

Building on a Slope and Disproportionate Collapse

Location:	St Chad's, Whiteleigh Green, Plymouth
Client:	Sarcen Housing Association
Construction method:	Timber frame, MMC
Size:	33 units: 5 houses and a 4/5 storey block of flats
Unique features:	Stepped floor levels & cantilevered floors

This site is steeply sloping with a variety of ground levels throughout, which presented challenges to the developers and designers.

The upper part of the site houses the flatted block. The 5-storey section was designed, as is standard, to take account of disproportionate collapse. In addition the varied slopes, angles and directions of incline of the site required that the floor and roof levels responded. These height changes were all accommodated within the building's internal dimensions, ensuring the cleaner, more sympathetic external elevation required by the architect was achieved.

Lower down the site, the five terraced houses were built off split-level underbuilding. This accommodation is partially cantilevered at first floor level, to overhang individual undercrofts at ground level, which are utilized for storage or parking.

"The steepness of the slope, the varying levels and the combination of flatted and individual housetypes meant that we had to be flexible and innovative in our approach: but it was nothing that our design expertise, combined with the benefits of engineered timber construction, couldn't handle.

"The load paths through the terraced housing were also unusual, which, coupled with the partial cantilevering, required an innovative approach to our structural design. Our solution was to use engineered timber beams and ensure that they ran within each floor zone. It's a bit unusual, but has proved very successful!"

Robin Dodyk - Technical Director, Oregon Timber Frame, comments July 2010.

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