Unit 07: Footing and Basement Construction

Content Area: **Technology**
Course(s): **Architecture**
Time Period: **March**
Length: **12 Blocks**
Status: **Published**

Enduring Understandings

1. The foundation of a house provides a firm platform to build the house on.

2. The selection of a foundation system is determined by factors such as cost, location, soil conditions, building type, and availability of required materials.

3. Footings support the load of the foundation.

4. Footings are placed below the frost line to avoid movement caused by the freeze and thaw of the soil.

Essential Questions

1. Why is it important to have to a solid foundation in place before beginning to construct the house?

2. What factors influence the selection of different foundation systems?

3. How do you determine which foundation system is best for the design of the house and the geographic location?

4. What does the frost line have to do with footings?

Content

Vocabulary:

concrete masonry unit (CMU), pier, floating slab, slab, crawl space, footing, foundation, frost line, soil

examination, basement, footer, continuous pour, I-beam, manufactured beam

Skills

1. Analyze a house floor plan to determine an appropriate foundation.

2. Create a cross-section drawing of a foundation footer.

3. Create a foundation plan drawing for a house given its floor plan.

4. Create a foundation plan drawing for a custom designed house.

5. Construct a scale model foundation for a custom house.

Resources

11x17 Paper / Drawing Boards / T Square / Pencil / Erasers / Rendering Markers

Standards

NJ: Grade 9 - 12

9.3 CTE: B. Architecture & Construction Career Cluster

Academic Foundations:

9.3.12.AC-DES.5 Identify the diversity of needs, values and social patterns in project design, including accessibility standards.

Communication Skills:

9.3.12.AC-DES.6 Apply the techniques and skills of modern drafting, design, engineering and construction to projects.

9.3.12.AC-DES.7 Employ appropriate representational media to communicate concepts and project design.

9.3.12.AC-DES.1 Justify design solutions through the use of research documentation and analysis of data.

Problem-Solving and Critical Thinking:

9.3.12.AC-DES.8 Apply standards, applications and restrictions pertaining to the selection and use of construction materials, components and assemblies in the project design.

9.3.12.AC.4 Evaluate the nature and scope of the Architecture & Construction Career Cluster and the role of architecture and construction in society and the economy.

9.3.12.AC.6 Read, interpret and use technical drawings, documents and specifications to plan a project.

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