

ATCT-1331: CONCRETE FOOTERS AND WALLS

Cuyahoga Community College

Viewing: ATCT-1331 : Concrete Footers and Walls

Board of Trustees:

May 2025

Academic Term:

Fall 2025

Subject Code

ATCT - Appld Indus Tech - Carpentry

Course Number:

1331

Title:

Concrete Footers and Walls

Catalog Description:

Introduction to construction of concrete form work. Includes reading of construction working drawings, layout, fabrication, and erection of standard wall, column, and footing forms.

Credit Hour(s):

2

Lecture Hour(s):

2

Requisites

Prerequisite and Corequisite

Departmental approval: Admissions to Carpentry Technology apprenticeship program.

Outcomes

Course Outcome(s):

1. Select appropriate hardware, fabricate and erect standard wall, column, and footing forms in accordance with industry standards.

Objective(s):

1. Identify procedures for job site safety during foundation installations as defined by OSHA regulations.
2. Interpret blueprints for information relating to form work system layout and installation.
3. Explain the purpose of forms.
4. Name and explain the hardware used on forms.
5. Fabricate formwork for various footing combinations.
6. List the ingredients of concrete and discuss its different properties.
7. Calculate material requirements for concrete formwork and foundation systems.

Course Outcome(s):

2. Apply math concepts involving decimal conversion, standard measurement conversion, calculating area, and calculating volume to calculate materials needed in formwork and foundation systems.

Objective(s):

1. Demonstrate how to calculate the area of squares, rectangles, parallelograms, trapezoids, and circles.
 2. Demonstrate how to convert decimal feet to standard measurement and vice/versa.
 3. Demonstrate how to calculate volume of rectangular solids and cubes, cylinders, and footings.
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Course Outcome(s):

3. Interpret blueprints for information relating to form work system layout and installation.

Objective(s):

1. Recognize and interpret symbols related to form work system layout and installation.
2. Identify reference points related to form work system layout.
3. Differentiate between full basement foundation prints, crawl space foundation prints, and slab-on grade foundation prints.

Methods of Evaluation:

1. Quizzes
2. Exams
3. Classroom participation
4. Completion of assigned projects

Course Content Outline:

1. Concepts
 - a. Types of walls and footings
 - i. inverted t-shaped
 - ii. battered
 - iii. L-shaped
 - iv. rectangular.
 - b. Types of foundation sills
 - i. wood
 - ii. use of preservatives
 - iii. use of anchor bolts
 - iv. fastening with studs or anchor clips.
 - c. Types of foundation systems
 - i. crawl space
 - ii. full basement
 - iii. slab on grade
 - iv. sloped lots
 - d. Composition of concrete
 - e. Terms associated with concrete
 - i. hot and cold weather delivery
 - ii. pouring
 - iii. curing
 - iv. steel reinforcement
 - f. Mix variations of concrete
 - g. Decimal to inch conversion
 - h. Inch to decimal conversion
 - i. Area calculation
 - j. Volume calculation
 - k. Material estimation methods
 - l. Concrete estimation methods
 - m. T-foundations
2. Skills
 - a. Interpreting blueprints for concrete form-work layout information.
 - b. Using sheathing, framing, bracing, and ties to create built-in place forms, form panels, and door and window openings.
 - c. Forming T-foundation with footing, keyways, reinforcing steel, and walls.
 - d. Establishing height of pour, and pouring concrete correctly.
 - e. Estimating concrete for foundation footings and walls, pier footings, and complete foundation.
 - f. Estimating form materials for sheathing, footing, foundation walls, stiffeners, and supports.
 - g. Calculating volume of rectangular solids and cubes, cylinders, curved walls and footings.
 - h. Calculating area of squares, rectangles, parallelograms, trapezoids, and circles.

- i. Converting decimal feet to standard measurements and standard measurements to decimal feet.
- j. Fabricating form-work for rectangular, battered, pier, grade-beams, and slabs.

Resources

Koel, Leonard. *Concrete Formwork*. 5th ed. Homewood: American Technical Publishers, 2015.

Carpenters International Training Fund. *Concrete Construction*. Las Vegas, NV: Carpenters International Training Fund, 2023.

Carpenters International Training Fund. *Print Reading 1: Introductory and Intermediate Skills*. Second Edition. Las Vegas, NV: Carpenters International Training Fund, 2022.

Carpenters International Training Fund. *Silica Awareness*. Las Vegas, NV: Carpenters International Training Fund, 2017.

Resources Other

Carpenter's International Training Fund. <https://www.carpenters.org/citf-training/> : 2024.

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