Bridge over Troubled Water Project

Group Size: 2; Work will be performed in class and at home.

**You must write up a report that includes the following.**

**1. Problem Statement**: What is the best design for a bridge that will maximize load capacity but minimize construction material weight?

**2. Research**: Identify at least four different bridge designs, their materials of construction, their earliest uses, a famous bridge of each type, its designer, its span, and its location, the longest bridge of this type, and why this type of bridge is used. One-two pages, typed.

3. Write your **hypothesis**.

**4. Procedure**

Materials:

* Flat wooden toothpicks
* Glue (wood glue or glue gun)
* Tape
* Card Stock or Note Cards
* Mason’s String

Constraints:

* Must use above materials only
* Minimum span: 30 cm
* Maximum support length on each side: 1 cm

**5. Observations:**

1. Bridge will be massed.
2. Bridge will be placed on two lab tables.
3. A mass simulating a car will be placed in the middle of the bridge span.
4. A bucket will be suspended under the bridge and attached to the “car”.
5. Sand will be poured into the bucket until the bridge collapses or deflects more than 2 cm

**6. Conclusion:** Compare your Load to Bridge Mass Ratio with your classmates. Create a table for comparison. Write a two to three sentence conclusion.

**Your end products will be the bridge and a one to two page typed, double space, 12 Point font paper that includes your research and each of the points above.**