



APT Charleston Conference – Session CS06
**Towers of Reason: Preservation Engineering
Collaborative Solutions**
Session Hand-Out

Papers:

1. *Appropriated Vernacular: Jacal Construction at the Blas Herrera Ranch* by Amarantha Quintana-Morales (Student, University of Texas at Austin)
2. *Architect Contractor Collaboration in Defining the Desert View Watchtower Rehabilitation* by Tom Duferrera
3. *Charles McKim and Transitional Building Techniques: Or... Why is our tower leaking?* by Christine Ussler and John Harry
4. *Collaboration at the Heart of the Matter: Boston's Old South Church* by Ann Coleman and Matthew Consigli.

Presenter Biographies:

Amarantha Quintana-Morales is an MA candidate at the University of Texas at Austin. She is a 2012 recipient of the APT Student Scholarship.

Thomas Duferrera is a Principal at the firm of Page & Turnbull in San Francisco. He has taken key responsibility for issues of constructability, details and materials, since joining the firm in 1994. Tom's 27 years of practice have immersed him in all areas of historic preservation. He has worked on many projects that involve the coordination of numerous consultants at multiple sites for both public and private clients including numerous local and California State Parks projects as well as over 20 National Park projects in his career. Tom was involved in the building trades as a carpenter, apprentice stone mason and concrete mixer truck driver, prior to his formal architectural training.

Christine Ussler, AIA, is the president and founding principal of Artefact, Inc. a firm specializing in architectural design, the adaptive reuse of existing buildings, and historic preservation consulting. She is also a Professor of Practice in the Department of Art, Architecture, and Design at Lehigh University. Christine has an M. ARCH degree from Columbia University and over 28 years of experience in architecture and preservation.

John Harry has been a consultant on the preservation of historic masonry for 18 years. Previously he owned a firm which performed masonry restoration. He has been involved in the preservation of over 700 structures in the United States and Canada. Mr. Harry is an expert on matching masonry repairs to the existing materials and extant surfaces. He also conducts training seminars nationwide for architects, contractors and restoration material manufacturers.

Ann Coleman is an Associate Principal and Unit Manager with Wiss, Janney, Elstner, Associates Inc. in Boston, Massachusetts. Ms. Coleman applies her experience with masonry structures and building enclosures to technical presentations and publications. Speaking engagements include: Common Causes of Construction Defects; Building Reuse; and Cast Stone Past and Present. Publications include: "EIFS and Sustainability," Eco-Structure; "A Discussion of the Benefits and Problems of ASTM C 1324 for Analyzing Hardened Masonry Mortars" Journal of ASTM International; and "Historic Masonry Walls: The Insulation and Vapor Barrier Conundrum" International Conference on Building Envelope Systems and Technology.

Matthew Consigli is co-owner and Vice President of Consigli Construction Co., Inc. In this role, he guides the company's strategic planning and business development efforts and directs the firm's project management. Along with his brother, they have grown the company from a small, local contractor to one of the largest construction management firms in the Northeast, while earning numerous "Best Places to Work" awards. The firm's significant historic restoration work includes some of the northeast's most treasured landmarks including Trinity Church and Old South Church in Boston, Massachusetts, the New York State Capitol building in Albany and the Wadsworth Atheneum of Art in Hartford, Connecticut. Matthew serves on the Board of Directors of the Associated General Contractors (AGC) of Massachusetts and the Red Cross of Central Massachusetts, in addition to several other New England philanthropic organizations. Matthew received his A. S. degree in Construction Management at the University of New Hampshire, his B.S. degree in Business Administration from Northeastern University, and an M.B.A. from Babson College Graduate School of Management.

Appropriated Vernacular: Jacal Construction at the Blas Herrera Ranch

Amarantha Quintana Morales, University of Texas at Austin, Austin, Texas, USA

Abstract

This ongoing study seeks to examine one of two unique wood structures located on the property of Blas Herrera Ranch, 41BX672. This structure, identified as house #1, is an example of a distinctive type of vernacular architecture known as a *jacal*, of which few examples remain in the San Antonio region. Through on site examination of the structure as well as laboratory analysis of samples of the wood members and the nails used as connectors between these members, the study endeavors to better understand and document the specific construction technique that was used to build house #1.

Owned by the Herrera family since 1845, the Blas Herrera Ranch is located south of San Antonio, Texas near the Medina River in Bexar County. The property has been passed down within the family since its initial occupation by Blas Maria Herrera and Maria Antonia Ruiz Herrera. The property comprises two *jacales* dating from the 1830s-1840s, two other wood buildings and a pavilion. House #1 is located immediately to the south of the entry path.

As a well-preserved example of a unique building typology that was imported from central Mexico and adapted by European, primarily Spanish, Native American and mixed-caste settlers to fit local conditions, house #1 enhances the architectural significance of Blas Herrera Ranch. A *jacal* is a type of wattle-and-daub structure that uses local materials and a *palisadoed* construction technique. The most common form of the *jacal* is a rectangular-shaped dwelling consisting of a palisade-style wood frame with vertical poles buried in the ground and horizontal members nailed to the interior and exterior. These frames typically contain an infill of mud and straw, stone rubble and/or adobe and are sometimes plastered with lime or white stucco to create a whitewashed finish. Most traditional *jacales* have a steep thatch gable roof.

For the study methodology, archival research of the history of *jacal* construction in the region will serve as a basis for understanding common materials, techniques and tools used to construct *jacales* and identify variations unique to the area. This research will then be compared to the existing structure, analyzing both the overall assembly of the structure and individual samples obtained from the site. Wood pieces from both vertical and horizontal structural members will be identified through cross-section examination with the goal of species identification and documentation. The wood will also be tested for moisture content and examined for decay. In collaboration with an engineer, further examination of the wood and its characteristics both physical and mechanical will be attained. The nails recovered from the site will be carefully examined, identifying detailed characteristics and comparing these to reference standards.

A report evaluating the resulting research and data gathered from the archival studies, site investigations and laboratory examinations will be produced. It is the goal of this study that the report will provide an outline of the specific construction of house #1 as well as an assessment of its current condition.

Architect Contractor Collaboration in Defining the Desert View Watchtower Rehabilitation

Tom Dufurrena, Principal – Page & Turnbull

1. Introduction of the project and team
2. Project Background and History, context for our work
 - a. Location at South Rim of Grand Canyon
 - b. Construction date 1932
 - c. Collaboration between Mary Elizabeth Jane Colter, Fred Harvey Company and Santa Fe Railroad (Images of all the players, logo of Santa Fe Railroad)
 - d. Simulation of prehistoric tower as seen at Hovenweep National Monument
 - e. Interior Fred Kuboti Hopi Murals
 - f. Facility being enjoyed by hundreds of thousands of visitors per year
3. Description of Challenges Faced
 - a. Exterior Envelope
 - i. Cracking
 - ii. Porosity
 - iii. Windows
 - b. Accessibility
 - c. Life Safety
4. Layout of team dynamics and initial strategy – Kick off meeting
5. Description of how challenges were overcome.
 - a. Exterior Cracking
 - i. Vertical and Horizontal Cracks (show plan diagram indicating crack locations)
 - b. Project Access - Contractor use of articulated lift provided access to canyon side of building without imposing loads on building.
 - c. Laser Scan
 - d. Restoration of Exterior Kiva Stair – Collaboration to reopen stair for emergencies while maintaining original fabric.
6. Conclusion
 - a. How to structure the degree of collaboration that made this project a success.
 - b. Contractual relationships aligned with project realities. (No fixed fee competitive contracts for highly crafted projects with unknown quantities.)
 - c. Discussion of project unknowns.
 - d. Meeting with crafts persons that will be doing the work to discuss project goals and constraints.

Charles McKim and Transitional Building Techniques: Or... Why is our tower leaking?

Christine Ussler and John Harry

1. The Building – St. Peter’s Episcopal Church, Morristown NJ
 - a. Dates of construction (1887-1909)
 - b. Designed by Charles McKim of McKim, Mead, and White
 - c. Construction of Tower supervised by Henry Bacon
 - d. Morristown and connection to NYC business and social elite
 - e. Architectural description
 - f. Construction phases
2. The Problem
 - a. Massive leaks into the interior the tower
 - b. Long standing problem
 - c. Repointed numerous times
 - d. Current pointing on exterior in good condition
 - e. More repointing recommended by others
 - f. How is water infiltrating the structure?
 - g. How is water moving down through structure and to the interior
3. The Team
 - a. Architect(s)
 - b. Masonry consultant
 - c. Structural engineer
 - d. Petrographer
 - e. Church member
 - f. Funding partner – Morris County Historic Preservation Trust
4. The Collaborative Process
 - a. Benefit of past experience between members of team
 - b. Benefit of Preservation Plan requirement by funding partner
 - c. Comprehensive approach
 - d. Deep determination to solve the problem
 - e. Joy of detective work – collaborative problem solving
 - f. Communication methods
 - i. On site interactions
 - ii. Phone conferences
 - iii. FTP site for sharing historical information, drawings, photos and current documents
 - iv. Email
 - v. Sub meetings
 - g. Excellent cooperation between Church and team through project oversight by Church member
5. The Work Process
 - a. Analysis of historic photographs
 - b. Analysis of historic documents
 - c. Photographic documentation
 - d. Exterior examination from man-lift
 - e. Interior probes
 - f. Petrographic analysis

6. The Discoveries
 - a. Early use of poured concrete as cost saving technique
 - b. Details of transitional construction of stone + concrete critical to understanding problem
 - c. Concrete pouring techniques, poor consolidation, and cold joints
 - d. Harmful effects of previous repointing work

7. The Solution
 - a. Solutions aimed at correcting problem not just symptoms
 - b. No major repointing at this time
 - c. Rebuild top of tower and turret
 - d. Install through-wall flashing at top of tower
 - e. Correct water intrusion near top of tower by local repointing

Collaboration at the Heart of the Matter: Boston's Old South Church

Ann Coleman, Associate Principal and Unit Manager - Wiss, Janney, Elstner, Associates Inc.

Matthew Consigli, Co-owner and Vice President - Consigli Construction Co., Inc.

1. Background Historical Information
 - a. Timeline and Materials
 - i. 1873 Gordon House
 - ii. 1875 Sanctuary and Tower
 - iii. 1912-1932 Listing of the Tower (history of earlier damage)
 - iv. 1937 New Tower, Chapel and Parish House
2. Conflict Resolution via Collaboration
 - a. Memorandum of Agreement
 - b. The Matter
 - i. December 2008
 - ii. Jet Grouting Technique
 - iii. Condition Assessment
 - c. Resolution
 - i. Monitoring
 - ii. Evaluation and Testing
 - iii. Restoration
 - 1) Restoration with a Preservation Eye
 - 2) Temporary protection
 - a. Organ
 - b. Church Services
 - 3) Logistical challenges
 - a. Congested neighborhood
 - b. Exterior Access
 - c. Customized Scrim
 - 4) Coordination with Artisans
3. Lessons for the Community
 - a. Communications
 - b. Leadership
 - c. Collaboration
 - i. Objective analysis
 - ii. Collaboration among experts and artisans
 - iii. Recognition of the "what if" scenario