

2016 Great West Sound BRIDGE CHALLENGE

Saturday, April 30 ♦ 10am - 3pm

@ Kitsap Mall, Silverdale

Hosted in partnership with Olympic Educational Service District 114



The Challenge:

Your community needs to build a truss bridge that can cross a local river without the use of any support pillars. The goal is to construct a bridge that does not disturb the river's fish population in any way.

ELEMENTARY SCHOOL Design Challenge:

Build a model of the bridge that can **span a distance of at least 30cm, be a minimum of 4cm wide**, and have a mid-span accessible testing area that will allow for the addition of penny rolls and a Dixie Cup, using **ONLY** the materials listed below.

Authorized Materials:

- ♦ Up to 20 non-bendy drinking straws, with a diameter of 0.25-0.35 inches
- ♦ Up to five 3" x 5" index cards
- ♦ Clear scotch tape – unlimited
- ♦ Scissors (for cutting only—not as part of the bridge)
- ♦ Meter stick (for measuring only—not as part of the bridge)

Bridge History:

A bridge is a structure that spans a gorge, valley, road, railroad track, body of water, or any other physical obstacle, for the purpose of providing passage over the obstacle.

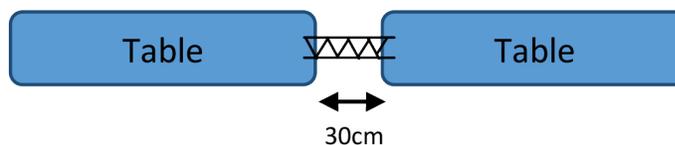
There are many types of bridges: beam, truss, arch, suspension and cable stayed. A truss bridge is a bridge that uses trusses, or a series of triangles for support.

Engineers need to consider loads when building structures. Loads are weights and forces that a structure must withstand. The dead load of a structure is the weight of the structure itself. The dead load of a bridge, for example, includes beams, cables, and the deck. The live load of a structure is the weight that is added to the structure, including people, cars, and the wind.

Testing Procedure:

Each bridge will be positioned across a 30cm gap and cannot be anchored on either side in any way. Rolls of 50 pennies

will slowly be added to the mid-span testing area. Once the bridge begins to flex, a Dixie cup will be added to the mid-span testing area, where pennies will be added one at a time to the cup until the bridge collapses or you ask to stop. Your bridge's strength rating will be based on the number of pennies it is able to support.



For more info on the Showcase and Bridge Challenge, and for bridge resources, visit www.westsoundstem.org.

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