

2. Channel migration anticipated during the life of the structure:

- Naturally occurring lateral migration of the main channel of a stream within a floodplain may affect the stability of the piers, erode abutments or the approach roadway, or change the total scour by changing the flow angle of attack at piers and abutments. Factors that affect lateral stream movement also affect the stability of a bridge foundation. These factors are the geomorphology of the stream, location of the crossing on the stream, flood characteristics, and the characteristics of the bed and bank materials.

3. General scour, including contraction scour:

- General scour is the general decrease in the elevation of the bed across the bridge opening. It does not include localised scour at the foundations (local scour) or the long-term changes in the stream bed elevation (aggradations or degradation). General scour may not have a uniform depth across the bridge opening. General scour can be cyclic, that is, there can be an increase and decrease of the stream bed elevation (cutting and filling) during the passage of a flood.
- Contraction scour is a common general scour. There are several cases and flow conditions for contraction scour. Typically, contraction scour occurs where the bridge opening is smaller than the flow area of the upstream channel or the floodplain. Additional general scour conditions can result from erosion related to flow characteristics of the stream, flow around a bend, variable downstream control, or additional changes that decrease the bed elevation at the bridge.

4. Local scour, including pier and abutment scours:

- Basic mechanisms that cause local scour at piers or abutments include the formation of vortices (known as the horseshoe vortex) at their base (refer to Figure 2-4 for an example). Horseshoe vortices result from the pileup of water on the upstream surface of the obstruction and subsequent acceleration of the flow around the nose of the pier or abutment.

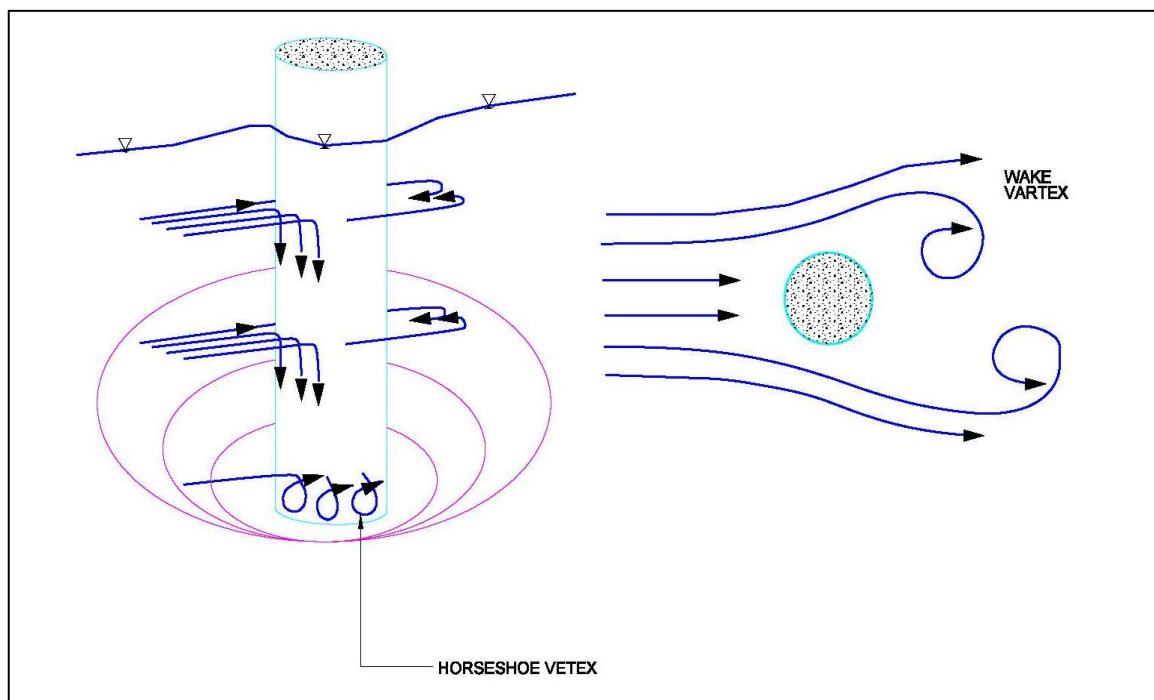


Figure 2-4: Schematic of local scour at circular pier