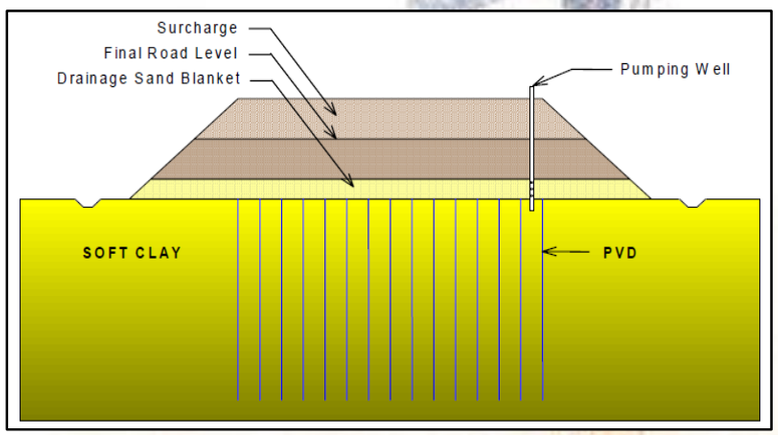
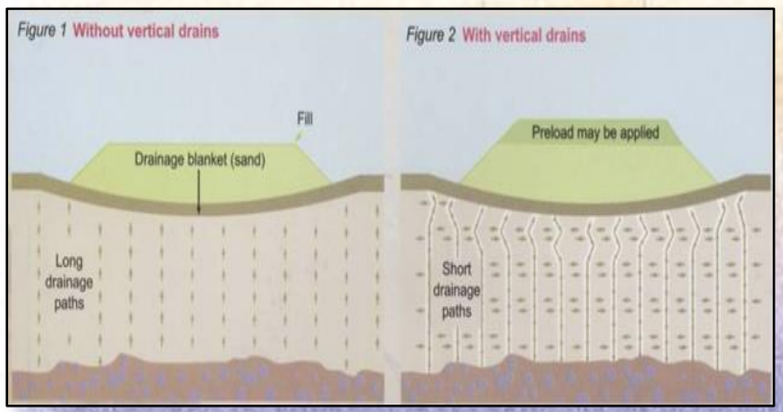
PREFABRICATED VERTICAL DRAIN

Definition

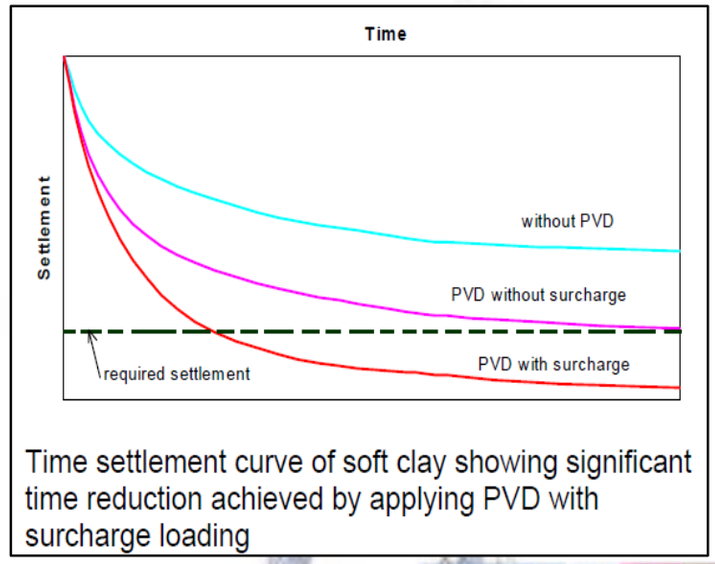
Prefabricated Vertical Drains (PVDs) are composed of a plastic core encased by a geotextile for the purpose of expediting consolidation of slow draining soils.
They are typically coupled with surcharging to expedite preconstruction soil consolidation.





Benefits of PVDs

- Decrease overall time required for completion of primary consolidation due to preloading
- Decrease the amount of surcharge required to achieve the desired amount of precompression in the given time
- Increase the rate of strength gain due to consolidation of soft soils when stability is of concern



Time settlement curve of soft clay showing significant time reduction achieved by applying PVD with surcharge loading

Suitable Soils

It is commonly assumed that PVD should be used in all soils that compress very slowly under natural drainage condition due to low soil permeability and relatively great distance between natural drainage boundaries.

However, PVD are **not** versatile for all soil types and geological conditions. The drains can be implemented in soils that are moderately to highly compressible under static loading.

Testing for PVD

1.Dimensions (all measured directly) – by caliper & tape
2.Discharge capacity
3.Tensile strengths at 5%, 10% and 50% (or break)

Effectiveness of Prefabricated Vertical Drains (PVDs)

In order for effective expedition of the consolidation process, the PVDs must accept water from the surrounding soil, and discharge it. The initial design conditions and changes in these factors throughout the length of the project will affect the consolidation rate/success of the project.

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