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## Effect of bridge pier induced turbulence on vegetated meander river morphology

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A natural riverine corridor has several curls based on its physical and geomorphological characteristics. In most of the scenarios, the bridge construction on a meandering channel aligns along the convergent section. The enhanced secondary flow at convergent sections and the effect of meandering curvature bring the complexity in river turbulent characteristics. This effect may become predominant inside the main channel with variability in size and shape of the bridge pier. The present work discusses the turbulent structures in the main channel due to the variability in pier diameter (1 inch and 2 inch  $\square$ ) and a number of bridge piers on floodplain with inclusive of vegetation. Three-dimensional flow vertical and transverse velocity measurements were carried with acoustic Doppler velocimeter (ADV) 100Hz, at apex cross-section in a low sinuous channel. The results of the analysis showed that the combined effect of pier and vegetation on floodplain significantly altered the shear layer mechanisms in the channel with varying flow patterns. The comparison of the difference in secondary velocities between the pier with 1 inch and 2 inch  $\square$  is 57% more in the case of lesser diameter pier. Further, the effect of size and number of piers on transverse velocity, Reynold's shear stress is more susceptible to the mainstream. The convergence induced contraction of the meandering channel along with the bridge pier on its floodplain is observed to affect the turbulent structures formed in the main channel.