



## Angled destruction testing of Anchors 2001

In June 2001 the CNCC Technical Group set a small test bed of Eco anchors using Exchem's Resifix 3+ as the bonding agent.



The test beds were installed in sandstone in Dalton Quarry Lancashire and in Limestone in Horton Quarry North Yorkshire.

In Dalton Quarry the anchors were pulled at an angle of 45 and 90 degrees to the substrate. Although 90 degrees implies a shear loading because of the setup of the test rig 90 degrees was actually 10 degrees above the surface of the substrate so technically, an 80 degrees loading was applied.

One anchor was pulled with a direction of shear loading.

The anchors installed in Horton Quarry were pulled out in an axial load.

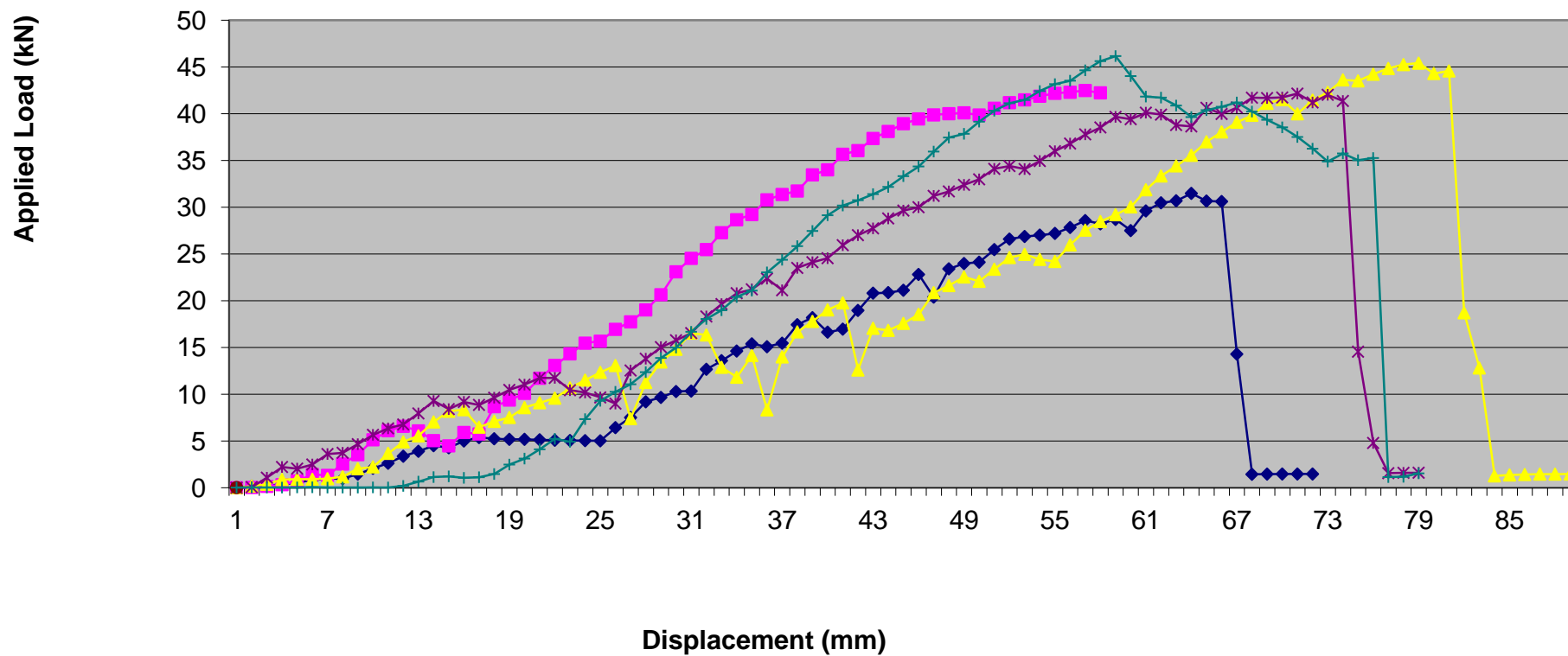
The Eco anchor is a 'P' shaped anchor with a double shaft manufactured 8mm - 316 stainless steel bar.



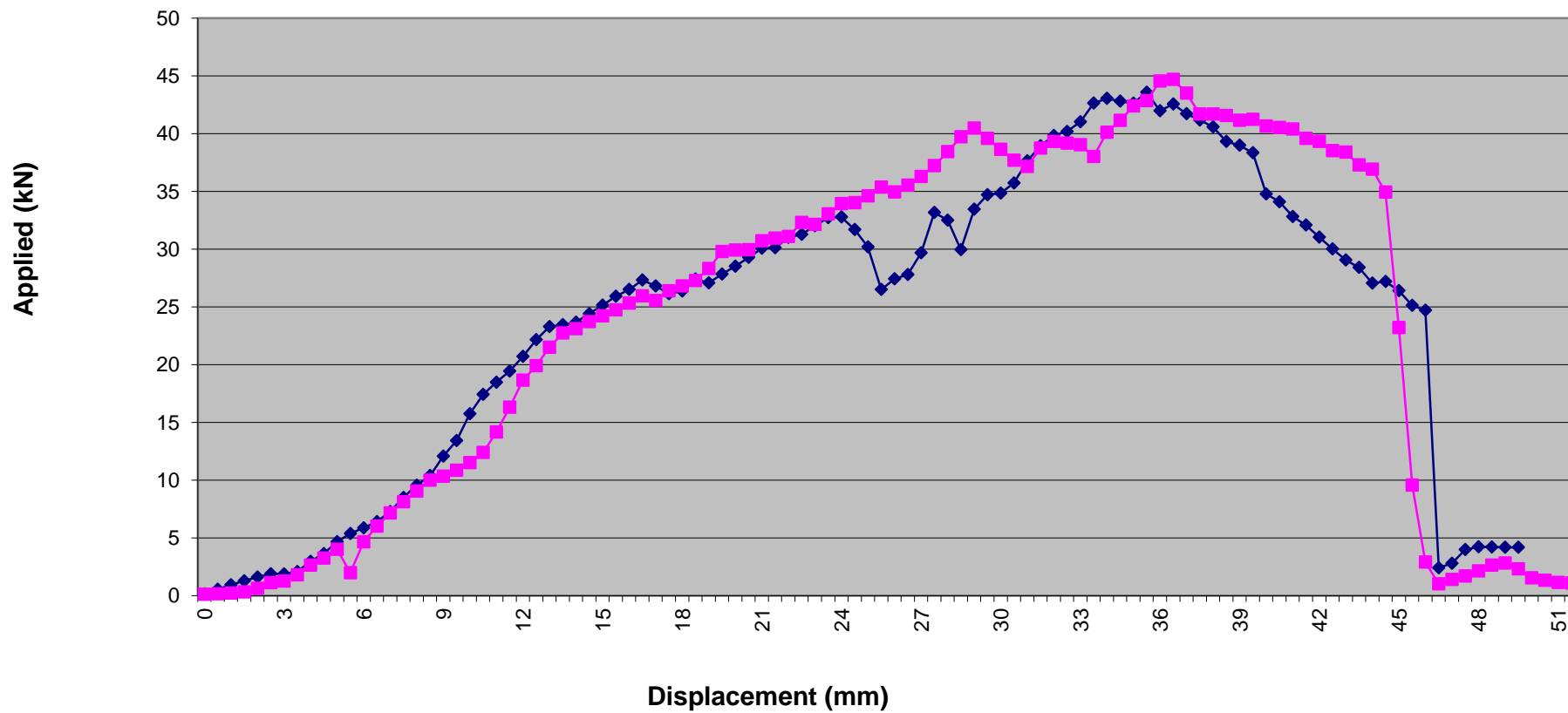
The installation procedures that had been developed by the CNCC Technical Group and subsequently adopted by the National Caving Association was used to install all the anchors.

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# 45 Degree Combination Load Tests



# 90 Degree Shear Test



# Dalton Quarry Shear Test

