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THE USE OF LIGHT-WEIGHT BARRIERS IN BLAST MITIGATION

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In the course of work on protective walls, it was observed that it is possible for a wall to be completely demolished by a blast, yet provide the same degree of protection against blast as if it had not been destroyed. Subsequent investigations showed that even failing thin walls will provide useful protection.

These observation led to investigations into the performance of light weight barriers in blast mitigation.

The concept was that the light-weight barrier should mitigate blast in three ways:

- **Reflection.** Before and as the barrier fails or deforms it will reflect some of the blast energy.
- **Absorption.** The barrier will absorb energy from the blast as kinetic and internal energy. A failed barrier loaded with kinetic energy forms a missile, but through suitable design this localised energy may be less damaging than a blast wave which can reflect and diffract within a structure.
- **Modification.** The blast energy that is neither reflected nor absorbed by the light-weight barrier may be modified in form. Some modifications may reduce the damaging effects of the transmitted blast.

The paper describes recent full scale experimental investigations and discusses the results. The background to the experiments and the preliminary numerical and model scale experiments are summarised.