

Ames Public Library @HOME Activities

Bridges!

How do you travel over rivers, across canyons, and through creeks? By using a bridge, of course! There are many types of bridges and many materials that they are built from.

A bridge design can give you clues to its strength and its purpose.

See a related video on the Library's YouTube Channel at <http://bit.ly/APLvideos>.

Books and Media:

Title	Author / Performer	Call Number
<i>Who Built That? Bridges</i>	Cornille, Didier	J 624.2 COR
<i>This Bridge Will Not Be Gray</i>	Eggers, Dave	J 624.2 EGG
<i>Building Bridges</i>	Enz, Tammy	J 624.2 ENZ
<i>Cross a Bridge</i>	Hunter, Ryan Ann	J 624.2 HUN
<i>Bridges! Amazing Structure To Design, Build & Test</i>	Johmann, Carol and Rieth, Elizabeth	J 624.2 JOH
<i>Bridges</i>	Marsico, Kate	J 624.2 MAR
<i>How Do Bridges Not Fall Down?</i>	Shand, Jennifer	J 624.2 SHA
<i>Brooklyn Bridge</i>	Ken Burns' America Collection	Stream on Hoopla using Library card

Websites:

URL
https://www.pbs.org/wgbh/buildingbig/bridge/basics.html

Vocabulary:

Deck – the load bearing portion of the bridge on which people and traffic travel.

Truss – A truss is made of a framework of made of several triangles. In a truss bridge the triangles are arranged so the weight is distributed evenly.

Piles – are slender vertical supports that are driven into the ground below a bridge, even if that ground is below water.

Piers – are thick strong structures that support the bridge at the ends of a span.

Span – span is the distance between bridge supports. If your legs were piers the span would be your hips.

Beams – are long horizontal structure that stretch the length of a bridge. Horizontal is something that lies flat.

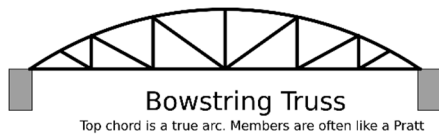
Abutment – Bridges need to stay in line with the road. For this the beams of the bridge need to be anchored firmly into the ground, this is made possible by an abutment. An abutment is sturdy structure that connects the beams of the bridge to the land.

There are many types of bridges: simple ones like a log across a shallow creek to huge, magnificent structures that are on an ocean. Bridges can be constructed from many different materials and have different structures. Two common types of bridges are the truss-type bridge and the suspension bridge.

Truss Bridges

A truss is made of a framework made of several triangles. This web of triangles can evenly distribute stress across the entire structure and can be dramatically more lightweight than walls created from strong materials.

Below are some examples of trusses:



Suspension Bridges

A suspension bridge is a type of bridge in which the deck is hung below suspension cables on vertical suspenders.

Take Away Bag: Bridges

Bag Contents:

- 30 Popsicle sticks
- Elmer's glue

In the kit are 30 Popsicle sticks for you construct a bridge. You can also use items like pieces of yarn, sticks, small stones and other objects, but always ask your grown-up's permission.

Before building a bridge, engineers and architects need to answer many questions—like how long the bridge needs to be, who will be using it, and the best materials to construct it with. One way to work out the questions is to draw out the bridge design on paper before building it.

Build your bridge and let the glue dry. Then, test your bridge to see how much weight or load it can support. Start with something light, like an eraser, then move on to heavier objects such as a can of soup. Testing your bridge can give you ideas about the strength of your bridge and way to improve or modify your bridge design.

You can also build several different types of bridges, and test them to see which design is the strongest. Think about why it's stronger than the others.