



Elementary Science Olympiad Bridge Building Mission Phase 1: Who Designs and Builds Bridges?



To learn about bridge building, it is important to know who designs and builds them. After reviewing the resources in Mission Phase 1, you will know more about the careers of the STEM professionals behind these awesome structures. Let's get started learning about architects, engineers, and builders!

Step 1: Click [HERE](#) and begin on page 1, Phase 1. Read about architects, engineers, and builders.

Step 2: Let's hear from some real bridge building professionals:

- Miguel Rosales, Architect: Click [HERE](#)
- David Nyarko, Mechanical Engineer: Click [HERE](#)
- Civil Engineers: Click [Here](#)

Step 3: After reading and learning about different careers associated with designing and building bridges, go back to Step 1 and choose 1 of the careers listed to research (example: Mechanical Engineer). Use the information you find to answer the following:

- Share 3 things you learned about the career.
- Share 2 things that surprised you about this career.
- What is 1 question you still have?

Write your answers on your own paper and give it to your coach.



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Mission Phase 2: Explore Types of Bridges



To design and build a prototype of a bridge that is lengthy, strong, and stable, you will need to learn about the types of bridges. In this mission, you will read some information about bridges and use this information to help you decide what type of bridge you would like to build for the final Mission 4 Challenge.

Step 1: Click [HERE](#) and scroll to Phase 2 (beginning on page 6) to explore types of bridges.

Step 2: Click [HERE](#) to go to a PBS site. Here you can click on several bridges to learn more about them.

Step 3: Once you check out the bridges, click on [The Bridge Challenge](#) link to choose the right bridge for each location.



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Mission Phase 3: What Makes a Lengthy, Strong, and Stable Bridge?

Now that you have researched types of bridges, you will need to dig a little deeper to find out what can make a bridge lengthy, strong, and stable. Learning about this can help you as you plan for your final bridge building challenge.

Step 1: Click [HERE](#) and scroll to Phase 3 (beginning on page 28) to review a graphic organizer that compares the types of bridges that you researched in Phase 2. This gives you a quick glance at some things you need to consider as you plan for the final bridge building challenge.

Step 2: Watch the videos linked below:

What Makes Bridges So Strong? ~Click [HERE](#)

Building Strong Bridges ~Click [HERE](#)

Step 3: Click [HERE](#) to go to the Bridge Basics Program Kit produced by the Construction Industry Round Table. You will find pages of information about bridges. Focus on pages 50-54 to learn the pros and cons of each bridge. Then, go to the Instructions for Card Bridge Models and choose a model to build. Show your model to your coach and your teammates!



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Mission Phase 4: Bridge Building Challenge



Phase 4 is all about applying what you have learned throughout the Mission Phases! With the guidance of your coach, you will use the Engineering Design Process to complete this final challenge. As you go through the design process, don't skip the "Make It Better" step!! Your coach will let you know how long you have to complete this challenge.

Step 1: Click [HERE](#) to check out the Engineering Design Process.

Step 2: Follow your coach's directions for the challenge event. You can click [HERE](#) to see what you need to do to complete this challenge. This is the same challenge that teams use when competing in Georgia regional and state Elementary Science Olympiad competitions.

Step 3: Have fun!!

This Elementary Science Olympiad event was designed in collaboration with Breaux & Associates Architects. Click [HERE](#) to check out the buildings they design and how they support school districts across Georgia!



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