TOWN OF WINDSOR
CURB, GUTTER, AND SIDEWALK
REPLACEMENT GUIDE

December 2007

TOWN OF WINDSOR
Engineering Department

Curb, Gutter, and Sidewalk Replacement Guide

This guide is designed to prioritize concrete replacement and assist in the evaluation of existing concrete conditions to provide consistency in the inspection and aide in the production of an inventory list. The actual field conditions may require some adjustment to the guidelines in the determination of the applicable rating.

The ratings are on a scale of zero (0) to five (5), with a zero (0) rating being a condition of no defects and a five (5) rating being the worst condition. To achieve a rating, a section or sections of concrete must exhibit one or more of the following characteristics:

Vertical Separation:

Vertical separation is a break and/or a crack in a concrete section that has been displaced vertically. The evaluation of the vertical separation is based on the vertical displacement from an adjacent concrete section.

Ponding:

Ponding occurs when a section or sections of curb and gutter have been displaced disrupting the drainage capabilities of the curb and gutter. The evaluation of ponding is based on the depth and width of water in the curb and gutter. If there is no water in the curb and gutter, a hand level and/or laser level will be used to determine the extent of the repair.

Fracture:

A fracture is a break and/or crack in a concrete section that has a horizontal displacement. This evaluation is based on two parts:

1) The Amount of Horizontal Displacement, or
2) The Number of Fractures per concrete section

Spalling:

Spalling occurs when the top layer of concrete chips or flakes off exposing the concrete aggregate. This evaluation is based on the percentage of a concrete section that is spalling.

Gouging:

A gouge is damage to a concrete section caused by a piece of equipment and/or vehicle. This evaluation is based on the depth of the gouge and the length of the gouge.

Missing Concrete Structure:

When a concrete structure is completely or partially missing a segment of concrete, it will receive a rating of a five.

The Town will evaluate a concrete section to determine the need for repair based on this criterion. When the concrete section has multiple characteristics, the highest rating will determine the need for the repair. The evaluation of the concrete will be completed concrete section by concrete section.

Each year the evaluation of the concrete will focus on the Capital Improvement Project locations and high pedestrian use locations. The concrete sections receiving a 3 or higher rating in these areas will be prioritized and considered for repair.

The Town will also look at other sections of Town on yearly bases to determine the need for repair. The concrete sections receiving a 4 or higher rating in these areas will be prioritized and considered for repair.

At the inspector's discretion, concrete sections that receive a low rating may be repaired:

1. if it is adjacent to a concrete section that receives a high rating
2. if it will prevent future problems and/or repairs
3. if it will accommodate the repair of a higher rating concrete section
4. if it does not meet current standards

Definitions:

Concrete Section:

A concrete section is an area of concrete which is contained between two control joints

Control Joint:

A control joint is a tooled joint from the installation of the concrete or a saw cut joint from a previous repair

Rating: 1

Vertical Separation: 0” to 1/8” Vertical Displacement (Figure 1-1)

Ponding: Ponding is equal to or less than 1/4” in depth and the water is contained within the gutter pan (Figure 1-2)

Fracture: Horizontal Displacement: 0” to 1/16” horizontal separation (Figure 1-3)
Number of Fractures: One (1) fracture per concrete section

Spalling: 0% to 10% of the surface area (Figure 1-4)

Gouging: No gouging has occurred

Figure 1-1
Vertical Separation – Rating 1

Figure 1-2
Ponding – Rating 1

Figure 1-3
Fracturing – Rating 1

Figure 1-4
Spalling – Rating 1

Rating: 2

Vertical Separation: 1/8" to 1/4" Vertical Displacement (Figure 2-1)

Ponding: Ponding is 1/4"to 1/2" in depth and the water is contained within the gutter pan (Figure 2-2)

Fracture: Horizontal Displacement: 1/16" to 1/4" horizontal separation (Figure 2-3)
Number of Fractures: One (1)fracture per concrete section

Spalling: 10% to 25% of the surface area (Figure 2-4)

Gouging: 3/8" or less in depth and 1% to 10% of the length of the concrete section

Figure 2-1
Vertical Separation – Rating 2

Figure 2-2
Ponding – Rating 2

Figure 2-3
Fracturing Rating - 2

Figure 2-4
Spalling – Rating 2

Rating: 3

Vertical Separation: 1/4" to 3/8" Vertical Displacement (Figure 3-1)

Ponding: Ponding is 1/2" to 1" in depth and the water is contained within the gutter pan (Figure 3-2)

Fracture: Horizontal Displacement: 1/4" to 3/8" horizontal separation (Figure 3-3)
Number of Fractures: Two (2) to Three (3) fractures per concrete section

Spalling: 25% to 50% of the surface area

Gouging: 3/8" to 1/2" depth and 10% to 25% of the length of the concrete section

Figure 3-1
Vertical Separation – Rating 3

Figure 3-2
Ponding – Rating 3

Figure 3-3
Fracturing – Rating 3

Rating: 4

Vertical Separation: 3/8” to 1/2” Vertical Displacement (Figure 4-1)

Ponding: Ponding is 1” to 1 1/2” in depth and the water extends to the edge of asphalt (Figure 4-2)

Fracture: Horizontal Displacement: 3/8” to 1/2” horizontal separation
Number of Fractures: Four (4) to Five (5) fractures per concrete section (Figure 4-3)

Spalling: 50% to 75% of the surface area

Gouging: 1/2” to 3/4” depth and 25% to 50% of the length of the concrete section

Figure 4-1
Vertical Separation – Rating 4

Figure 4-2
Ponding – Rating 4

Figure 4-3
Fracturing – Rating 4

Rating: 5

Vertical Separation: 1/2" and greater Vertical Displacement (Figure 5-1)

Ponding: Ponding is 1 1/2" and greater in depth and extends on to the adjacent asphalt (Figure 5-2)

Fracture: Horizontal Displacement: 1/2" and greater in depth in horizontal separation
Number of Fractures: Six (6) or more fractures per concrete section (Figure 5-3)

Spalling: Greater than 75% of the surface area (Figure 5-4)

Gouging: 3/4" or greater in depth and greater than 50% of the length of the concrete section

Missing Concrete Structure:
Concrete or the concrete structure partially or completely missing (Figure 5-5)

Figure 5-1
Vertical Separation – Rating 5

Figure 5-2
Ponding – Rating 5

Figure 5-3
Fracturing – Rating 5

Figure 5-4
Spalling – Rating 5

Figure 5-5
Missing Concrete Structure – Rating 5