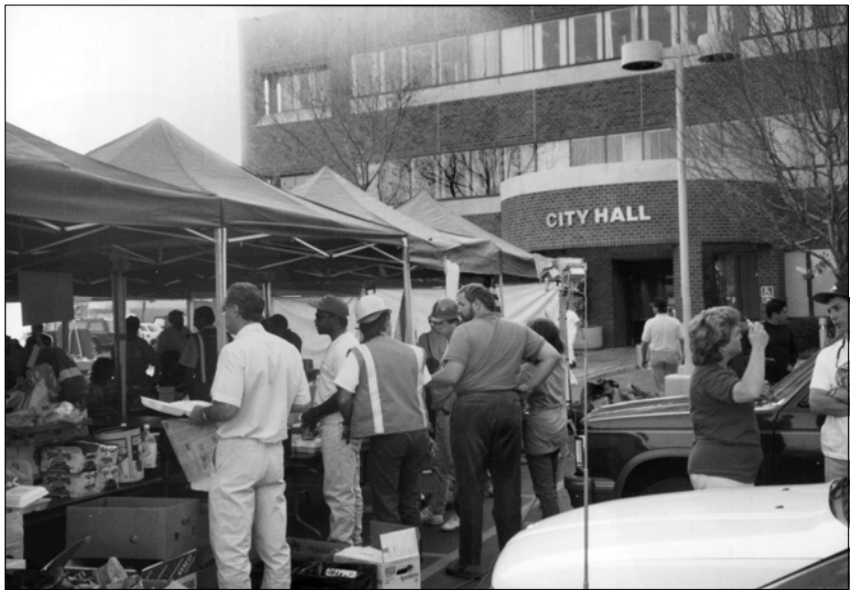
Then…

The Northridge Earthquake on January 17, 1994 left Santa Clarita City Hall unusable causing “Tent City Hall” to be set up in the adjacent parking lot. The quake was the second costliest disaster in U.S. history, after Hurricane Katrina, killing 57 people, injuring thousands more, damaging 112,000 structures and leaving more than $20 billion in property losses. More than 20,000 people were displaced from their homes.



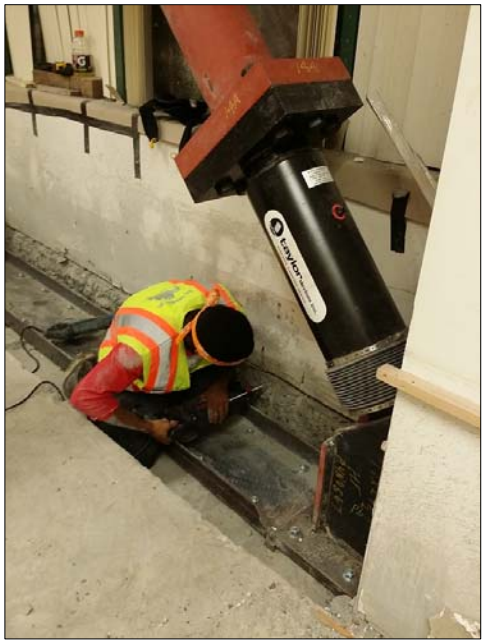
Computer generated study model

Now…

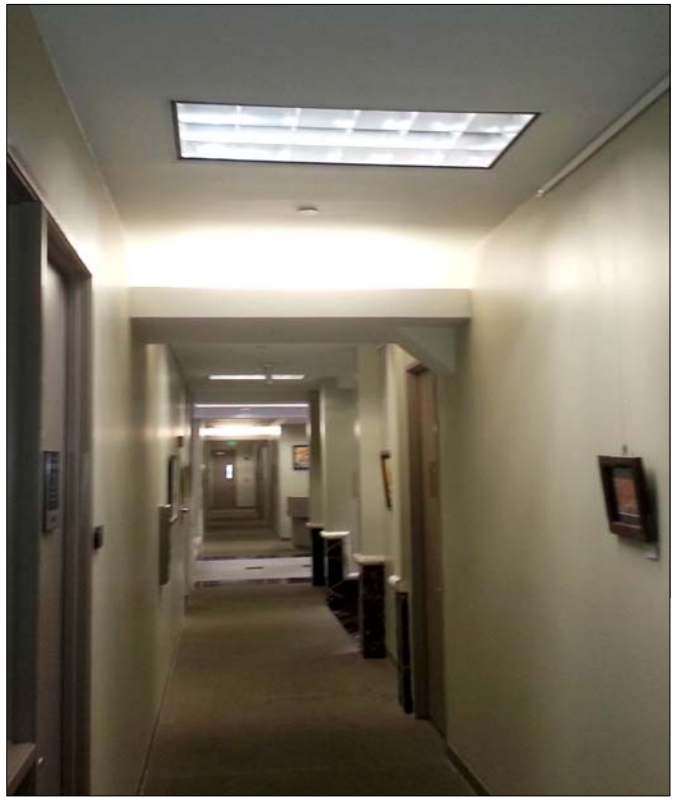
The recently completed seismic retrofit was constructed in phases during the months of May through August of 2014. The work had its usual difficulties that comes with any renovation, but encountered no time delays, primarily due to the extensive logistical planning efforts between the design team and the City staff. Various options were developed and studied for construction phasing scenarios, affected staff relocations to “swing” spaces and ways to minimize any disruption to the daily operations of the City.

The construction itself, as well as much of the collaboration between the contractor, City, Special Inspectors and the architects/engineers, took place during off-hours (6pm to 3am) and weekends to maintain continuous City operations during the work week. Noise consideration for the residential neighbors to the south of the site also needed to be taken into consideration.

City of Santa Clarita City Hall Seismic Retrofit Project



A typical damper shown above weighs about 600 lbs and is about 4’ long with a 10” diameter. The damper is attached to a steel pipe with 3” thick steel plates.



Fluid Viscous Dampers

Miyamoto International, the selected structural engineers for the project, reviewed the current construction of the Santa Clarita City Hall Building and the special concentrically braced frame retrofit design by another firm. This review included creating a three-dimensional computer model of the City Hall and applying approximated seismic ground motion time histories to better understand its behavior during a large earthquake. This study revealed that the building would be an excellent candidate for the use of fluid viscous dampers. Dampers dissipate seismic energy by the compression of an inert fluid inside of an enclosed steel chamber converting seismic energy into heat which is safely dissipated into the atmosphere. By utilizing this method, the dampers reduced the forces, accelerations and drifts to the point that no new construction was necessary on the third floor, reducing construction time, costs and staff relocations significantly.

Design Integration (First Floor Corridor at right)

Bastien and Associates, Inc., the selected architectural firm, provided designs to incorporate the braces into the work spaces as seamlessly as possible. The main corridor of the first floor is the main entrance point from the parking lot to the Building Department and elevators of the other floors. With the new interior steel angled braces now penetrating the space, a new soffit with coved up-lighting was created which ties in with other coved up-lighting in other areas of the building.

City of Santa Clarita City Hall Seismic Retrofit Project

City Council Chambers

Work in the City Counsel Chambers was completed during the August summer recess, thereby causing no interruptions to the important functions of this room. The braces here were fabricated utilizing “integrated” dampers to provide a smooth, clean appearance.

Second Floor Offices

New dampered braces were placed along portions of the exterior wall, protruding into existing offices and work spaces. The large bolted connection plates between the dampers and tube steel braces were covered and integrated with new built-in cabinetry, which included additional shelving space for the staff. Each location in the building had its unique challenges, and was addressed in a way that met the use of each individual space.

The Signal
Santa Clarita Valley

Santa Clarita City Hall retrofitting complete

Seismic upgrade wraps up days after Napa quake

Posted: September 1, 2014 2:00 a.m.
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By Luke Money
Signal Staff Writer

City of Santa Clarita Senior Engineer Mike Hennawy discusses the fluid viscous damper system that works as a shock absorber fitted to one of eight two story structural steel braces that have been added to support Santa Clarita Hall building in Valencia as part of an earthquake retrofit project. Signal photo by Dan Watson.

Work wrapped up last week on a project to better prepare Santa Clarita City Hall to withstand an earthquake.

The project officially finished just days after a powerful earthquake hit Napa, knocking facades off structures in the city's downtown area and crippling some public buildings.

The seismic retrofit just completed at City Hall is designed to make sure the building can be operational and able to be occupied shortly after an earthquake, according to Mike Hennawy, a senior engineer with the city of Santa Clarita.

This is especially important because City hall is home to the city's emergency operations center, Hennawy said. "It's basically a center that you operate and you have everybody reporting to after a disaster," he said.

The city has firsthand experience when it comes to major seismic events, having dealt with the aftermath of the 1994 Northridge earthquake.

Hennawy compared them to shock absorbers in a car.

Work for the project took place after business hours, Hennawy said.

"We wanted to minimize impact on the staff and the operation of the city", he said. "And we wanted to make sure that everybody could come in and out of the building."

Part of the funding for the seismic retrofit project came from a grant from the Federal Emergency Management Agency, Hennawy said.

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City of Santa Clarita City Hall Seismic Retrofit Project