

## Chapter 02 | Policies & Procedures

### 02.10 Sidewalk Safety: Hazards & Defects

#### PURPOSE

This policy provides information to RF Program custodial care and landscape maintenance Service Providers to ensure that the RF staff are appropriately addressing sidewalk, plaza, and surface hazards at Wisconsin Department of Transportation Roadside Facilities. This information is intended to be used to eliminate injuries and minimize the risk of liability to all involved parties. Any hazard must be documented, and action must be taken to warn/divert the public as quickly as possible.

#### IDENTIFY

**A sidewalk, plaza, or surface defect is a hazardous condition for the following reasons:**

- Differential settlement or heaving at a walk joint or walk/curb joint of  $\frac{3}{4}$ " or more.
- Sidewalk is cracked, and such cracking has caused or has the potential to cause breaking out and/or settling.
- Sidewalk has pieces missing at joints to the extent that they are susceptible to catching a person's shoe.
- The surface of the walk has spalled to the extent that scaling, pitting, or pocketing has progressed to  $\frac{1}{2}$ " from the surface, and there are at least two or more pockets in the sidewalk.
- Open joints of more than  $\frac{3}{4}$ " or at any location in the sidewalk or curb.
- The curb has pieces missing.

#### WARNING

Take appropriate actions to warn the public of the hazard or restrict access depending upon the location and severity of the hazard. A high-priority hazard should be marked with YELLOW safety paint where the hazard is located.

#### DOCUMENT

Create an Unsafe Condition Work Order in FAMIS. Type Field, select Unsafe Condition, and in the Subtype Field, select Unsafe Condition. In the "Describe Your Request" box, include descriptions of hazardous defects, identifying the location and severity. Upload photographs of the hazard or defect to the work order.

#### REMEDIAL ACTION

Paint defect with yellow paint using a 3" roller along the edges.

#### ADDITIONAL DESCRIPTION OF HAZARDOUS DEFECTS

**Use the following descriptions to determine if the defects are a hazardous condition.**

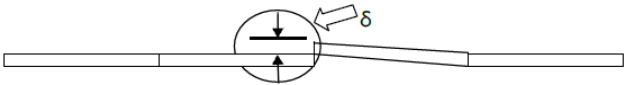
**Cracking**

Caused by several factors, such as vehicular load, frost heave, untimely sawing of joints, and tree root growth. The severity levels are broken down.

**Faulting**

The difference in elevation across a joint or crack. Some common causes of faulting are settling of slabs caused by a soft foundation, pumping, or eroding of materials from under the slab caused by voids beneath the slab, growing of tree roots, and upheaving caused by frost penetration. The severity levels are defined by the difference in elevation,  $\delta$ , across the crack or joint.

Largest Crack Width in Slab, $W_c$	Number of Sections Slab Divided Into		
	Sections $\leq 2$	2 > Sections $\leq 2$	Sections > 4
$W_c < \frac{1}{2}$ Inch	Low	Medium	High
$\frac{1}{2}$ Inch $\leq W_c < \frac{1}{2}$ Inch	Medium	High	High
$W_c \geq \frac{1}{2}$ Inch	High	High	High



**Faulting severity levels are broken down as:**

- $\frac{1}{4}$  inch  $\delta < \frac{1}{2}$  inch = **LOW**
- $\frac{1}{2}$  inch  $\leq \delta < \frac{3}{4}$  inch = **MEDIUM**
- $\delta$  over  $\frac{3}{4}$  inch = **HIGH**

**Geometry**

This problem occurs when a section of sidewalk or sidewalk ramp does not comply with regulations set by the federal or state government or poses any other hazard which makes the sidewalk unsafe. The problem is caused by an improper or outdated design. The severity level is listed as “high” if the current sidewalk condition does not comply with the “Americans with Disabilities Act” guidelines.

**Patching**

An area where the original sidewalk has been removed and then replaced by patch material. The severity levels are defined as follows:

- Low = Patch material of any permanent type that has little or no deterioration.
- Medium = Patch material of any permanent type that is moderately deteriorated, or multiple low-severity patches are present.
- High = Patch material of any permanent type is badly deteriorated, temporary patch material of any condition is present, or multiple patches are present with at least one being medium severity.

**Spalling**

A distress that primarily occurs in the top portion of the slab does not extend vertically through the slab. Spalling can occur anywhere in a slab, including at the joint or a crack. Spalling can be caused by excessive

stress caused by infiltration of incompressible materials in the joints; over-finishing of the concrete surface, and freeze-thaw cycling. The severity levels are illustrated below.

		Area of Spalling, $A_{sp}$	
Depth of Spalling, $D_{sp}$		$A_{sp} < 2 \text{ sq. ft.}$	$A_{sp} < 2 \text{ sq. ft.}$
$D_{sp} < \frac{1}{2} \text{ Inch}$		Low	Low

**Surface Deterioration**

Surface deterioration is any surface distress that effects the functionality of the sidewalk. Common surface deterioration distress are pop-outs, scaling, and weathering which are caused by freeze-thaw cycles and deicing salts, over finishing of the concrete surface, and inferior aggregate within a concrete mix. The severity levels are measured as listed below.

		Total Percent Area of Surface Deterioration, $A_{sd}$		
Surface Elevation Difference, $E_{sd}$		$\%A_{sd} < 25\%$	$25\% \leq \%A_{sd} < 50\%$	$\%A_{sd} \geq 50\%$
$E_{sd} < \frac{1}{2} \text{ Inch}$		Low	Low	Medium
$\frac{1}{2} \text{ Inch} \leq E_{sd} < \frac{3}{4} \text{ Inch}$		Low	Medium	High

**Vaulting**

A V-shaped upheaval or depression that occurs at a joint or at a crack in the slab. Vaulting is caused by shrinking and/or swelling of the soil beneath the sidewalk or by stresses that act at the bottom of the slab caused by the infiltration of incompressible materials, tree root growth, etc. The severity level is defined by the difference in grade from the desired grade. The grade difference is defined as  $y/x$ .

	<p><b>High = Grade difference is <math>\geq 8\%</math> or equivalent to 4 inches or 4 feet.</b></p>
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