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Terms for railway bridge

铁路桥梁词汇

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Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009.

This standard was proposed by, and is under the administration of, the National Railway Administration.

The organisations responsible for drafting this standard are the Railway Engineering Research Institute of the China Academy of Railway Sciences and the Standards and Metrology Research Institute of the China Academy of Railway Sciences.

1 Scope

China's national vocabulary for railway bridge engineering: the document that fixes what the basic terms of the discipline mean and how each of them is rendered in English. A railway bridge passes through many hands over its life - design institute, steel fabricator, construction contractor, inspection body, maintenance depot - and every one of them writes about the same object. When the same Chinese word is used for two different things, or two words for one thing, the confusion turns into drawings that are read wrongly and defects that are recorded in a way nobody can compare. This standard removes that ambiguity by defining the basic terms of railway bridge engineering structures together with their definitions, and it groups them the way an engineer thinks about a bridge: first the bridge as a whole and its types, then the beams and arches that span the opening. Because each entry carries its English equivalent, the vocabulary also serves as the reference for translating Chinese railway bridge documents and for reading foreign ones against Chinese practice. It applies to railway bridge engineering structures.

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2 Bridge

2.1 railway bridge: an elevated structure by which a railway crosses a natural obstacle or a

man-made facility.

2.2 jacked in bridge or culvert: a bridge or culvert passing under an existing railway subgrade and built by the jacking method.

2.3 bridge superstructure: the structure spanning the bridge opening, above the bearings of a girder bridge or above the springing line of an arch bridge.

2.4 steel bridge: a bridge in which steel is the main building material of the superstructure.

2.5 reinforced concrete bridge: a bridge whose superstructure is built mainly of concrete containing load-bearing reinforcement.

2.6 prestressed concrete bridge: a bridge whose superstructure is built mainly of concrete prestressed beforehand by means of prestressing steel.

2.7 stone bridge: a bridge whose superstructure is built of stone.

2.8 girder bridge: a bridge using beams as the superstructure.

2.9 arch bridge: a bridge using an arch ring or arch ribs as the superstructure.

2.10 rigid frame bridge: a bridge in which the superstructure is rigidly connected to the piers or abutments. Note: the rigid frame bridge is also called a rigid-framed bridge.

2.11 frame bridge: a bridge whose main load-bearing member is a monolithic box-shaped frame.

2.12 slant legged rigid frame bridge: a rigid frame bridge provided with inclined columns in order to increase the span of the bridge.

2.13 suspension bridge: a bridge in which the towers support cables anchored at the two banks or ends, and the deck and the beam are hung from hangers attached to those cables to form the superstructure.

2.14 cable-stayed bridge: a bridge whose superstructure consists of the main girder connected to the pylon by stay cables.

2.15 movable bridge: a bridge in which one or two spans of the superstructure can be opened by lifting, by horizontal rotation or by vertical rotation.

2.16 pontoon (floating) bridge: a bridge in which civil vessels, standard boats or floating boxes act as floating piers, with the superstructure erected on top of them.

2.17 deck bridge: a bridge whose deck lies at the top of the superstructure.

2.18 half-through bridge: a bridge whose deck lies at mid-height of the superstructure.

2.19 through bridge: a bridge whose deck lies at the bottom of the superstructure.

2.20 single-track bridge: a bridge on which only one railway track can be laid.

- 2.21 double-track bridge: a bridge on which two railway tracks can be laid.
- 2.22 multi-track bridge: a bridge on which more than two railway tracks can be laid.
- 2.23 viaduct: a multi-span bridge built instead of an embankment to cross a deep valley, low ground or man-made facilities, or built as a bridge in place of a line on the ground.
- 2.24 multipurpose bridge: a bridge carrying both a highway and a railway.
- 2.25 fly over bridge; grade separated bridge: a bridge crossing a railway, a highway, an urban road or another traffic route.
- 2.26 bridge fixed with track turnout: a bridge whose track includes a turnout.
- 2.27 bridge fixed with ballastless track: a bridge whose deck is a monolithic deck without ballast.
- 2.28 main bridge: the bridge crossing the main channel of a watercourse, or the main part of a deep valley or of a man-made facility.
- 2.29 approach bridge: the bridge connecting the embankment to the main bridge.

3 Beam and arch

- 3.1 beam: a straight or curved member which mainly carries the bending moment and the shear force produced by the various loads.
- 3.2 truss: a plane or spatial lattice structure made up of a number of members, each member mainly carrying the axial force produced by the various loads.
- 3.3 main girder: in the superstructure, the girder that carries the various loads and transmits them to the piers and abutments.
- 3.4 simple supported beam: a beam resting on bearings at both ends, one of which is a hinged bearing restrained in the axial direction while the other can roll axially.
- 3.5 continuous beam: a beam continuous over two or more spans and carried on bearings.
- 3.6 cantilever girder: a girder whose body has a cantilever projecting beyond the point of support.
- 3.7 continuous rigid frame girder: a girder continuous over two or more spans, the body of the girder being rigidly connected to the tops of the piers.
- 3.8 steel plate girder: a girder whose I-shaped main girders are made up of steel plates or sections and are connected by longitudinal and transverse bracing.
- 3.9 deck steel plate girder bridge: a steel plate girder whose deck lies on the upper flange of the main girder.
- 3.10 through steel plate girder bridge: a steel plate girder whose deck lies on the lower

flange of the main girder.

3.11 steel box girder: a single-cell or multi-cell box section girder made up of steel plates stiffened by longitudinal and transverse stiffeners.

3.12 composite girder: a girder in which a reinforced concrete slab and a steel girder are combined into a whole and carry the load together.

3.13 truss girder: a girder made up of trusses.

3.14 welded and bolted steel girder: a steel girder whose segments or members are welded in the works and then connected on site by high-strength bolts.

3.15 riveted steel girder: a steel girder whose members and joints are all connected by rivets.

3.16 welded and riveted steel girder: a steel girder whose members are welded in the works and whose joints are riveted on site.

3.17 all welded steel girder: a steel girder whose members and joints are all connected by welding.

3.18 main truss: a plane truss which carries the load and transmits it directly to the bearings.

3.19 parallel chord truss: a truss girder whose upper and lower chords are parallel.

3.20 polygonal chord truss: a truss girder whose upper and lower chords are not parallel.

3.21 deck truss: a truss girder whose deck lies in the plane of the upper chord.

3.22 through truss: a truss girder whose deck lies in the plane of the lower chord.