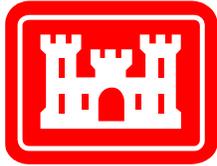


Memphis District

Invitation for Bid No. W912EQ-04-B-0010



**US Army Corps
of Engineers®**

Project Title:

**BARNES RIDGE PARCEL 1 - LIME/FLY-ASH
INJECTION
SETBACK LEVEE MILES 28/20+00 – 30/30+00
MISSISSIPPI RIVER LEVEES -MAINTENANCE**

Location:

NEW MADRID COUNTY, MISSOURI

**Construction Solicitation
and Specifications**

**THIS IS AN UNRESTRICTED SOLICITATION. HUBZone Evaluation
Preference Applies.**

Date: April 2004

PART II - TECHNICAL SPECIFICATIONS

TABLE OF CONTENTS

<u>Section No.</u>	<u>Description</u>
--------------------	--------------------

DIVISION 1 - GENERAL REQUIREMENTS

01025	MEASUREMENT AND PAYMENT
01130	ENVIRONMENTAL PROTECTION
01330	SUBMITTAL PROCEDURES
01451	CONTRACTOR QUALITY CONTROL
01452	PROJECT SIGNS

DIVISION 2 - SITE WORK

02230	LIME/FLY-ASH SLURRY INJECTIONS
02935	ESTABLISHMENT OF TURF

DIVISIONS 3 THRU 16 - NOT USED

DIVISION 1 - GENERAL REQUIREMENTS

SECTION 01025

MEASUREMENT AND PAYMENT

TABLE OF CONTENTS

PART 1 GENERAL

- 1.1 SUBMITTALS (Not Used)
- 1.2 RELATED REQUIREMENTS
 - 1.2.1 Contract Clauses
 - 1.2.2 Special Contract Requirements (Not Used)
- 1.3 LUMP SUM PAYMENT ITEM
 - 1.3.1 General
 - 1.3.2 Lump Sum Item
- 1.4 UNIT PRICE PAYMENT ITEMS
 - 1.4.1 General
 - 1.4.2 Unit Price Item

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

SECTION 01025

MEASUREMENT AND PAYMENT

PART 1 GENERAL

1.1 SUBMITTALS (Not Used)

1.2 RELATED REQUIREMENTS

1.2.1 Contract Clauses

Payments under fixed price construction contracts.

1.2.2 Special Contract Requirements (Not Used)

1.3 LUMP SUM PAYMENT ITEM

1.3.1 General

Payment item 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 the item of work, which is not specifically mentioned to be included in a particular lump sum or unit price payment item, 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, meeting safety requirements, tests and reports, and for performing all work required for which separate payment is not otherwise provided.

1.3.2 Lump Sum Item

(1) "Mobilization and Demobilization"

a. Payment will be made for all costs associated with operations necessary for mobilization and demobilization as specified in Contract Clause DFARS 252.236-7004.

b. Unit of measure, lump sum: (LS).

(2) "Environmental Protection"

a. Payment will be made for costs associated with operations necessary for environmental protection as specified in SECTION 01130.

b. Unit of measure, lump sum: (LS).

(3) "Turfig"

a. Payment will be made for all costs associated with grading, dressing, fertilizing and seeding for "Turfig", which price and payment shall constitute full compensation for fertilizing and seeding as specified in SECTION 02935.

b. Unit of measure, lump sum: (LS).

1.4 UNIT PRICE PAYMENT ITEMS

1.4.1 General

Payment items for the work of this contract on which the contract progress payments will be based are listed in the BIDDING SCHEDULE and described below. The unit 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, meeting safety requirements, tests and reports, and for performing all work required for each of the unit price items.

1.4.2 Unit Price Items

(1) "Lime/Fly-Ash Slurry Injection"

a. Measurement for lime/fly-ash slurry injection shall be made in the field and is based on the parallel length of the levee surface area to the nearest square foot. The slope length shall be measured by tape parallel to the slope every 500 feet.

b. Payment for lime/fly-ash slurry injection as specified in this section will be made at the contract unit price per square foot for "Lime/Fly-Ash Slurry Injection", which price and payment shall constitute full compensation for furnishing all materials, equipment and labor, and manufacturing, transporting, placing the lime/fly-ash slurry injection as required, and performing all other operations incidental thereto, to include repairs to asphalt surfacing, repair of levee side slopes after construction, and all work incidental thereto as specified in SECTION 02230.

c. Unit of measure: square foot (SF).

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION (Not Used)

-- End of Section --

DIVISION 1 - GENERAL REQUIREMENTS

SECTION 01130

ENVIRONMENTAL PROTECTION

TABLE OF CONTENTS

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	Environmental Monitoring Plans
1.2.1.6	Traffic Control Plan
1.2.1.7	Surface and Ground Water
1.2.1.8	Work Area Plan
1.3	SUBCONTRACTORS
1.4	PERMITS OBTAINED BY CORPS OF ENGINEERS
1.5	REGULATORY REQUIREMENTS
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	Reduction of Exposure of Unprotected Erodible Soils
3.1.1.4	Temporary Protection of Disturbed Areas
3.1.1.5	Erosion and Sedimentation Control Devices
3.1.1.6	Location of Contractor Facilities
3.1.1.7	Borrow Areas on Government Property
3.1.1.8	Disposal Areas on Government Property
3.1.1.9	Temporary Excavation and Embankments
3.1.1.10	Disposal of Solid Wastes
3.1.1.11	Disposal of Chemical Wastes
3.1.1.12	Disposal of Discarded Materials
3.2	HISTORICAL, ARCHAEOLOGICAL AND CULTURAL RESOURCES
3.3	PROTECTION OF WATER RESOURCES
3.3.1	Cofferdam and Diversion Operations
3.3.2	Stream Crossings

- 3.3.3 Monitoring of Water Areas Affected by Construction Activities
- 3.4 PROTECTION OF FISH AND WILDLIFE RESOURCES
- 3.5 PROTECTION OF AIR RESOURCES
 - 3.5.1 Particulates
 - 3.5.2 Hydrocarbons and Carbon Monoxide
 - 3.5.3 Odors
 - 3.5.4 Monitoring Air Quality
- 3.6 INSPECTION
- 3.7 POST CONSTRUCTION CLEANUP
- 3.8 RESTORATION OF LANDSCAPE DAMAGE
- 3.9 MAINTENANCE OF POLLUTION FACILITIES
- 3.10 TRAINING OF CONTRACTOR PERSONNEL IN POLLUTION CONTROL

SECTION 01130

ENVIRONMENTAL PROTECTION

PART 1 GENERAL

1.1 DEFINITIONS

For the purpose of this specification, environmental pollution and damage is defined as the presence of chemical, physical, or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances of importance to human life; affect other species of importance to man; or degrade the utility of the environment for aesthetic, cultural and/or historical purposes. The control of environmental pollution and damage requires consideration of air, water, and land, and includes management of visual aesthetics, noise, solid waste, radiant energy and radioactive materials, as well as other pollutants.

1.2 ENVIRONMENTAL PROTECTION REQUIREMENTS

Provide and maintain, during the life of the contract, environmental protection. Plan for and provide environmental protective measures to control pollution that develops during normal construction practice. Plan for and provide environmental protective measures required to correct conditions that develop during the construction of permanent or temporary environmental features associated with the project. Comply with Federal, State, and local regulations pertaining to the environment, including but not limited to water, air, and noise pollution.

1.2.1 Environmental Protection Plan

Within 15 days after receipt of Notice of Award of the contract, the Contractor shall submit in writing an Environmental Protection Plan and, prior to starting work, and meet with representatives of the Contracting Officer to develop mutual understanding relative to compliance with this provision and administration of the environmental protection program. Approval of the Contractor's plan will not relieve the Contractor of his responsibility for adequate and continuing control of pollutants and other environmental protection measures. The Government reserves the right to make changes in his environmental protection plan and operations as necessary to maintain satisfactory environmental protection performance. The Environmental Protection Plan shall include but not be limited to the following:

1.2.1.1 Protection of Features

The Contractor shall determine methods for the protection of features to be preserved within authorized work areas. The Contractor shall prepare a listing of methods to protect resources needing protection, i.e., trees, shrubs, vines, grasses and ground cover, landscape features, air and water quality, fish and wildlife, soil, historical, archaeological and cultural resources.

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

The Contractor shall obtain all needed permits or licenses.

1.2.1.4 Drawings

The Contractor shall include drawings showing 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 unsatisfactory earth materials.

1.2.1.5 Environmental Monitoring Plans

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

1.2.1.6 Traffic Control Plan

The Contractor shall include a traffic control plan for the job site.

1.2.1.7 Surface and Ground Water

The Contractor shall establish methods of protecting surface and ground water during construction activities.

1.2.1.8 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.

1.3 SUBCONTRACTORS

Assurance of compliance with this section by subcontractors will be the responsibility of the Contractor.

1.4 PERMITS OBTAINED BY CORPS OF ENGINEERS

The Corps of Engineers will not obtain any permits for this project except the NPDES. See Contract Clause entitled "PERMITS AND RESPONSIBILITIES".

1.5 REGULATORY REQUIREMENTS

The Contractor shall comply with all state regulatory and statutory requirements.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.1 PROTECTION OF ENVIRONMENTAL RESOURCES

The environmental resources within the project boundaries and those affected outside the limits of permanent work under this contract shall be protected during the entire period of this contract. The Contractor shall confine his activities to areas defined by the contract drawings or specifications. Environmental protection shall be as stated in the following subparagraphs.

3.1.1 Protection of Land Resources

Prior to the beginning of any construction, the Contracting Officer will identify all land resources to be preserved within the Contractor's work area. The Contractor shall not remove, cut, deface, injure, or destroy land resources including trees, shrubs, vines, grasses, top soil, and land forms without special permission from the Contracting Officer. 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 as defined in the following subparagraphs.

3.1.1.1 Work Area Limits

Prior to any construction, the Contractor shall mark the areas where no work is to be performed under this contract. Isolated areas within the general work area which are to be saved and protected shall also be marked or fenced. Monuments and markers shall be protected before construction operations commence and during all construction operations. Where construction operations are to be conducted during darkness, the markers shall be visible during darkness. The Contractor shall convey to his

personnel the purpose of marking and/or protection of all necessary objects.

3.1.1.2 Protection of Landscape

Trees, shrubs, vines, grasses, land forms and other landscape features to be preserved, indicated and defined on the drawings submitted by the Contractor as a part of the Environmental Protection Plan, shall be clearly identified by marking, fencing, or wrapping with boards, or any other approved techniques.

3.1.1.3 Reduction of Exposure of Unprotected Erodible Soils

Earthwork brought to final grade shall be finished as indicated and specified. Side slopes and back slopes shall be protected as soon as practicable upon completion of rough grading. All earthwork shall be planned and conducted to minimize the duration of exposure of unprotected soils. Except in instances where the constructed feature obscures borrow areas, quarries and waste material areas, these areas shall not initially be cleared in total. Clearing of such areas shall progress in reasonably sized increments as needed to use the areas developed as approved by the Contracting Officer.

3.1.1.4 Temporary Protection of Disturbed Areas

Such methods as necessary shall be utilized to effectively prevent erosion and control sedimentation, including but not limited to the following:

Retardation and Control of Runoff

Runoff from the construction site shall be controlled by construction of diversion ditches, benches, and berms to retard and divert runoff to protected drainage courses, and the Contractor shall also utilize any measures required by area-wide plans approved under Paragraph 208 of the Clean Water Act.

3.1.1.5 Erosion and Sedimentation Control Devices

The Contractor shall construct or install all temporary and permanent erosion sedimentation control features. Temporary erosion and sediment control measures such as berms, dikes, drains, sedimentation basin, grassing and mulching shall be maintained until permanent drainage and erosion control facilities are completed and operative.

3.1.1.6 Location of Contractor Facilities

The Contractor's field offices, staging areas, stockpiles, storage, and temporary buildings shall be placed in areas acceptable to the Contracting Officer. Temporary movement or relocation of Contractor facilities shall be made only on approval by the Contracting Officer.

3.1.1.7 Borrow Areas on Government Property

Borrow areas on Government property shall be managed to minimize erosion and to prevent sediment from entering nearby water courses or lakes.

3.1.1.8 Disposal Areas on Government Property

Disposal areas on Government property shall be managed and controlled to limit material to areas designated on the contract drawings and prevent erosion of soil or sediment from entering nearby water courses or lakes. Disposal areas shall be developed in accordance with the grading plan indicated on the contract drawings.

3.1.1.9 Temporary Excavation and Embankments

Temporary excavation and embankments shall be controlled to protect adjacent areas from contamination.

3.1.1.10 Disposal of Solid Wastes

Solid wastes (excluding clearing debris) shall be placed in containers which are emptied on a regular schedule. All handling and disposal shall be conducted to prevent contamination. The Contractor shall transport all solid waste off Government property and dispose of it in compliance with Federal, State, and local requirements for solid waste disposal.

3.1.1.11 Disposal of Chemical Wastes

Chemical wastes shall be stored in corrosion resistant containers, removed from the work area and disposed of in accordance with Federal, State, and local regulations.

3.1.1.12 Disposal of Discarded Materials

Discarded materials other than those which can be included in the solid waste category shall be handled as directed by the Contracting Officer.

3.2 HISTORICAL, ARCHAEOLOGICAL AND CULTURAL RESOURCES

Existing historical, archaeological and cultural resources within the Contractor's work area will be so designated by the Contracting Officer and precautions shall be taken by the Contractor to preserve all such resources as they existed at the time they were pointed out to the Contractor. The Contractor shall install all protection for these resources so designated on the contract drawings and shall be responsible for their preservation during this contract. If during construction items of apparent archaeological or historical interest are discovered, they shall be left undisturbed and the Contractor shall report the find immediately to the Contracting Officer.

3.3 PROTECTION OF WATER RESOURCES

The Contractor shall keep construction activities under surveillance, management and control to avoid pollution of surface and ground waters. Special management techniques as set out below shall be implemented to control water pollution by the listed construction activities which are included in this contract.

3.3.1 Cofferdam and Diversion Operations

The Contractor shall plan his operations and perform all work necessary to minimize adverse impact or violation of the water quality standard. Construction operations for dewatering, removal of cofferdams, tailrace excavation, and tunnel closure shall be controlled at all times to limit impact of water turbidity on the habitat for wildlife and impacts on water quality for downstream use.

3.3.2 Stream Crossings

Stream crossings shall be controlled during construction. Crossings shall provide movement of materials or equipment which do not violate water pollution control standards of the Federal, State or local government.

3.3.3 Monitoring of Water Areas Affected by Construction Activities

Monitoring of water areas affected by construction activities shall be the responsibility of the Contractor. All water areas affected by construction activities shall be monitored by the Contractor.

3.4 PROTECTION OF FISH AND WILDLIFE RESOURCES

The Contractor shall keep construction activities under surveillance, management and control to minimize interference with, disturbance to and damage of fish and wildlife. Species that require specific attention along with measures for their protection shall be listed by the Contractor prior to beginning of construction operations.

3.5 PROTECTION OF AIR RESOURCES

The Contractor shall keep construction activities under surveillance, management and control to minimize pollution of air resources. All activities, equipment, processes, and work operated or performed by the Contractor in accomplishing the specified construction shall be in strict accordance with the laws of the state or states in which the work is being done and all Federal emission and performance laws and standards. Special management techniques as set out below shall be implemented to control air pollution by the construction activities which are included in the contract.

3.5.1 Particulates

Dust particles, aerosols, gaseous by-products from all construction activities, 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, areas of excess excavated material, borrow areas, and all other work areas within or outside the project boundaries free from particulates which would cause the air pollution standards mentioned in the 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, to be efficient, must be repeated at such intervals as to keep the disturbed area damp at all times. The Contractor must have sufficient equipment available to accomplish this task. Particulate control shall be performed as the work proceeds and whenever a particulate nuisance or hazard occurs.

3.5.2 Hydrocarbons and Carbon Monoxide

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

3.5.3 Odors

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

3.5.4 Monitoring Air Quality

Monitoring of air quality shall be the responsibility of the Contractor. All air areas affected by the construction activities shall be monitored by the Contractor.

3.6 INSPECTION

The Contracting Officer will notify the Contractor in writing of any observed noncompliance with the Contractor's environmental protection plan. The Contractor shall, after receipt of such notice, inform the Contracting Officer of proposed corrective action and take such action as may be approved. 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 has been taken. No time extensions will be granted or costs or damages allowed to the Contractor for any such suspension.

3.7 POST CONSTRUCTION CLEANUP

The Contractor shall clean up all area(s) used for construction.

3.8 RESTORATION OF LANDSCAPE DAMAGE

The Contractor shall restore all landscape features damaged or destroyed during construction operations outside the limits of the approved work areas. Such restoration shall be in accordance

with the plans submitted for approval by the Contracting Officer.

3.9 MAINTENANCE OF POLLUTION FACILITIES

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

3.10 TRAINING OF CONTRACTOR PERSONNEL IN POLLUTION CONTROL

The Contractor shall train his personnel in all phases of environmental protection. The training shall include methods of detecting and avoiding pollution, 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.

-- End of Section --

DIVISION 1 - GENERAL REQUIREMENTS

SECTION 01330

SUBMITTAL PROCEDURES

TABLE OF CONTENTS

PART 1 GENERAL

- 1.1 SUBMITTAL CLASSIFICATION
 - 1.1.1 Government Approved
 - 1.1.2 For Information Only
- 1.2 APPROVED SUBMITTALS
- 1.3 DISAPPROVED SUBMITTALS
- 1.4 WITHHOLDING OF PAYMENT

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION

- 3.1 GENERAL
- 3.2 SUBMITTAL REGISTER (ENG FORM 4288R)
- 3.3 SCHEDULING
- 3.4 TRANSMITTAL FORM (ENG FORM 4025R)
- 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

SECTION 01330

SUBMITTAL PROCEDURES

PART 1 GENERAL

1.1 SUBMITTAL CLASSIFICATION

Submittals are identified with submittal description (SD) numbers and are classified as follows:

1.1.1 Government Approved

Governmental 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 entitled "Specifications and Drawings for Construction," they are considered to be "shop drawings."

These items are tagged GA/AE or GA/RE in the submittal register.

The designer of record approves GA/AE review materials. This is usually an architectural-engineering design firm hired by the construction contractor. The Corps of Engineers construction resident engineer approves GA/RE review materials. This is usually a group of engineers who work for the installation's resident engineer.

1.1.2 For Information Only (FIO)

All submittals not requiring Government approval will be for information only. These items are tagged FIO in the submittal register. They are not considered to be "shop drawings" within the terms of the Contract Clause referred to above.

1.2 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 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 re-submittal for the purpose of substituting materials or equipment will be considered unless accompanied by an explanation of why a substitution is necessary.

1.3 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.

1.4 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 {GA and FIO} shall be checked and approved by the Contractor's Quality Control (CQC) representative and each item shall be stamped, signed, and dated by the CQC representative 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 (ENG FORM 4288R)

At the end of this section is one set of ENG Form 4288R 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.

The Contractor will also be given the submittal register as a diskette containing the computerized ENG Form 4288R and instructions on the use of the diskette. Columns "d" through "r" have been completed by the Government; the Contractor shall complete columns "a" and "s" through "u" and submit the forms (hard copy plus associated electronic file) to the Contracting Officer for approval within 30 calendar days after Notice to Proceed.

The Contractor shall keep this diskette up-to-date and shall submit it to the Government together with the monthly payment request. 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.

All submittals for all interior finishes (wall, floor, ceiling), all base, casework, toilet partitions, window treatments and all other similar items requiring coordinated color selection shall be submitted concurrently. Certifications to be submitted with the pertinent drawings shall be so scheduled.

The contractor shall allow 30 calendar days, exclusive of mailing time, and this period shown on the submittal register and NAS schedule for submittals requiring Government review and approval.

No delay damages or time extensions will be allowed for time lost in late submittals or resubmittals.

An additional 10 calendar days shall be allowed and shown on the register and NAS schedule for the review and approval of submittals for food service equipment and refrigeration and HVAC control systems.

3.4 TRANSMITTAL FORM (ENG FORM 4025R)

The sample transmittal form (ENG Form 4025R) attached to this section shall be used for submitting both Government approved and for 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

The Contractor shall be responsible for the scheduling and control of all submittals.

The Contractor is responsible for confirming that the submittal register includes all submittals required by the contract documents.

In addition to those items listed on ENG Form 4288R, the Contractor will furnish submittals for any deviation from the plans or specifications. The scheduled need dates must be recorded on the document for each item for control purposes and critical items must be tied to the contractor's approved schedule where applicable.

The Contractor will submit to the Contracting Officer for approval five (5) copies of all G/AE or G/RE level and for all FIO level submittals. This number of copies of submittals specified in this portion of the contract shall be as specified in lieu of the number as specified by FAR 52.236-21.

For those contracts requiring project schedule--Network Analysis System (NAS), the Contractor will schedule on the NAS, critical or key items of material or equipment which the procurement activities will, or have the potential to, significantly impact project critical path and completion. The list of key or critical items of material or equipment shall be submittal approved by the Contracting Officer. See attachment to Section 0800 for NAS scheduling requirements.

Where ENG Form 4025R must be submitted prior to approval of the Construction Progress Schedule, the Contractor shall submit an initial annotated ENG Form 4288R upon which dates for submittal, approval and delivery of procurement items shall be included for the first 60 days of the work.

Upon approval of the Construction Progress Schedule, or no later than 60 days after Notice to Proceed, the Contractor shall submit final annotated copies of ENG Form 4288R-Submittal Register. Dates shall be coordinated with the approved Construction Progress Schedule to logically interface with the sequence of construction. Critical item numbers will be shown on the listing if NAS is required.

Furnishing the schedule shall not be interpreted as relieving the Contractor of his obligation to comply with all the specification requirements for the items on the schedule.

Contractor's Quality Control representative shall review the listing at least every 30 days and take appropriate action to maintain an effective system.

The Contractor shall furnish a list each 30 days of all submittals on which either Government's or Contractor's action is past due. This monthly list of delayed items shall also be annotated by the Contractor to show what corrective action he is taking with regard to slippages in submittal schedule that are attributable to actions by him, his subcontractors, or suppliers.

The Contractor shall provide updated submittal register data, electronically or on floppy disk, to the contracting Officer, monthly, indicating the current status and codes of all submittals in order update the master submittal register maintained by the Contracting Officer and to assure that the contractor's schedule is being maintained.

He shall also furnish revised due dates in those cases when the original submittal schedule is no longer realistic.

The Contractor shall certify that each submittal is correct and in strict conformance with the contract drawings and specifications. All submittals not subject to the approval of the Contracting Officer will be submitted for Information purposes only, (FIO).

No Corps of Engineers action will be required for FIO submittals prior to incorporating these items into the work, but the submittal shall be furnished to the Area/Resident Engineer not less than 2 weeks prior to procurement of Contractor certified material, equipment, etc.

These Contractor approved submittals (FIO), will be used to verify that material received and used in the job is the same as that described and approved and will be used as record copies.

All samples of materials submitted as required by these specifications shall be properly identified and labeled for ready identification, and upon being certified by the Contractor and reviewed by the Contracting Officer, shall be stored at the site of the work for job site use until all work has been completed and accepted by the Contracting Officer.

Delegation of this approval authority to Contractor Quality Control does not relieve the Contractor from the obligation to conform to any contract requirement and will not prevent the Contracting Officer from requiring removal and replacement of construction not in contract conformance; nor does it relieve the Contractor from the requirement to furnish "samples" for testing by the Government Laboratory or check testing by the Government in those instances where the technical specifications so prescribe.

Contractor certified drawings will be subject to quality assurance review by the Government at any time during the duration of the contract.

No adjustment for time or money will be allowed for corrections required as a result of noncompliance with plans and specifications.

Submittals Requiring Government Approval (G/AE Level or G/RE Level). Where the review authority is designated to the Government, the Contractor is required to sign the certification on

ENG Form 4025R in the box beside the remarks block in Section I. The Government will code the items in block h and sign the approval action block in Section II as the approving authority.

Operating and Maintenance Instructions. Six (6) complete sets of instructions containing the manufacturer's operating and maintenance instructions for each piece of equipment shall be furnished. Each set shall be permanently bound and shall have a hard cover.

One (1) complete set shall be furnished at the time test procedures are submitted.

Remaining sets shall be furnished to the Contracting Officer on the date of final/acceptance inspection of the project. The following identification shall be inscribed on the covers: The words "OPERATING AND MAINTENANCE INSTRUCTIONS," name and location of the facility, name of the Contractor, and contract number. Flysheets shall be placed before instructions covering each subject. Instruction sheets shall be approximately 8-1/2 by 11 inches, with large sheets of drawings folded in. Instructions shall include but are not limited to:

- (1) System layout showing piping, valves and controls;
- (2) Approved wiring and control diagrams;
- (3) A control sequence describing startup, operation and shutdown;
- (4) Operating and maintenance instructions for each piece of equipment, including lubrication instructions and troubleshooting guide; and
- (5) Manufacturer's bulletins, cuts and descriptive data; parts lists and recommended parts.

3.5.2 Deviations

For submittals, which include proposed deviations requested by the Contractor, the column "variation" of ENG Form 4025R 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.

The contractor is not authorized to take action on an approved deviation until the deviation is included in a final contract modification.

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 GA submittals will be retained by the Contracting Officer and two (2) copies of the submittal will be returned to the Contractor-within the time specified-with action code.

Submittals requiring re-submittal to the Government are due immediately upon receipt by the contractor to avoid contractor delay to the project.

3.8 INFORMATION ONLY SUBMITTALS

Three (3) copies of the submittal will be retained by the Contracting Officer and two (2) copies returned to the contractor.

Not all FIO submittals will be reviewed by the Government. This Government review will be a quality assurance review only of a sample of the entire number of submittals. 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.

FIO submittals noted for re-submittal to the Government for clarification or additional data are due immediately upon receipt by the contractor.

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--

1. Section 1 will be initiated by the Contractor in the required number of copies.
2. Each transmittal shall be numbered consecutively in the space provided for "Transmittal No.". This number, in addition to the contract number, will form a serial number for identifying each submittal. For new submittals or resubmittals, mark the appropriate box; on resubmittals, insert transmittal number of last submission as well as the new submittal number.
3. The "Item No." will be the same "Item No." as indicated on ENG FORM 4288 for each entry on this form.
4. Submittals requiring expeditious handling will be submitted on a separate form.
5. Separate transmittal form will be used for submittals under separate sections of the specifications.
6. A check shall be placed in the "Variation" column when a submittal is not in accordance with the plans and specifications--also, a written statement to that effect shall be included in the space provided for "Remarks".
7. Form is self-transmittal, letter of transmittal is not required.
8. When a sample of material or Manufacturer's Certificate of Compliance is transmitted, indicate "Sample" or "Certificate" in column c, Section I.
9. U.S. Army Corps of Engineers approving authority will assign action codes as indicated below in space provided in Section I, column i to each item submitted. In addition they will ensure enclosures are indicated and attached to the form prior to return to the contractor. The Contractor will assign action codes as indicated below in Section I, column g, to each item submitted.

THE FOLLOWING ACTION CODES ARE GIVEN TO ITEMS
SUBMITTED

- | | |
|---|---|
| A -- Approved as submitted. | E -- Disapproved (See attached). |
| B -- Approved, except as noted on drawings. | F -- Receipt acknowledge. |
| C -- Approved, except as noted on drawings.
Refer to attached sheet resubmission required. | FX -- Receipt acknowledged, does not comply
as noted with contract requirements. |
| D -- Will be returned by separate correspondence. | G -- Other (<i>Specify</i>) |

10. Approval of items does not relieve the contractor from complying with all the requirements of the contract plans and specifications.

DIVISION 1 - GENERAL REQUIREMENTS

SECTION 01451

CONTRACTOR QUALITY CONTROL

TABLE OF CONTENTS

PART 1	GENERAL
1.1	REFERENCES
1.2	PAYMENT
PART 2	PRODUCTS (Not Applicable)
PART 3	EXECUTION
3.1	GENERAL
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	CQC System Manager
3.4.2	CQC Staff
3.4.3	Additional Requirement
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	Laboratory Validation
3.7.2.2	Capability Check
3.7.2.3	Capability Recheck
3.7.3	On-Site Laboratory

- 3.7.4 Furnishing or Transportation of Samples for Testing
- 3.8 COMPLETION INSPECTION
- 3.9 DOCUMENTATION
- 3.10 NOTIFICATION OF NONCOMPLIANCE

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	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	Agencies Engaged in the Testing and/or Inspection of Materials Used in Construction

1.2 PAYMENT

Separate payment will not be made for providing and maintaining an effective Quality Control program, and all costs associated therewith shall be included in the applicable unit prices or lump-sum prices contained in the Bidding Schedule.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.1 GENERAL

The Contractor is responsible for quality control and shall establish and maintain an effective quality control system in compliance with the Contract Clause entitled "Inspection of Construction." The quality control system shall consist of plans, procedures, and organization necessary to produce an end product that complies with the contract requirements. The system shall cover all construction operations, both on-site and off-site, 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 calendar days after receipt of Notice of Award of the contract, the Contractor Quality Control (CQC) Plan proposed to implement the requirements of the Contract Clause entitled "Inspection of Construction." The plan shall identify personnel, procedures, control, instructions, test, records, and forms to be used. The Government will consider an interim plan for the first 15 days of operation. 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 on-site and off-site, 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 will also be furnished to the Government.

d. Procedures for scheduling, reviewing, certifying, and managing submittals, including those of subcontractors, off-site fabricators, suppliers, and purchasing agents. These procedures shall be in accordance with SPECIAL CONTRACT REQUIREMENT entitled "Submittals".

e. 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, testing

laboratory, and person responsible for each test.

f. Procedures for tracking preparatory, initial, and follow-up control phases and control, verification, and acceptance tests including documentation.

g. Procedures for tracking construction deficiencies from identification through acceptable corrective action. These procedures will establish verification that identified deficiencies have been corrected.

h. Reporting procedures, including proposed reporting formats.

i. A list of the definable features of work. A definable feature of work is a task that is separate and distinct from other tasks and has separate control requirements. Different trades or disciplines could identify it, 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 is 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 QC plan, the Contractor shall notify the Contracting Officer in writing a minimum of seven 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 Quality Control Plan, the Contractor shall meet with the Contracting Officer or Authorized Representative and discuss the Contractor's quality control system. 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 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 CQC System Manager

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 subject to acceptance by the Contracting Officer. The CQC System Manager shall be assigned as System Manager but may have other duties in addition to quality control.

3.4.2 CQC Staff

A staff shall be maintained under the direction of the CQC System Manager to perform all CQC activities. An alternate will be identified to serve in the absence of the CQC System Manager. 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. All CQC Staff members or replacements shall be subject to acceptance by the Contracting Officer.

3.4.3 Additional Requirement

In addition to the above requirements, the CQC System Manager and his/her alternate shall complete the course entitled "Construction Quality Management for Contractors". This course is generally offered every quarter starting with the month of February. For further details and for the actual class schedule see the following website: http://155.76.117.11/conops/const_quality.htm.

3.5 SUBMITTALS

Submittals shall be in accordance with SPECIAL CONTRACT REQUIREMENT entitled "Submittals". The CQC organization shall be responsible for certifying that all submittals 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 and shall include:

- a. A review of each paragraph of applicable specifications.
- 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 phase 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. The Government shall be notified at least 24 hours in advance of beginning any of the required action of the preparatory 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 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 24 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 on-site, 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 or conceal non-conforming work.

3.6.4 Additional Preparatory and Initial Phases

As determined by the Government, additional preparatory and initial phases may 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, on-site 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/or 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 in accordance with paragraph 3.7.2 below. 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, will 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 by the Contracting Officer, 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 off-site 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 Laboratory Validation

All testing of soil, gravel, aggregate, stone, concrete, and asphalt shall be performed by a testing laboratory validated by the Material Testing Center (MTC) of the Corps of Engineers. Refer to the MTC website <http://www.wes.army.mil/SL/MTC/ValStatesTbl.htm> for a complete and current list of validated commercial laboratories. If the Contractor proposes to use a commercial laboratory that is not validated or set up an on-site laboratory, he shall make arrangements for validation by contacting the Material Testing Center at Waterways Experiment Station, Vicksburg, Mississippi, telephone number: 601-634-2496 or 601-634-3610, www.wes.army.mil/SL/MTC/inspection.htm. The Government will not be responsible for any cost associated with the validation of laboratories that are not currently validated. The validation process could take 60 to 90 days or more. The Contractor shall be responsible for determining the amount of time required for the validation of the proposed laboratory and accounting for this event in his progress schedule. If the Contractor elects to use a

non-validated laboratory, work requiring testing shall not commence until the laboratory has been validated by MTC.

3.7.2.2 Capability Check

The Contracting Officer 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.

3.7.2.3 Capability Recheck

If the selected laboratory fails the capability check, the Contractor will be assessed a charge 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. There will be no extension of time allowed due to necessity to perform capability rechecks.

3.7.3 On-Site Laboratory

The Contracting Officer 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 will be borne by the Contractor. Samples of materials for test verification and acceptance testing by the Government shall be delivered by the Contractor to a location specified by the Contracting Officer.

3.8 COMPLETION INSPECTION

At the completion of all work or any increment thereof established by a completion time stated in the SPECIAL CONTRACT REQUIREMENTS entitled "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 shall be included in the CQC documentation, as required by paragraph DOCUMENTATION below, and shall include the estimated date by which the deficiencies will be corrected. The CQC System Manager or staff shall make a second inspection to ascertain that all deficiencies have been corrected and so notify the Government. 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 thereof if the project is divided into increments by separate completion dates.

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 should be identified (Preparatory, Initial, and 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 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(s) 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 seven 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 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 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 worksite, 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 excess costs or damages by the Contractor.

-- End of Section --

DIVISION 1 - GENERAL REQUIREMENTS

SECTION 01452

PROJECT SIGNS

TABLE OF CONTENTS

PART 1	GENERAL
1.1	SCOPE
1.2	PROJECT SIGNS
1.3	PAYMENT
PART 2	PRODUCTS (Not Applicable)
PART 3	EXECUTION (Not Applicable)

SECTION 01452

PROJECT SIGNS

PART 1 GENERAL

1.1 SCOPE

The work covered by this section consists of furnishing, erecting, maintaining, and removing project signs.

1.2 PROJECT SIGNS

The Contractor shall furnish, erect, and maintain two single faced project signs at the specific locations designated by the Contracting Officer. The signs shall be constructed of 3/4-inch marine-grade plywood or 22 gage metal, mounted on a substantial framework of 2-inch material. Size, lettering, color and paint shall conform to the details shown on the drawing "Temporary Project Sign" included at the end of this section. Upon request, the Government will furnish without cost to the Contractor two (2) decals of the Engineer Castle. The signs shall be erected as soon as practicable, but not later than 15 calendar days after the date established for commencement of work. The signs shall be removed upon completion of all other construction work under the contract and will become the property of the Contractor.

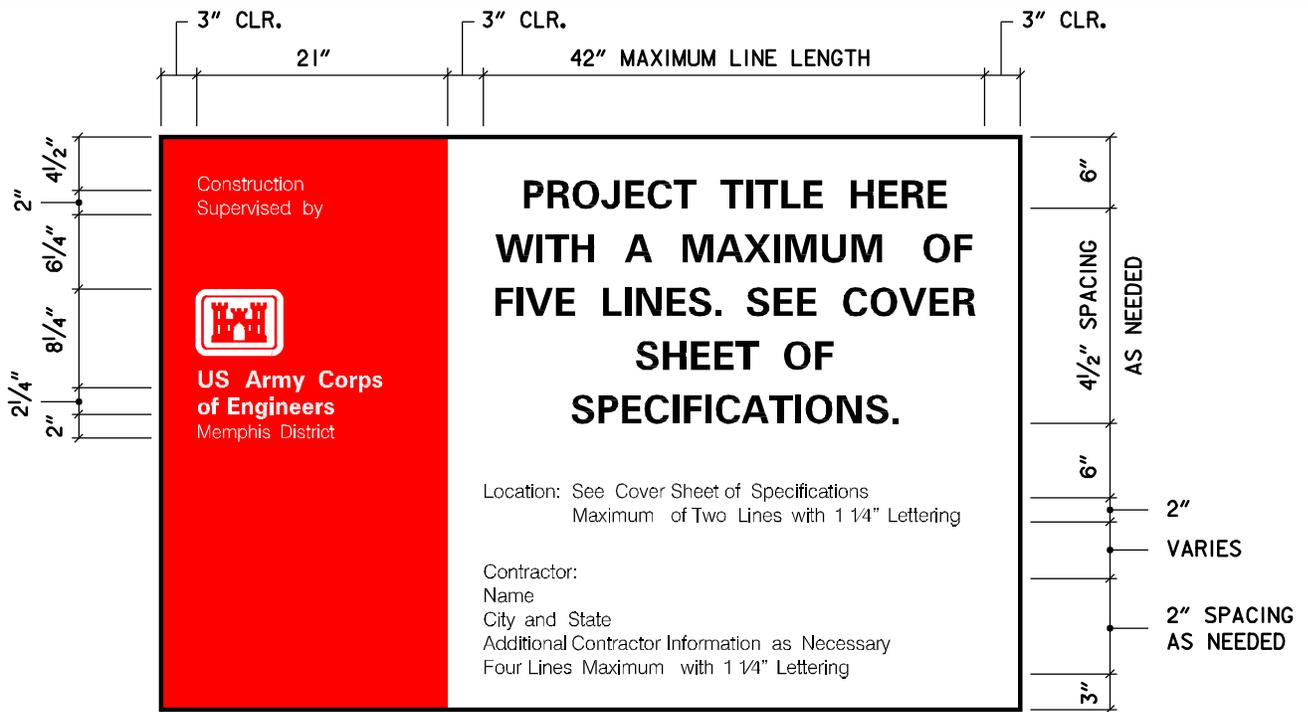
1.3 PAYMENT

No separate payment will be made for erecting, maintaining and removing project signs and all costs in connection therewith will be considered an incidental obligation of the Contractor.

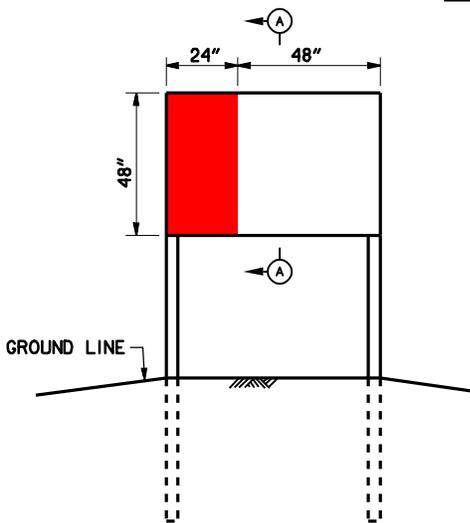
PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

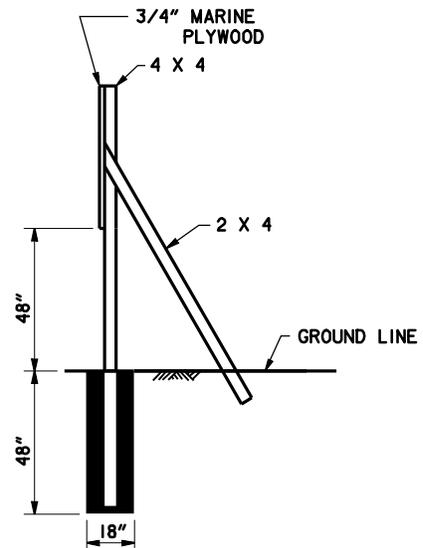
--End of Section--



ELEVATION



ELEVATION



SECTION A-A

SPECIFICATIONS

1. SIGN PANEL SHALL BE 4' x 6' x 3/4" MARINE PLYWOOD OR 22 GAGE SHEET METAL.
2. POSTS AND BRACING SHALL BE TREATED, NO.1 GRADE YELLOW PINE.
3. ALL EXPOSED SURFACES SHALL BE GIVEN ONE COAT OF LINSEED OIL AND WIPED PRIOR TO PRIMING.
4. ALL EXPOSED SURFACES SHALL BE GIVEN ONE COAT OF WHITE AS PRIMER. SECOND COAT SHALL BE COMMUNICATIONS RED ON LEFT AND WHITE ELSEWHERE.
5. THE LEFT SECTION SHALL BE RED WITH WHITE LEGEND. THE RIGHT SECTION SHALL BE WHITE WITH BLACK LEGEND.
6. PAINT SHALL BE BENJAMIN MOORE NO. 120-60 POLY-SILICONE ENAMEL OR APPROVED
7. ALL LETTERING SHALL BE 1/4" EXCEPT FOR THE WORDS "US Army Corps of Engineers" AND THE PROJECT TITLE. THE WORDS "US Army Corps of Engineers" SHALL BE 1/2" TALL. THE PROJECT TITLE LETTERING SHALL BE A MINIMUM OF 1/2" TALL AND A MAXIMUM OF 3/2" TALL. THE LETTERING SIZE SHALL BE CHOSEN SUCH THAT LARGEST POSSIBLE LETTERS ARE USED WITHOUT EXCEEDING A MAXIMUM LINE LENGTH OF 42". THE NUMBER OF LINES IN THE PROJECT TITLE SHALL MATCH THAT SHOWN ON THE COVER SHEET OF THE SPECIFICATIONS.

SCALE: NONE

JUNE 1998

U.S. ARMY ENGINEER DISTRICT, MEMPHIS
CORPS OF ENGINEERS
MEMPHIS, TENNESSEE

**TEMPORARY
PROJECT SIGN**

DIVISION 2 - SITE WORK

SECTION 02230

LIME/FLY-ASH SLURRY INJECTIONS

TABLE OF CONTENTS

PART 1	GENERAL
1.1	SCOPE
1.2	QUALITY CONTROL
1.3	APPLICABLE PUBLICATION
1.4	CERTIFICATION OF CONTRACTOR
PART 2	PRODUCTS
2.1	MATERIALS
2.1.1	Certification and Manufacturer's Literature
2.1.2	Water
2.1.3	Lime
2.1.4	Fly-ash
2.1.5	Retarder
2.1.6	Surfactant
2.2	EQUIPMENT
2.2.1	Injector
2.2.2	Tank
2.2.3	Support
PART 3	EXECUTION
3.1	APPLICATION
3.1.1	Ground Preparation
3.1.2	Flow Shutoff
3.1.3	Refusal
3.1.4	Penetration
3.1.5	Pressures
3.1.6	Slurry Mix
3.1.7	Injection Sequence
3.1.8	Wasted Slurry
3.1.9	Berms
3.2	DELAYS
3.2.1	Air Temperature Delay

3.3 3.2.2 Thunderstorm Delay
 ASPHALT SURFACING

SECTION 02230

LIME/FLY-ASH SLURRY INJECTIONS

PART 1 GENERAL

1.1 SCOPE

The work covered by this section consists of furnishing all plant, labor, and equipment for lime/fly-ash slurry injections, to include dressing and grading the levee riverside slope and performing all operations incidental thereto as specified herein and/or as indicated on the drawings. The extent of the levee embankment areas to receive the lime/fly-ash slurry injections are between Station 28/20+00 and extend to Station 30/30+00 as shown on the drawings.

1.2 QUALITY CONTROL

The Contractor shall establish and maintain quality control for the work specified in this section to assure compliance with the contract requirements and maintain records of his quality control for all construction operations including but not limited to the following:

(1) Slurry Mix

Mixture, pressure, placement

A copy of these records and tests, as well as the records of corrective action taken, shall be furnished to the Government.

1.3 APPLICABLE PUBLICATION

The following publication of the issues listed below, but referred to thereafter by basic designation only, forms a part of this specification to the extent indicated by the references thereto:

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM) PUBLICATIONS

C 593
C 977

Fly-Ash and Other Pozzolans for Use with Lime
Quicklime and Hydrated Lime for Soil Stabilization

1.4 CERTIFICATION OF CONTRACTOR

The Contractor shall submit evidence that he or his subcontractor (if used) is competent in the lime/fly-ash slurry injection process. The evidence will insure that the Contractor or his subcontractor shall have sufficient competent personnel to carry out the operations specified and such personnel shall have experience in this type of construction. Evidence of certification shall be submitted to the Contracting Officer for approval at least 1 week prior to the start of the injection process.

PART 2 PRODUCTS

2.1 MATERIALS

2.1.1 Certification and Manufacturer's Literature

Certification and manufacturer's literature of all materials and equipment used in the lime/fly-ash slurry injections shall be furnished the Government prior to commencement of work. The materials to be used in the lime/fly-ash slurry injection process are as specified herein.

2.1.2 Water

Slurry water shall be clean, fresh, and shall contain no materials deleterious to the slaking process or the lime/fly-ash/soil chemical reactions. If it is intended to use non-potable water, the suitability of non-potable water must be so demonstrated by the Contractor to the Contracting Officer.

2.1.3 Lime

Lime can be delivered in the form of either dry hydrate or calcium oxide, either of which can be slaked into hydrated lime conforming to ASTM C 977.

2.1.4 Fly-Ash

Fly-ash shall be Type C fly-ash, conforming to all applicable sections of ASTM C 593.

2.1.5 Retarder

A retarder for the fly-ash may be used according to the manufacturer's specifications, subject to the Contracting Officer's approval.

2.1.6 Surfactant

A non-ionic surfactant (wetting agent) may be used, in accordance with the manufacturer's specifications or at the rate of one part per 3,500 gallons of water, whichever is greater.

2.2 EQUIPMENT

2.2.1 Injector

The injection device shall be attached to a mobile vehicle. The injector rods shall have tips capable of dispersing slurry in a 360-degree pattern. The vehicle and device shall be of sufficient size and weight to allow full depth penetration without causing excessive blowbacks and loss of slurry around the injector pipes. The injector shall be equipped with a pressure gauge which measures and allows monitoring of the slurry injection pressure. The injector vehicle shall also be equipped with a slurry shut-off valve capable of shutting off slurry to all injection rods simultaneously.

2.2.2 Tank

Supply and mix tanks shall be equipped with a mechanical agitation system capable of producing and maintaining a uniform mix. The supply tank shall have the capability of transferring the lime/fly-ash slurry to the injector unit at the required pressure and in the necessary quantities. The tanks shall be located and operated in such a manner as to prevent damage to the environment. Berms or adequate protection shall be provided to prevent spills and excess slurry from entering any wooded areas or watercourses.

2.2.3 Support

The Contractor shall provide all other support equipment necessary to keep the work progressing in a smooth and orderly fashion. The equipment may include, but is not limited to, slurry transport trailers, portable pumps, hoses and other related equipment as required.

PART 3 EXECUTION

3.1 APPLICATION

3.1.1 Ground Preparation

The Contractor shall dress the levee riverside slopes to remove all humps, hilly and depressed surface areas after drilling holes for the lime/fly-ash slurry application. The Contractor shall not cut or disturb existing trees without prior approval of Mr. Lynn Bock of the St. John's Levee District, 565 Virginia, New Madrid, Missouri, Telephone No. (573) 748-9232.

3.1.2 Flow Shutoff

The flow of the lime/fly-ash slurry shall be shut off when the injector pipes are removed from the ground and the equipment is moved between injection sites.

3.1.3 Refusal

Lime/fly-ash slurry injections shall be continued until refusal is reached. Refusal is defined as the point at which injection pressures reach 200 psi or when the soil will not take any more slurry and the slurry is running freely on the surface around the injection rods, out of previous injection holes, or has fractured the ground.

3.1.4 Penetration

The injection rods shall penetrate the soil in depth increments of approximately 12 to 18 inches. Injection as defined in paragraph 3.1.3 above shall be performed at each depth interval for a total depth as shown on the drawings. Injection shall begin at 12 to 18 inches from the surface and proceed downward at the specified intervals to the depth as shown on the drawings.

3.1.5 Pressures

Injection pressures shall be adjustable to inject the slurry within a pressure range of 50 to 70 psi during the normal injecting operations; however, there may be instances when the pressures will approach 200 psi.

3.1.6 Slurry Mix

Lime/fly-ash shall be proportioned at the ratio of 1 part lime to 3 parts fly-ash and shall be mixed into a slurry in the range of 6 to 8 pounds lime/fly-ash per gallon of water. Use of less than 6 pounds and more than 8 pounds of lime/fly-ash per gallon of water may be used, subject to approval by the Contracting Officer. The lime/fly-ash slurry shall be continuously agitated during each

working day.

3.1.7 Injection Sequence

Injections shall be in two phases. The spacing for the injections shall be 5 feet on center each way as shown on the drawings. The average minimum quantity of lime and fly-ash to be injected for the primary phase injections shall be 1 pound per cubic foot based on the total area to be stabilized. A minimum cure time of 48 hours will be required between the primary and secondary phase injections. The secondary phase injections shall be placed between the primary injections as shown on the drawings. The average minimum quantity of lime fly-ash to be injected for the secondary phase injections shall be 0.5 pounds per cubic foot based on the total area to be stabilized. The injection sequence shall be in swaths perpendicular to the levee centerline. The injection sequence shall begin at the landside limits of injection and proceed riverward. The Contractor may vary this sequence, subject first however, to approval by the Contracting Officer.

3.1.8 Wasted Slurry

Any slurry that is running freely on the surface (either around injection rods or out of previous injection holes), is puddled at the toe of the embankment slope, has been spilled, or for any other reason has been judged unsuitable slurry material by the Contracting Officer, shall be defined as wasted slurry. The waste slurry that is puddled at the toe of the levee slope shall be disposed of in an environmentally safe manner.

3.1.9 Berms

The Contractor shall construct small earthen berms along the levee toe for the length of the job and adjacent to drainage channels to eliminate accidental entry of slurry into area watercourses. The earthen berms shall be of sufficient size to capture all excess slurry at the levee toe.

3.2 DELAYS

3.2.1 Air Temperature Delay

No designed slurry shall be produced or injected at an air temperature of 36 degrees F. or below with a prediction of steady or falling temperatures. If this condition interrupts one day's production, the remaining slurry shall be disposed of as approved by the Contracting Officer at no cost to the Government.

3.2.2 Thunderstorm Delay

Designed slurry shall not be injected during weather conditions suspected of producing ground strikes of lightning. The Contracting Officer shall be the sole authority in judging the presence of this condition. If this condition interrupts one day's production, the remaining slurry shall be disposed of as approved by the Contracting Officer at no cost to the Government.

3.3 ASPHALT SURFACING

The Contractor shall repair any portion of the asphalt surfacing on Highway P that is damaged due to injection operations or operation of construction equipment.

-- End of Section --

DIVISION 2 - SITE WORK

SECTION 02935

ESTABLISHMENT OF TURF

TABLE OF CONTENTS

PART 1	GENERAL
1.1	SCOPE
1.2	QUALITY CONTROL
1.3	AREAS TO BE TREATED
PART 2	PRODUCTS
2.1	MATERIALS
2.1.1	Fertilizer
2.1.2	Seed
2.1.3	Soil for Repairs
2.2	CERTIFICATES AND SAMPLES
2.2.1	Fertilizer
2.2.2	Seed
PART 3	EXECUTION
3.1	COMMENCEMENT, PROSECUTION, AND COMPLETION
3.1.1	General
3.1.2	Sequence of Work
3.2	PREPARATION OF GROUND SURFACE
3.2.1	General
3.2.2	Clearing
3.2.3	Dressing
3.3	APPLICATION OF FERTILIZER
3.4	SEEDING
3.4.1	General
3.4.2	Broadcast Seeding
3.4.3	Damage to Seeding
3.5	COMPACTING
3.6	MAINTENANCE

SECTION 02935

ESTABLISHMENT OF TURF

PART 1 GENERAL

1.1 SCOPE

The work provided for herein consists of furnishing all plant, labor, equipment, and materials, and performing all operations necessary for dressing, fertilizing, and turfing areas as specified herein and as indicated on the drawings. Fertilizing and/or seeding may be accomplished by aircraft or ground equipment at the option of the Contractor.

1.2 QUALITY CONTROL

The Contractor shall establish and maintain quality control for the work specified in this section to assure compliance with contract requirements and maintain records of his quality control for all construction operations including but not limited to the following:

(1) Preparation of Ground Surface. Location and quality of dressing, including necessary clearing, filling, or dressing out of washes, smoothness and uniformity of surfaces, and time of year.

(2) Fertilizing. Quality of materials, areas fertilized, quantity applied, and method of application.

(3) Seeding. Quality and type of seed, area covered, rate of application, quantity of seed used, and method of distribution.

A copy of these records and tests, as well as the records of corrective action taken, shall be furnished the Government.

1.3 AREAS TO BE TREATED

Turf shall be established on all disturbed areas, excluding areas with aggregate surfacing, and all other disturbed areas.

PART 2 PRODUCTS

2.1 MATERIALS

2.1.1 Fertilizer

Fertilizer shall consist of a mixture containing nitrogen, phosphorous, and potash, and shall be uniform in composition and free-flowing. The fertilizer may be delivered to the site in bags or other convenient containers or delivered in bulk. If delivered in bags or containers, the fertilizer shall be fully labeled in accordance with the applicable State fertilizer laws and shall bear the name, tradename or trademark, and warranty of the producer. The fertilizer shall meet the State commercial fertilizer requirements. Should the commercial fertilizer be furnished in bulk, the Contractor shall furnish certified weight tickets and a certified quantitative analysis report, in triplicate, from a recognized testing laboratory certifying the nutrient ratio of the materials. In the event the commercial mixture is delivered to the job site in the original containers, unopened, the analysis report will not be required.

2.1.2 Seed

Seed labeled in accordance with U.S. Department of Agriculture Rules and Regulations under the Federal Seed Act shall be furnished by the Contractor. Seed shall be furnished in sealed, standard containers unless written exception is granted. Seed that is wet or moldy or that has been otherwise damaged in transit or storage will not be acceptable. The specifications for seeds shall conform to the following, unless otherwise approved by the Contracting Officer:

<u>Kind of Seed</u>	<u>Minimum Purity Percent</u>	<u>Minimum Germination Percent</u>
Kentucky 31 Tall Fescue	95	80
Serecia Lespedeza (Scarified)	95	80
Bermuda Grass (Unhulled)	95	80

2.1.3 Soil for Repairs

For fill of areas to be repaired, soil shall be of a quality at least equal to that which exists in areas adjacent to the area to be repaired. Soil used shall be free from roots, stones, and other materials that hinder grading, planting, and maintenance operations and shall be free from objectionable weed seeds and toxic substances.

2.2 CERTIFICATES AND SAMPLES

2.2.1 Fertilizer

Duplicate signed copies of invoices from suppliers shall be furnished. Invoices shall show quantities and percentage of nitrogen, phosphorous, and potash. Upon completion of the project, a final check of the total quantity of fertilizer used will be made against total area treated, and if minimum rates of application have not been met, an additional quantity of material sufficient to make up the minimum application rate shall be distributed as directed.

2.2.2 Seed

The Contracting Officer shall be furnished duplicate signed copies of statements certifying that each container of seed delivered is labeled in accordance with the Federal Seed Act and is at least equal to the requirements specified in 2.1.2 above. This certification shall be obtained from the supplier and shall be furnished on or with all copies of seed invoices.

PART 3 EXECUTION

3.1 COMMENCEMENT, PROSECUTION, AND COMPLETION

3.1.1 General

Preparation of the ground surface, fertilizing, and turfing operations shall be accomplished during the season specified in 3.4.4 below, unless otherwise authorized by the Contracting Officer.

3.1.2 Sequence of Work

The sequence of operations for work prescribed in this section shall be as follows:

- (1) Preparation of ground surface.
- (2) Fertilizing.

(3) Seeding.

(4) Compacting, where applicable.

3.2 PREPARATION OF GROUND SURFACE

3.2.1 General

Equipment, in good condition, shall be provided for the proper preparation of the ground and for handling and placing all materials. Equipment shall be approved by the Contracting Officer before work is started.

3.2.2 Clearing

Prior to dressing, vegetation that may interfere with turfing operations shall be removed and shall be disposed of by removal from site. The surface shall be cleared of roots, cable, wire, and other materials that might hinder the work or subsequent maintenance.

3.2.3 Dressing

Surfaces where the combination of dressing, fertilizing and seeding is required as specified in 1.3 above shall be prepared for fertilizing and seeding by dressing so as to produce smooth profiles, and end slopes. Necessary repairs to disturbed areas of levee shall be with suitable material placed and compacted as specified in 3.5 below.

3.3 APPLICATION OF FERTILIZER

Fertilizer shall be distributed uniformly over the areas to be seeded at a rate which will supply not less than 40 pounds of available nitrogen, 40 pounds of available phosphorous, and 40 pounds of potash per acre. Fertilizer distributed over the surfaces within where the combination of dressing, fertilizing, and seeding is required as specified in 1.3 above shall be incorporated into the soil by light disking, harrowing, or other acceptable methods immediately following the application.

3.4 SEEDING

3.4.1 General

Seed sown during the season between 1 March and 30 June, inclusive, shall consist of 30 pounds of Kentucky 31 Tall Fescue, and 50 pounds of Bermuda seed per acre. Seed sown during the season between 1 September and 15 November, inclusive, shall consist of 50 pounds of Kentucky 31 Tall

Fescue, and 30 pounds of Serecia Lespedeza seed per acre. A satisfactory method of sowing shall be employed, using approved mechanical power-drawn seeders, mechanical hand-seeders, broadcast-seeders, or other approved methods. When conditions are such by reason of drought, high winds, excessive moisture, or other factors that satisfactory results are not likely to be obtained, work shall be halted as directed and resumed only when conditions are favorable or when approved alternative or corrective measures and procedures have been effected. If inspection either during seeding operations or after there is a show of green indicates that areas have been left unplanted, additional seed shall be sown if so directed.

3.4.2 Broadcast Seeding

Seed shall be broadcast with approved sowing equipment and distributed uniformly over the areas. Seed shall be covered lightly by brush harrow, spike-tooth harrow, chain harrow, cultipacker, or other approved device. Seed shall not be broadcast during windy weather.

3.4.3 Damage to Seeding

The Contractor shall be fully responsible for any damage to the seeded areas caused by his operations. Areas that become damaged as a result of poor workmanship or failure to meet the requirements of the specifications may be ordered to be repaired and reseeded to specification requirements, without additional cost to the Government.

3.5 COMPACTING

Immediately after seeding operations have been completed upon the surfaces where the combination of dressing, fertilizing, seeding is required as specified in 1.3 above, such surfaces shall be compacted by one pass of a cultipacker, corrugated roller, or other approved equipment weighing 100 to 160 pounds per linear foot of roller. The roller shall be operated parallel to the centerline of the levee.

3.6 MAINTENANCE

The Contractor shall be responsible for the turfed areas to the time of acceptance by the Contracting Officer. Prior to acceptance of the turfed areas, the Contractor shall repair rain wash damage, if any, to the completed embankment at no additional cost to the Government. The turfed areas shall be maintained by mowing for the life of the contract. Turfed areas shall be kept mowed to a height between 3 and 6 inches above the turfed earth surface. Should the Contractor fail to mow the turfed areas to the limits as specified above, the Government will assume the responsibility for the mowing and deduct the cost thereof from any payment due the Contractor.

--End of Section--

DIVISION 3 – CONCRETE

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DIVISION 16 – ELECTRICAL

(NOT USED)