**The Sinking Millennium Tower**

In early November of 2016, news broke that one of the United States’ most luxurious residential towers are sinking and tilting – which has led to residents filing suits against the city of San Francisco.

According to testimony heard at City Hall on Thursday, February 2, 2017, the developers behind the sinking Millennium Tower had paid for an independent review of the tower itself prior to construction, however not for the site itself. The Millennium Partners and its engineering consultants hired Jack Moehle, a professor of structural engineering at UC Berkeley, to conduct the independent peer-review of the building design and as such, the Government Audit and Oversight committee had a few questions for him.

During Thursday’s hearing, Moehle explained that he inspected the high-rise design from top to bottom but no lower than the bottom and that a geotechnical review (a review of the condition of the soil under which the structure would be erected) was never part of the process – as no geotechnical engineers were hired. “My interest went as far as the concrete mat”, states Moehle.

The condition of the dirt that structures are to be built on is important to evaluate pre-construction – especially for buildings that use foundation designs which rely on the properties of the dirt to keep the building in place (i.e. concrete pillars wedged into the ground). An analogy put forth by an Iowa State design professor, aids in the understanding of how this design works. That is, one way to look at it is to think of a broomstick being wedged into a mound of beach sand. The properties of the sand as well as the depth that the broomstick is wedged are the two key components in ensuring that the broomstick stays in place.

Without an adequate analysis of the sand’s properties, there is no basis to go on in determining how far beneath the surface the broomstick needs to be wedged. The same can be said for soil properties and concrete pillars.

Another prime example of the leaning tower phenomenon is the famous Leaning Tower of Pisa. Similarly, the Pisa skyscraper leans to one side due to the fact that the foundation was built on soft ground that could not adequately support the weight and keep the structure in place.

*The question remains… how have we not learned from our historical mistakes?*

Though via email, a spokesperson for Millennium Partners affirmed that by paying for an independent review the Mission Street Development met all requirements of the city, it is clear that by failing to hire a geotechnical engineer to evaluate the soil at the Millennium Tower jobsite, the structural integrity of the building is now suffering greatly.

It is pivotal to approve structural design, but this is just one piece of the puzzle. Let the sinking Millennial Tower be a reminder that there are many pieces of the puzzle that need to be positioned just so in order for us to optimize the execution of our concrete construction projects.

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