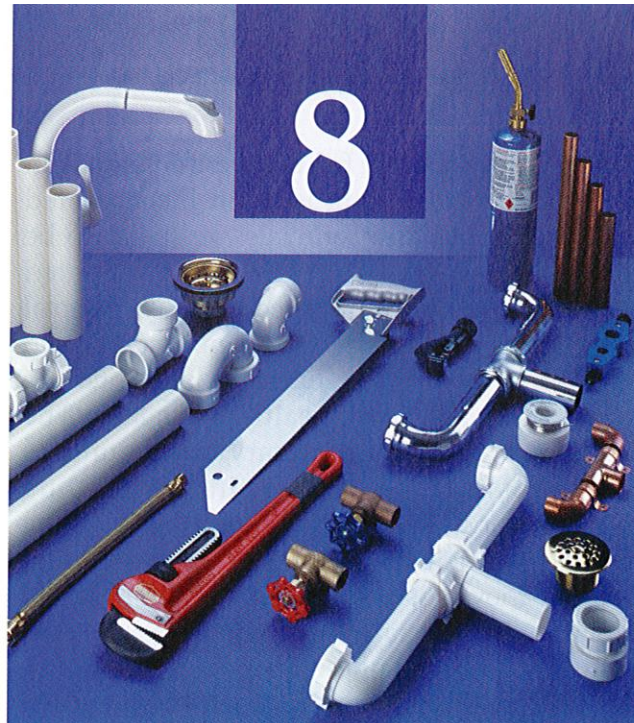


Building and Plumbing Codes



Objectives

This chapter outlines the purpose and content of building and plumbing code.

After studying this chapter, you will be able to:

- Explain the purpose of zoning laws and building codes.
- Cite typical examples of how codes are administered and enforced.
- List the specific points that a plumbing code should cover.
- Apply code requirements to a plumbing installation.

Technical Terms

Zoning laws
Building codes
Model codes

International
Residential Code
for One- and Two-
Family Dwellings

Governmental units, such as cities, counties, and states, make and enforce laws specifying minimum standards for buildings constructed within their jurisdiction. These laws provide for the health and safety of people who occupy the structures.

Zoning laws regulate the type of structure that may be built in a given area. In general, these laws serve to separate residential, office,

light industrial, and heavy industrial activities. *Building codes* also control:

- The quality of materials required.
- Structural system load capacity support requirements.
- The number and type of exits required.
- The quality of work required.

Plumbing and electrical codes are frequently separate from the building code because the installation and inspection personnel must be specially trained. In many cases, they are licensed by the governmental unit to work in the jurisdiction.

Administration of Codes

Since codes are adopted and applied locally, it is almost impossible to precisely describe how codes are universally administered. However, some generalizations may be made concerning code enforcement. When plumbing, a thorough familiarity with the codes that apply to the individual's specific area is crucial.

Before planning a plumbing installation, it is necessary to determine which governmental

agency is responsible for code enforcement in the area. If the building is in an incorporated city, the city building officials are likely to be responsible. In areas outside of incorporated cities, a state plumbing code may control plumbing installations. Code enforcement in areas such as this is generally delegated to county building or health officials. The building official's title may vary, but commonly used titles include city engineer, building inspector, and building commissioner. They may be certified to administer state building codes, if they exist. The chief building official generally has a staff to study plans, inspect buildings, and maintain records of all buildings under construction. Inspectors may often be required to obtain a license, verifying that they are qualified to perform their work.

A brief review of the process used by the building officials demonstrates the need for good planning and careful work.

1. A contractor needs a permit to construct a certain kind of building on a specified plot of ground. To obtain a building permit, the contractor must submit two copies of the plans and specifications to the building inspector, along with an application for a building permit, a plumbing permit, an electrical permit, a heating and ventilating permit, as well as other permits as required. See **Figure 8-1**.
2. The plans and specifications are reviewed for compliance with the minimum standards specified by the code. If changes are necessary, they are noted on the plans by the building officials.
3. Assuming the changes are minimal, the plans are approved and a permit is issued. Instructions regarding the appropriate time to request an inspection are also provided.
4. During the construction project, periodic inspections are made. In the case of residential plumbing, an inspection is done after roughing-in is complete and before any pipes are covered. A final inspection is made upon completion of the job. In addition, the connection of the house drain to the sewer and the water supply connection

to the water main require inspection before they are covered.

5. The inspector attaches an approval or rejection notice to the building permit, as warranted by the work that has been done, see **Figure 8-2**. If the work is rejected, the changes must be completed before the work is reinspected. There may be an additional charge for reinspection.
6. When the building passes final inspection, an occupancy permit is issued. This document certifies that the building meets code requirements and is safe for people to use.

Code Enforcement

In cases where the building officials have difficulty obtaining the quality of work necessary, the case may be turned over to the prosecuting attorney. Court action may be initiated to stop work on the job until necessary changes are made. Commonly, it is not possible to obtain a permanent water meter until the plumbing passes inspection.

Model Codes

The development of plumbing codes began when cities first installed central water supply systems. These codes were necessary to protect the water supply and the health and safety of the people. The codes varied greatly because they were independently developed by each city. This variety made it very difficult for plumbers who worked in several communities, as they had to know the code for each community. Plumbing supply businesses and

Zoning laws: Laws regulating the type of structure that can be built in a given area.

Building codes: Laws that control the quality of materials used, the structural system load capacity support requirements, the number and type of exits required, and the quality of work required.

Application for Plumbing Permit

Permit no. _____

Date _____

Receipt _____

To the building inspector:

The undersigned hereby makes application for a Plumbing Permit, according to the following specifications:

Name of plumber _____

Name of owner _____

Address _____

Location, house no. _____

Between _____

and _____

Kind of building _____

Kind of floor _____

Number waterclosets _____

" Baths _____

" Washstands _____

" Kitchen sinks _____

" Slop sinks _____

" Laundry trays _____

" Shower baths _____

" Urinals _____

" Soda fountain wastes _____

" Fountain cuspidor wastes _____

" Refrigeration wastes _____

" Drinking fountains _____

" Cellar drains _____

" Hot water installation _____

Estimate cost of plumbing \$ _____

Fee \$ _____

Minimum fee

In consideration of permission given _____ do hereby covenant and agree to construct said work in all respects in compliance with the Laws of the State of _____ and with the ordinances of the City of _____ Code relating to Plumbing.

Plumber _____

Address _____

Company _____

Figure 8-1. Typical plumbing permit application. The fee paid to the city usually depends on the number of fixtures.

Figure 8-2. Inspection stickers. Different colors are often used for rejection and approval.

manufacturers of plumbing materials found this diversity both confusing and expensive to work with.

History Brief

The first model plumbing code to achieve national recognition was the “*Hoover Code*” published in 1928. Herbert C. Hoover, then Secretary of Commerce, appointed a Subcommittee on Plumbing in 1921 to draft a model plumbing code. The subcommittee produced a preliminary report in 1922, calling for studies to be conducted regarding pipe sizing. Dr. Roy B. Hunter, of the National Bureau of Standards, initiated five years of studies that produced basic information about sizing both water supply and drainage piping. This information was included in the U.S. Department of Commerce publication *BH13–Recommended Minimum Requirements for Plumbing*, better known as the *Hoover Code*. Current model codes continue to use the information about sizing as a basis for their requirements.

In an effort to improve the quality of codes and provide a degree of standardization, *model*

codes were developed. These codes became available for adoption by local governments and were well received because of the time and expense involved in developing quality plumbing codes. Several model codes for plumbing were developed to serve different regions of the United States. See **Figure 8-3**. These codes have helped standardize plumbing in the respective regions and have served as the basis for developing an international model code.

The International Code Council introduced the *International Residential Code for One- and Two-Family Dwellings* in 2000. This new model code is compatible with the National

Model codes: Standardized plumbing codes that are available for adoption by local governments. These are well received because they minimize the time and expense involved in developing quality plumbing codes.

International Residential Code for One- and Two-Family Dwellings: Code introduced in 2000 by the International Code Council. It is compatible with the National Codes published by BOCA, ICBO, and SBCCI.

Model Code	Sponsoring Organization
BOCA Basic Building Code	Building Officials and Code Administrators International, Inc.
ICBO Plumbing Code	International Conference of Building Officials
Standard Plumbing Code	Southern Building Code Congress International, Inc.
Uniform Plumbing Code	International Association of Plumbing and Mechanical Officials
International Residential Code for One- and Two-Family Dwellings	International Code Council

Figure 8-3. Model plumbing codes and their sponsoring organizations.

Codes published by the Building Officials and Code Administrators International, Inc. (BOCA), the Uniform Codes published by the International Conference of Building Officials (ICBO), and the Standard Codes published by the Southern Building Code Congress International, Inc. (SBCCI).

Federal, state, and local governments, building officials, plumbers, plumbing contractors, plumbing product manufacturers, architects, and health officials are among the groups involved in developing model plumbing codes. The resulting codes are well developed and scientifically verified. The model plumbing codes consider both the practical problems of fabricating plumbing systems and the necessity of creating and maintaining a safe and healthful water supply.

One function of plumbing code is to control the quality of the components installed as a part of the plumbing system. This is accomplished by referring to standards developed for the production of these components. Labels, such as ASTM-B-370, ASSE-1025, and ANSI-1002, that appear on components indicate the standard under which they were manufactured. The abbreviation at the beginning of the labels notes the agency that developed and maintains the standard. Common agency abbreviations:

- ASTM—American Society for Testing and Materials
- CISPI—Cast Iron Soil Pipe Institute
- CSA—Canadian Standards Association
- AGA—American Gas Association
- ANSI—American National Standards Institute

- ASSE—American Society of Sanitary Engineers
- NSF—National Sanitation Foundation
- NSPI—National Spa and Pool Institute

It is the plumber's responsibility to only install components that are approved by the local plumbing code. Since many of the standards agencies also develop standards for products not approved for installation in plumbing systems, it is necessary to know both the agency and the standard to ensure that the correct materials are used.

Model plumbing codes cannot be enforced until they are adopted by the local government. The local government, however, has authority to modify the code. This is particularly important with plumbing codes, because both climate and altitude impact the installation of plumbing systems.

Content of Plumbing Codes

Well-written plumbing code generally contains the following type of information:

- Assumptions or general principles on which the specifics of the codes are based.
- Definitions of terms used in the code.
- General regulations (such as type of structure to which the code applies, slope of drainage piping, quality of work, and depth of building drains).
- Quality and size limits on materials.
- Requirements for joints.

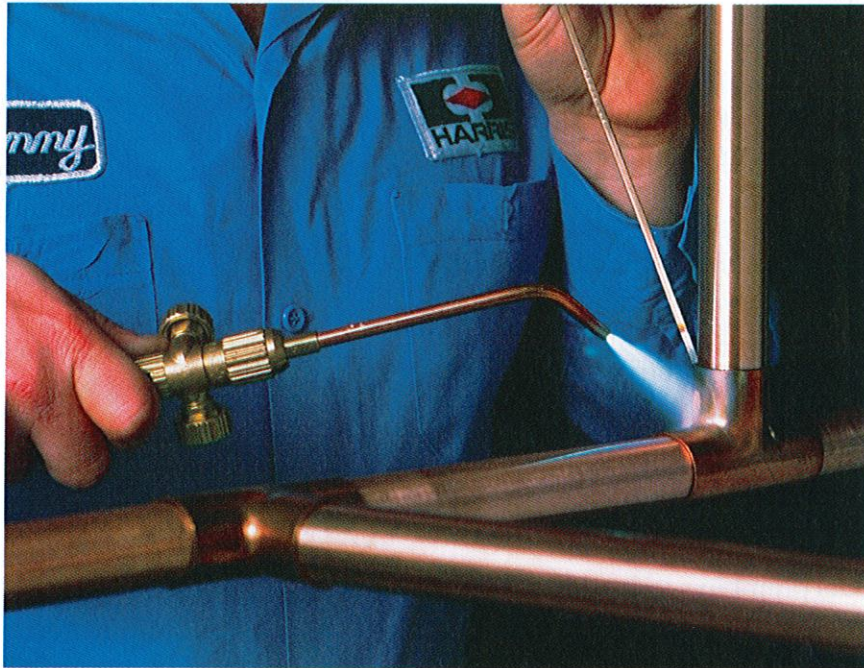
- Requirements for the location of traps and cleanouts.
- Requirements for plumbing fixtures.
- Requirements regarding the design of water supply piping.
- Requirements for the design of drain/waste piping.
- Requirements for the design of vents.
- Requirements for storm drains.
- Procedures for specific inspections and tests.

From this list it is evident that design, material selection, and installation practices are all controlled. It is the plumber's responsibility to

complete work that complies with the code. Therefore, a thorough study of the local area's existing code is absolutely essential before beginning work on the plumbing system. *Code Notes* are included in each chapter of this book to call your attention to code requirements.

Professional Tip

The plumber must furnish the tools and materials, and perform the work necessary to test the DWV and water supply piping. These tests are observed and approved by the appropriate building inspector.



Plumbers often use soldering and brazing processes in their work. This worker is sweat-soldering a fitting on copper tubing. (J. W. Harris Co., Inc.)