



PROJECT PROFILE

Office Tower

Davit System Evaluation, Testing, and Design of Repairs | Houston, TX



CLIENT

National Real Estate Management Company

BACKGROUND

The building is a sixty-five-story high-rise in Houston, Texas, containing 1.4 million square feet of office space. It features a davit system consisting of 244 davit bases, sixty-four davits, and three fall arrest anchors located on seven different levels and thirty-five separate roof podiums. The davits support two dedicated, roof-rigged powered platforms. The platforms have hoists that are rated for 1,500 pounds and are used with the davits on five different levels. The davit bases at levels six and nine are used to support a portable, ground-rigged powered platform. The hoists on this platform are rated for 1,000 pounds.

The client engaged WJE to perform a preliminary Phase I evaluation of the building's davit system to ensure that the davit system would comply with OSHA's minimum requirements. The client later engaged WJE for a Phase II evaluation that included additional reviews, interviews, calculations, and field observations.

SOLUTION

WJE's evaluation included reviewing tests performed by other firms to determine what additional measures would be necessary to ensure that the davit system would comply with OSHA's minimum requirements. Based on Phase I and II evaluations, WJE concluded that the testing protocol suggested by the other firms would not be adequate to conform to OSHA's minimum requirements. WJE recommended testing all davit bases and performing a structural analysis of the davits. The client requested that WJE verify the davits by testing instead of analytical evaluation. WJE used several testing apparatus and configurations to overcome complicated field conditions and minimize disruption to the office tenants.



Ten davit bases, one davit, and all three fall arrest anchors failed during the testing. Most davit bases failed at a load much lower than the required OSHA test load. WJE designed repairs, created repair documents to address the failed davit bases and davit, and retested the repaired davit bases to verify compliance with the OSHA load capacity requirements. Based on the testing, repairs, and retesting, the permanently dedicated davit bases and davit arms now meet OSHA load capacity requirements. The client immediately placed the failed fall arrest anchors out of service.