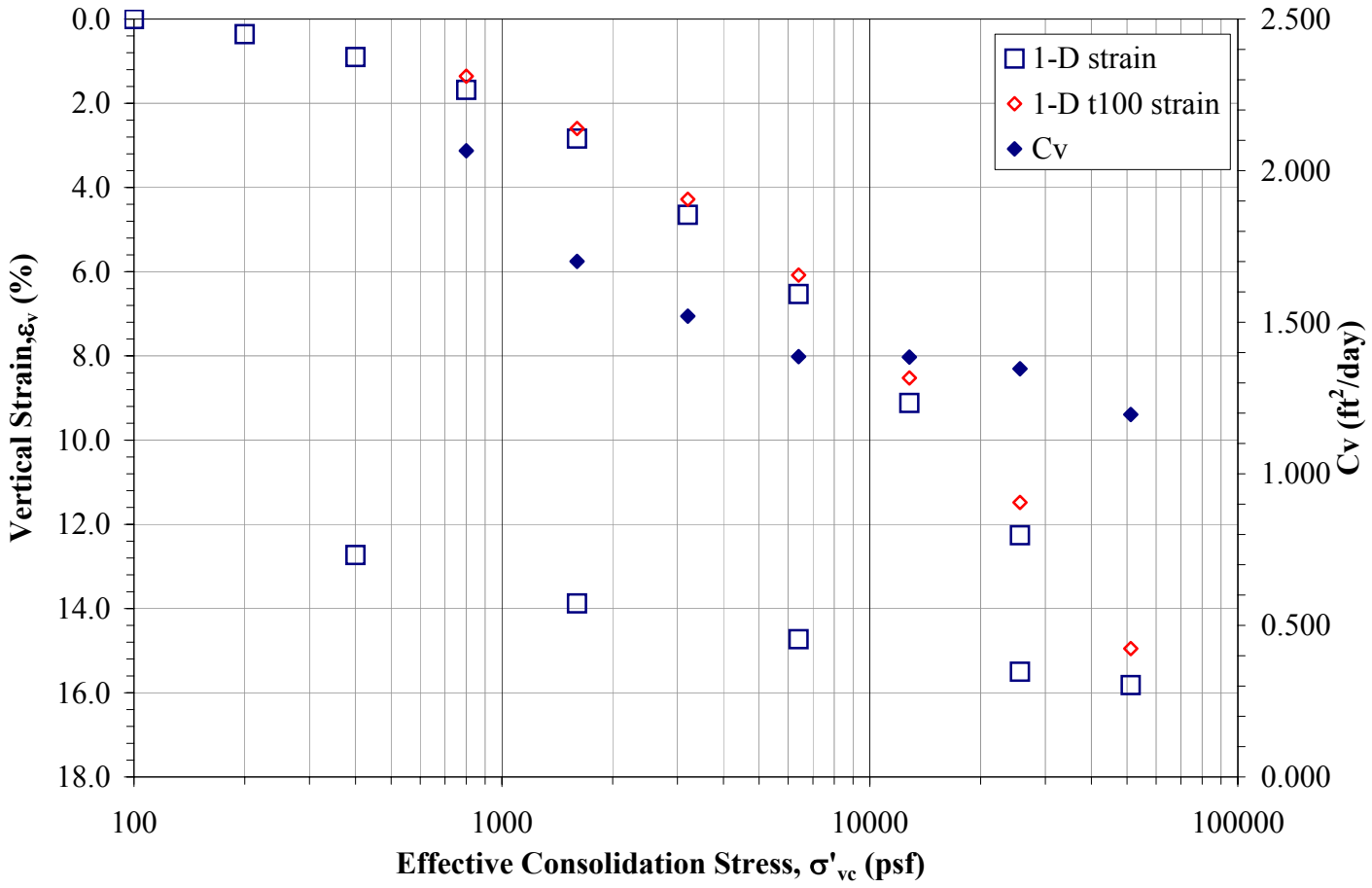
One-Dimensional Consolidation Properties of Soils ASTM D-2435

Project: BYU (Dr. Youd)
Number: M00399-003
Sample: GVDA
Depth: 15.5-18 ft

	Initial	Final
Sample height, H_0 (in)	1.0000	0.8727
Sample Diameter, D_0 (in)	2.416	2.416
Moist unit weight (pcf)	125.0	140.0
Dry unit weight (pcf)	104.8	120.1
Moisture content (%)	19.2	16.5

Gs (Determined)	2.717

Stress (psf)	Dial (in)	1-D ε_v (%)	Hc (in)	Void ratio e	Cv (ft²/day)	1-D t_{100} ε_v (%)
100	0.3061	0.00	1.0000	0.618		
200	0.3097	0.36	0.9964	0.612		
400	0.3151	0.90	0.9910	0.604		
800	0.3229	1.68	0.9832	0.591	2.066	1.357
1600	0.3345	2.84	0.9716	0.572	1.701	2.599
3200	0.3526	4.65	0.9535	0.543	1.520	4.281
6400	0.3714	6.53	0.9347	0.513	1.387	6.079
12800	0.3973	9.12	0.9088	0.471	1.385	8.523
25600	0.4287	12.26	0.8774	0.420	1.346	11.480
51200	0.4643	15.82	0.8418	0.362	1.196	14.952
25600	0.4611	15.50	0.8450	0.367		
6400	0.4534	14.73	0.8527	0.380		
1600	0.4449	13.88	0.8612	0.394		
400	0.4334	12.73	0.8727	0.412		



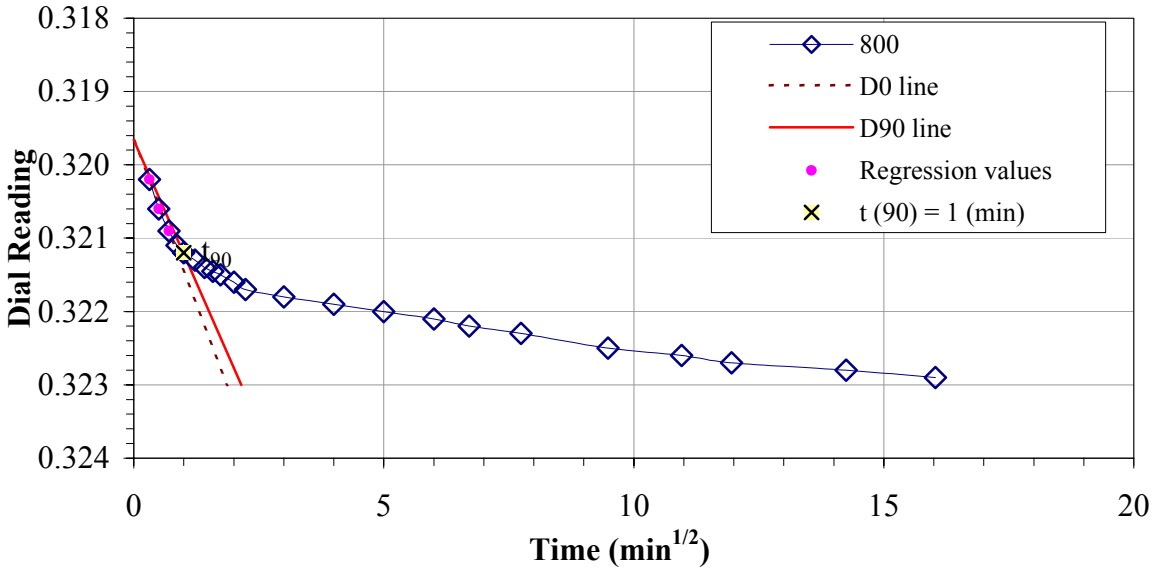
Tested by:_____

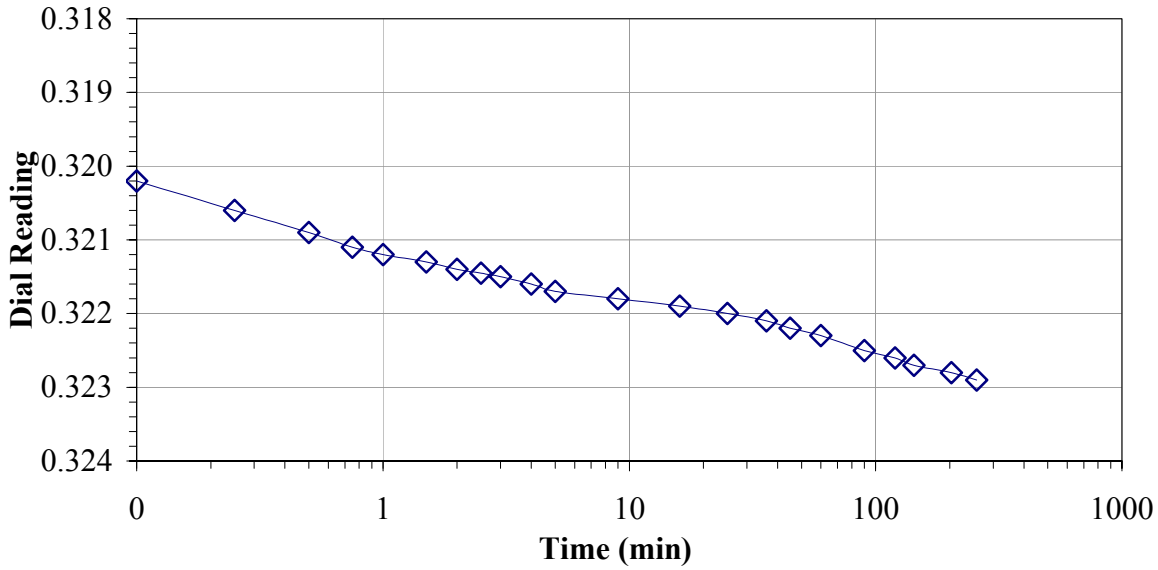
Reviewed:_____

One-Dimensional Consolidation Time-Deformation Relationship

Project: BYU (Dr. Youd)
Number: M00399-003
Sample: GVDA
Depth: 15.5-18 ft
Stress: 800 (psf)

Data Summary		
H_{DR} =	0.4936	(in)
Slope of t_{int} line =	0.00178	(dial/min$^{1/2}$)
Slope of t_{90} line =	0.00155	(dial/min$^{1/2}$)
D_0 =	0.32	(dial)
D (90) =	0.3212	(dial)
D (100) =	0.31967	(dial)
t (90) =	1.0	(min)
Cv =	0.207	(in^2/min)
Cv =	2.07	(ft^2/day)





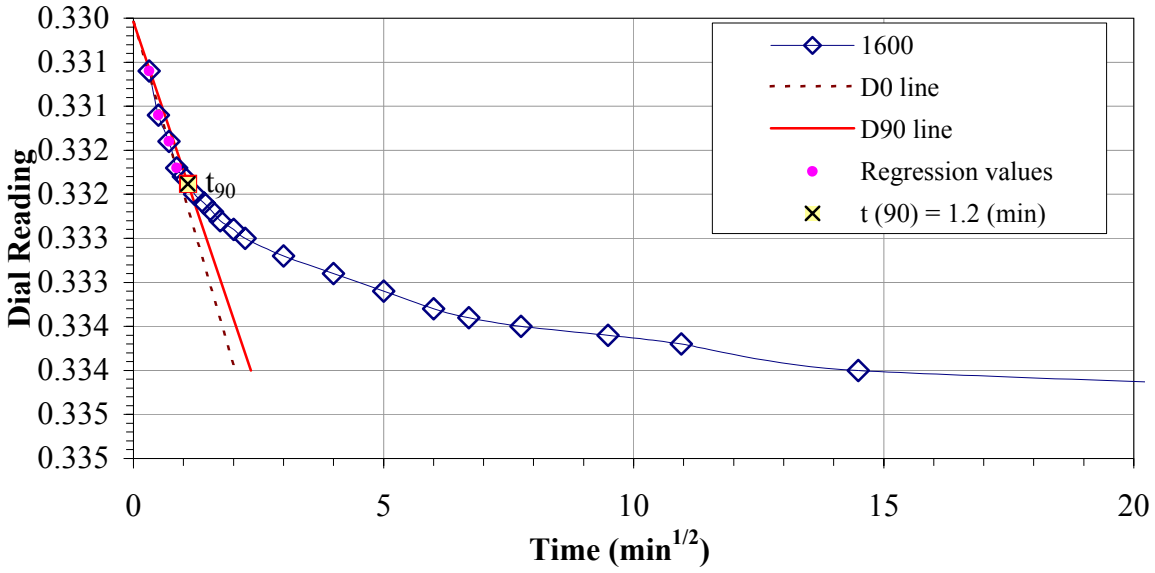
Time rate consolidation data

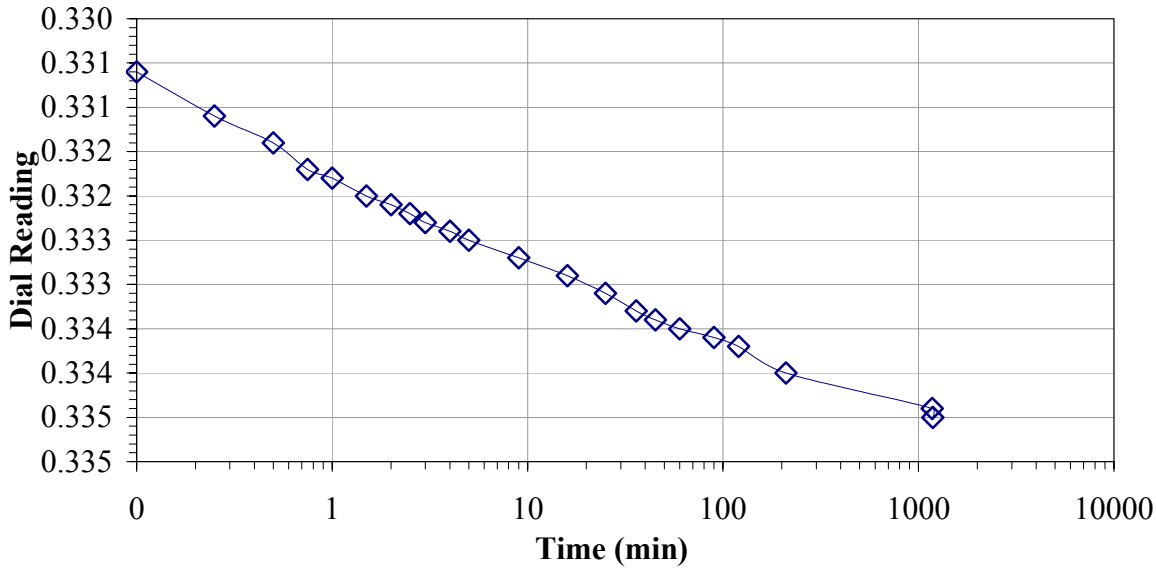
Time (min)	Dial Reading (cc)
0	
0.1	0.3202
0.25	0.3206
0.5	0.3209
0.75	0.3211
1	0.3212
1.5	0.3213
2	0.3214
2.5	0.32145
3	0.3215
4	0.3216
5	0.3217
9	0.3218
16	0.3219
25	0.322
36	0.3221
45	0.3222
60	0.3223
90	0.3225
120	0.3226
143	0.3227
203	0.3228
257	0.3229

One-Dimensional Consolidation Time-Deformation Relationship

Project: BYU (Dr. Youd)
Number: M00399-003
Sample: GVDA
Depth: 15.5-18 ft
Stress: 1600 (psf)

Data Summary		
H_{DR} =	0.4887	(in)
Slope of t_{int} line =	0.00194	(dial/min$^{1/2}$)
Slope of t_{90} line =	0.00168	(dial/min$^{1/2}$)
D_0 =	0.33	(dial)
D (90) =	0.3319	(dial)
D (100) =	0.33209	(dial)
t (90) =	1.2	(min)
Cv =	0.170	(in^2/min)
Cv =	1.70	(ft^2/day)





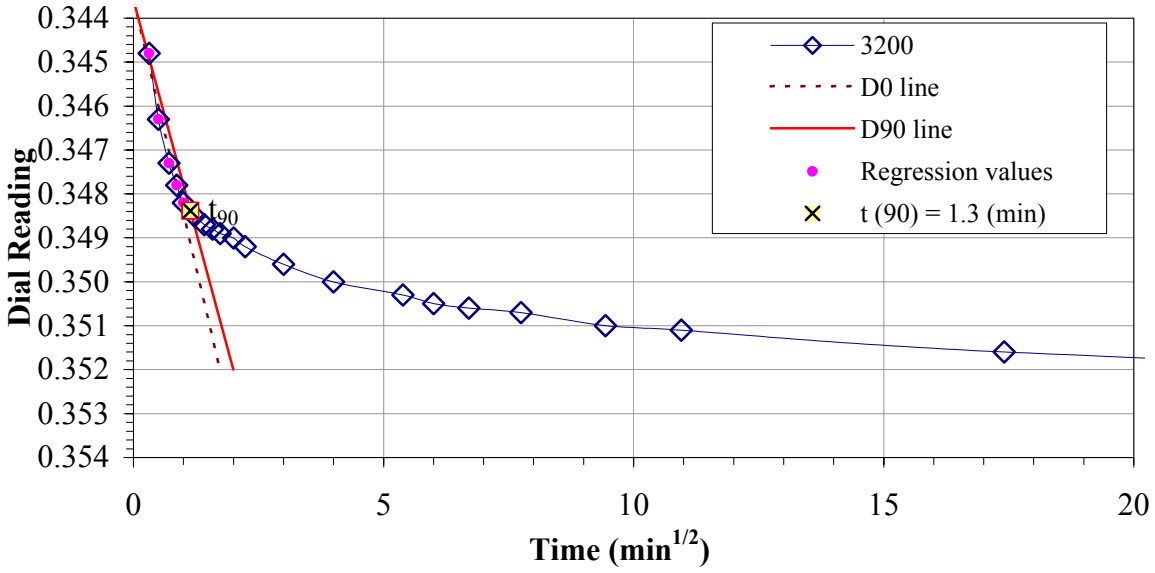
Time rate consolidation data

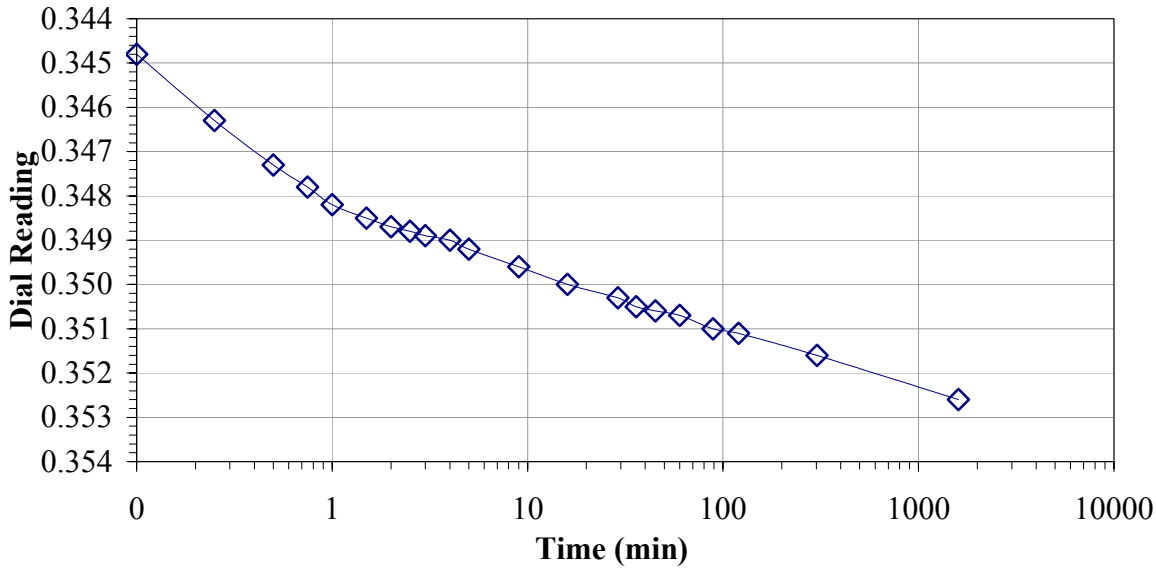
Time (min)	Dial Reading (cc)
0	
0.1	0.3306
0.25	0.3311
0.5	0.3314
0.75	0.3317
1	0.3318
1.5	0.332
2	0.3321
2.5	0.3322
3	0.3323
4	0.3324
5	0.3325
9	0.3327
16	0.3329
25	0.3331
36	0.3333
45	0.3334
60	0.3335
90	0.3336
120	0.3337
210	0.334
1176	0.3344
1186	0.3345

One-Dimensional Consolidation Time-Deformation Relationship

Project: BYU (Dr. Youd)
Number: M00399-003
Sample: GVDA
Depth: 15.5-18 ft
Stress: 3200 (psf)

Data Summary		
H_{DR} =	0.4813	(in)
Slope of t_{int} line =	0.00485	(dial/min$^{1/2}$)
Slope of t_{90} line =	0.00421	(dial/min$^{1/2}$)
D_0 =	0.34	(dial)
D (90) =	0.3484	(dial)
D (100) =	0.34891	(dial)
t (90) =	1.3	(min)
Cv =	0.152	(in^2/min)
Cv =	1.52	(ft^2/day)





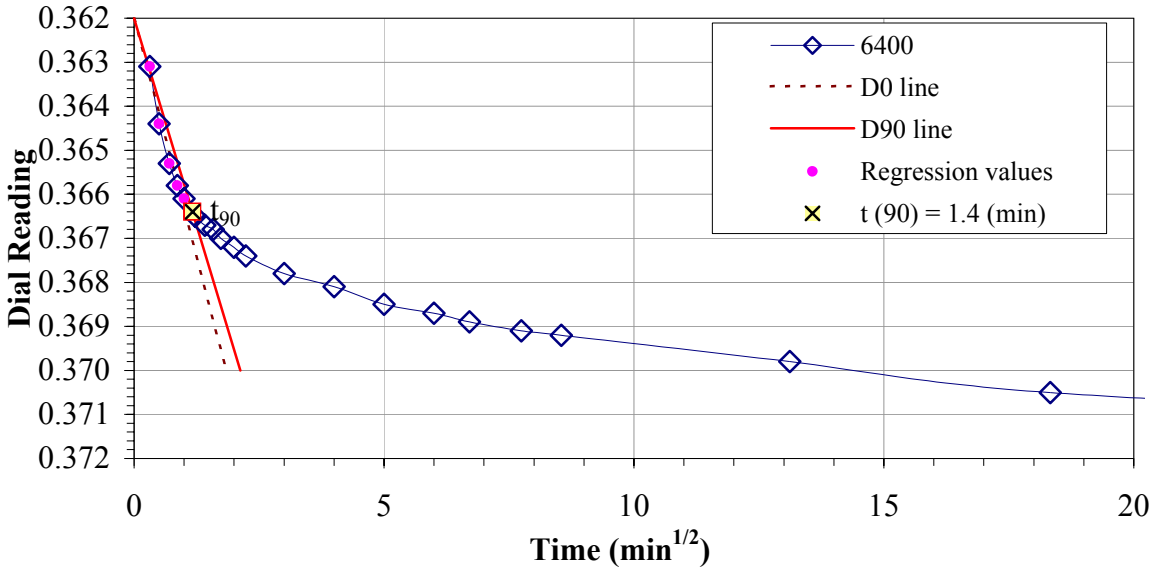
Time rate consolidation data

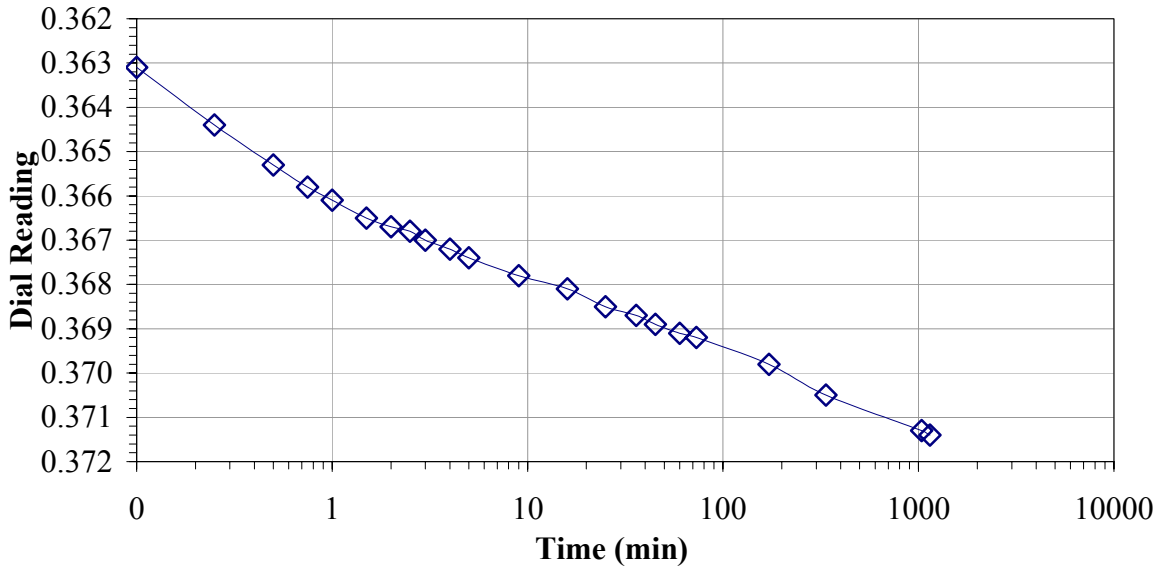
Time (min)	Dial Reading (cc)
0	
0.1	0.3448
0.25	0.3463
0.5	0.3473
0.75	0.3478
1	0.3482
1.5	0.3485
2	0.3487
2.5	0.3488
3	0.3489
4	0.349
5	0.3492
9	0.3496
16	0.35
29	0.3503
36	0.3505
45	0.3506
60	0.3507
89	0.351
120	0.3511
303	0.3516
1603	0.3526

One-Dimensional Consolidation Time-Deformation Relationship

Project: BYU (Dr. Youd)
Number: M00399-003
Sample: GVDA
Depth: 15.5-18 ft
Stress: 6400 (psf)

Data Summary		
H_{DR} =	0.4721	(in)
Slope of t_{int} line =	0.00432	(dial/min$^{1/2}$)
Slope of t_{90} line =	0.00376	(dial/min$^{1/2}$)
D_0 =	0.36	(dial)
D (90) =	0.3664	(dial)
D (100) =	0.36689	(dial)
t (90) =	1.4	(min)
Cv =	0.139	(in^2/min)
Cv =	1.39	(ft^2/day)





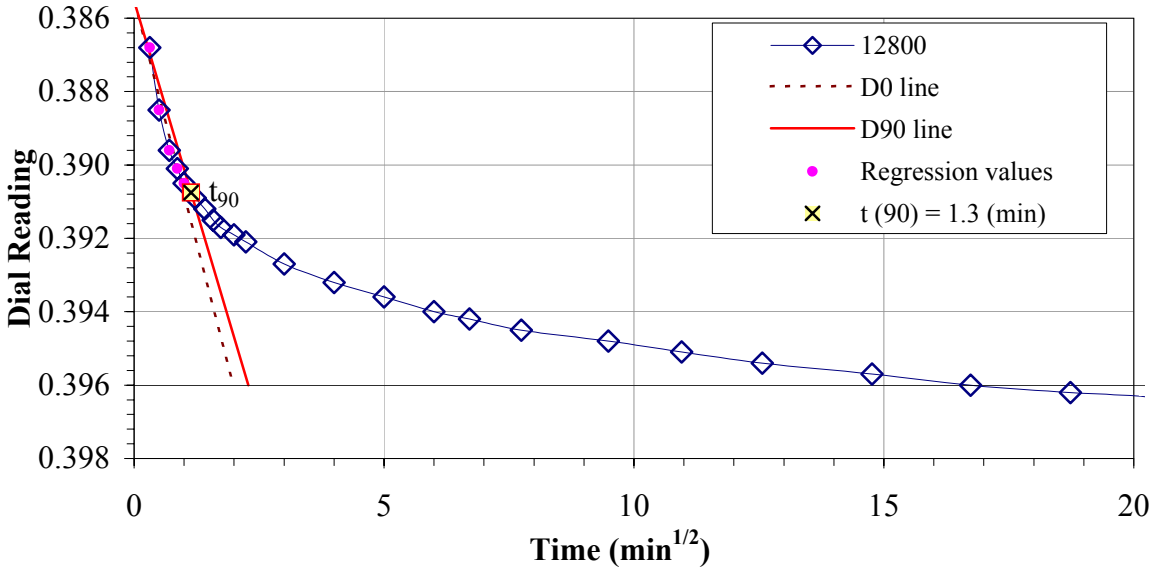
Time rate consolidation data

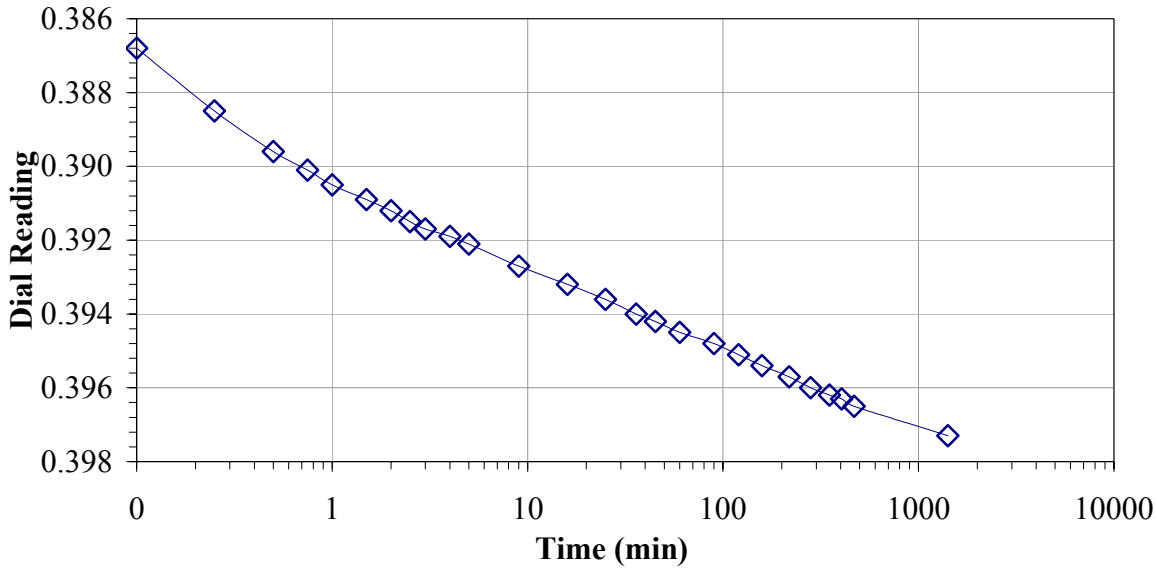
Time (min)	Dial Reading (cc)
0	
0.1	0.3631
0.25	0.3644
0.5	0.3653
0.75	0.3658
1	0.3661
1.5	0.3665
2	0.3667
2.5	0.3668
3	0.367
4	0.3672
5	0.3674
9	0.3678
16	0.3681
25	0.3685
36	0.3687
45	0.3689
60	0.3691
73	0.3692
172	0.3698
336	0.3705
1036	0.3713
1144	0.3714

One-Dimensional Consolidation Time-Deformation Relationship

Project: BYU (Dr. Youd)
Number: M00399-003
Sample: GVDA
Depth: 15.5-18 ft
Stress: 12800 (psf)

Data Summary	
H_{DR} =	0.4609 (in)
Slope of t_{int} line =	0.00526 (dial/min$^{1/2}$)
Slope of t_{90} line =	0.00458 (dial/min$^{1/2}$)
D_0 =	0.39 (dial)
D (90) =	0.3907 (dial)
D (100) =	0.39133 (dial)
t (90) =	1.3 (min)
Cv =	0.138 (in^2/min)
Cv =	1.38 (ft^2/day)





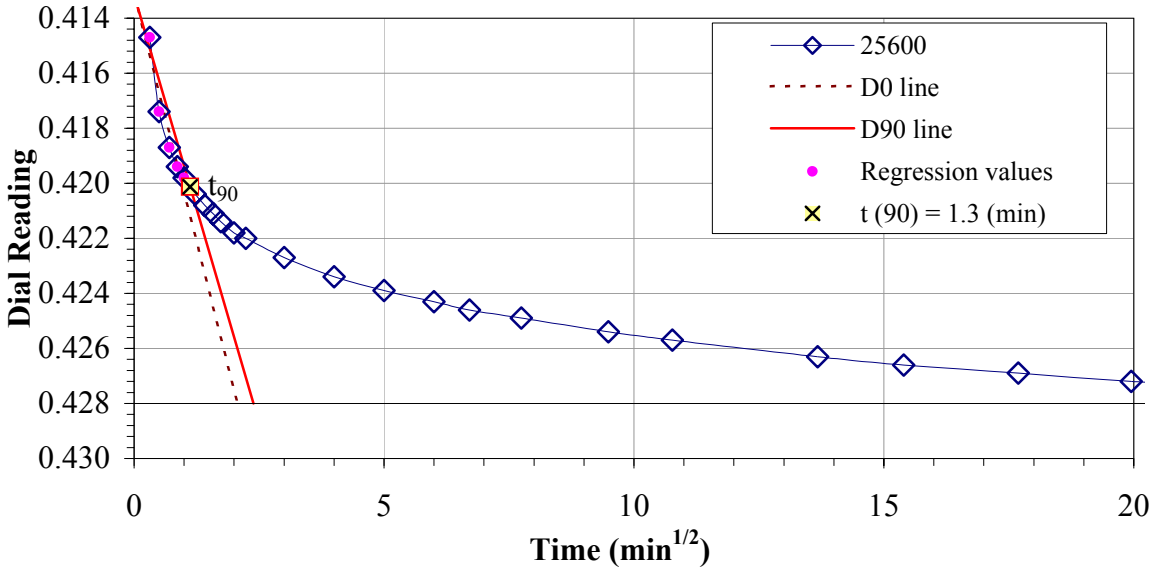
Time rate consolidation data

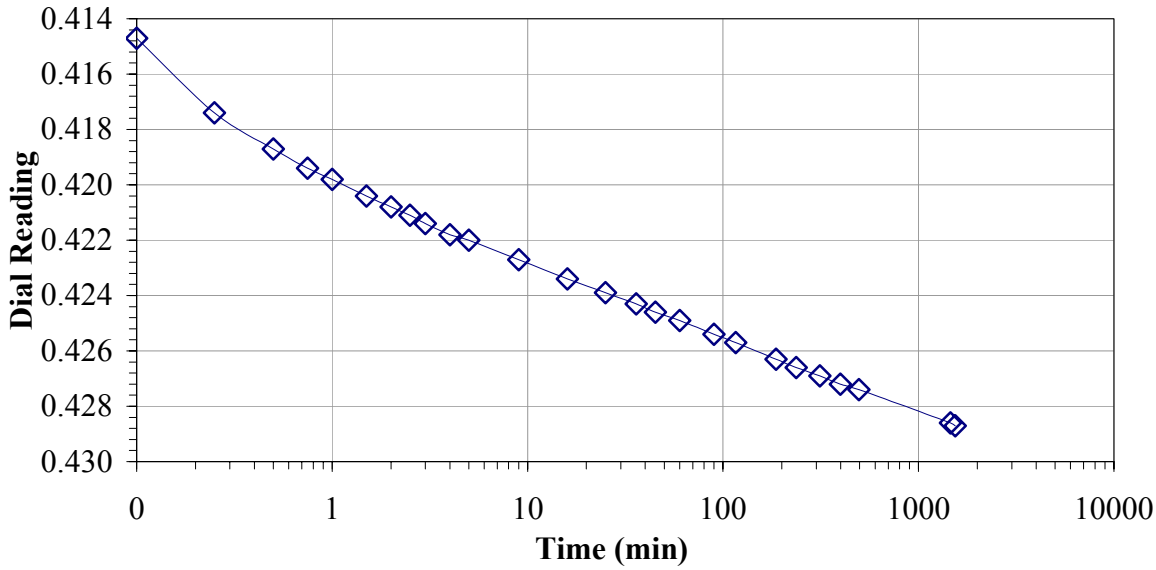
Time (min)	Dial Reading (cc)
0	
0.1	0.3868
0.25	0.3885
0.5	0.3896
0.75	0.3901
1	0.3905
1.5	0.3909
2	0.3912
2.5	0.3915
3	0.3917
4	0.3919
5	0.3921
9	0.3927
16	0.3932
25	0.3936
36	0.394
45	0.3942
60	0.3945
90	0.3948
120	0.3951
158	0.3954
218	0.3957
280	0.396
351	0.3962
404	0.3963
468	0.3965
1411	0.3973

One-Dimensional Consolidation Time-Deformation Relationship

Project: BYU (Dr. Youd)
Number: M00399-003
Sample: GVDA
Depth: 15.5-18 ft
Stress: 25600 (psf)

Data Summary		
H_{DR} =	0.4466	(in)
Slope of t_{int} line =	0.00715	(dial/min$^{1/2}$)
Slope of t_{90} line =	0.00622	(dial/min$^{1/2}$)
D_0 =	0.41	(dial)
D (90) =	0.4201	(dial)
D (100) =	0.4209	(dial)
t (90) =	1.3	(min)
Cv =	0.135	(in^2/min)
Cv =	1.35	(ft^2/day)





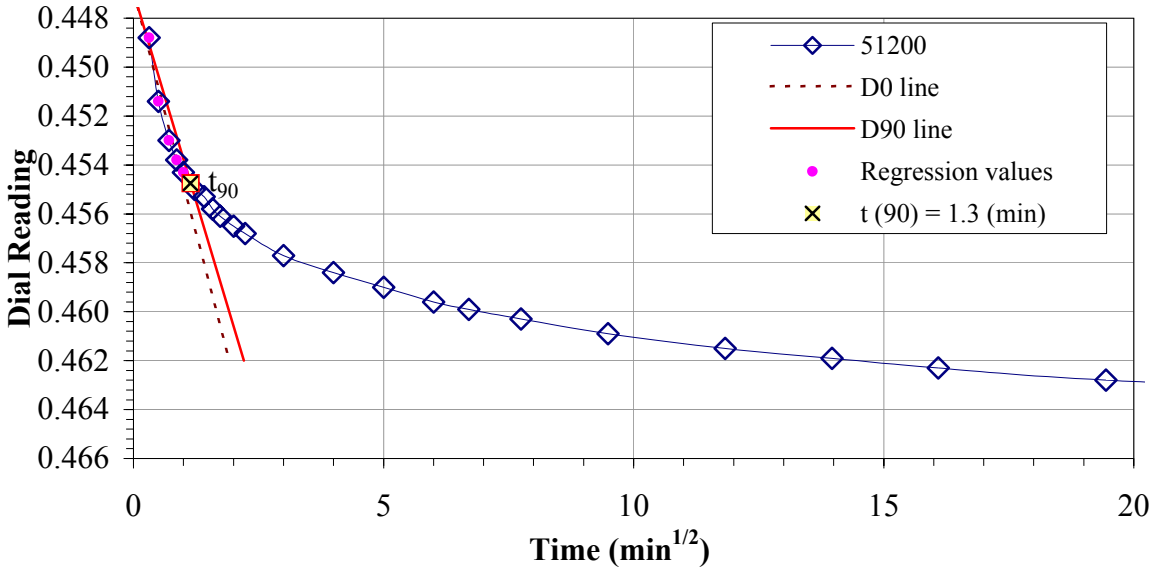
Time rate consolidation data

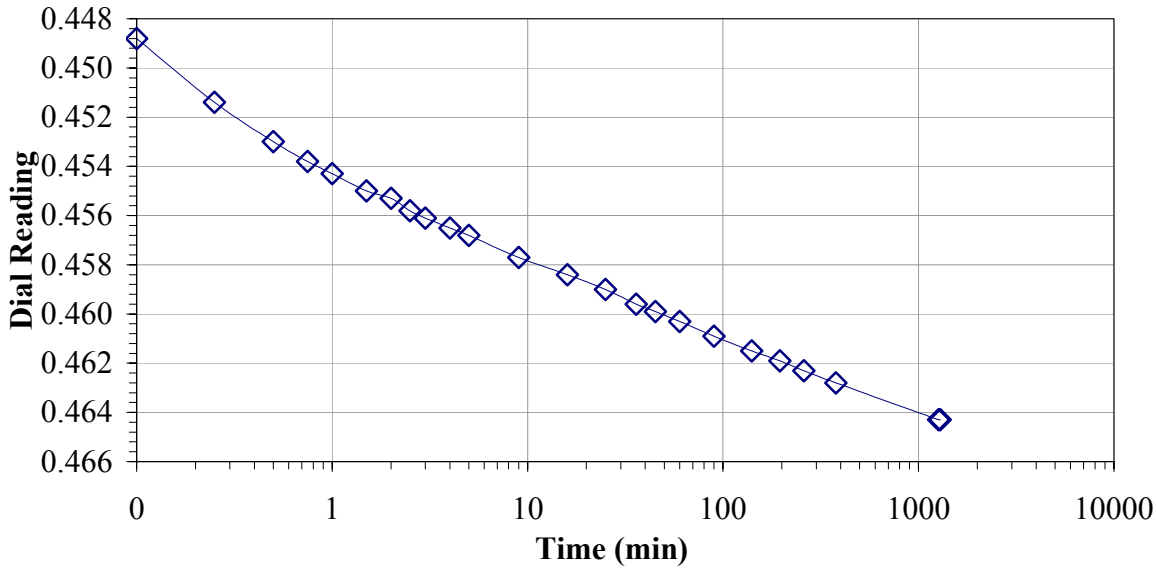
Time (min)	Dial Reading (cc)
0	
0.1	0.4147
0.25	0.4174
0.5	0.4187
0.75	0.4194
1	0.4198
1.5	0.4204
2	0.4208
2.5	0.4211
3	0.4214
4	0.4218
5	0.422
9	0.4227
16	0.4234
25	0.4239
36	0.4243
45	0.4246
60	0.4249
90	0.4254
116	0.4257
187	0.4263
237	0.4266
313	0.4269
398	0.4272
496	0.4274
1455	0.4286
1544	0.4287

One-Dimensional Consolidation Time-Deformation Relationship

Project: BYU (Dr. Youd)
Number: M00399-003
Sample: GVDA
Depth: 15.5-18 ft
Stress: 51200 (psf)

Data Summary		
H_{DR} =	0.4298	(in)
Slope of t_{int} line =	0.00785	(dial/min$^{1/2}$)
Slope of t_{90} line =	0.00682	(dial/min$^{1/2}$)
D_0 =	0.45	(dial)
D (90) =	0.4548	(dial)
D (100) =	0.45562	(dial)
t (90) =	1.3	(min)
Cv =	0.120	(in^2/min)
Cv =	1.20	(ft^2/day)





Time rate consolidation data

Time (min)	Dial Reading (cc)
0	
0.1	0.4488
0.25	0.4514
0.5	0.453
0.75	0.4538
1	0.4543
1.5	0.455
2	0.4553
2.5	0.4558
3	0.4561
4	0.4565
5	0.4568
9	0.4577
16	0.4584
25	0.459
36	0.4596
45	0.4599
60	0.4603
90	0.4609
140	0.4615
195	0.4619
259	0.4623
378	0.4628
1266	0.4643
1293	0.4643