

# ATRF-2050: SINGLE PLY ROOFING II

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## Cuyahoga Community College

**Viewing: ATRF-2050 : Single Ply Roofing II**

**Board of Trustees:**

1/30/2025

**Academic Term:**

Spring 2025

**Subject Code**

ATRF - Applied Industrial Technology - Roofing

**Course Number:**

2050

**Title:**

Single Ply Roofing II

**Catalog Description:**

Covers installation and detailing of Hot-Air Welded Roofing Systems. Also includes installation in accordance with warranty specifications and warranty inspections.

**Credit Hour(s):**

4

**Lecture Hour(s):**

4

## Requisites

**Prerequisite and Corequisite**

Departmental approval: admission to Roofer's Apprenticeship program.

## Outcomes

**Course Outcome(s):**

Install and detail a Hot-Air Welded System.

**Objective(s):**

1. Describe the characteristics of hot-air welded systems.
2. Describe the common membranes used with hot-air welded systems.
3. Describe the tools and equipment used for hot-air welded systems.
4. Explain laying out sheets for correct seams.
5. Describe the equipment used.
6. Explain how to clean a seam and why it is important.
7. Explain how to use a hand welder to weld seams.
8. Explain how to use a machine welder to weld seams
9. Address end laps and T-joints.
10. Explain how to properly probe seams.
11. Explain how and where to apply cut edge sealant.
12. Discuss the importance of detailing.
13. Detail curbs, walls, and corner.
14. Detail pipe penetrations.
15. Install and detail a penetration pocket or pan.
16. Detail a roof drain.
17. Install and detail a scupper.
18. Detail roof perimeters.
19. Discuss the purpose of walkways and how to install them.

20. Discuss the purpose of coatings and how to apply them.
21. Describe several unique systems that illustrate the need to remain current in their craft.

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**Course Outcome(s):**

Warranty Inspection.

**Objective(s):**

1. Explain what a warranty is and why it is important.
2. Describe what happens during a final inspection for warranty.
3. Discuss the importance of installing per manufacturer's specifications to maintain the warranty.

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**Methods of Evaluation:**

1. Quizzes from Roofer's International raining Resource center
2. Exams from Roofer's International Training Resource Center
3. Hands on projects
4. Participation

**Course Content Outline:**

1. Thermoplastic Materials
  - a. Thermoplastic Polyolefin (TPO) Membrane
  - b. Polyvinyl Chloride (PVC) Roofing membrane
2. Tools and Equipment
  - a. Handwelder
  - b. Hot-air welding machine
  - c. Shears
  - d. Seam Rollers
  - e. Gloves
  - f. Probe
  - g. Wire brush
  - h. Solvent resistant brush
  - i. White cotton rags
  - j. Caulk gun
  - k. Black and red permanent marker
  - l. Chalkline
3. Seams
  - a. Laying out sheets
  - b. Equipment
  - c. Cleaning seams
  - d. Using a hand welder
  - e. Using a welding machine (robot welder)
  - f. End lap and T-Joints
  - g. How to probe seams
  - h. Cut Edge Sealant
4. Detailing
  - a. Importance of detailing
  - b. Materials for detailing
  - c. Unsupported membrane
  - d. Prefabricated/modeled
  - e. Corners
  - f. Pipe boots
  - g. Penetration pockets
    - i. Curbs, Walls, and Corners
    - ii. Pipe Penetrations
    - iii. Field Fabricated Flashing

- iv. Penetration Pockets and Pans
  - v. Drains
  - vi. Scuppers
5. Importance of Remaining Current
- a. Liquid applied membranes
  - b. Environmental liquid membrane systems (ELMS)
  - c. Liquid EPDM
  - d. Ethylene Propylene (EP)
  - e. Polyisobutylene (PIB)
  - f. Ketone Ethylene Ester (KEE)
  - g. Self-Adhered Modified Bitumen System
  - h. Self-adhered TPO Systems
6. Warranty Inspection
- a. Importance of warranty
  - b. Compliance with Manufacturer's specifications
  - c. Inspection

## Resources

*Single Ply Roofing Instructors Guide*. United Union of Roofers, Waterproofers, and Allied Workers National Apprenticeship Program, 2023.

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## Resources Other

1. *Roofer's Training Resource Center*. Rooferstrc.com (<http://catalog.tri-c.edu/courseadmin/5293/Roofersrc.com>). 2024.
2. *National Single Ply Qualified Evaluator Video for Instructors*. United Union of Roofers, Waterproofers, and Allied Workers National Apprenticeship Program, 2023.
3. *Planning-Teaching and Assessing Effective Lesson Plans Video for Trades Instructors*. United Union of Roofers, Waterproofers, and Allied Workers National Apprenticeship Program, 2023.
4. United Union of Roofers, Waterproofers, and Allied Workers - United Union Of Roofers, Waterproofers & Allied Workers (<https://unionroofers.com/>) 2024.

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