VOLCANO SCHOOL OF ARTS AND SCIENCE
PHASE – 1 SITE IMPROVEMENTS

OLA`A SUMMER LOTS, PUNA, HAWAI`I

TAX MAP KEY: (3) 1-9-004 : 019

SPECIFICATIONS

Prepared For:

Volcano School of Arts and Sciences

Prepared By:

Engineering Partners Inc.
455 East Lanikaula St.
Hilo, Hawaii 96720
(808) 930-7865

TECHNICAL SPECIFICATIONS

DIVISION 1 – GENERAL REQUIREMENTS

DIVISION 2 – SITE CONSTRUCTION

END OF SECTION

DIVISION 1 – GENERAL REQUIREMENTS

SECTION 01010 – SUMMARY OF WORK

PART 1 – GENERAL

1.01 GENERAL CONDITIONS

A. The General Requirements and Covenants and the Special Provisions preceding these specifications shall govern all work specified hereinafter in all Divisions and Sections

1.02 SUBMITTALS

A. Pre-Construction Submittals

1. Contractor must submit a comprehensive list of the required submittals, by Specification Section, and submit this list to the Director within 15 days after Notice to Proceed. If a pre-construction meeting will be held, this list should be presented at the pre-construction meeting. Submittals may be provided prior to the meeting.

1.03 SUMMARY OF PROJECT

A. The work to be done shall include performing all operations and furnishing all equipment, tools, materials and labor necessary to execute, complete and deliver all of the work and related items required for the project as called for on the drawings and as specified herein.

B. This project includes the demolition and removal portion of existing chain link fence, removal and storage of existing pavilion, and relocation of volleyball/ basketball equipment. Construct new gravel driveway with paved connection to Huanani road, utility line installation, chain link construction, drywells, graded pad area, and all other related work as shown on the drawings and as specified herein.

1.04 CODES AND ORDINANCES

A. The Contractor shall comply with all Federal, State and local laws, ordinances, rules and regulations having jurisdiction over this project and shall apply for, pay for and obtain all permits, licenses and certificates and publish or post and pay for all notices required.

B. The requirements of the Americans with Disabilities Act Accessibility Guidelines are hereby made a part of the specifications. Contractor shall familiarize himself with all facets of said document and implement construction activities so as to comply with the requirements thereof whether or not specifically referenced in the drawings or specifications.

1.05 DIVISION OF WORK

A. The Divisions, Sections and work specified within each Section into which these Specifications are divided shall not be considered an accurate or complete segregation of work by trades. As such, the disciplines by which the drawing sheets are divided, or the details therein, shall not be construed as a segregation of work by trades. All specifications, drawings and referenced codes, rules, regulations, standards, etc. shall be considered in whole.

1.06 GENERAL

A. Construction Work Scope: The Contractor shall verify the work scope indicated on the drawings before any construction begins. Any discrepancies shall be immediately brought to the attention of the Director, and any change shall be made in accordance with his instruction. The Contractor

shall **not** be entitled to extra payment if he fails to report the discrepancies before proceeding with any work whether within the area affected or not.

B. Examination of Premises: The Contractor shall contact the Director and obtain permission before visiting secured areas at the site and of the structures thereon. The Contractor shall visit the site within the allow time and dates, to fully understand existing conditions and the scope of work required. The Contractor shall account for all hardships in executing the work of this project relative to existing conditions and make due allowances for such in his bid.
   1. Site may be exam on the following dates and time
      a. Wednesday, 8/21/19 between 8:30 am – 1:30 PM
      b. Thursday, 8/22/19 between 9:00 am – 12:00 PM
      c. Wednesday, 8/28/2019 between 8:30 am – 1:30 PM
   2. Contractor to schedule appointments to exam the site with Ted Pirsig, Keakealani Campus Development Project Manager twenty-four (24) hours in advance, at (808) 985-9800 Main line, (808) 312-7768 Cell, (808) 967-7319 Home Office.

C. Conditions at Site:
   1. Prior to preparing their bid the Contractor and Subcontractors are expected to:
      a. Visit the site;

      b. Make due allowances for difficulties and contingencies to be encountered;

      c. Compare contract documents with work in place and inform themselves of existing conditions, the conditions to be encountered in performing the work, and the requirements of the plans and specifications.
         1) The Contractor shall accept the site in the condition in which it exists at the time he is given access to begin the work.
            a) The Contractor shall verify all existing conditions and dimensions shown and other dimensions not indicated but necessary to accomplish the work.

            b) Locate general reference points and take such action as necessary to prevent their destruction; layout work and be responsible for lines, elevations and measurements and the work executed. Exercise proper precautions to verify figures and conditions shown on drawings before layout of work.

            c) The Contractor and each subcontractor, before starting work, shall verify governing dimensions at the premises and shall examine adjoining work on which his work is in any way dependent. No additional compensation will be allowed on account of differences between actual measurements and dimensions shown. Submit differences discovered during the work to the Director for interpretations before proceeding with the associated work.

   2. Submission of bid shall be considered evidence that the Contractor has complied with the above listed expectations. No allowance will be awarded to a contractor for lack of examination of the site.

D. Contract Zone Limits: The Contract Zone Limits shall be within the boundaries of TMK: (3) 1-9-004: 019. Contractor shall coordination the final extents of the contract zone limits with the Director, prior to construction. When adjustments are required to be made to the Contract Zone Limits to suite the facility operations or school activities, the Contractor is responsible to make such adjustments as directed by the Director. The Contractor, however, is required to perform any and all necessary and incidental work, which may fall outside of these demarcation lines. The Contractor is also expected to confine all of his construction activities within the Contract Zone Limits and not to spread his equipment and materials indiscriminately about the area.
   1. The Director may alter, reduce, or otherwise adjust the Contract Zone Limits throughout the duration of the project, as necessary to maintain the proper operations of the facilities.

E. Disruption of Utility Services: All work related to the disconnection of any utility system shall be pre-arranged with the Director. The Contractor shall notify the Director at least fifteen (15) days in advance of any interruption of existing utility service. Time and duration of interruption shall be to the satisfaction of the Director. Duration of interruption shall be kept to a minimum so as not to cause inconvenience or hardship to the facility. In the event temporary power hook-up is required, the Contractor shall provide the necessary services at his own expense.
   1. The Director reserves the right to dates and times in which the Contractor may not disrupt utilities.

F. Utility Services:
   1. Electricity and Telephone: The Contractor shall make the necessary arrangements with the utility companies for temporary use of electricity and telephone for construction purposes and shall pay for all expenses pertaining thereto.

   2. Water: The Contractor shall make the necessary arrangements with the Director for temporary use of water and shall pay for all expenses pertaining thereto. If temporary water is not available through the Director, Contractor is responsible for providing the necessary equipment (water haul trucks, temporary on-site tank, etc..) necessary to complete the work, at the Contractors expense.

   3. Sewer: The Contractor shall include provisions to provide alternate toilet facilities and other sanitary requirements when work requires closure of restrooms.

G. Contractor Access:
   1. The Contractor and his employees will only be allowed to park in areas on the site designated by the Director.

   2. Areas to be used by the Contractor shall be as designated by the Director. Any lawn damaged by the Contractor shall be restored immediately to the satisfaction of the Director at no additional cost to the Owner.

   3. Access to the Construction Area shall also be as designated by the Director.

H. Protection of Property: The Contractor shall continually maintain adequate protection of all his work from damage and shall protect all property, including but not limited to buildings, equipment, furniture, grounds, vegetation, materials, and utility system located at and adjoining the job site. The Contractor shall repair, replace or pay the expenses of repair of damages resulting from his fault or negligence. Repair and replacement work shall occur at a schedule to be determined by the Director.

I. Use of Power Driven Equipment: The Contractor is cautioned to take all necessary safety precautions to protect his personnel and the public whenever power driven equipment is used.

J. Safety:
   1. The Hawaii Occupational Safety and Health Law, Chapter 396, Hawaii Revised Statutes, effective May 16, 1972, as amended, is applicable and made a part of the Contract.
      a. The Contractor shall carefully read and strictly comply with its requirements.

K. Clean Up of Premises: The Contractor shall clean up and remove from premises all debris accumulated from operations from time to time and as directed by the Director.

L. Responsibility:
   1. The Director will hold the Contractor liable for all the acts of Subcontractors and shall deal only with him (the General Contractor) in matters pertaining to other trades employed on the job. The Contractor shall be responsible for coordinating the work of all trades on the job.

   2. Should he discover any discrepancy in the plans or specifications, the Contractor shall immediately notify the Director before proceeding any further with the work. Otherwise, the Contractor will be held responsible for any cost involved in correction of work placed due to such discrepancy.

M. Plans and Specifications:
   1. The Contractor shall not deviate or make alterations in the drawings and specifications without written approval from the Director. In the event he discovers any errors or discrepancies, the Contractor shall immediately notify the Director in writing.

   2. Where devices, or items, or parts thereof are referred to in the singular, it is intended that such reference shall apply to as many devices, items or parts as are required to properly complete the work.

   3. Specifications and drawings are prepared in abbreviated form and include incomplete sentences. Omission of words or phrases such as "the Contractor shall", "as shown on the drawings", "and", and "the" are intentional. Omitted words and phrases shall be provided by inference to form complete sentences.

   4. The specifying of inference and coordination in the various Sections is provided for information and convenience only. Such requirements, in the various Sections shall complement the requirements of this Section.

   5. Discrepancies:
      a. The drawings and specifications are intended to be cooperative. Any materials, equipment, or systems exhibited on the drawings but not mentioned in the specifications are to be executed to the intent and meaning thereof, as if it were mentioned in the specifications and set forth on the drawings.

      b. In case of differences between the drawings and specifications, the specifications shall govern first, and then the drawings. Large scale details shall take

precedence over small scale drawings as to the shape and details of construction. Specifications shall govern as to materials and procedures.

c. Drawings and specifications are intended to be fully cooperative and to agree, but should any discrepancy or apparent difference occur between the drawings and specifications or should error occur in the work of others affecting the work, the Contractor must notify the Director immediately. If the Contractor proceeds with the work affected without written instructions from the Director, any resultant damage or defect must be made good at no additional cost to the Owner. All interpretations of the drawings and specifications shall be clarified in writing by the Director.

N. Required Submittals:

1. Required submittals as specified in the technical sections of these specifications include, but are not limited to, one or more of the following: shop drawings; color samples; material samples; technical data; schedules of materials; material safety data sheets; schedules of operations; certifications; guarantees; operating and maintenance manuals; and record drawings.

2. Record Drawings: Record Drawings (as-builts) are required for submittal and the following shall apply:

a. Record drawings, the intent of which is to record the actual in-place construction so that any future renovations or tie-ins can be anticipated accurately, shall be required.

b. To accomplish this, all authorizations given by the Director to deviate from the plans shall be drawn onto the field set by the Contractor.

1) The Contractor shall document all such authorizations, including scope, date, and method of authorization and submit this list with the record drawings.

c. All deviations from alignments, elevations and dimensions which are stipulated on the plans shall be recorded on the record drawings set.

d. The following procedure shall be followed:

1) Immediately after these changes are constructed in place, the Contractor shall record them on the field office plans. This is to assure that changes are recorded before they are forgotten.

2) Within two weeks after final inspection of the project, the Contractor shall transfer the changes marked on the field office plans onto the original tracings using a red pencil. Any deletions shall be eradicated from the tracings and redrawn as necessary. The Contractor shall stamp or mark the tracings "RECORD DRAWING", and also sign and date each drawing so marked.

3) The Contractor shall submit the record drawings together with the marked-up field office plans to the Director.

4) Any record drawing which the Director determines does not accurately record the deviation shall be corrected by the Contractor within two weeks of notification.

O. Barricade: Erect temporary barricade(s) to prevent unauthorized persons from entering the project area to the extent as agreeable to the Director.
   1. To the extent feasible, temporary barricades, as well as any and all of the Contractor's operations shall not block or impede any existing accessible routes. When accessible routes are caused to be occluded or otherwise detrimentally affected by the Contractor's actions, the Contractor shall provide temporary accessible route(s) in compliance with ADAAG Section 206 and Chapter 4 until such time that existing accessible routes are restored and maintained free and clear. Temporary accessible routes shall be clearly identified and shall comply with ADAAG Section 216 requirements as if it were new construction. The Contractor shall identify, design and construct all such temporary accessible routes as incidental to the scope of this project.

P. Protection of Drains: The Contractor shall provide adequate continuous protection of all drains, floor drains, inlets to catch basins, drywells, etc. to prevent intrusion of runoff, construction debris and waste materials. He shall erect and maintain silt fences or temporary plugs but shall in no way cause runoff to leave the site or damage existing improvements.

1.07 GENERAL CONTRACTOR RESPONSIBILITIES

A. The General Contractor, referred to as "Contractor", shall be in charge of this Contract and the site, as well as the coordination, direction and scheduling of all work. Contractor shall include general supervision, management and control of the work of this project, and in addition to other areas more specifically noted throughout the specification.

B. Final responsibility for performance, interface, and completion of the Work and the project shall be the Contractor's.

C. Job site Administration shall be the responsibility of the Contractor. The Contractor shall provide a competent superintendent on the job at all times during the progress of work with authority to act in its behalf. The Contractor shall also provide an adequate staff to coordinate and expedite all work properly and orderly in compliance with the plans and specifications. In addition, all workmen shall dress neatly and conduct themselves properly at all times; loud abusive behavior, sexual harassment and misconduct will not be tolerated. Workmen found in violation of the above shall be removed from the job site as directed by the Director.

D. Existing Conditions: Before commencing any of the work of this project, the Contractor shall verify if existing site conditions are the same as presented on the drawings, and immediately report any apparent discrepancies or inconsistencies in accordance with Paragraph 1.05 C.1.

E. The Contractor shall be responsible for repairing any damage to the existing improvement to the satisfaction of the Director and shall not be entitled to extra payment if he fails to report discrepancies before proceeding with any work within the affected areas or not.

F. Shop Drawings: Shop drawings, manufacturer's literature, samples, color chips, schedules, catalogs, certificates, guarantees, bonds, and other items requiring the Director's review or acceptance shall be submitted through the Contractor as part of the control of the work. The

Contractor shall prepare a schedule of submittals for review and approval by the Director prior to commencement of construction in accordance with Paragraph 1.05 N.

G. Laying out Work:
   1. Bench Marks and Reference Points: Contractor shall designate a qualified surveyor to:
      a. Establish bench marks and other reference points; and

      b. Establish alignments, azimuths and distances; and

      c. Layout levels, grades, slopes and elevations for all work

   2. The Contractor shall keep layouts intact throughout the work of the project. The Contractor shall correctly locate all grades, lines and levels as required for the construction and completion of the Project; be solely responsible for the accuracy and correctness of all lines, levels and grades; and for establishing the location of buried utility lines at the site. Where work is required to comply with ADAAG, the Contractor shall employ all means at his disposal to ensure finished product is in full compliance.

   3. Minor changes: Minor changes necessary to adjust conditions at the site to conform to the Contract Documents or vice versa will not be grounds for the Contractor to claim additional charges or additional time.

   4. Measurements: Before ordering any material, or doing any work, each Contractor shall verify all measurements and shall be responsible for the correctness of same. No extra charge or compensation will be allowed because of differences in actual dimensions and measurements indicated on the drawings.

H. Protection: The Contractor shall be responsible for the protection and safeguarding of all new work until after final inspection and acceptance by the Director in accordance with Paragraph 1.05.H.

I. Coordination: Provide project interface and coordination as required to properly and accurately bring together the several parts, components, systems, and assemblies and as required to complete the Work and the Project pursuant to the General Conditions and Special Provisions. All construction work and improvements shall be in accordance with the Americans with Disability Act Guidelines (ADAAG), including providing temporary routes, features, equipment, services, etc. to be accessible during construction.

PART 2 – PRODUCTS

2.01 ASBESTOS PROHIBITION

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

2.02 QUALITY

A. Materials, equipment, furnishings, fixtures, hereinafter specified in the various divisions and sections of the specifications shall be new, best, commercial grade, class, kind, and type available.

2.03 HANDLING

A. The Contractor shall supervise job site delivery and handling, and assign storage space for materials, equipment, furnishings, and fixtures of all trades. Contractor is responsible for delivery, unloading, unpacking, handling, storage, distribution, installation, and protection of materials at the job site until acceptance by the Director.

PART 3 – EXECUTION

3.01 ENVIRONMENTAL

A. Contractor shall oversee that proper environmental conditions are met regarding temperature, humidity, lighting, and ventilation.

3.02 PREPARATION AND PROTECTION

A. Before starting work on previously erected construction, Contractor shall make a thorough and complete investigation of such recipient surfaces and determine their suitability to receive required additional construction and finishes. Contractor, at his own expense, shall make whatever repairs and conditioning required to properly prepare such surfaces. Contractor shall coordinate the work to provide suitable surfaces to receive subsequent work.

B. Commencement of work by any trade will be construed as acceptance of existing conditions and surfaces being satisfactory for application of subsequent work. Contractor shall be responsible for finished results and assumption of warranty obligations under the contract.

C. Contractor shall protect existing work in a manner to prevent any damage. Take positive measures to prevent breakage of glass and damage to all finishes.

D. Contractor shall exercise all required precautions necessary to protect all buildings and other construction on property adjacent to that of the work under the contract.

E. Throughout entire construction period Contractor shall provide adequate measures to fully protect all property, staff, and the public.

3.03 CLEAN UP

A. Rubbish and debris resulting from work of the various divisions and sections of the specifications shall be collected daily and disposed of by the Contractor in compliance with appropriate government laws. Contractor(s) or trade(s) specifically involved shall remove materials, debris, and rubbish from the site daily and dispose of at legal disposal areas away from the premises. Permission to provide on-site trash containers may be granted by the Director and shall be placed where directed by the Director.

END OF SECTION

SECTION 01015 – ADMINISTRATIVE PROVISIONS

PART 1 – GENERAL

1.01 GENERAL CONDITIONS

A. The General Requirements and Covenants and the Special Provisions preceding these specifications shall govern all work specified hereinafter in all Divisions and Sections

1.02 WORK SEQUENCE

A. Construct work in stages to accommodate the Director's occupancy requirements during the construction period. Work required of this contract to be performed in pedestrian and vehicular traffic areas, or interfering with pedestrian and vehicular traffic flow shall be scheduled with the Director to minimize disruption. The Contractor shall confine all work, equipment, materials, and personnel as much as possible within the Contract Zone Limits.

B. The Contractor shall contact the Director and provide at least five (5) consecutive working days notice prior to starting any work.

C. The sequence of work shall be based on the approved construction schedule. No work may begin until the schedule of operations has been reviewed and an adequate response has been provided per Section 01300 – Submittal Procedure.

1.03 CONTRACTOR'S USE OF PREMISES

A. Limit the use of premises for work and construction operations to allow for Director occupancy. Limit access to the site as directed by the Director.

B. The Contractor shall conduct operations with minimum interference to the building facilities, streets, driveways, etc. and shall confine all work, equipment, materials, and personnel as much as possible to the work area indicated. The Contractor will schedule all work that involves excessive noise, dust, dirt, or any other detrimental aspect of this work in order that there will be minimum disruption to normal facility operations and the normal flow of traffic.

C. If required by the Director, the Contractor, his/her employees, or subcontractors shall follow School procedural background check protocols.

1.04 CONTRACT ZONE LIMITS

A. The Contract Zone Limits as provided elsewhere in these specifications indicate only in general the limits of the work involved. The Contractor however, is required to perform any and all necessary and incidental work which may fall outside of these demarcation lines. The Contractor is also expected to confine all of his construction activities within the Contract Zone Limits and not to spread his equipment and materials indiscriminately about the area.

1.05 OWNER OCCUPANCY

A. The premises will remain occupied during the entire construction period for the conduct of normal operations. Coordinate with the Director to minimize any conflict. Any interruptions or interference caused by the construction activities, which hampers normal operations, shall be halted and rescheduled to the satisfaction of the Director at no additional cost to the Owner.

1.06 PERMITS, NOISE, ETC.

A. The Contractor shall procure and pay for all necessary permits or certificates that may be required in connection with this project. The Contractor is required to comply with the conditions stipulated in the application and approval of all necessary permits.

B. The following permits have not yet been obtained and are anticipated to be required for this project. This list is intended to serve as a guide and does not preclude the Contractor from investigating and obtaining all permits and approvals that may be required by any authority having jurisdiction over the work. Any associated fees must be paid by the Contractor.
   1. Grading Permit.

1.07 PROJECT MEETINGS

A. The Director will schedule and administer project meetings throughout the progress of the work, including pre-construction and post-construction meetings. The Director will make physical arrangements, prepare agenda, and preside over all meetings. Those in attendance shall include; job superintendent, major subcontractors and suppliers, Architect/Engineer, and other persons relevant to the meeting agenda.

PART 2 – NOT USED

PART 3 – NOT USED

END OF SECTION

SECTION 01300 – SUBMITTAL PROCEDURE

PART 1 – GENERAL

1.01 GENERAL CONDITIONS

A. The General Requirements and Covenants and the Special Provisions preceding these specifications shall govern all work specified hereinafter in all Divisions and Sections

1.02 GENERAL REQUIREMENTS

A. Where required by the plans and specifications, the Contractor shall submit descriptive information to ascertain whether the Contractor's proposed materials, equipment or methods of work are in general conformance to the design concept and in compliance with the drawings and specifications. The information to be submitted shall consist of drawings, specifications, descriptive data, certificates, samples, test results and such other information, all as specifically required in the specifications.

1.03 SUBMITTALS

A. The following is a list of Sections having submittal requirements and the phase(s) during which these submittals are required. This list does not relieve the Contractor from providing the comprehensive list required by Section 01010 – SUMMARY OF WORK. Any discrepancies found between this list and the submittal requirements of the remaining specification sections must be brought to the attention of the Director for clarification. Unless specifically permitted by the Director in writing, the Contractor is responsible for all submittals required by these specifications, whether listed here or not.

1. Section 01010 – SUMMARY OF WORK
   a. Pre-Construction Submittals
   b. Record Drawings (as-builts)
2. Section 01310 – CONSTRUCTION SCHEDULE
   a. Construction Schedule.
   b. Construction Schedule during construction. Submittal to be on a monthly basis for duration of construction.
3. Section 01500 – CONSTRUCTION FACILITIES
   a. Shop Drawings of Barricades.
4. Section 01567 – POLLITION CONTROL
   a. Site Specific BMP Plan.
   b. Manufacturer's products
5. Section 01700 – CONTRACT CLOSEOUT
   a. Closeout Procedures.
6. Section 02050 – DEMOLITION REMOVAL AND RELOCATION
   a. Plan of Demolition, removal, and relocation.
   b. Documentation of existing Conditions.

c. Toning Survey of underground utilities

7. Section 02110 – CLEARING AND GRUBBING
   a. Site Specific BMP Plan.

   b. Affidavit of rodent investigation.

8. Section 02300 – EARTHWORK
   a. Compaction implication Plan.

   b. Manufacturer's product

   c. Sequence of Work

   d. Compaction test results

9. Section 02362 – SOIL TREATMENT FOR VEGETATION CONTROL
   a. Manufacturer's product data

10. Section 02485 – LAWNS AND GRASSES
    a. Manufacturer's product data

    b. Written request for approval (after installation)

11. Section 02513 – ASPHALTIC CONCRETE PAVING
    a. Manufacturer's product data and Job Mix Formula

    b. Compaction test

12. Section 02600 – PIPED UTILITY MATERIALS AND METHODS
    a. Manufacturer's product data

    b. Waterline pressure test and chlorination test results

    c. Product Affidavits

13. Section 02770 – SITE CONCRETE
    a. Concrete Mix Designs

    b. Reinforcing

    c. Reinforcing shop drawings

    d. Manufacturer's products

    e. Materials Certificates

14. Section 02820 – CHAIN LINK FENCE AND GATE
    a. Product Data

b. Shop Drawings

1.04 BIDDERS SPECIAL RESPONSIBILITY FOR COORDINATING CONTRACTUAL WORK AND SUBMITTALS:

A. The Contractor shall be responsible for the coordination of all contractual work and submittals.

B. The Contractor shall have a “stamp” made up in the following format:

(Contractor's Name)

PROJECT: _____

_____

JOB NO. _____

THIS SUBMITTAL HAS BEEN CHECKED BY THIS 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 _____
SUBCONTRACTOR _____
SUPPLIER _____
MANUFACTURER _____

CERTIFIED BY: _____

C. This “stamp”, with fields completed, should appear on the title sheet of each shop drawing, on a cover sheet of submittals in an 8-1/2" x 11" format, or on one face of a cardstock tag (min. 3" x 6") tied to each sample. 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 Director for his receipt, review, and log stamp and for any comments that relate to the sample.

D. All submittals, including but not limited to manufacturer’s data, MSDS, certificates, and shop drawings, listed in the contract documents, shall be required and shall be first reviewed and certified by the Contractor, then reviewed by the Director, prior to any ordering of materials and equipment. Submittals that have not been reviewed by the Contractor shall be returned for review.

PART 2 – CONTRACTOR’S RESPONSIBILITIES

2.01 GENERAL

A. All submittals required by these specifications are required to be submitted by the Contractor in full, complete form, no exceptions. The Contractor shall request in writing to the Director to omit those specific submittals he feels are not required or not applicable to the project. Unless so granted by the Director, all submittals are required as a prerequisite to project acceptance.

B. Contractor shall be responsible for the accuracy and completeness of the information contained in each submittal and shall assure that the material, equipment or method of work shall be as described in the submittal. Submittals shall contain all required information, including satisfactory identification of items, units, and assemblies in relation to the contract drawings and specifications. The Contractor shall verify that the material and equipment described in each submittal conform to the requirements of the specifications and drawings. Unless otherwise reviewed by the Director, submittals shall be made only by the Contractor, who shall indicate by a signed stamp on the submittals, that it (the Contractor) has checked the submittals, and that the work shown conforms to contract requirements and has been checked for dimensions and relationship with work of all other trades involved. If the information shows deviations from the specifications or drawings, the Contractor, by statement in writing accompanying the information shall identify the deviations and state the reason(s) therefore. The Contractor shall insure that there is no conflict with other submittals and shall notify the Director in each case where its submittal may affect the work of another contractor or the Director. The Contractor shall insure coordination of submittals among the related crafts and Subcontractors.

C. The Contractor may authorize in writing a material or equipment supplier to deal directly Director with regard to a submittal. The Contractor, however, shall be responsible for the accuracy and completeness of information contained in all submittals.

D. All submittals shall be made no later than necessary to allow for the Director’s review, to procure the item, and to avoid schedule delays as established in the Contractor's construction schedule.

2.02 PERFORMANCE (CONSTRUCTION) SCHEDULE

A. The Contractor shall provide a construction schedule for scheduling and coordinating the work within the contract time as specified in Section 01310 – CONSTRUCTION SCHEDULE. The construction schedule shall be itemized and be in Gantt chart format, and shall be submitted to the Director for approval no later than 30 days after the Contract Award Date or prior to the issuance

of Notice to Proceed, whichever is earlier. Contract time extensions shall be incorporated into updated schedules, reflecting their effect at the time of occurrence. Failure of the Contractor to comply with these requirements for submittal of the performance schedule and reports shall be cause for delay in review of progress payments by the Director. Project status review and update shall be provided each month and submitted with progress payment requests.

2.03 SUBMITTAL SCHEDULE

A. The Contractor shall provide a submittal schedule as specified in Section 01010– SUMMARY OF WORK.

2.04 RECORD DRAWINGS

A. Record drawings shall be submitted by the Contractor in conformance with Section 01010 – SUMMARY OF WORK and Section 01700 – CONTRACT CLOSEOUT.

2.05 SAMPLES AND TESTING

A. Where required in the Specifications, and as determined necessary by the Director, samples of materials, appliances, and fittings to be used or offered for use in connection with the work shall be submitted to the Director at the Contractor's expense, with information as to their sources, with all cartage charges prepaid, and in such quantities and sizes as may be required for proper examination to establish the quality or equality thereof, as applicable.

B. All samples shall be submitted in ample time to enable the Director to make any examinations necessary, without delay to the work. The Contractor will be held responsible for any loss of time due to his neglect or failure to deliver the required samples to the Director, as specified.

C. Samples also shall be taken during the course of the work, as required elsewhere in these specifications and/or as required by the Director.

D. Laboratory tests and examinations that the Director elects to make in its own laboratory will be made at no cost to the Contractor, except that, if a sample of any material or equipment proposed for use by the Contractor fails to meet the Specifications, the cost of testing subsequent samples shall be borne by the Contractor.

E. All tests required by the specifications to be performed by an independent laboratory shall be made at the sole expense of the Contractor.

F. Materials used in the work shall conform to the submitted samples and test certificates as approved by the Director.

PART 3 – TRANSMITTAL PROCEDURE

3.01 GENERAL

A. Unless otherwise noted, excepting for physical samples and documents requiring wet signatures, all submittals shall be provided to the Director in electronic (.pdf) format. Submittals shall be emailed to brain.funai@epinc.pro & mark.grant@epinc.pro . The subject of all e-mailed submittals shall begin with the project title, “VSAS – Phase 1 Site Improvements”. Submittals shall be made in sufficient time to allow the Director not less than twenty (20) regular working days to provide a review and response.

B. A unique number, sequentially assigned, shall be noted on the transmittal form accompanying each item submitted. Original submittal numbers shall have the following format: "XXX"; where "XXX" is the sequential number assigned by the Contractor.

C. Resubmittals shall have the following format: "XXX-Y"; where "XXX" is the originally assigned submittal number and "Y" is a sequential letter assigned for resubmittals, i.e., A, B, or C being the 1st, 2nd, and 3rd resubmittals, respectively. Submittal 25B, for example, is the second resubmittal of submittal 25.
   1. Resubmittals must be made as a complete package with any revisions from the previous submittal indicated on the cover sheet.

3.02 DEVIATION FROM CONTRACT

A. If the Contractor proposes to provide a material which does not conform to the specifications and drawings, it shall indicate so under "deviations" on the submittal transmittal form accompanying the submittal copies. The Contractor shall prepare its reason for the proposed change, including cost and time differential. All deviations shall be reviewed and approved by the Director on an individual basis.

PART 4 – REVIEW PROCEDURE

4.01 SUBMITTALS

A. When the contract requires a submittal, the Contractor shall submit the specified information as follows to the Director for review:
   1. Unless otherwise noted, excepting for physical samples and documents requiring wet signatures, all submittals shall be provided to the Director in electronic (.pdf) format. Submittals shall be emailed to brain.funai@epinc.pro & mark.grant@epinc.pro . The subject of all e-mailed submittals shall begin with the project title. Submittals shall be made in sufficient time to allow the Director not less than twenty (20) regular working days to provide a review and response.

   2. Physical samples and documents requiring wet signatures shall be submitted in triplicate with appropriate identification as indicated previously in this section.

4.02 RESPONSES

A. Responses to electronic submittals will be provided as follows:
   1. Unless otherwise specified, upon receipt of the submittal by the Director, the submittal shall be reviewed and the Director shall return a marked up copy of the submittal in electronic (.pdf) format. The Director's response will be addressed to the email from which the submittal was originated unless the Contractor requests otherwise. Unless otherwise indicated, the Contractor shall allow for twenty (20) working days for review and return of all submittals. Submittals requiring shorter review times may be requested by the Contractor, however, no guarantee is made that these requests will be accommodated.

B. Responses to physical submittals will be provided as follows:
   1. Unless otherwise specified, upon receipt of the submittal by the Director, the submittal shall be reviewed and the Director shall return two (2) copies of the marked-up reproducible original. The reproduction original will be retained by the Director. The Contractor may submit additional sets of the submittal should he require additional sets

for distribution to his Subcontractors, suppliers, or for other purposes. Unless otherwise indicated, the Contractor shall allow for twenty (20) working days for review and return of all submittals. Submittals requiring shorter review times may be requested by the Contractor, however, no guarantee is made that these requests will be accommodated.

C. Returned submittals shall indicate one of the following actions:
   1. No Exceptions Taken
      a. This response indicates that the material, or work method is in general conformance with the design concept and complies with the drawings and specifications. In this event the Contractor may begin to implement the work method or incorporate the material or equipment covered by the submittal.

   2. Reviewed – See Remarks
      a. This response indicates limited corrections are required. The Contractor may begin implementing the work method or incorporating the material and equipment covered by the submittal in accordance with the noted corrections. A corrected copy of the complete submittal shall be provided with the post-construction submittal package.

   3. Amend & Submit
      a. This response indicates that the submittal is insufficient or contains incorrect data. Copies will be marked accordingly and will be required to be resubmitted. Except at his own risk, the Contractor shall not undertake work covered by this submittal.

      b. The Contractor shall resubmit the complete, corrected package until the submittal is returned and marked either "No Exceptions Taken" or "Reviewed – See Remarks".

   4. Rejected
      a. This response indicates that the material, equipment, or work method is not in general conformance with the design concept or incompliance with the drawings and specifications. Except at its own risk, the Contractor shall not undertake work covered by such submittals.

      b. Submittals with deviations that have not been identified clearly may be rejected.

      c. Submittals which are incomplete may also be rejected.

      d. The Contractor shall resubmit the complete, corrected package until the submittal is returned and marked either "No Exceptions Taken" or "Reviewed – See Remarks".

PART 5 – EFFECT OF REVIEW OF CONTRACTOR'S SUBMITTALS

5.01 GENERAL

A. The Director's review of drawings, methods of work, or information regarding materials or equipment the Contractor proposes to provide, shall not relieve the Contractor of its responsibility for deficiencies, omissions and errors therein and shall not be regarded as an assumption of risks or liability by Director, or by any officer, employee, consultant, or subcontractor thereof, and the

Contractor shall have no claim under the contract on account of the failure, or partial failure, of the method of work, material, or equipment so reviewed. A mark of "NO EXCEPTIONS TAKEN" or "REVIEWED – SEE REMARKS" shall mean that the Director has no objection to the Contractor, upon its own responsibility, using the plan or method of work proposed, or providing the material or equipment proposed.

END OF SECTION

SECTION 01310 – CONSTRUCTION SCHEDULE

PART 1 – GENERAL

1.01 GENERAL CONDITIONS

A. The General Requirements and Covenants and the Special Provisions preceding these specifications shall govern all work specified hereinafter in all Divisions and Sections

1.02 SCOPE

A. This section specifies the procedures for preparing and revising the cost-loaded construction schedule used for planning and managing construction activities. The schedule provides a basis for determining the progress status of the project relative to the completion time, specific dates, and for determining the acceptability of the Contractor's progress payment estimates.

1.03 DESCRIPTION

A. The Contractor shall prepare a time scale network schedule in Gantt chart format using the critical path method. A general guide for preparing such a schedule is contained in "The Use of CPM in Construction, a Manual for Contractors," published by the Associated General Contractors of America.

B. The schedule shall depict all significant construction activities and all items of work listed in the breakdown of contract prices submitted by the Contractor. Assigned values for each part of the work shall be indicated. The dependencies between activities shall be indicated so that it may be established what effect the progress of any one activity has on the schedule.

C. Completion time and all specific dates and sequencing requirements shall be shown on the schedule. Activities making up the critical path shall be identified.

D. No activity on the schedule shall have duration longer than 21 days or assigned value greater than $100,000, except activities comprising only fabrication and delivery may extend for more than 21 days. Activities which exceed these limits shall be divided into more detailed components. The scheduled duration of each activity shall be based on the work being performed during the normal 40-hour work week with allowances made for legal holidays and normal weather conditions.

1.04 SUBMITTALS

A. Pre-Construction Submittals

1. The Contractor must submit a complete construction schedule no later than 30 days after the Contract Award Date or prior to issuance of the Notice to Proceed, whichever is earlier.
    a. Within one week of receiving the construction schedule, the Director will review and return the schedule to the Contractor approved or with comments.
    b. If comments are issued, the Contractor will have one week to revise and resubmit the schedule.

B. Submittals During Construction

1. The Contractor must submit an updated construction schedule on a monthly basis throughout the duration of construction.

1.05 CONTINUITY OF SERVICES

A. All work shall be coordinated with the Director and sequenced such that the facility may remain open during the work.

B. Any unavoidable closures, whenever possible, must be scheduled for weekends, or hours when the facility is typically closed for business.

C. If closures must occur that will interfere with facility operations, these closures must be scheduled with the Director a minimum of two weeks in advance and accepted prior to starting that work.

PART 2 – NOT USED

PART 3 – NOT USED

END OF SECTION

SECTION 01400 – QUALITY CONTROL

PART 1 – GENERAL

1.01 GENERAL CONDITIONS

A. The General Requirements and Covenants and the Special Provisions preceding these specifications shall govern all work specified hereinafter in all Divisions and Sections

1.02 INSPECTIONS

A. It is the Contractor's responsibility to coordinate and schedule all necessary inspections with the authorities having jurisdiction.

B. Any remediation work required due to failed inspections or failure to schedule inspections shall be performed by the Contractor at no additional cost to the Owner.

C. The Director must be notified at least 24 hours prior to any scheduled inspection and must be notified of the results within 24 hours after those results are available.

1.03 APPLICABLE CODES AND STANDARDS

A. All work shall meet or exceed the requirements of the International Building Code (IBC), Uniform Plumbing Code (UPC), National Electrical Code (NEC), latest adopted editions and the applicable codes and ordinances having jurisdiction of the County, State, and Federal governments.

B. References in the specifications to "code" or to "building code" not otherwise identified shall mean the foregoing specified codes, together with the additions, changes, amendments, and interpretations adopted by the enforcing agency, and in effect on the date of these contract documents. Nothing on the drawings or in the specifications shall be interpreted as requiring or permitting work that is contrary to these rules, regulations, and codes. Any such discrepancies shall be brought to the attention of the Director immediately.

C. Where other codes or standards are referenced hereinafter in these specifications, the affected work shall meet or exceed the applicable requirements of such codes and standards. When latest edition of a standard is specified, it shall mean the latest edition in effect as of the date of these contract documents. When the documents are not dated, the date of execution of the agreement shall establish the date of the contract documents. In the event that during the construction period, codes or standards referenced are superseded by newly promulgated regulations, and conflict with the plans and specifications exist, such conflict shall be brought to the attention of the Director immediately.

D. The code, specification, or standard referred to shall have full force and effect as though printed in these specifications, except as modified in these specifications.

E. Where the drawings or specifications call for or describe materials, workmanship, or construction of a better quality, higher standard, or larger size than is required by said laws, codes, rules, and regulations, the provisions of the drawings and specifications shall take precedence over said laws, codes, rules, and regulations.

1.04 OTHER APPLICABLE LAWS AND REGULATIONS

A. All applicable Federal, State, and local laws, and the regulations of governing utility districts and the various other authorities having jurisdiction over the construction and completion of the

project shall apply to the contract throughout, and they shall be deemed to be included in the contract the same as though printed in the specifications.

1.05 REFERENCES

A. The contract documents contain references to various standard specifications, codes, practices, and requirements for materials, work quality, installation, inspections, and tests, which references are published and issued by the organizations, societies, and associations listed below by abbreviation and name. Such references are hereby made a part of the contract documents to the extent required.

B. The Specifications and Standards of the American Society for Testing and Materials (ASTM) and the American National Standards Institute (ANSI) are identified in the various sections by abbreviation and number only (not by title) and are not further identified.

C. When the effective date of a reference standard is provided or not provided, it shall be understood that the current edition or latest revision thereof and any amendments or supplements thereto in effect shall govern the work.

D. Reference standards are not furnished with the contract documents. The Contractor shall obtain copies of referenced standards direct from publication sources as needed for proper performance and completion of the work and provide and maintain referenced standards at the job site field office.

PART 2 – NOT USED

PART 3 – NOT USED

END OF SECTION

SECTION 01500 – CONSTRUCTION FACILITIES

PART 1 – GENERAL

1.01 GENERAL CONDITIONS

A. The General Requirements and Covenants and the Special Provisions preceding these specifications shall govern all work specified hereinafter in all Divisions and Sections

1.02 GENERAL REQUIREMENTS

A. Consult with the Director, review site conditions and factors which affect construction procedures and construction aids, including adjacent properties and public facilities, which may be affected by execution of the work.

B. Relocate construction aids as required by the progress of construction, by storage or work requirements, and to accommodate legitimate requirements of the Director and other contractors employed at the site.

1.03 SUBMITTALS

A. Submit the following items for review. Work may not begin until these submittals have been reviewed and an adequate response has been provided per Section 01300 – Submittal Procedure.
   1. Shop drawings, including a layout and elevation views for the proposed safety barricades.

1.04 UTILITIES

A. The Contractor is responsible to coordinate all necessary utility services with the appropriate utility companies.
   1. The Contractor is responsible for all fees associated with temporary utility services used with the project.

B. The Contractor shall provide portable sanitary facilities for all workers and subcontractors at no additional expense to the Owner.

C. Locations of temporary utility lines and facilities must be coordinated with the Director. Locations should minimize interference with the Director's daily operations.

1.05 CONSTRUCTION AIDS

A. Provide construction aids and equipment required by construction personnel and to facilitate execution of the work; including but not limited to scaffolds, ladders, runways, platforms, railings, hoists, cranes, chutes, and other such facilities and equipment.

B. Any lighting used for night work must be in compliance with all applicable regulations and regulating bodies, including but not limited to the Hawaii County Code and the U.S. Fish and Wildlife Service.

1.06 TEMPORARY PROTECTION

A. The Contractor shall erect and maintain a temporary orange fence construction safety barricade encompassing the project area to protect the occupants and the public. Unless otherwise instructed by the Director, the barricade shall be maintained a minimum of five (5) feet outside the project area. The barricade shall remain in place until approval is given by the Director for its removal.

B. Any damage to the surrounding buildings or their contents from failure to provide the protection mentioned in the above paragraphs shall be repaired by the Contractor to the satisfaction of the Director at no cost to the Owner.

1.07 REMOVAL

A. Completely remove temporary materials, equipment and service at project completion. Clean and repair damage caused by installation or use of temporary facilities. Remove foundations and underground installations for construction aids. Restore existing facilities used for temporary purposes to the specified or to original conditions to the satisfaction of the Director.

PART 2 – NOT USED

PART 3 – NOT USED

END OF SECTION

SECTION 01567 – POLLUTION CONTROL

PART 1 – GENERAL

1.01 GENERAL CONDITIONS

A. The General Requirements and Covenants and the Special Provisions preceding these specifications shall govern all work specified hereinafter in all Divisions and Sections

1.02 SUBMITTALS

A. Submit the following items for review. Work may not begin until these submittals have been reviewed and an adequate response has been provided per Section 01300 – Submittal Procedure.
   1. Site Specific BMP Plan
      a. The Contractor must submit a BMP plan developed specifically for this project including but not limited to layout drawings and descriptions of work processes.

      b. The site specific BMP plan must include any necessary phasing and shall refer to the overall project schedule.

   2. Manufacturer's product data, including product specifications, MSDS, installation and maintenance instructions, and any applicable warranty information.
      a. Product specification sheets must be sufficient to determine compliance with the requirements of the plans and these specifications.

1.03 GENERAL REQUIREMENTS

A. Rubbish Disposal
   1. Wherever possible, construction waste should be recycled instead of being sent to the landfill. In addition to a standard waste disposal bin, the Contractor must provide recycling bins at the jobsite for the collection of recyclable waste.
      a. Common recyclable wastes include: scrap metals, scrap plastics, plastic packaging, and cardboard boxes.

   2. No burning of debris and/or waste materials shall be permitted on the project site.

   3. No burying of debris and/or waste materials, except for materials that are specifically indicated elsewhere in these specifications as suitable for backfill, shall be permitted on the project site.

   4. All usable debris and waste material shall be hauled away to an appropriate off-site waste dump area. During loading operations, debris and waste material shall be watered down to allay dust.

   5. No dry sweeping shall be permitted in cleaning rubbish and fines, which can become airborne from roof or other areas. Vacuuming, wet mopping or wet/damp sweeping is permissible.

   6. Clean-up shall include the collection of all waste paper and wrapping materials, cans, bottles, construction waste material and other objectionable materials, and their removal as required. Frequency of clean-up shall coincide with rubbish-generating activities; work area shall be free of non-containerized debris and waste material at the end of each work day.

B. Dust

1. The Contractor shall prevent dust from becoming airborne at all times including non-working hours, weekends and holidays in conformance with State of Hawai‘i, Department of Health, Administrative Rules, Title 11, Chapter 60.1 – Air Pollution Control.

2. The method of dust control and costs shall be the responsibility of the Contractor. Methods of dust control shall include the use of water or chemicals approved for such use over surfaces that may create airborne dust.
   a. Dust control water shall be kept to a minimum so that no runoff is generated.

C. Noise

1. Noise shall be kept within acceptable levels at all times, in conformance with State of Hawai‘i, Department of Health, Administrative Rules, Title 11, Chapter 46 – Community Noise Control. The Contractor shall obtain and pay for the Community Noise Permit from the State of Hawai‘i, Department of Health when construction related equipment or activities emit noise at levels exceeding the specified limits.

2. All internal combustion engine-powered equipment shall have mufflers to minimize noise and shall be properly maintained to reduce noise to within acceptable levels.

3. Starting-up of construction equipment meeting allowable noise limits shall not be done prior to 7:00 AM without prior approval of the Director. Equipment exceeding allowable noise levels shall not be started-up prior to 7:30 AM.

D. Best Management Practices (BMPs)

1. Wherever construction and construction related vehicles leave the site and enter surrounding paved streets or public rights-of-ways, the Contractor shall prevent any materials from being carried onto hard surfaces. All materials deposited on paved roads, streets, parking lots, sidewalks or walkways shall be immediately removed and cleaned to the satisfaction of the Director.
   a. Where used, construction exit washing water must be directed to an impermeable basin sized to contain 1.5 times the anticipated volume of wash water. Water shall be allowed to evaporate and the remaining sludge must be disposed of at an approved location.

2. Wastewater shall not be discharged into existing streams, waterways or drainage systems such as gutters and catch basins unless treated to comply with the State of Hawai‘i, Department of Health water pollution regulations.

3. Trucks hauling debris shall be covered as required by PUC Regulations. Trucks hauling fine materials or materials that may generate dust shall be covered, without exception.

4. No dumping of waste concrete will be permitted at the job-site unless otherwise permitted in the Special Provisions.

5. Except for rinsing of hopper and delivery chute, and for wheel washing where required, concrete trucks shall not be cleaned on the job site. Rinse water shall not be allowed to drain into the drainage system.

a. Unless otherwise permitted, concrete truck wash water must be directed to an impermeable basin sized to contain 1.5 times the anticipated volume of wash water. Water shall be allowed to evaporate and the remaining sludge must be disposed of at an approved location.

6. Hydrotesting waters must be captured and treated using approved dechlorination measures before being infiltrated onsite.

7. Sawcutting slurry must be wet vacuumed simultaneously with or immediately after the sawcutting operations and the collected slurry must be disposed of at an approved location.

8. No fuel, oil, or hydraulic fluid shall be stored onsite. Except in an emergency, such as mechanical failure, all vehicle fueling and maintenance shall be done in a designated area. A temporary berm shall be constructed around the area when runoff can cause a problem.

9. Emulsified asphalt, prime coat, and/or tack coat must be applied on dry sunny days to eliminate the possibility of discharge of emulsifiers during paving. In the event that this is not possible, discharges must be directed to an impermeable basin. Water shall be allowed to evaporate and the remaining sludge must be disposed of at an approved location.

10. Discharges associated with painting and paint wash solvent/water must be directed to an impermeable basin. Water shall be allowed to evaporate and the remaining sludge must be disposed of at an approved location.

11. Discharges associated with industrial chemicals, fertilizers, and/or pesticides must be directed to an impermeable basin. Water shall be allowed to evaporate and the remaining sludge must be disposed of at an approved location.

12. Where deemed necessary by the Director the Contractor shall implement additional BMPs to prevent pollution from leaving the construction site at no additional cost to the Owner, whether indicated on the plans or not.

E. Suspension of Work

1. Violations of any of the above requirements or any other pollution control requirements which may be specified in the Technical Specifications herein shall be cause for suspension of the work creating such violation. No additional compensation shall be due the Contractor for remedial measures to correct the offense. Also, no extension of time will be granted for delays caused by such suspension.

2. If no corrective action is taken by the Contractor within 72 hours after suspension is ordered by the Director, the Director reserves the right to take whatever action is necessary to correct the situation and to deduct all costs incurred by the Owner in taking such action from monies due the Contractor.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Where specific products are mentioned below, the intent is to specify a level of quality. Acceptable alternatives must meet or exceed those specifications of the listed products.

B. Silt Fence
   1. Fabric used for silt fence shall be Geotex 2130 as manufactured by Propex or an approved equal.

C. Chemicals for Dust Control
   1. The use of chemicals for dust control shall be prohibited Except where the Contractor can meet the following criteria:
      a. The Contractor must receive specific written consent from the Director.

      b. The Contractor must demonstrate compliance with the requirements of the Authority Having Jurisdiction.

D. Sediment Filtration Waddle
   1. Sediment filtration waddles shall be a compost filled waddle, SiltSoxx as manufactured by Filtrexx or approved equal.

E. Sandbags
   1. Sandbags shall meet the specifications of CalTrans SC-8.

   2. Sandbag fill shall be crushed basalt rock, graded to #4 sand.

F. Drain Inlet Protection
   1. Drain inlet protection shall be a geotextile fabric unit specifically designed for the application, Dandy Sack as manufactured by Dandy Products or approved equal.

PART 3 – EXECUTION

3.01 INSTALLATION

A. All products shall be installed according to the manufacturer's requirements and recommendations. If there is conflict between the manufacturer's requirements and the instructions provided in the plans, this must be brought to the immediate attention of the Director. In such cases the Director may choose to revise the plans to ensure any warranties offered by the product manufacturer will remain intact.

3.02 MAINTENANCE

A. Pollution control measures must remain in place as indicated and as required throughout the duration of the project. If pollution control structures are found to have failed or been damaged, the Contractor must repair or replace those structures immediately, prior to proceeding with any other work.

END OF SECTION

SECTION 01700 – CONTRACT CLOSEOUT

PART 1 – GENERAL

1.01 GENERAL CONDITIONS

A. The General Requirements and Covenants and the Special Provisions preceding these specifications shall govern all work specified hereinafter in all Divisions and Sections

1.02 CLOSEOUT PROCEDURES

A. When work has reached final completion, submit written notification that the contract documents have been reviewed, the work has been examined, and that the work is complete in accordance with contract documents and ready for the Director's review and acceptance.

B. After the above notification and unless otherwise directed by the Director, the following events shall occur in sequence:
   1. Pre-Final Inspection

   2. Final Inspection

   3. Execution of Submittals
      a. Letter of release from the surety company

      b. Submittals as specified in any section of these specifications and the conditions of the contract

      c. Final invoice, construction progress report, and statement of contract time.

      d. Contractor shall refer to bid advertisement for additional required documents that may be requested.

   4. Submittals shall be made in accordance with Section 01300 – Submittal Procedure.

   5. Any final closeout contractual documents required by Owner.

1.03 PRE-FINAL INSPECTION

A. The pre-final inspection at the jobsite will be held after written notice as specified above is received by the Director.

B. The Contractor shall have a copy of the "as-built" record drawings available for reference during the pre-final inspection.

C. During the inspection, any work determined by the Director to be incomplete, damaged, and/or not in accordance with the contract documents shall be recorded in a punch list.

D. Deficient work, indicated in the Director's punch list shall be completed, repaired, and/or corrected to the satisfaction of the Director and at no additional cost to the Owner.

E. All punch list work shall be completed within ten (10) consecutive working days from the pre-final inspection date or prior to the contract completion date indicated in the Notice to Proceed, whichever is later.

F. All punch list work must be included in the final "as-built" record drawings.

1.04 FINAL INSPECTION

A. Final inspection will be called after written notice is received by the Director.

B. If any punch list work is found incomplete at the time of final inspection and the reasons for delay are not acceptable to the Director, the liquidated damages stipulated in the Special Provisions Section will take effect the day after the contract completion date.

1.05 WARRANTIES

A. Provide original and electronic copies of all warranties. All warranties shall be in effect from the date of project acceptance for the duration specified.

1.06 FINAL CLEANING

A. At the completion of the project, prior to acceptance and prior to the final inspection, thoroughly clean the job site, buildings and work areas. Areas requiring cleaning shall be limited to construction areas, areas used, traversed or soiled by and attributed to construction operations and as indicated herein after. Vacuum clean where appropriate and remove grease, adhesive, dust, dirt, stains, fingerprints, labels, and other foreign materials from sight-exposed interior and exterior surfaces. Use commercial cleaning compounds where necessary. Clean and leave in like-new condition all surfaces not specifically mentioned above.

B. Follow the recommendations of the manufacturers of the materials and items to be cleaned for all cleaning, polishing, and treatment such as waxing and sealing.

C. Also prior to final inspection, clean the site and put it into a neat, acceptable condition. Hose down and scrub where necessary all new pavement and walks, and all existing pavement and walks dirtied as a result of the work. Contractor shall conduct an inspection of sight-exposed interior and exterior surfaces, and all work areas, to verify that the entire work is clean and ready for final inspection.

PART 2 – NOT USED

PART 3 – NOT USED

END OF SECTION

SECTION 02050 – DEMOLITION REMOVAL AND RELOCATION

PART 1 – GENERAL

1.01 GENERAL CONDITIONS

A. The General Requirements and Covenants and the Special Provisions preceding these specifications shall govern all work specified hereinafter in all Divisions and Sections

1.02 GENERAL

A. Furnish all materials, labor and equipment necessary to demolish portions of existing chain link fence, remove or relocate existing volleyball/basketball equipment, removing and properly storing on-site pavilion structure, pavement, concrete sidewalks and all other existing improvements as shown on the drawings and as specified herein.

B. Condition at Site

1. Visit the site, examine and note all existing conditions and extent of work involved for completion of this work.

2. Accept obvious conditions of existing premises on date of bid opening as part of the work, even though they may not be indicated on the drawings or may vary there from.

3. Exercise every precaution to preserve and protect from damage all existing structures, plants, trees, walls, private and public utilities above and below ground, etc., that are to remain. Repair any damage to the satisfaction of the Director.

C. Permits, Notices, Etc.

1. Procure and pay for all necessary permits or certificates required in connection with this work.

2. Serve proper notices and consult with the Director regarding any temporary disconnections of electrical or other utility lines, which may interfere with this work. Properly disconnect all such lines where necessary before commencing with the work.

D. Existing Utility Lines

1. Existence of underground utility lines other than those shown is not definitely known. Should any be encountered or identified, immediately notify the Director and follow his/her direction as to procedure at no additional cost to the Owner.

2. The following areas must be surveyed for existing utilities using toning methods such as Ground Penetrating Radar (GPR), Electromagnetic Radio Frequency, or other methods to scan for underground utilities

a. Perimeter of proposed driveways both above ground and underground (buildings, drywells, etc.).

b. Alignment of proposed underground utilities

c. Perimeter of existing water tanks to remain.

3. A map showing the results of the toning survey must be submitted at contract closeout.

1.03 SUBMITTALS

A. Submit the following items for review. Work may not begin until these submittals have been reviewed and an adequate response has been provided per Section 01300 – Submittal Procedure.
   1. Submit a plan for demolition, removal, and relocation.
      a. Indicate schedule of operations.

      b. Indicate demolition procedures and equipment, highlighting operations which may be especially noisy or otherwise disruptive.

      c. Indicate items to be relocated.

      d. Indicate items and quantities to be recycled or reused.

      e. List all items and quantities that may be salvaged. The Director will respond with direction as to which items should be salvaged including how and where they should be stored.

   2. Documentation of Existing Conditions
      a. The Contractor may submit photo or video documentation of damage existing prior to construction work. Photos must be of an appropriate scale to identify the location and the condition of the subject.

B. A map showing the results of the toning survey must be submitted at contract closeout.

1.04 DEFINITIONS

A. Remove: Detach items from existing construction and legally dispose of them off-site, unless indicated to be removed and salvaged.

B. Remove and Salvage: Protect items, detach from existing construction, and store them as directed by the Director.

C. Relocate: Protect items, detach from existing construction, and reinstall as indicated per plan or as directed by the Director.

D. Protect in Place: Do not remove or damage this existing item.

1.05 WARRANTIES

A. Should the work covered under this section result in the voiding of any warranties in place for existing materials, equipment, or otherwise, the Contractor shall be responsible for the replacement and reinstallation of those items, with full warranties, at no additional cost to the Owner.

PART 2 – PRODUCTS

2.01 MATERIALS

A. 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.

PART 3 – EXECUTION

3.01 DEMOLITION, REMOVAL, AND RELOCATION

A. Execute all work in an orderly manner, with proper safety precautions observed at all times. Provide warning signs, lights, barricades, etc. as required or as directed by the Director.

B. Demolish all improvements indicated on the drawings completely. Do not remove from the site, portions of any structure or any improvements, either as a whole or substantially as a whole, for revise elsewhere. Break up and remove pavement in areas noted on the drawings.

C. Cut portions of pavements which are to remain to a depth of 1-1/2" with a power-driven abrasive saw. The saw cut shall be neat and true with no shattering or spalling of the portion of concrete to remain in place or to be joined with the new work.

D. Relocate existing improvements as indicated on the drawings.

E. Removed material having no salvage value, as determined by the Director, shall become the property of the Contractor and shall be removed from the premises at no cost to the Owner. Removed materials with salvage value, as determined by the Owner, shall be stored where directed.

F. Backfill all voids, trenches, holes, depressions and pits created by the removal of such miscellaneous improvements as required on the plans and in the pertinent sections of these specifications.

G. Provide adequate shoring, coverings, barriers, etc. as necessary to protect existing construction not scheduled to be demolished.

H. Provide new bypass lines and connections as required to maintain utility service to existing structures.
   1. Where bypass lines are required, the disruption of utility service must be scheduled with the Director not less than fifteen (15) days in advance and bypass lines must be installed such that any utilities shall not be disconnected for a period greater than 24 hours or as directed by the Director.

3.02 CONTRACT ZONE LIMITS

A. The Contract Zone Limits as provided elsewhere in these specifications indicate only in general, the limits of the work involved. The Contractor however, is required to perform any and all necessary and incidental work which may fall outside of these demarcation lines. The Contractor is also expected to confine all construction activities within the Contract Zone Limits and not to spread his equipment and materials indiscriminately about the area.

3.03 MAINTAINING TRAFFIC

A. Conduct operations and schedule work for minimum interference to streets, driveways, sidewalks, etc. Confine all work, equipment, materials and personnel, as much as possible, to the work area as indicated so as not to interfere with the normal function of adjacent streets.

B. Schedule all work involving excessive noise, dust, dirt or any other detrimental aspect of this work in order that there will be a minimum disruption of the normal facility operations.

C. The premises will remain occupied during the entire construction period for the conduct of normal operations. Coordinate with the Director to minimize any conflict. Any interruptions or interference caused by the construction activities, which hampers normal operations, shall be halted and rescheduled to the satisfaction of the Director at no additional cost to the Owner.

3.04 DUST CONTROL

A. Keep the work area thoroughly wetted down to prevent dirt and dust from rising but not so much as to create runoff. Provide all waterlines required for this purpose. Grade to fill all depressions or pits and to remove high spots after grubbing and removing all debris.

3.05 DEBRIS

A. Remove all debris existing or accumulated from this work completely and promptly from the site to the satisfaction of the Director. Burning of debris on the site is not permitted.

3.06 CLEANING

A. Keep the premises clean, neat and orderly at all times. Promptly remove all excess soil, debris, materials, apparatus, temporary toilets, lights, barriers, etc. from the site upon completion of this work or prior to the completion of work when directed by the Director.

END OF SECTION

SECTION 02110 – CLEARING AND GRUBBING

PART 1 – GENERAL

1.01 GENERAL CONDITIONS

A. The General Requirements and Covenants and the Special Provisions preceding these specifications shall govern all work specified hereinafter in all Divisions and Sections

1.02 GENERAL REQUIREMENTS

A. Furnish materials, labor and equipment necessary to clear or grub the entire construction area, accumulate and dispose of all debris and waste materials, and lay out the entire work, all as indicated on the drawings and specified herein.

1.03 SUBMITTALS

A. Submit the following items for review. Work may not begin until these submittals have been reviewed and an adequate response has been provided per Section 01300 – Submittal Procedure.
   1. Site specific BMP plan
      a. Site specific BMP plan should include a plan showing structural BMPs to be implemented for each phase of the project and a narrative description of how and when BMPs will be implemented with reference to the construction schedule.

B. Prior to the start of clearing and grubbing operations, submit an affidavit signed by the Contractor certifying that the site was investigated for the presence of rodents and if necessary, the appropriate eradication measures have been performed.

PART 2 – PRODUCTS

2.01 MATERIALS

A. 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.

B. No chemicals may be used for the purpose of clearing and grubbing.

PART 3 – EXECUTION

3.01 GENERAL

A. Prior to the start of clearing and grubbing operations, the Contractor must investigate the site for the presence of rodents and provide eradication measures as necessary per Hawaii Administrative Rules, Title 11, Chapter 26.

B. The Contractor shall clear the premises of all obstacles and obstructions, the removal of which will be necessary for the proper reception, construction, execution and completion of other work included in this contract.

C. Within the Contract Zone Limits and where indicated on the drawings, grub the entire ground surface of all grass, weeds, and plants down to at least 6” below the existing ground surface in areas to receive fill and 6” below rough or subgrade in excavated areas. Treat all roots remaining in the soil with weed killer, applied full strength in accordance with the manufacturer’s

instructions. All debris accumulated from the operation shall be completely removed from the premises by the Contractor.

1. Trees and other large plants having a trunk caliper of 1" or greater must be removed to a depth of at least 4' below the existing ground surface or below the root ball, whichever is shallower. Backfill void in accordance to Earthwork specifications.

D. No excavation or filling shall be undertaken until the area has been cleared and grubbed.

E. All clearing and grubbing shall be done in accordance with Section 10, STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, dated September 1986.

F. The Contractor shall protect from injury and damage all surrounding plants, walks, pavements, lawn, buildings, utilities, etc., and shall leave all in as good a condition as at present. Any damage to existing improvements shall be repaired or replaced by the Contractor to the satisfaction of the Director.

G. Green waste material (e.g. yard debris and tree trimmings, logs and stumps, untreated wood, etc.) shall be delivered to a composting or recycling facility for recycling. Confirm the types and condition of acceptable green waste material with the composting facility and pay all applicable charges.

3.02 CONTRACT ZONE LIMITS

A. The Contract Zone Limits shown on the drawings or described elsewhere in these specifications indicate only in general, the limits of the work involved. The Contractor, however, is required to perform any and all necessary and incidental work which may fall outside these demarcation lines. The Contractor is also expected to confine all of his construction activities within the Contract Zone Limits, except as provided hereinbefore, and not to spread his equipment indiscriminately about the area.

3.03 SITE SPECIFIC BMPS

A. All work done under this section must be in accordance with the approved, site specific BMP plan. The Contractor is required to check the implemented BMPs on a daily basis and after major storm events to verify that they are in good working order. If any BMPs are found to require repair, the contractor must stop all other work and repair the BMPs as necessary. Work may not resume until the repairs have been made and the BMPs are in place and fully functioning as intended.

END OF SECTION

SECTION 02300 – EARTHWORK

PART 1 – GENERAL

1.01 GENERAL CONDITIONS

A. Furnish materials, labor and equipment required to accomplish all excavation, filling, backfilling, grading, and compacting as indicated on the drawings.

B. The Geotechnical engineer/ geotechnician shall be present to observe site grading, proofrolling, fill and backfill placements and compaction and probing and grouting procedures on a full-time basis. All cost for their services shall be borne by the Contractor.

C. It shall be the responsibility of the Contractor to examine the site and determine for himself, the existing conditions.

D. Obvious conditions of the site existing on the date of the bid opening shall be accepted as part of the work, even though they may not be clearly indicated on the drawings and/or described herein or may vary therefrom.

E. All debris of any kind accumulated from clearing shall be disposed of from the site, and the whole area left clean. The Contractor shall be required to make all necessary arrangements relative to the proposed place of disposal.

F. The requirements of this section are applicable to all new construction areas and to future construction areas under this contract.

1.02 SUBMITTALS

A. Submit the following items for review. Work may not begin until these submittals have been reviewed and an adequate response has been provided per Section 01300 – Submittal Procedure.
   1. Manufacturer's product data
      a. When formulated by a Contractor-hired landscape professional, product data for top soil must be accompanied by a certifying cover letter.

   2. A plan for achieving all compaction requirements noted on the plans and these specifications.

   3. Sequence of work.

   4. Name qualified surveyor responsible for laying out baselines, establishing grades, and staking.

B. Compaction test results must be submitted as soon as they are available.

1.03 CODES, STANDARDS, REGULATIONS

A. Work shall be in accordance with the following sections of the County's "Standard Specifications for Public Works Construction" (SSPWC), dated September 1986 as revised, except as amended in the plans and specification herewith. (Paragraphs concerning Measurement and Payment in the Sections are not applicable to this project.)
   1. Clearing and Grubbing Section 10

2.	Trench Excavation and Backfill	Section 11
3.	Roadway Excavation	Section 12
4.	Structural Excavation and Backfill	Section 13
5.	Rock for Fill	Section 14
6.	Crushed Rock	Section 15
7.	Borrow	Section 16
8.	Embankment	Section 17

1.04 REMOVAL AND REPAIR WORK

A. The contractor shall exercise every precaution to preserve and protect all structures, walkways or utility improvements which are to remain or be relocated. Portions of pavement which are to remain shall be saw-cut neat and true to line. Restore all pavement and curbs upon completion of the work.

1.05 PROTECTION

A. Erect temporary barricade to prevent people from entering into project area, to the extent as required/approved by the Director. The extent of barricades may be adjusted as necessary with the approval of the Director. This work shall be accomplished at no extra cost to the Owner.

B. Take all precautions and safety measures as required to protect the Owner free and harmless from liability of any kind. Conduct operations with minimum interference to streets, driveways, sidewalks passages, etc.

C. Adequate precautions shall be taken before commencing and during the course of the work to ensure the protection of life, limb, and property.

D. The Contractor shall protect from damage all surrounding structures, trees, plants, grass, walks, pavements, etc. Any damage will be repaired or replaced by the Contractor to the satisfaction of the Director at no cost to the Owner.

E. The Contractor shall prevent dust from becoming airborne at all times including non-working hours, weekends and holidays in conformance with State of Hawai‘i, Department of Health, Administrative Rules, Title 11, Chapter 60.1 – Air Pollution Control.
   1. The method of dust control and costs shall be the responsibility of the Contractor. Methods of dust control shall include the use of water or chemicals approved for such use over surfaces that may create airborne dust.
      a. Dust control water shall be kept to a minimum so that no runoff is generated.

1.06 CRITERIA FOR BIDDING

A. Base bids on the following criteria.
   1. That the surface elevations are as indicated.

   2. Blasting is not permitted.

3. Crushing and screening of onsite rock material for general fill is permitted.

1.07 PERMITS

A. The Contractor shall obtain and pay for necessary permits prior to the commencement of work.

B. The Contractor must be familiar with any permits that have been obtained by the Owner or otherwise and construction operations must be in accordance with the requirements of those permits.

1.08 MAINTAINING TRAFFIC

A. The Contractor shall conduct operations with minimum interference to streets, driveways, sidewalks, traffic activities, etc.

B. When necessary, the Contractor shall provide, erect and maintain lights, barriers, etc., as required by traffic and safety regulations with special attention to protection of life.

1.09 CONSTRUCTION LINES, LEVELS, AND GRADES

A. The Contractor shall verify all lines, levels and elevations indicated on the drawings before any clearing, excavation or construction begins. Any discrepancy shall be immediately brought to the attention of the Director and any changes shall be made in accordance with his instructions. The Contractor shall not be entitled to extra payment if he fails to report the discrepancies before proceeding with any work whether within the area affected or not.

B. The laying out of base lines, establishment of grades and staking out the entire work shall be done by a qualified surveyor as determined by the Contractor. He shall be solely responsible for their accuracy. Erect and maintain substantial batter boards showing construction lines and levels.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Asbestos Prohibition

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

B. Unless otherwise noted, the materials covered by this section shall be composed of basalt rock or similar material having a specific gravity at or above 2.60.

C. Structural Fill and Backfill

1. Structural fill shall be well graded granular material, with particles less than 3 inches in maximum size and contain less than 30 percent particles passing the No. 200 sieve by weight. When placed in confined areas, such as utility trenches and footing excavations the maximum particle size shall be limited to 2 inches.

D. General Fill

1. General fill material shall be well-graded granular material, free from organic material and backfill, debris, other deleterious substances and majority of which are less than 12 inches in size with an absolute maximum dimension of 18 inches. Materials between 12

and 18 inches in particle size should be limited to about 15 percent or less of the total volume.

E. Cushion Fill
   1. Under exterior and interior concrete slabs-on-grade shall be sized as indicated on the plans. Where no size requirement is provided on the plan, cushion fill shall be ASTM C33 Standard Size Aggregate No. 67.

F. Drain Rock
   1. Drain rock shall be sized as indicated on the plans. Where no size requirement is provided on the plan, drain rock shall be ASTM C33 Standard Size Aggregate No. 67.

G. Subbase Course
   1. Subbase course for roadways shall meet the requirements of the Standard Specifications for Public Works Construction, Section 30-Select borrow for Subbase Course.

H. Aggregate Base Course
   1. Aggregate base course for roadways shall meet the requirements of the Standard Specifications for Public Works Construction, Section 31-Aggregate Base Course.

I. Top Soil
   1. Requirements for top soil are as indicated on the plans or elsewhere in these specifications. Where no specific requirements are provided, the contractor is required to consult a landscaping professional to determine the appropriate mix components and ratios for the project site and planting requirements. Product information must be submitted for review along with a certifying cover letter from the landscaping professional.

J. Existing Materials
   1. Excavated onsite basalt materials may be used as fill and backfill, provided that the materials are well graded and maximum size of the individual fragments are limited to the applicable sizes for general fill and backfill and structural fill and backfill.

K. Insufficient Earth Material
   1. The Contractor shall import all necessary material to complete the grading work at no additional cost to the Owner. Imported material shall be well-graded from coarse to fine with no particles greater than 6 inches in largest dimension. The material shall have a laboratory California Bearing Ratio (CBR) value of 20 or higher, and a swell potential of 1 percent or less when tested in accordance with ASTM Test Designation D1883. The imported material shall be tested prior to being transported to the site and subject to review by the Director and shall meet the requirements as specified for each category of the materials.

PART 3 – EXECUTION

3.01 PROTECTIVE MEASURES

A. All excavation shall be protected and guarded against danger to life, limb and property in accordance with applicable regulations.

B. Shoring, cribbing and logging, as required to safely preserve the excavations, earth banks, and existing structures free from damages resulting from the work shall be designed, provided and installed by the Contractor.

C. All excavations shall be kept free from standing water. The Contractor shall do all pumping and draining that may be necessary to remove water to the extent required in carrying on the work. Grading shall be controlled so that the ground surface is properly sloped to prevent water run-off from entering structural foundations and open trenching excavations.

D. The Contractor shall conduct operations with minimum interference to streets, driveways, sidewalks, passageways, traffic, etc. The Contractor shall confine all work, equipment, materials and personnel as much as possible to the work area as indicated. The Contractor shall schedule all work that involves excessive noise, dust, dirt, or any other detrimental aspect of this work in order that there will be minimum disruptions to neighbors. When necessary and when directed, the Contractor shall provide and erect barriers, etc. with special attention to the protection of personnel.

E. The underground utility lines crossing the construction area known to exist by the designer are shown on the plans. Should any be encountered during excavation, whether shown on the plans or not, the Contractor shall not disconnect same without authorization from the Director but shall inform the latter immediately of each discovery. The Director shall investigate and issue proper authorization for procedure.

3.02 LAYING OUT

A. The laying out of base lines, establishment of grades and staking out the entire work shall be done by a qualified surveyor as determined by the Contractor. He shall be solely responsible for their accuracy. Erect and maintain substantial batter boards showing construction lines and levels.

B. Should any discrepancies be discovered in the dimensions given in the plans, the Contractor shall immediately notify the Director before proceeding any further with the work; otherwise, he will be held responsible for any costs involved in corrections of construction placed due to such discrepancies.

3.03 SITE GRADING

A. All grading work shall be performed in conformance with County of Hawaii Ordinance 168, the applicable provisions of Chapter 54, Water Quality Control Standards, and Chapter 55, Water Pollution Control, of Title 11, Administrative Rules of the State Department of Health. In addition, the work shall be in conformance with the Air Pollution Control Standards and Regulations of the State Department of Health.

B. The area to be graded shall be cleared of vegetation, debris, rubbish, old pavements, abandoned pipelines and other deleterious materials. Trees and large masses of roots shall be grubbed. All of these materials shall be removed and disposed of properly off-site at no cost to the Owner.

C. No blasting will be permitted.

D. The areas not covered by concrete slab or pavement up to the Contract Zone Limits shall be graded to conform to finish contours. The top layer shall be 6” thick top soil unless otherwise indicated in the drawings or these specifications. Rough grading shall prevent the drainage of water into construction areas.

3.04 SITE PREPARATION

A. Prior to commencement of earthwork operations, all vegetation, debris, and other deleterious materials shall be removed from the site.

B. Any underground structures such as cesspools, pipelines, tanks, etc. discovered in the site preparation work shall be removed and backfilled in accordance with these specifications and any applicable regulations.

C. The underground utility survey required elsewhere in these specifications must be completed prior to commencing with any operations covered under this section.

D. All pertinent BMPs including but not limited to silt fence, sediment waddles, construction entrance, etc., must be in place prior to the commencement of earthwork operations.

E. Where compaction must occur to ensure soil stability, that compaction must be completed prior to starting any excavation.

F. Basalt rock under slab-on-grade pavements, excavated subgrades and areas to receive fill shall be ripped and proofrolled as specified herein.

G. All subgrades of fill areas shall be ripped to a depth of about 3 feet below the existing ground surface to detect and collapse near-surface cavities and/or voids. As a minimum, ripping of the subgrades should extend at least three (3) feet laterally beyond the limits of the fill areas.

H. After the fill surfaces have been ripped to a depth of about 3 feet below the ground surface, the ground should be proof-rolled with a Caterpillar D-10 bulldozer or similar size bulldozer a minimum of four passes to provide a relatively level surface. After leveling with the bulldozer, the fill subgrades should be proof-rolled with a large vibratory drum roller (minimum 20 tons static weight) for a minimum of eight passes travelling no faster than 100 feet per minute. Yielding areas, loose areas, or cavities disclosed during clearing and proof-rolling operations should be over-excavated and backfilled with compacted fill materials.

3.05 FILLING AND BACKFILLING

A. Fill areas of the project shall be capped with a minimum two (2) foot thick layer of structural fill material.

B. Fill and backfill materials below the minimum two (2) foot thick structural fill layer may consist of general fill material.

C. General fill and backfill shall be compacted to a firm, unyielding surface. Conventional compaction testing is generally not practicable in fills which are composed of rocks, boulders and/or cobbles. A testing program to evaluate the number of passes of a compactor needed to achieve the desired level of compaction shall be conducted at the start of the grading phase of the project.

D. General fill areas shall be compacted to not less than 90% maximum dry density.

E. General fill slopes shall not be steeper than 2 horizontal to 1 vertical.

F. Filling operations shall start at the lowest point and continue up in level horizontal compacted layers in accordance with the fill placement recommendations noted herein before. Fill slopes should be constructed by overfilling and cutting back to the design slope ratio to obtain a well-compacted slope face.

G. Fills placed on slopes steeper than 5 horizontal to 1 vertical should be keyed and benched into the existing slope instead of backfilling the slope to the design grade with sliver fills.

H. Structural fill materials shall be used to backfill any voids detected during proof-rolling.

I. Structural fill shall be laid in lifts not exceeding 12 inches in loose thickness moisture-conditioned and compacted to at least 95% maximum dry density (ASTM D4914). For structural fill and backfill in confined areas, the material shall be placed in smooth, loose lifts less than 6 inches thick, moisture conditioned, and compacted to at least 95 % maximum dry density.

J. Structural fill slopes shall not be steeper than 2 horizontal to 1 vertical.

3.06 FILL TESTING

A. Fills shall be tested for appropriate compaction as noted below. All tests shall be conducted by a geotechnical engineer or an independent testing agency. Test results must be provided to the Director for review. Contractor is responsible for the cost of associated services of geotechnical engineer or testing agency. Should any test results indicate insufficient compaction, additional testing to the satisfaction of the Director may be required.
   1. Graded Pad Area: Compaction testing of the subgrade and cushion fill is required at two locations, one on either side of the pad for each lift of fill material.

   2. Roadway: Compaction testing of the subgrade, and aggregate base course is required at 100 foot intervals along the roadway.

B. Additional testing of fills for appropriate compaction may be requested by the Director at any point during the project. Fill shall be tested by a geotechnical engineer or an independent testing agency. Except in the case where insufficient compaction is discovered, costs for requested additional fill testing shall be borne by the Owner. Where insufficient compaction is discovered, the Contractor shall be responsible for the cost of that test and any subsequent tests performed until compaction is determined to be sufficient.

3.07 FINISH GRADING

A. Where finish grades and contours are not given, Contractor shall grade to provide drainage away from new and existing structures and shall provide smooth transitions into existing grades outside the grading limits.

END OF SECTION

SECTION 02362 – SOIL TREATMENT FOR VEGETATION CONTROL

PART 1 – GENERAL

1.01 GENERAL CONDITIONS

A. The General Requirements and Covenants and the Special Provisions preceding these specifications shall govern all work specified hereinafter in all Divisions and Sections

1.02 GENERAL REQUIREMENTS

A. This work shall consist of the application of weed killer on the prepared parking area, driveway, and graded pad prior to the installation of the base course and where called for on the plans and on existing growth prior to application of asphalt.

1.03 SUBMITTALS

A. Submit the following items for review. Work may not begin until these submittals have been reviewed and an adequate response has been provided per Section 01300 – Submittal Procedure.
   1. Manufacturer's product data, including installation/application instructions, MSDS, and EPA registered label.

PART 2 – PRODUCTS

2.01 MATERIALS

A. 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.

B.

Weed Killer Trade Name	Application
Casoron 4G or Norosac 4G	Under new or rebuilt asphalt pavement
Hyvar X or Roundup	Existing weeds for resurfacing work

PART 3 – EXECUTION

3.01 APPLICATION

A. Spread weed killer uniformly using calibrated application equipment at the maximum rates permitted for under asphalt use. Install base course material as soon as possible to preclude loss of germination inhibiting action.

B. In treatment of existing growth, mix the weed killer and uniformly spray in strict accordance with the manufacturer's label.

C. Retreat nut grass and weeds two (2) days after initial application and again if growth still exists.

D. Notify the Director 72 hours before the application of weed killer.

END OF SECTION

SECTION 02485 – LAWNS AND GRASSES

PART 1 – GENERAL

1.01 GENERAL CONDITIONS

A. This section covers the requirements for preparation, planting, and maintenance of areas designated to be grassed per plan.
   1. Where grassed areas are not specifically indicated on the plans, the following areas shall be grassed:
      a. All existing grassed areas that are damaged by construction operations;

      b. Areas that are dug up for utility trenches;

      c. Areas within "Contract Zone Limits" that are graded and covered with topsoil except areas designated for other plants; and

      d. All other areas within "Contract Zone Limits" that are indicated on the plans to be graded, whether with the addition of screened soil or not, such as slopes of banks, etc.

B. The maintenance requirements of this section shall extend to all landscaped areas that are affected by the construction work, whether grassed or not.

1.02 SUBMITTALS

A. Submit the following items for review. Work may not begin until these submittals have been reviewed and an adequate response has been provided per Section 01300 – Submittal Procedure.
   1. Manufacturer's product data

B. At the completion of planting operations, the Contractor must submit a written request for approval. The date that written approval is issued will constitute the start of the maintenance period.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Grassing shall be done by placing sod or by hydromulch seeding.

B. Where grassing will be done by hydromulch, grass seeds shall be fresh, hulled, and meet the following requirements:
   1. Pure Seed: 95% Minimum

   2. Crop Seed: 1.0% Maximum

   3. Weed: 0.5% Maximum

   4. Inert Materials: 5.0% Maximum

   5. Germination: 85.0% Minimum

6. Grass seeds shall be a mixture of 50% Bermuda and 50% Rye.

7. Grass seeds shall be delivered to the site in unopened, sealed containers, labeled with the brand name and percent purity. Labeling shall indicate that the seeds passed a certified germination test no more than 12 months prior to use.

C. Grass seeds shall be applied at the following rates:
   1. Bermuda Grass: 62 lbs / acre

   2. Rye Grass: 215 lbs / acre

D. Fertilizer shall be pelleted and shall consist of the following percentages by weight of active ingredients:
   1. Nitrogen: 15%

   2. Phosphate: 15%

   3. Potash: 15%

E. Mulch shall be specially processed fiber containing no growth or germination inhibiting factors. It shall be such that additions and agitation in the hydraulic equipment with seed, fertilizer, water and other additives not detrimental to plant growth, the fibers will form a homogeneous slurry. When hydraulically sprayed on the soil, the fibers shall form a blotter like ground cover that readily absorbs water and allows infiltration to the underlying soil.
   1. Hydro mulch shall be Central Fiber Corp. 'Enviro-Matt' or equal. Rate of application shall be 3,000 lbs./acre minimum.

F. Organic Soil Conditioners
   1. Aged macadamia nut husk

   2. Redwood shavings shall be a nitrogen stabilized compost of redwood materials passing through a 1/2" screen

   3. Peat moss

G. Water shall be potable.

PART 3 – EXECUTION

3.01 GROUND PREPARATION

A. Prior to planting, the areas to be grassed shall be cleared of all unwanted plants (including their root system), stones over 3 inches in diameter, papers, trash and debris and graded to the dimension and elevations shown on the plans or as directed.
   1. If the existing soil in the areas to be grassed is suitable for use as planting soil, the soil shall be scarified to a depth of not less than 6 inches from the finished surface shown on the plans. The soil shall be worked until it is of a uniform and loose texture, free from all stones greater than 1/2 inch in diameter and appropriate for planting. If additional material is required to bring the said areas to plan grade,

planting soil shall then be spread and graded to conform to the finish surface shown on the plans.

2. Areas unsuitable for planting, as determined by the Director shall be excavated to a depth of not less than 6 inches from the finished surface and backfilled with planting soil. The planting soil shall be spread and graded to conform to the finish grade shown on the plans. The Contractor shall be responsible for the disposal of all excavated material.

3. A soil conditioner shall be added to all surfaces to be grassed. A 2-inch thick layer of soil amendment shall be tilled into the soil to depth of not less than 6 inches until the soil is loose and fine textured and free from stones greater than 1/2 inches in diameter.

3.02 HYDROMULCHING

A. Hydromulching shall consist of furnishing and applying hulled seed, fertilizer, mulch and stabilizing and water retaining agent by hydromulching.
   1. The seeds shall be applied at the rates indicated hereinbefore. In every application, complete and uniform coverage of the soil shall be attained.

   2. First application of fertilizer shall be included with the mulch and seed.

   3. The hydromulch equipment shall be capable of mixing all the necessary ingredients to a uniform texture and to apply the slurry to provide uniform coverage. Seed, fertilizer, mulch mix, and stabilizing water retaining agent shall be applied in one operation by hydraulic equipment made specifically for this use. The equipment shall have a built in agitation system with an operating capacity sufficient to keep the mix in uniform distribution until pumped from the tank. Distribution and discharge lines shall be large enough to prevent stoppage and shall be equipped with hydraulic spray nozzles which provide a uniform distribution of the slurry.

   4. Water shall be applied immediately following mulching and the planted area shall then be kept moist until roots are established.

3.03 MAINTENANCE

A. Fertilizer shall be distributed uniformly over the planted area at a rate of 300 pounds per acre.
   1. In addition to the initial application during hydromulching operations, fertilizer shall be applied at least 3 times during the maintenance period at intervals not closer than 2-1/2 months.

B. The Contractor shall be responsible for the proper care of the grassed areas. Maintenance shall include watering, mowing, repairing, regrassing, and protection. The maintenance period will begin immediately after completion and written approval of all planting operation is issued and shall continue for a period of nine months thereafter. If the end of the maintenance period occurs before the end of the construction contract, the maintenance shall continue until the end of the construction contract.

C. After mulching, the ground shall be watered as deemed necessary by the Contractor to establish a healthy growth. Watering shall be done in a manner that will prevent erosion due to the application of excessive quantities of water, and the watering equipment shall be of a type that will prevent damage to the finished surface.

D. Weeds shall be uprooted and removed completely and in no case shall they be allowed to grow and propagate more seeds. Large holes caused by weeding shall be filled with screened soil and raked level.

E. Grass shall be mowed to a height of 1" whenever the height of the grass becomes 1-1/2".

F. When any portion of the surface becomes gullied or otherwise damaged and grass has failed to grow, such areas shall be repaired with screened soil and replanted with grass. Any area of one foot square or more in which grass has failed to grow after 30 days of maintenance shall be regrassed.

G. The grassed areas shall be protected against traffic so that the grass establishes a healthy growth. Grassed areas damaged by traffic shall be replanted.

3.04 ACCEPTANCE OF GRASSING

A. At the time of acceptance, the grass shall have been well established and shall have been given a final weeding and a final mowing to a height of 1". If the maintenance period has expired before acceptance of the entire project, the Contractor shall continue to maintain the grass until acceptance of the entire project. If the maintenance period should extend beyond acceptance of the entire project, the Contractor shall continue to maintain the grass until the end of the specified period of time required for maintenance.

1. At the end of the maintenance period, should there appear areas where grass has failed to grow, such areas shall be replanted with grass, refertilized and maintained beyond the maintenance period until a healthy growth is established.

END OF SECTION

SECTION 02513 – ASPHALTIC CONCRETE PAVING

PART 1 – GENERAL

1.01 GENERAL CONDITIONS

A. The General Requirements and Covenants and the Special Provisions preceding these specifications shall govern all work specified hereinafter in all Divisions and Sections

1.02 GENERAL REQUIREMENTS

A. Furnish materials, labor and equipment required to accomplish all asphaltic concrete paving, including compaction of subgrade and installation of aggregate base course, and asphaltic concrete as indicated on the drawings and as required by these specifications.

B. All work shall be performed in accordance with the Counties' Standard Specifications for Public Works Construction, September 1986.

1.03 SUBMITTALS

A. Submit the following items for review. Work may not begin until these submittals have been reviewed and an adequate response has been provided per Section 01300 – Submittal Procedure.
   1. Manufacturer's product data, including installation instructions and MSDS as applicable.

   2. Job mix formula for asphaltic concrete.

B. Compaction test results must be submitted as soon as they are available.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Asbestos Prohibition
   1. No asbestos containing materials or equipment shall be used under this section. The Contractor shall insure that all materials and equipment incorporated in the project are asbestos free.

B. Materials for roads and parking areas shall be constructed in accordance with the below-listed sections of the Counties STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION dated September 1986 and STANDARD DETAILS FOR PUBLIC WORKS dated September 1984 as revised, except as amended in the plans and/or specifications herewith. (Paragraphs concerning Measurements and Payments in the sections are not applicable to this project.)

1.	Subgrade	Section 29
2.	Select Borrow for Subbase Course	Section 30
3.	Aggregate Base Course	Section 31
4.	Treated Bases	Section 32
5.	Asphalt Surface Treatment	Section 33

6. Asphalt Concrete Pavement Section 34

C. Mix shall be County Mix No. 4 for all work.

PART 3 – EXECUTION

3.01 GENERAL REQUIREMENTS

A. The Contractor shall stake out the areas to be paved, using grade stakes on which the final finish elevations, base course and subgrade elevations are clearly marked.

B. Weed killer shall be applied as indicated elsewhere in these specifications, for the treatment of existing growth or to prevent new growth.

3.02 SUBGRADE, SUBBASE, AND BASE COURSE INSTALLATION

A. Subbase and base course shall be installed to the thicknesses indicated on the plans.
   1. Where these thicknesses are not indicated on the plans, the minimum compacted thickness shall be 6” for subbase and 4” for base course.

B. Subbase and base course shall be placed at a consistent thickness and such that the finished surface does not vary more than 0.10 feet vertically from theoretical grade.

C. Compaction of the subgrade, subbase, and base course shall be as required on the plans and/or as indicated elsewhere in these specifications.

D. Compaction testing shall be performed as required prior to the installation of each successive layer.

E. Subbase and base course shall be placed in lifts having a maximum compacted thickness of 6”.

3.03 ASPHALTIC CONCRETE INSTALLATION

A. Asphaltic concrete may not placed on wet surfaces.

B. Asphaltic concrete may not be placed when ambient temperatures are at or below 50 degrees F.

3.04 COMPACTION TESTING

A. After compaction of each pavement component, including but not limited to subgrade, subbase, base course, and asphaltic concrete, in-place density testing must be performed by nuclear methods (ASTM D6938, ASTM D2950).
   1. Baseline testing for asphaltic concrete shall be done according to the requirements of ASTM D2041 (rice test).

B. Testing must be performed at a rate of one test per component, per lift of pavement.

C. Testing, as described above will be the responsibility of the Contractor at no additional cost to the Owner. Additional testing may be required at the request of the Director.

D. Except in the case where the in-place density is found to be less than what is specified (failed test), additional testing will be paid for by the Owner. In the case of failed tests, those additional

tests, including follow up testing after remediation is complete, must be provided by the Contractor at no cost to the Owner.

END OF SECTION

SECTION 02600 – PIPED UTILITY MATERIALS AND METHODS

PART 1 – GENERAL

1.01 GENERAL CONDITIONS

A. The General Requirements and Covenants and the Special Provisions preceding these specifications shall govern all work specified hereinafter in all Divisions and Sections

1.02 GENERAL REQUIREMENTS

A. This specification covers the requirements for furnishing and installation of piped utilities, including but not limited to; water, sanitary sewer, storm sewer, and as indicated in the plans or elsewhere in these specifications.

B. Whenever the Contractor is required by State or local laws or regulations to make a deposit and/or pay for a permit before proceeding with any work called for under this part of the specifications, the Contractor shall make the necessary deposits and/or pay for obtaining the required permit for the work.

C. The Contractor must be familiar with any permits that have been obtained by the Owner or otherwise and construction operations must be in accordance with the requirements of those permits.

D. The following construction standards, with certain modifications as hereinafter specified, are hereby incorporated into and made a part of these specifications by reference and shall be applicable to all work performed by the Contractor under this section.

1. The Counties' STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION dated September 1986 and STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION dated September 1984 as revised, except as amended in the plans and/or specifications herewith. (Paragraph concerning Measurements and Payments in the Sections are not applicable to this project.

2. The Hawaii County Code.

3. WATER SYSTEM STANDARDS, and APPROVED MATERIAL LIST AND STANDARD DETAILS FOR WATER SYSTEM CONSTRUCTION, County of Hawaii, State of Hawaii, 2002.

4. 2005 STANDARD SPECIFICATIONS & SPECIAL PROVISIONS, Department of Transportation, State of Hawaii, latest edition, as amended with deletion of sub-sections related to measurement and payment and as specified herein.

1.03 SUBMITTALS

A. Submit the following items for review. Work may not begin until these submittals have been reviewed and an adequate response has been provided per Section 01300 – Submittal Procedure.

1. Manufacturer's product data

2. Material Safety Data Sheets (MSDS)

3. Waterline pressure test and chlorination test results

B. Prior to any installation work, the Contractor must furnish affidavits from the manufacturers of all materials furnished and installed under this section verifying that such materials delivered to the project conform to the requirements of this specification. Materials include but are not limited to pipe, fittings, valves, and appurtenances.
   1. These affidavits must be specific to this project.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Asbestos Prohibition
   1. No asbestos containing materials or equipment shall be used under this section. The Contractor shall insure that all materials and equipment incorporated in the project are asbestos free.

B. Materials for sanitary sewer system shall be in accordance with the PLUMBING CODE of the County of Hawaii and the applicable sections of the Counties' STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION dated September 1986 and STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION dated September 1984 as revised, except as amended in the plans and/or specifications herewith.
   1. Gravity flow sanitary sewer piping and fittings must be PVC SDR-26 or SDR-35 as indicated on the plans and must conform to ASTM D3034 or ASTM F679 as applicable.

   2. Gravity flow sanitary sewer piping shall be green in color.

C. Material for storm drain system shall be in accordance with the PLUMBING CODE of the County of Hawaii and the applicable sections of the Counties' STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION dated September 1986 and STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION dated September 1984 as revised, except as amended in the plans and/or specifications herewith.
   1. Storm drain piping and fittings must be PVC SDR-26 or SDR-35 as indicated on the plans and must conform to ASTM D3034 or ASTM F679 as applicable.

   2. Storm drain piping shall be green in color.

D. Materials for water distribution system shall be in accordance with the current Department of Water Supply's WATER SYSTEM STANDARDS, except as amended in the plans or specifications herewith.

E. Warning tape must be installed for all underground piped utilities. Warning tape must be a minimum 6" wide and run continuously along the length of buried pipe. The warning tape must clearly identify the type of utility for which it is applied (e.g. "Caution Sanitary Sewer Below").
   1. Warning tape must be manufactured specifically for underground use, be resistant to destructive elements typically found in soil, and have a minimum thickness of 4.5 mils.

   2. Where metallic piping has been installed, the warning tape shall be non-metallic.

3. Where non-metallic piping has been installed, the warning tape shall be metallic and detectable by standard, non-destructive, pipe detection methods.

4. Warning tape and lettering shall have the following color schemes:
   a. Sanitary and Storm Sewer: Green

   b. Potable Water: Blue

PART 3 – EXECUTION

3.01 INSTALLATION

A. Location and Adjustment of Existing Utility Lines

1. The Contractor shall he responsible for precisely laying out the various exterior utility lines shown on the contract drawings as provided elsewhere in these specifications. The locations shown on the contract drawings of the various existing utility lines which the new lines are to cross over or under or connect to, were determined on the basis of the best information available; however, no assurance can be provided that the actual locations will be precisely as shown on the contract drawings.

2. In performing all work, the Contractor shall exercise due care and caution necessary to avoid any damage to and impairment in the use of any existing utility lines. Any damage inflicted on existing lines resulting from the Contractor's operations shall be immediately repaired and restored as directed by the Director at the Contractor's expense.

3. Toning of existing underground utility must be completed prior to any excavation work.

B. Joining and Laying Pipe

1. Pipes must be joined and placed according to the manufacturer's requirements and recommendations. For gravity flow pipes and other piping requiring a specific slope, ensure the trench bedding is well compacted prior to placing. Any solvents or lubricants used must conform to the pipe manufacturer's requirements. Installation of gravity pipe shall be with the bell end facing upstream.

C. Excavation and Backfill

1. Trench excavation and backfill for the laying and installation of water and sewer pipes, to the required line and grade and structure excavation for the construction of the appurtenant structures, shall be governed by the following provisions of the DPW STANDARD SPECIFICATIONS as hereinbefore amended with respect to measurement and payment and with certain additional modifications noted below:
   a. Trench Excavation and Backfill — Section 11

   b. Structure Excavation and Backfill — Section 13

   c. PVC Sewer Pipe and Appurtenances — Section 21

   d. Restoring Pavement and Other Improvements — Section 38

2. Surplus material resulting from trench and structure excavation shall be used by the Contractor for backfilling, filling and grading to the extent required as specified

elsewhere in these specifications. The Contractor, in performing any work within the Contract Zone Limits shown on the contract drawings, shall exercise due care to keep to an absolute minimum any damages to existing improvements, including plants and shrubs. The Contractor shall be responsible for repairing, replacing and/or restoring all damages to existing improvement to the satisfaction of the Contracting Officer

a. Sanitary Sewer System

1) In accordance with the PLUMBING CODE of the County of Hawaii and applicable Sections of the Counties' STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION dated September 1986.

b. Water Distribution System

1) In accordance with the PLUMBING CODE of the County of Hawaii and applicable sections of the current Department of Water Supply's WATER SYSTEM STANDARDS , 2002

2) Connecting, Testing, Flushing and Disinfecting: The new lines shall be installed but not connected until pressure testing is completed. Pressure testing, flushing of valves and mains, disinfection of the system shall be carried out in accordance with the Department of Water Supply's WATER SYSTEM STANDARDS. The Contractor shall submit the results of such tests to the Director for approval. Any additional fittings of a temporary nature required for the purpose of working such tests shall be supplied and installed at the Contractor's expense.

3.02 FINAL INSPECTION

A. At the time of final inspection of the work performed under the contract, the utilities covered by this section shall be complete in every respect and operating as designed. All surplus materials of every character resulting from the work of this section shall have been removed. Sanitary sewers shall be free from sand, silt or other obstructions. Any defects discovered in the utilities subsequent to this inspection shall be corrected prior to final acceptance.

END OF SECTION

SECTION 02770 – SITE CONCRETE

PART 1 – GENERAL

1.01 GENERAL CONDITIONS

A. The General Requirements and Covenants and the Special Provisions preceding these specifications shall govern all work specified hereinafter in all Divisions and Sections

1.02 CONSTRUCTION STANDARDS

A. Comply with the provisions of the following specifications and standards, except as otherwise noted or specified in the drawings or these specifications. Where the year of publication is not specified, it shall be taken to mean the latest edition or the latest edition currently adopted by the County of Hawaii.
   1. ACI 301: Specifications for Structural Concrete
   2. SP-66: ACI Detailing Manual
   3. ACI 318: Building Code Requirements for Structural Concrete
   4. Concrete Reinforcing Steel Institute (CRSI) Manual of Standard Practice
   5. Standard Specifications for Public Works Construction, September 1986, as adopted by the County of Hawaii
   6. Standard Specifications for Road, Bridge, and Public Works Construction, 2005, State of Hawaii, Department of Transportation

1.03 SCOPE OF WORK

A. Work covered under this section includes, drywell covers and rings, concrete slabs, fence post footings, drainage inlet boxes, culvert headwalls, and other concrete sitework that are not manufacturer designed products.

1.04 SUBMITTALS

A. Submit the following items for review. Work may not begin until these submittals have been reviewed and an adequate response has been provided per Section 01300 – Submittal Procedure.
   1. Concrete mix designs
      a. Indicate amounts of water to be withheld for later addition at the project site.
   2. For reinforcing steel used in retaining walls and drainage boxes only, provide certified mill test results or laboratory test results. Indicate bar size, yield strength, ultimate tensile strength, elongation, and bend test. Provide chemical composition for bars that are to be welded.
   3. Reinforcing layout shop drawings for boxes and covers.
   4. Manufacturer's Product Data, including installation instructions, color selection and texture information as appropriate for the following items:
      a. Joint sealing compound

5. Materials certificates, signed by manufacturers, certifying that each of the following items complies with the requirements of the drawings and these specifications. Certificates must be specific to this project.
   a. Concrete admixtures
   b. Form materials and form release agents
   c. Steel reinforcement and reinforcement accessories
   d. Curing materials
   e. Adhesives and bonding agents
   f. Patching products
   g. Polymer modified concrete products

1.05 STORAGE OF MATERIALS

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

PART 2 – PRODUCTS

2.01 MATERIALS

A. Asbestos Prohibition
   1. No asbestos containing materials or equipment may be used under this section. The Contractor must insure that all materials and equipment incorporated in the project are asbestos free. .

B. Formwork
   1. Plywood wood forms must be commercial-standard Douglas Fir, moisture resistant concrete form plywood not less than 5-ply and at least 5/8" thick. Framing, strongbacks and other bracing must be structural grade, adequate size and thickness required for each application.
   2. Metal forms may be used if they will produce surfaces equal to those specified for wood forms.
   3. Metal clamps and ties must be used. Form ties for exposed concrete must be removable either completely or to a minimum depth of 1" from the face of the concrete.

C. Reinforcing
   1. Reinforcing steel must be deformed bars conforming to ASTM A615, Grade 60
      a. Where noted on the plans, Grade 40 may be used for #4 and smaller bars.
   2. Welded wire fabric for concrete reinforcement must conform to ASTM A1064 and be hot dip galvanized.

3. Metal accessories such as spacers, chairs, ties and other devices necessary for properly placing, supporting and fastening reinforcement in place must be provided. Chairs must be galvanized. Minimum No. 16 wire must be used to secure reinforcement.

D. Portland Cement must conform to the requirements of ASTM C150, Type II, for all concrete work.

E. Concrete Aggregates
   1. Fine aggregates must be in accordance with ASTM C33 and the Department of Public Works Standard Specifications.

   2. Coarse aggregates must be crushed close-grained, blue lava rock and must be in accordance with the Department of Public Works Standard Specifications.

F. Water used in mixing concrete must be fresh, clean, and drinkable.

G. Joint sealing compound must be a polysulfide or urethane compound or other approved equal.

H. Bond-break filler must be mineral surfaced roofing cap sheet or asphalt coated felt.

I. Admixture, if used, must conform to ASTM C494 or ASTM C260 and must be mixed in proper amount in accordance with the manufacturer's instructions.
   1. Do not use Calcium Chloride or admixtures containing Calcium Chloride.

PART 3 – EXECUTION

3.01 CONSTRUCTION OF FORMS

A. Forms must be constructed so that the concrete surfaces do not deviate from established lines, grades and dimensions.

B. All concrete forms must be placed with metal clamps and ties. Locate ties level and plumb in horizontal rows and vertical tiers.

C. Side forms for concrete pavement must be held rigidly in place by stakes, clamps, spreaders or braces.

D. Determination of the appropriate time for form removal is the responsibility of the Contractor. Any damages resulting from the removal of forms must be repaired as indicated in these specifications.

E. Screeds for Slabs
   1. Edge forms and intermediate screed strips must be set accurately to produce the designed elevations and contours of the finished surface. The concrete surface must be aligned to the contours of the screed strips by the use of strike-off templates or approved compaction type screeds. Screeds must be set adjacent to all walls and in parallel rows not to exceed eight feet on center.

   2. At slab-on-grade screeds must be set at the sides to serve as forms and additional screeds, if required, may not be spaced greater than eight feet on center.

3.02 TOLERANCES

A. Bars used for concrete reinforcement must meet the following requirements for fabrication tolerances:

1.	Sheared Length	± 1 inch
2.	Bends	± 1 inch

B. Bars must be placed to the following tolerances:

1.	Clear distance to formed surfaces	± 1/4 inch
2.	Minimum spacing between bars	- 1/4 inch
3.	Top bars in slabs	
a.	Members eight inches deep or less	± 1/4 inch
b.	Members more than eight inches but not over two feet deep	± 1/2 inch
c.	Members more than two feet deep	± 1 inch
d.	Crosswise of members	spaced evenly within two inches
e.	Lengthwise of members	± 2 inches

C. Bars may be moved as necessary to avoid interference with other reinforcing steel or embedded items. If bars are moved more than one bar diameter, or enough to exceed the above tolerances, the resulting arrangement of bars must be reviewed and approved by the Director prior to pouring concrete.

3.03 REINFORCEMENT

A. Reinforcing bars, wire, and wire fabric must be provided in the sizes, lengths and configurations as required by the plans and these specifications and must be thoroughly cleaned of loose mill scale, loose flaky rust, oil and all coatings that will destroy or reduce bond before placing. If necessary, they must be cleaned again before placing of concrete. All items must be fabricated, positioned, and secured in place as indicated in the plans and as herein specified. No. 16 wire must be used to secure reinforcement. Reinforcement must be placed in specified positions not exceeding the tolerances listed herein. Unless otherwise noted, cleaning, bending and placing of reinforcement must be done in accordance with the standard practice of the Concrete Reinforcing Steel Institute.

B. Concrete or metal support and spacers must be used to secure the proper spacing of reinforcement over form work including welded wire fabric for slabs and walkways. Stirrups must be accurately and securely wired to the bars at both top and bottom. At slabs, and footings in contact with earth, pre-cast concrete blocks (not bricks or hollow tile) must be used to hold reinforcement at a proper distance above earth.

C. Bars must be tied at all intersections, and distances from forms, base and finished surfaces must be maintained by means of pre-cast concrete blocks, ties, hangers or other approved supports.

D. Bars must be bent cold to the shapes shown on the plans. Bends must be made around a pin having a diameter not less than six times the bar diameter.

E. Anchor bolts, rods, inserts and other embedded items must be secured in place to the form prior to concrete pour. All ferrous metal embedments must be hot-dip galvanized or stainless steel.

F. The following minimum concrete cover must be provided for reinforcement:

1.	Concrete cast against and permanently exposed to earth	3 inches
2.	Concrete exposed to earth or weather (No. 6 through No. 18 bars)	2 inches
3.	Concrete exposed to earth or weather (No. 5 bar or smaller)	1-1/2 inches

3.04 DESIGN OF CONCRETE MIXES

A. Concrete classifications and quality must be in accordance with the Standard Specifications for Public Works Construction, Section 39 – Portland Cement Concrete.

B. Unless otherwise noted on the drawings or in these specifications the table below will determine the appropriate mix design and strength for items covered under this specification.

Application	Minimum Compressive Strength, f'c	Classification per Standard Specifications for Public Works Construction
Drywell cover & rings, inlet boxes	4000 psi	AAA
Site retaining wall, culvert headwall/wing wall	3500 psi	AA
Driveway apron, concrete pavement, ramp, fence wall, other drainage structure supported on grade	3000 psi	A
Sidewalk, slab-on-grade, curb, gutter, fence post footing	2500 psi	B
Mass concrete	2000 psi	C
All others	3000 psi	A

3.05 MIXING CONCRETE

A. All concrete throughout must be either job or plant mixture in an approved type of power operated mixer that will insure uniformity and homogeneity of the concrete produced. Contractor must provide a sufficient number of mixers to continuously carry on the work.

B. Mixing at jobsite must be done in accordance with ACI 614 and as follows:

1. Concrete must be thoroughly mixed in a batch mixer of an approved type and size which will insure a uniform distribution of materials throughout the mass. The machine must have a control device to prevent materials from being discharged until they have been mixed for the specified minimum time.

2. The entire contents of the drum must be discharged before materials of the succeeding batch are placed therein. No mixer may be used which has a rated capacity of less than a 1-sack batch and no mixer may be charged in excess of its rated capacity.

3. The first batch of materials placed in the mixer after the machine has been cleaned must contain a sufficient excess of cement, sand, and water to coat the inside of the drum

without reducing the required mortar content of the mix. Upon cessation of mixing, the mixer must be thoroughly cleaned.

C. Ready Mixed and Mixed in Transit Concrete must be mixed to conform to the provisions of ASTM C94 and as follows:
   1. The plant must have sufficient capacity and transportation equipment to deliver concrete at the rate desired. The interval between batches for a pour may 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 may not exceed 90 minutes.
      a. The Engineer may approve the placing of concrete in excess of this 90 minute window, in the field, on a case by case basis.

      b. Under no circumstance may concrete be placed if its temperature has reached or exceeds 90°F, regardless of whether or not the 90 minute window has elapsed.

D. Concrete should be mixed only in such quantity as is required for immediate use. No retempering will be permitted and concrete which has started to harden must be discarded and promptly removed from the job.

E. Admixtures conforming to the requirements of this specification may be used in the concrete as recommended by the supplier and approved by the Director.

F. Hand mixing of concrete will not be permitted except to make up for shortages for fence post footings, sidewalks, thresholds, flagpole foundations, curbs and gutters, and thrust blocks.

3.06 PLACING CONCRETE

A. The Director must be notified a minimum of 48 hours ahead of all concrete pours.

B. Preparation
   1. All sawdust, chips and other construction debris and extraneous matter must be removed from interior of forms. Struts, stays, bracing, or locking serving temporarily to hold forms in correct shape or alignment may be removed when the concrete placing has reached an elevation rendering their services unnecessary.

   2. Concrete must be placed upon clean, damp surfaces with no free water, or upon properly compacted fills but never upon soft mud or dry, porous earth. Before pouring footings or foundations, bottoms of excavations must be properly leveled off and tamped.

   3. Before depositing new concrete on or against concrete which has set, all accumulations of mortar splashed upon reinforcing steel and the surfaces of forms must be removed and the forms must be retightened. The surfaces of previously set concrete must be thoroughly roughened and cleaned of all foreign matter and laitance, saturated with water and slushed with a coat of cement grout. New concrete must be placed before the grout has attained its initial set.

C. Conveying
   1. Concrete must be conveyed from mixer to forms as rapidly as practicable by methods that will prevent segregation.

2. Concrete must be deposited as nearly as practicable in its final position. Extensive spading as a means of transportation must be avoided and in no case may vibrators be used to transport concrete inside the forms.

3. Open troughs and chutes must have a slope not to exceed 1 vertical to 2 horizontal and not less 1 vertical to 3 horizontal. Chutes more than 20 ft. long and chutes not meeting the slope requirements may be used provided they discharge into a hopper before distribution.

4. Concrete must not be allowed to drop freely more than six feet except where specifically authorized by the Engineer. When placing operations would involve the dropping of concrete from a height of more than six feet. It must be conveyed through pipes or flexible drop chutes.

5. If any appreciable segregation occurs through the conveying methods employed, their use will be ordered discontinued by the Engineer and some other satisfactory method of placing concrete must be used.

6. All chutes, troughs, pipes and other means of conveyances must be kept clean and free from coatings of hardened cement or concrete by thoroughly cleaning with water and chipping after each pour. Water used for flushing must be discharged away from the vicinity of the concrete or forms already in place.

D. Depositing
1. Unless adequate protection is provided, concrete must not be placed during rain. Rainwater must not be allowed to increase the mixing water nor to damage the surface finish. Fresh concrete that has been deposited but has not attained its initial set must be protected in the event of rain.

2. Concrete must be placed so as to avoid segregation of the materials and the displacement of the reinforcing. As nearly as practicable, the concrete must be dropped vertically without hitting reinforcement, sleeves or forms into its final position in order to avoid separation of coarse aggregates from concrete. After the initial set of concrete, the forms must not be jarred and no strain may be placed on the projecting reinforcing.

3. Formed concrete must be deposited in horizontal layers not deeper than two feet avoiding inclined layers and inclined construction joints. The depth of layers must be shallow enough so that the succeeding layer will be placed before the previous layer has attained its initial set. Concrete must not be allowed nor may it be caused to flow horizontally or on slopes in the form. Concrete placing on a slope must begin at the lower end of the slope and progress upward.

4. In slab construction, placing the concrete must be started at the far end of the work so that each batch will be dumped against previously placed concrete, not away from it. The concrete may not be dumped in separate piles and the piles then leveled and worked together.

E. Consolidation
1. All concrete must be consolidated by vibration so that the concrete is thoroughly worked around the reinforcement, around embedded items, and into corners of forms, eliminating all air or stone pockets which may cause honey combing, pitting or planes of weakness.

All compaction or consolidation must be done by use of high frequency internal vibrators.

2. Frequency of vibrator may not be less than 7,000 impulses per minute. The Contractor must provide a sufficient number of vibrators to properly consolidate all concrete immediately after placing. At least one standby vibrator must be on hand at all times during placement of the concrete.

3. Vibration may not be applied through contact with reinforcement or forms. Vibration must penetrate previously deposited concrete sufficiently to prevent pockets of voids or construction joints from occurring between pours, but must not be applied to concrete which has set up sufficiently to cease to be plastic under vibration.

3.07 SLAB ON GRADE

A. All slabs on grade must be reinforced as called for on the plans. Plain bar dowels must be provided as detailed for construction and expansion joins. Such dowels must be wrapped or greased on one side of the joints to prevent bonding.

B. Care must be taken in handling and placement of the reinforcing as follows:
   1. Reinforcing fabric must not be rolled over by trucks, buggies, or wheelbarrows, nor trampled to the extent that it is bent out of the plane of the fabric. Material which has been so bent that it cannot be laid out flat will be rejected.

   2. Reinforcing fabric must be positively set prior to the placement of concrete, to the level(s) required within the slab(s) as indicated on the plans or as otherwise called for herein.

3.08 FINISHING OF SLABS

A. Finish A – Light Trowelled Finish
   1. After the concrete has been placed, struck off consolidated and leveled, the concrete must not be worked further until ready for floating. Floating may begin when the water sheen has disappeared and/or when the mix has stiffened sufficiently to permit the proper operation of a power-driven float. The surface must then be consolidated with power-driven floats of the impact type. Locations inaccessible to the power-driven machine may be floated by hand. The slab must then be steel trowelled to a uniform, smooth texture.

B. Finish B – Broom Finish
   1. The concrete slab must be given a coarse transverse scored texture by drawing a broom across the surface. The operation must follow immediately after steel-trowelling performed under Finish A above.

C. Finish tolerances for slabs as classified on the plans must be in accordance with the following:
   1. Finishes with Class I tolerances must be true planes within 1/8” in 10 ft. as determined by a 10 ft. straightedge placed anywhere on the slab in any direction.

   2. Finishes with Class II tolerances must be true planes within 1/4” in 10 ft. as determined by a 10 ft. straightedge placed anywhere on the slab in any direction.

   3. Unless otherwise shown on the plans, all slabs must meet Class II tolerance. The tolerances will be checked prior to moving forms or shores.

D. Concrete walks must be Class II, Finish B.

3.09 REPAIR OF DEFECTS

A. After forms have been removed, any concrete which is not constructed as shown on the plans or is out of alignment or level beyond required tolerances or which shows a defective surface which in the opinion of the Engineer cannot be properly repaired or patched must be removed and replaced at no additional cost to the Owner.

B. Where cast-in-place concrete which is exposed to view or designated architectural, requires repairing or patching, the texture of the surface of such repair or patch must closely match that of the surrounding surface. If the concrete is to remain unpainted, the surface color must also be closely matched to that of the surrounding surface.

C. All tie holes and all repairable defective areas must be patched immediately after form removal as follows:

1. All honeycombed concrete must be chipped out to sound concrete but in no case to a depth of less than one inch. If possible, edges of the chipped-out areas shall be undercut.

2. Rock pockets, form tie holes, deep holes not too large in area, other holes with relatively high ratio of depth to area, and similarly confined areas must be dry packed.
   a. After the area to be patched has been thoroughly cleaned and dampened, the mortar, which must consist of 1 part cement, 2-1/2 parts sand passing a #16 screen, and only enough water to produce a mortar that will stick together upon being molded into a ball by slight pressure of the hands, must be placed in the holes in layers having a compacted thickness of about 3/8". Each such layer must be solidly rammed over its entire surface using a hardwood stick and a hammer.

3. Shallow depressions where lateral restraint cannot be obtained, voids behind reinforcement, and holes extending through concrete sections must be patched using a commercially prepared bonding agent, a stiff mortar mix of 1 part cement and not more than 2-1/2 parts sand.
   a. For filling holes in exterior surfaces, an epoxy bonding agent must be used. Application of the bonding agent must be in strict conformance with the manufacturer's instructions.

4. An epoxy-and-sand mixture may be used in lieu of mortar-and-bonding agent mixture for any of the patching above. The preparation of the surface to receive the patch, as well as the mixture proportions of the epoxy-and-sand, must be in strict conformance with the manufacturer's instructions.

D. Except for concrete required to be removed under this section, any concrete which is not constructed as shown on the plans or is out of alignment and/or level beyond allowable tolerances may be patched using an epoxy-and-sand mixture.

1. The proportions of the mix and preparation of the surface to receive the patch must be in strict conformance with the manufacturer's instructions except as or unless otherwise specified herein. The minimum thickness of the patch must be 1/4". No "feathering" to a lesser thickness will be permitted.

E. Misalignment which requires correction more than one inch thickness must be repaired in the following manner:
   1. The surface of the affected area must be chipped, etched or otherwise cleaned and roughened to provide a sound surface for bonding;

   2. Concrete nails or other fasteners which can provide positive mechanical bonding of the patch must be set into the surface at about 18 inches on center in all directions with a minimum of two rows;

   3. Wire mesh reinforcement as approved by the Directorr must be installed in those portions of the patch which exceed two inches in thickness;

   4. A bonding agent suitable for use in the repair location (epoxy required for exterior use) must be applied over the entire surface to be patched;

   5. Formwork to the true lines called for must be installed over the area requiring the patch; and

   6. Concrete or grout with aggregate sized appropriately for the cavity and which will provide strength equivalent to that of the base surface must be placed in the form, properly compacted and suitably cured.

3.10 CURING AND PROTECTION

A. All concrete must be cured for a period of not less than seven days by one of the methods listed below. During this curing period, the concrete must be maintained with minimal moisture loss at a relatively constant temperature. Fresh concrete must be protected from heavy rains, flowing water, mechanical injury and injurious action of the sun. Curing method selected must be compatible with the finish to be applied to the concrete.
   1. Curing must immediately follow the finishing operation.

B. Water Curing
   1. Concrete must be kept wet by mechanical sprinklers, by ponding, or by any other method which will keep the surfaces continuously wet.

C. Waterproof Paper
   1. Waterproof paper or opaque polyethylene film conforming to ASTM C171 may be used. The paper or film must be anchored securely and all edges sealed or applied in such a manner as to prevent moisture escaping from the concrete. Waterproof paper must not be used on floors that will be exposed when finished.

3.11 FINAL INSPECTION

A. At the time of final inspection of the work performed under the contract, the items covered by this section must be complete in every respect and operating as designed. All surplus materials of every character resulting from the work of this section must have been removed. All concrete and adjacent surfaces must be cleaned of any laitance. Any defects discovered subsequent to this inspection must be corrected prior to final acceptance.

END OF SECTION

SECTION 02820 – CHAIN LINK FENCE AND GATES

PART 1 – GENERAL

1.01 GENERAL CONDITIONS

A. The General Requirements and Covenants and the Special Provisions preceding these specifications shall govern all work specified hereinafter in all Divisions and Sections

1.02 DESCRIPTION OF WORK

A. Furnish materials, labor, and equipment necessary to install all chain link fences and gates to the limits shown and as detailed on the plan and as specified herein. All materials shall be new, specifically purchased for this project.

B. This Section includes commercial chain link fence and gates specifications.

1. Galvanized steel coated chain link fabric

2. Galvanized steel framework and fittings

3. Swing Gates

C. Related Work Described Elsewhere:

Section 02770 – Site Concrete

1.03 REFERENCES

A. ASTM A 392, Zinc-Coated Steel Chain Link Fence Fabric.

B. ASTM A 824, Metallic-coated Marcelled Tension Wire for use with Chain Link Fence Fabric.

C. ASTM F 552, Definitions of Terms Relating to Chain Link Fencing.

D. ASTM F 567, Standard Practices for Installation of Chain-Link Fence.

E. ASTM F 626, Standard Specifications for Fence Fittings.

F. ASTM F 900, Standard Specification for Industrial and Commercial Swing Gates.

G. ASTM F 1083, Pipe, Steel, Hot-dipped, Zinc-Coated (Galvanized) Welded, for Fence Structures.

1.04 SUBMITTALS

A. Product Data: Submit manufacturer's product data and specifications of the specified chain link fencing and gates.

B. Shop drawings: Site plan showing layout of fence location with dimensions, location of gates and opening size, cleared area, elevation of fence, gates, footings and details of attachments, including installation details of the fencing, posts, gates, hardware, and accessories for review.

1.05 QUALITY ASSURANCE

A. Supply material in accordance with CLFMI -Product Manual, and per references specified in this section.

B. Perform installation in accordance with ASTM F567.

C. Maintain one copy of each document on site.

1.06 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three 3 years experience.

B. Installer: Company specializing in performing work of this section with minimum three (3) years experience

1.07 DELIVERY STORAGE AND HANDLING

A. Deliver, store, protect and handle products with adequate protection against damage.

B. Deliver fence fabric and accessories in packed cartons or firmly tied rolls.

C. Identify each package with manufacturer's name.

D. Store fence fabric and accessories in secure and dry place

1.08 COORDINATION

A. Coordinate work with work of others.

PART 2 – PRODUCTS

2.01 MANUFACTURERS

A. Manufacturer and distributor of complete fencing systems, or approved equivalent.

2.02 CHAIN LINK FABRIC

A. Chain Link Fence Fabric: Hot-dip galvanized and conforms to ASTM A392, Class 2. Fabric shall be standard Chain Link, 9 ga. 2" square mesh, 6'-0" high, top selvage knuckled & bottom selvage knuckled.
   1. Zinc-Coated Steel Fabric: ASTM A392 hot dipped galvanized before weaving.
      a. Class 2 – 2.0 oz/ft^2

   2. Fabric selvage: Knuckle finishes top and bottom, K&K.

2.03 STEEL FENCE FRAMEWORK

A. Round steel pipe and rail: Schedule 40 standard weight pipe, in accordance with ASTM F1083, 1.8 oz/ ft² hot dip galvanized zinc exterior and 1.8 oz/ft² hot dip galvanized zinc interior coating Regular Grade: Minimum steel yield strength 30,000 psi.
   1. Line Post: 2-3/8" O.D. – 3.65 lbs/ft

   2. End, Corner, Pull Post: 2-3/8" O.D. – 3.65 lbs/ft

   3. Top, brace rails: 1-5/8" O.D. – 2.57 lbs/ft

2.04 TENSION WIRE

A. Metallic Coated Steel Marcelled Tension Wire: 7 gauge (0.177 in.) marcelled wire complying with ASTM A824.
   1. Type II Zinc-Coated Class 5 – 2.0 oz/ft^2

2.05 FITTINGS

A. Tension and Brace Bands: Galvanized pressed steel complying with ASTM F626, minimum steel thickness of 12 gauge (0.105 in.), minimum width of 3/4 inch and minimum zinc coating of 1.20 oz/ft². Secure bands with 5/16 inch galvanized steel carriage bolts.

B. Terminal Post Caps, Line Post Loop Tops, Rail and Brace Ends, Rail Sleeves: In compliance to ASTM F626, pressed steel galvanized after fabrication having a minimum zinc coating of 1.20 oz/ft².

C. Truss Rod Assembly: In compliance with ASTM F626, 3/8 inch diameter steel truss rod with a pressed steel tightener, minimum zinc coating of 1.2 oz/ft², assembly capable of withstanding a tension of 2,000 lbs.

D. Tension Bars: In compliance with ASTM F626. Galvanized steel one-piece length 2 in. less than the fabric height. Minimum zinc coating 1.2 oz. /ft².

   1. Bars shall have minimum cross section of 1/4 inch by 3/4 inch.

2.06 TIE WIRE AND HOG RINGS

A. Tie wire and hog rings per ASTM F626. 9 gauge (0.148 in.) galvanized steel preformed power-fastened wire ties, 9 gauge (0.148 in.) galvanized steel hog rings. Minimum zinc coating 1.20oz/ft^2.

2.07 SWING GATES

A. Swing Gates: Double swing 24-foot opening by 6-feet high gate, as shown per plan. Galvanized steel pipe welded fabrication in compliance with ASTM F900. Gate frame members 1-7/8-inch in. OD ASTM F 1083 schedule 40 galvanized steel pipe. Frame members spaced no greater than 8-feet apart vertically and horizontally. Welded joints protected by applying zinc-rich paint in accordance with ASTM Practice A780. Provide positive locking gate latch, pressed steel galvanized after fabrication. Galvanized malleable iron or heavy gauge pressed steel post and frame hinges. Match gate fabric to that of the fence system. Gateposts 6-5/8-inch O.D., 18.97 lb/ft.

2.08 CONCRETE

A. Concrete for post footings shall have a 28-day compressive strength of 2,500 psi.

PART 3 – EXECUTION

3.01 EXAMINATION

A. Verify that field conditions are acceptable and are ready to receive work.

B. Beginning of work means installer accepts existing surface and substrate conditions.

3.02 CLEARING FENCE LINE

A. Clearing: Surveying, clearing, grading and removal of debris for the fence line or any required clear areas adjacent to the fence. Clearing work required to properly install fence shall be considered incidental work.

3.03 FRAMEWORK INSTALLATION

A. Posts: Posts shall be set plumb in concrete footings in accordance with ASTM F567. Minimum footing depth and footing diameter shall be in accordance with project drawings. Top of concrete footing to be at grade crowned to shed water away from the post. Line posts installed at intervals not exceeding 10 feet on center.

B. Top rail: When specified, install 20 feet lengths of rail continuous thru the line post loop top. Splice rail using top rail sleeves minimum 6 inches long. Rail shall be secured to the terminal post by a brace band and rail end. Intermediate rail shall be field cut and secured to the line posts using boulevard clamps or brace band with rail end.

C. Terminal posts: The horizontal brace rail and diagonal truss rod shall be installed in accordance with ASTM F567.

D. Tension wire: Shall be installed 4 inches up from the bottom of the fabric. Tension wire to be stretched taut, independently and prior to the fabric, between the terminal posts and secured to the terminal post using a brace band. Secure the tension wire to each line post with a tie wire.

3.04 CHAIN LINK FABRIC INSTALLATION

A. Chain Link Fabric: Install fabric to outside of the framework. Attach fabric to the terminal post by threading the tension bar through the fabric; secure the tension bar to the terminal post with tension bands and 5/16 inch carriage bolts spaced no greater than 12 inches on center. Chain link fabric to be stretched taut free of sag. Fabric to be secured to the line post with tie wires spaced no greater than 14 inches on center and to horizontal rail spaced no greater than14 inches on center. Preformed 9 gauge power-fastened wire ties shall be wrapped 360° around the post or rail and fabric wire picket, twist the two ends together three full turns per ASTM F567. Excess wire shall be cut off and bent over to prevent injury. The installed fabric shall have a ground clearance on no more than 2 inches. Secure the fabric to the tension wire by crimping hogs rings around a fabric wire picket and tension wire.

3.05 GATE INSTALLATION

A. Swing Gates: Installation of swing gates and gateposts in compliance with ASTM F567. Direction of swing shall be inward and outward. Gates shall be plumb in the closed position having a bottom clearance of 3 inches grade permitting. Hinge and latch offset opening space from the gate frame to the post shall be no greater than 3 inches in the closed position. Double gate drop bar receivers shall be set minimum 8-inches into concrete footing foundation. Bottom post mount gate leaf holdback shall be installed for all double gates.

3.06 NUTS AND BOLTS

A. Bolts: Carriage bolts used for fittings shall be installed with the head on the secure side of the fence. All bolts shall be peened over to prevent removal of the nut.

3.07 FINAL CLEAN-UP

A. Clean Up: The area of the fence line shall be left neat and free of any debris caused by the installation of the fence.

END OF SECTION