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Stress analyses of various curvature arched groundsills

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In Taiwan, arched groundsill is frequently used as soil-and-water conservation structures for stabilizing creek bed, guiding flow direction, decreasing the slope of creek bed and reducing the scour effect. Even though much more arched grounsill was built in wild creek recently, its mechanical mechanism is still unclear.

In order to explore the characteristics of arched groundsill, this study intends to find out the scale of stress, moment and displacement distribution on the various curvature arched groundsills by means of the structural analysis software, ABAQUS. Simultaneously, the three-dimensional computational fluid dynamics software, ANSYS-FLUENT, is applied to show the flow condition of different setups. Preliminary result shows that the maximum stress and displacement of arched groundsill increase with curvature. The maximum moment decreases slightly firstly and increases sharply later with curvature.