

Inspecting Vegetation Maintenance Work



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What do I need for an inspection?

A checklist of the jobs to be inspected for a given contract:

- ▶ Digital camera with a date function
- ▶ GPS (Global Positioning System) unit
- ▶ Notebook
- ▶ Pencil
- ▶ Relevant Personal Protection Equipment (PPE)



What legal mandates need to be met?

- ▶ Safety requirements: HIOSH, OSHA, MUTCD guidelines, HDOT Section 645
- ▶ Ditches and drains free of debris: EPA
- ▶ Pesticide: HDOA, EPA/FIFRA (Federal Insecticide, Fungicide and Rodenticide Act)
- ▶ See Chapter 2 section, "Comply with legal and policy mandates."



What should an inspector and contractor do before starting work in the ROW?

The inspector and contractor should meet immediately after the contract has been awarded and before work begins. Review the inspection process, the criteria for imposing penalties and the percent deduction for infraction relative to each job component of the contract.

The table below lists the number of jobs that HDOT might contract out. Each job has different number of components; e.g., there are 16 components under mowing (see next section for details on the job components). A contract may not include all jobs.

Based on the number of jobs included in a given contract, the percentage of money allotted to each job and, therefore, the percent deducted in the event of an infraction will vary with each contract. Both the inspector and the contractor should review the number of jobs included in the contract and the percent allotted and deducted for the jobs before beginning work in the ROW.

Job	Number of job components*
Management	9
Safety	6
LMZ Distances	1
Mowing	16
Edging and trimming of grass	10
Weeding	4
Edging and trimming of vines and groundcover	5
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*See section that follows for details on job components.



What do I look for during an inspection?

Thoroughly inspect all the job components included in a contract. Use the checklist below to verify that each of the job components are performed to HDOT (or any other specified) standard and within the specified time. Document all observed infractions – take good notes, photos, record location using GPS unit. Based on the observed infractions, recommend appropriate percent deduction from the amount of money allocated to the job at which you observed the infraction.

Management

- Verify requests are done on time.
- Verify effective communication.
- Verify timely submission of payrolls to employees.
- Verify proof of Certified Landscape Technician status/expiration date/name.
- Verify proof of Certified Landscape Technician – irrigation status/expiration date/name.
- Verify proof of ISA Certificate Arborist status/expiration date/name.
- Verify proof of WCISA Certified CTW status/expiration date/name.
- Verify proof of insurance.
- Question normal operations. Can we make improvements?

Safety

- Use a Class 2 safety vest in area speed limits <45 mph and a Class 3 safety vest in area speed limits >45 mph or at night.
- Check for any obstructions to safe movement of traffic or road users.
- Verify that the use of traffic control devices complies with MUTCD standards.
- Verify coning adheres to MUTCD specifications.
- Verify that hazardous situations are reported.
- Make sure all permits are in order and contractor's are up to date.

LMZ Distance

- Verify that LMZ heights and widths meet recommended standards based on posted speed limits. See Chapter 4 in this *Highway Manual for Sustainable Landscape Maintenance*.

Mowing

- Verify that the height of the turf matches the "Mowing Standards for Hawaii." See Chapter 5 in this Manual.
- All turf shall be mowed uniformly twice a month.
- Fire season mowing of no-mow grasses: 5-6"
- St. Augustine: 2-3"
- Centipede grass: 1½-2"
- Common Bermuda: 1½-2"
- El Toro zoysia: 1-1½"
- Seashore paspalum: 1/2-1"
- Emerald zoysia: 1/2-1"
- Hybrid Bermuda: 1/2-3/4"
- Verify that no grass clippings are on the turf or hardscaped areas. Failure to enforce this practice could result in DOH fines.
- Quality of cut: sharp blade.
- Check for damage to turf (e.g., presence of deep ruts due to the use of heavy equipment on wet turf, scalping, repair, etc.).
- Verify mowing pattern is overlapped a minimum of 10%.
- Verify that ground cover in the rural LMZ is 3 ft. or less.
- Verify that mowing is uniform in height.
- Verify that ornamental ground cover in the high visibility rural triangles at intersections is maintained at 2 ft. or less.
- There should be no visible difference in turf height in areas mowed by a mower and a weed eater, and the turf should not be scalped by weed eaters.
- Vegetation around, under, between and behind guard rails should not exceed 2 ft. in height.

Edging and Trimming of Grass

- Verify that turf is edged neatly, especially in high visibility areas, in medians and sidewalk areas.
- Unless allowed by the Engineer, no chemicals may be used for edging turf.
- Verify that turf against walls and other structures is trimmed, typically with a weed eater.
- Verify no mechanical damage to base of trees and shrubs.

- Verify all curbs, walls and gutters are free of overhanging vegetation.
- Verify mulching around all trees and planting beds in March and September.
- Verify that there is no vegetation wrapped around any roadside furniture (e.g., lamp posts, signs, guard rails, etc.).
- Verify edging is performed by an edger, not a weed eater.
- Verify that mulched areas around tree trunks are free of weeds.
- Verify that wood chips used for mulching are no more than 4 inches thick and at least 6 inches away from the base of the trunk.

Weeding

- Verify weeds do not cover more than 10% of ground vegetation in all areas of the ROW, and that weed cover in high visibility urban areas is less than 2%.
- Verify specified weeds are eradicated.
- Verify all paved areas are 100% weed free.
- Verify all planting beds are weed free.

Edging and Trimming of Vines and Ground Cover

- Vines and ground cover shall be edged and/or trimmed to maintain a neat appearance and safe travelway.
- Vines or ground cover shall not overgrow shrubbery, signs, street lights, fences, valve boxes, guard rails or other structures.
- Maintain ground covers at a uniform height not exceeding 12 inches and not less than 6 inches and cleared from sprinkler heads, valves and other utilities.
- Remove all other undesirable vines and ground covers.
- All work must be completed with thirty (30) days after start.

Pruning Trees, Palms, Shrubs and Hedges

- Verify that branches hanging over the travelways are 17 ft. or more above the ground.
- Verify all pruning tools are sharp.
- Verify that branches hanging over the sidewalks are 7 ft. or more above the ground.
- Verify if any tree, palm, shrub or hedge is dead or missing and replace.
- No new trees with a mature potential diameter of 4 inches or larger at breast height should be allowed to establish in LMZ.

- Verify that pruned trees do not show any rip cuts, flush cuts, lion's tailing, topping, internodal cuts or more than 25% crown removal.
- Verify that pruned trees do not have any branches that are dead or dying, insect infested or diseased, broken, cracked or decayed, weakly attached, rubbing and water sprouts.
- There should be no tree stumps in the LMZ; trees should be cut flush to the ground and 6 inches below finish grade in urban areas.

ROW Intrusion

- Branches of trees rooted on private property should be pruned **only** after obtaining proper permits, even if the branches overhang the right-of-way.
- Verify all palms are free of inflorescence.
- Verify that coconut palms shorter than 20 ft. do not have any buds, flowers or fruits larger than 3 to 4 inches in diameter.
- Verify that palm fronds do not hang lower than 90° to the trunk.
- Ensure that there are no gaff or spike scars on any other species of palms.
- Verify that palm fronds are not infested with insects (e.g., white flies).
- Verify hedge trimming does not remove more than 20%.
- Verify that hedges are pruned properly, the top part of the hedge a minimum of 5% narrower than the bottom.
- Branches should not be allowed within 10 ft. of a powerline. Branches already growing within 10 ft. of a powerline should not be pruned by the contractor. Report this situation to utility company.
- Selective pruning and hedging during flowering.

Fertilizers (urban only)

- Verify that plants do not show signs of nutritional mineral deficiency (lack of fertilization).
- Inspect vegetation within two weeks of fertilizer application for signs of improper use (e.g., chemical burns).
- There should be no fertilizer on paved surfaces or drainage swales as a result of overspreading.
- Verify HDOT is notified two weeks prior to fertilization.
- Verify that fertilizer logs and empty fertilizer bags are submitted

to HDOT within three days after spreading fertilizer.

- Count fertilizer bags to double check the amount of fertilizer reported as used.

Pesticides & Herbicides

- Verify that written approval is obtained **before** pesticides are used.
- Verify pesticide/herbicide is used according to label.
- Verify that pesticide logs are properly filled out.
- Verify that HDOT-approved herbicides are used.
- Verify that non-target plant species have not been damaged by careless herbicide use.
- Verify that plants outside contracted area (e.g., at the borders) are not impacted by herbicides sprayed in the right-of-way.
- Don't spray in rain or high wind.

Rubbish and Debris in Gutters, Ditches and Swales

- There should be no rubbish (papers, bottles, cans, etc.) and debris (rocks, mud) in gutters, ditches and swales.
- There should be no standing water in ditches and swales due to existing vegetation blocking or impeding water flow.
- Verify that curbs and gutters are free of vegetation.
- Contractors are not expected to maintain culverts and embankments, but are required to report blockages. If you observe blockages, ensure that the contractor has filed a report.

Replacing Plants and Mulch

- Inspect plant replacement records for location, date, species and number of plantings. Plants must be approved by the Engineer prior to planting.
- Verify that replacements occur within four weeks of notification.
- Verify that plants replaced within the last year are being irrigated. In areas where there is no irrigation system, contractors are required to hand water replaced plants or use temporary watering techniques, such as gator bags.
- Verify that plants are planted properly (see Chapter 8 of this *Highway Manual for Sustainable Landscape Maintenance*): not leaning, and not too deep.
- Verify that mulch around replaced trees is at least 6 inches

- away from the base of the trunk.
- Verify that trees are staked properly and that ties are adjusted and removed on a timely basis. Remove stakes at 6 months.
- Verify that replacement mulch is no more than 3-4 inches thick and a minimum of 2 inches thick.
- Verify that replacement plants are free of weeds.

Invasive Plant Removal

- Verify, using the most recent list, that no priority pests or weeds are evident in the right-of-way.
- Verify that new invasive species in the right-of-way have been reported in a timely manner to the Engineer and to **643-PEST**.
- Verify that contractors clean vehicles and equipment after working in areas where there are invasive species.
- Inspect designated cleaning areas to look for the establishment of new and existing priority weeds.
- When possible, inspect equipment, vehicles and sanitation procedures to ensure that protocols listed in this *Highway Manual for Sustainable Landscape Maintenance* are followed.

Removal and Disposal of Rubbish and Debris

- Verify that all rubbish and debris, including waste material from work activities, are removed from all landscaped and shoulder areas and disposed of properly.
- Verify that no maintenance materials or tree limbs are stockpiled in the right-of-way.

Irrigation

- Verify that plants receive an adequate amount of water (i.e., make sure they are not dry or wilting). There should be no excessively dry or wet spots.
- Verify that there are no leaks in the irrigation system, such as water running across hardscaped areas (e.g., sidewalk), puddles or accumulation of "green slimy algae."
- Open the irrigation controller boxes and ensure that they are clean and free of animals, such as insects and geckos.
- Check controller to see if the watering start times, run times and days to water are set to those agreed upon with the Engineer.
- Controller shall have three schedules: day, wet, transition. Submit irrigation schedule for each schedule to Engineer.

- Manually operate all zones to check for broken or missing heads, non-operational control valves, and proper coverage.
- Verify that sprinkler head types are uniform in watering zones.
- Check for broken risers, laterals or mains, and each valve box for stuck valves.
- You will accompany the Engineer to perform a comprehensive annual inspection of the entire irrigation system in May or June of each year.
- Every valve shall be individually operated and checked for any deficiencies.
- You will be required to repair a damaged sprinkler system within (48) hours after you detect a problem, or after notification by the State maintenance inspector. See Chapter 12, "Irrigation System – Maintenance, Inspection and Repair."



What is a Comprehensive Annual Inspection?

Once per year, the Contractor and Engineer shall perform a Comprehensive Annual Inspection which will include the following:

- ▶ An irrigation audit
- ▶ Plant inventory
- ▶ Plant list comparison and replacement list/liquidated damages assessed
- ▶ Soil tests of troubled planting areas
- ▶ Arborist report of troubled plants and remedies
- ▶ Fertilization schedule review
- ▶ Herbicide schedule review
- ▶ Invasive species
- ▶ Discretionary fund projects for the coming year
- ▶ Professional credential review
- ▶ Maintenance sustainability recommendations



In a Nutshell

1. As a contractor/staff you should be aware of all the job items that are subject to inspection.
2. HDOT is exploring different deduction schemes, so the percent deducted for any given task might change in the future.
3. In addition to periodic inspections, HDOT conducts an annual comprehensive inspection for all major jobs.