Bridges

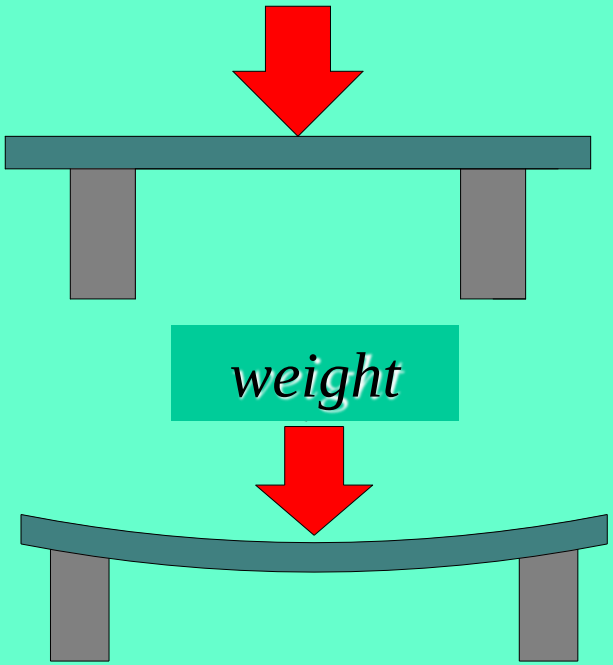
Bridges

There are four different kinds of bridges

1. Beam bridge
2. Cantilever bridge
3. Arch bridge
4. Hanging bridge

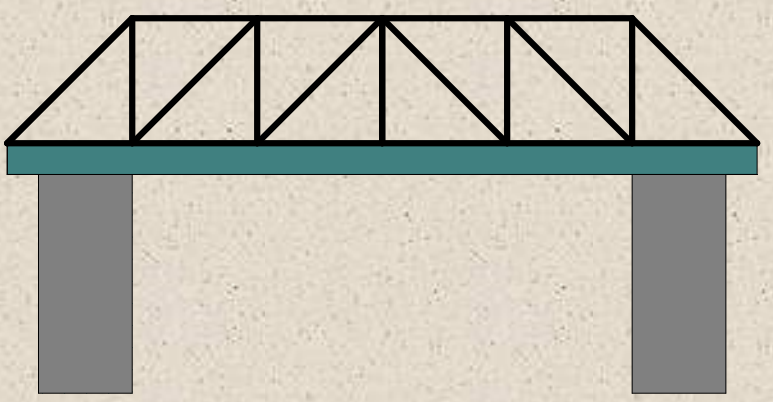
Beam Bridge

This is the oldest and simplest of the four types of bridges. Originally people used a long piece of stone or tree trunk to cross small streams. Its possible that bridges made of stone slabs found in south west England are the oldest in the world. We don't know exactly when they were built but they are still standing.

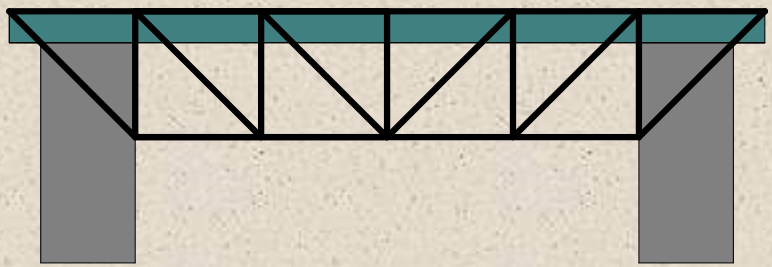


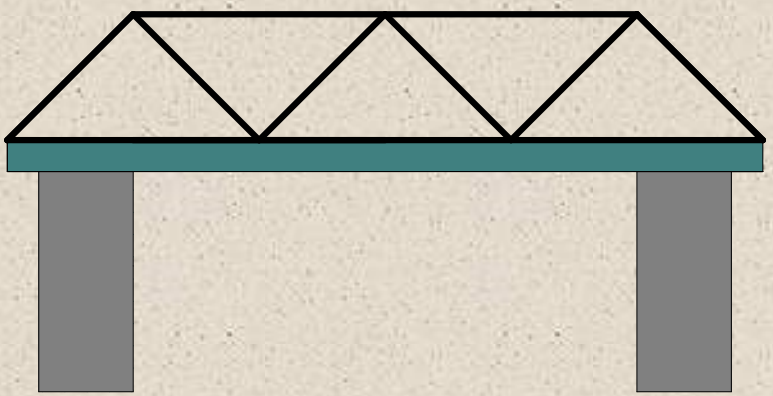
As weight is placed on the beam the compression force shortens the upper part. This tension causes the lower part to lengthen. The beam bends and if the pressure is too great it will break.

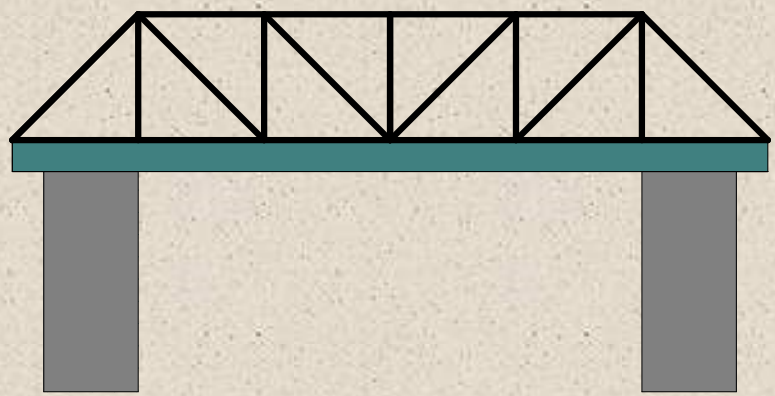
Many of the beam bridges that you see above roads are made of steel or concrete to make sure that they are strong enough to hold the weight. The size of the beam, and especially its height, controls the span of the bridge. Its possible to put more weight on the beam by increasing its thickness or height. A framework or truss is used to build high bridges and this structure spreads the tension and the compression.



Examples of truss patterns





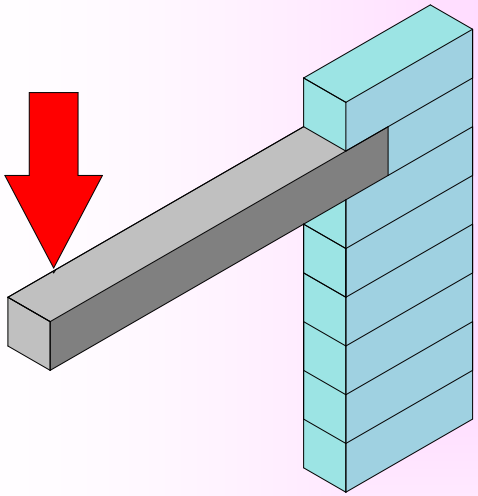


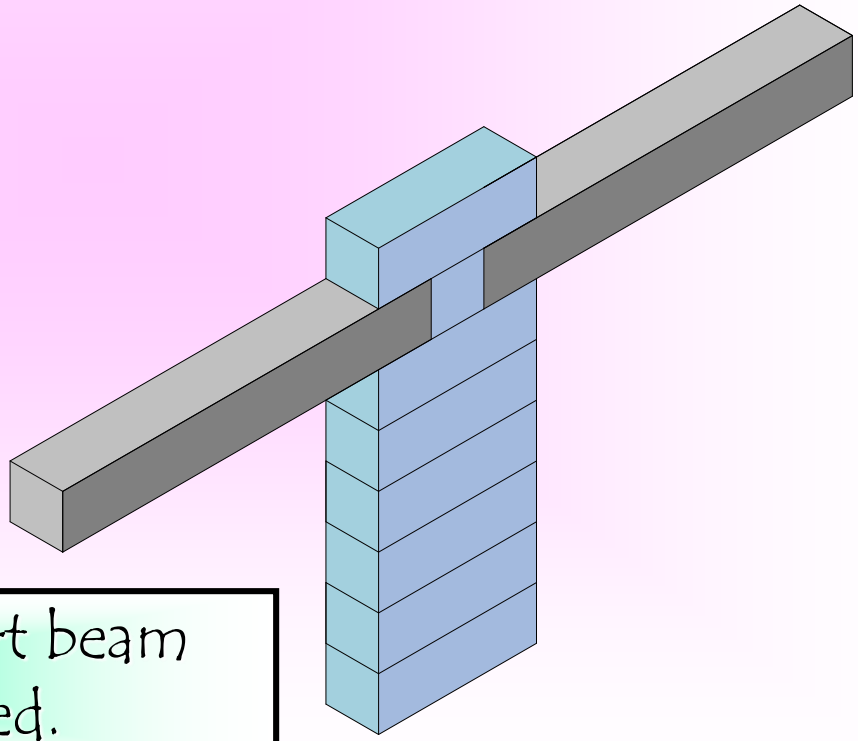
Beam Bridges

A beam bridge can be one span (one beam) or multi spans (many beams)

Cantilever Bridges

Cantilever bridges are made from beams supported on one side only. A cantilever bridge is a form of beam bridge.

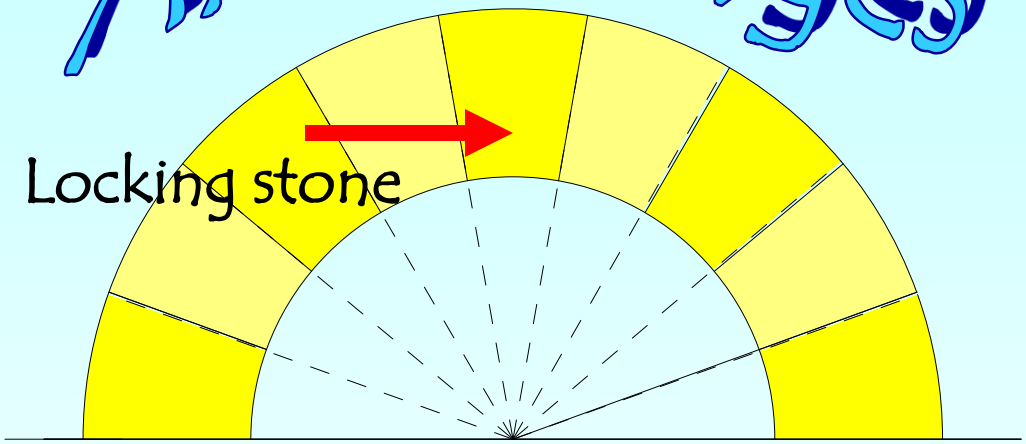




Two cantilevers with a short beam between them are often used.

The railway bridge over the river Forth in Scotland. An example of a cantilever bridge.

Arch Bridges



This type of bridge was invented by the Romans. They realised that a wedge shaped stone called *voussoirs* could carry heavy loads if built in the shape of an arch

A wooden framework has to be built to support the stones while building the arch bridge. After putting the locking stone in place the wooden frame is removed and the arch should stand by itself.

Arch bridges

Originally Arch bridges were built using materials such as stones and bricks that can withstand compression. But many modern bridges are built using concrete or steel. Strong support is needed on each side of the arch to stop it from spreading out.

Hanging Bridges

A hanging bridge can stretch over long distances without much material being needed to build it. Perhaps you have seen a simple hanging bridge in a film or adventure story about the jungle on the television.

Hanging bridges of Wales

Two of the most famous hanging bridges in the world are in Wales.

Hanging bridges to carry roads depend on tight strong steel cables. Strong winds can be dangerous for a hanging bridge and they must be carefully designed to cope with stormy conditions.

Types of Bridges

Create an information page all about the different types of bridges. Include information about each type and labelled diagrams.

Beam bridge

Cantilever bridge

Arch bridge

Hanging bridge