<table>
<thead>
<tr>
<th>6.27</th>
<th>Sectional view of consolidated clay sample (end of 320kPa pressure) with central Trpod shape sand drain (TSSD) of n’11.04</th>
<th>520</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.28</td>
<td>Shaking table with Oedometer, vane shear and vibration meter</td>
<td>521</td>
</tr>
</tbody>
</table>
**LIST OF SYMBOLS**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CNS</td>
<td>Cohesive non-swelling</td>
</tr>
<tr>
<td>H</td>
<td>Height / thickness of the sample</td>
</tr>
<tr>
<td>R</td>
<td>Radius of the soil sample or Oedometer</td>
</tr>
<tr>
<td>K</td>
<td>Permeability of the sand used for vertical drain</td>
</tr>
<tr>
<td>C_r</td>
<td>Coefficient of consolidation through radial drainage</td>
</tr>
<tr>
<td>C_v</td>
<td>Coefficient of consolidation through vertical drainage</td>
</tr>
<tr>
<td>PVD</td>
<td>Prefabricated vertical drain</td>
</tr>
<tr>
<td>t</td>
<td>Time at any given instance</td>
</tr>
<tr>
<td>Tr</td>
<td>Time factor for consolidation through radial drainage</td>
</tr>
<tr>
<td>Tr,50</td>
<td>Time factor for 50% consolidation through radial drainage</td>
</tr>
<tr>
<td>Tr,80</td>
<td>Time factor for 80% consolidation through radial drainage</td>
</tr>
<tr>
<td>U</td>
<td>Degree of consolidation due to combined linear and radial drainage</td>
</tr>
<tr>
<td>C_h</td>
<td>Coefficient of consolidation through horizontal drainage</td>
</tr>
<tr>
<td>R</td>
<td>Ratio of r/re with reference to isochrones</td>
</tr>
<tr>
<td>r</td>
<td>Any radial distance with reference to Oedometer</td>
</tr>
<tr>
<td>re</td>
<td>Radius of influence</td>
</tr>
<tr>
<td>r1</td>
<td>Radial point nearer to drain/first radial point with reference to Oedometer</td>
</tr>
<tr>
<td>r2</td>
<td>Radial point at mid distance/second radial point with reference to Oedometer</td>
</tr>
<tr>
<td>r3</td>
<td>Radial point away from drain/third radial point with reference to Oedometer</td>
</tr>
<tr>
<td>U_R</td>
<td>Average degree of consolidation for radial flow</td>
</tr>
<tr>
<td>U_r</td>
<td>Degree of radial consolidation</td>
</tr>
<tr>
<td>u_o</td>
<td>Initial pore water pressure</td>
</tr>
<tr>
<td>u_r</td>
<td>Pore water pressure at given radial point</td>
</tr>
<tr>
<td>T_r</td>
<td>Time factor for radial consolidation</td>
</tr>
<tr>
<td>r_w</td>
<td>Radius of filter well (drain) with reference to Barron’s theory</td>
</tr>
<tr>
<td>k_v</td>
<td>Coefficient of vertical permeability</td>
</tr>
<tr>
<td>k_h</td>
<td>Coefficient of horizontal permeability</td>
</tr>
<tr>
<td>U</td>
<td>Degree of consolidation in general</td>
</tr>
<tr>
<td>U_z</td>
<td>Degree of vertical consolidation</td>
</tr>
<tr>
<td>T_h</td>
<td>Time factor for horizontal drainage</td>
</tr>
<tr>
<td>e</td>
<td>Void ratio</td>
</tr>
</tbody>
</table>
- \( n \) \: Porosity
- \( A_P \) \: Applied pressure in kPa
- \( n \) \: Ratio of \( r_e/r_w \)
- \( k_w \) \: Permeability of well backfill
- \( r_w \) \: Radius of drain/well
- \( \frac{de}{dt} \) \: Rate of vertical strain
- \( Q \) \: Well discharge capacity
- \( q'(z) \) \: Rate of loading at time \( t \)
- \( L \) \: Characteristic length of the drain
- \( k_c' \) \: Coefficient of permeability in smeared zone
- \( \Delta P \) \: Pressure increment in kPa
- \( q \) \: Coefficient of volume compressibility of the pore fluid
- \( r_w \) \: Unit weight of pore fluid
- \( v \) \: Volume of pore fluid
- \( l_w \) \: Degree of saturation
- \( Pa \) \: Atmospheric pressure
- \( K_v \) \: Coefficient of permeability in the vertical direction
- \( K_r \) \: Coefficient of permeability in the radial direction
- \( S \) \: Compression modulus
- \( U(t) \) \: Mean excess pore pressure
- \( U_0 \) \: Initial excess pore pressure
- \( V_j \) \: Volume of soil below depth below \( z = j(z) \)
- \( Q(t) \) \: Total amount of ground water which has been transported through the drain up to time \( t \)
- \( u_z \) \: Vertical upward displacement
- \( B_e \) \: Equivalent drainage diameter
- \( C_{wr} \) \: Coefficient of vertical consolidation for radial drainage
- \( U_R \) \: Average degree of consolidation
- \( T_r \) \: Time factor for consolidation due to radial flow
- \( \lambda \) \: Lump parameter
- \( C_r \) \: Coefficient of consolidation due to radial drainage
- \( C_e \) \: Coefficient due to permeability and porosity
- \( WCR \) \: Water content ratio
- \( CPR \) \: Consolidation pressure ratio
- \( k_h \) \: Coefficient of permeability for horizontal flow
$k_v$ Coefficient of permeability for vertical flow
$C_r$ Coefficients of consolidation due to radial flow
$T_r$ Time factor for consolidation due to radial flow
$U_r$ Degree of consolidation due to the radial drainage
$C_{cr}$ Compression index for consolidation due to radial flow
$P_{cr}$ Primary compression ratio for consolidation due to radial flow
$u_r/u_o$ Pore pressure ratio for radial flow
$a_{wr}$ Coefficient of compressibility due to radial flow
$m_{wr}$ Coefficient of volume change due to radial flow
$P$ Consolidation pressure
$SM$ Settlement analysis
$PM$ Pore pressure analysis
$e$ Void ratio
$\zeta$ Shear strength of soil
$\beta$ Angle of orientation
$SD$ Sand drain
$SW$ Sandwich
$CJ$ Coir-jute fiber drain
$PF$ Polypropylene fiber drain
$n$ ratio of radius of odometer to the radius of drain
$Sa$ Surface area
$De$ Equivalent diameter of geodrain
$SEM$ Scanning electron microscopy
$r$ Radius of clay sample in general
$r_d$ Radius of drain
$B_d$ Breadth of drain
$T_d$ Thickness of drain
$r_1$ first radial point for measurement of pore pressure at a distance of $r/4$
$r_2$ second radial point for measurement of pore pressure at a distance of $r/2$
$r_3$ third radial point for measurement of pore pressure at a distance of $3r/4$
$H$ thickness of final consolidated clay sample
$h_t$ Top of final consolidated clay sample
$h_c$ Centre of final consolidated clay sample
$h_b$ Bottom of final consolidated clay sample
\( h_{b1} \)  
Top of final consolidated clay sample at first radial point \( r_1 \)

\( h_{b2} \)  
Top of final consolidated clay sample at first radial point \( r_2 \)

\( h_{b3} \)  
Top of final consolidated clay sample at first radial point \( r_3 \)

\( h_{cr1} \)  
Centre of final consolidated clay sample at first radial point \( r_1 \)

\( h_{cr2} \)  
Centre of final consolidated clay sample at first radial point \( r_2 \)

\( h_{cr3} \)  
Centre of final consolidated clay sample at first radial point \( r_3 \)

\( h_{br1} \)  
Bottom of final consolidated clay sample at first radial point \( r_1 \)

\( h_{br2} \)  
Bottom of final consolidated clay sample at first radial point \( r_2 \)

\( h_{br3} \)  
Bottom of final consolidated clay sample at first radial point \( r_3 \)

\( I_{rd} \)  
Clay-Drain interface at top of final consolidated clay sample at location \( r_d \)

\( I_{cr} \)  
Clay-Drain interface at centre of final consolidated clay sample at location \( r_d \)

\( I_{br} \)  
Clay-Drain interface at bottom of final consolidated clay sample at location \( r_d \)

\( I_{b1} \)  
Clay-Drain interface at top of final consolidated clay sample at location \( r_1 \)

\( I_{b2} \)  
Clay-Drain interface at top of final consolidated clay sample at location \( r_2 \)

\( I_{b3} \)  
Clay-Drain interface at top of final consolidated clay sample at location \( r_3 \)

\( I_{cr1} \)  
Clay-Drain interface at centre of final consolidated clay sample at location \( r_1 \)

\( I_{cr2} \)  
Clay-Drain interface at centre of final consolidated clay sample at location \( r_2 \)

\( I_{cr3} \)  
Clay-Drain interface at centre of final consolidated clay sample at location \( r_3 \)

\( I_{br1} \)  
Clay-Drain interface at bottom of final consolidated clay sample at location \( r_1 \)

\( I_{br2} \)  
Clay-Drain interface at bottom of final consolidated clay sample at location \( r_2 \)

\( \Psi \)  
Permittivity

\( \theta \)  
Transmissivity

\( d_e \)  
Oedometer diameter

\( d_w \)  
Drain diameter

\( \Delta u \)  
Initial pore water pressure

\( \Delta P \)  
Applied incremental stress

\( C_e \)  
Equivalent compressibility of pore water line and connection

\( C_m \)  
Compressibility of pore pressure measuring element

\( C_s \)  
Compressibility of soil skeleton
<table>
<thead>
<tr>
<th>Symbol</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>h₁, h₂</td>
<td>Initial levels of two mercury surfaces measured above some datum</td>
</tr>
<tr>
<td>h₃</td>
<td>Level of sample measured above some datum</td>
</tr>
<tr>
<td>Yₘ</td>
<td>Unit weight of mercury</td>
</tr>
<tr>
<td>Yₜ</td>
<td>Unit weight of water</td>
</tr>
<tr>
<td>A</td>
<td>Cross-sectional area of the cylinder</td>
</tr>
<tr>
<td>ΔL</td>
<td>Shortening of the spring</td>
</tr>
<tr>
<td>w</td>
<td>Weight of unit length of flexible tube filled with mercury</td>
</tr>
<tr>
<td>k</td>
<td>Spring stiffness</td>
</tr>
<tr>
<td>LVDT</td>
<td>Linear variable differential transformer</td>
</tr>
<tr>
<td>DVM</td>
<td>Digital volt meter</td>
</tr>
<tr>
<td>PVD</td>
<td>Prefabricated vertical drain</td>
</tr>
<tr>
<td>CSSD</td>
<td>Conventional circular shape sand drain</td>
</tr>
<tr>
<td>PSSD</td>
<td>Plus shape sand drain</td>
</tr>
<tr>
<td>TSSD</td>
<td>Tripod shape sand drain</td>
</tr>
<tr>
<td>BSSD</td>
<td>Band shape sand drain</td>
</tr>
<tr>
<td>MIC</td>
<td>Micro structure characterization</td>
</tr>
</tbody>
</table>