

# Improving non-structural seismic compliance with BIM

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## ABSTRACT

Building Information Modelling (BIM) represents a step change in the way buildings are designed, constructed and operated. Using BIM to improve the design, installation and maintenance of non-structural seismic solutions can lead to reduced rework, improved quality assurance and a virtual 3D record of what was installed during construction. This paper will provide insight into the application of automation in the design of non-structural seismic restraints. Using virtual reality (VR) to improve installation and coordination constraints and how the BIM can be used to verify and maintain captured non-structural seismic solutions.

## 1 CONCLUSIONS

Building Information Modelling (BIM) offers an opportunity to provide in-depth insight into the performance and installation of non-structural seismic solutions. BIM allows designers and engineers to test various solutions in a virtual environment offering rapid evaluation of coordination and cost restraints. BIM provides a virtual solution to what is traditionally a design and build component on site enabling an opportunity to fine tune solutions to provide greater certainty in design performance, construction coordination and overall cost of non-structural seismic solutions.

Virtual Reality (VR) is the next frontier for digital innovation in the construction industry. VR enables users of the technology to ‘step inside’ a virtual prototype of any construction project. Designers, contractors and clients are able to work collaboratively to resolve and approve proposed solutions and run virtual simulations before work starts on –site. VR allows the user to visualise both the 3D model elements and to gain access to detailed specification data streamlining installation and improving quality control procedures on-site.

VR does just enable improved workflows on-site but can be a key enabler for Facilities and Asset Management (FM/AM) during the operational life-cycle of the building. VR solutions enable designer, engineers, contractor and clients to ‘see-through’ or behind built elements by creating a digital overlay of the modelled environment that is projected in front of the user in the real-world. Using a combination of BIM and VR property owners are able to store and access information about their building captured during the design and construction phases and can mitigate costly invasive exploration to find building elements hidden in walls, behind ceilings etc.

By using and engaging with new technologies such as BIM and VR major improvements in the way non-structural seismic solutions are designed, constructed and maintained can be expected.

## 2 REFERENCES

- Autodesk Building Information Modelling (BIM) software solutions - <http://www.autodesk.co.nz/>
- DeWalt Building Information Modelling (BIM) software solutions - <http://gogtp.com/hangerworks.html>
- Mircosoft Hololens Virtual Reality (VR) solutions - <https://www.microsoft.com/microsoft-hololens/en-us>
- Trimble Virtual Reality (VR) solutions - <http://www.trimble.com/>