

PROJECT

Lake City Army Ammunition Plant
Independence, Missouri

CLIENT

Bucher, Willis, & Ratliff Engineers
Kansas City, Missouri

Right: Air-bag loading reaction frame for testing wall wind resistance.



PROJECT DESCRIPTION

The 21,000 m² manufacturing facility was constructed in 1942 of unreinforced hollow clay tile walls with pilasters at intervals supporting roof beams. Atkinson-Noland & Associates was retained to assess the condition of the masonry walls and pilasters and to make recommendations for any necessary repairs as part of an overall program to retrofit the building. Concern regarding the masonry strength arose from extensive cracking in mortar joints and from movement of the masonry relative to the concrete foundation. Engineering analysis used data from in situ tests and determined that most of the structure was adequate for resisting in-plane seismic and wind shear loads in addition to vertical dead and live loads. Some wall configurations and pilasters were inadequate for resisting out-of-plane seismic and flexural loads. Several strengthening schemes were proposed for retrofitting deficient areas.

SERVICES PROVIDED BY ATKINSON-NOLAND

- Condition survey of existing building including crack-mapping, location of deteriorated areas, and in-place testing to determine masonry compression, shear, and flexural behavior
- Evaluation of existing anchor bolt anchorages connecting the roof diaphragm to the hollow clay tile masonry walls
- Large-scale lateral load test on in-place wall panels to verify masonry resistance for out-of-plane wind loadings
- Structural analysis
- Preparation of recommendations for retrofit and repair



Atkinson-Noland & Associates
Consulting Engineers
www.ana-usa.com

2619 Spruce Street
Boulder, CO 80302
303.444.3620

32 Old Slip, 10th Floor
New York, NY 10005
917.647.9530