Here's an example of a cable-stayed bridge. And keep in mind, this is just one example. So feel free to get creative. You don't have to make something that looks exactly like this.

And we're going to go through some of the tips that make this process easier and help you design a bridge that's more supportive. So first we're going to start by looking at these towers. It's important that you build a pretty strong base, so that your bridge can support weight.

And just feel free, when you're making this, you could design a bridge with one tower. You could design a bridge that the cables run differently than they do here. So definitely get creative with those aspects of this project.

So here's a tower. It has a pretty supportive base. So what we did to make this is, first, I figured out what design I wanted. So you're going to want some kind of opening, so that you can put your road through. But it doesn't have to be a triangle.

And you're going to want some structure on the top that you can thread your cables through. And you're going to want some kind of base. So this is my first piece that I cut. And next, you're going to want to cut a piece that looks like this. And basically, you want to make sure that half of-- so two sides of this panel that are ultimately going to wrap around your tower to give it a strong base, two sides are going to be a little bit bigger than the width of this component.

So you can measure it with ruler and score each panel. So I'll do an example here. So I've drawn up my lines. These are each three inches apart, but that's dependent on the width of the design that I did here.

You can draw out the lines in pencil. And then you can take your blade, and you just want to cut the top surface of your foam core or whatever surface you're using. And you can do-- so you want to cut all the way through. You just want to cut the surface, so you can just apply light pressure.

And once you've done that, you should be able to kind of pop these sides and make these creases, which is really useful. So next, what you're going to do is, you're going to take a piece of tape or glue, whatever you have available. And I put it on the inside, so that I could just fold this around and secure together from the inside. So you don't see the tape.

So now you should have this base. And you can put your tower through the base. And you can see that it's getting stronger, but it's still a little wobbly. So something that's really helpful is if you create a third component that looks like this. It acts as a brace to hold these two pieces really well in place.

So what I did is, I just measured the width this way, between my two fingers, and cut a little square and notched it to fit the tower. I think it goes this way. And I can slide it in, and that makes the tower a lot stronger.

So I've used foam core in this example. But you ca also use cardboard. Or you could maybe even layer up some thick construction paper or something, anything that you have access to. Now we're just going to finish building our second tower. And again, for this design, we have two towers, this basic bridge. But you don't have to have two towers if you don't want to.

So now our two towers are ready to go. The next important step is to decide how long you want your road and cut that out. Just make sure that your road is going to fit in the holes that you've cut into your towers. And you have to decide how you on your cables to run through your bridge. So all I did was measure the length of my road. And I knew I wanted the weight evenly distributed along the road.

I designated thirds of the road to have cables running through them. And I poked holes in the bridge evenly, In each of those thirds. And the next thing I'm going to do is figure out a way to attach my road to my towers. Because as you thread your cables through and you pull them tight, you don't want your road to start lifting up. And it makes it a lot easier if it's actually secured down to your towers.

I'm going to decide where I want to add these next holes. And I can just line it up, so I can see what's going on. Here, I have my towers. They're like right here. I'm going to add a hole here and here, here and here. And when I've marked those, I can actually use a pen or anything really to poke these holes. And then I wasn't able to go all the way through, so I'll use my X-ACTO knife to kind of make sure that--

OK, so now we're going to attach the road to the towers. I can slide my road through here and line it up where I want. And next thing you're going to do is-- so I'm going to use string to attach these. But you can use glue, if you'd like, or tape, if you have tape.

So I'm going to cut a couple inches of string. And a really nice trick is, you can use a big needle if you have one. But it's sometimes hard to thread the string through the holes. So I found it was easier to use

a paper clip. So I can bend the paper clip, and I can kind of just turn it into a needle.

Oh, that just popped off. I'm going to just twist it around. So I can now take the string and just thread it through my needle. So we're just going to slide the road out, so I can thread this through. I'm going to put my needle through and pull it through my holes like so.

And then I can take the string off the needle and do this on all four holes that are going to connect it to the tower. And then, when you've done that, you can just tie these all off in the four holes that you poked, so you can attach the road to the tower. Because when you add the cables, they're going to apply tension to the road. And you want to prevent the road from lifting up off the towers.

So now we've tied off all four corners onto the towers, and we've attached the road. So we're ready to string up our cables. So before you go into this, you want to think about exactly how you're going to thread your cables.

So you're going to need a piece of string. And it's good to keep it long. And what you're going to do is-- to start off, it's really nice to have something like a nut or a washer or a plastic bead, anything like that, something to stop the string on the backside. I'll show you.

So you thread it through the nut or bead or whatever you have, just tie. You can tie like a double knot. And now you're ready. And you're going to find the other end of your string, which is over here. And you're going to thread it back through your needle.

And now you're ready to go through your bridge. You're going to pull it through. And it stops because you put the nut back there.

So then, your next step is going to go up through the tower. So I'm going to find the hole in the tower and pull it through. So if you have a hole that you want to go down and back up through the same hole, you can use a similar technique to the one we started with, using a nut or a bead or washer.

So I'll show you an example. You can just go down through your road, pull your strings through all the way, like this. And then you can throw your nut or washer on. And you don't need to tie it off. You can just let it slide down.

You can put your needle back on, and then you can go back up through the same hole and pull it through. And now you have this stopper. So sometimes, you have to kind of manually pull the string a

little bit, to make it tight. But you should be good.

So then you're going to go back through the next tower and pull it taut. Got a little knot in my string. So I can just undo it and finally back down through your road and pull it really tight.

You want there to be tension in these cables. That's what's helping to support the road. And then it's easier to just do one length at a time. So to finish this section off, I'm going to throw another nut on or whatever you have available and then pull it tight. and you can just tie a little knot underneath and pull it tight. So you can just repeat this for all the remaining holes, until you have your cable-stayed bridge.

Again, this is just one example. So feel free to get creative. And once you're done, you can load your bridge with weight, to see how much weight it can support. And don't forget to take a picture and post it on the website.