

# The History and Future of Adobe at La Junta de los Rios: Social Dimensions of Adobe Making

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*In La Junta de los Rios today, the timber framework of the Native-American jacal-pithouse has been replaced with poured concrete and steel rebar. Mud daub for jacal walls is now adobe bricks; wattle latticework has become interlaced concrete mortar skeletons holding the adobe bricks in the walls. The vernacular adobe house remains, conceptually, a prehistoric Native-American jacal-pithouse, albeit, with the addition of the Spanish adobe brick wall and modern construction materials.*

The region known as La Junta de los Rios—the junction of the Mexican Río Conchos and the Rio Grande—in the Big Bend of West Texas has been home to Native-American peoples for millennia. Many West Texans and Chihuahuenses live in homes made of sun-dried mud and straw bricks called adobes.<sup>1</sup> This molded brick for homebuilding is the most recent addition to a traditional indigenous architecture rooted in the prehistory of the American Southwest and the northern Mexican deserts.

The concept of mold-shaped adobes may have reached La Junta with Spanish Catholic missionaries as early as the 1580s or early seventeenth century. Certainly present by 1683, adobes were used to build the mission church at the Native-American pueblo of Tapacolmes at Redford, Texas, known as the Polvo site (41PS21).<sup>2</sup>

Expeditions to La Junta as late as 1747 seeking to establish a presidio and permanent Spanish settlements found little evidence of the use of adobe bricks in Native-American pueblos. One

explorer, Captain Commander Joseph de Ydoiaga from southwestern Chihuahua directed the three nations of Puliques pueblo:

I expressed my joy to them in seeing them united like good friends and relatives; and I enjoined them like brothers, and to become related reciprocally by marriage without heeding the minor differences among the nations. With this union, they would form a large and good pueblo, for which they should construct their spacious church and houses of *terrado* in order to live more comfortably and because whatever is well made is best loved.<sup>3</sup>

The Spanish encountered a long-standing indigenous architectural tradition of wattle and daub: the pithouse *jacal* (Figure 1). A 1581 description reads:

These houses resemble those of the Mexicans . . . they are built of palings. They build them square. They put up the bases and upon these they place timbers . . . Then they add the pales, and plaster them with mud . . . the houses of the Jumanos (Indians) . . . were built in pits . . . "half under and half above the ground."<sup>4</sup>

The Spanish, thus, introduced a new and simple way to make an old type of house wall to the region. It fit perfectly into the native architecture based on wood and mud and stones. Readily adopted and adapted, it supplemented *jacal* construction. Homes of molded adobes eventually came to dominate until recently

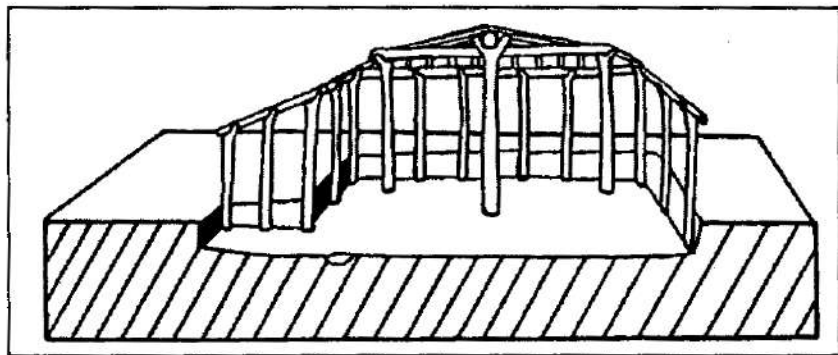


Figure 1. Diagrammatic representation of the method of construction of a Snaketown-type pithouse. The framework only is shown here, the outer covering having been removed. (Taken from McGregor 1974:168)

when concrete blocks began replacing adobes for building material.

Almost every technique used in making *jacales* can be transferred and applied—and in La Junta it was—to adobe house construction. No discussion of adobe in La Junta can be had without understanding its assimilation into an ancient vernacular tradition. Except for details known only to Spanish craftsmen or those requiring European metal tools—e.g., the carved woodwork of home interiors or hewn timbers of the Spanish Colonial style—Native Americans possessed a repertoire of techniques and concepts to absorb the new Spanish adobe brick wall into their construction. It can truly be said that in La Junta de Los Rios: "*La casa de adobes es la hija del jacal.*"

Archeologists J. Charles Kelley provides the most complete architectural data with which to study the evolution of La Junta's vernacular architecture. He traces house building traditions of native Bravo Valley cultures near Presidio, Texas, and Ojinaga, Chihuahua. Three cultural phases—the La Junta phase (A.D. 1200–1400); the Concepcion phase (A.D. 1400–1715); and Conchos phase (begins 1715)—document Late Prehistoric, Protohistoric, and Historic structures.<sup>5</sup>

### Jacal Features used in Adobe Homes

Multiple features of historic and modern adobe houses may be traced directly to Native-American *jacal* construction:

- Adobe plaster for roofs is applied atop brush or mats and later onto split shakes called *rajas*. Mud is applied in two layers allowing for slight drying; mud thickness is three to four inches total—never more. The roof mud layer is called a *torta*. Adobe mud with heavier clay content is best. Today, heavy plastic sheets below the mud layer further waterproof the roof. Downspouts or *canales* are set slightly lower than the *torta* which is pitched for run-off; long ridges are shaped onto the *torta* to channel water into the *canales*.<sup>6</sup>
- Constructed adobe floors from pithouses are also used.<sup>7</sup> *Tierra barriosa* (clay dirt) mixed with straw and made into mud is applied. This floor mud "slab" is called a

*plancha de zoquete*. It is four inches thick and well-tamped down.<sup>8</sup>

- Adobe banquettes, benches—*polluelos*—and curbs may be built up on floors against the walls inside or outside.
- Wattlework walls are replaced by adobe brick walls, but the corner posts that supported *jacal* roof beams have resurfaced in modern construction as the Castillo building technique: long steel reinforcing rods (triangular in cross section and of varying thicknesses) are set inside vertical cast concrete pillars in house corners. Long adobe wall sections may also incorporate these vertical reinforced concrete pillars. A concrete ring or collar with rods is poured horizontally at the top of the finished wall to tie in all the vertical pillars. *Vigas* are laid atop of this concrete ring.<sup>9</sup>
- Wattle-and-daub walls are used for fences outside—plastered or not. They were also used for interior room partitions or even room additions to adobe houses.
- *Vigas* continued in use.
- Adobe and rock chimneys were built against walls or in corners.<sup>10</sup>
- Clay plastering of walls made the transition.
- “Turtle back” adobes (most probably hand-shaped on the knee) laid down in a Redford, Texas, pithouse wall presage later coursed adobe brick construction.<sup>11</sup>
- Roofed-over spaces between adjacent *jacales* become the open-ended *corredores* separating adobe rooms: these are similar to the “dog-runs” or “dog-trots” of the early Anglo-Texans.<sup>12</sup>
- *Ramadas* or shades continue to be attached to houses.
- The concept of contiguous rooms in adobe homes existed in an El Paso phase (A.D. 1200) adobe-walled pueblo in Presidio.<sup>13</sup> Support poles were built into the exterior of its adobe walls perhaps similar to the Castillo technique.

Adobe bricks facilitate L- or U-shaped buildings as well as patios—open or enclosed.

- Pithouses disappear during the Conchos phase; the concept of surface-built *jacales* passes on to the surface-built adobe house.<sup>14</sup>
- Adobe and rock constructions around the *jacales* are used as a technique for repairs to adobe walls.
- La Junta through Conchos phase square pithouses and *jacales* continue on as square adobe houses. Circular house traditions may have evolved into circular adobe structures such as granaries, ovens, or even round adobe towers called *torreones* for defense in historic haciendas.

All of these traits, however, have their own history.

### The Prehistory of the *Jacal*

The proto-*jacal*—“the earliest type of structure found in the Southwest”—may be the shallow two-meter-wide pithouse with storage pits and postholes of the Late Chochise culture (500 B.C.–A.D. 1).<sup>15</sup> Wattle and daub was used very early.<sup>16</sup> Primitive walls of mud-coated overlapping and interlaced pieces of wood were found in second and third century sites in the Southwest.<sup>17</sup> Plastered wattle-work was common in Hohokam and Pueblo cultural areas by A.D. 799–900.<sup>18</sup>

Roofs made of cross-sticks, bark, and grass covered with plaster appeared in the Estrella phase of the Pioneer period of Hohokam culture in A.D. 100–200.<sup>19</sup> Split planks—*rajas*—for roofs covered with clay appear in the Flagstaff area in A.D. 900–1100.<sup>20</sup>

“Turtle back” adobes show up during A.D. 700–900 in Colorado River cultures,<sup>21</sup> and again in the A.D. 1100–1300 period Betatakin Pueblo in northern Arizona.<sup>22</sup>

Massed-adobe-walled buildings with contiguous rooms date from A.D. 700–900 in the Colorado River cultures.<sup>23</sup> Surface multi-rooms of wood frames covered with mud in rectangular shape were found in the A.D. 925–1125 Anasazi site at Chimney Rock Mesa, Colorado.

Clearly, architectural forms—material and conceptual—from prehistoric Southwestern and Mexican traditions allowed the acceptance of the Spanish molded-adobe-brick wall and shaped its evolution into the vernacular architecture of contemporary La Junta.

### **Adobe in La Junta Today**

Despite its antiquity throughout the vast border region, adobe homebuilding as a viable vernacular architecture may be imperiled. A series of Mexican peso devaluations have increased the price of adobe brick 700% and the cost of labor has gone up leaving half-finished adobe homes or homes completed with concrete blocks. Concrete blocks are by no means inexpensive, just less so than adobes.<sup>25</sup> Other factors, such as the incorporation of Presidio, Texas, as a city, have brought new taxes and building code regulations that have affected the cost of housing. Governmental policies on spending, taxes, and regulation that are detrimental in inner cities<sup>26</sup> are also hurtful to vernacular architectures: “Federal mortgage-interest and property-tax deductions give people a subtle incentive to buy bigger houses on bigger lots...”<sup>27</sup>

But bigger houses on bigger lots are the prerogatives of those with bigger incomes. According to 1990 census data, the poverty level in Presidio County was 48.1%<sup>28</sup> and the county’s ethnicity was 81.6% Hispanic.<sup>29</sup> One La Junta historian grimly notes: “Presidio County is one of the poorest in the state of Texas, one of the poorest in the nation, and ‘south county’ is the poorest part of that poor county.”<sup>30</sup> For many La Junta residents on either side of the border owning a home built from any kind of suitable material remains only a dream.

For all of their ubiquity as a building material and their perception as a low-cost one, in arid and semi-arid regions as La Junta, cement/concrete blocks await the final determination as to their real cost. Here the most costly raw material is water. The least expensive are earth and sand. Cement is not a natural material but a processed one. And its production—from the extraction of its raw materials to its distribution—is deeply embedded in the matrix of a fossil fuel economy.

As for the high cost of labor, it is the payment we receive for our work and it determines our standard of living. No one wants to

lower that. Economic climates, however, can be compensated for and financial conditions are amenable to correction and direction. The cost of building materials and of having a house can be controlled. Costs can be cut by engineering creative uses of technology; by creative, progressive financial restructurings at local, national, and international levels of government; and by informed, aggressive educational campaigns to create and restore the value of adobes in the public’s mind.

The most cogent argument for the retention of adobe building as a vernacular architecture is found in its future role along the U.S.–Mexico border. This region is defined as a 120-mile-wide by 2,000-mile-long strip on both sides of the present border between Mexico and the United States. A 1999 U.S. General Accounting Office report states:

In 1997, the Environmental Protection Agency (EPA) estimated that the population of the U.S.–Mexico border region was greater than 10.5 million people . . . Current populations projections forecast a doubling of the border population over the next twenty years.<sup>31</sup>

By 2017 we may expect the U.S.–Mexico border population to have reached 21 million persons or approximately 4.2 million families. These families will face, among many problems, a severe housing shortage. And further, is it credible to foresee another doubling in forty years to 40+ million people? And what kind of homes will they be living in? The vernacular home of 2017 in the U.S.–Mexico border region will be a low-cost, easily and simply constructed, safe, and efficient “modernized” adobe house for one reason: We will need it to be so.

### **Preservation of Historic Buildings and Building Traditions**

We are wise enough now to protect our historic buildings of adobe. Have we the wisdom to preserve and to protect the living tradition that created these buildings? The native people of the border form the majority of its population. The historical use of adobe in all its forms is, in architectural terms, the “expression” of that border society. It is the “vehicle of communication of quality and meaning” by which the making of adobe and the uses it is put to are transformed into art.<sup>32</sup> The adobe architecture of the North American deserts has a world-wide reputation for its beauty. One

fourth of the people of the earth use adobe<sup>33</sup> and they have earned and merit the respect and protection all artists deserve.

Many people here in La Junta de los Rios were born, grew up, and still live in adobe homes. They want adobe houses. There are adobe makers and adobe builders. A La Junta builder and contractor says, "Everyone who has mastered adobe construction prefers it."<sup>34</sup> Adobe knowledge resides in the memories of the mature generations. Its rising cost is a recent phenomenon and—being subject to political will—is easily arrested and reversed. Adobe forms the core of a living tradition still. An old proverb instructs us: "You don't throw the baby out with the bathwater." In Spanish we say: "*Lo que es de valor no se desperdicia* (Whatever is of value is not to be squandered)."

### Notes

1. "West Texas Adobe from the Gound Up." VHS videotape with teacher's guide. Institute of Texan Cultures at San Antonio, The University of Texas at San Antonio (July 1989).
2. Enrique R. Madrid, "The Lost Mission of El Polvo: Searching for the History of a State Archeological Landmark," *Journal of Big Bend Studies* 15 (2003): 55–68. See also the website from North Texas Institute for Educators on the Visual Arts, "Adobe Architecture," fall semester (1997) vol. 8 no. 3. [http://www.art.unt.edu/ntieva/news/vol\\_8/issue3/adobe.htm](http://www.art.unt.edu/ntieva/news/vol_8/issue3/adobe.htm). This site has information on Spanish introduction of adobe bricks into the New World and to New Mexico in particular.
3. Enrique Rede Madrid, translator, *Expedition to La Junta de Los Rios, 1747–1748: Captain Commander Joseph de Ydoiaga's Report to the Viceroy of New Spain*. Office of the State Archeologist, Special Report 33 (Austin: Texas Historical Commission, 1992), 51.
4. W. W. Newcomb Jr., *The Indians of Texas from Prehistoric to Modern Times* (Austin: University of Texas Press, 1978), 241, 242.
5. J. Charles Kelley, "Review of the Architectural Sequence at La Junta de los Rios," in Proceedings of the Third Jornada Conference, eds. Michael S. Foster and Thomas C. O'Laughlin. *The Artifact*, vols. 1 and 2. El Paso, 1985.
6. Mr. Valerio Pando, life-long La Junta resident. Personal communication, August, 2004, at Redford, TX.
7. Ibid.
8. Ibid.
9. Mr. Jesus Hinojos, La Junta adobe construction worker. Personal communication, August 2004, at Redford, TX.

10. Pando, personal communication, 2004
11. Kelley, "Review of the Architectural Sequence," 4.
12. "West Texas Adobe from the Ground Up."
13. Kelley, "Review of the Architectural Sequence," 3.
14. Ibid., 9.
15. John C. McGregor, *Southwestern Archeology*, 2nd Edition (Chicago: University of Illinois Press, 1974), 133–134.
16. Ibid., 328 (see photo).
17. Ibid., 174.
18. Ibid., 233, 244.
19. Ibid., 154.
20. Ibid., 284–285.
21. Ibid., 250–251.
22. Ibid., 329.
23. Ibid., 242–243.
24. Franklin Folsom and Mary Elting Folsom, *America's Ancient Treasures*, 3rd Edition (Albuquerque: University of New Mexico Press, 1983), 43.
25. Mr. James S. Adamson, La Junta builder and contractor. Personal communication, August 2004, Presidio, TX. The value of the Mexican peso has continued to fluctuate since the devaluations of the 1970s and 1980s.
26. Bruce Katz and Jennifer Bradley, "Divided We Sprawl," *Atlantic Monthly*, 284, no. 6 (December 1999): 28.
27. Ibid.
28. West Texas Food Bank brochure, ca. 1999. Distributed through Presidio Chamber of Commerce. "The Food Bank serves 22 counties in West Texas providing food to those in need among the 1.1 million people living in the area."
29. *Dallas Morning News, 1998–1999 Texas Almanac*. (Texas A&M Press Consortium, 1997), 255, see "Presidio County."
30. Jefferson Morgenthauer, *The River has Never Divided Us: A Border History of La Junta de los Rios* (Austin: University of Texas Press, 2004), 230.
31. United States General Accounting Office, "U.S.–Mexico Border: Issues and Challenges Confronting the United States and Mexico." A Report to Congressional Requesters, document number GAO/NSIAD-99-190 U.S.-Mexico Border Issues, July 1999, 12.



32. The New Encyclopedia Britannica, 15th Edition, Vol. 13. See "Expression" in "The Art of Architecture" (1986): 945.
33. "West Texas Adobe from the Ground Up."
34. Adamson, personal communication, 2004.

### Appendix Adobe Terms and Techniques

The word "adobe" in Spanish dictionaries:

—"Masa de barro, moldeada en forma de ladrillo y secada al aire." Diccionario Porrúa de la Lengua Española, Mexico, 1983.

—"Ladrillo secado al sol." Pequeño Larousse Ilustrado, Mexico, 1987.

—"Ladrillo Tosco y poco resistente, que se obtiene secando al sol la arcilla amasada con paja para conferirle mayor soidez." Pequeño Larousse de Ciencias y Técnicas, Mexico, 1983.

The word "adobe" in English dictionaries:

—"1. Unburnt, sun-dried brick. 2. The clay of which this brick is made. 3. A building made of adobe" (*Webster's New World Dictionary of the American Language*, 1962).

—"1: a brick or building material of sun-dried earth and straw 2: a heavy clay used in making adobe bricks; broadly: alluvial or playa clay in desert or arid regions; 3: a structure made of adobe bricks" (*Webster's New Collegiate Dictionary*, 1979).

—"Unburned, sun-dried bricks. Clay and silty deposits found in the desert basins of southwestern United States and in Mexico where the material is extensively used for making sun-dried bricks. The composition is a mixture of clay and silt together with minor amounts of other materials" (*Dictionary of Geological Terms*, New York, 1976).

Terms used by Charles C. Di Peso:\*

—Mud concrete and poured adobe, made by pouring a fluid mud mix into full-height or moveable forms that could be lifted as construction progressed, after the fashion of the Berbers of the upper Dade Valley in the Atlas Mountains.

—English cob walls, manufactured by hand-shaping a stiff mud mix without the aid of either a form or a structural skeleton.

—Rammed earth, also known as *pise de terre*, built by placing a damp mud mix between sturdy work forms and ramming each layer until it was approximately 7 cm thick.

—Sun-baked soil bricks, involving individual units, either mold-formed or hand-shaped, constructed of a stiff mud mix that may or may not have included a non-earth binder, which were placed after they had been sun-dried and shrunk.

—*Jacal* (mud and wattle, or thick post-reinforced) walls, built on structural skeletons of plaited poles and supporting a wickerwork of branches covered with a mud plaster on one or both faces.

—Dirt core masonry walls, which were formed of either English cob or mud concrete and faced with a stone veneer.

\*Charles C. Di Peso, *Casas Grandes: A Fallen Trading Center of the Gran Chichimeca*, Vol. 2: 683 (Flagstaff: Northland Press, 1974).

Modern adobe terms used in the La Junta de los Rios region:

**adobes**—always denotes the bricks made from mud mix with straw, as in "*una casa de adobes*;" the bricks are shaped in molds

**barro**—mud; use of this word implies heavy clay content

**barro con paja**—mud mix with straw

**cimiento**—foundation for adobe wall

**enjarre**—mud plaster or daub on *jacal* walls; lime/sand or cement/sand plaster for adobe walls also

**lodo**—(Latin: *lutum*; Italian: *loto*) mud

**lodo con paja**—mud mix with straw

**mezcla**—lit. "mixture"

**mezcla con paja**—mud mix with straw

**mezcla de cal**—lime/sand mix or mortar

**piso de zoquete**—floor made of poured mud without straw. The mud is a mixture of water and heavy clay soil or *tierra barriosa*; floor is firmly tamped down

**polluelos**—long benches attached to adobe house for sitting; made of adobes with mud or stones with mud

*tapia or tapias* (pl.)—vestiges or ruins of walls

*terrado*—adobe brick construction, as in “casa de terrado”

*tierra pisada*—rammed earth; *pise de terre*

*torta*—mud mix with straw applied three to four fingers thick to form a roof “slab;” a level is used to slope the roof allowing for drainage; ridges are shaped to channel water to cottonwood *canales*, drains, or downspouts

*zoquete*—(Nahuatl: *zoquitl*) mud

*zoquete con paja*—mud mix with straw

*zoquete vaciado* (or simply, *vaciado*)—puddled adobe