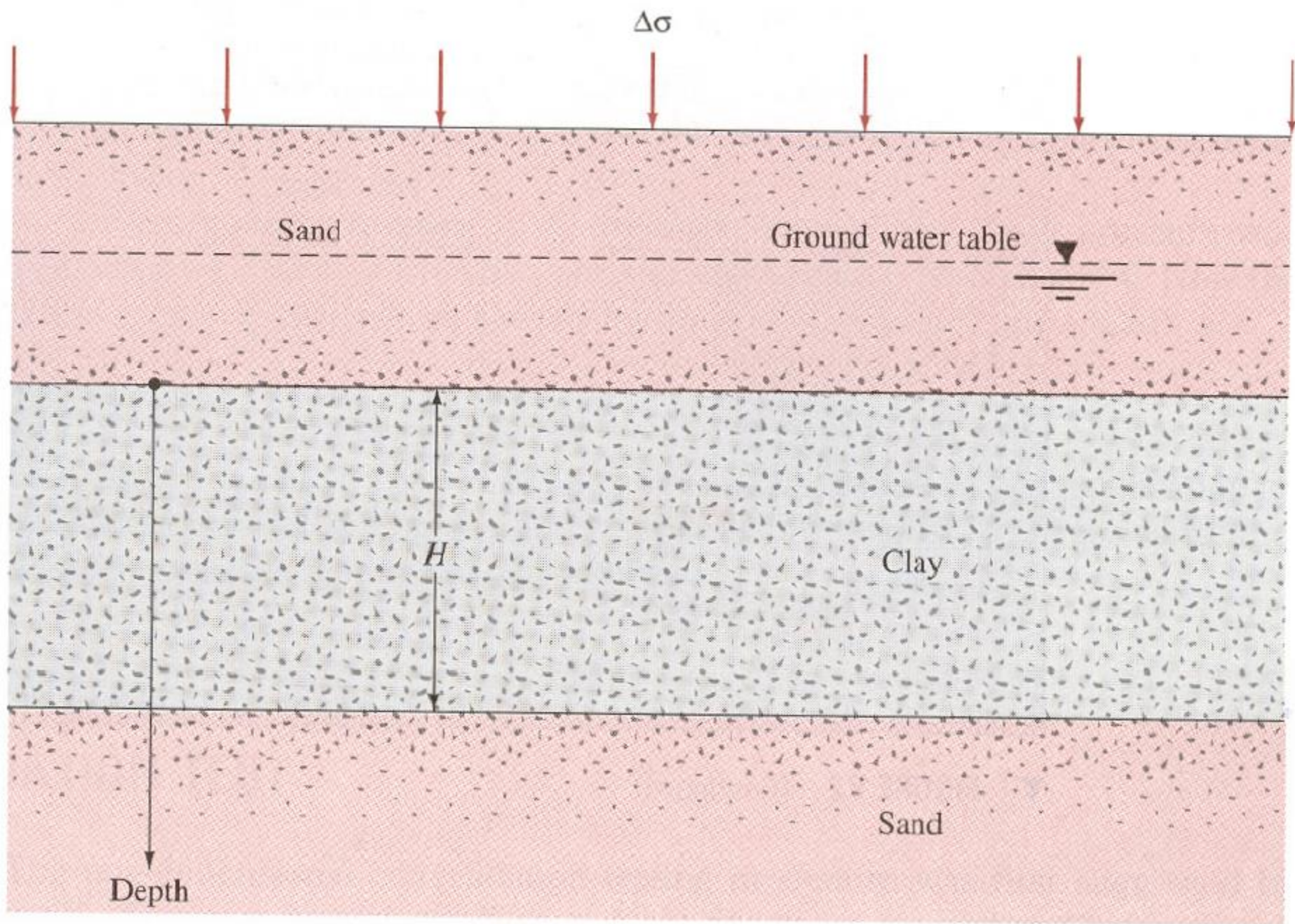
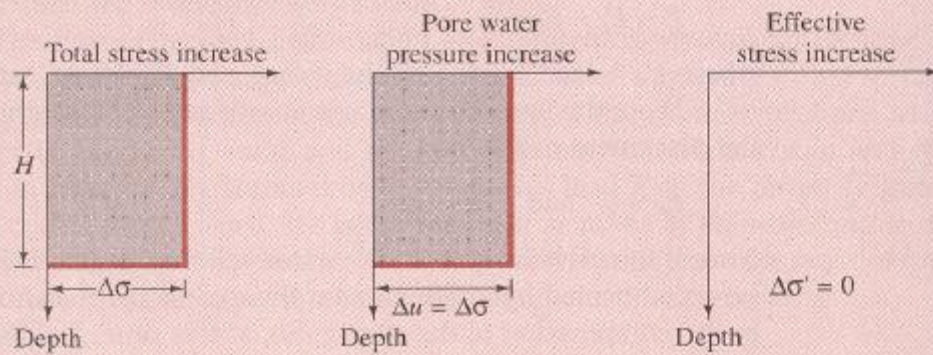


Compressibility of Soil

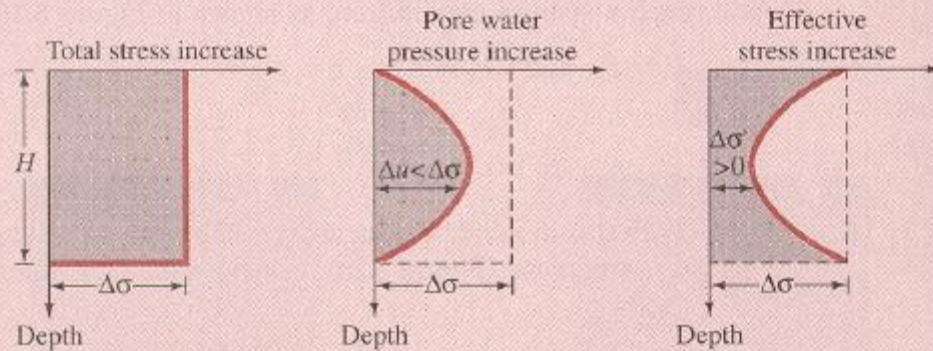
CONSOLIDATION &
ELASTIC SETTLEMENT



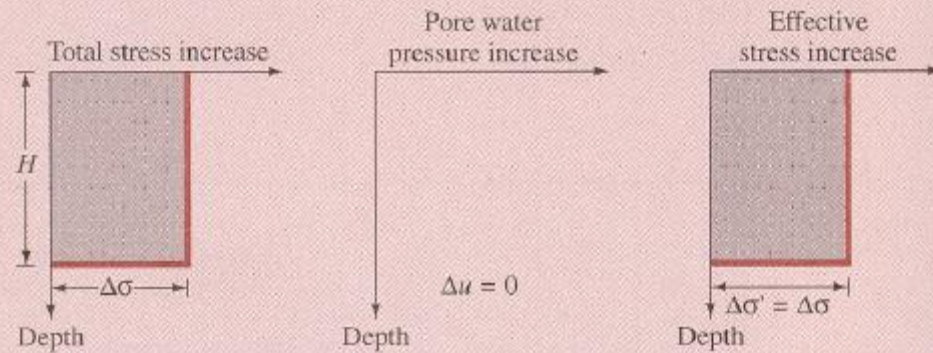
(a)



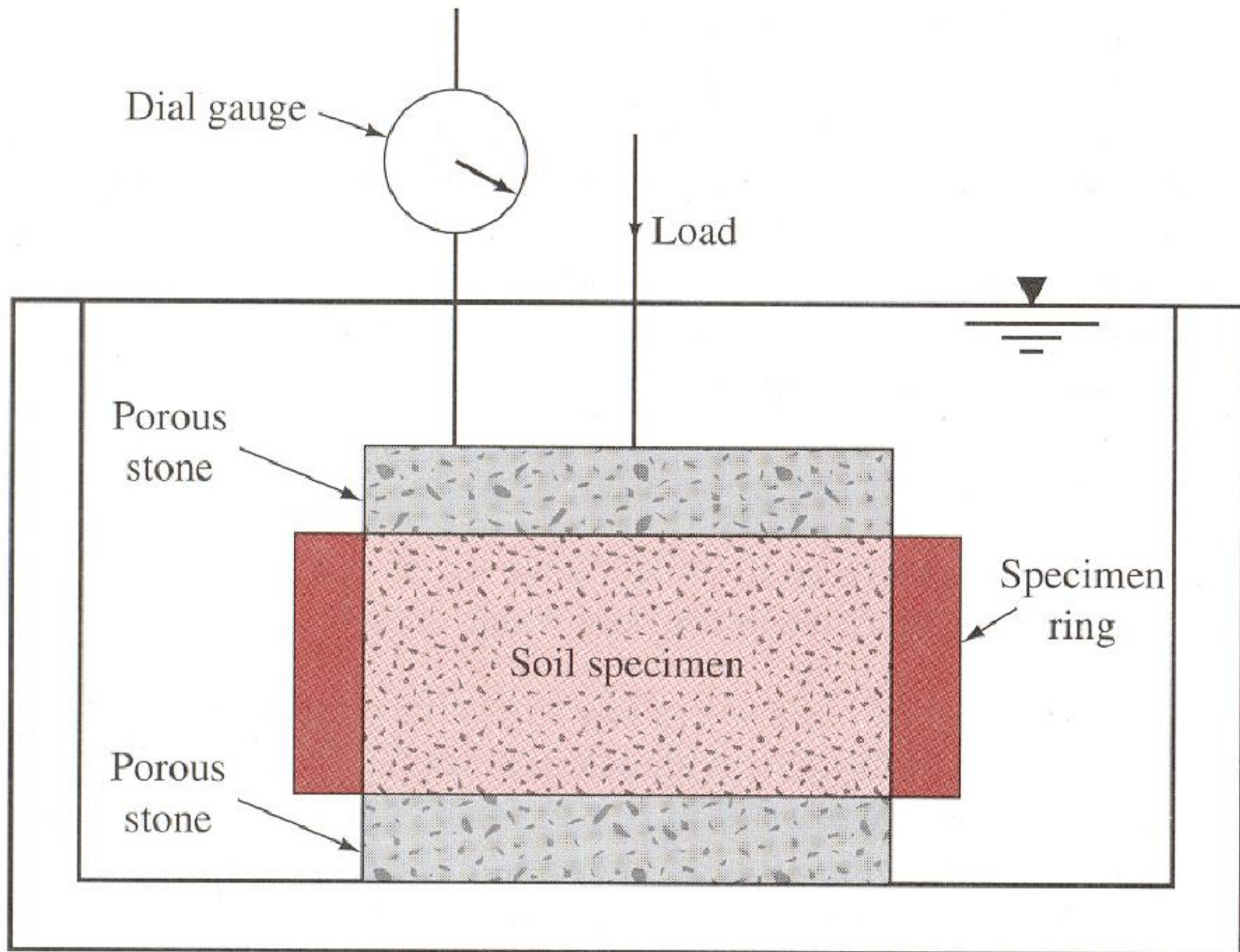
(b) At time $t = 0$

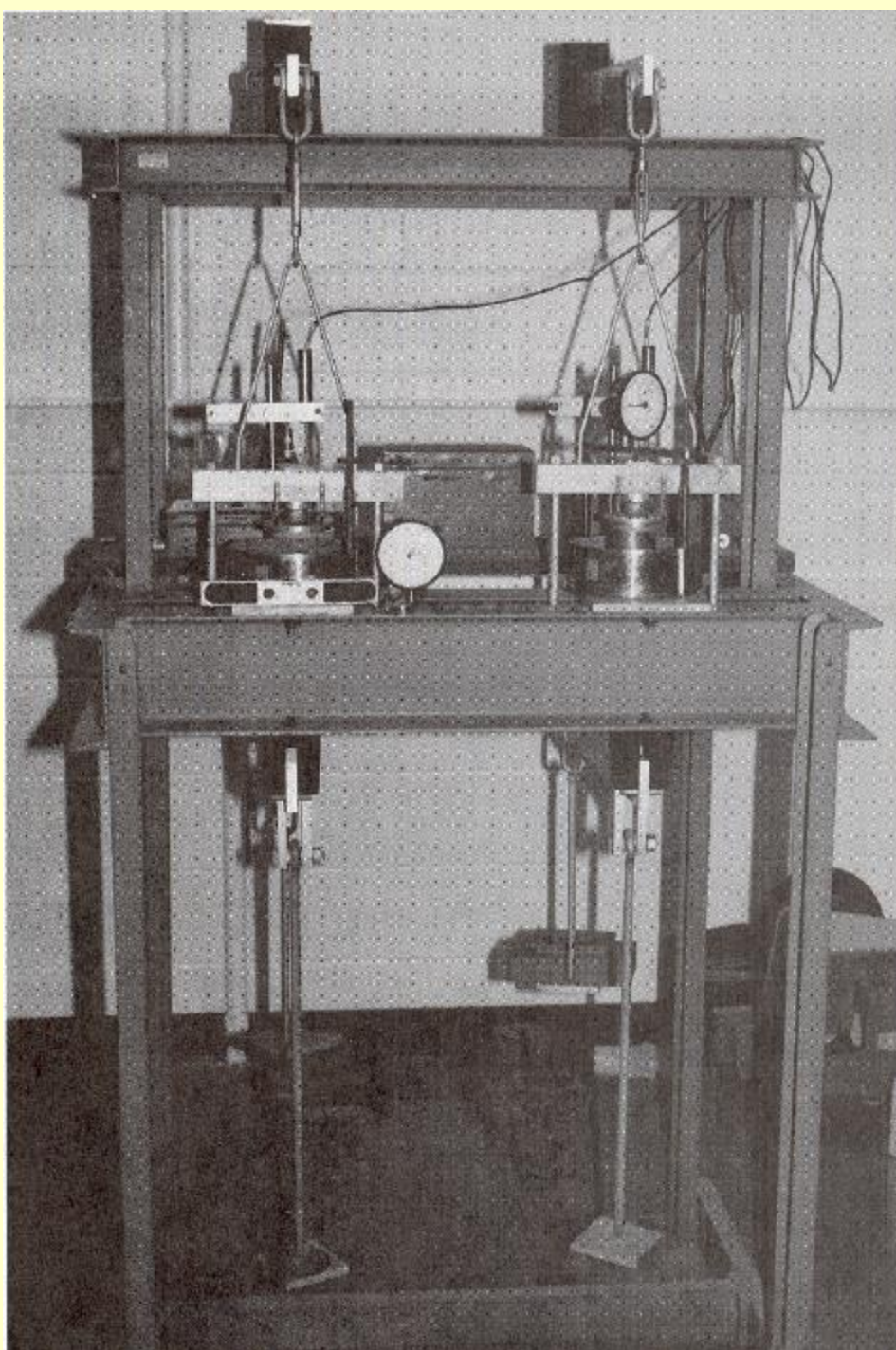


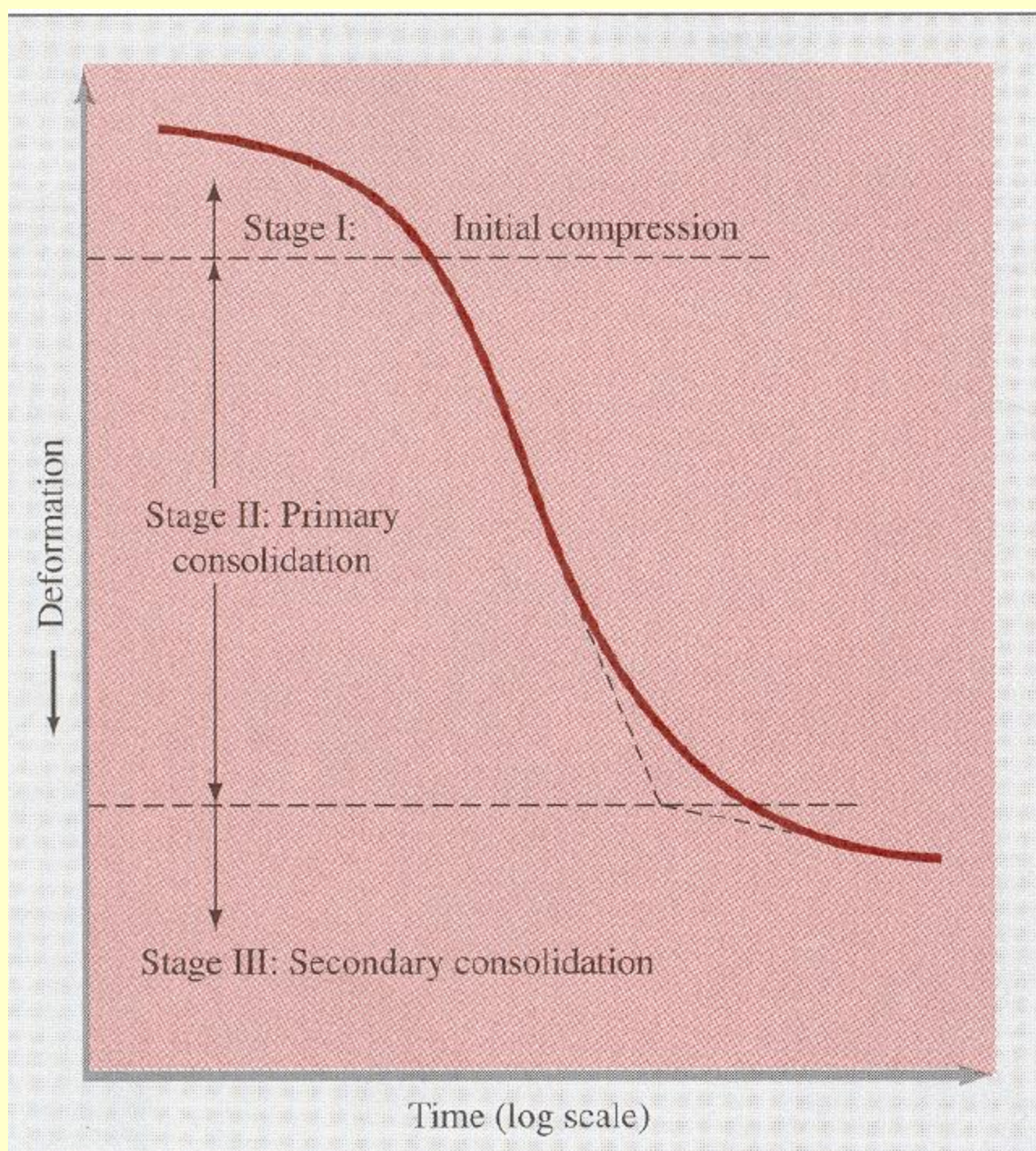
(c) At time $0 < t < \infty$

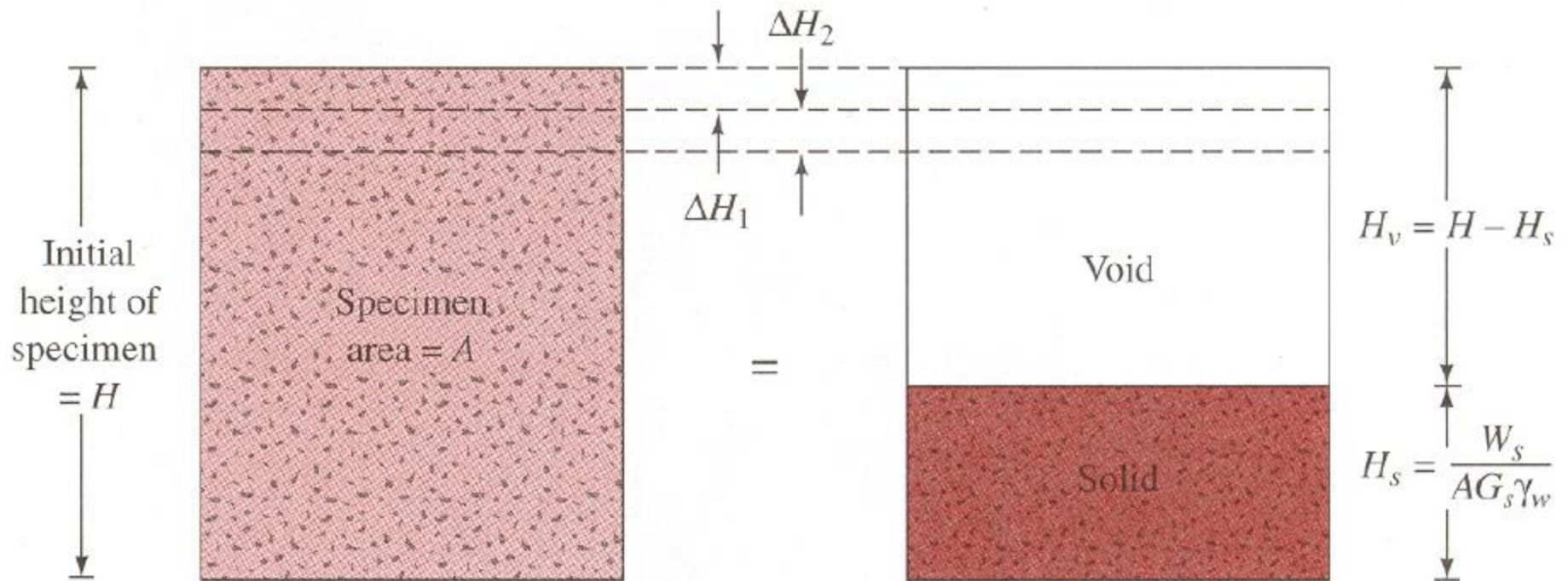


(d) At time $t = \infty$

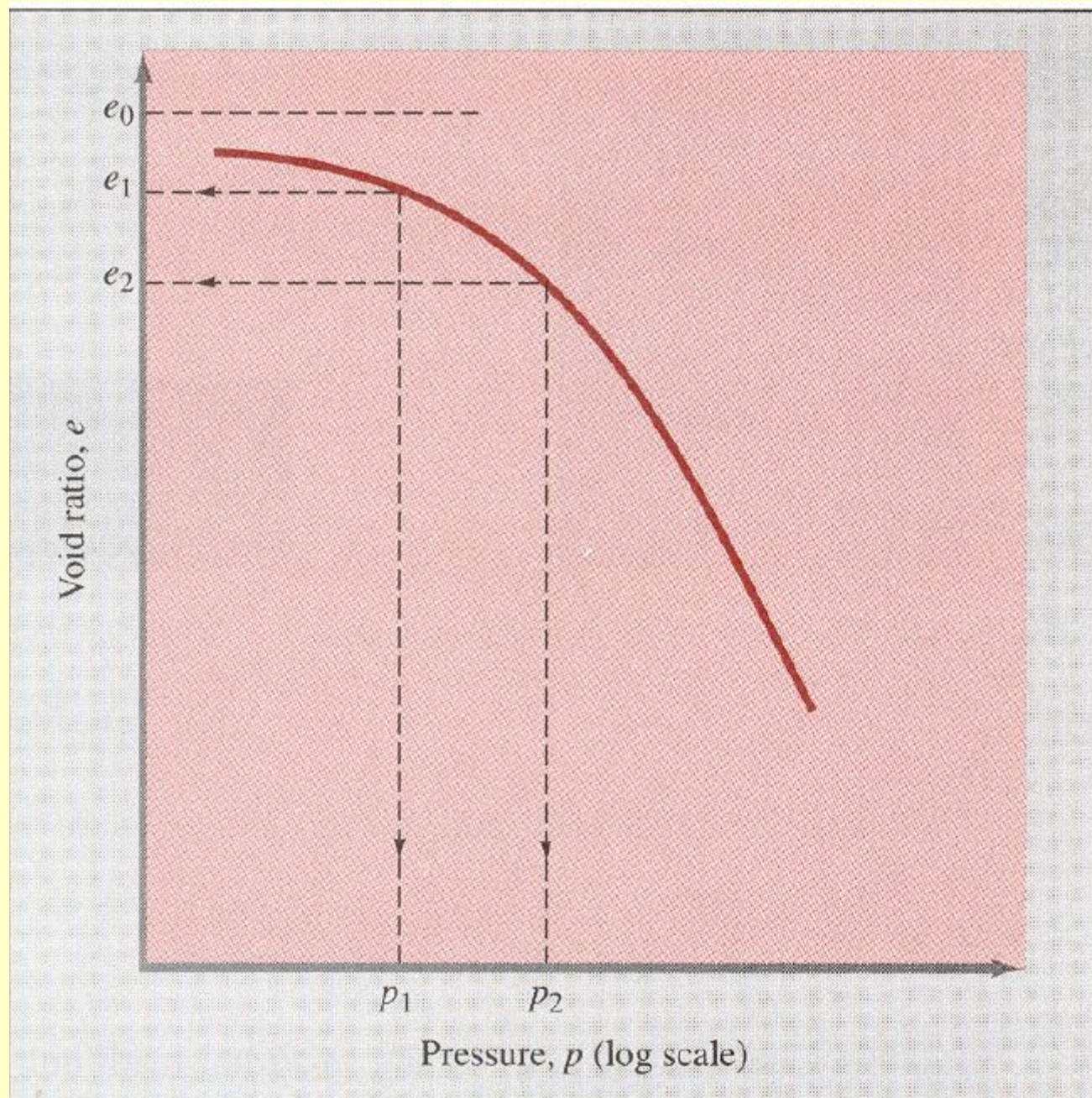




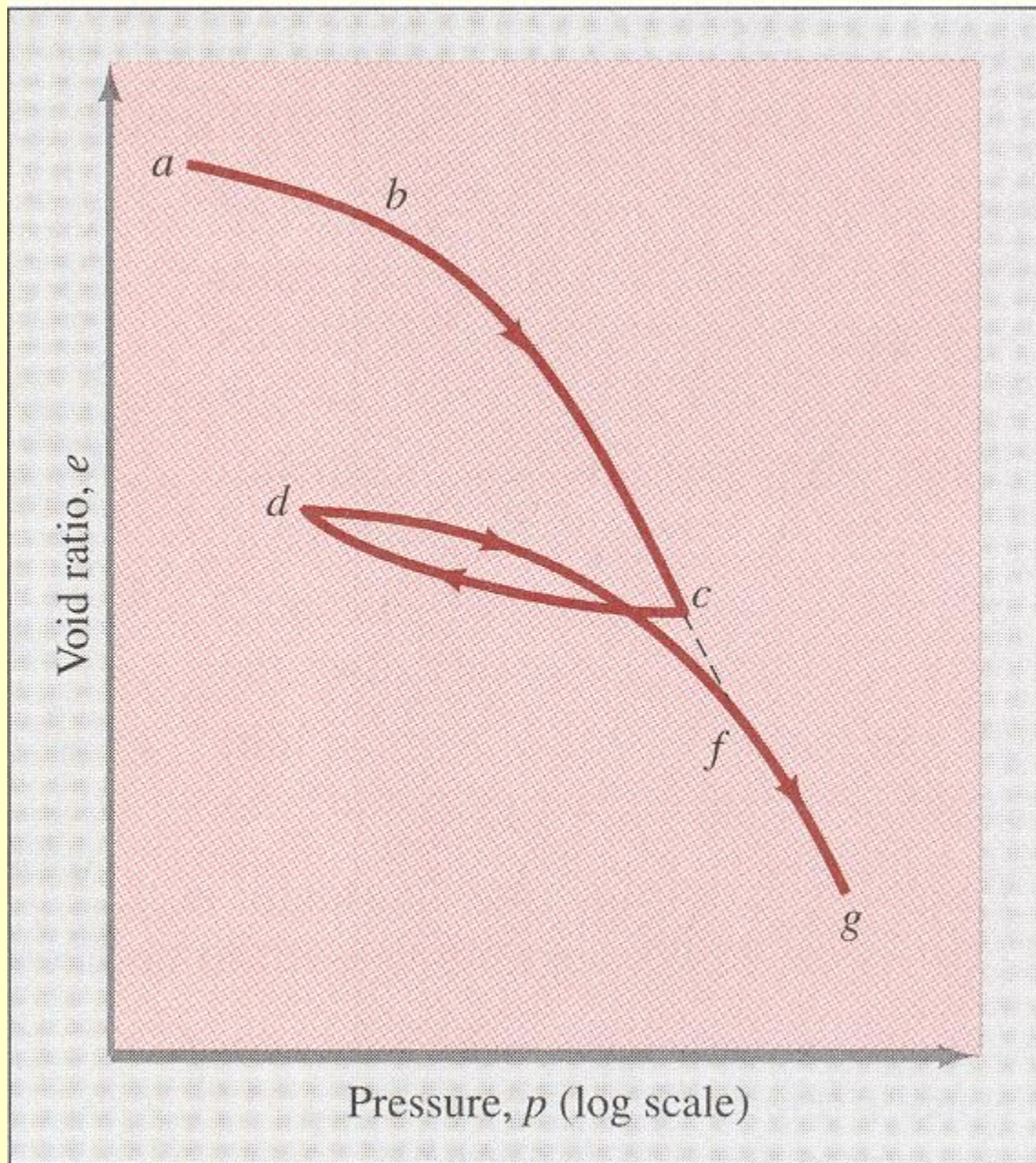




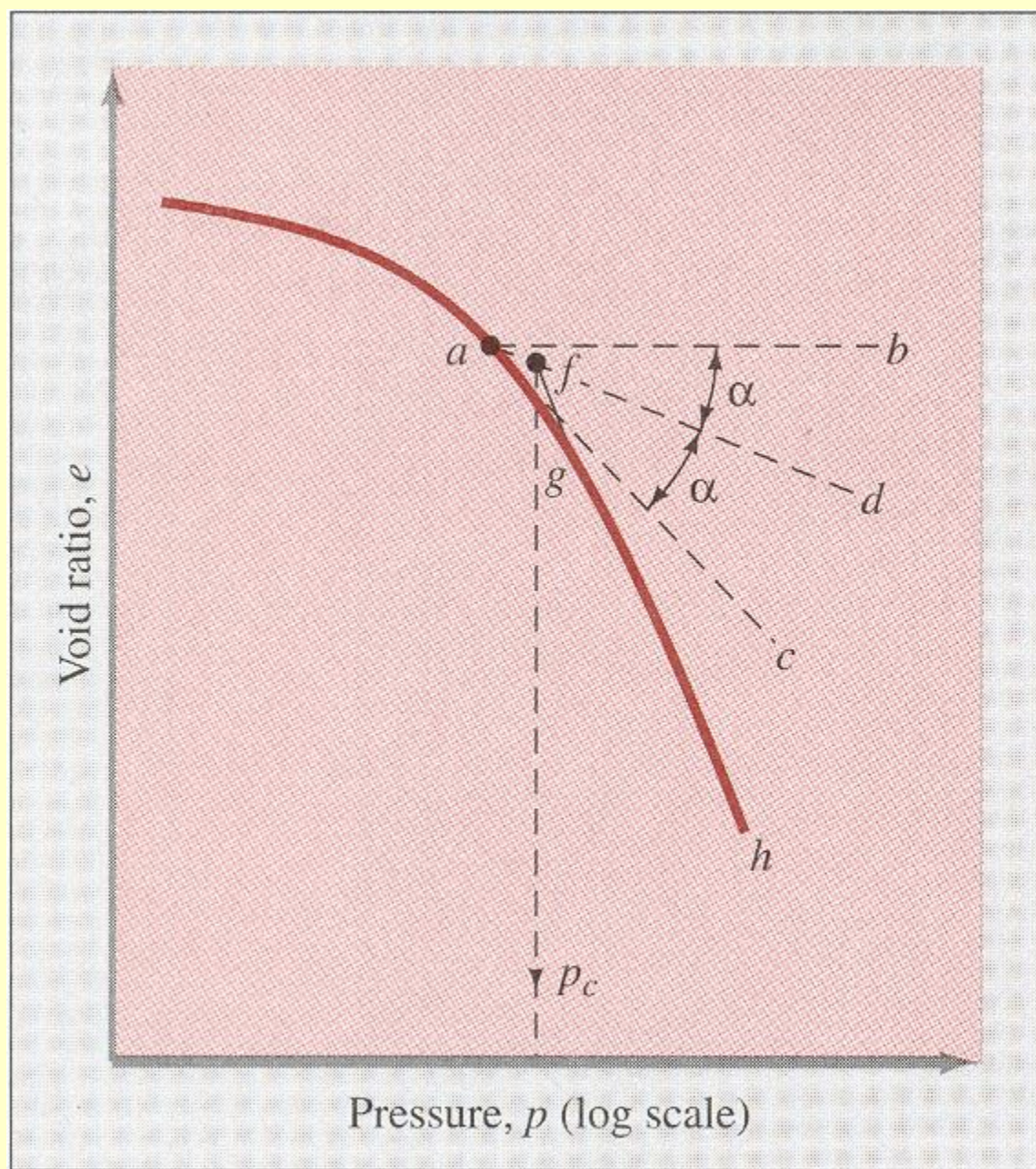
▼ **FIGURE 8.5** Change of height of specimen in one-dimensional consolidation test



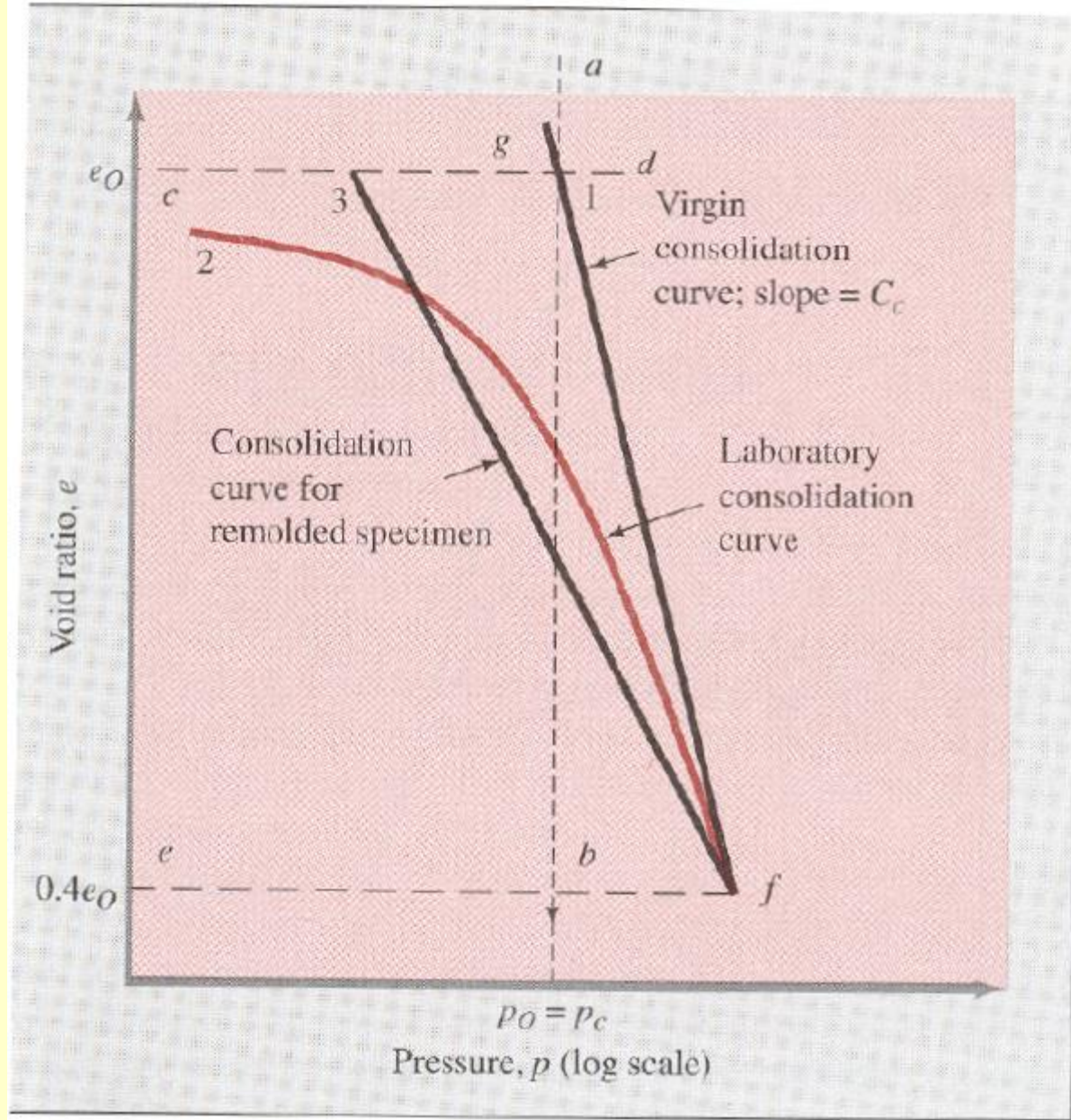
▼ **FIGURE 8.6** Typical plot of e against $\log p$



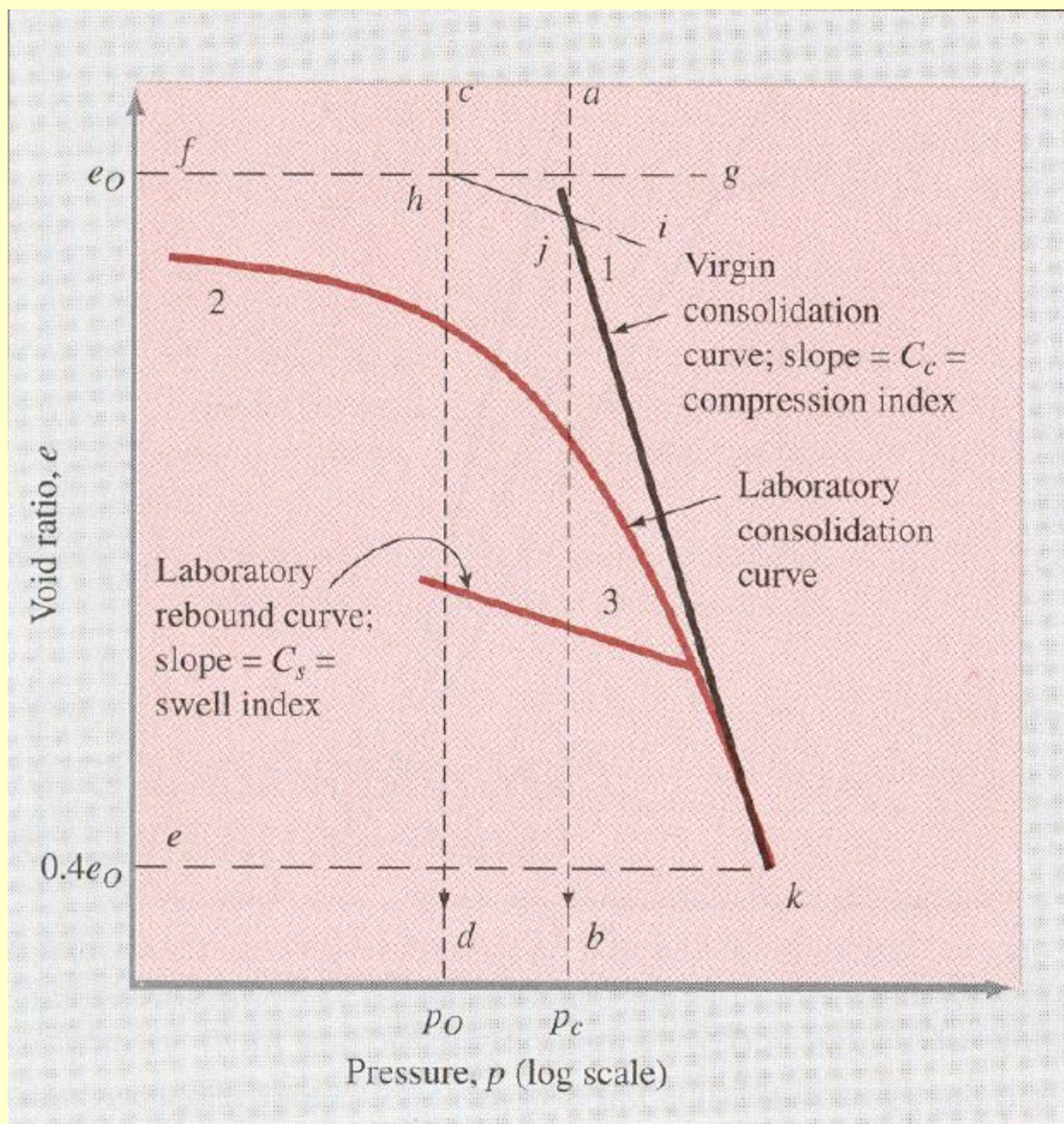
▼ **FIGURE 8.7** Plot of e against $\log p$ showing loading, unloading, and reloading branches



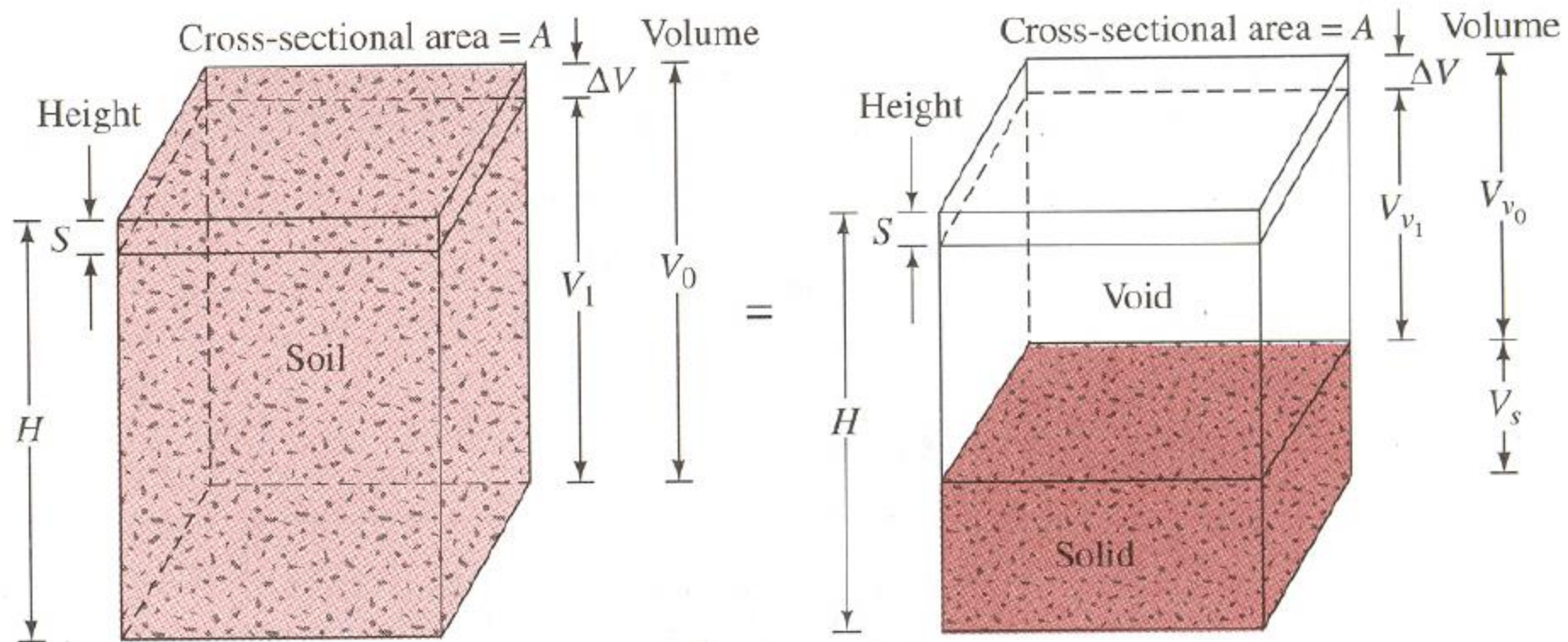
▼ **FIGURE 8.8** Graphic procedure for determining preconsolidation pressure



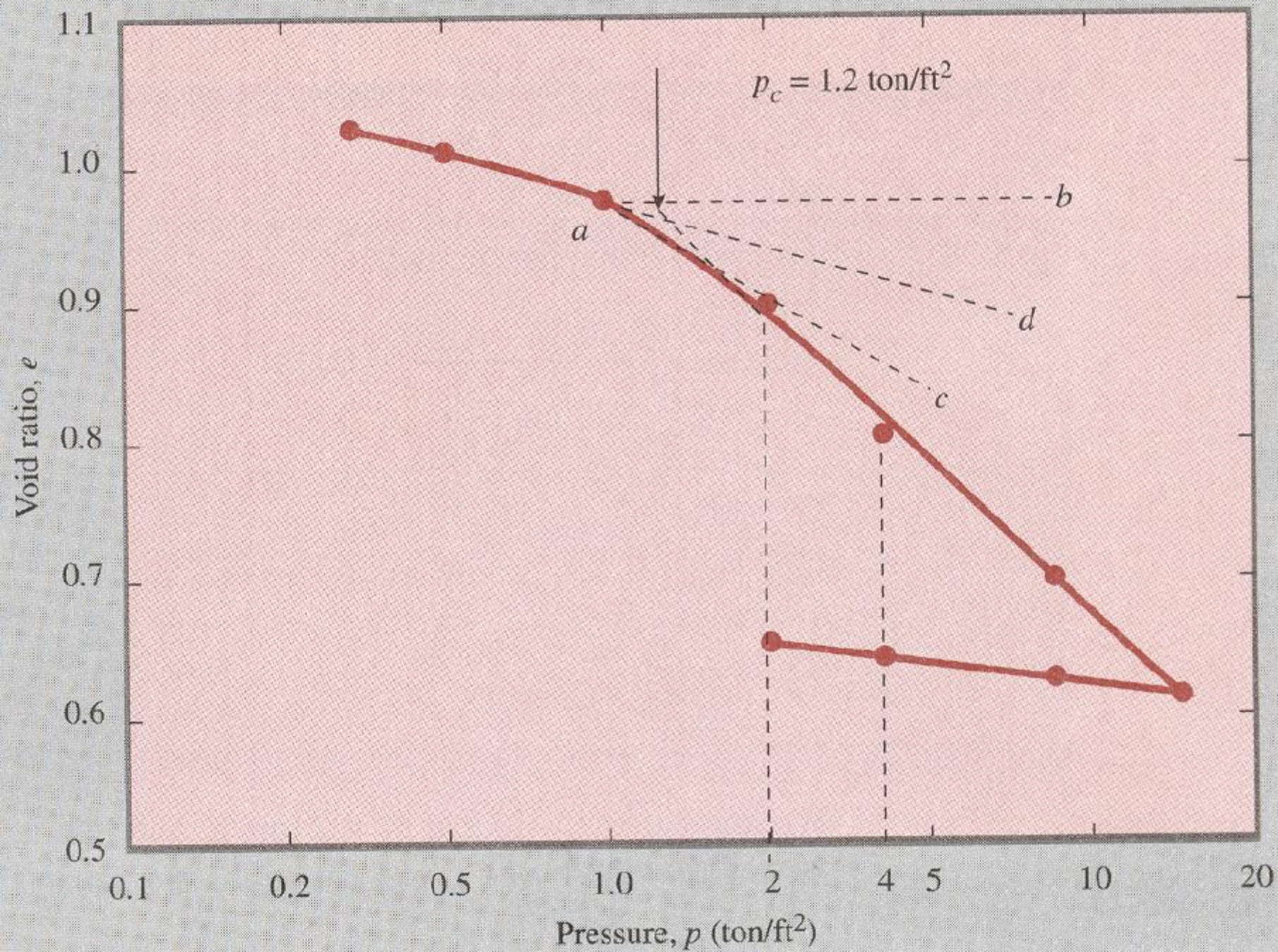
▼ **FIGURE 8.9** Consolidation characteristics of normally consolidated clay of low to medium sensitivity

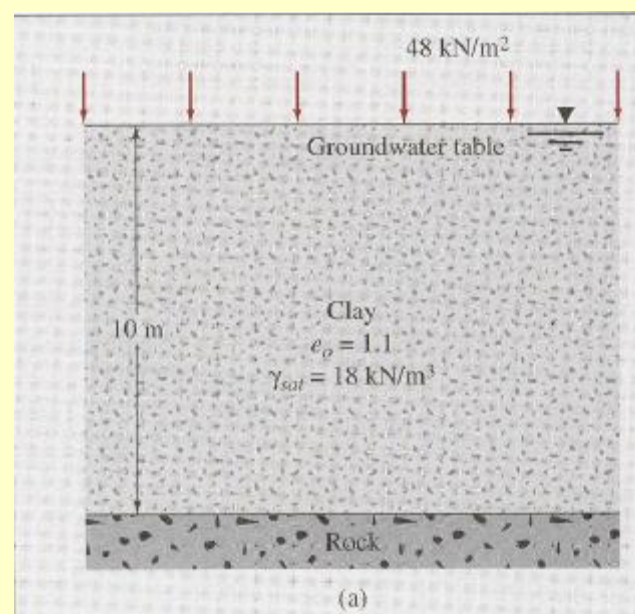


▼ **FIGURE 8.10** Consolidation characteristics of overconsolidated clay of low to medium sensitivity

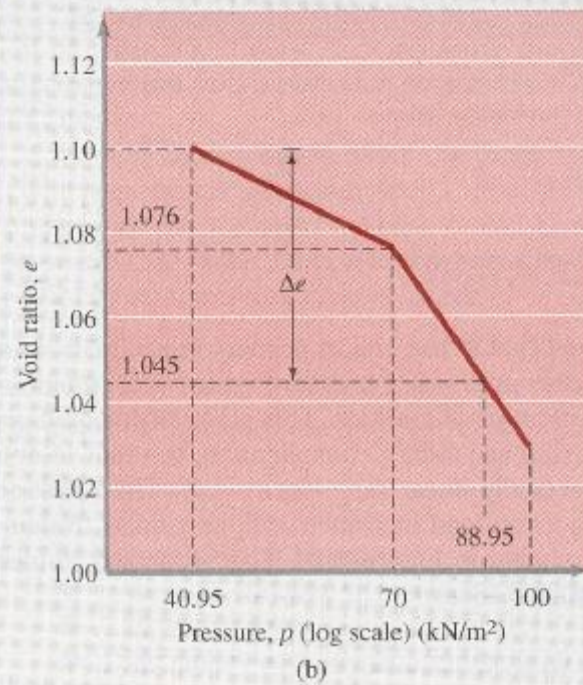


▼ **FIGURE 8.14** Settlement caused by one-dimensional consolidation



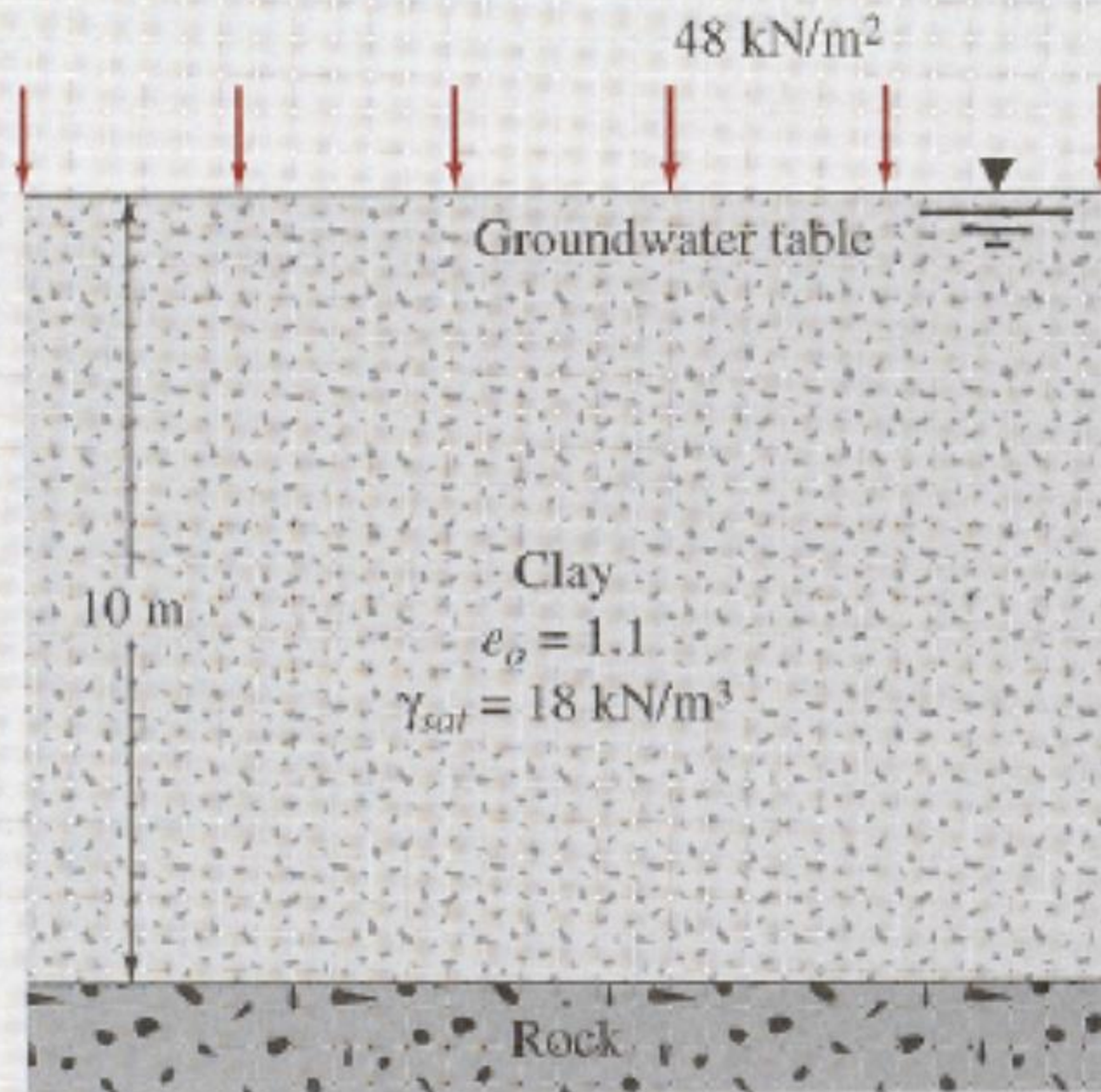


(a)

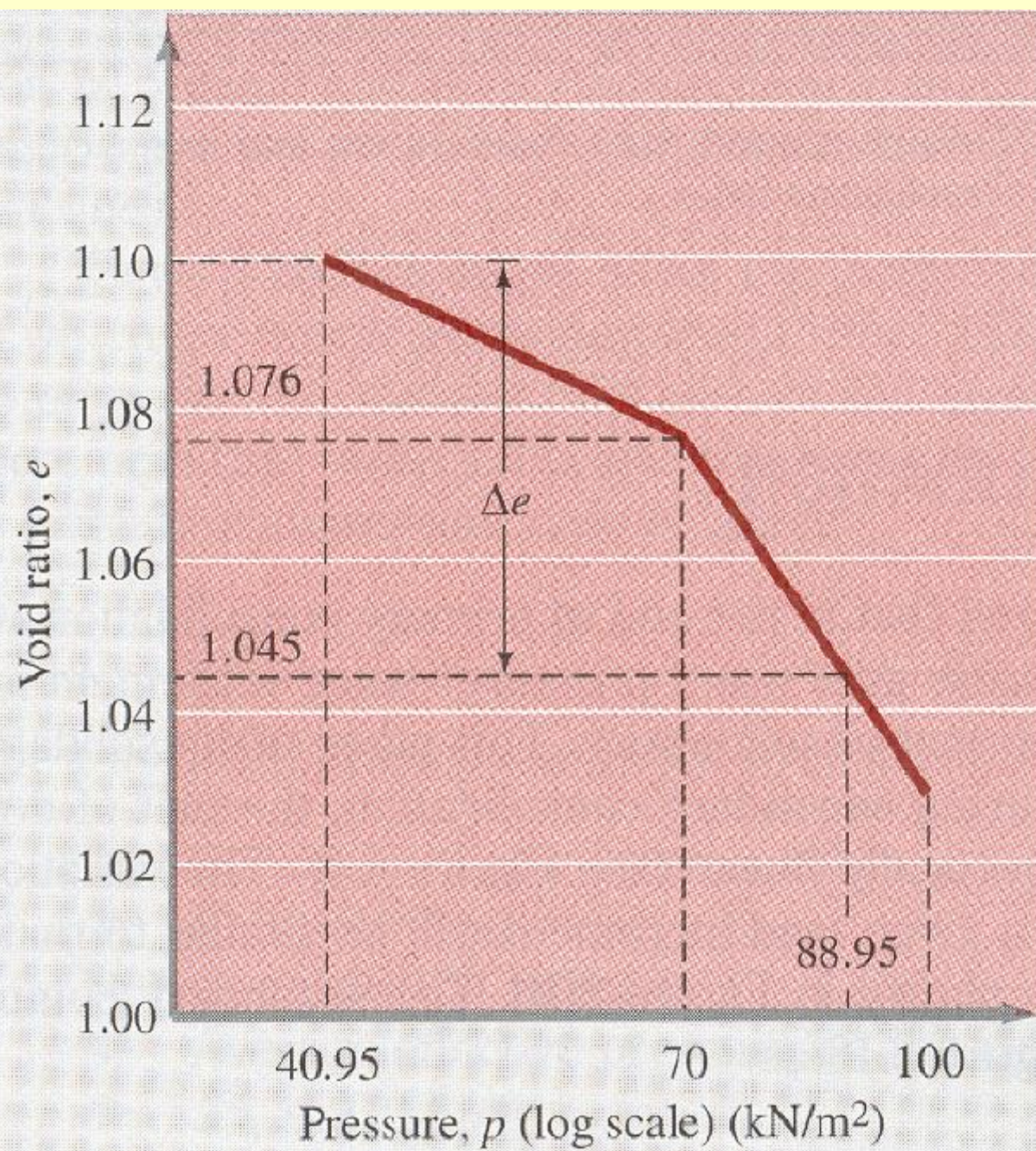


(b)

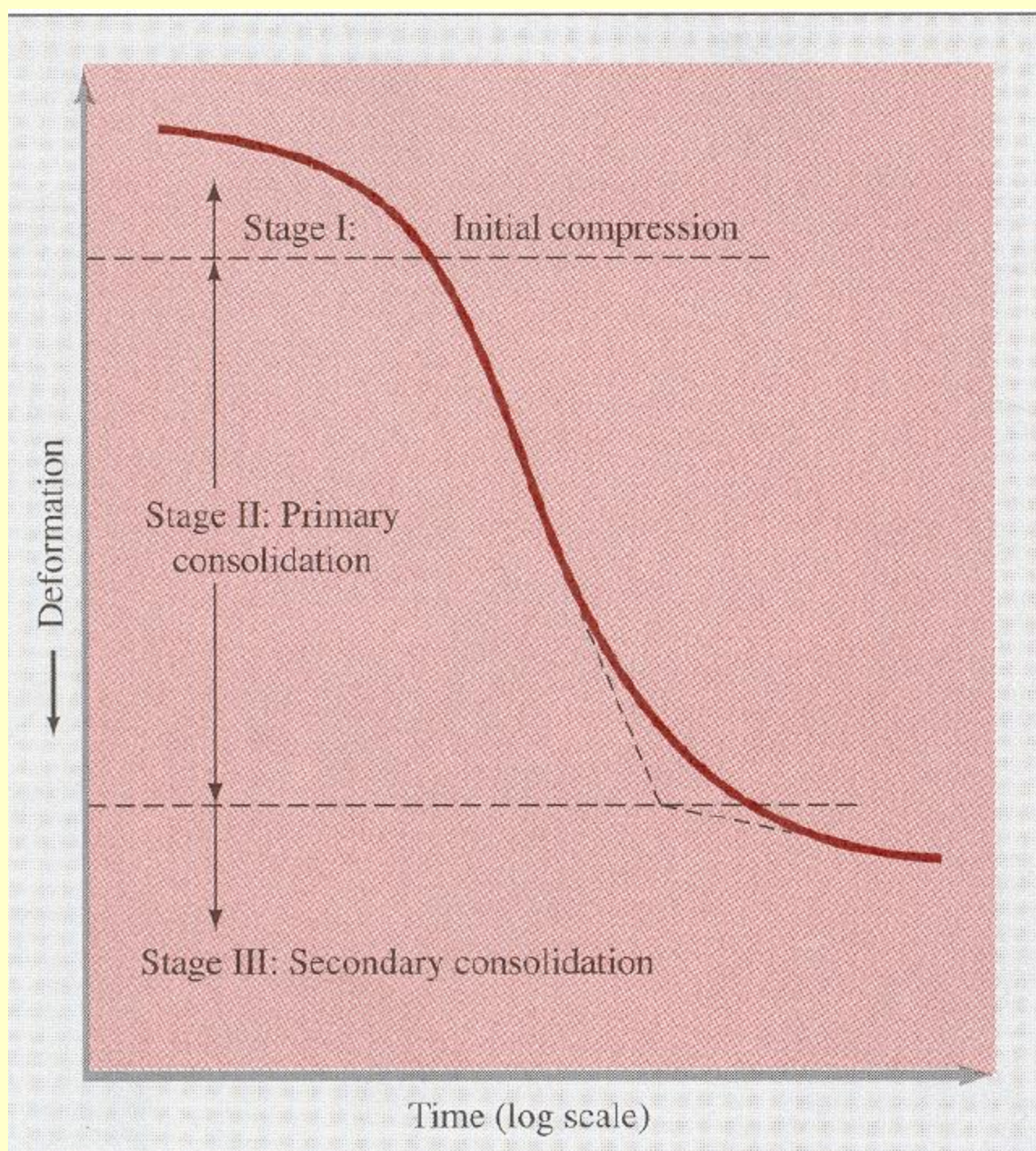
▼ **FIGURE 8.17** (a) Soil profile; (b) field consolidation curve

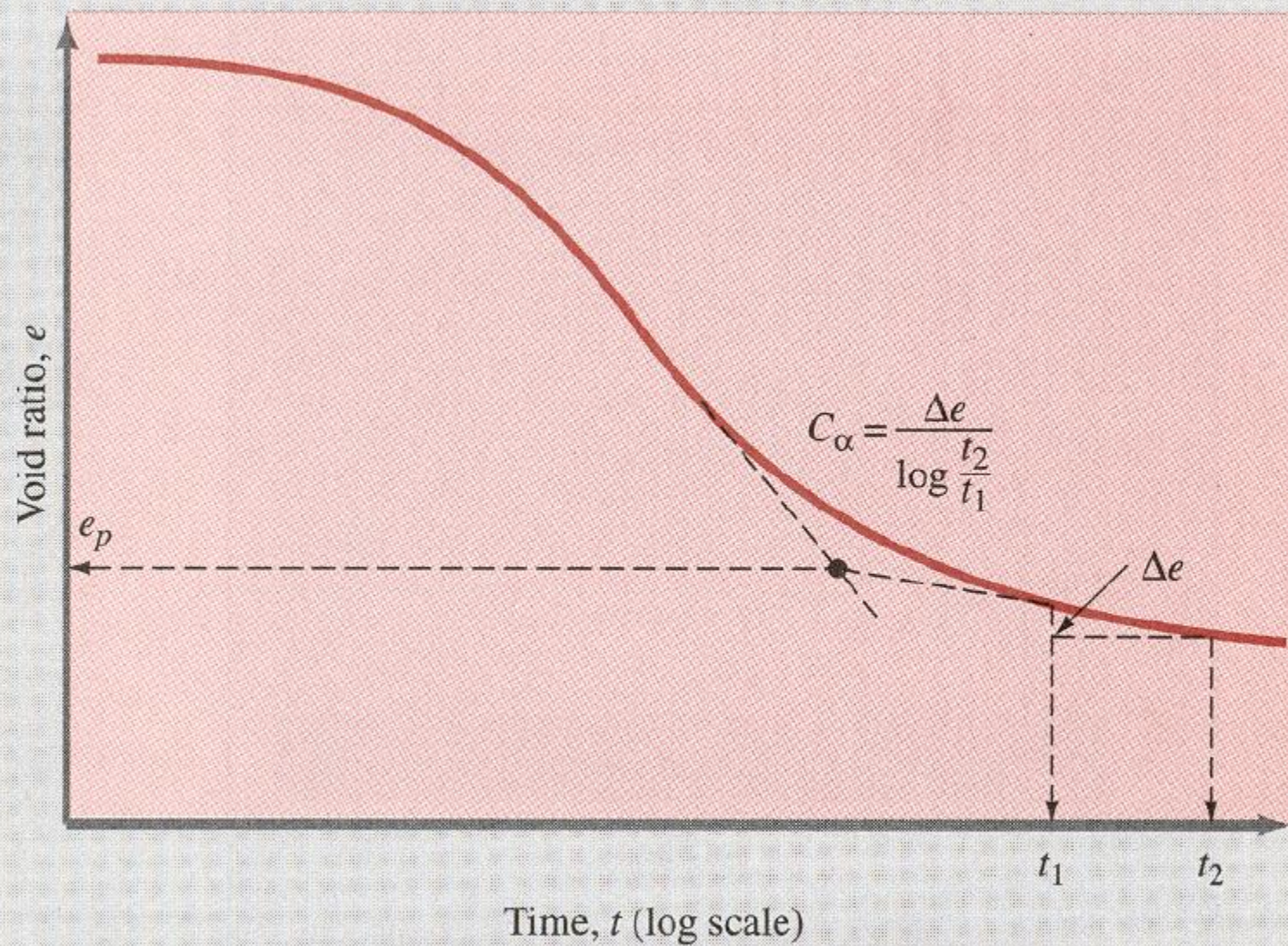


(a)

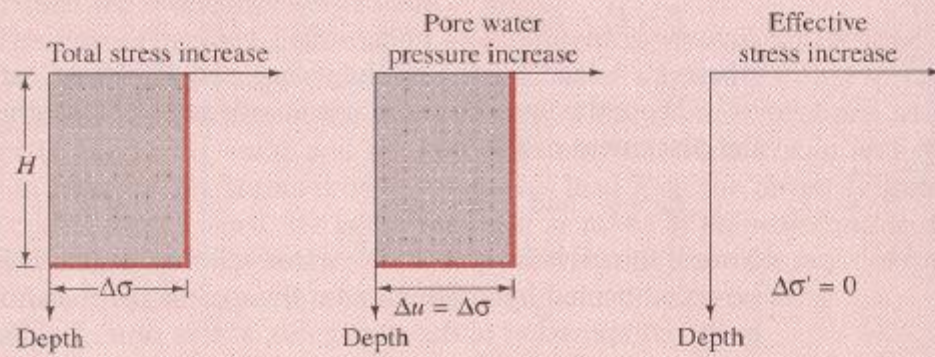


(b)

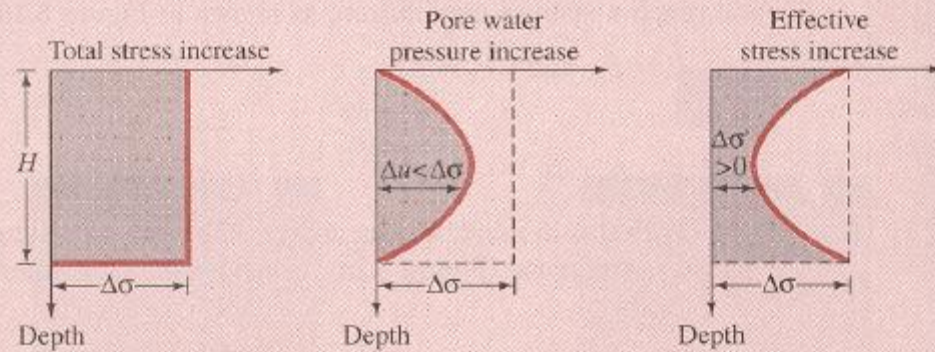




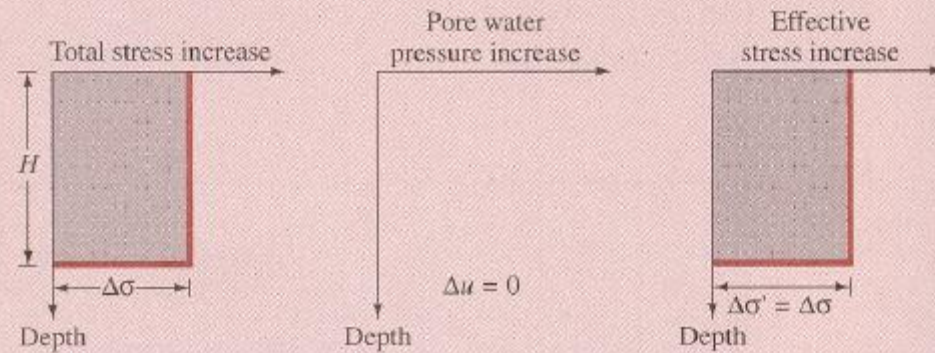
▼ **FIGURE 8.18** Variation of e with $\log t$ under a given load increment, and definition of secondary consolidation index



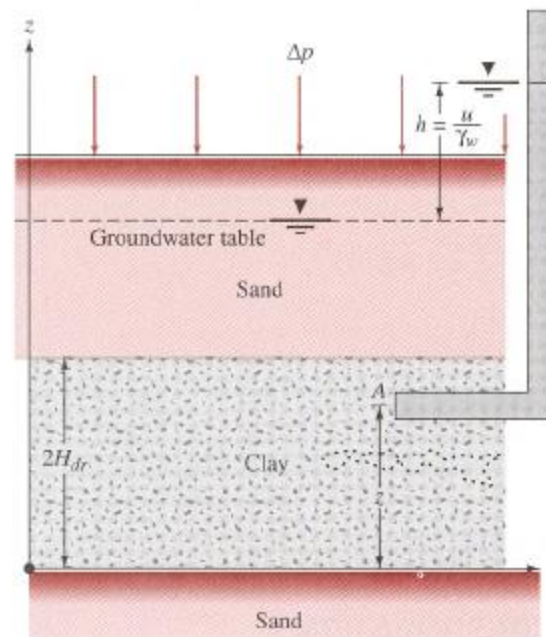
(b) At time $t = 0$



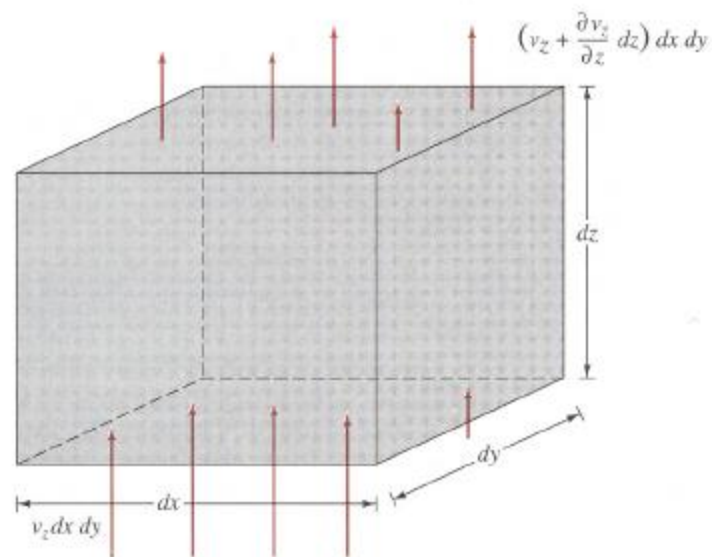
(c) At time $0 < t < \infty$



(d) At time $t = \infty$

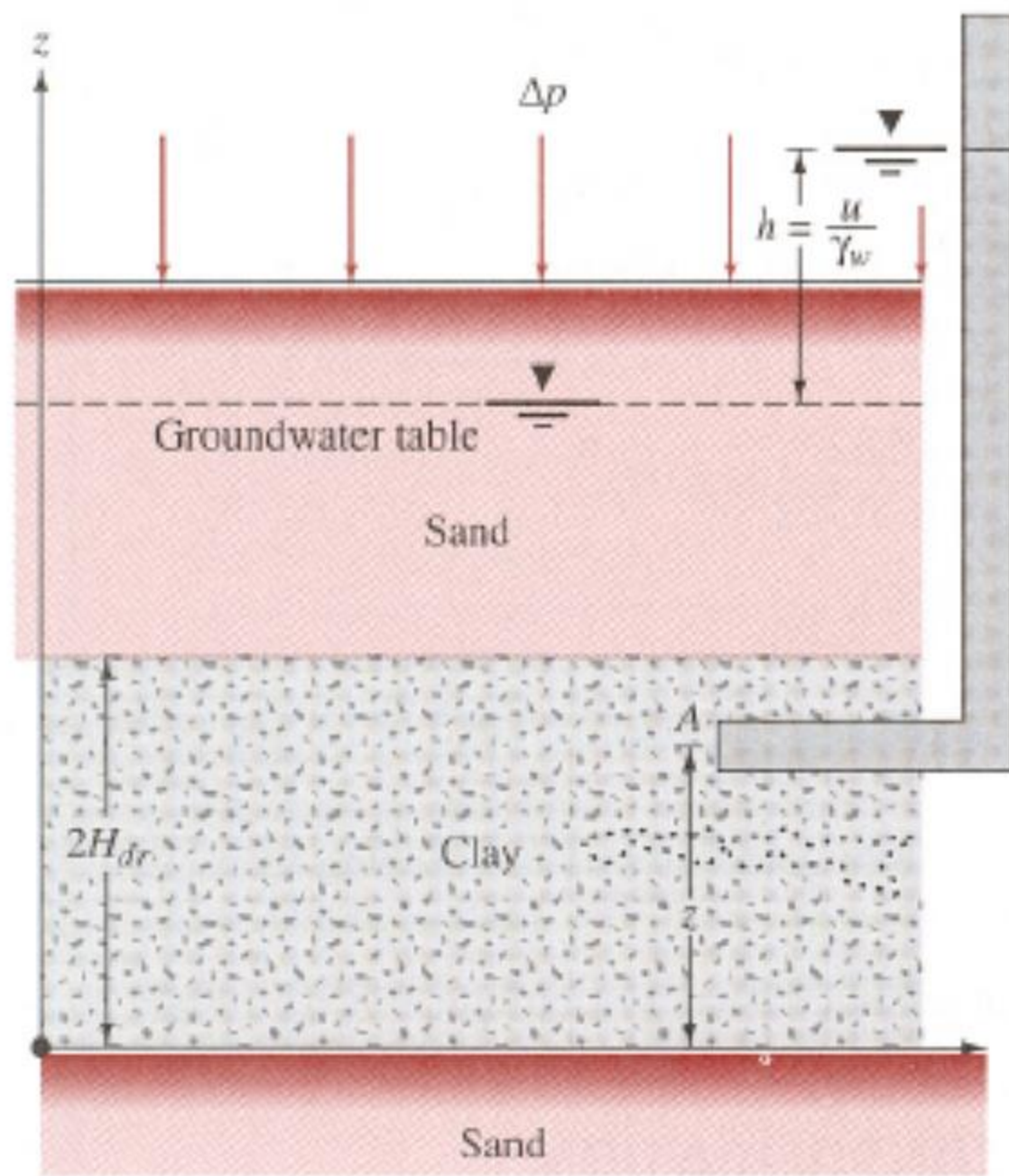


(a)

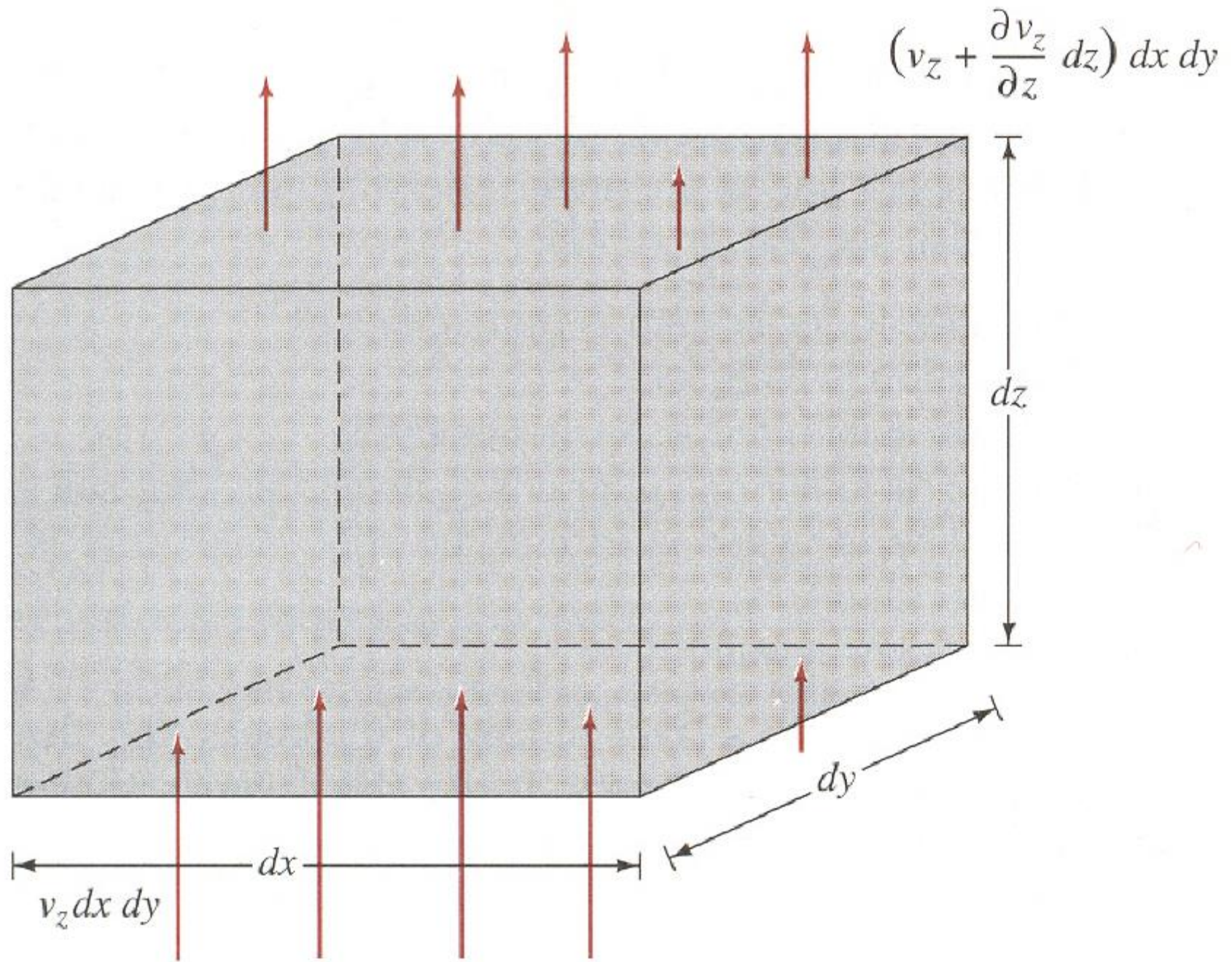


(b)

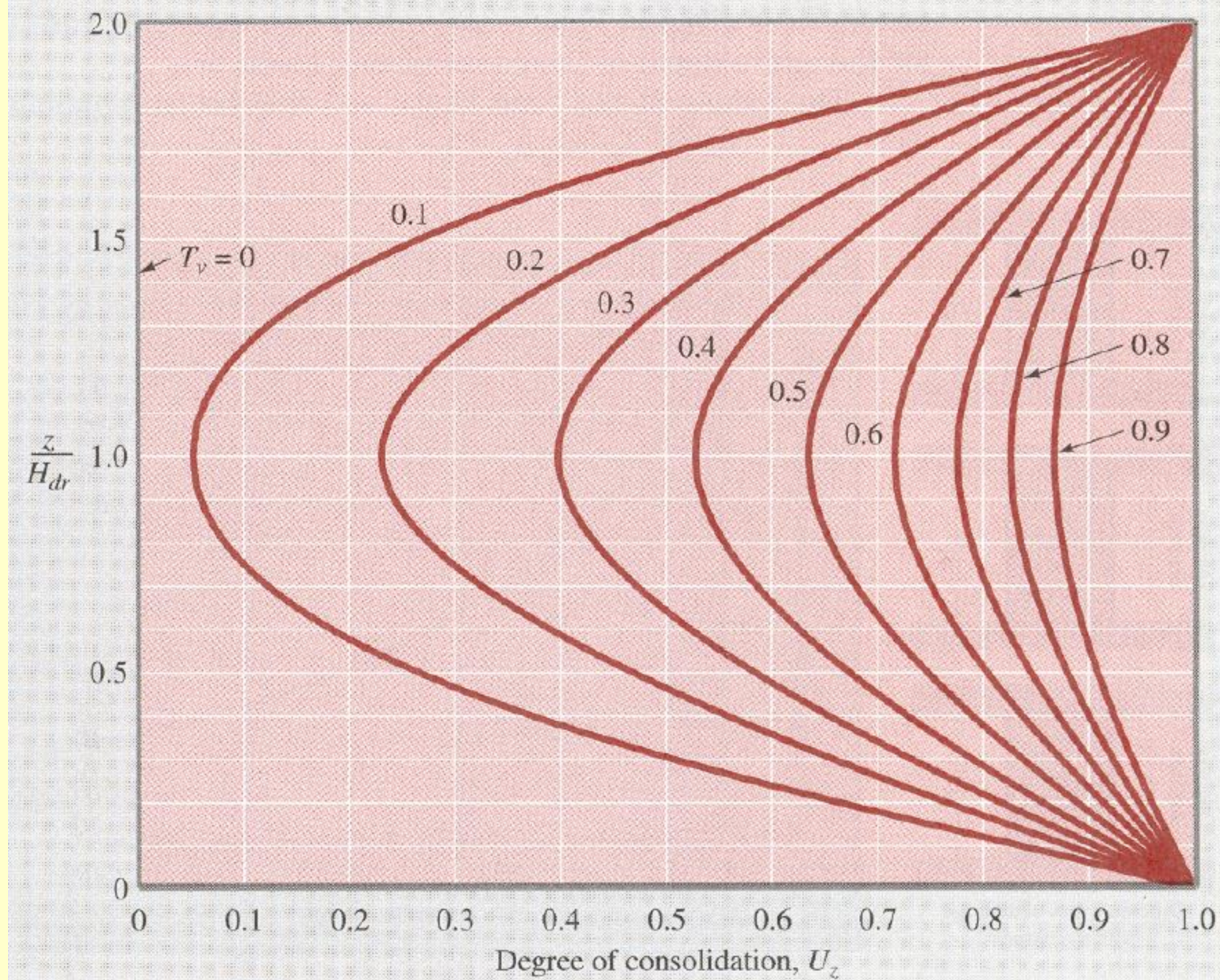
▼ **FIGURE 8.20** (a) Clay layer undergoing consolidation; (b) flow of water at A during consolidation

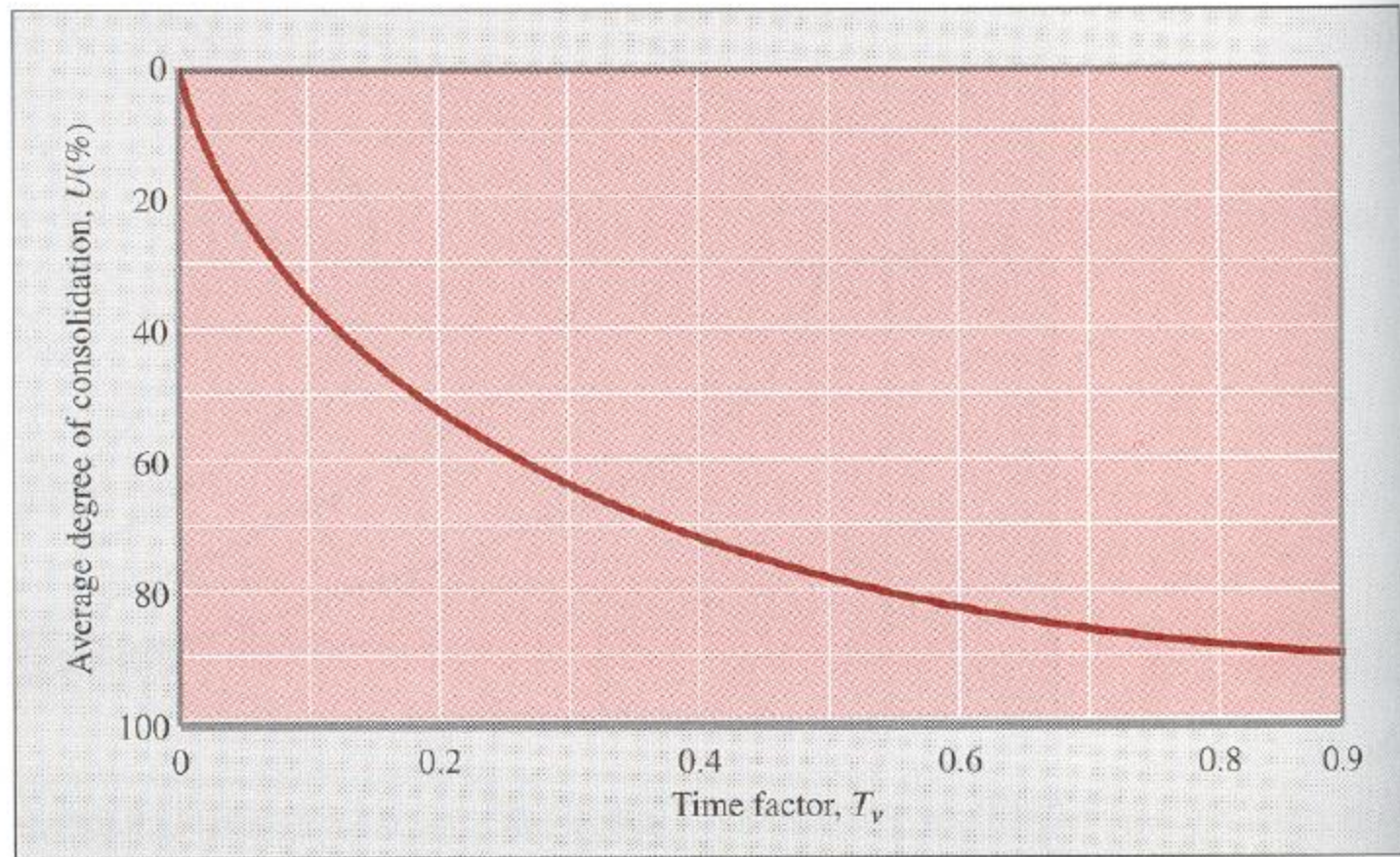
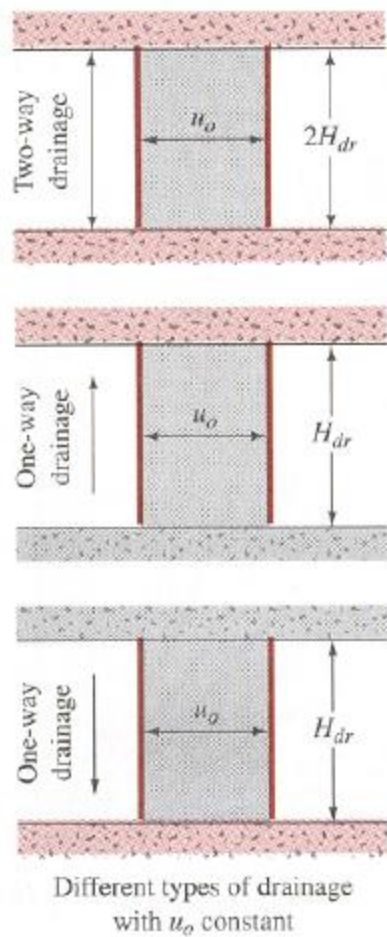


(a)



(b)



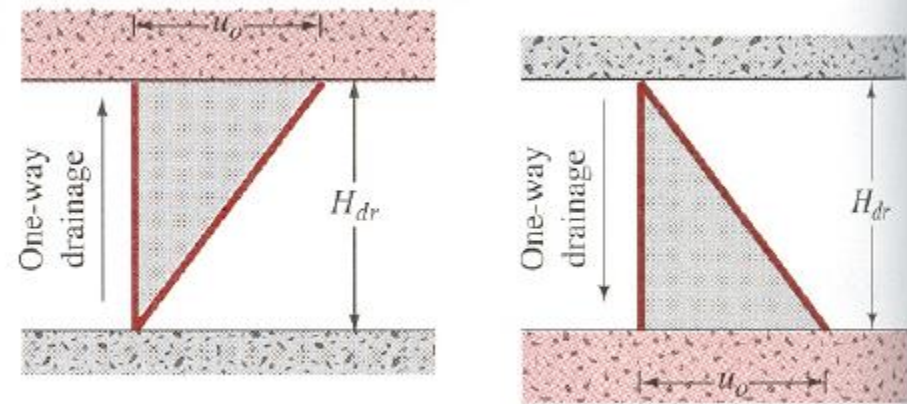


▼ **FIGURE 8.22** Variation of average degree of consolidation with time factor, T_v (u_o constant with depth)

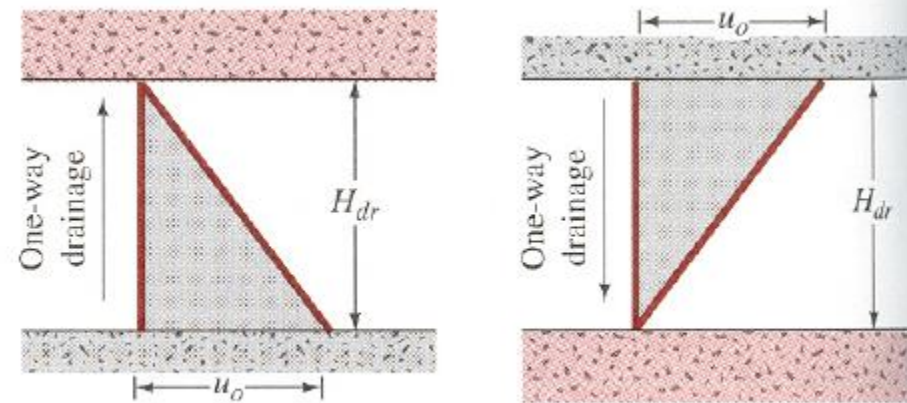
U (%)	τ_c	U (%)	τ_c
0	0	51	0.204
1	0.00008	52	0.212
2	0.0003	53	0.221
3	0.00071	54	0.230
4	0.00126	55	0.239
5	0.00196	56	0.248
6	0.00283	57	0.257
7	0.00385	58	0.267
8	0.00502	59	0.276
9	0.00636	60	0.286
10	0.00785	61	0.297
11	0.0095	62	0.307
12	0.0113	63	0.318
13	0.0133	64	0.329
14	0.0154	65	0.304
15	0.0177	66	0.352
16	0.0201	67	0.364
17	0.0227	68	0.377
18	0.0254	69	0.390
19	0.0283	70	0.403
20	0.0314	71	0.417
21	0.0346	72	0.431
22	0.0380	73	0.446
23	0.0415	74	0.461
24	0.0452	75	0.477
25	0.0491	76	0.493
26	0.0531	77	0.511
27	0.0572	78	0.529
28	0.0615	79	0.547
29	0.0660	80	0.567
30	0.0707	81	0.588
31	0.0754	82	0.610
32	0.0803	83	0.633
33	0.0855	84	0.658
34	0.0907	85	0.684
35	0.0962	86	0.712
36	0.102	87	0.742
37	0.107	88	0.774
38	0.113	89	0.809
39	0.119	90	0.848
40	0.126	91	0.891
41	0.132	92	0.938
42	0.138	93	0.993
43	0.145	94	1.055
44	0.152	95	1.129
45	0.159	96	1.219
46	0.166	97	1.336
47	0.173	98	1.500
48	0.181	99	1.781
49	0.188	100	∞
50	0.197		

TABLE 8.4 Variation of Time Factor T_v with Degree of Consolidation

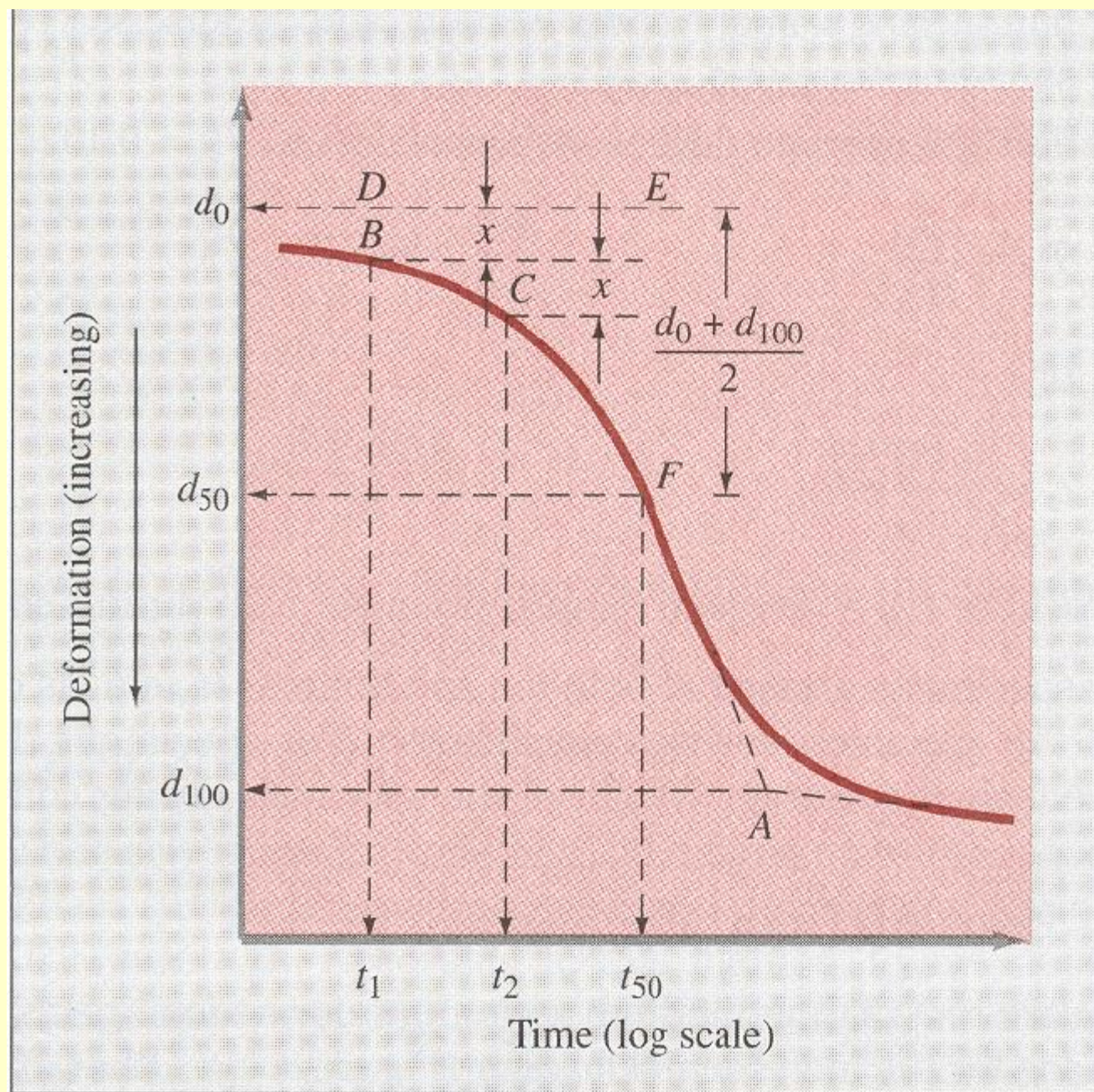
Degree of consolidation U (%)	Time factor T_v	
	Case I	Case II
0	0	0
10	0.003	0.047
20	0.009	0.100
30	0.024	0.158
40	0.048	0.221
50	0.092	0.294
60	0.160	0.383
70	0.271	0.500
80	0.440	0.665
90	0.720	0.940
100	∞	∞



Case I



Case II



▼ **FIGURE 8.23** Logarithm-of-time method for determining coefficient of consolidation