

TNO report

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**PULL OUT TESTS ON ANCHORS**  
(anchors type 61170)

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## 1 SAMPLE AND COMMISSION

On 1<sup>st</sup> August 1997 15 anchors  $\varnothing$  8 mm were received from Volco International BV at Hilversum (Neth.). These anchors were made from a round folded steel plate of apr. 47 x 20 x 1.4 mm. The upper part was partially folded and provided with a hole  $\varnothing$  5 mm. The lower part was apr. 22 mm long with a diameter of 8.5 mm. As specified the anchors were of type nr. 61170. The anchors were enlisted under sample number M-7584. With letter ref. PA/RCC, dated 21<sup>st</sup> July 1997 TNO Building and Construction Research was commissioned to carry out pull out tests out of concrete. The anchors had to be placed in drilled holes  $\varnothing$  8.0 mm.

## 2 TESTING PROCEDURE AND RESULTS

With a new drill holes  $\varnothing$  8 mm were drilled in a piece of concrete, Dutch quality B30, and the anchors driven in until the upper part. Next the anchors were pulled out with a with 20 N/s increasing load. All tested anchors were pulled out of the hole. Load-displacement graphs show that the load could be increased till the ultimate load without slipping of the anchor.

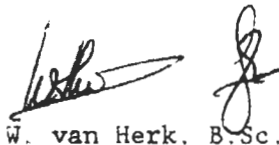
The results were:

anchor nr.	ultimate load (kN)
1	4.42
2	5.70
3	5.84
4	3.80
5	5.15
6	4.36
7	4.96
8	4.71
9	5.04
10	4.68
average	4.87
std. dev.	0.62

## REMARK

The level of the pull out load depends strongly of the diameter and the appearance of the drilled hole. Therefore, these loads can deviate more or less.

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