Clase 9-10

Prof.: Ricardo Moffat C.

Resistencia de materiales finos

- Resistencia drenada
- Resistencia No-drenada

Carga No drenada (General)

- Parámetros de presión de poros A y B
- Ensayos Consolidados
- Ensayos no consolidados

VALUES OF PARAMETER *B*

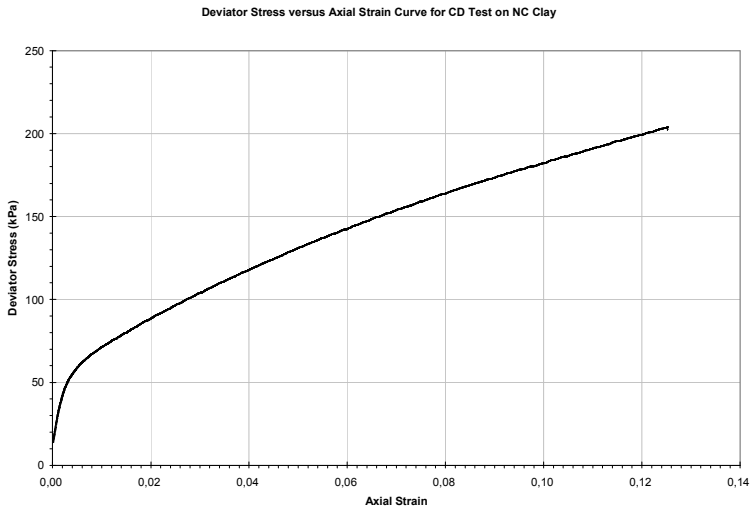
Material	*S*(%)	*B*	Reference
Sandstone	100	0.286	
Granite	100	0.342	
Marble	100	0.550	Computed from
Concrete	100	0.582	compressibi-
Dense sand	100	0.9921	lities given by
Loose sand	100	0.9984	Skempton (1961)
London clay (OC)	100	0.9981	
Gosport clay (NC)	100	0.9998	
Vicksburg buckshot clay	100	0.9990	M.I.T.
Kawasaki clay	100	0.9988 to 0.9996	M.I.T.
Boulder clay	93	0.69	Measured by
	87	0.33	Skempton
	76	0.10	(1954)

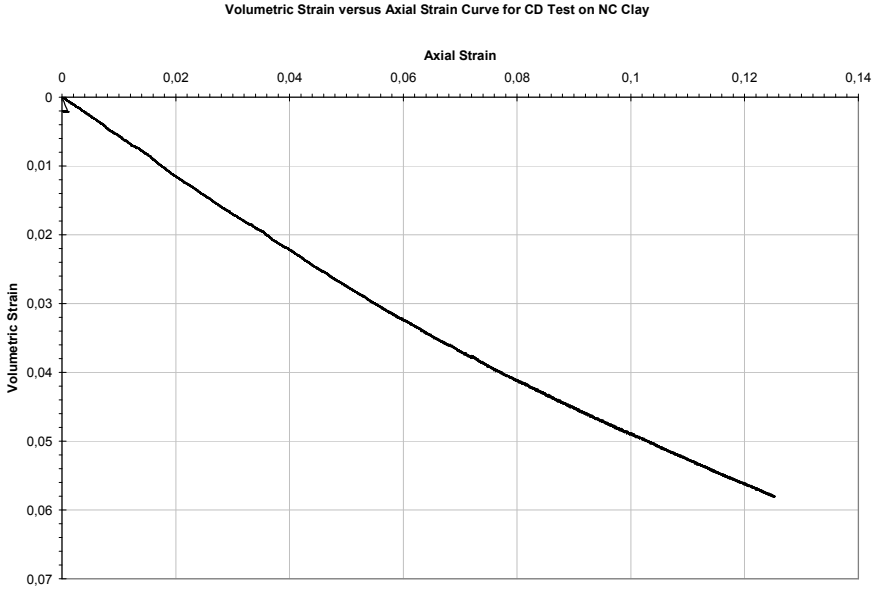
VALUES OF PARAMETER *A*

Material ($S = 100\%$)	*A* (at failure)	Reference
Very loose fine sand	2 to 3	Typical
Sensitive clay	1.5 to 2.5	values
Normally consolidated clay	0.7 to 1.3	given by
Lightly overconsolidated clay	0.3 to 0.7	Bjerrum
Heavily overconsolidated clay	−0.5 to 0	

Material ($S = 100\%$)	A (for foundation settlement)	Reference
Very sensitive soft clays	>1	
Normally consolidated clays	$\frac{1}{2}$ to 1	From Skempton
Overconsolidated clays	$\frac{1}{4}$ to $\frac{1}{2}$	and Bjerrum
Heavily overconsolidated sandy clays	0 to $\frac{1}{4}$	(1957)

Ensayo drenado en arcilla NC





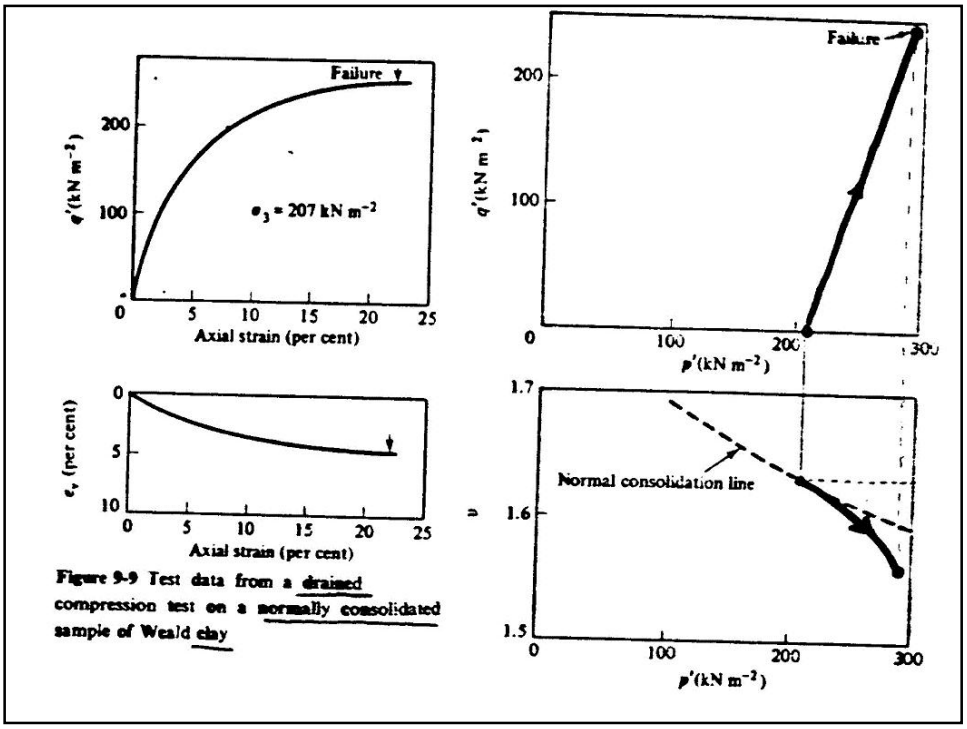
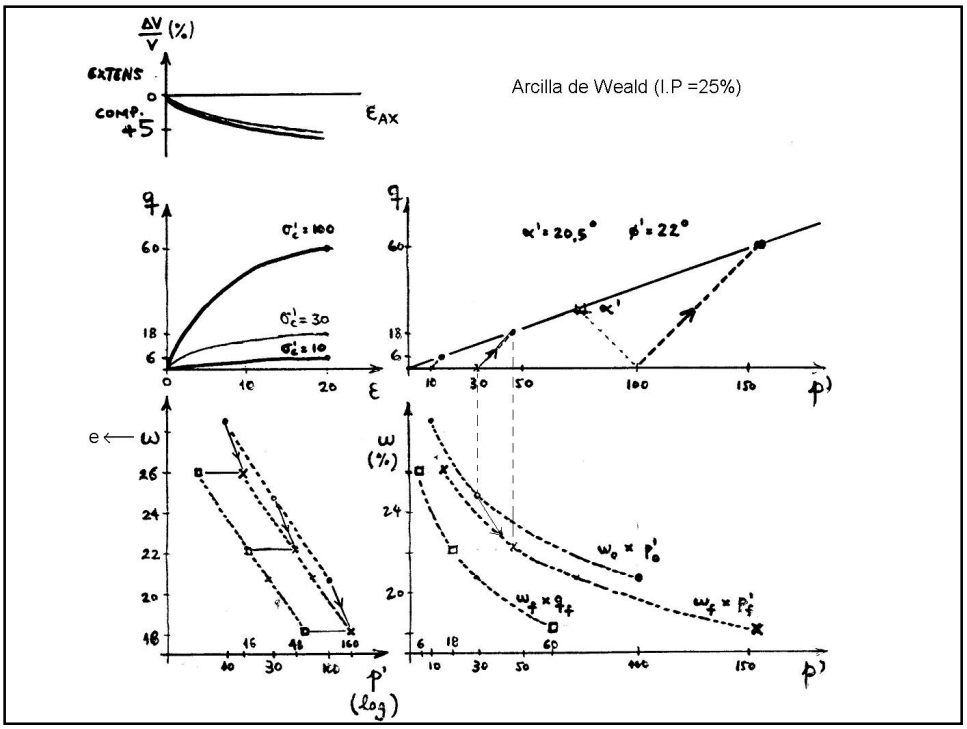
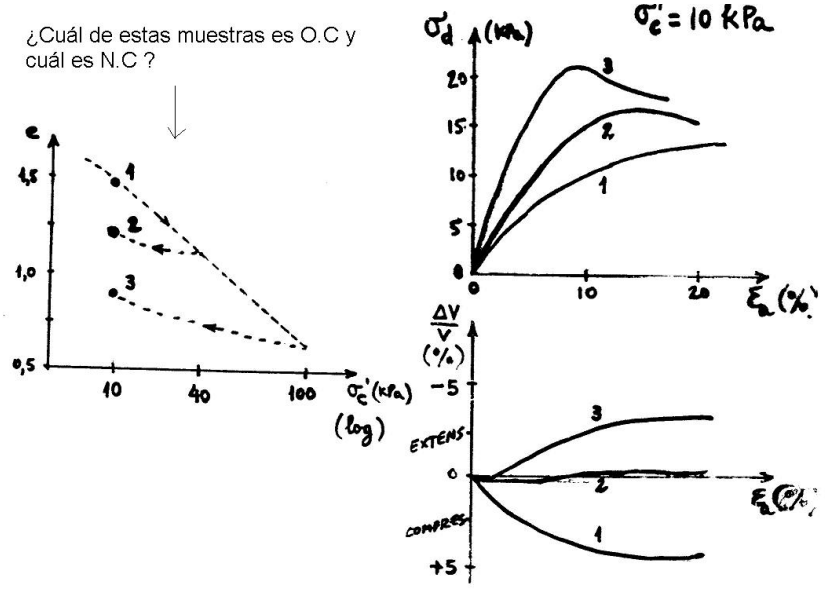


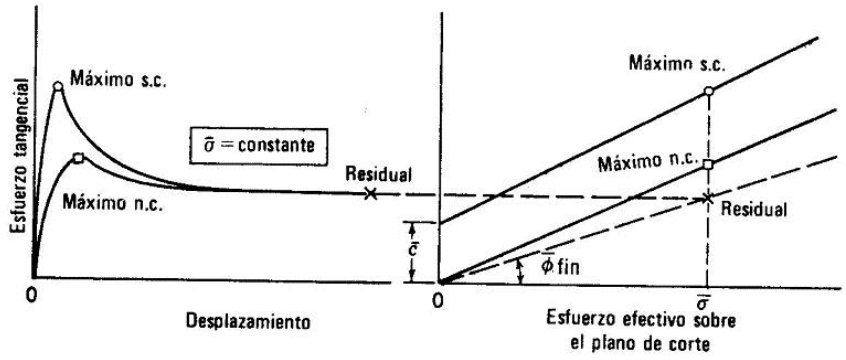
Figure 9-9 Test data from a drained compression test on a normally consolidated sample of Weald clay

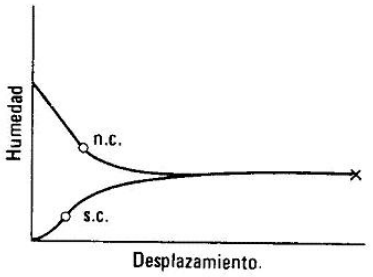


Arcilla OC -Drenado

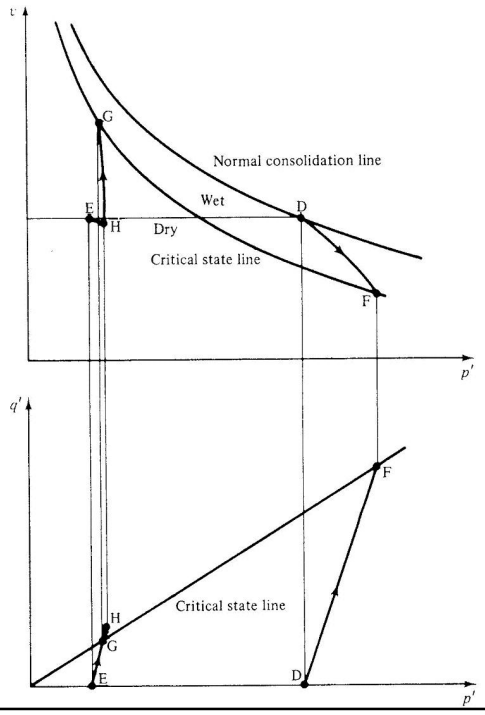
¿Cuál de estas muestras es O.C y cuál es N.C ?





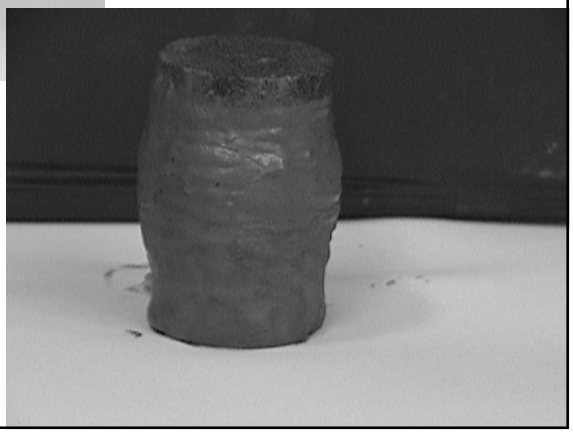


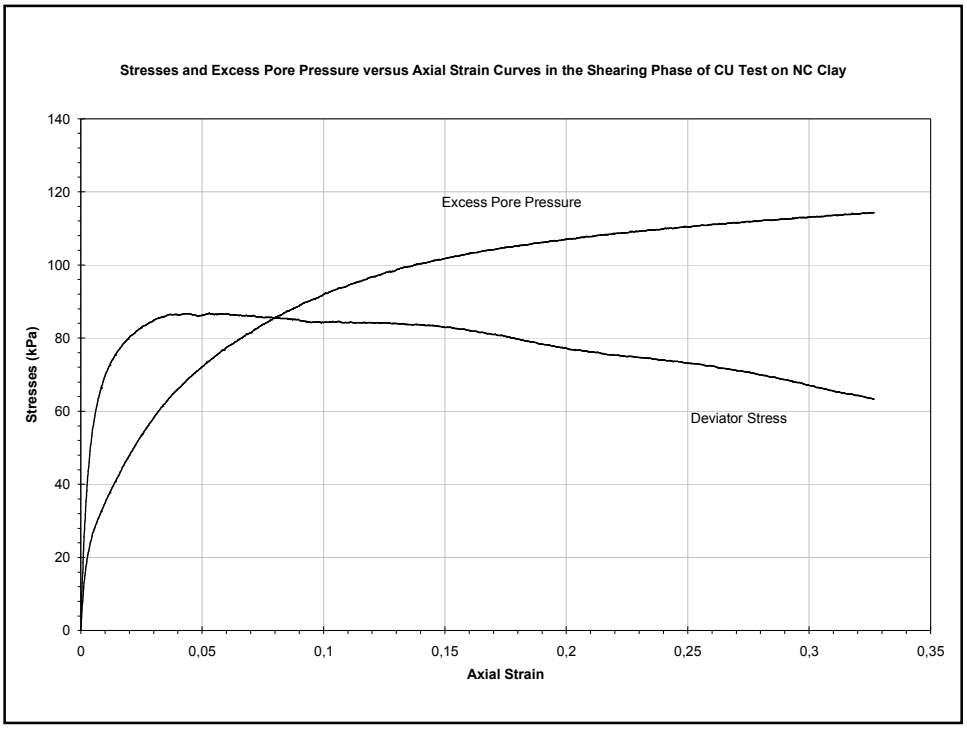
Relación entre las resistencias máxima y residual.

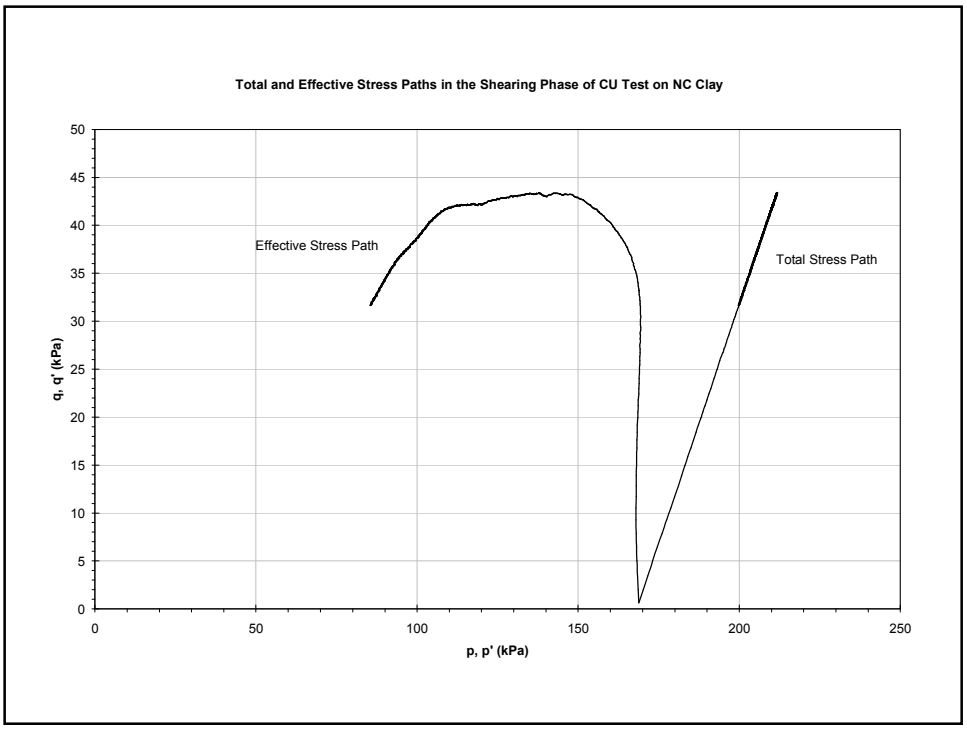


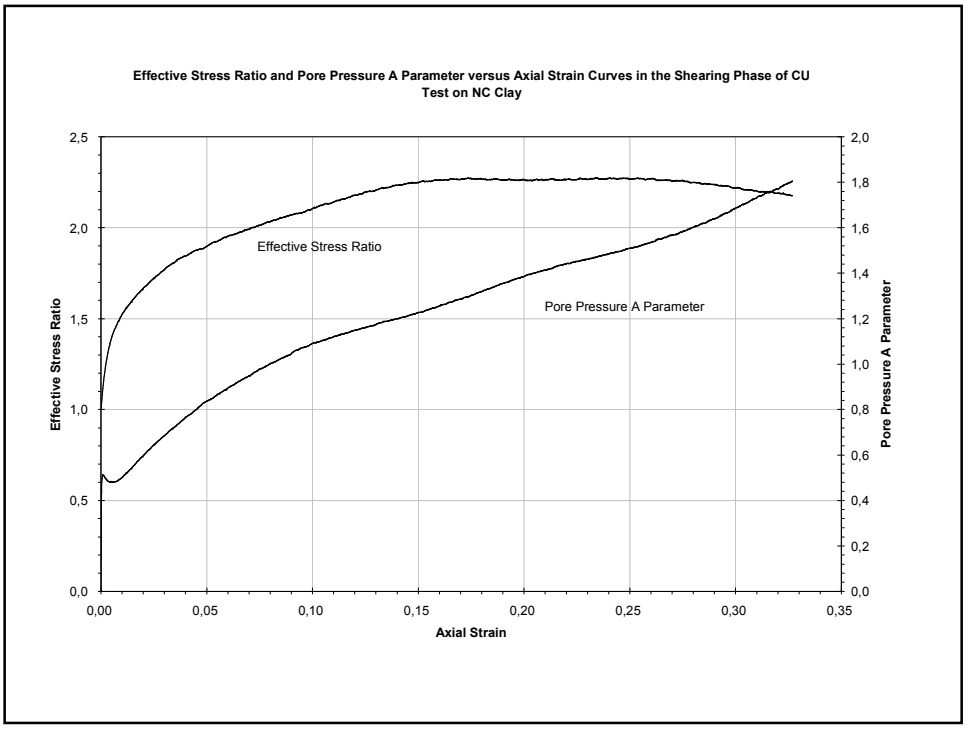
Comparación ensayo drenado NC y OC

Arcilla NC-
No drenado




Stresses and Excess Pore Pressure versus Axial Strain Curves in the Shearing Phase of CU Test on NC Clay
Excess Pore Pressure
Deviator Stress
Stresses (kPa)
Axial Strain
0
20
40
60
80
100
120
140
0
0,05
0,1
0,15
0,2
0,25
0,3
0,35


Total and Effective Stress Paths in the Shearing Phase of CU Test on NC Clay
Effective Stress Path
Total Stress Path
q, q' (kPa)
p, p' (kPa)
0
5
10
15
20
25
30
35
40
45
50
0
50
100
150
200
250



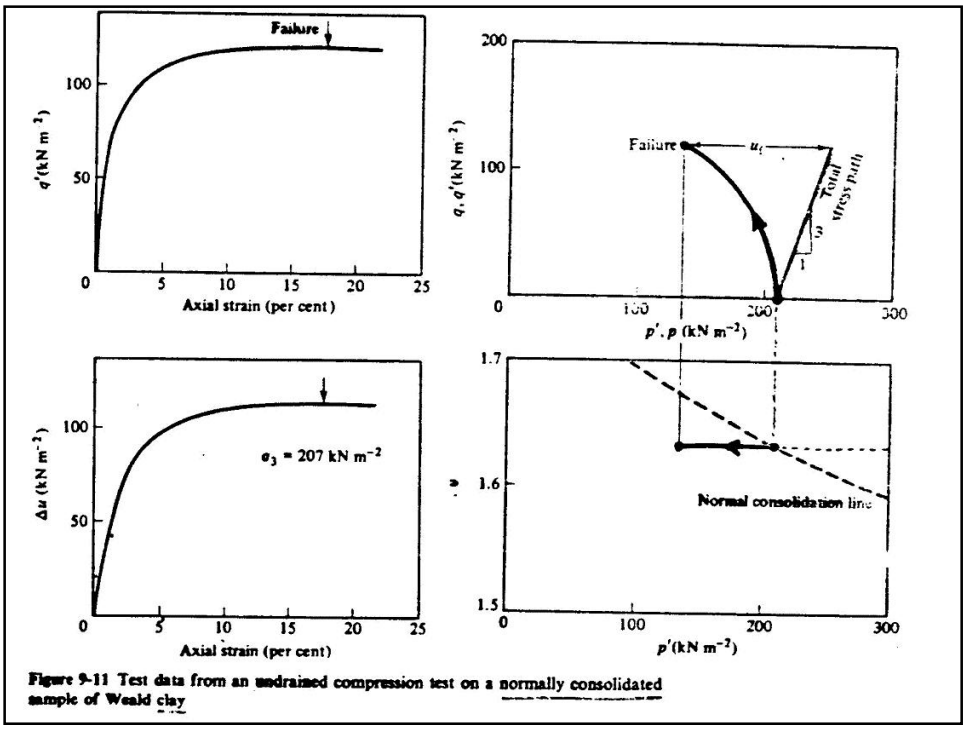
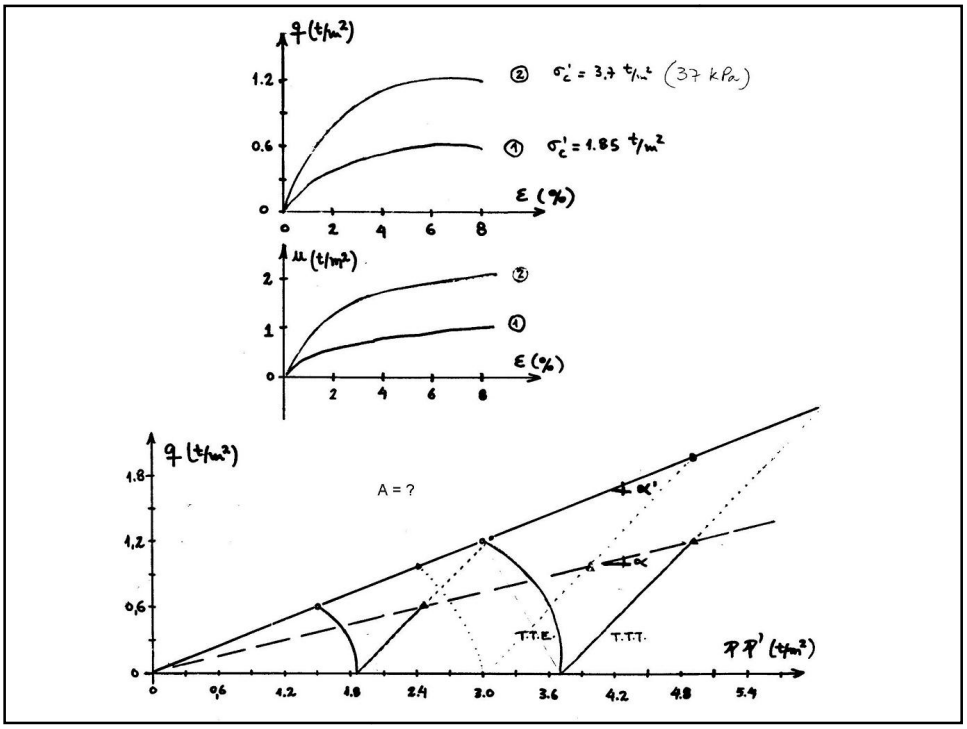
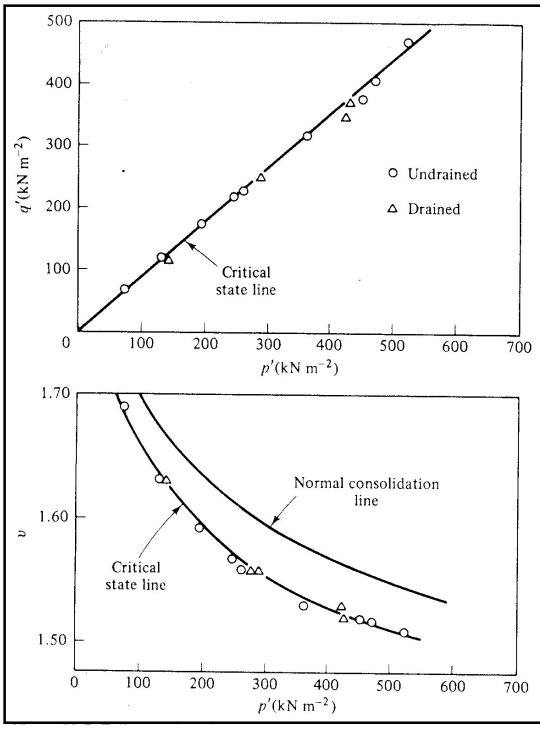
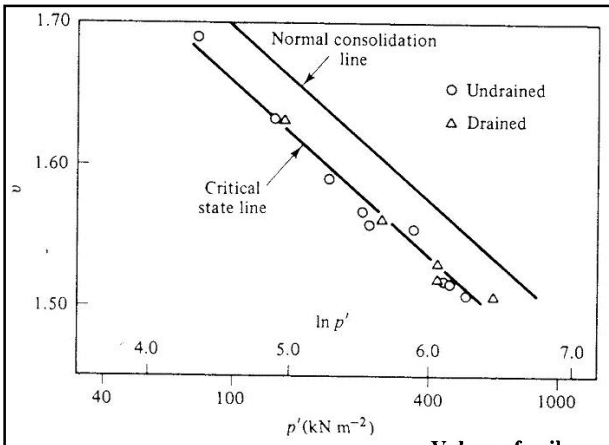


Figure 9-11 Test data from an undrained compression test on a normally consolidated sample of Weald clay





Línea de estado último No drenado vs. Drenado.



$$\upsilon = 1 + e$$

$$q = M \cdot p`$$

$$\upsilon = \Gamma - \lambda \ln p`$$

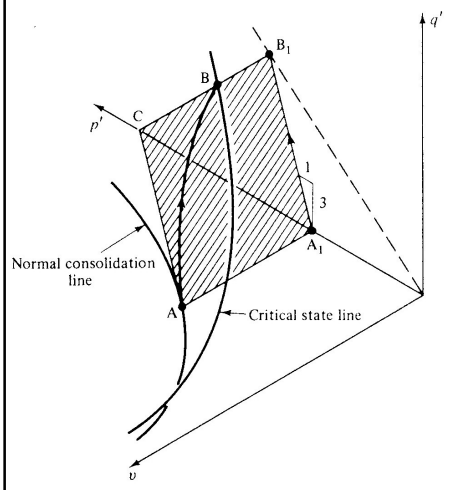
$$q` = (\sigma`_1 - \sigma`_3)$$

$$p` = \tfrac{1}{3}(\sigma`_1 + \sigma`_2 + \sigma`_3)$$

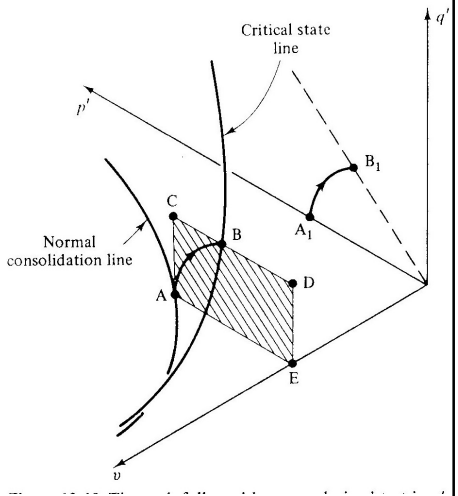
Values of soil constants for various clays (after Schofield and Wroth, 1968, p. 157)

	London clay	Weald clay	Kaolin
λ	0.161	0.093	0.26
κ	0.062	0.035	0.05
Γ	2.759	2.060	3.767
M	0.888	0.95	1.02

Note: the value of Γ is that for $p' = 1.0$ kN m^{-2}.

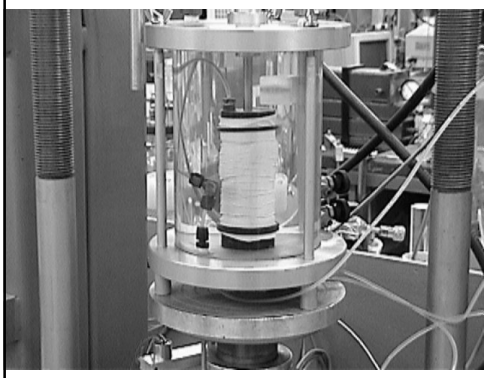


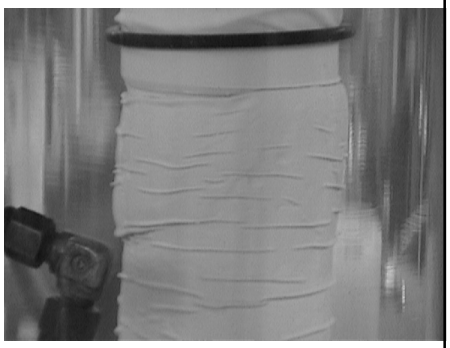
Drenado



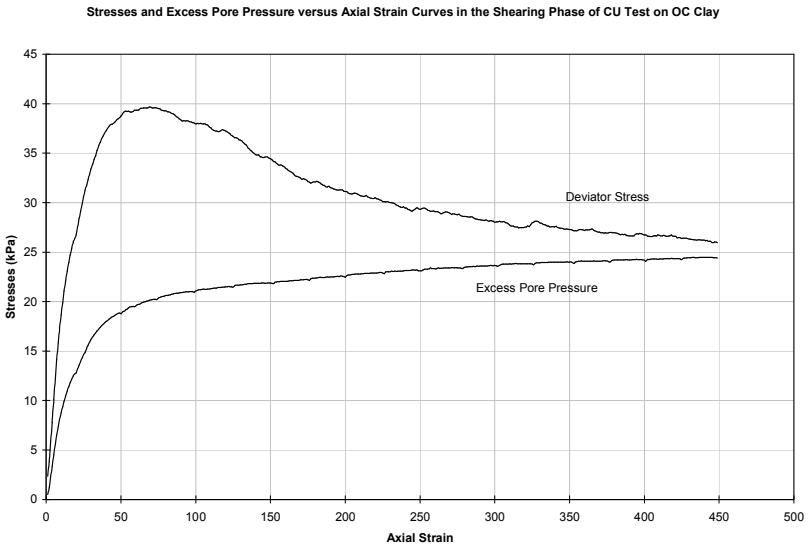
No drenado

Arcilla OC- No drenado

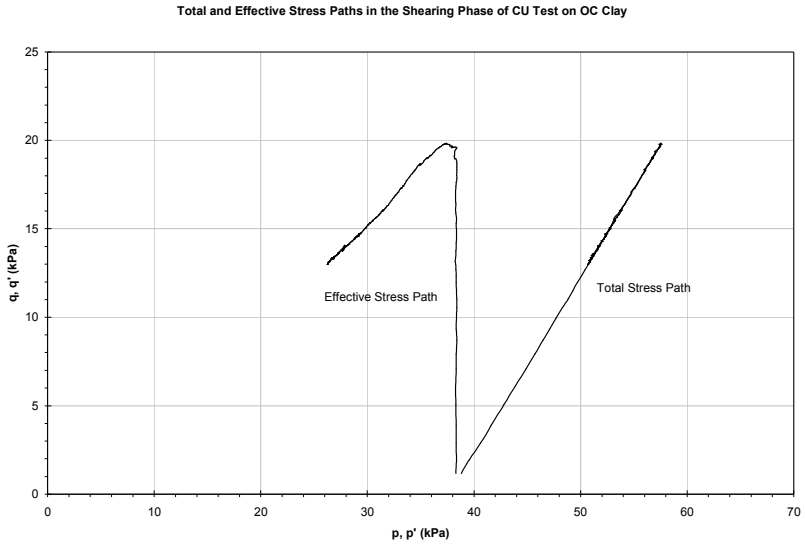




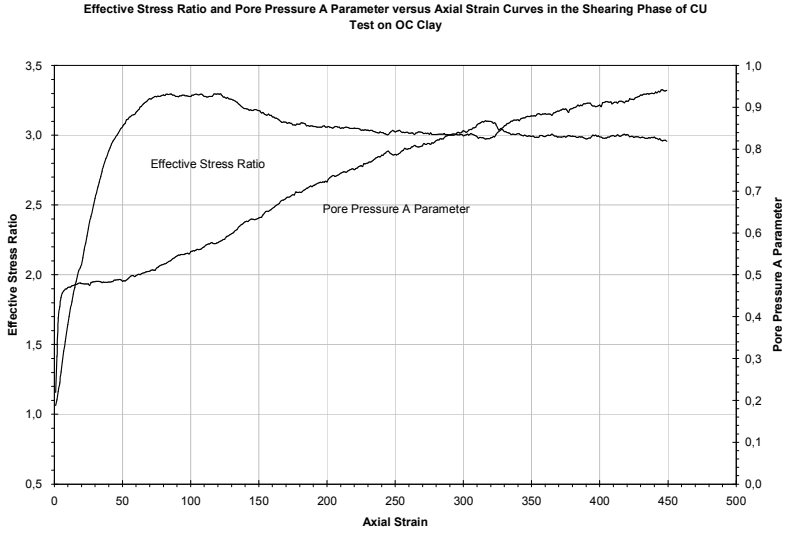
LEVEMENTE PRECONSOLIDADO

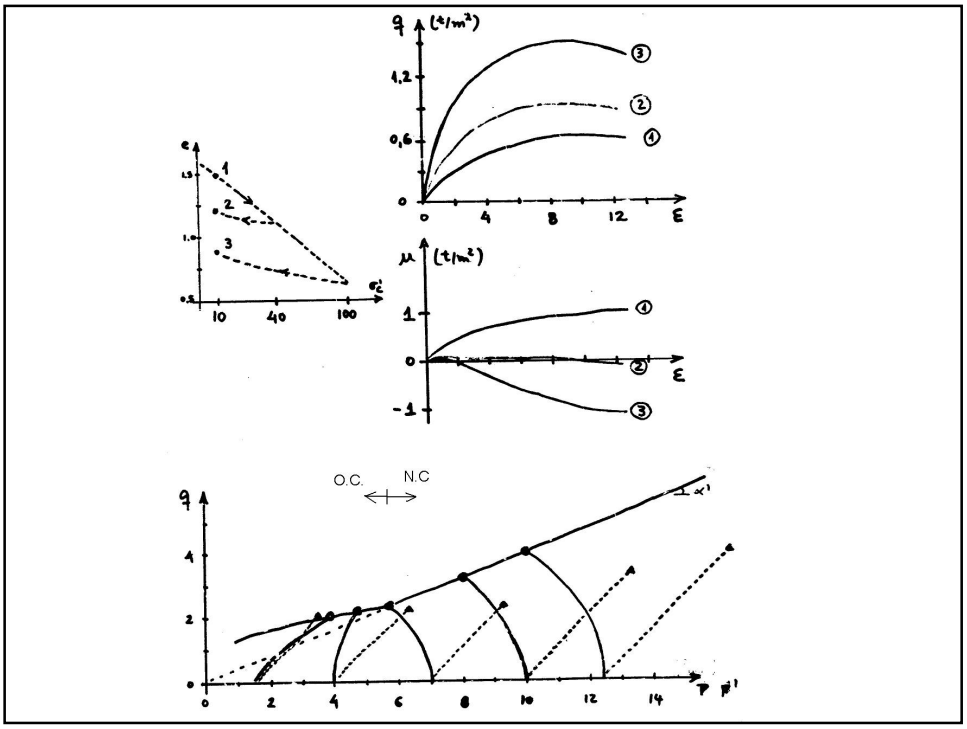


LEVEMENTE PRECONSOLIDADO

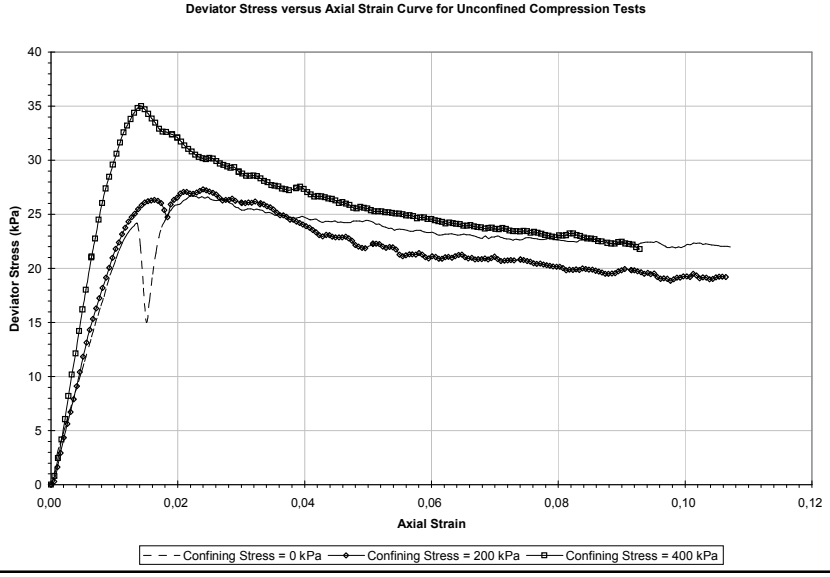


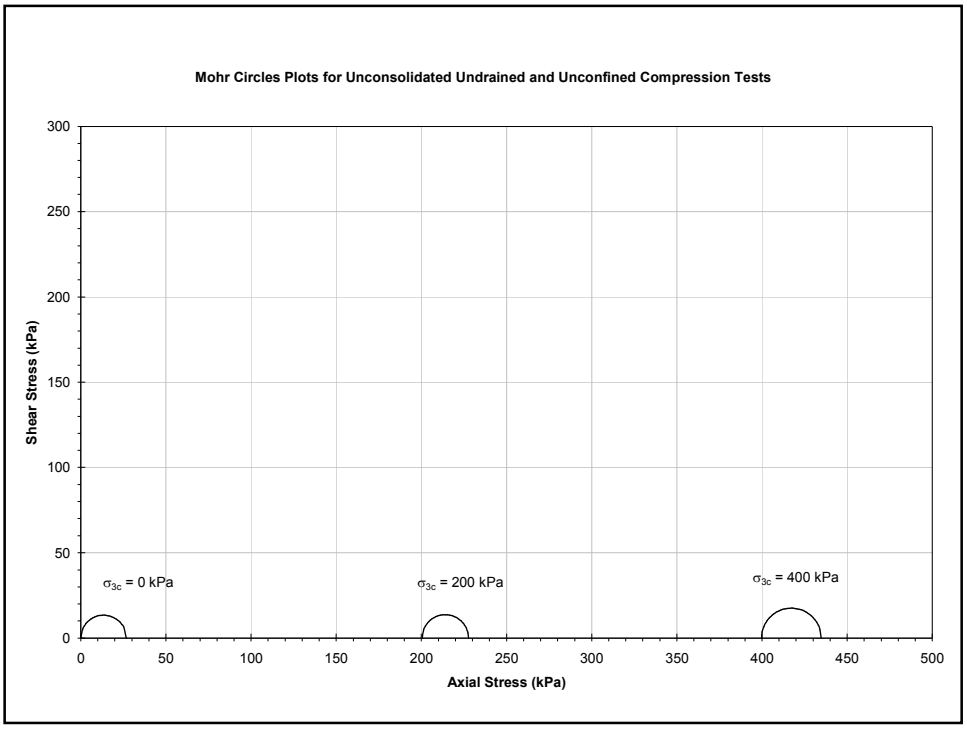
LEVEMENTE PRECONSOLIDADO

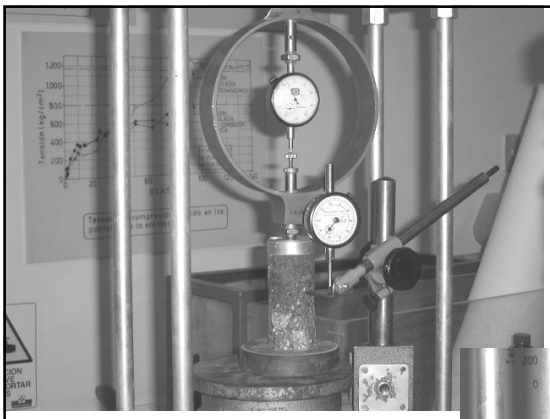




Ensayos No consolidados







Ensayo compresión simple