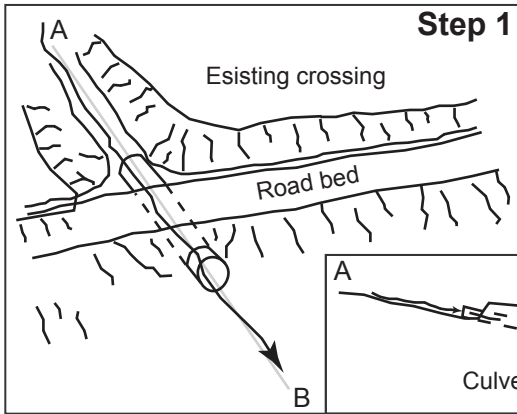
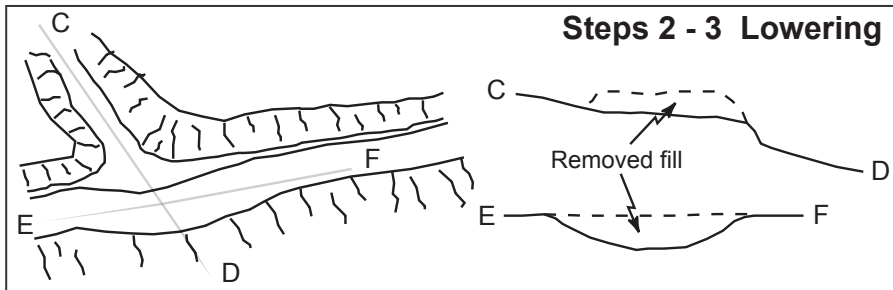
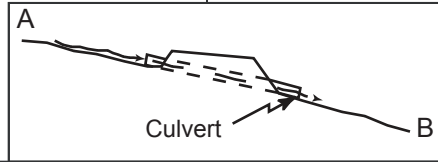


Ten Steps for Constructing a Typical Armored Fill Stream Crossing



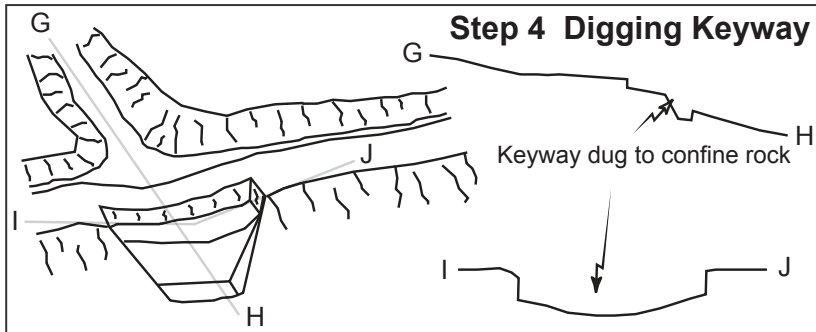
Step 1

- The two most important points are:
 - The rock must be placed in a "U" shape across the channel to confine flow within the armored area. (Flow around the rock armor will gully the remaining fill. Proper shape of surrounding road fill and good rock placement will reduce the likelihood of crossing failure).
 - The largest rocks must be used to buttress the rest of the armor in two locations: (i) The base of the armored fill where the fill meets natural channel. (This will buttress the armor placed on the outboard fill face and reduce the likelihood of it washing downslope). (ii) The break in slope from the road tread to the outer fill face. (This will buttress the fill placed on the outer road tread and will determine the "base level" of the creek as it crosses the road surface).



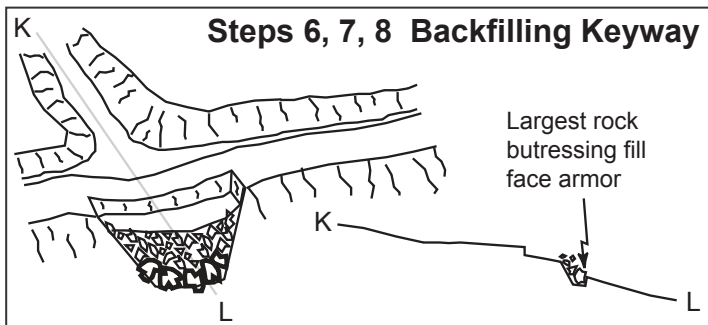
Steps 2 - 3 Lowering

- Remove any existing drainage structures including culverts and Humboldt logs.
- Construct a dip centered at the crossing that is large enough to accommodate the 100-year peak storm flow and prevent diversion (C-D, E-F).



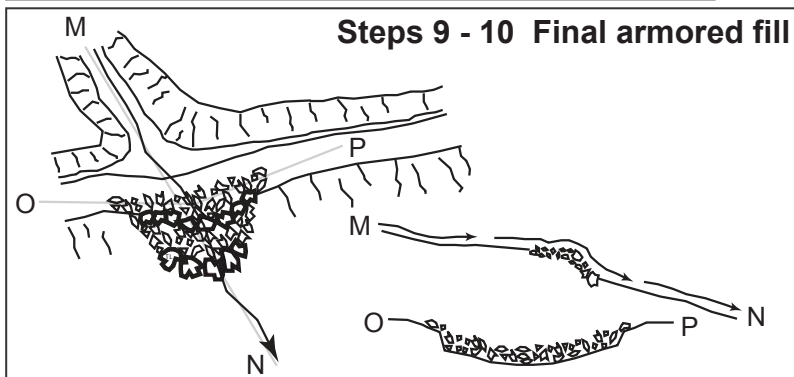
Step 4 Digging Keyway

- Dig a keyway (to place rock in) that extends from the outer 1/3 of the road tread down the outboard road fill to the point where outboard fill meets natural channel (up to 3 feet into the channel bed depending on site specifics) (G-H, I-J).
- Install geofabric (optional) within keyway to support rock in wet areas and to prevent winnowing of the crossing at low flows.



Steps 6, 7, 8 Backfilling Keyway

- Put aside the largest rock armoring to create 2 buttresses in the next step.
- Create a buttress using the largest rock (as described in the site treatments specifications) at the base of fill. (This should have a "U" shape to it and will define the outlet of the armored fill.)
- Backfill the fill face with remaining rock armor making sure the final armored area has "U" shape that will accommodate the largest expected flow (K-L).



Steps 9 - 10 Final armored fill

- Install a second buttress at the break in slope between the outboard road and the outboard fill face. (This should define the base level of the stream and determine how deep the stream will backfill after construction). (M-N)
- Back fill the rest of the keyway with the unsorted rock armor making sure the final armored area has a "U" shape that will accommodate the largest expected flow (O-P).

Typical Drawing #7