

Did unstable soil conditions contribute to partial collapse of Welland condo?

The cause of the collapse has yet to be determined — awaiting the results of a Ministry of Labour investigation into the collapse of part of the building at 350 Prince Charles Dr. on Feb. 18, followed by a second collapse on Feb. 25

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While the partial collapse of a \$55-million luxury condominium in Welland has led to concerns about the stability of the land it was built upon, representatives of the developer said that's not likely the reason behind the issues hampering construction of the five-storey, 226-unit complex along the recreational canal.

Meanwhile, the cause of the collapse has yet to be determined — awaiting the results of a Ministry of Labour investigation into the collapse of part of the building at 350 Prince Charles Dr. on Feb. 18, followed by a second collapse on Feb. 25.

Joyce Morocco, a contracted spokesperson for Evertrust Development, denied recent allegations on social media that another collapse occurred overnight, Thursday.

“Nothing happened,” she said.

Morocco also doubted soil conditions contributed to the issues at the construction site, because any problems of that nature would have been identified through testing before construction began.

“Every build takes soil samples,” said Morocco, a Niagara Falls regional councillor who also runs Elements of Success, a public relations and marketing company hired by the developer.

But historian Terry Hughes said soil stability along the banks of the canal have impacted nearby infrastructure over many years.

And he suspects that may have been the cause of the recent issues, too.

“All indications are the stability of the soil is what we’re looking at here,” he said.

Hughes said the area where the condominium is now under construction was once “very wet and swampy.”

“Over time, they filled those areas in with dirt when they built succeeding canals,” he said. “But for years after all that had been filled in, nothing was ever built on there save for the railway going through. ... It was just scrub land. It had been that way for ages.”

The condominium, Hughes added, is located almost exactly in the area where that swampy land was once located.

Welland architect Raffaele Belvedere agreed soil conditions may have contributed to the collapse, although it’s one of many possible causes.

“It could have been the simplest thing, or it could be very complicated. It could have been as simple as the failure of one little bolt that wasn’t torqued properly. It could have been the failure of a weld that wasn’t done properly, or it could be the precast concrete slabs themselves failed,” he said. “But I’m also considering soil conditions. I’ve been an architect here for 45 years and I know the situation we have in various spots around the canal. We have a silty clay, which is very malleable ... And the deeper you go, the siltier the clay gets.”

Hughes, who has researched the canal banks and erosion concerns along the waterway for many years, said the nearby railway swing bridge crossing the canal became unstable after an overpass on Prince Charles Drive was constructed in the late 1950s.

“A couple of years after the overpass had been in operation, the west side of the canal bank right at the bridge started to move and the swing bridge was jamming,” Hughes said, adding a huge concrete abutment on the western bank had to be rebuilt, and additional steel girders installed to fix the issues at the time.

Belvedere, who retired from professional practice in 2014, said the 4.2 magnitude earthquake that hit the region on Feb. 6 may have contributed as well.

“We had a mild little earthquake a couple of weeks ago. I don’t know, but if that shook that silty clay an inch one way or another, it could have affected the structure all the way up to the top floor precast where they might have just slipped off their bearing. Who knows?” Belvedere said.

Gerlando (Gerry) Bonomo, a worker who helped dig the foundation for the building, said the collapses were not a result of soil stability.

“The ground was stable — 110 per cent,” said Bonomo, who said he was working on the project for a local contractor he didn’t identify.

He said he dug into “virgin ground” about 15 feet deep, “and it was solid.”

Bonomo, who’s retired after more than 30 years in the construction business but still takes part-time jobs occasionally, said the footings in the building’s foundation are more than a metre thick, and suspected the problem was instead the steel structure.

“I don’t think the structure above it can hold the concrete slabs,” he said.

Welland resident Don Thorpe who retired as the city’s planner in 2011, said soil conditions are one of the top items structural engineers consider, no matter what they’re building.

“Whether it’s a house or a skyscraper, you look at soil conditions and build or engineer it to adapt to whatever they are,” said, adding deeper and wider foundation footings can be used to support the weight of the building if soil conditions are not ideal.

Belvedere said he’s used several techniques to counter unstable soil conditions in some buildings he designed near the canal bank — such as Canal View Homes at the intersection of Division and King streets which was constructed on a metre-thick slab of concrete.

“It was a boat, almost, that we placed the building on,” he said.

Belvedere also designed Parkway Village — four buildings on Denistoun Street, each eight storeys tall — that were built to accommodate the weight of the structures despite unstable soil conditions, while the city’s public works centre on Federal Road used four massive concrete caissons that were flared out at the bottom 25 feet into the ground to support every column within the structure.

In the meantime, Hughes fears the stability of the canal banks may be an issue in years to come, as the city continues to move forward with long-term plans for future development.

Hughes said there’s also a layer of clay that runs through the area that has caused problems in the past.

“All the way through the canal they were running into this stuff called blue clay,” Hughes said. “It can fool you because it’s so hard generally speaking that people think they hit rock. But if there’s any opportunity for it to get wet, it becomes gumbo ... You think you’re dealing with rock when in fact this stuff has no stability at all.”

Hughes said that layer of clay was blamed for a collapse of a large portion of the canal bank in 1939, on the west side of the waterway near Forks Road.

It was one of several instances where stability of the canal banks have caused problems over the years.

Asked about Hughes’ claims about blue clay, Bonomo said “there is blue clay there,” but not enough that it would’ve created a problem.

For now, Thorpe said people can only speculate about the cause of the collapse while awaiting the result of the labour ministry investigation.