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DEVELOPMENT OF TWO PREFABRICATED HYPERBOLIC PARABOLOID SHELL STRUCTURAL SYSTEMS

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19. ABSTRACT (Continue on reverse if necessary and identify by block number) This report documents the full-scale tests of two prefabricated modules designed to resist near misses of conventional munitions. The modules were made of hyperbolic paraboloidal (hypar) panels and provided 500 square feet of usable floor space each. The hypar shape is an efficient means of carrying impulsive loads, characteristic of conventional munitions. The hypar derives its efficiency its shape of two opposing curvatures. The hypar panels were approximately 5.5 inches thick. The panels were made in three layers: a thin polyester anti-spall coat, a 4.5 inch thick layer of rebar and fiber-reinforced concrete, and a 1.0 inch thick layer of asphalt reinforced with fiberglass mat. Six blast tests were conducted using MK-83 bombs. One module used pinned panel-to-panel connections; the other used bolted connections. Both modules used three different composite panel designs. The pinned module was tested twice with bomb offset distances (continued on back)			
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