

SPECIFICATIONS  
for  
LANIKAI BEACH RESTORATION PILOT PROJECT



US Army Corps of Engineers  
Honolulu District

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**SUBMITTAL REGISTER**

CONTRACT NO.

TITLE AND LOCATION

LANIKAI BEACH RESTORATION PILOT PROJECT

CONTRACTOR

ACTIVITY NO	TRANSMITTAL NO	SPEC SECT	DESCRIPTION ITEM SUBMITTED	PARAGRAPH	CLASSIFICATION	CONTRACTOR: SCHEDULE DATES			CONTRACTOR ACTION		APPROVING AUTHORITY					REMARKS	
						SUBMIT	APPROVAL NEEDED BY	MATERIAL NEEDED BY	ACTION CODE	DATE OF ACTION	DATE FWD TO APPR AUTH/ DATE RCD FROM CONTR	DATE FWD TO OTHER REVIEWER	DATE RCD FROM OTH REVIEWER	ACTION CODE	DATE OF ACTION		MAILED TO CONTR/ DATE RCD FRM APPR AUTH
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)
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## SECTION 01 57 20

## ENVIRONMENTAL PROTECTION

## PART 1 GENERAL

## 1.1 REFERENCES

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

## U.S. ARMY CORPS OF ENGINEERS (USACE)

WETLAND MANUAL	Corps of Engineers Wetlands Delineation Manual Technical Report Y-87-1
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## U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

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

## 1.2 DEFINITIONS

## 1.2.1 Environmental Pollution and Damage

Environmental pollution and damage is the presence of chemical, physical, or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances of importance to human life; affect other species of importance to humankind; or degrade the environment aesthetically, culturally and/or historically.

## 1.2.2 Environmental Protection

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

liquid waste; radiant energy and radioactive material as well as other pollutants.

#### 1.2.3 Contractor Generated Hazardous Waste

Contractor generated hazardous waste means materials that, if abandoned or disposed of, may meet the definition of a hazardous waste. These waste streams would typically consist of material brought on site by the Contractor to execute work, but are not fully consumed during the course of construction. Examples include, but are not limited to, excess paint thinners (i.e. methyl ethyl ketone, toluene etc.), waste thinners, excess paints, excess solvents, waste solvents, and excess pesticides, and contaminated pesticide equipment rinse water.

#### 1.2.4 Land Application for Discharge Water

The term "Land Application" for discharge water implies that the Contractor shall discharge water at a rate which allows the water to percolate into the soil. No sheeting action, soil erosion, discharge into storm sewers, discharge into defined drainage areas, or discharge into the "waters of the United States" shall occur. Land Application shall be in compliance with all applicable Federal, State, and local laws and regulations.

#### 1.2.5 Surface Discharge

The term "Surface Discharge" implies that the water is discharged with possible sheeting action and subsequent soil erosion may occur. Waters that are surface discharged may terminate in drainage ditches, storm sewers, creeks, and/or "waters of the United States" and would require a permit to discharge water from the governing agency.

#### 1.2.6 Waters of the United States

All waters which are under the jurisdiction of the Clean Water Act, as defined in 33 CFR 328.

#### 1.2.7 Wetlands

Wetlands means those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, and bogs. Official determination of whether or not an area is classified as a wetland must be done in accordance with WETLAND MANUAL.

### 1.3 GENERAL REQUIREMENTS

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

#### 1.4 SUBCONTRACTORS

The Contractor shall ensure compliance with this section by subContractors.

#### 1.5 PAYMENT

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

#### 1.6 SUBMITTALS

The Lanikai Homeowners Association Contracting Officer approval is required for submittals with an "L" designation; submittals not having an "L" designation are for information only. The following shall be submitted:

##### SD-01 Preconstruction Submittals

Environmental Protection Plan; L

The environmental protection plan.

Joint Condition Survey

#### 1.7 ENVIRONMENTAL PROTECTION PLAN

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

##### 1.7.1 Compliance

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



## 1.7.2 Contents

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

- a. Name(s) of person(s) within the Contractor's organization who is(are) responsible for ensuring adherence to the Environmental Protection Plan.
- b. Name(s) and qualifications of person(s) responsible for manifesting hazardous waste to be removed from the site, if applicable.
- c. Name(s) and qualifications of person(s) responsible for training the Contractor's environmental protection personnel.
- d. Description of the Contractor's environmental protection personnel training program.
- e. An erosion and sediment control plan which identifies the type and location of the erosion and sediment controls to be provided, including site-specific Best Management Practices (BMP). The plan shall include monitoring and reporting requirements to assure that the control measures are in compliance with the erosion and sediment control plan, Federal, State, and local laws and regulations. A Storm Water Pollution Prevention Plan (SWPPP) may be substituted for this plan.
- f. Drawings showing locations of proposed temporary excavations or embankments for haul roads, stream crossings, material storage areas, structures, sanitary facilities, and stockpiles of excess or spoil materials including methods to control runoff and to contain materials on the site.
- g. Traffic control plans including measures to reduce erosion of temporary roadbeds by construction traffic, especially during wet weather. Plan shall include measures to minimize the amount of mud transported onto paved public roads by vehicles or runoff.
- h. Work area plan showing the proposed activity in each portion of the area and identifying the areas of limited use or nonuse. Plan should include measures for marking the limits of use areas including methods for protection of features to be preserved within authorized work areas.
- i. Drawing showing the location of borrow areas.
- j. The Spill Control plan shall include the procedures, instructions, and reports to be used in the event of an unforeseen spill of a substance regulated by 40 CFR 68, 40 CFR 302, 40 CFR 355, and/or regulated under State or Local laws and regulations. This plan shall include as a minimum:

(1) The name of the individual who will report any spills or hazardous substance releases and who will follow up with complete documentation. This individual shall immediately notify the Contracting Officer and the local Fire Department in addition to the legally required Federal, State, and local reporting channels (including the National Response Center 1-800-424-8802) if a

reportable quantity is released to the environment. The plan shall contain a list of the required reporting channels and telephone numbers.

(2) The name and qualifications of the individual who will be responsible for implementing and supervising the containment and cleanup.

(3) Training requirements for Contractor's personnel and methods of accomplishing the training.

(4) A list of materials and equipment to be immediately available at the job site, tailored to cleanup work of the potential hazard(s) identified.

(5) The names and locations of suppliers of containment materials and locations of additional fuel oil recovery, cleanup, restoration, and material-placement equipment available in case of an unforeseen spill emergency.

(6) The methods and procedures to be used for expeditious contaminant cleanup.

- k. A non-hazardous solid waste disposal plan identifying methods and locations for solid waste disposal including clearing debris. The plan shall include schedules for disposal. The Contractor shall identify any subContractors responsible for the transportation and disposal of solid waste. Licenses or permits shall be submitted for solid waste disposal sites that are not a commercial operating facility. Evidence of the disposal facility's acceptance of the solid waste shall be attached to this plan during the construction. The Contractor shall attach a copy of each of the Non-hazardous Solid Waste Diversion Reports to the disposal plan. The report shall be submitted on the first working day after the first quarter that non-hazardous solid waste has been disposed and/or diverted and shall be for the previous quarter (e.g. the first working day of January, April, July, and October). The report shall indicate the total amount of waste generated and total amount of waste diverted in cubic yards or tons along with the percent that was diverted.
- l. A recycling and solid waste minimization plan with a list of measures to reduce consumption of energy and natural resources. The plan shall detail the Contractor's actions to comply with and to participate in Federal, State, Regional, and local government sponsored recycling programs to reduce the volume of solid waste at the source.
- m. An air pollution control plan detailing provisions to assure that dust, debris, materials, trash, etc., do not become air borne and travel off the project site.
- n. A contaminant prevention plan that: identifies potentially hazardous substances to be used on the job site; identifies the intended actions to prevent introduction of such materials into the air, water, or ground; and details provisions for compliance with Federal, State, and local laws and regulations for storage and handling of these materials. A copy of the Material Safety Data Sheets (MSDS) and the maximum quantity of each hazardous

material to be on site at any given time shall be included in the contaminant prevention plan. As new hazardous materials are brought on site or removed from the site, the plan shall be updated.

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

#### 1.7.3 Appendix

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

#### 1.8 PROTECTION FEATURES

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

#### 1.9 ENVIRONMENTAL ASSESSMENT OF CONTRACT DEVIATIONS

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

#### 1.10 NOTIFICATION

The Contracting Officer will notify the Contractor in writing of any observed noncompliance with Federal, State or local environmental laws or regulations, permits, and other elements of the Contractor's Environmental Protection plan. The Contractor shall, after receipt of such notice,

inform the Contracting Officer of the proposed corrective action and take such action when approved by the Contracting Officer. The Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No time extensions shall be granted or equitable adjustments allowed to the Contractor for any such suspensions. This is in addition to any other actions the Contracting Officer may take under the contract, or in accordance with the Federal Acquisition Regulation or Federal Law.

## PART 2 PRODUCTS (NOT USED)

## PART 3 EXECUTION

### 3.1 ENVIRONMENTAL PERMITS AND COMMITMENTS

The Contractor shall be responsible for obtaining and complying with all environmental permits and commitments required by Federal, State, Regional, and local environmental laws and regulations.

### 3.2 LAND RESOURCES

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

#### 3.2.1 Work Area Limits

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

#### 3.2.2 Landscape

Trees, shrubs, vines, grasses, land forms and other landscape features indicated and defined on the drawings to be preserved shall be clearly identified by marking, fencing, or wrapping with boards, or any other approved techniques. The Contractor shall restore landscape features damaged or destroyed during construction operations outside the limits of the approved work area.

#### 3.2.3 Erosion and Sediment Controls

The Contractor shall be responsible for providing erosion and sediment control measures in accordance with Federal, State, and local laws and regulations. The erosion and sediment controls selected and maintained by

the Contractor shall be such that water quality standards are not violated as a result of the Contractor's construction activities. The area of bare soil exposed at any one time by construction operations should be kept to a minimum. The Contractor shall construct or install temporary and permanent erosion and sediment control best management practices (BMPs) as indicated on the drawings. BMPs may include, but not be limited to, vegetation cover, stream bank stabilization, slope stabilization, silt fences, construction of terraces, interceptor channels, sediment traps, inlet and outfall protection, diversion channels, and sedimentation basins. The Contractor's best management practices shall also be in accordance with the National Pollutant Discharge Elimination System (NPDES) Storm Water Pollution Prevention Plan (SWPPP) which may be reviewed at the Environmental Office. Any temporary measures shall be removed after the area has been stabilized.

#### 3.2.4 Contractor Facilities and Work Areas

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

### 3.3 WATER RESOURCES

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

#### 3.3.1 Cofferdams, Diversions, and Dewatering Operations

Construction operations for dewatering, removal of cofferdams, tailrace excavation, and tunnel closure shall be controlled at all times to maintain compliance with existing State water quality standards and designated uses of the surface water body. The Contractor shall comply with the State of Hawaii water quality standards and anti-degradation provisions.

#### 3.3.2 Wetlands

The Contractor shall not enter, disturb, destroy, or allow discharge of contaminants into any wetlands.

### 3.4 AIR RESOURCES

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

#### 3.4.1 Odors

Odors from construction activities shall be controlled at all times. The

odors shall not cause a health hazard and shall be in compliance with State regulations and/or local ordinances.

#### 3.4.2 Sound Intrusions

The Contractor shall keep construction activities under surveillance and control to minimize environment damage by noise. The Contractor shall comply with the provisions of the State of Hawaii rules.

#### 3.4.3 Burning

Burning will not be allowed on the project site unless specified in other sections of the specifications or authorized in writing by the Contracting Officer. The specific time, location, and manner of burning shall be subject to approval.

### 3.5 CHEMICAL MATERIALS MANAGEMENT AND WASTE DISPOSAL

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

#### 3.5.1 Solid Wastes

Solid wastes (excluding clearing debris) shall be placed in containers which are emptied on a regular schedule. Handling, storage, and disposal shall be conducted to prevent contamination. Segregation measures shall be employed so that no hazardous or toxic waste will become co-mingled with solid waste. The Contractor shall comply with Federal, State, and local laws and regulations pertaining to the use of landfill areas.

#### 3.5.2 Chemicals and Chemical Wastes

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

#### 3.5.3 Contractor Generated Hazardous Wastes/Excess Hazardous Materials

Hazardous wastes are defined in 40 CFR 261, or are as defined by applicable State and local regulations. Hazardous materials are defined in 49 CFR 171 - 178. The Contractor shall, at a minimum, manage and store hazardous waste in compliance with 40 CFR 262 and shall manage and store hazardous waste in accordance with the hazardous waste management plan. The Contractor shall take sufficient measures to prevent spillage of hazardous and toxic materials during dispensing. The Contractor shall segregate hazardous waste from other materials and wastes, shall protect it from the weather by placing it in a safe covered location, and shall take precautionary measures such as berming or other appropriate measures against accidental spillage. The Contractor shall be responsible for storage, describing, packaging, labeling, marking, and placarding of hazardous waste and hazardous material in accordance with 49 CFR 171 - 178, State, and local laws and regulations. The Contractor shall transport Contractor generated hazardous waste off property within 60 days in accordance with the Environmental Protection Agency and the Department of

Transportation laws and regulations. The Contractor shall dispose of hazardous waste in compliance with Federal, State and local laws and regulations. Spills of hazardous or toxic materials shall be immediately reported to the Contracting Officer. Cleanup and cleanup costs due to spills shall be the Contractor's responsibility. The disposition of Contractor generated hazardous waste and excess hazardous materials are the Contractor's responsibility.

#### 3.5.4 Fuel and Lubricants

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

#### 3.5.5 Waste Water

Disposal of waste water shall be as specified below.

Waste water from construction activities, such as onsite material processing, concrete curing, foundation and concrete clean-up, water used in concrete trucks, forms, etc. shall not be allowed to enter water ways or to be discharged prior to being treated to remove pollutants. The Contractor shall dispose of the construction related waste water in accordance with all Federal, State, Regional and Local laws and regulations.

#### 3.6 RECYCLING AND WASTE MINIMIZATION

The Contractor shall participate in State and local government sponsored recycling programs. The Contractor is further encouraged to minimize solid waste generation throughout the duration of the project.

#### 3.7 NON-HAZARDOUS SOLID WASTE DIVERSION REPORT

The Contractor shall maintain an inventory of non-hazardous solid waste diversion and disposal of construction and demolition debris.

#### 3.8 HISTORICAL, ARCHAEOLOGICAL, AND CULTURAL RESOURCES

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

removing, or otherwise disturbing such resources.

### 3.9 BIOLOGICAL RESOURCES

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

### 3.10 PREVIOUSLY USED EQUIPMENT

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

### 3.11 MAINTENANCE OF POLLUTION FACILITIES

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

### 3.12 TRAINING OF CONTRACTOR PERSONNEL

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

### 3.13 POST CONSTRUCTION CLEANUP

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

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## SECTION 01 90 00

## MISCELLANEOUS PROVISIONS

## PART 1 GENERAL

## 1.1 PROJECT MANAGEMENT ORGANIZATION

## 1.1.1 General

The Contractor is responsible for ensuring that the contract is adequately staffed to manage all of the work in full accordance and compliance with the contract requirements.

## 1.1.2 Organization Plan

The Contractor shall submit an organization plan describing the organization it intends to structure for managing this contract. The plan shall include lines of authority, position responsibilities, and qualifications of the proposed staff. The project staff shall minimally consist of the following key personnel: Project Manager, Project Superintendent, Contractor Quality Control System Manager, and Safety and Health Manager. Each of the individuals selected to fill these positions is subject to acceptance by the Contracting Officer.

## 1.1.3 Organizational Changes

The Contractor shall maintain the project management staff at full strength at all times. When it is necessary to make changes to the staff, the Contractor shall revise the Organization Plan to reflect the changes and submit the changes to the Contracting Officer for acceptance at least fourteen (14) calendar days prior to implementation of the changes.

Substitutions for any accepted key personnel must be submitted for review and acceptance by the Contracting Officer prior to the start of work by that individual. The Contractor is informed that the Contracting Officer will be allowed at least 30 days to respond. Any delays resulting from this process shall be the responsibility of the Contractor and shall not be a basis for any equitable contract adjustment.

## 1.1.4 Project Manager

The Project Manager shall be responsible for the Contractor's overall management and coordination of this contract and shall be the central point of contact with the Contracting Officer for performance of all work under this contract, including warranty. The Project Manager shall oversee construction accomplishment, administer all instructions, and answer all questions from the Contracting Officer pertaining to the work during the life of the contract, including the warranty period. The Project Manager shall be responsible for the complete coordination of all work in this contract. The Project Manager will be responsible for ensuring that adequate internal controls and review procedures are followed in order to eliminate conflicts, errors and omissions, and for ensuring that all technical requirements are met. Another individual may be designated to

temporarily act (no longer than 2 weeks) for the Project Manager, however, forty-eight (48) hours advance notice in writing of such change shall be requested to the Contracting Officer, and no change shall be made without prior acceptance by the Contracting Officer.

The Project Manager shall have a recognized four-year college degree in engineering, architecture, or related technical field, and at least five (5) years experience in managing and supervising construction projects of similar size and scope.

#### 1.1.5 Project Superintendent

A Project Superintendent shall be assigned. This individual shall have a minimum of five (5) years experience as a superintendent similar in size and scope to this contract. The project superintendent shall have overall responsibility for all operations on the jobsite.

#### 1.2 DOCUMENTATION OF MEETINGS

All meetings involving the Contractor and the Contracting Officer shall be documented. Except for the Preconstruction Meeting and the CQC and Safety coordination/mutual understanding meetings which will be documented by the Contracting Officer, the Contractor shall be responsible for accurately recording minutes of meetings and producing written documentation of meeting discussions. The minutes shall include meeting specifics such as: contract number, date, time, purpose/subject, attendees, and summary of discussions in outline form, including pending actions, responsible party, and suspenses. Prior to distribution of the minutes, a Draft of the minutes shall be prepared and forwarded within 24 hours of the meeting's conclusion to all meeting attendees for review and comment. The Final minutes shall be completed and distributed within 3 working days following the meeting.

#### 1.3 CONTRACTOR QUALITY CONTROL

To assure compliance with contract requirements, the Contractor shall establish and maintain quality control for materials and work. Records shall be maintained for all operations including sampling and testing.

#### 1.4 DUST CONTROL

The amount of dust resulting from the Contractor's work shall be controlled to prevent the spread of dust to occupied portions of the construction site and to avoid creation of a nuisance in the surrounding area. Use of water will not be permitted when it will result in, or create, hazardous or objectionable conditions such as flooding and pollution. Measures shall also be taken for dust control along haul routes and equipment parking areas.

#### 1.5 PROTECTION

The Contractor shall take all necessary precautions to insure that no damages to private or public property will result from his operations. Any such damages shall be repaired or property replaced by the Contractor in accordance with the CONTRACT CLAUSES entitled "PERMITS AND RESPONSIBILITIES" and "PROTECTION OF EXISTING VEGETATION, STRUCTURES, EQUIPMENT, UTILITIES, AND IMPROVEMENTS", without delay, and at no cost.

#### 1.5.1 Warning Signs and Barricades

The Contractor shall be responsible for posting warning signs or erecting temporary barricades to provide for safe conduct of work and protection of property.

#### 1.5.2 Protection of Grassed and Landscaped Areas

The Contractor's vehicles shall be restricted to paved roadways and driveways. Vehicles shall not be driven or parked on grassed and/or landscaped areas except when absolutely necessary for the performance of the work and approved in advance by the Contracting Officer. Grassed or landscaped areas damaged by the Contractor shall be restored to their original condition without delay and at no cost.

#### 1.5.3 Protection of Trees and Plants

Where necessary, tree branches and plants interfering with the work may be temporarily tied back by the Contractor to permit accomplishment of the work in a convenient manner, so long as they will not be permanently damaged thereby. If this is not feasible, they may be pruned, subject to written approval by the Contracting Officer.

### 1.6 RESTORATION WORK

Existing conditions or areas damaged or disturbed by the Contractor's operations shall be restored to their original condition, or near original condition as possible, to the satisfaction of the Contracting Officer.

### 1.7 REMOVAL AND DISPOSAL

The Contractor shall salvage or recycle waste to the maximum extent practical as it relates to the capabilities of local industries. A record of the quantity of salvaged or recycled materials shall be maintained by the Contractor during the length of the project and submitted to the Contracting Officer at acceptance of the project. Quantities shall be recorded in the unit of measure of the industry. Reuse of materials on the site shall be considered a form of recycling. An example of such reuse would be the use of acceptable excavated materials as fill.

#### 1.7.1 Title to Materials

Title to all materials and equipment to be removed, except as indicated or specified otherwise, is vested in the Contractor upon receipt of notice to proceed. Items indicated to be removed shall be removed and disposed of by the Contractor as indicated at the Contractor's responsibility and expense before the completion and final acceptance of the work, and such materials shall not be sold on the site.

#### 1.7.2 Rubbish and Debris

Rubbish and debris shall be removed daily unless otherwise directed, so as not to allow accumulation. Materials that cannot be removed daily shall be stored in areas designated by the Contracting Officer.

### 1.8 WORKING HOURS

All work shall be performed between the hours of 0730 to 1600 HST, Monday through Friday. No work shall be accomplished on Saturdays, Sundays, and

all Federal holidays without written permission from the Contracting Officer. Such written permission shall be available at the job site at all times during construction.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

-- End of Section --

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DIVISION 35 - WATERWAY AND MARINE CONSTRUCTION

SECTION 35 49 34

BEACH SAND

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-- End of Section Table of Contents --

## SECTION 35 49 34

## BEACH SAND

## PART 1 GENERAL

## 1.1 REFERENCES

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

## ASTM INTERNATIONAL (ASTM)

ASTM D 75 (1987; R 1992) Sampling Aggregates

## 1.2 SUBMITTALS

The Lanikai Homeowners Association Contracting Officer approval is required for submittals with an "L" designation; submittals not having an "L" designation are for information only. The following shall be submitted:

SD-04 Samples

Sand; L

## 1.3 SOURCES OF SAND

- a. Sand shall be obtained from approved sources and shall meet the requirements specified herein. Development of a sand source shall be the Contractor's responsibility and at the Contractor's expense. Approval of a source or sources of sand shall not be construed as an approval for all material from that source or sources. The right is reserved to reject material produced from localized areas, zones, or strata when such materials are unsuitable as determined by the Contracting Officer.
- b. Contractor shall be responsible for obtaining all right-of-ways required in connection with his sand borrowing operations. The Contractor shall obtain from the landowners the right to procure materials, pay all charges involved, and bear all expenses of developing the sources, including right-of-ways for hauling. Necessary equipment, labor, and materials for excavating, dredging, loading, hauling, and all other operations required to obtain the sand shall be provided by the Contractor at no additional cost to the Lanikai Homeowners Association. The Contractor shall be responsible for trespassing upon or injury to private lands resulting from his actions or those of his employees.

## 1.4 SAMPLING AND TESTING OF SAND

Samples of sand from sources proposed by the Contractor shall be submitted as standards of the sand quality to be furnished. Duplicate sets of samples shall be taken, referenced, and identified. One set shall remain with the Contractor for later comparison with actual sand furnished for the project. The second set of samples shall be delivered to an independent

testing laboratory, no later than 30 days in advance of the time when placing of sand is expected to begin. Sampling, identification, preparation, and transportation of samples shall be in accordance with ASTM D 75.

## PART 2 PRODUCTS

### 2.1 SAND

The fill sand shall be of beach-compatible quality and shall meet the following guidelines:

- a. The proposed fill sand shall not contain more than 6 percent fines, defined as the #200 sieve (0.074 mm).
- b. The proposed beach fill sand shall not contain more than 10 percent coarse sediment, defined as the #4 sieve (4.76 mm).
- c. Compatibility of the existing and proposed fill beach sands shall be demonstrated by the grain size distribution of the fill sand and shall fall within 20 percent of the existing sand, as measured by a percent finer than or percent coarser than value. For example, if the existing sand has a 45 percent grain size finer than the #100 sieve, the proposed fill sand must contain between 25 percent and 65 percent grain size finer than the #100 sieve.
- d. The overall fill ratio of the fill sand to existing sand shall not exceed 1.5. Overfill factor shall be calculated using the U.S. Army Corps of Engineers method of overfill factor determined by comparing mean sediment diameter and sorting values of the existing beach and borrow sediments (in phi units). See U.S. Army Corps of Engineers "Coastal Engineering Manual" V-4.1.e.3 Sections h and i on sediment suitability and overfill factor.
- e. No more than 50 percent of the fill sand shall have a grain diameter less than 0.125 mm as measured by #120 Standard Sieve Mesh.
- f. Beach fill shall be dominantly composed of naturally-occurring carbonate beach or dune sand. Crushed limestone or other man made or non carbonate sands are not acceptable.
- g. The Contractor shall demonstrate that the proposed beach fill sand was obtained from an approved source and has been reviewed and authorized by the Department of Land and Natural Resources (DLNR).
- h. All placed material shall be free of contaminants of any kind including: excessive silt, sludge, anoxic or decaying organic matter, turbidity, temperature or abnormal water chemistry, clay, dirt, organic material, oil, floating debris, grease or foam or any other pollutant that would produce an undesirable condition to the beach or water quality.

## PART 3 EXECUTION

### 3.1 PLACEMENT

- a. Sand fill shall be placed to the lines, grades, and thicknesses indicated on the drawings. The contractor shall place sand to



achieve the crest elevation and maintain that elevation to the lines shown. A beach crest elevation tolerance of +/- 3 inches will be permitted.

- b. The Contractor shall not be permitted to operate equipment containing fuel or other hazardous material in the water. Sand fill beyond the construction fill lines shall be distributed uniformly by placing sand just beyond the slope break or the construction fill line, whichever is reached first.
- c. The Contractor is responsible for achieving the beach crest shown in the drawings and placing the total volume of sand. The Contractor is not responsible for the final designed natural beach shape.

### 3.2 TURBIDITY CONTROL

A silt containment device shall be deployed completely enclosing the fill operation area during placement of the sand, and shall remain in place a minimum of 24 hours following completion of the sand placement. The Contracting Officer may order the Contractor to cease placing sand should excessive turbidity be observed escaping from the silt containment device.

-- End of Section --

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## SECTION 35 49 35

## GEOTEXTILE CONTAINER

## PART 1 GENERAL

## 1.1 REFERENCES

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

## ASTM INTERNATIONAL (ASTM)

ASTM D 4355	(2007) Deterioration of Geotextiles from Exposure to Light, Moisture and Heat in a Xenon-Arc Type Apparatus
ASTM D 4491	(1999a; R 2004e1) Water Permeability of Geotextiles by Permittivity
ASTM D 4595	(2009) Tensile Properties of Geotextiles by the Wide-Width Strip Method
ASTM D 4751	(2004) Determining Apparent Opening Size of a Geotextile
ASTM D 4833	(2007) Index Puncture Resistance of Geotextiles, Geomembranes, and Related Products
ASTM D 4873	(2002; R 2009) Identification, Storage, and Handling of Geosynthetic Rolls and Samples
ASTM D 4884	(2009) Strength of Sewn or Thermally Bonded Seams of Geotextiles

## 1.2 SUBMITTALS

The Lanikai Homeowners Association Contracting Officer approval is required for submittals with an "L" designation; submittals not having an "L" designation are for information only. The following shall be submitted:

## SD-01 Preconstruction Submittals

## Construction Plan; L

The Contractor shall submit a Construction Plan for each phase of the Scope of Work. The Construction Plan shall be submitted at a minimum of 30 days prior to construction.

## Quality Control Plan; L

The Contractor's Quality Control Plan shall include details regarding execution of the specified quality control actions

required for this contract, including surveys, testing of geotextiles, elevation control of filled areas. The plan shall include information regarding the Geotextile Testing Laboratory selected by the Contractor which shall include certification, personnel, experience, and description of the testing equipment. The plan shall also include a proposed method to test the heights of the filled geotextile containers for acceptance.

#### SD-03 Product Data

##### Thread; L

A minimum of 30 days prior to scheduled use, proposed thread type for sewn seams along with data sheets showing the physical properties of the thread.

##### Manufacturing Quality Control Sampling and Testing

A minimum of 30 days prior to scheduled use, manufacturer's quality control manual.

##### Geotextile Containers; L

Manufacturer data for each geotextile container shall be submitted 30 days prior to construction.

#### SD-04 Samples

##### Site Verification, Sampling and Testing

Samples for quality assurance testing, if required by the Contracting Officer (See Para Site Verification, Sampling and Testing.

##### Geotextile Containers; L

One (1) sample of each type of geotextile container shall be provided 30 days prior to start of Construction by the Contractor for a permanent record. Each sample shall be a minimum of 3 feet by 3 feet in dimension.

#### SD-05 Design Data

##### Surveys

A plot of the as-built longitudinal profile and the original survey field book shall be submitted within 7 calendar days of survey data collection. Also, an electronic copy of the survey data shall be submitted.

#### SD-07 Certificates

##### Geotextile Containers

A written certification of compliance shall be submitted upon the delivery of the geotextile containers. The certification shall state the geotextile containers shipped to the site meet or exceed the minimum average roll values listed in the TABLE below and the chemical, physical, and manufacturing requirements

specified herein.

#### Geotextile Seams

A written certification of compliance shall be submitted upon the delivery of the geotextile containers. The certification shall state the geotextile seam meet or exceed the minimum average roll values listed in the TABLE below.

### 1.3 DELIVERY, STORAGE AND HANDLING

Delivery, storage, and handling of geotextile containers shall be in accordance with ASTM D 4873. Each roll shall be wrapped in an opaque and waterproofed layer of plastic during shipment and storage. The plastic wrapping shall be placed around the geotextile container in the manufacturing facility and shall not be removed until the geotextile container is to be used to form the placement area. Each roll shall be labeled with the manufacturer's name, geotextile container type, lot number, and roll dimension, including length, width, or gross weight. Geotextile container or plastic wrapping damaged as a result of delivery, storage, or handling shall be repaired or replaced, as directed at no additional cost.

#### 1.3.1 Delivery

The Contracting Officer shall be notified a minimum of 24 hours prior to delivery and unloading of geotextile container. Geotextile container shall be packaged in an opaque, waterproof, protective plastic wrapping. The plastic wrapping shall not be removed until deployment. When quality assurance samples are collected, rolls shall be immediately rewrapped with the plastic wrapping. Geotextile container or plastic wrapping damaged during storage or handling shall be repaired or replaced at the Contractors expense, as directed. Each geotextile container shall be labeled with the manufacturer's name, geotextile type, geotextile container number, geotextile container dimensions (length, width, height, gross weight), and date manufactured.

#### 1.3.2 Storage

Prior to filling, the geotextile container assembly shall be stored in areas where water cannot accumulate, and protected from conditions that will affect the properties or performance. Geotextile container shall be protected from construction equipment, chemicals, sparks and flames, temperatures in excess of 140 degrees F, or any other environmental condition that may damage the physical properties of the geotextile container. To protect geotextile container from becoming saturated, geotextile container shall either be elevated off the ground or placed on a sacrificial sheet of plastic in an area where water will not accumulate. Outdoor storage shall not be for periods, which exceed the manufacturers recommendations or 6 months, whichever is less.

#### 1.3.3 Handling

Geotextile container shall be handled and unloaded with load carrying straps, a fork lift with a stinger bar, or an axial bar assembly. Geotextile container shall not be dragged along the ground, lifted by one end, or dropped to the ground. No hooks, tongs, or other sharp instruments shall be used for handling the geotextile container.

## PART 2 PRODUCTS

## 2.1 RAW MATERIALS

## 2.1.1 Dredged Fill Material

Material for filling geotextile containers shall consist of beach quality sand as specified in Section 35 49 34 BEACH SAND.

## 2.2 GEOTEXTILE CONTAINERS

Geotextile shall be used for the geotextile containers and scour aprons. The geotextile shall be a woven pervious sheet of polypropylene yarn. The use of woven slit film geotextiles (i.e. geotextile containers made from yarns of a flat, tape-like character) will not be allowed. Stabilizers and/or inhibitors shall be added to the base polymer, as needed, to make the filaments resistant to deterioration by ultraviolet light, oxidation, and heat exposure. Re grind material, which consists of edge trimmings and other scraps that have never reached the consumer, may be used to produce the geotextile. Post-consumer recycled material may also be used. Geotextile shall be formed into a network such that the filaments or yarns retain dimensional stability relative to each other. Geotextiles shall meet the requirements specified in TABLE 1. Where applicable, Table 1 property values represent minimum average roll values (MARV) in the weakest principal direction. Values for AOS represent maximum average roll values.

TABLE 1

## MINIMUM PHYSICAL REQUIREMENTS FOR GEOTEXTILE

<u>PROPERTY</u>	<u>UNITS</u>	<u>ACCEPTABLE VALUES</u>	<u>TEST METHOD</u>
Apparent Opening Size	US Sieve	#60	ASTM D 4751
Flow Rate	Gal/min/Ft <sup>2</sup>	14	ASTM D 4491
Puncture	Lbs	280	ASTM D 4833
Wide Width Tensile			ASTM D 4595
Ultimate Tensile Strength Machine Direction(MD)	Lbs/Ft	9600	
Ultimate Tensile Strength Cross Direction(CD)	Lbs/Ft	15,600	
Wide Width Tensile			ASTM D 4595
Elongation MD	%	20	
Elongation CD	%	20	
Ultraviolet			ASTM D 4355
Degradation (percent Strength retained at 500 hours)		85% strength Retained for all classes	

TABLE 1

## MINIMUM PHYSICAL REQUIREMENTS FOR GEOTEXTILE

<u>PROPERTY</u>	<u>UNITS</u>	<u>ACCEPTABLE VALUES</u>	<u>TEST METHOD</u>
Factory Seam strength Wide Width Tests in the MD and CD	Lbs/Ft	9,000	ASTM D 4884
Percent Open Area	%	4	Specifications

## 2.2.1 Geotextile Container Assembly

The arrangement of the geotextile container suggested on the drawings does not preclude the Contractor from proposing an arrangement that provides for greater efficiency subject to approval of the Contracting Officer. Filling ports shall be located on the top center of the Geotextile container at a maximum of 50 foot spacing. One filling port shall be located at a distance no greater than 10 feet from each end of the individual geotextile containers.

## 2.2.2 Geotextile Seams

Geotextile seams shall be factory sewn, and shall meet or exceed the minimum average roll values listed in TABLE 1.

## 2.3 THREAD

The thread shall consist of long-chain synthetic polymers composed of at least 95 percent by weight polyolefins, polyesters, or polyamides.

## 2.4 FABRICATION GEOTEXTILE CONTAINERS AND SCOUR APRONS

The geotextile used for fabrication of the geotextile containers shall be manufactured to the largest loom width possible. The geotextile containers shall be fabricated by sewing together sheets of high strength woven geotextile material to form a tubular shape. The geotextile containers shall have the circumferences of 60 feet as shown. The geotextile containers shall be delivered with filling ports spaced at intervals not to exceed 50 feet or closer if required to adequately fill the geotextile container. Each fill port shall be designed in such a way as to facilitate use with the proposed dredging method. In addition, a pressure relief shall be located not more than 10 feet from each end excluding overlaps of each geotextile container. Loops or straps shall be incorporated along the sides of the geotextile container every 20 feet to facilitate deployment and anchoring. The loops or straps shall have the same tensile strength as the geotextile container. Seams shall be overlapped and folded. Geotextile container and scour apron seams shall be factory sewn. The width of the scour apron shall be sufficient such that the entire width of the protection stone as shown on the drawings rests upon the scour apron.

## 2.5 APPROVALS, TESTS, INSPECTIONS, AND VERIFICATIONS

## 2.5.1 Manufacturing Quality Control Sampling and Testing

Geotextiles and factory seams shall meet the requirements specified in TABLE 1 above. Conformance testing shall be performed on five random

samples in accordance with approved Quality Control practices. The manufacturer shall submit test results for samples of the geotextile containers before fabrication. Samples shall be tested to verify the Geotextile meets the requirements specified in TABLE 1. Samples shall be identified by manufacturer's name, type of Geotextile, lot number, roll number, and machine direction. Testing shall be performed at an approved laboratory with personnel experienced in testing Geosynthetics. The Contracting Officer reserves the right for approval of laboratories. Test results from the lot under review shall be submitted and approved prior to deployment of that lot of geotextile container. Rolls, which are sampled, shall be immediately rewrapped in their protective covering after fabrication.

#### 2.5.2 Site Verification, Sampling and Testing

If requested by the Contracting Officer, the Contractor shall provide samples for testing to determine compliance with the requirements in the specification. When samples are to be provided, they shall be submitted a minimum of 30 days before the beginning of installation of the same geotextile container. Samples provided shall be the full manufactured width of the geotextile by at least 10 feet long.

#### 2.5.3 Additional Requirements

The Contractor shall provide information on the polypropylene geotextile to be used to fabricate the geotextile containers and it must be a stock item of the manufacturer. The manufacturer must have inventory available of the polypropylene geotextile in sufficient quantity at the time of the solicitation to fabricate all of the geotextile containers for this project. The Contractor shall also provide verification that the polypropylene geotextile to be used for fabrication of the geotextile containers must have been used successfully in at least 2 geotextile container projects, which are identifiable and documented.

#### 2.5.4 Manufacturers' Personnel

Each manufacturer must provide at least one employee with geotextile container installation experience to provide the Contractor necessary start-up technical assistance. The Contractor must identify this individual and provide the professional resume of the person. The employee identified must demonstrate successful use of membrane in combination with polypropylene geotextile for a minimum of 5 years.

### PART 3 EXECUTION

#### 3.1 GENERAL

The Contractor shall conduct the work as proposed during the selection process.

#### 3.2 MOBILIZATION AND DEMOBILIZATION

The Contractor shall mobilize sufficient personnel and equipment to the work site. Upon successful completion of the work required as specified herein, the Contractor shall remove the construction equipment, materials, and supplies from the site after acceptance of the work by the Contracting Officer.



### 3.3 CONSTRUCTION PLAN

The Construction Plan for the geotextile groins shall be submitted in writing and approved prior to commencement of construction. The plan shall include specific installation procedures for each component of the geotextile groins but shall not be limited to sequence, equipment, and a listing of personnel experience in the installation and filling of geotextile containers. The plan shall incorporate the requirements specified herein and shall include a brief written discussion and sketches describing the geometry, orientation, place of material, fabrics, fabrication, installation, anchoring, and filling procedures. Fabrication details or installation techniques that differ from those specified herein may be documented in the Construction Plan and submitted for approval. However, a rejection of alternative methods suggested by the Contractor shall not constitute a basis for a claim against the Lanikai Homeowners Association. The Contractor shall not begin installation of the geotextile containers until the work delineated in the plan is approved. Upon receipt of the plan, the Lanikai Homeowners Association will provide comments or questions within 30 working days. The Contractor shall provide written or verbal responses, as directed, and a satisfactory resolution of the Plan-related issue shall be reached prior to commencement of construction.

### 3.4 QUALITY CONTROL PLAN

The Contractor's Quality Control Plan shall include details regarding execution of the specified quality control actions required for this contract, including surveys, testing of geotextiles, elevation control of filled areas and height control of installed geotextile containers. The plan shall also include information regarding the Geotextile Testing Laboratory selected by the Contractor which shall include certification, personnel, experience, and description of the testing equipment.

### 3.5 SURFACE PREPARATION

The underlying surface to receive the geotextile containers shall be leveled and prepared to a relatively smooth condition free of ruts, erosion rills, obstructions, depressions, or debris greater than 20 cm in height.

### 3.6 INSTALLATION OF GEOTEXTILE CONTAINER

Within 10 days after Notice to Proceed, the Contractor shall submit the Plan of Construction specified in the Paragraph: SUBMITTALS above. The Plan shall incorporate the requirements specified herein with respect to geotextile container and associated components including, geometry, orientation, fabrics, fabrication, installation, anchoring, and filling. Fabrication details or installation techniques that differ from those specified herein may be documented in the Plan of Construction and submitted for consideration by the Contracting Officer. However, rejection of alternative methods suggested by the Contractor shall not constitute a basis for claim against the Lanikai Homeowners Association. The Contractor shall visually inspect the geotextile container prior to installation for damage and imperfections. Defects shall be marked and repaired according to manufacturer's recommendation. The Contractor will be allowed to install a temporary geosynthetic apron along one or both sides of the geotextile containers to facilitate installation, but no separate payment will be made for the apron.

### 3.7 PLACEMENT

Placement shall be in accordance with the approved Plan of Construction and as otherwise found herein.

#### 3.7.1 Filling Of Geotextile Container

Before and during filling, the geotextile containers shall be prevented from rolling or shifting from the alignment on the drawings. The geotextile containers shall be filled until the required elevation of +4.5 feet MLLW (+/- 0.25 feet) has been reached. The containers shall be monitored for elevation reduction until the geotextile container has been accepted. If the geotextile container elevations are not +4.5 feet MLLW (+/- 0.25 feet) after 30 days following initial filling, the Contractor shall fill the container to the required elevation. Failed seams or ruptures in the geotextile containers shall be patched. The filling ports shall remain open during filling and not closed until the approved height requirements have been met after the 30 day waiting period. The Contractor shall then close the filling ports in accordance with the manufacturer's recommendations.

### 3.8 PROTECTION

The geotextile containers shall be protected during installation and filling from binding, clogging, penetrations, tears, or other damage. Damaged geotextile containers shall be repaired or replaced at no expense to the Lanikai Homeowners Association. No equipment shall be operated directly on top of the geotextile container without approval of the Contracting Officer.

### 3.9 REPAIRS

Damaged geotextile containers shall be replaced or repaired. Geotextile container repairs shall be made by placing a patch of the same type of geotextile which extends a minimum of 1-1/2 feet beyond the edge of the damage or defect. Patches shall be continuously fastened using a sewn seam or other approved methods recommended by the manufacturer. The machine direction of the patch shall be aligned with the machine direction of the geotextile container being repaired. Geotextile containers which cannot be repaired shall be replaced.

### 3.10 SURVEYS

An elevation profile including x, y, and z coordinates along the center of each geotextile container shall be taken no later than 30 calendar days following acceptance of filled geotextile container. The data shall be submitted within 7 calendar days of data collection.

### 3.11 GEOTEXTILE CONTAINER JOINT

Geotextile containers to be placed end to end shall be joined with a butt joint or other approved method. The finished top elevation of the geotextile containers at the location of the joint between containers shall not be less than the finished average top elevation of the two geotextile containers adjacent to the same joint.

-- End of Section --