



PROJECT PROFILE

Fire Training Academy Burn Building

Structural Analysis and Repair Design | North Bend, WA



CLIENT

Washington State Patrol
Department of General
Administration

BACKGROUND

The Washington State Patrol manages a Fire Training Academy for the purpose of training firefighters from all over the Northwest. One of the many training facilities at the site, the Burn Building is a three-story reinforced concrete warehouse connected to a six-story reinforced concrete fire tower. Since its construction in 1982, the building has been used extensively for live interior firefighting training, and exhibited many signs of distress that impaired its functionality as well as its life safety.

Evaluation of damage in 1990 led to application of new refractory concrete on the walls and ceiling. Damage to the concrete structure and existing protective systems, as well as leakage of water through walls and ceilings, caused the Department of General Administration to seek a more thorough analysis of the problem. The department retained WJE to study the building condition, to design repairs, and to make recommendations for future repairs and maintenance.



SOLUTION

After reviewing existing documents, WJE architects performed a close-up inspection of the facility, including thermal instrumentation monitoring and petrographic, chemical, and ultrasonic testing. Based on the findings of the inspection, laboratory testing, and structural analysis, WJE completed structural concrete repairs as well as selective slab and beam repairs. The architects redesigned and replaced most of the refractory lining to provide enhanced fire resistance and created an integrated metal roof and waterproofing coating designed to inhibit water entry from the roof deck into the structure. Finally, WJE produced a routine maintenance plan to greatly increase the life expectancy of the Burn Building.

