Attachment 2021-1.0 Concrete Deterioration Terminology

Traditionally, inspectors use the terms “fracture”, “incipient spall”, “developing spall”, “imminent spall” and/or “hollow sounding concrete” to describe areas of delaminated concrete. In order to have uniformity when recording this defect on concrete, the inspector shall only use the terminology presented in AASHTO’s Manual for Bridge Element Inspection, 2nd Edition (2019) (MBEI), namely: “delamination” and “spall” based on the definitions included in the Bridge Inspector’s Reference Manual (BIRM) Section 6.2.6, “Anticipated Modes of Concrete Deficiencies”.

The following terminology and definitions shall be used when evaluating defects on reinforced or prestressed concrete elements. Please refer to the MBEI for detailed descriptions of the Condition States and Defects, as well as for pictorial examples and further guidance.

Defect Term (MBEI Defect Code)	Definition (based on the BIRM)	Traditional Terms (to be replaced)
Delamination (1080)	Occurs when layers of concrete separate at or near the level of the outermost layer of reinforcing steel. The major cause of delamination is expansion of corroding reinforcing steel causing a break in the bond between the concrete and reinforcement. This is commonly caused by intrusion of chlorides or salt. Another cause of delamination is severe overstress in a member. Delaminated areas give off a hollow “clacking” sound when tapped with a hammer or chain drag.	Fracture, Incipient spall, Developing spall, Imminent spall, Hollow sounding concrete.
Spall (1080)	Depression in the concrete that occurs when a delaminated area completely separates from the element. It occurs as a result of the separation and removal of a portion of the surface concrete, a layer-type failure roughly parallel to the surface. Spalls can be caused by corroding reinforcement, friction from thermal movement, and overstress.	N/A

The term “Fracture” shall be reserved for describing a through crack or break in concrete (which includes a separation of any degree). Examples include a fractured section of curb or sidewalk due to settlement or a fractured section of barrier parapet due to collision damage.