ATLB-1420: SCAFFOLD BUILDER

Cuyahoga Community College

Viewing: ATLB-1420 : Scaffold Builder

Board of Trustees:
2018-01-25

Academic Term:
Spring 2019

Subject Code
ATLB - AIT-Construct/Hazard Material

Course Number:
1420

Title:
Scaffold Builder

Catalog Description:
Course covers the assembly and dismantling of three scaffold types, tube and coupler, fabricated frame and systems. Included are the general requirements for all scaffold assembly and dismantling as prescribed by the Occupational Safety and Health Administration (OSHA).

Credit Hour(s):
2

Lecture Hour(s):
2

Requisites

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

Outcomes

Course Outcome(s):
Interpret and apply the General Requirements to scaffold building as prescribed by OSHA.

Essential Learning Outcome Mapping:
Critical/Creative Thinking: Analyze, evaluate, and synthesize information in order to consider problems/ideas and transform them in innovative or imaginative ways.

Objective(s):
1. Determine the capacity of any scaffold by analyzing leg-load charts for light, medium and heavy duty usage.
2. Identify the requirements for personnel and material platforms including minimum and maximum widths, distances from guardrails and methods for securing plank to scaffold frames.
3. Differentiate between supported and suspended scaffolds.
4. Provide safe access for all scaffolds.
5. Identify safe use of scaffolding with respect to electrical and environmental hazards.
6. Identify the requirements for fall protection, including guardrails and personal arrest systems.
7. Explain the need for overhead protection including canopies, toe boards and screen for hazards resulting from falling objects.

Course Outcome(s):
Explain the use of Tube and Coupler and Systems scaffolding including bracing techniques and identify the components of each type.

Essential Learning Outcome Mapping:
Critical/Creative Thinking: Analyze, evaluate, and synthesize information in order to consider problems/ideas and transform them in innovative or imaginative ways.

Objective(s):

1. Differentiate between fixed and swivel clamps and state the application of each.
2. Distinguish between transverse, longitudinal and diagonal bracing and discuss the need for each.
3. Explain the differences between Tube and Coupler and Systems scaffolding.
4. Discuss the options for base preparation and assembly and height requirements that are determined by jobsite limitations.
5. List the applications of Tube and Coupler scaffolding as determined work scope accessibility and jobsite obstructions.
6. List the components of Tube and Coupler scaffolding.

Course Outcome(s):

Identify the applications of Fabricated Frame Scaffolding, sizing, load limitations, and horizontal and vertical erection requirements.

Essential Learning Outcome Mapping:

Critical/Creative Thinking: Analyze, evaluate, and synthesize information in order to consider problems/ideas and transform them in innovative or imaginative ways.

Objective(s):

1. List the applications of Fabricated Frame scaffolding.
2. Interpret leg-load charts for height and weight limitations and discuss how ground conditions and engineering specifications affect scaffold erection.
3. Explain tie-in requirements for scaffolds in the vertical and horizontal directions.
4. Explain various tie-in methods using different materials.

Course Outcome(s):

Demonstrate the ability to safely assemble and dismantle different scaffolding types.

Essential Learning Outcome Mapping:

Critical/Creative Thinking: Analyze, evaluate, and synthesize information in order to consider problems/ideas and transform them in innovative or imaginative ways.

Objective(s):

1. Identify the best scaffold type as determined by jobsite conditions and applications.
2. Compile a list of respective scaffold components.
3. Establish load requirements based on load charts and engineering specifications.
4. Prepare the scaffold base and foundation including mudsills, frames and cross braces.
5. Assemble frames and cross braces of subsequent tiers.
6. Locate and install tie-ins at required intervals.
7. Install respective platforms per requirements and specifications.
8. Provide for fall protection.
9. Recognize the hazards associated with scaffold disassembly and follow reverse order procedures.

Methods of Evaluation:

1. Quizzes
2. Tests
3. Class Participation
4. Hands-on skill-based demonstration projects

Course Content Outline:

1. General requirements
2. Scaffold capacity
    a. Leg load charts
        i. Light
        ii. Medium
        iii. Heavy duty
            1. Live and dead loads
        iv. Wood plank
        v. Steel
        vi. Aluminum
            1. Widths
        vii. Minimum
        viii. Maximum

        1. Distances
        2. Securing
    ix. Needle beam
    x. Cantenary
    xi. Single and multi-point
        1. Anchorage points
    xii. Minimum capacity
    xiii. Connections
    xiv. Counter weights
        1. Positioning
    xv. Motorized
    xvi. Block and tackle
3. Platforms
    a. Types
4. Supported scaffold
    a. Anchoring
    b. Foundation and base
5. Suspended scaffold
    a. Types
6. Scaffold access
    a. Stairways
    a. Ladders
    b. Walkways
    c. Ramps
    d. Different levels
7. Hazards
    a. Electrical
        i. Minimum safe distances
        ii. Insulation requirements
            1. Environmental
        iii. Wind
        iv. Ice/snow
        v. Plank spacing
        vi. Screws
        vii. Toe boards
8. Fall protection
    a. Lanyards
    b. Minimum heights
    c. Harness
9. Overhead protection
    a. Canopies
10. Tube and coupler scaffold
11. Applications
    a. Power plants
    b. Confined spaces
    c. Industrial
    d. Tanks
    e. Job accessibility
    f. Obstructions
12. Components
    a. Base plates
    b. Tubing
    c. Couplers
        i. Rigid
        ii. Swivel
            1. Plank
            2. Ladders
            3. Stairways
            4. Putlog

5. Knee bracing
6. Brackets

iii. Longitudinal runners
iv. Transverse runners
v. Right angle installations
1. Sizes

vi. Diagonal bracing
vii. Scaffold positioning
viii. Angles

13. Fixes clamps
    a. Applications
14. Swivel clamps
    a. Applications
        i. Less than 90 degrees
        ii. Greater than 90 degrees
15. Sizes
    a. Bracing
        i. Transverse
            1. Platform support
            2. Scaffold integrity
            3. Access points
                a. Longitudinal
            4. Tie-ins
            5. Positioning
                a. Diagonal
            6. Load transfer
            7. Plumb, level and square
            8. Tubing
            9. Assembly
            10. Pre-manufactured
            11. Load capacity
                a. Differences
            12. Applications
            13. Leveling techniques
            14. Components
            15. Leveling
            16. Spacing
            17. Squaring
                a. Vertical
            18. Plumb
            19. Limitations without engineering
            20. Engineered specifications
            21. Overhead obstructions
            22. Loading
            23. Maximum vertical distances
            24. Manufacture specifications
                a. Horizontal
            25. Corners
            26. Distances
                a. Methods and materials
            27. Guy lines
            28. Lumber
            29. Steel
            30. Turn buckles
    b. Tube and Coupler versus Systems Scaffolding
        i. Similarities
    c. Fabricated Frame
    d. Applications

        i. Masonry
        ii. Unobstructed vertical conditions
        iii. Heavy duty use
    e. Sizing
        i. Frame heights
        ii. Widths
        iii. Brace type and length
    f. Load limits
        i. Work personnel
        ii. Spans
        iii. Load charts
    g. Erection requirements
        i. Horizontal
    h. Base preparations
        i. Compacted ground
        ii. Mudsills
        iii. Water drainage
    i. Leg load charts
        i. Manufacture specifications
        ii. Pounds per leg capacity
        iii. Component weights
        iv. Engineered specifications
    j. Tie-in requirements
        i. Vertical
    k. Scaffold assembly and dismantling
    l. Scaffold selection
        i. Accessibility
        ii. Work scope complexity
        iii. Productivity needs
        iv. Jobsite conditions
    m. Components
        i. Base
        ii. Platform
        iii. Bracing
        iv. Tie-ins
        v. Fall protection
        vi. Access
    n. Load requirements
        i. Load charts
        ii. Environmental conditions
        iii. Engineering
        iv. Manufacturing
    o. Housekeeping
16. Base preparation
    a. Drainage
    b. Sill requirement
17. Frame assembly
    a. Plumb
    b. Level
    c. Square
18. Platform installation
    a. Type
    b. Load limits
    c. Spans
19. Tie-ins
    a. Intervals
    b. Material
    c. Method
20. Fall protection

21. Hazard recognition
22. Reverse order disassembly

Resources

LIUNA Education and Training Fund. *Building Frame Scaffold.* current. Pomfret Center, CT; LIUNA Education and Training Fund, 2006.

LIUNA Education and Training Fund. *Systems Scaffold.* current. Pomfret Center, CT; LIUNA Education and Training Fund, 2006.

The Scaffold Training Institute. *Competent Person Learning Guide.* current. League City, TX; The Scaffold Training Institute, 2000.

Resources Other

www.ehss.vt.edu/programs/SCA_proper_erection.php
https://www.osha.gov/Publications/OSHA3150/osha3150.html

Top of page
Key: 409