

Common Symbols used in GEOL 473/573

A	Area [L^2]
b	Saturated thickness of an aquifer [L]
d	Diameter [L]
e	void ratio (dimensionless) or e^1 is a constant = 2.718281828...
f	Number of head drops in a flow of net
F	Force [$M L T^{-2}$]
g	Acceleration due to gravity [9.81 m/s^2]
h	Hydraulic head [L] (Total hydraulic head; $h = \psi + z$)
h_o	Initial hydraulic head [L], generally an initial condition or a boundary condition
dh/dL	Hydraulic gradient [dimensionless] sometimes expressed as i
k_i	Intrinsic permeability [L^2]
K	Hydraulic conductivity [$L T^{-1}$]
K_x, K_y, K_z	Hydraulic conductivity in the x, y, or z direction [$L T^{-1}$]
L	Length from one point to another [L]
n	Porosity [dimensionless]
n_e	Effective porosity [dimensionless]
q	Specific discharge [$L T^{-1}$] (Darcy flux or Darcy velocity)
q_x, q_y, q_z	Specific discharge in the x, y, or z direction [$L T^{-1}$]
Q	Flow rate [$L^3 T^{-1}$] (discharge)
p	Number of stream tubes in a flow of net
P	Pressure [$M L^{-1} T^{-2}$]
r	Radial coordinate [L]
r_w	Radius of well over screened interval [L]
Re	Reynolds' number [dimensionless]
s	Drawdown in an aquifer [L]
S	Storativity [dimensionless] (Coefficient of storage)
S_s	Specific storage [L^{-1}]
S_y	Specific yield [dimensionless]
t	Time [T]
T	Transmissivity [$L^2 T^{-1}$] or Temperature (degrees)
u	Theis' number [dimensionless] or used for fluid pressure (P) in engineering
v	Pore-water velocity [$L T^{-1}$] (Average linear velocity)
V	Volume [L^3]
V_T	Total volume of a soil core [L^3]
V_v	Volume voids in a soil core [L^3]
V_w	Volume of water in the voids of a soil core [L^3]
V_s	Volume solids in a soil core [M]
M_s	Mass of solids in a soil core [M]
M_T	Mass of solids and water in a soil core [M]
W	Width [L]
$W(u)$	Well function of u [dimensionless]
x, y, z	Cartesian coordinate [L]
z	Elevation head (Position head) [L]
α	Compressibility of the aquifer matrix [$L T^2 M^{-1}$]
β	Compressibility of water [$L T^2 / M$]
γ	Specific weight [$M L^{-2} T^{-1}$] = ρg
θ	Water content of a porous medium [dimensionless having a magnitude between 0 and n]
μ	Dynamic Viscosity [$M L^{-1} T^{-1}$]
ρ_w	Density of water [$L^3 T^{-1}$]
ρ_f	Density of fresh water [$L^3 T^{-1}$]
ρ_s	Density of seawater [$L^3 T^{-1}$]
ρ_{dry}	Dry bulk density [$L^3 T^{-1}$]
ρ_{sat}	saturated density of a porous media [$L^3 T^{-1}$]
ρ_b	Bulk density (mass of solid + water in the soil core) [$L^3 T^{-1}$]
ρ_m	average particle or grain density [$L^3 T^{-1}$]
σ_T	Total stress [$M L^{-1} T^{-2}$]
σ_e	Effective stress [$M L^{-1} T^{-2}$]
τ	Shear stress [$M L^{-1} T^{-2}$]
Φ	Fluid potential [$L^2 T^{-2}$]
ψ	Pressure head [L]