Make the following section a part of the Standard Specifications:

SECTION 621 – INVASIVE SPECIES MANAGEMENT

## 621.01 Description. This section describes the best management practices for the prevention, identification, control, eradication, and reporting of invasive plant and animal species (collectively, invasive species). Invasive species impacts can include damage to infrastructure, public health and safety issues, reduction of biodiversity, and reduced cover of desirable native and/or nonnative species. The material found in Section 621 – Invasive Species Management shall be applied to the following sections, as appropriate: Section 201 – Clearing and Grubbing, Sections 202 – Removal of Structures and Obstructions, 203 – Excavation and Embankment, 204 –Excavation and Backfill for Miscellaneous Facilities, 205 – Excavation and Backfill for Bridge and Retaining Structures, and 206 –Excavation and Backfill for Drainage Facilities, which cover various excavations; Section 209 – Temporary Water Pollution, Dust, and Erosion Control; Section 619 – Planting; Section 641 – Hydro-Mulch Seeding; Section 642 – Landscape Maintenance; and Section 643 – Maintenance of Existing Landscape Areas.

## **(A) Definitions.** Whenever the following words, terms, or pronouns are used in contract documents, unless otherwise prescribed therein and without regard to the use or omission of uppercase letters, the intent and meaning shall be interpreted as follows:

**(1) Alien Species.**  Any species, including its seeds, eggs, spores, or other biological material capable of propagating that species, that is not native to that ecosystem.

**(2) Botanist/Arborist.**  A person with a minimum of 5 years of experience in the botanical field, including the identification, eradication, control, and reporting of invasive plant species. The CONTRACTOR’s selected botanist/arborist shall be approved by the Engineer.

**(3) Hawaii Invasive Species Council (HISC)**. Inter-departmental collaboration comprised of the Departments of Land & Natural Resources (DLNR), Agriculture (DOA), Health (DOH), Transportation (DOT), Business, Economic Development & Tourism (DBEDT), and the University of Hawaii (UH). The HISC was established in 2003 for the special purpose of providing policy level direction, coordination, and planning among state departments, federal agencies, and international and local initiatives for the control and eradication of harmful invasive species infestations throughout the State and for preventing the introduction of other invasive species that may be potentially harmful.

**(4) Invasive Species.**  An alien species whose introduction does, or is likely to, cause economic or environmental harm or harm to human health.

**(5) Invasive Species Committee (ISC).** Committees located in Hawai‘i that are island-based partnerships of government agencies, nongovernmental organizations, and private businesses protecting each island from the most threatening invasive weeds and pests.

**(6) Noxious Weed.** Any plant species that is, or that may be likely to become, injurious, harmful, or deleterious to the agricultural, horticultural, aquacultural, or livestock industry of the state and to forest and recreational areas and conservation districts of the state, as regulated by the Secretary of Agriculture and the federal land management agencies and the State of Hawai‘i Department of Agriculture (HDOA) Hawai‘i Revised Statutes (HRS) Chapter 152. The HDOA Noxious Weed List can be found in HRS 4:6:68 (Noxious Weed Rules).

**(7) Pest.** Any insect, rodent, nematode, fungus, weed, or any other form of terrestrial or aquatic plant or animal life or virus, bacteria, or other microorganism (except viruses, bacteria, or other microorganisms on or in living humans or other living animals) that the Engineer declares to be a pest (Federal Insecticide, Fungicide, and Rodenticide Act, Section 2(t)).

**(8) Physical Construction**. Activities associated with clearing, grubbing, grading, excavating, filling of land, or other similar site work activities and that cause ground disturbance and/or site disturbance.

**(9) Propagule**. A vegetative structure that can become detached from a plant and give rise to a new plant, e.g., a bud, sucker, or spore.

**(10) Priority Invasive Plants for the State of Hawai‘i Department of Transportation Construction Projects.**

**(a)** Plants and weeds identified in State of Hawai‘i Department of Transportation (HDOT) contract specifications.

**(b)** Plants on the U.S. Department of Agriculture Federal Noxious Weed List and in HRS 4:6:68 (Noxious Weed Rules) *provided that* the HDOA and/or theISC also recommend that weed as a target.

**(c)** Species identified as targets for the early detection, eradication, or containment and control by the local island ISC in each county, found at the following websites:

**1.** Hawai‘i Island: https://www.biisc.org/

**2.** Kaua‘i: https://www.kauaiisc.org/

**3.** Maui: https://mauiinvasive.org/

**4.** O‘ahu: https://www.oahuisc.org/

**(d)** Species determined by HDOT to impact roadside maintenance operations, infrastructure, or health and safety of the public (as determined by the Engineer). These species can be found in Chapter 2 of the HDOT Invasive Species Project Prioritization Plan.

**(e)** Species that are actively controlled by neighboring landowners and agreed upon by the Engineer, as identified during pre-construction consultation with landowners (as applicable).

**(11) Priority Pests for the State of Hawai‘i Department of Transportation.**

**(a)** Animals and pathogens designated as high-priority invasive species for early detection, eradication, or containment by the ISCs or HDOA in each county.

**(b)** Animals and pathogens known to impact roadside maintenance operations, infrastructure, or public safety, as determined by HDOT.

**(c)** Animals and pathogens that are of concern to neighboring landowners and the Engineer agrees should be targets for HDOT.

**(12) Weed**. Any plant growing where it is not wanted, as determined by the Engineer.

**(13) Wildlife Biologist**. A person with a minimum of 5 years of experience in the wildlife field, including identification, eradication, control, and reporting of invasive animal species. The CONTRACTOR’s selected Wildlife Biologist shall be approved by the Engineer.

## **621.02 Materials.**

## (A) Free from Invasive Plants or Pests. All material, including plant material, gravel, sand, and soil, provided for the project shall be free of invasive plants or pests. Such action is to prevent the introduction of invasive species onto the project site.

## (B) Plant Material Sources.

**(1)** The CONTRACTOR shall buy plants propagated on the island where the plants will be planted. The CONTRACTOR shall provide the Engineer with the names of the nursery or nurseries they will use to provide landscaping plants in accordance with Section 619 – Planting. A Botanist/Arborist and a Wildlife Biologist (collectively, Biologists) shall inspect the nursery for the presence of invasive species on the property and in planting materials destined for the project site within 90 days of planting. Inspection results shall be provided to the Engineer in a report.

**(2)** Should plants not be available on-island, imported plants from off-island may be used but shall not be brought directly to the project site. State of Hawai‘i Plant Quarantine Branch–certified nurseries should be given priority when selecting off-island plant imports (State of Hawai‘i Plant Industry Division 2020, available at: https://hdoa.hawaii.gov/1pi/pq/certified-nurseries/). These plants shall not be mixed with locally grown plants and shall be first quarantined in a location away from the project site for a period not less than 30 days in an area approved by the Engineer. Biologists shall inspect all plants imported from off-island to ensure that they are free from invasive species, such as coqui frogs (*Eleutherodactylus coqui*), fire ants (*Wasmannia auropunctata* and *Solenopsis geminata*), and weed seedlings, that could arrive inadvertently. The Biologists shall screen out any priority invasive plants or other potentially invasive plants or organisms, including imported plants that appear to be sick or carrying disease. Any plant that appears to be diseased shall be submitted to the University of Hawai‘i College of Tropical Agriculture and Humane Resources extension agents for positive identification of the disease. The Biologists may also seek assistance from other organizations, including the State of Hawai‘i Department of Land and Natural Resources (DLNR), HDOA, and the local island ISC in the identification or detection of non-plant invasive species. Imported plants shall be planted out only after they have been determined to be free of unwanted weeds or animal pests at the quarantine location determined by the Engineer. All pests or invasive species shall be reported by calling the Hawai‘i Invasive Species Council at 808-643-PEST (7378) to determine appropriate treatment.

**(3)** In conjunction with Section 641 – Hydro-Mulch Seeding, a botanist/arborist shall inspect seeded areas a minimum of 45 days after hydroseed is applied.

## (C) Construction Material.

**(1)** The Contractor shall make sure all material stockpile sites are free of invasive plants (including seeds and propagules) and animals. Stockpile site surveys shall be included in the Biologists’ inventory report.

**(2)** All imported materials, including gravel, soil, rock, and sand shall be free of invasive species.

**(3)** All materials shall be stockpiled at a designated staging area to prevent contamination. If possible, permanent containment areas shall be constructed for long-term projects.

**(4)** Stockpiles of materials such as gravel, soil, rock, and sand shall be inspected every 6 months by the Biologists to ensure that they are not encroached upon by invasive plants or animals (a buffer of 30 feet shall be maintained).

**(5)** If invasive species are present, the CONTRACTOR shall either chemically or mechanically remove them, as determined by the Engineer.

## 621.03 Construction.

## (A) Responsibility.

**(1)** Any priority invasive plants and priority pests that establish after notice to proceed and prior to final acceptance by the Engineer that were not present before construction shall be the sole responsibility of the CONTRACTOR to remove or control. Acceptable removal is dependent on the type of species and shall be approved by the Engineer.

**(2)** The CONTRACTOR shall be responsible for the control or eradication of priority invasive plants and/or priority pests that are already established at a project site before construction begins. CONTRACTOR responsibility is determined by the Engineer. Removal of already established species shall be paid from the force account; see Payment section below.

**(3)** The CONTRACTOR shall ensure that weed and/or pest removal is carried out in a legal manner, including obtaining all necessary training, licenses, and permits from applicable regulatory agencies for the specific methods proposed for removal and disposal of invasive species.

## (B) Inventory of Invasive Species before Physical Construction.

**(1)** A full list of plant and animal species present at the site (botanical inventory and faunal inventory, respectively) is required for projects that have more than 1 acre or 43,560 square feet of roadside soil or vegetation and which will remain as soil or vegetation at the end of the construction project. The botanical and faunal inventory can either be combined into one report or the floral and faunal inventories can be reported on separately. Biologists shall provide one electronic copy of each inventory report to the Engineer. Botanical and faunal inventories shall be undertaken within 30 days before physical construction activities (e.g., site work, clearing, grubbing, ground disturbance, and/or any other site disturbance) are initiated. The postconstruction botanical and faunal inventories shall be undertaken during the Plant Establishment Period, which extends 9 months from the accepted completion date of the Planting Period. See Section 619 – Planting for definitions on the Planting Period and the Plant Establishment Period. The botanical and faunal inventory of the right-of-way shall be done by Biologists hired by the CONTRACTOR. The botanical inventory report shall include scientific names of plant species and their abundance (area covered and/or number of plants, as appropriate, depending on growth form). For priority invasive plants, the inventory shall provide details on GPS location (NAD 83) and reproductive status: mature (reproductive parts present) or immature. For priority invasive animals, the inventory shall include scientific names of faunal species and shall provide details on GPS location (NAD 83) and individual(s) detected.

**(2)** The Biologists shall inventory and report any priority invasive plants and/or priority invasive pests within 30 feet of any proposed on-site stockpiles for gravel, sand, and soil that may be sourced for the construction project.

## (C) Invasive Species Removal Plan.

**(1)** If invasive species are found before physical construction, including within 30 feet of material stockpile locations, the CONTRACTOR shall submit an invasive species removal plan for approval by the Engineer. This plan shall include specific removal methods for all priority invasive species identified by the Engineer, such as physical removal and/or chemical treatments, and a detailed post-removal monitoring plan. The plan should address how to prevent the spread of the invasive species if not removed. A cost to remove and a cost to prevent the spread shall be submitted by the CONTRACTOR. Preparation of the removal plan will be paid for from the force account.

**(2)** If the invasive species is/are not removed prior to physical construction, the CONTRACTOR shall surround areas of all invasive plants with a protective 4-foot-high, orange plastic mesh or equivalent fence accepted by the Engineer, supported on a minimum 6-foot-long steel T‑post. The CONTRACTOR shall provide signage on the fence that states “not to disturb or work within the fenced area.” Fences shall be erected before removal work begins and shall not be removed until removal work is completed. For trees or shrubs, flagging tape can be used to mark plants. The CONTRACTOR shall contact the local island ISC to determine the best method to contain invasive animals.

## (D) Removal of Priority Invasive Species Found before Physical Construction.

**(1)** The CONTRACTOR shall be required to remove invasive plants and/or priority pests present at the site after approval of the removal plan or implement mitigation measures to prevent their spread. Removal of invasive species present prior to construction will be paid from the force account. Removal shall be completed prior to any physical construction at the project site.

**(2)** The CONTRACTOR shall be responsible for ensuring the plant and animal removal is carried out in a legal manner, including obtaining all necessary training, licenses, and permits from applicable regulatory agencies for the specific methods proposed for clearing and removing invasive species.

**(3)** If pesticides are proposed for use in the removal plan, the CONTRACTOR shall ensure that their application is supervised by a licensed commercial applicator. The labels for pesticides being used must be in the applicator’s possession; the applicator shall have proper safety equipment and be prepared to handle chemical spills before they occur. The CONTRACTOR shall use the least toxic chemical that shall achieve the desired results. If a chemical spill occurs, the Engineer must be notified, and the proper authorities shall be notified in accordance with the pesticide label requirements. A record of chemical applications shall be kept by the commercial applicator and submitted to the Engineer.

**(4)** Green waste resulting from invasive species removal shall be disposed in a manner that will prevent spread by seeds or regrowth from plant fragments. Material contaminated with invasive species shall be covered and secured during transport to prevent other areas from becoming contaminated. In addition, seeds and fruit shall be placed and secured in bags by the CONTRACTOR. As determined by the Engineer, plant material shall be incinerated or buried in a landfill.

## (E) Post-removal Monitoring and Inspection. A Biologist shall carry out post-removal monitoring at least every 6 months to confirm that the removal plan was successfully implemented. The post-removal monitoring is intended to ensure that the treated areas remain free of invasive species during the construction. Before handing the site over to the Engineer, the CONTRACTOR shall perform an inspection of the entire construction site. The Engineer shall determine whether the CONTRACTOR has met the responsibilities for invasive species removal based on the post-removal inspection report.

## (F) Decontaminating Equipment, Machinery, and Vehicles.

**(1) Clean Equipment.**

**(a)** All CONTRACTOR equipment and vehicles shall arrive at the work site clean and visibly free of any soil, plants, or plant parts (e.g., seeds); insects and insect eggs; reptiles and amphibians and their eggs; or any other invasive species. Routine clean-down procedures shall be implemented to prevent contaminants from building up using visible inspection and power washing equipment.  All equipment cleaning and sanitation shall be incidental to the lump-sum pay items.

**(b)** The CONTRACTOR shall certify that equipment is arriving free of soil and debris capable of transporting viable invasive plant parts, seeds, or propagules, or invasive animals. The CONTRACTOR shall provide the Engineer with sequentially numbered decals and an accompanying spreadsheet with the decal numbers indicated in one column and subsequent column headings for the date of inspection and license plate number.  Decals shall include the contract number and be consistent with the format supplied by the Engineer. The CONTRACTOR shall place the decal on construction project machinery and vehicles, and the Engineer will initial and date the decal after an inspection determines that the vehicles are acceptably clean. After initialing the decal on the vehicle/ machinery, the Engineer will use the submitted spreadsheet to record the date of inspection and license plate number. The CONTRACTOR shall remove the decal after project completion.

**(c)** Vehicles or equipment that are off-site for 1 or more working days shall be cleaned and inspected at least once prior to their arrival at site. For other vehicles left on-site, the CONTRACTOR shall attempt to maintain reasonable standards of vehicle hygiene, and frequency of inspection will be determined by the Engineer.

**(d)** All vehicles and equipment brought in for construction work from off-island are required to be thoroughly washed at the port of export before they arrive at the project site. If invasive species are found at the project site, all vehicles that are deemed to be contaminated by the Engineer must be washed before leaving the project site and being returned to its island of origin, or if not feasible or appropriate at the project site, then at an approved alternative site.

**(e) Cleaning Stations.**

**1.** The Engineer will designate a cleaning station for the project site. The location of cleaning stations shall be recorded using a GPS unit and provided to the Engineer. The Engineer will consider the following when selecting and approving a cleaning station at the project site:

1. The cleaning stations shall not contribute to further contamination of machinery. To prevent this, gravel or other appropriate material shall be used to minimize contact with mud or dirt, which may contain invasive plant seeds.
2. Cleaning stations shall be located in low-value areas (e.g., away from native vegetation) or off-site.
3. The designated cleaning area must provide an environment for operators to safely undertake clean-down procedures (i.e., is safe for road traffic and personnel).
4. Cleaning station locations must be clearly posted with signs that say: “Cleaning Station.”

**2.** The CONTRACTOR shall only use designated cleaning stations at the project site to decontaminate equipment, machinery, and vehicles. All earthwork equipment shall be cleaned and be completely free of soil, seeds, vegetative matter, or other debris that could contain plant seeds or propagules prior to arrival and/or before leaving the project site. Manual clean-down procedures consist of using hand tools such as brushes, brooms, air compressors, vacuums, and/or high-pressure water guns. If using high-pressure water, apply only as much water as needed to avoid unnecessary run-off. As part of the cleaning, the CONTRACTOR must pay particular attention to key areas such as the chassis and wheels. A clean-down checklist for vehicles shall include the following:

1. Underside: wheels, rollers, tracks, wheel arches, wheel trim, bumpers, mud flaps, tire rims, axle, differentials, and spare tire
2. Digging apparatus, blades, and buckets
3. Interior: foot wells, carpets, and under mats
4. Engine bay: radiator, air filters, grille, recess under windscreen wipers, and transmission gearbox
5. Tray and trunk (for soil, seed, and plant material)

**3.** The CONTRACTOR shall clean and inspect equipment before it arrives at the project site. Equipment shall be considered free of soil, seeds, and other such debris after a visual inspection confirms it. Visual inspection shall include the complete exterior, including undercarriages, tires, wheel wells, and grille. Disassembly of equipment components or specialized inspection tools are not required. The Engineer will maintain a log of vehicle inspections. Earthwork equipment shall not be allowed to operate within the state right-of-way until approved by the Engineer.

**4.** Priority pests found hitchhiking on equipment shall be reported to HDOA by calling 808-643-PEST (7378).

**5.** Equipment shall not be sprayed with pesticides as a preventative measure. Spraying equipment with pesticides is not consistent with label specifications. Additionally, many pesticides target a wide range of vegetation and invertebrates and using pesticides in this way may harm nontarget vegetation and invertebrates.

**6.** The CONTRACTOR shall thoroughly inspect seeding equipment prior to conducting seeding activities to ensure they are free of invasive plant propagules.

## (G) Ensuring No Invasive Species Become Established during Construction.

**(1)** The CONTRACTOR is responsible for keeping the construction site free of invasive species**.** Monitoring shall be carried out by the CONTRACTOR after removal of invasive species found prior to construction, every 6 months during construction, after physical construction, and after the Plant Establishment Period, before handing the site over to the State. This monitoring shall be undertaken by a Botanist/Arborist for invasive plants and a Wildlife Biologist for invasive animals who shall provide an inventory report which will include scientific names of plant and animal species and their abundance (e.g., area covered and/or number of plants, as appropriate, depending on growth form; and number of individual animals detected). The invasive species inventory report can either report on invasive plants and animals separately or joined as a single document. The report for priority invasive plants shall provide GPS (NAD 83) locations and reproductive status, and the report for priority invasive pests shall provide GPS (NAD 83) locations and the number of individuals detected. Each Biologist shall provide one electronic copy of each inventory report to the Engineer.

**(2)** Invasive Species Information Signage at the Project Site. Invasive species and noxious weed signage shall be prominently posted at the CONTRACTOR’s workplace and at the project site. Signage shall include one laminated 8.5 × 11–inch color page for each HDOT priority invasive species relevant to the project site. The CONTRACTOR may obtain free digital files with invasive species photographs that shall be printed and laminated for use on the project site; these are available at: http://www.hawaiiinvasivespecies.org. All signage shall include “Call 808-643-PEST (7378).”

**(3)** Training. HDOT and the CONTRACTOR’s field staff shall attend a mandatory training by biologists knowledgeable about invasive plants and animals about on-site decontamination protocols, identification of priority invasive species and pests, and reporting procedures**,** once annually (or prior to any physical construction). The local island ISC should be contacted for training information. Trainers shall record the name and date of training for those individuals that complete the training, which shall be provided to the Engineer upon request.

**(4)** Unannounced Inspections. The CONTRACTOR shall provide unfettered access to the state right-of-way to any ISC staff, HDOA staff, or anyone else acting for the Engineer for the purpose of detecting or monitoring invasive species.

## (H) Post-Physical Construction Prior to Returning the Site to the State—Post-Construction Inventory. The CONTRACTOR shall conduct a post-construction invasive species inventory to verify and confirm that the CONTRACTOR maintained the site in the original condition after the initial removal of invasive species was conducted.  If additional invasive species are found, the CONTRACTOR would be responsible to develop a removal plan, remove the invasive species found, and conduct post-removal monitoring at their own expense. The removal plan shall be subject to Engineer approval.

## **621.04 Measurement.**

**(A)** Invasive species control measures during construction, including signage and decontamination training, will be paid on a lump sum basis. Measurement for payment will not apply.

**(B)** The development of the invasive species removal plan, removal of invasive species established before physical construction and not part of the project’s physical construction work, as well as the post-removal monitoring, shall be paid with force account funds. The Engineer will measure invasive species removal planning, removal, and monitoring required and requested by Engineer on a force account basis in accordance with Subsection 109.06 – Force Account Provisions and Compensation.

## **621.05 Payment.** The Engineer will pay for the accepted invasive species management on a contract lump-sum basis after the final acceptance of the project. Payment will be full compensation for the work prescribed in this section and the contract documents.

 The Engineer will pay for the following pay items when included in the proposal schedule:

**Pay Item** **Pay Unit**

Inventory of Invasive Species before Construction Lump sum

Invasive Species Removal Plan Force account

Removal of Plants and Animals Established before

Physical Construction or Site Work, Post-removal Monitoring Force account

Monitoring of Invasive Species during and after Construction Lump sum

Post-Construction Inventory Prior to Returning the Site

to the State Lump sum

An estimated amount for the force account is allocated in the proposal schedule under Existing Invasive Species Removal, which includes the Invasive Species Removal Plan and the Removal of Plants and Animals Established before Physical Construction or Site Work, Post-removal Monitoring. The actual amount to be paid will be the sum shown on accepted force account records, whether this sum is more or less than the estimated amount allocated in the proposal schedule.

**END OF SECTION 621**