ATPD-2710: MILLWRIGHT-PILE DRIVER WELD V

Cuyahoga Community College

Viewing: ATPD-2710 : Millwright-Pile Driver Weld V

Board of Trustees:
September 2025

Academic Term:
Fall 2025

Subject Code
ATPD - Applied Ind Tech-Pile Driving

Course Number:
2710

Title:
Millwright-Pile Driver Weld V

Catalog Description:
Advanced welding practices as applied to pile driving. GMAW topics include innershield welding, safe set up and use of wire fed welding machines.

Credit Hour(s):
2

Lecture Hour(s):
2

Requisites

Prerequisite and Corequisite
ATPD-2700 Millwright-Pile Driver Weld IV and departmental approval: admission to Pile Driving Technology apprenticeship program.

Outcomes

Course Outcome(s):
Select proper tools and use safe and proper procedures when creating 2G, 3G, and 4G positions, root passes, stringer beads, and V-Groove welds with jet electrodes.

Objective(s):
1. Demonstrate safe and proper procedures in assembling and using a track burner, oxy-acetylene cutting equipment and welding equipment.
2. Select and use proper welding rod, current and polarity for acceptable welds in the 2G, 3G, and 4G positions.
3. Run root passes and stringer beads in the 2G, 3G, and 4G positions.
4. Make acceptable V-Groove welds with Jet electrode.

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

Course Content Outline:
1. Concepts
   a. Impact of innershield on flat disposition rate
   b. Eliminating lost time
   c. Reducing welding costs

   d. Tolerance to poor fitup and elements
   e. Eliminating need for flux handling and recovery
   f. Moisture pickup and wind shelters
   g. Application of long stick
   h. Permission of more seams
   i. Open arc process
   j. Operating in all positions.
   k. Proper equipment operation
   l. Procedures for power sources electrode feed units, and feed systems.
   m. Correct equipment usage for manual metal inert gas (MIG) welding including machines, shielding gases, and filler wires.
2. Skills
   a. Completing semi-automatic arc welding using self-shielded metal arc welding (SMAW), flux-core arc welding (FCAW), and gas metal arc welding (GMAW).
   b. Using flux and electrode materials.
   c. Preparing for welds by choosing proper gun and stickout, checking drive rolls, and loading wire reels.
   d. Completing MIG welding in all positions including spray-arc welding, short-arc welding, MIG Carbon Dioxide (CO_2) welding, and core-wire welding.
   e. Creating good, sound welds using MIG welding using high welding speeds and no slag while arc is visible to operator.
   f. Establishing and making weld beads using mild steel plates, electrode wires, and CO_2 shielding gas.
   g. Following proper procedures when welding by checking manufacturer recommendations, setting voltage, setting wire feed speed control, adjusting gas-flow rate, recessing contact tip, and reviewing safety.
   h. Creating joints using mild steel, electrode wire, and CO_2 shielding gas.
   i. Following joint procedures by maintaining wire stickout, tacking weld two pieces, using transverse angles, welding sides with tacks, cooling and examining, and checking depth penetration.
3. Issues
   a. Variables that can affect welding such as type of electrode wire, size of electrode wire, type of inert gas, inert-gas flow rate, arc voltage, welding current, and travel speed.

The Course Schedule is subject to change due to pedagogical needs, instructor discretion, parts of term, and unexpected events.

Resources for the Instructor

Northern California Pile Drivers J.A.T.C. *Welding 5.* First ed. Northern California Counties: Northern California Pile Drivers J.A.T.C, 1992.

Miller, R. *Welding Skills.* Second ed. Homewood, IL: American Technical Publishers, Inc., 1997.

The James F. Lincoln Arc Welding Foundation. *Principles of Industrial Welding.* First ed. Cleveland, OH: The James F. Lincoln Arc Welding Foundation, 1978.

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