



# SNS COLLEGE OF TECHNOLOGY

## UNIT III CONSTRUCTION PRACTICE - SUB STRUCTURE



### Topic: Tunnelling

Tunnelling techniques used in construction practice for substructures involve various methods depending on the type of terrain, soil, and rock conditions. Some common tunnelling techniques include:

#### 1. **Cut-and-Cover Tunnelling:**

- The tunnel is constructed by excavating a trench, building the tunnel structure, and then covering it with soil.
- Common in urban areas where the ground is soft and accessible.

#### 2. **Bored Tunnelling:**

- A tunnel boring machine (TBM) is used to excavate tunnels in hard or soft soil conditions.
- Suitable for long tunnels and ensures minimal surface disruption.

#### 3. **Drill and Blast:**

- Used in rock tunnels, this method involves drilling holes into the rock, placing explosives, and then blasting the rock.
- Commonly used in mountainous regions.

#### 4. **New Austrian Tunnelling Method (NATM):**

- A flexible method that uses the surrounding rock to stabilize the tunnel.
- Involves the sequential excavation and reinforcement of tunnel walls with shotcrete, wire mesh, or steel ribs.

#### 5. **Pipe Jacking and Micro Tunnelling:**

- Involves pushing pipes through the ground while simultaneously excavating soil ahead of the pipes.
- Suitable for small-diameter tunnels and minimizes disruption at the surface.

#### 6. **Immersed Tunnelling:**

- Used for underwater tunnels where tunnel segments are prefabricated and then immersed and connected on the seabed.
- Common for river crossings and marine applications.

These techniques are selected based on the project's geological and environmental conditions, as well as project size and budget considerations.