

APPENDIX J

Definitions

DEFINITIONS

AASHTO

Acronym for American Association of State Highway and Transportation Officials. AASHTO is a standards setting body which publishes specifications, test protocols, and guidelines which are used in highway design and construction throughout the United States.

Axial Capacity

The ability of a structure or member to resist a force passing through the centroid of a particular section perpendicular to the plane of the section.

Bottom Chord

The lowest longitudinal member of a structure. The horizontal bottom member of a truss.

Continuous spans

A rigid span extending over three or more supports so that bending movements are transmitted from one segment to the next.

Dead Load

The weight of materials which form a permanent part of the structure.

Exodermic Deck

A bridge deck which is comprised of a concrete slab integral with, a steel bar grid.

Fender System

A bumper used to absorb kinetic energy of a boat or vessel to prevent damage to boats, vessels, or structures.

FEMA

Acronym for Federal Emergency Management Agency. An independent agency of the United States government that provides a single point of accountability for all federal emergency preparedness and mitigation and response activities. Estimates and publishes storm elevations and limits of water bodies.

FHWA

Acronym for Federal Highway Administration. A branch of the US Department of Transportation that administers the federal-aid Highway Program, providing financial assistance to states to construct and improve highways, urban and rural roads, and bridges.

Flange

The top and bottom plates of an I- or H-beam. The top and bottom flanges of a beam are usually in compression and tension respectively.

Floor Beam

Any beam that supports the floor of a building or deck of a bridge. In truss construction they are referred to as the beams transverse to the truss members that the roadway beams frame into.

Flexure

The act of bending or curving, or the condition of being bent or curved.

Fracture Critical

A steel member in tension, or with a tension element, whose failure would probably cause a portion of or the entire bridge to collapse.

Functional Adequacy

The quality of a roadway or structure being able to meet the needs intended for its purpose and use.

Galvanized

Coated with a protective layer of zinc.

HS-20

Represented by a three-axle semitrailer combination weighing 72,000 pounds with 8,000 pounds on its steering axle, 32,000 pounds on its drive axle, and 32,000 pounds on the semitrailer axle. The "20" in HS-20 stands for 20 tons, and the "S" stands for semi-trailer combination, which adds in the additional 16 tons for the third axle to give a total of 36 tons.

HL-93

Highway Loading adopted in 1993, which includes variations and combinations of truck, tandem, and lane loading. The design truck is a 3-axle truck with variable rear axle spacing and a total weight of 72,000 pounds. The design tandem is a two-axle vehicle, 25,000 pounds per axle, spaced 4 feet apart.

Inventory Stress

A load which can be safely maintained by a bridge for an indefinite period of time.

Live Load

The weight of non-permanent loads on a structure, i.e., vehicles, people, etc.

Moment

The bending force which acts on, for example, a beam, and is resisted by an equal internal resistance moment within the beam. Units of bending moment are those of force x distance.

Operating Stress

The absolute maximum permissible load to which a structure should be subjected.

Permit Loads

Oversized or overweight vehicles that must be permitted.

Scupper

An inlet structure for draining water.

Substructure

The underlying or supporting portion of the bridge, typically consisting of abutments, piers, and other support structures.

Superstructure

The portion of the bridge that includes the span and directly receives the live load.

Structural Component Rating System

- 1- FAILURE CONDITION – major deterioration or section loss present in critical structural components, or obvious vertical or horizontal movement affecting structure stability. Bridge is closed to traffic, but corrective action may put bridge back into light service
- 2- CRITICAL CONDITION – advanced deterioration of primary elements. Fatigue cracks in steel or shear cracks in concrete may be present or scour may have removed substructure support. Unless closely monitored, it may be necessary to close the bridge until corrective action is taken
- 3- SERIOUS CONDITION – loss of section, deterioration, spalling, or scour have seriously affected primary structural components. Local failures are possible. Fatigue cracks in steel or shear cracks in concrete may be present
- 4- POOR CONDITION – advanced section loss, deterioration, spalling, or scour
- 5- FAIR CONDITION – all primary structural elements are sound but may have minor section loss, cracking, spalling, or scour
- 6- SATISFACTORY CONDITION – structural elements show some minor deterioration
- 7- GOOD CONDITION – some minor problems
- 8- VERY GOOD CONDITION – no problems noted
- 9- EXCELLENT CONDITION

Top Chord

An inclined or horizontal member that establishes the upper edge of a structure. This member is subjected to compressive and bending stresses. In truss construction; the top horizontal member.

Wale

Horizontal timber or steel member in a fender system or retaining structure.

Web

The middle plate of an I-beam or H-beam. The web connects the two flanges, and resists shear forces.

Wing Wall

A short section of wall usually at an angle to a bridge abutment, used to stabilize the abutment as well as act as a retaining wall along the nearby slopes.