

Recent Parking Garage Collapses Is this a Wake-up Call for Facility Managers?

Is the Problem Design, Maintenance, or Increasing Weight of EV Cars?

By Kyle Christiansen, VP U.S. Operations



Do you have a parking garage in your portfolio? Deadly collapses of parking garages are in the news again. In June of 2021, the Surfside tower collapsed due to design and maintenance issues in an underground garage. This week, another garage collapsed with similar design and maintenance issues.

This alone should be enough to alert facility managers and building owners to take a second look at parking garage maintenance and condition. However, there is another factor affecting parking garage safety that few are talking about. We are at the precipice of a potential EV car revolution. What nobody is talking about is the additional weight in an average EV car. An average EV car is approximately 33% heavier than a traditional car. An average EV car has a battery that adds in excess of 1,000 lbs. to the weight of a small sedan. A larger SUV or truck can add \$3,000 extra pounds. There are articles that suggest that fatal crashes could be 45% more common if EV cars impact traditional cars. Few are discussing the potential stresses and risks that EV cars could add to parking garages.

I have been involved in parking garage assessments and forensics for much of my 4-decade career. Earlier this year, a US state government office asked for an assessment of a parking garage located adjacent to their state capital facilities. A review of this free-standing garage identified a history of structural problems and repairs. Now at 50 years old, the post tension cables have been affected by years of inadequate maintenance.

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Our assessment included a full facility assessment to look at the condition of all of the facility systems and conditions – as well as a structural evaluation by a structural engineer. Due to readily observable distressed conditions and a review of previous structural evaluations, we determined that there was value in doing a quarter million dollars in testing with an eye towards restoration of the garage instead of full replacement. This assessment was completed without considering the changing loads that may be added to the facility in coming years due to the advent and adoption of EV vehicles. This changes the dynamic and static loads that the concrete-frame garage and the associated post-tension cables will be expected support.

The parking garage in NYC that collapsed this week was 100 (1925) years old, with some modifications completed in 1957 to convert the building into a parking garage. A subsequent certificate of occupancy noted that the roof deck could not support the same number of cars as the lower floors. The collapse of the Surfside Towers in 2021 could also be traced to inadequate design, less than optimal construction materials, and deferred maintenance. Concrete, reinforced with steel, needs to be protected from salt and water penetration. If not, steel exposed to rusting conditions can expand up to 6 x's the diameter of the steel and cause cracking of the concrete decking. Further cracking allows more moisture and salt, leading to an acceleration of deterioration and loss of structural strength.

Deferred capital investment has many potential risks. Not all risks lead to potential loss of life, but almost all risks may lead to loss of quality of life. How do you know what risks lie in waiting for facilities that you manage? The average commercial facility in the US is now 50 years old. The average K-12 school is not 45 years old. The risks for these facilities grow greater as the years and decades go by. The best way to assess and prioritize risks is to do a full building, facility condition assessment. Many facility managers tell me that they know what the problems are, they just can't explain or quantify the problems in a way that allows them to prioritize and request funding. Asset managers who hold the purse strings are reluctant to fund budgets for capital investment without defensible data. Do you have buildings that need a comprehensive review to determine their condition and to prioritize funding and investment?

Give us a call. Roth IAMS offers an Integrated Asset Management Strategy to help you on the journey to facility management and maintenance.