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SECTION 01430

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SECTION 01430

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 in the text by basic designation only.

HAR

HAR Chapter 11-55, Appendix C	NPDES General Permit Coverage Guidelines for CWB-NOI Form C

STATE OF HAWAII DEPARTMENT OF HEALTH (HIDOH)

HIDOH, Chapter 11-54	Administrative Rules, Water Quality Standards
HIDOH, Chapter 11-55	Administrative Rules, Water Pollution Control
HIDOH, Chapter 43	Administrative Rules, Title 11, Community Noise Control for Oahu
HIDOH, Chapter 59	Administrative Rules, Ambient Air Quality Standards
HIDOH, Chapter 60	Administrative Rules, Air Pollution Control

1.2 GENERAL REQUIREMENTS

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

1.2.1 Subcontractors

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

1.2.2 Notification

The Contracting Officer will notify the Contractor in writing of any observed noncompliance with the aforementioned Federal, State or local 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 proposed corrective action and take such action as may be approved. If the Contractor fails to comply promptly, the Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No time extensions will be granted or costs or damages allowed to the Contractor for any such suspension.

1.3 SUBMITTALS

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

SD-06 Test Reports

Environmental Protection Plan; G.

Within 30 calendar days of receipt of Notice to Proceed, the Contractor shall submit in writing an environmental protection plan. Approval of the Contractor's plan will not relieve the Contractor of his responsibility for adequate and continuing control of pollutants and other environmental protection measures. The environmental protection plan shall include but not be limited to the following:

a. A list of Federal, State, and local laws, regulations, and permits concerning environmental protection, pollution control and abatement that are applicable to the Contractor's proposed operations and the requirements imposed by those laws, regulations, and permits.

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

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

d. Location of the solid waste disposal area.

e. Drawings showing locations of any proposed temporary excavations or embankments for haul roads, stream crossings,

material storage areas, structures, sanitary facilities, and stockpiles of excess or spoil materials.

f. Environmental monitoring plans for the job site, including land, water, air, and noise monitoring.

g. Traffic control plan.

h. Methods of protecting marine, surface and ground water during construction activities, including Best Management Practices.

i. 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.

j. Plan of borrow area(s).

k. Training for his personnel during the construction period.

SD-07 Certificates

NPDES Permit; G.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION

3.1 PROTECTION OF ENVIRONMENTAL RESOURCES

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

3.1.1 Land Resources

Prior to the beginning of any construction, the Contractor shall identify all land resources to be preserved within the Contractor's 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 special permission from the Contracting Officer. No ropes, cables, or guys shall be fastened to or attached to any trees for anchorage unless specifically authorized. Where such special emergency use is permitted, the Contractor shall provide effective protection for land and vegetation resources at all times as defined in the following subparagraphs.

3.1.1.1 Work Area Limits

Prior to any construction, the Contractor shall mark the areas that are not required to accomplish all work to be performed under this contract. Isolated areas within the general work area which are to be saved and protected shall also be marked or fenced. Monuments and markers shall be protected before construction operations commence. Where construction operations are to be conducted during darkness, the markers shall be visible. The Contractor shall convey to his personnel the purpose of marking and/or protection of all necessary objects.

3.1.1.2 Reduction of Exposure of Unprotected Erodible Soils

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

3.1.1.3 Protection of Disturbed Areas

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

a. Retardation and Control of Runoff: Runoff from the construction site shall be controlled by construction of diversion ditches, benches, and berms to retard and divert runoff to protected drainage courses, and any measures required by areawide plans approved under Paragraph 208 of the Clean Water Act.

b. Erosion and Sedimentation Control Devices: The Contractor shall construct or install all temporary and permanent erosion and sedimentation control features on the Best Management Practices (BMP) Plan as indicated in HAR Chapter 11-55, Appendix C to prevent surface runoff and sediments from entering harbor waters. Temporary erosion and sediment control measures such as berms, dikes, drains, grassing, and mulching shall be maintained until the end of construction.

3.1.1.4 Contractor Facilities and Work Areas

a. Location of Field Offices, Storage, and Other Contractor Facilities: The Contractors' 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 on approval by the Contracting Officer.

b. Stockpile Areas on Government Property: Stockpile areas shall be managed and controlled to limit dredged material to areas designated on the drawings and prevent erosion of soil or sediment from entering nearby waters.

c. Temporary Excavations and Embankments: Temporary excavations and embankments for plant and/or work areas shall be controlled to protect adjacent areas from despoilment.

3.1.2 Disposal of Wastes

Disposal of wastes shall be as specified in Section 02220 DEMOLITION and as specified hereinafter.

3.1.2.1 Solid Wastes

Solid wastes (excluding clearing debris) shall be placed in containers

which are emptied on a regular schedule. All handling and disposal shall be conducted to prevent contamination. Segregation measures shall be employed such that no hazardous or toxic waste will become commingled with solid waste. The Contractor shall transport all solid waste off Government property and dispose of it in compliance with Federal, State, and local requirements for solid waste disposal. The Contractor shall comply with site procedures and with Federal, State, and local laws and regulations pertaining to the use of landfill areas.

3.1.2.2 Chemical Wastes:

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

3.1.2.3 Hazardous Wastes:

The Contractor shall take sufficient measures to prevent spillage of hazardous and toxic materials during dispensing and shall collect waste in suitable containers observing compatibility. The Contractor shall transport all hazardous waste off Government property and dispose of it in compliance with Federal 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 responsibility of the Contractor.

3.1.3 Historical, Archeological, and Cultural Resources

Existing historical, archeological, and cultural resources within the Contractor's work area will be so designated by the Contracting Officer if any has been identified. The Contractor shall take precautions to preserve all such resources as they existed at the time they were pointed out to him. The Contractor shall provide and install all protection for these resources so designated and shall be responsible for their preservation during this contract. If during excavation or other construction activities in areas with existing or known resources, as well as in any other work area, any unidentified or unanticipated resources are discovered or found, all activities that may damage or alter such resources shall be temporarily suspended. These resources or cultural remains (prehistoric or historic surface or subsurface) include but are not limited to: any human skeletal remains or burials; artifacts; shell, midden, bone, charcoal, or other deposits; rocks or coral alignments, paving, wall, or other constructed features; and any indication of agricultural or other uses. Upon such discovery or find, the Contractor shall immediately notify the Contracting Officer. When so notified, the Contracting Officer will initiate action so that prompt and proper data recovery can be accomplished. In the mean time, recording and preservation of historical and archeological finds during construction activities shall be reported in accordance with the SPECIAL CONTRACT REQUIREMENTS.

3.1.4 Water Resources

The Contractor shall keep construction activities under surveillance, management, and control to avoid pollution of surface and ground waters. All activities, equipment processes, and work operated or performed by the Contractor in accomplishing the specified construction shall be in strict accordance with the HIDOH, Chapter 11-54 and HIDOH, Chapter 11-55. Special management techniques as set out below shall be implemented to control water pollution by the construction activities included in this contract.

3.1.4.1 Washing and Curing Water

Waste waters directly derived from dewatering dredged material and other construction activities shall not be allowed to enter water areas. These waste waters shall be collected and placed in retention pond where suspended material can be settled out or the water evaporates so that pollutants are separated from the water.

3.1.4.2 Construction BMPs Plan (CBMP)

The Contractor shall be responsible for compliance with the "General Best Management Practices Plan", dated July 4, 2004 that has been prepared for this project (Attachment 1). In addition, the Contractor shall prepare and submit a Construction BMPs Plan (CBMP) in accordance with NGPC (Attachment 6), paragraph 6.d. In-water construction activity will not be permitted until all comments on the CBMP have been satisfactorily addressed. The CBMP shall be prepared in accordance with the attached "Guidelines for Construction Best Management Practices (BMPs) Plan" (Attachment 2).

3.1.4.3 Monitoring of Water Areas

Monitoring of water areas affected by construction activities shall be the responsibility of the Contractor. All water areas affected by construction activities shall be monitored by the Contractor. The Contractor's environmental protection plan shall describe his scheme for minimizing construction-related turbidity in near-shore waters. Construction-related turbidity at the project sites shall be controlled so as to meet Hawaii State Water Quality Standards (WQS) for the type and class of waters in which the project is located.

Effective silt containment devices shall be deployed to isolate the construction activity, to minimize the transport of potential pollutants, and to avoid the potential degradation of receiving water quality and the marine ecosystem. Periodic monitoring in accordance with the attached Scope of Work (Attachment 3) shall be conducted immediately outside the silt containment devices and at control stations to verify that WQS are not being exceeded due to project construction.

In-water construction shall be curtailed during sea conditions which are sufficiently adverse to render the silt containment devices ineffective. If monitoring indicates that the turbidity standard is being exceeded due to construction activities, the Contractor shall suspend the operation or operations causing excessive turbidity levels until the condition are corrected. Such suspension shall not form the basis for a claim against the Government.

3.1.4.4 Permits and Responsibilities

The following documents contained in this section are made a part of this contract. The Contractor shall comply with all permit requirements applicable to the project construction activities. The documents are annotated as follows: Responsibilities of the Contracting Officer are designated as "CO", responsibilities of the construction contractor are designated as "CC", joint responsibilities are designated as "CO/CC", and requirements not a part of this contract are designated as "NIC".

a. Department of the Army Permit 200000171 (Attachment 4); Kahului Light Draft Navigation Improvement, Maui, Hawaii, Environmental

Assessment and Finding of No Significant Impact, dated October 23, 1996, Section 5.7 (Attachment 4a)

b. Section 401 Water Quality Certification (WQC) for the Kahului Harbor Light-Draft Navigation Improvements Project, Kahului, Maui, Hawaii, WQC 0000346/Army Authorization No. CW 95-0004 & Army File No. 200000171, dated January 26, 2001 (Attachment 5); Letters from State of Hawaii Department of Health, Subject: Section 401 Water Quality Certification (WQC), Kahului Harbor Light-Draft Navigation Improvements Project, Kahului, Maui, Hawaii, WQC 0000346/Army Authorization No. CW 95-0004 & Army File No. 200000171, dated January 21, 2003 (Attachment 5a) and August 5, 2004 (Attachment 5b)

c. Notice of General Permit Coverage (NGPC), National Pollutant Discharge Elimination System (NPDES), Kahului Light Draft Navigational Improvements, Ph. II - Harbor Improvements, Kahului Beach Road, Kahului, Maui, Hawaii, File No. HI R10B726, dated January 14, 2004 (Attachment 6); CWB-NOI Form C, dated January 5, 2004 (Attachment 6a); Solid Waste Disclosure Form for Construction Sites (Attachment 6b)

d. Conservation District Use Application (CDUA) MA-2988 for Light Draft Navigation Improvements, Kahului, Maui, dated October 17, 2000 (Attachment 7)

e. Kahului Light Draft Navigation Improvements, Job H.C. 4171, Special Management Area Use Permit and Shoreline Setback Variance, TMK: 3-7-01:21, 23, Kahului, Maui, Hawaii (SM1 970007, SSV970003), dated March 6, 2001 (Attachment 8)

The Contractor shall comply with all permit requirements applicable to the project's construction activities as stipulated in the documents listed above. Although the term "permittee" references the U.S. Army Corps of Engineers in the NGPC, for project purpose under this contract for the construction of the Kahului Light Draft Navigational Improvements, Ph. II - Harbor Improvements, the term "permittee" shall mean the Contractor.

The Contractor is advised that SMA Use Permit Condition 1 has been met. The State of Hawaii initiated and completed a project under this permit. Therefore, Condition 2 is in effect.

3.1.4.5 Other Related Documents

The Environmental Assessment (EA), Finding of No Significant Impact (FONSI), and other related documents prepared for this project are available for review at the offices of the Contracting Officer, Bldg. 200, Fort Shafter, Hawaii. Electronic copies are also available on the contracting website for this solicitation. A complete list of available documents is provided in Section 00900. The Contractor is advised to review the contents of these documents for information that may be useful in its prosecution of the work.

3.1.5 Fish and Wildlife Resources

The Contractor shall keep construction activities under surveillance, management and control to minimize interference with, disturbance to and damage of fish and wildlife. Species that require specific attention which include, but are not limited to humpback whales and green sea turtles, along with measures for their protection will be listed by the Contractor prior to beginning of construction operations and be included in the

Contractor's environmental protection plan.

3.1.6 Air Resources

The Contractor shall keep construction activities under surveillance, management and control to minimize pollution of air resources. All equipment operated by and activities, processes, and work performed by the Contractor in accomplishing the specified construction shall be in strict accordance with HIDOH, Chapter 59, HIDOH, Chapter 60, and all Federal emission and performance laws and standards. Ambient Air Quality Standards set by the Environmental Protection Agency shall be maintained for those construction operations and activities specified in this section. Special management techniques as set out below shall be implemented to control air pollution by the construction activities which are included in the contract. The Contractor must obtain State of Hawaii Air Permits, if necessary.

3.1.6.1 Particulates

a. Dust particles, aerosols, and gaseous by-products from all construction activities, processing and preparation of materials, such as from asphaltic batch plants, shall be controlled at all times, including weekends, holidays and hours when work is not in progress.

b. The Contractor shall maintain all excavations, stockpiles, haul roads, permanent and temporary access roads, plant sites, spoil areas, borrow areas, and all other work areas within or outside the project boundaries free from particulates which would cause the air pollution standards mentioned in paragraph Air Resources, herein before, to be exceeded or which would cause a hazard or a nuisance. Sprinkling, chemical treatment of an approved type, light bituminous treatment, baghouse, scrubbers, electrostatic precipitators or other methods will be permitted to control particulates in the work area. Sprinkling, to be efficient, must be repeated at such intervals as to keep the disturbed area damp at all times. The Contractor must have sufficient competent equipment available to accomplish this task. Particulate control shall be performed as the work proceeds and whenever a particulate nuisance or hazard occurs.

3.1.6.2 Hydrocarbons and Carbon Monoxide

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

3.1.6.3 Odors

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

3.1.6.4 Monitoring of Air Quality

Monitoring of air quality shall be the responsibility of the Contractor. All air areas affected by the construction activities shall be monitored by the Contractor. Monitoring results will be periodically reviewed by the Government to ensure compliance.

3.1.7 Sound Intrusions

The Contractor shall keep construction activities under surveillance, and control to minimize damage to the environment by noise. The Contractor shall comply with the provisions of HIDOH, Chapter 43.

3.2 POST CONSTRUCTION CLEANUP

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

3.3 RESTORATION OF LANDSCAPE DAMAGE

The Contractor shall restore all landscape features damaged or destroyed during construction operations outside the limits of the approved work areas. Such restoration shall be in accordance with the plan submitted for approval by the Contracting Officer. This work will be accomplished at the Contractor's expense.

3.4 MAINTENANCE OF POLLUTION CONTROL FACILITIES

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

3.5 TRAINING OF CONTRACTOR PERSONNEL IN POLLUTION CONTROL

The Contractor shall train his personnel in all phases of environmental protection. The training shall include methods of detecting and avoiding pollution, familiarization with pollution standards, both statutory and contractual, and installation and care of facilities (vegetative covers, and instruments required for monitoring purposes) to ensure adequate and continuous environmental pollution control.

-- End of Section --

LINDA LINGLE
GOVERNOR OF HAWAII

STATE OF HAWAII
DEPARTMENT OF HEALTH
P.O. BOX 3378
HONOLULU, HAWAII 96801-3378

09 AUG 2004	
DE	
DD	LV
DX	DZ
PPC	
Paul	8/10
Sharon	8/10

CHIYOME L. FUKINO, M.D.
DIRECTOR OF HEALTH

In reply, please refer to:
EMD / CWB

08006CSS.04

August 5, 2004

David C. Press, Lieutenant Colonel, U.S. Army
District Engineer
Department of the Army
U.S. Army Engineer District, Honolulu
Building 230
Fort Shafter, Hawaii 96858-5440

and

Mr. Peter T. Young, Chairperson
Board of Land and Natural Resources
State of Hawaii
P.O. Box 621
Honolulu, Hawaii 96809-0621

Dear Lt. Col. Press and Mr. Young:

Subject: **Section 401 Water Quality Certification (WQC) for the Kahului Harbor Light-Draft Navigation Improvements Project Kahului, Maui, Hawaii WQC 0000346/Army Authorization No. CW 95-0004 & Army File No. 200000171**

This letter is to inform you that the expiration date of the subject Section 401 WQC has been extended to two years from the date of this letter.

The granting of this approval is based on the subject Section 401 WQC issued by the Department of Health on January 26, 2001; written request, dated June 15, 2004, from Mr. Ray H. Jyo, Deputy District Engineer for Programs and Project Management of the U.S. Army Engineer District, Honolulu; and the understanding that there were no changes to information already on file that will affect the initial Section 401 WQC determination since its issuance.

The expiration date has been modified with the following conditions:

1. This Section 401 WQC shall become valid only when the following information has been submitted, <u>within one year from the date of this letter</u>:

Attachment 5b

CC

A complete Environmental Protection Plan, as required in Section 01430 of the "Specifications (dated April 2000)" has been submitted to the Clean Water Branch (CWB) for review and comment and all related concern(s) and comment(s) are properly addressed to the Director's satisfaction. A copy of the final Environmental Protection Plan shall be submitted to the CWB.

The CWB shall have at least 30 days to review and comment after receiving a copy of the complete Environmental Protection Plan.

A complete Environmental Protection Plan shall, at a minimum, include the following information:

a. A project-related site-specific and construction method-specific Best Management Practices Plan which shall, at a minimum, include the following descriptions:

   i. Site characterization;

   ii. Construction sequence;

   iii. Construction method;

   iv. Characteristics of the discharge and potential pollutants associated with the proposed construction activity; and

   v. Proposed control measures or treatment.

b. An applicable monitoring plan;

c. A detailed dredging plan;

d. A dewatering, treatment and effluent monitoring plan, if applicable; and

e. Additional mitigative/compensatory measures, controls or treatment measures, or contingency plan needed because of the construction method used or other unforeseen circumstances.

2. The Section 401 WQC shall expire two years from the date of this letter, or until the applicable Water Quality Standards (WQS) is revised or modified, or the applicable Department of the Army permit expires or is revised or modified, or when the project

construction is completed, whichever is earliest. If the applicable State WQS is revised or modified during the two-year period and the discharge activity complies with the revisions or modifications, this Section 401 WQC shall continue to be valid for the remainder of the two-year period.

The Director, upon the written request from the applicant, may administratively extend the expiration date of this Section 401 WQC only when the written request is accompanied with appropriate color photographs demonstrating that the project is in fact under physical construction and the purpose of extending the expiration date is to allow the contractor to complete the project construction.

Should you have any questions, please contact Mr. Shane Sumida of the Engineering Section, Clean Water Branch, at (808) 586-4309.

Sincerely,

for Chiyome Leinaala Fukino, M.D.
Director of Health

c: Ms. Sharon Ishikawa, Civil and Public Works Branch, U. S. Army Engineer District, Honolulu (via fax 438-0430)
Mr. Manuel Emiliano, Division of Boating and Ocean Recreation, State DLNR
CZM Program, Office of Planning, State DBEDT
Division of Aquatic Resources, State DLNR
Solid and Hazardous Waste Branch, State DOH
Harbors Division, State DOT
DHO, Maui

LINDA LINGLE
GOVERNOR OF HAWAII

PETER T. YOUNG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

DAN DAVIDSON
DEPUTY DIRECTOR - LAND

YVONNE Y. IZU
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
OFFICE OF CONSERVATION AND COASTAL LANDS

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

REF.;OCCL ;TM

FILE NO.: MA-3196

AUG - 2 2004

Mr. Richard Rice, Administrator
Division of Boating and Ocean Recreation
333 Queen St., Suite 300
Honolulu, HI 96813

Dear Mr. Rice,

This is to inform you that on July 30, 2004, the Board of Land and Natural Resources (BLNR) approved your Conservation District Use Application for Light-Draft Navigation Improvements located at Kahului Harbor, Wailuku, Maui, TMK: (2) 3-7-001:021, 022 & 023 subject to the following conditions:

CC 1. The applicant shall comply with all applicable statutes, ordinances, rules, and regulations of the federal, state, and county governments, and applicable parts of Chapter 13-5, Hawaii Administrative Rules (HAR), including the standard conditions listed in 13-5-42, HAR;

CC 2. The applicant shall comply with all applicable department of health administrative rules;

CO 3. Before proceeding with any work authorized by the department or the board, the applicant shall submit four copies of the construction plans and specifications to the chairperson or his authorized representative for approval for consistency with the conditions of the permit and the declarations set forth in the permit application. Three of the copies will be returned to the applicant. Plan approval by the chairperson does not constitute approval required from other agencies;

CO 4. Any work or construction to be done on the land shall be initiated within one year of the approval of such use, in accordance with construction plans that have been approved by the Department; further, all work and construction must be completed within three years of the approval. The applicant shall notify the Office of Conservation and Coastal Lands in writing prior to the initiation, and upon completion, of the project;

Attachment 7

CC 5. All representations relative to mitigation set forth in the accepted environmental assessment or impact statement for the proposed use are incorporated as conditions of the permit;

CO 6. In issuing the permit, the department and board have relied on the information and data which the applicant has provided in connection with the permit application. If, subsequent to the issuance of the permit such information and data prove to be false, incomplete, or inaccurate, this permit may be modified, suspended, or revoked, in whole or in part, and the department may, in addition, institute appropriate legal proceedings;

CC 7. When provided or required, potable water supply and sanitation facilities shall have the approval of the department of health and the board of water supply;

CC 8. Provisions for access, parking, drainage, fire protection, safety, signs, lighting, and changes on the landscape shall be provided;

CC 9. Where any interference, nuisance, or harm maybe caused, or hazard established by the use, the applicant shall be required to take measures to minimize or eliminate the interference, nuisance, harm, or hazard;

CC 10. Obstruction of public roads, trails, and pathways shall be minimized. If obstruction is unavoidable, the applicant shall provide roads, trails, or pathways acceptable to the department;

CC 11. During construction, appropriate mitigation measures shall be implemented to minimize impacts to off-site roadways, utilities, and public facilities;

CC 12. Cleared areas shall be revegetated within thirty days unless otherwise provided for in a plan on file with and approved by the department;

CC 13. The applicant shall use silt curtains around dredged areas during dredging when practicable and feasible and around areas where any dredged material will be stored;

CC 14. The applicant shall not conduct any blasting in Kahului Harbor;

CC 15. The applicant shall obtain all necessary federal, state and county approvals for the disposal of dredged material;

CO/CC 16. Other terms and conditions as prescribed by the chairperson; and

CO/CC 17. Failure to comply with any of these conditions shall render this permit void.

Please acknowledge receipt of this approval, with the above noted conditions, in the space provided below. Please sign two copies. Retain one and return the other within thirty (30) days. Should you have any questions on any of these conditions, please feel free to contact Tiger Mills at 587-0382.

Sincerely,

Sam Lemmo, Administrator
Office of Conservation and Coastal Lands

Receipt acknowledged:

Applicant's Signature

Date 8/3/04

cc: Chairperson
Maui Board Member
Maui Land Agent
DOH/ENG
County of Maui, Department of Planning

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DIVISION 02 - SITE CONSTRUCTION

SECTION 02450

CLEATS

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-- End of Section Table of Contents --

SECTION 02450

CLEATS

PART 1 GENERAL

1.1 REFERENCES

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

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A 148	(1984) Steel Castings, High Strength, for structural purposes
ASTM A 240	(1996a) Heat-Resisting Chromium and Chromium-Nickle Stainless Steel Plate, Sheet and Strip for Pressure Vessels

1.2 SUBMITTALS

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

SD-02 Shop Drawings

Shop drawings and manufacturer's catalog data.

PART 2 PRODUCTS

2.1 MATERIALS

a. Cleats shall be made of cast steel confirming to ASTM Designation ASTM A 148 with ultimate strength of 80,000 psi. All new cleats shall hot-dip galvanized to 4 mills thick.

b. All fillets and chamfers shall have 1/2 inch radius, unless noted. Sand or grind faces to true plane prior to installing bollards.

c. Anchor bolts, nuts, and washers shall be stainless steel conforming to ASTM A 240 Type 316.

PART 3 EXECUTION

3.1 SURFACE PREPARATION

3.1.1 New Ferrous Steel

Prepare surfaces prior to galvanizing in strict compliance with Steel

Structures Painting Council's Surface Preparation Standards as specified herein. SSPC-Vis-1-89, "Visual Standard for Abrasive Blast Cleaned Steel" shall be used as a guide to judge abrasive blasted surface areas. Areas of oil and extraneous materials on surfaces shall be cleaned with clean petroleum solvents and then blast cleaned according to SSPC SP6 "Commercial".

3.2 INSTALLATION

All cleats shall be installed as indicated on the plans. All bolts to anchor cleats shall be cast-in-place. Use cleat bolt template for accurate bolt placement into cast-in-place concrete. Field drilling of concrete will not be permitted.

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SECTION 02458A

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SECTION 02458A

PRESTRESSED CONCRETE PILING

PART 1 GENERAL

1.1 REFERENCES

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

ACI INTERNATIONAL (ACI)

ACI 304R	(2000) Measuring, Mixing, Transporting, and Placing Concrete
ACI 318/318R	(1999) Building Code Requirements for Structural Concrete and Commentary
ACI SP-66	(1994) ACI Detailing Manual

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A 82	(1997a) Steel Wire, Plain, for Concrete Reinforcement
ASTM A 416/A 416M	(1999) Steel Strand, Uncoated Seven-Wire for Prestressed Concrete
ASTM A 421	(1998a) Uncoated Stress-Relieved Steel Wire for Prestressed Concrete
ASTM A 615/A 615M	(2000) Deformed and Plain Billet-Steel Bars for Concrete Reinforcement
ASTM A 934/A 934M	(1997) Epoxy-Coated Prefabricated Steel Reinforcing Bars
ASTM C 33	(2001) Concrete Aggregates
ASTM C 150	(2000) Portland Cement
ASTM C 260	(2000) Air-Entraining Admixtures for Concrete
ASTM C 494	(1999) Chemical Admixtures for Concrete
ASTM C 666	(1997) Resistance of Concrete to Rapid Freezing and Thawing

AMERICAN WELDING SOCIETY (AWS)

AWS D1.4	(1998) Structural Welding Code - Reinforcing Steel

PRECAST/PRESTRESSED CONCRETE INSTITUTE (PCI)

PCI JR-119	(1972) Recommended Practice for Grouting of Post-Tensioned Prestressed Concrete
PCI MNL-116	(1985) Manual for Quality Control for Plants and Production of Precast and Prestressed Concrete Products

1.2 SUBMITTALS

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

SD-02 Shop Drawings

Installation

Drawings including shop and erection details and details of build-ups and embedded or attached lifting devices, prior to commencing the work or ordering materials. Drawings shall indicate pick-up and support points for piles. Reinforcing steel details shall conform to ACI SP-66.

SD-03 Product Data; G

Predrilling and Installation Equipment/Procedure.

Contractor to notify Contracting Officer a minimum of 14 days prior to start of predrilling operations.

Descriptions of all predrilling and installation equipment to be employed in the work, prior to commencement of pile installations, including details of the methods to temporarily case the hole, install the pile, and fill the annular space between the pile and hole. **Details shall also include procedures to determine cleanliness of hole and bottom of hole elevation. Contractor shall be required to submit drilling log at the end of each day's drilling operations. Drilling logs shall show materials encountered with depth and top of rock elevation.**

Contractors Qualifications

The Specialty Contractor shall submit a list of projects where piles were installed in similar subsurface conditions (hard coral, soft coral, basalt).

SD-06 Test Reports

Field Test and Inspections

Material Test Reports: Copies of material test reports and mix proportioning studies, within 24 hours after completion of tests.

1.3 QUALIFICATIONS

The work shall be performed by a firm specializing in the specified foundation system and having a minimum 2 years experience in constructing and installing the specified foundation system under similar subsurface and offshore conditions. The Contractor shall provide a list of projects, points of contact, phone numbers, and subsurface conditions where piles were installed under similar conditions.

1.4 SUBSURFACE DATA

Subsurface soil data logs are shown on the drawings and represent conditions at these locations. Conditions between and in the vicinity of the borings may vary.

PART 2 PRODUCTS

2.1 MATERIALS

2.1.1 Admixtures

Admixtures shall all be compatible and shall be used at no additional cost to the Government. All admixtures shall be added at the plant. Super plasticizer or high range water reducer admixtures shall conform to ASTM C 494 and adjustment may be required to compensate for the increased water demand when microsilica is added to the concrete. The admixtures shall also be compatible with calcium nitrite solutions. Air-entraining admixture shall conform to ASTM C 260. Admixtures containing chlorides shall not be used.

Corrosion inhibitor admixture. All concrete shall contain a corrosion inhibiting admixture such as Master Builders organic-based Rheocrete 222 or W.R. Grace's calcium nitrite-based DCI, or approved equals. The water in solution shall be counted as mixing water for the purpose of determining the water to cement ratio of the concrete.

The organic-based Rheocrete 222 corrosion inhibiting admixture has no effect on rate of hardening and may be used in conjunction with other compatible admixtures, and in compliance with the manufacturer's recommendations for mixing, at a rate of 1.0 gallon per cubic yard of concrete. The calcium nitrite-based DCI admixture acts as an accelerator, and may be used in conjunction with other compatible admixtures added to the mix (at plant) immediately after the air-entrained and retarding admixtures have been introduced to the batch at a rate of 4.0 gallons per cubic yard of concrete.

2.1.2 Aggregates

2.1.2.1 General Requirements

Aggregates shall conform to ASTM C 33, except as specified otherwise herein. Aggregates shall be free from any substance which may be deleteriously reactive with the alkalies in the cement in an amount sufficient to cause excessive expansion of the concrete. Coarse aggregate shall be 3/4-inch maximum nominal size.

2.1.2.2 Fine Aggregates

Fine aggregates from different sources of supply shall not be mixed or stored in the same stock pile, or used alternately in the same concrete mix or the same structure without approval. The fineness MODULUS of fine aggregate shall be not less than 2.40 or greater than 3.0. For piles that will be exposed to freezing and thawing, fine and coarse aggregate subjected to five cycles of the sodium sulfate soundness test shall show a loss not greater than 10 percent. If the selected aggregates fail the soundness test, the Contractor may use the aggregate source, provided concrete specimens made with the aggregates to be used for the piles shall have a durability factor of not less than 80 based on 300 cycles of freezing and thawing when tested in accordance with ASTM C 666.

2.1.3 Anchorage

Anchorage and end fittings for post-tension assemblies shall conform to ACI 318/318R.

2.1.4 Cement

Cement shall conform to ASTM C 150. Type II cement shall be used. Cement shall contain less than 8 percent tricalcium aluminate (C3A).

2.1.5 Microsilica

Microsilica shall consist of 92 - 98 percent SiO2 silicon dioxide, have a specific gravity of approximately 2.2 and a weight of 9 - 25 pounds per cubic feet (PCF), "Force 10,000S" by Grace Concrete Products or equal. Microsilica shall be in slurry form and shall be added at a rate of solid microsilica (excluding liquid weight) equal to 10% of the weight of cement.

2.1.6 Grout

Grout materials used in prestressed piles shall conform to the requirements specified herein for concrete mixes. Grout for post-tensioned ducts and bonds shall conform to PCI JR-119. Admixtures, when required for grout, shall have no injurious effects on steel or concrete. Calcium chloride shall not be used.

2.1.7 Prestressing Steel

Prestressing steel shall be seven-wire stress-relieved strand conforming to ASTM A 416/A 416M or stress-relieved wire conforming to ASTM A 421, Type WA. The minimum ultimate strength shall be 270,000 psi. Prestressing steel shall be free from grease, oil, wax, paint, soil, dirt, loose rust, kinks, bends, or other defects.

2.1.8 Reinforcing Steel

Non-prestressed reinforcing steel shall conform to ASTM A 615/A 615M, Grade 60. Welding of reinforcing steel shall be in accordance with AWS D1.4. **All non-prestressed reinforcing steel, ties and spirals shall be epoxy coated in accordance with ASTM A 934/A 934M**. Damaged coatings shall be repaired in accordance with the epoxy manufacturer's repair recommendations.

2.1.9 Ties and Spirals

Steel for ties and spirals shall be epoxy coated and conform to ASTM A 82 and ASTM A 934/A 934M.

2.1.10 Water

Water for mixing concrete shall be clean and free from injurious amounts of oils, acids, alkalies, salts, organic materials, or other substances that may be deleterious to concrete or steel. Mortar cubes made with nonpotable mixing water shall have 7-day and 28-day strengths equal to at least 90 percent of the strengths of similar specimens made with potable water.

2.2 MANUFACTURED UNITS - GENERAL REQUIREMENTS

Concrete piles shall be designed and fabricated by a precast concrete manufacturer certified under the PCI Plant Certification Program.

2.2.1 Pretensioned Piles

Pretensioned piles shall be cast as monolithic units of homogenous high-strength concrete from head to tip and stressed with high-tensile cold-drawn stress-relieved steel strands.

2.2.2 Seawater Exposure

For piles to be exposed to seawater, the concrete mix design and the concrete materials should be selected, placed, and cured in a manner that ensures production of extremely dense concrete free of shrinkage cracks and honeycomb with a minimum degree of permeability. The maximum permissible water-cement ratio (by weight) shall be 0.40 or 4.5 gallons of water per sack of cement. The cement shall be air entrained with a minimum of 4.5 percent and a maximum of 6 percent air entrainment, accomplished by use of an additive at the mixer and approved by the Contracting Officer.

2.2.3 Conveying

Concrete shall be conveyed from the mixer to the forms as rapidly as practicable by methods that will not cause segregation or loss of ingredients in accordance with ACI 304R. It shall be deposited as nearly as practicable in its final position in the forms. At any point in conveying, the free vertical drop of the concrete shall not exceed 3 feet. Chuting will be permitted only where the concrete is deposited into a hopper before it is placed in the forms. Conveying equipment shall be cleaned thoroughly before each run. Concrete shall be deposited as soon as practicable after the forms and the reinforcement have been inspected. Concrete that has segregated in conveying shall be removed.

2.3 FABRICATION OF PRETENSIONED PILES

2.3.1 Workmanship

Workmanship shall conform to PCI MNL-116. Pile pick-up points shall be the responsibility of the Contractor. Unless special lifting devices are attached for pick-up, pick-up points shall be plainly marked on all piles after removal of the forms, and all lifting shall be done at these points. Piles shall be lifted by a suitable bridge or sling attached to the pick-up points. Piling shall not be installed until the concrete attains a compressive strength of not less than 6,000 psi as indicated by breaking

test cylinders.

2.3.2 Forms

Forms shall be of metal, shall be well braced and stiffened against deformation, and shall be accurately constructed and watertight. Forms shall permit movement of the pile without damage during release of the prestressing force. Bottom of the form shall be within 1/4 inch of a true plane in a length of 50 feet.Inside forms or void tubes may be of treated fiberboard, plywood, or other material and/or method approved by the Contracting Officer. Void forms shall be anchored firmly so they will not move, float, or collapse during the placing of concrete. If a moving mandrel is used for forming the inner void, special precautions shall be taken to prevent fallout of inner surfaces, tensile cracks, and separation of concrete from strands.

2.3.3 Reinforcement and Embedments

Reinforcing steel, prestressing steel, and embedded items shall be accurately positioned in the forms and secured to prevent movement during concrete placement. In marine or other corrosive environments the minimum concrete cover shall be 3 inches.

2.3.4 Concrete Work

The concrete mix shall have an ultimate compressive strength of 6,000 psi at 28 days and a slump of 2 to 4 inches. Concrete shall not be deposited in the forms until the placement of reinforcement and anchorages has been inspected and approved by the Contracting Officer. Each pile shall be produced of dense concrete with smooth surfaces. Concrete shall be placed promptly after mixing is completed and shall be deposited close to its final position in the form. Vibrator heads shall be smaller than the minimum distance between steel for pretensioning. Dimensional tolerances shall conform to PCI MNL-116. The ends of all piles and the corners of square piles shall be chamfered. Side forms shall not be removed until concrete has attained 4800 psi compressive strength. Minimum concrete strength at time of installation shall be 6000 psi. Minimum strength at 28 days shall be 6000 psi.

2.3.5 Pretensioning

Anchorages for tensioning the prestressing steel shall be a type approved by the Contracting Officer. The tension to which the steel is to be pretensioned shall be measured by the elongation of the steel and verified by the jack pressure reading on a gauge. The gauge shall have been recalibrated by a calibration laboratory within 12 months of commencing work and every 6 months thereafter during the term of the contract. Means shall be provided for measuring the elongation of the steel to at least 1/8 inch. When the difference between the results of measurement and gauge reading is more than 5 percent, the cause of the discrepancy shall be corrected. The tensioning steel shall be given a uniform prestress prior to being brought to design prestress. The same initial prestress shall be induced in each unit when several units of prestressing steel in a pile are stretched simultaneously. Stress in prestressing reinforcement at nominal strength shall be 189,000 psi.

2.3.6 Detensioning

Releasing of prestressing force in pretensioned piles shall be performed in

a manner that minimizes eccentricity of prestress. Tension in the strands shall be released from the anchorage gradually. In no case shall the stress be released after casting without approval by the Contracting Officer. The transfer of prestressing force shall be done when the concrete has reached a compressive strength of not less than 4800 psi.

2.3.7 Curing of Piles

Prior to the start of curing operations, the methods and details of curing shall be submitted for record and shall be approved by the Contracting Officers. All piles shall be cured in accordance with Section 4 of PCI MNL-116.

2.3.8 Build-Ups

Build-up (non-prestressed) of pile not allowed. Contractor may order precast-prestressed pile longer than shown on plan, then cut pile in field to meet pile elevation at cap and cap connection dimensions, meet minimum number of spirals at pile ends, and meet minimum strand development length.

2.3.9 Splices

Splicing of piles will not be permitted.

2.4 MANUFACTURING CONTROLS

2.4.1 Initial Sampling and Testing

Testing shall be performed by an acceptable, industry recognized and certified commercial testing laboratory or by an approved laboratory maintained by the manufacturer of the material.

2.4.1.1 Aggregates

Fine and coarse aggregates shall be tested for conformance with ASTM C 33.

2.4.1.2 Cement Test

Cement shall be tested at the mill or at the mixing plant for conformance with ASTM C 150.

2.4.1.3 Mix Proportions

Prior to commencing pile fabrication, the Contractor shall furnish a statement giving the maximum nominal coarse aggregate size and the proportions of all ingredients that will be used in the manufacture of each strength of concrete and lightweight concrete, proposed for use. Aggregate weights shall be based on the saturated surface dry condition. The statement shall be accompanied by test results from an independent commercial testing laboratory, attesting that the proportions selected will produce concrete of the qualities indicated. No substitutions shall be made in the materials used in the work without additional tests to show that the quality of the concrete is satisfactory. The statement shall also be accompanied by test results demonstrating compliance of aggregate and cement, as specified herein.

2.4.2 Changes in Proportions

If the test results of the laboratory cured cylinders at 28 days fall below

the specified compressive strength, adjustments in the proportions, the water content, or both shall be made as necessary; if the test results of the field-cured specimens fall below the specified strength, changes in the casting, handling, or storage method and the moisture and curing procedures of such specimens shall be made as necessary to secure the specified strength. All changes shall be submitted in writing to the Contracting Officer. The slump shall be as specified.

PART 3 EXECUTION

3.1 INSTALLATION

3.1.1 Predrilling

All piles will be installed in predrilled holes. The Contractor shall have all equipment necessary to drill a hole to a tip elevation as indicated on the contract drawings. The drill hole diameter shall provide a minimum 4-inch space (on all sides of the pile) between the largest pile dimension and the predrill hole. The Contractor shall use his expertise to drill the hole through variable subsurface materials consisting of sands and gravels, cobbles, boulders, tuff, limestone breccia, and lava basalt. The Contractor shall employ methods including use of temporary casing to prevent the sides of the hole from caving in or from surface materials from sloughing into the hole. Inspection method to ensure a clean hole at the correct elevation shall be submitted for Contracting Officer's approval. **The Contracting Officer's Representative shall be on site to witness drilling operations for at least the first few piles**.

3.1.2 Handling

Piles shall not be handled or moved in any manner that would result in cracking or permanent damage to the concrete. Piles shall not be installed until the concrete has attained a minimum strength of 6,000 psi. Piles may be installed with pile guides or leads.

3.1.3 Cutting of Piles

When necessary and approved by the Contracting Officer, cutting of piles shall be with pneumatic tools, sawing, or other approved methods. The use of explosives for cutting will not be permitted.

3.1.4 Protection of Piles

Care shall be taken to avoid damage to the piles in handling piles, and in placing the pile in the leads. Where pile or projecting reinforcement orientation is essential, special care shall be taken to maintain the orientation during installation. The top of the pile shall be squared to the longitudinal axis of the pile.

3.1.5 Tolerances in Installation

All piles shall be installed with a variation of not more than 0.125 inch per foot of pile length from the vertical for plumb piles. Top of pile shall be within 3 inches of the location indicated. Manipulation of piles to force them into position will not be permitted. All piles will be checked for alignment, prior to grouting the annulus. Pile alignment shall be maintained while grout cures for a minimum of 7 days.

3.1.6 Tremie Filling the Annulus

The annulus space between the pile and the predrill hole shall be filled with concrete using tremie methods. The concrete mix shall be self-leveling and pumpable with a maximum aggregate size 3/4 inch. The 28-day compressive strength of the concrete shall be at least 4000 psi. Water-reducing or retarding admixtures shall conform with ASTM C 494, Type A, B, D, F or G and produce a self-leveling concrete as it exits the tremie pipe. An anti-washout admixture shall be used to reduce the potential for the cement to separate from the aggregate when exposed to seawater movement. Both the water-reducing/retarding admixture and the anti-washout admixture shall be compatible with each other. The Contractor shall account for barge movement when filling the annulus.

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SECTION 03350

CAST-IN-PLACE TREMIE CONCRETE GROUT

PART 1 GENERAL

1.1 REFERENCES

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

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM C 143	(2000) Slump of Hydraulic Cement Concrete
ASTM C 150	(2000) Portland Cement
ASTM C 260	(2000) Air-Entraining Admixtures for Concrete
ASTM C 404	(1997) Aggregates for Masonry Grout
ASTM C 494	(1999) Chemical Admixtures for Concrete
ASTM C 94	(1997) Ready-Mixed Concrete
ASTM D 448	(1986; R 1998) Sizes of Aggregate for Road and Bridge Construction

1.2 SUBMITTALS

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

SD-07 Certificates

Proportions of Mix

The results of trail mix along with a statement giving the maximum nominal fine aggregate size and the proportions of all ingredients that will be used in the manufacturer of each strength of concrete, at least 14 days prior to commencing concrete placing operations. Aggregate weights shall be based on the saturated surface dry condition. The statement shall be accompanied by test results from a independent commercial testing laboratory or the quarry control laboratory of the ready mix concrete supplier, attesting that the proportions selected will produce concrete of the qualities indicated. No substitutions shall be made in the materials used in the work without additional tests to show that the quality of the concrete is satisfactory.

SD-06 Test Reports

Test Reports

Certified copies of laboratory test reports, including all test data, for aggregate, and admixtures. These tests shall be made by an approved commercial laboratory or by a laboratory maintained by the manufacturers of the materials.

SD-07 Certificates

Cementitious Materials

Manufacturer's certification of compliance accompanied by mill test reports attesting that the materials meet the requirements of the specification under which it is furnished. No cement shall be used until notice of acceptance has been given. Cement may be subjected to check testing by the Government from samples obtained at the mill at transfer points, or at the project site.

1.3 STORAGE OF MATERIALS

Cement aggregates and admixtures shall be stored in such a manner as to prevent their deterioration or the intrusion of foreign matter. An material which has deteriorated or which has been damaged shall not be used for concrete and shall be promptly removed from the site.

1.4 TESTING

1.4.1 Slump

Standard slump tests as described in ASTM C 143. (Modification: Sampling of concrete for slum test shall be taken after at least 1/4 cubic yard of concrete has been discharged) will be made periodically during the placement of concrete by the Contractor to ensure that the slump for which the concrete has been designed is met. Any concrete batch tested and showing slumps exceeding the specified tolerance shall be rejected. Any concrete placed prior to slump testing shall be the sole responsibility of the Contractor and shall be rejected should the subsequent slump test of the batch in question indicate that the slump tolerance is be exceeded. All rejected concrete shall be promptly removed and property replaced. All costs resulting there from shall be borne by the Contractor.

PART 2 PRODUCTS

2.1 ASBESTOS PROHIBITION

No asbestos containing materials or equipment shall be used under this section. The Contractor shall ensure that all materials and equipment incorporated in the project are asbestos-free.

2.2 CEMENT

Portland Cement shall conform to the requirements of ASTM C 150, type II or as recommended by tremie.

2.3 CONCRETE AGGRETATES

Fine Aggregates shall be calcareous or basalt sands, or a combination

thereof. Aggregate for use in grout shall conform to ASTM C 404, with grading in accordance with ASTM D 448, No. 10.

2.4 MORTAR AND GROUT MATERIALS

Portland cement, masonry cement, mortar cement, lime and admixtures shall be stored in such a manner as to prevent deterioration or contamination with foreign matter. Cement which has become caked, partially set or otherwise deteriorated, or any material which becomes damaged or contaminated, shall be rejected.

2.5 ADMIXTURE

If manufactured sands are used in the concrete mix, the Contractor may select and use a water-reducing and/or an air-entraining admixture as specified hereinafter to provide satisfactory workability in the concrete. The cement content of a mix shall be as specified hereinafter, and the use of an admixture shall in no way result in the reduction of the cement factor. Admixture, if used, shall conform to ASTM C 494 or ASTM C 260 an shall be mixed in proper amount in accordance with directions of manufacturer.

2.6 WATER

Water used in mixing concrete shall be clean and free from injurious amounts of oils, acids, alkalis, salts, organic materials or other substances that may be deleterious to concrete or reinforcement. Non-potable water shall not be used.

PART 3 EXECUTION

3.1 DESIGN OF CONCRETE MIXES

a. Ingredients for tremie concrete grout shall be Portland cement, fine aggregates, admixtures and water. Grout shall have a minimum compression strength of 2500 psi and with 1.0% of cement weight of Pro-Tremie Admixture for underwater placement.

b. Concrete grout shall be designed so that the concrete materials will not segregate nor cause excessive bleeding.

c. Tremie admixture shall be applied in strict accordance to the manufacturer's instruction.

d. The Contractor shall submit the mixes he intends to use at least 14 days before the actual concrete placing operations.

3.2 MIXING GROUT

a. All grout throughout shall be plant mixture in an approved type of power operated mixer than will ensure uniformity and homogeneity of the grout produced. Contractor shall provide a sufficient number of mixtures to continuously carry on the work.

b. Ready Mixed and Mixed-In-Transit Concrete shall be mixed to conform to the provisions of ASTM C 94 and as follows:

1. The plant shall have sufficient capacity and transportation equipment to deliver concrete at the rate desired. The interval

between for a pour shall not exceed 30 minutes.

2. The time elapsed between the introduction of the mixing water to the cement and aggregates or the cement to the aggregates, and the placing of concrete in its final position shall not exceed 90 minutes.

c. Admixtures conforming to Section 2.5 may be used in the concrete as recommended by the supplier.

3.3 PLACEMENT OF CONCRETE GROUT

The Contractor shall give the Contracting Officer or his representative a minimum of five calendar days advance notice of starting time of grout pour.

3.3.1 Grout Under Precast Concrete Panels

a. Preparation:

1. Cushion fill shall be compacted to 95% of its maximum dry density.

2. All precast panels shall be set in place on the leveling frame at exact location and elevations.

3. Rock revetment a toe and sides of ramp shall be set in place prior to grouting.

b. Grout Injection:

1. Tremie grout shall be injected through the preset injection holes in the precast panels from lowest area toward higher elevation. The injection pressure shall be adjusted at the site to produce best results.

2. All voids between the precast panels and the compacted base course shall be filled with grout.

3. Tremie grout injection shall be performed by workers who had successful experience with this type of placement method.

3.3.2 Grout Bags

a. Preparation:

1. Rock revetment under and side of grout bags shall be set in place prior to grouting.

b. Grout Bags:

1. Tremie grout shall be injected from lowest area toward higher elevation. The injection pressure shall be adjusted at the site to produce best results.

2. While concrete grout is still fresh, step on the concrete filled bags until the bags form a shape to fit the surrounding rock revetment.

3. Tremie grout injection shall be performed by workers who had successfully experience with this type of placement method.

3.4 CLEAN UP

Contractor shall clean up all concrete and cement materials, equipment and debris upon completion of any portion of the concrete work and upon completion of the entire concrete and related work.

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SECTION 03410N

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2.2.4 2.2.5 Deleted
2.2.4.1 2.2.5.1 Deleted
2.2.4.2 2.2.5.2 Deleted
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2.2.4.4 2.2.5.4 Deleted
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SECTION 03410N

PLANT-PRECAST STRUCTURAL CONCRETE

PART 1 GENERAL

1.1 REFERENCES

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

ACI INTERNATIONAL (ACI)

ACI 304R	(1989) Measuring, Mixing, Transporting, and Placing Concrete
ACI 305R	(1991) Hot Weather Concreting
ACI 309R	(1996) Consolidation of Concrete
ACI 318M/318RM	(1995) Building Code Requirements for Structural Concrete

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A 36/A 36M	(1996) Carbon Structural Steel
ASTM A 47	(1990) Ferritic Malleable Iron Castings
ASTM A 615/A 615M	(1996; Rev. A) Deformed and Plain Billet-Steel Bars for Concrete Reinforcement
ASTM C 94	(1997) Ready-Mixed Concrete
ASTM A 934/A 934M	(1997) Epoxy-Coated Prefabricated Steel Reinforcing Bars

PRECAST/PRESTRESSED CONCRETE INSTITUTE (PCI)

PCI MNL-116	(1985) Quality Control for Plants and Production of Precast Prestressed Concrete Products
PCI MNL-120	(1992) Design Handbook - Precast and Prestressed Concrete

1.2 PRECAST MEMBERS

The work includes the provision of precast non-prestressed concrete herein referred to as precast members. Precast members shall be the product of a manufacturer specializing in the production of precast concrete members. In the ACI publications, the advisory provisions shall be considered to be mandatory, as though the word "shall" has been substituted for "should"

wherever it appears; reference to the "Building Official," the "Structural Engineer" and the "Architect/Engineer" shall be interpreted to mean the Contracting Officer.

1.3 SUBMITTALS

Submit the following in accordance with Section 01330, "Submittal Procedures."

SD-02 Shop Drawings

Drawings of precast members;

SD-03 Product Data

Anchorage and lifting inserts and devices

Bearing pads

SD-04 Samples

Surface finish

Submit two 12 by 12 by 2 inch thick sample panels representative of the color and finish of precast member requiring a finish Grade A surface finish.

SD-05 Design Data

Concrete mix design;

SD-06 Test Reports

Contractor-furnished mix design

Submit copies of test reports showing that the mix has been successfully tested to produce concrete with the properties specified and will be suitable for the job conditions. Obtain approval before concrete placement.

SD-07 Certificates

Fabrication

Submit quality control procedures established in accordance with PCI MNL-116 by the precast manufacturer.

SD-11 Closeout Submittals

Concrete batch ticket information

1.4 QUALITY CONTROL

1.4.1 Product Quality Control

PCI MNL-116 for PCI enrolled plants. Where panels are manufactured by specialists in plants not currently enrolled in the PCI "Quality Control Program," provide a product quality control system in accordance with PCI MNL-116 and perform concrete and aggregate quality control testing using an

approved, independent commercial testing laboratory. Submit test results to the Contracting Officer.

1.5 DELIVERY AND STORAGE

Lift and support precast members at the lifting and supporting points indicated on the shop drawings. Store precast members off the ground. Separate stacked precast members by battens across the full width of each bearing point. Protect from weather, marring, damage, and overload.

1.6 FACTORY INSPECTION

At the option of the Contracting Officer, precast units shall be inspected by the QC Representative prior to being transported to the job site. The Contractor shall give notice 14 days prior to the time the units will be available for plant inspection. Neither the exercise nor waiver of inspection at the plant will affect the Government's right to enforce contractual provisions after units are transported or erected.

1.7 QUALITY ASSURANCE

1.7.1 Drawing Information

Submit drawings indicating complete information for the fabrication, handling, and erection of the precast member. Drawings shall not be reproductions of contract drawings. Design calculations and drawings of precast members (including connections) shall be prepared and sealed by a registered professional engineer, and submitted for approval prior to fabrication. The drawings shall indicate, as a minimum, the following information:

a. Marking of members for erection

b. Connections for work of other trades

c. Location and size of openings

d. Reinforcing details

e. Material properties of steel and concrete used

f. Lifting and erection inserts

g. Dimensions and surface finishes of each member

h. Erection sequence and handling requirements

1.7.2 Concrete Mix Design

Marine concrete as specified in Section 03311 shall be used. Thirty days minimum prior to concrete placement, submit a mix design for the concrete. Include a complete list of materials including type; brand; source and amount of cement, pozzolan, and admixtures; and applicable reference specifications.

1.7.3 Certificates: Record Requirement

ASTM C 94. Submit mandatory batch ticket information for each load of ready-mixed concrete.

PART 2 PRODUCTS

2.1 CONTRACTOR-FURNISHED MIX DESIGN

ACI 318M/318RM. The minimum compressive strength of concrete at 28 days shall be 5000 psi, unless otherwise indicated.

2.2 MATERIALS

2.2.1 **2.2.1 Deleted**

2.2.1.1 **2.2.1.1 Deleted**

2.2.1.2 **2.2.1.2 Deleted**

2.2.2 **2.2.2 Deleted**

2.2.3 **2.2.3 Deleted**

2.2.3.1 **2.2.3.1 Deleted**

2.2.4 **2.2.5 Deleted**

2.2.4.1 **2.2.5.1 Deleted**

2.2.4.2 **2.2.5.2 Deleted**

2.2.4.3 **2.2.5.3 Deleted**

2.2.4.4 **2.2.5.4 Deleted**

2.2.5 Reinforcement

2.2.5.1 Reinforcing Bars

Epoxy coated rebar ASTM A 615/A 615M, Grade 60; ASTM A 934/A 934M.

2.2.6 Metal Accessories

2.2.6.1 Inserts

ASTM A 47, Grade 32510 or 35018.

2.2.6.2 Structural Steel

ASTM A 36/A 36M.

2.3 FABRICATION

PCI MNL-116 unless specified otherwise.

2.3.1 Forms

Brace forms to prevent deformation. Forms shall produce a smooth, dense surface. Chamfer exposed edges of columns and beams 3/4 inch, unless otherwise indicated. Provide threaded or snap-off type form ties.

2.3.2 Reinforcement Placement

ACI 318M/318RM for placement and splicing. Reinforcement may be preassembled before placement in forms. Provide exposed connecting bars, or other approved connection methods, between precast and cast-in-place construction. Remove any excess mortar that adheres to the exposed connections.

2.3.3 Concrete

2.3.3.1 Concrete Mixing

ASTM C 94. Mixing operations shall produce batch-to-batch uniformity of strength, consistency, and appearance.

2.3.3.2 Concrete Placing

ACI 304R, ACI 305R for hot weather concreting, and ACI 309R, unless otherwise specified.

2.3.3.3 Concrete Curing

Commence curing immediately following the initial set and completion of surface finishing. Provide curing procedures to keep the temperature of the concrete between 50 and 190 degrees F. When accelerated curing is used, apply heat at controlled rate and uniformly along the casting beds. Monitor temperatures at various points in a product line in different casts.

2.3.4 Surface Finish

Repairs located in a bearing area shall be approved by the Contracting Officer prior to repairs. Precast members containing hairline cracks which are visible and are larger than 0.005 inches in width shall be repaired. Precast members which contain cracks greater than 0.02 inches in width shall be approved by the Contracting Officer, prior to being repaired. Any precast member that is structurally impaired or contains honeycombed section deep enough to expose reinforcing shall be rejected.

2.3.4.1 Unformed Surfaces

Provide a floated finish first and provide final V groove finish or steel broom finish as shown on the plan.

PART 3 EXECUTION

3.1 SURFACE REPAIR

Prior to erection, and again after installation, precast members shall be checked for damage, such as cracking, spalling, and honeycombing. As directed by the Contracting Officer, precast members that do not meet the surface finish requirements specified in Part 2 in paragraph entitled "Surface Finish" shall be repaired, or removed and replaced with new precast members.

3.2 ERECTION

Precast members shall be erected after the concrete has attained the specified compressive strength, unless otherwise approved by the precast manufacturer. Erect in accordance with the approved shop drawings. PCI

MNL-116 and PCI MNL-120 (Chapter 8), for tolerances. Place precast members within tolerances. Align member ends.

-- End of Section --