

METAL FABRICATION 1, 2, 3, AND 4 STANDARDS

Course Code: 6260, 6261, 6262, 6263

Sheet metal workers make, install, and maintain heating, ventilation, and air-conditioning duct systems; roofs; siding; rain gutters; downspouts; skylights; restaurant equipment; outdoor signs; railroad cars; tailgates; customized precision equipment; and many other products made from metal sheets. They also may work with fiberglass and plastic materials. Although some workers specialize in fabrication, installation, or maintenance, most do all three jobs. Sheet metal workers do both construction-related sheet metal work and mass production of sheet metal products in manufacturing.

Sheet metal workers first study plans and specifications to determine the kind and quantity of materials they will need. They then measure, cut, bend, shape, and fasten pieces of sheet metal to make ductwork, countertops, and other custom products. In an increasing number of shops, sheet metal workers use computerized metalworking equipment. They cut, drill, and form parts with computer-controlled saws, lasers, shears, and presses.

Sheet metal workers in manufacturing plants make sheet metal parts for products such as aircraft or industrial equipment. In addition to installation, some sheet metal workers specialize in testing, balancing, adjusting, and servicing existing air-conditioning and ventilation systems to make sure they are functioning properly and to improve their energy efficiency.

In 2002, median hourly earnings of sheet metal workers were \$16.62. The middle 50 percent earned between \$12.15 and \$23.03. The lowest 10 percent of all sheet metal workers earned less than \$9.50, and the highest 10 percent earned more than \$29.53.

A. LAYING OUT SHEET METAL

1. Lay out round duct lateral
2. Lay out rectangular straight duct.
3. Lay out rectangular square throat and square heel duct elbow.
4. Lay out rectangular duct ogee offset.
5. Lay out rectangular taper duct.
6. Lay out rectangular duct Y branch.
7. Lay out round straight duct.
8. Lay out round duct elbow.
9. Lay out round duct Y branch.
10. Lay out round duct offset.
11. Lay out round duct taper.
12. Lay out round duct lateral.
13. Lay out batten seam metal roof panel and cap.
14. Lay out ogee gutter.

15. Lay out metal siding panel.
16. Lay out louver.
17. Lay out framed damper.
18. Lay out square hopper.
19. Lay out cyclone dust collector.
20. Lay out helical chute.
21. Lay out belt guard.
22. Lay out hood.
23. Lay out steam table.
24. Lay out sink.
25. Lay out cabinet.
26. Lay out rectangular fiberglass duct.
27. Lay out rectangular radius throat and radius heel duct elbow.
28. Lay out counter top.
29. Lay out blind/drapery pocket (cornice).
30. Lay out round duct support saddle (floor mounted).
31. Lay out metal sign with hollow metal letters.
32. Lay out rectangular taper duct (one side straight).

B. FABRICATING MECHANICAL SYSTEMS

1. Fabricate rectangular straight duct.
2. Fabricate rectangular radius throat and radius heel duct elbow.
3. Fabricate rectangular square throat and square heel duct elbow.
4. Fabricate rectangular duct ogee offset.
5. Fabricate rectangular duct transition.
6. Fabricate rectangular duct Y branch.
7. Fabricate rectangular shoe tap.
8. Fabricate round straight duct.
9. Fabricate round duct elbow..
10. Fabricate round duct Y branch.
11. Fabricate round duct offset.
12. Fabricate round duct taper (transition).
13. Fabricate round cut lateral (round tap).
14. Fabricate round saddle tap.
15. Fabricate single wall equipment casing/housing.
16. Fabricate double wall equipment casing/housing.
17. Fabricate flat S.
18. Fabricate bar S.
19. Fabricate drive cleat.
20. Fabricate pocket/government lock.
21. Fabricate companion angle.
22. Fabricate flanged duct section.

C. FABRICATING ARCHITECTURAL/ROOFING SHEET METAL

1. Fabricate batten seam metal roof panel and cap.
2. Fabricate standing seam metal roof panel.
3. Fabricate metal flat-lock roof panel.
4. Fabricate ogee gutter.
5. Fabricate half-round gutter.
6. Fabricate offset in rectangular downspout/ conductor.
7. Fabricate conductor head.
8. Fabricate flashing.
9. Fabricate roof coping.
10. Fabricate gravel stop fascia.
11. Fabricate metal siding panel.
12. Fabricate louver.
13. Fabricate column cover.
14. Fabricate metal ceiling panel.

D. FABRICATING SPECIALITY SHEET METAL

1. Fabricate rectangular single blade damper in frame.
2. Fabricate rectangular multi-blade damper in frame.
3. Fabricate hopper.
4. Fabricate cyclone dust collector.
5. Fabricate helical (spiral) chute.
6. Fabricate rectangular tube.
7. Fabricate round tube.
8. Fabricate hollow metal letter.
9. Fabricate metal sign with hollow metal letters.
10. Fabricate round duct support saddle (floor mounted).
11. Fabricate belt guard.
12. Fabricate blind/drapery pocket (cornice).
13. Fabricate breeching.
14. Fabricate lagging for insulated breeching.
15. Fabricate lagging stand off members for insulated breeching.
16. Fabricate polyvinylchloride (PVC) hood.
17. Fabricate rectangular fiberglass duct.

E. FABRICATING FOOD AND BEVERAGE DISPENSING EQUIPMENT

1. Fabricate steam table.
2. Fabricate sink.
3. Fabricate counter top.
4. Fabricate shelf.
5. Fabricate cabinet shell.
6. Fabricate cabinet drawer.
7. Fabricate cabinet sliding door.
8. Fabricate cabinet hinge door.
9. Assemble cabinet components.

10. Fabricate range hood.

F. WELDING SHEET METAL

1. Weld aluminum with gas tungsten arc welding (GTAW) equipment.
2. Weld aluminum with gas metal arc welding (GMAW) equipment.
3. Weld stainless steel with gas metal arc welding (GMAW) equipment.
4. Weld stainless steel with shielded metal arc welding (SMAW) equipment.
5. Weld stainless steel with gas tungsten arc welding (GTAW) equipment.
6. Weld galvanized steel with carbon arc welding (CAW) equipment.
7. Braze galvanized steel.
8. Grind and polish metal.
9. Solder galvanized steel/copper/stainless steel.

G. INSTALLING MECHANICAL SYSTEMS

1. Install rectangle duct system.
2. Install round duct system.
3. Install single wall equipment casing/housing.
4. Install double wall equipment casing/housing.

H. INSTALLING ARCHITECTURAL/ROOFING SHEET METAL

1. Install batten seam metal roof.
2. Install standing seam metal roof.
3. Install metal flat-lock roof.
4. Install ogee gutter.
5. Install half round gutter.
6. Install rectangular downspout/conductor.
7. Install conductor head.
8. Install flashing.
9. Install coping.
10. Install gravel stop fascia.
11. Install metal siding.
12. Install louver.
13. Install column cover.
14. Install metal ceiling.

I. INSTALLING SPECIALTY SHEET METAL

1. Install breeching.
2. Install lagging stand off members.
3. Install lagging on insulated breeching.
4. Install belt guard.