EL VADO MOTEL

Structural Evaluation

Final Report August 2006

Prepared by:
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Structural Engineer

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Druc Engineering Biographical Information

William M. Druc

William M. Druc, Principal of Druc Engineering, LLC. Has a Master of Engineering Degree from Cornell University, a Master of Architecture Degree from the State University of New York and a Bachelor of Arts from Brandeis University.
Druc is currently licensed as a Structural Engineer in New Mexico and Colorado and is a registered architect in the State of New York.

Mr. Druc has extensive experience as a Professional Engineer in commercial and residential projects. He has also taught structural engineering courses at the University of New Mexico School of Architecture and Planning and the Santa Fe Community College.

Some of the projects William has worked on include: the San Esteban del Rey Church at Acoma Pueblo, the Oldest House in the United States in Santa Fe, NM, and the Santuario de Guadalupe in Santa Fe, NM. William has extensive experience with historical adobe and other building materials and has worked on numerous projects with Cornerstones Community Partnership, leaders in historical preservation.

Arnold Valdez

Arnold Valdez, Associate, Architectural Harmonics, San Luis, Colorado, obtained an MArch at the University of New Mexico in 1992, receiving the John Gaw Meem Award for his thesis on Hispano vernacular architecture. In 1999-2000 Valdez was the recipient of Loeb Fellowship of Advanced Environmental Studies at Harvard University Graduate School of Design. Currently, Valdez is an Adjunct Research Professor at the University of New Mexico School of Architecture and Planning.

As co-founder of Peoples Alternative Energy Services (PAES), Mr. Valdez has promoted alternative energy for low-income sectors, sustainable planning, and environmental reform since 1976. PAES's grassroots organizing workshops and hands-on initiatives were featured in a variety of publications and highlighted in a PBS documentary. Currently, the principal of Valdez & Associates, a consulting firm specializing in earthen designs, Valdez served as trainer for Peace Corps and other government sponsored solar projects since the 1980s. After studying advanced adobe dome construction techniques in India, he collaborated on a design for a high altitude adobe village and spearheaded several construction projects for the Sangre de Cristo Parish, including a design of an environmental center and restoration of the oldest non-Amerindian adobe religious structure in Colorado. His greatest achievement was to co-design and supervise construction of a domed adobe chapel in 1996. Since 1990, his firm has undertaken landscape research, architectural surveys and historic preservation of buildings and cultural landscapes in southern Colorado and New Mexcio.

Suzy Bedford

Suzy has received a Bachelor of Architecture from Portland State University. She has a technical report writing background with a local architecture firm collaborating to do existing facility assessment reports with her major contribution being determining American with Disability Act requirements and providing a separate report for each facility. She has worked at City of Albuquerque's Planning Department doing residential drawing plan checks and signing off for permit applications. She has special interest in historic preservation with an emphasis in regional adobe architecture.

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2.2 Participants

Druc Engineering, LLC.-
William Druc, P.E., Structural Engineer, Principal Investigator;
Arnold Valdez, M.Arch., Architectural Historian
Suzy Bedford, B.Arch

2.3 Building Location

Latitude: 35° 05.650'
Longitude: 106° 40.700'
2500 Central Avenue SW
Albuquerque, New Mexico

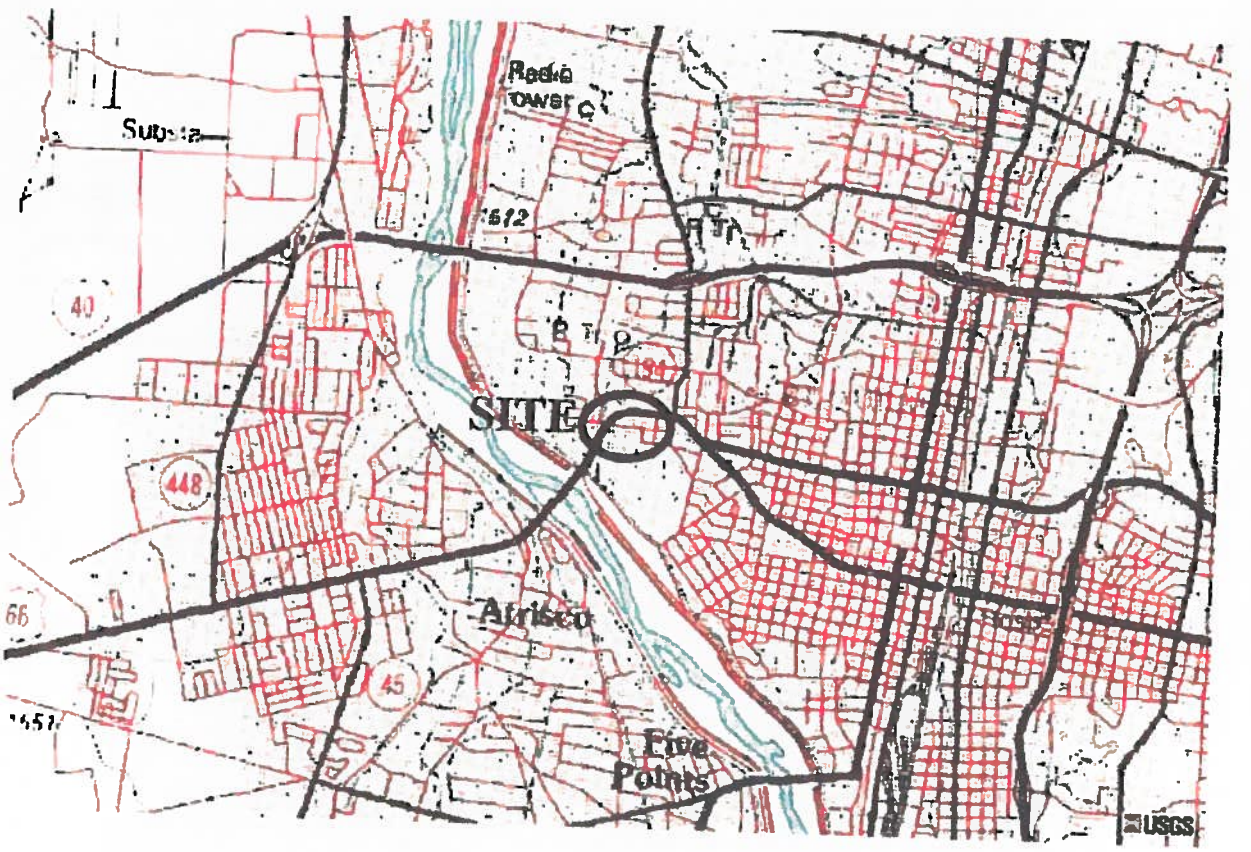


Figure 1: Vicinity Map

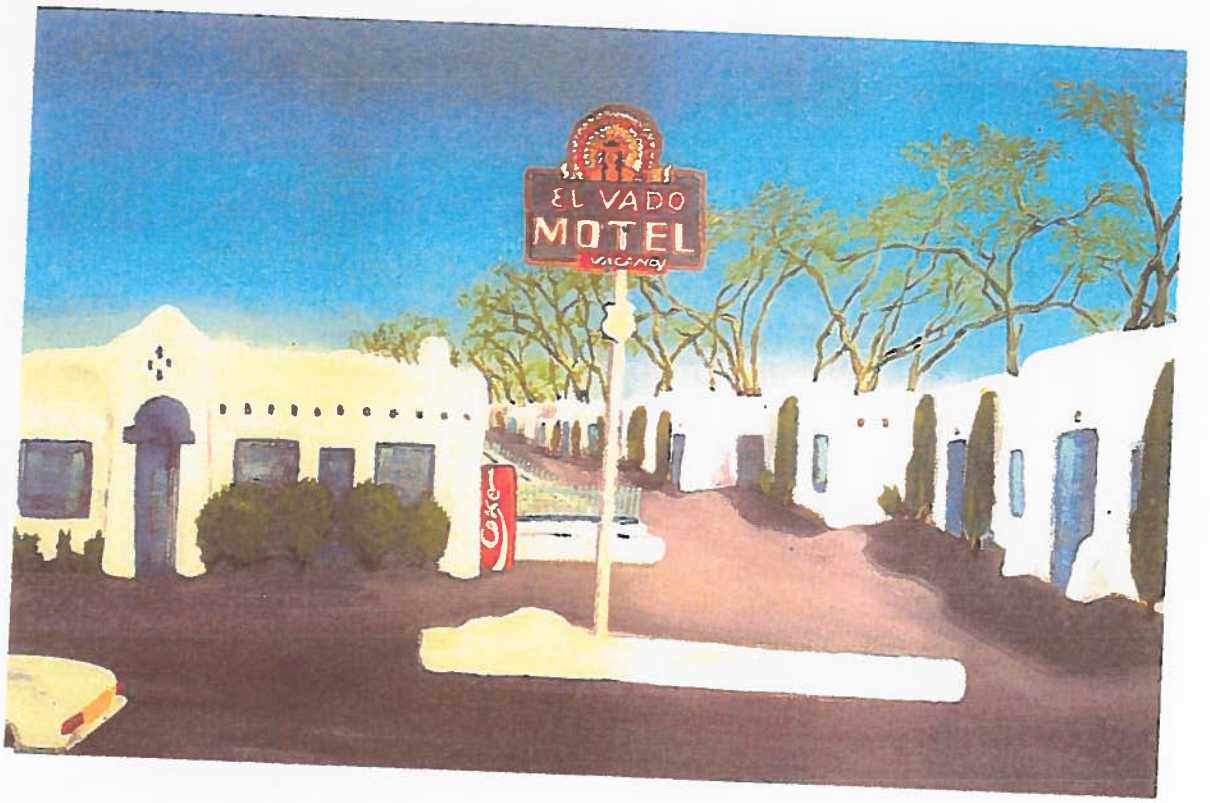


Figure 4 Historic El Vado Post Card Artwork

Construction History

The El Vado Motel is an example of a pre-World War II tourist court located on Route 66. Built in 1937 by Dan Murphy, formerly manager of the Franciscan Hotel, and N.C. Cross of Tulsa, Oklahoma. The first 10 rooms located at the southwest portion of the site are constructed from 8 inch thick hollow clay tile (Building 3, Figure 9) (Figure 5). Designed in a Pueblo Revival Style, the architectural features include buttressed walls, curvilinear parapets, irregular massing and exposed vigas. The office/lobby (Building 1, Figure 9) has ornamental buttressing framing the entries and is constructed of adobe brick.

The additional block of rooms located at the east portion of the site (Building 4, Figure 9) and north block (Building 2, Figure 9) were constructed of 10 inch thick adobe walls covered with cement stucco. Garage spaces are interspersed between the lodging units and are articulated by stucco covered support posts (Figures 6,7). There are a total of thirty-five units organized in a parallel linear plan with the wider office/residence at the front of the west wing extending to the south courtyard. A swimming pool southeast of the office fills in part of the courtyard adjacent to the north block of rooms (Figure 10).

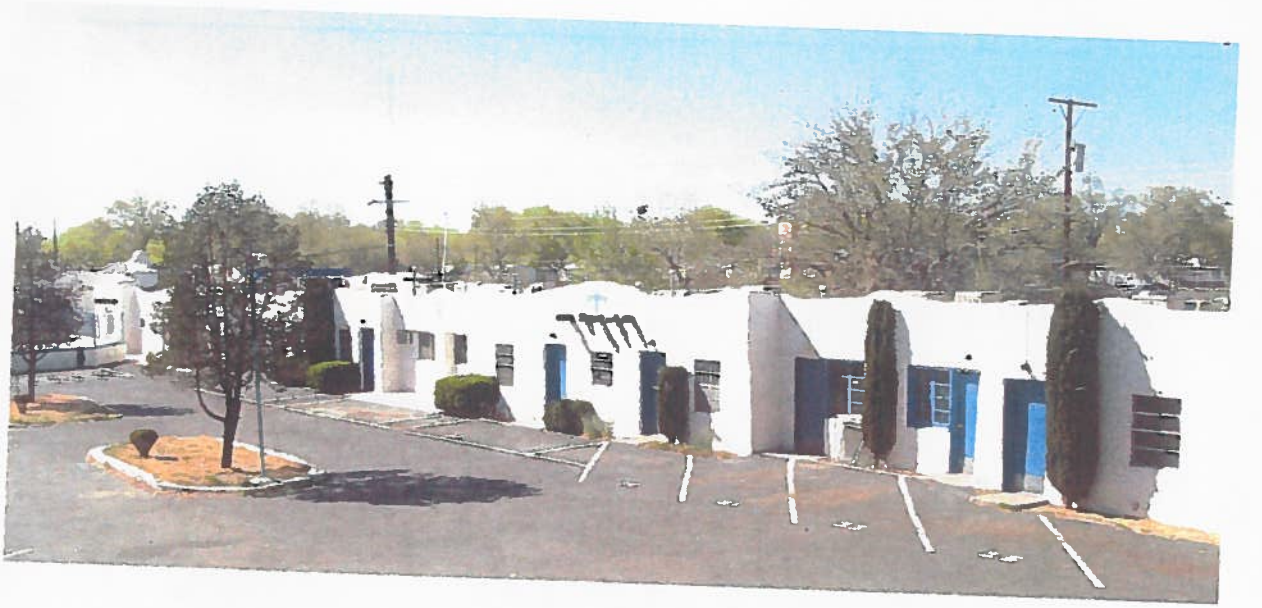


Figure 7 Building 2

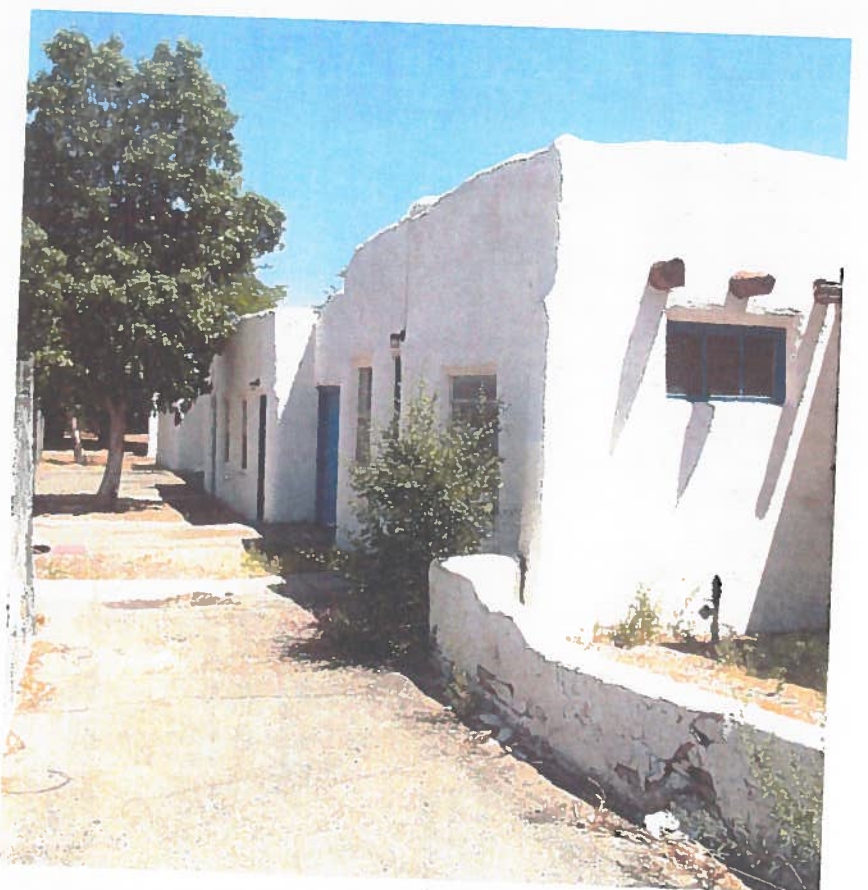
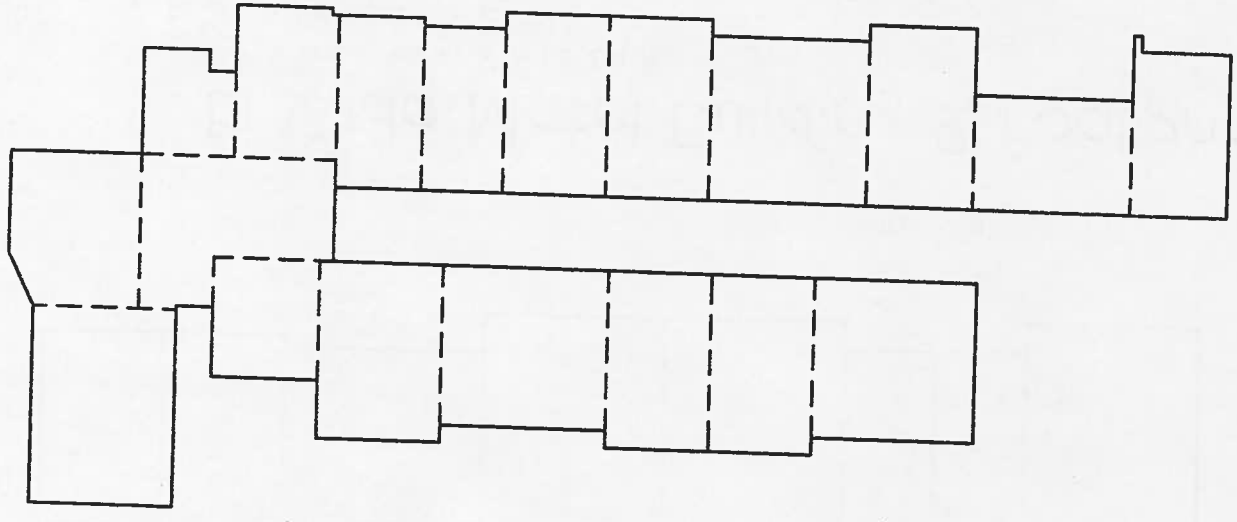
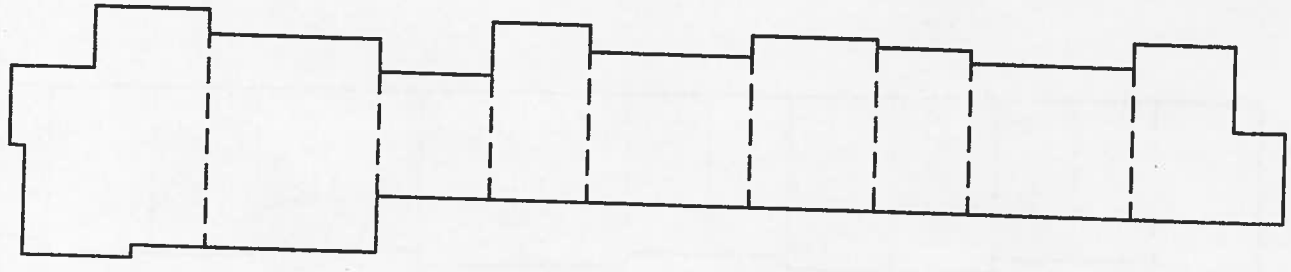


Figure 8 Building 1



El Vado Motel Building 1 Footprint

- Total Area: 5,467 sq.ft.
- Perimeter: 646 LF
- Interior Partition Walls (both sides): 680 LF



El Vado Motel Building 3 Footprint

- Total Area: 3,284 sq.ft.
- Perimeter: 397 LF
- Interior Partition Walls (both sides): 325 LF

4. Architectural/Structural Assessment and Preservation Recommendations

4.1 Landscape Features

The site of the El Vado Motel (Figure 9) is a mostly rectangular lot with a diagonal west boundary. In addition to the four buildings, there is paved circulation and on-site parking for the motel rooms (Figure 10), signage (Figure 11), two landscaped planter islands at the middle of the lot, a swimming pool (Figure 12) and a small open space area at the northeast corner wrapping around to the east. The existing asphalt paving is cracked with vegetation growth emerging throughout. The grading of the pavement is nearly at the level of the room doorways. The Albuquerque Country Club landscape to the south of the El Vado site is at a higher elevation resulting in flooding and pooling of water at the El Vado site during seasonal heavy rains.

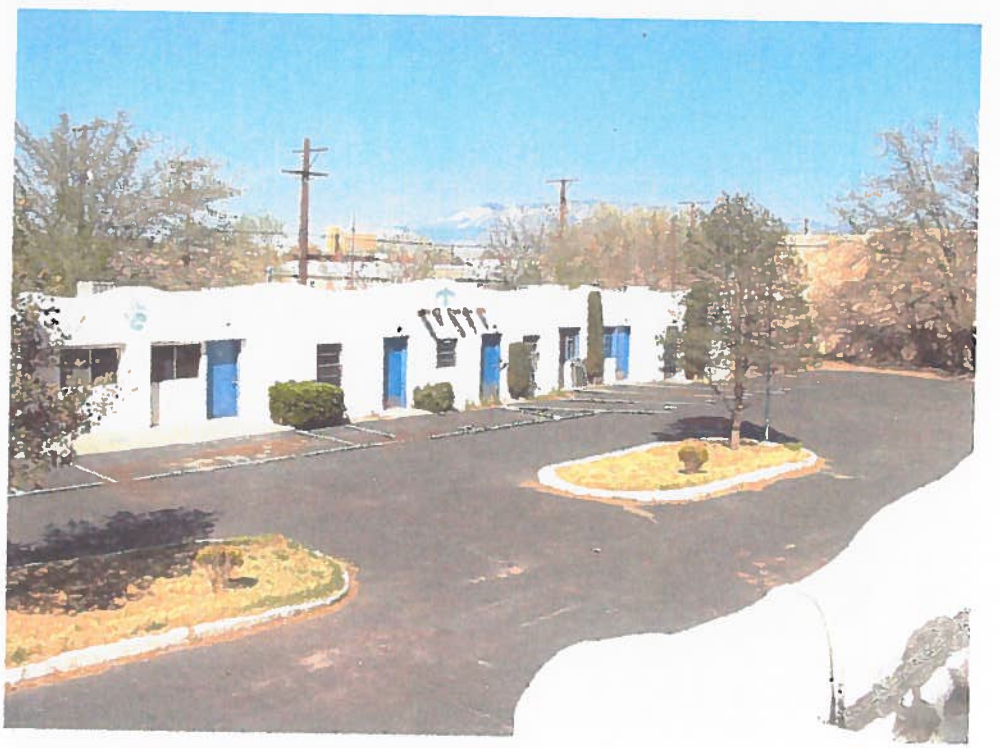


Figure 10 Asphalt Paving and Landscape Island

Figure 12 El Vado Swimming Pool

The swimming pool of the El Vado has been closed for a few years due to structural cracks in the concrete walls and decking (Figure 13). Currently the perimeter is enclosed with a chain link fence. The pool surface is covered with plywood panels and asphalt roofing. The mechanical room for the pool is also dilapidated and is out of compliance with plumbing and electrical codes.

Figure 13 Cracked Concrete at Swimming Pool deck

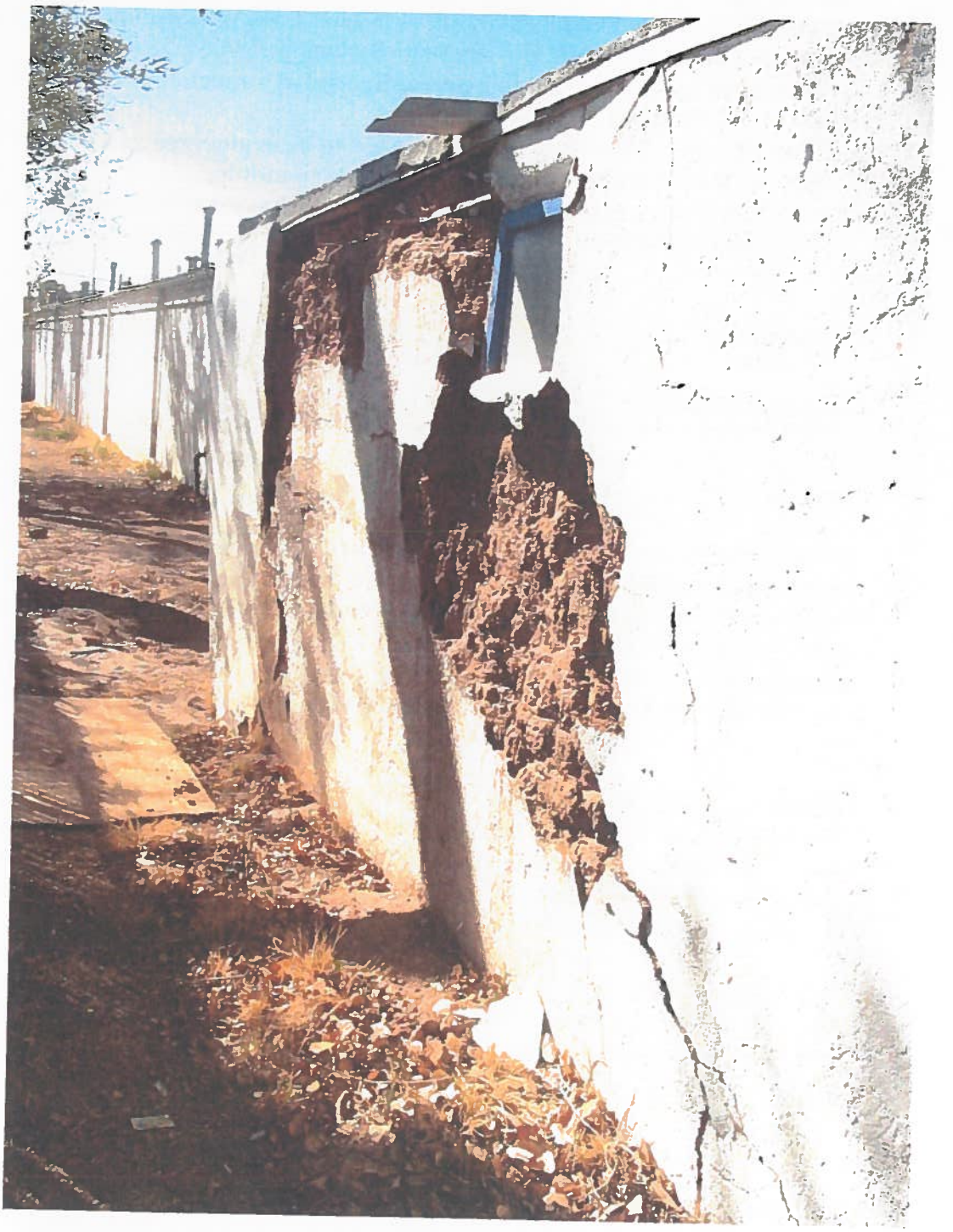


Figure 15 Wall Failure at Southeast Building Cluster

Figure 16 Foundation Wall

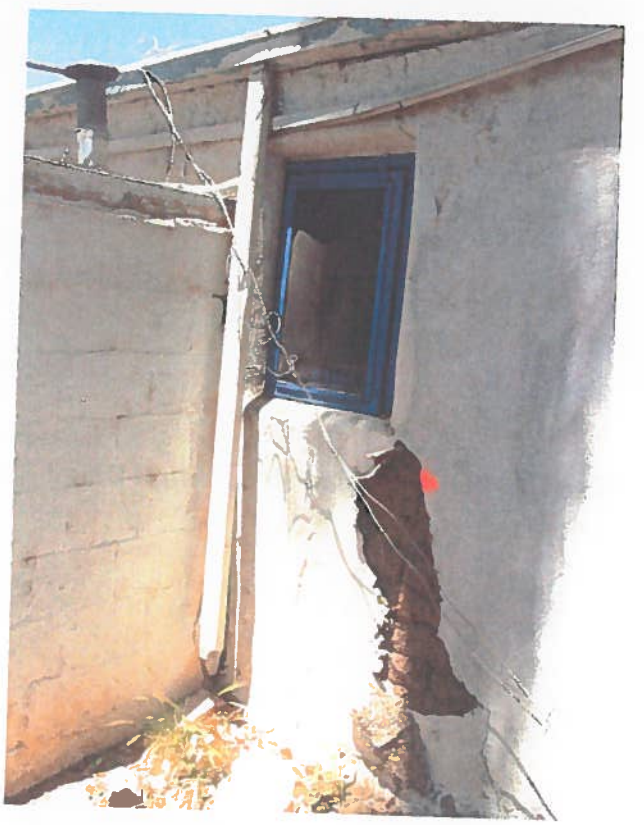


Figure 17 Roof Gutters/Downspout

The southwest building (Building 3, Figure 9) has several low spots where storm water has been pooling near the foundation perimeter. This is especially critical at the adobe storage shed addition where there has been intensive moisture damage from the leaking gutters and damp ground leading upwards to the base of the adobe walls. As a result of the moisture saturation, the adobe walls at the storage sheds have collapsed.

Figure 19 Collapsed Storage Shed Adobe Walls

Recommendations

1. **The soils adjacent to the footing need to be lowered so that all adobes are above finish grade. Offsite drainage to the south needs to be mitigated.**
2. **The footing wall needs to be waterproofed and insulated by an approved method. A foundation drain should be installed adjacent to the footing. An approved design should include a drain pipe, with an appropriate geotextile to prevent clogging, and appropriate placed gravel to direct moisture into the drain. The drain should run down at an appropriate slope out to daylight.**
3. **Downspouts and gutters need to be cleaned, prepared and sealed.**
4. **Leaders should be installed to divert water away from the building foundation.**
5. **The roof needs to be reconstructed to provide appropriate overhangs, parapets and flashing.**

Roof Framing System

The main structural framing members for all the roofs of the El Vado are the structural wood vigas. The vigas have diameters ranging from 6-inches to 8-inches at their ends. ***Some vigas have serious problems with dry rot at the exposed ends where they are supported on load bearing walls.*** The structure of the motel's roofs is composed of a roof ceiling assembly (vigas spanned by 3/4 of an inch thick tongue and groove wood decked ceiling with no insulation above) then layers of roofing material.

The roofing surface is in poor condition with several patched spots throughout causing water pooling and subsequent damaged. Due to the large number of roof penetrations from the utility lines there are numerous leaks throughout all roof surfaces. It seems that repairs were made to the roofing at numerous times. We noticed soft spots on the roof indicating possible failure of the roof sheathing. Some minor deflection was observed throughout portions of the roof.

Figure 21 Typical Viga Layout

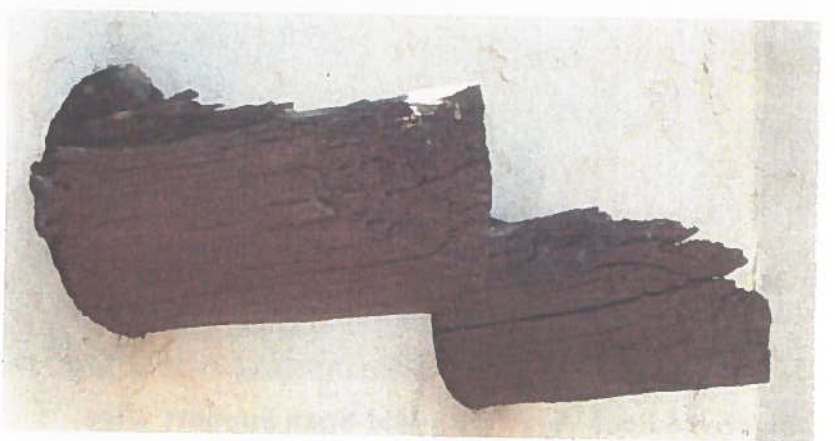


Figure 22 Dry Rot Viga Ends

The lobby/office building of the El Vado's roof structure is composed of wood beams spaced at approximately 24 inches from centers. The low pitched roof is covered with lapped asphalt membrane roofing. This roof appears to be in poor condition. This roof contains numerous vent stacks, swamp cooler and ventilating equipment. The exposed viga ends that extend beyond the walls are in a deteriorating condition due to dry rot.

Generally, such penetrations to roofing membranes at the El Vado facility have created roof and ceiling leaks.

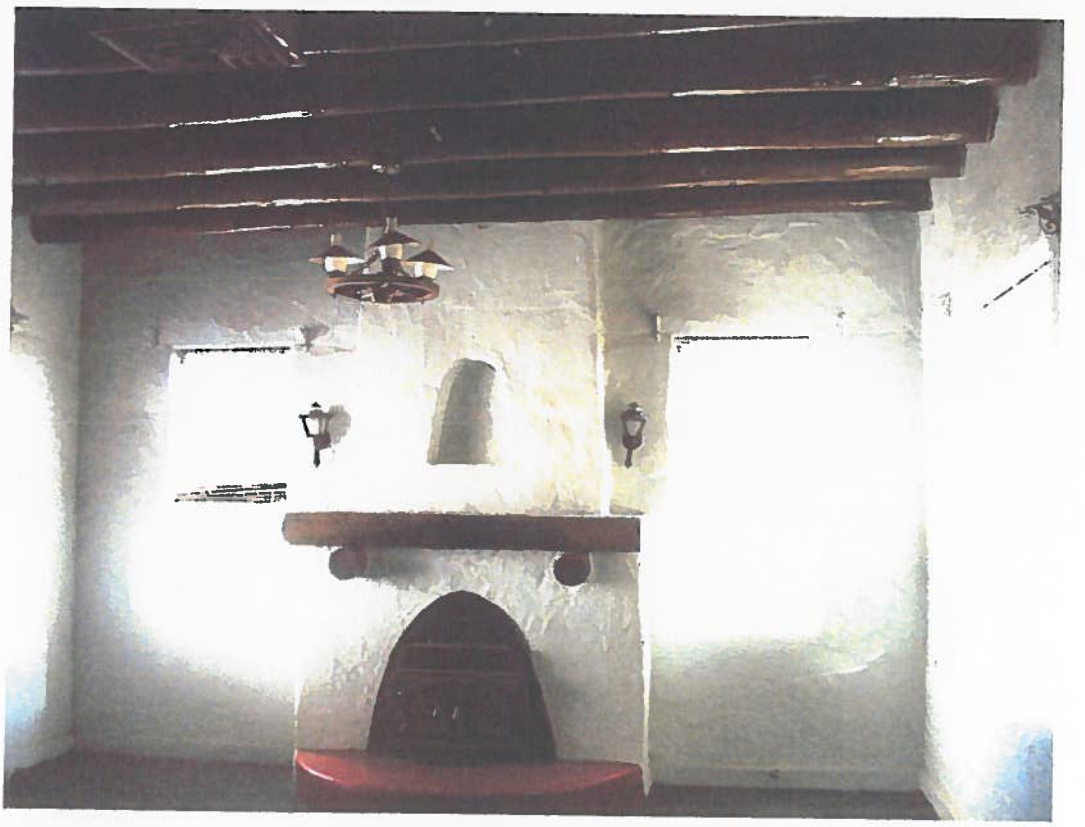


Figure 25 Roof Vigas at Office/Lobby

Recommendations

1. **Inspect and evaluate each viga end throughout the buildings to check for rot and repair as necessary.**
2. **Inspect and evaluate each viga for stress cracks, excessive deflection and repair as necessary.**
3. **Inspect and evaluate roof sheathing. Replace with 3/4 inch sheathing as necessary.**
4. **Insulate roofs to code standards and replace entire roof surfaces.**
5. **Overhangs, gutters etc.**

Figure 28 Roof Penetrations at North Room Block

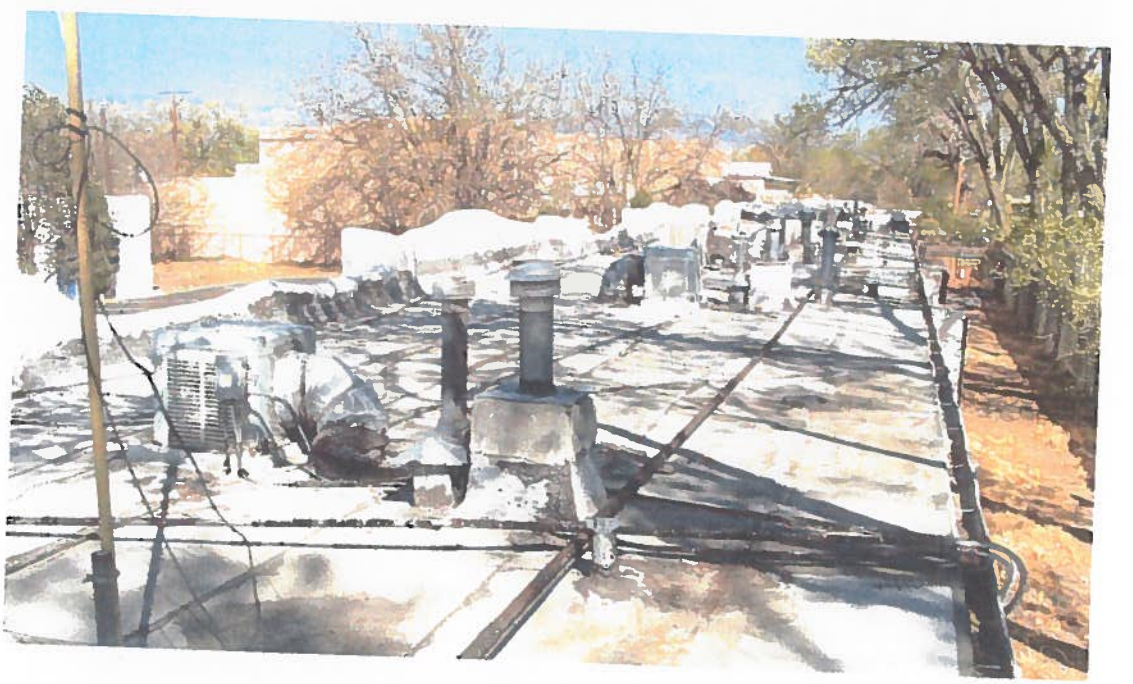


Figure 29 Roof Penetrations at South Room Block

Figure 31 South West Rooms Built of Hollow Clay Tile

Exterior Finishes

Cement stucco is the exterior finish material for both the adobe and hollow clay tile block walls of all buildings. The stucco on the adobe building is in poor condition. The adobe walls are being impacted by moisture infiltration. Cement stucco traps moisture in the walls. As a result there are numerous cracks in the stucco that exacerbate the moisture related problems. Asbestos examination has revealed trace elements of asbestos in the plaster samples of the Delphi, Inc. report.

Exterior Appendages

The main entrance to the office/lobby building (Building 1, Figure 9) is covered with an overhead roof forming a protective alcove for the doorway. There are concrete slab stoops at all doorways, some above the interior room's floor grade.

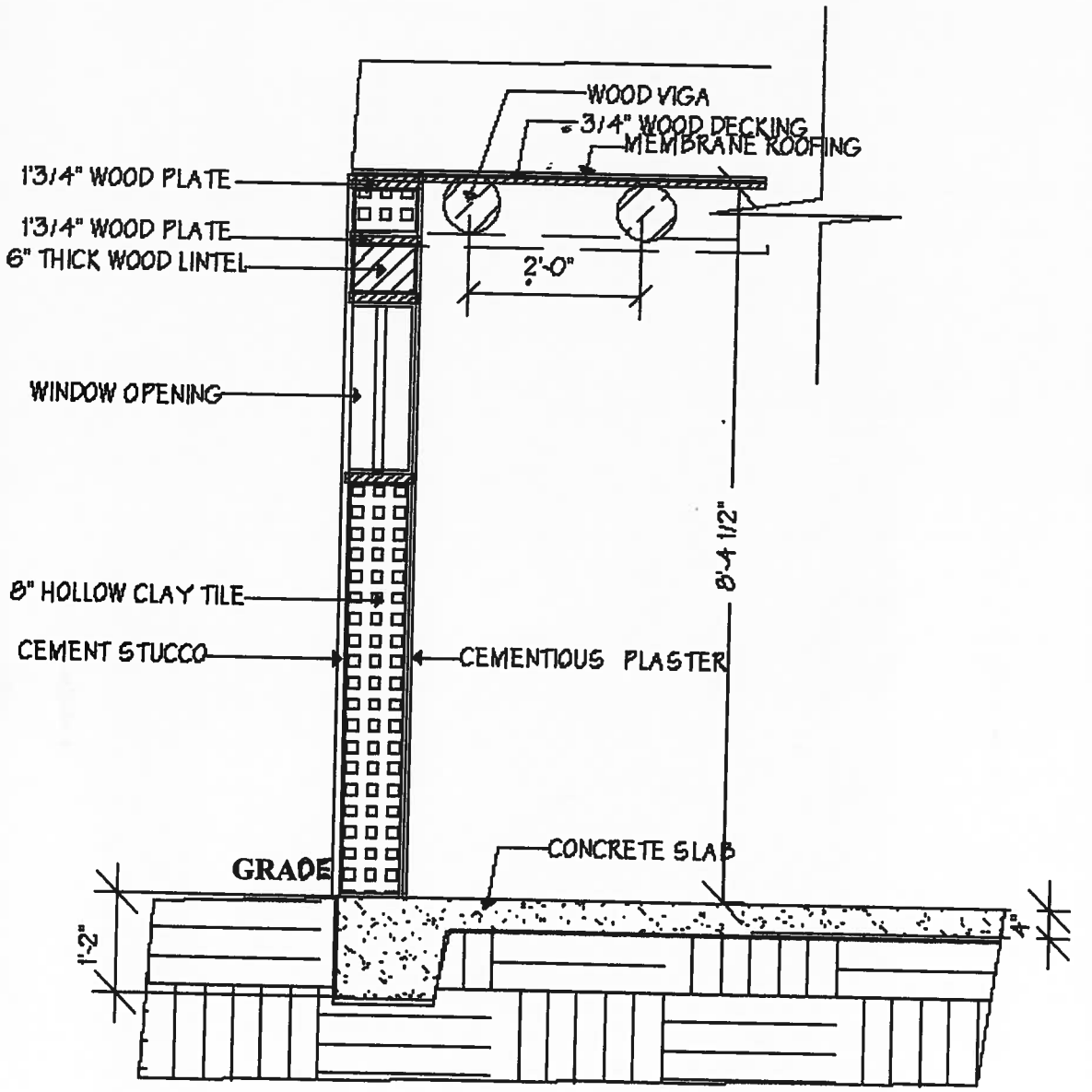


Figure 34 Typical Hollow Clay Tile Wall Section

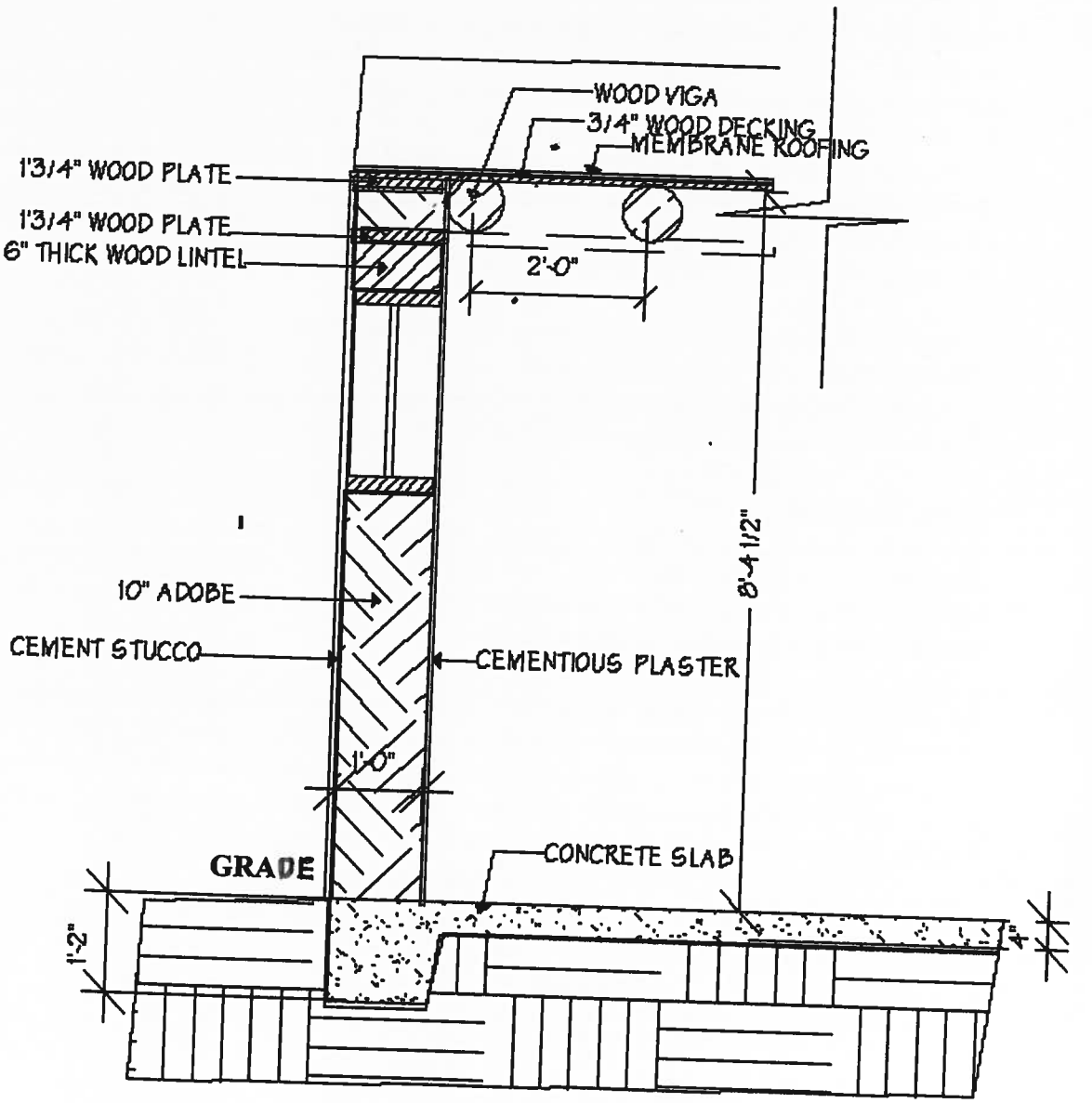


Figure 36 Typical Adobe Wall Construction

South And West Wall

Overall the condition of the south wall and west wall (Building 1,4, Figure 9) ***are unsatisfactory.*** There are numerous stucco cracks in both walls and at the parapet. However, we did notice severe deterioration. Portions of the upper walls under the eave have missing or broken sections of stucco.

Recommendations

1. **A detailed inspection and evaluation of the stucco condition should be conducted**
2. **Perform site and grading recommendations as listed in the above sections.**
3. **Remove all cement stucco at areas where stucco appears to be slumped.**
4. **Remove all cement stucco at any areas where the stucco is loose or where there are major cracks.**
4. **If possible, remove all the cement stucco from the exterior of the adobe buildings throughout. Since the cement stucco is actually a problem, it would be a good idea to remove it everywhere. The cement stucco is very hard and is adhered to the adobes. Removing the stucco might cause the adobes to crack and fall apart.**
5. **Replace cement stucco with an approved material, such as a lime-based stucco which will allow the wall to "breathe".**

Note: Apply extreme caution when removing stucco. Since all building adobes have not been inspected, it is imperative that stucco be removed slowly and under the supervision of an experienced professional. The removal of cement stucco is risky.

Adequate precautions must be taken:

1. **Shore roof structure at wall sections to be removed.**
2. **Remove small non-contiguous sections of stucco to preclude wall collapse.**
3. **Access wall condition with experienced professional engineer.**

North Wall (Building 2)

A severe condition that requires immediate attention occurs adjacent to the parapet wall on the north side of the building. The damage occurring is due to moisture infiltration because of cracked stucco which allows moisture in between the adobe walls and cement plaster. The moisture becomes trapped and cannot get out. The adobe blocks become saturated with the moisture and begin to deteriorate. As the blocks deteriorate, chunks of adobe mud and mortar separate from the rest of the block. This creates a larger void between the cement stucco and the adobe, giving access for snow melt and rain to enter the cavity. The adobe chunks become wedged between the intact wall and the cement plaster causing a further cycle of deterioration. As trapped moisture freezes and expands it creates even more damage as the cement stucco is forced away from the building dragging pieces of adhered adobe with it.

The north wall is now at the point where large sections of cement plaster are falling off the building. **This constitutes a dangerous, severe existing condition.** Exposed adobe walls, cracked stucco and wall damage at the northeast as evident by the bulging stucco and separated concrete apron.

Figure 39 - Cement Stucco Separation from Adobe Wall

4.5 Roofing/Drainage

Roofing & Weatherproofing

The El Vado buildings have asphalt based roofing. ***The roof surfaces are in fair to poor condition.*** Maintenance is required periodically to inspect fasteners, joints and the ridge/parapet connections. The parapet flashing has separated from the walls creating gaps and cracks in the walls. ***Areas of particular concern exist at the parapets and perimeter of all building walls. The roof vigas which protruding from the walls are in poor shape due to dry rot conditions***

Figure 41– Roofing Materials at Building 1.

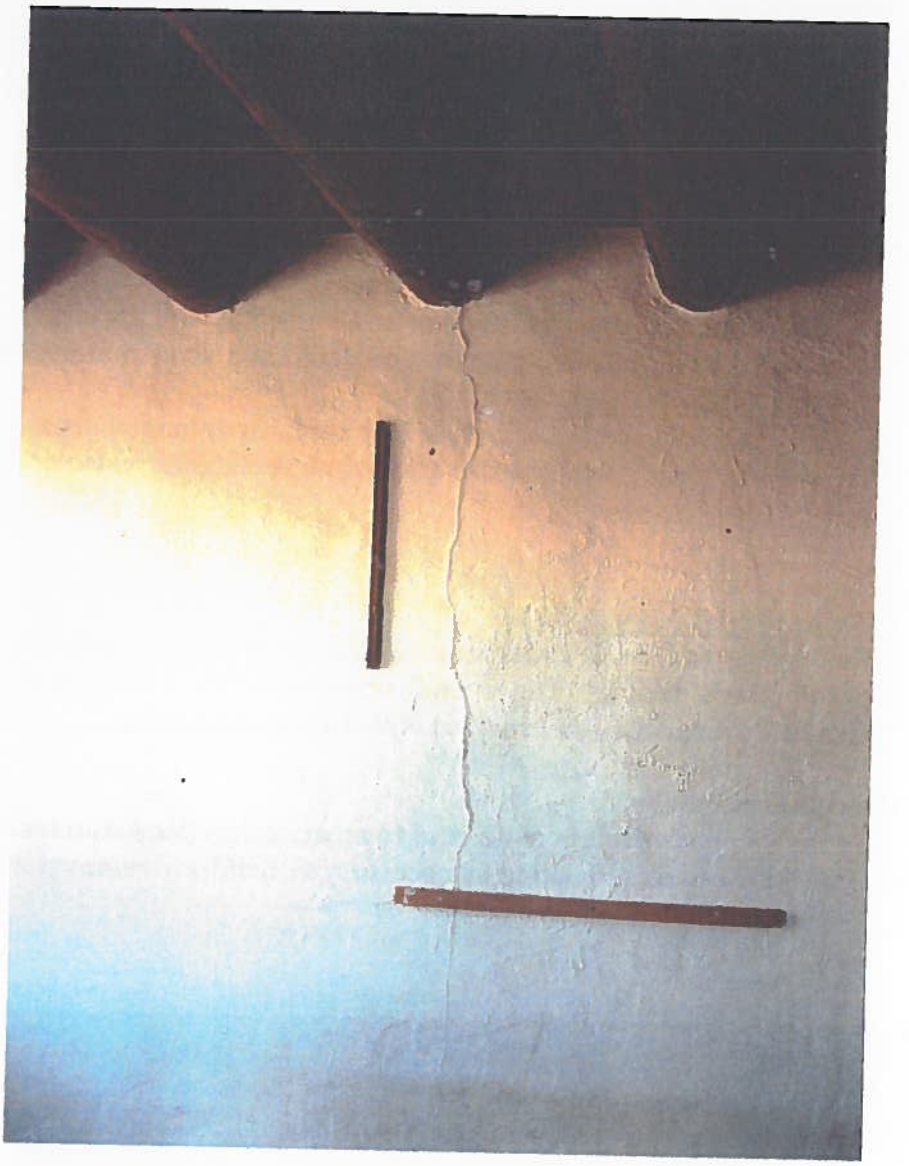


Figure 43 Typical Interior Wall Plaster

4.6 Interior - Wall, Ceiling and Floor Finishes

Wall Finish Materials

In all buildings, the interior wall surfaces are coated with cementious plaster. The thickness of the plastered surface varies from 1/4 inch to 1/2 inches. Several layers of paint in different colors have been applied over the original whitewash. At several locations, the interior plaster is flaking, cracking and crumbling. ***The main cause of this problem is moisture infiltration and wear and tear due to use.***

4.7 Interior - Doors, Windows

The original windows of the buildings are single glass, wood framed single hung units. Some original units have been replaced with single hung metal clad units. Steel security bars have been added to some windows blocking egress.

Figure 45 - Single Hung Window With Security Bars

The overall condition of the windows are poor. Numerous repairs and replacement is required. The paint is peeling and is in poor condition. Entry doors and interior doors need refinishing.

Recommendations

1. **Inspect, repair and or replace exterior doors.**
2. **Inspect, repair and or replace windows.**
3. **Door hardware should comply with accessibility standards.**
4. **Door trim needs to be refinished or replaced to original finish.**
5. **New energy efficient windows and doors are recommended.**
6. **Inspect, repair or replace single hung windows to original integrity. Frames and trim are included in this procedure.**
7. **Replace bathroom window with new window comparable to original opening and style to include energy efficient glass.**
8. **Repair or replace concrete sills and paint.**
9. **Restore original window openings, install new frames windows comparable to existing windows.**
10. **Patch and repair around all window frames.**
11. **Incorporate new door hardware, include security locks.**
12. **Handicap requirements.**

Interior Windows

With the exception of the windows on the north and east walls, all other perimeter windows are of the original configuration and have remained unchanged. The north and east windows were replaced with aluminum windows.

Recommendations

1. **Inspect, repair or replace windows and trim as necessary.**
2. **Paint color may be changed as per overall interior restoration to original colors.**
3. **Window hardware for sliding mechanisms should be inspected and repaired or replaced as necessary.**
4. **Remove retrofitted windows and replace with window comparable to original configuration and size if desired.**
5. **Conduct paint analysis to determine the presence of lead-based paints.**

Interior Doors

For the most part, the interior doors have remained as originally installed and are composed of painted, solid core wood-paneled construction with simple door knobs, and removable pin butt hinges.

Recommendations

1. **Inspect, repair and re-paint doors and trim as necessary.**
2. **Paint color may be changed as per overall interior restoration to original colors.**
3. **Door hardware should be inspected and repaired and or replaced as necessary.**
4. **Handicap requirements.**

6. Mechanical Assessment

6.1 Introduction

This study did not investigate existing mechanical heating, ventilating and plumbing systems associated with El Vado Motel.

Druc Engineering recommends field investigations and references to the following code related handbooks and guidelines pertinent to the project:

ASHRAE (American Society of Heating, Refrigerating and Air Conditioning Engineers)
NFPA 90A (Installation of Air Conditioning and Ventilating Systems)

- Uniform Mechanical Code
- Uniform Plumbing Code
- Uniform Fire Code

Electrical Assessment

7.1. Introduction

Druc Engineering did not investigate the main electrical service, exterior lighting, interior lighting.

Druc Engineering recommends field investigations and references to the following code related handbooks and guidelines pertinent to the project:

- National Electrical Code

Mold Assessment

8. Introduction

CERL Environmental Consultants investigated El Vado Buildings for mold contamination. Site evaluation was conducted on May 27, 2006. The findings of are contained in a report submitted by the consultants

10. References

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