

Beginner's Guide to the Bridge Designer

By Kate Harty
(Age 10)



Contents

1. Introduction
2. Tools
3. How to Make a Bridge
4. Suspension Bridge (44 metre span)
5. The Different Bridges and How to Build Them
6. Examples
7. Conclusion

Chapter 1: Introduction

The Bridge Designer is a simulator that you make bridges on. A truck drives over it to test your bridge. There are ten different bridges and many ways to make each one.

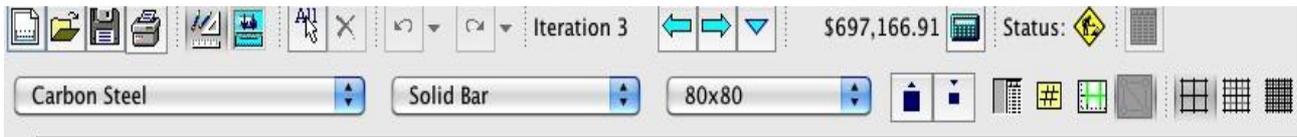
This book is written for beginners who want to use the Bridge Designer and want to know where to start and how to use it.

About the Author

My name is Kate Harty and I'm 10 years old. I live in Ireland and I wrote this book mainly for fun but also to help beginners starting the Bridge Designer. I wish I was American so I could enter the competitions.

If you don't have the Bridge Designer downloaded on your computer go to <https://bridgecontest.org/resources/download/> for the free download.

Chapter 2: Tools



This is the general tool bar.



This is to start a new bridge.



This is to open an existing bridge.



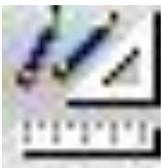
This is to save your bridge.



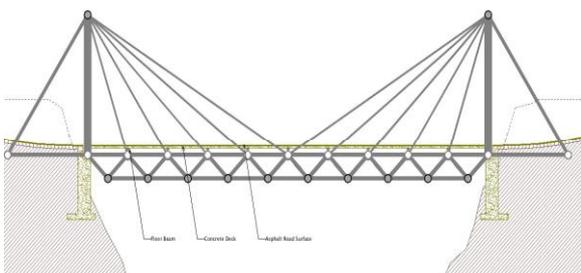
This is to print your bridge.



This is to test your bridge with the truck.



This is to get from



to





This is to select all members and joints.



This is to erase selected members and joints.



This is to undo and redo.



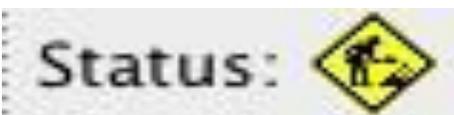
This is for the previous and next bridge design iterations.

\$715,632.69

This shows how much your bridge costs.



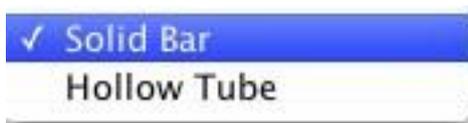
This shows how much money each individual part of your bridge costs.



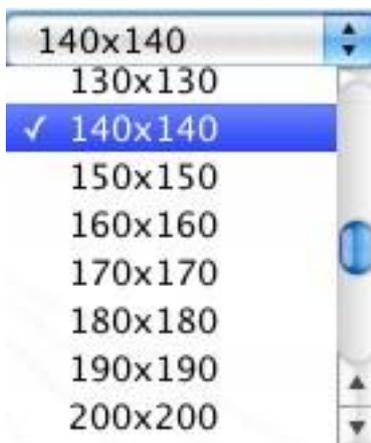
Status shows how safe your bridge is.



These are the types of steel you can use in the Bridge Designer.



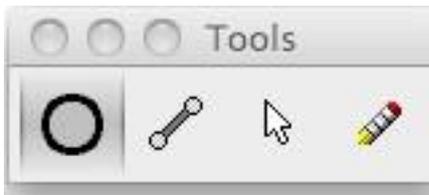
These are the types of bars you can use in the Bridge Designer



These are how thick your bars are allowed to be. They range from 30x30 to 500x500.



These buttons make the tube sizes bigger and smaller. For example, 380x380 to 390x390.



These are the most important tools you use in the Bridge Designer. Left to right are: joints, members (bars), select and erase.

When you're checking your bridge there are some more controls:



Background: The background is the river and the cliffs.

Abutments: The abutments are the supports (bricks at either side) of the bridge.

Truck: Is the truck. If you deselect it, the truck goes away.

Colours: The colours are the blue (tension = being pulled apart) and the red (compression = being pushed together).

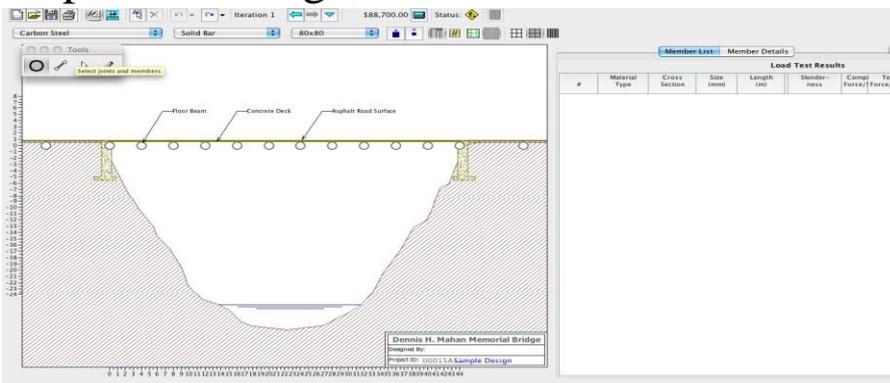
Exaggeration: The exaggeration shows you the way the bridge sags or collapses.

Smoothing: The smoothing is whether the background looks smooth or rough.

Chapter 3: How to Make a Bridge

There are ten different sample bridges provided by the Bridge Designer.

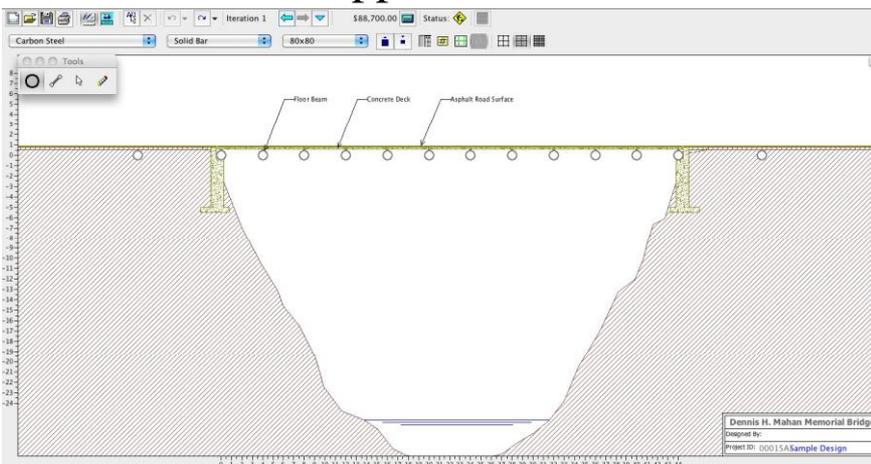
If you load a sample of a bridge you choose which one you want from the list, but if you start a new bridge it automatically goes to suspension bridge, 44 metres:



It always starts like this but if you don't want the Members window the you can click on the x,



, and it disappears:



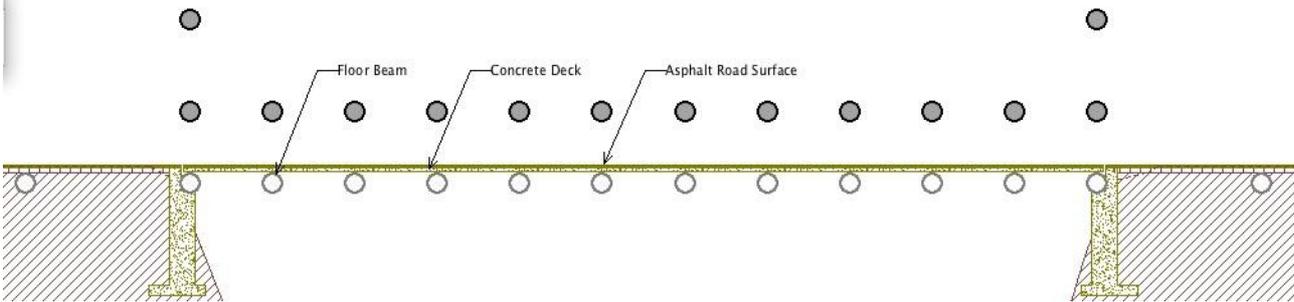
But if you want it back you just click on the little arrow in the top right hand corner and it reappears:



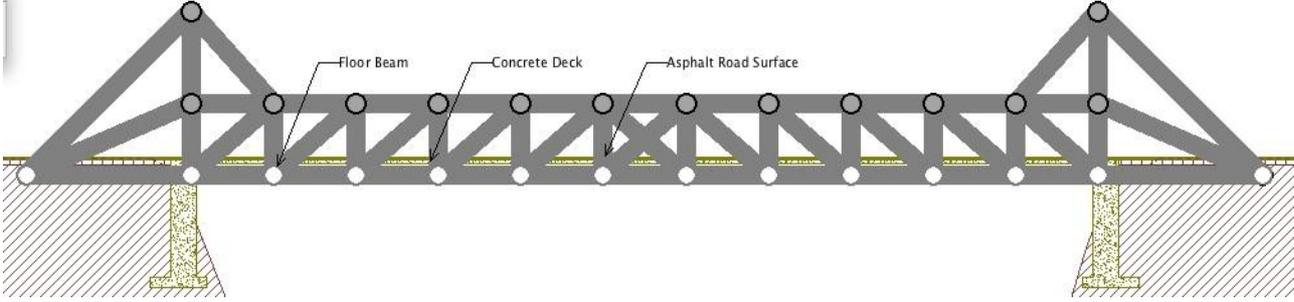
I usually x it.

This is a demonstration of a bridge on the Bridge Designer:

You start with your joints:



then the members:



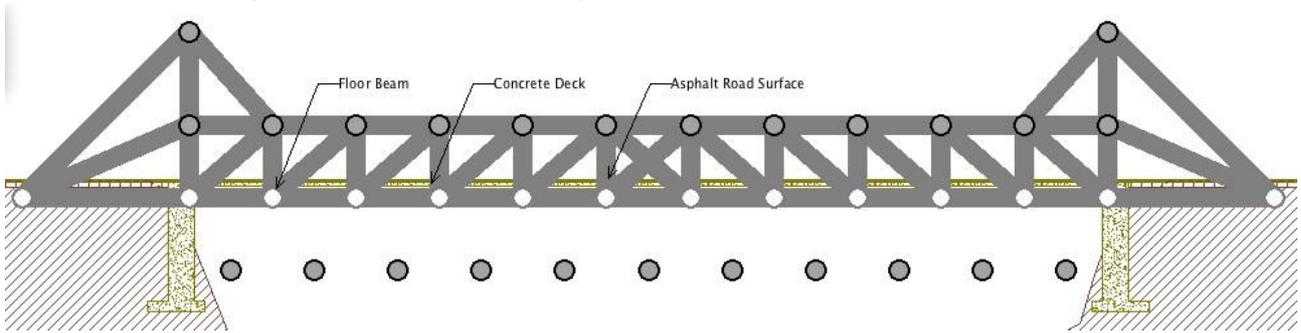
At any time you can check you bridge with the truck by pressing



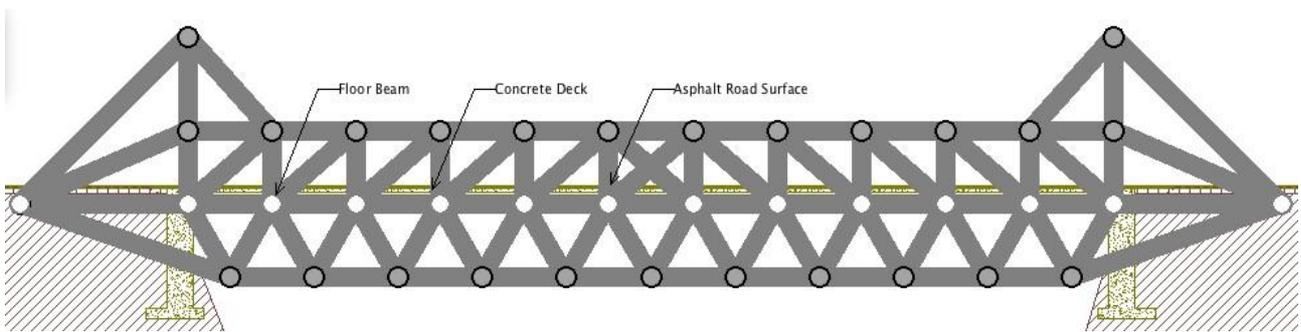
This is what this bridge looks like:



At the moment it sags a little but you can put in reinforcements to make it stronger. Put a row of joints under the first one:



Then add the members:



Now it's flatter again:

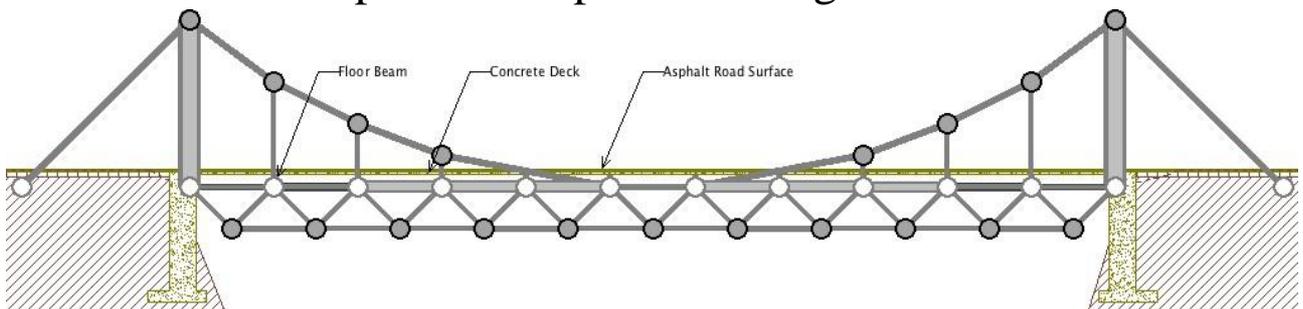


That's one of the many ways to make a bridge with the Bridge Designer.

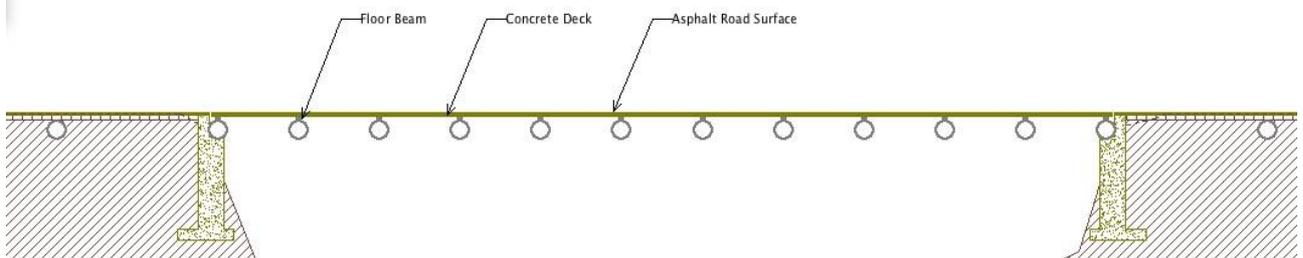
Chapter 4: Suspension Bridge (44 metre span)



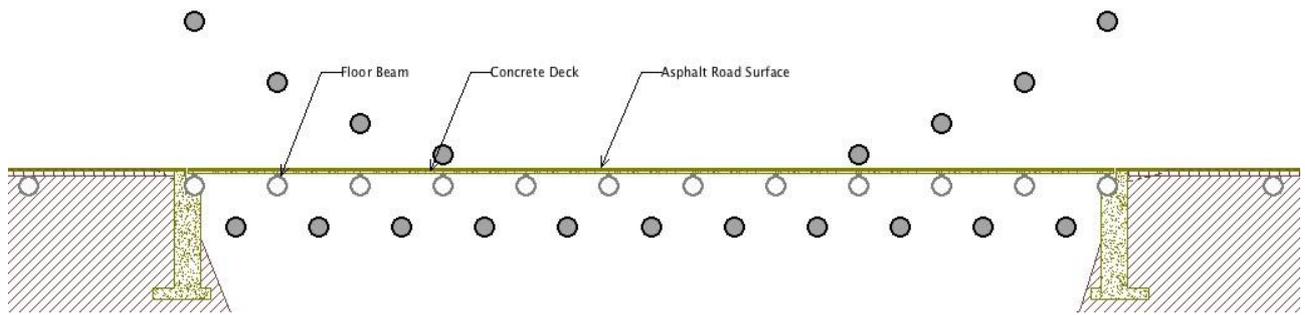
There are three different types of suspension bridges in the Bridge Designer. The first one on the list is a 44 metre span bridge. If you want to load a sample of a suspension bridge it looks like this:



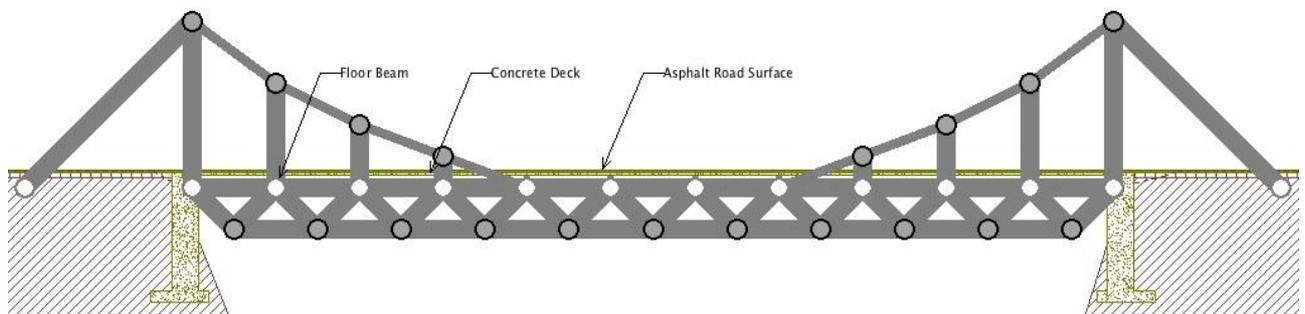
and you can always start with your own design by pressing



Again, you start with your joints:



Then members:



Then try out your bridge:

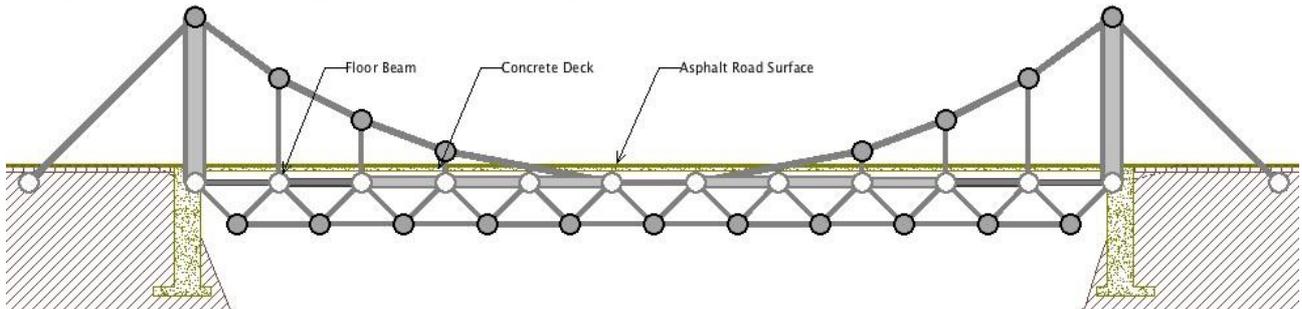


That's a Suspension Bridge 44 metre span.

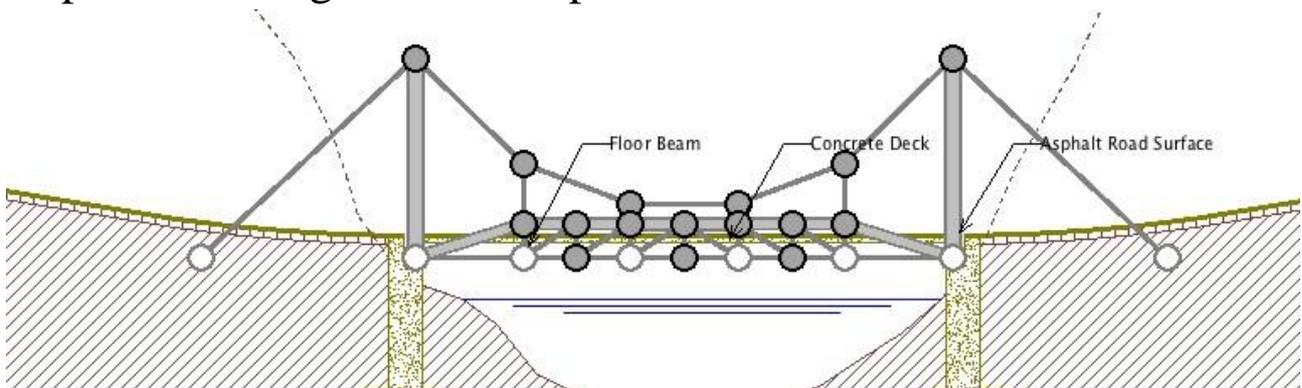
Chapter 5: The Different Bridges and How to Build Them

Some of the bridges available in the Bridge Designer are:

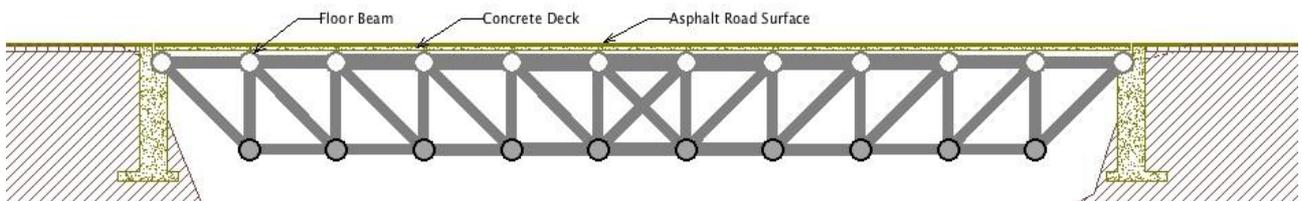
Suspension Bridge 44 metre span:



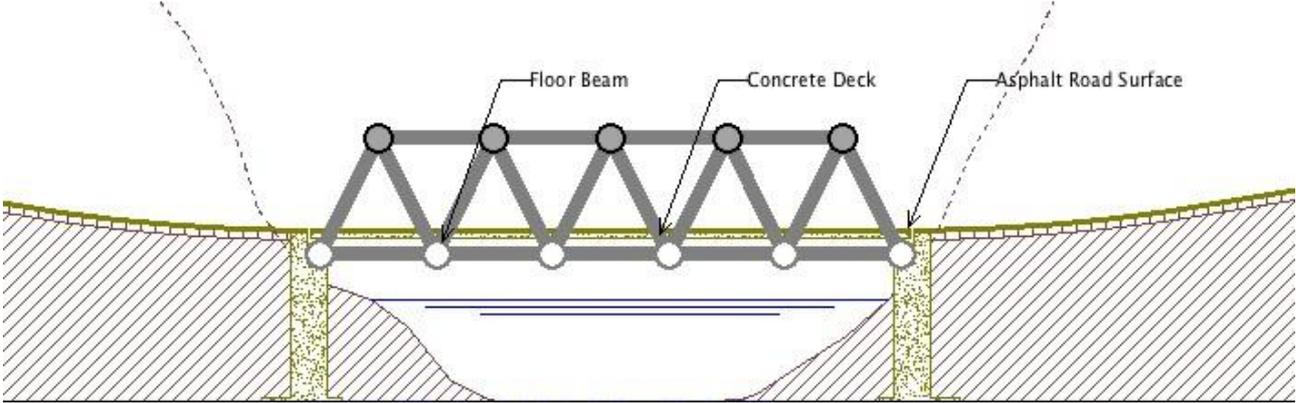
Suspension Bridge 20 metre span:



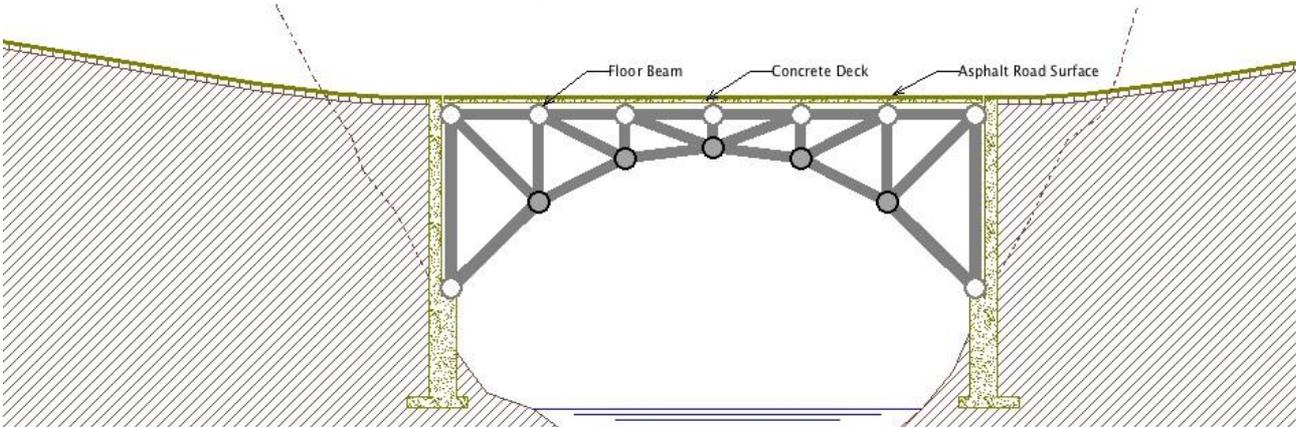
Pratt Deck Truss 44 metre span:



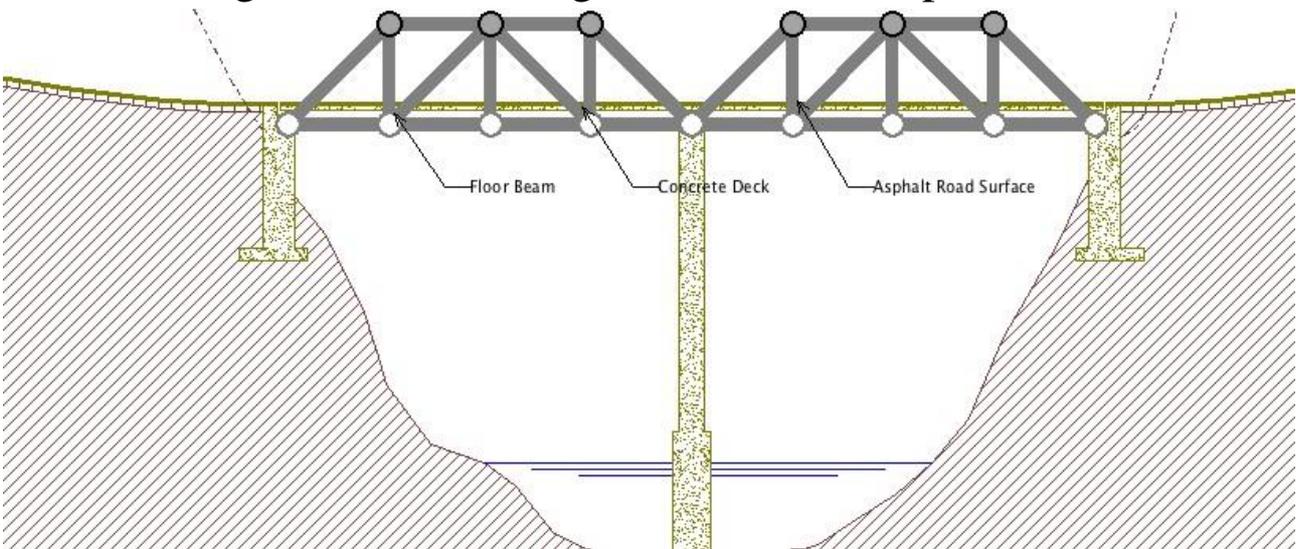
Warren Thru Truss 20 metre span:



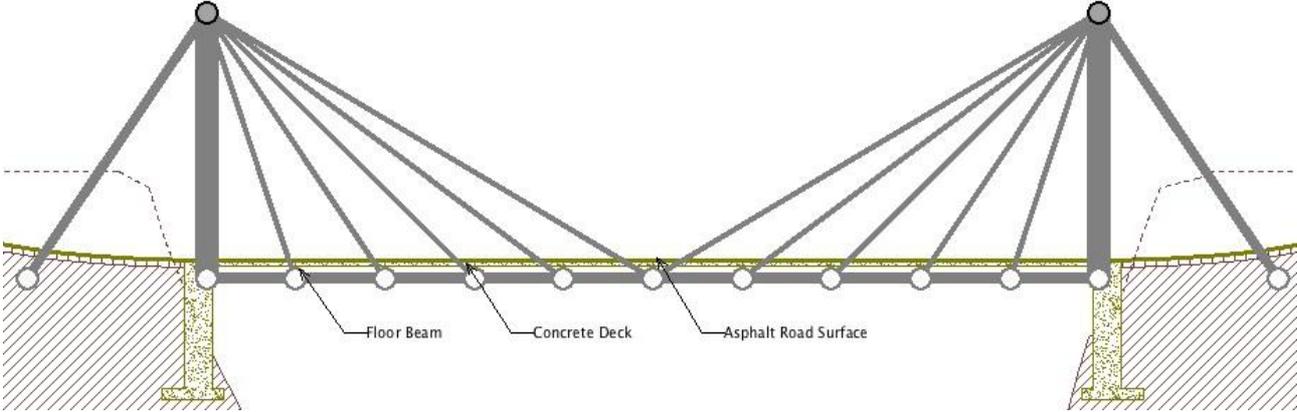
Continuous Arch 24 metre span:



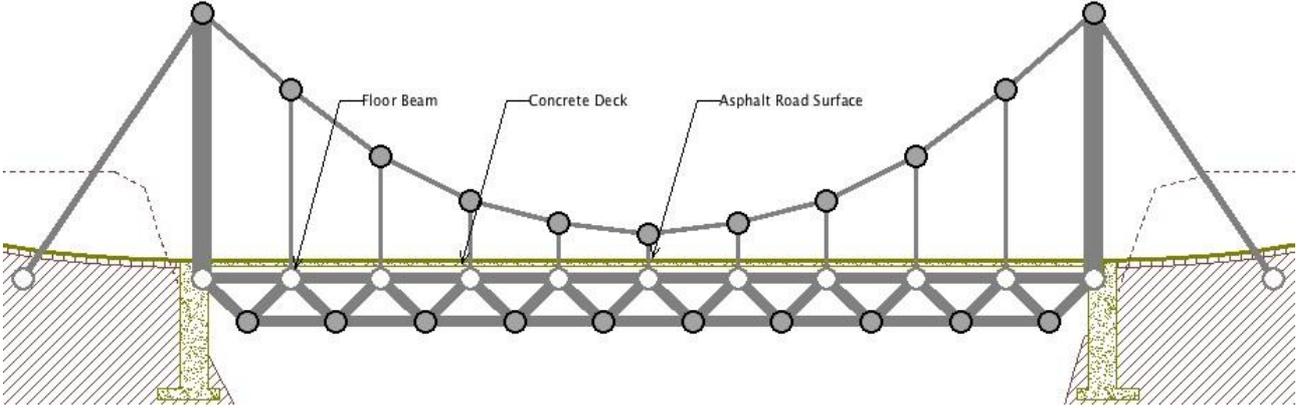
Howe Thru Truss With High Pier 32 metre span:



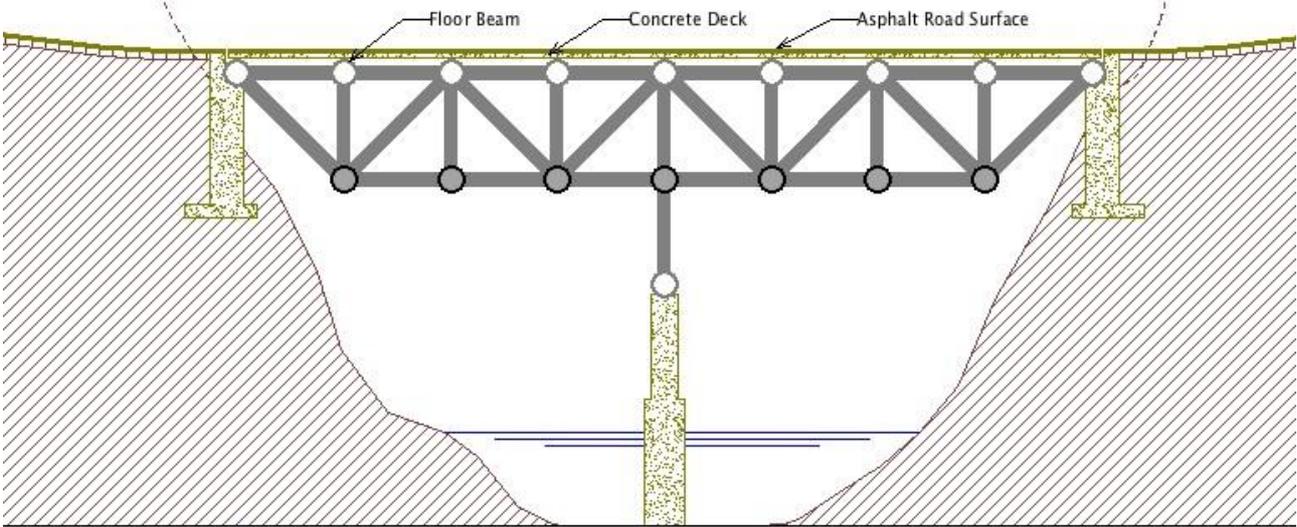
Cable-stayed Bridge 40 metre span:



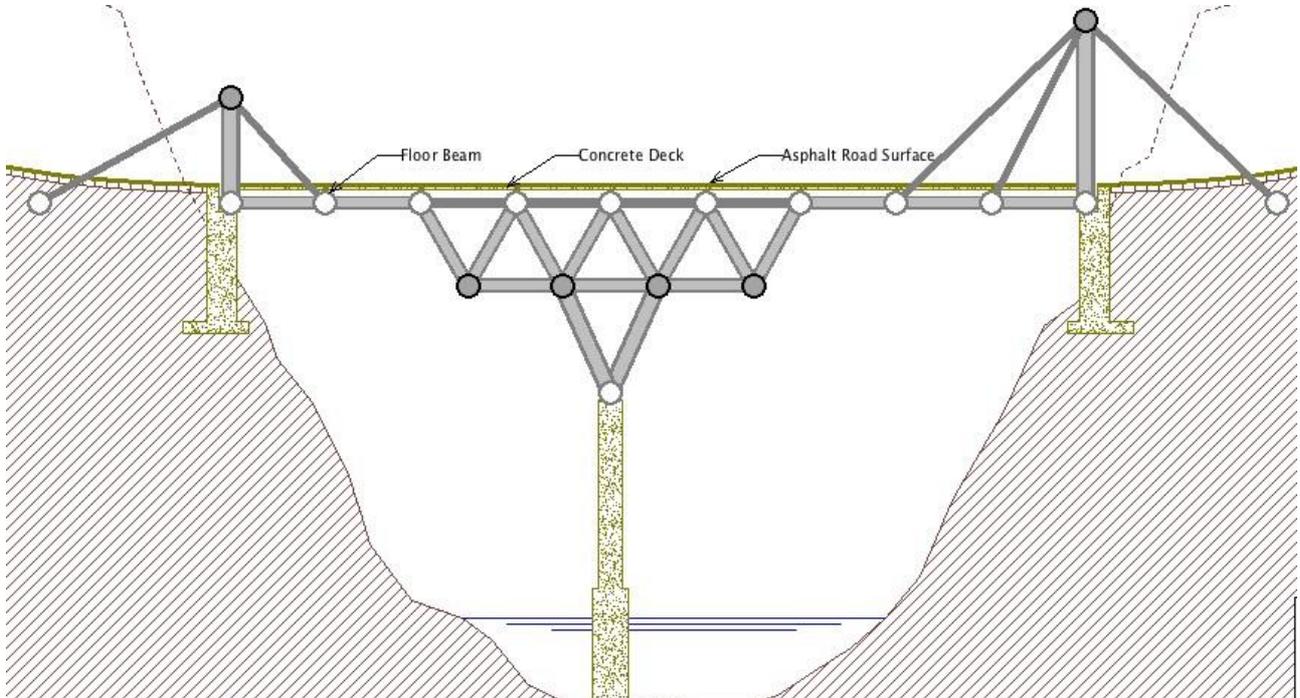
Suspension Bridge 40 metre span:



Warren Deck Truss With Low Pier 32 metre span:



Combined Truss Bridge 36 metre span:



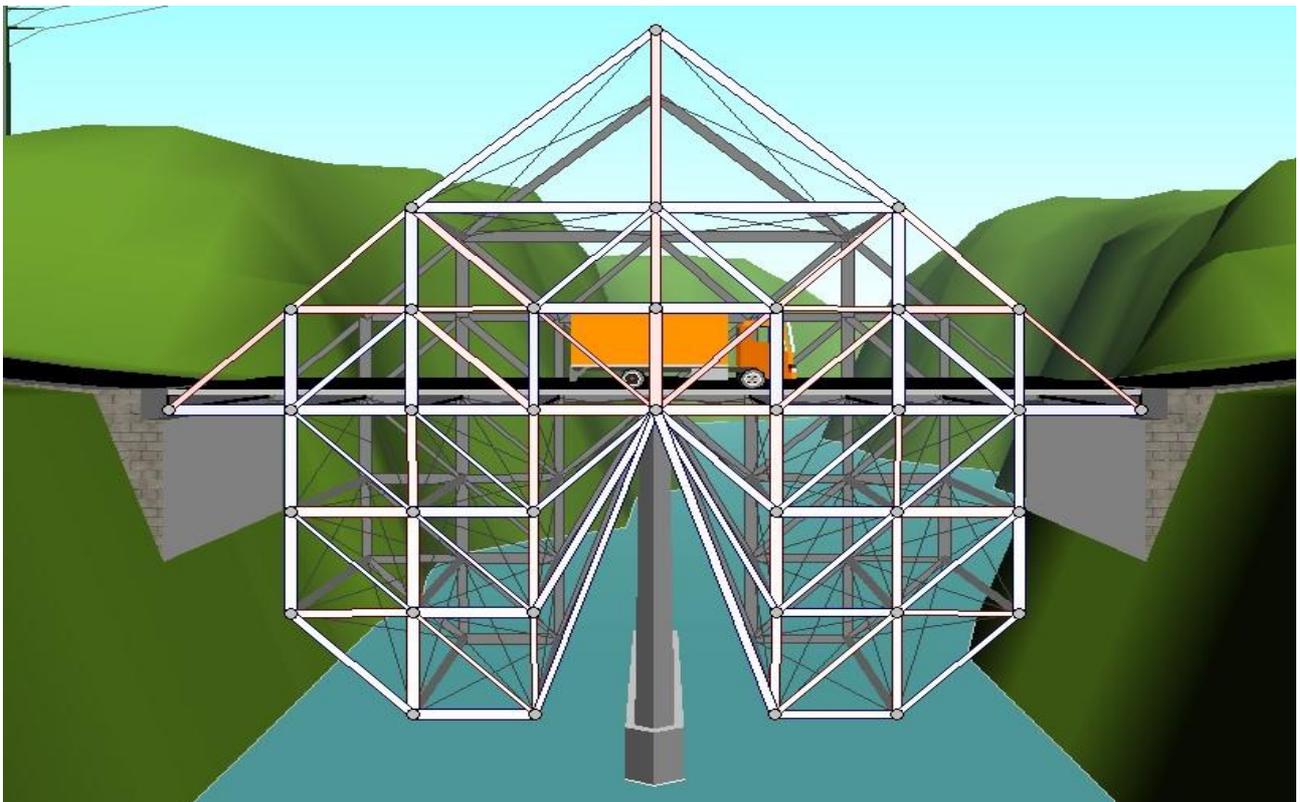
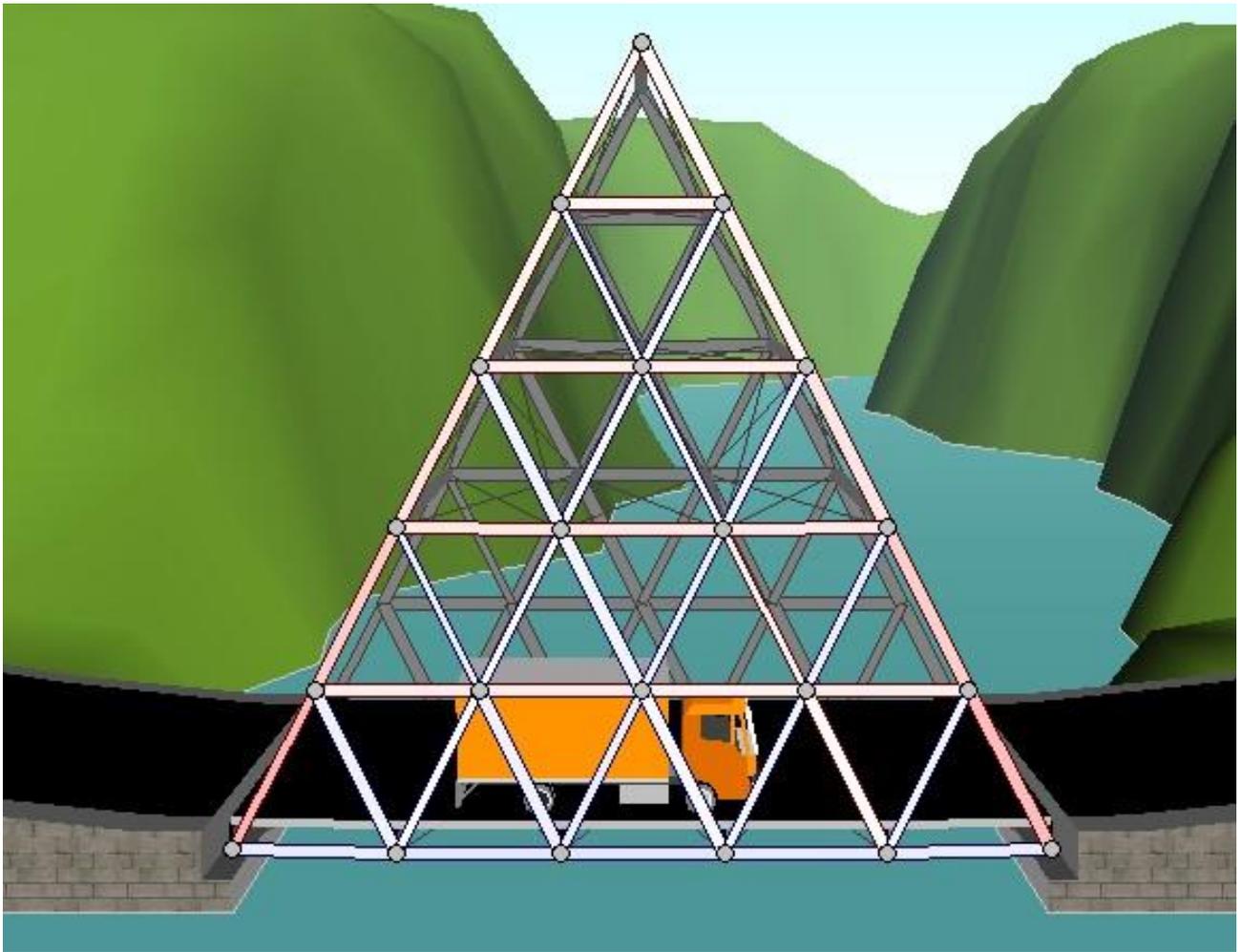
With every bridge you build you start the same way:

1. Joints
2. Members
3. Check your bridge
4. If your not happy with your bridge make it stronger
5. If you are happy with your bridge, save it.

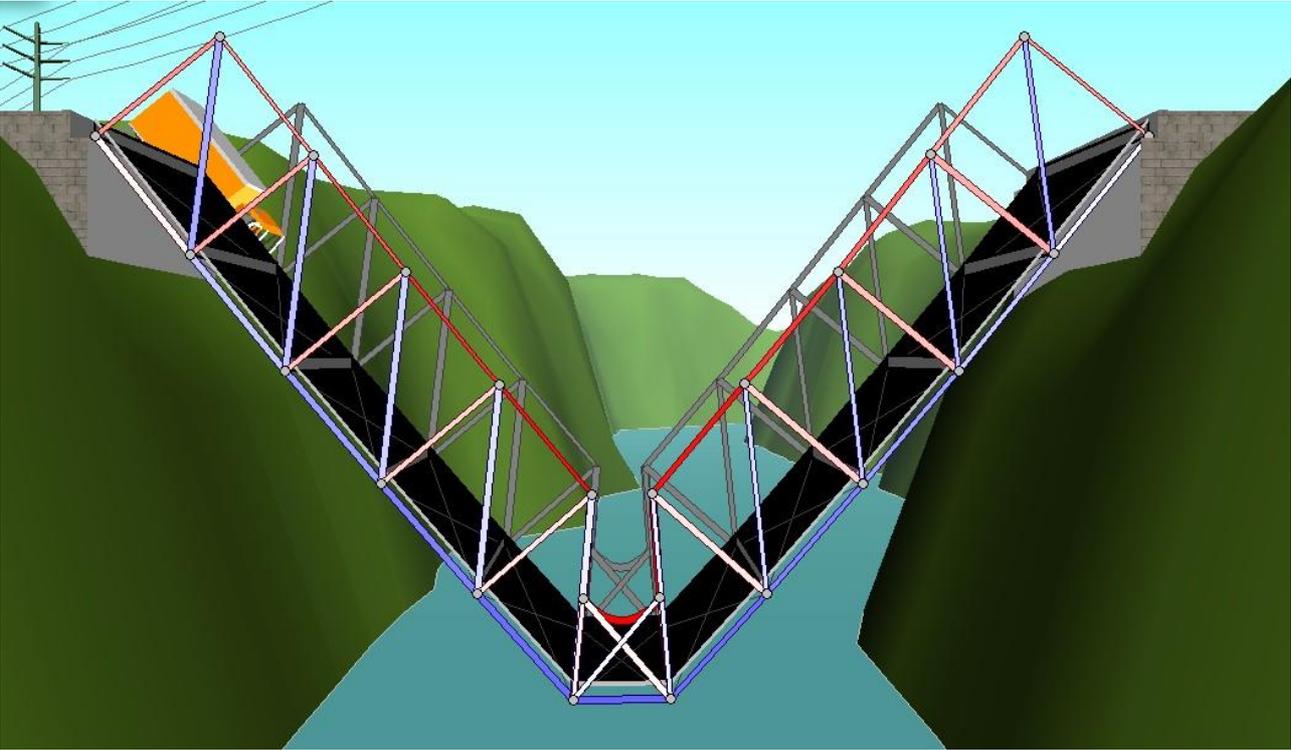
Chapter 6: Examples

Here are three of my cool looking bridges (none of them are perfect):

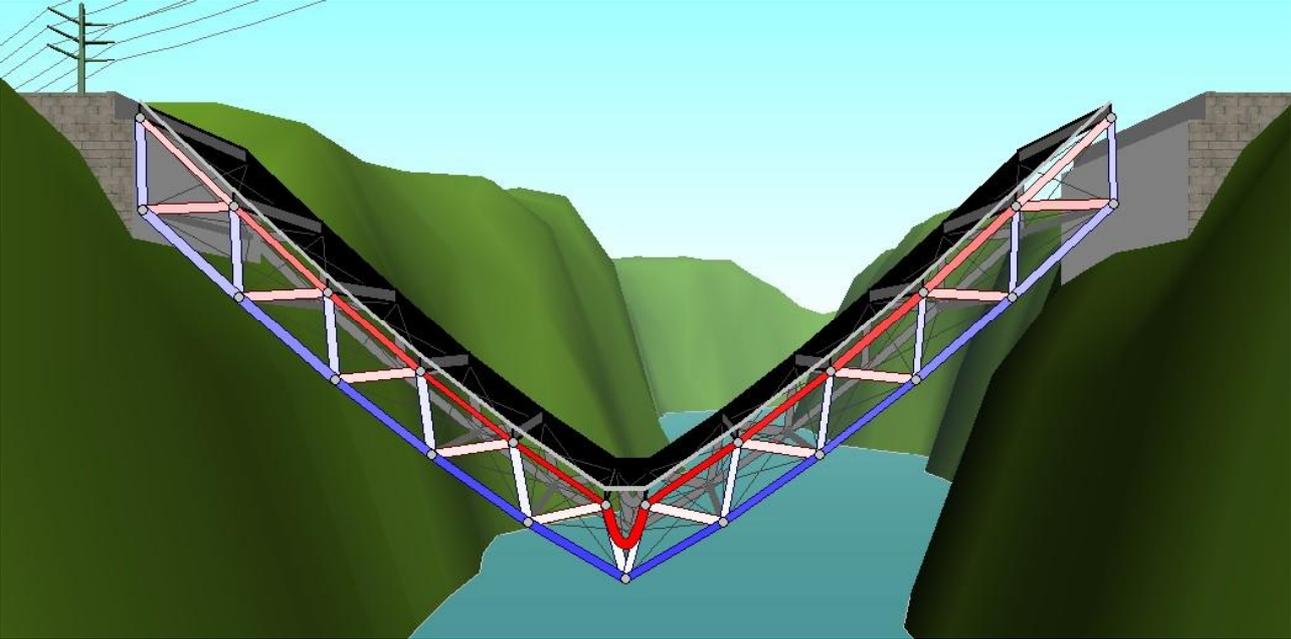




You can also sometimes see the truck make the bridge collapse:



Or the bridge collapse itself:



I hope you enjoyed reading this book and I hope you make some really cool bridges.

