



## Formulation of Response Reduction Factor for Wall Type-Bridge Piers

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### Abstract

The response reduction factor also known as R-factor is one of the most significant parameters in the force-based analysis to reduce the maximum considered seismic force by a level that is reliable with the implied ductile capacity of the structure under consideration. Currently, there is a notable difference in the values of response reduction factor for wall-type bridge piers as mentioned in the Indian standard codes as compared with the internationally referred code such as AASHTO, EN1998. The primary goal of this investigation is to formulate the response reduction factor for typical reinforced concrete (RC) wall type bridge piers located in a highly seismic zone in India by pushover analysis and to show how much conventional or non-conventional value is followed in the Indian standard codes and to formulate the most probable value of R-factor for wall type bridge piers, that are needed to be considered in the design. The nonlinear behavior, sequence, and mechanism of plastic hinge formation are carried out in the structural analysis program SAP2000.

**Keywords:** Pushover analysis, Response reduction factor, Wall type pier, SAP 2000