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Comparison of the downstream scour to various curvatures of arched groundsill by flume test and computational software

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In recent years, the arched groundsill has frequently used to prevent downstream scour and make ecologic habitat in Taiwan. However, the relationship between the depth of downstream scour and curvatures of arched groundsill is still unclear among the specialists and engineers. In order to explore this relationship, this study carried out flume test and calibrated computational software. The result shows that the maximum impact increases with increasing curvatures of both of upward and downward arched groundsills. And, the downstream flow tubes tend to concentration with increasing curvatures of upward arched groundsill while the downstream flow tubes tend to spread uniformly with increasing curvatures of downward one. These phenomena would affect the scale of downstream scour and make the new river geomorphology. Result could be as a reference for choosing convenient curvature when specialists and engineers design arched groundsill.