Performance Under Weathering

The climatic conditions near and at the adobe home are typical of the mountainous coastal regions of Southern California. The annual rainfall varies from less than 10 inches to over 30 inches in 1980. Freezing temperatures do occur during winter nights, however, snow accumulations have been very minor during the past several decades. The home is located on a hill at the end of a narrow valley which acts as a funnel for the Southwesterly winds. As a consequence, the wind speeds vary from gentle breezes to speeds exceeding about 60 mph at least once or twice per year. The weathering of the adobe bricks after 16 years of the above-described climatic conditions appears to be minimal. The edges and corners of nearly all the adobe bricks have been blunted on the outside wall surfaces. The adobe brick surfaces may have lost about 1/4-inch in thickness and loose straw is visible on some bricks. The mortar joints have deteriorated in localized regions where moisture accumulation is higher. Re-striking the joints has been performed on several occasions using adobe mix similar to that used for the adobe brick. As discussed in an earlier section dealing with the preparation of the adobe brick, the presence of localized lumps of clay and rain probably produced the spherical voids present in some adobe bricks especially in regions of high moisture accumulation.

An interesting phenomenon of adobe construction is its vulnerability to attack by animals. Boring wasps have on several occasions built their nests in the adobe walls by boring deep holes about 3/8 in. diameter into the adobe brick. It appears that asphalt stabilizers do not deter such behavior by wasps or other animals that scratch or dig into the adobe.

Performance During Earthquakes

Since 1964, the cities and towns adjacent to the San Andreas Fault extending from Los Angeles to Imperial Valley (see Fig. 8) have been subjected to more than two dozen earthquakes with magnitudes about 4.5 on the Richter scale. Except for the 1971 San Fernando Earthquake, most of the remaining earthquakes along the southern San Andreas and San Jacinto faults occurred in the Imperial Valley near the cities of El Centro, Brawley and Calexico. These cities are approximately 50 miles south of this adobe home and suffered considerable damage during past earthquakes. Seismic activity such as shaking, was physically observed at the adobe home on numerous occasions. The extent of damage due to seismic activity has been minor to the adobe home. Cracking at the junction of the pilasters and the adobe walls has been attributed to the seismic activity as illustrated in Fig. 11. Settlement and lack of a mechanical connection may also have been partially responsible for such cracking.

The embedment of the roof beams and girders into the adobe walls has been sufficient to result in diaphram action during seismic activity. This is evident by the presence of minor cracking in the adobe bricks and mortar joints at and near the location of beam or girder embedments.

Special Ornamental Features

Most doors, both interior and exterior, were hand-carved utilizing aesthetic features common to the Mexican-Indians. The door hinges were made from malleable iron rods and shaped according to the colonial Spanish and Indian traditions as illustrated in Fig. 12. The hardware on all doors was handmade.

The centerpiece in many Mexican-Indian and colonial Spanish homes was one or more spiral-shaped columns illustrated in Fig. 9. The columns were generally carved by hand from native wood and located in the kitchen and/or dining room area. Mr. Jakway carved the column from spruce pine utilizing several carving knives and a small hatchet.

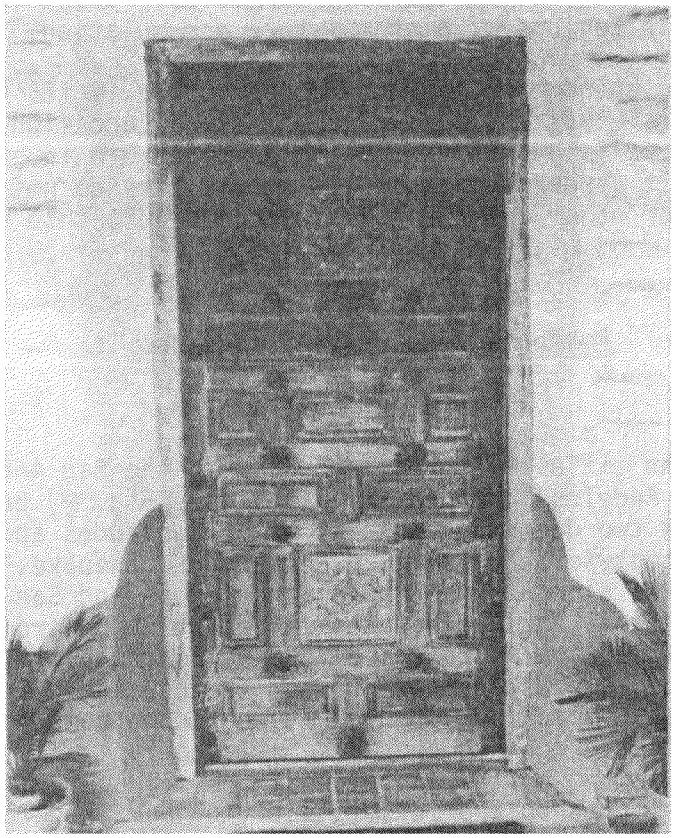

FIG. 12

Typical Handmade Doors and Hinges