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EARTHQUAKE TOLERANT MATERIAL - WASTE PLASTIC FIBER ADDITIVE REINFORCEMENT

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ABSTRACT

The present paper deals with the impact of seismic shocks resistance on the strength of M15/M20 concrete. The parameters of the study include the use of Ordinary Portland Cement and waste plastic fibers arranged with different orientation. The specimen cubes were cast and cured for periods 7, 14 and 28 days under similar conditions prior to testing. The study demonstrates that the 3II waste plastic fiber mix concrete to a great extent influences the strength and failure time of concrete mix. On the basis of interpretation of the results the following conclusion was drawn. Curing for 28days plain concrete M15/M20 gave adequate compressive strength of **29.21 N/mm^2** / **36.62 N/mm2** respectively, 3II-waste Fiber mix M15/M20 concrete gave adequate compressive strength **25.95 N/mm^2** / **34.00 N/mm2** slightly less but more than the desirable limit with extended failure times. The results obtained make valuable contribution to the extension of failure time by 318 Seconds for M/15 and 72 Seconds for M/20 with reference to Seismic Vulnerability of Concrete Structures. Under this back ground, in the present work an attempt has been made to modify the structural material with waste cement bags Plastic Fiber Additive Reinforcement, which leads to extension of failure time while retaining the compressive strength within desirable limit. WPFAR concrete can be used as potentially economically viable alternative material in seismic prone zones as an eco-friendly material in construction.

KEYWORDS: Earthquake Tolerant Material (ETS), Base Isolation Devices (BID), Seismic Dampers (SD), Seismic Vulnerability of Concrete Structures (SVCS), Waste Plastic Fiber Additive Reinforcement (WPFAR)