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ANALYTICAL STUDY OF HYBRID TRC WITH ENGINEERED CEMENTITIOUS COMPOSITES

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ABSTRACT: Textile reinforced concrete (TRC) is a type where instead of steel reinforcement, textile is been used to provide strength in the tensile region of the concrete. Basically TRC will have a single woven fiber mesh as reinforcing material; in this study two fiber material are woven together making it a hybrid mesh which is the combination of carbon and Kevlar fiber. The cement matrix used is known as engineered cementitious composites (ECC) which is similar to the fiber reinforced concrete (FRC) but without coarse aggregates. this study focuses on thin shell reinforced with carbon-kevlar hybrid textile mesh considering 3, 4 and 5 layers of the mesh and also for different grades of concrete. Their load carrying capacity and stress-strain behavior is been studied using FEM software. In the analytical investigation, it was observed that load and deflections varies accordingly based on the grade of concrete and layers of the hybrid mesh. Considering all the cases, 5 layers of hybrid TRC having the concrete grade of M40 was determined to be optimum having more strength capacity.

Keywords: *ECC, Hybrid, mesh, Textile, Thin shell*