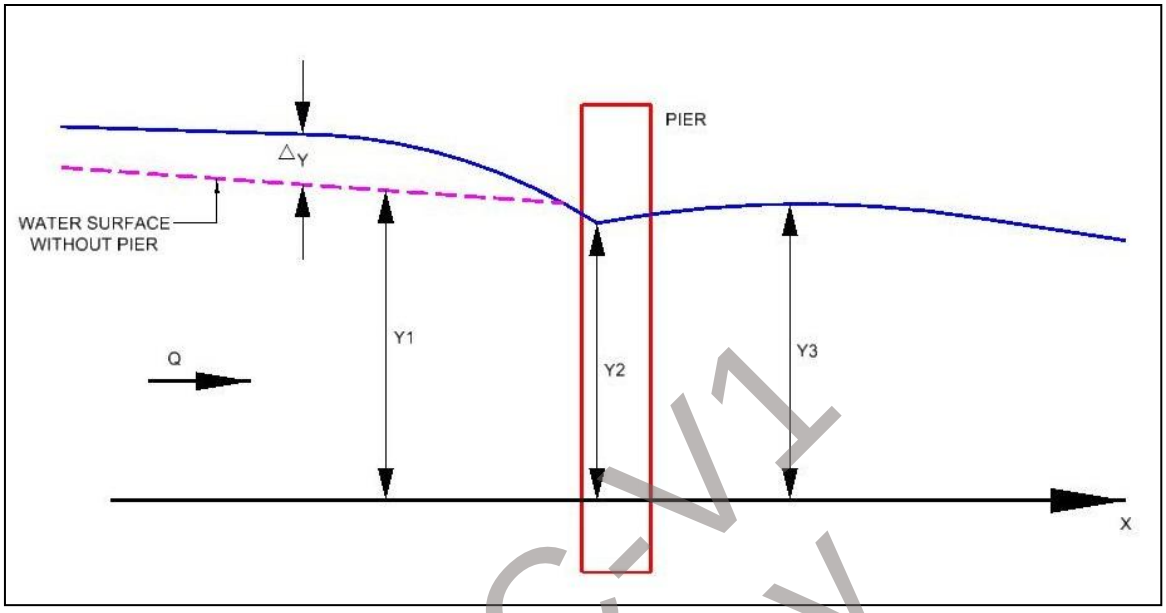

Figure 2-1 Schematic of backwater effect cause by bridge pier

Larger storms, that overtop the banks and spread out across the floodplain, require additional openings under the roadway. These are called relief crossings and can consist of additional bridge spans or large culverts and shall be placed at locations that match the low points in the floodplain terrain. Relief crossings will generally be at higher levels than the main channel.

An example of this is shown in Figure 2-2, where the bridge's main span is sized for the main channel area, with additional spans acting as flood relief. Although this picture shows the relief crossings using additional spans, they can also be provided through the roadway fill using large culverts. Bridge hydraulic design programs, such as HEC-RAS, will perform modelling of the design flows through both the main and secondary relief openings. Total opening areas are sized to meet the design requirements noted above.

Figure 2-2: Wadi bridge crossing with floodplain relief spans