

TECHNICAL SPECIFICATIONS  
FOR  
KAWAIHAE GUARDRAIL INSTALLATION  
KAWAIHAE, SOUTH KOHALA, ISLAND OF HAWAII, HAWAII

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All applicable sections of the following are incorporated by reference (inclusive):

1. WATER SYSTEM STANDARDS, of the Department of Water Supply - County of Hawaii, Board of Water Supply - City and County of Honolulu, Department of Water - County of Kauai, and Department of Water Supply - County of Maui, State of Hawaii, dated 2002, as amended (Bound Separately).
2. HAWAII STANDARD SPECIFICATIONS for Road, Bridge and Public Works Construction, State of Hawaii, Department of Transportation, Highways Division, 1994 and current amendments (Bound Separately. Paragraphs on Measurement and Payment do not apply to this project).

**CAUTION:** For measurement and payment purposes, if there are discrepancies between these technical specifications, the Standard Specifications, and the proposal schedule, **measurement and payment will be in accordance with the PROPOSAL SCHEDULE.**

## DIVISION 1 – GENERAL REQUIREMENTS

### SECTION 01010 - GENERAL REQUIREMENTS

#### PART 1 - GENERAL

- 1.01 GENERAL REQUIREMENTS AND COVENANTS: The General Conditions, General Specifications, Special Provisions, and other applicable documents preceding these specifications shall govern all work specified hereinafter in all Divisions and Sections.
- 1.02 APPLICABLE REGULATIONS: The Contractor shall comply with all local laws, ordinances, rules and regulations pertaining to such work and must obtain all required permits, licenses, and certificates and publish and post all notices required thereby.
- 1.03 DESCRIPTION OF THE WORK: These specifications are divided for convenience into titled divisions and sections as set forth in the TABLE OF CONTENTS preceding these specifications and shall not be considered an accurate or complete segregation of the several units of labor and materials. No responsibility, either direct or implied is assumed by the Department of Hawaiian Home Lands (DHHL) for omissions or duplications of the subject matter. The Contractor will be held responsible for the complete work whenever or wherever the parts are described in one or more trade heads. Any mention in these sections or indication on the drawings of articles, materials, operations, or methods, require that the Contractor furnish each item so mentioned or indicated, of the kind, type, or design and quality of each item so mentioned on the drawings, and that the Contractor furnish all labor, materials, equipment, incidentals and supervision necessary to complete the work in accordance with the drawings and the true meaning and intent of these specifications, even though such mention of articles, materials, operations, methods, quality, qualifications or condition is not expressed in complete sentences.

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

Schedule of work included in these specification sections are given for convenience and shall not be considered as a comprehensive list of items necessary to complete the work of any section.

The Contractor shall employ the usual standard practice of coordinating the work covered in each section with the work of other sections. The necessary information and the items, accessories, anchors, connections, patterns, templates, etc., shall be delivered when required in order to prevent any delay in the progress and completion of the work.

- 1.04 PLANS AND SPECIFICATIONS: These specifications are intended to cover all labor, materials and standards of workmanship employed in the work indicated on the plans and called for in the specifications or reasonably implied therein. The plans and specifications complement one another. Any part of the work mentioned in one and not represented in the other, shall be done the same as if it had been mentioned or represented in both.

The Contractor shall not alter from the drawings and specifications. In the event of errors or discrepancies, the Contractor shall immediately notify the Engineer.

All figured dimensions take precedence over scaled measurements. No important dimension shall be determined by scale.

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

1.05 REFERENCE STANDARDS: All work shall be done in accordance with the most current standards listed below as amended and/or amplified herein.

ASA American Standards Association

ASTM American Society for Testing and Materials

AISC American Institute of Steel Construction

ACI American Concrete Institute

UBC Uniform Building Code - current edition

END OF SECTION

DIVISION 1 – GENERAL REQUIREMENTS

SECTION 01340 - DRAWINGS TO BE FURNISHED BY CONTRACTOR

The following shall supplement the General Conditions.

- 1.01 Shop drawings and submittals shall be made in accordance with Section 5.5 - Shop Drawings and Other Submittals of the General Conditions.
- 1.02 The Contractor's stamp and verification of drawings shall consist of the following format:

KAWAIHAE GUARDRAIL PROJECT  
DHHL CONTRACT NO. IFB-16-HHL-015

(Contractor's Name) \_\_\_\_\_

(Signature ) \_\_\_\_\_ (Date) \_\_\_\_\_

This submittal has been checked and verified in accordance with the requirements of the contract documents and any equipment submitted herewith can be installed in the allocated spaces.

Submittal No. \_\_\_\_\_

Specification Section No. \_\_\_\_\_

Paragraph No. \_\_\_\_\_

Contract Drawing Ref. \_\_\_\_\_

Subcontractor \_\_\_\_\_

Supplier \_\_\_\_\_

Manufacturer \_\_\_\_\_

Exceptions Taken:            Yes \_\_\_\_\_            No \_\_\_\_\_

Details of Exception \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

- 1.03 The person signing the Contractor's submittal stamp shall be the one designated under the contract agreement with the DHHL. The signature shall be in original ink. Stamped signature will not be acceptable. Submittal shall be completely filled out, signed and dated.

- 1.04 All changes made to the submittal drawings by the Contractor in the form of written or typewritten markings shall be initialed and dated by the Contractor.
- 1.05 When the Contractor takes any exception to the submittal drawings, such exception shall be brought to the attention of the Engineer. The exception shall be submitted with the shop drawings together with sufficient details and justifications.
- 1.06 Within 30 days after receipt of notice to proceed, the Contractor shall submit to the Engineer in duplicate, a schedule, listing all items that will be submitted for review and approval action by the DHHL, the State Department of Transportation, or the County. The schedule shall include, among other things, a list of shop drawings and manufacturer's literature, certificates of compliance, material samples, and guarantees. The schedule shall indicate the type of item, contract requirement reference; the Contractor's scheduled date for submitting the above items and projected needs for approval answers and procurement dates. In preparing the schedule, adequate time (minimum of 15 days) shall be allowed for review and approval; additional time shall be allowed to provide for possible resubmittal. Also, the scheduling shall be coordinated with the approved progress schedule.
- 1.07 The Contractor shall maintain at the job site two sets of full size contract drawings, marking them in red to show all variations between the construction actually provided and that indicated or specified in the contract documents, including buried or concealed herein, or where variations in scope or character of work from that of the original contract are authorized, the drawings shall be marked to define the construction actually provided. Where equipment installation is involved, the size, manufacturer's name, model number and power input or output characteristics are applicable shall be shown on the as-built drawings. The representations of such changes shall conform to standard and detail as necessary to clearly portray the as-built construction. The drawings shall be maintained and updated on a daily basis.

Monthly and final payments of the Contractor shall be subject to prior approval of the drawings.

On completion of the work, both sets of marked-up drawings shall be delivered to the Engineer, and shall be subject to his approval before acceptance.

END OF SECTION

## DIVISION 1 – GENERAL REQUIREMENTS

### SECTION 01430 - ENVIRONMENTAL PROTECTION

#### PART 1 - GENERAL

- 1.01 **GENERAL:** This section covers prevention of environmental pollution and damage during and as the result of construction operations under this contract and for those measures set forth in other sections of the TECHNICAL SPECIFICATIONS. For the purpose of this specification, environmental pollution and damage is defined as the presence of chemical, physical, or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances of importance to utility of the environment for aesthetic, cultural and/or historical purposes. The control of environmental pollution and damage requires consideration of air, water, and land, and includes management of visual aesthetics, noise, solid waste, as well as other pollutants. It is the responsibility of the Contractor to investigate and comply with all applicable Federal, State and County laws and regulations concerning environmental protection and pollution control, and to secure all necessary permits.
- 1.02 **SUBMITTALS:** The Contractor shall submit an environmental protection plan in accordance with the provisions as herein specified. Environmental protection plan shall include but not be limited to the following:
- A. Methods for protection of features to be preserved within authorized work areas. The Contractor shall prepare a listing of methods to protect resources needing protection; i.e., trees, shrubs, vines, grasses and ground cover, landscape features, air and water quality, fish and wildlife, soil, historical, archaeological, and cultural resources.
  - B. Procedures to be implemented to provide the required environmental protection and to comply with all applicable laws and regulations. The Contractor shall set out the procedures to be followed to correct pollution of the environment due to accident, natural causes, or failure to follow the procedures set out in accordance with the environmental protection plan.
  - C. Drawings showing locations of any proposed temporary excavations or embankments for haul roads, stream crossings, material storage areas, structures, sanitary facilities, and stockpiles or spoil material.
  - D. Environmental monitoring plans for the job site, including land, water, air and noise monitoring.
  - E. Methods of protecting surface and groundwater during construction activities.
  - F. Training for his personnel during the construction period.
- 1.03 **IMPLEMENTATION:** After receipt of Notice to Proceed, the Contractor shall submit in writing the above environmental protection plan for approval of the Engineer within 5 days after Notice to Proceed. Approval of the contractor's plan will not relieve the Contractor of his responsibility for adequate and continuing control of pollutants and their environmental protection measures.

- 1.04 SUBCONTRACTORS: Assurance of compliance with this section by subcontractors will be the responsibility of the Contractor.
- 1.05 NOTIFICATION: The Engineer will notify the Contractor in writing of any observed noncompliance with the aforementioned Federal, State or local laws or regulations, permits, and other elements of the Contractor's environmental protection plan. The Contractor shall, after receipt of such notice, inform the Engineer of proposed corrective action and take such action as may be approved. If the Contractor fails to comply promptly, the Engineer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No time extensions shall be granted or costs or damages allowed to the Contractor for any such suspension.

## PART 2 - PRODUCTS (NOT USED)

## PART 3 - EXECUTION

- 3.01 PROTECTION OF ENVIRONMENTAL RESOURCES: The environmental resources within the project boundaries and those affected outside the limits of permanent work under this contract shall be protected during the entire period of this contract. The Contractor shall confine his activities to areas defined by the drawings and specifications.
- 3.02 PROTECTION OF LAND RESOURCES: Prior to the beginning of any construction, the Contractor shall identify all land resources to be preserved within the Contractor's work area. Except in areas indicated on the drawings or specified to be cleared, the Contractor shall not remove, cut, deface, injure, or destroy land resources including trees, shrubs, vines, grasses, topsoil, and land forms without special permission from the Engineer. No ropes, cables, or guys shall be fastened to or attached to any trees for anchorage unless specifically authorized. Where such special emergency use is permitted, the Contractor shall provide effective protection for land and vegetation resources at all times as defined in the following subparagraphs.
- A. Work Area Limits: Prior to any construction, the Contractor shall mark the areas that are not required to accomplish all work to be performed under this contract. Isolated areas within the general work area, which are to be saved and protected shall also be marked or fenced. Monuments and markers shall be protected before construction operations commence. Where construction operations are to be conducted during darkness, the markers shall be visible. The Contractor shall convey to his personnel the purpose of marking and/or protection of all necessary objects.
- B. Protection of Landscape: Trees, shrubs, vines, grasses, land forms and other landscape features indicated and defined on the drawings to be preserved shall be clearly identified by marking, fencing, or wrapping with boards, or any other approved techniques.
- C. Reduction of Exposure of Unprotected Erodible Soils: Earthwork brought to final grade shall be finished as indicated and specified. Side slopes and back slopes shall be protected as soon as practicable upon completion of rough grading. All earthwork shall be planned and conducted to minimize the duration of exposure of unprotected

soils. Runoff from the construction site shall be controlled by construction of diversion ditches, benches, and berms to retard and divert runoff to protected drainage courses.

- D. Disposal of Solid Waste by Removal From State Property: The Contractor shall transport all solid waste off State property and dispose of it in compliance with Federal, State and local requirements for solid waste disposal.
- E. Disposal of Chemical Waste: Chemical waste shall be stored in corrosion resistant containers, removed from the work area and disposed of in accordance with Federal, State, and local regulations.

3.03 PROTECTION OF WATER RESOURCES: The Contractor shall keep construction activities under surveillance, management and control to avoid pollution of surface and groundwaters. Special management techniques as shall be implemented to control water pollution.

- A. Protection of Waterways: Construction of drainage facilities as well as performance of other contract work which will contribute to the control of siltation shall be carried out in conjunction with the earthwork operations or as soon thereafter as is practicable.

Prior to or during any suspension of construction operations for any appreciable length of time, the Contractor shall provide for any temporary erosion control measures deemed necessary. Such measures shall be continued until the permanent drainage facilities have been constructed and when called for, until the protective ground cover is sufficiently established to be an effective erosion deterrent. Should such measures fail and an appreciable quantity of material begins to erode into the natural waterway, the Contractor shall act immediately to bring the siltation under control.

- B. Pollution: The Contractor shall exercise every reasonable precaution throughout the life of the project to prevent pollution of rivers, streams or impoundments. Pollutants such as chemicals, fuels, lubricants, bitumens, raw sewage and other harmful waste shall not be discharged into or alongside of the stream, or into natural or manmade channels leading thereto. The Contractor shall also comply with the applicable regulations of the State Department of Land and Natural Resources and other statutes relating to the prevention and abatement of pollution.

The Contractor shall conduct his operations near harbors, bays, swimming and water recreation areas, to avoid and minimize pollution. He shall comply with the applicable regulations of the United States Department of Interior, State Department of Health and other authority having jurisdiction.

Monitoring of water areas affected by construction activities shall be the responsibility of the Contractor. All water areas affected by construction activities shall be monitored by the Contractor.

3.04 PROTECTION OF FISH AND WILDLIFE RESOURCES: The Contractor shall keep construction activities under surveillance, management and control to minimize interference with, disturbance to and damage of fish and wildlife.

3.05 PROTECTION OF AIR RESOURCES: The Contractor shall keep construction activities under surveillance, management and control to minimize pollution of air resources. All activities, equipment, processed, and work operated or performed by the Contractor in accomplishing the specified construction shall be in strict accordance with the State of Hawaii Public Health Regulations, Chapter 43, "Air Pollution Control." Special management techniques as set out below shall be implemented to control air pollution by the construction activities, which are included in the contract.

A. Particulates: Dust particles, aerosols, and gaseous by-products from all construction activities and processing and preparation of materials shall be controlled at all times, including weekends, holidays and hours when work is not in progress. The Contractor shall maintain all excavations, stockpiles, haul roads, permanent and temporary access roads, plant sites, spoil areas, borrow areas, and all other work areas within or outside the project boundaries free from particulates which would cause the air pollution standards mentioned above to be exceeded or which would cause a hazard or a nuisance. Sprinkling or other methods approved by the Engineer will be permitted to control particulates in the work area. Sprinkling, to be efficient, must be repeated at such intervals as to keep the disturbed area damp at all times. The Contractor must have sufficient competent equipment available to accomplish this task. Particulate control shall be performed as the work proceeds and whenever a particulate nuisance or hazard occurs.

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

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

D. Monitoring of air quality shall be the responsibility of the Contractor. All air areas affected by the construction activities shall be monitored by the Contractor.

3.06 PROTECTION FROM SOUND INTRUSIONS: The Contractor shall adhere to the requirements of the Department of Health and shall implement acceptable noise abatement methods to minimize the construction noise level.

Noise shall be kept within acceptable levels at all times in conformance with Title II, Administration Rules, Chapter 43, Community Noise Control, State Department of Health, Public Health Regulations. The Contractor shall obtain the pay for community noise permit from the State Department of Health when the construction equipment or other devices emit noise at levels exceeding the allowable limits.

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

3.07 POST CONSTRUCTION CLEANUP: The Contractor shall clean up areas used for construction.

- 3.08 RESTORATION OF LANDSCAPE DAMAGE: The Contractor shall restore all landscape features damaged or destroyed during construction operations outside the limits of the approved work areas. Such restoration shall be in accordance with the plan submitted for approval by the Engineer. This work will be accomplished at the Contractor's expense.
- 3.09 MAINTENANCE OF POLLUTION CONTROL FACILITIES: The Contractor shall maintain all constructed facilities and portable pollution control devices for the duration of the contract or for that length of time construction activities create the particular pollutant.
- 3.10 TRAINING OF CONTRACTOR PERSONNEL IN POLLUTION CONTROL: The Contractor shall train his personnel in all phases of environmental protection. The training shall include methods of detecting and avoiding pollution, familiarization with pollution standards, both statutory and contractual, and installation and care of facilities (vegetative covers and instruments required for monitoring purposes) to ensure adequate and continuous environmental pollution control.

END OF SECTION

## DIVISION 1 – GENERAL REQUIREMENTS

### SECTION 01440 - ARCHAEOLOGICAL FINDINGS

#### PART 1 - GENERAL

- 1.01 PRESERVATION AND RECOVERY OF HISTORICAL, ARCHAEOLOGICAL, AND CULTURAL RESOURCES: Existing historical, archaeological, and cultural resources within the Contractor's work area will be so designated by the Engineer if any have been identified. The Contractor shall take precautions to preserve all such resources as they existed at the time they were pointed out to him. The Contractor shall provide and install all protection for these resources so designated and shall be responsible for their preservation during this contract. If during excavation or other construction activities in areas with existing or known resources, as well as in any other work area, any previously unidentified or unanticipated resources are discovered or found, all activities that may damage or alter such resources shall be temporarily suspended. Such temporary suspension of work shall not be attributable to the Contractor. These resources of cultural remains (prehistoric or historic surface or subsurface) include but are not limited to: any human skeletal remains or burials; artifacts; shell, midden, bone, charcoal, or other deposits; rocks or coral alignments, parings, wall, or other constructed features; and any indication or agricultural or other uses. Upon such discovery or find, the Contractor shall immediately notify the Engineer. When so notified, the Engineer will notify the State Historic Preservation Officer (SHPO) for further direction.

As directed by the Engineer, the Contractor may be allowed to continue any operation which would not further disturb the site(s); however, all work within the protected area shall be suspended until the Engineer is notified by the SHPO that all investigations or salvage operations have been completed.

#### PART 2 – PRODUCTS (NOT USED)

#### PART 3 – EXECUTION (NOT USED)

END OF SECTION

## DIVISION 1 – GENERAL REQUIREMENTS

### SECTION 01750 - GUARANTEE

#### PART 1 - GENERAL

##### 1.01 GENERAL

- A. The Contractor guarantees all materials and equipment furnished to be in operable condition upon final acceptance of the work and that all such materials and equipment conform to the requirements of this contract and be fit for the use intended.
- B. He further guarantees all such materials and equipment against defects and poor workmanship and, to the extent that he is responsible for design, the Contractor guarantees the design to meet the criteria and operating requirements specified against failure to perform in accordance with such criteria and operating requirements.
- C. The period of this guarantee shall commence upon acceptance of the work by the appropriate agency, and shall extend through the project performance evaluation period not to exceed 1 year for all materials and equipment, provided that this period shall be extended from the time of correction of any defect or failures, corrected under the terms of this guarantee, for a like period for the corrected work.
- D. The Contractor shall correct all defects or failures discovered within the guarantee period. The appropriate agency will give the Contractor prompt written notice of such defects or failures following their discovery. The Contractor shall commence corrective work within five (5) days following notification and shall diligently prosecute such work to completion. The Contractor shall bear all costs of corrective work, which shall include necessary disassembly, transportation, reassembly and retesting, as well as repair or replacement of the defective material or equipment, and any necessary disassembly and reassembly of adjacent work.
- E. Any period that a particular equipment is not operable due to its failure shall not be considered as a part of the guarantee period. The guarantee period shall be extended for a like period. If due to failure of other equipment the equipment is unable to perform its intended function, the guarantee period shall be extended for a like period. Time that equipment is operating shall be counted as applying to the warranty. Such time shall be determined by use of plant operator's log or other suitable documentation.
- F. If the Contractor fails to perform corrective work in the manner and within the time stated, the Department of Hawaiian Home Lands (DHHL) may proceed to have such work performed at the Contractor's expense and his sureties will be liable therefor. The DHHL shall be entitled to reasonable attorney's fees and court costs necessarily incurred by the Contractor's refusal to honor and pay such costs of corrective work.
- G. The Contractor's performance bond shall continue in full force and effect during the period of this guarantee.

- H. The rights and remedies of the DHHL under this provision do not preclude the exercise of any other rights or remedies provided by this contract or by law with respect to unsatisfactory work performed by the Contractor.
- I. This guarantee shall be deemed supplemental to guarantee provisions provided in other sections of the specifications for the individual units and systems of units so specified.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

## DIVISION 2 - SITE WORK

### SECTION 02100 - CLEARING AND GRUBBING

#### PART 1 - GENERAL

1.01 GENERAL CONDITIONS: The General Conditions and Special Provisions preceding these specifications shall govern this section of the work.

#### 1.02 WORK INCLUDED

- A. Furnish all labor, materials, equipment and tools necessary to clear and grub the entire construction area, accumulate and dispose of all debris and water materials, and lay out the entire work, as indicated on the drawings and specified herein.
- B. It shall be the responsibility of the Contractor to examine the project site and determine for himself the existing conditions.
- C. 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 plans and/or described herein or may vary therefrom.
- D. All debris of any kind accumulated from clearing or grubbing shall be disposed of off-site weekly and the whole area left clean. The Contractor shall be required to make all necessary arrangements related to the proposed place of disposal.
- E. Burning onsite will not be permitted.
- F. Dust Control: Use all means necessary to protect existing objects designated to remain and, in the event of damage, immediately make repairs and replacements necessary to the satisfaction of the Engineer at no additional cost.

#### PART 2 – PRODUCTS (NOT USED)

#### PART 3 - EXECUTION

3.01 SEQUENCE OF WORK: All sequence of work shall be subject to the approval of the Engineer.

#### 3.02 PROTECTION

- A. Adequate precautions shall be taken before commencing and during the course of the work to insure the protection of life, limb and property.
- B. The Contractor shall protect from damage all surrounding structures, trees, plants, grass, walks, pavements, utility boxes, etc. Any damages will be repaired or replaced by the Contractor to the satisfaction of the Engineer and at no cost to the State or DHHL

### 3.03 PERMITS

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

### 3.04 MAINTAINING TRAFFIC

- A. The Contractor shall conduct operations with minimum interference to streets, driveways, sidewalks, 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.

### 3.05 CONSTRUCTION LINES, LEVELS AND GRADES

- A. The Contractor shall verify all lines, levels and elevations indicated on the plans before any clearing, excavation or construction begins. Any discrepancy shall be immediately brought to the attention of the Engineer 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. All lines and grades shall be established by a Surveyor licensed in the State of Hawaii.
- C. Starting of clearing and grubbing operations will be construed to mean that the Contractor agrees that the existing grades, inverts, and improvements are essentially correct as indicated.

### 3.06 CLEARING AND GRUBBING

- A. The Contractor shall clear off and remove from the entire area to be graded, all rubbish, grass and weeds, stumps, large roots, buried logs, garbage, boulders, asphalt, concrete or masonry, abandoned vehicles, boats, appliances, fences and other unsuitable material. Where soft wet soils are encountered, light equipment should be used.
- B. Any stumps and roots larger than 3 inches in diameter shall be removed to a depth not less than 18 inches below the original grade level. Fill voids with select fill to maintain indicated grade. Providing material to fill void, placement and compaction to be considered incidental.
- C. No excavation or filling shall be undertaken until area has been cleared and grubbed.

### 3.07 DISPOSAL

- A. All removed materials with no salvage value shall be removed from the premises. All removed material with salvage value as determined by the Director shall be neatly stored on the premise as direction by the County.
- B. Excessive accumulation of debris, rubbish and dirt will not be permitted. All material or debris shall be removed regularly from the site. A fog spray or other dust settling method shall be employed to dampen areas where there is excessive dust and dirt.
- C. All items to be later reused shall be carefully removed, inspected by the Director and neatly stored away. Items damaged during the removal work shall be replaced with new of the matching type, size and shape at no cost to the County of Hawaii.
- D. The Contractors shall comply with Federal, State and local hauling and disposal regulations.

### 3.08 CLEAN-UP

Clean up and remove all debris accumulated from construction operations from time to time, when and as directed by the Engineer. Upon completion of the construction work and before final acceptance of work, remove all surplus materials, equipment, etc., and leave entire job site clean and neat.

END OF SECTION

## DIVISION 2 - SITE WORK

### SECTION 02370 – EROSION AND SEDIMENTATION CONTROL

#### PART 1 - GENERAL

##### 1.01 SUMMARY

- A. Section Includes
  - 1. Installation of temporary and permanent erosion and sedimentation control systems.
- B. Related Sections
  - 1. Section 02850 - Guardrail
  - 2. Construction Drawings

##### 1.02 ENVIRONMENTAL REQUIREMENTS

- A. Protect adjacent properties, any identified endangered or threatened species or critical habitat, any identified cultural or historic resources, and receiving water resources from erosion and sediment damage until final stabilization.

#### PART 2 - PRODUCTS

##### 2.01 MATERIALS

- A. Envirotech Biosock for sediment control as specified on the Construction Drawings.
- B. Temporary sediment control filter at catch basin and temporary sediment barrier at drain inlet as specified on the Construction Drawings.
- C. Seed, sod, and ground covers for the establishment of vegetation and installation of gravel in accordance with State Standard Specifications.

#### PART 3 - EXECUTION

##### 3.01 PREPARATION

- A. Review the Site Plan in the Construction Drawings.
- B. Conduct storm water pre-construction meeting with Site Contractor, all ground-disturbing Sub-contractors, site engineer of record or someone from their office familiar with the site and erosion control requirements.
- C. Contact Engineer and coordinate locations of the Contractor's lay down area, Envirotech Biosock near the public roadways and general erosion control features and locations to be used during construction prior to construction.

### 3.02 EROSION AND SEDIMENTATION CONTROL IMPLEMENTATION

- A. Place erosion and sediment control systems in accordance with the Construction Drawings or as may be dictated by site conditions in order to maintain the intent of the specifications and permits, including Permit to Work within the State Right-of-Way.
- B. Phase construction activities so as to minimize the area of exposure of erodible earth material in general conformance with the Construction Documents.
- C. Deficiencies or changes on the Construction Drawings shall be corrected or implemented as site conditions change. Changes during construction shall be posted on the Construction Drawings.
- D. The Engineer has authority to limit surface area of erodible earth material exposed by clearing and grubbing, excavation, borrow and embankment operations and to direct Contractor to provide immediate permanent or temporary pollution control measures.
- E. Maintain temporary erosion and sedimentation control systems as dictated by site conditions, indicated in the Construction Documents, or as directed by governing authorities or the Engineer to control sediment until final stabilization. Contractor shall respond to maintenance or additional work ordered by the Engineer or governing authorities immediately, but in no case, within not more than 48 hours if required at no additional cost to the State or DHHL.
- F. Contractor shall incorporate permanent erosion control features, paving, permanent slope stabilization, and vegetation into project at earliest practical time to minimize need for temporary controls.
- G. Permanently seed and mulch cut slopes as excavation proceeds, if any, to extent considered desirable and practical. Add gravel to cover exposed areas as noted on the Construction Documents.
- H. Disturbed areas that will not be graded or actively worked for a period of 14 days or more, shall be temporarily stabilized as work progresses with vegetation or other acceptable means, unless otherwise specified in the Contract Documents. In the event it is not practical to seed areas, slopes must be stabilized with mulch and tackifier, bonded fiber matrix, netting, blankets or other means to reduce the erosive potential of the area.

END OF SECTION

## DIVISION 2 – SITE WORK

### SECTION 02850 - GUARDRAIL

#### PART 1 – GENERAL

##### 1.01 SECTION INCLUDES:

- A. Furnishing and installing Type 3 Beam Type Guardrails including assembly and erection of component parts.
- B. Furnishing and installing Guardrail End Treatments including assembly and erection of component parts.

##### 1.02 RELATED WORK

- A. Construction Drawings
- B. Hawaii Standard Specifications for Road, Bridge and Public Works Construction, State of Hawaii, Department of Transportation, Highways Division, 1994 and current amendments (Paragraphs on Measurement and Payment do not apply to this project).

##### 1.03 REFERENCES

- A. AASHTO M 111-04 - Zinc (Hot-dipped Galvanized) Coatings on Iron and Steel Products
- B. AASHTO M 180-00 - Corrugated Sheet Steel Beams for Highway Guardrail
- C. ASTM A 36 - Carbon Structural Steel
- D. ASTM D 1603-04 - Standard Test Method for Carbon Black in Olefin Plastics
- E. ASTM A 307-04 - Carbon Steel Bolts and Studs, 60 ksi Tensile Strength
- F. ASTM A 325 - Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength
- G. ASTM A 449 - Quenched and Tempered Steel Bolts and Studs
- H. ASTM A 563 - Carbon and Alloy Steel Nuts

##### 1.04 SUBMITTALS

Submit certified inspection reports with test results certifying compliance of the metal beam rails, posts, and hardware according to the contract. Furnish certification before installation of the guardrail.

## PART 2 – PRODUCTS

### 2.01 GENERAL COMPLIANCE

All guardrails, posts and hardware shall conform to Hawaii Standard Specifications.

### 2.02 GUARDRAIL

- A. Guardrail Post and Steel Rail. Steel posts and steel rail beams for the Type 3 Beam Type Guard Rail shall be zinc-coated. Steel shall conform to ASTM A 36. Corrugated sheet steel rails shall conform to AASHTO M 180, Class A, Type II. Damaged zinc-coated base metal surfaces shall be repaired. Zinc-coat steel posts after fabrication.
- B. Guardrail Hardware. Zinc-coat metal fittings, bolts, washers and accessories according to AASHTO M111 or ASTM A153. Zinc-coat after fabrication.
- C. Recycled Plastic Offset Brackets. Recycled plastic offset brackets (or spacer blocks) shall consist of minimum 70% by weight of recycled plastic and shall be uniform in composition throughout the product. The product shall exhibit good workmanship and shall be free of burns, discoloration, contamination, and other objectionable marks or defects which affect appearance or serviceability. The Engineer will permit only chemicals, including fillers and colorants, designed to inhibit ultraviolet degradation, biological/biochemical decomposition, insect infestation, or burning to enhance durability for a minimum life of 35 years. The basic material used in the construction shall contain at least 2.5% and not more than 3.5% of carbon black when tested according to ASTM D 1603, and shall have not more than 0.03% of absorption when tested according to ASTM D 570, Section 7.1. Each block shall have the manufacturer's name and the date that the block was manufactured, branded on the block.
- D. Splices and End Connections.
  - 1. Splices and end connections shall be according to the contract and shall be of such strength as to develop the full design strength of the rail elements.
  - 2. End section shall conform to AASHTO M 180, Class A, Type 2.
  - 3. W beam terminal connectors shall conform to AASHTO M 180, Class B, Type 2.

## PART 3 - EXECUTION

### 3.01 CONSTRUCTION REQUIREMENTS

Assemble and erect guardrails. Preserve and protect existing facilities to remain. Replace guardrails damaged by the Contractor. At the end of each workday, protect any

opening in the guardrail system not yet completed with acceptable physical barriers. Install end treatments in accordance with manufacturer's recommendations.

### 3.02 BEAM TYPE GUARD RAIL

Repair zinc-coated base metal surfaces damaged during installation and assembly.

- A. Posts. When using a suitable method, the Contractor may drive only steel posts, except those with anchors, into the ground. Maintain an accurate vertical alignment and shall not deform the steel post.

Set the wood and steel posts with anchors plumb in hand or mechanically dug holes. Backfill post holes with acceptable material placed in layers and compact thoroughly.

Set the posts vertically in the ground to the approximate depth shown in the contract. The posts, after backfilling or driving, shall be in accurate alignment with their tops at the required grade.

The Contractor may vary the guardrail post locations shown in the contract to ease clearing utility lines or to produce smooth transitions. Request such variance for acceptance by the Engineer. The Contractor may not vary the guardrail post locations of terminal sections.

When the contract requires additional bolts and holes on posts, drill the additional bolt holes and furnish the bolts for proper installation. Drill, furnish, and install these additional bolts at no cost to the State.

Do not make the additional bolt holes in posts by burning with a torch or other method or device. Manufacture or drill the holes in the posts.

Apply a preservation treatment to the wood posts and blocks according to Section 714 - Structural Timber and Related Materials.

Where field cutting or boring is done after treatment, thoroughly swab, spray, or brush the cuts and holes with two applications of preservatives accepted by the Engineer.

B. Rail Elements. Install the rail elements that results in a smooth, continuous installation. Draw the bolts, except adjustment bolt, tight. Bolts shall be of sufficient length to extend beyond the nuts.

When the contract requires setting the guardrail posts at non standard spacing, cut the rail elements and drill bolt holes as necessary for proper installation.

Do not make the additional bolt holes by burning with a torch or other method or device.

The Contract does not require paint on zinc coated steel railing.

END OF SECTION