



Coffee Break Training - Fire Protection Series

Access and Water Supplies: Road Bridge Carrying Capacities

No. FP-2012-41 October 9, 2012

Learning Objective: The student shall be able to describe conditions affecting bridge or elevated surface weight-bearing limits.

Today's picture illustrates a common problem found in suburban and rural environments: access road bridges that are not capable of supporting the imposed weight of fire apparatus.

Depending upon the fire code adopted in the jurisdiction, fire apparatus access roads may be required for new buildings or facilities. In the model fire codes, National Fire Protection Association (NFPA) 1, *Fire Code*, requires that access roads reach within 50 feet (15 meters (m)) of an exterior door that provides access to the interior of the building. The *International Fire Code*[®] requires access roads to reach within 150 feet (45 m) of all portions of the facility or first floor exterior wall of a building. Both require that bridges or elevated surfaces provide the ability to support the weight of fire apparatus. When specifying weight-carrying capacities, remember to include automatic or mutual-aid apparatus that may have to use the bridge.

Fully loaded fire apparatus can weigh as much as 80,000 pounds (36,287 kilograms (kg)), with the loads distributed among the axles.* Fire apparatus manufacturers can provide specific details on the actual and rated weights of their vehicles, and for handling and safety characteristics, these limits never should be exceeded. (For an explanation of vehicle weights and axle distribution, refer to NFPA 1901, *Standard for Automotive Fire Apparatus*.)

While NFPA 1 is silent on design standards, the *International Fire Code*[®] requires that bridges in fire apparatus access roads meet the criteria of the American Association of State Highway and Transportation Officials (AASHTO) standard *Specification for Highway Bridges*. A competent civil or structural engineer should be able to provide documentation that the bridge is capable of supporting the live loads that fire apparatus impose. The code official is authorized to require that weight limit signs be posted at all entrances to the bridge or elevated driving surface.

The bridge shown in today's picture creates a challenge for the local fire department since its apparatus cannot drive on it. A few minutes of preincident planning to find an alternative to reach the fire hydrant can go a long way toward eliminating a problem that might arise during an emergency.

*Fire departments should always check with their State motor vehicle division or transportation department to assure their apparatus purchases are in compliance with State-mandated weight limits.



Access to this important water supply is compromised by the load-carrying capacity of the bridge.



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