



# Scour Countermeasures at Circular Pier by Using Modified W Weir under Clear Water Conditions

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**Abstract:** The river spanning W weir can effectively control the scour only at the central pier of the bridge. The author has downscaled the W weir's size, height, and location concerning pier size to countermeasures the scour at each pier. The equilibrium scour morphology of modified W weir is contrasting when compared to river spanning W weir. The depth of the scour hole strongly depends on the structure height and flow depth. At the vicinity of the modified W weir, the maximum and minimum scour depth was 1.64D and 0.96D has occurred. In the modified W weir, one paramount scour hole was found at the weir's center between the upstream apexes to the downstream apex. The maximum and minimum local scour hole depth at the vicinity of the pier is 1.067D and 0.64D. From the observation, the modified W weir can effectively reduce the scour at the vicinity of the cylindrical pier up to 55.14%. The 1.5D sized (D = diameter of the pier) modified W weir with the height of downstream apex is 2D is located 2D distance from the pier, produce the maximum scour control, and this structure configuration is considered as optimum structure configuration of modified W weir.

**Keywords:** Bridge pier scour, Scour countermeasures, Weir, Scour morphology

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