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**Submitted To Engr Adeed Khan**

**Topic**

1. Establish the stage discharge relationship for a concrete rectangular box culvert use suitable data of your own choice
2. Also describe loads on bridge foundation due to scour and their working mechanism.

**Answer**

**Part1:**

**Part 2**

**Scouring:-**

Scour can be defined as the excavation and removal of material from the bed and bank of stream as a result of the erosive action of flowing water. Bridge scour is the accumulation of sediment such as sand and gravel from around bridge abutments or piers. Scour, caused by swiftly moving water, can scoop out scour holes, compromising the integrity of a structure. Bridge scour is one of the three main causes of bridge failure (the others being collision and overloading).It has been estimated that 60% of all bridge failures result from scour and other hydraulic-related causes

Scour occurs in three main forms general scour contraction scour and local scour.

1. General scour:- it occurs in river channels in result of change in flow rate or quantity of channel
2. Construction scour: - it occurs as a result of reduction of cross sectional area this problem rise due to bridge pair and abutments.
3. Local scour: - It occurs around individual bridge pier and abutment in this Horseshoe vertex is developed.