**Effects of structural damage. A case study of Florida condo complex**

**Introduction**

The Surfside collapse, along with the Knickerbocker Theatre collapse, is the third-deadliest structural engineering failure in US history, trailing only the Hyatt Regency walkway collapse and the Peberton Mill collapse. The Champlain Towers South, a 12-story beachfront condominium in Miami's Surfside neighborhood, Florida, which partially collapsed killing approximately Ninety-eight people while other Four people were rescued from the rubble. The potential causes include land subsidence, insufficient reinforcing steel, and construction corruption.

As reported by the New York Times, According to a report on the collapse of a Florida high-rise, the columns, beams, and walls beneath the parking garage had "abundant" cracking and crumbling. The condominium complex had been scheduled to be demolished due to the major structural damage” to the concrete slab below the pool.

The Florida condo complex is an example of the effects of structural damage and impact on people economy and environment.

**Effects of structural damage**

The consequences of structural failures (caused by an unintentional action) typically take the form of fatalities, injuries, structural damage, content damage, loss of functionality, and environmental damage. When considering the consequences of structural failures, these are frequently divided into two categories: direct and indirect.

**Direct effects**

Direct consequences are those that result from the damage states of individual structural components. They are limited to the effects of immediate damage caused by a hazard and are related to the structure's vulnerability. Srensen, Rizzuto, et al., 2009 coined the term.

The direct effects of structural damage are father classified into three categories;

*Human*: Injuries Fatalities

*Economic*: initial damage repair, contents replacement/repair

*Environmental*: CO2 emissions, energy consumption, toxic emissions, environmental research/repair

**Indirect effects**

Indirect consequences are associated with a loss of system functionality or failure as a result of local or regional failures, as well as the structure's robustness. Simply put, indirect consequences follow on from direct consequences rather than being directly related to them.

The Indirect effects of structural damage are father classified into three categories;

*Human:* Psychological Damage, Injuries and Fatalities

*Economic:* Structure replacement or repair, Contents replacement or repair, Functionality/production loss, Relocation is only temporary., The cost of cleanup, Costs of rescue, The economic impact on the region, Investigation/compensation and Reputational harm.

*Environmental:* CO2 emissions, energy consumption, toxic emissions, environmental research/repair

When determining the effects of structural damage it is critical to distinguish between different consequences, possibly using different units of measurement. For example, if the rescue costs (e.g., fire department, ambulance) are included in a consequence analysis, the costs associated with pre-hospital treatment should not be included in the injury cost term. This is critical to ensuring that no consequences are missed or counted twice.

**Conclusion**

When a house sustains structural damage, the structure may no longer be able to support the house. The foundation, walls, roof, and load-bearing walls are all included. Hairline cracks in walls, drywall, ceilings, and roofs are warning signs that a building may have structural problems. According to the Homeowners' Association of America, structural problems are never good, but the majority of them are simple to fix and repair (HAARP). Knowing what to look for and dealing with these serious issues as soon as possible can save you a lot of time, money, and stress. Ignoring minor signs of structural problems can lead to major costs later on. What appears to be a minor issue to the naked eye may be a major issue in your foundation. If you ignore them, you risk extensive damage to your home, costly repairs, or even collapse.

Refrences

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