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Development of a Laboratory Scale Test Facility (LSTF) to investigate Armor solutions against buried explosive threats FELIPE GARCIA, JOSE SINIBALDI, Naval Postgraduate School — This LSTF will address the effects of High Velocity Sand Blast Impact; massive overpressures, impulsive effects, kinetic energy and momentum, from developing the type of flat sand- loading profile required for code validation purposes. The background of this study is to generate a planar shock-wave profile and a flat-loading profile from high velocity sand and air blast onto intended flat-plate targets, to properly characterize the codes under development; to do this we propose to use a flyer plate, which is explosively driven, so, we end with a design in which a slanted flyer plate, with an explosive layer underneath it, is set-up and detonated from one end, as the detonation wave runs through the explosive layer, it pushes the flyer plate. If all the geometry is carefully designed and the flyer plate/explosive layers are precisely positioned, in theory we should be able to produce a flat flyer plate that travels on the order of 1 to 2 km/s towards a layer of sand, therefore generating a shock wave within the sand that will eventually accelerate the sand with a flat top-hat profile towards the intended target, thus achieving a flat sand loading profile onto the target. Success in this domain will allow ease of testing of advanced armor concepts against simulate buried explosive threats, thus providing validation for numerical codes that will be used to perform optimization of novel armor designs at low costs.

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