

## BLAST WAVE TRANSMISSION ALONG ROUGH-WALLED TUNNEL

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There is a sizable body of work available relating to the transmission of long duration blast waves down tunnels of both simple and complex geometry. However, little has been presented on the propagation of blast waves of relatively short duration along tunnels with roughened walls. The use of rough-walled tunnels, possibly in conjunction with tunnel bends, could offer a means of providing an efficient and relatively short protective entrance to a sensitive structure.

This paper presents the results of an experimental study carried out at approximately 1/30th scale into the propagation of blast waves along a straight tunnel roughened by means of different height blocks fixed along both sides of the tunnel at different separations. Small hemispherical charges of plastic explosive were detonated at a fixed scaled distance from the open end of the tunnel and measurements of overpressure-time histories were made at up to four locations in the roof and back wall of the tunnel. Peak overpressure and impulse data are plotted against suitably non-dimensionalised tunnel geometry parameters to illustrate the effect of different roughness geometries. From such information, selection of the geometry to produce greatest attenuation at the entrance to any structure located at the termination of the tunnel can be made.