Chapter 4: Maintenance

This chapter provides guidance for the maintenance tasks necessary to achieve a minimum standard of care for parkways. The guidelines focus on essential tasks. At present, DCR is undertaking a collection of data to update the agency's Facility Asset Management Information System (FAMIS), a system-wide inventory of facilities and parkways that will enable the agency to go from the basic maintenance of today to more comprehensive maintenance in the future.

The guidelines are intended to assure that parkway maintenance is consistent with a rehabilitation, if not a preservation treatment, as these terms are defined in *The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes*[1]. The maintenance standard is predicated on existing capacity, both in house and contracted, for both labor and equipment. Determining what financial resources are necessary to bring current maintenance practices up to an acceptable level is outside the scope of this manual.

Basic routine maintenance is critical to ensuring public safety as well as maintaining parkway character. The importance of consistent parkway maintenance cannot be overstated. The public has the right to expect an adequate level of maintenance for all parkways. Obviously, the more people using the parkway, the more wear and tear they will cause a parkway. High volume parkways need more intense maintenance.

Inadequate parkway maintenance can manifest itself in many ways: rutting, potholes, erosion of the road surface and shoulders, clogged drain systems, crumbling walls, compacted soil, deadwood, weeds growing along guardrails and litter. Inadequate maintenance creates the potential to accelerate deterioration of structures and vegetation. Facilities in disrepair and overgrown vegetation send signals to the user not only about lack of care, but also about lack of safety. The strictest adherence to the design guidelines described in Chapter 3 in a parkway project can be nullified in a matter of a few years without adequate maintenance. Put another way, the key to maintaining parkway character and safety is preventive and corrective maintenance.

The following maintenance guidelines are not intended to be prescriptive. They establish baseline goals and levels of service that are consistent throughout the parkway system. More specific standards will be developed over time.

The following are goals for the maintenance of the historic parkways:

Goals

Develop parkway maintenance plans in conjunction with the implementation of capital improvement projects. Keep maintenance plans current and update as conditions and staffing patterns change. Develop a more systematic approach to preventative and corrective maintenance by integrating parkway maintenance plans into FAMIS work order system.

Develop new models of stewardship by exploring partnerships with appropriate private organizations and state agencies.

Adhere to maintenance strategies and best maintenance practices that are ecologically sustainable, enhance visual interest, and reduce maintenance costs.

Take special precautions during maintenance or repair operations to preserve the natural surroundings within and adjacent to the work area, control erosion, and avoid injury to resources or creation of a safety hazard to parkway users.

This chapter follows the general order of the guidelines in Chapter 3, but with similar tasks lumped into more general categories.

4.1 PARKWAY TRAVELWAYS

Pavement surfaces, shoulders, parking areas, markings or striping, landscape grading, sidewalks and pathways, and retaining walls all fall into this category.

4.1.1 Pavement or Travelway Surface

Resources for maintenance will logically be focused on maintaining safe travelway conditions. Routine maintenance includes snow removal and deicing in the winter and street sweeping on a regular schedule throughout the year. Resurfacing is as needed, and includes emergency filling of potholes, and filling and sealing of cracks and potholes as needed. (Maintenance trucks may not exceed nine feet in height in order to achieve clearance under bridges and overpasses.)

4.1.2 Shoulders

Shoulders are subject to debris accumulation, washouts and deposition of material left by runoff. They require at least annual maintenance, and emergency attention after severe storms. Shoulder material may not be standardized; crushed stone may be appropriate in one locale, gravel in another, and grass in yet another, requiring replenishment in kind. In areas of roadside ledge, shoulders may accumulate fallen ledge debris, which needs to be cleared as soon as it falls. Shoulders should be graded back to their original grades as necessary.

4.1.3 Parking Areas

Routine maintenance includes keeping parking areas clear of snow and litter, and emptying litter receptacles. Impervious pavements are subject to cracking and frost heaving and settling of improperly compacted subgrade. These conditions need to be analyzed every spring and repaired at the appropriate time. Pervious pavements may need new grading in the spring if conditions have deteriorated over the winter.

4.1.4 Pavement Markings

Routine repainting of faded markings is one of the most important maintenance tasks to maintain safe conditions on the travelway. Fresh, easily legible marking of crosswalks is particularly important for pedestrian safety. The work should be done with care to assure accurate application of striping each spring, after street sweeping is completed. Striping should be inspected again in the fall to make sure that all markings are still visible and easy to read.

4.1.5 Landscape Grading, Slopes and Ledge Outcrops

Landscape grading, especially within ten feet of the curb line, may need repair and new grading after heavy piles of snow have melted in these areas. Plow damage, salt, and sand accumulation and compaction are all problems that recur every spring and need to be remedied on a regular basis.

Established earth slopes are subject to erosion, and exposed ledge is subject to falling rocks. All require routine monitoring for signs of instability or erosion. Debris deposited by ledge outcrops requires attention as needed, immediately when rock large enough to pose a safety hazard has fallen within the clear zone.

4.1.6 Sidewalks and Pathways

Routine maintenance includes keeping sidewalks and pathways clear of snow and litter, and emptying the litter receptacles. Sidewalks and pathways are subject to cracking and frost heaving, settling of improperly compacted subgrade, and localized storm deposition. Deferred repair can allow invasive plants to accelerate deterioration. The DCR Planning and Engineering Division administers contracts for repairs to sidewalks and pathways. A systematic approach to a replacement schedule for sidewalks and pathways is needed.

The lack of maintenance of invasive planting along Truman Parkway in Hyde Park inhibits use of the sidewalk.

4.1.7 Retaining Walls

Walls are subject to wear and tear from water and ice damage, requiring repair that is often not within DCR staff expertise and therefore is deferred. A systematic inspection of all retaining walls is recommended at least yearly in the spring. After this inspection, minor repairs should be made and serious problems put on a capital improvements list. For guidelines on non-routine repair tasks that may be addressed as part of a project, refer to the wall guidelines in Chapter 3.

Walls are also easy targets for graffiti. If left in place for a long time, they convey a negative message about parkways and parkland care. Every effort should be made to remove graffiti within 72 hours of discovery. When operations staff is not able to address the graffiti, the location and nature of the graffiti should be recorded in FAMIS.

4.2 PARKWAY CONTROL OF VEGETATION

Tree care, shrub care, grass care, vistas and overlooks, trailheads and crossings, and invasive vegetation control all fall under this category.

Roadside parkland routinely accumulates windblown litter and snowplow debris. The soil here is highly vulnerable to compaction by pedestrians and stray vehicles. Roots of trees, shrubs and grass suffer from deicing chemicals and overuse by pedestrians and runners. Grass within the first ten feet of the roadway does more poorly than anywhere else in the parkway landscape, and yet is the most visible to parkway users.

An inventory, in electronic format, of all trees, shrubs and grasses should be maintained. The size, species and condition should be put into the inventory so

that long-term care can be systematically planned and the cost of vegetation management and replacement can be ascertained and put in the annual budget.

Coded signage, flagging, fencing or other barriers should protect Commonwealth-listed rare plant species during any intense use, such as a large event, during maintenance operations or during construction projects.

4.2.1 Tree Care

Trees contribute to the beauty of a parkway more than any other natural element. Their presence, especially the presence of mature specimens, is critical to the character of the historic parkways. Their preservation, continued survival and wellbeing are critical. The level of maintenance for trees must be as high as their importance.

A vegetation management plan should be included in every parkway maintenance plan. A regular, rotating system of tree maintenance – pruning, fertilizing, pest management and replacement is recommended.

Deferred maintenance along Alewife Brook Parkway now necessitates clearing the path and removing a mature tree to reset the stone step.

Mowing has damaged a tree trunk on Blue Hills Parkway, Milton.

At least five common shade trees, Norway Maple, Sycamore Maple, Autumn Olive, Amur Cork Tree, Black Locust are now listed on the Commonwealth's invasive plant list. Planning for their replacement over time along the historic parkways should be done now as well.

Trees routinely accumulate deadwood. Only when a major branch is dead or an unsafe condition has arisen, should tree work be undertaken. All pruning should be done under the supervision and direction of a certified arborist. In such situations, large equipment and a bucket truck may be required. Special attention needs to be paid to protecting the soil and lawn when using these large trucks to minimize compaction. To protect tree roots, no large equipment should be parked under the canopy of parkway trees at any time.

Pruning live branches or healthy trees may be required in some circumstances. If a volunteer tree of a common species is significantly blocking an important view, the removal of a healthy tree or limb should be considered. In some cases where the naturalistic form of highly visible trees has been lost, judicious pruning can recover their original form.

Invasives along the Internal Park Road in Bradley Palmer State Park, Topsfield, need removal.

4.2.2 Shrub Care

Shrub care, like tree care, needs to occur on a yearly basis in the spring. Shrub care in more rural parkways means occasional pruning, monitoring of shrub masses, and litter pickup. In more urban areas with high volume pedestrian, bicycle and roller blade use, the planting of shrubs should be done carefully and only in areas with little traffic because of the high mortality rate of the shrubs. A regular program of fertilization, pruning, pest management and replacement is recommended. In urban areas, shrub masses can attract rats and create hiding places, so careful monitoring is warranted.

4.2.3 Grass Care

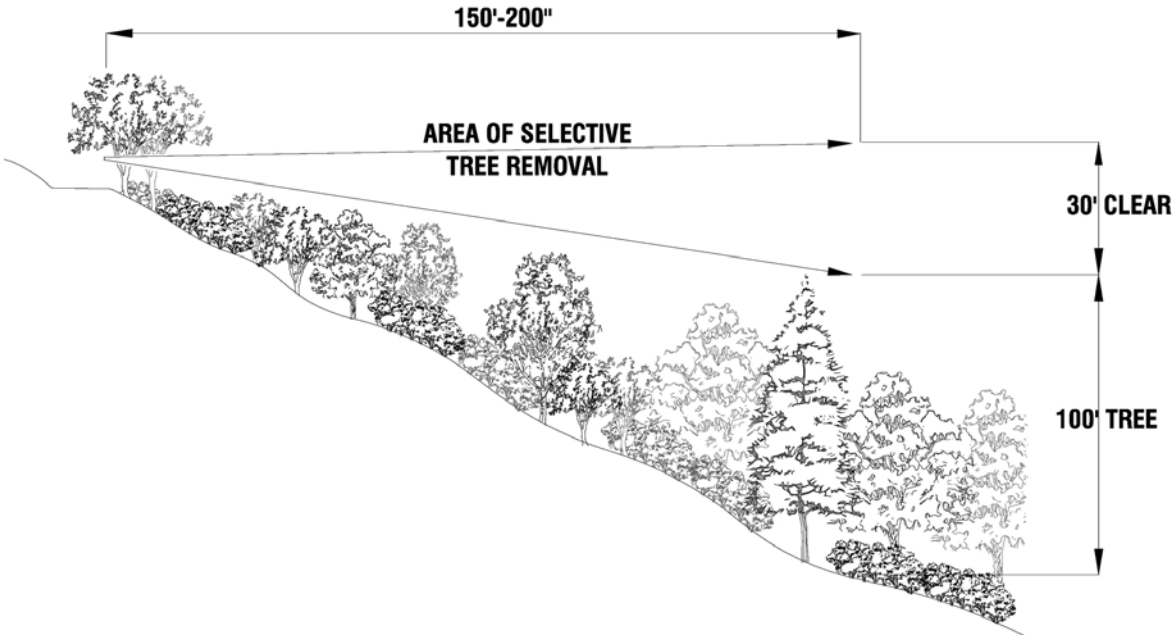
Grass along the travelway should be healthy and vigorous. These areas should be mowed when the grass exceeds 6 inches in height. Litter should always be removed before mowing. Established turf requires not only regular mowing in season, but also annual fertilizer application and weed control, and reseeding and aeration as needed.

Weed removal, where control has failed, needs to be put on the summer task list. Weeds thrive under guardrails and fencing and between boulders where mowing is difficult. Environmentally friendly herbicides may be used. However, consideration should be given to the environmental sensitivity of certain parkways. Relevant agency policies and permit requirement regarding the application of these substances must be followed.

4.2.4 Vistas and Overlooks

Vistas or special view corridors require monitoring every two years to make sure that the character-defining views to the water, the beach or the valley below are maintained for parkway users. A certified arborist who is sensitive to the specific characteristics of the local plant community should make the decisions about tree removal. The arborist should retain any uncommon or important habitat species, and remove all invasive species, as identified in the Design Control Report. After vistas have been re-established, they should be replanted with an appropriate seed mix so that the disturbed slopes are not bare and susceptible to erosion. Erosion control matting will help stabilize banks.

Summit Roads, where side slopes may approach 1.5:1, may require selective thinning or clearing of volunteer trees within 200 feet of the travelway, for a distance of at least 100 feet along the travelway. Vista corridor maintenance operations should avoid disturbance of Commonwealth-listed Rare Species and Natural Communities, identified by the Massachusetts Division of Fisheries and Wildlife (DFW) Natural Heritage and Endangered Species Program (NHESP). No new vistas should be created in these areas, within delineated wetlands or woodland vernal pools. Even for existing vistas, any unnecessary clearing of vegetation, grading, planting, or dumping of materials within these areas should be avoided. The maintenance activity may require permits from both the NHESP and the local conservation commission.



Conceptual vista clearing (Vollmer Team, Mount Greylock Historic Parkway Assessment for DCR, March 2003)

4.2.5 Trailheads and Crossings

Other special vegetation maintenance areas are trailheads and crossings. The vegetation must be pruned back so that the trailheads and important crossings are visible to trail users at all times. Spring and fall inspections of these areas are recommended. Pruning should be done under the supervision and direction of someone skilled in shrub and tree pruning.

4.2.6 Invasive Vegetation Control

Invasive species and weed trees, which are second growth volunteer species, are an issue on all parkways. The 2006 Massachusetts Prohibited Plant List is included in Appendix I of these guidelines. Updating the maintenance plan for each parkway with a new phased plan to eliminate all the specified invasive plants within the parkway is a priority. While some of these plants can be easily eliminated, most of the invasive plants are difficult to eradicate and it often takes a three-year program to get rid of them. Invasive tree eradication should be phased in over a ten-year period, because several of the trees listed have helped form the distinctive character of the parkway. The shrub, perennial and grass plants are easier to replace with native plantings because they are not as visible and character defining.

Invasive eradication is especially sensitive along Internal Park Roads, which lie in the heart of parkland that is likely to have the least disturbed plant communities in its region. These invasive species are identified in the Design Control Report for each parkway project. For sites without such documentation, regional data are helpful. The Nature Conservancy's Wildland Weeds Program 2002 provides

specifics for such rapidly spreading species as garlic mustard, which is already a threat at Mount Greylock.

4.3 PARKWAY SITE ELEMENTS

Traffic barriers, guardrails, gates, fencing, railings, signs, trailheads, benches picnic tables and trash receptacles are all addressed in this section.

Parkway site elements add safety, comfort and information to both the vehicular and pedestrian environments. The condition of the parkways is probably most evident when they have been vandalized or have deteriorated. There should be an inventory, in electronic format, of all these elements so that they can be replaced periodically and repaired as needed. Readily accessible replacement items or parts are especially important for to facilitate repair.

4.3.1 Traffic Barriers and Guardrails

Maintenance of guardrails is usually performed, by contract, administered by the Planning and Engineering Division and, in the case of post-collision repairs, coordinated with insurance companies. Given that the annual operating budget includes only a modest budget for repairs, they are concentrated in areas where damage creates a safety hazard for vehicles, cyclists or other users. Over time, a regular system of spring inspection for all traffic barriers and guardrails and summer repair is recommended.

Timber guardrail in Joseph Allen Skinner State Park in Hadley leans from Vehicular impact.

4.3.2 Gates, Fencing, Railings

Like the guardrails, the current maintenance is administered by the Planning and Engineering Division and is concentrated where there is a safety threat. The gates, fencing and historic railings are important character-defining features of the historic parkway system, and regular maintenance and repair are recommended.

4.3.3 Signs

Well-maintained signage is important for safety and enhancement of the parkway experience. Signs in disrepair—especially problems with support, the legend, or reflectivity—undermine the message that DCR parkways are special and receive adequate care. A regular inspection of their condition and immediate replacement of missing parts are warranted.

4.3.4 Trailheads and Trail Crossings

As in the parkway vegetation control section of this chapter, the regular inspection of the trailhead and crossing signs and directional information is needed to protect the parkway users' safety.

4.3.5 Benches, Picnic Tables and Other Site Furniture

While these site elements are not always visible from the travelway, their condition sets the tone for the pedestrian parkway experience. If the benches or picnic tables are vandalized or have broken parts, pedestrians will feel less safe in this environment and may curtail their use of the parkways. Graffiti on site furniture needs to be removed immediately to foster the sense that the parkway is being well watched and maintained. The site elements themselves should be inspected twice a year, in the spring and the fall, for any missing pieces. If the broken part does not affect safety, it can be replaced during the summer or winter months. If there is a safety issue, the part should be replaced immediately.

4.3.6 Trash Receptacles

Trash or litter baskets need daily attention during the months that the parkways are actively used. Trash receptacles should never become more than three quarters full and certainly should never overflow. Each parkway should have a Design Control Report and a maintenance plan. Those two documents should determine how often the trash is picked up during the different seasons of the year. The trash receptacles themselves should be inspected in the spring and fall and replaced with new receptacles if warranted, or else repaired.

4.4 PARKWAY UTILITIES

Utilities other than drainage, traffic signals and lighting fall under this category.

4.4.1 Utilities

Local utility companies maintain electric, telephone and telecommunication, and gas service, on and adjacent to DCR land. The utility company gets permission to enter DCR parkland for routine maintenance and upgrading service. These tasks constitute a DCR management issue because any routine maintenance service by these companies affects the parkland. DCR must educate outside utilities about the fragile natural environment present at these work sites and the impact their equipment has on these natural areas that are enjoyed by many people on a daily basis. It is not a typical repair on a municipal street. DCR needs to monitor the utility to assure safety and resource protection, and restoration of the landscape to pre-construction conditions.

4.4.2 Traffic Signals

Traffic signals within the parkway are also under different ownership. The ones owned by DCR and MassHighway also require maintenance of the Boston Traffic Department loop detectors. DCR has the added management responsibility for notifying all the owners of any signal malfunction. An annual monitoring of all traffic signals and their standards will identify which ones need repair.

4.4.3 Lighting

Maintenance of lighting on or adjacent to DCR land depends on the ownership of the lights. DCR maintains the streetlights within its ownership, which are usually the historic "1907" fixtures. However, most lighting along parkways is not owned by DCR, but is owned and maintained by the local electric utility. Again, this management issue requires DCR monitoring of the utility to assure safety and resource protection, and restoration of the landscape to conditions as good as or better than the preexisting conditions after the repairs are complete.

DCR is phasing in programs of relamping the parkway lights with full cut-offs, and of converting all parkway fixtures to the historic "1907" or a parkway-appropriate fixture.

4.5 PARKWAY DRAINAGE UTILITIES

Drop inlets, catch basins, stone ladders, paved and grass waterways or swales, and headwalls fall under this category.

4.5.1 Drop Inlets, Catch Basins, and Stone Ladders

The structural condition of all drainage structures, inlets, outlets, sumps, and piping should be checked yearly. The cleaning of the sumps should be part of a regular maintenance program, from four times to once a year, depending on the volume of use on the parkway and the use of salt and sand. In the annual visit, needed repairs for the structures are noted for repair in the summer months. If the structure is seriously damaged, it is listed for replacement. Grills and grates need

cleaning after big snow and rain storms and in the fall after the leaves drop to keep them workable.

4.5.2 Paved Waterways or Swales

In the spring, paved waterways and swales need to be checked for any cracks or holes in the paved waterway surface. Swales need to be checked for the structural integrity of the pavement or stones for washouts. If the damage is minor, it needs to be repaired in the summer months. If the damage is major, it should be listed for structural work within the same year if possible.

4.5.3 Vegetated Waterways or Swales

In the spring, vegetated waterways and swales need to be checked for erosion and clean debris. The sub drain system should be inspected for structural problems, problems that should be repaired in the summer months. Eroded areas should be reseeded with grass using rye grass, as a nurse crop, mixed with the appropriate seed mix for the parkway. Slopes greater than 5% need erosion control matting as well. The grass should be mowed to the proper height as per the parkway maintenance plan.

Erosion near the Estate Road bridge at Maudslay State Park in Newburyport requires immediate attention.

4.5.4 Headwalls

After the spring rains, the headwalls should be checked for internal drain line damage and structural damage to the headwall itself. Minor repairs should be made in the summer months and any volunteer vegetation removed yearly. Major structural damage to the headwall structure should be listed for major repair or replacement using the same materials.

Deferred maintenance on Wickett Pond Road in Wendell State Forest has left the culvert clogged.

[1] Birnbaum, Charles A, ed., *The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes* (Washington, D.C.: U. S. Department of Interior, National Park Service, Cultural Resource Stewardship and Partnerships, Heritage Preservation Services, Historic Landscape Initiative, 1996), page 19 and 49.