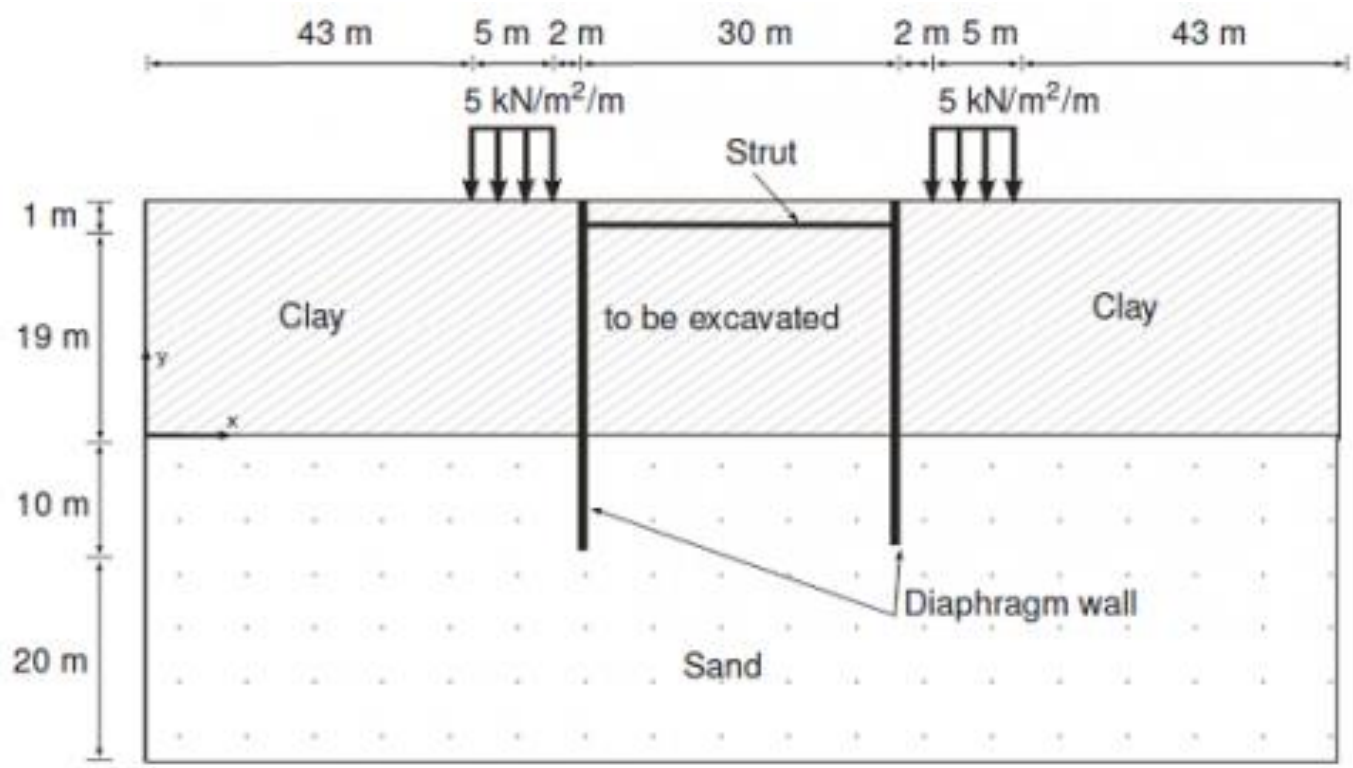
Problema 1


43 m
5 m
2 m
30 m
2 m
5 m
43 m
5 kN/m²/m
5 kN/m²/m
Strut
1 m
19 m
10 m
20 m
Clay
to be excavated
Clay
y
x
Diaphragm wall
Sand

Propiedades del terreno

Parameter	Name	Clay	Sand	Unit
General				
Soil model	Model	Hardening Soil	Hardening soil	-
Drainage type	Type	Undrained (A)	Drained	-
Unsaturated unit weight	γ_{unsat}	16	17	kN/m^3
Saturated unit weight	γ_{sat}	18	20	kN/m^3
Mechanical				
Secant stiffness in standard drained triaxial test	E_{50}^{ref}	$4 \cdot 10^3$	$40 \cdot 10^3$	kN/m^2
Tangent stiffness for primary oedometer loading	E_{oed}^{ref}	$3.3 \cdot 10^3$	$40 \cdot 10^3$	kN/m^2

Propiedades del terreno

Mechanical				
Unloading / reloading stiffness	E_{ur}^{ref}	$12 \cdot 10^3$	$120 \cdot 10^3$	kN/m^2
Poisson's ratio	ν_{ur}	0.15	0.2	-
Power for stress-level dependency of stiffness	m	1.0	0.5	-
Cohesion (constant)	c'_{ref}	1	0	kN/m^2
Friction angle	φ'	25	32	°
Dilatancy angle	ψ	0	2	°
K_0-value for normal consolidation	K_0^{nc}	0.5774	0.4701	-
Groundwater				
Data set	-	Standard	Standard	-
Soil type	-	Coarse	Coarse	-
Use defaults	-	None	None	-
Permeability in horizontal direction	k_x	$1 \cdot 10^{-3}$	1	m/day
Permeability in vertical direction	k_y	$1 \cdot 10^{-3}$	1	m/day

Propiedades del terreno

Interfaces				
Srength determination	-	Manual	Manual	-
Strength reduction factor	R_{inter}	0.5	0.67	-
Initial				
K_0 determination	-	Automatic	Automatic	-
Pre-overburden pressure	POP	5	0	kN/m^2
Over-consolidation ratio	OCR	1	1	-

Propiedades de la pantalla

Property	Name	Value	Unit
General			
Material type	-	Elastic	-
Weight	w	10	kN/m/m
Prevent punching	-	No	-
Mechanical			
Isotropic	-	Yes	-
Axial stiffness	EA_1	$7.5 \cdot 10^{6}$	kN/m
Bending stiffness	EI	$1.0 \cdot 10^{6}$	kNm^2/m
Poisson's ratio	ν	0.0	-

Propiedades del puntal

Property	Name	Strut	Unit
General			
Material type	-	Elastic	-
Mechanical			
Out-of-plane spacing	$L_{spacing}$	5	m
Axial stiffness	EA	$2 \cdot 10^{6}$	kN