ATLB-1080: BUILDING DRAWINGS FOR LABORERS

Cuyahoga Community College

Viewing: ATLB-1080 : Building Drawings for Laborers

Board of Trustees:
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Academic Term:
Spring 2019

Subject Code
ATLB - AIT-Construct/Hazard Material

Course Number:
1080

Title:
Building Drawings for Laborers

Catalog Description:
Introductory course that identifies application of construction building drawings used by the Construction Laborer to the construction site. Also included is a discussion of the development of building drawings, how to interpret them and how mechanical, electrical and plumbing drawings (MEP) relate to architectural plans.

Credit Hour(s):
2

Lecture Hour(s):
2

Requisites

Prerequisite and Corequisite
Departmental approval: admission to Laborer's apprenticeship program.

Outcomes

Course Outcome(s):
Discuss the development of construction drawings including conceptual, schematic and specifications and identify the respective sheets, lines, symbols and site orientations.

Objective(s):
1. Explain the planning steps related to the construction process.
2. Differentiate between conceptual and schematic drawings.
3. Discuss the importance of construction documents and specifications.
4. Identify the different sheets that make up a set of working drawings.
5. Identify the various lines, symbols and conventions and explain how they relate to construction.
6. Orient exterior views and various construction features with respect to true or assumed north or existing site components.

Course Outcome(s):
Interpret site drawings and identify the information the Construction Laborer uses for assisting in site development.

Objective(s):
1. Identify natural features shown on site plans including bodies of water, rock formations and hills and valleys.
2. Discuss how soil borings affect foundation design.
3. Locate property lines, neighboring properties and existing right of ways.
4. Define the terms relative to site work.
5. Explain the importance of topographic drawings and civil drawings.
6. Identify various utility considerations, including storm water retention, sanitary and water lines.

Course Outcome(s):

Interpret structural drawings, plans details and sections to assist in the construction of foundation requirements for commercial buildings.

Objective(s):

1. List the foundation features of a commercial building requiring the assistance of the Construction Tender.
2. Identify footing dimensions; including reinforcement bars sizes and configurations.
3. Discuss the use of deep foundation systems, including caissons and grade beams.
4. Differentiate between poured concrete and concrete masonry units (CMU).
5. Estimate the forming materials required for a footing or wall system.

Course Outcome(s):

Interpret architectural plans to identify various building and room dimensions, symbols and details showing column lines and clear building distances.

Objective(s):

1. Locate dimensions and centerlines of columns and walls that either shown or inferred on the drawing.
2. Identify various wall thickness used for mechanical and electrical chases.
3. Explain how clear distances are shown with respect to cabinet casework and mechanical fixtures.
4. Explain how symbols are used to identify building materials, electrical and mechanical features and structural requirements and elevations.
5. Discuss how details are used to establish centerlines, anchor bolts locations and show construction and control joints in concrete floor slabs.

Course Outcome(s):

Discuss how Mechanical, Electrical and Plumbing (MEP) drawings are used with respect to architectural plans and sections for locating mechanical features in buildings.

Objective(s):

1. Establish dimensions and footing requirements of mechanical and electrical protrusions.
2. List the common symbols used on MEP's.
3. Explain how the construction tender interprets MEP's to assist other trades relative to jobsite tasks.
4. Demonstrate the ability to interpret MEP's to locate trench and foundation depths, offsets, chases and clear distances.

Methods of Evaluation:

1. Tests
2. Quizzes
3. Classroom participation

Course Content Outline:

1. Construction drawing development
    a. Planning procedure
        i. Structure type
        ii. Site orientation
        iii. Owner- architect relationship
        iv. Contract
            1. American Institute of Architects (AIA).
            2. Municipal codes and zoning
            3. Financial
    b. Conceptual versus schematic
        i. Conceptual
            1. Owner requirements
            2. Square footage
            3. Perspective drawings
        ii. Schematic
            1. Structural frame system
            2. Room usage
            3. Mechanical systems
            4. Exterior and interior finishes

c. Construction documents
    i. Contract
        1. Public versus private
        2. Labor affiliation
        3. Prime and subcontractors
    ii. Specifications
        1. Materials
        2. Work scope
        3. Financial
        4. CSI format
        5. Supervision
d. Drawing sheets
    i. Architectural
    ii. Structural
    iii. Civil
    iv. Utility
    v. Mechanical
e. Lines, symbols and conventions
f. Orientation
    i. True and assumed north
    ii. Existing site conditions

2. Site drawings
    a. Terminology
        i. Contour lines
        ii. Curb
        iii. Storm water drainage
        iv. Headwall
        v. Swale
        vi. Invert elevation
        vii. Flat top inlet
        viii. Under drain
        ix. Clearing and grubbing
        x. Rip rap
        xi. Rock channel protection
        xii. Property pins
    b. Topography and civil drawings
        i. Topographic
            1. Existing contours
            2. Excavation embankment
            3. Utilities
            4. Corner pins
            5. Right of Way and easements
        ii. Civil drawings
            1. Proposed contours
            2. Utilities
            3. Building orientation
            4. Roads, drives and parking
            5. Storm water system
            6. Sanitary sewer systems
            7. Water supply
    c. Utilities
        i. Storm water retention
        ii. Sanitary
        iii. Water lines
            1. Domestic
            2. Fire suppression
    d. Natural features

        i. Bodies of water
        ii. Rock formations
        iii. Hills and valleys
    e. Soil borings
        i. Substantive quality
        ii. Compaction
        iii. Water table
        iv. Soil strata
        v. Bearing strength
    f. Property lines
        i. Bearings and distances
        ii. Property pins
        iii. Encroachments
        iv. Zoning requirements
3. Foundation requirements
    a. Structures
        i. Footing types
        ii. Footing schedules
        iii. Types and dimensions
        iv. Anchor bolt locations
        v. Rebar description
    b. Deep foundations
        i. Caissons
        ii. Belled footings
        iii. Piling support
        iv. Grade beams
        v. Floating slabs
    c. Cast in place concrete
        i. Forming systems
        ii. Strength of concrete
    d. Material estimates
        i. Soil excavation
        ii. Bedding requirements
        iii. Concrete
        iv. Rebar
        v. Anchors
4. Columns and clear distances
    a. Centerlines
        i. Walls
        ii. Footings
        iii. Shown centerlines
        iv. Inferred centerlines
    b. Walls
        i. Types
        ii. Thickness
        iii. Reinforcement
        iv. Utility access
        v. Chases
    c. Clear distances
        i. Cabinet casework
        ii. Mechanical fixtures
        iii. Pre-fabrication
        iv. Zoning requirements
        v. Handicap accessible
    d. Structural requirements
        i. Masonry
        ii. Earthwork
        iii. Wall envelope
        iv. Pipes and valves

e. Concrete slab
    i. Joints
        1. Construction
        2. Control
        3. Expansion
    ii. Column diamonds
    iii. Baseplates
5. Mechanical Electrical Plumbing (MEP)
    a. Protrusions
        i. Electrical
        ii. Mechanical
    b. Symbols
        i. Tees, Y's and valves
        ii. Power supply
        iii. Vents, valves andcleanouts
    c. MEP and Construction Laborer work scope
        i. Material identification and placement
        ii. Site preparation
        iii. Interior operations
    d. Equipment support
        i. Base requirements
        ii. Offsets
        iii. Clear distances

Resources

Proctor and Toenjes. *Printreading for Residential and Light Commercial Const.* 6th. Orland Park, Il.American Technical Publishers, 2016.

Kilmer, W. Otie. *Construction Drawings and Details for Interiors.* current. Danvers, Ma; John Wiley and Sons, 2003.

Sorby,Sheryl. *Developing Spatial Thinking.* current. Clifton Park, N.Y., 2012.

Resources Other

www.pro**construction**guide.com/how-to-**read-blueprints**

www.**construction**knowledge.net/general.cps.pace.edu/**construction**-management/**construction-blueprint-reading**

Top of page

Key: 398