

DYNAMIC-PLASTIC RESPONSE OF RECTANGULAR STEEL PLATES TO IMPULSIVE BLAST LOADING

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Large plastic deformation of homogeneous rectangular steelplates at an aspect ratio of 2 has been investigated. The maximum permanent deflection was in the range of 5 to 20 times the plate's thickness. Experiments were done with plates that were clamped along all edges to a rigid support. The impulsive blast load was produced by spherical HE charges that detonated at some HOB above the plate's center. Pressure-time histories of the load function were measured to allow direct comparison of test results to theoretical solutions. A theoretical method, termed "energy solution", results in maximum deflection values that are in good agreement with the test results.