

ME-21 Grand Lake Shoreline Protection

CONSTRUCTION SPECIFICATIONS

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SPECIAL PROVISIONS

1. There are no known pipelines within the project limits. It is possible that some pipelines and/or utilities exist that have not been shown. The contractor shall be on the alert for such pipelines and utilities, and shall report them immediately to the Contracting Officer (CO). The contractor shall notify Louisiana One Call (LA ONE CALL) at 1-800-272-3020 at least 72 hours and no more than 120 hours prior to digging or driving piling to have pipelines and utilities located and marked.
2. The contractor shall notify the Eighth Coast Guard District so that a Notice to Mariners may be prepared, as required. Notification, with a copy of the permit approval and drawings, should be mailed to the following address within 48 hours of issuance of the Notice to Proceed:

CDR 8th Coast Guard District (dpw)
Hale Boggs Federal Bldg.
500 Poydras St. Suite 1230
New Orleans, La. 70130-3396

E-mail notification must also be provided to the Eighth Coast Guard District, Aids to Navigation Branch, Marine Information Office 7 to 10 days prior to dredging or construction operations. The Marine Information Office may be reached by e-mail at d8marineinfo@uscg.mil. Telephone inquiries may be directed to 504-671-2327. A copy of the e-mail notification prior to construction shall be provided to the CO.

3. All elevations stated in the plans and specifications are referenced to NAVD 88, Geoid 99. All horizontal data in the plans and specifications are referenced to NAD 1983, Louisiana South Zone (1702).
4. The average water elevation is +1.45 feet NAVD 88, Geoid 99.
5. The contractor is advised that the project lies within a dynamic marine environment subject to significant changes in environmental conditions and that water surface elevations in this area can vary due to weather and daily tides. Historical data can be obtained from the U.S. Army Corps of Engineers, the U.S. Geological Survey, the State of Louisiana's Coastal Protection and Restoration Authority (CPRA), or the National Oceanic and Atmospheric Administration (NOAA). The contractor is responsible for taking the appropriate measures to ensure that water level fluctuations, rainfall events, and soil conditions do not interfere with access to and from the construction site or with completion of the construction activities.
6. All equipment shall be floating at all times during transit to and from the project area, as well as during construction. No equipment, rock, or excavated material may be placed on adjacent marsh at any time.

7. Airboats and small outboards shall be used whenever practical to reduce the usage of marsh buggies. Established trails and access canals shall be utilized whenever possible. Marsh buggy use shall be limited to the work limits and access routes shown on the drawings.
8. The contractor's responsibilities include, but are not limited to, the following:
 - a. Navigating from a navigable water body to the project site.
 - b. Navigating within the project work limits and access routes only.
 - c. Dredging within the limits of the flotation and access channels only.
 - d. Protecting survey monuments or property line markers for the duration of the project. Any survey monuments or property line markers damaged or destroyed shall be replaced promptly by a Professional Land Surveyor registered in the State of Louisiana.
 - e. Staying off the marsh vegetation except as noted on the drawings. Any marsh area vegetation outside the construction limits damaged by the contractor shall be repaired or mitigated by the contractor. Such repair or mitigation shall be as set forth by the Contracting Officer and as required by the state/federal mitigation board and/or land owners.
 - f. Limiting movement in the project area to the work limits and access routes shown on the plans.
 - g. Ensuring that his employees and subcontractors are aware that disturbing, injuring, collecting, or attempting to disturb, injure, or collect any flora, fauna, or other property is prohibited.
 - h. Repairing or replacing in like manner any fences, roads, bridges, launches, trails, waterways, and other facilities which may be damaged or destroyed during construction of the project or during removal of debris associated with construction of the project.
 - i. Ensuring that all tools, equipment, and other property (excluding project features) moved to the project site shall remain under the contractor's control for the duration of the project and shall be removed from the project site before final payment is made.
9. Should the contractor's activities result in surface alterations beyond those absolutely necessary for accessing the site and conducting project activities, the contractor shall be responsible for restoring the site, to the greatest extent practical, to conditions existing at commencement of contractor activities, or the contractor or its insurance carrier will be responsible for the cost of such restoration. The contractor shall be responsible for removing all litter from the project site upon completion of authorized work.
10. The contractor is made aware that occasional access by landowners, lessees and oilfield and utility company employees throughout the work area may be required. On such occasions

the contractor shall provide for such passage in a reasonably adequate and satisfactory manner, as determined by the contracting officer.

11. The contractor shall include the following landowners as additional insured parties on any and all pertinent liability insurance policies maintained by the contractor during the construction of the project. Such insurance policies shall provide that those parties will be protected from and defended and insured against, without costs or expense to those parties, or damage to property of any kind, arising wholly or in part from or in connection with operations on their properties.

Additional Insured Parties:

State of Louisiana

Miami Corporation

12. The contractor shall notify the contracting officer within seven (7) calendar days of occurrence of any written or oral notice of conflict between contractor and any subcontractor/supplier regarding non-payment for services or supplies. In the event that a lawsuit is filed and the prime contractor is notified of such lawsuit while the contract is active, the contractor shall notify the contracting officer within seven (7) calendar days of receipt of such notice.
13. The Contractor shall review the plans and specifications for accuracy and completeness. The Contractor shall also make his own determination of the quantities of work required to complete the construction and make his own assessment of the site and work required prior to bidding. Any discrepancies, errors, or omissions shall be brought to the attention of the Contracting Officer (CO) prior to the bid due date.
14. The contractor's navigation requirements include, but are not limited to, the following:
 - a. All marine vessels shall follow the Inland Navigation Rules which are contained in the following Federal Laws or Regulation: International Navigational Rules Act of 1977 (Public Law 95-75, 91 Stat. 308, or 33 U.S.C. 1601-1608), and the Inland Navigation Rules Act of 1980 (Public Law 96-591, 94 Stat. 3415, 33 U.S.C. 2001-2038). These rules can be found on the Internet at http://www.navcen.uscg.gov/mwv/navrules/rotr_online.htm. All marine vessels shall display the lights and day shapes required by Part C – Lights and Shapes of the Inland Navigation Rules. The location, type, color, and size of the lights and day shape shall be in accordance with Annex I – Positioning and Technical Details of Lights and Shapes. Any vessel engaged in dredging is considered a “Vessel restricted in her ability to maneuver” and shall display all the lights and shapes required in Rule 27: Vessel Not Under Control.
 - b. The contractor shall operate in compliance with pertinent U.S. Coast Guard regulations and shall conduct work in such a manner as to minimize any obstruction to navigation. If the Contractor's dredge or any other floating equipment obstructs any navigation, making

navigation difficult or endangering the passage of vessels, said dredge or equipment shall be promptly moved on the approach of any vessel to the extent necessary to afford a practical passage. Upon completion of work, the contractor shall promptly remove the dredge and other floating equipment, as well as ranges, buoys, piles and any other marks or objects that are not permanent project features placed in the navigable water or on shore.

- c. All vessels that are regulated by the United States Coast Guard (USCG) shall have current inspection and certifications issued by the USCG before commencing construction. A copy of the certification shall be posted in a public area on board the vessel.
 - d. All dredge and quarter boats not subject to USCG inspection and certification or not having a current American Bureau of Shipping (ABS) Classification shall be inspected in working mode annually by a marine surveyor accredited by the National Association of Marine Surveyors (NAMS) or the Society of Accredited Marine Surveyors (SAMS). The surveyor must have at least five years' experience in commercial marine vessels and equipment. All other vessels shall be inspected before being placed in use and at least annually by a qualified person. The inspection shall be documented. A copy of the most recent inspection report shall be posted in a public area on board the vessel. A copy of the inspection shall be furnished to the COR upon request. The inspection shall be appropriate for the intended use of the vessel. The inspection, as a minimum, shall evaluate the structural integrity of the vessel and compliance with the National Fire Protection Association code 302 – Pleasure and Commercial Motor Craft.
 - e. Officers and crew shall be in possession of a current valid USCG license or a correctly endorsed document as required by the USCG, which shall be posted in a public area on board the vessel.
15. Work under this contract is permitted under Department of the Army Permit No. _____ . A copy of Page 1 of the permit must be conspicuously displayed at the project site. Also, a copy of the signed permit must be kept at the project site until the work is completed.

Construction Specification 5—Pollution Control

1. Scope

The work consists of installing measures or performing work to control erosion and minimize the production of sediment and other pollutants to water and air from construction activities.

2. Material

All material furnished shall meet the requirements of the material specifications listed in section 8 of this specification.

3. Erosion and sediment control measures and works

The measures and works shall include, but are not limited to, the following:

Staging of earthwork activities—The excavation and moving of soil materials shall be scheduled to minimize the size of areas disturbed and unprotected from erosion for the shortest reasonable time.

Seeding—Seeding to protect disturbed areas shall occur as soon as reasonably possible following completion of that earthwork activity.

Mulching—Mulching to provide temporary protection of the soil surface from erosion.

Diversions—Diversions to divert water from work areas and to collect water from work areas for treatment and safe disposition. They are temporary and shall be removed and the area restored to its near original condition when the diversions are no longer required or when permanent measures are installed.

Stream crossings—Culverts or bridges where equipment must cross streams. They are temporary and shall be removed and the area restored to its near original condition when the crossings are no longer required or when permanent measures are installed.

Sediment basins—Sediment basins collect, settle, and eliminate sediment from eroding areas from impacting properties and streams below the construction site(s). These basins are temporary and shall be removed and the area restored to its original condition when they are no longer required or when permanent measures are installed.

Sediment filters—Straw bale filters or geotextile sediment fences trap sediment from areas of limited runoff. Sediment filters shall be properly anchored to prevent erosion under or around them. These filters are temporary and shall be removed and the area restored to its original condition when they are no longer required or when permanent measures are installed.

Waterways—Waterways for the safe disposal of runoff from fields, diversions, and other structures or measures. These works are temporary and shall be removed and the area restored to its original condition when they are no longer required or when permanent measures are installed.

Other—Additional protection measures as specified in section 8 of this specification or required by Federal, State, or local government.

4. Chemical pollution

The contractor shall provide watertight tanks or barrels or construct a sump sealed with plastic sheets to collect and temporarily contain chemical pollutants, such as drained lubricating or transmission fluids, grease, soaps, concrete mixer washwater, or asphalt, produced as a by-product of the construction activities. Pollutants shall be disposed of in accordance with appropriate State and Federal regulations. At the completion of the construction work, tanks, barrels, and sumps shall be removed and the area restored to its original condition as specified in section 8 of this specification. Sump removal shall be conducted without causing pollution.

Sanitary facilities, such as chemical toilets, or septic tanks shall not be located next to live streams, wells, or springs. They shall be located at a distance sufficient to prevent contamination of any water source. At the completion of construction activities, facilities shall be disposed of without causing pollution as specified in section 8 of this specification.

5. Air pollution

The burning of brush or slash and the disposal of other materials shall adhere to state and local regulations.

Fire prevention measures shall be taken to prevent the start or spreading of wildfires that may result from project activities. Firebreaks or guards shall be constructed and maintained at locations shown on the drawings.

All public access or haul roads used by the contractor during construction of the project shall be sprinkled or otherwise treated to fully suppress dust. All dust control methods shall ensure safe construction operations at all times. If chemical dust suppressants are applied, the material shall be a commercially available product specifically designed for dust suppression and the application shall follow manufacturer's requirements and recommendations. A copy of the product data sheet and manufacturer's recommended application procedures shall be provided to the engineer 5 working days before the first application.

6. Maintenance, removal, and restoration

All pollution control measures and temporary works shall be adequately maintained in a functional condition for the duration of the construction period. All temporary measures shall be removed and the site restored to near original condition.

7. Measurement and payment

Method 1—For items of work for which specific unit prices are established in the contract, each item is measured to the nearest unit applicable. Payment for each item is made at the contract unit price for that item. For water or chemical suppressant items used for dust control for which items of work are established in section 8 of this specification, measurement for payment will not include water or chemical suppressants that are used inappropriately or excessive to need. Such payment will constitute full compensation for the completion of the work.

Method 2—For items of work for which lump sum prices are established in the contract, payment is made as the work proceeds and supported by invoices presented by the contractor that reflect actual costs. If the total of all progress payments is less than the lump sum contract price for this item, the balance remaining for this item will be included in the final contract payment. Payment of the lump sum contract price will constitute full compensation for completion of the work.

Method 3—For items of work for which lump sum prices are established in the contract, payment will be prorated and provided in equal amounts on each monthly progress payment estimate. The number of months used for prorating shall be the number estimated to complete the work as outlined in the contractor's approved construction schedule. The final month's prorate amount will be provided with the final contract payment. Payment as described will constitute full compensation for completion of the work.

All Methods—The following provisions apply to all methods of measurement and payment. Compensation for any item of work described in the contract, but not listed in the bid schedule is included in the payment for the item of work to which it is made subsidiary. Such items, and the items to which they are made subsidiary, are identified in section 8 of this specification.

8. Items of work and construction details

8. ITEMS OF WORK AND CONSTRUCTION DETAILS

It has been determined that this project comes under the LDEQ Louisiana Pollution Discharge Elimination System (LPDES), and that a Storm Water Pollution Prevention Plan is required for this project since the disturbed area will be greater than 5 acres in size. Please note that the rules for LPDES process relative to construction sites are contained in the LAC Title 33:IX.2341. Rules for storm water discharges associated with construction sites covered by general permits are found in LAC Title 33:IX.2345.

Items of work and construction details to be performed in conformance with this specification are:

a. Subsidiary Item, Pollution Control

(1) This item shall consist of all work necessary to control erosion and sediment pollution, chemical pollution, water pollution, and air pollution during the period of this contract. The contractor shall perform the work in a manner that will reduce erosion, minimize sediments and other pollutants to the water and streams, and create a minimum of air pollution. As a part of this requirement, a Storm Water Pollution Prevent Plan shall (SWPPP) be developed by the Contractor in compliance with the following sections.

(2) SWPPP Requirements

A. General SWPPP Requirements

The contents of the SWPPP shall address all of the applicable items identified in Part IV of Permit No. LAR100000. Attached is a draft copy of an SWPPP the Contractor may use to develop the site specific SWPPP for implementation on this contract.

B. Scope

The purpose of the SWPPP is to control soil erosion and the resulting sediment from leaving the project work area and prevent pollution of any water body caused by the runoff from the area of construction activities under this contract, under the terms of Permit No. LAR100000. The Contractor shall develop a site specific SWPPP that corresponds with the proposed construction activities by type and time of occurrence, and implement the SWPPP in a manner which will meet the requirements Permit No. LAR 100000. The Contractor shall also assure that all subcontractors have reviewed the plan and that they comply with its provisions.

C. Definitions

Construction Owner – The construction owner is the party that has operational control over plans and specification including the ability to make changes to those items. The Natural Resources Conservation Service is the construction owner.

Construction Operator – The construction operator is the party having day-to-day operational control over those activities at a project site that are necessary to ensure compliance with the SWPPP or other permit conditions. The Contractor is the construction operator.

Notice of Intent (NOI) – A document that is completed and submitted to the Louisiana Department of Environmental Quality (LDEQ) as application for coverage to discharge under the Permit No. LAR100000.

Notice of Termination (NOT) – A document that is completed and submitted to the Louisiana Department of Environmental Quality (LDEQ) to terminate permission to discharge under the Permit No. LAR100000. The NOT should be filed when the permittee is no longer the Construction Operator of the contract, or when termination of storm water discharge has been accomplished.

D. Notice of Intent (NOI)

The Government will submit an NOI to the LDEQ as application for the Government's coverage under the terms of the Permit No. LAR100000. If a specific LPDES permit applicable to this construction has been received from the LDEQ in response to the NOI, a copy of the permit, as well as a copy of the Government's NOI will be provided to the Contractor at the Pre-Construction Conference. The Contractor shall make site specific modifications necessary to the attached preliminary SWPPP, attach the Construction Owner/Operator certification statement provided, and certify by signing the statement as the Construction Operator. The Contractor shall submit a NOI to the LDEQ as application for his/her coverage under the terms of Permit No. LAR100000 prior to the initiation any construction activities. An Environmental Assessment has been made for this project in accordance with NEPA requirements. As such the Government will provide the Contractor with specific information regarding the Threatened and Endangered Species and Historical Properties sections of the NOI. Certified mail is recommended for the Contractor's proof of submittal. A copy of the Contractor's NOI submittal shall be provided to the Contracting Officer at the time of submittal. LDEQ will provide a LPDES permit to the Contractor in response to the NOI submitted. Then NOI's of both the Contractor and the Government, as well as the specific permits in response to the NOI, shall be posted at the job site by the Contractor.

E. Record Retention Requirements

Records of the NOT as well as any data used to complete it, the SWPPP, and any reports required by Permit No. LAR100000 shall be retained by the permittee for at least three years from the date that the site is finally stabilized. Certification of the SWPPP by the Contractor or any sub-contractor is required in accordance with Permit No. LAR100000.

F. Plan Accessibility

The Contractor shall post a notice near the main entrance of the construction site with the following information:

- The LDPES permit number (LAR100000) and effective date of this permit
- The name and telephone number of a local contact person
- A brief description of the project
- The location of the SWPPP

A copy of the SWPPP required by the permit, including a copy of the permit language shall be retained at the construction site from the date of construction initiation to the date of stabilization. The permittee with day-to-day operational control over the SWPPP implementation shall have a copy of the plan available at a central location on-site for the use of operators and those identified as having responsibilities under the plan.

G. LDEQ Correspondence

Any written correspondence concerning the NOI, NOT, SWPPP, or discharges covered under Permit No. LAR100000, shall be identified by permit number, if one has been assigned, and a copy provided to the Contracting Officer. LDEQ mailing address is as follows:

Louisiana Department of Environmental Quality
Office of Environmental Services
P.O. Box 4313
Baton Rouge, LA 70821-4313
Attn: Permits Division

H. Maintenance and Surveillance Fees

The Contractor, without additional expense to the Government, shall be responsible for paying any state required annual maintenance and surveillance fee for work associated with coverage under Permit No. LAR100000.

I. Control Measures

Control measures that will be implemented shall be in compliance with Permit No. LAR100000, and identified in the SWPPP. The control measures shall include erosion control measures for both short and long term erosion control measures (BMP's) both vegetative and structural.

J. Maintenance and Inspection

The Contractor shall maintain the temporary and permanent vegetation, erosion and sediment control measures, and other protective measures in good and effective operating condition. The Contractor shall inspect disturbed areas of the construction site, areas used for storage of materials, stabilization practices, structural practices, and other controls at least once every fourteen (14) calendar days, before anticipated storm events expected to cause a significant amount of runoff, and within 24 hours of the end of any storm that produces 0.5 inches or more of precipitation.

A report of each inspection shall be made and included with the daily QC report. Any items identified in the inspection requiring repairs or restoration shall be immediately corrected and actions taken reported in the daily QC report.

K. Notice of Termination (NOT)

Upon stabilization and elimination of all storm water discharges authorized by Permit No. LAR100000, a Notice of Termination (NOT) shall be certified and submitted by the Contractor to the Permits Division of LDEQ. Certified mail is recommended as proof of the NOT submittal. A copy of the Contractor's NOT submittal shall be provided to the Contracting Officer at the time of submittal, prior to final acceptance of the work.

- (3) All paints and hazardous materials shall be kept in the original containers and tightly sealed with the manufacturer's label attached. These must be properly stored when not in use. They shall also be stored in a neat orderly manner in their original containers. Disposal of surplus materials shall be in accordance with the manufacturer's or State and Local regulations and recommended methods. Containers shall be empty before disposal.
- (4) Petroleum products such as fuels and lubricants will be stored in tightly sealed containers that are clearly labeled. The storage and dispensing of all petroleum products will be in accordance with part 1926.152 of the OSHA Construction Industry Safety and Health Standards. All spills will be cleaned up on the same workday of the spill occurrence or whenever discovered.
- (5) Soils contaminated with petroleum products will be removed from the site and disposed of in accordance with State and Local regulations.
- (6) All onsite vehicles and equipment shall be monitored for leaks and receive regular preventive maintenance to reduce the chance for leakage. Leaks shall be repaired as soon as they are identified.
- (7) Sumps used to control chemical pollution shall be sealed with plastic sheets having a minimum thickness of 20 mils.
- (8) The contractor shall anchor all temporary materials used for pollution control in such a manner to prevent its being transported off the worksite by storm runoff water. Damage

caused by clogging of downstream bridges and/or culverts by such temporary materials being transported downstream by storm water shall be the responsibility of the contractor.

- (9) No pumping of bilge into waters of the state will be allowed on the job site.
- (10) The Contractor shall have an oil boom on site at all times sufficient in size to encompass the largest piece of equipment used in construction of the project. The boom shall be sufficient to contain any leaks or spills that may occur from the equipment.
- (11) The contractor shall make maximum use of biobased products that are United States Department of Agriculture (USDA)-designated items. Information about this requirement and these products is available at <http://www.biopreferred.gov>.
- (12) Section 7, Measurement and payment. No separate payment will be made for this item. Payment for this item will be included in the payment for Bid Item 2, Contractor Quality Control.

DRAFT

**STORM WATER POLLUTION
PREVENTION PLAN**

**ME-21 Grand Lake Shoreline Protection
Cameron Parish, Louisiana**

DATE

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1.0 SITE OWNER

CWPPRA Project Proponent:

State of Louisiana
Office of State Lands
P.O. Box 94095
Baton Rouge, LA 70804-9095

Miami Corporation
309 Rue La France, Suite 201
Lafayette, LA 70508

CWPPRA Contracting Agency (During Construction):

USDA Natural Resources Conservation Service
3737 Government St.
Alexandria, LA 71302

2.0 SWPPP COORDINATOR AND DUTIES

The construction site SWPPP coordinator for this Project is (**Insert appropriate person's name, title, contact no., etc.**). Mr. /Ms. _____ duties include the following:

- Implement the SWPPP
- Oversee installation of control measures
- Conduct inspections of control measures
- Identify deficiencies in the SWPPP or control measures and take corrective action

3.0 SITE LOCATION

Project Name and Location: ME-21 Grand Lake Shoreline Protection
Cameron Parish, Louisiana

The approximate coordinates of the site are: Latitude 29° 51' 30"
Longitude 92° 48' 55"

Location map and site plan: Included in the construction drawings.

4.0 CONSTRUCTION TYPE

Construction approximately 5,700 LF of shoreline protection measures:

- Dredge access flotation channels.
- Dispose of spoil material on Tebo Point side of rock dike up to elevation +4.0.
- Store remaining spoil adjacent to flotation channels.
- Construct approximately 5,700 LF of rock dike breakwater.
- Move spoil material back to flotation channels upon project completion.

5.0 EXISTING CONDITIONS

Construction activities will entail placing rock dike in open water.. For antecedent moisture condition II, the runoff curve number will be 94 before and after construction.

6.0 CONSTRUCTION SEQUENCE

The anticipated sequence of construction for the rock riprap dike installation is as follows:

1. Dredge access flotation channels.
2. Dispose of spoil material on Tebo Point side of rock dike up to elevation +4.0.
3. Store remaining spoil adjacent to flotation channels.
4. Construct approximately 5,700 LF of rock dike breakwater.
5. Move spoil material back to flotation channels upon project completion.

A summary of the quantities for each major item of work are as follows:

Mobilization and Demobilization	1	LS
Contractor Quality Control	1	LS
Construction Surveys	1	LS
Excavation, Flotation Access Dredging	1	LS
Geotextile	41,700	SY
Rock Riprap	42,600	Tons
Identification Markers & Plaques, Lighted	10	EA
Permanent Warning Signs	13	EA
Identification Markers & Plaques, Lighted	13	EA
Temporary Warning Signs	4	EA
Identification Markers & Plaques, Lighted	4	EA
Warning Buoys	3	EA
Settlement Plates	3	EA

7.0 ENDANGERED OR THREATENED SPECIES

There are no endangered or threatened species within the construction activities.

8.0 POTENTIAL CONTAMINANTS

The following list of materials or substances are expected to be present during construction which could impact water or air quality if improperly used.

Petroleum Based Products
Earthfill (sediment)

The contractor will be responsible for spill prevention and cleanup. The contractor will submit an emergency response plan to the Contracting Officer prior to the start of work

on this contract. The contractor's emergency response plan will be clearly posted and site personnel will be made aware of the procedures and the location of the information and cleanup supplies.

The following are the Material Management Practices that will be used to reduce the risk of spills or other accidental exposure of materials and substances to storm runoff water:

An effort will be made to store only enough products required to do the job. All materials stored on site will be stored in a neat, orderly manner in their appropriate containers and, if possible under a roof or other enclosure. Products will be kept in their original containers with the manufacturers' label. Manufacturers' recommendations for proper use and disposal will be followed. Containers of products will be empty before disposal.

The following additional Practices will be used to reduce the risks associated with hazardous materials:

Hazardous products will be kept in original containers unless containers cannot be resealed. Original labels and materials safety data will be retained. Surplus products and containers will be properly disposed of in accordance with manufacturers' or State and local regulations and recommended methods. Containers will be empty before disposal.

Petroleum Products:

All on site vehicles will be monitored for leaks and receive regular preventive maintenance to reduce the chance of leakage. Petroleum products will be stored in tightly sealed containers, which are clearly labeled. Any asphalt substances used onsite will be applied according to manufacturer's recommendations.

All spills of petroleum products will be cleaned up immediately. All contaminated soils will be removed from the site and disposed of in accordance with State and local regulations.

Fertilizers:

Fertilizers will be applied in the amount and at the rate recommended in the project specifications. These rates shall not exceed the manufacturers' recommendation. Storage will be in a covered shed. The contents of any partially used bags of fertilizer will be transferred to an acceptable sealable plastic container to avoid spills.

Spill Control Practices - The following additional practices will be followed for spill prevention and cleanup:

Manufacturers' recommended methods for spill cleanup will be clearly posted and site personnel will be made aware of the procedures and the location of the information and cleanup supplies. Materials and equipment necessary for spill cleanup will be available onsite.

All spills of hazardous materials will be cleaned up immediately after discovery. Spills of toxic or hazardous materials will be reported to the appropriate State and local government agency. The contractor will be responsible for spill prevention and cleanup.

9.0 CONTROLS TO REDUCE POLLUTANTS

The contractor will be required to prepare a written plan for pollution control at the project site. The plan will outline construction sequences and construction activities so that the least area possible is disturbed by the various construction activities in the course of the construction of the project. It will contain management provisions for storm water POLLUTION control.

It is the responsibility of the Contractor to develop a **Site Specific Storm Water Pollution Prevention Plan** around the proposed construction operations. The following Erosion and Sediment Control plan is offered for consideration by the Contractor in the development of the plan for the installation of the structures. The contractor is reminded that **this is a draft plan only** and is not intended to dictate a construction sequence or any construction activities.

Temporary Erosion and Sediment Controls:

Excavation and Spoil Placement is as follows:

1. Excavate access and flotation channels and place spoil in spoil placement areas
2. Mark location of spoil placement areas with temporary signs and lights to keep boat traffic away from placed spoil
3. Place any spoil remaining at the end of construction back into the excavated flotation channel.

Rock Riprap Dike installation is as follows:

1. Place geotextile on rock dike footprint
2. Place the rock riprap

Waste Disposal

- All chemical, hazardous and sanitary waste materials will be disposed of in an approved offsite disposal area. Chemical waste shall be temporarily stored in leak proof containers until disposed of in an approved area.
- Accidental chemical spills will be properly cleaned up on the same day of occurrence. Daily inspection will be made to determine needed cleanup.
- Sanitary waste will be collected from portable units a minimum of two times per week to avoid overfilling.

11.0 CERTIFICATION OF COMPLIANCE WITH REGULATIONS

All local and state regulations will be adhered to concerning the burning of organic materials or disposal of organic, chemical, and sanitary waste. This project has been authorized by the Department of the Army in accordance with Section 404 of the Clean Water Act (CWA). The State of Louisiana, Department of Environmental Quality, has issued a Water Quality Certification permit. There are no other applicable State or Federal requirements for sediment and erosion site plans or storm water management site plans.

11.0 MAINTENANCE AND INSPECTION PROCEDURES

The contractor will be responsible for intermittent review and inspection of the operation and maintenance of all pollution control measures throughout the life of the contract. Visual inspections of all cleared and graded areas of the construction site will be performed daily. Also inspection of the conditions and the need for repair shall be made after each storm rainfall exceeding 0.5 inch. Daily inspections of the need for clean up of chemical spills and sanitary facilities are specified.

The inspections will verify that the procedures used to prevent storm water contamination from construction materials are effective. Any items requiring maintenance will be immediately addressed.

12.0 CERTIFICATION

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

Signature: _____

Date: _____

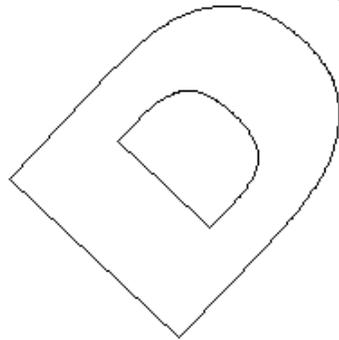
Name: _____

Title: _____

Firm: _____

Address: _____

Phone: _____



13.0 SUBCONTRACTOR CERTIFICATION

I certify under penalty of law that I understand the terms and conditions of the general Louisiana Pollution Discharge Elimination Systems (LPDES) permit that authorizes the storm water discharges associated with industrial activity from the construction site identified as part of this certification.

Signature: _____

Date: _____

Name: _____

Title: _____

Firm: _____

Address: _____

Phone: _____

Signature: _____

Date: _____

Name: _____

Title: _____

Firm: _____

Address: _____

Phone: _____



**To: Prospective Applicants for a Stormwater
General Permit Associated with Construction
Activity Greater than 5 Acres**

Attached is a **Stormwater General Permit Associated with Construction Activity Greater than 5 Acres Notice of Intent (NOI) CSW-G**, for a Louisiana Pollutant Discharge Elimination System (LPDES) permit, authorized under EPA's delegated NPDES program under the Clean Water Act. To be considered complete, every item on the form must be addressed and the last page signed by an authorized company agent. If an item does not apply, please enter "NA" (for not applicable) to show that the question was considered.

Two copies (one original and one copy) of your **completed NOI** should be submitted to:

Mailing Address:

Department of Environmental Quality
Office of Environmental Services
Post Office Box 4313
Baton Rouge, LA 70821-4313
Attention: Water Permits Division

Physical Address (if NOI is hand delivered):

Department of Environmental Quality
Office of Environmental Services
602 N Fifth Street
Baton Rouge, LA 70802
Attention: Water Permits Division

Please be advised that completion of this NOI may not fulfill all state, federal, or local requirements for facilities of this size and type.

According to L. R. S. 48:385, any discharge to a state highway ditch, cross ditch, or right-of-way shall require approval from:

Louisiana DOTD
Office of Highways
Post Office Box 94245
Baton Rouge, LA 70804-9245
(225) 379-1927

AND

Louisiana DHH
Office of Public Health
Center for Environmental Services
Post Office Box 4489
Baton Rouge, LA 70821-4489
(225) 342-7395

A copy of the LPDES regulations may be obtained from the Department's website at <http://www.deq.louisiana.gov/portal/tabid/1674/Default.aspx#Title33> or by contacting the Office of Environmental Assessment, Regulations Development Section, Post Office Box 4314, Baton Rouge, Louisiana 70821-4314, phone (225) 219-3550.

After the review of the NOI, this Office will issue written notification to those applicants who are accepted for coverage under this general permit.

For questions regarding this NOI please contact the Water Permits Division at (225) 219-3181. For help regarding completion of this NOI please contact DEQ, Small Business/Small Community Assistance at 1-800-259-2890.

STATE OF LOUISIANA
DEPARTMENT OF ENVIRONMENTAL QUALITY
Office of Environmental Services, Permits Division
Post Office Box 4313
Baton Rouge, LA 70821-4313
PHONE#: (225) 219-3181

**LPDES NOTICE OF INTENT (NOI) TO DISCHARGE STORMWATER ASSOCIATED
WITH CONSTRUCTION ACTIVITY GREATER THAN 5 ACRES**
(Attach additional pages if needed.)

Submission of this Notice of Intent constitutes notice that the party identified in Section I of this form intends to be authorized by an LPDES permit issued for stormwater discharges associated with construction activity in Louisiana. In order to be automatically authorized under General Permit LAR100000 you must submit a complete and accurate NOI to LDEQ.

EVERY ITEM MUST BE COMPLETED.

Submission of this Notice of Intent also constitutes that implementation of the Storm Water Pollution Prevention Plan required under the general permit will begin at the time the permittee commences work on the construction project identified in Section II below.

SECTION I - FACILITY INFORMATION

A. Permit is to be issued to the following: (must be a party having operational control over construction plans and specifications and /or a party having day-to-day operational control over those activities at a project site which are necessary to ensure compliance with the storm water pollution prevention plan or other permit conditions LAC 33:IX.2501.B and LAC 33:IX.2503.A and B).

1. Legal Name of Applicant

(Company, Partnership, Corporation, etc.) _____

Project Name _____

(NOTE: Only one NOI needs to be submitted to cover all of the permittee's activities on the common plan of development or sale (e.g., you do not need to submit a separate NOI for each separate lot in a **residential subdivision** or for two separate buildings being constructed on the same property, provided your SWPPP covers each area for which you are the operator.)

Mailing Address _____

Zip Code: _____

If the applicant named above is not also the owner, state owner name, phone # and address.

Check status: Federal Parish Municipal
 State Public Private Other: _____

2. Location of project. Provide a specific address, street, road, highway, interstate, and/or River Mile/Bank location of the project for which the NOI is being submitted.

City _____

Zip Code _____

Parish _____

SECTION I - FACILITY INFORMATION

Front Gate Coordinates:

Latitude- ____ deg. ____ min. ____ sec. Longitude- ____ deg. ____ min. ____ sec.

Method of Coordinate Determination:

(ex:<http://terraserver-usa.com/Quad Map>, Previous Permit, website, GPS)

Is the facility located on Indian Lands? Yes No

B. Stormwater Pollution Prevention Plan Information.

1. Has the Stormwater Pollution Prevention Plan (SWPPP) been prepared? (NOTE: The SWPPP must be prepared prior to submittal of the NOI. Do **not** submit SWPPP with this NOI.)

Yes No

2. Indicate address of location of SWPPP if different from Project Location. (N/A if SWPPP is located at the construction site.)

Address _____

City _____ State _____ Zip _____

C. Location Information

1. Estimated Construction Start Date: (mo/day/yr) _____

2. Estimated Construction Completion Date: (mo/day/yr) _____

3. Estimate of area to be disturbed (to nearest acre) _____

4. Is the project part of a larger development or subdivision? Yes No

If yes, provide the name of the development or subdivision. _____

D. Discharge Information

1. Indicate how the storm water run-off reaches state waters (named water bodies). This will usually be either *directly*, by *open ditch* (if it is a highway ditch, indicate the highway), or by *pipe*. Please specifically name all of the minor water bodies that your discharge will travel through on the way to a major water body. This information can be obtained from U.S.G.S. Quadrangle Maps. Maps can also be obtained online at <http://map.deq.state.la.us/> or www.topozone.com. Private map companies can also supply you with these maps. If you cannot locate a map through these sources you can contact the Louisiana Department of Transportation and Development at the address on the first page of this form.

By _____ (effluent pipe, ditch, etc.);

thence into _____ (effluent pipe, ditch, etc.);

thence into _____ (Parish drainage ditch, canal, etc.);

thence into _____ (named bayou, creek, stream, etc.)

2. Based on Appendix C, the Outstanding Natural Resource Water (ONRW) list, does your stormwater run-off flow directly into a waterbody listed as an ONRW?

Yes No

NOTE: If the discharge will ultimately enter a scenic stream, contact the Louisiana Department of Wildlife and Fisheries (LDWF) Scenic Stream Division at 318-343-4044.

SECTION I - FACILITY INFORMATION

3. Based on Appendix A, Endangered Species Guidance, are there any listed endangered or threatened species in the project area?

Yes No

NOTE: Use the Endangered Species Guidance in Appendix A to determine if there are listed endangered or threatened species in the project area. Applicants should contact the U. S. Fish and Wildlife Service (address is in Appendix A) for guidance if they need assistance in making a determination.

4. Based on Appendix B, Historic Properties Guidance, are any historic properties listed or eligible for listing on the National Register of Historic Places located on the facility or in proximity to the discharge?

Yes No

5. Was the State Historic Preservation Office (see Part I.A.3.f of the permit) involved in your determination of eligibility?

Yes No

E. Additional Discharge Information

1. Will the facility being constructed result in a discharge that will require a water discharge permit (including sanitary wastewater, such as a subdivision or apartment complex)?

Yes No

2. If yes, the party or developer responsible for construction plans and specifications must provide this information to: DEQ, OES, P.O. Box 4313, Baton Rouge, LA 70821-4313, Attn: Water Permits Division, and obtain a preliminary determination whether permit limits may be more stringent. **Failure to submit this information may result in denial of this and/or any future applications for discharge of wastewater to waters of the state. The "Request for Preliminary Determination of LPDES Permit Issuance Form" requests the information referenced above and can be accessed on our web page <http://www.deq.louisiana.gov> under DIVISIONS, Water Permits, LPDES Permits, LPDES forms**

SECTION II – LAC 33.I.1701 REQUIREMENTS

- A. Does the company or owner have federal or state environmental permits in other states that are identical to, or of a similar nature to, the permit for which you are applying? (This requirement applies to all individuals, partnerships, corporations, or other entities who own a controlling interest of 50% or more in your company, or who participate in the environmental management of the facility for an entity applying for the permit or an ownership interest in the permit.)

Permits in Louisiana. List Permit Numbers: _____

Permits in other states (list states): _____

No environmental permits.

- B. Do you owe any outstanding fees or final penalties to the Department? Yes No

If yes, please explain.

- C. Is your company a corporation or limited liability company? Yes No

If yes, is the corporation or LLC registered with the Secretary of State? Yes No

SECTION III - SIGNATURE

According to the Louisiana Water Quality Regulations, LAC 33:IX.2503, the following requirements shall apply to the signatory page in this application:

Chapter 25. Permit Application and Special LPDES Program Requirements

2503. Signatories to permit applications and reports

- A. All permit applications shall be signed as follows:
1. For a corporation - by a responsible corporate officer. For the purpose of this Section responsible corporate officer means:
 - (a) A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation, or
 - (b) The manager of one or more manufacturing, production, or operating facilities provided: the manager is authorized to make management decisions that govern the operation of the regulated facility, including having the explicit or implicit duty of making major capital investment recommendations and initiating and directing other comprehensive measures to ensure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken together complete and accurate information for permit application requirements; and the authority to sign documents has been assigned or delegated to the manager in accordance with corporation procedures.
- NOTE:** LDEQ does not require specific assignments or delegations of authority to responsible corporate officers identified in the Permit **Standard Permit Conditions, Part VI.G.1.a(1)** The agency will presume that these responsible corporate officers have the requisite authority to sign permit applications unless the corporation has notified the state administrative authority to the contrary. Corporate procedures governing authority to sign permit applications may provide for assignment or delegation to applicable corporate positions under Permit **Standard Permit Conditions, Part VI.G.1a.(2)** rather than to specific individuals.
2. For a partnership or sole proprietorship - by a general partner or the proprietor, respectively; or
 3. For a municipality, state, federal or other public agency – by either a principal executive officer or ranking elected official. For the purposes of this section a principal executive officer of a federal agency includes:
 - (a) The chief executive officer of the agency, or
 - (b) A senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of EPA).

CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage this system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I also certify that a storm water pollution prevention plan, including both construction and post construction controls, has been prepared for the site in accordance with the permit and that such plan complies with approved State, Tribal and/or local sediment and erosion plans or permits and/or storm water management plans or permits. I am aware that signature and submittal of the NOI is deemed to constitute my determination of eligibility under one or more of the requirements of Permit Part I.A.3.e(1), related to the Endangered Species Act requirements. To the best of my knowledge, I further certify that such discharges and discharge related activities will not have an effect on properties listed or eligible for listing on the National Register of Historic Places under the National Historic Preservation Act, or are otherwise eligible for coverage under Part I.A.3.f of the permit. I am also aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

NOTE: SIGNATURE MUST COMPLY WITH REQUIREMENTS STATED ABOVE IN SECTION III.

Signature _____

Printed Name _____

Title _____

Company _____

Date _____

Telephone _____

*****ANY NOI THAT DOES NOT CONTAIN ALL OF THE REQUESTED INFORMATION WILL BE CONSIDERED INCOMPLETE. NOI PROCESSING CANNOT PROCEED UNTIL ALL REQUIRED INFORMATION HAS BEEN SUBMITTED.**

APPENDIX A

ENDANGERED SPECIES GUIDANCE – LARGE CONSTRUCTION GP

I. INSTRUCTIONS

A list of endangered and threatened species that EPA has determined may be affected by the activities covered by the General Permit for Construction Activities Five Acres or More is available on the LDEQ Internet website at <http://www.deq.louisiana.gov/portal/>. The list is included in a document titled *“Implementation Strategy for the Louisiana Department of Environmental Quality and the U.S. Fish and Wildlife Service – Memorandum of Understanding” (MOU)*. Go through the following links to find the MOU: INFO ABOUT Water – Permits – LPDES Program Page – OTHER LPDES DOCUMENTS – 2007 Endangered Species Listing – Fish and Wildlife Service MOU. The species are listing by parish is found near the end of the MOU. You should note that the list is updated annually; therefore, the title “2008 Endangered Species Listing” will become the “2009 Endangered Species Listing” late in 2009, and will become the “2010 ... Listing” late in 2010, etc.

In order to be eligible for coverage under this permit, operators must:

Determine whether any species listed in this Guidance or critical habitat are in proximity to the facility,

Pursuant to Permit Part I.A.3.e follow the procedures found in this Guidance to protect listed endangered and threatened species and designated critical habitat and determine that the storm water discharges and BMPs to control storm water run off covered under this permit meet one or more of the eligibility requirements of Part I.A.3.e.(1) of this permit. Signature and submittal of the Notice of Intent form is deemed to constitute the Operator's compliance with eligibility requirements for permit coverage.

To determine permit eligibility and to avoid unauthorized impacts upon threatened or endangered species or on the critical habitat for those species, you must follow steps 1 through 4 (and 5 if applicable), below when completing the NOI form and when developing the pollution prevention plan.

NOTE: At any step in the determination, applicants may contact the U.S. Fish and Wildlife Service (FWS) for guidance. That request should be in writing and should include a description of the facility and a topographic map depicting the locations of the facility, the proposed construction activities, and the associated storm water discharges.

U.S. Fish and Wildlife Service
646 Cajundome Blvd.
Suite 400
Lafayette, LA 70506
(337) 291-3108

STEP 1: DETERMINE IF THE CONSTRUCTION SITE OR ASSOCIATED STORM WATER DISCHARGES ARE WITHIN THE VICINITY OF FEDERALLY LISTED THREATENED OR ENDANGERED SPECIES, OR THEIR DESIGNATED CRITICAL HABITAT.

If either the proposed site or the path of storm water from the site to the receiving stream is in a parish included on the Endangered Species List, the applicant should proceed to **Step 2** below. If, however, neither is located in a listed parish, then the applicant should proceed directly to **Step 5**.

If no species are listed in the site's parish or if a facility's parish is not found on the list, the applicant is eligible for permit coverage. Where a project is located in more than one parish, the lists for all parishes shall be reviewed.

(EPA notes that many measures imposed to protect listed species under steps 3 through 4 will also protect critical habitat. However, obligations to ensure that an action is not likely to result in the destruction or adverse modification of critical habitat are separate from those of ensuring that an action is not likely to jeopardize the existence of threatened and endangered species. Thus, meeting the eligibility requirements of this permit may require measures to protect critical habitat that are separate from those to protect listed species.).

STEP 2: DETERMINE IF ANY SPECIES MAY BE FOUND "IN PROXIMITY" TO THE CONSTRUCTION ACTIVITY'S STORM WATER DISCHARGES:

A species is in proximity to a construction activity's storm water discharge when the species is:

- Located in the path or immediate area through which or over which contaminated point source storm water flows from construction activities to the point of discharge into the receiving water; or
- Located in the immediate vicinity of, or nearby, the point of discharge into receiving waters; or
- Located in the area of a site where storm water BMPs are planned or are to be constructed.

The area in proximity to be searched/surveyed for listed species will vary with the size and structure of the construction activity, the nature and quantity of the storm water discharges, and the type of receiving waters. Given the number of construction activities potentially covered by the permit, no specific method to determine whether species are in proximity is required for permit coverage. Instead, operators should use the method or methods which best allow them to determine to the best of their knowledge whether species are in proximity to their particular construction activities. These methods may include:

- Conducting visual inspections: This method may be particularly suitable for construction sites that are smaller in size or located in non-natural settings such as highly urbanized areas or industrial parks where there is little or no natural habitat, or for construction activities that discharge directly into municipal storm water collection systems.
- Contacting the nearest State or Tribal Wildlife Agency or U.S. Fish and Wildlife Service (FWS) offices. Many endangered and threatened species are found in well-defined areas or habitats. That information is frequently known to State, Tribal, or Federal wildlife agencies.
- Contacting local/regional conservation groups. These groups inventory species and their locations and maintain lists of sightings and habitats.
- Conducting a formal biological survey. Larger construction sites with extensive storm water discharges may choose to conduct biological surveys as the most effective way to assess whether species are located in proximity and whether there are likely adverse effects.

- Conducting an Environmental Assessment Under the National Environmental Policy Act (NEPA). Some construction activities may require environmental assessments under NEPA. Such assessments may indicate if listed species are in proximity. (Construction General Permit coverage does not trigger NEPA because it does not regulate any dischargers subject to New Source Performance Standards under Section 306 of the Clean Water Act. See CWA, 511(c). However, some construction activities might require review under NEPA because of Federal funding or other Federal nexus.)

If no species are in proximity, an operator is eligible for Construction General Permit coverage under Permit Part I.A.3.e.(1)(a).

If listed species are found in proximity to a facility, operators must indicate the location and nature of this presence in the storm water pollution prevention plan and follow step 3 below.

STEP 3: DETERMINE IF SPECIES OR CRITICAL HABITAT COULD BE ADVERSELY AFFECTED BY THE CONSTRUCTION ACTIVITY'S STORM WATER DISCHARGES OR BY BMPs TO CONTROL THOSE DISCHARGES.

Scope of Adverse Effects: Potential adverse effects from storm water include:

- Hydrological. Storm water may cause siltation, sedimentation or induce other changes in the receiving waters such as temperature, salinity or pH. These effects will vary with the amount of storm water discharged and the volume and condition of the receiving water. Where a storm water discharge constitutes a minute portion of the total volume of the receiving water, adverse hydrological effects are less likely.
- Habitat. Storm water may drain or inundate listed species habitat.
- Toxicity. In some cases, pollutants in storm water may have toxic effects on listed species.

The scope of effects to consider will vary with each site. Operators must also consider the likelihood of adverse effects on species from any BMPs to control storm water. Most adverse impacts from BMPs are likely to occur from the construction activities. However, it is possible that the operation of some BMPs (for example, larger storm water retention ponds) may affect endangered and threatened species.

If adverse effects are determined to be not likely, then the operator is eligible for permit coverage under Part I.A.3.e(1)(a).

If adverse effects are likely, operators should follow step 4 below.

STEP 4: DETERMINE IF MEASURES CAN BE IMPLEMENTED TO AVOID ANY ADVERSE EFFECTS:

If an operator determines that adverse effects cannot be ruled out or are likely, it can receive coverage if appropriate measures are undertaken to avoid or eliminate any actual or potential adverse effects prior to applying for permit coverage. These measures may involve relatively simple changes to construction activities such as re-routing a storm water discharge to bypass an area where species are located, relocating BMPs, or limiting the size of construction activity that will be subject to storm water discharge controls.

At this stage, operators must contact the FWS (or the National Marine Fisheries Service if referred to that Service by FWS) to see what appropriate measures might be suitable to avoid or eliminate adverse impacts to listed species and/or critical habitat. (See 50 CFR 402.13(b)). This can entail the initiation of informal consultation with the FWS (and/or NMFS, if appropriate) which is described in more detail below at step 5.

If operators adopt measures to avoid or eliminate adverse effects, they must continue to abide by them during the course of permit coverage. These measures must be described in the storm water pollution prevention plan and may be enforceable as permit conditions.

If appropriate measures to avoid the likelihood of adverse effects are not available to the operator, the operator should follow step 5 below.

STEP 5: DETERMINE IF THE ELIGIBILITY REQUIREMENTS OF PART I.A.3.E.(1)(b)-(d) CAN BE MET.

Where adverse effects are likely, the operator must contact FWS. Operators may still be eligible for permit coverage if any likelihood of adverse effects is addressed through meeting the criteria of Part I.A.3.e.(1)(b)-(d) of the permit if:

- I.A.3.e.(1)(b). The operator's activity has received previous authorization through an earlier Section 7 consultation or issuance of a Endangered Species Act (ESA) Section 10 permit (incidental taking permit) and that authorization addressed storm water discharges and/or BMPs to control storm water runoff (e.g., developer included impact of entire project in consultation over a wetlands dredge and fill permit under Section 7 of the ESA).

OR

- I.A.3.e.(1)(c). The operator's activity was previously considered as part of a larger, more comprehensive assessment of impacts on endangered and threatened species and /or critical habitat under Section 7 or Section 10 of the Endangered Species Act which accounts for storm water discharges and BMPs to control storm water runoff (e.g., where an area-wide habitat conservation plan and Section 10 permit is issued which addresses impacts from construction activities including those from storm water or a NEPA review is conducted which incorporates ESA Section 7 procedures).

OR

- I.A.3.e.(1)(d). The operator's activity was considered as part of a larger, more comprehensive site-specific assessment of impacts on endangered and threatened species by the owner or other operator of the site when it developed a SWPPP and that permittee met the eligibility requirements stated in items I.A.3.e.(1)(a), (b), (c), or (d) of the permit (e.g., owner was able to determine there would be no adverse impacts for the project as a whole under item (a), so contractor meets the eligibility requirements stated in item (d)). Utility companies applying for area-wide permit coverage meet the eligibility requirements stated in item (d) since authorization to discharge is contingent on a principal operator of a construction project having been granted coverage under this, or an alternative LPDES permit for the areas of the site where utilities installation activities will occur.

The determination of eligibility under the conditions of permit Parts I.A.3.e.(1) (b)-(d) shall be documented in the facility's SWPPP and copies of all applicable documents, such as FWS approval letters, included in the SWPPP. The operator must comply with any terms and conditions imposed under the eligibility requirements of permit Parts I.A.3.e.(1)(a), (b), (c), (d) to ensure that storm water discharges or BMPs to control storm water runoff are protective of listed endangered and threatened species and/or critical habitat. Such terms and conditions must be incorporated in the operator's storm water pollution prevention plan.

If the eligibility requirements of Part I.A.3.e.(1)(a)-(d) cannot be met then the operator may not receive coverage under this permit. Operators should then consider applying to LDEQ for an individual permit.

This permit does not authorize any taking (as defined under Section 9 of the Endangered Species Act) of endangered or threatened species unless such takes are authorized under Sections 7 or 10 the Endangered Species Act. Operators who believe their construction activities may result in takes of listed endangered and threatened species should be sure to get the necessary coverage for such takes through an individual consultation or Section 10 permit.

This permit does not authorize any storm water discharges or BMPs to control storm water runoff that are likely to jeopardize the continued existence of any species that are listed as endangered or threatened under the Endangered Species Act or result in the adverse modification or destruction of designated critical habitat.

II. ENDANGERED SPECIES PARISH LIST

At the time this general permit was finalized, the list could be located on the LDEQ website at:

<http://www.deq.louisiana.gov/portal/LinkClick.aspx?fileticket=NedPkSZRWhs%3d&tabid=243>

.

Please note that LDEQ internet addresses are subject to change as the LDEQ website is updated. If you are unable to locate the Endangered Species Parish List using this Internet address, you should try to locate it at www.deq.louisiana.gov/portal/ (go through the following links to find the MOU DOCUMENTS – 2007 Endangered Species Listing – Fish and Wildlife Service MOU.) If that doesn't work, you should do a Google search for "Department of Interior LDEQ Endangered Species List." If you are still unable to locate the list by utilizing these suggestions, please contact the Water Permits Division at (225) 219-3181 for assistance.

APPENDIX B HISTORIC PROPERTIES GUIDANCE

Applicants must determine whether their facility's storm water discharge has the potential to affect a property that is either listed or eligible for listing on the National Register of Historic Places.

For existing dischargers who do not need to construct BMPs for permit coverage, a simple visual inspection may be sufficient to determine whether historic properties are affected. However, for facilities which are new stormwater dischargers, applicants should conduct further inquiry to determine whether historic properties may be affected by the stormwater discharge or BMPs to control the discharge. In such instances, applicants should first determine whether there are any historic properties or places listed on the National Register or if any are eligible for listing on the register (e.g., they are "eligible for listing").

Due to the large number of entities seeking coverage under this permit and the limited number of personnel available to the State Historic Preservation Officer to respond to inquiries concerning the location of historic properties, it is suggested that applicants first access the "National Register of Historic Places" information listed on the Louisiana Office of Cultural Development's web page at the address listed below. The address for the Louisiana State Historic Preservation Officer is also listed below. Applicants may also contact city, parish or other local historical societies for assistance, especially when determining if a place or property is eligible for listing on the register.

The following scenarios describe how applicants can meet the permit eligibility criteria for protection of historic properties under this permit:

- (1) If historic properties are **not identified** in the path of a facility's storm water discharge or where construction activities are planned to install BMPs to control such discharges (e.g., diversion channels or retention ponds), or

if historic properties **are identified** but it is determined that they will **not be affected** by the discharge or construction of BMPs to control the discharge

then the applicant has met the permit eligibility criteria under Part I.A.3.f.

- (2) If historic properties **are identified** in the path of a facility's storm water discharge or where construction activities are planned to install BMPs to control such discharges, and it is determined that **there is the potential** to adversely affect the property, the applicant can still meet the permit eligibility criteria if he/she obtains and complies with a written agreement with the State Historic Preservation Officer which outlines measures the applicant will follow to mitigate or prevent those adverse effects. The contents of such a written agreement must be included in the facility's storm water pollution prevention plan.

In situations where an agreement cannot be reached between an applicant and the State Historic Preservation Officer, applicants should contact the Advisory Council on Historic Preservation listed below in this addendum for assistance.

The term "adverse effects" includes but is not limited to damage, deterioration, alteration or destruction of the historic property or place. LDEQ encourages applicants to contact the Louisiana State Historic Preservation Officer as soon as possible in the event of a potential adverse effect to a historic property.

Applicants are reminded that they must comply with all applicable State and local laws concerning the protection of historic properties and places.

I. Internet Information on the National Register of Historic Places

An electronic listing of the "National Register of Historic Places," as maintained by the Louisiana Office of Cultural Development, Division of Historic Preservation, can be accessed on the Internet at <http://www.crt.state.la.us/hp/historicplacesprogram.asp>. Remember to use small case letters when accessing Internet addresses.

II. Louisiana State Historic Preservation Officer (SHPO)

Louisiana, SHPO, Office of Cultural Development, P.O. Box 44247, Baton Rouge, LA 70804-4247. For questions contact the Section 106 Review Coordinator, Telephone: (225) 342-8170.

III. Advisory Council on Historic Preservation

Advisory Council on Historic Preservation, 12136 W. Bayaud Ave., Suite 330, Lakewood, CO 80228, Telephone (303) 969-5110, Fax: (303) 969-5115, Email: achp@achp.gov

APPENDIX C
Outstanding Natural Resource Waters

ATCHAFALAYA RIVER BASIN:

None

BARATARIA BASIN:

Bayou Des Allemands – from Lac Des Allemands to old US 90

Bayou Des Allemands – fro Hwy. 90 to Lake Salvador

CALCASIEU RIVER BASIN:

Calcasieu River – from LA Highway 8 to the Rapides/Allen Parish line

Calcasieu River – from Rapides-Allen Parish line to Marsh Bayou

Calcasieu River – from Marsh Bayou to saltwater barrier

Whiskey Chitto Creek – from the southern boundary of Fort Polk Military Reservation to the Calcasieu River

Six Mile Creek – East and West Forks from the southern boundary of Fort Polk Military Reservation to Whiskey Chitto Creek

Ten Mile Creek – from headwaters to Whiskey Chitto Creek

LAKE PONTCHARTRAIN BASIN:

Comite River – from Wilson-Clinton Highway to entrance of White Bayou

Amite River – from Mississippi State Line to LA Highway 37

Blind River – from the Amite River Diversion Canal to the mouth at Lake Maurepas

Blind River – from headwaters to Amite River Diversion Canal

Tickfaw River – from the Mississippi State Line to LA Highway 42

Tangipahoa River – from the Mississippi State Line to I-12

Chappepeela Creek – from Louisiana Highway 1062 to Tangipahoa River

Tchefuncte River – from headwaters to Bogue Falaya River, includes tributaries

Lower Tchefuncte River – from Bogue Falaya River to LA Highway 22

Bogue Falaya River – from headwaters to Tchefuncte River

Bayou Lacombe – from the headwaters to U.S. Highway 190

Bayou Lacombe – from U.S. Highway 190 to Lake Pontchartrain

Bayou Cane – from the headwaters to U.S. Highway 190

Bayou Cane – from U.S. Highway 190 to Lake Pontchartrain

Bayou Labranche – from headwaters to Lake Pontchartrain

Bayou Trepagnier – from Norco to Bayou Labranche

Bayou St. John

Bayou Chaperon

Bashman Bayou – from headwaters to Bayou Dupre

Bayou Dupre – from Lake Borgne Canal to Terre Beau Bayou

Lake Borgne Canal – from the Mississippi River siphon at Violet to Bayou Dupre; also called Violet Canal

Pirogue Bayou – from Bayou Dupre to New Canal

Terre Beau Bayou – from Bayou Dupre to New Canal

Bayou Bienvenue – from Bayou Villere to Lake Borgne

MERMENTAU RIVER BASIN:

None

VERMILION-TECHE RIVER BASIN:

Spring Creek – from headwaters to Cocodrie Lake

Bayou Cocodrie – from U.S. Highway 167 to the Bayou Boeuf-Cocodrie Diversion Canal

MISSISSIPPI RIVER BASIN:

None

OUACHITA RIVER BASIN:

Bayou Bartholomew – from Arkansas State Line to Ouachita River

Bayou de L'Outre – from the Arkansas State Line to the Ouachita River

Bayou D'Arbonne – from Bayou D'Arbonne Lake to the Ouachita River

Corney Bayou – from the Arkansas State Line to Corney Lake

Corney Bayou – from Corney Lake to Bayou D'Arbonne Lake

Middle Fork of Bayou D'Arbonne – from headwaters to Bayou D'Arbonne Lake

Little River – from Bear Creek to Catahoula Lake

Fish Creek – from headwaters to Little River

Trout Creek – from headwaters to Little River

Big Creek – from the headwaters to Little River

PEARL RIVER BASIN:

Holmes Bayou – from Pearl River to West Pearl River

West Pearl River – from headwaters to Holmes Bayou

West Pearl River – from Holmes Bayou to The Rigolets; includes the east and west mouths)

Morgan River – from Porters River to West Pearl River

Wilson Slough – from Bogue Chitto to West Pearl River

Bradley Slough - from Bogue Chitto to West Pearl River

Pushepatapa Creek – from headwaters and tributaries at Mississippi State Line to Pearl River flood plain

Bogue Chitto River – from Mississippi State Line to Pearl River Navigation Canal

RED RIVER BASIN:

Bayou Dorcheat – from Arkansas State Line to Lake Bistineau

Black Lake Bayou – from one mile north of Leatherman Creek to Black Lake

Saline Bayou – from headwaters near Arcadia to Saline Lake

Kisatchie Bayou – from its Kisatchie National Forest to Old River

Saline Bayou – from Larto Lake to Saline Lake

Bayou Cocodrie – from Little Cross Bayou to Wild Cow Bayou

SABINE RIVER BASIN:

Pearl Creek – from headwaters to Sabine River

TERREBONNE BASIN:

Bayou Penchant – from Bayou Chene to Lake Penchant



STATE OF LOUISIANA
DEPARTMENT OF ENVIRONMENTAL QUALITY

Office of Environmental Services, Permits Division
Post Office Box 4313
Baton Rouge, La 70821-4313
Phone#: (225) 219-3181

LPDES NOTICE OF TERMINATION (NOT) OF COVERAGE UNDER
LPDES GENERAL PERMIT FOR STORMWATER DISCHARGES
ASSOCIATED WITH CONSTRUCTION ACTIVITY GREATER THAN 5 ACRES

SECTION I - PERMIT INFORMATION

Facility's Storm Water General Permit Authorization Number LAR10

Check here if you are no longer the Operator of the Facility

Check here if the Storm water discharge associated with the
construction activity is Being Terminated

SECTION II - FACILITY OPERATOR INFORMATION

Name
Address
City
State Zip Phone

SECTION III - FACILITY/SITE LOCATION INFORMATION

Name of Project
Location of Project
City State Zip
Latitude- deg. min. sec. Longitude- deg. min. sec.
Parish

SECTION IV - CERTIFICATION

I certify under penalty of law that all storm water discharges associated with construction activity from
the identified facility that are authorized by a LPDES general permit have been eliminated or that I am
no longer the operator of the facility or construction site. I understand that by submitting this Notice
of Termination, I am no longer authorized to discharge storm water associated with industrial activity
under this general permit, and that discharging pollutants in storm water associated with industrial
activity to waters of the State is unlawful under the Clean Water Act where the discharge is not
authorized by a LPDES permit. I also understand that the submittal of this Notice of Termination does
not release an Operator from liability for any violation of this permit or the Clean Water Act.

Print Name Date

Signature

Construction Specification 7—Construction Surveys

1. Scope

The work consists of performing all surveys, measurements, and computations required by this specification.

2. Equipment and material

Equipment for construction surveys shall be of a quality and condition to provide the required accuracy. The equipment shall be maintained in good working order and in proper adjustment at all times. Records of repairs, calibration tests, accuracy checks, and adjustments shall be maintained and be available for inspection by the engineer. Equipment shall be checked, tested, and adjusted as necessary in conformance with manufacturer's recommendations.

Material is field notebooks, stakes, templates, platforms, equipment, spikes, steel pins, tools, and all other items necessary to perform the work specified.

3. Quality of work

All work shall follow recognized professional practice and the standards of the industry unless otherwise specified in section 9 of this specification. The work shall be performed to the accuracy and detail appropriate for the type of job. Notes, sketches, and other data shall be complete, recorded neatly, legible, reproducible and organized to facilitate ease in review and allow reproduction of copies for job documentation. Survey equipment that requires little or no manual recording of field data shall have survey information documented as outlined in section 9 of this specification.

All computations shall be mathematically correct and shall include information to identify the bid item, date, and who performed, checked, and approved the computations. Computations shall be legible, complete, and clearly document the source of all information used including assumptions and measurements collected.

If a computer program is used to perform the computations, the contractor shall provide the engineer with the software identification, vendor's name, version number, and other pertinent data before beginning survey activities. Computer generated computations shall show all input data including values assigned and assumptions made.

The elevations of permanent and temporary bench marks shall be determined and recorded to the nearest 0.01 foot. Differential leveling and transit traverses shall be of such precision that the error of vertical closure in feet shall not exceed plus or minus 0.1 times the square root of the traverse distance in miles. Linear measurements shall be accurate to within 1 foot in 5,000 feet, unless otherwise specified in section 9 of this specification. The angular error of closure for transit traverses shall not exceed 1 minute times the square root of the number of angles turned.

The minimum requirements for placing slope stakes shall be at 100-foot stations for tangents, as little as 25 feet for sharp curves, breaks in the original ground surface and at any other intermediate stations necessary to ensure accurate location for construction layout and measurement. Slope stakes and cross sections shall be perpendicular to the centerline. Significant breaks in grade shall be determined for cross sections. Distances shall be measured horizontally and recorded to the nearest 0.1 foot. Side shots for interim construction stakes may be taken with a hand level.

Unless otherwise specified in section 9 of this specification, measurements for stationing and establishing the location of structures shall be made to the nearest 0.1 foot.

Elevations for concrete work, pipes, and mechanical equipment shall be determined and recorded to the nearest 0.01 foot. Elevations for earth work shall be determined and recorded to the nearest 0.1 foot.

4. Primary control

The baselines and bench marks for primary control, necessary to establish lines and grades needed for construction, are shown on the drawings and have been located on the job site.

These baselines and bench marks shall be used as the origin of all surveys, layouts, and measurements to establish construction lines and grades. The contractor shall take all necessary precautions to prevent the loss or damage of primary control points. Any stakes or control points lost or damaged by construction activity will be reestablished by the contractor or at contractor expense.

5. Construction surveys

Before work starts that requires contractor performed surveys, the contractor shall submit in writing for the engineer's review: the name, qualifications, and experience of the individuals to be assigned to the survey tasks.

Method 1—Contractor performed surveys shall include:

- checking and any supplemental or interim staking
- performing quantity surveys, measurements, and computations for progress payment
- other surveys as described in section 9 of this specification

Method 2—Contractor performed surveys shall consist of all work necessary for:

- establishing line and grade for all work
- setting slope stakes for all work
- checking and any supplemental or interim staking
- establishing final grade stakes
- performing quantity surveys, measurements, and computations for progress payment
- other surveys as described in section 9 of this specification

Method 3—Contractor performed surveys shall consist of all work necessary for:

- establishing line and grade for all work
- setting slope stakes for all work
- checking and any supplemental or interim staking
- establishing final grade stakes
- performing quantity surveys, measurements, and computations for progress payments
- performing original (initial) and final surveys for determinations of final quantities
- other surveys as described in section 9 of this specification.

6. Staking

The construction staking required for the item shall be completed before work on any item starts. Construction staking shall be completed as follows or as otherwise specified in section 9 of this specification:

Clearing and grubbing—The boundary of the area(s) to be cleared and grubbed shall be staked or flagged at a maximum interval of 200 feet, closer if needed, to clearly mark the limits of work. When contractor staking is the basis for determining the area for final payment, all boundary stakes will be reviewed by the engineer before start of this work item.

Excavation and fill—Slope stakes shall be placed at the intersection of the specified slopes and ground line. Slope stakes and the reference stakes for slopes shall be marked with the stationing, required cut or fill, slope ratio, and horizontal distance from the centerline or other control line. The minimum requirements for placing slope stakes is outlined in section 3, Quality of work.

Structures—Centerline and offset reference line stakes for location, alignment, and elevation shall be placed for all structures.

7. Records

All survey data shall be recorded in fully identified standard hard-bound engineering survey field notebooks with consecutively numbered pages. All field notes and printed data shall include the purpose or description of the work, the date the work was performed, weather data, sketches, and the personnel who performed and checked the work. Electronically generated survey data and computations shall be bound, page numbered, and cross referenced in a bound field notebook containing the index for all survey activities. All work shall follow recognized professional practice.

The construction survey records shall be available at all times during the progress of the work for examination and use by the engineer and when requested, copies shall be made available. The original field notebooks and other records shall be provided to and become the property of the owner before final payment and acceptance of all work.

Complete documentation of computations and supporting data for progress payments shall be submitted to the engineer with each invoice for payment as specified in section 9 of the specification. When the contractor is required to conduct initial and final surveys as outlined in section 5, Construction Surveys, notes shall be provided as soon as possible after completion to the engineer for the purpose of determining final payment quantities.

8. Payment

Method 1—For items of work for which lump sum prices are established in the contract, payment is made as the work proceeds, after presentation of correct and accurate invoices by the contractor showing related costs and evidence of the charges of suppliers, subcontractors, and others for supplies furnished and work performed. Invoices for the total amount of the contract price will not be accepted until all surveys are complete and required documentation has been determined complete. If the total of such payments is less than the lump sum contract price for this item, the unpaid balance will be included in the final contract payment. Payment of the lump sum contract price will constitute full compensation for completion of all work under the bid item.

Method 2—For items of work for which lump sum prices are established in the contract, payment is made as the work proceeds with progress payment amounts determined as a percentage of the total work planned as projected from the contractor's approved construction schedule. Payment of the lump sum contract price will constitute full compensation for completion of all work under this bid item.

All Methods—Payment will not be provided under this item for the purchase price of materials or equipment having a residual value.

Compensation for any item of work described in the contract, but not listed in the bid schedule will be included in the payment for the item of work to which it is made subsidiary. Such items and the item to which they are made subsidiary are identified in section 9 of this specification.

9. ITEMS OF WORK AND CONSTRUCTION DETAILS

Items of work to be performed in conformance with this specification and the construction details therefore are:

a. Bid Item 3, Construction Surveys

- (1) This item shall consist of all work necessary by the Contractor to check NRCS-provided surveys, perform supplemental or interim staking for the Contractor's own use, perform pre-construction surveys, progress payment surveys, measurements and computations for progress payments, and any other surveys the Contractor feels are required which are not specifically indicated to be provided by NRCS.
- (2) All surveys completed by the Contractor shall be taken in State Plane U.S. Survey Feet, Louisiana South Zone 1702, NAD 83 horizontal datum, and NAVD 88, GEOID 99 vertical datum.
- (3) Benchmark "South Grand Lake," located approximately 1 mile southeast of the project area, shall be used for horizontal and vertical positioning. Benchmark coordinates are N 487949.240, E 2819803.207, El 5.988 feet NAVD 88, Louisiana South Zone 1702, Geoid 99. Virtual Reference Station Networks shall not be used.
- (4) Water surface elevations shall not be used as an elevation check or as the primary control for any surveys related to the rock dike or settlement plates.
- (5) Persons considered qualified by the NRCS to perform Contractor surveys shall be certified or licensed land surveyors, registered engineers, or construction personnel who are deemed qualified based on previous performance or who can demonstrate through performance that they are capable and qualified to perform any surveys required by the Contractor. The Contractor shall submit written resumes, experience or qualification statements, and references to the Contracting Officer for approval for all individuals to be assigned Contractor survey responsibilities.
- (6) Feature codes to be used by the Contractor shall be LA DOTD feature codes. Any deviation shall be approved by the CO and COR prior to beginning survey activities.
- (7) Under this specification NRCS will provide basic staking of features, using NAD 83 horizontal datum and NAVD 88, Geoid 99 vertical datum, that include the following:
 - Limits of the flotation and access channels at 200-foot intervals
 - Centerline alignment for the rock dike at all PI's and at 200-foot intervals
 - Work limits, staked at the corners

- Limits of the marsh-side dredge fill placement areas at 200-foot intervals
 - Locations of warning signs, buoys, and settlement plates
- a) The above staking will be provided on a one-time basis by NRCS. If survey posts or marks are destroyed, the Contractor will bear sole responsibility for replacement.
- b) NRCS reserves the right to perform periodic quality assurance surveys on all project features. Quality assurance surveys will use similar equipment to that specified for the Contractor.
- (8) Contractor construction surveys under this specification shall be in accordance with Method 2 with the following additional requirements:

a) Pre-Construction Surveys:

The locations of all planned pre-construction surveys shall be submitted to the Contracting Officer's Representative (COR) for approval prior to the commencement of any survey activities at the site.

Prior to commencement of any construction, the Contractor shall perform a profile survey along the planned centerline of the dike. Transects shall be taken approximately every 250 feet perpendicular to the dike alignment and extend from beyond the permanent spoil placement areas on the marsh side of the dike to beyond the temporary spoil placement areas on the lake side. Survey points along the profile and transects shall be spaced at 25 feet or less. These surveys shall be used for verification of the design survey, as a pre-project condition for the access channel and spoil locations, and to make modifications or adjustments to the project alignment and features as required by the Contracting Officer.

The Contractor shall submit two (2) copies of raw survey data, plotted survey data, notes, computations, etc., to the CO two weeks prior to commencing any construction activities at the site. NRCS will review the survey and determine if any changes to the location of project features will be required. Upon approval of project features and locations, the Contractor shall stake the rock dike alignment, the limits of the flotation access channel, and any other project features not previously staked by NRCS or the Contractor.

b) Magnetometer Surveys:

Prior to the commencement of construction activities, a magnetometer survey shall be conducted at the project site. At a minimum, magnetometer lines shall be run along: the planned centerline of the dike, the planned centerline of the excavation and access channels, and perpendicular to the dike alignment at a maximum interval of 500 feet. The perpendicular sections shall extend from beyond the permanent spoil placement areas on the marsh

side of the dike to beyond the temporary spoil placement areas on the lake side.

Any other magnetometer survey locations that the Contractor deems necessary to ensure that the work site is clear of oil and gas infrastructure or other metallic objects and debris that may present a hazard to life, property, or equipment shall also be conducted. The locations of all magnetometer surveys shall be submitted to the COR for approval prior to the commencement of any survey activities at the site.

The magnetometer shall be a proton or cesium magnetometer used to measure the earth's ambient magnetic field. It shall have an accuracy of 0.1 nanotesla (gammas) and a sensitivity of 0.01 gammas. It shall be equipped with a digital altimeter accurate to 0.1 meters and a pressure sensor and have a sampling range of 0.1 to 4 hertz (Hz). Magnetometer readings shall be correlated to a position with RTK GPS and take into account speed and position of the towfish relative to the vessel.

All magnetic anomalies detected shall be recorded with coordinates, signature intensity, signature width, and physical description of the anomaly, if possible. The information shall be plotted and submitted to the COR, along with the Contractor's plan for addressing or avoiding each anomaly, prior to commencement of construction activities. Any pipelines detected shall be identified with coordinates, top elevation, and cover, and clearly staked in the field. Any anomaly suspected to be potentially dangerous to life or equipment shall be identified as so, clearly staked in the field, and immediately reported to the Inspector and COR.

c) Progress Surveys:

i. Dike Cross-Sections:

Construction check surveys of the rock dike shall be taken at the same locations and intervals as the pre-construction transects. These surveys shall be taken after initial placement of rock riprap, and after any subsequent placement of rock riprap. Construction check surveys to be used for payment shall include, at a minimum, a survey shot at the toe, multiple shots along the slope, and a shot at the edge of the crown for both sides of the dike. A shot at the centerline shall also be taken.

ii. Dike Centerline Profile

Centerline profile surveys shall be taken at intervals not to exceed 25 feet. These surveys shall be taken after initial placement of rock riprap, and after any subsequent placement of rock riprap.

iii. Surveys of Flotation and Access Channels and Spoil Placement Areas

Following excavation of the flotation and access channels and placement of spoil in the permanent and temporary spoil placement areas, centerline profile and cross section surveys shall be taken of the flotation and access channels and of the permanent and temporary spoil placement areas. Cross sections shall be taken at the same locations and spacing as the project layout survey, and shall extend from beyond the permanent spoil placement areas on the marsh side of the dike to beyond the temporary spoil placement areas on the lake side. Spoil placement area centerline profile surveys shall be taken at intervals not to exceed 25 feet.

iv. Settlement Plate Surveys

The elevation of the top of the pipe on each settlement plate shall be established at the time of initial placement and at intervals not to exceed 30 days thereafter until construction completion. In addition, the top of pipe shall be surveyed following initial placement of rock riprap and any subsequent lifts of riprap.

v. Temporary Warning Sign Surveys

The horizontal position of each sign, the elevation of the top of each warning sign, and the elevation of the top of each warning sign support shall be established at the time of initial placement.

vi. Permanent Warning Sign Surveys

The horizontal position of each sign, the elevation of the top of each warning sign, and the elevation of the top of each warning sign support shall be established at the time of initial placement.

d) As-Built Surveys:

i. The final progress surveys for the dike cross sections, dike centerline profile, flotation and access channel cross-sections, spoil placement area cross-sections, settlement plates, and permanent warning signs shall be incorporated into a comprehensive set of As-Built Survey drawings.

ii. Access Channel and Spoilbank Surveys

Following backfilling of the access channel, centerline profile and cross section surveys shall be taken of the access channel and temporary spoilbank locations to ensure that the channel has been properly backfilled. Surveys shall be taken along the alignment at the same locations and spacing as those in the pre-construction and progress surveys. These shall also be incorporated into the final as-built drawings.

e) Deliverables:

i. Raw Data

All pre-construction survey data and any survey data to be used for payment purposes shall be presented to the CO no later than 2 days after the survey is taken. The survey data submitted shall be in raw format and consist of electronically recorded data files, along with a hard copy of any field notes. The files shall be in *.rw5 or *.job file format and *.asc file format and contain northings, eastings, elevations, and feature codes. The time and date the survey was taken shall also be included. Under no circumstances shall the information be edited for the purpose of eliminating incorrect soundings or snapping to the nearest transect. The Contractor shall provide a separate file listing all incorrect soundings to be eliminated in the processed data.

ii. Processed Data

The following data is required with all requests for payment:

- Digital map of survey data with points and break lines in *.rw5, *.job, *.asc, and *.pdf file format containing northings, eastings, elevations and feature codes. Features shall be shown as break lines or cells and labeled in the drawing.
- An electronic copy of the data sets on CD.
- A hard copy and electronic copy in CD format of (11" x 17") drawings shall be submitted to the CO and the COR including:
 - A plan view showing all survey lines and sheets showing all profile/cross sectional diagrams.
 - Survey Transects – by ID Number or station number.
 - Temporary Benchmarks (TBMs) used, including coordinates, reference elevations, and associated survey points that the TBMs were used for.

The drawing files shall be in *.dwg or *.dxf format compatible with AutoCAD Civil 3D 2010. The plan view(s) shall be overlaid onto 2010 (or later) geo-rectified Digital Orthophoto Quarter Quadrangle (DOQQ) aerial photographs. Drawing files shall also include a table with benchmark locations (in State Plane and Geographic coordinates) and datums on which the survey is based. The CWPPRA project name and number shall be shown on all drawings.

The survey profile/cross sections in the drawings shall be plotted at a one-to-one scale or with an exaggerated vertical scale as appropriate to adequately present the data.

- All submitted data shall also be submitted in *.pdf format.

iii. As-Built Survey Submittals

As-built submittals for the project are required within 72 hours of the completion of construction activities. As-built submittals shall be in accordance with the requirements listed above for processed data.

- (9) The Contractor shall be responsible for executing the work to the limits, lines, locations, and grades established by NRCS. The Contractor shall also be responsible for maintaining, preserving, and re-establishing, as necessary, all posts and other marks established by NRCS.
- (10) The Contractor shall notify the COR at least 48 hours in advance of any pending surveys to be performed by the Contractor.
- (11) All survey notes shall conform to the requirements of Section 7, Records, of this specification with the following additions:
 - a) The contractor shall provide to the CO an example copy of the notes for each type of survey the contractor plans on performing. The contractor shall not perform any surveys until the CO has approved the example field notes for each type of survey. When the example field notes have been approved by the CO the contractor shall use such format for the duration of the survey work to be performed.
 - b) Notes recorded in bound hard copy field books shall be recorded at the time of survey performance. Any errors shall be lined through, not erased. Field notes generated in the office from notes taken from field notes recorded on loose leaf paper, etc., will be rejected.
 - c) Final surveys, including field notes, shall be submitted to the Contracting Officer.
- (12) In Section 8, Payment, Method 2 will apply. Such payment will be considered as full compensation for the work to be done under this bid item.

Construction Specification 8—Mobilization and Demobilization

1. Scope

The work consists of the mobilization and demobilization of the contractor's forces and equipment necessary for performing the work required under the contract. It does not include mobilization and demobilization for specific items of work for which payment is provided elsewhere in the contract. Mobilization will not be considered as work in fulfilling the contract requirements for commencement of work.

2. Equipment and material

Mobilization shall include all activities and associated costs for transportation of contractor's personnel, equipment, and operating supplies to the site; establishment of offices, buildings, and other necessary general facilities for the contractor's operations at the site; premiums paid for performance and payment bonds including coinsurance and reinsurance agreements as applicable; and other items specified in section 4 of this specification.

Demobilization shall include all activities and costs for transportation of personnel, equipment, and supplies not required or included in the contract from the site; including the disassembly, removal, and site cleanup of offices, buildings, and other facilities assembled on the site specifically for this contract.

This work includes mobilization and demobilization required by the contract at the time of award. If additional mobilization and demobilization activities and costs are required during the performance of the contract as a result of changed, deleted, or added items of work for which the contractor is entitled to an adjustment in contract price, compensation for such costs will be included in the price adjustment for the item or items of work changed or added.

3. Payment

Payment will be made as the work proceeds, after presentation of paid invoices or documentation of direct costs by the contractor showing specific mobilization and demobilization costs and supporting evidence of the charges of suppliers, subcontractors, and others. When the total of such payments is less than the lump sum contract price, the balance remaining will be included in the final contract payment. Payment of the lump sum contract price for mobilization and demobilization will constitute full compensation for completion of the work.

Payment will not be made under this item for the purchase costs of materials having a residual value, the purchase costs of materials to be incorporated in the project, or the purchase costs of operating supplies.

4. Items of work and construction details

4. ITEMS OF WORK AND CONSTRUCTION DETAILS

Items of work and construction details to be performed in conformance with this specification are:

a. Bid Item 1, Mobilization and Demobilization

- (1) This item shall consist of mobilizing and demobilizing personnel and equipment in preparation to perform the work within the scope of this contract.
- (2) Access to the site may be impeded due to shallow water conditions and/or existing utilities. The contract shall not be modified to increase the performance time or monetary value as a result of difficulty in accessing these sites due to shallow water conditions or existing utilities. Excavation to increase flotation (draft depth) will be allowed to the limits shown on the drawings.
- (3) All tug boats and barges will be loaded in a manner to ensure that they float at all times.
- (4) The contractor's movement within the project area is limited to the access routes and work limits shown on the construction drawings.
- (5) This item shall include mobilizing and demobilizing equipment and operating supplies to the general work area in this contract.
- (6) This item shall not include the movement of personnel and supplies within the work sites associated with the daily operation of the contractor's work force.
- (7) Payment shall be as specified in Section 3. Such payment will be considered full compensation for this item.

Construction Specification 13—Piling

1. Scope

The work consists of furnishing and installing the specified kinds and types of piles at the locations shown on the drawings.

2. Material

Piles shall conform to the requirements of following material specifications as appropriate to the kinds of piles specified. For piles of materials other than those listed, the material requirements outlined in section 14 of this specification shall apply.

511—Steel Piles

512—Wood Piles

513—Precast Concrete Piles

514—Cast-in-Place Concrete Piles

3. Site preparation

All excavation within the area to be occupied by bearing piles shall be completed before the piles are driven.

4. Protection of pile heads

The heads of all piles shall be protected during driving by suitable caps, rings, heads, blocks, mandrels, and other devices.

The heads of timber piles shall be fitted into a steel head block or fitted with heavy steel or wrought iron rings or wire wrapping.

The heads of steel piles shall be cut square and fitted with a steel driving cap.

The heads of precast concrete piles and casings shall be fitted into cushion type drive caps having a rope or other suitable cushion next to the pile head and fitting into a casting that in turn supports a timber shock block.

Driving heads, mandrels, and other devices shall be provided by the contractor as needed for special types of piles and shall conform to the recommendations of the pile manufacturer.

5. Piles, general

The contractor shall notify the engineer before pile driving operation commences. Such notice shall be far enough in advance, a minimum of 24 hours, to provide the engineer adequate time to be present for the driving operations. Piles shall be driven only in the presence of the engineer or authorized representative.

The determination of piling order lengths shall be the contractor's responsibility unless otherwise specified.

Unless otherwise approved, piles shall be driven with steam, air, diesel powered hammers or a combination of hammers, or by vibration or water jets. Water jets may be used only when specifically authorized by the engineer. Where jetting is authorized, the jets shall be withdrawn

before the specified depth or bearing capacity is obtained and the piles shall be driven with the hammer to the final penetration.

When drop hammers are permitted, the height of drop shall not be more than 8 feet for concrete piles or 12 feet for steel and timber piles, unless otherwise specified.

The driving of piling with followers shall be allowed only when expressly approved by the engineer.

Piles shall not be driven within 20 feet of concrete less than 7 days after placement, including concrete placed in cast-in-place piles with or without predriven shells or casings.

The contractor shall not attempt to drive piles beyond the point of refusal, as indicated by excessive bouncing of the hammer or kicking of the pile.

6. Bearing piles

Bearing piles shall be driven to the position, line, and batter specified on the drawings. Each pile shall be driven continuously and without interruption to the specified depth or until the specified bearing capacity is obtained. Deviation from this procedure is permitted only when interruption of driving is caused by conditions that could not reasonably be anticipated.

When a diesel hammer is used, it shall be operated at full throttle when blows are counted for determination of bearing capacity except that throttle adjustments shall be made as necessary to prevent the nonstriking parts of the hammer from rising from the pile on the ram upstroke.

7. Sheet piles

The piling shall be driven in a manner that ensures perfect interlocking throughout the entire length of each pile. The piles shall be held in proper alignment during driving by assembling frames or other suitable temporary guide structures. Temporary guide structures shall be removed when they have served their purpose.

Anytime the forward edge of the sheet pile wall is found to be out of correct alignment,

- a. The piling already assembled and partly driven shall be driven to the required depth.
- b. Taper piles shall then be driven to bring the forward edge into correct alignment before additional regular piling is assembled and driven. The maximum permissible taper in a single pile shall be 0.25 inch per foot of length.

8. Estimating bearing capacity

When load tests are not required, the bearing capacity of each pile shall be estimated using one of the following formulas, as appropriate:

Gravity hammers:

$$R = \frac{2WH}{S+1}$$

Single-acting steam or air hammers and diesel hammers having unrestricted rebound of the ram:

$$R = \frac{2WH}{S+0.1}$$

Double-acting steam or air hammers and diesel hammers having enclosed rams:

$$R = \frac{2H(W + AP)}{S + 0.1} \quad \text{or} \quad R = \frac{2E}{S + 0.1}$$

where:

- R = safe bearing capacity, in pounds
- W = weight of striking parts of hammer, in pounds
- H = height of fall, in feet
- A = area of piston, in square inches
- P = pressure of steam, air, or other gas exerted on the hammer piston or ram, in pounds per square inch
- E = the manufacturer's rating for foot-pounds of energy developed by double-acting steam or air hammers, or 90 percent of the average equivalent energy developed by diesel hammers having enclosed rams as evaluated by gauge and chart readings, in foot-pounds
- S = average penetration for the last 5 to 10 blows of a gravity hammer or the last 10 to 20 blows for steam, air, or diesel powered hammers, in inches per blow

These formulas are applicable when:

- The hammer has a free fall.
- The head of the pile is not crushed.
- The penetration is reasonably quick and uniform.
- There is no sensible bounce after the blow.
- A follower is not used.

Twice the height of the bounce shall be deducted from **H** to determine its value in the formula.

If case water jets are used in conjunction with the driving, these formulas are used to determine the bearing power from the results of driving after the jets have been removed.

9. Load tests

When load tests are specified, the test loads shall be applied gradually, without impact, and in a manner that no lateral forces are applied to the pile. Load testing shall not be started until 24 hours after driving of the test pile is completed unless otherwise specified in section 14 of this specification. Except as otherwise specified, load tests shall be performed according to the following procedures.

The total test load shall be twice the specified working load and shall be applied to the pile in increments equal to 25 percent of the working load. Settlement of the top of the pile shall be measured to an accuracy of 0.01 inch before and after the application of each load increment and at 2, 4, 8, 15, 30, and 60 minutes after, and then every 2 hours until the next load increment is applied. Additional load shall not be applied until the rate of settlement is less than 0.01 inch in 1 hour.

The total test load shall remain on the pile for a minimum of 24 hours. Settlement shall be measured at 6-hour intervals during this period and at the end of the period, at least twice during removal of the load, and immediately after all of the test load is removed. The net settlement shall be measured about 24 hours after the total load has been removed.

If settlement continues in excess of 0.01 inch per hour under less than the total test load, no additional load shall be applied. However, the load that has been applied shall remain on the pile

a minimum of 24 hours, and settlement measurements while the load is on the pile and during and after removal of the load shall be made as if it were the total test load.

10. Cutting off piles

The contractor shall cut the piles at the specified elevations. The length of pile cut off shall be sufficient to permit the removal of all damaged material. Steel shells or concrete casings for cast-in-place concrete piles shall be cut off at the specified elevation before being filled with concrete.

Steel bearing piles shall be cut off in clean, straight lines as shown on the drawings. Any irregularities shall be leveled off with deposits of weld metal or by grinding before placement of bearing caps.

Precast concrete piles and concrete casings shall be cut off in a manner that prevents damage to the rest of the pile or casing or to the projecting reinforcement required for connecting the piles to the structure.

Timber piles that are to be capped shall be accurately cut off so that true bearing is obtained on every pile without the use of shims.

11. Defective piles

Any pile damaged in driving, driven out of proper location, driven below the specified cutoff elevation, or inaccurately cut off shall be corrected by one of the following methods, as approved by the engineer:

- a. The defective pile shall be pulled and replaced or re-driven.
- b. A new pile shall be driven adjacent to the defective pile.
- c. The defective pile shall be spliced or built up or a sufficient part of the footing shall be extended to properly embed the pile.

Pile shells abandoned in place after driving shall be filled with concrete or sand-cement grout as appropriate to the conditions that are present.

All piles pushed up by the driving of adjacent piles or by any other cause shall be re-driven to final grade.

Any sheet pile ruptured in the interlock or otherwise damaged during driving shall be pulled and replaced.

12. Correcting surface heave

Any excess material resulting from displacement of earth by pile driving shall be removed. Materials disturbed by pile driving shall be conditioned and compacted to a minimum density equal to adjacent undisturbed material.

13. Measurement and payment

Method 1—For items of work for which specific unit prices are established in the contract, each type, kind, and length of pile driven in place is counted. Payment for furnishing and driving each type, kind, and length of pile is made at the contract unit price. Such payment will constitute full compensation for all labor, equipment, materials, and all other items necessary and incidental to the completion of the work.

Method 2—For items of work for which specific unit prices are established in the contract, each type, kind, and length of pile furnished, accepted, and stockpiled in good condition at the site of the work is counted. Payment for furnishing each type, kind, and length of pile is made at the contract unit price. Payment for driving each type and kind of pile is made at the contract unit price. Such payment will constitute full compensation for all labor, equipment, materials, and all other items necessary and incidental to the completion of the work.

Method 3—For items of work for which specific unit prices are established in the contract, the length of each type and kind of pile driven is computed to the nearest foot as the difference between the measured length of pile before driving and measured length of pile cut off after driving. Payment for furnishing and driving each type and kind of pile is made at the contract unit price. Such payment will constitute full payment for all labor, equipment, materials, and other items necessary and incidental to the completion of the work.

Method 4—For items of work for which specific unit prices are established in the contract, the area of sheet pile walls, acceptably placed in accordance and within the neat lines shown on the drawings, is computed to the nearest square foot. Payment is made at the contract unit price for each type, kind, and weight of piling. Such payment will constitute full payment for all labor, equipment, materials, and other items necessary and incidental to the completion of the work.

All Methods—The following provisions apply to all methods of measurement and payment:

The measurement of the number of linear feet of piles (or number of piles) furnished and the number of piles driven shall include test and tension piles specified in the contract. Piles furnished and driven at the option of the contractor are not included. No payment is made for furnishing or driving pile, including test piles, to replace piles lost or damaged before the completion of the contract while in stockpile or during handling and driving.

When load tests are specified, payment for each test is made at the contract unit price per test. Such payment will constitute full compensation for all labor, equipment, materials, and all other items necessary and incidental to perform the test, except furnishing and driving piling.

When splices are specified, payment for each splice is made at the contract unit price. Such payment shall constitute full compensation for labor, equipment, materials, and all other items necessary and incidental to the completion of the work.

Compensation for any item of work described in the contract, but not listed in the bid schedule is included in the payment for the item of work to which it is made subsidiary. Such items and the items to which they are made subsidiary are identified in section 14 of this specification.

14. Items of work and construction details

14. ITEMS OF WORK AND CONSTRUCTION DETAILS

Items of work to be performed in conformance with this specification and the construction drawings are:

a. Subsidiary Item, Round Timber Piling, Sign Supports

- (1) This item shall consist of furnishing and driving all timber piles required to construct the warning sign supports to the lines and grades as shown on the drawings.
- (2) The piling shall be Type II, Southern Yellow pine or Douglas fir. Piles shall have a 38-inch circumference three feet from the butt with a corresponding tip circumference as specified in Table X1.1, Class B of ASTM D 25.
- (3) All timber piles shall conform to Material Specification 512, Wood Piles. Minimum pile length shall be 50 feet.
- (4) All piling shall be pressure treated to a minimum of 2.5 pounds per cubic foot by assay with Ammoniacal Copper Zinc Arsenate or Chromated Copper Arsenate conforming to American Wood Preservers Association (AWPA) standards AWPA P22-10 and AWPA P23-10 and Material Specification 585, Wood Preservatives and Treatments, and tagged in accordance with AWPA standards. The Contractor shall submit an independent third party analysis report of the actual preservative retention and penetration as specified by the American Wood Preservers Association Standard U1. The report shall be sent directly from the testing lab to the Contracting Officer as soon as the test results are available.
- (5) All pilings shall be driven plumb and straight and the damaged end cut off to the lines and grades as shown or dictated on the drawings. Maximum cutoff is 2 feet. Tops of all cut creosote timber piling shall be painted with coal tar epoxy paint conforming to Material Specification 583, Coal Tar-Epoxy Paint. The coating shall be of sufficient thickness to coat all projecting fibers. Tops of piles that are to remain exposed shall also be covered with 26 gage aluminum flashing as shown on the drawings and conform to Material Specification 581, Metal. Cut-off ends shall be disposed of at an approved off-site facility.
- (6) Drop gravity hammers may be used.
- (7) All bolts, washers, nuts and other metal fastening hardware shall be aluminum or stainless steel and shall conform to Material Specification 581, Metal.
- (8) No separate payment shall be made for this item. Compensation for this item is to be included in the appropriate related bid item of those listed here: Bid Item 7, Identification Markers or Plaques, Permanent Warning Signs; Bid Item 8, Identification Markers or Plaques, Temporary Warning Signs; or Bid Item 9, Identification Markers or Plaques, Warning Buoys.

Construction Specification 21—Excavation

1. Scope

The work shall consist of the excavation required by the drawings and specifications and disposal of the excavated materials.

2. Classification

Excavation is classified as common excavation, rock excavation, or unclassified excavation in accordance with the following definitions.

Common excavation is defined as the excavation of all materials that can be excavated, transported, and unloaded using heavy ripping equipment and wheel tractor-scrappers with pusher tractors or that can be excavated and dumped into place or loaded onto hauling equipment by excavators having a rated capacity of one cubic yard or larger and equipped with attachments (shovel, bucket, backhoe, dragline, or clam shell) appropriate to the material type, character, and nature of the materials.

Rock excavation is defined as the excavation of all hard, compacted, or cemented materials that require blasting or the use of ripping and excavating equipment larger than defined for common excavation. The excavation and removal of isolated boulders or rock fragments larger than 1 cubic yard encountered in materials otherwise conforming to the definition of common excavation shall be classified as rock excavation. The presence of isolated boulders or rock fragments larger than 1 cubic yard is not in itself sufficient cause to change the classification of the surrounding material.

For the purpose of these classifications, the following definitions shall apply:

Heavy ripping equipment is a rear-mounted, heavy duty, single-tooth, ripping attachment mounted on a track type tractor having a power rating of at least 250 flywheel horsepower unless otherwise specified in section 10.

Wheel tractor-scraper is a self-loading (not elevating) and unloading scraper having a struck bowl capacity of at least 12 cubic yards.

Pusher tractor is a track type tractor having a power rating of at least 250 flywheel horsepower equipped with appropriate attachments.

Unclassified excavation is defined as the excavation of all materials encountered, including rock materials, regardless of their nature or the manner in which they are removed.

3. Blasting

The transportation, handling, storage, and use of dynamite and other explosives shall be directed and supervised by a person(s) of proven experience and ability who is authorized and qualified to conduct blasting operations.

Blasting shall be done in a manner as to prevent damage to the work or unnecessary fracturing of the underlying rock materials and shall conform to any special requirements in section 10 of this specification. When specified in section 10, the contractor shall furnish the engineer, in writing, a blasting plan before blasting operations begin.

4. Use of excavated material

Method 1—To the extent they are needed, all suitable material from the specified excavations shall be used in the construction of required permanent earthfill or rockfill. The suitability of material for specific purposes is determined by the engineer. The contractor shall not waste or otherwise dispose of suitable excavated material.

Method 2—Suitable material from the specified excavations may be used in the construction of required earthfill or rockfill. The suitability of material for specific purposes is determined by the engineer.

5. Disposal of waste materials

Method 1—All surplus or unsuitable excavated materials are designated as waste and shall be disposed of at the locations shown on the drawings.

Method 2—All surplus or unsuitable excavated materials are designated as waste and shall be disposed of by the contractor at sites of his own choosing away from the site of the work. The disposal shall be in an environmentally acceptable manner that does not violate local rules and regulations.

6. Excavation limits

Excavations shall comply with OSHA Construction Industry Standards (29CFR Part 1926) Subpart P, Excavations, Trenching, and Shoring. All excavations shall be completed and maintained in a safe and stable condition throughout the total construction phase. Structure and trench excavations shall be completed to the specified elevations and to the length and width required to safely install, adjust, and remove any forms, bracing, or supports necessary for the installation of the work. Excavations outside the lines and limits shown on the drawings or specified herein required to meet safety requirements shall be the responsibility of the contractor in constructing and maintaining a safe and stable excavation.

7. Borrow excavation

When the quantities of suitable material obtained from specified excavations are insufficient to construct the specified earthfills and earth backfills, additional material shall be obtained from the designated borrow areas. The extent and depth of borrow pits within the limits of the designated borrow areas shall be as specified in section 10 or as approved by the engineer.

Borrow pits shall be excavated and finally dressed to blend with the existing topography and sloped to prevent ponding and to provide drainage.

8. Overexcavation

Excavation in rock beyond the specified lines and grades shall be corrected by filling the resulting voids with portland cement concrete made of materials and mix proportions approved by the engineer. Concrete that will be exposed to the atmosphere when construction is completed shall meet the requirements of concrete selected for use under Construction Specification 31, Concrete for Major Structures, or 32, Structure Concrete, as appropriate.

Concrete that will be permanently covered shall contain not less than five bags of cement per cubic yard. The concrete shall be placed and cured as specified by the engineer.

Excavation in earth beyond the specified lines and grades shall be corrected by filling the resulting voids with approved, compacted earthfill. The exception to this is that if the earth is to become the subgrade for riprap, rockfill, sand or gravel bedding, or drainfill, the voids may be filled with material conforming to

the specifications for the riprap, rockfill, bedding, or drainfill. Before correcting an overexcavation condition, the contractor shall review the planned corrective action with the engineer and obtain approval of the corrective measures.

9. Measurement and payment

For items of work for which specific unit prices are established in the contract, the volume of each type and class of excavation within the specified pay limits is measured and computed to the nearest cubic yard by the method of average cross-sectional end areas or by methods outlined in section 10 of this specification. Regardless of quantities excavated, the measurement for payment is made to the specified pay limits except that excavation outside the specified lines and grades directed by the engineer to remove unsuitable material is included. Excavation required because unsuitable conditions result from the contractor's improper construction operations, as determined by the engineer, is not included for measurement and payment.

Method 1—The pay limits shall be as designated on the drawings.

Method 2—The pay limits shall be defined as follows:

- a. The upper limit shall be the original ground surface as it existed before the start of construction operations except that where excavation is performed within areas designated for previous excavation or earthfill, the upper limit shall be the modified ground surface resulting from the specified previous excavation or earthfill.
- b. The lower and lateral limits shall be the neat lines and grades shown on the drawings.

Method 3—The pay limits shall be defined as follows:

- a. The upper limit shall be the original ground surface as it existed before the start of construction operations except that where excavation is performed within areas designated for previous excavation or earthfill, the upper limit shall be the modified ground surface resulting from the specified previous excavation or earthfill.
- b. The lower and lateral limits shall be the true surface of the completed excavation as directed by the engineer.

Method 4—The pay limits shall be defined as follows:

- a. The upper limit shall be the original ground surface as it existed before the start of construction operations except that where excavation is performed within areas designated for previous excavation or earthfill, the upper limit shall be the modified ground surface resulting from the specified previous excavation or earthfill.
- b. The lower limit shall be at the bottom surface of the proposed structure.
- c. The lateral limits shall be 18 inches outside of the outside surface of the proposed structure or shall be vertical planes 18 inches outside of and parallel to the footings, whichever gives the larger pay quantity, except as provided in d below.
- d. For trapezoidal channel linings or similar structures that are to be supported upon the sides of the excavation without intervening forms, the lateral limits shall be at the underside of the proposed lining or structure.
- e. For the purposes of the definitions in b, c, and d, above, any specified bedding or drainfill directly beneath or beside the structure will be considered to be a part of the structure.

All methods—The following provisions apply to all methods of measurement and payment.

Payment for each type and class of excavation is made at the contract unit price for that type and class of excavation. Such payment will constitute full compensation for all labor, materials, equipment, and all other items necessary and incidental to the performance of the work except that extra payment for backfilling overexcavation will be made in accordance with the following provisions.

Payment for backfilling overexcavation, as specified in section 8 of this specification, is made only if the excavation outside specified lines and grades is directed by the engineer to remove unsuitable material and if the unsuitable condition is not a result of the contractor's improper construction operations as determined by the engineer.

Compensation for any item of work described in the contract, but not listed in the bid schedule is included in the payment for the item of work to which it is made subsidiary. Such items and the items to which they are made subsidiary are identified in section 10 of this specification.

10. Items of work and construction details

10. ITEMS OF WORK AND CONSTRUCTION DETAILS

Items of work and construction details to be performed in conformance with this specification are:

a. Bid Item 4, Excavation, Flotation and Access Channels

The contractor will be allowed to perform flotation and access channel excavation 24 hours per day 7 days per week.

- (1) This item shall consist of the common excavation and construction of the flotation and access channels as necessary, up to the allowable limits shown by the lines and grades on the drawings.
- (2) Materials excavated for the flotation channel along the rock dike shall be placed on the landward side of the rock dike in the permanent spoil placement areas as shown on the drawings. The top elevation of spoil placed in the permanent spoil placement areas shall not exceed +4.0 feet NAVD 88.
- (3) Materials excavated for barge turnarounds and for the access channels perpendicular to the rock dike may be placed in the temporary spoil placement areas on the lake side of the rock dike at the locations shown on the drawings. These temporary spoil materials shall be removed and placed back in the flotation and access channels upon completion of rock dike construction.
- (4) In Section 4, Use of Excavated Materials, all spoil will be placed as specified above.
- (5) In Section 5, Disposal of waste materials, Method 1 shall apply.
- (6) Section 9, Measurement and Payment, does not apply. Payment for flotation and access excavation shall be made on a lump sum basis. 75 per cent of the lump sum price will be paid when excavation and permanent spoil placement have been completed. The remaining 25 per cent of the lump sum price will be paid upon project completion after all temporary spoil has been moved from the temporary spoil placement areas and placed back into the flotation and access channels.

Construction Specification 23—Earthfill

1. Scope

The work consists of the construction of earth embankments, other earthfills, and earth backfills required by the drawings and specifications.

Earthfill is composed of natural earth materials that can be placed and compacted by construction equipment operated in a conventional manner.

Earth backfill is composed of natural earth material placed and compacted in confined spaces or adjacent to structures (including pipes) by hand tamping, manually directed power tampers or vibrating plates, or their equivalent.

2. Material

All fill material shall be obtained from required excavations and designated borrow areas. The selection, blending, routing, and disposition of material in the various fills shall be subject to approval by the engineer.

Fill materials shall contain no frozen soil, sod, brush, roots, or other perishable material. Rock particles larger than the maximum size specified for each type of fill shall be removed prior to compaction of the fill.

The types of material used in the various fills shall be as listed and described in the specifications and drawings.

3. Foundation preparation

Foundations for earthfill shall be stripped to remove vegetation and other unsuitable material or shall be excavated as specified.

Except as otherwise specified, earth foundation surfaces shall be graded to remove surface irregularities and shall be scarified parallel to the axis of the fill or otherwise acceptably scored and loosened to a minimum depth of 2 inches. The moisture content of the loosened material shall be controlled as specified for the earthfill, and the surface material of the foundation shall be compacted and bonded with the first layer of earthfill as specified for subsequent layers of earthfill.

Earth abutment surfaces shall be free of loose, uncompacted earth in excess of 2 inches in depth normal to the slope and shall be at such a moisture content that the earthfill can be compacted against them to produce a good bond between the fill and the abutments.

Rock foundation and abutment surfaces shall be cleared of all loose material by hand or other effective means and shall be free of standing water when fill is placed upon them. Occasional rock outcrops in earth foundations for earthfill, except in dams and other structures designed to restrain the movement of water, shall not require special treatment if they do not interfere with compaction of the foundation and initial layers of the fill or the bond between the foundation and the fill.

Foundation and abutment surfaces shall be no steeper than one horizontal to one vertical unless otherwise specified. Test pits or other cavities shall be filled with compacted earthfill conforming to the specifications for the earthfill to be placed upon the foundation.

4. Placement

Earthfill shall not be placed until the required excavation and foundation preparation have been completed and the foundation has been inspected and approved by the engineer. Earthfill shall not be placed upon a frozen surface nor shall snow, ice, or frozen material be incorporated in the earthfill matrix.

Earthfill shall be placed in approximately horizontal layers. The thickness of each layer before compaction shall not exceed the maximum thickness specified in section 10 or shown on the drawings. Materials placed by dumping in piles or windrows shall be spread uniformly to not more than the specified thickness before being compacted.

Hand compacted earth backfill shall be placed in layers whose thickness before compaction does not exceed the maximum thickness specified for layers of earth backfill compacted by manually directed power tampers.

Earth backfill shall be placed in a manner that prevents damage to the structures and allows the structures to assume the loads from the earth backfill gradually and uniformly. The height of the earth backfill adjacent to a structure shall be increased at approximately the same rate on all sides of the structure.

Earthfill and earth backfill in dams, levees, and other structures designed to restrain the movement of water shall be placed to meet the following additional requirements:

- (a) The distribution of materials throughout each zone shall be essentially uniform, and the earthfill shall be free from lenses, pockets, streaks, or layers of material differing substantially in texture, moisture content, or gradation from the surrounding material. Zone earthfills shall be constructed concurrently unless otherwise specified.
- (b) The surface of each layer shall be scarified parallel to the axis of the fill to a depth of not less than 2 inches before the next layer is placed.
- (c) The top surface of embankments shall be maintained approximately level during construction with two exceptions: A crown or cross-slope of about 2 percent shall be maintained to ensure effective drainage, or as otherwise specified for drainfill or sectional zones.
- (d) Dam embankments shall be constructed in continuous layers from abutment to abutment except where openings to facilitate construction or to allow the passage of streamflow during construction are specifically authorized in the contract.
- (e) Embankments built at different levels as described under (c) or (d) above shall be constructed so that the slope of the bonding surfaces between embankment in place and embankment to be placed is not steeper than 3 feet horizontal to 1 foot vertical. The bonding surface of the embankment in place shall be stripped of all material not meeting the requirements of this specification and shall be scarified, moistened, and recompacted when the new earthfill is placed against it. This ensures a good bond with the new earthfill and obtains the specified moisture content and density at the contact of the in-place and new earthfills.

5. Control of moisture content

During placement and compaction of earthfill and earth backfill, the moisture content of the material being placed shall be maintained within the specified range.

The application of water to the earthfill material shall be accomplished at the borrow areas insofar as practicable. Water may be applied by sprinkling the material after placement on the earthfill, if necessary. Uniform moisture distribution shall be obtained by disking.

Material that is too wet when deposited on the earthfill shall either be removed or be dried to the specified moisture content prior to compaction.

If the top surface of the preceding layer of compacted earthfill or a foundation or abutment surface in the zone of contact with the earthfill becomes too dry to permit suitable bond, it shall either be removed or scarified and moistened by sprinkling to an acceptable moisture content before placement of the next layer of earthfill.

6. Compaction

Earthfill—Earthfill shall be compacted according to the following requirements for the class of compaction specified:

Class A compaction—Each layer of earthfill shall be compacted as necessary to provide the density of the earthfill matrix not less than the minimum density specified in Section 10 or identified on the drawings. The earthfill matrix is defined as the portion of the earthfill material finer than the maximum particle size allowed in the reference compaction test method specified (ASTM D698 or ASTM D1557).

Class B compaction—Each layer of earthfill shall be compacted to a mass density not less than the minimum density specified.

Class C compaction—Each layer of earthfill shall be compacted by the specified number of passes of the type and weight of roller or other equipment specified or by an approved equivalent method. Each pass shall consist of at least one passage of the roller wheel or drum over the entire surface of the layer.

Earth backfill—Earth backfill adjacent to structures shall be compacted to a density equivalent to that of the surrounding in-place earth material or adjacent required earthfill or earth backfill. Compaction shall be accomplished by hand tamping or manually directed power tampers, plate vibrators, walk-behind, miniature, or self-propelled rollers. Unless otherwise specified heavy equipment including backhoe mounted power tampers or vibrating compactors and manually directed vibrating rollers shall not be operated within 3 feet of any structure. Towed or self-propelled vibrating rollers shall not be operated within 5 feet of any structure. Compaction by means of drop weights operating from a crane or hoist is not permitted.

The passage of heavy equipment will not be allowed:

- Over cast-in-place conduits within 14-days after placement of the concrete
- Over cradled or bedded precast conduits within 7 days after placement of the concrete cradle or bedding
- Over any type of conduit until the backfill has been placed above the top surface of the structure to a height equal to one-half the clear span width of the structure or pipe or 3 feet, whichever is greater, except as may be specified in section 10.

Compacting of earth backfill adjacent to structures shall not be started until the concrete has attained the strength specified in section 10 for this purpose. The strength is determined by compression testing of test cylinders cast by the contractor's quality control personnel for this purpose and cured at the work site in the manner specified in ASTM C 31 for determining when a structure may be put into service.

When the required strength of the concrete is not specified as described above, compaction of earth backfill adjacent to structures shall not be started until the following time intervals have elapsed after placement of the concrete.

Structure	Time interval (days)
Vertical or near-vertical walls with earth loading on one side only	14
Walls backfilled on both sides simultaneously	7
Conduits and spillway risers, cast-in-place (with inside forms in place)	7
Conduits and spillway risers, cast-in-place (inside forms removed)	14
Conduits, pre-cast, cradled	2
Conduits, pre-cast, bedded	1
Cantilever outlet bents (backfilled both sides simultaneously)	3

7. Reworking or removal and replacement of defective earthfill

Earthfill placed at densities lower than the specified minimum density or at moisture contents outside the specified acceptable range of moisture content or otherwise not conforming to the requirements of the specifications shall be reworked to meet the requirements or removed and replaced by acceptable earthfill. The replacement earthfill and the foundation, abutment, and earthfill surfaces upon which it is placed shall conform to all requirements of this specification for foundation preparation, approval, placement, moisture control, and compaction.

8. Testing

During the course of the work, the contractor shall perform quality control tests, as applicable, to identify earthfill and earth backfill materials; determine the reference maximum density and optimum moisture content; and document that the moisture content of material at the time of compaction and the density of earthfill and earth backfill in place conform to the requirements of this specification.

Determining Reference Maximum Density and Optimum Moisture Content—For Class A compaction, the reference maximum density and optimum moisture content shall be determined in accordance with the compaction test and method specified on the drawings or in section 10.

Documenting Specification Conformance—In-place densities of earthfill and earth backfill requiring Class A compaction shall be measured in accordance with ASTM D1556, D2167, D2937, or D6938. Moisture contents of earthfill and earth backfill at the time of compaction shall be measured in accordance with ASTM D2216, D4643, or D6938. Values of moisture content determined by ASTM D2216 are considered the true value of the soil moisture. Values of moisture content determined by ASTM D4643 or D6938 shall be verified by comparison to values obtained by ASTM D2216. Values of in-place density and moisture content determined by these tests shall be compared to the minimum density and moisture content range specified on the drawings or in section 10.

Correction for Oversize Particles—If the materials to be used for earthfill or earth backfill contain more than 5 percent by dry weight of oversize rock particles (particles larger than those allowed in the specified compaction test and method), corrections for oversize particles shall be made using the appropriate procedures explained in ASTM D4718.

9. Measurement and payment

For items of work for which specific unit prices are established in the contract, the volume of each type and compaction class of earthfill and earth backfill within the specified zone boundaries and pay limits is measured and computed to the nearest cubic yard by the method of average cross-sectional end areas. Unless otherwise specified in section 10, no deduction in volume is made for embedded items, such as, but not limited to, conduits, inlet structures, outlet structures, embankment drains, sand diaphragm and outlet, and their appurtenances.

The pay limits shall be as defined below, with the further provision that earthfill required to fill voids resulting from overexcavation of the foundation, outside the specified lines and grades, will be included in the measurement for payment only under the following conditions:

- Where such overexcavation is directed by the engineer to remove unsuitable material, and
- Where the unsuitable condition is not a result of the contractor's improper construction operations as determined by the engineer.

Earthfill beyond the specified lines and grades to backfill excavation required for compliance with OSHA requirements will be considered subsidiary to the earthfill bid item(s).

Method 1—The pay limits shall be as designated on the drawings.

Method 2—The pay limits shall be the measured surface of the foundation when approved for placement of the earthfill and the specified neat lines of the earthfill surface.

Method 3—The pay limits shall be the measured surface of the foundation when approved for placement of the earthfill and the measured surface of the completed earthfill.

Method 4—The pay limits shall be the specified pay limits for excavation and the specified neat lines of the earthfill surface.

Method 5—The pay limits shall be the specified pay limits for excavation and the measured surface of the completed earthfill.

Method 6—Payment for each type and compaction class of earthfill and earth backfill is made at the contract unit price for that type and compaction class of earthfill. Such payment will constitute full compensation for all labor, material, equipment, and all other items necessary and incidental to the performance of the work.

Method 7—Payment for each type and compaction class of earthfill and earth backfill is made at the contract unit price for that type and compaction class of earthfill. Such payment will constitute full compensation for all labor, material, equipment, and all other items necessary and incidental to the performance of the work except furnishing, transporting, and applying water to the foundation and earthfill material. Water applied to the foundation and earthfill material is measured and payment made as specified in Construction Specification 10.

All methods—The following provisions apply to all methods of measurement and payment. Compensation for any item of work described in the contract, but not listed in the bid schedule is included in the payment for the item of work to which it is made subsidiary. Such items and the items to which they are made subsidiary are identified in section 10 of this specification.

10. Items of work and construction details

10. ITEMS OF WORK AND CONSTRUCTION DETAILS

Items of work to be performed in conformance with this specification and the construction drawings are:

a. Subsidiary Item, Earthfill, Permanent Spoil Placement

- (1) This item shall consist of all work necessary to place or cast excavated material from the flotation channel to the landward side of the rock dike in the permanent spoil placement areas at the locations shown on the drawings.
- (2) Materials for the permanent spoil placement shall be obtained from the flotation channels parallel to the rock dike.
- (3) Placement shall be at the locations and up to the lines and grades shown on the drawings. Any excess excavated material shall be placed in the temporary spoil placement areas.
- (4) No compaction will be required.
- (5) Soil material shall be handled to the minimum extent possible to maintain soil strength and minimize lateral spreading during placement.
- (6) Stronger, initial contact soil shall be placed nearer to the rock dike to prevent weaker material from flowing into the rock dike fill.
- (7) The contractor shall minimize "pancaking" of placed material and displacement of underlying soil by limiting the soil drop height to three feet.
- (8) Excavator buckets with drains shall be used to reduce water flow over freshly placed fill.
- (9) Section 9, Measurement and Payment, does not apply. Payment for this item is included in payment for Bid Item 4, Excavation, Flotation and Access.

b. Subsidiary Item, Earthfill, Temporary Spoil Placement

- (1) This item shall consist of all work necessary to place excavated materials not used in the permanent dredge fill placement areas into the temporary spoil placement areas. These materials shall be placed at the locations and up to the lines and grades shown on the drawings. At the completion of construction, the stored spoil shall be returned to the flotation and access excavation channels.
- (2) Section 9, Measurement and Payment, does not apply. Payment for this item is included in payment for Bid Item 4, Excavation, Flotation and Access.

Construction Specification 61—Rock Riprap

1. Scope

The work shall consist of the construction of rock riprap revetments and blankets, including filter or bedding where specified.

2. Material

Rock riprap shall conform to the requirements of Material Specification 523, Rock for Riprap, or if so specified, shall be obtained from designated sources. It shall be free from dirt, clay, sand, rock fines, and other material not meeting the required gradation limits.

At least 30 days before rock is delivered from other than designated sources, the contractor shall designate in writing the source from which rock material will be obtained and provide information satisfactory to the contracting officer that the material meets contract requirements. The contractor shall provide the contracting officer's technical representative (COTR) free access to the source for the purpose of obtaining samples for testing. The size and grading of the rock shall be as specified in section 8.

Rock from approved sources shall be excavated, selected, and processed to meet the specified quality and grading requirements at the time the rock is installed.

Based on a specific gravity of 2.65 (typical of limestone and dolomite) and assuming the individual rock is shaped midway between a sphere and a cube, typical size/weight relationships are:

Sieve size of rock	Approx. weight of rock	Weight of test pile
16 inches	300 pounds	6,000 pounds
11 inches	100 pounds	2,000 pounds
6 inches	15 pounds	300 pounds

When specified in Section 8 or when it is necessary to verify the gradation of the rock riprap, a particle size analysis shall be performed in accordance with ASTM D5519, Test Method A or B. The analysis shall be performed at the work site on a test pile of representative rock. The mass of the test pile shall be at least 20 times the mass of the largest rock in the pile.

The results of the test shall be compared to the gradation required for the project. Test pile results that do not meet the construction specifications shall be cause for the rock to be rejected. The test pile that meets contract requirements shall be left on the job site as a sample for visual comparison. The test pile shall be used as part of the last rock riprap to be placed.

Filter or bedding aggregates when required shall conform to Material Specification 521, Aggregates for Drainfill and Filters, unless otherwise specified. Geotextiles shall conform to Material Specification 592, Geotextile.

3. Subgrade preparation

The subgrade surface on which the rock riprap, filter, bedding, or geotextile is to be placed shall be cut or filled and graded to the lines and grades shown on the drawings. When fill to subgrade lines is required, it shall consist of approved material and shall conform to the requirements of the specified class of earthfill.

Rock riprap, filter, bedding, or geotextile shall not be placed until the foundation preparation is completed and the subgrade surface has been inspected and approved.

4. Equipment-placed rock riprap

The rock riprap shall be placed by equipment on the surface and to the depth specified. It shall be installed to the full course thickness in one operation and in such a manner as to avoid serious displacement of the underlying material. The rock for riprap shall be delivered and placed in a manner that ensures the riprap in place is reasonably homogeneous with the larger rocks uniformly distributed and firmly in contact one to another with the smaller rocks and spalls filling the voids between the larger rocks. Some hand placing may be required to provide a neat and uniform surface.

Rock riprap shall be placed in a manner to prevent damage to structures. Hand placing is required as necessary to prevent damage to any new and existing structures.

5. Hand placed rock riprap

The rock riprap shall be placed by hand on the surface and to the depth specified. It shall be securely bedded with the larger rocks firmly in contact one to another without bridging. Spaces between the larger rocks shall be filled with smaller rocks and spalls. Smaller rocks shall not be grouped as a substitute for larger rock. Flat slab rock shall be laid on its vertical edge except where it is laid like paving stone and the thickness of the rock equals the specified depth of the riprap course.

6. Filter or bedding

When the contract specifies filter, bedding, or geotextile beneath the rock riprap, the designated material shall be placed on the prepared subgrade surface as specified. Compaction of filter or bedding aggregate is not required, but the surface of such material shall be finished reasonably smooth and free of mounds, dips, or windrows.

7. Measurement and payment

Method 1—For items of work for which specific unit prices are established in the contract, the quantity of each type of rock riprap placed within the specified limits is computed to the nearest ton by actual weight. The volume of each type of filter or bedding aggregate is measured within the specified limits and computed to the nearest cubic yard by the method of average cross-sectional end areas. For each load of rock riprap placed as specified, the contractor shall furnish to the COTR a statement-of-delivery ticket showing the weight to the nearest 0.1 ton.

Payment is made at the contract unit price for each type of rock riprap, filter, or bedding. Such payment is considered full compensation for completion of the work.

Method 2—For items of work for which specific unit prices are established in the contract, the quantity of each type of rock riprap placed within the specified limits is computed to the nearest 0.1 ton by actual weight. The quantity of each type of filter or bedding aggregate delivered and placed within the specified limits is computed to the nearest 0.1 ton. For each load of rock riprap placed as specified, the contractor shall furnish to the engineer a statement-of-delivery ticket showing the weight to the nearest 0.1 ton. For each load of filter or bedding aggregate, the contractor shall furnish to the COTR a statement-of-delivery ticket showing the weight to the nearest 0.1 ton.

Payment is made at the contract unit price for each type of rock riprap, filter, or bedding. Such payment is considered full compensation for completion of the work.

Method 3—For items of work for which specific unit prices are established by the contract, the volume of each type of rock riprap and filter or bedding aggregate is measured within the specified limits and computed to the nearest cubic yard by the method of average cross-sectional end areas.

Payment is made at the contract unit price for each type of rock riprap, filter, or bedding. Such payment is considered full compensation for completion of the work.

Method 4—For items of work for which specific unit prices are established by the contract, the volume of each type of rock riprap, including filter and bedding aggregate, is measured within the specified limits and computed to the nearest cubic yard by the method of average cross-sectional end areas.

Payment is made at the contract unit price for each type of rock riprap, including filter and bedding. Such payment is considered full compensation for completion of the work.

Method 5—For items of work for which specific unit prices are established by the contract, the quantity of each type of rock riprap placed within the specified limits is computed to the nearest ton by actual weight. For each load of rock for riprap placed as specified, the contractor shall furnish to the COTR a statement-of-delivery ticket showing the weight to the nearest 0.1 ton.

Payment is made at the contract unit price for each type of rock riprap, including geotextile used for filter or bedding. Such payment is considered full compensation for completion of the work.

Method 6—For items of work for which specific unit prices are established by the contract, the volume of each type of rock riprap is measured within the specified limits and computed to the nearest cubic yard by the method of average cross-sectional end areas.

Payment is made at the contract unit price for each type of rock riprap, including geotextile used for filter or bedding. Such payment is considered full compensation for completion of the work.

All methods—The following provision applies to all methods of measurement and payment. Compensation for any item of work described in the contract, but not listed in the bid schedule, is included in the payment for the item of work to which it is made subsidiary. Such items and the items to which they are made subsidiary are identified in section 8.

No separate payment is made for testing the gradation of the test pile. Compensation for testing is included in the appropriate bid item for riprap.

8. Items of work and construction details

8. ITEMS OF WORK AND CONSTRUCTION DETAILS

Items of work and construction details to be performed in conformance with this specification are:

a. Bid Item 6, Rock Riprap

- (1) This item shall consist of furnishing all rock riprap and all work necessary to transport and place the rock riprap needed to construct the rock dike. Rock riprap shall be placed to the lines and grades shown on the drawings and as staked in the field.
- (2) At the time of final inspection, the rock riprap shall be to the lines and grades shown on the drawings with a vertical tolerance of +0.5 feet. The vertical tolerance applies only to the top crown of the rock structure which shall be at the design width. The base with of the rock dike shall be determined by superimposing the design template (+3.5 feet crown elevation, 4-foot top width, 3:1 side slopes) on the bottom surface.
- (3) Rock riprap shall be reasonably well graded from the minimum size stone to the maximum size stone permitted. Rock riprap shall be Rock Type 1 and conform to Material Specification 523, Rock for Riprap.

Rock riprap gradation shall conform to ASTM D 6092-97 Riprap R-300 as shown below. Minimum rock riprap thickness will be 24" as shown on the drawings:

Percent Lighter by Weight	ASTM D6092-97 R-300 Rock Riprap Rock Size By Weight
100	700 lbs.
50-100	300 lbs.
15-50	150 lbs.
0-15	45 lbs.

- (4) Rock riprap shall be placed by equipment on the surface and to the depth specified. No rock is to be dropped from a height greater than one (1) foot. The rock for riprap shall be delivered and placed in a manner that ensures the riprap in place is reasonably homogeneous, with the larger rocks uniformly distributed and firmly in contact with one another, and the smaller rocks and spalls filling the voids between the larger rocks. Some hand placing may be required to provide a neat and uniform surface.

Rock riprap shall be placed in two lifts, beginning at the tie-in to the existing rock dike at Station 56+81 and proceeding to Station 0+00. Special care shall be taken to displace soft mud in the old flotation channel between approximate Stations 56+75 and 55+25 by placing rock riprap at the dike centerline and working outward to the toes of the dike. The first lift shall be brought up to the water level in this manner, with a top elevation no higher than +1.5 feet NAVD 88, for the entire length of the rock dike. The second lift shall begin at the same location as the first and shall raise the rock dike to the design elevation.

- (5) Care shall be taken when placing rock to minimize spillage. In the event rock is spilled in areas where boat traffic may impact the spilled rocks, the contractor shall remove said rocks from the entire area in question. Upon completion of the work the contractor shall investigate, by appropriate means, the entire work area to include the staging area to assure no spilled rock is present.
- (6) The contractor shall not operate any equipment on the berm between the rock dike and the flotation channel for rock placement or any other construction operation.

- (7) Section 7, Measurement and payment does not apply. Payment will be made per ton of rock riprap placed and shaped to the lines and grades shown on the drawings. The COR will measure the quantity of rock riprap for payment, by weight determined by barge displacement. Not less than 10 days prior to unloading the stone from any barge, the Contractor shall furnish the COR a barge displacement table for that barge. The COR shall be notified at least 24 hours in advance before any full rock barges are to be measured for payment, and subsequently each time a full barge of rock riprap is being transferred to smaller barges for placement on the project sites. The Contractor shall measure the full barge each time that there is a complete loading onto a light loaded barge and these records of measurement shall be provided to the COR. 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 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 COR. Each table submitted shall show the name and/or number of the barge, the barge dimensions, the barge owner, the name of the fabricator, and the certification and date of certification of the person or firm preparing the table. All new or modified barges may be field checked for current dimensions by the COR. 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 gauging locations along each side of the barge. A line shall mark each gauging location perpendicular to the edge of the barge, four inches wide and one 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 gauging locations shall be placed approximately four feet from the box end(s). The freeboard will be measured at the four gauging locations and the displacement determined by the use of "CELMV Standard Barge Tables" from the average of these measurements. The displacement shall be determined before and after being unloaded and the difference between these values shall be the quantity delivered.

Pumping water from within the barge will not be permitted during unloading of the riprap or until all displacement measurements have been taken. If barge tables are furnished for fresh water and if the Contractor believes that barge displacement measurements made within the contract limits of work are being taken in water that has salinity, they will have the option of obtaining water samples and determining densities or unit weights of these samples. These water samples shall be taken in accordance with ASTM D 3370 (practice A - Grab Sample) at depths of 4 and 8 feet in the area where measurements are made. Water sampling shall be performed when the barges are measured for quantities, both when fully loaded and when empty. Water samples shall be taken by the Contractor and witnessed by the COR with the use of "Polypro" 2000 ml. water sampler, or equal. Densities shall be determined as specified in ASTM D 1429 (Method D - Hydrometer Method). Testing shall be done for the Contractor by a Certified testing laboratory, and test results certified by this laboratory. After review and approval of the test results by the Government, the average of the densities obtained at 4 feet and 8 feet will be used as the suitable salt water conversion factor. In all calculations, the unit weight of 62.45 pounds/cubic foot will be used for fresh water. If the Contractor does not obtain water samples and densities, then no adjustment or conversion factor will be applied to stone quantities determined by displacement tables.

Construction Specification 81—Metal Fabrication and Installation

1. Scope

The work consists of furnishing, fabricating, and erecting metalwork, including the metal parts and fasteners of the composite structures.

2. Material

Unless otherwise specified, material shall conform to the requirements of Material Specification 581, Metal. Steel shall be structural quality unless otherwise specified. Castings shall be thoroughly cleaned and subjected to careful inspection before installation. Finished surfaces shall be smooth and true to assure proper fit. Galvanizing shall conform to the requirements of Material Specification 582, Galvanizing.

3. Fabrication

Fabrication of structural steel shall conform to the requirements of Specification for the Design, Fabrication and Erection of Structural Steel for Buildings (Riveted, Bolted and Arc-Welded Construction), American Institute of Steel Construction.

Fabrication of structural aluminum shall conform to the requirements in the Aluminum Design Manual available from The Aluminum Association.

4. Erection

The frame of metal structures shall be installed true and plumb. Temporary bracing shall be placed wherever necessary to resist all loads to which the structure may be subjected, including those applied by the installation and operation of equipment. Such bracing shall be left in place as long as may be necessary for safety.

As erection progresses the work shall be securely bolted up, or welded, to resist all dead load, wind, and erection stresses. The contractor shall furnish such installation assisting bolts, nuts, and washers as may be required.

No riveting or welding shall be performed until the structure is stiffened and properly aligned.

Rivets driven in the field shall be heated and driven with the same care as those driven in the shop.

All field welding shall be performed in conformance to the requirements for shop fabrication except those that expressly apply to shop conditions only.

5. Protective coatings

Items specified to be galvanized shall be completely fabricated for field assembly before the application of the zinc coatings. Galvanized items shall not be cut, welded, or drilled after the zinc coating is applied.

Items specified to be painted shall be painted in conformance to the requirements of Construction Specification 82 for the specified paint systems.

6. Measurement and payment

Method 1—The work is not measured. Payment for metal fabrication and installation is made at the

contract lump sum price in the contract. Such payment constitutes full compensation for all labor, equipment, material, and all other items necessary and incidental to the completion of the work including connectors and appurtenances, such as rivets, bolts, nuts, pins, studs, washers, hangers, and weld metal.

Method 2—The weight of metal installed complete in place shall be determined to the nearest pound. Unless otherwise specified, the weight of metal shall be computed by the method specified in section 3 of the Code of Standard Practice for Steel Buildings and Bridges, American Institute of Steel Construction, except that the following unit weights shall also be used, as appropriate, as the basis of computation:

Material	Unit weight (lb/ft ³)
Aluminum alloy	173
Bronze or copper alloy	536
Iron, malleable	470
Iron, wrought	487

Payment for furnishing, fabricating, and installing metalwork is made at the contract unit price for the specified types of labor, material, equipment, and all other items necessary and incidental to the completion of the work.

Method 3—The work is not measured. Payment for furnishing, fabricating, and installing each item of metalwork is made at the contract price for that item. Such payment constitutes full compensation for all labor, equipment, material, and all other items necessary and incidental to the completion of the work including connectors and appurtenances, such as rivets, bolts, nuts, pins, studs, washers, hangers, and weld metal.

All methods—The following provisions apply to all methods of measurement and payment. Compensation for any item of work described in the contract, but not listed in the bid schedule, is included in the payment for the item of work to which it is made subsidiary. Such items and the items to which they are made subsidiary are identified in section 7 of this specification.

7. ITEMS OF WORK AND CONSTRUCTION DETAILS

Items of work to be performed in conformance with this specification and the construction drawings are:

a. Bid Item 10, Metal Fabrication, Settlement Plates

- (1) This item shall consist of furnishing, fabricating and installing settlement plates to the lines and grades as shown on the drawings and as staked in the field.
- (2) All pipe shall be hot dipped galvanized and conform to ASTM A53 Grade B and Material Specifications 554, Steel Pipe and 582, Galvanizing.

All plate steel shall be hot dipped galvanized and conform to ASTM A572, Grade 50, and Material Specifications 581, Metal and 582, Galvanizing.

All other metal, bolts, nuts, washers, and other metal fastening hardware shall be galvanized steel, unless otherwise shown on the drawings, and conform to Material Specifications 581, Metal and 582, Galvanizing.

- (3) The contractor shall furnish the COR a copy of the shop drawings for all metal fabrication 14 days prior to fabricating.
- (4) All settlement plates shall be shop fabricated in a manner to keep field connections to a minimum.
- (5) For the rock dike, the settlement plates shall be placed against the geotextile surface after placing and securing the geotextile on the foundation before placing the rock riprap. All settlement plates shall be placed such that the vertical pipe conforms to a vertical plumb standard of no more than one part per one hundred from true vertical.
- (6) The settlement plates shall be surveyed in accordance with the requirements of Specification 7, Construction Surveys.
- (7) Measurement and payment shall be by Method 3. Such payment will be considered full compensation for all work related to furnishing and installing the settlement plates.

b. Subsidiary Item, Metal Fabrication and Installation, Timber Pile Caps

- (1) This item shall consist of furnishing, fabrication, and installation of all metalwork required to install timber pile caps at all locations as shown on the drawings.
- (2) All aluminum shall be type 6061 – 26 gage.
- (3) Each pile as required shall have the cap fitted as shown on the drawings.

- (4) No separate payment shall be made for this item. Compensation for this item is to be included in the appropriate related bid item of those listed here: Bid Item 7, Identification Markers or Plaques, Permanent Warning Signs; Bid Item 8, Identification Markers or Plaques, Temporary Warning Signs; or Bid Item 9, Identification Markers or Plaques, Warning Buoys.

Construction Specification 93—Identification Markers or Plaques

1. Scope

The work consists of furnishing and installing identification markers or plaques at the designated locations.

2. Material

The markers or plaques shall be constructed of the specified material, and shall meet all requirements for lettering, painting, finishing, and related items as shown on the drawings or as specified in section 6 of this specification.

3. Construction methods

The markers or plaques shall be installed at location(s) as shown on the drawings and in the manner or condition specified in section 6.

4. Monuments

Unless otherwise specified, the markers or plaques shall be mounted on concrete monuments, on existing structures, or on structures proposed for installation under this contract.

5. Measurement and payment

Method 1—For items of work for which specific unit prices are established in the contract, payment for each type, kind, and size of marker or plaque complete in place is made at the contract unit price for that type, kind, and size. Such payment constitutes full compensation for all labor, equipment, tools, and all other items necessary and incidental to the completion of the work.

Method 2—For items of work for which specific lump sum prices are established in the contract, payment for identification markers or plaques is made at the contract lump sum price. Such payment constitutes full compensation for all labor, equipment, tools, and all other items necessary and incidental to the completion of the work.

All methods—The following provisions apply to all methods of measurement and payment.

Compensation for any item of work described in the contract, but not listed in the bid schedule, is included in the payment for the item of work to which it is made subsidiary. Such items and the items to which they are made subsidiary are identified in section 6 of this specification.

6. Items of work and construction details

6. ITEMS OF WORK AND CONSTRUCTION DETAILS

Items of work to be performed in conformance with this specification and the construction details are:

a. Bid Item 7, Identification Markers or Plaques, Permanent Warning Signs

- (1) This item shall consist of furnishing, fabricating and installing permanent signs to the lines, grades and locations indicated on the drawings. The contractor shall submit shop drawings for the sign supports and connections to the Contracting Officer 14 days prior to fabrication.
- (2) The posts shall be driven to an approximate elevation of +10.0 feet NAVD 88 plus or minus 6 inches.
- (3) The wording and height of text for the permanent signs will be as shown on the drawings.
- (4) Permanent signs shall be made from 3/16 inch plate aluminum and conform to Material Specification 581, Metal.
- (5) The two (2) inch border on the warning sign shall be an orange Type I reflective sheeting with a Class 1 or Class 2 adhesive in accordance with ASTM D 4956. The lettering field measuring 33" x 33" will be a retro-reflective material of white color. The lettering for the warning sign will be black.
- (6) Permanent sign posts shall be round timber piles as specified in Construction Specification 13, Piling and as shown in the drawings.
- (7) All bolts, lag screws, washers and nuts used to attach the signs to the sign posts shall be stainless steel. The bolts or lag screws shall be 5/8" diameter. The nuts shall be spot welded to the bolts upon completion of the permanent installation.
- (8) The sign supports shall be installed plumb and straight and shall be placed as directed by the project drawings and concurred in by the COR. The permanent signs shall be attached prior to the date that a pre-final inspection is requested.
- (9) In Section 5, Measurement and payment shall be by Method 1. Such payment shall constitute full compensation for related Subsidiary Items Conspicuity Tape, Round Timber Piling, Sign Supports; and Marine Lanterns.

b. Bid Item 8, Identification Markers or Plaques, Temporary Warning Signs

- (1) This item shall consist of furnishing, fabricating and installing temporary signs to the lines, grades and locations shown in the drawings. The contractor shall submit shop drawings for the sign supports and connections to the Contracting Officer 14 days prior to fabrication.

- (2) The wording and height of text for the temporary signs shall be as shown on the drawings.
- (3) Temporary signs shall be cut from 1/2 inch marine, B/C grade veneer plywood to the dimensions shown on the drawings.
- (4) Temporary signs shall be first primed on the B side of the plywood with two (2) coats of a light pigment, permanent oil-based primer. The top coat shall be an oil-based brilliant white. The lettering on these signs shall be black.
- (5) Sign supports shall be round timber pile sign supports meeting the requirements of Construction Specification 13, Piling. Conspicuity tape, a minimum of two inches wide, shall be installed on the sign supports as shown on the drawings. All sign supports shall be long enough to maintain the signs at the specified elevation during weather patterns and marine traffic considered typical for the project area.
- (6) The temporary warning signs placed on access channels that are perpendicular to the shoreline shall have a sign placed on each side of the support oriented to be visible by marine traffic traveling in either direction parallel to the shoreline. The temporary warning signs shall be placed at the locations shown on the plans or as directed by the COR.
- (7) The temporary warning signs placed along access channels that are parallel to the shoreline shall have one sign on the support facing the open water area. The temporary warning signs shall be placed at the locations shown on the plans or as directed by the COR.
- (8) The temporary signs shall be installed as soon as work has started in the adjacent area and maintained until the flotation channel is filled with the excavated material that is stockpiled on the water side of the rock dike. The contractor shall install the signs at the elevation shown on the drawings. Sign supports shall be installed plumb. The signs shall be inspected daily and corrections made as necessary to insure the signs are positioned as specified.
- (9) Additional temporary signs may be required during construction. It is the Contractor's responsibility to provide, install, and maintain temporary warning signs as required by the US Coast Guard or other regulatory authority and as concurred in or required by the COR.
- (10) Measurement and payment shall be by Method 1. Such payment shall constitute full compensation for related Subsidiary Items Conspicuity Tape, Round Timber Piling, Sign Supports; and Marine Lanterns.

c. Subsidiary Item, Identification Markers or Plaques, Conspicuity Tape

- (1) This item shall consist of furnishing and installing conspicuity tape to the lines, grades, and locations shown on the drawings.
- (2) A minimum two inch wide white retro-reflective conspicuity tape shall be affixed per the manufacturer's recommendation to a smooth aluminum substrate sheet cut from ASTM B-209 Alloy 5052-H34 or 6061-T6 sheeting in 0.025 inch (0.0635 cm) thickness and shall be placed on the round timber piling as shown on the project drawings. This material shall be wrapped completely around the round timber pile circumference and shall be attached with a minimum of four stainless steel or aluminum nails.
- (3) No separate payment shall be made for this item. Compensation for this item is to be included in Bid Item 7, Identification Markers or Plaques, Permanent Warning Signs; Bid Item 8, Identification Markers or Plaques, Temporary Warning Signs; and Bid Item 9, Identification Markers or Plaques, Warning Buoys.

d. Subsidiary Item, Identification Markers or Plaques, Marine Lanterns

- (1) This item shall consist of furnishing and installing marine lanterns to the lines and grades and at the locations indicated on the drawings. Alternative configurations meeting the requirements listed in 6d(2) below may be submitted to the COR prior to mobilization for review and determination of acceptance.
- (2) A USCG approved marine lantern shall be affixed to the top of the warning signs indicated on the drawings. The lantern shall be white with a minimum visibility of 1 nautical mile, and a flash characteristic of 0.3 sec ON / 2.2 sec OFF. The light shall have a capability of 30 days of autonomy with power provided by a battery charged by solar panel. The solar panel shall be positioned to face due south and shall include a bird deterrent device that covers the top width of the panel. Any batteries, circuits, or other components that may be sensitive to the marine environment shall be contained within a stainless steel or hot dipped galvanized enclosure.
- (3) No separate payment shall be made for this item. Compensation for this item is to be included in the related bid items among those listed here: Bid Item 7, Identification Markers or Plaques, Permanent Warning Signs; Bid Item 8, Identification Markers or Plaques, Temporary Warning Signs; and Bid Item 9, Identification Markers or Plaques, Warning Buoys.

e. Bid Item 9, Identification Markers or Plaques, Warning Buoys

- (1) This item shall consist of furnishing and installing lighted warning buoys at the locations shown on the drawings.
- (2) The Contractor shall be responsible for placing lighted danger obstruction buoys at the locations shown on the plans and maintaining them for the duration of construction. These buoys shall alert the boating public of the obstruction created by the temporary spoil. Buoys shall be in accordance with USCG regulations and shall display a white marine lantern with one nautical mile visibility and a 0.3 sec ON / 2.2 sec OFF flash pattern. Buoys shall be maintained during the entire performance period of the contract and removed upon completion of the contract.
- (3) In Section 5, Measurement and payment shall be by Method 1. Such payment shall constitute full compensation for related Subsidiary Items Conspicuity Tape and Marine Lanterns.

Construction Specification 94—Contractor Quality Control

1. Scope

The work consists of developing, implementing, and maintaining a quality control system to ensure that the specified quality is achieved for all materials and work performed.

2. Equipment and materials

Equipment and material used for quality control shall be of the quality and condition required to meet the test specifications cited in the contract. Testing equipment shall be properly adjusted and calibrated at the start of operations and the calibration maintained at the frequency specified. Records of equipment calibration tests shall be available to the engineer at all times. Equipment shall be operated and maintained by qualified operators as prescribed in the manufacturer's operating instructions, the references specified, and as specified in section 10 of this specification. All equipment and materials used in performing quality control testing shall be as prescribed by the test standards referenced in the contract or in section 10.

All equipment and materials shall be handled and operated in a safe and proper manner and shall comply with all applicable regulations pertaining to their use, operation, handling, storage, and transportation.

3. Quality control system

Method 1—The contractor shall develop, implement, and maintain a system of quality control to provide the specified material testing and verification of material quality before use. The system activities shall include procedures to verify adequacy of completed work, initiate corrective action to be taken, and document the final results. The identification of the quality control personnel and their duties and authorities shall be submitted to the contracting officer in writing within 15 calendar days after notice of award.

Method 2—The contractor shall develop, implement, and maintain a system adequate to achieve the specified quality of all work performed, material incorporated, and equipment furnished before use. The system established shall be documented in a written plan developed by the contractor and approved by the contracting officer. The system activities shall include the material testing and inspection needed to verify the adequacy of completed work and procedures to be followed when corrective action is required. Daily records to substantiate the conduct of the system shall be maintained by the contractor. The quality control plan shall cover all aspects of quality control and shall address, as a minimum, all specified testing and inspection requirements. The plan provided shall be consistent with the planned performance in the contractor's approved construction schedule. The plan shall identify the contractor's onsite quality control manager and provide an organizational listing of all quality control personnel and their specific duties. The written plan shall be submitted to the contracting officer within 15 calendar days after notice of award. The contractor shall not proceed with any construction activity that requires inspection until the written plan is approved by the contracting officer.

All methods—The quality control system shall include, but not be limited to, a rigorous examination of construction material, processes, and operation, including testing of material and examination of manufacturer's certifications as required, to verify that work meets contract requirements and is performed in a competent manner.

4. Quality control personnel

Method 1—Quality control activities shall be accomplished by competent personnel. A competent person is: One who is experienced and capable of identifying, evaluating, and documenting that materials and processes being used will result in work that complies with the contract; and, who has authority to take prompt action to remove, replace, or correct such work or products not in compliance. Off-site testing laboratories shall be certified or inspected by a nationally recognized entity. The Contractor shall submit to the Contracting Officer, for approval, laboratory certification or inspection information. The Contractor shall submit to the Contracting Officer, for approval, the names, qualifications, authorities, certifications, and availability of the competent personnel who will perform the quality control activities.

Method 2—Quality control activities shall be accomplished by competent personnel who are separate and apart from line supervision and who report directly to management. A competent person is one who is experienced and capable of identifying, evaluating, and documenting that material and processes being used will result in work that complies with the contract, and who has authorization to take prompt action to remove, replace, or correct such work or products not in compliance. Offsite testing laboratories shall be certified or inspected by a nationally recognized entity. The Contractor shall submit to the Contracting Officer, for approval, laboratory certification or inspection information. The contractor shall submit to the contracting officer, for approval, the names, qualifications, authorities, certifications, and availability of the competent personnel who will perform the quality control activities.

5. Post-award conference

The contractor shall meet with the contracting officer before any work begins and discuss the contractor's quality control system. The contracting officer and the contractor shall develop a mutual understanding regarding the quality control system, including procedures for correcting quality control issues.

6. Records

The contractor's quality control records shall document both acceptable and deficient features of the work and corrective actions taken. All records shall be on forms approved by the contracting officer, be legible, and be dated and signed by the competent person creating the record.

Unless otherwise specified in section 10 of this specification, records shall include:

- a. Documentation of shop drawings including date submitted to and date approved by the contracting officer, results of examinations, any need for changes or modifications, manufacturer's recommendations and certifications, if any, and signature of the authorized examiner.
- b. Documentation of material delivered including quantity, storage location, and results of quality control examinations and tests.
- c. Type, number, date, time, and name of individual performing quality control activities.
- d. The material or item inspected and tested, the location and extent of such material or item, and a description of conditions observed and test results obtained during the quality control activity.
- e. The determination that the material or item met the contract provisions and documentation that the engineer was notified.
- f. For deficient work, the nature of the defects, specifications not met, corrective action taken, and results of quality control activities on the corrected material or item.

7. Reporting results

The results of contractor quality control inspections and tests shall be communicated to the engineer immediately upon completion of the inspection or test. Unless otherwise specified in section 10, the original plus one copy of all records, inspections, tests performed, and material testing reports shall be submitted to the engineer within one working day of completion. The original plus one copy of documentation of material delivered shall be submitted to the engineer before the material is used.

8. Access

The contracting officer and the engineer shall be given free access to all testing equipment, facilities, sites, and related records for the duration of the contract.

9. Payment

Method 1—For items of work for which lump sum prices are established in the contract, payment is made as the work proceeds, after presentation by the contractor of invoices showing related costs and evidence of charges by suppliers, subcontractors, and others for furnishing supplies and work performed. If the total of such payments is less than the lump sum contract price for this item, the remaining balance is included in the final contract payment. Payment of the lump sum contract price constitutes full compensation for completion of the work.

Payment is not made under this item for the purchase cost of material and equipment having a residual value.

Method 2—For items of work for which lump sum prices are established in the contract, payment is prorated and paid in equal amounts on each monthly estimate. The number of months used for prorating shall be the number estimated to complete the work. The final month's prorate amount is made with the final payment. Payment as described above constitutes full compensation for completion of the work.

Payment is not made under this item for the purchase cost of material and equipment having a residual value.

All methods—Compensation for any item of work described in the contract, but not listed in the bid schedule, is included in the payment for the item of work to which it is made subsidiary. Such items and the items to which they are made subsidiary are identified in section 10.

10. Items of work and construction details

10. ITEMS OF WORK AND CONSTRUCTION DETAILS

Items of work and construction details to be performed in conformance with this specification are:

a. Bid Item 2, Contractor Quality Control

- (1) This item shall consist of providing all equipment, materials, labor and services necessary to insure that the specified quality is maintained on all work performed.
- (2) The Contractor shall provide evidence that any and all materials have been tested and meet the requirements for the applicable specification.
- (3) In Section 3, Quality Control System, Method 1 will apply.
- (4) In Section 4, Quality Control Personnel, Method 2 will apply. The Contractor shall make submission of the requirements of Method 2 within 7 days of the contract award.
- (5) The Contractor shall submit quality control reports by the end of the day following the previous day's work to the NRCS inspector on site. The Contractor shall submit one copy of the quality control reports to the COR on the first work day of each week for the work performed during the previous week. The quality control reports shall include in one report all quality control information for the prime contractor and for all subcontractors.
- (6) In addition to the items specified in Section 6 of this specification, the following items shall be included in the quality control reports:
 - (a) Report Number, Date, and Work Period.
 - (b) Contract Number and Name.
 - (c) Contractor and Sub-Contractor Names
 - (d) Daily Weather
 - (e) Water Elevation at the beginning and end of each work day.
 - (f) Description of Work Completed during work period.
 - (g) Bid Items and Quantities placed during work period.
 - (h) Number of personnel and classification as skilled or unskilled and hours each work during work period
 - (i) List of equipment and hours worked during work period
 - (j) List of visitors on job site
 - (k) Safety and Pollution Control Inspections and Violations
 - (l) All the above information for any sub-contractors on site.

- (m) Daily quantity of materials delivered to the project site or staging area.
- (n) Daily amount and locations completed for excavation for access.
- (o) Daily amount of lightweight aggregate encapsulated.
- (p) Daily amount of lightweight aggregate placed and locations where placement occurred.
- (q) Daily total and cumulative total of rock riprap placed and locations where placement occurred.
- (r) Report signed by QC Manager.
- (s) Brief summary of work performed, any problems, issues, or discrepancies encountered, and any resolutions achieved.

A copy of the proposed QC report format shall be submitted to the CO for approval prior to the Notice to Proceed for construction being issued.

- (7) Payment shall be by Method 2. Such payment shall include full compensation for Subsidiary Item, Pollution Control.

Construction Specification 95—Geotextile

1. Scope

This work consists of furnishing all material, equipment, and labor necessary for the installation of geotextiles.

2. Quality

Geotextiles shall conform to the requirements of Material Specification 592 and this specification.

3. Storage

Before use, the geotextile shall be stored in a clean, dry location out of direct sunlight, not subject to extremes of either hot or cold temperatures, and with the manufacturer's protective cover undisturbed. Receiving, storage, and handling at the job site shall be in accordance with the requirements listed in ASTM D 4873.

4. Surface preparation

The surface on which the geotextile is to be placed shall be graded to the neat lines and grades as shown on the drawings. It shall be reasonably smooth and free of loose rock and clods, holes, depressions, projections, muddy conditions, and standing or flowing water (unless otherwise specified in section 7 of this specification).

5. Placement

Before the geotextile is placed, the soil surface will be reviewed for quality assurance of the design and construction. The geotextile shall be placed on the approved prepared surface at the locations and in accordance with the details shown on the drawings and specified in section 7 of this specification. It shall be unrolled along the placement area and loosely laid, without stretching, in such a manner that it conforms to the surface irregularities when material or gabions are placed on or against it. The geotextile may be folded and overlapped to permit proper placement in designated area(s).

Method 1—The geotextile shall be joined by machine sewing using thread material meeting the chemical requirements for the geotextile fibers or yarn. The sewn overlap shall be 6 inches, and the sewing shall consist of two parallel stitched rows at a spacing of about 1 inch and shall not cross (except for any required re-stitching). The stitching shall be a lock-type stitch. Each row of stitching shall be located a minimum of 2 inches from the geotextile edge. The seam type and sewing machine to be used shall produce a seam strength, in the specified geotextile, that provides a minimum of 90 percent of the tensile strength in the weakest principal direction of the geotextile being used, when tested in accordance with ASTM D 4884. The seams may be factory or field sewn.

The geotextile shall be temporarily secured during placement of overlying material to prevent slippage, folding, wrinkling, or other displacement of the geotextile. Unless otherwise specified, methods of securing shall not cause punctures, tears, or other openings to be formed in the geotextile.

Method 2—The geotextile shall be joined by overlapping a minimum of 18 inches (unless otherwise specified) and secured against the underlying foundation material. Securing pins, approved and provided by the geotextile manufacturer, shall be placed along the edge of the panel or roll material to adequately hold it in place during installation. Pins shall be steel or fiberglass formed as a **U**, **L**, or **T** shape or contain "ears" to prevent total penetration through the geotextile. Steel washers shall be provided on all but the **U**-

shaped pins. The upstream or upslope geotextile shall overlap the abutting downslope geotextile. At vertical laps, securing pins shall be inserted through the bottom layers along a line through approximately the mid-point of the overlap. At horizontal laps and across slope laps, securing shall be inserted through the bottom layer only. Securing pins shall be placed along a line about 2 inches in from the edge of the placed geotextile at intervals not to exceed 12 feet unless otherwise specified. Additional pins shall be installed as necessary and where appropriate to prevent any undue slippage or movement of the geotextile. The use of securing pins will be held to the minimum necessary. Pins are to remain in place unless otherwise specified.

Should the geotextile be torn or punctured, or the overlaps or sewn joint disturbed, as evidenced by visible geotextile damage, subgrade pumping, intrusion, or grade distortion, the backfill around the damaged or displaced area shall be removed and restored to the original approved condition. The repair shall consist of a patch of the same type of geotextile being used and overlaying the existing geotextile. When the geotextile seams are required to be sewn, the overlay patch shall extend a minimum of 1 foot beyond the edge of any damaged area and joined by sewing as required for the original geotextile except that the sewing shall be a minimum of 6 inches from the edge of the damaged geotextile. Geotextile panels joined by overlap shall have the patch extend a minimum of 2 feet from the edge of any damaged area.

Geotextile shall be placed in accordance with the following applicable specification according to the use indicated in section 7:

Slope protection—The geotextile shall not be placed until it can be anchored and protected with the specified covering within 48 hours or protected from exposure to ultraviolet light. In no case shall material be dropped on uncovered geotextile from a height of more than 3 feet.

Subsurface drains—The geotextile shall not be placed until drainfill or other material can be used to provide cover within the same working day. Drainfill material shall be placed in a manner that prevents damage to the geotextile. In no case shall material be dropped on uncovered geotextile from a height of more than 5 feet.

Road stabilization—The geotextile shall be unrolled in a direction parallel to the roadway centerline in a loose manner permitting conformation to the surface irregularities when the roadway fill material is placed on its surface. In no case shall material be dropped on uncovered geotextile from a height of more than 5 feet. Unless otherwise specified, the minimum overlap of geotextile panels joined without sewing shall be 24 inches. The geotextile may be temporarily secured with pins recommended or provided by the manufacturer, but they shall be removed before the permanent covering material is placed.

6. Measurement and payment

Method 1—For items of work for which specific unit prices are established in the contract, the quantity of geotextile for each type placed within the specified limits is determined to the nearest specified unit by measurements of the covered surfaces only, disregarding that required for anchorage, seams, and overlaps. Payment is made at the contract unit price. Such payment constitutes full compensation for the completion of the work.

Method 2—For items of work for which specific unit prices are established in the contract, the quantity of geotextile for each type placed with the specified limits is determined to the nearest specified unit by computing the area of the actual roll size or partial roll size installed. The computed area will include the

amount required for overlap, seams, and anchorage as specified. Payment is made at the contract unit price. Such payment constitutes full compensation for the completion of the work.

Method 3—For items of work for which specific lump sum prices are established in the contract, the quantity of geotextile is not measured for payment. Payment for geotextiles is made at the contract lump sum price and constitutes full compensation for the completion of the work.

All methods—The following provisions apply to all methods of measurement and payment. Compensation for any item of work described in the contract, but not listed in the bid schedule, is included in the payment for the item of work to which it is made subsidiary. Such items and the items to which they are made subsidiary are identified in section 7 of this specification.

7. Items of work and construction details

7. ITEMS OF WORK AND CONSTRUCTION DETAILS

Items of work and construction details to be performed in conformance with this specification are:

a. Bid Item 5, Geotextile

- (1) This item shall consist of furnishing and placing geotextile under the rock riprap as required for construction of the rock dike at the locations and to the lines and grades as shown on the construction drawings.
- (2) The geotextile shall be woven and shall meet or exceed the properties for Class I as listed in Table 1 of Material Specification 592, Geotextile, with the exception of the tensile strength which shall be a minimum of 400 lbs; the ultimate strength in any principle direction, which shall be in conformance with ASTM D4595, Tensile Properties of Geotextiles by the Wide-Width Strip Method; and the minimum percent open area requirement which shall be deleted in its entirety.
- (3) Material Specification, 592, Geotextile, Item 3, Classification, Woven, shall be deleted in its entirety and replaced with:

Woven Fabrics formed by the uniform and regular interweaving of the threads or yarns in two directions. Woven fabrics shall be formed into a uniform pattern. The edges of fabric shall be selvaged or otherwise finished to prevent the outer yarn from unraveling.
- (4) In Section 5, Placement, Method 1 shall apply. Double locking stitched "J" seams are acceptable. Geotextile panels shall be factory sewn for as large a panel area as manageable. In areas where field seams are needed, field sewing shall be required. Geotextile shall extend a minimum of three feet beyond the toe of the rock dike on all sides.
- (5) Contractor submittals shall also include a plan of geotextile placement for each site and the corresponding factory sewn panel dimensions. This submittal shall allow the COR a minimum of seven-day approval review prior to geotextile fabrication.
- (6) After placement of rock riprap over the geotextile, any geotextile that extends past the limits of the rock *and* is above the normal water level shall be cut off. The cut off pieces of material shall be removed from the job site and the contractor shall insure that they are disposed of properly at an approved landfill.
- (7) Section 6, Measurement and Payment, is removed in its entirety and replaced with the following: The quantity of geotextile for each type placed within the specified limits will be determined to the nearest square yard for the approved dimensions of the panel, not to include seams and laps. The COR shall verify panel dimensions prior to fill material being placed. Payment will be made at the contract unit price. Such payment will constitute full compensation for the completion of the work.

Material Specification 512—Wood Piles

1. Scope

This specification covers the quality of wood piles.

2. Quality of piles

The piles shall conform to the requirements of ASTM D 25 for the specified classes and sizes of piles.

3. Treatment

Piles shall be treated with the specified type and amount of preservative and in conformance with the requirements of Material Specification 585.

4. Marking

Each treated pile delivered to the job site shall be marked as specified in Material Specification 585.

Material Specification 523—Rock for Riprap

1. Scope

This specification covers the quality of rock to be used in the construction of rock riprap.

2. Quality

Individual rock fragments shall be dense, sound, and free from cracks, seams, and other defects conducive to accelerated weathering. Except as otherwise specified, the rock fragments shall be angular to subrounded. The least dimension of an individual rock fragment shall be not less than one-third the greatest dimension of the fragment. ASTM D 4992 provides guidance on selecting rock from a source.

Except as otherwise provided, the rock shall be tested and shall have the following properties:

Rock type 1

- **Bulk specific gravity (saturated surface-dry basis)**—Not less than 2.5 when tested in accordance with ASTM C 127 on samples prepared as described for soundness testing.
- **Absorption**—Not more than 2 percent when tested in accordance with ASTM C 127 on samples prepared as described for soundness testing.
- **Soundness**—The weight loss in 5 cycles shall not be more than 10 percent when sodium sulfate is used or more than 15 percent when magnesium sulfate is used.

Rock type 2

- **Bulk specific gravity (saturated surface-dry basis)**—Not less than 2.5 when tested in accordance with ASTM C 127 on samples prepared as described for soundness testing.
- **Absorption**—Not more than 2 percent when tested in accordance with ASTM C 127 on samples prepared as described for soundness testing.

- **Soundness**—The weight loss in 5 cycles shall be not more than 20 percent when sodium sulfate is used or more than 25 percent when magnesium sulfate is used.

Rock type 3

- **Bulk specific gravity (saturated surface-dry basis)**—Not less than 2.3 when tested in accordance with ASTM C 127 on samples prepared as described for soundness testing.
- **Absorption**—Not more than 4 percent when tested in accordance with ASTM C 127 on samples prepared as described for soundness testing.
- **Soundness**—The weight loss in 5 cycles shall be not more than 20 percent when sodium sulfate is used or more than 25 percent when magnesium sulfate is used.

3. Methods of soundness testing

Rock cube soundness—The sodium or magnesium sulfate soundness test for all rock types (1, 2, or 3) shall be performed on a test sample of $5,000 \pm 300$ grams of rock fragments, reasonably uniform in size and cubical in shape, and weighing, after sampling, about 100 grams each. They shall be obtained from rock samples that are representative of the total rock mass, as noted in ASTM D 4992, and that have been sawed into slabs as described in ASTM D 5121. The samples shall further be reduced in size by sawing the slabs into cubical blocks. The thickness of the slabs and the size of the sawed fragments shall be determined by the size of the available test apparatus and as necessary to provide, after sawing, the approximate 100-gram samples. The cubes shall undergo five cycles of soundness testing in accordance with ASTM C 88.

Internal defects may cause some of the cubes to break during the sawing process or during the initial soaking period. Do not test any of the

Material Specification 523 Rock for Riprap (continued)

cubes that break during this preparatory process. Such breakage, including an approximation of the percentage of cubes that break, shall be noted in the test report.

After the sample has been dried following completion of the final test cycle and washed to remove the sodium sulfate or magnesium sulfate, the loss of weight shall be determined by subtracting from the original weight of the sample the final weight of all fragments that have not broken into three or more fragments.

The test report shall show the percentage loss of the weight and the results of the qualitative examination.

Rock slab soundness—When specified, the rock shall also be tested in accordance with ASTM D 5240. Deterioration of more than 25 percent of the number of blocks shall be cause

for rejection of rock from this source. Rock shall also meet the requirements for average percent weight loss stated below.

- For projects located north of the Number 20 Freeze-Thaw Severity Index Isoline (fig. 523–1). Unless otherwise specified, the average percent weight loss for Rock Type 1 shall not exceed 20 percent when sodium sulfate is used or 25 percent when magnesium sulfate is used. For Rock Types 2 and 3, the average percent weight loss shall not exceed 25 percent for sodium sulfate soundness or 30 percent for magnesium sulfate soundness.
- For projects located south of the Number 20 Freeze-Thaw Severity Index Isoline, unless otherwise specified, the average percent weight loss for Rock Type 1 shall not exceed 30 percent when sodium sulfate is used or 38 percent when magnesium sulfate is used.

Figure 523–1 Number 20 freeze-thaw severity index isoline (map approximates the map in ASTM D 5312)



Material Specification 523 Rock for Riprap (continued)

For Rock Types 2 and 3, the average percent weight loss shall not exceed 38 percent for sodium sulfate soundness or 45 percent for magnesium sulfate soundness.

4. Field durability inspection

Rock that fails to meet the material requirements stated above (if specified), may be accepted only if similar rock from the same source has been demonstrated to be sound after 5 years or more of service under conditions of weather, wetting and drying, and erosive forces similar to those anticipated for the rock to be installed under this specification.

A rock source may be rejected if the rock from that source deteriorates in 3 to 5 years under similar use and exposure conditions expected for the rock to be installed under this specification, even though it meets the testing requirements stated above.

Deterioration is defined as the loss of more than one-quarter of the original rock volume, or severe cracking that would cause a block to split. Measurements of deterioration are taken from linear or surface area particle counts to determine the percentage of deteriorated blocks. Deterioration of more than 25 percent of the pieces shall be cause for rejection of rock from the source.

5. Grading

The rock shall conform to the specified grading limits after it has been placed within the matrix of the rock riprap. Grading tests shall be performed, as necessary, according to ASTM D 5519, Method A, B, or C, as applicable.

Material Specification 554—Steel Pipe

1. Scope

This specification covers the quality of steel pipe and fittings.

2. Pipe

Steel pipe shall conform to the requirements of the applicable specification listed below for the kind of pipe and the type, weight, grade, and finish specified:

Pipe	ASTM specification
Steel, black and hot-dipped, zinc-coated welded and seamless	A 53
Steel, electric-fusion (ARC)-welded (sizes NPS 16 and over)	A 134
Electric-resistance-welded steel	A 135
Electric-fusion (ARC)-welded steel (NPS 4 and over)	A 139
	AWWA standard
Steel water pipe, 6 inches and larger	C 200

3. Fittings

Fittings shall conform to the requirements for the types and kinds specified.

Fittings	ASTM specification
Heat-treated carbon steel fittings for low-temperature and corrosive service	A 858
Threaded couplings, steel, black or zinc-coated (galvanized) welded or seamless, for use in steel pipe joints	A 865

Material Specification 581—Metal

1. Scope

This specification covers the quality of steel and aluminum alloys.

2. Structural steel

- Structural steel shall conform to the requirements of ASTM A 36.
- High-strength low-alloy structural steel shall conform to ASTM A 242 or A 588.
- Carbon steel plates of structural quality to be bent, formed, or shaped cold shall conform the ASTM A 283, Grade C.
- Carbon steel sheets of structural quality shall conform to ASTM Standard A 1011, Grade 40, or A 1008, Grade 40.
- Carbon steel strip of structural quality shall conform to ASTM Standard A 1011, Grade 36.

3. Commercial or merchant quality steel

Commercial or merchant quality steel shall conform to the requirements of the applicable ASTM listed below:

Product	ASTM standards
Carbon steel bars	A 575, Grade M 1015 to Grade M 1031
Carbon steel sheets.....	A 1011
Carbon steel strips	A 1011
Zinc-coated carbon steel sheets	A 653 or A 924

4. Aluminum alloy

Aluminum alloy products shall conform to the requirements of the applicable ASTM standard listed below. Unless otherwise specified, alloy 6061-T6 shall be used.

Product	ASTM standard
Standard structural shape.....	B 308
Extruded structural pipe and tube	B 429
Extruded bars, rods, shapes, and tubes	B 221
Drawn seamless tubes.....	B 210
Rolled or cold-finished bars, rods, and wire ...	B 211
Sheet and plate	B 209

5. Bolts

Steel bolts shall conform to the requirements of ASTM Standard A 307. If high-strength bolts are specified, they shall conform to the requirements of ASTM A 325.

When galvanized or zinc-coated bolts are specified, the zinc coating shall conform to the requirements of ASTM Standard A 153 except that bolts 0.5 inch or less in diameter may be coated with electro-deposited zinc or cadmium coating conforming to the requirements of ASTM Standard B 633, Service Condition SC 3, or ASTM B 766, unless otherwise specified.

6. Rivets

Unless otherwise specified, steel rivets shall conform to the requirements of ASTM Specification A 31, Grade B. Unless otherwise specified, aluminum alloy rivets shall be Alloy 6061 conforming to the requirements of ASTM Standard B 316.

7. Welding electrodes

Steel welding electrodes shall conform to the requirements of American Welding Society Specification AWS A5.1, "Specification for Mild Steel Covered Arc-Welding Electrodes," except that they shall be uniformly and heavily coated (not washed) and shall be of such a nature that the coating does not chip or peel while being used with the maximum amperage specified by the manufacturer.

Aluminum welding electrodes shall conform to the requirements of American Welding Society Specification AWS A5.10, "Specification for Aluminum and Aluminum-Alloy Welding Rods and Bare Electrodes."

Material Specification 582—Galvanizing

1. Scope

This specification covers the quality of zinc coatings applied to iron and steel productions.

2. Quality

Zinc coatings shall conform to the requirements of ASTM A 123 for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products or as otherwise specified in the items of work and construction details of the Construction Specification.

ASTM A 123 covers both fabricated and nonfabricated products; e.g., assembled steel products, structural steel fabrications, large tubes already bent or welded before galvanizing, and wire work fabricated from noncoated steel wire. It also covers steel forgings and iron castings incorporated into pieces fabricated before galvanizing or which are too large to be centrifuged (or otherwise handled to remove excess galvanizing bath metal).

Items to be centrifuged or otherwise handled to remove excess zinc shall meet the requirements of ASTM A 153, except bolts, screws, and other fasteners 0.5 inch or less in diameter may be coated with electro-deposited zinc or cadmium coating conforming to the requirements of ASTM B 766, coating thickness Class 5, Type III, or ASTM B 633, Service Condition SC-3, unless otherwise specified.

Material Specification 583—Coal Tar-Epoxy Paint

1. Scope

This specification covers the quality of a coal tar polyamide epoxy paint suitable for use on structural steel or concrete. Paint supplied meeting Paint Specification No. 16, Type 1, Class II, of the Steel Structures Painting Council will meet the requirements of this specification.

2. Composition and processing

Composition—The paint shall be a two-component system that has the pitch, filler, and catalyst in one component and the resin in another. Each component of this paint based on the specified ingredients shall be uniform, stable in storage, and free from grit and coarse particles. The components shall contain the followings types and proportions of ingredients:

Ingredient	Component A		Component A and B typical composition percent by weight
	percent by weight min.	max.	
Coal tar pitch	33.0	36.0	28.2
Polyamide	11.0	12.0	9.5
Magnesium silicate	30.0	33.0	25.8
Xylene	18.0	21.0	15.4
Gelling agent and activator	2.5	2.6	2.0
Catalyst (accelerator)	1.2	1.3	1.1
Subtotal			82.0
Component B			
Epoxy resin (100% nonvolatile)	100	—	18.0
Total			100.0

Processing—Magnesium silicate and gelling agent shall be thoroughly dispersed in component A by means of grinding equipment capable of developing substantial shear values. Gellant shall be mixed with an equal weight of magnesium silicate and then dampened by stirring-in all of the alcohol; the resultant mixture shall be added to and thoroughly

dispersed into component A. (The viscosity of component A is markedly influenced by the degree of dispersion of gellant and magnesium silicate.)

Quality of ingredients—Ingredient material shall exhibit the following properties:

Coal tar pitch. Coal tar pitch is a product obtained from the distillation of high temperature crude coke oven tar, which in itself is a product obtained during the destructive distillation of coal in slot ovens operated at a temperature above 700 degrees Celsius. Coal tar pitch shall have the following characteristics:

	Min.	Max.
Softening point, in water, °C (ASTM D 36)	70	75
Ash, percent by weight (ASTM D 2415)	--	0.5
Insolubles in carbon disulfide, percent by weight (ASTM D 4)	--	20
Volatiles, percent by weight		
Under 250 °C	--	0.0
Under 300 °C	--	5.0

Gellant. The gellant or thixotropic-producing additive shall be an organic derivative of magnesium montorillonite or hydrogenated castor oil. It shall be a creamy white powder having a bulking value of 15 ± 0.2 pounds per gallon and water content of 3 percent maximum.

Activator. The activator, if used, shall be methanol, ethanol, or propylene carbonate.

Catalyst. The catalyst (accelerator) shall be 2,4,6-tri (dimethylamino methyl) phenol.

Epoxy resin. Epoxy resin shall be a di-epoxide condensation product of bisphenol-A and epichlorohydrin with terminal epoxide group. It shall be clear, free of turbidity, crystals, and particulate matter with the following properties:

Property	Requirements	
	min.	max.
Nonvolatile content (1 to 2 grams after 1 hour at 105 ± 2 °C), % by weight	99	--
Epoxide equivalent (ASTM D 1652)	180	200
Color, Gardner (ASTM D 1544)	--	5.0
Specific gravity (ASTM D 1475)	1.15	1.18
Viscosity, Brookfield, poises at 25 °C	100	160

Polyamide resin. Polyamide resin shall be a condensation product of a dimerized fatty acid in polyamides. It shall be clear, free of turbidity and particulate matter, with the following characteristics:

Characteristics	Requirements	
	min.	max.
Amine value ^{1/}	330	360
Color, Gardner (ASTM D 1544)	--	9
Specific gravity (ASTM D 1475)	0.96	0.98
Viscosity, Brookfield, poises at 25 °C	7	9
Nonvolatile content (1-2 grams after 1 hr at 105 ± 2 °C), % by weight	97	--

1/ The amine value is defined as the milligrams of potassium hydroxide equivalent to the amine alkalinity potentiometric titration with standard perchloric acid according to the following method:

- Weigh the approximate amount of well mixed resin to give a titration in the range of 12 to 18 milliliters (mL) into a tared 200 mL berzelius tall form beaker on an analytical balance. Cover the beaker with aluminum foil to minimize contact with air.
- From a graduated cylinder, carefully add 90 mL of solvent (suitable solvents are nitrobenzene, propylene carbonate, or acetonitrile), insert a stirring bar, cover the beaker with aluminum foil, and stir on a magnetic stirrer to dissolve the sample. Add the solvent immediately after weighing the sample. A fume hood should be used for all operations.
- From a graduated cylinder, add 20 mL of glacial acetic acid to the sample solution and stir for several minutes.
- Immerse the electrodes into the sample solution, stir for 2 minutes, and titrate potentiometrically with 0.1 N perchloric acid using the millivolt scale. Record the millivolt reading every 0.1 mL. Plot a graph showing the

millivolts against the titration. The endpoint is the midpoint of the inflection on the titration curve.

- Conduct a blank determination on 90 mL of the solvent and 20 mL of acetic acid. The blank need only be determined once for each lot of solvent used. On the majority of lots used, the blank has been found to be zero.
- Calculate the amine value using the following formula:
Amine value = (sample titration-solvent blank) x
normality x 56.1 weight of sample

Magnesium silicate. Magnesium silicate shall conform to ASTM Standard D 605 "Magnesium Silicate Pigment (Talc)." When a dark red coating is specified, a dark red coating shall be furnished in 50 percent or more (by volume) of the magnesium silicate is replaced by synthetic red iron conforming to ASTM Standard D 3721. The red coating shall meet all of the test requirements prescribed for the black coating except that the nonvolatile content of component A shall be an amount reflecting the greater specific gravity of the iron oxide pigment.

3. Physical requirements

When tested by the methods described in section 4, component A shall exhibit the following properties:

- Viscosity, Brookfield, at 25 degrees Celsius poises 160 maximum
- Nonvolatile residue, percent by weight 77 minimum

The mixed paint shall exhibit the following properties:

- Sag, 14 mil wet film—None
- Pot life at 24 to 27 °C, hours—4 minimum

The cured film shall exhibit the following properties:

- Penetration, 200 grams, 5 seconds, 25 °C, hundredth centimeter units—3 maximum
- Odor after 48 hours curing—Pass test
- Flexibility on 0.5-inch mandrel—Pass test
- Adhesion—No delamination

4. Test methods

Viscosity of component A—Fill a container having a minimum diameter of 3 inches, a minimum height of 3.75 inches, and a minimum depth of 3 inches with a representative sample of component A. Set up a Model RVT or RVF-100 Brook-field Synchro-Electric Viscometer with a No. 7 spindle and with guard removed. Bring the sample to (and thereafter maintain) a temperature of 25 degrees Celsius and

stir vigorously for 2 minutes with a stiff spatula. Immediately after stirring, lower the viscometer, immersing the spindle until half of the neck mark on the spindle is covered. Run the viscometer at 100 rpm for 1 minute and record the pointer position on the dial. If the dial reading is 40 or less, the viscosity shall be considered to be 160 poises or less. If the reading is over 40, immediately start the motor and take additional readings at 1-minute intervals. If one or more readings of 40 or less are obtained out of 10 readings, taken at 1-minute intervals, the viscosity of the material shall be considered to be within specification limits.

Nonvolatile content of component A—Place a stirrer (e.g., short length of stiff wire, such as a partly-straightened paper clip) into a small disposable aluminum dish of about 2 inches in diameter and weigh to the nearest 0.1 milligram. As rapidly as possible, place between 2 and 3 grams of component A into the dish and weigh immediately to the nearest 0.1 milligram. After weighing, spread the material over the bottom of the dish. Heat the dish, wire, and contents in a well-ventilated, convection-type oven maintained at 105 degrees Celsius plus or minus 2 degrees Celsius for 3 hours. After the material has been in the oven for a few minutes, and periodically thereafter, stir the material. Cool in a desiccator, weigh to the nearest 0.1 milligram, and calculate the percentage of nonvolatile on a weight basis.

Sag test of coal tar-epoxy paint—Prepare about 500 mL of the material by thoroughly mixing 100 mL of component B into 400 mL of component A. Determine its viscosity immediately after mixing using the same procedure as those for component A, but employing a No. 5 spindle. If all of five readings recorded at 1-minute intervals are above 50, reduce the viscosity by adding xylene in small increments until a reading not greater than 50 is obtained. Press a strip of 1-inch masking tape across the full width of a solvent-cleaned 3-inch by 6-inch cold-rolled steel panel. The tape should be parallel to and centered on the shorter axis of the panel. Within 5 minutes after making the final check of viscosity, apply the material to the panel to a wet film thickness at least 14 mils as determined by an Interchemi-cal wet film doctor blade having a gap of about 25 mils, or by brush. Immediately after applying the material, carefully remove the masking

tape and stand the panel in a vertical position (with the bare strip horizontal) in a draft-free, 24 to 27 degree Celsius location. Examine the panel after 4 hours. Sagging or running of the coating into the bare area shall constitute failure of the material to pass the sag test.

Pot life test of coal tar-epoxy paint—Mix 100 mL of compound B into 400 mL of component A with both components having a temperature of 24 to 27 degrees Celsius before mixing. Pour the material at once into a pint metal can, seal tightly, and maintain at 24 to 27 degrees Celsius. Examine the material 4 hours after it was mixed. For its pot life to be considered satisfactory, the mixed material must remain in a fluid condition and, when thinned with no more than 100 mL of xylene, shall be lump-free and brushable.

Penetration test on coal tar-epoxy film—Select and solvent spray-clean two 3-inch by 6-inch cold-rolled steel panels in accordance with ASTM D 609. Draw down in accordance with a coat of the paint prepared as described in section 4 for the sag test. Allow the film to dry 18 to 24 hours in a horizontal position at 24 to 27 degrees Celsius and at a relative humidity of not over 60 percent. Apply a second coat over and at right angles to the first coat, using freshly mixed paint prepared identically to that used for the first coat. The draw down applicator(s) shall be such as to provide a total dry-film thickness for the two coats of 20 to 25 mils, and the coats shall be of approximately equal thickness. Allow the second coat to dry in a horizontal position for 120 hours at 24 to 27 degrees Celsius. After 120 hours of curing, and daily thereafter, clamp the panel into the table of a penetrometer (ASTM D 5) so that the needle is over an area that is within the prescribed thickness range (as measured by ASTM D 1186). Determine the penetration using a total load of 200 grams applied for 5 seconds at 25 degrees Celsius. The average of the three lowest out of five penetration readings, all taken within a 1 centimeter square, shall not exceed 0.03 of a centimeter after 120 hours of curing.

Odor of dried coal tar-epoxy film—Examine the paint film on one of the flexibility panels for odor after it has cured for 48 hours. The film shall be free of any odor except for a faint odor of xylene.

Flexibility of coal tar-epoxy film—Sand blast three steel panels (similar to those used in the penetration test) at low pressure with a clean, 30 to 50 mesh, nonmetallic abrasive until a uniform, gray-white surface with well developed anchor pattern, is achieved. (Note: It may be necessary to blast both sides of panel, in stages, to avoid warping.) Blow off any dust with a clean air blast. Apply two coats of paint as described in section 4 for the penetration test. Allow the film to cure in the period equal to that required to reach a penetration of 0.03 centimeter on the penetration test panel, whichever occurs first. With the film side up, and in a time interval of about 1 second, bend each of the flexibility panels double over a 0.5-inch diameter mandrel. Cracks in any of the panels visible to the naked eye shall constitute failure except that edge cracks extending no further than 0.5 inch or small local fissures emanating from air bubbles, craters, and similar imperfections shall be disregarded.

Adhesion of coal tar-epoxy film—Test the adhesion of the coating on an unbroken area of the flexibility panel with a sharp knife after the coating has cured for 120 hours. It shall strongly resist being removed from the metal. Also use a knife to test the intercoat adhesion of the film on a penetration panel after 120 hours curing. Any delamination of the two coats shall constitute failure.

Material Specification 585—Wood Preservatives and Treatment

1. Scope

This specification covers the quality of wood preservatives, treatment processes, quality of treated material, and marking related to preservative treatment. Included are requirements for fasteners, connectors, and any other metal that will be in contact with preservative treated wood.

2. Treatment processes

Treatment processes may use any combination of atmospheric air, initial air pressure, or vacuum and pressure that will achieve the desired results without damaging the wood.

3. Preservatives

The wood shall be treated with the specified type of preservative.

4. Quality of treated material

Treated lumber, timber, piles, poles, or posts shall be free from heat checks, water bursts, excessive checking, chafing damage, or from any other damage or defects that would impair their usefulness or durability for the purpose intended. The use of s-irons is not permitted. Holes bored for tests shall be filled with tight fitting, treated wood plugs.

5. Marking

Each treated wood item delivered to the job site shall be identified with a label, brand, or stamp that lists: the product name or logo; treatment company name and location; names of the preservative components;

treatment end use category; minimum retention; and the applicable AWPAs treatment standard or the number of the evaluation report from an evaluation service recognized by the International Code Council at <http://www.iccsafe.org>.

6. Fasteners and Connectors

All fasteners, connectors, and any other metal contacting preservative treated wood shall be hot-dip galvanized or stainless steel. Unless otherwise specified, all fasteners, connectors, and any other metal contacting alkali copper quaternary (ACQ) or copper azole (CA) treated wood shall be stainless steel. Galvanizing for fasteners shall conform to ASTM A153. Galvanizing for connectors made from steel sheet shall conform to ASTM A653, Class G185. Galvanizing for all other metal in contact with preservative treated wood shall conform to ASTM A123. Stainless steel shall be AISI Type 304 or 316.

Material Specification 592—Geotextile

1. Scope

This specification covers the quality of geotextiles.

2. General requirements

Fibers (threads and yarns) used in the manufacture of geotextile shall consist of synthetic polymers composed of a minimum of 85 percent by weight polypropylenes, polyesters, polyamides, polyethylene, polyolefins, or polyvinylidene-chlorides. They shall be formed into a stable network of filaments or yarns retaining dimensional stability relative to each other. The geo-textile shall be free of defects and conform to the physical requirements in tables 592-1 and 592-2. The geotextile shall be free of any chemical treatment or coating that significantly reduces its porosity. Fibers shall contain stabilizers and/or inhibitors to enhance resistance to ultraviolet light.

Thread used for factory or field sewing shall be of contrasting color to the fabric and made of high strength polypropylene, polyester, or polyamide thread. Thread shall be as resistant to ultraviolet light as the geotextile being sewn.

3. Classification

Geotextiles shall be classified based on the method used to place the threads or yarns forming the fabric. The geotextiles will be grouped into woven and nonwoven types.

Woven—Fabrics formed by the uniform and regular interweaving of the threads or yarns in two directions. Woven fabrics shall be manufactured from monofilament yarn formed into a uniform pattern with distinct and measurable openings, retaining their position relative to each other. The edges of fabric shall be selvaged or otherwise finished to prevent the outer yarn from unraveling.

Nonwoven—Fabrics formed by a random placement of threads in a mat and bonded by heat-bonding, resin-bonding, or needle punching. Nonwoven fabrics shall be manufactured from individual fibers formed into a random pattern with distinct, but variable small openings, retaining their position relative to each other when bonded by needle punching, heat, or resin bonding. The use of nonwovens other than the needle punched geotextiles is somewhat restricted (see note 3 of table 592-2).

4. Sampling and testing

The geotextile shall meet the specified requirements (table 592-1 or 592-2) for the product style shown on the label. Product properties as listed in the latest edition of the "Specifiers Guide," Geosynthetics, (Industrial Fabrics Association International, 1801 County Road B, West Roseville, MN 55113-4061 or at <http://www.geosindex.com>) and that represent minimum average roll values, are acceptable documentation that the product style meets the requirements of these specifications.

For products that do not appear in the above directory or do not have minimum average roll values listed, typical test data from the identified production run of the geotextile will be required for each of the specified tests (tables 592-1 or 592-2) as covered under clause AGAR 452.236-76.

5. Shipping and storage

The geotextile shall be shipped/transported in rolls wrapped with a cover for protection from moisture, dust, dirt, debris, and ultraviolet light. The cover shall be maintained undisturbed to the maximum extent possible before placement.

Each roll of geotextile shall be labeled or tagged to clearly identify the brand, class, and the individual production run in accordance with ASTM D 4873.

Material Specification 592 Geotextile (continued)**Table 592-1** Requirements for woven geotextiles

Property	Test method	Class I	Class II & III	Class IV
Tensile strength (pounds) ^{1/}	ASTM D 4632 grab test	200 minimum in any principal direction	120 minimum in any principal direction	180 minimum in any principal direction
Elongation at failure (percent) ^{1/}	ASTM D 4632 grab test	<50	<50	<50
Puncture (pounds) ^{1/}	ASTM D 4833	90 minimum	60 minimum	60 minimum
Ultraviolet light (% residual tensile strength)	ASTM D 4355 150-hr exposure	70 minimum	70 minimum	70 minimum
Apparent opening size (AOS)	ASTM D 4751	As specified, but no smaller than 0.212 mm (#70) ^{2/}	As specified, but no smaller than 0.212 mm (#70) ^{2/}	As specified, but no smaller than 0.212 mm (#70) ^{2/}
Percent open area (percent)	CWO-02215-86	4.0 minimum	4.0 minimum	1.0 minimum
Permittivity sec ⁻¹	ASTM D 4491	0.10 minimum	0.10 minimum	0.10 minimum

^{1/} Minimum average roll value (weakest principal direction).

^{2/} U.S. standard sieve size.

Note: CWO is a USACE reference.

Material Specification 592 Geotextile (continued)**Table 592-2** Requirements for woven geotextiles

Property	Test method	Class I	Class II	Class III	Class IV ^{3/}
Tensile strength (lb) ^{1/}	ASTM D 4632 grab test	180 minimum	120 minimum	90 minimum	115 minimum
Elongation at failure(%) ^{1/}	ASTM D 4632	≥ 50	≥ 50	≥ 50	≥ 50
Puncture (pounds)	ASTM D 4833	80 minimum	60 minimum	40 minimum	40 minimum
Ultraviolet light (% residual tensile strength)	ASTM D 4355 150-hr exposure	70 minimum	70 minimum	70 minimum	70 minimum
Apparent opening size (AOS)	ASTM D 4751	As specified max. #40 ^{2/}			
Permittivity sec ⁻¹	ASTM D 4491	0.70 minimum	0.70 minimum	0.70 minimum	0.10 minimum

1/ Minimum average roll value (weakest principal direction).

2/ U.S. standard sieve size.

3/ Heat-bonded or resin-bonded geotextile may be used for classes III and IV. They are particularly well suited to class IV. Needle-punched geotextiles are required for all other classes.