Parking Lots And Tripping Hazards

Without proper maintenance, wheel stops, manhole covers, and even asphalt pose threats to pedestrians.

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Parking lots can be dangerous places for pedestrians. Cars pulling in and out of parking spaces, two-way traffic in drive lanes and, all too often, drivers taking short-cuts through parking spaces create situations in which pedestrian attention is divided, and may be drawn away from the pavement in front of them; making trip and fall accidents all the more likely.

Studies have shown that a vertical edge in a walking surface of as little as ¼-inch is enough to cause a pedestrian trip and fall.[1] At many facilities, the focus of many pedestrian safety programs for parking lots rarely goes beyond regulating snow and ice removal. While attention to reducing slip and fall incidents is laudable, the design and maintenance of parking lots should also consider reducing the potential for the occurrence of trip and fall accidents. This article discusses some potential tripping hazards that are present in many parking lots and ways of minimizing the risk to pedestrians.

Pedestrian travel across parking islands that were not designed as walkways should be discouraged. Wheel stops (inset) create abrupt vertical changes in the pavement surface, which may not be seen by pedestrians. (Photos: Rimkus Consulting Group)

Wheel Stops. These items create abrupt vertical changes in the pavement surface (see inset photo), which may not be seen by a pedestrian if their attention is diverted elsewhere. The prevalence of trip and fall accidents occurring at wheel stops has resulted in some standards recommending that the use of wheel stops be avoided in parking lots. However, wheel stops serve a useful purpose in keeping drivers from pulling too far forward into pedestrian aisles, and, in fact, are recommended for use in the 2010 Americans with Disabilities Act (ADA) Standards for Accessible Design.[2] When used, wheel stops should be installed as follows to minimize the possibility of trip and fall incidents:

- Contrast in color to surrounding pavement. Concrete wheel stops on asphalt pavement often meet this criterion.
- Wheel stops should be centered in the parking space and should not be longer than 6-feet, so as not to extend beyond the sides of a properly parked car.
- The space between wheel stops should be a minimum of 36-inches to allow room for pedestrian travel.[3]

Parking Islands. Like wheel stops, parking islands help maintain orderly vehicle parking and define the edges of drive lanes. In fact, in many jurisdictions zoning ordinances require the use of parking islands to provide green space. Unfortunately, many pedestrians view parking islands as obstacles to be crossed rather than walking around them. Over time, a trail will develop across the island, where pedestrians may view it as a “short cut”. Maintenance personnel will often attempt to improve the trail by adding walkway pavers over the worn path. Pedestrian travel across parking islands that were not designed as walkways should be discouraged. When it becomes obvious that pedestrians are traveling over parking islands, such use should be discouraged by planting shrubs or groundcover.

Manhole Covers. Often the design of a facility will necessitate placing manholes in the parking lot. The manhole frame seat should be set so the covers are at the same elevation as the surrounding grade. At some point, however, your parking lot is going to need resurfacing, and the manhole covers that were once at the same elevation as the surrounding pavement are now below it—often by as much as several inches. Not only does this make the pavement around the manhole susceptible to damage from vehicle impact, it also creates a vertical edge over which pedestrians may trip. To avoid this, manhole riser rings should be installed whenever an asphalt overlay is applied to maintain the elevation parity between pavement and manhole cover.

Damaged Asphalt. Often prone to distress, asphalt can contribute to pedestrian trips. Potholes are the obvious culprit, but other forms of asphalt degradation can also lead to pedestrian trips or stumbles. These include: Localized grade depressions or ruts difficult to see, but that can result in sudden, unperceived changes in the slope of the asphalt. Also, watch for severe “alligator” cracking in which the edges of asphalt are raised, or pieces of asphalt have broken off.

The interaction of pedestrians with the built environment will never be perfectly safe and trip and falls in parking lots will always happen. However, a proper design and a maintenance program that focuses on safety can significantly reduce the number of these incidents that occur in parking lots.

References

[1] Cohen, H.H., and C.A. LaRue. Perceptual-cognitive and biomechanical factors in pedestrian falls. In Y.I. Noy and W. Karwowski (Eds.) Handbook of Human Factors in Litigation. Boca Raton, FL: CRC Press 2005.

[2] "2010 ADA Standards for Accessible Design." Washington, D.C.: Department of Justice, 2010. Web. Accessed October 10, 2020.

[3] ASTM International, ASTM F 1637-19 Standard Practice for Safe Walking Surfaces, 2019, ASTM International, West Conshohocken, PA.

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