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Fabric Reinforced Cementitious Matrix (FRCM) and Textile Reinforced Mortar (TRM) – *Part II: Comparative Study*

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ABSTRACT:

As a continuation to *Part I* of a study on Fabric Reinforced Cementitious Matrix (FRCM) composites and textile reinforced mortar (TRM), this paper presents the total resistance of each concrete bar reinforced with FRCM in the force-displacement curves. The maximum force endured in the force-displacement curve is used in order to determine the resistance of the bars. It is observed that in all samples with increasing lateral displacement, the resistance of the system increases linearly, which is due to the initial stiffness of the system. After a certain displacement, the linear trend changes, and as the displacement increases, the slope of resistance increase becomes mild and gradually reaches a constant value. Additionally, the effect of reinforcing thickness on the performance of concrete bar is studied. It was observed that the U-FRMC-10 concrete bar pattern for FRCM-reinforced concrete bars and the U-TRM-10 concrete bar pattern for reinforcing concrete bar with TRM materials were superior in performance compared to other proposed patterns. Among all reinforcement methods for concrete bar, the U-shaped reinforcement pattern with FRCM materials had the best performance in concrete bar. Finally, the performance parameters of the bar including ultimate resistance, stiffness, and energy dissipation for the U-shaped pattern of FRCM and TRM materials with different thicknesses have been compared.

KEYWORDS: Fabric Reinforced Cementitious Matrix (FRCM); textile reinforced mortar (TRM); performance parameters; concrete bar