

Stabilization and Repair of the City Café Hearne, Texas

A Case for SIP (Stabilize-In-Place)
vs.
ROAR (Rip-Out-and-Replace)



Introduction

Is **DEATH** Real?

The preservation of Texas Style Older Buildings is a one-way street. There is no chance to renovate or save a historic site once it is gone. And we can never be confident about what the future values. This reality highlights the importance of locating and protecting landmark significance - **like a headstone marks a grave, buildings once destroyed and lost only a faded memory remains** Figure 1.

A community culturally imbued with a tangible presence of the historical era buildings has residents taking pride in their neighborhood's history. Rather than demolishing or disposing of older buildings (**ROAR**), restoring and rehabilitating (**SIP**) will positively impact the community's overall economic stability and growth.

The two-story building, constructed in the year 1900, served as offices. In 1914 the City Café opened for business and quickly became a community gathering spot for food, hobnobbing Hearne residents and surrounding communities. During the late 1980s, two adjacent abutting buildings collapsed, changing the exposure of two common interior walls to exterior walls - Figure 2.



Figure 1 – Buildings soon to be lost!

Goals and Objectives

□ Project Goals

- Stop water from entering the building through the roof and walls.
- Repair and stabilize the roof and masonry wall systems.
- Create a safe and dry tenancy for the occupant.

□ Objectives

- Dry the wet masonry walls, wet roof elements, and eliminate development of mold and damp interior surfaces.
- Conduct the work in a manner minimizing disruption of the tenant's business operations.
- Repair and stabilize the roof and parapet flashing systems to a weather-tight and dry state - Figure 3.
- Repair and stabilize the East and North exterior masonry walls to a weather-tight and dry state.



Figure 2 – Exposed side walls circa 1995



Figure 3 – Partial roof circa 1995

Parameters

□ Building Conditions

- The North and East side walls have severe deterioration of the brick resulting from years of unprotected exposure – Figure 2.
- The asphalt and gravel roof membrane is at least thirty (30) years old and failing - Figure 3.
- Bitumen parging applied the parapet walls as a measure to halt water leakage into the building. Years in the Texas sun cooked the material to the brick imparting additional repair when removed.
- Repair of the masonry walls (replace the damaged brick and point with new mortar) could not be completely accomplished with the available budget.

□ Project Conditions

- **Building area** - approximately 28'-0" x 109'-0" - 3,052 Square Feet for each floor.
- **Project schedule** - five (5) months from design to completion beginning May 1996 and ending October 1, 1996.
- **Exterior masonry walls** – the required period to dry is one (1) month per inch of wall thickness during a hot Texas summer, approximately four (4) months for the exterior course of brick.
- **Project Materials**
 - ❖ Historical Mortar –Simulate the original Sand-Lime mortar.
 - ❖ Clay Brick matching the size, strength and color of the damaged units in the walls.
 - ❖ Urethane foam for the roof and walls - closed-cell SPF (spray-applied foam) with an acrylic coating.

Parameters

□ Project Criteria

- The City Café building fronts Fourth Street considered Hearne's main street. Portions of the street were closed during construction phases requiring front access to the building.
- Initial budget for Stabilization - \$80,000.00.
- The Owner's base project criteria
 - ❖ Stabilize the building using materials closely matching the original materials of 1900;
 - ❖ Construction work is to have a minimal of interruptions of tenant's peaceable occupancy.
 - ❖ The Owner's **limited budget required creative solutions** to preserve the building's integrity and the project objectives.



Figure 4 – Adjacent parapet wall



Figure 5 – Adjacent parapet wall

Solutions

☐ Roof System – Urethane SPF with Acrylic Coat

- Removed the existing roof membrane, exposed and repair damage.
- New urethane SPF coating two (2) inches thick and twenty (20) mil white acrylic coating.
- The system manufacture provided a **ten (10) year warranty** with an additional ten (10) year option.

☐ Vertical Masonry Walls

- Repair of the masonry walls (replace the damaged brick and point with new mortar) could not be accomplished with the available budget.
- The alternative solution is the applying one (1) inch of urethane SPF with an acrylic topcoat – Figure 6.
- At completion, the walls remain dry and force the moisture in the brick to the inside of the building – Figure 7.
- Fans exhausting air from the unoccupied spaces and air conditioning in the occupied spaces, removed all the moisture in six months.

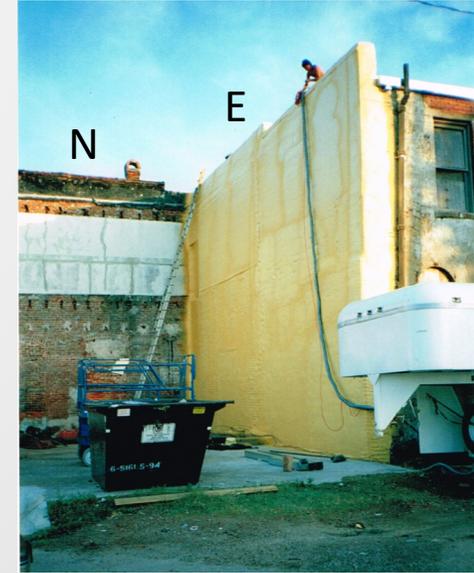


Figure 6 – East wall with SPF

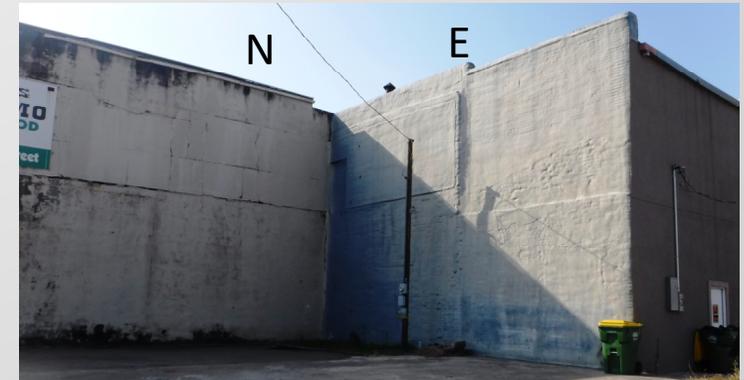


Figure 7 – East and North Walls Repaired

Highlights

□ Observations

- Twenty-four years after applying the urethane foam on the vertical surface of the masonry walls, there is no indication of failure or fatigue.
- The foam acts as shrink-wrap, contributing to the integrity of the masonry systems.
- The use of the foam is an economical solution to stabilizing unreinforced, loadbearing masonry walls.
- Replace damaged and deteriorated bricks into the middle wythe to maintain the load-bearing structural integrity of the entire wall system. The compression strength of the foam is not a trade-off for the hard, dense brick.
- At the end of the project construction, the Owner was pleasantly surprised with the solution and that only one trade was necessary.
- To my surprise, the SPF applicator took a deep interest in applying the material on the wall caving to make the foam resemble the older buildings' plaster look. After painting the walls, folks driving by do not recognize the difference between cement plaster and the foam.



Figure 8 – Repaired Walls

Information to Consider

Old Buildings and Masonry Walls

- Renovation of old masonry-bearing wall construction has its challenges, which vary based on the original selection of materials, the skill of the masons, and the level of maintenance performed over the building's life, particularly in the recent past if the building has been out of service. The following are points to consider in your next project:
 - Review the deterioration up close and personal to view each mode and determine how moisture migration and movement of envelope elements affect adjacent structural elements. These conditions will provide clues to the least intrusive, though most holistic, repair design.
 - During the building survey, remember to review the roof perimeter. If the roofing is failed or leaking, get it fixed. Few defects can destroy an old building quicker than a leaking roof.
 - Identify the mortar type and constituents and probe the depth of deterioration.
 - Determine the actual brick or stone (masonry) geology for all elements on the building. This information will guide your repair design.
 - Make exterior wall probes to determine the depth of masonry elements, such as lintels and water tables. Please do not rely solely on original architectural details, as they may vary.
 - Assemble a design team consisting of building technology experts and structural engineers for a holistic approach to repair of the building.

