



Virtual Learning

Residential Foundations

May 4, 2020



Civil Engineering & Architecture
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Lesson: May 4, 2020

Objective/Learning Target:

Students will learn about the structure and construction of residential foundations



Bell Ringer:

Watch the following video and answer the following question:

[Skating Spider from Harry Potter](#)

Why couldn't the spider stay standing?

What is the most famous example of an architectural foundation failure?

Bell Ringer:

The spider had trouble standing because it did not have a solid foundation. The same principle should be applied to architecture. If your building does not have a solid foundation it will fail.

The freestanding bell tower, or campanila, for the cathedral in Pisa, Italy is arguably the most famous foundation failure in the world.





Let's get started:

There are many different factors that should be considered when deciding on what type of foundation to design for your structure. Those factors should include but not be limited to:

- Soil type
- Building design
- Project location
- Bidding/Costing

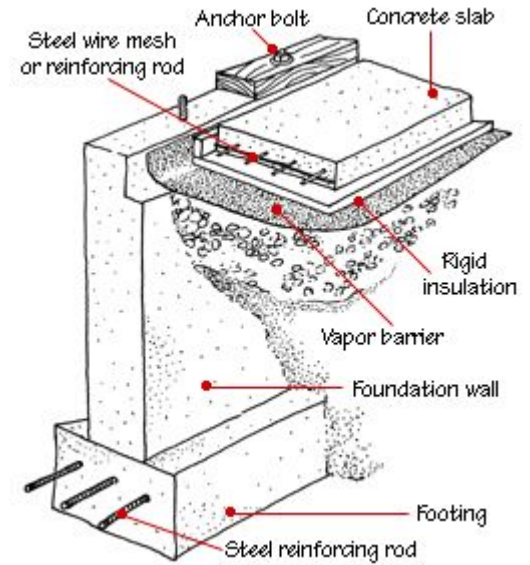
[Choosing the right foundation](#)

Let's get started:

Residential Foundations are typically constructed from poured in place concrete with steel bar reinforcement for additional strength. Other residential foundation materials might include CMU (concrete masonry units), or even wood or natural stone in some historical applications.

Types of foundations you should investigate in this activity should include:

- Slab on Grade
- Piers
- Crawl Space
- Basement





Practice:

Your task: Using the internet, research appropriate foundations types for the following regions:

- Coastal Region (sandy soils with high water table)
- Mountain Region (extremely rocky soils)
- Desert Region (very dry and compact soils)
- Midwest (expansive soils with high clay content)

Questions you should answer for each region:

- Identify which type of foundation you would choose to use in each region and defend your answer.
- What makes it appropriate for that region and soil type?
- Create a simple sketch diagram illustrating the foundation that you chose. Be sure to include reinforcement in your sketch.



Additional Resources:

[Foundation Failures](#)

[Types of Foundations](#)

<https://homereference.net/house-foundation-types/>

<https://www.homeselfe.com/the-4-types-of-foundation-found-in-homes/>