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Study on Elastic Properties of Concrete with Eof Steel Slag as Coarse Aggregate

K.Shrimathi^{1*}, M.Arivoli², R.Malathy³

¹Structural Engineering, Sona College of Technology, Salem, India

²Dept. of civil Engineering, Sona College of Technology, Salem, India

³Head of the Department, Dept. of civil Engineering, Sona College of Technology, Salem, India

Abstract:The elastic properties of concrete matrix are known to be effected by the elastic behaviour of its constituents and formation of interfacial transition zone between aggregate and cement paste. Because of inherent stiffness and large volume fraction it conquers in concrete, the aggregate exerts foremost influence on the modulus of elasticity of concrete. The modulus of elasticity is also affected by the type of the aggregate. Steel slag is a waste product generated by steel industry which is obtained from the conversion of iron to steel. Also, the application of steel slag, in concrete helps in reducing greenhouse gases and makes an eco-friendly material. Steel slag reduces the need of natural aggregate hence preserving our natural resources. The steel slag aggregate have high degree of internal friction and also highly angular in shape with rough surface texture. Due to rough surface texture and irregular shape of aggregate, the mechanical interlocking property strengthens which in turn increases the bond strength between cement matrix and aggregate. Steel slag aggregate helps in the enhancement of the mechanical properties of concrete in terms of compressive, flexural strength and modulus of elasticity than those of the concrete using natural aggregate. In this paper, an investigation is carried out to analyse the relationship between the mechanical properties of natural aggregate and that of steel slag aggregate concrete.

Key words: Steel slag, compressive, flexural strength, modulus of elasticity.