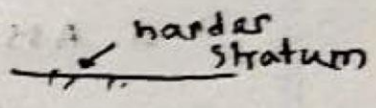
1. Defn of geotech engg.
   - Branch of CE
   - Deals w/ soils, rocks and underground water
   - their relation to design, construct and operation of CE structure

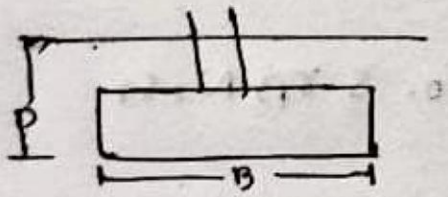
2. Bedrocks - harder stratum
   - by drilling, boring, excavation




Shallow foundation

$D/B \leq 1$

normally upto 3m




3. Importance

4. Issues to be address
   - Subsurface soil condition
   - Safely support
   - GW condition
   - Impact of plan, excavation, grading and filling
   - Slope and stability

foundation

Retaining wall

- Tunnelling / underground opening

  Eg

  contamination

5. Geotech eng. in design and execution process

   a. Assessment of subsurface soil condition

   b. performance of geotech analysis

   c. dev of geotech inputs

$$q_{ult} = cN_c s_c + \bar{q} N_q + 0.5 \gamma B N_\gamma s_\gamma$$

bearing capacity

requirements of geotech eng