ATMW-1340: INTRODUCTION TO PILE DRIVING

Cuyahoga Community College

Viewing: ATMW-1340 : Introduction to Pile Driving

Board of Trustees:

2007-05-24

Academic Term:

Spring 2019

Subject Code

ATMW - Appld Ind Tech - Millwrighting

Course Number:

1340

Title:

Introduction to Pile Driving

Catalog Description:

Study of pile driving basics. Topics include history, definition of industry specific terms, blueprint reading, types and uses of pile driving tools and equipment, types of piling, skills and duties of pile drivers, safety equipment, and review of OSHA standards relevant to pile driving.

Credit Hour(s):

2

Lecture Hour(s):

2

Requisites

Prerequisite and Corequisite

Acceptance to any Applied Industrial Technology program, and ATCT-1301 Introduction to Carpentry or concurrent enrollment; or departmental approval.

Outcomes

Course Outcome(s):

Work safely, effectively, and efficiently at work sites where pile driving occurs.

Objective(s):

1. 1. Relate history and purpose of pile driving.
2. 10. Identify the different types of pile driving hammers and expound on their application.
3. 11. Demonstrate knowledge in sheet driven pile by setting up and driving a small rectangle cell.
4. 12. Demonstrate knowledge in pile extraction by removing a small rectangle cell with a vibro hammer.
5. 13. Set-up, use, and break down an oxy-propane torch according to industry standards.
6. 14. List and discuss the skills needed to be a successful pile driver.
7. 15. Read blueprints with a focus on layout, grades, and elevations.
8. 16. Use hand, electric, air, engine driven, and pneumatic pile driving tools.
9. 17. Identify and discuss the skills needed to be a successful pile driver.
10. 2. Identify and discuss industry-specific terms.
11. 3. Recognize and explain the types of pile and accessories.
12. 4. Name the various lead configurations.
13. 5. Define key terms used in pile driving.
14. 6. Identify crane types and their different equipment.
15. 7. Demonstrate ability to safely assemble and disassemble a variety of cranes.
16. 8. Formulate a rigging plan for a typical pile driving project.
17. 9. List important OSHA safety rules pertaining to pile driving.

Methods of Evaluation:

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

Course Content Outline:

A.Concepts
1.Pile driving history
2.Industry specific terms
3.Function of friction pile
4.Function of point bearing pile
5.H-pile
6.Pipe pile
7.Tapered shell pile
8.Concrete pile
9.Sheet pile
10.OSHA safety standards
11.Causes of accidents
12.Pre-job safety planning
13.Lead configurations
14.Job site standards and specifications
15.Assembling cranes
16.Disassembling cranes
17.Rigging plans
18.Pile driving hammers
19.Vibro hammer
20.Pile driving leads
21.Pile driving heads and shoes
22.Pile driving extractors
23.Pile driving cranes
24.Blueprint reading fundamentals
25.Layout
26.Grades and elevations
27.Sheet driven pile
28.Small rectangle cell
29.Oxy-propane torch
30.Pile driver skill:rigging
31.Pile driver skill:loftsman
32.Pile driver skill:top man
33.Pile driver skill:burning
34.Pile driver skill:welding
B.Skills
1.Applying knowledge of pile types and accessories on the job site
2.Applying knowledge of lead configurations on the job site
3.Demonstrating ability to safely assemble and disassemble a variety of cranes
4.Formulating a rigging plan for a typical pile driving project
5.Applying knowledge of OSHA pile driving safety rules on the job site
6.Identifying the different types of pile driving hammers and explaining their use
7.Demonstrating knowledge in sheet driven pile by setting up and driving a small rectangle cell
8.Demonstrating knowledge in pile extraction by removing a small rectangle cell with a vibro hammer
9.Setting-up, using, and breaking down an oxy-propane torch according to industry standards
10.Reading blueprints with a focus on layout, grades, and elevations

11.Using hand pile driving tools
12.Using electric pile driving tools
13.Using air pile driving tools
14.Using engine driven pile driving tools
15.Using pneumatic pile driving tools
16.Applying pile driver skills to the job site
C.Issues
1.Combining skills for success: rigging, loftsman, top man, burning, welding
2.OSHA standards
3.Craft specific safety issues
4.Hand signals
5.Professional demeanor to promote credibility of the trade
6.Communication skills to promote effective interpersonal skills

Resources

Chellis, Robert. *Pile Driving Handbook: Theory, Design, Practice of Pile Foundations.* New York: Pitman Publishing Corporation (Most recent edition), 1944.

Goble, George. *Piles and Pile Driving Hammer Performances for H-piles Driven to Bedrock.* Cleveland: Case Western Reserve University (Most recent edition), 1977.

U.S. Dept. of Transportation. *Determination of Pile Driveability and Capacity from Penetration Tests.* Springfield, VA: National Technical Information Service, 1997.

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