



STATE OF HAWAII  
DEPARTMENT OF HAWAIIAN HOME LANDS  
91-5420 Kapolei Parkway,  
Kapolei, HI. 96707

# **TECHNICAL SPECIFICATIONS FOR BIDDING AND CONSTRUCTION**

FOR  
FURNISHING LABOR AND MATERIALS FOR

## **NĀNĀKULI FLOOD CHANNEL LATERAL REPAIRS**

NĀNĀKULI, WAI'ANAE, ISLAND OF OAHU, HAWAI'I

TMK: (1) 8-9-001:004

IFB No.: IFB-25-HHL-004

November 2024



## DIVISION 1 – GENERAL REQUIREMENTS

### SECTION 01010 – SUMMARY OF WORK

#### PART 1 – GENERAL

##### 1.01 RELATED DOCUMENTS

The General Provisions and the Special Provisions apply to this Section. Special attention is directed to the Proposal Schedule.

##### 1.02 SUMMARY

Section Includes:

1. Scope of Work
2. Vehicle Parking
3. Provisions for Field Office/Storage Space
4. Location of the Work
5. Hours of work
6. Safety
7. Disposal of excess soil materials
8. Construction stakes, lines and grades
9. Special project requirements
10. Unforeseen Conditions Allowances

##### 1.03 SCOPE OF WORK

This project consists of furnishing supervision, labor, materials, equipment, and all appurtenances to perform grading of basin and chain link fence installation and repairs to Nanakuli Flood Channel Laterals Repairs. All work shall be completed according to the technical specifications and plans contained in this IFB.

1. **MOBILIZATION AND DEMOBILIZATION** (not to exceed 6% of total bid sum, fewer allowances and force account, and to include but not be limited to mobilization, proper disposal of all waste generated during construction, and demobilization).
2. **CHANNEL SEGMENT 1 REPAIRS (to include but not limited to:**
  - 2.1 Add mortar cap on the wall top
  - 2.2 Regrout wall and fill up missing stones to restore its original condition
  - 2.3 Remove tree stumps along the wall and floor
  - 2.4 Remove debris along the channel floor and wall
  - 2.5 Repair cracks and spalls
  - 2.6 Add/Replace chain link fence
  - 2.7 Remove boulders on the channel floor

- 3. CHANNEL SEGMENT 2 REPAIRS (to include but not limited to):**
  - 3.1 Restore the damaged CRM wall to its original condition and add a mortar cap on the wall top.
  - 3.2 Regrout the wall and fill in missing stones to restore its original condition.
  - 3.3 Remove trees and tree stumps on top of the channel wall
  - 3.4 Remove boulders
  - 3.5 Remove debris and wooden box along the channel floor and wall
  - 3.6 Repair cracks and spalls
  - 3.7 Add/Replace chain link fence
  - 3.8 Repair Chain link fence
  
- 4. SEGMENT 3 REPAIRS (to include but not limited to):**
  - 4.1 Add mortar cap on the wall top.
  - 4.2 Regrout the wall and fill in missing stones to restore its original condition.
  - 4.3 Remove trees and tree stumps on top of the channel wall
  - 4.4 Remove boulders
  - 4.5 Remove debris along the channel wall
  - 4.6 Repair cracks and spalls
  - 4.7 Add/Replace chain link fence
  
- 5. CHANNEL SEGMENT 4 REPAIRS (to include but not limited to):**
  - 5.1 Restore the damaged CRM wall to its original condition, and add a mortar cap on the wall top.
  - 5.2 Repair chain link fence
  - 5.3 Add/Replace chain link fence
  
- 6. CHANNEL SEGMENT 5 REPAIRS (to include but not limited to):**
  - 6.1. Repair cracks and spalls
  
- 7. CHANNEL SEGMENT 6 REPAIRS (to include but not limited to):**
  - 7.1 Remove boulders
  - 7.2 Remove debris along the channel floor
  - 7.3 Repair cracks and spalls
  
- 8. CHANNEL SEGMENT 7 REPAIRS (to include but not limited to):**
  - 8.1 Remove trees, tree stumps
  - 8.2 Remove boulders
  - 8.3 Remove debris along the channel floor and wall
  - 8.4 Repair cracks and spalls
  - 8.5 Spray with concrete sealer the hairline cracks on the channel walls
  - 8.6 Demolish the damaged channel wall and construct a new one to match the existing.
  - 8.7 Add/Replace chain link fence
  - 8.8 Add/Replace chain link fence with metal lath

**9. CHANNEL SEGMENT 8 REPAIRS (to include but not limited to):**

- 9.1 Remove trees and tree stumps on top of the wall and near the channel wall
- 9.2 Remove boulders
- 9.3 Remove debris along the channel floor and wall
- 9.4 Repair cracks and spalls
- 9.5 Add/replace chain link fence

**10. CHANNEL SEGMENT 9 REPAIRS (to include but not limited to):**

- 10.1 Remove trees and tree stumps on top of the channel wall
- 10.2 Remove debris along the channel floor and wall and remove structures on the channel
- 10.3 Spray with concrete sealer on the hairline cracks on the channel wall
- 10.4 Repair chain link fence

**11. Remove and demolish encroachments and structures along the concrete channel, and properly dispose of all removed and demolished materials and debris.**

1.04 VEHICLE PARKING

Parking is available on job site only. There is “NO” street parking.

1.05 PROVISIONS FOR FIELD OFFICE/STORAGE SPACE

No field office will be necessary.

1.06 LOCATION OF THE WORK

- A. The work to be performed under this contract is located in Nanakuli, Waianae, Island of Oahu. TMK (1) 8-9-001:004. Refer to the plans for project locations.
- B. Conditions: Upon awarding the contract, the Contractor, at their cost, shall obtain all permits required for this project.

1.07 HOURS OF WORK

- A. Work can be performed at the construction site between 8:00 am and 4:30 pm, Monday through Friday. Submit a proposed construction schedule to the Project Manager for review and approval within 14 calendar days prior to start of work. The Contractor shall coordinate their schedule with the Project Manager if rescheduling of work or intermittent work is required, such work shall be performed at no extra cost to the State. If the Contractor’s obligation to pay.

- B. Contractors shall clean work areas at the end of each working shift. Rubbish, loose materials, etc. shall be disposed of daily.

#### 1.08 SAFETY

- A. The Contractor shall take the necessary precautions to protect his workers and other personnel from injuries. The rules and regulations promulgated by the Occupational Safety and Health Acts are applicable and made a part of these specifications.
- B. Barricades and warning signs shall be erected by the Contractor in the work area to properly protect all personnel in the area.
- C. During the progress of the work debris, empty crates, waste, material drippings, etc., shall be removed by the Contractor at the end of each workday, and the work area shall be left clean and orderly.

#### 1.09 DISPOSAL OF EXCESS SOIL MATERIALS

- A. At the Construction Manager and/or Engineers discretion, excess usable soil materials may be used as fill material for this project. Best Management Practices shall be employed at all times to control soil erosion and water pollution that may result from stockpiling activities.
- B. Off-Site Disposal of Excess Soil Material: Any excess soil material and rubbish disposed of outside the DHHL property shall be the responsibility of the Contractor. The Contractor shall make all arrangements and bear all costs involved therewith.

#### 1.10 CONSTRUCTION STAKES, LINES AND GRADES

- A. The Contractor shall perform all construction layout and reference staking necessary for the proper control and satisfactory completion of all structures, grading, paving, drainage, sewer, water, and all other appurtenances required for the completion of the work.
- B. Existing horizontal and vertical survey control points for the project are shown on the plans. The Contractor shall verify the location of all control points prior to the start of construction.

- C. The Department will not be responsible for delays in setting stakes and marks.
- D. All control points and stakes or marks which the Project Manager may set shall be preserved by the Contractor. If such control points, stakes or marks are destroyed or disturbed by the Contractor, the cost of replacing such stakes or marks will be charged against the Contractor and deducted from payments due the Contractor.
- E. The Contractor shall be responsible for the placement and preservation of adequate ties to all control points whether established by the Contractor or by the Project Manager.
- F. All original, additional or replacement stakes, marks, references and batter-boards which may be required for the construction operations, shall be furnished, set and properly referenced by the Contractor. The Contractor shall be solely and completely responsible for the accuracy of the line and grade of all features of the work. Any errors or apparent discrepancies found in previous surveys, the plans and specifications shall be called to the Project Manager's attention by the Contractor for correction or interpretation prior to the proceeding with the work.
- G. Before construction is started on any structure which is referenced to an existing structure or topographical feature, the Contractor shall check the pertinent locations and grades of the existing structures or topographical features to determine whether the locations and grades shown on the plans are correct.
- H. All construction staking shall be performed by qualified personnel under the direct supervision of a person with an engineering background who is experienced in the direction of such work and is acceptable to the Project Manager.
- I. All stakes and markers used for control staking shall be of the same quality as used by the Department for this purpose. For slope limits, pavement edges, gutter lines, etc., where so called "working" stakes are commonly used, stakes of different quality may be acceptable.
- J. The Department may check the Contractor's control of the work at any times as the work progresses. The Contractor will be informed of the results of these checks, but the Department by doing so will in no way relieve the Contractor of his responsibility for the accuracy of the layout work. The Contractor shall at his expense correct or replace any deficient or inaccurate layout and construction work. If, as a result of these deficiencies or inaccuracies, the Department is required to make further studies, redesign, or both, all expenses incurred by the

Department due to such deficiencies or inaccuracies, will be deducted from any payment due the Contractor.

- K. The Contractor shall furnish all necessary personnel, engineering equipment and supplies, materials, and transportation incidental to the accurate and satisfactory completion of this work. Unless otherwise provided, all requirements imposed by this section and performed by the Contractor shall be considered incidental to the various contract items and not separate or additional payment will be made thereof.

#### 1.11 SPECIAL PROJECT REQUIREMENTS

- A. Upon receipt of the Contract, the Contractor shall process and return the Contract to the DHHL office within five (5) calendar days.
- B. The State intends to issue the Notice to Proceed for the Project to the Contractor within 30 calendar days after bid opening. The Contractor shall be able to commence work on this date.

#### 1.12 UNFORSEEN CONDITIONS ALLOWANCE

- A. Included in this project is an allowance for unforeseen conditions to be used by the engineer to pay for unknown conditions from either review of the contract documents or existing exposed conditions found at the site or anticipated from the type of work found.
- B. All unforeseen conditions that the Contractor is anticipating being compensated for must be brought to the engineer's attention and acknowledged as an unpredictable condition that the State will pay for before the Contractor proceeds with his work.
- C. Work accomplished by the Contractor without prior approval by the Project Manager will be considered part of the work and incidental to the work and no additional compensation will be allowed.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

PART 4 - MEASUREMENT AND PAYMENT

#### 4.01 BASIS OF MEASUREMENT AND PAYMENT

- A. Work under this section will not be measured not paid for separately, but shall be considered incidental to and included in the bid prices for the various items of work in this project.
- B. Work under this section for unforeseen conditions shall be paid under an allowance item in the Proposal Schedule. The allowance is an estimate and the Additional charges by the Contractor for overhead, coordination, profit, included in the Contractor's lump sum bid price.

END OF SECTION



## SECTION 01300 – SUBMITTALS

### PART 1 – GENERAL

#### 1.01 RELATED DOCUMENTS

Shop drawings and submittals shall be made in accordance with DHHL’s General Conditions, Section 5.5.1 – “SHOP DRAWINGS” and Section 6.3 – “SUBSTITUTION OF MATERIALS AND EQUIPMENT”

#### 1.02 OTHER SUBMITTALS REQUIRED BEFORE CONSTRUCTION

The Contractor shall submit the following items prior to or at the pre-construction meeting or unless otherwise noted:

#### 1.03 SHOP DRAWINGS, SAMPLES, CATALOG CUTS, AND CERTIFICATES

- A. Submittal Schedule: Prior to the submission of any shop drawings or submittals, the Contractor shall submit to the Construction Manager and Design Consultant for review, a submittal schedule. The schedule shall identify the subject matter of each submittal, the corresponding specification section number and the proposed date of submission. During the progress of work, the Contractor shall revise and resubmit the submittal schedule as directed by the Project Manager.
- B. The Contractor shall submit for review to the Construction Manager, or to a representative designated by the Project Manager, electronically or submit four (4) copies, if directed by the Project Manager of all shop drawings, samples, catalog cuts and certificates. Two (2) copies will be returned to the Contractor with information of review action. The Contractor shall submit additional quantities for their subcontractor’s or supplier’s use. Each shop drawing, certificate of compliance, sample, and equipment list shall be checked and certified correct by the Contractor, and shall be identified with the applicable information specified hereinafter under “Submittal Identification.”

Items are to be reviewed prior to commencing fabrication or delivery of material to the job site.

- C. Each copy of the drawings, certificates, catalog cuts, and lists reviewed by the Design Consultant will be stamped “REVIEW ACTION” with the appropriate action noted therein. The review of the Design Consultant shall not be construed as a complete check but will indicate only that the general method of construction and detailing is satisfactory. Acceptance of such drawings will not relieve the Contractor the responsibility of conforming to the contract drawings and specifications or for any error or omission which may exist as the Contractor shall be responsible for the dimensions and design of adequate connections, details, and satisfactory construction of all work. Each shop drawing submitted for review shall have, in the lower right-hand corner just above title, a white space 4” x 4” in which the Design Consultant can place the stamp and

indicate action taken. The Contractor shall also inform their subcontractors to provide this space in their preparation of shop drawings.

1.07 TEST REPORTS

Six copies of test reports for any material used in this Contract shall be submitted when specified or required by the Project Manager.

1.08 SUBMITTAL IDENTIFICATION

A. To avoid rejection and to clarify each submittal, the General Contractor shall have a rubber stamp made up in the following format:

B. CONTRACTOR NAME: \_\_\_\_\_  
PROJECT: \_\_\_\_\_  
IFB NO: \_\_\_\_\_

THIS SUBMITTAL HAS BEEN CHECKED BY THIS GENERAL CONTRACTOR. IT IS CERTIFIED CORRECT, COMPLETE, AND IN COMPLIANCE WITH CONTRACT DRAWINGS AND SPECIFICATIONS. ALL AFFECTED CONTRACTORS AND SUPPLIERS ARE AWARE OF, AND WILL INTEGRATE THIS SUBMITTAL INTO THEIR OWN WORK.

DATE RECEIVED \_\_\_\_\_

SPECIFICATION SECTION \_\_\_\_\_

SPECIFICATION PARAGRAPH \_\_\_\_\_

DRAWING NUMBER \_\_\_\_\_

SUBCONTRACTOR NAME \_\_\_\_\_

SUPPLIER NAME \_\_\_\_\_

MANUFACTURER NAME \_\_\_\_\_

CERTIFIED BY: \_\_\_\_\_

- C. This stamp “filled in” should appear on each reproducible shop drawing, on the cover sheet of copies of test and mill reports, certificates of compliance, catalog cuts, brochures, etc. The stamp should be placed on a heavy stock paper merchandise (approximately 3” x 6”) and one tag tied to each sample submitted for approval. The tag on the samples should state what the sample is, so that if the tag is accidentally separated from the sample they can be matched up again.

The back of this tag will be used by the Project Manager for receipt, approval, and log stamp for any comments that relates to the sample.

- D. Submission Number: Each submission is to be sequentially numbered in the space provided in the Contractor’s stamp. Correspondence and transmittal will refer to this number.
- E. The Contractor shall ensure that all submittals, including shop drawings, are complete and in conformance to the requirements of the Contract specifications prior to submissions to the State for review and acceptance. Incomplete submittals will not be processed by the State and returned to the Contractor for correction. Any cost impacts and delays in the Project schedule as a result of incomplete submittals shall be the responsibility of the Contractor.

1.10 GUARANTEES

Guarantee periods shall start at the time of acceptance by the State in writing.

All guarantees and warranties shall be made out to the “State of Hawaii.”

The Contractor shall co-sign supplier and subcontractor guarantees.

The Contractor is solely responsible for the coincidence or non-coincidence of factory warranties or equipment guarantees, and the Contractor’s own warranties and guarantees as required by the contract. The Contractor is solely responsible for scheduling and coordinating the installation of equipment and materials so as to take maximum advantage of factory warranties.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

PART 4 – MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT AND PAYMENT

Work under this section will not be measured nor paid for separately, but shall be considered incidental to and included in the bid prices for the various items of work in this project.

END OF SECTION

## SECTION 01505 – MOBILIZATION AND DEMOBILIZATION

### PART 1 – GENERAL

#### 1.01 GENERAL REQUIREMENTS

This section covers the requirements for mobilization and demobilization are hereby incorporated into and made a part of these specifications by reference unless otherwise modified hereinafter.

#### 1.02 MOBILIZATION

The Contractor shall mobilize and transport his construction plant and equipment including materials and supplies for operation to the site of work, construct temporary buildings and facilities as necessary, and assemble the equipment at the site as soon as possible after receipt of Notice to Proceed, subject to the provisions of the General Provisions.

#### 1.03 DEMOBILIZATION

The Contractor shall demobilize and transport his construction plant and equipment including materials, supplies and temporary buildings off the site as soon as possible after construction is completed. Demobilization shall include all cleanup required under this contract and as directed by the Engineer. Demobilization and final cleanup shall be completed prior to final acceptance.

#### 1.04 PERFORMANCE BOND

The Contractor shall file and pay for the performance and payment bonds according to the Instruction for Bid Submittal, except that the value of the bonds shall equal one hundred percent (100%) of the amount of the contract basic bid amount plus one hundred percent (100%) of the amount of the extra work.

Payment for the Contractor's bond premium will be made in accordance to the terms stated in Part 4 below.

### PART 2 – PRODUCTS (Not Applicable)

### PART 3 – EXECUTION (Not Applicable)

### PART 4 – MEASUREMENT AND PAYMENT

#### 4.01 METHOD OF MEASUREMENT

- A. Mobilization shall not be measured for payment. The maximum bid allowed for “Mobilization” is an amount not to exceed size (6) percent of the sum of all items (excluding this item and all Allowances). If the proposal submitted by the bidder indicates an amount in excess of the allowable maximum, the indicated amount or amounts shall be reduced to the allowable maximum; the “Sum of All Items,” in the proposal schedule shall be adjusted to reflect any such reduction. For the purpose of comparing bids and determining the contract price to be inserted in the contract awarded to the bidder, if any is so awarded, the “Sum of All Items” adjusted in accordance with the foregoing shall be used and the bidder’s proposal shall be deemed to have been submitted for the amounts as reduced and adjusted in accordance herewith.
- B. Demobilization will not be measured for payment. A separate line item called “Demobilization” will be added to the Contractor’s Schedule of Values after the contract has been awarded. The total amount for this item shall be 2.5% of the Contractor’s total bid amount and will be deducted from other line items in the schedule of values as negotiated between the Contractor and the State. **THE CONTRACTOR SHALL NOT MODIFY THE PROPOSAL SCHEDULE BY ADDING A “DEMobilIZATION” BID ITEM TO THE PROPOSAL SCHEDULE.**

#### 4.02 BASIS OF PAYMENT

- A. Mobilization will be paid for at the contract lump sum price under Mobilization. Partial payment will be made as follows:
1. When 2 ½ percent of the original contract amount is earned, 50 percent of the bid amount will be paid.
  2. When 5 percent of the original contract amount is earned, 75 percent of the bid amount will be paid.
  3. When 10 percent of the original contract amount is earned, 100 percent of the bid amount will be paid.
- Nothing herein shall be construed or limit or preclude partial payments otherwise provided by the contract.
- B. Partial payment will not be paid for Demobilization. Full payment will be made on the Contractor’s final payment request. This will occur after the Contractor has fulfilled all of the requirements of the Contract bid documents to the satisfaction of the State and issuance of the Final Acceptance letter to the Contractor by the State.

END OF SECTION

SECTION 01750 - GUARANTEE

PART 1 – GENERAL

1.01 RELATED DOCUMENTS

Guarantee shall be made in accordance with Section 7.35 – “GUARANTEE OF WORK” of the DHHL’s General Conditions.

1.01 GUARANTEES

The Contractor guarantees all materials and equipment furnished to be in operable condition upon final acceptance of the work and that all such materials and equipment conform to the requirements of this contract and be fit for the use intended.

He further guarantees all such materials and equipment against defects and poor workmanship and, to the extent that he is responsible for design, the Contractor guarantees the design to meet the criteria and operating requirements specified against failure to perform in accordance with such criteria and operating requirements.

The period of this guarantee shall commence upon acceptance of the work by the DHHL, and shall extend through the project performance evaluation period not to exceed 1 year for all materials and equipment, provided that this period shall be extended from the time of correction of any defect or failures, corrected under the terms of this guarantee, for a like period for the corrected work.

The Contractor shall correct all defects or failures discovered within the guarantee period. The DHHL will give the Contractor prompt written notice of such defects or failures following their discovery. The Contractor shall commence corrective work within five (5) days following notification and shall diligently prosecute such work to completion. The Contractor shall bear all costs of corrective work, which shall include necessary disassembly, transportation, reassembly and retesting, as well as repair or replacement of the defective material or equipment, and any necessary disassembly and reassembly of adjacent work.

Any period that a particular equipment is not operable due to its failure shall not be considered as a part of the guarantee period. The guarantee period shall be extended for a like period. If due to failure of other equipment the equipment is unable to perform its intended function, the guarantee period shall be extended for a like period. Time that equipment is operating shall be counted as applying to the warranty. Such time shall be determined by use of plant operator's log or other suitable documentation.

If the Contractor falls to perform corrective work in the manner and within the time stated, the Department of Hawaiian Home Lands (DHHL) may proceed to have such

work performed at the Contractor's expense and his sureties will be liable therefor. The DHHL shall be entitled to reasonable attorney's fees and court costs necessarily incurred by the Contractor's refusal to honor and pay such costs of corrective work. The Contractor's performance bond shall continue in full force and effect during the period of this guarantee.

The rights and remedies of the DHHL under this provision do not preclude the exercise of any other rights or remedies provided by this contract or by law with respect to unsatisfactory work performed by the Contractor.

This guarantee shall be deemed supplemental to guarantee provisions provided in other sections of the specifications for the individual units and systems of units so specified.

Guarantee periods shall start at the time of acceptance in writing by the State. All guarantees and warranties shall be made out to the "State of Hawaii." Supplier and subcontractor guarantees shall be co-signed by the Contractor. The Contractor is solely responsible for coincidence or non-coincidence of factory warranties or equipment guarantees, and the Contractor's own warranties and guarantees as required by the contract. The Contractor is solely responsible for scheduling and coordinating the installation of equipment and materials so as to take maximum advantage of factory warranties.

END OF SECTION

## SECTION 02 41 20 SELECTIVE DEMOLITION

### PART 1 GENERAL

#### 1.1 SUMMARY

- A. Section includes removal of designated construction; dismantling, cutting and alterations as indicated and necessary for the completion of the work; disposal of materials; identification of utilities; and protection of items to remain.

#### 1.2 SUBMITTALS

- A. Section 01 33 00 – Submittal Procedures.

#### 1.3 CLOSEOUT SUBMITTALS

- A. Section 01 77 00 – Closeout Procedures.

### PART 2 PRODUCTS

#### 2.1 PRODUCTS FOR PATCHING, EXTENDING AND MATCHING

- A. General: Provide same products or types of construction as that in existing structure, as needed to match existing work.

### PART 3 EXECUTION

#### 3.1 PREPARATION

- A. Notify Engineer a minimum of 72 hours prior to start of Work.
- B. Provide adequate protective materials, methods, and procedures, to prevent damage from weather, vehicles, or pedestrians.
- C. Provide, erect, and maintain temporary safeguards, including warning signs and lights, barricades, and similar measures, for protection of the public, contractor's employees, and existing improvements to remain.
- D. Erect and maintain temporary partitions to prevent spread of dust, odors, and noise to permit continued owner occupancy.
- E. Protect existing materials and existing improvements that are not to be demolished.
- F. Protect components during and after demolition from exposure to weather.

#### 3.2 DEMOLITION

- A. Demolish in an orderly and careful manner.
- B. Demolish using means, methods, and procedures that prevent damage.
- C. Remove demolished materials, waste, and debris from site, daily
- D. Upon completion of work, leave areas in clean condition.



E. Remove temporary work.

### 3.3 CLEANING

A. Progress Cleaning: Perform cleaning during the progress of the work daily and as follows:

1. Maintain work areas in a clean and orderly condition at all times, and to eliminate safety hazards.

END OF SECTION

## SECTION 32 31 13 CHAIN LINK FENCES AND GATES

### PART 1 GENERAL

#### 1.1 SECTION INCLUDES

- A. Fence framework, chain-link fabric, and accessories; excavation for post bases; concrete foundation for posts.
- B. Related Sections:
  - 1. Section 03 30 00 – Cast-In-Place Concrete: Concrete anchorage for posts.
  - 2. Section 31 00 00 – Earthwork: Excavation for post bases.

#### 1.2 REFERENCES

- A. ASTM A392-11a(2017) – Standard Specification for Zinc-Coated Steel Chain-Link Fence Fabric.
- B. ASTM F567-14a – Standard Practice for Installation of Chain-Link Fence.
- C. ASTM F900-11(2017) – Standard Specification for Industrial and Commercial Steel Swing Gates.
- D. ASTM F934-96(2017) – Standard Specification for Standard Colors for Polymer-Coated Chain Link Fence Materials.
- E. ASTM F1083-18 – Standard Specification for Pipe, Steel, Hot-Dipped Zinc-Coated (Galvanized) Welded, for Fence Structures.
- F. CLFMI-FIG-0111-14 – Field Inspection Guide, CLFMI (Chain Link Fence Manufacturers Institute).
- G. CLF-PM0610-17 – Product Manual, CLFMI (Chain Link Fence Manufacturers Institute).

#### 1.3 SYSTEM DESCRIPTION

- A. Fence Height: 6 feet nominal.
- B. Line Post Spacing: At intervals not exceeding 10 feet.

#### 1.4 SUBMITTALS

- A. Section 01 33 00 – Submittal Procedures: Submittal procedures.
- B. Shop Drawings: Indicate plan layout, spacing of components, post foundation dimensions, hardware anchorage, gates, and schedule of components.
- C. Product Data: Submit data on fabric, posts, accessories, fittings and hardware.

#### 1.5 QUALITY ASSURANCE

- A. Section 01 40 00 – Quality Requirements.
- B. Supply material in accordance with CLFMI – Product Manual.

- C. Perform installation in accordance with ASTM F567.
- D. Perform quality assurance in accordance with CLFMI-FIG-0111-14 – Field Inspection Guide.

## 1.6 DELIVERY, STORAGE AND HANDLING

- A. Section 01 60 00 – Product Requirements: Product storage and handling requirements.
- B. Fence fabric and accessories shall be delivered to the construction site in packed cartons or firmly tied rolls.
- C. Each package shall be identified and shall bear the manufacturer’s name.
- D. Store fence fabric and accessories in a secure and dry place.

## PART 2 PRODUCTS

### 2.1 MANUFACTURERS

- A. Manufacturers:
  - 1. Anchor Fence Inc.
  - 2. Cyclone Inc.
  - 3. Substitutions: Section 01 60 00 – Product Requirements: or approved equal.

### 2.2 MATERIALS

- A. Framing (Steel): ASTM F1083 Schedule 40 galvanized steel pipe, welded construction, minimum yield strength of 25 ksi; coating conforming to ASTM F1043 Type A on pipe exterior and interior.
- B. Fabric Wire (Steel): ASTM A392 zinc coated wire fabric.
- C. Concrete: Section 03 30 00.

### 2.3 COMPONENTS

- A. Terminal, Corner, and Gate Posts: 2.88-inch diameter.
- B. Line Posts: 1.9-inch diameter.
- C. Top and Brace Rail: 1.66-inch diameter, plain end, sleeve coupled.
- D. Gate Frame:
  - 1. 1.9-inch diameter for welded fabrication.
  - 2. Hot-dip galvanize after fabrication.
- E. Gusset Plates: 1/4-inch thick steel for truss rod attachment; fabricate to weld into gate frame corners. Hot-dip galvanize after fabrication.
- F. Fabric: 2-inch diamond mesh interwoven wire, 9 gage thick, top salvage and bottom selvage knuckled.
- G. Tension Wire: 6 gage thick steel, single strand.
- H. Tension Band: Galvanized steel.

- I. Tension Strap: Galvanized steel.
- J. Tie Wire: Aluminum alloy steel wire.

## 2.4 ACCESSORIES

- A. Caps: Dome type, cast steel galvanized; sized to post diameter, set screw retainer.
- B. Fittings: Sleeves, bands, clips, rail ends, tension bars, fasteners and fittings: galvanized steel.
- C. Gate Hardware:
  - 1. Fork latch with gravity drop rod and latch assembly.
  - 2. Two 180 degree gate hinges per leaf.
- D. Touch-Up Primer for Galvanized Surfaces: ZRC cold-galvanizing paint, with 94 percent zinc by weight in dried condition.
- E. Privacy Slats: Vinyl strips, sized to fit fabric weave. Color: as selected.

## PART 3 EXECUTION

### 3.1 INSTALLATION

- A. Install framework, fabric, and accessories, in accordance with ASTM F567.
- B. Place fabric on outside of posts and rails.
- C. Set posts plumb, in concrete footings with top of footing 1 inch above finish grade. Slope top of concrete for water runoff.
- D. Do not stretch fabric until concrete foundation has cured.
- E. Stretch fabric between terminal posts.
- F. Position bottom of fabric 2 inches above finished grade.
- G. Fasten fabric to top rail, line posts, braces, and bottom tension wire with tie wire at maximum 18 inches on centers.
- H. Attach fabric to posts with tension bars and tension bar clips.
- I. Install bottom tension wire stretched taut between terminal posts.
- J. Connect to existing fence at Picnic Area by installation of an end post.
- K. The clear opening from end posts to buildings, fences and other structures shall not exceed 6 inches unless otherwise approved in advance by the Consultant.
- L. Excavate holes for posts to the diameter and spacing required without disturbing the underlying materials.
- M. Center and align posts. Place concrete around posts, and vibrate or tamp for consolidation.
  - 1. Recheck vertical and top alignment of posts and make necessary corrections.
  - 2. Extend concrete footings 1 inch above grade, and trowel to a crown to shed water.

3. Unless otherwise approved by the Consultant, no materials shall be installed on the posts, nor shall the posts be disturbed within 7 days after the individual post footing is completed.

### 3.2 ERECTION TOLERANCES

- A. Section 01 40 00 – Quality Requirements: Tolerances.
- B. Maximum Variation From Plumb: 1/4 inch.
- C. Maximum Offset From True Position: 1 inch.

END OF SECTION

## SECTION 31 00 00 EARTHWORK

### PART 1 GENERAL

#### 1.1 SECTION INCLUDES

- A. Excavation; filling and backfilling; fill for over-excavation; rough contouring; base course, consolidation and compaction.
- B. Related Requirements:
  - 1. Section 02 41 20 – Selective Demolition.
  - 2. Section 03 10 00 – Concrete Forming and Accessories.
  - 3. Section 32 31 13 – Chain Link Fences and Gates.

#### 1.2 REFERENCES

- A. ASTM C136/C136M-14 – Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
- B. ASTM D1557-12e1 – Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft<sup>3</sup> (2,700 kN-m/m<sup>3</sup>)).
- C. ASTM D2487-17 – Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System).
- D. ASTM D2922 - 01 – Standard Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
- E. ASTM D3017 - 01 – Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).
- F. Local utility standards when working within 24 inches of the respective utility lines.
- G. Standard Specifications for Public Works Construction, City and County of Honolulu, 1986.

#### 1.3 DEFINITIONS

- A. Utility: Any buried pipe, conduit, or cable.
- B. Top Soil: The top 4-inch layer in excavations across lawn or planting area.

#### 1.4 SUBMITTALS

- A. Section 01 33 00 – Submittal Procedures: Submittal procedures.
- B. Samples: Provide samples of materials as required by the Engineer that will be used from furnished material.
- C. Materials Source: Submit name of imported materials suppliers.
- D. Test Reports: Field density test reports. Submit gradation test for all furnished material.

#### 1.5 CLOSEOUT SUBMITTALS

- A. Section 01 77 00 – Closeout Procedures.
- B. Accurately record actual locations of new and existing utilities, by horizontal dimensions, elevations or inverts, and slope gradients.
- C. Accurately record actual locations of capped utilities and subsurface obstructions.

1.6 QUALITY ASSURANCE

- A. Section 01 40 00 – Quality Requirements.
- B. Perform Work in accordance with the Standard Specifications for Public Works Construction of the City and County of Honolulu.

1.7 COORDINATION

- A. Section 01 30 00 – Administrative Requirements: Coordination and project conditions.
- B. Convene minimum one week prior to commencing Work of this section.
- C. Review preparation and installation procedures and coordinating and scheduling required with related work.

PART 2 PRODUCTS

2.1 FILL MATERIALS

- A. General Fill: Excavated native material or borrow material, free of subsoil, roots, grass, weeds, large stone, and foreign matter, consisting of coarse-grained soil with clay binders and fine-grained soils having expansion value less than 3 percent and with CBR value of 8 or greater; containing not more than 50 percent rock or hard lumps of earth larger than 3 inches in greatest dimension.
- B. Structural Fill: Structural fill used below foundations should consist of a mineral soil free of organic material, loam, debris, frozen soil or other deleterious material which may be compressible or which cannot be properly compacted. Structural fill should conform to the following gradation requirements:

- 1. Gradation per ASTM C136:

SIEVE SIZE	% Passing
2"	100
No. 4	20 - 70
No. 40	5 - 35
No. 200	0 - 10

- C. Structural fill should be placed in layers no thicker than 8 inches, as placed, and compacted with suitable compaction equipment to at least 95 percent of maximum dry density as determined by ASTM D1557. Lift thickness should be

reduced to 4 inches in confined areas accessible only to hand guided compaction equipment.

- D. Unsuitable Material: Highly organic soil ASTM D2487, Group PT or CH, topsoil, roots, vegetable matter, trash and debris.
- E. Base: Crushed stone, free of vegetable matter and other deleterious substances, capable of meeting compaction requirements, conforming to the following:
  - 1. Gradation per ASTM C136:

SIEVE SIZE	% Passing
2"	100
1 ½"	90
¾"	79
4	47
200	6

- F. Pipe Zone Material: Granular material such as sand, crushed fine aggregate, or finely graded coral, free of vegetable matter and other deleterious substances, capable of meeting compaction requirements, conforming to the following:
  - 1. Gradation per ASTM C136:

Sieve Size	% Passing (By Weight)
1"	100
¾"	90-100
No. 4	35-65
No. 16	15-40
No. 200	2-10

- G. Drainage Gravel: Natural gravel, free of clay, organic matter or other objectionable material. For grains retained on No. 4 sieve, the grain shape shall be rounded or sub-rounded, as defined by ASTM D-2488, and shall conform to the following:
  - 1. Gradation per ASTM C136:

Sieve Size	% Passing (By Weight)
1/2"	100
No. 4	75-100
No. 50	0 - 70
No. 100	0 - 30
No. 200	0 - 15



## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Section 01 73 00 – Execution: Examination.
- B. Identify required lines, levels, contours, and datum.
- C. Verify field measurements prior to fabrication or construction.
- D. Verify that survey benchmark and intended elevations for the Work are as indicated.

### 3.2 PREPARATION

- A. Section 01 33 00 – Coordination and Project Conditions.
- B. Notify Engineer a minimum of 72 hours prior to commencement.
- C. Stake and flag locations of known utilities. Locate, identify, and protect utilities that remain from damage.

### 3.3 PROTECTION

- A. Protect excavations by methods required to prevent cave-in or loose soil from falling into excavation.
- B. Protect above and below grade utilities that remain.
- C. Protect plant life, lawns, and other features remaining as a portion of final landscaping.
- D. Protect benchmarks, survey control points, existing structures, fences, sidewalks, paving, and curbs from damage by excavating equipment and vehicular traffic.

### 3.4 STOCKPILING

- A. Stockpile excavated material in area designated on site to depth not exceeding 8 feet (2.5 m) and protect from erosion. Stockpile material on impervious material on 36 mil Hypalon material and covered over with the same material, until disposal.
- B. Separate differing materials with dividers or stockpile apart to prevent mixing.
- C. Direct surface water away from stockpile site to prevent erosion or deterioration of materials.
- D. Remove excess topsoil, not intended for reuse, from site.

### 3.5 PUMPING, DRAINAGE, AND DEWATERING

- A. Remove water, including rainwater, encountered during the course of the foundation and substructure work, by the use of pumps, drains, and other approved methods.
- B. Grade top perimeter of excavation to prevent surface water from draining into excavation. Provide temporary dams, curbs, and ditches as may be required.

### 3.6 SUBSOIL EXCAVATION

- A. Excavate subsoil to accommodate slabs-on-grade, footings, and construction operations.
- B. Remove groundwater by pumping to keep excavations dry.
- C. When excavating through roots, perform work by hand and cut roots with sharp axe.
- D. Slope banks with machine to angle of repose or less until shored.
- E. Grade top perimeter to prevent surface water from draining into excavation.
- F. Hand trim excavation. Remove loose matter.
- G. Remove lumped subsoil, boulders, and rock from site.
- H. Proofroll bearing surfaces. Correct soft spots and compact uniformly to required density.
- I. Notify Engineer of unexpected subsurface conditions and discontinue affected Work in area until notified to resume Work.
- J. Correct over-excavated by refilling to proper grade with approved materials at no additional cost to Owner.
- K. Provide adequate protection of open excavations.

### 3.7 PREPARATION BEFORE BACKFILLING

- A. Compact subgrade to density requirements for subsequent backfill materials.
- B. Cut out soft areas of subgrade not capable of in situ compaction. Backfill with General Fill and compact to density equal to or greater than requirements for subsequent fill material.
- C. Scarify subgrade surface to a depth of 6 inches to identify soft spots; fill and compact to density equal to or greater than requirements for subsequent fill material.

### 3.8 FILLING AND BACKFILLING

- A. Fill areas to contours and elevations.
- B. Do not backfill over porous, wet or spongy subgrade surfaces.
- C. Employ a placement method that does not disturb or damage utility or other work.
- D. Place fill materials in continuous layers and compact to required density. Do not exceed 8 inches depth per lift before compaction.
- E. Pipe Trench:
  - 1. Place pipe cushion material in bottom of trench to a minimum depth of 2 inches.
  - 2. Backfill first lift with Pipe Zone Material from the bottom of pipe to 12 inches above the barrel of the pipe by hand shoveling and tamping. Make sure backfill material is in contact with entire periphery of the pipe.
  - 3. Backfill remainder of trench with General Fill.

- F. Maintain optimum moisture content of fill materials to attain required compaction density.
- G. Compact to 90 percent of ASTM D 1557 maximum dry density.
- H. Remove surplus fill materials from site.

### 3.9 ROUGH GRADING

- A. Maintain lines, levels, profiles and contours. Make changes in grade gradual. Blend slopes into level areas.
- B. Eliminate uneven areas and low spots.
- C. Make grade changes gradual. Blend slope into level areas.
- D. Slope grade away from buildings and other structures a minimum of 2 inches in 10 ft., unless noted otherwise.

### 3.10 BASE COURSE

- A. Conform to Standard Specifications for Public Works Construction of the City and County of Honolulu for the placement and compaction of aggregate materials.
- B. Place material in continuous layers not exceeding 6 inches compacted depth.
- C. After spreading and blading, roll the aggregate lightly to obtain initial compaction to bring out any irregularities. Fill high and low spots until surface is smooth and true.
- D. Roll aggregate material until it does not creep or weave under the weight of the roller.
- E. Grade, level and contour surfaces to provide positive drainage to existing drain inlets without obstruction.
- F. Add small quantities of fine aggregate to course aggregate as appropriate to assist compaction.
- G. Add water to assist compaction. If excess water is apparent, remove aggregate and aerate to reduce moisture content.
- H. Use mechanical tamping equipment in areas inaccessible to compaction equipment.
- I. Compact to 95 percent of ASTM D 1557 maximum dry density.

### 3.11 TOLERANCES

- A. Top Surface of General Backfilling: Plus or minus 1 inch from required elevations.

### 3.12 FIELD QUALITY CONTROL

- A. Section 01 40 00 – Quality Requirements.
- B. Perform a minimum of 1 field density test per 100 square feet on compacted fill in accordance with ASTM D1557.

### 3.13 STOCKPILE CLEANUP

- A. Remove stockpile; leave area in a clean and neat condition.
- B. Remove surplus subsoil and topsoil from site.
- C. Leave stockpile area and site clean and raked.
- D. Grade site surface to prevent freestanding surface water.

### 3.14 PROTECTION OF FINISHED WORK

- A. Protect finished Work under provisions of Section 01 73 00.
- B. Reshape and re-compact fills subjected to vehicular traffic during construction.

### 3.15 SCHEDULE

- A. Compaction:
  - 1. Structural Fill: Compact to 95% of maximum Standard Proctor Density.

END OF SECTION