

# Moment of Resistance of Reinforced Masonry Beam Based on Effective Pull-Out Stiffness of Reinforced Brick Mortar Joint

Shashank Mehendale<sup>1</sup>, Abhay Bambole<sup>2</sup> and S. Raghunath<sup>3</sup>

## Abstract:

Concrete and masonry are brittle materials that are strong in compression but weak in tension. Tensile stresses developed in masonry can be effectively resisted by providing reinforcement. Design guidelines available for reinforced masonry (RM) are generally based on assumptions similar to those for reinforced concrete (RC) members. Formulations available in literature for reinforced masonry are based on the assumption that the bond between masonry and reinforcement is perfect; however, the bond between masonry and reinforcement is not perfect, and this observation has been confirmed by experimental investigation. In addition, experimental investigation established the fact that tensile force developed in reinforcement is significantly lesser due to the properties of interface materials. Stiffness contribution of RM joint can be derived from the stiffness properties of individual materials and interfaces by using spring analogy. In the present work, a novel approach to make use of the stiffness contributions of individual elements, namely brick, mortar, and reinforcement, along with two interfaces in design of reinforced masonry beam incorporating the effect of non-perfect bond has been presented.

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<sup>1</sup> PhD Research Scholar, Veermata Jijabai Technological Institute, Mumbai 400 019, India, shashank\_mehendale@smassociates.co.in

<sup>2</sup> Professor, Structural Engineering Department, Veermata Jijabai Technological Institute, Mumbai 400 019, India, anbambole@vjti.ac.in

<sup>3</sup> Professor, Civil Engineering Dept., BMS College of Engineering, Bengaluru 560 019, India, raghu.civ@bmsce.ac.in