US Army Corps
of Engineers
Kansas City District

General Guidelines for Stream Crossings
Regional Condition 1

For all Nationwide Permits that involve the construction/installation of culverts and low water crossings, measures will be included in the construction, design, and installation that will allow for the passage of flows and promote the safe passage of fish and other aquatic organisms. The following General Guidelines are required to supplement General Condition (2) Aquatic Life Movements and General Condition (9) Management of Water Flows.

Culverts:

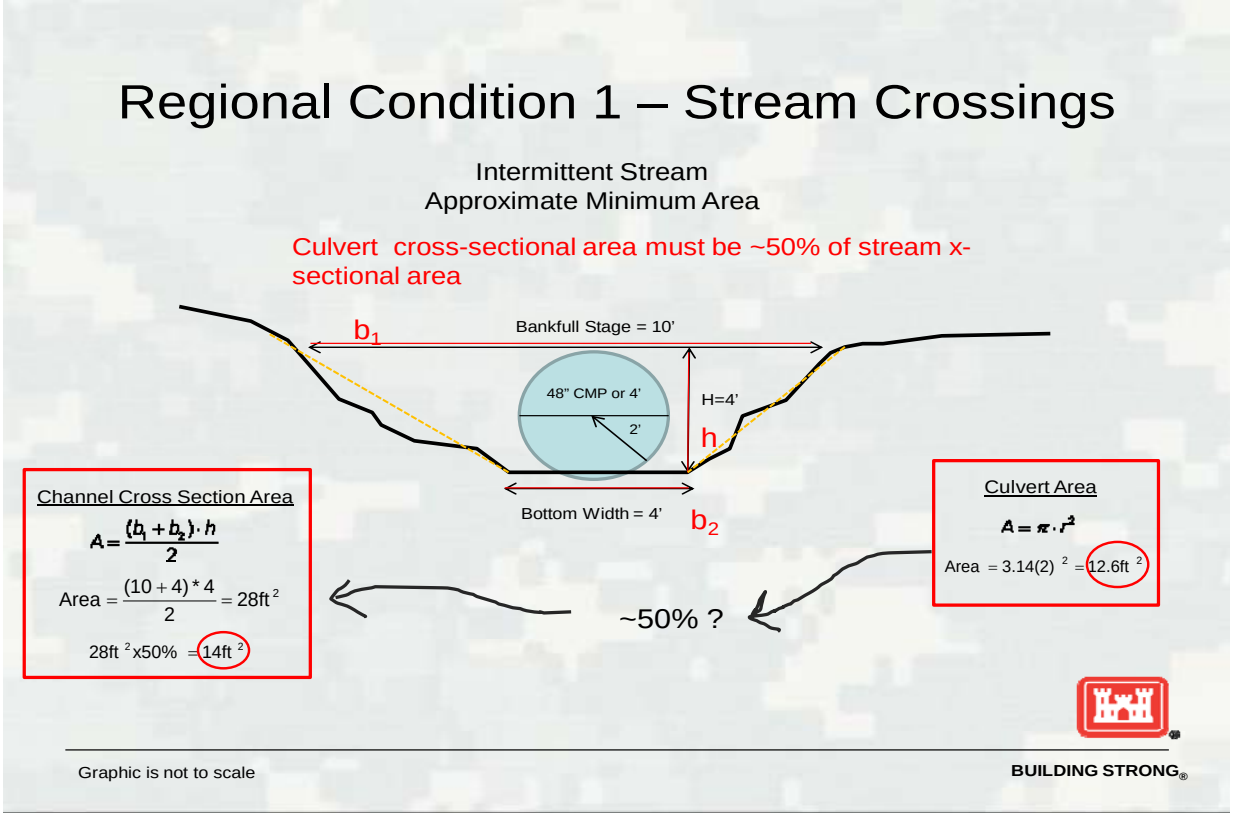
- New or replacement culverts (e.g., box or tubular, pipes, etc.) must be designed, sized, and placed correctly. Culverts perched above the grade of the stream are not allowed. This includes other in-stream structures placed at the inlet with the purpose to reduce sedimentation within the stream crossing. It is acceptable for a portion of the water to pass over the structure if it is designed to be overtopped. Culverts must be the shortest length necessary to meet the project purpose, and a single culvert is encouraged.

- Drop boxes or other structures placed at the inlet with the purpose to reduce sedimentation within the stream crossing are not allowed. Culvert must be the shortest length necessary to meet the project purpose.

- New or replacement culverts, in conjunction with the associated fill material, shall have an appropriately sized opening that allows water flow through and over the crossing that is relative to the bankfull area (See Image 1). For purposes of this regional condition, bankfull area is defined as the height and width of the stream channel within the project to the top of the high bank(s). In addition, if elevations differ on both sides of the stream the lowest elevation shall be used as the height. The following basic guidelines shall be used when designing new or replacement crossing projects:

Stream Type	% of crossing profile that shall remain open
Perennial	Designed to allow an 85% opening to include the culvert(s) and area above the crossing up to the bankfull area.
Intermittent	Designed to allow a 50% opening to include the culvert(s) and area above the crossing up to the bankfull area.
Ephemeral	Placed at a depth below or at the natural steam bottom to provide for passage during low flow conditions.

Image 1



- For permanent crossings, the culvert must be embedded and backfilled below the grade of the stream on both the upstream and downstream sides ≥ 1 foot for culverts >48 inches. On culverts ≤ 48 inches the bottom of the culvert must be placed at a depth below or at the natural stream bottom to provide for aquatic organism passage during low flow conditions. Culverts in streams with non-erodible beds (i.e. bedrock or stable clay) must be constructed flush with the stream bed, but do not need to be embedded. Culverts in streams with highly erodible beds must be embedded deeper to lessen the chance of future perching due to downstream degradation and may be accompanied with other grade control measures to prevent erosion while maintaining General Condition (2) Aquatic Life Movements.

Low Water Crossings:

- The applicant must notify the District Engineer when repairing, rehabilitating or replacing low water crossings when discharges of dredged or fill material would raise or lower the lowest elevation of the crossing.

- When replacing or removing low water crossings the applicant must propose and employ measures to mitigate for and minimize the potential of streambed headcutting where channel incision has occurred downstream of the structure and the structure is providing grade control that is preventing channel incision from migrating upstream.