

# ATCM-1321: INTRODUCTION TO PLAN READING

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## Cuyahoga Community College

**Viewing: ATCM-1321 : Introduction to Plan Reading**

**Board of Trustees:**

October 2020

**Academic Term:**

Fall 2021

**Subject Code**

ATCM - Appd Indus Tech-Cement Masonry

**Course Number:**

1321

**Title:**

Introduction to Plan Reading

**Catalog Description:**

Introductory course covering technical and practical fundamentals of Blueprints. This course provides students with knowledge of blueprint reading and blueprint history as they relate to the cement masonry industry. Classroom activities include interpreting standard architectural drawings and plot plans to establish dimensions and elevations of buildings, parking lots, sidewalks and aprons.

**Credit Hour(s):**

1

**Lecture Hour(s):**

1

## Requisites

**Prerequisite and Corequisite**

Departmental approval: admission to Cement Mason's Apprenticeship program.

## Outcomes

**Course Outcome(s):**

Discuss the history, types of drawings and applications, including residential and commercial construction drawings.

**Objective(s):**

1. Discuss the history and evolution of blueprints from the early twentieth century to present day.
2. List and define the terms related to blueprints and construction drawings.
3. Examine drawing sheets and identify the respective design drawing components including title block, revisions, legend, and scales.
4. Identify various symbols used in blueprint reading with respective to the cement masonry industry including subbase symbols, concrete symbols and plot plan symbols.
5. Discuss how architectural and plot plans are used for cement masonry applications.
6. Identify section views, details and elevations. Then describe how they relate to each other in the construction industry.

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**Course Outcome(s):**

Demonstrate the ability to interpret construction drawings to establish building dimensions, concrete types, and subgrade requirements and respective specifications covering reinforcing.

**Objective(s):**

1. Select the respective construction drawings used to identify dimensions for a given building.
2. List the different types of materials used in commercial and residential construction.
3. Determine required location for reinforcement in concrete foundations with respect to the building materials to be used on them.
4. Explain how established benchmarks are used to locate foundation heights.

5. List the different types of concrete used in commercial and residential construction.
  6. Assess related specifications to determine reinforcing types and locations with respect to concrete pavement.
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**Methods of Evaluation:**

1. All students will be evaluated during the first two weeks and at mid-term. Progress reports will be issued per procedure. Additional course evaluations and final examination are detailed below:
  - a. Quizzes
  - b. Tests
  - c. Class participation

**Course Content Outline:**

1. Blueprints
  - a. History
    - i. Past
      1. Hand drawn
      2. Diazo process
      3. Black and white
    - ii. Current
      1. Digital
      2. Computer aided drawings
      3. Electronic copy
      4. Inter-active personal application device/I pad
  - b. Terminology
    - i. Specifications
    - ii. Sketch
    - iii. Floor plan
    - iv. Section drawings
    - v. Details
    - vi. Legend
    - vii. Scale
  - c. Drawing sheet
    - i. Design drawing area
      1. Schedules
      2. Projection
    - ii. Title block
      1. Drawing title
      2. Drawing number
      3. Location
      4. Vendor
      5. Date
      6. Architect
    - iii. Revision block
      1. Modifications
      2. Location changes
      3. Section changes
  - d. Cement masonry symbols
    - i. Subbase symbols
      1. Earth
      2. Rubble or cut stone
      3. Cast stone (recycled concrete)
    - ii. Concrete symbols
      1. Lightweight
      2. Structural
    - iii. Plot plan symbols
      1. Point of beginning (POB)
      2. Utility meter or valve
        - a. Electric service
        - b. Natural gas service

- c. Water line
      - d. Telephone or telecommunications line
    - 3. Power pole
    - 4. Fire hydrant
    - 5. Building line
    - 6. Property line
    - 7. Right of way
  - e. Architectural versus plot plans
    - i. Architectural
      - 1. Establish dimensions
      - 2. Determine locations
      - 3. Framing
      - 4. Radii
      - 5. Reference point
    - ii. Plot plans
      - 1. Overall size of a building on the lot
      - 2. Finished floor elevation
      - 3. Topographic elevations
      - 4. Utility locations
  - f. Miscellaneous sheets
    - i. Section views
      - 1. Material sizes
      - 2. Rough dimensions
      - 3. Assembly process
    - ii. Details
      - 1. Larger scale
      - 2. Actual dimensions
      - 3. Fabrication methods
      - 4. Material types
    - iii. Elevations
      - 1. Front view
      - 2. Side view
2. Drawing Interpretations
- a. Drawing
    - i. Architectural
      - 1. Floor plan
        - a. Frame location
        - b. Partitions
        - c. Rough opening
      - 2. Elevations
        - a. Front view
        - b. Side view
      - 3. Sections
        - a. Cut section
        - b. Material sizes
        - c. Rough dimension
      - 4. Detail drawings
        - a. Larger scale
        - b. Actual dimensions
        - c. Fabrication methods
        - d. Material types
    - ii. Materials used in commercial and residential concrete construction
      - i. Subbase
        - 1. Earth
        - 2. Stone
          - a. Cast (recycled)
          - b. Rubble or cut stone
        - 3. Reinforcing

- a. Rebar
- b. Welded wire mesh (WWM)
- c. Fiber mesh
4. Concrete
  - a. Lightweight
  - b. Structural
- c. Reinforcement location
  - i. Rebar plans
    1. Horizontal reinforcement
    2. Vertical reinforcement
  - ii. Architectural building symbols
    1. Concrete masonry unit (CMU)
    2. Brick
    3. Wood
    4. Plaster
    5. Stone
    6. Glass
- d. Benchmark on plot plans
  - i. Maintaining level construction
  - ii. Finished floor elevation
  - iii. Marks on hydrant
  - iv. Marks on sewer grates
  - v. Datum points
- e. Types of concrete
  - i. Decorative
  - ii. Structural
  - iii. Standard
  - iv. Industrial
  - v. Architectural
  - vi. Residential

## Resources

Thomas, E. Proctor. *Print Reading for Residential and Commercial Construction*. 6th ed. American Technical Publishers, 2016.

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## Resources Other

- <https://www.opcmia.org/training/>
- Concrete and Cement Masonry, Developed by the Curriculum and Instructional Materials Center for the Trade and Industrial Education Division Oklahoma Department of Career and Technology Education, 2002

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