



The 401 North Michigan Avenue Building, formerly known as the Equitable Building, is a 35-story concrete frame structure clad in anodized aluminum, completed in 1965. An original steel davit rail system, still in use, is located along the roof perimeter and supports mobile window washing davits and davit receivers. BTC was retained to inspect and test the 50+ year-old rail system for safety and structural integrity, and to assist in preparing policies regarding roof access and fall protection for building staff and vendors. BTC's assistance was also requested for design and construction phase services associated with installation of 19 new fall arrest roof anchors throughout the roof.

The building's roof is constructed of a lightweight topping slab and a 4 1/2-inch thick reinforced concrete structural slab supported by steel beams. This relatively thin structural slab necessitated that the roof anchors be secured with through-bolts and steel plates on the underside of the slab. However, the slab spans over a 2-story mechanical space and the ceiling of a tenant office space; both of which are crowded with large ductwork and mechanical raceways. This posed numerous challenges, resulting in the need for a modified split-plate design and unique access equipment (see photo on right). Other challenges included proper cleanup of nearby asbestos fireproofing, and accommodating tenant needs regarding working hours and limiting construction noise. To overcome these challenges, non-destructive magnetic field detection technology was used to identify anchor installation locations simultaneously from the topside and underside of the roof. This allowed for the anchors to be located and installed around mechanical equipment and rooftop fixtures without the need for destructive pilot drilling.

BTC certified the new anchors for use by self-performing load testing with a hydraulic pump. BTC coordinated davit rail testing with a contractor; temporarily lifting a test load off the ground using a hoist suspended from the davits.

Project Name:
Facade Access and Fall Protection Consulting Services;

Project Location:
*401 North Michigan Avenue
 Chicago, Illinois*

Client:
Zeller Realty Group

Approximate Construction Cost:
\$90,000

Year Completed:
2018

Nature of Services:
Evaluation, Design, and Construction Phase Services

