



Glossary



Abutment: the structure that the ends of the bridge rest on and can be anchored by.

Aeroelastic flutter: vibrations or movement, caused by fluids (such as wind) on a flexible material, these can lead to a positive feedback loop – feeding into their own movement and increasing the flutter even more.

Anchor: acts to secure the bridge to the ground.

Arch: semi-circular curved structure.

Baltimore Truss: a type of truss bridge developed in the 1870s in Baltimore, USA. It is mainly used for railway bridges.

Beam: the simplest form of bridge, consisting of a single span resting on abutments.

Bowstring Truss: this was patented in 1841 by Squire Whipple. The Old Bridge at Rochester is a bowstring shaped truss.

Bridge: a structure that goes over an obstacle to carry or support something else.

Cast iron: iron with additional carbon and other impurities mixed in, and then shaped using a cast, or mould, while hot.

Cement: a fine powder that hardens when water is added and used as the binding material in concrete. It is most commonly 'Portland Cement', produced by heating limestone and clay in a kiln, and then adding gypsum.

Centring: the temporary structure originally used by the Romans to support the arch during construction.

Civil engineering: the type of engineering that helps shape the world around us, helping to design bridges, tunnels, railways, roadways, as well as constructing skyscrapers, dams, power stations, airports and sports stadiums.

Cofferdam: a temporary box, built in the water, from which the water is removed, leaving a dry space for building.

Composite: a material made from two or more different materials combined together.

Compression: a force that tries to make things shorter or smaller (a squashing, pushing force).

Concrete: a construction material that could be described as artificial rock, made up of fine and coarse aggregates, such as sand or gravel, and cement.

Corrugated: folded into small furrows or ridges.

Dead load: the bridge's own weight which does not change or move.

Deck: the main surface of the bridge, the traffic crosses here.

Engineering design process: the process engineers use to describe the steps taken to move from a question, idea or need, to designing the product or process required.

Hanger: the cables that hang the deck from the main cable.

Hinge: a fold that allows movement to swing open and closed from that point.

Howe Truss: a type of truss bridge patented in 1840 by Millwright William Howe.

Iron: a type of metal, and one of the most commonly found in the Earth's crust. It is found in iron ore.

Iron ore: a type of rock found in the Earth's crust from which iron can be extracted. When the iron ore is heated to a very high temperature with charcoal, iron is produced.

Iron triangle of engineering: a way of showing how three factors in engineering projects affect each other.



Keystone: the most important, wedge-shaped stone in the very centre of the arch.

Lamination: the process of gluing very thin layers of material together – such as wood – to form a much thicker piece, which can be bent or shaped more easily than a similar single piece of wood.

Live load: mainly the weight of what the bridge is carrying, although wind and snow also have an effect. This moves and changes constantly.

Main cable: the cables that hold up the bridge, anchored at either end and suspended from the towers.

Mortar: a clay-based type of glue used to stick the stones together in an arch.

Parapet: a low wall or railing alongside the edge of the bridge deck to protect traffic from falling off.

Pedestrian: a person walking, rather than travelling in a vehicle, and for bridges, can refer to a bridge made solely for people to walk across, or for part of the deck that people are able to walk safely across (for example, the pavement).

Piers: the upright columns that support the bridge.

Piles: the large logs with sharpened ends used by Romans to make cofferdams.

Pile-driver: a large weight at the end of a rope, used by Romans to drive the piles into the riverbed. There are modern-day versions of this, which are used to drive in sheet piles.

Pratt Truss: this is a bridge type found commonly in the USA, it was patented in 1844 by Thomas and Caleb Pratt.

Sheet piles: modern versions of piles, made of steel and shaped into a specific 'M' shape.

Span: the distance between bridge supports.

Steel: another iron and carbon mixture, although including much less carbon than either wrought or cast iron, which means it is much easier to shape and is stronger.

Tension: a force that tries to make things longer (a stretching, pulling force).

Total span: the full distance, from one side to the other, the bridge covers.

Tower: the main structure that supports the bridge, over which the main cables are suspended, or hanging.

Transverse: something at right angles, or crossways, to something else.

Truss: a bridge designed with lots of triangle shapes.

Vousoir: the special wedge-shaped pieces used in stone arches.

Warren Truss: patented in 1848 by its designer James Warren.

Wind tunnel: a tunnel with a large fan at one end that can be used to simulate the effects of wind on a bridge or other structure.

Wrought iron: iron mixed with a very small amount of another element, carbon. It is heated and worked, by being squashed and beaten over and over again, by a blacksmith.

