3 PLACING OF PIPES
 - 3.3.1 Corrugated Metal Pipe
- 3.4 BACKFILL FOR PIPES
 - 3.4.1 General
 - 3.4.2 Compaction

-- End of Section Table of Contents --

SECTION 02719

CORRUGATED METAL PIPE

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A 123/A 123M	(2001a) Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
ASTM A 760/A 760M	(2001a) Corrugated Steel Pipe, Metallic-Coated for Sewers and Drains
ASTM A 780	(2001) Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings
ASTM D 698	(2000a) Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/cu. ft. (600 kN-m/cu. m.))
ASTM D 1056	(2000) Flexible Cellular Materials - Sponge or Expanded Rubber
ASTM D 2922	(1996e1) Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)

AMERICAN WELDING SOCIETY (AWS)

AWS D1.1	(2000) Structural Welding Code - Steel
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1.2 GENERAL

The Contractor shall verify all measurements and shall take all field measurements necessary before fabrication. Welding to or on corrugated metal pipe shall be in accordance with the applicable provisions of AWS D1.1, except that the limitations on types of base metal shall not apply where other types are specified or shown.

1.3 SUBMITTALS

Government approval is required for all submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-07 Certificates

Corrugated Metal Pipe

Certificates of compliance shall be submitted attesting that the materials meet the specified requirements.

PART 2 PRODUCTS

2.1 MATERIALS

2.1.1 Corrugated Metal Pipe

The pipe shall be corrugated steel pipe in accordance with ASTM A 760/A760M, zinc-coated with helical corrugations or annular corrugations and folded lock seams. The lock seams shall be welded at each end of the pipe section. Corrugations for 1 000 mm diameter pipe and smaller shall be 68 by 13 mm (nominal size). If ASTM A 760/A 760M (metric diameters) pipe is not locally available, then (inch diameters) pipe may be furnished as specified herein.

2.1.1.1 Pipe Ends

Pipe shall have the ends equipped with a minimum of four (4) rerolled annular corrugations.

2.1.1.2 Lifting Lugs

All pipe 900 mm in diameter or larger shall be equipped with two (2) lifting lugs. These lugs shall be attached to the pipe by welding.

2.1.1.3 Pipe Gage

The gage of the pipe shall be as specified below:

PIPE GAGE		
Pipe Diameter Millimeters (in.)	68 by 13 Corrugations	75 by 25 Corrugations
750 (30)	14	--
900 (36)	12	--

2.1.1.4 Pipe Lengths

The Contractor may elect to furnish pipe section lengths in combinations that will reduce the number of connecting bands. Pipe section lengths shall be approved.

2.1.2 Connecting Bands

2.1.2.1 Pipe All Sizes

The following described connecting bands may be used for any size pipe. They shall have a minimum of nine (9) corrugations (68 by 13 mm corrugations) or seven (7) corrugations (75 by 25 mm corrugations) and a minimum circumferential lap of 150 mm. The band shall be rolled so that when it is placed on the pipe sections, the ends of the pipe will fit flush. The binders for the connecting band shall consist of a minimum of six (6) rods and tank lugs in accordance with the details shown. A closed

cell expanded rubber gasket shall be used with this type connecting band. The closed cell gasket shall be 300 mm wide, 9.5 mm thick, unstretched diameter 10 percent less than the normal pipe size and shall comply with ASTM D 1056, Grade SCE-43. The gasket shall be centered over the pipe joint under the connecting band.

2.1.2.2 Pipe 800 mm In Diameter or Or Less

The following described connecting bands may be used for connecting pipe 800 mm in diameter or less. This band shall consist of one continuous corrugation on each side to mesh with the second annular corrugation on the end of the pipe. A 19 mm O-ring gasket shall be installed in the first annular corrugation of the end of the pipe. A mastic shall be placed in the lap area of the band prior to tightening of the rods and bolts. The mastic shall be as recommended by the pipe manufacturer. A tank rod and lug shall be placed in the annular corrugation on the outside of the band in accordance with the details as shown.

2.1.2.3 Tank Rods

The tank rods shall be 12 mm in diameter and shall be equipped with 12 mm diameter rolled threads. The nuts used on the rods shall be 12 mm x 100 mm steel hexagon head coupling nuts galvanized and retapped 0.5 mm (0.8 mm maximum) oversized to remove excess galvanizing from threads. Tank rods, nuts and washers shall be galvanized in accordance with ASTM A 123/A 123M. If metric sized products are not locally available, the following may be substituted. The tank rods shall be 7/16-inch in diameter and shall be equipped with 1/2-inch x 1 3/4-inch steel hexagon head coupling nuts galvanized and retapped 0.020-inch (1/32-inch maximum) oversized to remove excess galvanizing from threads.

2.1.2.4 Bands

The bands shall have the same coating, depth of corrugation and gage as specified for the pipe.

2.1.3 Test Reports and Bills of Lading

A metallurgical test report and bill of lading showing respective heat numbers shall be furnished for all pipe delivered to the job.

PART 3 EXECUTION

3.1 INSTALLATION

3.1.1 Pipe

When delivered to the job site, the pipe shall be unloaded from the truck in a manner that will ensure no damage to the coatings or bending of the pipe. The pipe shall be unloaded by use of hoist, skids and snubbing ropes or other methods approved. Under no circumstances shall the pipe be allowed to drop from the truck or roll freely. Lifting of the pipe shall be done by use of slings or lifting lugs attached to the pipe. The use of hooks attached to the ends of the pipe will not be allowed.

3.1.2 Connecting Bands

The connecting bands shall be installed as shown. The closed cell gasket shall be centered over the pipe joint under the connecting band.

3.1.3 Touch-up

All welds and exposed metal shall be repaired in accordance with ASTM A 780 and painted with two coats of a zinc dust primer as recommended by the pipe manufacturer. All coatings damaged during shipping, welding, or installation shall be repaired as recommended by the pipe manufacturer .

3.2 PIPE TRENCH EXCAVATION

3.2.1 General

The pipe trench excavation shall consist of removal of material in preparing the foundation to the lines and grades shown and removal of unsuitable materials. The surfaces upon which pipe is to be placed shall be accurately finished to the lines and grades required. All foundations shall be on solid, undisturbed or properly compacted material. When disturbed by the Contractor's operations, and elsewhere as required, the excavated surfaces shall be moistened with water if necessary and tamped or rolled with suitable tools or equipment for the purpose of thoroughly compacting them and forming firm foundations upon or against which to place the pipes. Wherever unsuitable foundation material is encountered, the unsuitable material shall be removed to the depth directed. Over excavation will not be permitted except to remove unsuitable material as directed. If at any point in the excavation for pipes, material is excavated beyond the excavation lines shown, such unauthorized overexcavation shall be backfilled and compacted to at least the density of the adjacent undisturbed material, at no additional cost to the Government. If at any point in excavation the foundation material is found to be unsuitable, it shall be removed as directed and replaced with selected materials placed and compacted as specified above and an equitable adjustment in contract price and time will be made in accordance with the Contract Clause CHANGES. Excavated materials shall be disposed of as specified in paragraph EXCESS AND UNSUITABLE MATERIALS. All excavation and foundation preparation shall be performed in areas free of water. Where dimensions of pipe trenches are not shown, the bottom width shall be not less than 600 mm greater than the outside span dimension of the pipe. Excavation for pipes shall fit the outside periphery of the bottom quadrant of the pipe.

3.2.2 Disposition of Materials

3.2.2.1 Suitable Materials

Excavated materials which are suitable for incorporation in the fill or backfill shall either be placed directly or stockpiled and subsequently used in the fill or backfill. Suitable materials shall be clay CL, CH, or silt ML as classified by the Unified Soil Classification System. Stockpiled material shall be placed no closer than 15 meters from the top bank or pipe excavation. Such stockpiled material shall have a maximum height not to exceed 3 meters, shall be placed so as to drain, and shall have end and/or side slopes not steeper than 1V on 2H.

3.2.2.2 Excess and Unsuitable Materials

All excess excavated material and unsuitable material shall be disposed of by placing it in Contractor furnished disposal area(s) outside the Government furnished rights-of-way. The location and dimensions of the Contractor furnished disposal area(s) shall be approved by the Contracting

Officer prior to the disposal of any material and shall not be located in any river, stream, lake or wetland area. The Contractor shall obtain the rights-of-way for the disposal area(s) in accordance with Section 01000 GENERAL CONTRACT REQUIREMENTS, paragraph RIGHTS OF WAY. No separate payment will be made for Contractor furnished disposal area(s).

3.3 PLACING OF PIPES

3.3.1 Corrugated Metal Pipe

Corrugated metal pipe shall be laid with separate sections jointed firmly together and with outside laps of circumferential joints pointing upstream and with longitudinal laps on the sides. The coupling bands shall lap at equal portion on each pipe section jointed and shall be drawn tight to ensure that the corrugations fit snugly and provide a satisfactory joint. The pipe shall be placed with the pipe invert coinciding with the specified grade lines. Pipe shall be handled with care so that the coating will not be damaged. Proper facilities shall be provided for lowering the pipe into the trench. Damaged areas on coupling bands, pipe and bolts and angles shall be repaired as specified in paragraph TOUCH-UP prior to placing backfill except that exposed metal in joints shall be coated prior to making joints.

3.4 BACKFILL FOR PIPES

3.4.1 General

Backfill around the corrugated metal pipe shall be hand compacted (tamped) from the circumference of the pipe to a distance of at least one meter from the pipe. The fill material to be hand compacted shall be placed in layers not exceeding 100 mm in thickness and shall be compacted by application of a motor driven hand tamper or other approved hand compaction equipment over the fill in such a manner that every point of the surface of each layer of fill will be compacted by the hand tamper. The pipe conduit shall be held securely in place at all times while tamping is being performed to ensure proper bond between the pipe and the ground. Compaction of subsequent lifts shall be accomplished by sheepsfoot rollers, pneumatic-tired rollers, steel-wheeled rollers, vibratory compactors, or other approved equipment well suited to the type of material being compacted. No fill shall be placed against slopes steeper than one (1) horizontal to one (1) vertical unless approved.

3.4.2 Compaction

Pipe backfill placed as describe above shall be compacted at optimum moisture (plus or minus 2 percent) to within 95 percent of maximum density. Optimum moisture and maximum density shall be determined by the Contractor in accordance with ASTM D 698 (Standard Proctor) from representative samples of each type of material to be placed. Test results shall be furnished to the Contracting Officer before placing pipe backfill. Field density and moisture content tests shall be determined by the Contractor in accordance with ASTM D 2922 (Nuclear Probe) on each lift placed. The Contractor shall furnish control tests and reports daily in accordance with Section 01451 CONTRACTOR QUALITY CONTROL.

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 02 - SITE WORK

SECTION 02775

CONTROL OF WATER AT GRADE CONTROL STRUCTURE

PART 1 GENERAL

1.1 DESCRIPTION OF WORK

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.1 CONTROL OF WATER

3.1.1 Stream Description

3.1.2 Contract Requirements

-- End of Section Table of Contents --

SECTION 02775

CONTROL OF WATER AT GRADE CONTROL STRUCTURE

PART 1 GENERAL

1.1 DESCRIPTION OF WORK

The work covered by this section of the contract specifications consists of furnishing all plant, labor, materials, equipment (with the exception of wells and/or wellpoints), and collecting and disposing of water regardless of its source (including subsurface) within the work areas. No separate measurement or payment will be made for control of water and all costs associated therewith shall be included in the applicable contract lump sum price for each site as contained in the Bidding Schedule.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.1 CONTROL OF WATER

3.1.1 Stream Description

During periods of rainfall the stream is subject to a fast rise and fall.

3.1.2 Contract Requirements

The Contractor shall take such action as necessary to control water in and through the work sites. Diversion of the stream outside its banks will not be permitted. Work must be constructed on a firm foundation in areas free of water. If the Contracting Officer determines that wells and/or wellpoints are required to control water, an equitable adjustment under the CHANGES clause will be made.

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 02 - SITE WORK

SECTION 02960

EROSION CONTROL

PART 1 GENERAL

- 1.1 SUBMITTALS
- 1.2 AREAS TO RECEIVE EROSION CONTROL

PART 2 PRODUCTS

- 2.1 FERTILIZER
- 2.2 SEED
 - 2.2.1 Spring and Summer Seeding
 - 2.2.2 Fall and Winter Seeding
- 2.3 MULCH

PART 3 EXECUTION

- 3.1 EROSION CONTROL
 - 3.1.1 Grading and Dressing
 - 3.1.2 Application
- 3.2 MULCHING

-- End of Section Table of Contents --

SECTION 02960

EROSION CONTROL

PART 1 GENERAL

1.1 SUBMITTALS

Government approval is required for all submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-03 Product Data

Fertilizer

The Contractor shall submit signed copies of invoices from suppliers which show quantities and the percentages of nitrogen, phosphorous, and potash.

1.2 AREAS TO RECEIVE EROSION CONTROL

All disturbed areas within the rights-of-way, except areas to receive other types of surfacing, shall receive erosion control as specified herein.

PART 2 PRODUCTS

2.1 FERTILIZER

Fertilizer shall meet the requirements of the State of Mississippi for commercial fertilizer. Fertilizer shall have a minimum analysis of 13 percent nitrogen, 13 percent phosphorus, and 13 percent potash (13-13-13). Duplicate signed copies of invoices from suppliers shall be furnished to the Contracting Officer upon delivery to the worksite. Invoices shall show quantities and percentages of nitrogen, phosphorus, and potash.

2.2 SEED

Grass seeds shall be labeled in accordance with the U.S. Department of Agriculture Rules and Regulations under the Federal Seed Act in effect on the date of purchase. The seed shall have a minimum purity of 90 percent and a minimum germination rate of 80 percent. Seeding mixtures per each hectare seeded shall be in accordance with the following:

2.2.1 Spring and Summer Seeding

If seeding is done during the period of 1 March through 30 September, the seeding mixture shall consist of a uniform mixture of 11 kg of Bahia and 11 kg of Bermuda Grass (hulled) seed per hectare.

2.2.2 Fall and Winter Seeding

If seeding is done during the period of 1 October through 28 February, the seeding mixture shall consist of a uniform mixture of 22 kg of Rye and 11 kg

of Bermuda Grass (unhulled) seed per hectare.

2.3 MULCH

The mulch shall be a vegetative mulch consisting of grain straw (oats, wheat, or rice) or grass hay.

PART 3 EXECUTION

3.1 EROSION CONTROL

3.1.1 Grading and Dressing

The areas to receive erosion control shall be graded to drain and dressed by the cutting off of high points and the filling of depressions to the extent necessary to provide a reasonably smooth surface that can be readily traveled by a farm tractor pulling a rotary type mower.

3.1.2 Application

After grading and dressing, the areas to receive erosion control shall be fertilized and seeded. Fertilizer shall be uniformly distributed at a rate of 225 kg per hectare over areas to be seeded and shall be incorporated into the soil to a depth of at least 100 mm by disking, harrowing, or other acceptable methods. After dressing has been completed and fertilizer incorporated, surfaces shall be seeded by uniformly distributing the applicable mixture of grass seed specified in paragraph SEED per each hectare. After the seed has been distributed, the entire finished surface shall be compacted by two passes of a conventional tractor-drawn cultipacker.

3.2 MULCHING

Mulching shall be performed within 24 hours after seeding. Mulch shall be applied uniformly on the soil surface at the rate of 3.4 metric tons per hectare. The mulch shall be anchored into the soil with a mulch crimper. The mulch crimping equipment shall have straight, notched, dull blades no more than 255 mm apart and shall be equipped with scrapers. The mulching material shall be anchored at least 25 mm into the soil. Anchoring the mulch shall be performed along the contour of the ground surface. The mulch shall be applied by means of approved equipment suitable for such work.

-- End of Section --

SECTION TABLE OF CONTENTS

DIVISION 03 - CONCRETE

SECTION 03308

CONCRETE

PART 1 GENERAL

- 1.1 REFERENCES
- 1.2 SYSTEM DESCRIPTION
 - 1.2.1 Design Requirements
 - 1.2.1.1 Concrete Mixture Proportions
 - 1.2.2 Performance Requirements
 - 1.2.2.1 Strength
 - 1.2.2.2 Construction Tolerances
 - 1.2.3 Construction Testing by Government
- 1.3 SUBMITTALS
- 1.4 REGULATORY REQUIREMENTS

PART 2 PRODUCTS

- 2.1 MATERIALS
 - 2.1.1 Cement
 - 2.1.1.1 Portland Cement
 - 2.1.2 Pozzolan
 - 2.1.3 Aggregates
 - 2.1.4 Admixtures
 - 2.1.4.1 Air-Entraining Admixture
 - 2.1.4.2 Water-Reducing or Retarding Admixture
 - 2.1.5 Curing Materials
 - 2.1.5.1 Impervious Sheet Materials
 - 2.1.5.2 Membrane - Forming Curing Compound
 - 2.1.6 Water
 - 2.1.7 Reinforcement Steel
 - 2.1.8 Formwork
 - 2.1.9 Form Coatings

PART 3 EXECUTION

- 3.1 PREPARATION
 - 3.1.1 General
 - 3.1.2 Embedded Items
 - 3.1.3 Formwork Installation
 - 3.1.3.1 General
 - 3.1.4 Production of Concrete
 - 3.1.4.1 Ready-Mixed Concrete
 - 3.1.4.2 Volumetric Batching and Continuous Mixing
- 3.2 CONCRETE PLACEMENT
 - 3.2.1 General
 - 3.2.2 Consolidation
 - 3.2.3 Cold-Weather Requirements
 - 3.2.4 Hot Weather Requirements

- 3.3 FORM REMOVAL
- 3.4 FINISHING
 - 3.4.1 General
 - 3.4.2 Finishing Formed Surfaces
 - 3.4.2.1 General
 - 3.4.3 Finishing Unformed Surfaces
 - 3.4.3.1 Float Finish
- 3.5 CURING AND PROTECTION
- 3.6 TESTS AND INSPECTIONS
 - 3.6.1 General
 - 3.6.2 Inspection Details and Frequency of Testing
 - 3.6.2.1 Preparations for Placing
 - 3.6.2.2 Air Content
 - 3.6.2.3 Slump
 - 3.6.2.4 Consolidation and Protection
 - 3.6.3 Action Required
 - 3.6.3.1 Placing
 - 3.6.3.2 Air Content
 - 3.6.3.3 Slump
 - 3.6.3.4 Reports

-- End of Section Table of Contents --

SECTION 03308

CONCRETE

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

ACI INTERNATIONAL (ACI)

ACI 117/117R	(1990; Errata) Standard Tolerances for Concrete Construction and Materials
ACI 308	(1992; R 1997) Standard Practice for Curing Concrete
ACI 318M	(1995) Metric Building Code Requirements for Structural Concrete and Commentary

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A 185	(1997) Steel Welded Wire Fabric, Plain, for Concrete Reinforcement
ASTM A 615/A 615M	(2001b) Deformed and Plain Billet-Steel Bars for Concrete Reinforcement
ASTM C 31/C 31M	(2000e1) Making and Curing Concrete Test Specimens in the Field
ASTM C 33	(2001) Concrete Aggregates
ASTM C 39/C 39M	(2001) Compressive Strength of Cylindrical Concrete Specimens
ASTM C 94/C 94M	(2000e2) Ready-Mixed Concrete
ASTM C 143/C 143M	(2000) Slump of Hydraulic-Cement Concrete
ASTM C 150	(2000) Portland Cement
ASTM C 171	(1997a) Sheet Materials for Curing Concrete
ASTM C 172	(1999) Sampling Freshly Mixed Concrete
ASTM C 231	(1997e1) Air Content of Freshly Mixed Concrete by the Pressure Method
ASTM C 260	(2001) Air-Entraining Admixtures for Concrete
ASTM C 309	(1998a) Liquid Membrane-Forming Compounds

for Curing Concrete

ASTM C 494/C 494M (1999ae1) Chemical Admixtures for Concrete

ASTM C 618 (2001) Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Concrete

ASTM C 685/C 685M (2000a) Concrete Made by Volumetric Batching and Continuous Mixing

ASTM D 75 (1997) Sampling Aggregates

CORPS OF ENGINEERS (COE)

COE CRD-C 400 (1963) Water for Use in Mixing or Curing Concrete

1.2 SYSTEM DESCRIPTION

1.2.1 Design Requirements

1.2.1.1 Concrete Mixture Proportions

Specified compressive strength f'_c shall be 28 MPa at 28 days (90 days if pozzolan is used). The maximum nominal size coarse aggregate shall be 19 mm in accordance with guidance given in ACI 318M, Paragraph 3.3.3. The air content shall be between 4.5 and 7.5 percent. The slump shall be between 50 mm and 127 mm. The maximum water cement ratio shall be 0.50.

1.2.2 Performance Requirements

1.2.2.1 Strength

Acceptance test results will be the average strengths of two specimens tested at 28 days (90 days if pozzolan is used). The strength of the concrete will be considered satisfactory so long as the average of three consecutive acceptance test results equal or exceed the specified compressive strength, f'_c , and no individual acceptance test result falls below f'_c by more than 3.5 MPa.

1.2.2.2 Construction Tolerances

A Class "C" finish shall apply to all surfaces except those specified to receive a Class "D" finish. A Class "D" finish shall apply to all surfaces which will be permanently concealed after construction. The surface requirements for the classes of finish required shall be as specified in ACI 117/117R.

1.2.3 Construction Testing by Government

The Government will maintain the option to sample and test aggregates and concrete to determine compliance with the specifications. The Contractor shall provide facilities and labor as may be necessary for procurement of representative test samples. Samples of aggregates will be obtained at the point of batching in accordance with ASTM D 75. Concrete will be sampled in accordance with ASTM C 172. Slump and air content will be determined in accordance with ASTM C 143/C 143M and ASTM C 231, respectively, when cylinders are molded. Compression test specimens will be made, cured, and

transported in accordance with ASTM C 31/C 31M. Compression test specimens will be tested in accordance with ASTM C 39/C 39M. Samples for strength tests will be taken not less than once each shift in which concrete is produced. A minimum of three specimens will be made from each sample, two will be tested at 28 days (90 days if pozzolan is used) for acceptance, and one will be tested at 7 days for information.

1.3 SUBMITTALS

Government approval is required for all submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Concrete Placement; G

The methods and equipment for transporting, handling, depositing, and consolidating the concrete shall be submitted prior to the first concrete placement.

SD-03 Product Data

On-Site Batching and Mixing; G

Air-Entraining Admixtures; G

Water-Reducing or Retarding Admixtures; G

Reinforcing Steel; G

Curing Materials; G

The Contractor shall submit manufacturer's literature from suppliers which demonstrates compliance with applicable specifications for all equipment and materials.

SD-07 Certificates

Formwork; G

Formwork design shall be submitted prior to the first concrete placement.

Concrete Mixture Proportions; G

Concrete mixture proportions shall be the responsibility of the contractor and shall be designed in accordance with the criteria in paragraph CONCRETE MIXTURE PROPORTIONS. Ten days prior to placement of concrete, the contractor shall submit the mixture proportions that will produce concrete of the qualities required. Mixture proportions shall include the dry weights of cementitious material(s); the nominal maximum size of the coarse aggregate; the specific gravities, absorptions, and saturated surface-dry weights of fine and coarse aggregates; the quantities, types, and names of admixtures; and quantity of water per cubic meter of concrete. All materials included in the mixture proportions shall be of the

same type and from the same source as will be used on the project.

SD-06 Test Reports

Aggregates; G

Aggregates will be accepted on the basis of test reports that show the material meeting the requirements of the specifications under which it is furnished.

Concrete mixture proportions; G

Applicable test reports shall be submitted to verify that the concrete mixture proportions selected will produce concrete of the quality specified.

Tests and inspections; G

The results of all tests and inspections conducted at the project site shall be reported informally at the end of each shift and in writing weekly and shall be delivered within 3 days after the end of each weekly reporting period.

SD-07 Certificates

Cement

Cementitious Material will be accepted on the basis of a manufacturer's certificate of compliance.

1.4 REGULATORY REQUIREMENTS

The regulation requirements listed below form a part of this specification to the extent referenced. The regulatory requirements are referred to in the text by basic designation only.

MISSISSIPPI STATE HIGHWAY DEPARTMENT (MS SHD)

MS SHD-01 (1990; Suppl 1991) Standard Specifications
for Road and Bridge Construction

PART 2 PRODUCTS

2.1 MATERIALS

2.1.1 Cement

Cement shall be Portland cement and shall conform to appropriate specifications listed below:

2.1.1.1 Portland Cement

ASTM C 150, Type I, low alkali.

2.1.2 Pozzolan

Pozzolan shall conform to ASTM C 618, Class C or F, including requirements of Tables 1A and 2A.

2.1.3 Aggregates

Aggregates shall meet the quality and grading requirements of ASTM C 33, Class Designations 4M or better, or the requirements specified in MS SHD-01, see paragraph REGULATORY REQUIREMENTS.

2.1.4 Admixtures

Admixtures to be used, when required or approved, shall comply with the appropriate specification listed below. Chemical admixtures that have been in storage at the project site for longer than 6 months or that have been subjected to freezing shall be retested at the expense of the contractor at the request of the Contracting Officer and shall be rejected if test results are not satisfactory.

2.1.4.1 Air-Entraining Admixture

Air-entraining admixtures shall meet the requirements of ASTM C 260.

2.1.4.2 Water-Reducing or Retarding Admixture

Water-reducing or retarding admixtures shall meet the requirements of ASTM C 494/C 494M, Type A, B, or D.

2.1.5 Curing Materials

Curing materials shall comply with the following:

2.1.5.1 Impervious Sheet Materials

ASTM C 171, type optional, except polyethylene film, if used, shall be white opaque.

2.1.5.2 Membrane - Forming Curing Compound

ASTM C 309, Type 1-D or 2, Class A.

2.1.6 Water

Water for mixing and curing shall be fresh, clean, potable, and free from injurious amounts of oil, acid, salt, or alkali, except that unpotable water may be used if it meets the requirements of COE CRD-C 400.

2.1.7 Reinforcement Steel

Reinforcing steel bars shall conform to the requirements of ASTM A 615/A 615M, Grade 60, 414 MPa. Welded steel wire fabric shall conform to the requirements of ASTM A 185. Details of reinforcement not shown shall be in accordance with ACI 318M, Chapters 7 and 12.

2.1.8 Formwork

Forms shall be of wood, steel, or other approved material. The type, size, shape, quality, and strength of all materials of which the forms are made shall be subject to approval. The design and engineering of the formwork, as well as its construction, shall be the responsibility of the Contractor.

2.1.9 Form Coatings

Forms for exposed surfaces shall be coated with a nonstaining form oil, which shall be applied shortly before concrete is placed.

PART 3 EXECUTION

3.1 PREPARATION

3.1.1 General

Construction joints shall be prepared to expose coarse aggregate and the surface shall be clean, damp, and free of laitance. Ramps and walkways, as necessary, shall be constructed to allow safe and expeditious access for concrete and workmen. Snow, ice, standing or flowing water, loose particles, debris, and foreign matter shall have been removed. Earth foundations shall be satisfactorily compacted. Spare vibrators shall be available. The entire preparation shall be accepted by the Government prior to placing.

3.1.2 Embedded Items

Reinforcement shall be secured in place; joints, anchors, and other embedded items shall have been positioned. Internal ties shall be arranged so that when the forms are removed all metal will be not less than 50 mm from concrete surfaces permanently exposed to view or exposed to water on the finished structures. Embedded items shall be free of oil and other foreign matter such as loose coating or rust, paint, and scale. The embedding of wood in concrete will be permitted only when specifically authorized or directed. All equipment needed to place, consolidate, protect, and cure the concrete shall be at the placement site and in good operating condition.

3.1.3 Formwork Installation

3.1.3.1 General

Forms shall be properly aligned, adequately supported, and mortar-tight. The form surfaces shall be smooth, free from irregularities, dents, sags, or holes when used for permanently exposed faces. All exposed joints and edges shall be chamfered, unless otherwise indicated.

3.1.4 Production of Concrete

3.1.4.1 Ready-Mixed Concrete

Ready-mixed concrete shall conform to ASTM C 94/C 94M, except as otherwise specified.

3.1.4.2 Volumetric Batching and Continuous Mixing

Volumetric batching and continuous mixing shall conform to ASTM C 685/C 685M.

3.2 CONCRETE PLACEMENT

3.2.1 General

Concrete placement shall not be permitted when, in the opinion of the Contracting Officer, weather conditions prevent proper placement and consolidation. When concrete is mixed or transported by a truck mixer, the concrete shall be delivered to the site of the work and discharge shall be

completed within 1-1/2 hours after introduction of the cement to the aggregate and water, or within 45 minutes when the placing temperature is 30 degrees C or greater, unless a retarding admixture is used. Concrete shall be conveyed from the mixer to the forms as rapidly as practicable by methods which prevent segregation or loss of ingredients. Concrete shall be in place and consolidated within 15 minutes after discharge from the mixer. Concrete shall not be dropped from a height greater than 1.5 m and deposited as close as possible to its final position in the form and be so regulated that it may be effectively consolidated in horizontal layers 455 mm or less in thickness with a minimum of lateral movement. The placement shall be carried on at such a rate the formation of cold joints will be prevented.

3.2.2 Consolidation

Each layer of concrete shall be consolidated by internal vibratory equipment. Internal vibration shall be systematically accomplished by inserting the vibrator through the fresh concrete into the layer below at a uniform spacing over the entire area of placement. The distance between insertions shall be approximately 1.5 times the radius of action of the vibrator and overlay the adjacent, just vibrated area by 75 to 100 mm. The vibrator shall penetrate rapidly to the bottom of the layer and at least 150 mm into the layer below if such exists. It shall be held stationary until the concrete is consolidated and then withdrawn slowly at the rate of 75 mm per second.

3.2.3 Cold-Weather Requirements

No concrete placement shall be made when the ambient temperature is below 0 degrees C, nor if the ambient temperature is below 4.5 degrees C and falling. Suitable covering and other means, as approved, shall be provided for maintaining the concrete at a temperature of at least 10 degrees C for not less than 72 hours after placing and at a temperature above freezing for the remainder of the curing period. Salt, chemicals, or other foreign materials shall not be mixed with the concrete to prevent freezing. Concrete damaged by freezing shall be removed and replaced at the expense of the Contractor.

3.2.4 Hot Weather Requirements

When the rate of evaporation of surface moisture, as determined by use of Figure 1 of ACI 308, is expected to exceed 1.1 kg per square meter per hour, provisions for windbreaks, shading, fog spraying, or covering with a light-colored material, shall be made in advance of placement, and such protective measures shall be taken as quickly as finishing operations will allow.

3.3 FORM REMOVAL

Forms shall not be removed before the expiration of 24 hours after concrete placement, except where otherwise specifically authorized. Supporting forms and shoring shall not be removed until the concrete has cured for at least 5 days. When conditions on the work are such as to justify the requirement, forms will be required to remain in place for longer periods.

3.4 FINISHING

3.4.1 General

No finishing or repair will be done when either the concrete or the ambient temperature is below 10 degrees C.

3.4.2 Finishing Formed Surfaces

3.4.2.1 General

Within 72 hours after removal of forms, all fines and loose materials shall be removed, and surface defects including tie holes shall be filled. All honeycomb areas and other defects shall be repaired. Forms shall only be removed at a rate at which all surface defects can be repaired within the allotted 72 hours. All unsound concrete shall be removed from areas to be repaired. Surface defects greater than 13 mm in diameter and holes left by removal of tie rods in all surfaces not to receive additional concrete shall be reamed or chipped and filled with dry-pack mortar. The prepared area shall be brush-coated with an approved epoxy resin or latex bonding compound or with a neat cement grout after dampening and filled with mortar or concrete. The cement used in mortar or concrete for repairs to all surfaces permanently exposed to view shall be a blend of Portland cement and white cement so that the final color when cured will be the same as adjacent concrete.

3.4.3 Finishing Unformed Surfaces

All unformed surfaces that are not to be covered by additional concrete or backfill shall be float finished to elevations shown on the drawings, unless otherwise specified. Surfaces to receive additional concrete or backfill shall be brought to the elevations shown on the drawings and left as a true and regular surface. Exterior surfaces shall be sloped for drainage unless otherwise shown on the drawings. Joints shall be carefully made with a jointing tool. Unformed surfaces shall be finished to a tolerance of 9.5 mm for a float finish and 8 mm for a trowel finish as determined by a 3 m straightedge placed on surfaces shown on the plans to be level or having a constant slope. No water or cement shall be added to the surface during finishing.

3.4.3.1 Float Finish

Surfaces to be float finished shall be screed and darried or bullfloated to eliminate the ridges and to fill in the voids left by the screed. In addition, the darby or bullfloat shall fill all surface voids and only slightly embed the coarse aggregate below the surface of the fresh concrete. When the water sheen disappears and the concrete will support a person's weight without deep imprint, floating should be completed. Floating should embed large aggregates just beneath the surface, remove slight imperfections, humps, and voids to produce a plane surface, compact the concrete, and consolidate mortar at the surface.

3.5 CURING AND PROTECTION

Beginning immediately after placement and continuing for at least 7 days, all concrete shall be cured and protected from premature drying, extremes in temperature, rapid temperature change, freezing, mechanical damage, and exposure to the rain or flowing water. All materials and equipment needed for adequate curing and protection shall be available and at the site of placement prior to the start of concrete placement. Preservation of moisture for concrete surfaces not in contact with forms shall be accomplished by one of the following methods:

- a. Continuous sprinkling or ponding.
- b. Application of absorptive mats or fabrics kept continuously wet.
- c. Application of sand kept continuously wet.
- d. Application of impervious sheet material conforming to ASTM C 171.
- e. Application of membrane-forming curing compound conforming to ASTM C 309, Type 1-D, on surfaces permanently exposed to view and Type 2 on other surfaces shall be accomplished in accordance with the manufacturer's instructions.

The preservation of moisture for concrete surfaces placed against wooden forms shall be accomplished by keeping the forms continuously wet for 7 days, except for concrete made with Type III cement, 3 days. If forms are removed prior to end of the required curing period, other curing methods shall be used for the balance of the curing period. During the period of protection removal, the temperature of the air in contact with the concrete shall not be allowed to drop more than 14 degrees C within a 24 hour period.

3.6 TESTS AND INSPECTIONS

3.6.1 General

The individuals who sample and tests concrete as required in this specification shall have demonstrated a knowledge and ability to perform the necessary test procedures equivalent to ACI minimum guidelines for certification of concrete Field Testing Technicians, Grade I.

3.6.2 Inspection Details and Frequency of Testing

3.6.2.1 Preparations for Placing

Foundation or construction joints, forms, and embedded items should be inspected in sufficient time prior to each concrete placement by the Contractor in order to certify to the Contracting Officer that it is ready to receive concrete.

3.6.2.2 Air Content

Air content will be checked at least once during each shift that concrete is placed. Samples shall be obtained in accordance with ASTM C 172 and tested in accordance with ASTM C 231.

3.6.2.3 Slump

Slump shall be checked twice during each shift that concrete is produced for each class of concrete required. Samples shall be obtained in accordance with ASTM C 172 and tested in accordance with ASTM C 143/C 143M.

3.6.2.4 Consolidation and Protection

The Contractor shall ensure that the concrete is properly consolidated, finished, protected, and cured.

3.6.3 Action Required

3.6.3.1 Placing

The placing foreman shall not permit placing to begin until he has verified that an adequate number of acceptable vibrators, which are in working order and have competent operators, are available. Placing shall not be continued if any pile is inadequately consolidated.

3.6.3.2 Air Content

Whenever a test result is outside the specification limits, the concrete shall not be delivered to the forms and an adjustment shall be made to the dosage of the air-entrainment admixture.

3.6.3.3 Slump

Whenever a test result is outside the specifications limits, the concrete shall not be delivered to the forms and an adjustment should be made in the batch weights of water and fine aggregate. The adjustments are to be made so that the water-cement ratio does not exceed that specified in the submitted concrete mixture proportion.

3.6.3.4 Reports

The Contractor shall prepare reports of all tests and inspections conducted at the project site.

-- End of Section --