SEISMIC STRENGTHENING OF THE TOWN HALL BUILDING IN WELLINGTON, NEW ZEALAND - GEOTECHNICAL

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Wellington Town Hall

1904 – Official opening of Wellington Town Hall

Earthquake Prone Building (Closed to the public)

To be preserved
To be Strengthened
Considerations

Many aspects that influenced the decisions on strengthening

The need for more space (basements)

Base shear?
Vertical support?

Importance level 3
Structure: PGA 0.65 M 7.1

Heritage
Retain and minimise demolitions

Building Use

Unreinforced Masonary
Heavy, Low tolerance to deflections

Unreinforced Plies

Liquefaction

Variable Alluvium
Strengthening Options

This project included optioneering workshops involving the building owner, architect, structural engineer, geotechnical engineer and cost estimator, before even building use had been confirmed.

The two structural options identified for further evaluation:

- Base isolated satisfying 100% of new building standard (NBS).
- Non base isolated satisfying 67% of new building standard (NBS).

The foundations considered were for the above were:

- screw piles
- in-ground jet grout columns

Create a basement to increase space.
Selected Solution
(100%NBS, Base Isolated, Screw Piles)
Main Conclusion

This early (geotechnical and structural) involvement and collaboration allowed a robust integrated evaluation of options. For example; a full basement offered benefits of removing potentially liquefiable soils and in establishing the base isolation plane across the building. The building owner and architects were able to consider the value of this space in terms of building use. Without this early input from geotechnical this opportunity would not have been considered.
Come see my Poster!

**Today Poster Session:**

- **Time:** 5:15 – 7:00 pm
- **Room:** Pasadena (Exhibit Hall)
- **Poster location:** 120