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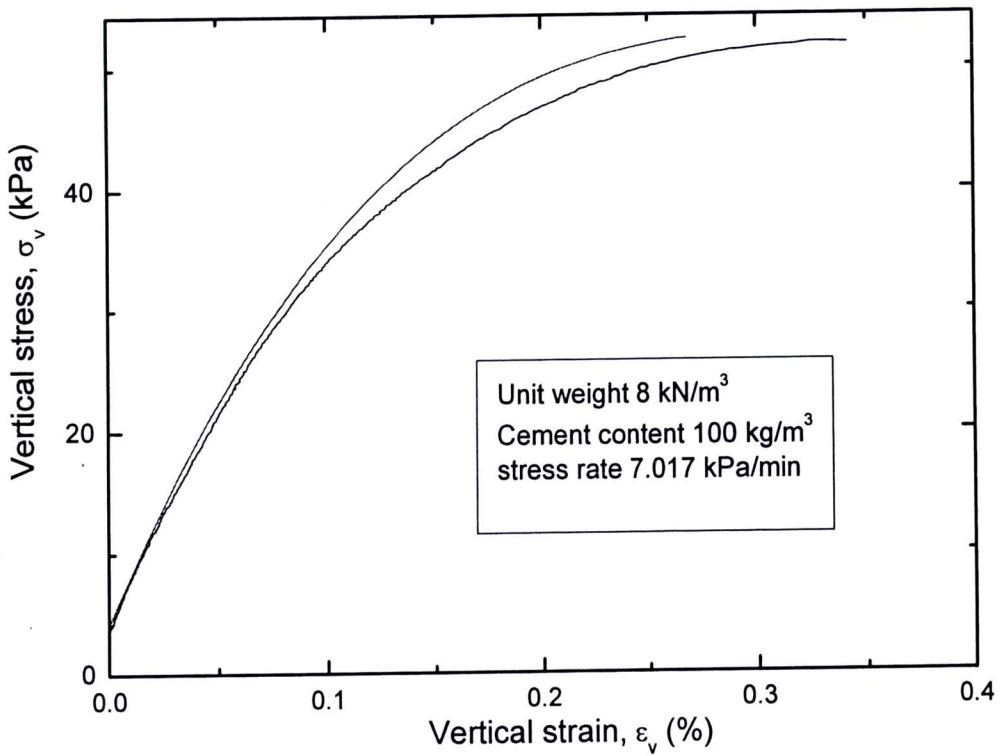
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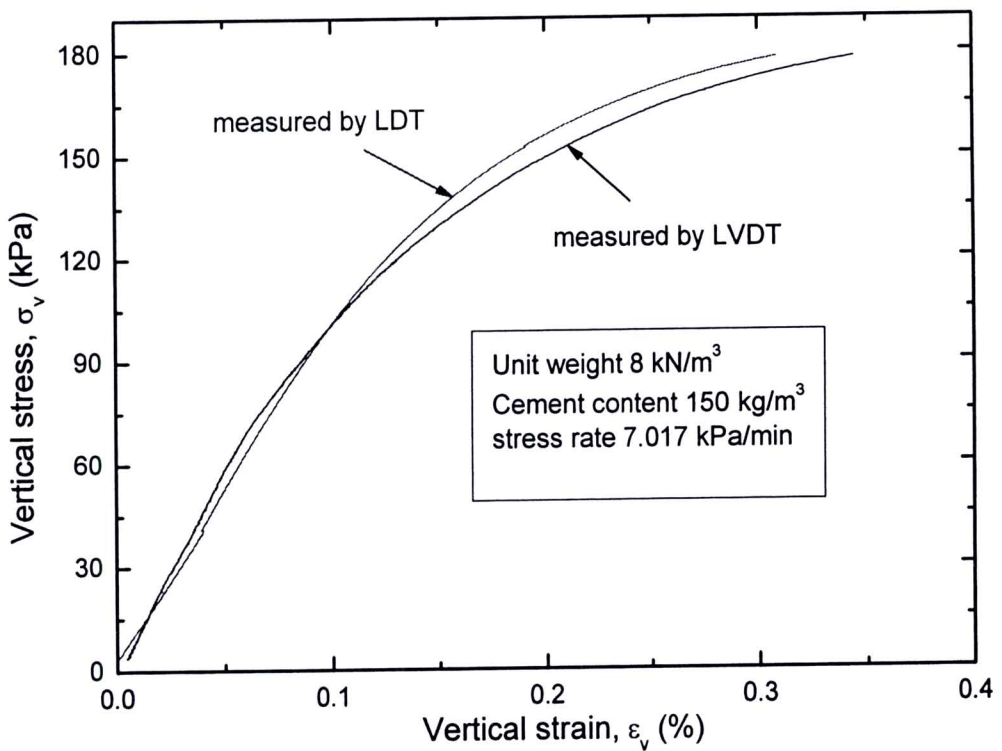
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## **APPENDIX A**

Relationship between stress and strain of monotonic loading test on air-cement treated soil

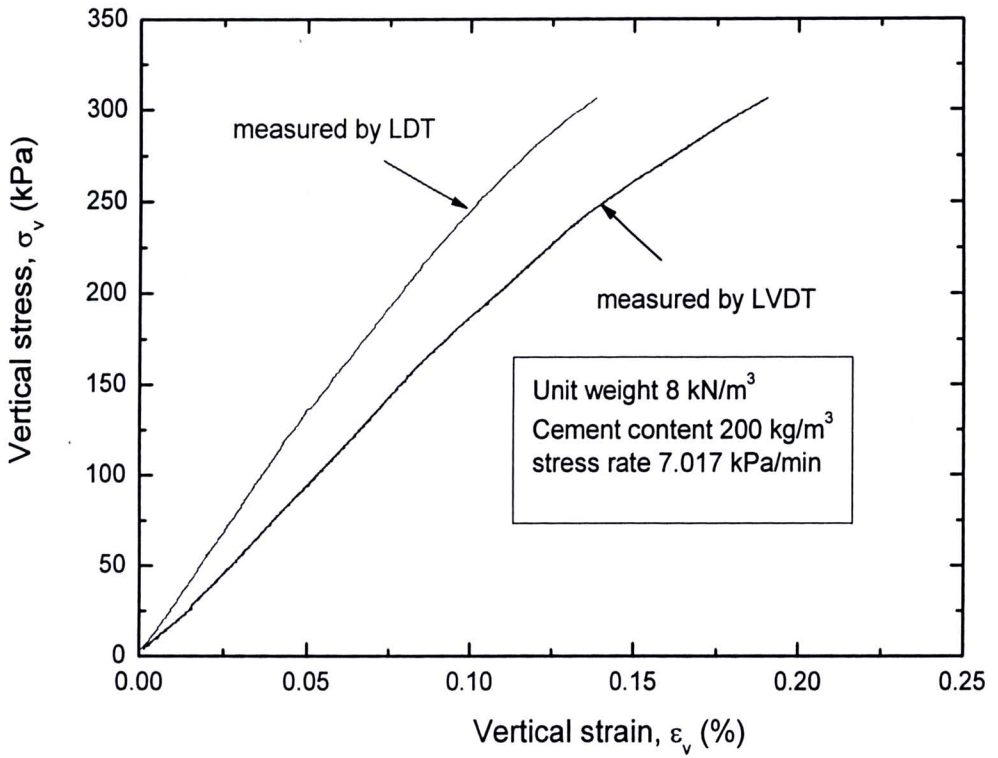


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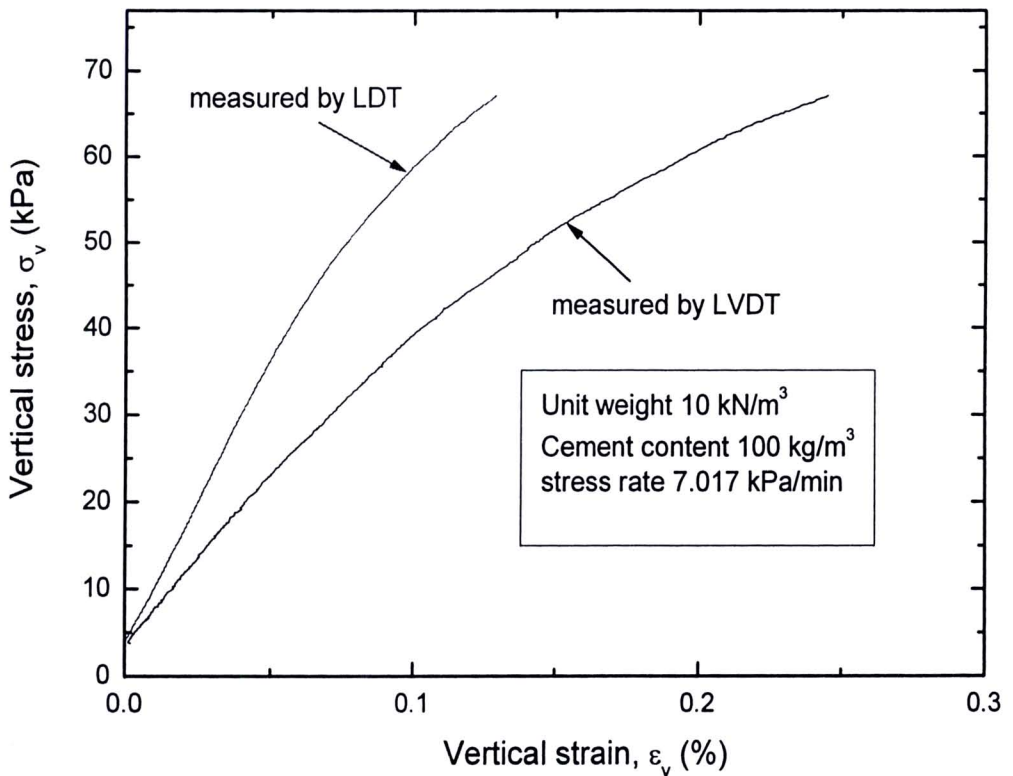


(b)

**Figure A.1** Relationship between stress and strain of monotonic loading test on air-cement treated soil  
 (a) Unit weight  $8 \text{ kN/m}^3$  and cement content  $100 \text{ kg/m}^3$   
 (b) Unit weight  $8 \text{ kN/m}^3$  and cement content  $150 \text{ kg/m}^3$

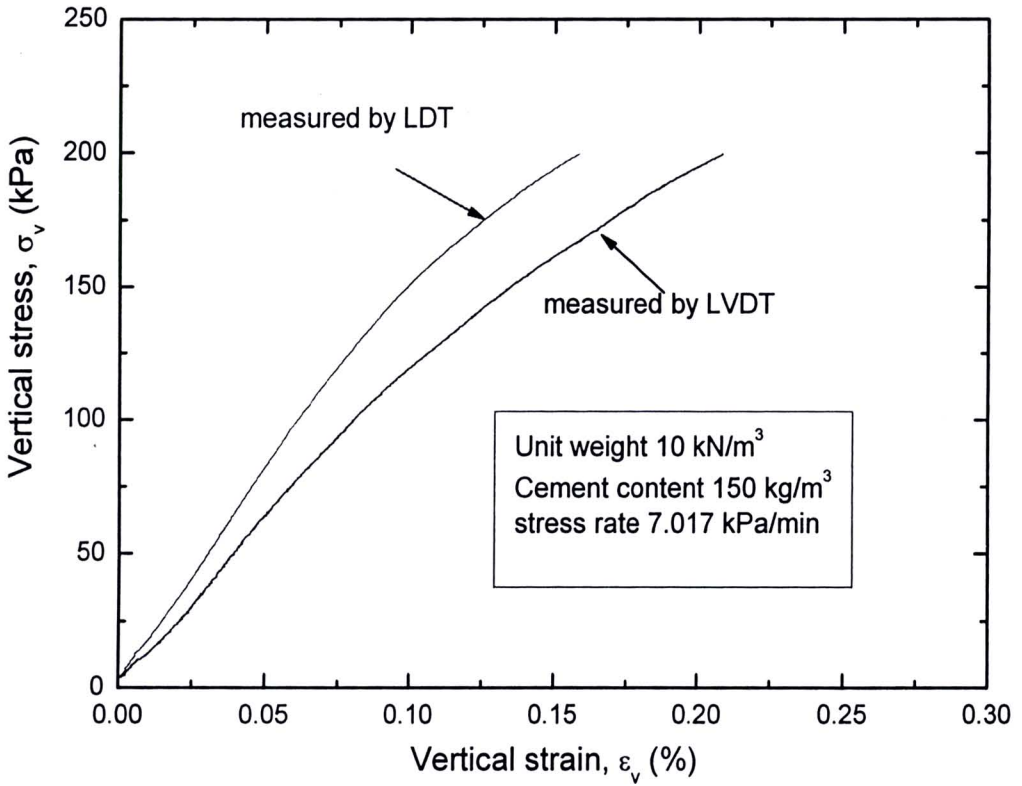


(c)

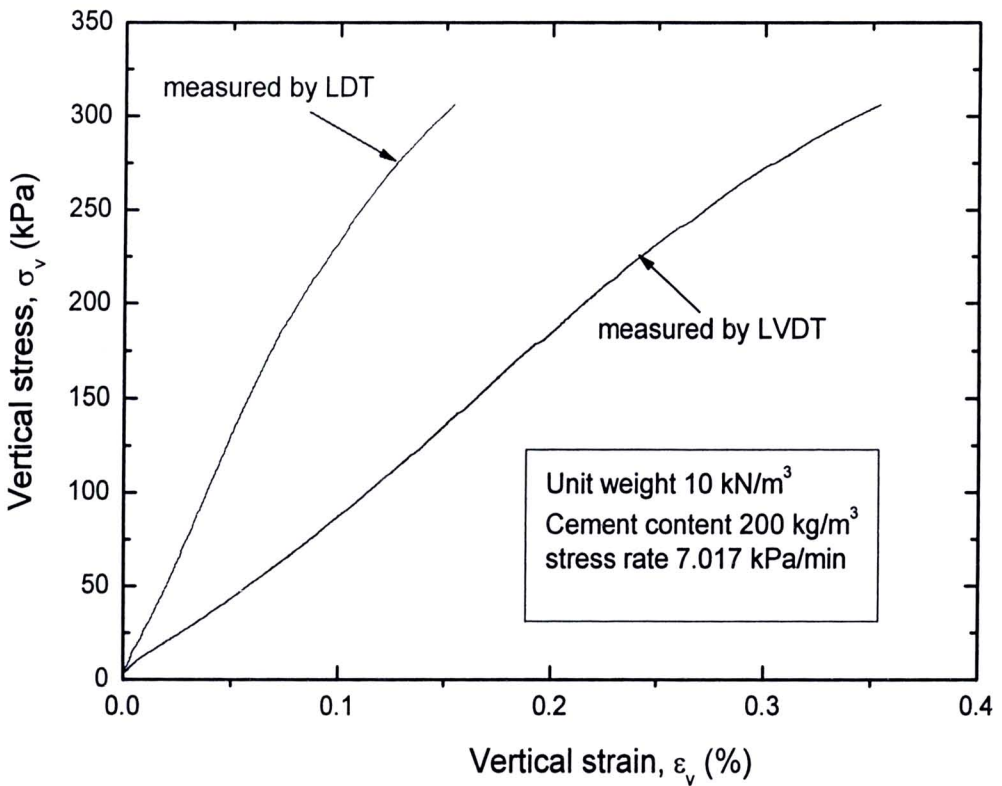


(d)

**Figure A.1 (Cont.)** (c) Unit weight  $8 \text{ kN/m}^3$  and cement content  $200 \text{ kg/m}^3$   
 (d) Unit weight  $10 \text{ kN/m}^3$  and cement content  $100 \text{ kg/m}^3$

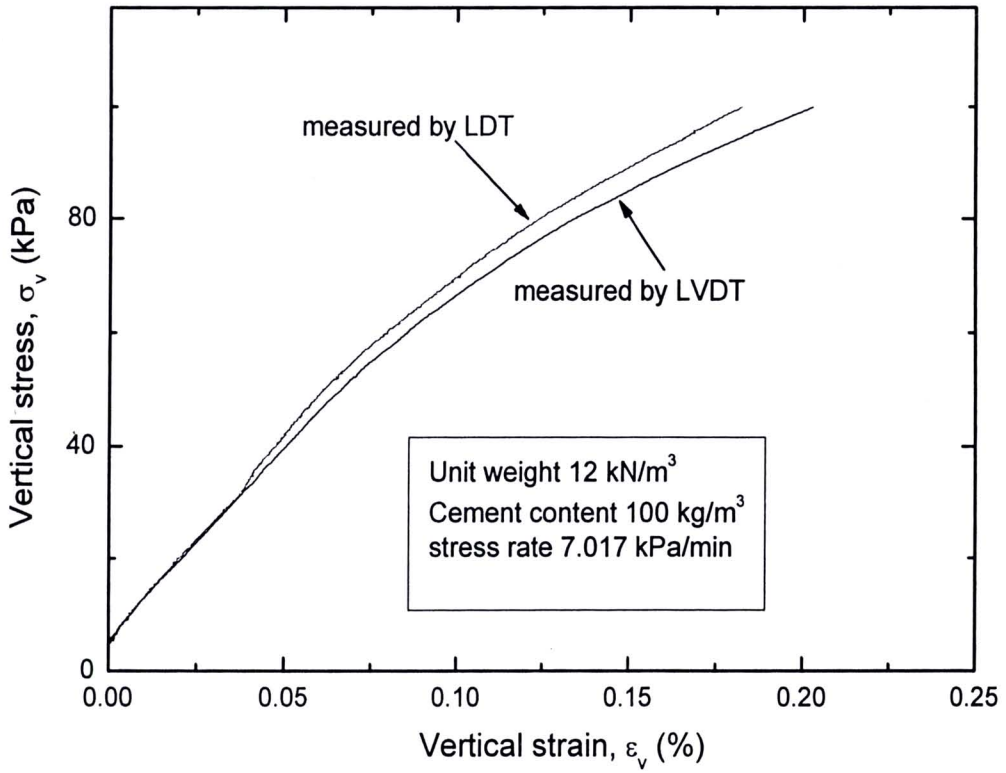


(e)

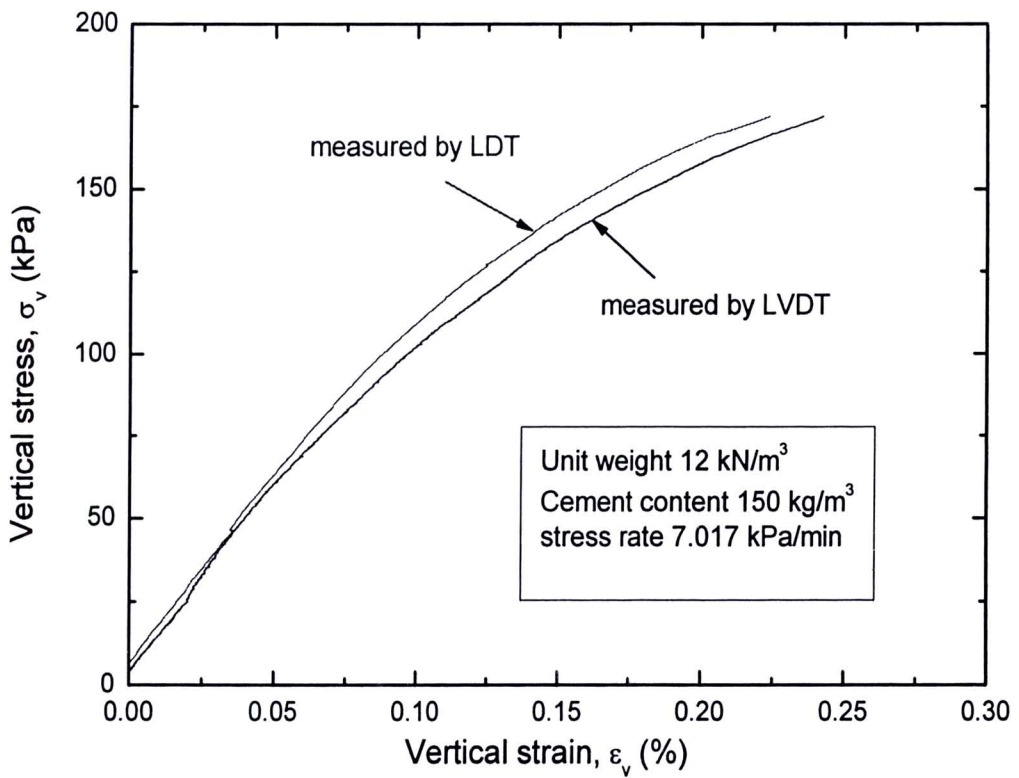


(f)

**Figure A.1 (Cont.)** (e) Unit weight 10 kN/m<sup>3</sup> and cement content 150m<sup>3</sup>  
 (f) Unit weight 10 kN/m<sup>3</sup> and cement content 200m<sup>3</sup>

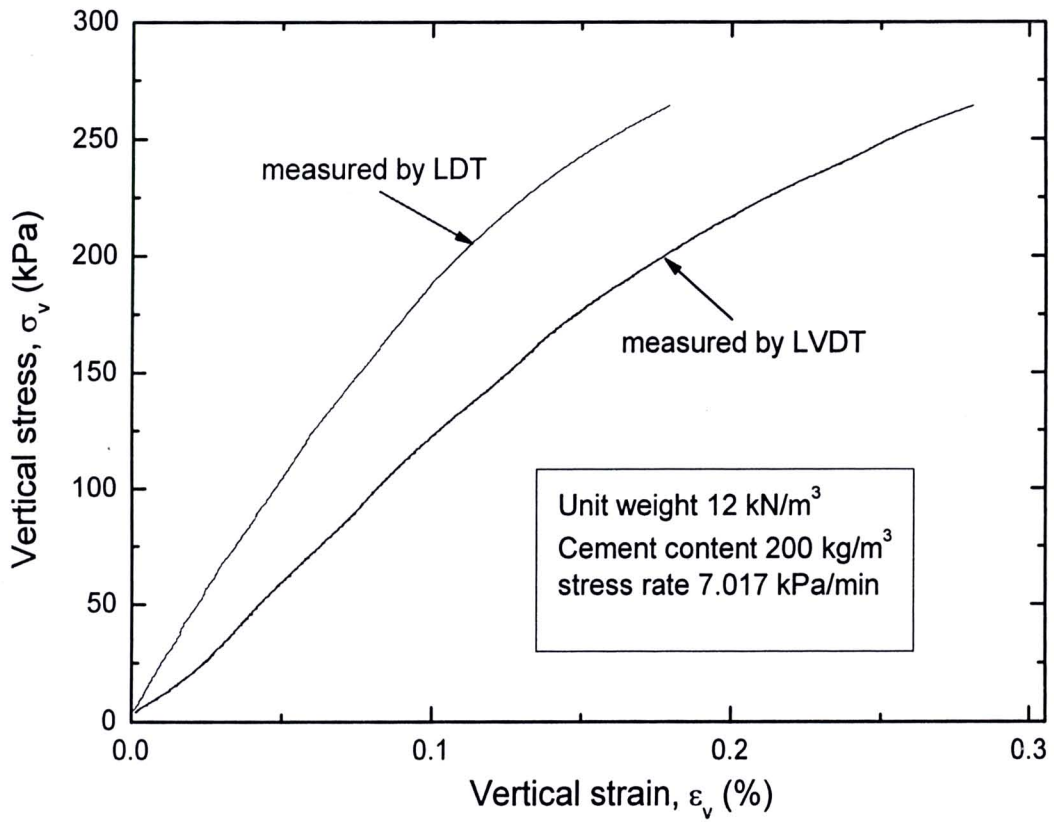


(g)



(h)

**Figure A.1 (Cont.)** (g) Unit weight 12 kN/m<sup>3</sup> and cement content 100 m<sup>3</sup>  
(h) Unit weight 12 kN/m<sup>3</sup> and cement content 150 m<sup>3</sup>

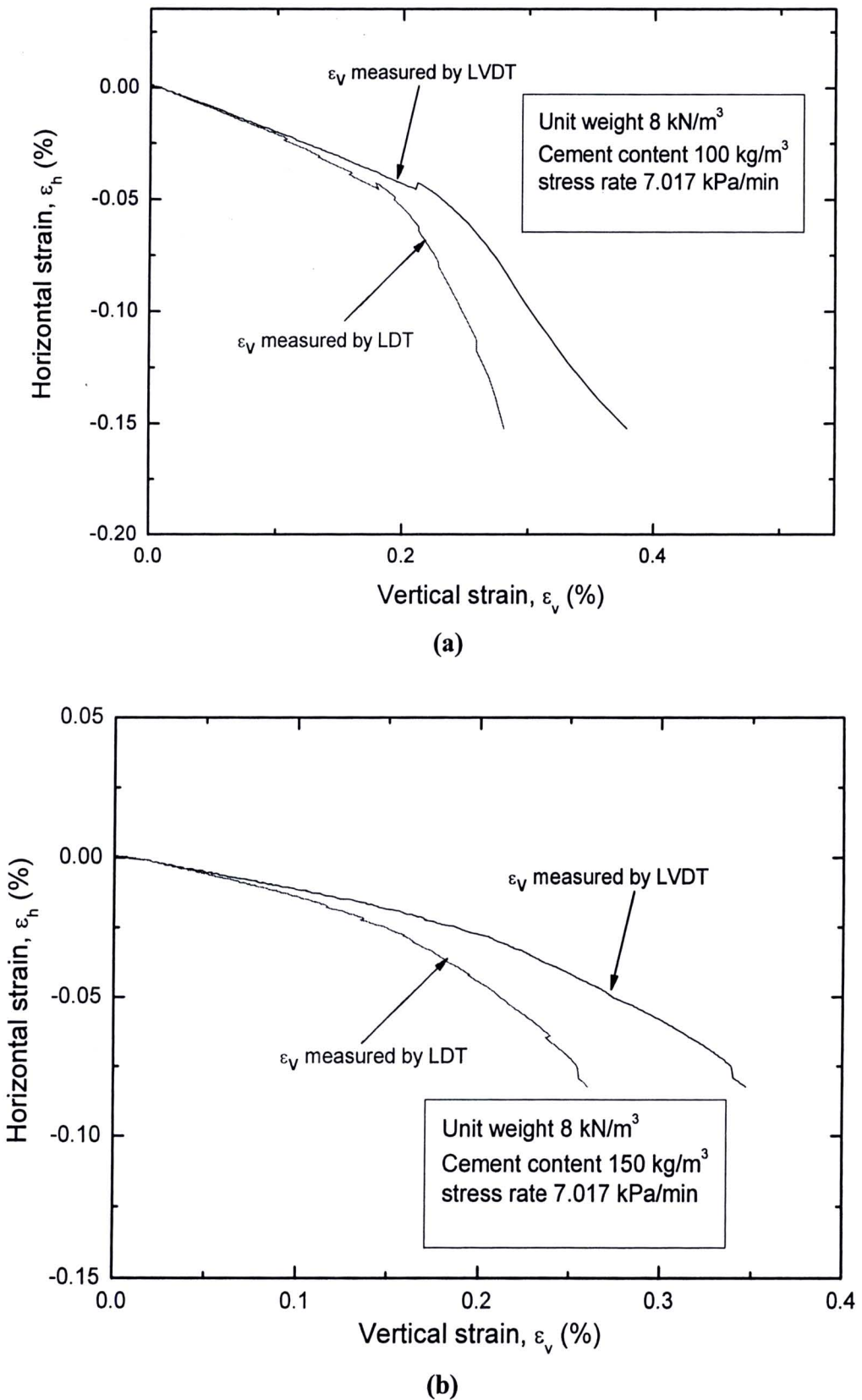


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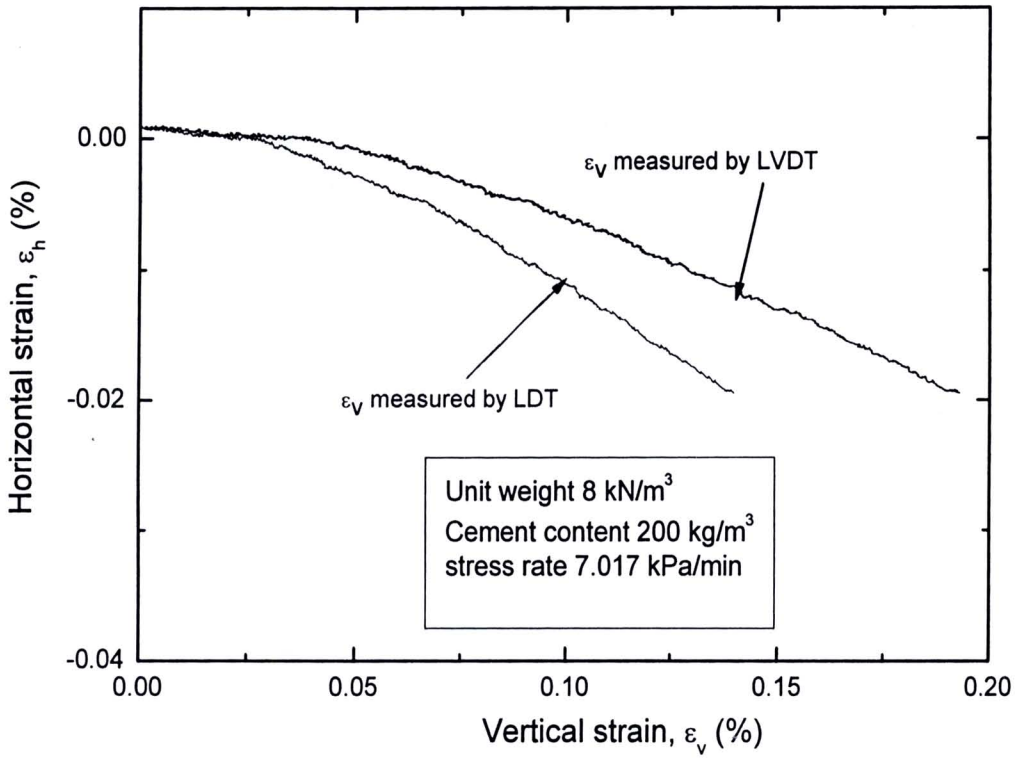
**Figure A.1 (Cont.)** (i) Unit weight  $12 \text{ kN/m}^3$  and cement content  $200 \text{ kg/m}^3$

## **APPENDIX B**

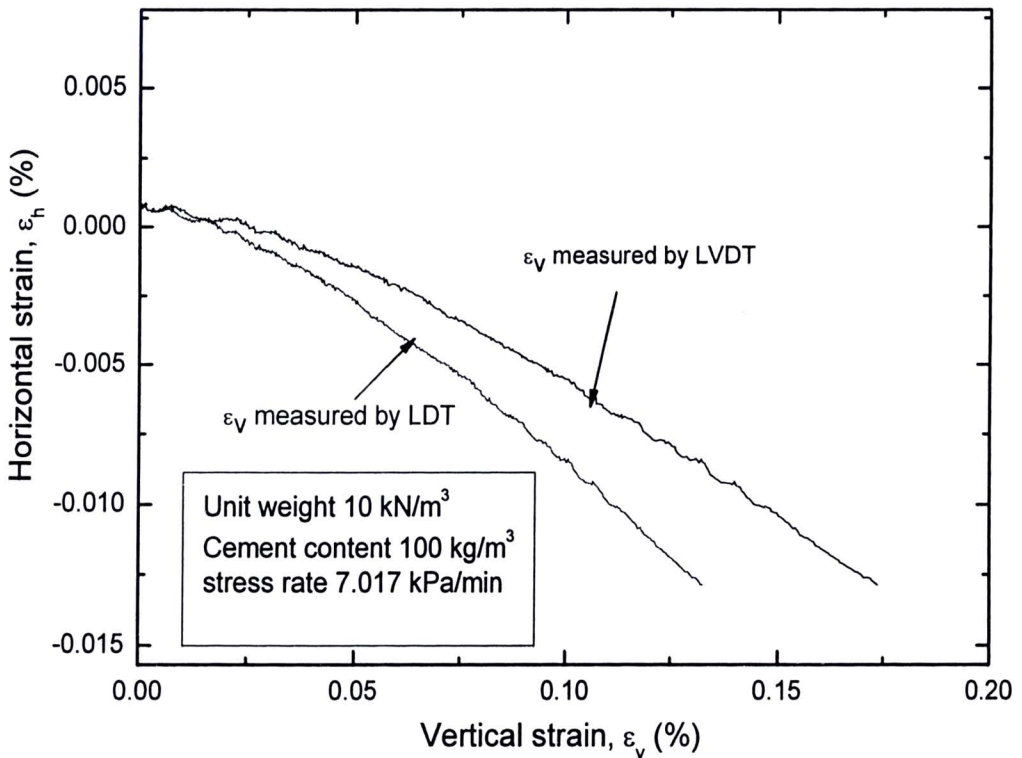
Relationship between horizontal strain and vertical strain of monotonic loading test on  
air-cement treated soil



**Figure B.1** Relationship between horizontal strain and vertical strain of monotonic loading test on air-cement treated soil  
 (a) Unit weight  $8 \text{ kN/m}^3$  and cement content  $100 \text{ kg/m}^3$   
 (b) Unit weight  $8 \text{ kN/m}^3$  and cement content  $150 \text{ kg/m}^3$

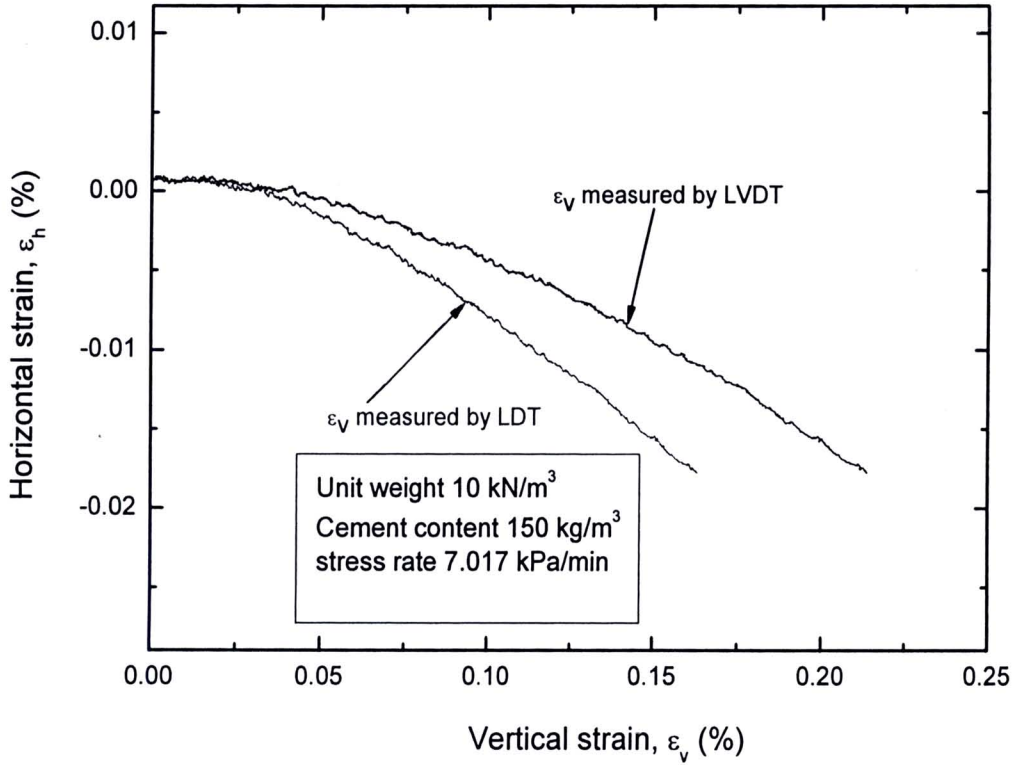


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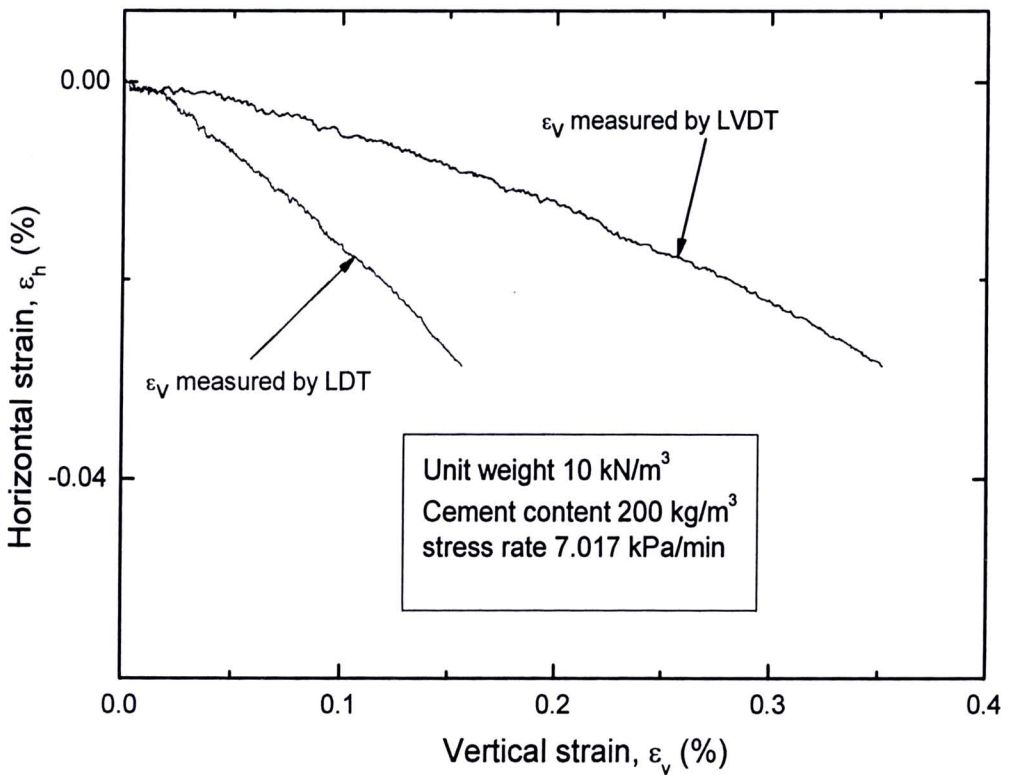


(d)

**Figure B.1 (Cont.)** (c) Unit weight  $8 \text{ kN/m}^3$  and cement content  $200 \text{ kg/m}^3$   
(d) Unit weight  $10 \text{ kN/m}^3$  and cement content  $100 \text{ kg/m}^3$

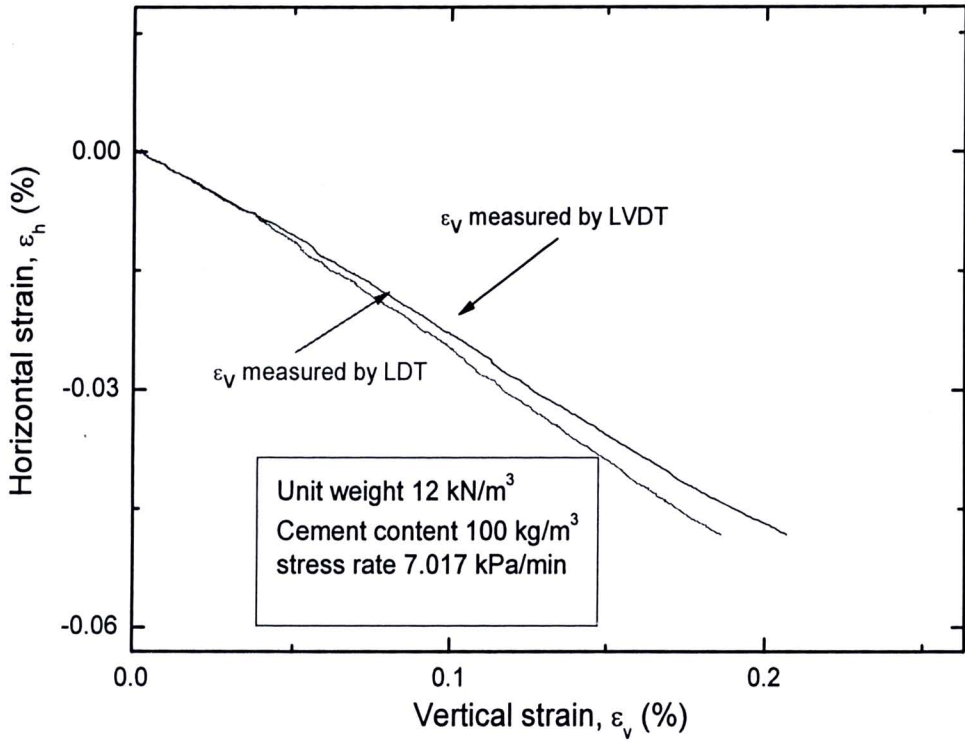


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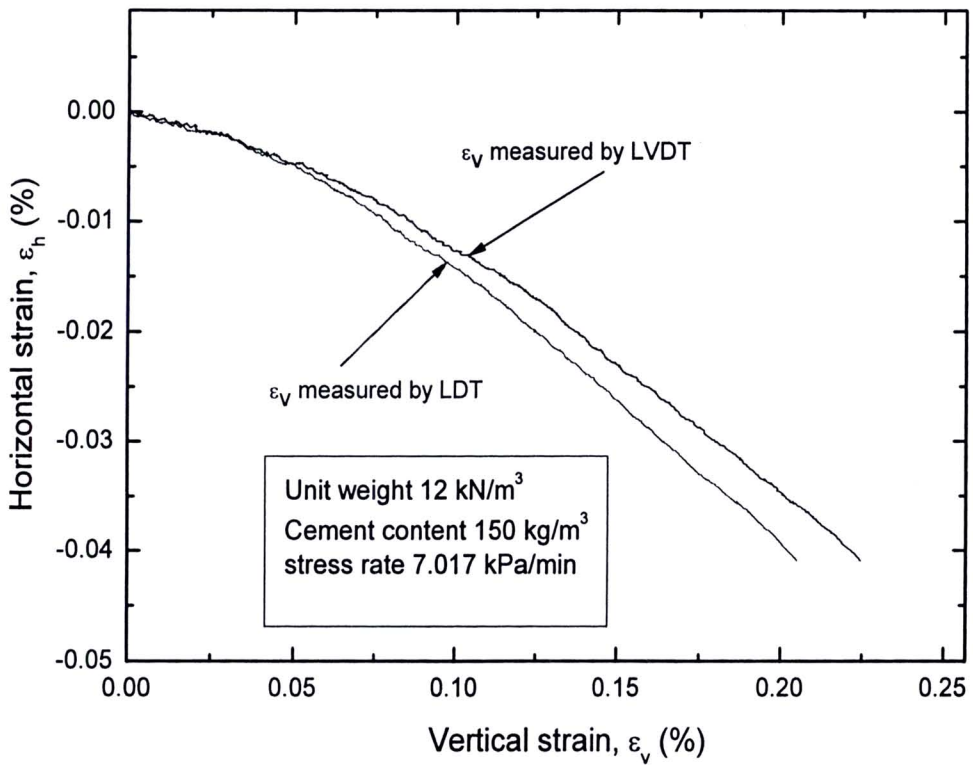


(f)

**Figure B.1 (Cont.)** (e) Unit weight  $10 \text{ kN/m}^3$  and cement content  $150 \text{ kg/m}^3$   
(f) Unit weight  $10 \text{ kN/m}^3$  and cement content  $200 \text{ kg/m}^3$



(g)



(h)

**Figure B.1 (Cont.)** (g) Unit weight  $12 \text{ kN/m}^3$  and cement content  $100 \text{ kg/m}^3$   
(h) Unit weight  $12 \text{ kN/m}^3$  and cement content  $150 \text{ kg/m}^3$

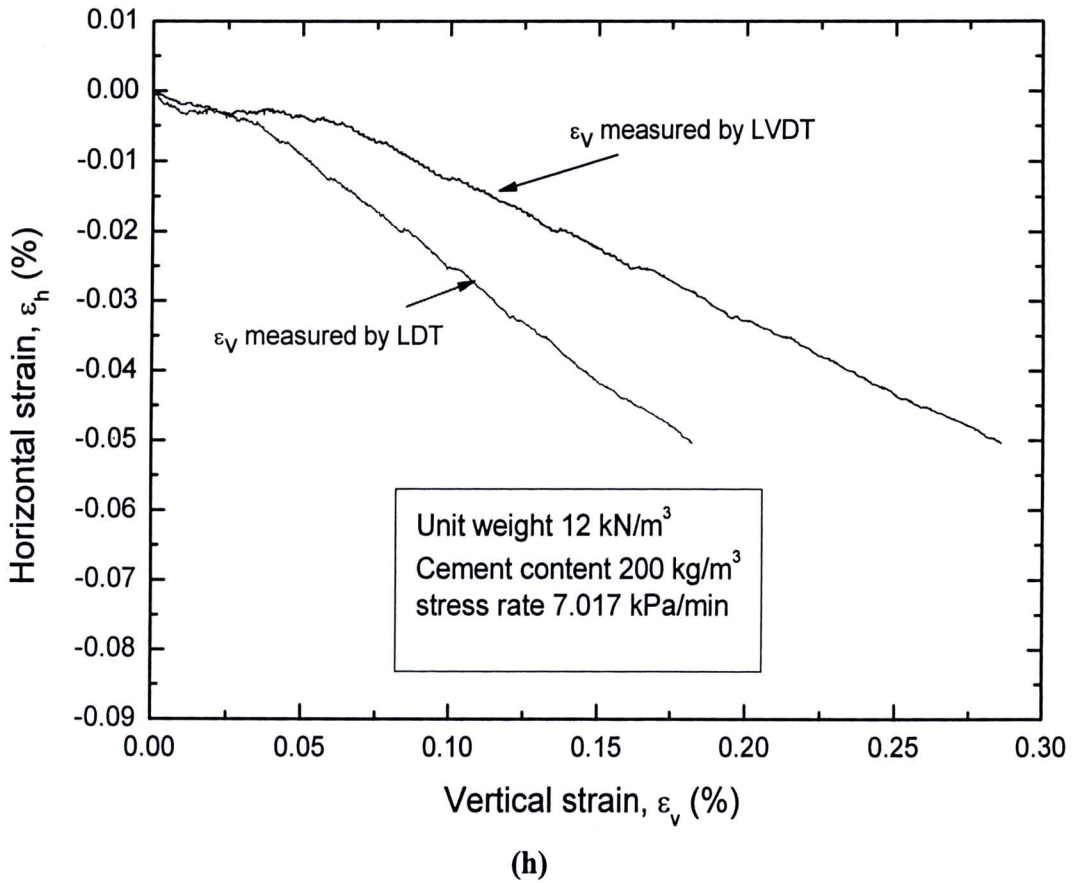
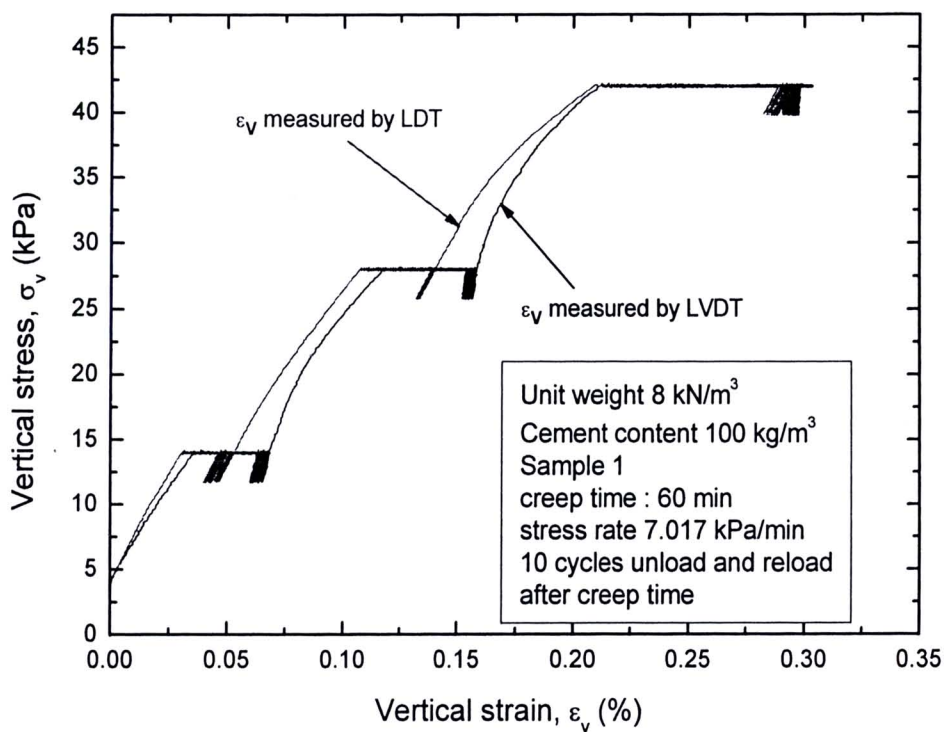


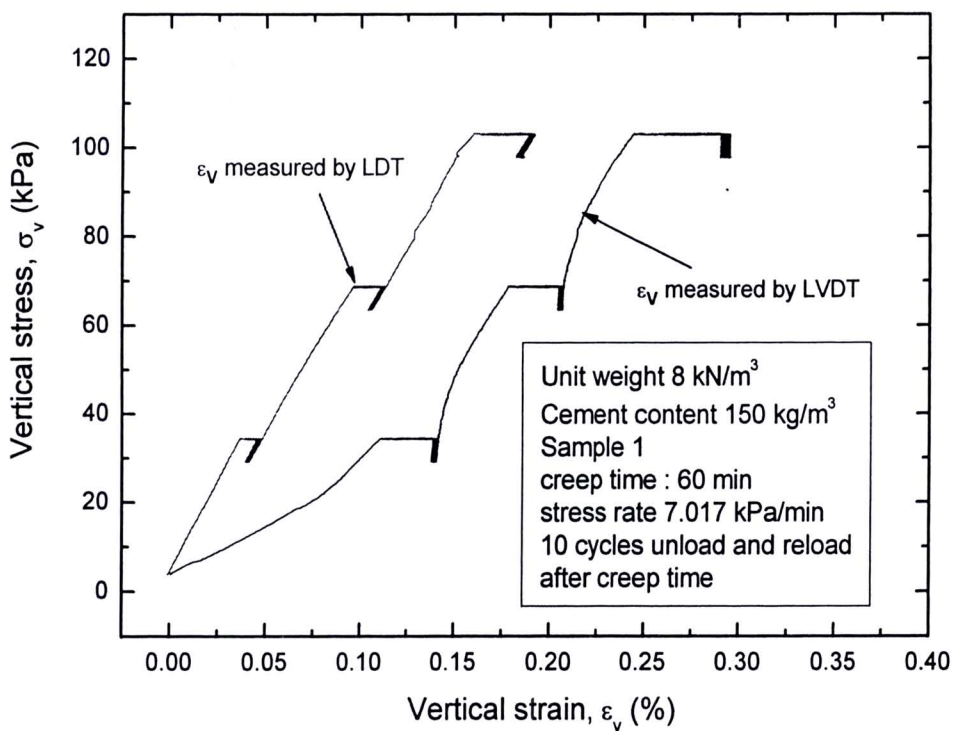
Figure B.1 (Cont.) (h) Unit weight  $12 \text{ kN/m}^3$  and cement content  $200 \text{ kg/m}^3$

## **APPENDIX C**

Relationship between stress and strain of small strain properties test on air-cement treated soil



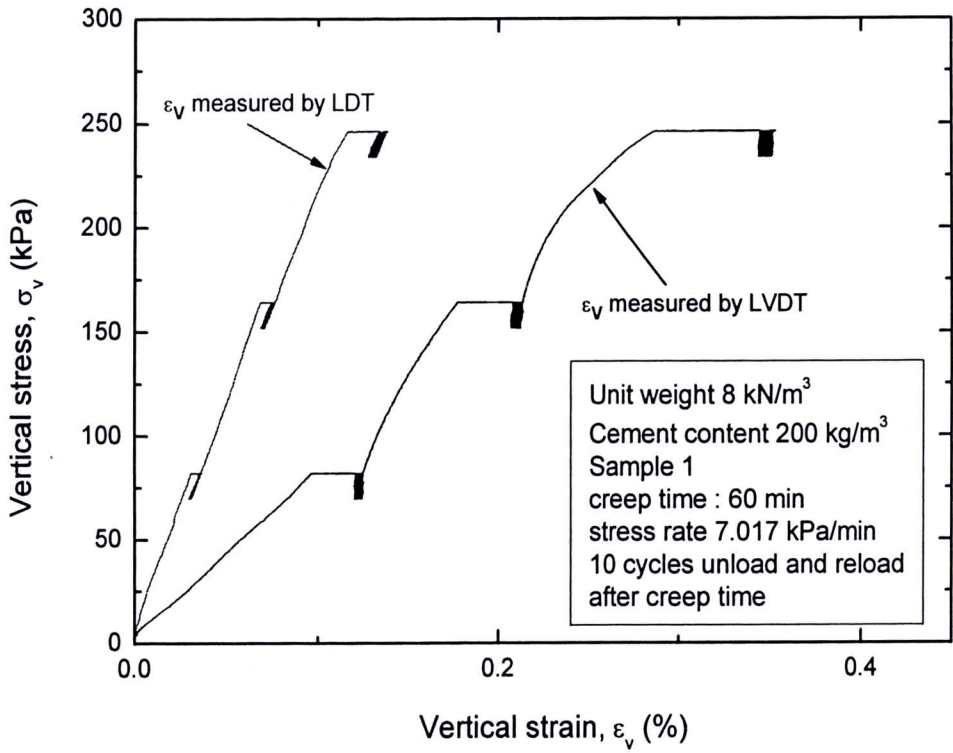
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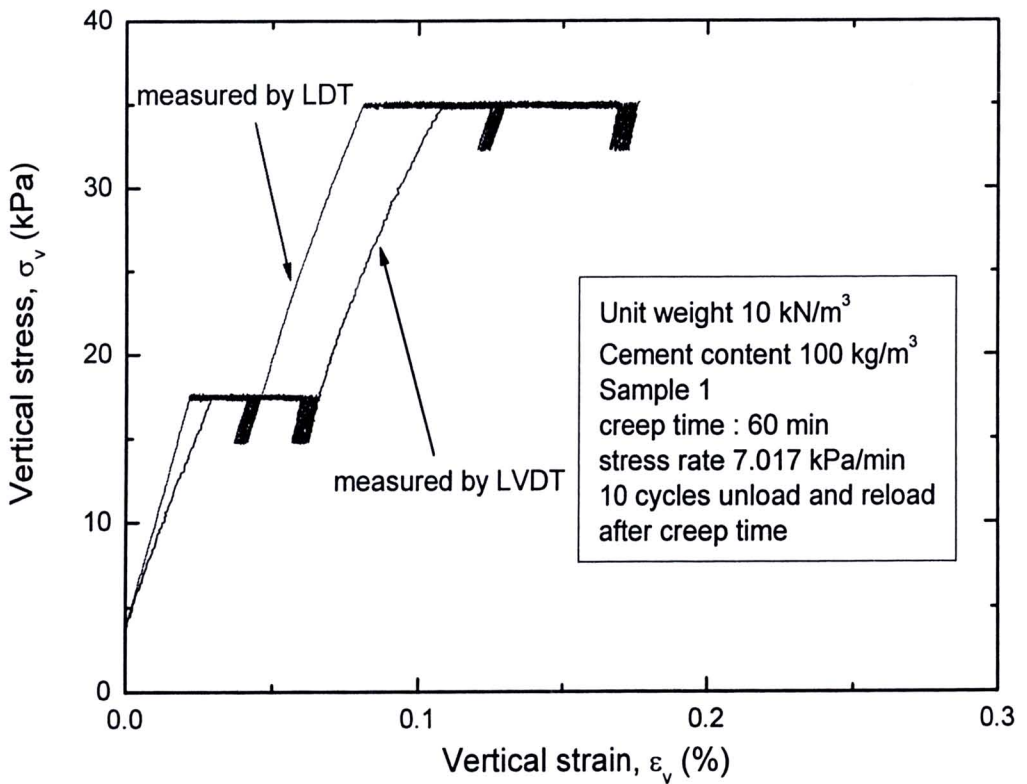
(b)

**Figure C.1** Relationship between stress and strain of small strain properties test on air-cement treated soil

- (a) Unit weight  $8 \text{ kN/m}^3$  and cement content  $100 \text{ kg/m}^3$  sample 1  
 (b) Unit weight  $8 \text{ kN/m}^3$  and cement content  $150 \text{ kg/m}^3$  sample 1

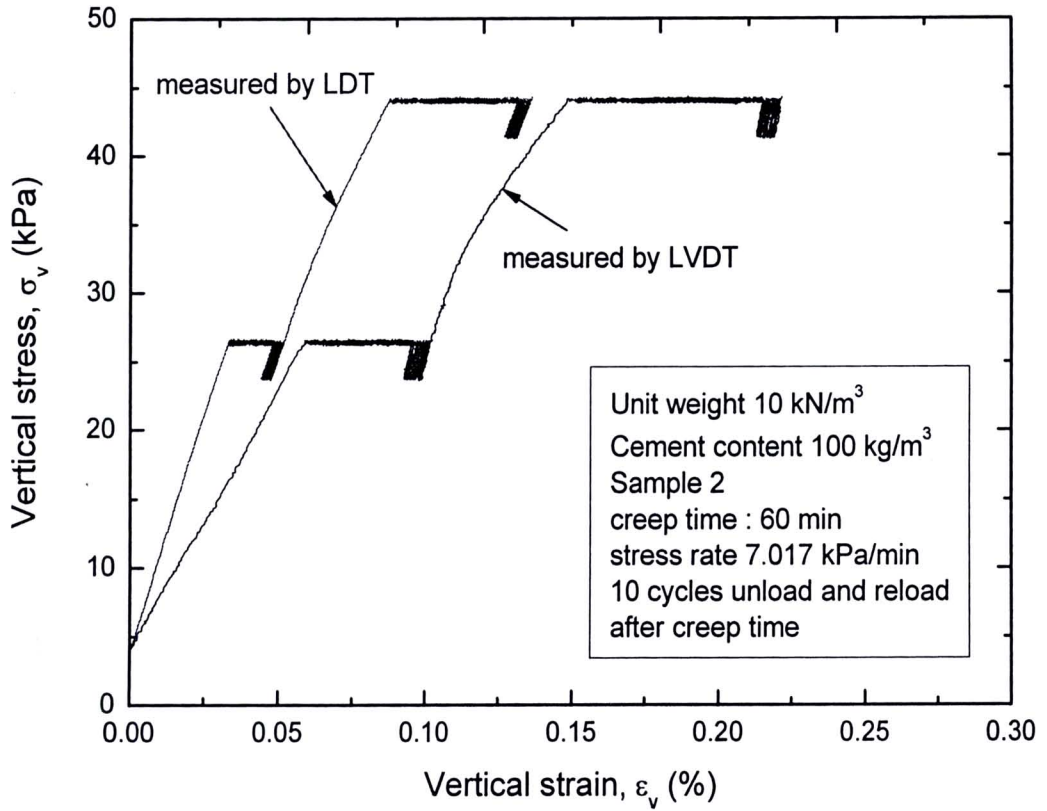


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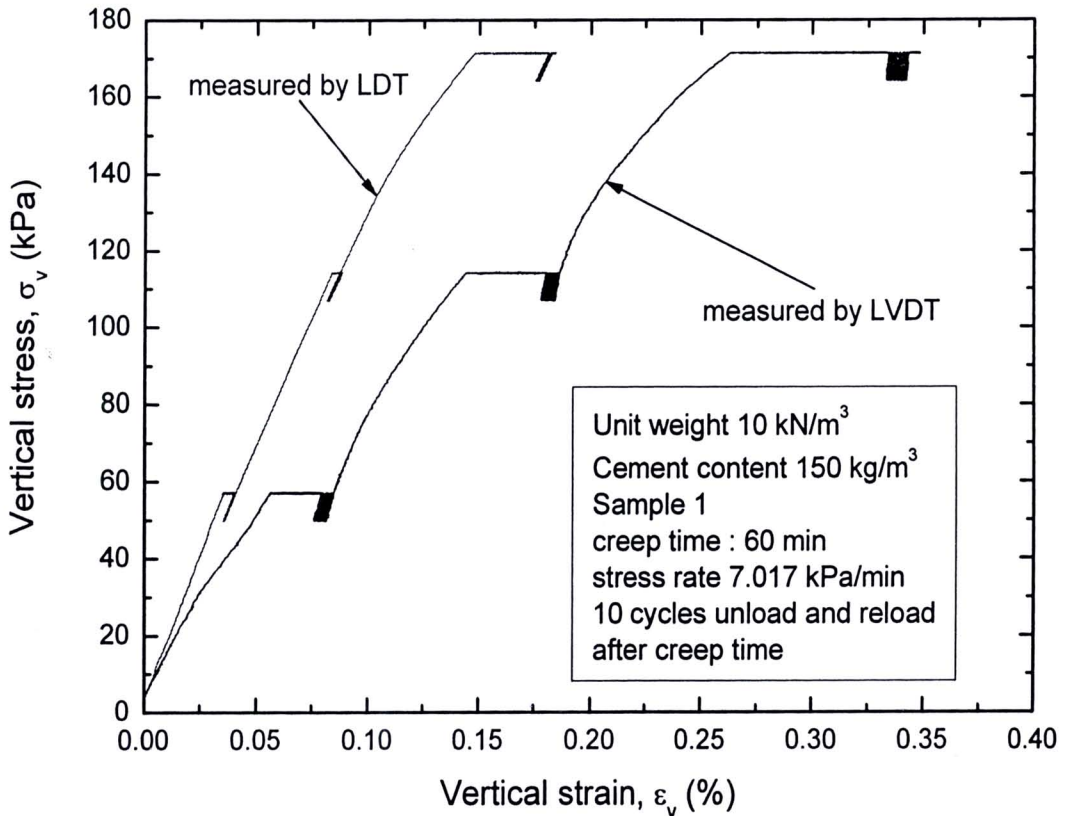


(d)

**Figure C.1 (Cont.)** (c) Unit weight  $8 \text{ kN/m}^3$  and cement content  $200 \text{ kg/m}^3$  sample 1  
 (d) Unit weight  $10 \text{ kN/m}^3$  and cement content  $100 \text{ kg/m}^3$  sample 1

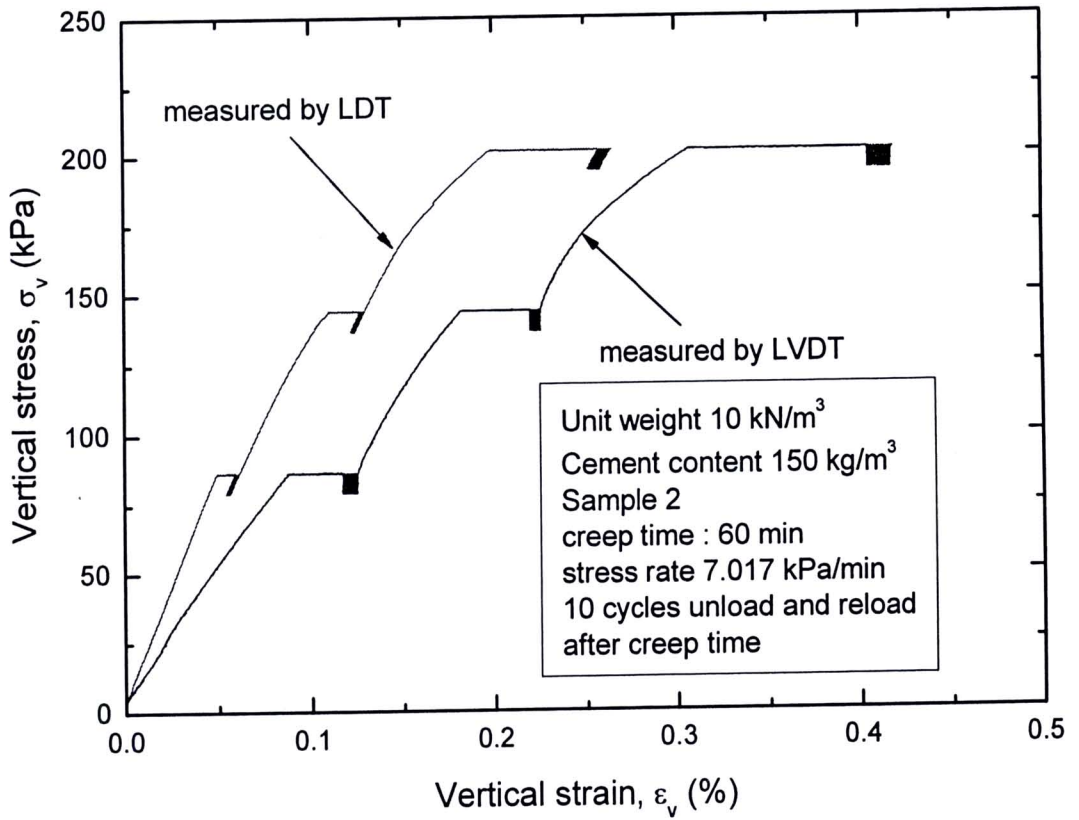


(e)

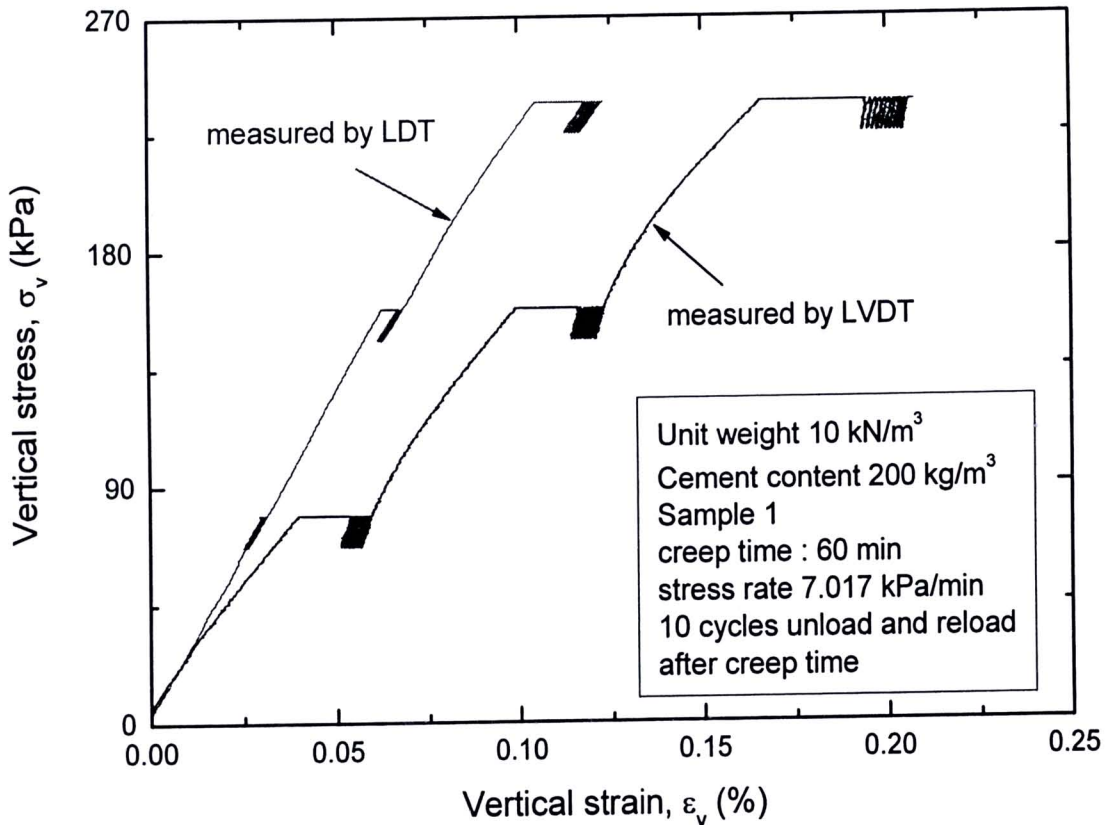


(f)

**Figure C.1 (Cont.)** (e) Unit weight  $10 \text{ kN/m}^3$  and cement content  $100 \text{ kg/m}^3$  sample 2  
 (f) Unit weight  $10 \text{ kN/m}^3$  and cement content  $150 \text{ kg/m}^3$  sample 1

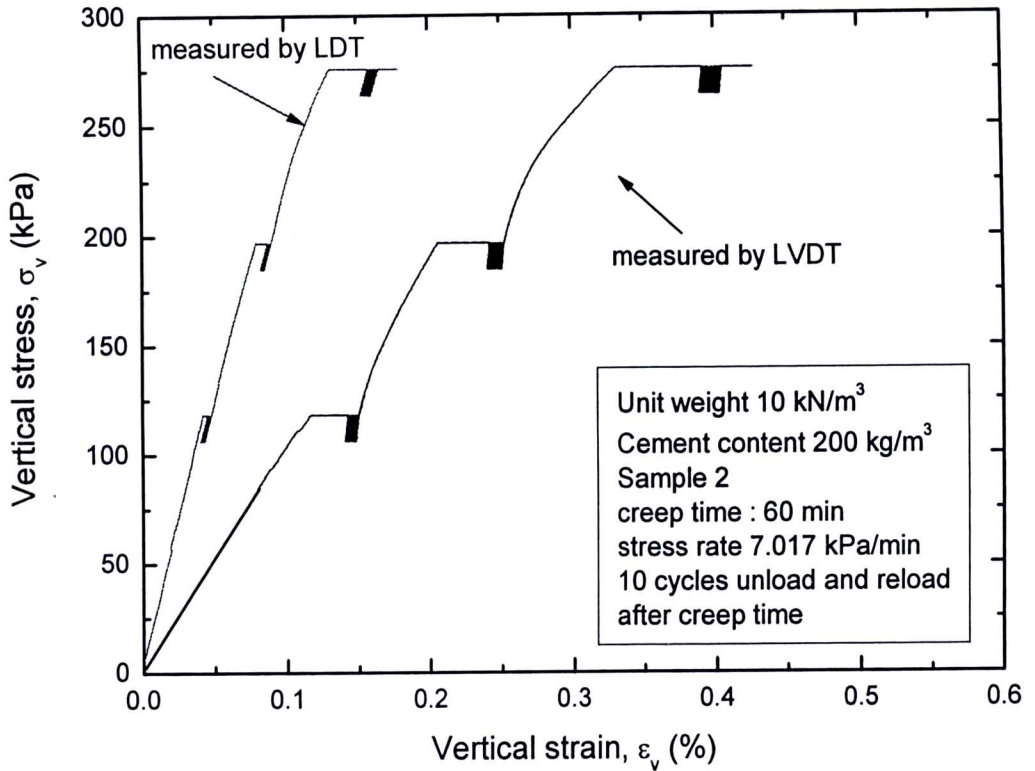


(g)

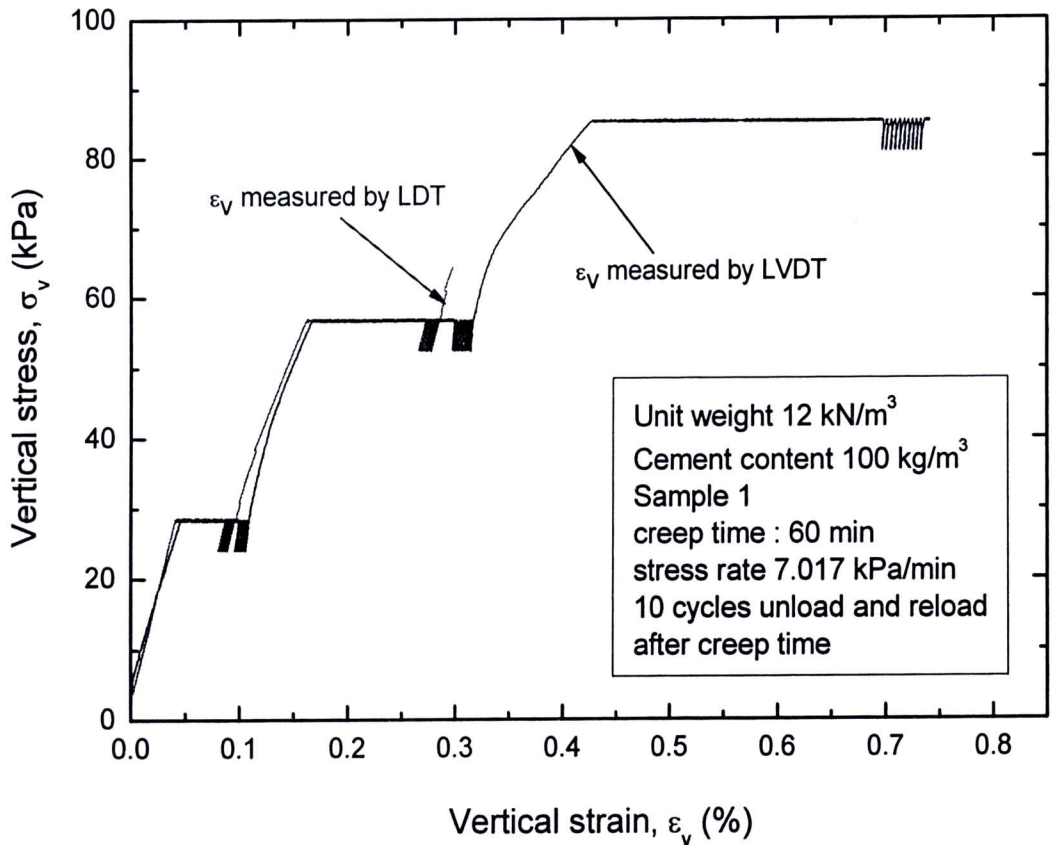


(h)

**Figure C.1 (Cont.)** (g) Unit weight  $10 \text{ kN/m}^3$  and cement content  $150 \text{ kg/m}^3$  sample 2  
 (h) Unit weight  $10 \text{ kN/m}^3$  and cement content  $200 \text{ kg/m}^3$  sample 1

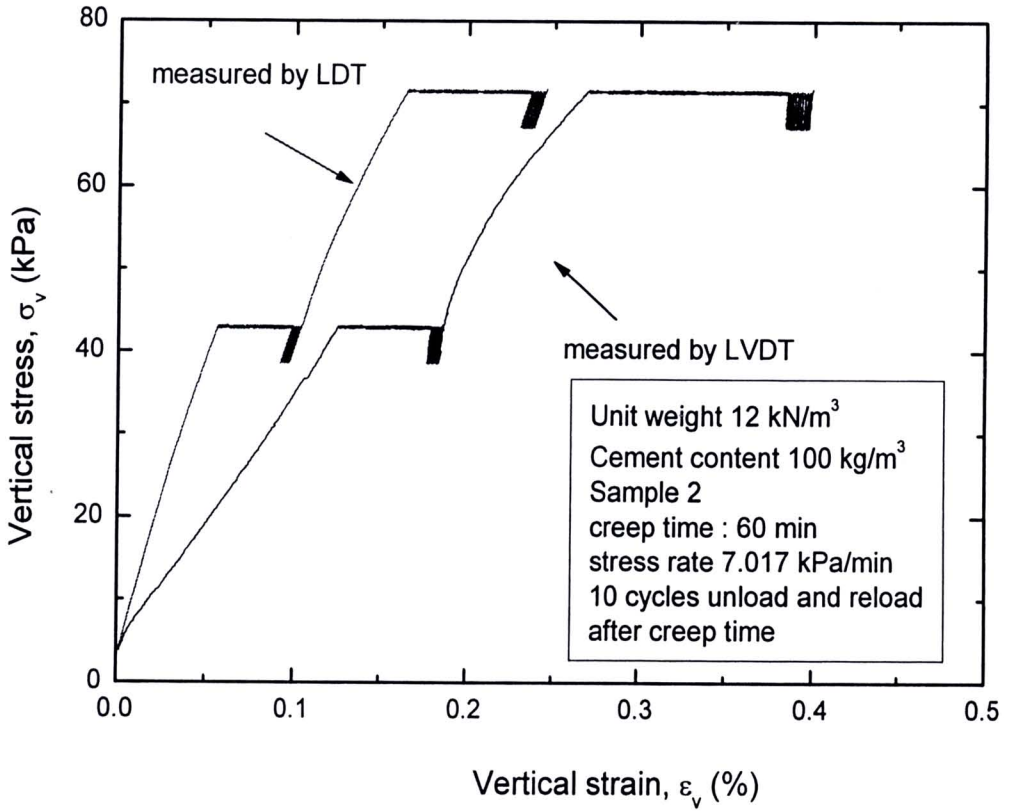


(i)

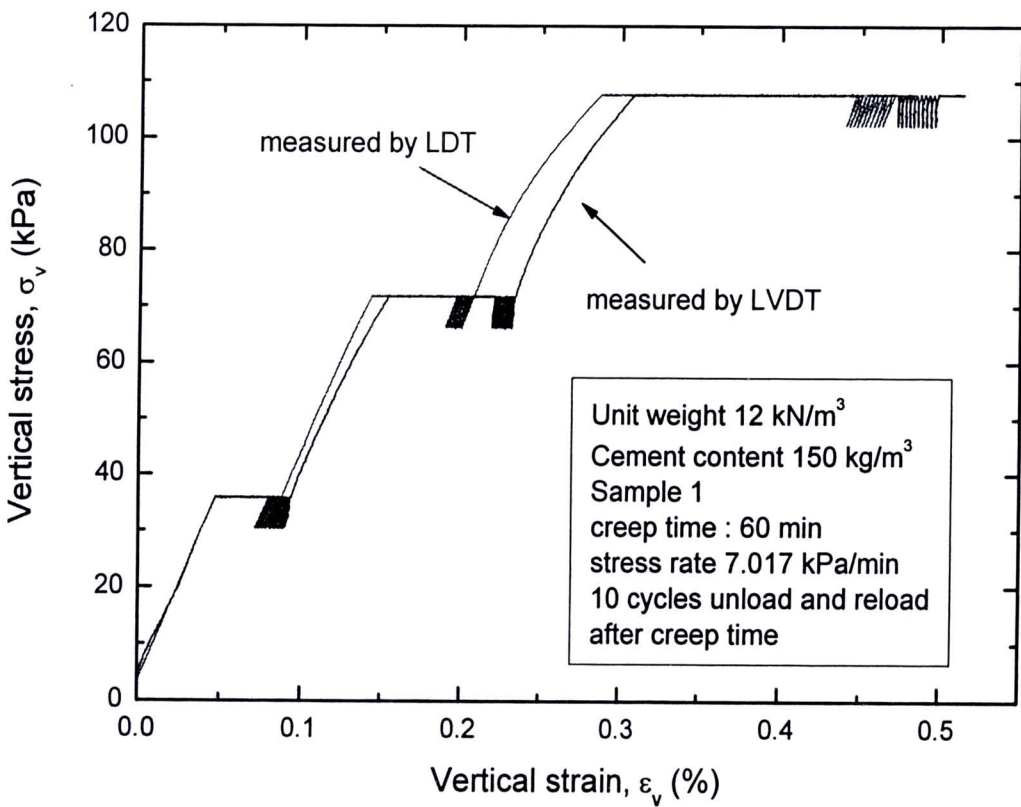


(j)

**Figure C.1 (Cont.)** (i) Unit weight  $10 \text{ kN/m}^3$  and cement content  $200 \text{ kg/m}^3$  sample 2  
 (j) Unit weight  $12 \text{ kN/m}^3$  and cement content  $100 \text{ kg/m}^3$  sample 1

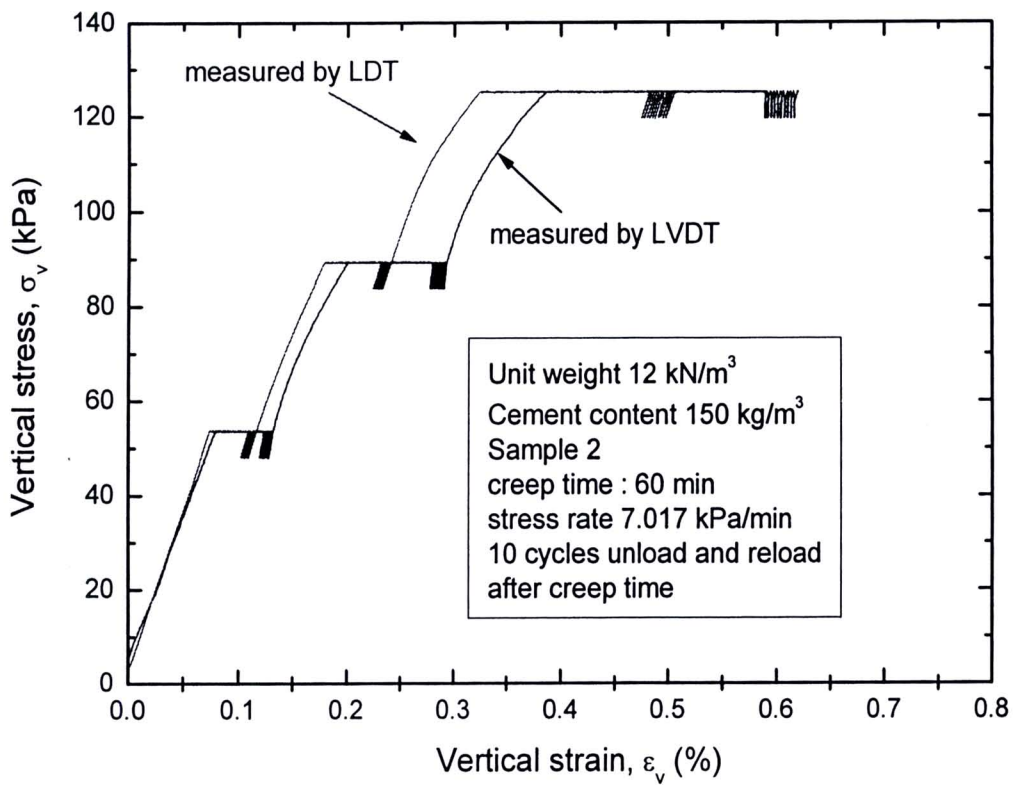


(k)

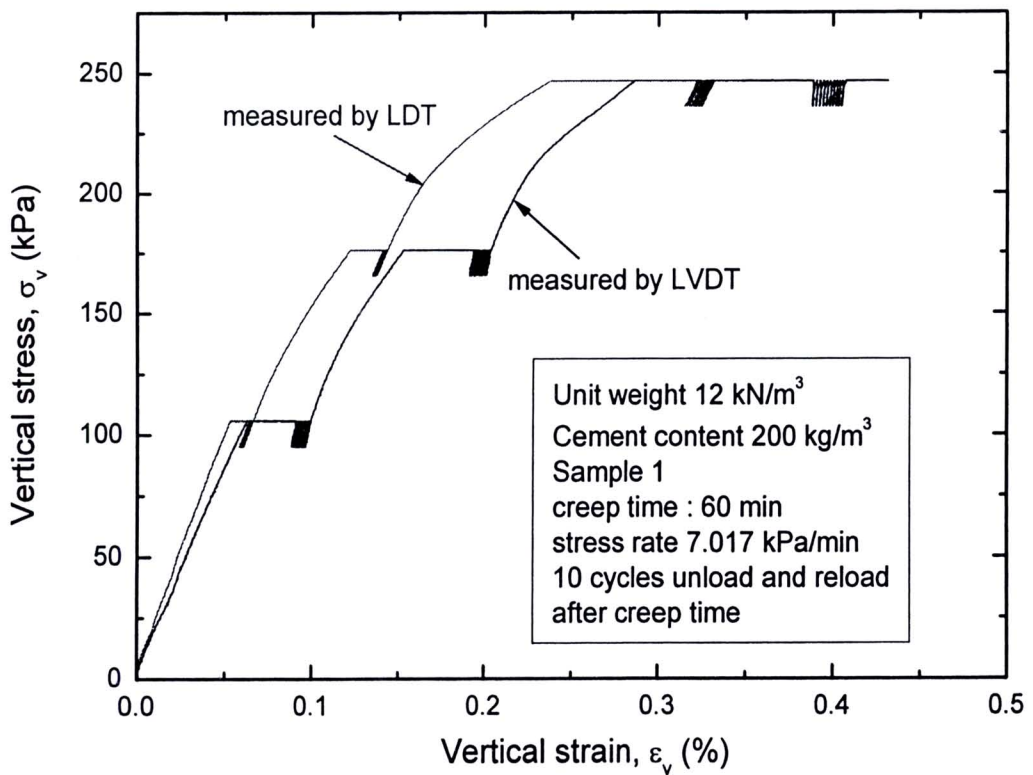


(l)

**Figure C.1 (Cont.)** (k) Unit weight  $12 \text{ kN/m}^3$  and cement content  $100 \text{ kg/m}^3$  sample 2  
 (l) Unit weight  $12 \text{ kN/m}^3$  and cement content  $150 \text{ kg/m}^3$  sample 1

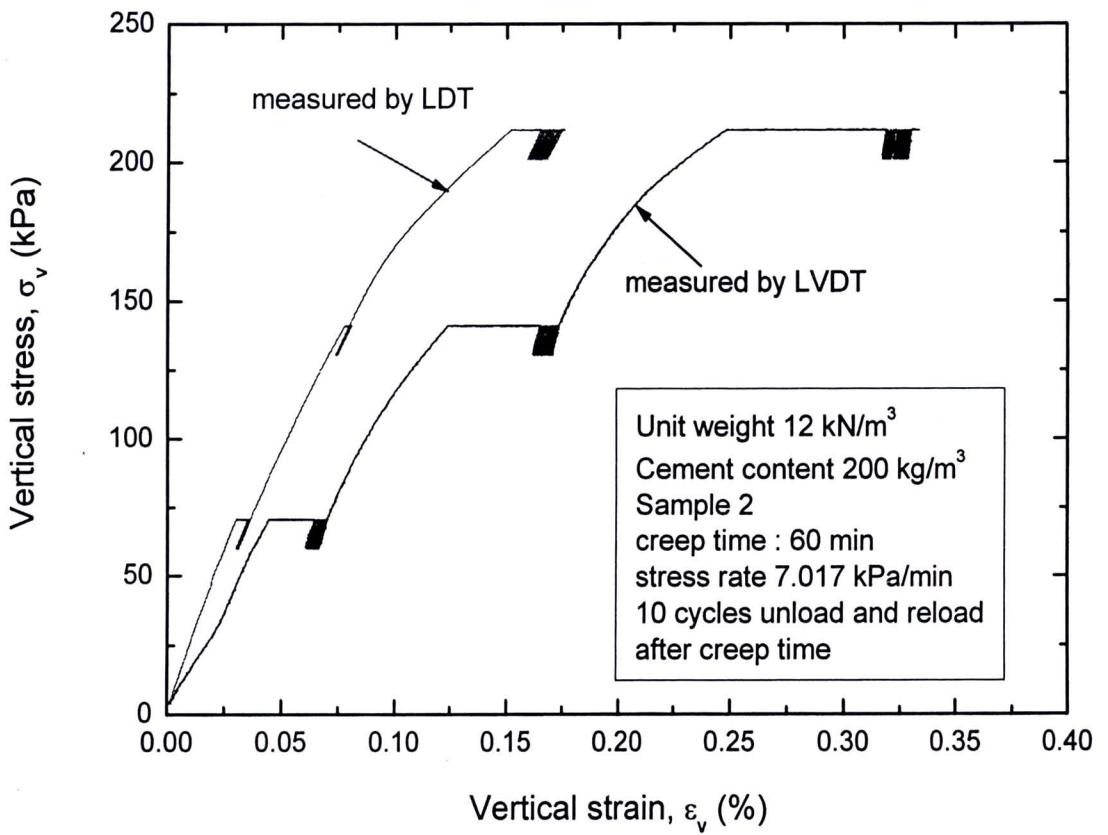


(m)



(n)

**Figure C.1 (Cont.)** (m) Unit weight  $12 \text{ kN/m}^3$  and cement content  $150 \text{ kg/m}^3$  sample 2  
 (n) Unit weight  $12 \text{ kN/m}^3$  and cement content  $200 \text{ kg/m}^3$  sample 1

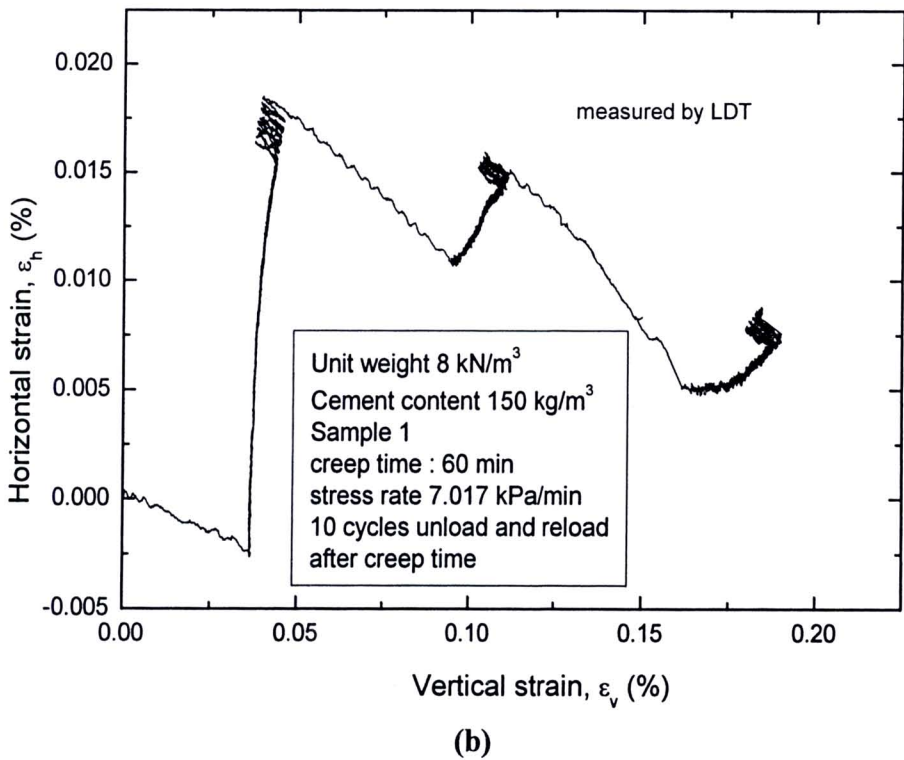
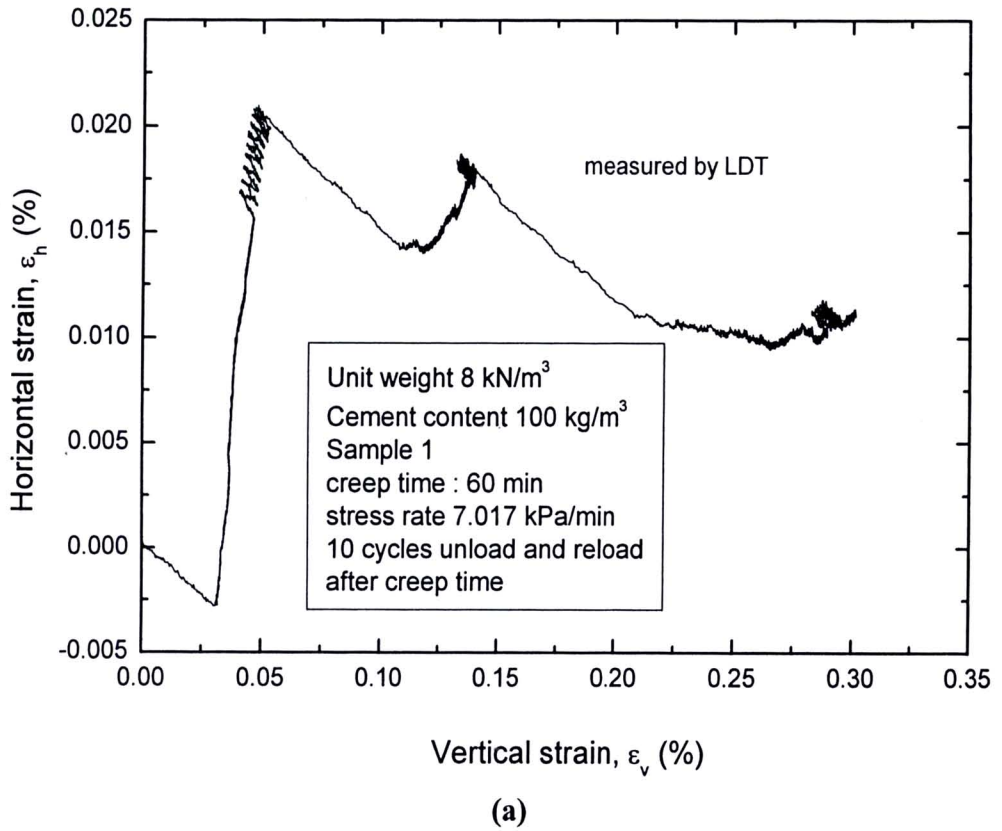


(o)

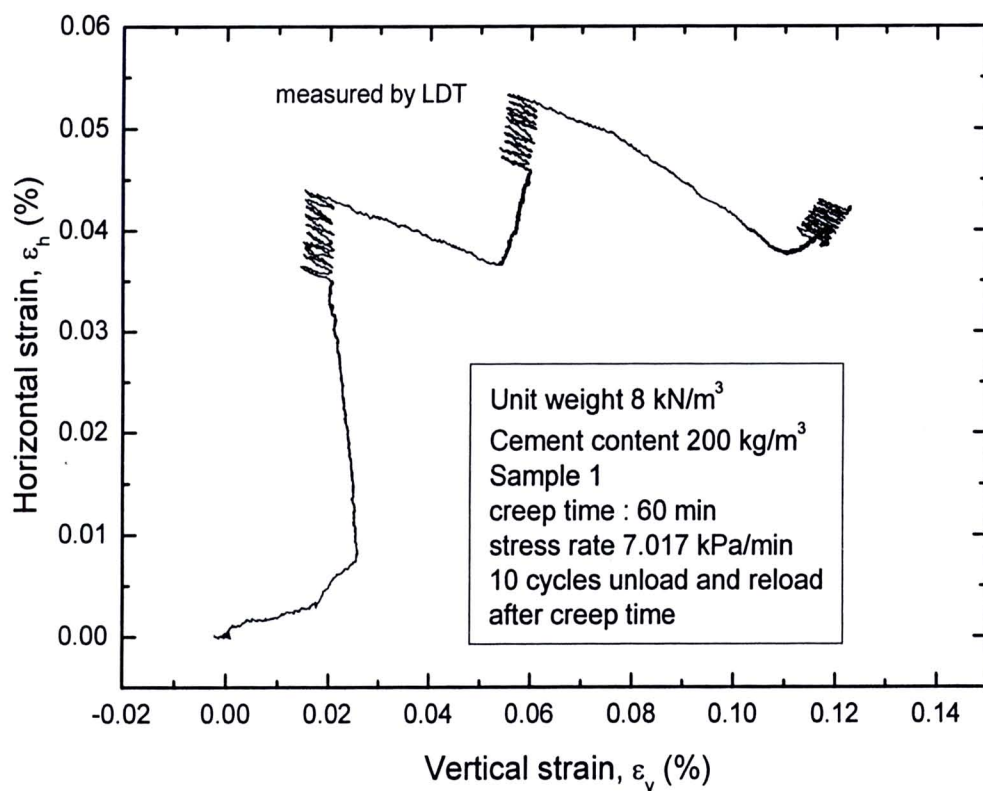
Figure C.1 (Cont.) (o) Unit weight  $12 \text{ kN/m}^3$  and cement content  $200 \text{ kg/m}^3$  sample 2

## **APPENDIX D**

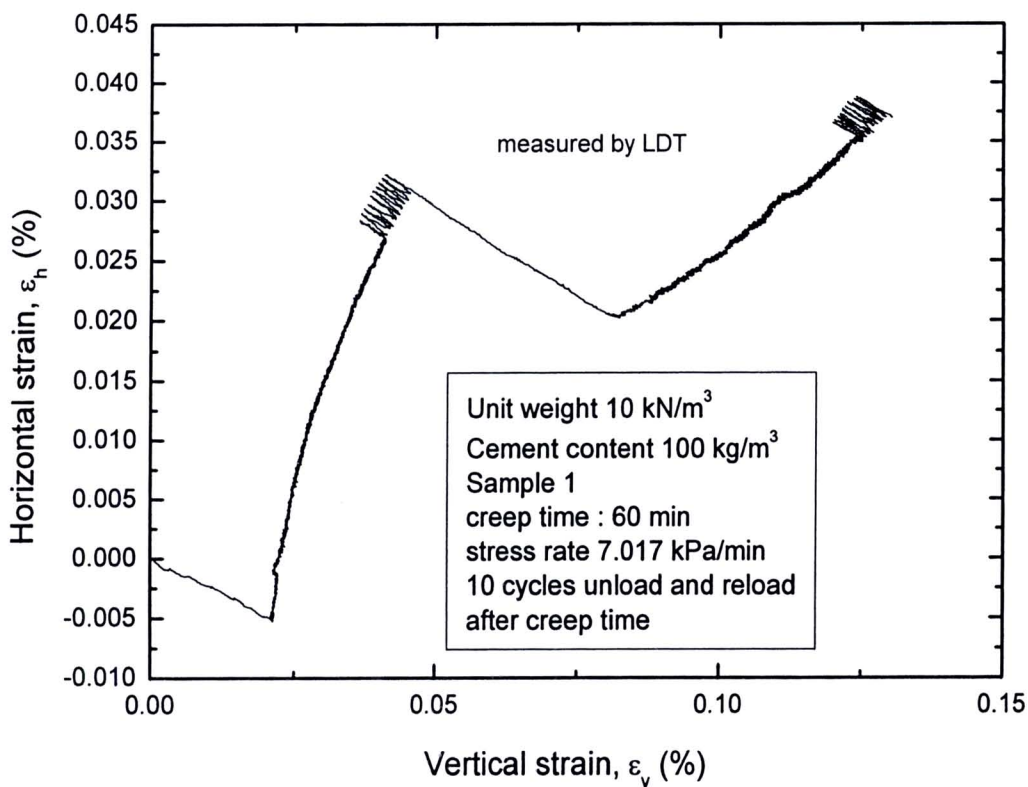
Relationship between horizontal strain and vertical strain of small strain properties test  
on air-cement treated soil



**Figure D.1** Relationship between horizontal strain and vertical strain of small strain properties test on air-cement treated soil  
 (a) Unit weight  $8 \text{ kN/m}^3$  and cement content  $100 \text{ kg/m}^3$  sample 1  
 (b) Unit weight  $8 \text{ kN/m}^3$  and cement content  $150 \text{ kg/m}^3$  sample 1

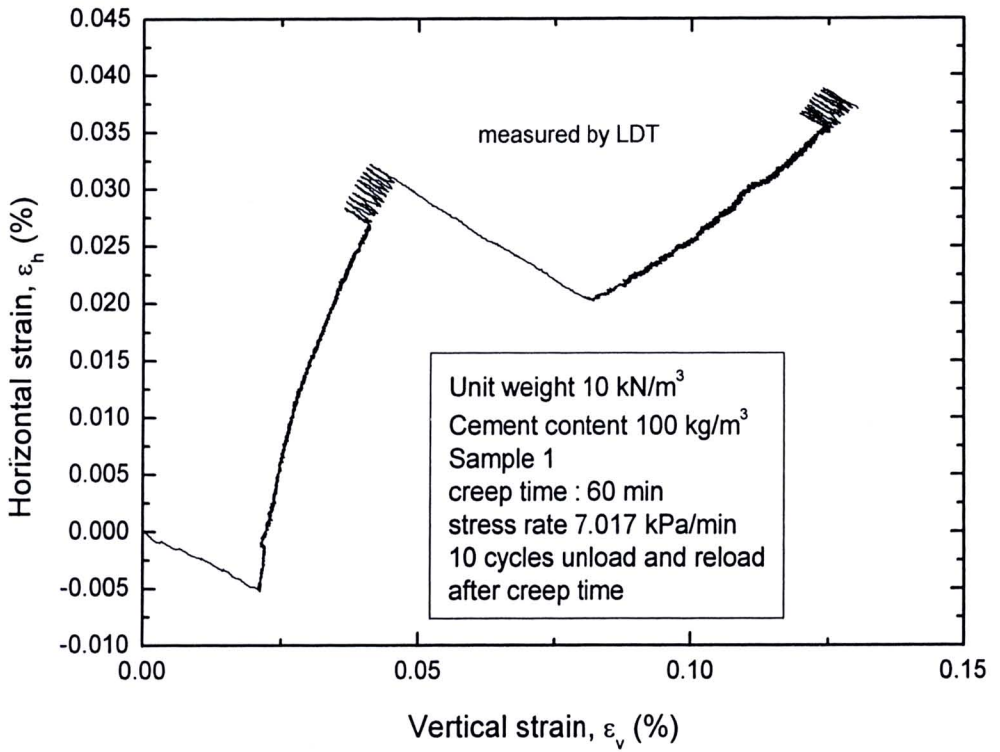


(c)

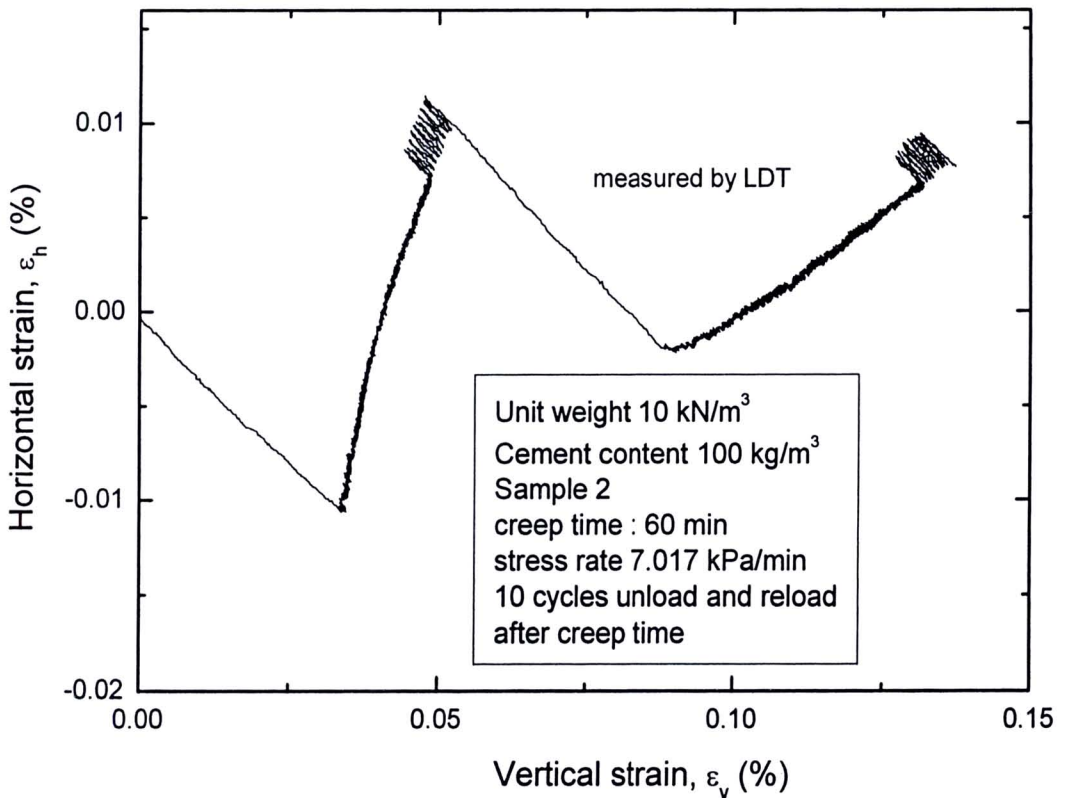


(d)

**Figure D.1 (Cont.)** (c) Unit weight  $8 \text{ kN/m}^3$  and cement content  $200 \text{ kg/m}^3$  sample 1  
 (d) Unit weight  $10 \text{ kN/m}^3$  and cement content  $100 \text{ kg/m}^3$  sample 1

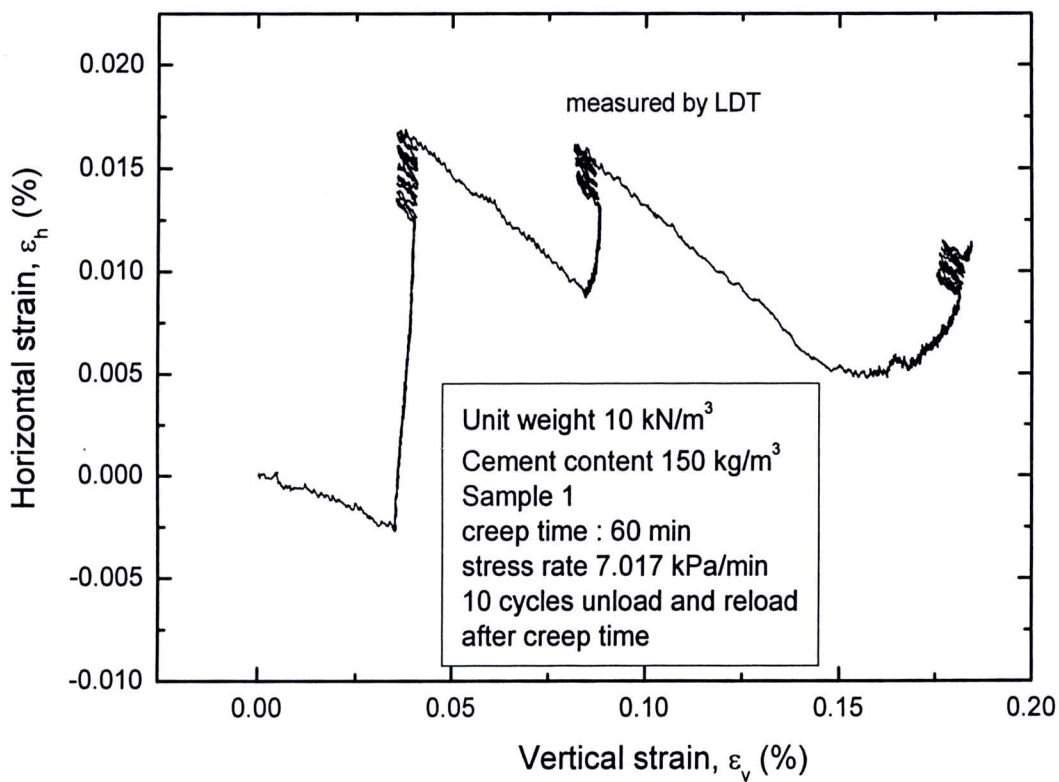


(e)

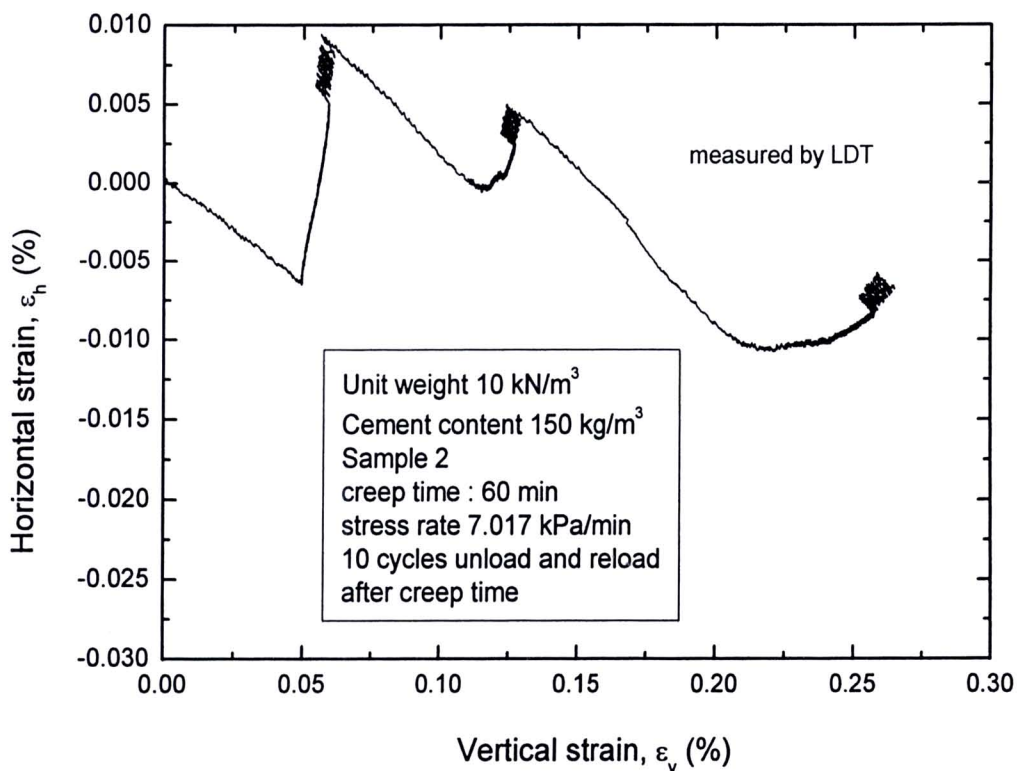


(f)

**Figure D.1 (Cont.)** (e) Unit weight  $10 \text{ kN/m}^3$  and cement content  $100 \text{ kg/m}^3$  sample 1  
 (f) Unit weight  $10 \text{ kN/m}^3$  and cement content  $100 \text{ kg/m}^3$  sample 2

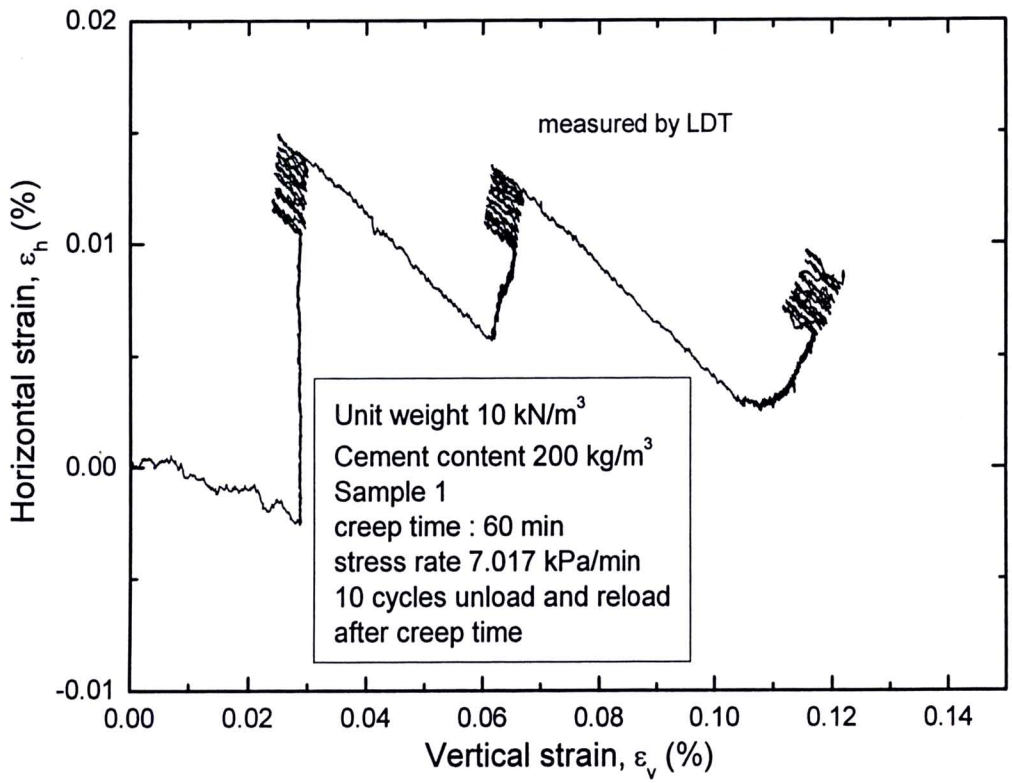


(g)

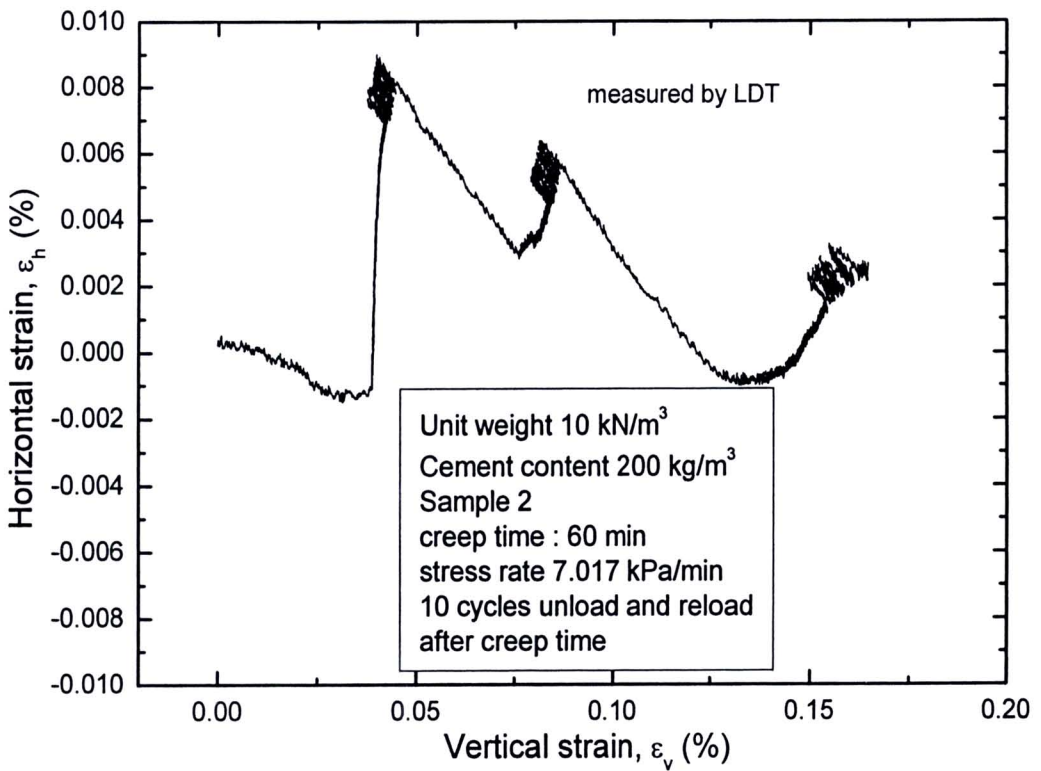


(h)

**Figure D.1 (Cont.)** (g) Unit weight  $10 \text{ kN/m}^3$  and cement content  $150 \text{ kg/m}^3$  sample 1  
 (h) Unit weight  $10 \text{ kN/m}^3$  and cement content  $150 \text{ kg/m}^3$  sample 2

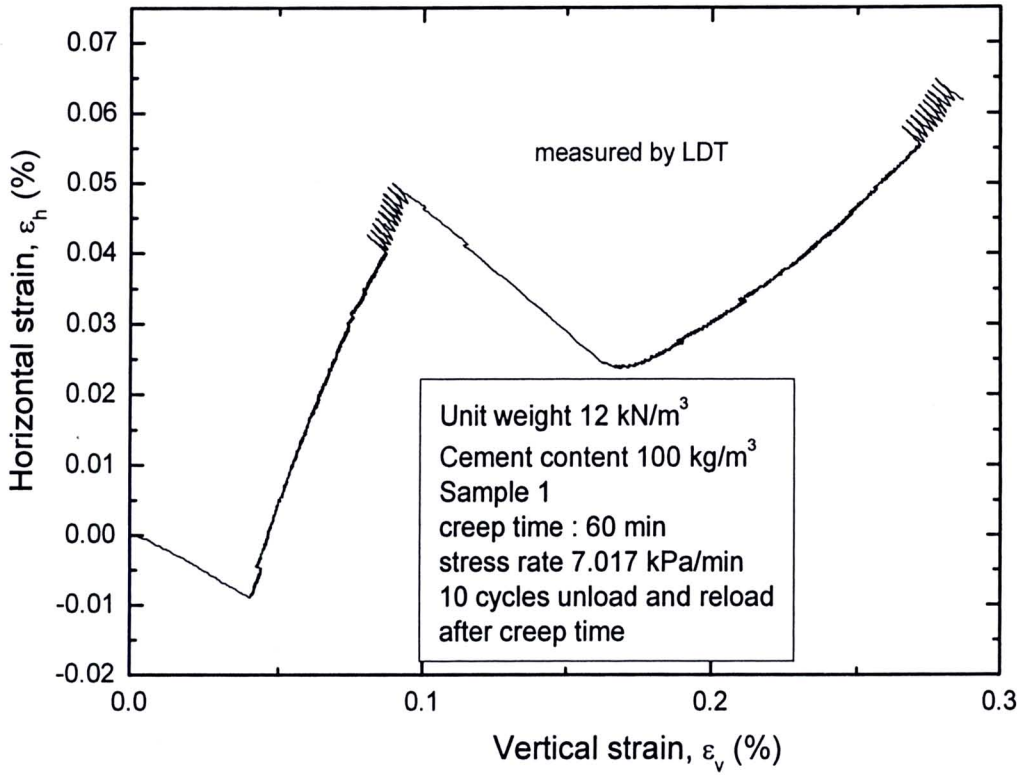


(i)

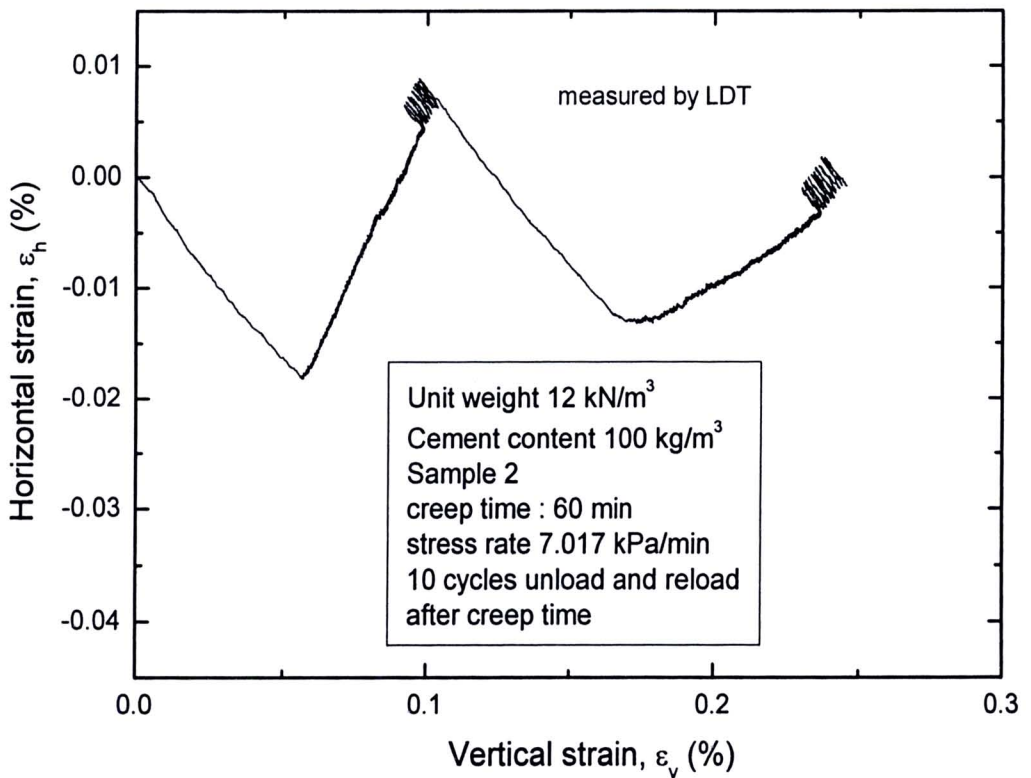


(j)

**Figure D.1 (Cont.)** (i) Unit weight  $10 \text{ kN/m}^3$  and cement content  $200 \text{ kg/m}^3$  sample 1  
 (j) Unit weight  $10 \text{ kN/m}^3$  and cement content  $200 \text{ kg/m}^3$  sample 2

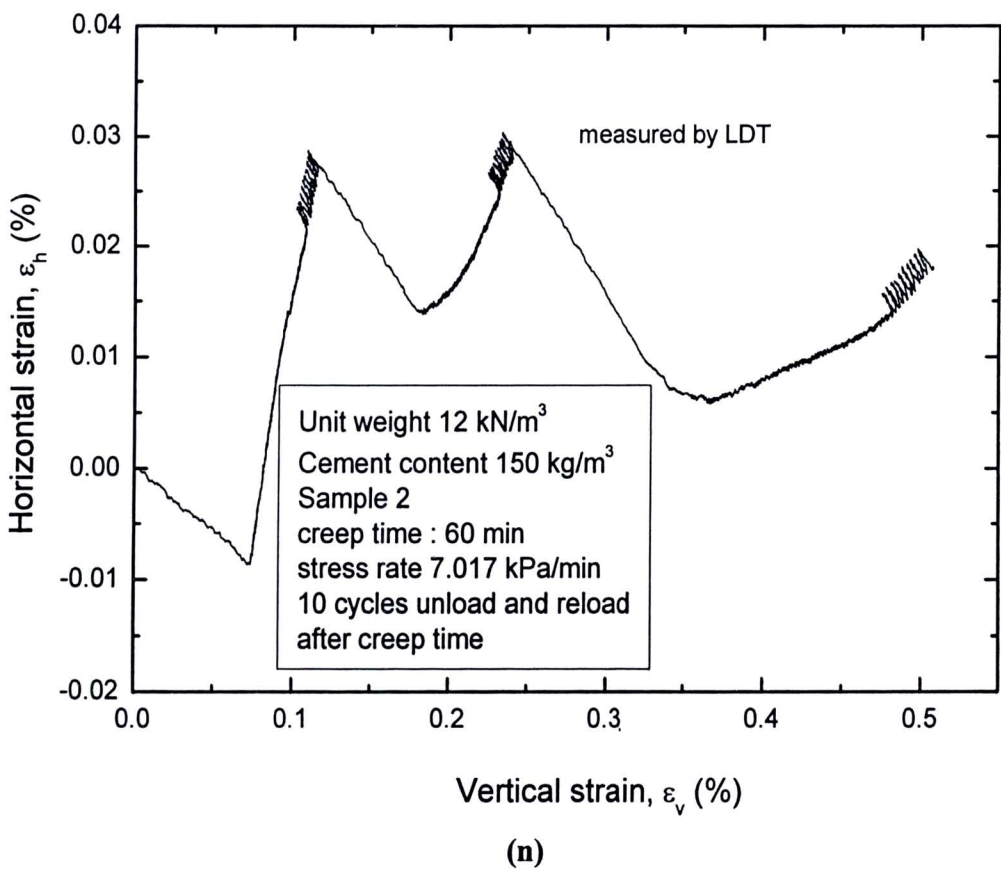
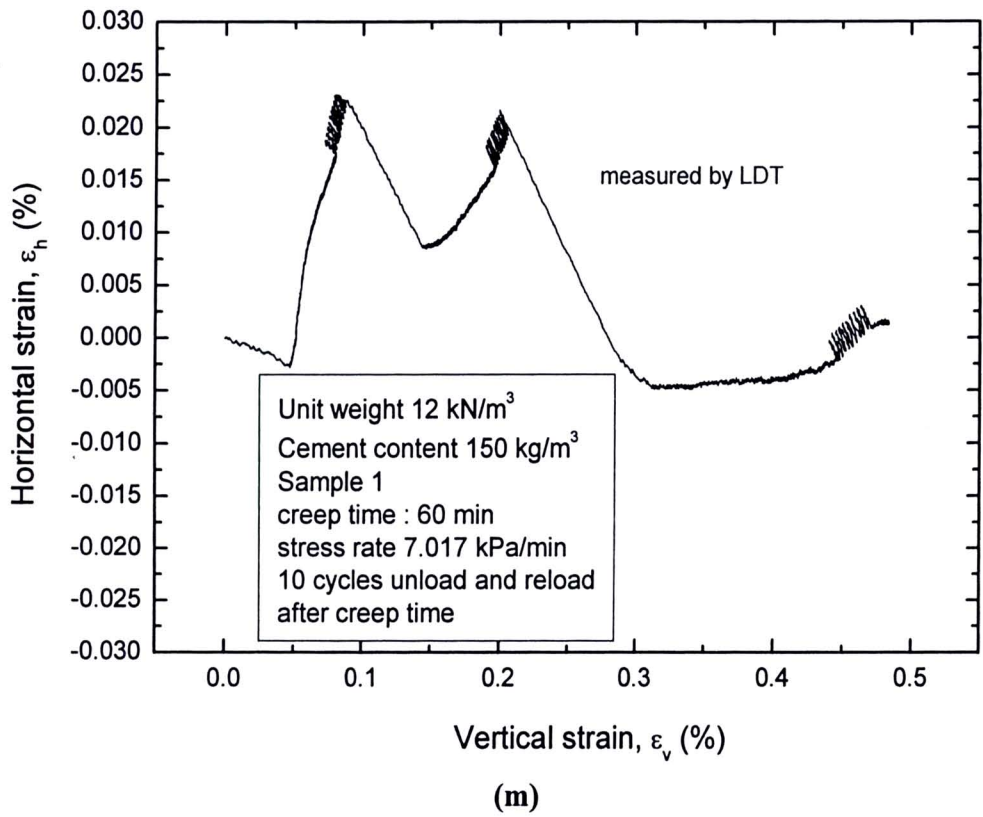


(k)

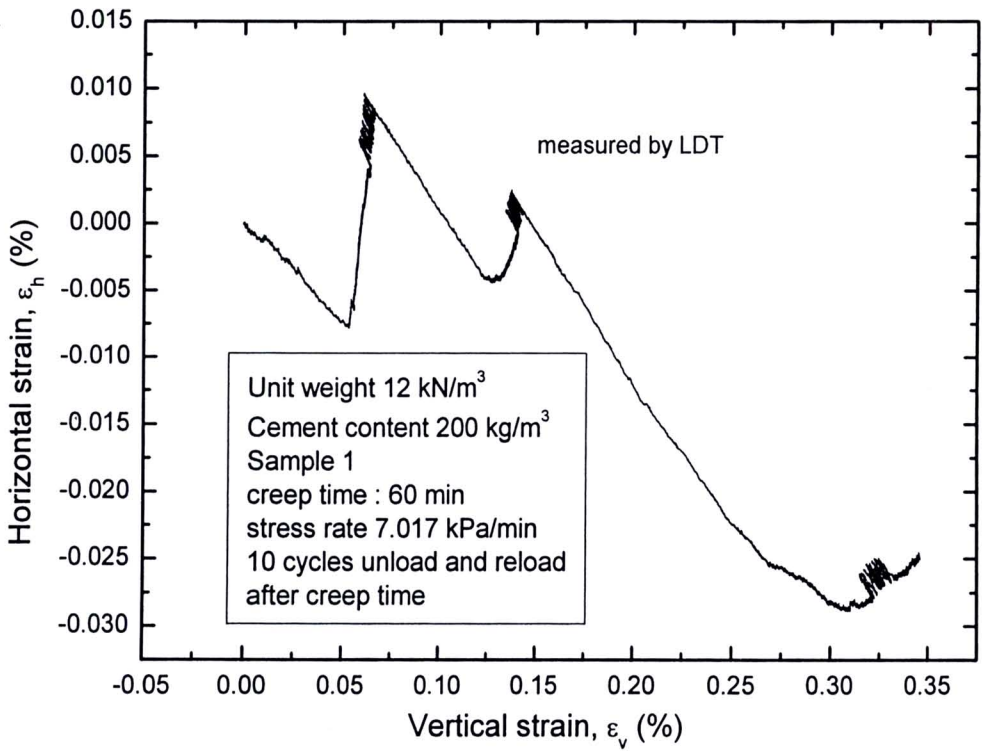


(l)

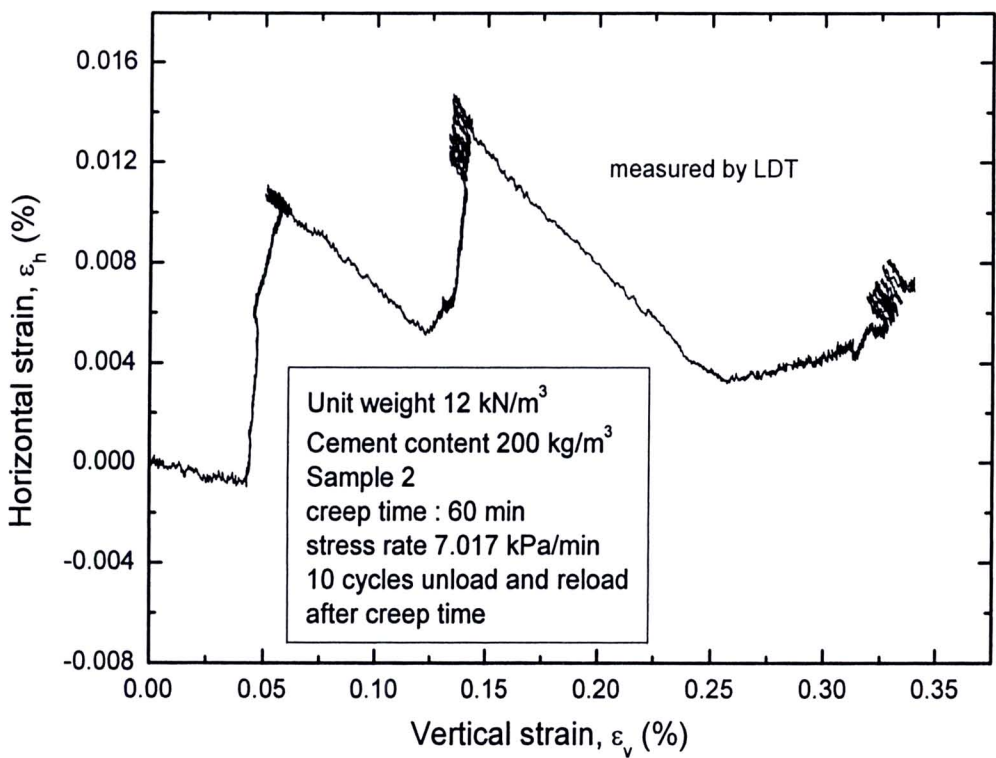
**Figure D.1 (Cont.)** (k) Unit weight  $12 \text{ kN/m}^3$  and cement content  $100 \text{ kg/m}^3$  sample 1  
 (l) Unit weight  $12 \text{ kN/m}^3$  and cement content  $100 \text{ kg/m}^3$  sample 2



**Figure D.1 (Cont.)** (m) Unit weight  $12 \text{ kN/m}^3$  and cement content  $150 \text{ kg/m}^3$  sample 1  
 (n) Unit weight  $12 \text{ kN/m}^3$  and cement content  $150 \text{ kg/m}^3$  sample 2



(o)



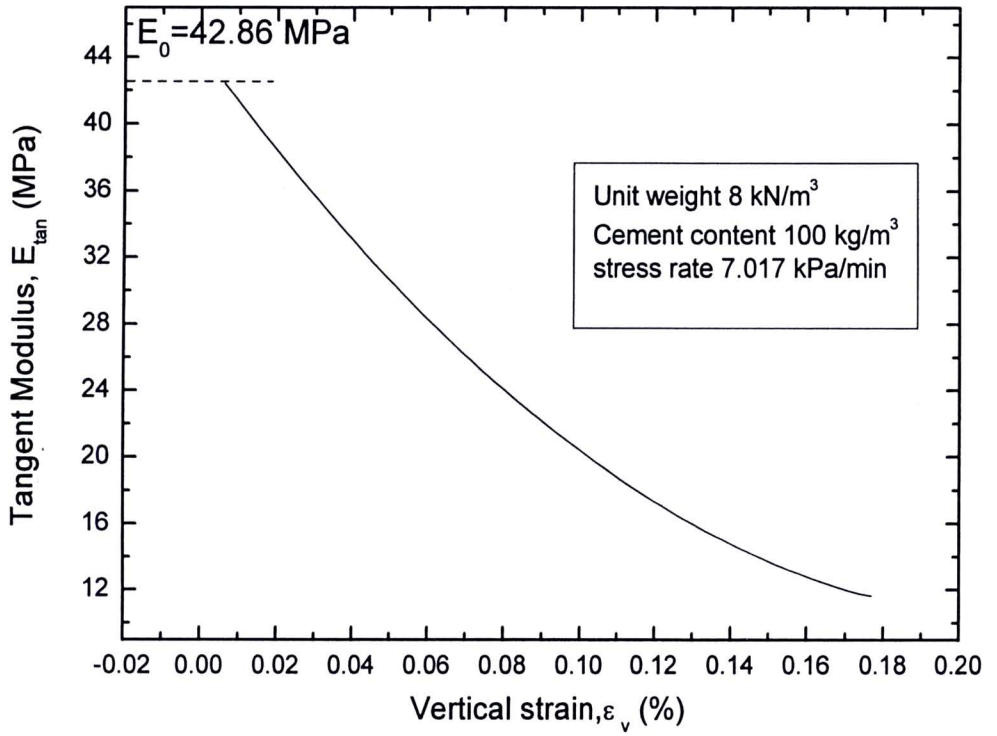
(p)

**Figure D.1 (Cont.)** (o) Unit weight  $12 \text{ kN/m}^3$  and cement content  $200 \text{ kg/m}^3$  sample 1  
 (p) Unit weight  $12 \text{ kN/m}^3$  and cement content  $200 \text{ kg/m}^3$  sample 2

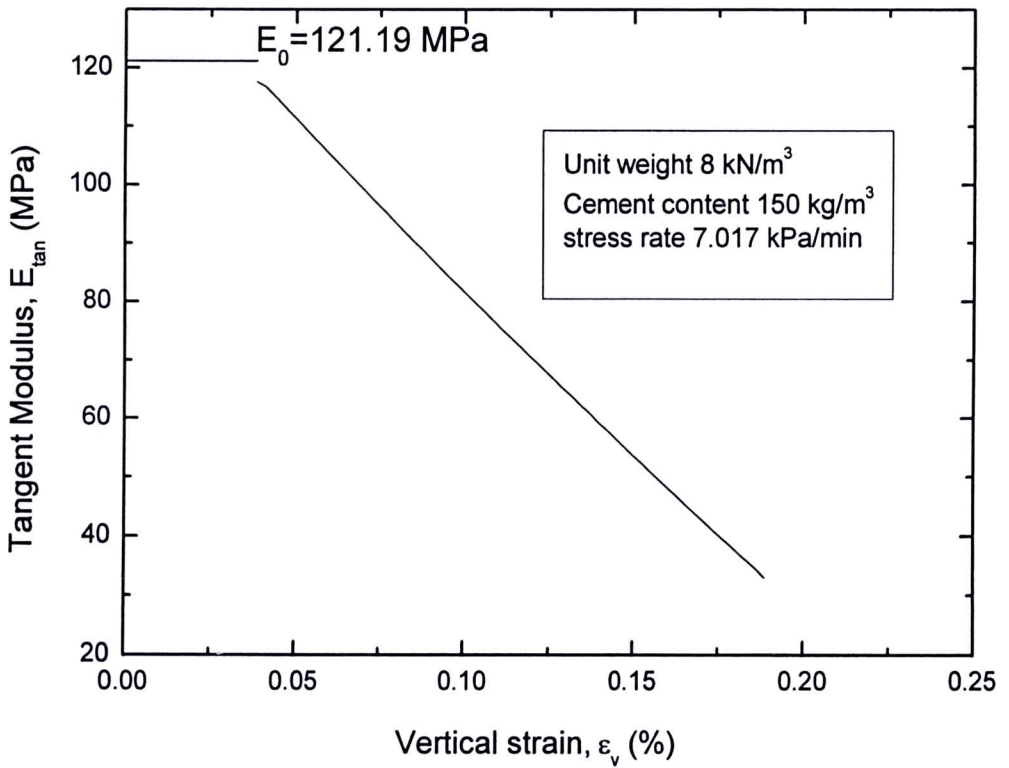


## **APPENDIX E**

Relationship between Tangent Modulus and Vertical strain of monotonic loading test on  
air-cement treated soil

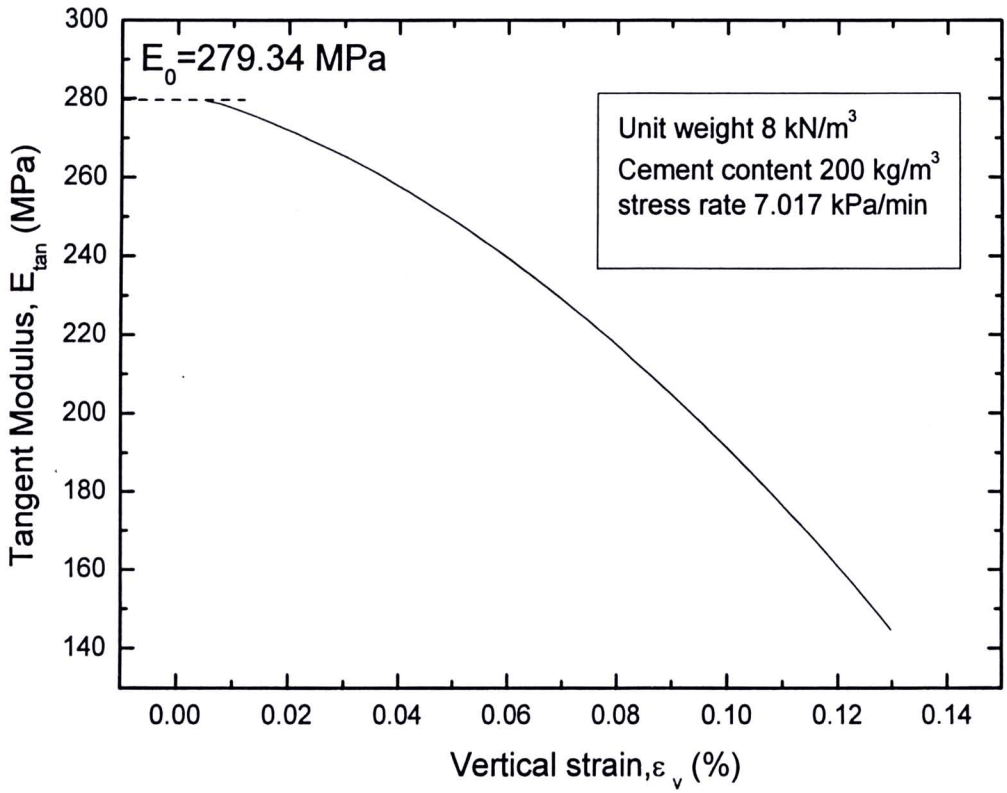


(a)

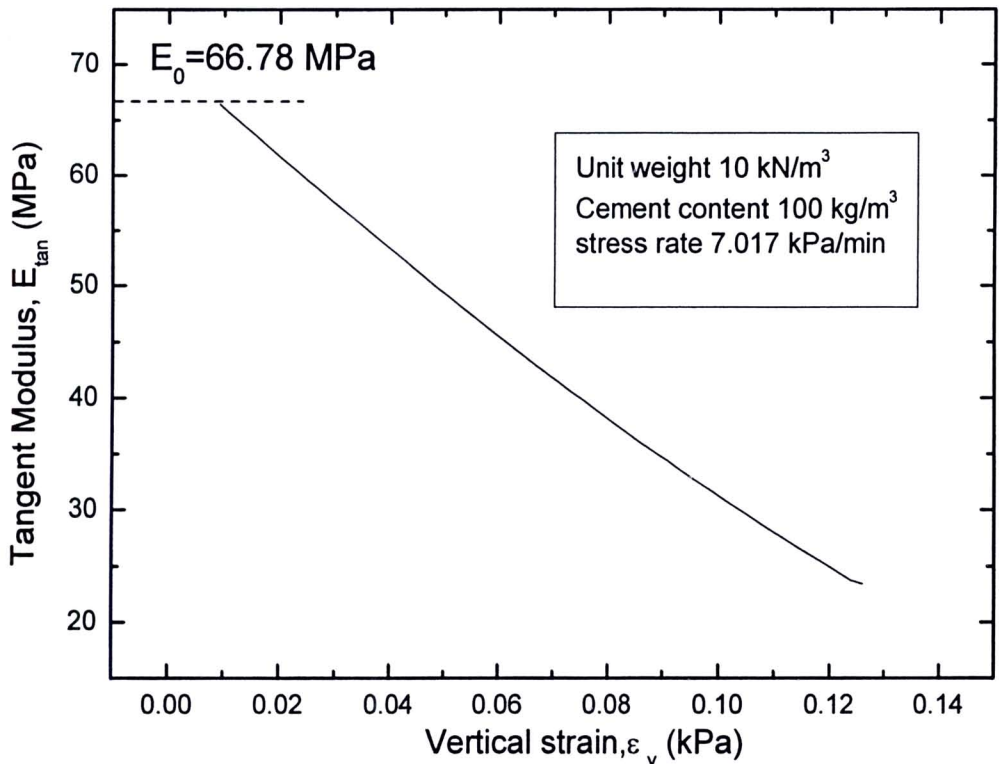


(b)

**Figure E.1** Relationship between Tangent Modulus and Vertical strain of monotonic loading test on air-cement treated soil  
 (a) Unit weight  $8 \text{ kN/m}^3$  and cement content  $100 \text{ kg/m}^3$   
 (b) Unit weight  $8 \text{ kN/m}^3$  and cement content  $150 \text{ kg/m}^3$

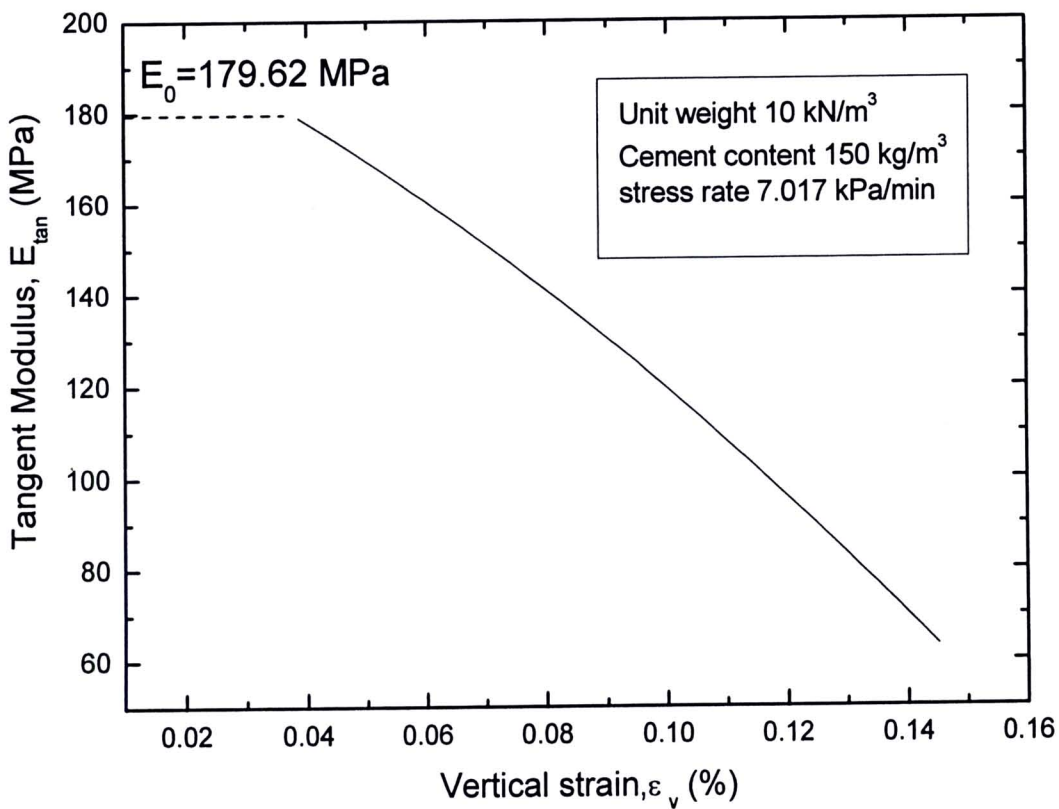


(c)

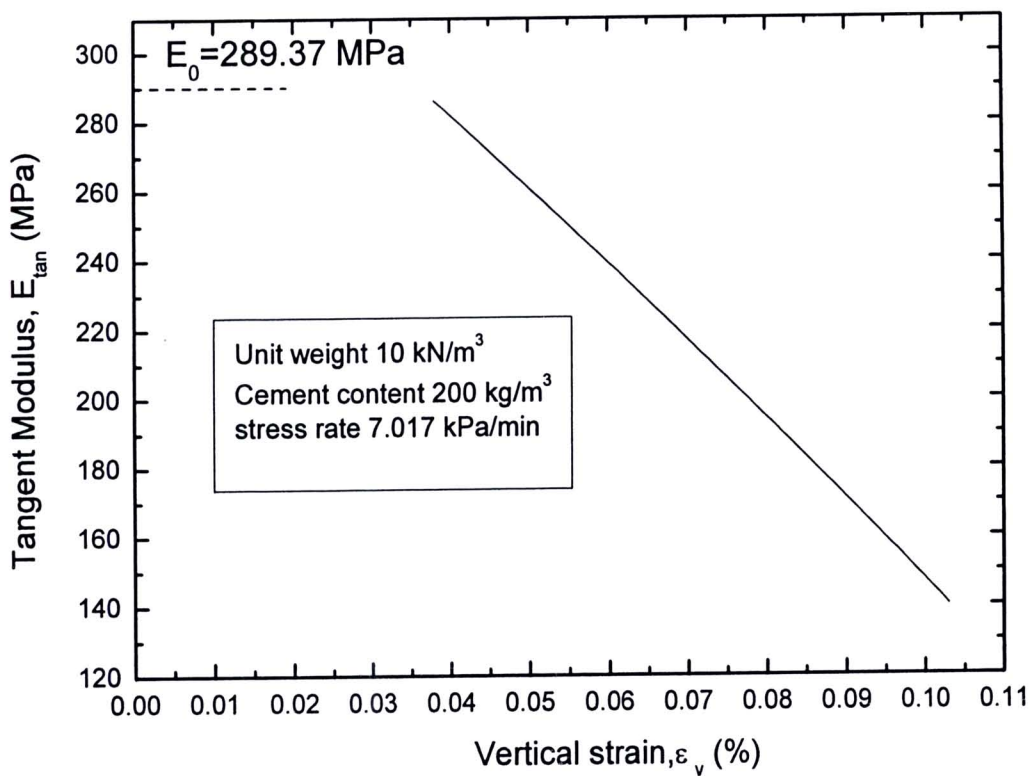


(d)

**Figure E.1 (Cont.)** (c) Unit weight 8 kN/m<sup>3</sup> and cement content 200 kg/m<sup>3</sup>  
 (d) Unit weight 10 kN/m<sup>3</sup> and cement content 100 kg/m<sup>3</sup>

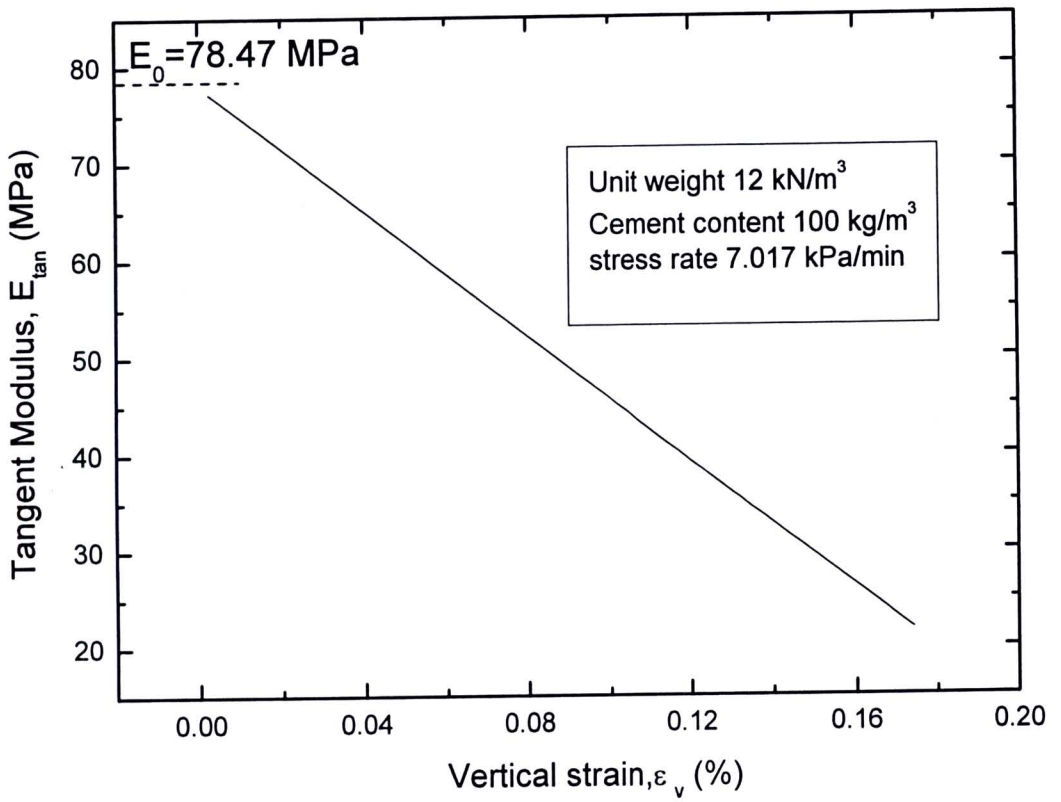


(e)

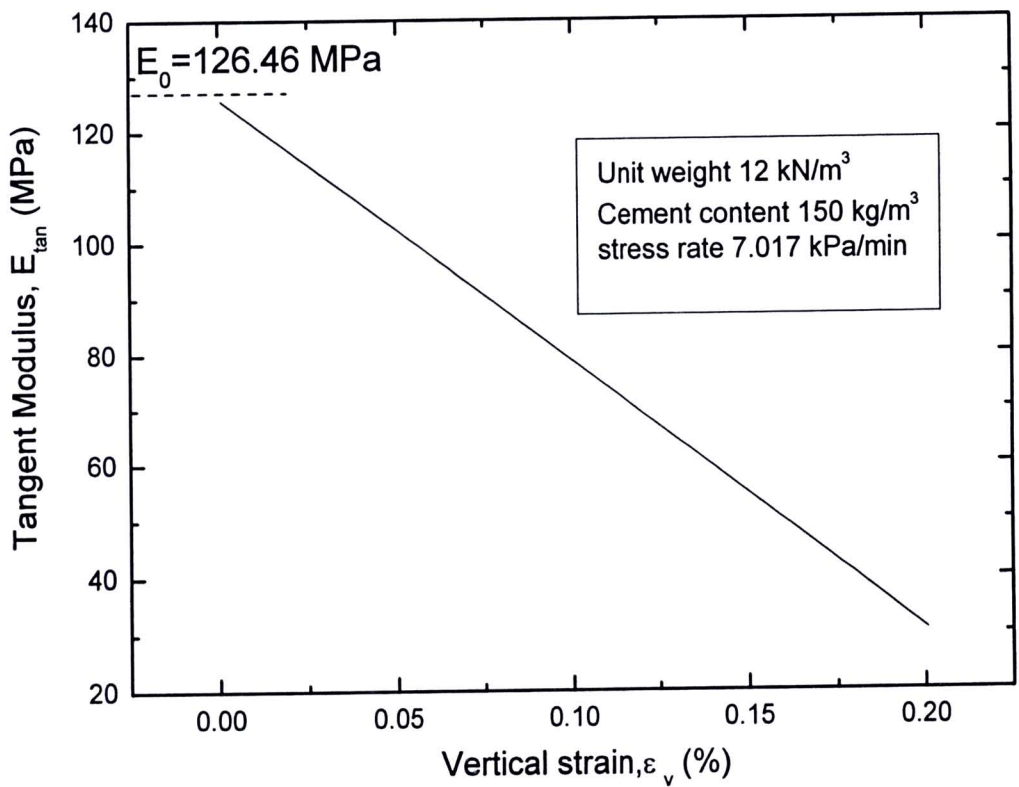


(f)

**Figure E.1 (Cont.)** (e) Unit weight  $10 \text{ kN/m}^3$  and cement content  $150 \text{ kg/m}^3$   
 (f) Unit weight  $10 \text{ kN/m}^3$  and cement content  $200 \text{ kg/m}^3$

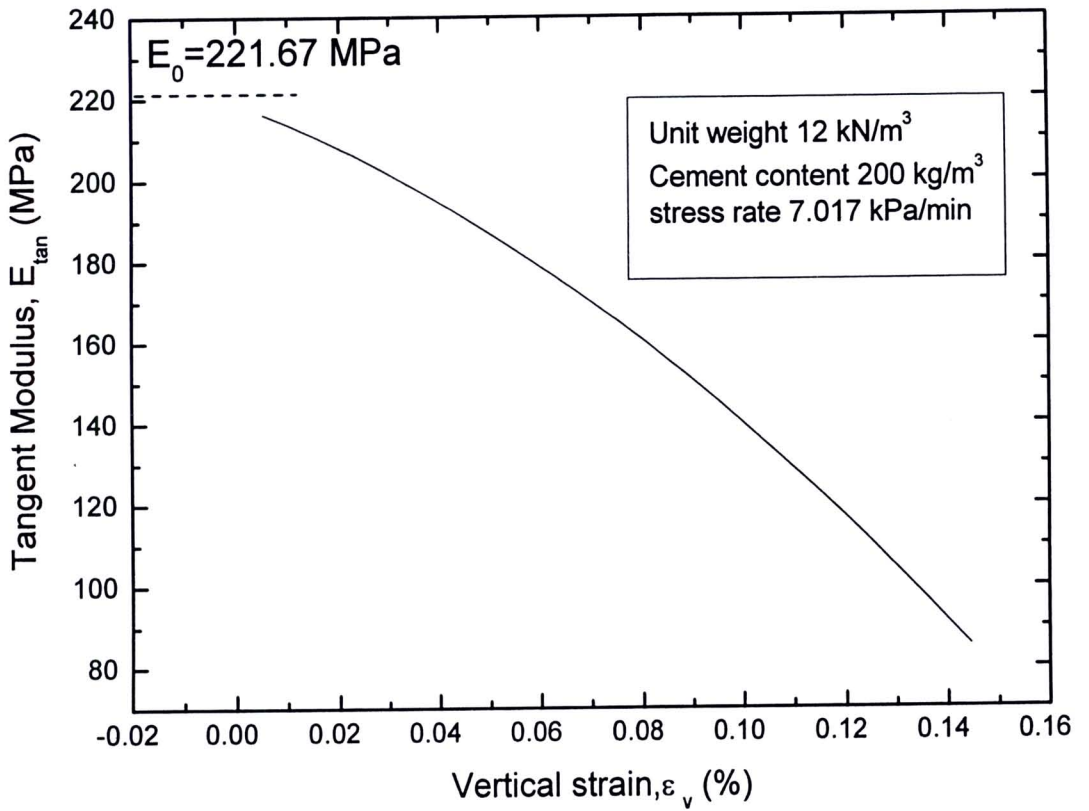


(g)



(h)

**Figure E.1 (Cont.)** (g) Unit weight  $12 \text{ kN/m}^3$  and cement content  $100 \text{ kg/m}^3$   
 (h) Unit weight  $12 \text{ kN/m}^3$  and cement content  $150 \text{ kg/m}^3$

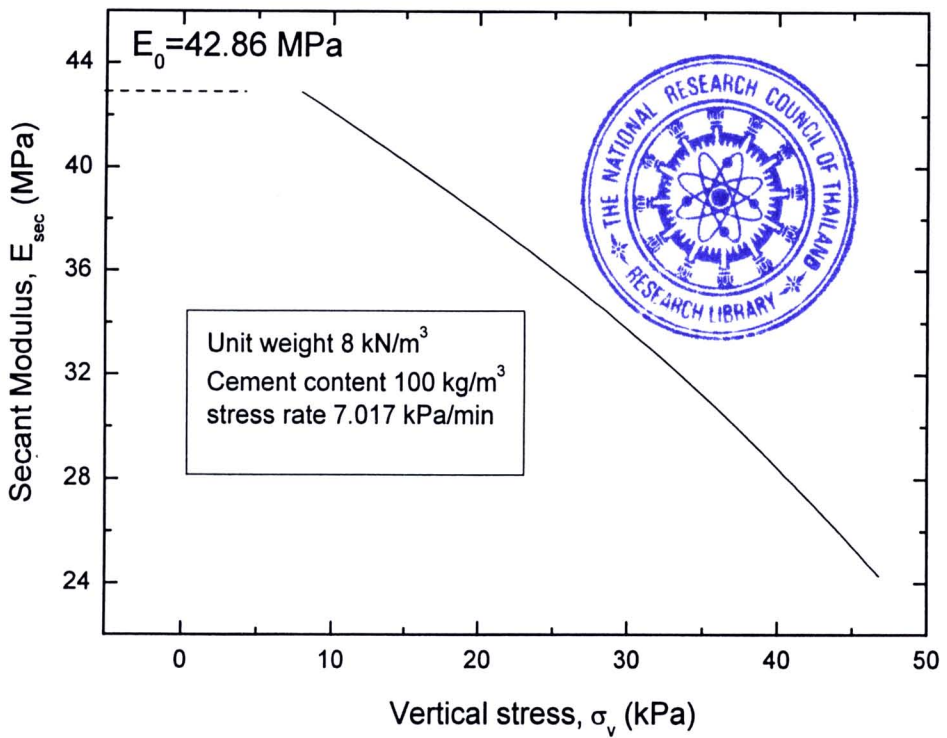


(i)

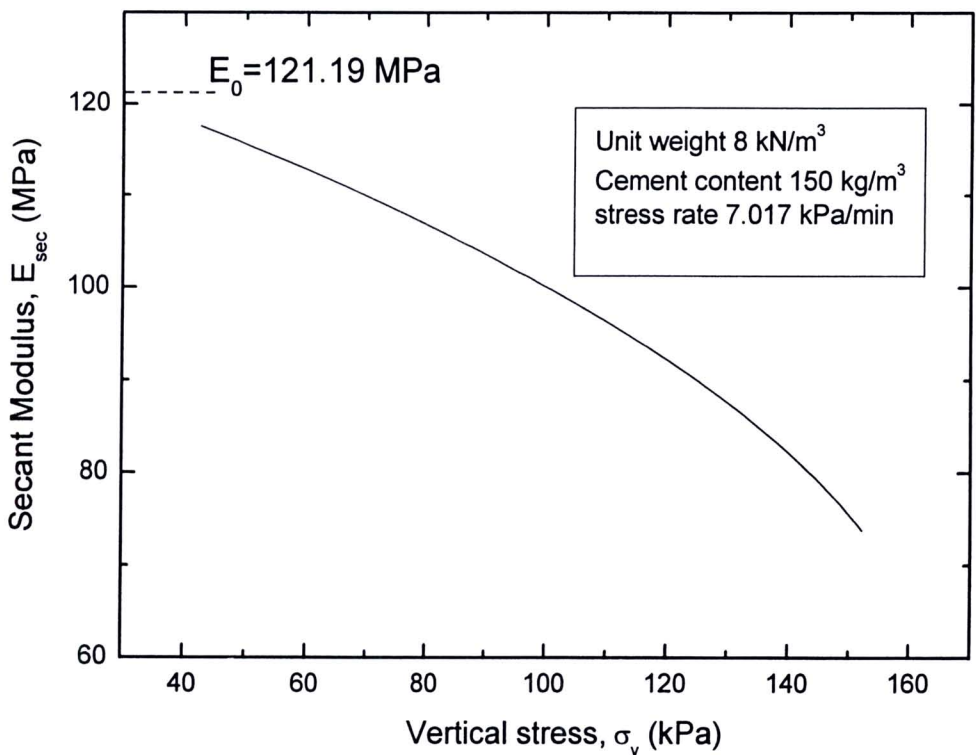
Figure E.1 (Cont.) (i) Unit weight 12 kN/m<sup>3</sup> and cement content 200 kg/m<sup>3</sup>

## **APPENDIX F**

Relationship between Secant Modulus and vertical stress of monotonic loading test on air-cement treated soil



(a)

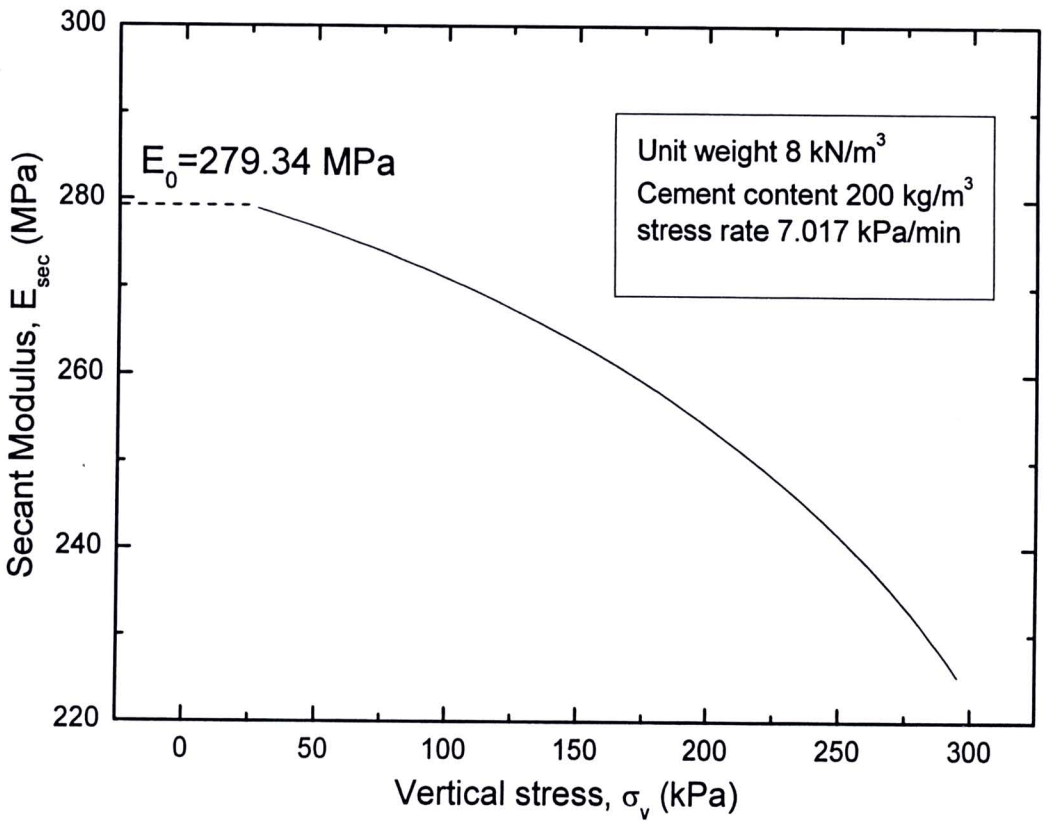


(b)

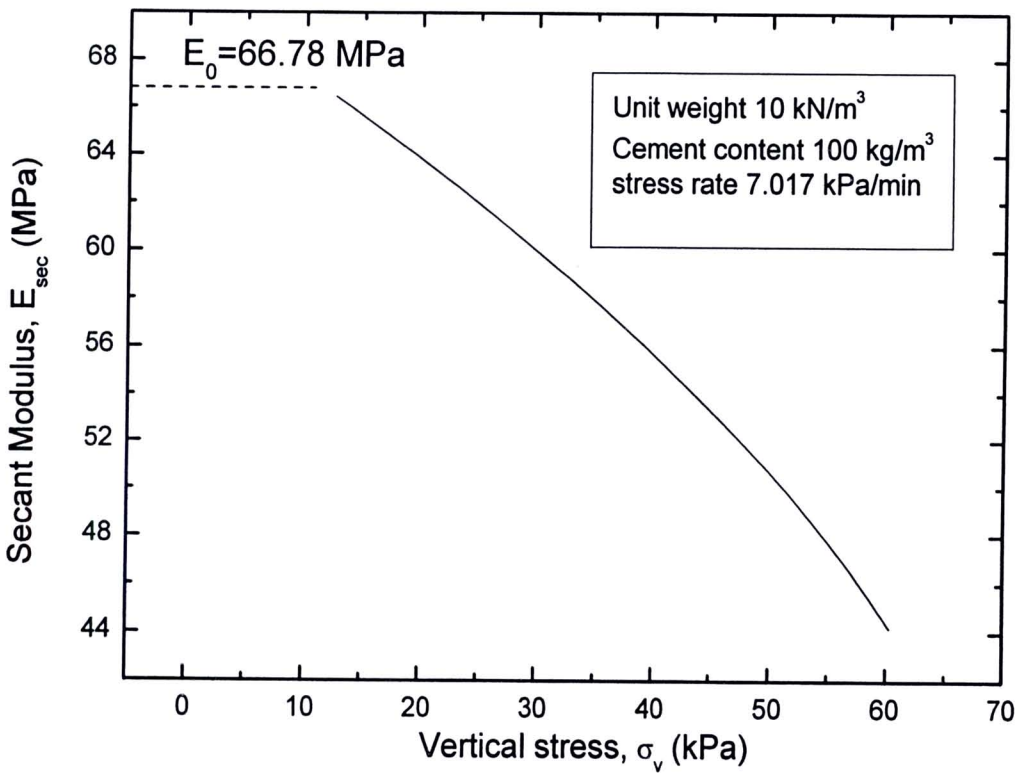
**Figure F.1** Relationship between Secant Modulus and vertical stress of monotonic loading test on air-cement treated soil

(a) Unit weight 8 kN/m<sup>3</sup> and cement content 100 kg/m<sup>3</sup>

(b) Unit weight 8 kN/m<sup>3</sup> and cement content 150 kg/m<sup>3</sup>

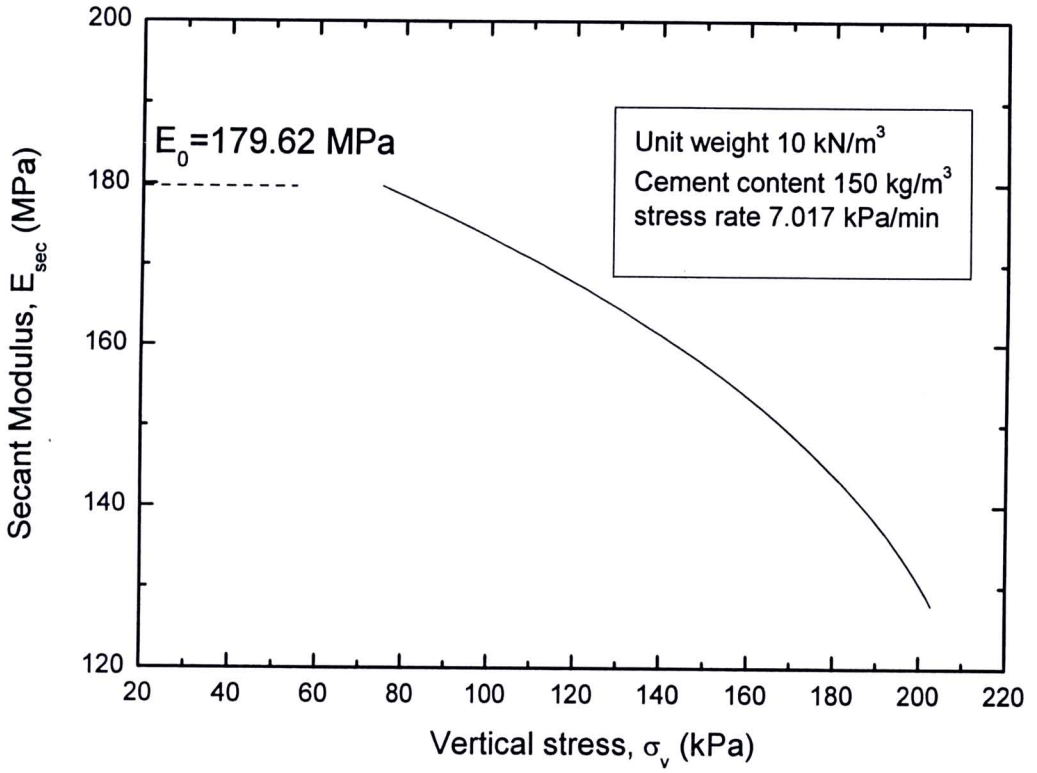


(c)

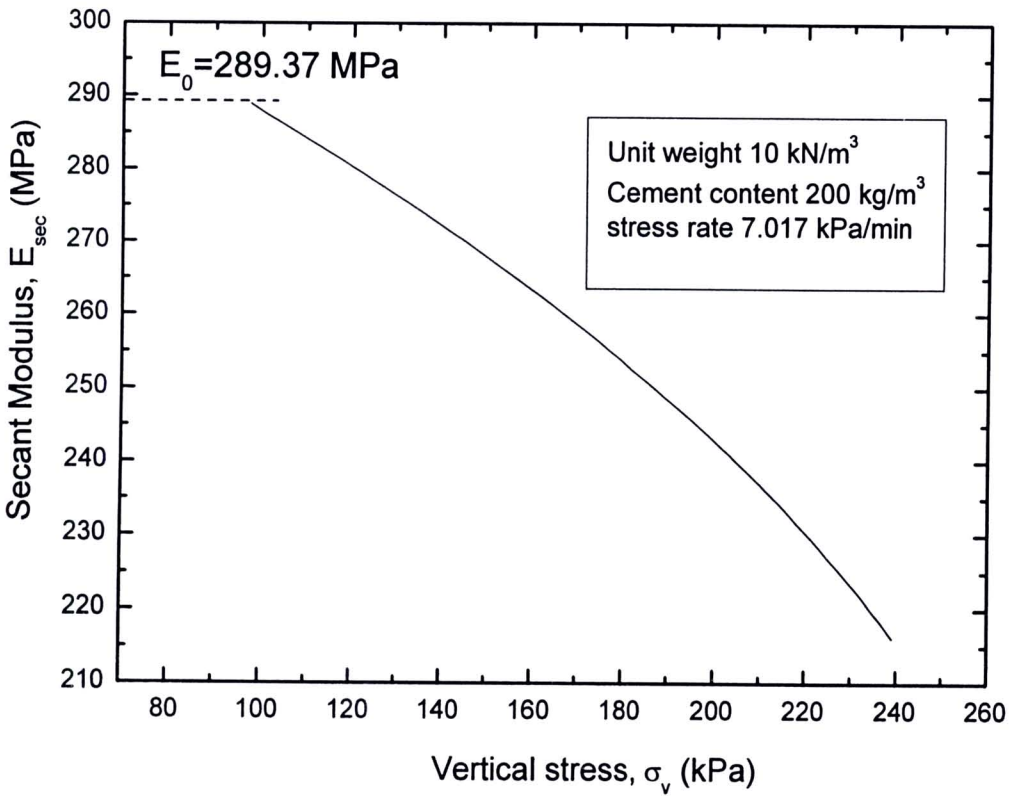


(d)

**Figure F.1 (Cont.)** (c) Unit weight 8 kN/m<sup>3</sup> and cement content 200 kg/m<sup>3</sup>  
(d) Unit weight 10 kN/m<sup>3</sup> and cement content 100 kg/m<sup>3</sup>

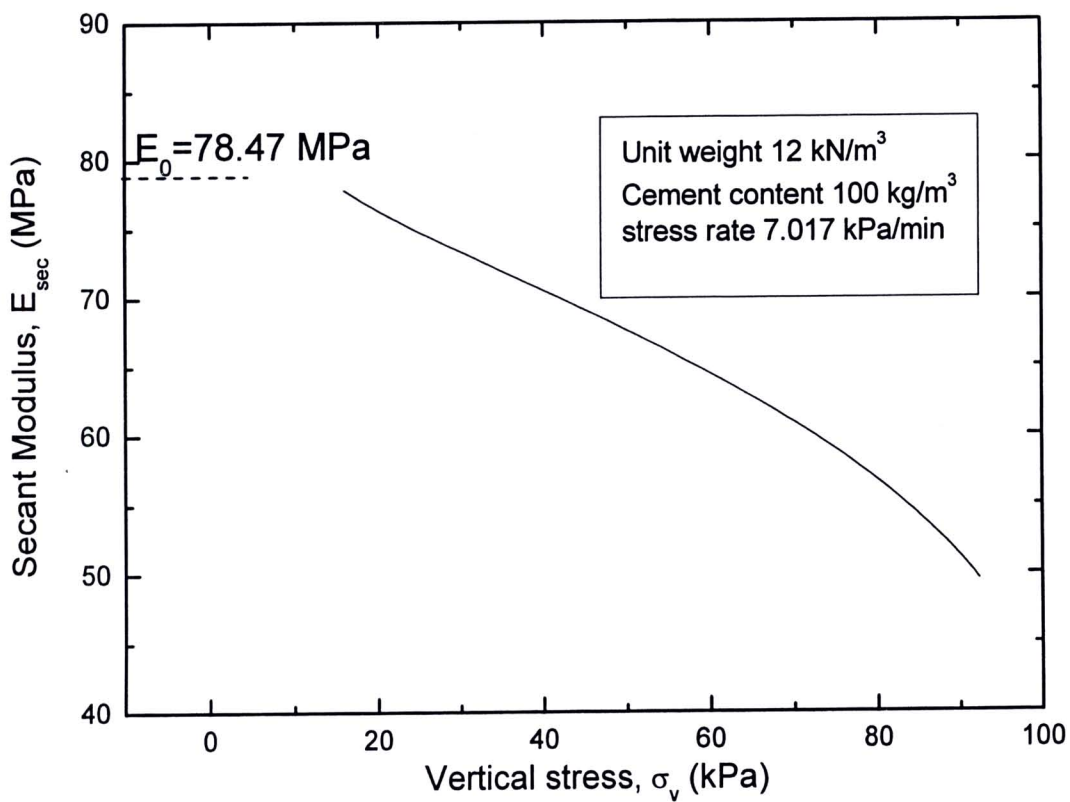


(e)

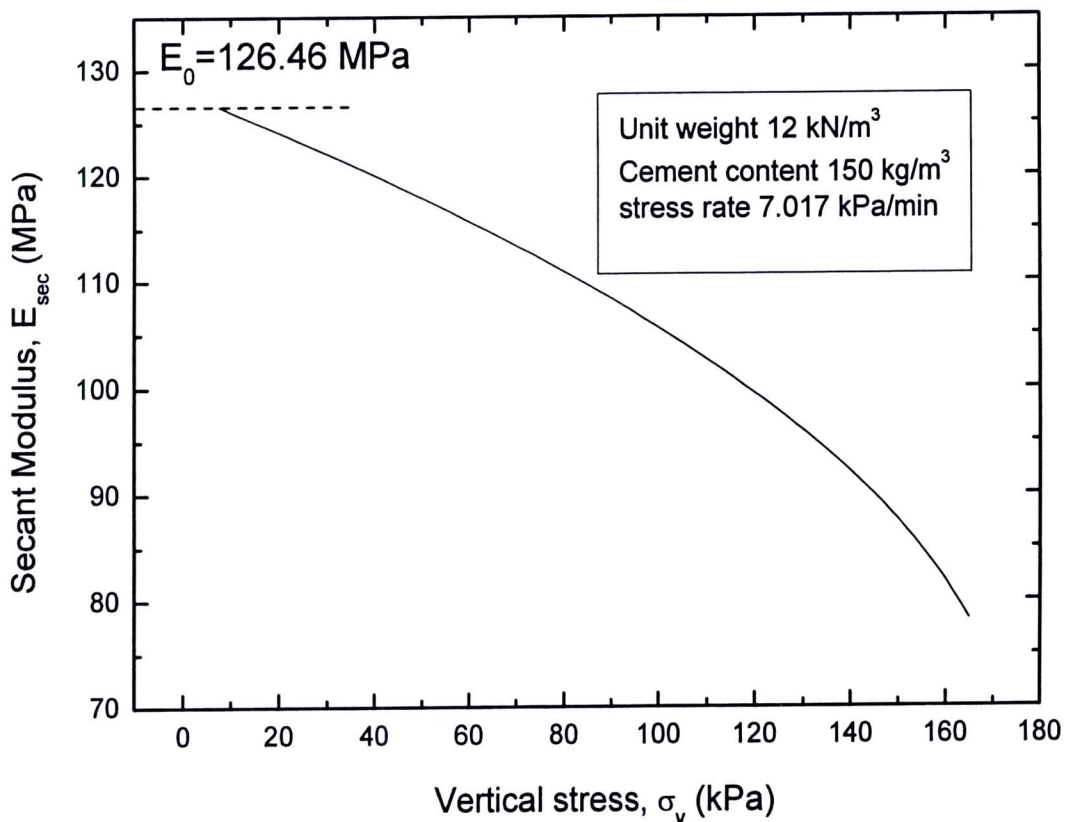


(f)

**Figure F.1 (Cont.)** (e) Unit weight  $10 \text{ kN/m}^3$  and cement content  $150 \text{ kg/m}^3$   
 (f) Unit weight  $10 \text{ kN/m}^3$  and cement content  $200 \text{ kg/m}^3$

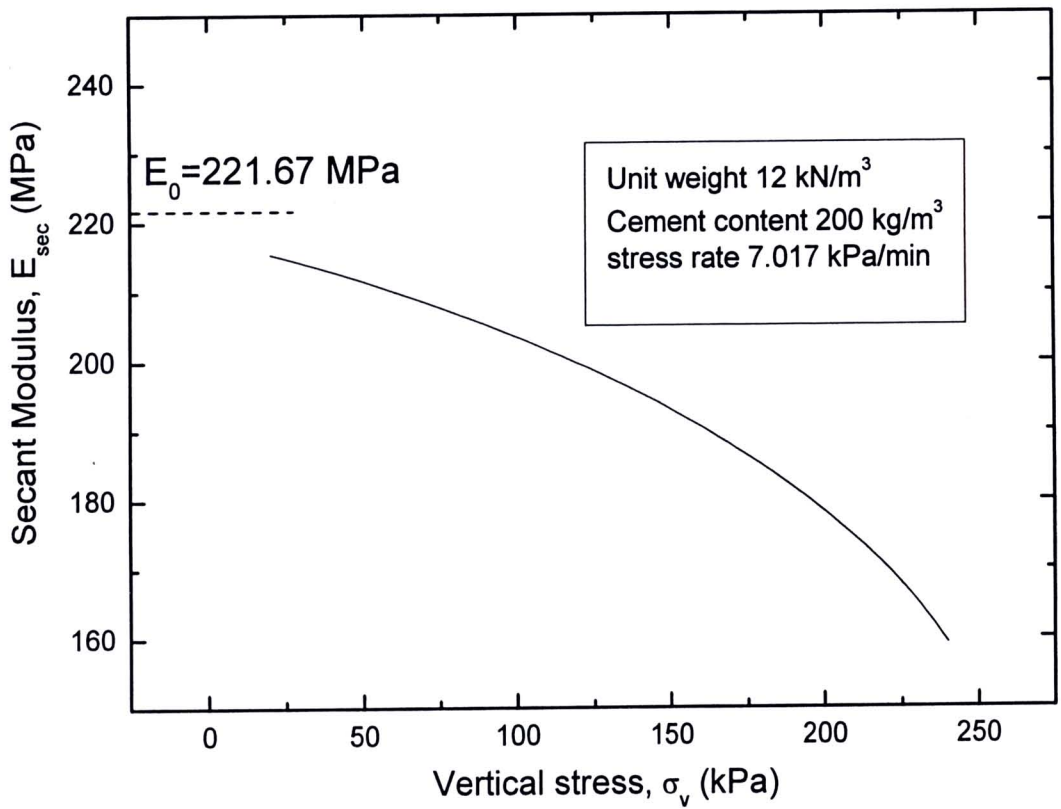


(g)



(h)

**Figure F.1 (Cont.)** (g) Unit weight 12 kN/m<sup>3</sup> and cement content 100 kg/m<sup>3</sup>  
(h) Unit weight 12 kN/m<sup>3</sup> and cement content 150 kg/m<sup>3</sup>

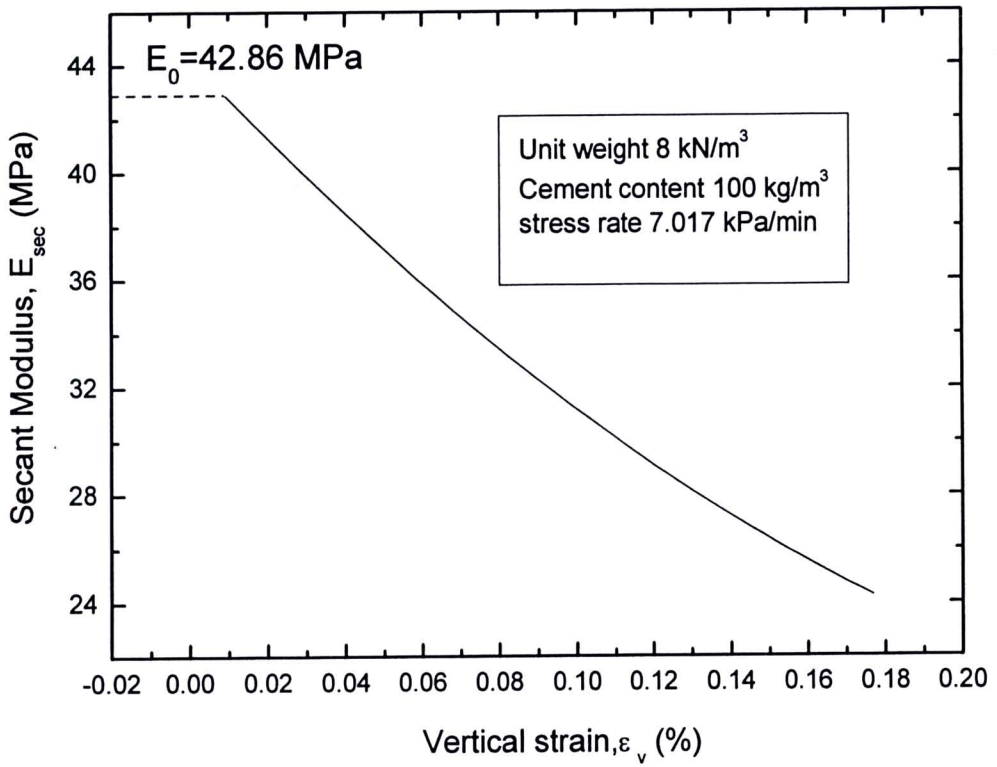


(i)

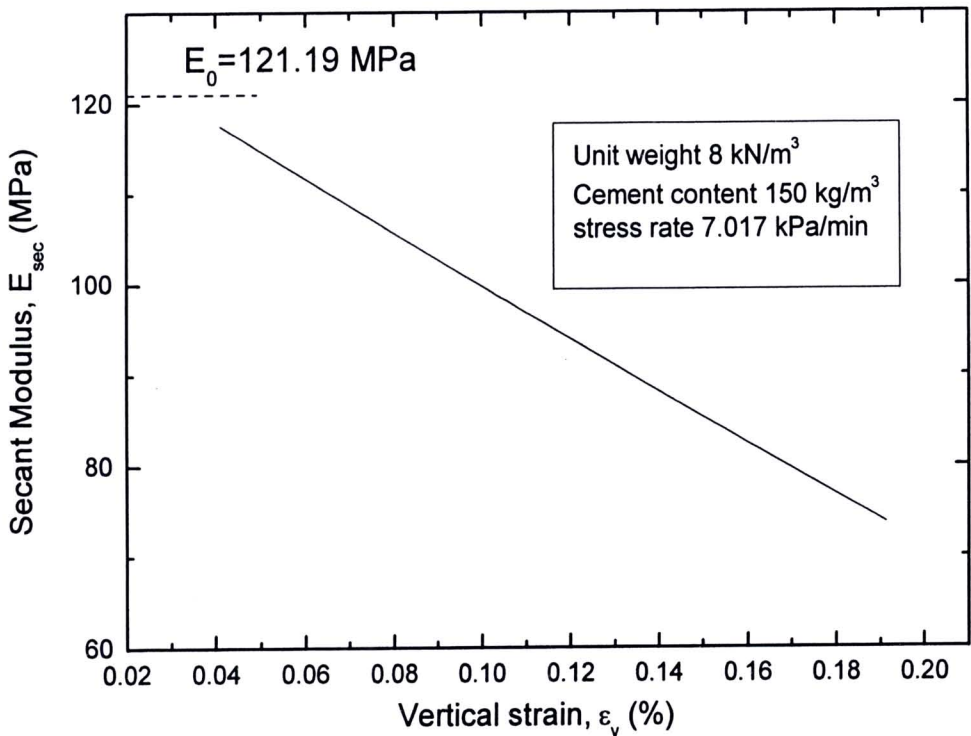
Figure F.1 (Cont.) (i) Unit weight 12 kN/m<sup>3</sup> and cement content 200 kg/m<sup>3</sup>

## **APPENDIX G**

Relationship between Secant Modulus and vertical strain of monotonic loading test on air-cement treated soil



(a)

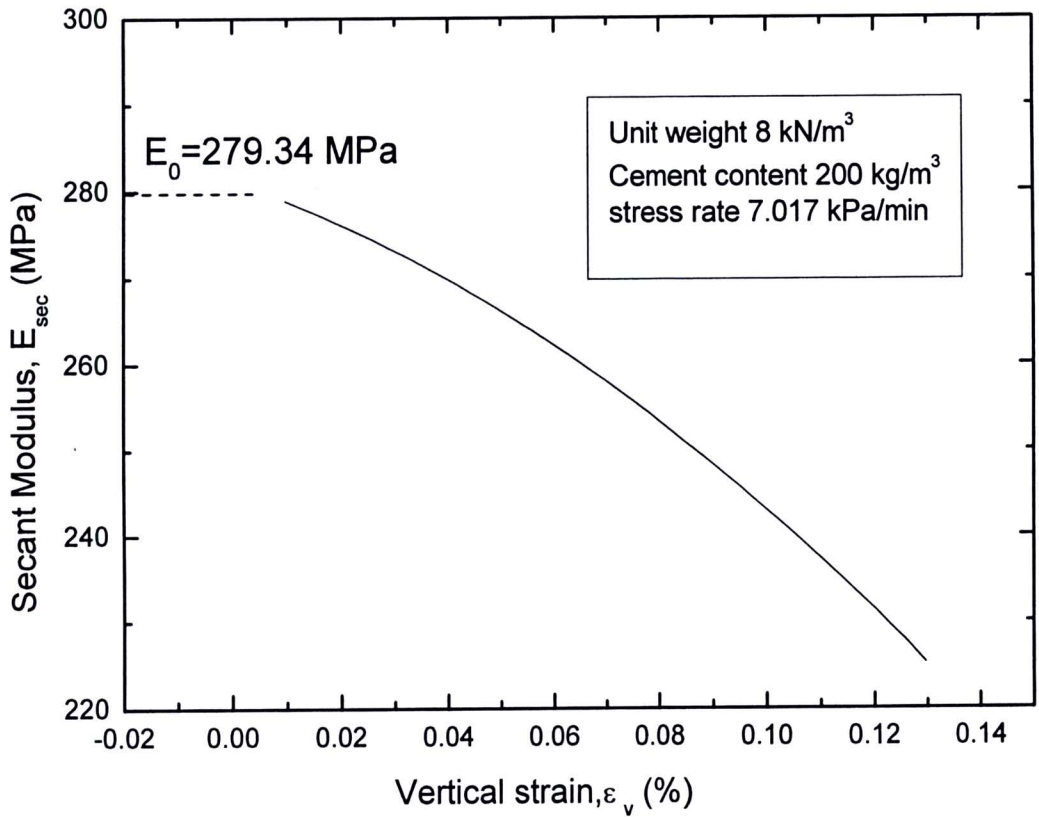


(b)

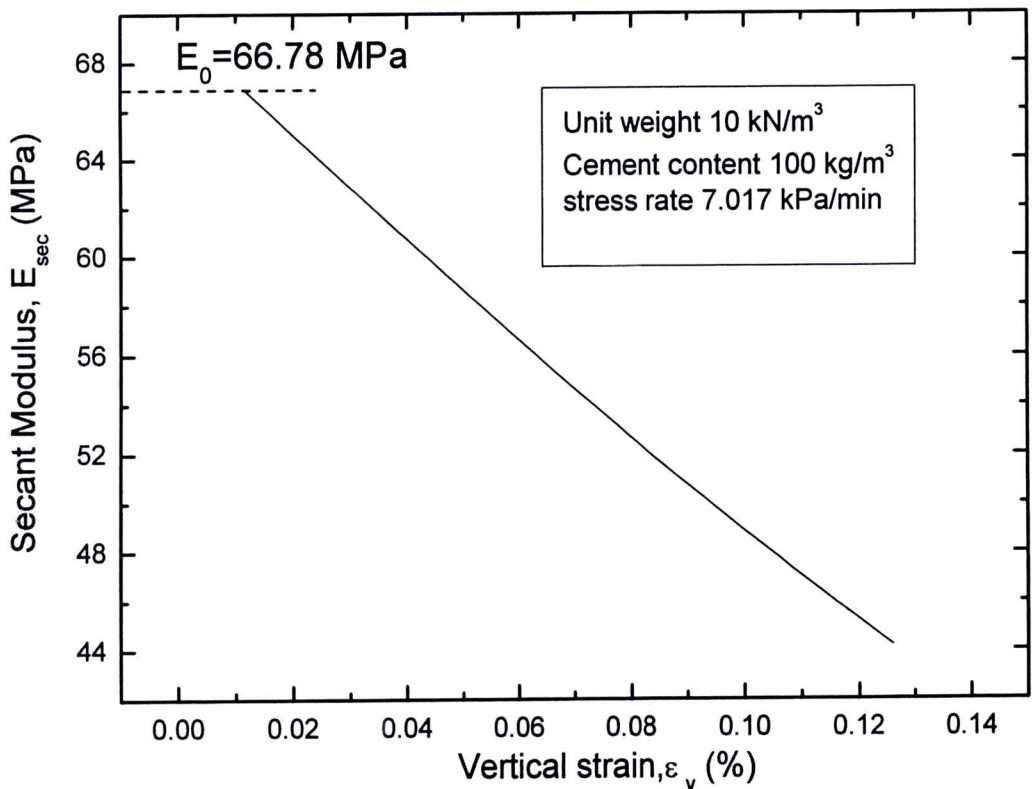
**Figure G.1** Relationship between Secant Modulus and vertical strain of monotonic loading test on air-cement treated soil

(a) Unit weight  $8 \text{ kN/m}^3$  and cement content  $100 \text{ kg/m}^3$

(b) Unit weight  $8 \text{ kN/m}^3$  and cement content  $150 \text{ kg/m}^3$

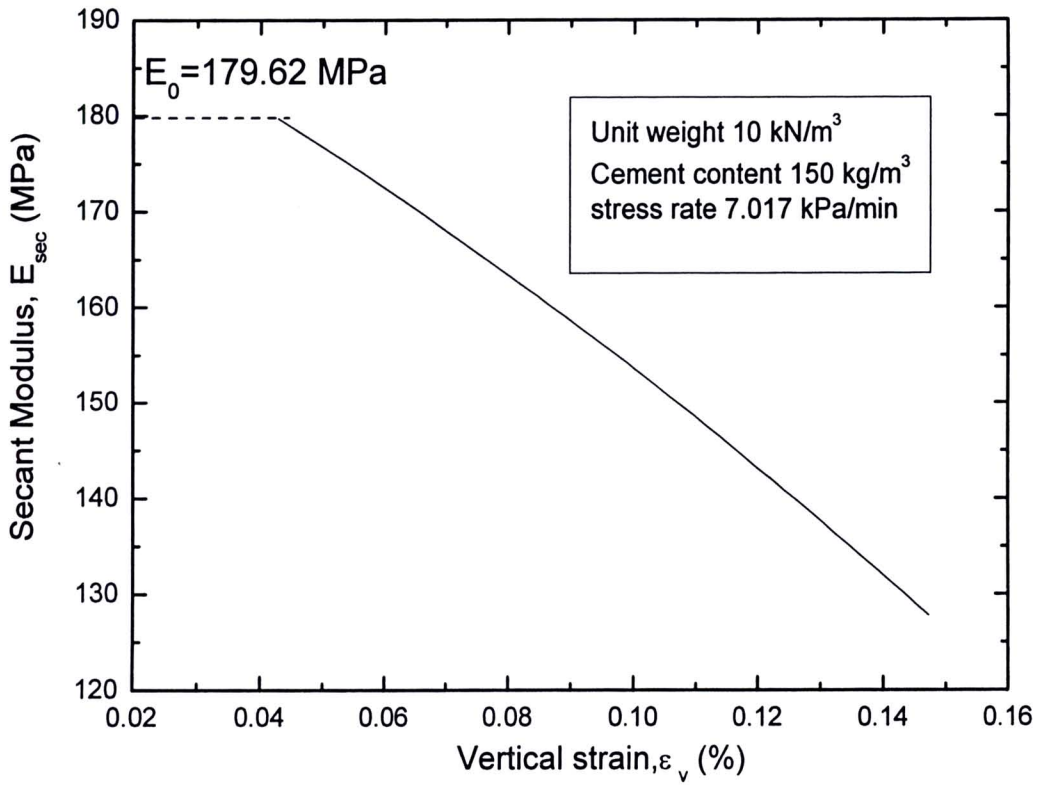


(c)

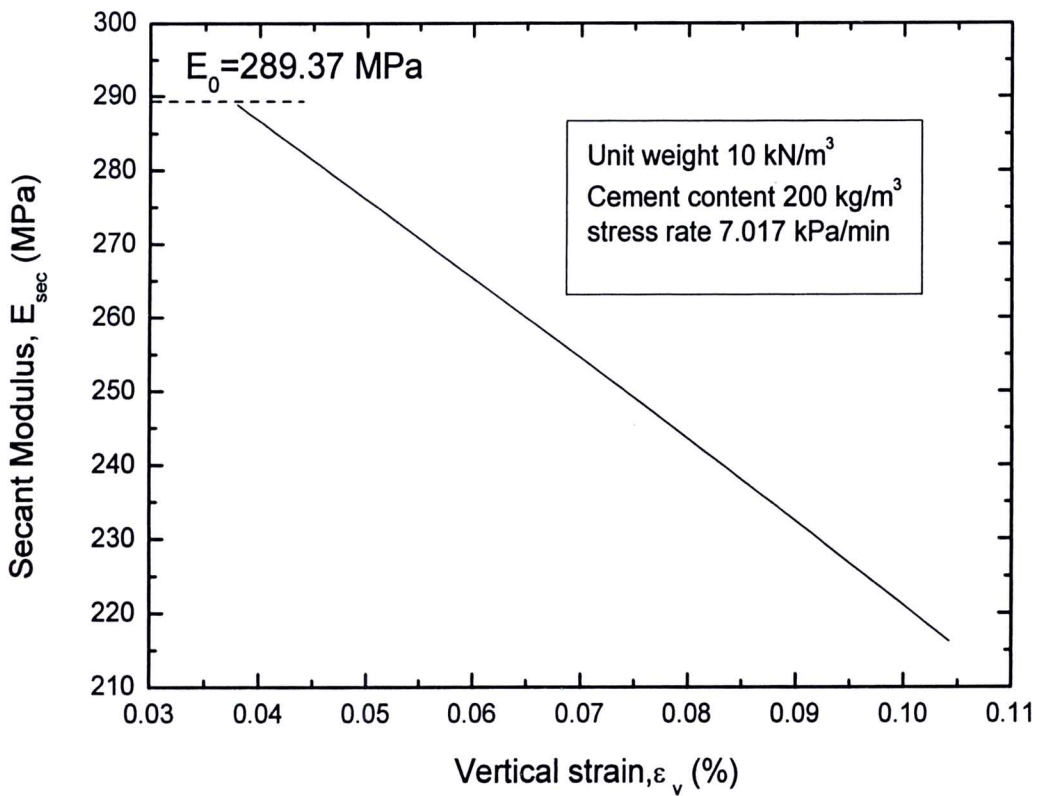


(d)

**Figure G.1 (Cont.)** (c) Unit weight  $8 \text{ kN/m}^3$  and cement content  $200 \text{ kg/m}^3$   
 (d) Unit weight  $10 \text{ kN/m}^3$  and cement content  $100 \text{ kg/m}^3$

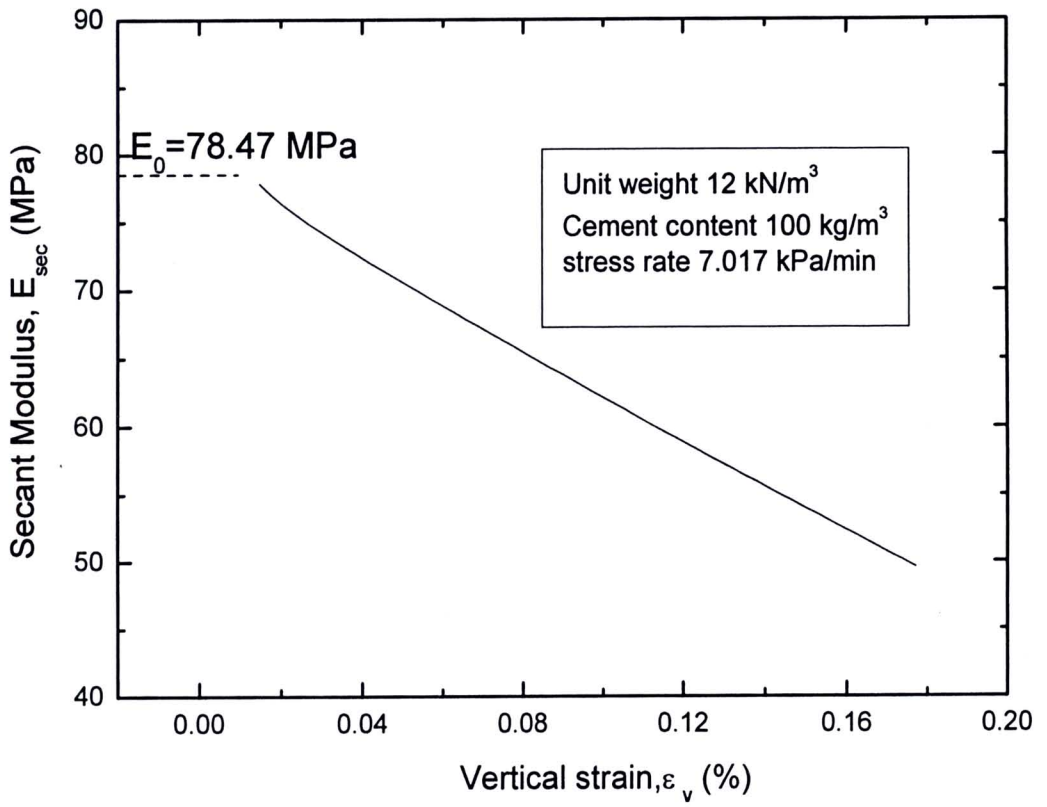


(e)

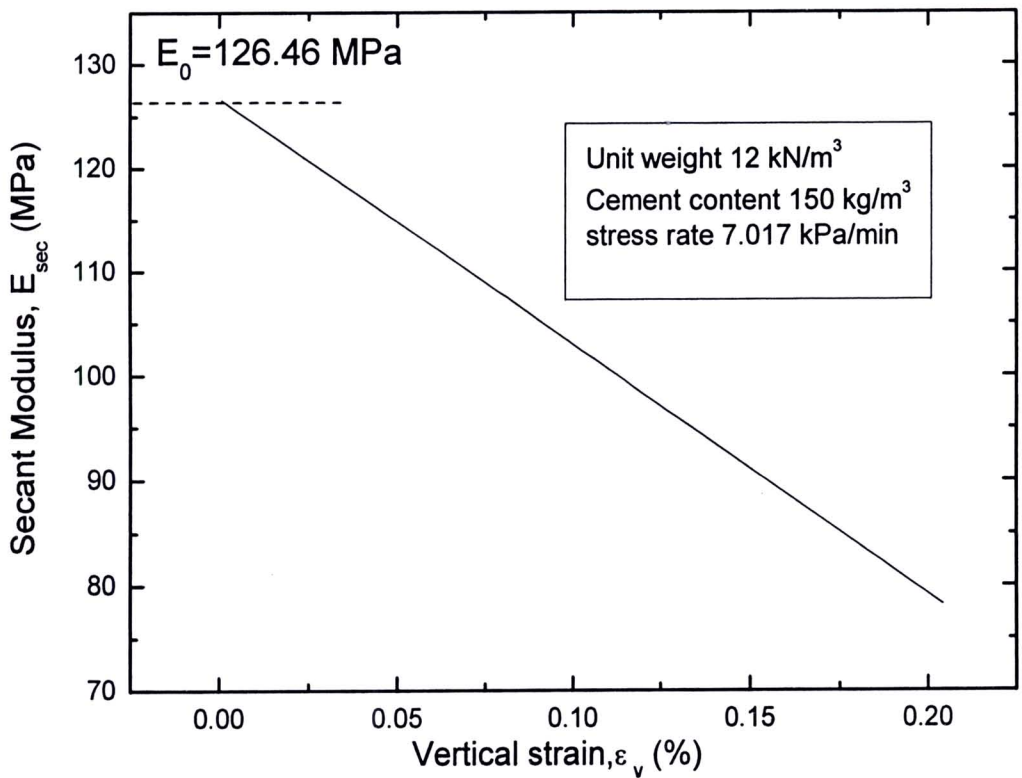


(f)

**Figure G.1 (Cont.)** (e) Unit weight  $10 \text{ kN/m}^3$  and cement content  $150 \text{ kg/m}^3$   
 (f) Unit weight  $10 \text{ kN/m}^3$  and cement content  $200 \text{ kg/m}^3$

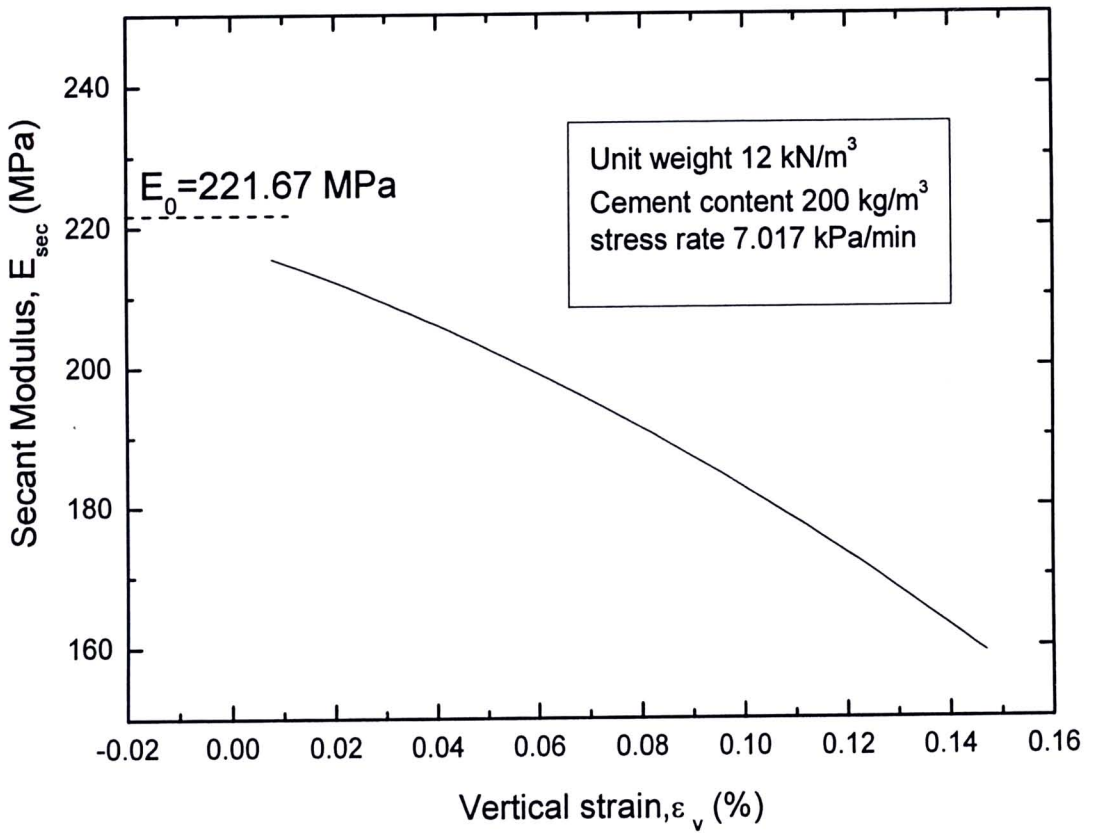


(g)



(h)

**Figure G.1 (Cont.)** (g) Unit weight 12 kN/m<sup>3</sup> and cement content 100 kg/m<sup>3</sup>  
 (h) Unit weight 12 kN/m<sup>3</sup> and cement content 150 kg/m<sup>3</sup>

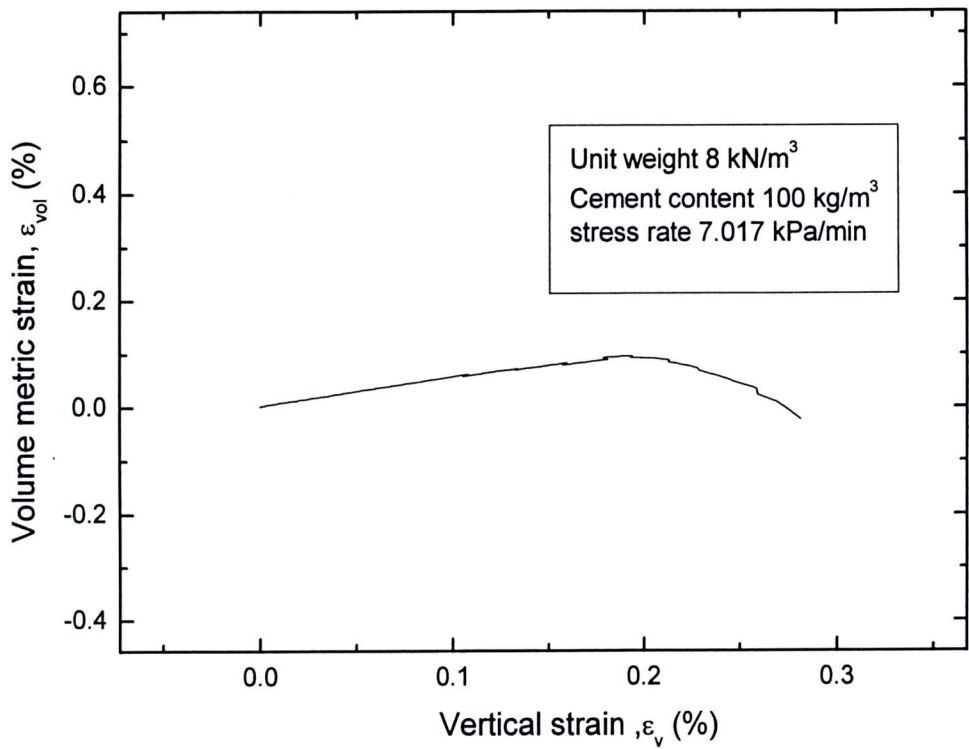


(i)

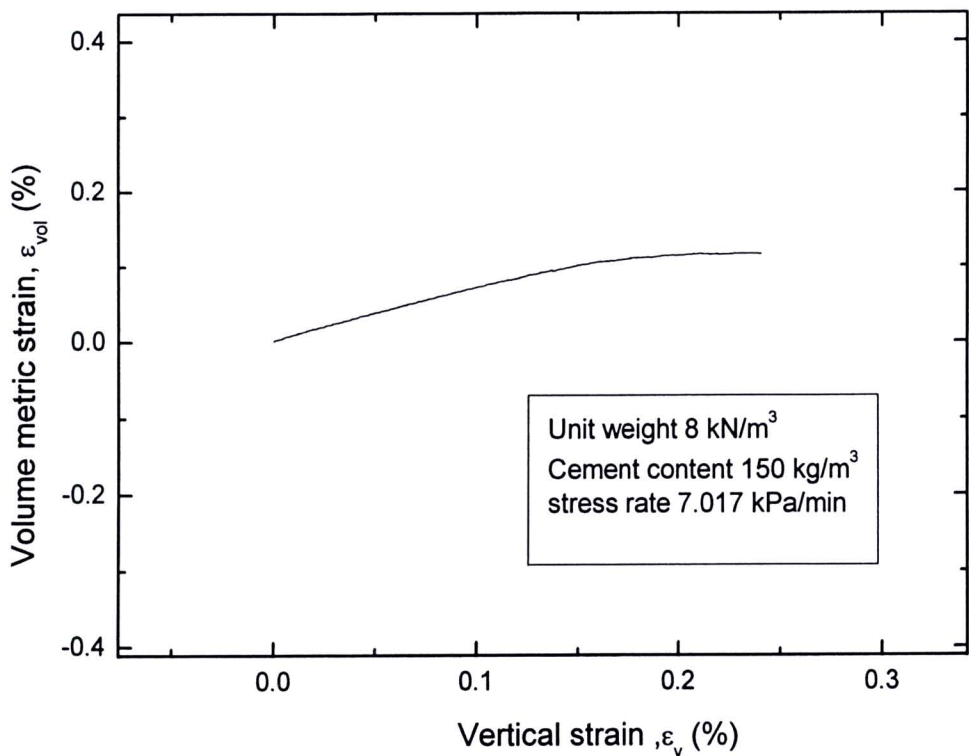
**Figure G.1 (Cont.)** (i) Unit weight 12 kN/m<sup>3</sup> and cement content 200 kg/m<sup>3</sup>

## **APPENDIX H**

Relationship between Volume metric strain and vertical strain of monotonic loading test on air-cement treated soil



(a)

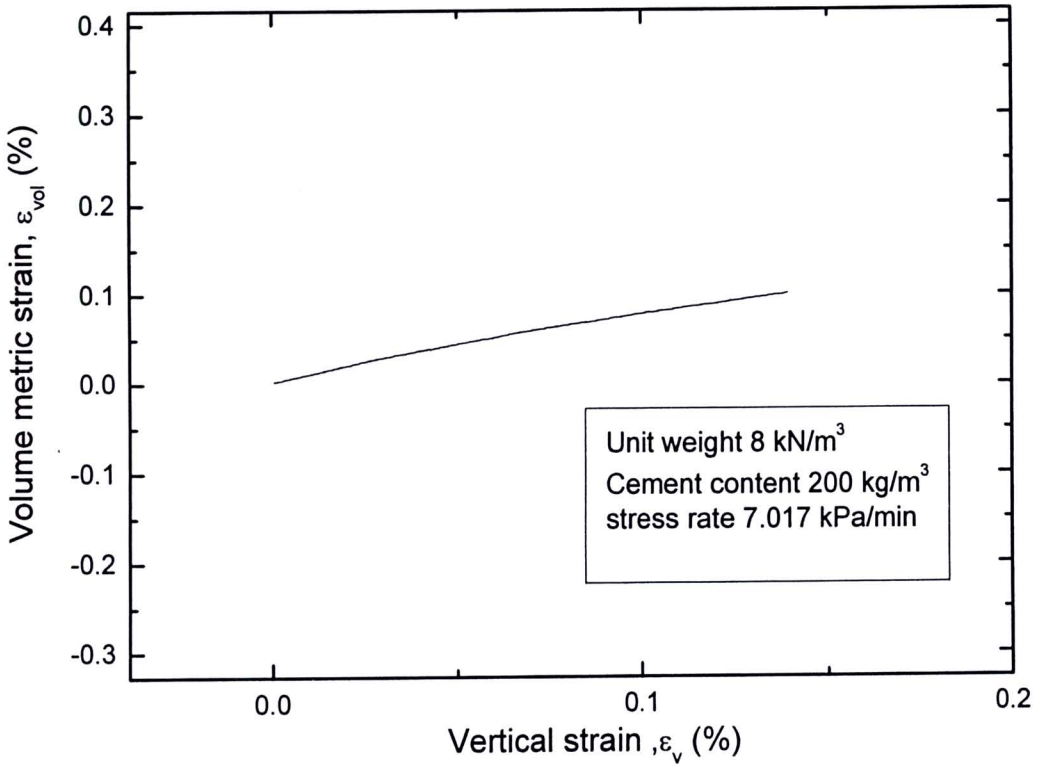


(b)

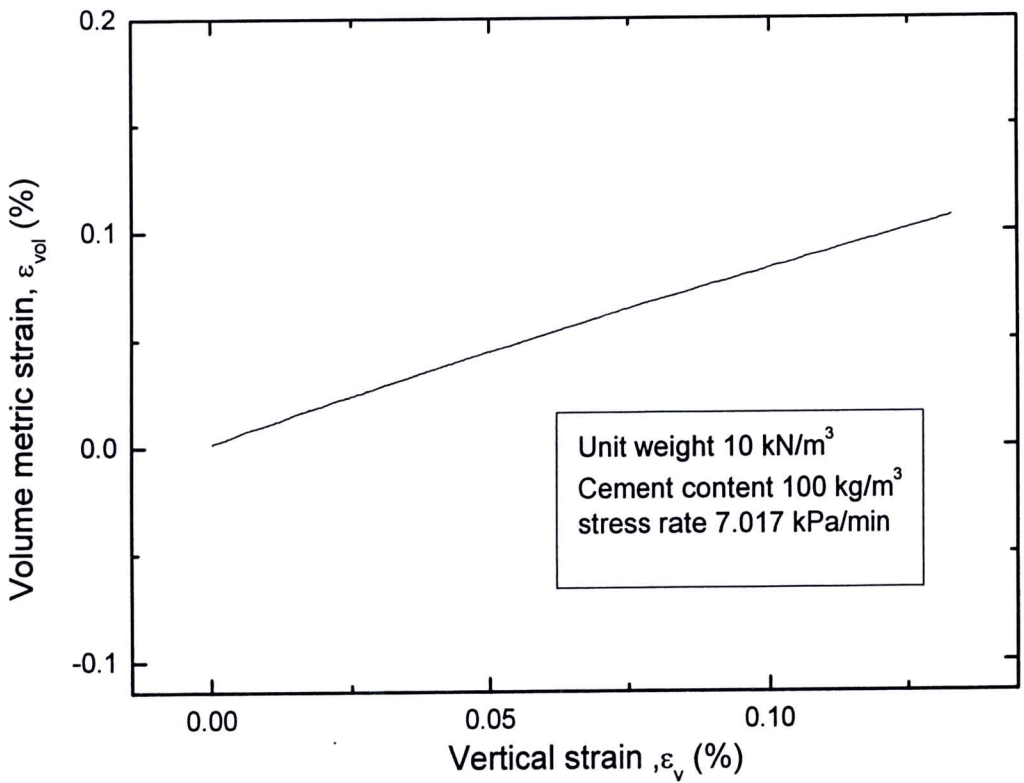
**Figure H.1** Relationship between Volume metric strain and vertical strain of monotonic loading test on air-cement treated soil

(a) Unit weight 8 kN/m<sup>3</sup> and cement content 100 kg/m<sup>3</sup>

(b) Unit weight 8 kN/m<sup>3</sup> and cement content 150 kg/m<sup>3</sup>

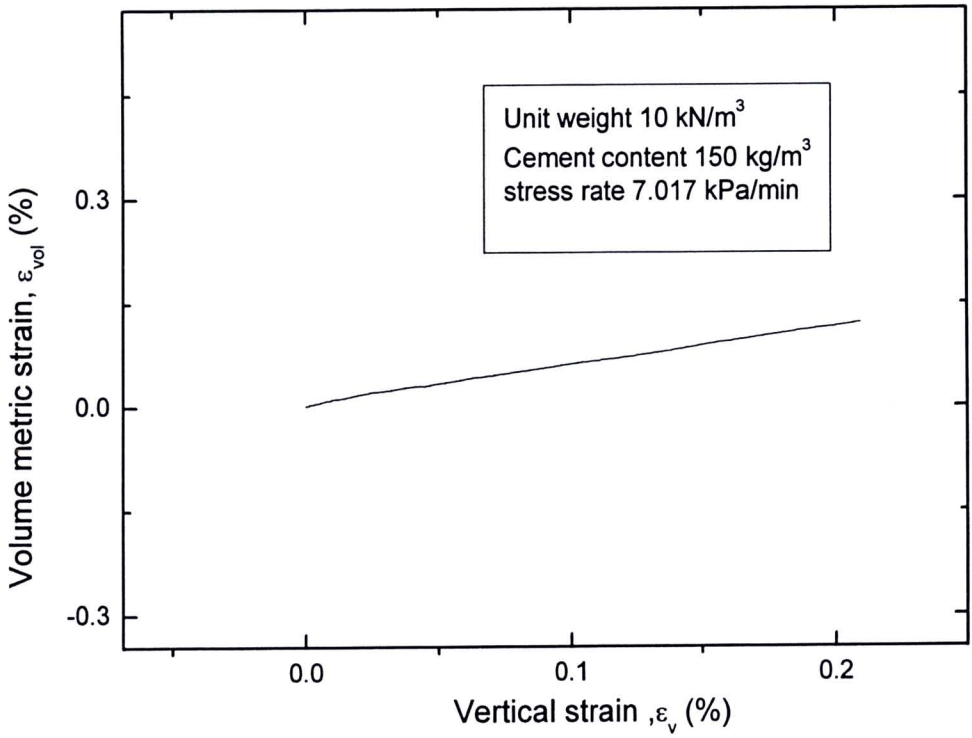


(c)

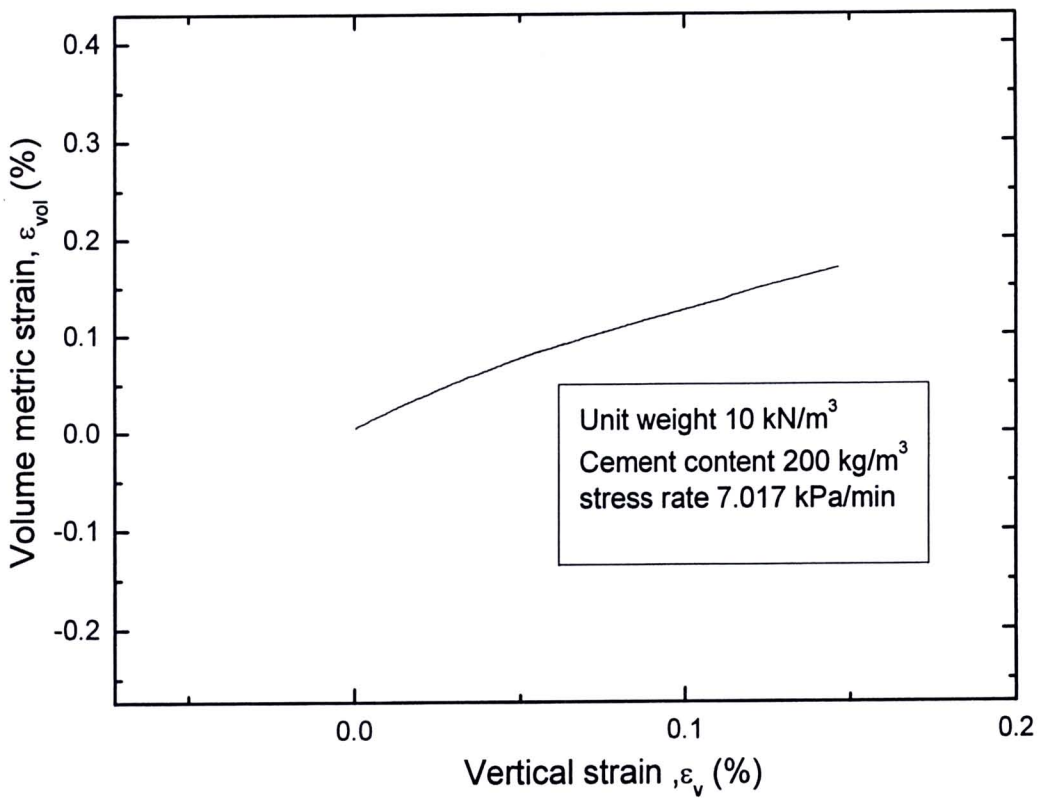


(d)

**Figure H (Cont.)** (c) Unit weight  $8 \text{ kN/m}^3$  and cement content  $200 \text{ kg/m}^3$   
 (d) Unit weight  $10 \text{ kN/m}^3$  and cement content  $100 \text{ kg/m}^3$

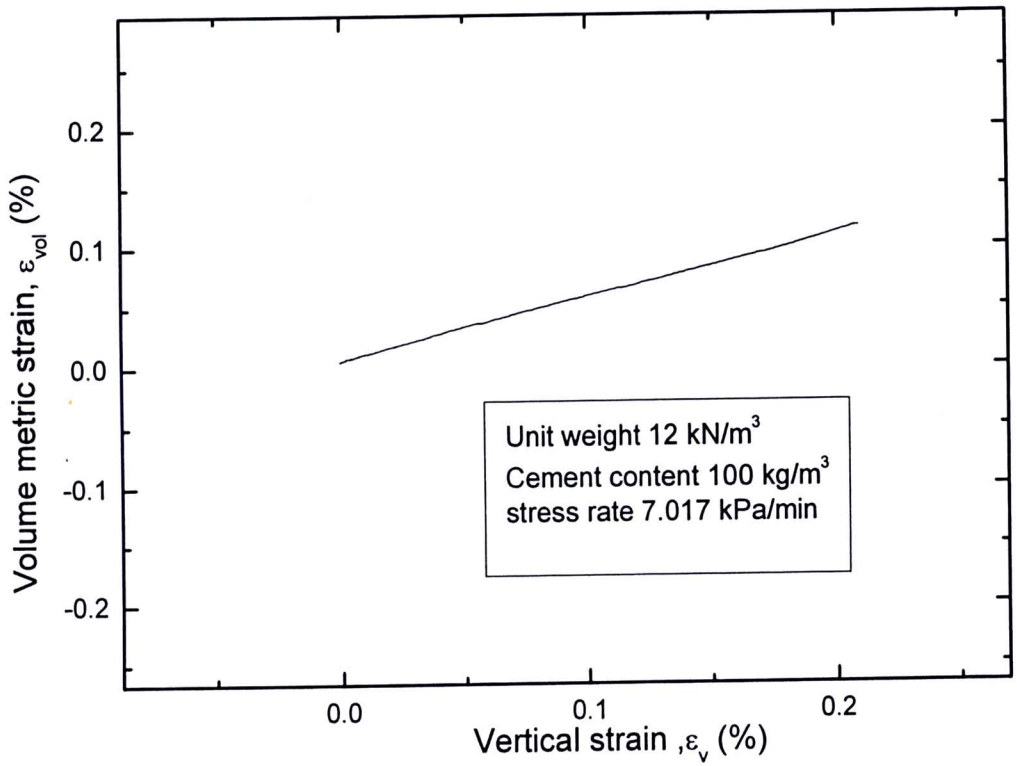


(e)

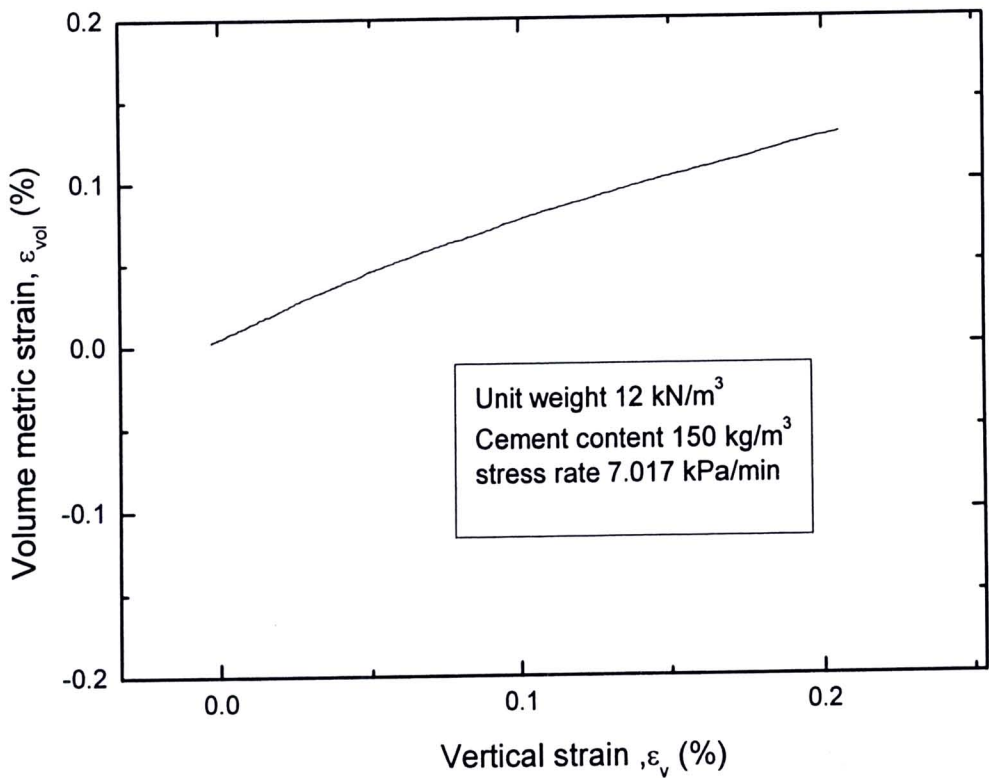


(f)

**Figure H.1 (Cont.)** (e) Unit weight 10 kN/m<sup>3</sup> and cement content 150 kg/m<sup>3</sup>  
 (f) Unit weight 10 kN/m<sup>3</sup> and cement content 200 kg/m<sup>3</sup>

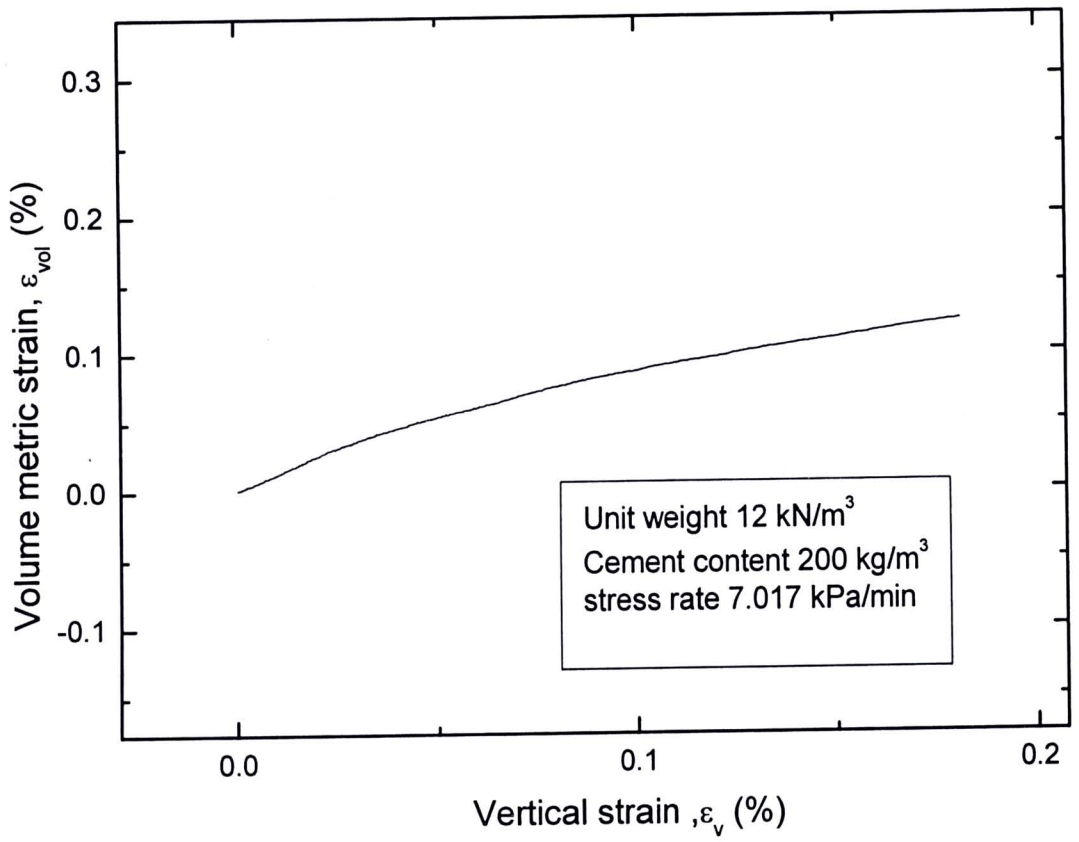


(g)



(h)

**Figure H.1 (Cont.)** (g) Unit weight  $12 \text{ kN/m}^3$  and cement content  $100 \text{ kg/m}^3$   
 (h) Unit weight  $12 \text{ kN/m}^3$  and cement content  $150 \text{ kg/m}^3$

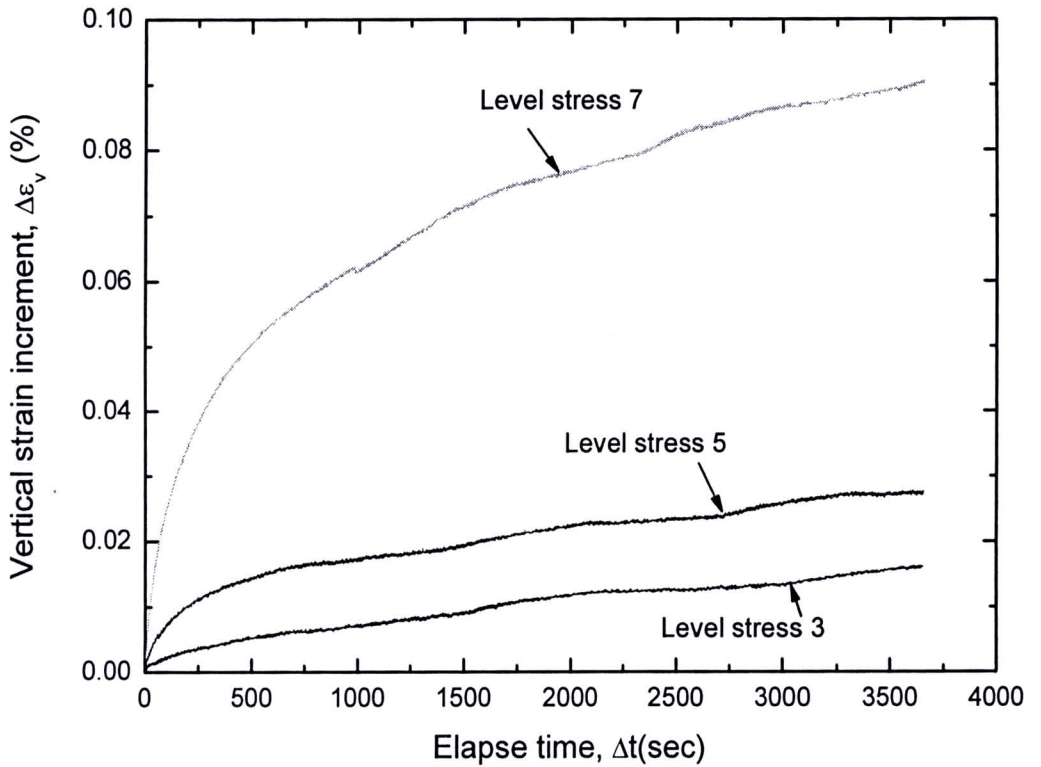


(i)

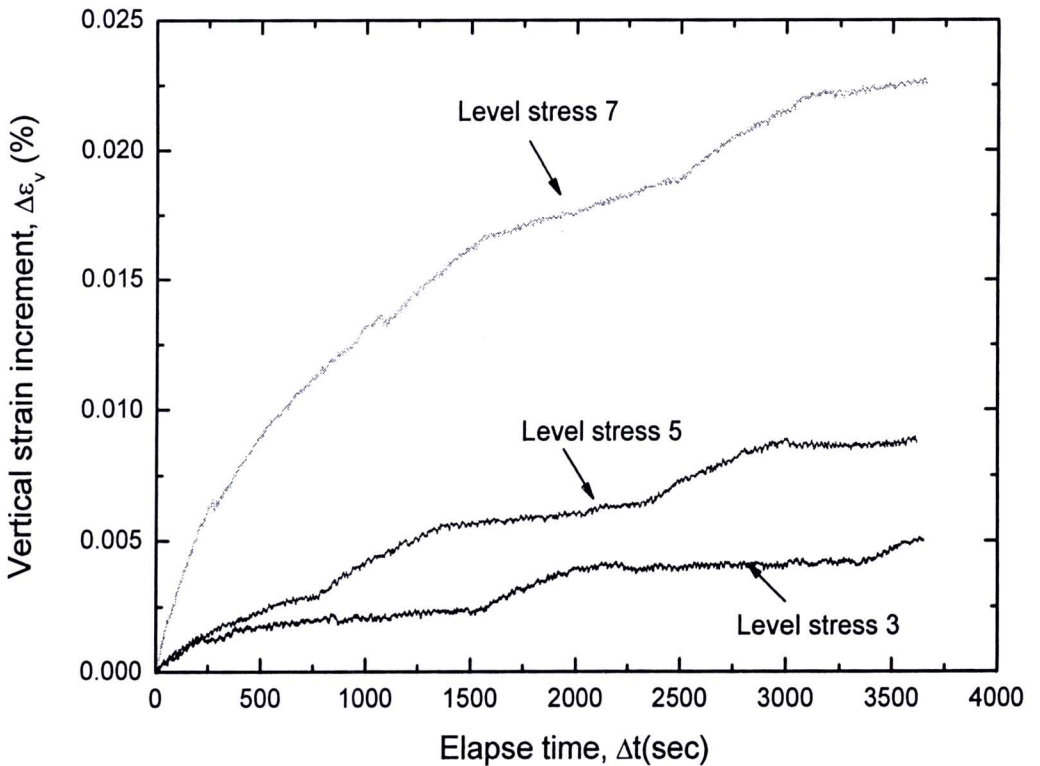
**Figure H.1 (Cont.)** (i) Unit weight 12 kN/m<sup>3</sup> and cement content 200 kg/m<sup>3</sup>

## **APPENDIX I**

Relationship between Vertical strain increment and time of creep load 1 hour on air-cement treated soil

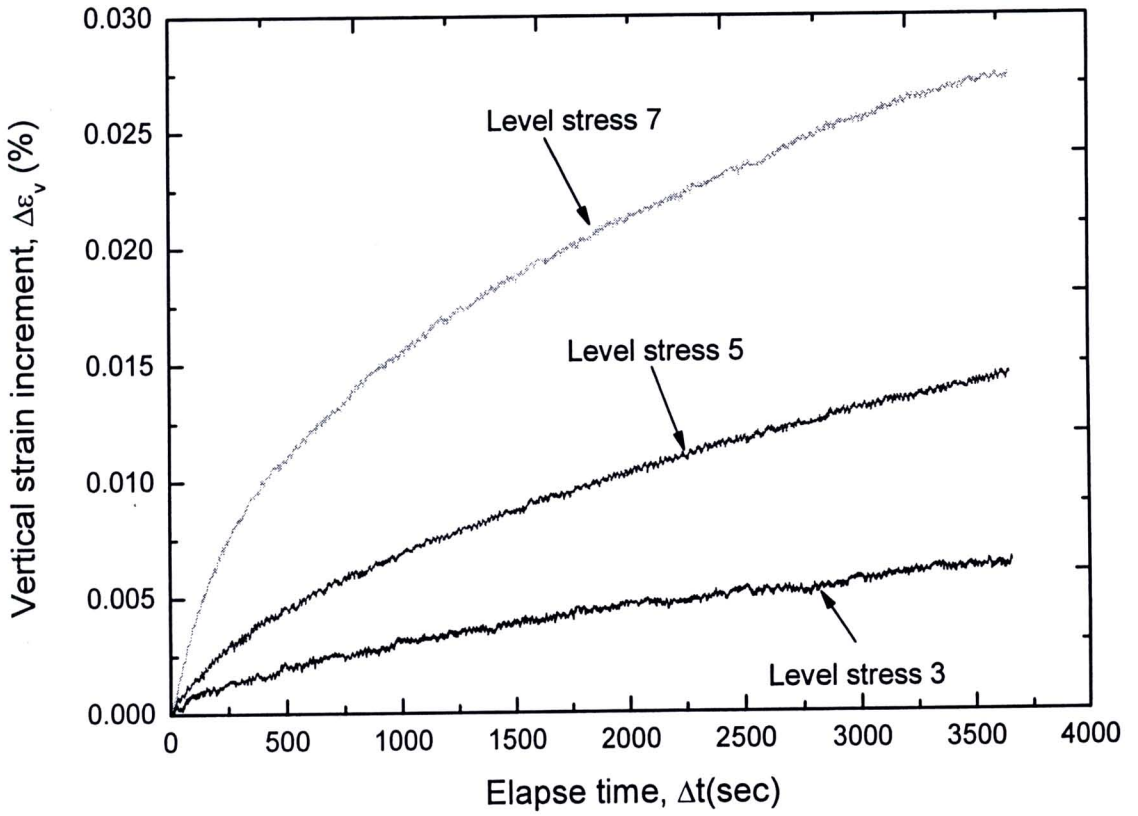


(a)



(b)

**Figure I.1** Relationship between Vertical strain increment and time of creep load 1 hour on air-cement treated soil  
 (a) Unit weight  $8 \text{ kN/m}^3$  and cement content  $100 \text{ kg/m}^3$   
 (b) Unit weight  $8 \text{ kN/m}^3$  and cement content  $150 \text{ kg/m}^3$



(c)

**Figure I.1 (Cont.)** (c) Unit weight  $8 \text{ kN/m}^3$  and cement content  $200 \text{ kg/m}^3$

## **APPENDIX J**

Summary of Air Void by solid fact (%) and Water Void by solid fact (%), Mixing ratio and ratio of volume of cement ( $v_c$ ) to volume of foam ( $v_f$ )

**Table J.1** Summary of Air Void by solid fact (%) and Water Void by solid fact (%)

Mix	Air Void by solid fact (%)	Water Void by solid fact (%)
8-100	397.98	505.00
8-150	344.63	385.86
8-200	292.55	297.64
10-100	156.39	571.03
10-150	129.74	444.04
10-200	158.80	356.41
12-100	27.20	584.16
12-150	32.64	483.24
12-200	47.71	452.52

**Table J.2** Summary of Mixing ratio

	Mixing Ratio		
	8-100	8-150	8-200
sample soil (kg)	260.63	241.27	221.91
water (L)	434.39	402.12	369.85
hardener (kg)	100.00	150.00	200.00
foam (L)	388.90	419.94	450.98
Air cement treaded soil (m <sup>3</sup> )	1.00	1.00	1.00
	Mixing Ratio		
	10-100	10-150	10-200
sample soil (kg)	340.64	321.28	301.91
water (L)	567.73	535.46	503.19
hardener (kg)	100.00	150.00	200.00
foam (L)	208.99	240.03	271.07
Air cement treaded soil (m <sup>3</sup> )	1.00	1.00	1.00
	Mixing Ratio		
	12-100	12-150	12-200
sample soil (kg)	420.64	401.28	381.92
water (L)	701.07	668.80	636.53
hardener (kg)	100.00	150.00	200.00
foam (L)	29.08	60.12	91.16
Air cement treaded soil (m <sup>3</sup> )	1.00	1.00	1.00

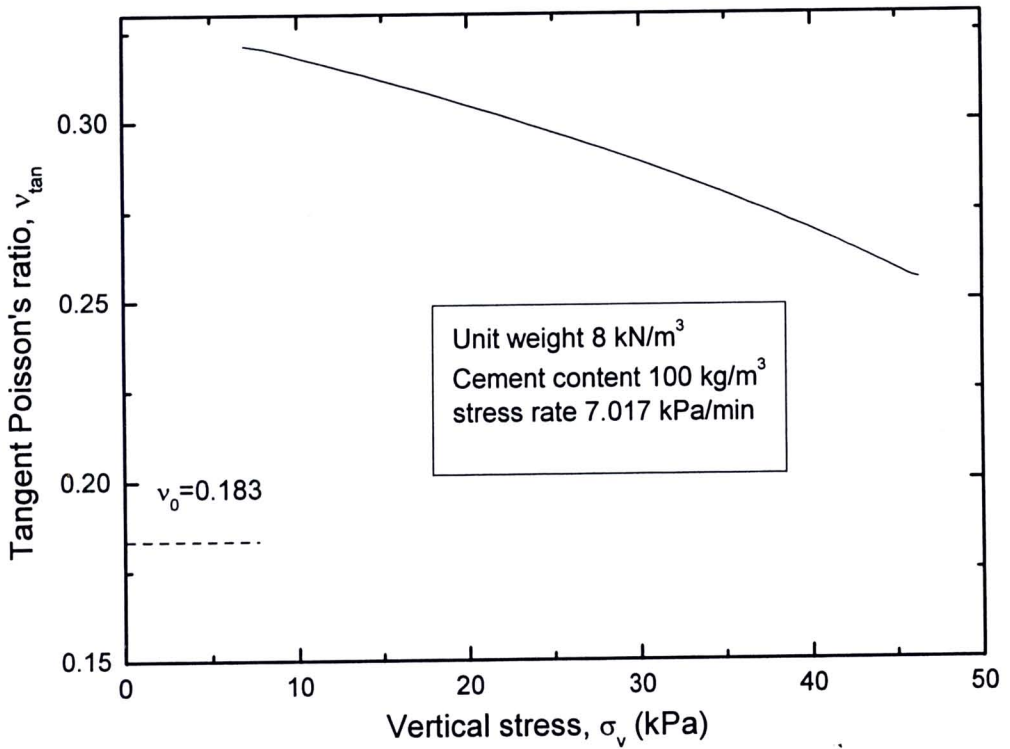
Note: Gs of cement 3.14, density of water 1 g/cc, density of foam 0.05 g/cc.

**Table J.3** Summary ratio of volume of cement ( $v_c$ ) to volume of foam ( $v_f$ )

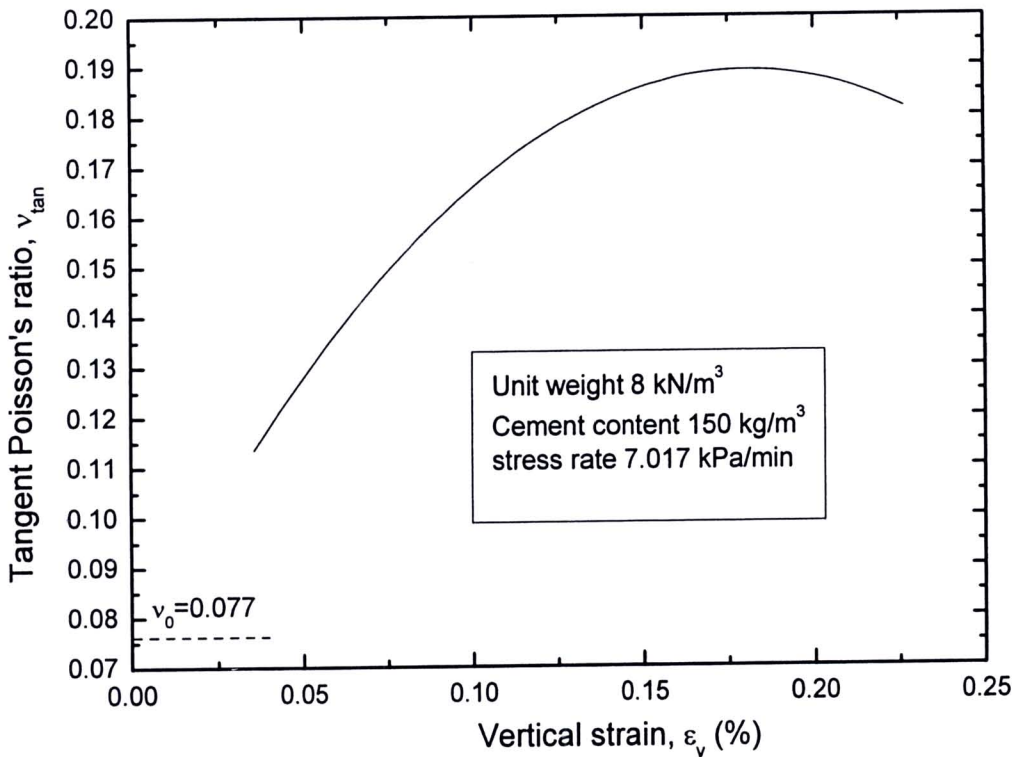
Mix	Volume of cement ( $v_c$ ) ( $\text{cm}^3$ )	Volume of foam ( $v_f$ ) ( $\text{cm}^3$ )	ratio $v_c/v_f$
8-100	31847.13	388895.82	0.082
8-150	47770.70	419937.74	0.114
8-200	63694.27	450979.66	0.141
10-100	31847.13	208987.64	0.152
10-150	47770.70	240029.56	0.199
10-200	63694.27	271071.48	0.235
12-100	31847.13	29079.45	1.095
12-150	47770.70	60121.38	0.795
12-200	63694.27	91163.30	0.699

## **APPENDIX K**

Relationship between Tangent Poisson's ratio and Vertical strain of monotonic loading  
test on air-cement treated soil

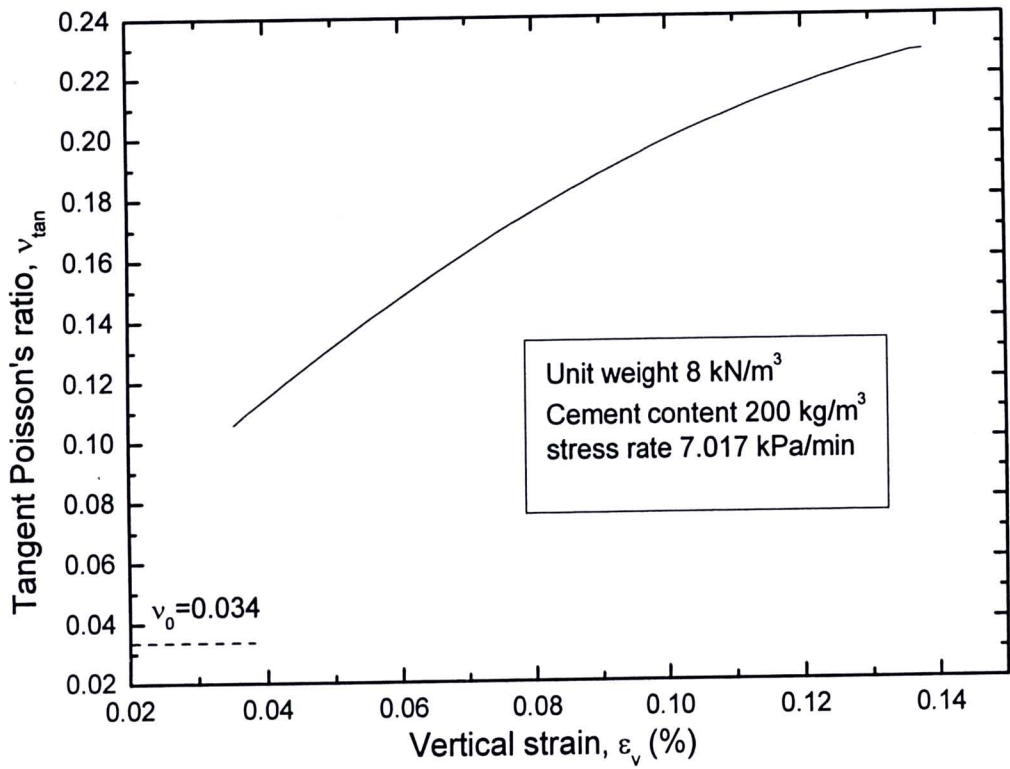


(a)

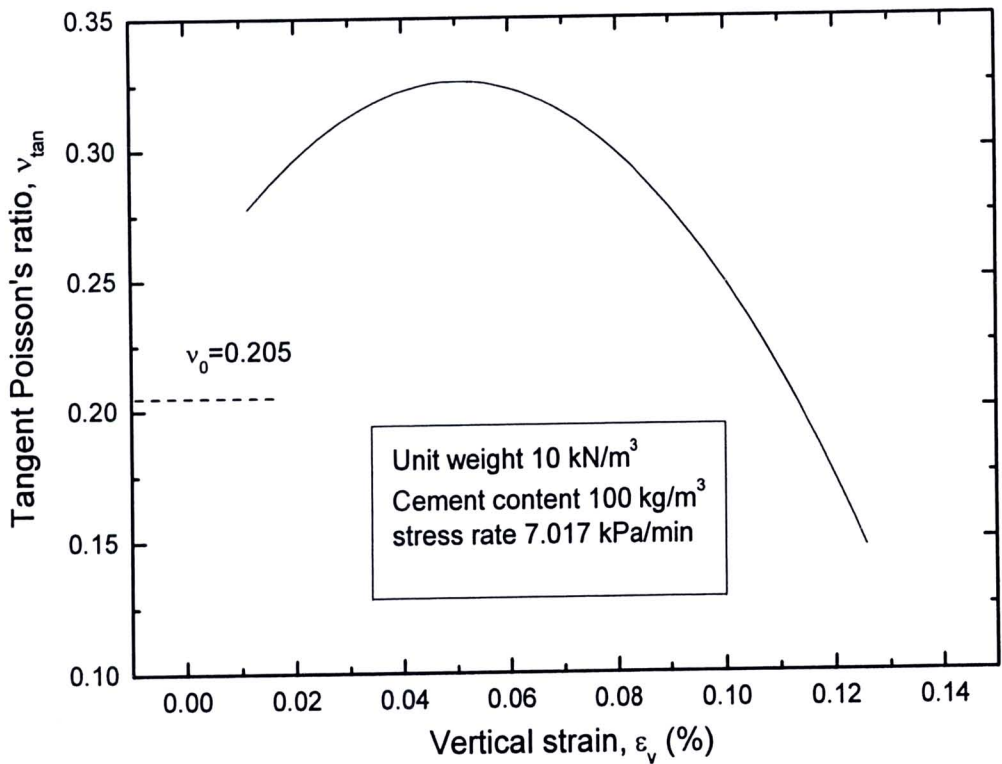


(b)

**Figure K.1** Relationship between Tangent Poisson's ratio and Vertical strain of monotonic loading test on air-cement treated soil  
 (a) Unit weight 8 kN/m<sup>3</sup> and cement content 100 kg/m<sup>3</sup>  
 (b) Unit weight 8 kN/m<sup>3</sup> and cement content 150 kg/m<sup>3</sup>

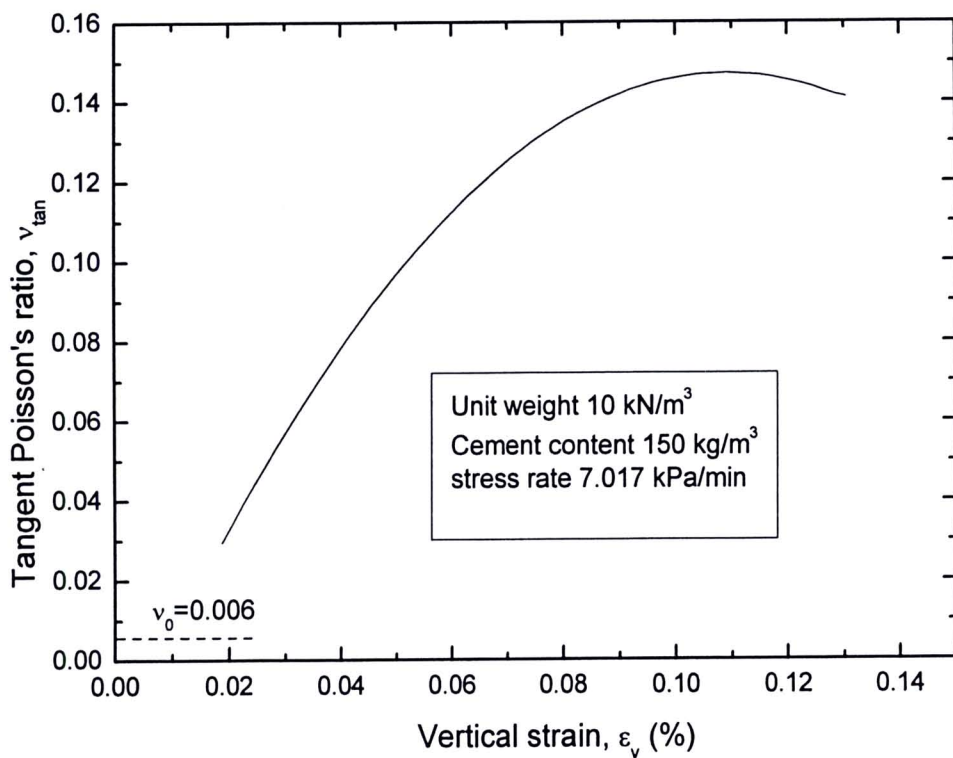


(c)

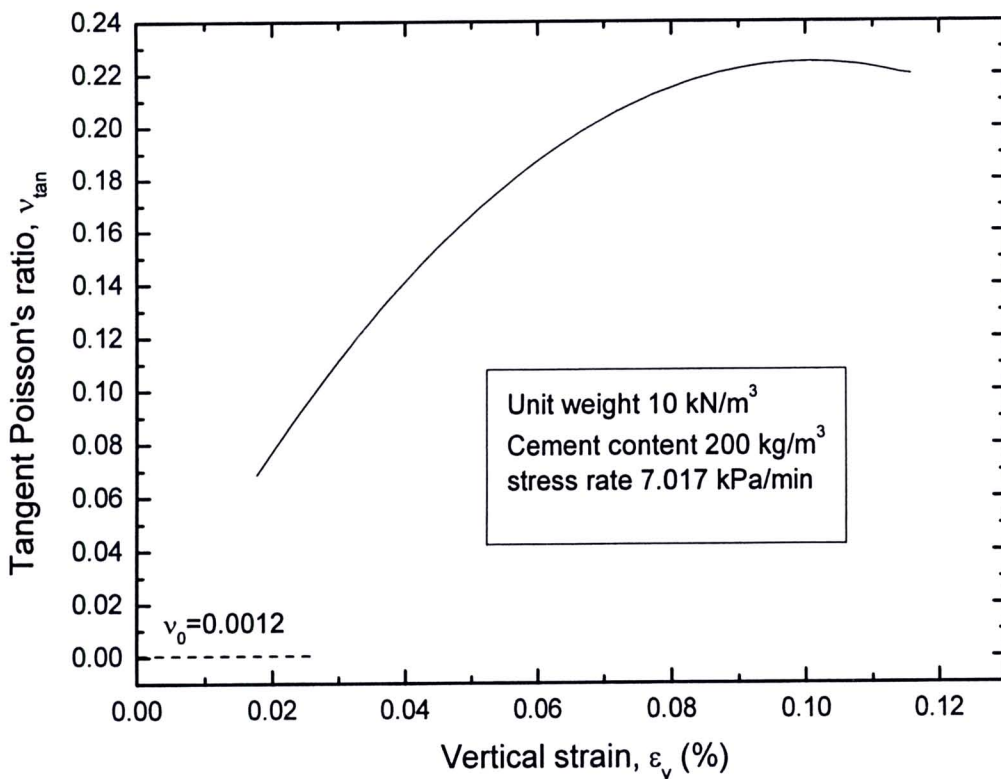


(d)

**Figure K.1 (Cont.)** (c) Unit weight 8 kN/m<sup>3</sup> and cement content 200 kg/m<sup>3</sup>  
 (d) Unit weight 10 kN/m<sup>3</sup> and cement content 100 kg/m<sup>3</sup>

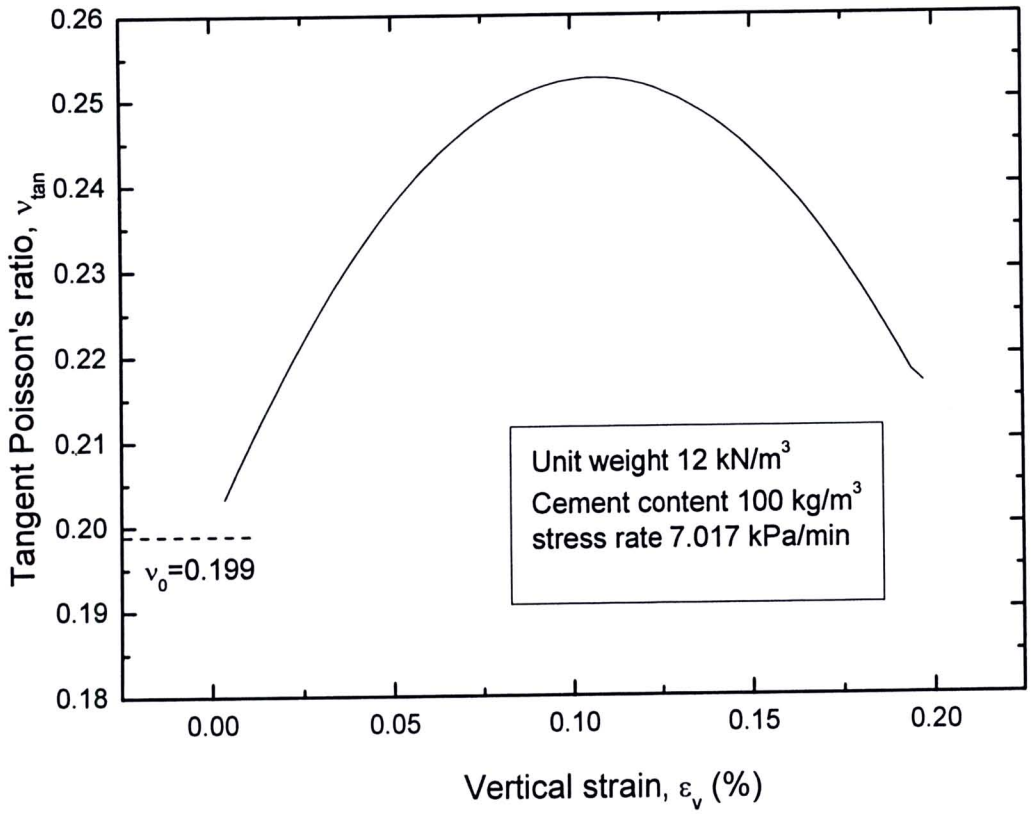


(e)

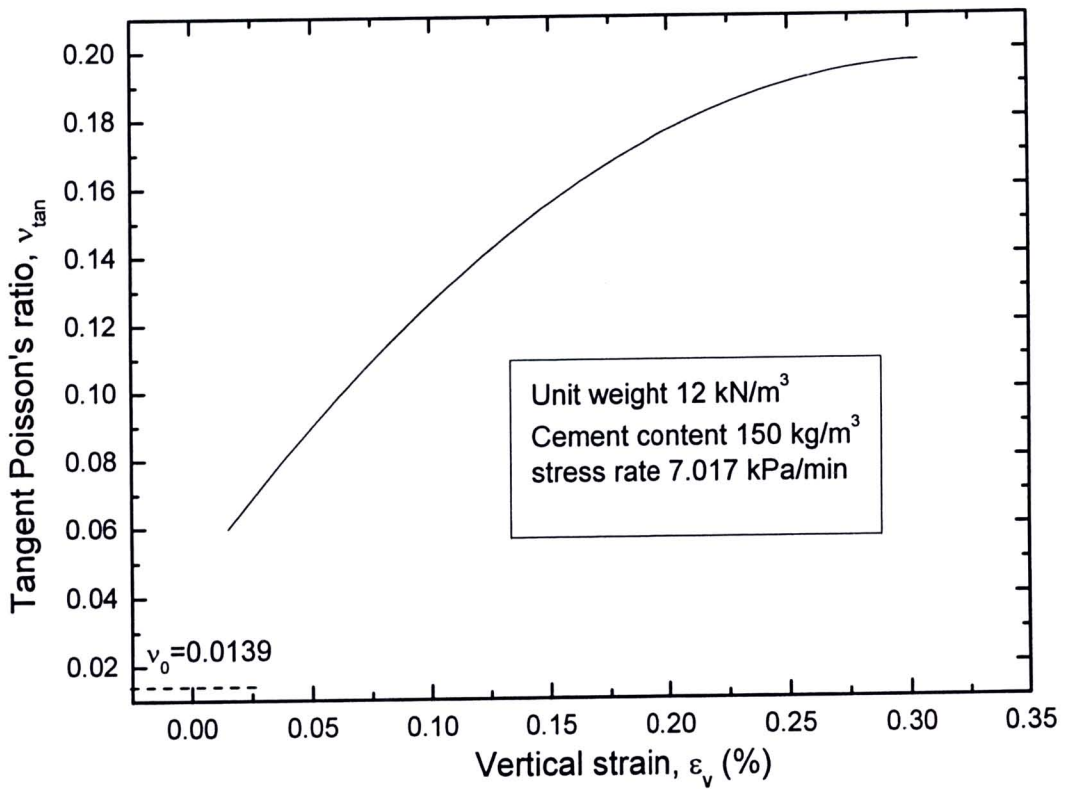


(f)

**Figure K.1 (Cont.)** (e) Unit weight  $10 \text{ kN/m}^3$  and cement content  $150 \text{ kg/m}^3$   
 (f) Unit weight  $10 \text{ kN/m}^3$  and cement content  $200 \text{ kg/m}^3$

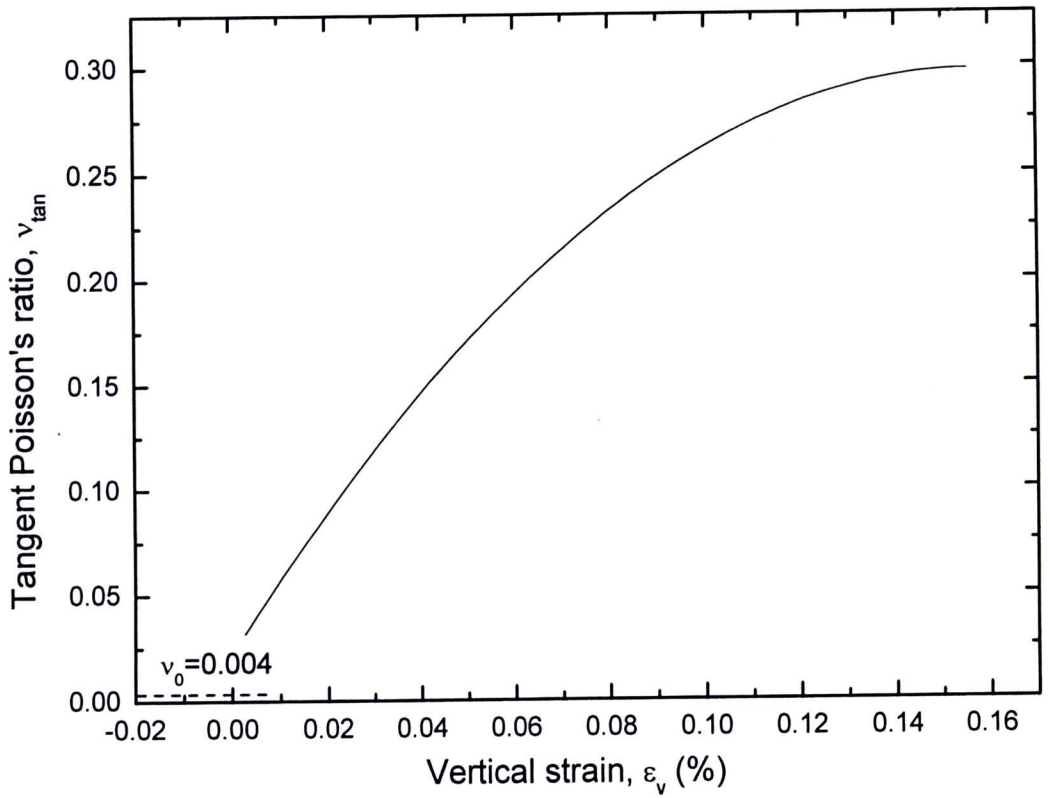


(g)



(h)

**Figure K.1 (Cont.)** (g) Unit weight 12 kN/m<sup>3</sup> and cement content 100 kg/m<sup>3</sup>  
 (h) Unit weight 12 kN/m<sup>3</sup> and cement content 150 kg/m<sup>3</sup>

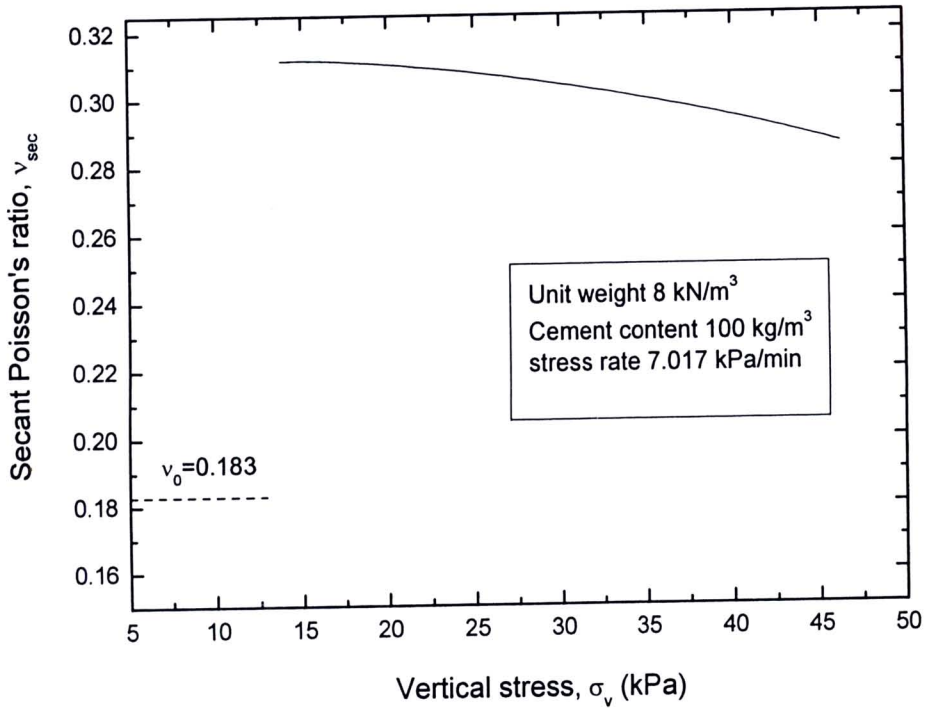


(i)

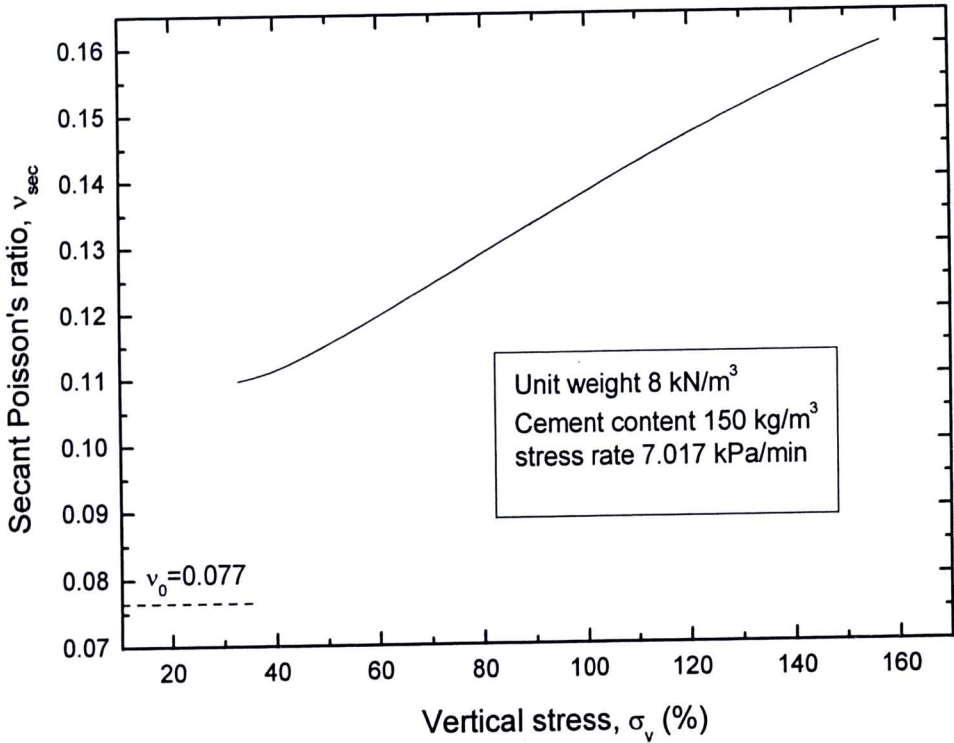
**Figure K.1 (Cont.)** (i) Unit weight  $12 \text{ kN/m}^3$  and cement content  $200 \text{ kg/m}^3$

## **APPENDIX L**

Relationship between Secant Poisson's ratio and Vertical stress of monotonic loading  
test on air-cement treated soil

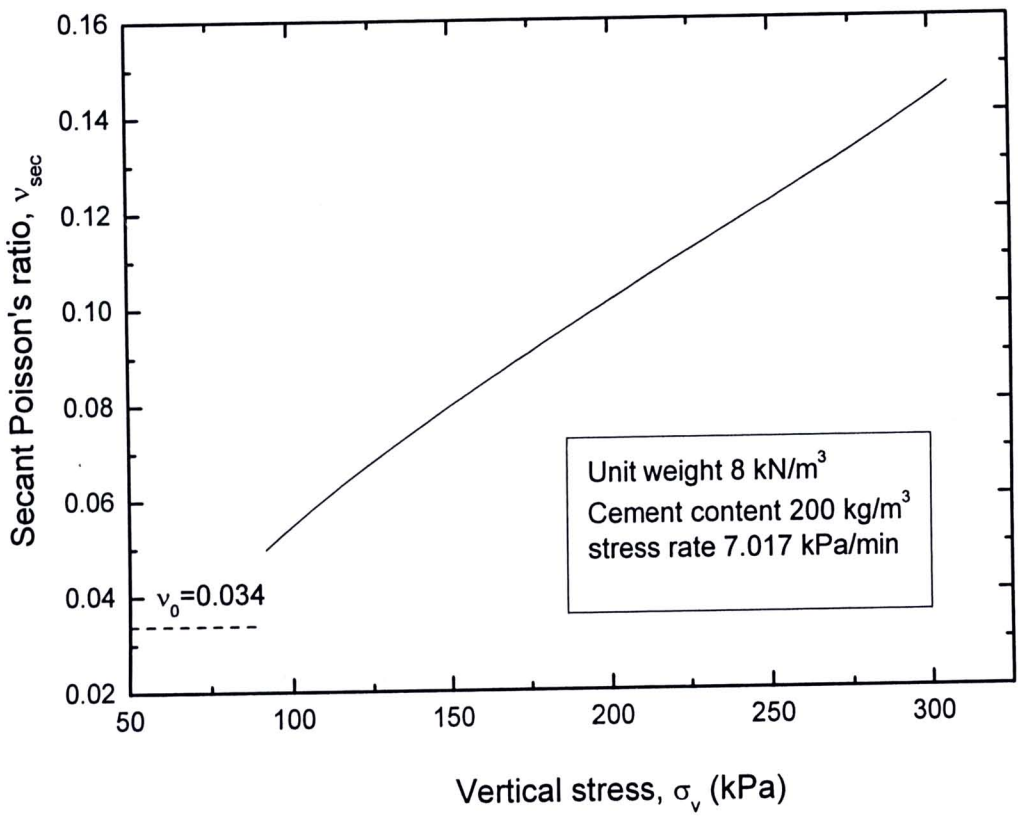


(a)

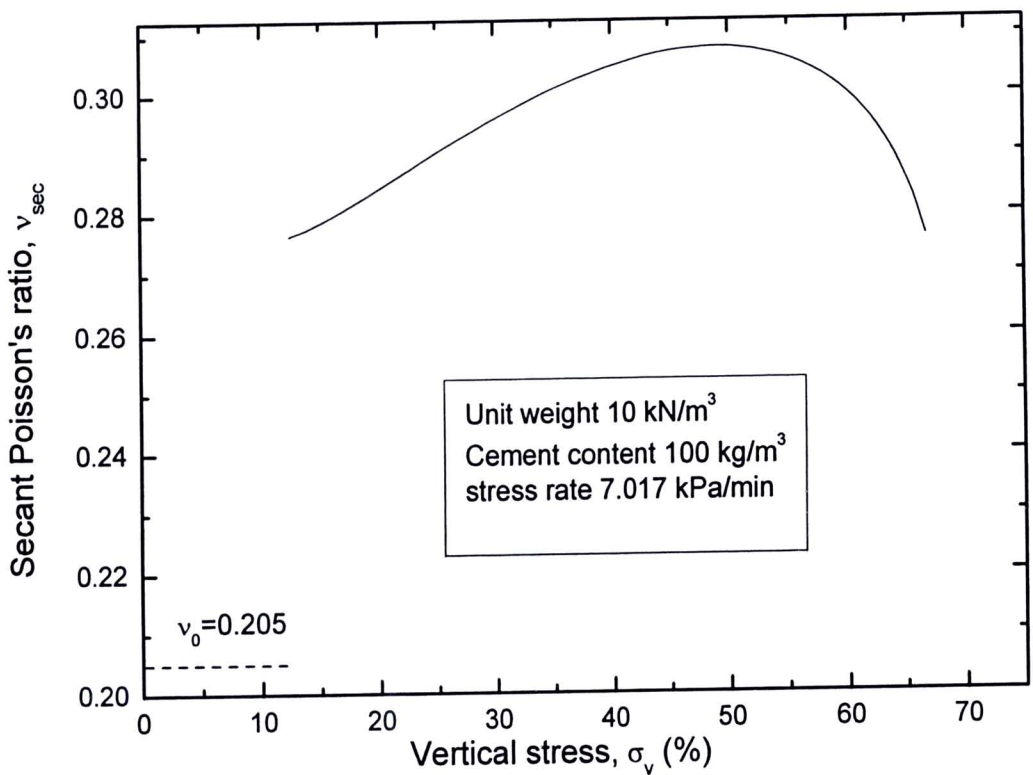


(b)

**Figure L.1** Relationship between Secant Poisson's ratio and Vertical stress of monotonic loading test on air-cement treated soil  
 (a) Unit weight 8 kN/m<sup>3</sup> and cement content 100 kg/m<sup>3</sup>  
 (b) Unit weight 8 kN/m<sup>3</sup> and cement content 150 kg/m<sup>3</sup>

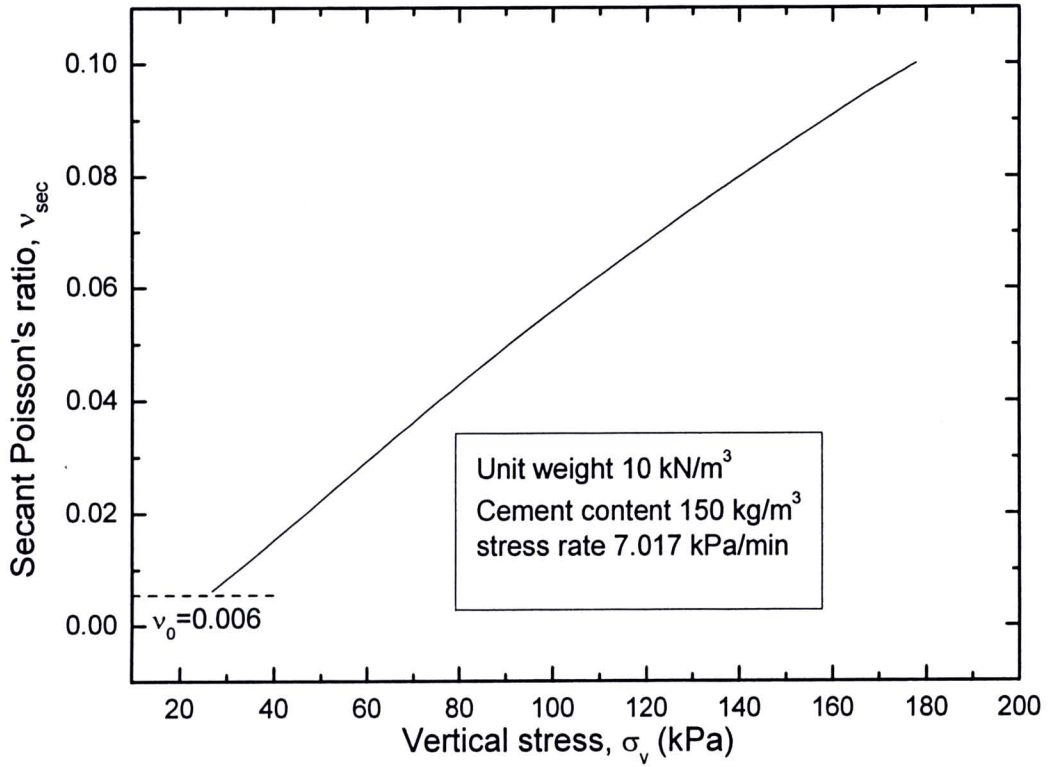


(c)

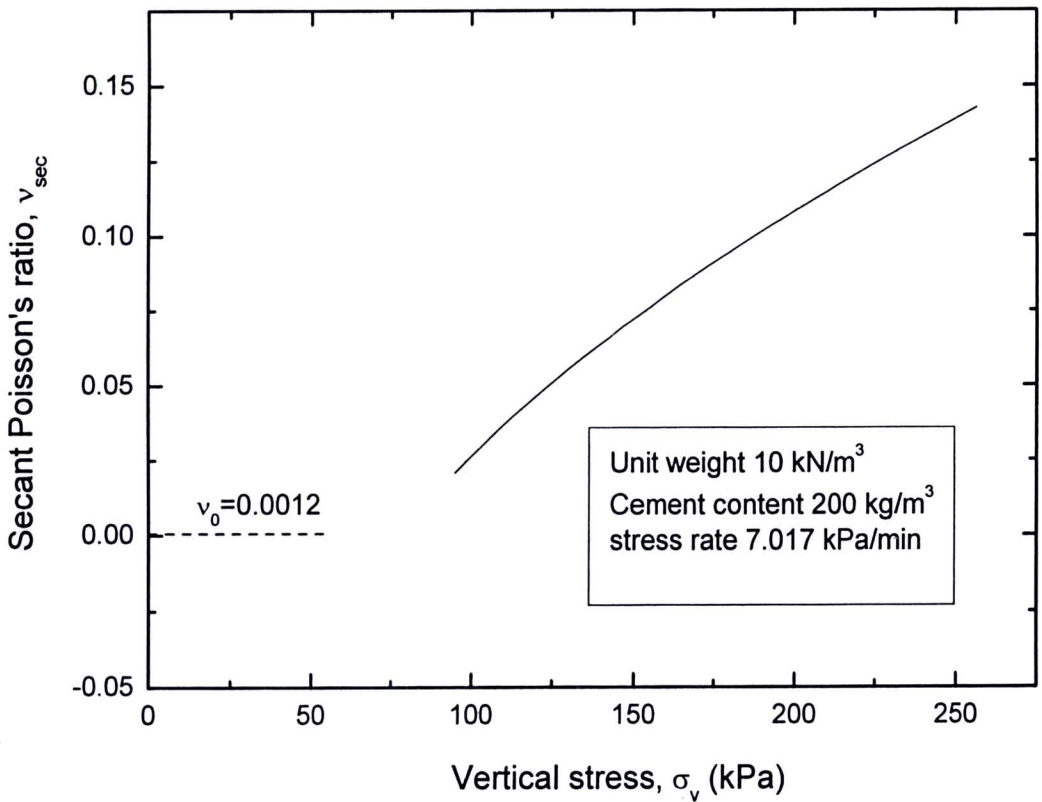


(d)

**Figure L.1 (Cont.)** (c) Unit weight  $8 \text{ kN/m}^3$  and cement content  $200 \text{ kg/m}^3$   
 (d) Unit weight  $10 \text{ kN/m}^3$  and cement content  $100 \text{ kg/m}^3$

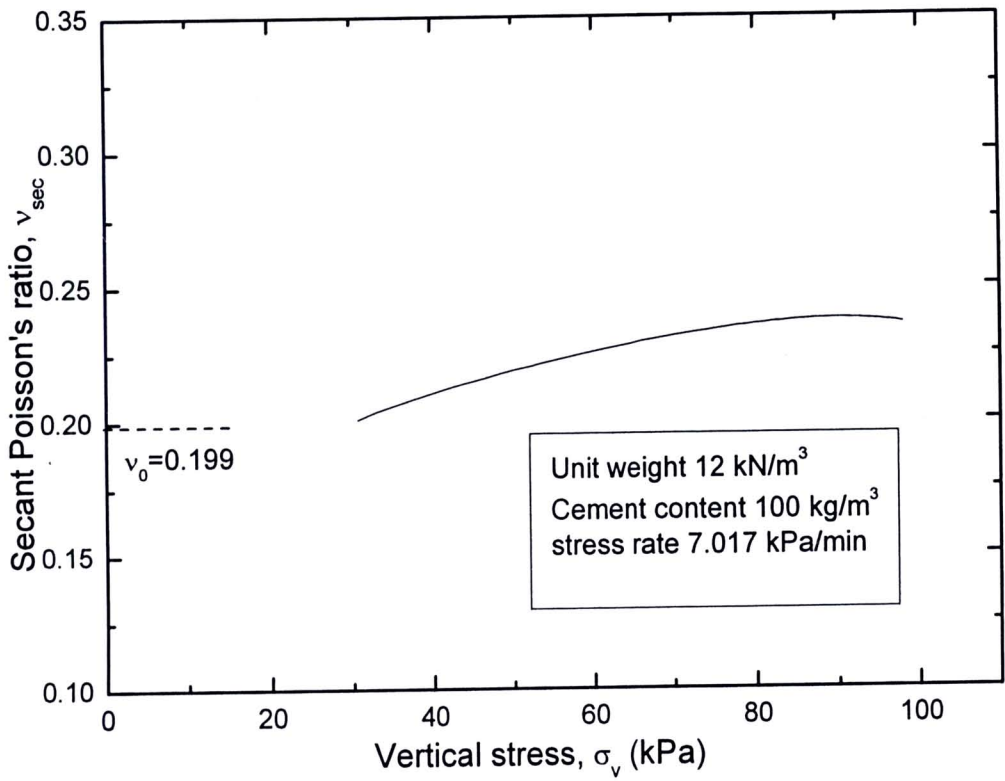


(e)

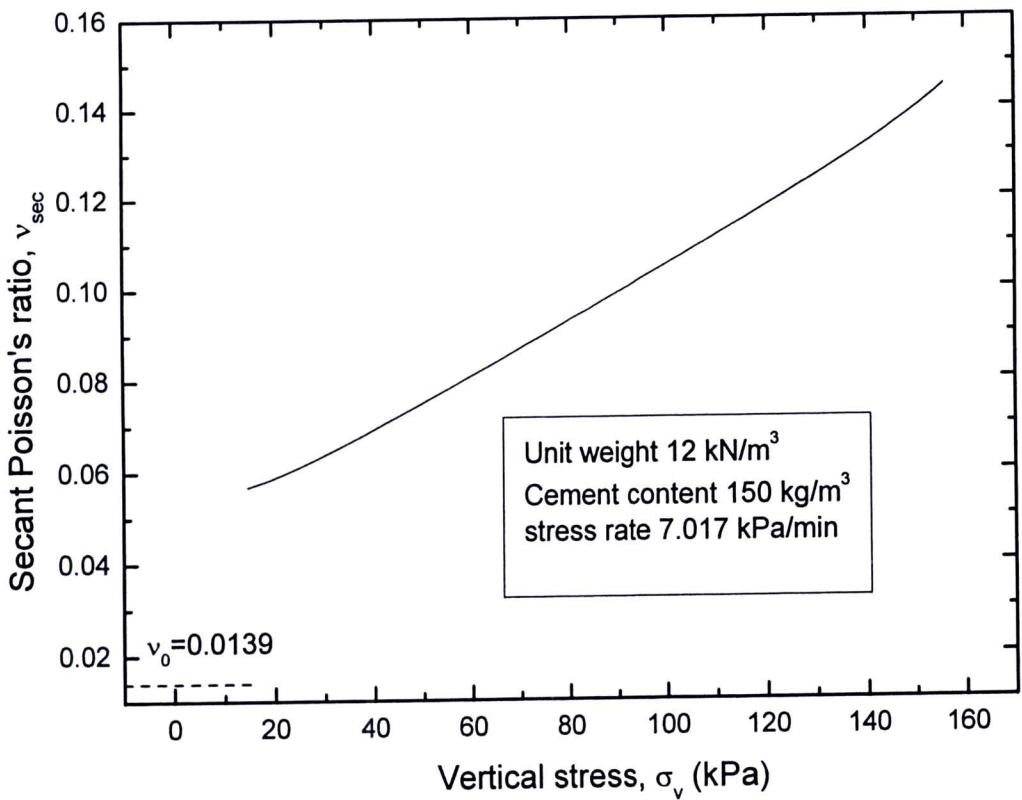


(f)

**Figure L.1 (Cont.)** (e) Unit weight  $10 \text{ kN/m}^3$  and cement content  $150 \text{ kg/m}^3$   
 (f) Unit weight  $10 \text{ kN/m}^3$  and cement content  $200 \text{ kg/m}^3$

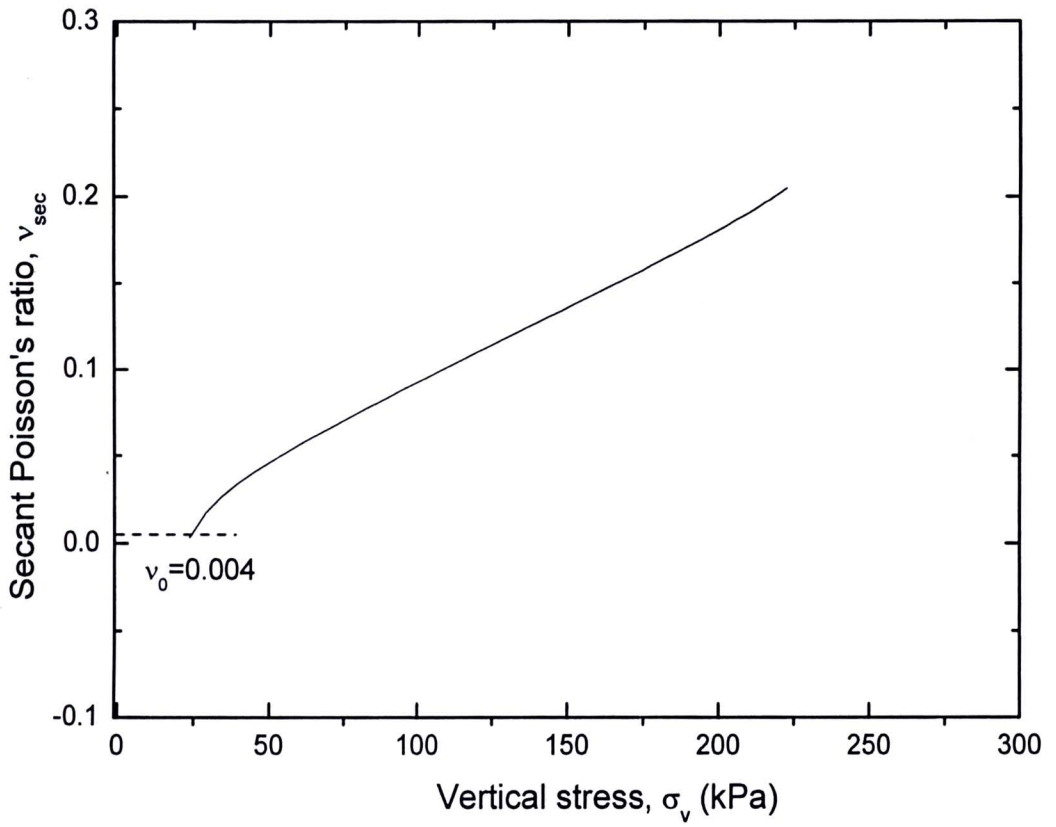


(g)



(h)

**Figure L.1 (Cont.)** (g) Unit weight  $12 \text{ kN/m}^3$  and cement content  $100 \text{ kg/m}^3$   
 (h) Unit weight  $12 \text{ kN/m}^3$  and cement content  $150 \text{ kg/m}^3$

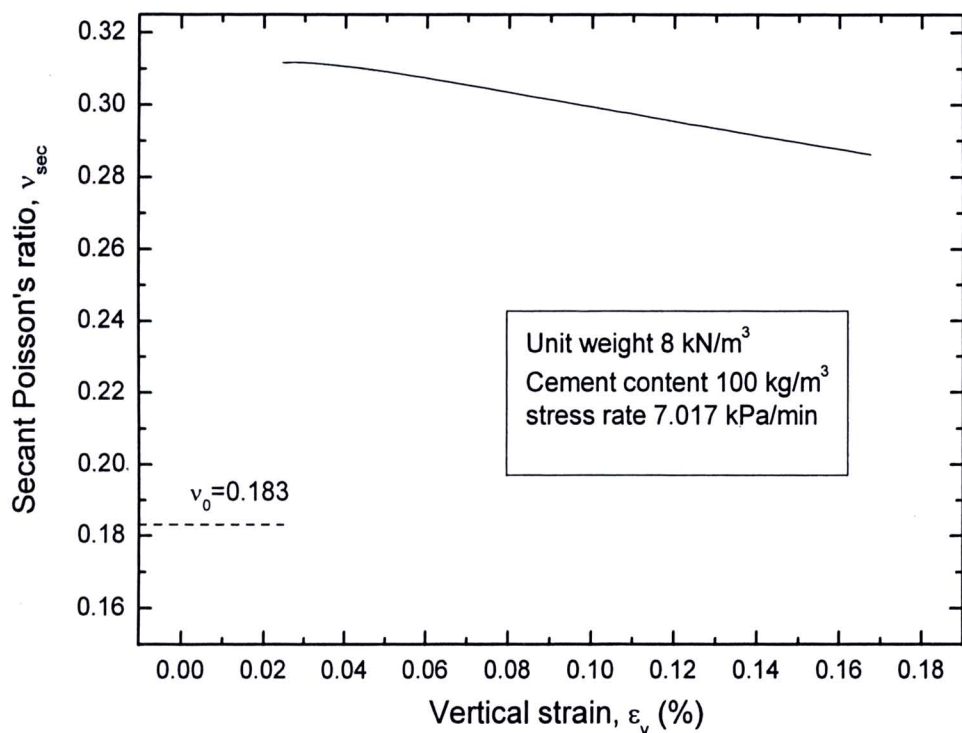


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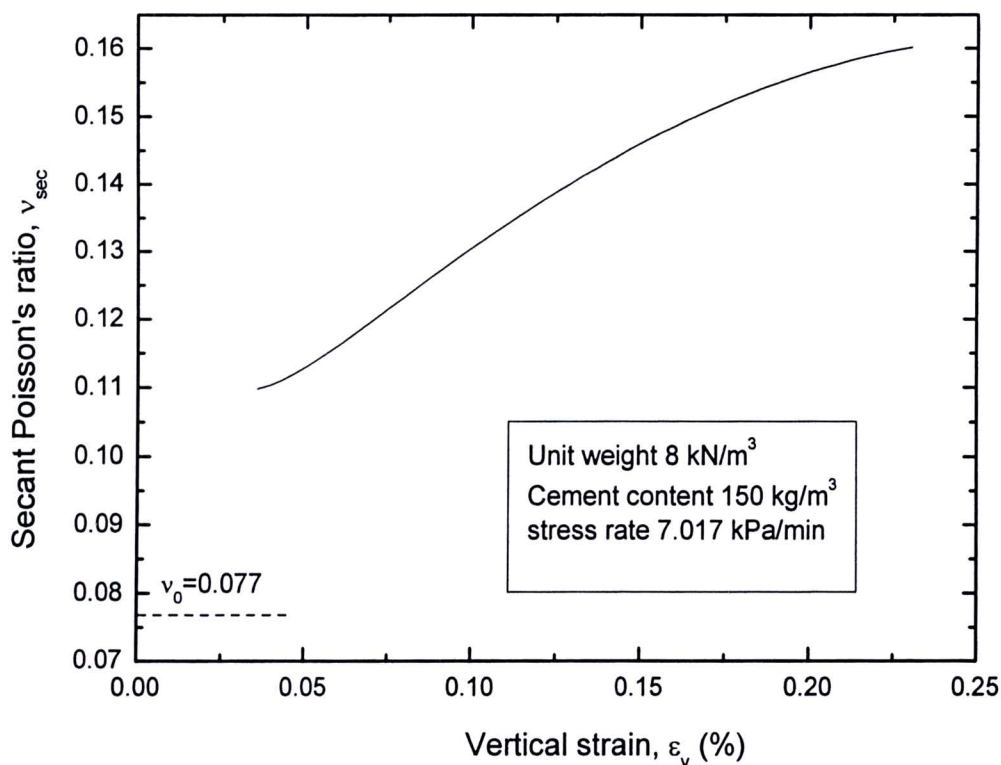
**Figure L.1 (Cont.)** (i) Unit weight  $12 \text{ kN/m}^3$  and cement content  $200 \text{ kg/m}^3$

## **APPENDIX M**

Relationship between Secant Poisson's ratio and Vertical strain of monotonic loading test on air-cement treated soil

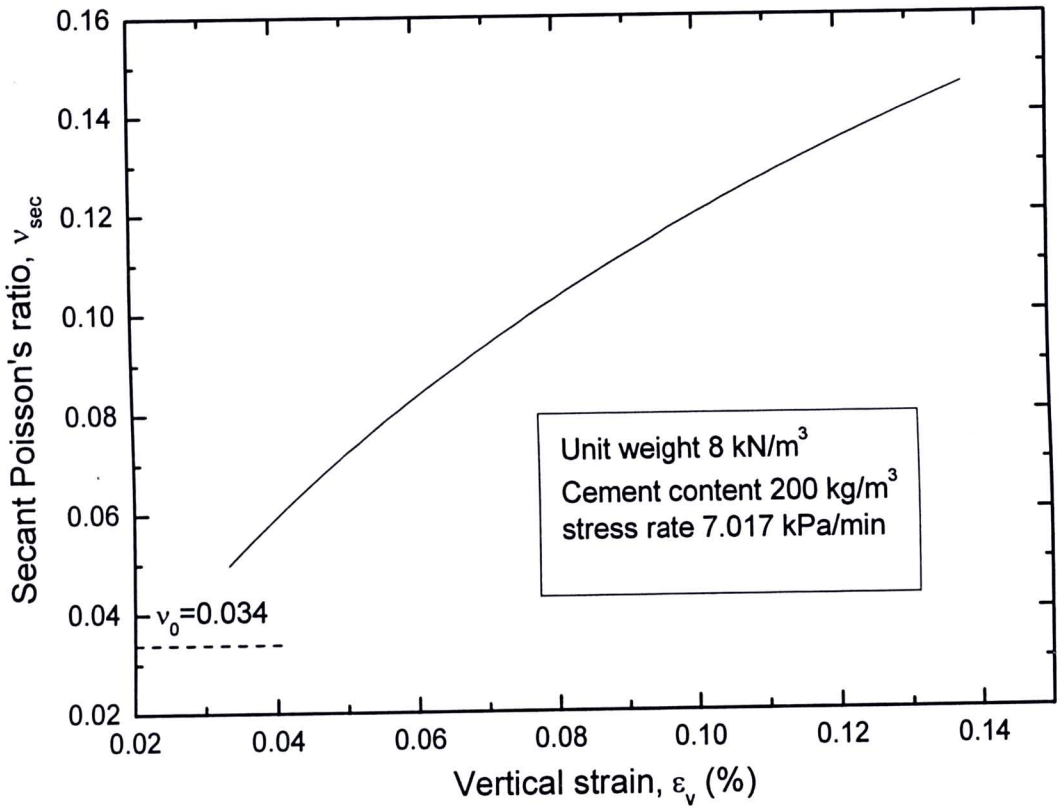


(a)

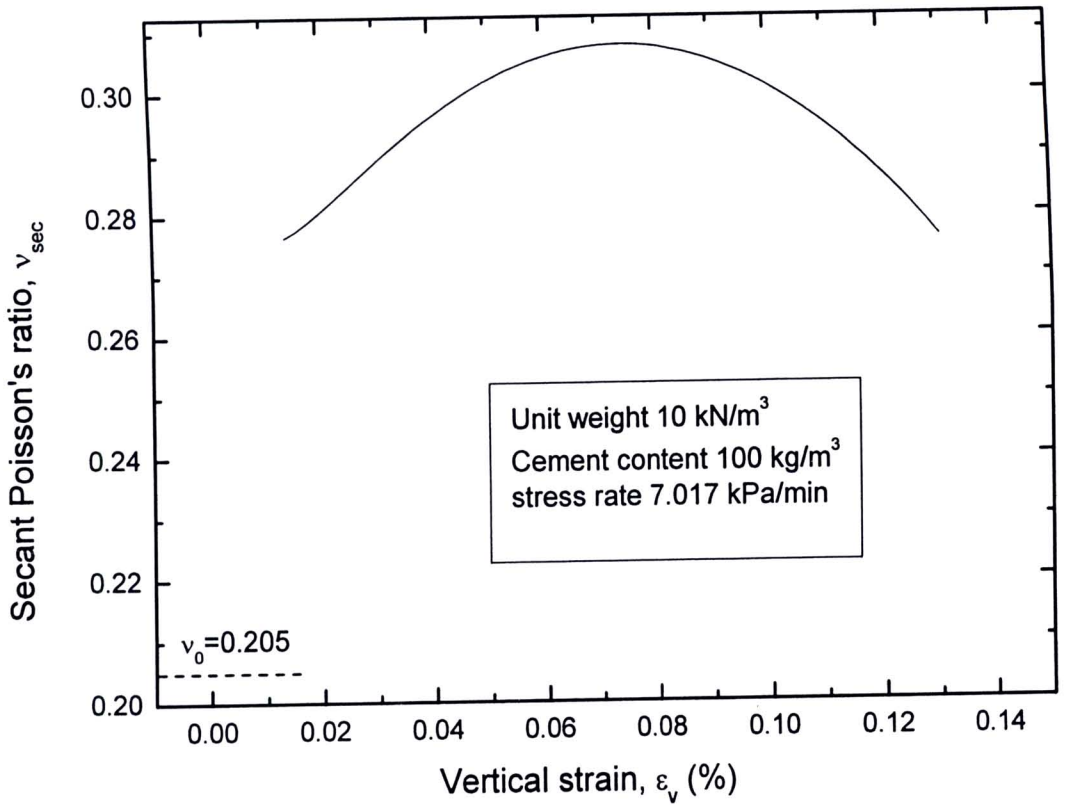


(b)

**Figure M.1** Relationship between Secant Poisson's ratio and Vertical strain of monotonic loading test on air-cement treated soil  
 (a) Unit weight  $8 \text{ kN/m}^3$  and cement content  $100 \text{ kg/m}^3$   
 (b) Unit weight  $8 \text{ kN/m}^3$  and cement content  $150 \text{ kg/m}^3$

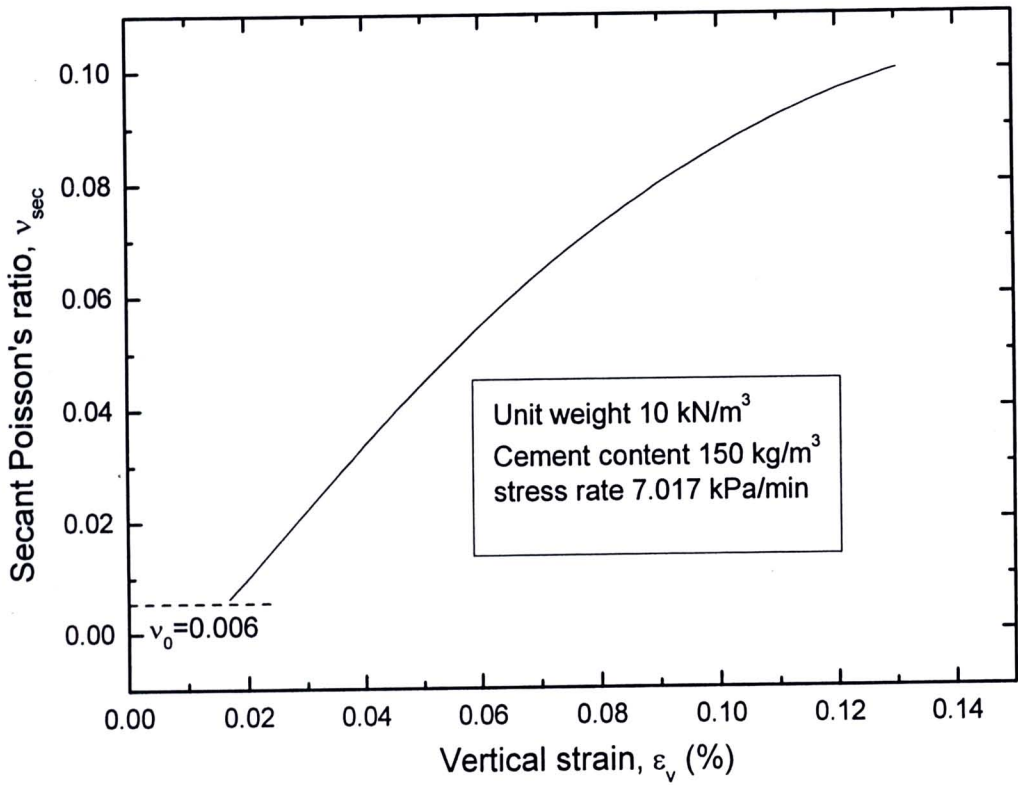


(c)

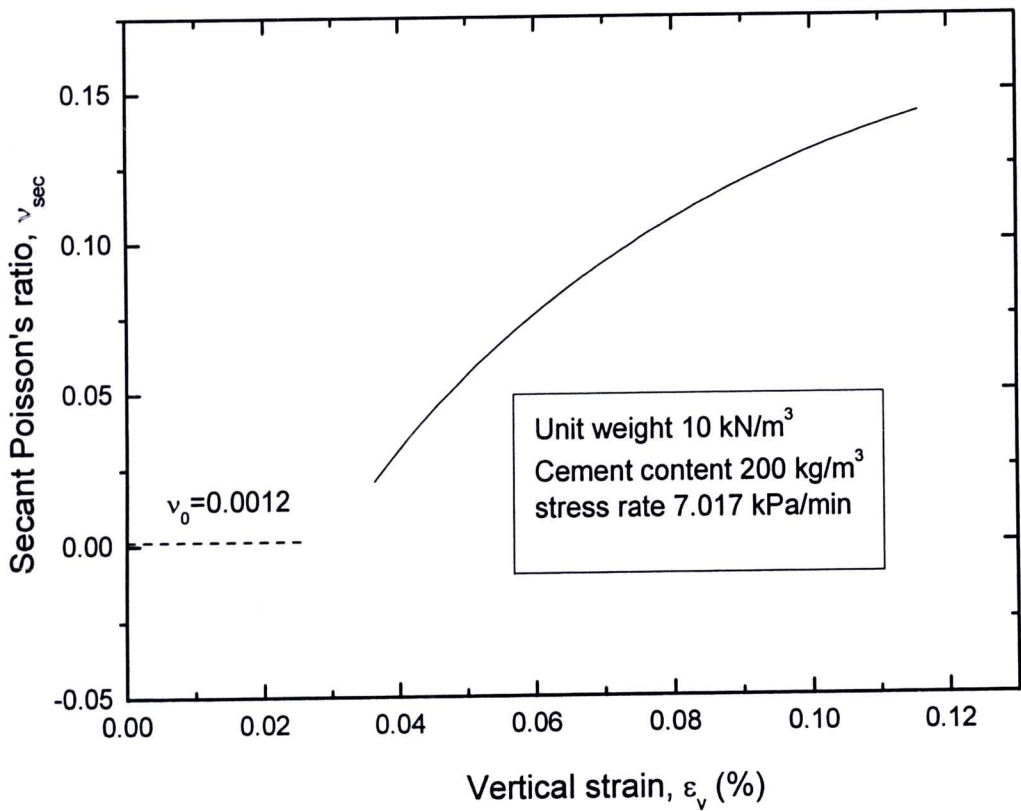


(d)

**Figure M.1 (Cont.)** (c) Unit weight  $8 \text{ kN/m}^3$  and cement content  $200 \text{ kg/m}^3$   
 (d) Unit weight  $10 \text{ kN/m}^3$  and cement content  $100 \text{ kg/m}^3$

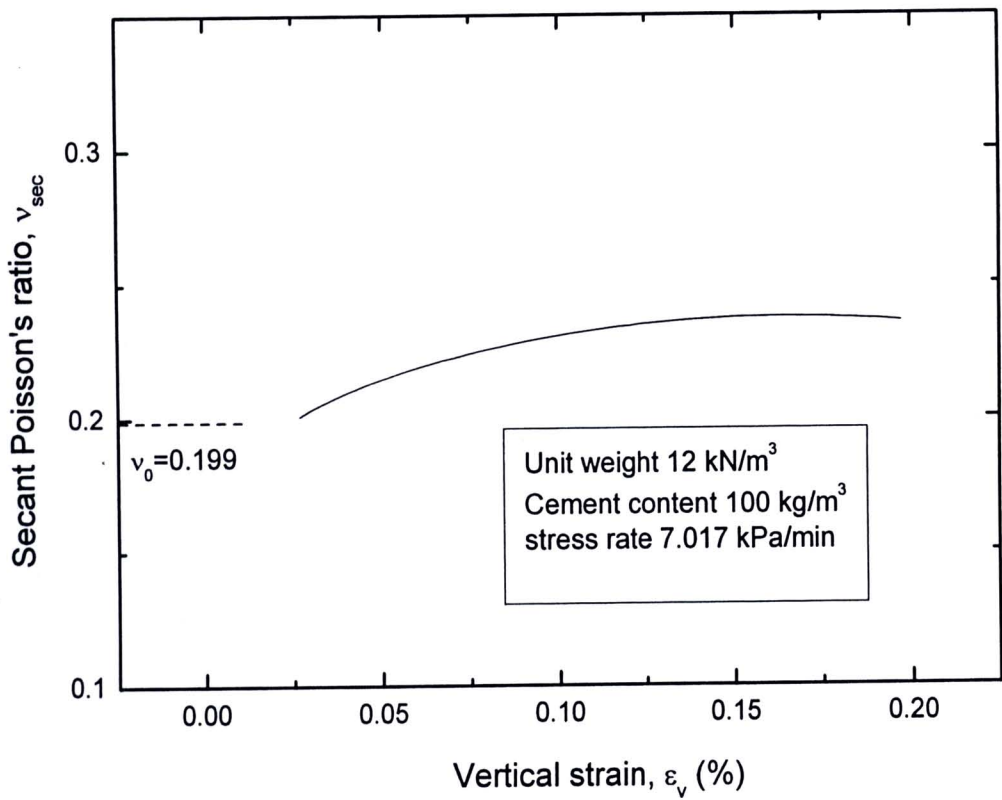


(e)

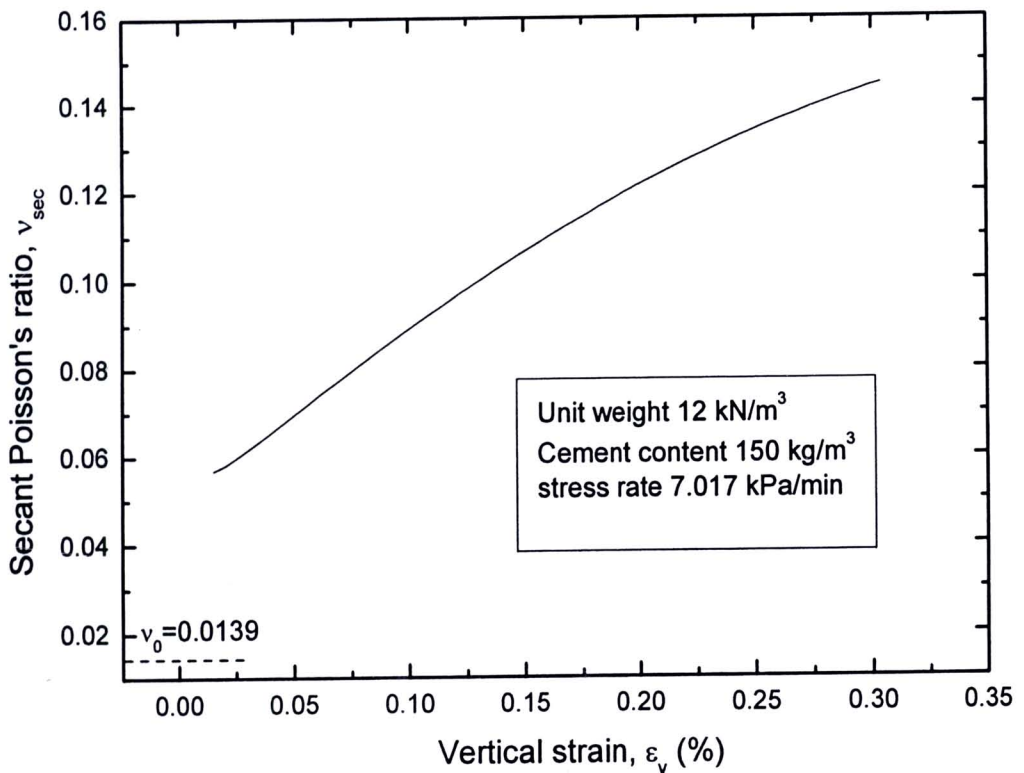


(f)

**Figure M.1 (Cont.)** (e) Unit weight  $10 \text{ kN/m}^3$  and cement content  $150 \text{ kg/m}^3$   
 (f) Unit weight  $10 \text{ kN/m}^3$  and cement content  $200 \text{ kg/m}^3$

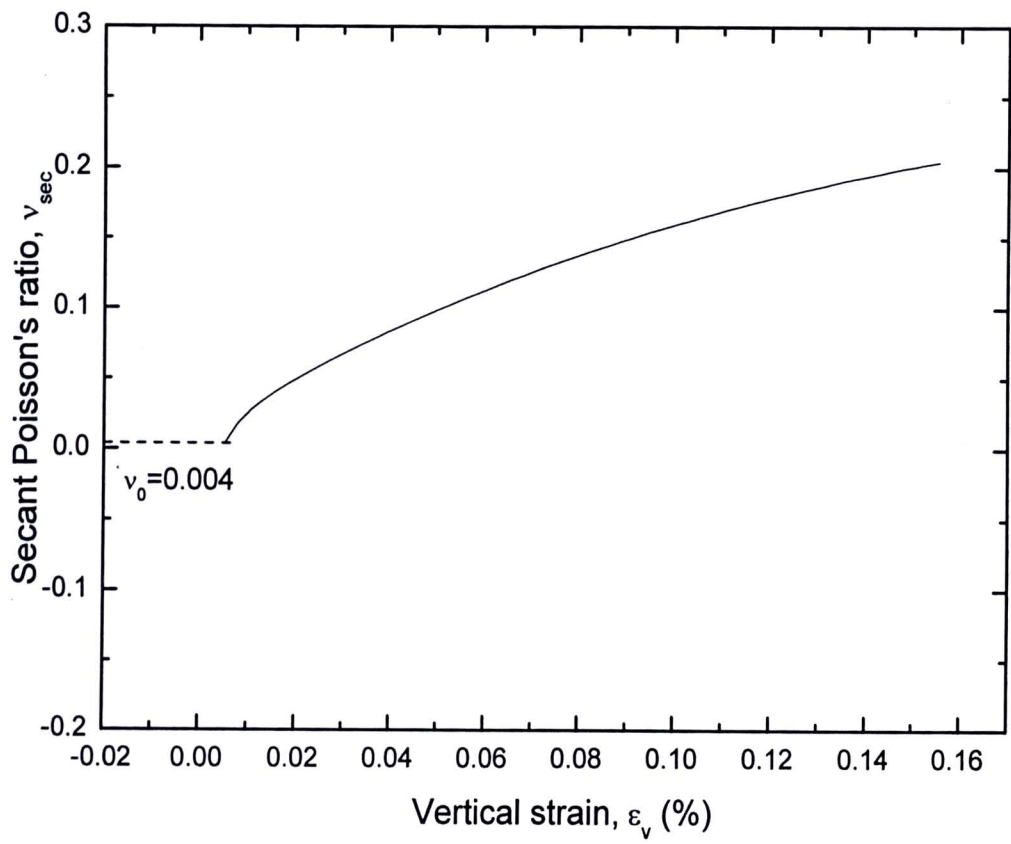


(g)



(h)

**Figure M.1 (Cont.)** (g) Unit weight 12 kN/m<sup>3</sup> and cement content 100 kg/m<sup>3</sup>  
 (h) Unit weight 12 kN/m<sup>3</sup> and cement content 150 kg/m<sup>3</sup>

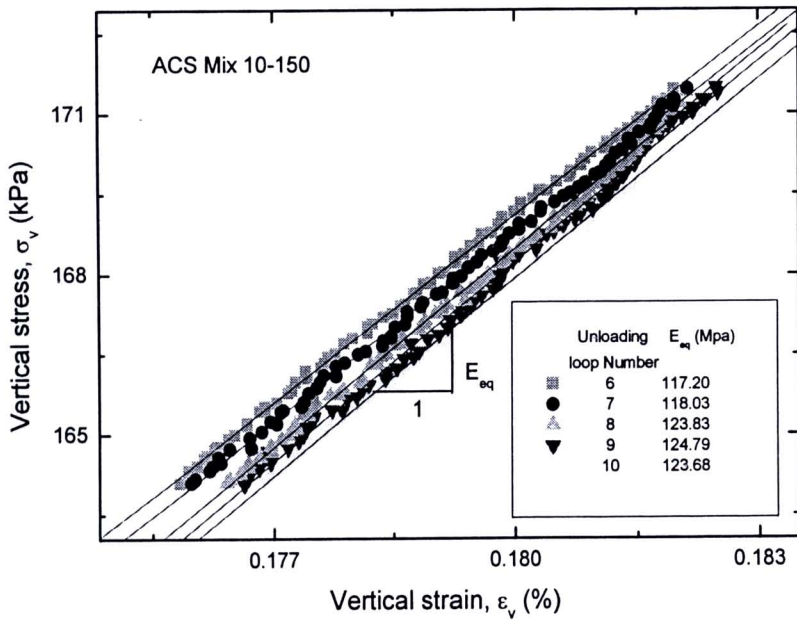


(i)

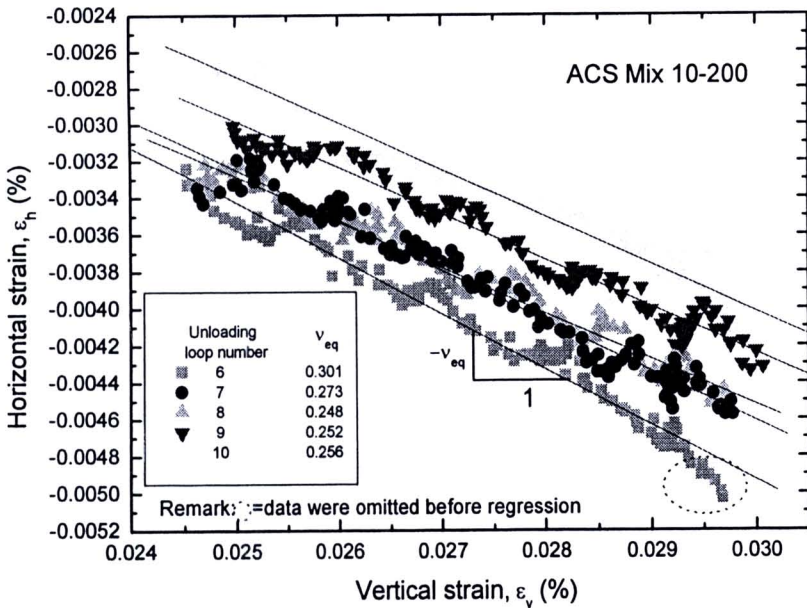
**Figure M.1 (Cont.)** (i) Unit weight  $12 \text{ kN/m}^3$  and cement content  $200 \text{ kg/m}^3$

## **APPENDIX N**

Evaluation of equivalent modulus and Poisson's ratio



(a)



(b)

**Figure N.1** Evaluation of equivalent modulus and Poisson's ratio.

(a) Evaluation of equivalent modulus obtained from  $\epsilon_v$  measured by LDTs at unloading from the sixth to the tenth loop at level  $\sigma_v$  equal to 171.25 kPa on Unit weight  $10 \text{ kN/m}^3$ , cement content  $150 \text{ kg/m}^3$

(b) Evaluation of equivalent Poisson's ratio obtained from  $\epsilon_v$  measured by LDTs and  $\epsilon_h$  measured by CGs at unloading from the sixth to the tenth loop at level  $\sigma_v$  equal to 78.93 kPa on Unit weight  $10 \text{ kN/m}^3$ , cement content  $200 \text{ kg/m}^3$

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**PUBLICATION** Songprom, A., Jongpradist, P. and Kongkitkul, W.  
2011, "Cyclic loading behaviour of air-cement  
treated soil", **Proceedings of the 16<sup>th</sup> National  
Convention on Civil Engineering**, May 18-20,  
Chonburi, Thailand, p.105.




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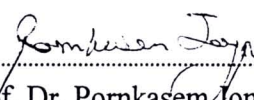
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Student

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