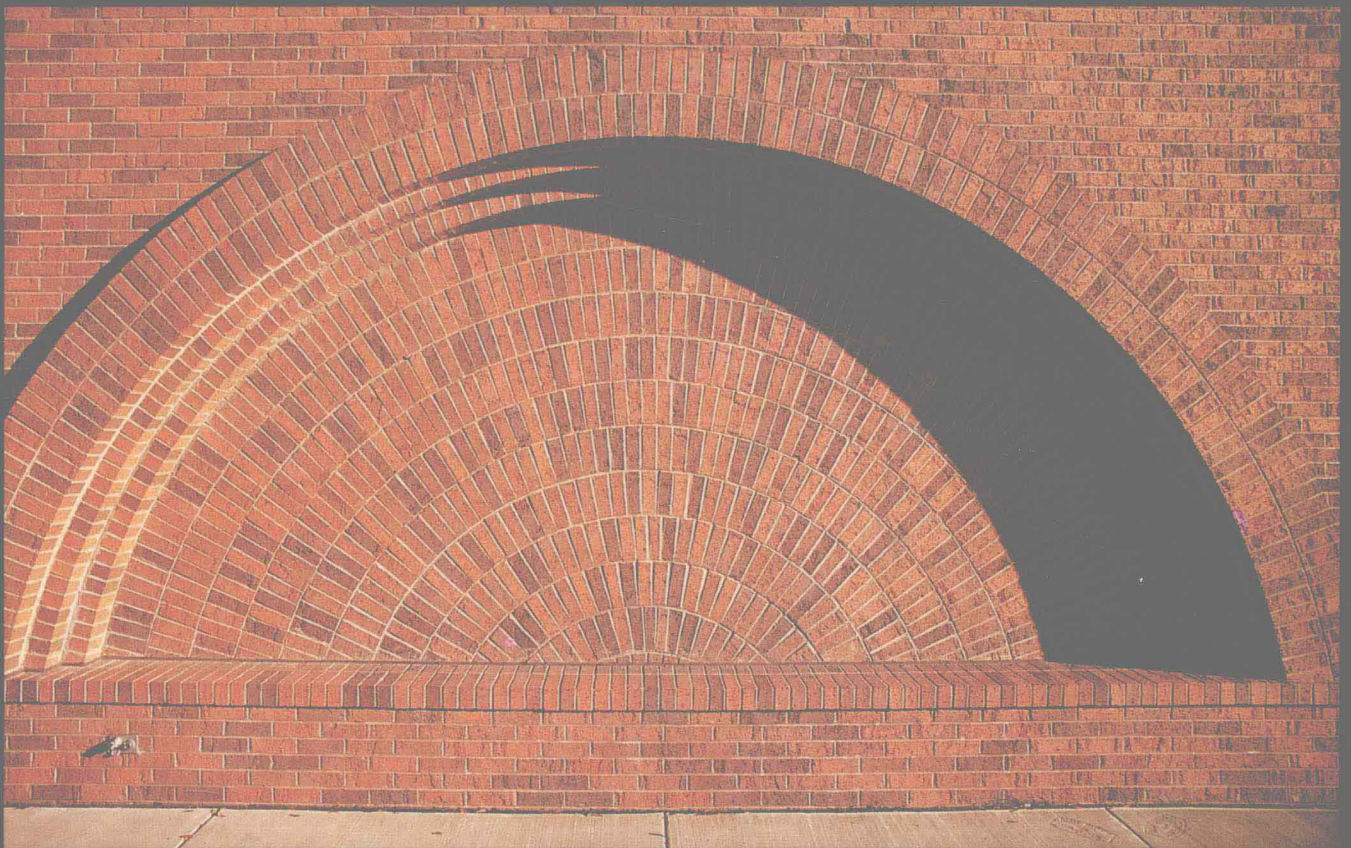


MODERN MASONRY

Robert Putnam



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PREFACE

Both knowledge and technique are required to build a sound and lasting masonry structure. *Modern Masonry* is a comprehensive introduction to the craft and art of working with masonry units. It is written for the beginning student, the journeyman, the professional craftsman, the supervisor in the building trades, and the homeowner. Current building techniques and practices are covered throughout. Special emphasis is given to the requirements of masonry apprenticeship and to safe working procedures and practices on the job.

The coverage begins with basic information and techniques and progresses to advanced tools, equipment, materials, and safety in all areas of masonry work. There is extended discussion of brickwork, concrete block work, and stonework. Labor-saving procedures and special hints on how to get the job done with the least pain and effort, while maintaining high professional standards, are mentioned throughout the text.

Modern Masonry is intended to be not only a how-to guide to current practices but also a continuing reference source for solving unfamiliar problems and questions that will be encountered on the job. The many illustrations throughout offer a quick and easy reference to standard professional procedures—in both hot weather and cold.

The manufacture of brick and concrete masonry units is covered to provide a more thorough knowledge of the materials used. Basic mortars and mortar mixes are described and related to the material standards in the field. Correct trade terminology is emphasized, and standard grades, types, and sizes are discussed in detail.

Basic masonry tools, their safe use, and proper techniques for their use are covered. Knowledge of tools, professional and safe use of tools, and proper tool care are necessary to do a good job.

Brick, concrete block, and stonework bonds, layout, joints, and finishes are covered. Construction of one-wythe walls, solid two-wythe walls, and cavity walls are illustrated, including the use of steel reinforcement and grouting cavity walls. Special techniques for constructing window and door openings are also described. Other topics include columns, piers, pilasters, chases, corbelling, lintels, veneer, arches, fireplaces, chimneys, capping, control joints, flashing installations, and paving. Both basic and advanced work is discussed, as is the use of masonry for solar storage.

Layout and design of basic walls, techniques for building leads, and procedures for leveling and plumbing the finished wall are illustrated and discussed. The final construction steps—striking of joints, finishing, and cleaning of the finished masonry work—complete the discussion.

For professionals—for journeymen, supervisors, and contractors—the book contains an extensive introduction to the interpretation of blueprints, sketching, and estimating. Estimation is required for takeoff, bidding of jobs, and economical construction practices. The extensive Glossary defines over 300 key terms most commonly encountered on the job.

Robert Putnam

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MODERN MASONRY

Chapter 1



MASONRY TODAY

After studying this chapter you should be able to:

- State six advantages of masonry construction.
- Define twelve different types of masonry walls.
- Describe the two types of basic masonry construction.
- Describe the types of masonry structural units.
- Describe the energy-efficient uses of masonry.
- List the requirements of a masonry apprenticeship.
- Define what a mason does and the training needed.

Masonry building units, along with shaped stone, are possibly our oldest manufactured building materials. They are also, when used well, two of the most beautiful and enduring. Brick, for example, when used with imagination and care, with good design, and with attention to color and texture, can create a structure that is both aesthetically appealing and functional (Figure 1-1). Brick and stone suggest quality and sound, enduring construction.

Masonry units are long lasting, maintenance free, and energy efficient. When in place, they create a water resistive and sound-proof barrier

that is extremely fire resistant. Masonry building units are available in a great number of types, sizes, textures, and colors, and are our most versatile building material today.

Anyone with some help and training can do a fairly good job laying masonry units in a simple wall. Only a trained and experienced professional, however, can build the more complex building elements to the high standards required in today's construction. It takes thousands of hours of on-the-job work to get the experience and technical facility to become a masonry journeyman. A masonry journeyman can do a job to the highest and

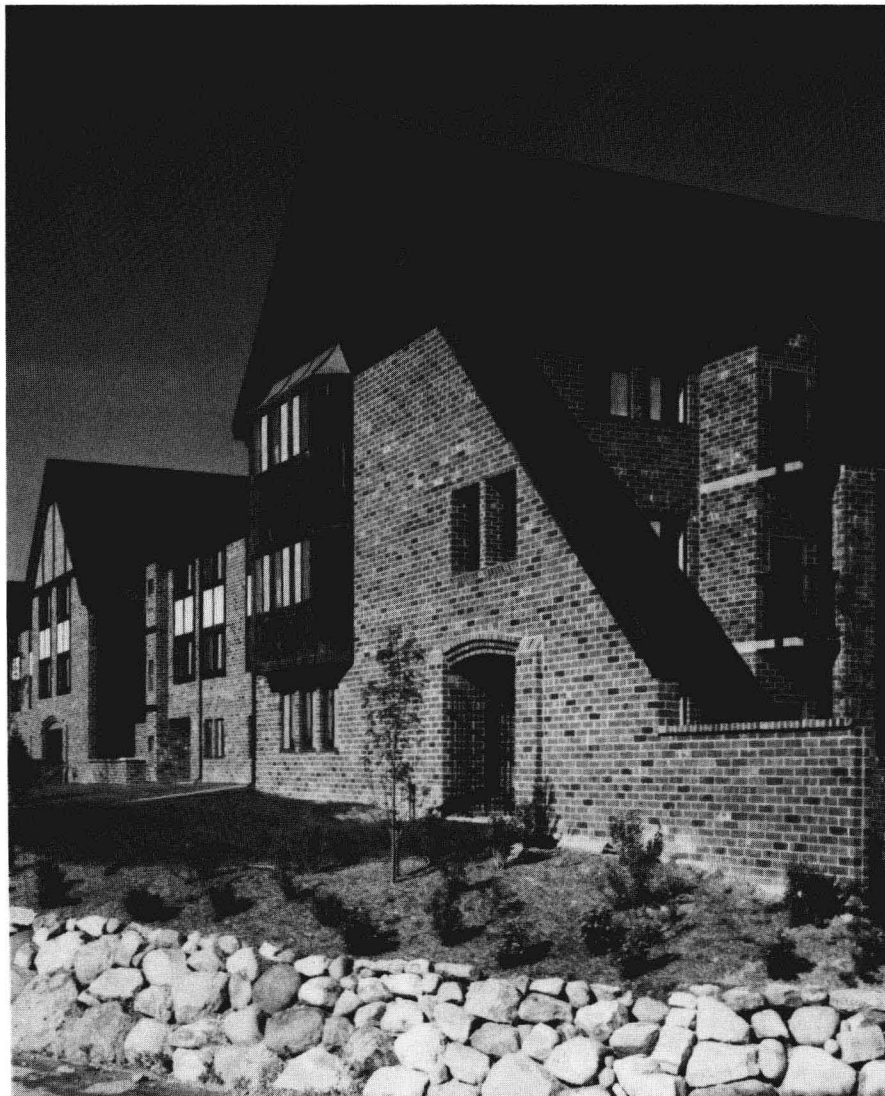


FIGURE 1-1

Brick construction can create an architecturally interesting and attractive structure. (Masonry Institute of Wisconsin, Inc.)

most exacting standards and do it quickly. The experienced journeyman will know the different masonry units, such as stone, brick, concrete block, structural tile, and glass block, and the type of mortar to use for a specific application. He will also know the different patterns, textures, colors, and hues that can be used to create an attractive and satisfying whole—a building or structural element that is appealing to the eye and that will be a commercial success, and, at the same time, possess structural integrity. The mason is both a craftsman and an artist. He or she will be expected to build (and estimate and design, if necessary) a wide variety of structural parts to the highest professional standards: exterior walls, retaining walls, interior walls, columns, piers, pilasters, buttresses, window and door openings, arches, fireplaces, floors, walks, and patios.

TYPES OF MASONRY CONSTRUCTION

There are basically two types of masonry construction recognized in the field: conventional and engineered. *Conventional masonry construction* is the type commonly seen in regular garden wall or residential construction. Figures 1-2 to 1-6 show examples of conventional masonry construction. Little, if any, steel reinforcement is used in the structural elements; the primary strength comes from the bonding of the masonry units themselves. *Engineered masonry construction* is a designed construction based on recognized engineering principles. It frequently employs steel reinforcement as an integral part of the structural element or building. The vertical steel reinforcement (if used) is embedded into the masonry

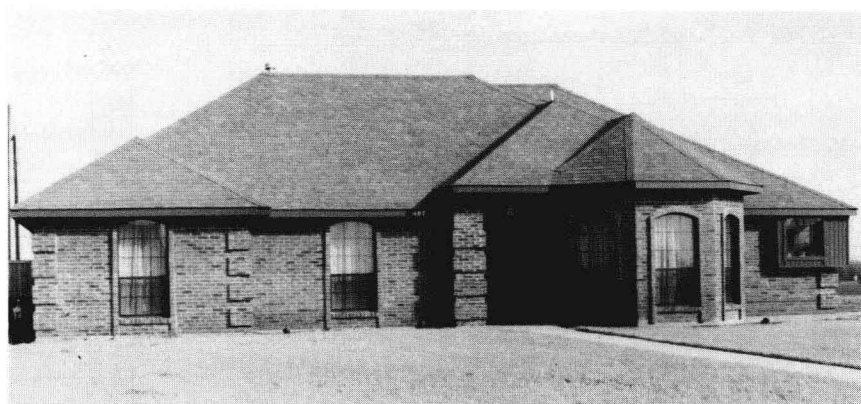


FIGURE 1-2

Brick used in simple residential construction. (Cherokee Brick and Tile Co.)



FIGURE 1-3

Two-story traditional brick home with outside chimney and turret. (Cherokee Brick & Tile Co.)



FIGURE 1-4

Auto dealership structure made using solid concrete block. A one-wythe wall is shown on the garage side. (Masonry Institute of America)