

Bridges

Key Points

- 1 Bridge spans should be wide enough and preferably with no or few piers, in order to:**
 - Not restrict flood flows and cause flooding
 - Not cause upstream sedimentation
 - In case of tidal rivers, not hinder the tidal flows and disturb the riverbed load
- 2 Bridge sills are important in soft underground, but should not too high, impeding drainage**
- 3 Protect entrance of bridge with combination of bio-engineering measures and armouring (NBS)**

Examples of techniques



Bridge on tidal river too narrow and too many piers disturbs the tidal flow, causes riverbed to silt up and tidal effect to withdraw



Bridge sill too high and bridge too narrow: causes water logging and silting up of the stream



Bridge abutment and bridge approach vulnerable to erosion – need to solve with bio-engineering measures and armouring

Determine bridge span

Calculate active water channel

Measure flood plain adjacent to active water channel (for 50-year flood)

Make provision for debris and floatsam (1-3 meter in small streams)

Note: avoid placing pier in active water channel and if so, provide reinforcement

Determine level of bridge sill

Survey streambed elevation

Deduct expected scour depth during design floods

Assess foundation stability requirements

Avoid drainage congestion at any cost