"SOFT HARDENING" AS A VIABLE ENGINEERING CONCEPT - THEORY, RESEARCH, DEVELOPMENT, TESTING & EVALUATION FOR IMPLEMENTATION IN PROTECTIVE-CONSTRUCTION"

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"Soft-Hardening" is a new engineering approach to the problem of protecting sheltered people from the effects of explosive blasts and projectiles' impacts/penetrations. Instead of classic "sheer force engineering" this approach is based on absorption of attacking energies by resilience, achieved by confining RC core between layers of relatively soft & compressible material, which bonds strongly to concrete to create a composite structure. T'he confinement of the concrete core delays tensile cracking under loads and prevents spalling, thus effecting higher "Injury-Threshold" and enhanced protection for sheltered people. This approach has been so far extensively tested. Implementation, which is quite easy to achieve in practice, is based on careful assessment of tests' results.

Keywords: Blast wave, blast over-pressure, blast impulse, blast energy, reflected pressure wave, reflected impulse, projectile-impact, projectile-penetration, injurythreshold, hardening, soft-hardening, protective-engineering, reinforced concrete, blast tests, impact tests, penetration tests, retrofit (of existing structures), Durisol, Maya-Durisol.