PLUMBER & STEAMFITTER

APPENDIX A

O*NET CODE 47-2152.02

This training outline is a minimum standard for Work Processes and Related Instruction. Changes in technology and regulations may result in the need for additional on-the-job or classroom training..

WORK PROCESSES

	Approximate Hours
A. Rigging and Material Handling	**200**
1. Using hand signals.	
2. Safe unloading of material.	
3. Using ladders, scaffolding.	
4. Using power lifts, personnel lifts.	
B. Tools, Machines and Equipment	**400**
1. Care and safe use of:	
a. Hand tools	
b. Power tools	
c. Cutting and burning equipment	
d. Machines	
e. Lock out/tag out procedures	
C. Materials	**100**
1. Identification of grades, type and appropriate uses of various piping materials.	
D. Planning and Layout	**400**
1. Reviewing blueprints, plans and specifications.	
2. Selecting type and size pipe, related materials and equipment.	
3. Inspecting worksite to determine presence of obstructions and to ascertain that holes cut for pipe will not cause structural weakness.	
4. Laying out job.	
5. Measuring and marking structure and materials.	

E. Pipe Cutting, Threading, Bending **500**

1. Cutting pipe using the following methods:
    a. Saws
    b. Pipe cutter
    c. Hammer and chisel
    d. Cutting torch
    e. Pipe cutting machine
    f. Using pipe threading machine.
    g. Using pipe bending tools and pipe bending machine.

F. Pipe Joining and Welding **900**

1. Connecting pipe and fittings by the following methods:
    a. Threading;
    b. Soldering;
    c. Brazing;
    d. Fusing;
    e. cementing and adhesives.
    f. Welding for the trade.

G. General Installation and Repair **1,500**

1. Cutting holes in structure prior to pipe installation.
2. Assembling pipes, tubes, fittings.
3. Securing pipes to structure with hangers, supports, fasteners.
4. Installing valves.
5. Installing hydraulic and pneumatic components such as pumps and cylinders.
6. Connecting equipment, such as radiators.
7. Assembling and connecting fixtures and appliances.
8. Increasing pressure in pipe system and testing for leaks.
9. Maintaining and repairing systems.

H. Controls **500 - 600**

1. Installing electrical controls.
2. Installing hydraulic controls.
3. Installing pneumatic controls.

4. Maintaining and repairing controls.

I. Hot Water Heating Systems **500 – 800**

1. Installing:gravity systems forced circulation (1 and 2 pipe systems) forced circulation loop systems.

J. Steam Heat Systems **500 – 800**

1. Installing the following type systems:
   a. pipe (optional)
   b. pipe vapor vacuum

K. Boiler Installation and Repair **700 – 900**

1. Low pressure.
2. High pressure.
3. Installing heating plant.
4. Insulating.
5. Maintaining and repairing.

L. Gas Installations and Repair **700 – 900**

1. Natural gas installations
2. L.P. gas systems
3. Sizing and venting gas systems
4. Gas appliances and controls
5. Medical gas systems
6. Maintaining and repairing

M. Oil Installations and Repair **500 – 700**

1. Connecting fuel oil tank, pump and equipment in place.
2. Connecting oil pipe line, fittings and valves in place.
3. Maintaining and repairing.

N. Refrigeration and Air-Conditioning Systems **700 – 900**

1. Installing refrigeration and air-conditioning systems including:
   a. Compressor
   b. Pumps
   c. Meters
   d. Pneumatic and hydraulic controls
   e. Piping

f. Maintaining refrigeration and air-conditioning systems.

O. Process and Power Piping **400**

Approximate Total Hours **8,500 – 10,000**

Apprenticeship work processes are applicable only to training curricula for apprentices in approved programs. Apprenticeship work processes have no impact on classification determinations under Article 8 or 9 of the Labor Law. For guidance regarding classification for purposes of Article 8 or 9 of the Labor Law, please refer to https://dol.ny.gov/public-work-and-prevailing-wage.

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APPENDIX B

RELATED INSTRUCTION

Safety and Accident Prevention

1. General
2. Trade Safety (including storage, handling, and disposal of hazardous chemicals and materials; lock out/tag out; use of personal protective equipment; use of air monitoring equipment; trenching guidelines; fall-protection; all applicable OSHA and EPA regulations/standards/rules)
3. OSHA 10-Hour Construction Course – if required for Public Work
4. First Aid (6.5 hours minimum every 3 years)
5. Asbestos Awareness – minimum 4 hours (see attachment)
6. Sexual Harassment Prevention Training – must comply with section 201-g of the Labor Law

Mathematics

1. Fundamentals
2. Trade Math (including pipe measurements)
3. Builders Level – Transit

Blueprint Reading and Drawing

1. Fundamentals of Plan and Blueprint Reading
2. Advanced Plan and Blueprint Reading
3. Understanding Technical and Isometric Drawings
4. Elementary Drawing/Drafting for Plumbers
5. Advanced Sketching and Layout

Trade Theory and Science

1. Trade Physics
2. Trade Chemistry
3. Bacteriology for Plumbers
4. Basic Electricity
5. Basic Building Construction
6. Use and Care of Tools
7. Materials of the Trade

8. Rigging and Signaling
9. Plumbing Code
10. Fixtures and Appliances
11. Water Supply
12. Water Treatment
    a. Water Mains and Services
    b. Building Water Supply Systems
    c. Hot Water Supply
    d. Valves
    e. Pumps
    f. Water Pollution in Plumbing Systems (including back-flow prevention and cross connection control devices)
    g. Drainage
13. Sewage Disposal
14. Sewers and Drains
15. Building Drainage Systems
16. The Plumbing Trap
17. Venting the Drainage System
    a. Pumps and Steam Systems
    b. Hydronic Systems
    c. Gas Installations
    d. Refrigeration
    e. CFC's: Use, Conservation and Safe Handling
    f. Air Conditioning
    g. Starting, Testing and Balancing
    h. Power Piping
    i. Controls: Electrical, Pneumatic, Hydraulic
    j. Oxy-Acetylene Cutting
    k. Soldering and Brazing
    l. Welding
    m. Repairing and Service Work
    n. Business Aspects of Plumbing

Industrial and Labor Relations (20 hours)

History and Background (6 hours, 1st year)

Current Laws and Practices (14 hours, 2nd year)

Other Related Courses as necessary

A Minimum of 216 Hours of Related Instruction are Required for Each Apprentice for Each of the 5 Years of the Apprenticeship.

Appendix B topics are approved by New York State Education Department.

ATTACHMENT TO APPENDIX B

Asbestos Awareness

This course must be delivered by one of the following:

1. A provider currently approved by the New York State Department of Health to deliver asbestos safety training.
2. A person holding a current Asbestos Handler certificate from the New York State Department of Labor in the title of: Inspector, Supervisor, Project Monitor, Management Planner, or Project Designer.
3. Anyone otherwise approved by the New York State Education Department.

Minimum course contents must include the following:

1. Definition of asbestos
2. Types and physical characteristics
3. Uses and applications
4. Health effects:
    a. Asbestos-related diseases
    b. Risks to families
    c. Cigarette smoking
    d. Lack of safe exposure level
5. Employer-specific procedures to follow in case of potential exposure, including making a supervisor or building owner immediately aware of any suspected incidental asbestos disturbance so that proper containment and abatement procedures can be initiated promptly.

Notwithstanding the above course requirement, employers are advised that they must also be in compliance with New York State Department of Labor Industrial Code Rule 56 at all times.

Employers are further advised, and must advise all apprentices, that completion of the above course requirement does not authorize any person to remove, encapsulate, enclose, repair, disturb, or abate in any manner, any friable or non-friable asbestos, asbestos containing material, presumed asbestos containing material, or suspect miscellaneous asbestos containing material.