8. Could accommodate multiple utilities at a lesser cost than the conventional trench installation of the same utilities.

The main disadvantages include:

1. Increased cost and the allocation of the existing space.
2. Coordination and compatibility for maintenance activities.
3. Needs detailed coordination between utilities providers for successful completion.
4. Requires one utility authority to take a leadership role in design and construction.
5. Requires agreement for design parameters and shared cost.

5.3.5 Utility Culverts

The utility culverts are box like concrete structure laid under the roadways and waterways. These culverts are constructed prior to the construction of the road and provide better access for installation and maintenance of the utilities. The construction cost of these culverts is higher as compared to other options, but they provide SAUP with the flexibility to monitor, upgrade and repair their utilities with minimum interruption to the flowing traffic.

The following details are to be considered while designing culverts:

1. The utility culverts are developed to facilitate the arrangement of different kind of utilities within the available open space. This arrangement solves the problem of over crowding of utilities at the surface as well as allows to have a common single crossing point.
2. The recommended method is to divide the culvert into different compartments and arrange the utilities in such a way that large diameter transmission mains are placed on concrete plinths while brackets attached to the sidewalls support smaller pipes.

Arrangement of utilities within a typical utilities culvert is presented in Figure 34 below.

Figure 34: Arrangement of a Typical Utilities Culvert