



Appendix D: Facility Maintenance

The first step in developing a maintenance program is to identify what tasks need to be undertaken and who is responsible for each task. The maintenance schedules below lay out potential maintenance tasks, and the likely frequency of these tasks. The County's Bike and Pedestrian Coordinator should be responsible for coordinating the execution of on-road bikeway maintenance and should be the point of contact for citizens with questions regarding maintenance.

Recommended Pedestrian Maintenance Practices

Sidewalk maintenance will be necessary, particularly along portions of sidewalk which are not maintained by SHA or adjacent property owners. Sidewalk maintenance should include periodic sweeping and edging, mowing during spring and summer months, vegetation trimming, and spot repairs. Periodic inspection and maintenance of sidewalks should be coordinated by the Bicycle and Pedestrian Coordinator.

Surface Repair

Surface cracking is a major step in sidewalk deterioration. Extensive freeze and thaw cycles are major culprits for cracking. If the surface is allowed to continue to crack, vegetation may invade the crack and rapidly increase surface deterioration. Drain grates that are located in the path of pedestrian travel can also become a hazard if not properly maintained. The following section of County Code addresses the repair of sidewalks bounding on a public road. In most cases where the sidewalk is integral with the curb, the County will maintain it.

Article 25: § 4-112. Improvement of sidewalks; sidewalk assessments.

(a) The Director may cause and direct the owner of real property bounding on a public road to grade, lay out, pave, repave, construct, reconstruct, repair, extend, widen, straighten, or improve a sidewalk in accordance with the plans and specifications prepared by the Department whenever in the judgment of the Director the work is required in the interest of public safety and welfare.

(b) Work required of a property owner under subsection (a) of this section shall be done at the expense of the property owner after receipt of a notice from the Director to perform the work. The notice shall specify the work to be done, the manner of doing the work, and the materials to be used. The notice shall also state a time limit within which to comply with the notice. The time limit shall not be less than 30 days from the service of the notice.

(c) The notice shall be:

- (1) served personally on the owner of the property or the owner's agent, trustee, or guardian;



- (2) sent by certified mail to the owner of the property;
- (3) left at the owner's place of residence; or
- (4) published once a week for four successive weeks in a newspaper of general circulation published in the County.

(d) A person aggrieved by the terms and conditions of the notice may apply to the Director for a hearing and shall be given an opportunity to be heard. At the hearing the Director may revise, alter, affirm, or rescind the notice.

(e) On the failure of a property owner to comply with a final notice within the time specified in the notice, the Director may procure the performance of the work by the County work force or by contract. The cost and expense of the work, including overhead and administrative costs, shall be certified to the Controller, together with the names of the owners of property in front of which the work was done. The amount shall be levied, collected, and enforced in the same manner as County real property taxes, and shall have the same priority rights, bear the same interest and penalties, constitute a lien on the real property so assessed, and be treated the same as County real property taxes.

(f) On application the County may provide for payment of an assessment in not more than five annual installments. Installment payments shall not be permitted unless an agreement was made between the property owner and the County before the performance of the work.

(Code 1967, § 15-709; Bill No. 78-85, § 1)

Recommendations

- Periodically check sidewalk surface of major pedestrian routes based on citizen request and random field checks.
- Check sidewalks for heaves and elevation changes that cause tripping hazards
 - Vertical displacement of $\frac{3}{4}$ " high or greater for 12" of joint
 - Horizontal displacements of greater than 1/2" for crack 3' or longer
- Repair cracks early before additional deterioration is encouraged.
- Repair or replace drain grates that create an uneven surface.
- Provide extra sweeping in the fall in areas where leaves/cones accumulate in bike lanes.

Sweeping

A regularly scheduled inspection and maintenance program based upon citizen request helps ensure that sidewalk litter is regularly picked up or swept. During extended icy conditions, it may not be cost-effective to frequently remove sanding materials; however, they should be swept after major storms in high-use areas and after the winter season ends .



Recommendations

- Establish a seasonal sweeping schedule per citizen requests;
- Sweep sidewalks whenever there is a noticeable accumulation of debris

Vegetation

Vegetation encroaching into sidewalks is both a nuisance and a problem. Roots should be controlled to prevent break-up of the surface. Adequate clearances and sight-distances should be maintained at driveways and intersections: pedestrians and bicyclists must be visible to approaching motorists.

Recommendations

- Cut back vegetation to increase pedestrian visibility, where appropriate
- Plant trees that are sidewalk friendly
- Remove hazardous roots, consult an arborist for safe tree root removal

Drainage Improvements

Flowing or standing water will warp concrete sidewalks and create dips and potholes in roadway shoulders. Good drainage will help prolong the life of an accessible sidewalk. After periods of rain or snow melt, sidewalks and shoulders with puddles will be uncomfortable for pedestrians. Poor drainage may cause pedestrians to walk in the roadway or jump sideways suddenly to avoid a puddle, creating the risk of a crash. Drainage structures that are installed within the sidewalk area must not create a gap of more than 12.5 millimeters ($\frac{1}{2}$ inch) in the direction of travel.

Recommendations

- Raise catch basin grates flush with pavement;
- Modify or replace deficient drainage grates with bicycle-safe grates; and

Repair or relocate faulty drains at intersections where water backs up onto the curb cut or into the crosswalk;

Winter Season Maintenance

Snow removal will ensure that the minimum five-foot width is accessible to all pedestrians. Sidewalk continuity will be disrupted if a single home or business does not remove snow from their portion of the sidewalk. When this happens, pedestrians are often forced to travel in the street with automobiles, which is especially dangerous in snowy and icy conditions. Property owners should also remove ice or apply appropriate traction materials to prevent slipping.

Snow banks often block openings between sidewalks and marked and unmarked crosswalks, especially at mid-block locations. It is essential for highway agencies to note the locations of crosswalks and ensure that pedestrian access



to them is maintained. The following section of County Code addresses the issues of snow and ice on public walkways

Article 25: § 5-108. Snow and ice on walkways.

(a) Except as provided in subsection (b) of this section, the owner, user, or occupant of property situated on a street along which there is a paved sidewalk shall remove the snow and ice from the sidewalks fronting the property within six hours after the fall of snow.

(b) Whenever it snows between 3:00 p.m. and 6:00 a.m., the owner, user, or occupant of property situated on a street along which there is a paved sidewalk shall remove the snow and ice from the sidewalks fronting the property before 11:00 a.m.

(c) Whenever a person fails to comply with subsections (a) or (b) of this section, the Department of Public Works may cause the snow or ice to be removed and shall certify the cost of removal to the Controller. The costs of removal shall be paid to the County by the person who failed to remove snow or ice and the costs may be recovered by the County in an action at law.

(d) A person who violates any provision of subsections (a) or (b) of this section is guilty of a misdemeanor and on conviction is subject to a fine not exceeding \$10.

(Code 1967, §§ 15-710, 15-711)

Intersection Maintenance

Intersections should be checked yearly for maintenance of existing pedestrian facilities. Intersections can become pedestrian hazards in the facility controls are in need of maintenance and repair.

Recommendations

- Contact the Maryland State Highway Administration for problems relating to State roads.
- Contact Anne Arundel County Department of Public Works for problems relating to County roads
- Do spot checks for painted crosswalk wear
- Do spot checks for curb ramp deterioration



PEDESTRIAN MAINTENANCE SCHEDULES

Anne Arundel County Maintained Sidewalks

TASK	FREQUENCY	COMMENTS
Regular Inspection	2 times per year	Includes all heavy pedestrian traffic sidewalk routes
Sidewalk Sweeping	As needed	All sidewalks maintained by the County will need extra attention in the fall
Sidewalk repairs	As needed	Repair cracks or other problems on the sidewalks
Sidewalk snow removal	As needed	As long as sidewalk is maintained by Anne Arundel County
Debris removal from sidewalk	As needed	Remove debris from sidewalk such as gravel, broken glass and dirt.

Major Pedestrian Intersections

TASK	FREQUENCY	COMMENTS
Regular Inspection	2 times per year	Includes pedestrian signal and timing of major pedestrian intersections.
Curb Ramp Inspection	As needed	To maintain compliance with AADA
Signs and markings	As needed	Repair or replace signs and markings identified during inspections

Recommended Bicycle Maintenance Practices

It will be necessary in the future to establish necessary funds to maintain on-road bikeways that are built on County roads. Typically, additional on-road bikeway maintenance can be incorporated into regular roadway maintenance schedules, rather than being a separate program. The County's Bicycle and Pedestrian Coordinator will be responsible for forwarding requests to the County Maintenance Department.

On-road bikeways on State-owned roadways are the responsibility of Maryland SHA. The County's Bicycle and Pedestrian Coordinator should forward these maintenance requests to the District office.

Sweeping

Bicyclists often avoid bike lanes filled with sand, gravel, broken glass and other debris; they will ride in the roadway to avoid these hazards, causing conflicts with motorists. Debris from the roadway should not be swept onto sidewalks (pedestrians need a clean walking surface); nor should debris be swept from the sidewalk onto the roadway.

A regularly scheduled inspection and maintenance program helps ensure that travel way litter is regularly picked up or swept. During extended icy conditions, it may not be cost-



effective to frequently remove sanding materials; however, they should be swept after major storms in high-use areas and after the winter season ends.

Recommendations

- The County already sweeps curbed roadway sections on a regular basis, (approximately 1400 curb miles a year). It is recommended that this process continue as future roads are built, thereby including bike lane sweeping on curbed roadways. Added mileage accepted into the existing inventory would require additional resources.
- Work with DPW to establish a seasonal sweeping schedule for open roadway sections per citizen requests through the County's Bicycle and Pedestrian Coordinator.
- Provide extra sweeping, when necessary, in areas where debris regularly accumulates in bike lanes and wide shoulders areas.
- As the road network develops and Citizen requests increase, a corresponding increase in the maintenance budget is recommended.

Surface Repairs

A smooth surface, free of cracks, potholes, bumps and other physical problems should be provided and maintained.

Recommendations

- Respond to citizen complaints in a timely manner;
- Repair potentially hazardous conditions as soon as possible;
- Prevent the edge of a repair from running through a bike lane; and
- Sweep a project area after repairs.

Pavement Overlays

Pavement overlays are good opportunities to improve conditions for cyclists if done carefully: a ridge should not be left in the area where cyclists ride (this occurs where an overlay extends part-way into a bike lane). Overlay projects offer opportunities to widen the roadway, or to restripe the roadway with bike lanes. Pavement overlays are to be coordinated with the County Bicycle and Pedestrian Coordinator.

Recommendations

- Extend the overlay over the entire roadway surface to avoid leaving an abrupt edge;
- If this is not possible, and there is adequate bike lane width, it may be appropriate to stop at the bike lane stripe, provided no abrupt ridge remains;
- Raise inlet grates, manhole and valve covers to within 6 mm (1/4") of the new pavement surface and ensure grates are bicycle-safe; and



- Sweep the project area after overlay.

Vegetation

Vegetation encroaching into bikeways is both a nuisance and a problem. Adequate clearances and sight-distances should be maintained at driveways and intersections: pedestrians and bicyclists must be visible to approaching motorists, rather than hidden by overgrown shrubs or low-hanging branches, which can also obscure signs.

Recommendations

- Cut back vegetation to prevent encroachment

Signs, Stripes & Legends

New bikeway signs and legends are highly visible, but, over time, signs may fall into disrepair and legends may become hard to see, especially at night. Signs and legends should be kept in a readable condition, including those directed at motorists: pedestrians and bicyclists rely on motorists observing the signs and legends that regulate their movements.

Recommendations

- Inspect signs and legends regularly, including reflectivity at night;
- Replace defective signs as soon as possible; and
- Retrace legends, crosswalks and other pavement markings in the spring; in high-use areas, these may require another paint application in the fall.

Drainage Improvements

New drainage facilities function well, but may sink and deteriorate over time. Catch basins may need to be adjusted or replaced to improve drainage. A bike-safe drainage grate at the proper height improves bicycle safety. At intersections, there should be no drainage problems in crosswalks. All drainage improvements should be made in conjunction with a scheduled resurfacing or reconstruction effort unless special circumstances exist.

Recommendations

- Raise catch basin grates flush with pavement;
- Modify or replace deficient drainage grates with bicycle-safe grates
- Repair or relocate faulty drains at intersections where water backs up onto the curb cut or into the crosswalk;

Utility Cuts

Utility cuts can leave a rough surface for cyclists if not back-filled carefully.



Recommendations

- Wherever possible, place cut line in an area that will not interfere with bicycle travel;
- Back fill cuts in bikeways flush with the surface (humps will not get packed down by bicycle traffic);
- Ensure that cuts parallel to bicycle traffic don't leave a ridge or groove in the bicycle wheel track; and

Snow Removal

Snow stored on bike lanes and paved shoulders impedes bicycling in winter.

Recommendations

- On streets with bike lanes, remove all snow from street surface, including bike lanes and shoulders.

ON-ROAD BIKEWAY MAINTENANCE SCHEDULE

On-Road Bikeways Department of Public Works

TASK	FREQUENCY	COMMENTS
Regular Inspection	2 times per year	Includes all on-road bikeways, identify needed repairs of pavement, signs, marking, etc.
Street Sweeping	4 times per year	All streets with bike lanes, extra attention in the fall
Street repairs	As needed	Repair of streets including potholes, cracks or other problems on streets with bikeways
Bike lane snow removal	As needed	Clear snow completely from streets with bike lanes
Debris removal	As needed	Remove debris from on-street bikeways such as gravel, broken glass
Signs	As needed	Repair or replace signs identified during inspections
Markings	As needed, at least every 2 years	Includes all bike lane markings and symbols and crosswalks