How to Test Replacement Cavity Wall Ties

Why are Pull-out Tests Necessary when Installing Remedial Brick Ties?

A crucial part of any wall tie replacement scheme is to check the ties' anchorage strength. BRE Digest 401 suggests tension-testing in the outer and inner walls at random positions. The pull-out trials ensure the tying system is suitable for the material of the building. It also urges in-process tests during the work for quality control needs.

What is a Pull-out Test?

Pull-out testing involves fixing a tension test meter to a wall tie. The testing rig exerts a tensile stress force on the anchorage to show whether it can withstand the necessary service loads.

Test the ties' pull-out strength in both the inner and outer walls. The connection in one wall may resist less load than in the other. If that is the case, it is best to concentrate the in-process testing on the wall with the weakest anchorage.

What Tensile Load Value is necessary for Testing Wall Ties?

To find the necessary tension load, you must classify the following four details about the building and its exposure.

1. What is the height of the building?
2. Is the structure in an urban or rural setting?
3. What is the slope of the land within 1 km?
4. In what wind-zone area is the building?
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BRE Digest 401

Table 5 of BRE Digest 401 recommends a minimum tensile proof load. The table assumes each wall is at least 90 mm thick and the tie density is 2.5 per sqm. The values are for walls spanning horizontally between masonry returns or having sufficient edge ties to support the vertical edges. All loads are in Newtons.

For cladding masonry, which is vertically spanning (e.g. at a gable apex or between openings) without masonry returns or sufficient edge ties, multiply the table values by 1.72.

There is no need to test remedial wall ties beyond the Digest 401 loads. Overloading to the point of failure can damage the tester, the tie, or the masonry.

Watch our one-minute video to learn how to test replacement wall ties.