Instructions: Fill in the green cells

Part A: Water Quantity Calcula

(Assuming no additional water ingress from the sides and/or bottom of the excavation).

VT = A*d*n

Where:

VT	The total pore volume (m^3)
A	Areal extent of the aquifer/excavation (m^2)
d	Saturated thickness
n	Average total porosity, i.e. ratio of void spaces (or water for saturated conditions) to t

Input parameters

Depth of excavation (m)	3.00	
Depth of water table (m)	2.40	(shallowest, refer to borehole BH 5)

A (m^2)	6.25		
d (m)	0.60		
n	0.49	Assumed[1]	**(Recommended to be confirmed by means of in**

VT (m^3) **1.8375**

NB: The quantity of water to be de-watered/pumped out during excavation will be a function of the t areal extent of the excavation (e.g. length X width footprint), meaning it will differ from one fou sum total for all the required excavations.

Part B: Water Inflow (Soil Perme

Description of how water (or other liquids) and air are able to move through the soil.

Q = -k*i*A

Where:

Q	Groundwater inflow (l/day)	
k	Hydraulic conductivity (m/day)	
i	Δd/Δl	
	Where:	
	Δd	Depth difference between shallowest and deepest water table (m)
	Δl	Distance between reference positions (m)
A	Areal extent of the aquifer/excavation (m^2)	

Input parameters

	Reference	Depth relative to msl (m)	Y-coordinate
Shallowest water table	BH 4	0.69	-106,621.47
Deepest water table	TP 3	-0.17	-106,605.55

k (m/s)		0.01	Assumed[2] **(Recommended to be confirmed by means of in**
k (m/day)		864.00	
i	Δd/Δl		
	Where:		
	Δd (m)	-0.86	
	Δl (m)	112.12	
	i	-0.00767	
A (m^2)		6.25	
Q (m^3/day)		**41.42**	
Q (l/day)		**41419.33**	

NB: Please note that the above estimations/calculations are based on certain assumptions, in the abs
situ materials.

tions

:otal volume of material

ı-situ/laboratory testing of selected samples)

:otal depth of the excavation below the water table as well as the
ndation/excavation to another. The total quantity of water will be the

ability)

Assumptio

Reference:

1

2

X-coordinate
3,188,003.09
3,187,892.11

ı-situ/laboratory testing of selected samples)

ꞩence of any in-situ pump tests and/or permeability testing on the in-

ns:

Soil porosity

Geotechdata.info - Updated 18.11.2013

Soil porosity (n) is the ratio of the volume of voids to the total volume of the soil:

n = (V_v) / V

Where V_v is the volume of the voids (empty or filled with fluid), and V is the total volume of the soil.

Porosity is usually used in parallel with soil void ratio (e) , which is defined as the ratio of the volume of voids to the volume of solidsl. The posoity and the void ratio are inter-related as follows:

e = n /(1-n)   and   n = e / (1+e)

The soil prosoity depends on the consistence and packing of the soil. It is directly affacted by compaction.

Typical values of soil porosity for different soils

Some typical values of soil porosity are given below for different USCS soil types at normally consolidated condition unless otherwise stated. These values should be used only as guidline for geotechnical problems; however, specific conition of each engineering problem often needs to be considered for an appropriate choice of geotechnical parameters.

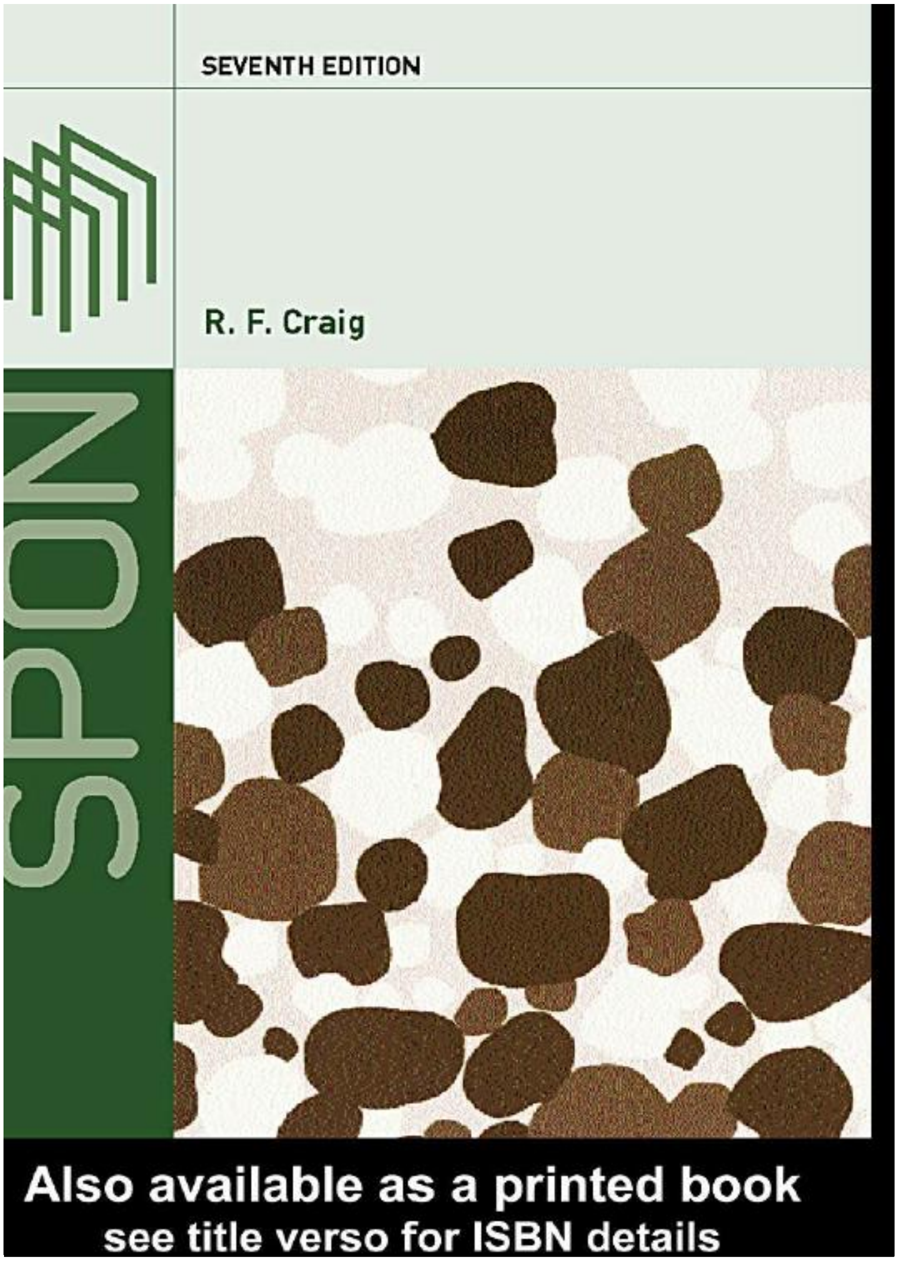
Description	USCS
Well graded gravel, sandy gravel, with little or no fines	GW
Poorly graded gravel, sandy gravel, with little or no fines	GP
Silty gravels, silty sandy gravels	GM
Gravel	(GW-C
Clayey gravels, clayey sandy gravels	GC
Glatial till, very mixed grained	(GC)
Well graded sands, gravelly sands, with little or no fines	SW
Coarse sand	(SW)
Fine sand	(SW)
Poorly graded sands, gravelly sands, with little or no fines	SP
Silty sands	SM
Clayey sands	SC
Inorganic silts, silty or clayey fine sands, with slight plasticity	ML
Uniform inorganic silt	(ML)
Inorganic clays, silty clays, sandy clays of low plasticity	CL
Organic silts and organic silty clays of low plasticity	OL
Silty or sandy clay	(CL-OI
Inorganic silts of high plasticity	MH
Inorganic clays of high plasticity	CH
Soft glacial clay	-
Stiff glacial clay	-
Organic clays of high plasticity	OH
Soft slightly organic clay	(OH-O
Peat and other highly organic soils	Pt
soft very organic clay	(Pt)

http://www.geotesting.info/parameter/soil-porosity.html

CRAIG'S SOIL MECHANICS

Table 2.1 Coefficient of permeability (

1   10^{-1} 10^{-2} 10^{-3} 10^{-4}



Clean gravels	Clean sands and sand–gravel mixtures	Ve sil lar
	Desiccated and fis	

	Porosity [-]			Reference
	min	max	Specific value	
	0.21	0.32		[1],
	0.21	0.32		[1],
	0.15	0.22		[1],
GP)	0.23	0.38		[2],
	0.17	0.27		[1],
	-	-	0.20	[4 cited in 5]
	0.22	0.42		[1], [2],
	0.26	0.43		[2],
	0.29	0.46		[2],
	0.23	0.43		[1], [2],
	0.25	0.49		[1], [2],
	0.15	0.37		[1],
	0.21	0.56		[1],
	0.29	0.52		[3],
	0.29	0.41		[1],
	0.42	0.68		[1], [3],
L)	0.20	0.64		[3],
	0.53	0.68		[1],
	0.39	0.59		[1],
	-	-	0.55	[4 cited in 5]
	-	-	0.38	[4 cited in 5]
	0.50	0.75		[1], [3],
L)	-	-	0.66	[4] cited in [5]
	-	-		[4 cited in 5]
	-	-	0.75	[4] cited in [5]

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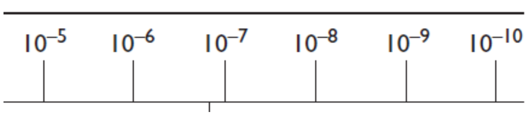
Citation :
Geotechdata.info, Soil void ratio, http://geotechdata.info/parameter/soil-void-ratio.html (as 16, 2013).

(m/s) (BS 8004: 1986)



ery fine sands, ts and clay-silt minate	Unfissured clays and clay-silts (>20% clay)
sured clays	

;wiss Road and

;y, New York,

ɔK Z Soil.PC

; of November