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Standard Guide for Snow and Ice Control for Walkway Surfaces[1]

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1. Scope

1.1 This guide covers snow and ice control procedures. It is intended to recommend known methods to bring about reasonably safe walkways where snow and ice may impact the safety of pedestrians.

1.2 Conformance with this guide will not alleviate all snow and ice hazards; however, conformance represents a reasonable effort to reduce pedestrian risks associated with snow and ice.

1.3 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 *ASTM Standards:*[2]

F1637 Practice for Safe Walking Surfaces

F1646 Terminology Relating to Safety and Traction for Footwear

3. Terminology

3.1 See Terminology F1646 for the following terms: fall, friction, pedestrian, ramp, sidewalk, slip, slip resistant, and walkway.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *anti-icing materials, n*—dry or liquid snow and ice control materials applied before a snow and ice event intended to prevent precipitation from bonding (that is, freezing) with the pavement, or weaken bonds formed for easier removal.[3]

3.2.2 *de-icing materials, n*—snow and ice melting products applied on top of a layer of snow or ice, or both, that is bonded to the pavement.

3.2.2.1 *Discussion*—Can also be applied proactively, during, or after plowing or snow and ice removal.[3]

4. Significance and Use

4.1 This guide outlines key elements of snow and ice control on walkway surfaces.

5. Snow/Ice Control

5.1 *General:*

5.1.1 Control techniques for exterior walkway surfaces include anti-icing, plowing, snow blowing, shoveling, de-icing, and/or applying sand or other abrasives.

5.1.2 Reasonable effort should be made to ensure exterior walkway surface safety for pedestrian traffic.

5.1.3 A combination of preparatory and ongoing snow and ice control methods should be employed, as applicable.

5.1.4 Snow and ice control procedures should be prioritized based on pedestrian usage. Where feasible, parking lots should be barricaded, plowed, and treated with de-icing materials before permitting use.

5.1.5 Snow and ice storage accumulations should be located to avoid obstructing drains, downspouts, or walkway drainage features.

5.1.6 Stair systems, ramps, handrails and side rails should be cleared of snow and ice before permitting their use.

5.1.7 Walkway surfaces should be monitored and treated for refreezing.

5.1.8 Removed snow and ice should be placed/stored in a manner that does not create a slip hazard upon melting or refreezing. For example, plowing snow accumulations to lower elevations of the property or onto grassy areas may prevent potentially hazardous refreezing of melt water.

5.1.9 Removed snow and ice should not be stored in a manner that creates a safety hazard for pedestrians, such as placement that blocks a path of egress. Fire hydrants and similar fixtures that could be covered by snow and ice should be marked with reflective posts, stakes, or other distinctive markings.

5.1.10 Special attention should be given to snow and ice clearance and control during reasonably foreseeable peak pedestrian traffic periods, including but not limited to early

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[2] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

[3] *National Cooperative Highway Research Program (NCHRP) Report 577: Guidelines for the Selection of Snow and Ice Control Materials to Mitigate Environmental Impacts*, Transportation Research Board of the National Academies, 2007.

morning hours, shift change, or prior to employee, vendor, visitor, and customer arrivals, including commercial dock or receiving area driveways, steps and ramps.

5.1.11 To scrape and wipe de-icing and anti-icing materials, slush, water and other debris from pedestrian footwear at entrances, suitable walk off mats, recessed grille mats, permanent carpet tiles and similar equipment should be used. (See Practice F1637, subsection 5.4, for additional information.)

5.2 *Planning:*

5.2.1 Plans for snow and ice control should be in writing. Procedures should be prioritized based on volume and type of pedestrian traffic.

5.2.2 When utilized, snow and ice control service agreements with contractors should include means, materials, and methods for snow and ice control, as well as diagrams of areas to be serviced. Diagrams may also include locations of where snow storage accumulations should be placed to minimize slip and fall exposures.

5.2.3 Parking lots, sidewalks, exterior steps, ramps and other walkway surfaces exposed to snow and ice should be repaired and free of trip hazards, prior to winter. Where feasible, low areas or other interruptions in drainage flow in walkway surfaces should be corrected in a manner that preserves the slip resistant properties of the walkway surface.

5.2.4 Painted walkway surfaces should include the proper application of abrasives as recommended by the paint manufacturer.

5.2.5 Roof downspouts should direct drainage flow away from walkways or into underground or covered trough drains, drainage systems or landscaped retention areas rather than onto walkway surfaces that could freeze.

5.2.6 Vendor guidance regarding anti-icing and de-icing product effectiveness, temperature use, advantages, disadvantages, environmental impact, and cost per unit should be considered.[3] Pre-storm application of anti-icing or de-icing materials accelerates the melting process by creating liquid brine between the walkway surface and the snow and ice accumulation. Wetting of de-icing materials in solid form may cause the chemicals to begin melting more quickly and could reduce waste or scattering of materials.[3]

5.3 *Equipment and Materials:*

5.3.1 Motorized equipment such as plows, snow blowers, etc., should be utilized where manual methods cannot control snow and ice quickly enough or it would be impractical to use manual methods.

5.3.2 Manual snow removal equipment, such as shovels, scrapers, brooms, and similar equipment should be utilized for detailed removal of snow and ice.

5.3.3 Anti-icing or de-icing equipment should be in good condition and free of leaks.

5.3.4 Workers using anti-icing and de-icing solutions should be trained on application requirements and techniques, preferably by the vendor, if proprietary products are used. Special training may be needed, including the amount to apply and the effect of warming temperatures and increased humidity.

5.3.5 When snow removal or the use of de-icing materials are not possible, sand and other abrasives can be used to create traction.

6. Snow and Ice Control—High-Traffic Parking Areas

6.1 Snow and ice accumulations between parked vehicles should be removed, where practical, to reduce patches of ice and the potential for refreezing.

7. Keywords

7.1 anti-icing; control; de-icing; ice; refreezing; snow