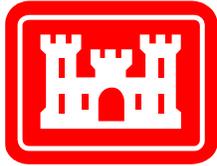


Memphis District

Invitation for Bid No. W912EQ-04-B-0013



**US Army Corps
of Engineers®**

Project Title:

**STONE DIKE CONSTRUCTION IN THE
MISSISSIPPI RIVER AT CARUTHERSVILLE-
LINWOOD, MISSOURI**

Location:

PEMISCOT COUNTY, MISSOURI

Technical Specifications

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

MAY 2004

TECHNICAL SPECIFICATIONS

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SECTION 01270

MEASUREMENT AND PAYMENT
02/94

PART 1 GENERAL

1.1 SUBMITTALS

Government approval is required for 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

Weight Certificates; G

Submit certified weight certificates for GRADED STONE A.

1.2 LUMP SUM PAYMENT ITEMS

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 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, environmental protection, meeting safety requirements, tests and reports, and for performing all work required for which separate payment is not otherwise provided.

1.2.1 Mobilization and Demobilization

1.2.1.1 Payment

Payment will be made for costs associated with mobilization and demobilization, as defined in Contract Clause PAYMENT FOR MOBILIZATION AND DEMOBILIZATION.

1.2.1.2 Unit of Measure

Unit of measure: lump sum (LS).

1.2.2 Excavate Notches

1.2.2.1 Payment

Payment for material removed in excavation operations of notches in existing dikes, will be made at the contract lump sum price for " Excavate Notches" which payment shall constitute full compensation for furnishing all labor, material, supplies, and equipment, and performing all excavation, and other items incidental thereto, all in accordance with these specifications.

1.2.2.2 Unit of Measure

Unit of Measure: Lump Sum (LS)

1.3 UNIT PRICE PAYMENT ITEMS

1.3.1 General

Payment items for the work of this contract on which the contract unit price payments will be made 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, environmental protection, meeting safety requirements, tests and reports, and for performing all work required for each of the unit price items in accordance with these specifications and as shown on the drawings.

1.3.2 Delivery by Barge

1.3.2.1 Contractor to Furnish

The Contractor shall furnish, not later than 5 days after receipt of notice to proceed, a list of barges, by name or number, which he anticipates using on this contract. Additional barge names or numbers shall be furnished during the progress of the work for any additional barges to be used. Displacement tables shall be furnished for any barge which has not already had displacement tables furnished and approved. The Contractor shall furnish with the barge displacement tables a drawing of the barge. The drawings shall show, as a minimum, the length, width, and depth of the barge and dimensions of the rake or rakes. Each such table shall have its accuracy certified by a person or firm, other than the Contractor, customarily performing this service and who has been approved by the Contracting Officer. Each table submitted shall show the name and/or number of the barge, the barge dimensions, the barge owner, the name of the fabricator, certification, and date of certification of the person or firm preparing the table. All new or modified barges shall be field checked for current dimension by the Contractor in the presence of the Government Quality Assurance Representative. Each table submitted shall contain, in parallel columns, the freeboard of the barge in feet and tenths from zero to the full depth of the barge, and the corresponding gross displacement to the

nearest ton. After barge table(s) have been verified by the Government, they will be incorporated into the MVD Standardized Barge Tables. Stone shall not be unloaded from any barge for which a displacement table has not been previously furnished and approved until the day after the Contractor is advised of the Contracting Officer's approval of the displacement table for that barge.

1.3.2.2 Barges

All barge number should be clearly marked on all four corners of the barge. Each barge shall be suitably marked with two displacement gaging lines on each side of the barge. Each gaging line shall be painted perpendicular to the edge of the barge and be no less than 4 inches wide and 1 foot long on both the deck and side of the barge. Barges with rakes shall have the displacement gage lines placed at each corner of the box section between the rakes. If a barge has a box end or ends, the gaging lines shall be placed approximately four feet from the box end.

1.3.2.3 Measurement

Measurement shall be by displacement.

1.3.2.4 Displacement

The freeboard will be measured at the 4 gaging locations and the displacement determined by the use of the MVD Standardized Barge Tables from the average of these measurements. The displacement shall be determined before and after the barge is unloaded and the difference between these values shall be the quantity delivered.

1.3.2.5 Unit of Measurement

The unit of measurement for stone will be the ton (2,000 pounds). Quantities will be computed to the nearest whole ton.

1.3.3 Delivery by Truck

1.3.3.1 Measurement

When stone, not handled by barge, is delivered by truck from a quarry or railroad siding, it shall be weighed on approved scales before being placed in the work. The scales shall be located as near the site of work as practicable and shall be tested as often as necessary to ensure accurate weights, as determined by the Contracting Officer. The Contractor shall furnish the scales and shall weigh the stone in the presence of a Quality Assurance Representative, who will certify the correctness thereof. Weight certificates furnished by a public weighmaster will be acceptable in lieu of such procedures when authorized by the Contracting Officer.

1.3.3.2 Unit of Measurement

The unit of measurement for stone will be the ton (2,000 pounds). Quantities will be computed to the nearest whole ton.

1.3.4 "Graded Stone A"

1.3.4.1 Payment

Payment for Graded Stone A satisfactorily placed in the work will be made at the applicable contract price for "Graded Stone A".

1.3.4.2 Measurement

Measurement will be in accordance with the applicable paragraph for DELIVERY BY BARGE or DELIVERY BY TRUCK in this section.

1.3.4.3 Unit of Measure

Unit of Measure: Ton (TN)

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION (NOT APPLICABLE)

-- End of Section --

SECTION 01330

SUBMITTAL PROCEDURES

05/02

PART 1 GENERAL

1.1 SUBMITTAL IDENTIFICATION (SD)

Submittals required are identified by SD numbers and titles as follows:

SD-01 Preconstruction SubmittalsSD-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 entitled "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.

1.6 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.

1.7 SUBMITTAL REGISTER

At the end of this section is a submittal register showing 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 Government will provide the initial submittal register in electronic format. Thereafter, the Contractor shall maintain a complete list of all submittals, including completion of all data columns. Dates on which submittals are received and returned by the Government will be included in its export file to the Contractor. The Contractor shall track all submittals.

1.8 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 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.

1.9 TRANSMITTAL FORM (ENG FORM 4025)

The sample transmittal form (ENG Form 4025) 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.

1.10 SUBMITTAL PROCEDURES

Submittals shall be made as follows:

1.10.1 Procedures

The Government will discuss detailed submittal procedures with the Contractor at the Preconstruction Conference.

1.10.2 Deviations

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

1.11 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."

1.12 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. 4 copies of the submittal will be retained by the Contracting Officer and 1 copy of the submittal will be returned to the Contractor.

1.13 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.

1.14 STAMPS

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

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

1.15 SUBMITTALS

Within 15 calendar days after receipt of notice to proceed, the Contractor shall complete and submit to the Contracting Officer, in duplicate, submittal register ENG Form 4288-R listing all submittals and dates. In addition to those items listed on ENG Form 4288-R, the Contractor shall 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. In preparing the document, adequate time (minimum of 30 days) will be allowed for review and approval and possible resubmittal. Scheduling shall be coordinated with the approved progress schedule. The Contractor's Quality Control representative shall review the listing at least every 30 days and take appropriate action to maintain an effective system. Two copies of updated or corrected listing shall be submitted to the Contracting Officer at least every 60 days. Payment will not be made for any material or equipment which does not comply with contract requirements. An original and four copies of all submittals shall be furnished the Contracting Officer. A completed submittal form, ENG Form 4025-R, shall accompany all submittals. Copies of ENG Form 4025-R and ENG Form 4288-R will be furnished to the Contractor upon request. Copies of ENG Form 4025-R and ENG Form 4288-R are included at the end of this Section. (ER 415 1 10, Appendices A and B)

INSTRUCTIONS

1. Section I 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-R 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 acknowledged. |
| 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.

SECTION 01355

ENVIRONMENTAL PROTECTION
02/02

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.

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

33 CFR 328	Definitions
40 CFR 68	Chemical Accident Prevention Provisions
40 CFR 261	Identification and Listing of Hazardous Waste
40 CFR 262	Standards Applicable to Generators of Hazardous Waste
40 CFR 279	Standards for the Management of Used Oil
40 CFR 302	Designation, Reportable Quantities, and Notification
40 CFR 355	Emergency Planning and Notification
49 CFR 171 - 178	Hazardous Materials Regulations

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1	(2003) U.S. Army Corps of Engineers Safety and Health Requirements Manual
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1.2 DEFINITIONS

1.2.1 Environmental Pollution and Damage

Environmental pollution and damage is 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 humankind; or degrade the environment aesthetically, culturally and/or historically.

1.2.2 Environmental Protection

Environmental protection is the prevention/control of pollution and habitat disruption that may occur to the environment during construction. The control of environmental pollution and damage requires consideration of land, water, and air; biological and cultural resources; and includes management of visual aesthetics; noise; solid, chemical, gaseous, and liquid waste; radiant energy and radioactive material as well as other pollutants.

1.2.3 Contractor Generated Hazardous Waste

Contractor generated hazardous waste means materials that, if abandoned or disposed of, may meet the definition of a hazardous waste. These waste streams would typically consist of material brought on site by the Contractor to execute work, but are not fully consumed during the course of construction.

1.2.4 Waters of the United States

All waters which are under the jurisdiction of the Clean Water Act, as defined in [33 CFR 328](#).

1.3 GENERAL REQUIREMENTS

The Contractor shall minimize environmental pollution and damage that may occur as the result of construction operations. The environmental resources within the project boundaries and those affected outside the limits of permanent work shall be protected during the entire duration of this contract. The Contractor shall comply with all applicable environmental Federal, State, and local laws and regulations. The Contractor shall be responsible for any delays resulting from failure to comply with environmental laws and regulations.

1.4 SUBCONTRACTORS

The Contractor shall ensure compliance with this section by subcontractors.

1.5 PAYMENT

No separate payment will be made for work covered under this section. The Contractor shall be responsible for payment of fees associated with environmental permits, application, and/or notices obtained by the Contractor. All costs associated with this section shall be included in the contract price. The Contractor shall be responsible for payment of all fines/fees for violation or non-compliance with Federal, State, Regional and local laws and regulations.

1.6 SUBMITTALS

Government approval is required for 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

Environmental Protection Plan; G

The environmental protection plan.

1.7 ENVIRONMENTAL PROTECTION PLAN

Within 15 days after receipt of Notice of Award of the contract, prior to commencing construction activities or delivery of materials to the site, the Contractor shall submit an Environmental Protection Plan for review and approval by the Contracting Officer. The purpose of the Environmental Protection Plan is to present a comprehensive overview of known or potential environmental issues which the Contractor must address during construction. Issues of concern shall be defined within the Environmental Protection Plan as outlined in this section. The Contractor shall address each topic at a level of detail commensurate with the environmental issue and required construction task(s). Topics or issues which are not identified in this section, but which the Contractor considers necessary, shall be identified and discussed after those items formally identified in this section. Prior to submittal of the Environmental Protection Plan, the Contractor shall meet with the Contracting Officer for the purpose of discussing the implementation of the initial Environmental Protection Plan; possible subsequent additions and revisions to the plan including any reporting requirements; and methods for administration of the Contractor's Environmental Plans. The Environmental Protection Plan shall be current and maintained on-site by the Contractor.

1.7.1 Compliance

No requirement in this Section shall be construed as relieving the Contractor of any applicable Federal, State, and local environmental protection laws and regulations. During construction, the Contractor shall be responsible for identifying, implementing, and submitting for approval any additional requirements to be included in the Environmental Protection Plan.

1.7.2 Contents

The environmental protection plan shall include, but shall not be limited to, the following:

- a. Name(s) of person(s) within the Contractor's organization who is(are) responsible for ensuring adherence to the Environmental Protection Plan.
- b. Name(s) and qualifications of person(s) responsible for manifesting hazardous waste to be removed from the site, if applicable.

- c. Name(s) and qualifications of person(s) responsible for training the Contractor's environmental protection personnel.
- d. Description of the Contractor's environmental protection personnel training program.
- e. An erosion and sediment control plan which identifies the type and location of the erosion and sediment controls to be provided. The plan shall include monitoring and reporting requirements to assure that the control measures are in compliance with the erosion and sediment control plan, Federal, State, and local laws and regulations. A Storm Water Pollution Prevention Plan (SWPPP) may be substituted for this plan.
- f. Drawings showing locations of proposed temporary excavations or embankments for haul roads, stream crossings, material storage areas, structures, sanitary facilities, and stockpiles of excess or spoil materials including methods to control runoff and to contain materials on the site.
- g. Traffic control plans including measures to reduce erosion of temporary roadbeds by construction traffic, especially during wet weather. Plan shall include measures to minimize the amount of mud transported onto paved public roads by vehicles or runoff.
- h. Work area plan showing the proposed activity in each portion of the area and identifying the areas of limited use or nonuse. Plan should include measures for marking the limits of use areas including methods for protection of features to be preserved within authorized work areas.
- j. The Spill Control Plan shall include the procedures, instructions, and reports to be used in the event of an unforeseen spill of a substance regulated by 40 CFR 68, 40 CFR 302, 40 CFR 355, and/or regulated under State or Local laws and regulations. The Spill Control Plan supplements the requirements of EM 385-1-1 . This plan shall include as a minimum:
 - 1. 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 and the local Fire Department in addition to the legally required Federal, State, and local reporting channels (including the National Response Center 1-800-424-8802) if a reportable quantity is released to the environment. If telephone communication is not possible, the nearest U.S. Coast Guard office may be contacted by radio to report the spill (33 CFR 153.203). The Contractor shall comply with any instructions from the responding agency concerning containment and/or cleanup of the spill. The plan shall contain a list of the required reporting channels and telephone numbers.
 - 2. The name and qualifications of the individual who will be responsible for implementing and supervising the containment and cleanup.

3. Training requirements for Contractor's personnel and methods of accomplishing the training.
 4. A list of materials and equipment to be immediately available at the job site, tailored to cleanup work of the potential hazard(s) identified.
 5. 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.
 6. The methods and procedures to be used for expeditious contaminant cleanup.
- k. A non-hazardous solid waste disposal plan identifying methods and locations for solid waste disposal including clearing debris. The plan shall include schedules for disposal. The Contractor shall identify any subcontractors responsible for the transportation and disposal of solid waste. Licenses or permits shall be submitted for solid waste disposal sites that are not a commercial operating facility. Evidence of the disposal facility's acceptance of the solid waste shall be attached to this plan during the construction. The Contractor shall attach a copy of each of the Non-hazardous Solid Waste Diversion Reports to the disposal plan. The report shall be submitted on the first working day after the first quarter that non-hazardous solid waste has been disposed and/or diverted and shall be for the previous quarter (e.g. the first working day of January, April, July, and October). The report shall indicate the total amount of waste generated and total amount of waste diverted in cubic yards or tons along with the percent that was diverted.
- l. A recycling and solid waste minimization plan with a list of measures to reduce consumption of energy and natural resources. The plan shall detail the Contractor's actions to comply with and to participate in Federal, State, Regional, and local government sponsored recycling programs to reduce the volume of solid waste at the source.
- m. An air pollution control plan detailing provisions to assure that dust, debris, materials, trash, etc., do not become airborne and travel off the project site.
- n. A contaminant prevention plan that: identifies potentially hazardous substances to be used on the job site; identifies the intended actions to prevent introduction of such materials into the air, water, or ground; and details provisions for compliance with Federal, State, and local laws and regulations for storage and handling of these materials. In accordance with [EM 385-1-1](#), a copy of the Material Safety Data Sheets (MSDS) and the maximum quantity of each hazardous material to be on site at any given time shall be included in the contaminant prevention plan. As new hazardous materials are brought on site or removed from the site, the plan shall be updated.
- p. A historical, archaeological, cultural resources, biological resources and wetlands plan that defines procedures for identifying and protecting historical, archaeological, cultural resources, biological resources and wetlands known to be on the project site: and/or

identifies procedures to be followed if historical archaeological, cultural resources, biological resources and wetlands not previously known to be on-site or in the area are discovered during construction. The plan shall include methods to assure the protection of known or discovered resources and shall identify lines of communication between Contractor personnel and the Contracting Officer.

1.7.3 Appendix

Copies of all environmental permits, permit application packages, approvals to construct, notifications, certifications, reports, and termination documents shall be attached, as an appendix, to the Environmental Protection Plan.

1.8 PROTECTION FEATURES

This paragraph supplements the Contract Clause PROTECTION OF EXISTING VEGETATION, STRUCTURES, EQUIPMENT, UTILITIES, AND IMPROVEMENTS. Prior to start of any on-site construction activities, the Contractor and the Contracting Officer shall make a joint condition survey. Immediately following the survey, the Contractor shall prepare a brief report including a plan describing the features requiring protection under the provisions of the Contract Clauses, which are not specifically identified on the drawings as environmental features requiring protection along with the condition of trees, shrubs and grassed areas immediately adjacent to the site of work and adjacent to the Contractor's assigned storage area and access route(s), as applicable. This survey report shall be signed by both the Contractor and the Contracting Officer upon mutual agreement as to its accuracy and completeness. The Contractor shall protect those environmental features included in the survey report and any indicated on the drawings, regardless of interference which their preservation may cause to the Contractor's work under the contract.

1.9 ENVIRONMENTAL ASSESSMENT OF CONTRACT DEVIATIONS

Any deviations, requested by the Contractor, from the drawings, plans and specifications which may have an environmental impact will be subject to approval by the Contracting Officer and may require an extended review, processing, and approval time. The Contracting Officer reserves the right to disapprove alternate methods, even if they are more cost effective, if the Contracting Officer determines that the proposed alternate method will have an adverse environmental impact.

1.10 NOTIFICATION

The Contracting Officer will notify the Contractor in writing of any observed noncompliance with Federal, State or local environmental laws or regulations, permits, and other elements of the Contractor's Environmental Protection plan. The Contractor shall, after receipt of such notice, inform the Contracting Officer of the proposed corrective action and take such action when approved by the Contracting Officer. The Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No time extensions shall be granted or equitable adjustments allowed to the Contractor for any such

suspensions. This is in addition to any other actions the Contracting Officer may take under the contract, or in accordance with the Federal Acquisition Regulation or Federal Law.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.1 ENVIRONMENTAL PERMITS AND COMMITMENTS

This paragraph supplements the Contractor's responsibility under the contract clause "PERMITS AND RESPONSIBILITIES" to the extent that the Government has obtained the environmental clearance but will not obtain any permits for this project.

3.2 LAND RESOURCES

The Contractor shall confine all activities to areas defined by the drawings and specifications. Prior to the beginning of any construction, the Contractor shall identify any land resources to be preserved within the work area. Except in areas indicated on the drawings or specified to be cleared, the Contractor shall not remove, cut, deface, injure, or destroy land resources including trees, shrubs, vines, grasses, topsoil, and land forms without approval. No ropes, cables, or guys shall be fastened to or attached to any trees for anchorage unless specifically authorized. The Contractor shall provide effective protection for land and vegetation resources at all times as defined in the following subparagraphs. Stone, soil, or other materials displaced into uncleared areas shall be removed by the Contractor.

3.2.1 Work Area Limits

Prior to commencing construction activities, the Contractor shall mark the areas that need not be disturbed under this contract. Isolated areas within the general work area which are not to be disturbed shall be marked or fenced. Monuments and markers shall be protected before construction operations commence. Where construction operations are to be conducted during darkness, any markers shall be visible in the dark. The Contractor's personnel shall be knowledgeable of the purpose for marking and/or protecting particular objects.

3.2.2 Landscape

Trees, shrubs, vines, grasses, land forms 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. The Contractor shall restore landscape features damaged or destroyed during construction operations outside the limits of the approved work area. Such restoration shall be in accordance with the plans submitted for approval by the Contracting Officer.

3.2.3 Erosion and Sediment Controls

The Contractor shall be responsible for providing erosion and sediment control measures in accordance with Federal, State, and local laws and regulations. The erosion and sediment controls selected and maintained by the Contractor shall be such that water quality standards are not violated as a result of the Contractor's construction activities. The area of bare soil exposed at any one time by construction operations should be kept to a minimum. The Contractor shall construct or install temporary and permanent erosion and sediment control best management practices (BMPs). BMPs may include, but not be limited to, vegetation cover, stream bank stabilization, slope stabilization, silt fences, construction of terraces, interceptor channels, sediment traps, inlet and outfall protection, diversion channels, and sedimentation basins. Any temporary measures shall be removed after the area has been stabilized.

3.2.4 Contractor Facilities and Work Areas

The Contractor's field offices, staging areas, stockpile storage, and temporary buildings shall be placed in areas designated on the drawings or as directed by the Contracting Officer. Temporary movement or relocation of Contractor facilities shall be made only when approved. Erosion and sediment controls shall be provided for on-site borrow and spoil areas to prevent sediment from entering nearby waters. Temporary excavation and embankments for plant and/or work areas shall be controlled to protect adjacent areas.

3.3 WATER RESOURCES

The Contractor shall monitor construction activities to prevent pollution of surface and ground waters. Toxic or hazardous chemicals shall not be applied to soil or vegetation unless otherwise indicated. All water areas affected by construction activities shall be monitored by the Contractor. For construction activities immediately adjacent to impaired surface waters, the Contractor shall be capable of quantifying sediment or pollutant loading to that surface water when required by State or Federally issued Clean Water Act permits.

3.4 AIR RESOURCES

Equipment operation, activities, or processes performed by the Contractor shall be in accordance with all Federal and State air emission and performance laws and standards.

3.4.1 Particulates

Dust particles; aerosols and gaseous by-products from construction activities; and 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 excavations, stockpiles, haul roads, permanent and temporary access roads, plant sites, spoil areas, borrow areas, and other work areas within or outside the project boundaries free from particulates which would cause the Federal, State, and local air pollution standards to be exceeded or which would cause a hazard or a nuisance. Sprinkling, chemical treatment of an approved type, baghouse, scrubbers, electrostatic precipitators or other methods will be permitted to control particulates in the work area. Sprinkling, to be efficient,

must be repeated to keep the disturbed area damp at all times. The Contractor must have sufficient, competent equipment available to accomplish these tasks. Particulate control shall be performed as the work proceeds and whenever a particulate nuisance or hazard occurs. The Contractor shall comply with all State and local visibility regulations.

3.4.2 Odors

Odors from construction activities shall be controlled at all times. The odors shall not cause a health hazard and shall be in compliance with State regulations and/or local ordinances.

3.4.3 Burning

Burning will not be allowed on the project site unless specified in other sections of the specifications or authorized in writing by the Contracting Officer.

3.5 CHEMICAL MATERIALS MANAGEMENT AND WASTE DISPOSAL

Disposal of wastes shall be as directed below, unless otherwise specified in other sections and/or shown on the drawings.

3.5.1 Solid Wastes

Solid wastes (excluding clearing debris) shall be placed in containers which are emptied on a regular schedule. Handling, storage, and disposal shall be conducted to prevent contamination. Segregation measures shall be employed so that no hazardous or toxic waste will become co-mingled with solid waste. The Contractor shall transport solid waste off Government property and dispose of it in compliance with Federal, State, and local requirements for solid waste disposal. A Subtitle D RCRA permitted landfill shall be the minimum acceptable off-site solid waste disposal option. The Contractor shall verify that the selected transporters and disposal facilities have the necessary permits and licenses to operate.

3.5.2 Chemicals and Chemical Wastes

Chemicals shall be dispensed ensuring no spillage to the ground or water. Periodic inspections of dispensing areas to identify leakage and initiate corrective action shall be performed and documented. This documentation will be periodically reviewed by the Government. Chemical waste shall be collected in corrosion resistant, compatible containers. Collection drums shall be monitored and removed to a staging or storage area when contents are within 6 inches of the top. Wastes shall be classified, managed, stored, and disposed of in accordance with Federal, State, and local laws and regulations.

3.5.3 Contractor Generated Hazardous Wastes/Excess Hazardous Materials

Hazardous wastes are defined in [40 CFR 261](#), or are as defined by applicable State and local regulations. Hazardous materials are defined in [49 CFR 171 - 178](#). The Contractor shall, at a minimum, manage and store hazardous waste in compliance with [40 CFR 262](#). The

Contractor shall take sufficient measures to prevent spillage of hazardous and toxic materials during dispensing. The Contractor shall segregate hazardous waste from other materials and wastes, shall protect it from the weather by placing it in a safe covered location, and shall take precautionary measures such as berming or other appropriate measures against accidental spillage. The Contractor shall be responsible for storage, describing, packaging, labeling, marking, and placarding of hazardous waste and hazardous material in accordance with 49 CFR 171 - 178, State, and local laws and regulations. The Contractor shall transport Contractor generated hazardous waste off Government property within 60 days in accordance with the Environmental Protection Agency and the Department of Transportation laws and regulations. The Contractor shall dispose of hazardous waste in compliance with Federal, State and local laws and regulations. Spills of hazardous or toxic materials shall be immediately reported to the Contracting Officer. Cleanup and cleanup costs due to spills shall be the Contractor's responsibility.

3.5.4 Fuel and Lubricants

Storage, fueling and lubrication of equipment and motor vehicles shall be conducted in a manner that affords the maximum protection against spill and evaporation. Fuel, lubricants and oil shall be managed and stored in accordance with all Federal, State, Regional, and local laws and regulations. Used lubricants and used oil to be discarded shall be stored in marked corrosion-resistant containers and recycled or disposed in accordance with 40 CFR 279, State, and local laws and regulations. Storage of fuel on the project site shall be accordance with all Federal, State, and local laws and regulations.

3.6 RECYCLING AND WASTE MINIMIZATION

The Contractor shall participate in State and local government sponsored recycling programs.

3.7 HISTORICAL, ARCHAEOLOGICAL, AND CULTURAL RESOURCES

Existing historical, archaeological, and cultural resources within the Contractor's work area are shown on the drawings. The Contractor shall protect these resources and shall be responsible for their preservation during the life of the Contract. If during excavation or other construction activities any previously unidentified or unanticipated historical, archaeological, and cultural resources are discovered or found, all activities that may damage or alter such resources shall be temporarily suspended. Resources covered by this paragraph include but are not limited to: any human skeletal remains or burials; artifacts; shell, midden, bone, charcoal, or other deposits; rock or coral alignments, pavings, wall, or other constructed features; and any indication of agricultural or other human activities. Upon such discovery or find, the Contractor shall immediately notify the Contracting Officer so that the appropriate authorities may be notified and a determination made as to their significance and what, if any, special disposition of the finds should be made. The Contractor shall cease all activities that may result in impact to or the destruction of these resources. The Contractor shall secure the area and prevent employees or other persons from trespassing on, removing, or otherwise disturbing such resources.

3.8 BIOLOGICAL RESOURCES

The Contractor shall minimize interference with, disturbance to, and damage to fish, wildlife, and plants including their habitat. The Contractor shall be responsible for the protection of threatened and endangered animal and plant species including their habitat in accordance with Federal, State, Regional, and local laws and regulations.

3.9 PREVIOUSLY USED EQUIPMENT

The Contractor shall clean all previously used construction equipment prior to bringing it onto the project site. The Contractor shall ensure that the equipment is free from soil residuals, egg deposits from plant pests, noxious weeds, and plant seeds. The Contractor shall consult with the USDA jurisdictional office for additional cleaning requirements.

3.10 MAINTENANCE OF POLLUTION FACILITIES

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

3.11 TRAINING OF CONTRACTOR PERSONNEL

The Contractor's personnel shall be trained in all phases of environmental protection and pollution control. The Contractor shall conduct environmental protection/pollution control meetings for all Contractor personnel prior to commencing construction activities. Additional meetings shall be conducted for new personnel and when site conditions change. The training and meeting agenda shall include: methods of detecting and avoiding pollution; familiarization with statutory and contractual pollution standards; installation and care of devices, vegetative covers, and instruments required for monitoring purposes to ensure adequate and continuous environmental protection/pollution control; anticipated hazardous or toxic chemicals or wastes, and other regulated contaminants; recognition and protection of archaeological sites, artifacts, wetlands, and endangered species and their habitat that are known to be in the area.

3.12 POST CONSTRUCTION CLEANUP

The Contractor shall clean up all areas used for construction in accordance with Contract Clause: "Cleaning Up". The Contractor shall, unless otherwise instructed in writing by the Contracting Officer, obliterate all signs of temporary construction facilities such as haul roads, work area, structures, foundations of temporary structures, stockpiles of excess or waste materials, and other vestiges of construction prior to final acceptance of the work.

-- End of Section --

SECTION 01420

SOURCES FOR REFERENCE PUBLICATIONS

03/04

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 standards producing organization, (e.g. ASTM B 564 Nickel Alloy Forgings). However, when the standards producing organization has not assigned a number to a document, an identifying number has been assigned for reference purposes.

1.2 ORDERING INFORMATION

The addresses of the standards publishing organizations whose documents 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 standards producing organization should be ordered from the source by title rather than by number.

ASTM INTERNATIONAL (ASTM)
100 Barr Harbor Drive, P.O. Box C700
West Conshohocken, PA 19428-2959
Ph: 610-832-9500
Fax: 610-832-9555
E-mail: service@astm.org
Internet: <http://www.astm.org>

U.S. ARMY CORPS OF ENGINEERS (USACE)
Order CRD-C DOCUMENTS 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: 601-634-2664
Fax: 601-634-2388
E-mail: mtc-info@erdc.usace.army.mil
Internet: <http://www.wes.army.mil/SL/MTC/handbook.htm>
Order Other Documents from:
USACE Publications Depot
Attn: CEIM-SP-D

2803 52nd Avenue
Hyattsville, MD 20781-1102
Ph: 301-394-0081
Fax: 301-394-0084
E-mail: pubs-army@usace.army.mil
Internet: <http://www.usace.army.mil/publications>
or <http://www.hnd.usace.army.mil/techinfo/engpubs.htm>

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)
8601 Adelphi Road
College Park, MD 20740-6001
Ph: 866-272-6272
Fax: 301-837-0483
Internet: <http://www.archives.gov>
Order documents from:
Superintendent of Documents
U.S. Government Printing Office
Washington, DC 20402-9325
Ph: 866-512-1800 or 202-512-1800
Fax: 202-512-2250
E-mail: gpoinfo@gpo.gov
Internet: <http://www.gpo.gov>

-- End of Section --

SECTION 01451

CONTRACTOR QUALITY CONTROL
01/03

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 within the text by basic designation only.

ASTM INTERNATIONAL (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	(2002) 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 REQUIREMENTS

The Contractor is responsible for quality control and shall establish and maintain an effective quality control system in compliance with the Contract Clause titled "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 operations, both onsite and offsite, and shall be keyed to the proposed construction sequence. The site project superintendent will be held responsible for the quality of work on the job and is subject to removal by the Contracting Officer for non-compliance with the quality requirements specified in the contract. The site project superintendent in this context shall be the highest level manager responsible for the overall construction activities at the site, including quality and production. The site project superintendent shall maintain a physical presence at the site at all times, except as otherwise acceptable to the Contracting

Officer, and shall be responsible for all construction and construction related activities at the site.

3.2 QUALITY CONTROL PLAN

The Contractor shall furnish for review by the Government, not later than 15 calendar days after receipt of notice to proceed, the Contractor Quality Control (CQC) Plan proposed to implement the requirements of the Contract Clause titled "Inspection of Construction." The plan shall identify personnel, procedures, control, instructions, tests, 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.

3.2.1 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 superintendent.
- 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 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.
- 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, and person responsible for each test. (Laboratory facilities approved by the Contracting Officer shall be used.)

- 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 shall 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 which is separate and distinct from other tasks, has separate control requirements, and may be identified by different trades or disciplines, or it may 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 features under a particular section. This list will be agreed upon during the coordination meeting.

3.2.2 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.

3.2.3 Notification of Changes

After acceptance of the CQC Plan, the Contractor shall notify the Contracting Officer in writing of 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 CQC Plan shall be submitted for review a minimum of 5 calendar days prior to the Coordination 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 onsite and offsite 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 Personnel Requirements

The requirements for the CQC organization are a CQC System Manager and sufficient number of additional qualified personnel to ensure safety and contract compliance. The Safety and Health Manager shall receive direction and authority from the CQC System Manager and shall serve as a member of the CQC staff. Personnel identified in the technical provisions as requiring specialized skills to assure the required work is being performed properly will also be included as part of the CQC organization. The Contractor's CQC staff shall maintain a presence at the site at all times during progress of the work and have complete authority and responsibility to take any action necessary to ensure contract compliance. The CQC staff shall be subject to acceptance by the Contracting Officer. The Contractor shall provide adequate office space, filing systems and other resources as necessary to maintain an effective and fully functional CQC organization. Complete records of all letters, material submittals, shop drawing submittals, schedules and all other project documentation shall be promptly furnished to the CQC organization by the Contractor. The CQC organization shall be responsible to maintain these documents and records at the site at all times, except as otherwise acceptable to the Contracting Officer.

3.4.2 CQC System Manager

The Contractor shall identify as CQC System Manager an individual within the onsite work organization who shall be responsible for overall management of CQC and have the authority to act in all CQC matters for the Contractor. The CQC System Manager shall be a graduate engineer or a graduate of construction management, with a minimum of 5 years construction experience on construction similar to this contract. This CQC System Manager shall be on the site at all times during construction and shall be employed by the prime Contractor. The CQC System Manager shall be assigned as System Manager but may have duties as project superintendent in addition to quality control. An alternate for the CQC System Manager shall be identified in the plan to serve in the event of the System Manager's absence. The requirements for the alternate shall be the same as for the designated CQC System Manager.

3.4.3 CQC Personnel

In addition to CQC personnel specified elsewhere in the contract, the Contractor shall provide as part of the CQC organization specialized personnel to assist the CQC System Manager for the following areas: civil and a survey technician. These individuals shall be directly employed by the prime Contractor and may not be employed by a supplier or sub-contractor on this project; be responsible to the CQC System Manager; be physically present at the construction site during work on their areas of responsibility; have the necessary education and/or experience in accordance with the experience matrix listed herein. These individuals

may perform other duties but must be allowed sufficient time to perform their assigned quality control duties as described in the Quality Control Plan.

Experience Matrix	
Area	Qualifications
a. Civil	Graduate Civil Engineer with 2 years experience in the type of work being performed on this project or technician with 5 yrs related experience
b. Survey	Surveyor with 2 yrs experience in hydrographic and topographic surveying

3.4.4 Additional Requirement

In addition to the above experience and/or education requirements the CQC System Manager shall have completed the course entitled "Construction Quality Management For Contractors". This course is periodically offered at the Memphis District. For further details and for the class schedule see the following website http://155.76.117.11/conops/const_quality.htm.

3.4.5 Organizational Changes

The Contractor shall maintain the CQC staff at full strength at all times. When it is necessary to make changes to the CQC staff, the Contractor shall revise the CQC Plan to reflect the changes and submit the changes to the Contracting Officer for acceptance.

3.5 SUBMITTALS AND DELIVERABLES

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

3.6 CONTROL

Contractor Quality Control is the means by which the Contractor ensures that the construction, to include that of subcontractors and suppliers, complies with the requirements of the contract. At least three phases of control shall be conducted by the CQC System Manager for each definable feature of the construction 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. Review of provisions that 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 controlling quality of 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 24 hours in advance of beginning 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 work to ensure that it is in full compliance with contract requirements. Review minutes of the preparatory meeting.
- b. Verify adequacy of controls to ensure 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 required 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 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 control activities, including control testing, are providing continued compliance with contract requirements, 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

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. Upon request, the Contractor shall furnish to the Government duplicate samples of test specimens for possible testing by the Government. 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. 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 shall 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 offsite or commercial test facility shall 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

A testing laboratory validated by the Material Testing Center (MTC) of the Corps of Engineers shall perform all testing of soil, gravel, aggregate, stone, concrete, and asphalt. Refer to <http://www.wes.army.mil/SL/MTC/ValStatesTbl.htm> for a complete and current list of validated commercial laboratories. This website is maintained by the MTC. If the Contractor proposes to use a commercial laboratory that is not validated or set up an on-site laboratory, he/she 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, <http://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/her progress schedule. If the Contractor elects to use a non-validated laboratory, the work that requires testing shall not commence until the laboratory has been validated by MTC.

3.7.2.2 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](#).

3.7.2.3 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 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:

For delivery by mail: Shall be delivered as directed by the appropriate Area Office listed below.

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

3.8 COMPLETION INSPECTION

3.8.1 Punch-Out Inspection

Near the end of the work, or any increment of the work established by a time stated in the Contract Clause, "Commencement, Prosecution, and Completion of Work", or by the specifications, the CQC Manager shall conduct an inspection of the work. A punch list of items which do not conform to the approved drawings and specifications shall be prepared and included in the CQC documentation, as required by paragraph DOCUMENTATION. The list of deficiencies 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. 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 shall be accomplished within the time slated 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 Inspection personnel, plus the superintendent or other primary management person, and the Contracting Officer's Representative shall be in attendance at the final acceptance inspection. Additional Government personnel including, but not limited to, those from Base/Post Civil Facility Engineer user groups, and major commands may also be in attendance. The final acceptance inspection will be formally scheduled by the Contracting Officer based upon results of the Pre-Final inspection. Notice shall be given to the Contracting Officer at least 14 days prior to the final acceptance inspection and shall include the Contractor's assurance that all specific items previously identified to the Contractor as being unacceptable, along with all remaining work performed under the contract, will be complete 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 cost in accordance with the contract clause titled "Inspection of Construction".

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 System (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 of 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. Offsite 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 48 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 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 excess costs or damages by the Contractor.

-- End of Section --

02100
CONSTRUCTION PROCEDURES
09/03

PART 1 GENERAL

1.1 SCOPE

The work provided for herein consists of furnishing all plant, labor, material, and equipment and performing all work in strict accordance with the specifications, schedules, and drawings, for the construction of stone dikes in the Mississippi River. The work shall be completed as expeditiously as possible even though river conditions may become increasingly severe as the construction progresses. The work requires steady and uninterrupted progress to minimize loss of stone during construction. The Contractor shall diligently prosecute the work and provide the necessary equipment, a skilled and experienced crew, and a regular and well-balanced supply of stone to ensure uniform and continuous progress once construction of a dike has been started. The Contractor shall, at no additional cost to the Government, provide land equipment if required for orderly progress of the work.

1.2 RIVER STAGE LIMITATIONS

Unless otherwise authorized by the Contracting Officer, subaqueous placement of stone will not be permitted when the river stage is more than 10 feet above the top elevation of that portion of the dike. Also, unless otherwise authorized or directed by the Contracting Officer, the top of the final lift of stone shall be placed in the dry whenever the dike is higher than +10 LWRP. Work will not be required on any dike when river stages are below 0 LWRP. Work will also not be required on a particular dike if a 6 foot continuous channel does not exist from the navigation channel to some work point on the dike where work is required.

1.3 NOTIFICATION OF U.S. COAST GUARD PRIOR TO BEGINNING WORK

At least 15 days prior beginning work, and upon demobilization from or completion of the work, the Contractor shall notify the U.S. Coast Guard at 901-544-3912. Collect calls will not be accepted. A copy of this notification will be provided to the Contracting Officer.

1.4 PROSECUTION OF WORK

Prior to any work commencing on the a dike, an Ahead of Stone survey shall be made and submitted to the Contracting Officer's Representative. This survey may necessitate a design change for the construction of the dike. After work has been started on a dike, the Contractor shall not suspend work until a lift of stone of full base width has been placed for the full length of the dike, or remove any equipment from this location, which in the opinion of the Contracting Officer, is required for orderly progress of the work. This prohibition will not apply during any period when work is suspended due to river stages, weather, or other conditions outside the control of the Contractor.

1.5 ORDER OF WORK

(1) The order of work will be at the option of the Contractor, subject to the approval of the Contracting Officer. However, multiple round-point structures shall be constructed prior to any notch excavation. Concurrent construction will be permitted provided that sufficient equipment and stone sources are available. The Contractor shall give a minimum of 48 hours prior notice before beginning or resuming construction in this contract.

(2) Once the work is complete, a final as-built survey shall be made. This survey shall be conducted in the presence of the Government Quality Assurance Representative (QAR). This data shall be given to the Contracting Officer.

(3) The spawning season for the Pallid Sturgeon is usually between 12 April and 30 June. No construction activities will be allowed during this time period.

(4) The critical nesting period for the Least Terns is usually between 15 May and 31 July. These dates might be extended depending on Mississippi River stage elevations. If surveys reveal breeding activity within one-half mile of the proposed construction site, construction activities will not be allowed unless approved by the Contracting Officer in conjunction with Memphis District environmental personnel and appropriate state and federal agencies.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.1 CARUTHERSVILLE-LINWOOD DIKE NO. 6 AND 7

Unless otherwise authorized or directed by the Contracting Officer, construction of the contract dike(s) shall be performed in accordance with the following procedure:

3.1.1 Raising Dike

Prior to stone placement, a survey will be taken along the centerline of the existing dike. The survey shall consist of cross sections taken on 50-foot intervals extending 100 feet upstream and 100 feet downstream of the dike centerline. These sections may demonstrate the need for adjusting the stone placement to maximize use of the existing stone as shown on the Details of Stone Dike drawing. The stone for raising a dike shall be placed in lifts, each proceeding riverward from the landward limit of construction. Stone shall first be placed for the entire length of the dike to provide a full base width at the grade of the existing dike. The dike shall then be completed to full grade and section by placement of stone in horizontal layers of about 5 foot thickness. Each layer shall be carried the full length of the dike and low areas and gaps shall be brought up to the desired elevation before proceeding with the next lift. That portion of the dike constructed above water may be completed in one lift.

3.2 CARUTHERSVILLE-LINWOOD DIKE NOTCHES FOR NOS. 6, 7, AND 8

Unless otherwise authorized or directed by the Contracting Officer, construction of the contract dike notches shall be performed in accordance with the following procedure:

3.2.1 Excavate Notches

Prior to any work commencing on the excavation of a notch, a survey shall be taken along the centerline of the existing dike. This survey shall extend 100 feet landward to 100 feet riverward of the proposed notch limits as depicted on the dike profile on the plans. The survey shall consist of cross sections taken on 50-foot intervals extending 100 feet upstream and 100 feet downstream of the dike centerline. This survey may necessitate a change in the location of the notch so as to maximize use of the existing stone without undermining the integrity of the dike structure.

Excavating of stone for notches may be accomplished using a dragline or any other method authorized by the Contracting officer. The notch will be constructed by displacing stone from the area of the notch downstream so as to create an apron adjacent to the downstream toe of the dike. The notch opening will approximately have a 150 feet top width and 50 feet bottom width with approximately 1V on 5H side slopes and be approximately 700 to 900 feet from top bank. The bottom elevation of the area where the stone shall be removed shall be +5 LWRP. The apron shall be at least 6 feet thick and it shall extend downstream enough to exhaust the stone removed from the dike. The apron shall extend at least 30 feet downstream, so additional stone may be needed in order for the apron to be constructed to full grade and section. Unless otherwise authorized or directed by the Contracting Officer a tolerance of plus or minus 1 feet in elevation will be allowed. Any additional permits needed to excavate the notch by any method other than mechanical methods shall be obtained by the Contractor.

3.3 CARUTHERSVILLE-LINWOOD ROUND-POINT STRUCTURES

Unless otherwise authorized or directed by the Contracting Officer, construction of the multiple round-point structures shall be performed in accordance with the following procedure:

3.3.1 Multiple Round-Point Structures

Prior to any work commencing on the construction of a round-point structure, a survey shall be taken along the centerline of each proposed structure. The center point of each structure is given with its easting and northing on the plan sheets. The survey shall consist of a single profile taken on line with the center point given extending 100 feet upstream and 100 feet downstream of the proposed location. This survey may necessitate a change in the location of the round-point structure so as to maximize use of stone.

Graded Stone A shall be placed downstream of Dike Nos. 7 and 8 at the locations shown on the plans to construct six multiple round-point structures. Stone shall be placed at each

location to produce a mound of stone with a crown width diameter of 10 feet. The top elevation of the stone shall be at the same elevation as the top of the dike immediately upstream of these structures. Side slopes shall be the angle of repose of stone. Each mound of stone may be constructed in a single lift. These structures shall be constructed from the downstream most mound of stone proceeding upstream. Unless otherwise authorized or directed by the Contracting Officer, a tolerance of plus one foot or minus two feet in average elevation of the crown will be allowed.

-- End of Section --

SECTION 02380

STONE FOR STRUCTURES

10/01

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 C 127	(1988; R 1993e1) Specific Gravity and Absorption of Coarse Aggregate
ASTM C 295	(2003) Petrographic Examination of Aggregates for Concrete
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 D 4992	(1994e1) Evaluation of Rock to be Used for Erosion Control
ASTM D 5312	(1992; R 1997) Evaluation of Durability of Rock for Erosion Control Under Freezing and Thawing Conditions
ASTM E 548	(1994e1) General Criteria Used for Evaluating Laboratory Competence

U.S. ARMY CORPS OF ENGINEERS (USACE)

COE CRD-C 144	(1992) Standard Test Method for Resistance of Rock to Freezing and Thawing
COE CRD-C 148	(1969) Method of Testing Stone for Expansive Breakdown on Soaking in Ethylene Glycol

COE CRD-C 169

(1997) Standard Test Method for Resistance of Rock to Wetting and Drying

1.2 UNIT PRICES

1.2.1 Graded Stone

1.2.1.1 Payment

Payment for stone satisfactorily placed will be made at the applicable contract unit price for Graded Stone A. Price(s) and payment(s) shall constitute full compensation for furnishing, hauling, handling, placing, and maintaining the stone until final acceptance by the Government.

1.2.1.2 Measurement

Stone will be measured for payment by the ton. Quantities will be computed to the nearest whole ton. Stone will be measured for payment, in the presence of the Contracting Officer, by weighing on approved, accurately calibrated scales furnished by and at the expense of the Contractor. The scales shall be capable of printing a weight ticket including time, date, truck number, and weight. Weight certificates furnished by a public weighmaster will be acceptable.

Stone will be measured for payment by the ton as determined by barge displacement.

b. Barge Load

(1) If delivered by barge, stone will be measured for payment by the Contracting Officer by weight determined by barge displacement. The Contractor shall furnish the Contracting Officer a barge displacement table not less than 10 work days prior to unloading the stone from any barge. Each table submitted shall show the name and/or number of the barge owner, the name of the fabricator, and the certification and date of certification of the person or firm preparing the table. The Contractor shall furnish with the barge displacement tables a drawing or sketch of each barge, dimensioned in sufficient detail to permit checking of the tables. The drawings shall show, as a minimum, the length, width, depth of the barge, and dimensions of the rake or rakes. Each such table shall have its accuracy certified by a person or firm, other than the Contractor, customarily performing this service. Each table submitted shall contain, in parallel columns, the freeboard of the barge in feet and tenths from zero to the full depth of the barge and the corresponding gross displacement to the nearest ton. Each barge shall be suitably marked with two displacement gaging locations on each side near each end of the barge. Each gaging location shall be marked by a line perpendicular to the edge of the barge, 4 inches wide and 1 foot long, on both the deck and side of the barge. Barges with rakes shall have the displacement gaging lines placed at each corner of the box

section between the rakes. If a barge has a box end or ends, the gaging locations shall be placed approximately 4 feet from the box end(s). The freeboard will be measured at the four gaging locations and the displacement determined by the use of "STANDARD BARGE TABLES" from the average of these measurements. The displacement will be determined before and after being unloaded and the difference between these values shall be the quantity delivered. Barges shall be loaded so that the readings taken at the gaging locations do not vary more than 1.5 feet port to starboard fore and aft and do not vary more than 0.5 feet port to starboard. If such is not the case, the Contractor shall trim the carrier by shifting the stone until this limit is reached, before the measurement will be accepted. All carriers used in transporting stone shall be free of leaks such as would render accurate gauging difficult. Facilities for inspecting the hold of each carrier to determine whether leakage is occurring shall be provided. Each carrier shall also be provided with adequate pumping facilities, and if water is found to be accumulating in the hold, the carrier shall be pumped dry before each gaging, both before and after unloading. Lightening by pumping or by transfer of crew or supplies will not be permitted while stone is being transferred. Rejected stone and unacceptable material shall be left aboard the barge until after the final readings have been taken.

1.2.1.3 Unit of Measure

Unit of measure: ton.

1.3 SUBMITTALS

Government approval is required for 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-04 Samples

Stone; G,

Submit suitable stone samples prior to delivery of any such material to the worksite if stone is not from one of the stone sources listed

<http://155.76.117.11/conops/MVDstoneLST020601.htm>.

SD-06 Test Reports

Gradation Test; G,

Submit the gradation tests using the GRADATION TEST DATA SHEET enclosed at end of this section for riprap or stone.

Evaluation Testing of Stone; G,

Quality test on the stone in accordance with PART 2 paragraph EVALUATION TESTING OF STONE shall be the responsibility of the Contractor. Prior to delivery of such material to the worksite, submit a copy of the laboratory inspection report along with actions taken to correct deficiencies. Submit a copy of the test reports.

SD-07 Certificates

Stone; G,

Laboratory; G,

Submit a copy of the documents, provided by the Materials Testing Center (MTC) at CEWES, that validates that the laboratory can perform the required tests. The individual tests shall be listed for which the validation covers along with the date of the inspection.

1.4 GOVERNMENT TESTING AND STUDIES

1.4.1 Stone

1.4.1.1 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, blast fractures, bedding, seams and other defects that would tend to increase its deterioration from natural causes. Inspections for cracks, fractures, seams and defects shall be made by visual examination. If, by visual examination, it is determined that 10 percent or more of the stone produced contains hairline cracks, then all stone produced by the means and measures which caused the fractures shall be rejected. A hairline crack that is defined as being detrimental shall have a minimum width of 4 mil and shall be continuous for one-third the dimension of at least two sides of the stone. The stone shall be clean and adequately free from all foreign matter. Any foreign material adhering to or combined with the stone as a result of stockpiling shall be removed prior to placement.

1.4.1.2 Sources

Stone shall be furnished from any of the sources listed at <http://155.76.117.11/conops/MVDstoneLST020601.htm>. If the Contractor proposes to furnish stone from a source not currently listed at the aforementioned website, 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. If no such records are available, the Government will conduct tests to assure the acceptability of the stone.

- 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 above website.

- 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 above mentioned website, 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 providing the quality, 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 below. 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 above website 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. The Contracting Officer also reserves the right to reject individual units of produced specified materials in stockpiles at the quarry, all transfer points, and at the project construction site when such materials are determined to be unsuitable. During the course of the work, the stone may be tested by the Government, if the Contracting Officer determines that testing is necessary. If such tests are determined necessary, the testing will be done in the Government's testing laboratory or commercial laboratory selected by the Government. Materials produced from a listed or unlisted source shall meet all the requirements herein. The cost of testing will be at the Government's expense. During the contract period, both prior to and after materials are delivered to the job site, visual inspections and measurements of the stone materials may be performed by the Contracting Officer. If the Contracting Officer, during the inspections, finds that the stone quality, gradation or weights of stone being furnished are not as specified or are questionable, re-sampling and re-testing by the Contractor shall be required. Sampling of the delivered stone for testing and the manner in which the testing is to be performed shall be as directed by the Contracting Officer. This additional sampling and testing shall be performed at the Contractor's expense when test results indicate that the materials do not meet specified requirements. When test

results indicate that materials meet specified requirements, an equitable adjustment in the contract price will be made for the sampling and testing. Any material rejected shall be removed or disposed of as specified and at the Contractor's expense.

1.4.1.3 Evaluation Testing of Stone

The tests to which the stone may be subjected will include petrographic analysis, specific gravity, unit weight, absorption, wetting and drying, freezing and thawing and such other tests as may be considered necessary to demonstrate that the stone is of a satisfactory quality which is at least equivalent to stone from the sources listed at <http://155.76.117.11/conops/MVDstoneLST020601.htm>.

a. Unit Weight and Absorption. Stone shall weigh more than 155 pounds per cubic foot. 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**.

b. Samples. Samples of stone from a source not listed at <http://155.76.117.11/conops/MVDstoneLST020601.htm> 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 150 pounds each from each unit that will be used in the production of the required stone. The Contracting Officer shall be notified to arrange for testing at least 60 workdays before the stone leaves the quarry.

c. Tests. The tests will be conducted in accordance with applicable Corps of Engineers methods of tests given in the Handbook for Concrete and Cement or ASTM methods of tests <http://www.wes.army.mil/SL/MTC/handbook.htm>.

1.4.1.4 MVD Standard Test Method for Gradation

- A. Select a representative sample (Note #1), weigh and dump on hard stand.
- B. Select specific sizes (see example) on which to run "individual weight larger than" test. (See Note #2). Procedure is similar to the standard aggregate gradation test for "individual weight retained".
- C. Determine the largest size stone in the sample. (100% 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) and cumulative percent passing (lighter than). Plot percent passing, along with the specification curve on ENG Form 4055.

NOTES

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 muck pile by given direction to the loader; small graded riprap is best sampled by random selection from the transporting vehicles or by taking random selection from around a stockpile to make up a minimum total sample of not less than 15 tons. If possible, all parties should take part in the sample selection and agree before the sample is run that the sample is representative.

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% size, the minimum 15% size, and one or two others as separation points.

Example Gradation

Specifications

<u>Stone Weight in Lbs</u>	<u>Percent Finer by Weight</u>
400-160	10
160-80	50
80-30	15

Example Worksheet

Stone Size	Individual			
Individual	Cumulative			
<u>Lbs.</u>	<u>Wt. Retained</u>	<u>Percent Retained</u>	<u>% Retained</u>	<u>% Passing</u>
400	0	0	-	100
160	9,600	30	30	70
80	11,200	35	65	35
30	8,000	25	90	10
<30	3,200	10	100	-

Total 32,000

NOTES

Largest stone 251 lbs

A plot of this example gradation is shown on Plate I at the end of this section.

1.5 QUALITY CONTROL

1.5.1 General

The Contractor shall establish and maintain quality control for all bank paving and stone dike construction to assure compliance with contract requirements, and shall maintain records of his quality control for all construction operations, including but not limited to the following:

- (1) Stone gradation and cleanliness.
- (2) Placement of bank paving at specified rate and uniformity of coverage.
- (3) Placement and alignment of stone in the dike.
- (4) Fathometer surveys as directed by the field representative of the Contracting Officer.
- (5) Record of the tonnage of stone placed.
- (6) Periodic check for compliance with specified dike grade and section.

1.5.2 Reporting

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

PART 2 PRODUCTS

2.1 STONE

2.1.1 General

2.1.1.1 Evaluation Testing of Stone

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 quarry investigation shall be performed by a registered geologist or registered engineer. The tests to which the stone shall be subjected include petrographic examination (ASTM C 295), unit weight, absorption (ASTM C 127), resistance of stone to freezing and thawing (COE CRD-C 144), and if argillaceous limestone and sandstone are used, resistance to wetting and drying (COE CRD-C 169).

The laboratory to perform the required testing shall be validated based on compliance with ASTM E 548 and relevant paragraphs of ASTM D 3740, and no work requiring testing shall

be permitted until the laboratory has been inspected and validated. The first inspection of the facilities shall be at the expense of the Government and any subsequent inspections required because of failure of the first inspection shall be at the expense of the Contractor.

b. Unit Weight and Absorption. Stone shall weigh more than 155 pounds per cubic foot. 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 shall be **ASTM C 127**, except the unit weight shall be calculated in accordance with Note No. 5 using bulk specific gravity, saturated surface dry.

c. Petrographic Examination. Stone shall be evaluated in accordance with **ASTM C 295** which shall include information required by **ASTM D 4992**, paragraph 10. **COE CRD-C 148** shall be used to perform Ethylene glycol tests required on rocks containing smectite as specified in **ASTM D 4992** and on samples identified to contain swelling clays.

d. Resistance to Freezing and Thawing. Stone shall have a maximum loss of 5 percent after the number of cycles specified in **ASTM D 5312**, Figure 1, when determining the durability of stone when subjected to freezing and thawing in accordance with **COE CRD-C 144**, except the surface area of one side of the sample shall be between 144 square inches and 2304 square inches.

e. Resistance of Rock to Wetting and Drying. Stone shall have a maximum loss of 1 percent when determining the durability of stone when subject to wetting and drying in accordance with **COE CRD-C 169**, except the surface area of one side of the sample shall be between 144 square inches and 2304 square inches.

f. Samples. Samples of stone from a source not listed at <http://155.76.117.11/conops/MVDstoneLST020601.htm> 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. Information provided with the samples shall include the location within the quarry from which the sample was taken along with a field examination of the quarry. The field examination shall include the information outline in **ASTM D 4992**, paragraph 7. Samples shall consist of at least three pieces of stone, roughly cubical in shape and weighing not less than 150 pounds each from each unit that shall be used in the production of the required stone. If the source is an undeveloped quarry, or if the operation has been dormant for more than one year such that fresh samples are not available, the Contractor shall expose fresh rock for 20 feet horizontally and for the full height of the face proposed for production, prior to the field evaluation. The samples shall be shipped at the Contractor's expense to a laboratory validated by the government to perform the required tests.

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

2.1.1.2 Gradation Test

The Contractor shall perform a gradation test or tests on the riprap and/or stone at the quarry in accordance with paragraph GRADATION TEST METHOD FOR 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. At least one gradation test(s) shall be performed per 50,000 tons of each size of stone 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 (LMV FORM 620-R), attached at end of this section. The sample shall consist of not less than 50 tons of <MET>[] </MET>stone 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 stone 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. The Contracting Officer may direct additional testing of the riprap, stone or at the project site if the stone appears, by visual inspection, to be out of gradation. The additional tests shall be performed on in-place materials at the locations directed, or on random loads selected by the Contracting Officer. In-place test areas shall be not less than 12 feet by 12 feet and shall include the full thickness of the placed stone without disturbing or including the underlying material and shall meet the minimum sample size specified above. Each pit excavated for an in-place test sample shall be refilled and reworked to provide a surface void of signs of disturbance. The Contracting Officer may direct this testing under the Contract Clause INSPECTION OF CONSTRUCTION. Certification and test results shall represent stone shipped from the quarry. Certification and tests results must be received by the Contracting Officer at the jobsite before the stone is used in the work.

2.1.2 Graded Stone "A"

Graded Stone "A" shall conform to the following table:

GRADED STONE "A"	
STONE WEIGHT (Pounds)	CUMULATIVE PERCENT (Finer by Weight)
5,000	100
2,500	70-100
500	40-65
100	20-45
5	0-15
1	0-5

A plot of the gradation curve is attached at the end of this section.

PART 3 EXECUTION

3.1 TESTS AND INSPECTIONS

3.1.1 Pre-Production

3.1.1.1 Material Quality

Before selecting a source for preparation of a demonstration stockpile, the Contractor shall be reasonably certain that the source is capable of meeting the quality and source requirements specified in paragraphs SOURCES and EVALUATION TESTING OF STONE, including their respective subparagraphs.

3.1.1.2 Borderline Material Quality

If the COR's evaluation of a demonstration stockpile results in not being able to determine by visual examination whether the material is acceptable or unacceptable, the COR will select at least one but not more than three representative stones from the demonstration stockpile to be prepared for shipment to the Government's laboratory for testing in accordance with paragraph EVALUATION TESTING OF STONE. Where specified sizes are in excess of 2,000 pounds, the Contractor shall cut or break a representative piece, weighing approximately 2,000 pounds each, off of the selected stones. For specified stone sizes of less than 2,000 pounds but more than 500 pounds, individual samples shall be the size of the largest stone specified for the size range. Samples of stone groupings with a maximum size less than 500 pounds shall contain at least two (2) stones representative of the higher limit of the stone weights specified. In addition, the sample shall be representative of the gradation specified and the minimum weight of the total sample shall be not less than 500 pounds. The sampling and testing procedures shall be repeated for each strata being quarried. The Contractor shall ship the samples to the laboratory as specified in paragraph EVALUATION TESTING OF STONE. If the laboratory testing reveals the materials are unacceptable, the Contractor shall submit a replacement source for approval and proceed with the demonstration stockpile procedures anew.

3.2 PLACEMENT AND CONTROL

3.2.1 DIKE AND MULTIPLE ROUND-POINT STRUCTURES STONE PLACEMENT

The dikes shall be constructed to the elevations, cross sections, and limits shown on the drawings. Side slopes shall be determined by the angle of repose of the stone, approximately 1V on 1 1/4H. The dikes and multiple round-point structures shall be constructed of Graded Stone A conforming to the requirements of paragraph GOVERNMENT TESTING AND STUDIES. Stone shall be placed in the dike or multiple round-point structures in such a manner as to produce a reasonably well graded mass of stone with the minimum practicable percentage of voids. A tolerance of plus or minus 1 foot will be allowed in the specified elevation(s) and 1 foot under and 2 feet over in the specified crown width. The stone may be

placed by crane or dragline equipped with skip, grapple, clamshell, or rock bucket; by front end loader or bulldozer, except when placing the base blanket subaqueously; or by trucks or other methods, if approved by the Contracting Officer. Additional stone shall be added if soundings or sections indicate such to be necessary. The large stones shall be well distributed throughout the mass and the finished dikes shall be free from pockets of small stones and clusters of large stones. Subaqueous placement of stone will be subject to river stage limitations as specified in SECTION 02100. Stone placement will not be permitted at any river stage when site and current conditions prevail, which in the opinion of the Contracting Officer, make construction operations impractical or uneconomical.

3.2.2 PLACEMENT CONTROL

3.2.2.1 General

The Contractor shall furnish, operate, and maintain all the necessary equipment to control placement of stone in the dike, including any necessary materials or supplies that may be required. At all times when stone placement from floating plant is underway, the means by which the Contractor positions his plant, equipment, and stone supply barges must function accurately and consistently. Whatever the method employed, it must permit the Contractor and the Government Quality Assurance Representative to readily determine the exact position of the stone placing operation. Prior approval of the Contracting Officer will be required before placing any stone subaqueously without the aid of any of the equipment listed below. The Contractor shall make before and after surveys and other surveys as the work progresses. The Contractor may be required to make minor changes in limits and layout when change have occurred in site conditions. The Contractor will keep a constant check on the layout of work and a record of quantities placed.

3.2.2.2 Construction Surveys

The contractor shall conduct surveys immediately before, during, and after construction to assure proper controls are achieved and to demonstrate that the stone is properly placed within the required grade and cross section. A before construction survey shall be obtained as specified in Section 02100 Part 3 Execution. This survey shall include an "Ahead of Stone Profile." The ahead of stone profile is defined as the elevation of the bottom of the river along the centerline of the proposed dike immediately prior to stone placement. It shall consist of soundings. Soundings every 20 feet, or at closer intervals if necessary, will be taken with an electronic depth finder immediately before and during stone placement. This survey information will be used to show detailed cross sections of the original ground surface and the stone being placed. These work sheets will be included in the as-built drawings. The Contractor shall perform an after construction survey of the dike at the centerline and the upstream and downstream crown limits and the elevations at the side slopes at water's edge at 25-foot intervals along the dike centerline. All survey shall be conducted in the presence of the Government Quality Assurance Representative. No separate payment will be made to the Contractor for this survey. After the work is completed, the books, scrolls, and plotted sheets will be turned over to the Contracting Officer's Representative (COR).

3.2.2.3 Alignment Control

Acceptable methods of alignment control include the use of manned transit, laser, or colored or polarized light beams.

3.2.2.4 Distance Control

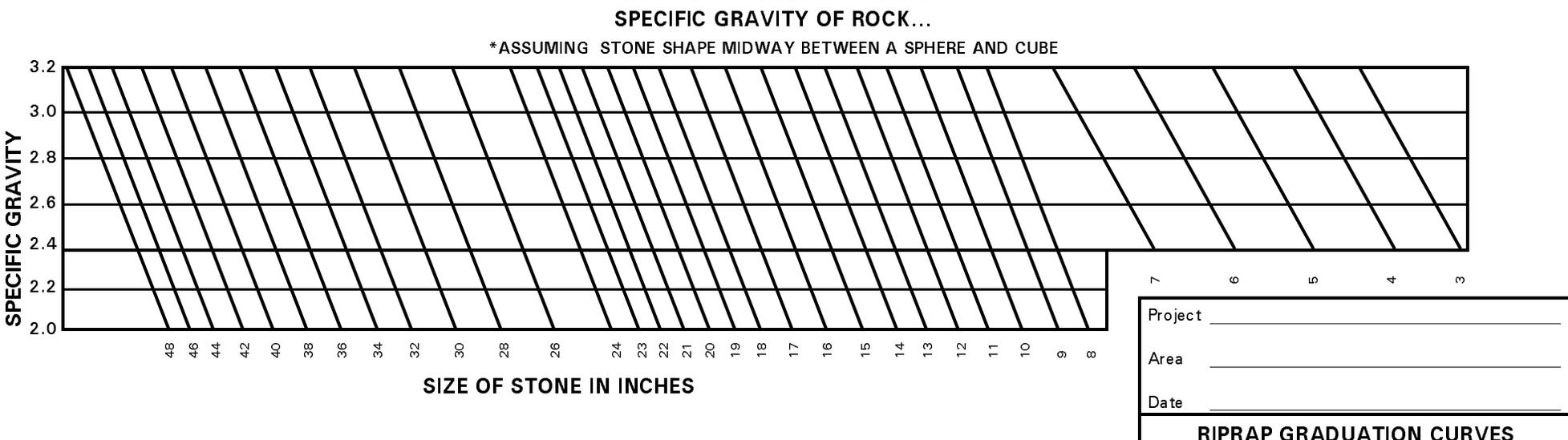
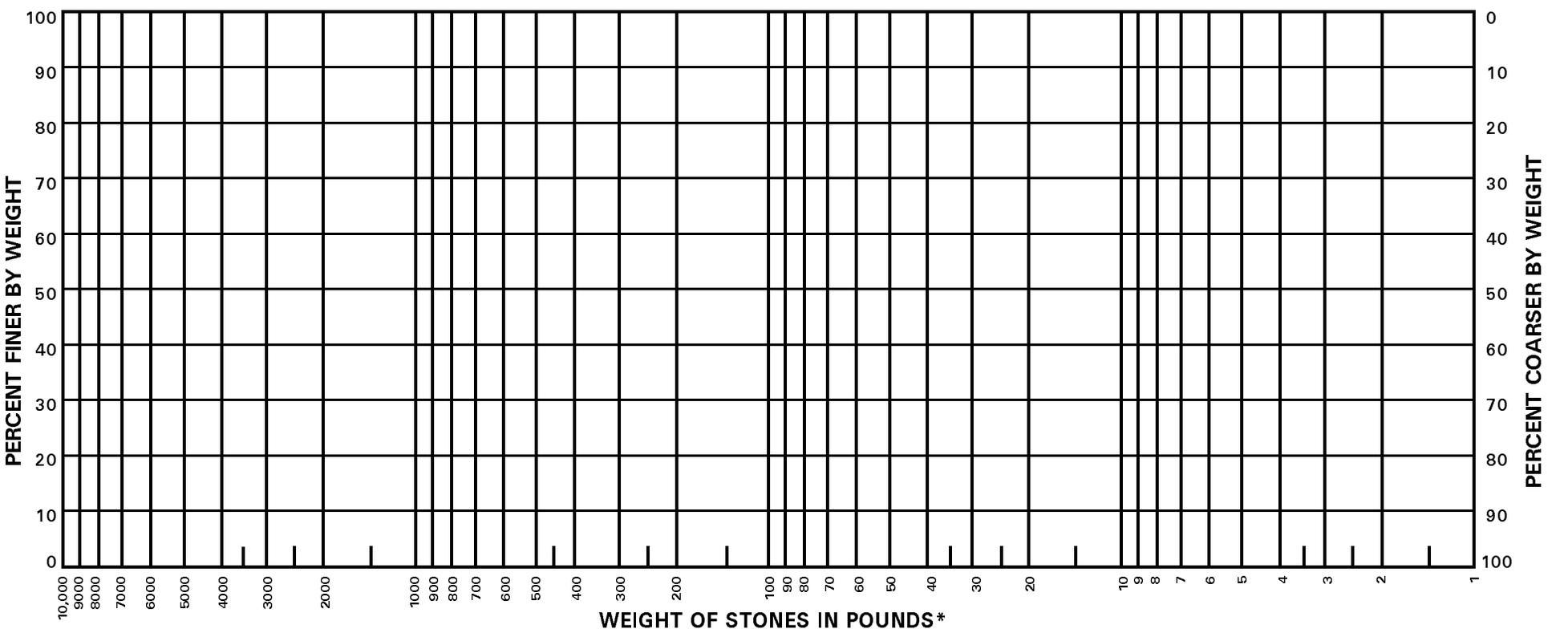
Acceptable methods of distance control for floating plant engaged in subaqueous placement of stone may consist of the use of electronic distance surveying instruments.

3.2.2.5 Depth Finder

A suitable recording electronic depth finder shall be provided at each location of work under this contract. The depth finder shall have a recording scroll not less than 4 inches wide with a scale of not more than 10 feet of depth to the inch. The depth finder shall be capable of obtaining accurate soundings during construction of the stone dike, and shall be used as an aid in the control of stone placement. The Contractor shall insure that the depth finder is in proper working order at all times and shall furnish and maintain an adequate stock of recording paper for the depth finder. The Contractor shall submit to the Contracting Officer for approval the manufacturer's name, model number, and/or model name of the electronic depth finder proposed for use, prior to the unit being placed in service.

3.2.2.6 Targets

The use of bank targets for alignment control will not be permitted for working distances of more than 400 feet without prior approval of the Contracting Officer, nor will the use of buoys be permitted for placement control.

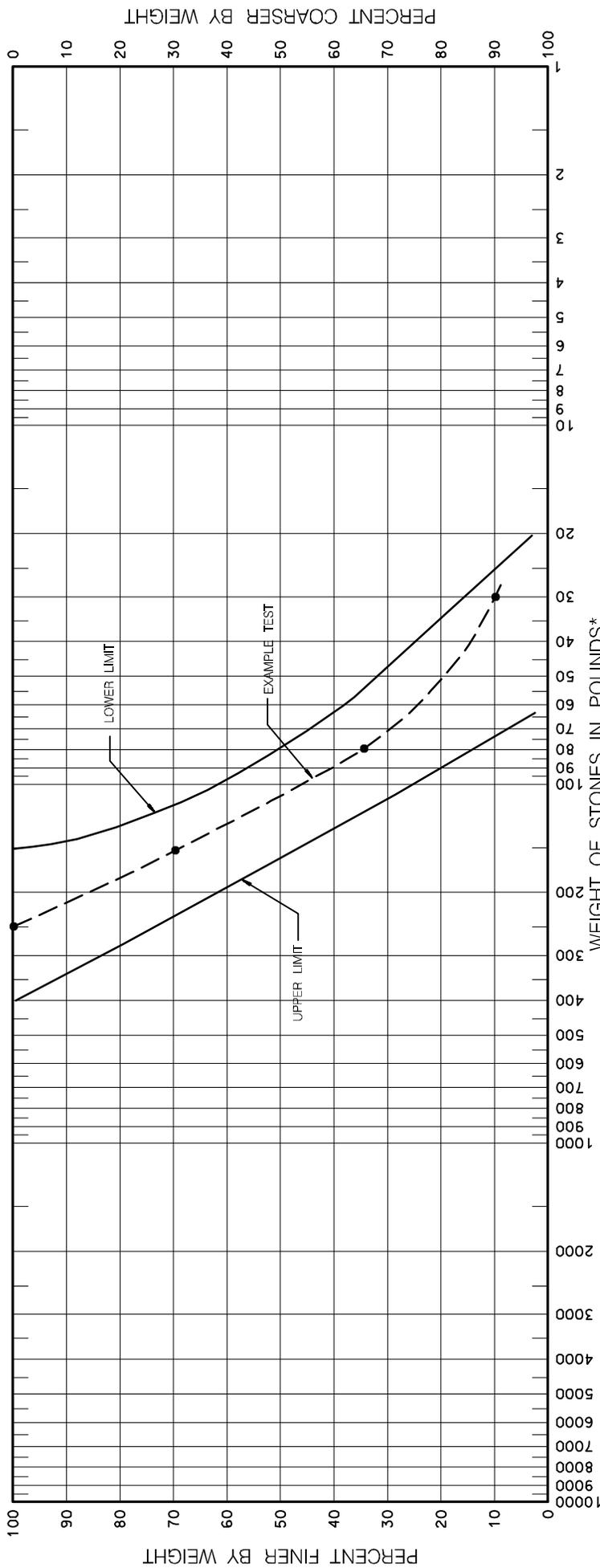


Project _____

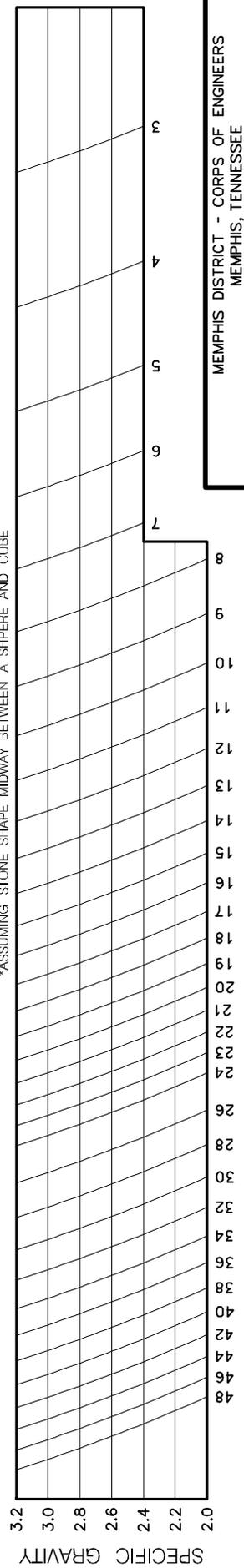
Area _____

Date _____

RIPRAP GRADUATION CURVES



SPECIFIC GRAVITY OF ROCK _____
 *ASSUMING STONE SHAPE MIDWAY BETWEEN A SPHERE AND CUBE

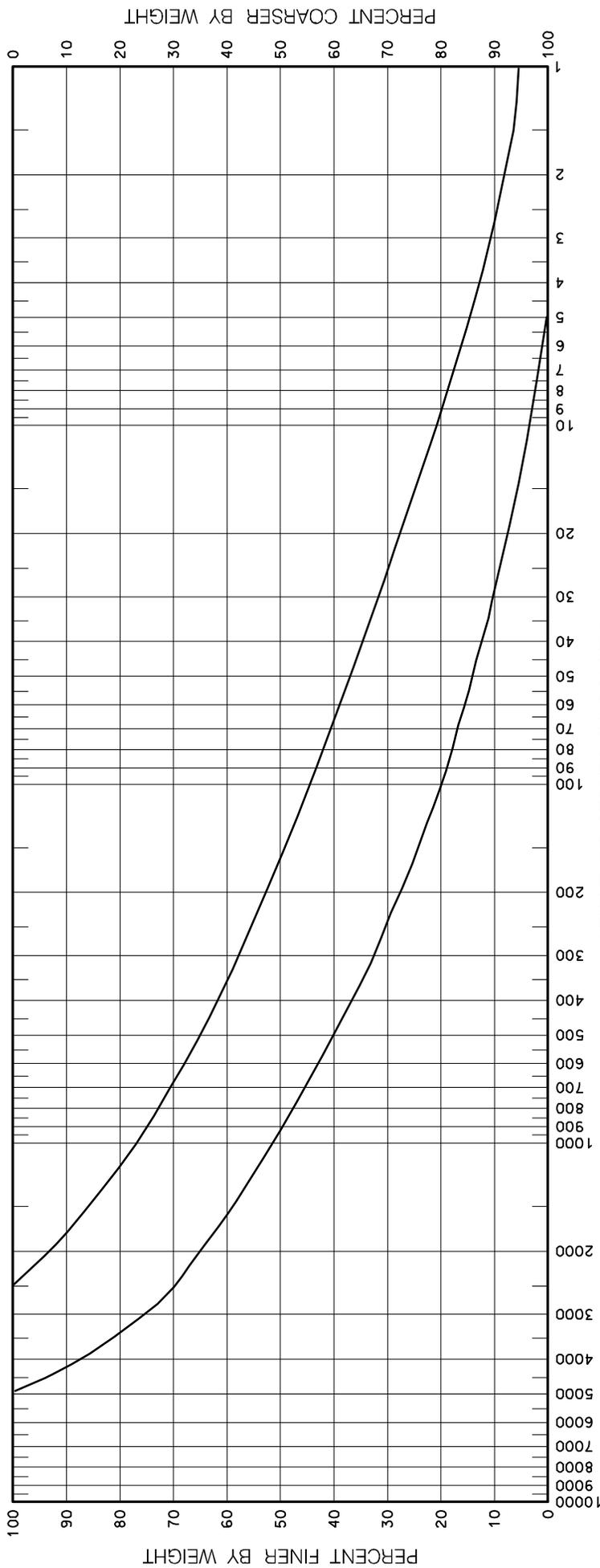


MEMPHIS DISTRICT - CORPS OF ENGINEERS
 MEMPHIS, TENNESSEE

EXAMPLE GRADATION

PROJECT: _____ DATE: _____

RIPRAP GRADATION CURVES



STONE WEIGHT POUNDS

CUMULATIVE % FINER BY WEIGHT

- 5000
 - 2500
 - 500
 - 100
 - 5
 - 1
- 100
 - 70-100
 - 40-65
 - 20-45
 - 0-15
 - 0-5

NOT MORE THAN 5% BY WEIGHT FINER THAN A 1/2 INCH SCREEN

MEMPHIS DISTRICT - CORPS OF ENGINEERS
MEMPHIS, TENNESSEE

GRADATION
GRADED STONE A

PROJECT: _____ DATE: _____

SEPTEMBER 1976

Invitation No. W912EQ-04-B-0013

DIVISION 3 - CONCRETE
THRU
DIVISION 16 - ELECTRICAL
(NOT USED)

Division 3 – Table of Contents