

The arrangement of segregating utilities is based on the probability of the failure of any utility and the potential of its impact on the adjacent utilities. One of the common examples is the failure of any utility due to the leakage of water from the wet service. Therefore, it is recommended that the power cables should be segregated from the water cables. Another typical example is the fire outbreak from power cables, for which it is recommended that the power cables should be separated from the telecommunications cables.

A typical ROW with the placement of utility tunnels can be observed in the proposed ROW cross sections presented in **Annexure 1**.

### 5.3.6 Utility Bridges

In certain instances the construction of bridges over the corridor is considered to protect the utilities. In some instances also highway bridges are used to transfer the utilities across the roads. However, it is important to note that before recommending any such option thorough evaluation should be done to estimate the risk associated with the traffic safety and mobility during the repair and complications involved with the upgrading of utilities or widening of the facilities. Different types of utility bridges are presented in the Figure 35 below:

**Figure 35: Utility Bridges**



The following details are to be considered while designing open trenches:

1. The utilities should only be attached to the bridges when crossing of a self supporting line is expected to be impractical.
2. The utilities such as communication lines should be enclosed in conduits and should be so located on structures that it does not interfere with stream flow, traffic, or routine maintenance operations. These conduits should be provided during the construction of the bridges, if the bridges are being planned and are to be constructed.