

Anchor Tiedown Systems Enhance MDH Design and Construction



Over the past few years, Simpson Strong-Tie has led the introduction of specific heavier duty connectors and ATS components required for timber mid-rise and MDH developments to the NZ market.

THE CHALLENGE

The bracing design principles of stand-alone residential dwellings and mid-rise and medium-density housing (MDH) structures are not too dissimilar, though there are additional engineering aspects to consider and often common residential solutions no longer provide the required resistance or aren't cost effective in mid-rise and MDH construction.



Rod-to-Steel-Beam Connector is welded to the embedded steel plate



The ATS threaded rods are ready for the second floor to be attached above

PROJECT INFORMATION

Project Category

Lateral Systems

Project Name

- Stonefields, Auckland
- Avondale, Auckland

Builder

- Fletcher Living
- Miles Construction

Engineer

- Blueprint Consulting Engineers
- ENGCO Consulting Engineers

Simpson Strong-Tie Products

Strong-Rod Anchor Tiedown Systems (ATS)

Project Start Date

- September 2018 (Stonefields)
- May 2020 (Avondale)

CHALLENGE

Common residential solutions are no longer provide the required resistance or aren't cost effective in stand-alone residential dwellings or mid-rise and MDH timber construction.

SOLUTION

Overseas timber mid-rise buildings utilise continuous Anchor Tiedown Systems (ATS) consisting of steel threaded rods coupled at each floor level to run the full height of the building.

RESULTS

Simpson Strong-Tie has led the introduction of specific heavier duty connectors and ATS components required for timber mid-rise and MDH developments to the NZ market over the past few years.

Simpson Strong-Tie® CASE STUDY

Residential bracing typically relies on sheathing (eg. plywood, plasterboard, fibre cement) fixed to framing with the framing tied together using connectors (eg. steel straps, screws, hold-down brackets). In taller light timber/stick frame MDH or mid-rise construction, the bracing on each floor level is still typically achieved using sheathing, however, transferring those loads through the framing down to the foundation/ground level using the 'piecemeal' residential connector approach becomes highly inefficient and load capacities of connectors is often exceeded on the lower levels as loads from each floor accumulate in lower storeys.

THE SOLUTION

Overseas timber mid-rise buildings utilise continuous Anchor Tiedown Systems (ATS) consisting of steel threaded rods coupled at each floor level to run the full height of the building. Each floor level's brace panel is then connected to these threaded rods using steel bearing plates, take-up devices, a washer and nut. The take-up devices self-adjust over the building's life to compensate for shrinkage of timber, ensuring a tight fit remains between bearing plates and ATS steel rods. ATS rods also anchor into the foundation similar to residential construction to dissipate the loads, though ATS loads are much greater and hence require superior anchorage.



Avondale Project

THE RESULTS

Simpson Strong-Tie has led the introduction of specific heavier duty connectors and ATS components required for timber mid-rise and MDH developments to the NZ market over the past years, to do better than to simply look to make existing residential product ranges 'make do'. The experience Simpson Strong-Tie has now amassed from real life projects globally and in NZ sees them continuing to credibly lead development of

this market sector in NZ with application specific products and engineering support.

Scan the QR code and watch the video learning how to install the Strong-Rod ATS System for shearwall overturning restraint.



Avondale Project



Stonefields Project

**MORE
INFO**

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