

## PROJECT

Mission San José de Tumacácori  
Tumacácori National Historic Park  
Tumacacori, Arizona

## CLIENTS

School of Architecture and Planning  
University of New Mexico  
Albuquerque, New Mexico

## PROJECT DESCRIPTION

The adobe, timber, and clay masonry church at Mission San José de Tumacácori dates from the early 19th century. For almost 200 years, moisture entry in the adobe walls and fired clay masonry dome has caused considerable damage to the interior plaster. In 1887, an earthquake with epicenter in the Teras Mountains of Sonora produced substantial damage to the Church.

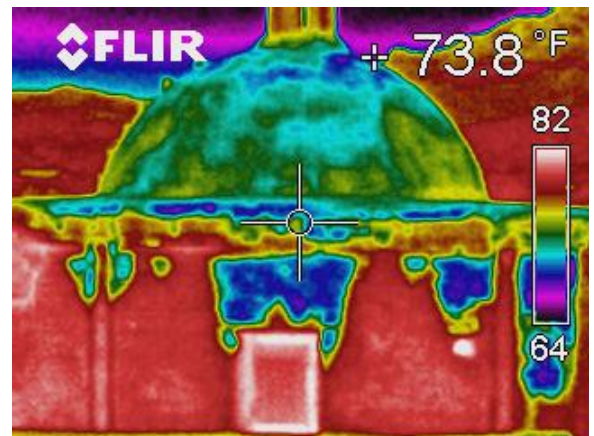
Atkinson-Noland and Associates conducted nondestructive investigations to determine moisture intrusion mechanisms, provide an estimate of the masonry thickness, as well as evaluate the construction cross section. In addition, our engineers performed a seismic vulnerability study to evaluate the likely damage that the structure will suffer, should another strong earthquake happen in the region. A time history analysis of the mission was conducted using a 3D finite element model.

## SERVICES PROVIDED BY ATKINSON-NOLAND

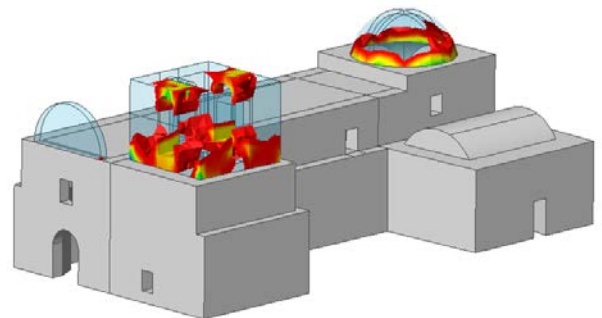
- Thermal imaging to locate damp areas and moisture intrusion on the dome
- Microwave radar scanning to image the dome and identify internal voids
- Seismic vulnerability study based on 3D finite element analysis
- Conceptual repair recommendations



*Mission San José de Tumacácori*



*Thermal imaging of the dome*



*Likely damage at tower and dome based on time history analysis*



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