

Sumário

Design and performance of embankments on very soft soils

1 Construction methods of embankments on soft soils

- 1.1 Replacement of soft soils and displacement fills**
- 1.2 Conventional embankment with temporary surcharge**
- 1.3 Embankments built in stages, embankments with lateral berms and reinforced embankments**
- 1.4 Embankment on vertical drains**
- 1.5 Lightweight fills**
- 1.6 Embankments on pile-like elements**
- 1.7 Construction methodologies for harbor works**

2 Site investigation

- 2.1 Preliminary investigations (Borings, Characterization)**
- 2.2 Complementary investigations (In situ tests, Laboratory tests)**
- 2.3 Vane tests (Equipment, Undrained strength, Clay sensitivity, Stress history, Clay anisotropy)**
- 2.4 Piezocone test (Equipment, Correction of cone resistance, Preliminary soil classification, Undrained strength, Stress history, Coefficient of consolidation)**
- 2.5 T-bar test**
- 2.6 Soil sampling for laboratory tests**
- 2.7 Oedometer consolidation tests**
- 2.8 Triaxial tests**

3 Geotechnical properties of very soft soils: Rio de Janeiro soft clays

- 3.1 Overall behavior of very soft soils: Cam clay models**
- 3.2 Index properties of some Rio de Janeiro clays**
- 3.3 Compressibility and stress history**
- 3.4 Hydraulic conductivity and coefficient of consolidation**
- 3.5 Soil strength**
- 3.6 Deformation data**
- 3.7 Viscous behavior**
- 3.8 Field studies (Embankment I & II)**

4 Prediction of settlements and horizontal displacements

- 4.1 Types of settlements (Immediate, Primary, Secondary)**
- 4.2 Staged embankment settlements**
- 4.3 Prediction of horizontal displacements**

5 Acceleration of settlements: use of vertical drains and surcharge

- 5.1 Embankments on vertical drains**

- 5.2 Vertical drains (Theoretical solutions, Radial drainage, PVDs)**
- 5.3 Design of the horizontal drainage blanket**
- 5.4 Use of temporary surcharge (Vacuum preloading, Secondary compression)**
- 6 Stability of unreinforced and reinforced embankments**
 - 6.1 Design parameters (Undrained strength of clay, Embankment strength, Geosynthetic reinforcement parameters)**
 - 6.2 Failure modes of embankments on soft soils**
 - 6.3 Foundation failure: Critical height of embankment**
 - 6.4 Global stability analysis of unreinforced embankments (Circular and Non-circular surfaces)**
 - 6.5 Reinforced embankments (Effects of reinforcement, Foundation failure, Lateral sliding, Global failure)**
 - 6.6 Stability analysis of stage constructed embankments**
 - 6.7 Sequence for stability analysis of embankments on soft soils**
- 7 Embankments on pile-like elements**
 - 7.1 Piled embankments with geosynthetic platform**
 - 7.2 Embankments on traditional granular columns**
 - 7.3 Encased granular columns**
- 8 Monitoring embankments on soft soils**
 - 8.1 Monitoring vertical displacements (Settlement plates, Extensometers, Profiler)**
 - 8.2 Measurement of horizontal displacements**
 - 8.3 Measurements of pore pressures**
 - 8.4 Monitoring of the tensile forces in geosynthetic reinforcements**
 - 8.5 Interpretation of monitoring results (Asaoka's method, Pore pressure analysis, Stability analysis)**
 - 8.6 New trends in geotechnical instrumentation.**