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**Should equipment
be load tested to
full strength or
half strength?**

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Load Testing of Facade Access Equipment

From time to time, WJE receives inquiries from building owners, property managers, or contractors regarding load testing of facade access equipment such as davit systems, dedicated anchorages, rail-supported carriages. One of the most common questions we encounter is whether equipment should be tested to the full strength required by the Occupational Health and Safety Administration (OSHA)—typically 5,000 pounds for dedicated anchorages or four times the rated load for davit systems—or to half of the required strength.



Preparing to weigh building maintenance unit to determine the loads on the track system.

Our answer is always the same: if one is going to determine via load testing whether an installation has the minimum capacity required by OSHA, it must be load tested to at least that minimum capacity. Note that there are some types of anchorages or other components that must undergo significant permanent deformations to resist the required loads. These components are not good candidates for structural load testing, and certification must be achieved by other means. Some basic facts about “half-load” and “full-load” testing are provided below.

Half-Load Testing (e.g., 2,500 pounds for anchorages or 2 times the rated load for davit systems):

- Has no rational basis in science, engineering, probability, or even common sense.
- Is promoted by a small group of facade access industry insiders because it is “how we have always done it.”
- Conflicts with nearly all reputable, and legally required, engineering standards such as the *International Building Code*, as well as flagship standards promulgated by the American Institute of Steel Construction, and the American Concrete Institute.

Load Testing (CONTINUED)

Half-Load Testing (continued)

- Only proves that an element is half as strong as it is required to be.
- Leaves hidden risk to building owners, equipment users, and the general public.
- Is founded on the premise that one is equal to two, two is equal to four, and 2,500 is equal to 5,000.

Full-Load Testing (e.g., 5,000 pounds for anchorages or 4 times the rated load for davit systems):

- Is well-founded in scientific, engineering, probabilistic, and logical principles.
- Is resisted by a small group of facade access industry insiders because it conflicts with "how we've always done it."
- Aligns with nearly all reputable, and legally required, engineering standards such as the *International Building Code*, as well as flagship standards promulgated by the American Institute of Steel Construction, American Concrete Institute.
- Proves that an element is at least as strong as it is required to be.
- Can identify hidden design, fabrication, or installation errors (or damage) that half-load testing cannot detect.
- Assures building owners, equipment users, and the general public that tested equipment possesses the required strength.
- Is classic "proof" testing: in order to prove something can withstand a load of "X", one must test to at least a load of "X".



Testing of davit arm in WJE structural laboratory.



Load testing of a parapet-mounted davit base using a specialized test fixture.



Direct pull test on an anchorage (right) by reacting off of a davit base (left).

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