

101+ AMAZING Science Project Ideas: CIVIL ENGINEERING



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- Gives you a brief survey
- Recommends projects that are best for you

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[Building the Tallest Tower](#)

Skyscrapers are impressive structures. What does it take to design a building so tall? Engineers use strong materials and innovative design to push the limits of gravity. In this experiment you will use LEGO components, rubber balls, and a 3-ring binder.

Difficulty = 1

[Bridges That Can Take a Shake!](#)

Bridges are big and beautiful structures, but they also need to be safe for the people who cross over them every day. Building a bridge that is safe and secure is a challenge to civil engineers. But the job is even more challenging if you live in earthquake country! Find out how engineers are solving this problem as they build a new bridge over the San Francisco Bay in California. Try some of your own Bay Bridge designs. Will your bridge design take the shake of a quake?

Difficulty = 2 – 3

[Solving a 'Windy' Problem](#)

The wind is a powerful force, enough to erode whole hillsides over time. Building structures in windy environments challenge civil engineers with special safety concerns. A wall in a windy area can either shield you from the cold or fall down on you. Learn a few tricks on how to design walls in windy places.

Difficulty = 3

[Set Your Table for a Sweet and Sticky Earthquake Shake](#)

Have you ever been in an earthquake? What did it feel like? Did you jiggle back and forth? Up and down? Was there a jolt? Or a rolling motion? Come build a house Hansel and Gretel would love to eat, a special table to shake it on, and see how different soil types can amplify shaking.

Difficulty = 4

[The Effect of Bridge Design on Weight Bearing Capacity](#)

Build model bridges and then deliberately destroy them? Who'd be crazy enough to try that?

Difficulty = 4 – 6

[Building Structures: It's a Slippery Slope](#)

Have you ever looked up at a skyscraper and thought "That is so cool!"? Building a skyscraper, or any structure, is more than just building the walls, windows, and floors. All structures require a foundation to keep them from falling down. This is especially important when a structure is built on a hill or on a slope. In this science project, you will build a tower of Lego® Duplos® on slopes with different angles. You will investigate how deep you have to dig the foundation for each angle of slope. Your goal is to make sure that your building doesn't fall down!

Difficulty = 5

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[How Does the Ratio of Sand to Cement Affect the Strength of Concrete?](#)

Sorry, you don't get to use a jackhammer for this project, but you'll find out another way to break concrete (not to mention what makes it strongest).

[Difficulty](#) = 5 – 6

[Dome Sweet Dome](#)

Geodesic domes are made of interconnected triangles that approximate the shape of a sphere. This project shows you how to build a geodesic dome using rolled-up newspapers and tape. How much weight do you think your dome will support? Build one and find out!



[Difficulty](#) = 5 – 9

[Keeping You in Suspens\(ion\)](#)

Suspension bridges, with their tall towers, long spans, and gracefully curving cables, are beautiful examples of the work of civil engineers. How do the cables and towers carry the load of the bridge? Can a suspension bridge carry a greater load than a simple beam bridge? This simple project shows you how to find out.

[Difficulty](#) = 5

[Solid Ground? Measuring Soil Bearing Capacity](#)

Foundations for many types of structures rest on soil. This project shows how you can investigate the bearing capacity of different types of soil.

[Difficulty](#) = 6

[The Design Process: Creating a Stronger Truss](#)

This is an interesting project that explores which geometrical shapes make the strongest bridge truss structures. It is a good introduction to the engineering design process. You'll design three different trusses, and use online simulation software to analyze the distribution of load-bearing forces in each design. Then you'll build and test prototypes of each design.

[Difficulty](#) = 7