



ST. FRANCIS CENTRAL HOSPITAL

Pittsburgh, PA, USA 2008

Demolition Failure Vulnerability Assessment & Implosion Analysis

In an impressive 10 second implosion, Saint Francis Central Hospital was erased from the Pittsburgh skyline on March 22, 2008. ASI was part of this story with its expertise and its advanced technology. However, there was a different story before this successful story.

There was a previous failed attempt to demolish the building using controlled collapse. In February, demolition workers tried to pull down the gutted 10 story hospital in February after cutting several support beams, but their cables snapped.

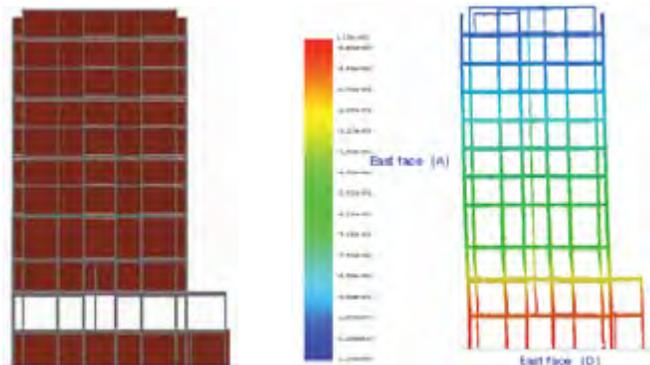
After several attempts and many hours, the initial demolition contractor decided to call it quits and try something else. At this stage, the services of ASI were requested. ASI performed two tasks: a vulnerability assessment of the existing structure and a demolition analysis based on the new demolition plan.

ASI constructed a full model of the structure using its Extreme Loading® for Structures (ELS). The model included all reinforcement details based on the original structural drawings and structural weakening based on the changes that were made to the structure during the first attempt of demolition. The ASI simulation showed that the components of the main structural system including vertical members, girders and reinforced concrete slabs were not affected by wind loading and no damage was observed in the pre-cast panels.

ASI also performed a simulation of the new demolition scenario proposed by Dykon Explosive Demolition Corporation. This simulation which was created before the demolition assured the contractor, the local authorities, the owners and occupants of neighboring buildings that this time the demolition will go as planned.



ASI's Demolition Analysis Prediction Versus the Actual Demolition



Wind Analysis Performed on the Weakened Structure

ASI estimated that there was a low potential of failure for the building under the effect of high winds. ASI also estimated that is safe for demolition workers to enter the building to do the work necessary to implode the building using explosives.

The actual implosion went almost exactly as the simulation predicted. The only damage to one of the neighboring structures was the shattering of one of its windows. This type of damage might have been predicted by ELS. However, in this particular scenario glass analysis was not within the scope of work handed to ASI.

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