Bridges 2 Essay, Research Paper

Beam Bridge

Beam bridges are the simplest form of bridge. They have developed from a log

across a river to the large box girder bridges that you see today. In between there have

been many different types of beam bridge.

A Clam Bridge

This is another early form of a beam bridge. it consists of a single slab of stone supported

at each end stretching from bank to bank, making a single span.

A Clapper Bridge

This is a bridge that consists of a number of stone slabs that provide a multi-span

crossing. Each span is simply supported at each end.

All bridges are concerned with providing the necessary stiffness to prevent

bending and twisting when a load is applied. All beams are good at this ( infact any

member that resists a load is called a beam). The load applied to the bridge is transferred

to the supports where the load act downwards.

Archbridges have been in use for thousands of years. The Romans made much use

of arches and many of their aqueducts and viaducts still stand today. They discovered that

small wedge shaped stones can, when placed to form a semicircle, resist large weights

from above. Originally they were built from stone, and later brick, they are now more

commonly built from reinforced concrete or steel. The newer materials allow a much

longer and lower span to be built. Arches carry their load by transferring the load to the

supports at either side. These supports must be rigidly fixed in the ground to stop them

spreading apart.

This diagram shows you the name for each part of an arch bridge. The most

important part is the brick in the middle of the arch called a keystone.

A cantilever projects outwards and is supported at one end only as shown.

Cantilever bridges usually use a pair of cantilevers, often to support a beam set between

the two cantievers. Many modern bridges over motorways use cantilevers in pairs. They

have a cantilever coming out from each side and a short beam between them.

Suspension bridges originated as rope and wood structures in various parts of the

world. Modern bridges use a bow sectioned roadway suspended from cables made from

extremely strong high tensile steel wires. The main cables, supported by the twin towers,

have to be securely anchored to the ground on either side of the bridge. Using suspension

bridges have an advantage that they are cheap and give long clear spans, making them the

most economical method of bridging large spans.