Glossary of symbols

The list given below is not exhaustive, but includes all the most important symbols used in this book. The number after each brief definition refers to the section in the book where the full definition may be found, and the initials (VVS) indicate that a symbol is one used by Sokolovski.

The dot notation is defined in §2.3, whereby $\dot{x}$ denotes a small change in the value of the parameter x. As a result of the sign convention adopted (§2.2) in which compressive stresses and strains are taken as positive, the following parameters only have a *positive* dot notation associated with a *negative* change of value (i.e., $+\dot{x} = -\delta x$):*v,l,r.*

The following letters are used as suffixes: *f* failure, *r* radial, *l* longitudinal; and as superfixes: *r* recoverable, *p* plastic (irrecoverable).

a	Height of Coulomb's wedge of soil	9.1
a	Cross-sectional area of sample in axial-test	5.2
c_u	Half unconfined compression strength	6.10
c_{vc}	Coefficient of consolidation	4.3
d	Diameter, displacement, depth	1.2, 2.5, 3.7
e	Voids ratio	1.5
f, f'	General function and its derivative	3.7
h, h_w	Height, and height of water in standpipe	3.1
i	Hydraulic gradient	3.2
k	Maximum shear stress (Tresca)	2.9
k	Coefficient of permeability	3.3
$\boldsymbol{k}$	Cohesion in eq. (8.1)	(VVS) 8.1
l	Length of sample in axial-test	5.2
l	Constant in eq. (8.3) cf. λ in eq. (5.23)	8.2
m_{vc}, m_{vs}	Coefficients of volume compressibility	4.3
n	Porosity	1.5
n	Normal stress	(VVS) 9.5
p	Effective spherical pressure	5.5
p_e	Equivalent pressure cf. σ'_e	5.10
p_u	Undrained critical state pressure	5.10
p_x	Critical state pressure on yield curve	6.5
p_{LL}	Pressure corresponding to liquid limit	6.9
p_{PL}	Pressure corresponding to plastic limit	6.9
p_Ω	Pressure corresponding to Ω point	6.9
p^*, q^*	Generalized stress parameters	8.2
p, q	Uniformly distributed loading pressures	(VVS) 9.4
p'	Equivalent stress	(VVS) 9.5
q	Axial-deviator stress	5.5
q_u	Undrained critical state value of q	5.10
q_x	Critical state value of q on yield curve	6.5
r	Radial coordinate	3.8
r_1, r_2	Directions of planes of limiting stress ratio	(VVS) 9.5
s	Distance along a flowline	3.2
s_+, s_-	Parameters locating centres of Mohr's circles	(VVS) 9.5
s, t	Stresses in plane strain	App. C

t	Tangential stress	(VVS) 9.5
t	Time	1.2
$t_{1/2}$	Half-settlement time	4.6
u	Excess pore-pressure	3.1
u_w	Total pore-pressure	1.6
u	Velocity of stream	1.7
v	Velocity	1.2
v_a	Artificial velocity	3.3
v_s	Seepage velocity	3.3
v	Specific volume	1.5
v_x	Critical state value of v on yield curve	6.5
v_κ, v_λ	Ordinates of κ-line and λ-line	6.1
v_{LL}	Specific volume at liquid limit	6.9
v_{PL}	Specific volume at plastic limit	6.9
Δv_{PI}	Change of specific volume corresponding to plasticity index	6.9
v_Ω	Specific volume corresponding to Ω point	6.9
w	Water content	1.5
w	Weight	1.2
x, y, z	Cartesian coordinate axes	1.7
x_t	Transformed coordinate	3.5
A, A_t	Cross-sectional areas	3.3, 4.1
A, A_m	Fourier coefficients	4.5
$A, B, \overline{B}$	Pore-pressure coefficients	7.10
C_c, C'_c	Compression indices	4.2, 6.9
D	Diameter	1.2
D_0	A total change of specific volume	5.13
E	Young's modulus	2.7
$\dot{E}$	Loading power	5.6
F, F', F^*	Potential functions (Mises)	2.9, 2.11, app. C
F	Frictional force	9.1
G	Shear modulus	2.7
G_s	Specific gravity	1.2
H	Maximum drainage path	4.4
H	Abscissa of Mohr-Coulomb lines	(VVS) 8.3
K	Bulk modulus	2.7
K, K_0	Coefficients of earth pressure	6.6
L	Lateral earth pressure force	9.1
M	Mach number	1.7
N	Overcompression ratio	7.10
N	Normal force	9.1
P, P_w, P_s	Vertical loads in consolidometer	4.1
P_A, P_P	Active and passive pressure forces	9.1, 9.2
$\dot{P}$	Probing power	5.6
Q	Quantity of flow	3.3
R	Force of resistance	1.2
T	Tangential force	9.1
T_v	Time factor	4.4

$T_{½}$	Half-settlement time factor		4.6
U	Proportion of consolidation		4.4
$\dot{U}$	Recoverable power		5.6
V, V_t, V_v	Volumes		1.2, 3.3
W	Weight		1.2
$\dot{W}$	Dissipated power		5.7
X_1, X_2, X_3	Loads in simple test system		5.2
Y	Yield stress in tension (Mises)		2.9
LL	Liquid limit		1.3
PL	Plastic limit		1.3
PI	Plasticity index		1.3
α, β	Pair of characteristics		9.9
α, β	Angles		2.4
γ	Engineering shear strain		2.4
γ	Saturated bulk density	(by weight not mass)	1.5
γ_d	Dry bulk density	(by weight not mass)	1.5
γ'	Submerged bulk density	(by weight not mass)	3.3
γ_w	density of water	(by weight not mass)	1.2
δ	Inclination of equivalent stress	(VVS)	9.5
δ	Displacement in simple test system		5.3
ε	Half angle between characteristics	(VVS)	9.1
$\dot{\varepsilon}$	Increment of shear strain		5.5
ε	Cumulative shear strain		6.7
$\dot{\varepsilon}_{ij}$	Components of strain increment		2.10
$\dot{\varepsilon}^*$	Generalized shear strain increment		App. C
η	Ratio of stresses q/p		5.8
η	Special parameter	(VVS)	9.9
θ	Angle		9.1
$\boldsymbol{\kappa}$	Special parameter	(VVS)	9.5
κ	Gradient of swelling line		4.2
λ	Gradient of compression line		4.2
λ_+, λ_-	Inclinations of principal stress to a stress discontinuity	(VVS)	9.5
μ	Viscosity		1.2
ν	Poisson's ratio		2.7
ν, ν^*	Scalar factors		2.10, app. C
ξ	Special parameter	(VVS)	9.9
ρ	Settlement		4.1
$\boldsymbol{\rho}$	Angle of friction in eq. (8.1)	(VVS)	8.1
σ	Total stress		1.6
σ'	Effective stress		1.6
σ'_{ij}	Components of effective stress		2.2
σ'_e	Hvorslev's equivalent stress		8.2
σ'_+, σ'_-	Parameters locating centres of Mohr's circles	(VVS)	9.5
τ, τ_m	Shear stresses in direct shear test		5.14
τ_{yz} etc.	Shear stresses		2.2
ϕ	Potential function		1.7

ϕ, ϕ_m	Angles of friction in Taylor's shear tests		5.14
ϕ_+, ϕ_-	Inclinations of principal stress on either side of discontinuity	(VVS)	9.5
ψ	Streamline function		3.7
Γ	Ordinate of critical state line		5.9
Δ	Caquot's angle	(VVS)	9.5
Λ	Parameter relating swelling with compression		6.6
M	Critical state frictional constant		5.7
$\sum'$	Major principal stress	(VVS)	9.5
Ω	Common point of idealized critical state lines		6.9