

Bridges 101



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Bridges provide a vital link for many of Pennsylvania's roadways, but since the average bridge age is 45 years old it's becoming necessary for them to be replaced or rehabilitated. There are 25,000 state owned bridges and 6,000 of them are considered structurally deficient. In addition to structurally deficient bridges, a bridge may be categorized as functionally obsolete, weak link or fracture critical. It is also possible for a bridge to be cataloged as having more than one type of problem.



Overview

Functionally Obsolete – has older design features compared to newer bridges.

Fracture Critical – by definition, if a key supporting member fails, the entire bridge could fail.

Weak Link – not restricted, but is close to having weight limits posted.

Structurally Deficient – has deteriorated elements that need to be closely monitored and/or repaired.

A Closer Look

Functionally Obsolete

Functionally Obsolete is an indication of the bridge's overall status in terms of the ability to service the traveling public. This type of bridge has older features (for example, road widths and vertical clearances) compared to more recently built bridges.

Fracture Critical

Fracture Critical bridges could fail if one of the main load-carrying components or connections would fail, such as a beam, girder, or truss chord. Bridges designed today typically have multiple load paths to create redundancy, therefore failure of a single component should not result in collapse.



Weak Link

These bridges are not yet weight restricted, but are close to being posted with weight limit signs. The definition of a Weak Link bridge is a structure that is within 110 percent of its legal load limit. In other words, the load carrying capacity is within 10 percent of requiring posting.

Structurally Deficient

The term Structurally Deficient refers to the bridge's overall condition in terms of structural soundness. Structurally Deficient indicates that the bridge has significant deterioration to one or more of its major components, has load restrictions, or is closed to traffic. It does not necessarily mean that the bridge is unsafe, just that it needs to be monitored and/or repaired.

