



When Redevelopment Projects go Awry

5 tips for managing the unexpected

Redevelopment projects are defined as any new construction project on a site that has pre-existing structures and uses. These projects can be large or small, ranging from a single building to entire neighbourhoods, and they often involve the demolition of some, if not all, the existing structures. Bernardo Garcia Ramirez, Design Engineer out of RJC Engineer's Edmonton Office, has worked on many redevelopment projects—all of which have presented his team with some new and unique challenges. In fact, his current project in Edmonton has been anything but straightforward, with surprises ranging from curious to downright costly.

"The original building was a three-storey, concrete office constructed in the 60s," he explains. "It has

had a variety of uses throughout its lifetime, but it has sat unused the last few years."

When complete, the new facility will provide important programs and supports for vulnerable populations. The scope of the redevelopment project includes the demolition of the existing concrete stairs and elevator cores, the construction of two new cores in different locations, and the reconfiguration of every level.

"It's nothing we haven't done before," Garcia Ramirez points out. "We even had a full set of existing drawings—detailed ones at that—which led us to believe this would be a very straightforward project."

But straightforward it was not. While the structure was only three storeys tall, the drawings indicated it was designed to be seven. Meanwhile, some of the columns had steel reinforcements that weren't included in the drawings and presumed to have been added after the fact.

"We got concrete cores from the slabs and we tested them, and the capacity of the concrete was 35 per cent of what it was supposed to be," he says. "The math told us that the capacity of the building was less than its own self-weight, and that the building shouldn't be standing. To resolve the issue, we would need to reinforce every single floor, adding approximately 2.5 million dollars to the already constrained budget."

According to Garcia Ramirez, the results from the concrete tests and the history of the building were so out of the ordinary, they decided to perform load tests to attest for the structural capacity of the building.

"The outcome turned out to be positive, as we found that the structure was capable of resisting the loads required for its intended use," he says.

Today, as the team continues to address new issues and push forward toward their target completion date, a few lessons-learned can be shared and applied to future redevelopment projects.

Here are Garcia Ramirez's top 5 tips for getting your redevelopment project back on track after encountering the unexpected:

1. **Evaluate the Existing Structure:** Assess the building's current state to identify potential structural issues.
2. **Learn, Research and Engage with Experts:** Gain insights into the project possibilities, constraints, and effective solutions.
3. **Test Design Assumptions:** Test various designs to find the one that aligns best with the project's goals, budget, and schedule.
4. **Be Ready to Pivot:** Adapt the project plan as needed to address unexpected challenges, like unsuitable materials or new discoveries during the construction phase.
5. **Resolve with Comprehensive Solutions:** Ensure solutions and designs meet current safety standards, considering historical preservation and project constraints.

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