

# **Plumbing**

## **Industry Training Criteria**

**O-NET CODE 47-2152.02**

# Plumbing Industry Standards Criteria

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1. Length of Training

Program sponsors shall establish a minimum of a four (4) year program of not less than 7,200 hours of on-the-job training.

2. Related Supplemental Instruction

The required prescribed courses of related and supplemental instruction shall be no less than 200 hours per year. This instruction must include at a minimum the related and supplemental training processes listed in Exhibit "A".

3. On-the-Job Training

Skills to be learned. See Exhibit "B".

4. Competency Testing

All apprentices must pass a competency test prior to the time of their classification advancement to the next higher period. The tests shall be based on all Related and Supplemental Instruction and manipulative skills tests based on laboratory assignments.

5. Completion Percentages

Program sponsors must have a 45% graduation rate of all apprentices that satisfactorily complete the program's probationary period.

6. Revisions

The schedule for revisions to the Plumbing Industry training criteria shall be in accordance with Labor Code Section 212.01.

# EXHIBIT “A”

## Related and Supplemental Instruction Topics For Plumbing Industry Criteria

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### RELATED AND SUPPLEMENTAL INSTRUCTION

1. Safety, First Aid, CPR
2. Use and care of tools
3. Brazing, Soldering, Welding, Installation practices, rigging, piping
4. Design and Layout of all related piping systems
5. Installation of soil, waste, vent, utility, sewer, storm, drain, hot & cold water, natural and liquid fuel piping, medical gas piping, pools, fountains, spas, geothermal, hydronic solar and utility piping and related industrial & commercial piping applications
6. Customer Relations, Computer Skills.
7. All local, State, Federal or other applicable codes
8. Service, repair and maintenance
9. Awareness of new and emerging technology
10. Green Awareness/Sustainability

# EXHIBIT "B"

## Work Process for Plumbing Industry Criteria

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### WORK PROCESS

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1. Installation

- a. Piping conveying liquids or gas (this may include but is not limited to waste, vent, water and drain piping)
- b. Different kinds of pipe material (this may include but is not limited to copper, plastic, cast iron and steel)
- c. Plumbing fixtures and drains

2. Maintenance

- a. Repair, operation and use of plumbing piping, fixtures and tools.

Total Number of Required Hours for Graduation is 7,200

# EXHIBIT “B”

## Work Process for Plumbing Industry Criteria

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- A. Design and Layout of Piping Utility Systems  
Canning sheets and drawings, Trenching, Material take off, Installation of cans, inserts and hangars, core drilling and shop & pre-fabrication. Maximize water savings via design, installation and layout of the water system
- B. Installation of soil, waste, vent & utility sewer and storm drain piping  
Cast Iron, Steel, Copper and other listed materials, Gray water, rain water collection & water re-use systems
- C. Installation of hot, cold water, geothermal, hydronic solar, utility piping and all pools, fountains, spas and other applicable equipment  
Cast Iron, Steel, Copper and other listed materials
- D. Installation of gas and utility gas piping  
Threaded, Welded, Plastic and other listed materials
- E. Strapping and backing of systems  
Wood backing, Strapping hangers, Welded backing and hangars, seismic and support hangers, and other listed materials including any “Green” materials & installation practices
- F. Installation of Shower, Shower receptacles, Bathtubs and all other Plumbing fixtures including those listed in the 2010 Green Code Supplement
- G. Installation of shower pans, roof drains and flashings  
Utilizing all methods & materials
- H. Testing of sewer, waste, vents gas, geothermal, hydronic solar and water systems
- I. Installation and connection of fixtures, equipment and accessories  
Sanitary, processing, cooling, wet heating, geothermal and hydronic solar installations, including those listed in the 2010 Green Code Supplement
- J. Operation, care and use of tools connected with the piping trade
- K. Installation of space heating equipment, gas appliances, wet or dry heating, geothermal, hydronic solar equipment including emerging energy efficient water heating equipment & appurtenances and controls including maintenance, repair

rehabilitation and demolition of plumbing and piping systems.

L. Rehabilitation and demolition of plumbing fixtures and systems, including waste management during rehabilitation and demolition of plumbing and piping systems

M. Installation, fabrication, rehabilitation and demolition of  
air, geothermal, hydronic solar, vacuum, chemical, rainwater utility piping, and  
rainwater catchment & control

N. Rigging all segments and safety practices involved

O. Welding, soldering and brazing of all work related to the piping trade

P. Maintenance, Service & Repair

- Assembly, installation, service and repair of pipes, fittings and fixtures for gas, water and sanitary lines, storms drains, toilets, sinks, basins, boilers, heat exchangers, valves, pumps, drinking fountains, water stills, hot water heaters, hydronic solar heating systems, pools, fountains, spas, geothermal heating & cooling systems and all other trade related systems and equipment.
- Cutting, bending, threading, joining and connecting of all pipes and other trade related materials,
- Performance of maintenance on plumbing fixtures and equipment, repair of pipes including clearance of clogged drains, waste & vent lines.
- Detection and repair of malfunctions in plumbing systems
- Service, maintenance, repair or replacement of pipes and piping systems of all trade related materials
- Installation, maintenance, repair or replacement of gas lines, gas appliances and related controls
- Soldering, brazing and welding related to the trade
- Concrete sawing, core drilling and restoration to original condition

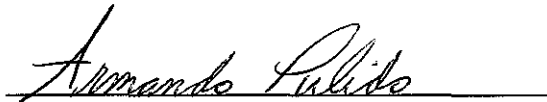
Q. Sustainable Water Systems

- Assembly, installation, service and repair of pipes, fittings and fixtures for gray water re-use, rainwater collection & storage and geothermal & solar heating systems
- Installation and maintenance of water saving plumbing fixtures
- Process piping for water and wastewater treatment, water reclamation and desalination

Total Hours ..... 7,200

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**Signature Page**



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