

SCOPE OF WORK

Installation of Feral Pig Fencing at Keaukaha Military Reservation (KMR), Hilo,
State of Hawaii, Department of Defense, Hawaii Army National Guard,
Job No. CA-202010

- 1. LOCATION.** The Keaukaha Military Reservation (KMR) consists of approximately 504 acres on the east side of Hawaii Island, located at 1304 A Kekuaaoa Street, Hilo, HI 96720-4595, TMK [3] 2-1-012:003 & [3] 2-1-013:010, adjacent to the southern boundary of the Hilo International Airport.
- 2. AUTHORITY.** The Sikes Act; Army Regulation 200-1; Endangered Species Act (ESA) of 1973 as amended; Executive Order (EO) 11514 Protection and Enhancement of Environmental Quality; EO 13186 Responsibilities of Federal Agencies to Protect Migratory Birds; EO 13751 Safeguarding the Nation from the Impacts of Invasive Species.
- 3. REFERENCES.** Hawaii Army National Guard (HIARNG) *Integrated Natural Resources Management Plan for Four Sites (2019)*; *Integrated Pest Management Plan for the Hawaii Army National Guard*, January 2018.
- 4. PURPOSE.** The Hawaii Army National Guard (HIARNG) must identify, evaluate, preserve, maintain, protect native ecosystems, migratory bird species, and threatened and endangered species on HIARNG training sites. In accordance with regulations and requirements to protect migratory birds, federal and state listed endangered species, and a unique and rare lowland wet forest ecosystem located at KMR will require the installation of fencing around various perimeters of KMR to eliminate the ingress of feral pigs.
- 5. MAJOR WORK TASKS.** The major requirement of this project is to install hog wire fencing along perimeter borders of KMR.
 - a) The total linear footage of hog wire fencing to be installed is approximately 17,145 linear feet.
 - b) The terrain along the perimeter borders of KMR where the fencing will be installed varies and is relatively flat and consists of areas previously cleared for fencing as well as portions that consist of a'a lava.
 - c) Vegetation along the border is typically covered with grasses, shrubs, and trees which will require clearing prior to fence installation and avoiding native plant species as much as possible. Vegetation will be cleared 6' (feet) on each side of the new fence line. Woody plants greater than 15 ft tall will not be disturbed, removed, or trimmed during the Hawaiian hoary bat birthing and pup rearing season (June 1 through September 15).
 - d) Contractor will be responsible for grubbing terrain 6' (feet) on either side of the new fence line, where applicable, to ensure that feral pigs cannot undermine the fencing and gain access into the property from the underside of the fence. A single strand of

barbwire will be installed at the base of the new fence to eliminate feral pig intrusion onto the property.

- e) The Contractor will be responsible for all required grubbing permits and archeological monitoring and/or impact mitigation, as required.

6. DETAILED WORK TASKS.

6.1 Project Phases - Listed in priority order. Phases 2 and 3 (Additive Alternates) may be awarded depending on availability of funds.

- a) Phase 1 – will consist of installing feral pig fencing along the northern (approximately 4433 linear feet) and southern portion (approximately 4119 linear feet) of KMR boundary.
- b) Phase 2 - (Additive Alternate #1) – will consist of installing feral pig fencing along the eastern portion (approximately 4341 linear feet) of KMR boundary. This segment will require two gates to be installed, one at the northern portion and one at the southern portion of the segment.
- c) Phase 3 - (Additive Alternate #2) – will consist of installing feral pig fencing along the western portion (approximately 4252 linear feet) of KMR boundary. This segment will require the installation of a gate at the northern portion of the segment.

7. CONSTRUCTION OF PERIMETER FENCING.

7.1 Removal and Herbicide Application for Non-Native Vegetation

- a) Non-native Vegetation Removal. The Contractor shall be responsible for cutting down all non-native grasses, shrubs and trees. All stumps will be cut down to ground surface (no more than 3 inches above ground surface) and treated with an approved herbicide.
- b) Approved Herbicide. Approved for use herbicide is Garlon 4 (EPA Registration Number 62719-40). No other herbicides will be used unless approved by the HIARNG Pest Management Coordinator (PMC). Herbicides shall be used in accordance with Federal, State of Hawai'i, local laws, and installation regulations. The Contractor shall always have the appropriate herbicide label and Safety Data Sheet (SDS) with them during herbicide mixing and treatment operations.
- c) Herbicide Equipment. Equipment shall be in good operating condition, free of visible deterioration, shall not leak, and shall be of the right size and power to complete the tasks listed in this scope. Herbicide equipment shall be calibrated to apply herbicides in accordance with the herbicide product label and acreage requiring treatment. The Contractor must clearly and plainly mark

all herbicide application equipment with the company's name, a point-of-contact, phone number and type of herbicide in the container. The Contractor shall assume responsibility for all Contractor-owned equipment or other items.

- d) Herbicide Storage. The Contractor shall not store herbicides or herbicide equipment on Government property. All herbicides and herbicide equipment shall be stored off Government property. All herbicides will be properly secured while Contractor is on-site.
- e) Herbicide Mixing. Herbicides may be mixed on HIARNG property in accordance with the label, state regulations, at an approved site, and provided secondary containment is utilized.
- f) Personal Protective Equipment (PPE). The Contractor shall provide the required PPE to safely perform the work to all employees as required by the herbicide label and SDS.
- g) Herbicide Application Reports. The Contractor shall prepare and maintain daily herbicide application records. Records shall be accurate and complete. Records shall be reported on DD Form 1532-1 in excel form. The form will be emailed to the contractor upon the contract being awarded. All herbicide application records shall be submitted electronically (e-mail attachment) to the project manager and PMC monthly. Records rejected by the PMC due to inadequate or incorrect information shall be corrected and returned to the PMC by the Contractor within five (5) business days.
- h) Advanced Notification. The Contractor is required to notify the project manager and PMC at least one (1) week prior to herbicide applications commencing.

7.2 Fencing Specifications

- a) Fencing. Fencing shall be fixed knot wire fencing with zinc aluminum coating meeting or exceeding ASTM A116 specifications and AASHTO specification M 279. Fencing will be 48 inches in height with 13 horizontal wires and consist of vertical stay spacing of 3" with the vertical stay wires joined to line wire with a fixed knot. Line wires (grade 175) and stay wires (grade 125) will be of 12.5-gauge size with knot wires (grade 60) of 13-gauge size. Zinc aluminum coating will consist of at least .40 oz. Zinc Al/Sq. Ft. and wire strength will range from 195-215 psi (line wire) and 140 psi (stay wire).
- b) Barb wire. A single strand of barb wire will be used at the base of the fencing to ensure feral pigs do not ingress from under the fencing. Barb wire will be of class 3 zinc coating, high tensile wire, heavy duty, meeting and exceeding ASTM A-121 standards.

7.3 T-133 Galvanized T-Posts Specifications

- a) 6.5 feet in length, Certified ASTM A702, T-133 Galvanized per ASTM A123, certified ASTM A 123, with anchor plate.
- b) Type I, Style 1, T-section hot rolled or rerolled rail steel, hot dipped galvanized, 1/8" thick, 1-3/8" wide, with studs for attaching wire not more than three inches apart.
- c) Line posts minimum weight of 1.33 pounds per lineal foot (T-133 posts).
- d) Anchor plates - minimum 0.67 pound, securely fastened to the post.
- e) Posts which are bent, split, mushroomed, cracked, or twisted or have cracked, chipped, or scratched coatings will not be used.

7.4 Fasteners (Clips)

- a) Stainless steel 0.120 dia. Designed for fastening woven wire.

7.5 Brace Wire and Anchor Wire

- a) Stainless steel wire, 0.1250, 304 Heat, #25/4H, annealed (for tying anchors).

7.6 "H" Brace and Corner Post Assemblies

- a) 2-7/8" O.D. or larger, Schedule 40 galvanized pipe, 6' length
- b) 1-7/8" O.D. or larger, Schedule 40 galvanized pipe, at least 9' long for horizontal member of "H" brace assembly.
- c) Industrial galvanized pressed steel accessories are acceptable.

7.7 Gates

- a) Fence Fabric. Provide ASTM A392, Class 2, zinc-coated steel wire with minimum coating weight of 2.0 ounces of zinc per square foot of coated surface or ASTM A491, Type I, aluminum-coated steel wire. Fabricate fence fabric of 9-gauge wire woven in 2-inch mesh conforming to ASTM A116. Fabric shall be twisted and barbed on the top selvage and knuckled on the bottom selvage. Secure fabric to frame using stretcher bar. Install fabric on opposite side of posts from area being secured.
- b) Gate Assembly. Provide gate assembly conforming to ASTM F900 and/or F1184 of the type and swing for a 20' (feet) opening. Provide gate frames conforming to strength and coating requirements of ASTM F1083 for Group IA, steel pipe, with external coating Type A, nominal pipe size (NPS) 1-1/2. Provide gate frames conforming to strength and coating requirements of

ASTM F1043, for Group IC, steel pipe with external coating Type A or Type B, nominal pipe size (NPS) 1-1/2. Gate fabric shall be as specified for chain link fabric.

- c) Gate Leaves. For gate leaves, more than 8 feet wide, provide either intermediate members and diagonal truss rods or tubular members as necessary to provide rigid construction, free from sag or twist. Attach fabric to the gate frame by method standard with the manufacturer except that welding will not be permitted.
- d) Gate Hardware and Accessories. Furnish and install latches, hinges, stops, keepers, rollers, and other hardware items as required for the operation of the gate. Arrange latches for padlocking so that the padlock will be accessible from both sides of the gate. Provide stops for holding the gates in the open position.
- e) Gate Installation. Install gates at the locations as shown on the map. Mount gates to swing in both directions, if applicable, or to swing outward from inside of the property. Install latches, stops, and keepers as required. Install gates as recommended by the manufacturer. Weld or otherwise secure hinge pins, and hardware assembly to prevent removal.

7.8 Concrete

- a) ASTM C94/C94M, using 3/4-inch maximum size aggregate, and having minimum compression strength of 4000 psi at 28 days. Grout shall consist of one-part portland cement to three parts clean, well-graded sand and the minimum amount of water to produce a workable mix.

8. EXECUTION.

8.1 Woven Wire

- a) Woven wire will be deployed with minimal damage to zinc aluminum coating. Whenever possible, crews shall avoid stepping on the wire while handling the rolls.
- b) Woven wire will be tensioned or stretched using a “come-along” device and commercial stretcher bar.
- c) Tension of the top wire shall be such that 10 lbs. of pressure applied midway between posts shall cause no more than 6” of displacement from the straight line between the two adjacent posts. Stretch wire with a ratchet-belay device or other suitable equipment to ensure proper tension.

- d) Woven wire shall be fastened on the outside section (knob side); the side where feral animal pressure will occur.
- e) Top and bottom wires and at least 2 equally spaced interior wires of the 48" tall woven wire will be secured to each T-post using clips or fasteners.
- f) Installed woven wire shall lay flat and uniform and have no "bellies" over high spots along the corridor.
- g) Bottom wire shall be no more than 2 inches above the ground surface at any point.
- h) Ends of the woven wire shall be secured to the corner posts by taking one turn around the post and wrapping it around itself in a tight uniform series of turns. Wire ends shall be trimmed with a cutter. Each strand of the woven wire will be secured in this fashion. When attaching woven wire to the terminal post, care must be taken to keep tensioned line from slacking while wires are cut and secured. Aluminum Crimp locks can be used to join fabric roll to a new roll or in lieu of wrapping or stretching around a corner post. Protection against galvanic action varies with type of fabric chosen.
- i) An unobstructed six-foot-wide corridor shall be provided on both sides of the woven wire and the existing vegetation to facilitate future inspection of the fence.

8.2 Posts

- a) Erect within 2 inches of plumb, spaced no more than 8 feet apart. Additional posts will be placed on high points of the corridor to prevent woven wire from "bellying". Posts will be installed per fencing manufacturer requirements.
- b) Posts shall be driven into substrate to withstand 75 pounds vertical pull and any horizontal force that would cause the posts to be uprooted prior to being bent.
- c) Posts shall be driven to a consistent depth so that the section of T-post showing above the topmost wire will not vary more than 2" from post to post. If substrate prevents installation at the proper depth, the excess post will be trimmed off the top. The exposed bare metal will be sprayed with a cold galvanized compound.
- d) Posts shall be installed so studs will be oriented to allow the woven wire to be installed on the side where feral animal pressure will occur. The posts shall be driven such that the face is parallel with the alignment and that the woven wire will lay flat and even.

8.3 Anchors

- a) Set anchors between posts as needed to keep the gap between the bottom strand of the woven wire and ground surface less than 2 inches. If it is not possible to meet this requirement due to uneven terrain, a segment of woven wire should be cut to the proper length and attached to the bottom strand of woven wire as a skirt. The skirt should conform to the depression and be secured with anchors or eyebolts spaced 2 feet apart.

8.4 Fasteners

- a) Top and bottom wires and at least 4 equally spaced interior wires of the 48" tall woven wire will be secured to each T-post using clips or fasteners. Top and bottom wires and at least 2 equally spaced interior wires of the 48" tall woven wire will be secured to each T-post using clips or fasteners.

8.5 Corner and Brace Assemblies

- a) End and corner posts will be 2-7/8" O.D. or larger Schedule 40 galvanized pipe set no less than 2 feet into the ground and reinforced with concrete. H-brace assembly will be constructed using 1-7/8" or greater O.D. Schedule 40 galvanized pipe as horizontal member in conjunction with the 2-7/8" O.D. corner post. Corner posts must remain plumb after tension is applied during woven wire installation.

8.6 Cleanup

- a) Remove waste fencing materials and other debris from the work site each workday.

9. SCHEDULING

9.1 Scheduling shall not conflict with National Guard exercises or operations.

9.2 Scheduling and site access shall be coordinated with the project manager and pest management coordinator (PMC) Craig Blaisdell, craig.p.blaisdell.nfg@mail.mil, (808) 672-1278.

10. REPORTING. Brief verbal progress reports on coordination and the development and implementation shall be provided to the Project Manager. All information about the completion of major work tasks and the discovery of major constraints shall be communicated as they occur.

11. EQUIPMENT AND MATERIALS. The contractor shall furnish all materials, supplies, and equipment related to the project.

12. PROJECT PERIOD. Each phase shall be completed within four months. Woody plants greater than 15 ft tall will not be disturbed, removed, or trimmed during the Hawaiian hoary bat birthing and pup rearing season (June 1 through September 15).

13. SPECIAL CONDITIONS.

13.1 Professional Qualifications Provided by Contractor

- a) The personnel required for this project shall be adequate in numbers, skill, and qualifications to accomplish the work required in conformance with the scope of work and the schedule of delivery. The contractor shall have the knowledge to identify and distinguish between non-native and native species.
- b) The Project Manager shall be notified of proposed changes in the selected Contractor's Supervisor and/or project employees, equipment and/or project related requirements and reserves the right to approve such changes based on professional qualifications. This shall only apply to those personnel involved in the actual planning and execution of the project.
- c) Selected contractor shall hold a current C-32 license.

13.2 Threatened and Endangered Species

- a) The Project Manager shall be immediately notified by the Contractor of the presence of threatened or endangered species within the project area prior to conducting any activity. All activities shall cease until the species has left on its own accord. The contractor shall comply with the Endangered Species Act of 1973, as amended (16 USC 1531 et seq.) and HRS Chapter 195D-4.
- b) Woody plants greater than 15 ft. tall will not be disturbed, removed, or trimmed during the Hawaiian hoary bat birthing and pup rearing season (June 1 through September 15).

13.3 Environmental Compliance Special Conditions

- a) Prior to start of any contract-related work and within 30 days of completion of the project, the Contractor shall submit to HIARNG-Environmental (ENV) Compliance Branch (Compliance), a Hazardous Material Inventory Log of chemical products to be used in the project. The log shall include the product name and manufacturer identification number, container size, amount used, and maximum number of containers to be stored on site at any given day during the project. Material Safety Data Sheets shall be provided or made available to HIARNG-ENV upon request.
- b) Prior to start of any contract-related work, the Contractor will provide to Compliance an estimate, if any, of the maximum amount of hazardous waste expected to be generated per month, and the total amount anticipated to be

stored on-site at any given time. All generated waste will be stored in a secured area pending removal for disposal, with signage indicating contact information and shall be managed in accordance with all applicable federal, state, and local regulations.

- c) The Contractor shall provide copies of all waste disposal documentation (including any required lab analyses, waste profiles, and any other supporting documentation) to the Contract Project Manager and HIARNG-ENV, along with draft copies of the waste manifests for review, prior to waste shipment off-site for disposal. If the Contractor utilizes a HIARNG Environmental Protection Agency (EPA) Identification Number for waste disposal, manifests will only be signed by individuals authorized by HIARNG-ENV.
- d) HIARNG ENV Compliance's approval is required for any fueling operations being conducted on-site, which will be conducted in accordance with all applicable requirements.
- e) HIARNG ENV Compliance's approval is required for any aboveground storage tank staged on-site. For storage of oil exceeding the EPA threshold of 1,320 gallons shell capacity of oil in containers 55 gallons or greater, contractor is responsible for preparing a Spill Prevention, Control, and Countermeasures (SPCC) Plan in accordance with 40 CFR 112.
- f) The Contractor shall use protective measures for any and all on-site petroleum, oils, or lubricants; chemicals; equipment and vehicles to prevent spills and leaks into the environment and ensure only rainwater enters on-site storm drains, swales, streams, and other paths to navigable waters.
- g) The Contractor is responsible for complying with all existing and applicable environmental permit conditions and requirements and obtaining any and all required environmental permits, e.g., construction-related surface discharge permits, county-required industrial wastewater discharge permits, minor (pollution) source air permits, Hazardous Waste permits, Solid Waste permits, etc. for any contract-related work.
- h) The Contractor is responsible for the cleanup of all spill and releases of hazardous materials and/or petroleum, oils, lubricants generated by the Contractor, to the satisfaction of HIARNG-ENV Compliance.

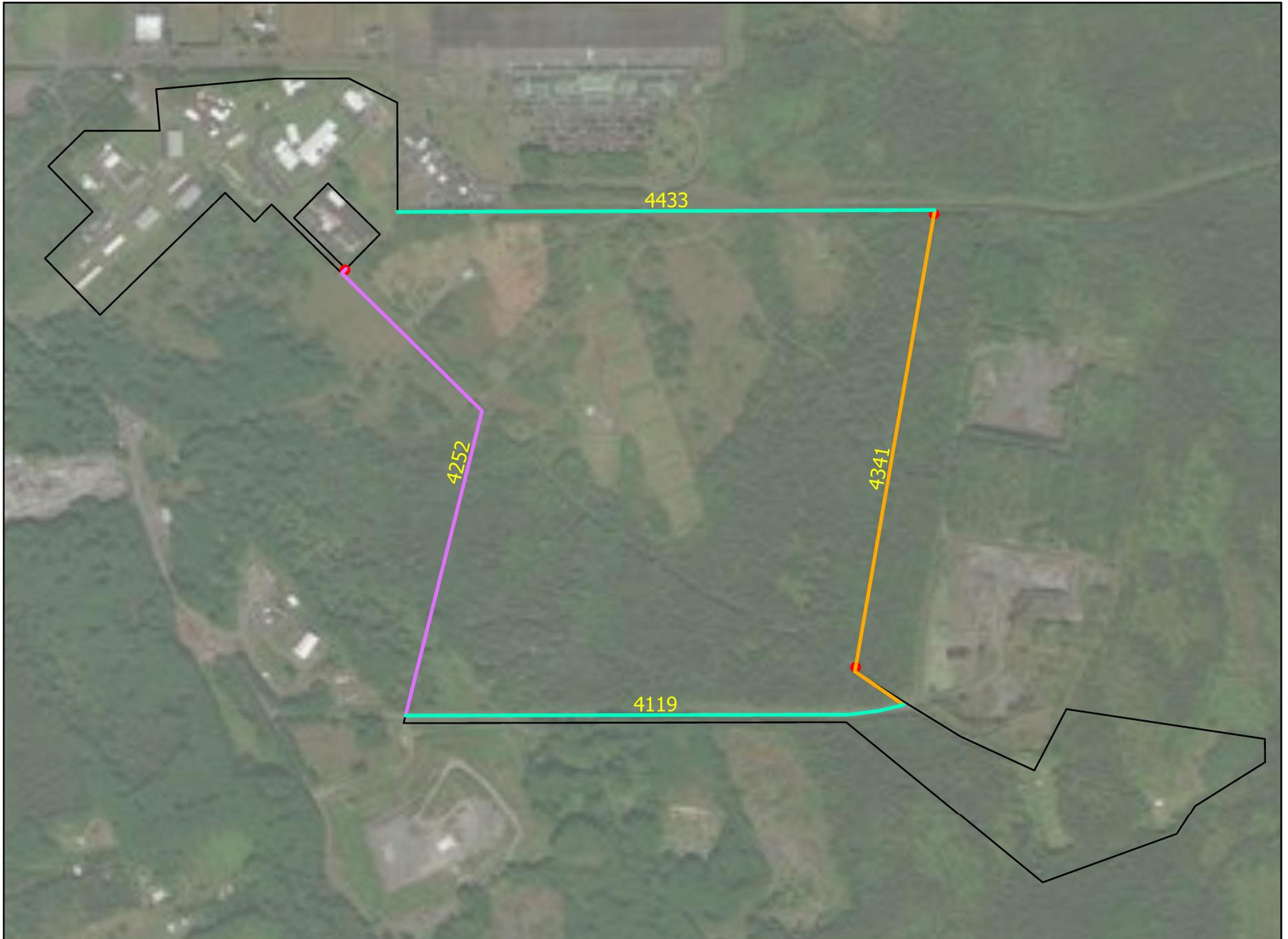
14. CONTRACTING AND BIDDING REQUIREMENTS.

14.1 It is recommended that any Contractor placing a bid on the contract attend the pre-bid meeting and site visit to ensure the bid placed is representative of the scope of the project.

14.2 Contractor shall be responsible for any required permits.

14.3 The successful bidder shall, within ten (10) days after notification of the award, submit a proposed work schedule.

KMR Fencing Project FY20



- Replace Existing Fence_Phase1
- Install New Fence_Phase2
- Install New Fence_Phase3
- Gates
- Property Boundary

0 500 1,000 2,000 Feet

