

Frequently Used Bridge Terms

AASHTO

American Association of State Highway and Transportation Officials. This organization is comprised of transportation officials from each state and other agencies. Their purpose is to write the design and construction specifications that govern highway and bridge design. The primary publication affecting bridges is the Standard Specifications for Highway Bridges. This document covers all state-funded bridges, from county roads to interstate highways. Its intended use is for the design of bridges for heavy vehicles, repetitive loading conditions and stress fatigue criteria. Continental Bridge personnel use the "AASHTO" term to indicate the Standard Specifications for Highway Bridges.

AASHTO Guide Spec

This is a term coined by Continental Bridge personnel to indicate the Guide Specifications for Design of Pedestrian Bridges. The AASHTO Sub Committee on Bridges and Structures developed this document. The Guide Spec provides a uniform approach for the design of pedestrian bridges and is a supplement to the Standard Specifications for Highway Bridges.

Abutments

The support foundation structure for the bridge. Usually constructed of concrete.

AISC

American Institute of Steel Construction. This agency writes the design code used for standard steel building design and construction. When Continental Bridge personnel use this term, they are indicating that the bridge will be designed in accordance with the Steel Construction Manual - Allowable Stress Design - 9th edition.

Anchor Bolts

Bolts set in concrete abutments or piers. Used to secure bridge to foundations.

Bearing Assembly

Device used to attach bridge to foundations. Several types are available, steel on steel, Teflon on stainless steel, and elastomeric. Combinations of the above types are also possible.

Bottom Chord

The bottom longitudinal structural member of a truss.

Camber

The arch found in bridges. Minimal arch, called dead load camber, is required on all bridges designated to be flat. This dead load camber is just enough camber to offset the deflection of the bridge due to its own weight. Arch beyond dead load camber is more for aesthetic reasons than structural value. Care needs to be taken to prevent deck slopes that are difficult for people to walk, ride bike or navigate in wheel chairs, etc.

Cover Plates

Plate steel welded to the end floorbeams to cover expansion joints at abutments.

Deflection

The engineering term to indicate the distance that a bridge span will displace due to the application of a load. Maximum deflection of a simple span bridge will always occur at the center of the span.

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Diagonal

The sloped web member of a truss, extending between the top and bottom chords.

Elevation Difference

The vertical height difference between two abutments or bridge bearing points.

Elevation View

Side view of bridge span on shop drawings.

Floor Beam

Structural horizontal members connecting the bottom chords of a Half-Through Pony System and Full-Through Box System, or connecting the verticals in a Half-Through H-Section System.

Form Deck

Continental's term for a galvanized corrugated decking used specifically for accepting the placement of concrete or asphalt. In asphalt applications, the form deck is designed to support all deck dead and live loads. In concrete applications, reinforcing bars and concrete will support the deck dead and live loads, and the form deck will only support the weight of wet concrete and a small uniform construction load.

Full-Through Box System

A "box" truss system utilizing an overhead lateral truss bracing system. The floor beam of a through truss is hung below the bottom chord.

Handrail

A longitudinal member attached to the inside truss, for use as an aid for pedestrians. Placement is normally dictated by the requirements in the American with Disabilities Act.

IronWoods®

The registered name of the premium naturally durable hardwood product. It is a very dense wood that does not require treatment. Continental Bridge uses the IronWoods® product as decking and rubrails. IronWoods® is comprised of hardwood species, such as Ipe.

Live Load

This is the term to indicate the carrying capacity of the bridge. It is to simulate the accumulation of pedestrians on the bridge. It is usually indicated as an uniform load specified in pounds per square foot, such as 60 psf, 85 psf, 100 psf, etc.

Half Through Systems

This type of bridge does not have any overhead lateral bracing system. Bracing of the top chord is accomplished by the stiffness of the U-frame. There are two types of Half-Through Bridge Systems. The Pony Truss has floor beams hung below the truss bottom chord. The H-Section has the floor beams connected to the inside face of the verticals.

Plan View

View of bridge from directly above the structure.

Rubrails

A nominal 5/4" x 6" naturally durable hardwood plank attached to the inside of the vertical trusses. Normally used to prevent the intrusion of bicycle handlebars into the truss.

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Safety Rails

Steel angle or tubing welded to the truss to deter objects from falling or small children from climbing through the truss. Safety rails may be either longitudinal or vertical pickets.

Skewed Ends

The condition where the bridge foundation is not perpendicular to the longitudinal center line of the bridge structure.

Sloped Ends

The end condition of a bridge where the end vertical slopes up from the abutment to the top chord. This condition is chosen for aesthetic reasons.

Specifications

A written document that explains all aspects of the bridge structure to be purchased. Comprehensive, non-proprietary specifications are required to assure that the structure designed and manufactured meets all intended expectations of the customer. Continental Bridge can aid in the preparation of performance based, non-proprietary specifications. We can even e-mail the specification in a document for your use.

Square Ends

The end condition of a bridge where the end vertical is plumb, that is the end is straight up and down. This condition is required for Half Through H-Section and Full-Through Box Systems. It also is desirable when approach rails or fencing meet up with the end of the bridge.

Stringers

Structural members running the length of the bridge used to provide structural support of the deck.

Truss

A framework of chords, verticals, and diagonals which give support to the bridge. Found along either side of the deck.

Toe Plate

A 6" plate located 2" above deck level to protect golf carts, snowmobiles, and people from slipping off the bridge deck.

Top Chord

The top longitudinal structural member of a truss.

Top Chord Height

The distance from the top of deck (measured at its highest point) to the top of the top chord. Typically a minimum dimension of 42" is required for pedestrian traffic. Bicycle traffic usually requires a 54" dimension.

Verticals

Structural members connecting the top and bottom chords of a truss. Usually they are at right angles to each of the chords.