BLAST RESULTANTS BEHIND CANTILEVER WALLS: COMPARISON BETWEEN FULL-SCALE AND MODEL SCALE EXEPRIMENTS"

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Car and other vehicle bombs have proved to be a major terrorist threat in many parts Of the world. They can have a devastating effect not only on the occupants of a building but also on the building structure itself. Al-though a significant degree of hardening may be incorporated into new buildings at relatively low cost, the hardening of an existing building could be an expensive procedure and result in a structure with a very aus-tere appearance. An alternative method of protection is the construction of a perimeter wall around and at some distance from the building. This has the effect of increasing the stand-off distance to the building from any bomb, so reducing, the blast resultants (overpressure, impulse and fragments loads) to a more acceptable level.

This paper describes a program of r research in which detailed measurements of the blast. environment were made behind protective cantilever walls firstly at model-scale and secondly at fullsize. In the first investigation measurements were made behind a 1/10th scale vertical blast wall in front of which scaled realistic threats were detonated. A grid for measurement was established out to six wall heights behind the Wall and up to three wall heights above the ground and side-on overpressure-time histories were obtained. From these records" contour plots of overpressure and impulse were developed. A similar procedure was adopted for the second set of experiments at fullsize in which wails approximately three metres high were subjected to blast loading from a simulated Terrorist car bomb. In addition, Pressure measurements were made in the model grid with the wall removed.

The paper clearly demonstrates the, benefit of providing a blast wall for protecting a building and shows the region) where such benefit is maximized. The paper also presents a comparison between the model-scale and fullsize investigations and shows that there is good agreement between the two sets of data emphasizing the value of well-designed, model-scale experiments.