Activity 3.2.8 Foundation Types and Considerations

Introduction

Someone once said, “It is not the beauty of a **building** you should look at; it is the construction of the **foundation** that will stand the test of time.” Although a building is architecturally beautiful and structurally sound, if the foundation cannot safely support it, the building is doomed to failure. An engineer takes many factors into consideration when designing a foundation system. The type of foundation specified for a building depends on the loading, the size and shape of the building, environmental conditions, the soil conditions, and the cost of construction. In this activity you will learn about many different types of foundations and when each is used. You will also investigate soil and environmental conditions for a site to provide information necessary to the design of a foundation.

Equipment

- Paper
- Pencil

Procedure

1. Research the following foundation types and draw sketches of each one. Describe the conditions under which each might be used.

Typical Foundation Systems/Usage	Diagram/Sketch
Continuous (Strip) Footing with Stem Wall Usage:	

Typical Foundation Systems/Usage	Diagram/Sketch
Spread Footing with Pier Usage:	
Slab-on-Grade with Thickened Slab Usage:	
Mat (Floating) Foundation Usage:	
Pile and Pile Cap Usage:	
Cast-in-Situ Pile and Grade Beam Usage:	

2. Visit the FEMA Map Service Center at **http://www.msc.fema.gov/**. Create a FIRMETTE for the Keystone Library Renovation site (Choose FIRMette under **What are you looking for?**). Then answer the following questions.

   Is the Keystone Library Renovation site in an A Zone or V Zone?

   How does this affect the building design?

Conclusion

1. How do weight and applications of loads affect the design of a structure?

2. What factors determine whether soil is suitable to support a structure?

3. What considerations influence the depth and height of the foundation?

4. What are the typical modes of failure of a concrete footing?