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Effect of Aggregate Size on Mechanical Behavior of Passively Confined Concrete Subjected to 3D Loading

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Abstract : Limited studies have examined the effect of size on the mechanical behavior of confined concrete subjected to 3-dimensional (3D) test. With the novel 3D testing system to produce passive confinement, concrete cubes were tested to examine the effect of size on stress-strain behavior of the specimens. The effect of size on 3D stress-strain relationship was scrutinized and compared to the stress-strain relationship available in the literature. It was observed that the ultimate stress and the corresponding strain was related to the confining rigidity and size. The size shows a significant effect on the intersection stress and a new model was proposed for the intersection stress based on the conceptual design of the confining plates.

Keywords : concrete, aggregate size, size effect, 3D compression, passive confinement
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