

# Plumbing Equipment and Material List

## Introduction To The Plumbing Profession

Transparencies  
Markers/chalk  
Blank acetate sheets  
Transparency pens  
Pencils and scratch paper  
Overhead projector and screen  
Whiteboard / chalkboard  
Appropriate personal protective equipment  
Copies of your local code  
*International Plumbing Code (IPC)*  
*Uniform Plumbing Code (UPC)*  
*National Standard Plumbing Code (NSPC)*  
Module Examinations

## Plumbing Safety

Transparencies  
Markers/chalk  
Blank acetate sheets  
Transparency pens  
Pencils and scratch paper  
Overhead projector and screen  
Whiteboard/chalkboard  
Appropriate personal protective equipment  
Copies of your local code  
Copies of your company's safety program  
Examples of personal protective equipment:  
    Hat, goggles, and shoes  
    Ear protection  
    Respiratory protection  
    Fall protection  
Rubber gloves to conduct an air test  
Respirators  
Ladders  
*CFR 1926*  
Lockout/tagout kit  
Sample material safety data sheets  
Materials to clean a respirator  
*CFR 1910*  
Sample MSDSs:  
    PVC adhesive MSDS  
    Concrete dust MSDS  
Sample safety plan  
Sample safety signs  
Hand and power tools:  
    Bladed  
    Impact  
    Power  
    Electrically powered  
    Liquid-fuel tools  
Sample emergency action plans  
Module Examinations  
Performance Profile Sheets

## Plumbing Tools

Transparencies  
Markers/chalk

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Blank acetate sheets  
Transparency pens  
Pencils and scratch paper  
Overhead projector and screen  
Whiteboard /chalkboard  
Appropriate personal protective equipment  
Copies of your local code  
Plumber's toolbox  
Damaged and unsafe tools  
Measuring and layout tools  
Variety of squares:  
    Speed  
    Combination  
    Framing  
Levels and precision measuring tools  
Sections of iron pipe  
Torpedo levels  
Plumb bobs  
Sections of vertical pipe  
Chalk lines  
Tooth-edged cutting tools:  
    Hacksaws  
    Reciprocating saws  
    Portable band saws  
    Abrasive saws  
Saw blades: 18, 14, and 32 teeth per inch  
Damaged saws  
Wood and cold chisels  
Chisel with mushroomed head  
Variety of smooth-edged cutting tools  
Keel crayon  
Soapstone  
Variety of drills:  
    Portable electric  
    Offset  
    Cordless  
Drill bits  
Die tool sets  
Soldering tools  
Variety of wrenches: Pipe, Pipe tongs, Strap,  
    Spud, Open-end, Adjustable, Basin,  
    Monkey, Torque  
Pliers  
Damaged hammers  
Maul  
Sections of wood  
Hollow-shank screwdriver  
Bits  
Vises  
Module Examinations  
Performance Profile Sheets

## Introduction to Plumbing Math

Transparencies  
Markers/chalk  
Blank acetate sheets  
Transparency pens

Pencils and scratch paper  
Overhead projector and screen  
Whiteboard /chalkboard  
Appropriate personal protective equipment  
Copies of your local code  
Piece of wood  
Handsaw  
Calculators  
Sections of pipe  
Measuring tools  
Module Examinations  
Performance Profile Sheets

## **INTRODUCTION TO PLUMBING DRAWINGS**

Transparencies  
Markers/chalk  
Blank acetate sheets  
Transparency pens  
Pencils and scratch paper  
Overhead projector and screen  
Whiteboard /chalkboard  
Appropriate personal protective equipment  
Copies of your local code  
Complete set of construction drawings  
Sample specifications and their corresponding drawings  
A variety of scales:  
    Architect's scale  
    1/4 scale  
    Engineer's scale  
    Metric scale  
Drafting paper to sketch isometric drawings  
Module Examinations  
Performance Profile Sheets

## **Plastic Pipe and Fittings**

Transparencies  
Markers/chalk  
Blank acetate sheets  
Transparency pens  
Pencils and scratch paper  
Overhead projector and screen  
Whiteboard /chalkboard  
Appropriate personal protective equipment  
Copies of your local code  
Flexible pipe  
Pipe labels  
Sections of plastic pipe:  
    ABS (acrylonitrile-butadiene-styrene)  
    PVC (polyvinyl chloride)  
    CPVC (chlorinated polyvinyl chloride)  
    PE (polyethylene)  
    PEX (cross-linked polyethylene)  
    PB (polybutylene)  
Sample material safety data sheets (MSDS) for plastic pipe  
Tools for measuring  
Tools for cutting pipe  
Deburring tools  
Miter box

Plastic saw for cutting PVC pipe  
CPVC or PVC cement or all-purpose cement conforming to ASTM F-493 standards  
PVC bell-and-spigot pipe  
Lubricant

Tools used to join PEX tubing:  
    Insert and crimp-ring system  
    Tubing cutter  
    Hand-crimping tool  
    Go-no-go gauge  
Cutter designed for plastic tubing  
PEX ring  
Expander tool  
Mechanical joints and clamps  
Compression collars  
Tools for the butt-fusion method:  
    Temperature indicator stick  
    Heating tool  
    Fusion timer  
    Socket face  
    Cold ring

*Manufacturers Standardization Society's MSS40 hanger standard*

*National Fire Protection Association (NFPA) Chapter 13*

Module Examinations  
Performance Profile Sheets  
Copies of Quick Quiz

## **Copper Pipe and Fittings**

Transparencies  
Markers/chalk  
Blank acetate sheets  
Transparency pens  
Pencils and scratch paper  
Overhead projector and screen  
Whiteboard / chalkboard  
Appropriate personal protective equipment  
Copies of your local code  
Access to a fire extinguisher  
Sections of copper pipe  
Tee-pulling tool  
Fittings and valves:  
    Water supply fittings  
    Water supply valves  
    DWV fittings  
    Alternative fittings  
Tools for measuring copper pipe  
Copper cutter  
Hand held tube cutter  
Internal tube cutter  
Sizing tool  
Tools to form sweat joints, compression joints, and flare joints  
Variety of soldering tools, including an acetylene torch  
Tools to roll groove and cut groove copper pipe  
Pipe attachments for wood-frame construction  
*National Fire Protection Association (NFPA) Chapter 13*  
*Manufacturers Standardization Society MSS40 hanger standards*

Pressure gauge  
Test plug  
Module Examinations  
Performance Profile Sheets

### **Cast-Iron Pipe and Fittings**

Transparencies  
Markers/chalk  
Blank acetate sheets  
Transparency pens  
Pencils and scratch paper  
Overhead projector and screen  
Whiteboard / chalkboard  
Appropriate personal protective equipment  
Cast-Iron Soil Pipe Institute (CISPI) handbook  
Sections of hub-and-spigot pipe (single and double hub) in a variety of sizes  
Sections of no-hub pipe in a variety of sizes  
A variety of fittings with manufacturer labels  
A variety of bends:  
    Long bends  
    Sweeps  
    Heel inlets  
    Closet bends  
    Closet flanges  
A variety of branches:  
    Wyes  
    Double wyes  
    Sanitary tees  
    Double sanitary tees  
    Sanitary crosses  
Increasesers  
Traps  
Folding rule  
Tape measure  
Soil pipe cutter  
Neoprene gasket  
Chain puller, lead hammer, or pushing bar  
Rubber lubricant  
Oakum fiber (white and brown)  
Running rope  
Spring clamp  
Lead pot and ladle  
Yarning iron  
Packing iron  
A variety of caulking irons  
Pickout iron  
Ball-peen hammer  
Couplings  
Torque wrench  
Sway braces  
Screws, lag screws, or large nails for wooden structures  
Beam clamps or C-clamps for metal structures  
Expansion anchors or threaded masonry fasteners  
Module Examinations  
Performance Profile Sheets  
Copies of Quick Quiz

### **Carbon Steel Pipe and Fittings**

Transparencies  
Markers/chalk  
Blank acetate sheets  
Transparency pens  
Pencils and scratch paper  
Overhead projector and screen  
Whiteboard /chalkboard  
Appropriate personal protective equipment  
Copies of your local code  
Sections of ASTM-approved pipe  
Steel pipe in different sizes  
Steel pipe fittings  
Steel pipe cutter  
Ground joint union  
A variety of couplings and fittings  
Globe, gate, ball, and stop-and-waste valves  
Threaded pipe  
Threading die and stock  
Cutting oil  
Tape measure  
Marking tool  
Two pipe wrenches of appropriate size  
Hand and power threaders  
Straight, offset, and compound leverage pipe wrenches  
Hand die and stock  
Pipe joint compound and sealant tape  
*NFPA Chapter 13*  
*MSS40* hanger standards  
Pipe attachments, including supports, channels, and clamps  
Connectors  
Structural attachments  
Module Examinations  
Performance Profile Sheets

### **Corrugated Stainless Steel Tubing**

Transparencies  
Markers / chalk  
Blank acetate sheets  
Transparency pens  
Pencils and scratch paper  
Overhead projector and screen  
Whiteboard / chalkboard  
Appropriate personal protective equipment  
Copies of your local code  
Sections of corrugated stainless steel tubing by a variety of manufacturers  
Tube cutters  
Tee fittings  
Appliance regulator  
Examples of fuel gas codes and standards  
Straight fittings  
Coupling fittings  
Bushings  
Tools to install and assemble fittings  
Module Examinations  
Performance Profile Sheets

## **FIXTURES AND FAUCETS**

Transparencies  
Markers/chalk  
Blank acetate sheets  
Transparency pens  
Pencils and scratch paper  
Overhead projector and screen  
Whiteboard/chalkboard  
Appropriate personal protective equipment  
Copies of your local code  
A variety of porcelain, cast iron, sheet steel, stainless steel, and plastic fixtures  
Faucet for wheelchair-accessible lavatory  
Figure 2 with the callouts covered  
Electric eye  
A variety of flushing devices  
Directional tee with an internal baffle  
Figure 34 with the callouts covered  
Figure 37 with the callouts covered  
Module Examinations  
Performance Profile Sheets  
Copies of Quick Quiz

## **Introduction to Drain, Waste, and Vent (DWV) System**

Transparencies  
Markers/chalk  
Blank acetate sheets  
Transparency pens  
Pencils and scratch paper  
Overhead projector and screen  
Whiteboard / chalkboard  
Appropriate personal protective equipment  
Copies of your local code  
DWV system design drawings  
P-traps  
Figure 8 with the callouts covered  
Drainage fittings made from a variety of materials  
DWV fittings:  
    Bends  
    Adapters  
    Cleanouts  
    Tees  
    Wyes  
    Increasesers  
    Offsets  
Torpedo level  
Plans for a municipal waste treatment plant  
Plans for a private waste disposal system  
Module Examinations  
Performance Profile Sheets

## **Introduction to Water Distribution Systems**

Transparencies  
Markers/chalk  
Blank acetate sheets  
Transparency pens  
Pencils and scratch paper  
Overhead projector and screen  
Whiteboard/chalkboard

Appropriate personal protective equipment  
Copies of your local code  
Figure 4 with the callouts covered  
Sample water distribution piping diagram  
Attachments:  
    Stems  
    Discs  
    Seat rings  
    Disc holders or guides  
    Wedges  
    Bushings  
A variety of valves:  
    Gate valves  
    Globe valves  
    Angle valves  
    Ball valves  
    Check valves  
    Pressure regulator valves  
    Supply stop valves  
    Temperature and pressure relief valves  
Drafting paper  
Module Examinations  
Performance Profile Sheets

## **ADVANCED:**

### **Intermediate Math**

Overhead projector and screen  
Whiteboard / chalkboard  
Appropriate personal protective equipment  
Framing square  
Length of pipe with two angled fittings  
Soccer ball  
Baseball  
Tape measure  
Calculator  
Transparencies  
Markers / chalk  
Blank acetate sheets  
Transparency pens  
Pencils and scratch paper  
Folding rule  
Protractor  
Assorted lengths of pipe and fittings  
Two 2x4s  
Copies of Quick Quiz  
Module Examinations  
Performance Profile Sheets

### **Reading Commercial Drawings**

Overhead projector and screen  
Whiteboard/chalkboard  
Appropriate personal protective equipment  
Examples of commercial drawings in a variety of formats, including a plumbing riser diagram  
Transparencies  
Markers/chalk  
Blank acetate sheets  
Transparency pens

Pencils and scratch paper  
Blank material takeoff sheets  
Oversized blank paper (11x14 or larger)  
Complete set of commercial drawings for a project, including:

- Sanitary plumbing plan
- Water supply piping system
- Plumbing plan detail

Module Examinations  
Performance Profile Sheets

### **Installing and Testing DWV Piping**

Overhead projector and screen  
Whiteboard/chalkboard  
Appropriate personal protective equipment  
Plumb bob  
Examples of pipe hangers and supports, including:

- Clevis hangers
- Universal pipe clamps
- Riser clamps
- Channels

Insulation shields  
Spring hangers  
Examples of connectors, including:

- Eye sockets
- Extension pieces
- Couplings
- Adjusters

Pipe assembly tools, including:  
Crescent wrenches  
Monkey wrenches  
Screwdrivers

General-purpose level  
Torpedo level  
Line level  
Plumber's level  
Builder's level, tripod, and stadia rods  
Cold beam laser, tripod, and targets  
Examples of test plugs

Transparencies  
Markers/chalk  
Blank acetate sheets  
Transparency pens  
Compasses  
Rulers  
Calculator

At least one set of drawings for a light residential construction project, including specifications  
Assorted lengths of pipe  
Assorted types of flashing  
Assorted anchors for use in concrete, brick, and hollow walls  
Copies of the applicable local code pertaining to installations for the physically challenged, location of pipe hangers and supports, and installation inspections  
Ball bearings or other small balls  
String  
A plumbing system certificate  
Protractor circle

Pencils and scratch paper  
Copies of Quick Quiz  
Module Examinations  
Performance Profile Sheets

### **Installing Roof, Floor, and Area Drains**

Overhead projector and screen  
Whiteboard/chalkboard  
Appropriate personal protective equipment  
Examples of roof drains with manufacturer's specifications, including at least one with adjustable dome  
Examples of area drains with manufacturer's specifications  
Drain receiver  
Examples of floor drains with manufacturer's specifications, including drains with:

- A threaded strainer
- A square strainer
- Floor sink
- Expansion joint

Screwdrivers, plumbing wrenches, and monkey wrenches  
Materials  
Transparencies  
Markers/chalk  
Blank acetate sheets  
Transparency pens  
Pencils and scratch paper  
A pitcher or container of water with sediment  
Copies of the local code pertaining to floor and roof drains  
Assorted lengths of pipe of different materials  
Examples of drain components as appropriate for the drains listed above, including:

- Gaskets
- Retaining clamps
- Lead
- Oakum
- Solvents

Membranes, flashing, and flashing clamps for a roof drain  
Piece of plywood with a hole sized for a roof drain  
Copies of Quick Quiz  
Module Examinations  
Performance Profile Sheets

### **Types of Valves**

Overhead projector and screen  
Whiteboard/chalkboard  
Appropriate personal protective equipment  
Transparencies  
Markers/chalk  
Blank acetate sheets  
Transparency pens  
Pencils and scratch paper  
At least one example of each type of valve and stem, with manufacturer's specifications  
Examples of special valves, including:

- Pressure regulator
- T/Psafety
- Supply stop
- Ball-cock
- Flush valve
- Flushometer

Copies of the ASME code for steam safety valves  
3x5 index cards  
Copies of Quick Quiz  
Module Examinations  
Performance Profile Sheets

### **Installing and Testing Water Supply Piping**

- Overhead projector and screen
- Whiteboard/chalkboard
- Appropriate personal protective equipment
- Water meter
- Hose bibb
- A dielectric fitting, with attached lengths of pipes of different metals
- Drop ell
- High ear ell
- Riser clamp
- Assorted pipe hangers and supports, including universal pipe clamps and channels
- Examples of floor joist materials
- Tools, including:
  - Levels
  - Hammers and nails
  - Strap hangers
  - Drills and drill bits
  - Saws
- Water hammer arrester
- Vacuum breaker
- Test gauge assembly
- Hydrostatic test pump (hand-, electric-, or gas-powered)
- Transparencies
- Markers/chalk
- Blank acetate sheets
- Transparency pens
- Copies of drawings with sanitary plumbing plan, water supply piping system, and a plumbing plan detail
- Copies of blank material takeoffs
- Copies of the local code pertaining to approved piping materials
- Examples of eye sockets and extension pieces
- Examples of anchors for use in concrete, brick, and hollow walls
- Examples of concrete inserts
- Copies of the local code pertaining to the location of pipe hangers and hanger and support distances
- Icemaker valve
- Pencils and scratch paper
- Module Examinations
- Performance Profile Sheets

### **Installing Fixtures, Valves, and Faucets**

- Overhead projector and screen
- Whiteboard/chalkboard

- Appropriate personal protective equipment
- A small fixture made with porcelain enamel
- Crescent and pipe wrenches
- Materials
- Transparencies
- Markers/chalk
- Blank acetate sheets
- Transparency pens
- Examples of valves, including:

- Threaded
- Soldered
- Solvent welded
- Flanged
- Compression

Tools and equipment suitable for fitting the above valves, including:

- Nuts and bolts
- Solvents
- Compression rings
- Pipe dope
- Soldering iron and solder

Lengths of pipes suitable for connection with the above valves

- Threaded copper adapter
- Relief valve
- Soldered shutoff valve
- Flanged valve
- Compression connection valve
- Assorted pipes and valves, appropriate nuts and bolts, and wrenches
- Cartridge faucet fixture
- Rotating ball faucet fixture
- Ceramic disc faucet fixture
- Float valve assembly with manufacturer's instructions
- Flush valve with manufacturer's instructions
- Water closet flush tank
- Diaphragm type flushometer
- Piston type flushometer
- Lavatory pop-up drain assembly
- A square piece of plywood
- Pencils and scratch paper
- Module Examinations
- Performance Profile Sheets

### **Installing Water Heaters**

- Overhead projector and screen
- Whiteboard/chalkboard
- Appropriate personal protective equipment
- A section of a flat plate solar energy collector
- Transparencies
- Markers/chalk
- Blank acetate sheets
- Transparency pens
- T/P relief valve
- Copies of the local code pertaining to water heater installation
- Assorted damaged water heater fittings
- Pencils and scratch paper
- Copies of Quick Quiz

Module Examinations  
Performance Profile Sheets

### **Fuel Gas Systems**

Overhead projector and screen  
Whiteboard/chalkboard  
Appropriate personal protective equipment  
Manometer  
Tin- or aluminum-case meter  
Flat-head and level-handle gas cock valves  
Insulating union  
Magnesium anode  
Excess flow valve  
Single-stage fuel oil pump  
Float gauge  
Transparencies  
Markers/chalk  
Blank acetate sheets  
Transparency pens  
Copies of the local code pertaining to the installation and use of natural gas, LPG, and fuel oil systems  
Copies of the National Fuel Gas Code and model codes of the Building Officials and Code Administrators, Southern Building Code Conference, and the International Association of Plumbing and Mechanical Officials  
Assorted lengths of black iron, galvanized steel, copper, polyethylene, corrugated stainless steel, and brass pipe  
Sheets of oversized paper (at least 8½ x14)  
Copies of a recent article about the production of crude oil  
Samples of natural gas, LPG, and fuel oil  
Floor plans for a single-story building  
Pencils and scratch paper  
Module Examinations  
Performance Profile Sheets

### **Servicing of Fixtures, Valves, and Faucets**

Overhead projector and screen  
Whiteboard/chalkboard  
Appropriate personal protective equipment  
Crescent and plumbing wrenches suited for working with the above valves and faucets  
Screw extractor, drill bit, and seat disc screw  
Reseating tool  
Transparencies  
Markers/chalk  
Blank acetate sheets  
Transparency pens  
Flushometers with manufacturer's instructions and replacement kits  
Examples of valves with manufacturer's instructions and replacement kits, including:  
    Globe valves  
    Angle valves  
    Gate valves  
    Compression valves  
Examples of faucets with manufacturer's instructions and replacement kits, including:  
    Cartridge faucets  
    Rotating ball faucets

Ceramic disc faucets  
Assorted replaceable seats  
Pre-formed and twist packing  
Packing extractors  
Ball cock  
Tank flush valve  
3x5 index cards  
Pencils and scratch paper  
Module Examinations  
Performance Profile Sheets

### **Applied Math**

Transparencies  
Markers/chalk  
Blank acetate sheets  
Transparency pens  
Pencils and scratch paper  
Sketch paper  
1 gallon of water  
Overhead projector and screen  
Whiteboard/chalkboard  
Appropriate personal protective equipment  
Copies of your local code  
English ruler, yardstick, gallon jug, measuring cup, and hand weights  
Calculators  
Liquid, bimetallic, and electrical thermometers  
Examples of an inclined plane, lever, pulley, wedge, screw, and wheel and axle  
Valve with a wheel handle  
Wrench  
Doorstop  
Drill bit  
Sealed pipe with friction caps  
Hair dryer or blowtorch  
Two 4-inch vertical pipes of different diameters, caps for the bottom end of each  
Assorted blocks, levers, wheels, and twine  
Module Examinations

### **Codes**

Transparencies  
Markers/chalk  
Blank acetate sheets  
Transparency pens  
Pencils and scratch paper  
Copies of Quick Quiz  
Module Examinations  
Performance Profile Sheets  
Overhead projector and screen  
Whiteboard/chalkboard  
Appropriate personal protective equipment  
Copies of your local code  
Copies of the model code on which the local code is based  
Saddle fitting  
Examples of code change proposals

### **Types of Venting**

Transparencies  
Markers/chalk  
Blank acetate sheets  
Transparency pens  
Pencils and scratch paper  
Copies of Quick Quiz  
Module Examinations  
Performance Profile Sheets  
Overhead projector and screen  
Whiteboard/chalkboard  
Appropriate personal protective equipment  
Straw, glass, and container for water  
Copies of your local code  
Selections from a model code other than the one on which your local code is based

### **Direct and Special Waste**

Transparencies  
Markers/chalk  
Blank acetate sheets  
Transparency pens  
Pencils and scratch paper  
Module Examinations  
Performance Profile Sheets  
Overhead projector and screen  
Whiteboard/chalkboard  
Appropriate personal protective equipment  
Copies of your local code  
Automatic trap primer  
Copies of site plans that specify the location of large interceptors  
Small grease interceptor

### **Sewage Pumps and Sump Pumps**

Transparencies  
Markers/chalk  
Blank acetate sheets  
Transparency pens  
Pencils and scratch paper  
Copies of Quick Quiz  
Module Examinations  
Performance Profile Sheets  
Overhead projector and screen  
Whiteboard/chalkboard  
Appropriate personal protective equipment  
Calculators  
Copies of your local code  
Small sewage or storm water pump

### **Sizing Water Supply Piping**

Transparencies  
Markers/chalk  
Blank acetate sheets  
Transparency pens  
Pencils and scratch paper  
Bucket of water  
Copies of Quick Quiz  
Module Examinations

Performance Profile Sheets  
Overhead projector and screen  
Whiteboard/chalkboard  
Appropriate personal protective equipment  
Copies of your local code  
Basin  
Copies of blueprints that include plumbing drawings  
Isometric drawings of a water supply piping system  
Copies of two of the standards cited in your local code

### **Backflow Preventers**

Transparencies  
Markers/chalk  
Blank acetate sheets  
Transparency pens  
Pencils and scratch paper  
Copies of Quick Quiz  
Module Examinations  
Performance Profile Sheets  
Overhead projector and screen  
Whiteboard/chalkboard  
Appropriate personal protective equipment  
Copies of your local code  
Various types of backflow preventers with manufacturer's instructions, including:  
Atmospheric vacuum breaker (AVB)  
Pressure-type vacuum breaker (PVB)  
Double-check valve assembly (DCV)  
Dual-check valve backflow preventer (DC)  
Reduced-pressure zone principle backflow preventer (RPZ)  
Appropriate tools for assembling and disassembling various types of backflow preventers

### **Water Pressure Booster and Recirculation Systems**

Transparencies  
Markers/chalk  
Blank acetate sheets  
Transparency pens  
Pencils and scratch paper  
Copies of Quick Quiz  
Module Examinations  
Performance Profile Sheets  
Overhead projector and screen  
Whiteboard/chalkboard  
Appropriate personal protective equipment  
Copies of your local code  
Engineering plans for one or more different types of water booster pressure systems  
Various components of a water booster system with manufacturer's instructions, including the following:  
A small storage tank  
Centrifugal water booster pump  
Vertical turbine pump  
Vibration isolators  
Temperature and flow sensors  
Water hammer arresters  
Appropriate tools for assembling and disassembling various types of water booster and recirculation systems

Pressure gauge

### **Servicing Piping Systems, Fixtures, and Appliances**

Transparencies  
Markers/chalk  
Blank acetate sheets  
Transparency pens  
Pencils and scratch paper  
Copies of Quick Quiz  
Module Examinations  
Performance Profile Sheets  
Overhead projector and screen  
Whiteboard/chalkboard  
Appropriate personal protective equipment  
Copies of your local code  
Several articles from relevant trade journals that offer practical tips about servicing piping systems  
Sections of pipe, couplings, and mini tube cutters  
Sections of corroded pipe  
Water hammer arrester  
Pressure-reducing valve  
Schrader valve  
Assorted water filters  
Hand snake, drain, and root-cutting attachment for a snake  
Tank flush valves, including:  
Flush valves with tank balls  
Flush valves with flapper tank balls  
Appropriate tools for assembling and disassembling flush valves

### **Business Math For Plumbers**

Transparencies  
Markers/chalk  
Blank acetate sheets  
Transparency pens  
Pencils and scratch paper  
Module Examinations  
Overhead projector and screen  
Whiteboard/chalkboard  
Copies of your local code  
Calculators  
Copies of a sample chart of accounts  
Copies of a well written and a poorly written estimate  
Project drawings and specifications  
Blank takeoff worksheets, summary sheets, and recapitulation sheets  
Sample invoices  
Sample inventory forms  
Blank change order forms  
Blank daily work reports

### **Sizing DWV and Storm Systems**

Transparencies  
Markers/chalk  
Blank acetate sheets  
Transparency pens  
Pencils and scratch paper  
Module Examinations  
Performance Profile Sheets

Overhead projector and screen  
Whiteboard/chalkboard  
Appropriate personal protective equipment  
Copies of your local code  
Calculators

### **Private Water Supply Systems**

Transparencies  
Markers/chalk  
Blank acetate sheets  
Transparency pens  
Pencils and scratch paper  
Copies of Quick Quiz  
Module Examinations  
Performance Profile Sheets  
Overhead projector and screen  
Whiteboard/chalkboard  
Appropriate personal protective equipment  
Copies of your local code  
Copies of a drilling log  
Waterproof mechanical splice kit  
Submersible pumps and the appropriate assembly tools

### **Private Waste Disposal Systems**

Transparencies  
Markers/chalk  
Blank acetate sheets  
Transparency pens  
Pencils and scratch paper  
Copies of Quick Quiz  
Module Examinations  
Performance Profile Sheets  
Overhead projector and screen  
Whiteboard/chalkboard  
Appropriate personal protective equipment  
Copies of your local code  
Calculators  
A distribution box  
Sections of perforated plastic distribution pipe and nylon screens  
Copies of a soil absorption system's design drawings, site plans, and soil quality data

### **Locating Buried Water and Sewer Lines**

Transparencies  
Markers/chalk  
Blank acetate sheets  
Transparency pens  
Pencils and scratch paper  
Module Examinations  
Performance Profile Sheets  
Overhead projector and screen  
Whiteboard/chalkboard  
Appropriate personal protective equipment  
Copies of your local code  
Copy of the local penalties for violating notification procedures  
Copies of your local telephone book  
Contact drawings

Copies of the American Petroleum Institute (API) color code  
Probe rod  
Site plans that indicate water supply lines  
Signal generator and section of pipe  
Calculators

### **Hydronic and Solar Heating Systems**

Transparencies  
Markers/chalk  
Blank acetate sheets  
Transparency pens  
Pencils and scratch paper  
Module Examinations  
Performance Profile Sheets  
Overhead projector and screen  
Whiteboard/chalkboard  
Appropriate personal protective equipment  
Copies of your local code

### **Water Supply Treatment**

Transparencies  
Markers/chalk  
Blank acetate sheets  
Transparency pens  
Pencils and scratch paper  
Copies of Quick Quiz  
Module Examinations  
Performance Profile Sheets  
Overhead projector and screen  
Whiteboard/chalkboard  
Appropriate personal protective equipment  
Copies of your local code  
Microscope  
Assorted slides prepared with drops of water  
Samples of liquid and solid chlorine  
An example of each of the three types of chlorinators  
Examples of mechanical, neutralizing, and oxidizing filters  
An oxidizing agent  
Alum  
Test kit for iron contamination with appropriate water samples  
Test kit for acidity with appropriate water samples

### **Swimming Pools and Hot Tubs**

Transparencies  
Markers/chalk  
Blank acetate sheets  
Transparency pens  
Pencils and scratch paper  
Module Examinations  
Performance Profile Sheets  
Overhead projector and screen  
Whiteboard/chalkboard  
Appropriate personal protective equipment  
Copies of your local code  
Assorted pool fittings, including the following:  
Vacuum fitting  
Sidewall drain

Skimmer  
Water supply fitting  
Floater  
Chlorine tablets  
Basin of water  
Chlorine and pH test kits  
Samples of pool water  
Copies of Figure 15 with the callouts covered  
Computers with Internet access

### **Compressed Air**

Transparencies  
Markers/chalk  
Blank acetate sheets  
Transparency pens  
Pencils and scratch paper  
Copies of Quick Quiz  
Module Examinations  
Performance Profile Sheets  
Overhead projector and screen  
Whiteboard/chalkboard  
Appropriate personal protective equipment  
Copies of your local code  
Calculators  
A variety of devices that reduce noise and vibration, including:  
Intake silencers  
Flexible metal hoses  
Shock absorbing mounts  
Air throttle valve, air pressure regulator, and lubricator

### **Corrosive-Resistant Waste Piping**

Transparencies  
Markers/chalk  
Blank acetate sheets  
Transparency pens  
Pencils and scratch paper  
Module Examinations  
Performance Profile Sheets  
Overhead projector and screen  
Whiteboard/chalkboard  
Appropriate personal protective equipment  
Copies of your local code  
Glass pipe cutter  
Manufacturers' catalogs for plastic pipe  
Sections of pipe materials used for corrosive waste and the appropriate materials and tools to join them, including:  
Borosilicate glass pipe  
Plastic pipe  
Silicon cast-iron pipe  
Stainless steel pipe  
Sections of beaded-end and plain-end glass pipe  
Several clean cloths  
Water  
Couplings for borosilicate glass pipe  
Ratchet wrenches  
Fusion coil  
Mechanical joints

Sections of no-hub pipe  
Appropriate tools for tightening bolts  
A color version of the NFPA diamond  
Copies of NFPA Standard 704

**Plumbing for Mobile Homes and Mobile Home Parks**

Transparencies  
Markers/chalk  
Blank acetate sheets  
Transparency pens  
Pencils and scratch paper  
Module Examinations  
Performance Profile Sheets  
Overhead projector and screen  
Whiteboard/chalkboard  
Appropriate personal protective equipment  
Copies of your local code  
A section of flexible pipe  
A quick-disconnect fitting  
Copies of a plot plan for a mobile home park  
Hose connection vacuum breaker  
Sill cock