



APPENDIX A

PLUMBER & PIPEFITTER

D.O.T. CODE 862.381-030

O*NET CODE 47-2152.02

This training outline is the current standard for Work Processes and Related Instruction. Changes in technology, regulations, or safety/health issues may result in the need for additional on-the-job or classroom training.

WORK PROCESSES

	<u>Approximate Hours</u>
A. <u>Rigging, Material Handling, Working at Heights</u>	200
1. Signaling, rigging, hoisting	
2. Loading/unloading materials in safe manner	
3. Using ladders, scaffolding safely	
4. Using power lifts, personnel lifts safely	
B. <u>Tools, Machines and Equipment</u>	300
Care and safe use of:	
1. hand tools	
2. power tools	
3. cutting and burning equipment	
4. machines used in the trade	
C. <u>Materials</u>	200
Identifying grade, type and appropriate use of various piping materials	

D.	<u>Basic Installation</u>	1,600
	<ol style="list-style-type: none"> 1. Accurately reading specifications, blueprints, work orders 2. Planning and layout; including avoiding obstructions, maximizing efficiency, avoiding interfering with activities of other workers 3. Cutting structural openings as required 4. Cutting and threading pipe 5. Pipe bending 6. Pipe joining 7. Caulking of joints 8. Assembling and installing pipe, fittings, valves, hydraulic and pneumatic equipment 9. Securing pipes to structures, walls, fixtures 10. Connecting to outside lines (e.g. - water, utility, sewage) 11. Inspecting pipe system for leaks, using such methods as gauges, hydrostatic testing, observation 	
E.	<u>Cutting and Burning</u>	500
	<ol style="list-style-type: none"> 1. Following all safety procedures and policies 2. Using cutting torch 3. Welding for the trade 	
F.	<u>Controls</u>	500
	<ol style="list-style-type: none"> 1. Installing electrical controls 2. Installing hydraulic controls 3. Installing pneumatic controls 4. Maintaining and repairing controls 	
G.	<u>Fixtures and Appliances</u>	500
	Assembling, in position, and connecting fixtures and appliances used in plumbing and drainage systems	
H.	<u>Specialized Plumbing Work</u>	1,000
	<ol style="list-style-type: none"> 1. Installing sanitary, storm, waste, vent, hot water, cold water piping 	

2. Water purification
 3. Sewage disposal
 4. Installing sheet lead (x-ray room and shower pan use only)
 5. Demonstrating familiarity with all tools, equipment and replacement parts used in repair and service; maintaining proper inventory
 6. Maintaining, modifying and repairing plumbing systems; including lead and tin pipe repair
- I. Boiler Installation and Repair 700
1. Low pressure
 2. High pressure
 3. Installing heating plant
 4. Insulating
 5. Installing steam and hot water piping
 6. Maintaining and repairing
- J. Gas Installations and Repair 700
1. Pipe and fittings for natural gas installations
 2. Pipe and fittings for L.P. gas systems (if available)
 3. Sizing and venting gas systems
 4. Gas appliances and controls
 5. Pipe and fittings for medical gas systems (including obtaining required certifications) (optional*)
 6. Maintaining and repairing
- K. Oil Installations and Repair 700
1. Connecting fuel oil tank, pump and equipment in place
 2. Connecting oil pipeline, fittings and valves in place
 3. Maintaining and repairing
- L. Geothermal Installations and Repair (optional*) 450
1. Installing heat pumps
 2. Maintaining and repairing

M.	<u>Solar Thermal Installations and Repair (optional*)</u>	450
	<ol style="list-style-type: none"> 1. Installing solar panels; running piping to hot water pumps; installing storage/mixing tanks 2. Maintaining and repairing 	
N.	<u>Refrigeration and Air-Conditioning Systems</u>	600
	<ol style="list-style-type: none"> 1. Installing refrigeration and air-conditioning systems including: <ol style="list-style-type: none"> a. compressors b. pumps c. meters d. pneumatic and hydraulic controls e. piping 2. Testing, adjusting, balancing (TAB), using computer if available 3. Maintaining and repairing 	
O.	<u>Specialized Pipefitting Work</u>	600
	<ol style="list-style-type: none"> 1. Process piping 2. Power piping 3. Pneumatic tube pipe work 	
TOTAL HOURS		9,000

*If optional components are not selected, the hours should be devoted to further mastery of the required Work Processes.

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 <http://www.labor.state.ny.us/workerprotection/publicwork/PDFs/Article8FAQS.pdf>.

APPENDIX B

PLUMBER & PIPEFITTER

RELATED INSTRUCTION

Safety and Health

OSHA 10-Hour Construction Course – if required for Public Work
Proper Use of Personal Protective Equipment (PPE)
Proper Lifting Techniques
Fall Protection
Scaffold Safety
Right-to-Know/Material Safety Data Sheets (MSDS)
Asbestos Awareness – minimum 4 hours (see attachment)
Welding Safety
First Aid – minimum 6.5 hours every 3 years

Mathematics

Fundamentals
Trade Math, including pipe measurements

Blueprint Reading and Drawing

Reading Specifications
Reading Building Plans and Blueprints
Elementary Blueprint Reading for the Pipe Trades
Advanced Blueprint Reading for the Pipe Trades
Elementary Drawing
Advanced Drawing and Layout (using computers and trade-specific software if available)

Trade Theory and Science

Basic Building Construction
Use and Care of Tools, Machines, Equipment
Materials of the Trade
Trade Physics
Trade Chemistry
Bacteriology for the Trade
Rigging, Signaling, Hoisting
Local Plumbing Codes and Regulations

Water Supply
Drainage
Sewage Disposal
Water Pollution in Plumbing Systems – including back-flow prevention and cross-connection control devices
Soil and Waste Lines
Venting
Plumbing Fixtures and Appliances
Pumps
Valve Repair
Basic Electricity
Electric Controls for Mechanical Equipment Service
Layout
Heating Systems
Heat Pumps (if Work Process “L” is undertaken)
Solar Thermal Installations (if Work Process “M” is undertaken)
Steam Systems
Power Plant Operation
Refrigeration
Conservation and Safe Handling of Refrigerants
Air-Conditioning
Introduction to Start, Test and Balance
Gas Installations
Medical Gas Systems Certification (if Work Process “J-5” is undertaken)
Special Purpose Plumbing Installations
Soldering and Brazing
Welding
Cutting
Instrumentation and Process Control
Service and Repair Work

Other Workplace Skills

Computer Fundamentals
Oral and Written Communication Skills
Customer Service Skills
Sexual Harassment Prevention Training – minimum 3 hours over the course of the whole apprenticeship

216 Hours of Related Instruction are Required for Each Apprentice for Each Year of the Program – minimum total of 972 hours.

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:
 - Asbestos-related diseases
 - Risks to families
 - Cigarette smoking
 - 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.