APPENDIX F
CONSTRUCTION DRAWINGS

F-1. PURPOSE

Working drawings and planning information are the main sources of facts for those responsible for construction work. The construction drawings graphically represent details of the structure to be built and the construction site layout. The planning information identifies the materials, personnel, and equipment to be used and the work sequence to be followed during construction. This appendix briefly describes for the nonengineer construction drawings and their uses.

F-2. TYPES OF DRAWINGS.

A drawing set includes general drawings, such as site plans, floor plans, elevations, and isometric views. Also included are detailed drawings, such as sectional views and construction details.

a. Site Plan. A site plan (see figure F-1) shows property lines and locations, building lines, locations of structures to be built, existing structures, and approach and access roads. A site plan provides actual dimensions of the site and shows scale representations of the facilities. Figure F-2 shows a corresponding site electrical plan. Since AFCS installation layouts are designed for general worldwide application, no specific information such as site orientation (north arrow) or slope and terrain (contour lines) is shown. Therefore, a site analysis must consider the criteria listed in *(1)* through *(5)* below:

(1) Slope. Contour lines show the elevation of the earth's surface above or below the elevation of a known and permanent reference point (benchmark). Since all points along the line are at the same elevation, the arrangement of the contour lines indicates if parts of the site are suitable for construction. For example, it would be unwise to put habitable buildings in an area where runoff water is likely to collect. Similarly, recreation areas or athletic courts should not be located on ground that is sloped more steeply than the recommended maximum.

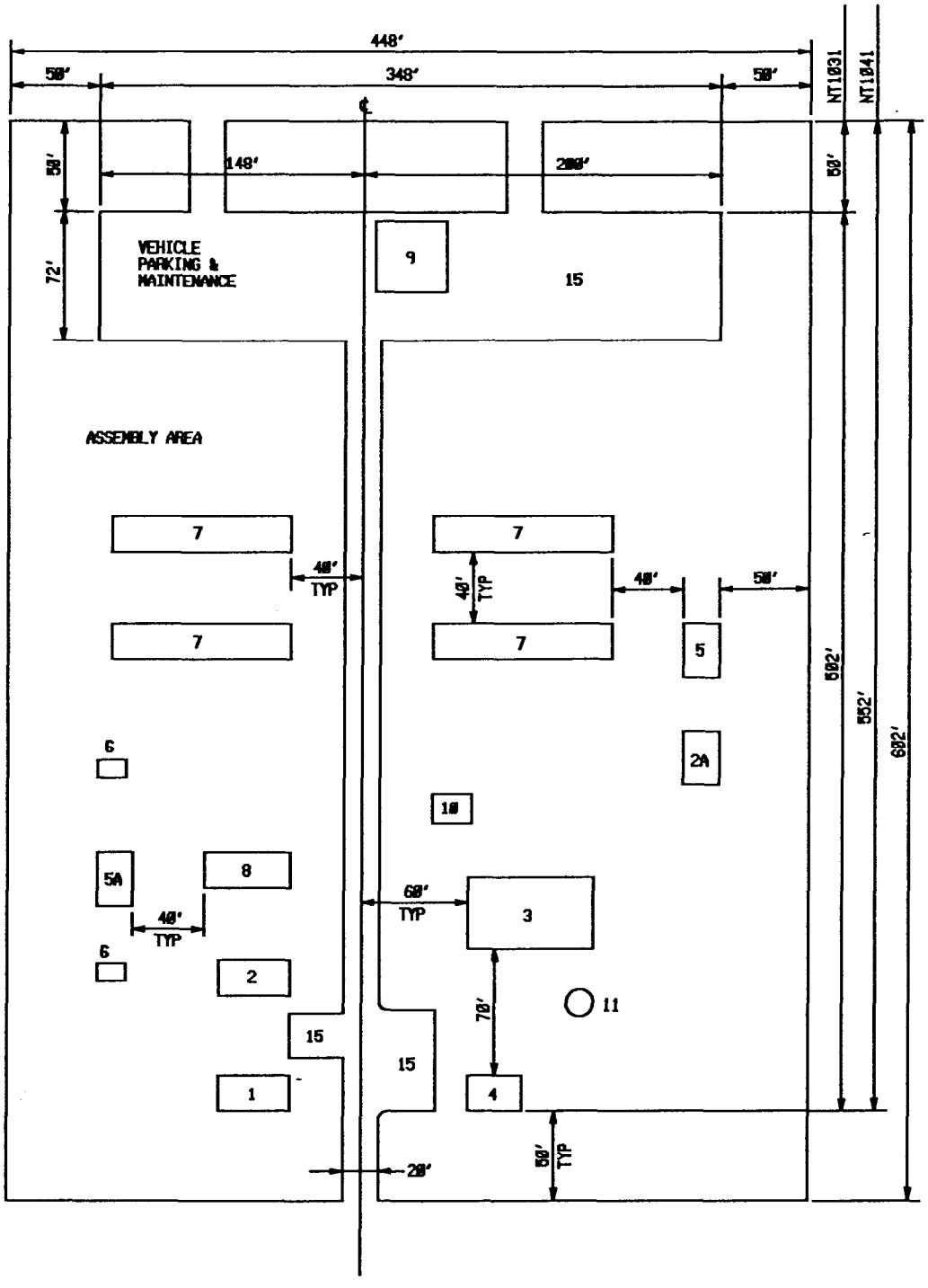
(2) Site Access. Factors such as existing approach roads, terrain, and security maintenance should be considered when locating entry and access points to the site.

(3) Existing Vegetation. Site preparation can waste time and resources if not handled carefully. If existing vegetation patterns are considered, buildings can often be placed in natural clearings, eliminating clearing efforts. Furthermore, careful site planning can help minimize environmental damage caused by construction operations, and indigenous plants can be an economical and effective source of camouflage materials. Trees and bushes can also provide effective windbreaks as well as solar shading in hot climates.

(4) Climatic Orientation. Consideration of solar orientation and prevailing winds can lead to more effective placement of buildings. In the temperate and cold climates of the Northern Hemisphere, buildings are best placed on southerly slopes and oriented with their longest face toward the south. That orientation allows maximum passive use of solar heat, which conserves fuel and makes the structures more livable. Consideration of prevailing winds can also be important. Hillcrests are generally much windier than hillsides; therefore, in warm climates, it would be best to locate buildings at the high point; in a cold climate, it would be most beneficial to locate buildings on the slopes. (See figure 2-1.)

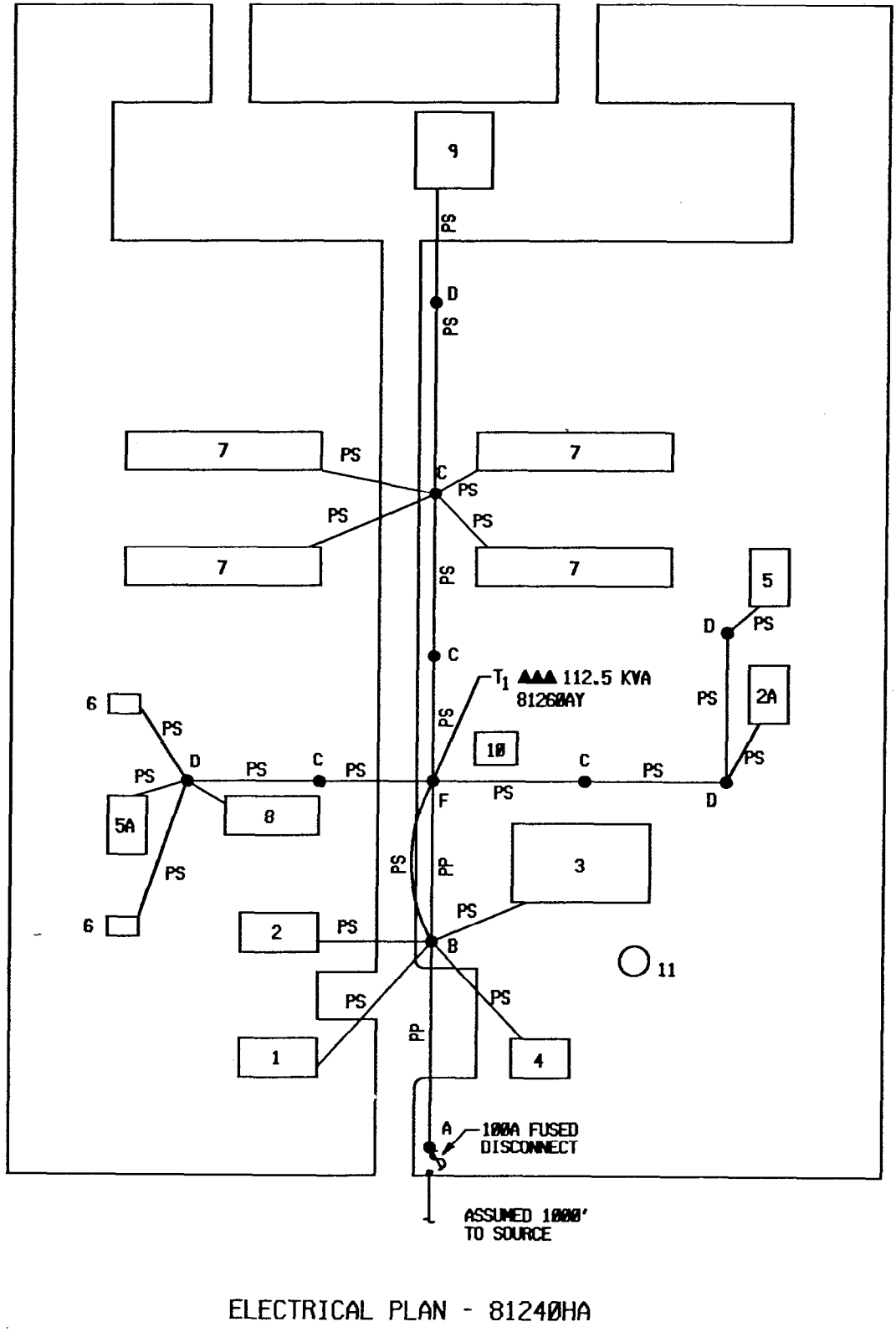
(5) Site Plan Summary. Since AFCS installations must be designed for worldwide application, construction for a specific site may be modified somewhat. Topographic and climatological maps of the proposed site should be consulted and a site analysis should be performed so that suitable adaptations can be made. The dimensions and relationships indicated on installation site plans are merely guidelines for planning; they should be changed when there is a better option for a specific site.

b. Elevation and Isometric Views. Elevation views (see figure F-3) are drawings that show the front, rear, or side view of a building or other structure. Construction materials are usually noted on the drawings, as are prominent features such as doors, windows, foundation footings, and ventilators. An elevation primarily describes the vertical relationship between building components; either vertical dimensions or elevations above a known point (usually a floor) will appear in the drawing. Isometric views (see figure F-4) sometimes show a building or structure more realistically because as three-dimensional diagrams they combine two elevations (and



SITE LAYOUT
125-MAN TROOP CAMP
INSTALLATION NO. NT 1031 W/MOTOR POOL
INSTALLATION NO. NT 1041 W/O MOTOR POOL
TEMPORARY STANDARD

Figure F-1. Typical site plan



ELECTRICAL PLAN - 8124ØHA

Figure F-2. Typical electrical plan

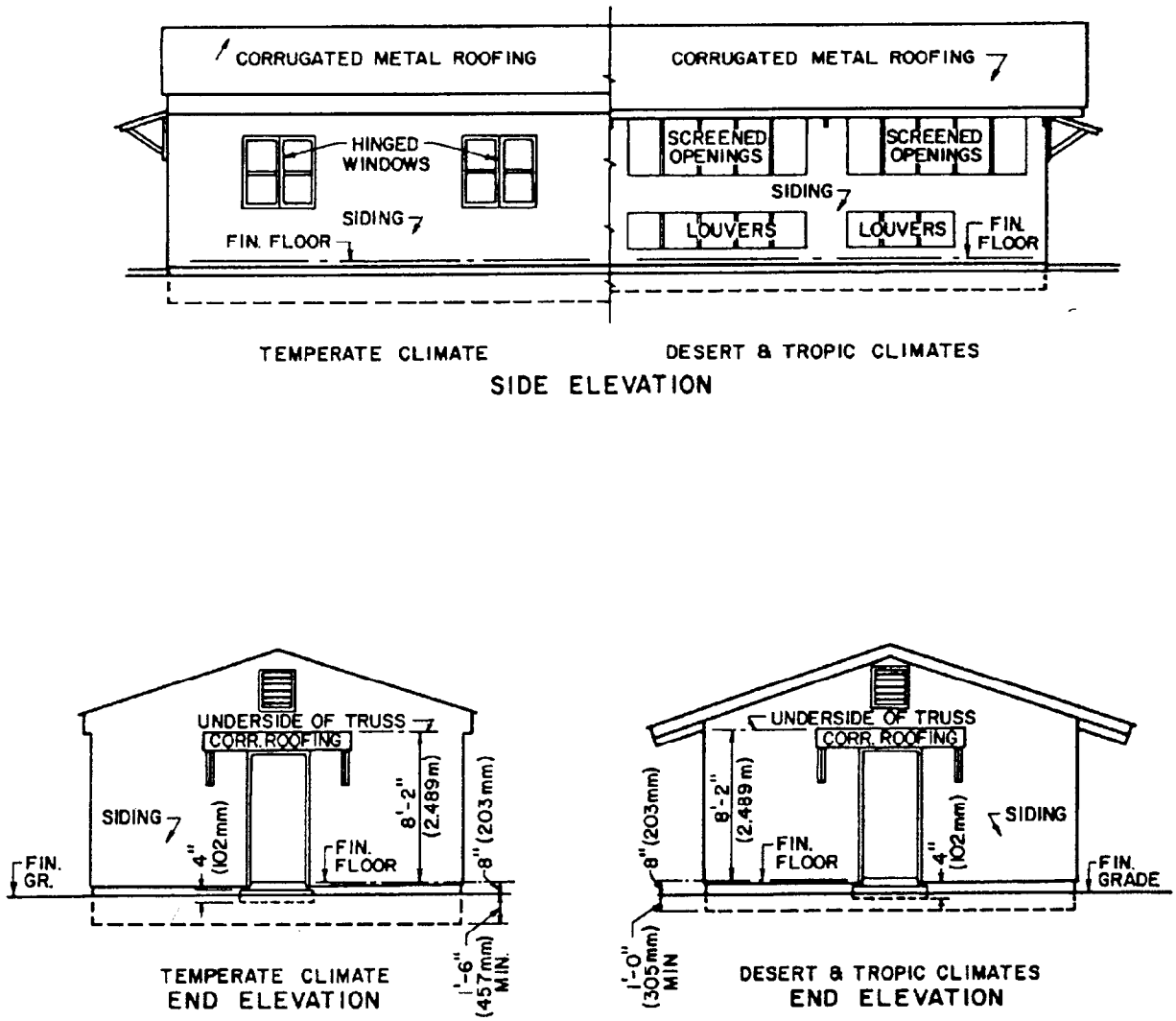
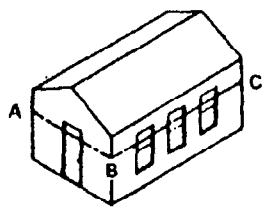
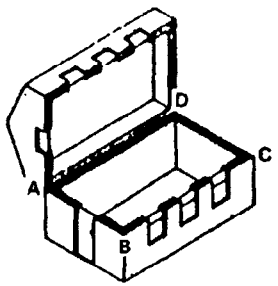


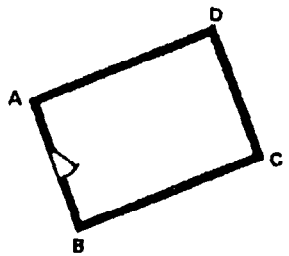
Figure F-3. Elevation views



PERSPECTIVE VIEW OF A SIMPLE BUILDING SHOWING CUTTING PLANE ABC



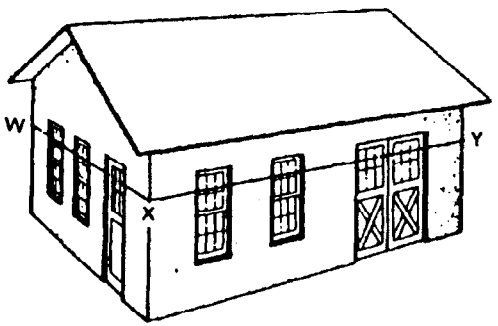
PREVIOUS PERSPECTIVE VIEW AT CUTTING PLANE ABCD, HINGED AND TOP LAID BACK



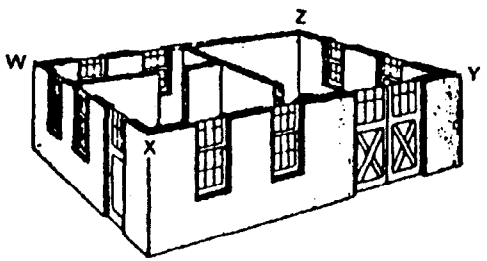
DEVELOPED FLOOR PLAN ABCD

PLAN DEVELOPMENT — SIMPLE BUILDING

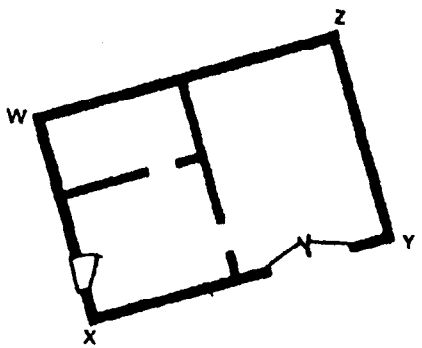
1



PERSPECTIVE VIEW OF A TYPICAL T/O BUILDING SHOWING CUTTING PLANE WXY



PREVIOUS PERSPECTIVE VIEW AT CUTTING PLANE WXYZ, TOP REMOVED



DEVELOPED FLOOR PLAN WXYZ

PLAN DEVELOPMENT — TYPICAL T.O. BUILDING

2

Figure F-4. Isometric views

possibly a roof plan view), giving the impression that the structure is being viewed from a corner.

c. Floor Plans. Floor plans are derived by passing an imaginary horizontal plane through the building at some given point (see figure F-5). The plan shows the horizontal relationship between building components. Horizontal dimensions appear in plan views, such as a site or floor plan. Dimension strings on the plan show overall dimensions, major breaks in the structure, and the placement of openings such as doors, windows, and louvers. Frequently, plumbing or electrical layouts are superimposed on the plan to show where pipes, fixtures, or conduits should be placed.

d. Sections. Sectional drawings (see figure F-6) show how a structure looks when it is cut by an imaginary vertical plane. The structure is usually drawn to large scale and shows details of a particular construction feature that cannot be explained by plans and elevations alone. The sectional drawing provides information about dimensions, materials, fastening and support systems, and concealed features. Wall sections are usually of greatest interest to builders, since those sections extend from the foundation up through the roof and show the construction of the wall and its relationship to floor and roof systems. Sections are keyed to the plan from which they were taken and are indicated on the plan by a section symbol.

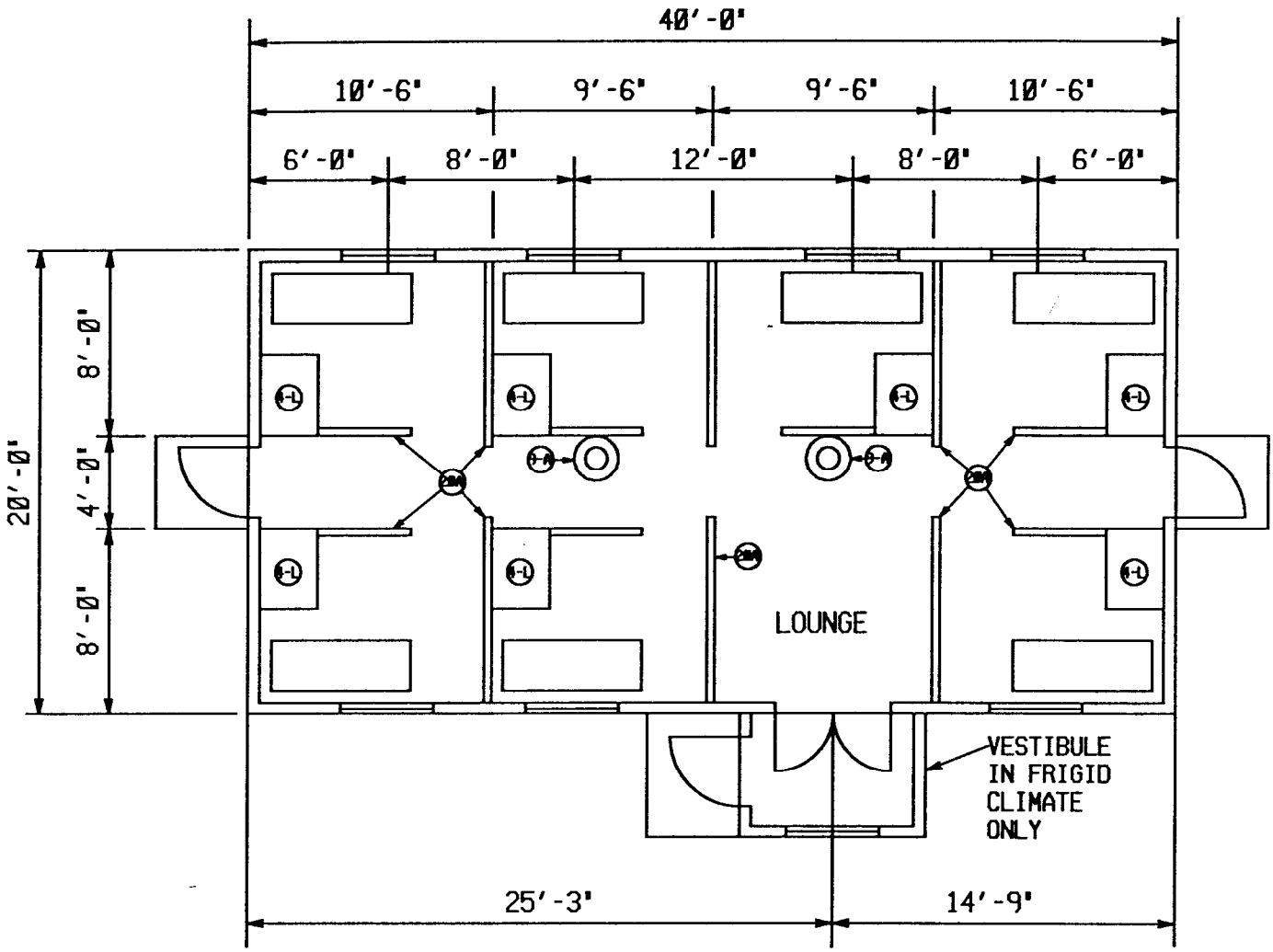
e. Details.

(1) General. Details (see figure F-7) are large-scale drawings of features that either do not appear or are too small on plans, elevations, and sections. Details are usually keyed by a coding system to the drawing from which they were taken.

(2) Wood Framing Details and Typical Theater Construction. Structural framing, whether wood or steel, is the skeleton that carries dead loads (those contributed by the structure itself) and live loads (those contributed by occupants, equipment, wind, snow, etc.) to the foundation and then into the earth. Typical theater construction (see figures F-8, F-9, and F-10) uses standard lumber components, such as studs, joists, and plywood sheathing. Construction is conventional; however, because of limited design life, safety and durability factors are not as stringent as for civilian construction. Foundations are either concrete or expedient wood footings, depending on factors such as loading conditions, availability, engineer effort, etc. AFCS working drawings for theater buildings usually show details of all framing. Light wood framing is used in barracks, bathhouses, administration buildings, light shop buildings, hospital buildings, and similar types of structures. Heavy wood framing with lumber members of at least 6 inches (timber construction) is used in heavy roof trusses, timber trestle bridges, and wharves. The major difference between light and heavy framing is the size of the timber and the types of fasteners used.

F-3. SYMBOLS ON DRAWINGS

Graphic symbols on construction drawings show the type and location of doors and windows, lighting and plumbing fixtures, wall partitions, and other construction information. Conventional symbols represent the types of construction materials to be used. The symbol selected normally resembles the actual material. For example, grain lines indicate wood, small dots and a triangle indicate concrete, etc.



OFFICERS HOUSING FLOOR PLAN

Figure F-5. Typical floor plan

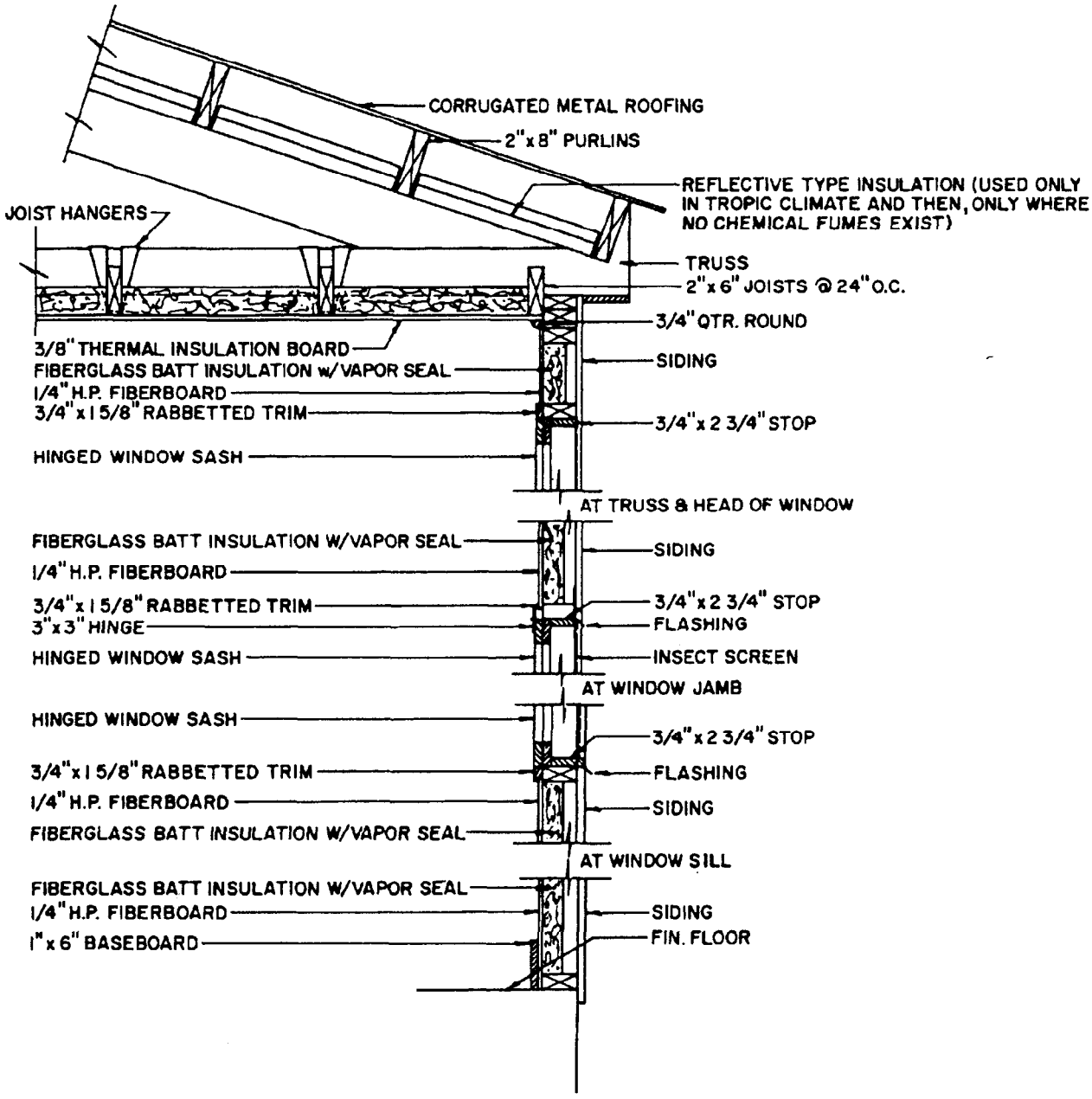


Figure F-6. Sectional drawings

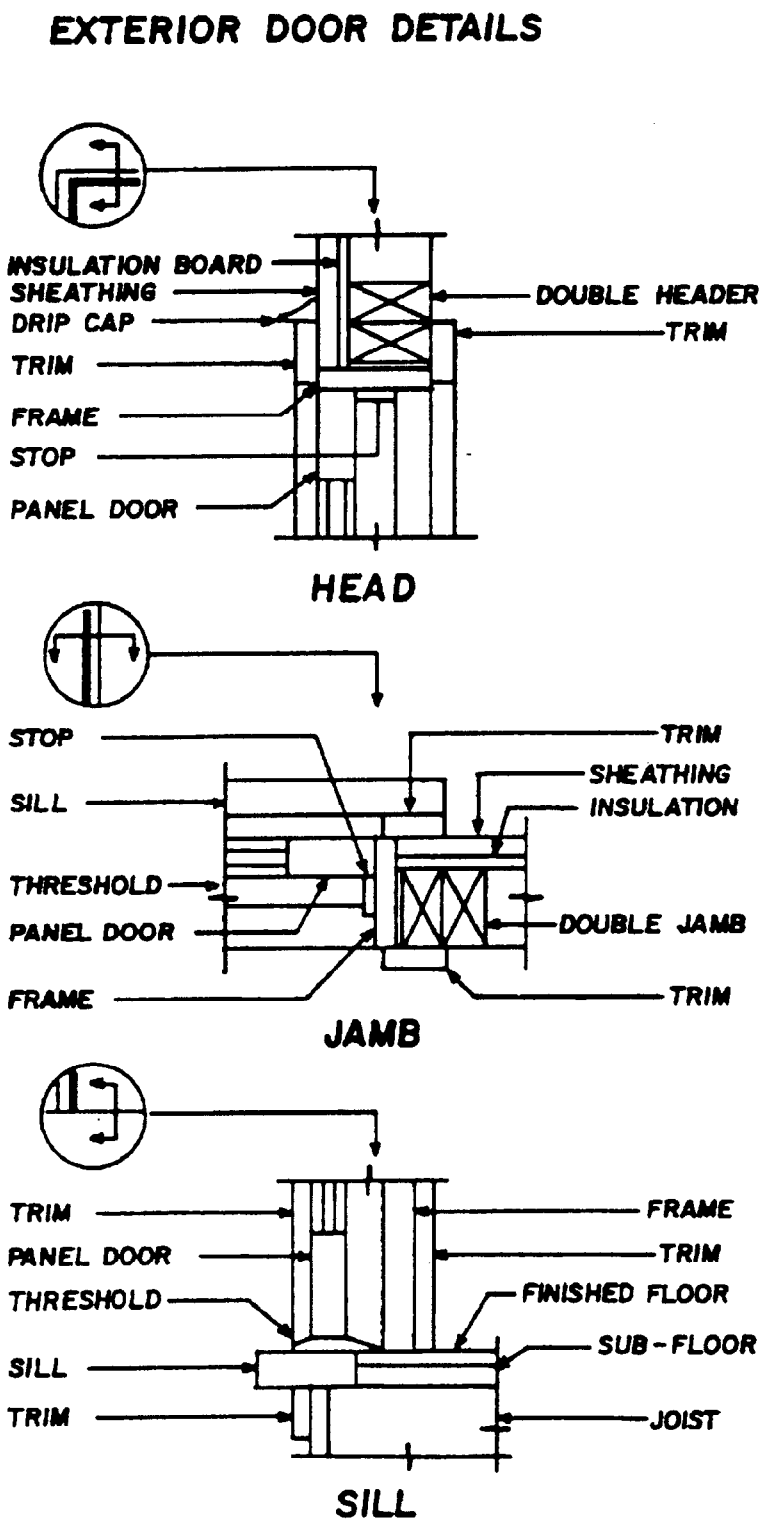


Figure F-7. Details

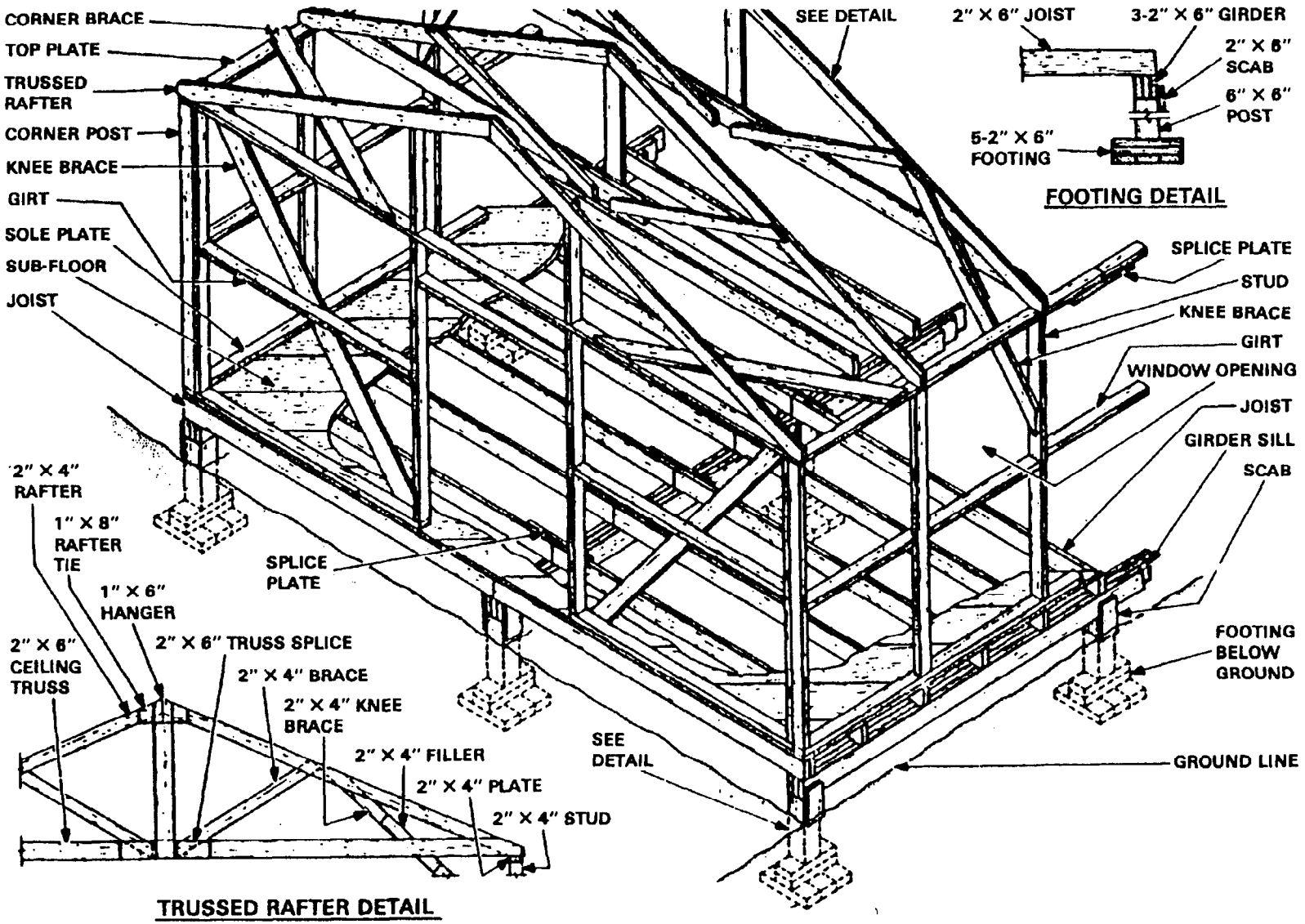
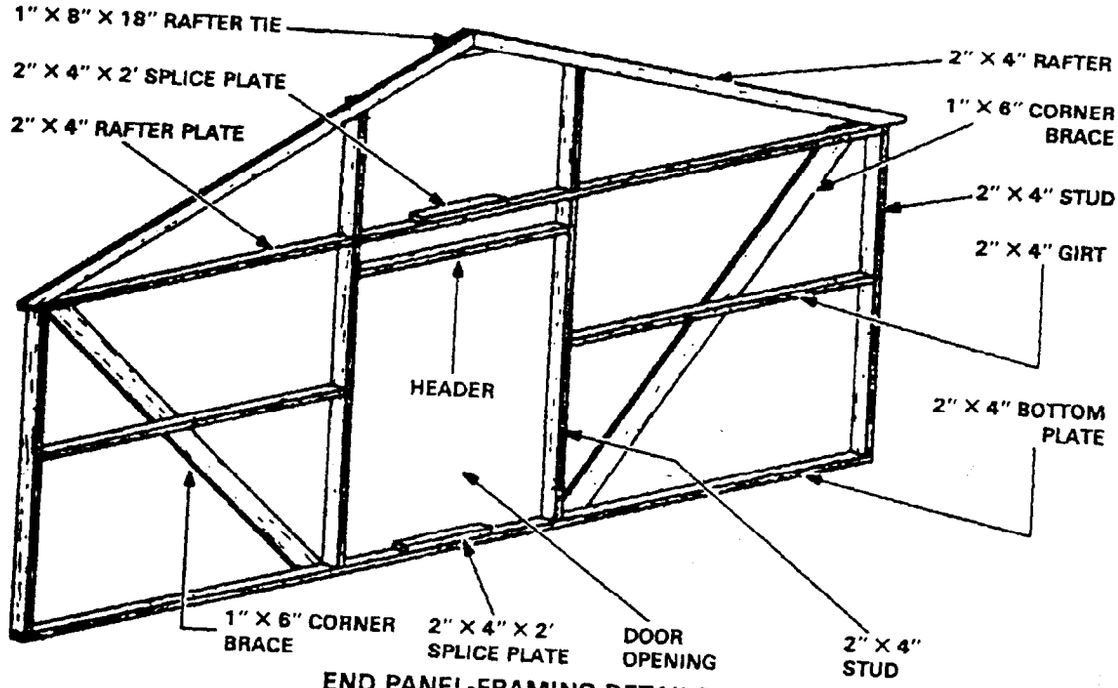
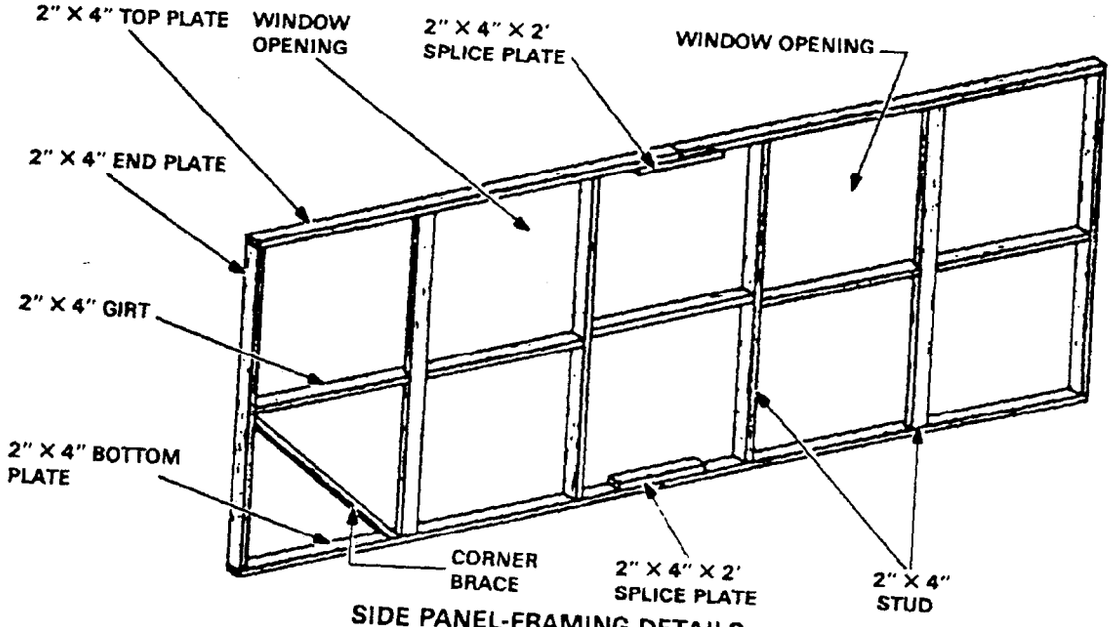


Figure F-8. Light framing details



END PANEL-FRAMING DETAILS

1



SIDE PANEL-FRAMING DETAILS

2

Figure F-9. Typical wall panels–framing details

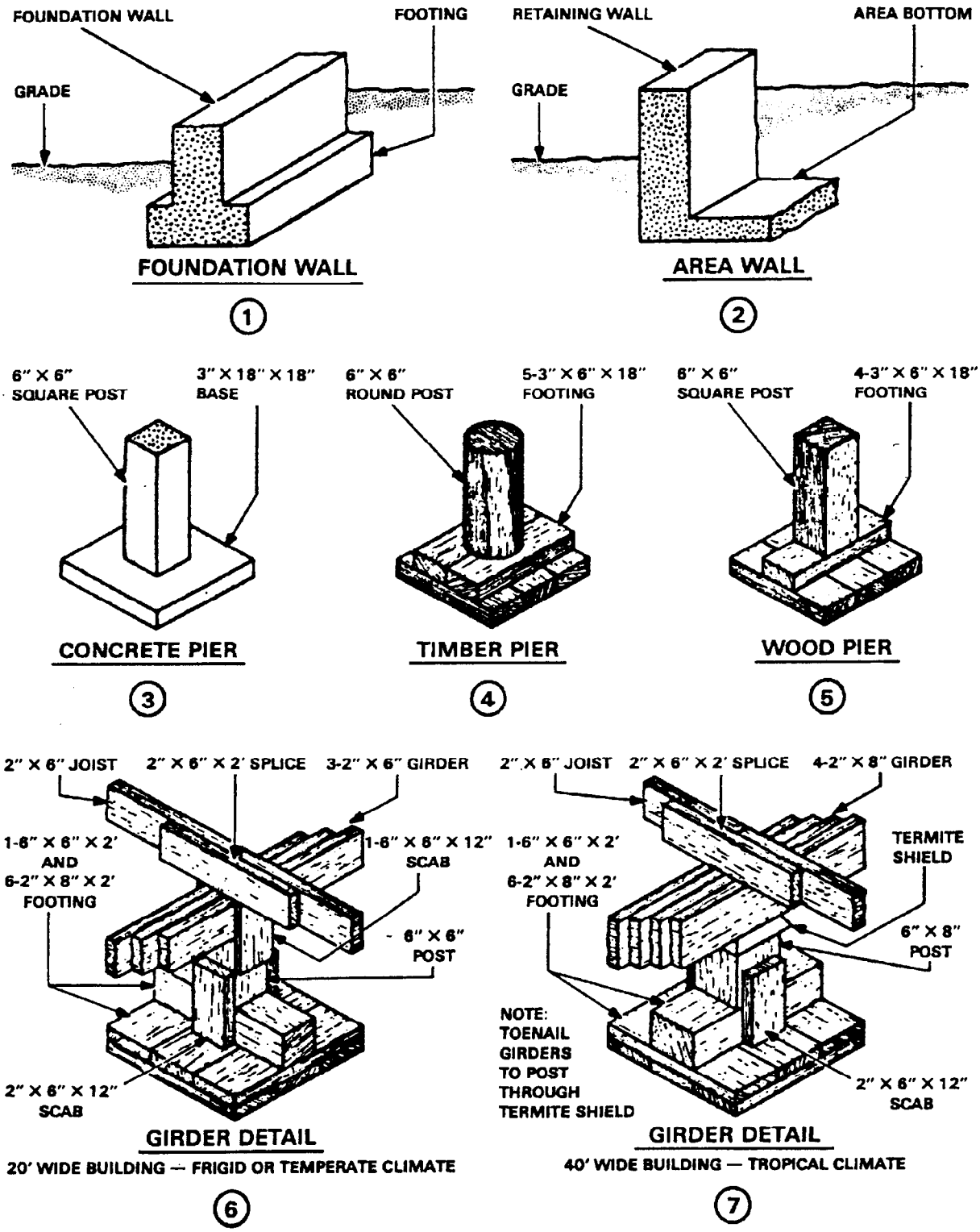


Figure F-10. Typical foundation and footing details