

	SOIL ENGINEERING SERVICES (SES) خدمات مهندسی مکانیک خاک	
	PROJ NO: 1347-EE-PEP-GEO-001-B	REV: B
	SUBJECT: GEOTECHNICAL INVESTIGATION, PHASE I, FACTUAL REPORT, SOUTH ALUMINIUM SMELTER (SALCO) IRAN	

Enclosure M

Pressuremeter Tests

Pressuremeter Testing in Soils

ASTM D 4719

Boring No.: BH-1	Type of Soil: Clay	Project :
Boring Diameter : 66 mm	Drilling Method : Coring	Client :
Depth (m): 4.0 to 6.00	Depth of Probe Center Point (m): 5.00	Location :
Test A Equal pressure increment method ☒ Method : B Equal volume increment method ☐	Type of Tube : 63 mm O.D.Slotted	Date: 2015.04.27
Hydrostatic Pressure on probe (MPa) : 0.0050	G . W . L . :	Time : 11:30
	Vi : 0 cm3	Page: 1

Volume of measuring portion of the unflated probe at 0 volume reading at ground surface , cm³ (V_o) : 535

Calibration Data						Pressuremeter Test Data								Pressuremeter Test Data						
Steps	Pressure PR (MPa)	Time Second	Volume VR (cm3)	Δ _v V60-V30	Δ _v Vsn-Vsn-1	Steps	Pressure PR (MPa)	Time Second	Volume VR (cm3)	Pressure (Corrected)	Δ _v V60-V30	Δ _v Vsn-Vsn-1	Steps	Pressure PR (MPa)	Time Second	Volume VR(cm3)	Pressure (Corrected)	Δ _v V60-V30	Δ _v Vsn-Vsn-2	
1	0.00	15	0	0	0	1	0	15	0	0.00	0	0								
		30	0					30	0											
		60	0					60	0											
2	0.05	15	20	2	22	2	0.05	15	5	0.08	0	7								
		30	20					30	7											
		60	22					60	7											
3	0.10	15	40	3	23	3	0.10	15	22	0.10	0	15								
		30	42					30	22											
		60	45					60	22											
4	0.15	15	60	10	35	4	0.15	15	30	0.11	3	13								
		30	70					30	32											
		60	80					60	35											
5	0.20	15	95	20	45	5	0.2	15	47	0.13	2	17								
		30	105					30	50											
		60	125					60	52											
6	0.25	15	150	30	75	6	0.25	15	60	0.15	3	13								
		30	170					30	62											
		60	200					60	65											
7						7	0.3	15	70	0.19	5	10								
								30	70											
								60	75											
8						8	0.35	15	87	0.22	2	17								
								30	90											
								60	92											
9						9	0.4	15	95	0.25	5	13								
								30	100											
								60	105											
10						10	0.45	15	115	0.30	5	20								
								30	120											
								60	125											
11						11	0.5	15	135	0.33	5	25								
								30	145											
								60	150											
12						12	0.55	15	157	0.35	5	15								
								30	160											
								60	165											
13						13	0.60	15	180	0.40	10	35								
								30	190											
								60	200											
14						14	0.65	15	210	0.42	10	30								
								30	220											
								60	230											
15						15	0.7	15	245	0.45	10	30								
								30	250											
								60	260											
16						16	0.75	15	285	0.49	20	60								
								30	300											
								60	320											

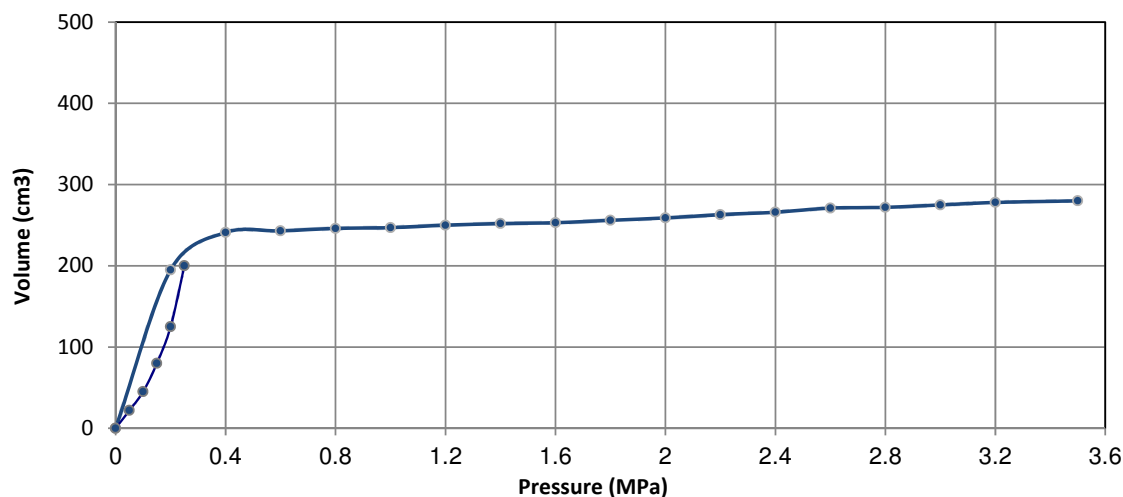
Pressuremeter Testing in Soils

ASTM D4719

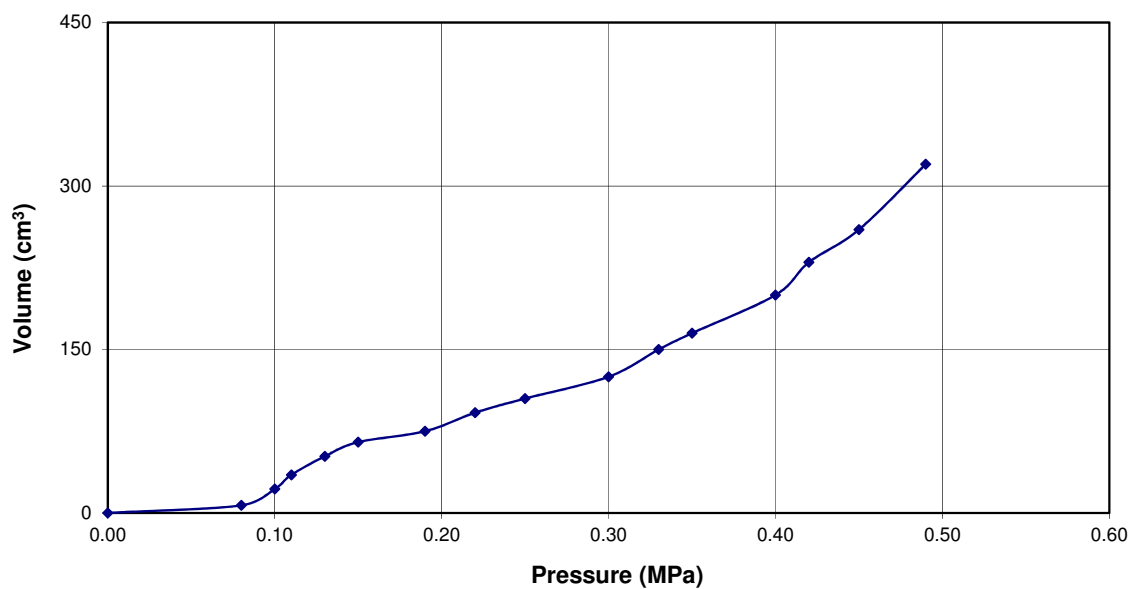
Boring No.: BH-1	Type of Soil: Clay	Project : Lamerd Aluminum Co
Boring Diameter : 66 mm	Drilling Method : Coring	Client : NFC
Depth of Stage : 4.0 to 6.0	Depth of Probe center Point (m): 5.00	Location : lamerd
Test Method : A Equal pressure increment method ☒	Type of Tube : 63mm O.D.Slotted	Date: 2015.04.27
B Equal volume increment method ☐	G.W.L.:	Time : 11:30
Hydrostatic Pressure on probe (P_w)(MPa) : 0.005		Page: 2

Volume of measuring portion of the unflated probe at 0 volume reading at ground surface , cm^3 (V_o) :535

Calibration Chart



Pressuremeter Test Chart



Calculated by: Z.Khalili	$E_{\text{menard}} = 6.6$	MPa
	$P_0 = 0.15$	MPa
	$P_L = 0.69$	MPa



Pressuremeter Testing in Soils

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Boring No.: BH-1	Type of Soil: Clay	Project : Lamerd Aluminum Co
Boring Diameter : 66 mm	Drilling Method : Coring	Client : NFC
Depth (m): 9.0 to 11.00	Depth of Probe Center Point (m): 10.00	Location : lamerd
Test Method : A Equal pressure increment method ☒ B Equal volume increment method ☐	Type of Tube : 63 mm O.D.Slotted	Date: 2015.04.27
Hydrostatic Pressure on probe (MPa) : 0.0050	G . W . L . : Vi : 0 cm3	Time : 14:30
		Page: 1

Volume of measuring portion of the unflated probe at 0 volume reading at ground surface , cm^3 (V_o) : 535

Calibration Data						Pressuremeter Test Data										Pressuremeter Test Data								
Steps	Pressure PR (MPa)	Time Second	Volume VR (cm3)	Δ _v V60-V30	Δ _v Vsn-Vsn-1	Steps	Pressure PR (MPa)	Time Second	Volume VR (cm3)	Pressure (Corrected)	Δ _v V60-V30	Δ _v Vsn-Vsn-1	Steps	Pressure PR (MPa)	Time Second	Volume VR(cm3)	Pressure (Corrected)	Δ _v V60-V30	Δ _v Vsn-Vsn-2					
1	0.00	15	0	0	0	1	0	15	0	0.00	0	0												
		30	0					30	0															
		60	0					60	0															
2	0.05	15	20	2	22	2	0.05	15	10	0.15	0	10												
		30	20					30	10															
		60	22					60	10															
3	0.10	15	40	3	23	3	0.10	15	28	0.20	5	25												
		30	42					30	30															
		60	45					60	35															
4	0.15	15	60	10	35	4	0.15	15	45	0.25	5	15												
		30	70					30	45															
		60	80					60	50															
5	0.20	15	95	20	45	5	0.2	15	55	0.30	5	20												
		30	105					30	65															
		60	125					60	70															
6	0.25	15	150	30	75	6	0.25	15	95	0.35	45	85												
		30	170					30	110															
		60	200					60	155															
7						7	0.3	15	185	0.40	40	95												
								30	210															
								60	250															
8						8	0.35	15	285	0.45	30	90												
								30	310															
								60	340															
9																								
10																								
11																								
12																								
13																								
14																								
15																								
16																								

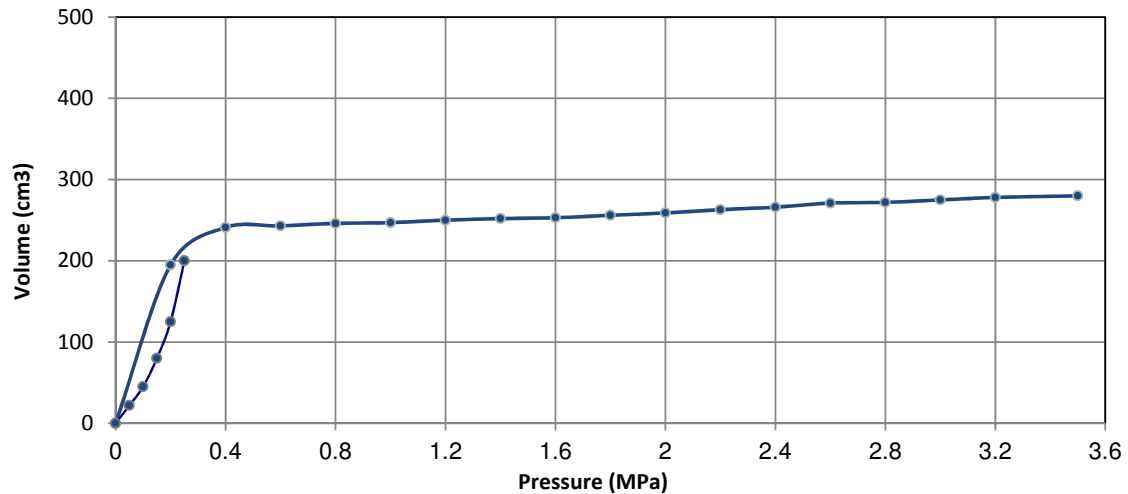
Pressuremeter Testing in Soils

ASTM D4719

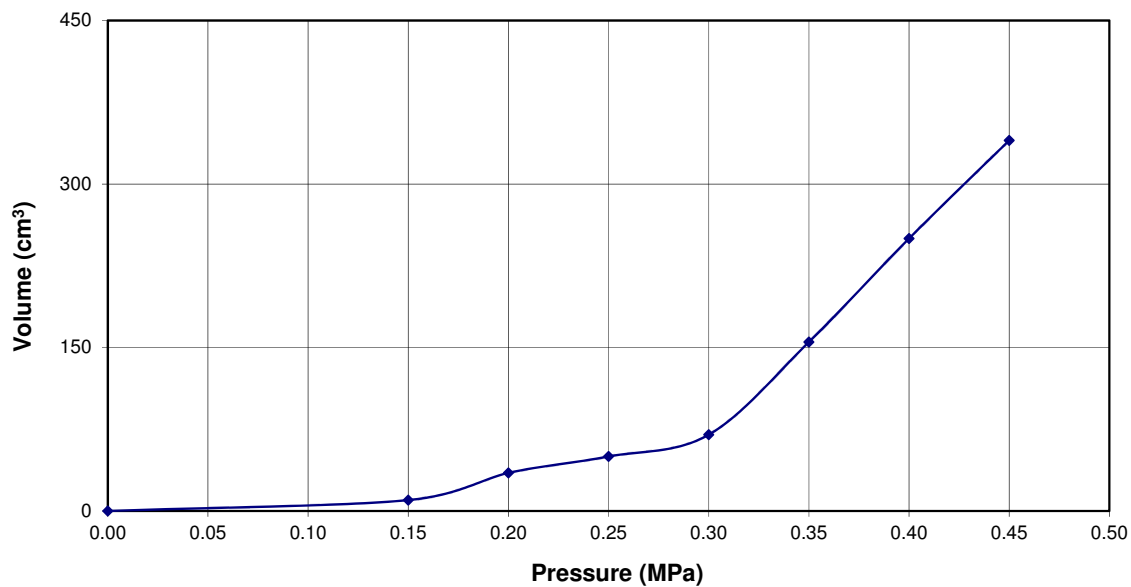
Boring No.: BH-1	Type of Soil: Clay	Project : Lamerd Aluminum Co
Boring Diameter : 66 mm	Drilling Method : Coring	Client : NFC
Depth of Stage : 9.0 to 11.0	Depth of Probe center Point (m): 10.00	Location : lamerd
Test Method : A Equal pressure increment method ☒	Type of Tube : 63mm O.D.Slotted	Date: 2015.04.27
B Equal volume increment method ☐	G.W.L.:	Time : 14:30
Hydrostatic Pressure on probe (P_w)(MPa) : 0.005		Page: 2

Volume of measuring portion of the unflated probe at 0 volume reading at ground surface , cm^3 (V_o) :535

Calibration Chart



Pressuremeter Test Chart



Calculated by: Z.Khalili	$E_{menard} = 4.6$	MPa
	$P_0 = 0.20$	MPa
	$P_L = 0.60$	MPa

Pressuremeter Testing in Soils

ASTM D 4719

Boring No.: BH-1	Type of Soil: Clay	Project : Lamerd Aluminum Co
Boring Diameter : 66 mm	Drilling Method : Coring	Client : NFC
Depth (m): 14.0 to 16.00	Depth of Probe Center Point (m): 15.00	Location : lamerd
Test Method : A Equal pressure increment method ☒ B Equal volume increment method ☐	Type of Tube : 63 mm O.D.Slotted	Date: 2015.04.27
Hydrostatic Pressure on probe (MPa) : 0.0050	G . W . L . :	Time : 15:30
	Vi : 0 cm3	Page: 1

Volume of measuring portion of the unflated probe at 0 volume reading at ground surface , cm³ (V_o) : 535

Calibration Data						Pressuremeter Test Data							Pressuremeter Test Data							
Steps	Pressure PR (MPa)	Time Second	Volume VR (cm3)	Δv V60-V30	Δv Vsn-Vsn-1	Steps	Pressure PR (MPa)	Time Second	Volume VR (cm3)	Pressure (Corrected)	Δv V60-V30	Δv Vsn-Vsn-1	Steps	Pressure PR (MPa)	Time Second	Volume VR(cm3)	Pressure (Corrected)	Δv V60-V30	Δv Vsn-Vsn-2	
1	0.00	15	0	0	0	1	0	15	0	0.00	0	0								
		30	0					30	0											
		60	0					60	0											
2	0.05	15	20	2	22	2	0.05	15	25	0.03	20	55								
		30	20					30	35											
		60	22					60	55											
3	0.10	15	40	3	23	3	0.10	15	100	0.06	10	70								
		30	42					30	115											
		60	45					60	125											
4	0.15	15	60	10	35	4	0.15	15	135	0.08	5	20								
		30	70					30	140											
		60	80					60	145											
5	0.20	15	95	20	45	5	0.2	15	150	0.11	0	10								
		30	105					30	155											
		60	125					60	155											
6	0.25	15	150	30	75	6	0.25	15	170	0.15	5	25								
		30	170					30	175											
		60	200					60	180											
7						7	0.3	15	195	0.19	2	22								
		30	200					30	200											
		60	202					60	202											
8						8	0.35	15	210	0.23	5	23								
		30	220					30	220											
		60	225					60	225											
9						9	0.4	15	240	0.26	2	27								
		30	250					30	250											
		60	252					60	252											
10						10	0.45	15	270	0.29	2	30								
		30	280					30	280											
		60	282					60	282											
11						11	0.5	15	300	0.32	5	28								
		30	305					30	305											
		60	310					60	310											
12						12	0.55	15	330	0.36	10	35								
		30	335					30	335											
		60	345					60	345											
13						13														
14						14														
15						15														
16						16														

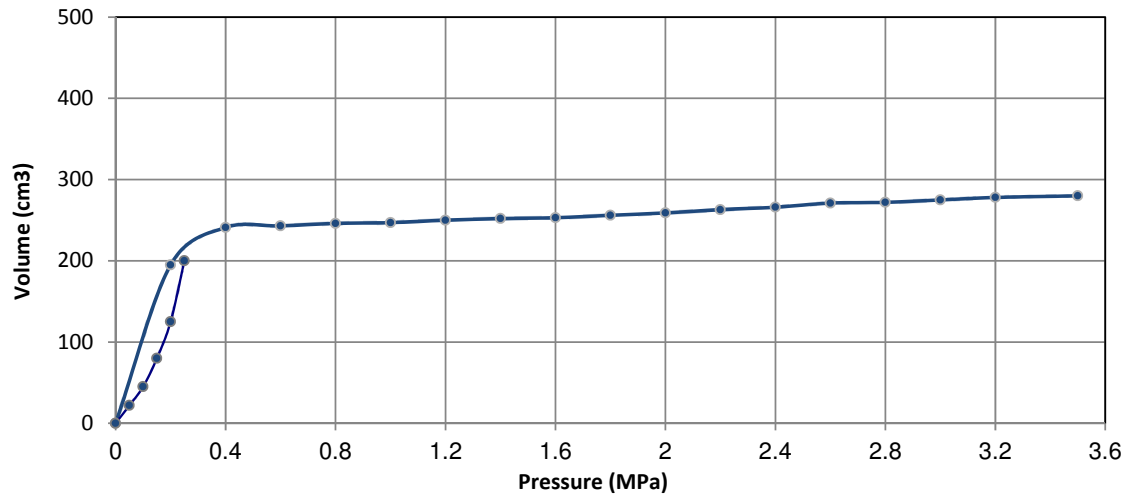
Pressuremeter Testing in Soils

ASTM D4719

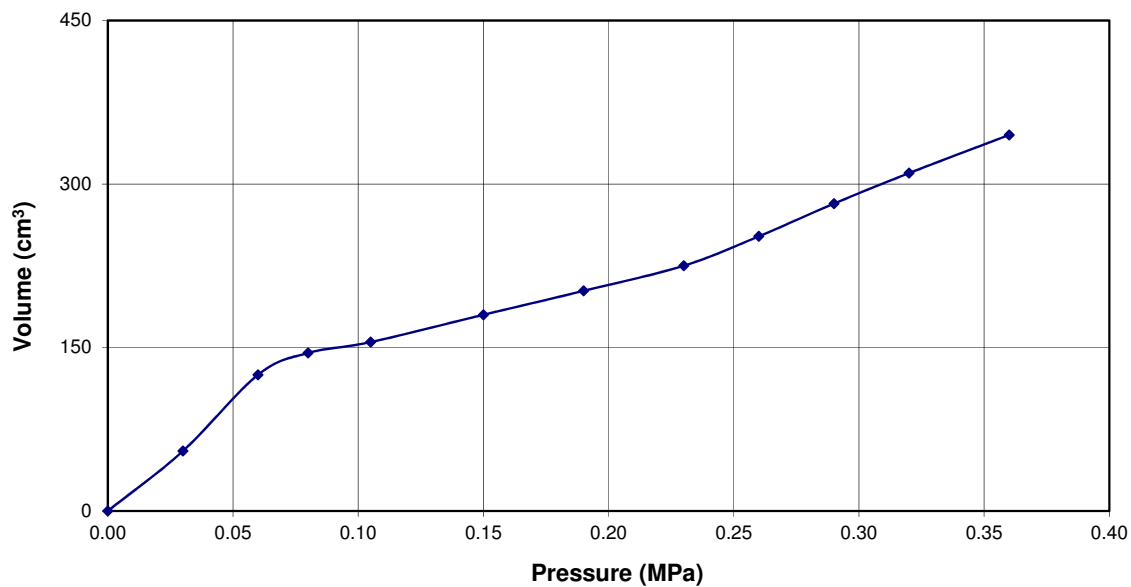
Boring No.: BH-1	Type of Soil: Clay	Project : Lamerd Aluminum Co
Boring Diameter : 66 mm	Drilling Method : Coring	Client : NFC
Depth of Stage : 14.0 to 16.0	Depth of Probe center Point (m): 15.00	Location : lamerd
Test Method : A Equal pressure increment method ☒	Type of Tube : 63mm O.D.Slotted	Date: 2015.04.27
B Equal volume increment method ☐	G.W.L.:	Time : 15:30
Hydrostatic Pressure on probe (P_w)(MPa) : 0.005		Page: 2

Volume of measuring portion of the unflated probe at 0 volume reading at ground surface , cm^3 (V_o) :535

Calibration Chart



Pressuremeter Test Chart



Calculated by: Z.Khalili	$E_{menard} = 4.7$	MPa
	$P_0 = 0.08$	MPa
	$P_L = 0.48$	MPa

Pressuremeter Testing in Soils

ASTM D 4719

Boring No.: BH-1	Type of Soil: Clay	Project : Lamerd Aluminum Co
Boring Diameter : 66 mm	Drilling Method : Coring	Client : NFC
Depth (m): 19.0 to 21.00	Depth of Probe Center Point (m): 20.00	Location : lamerd
Test Method : A Equal pressure increment method ☒ B Equal volume increment method ☐	Type of Tube : 63 mm O.D.Slotted	Date: 2015.04.27
Hydrostatic Pressure on probe (MPa) : 0.0050	G . W . L . :	Time : 17:30
	Vi : 0 cm3	Page: 1

Volume of measuring portion of the uninflated probe at 0 volume reading at ground surface , cm³ (V₀) : 535

Calibration Data						Pressuremeter Test Data							Pressuremeter Test Data							
Steps	Pressure PR (MPa)	Time Second	Volume VR (cm3)	Δv V60-V30	Δv Vsn-Vsn-1	Steps	Pressure PR (MPa)	Time Second	Volume VR (cm3)	Pressure (Corrected)	Δv V60-V30	Δv Vsn-Vsn-1	Steps	Pressure PR (MPa)	Time Second	Volume VR(cm3)	Pressure (Corrected)	Δv V60-V30	Δv Vsn-Vsn-2	
1	0.00	15	0	0	0	1	0	15	0	0.00	0	0								
		30	0					30	0											
		60	0					60	0											
2	0.05	15	20	2	22	2	0.05	15	15	0.25	0	15								
		30	20					30	15											
		60	22					60	15											
3	0.10	15	40	3	23	3	0.10	15	35	0.30	10	35								
		30	42					30	40											
		60	45					60	50											
4	0.15	15	60	10	35	4	0.15	15	62	0.35	5	20								
		30	70					30	65											
		60	80					60	70											
5	0.20	15	95	20	45	5	0.2	15	75	0.40	0	5								
		30	105					30	75											
		60	125					60	75											
6	0.25	15	150	30	75	6	0.30	15	90	0.50	0	20								
		30	170					30	95											
		60	200					60	95											
7						7	0.4	15	115	0.60	5	25								
		30	115					30	115											
		60	120					60	120											
8						8	0.50	15	135	0.70	3	20								
		30	137					30	137											
		60	140					60	140											
9						9	0.6	15	160	0.80	5	30								
		30	165					30	165											
		60	170					60	170											
10						10	0.7	15	187	0.90	5	30								
		30	195					30	195											
		60	200					60	200											
11						11	0.8	15	230	1.00	5	40								
		30	235					30	235											
		60	240					60	240											
12						12	0.9	15	269	1.10	5	39								
		30	274					30	274											
		60	279					60	279											
13						13	1.00	15	308	1.20	0	39								
		30	318					30	318											
		60	318					60	318											
14						14														
15						15														
16						16														

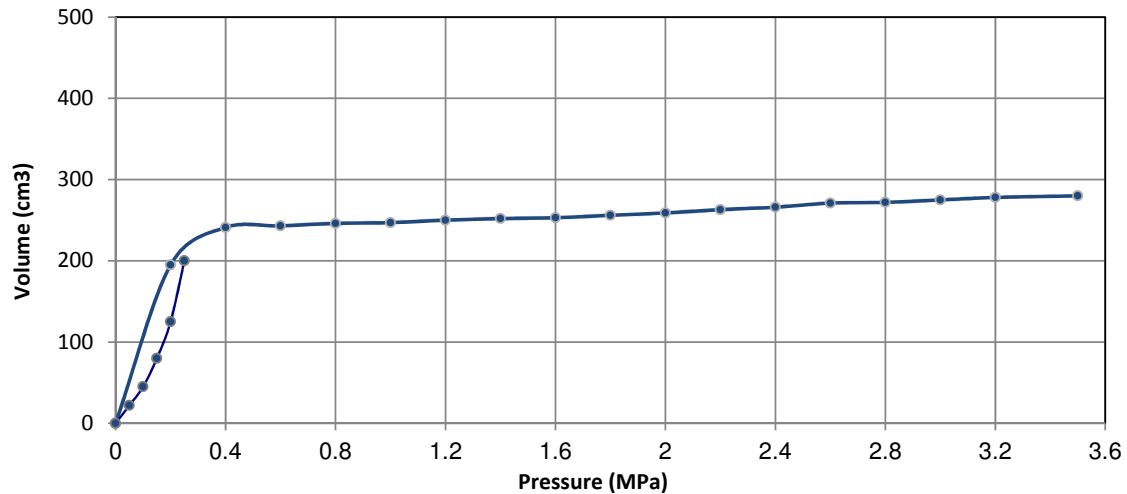
Pressuremeter Testing in Soils

ASTM D4719

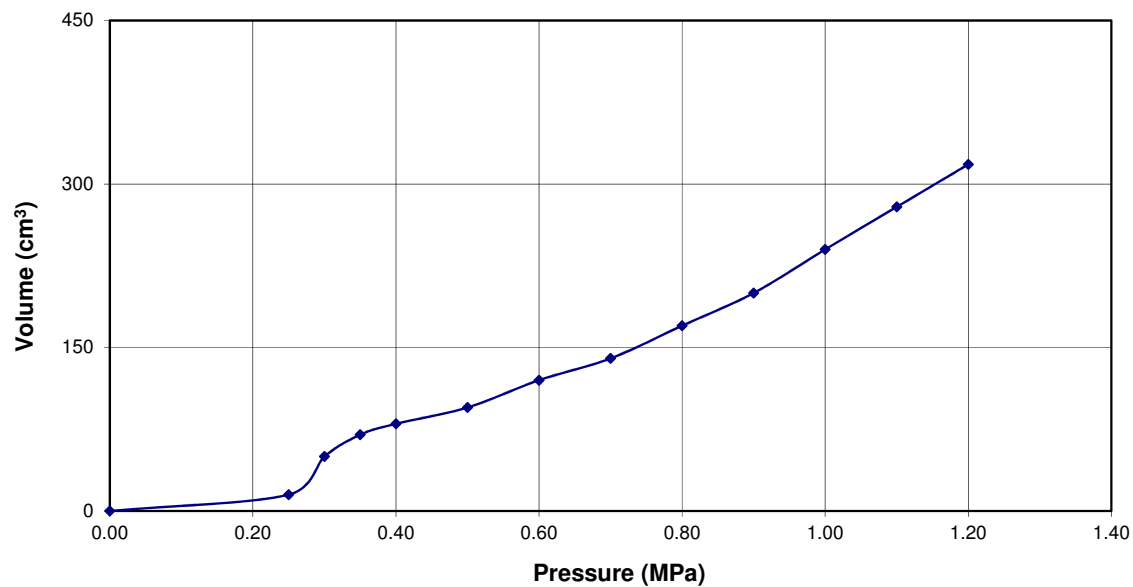
Boring No.: BH-1	Type of Soil: Clay	Project : Lamerd Aluminum Co
Boring Diameter : 66 mm	Drilling Method : Coring	Client : NFC
Depth of Stage : 19.0 to 21.0	Depth of Probe center Point (m): 20.00	Location : lamerd
Test Method : A Equal pressure increment method ☒	Type of Tube : 63mm O.D.Slotted	Date: 2015.04.27
B Equal volume increment method ☐	G.W.L.:	Time : 17:30
Hydrostatic Pressure on probe (P_w)(MPa) : 0.005		Page: 2

Volume of measuring portion of the unflated probe at 0 volume reading at ground surface , cm^3 (V_o) :535

Calibration Chart



Pressuremeter Test Chart



Calculated by: Z.Khalili	$E_{\text{menard}} = 7.3$	MPa
	$P_0 = 0.35$	MPa
	$P_L = 1.61$	MPa

Pressuremeter Testing in Soils

ASTM D 4719

Boring No.: BH-1	Type of Soil: Clay	Project : Lamerd Aluminum Co
Boring Diameter : 66 mm	Drilling Method : Coring	Client : NFC
Depth (m): 24.0 to 26.00	Depth of Probe Center Point (m): 25.00	Location : lamerd
Test Method : A Equal pressure increment method ☒ B Equal volume increment method ☐	Type of Tube : 63 mm O.D.Slotted	Date: 2015.04.28
Hydrostatic Pressure on probe (MPa) : 0.0050	G . W . L . :	Time : 9:00
	Vi : 0 cm3	Page: 1

Volume of measuring portion of the unflated probe at 0 volume reading at ground surface , cm³ (V_o) : 535

Calibration Data						Pressuremeter Test Data							Pressuremeter Test Data							
Steps	Pressure PR (MPa)	Time Second	Volume VR (cm3)	Δv V60-V30	Δv Vsn-Vsn-1	Steps	Pressure PR (MPa)	Time Second	Volume VR (cm3)	Pressure (Corrected)	Δv V60-V30	Δv Vsn-Vsn-1	Steps	Pressure PR (MPa)	Time Second	Volume VR(cm3)	Pressure (Corrected)	Δv V60-V30	Δv Vsn-Vsn-2	
1	0.00	15	0	0	0	1	0	15	0	0.00	0	0								
		30	0					30	0											
		60	0					60	0											
2	0.05	15	10	3	15	2	0.05	15	10	0.24	3	15								
		30	12					30	12											
		60	15					60	15											
3	0.10	15	40	20	55	3	0.10	15	35	0.27	5	30								
		30	50					30	40											
		60	70					60	45											
4	0.15	15	95	30	75	4	0.15	15	60	0.30	8	25								
		30	115					30	62											
		60	145					60	70											
5	0.20	15	170	20	65	5	0.2	15	85	0.32	5	25								
		30	190					30	90											
		60	210					60	95											
6	0.25	15	235	35	80	6	0.25	15	105	0.35	5	25								
		30	255					30	115											
		60	290					60	120											
7						7	0.3	15	130	0.37	10	25								
		30	135					30	135											
		60	145					60	145											
8						8	0.35	15	160	0.40	10	35								
		30	170					30	170											
		60	180					60	180											
9						9	0.4	15	210	0.42	10	45								
		30	215					30	215											
		60	225					60	225											
10						10	0.45	15	245	0.45	5	35								
		30	255					30	255											
		60	260					60	260											
11						11	0.5	15	285	0.48	20	55								
		30	295					30	295											
		60	315					60	315											
12						12	0.55	15	335	0.50	10	35								
		30	340					30	340											
		60	350					60	350											
13						13														
14						14														
15						15														
16						16														

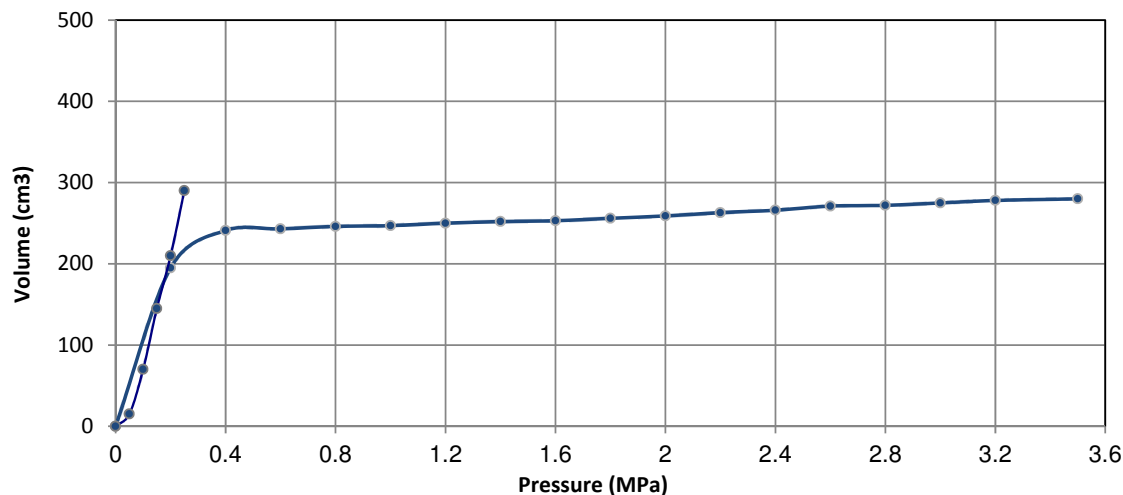
Pressuremeter Testing in Soils

ASTM D4719

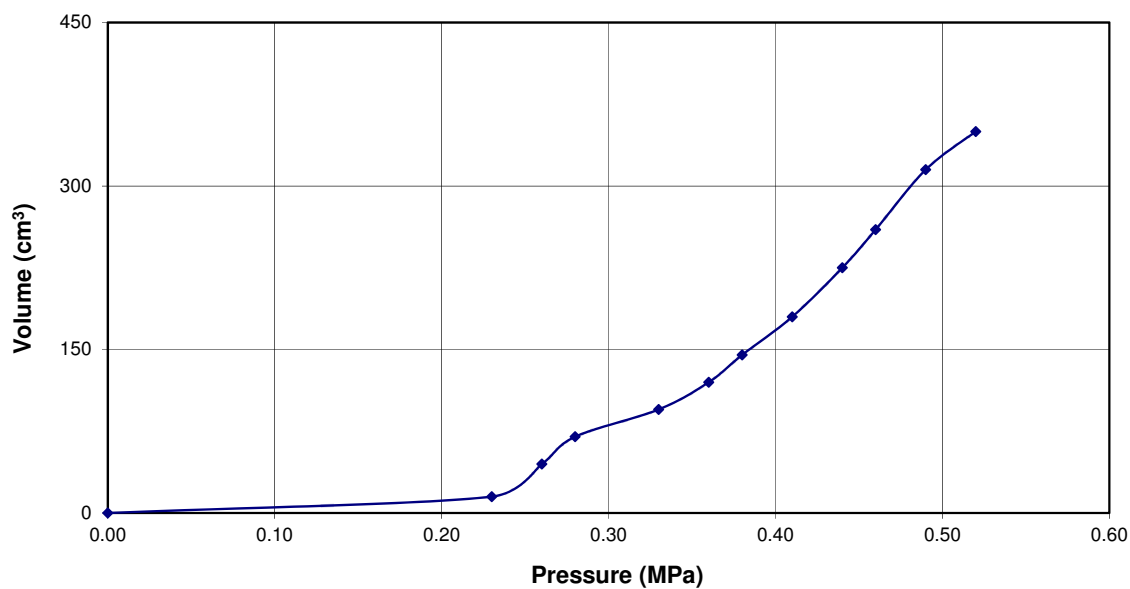
Boring No.: BH-1	Type of Soil: Clay	Project : Lamerd Aluminum Co
Boring Diameter : 66 mm	Drilling Method : Coring	Client : NFC
Depth of Stage : 24.0 to 26.0	Depth of Probe center Point (m): 25.00	Location : lamerd
Test Method : A Equal pressure increment method ☒	Type of Tube : 63mm O.D.Slotted	Date: 2015.04.28
B Equal volume increment method ☐	G.W.L.:	Time : 9:00
Hydrostatic Pressure on probe (P_w)(MPa) : 0.005		Page: 2

Volume of measuring portion of the unflated probe at 0 volume reading at ground surface , cm^3 (V_o) : 535

Calibration Chart



Pressuremeter Test Chart



Calculated by: Z.Khalili	$E_{menard} = 3.4$	MPa
	$P_0 = 0.28$	MPa
	$P_L = 0.64$	MPa

Pressuremeter Testing in Soils

ASTM D 4719

Boring No.: BH-1	Type of Soil: Clay	Project : Lamerd Aluminum Co
Boring Diameter : 66 mm	Drilling Method : Coring	Client : NFC
Depth (m): 29.0 to 31.00	Depth of Probe Center Point (m): 30.00	Location : lamerd
Test Method : A Equal pressure increment method ☒ B Equal volume increment method ☒	Type of Tube : 63 mm O.D.Slotted	Date: 2015.04.28
Hydrostatic Pressure on probe (MPa) : 0.0050	G . W . L . : Vi : 0 cm3	Time : 10:00
Page: 1		

Volume of measuring portion of the uninflated probe at 0 volume reading at ground surface , cm³ (V_o) : 535

Calibration Data						Pressuremeter Test Data						Pressuremeter Test Data							
Steps	Pressure PR (MPa)	Time Second	Volume VR (cm3)	Δv V60-V30	Δv Vsn-Vsn-1	Steps	Pressure PR (MPa)	Time Second	Volume VR (cm3)	Pressure (Corrected)	Δv V60-V30	Δv Vsn-Vsn-1	Steps	Pressure PR (MPa)	Time Second	Volume VR(cm3)	Pressure (Corrected)	Δv V60-V30	Δv Vsn-Vsn-2
1	0.00	15	0	0	0	1	0	15	0	0.00	0	0	17	0.8	15	245	0.85	5	15
		30	0					30	0						30	250			
		60	0					60	0						60	255			
2	0.05	15	10	3	15	2	0.05	15	15	0.25	5	30	18	0.85	15	265	0.90	0	15
		30	12					30	25						30	270			
		60	15					60	30						60	270			
3	0.10	15	40	20	55	3	0.10	15	40	0.30	5	20	19	0.9	15	280	0.94	5	20
		30	50					30	45						30	285			
		60	70					60	50						60	290			
4	0.15	15	95	30	75	4	0.15	15	55	0.35	2	12	20	0.95	15	300	0.97	5	20
		30	115					30	60						30	305			
		60	145					60	62						60	310			
5	0.20	15	170	20	65	5	0.2	15	70	0.38	0	13	21	1.0	15	320	1.00	5	20
		30	190					30	75						30	325			
		60	210					60	75						60	330			
6	0.25	15	235	35	80	6	0.25	15	85	0.41	5	15	22	1.05	15	345	1.04	10	30
		30	255					30	85						30	350			
		60	290					60	90						60	360			
7						7	0.3	15	95	0.45	2	10							
								30	98										
								60	100										
8						8	0.35	15	105	0.50	0	10							
								30	110										
								60	110										
9						9	0.4	15	120	0.55	5	15							
								30	120										
								60	125										
10						10	0.45	15	132	0.60	5	15							
								30	135										
								60	140										
11						11	0.5	15	150	0.63	5	15							
								30	150										
								60	155										
12						12	0.55	15	165	0.65	0	15							
								30	170										
								60	170										
13						13	0.60	15	180	0.70	5	15							
								30	180										
								60	185										
14						14	0.65	15	190	0.75	5	15							
								30	195										
								60	200										
15						15	0.7	15	210	0.78	10	20							
								30	210										
								60	220										
16						16	0.75	15	235	0.80	0	20							
								30	240										
								60	240										

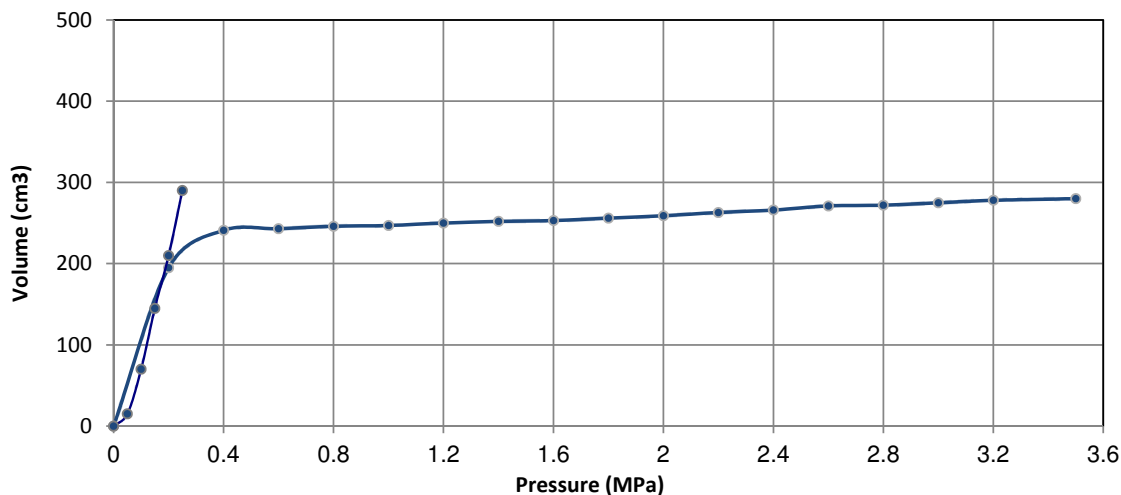
Pressuremeter Testing in Soils

ASTM D4719

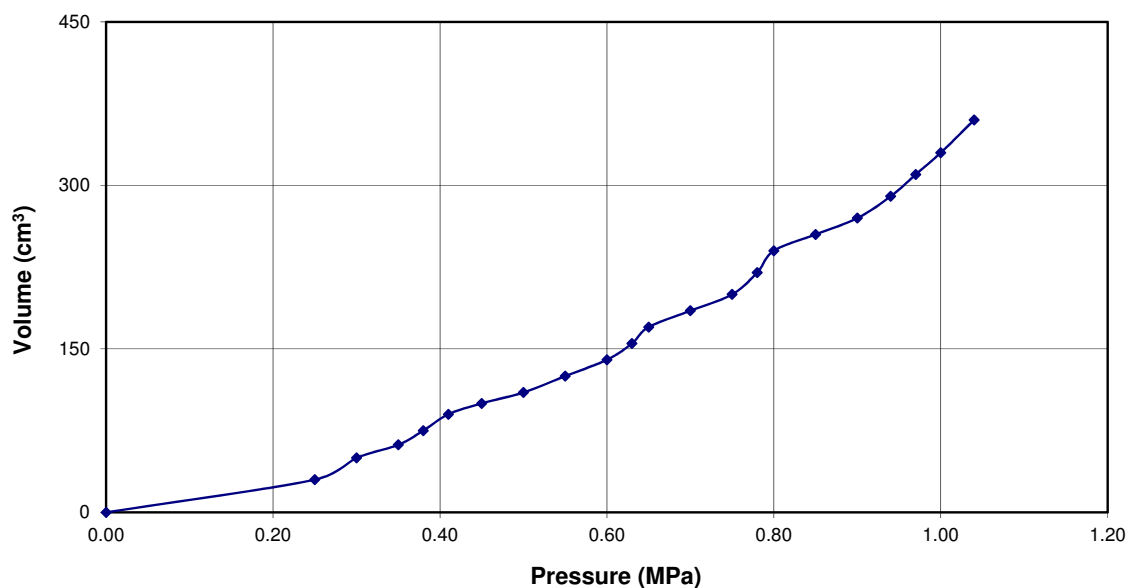
Boring No.: BH-1	Type of Soil: Clay	Project : Lamerd Aluminum Co
Boring Diameter : 66 mm	Drilling Method : Coring	Client : NFC
Depth of Stage : 29.0 to 31.0	Depth of Probe center Point (m): 30.00	Location : lamerd
Test Method : A Equal pressure increment method ☒	Type of Tube : 63mm O.D.Slotted	Date: 2015.04.28
B Equal volume increment method ☐	G.W.L.:	Time : 10:00
Hydrostatic Pressure on probe (P_w)(MPa) : 0.005		Page: 2

Volume of measuring portion of the unflated probe at 0 volume reading at ground surface , cm^3 (V_o) :535

Calibration Chart



Pressuremeter Test Chart



Calculated by: Z.Khalili	$E_{\text{menard}} = 6.6$	MPa
	$P_0 = 0.41$	MPa
	$P_L = 1.38$	MPa

Pressuremeter Testing in Soils

ASTM D 4719

Boring No.: BH-43	Type of Soil: Clay	Project : Lamerd Aluminum Co
Boring Diameter : 66 mm	Drilling Method : Coring	Client : NFC
Depth (m): 4.0 to 6.00	Depth of Probe Center Point (m): 5.00	Location : lamerd
Test Method : A Equal pressure increment method ☒ B Equal volume increment method ☐	Type of Tube : 63 mm O.D.Slotted	Date: 2015.05.01
Hydrostatic Pressure on probe (MPa) : 0.0050	G . W . L . : Vi : 0 cm3	Time : 8:30
		Page: 1

Volume of measuring portion of the uninflated probe at 0 volume reading at ground surface , cm³ (V_o) : 535

Calibration Data						Pressuremeter Test Data										Pressuremeter Test Data								
Steps	Pressure PR (MPa)	Time Second	Volume VR (cm3)	Δ _v V60-V30	Δ _v Vsn-Vsn-1	Steps	Pressure PR (MPa)	Time Second	Volume VR (cm3)	Pressure (Corrected)	Δ _v V60-V30	Δ _v Vsn-Vsn-1	Steps	Pressure PR (MPa)	Time Second	Volume VR(cm3)	Pressure (Corrected)	Δ _v V60-V30	Δ _v Vsn-Vsn-2					
1	0.00	15	0	0	0	1	0	15	0	0.00	0	0												
		30	0					30	0															
		60	0					60	0															
2	0.05	15	25	2	32	2	0.05	15	55	0.05	0	60												
		30	30					30	60															
		60	32					60	60															
3	0.10	15	60	10	48	3	0.10	15	75	0.07	20	40												
		30	70					30	80															
		60	80					60	100															
4	0.15	15	100	10	40	4	0.15	15	105	0.08	5	10												
		30	110					30	105															
		60	120					60	110															
5	0.20	15	140	20	55	5	0.2	15	130	0.09	5	30												
		30	155					30	135															
		60	175					60	140															
6	0.25	15	190	20	50	6	0.25	15	145	0.10	5	15												
		30	205					30	150															
		60	225					60	155															
7						7	0.3	15	160	0.12	0	10												
								30	165															
								60	165															
8						8	0.35	15	180	0.17	10	30												
								30	185															
								60	195															
9						9	0.4	15	200	0.18	0	10												
								30	205															
								60	205															
10						10	0.45	15	225	0.23	10	35												
								30	230															
								60	240															
11						11	0.5	15	250	0.25	5	20												
								30	255															
								60	260															
12						12	0.55	15	280	0.28	10	35												
								30	285															
								60	295															
13						13	0.60	15	310	0.30	10	35												
								30	320															
								60	330															
14																								
15																								
16																								

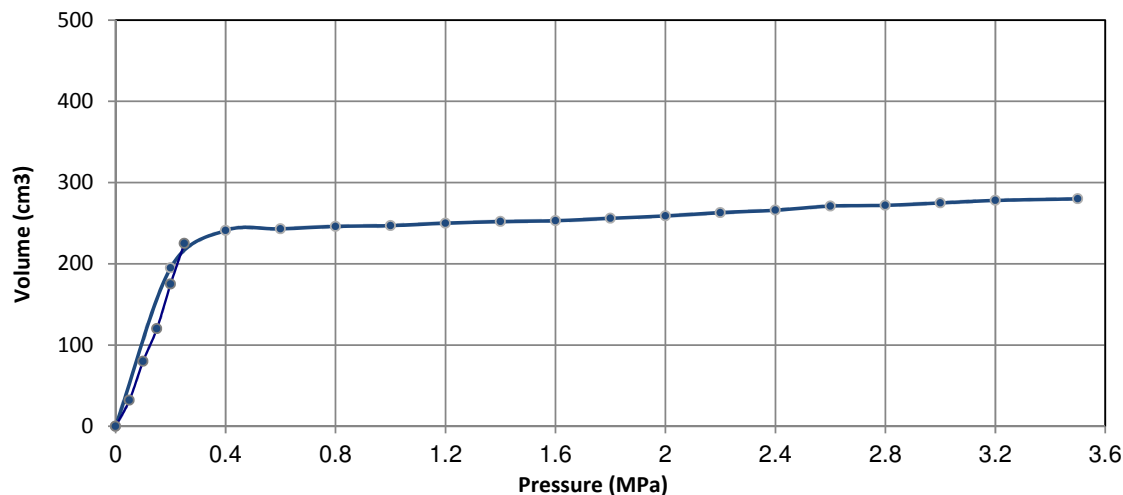
Pressuremeter Testing in Soils

ASTM D4719

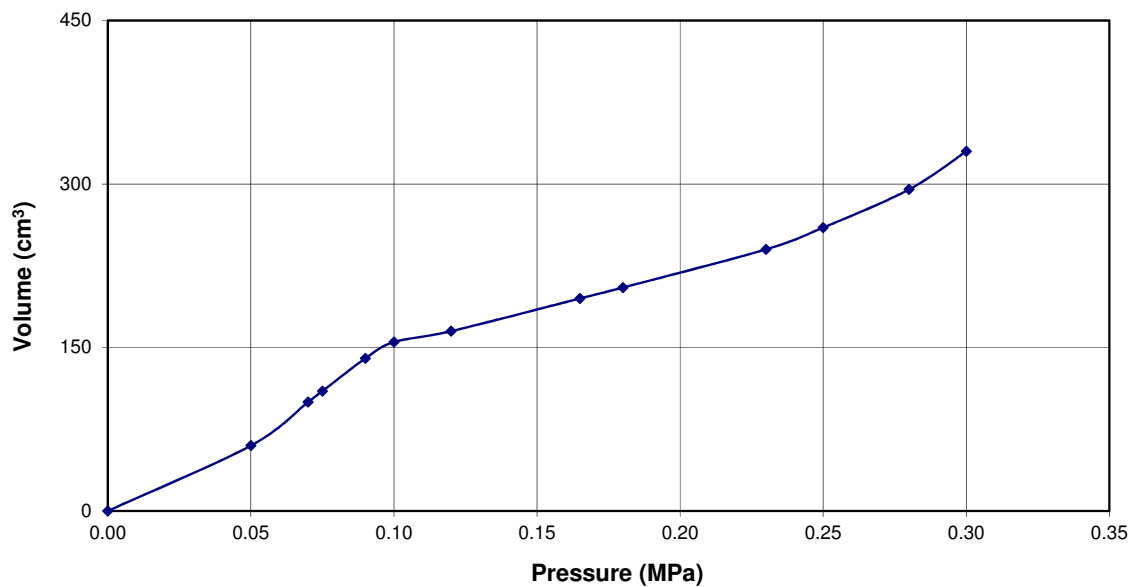
Boring No.: BH-43	Type of Soil: Clay	Project : Lamerd Aluminum Co
Boring Diameter : 66 mm	Drilling Method : Coring	Client : NFC
Depth of Stage : 4.0 to 6.0	Depth of Probe center Point (m): 5.00	Location : lamerd
Test Method : A Equal pressure increment method ☒	Type of Tube : 63mm O.D.Slotted	Date: 2015.05.01
B Equal volume increment method ☐	G.W.L.:	Time : 8:30
Hydrostatic Pressure on probe (P_w)(MPa) : 0.005		Page: 2

Volume of measuring portion of the unflated probe at 0 volume reading at ground surface , cm^3 (V_o) :535

Calibration Chart



Pressuremeter Test Chart



Calculated by: Z.Khalili

$E_{menard} = 3.8$ MPa

$P_0 = 0.10$ MPa

$P_L = 0.40$ MPa



Pressuremeter Testing in Soils

ASTM D 4719

Boring No.: BH-43	Type of Soil: Clay	Project : Lamerd Aluminum Co
Boring Diameter : 66 mm	Drilling Method : Coring	Client : NFC
Depth (m): 9.0 to 11.00	Depth of Probe Center Point (m): 10.00	Location : lamerd
Test Method : A Equal pressure increment method ☒ B Equal volume increment method ☐	Type of Tube : 63 mm O.D.Slotted	Date: 2015.05.01
Hydrostatic Pressure on probe (MPa) : 0.0050	G . W . L . : Vi : 0 cm3	Time : 9:30
		Page: 1

Volume of measuring portion of the unflated probe at 0 volume reading at ground surface , cm³ (V_o) : 535

Calibration Data						Pressuremeter Test Data										Pressuremeter Test Data								
Steps	Pressure PR (MPa)	Time Second	Volume VR (cm3)	Δ _v V60-V30	Δ _v Vsn-Vsn-1	Steps	Pressure PR (MPa)	Time Second	Volume VR (cm3)	Pressure (Corrected)	Δ _v V60-V30	Δ _v Vsn-Vsn-1	Steps	Pressure PR (MPa)	Time Second	Volume VR(cm3)	Pressure (Corrected)	Δ _v V60-V30	Δ _v Vsn-Vsn-2					
1	0.00	15	0	0	0	1	0	15	0	0.00	0	0												
		30	0					30	0															
		60	0					60	0															
2	0.05	15	25	2	32	2	0.05	15	80	0.02	5	90												
		30	30					30	85															
		60	32					60	90															
3	0.10	15	60	10	48	3	0.10	15	105	0.05	5	20												
		30	70					30	105															
		60	80					60	110															
4	0.15	15	100	10	40	4	0.15	15	130	0.08	10	40												
		30	110					30	140															
		60	120					60	150															
5	0.20	15	140	20	55	5	0.2	15	160	0.10	10	25												
		30	155					30	165															
		60	175					60	175															
6	0.25	15	190	20	50	6	0.25	15	200	0.12	15	50												
		30	205					30	210															
		60	225					60	225															
7						7	0.3	15	240	0.13	5	25												
								30	245															
								60	250															
8						8	0.35	15	255	0.14	10	20												
								30	260															
								60	270															
9						9	0.4	15	300	0.18	20	70												
								30	320															
								60	340															
10																								
11																								
12																								
13																								
14																								
15																								
16																								

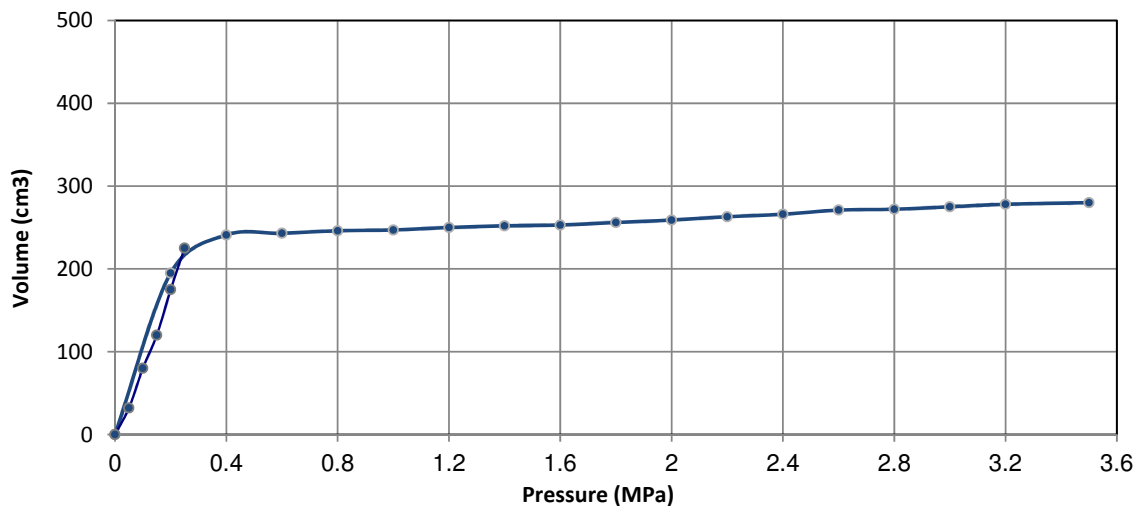
Pressuremeter Testing in Soils

ASTM D4719

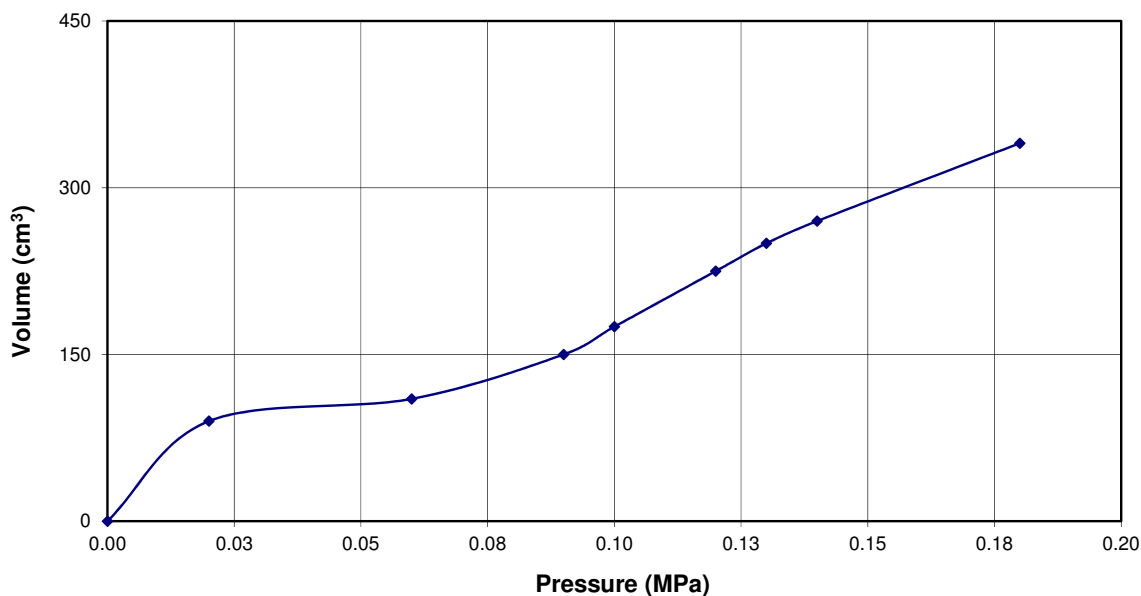
Boring No.: BH-43	Type of Soil: Clay	Project : Lamerd Aluminum Co
Boring Diameter : 66 mm	Drilling Method : Coring	Client : NFC
Depth of Stage : 9.0 to 11.0	Depth of Probe center Point (m): 10.00	Location : lamerd
Test Method : A Equal pressure increment method ☒	Type of Tube : 63mm O.D.Slotted	Date: 2015.05.01
B Equal volume increment method ☐	G.W.L.:	Time : 9:30
Hydrostatic Pressure on probe (P_w)(MPa) : 0.005		Page: 2

Volume of measuring portion of the unflated probe at 0 volume reading at ground surface , cm^3 (V_o) :535

Calibration Chart



Pressuremeter Test Chart



$E_{\text{menard}} = 3.5$ MPa

$P_0 = 0.02$ MPa

$P_L = 0.24$ MPa

Calculated by: Z.Khalili

Pressuremeter Testing in Soils

ASTM D 4719

Boring No.: BH-43	Type of Soil: Clay	Project : Lamerd Aluminum Co
Boring Diameter : 66 mm	Drilling Method : Coring	Client : NFC
Depth (m): 14.0 to 16.00	Depth of Probe Center Point (m): 15.00	Location : lamerd
Test Method : A Equal pressure increment method ☒ B Equal volume increment method ☐	Type of Tube : 63 mm O.D.Slotted	Date: 2015.05.01
Hydrostatic Pressure on probe (MPa) : 0.0050	G . W . L . : Vi : 0 cm3	Time : 10:30
		Page: 1

Volume of measuring portion of the uninflated probe at 0 volume reading at ground surface , cm³ (V_o) : 535

Calibration Data						Pressuremeter Test Data										Pressuremeter Test Data								
Steps	Pressure PR (MPa)	Time Second	Volume VR (cm3)	Δ _v V60-V30	Δ _v Vsn-Vsn-1	Steps	Pressure PR (MPa)	Time Second	Volume VR (cm3)	Pressure (Corrected)	Δ _v V60-V30	Δ _v Vsn-Vsn-1	Steps	Pressure PR (MPa)	Time Second	Volume VR(cm3)	Pressure (Corrected)	Δ _v V60-V30	Δ _v Vsn-Vsn-2					
1	0.00	15	0	0	0	1	0	15	0	0	0	0												
		30	0					30	0												60	0		
		60	0					60	0															
2	0.05	15	25	2	32	2	0.05	15	30	0.20	0	30												
		30	30					30	30												60	30		
		60	32					60	30															
3	0.10	15	60	10	48	3	0.10	15	55	0.25	5	35												
		30	70					30	60												60	65		
		60	80					60	65															
4	0.15	15	100	10	40	4	0.15	15	80	0.30	5	25												
		30	110					30	85												60	90		
		60	120					60	90															
5	0.20	15	140	20	55	5	0.2	15	115	0.35	3	30												
		30	155					30	117												60	120		
		60	175					60	120															
6	0.25	15	190	20	50	6	0.25	15	155	0.40	10	55												
		30	205					30	165												60	175		
		60	225					60	175															
7						7	0.3	15	200	0.45	10	40												
		30	205					30	205												60	215		
		60	215					60	215															
8						8	0.35	15	240	0.50	15	50												
		30	250					30	250												60	265		
		60	265					60	265															
9						9	0.4	15	295	0.55	15	55												
		30	305					30	305												60	320		
		60	320					60	320															
10																								
11																								
12																								
13																								
14																								
15																								
16																								

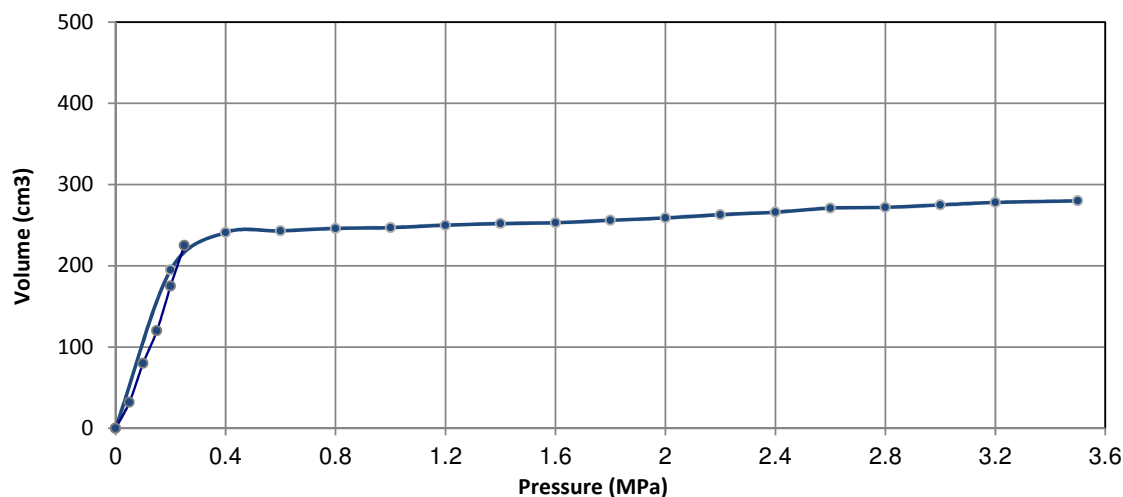
Pressuremeter Testing in Soils

ASTM D4719

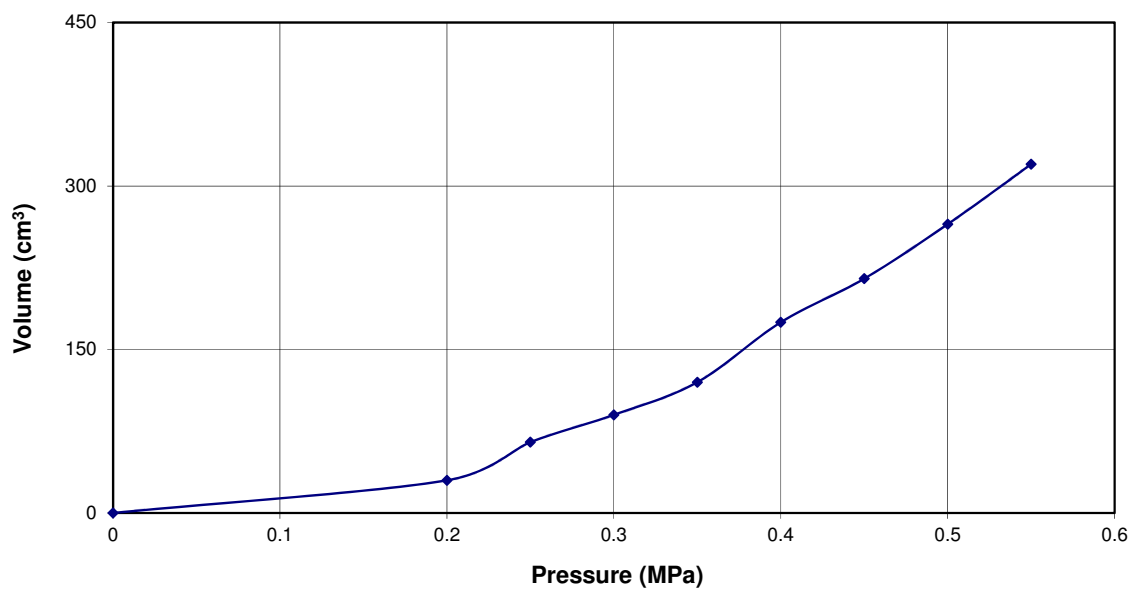
Boring No.: BH-43	Type of Soil: Clay	Project : Lamerd Aluminum Co
Boring Diameter : 66 mm	Drilling Method : Coring	Client : NFC
Depth of Stage : 14.0 to 16.0	Depth of Probe center Point (m): 15.00	Location : lamerd
Test Method : A Equal pressure increment method ☒	Type of Tube : 63mm O.D.Slotted	Date: 2015.05.01
B Equal volume increment method ☐	G.W.L.:	Time : 10:30
Hydrostatic Pressure on probe (P_w)(MPa) : 0.005		Page: 2

Volume of measuring portion of the unflated probe at 0 volume reading at ground surface , cm^3 (V_o) :535

Calibration Chart



Pressuremeter Test Chart



Calculated by: Z.Khalili	$E_{\text{menard}} = 3.4$	MPa
	$P_0 = 0.25$	MPa
	$P_L = 0.74$	MPa

Pressuremeter Testing in Soils

ASTM D 4719

Boring No.: BH-43	Type of Soil: Clay	Project : Lamerd Aluminum Co
Boring Diameter : 66 mm	Drilling Method : Coring	Client : NFC
Depth (m): 19.0 to 21.00	Depth of Probe Center Point (m): 20.00	Location : lamerd
Test Method : A Equal pressure increment method ☒ B Equal volume increment method ☐	Type of Tube : 63 mm O.D.Slotted	Date: 2015.05.02
Hydrostatic Pressure on probe (MPa) : 0.0050	G . W . L . :	Time : 8:30
	Vi : 0 cm3	Page: 1

Volume of measuring portion of the unflated probe at 0 volume reading at ground surface , cm³ (V_o) : 535

Calibration Data						Pressuremeter Test Data										Pressuremeter Test Data								
Steps	Pressure PR (MPa)	Time Second	Volume VR (cm3)	Δ _v V60-V30	Δ _v Vsn-Vsn-1	Steps	Pressure PR (MPa)	Time Second	Volume VR (cm3)	Pressure (Corrected)	Δ _v V60-V30	Δ _v Vsn-Vsn-1	Steps	Pressure PR (MPa)	Time Second	Volume VR(cm3)	Pressure (Corrected)	Δ _v V60-V30	Δ _v Vsn-Vsn-2					
1	0.00	15	0	0	0	1	0	15	0	0.00	0	0												
		30	0					30	0															
		60	0					60	0															
2	0.05	15	5	5	20	2	0.05	15	12	0.20	2	17												
		30	15					30	15															
		60	20					60	17															
3	0.10	15	40	5	30	3	0.10	15	25	0.23	0	13												
		30	45					30	30															
		60	50					60	30															
4	0.15	15	65	10	35	4	0.15	15	40	0.25	5	20												
		30	75					30	45															
		60	85					60	50															
5	0.20	15	105	15	50	5	0.2	15	60	0.26	5	20												
		30	120					30	65															
		60	135					60	70															
6	0.25	15	155	25	65	6	0.25	15	85	0.27	5	22												
		30	175					30	87															
		60	200					60	92															
7						7	0.3	15	115	0.28	3	28												
								30	117															
								60	120															
8						8	0.35	15	145	0.30	5	35												
								30	150															
								60	155															
9						9	0.4	15	175	0.34	10	35												
								30	180															
								60	190															
10						10	0.45	15	205	0.38	5	35												
								30	220															
								60	225															
11						11	0.5	15	245	0.41	15	50												
								30	260															
								60	275															
12						12	0.55	15	300	0.45	10	50												
								30	315															
								60	325															
13																								
14																								
15																								
16																								

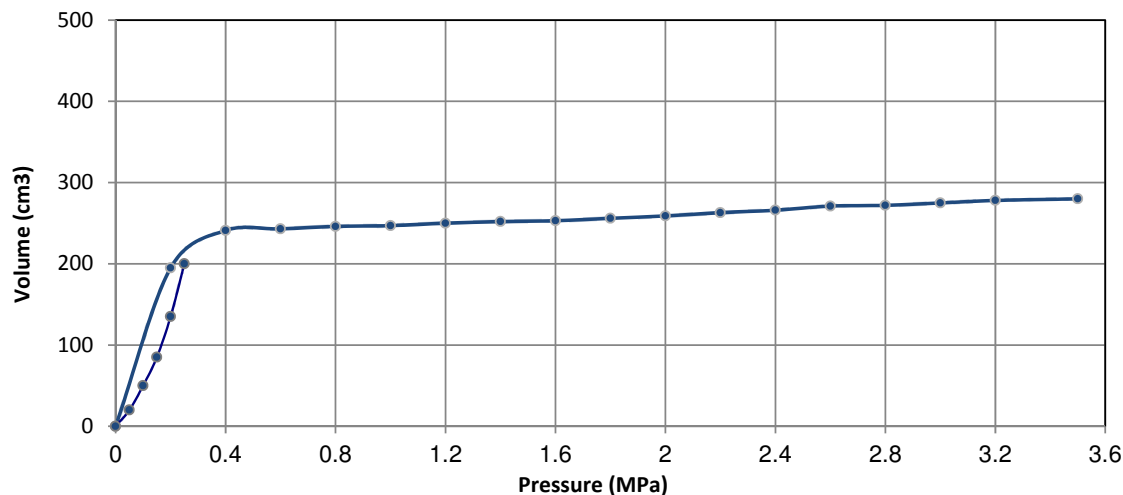
Pressuremeter Testing in Soils

ASTM D4719

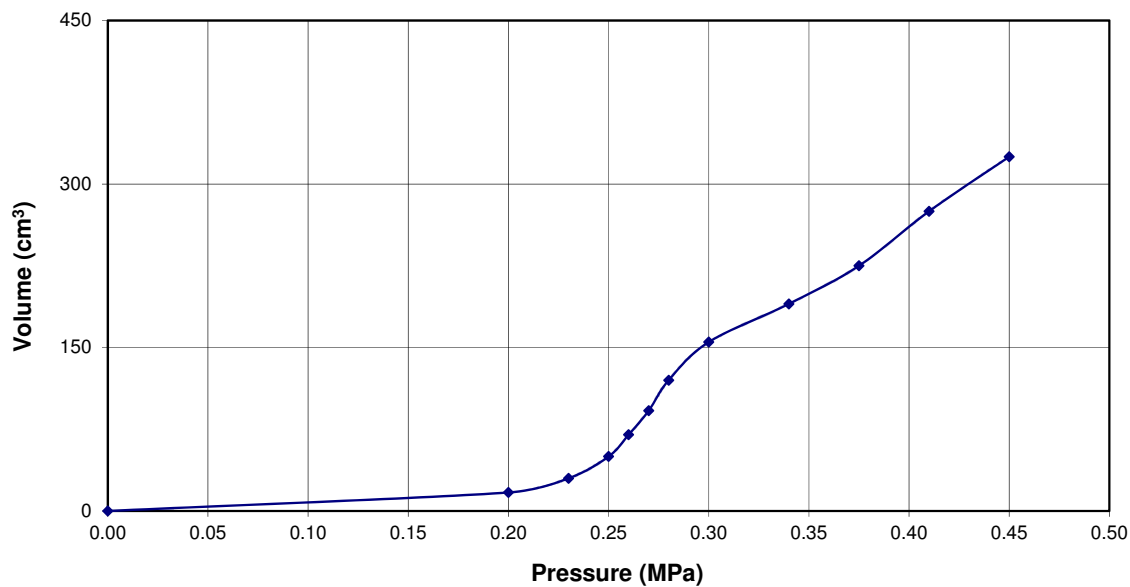
Boring No.: BH-43	Type of Soil: Clay	Project : Lamerd Aluminum Co
Boring Diameter : 66 mm	Drilling Method : Coring	Client : NFC
Depth of Stage : 19.0 to 21.0	Depth of Probe center Point (m): 20.00	Location : lamerd
Test Method : A Equal pressure increment method ☒	Type of Tube : 63mm O.D.Slotted	Date: 2015.05.02
B Equal volume increment method ☐	G.W.L.:	Time : 8:30
Hydrostatic Pressure on probe (P_w)(MPa) : 0.005		Page: 2

Volume of measuring portion of the unflated probe at 0 volume reading at ground surface , cm^3 (V_o) :535

Calibration Chart



Pressuremeter Test Chart



Calculated by: Z.Khalili

$E_{menard} = 3.5$ MPa

$P_0 = 0.25$ MPa

$P_L = 0.60$ MPa

Pressuremeter Testing in Soils

ASTM D 4719

Boring No.: BH-43	Type of Soil: Clay	Project : Lamerd Aluminum Co
Boring Diameter : 66 mm	Drilling Method : Coring	Client : NFC
Depth (m): 24.0 to 26.00	Depth of Probe Center Point (m): 25.00	Location : lamerd
Test A Equal pressure increment method ☒ Method : B Equal volume increment method ☐	Type of Tube : 63 mm O.D.Slotted	Date: 2015.05.02
Hydrostatic Pressure on probe (MPa) : 0.0050	G . W . L . :	Time : 9:50
	Vi : 0 cm3	Page: 1

Volume of measuring portion of the uninflated probe at 0 volume reading at ground surface , cm³ (V_o) : 535

Calibration Data						Pressuremeter Test Data								Pressuremeter Test Data							
Steps	Pressure PR (MPa)	Time Second	Volume VR (cm3)	Δ _v V60-V30	Δ _v Vsn-Vsn-1	Steps	Pressure PR (MPa)	Time Second	Volume VR (cm3)	Pressure (Corrected)	Δ _v V60-V30	Δ _v Vsn-Vsn-1	Steps	Pressure PR (MPa)	Time Second	Volume VR(cm3)	Pressure (Corrected)	Δ _v V60-V30	Δ _v Vsn-Vsn-2		
1	0.00	15	0	0	0	1	0	15	0	0	0	0									
		30	0					30	0												
		60	0					60	0												
2	0.05	15	5	5	20	2	0.05	15	10	0.2200	5	30									
		30	15					30	25												
		60	20					60	30												
3	0.10	15	40	5	30	3	0.10	15	32	0.2500	5	10									
		30	45					30	35												
		60	50					60	40												
4	0.15	15	65	10	35	4	0.15	15	55	0.2900	5	25									
		30	75					30	60												
		60	85					60	65												
5	0.20	15	105	15	50	5	0.2	15	70	0.3050	3	10									
		30	120					30	72												
		60	135					60	75												
6	0.25	15	155	25	65	6	0.25	15	80	0.3400	5	15									
		30	175					30	85												
		60	200					60	90												
7						7	0.3	15	100	0.3600	0	10									
								30	100												
								60	100												
8						8	0.35	15	110	0.4000	5	20									
								30	115												
								60	120												
9						9	0.4	15	130	0.4	5	20									
								30	135												
								60	140												
10						10	0.45	15	155	0.4700	10	30									
								30	160												
								60	170												
11						11	0.5	15	185	0.5	5	25									
								30	190												
								60	195												
12						12	0.55	15	210	0.5400	10	30									
								30	215												
								60	225												
13						13	0.60	15	245	0.6	10	40									
								30	255												
								60	265												
14						14	0.65	15	270	0.6000	10	25									
								30	280												
								60	290												
15						15	0.7	15	305	0.6	10	35									
								30	315												
								60	325												
16																					

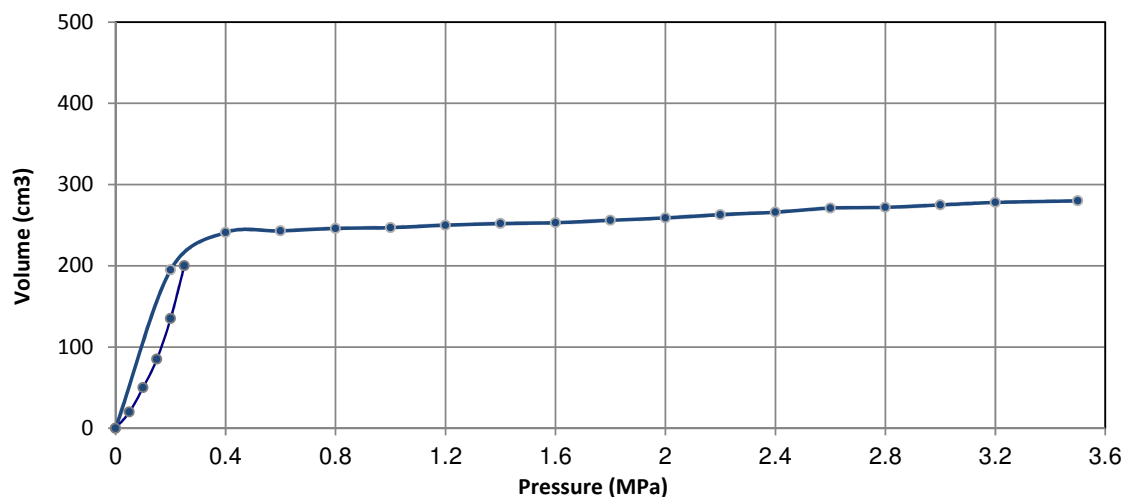
Pressuremeter Testing in Soils

ASTM D4719

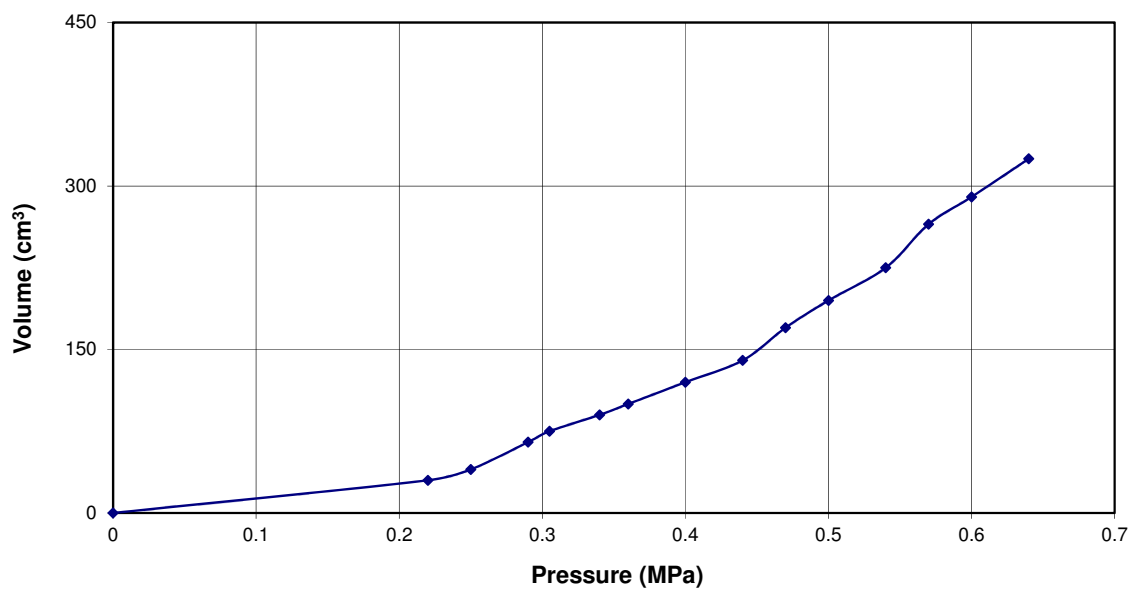
Boring No.: BH-43	Type of Soil: Clay	Project : Lamerd Aluminum Co
Boring Diameter : 66 mm	Drilling Method : Coring	Client : NFC
Depth of Stage : 24.0 to 26.0	Depth of Probe center Point (m): 25.00	Location : lamerd
Test Method : A Equal pressure increment method ☒	Type of Tube : 63mm O.D.Slotted	Date: 2015.05.02
B Equal volume increment method ☐	G.W.L.:	Time : 9:50
Hydrostatic Pressure on probe (P_w)(MPa) : 0.005		Page: 2

Volume of measuring portion of the unflated probe at 0 volume reading at ground surface , cm^3 (V_o) :535

Calibration Chart



Pressuremeter Test Chart



Calculated by: Z.Khalili	$E_{menard} = 3.9$	MPa
	$P_0 = 0.31$	MPa
	$P_L = 0.88$	MPa

Pressuremeter Testing in Soils

ASTM D 4719

Boring No.: BH-43	Type of Soil: Clay	Project : Lamerd Aluminum Co
Boring Diameter : 66 mm	Drilling Method : Coring	Client : NFC
Depth (m): 29.0 to 31.00	Depth of Probe Center Point (m): 30.00	Location : lamerd
Test Method : A Equal pressure increment method ☒ B Equal volume increment method ☐	Type of Tube : 63 mm O.D.Slotted	Date: 2015.05.02
Hydrostatic Pressure on probe (MPa) : 0.0050	G . W . L . : Vi : 0 cm3	Time : 11:30
		Page: 1

Volume of measuring portion of the unflated probe at 0 volume reading at ground surface , cm³ (V_o) : 535

Calibration Data						Pressuremeter Test Data							Pressuremeter Test Data							Pressuremeter Test Data		
Steps	Pressure PR (MPa)	Time Second	Volume VR (cm3)	Δ _v V60-V30	Δ _v Vsn-Vsn-1	Steps	Pressure PR (MPa)	Time Second	Volume VR (cm3)	Pressure (Corrected)	Δ _v V60-V30	Δ _v Vsn-Vsn-1	Steps	Pressure PR (MPa)	Time Second	Volume VR(cm3)	Pressure (Corrected)	Δ _v V60-V30	Δ _v Vsn-Vsn-2			
1	0.00	15	0	0	0	1	0	15	0	0.00	0	0										
		30	0					30	0													
		60	0					60	0													
2	0.05	15	5	5	20	2	0.05	15	30	0.15	10	50										
		30	15					30	40													
		60	20					60	50													
3	0.10	15	40	5	30	3	0.10	15	80	0.20	10	50										
		30	45					30	90													
		60	50					60	100													
4	0.15	15	65	10	35	4	0.15	15	105	0.25	2	10										
		30	75					30	108													
		60	85					60	110													
5	0.20	15	105	15	50	5	0.2	15	115	0.30	2	10										
		30	120					30	118													
		60	135					60	120													
6	0.25	15	155	25	65	6	0.30	15	122	0.39	5	10										
		30	175					30	125													
		60	200					60	130													
7						7	0.4	15	132	0.47	5	20										
								30	145													
								60	150													
8						8	0.50	15	155	0.55	10	20										
								30	160													
								60	170													
9						9	0.6	15	175	0.65	10	20										
								30	180													
								60	190													
10						10	0.7	15	200	0.73	5	20										
								30	205													
								60	210													
11						11	0.8	15	215	0.81	10	20										
								30	220													
								60	230													
12						12	0.9	15	245	0.90	5	20										
								30	245													
								60	250													
13						13	1.00	15	275	0.99	5	30										
								30	275													
								60	280													
14																						
15																						
16																						

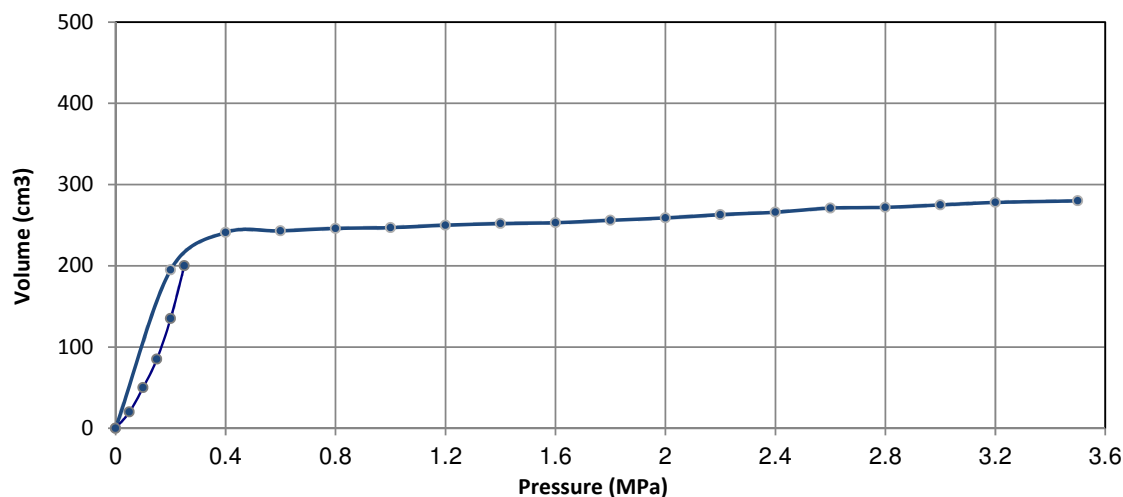
Pressuremeter Testing in Soils

ASTM D4719

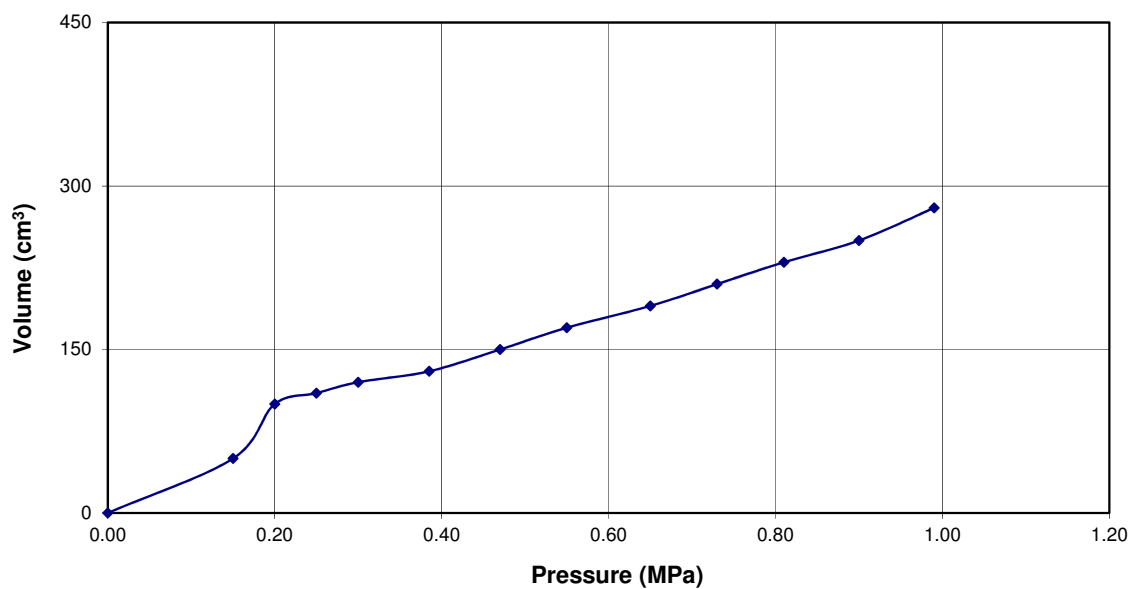
Boring No.: BH-43	Type of Soil: Clay	Project : Lamerd Aluminum Co
Boring Diameter : 66 mm	Drilling Method : Coring	Client : NFC
Depth of Stage : 29.0 to 31.0	Depth of Probe center Point (m): 30.00	Location : lamerd
Test Method : A Equal pressure increment method ☒	Type of Tube : 63mm O.D.Slotted	Date: 2015.05.02
B Equal volume increment method ☐	G.W.L.:	Time : 11:30
Hydrostatic Pressure on probe (P_w)(MPa) : 0.005		Page: 2

Volume of measuring portion of the unflated probe at 0 volume reading at ground surface , cm^3 (V_o) : 535

Calibration Chart



Pressuremeter Test Chart



Calculated by: Z.Khalili	$E_{menard} = 8.1$	MPa
	$P_0 = 0.20$	MPa
	$P_L = 1.61$	MPa

Pressuremeter Testing in Soils

ASTM D 4719

Boring No.: BH-61	Type of Soil: Clay	Project : Lamerd Aluminum Co
Boring Diameter : 66 mm	Drilling Method : Coring	Client : NFC
Depth (m): 4.0 to 6.00	Depth of Probe Center Point (m): 5.00	Location : lamerd
Test A Equal pressure increment method ☒ Method : B Equal volume increment method ☐	Type of Tube : 63 mm O.D.Slotted	Date: 2015.05.02
Hydrostatic Pressure on probe (MPa) : 0.0050	G . W . L . :	Time : 15:00
	Vi : 0 cm3	Page: 1

Volume of measuring portion of the uninflated probe at 0 volume reading at ground surface , cm³ (V_o) : 535

Calibration Data						Pressuremeter Test Data									Pressuremeter Test Data							
Steps	Pressure PR (MPa)	Time Second	Volume VR (cm3)	Δ _v V60-V30	Δ _v Vsn-Vsn-1	Steps	Pressure PR (MPa)	Time Second	Volume VR (cm3)	Pressure (Corrected)	Δ _v V60-V30	Δ _v Vsn-Vsn-1	Steps	Pressure PR (MPa)	Time Second	Volume VR(cm3)	Pressure (Corrected)	Δ _v V60-V30	Δ _v Vsn-Vsn-2			
1	0.00	15	0	0	0	1	0	15	0	0.00	0	0	17	0.8	15	315	0.55	20	50			
		30	0					30	0						30	325						
		60	0					60	0						60	345						
2	0.05	15	5	5	20	2	0.05	15	12	0.05	0	15										
		30	15					30	15													
		60	20					60	15													
3	0.10	15	40	5	30	3	0.10	15	30	0.07	0	15										
		30	45					30	30													
		60	50					60	30													
4	0.15	15	65	10	35	4	0.15	15	40	0.10	2	12										
		30	75					30	40													
		60	85					60	42													
5	0.20	15	105	15	50	5	0.2	15	50	0.15	0	8										
		30	120					30	50													
		60	135					60	50													
6	0.25	15	155	25	65	6	0.25	15	55	0.17	0	5										
		30	175					30	55													
		60	200					60	55													
7						7	0.3	15	60	0.20	3	10										
								30	62													
								60	65													
8						8	0.35	15	75	0.24	5	15										
								30	75													
								60	80													
9						9	0.4	15	85	0.28	5	15										
								30	90													
								60	95													
10						10	0.45	15	102	0.30	2	12										
								30	105													
								60	107													
11						11	0.5	15	120	0.35	5	20										
								30	122													
								60	127													
12						12	0.55	15	135	0.37	2	15										
								30	140													
								60	142													
13						13	0.60	15	155	0.40	2	20										
								30	160													
								60	162													
14						14	0.65	15	185	0.44	10	38										
								30	190													
								60	200													
15						15	0.7	15	225	0.47	15	45										
								30	230													
								60	245													
16						16	0.75	15	270	0.50	20	50										
								30	275													
								60	295													

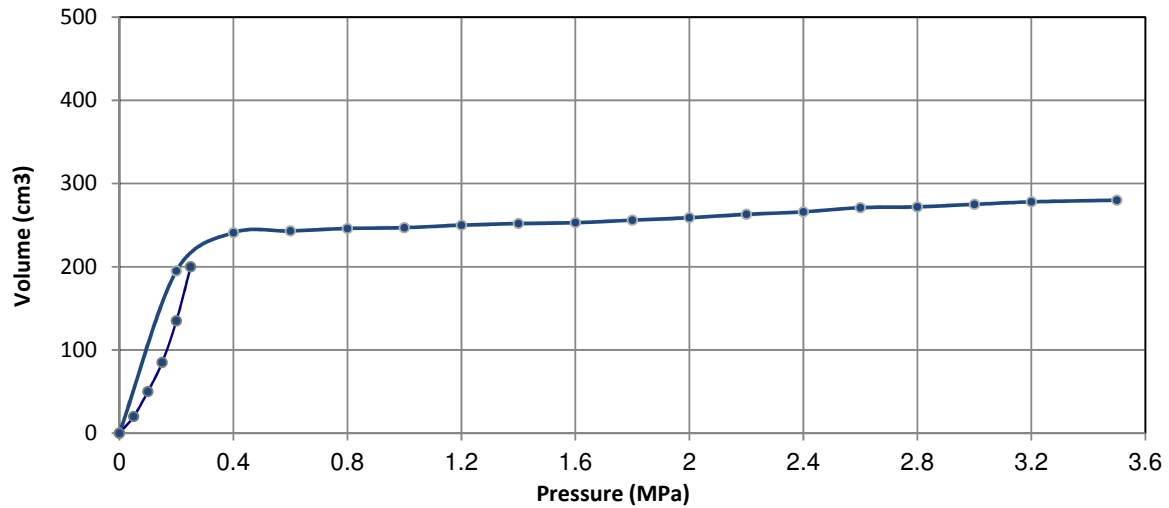
Pressuremeter Testing in Soils

ASTM D4719

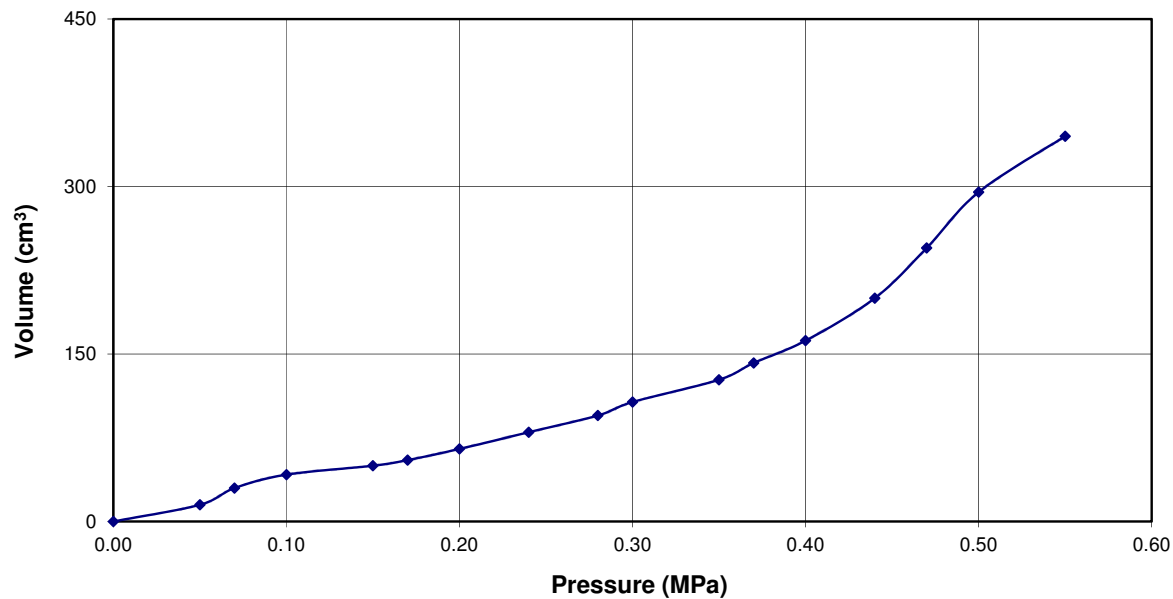
Boring No.: BH-61	Type of Soil: Clay	Project : Lamerd Aluminum Co
Boring Diameter : 66 mm	Drilling Method : Coring	Client : NFC
Depth of Stage : 4.0 to 6.0	Depth of Probe center Point (m): 5.00	Location : lamerd
Test Method : A Equal pressure increment method ☒	Type of Tube : 63mm O.D.Slotted	Date: 2015.05.02
B Equal volume increment method ☐	G.W.L.:	Time : 15:00
Hydrostatic Pressure on probe (P_w)(MPa) : 0.005		Page: 2

Volume of measuring portion of the unflated probe at 0 volume reading at ground surface , cm^3 (V_o) : 535

Calibration Chart



Pressuremeter Test Chart



Calculated by: Z.Khalili

$E_{menard} = 8.6$ MPa

$P_0 = 0.10$ MPa

$P_L = 0.74$ MPa

Pressuremeter Testing in Soils

ASTM D 4719

Boring No.: BH-61	Type of Soil: Clay	Project : Lamerd Aluminum Co
Boring Diameter : 66 mm	Drilling Method : Coring	Client : NFC
Depth (m): 9.0 to 11.00	Depth of Probe Center Point (m): 10.00	Location : lamerd
Test Method : ☒ A Equal pressure increment method ☐ B Equal volume increment method	Type of Tube : 63 mm O.D.Slotted	Date: 2015.05.02
Hydrostatic Pressure on probe (MPa) : 0.0050	G . W . L . :	Time : 16:20
	Vi : 0 cm3	Page: 1

Volume of measuring portion of the uninflated probe at 0 volume reading at ground surface , cm³ (V_o) : 535

Calibration Data						Pressuremeter Test Data								Pressuremeter Test Data								
Steps	Pressure PR (MPa)	Time Second	Volume VR (cm3)	Δ _v V60-V30	Δ _v Vsn-Vsn-1	Steps	Pressure PR (MPa)	Time Second	Volume VR (cm3)	Pressure (Corrected)	Δ _v V60-V30	Δ _v Vsn-Vsn-1	Steps	Pressure PR (MPa)	Time Second	Volume VR(cm3)	Pressure (Corrected)	Δ _v V60-V30	Δ _v Vsn-Vsn-2			
1	0.00	15	0	0	0	1	0	15	0	0.00	0	0										
		30	0					30	0													
		60	0					60	0													
2	0.05	15	5	5	20	2	0.05	15	15	0.09	5	22										
		30	15					30	17													
		60	20					60	22													
3	0.10	15	40	5	30	3	0.10	15	30	0.11	2	18										
		30	45					30	38													
		60	50					60	40													
4	0.15	15	65	10	35	4	0.15	15	50	0.13	5	20										
		30	75					30	55													
		60	85					60	60													
5	0.20	15	105	15	50	5	0.2	15	70	0.15	7	22										
		30	120					30	75													
		60	135					60	82													
6	0.25	15	155	25	65	6	0.25	15	90	0.16	0	13										
		30	175					30	95													
		60	200					60	95													
7						7	0.3	15	110	0.18	10	30										
								30	115													
								60	125													
8						8	0.35	15	138	0.21	10	30										
								30	145													
								60	155													
9						9	0.4	15	170	0.25	6	31										
								30	180													
								60	186													
10						10	0.45	15	205	0.29	13	39										
								30	212													
								60	225													
11						11	0.5	15	235	0.32	10	25										
								30	240													
								60	250													
12						12	0.55	15	260	0.35	15	40										
								30	275													
								60	290													
13						13	0.60	15	305	0.39	10	35										
								30	315													
								60	325													
14																						
15																						
16																						

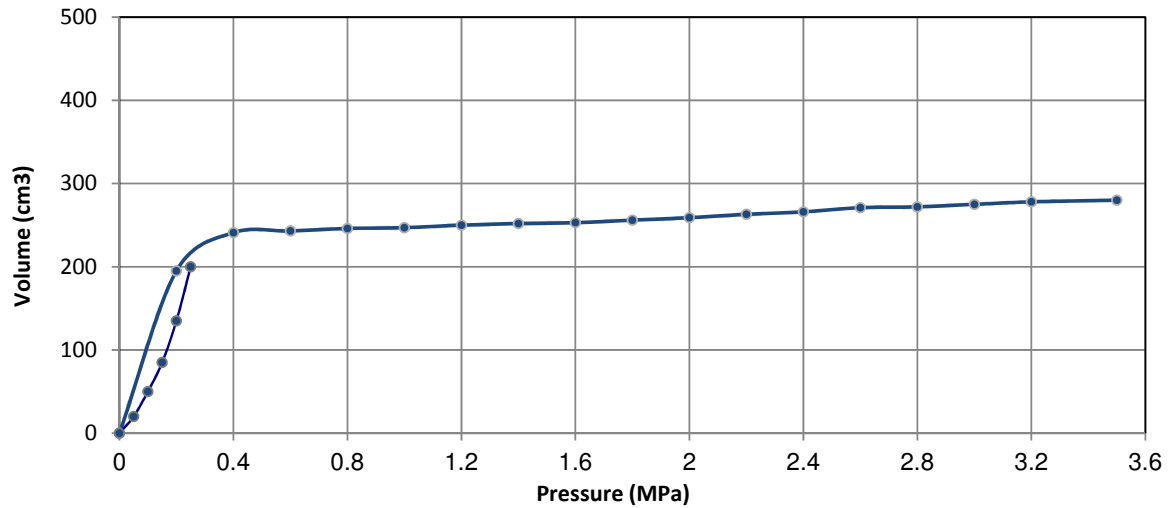
Pressuremeter Testing in Soils

ASTM D4719

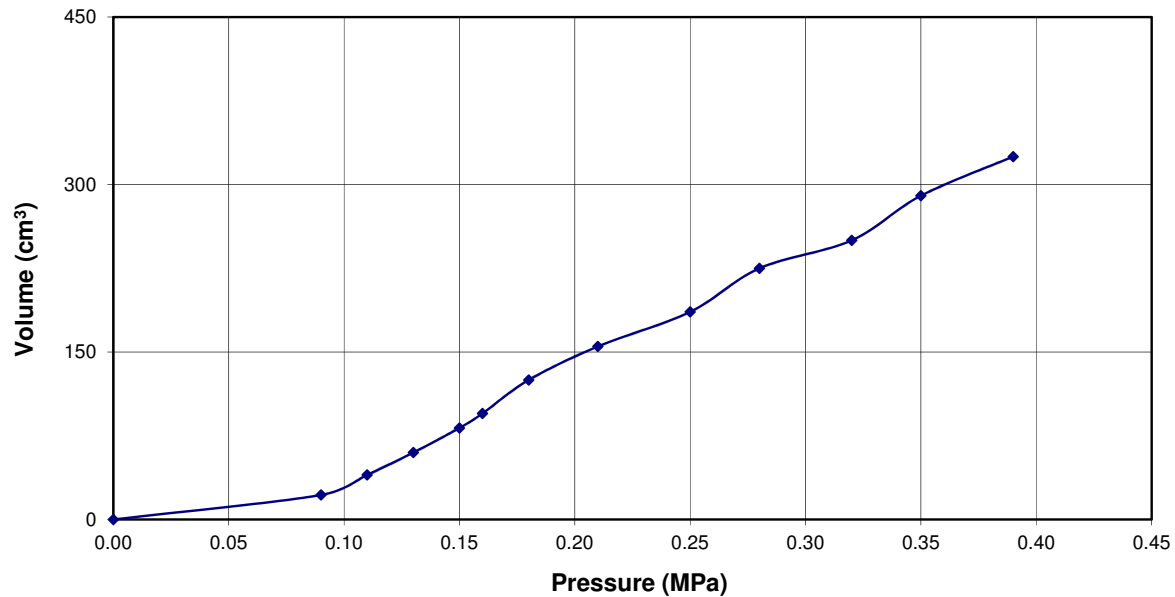
Boring No.: BH-61	Type of Soil: Clay	Project : Lamerd Aluminum Co
Boring Diameter : 66 mm	Drilling Method : Coring	Client : NFC
Depth of Stage : 9.0 to 11.0	Depth of Probe center Point (m): 10.00	Location : lamerd
Test Method : A Equal pressure increment method ☒	Type of Tube : 63mm O.D.Slotted	Date: 2015.05.02
B Equal volume increment method ☐	G.W.L.:	Time : 16:20
Hydrostatic Pressure on probe (P_w)(MPa) : 0.005		Page: 2

Volume of measuring portion of the unflated probe at 0 volume reading at ground surface , cm^3 (V_o) : 535

Calibration Chart



Pressuremeter Test Chart



Calculated by: Z.Khalili

$E_{\text{menard}} = 3.4$ MPa

$P_0 = 0.11$ MPa

$P_L = 0.54$ MPa

Pressuremeter Testing in Soils

ASTM D 4719

Boring No.: BH-61	Type of Soil: Clay	Project : Lamerd Aluminum Co
Boring Diameter : 66 mm	Drilling Method : Coring	Client : NFC
Depth (m): 14.0 to 16.00	Depth of Probe Center Point (m): 15.00	Location : lamerd
Test Method : A Equal pressure increment method ☒ B Equal volume increment method ☐	Type of Tube : 63 mm O.D.Slotted	Date: 2015.05.02
Hydrostatic Pressure on probe (MPa) : 0.0050	G . W . L . :	Time : 17:30
	Vi : 0 cm3	Page: 1

Volume of measuring portion of the unflated probe at 0 volume reading at ground surface , cm³ (V_o) : 535

Calibration Data						Pressuremeter Test Data										Pressuremeter Test Data								
Steps	Pressure PR (MPa)	Time Second	Volume VR (cm3)	Δ _v V60-V30	Δ _v Vsn-Vsn-1	Steps	Pressure PR (MPa)	Time Second	Volume VR (cm3)	Pressure (Corrected)	Δ _v V60-V30	Δ _v Vsn-Vsn-1	Steps	Pressure PR (MPa)	Time Second	Volume VR(cm3)	Pressure (Corrected)	Δ _v V60-V30	Δ _v Vsn-Vsn-2					
1	0.00	15	0	0	0	1	0	15	0	0.00	0	0												
		30	0					30	0															
		60	0					60	0															
2	0.05	15	5	5	20	2	0.05	15	15	0.15	2	22												
		30	15					30	20															
		60	20					60	22															
3	0.10	15	40	5	30	3	0.10	15	35	0.17	2	15												
		30	45					30	35															
		60	50					60	37															
4	0.15	15	65	10	35	4	0.15	15	50	0.20	3	18												
		30	75					30	52															
		60	85					60	55															
5	0.20	15	105	15	50	5	0.2	15	70	0.21	2	17												
		30	120					30	70															
		60	135					60	72															
6	0.25	15	155	25	65	6	0.25	15	90	0.23	0	23												
		30	175					30	95															
		60	200					60	95															
7						7	0.3	15	115	0.25	2	27												
								30	120															
								60	122															
8						8	0.35	15	140	0.27	0	23												
								30	145															
								60	145															
9						9	0.4	15	170	0.30	5	40												
								30	180															
								60	185															
10						10	0.45	15	205	0.33	10	40												
								30	215															
								60	225															
11						11	0.5	15	245	0.36	5	30												
								30	250															
								60	255															
12						12	0.55	15	285	0.40	5	45												
								30	295															
								60	300															
13						13	0.60	15	320	0.43	5	30												
								30	325															
								60	330															
14																								
15																								
16																								

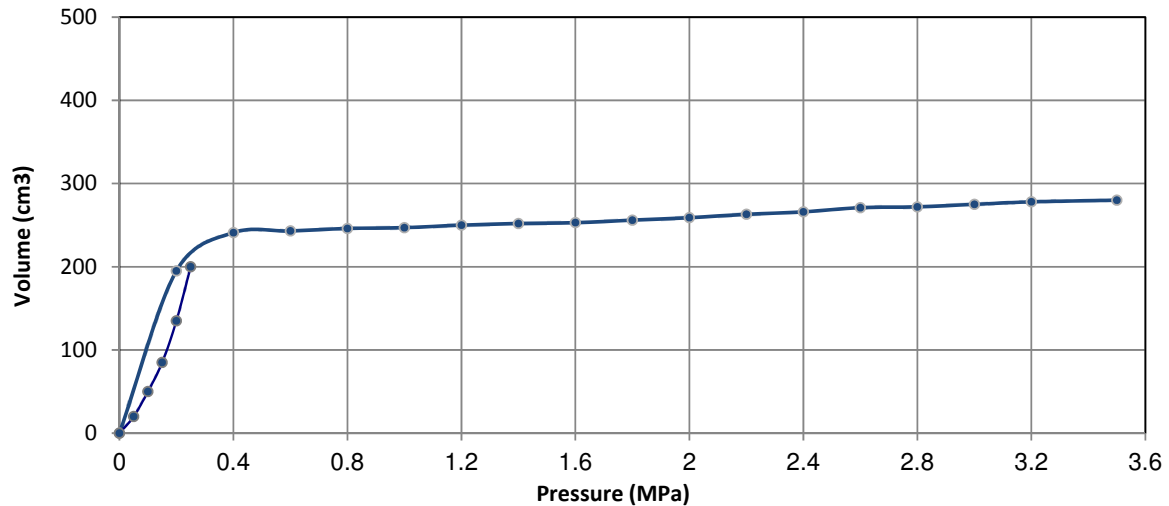
Pressuremeter Testing in Soils

ASTM D4719

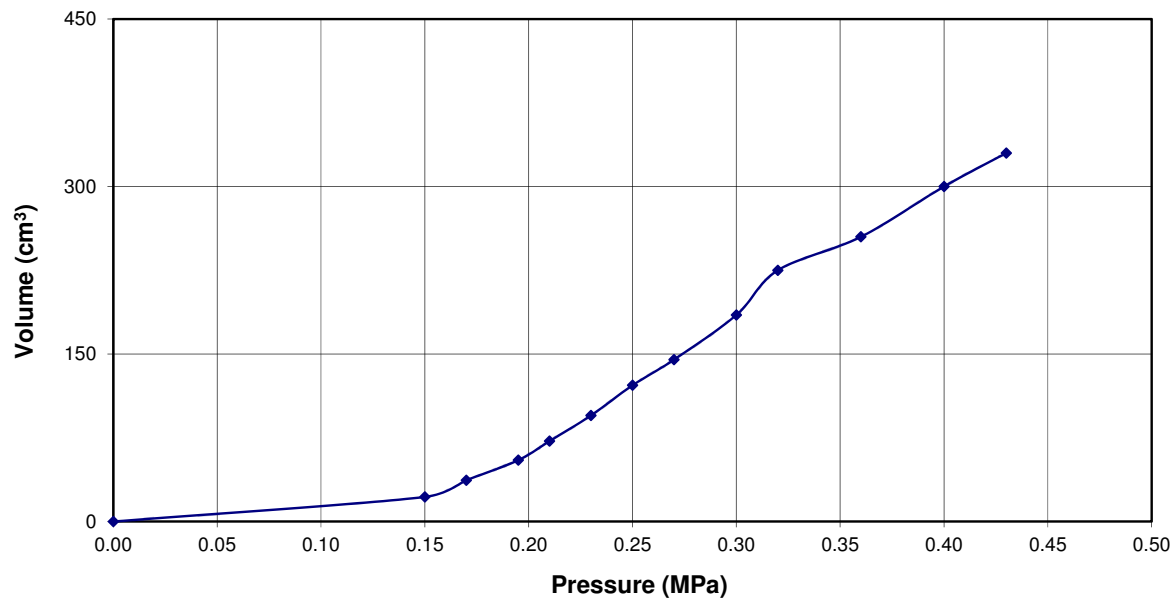
Boring No.: BH-61	Type of Soil: Clay	Project : Lamerd Aluminum Co
Boring Diameter : 66 mm	Drilling Method : Coring	Client : NFC
Depth of Stage : 14.0 to 16.0	Depth of Probe center Point (m): 15.00	Location : lamerd
Test Method : A Equal pressure increment method ☒	Type of Tube : 63mm O.D.Slotted	Date: 2015.05.02
B Equal volume increment method ☐	G.W.L.:	Time : 17:30
Hydrostatic Pressure on probe (P_w)(MPa) : 0.005		Page: 2

Volume of measuring portion of the uninflated probe at 0 volume reading at ground surface , cm^3 (V_o) : 535

Calibration Chart



Pressuremeter Test Chart



Calculated by: Z.Khalili

$E_{menard} = 2.8$ MPa

$P_0 = 0.15$ MPa

$P_L = 0.57$ MPa

Pressuremeter Testing in Soils

ASTM D 4719

Boring No.: BH-61	Type of Soil: Clay	Project : Lamerd Aluminum Co
Boring Diameter : 66 mm	Drilling Method : Coring	Client : NFC
Depth (m): 19.0 to 21.00	Depth of Probe Center Point (m): 20.00	Location : lamerd
Test Method : A Equal pressure increment method ☒ B Equal volume increment method ☐	Type of Tube : 63 mm O.D.Slotted	Date: 2015.05.03
Hydrostatic Pressure on probe (MPa) : 0.0050	G . W . L . :	Time : 7:30
	Vi : 0 cm3	Page: 1

Volume of measuring portion of the uninflated probe at 0 volume reading at ground surface , cm³ (V_o) : 535

Calibration Data						Pressuremeter Test Data							Pressuremeter Test Data							Pressuremeter Test Data		
Steps	Pressure PR (MPa)	Time Second	Volume VR (cm3)	Δ _v V60-V30	Δ _v Vsn-Vsn-1	Steps	Pressure PR (MPa)	Time Second	Volume VR (cm3)	Pressure (Corrected)	Δ _v V60-V30	Δ _v Vsn-Vsn-1	Steps	Pressure PR (MPa)	Time Second	Volume VR(cm3)	Pressure (Corrected)	Δ _v V60-V30	Δ _v Vsn-Vsn-2			
1	0.00	15	0	0	0	1	0	15	0	0.00	0	0										
		30	0					30	0													
		60	0					60	0													
2	0.05	15	5	5	20	2	0.05	15	5	0.23	0	5										
		30	15					30	5													
		60	20					60	5													
3	0.10	15	40	5	30	3	0.10	15	7	0.27	0	2										
		30	45					30	7													
		60	50					60	7													
4	0.15	15	65	10	35	4	0.20	15	10	0.36	0	3										
		30	75					30	10													
		60	85					60	10													
5	0.20	15	105	15	50	5	0.3	15	20	0.45	3	15										
		30	120					30	22													
		60	135					60	25													
6	0.25	15	155	25	65	6	0.40	15	37	0.54	0	15										
		30	175					30	40													
		60	200					60	40													
7						7	0.5	15	50	0.62	5	20										
								30	55													
								60	60													
8						8	0.60	15	75	0.69	10	30										
								30	80													
								60	90													
9						9	0.7	15	105	0.75	10	30										
								30	110													
								60	120													
10						10	0.8	15	150	0.80	5	40										
								30	155													
								60	160													
11						11	0.9	15	190	0.86	5	40										
								30	195													
								60	200													
12						12	1	15	240	0.95	5	50										
								30	245													
								60	250													
13						13	1.10	15	280	1.01	10	60										
								30	300													
								60	310													
14																						
15																						
16																						

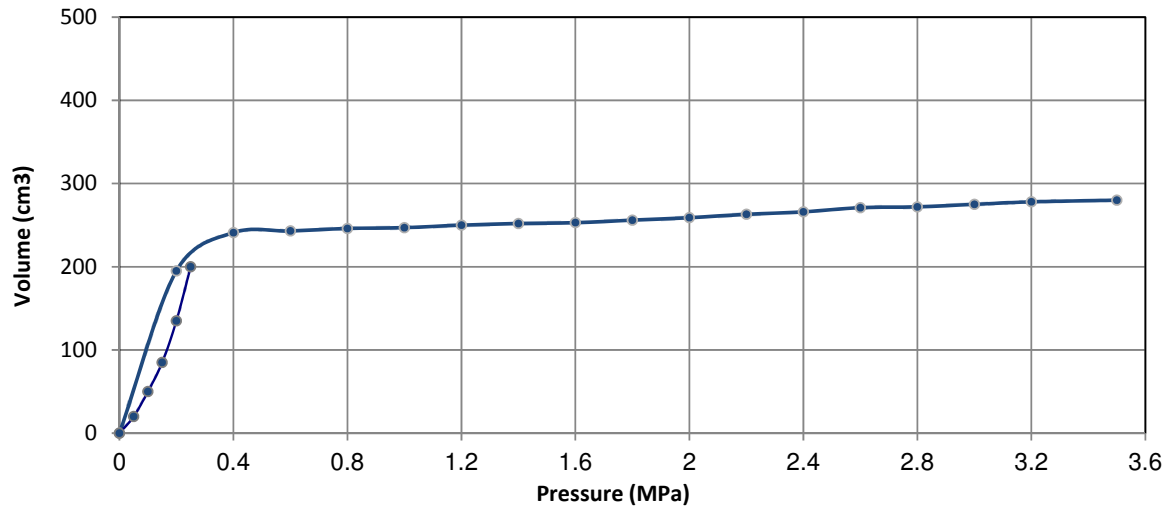
Pressuremeter Testing in Soils

ASTM D4719

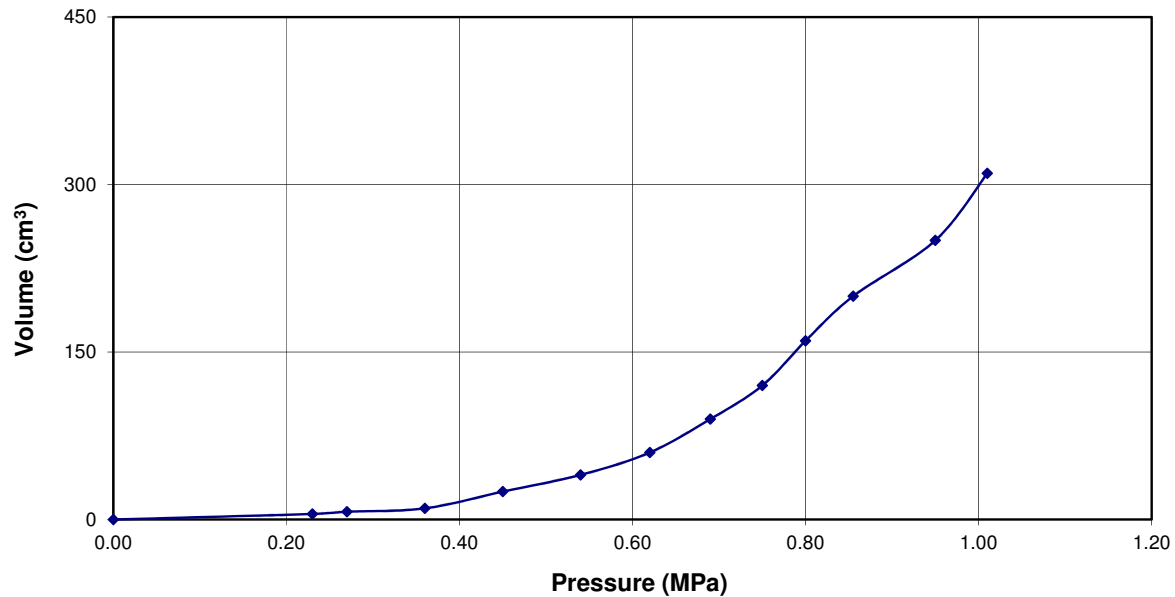
Boring No.: BH-61	Type of Soil: Clay	Project : Lamerd Aluminum Co
Boring Diameter : 66 mm	Drilling Method : Coring	Client : NFC
Depth of Stage : 19.0 to 21.0	Depth of Probe center Point (m): 20.00	Location : lamerd
Test Method : A Equal pressure increment method ☒	Type of Tube : 63mm O.D.Slotted	Date: 2015.05.03
B Equal volume increment method ☐	G.W.L.:	Time : 7:30
Hydrostatic Pressure on probe (P_w)(MPa) : 0.005		Page: 2

Volume of measuring portion of the unflated probe at 0 volume reading at ground surface , cm^3 (V_o) : 535

Calibration Chart



Pressuremeter Test Chart



Calculated by: Z.Khalili

$E_{\text{menard}} = 7.7$ MPa

$P_0 = 0.45$ MPa

$P_L = 1.38$ MPa

Pressuremeter Testing in Soils

ASTM D 4719

Boring No.: BH-61	Type of Soil: Clay	Project : Lamerd Aluminum Co
Boring Diameter : 66 mm	Drilling Method : Coring	Client : NFC
Depth (m): 24.0 to 26.00	Depth of Probe Center Point (m): 25.00	Location : lamerd
Test Method : A Equal pressure increment method ☒ B Equal volume increment method ☐	Type of Tube : 63 mm O.D.Slotted	Date: 2015.05.03
Hydrostatic Pressure on probe (MPa) : 0.0050	G . W . L . : Vi : 0 cm3	Time : 9:00
		Page: 1

Volume of measuring portion of the unflated probe at 0 volume reading at ground surface , cm³ (V_o) : 535

Calibration Data						Pressuremeter Test Data								Pressuremeter Test Data							
Steps	Pressure PR (MPa)	Time Second	Volume VR (cm3)	Δ _v V60-V30	Δ _v Vsn-Vsn-1	Steps	Pressure PR (MPa)	Time Second	Volume VR (cm3)	Pressure (Corrected)	Δ _v V60-V30	Δ _v Vsn-Vsn-1	Steps	Pressure PR (MPa)	Time Second	Volume VR(cm3)	Pressure (Corrected)	Δ _v V60-V30	Δ _v Vsn-Vsn-2		
1	0.00	15	0	0	0	1	0	15	0	0.00	0	0									
		30	0					30	0												
		60	0					60	0												
2	0.05	15	25	5	35	2	0.05	15	2	0.28	3	5									
		30	30					30	2												
		60	35					60	5												
3	0.10	15	65	5	45	3	0.10	15	10	0.32	0	5									
		30	75					30	10												
		60	80					60	10												
4	0.15	15	105	20	60	4	0.15	15	17	0.35	0	10									
		30	120					30	20												
		60	140					60	20												
5	0.20	15	155	10	35	5	0.2	15	27	0.40	5	15									
		30	165					30	30												
		60	175					60	35												
6	0.25	15	205	25	75	6	0.30	15	45	0.47	5	20									
		30	225					30	50												
		60	250					60	55												
7						7	0.4	15	80	0.55	5	30									
								30	80												
								60	85												
8						8	0.50	15	100	0.60	5	25									
								30	105												
								60	110												
9						9	0.6	15	135	0.66	5	40									
								30	145												
								60	150												
10						10	0.7	15	175	0.73	10	40									
								30	180												
								60	190												
11						11	0.8	15	215	0.80	5	35									
								30	220												
								60	225												
12						12	0.9	15	245	0.87	15	45									
								30	255												
								60	270												
13						13	1.00	15	297	0.95	20	50									
								30	300												
								60	320												
14																					
15																					
16																					

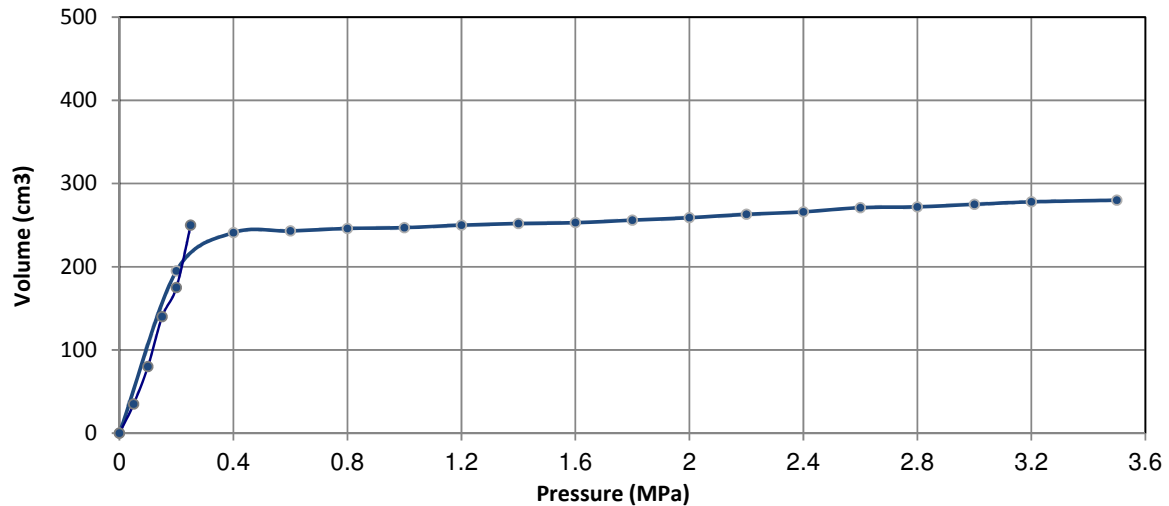
Pressuremeter Testing in Soils

ASTM D4719

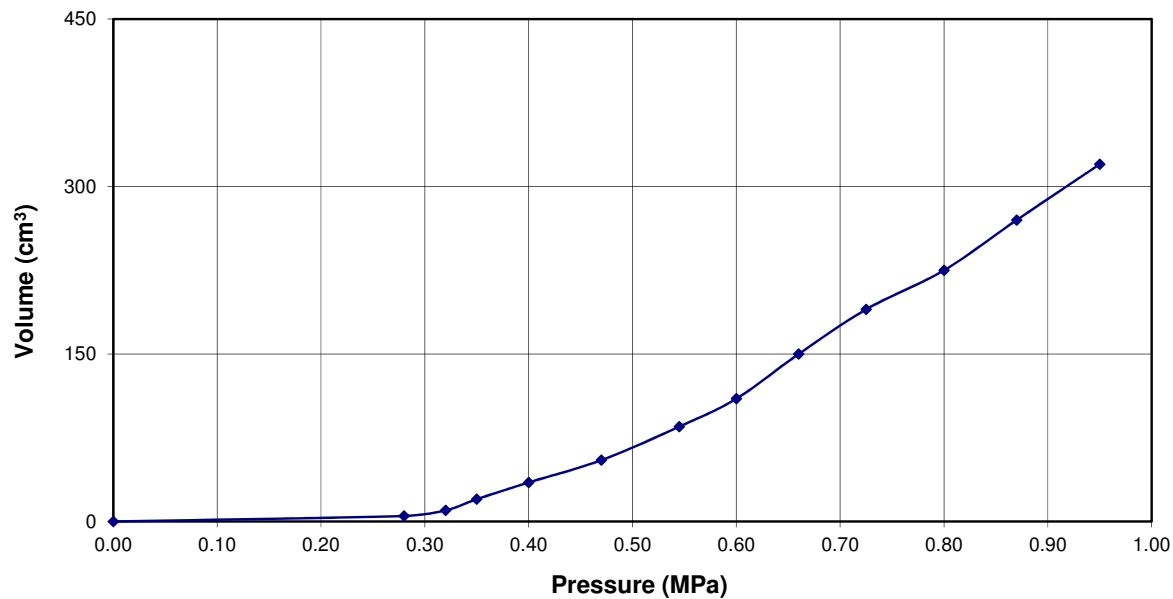
Boring No.: BH-61	Type of Soil: Clay	Project : Lamerd Aluminum Co
Boring Diameter : 66 mm	Drilling Method : Coring	Client : NFC
Depth of Stage : 24.0 to 26.0	Depth of Probe center Point (m): 25.0	Location : lamerd
Test Method : A Equal pressure increment method ☒	Type of Tube : 63mm O.D.Slotted	Date: 2015.05.03
B Equal volume increment method ☐	G.W.L.:	Time : 9:00
Hydrostatic Pressure on probe (P_w)(MPa) : 0.005		Page: 2

Volume of measuring portion of the unflated probe at 0 volume reading at ground surface , cm^3 (V_o) :535

Calibration Chart



Pressuremeter Test Chart



Calculated by: Z.Khalili

$E_{menard} = 4.4$ MPa

$P_0 = 0.40$ MPa

$P_L = 1.38$ MPa

Pressuremeter Testing in Soils

ASTM D 4719

Boring No.: BH-61	Type of Soil: Clay	Project : Lamerd Aluminum Co
Boring Diameter : 66 mm	Drilling Method : Coring	Client : NFC
Depth (m): 29.0 to 31.00	Depth of Probe Center Point (m): 30.00	Location : lamerd
Test Method : A Equal pressure increment method ☒ B Equal volume increment method ☐	Type of Tube : 63 mm O.D.Slotted	Date: 2015.05.03
Hydrostatic Pressure on probe (MPa) : 0.0050	G . W . L . :	Time : 11:00
	Vi : 0 cm3	Page: 1

Volume of measuring portion of the uninflated probe at 0 volume reading at ground surface , cm³ (V_o) : 535

Calibration Data						Pressuremeter Test Data								Pressuremeter Test Data								
Steps	Pressure PR (MPa)	Time Second	Volume VR (cm3)	Δ _v V60-V30	Δ _v Vsn-Vsn-1	Steps	Pressure PR (MPa)	Time Second	Volume VR (cm3)	Pressure (Corrected)	Δ _v V60-V30	Δ _v Vsn-Vsn-1	Steps	Pressure PR (MPa)	Time Second	Volume VR(cm3)	Pressure (Corrected)	Δ _v V60-V30	Δ _v Vsn-Vsn-2			
1	0.00	15	0	0	0	1	0	15	0	0.00	0	0										
		30	0					30	0													
		60	0					60	0													
2	0.05	15	25	5	35	2	0.05	15	5	0.32	1	8										
		30	30					30	7													
		60	35					60	8													
3	0.10	15	65	5	45	3	0.10	15	15	0.37	3	12										
		30	75					30	17													
		60	80					60	20													
4	0.15	15	105	20	60	4	0.20	15	30	0.45	2	20										
		30	120					30	38													
		60	140					60	40													
5	0.20	15	155	10	35	5	0.3	15	60	0.50	5	30										
		30	165					30	65													
		60	175					60	70													
6	0.25	15	205	25	75	6	0.40	15	95	0.55	5	40										
		30	225					30	105													
		60	250					60	110													
7						7	0.5	15	145	0.60	10	50										
								30	150													
								60	160													
8						8	0.60	15	190	0.67	20	65										
								30	205													
								60	225													
9						9	0.7	15	255	0.73	20	55										
								30	260													
								60	280													
10						10	0.8	15	310	0.78	20	70										
								30	330													
								60	350													
11																						
12																						
13																						
14																						
15																						
16																						

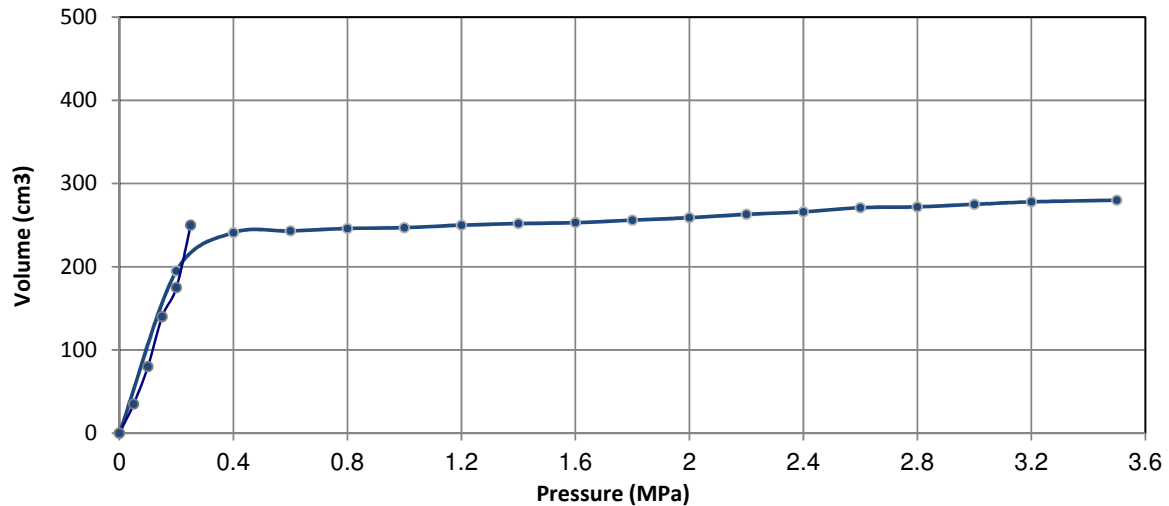
Pressuremeter Testing in Soils

ASTM D4719

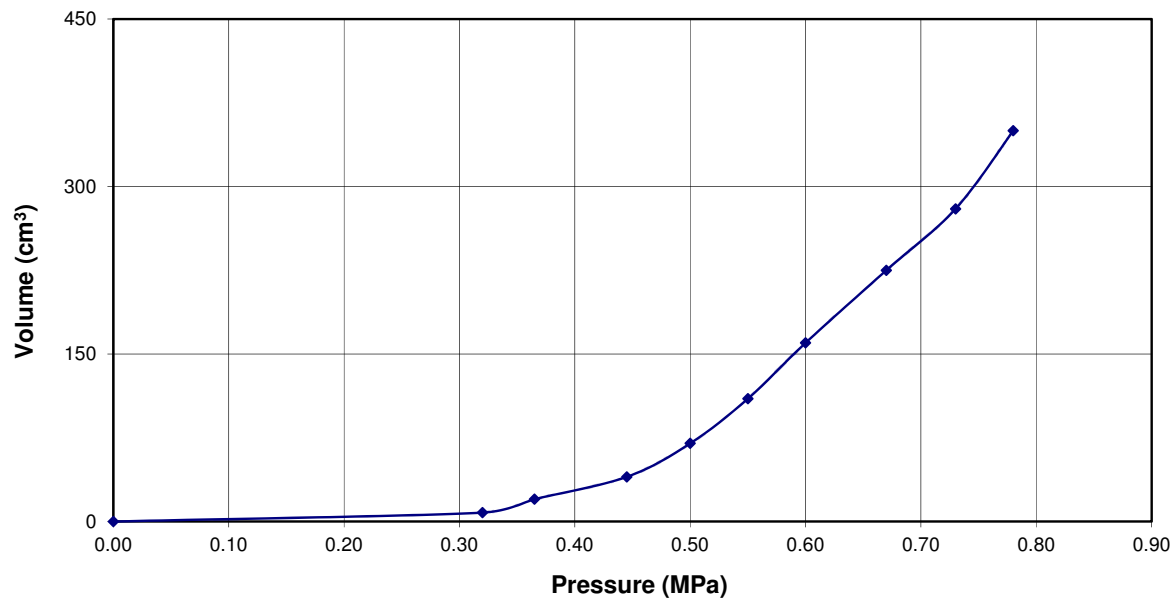
Boring No.: BH-61	Type of Soil: Clay	Project : Lamerd Aluminum Co
Boring Diameter : 66 mm	Drilling Method : Coring	Client : NFC
Depth of Stage : 29.0 to 31.0	Depth of Probe center Point (m): 30.00	Location : lamerd
Test Method : A Equal pressure increment method ☒	Type of Tube : 63mm O.D.Slotted	Date: 2015.05.03
B Equal volume increment method ☐	G.W.L.:	Time : 11:00
Hydrostatic Pressure on probe (P_w)(MPa) : 0.005		Page: 2

Volume of measuring portion of the unflated probe at 0 volume reading at ground surface , cm^3 (V_o) : 535

Calibration Chart



Pressuremeter Test Chart



Calculated by: Z.Khalili

$E_{\text{menard}} = 6.2$ MPa

$P_0 = 0.45$ MPa

$P_L = 1.07$ MPa

Pressuremeter Testing in Soils

ASTM D 4719

Boring No.: BH-118	Type of Soil: Clay	Project : Lamerd Aluminum Co
Boring Diameter : 66 mm	Drilling Method : Coring	Client : NFC
Depth (m): 4.0 to 6.00	Depth of Probe Center Point (m): 5.00	Location : lamerd
Test Method : A Equal pressure increment method ☒ B Equal volume increment method ☐	Type of Tube : 63 mm O.D.Slotted	Date: 2015.04.26
Hydrostatic Pressure on probe (MPa) : 0.0050	G . W . L . : Vi : 0 cm3	Time : 8:00
		Page: 1

Volume of measuring portion of the unflated probe at 0 volume reading at ground surface , cm³ (V_o) : 535

Calibration Data						Pressuremeter Test Data								Pressuremeter Test Data								
Steps	Pressure PR (MPa)	Time Second	Volume VR (cm3)	Δ _v V60-V30	Δ _v Vsn-Vsn-1	Steps	Pressure PR (MPa)	Time Second	Volume VR (cm3)	Pressure (Corrected)	Δ _v V60-V30	Δ _v Vsn-Vsn-1	Steps	Pressure PR (MPa)	Time Second	Volume VR(cm3)	Pressure (Corrected)	Δ _v V60-V30	Δ _v Vsn-Vsn-2			
1	0.00	15	0	0	0	1	0	15	0	0.00	0	0										
		30	0					30	0													
		60	0					60	0													
2	0.05	15	10	0	15	2	0.05	15	50	0.04	0	50										
		30	15					30	50													
		60	15					60	50													
3	0.10	15	30	5	25	3	0.10	15	58	0.05	2	10										
		30	35					30	58													
		60	40					60	60													
4	0.15	15	55	10	30	4	0.20	15	67	0.10	0	10										
		30	60					30	70													
		60	70					60	70													
5	0.20	15	105	15	65	5	0.3	15	75	0.19	3	10										
		30	120					30	77													
		60	135					60	80													
6	0.25	15	170	35	90	6	0.40	15	90	0.26	0	15										
		30	190					30	95													
		60	225					60	95													
7						7	0.5	15	105	0.35	2	17										
		30	110					30	110													
		60	112					60	112													
8						8	0.60	15	125	0.45	3	18										
		30	127					30	127													
		60	130					60	130													
9						9	0.7	15	145	0.51	5	20										
		30	145					30	145													
		60	150					60	150													
10						10	0.8	15	170	0.60	3	25										
		30	172					30	172													
		60	175					60	175													
11						11	0.9	15	195	0.70	5	30										
		30	200					30	200													
		60	205					60	205													
12						12	1	15	220	0.79	10	30										
		30	225					30	225													
		60	235					60	235													
13																						
14																						
15																						
16																						

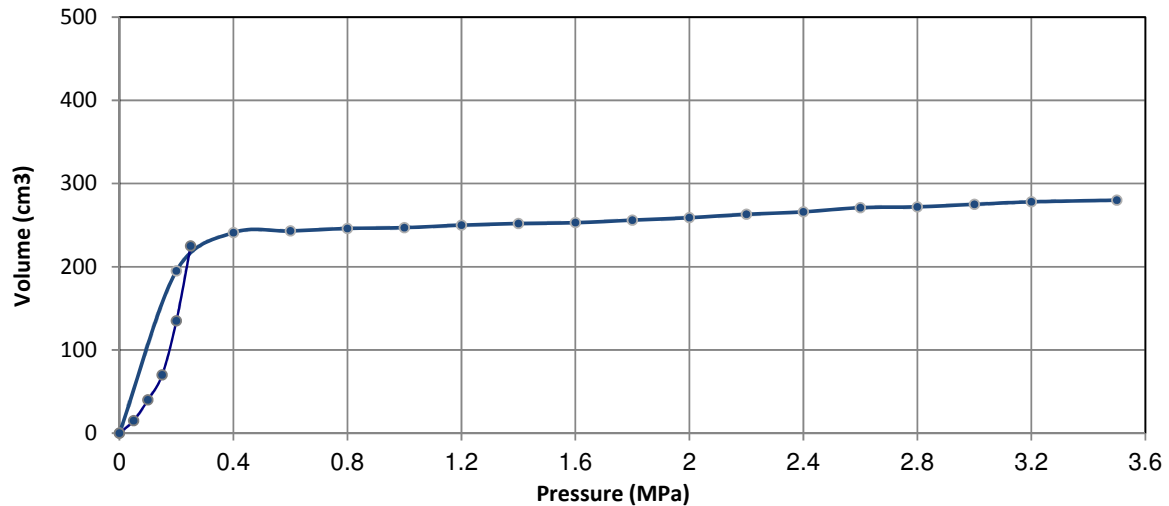
Pressuremeter Testing in Soils

ASTM D4719

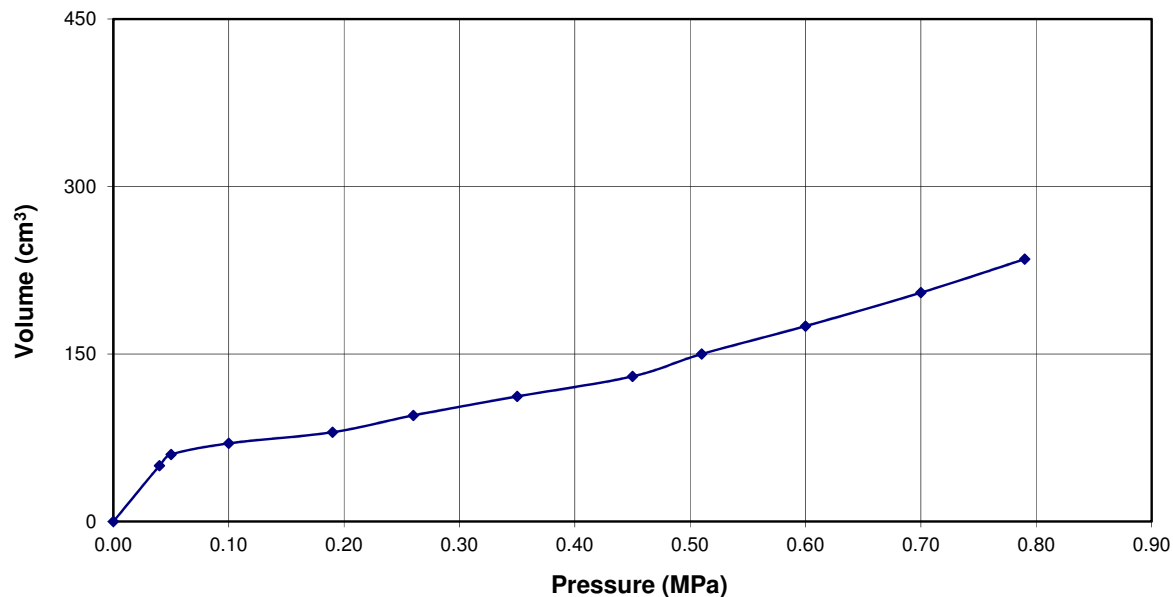
Boring No.: BH-118	Type of Soil: Clay	Project : Lamerd Aluminum Co
Boring Diameter : 66 mm	Drilling Method : Coring	Client : NFC
Depth of Stage : 4.0 to 6.0	Depth of Probe center Point (m): 5.00	Location : lamerd
Test Method : A Equal pressure increment method ☒	Type of Tube : 63mm O.D.Slotted	Date: 2015.04.26
B Equal volume increment method ☐	G.W.L.:	Time : 8:00
Hydrostatic Pressure on probe (P_w)(MPa) : 0.005		Page: 2

Volume of measuring portion of the unflated probe at 0 volume reading at ground surface , cm^3 (V_o) :535

Calibration Chart



Pressuremeter Test Chart



Calculated by: Z.Khalili

$E_{\text{menard}} = 15.0$ MPa

$P_0 = 0.10$ MPa

$P_L = 1.38$ MPa

Pressuremeter Testing in Soils

ASTM D 4719

Boring No.: BH-118		Type of Soil: Clay	Project : Lamerd Aluminum Co
Boring Diameter : 66 mm		Drilling Method : Coring	Client : NFC
Depth (m): 9.0 to 11.00		Depth of Probe Center Point (m): 10.00	Location : lamerd
Test Method : A Equal pressure increment method ☒ B Equal volume increment method ☐		Type of Tube : 63 mm O.D.Slotted	Date: 2015.04.26
Hydrostatic Pressure on probe (MPa) : 0.0050		G . W . L . :	Time : 9:00
		Vi : 0 cm3	Page: 1

Volume of measuring portion of the unflated probe at 0 volume reading at ground surface , cm³ (V_o) : 535

Calibration Data						Pressuremeter Test Data										Pressuremeter Test Data								
Steps	Pressure PR (MPa)	Time Second	Volume VR (cm3)	Δ _V V60-V30	Δ _V Vsn-Vsn-1	Steps	Pressure PR (MPa)	Time Second	Volume VR (cm3)	Pressure (Corrected)	Δ _V V60-V30	Δ _V Vsn-Vsn-1	Steps	Pressure PR (MPa)	Time Second	Volume VR(cm3)	Pressure (Corrected)	Δ _V V60-V30	Δ _V Vsn-Vsn-2					
1	0.00	15	0	0	0	1	0	15	0	0.00	0	0												
		30	0					30	0															
		60	0					60	0															
2	0.05	15	10	0	15	2	0.10	15	40	0.08	0	40												
		30	15					30	40															
		60	15					60	40															
3	0.10	15	30	5	25	3	0.15	15	55	0.10	2	20												
		30	35					30	58															
		60	40					60	60															
4	0.15	15	55	10	30	4	0.20	15	85	0.12	8	35												
		30	60					30	87															
		60	70					60	95															
5	0.20	15	105	15	65	5	0.25	15	110	0.13	3	20												
		30	120					30	112															
		60	135					60	115															
6	0.25	15	170	35	90	6	0.30	15	135	0.16	0	40												
		30	190					30	155															
		60	225					60	155															
7						7	0.35	15	180	0.20	5	40												
								30	190															
								60	195															
8						8	0.40	15	220	0.23	10	60												
								30	245															
								60	255															
9						9	0.45	15	270	0.25	20	45												
								30	280															
								60	300															
10																								
11																								
12																								
13																								
14																								
15																								
16																								

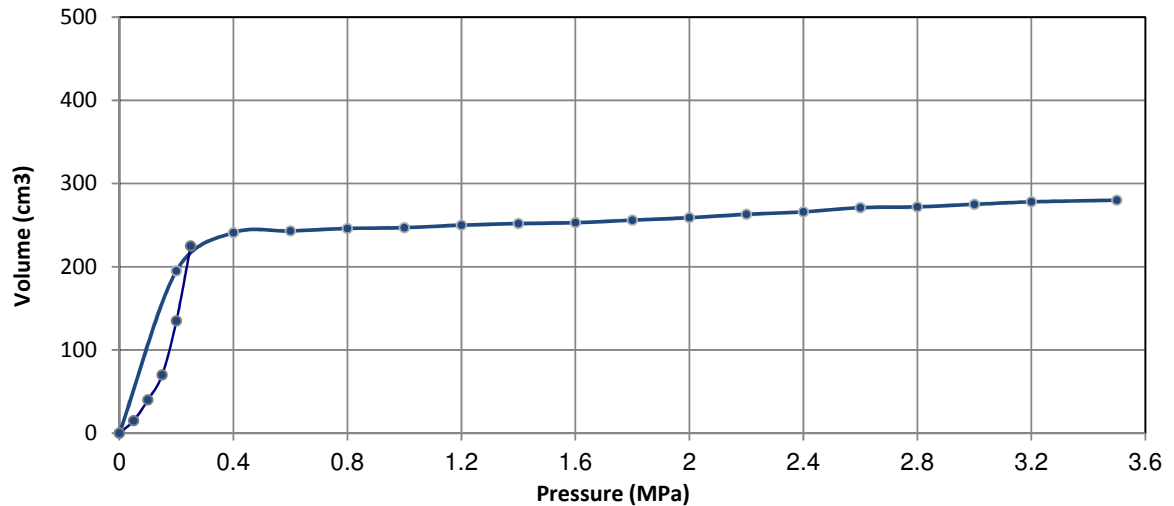
Pressuremeter Testing in Soils

ASTM D4719

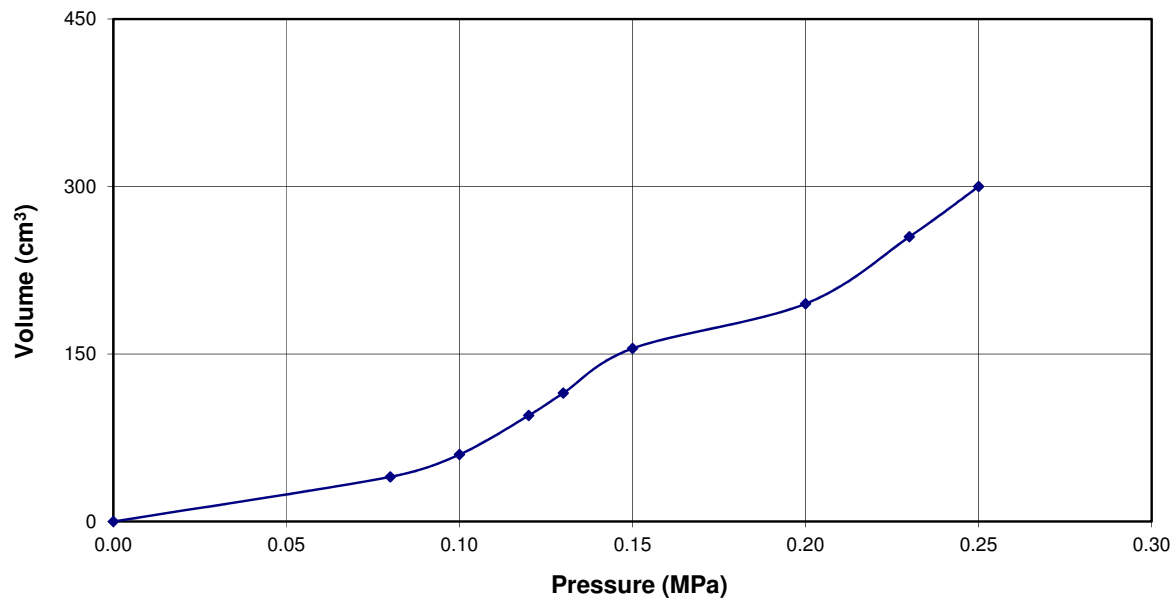
Boring No.: BH-118	Type of Soil: Clay	Project : Lamerd Aluminum Co
Boring Diameter : 66 mm	Drilling Method : Coring	Client : NFC
Depth of Stage : 9.0 to 11.0	Depth of Probe center Point (m): 10.00	Location : lamerd
Test Method : A Equal pressure increment method ☒	Type of Tube : 63mm O.D.Slotted	Date: 2015.04.26
B Equal volume increment method ☐	G.W.L.:	Time : 9:00
Hydrostatic Pressure on probe (P_w)(MPa) : 0.005		Page: 2

Volume of measuring portion of the unflated probe at 0 volume reading at ground surface , cm^3 (V_o) : 535

Calibration Chart



Pressuremeter Test Chart



Calculated by: Z.Khalili

$E_{\text{menard}} = 2.4$ MPa

$P_0 = 0.15$ MPa

$P_L = 0.36$ MPa

Pressuremeter Testing in Soils

ASTM D 4719

Boring No.: BH-118	Type of Soil: Clay	Project : Lamerd Aluminum Co
Boring Diameter : 66 mm	Drilling Method : Coring	Client : NFC
Depth (m): 14.0 to 16.00	Depth of Probe Center Point (m): 15.00	Location : lamerd
Test Method : A Equal pressure increment method ☒ B Equal volume increment method ☐	Type of Tube : 63 mm O.D.Slotted	Date: 2015.04.26
Hydrostatic Pressure on probe (MPa) : 0.0050	G . W . L . : Vi : 0 cm3	Time : 10:35
		Page: 1

Volume of measuring portion of the unflated probe at 0 volume reading at ground surface , cm³ (V_o) : 535

Calibration Data						Pressuremeter Test Data										Pressuremeter Test Data								
Steps	Pressure PR (MPa)	Time Second	Volume VR (cm3)	Δ _v V60-V30	Δ _v Vsn-Vsn-1	Steps	Pressure PR (MPa)	Time Second	Volume VR (cm3)	Pressure (Corrected)	Δ _v V60-V30	Δ _v Vsn-Vsn-1	Steps	Pressure PR (MPa)	Time Second	Volume VR(cm3)	Pressure (Corrected)	Δ _v V60-V30	Δ _v Vsn-Vsn-2					
1	0.00	15	0	0	0	1	0	15	0	0.00	0	0												
		30	0					30	0															
		60	0					60	0															
2	0.05	15	10	0	15	2	0.05	15	25	0.10	0	30												
		30	15					30	30															
		60	15					60	30															
3	0.10	15	30	5	25	3	0.10	15	40	0.13	2	12												
		30	35					30	40															
		60	40					60	42															
4	0.15	15	55	10	30	4	0.15	15	55	0.15	2	20												
		30	60					30	60															
		60	70					60	62															
5	0.20	15	105	15	65	5	0.20	15	80	0.17	5	28												
		30	120					30	85															
		60	135					60	90															
6	0.25	15	170	35	90	6	0.25	15	105	0.18	5	25												
		30	190					30	110															
		60	225					60	115															
7						7	0.30	15	145	0.21	10	50												
								30	155															
								60	165															
8						8	0.35	15	200	0.25	5	55												
								30	215															
								60	220															
9						9	0.40	15	245	0.27	5	40												
								30	255															
								60	260															
10						10	0.45	15	280	0.30	10	40												
								30	290															
								60	300															
11						11	0.5	15	315	0.32	15	45												
								30	330															
								60	345															
12																								
13																								
14																								
15																								
16																								

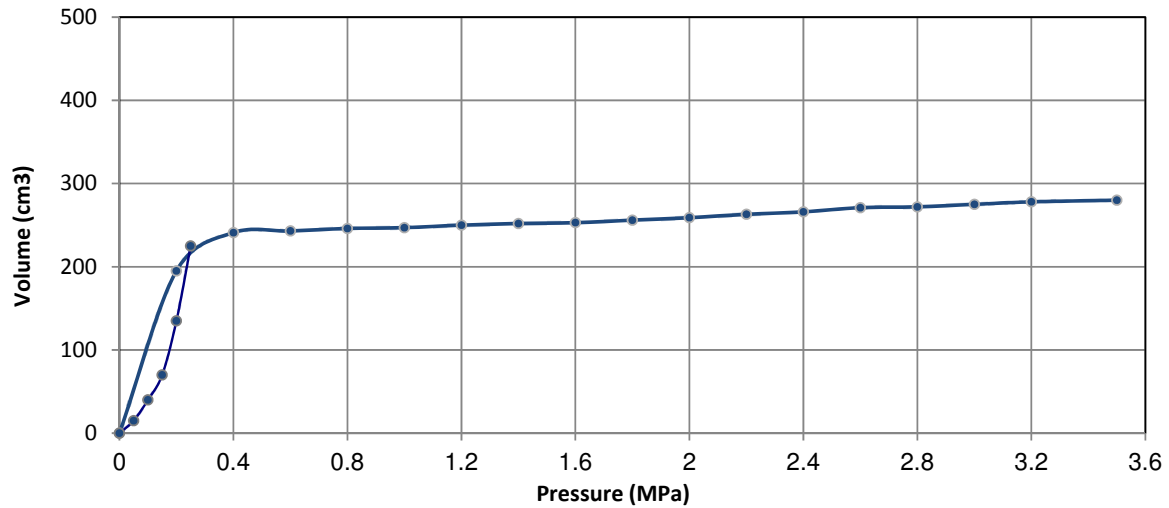
Pressuremeter Testing in Soils

ASTM D4719

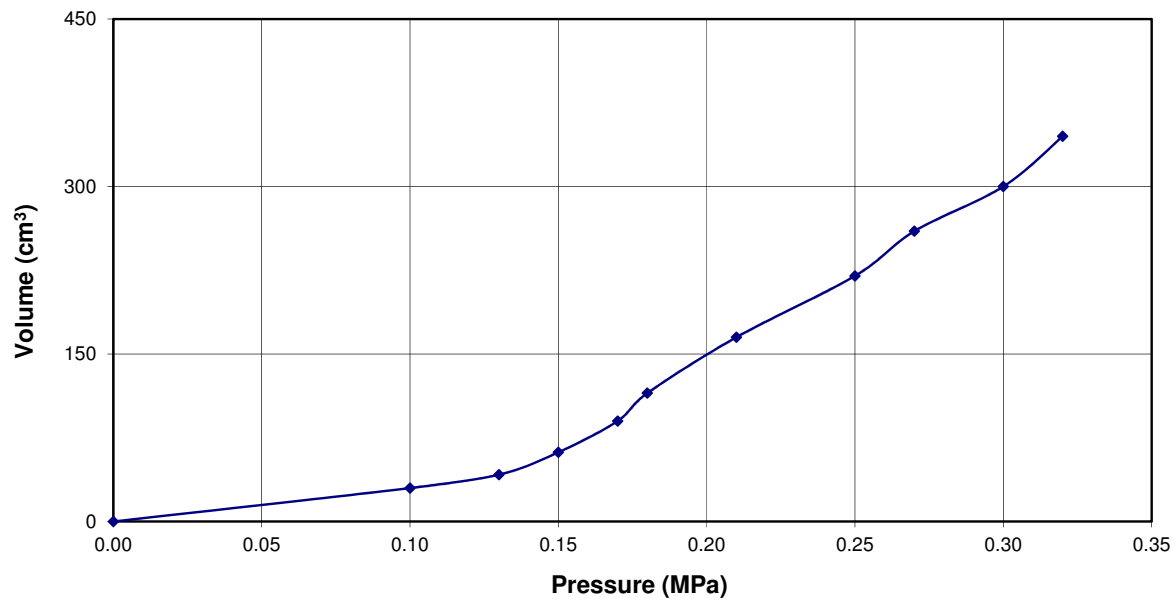
Boring No.: BH-118	Type of Soil: Clay	Project : Lamerd Aluminum Co
Boring Diameter : 66 mm	Drilling Method : Coring	Client : NFC
Depth of Stage : 14.0 to 16.0	Depth of Probe center Point (m): 15.00	Location : lamerd
Test Method : A Equal pressure increment method ☒	Type of Tube : 63mm O.D.Slotted	Date: 2015.04.26
B Equal volume increment method ☐	G.W.L.:	Time : 10:35
Hydrostatic Pressure on probe (P_w)(MPa) : 0.005		Page: 2

Volume of measuring portion of the uninflated probe at 0 volume reading at ground surface , cm^3 (V_o) : 535

Calibration Chart



Pressuremeter Test Chart



Calculated by: Z.Khalili

$E_{menard} = 3.9$ MPa

$P_0 = 0.13$ MPa

$P_L = 0.42$ MPa

Pressuremeter Testing in Soils

ASTM D 4719

Boring No.: BH-118	Type of Soil: Clay	Project : Lamerd Aluminum Co
Boring Diameter : 66 mm	Drilling Method : Coring	Client : NFC
Depth (m): 19.0 to 21.00	Depth of Probe Center Point (m): 20.00	Location : lamerd
Test Method : A Equal pressure increment method ☒ B Equal volume increment method ☐	Type of Tube : 63 mm O.D.Slotted	Date: 2015.04.26
Hydrostatic Pressure on probe (MPa) : 0.0050	G . W . L . : Vi : 0 cm3	Time : 15:00
		Page: 1

Volume of measuring portion of the unflated probe at 0 volume reading at ground surface , cm³ (V_o) : 535

Calibration Data						Pressuremeter Test Data							Pressuremeter Test Data						Pressuremeter Test Data		
Steps	Pressure PR (MPa)	Time Second	Volume VR (cm3)	Δ _v V60-V30	Δ _v Vsn-Vsn-1	Steps	Pressure PR (MPa)	Time Second	Volume VR (cm3)	Pressure (Corrected)	Δ _v V60-V30	Δ _v Vsn-Vsn-1	Steps	Pressure PR (MPa)	Time Second	Volume VR(cm3)	Pressure (Corrected)	Δ _v V60-V30	Δ _v Vsn-Vsn-2		
1	0.00	15	0	0	0	1	0	15	0	0	0	0									
		30	0					30	0												
		60	0					60	0												
2	0.05	15	10	0	15	2	0.10	15	2	0.25	3	5									
		30	15					30	2												
		60	15					60	5												
3	0.10	15	30	5	25	3	0.20	15	20	0.31	0	20									
		30	35					30	25												
		60	40					60	25												
4	0.15	15	55	10	30	4	0.30	15	45	0.37	5	27									
		30	60					30	47												
		60	70					60	52												
5	0.20	15	105	15	65	5	0.40	15	70	0.44	5	28									
		30	120					30	75												
		60	135					60	80												
6	0.25	15	170	35	90	6	0.50	15	110	0.50	5	40									
		30	190					30	115												
		60	225					60	120												
7						7	0.60	15	135	0.56	10	40									
								30	150												
								60	160												
8						8	0.70	15	170	0.65	25	45									
								30	180												
								60	205												
9						9	0.80	15	210	0.74	20	35									
								30	220												
								60	240												
10						10	0.9	15	245	0.82	15	35									
								30	260												
								60	275												
11						11	1.0	15	290	0.89	15	35									
								30	295												
								60	310												
12																					
13																					
14																					
15																					
16																					

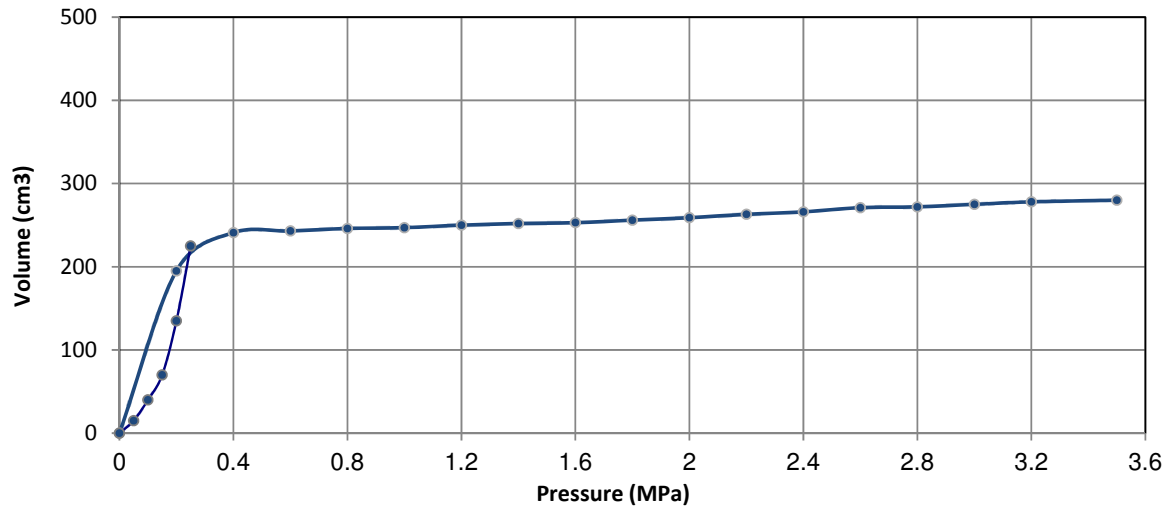
Pressuremeter Testing in Soils

ASTM D4719

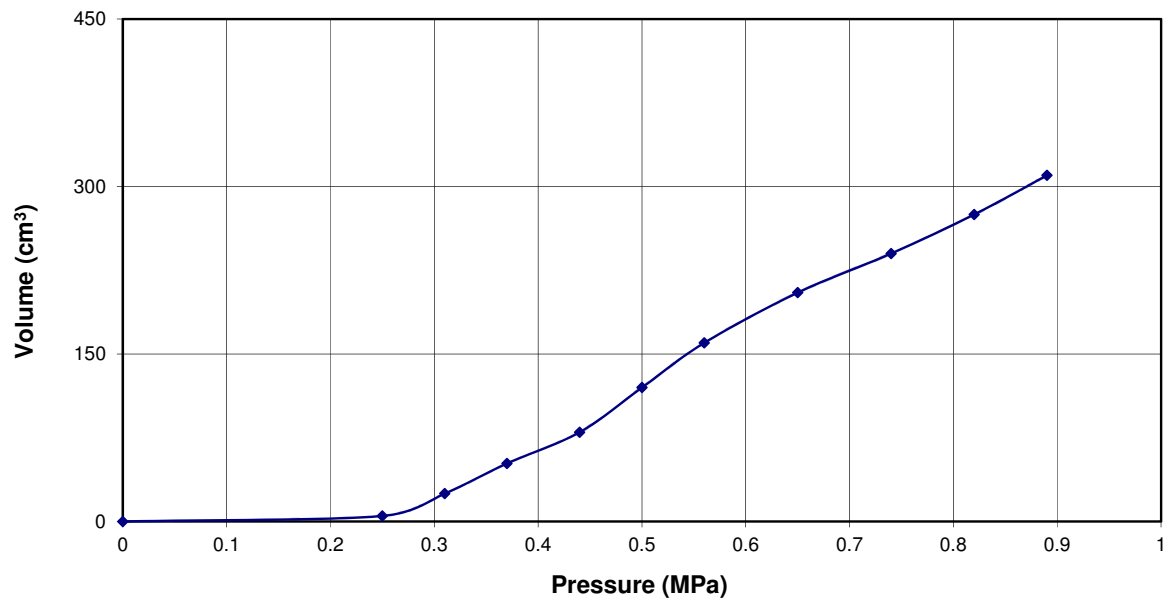
Boring No.: BH-118	Type of Soil: Clay	Project : Lamerd Aluminum Co
Boring Diameter : 66 mm	Drilling Method : Coring	Client : NFC
Depth of Stage : 19.0 to 21.0	Depth of Probe center Point (m): 20.00	Location : lamerd
Test Method : A Equal pressure increment method ☒	Type of Tube : 63mm O.D.Slotted	Date: 2015.04.26
B Equal volume increment method ☐	G.W.L.:	Time : 15:00
Hydrostatic Pressure on probe (P_w)(MPa) : 0.005		Page: 2

Volume of measuring portion of the unflated probe at 0 volume reading at ground surface , cm^3 (V_o) : 535

Calibration Chart



Pressuremeter Test Chart



Calculated by: Z.Khalili

$E_{\text{menard}} = 5.3$ MPa

$P_0 = 0.44$ MPa

$P_L = 1.21$ MPa

Pressuremeter Testing in Soils

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Boring No.: BH-118	Type of Soil: Clay	Project : Lamerd Aluminum Co
Boring Diameter : 66 mm	Drilling Method : Coring	Client : NFC
Depth (m): 24.0 to 26.00	Depth of Probe Center Point (m): 25.00	Location : lamerd
Test A Equal pressure increment method ☒ Method : B Equal volume increment method ☐	Type of Tube : 63 mm O.D.Slotted	Date: 2015.04.26
Hydrostatic Pressure on probe (MPa) : 0.0050	G . W . L . :	Time : 16:00
	Vi : 0 cm3	Page: 1

Volume of measuring portion of the unflated probe at 0 volume reading at ground surface , cm³ (V_o) : 535

Calibration Data						Pressuremeter Test Data								Pressuremeter Test Data							
Steps	Pressure PR (MPa)	Time Second	Volume VR (cm3)	Δ _v V60-V30	Δ _v Vsn-Vsn-1	Steps	Pressure PR (MPa)	Time Second	Volume VR (cm3)	Pressure (Corrected)	Δ _v V60-V30	Δ _v Vsn-Vsn-1	Steps	Pressure PR (MPa)	Time Second	Volume VR(cm3)	Pressure (Corrected)	Δ _v V60-V30	Δ _v Vsn-Vsn-2		
1	0.00	15	0	0	0	1	0	15	0	0.00	0	0									
		30	0					30	0												
		60	0					60	0												
2	0.05	15	10	0	15	2	0.10	15	10	0.30	0	12									
		30	15					30	12												
		60	15					60	12												
3	0.10	15	30	5	25	3	0.20	15	15	0.38	0	3									
		30	35					30	15												
		60	40					60	15												
4	0.15	15	55	10	30	4	0.30	15	30	0.45	2	17									
		30	60					30	30												
		60	70					60	32												
5	0.20	15	105	15	65	5	0.40	15	45	0.52	3	18									
		30	120					30	47												
		60	135					60	50												
6	0.25	15	170	35	90	6	0.50	15	62	0.61	5	20									
		30	190					30	65												
		60	225					60	70												
7						7	0.60	15	80	0.66	0	15									
								30	85												
								60	85												
8						8	0.70	15	100	0.75	10	35									
								30	110												
								60	120												
9						9	0.80	15	140	0.83	8	35									
								30	147												
								60	155												
10						10	0.9	15	170	0.90	5	25									
								30	175												
								60	180												
11						11	1.0	15	200	1.00	10	35									
								30	205												
								60	215												
12						12	1.1	15	225	1.09	10	30									
								30	235												
								60	245												
13						13	1.20	15	260	1.18	5	30									
								30	270												
								60	275												
14						14	1.3	15	290	1.24	15	40									
								30	300												
								60	315												
15																					
16																					

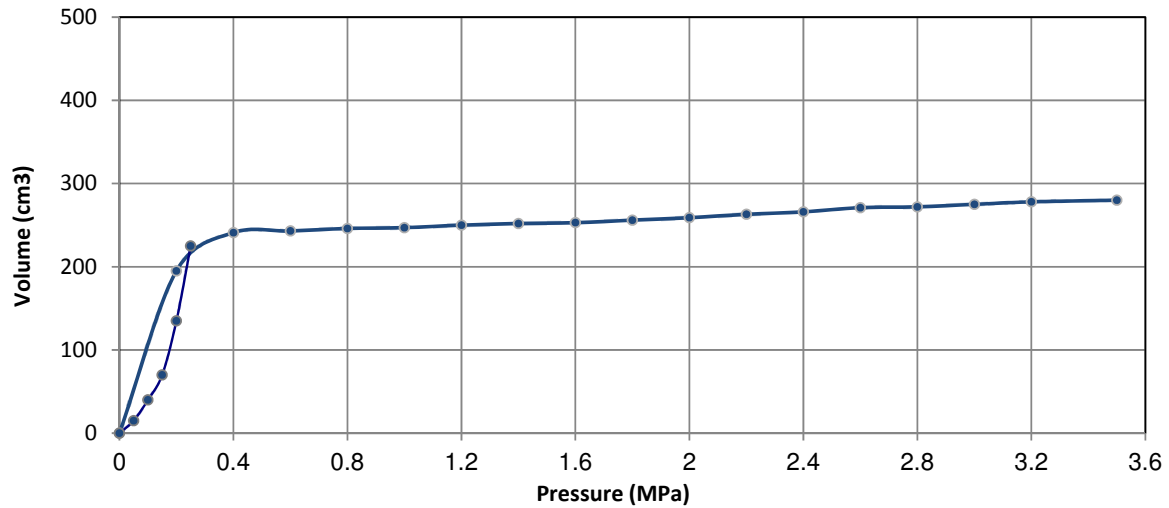
Pressuremeter Testing in Soils

ASTM D4719

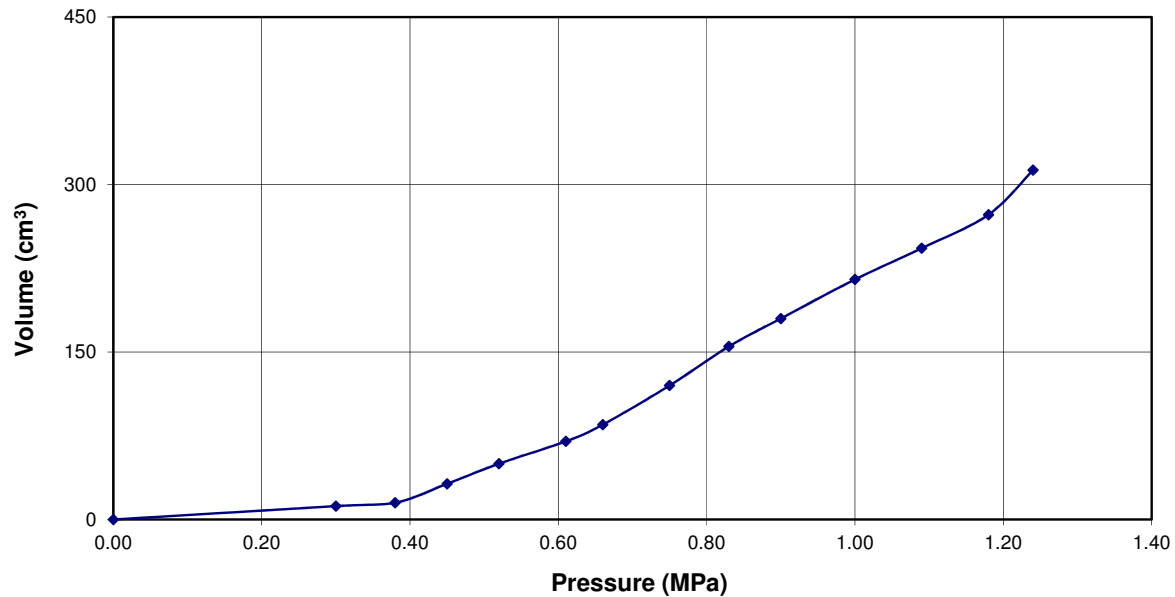
Boring No.: BH-118	Type of Soil: Clay	Project : Lamerd Aluminum Co
Boring Diameter : 66 mm	Drilling Method : Coring	Client : NFC
Depth of Stage : 24.0 to 26.0	Depth of Probe center Point (m): 25.00	Location : lamerd
Test Method : A Equal pressure increment method ☒	Type of Tube : 63mm O.D.Slotted	Date: 2015.04.26
B Equal volume increment method ☐	G.W.L.:	Time : 16:00
Hydrostatic Pressure on probe (P_w)(MPa) : 0.005		Page: 2

Volume of measuring portion of the unflated probe at 0 volume reading at ground surface , cm^3 (V_o) :535

Calibration Chart



Pressuremeter Test Chart



Calculated by: Z.Khalili

$E_{\text{menard}} = 7.3$ MPa

$P_0 = 0.52$ MPa

$P_L = 1.61$ MPa

Pressuremeter Testing in Soils

ASTM D 4719

Boring No.: BH-118	Type of Soil: Clay	Project : Lamerd Aluminum Co
Boring Diameter : 66 mm	Drilling Method : Coring	Client : NFC
Depth (m): 29.0 to 31.00	Depth of Probe Center Point (m): 30.00	Location : lamerd
Test Method : A Equal pressure increment method ☒ B Equal volume increment method ☐	Type of Tube : 63 mm O.D.Slotted	Date: 2015.04.17
Hydrostatic Pressure on probe (MPa) : 0.0050	G . W . L . :	Time : 9:30
	Vi : 0 cm3	Page: 1

Volume of measuring portion of the uninflated probe at 0 volume reading at ground surface , cm³ (V_o) : 535

Calibration Data						Pressuremeter Test Data										Pressuremeter Test Data								
Steps	Pressure PR (MPa)	Time Second	Volume VR (cm3)	Δ _v V60-V30	Δ _v Vsn-Vsn-1	Steps	Pressure PR (MPa)	Time Second	Volume VR (cm3)	Pressure (Corrected)	Δ _v V60-V30	Δ _v Vsn-Vsn-1	Steps	Pressure PR (MPa)	Time Second	Volume VR(cm3)	Pressure (Corrected)	Δ _v V60-V30	Δ _v Vsn-Vsn-2					
1	0.00	15	0	0	0	1	0	15	0	0	0	0												
		30	0					30	0												60	0		
		60	0					60	0															
2	0.05	15	20	2	22	2	0.10	15	5	0.35	0	5												
		30	20					30	5												60	5		
		60	22					60	5															
3	0.10	15	40	3	23	3	0.20	15	10	0.45	0	5												
		30	42					30	10												60	10		
		60	45					60	10															
4	0.15	15	60	10	35	4	0.30	15	32	0.50	5	30												
		30	70					30	35												60	40		
		60	80					60	40															
5	0.20	15	95	20	45	5	0.4	15	65	0.55	7	35												
		30	105					30	68												60	75		
		60	125					60	75															
6	0.25	15	150	30	75	6	0.50	15	95	0.60	10	35												
		30	170					30	100												60	110		
		60	200					60	110															
7						7	0.6	15	150	0.65	10	65												
								30	165												60	175		
8						8	0.70	15	210	0.72	15	65												
								30	225												60	240		
9						9	0.8	15	270	0.80	20	60												
								30	280												60	300		
10																								
11																								
12																								
13																								
14																								
15																								
16																								

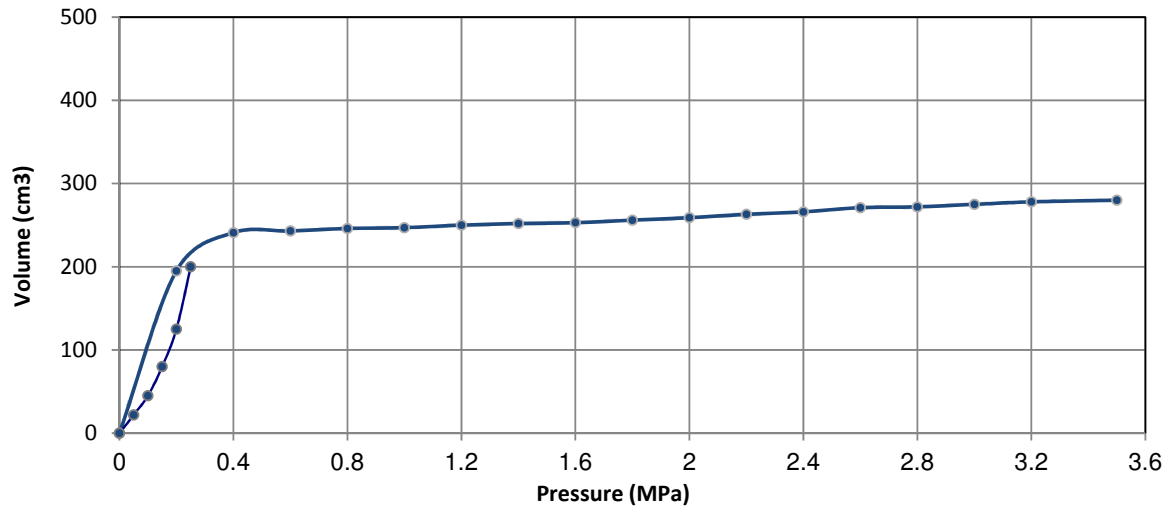
Pressuremeter Testing in Soils

ASTM D4719

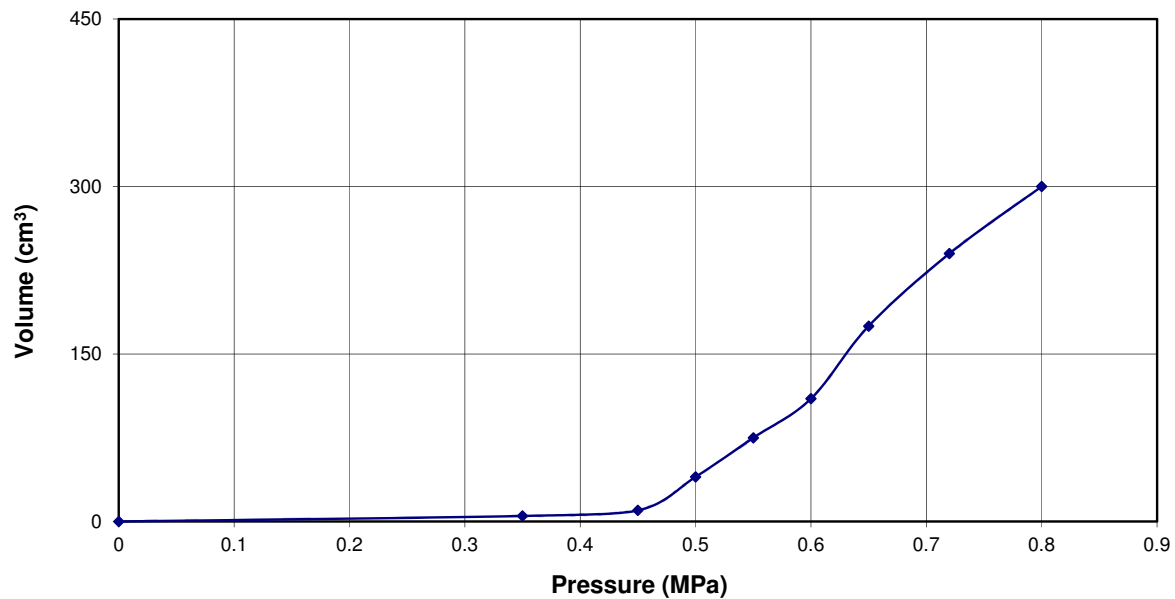
Boring No.: BH-118	Type of Soil: Clay	Project : Lamerd Aluminum Co
Boring Diameter : 66 mm	Drilling Method : Coring	Client : NFC
Depth of Stage : 29.0 to 31.0	Depth of Probe center Point (m): 30.00	Location : lamerd
Test Method : A Equal pressure increment method ☒	Type of Tube : 63mm O.D.Slotted	Date: 2015.04.17
B Equal volume increment method ☐	G.W.L.:	Time : 9:30
Hydrostatic Pressure on probe (P_w)(MPa) : 0.005		Page: 2

Volume of measuring portion of the unflated probe at 0 volume reading at ground surface , cm^3 (V_o) : 535

Calibration Chart



Pressuremeter Test Chart



Calculated by: Z.Khalili

$E_{\text{menard}} = 2.9$ MPa
 $P_0 = 0.45$ MPa
 $P_L = 1.21$ MPa



Pressuremeter Testing in Soils

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Boring No.: BH-138	Type of Soil: Clay	Project : Lamerd Aluminum Co
Boring Diameter : 66 mm	Drilling Method : Coring	Client : NFC
Depth (m): 4.0 to 6.00	Depth of Probe Center Point (m): 5.00	Location : lamerd
Test Method : A Equal pressure increment method ☒ B Equal volume increment method ☐	Type of Tube : 63 mm O.D.Slotted	Date: 2015.05.06
Hydrostatic Pressure on probe (MPa) : 0.0050	G . W . L . : Vi : 0 cm3	Time : 9:00
		Page: 1

Volume of measuring portion of the uninflated probe at 0 volume reading at ground surface , cm³ (V_o) : 535

Calibration Data						Pressuremeter Test Data								Pressuremeter Test Data								
Steps	Pressure PR (MPa)	Time Second	Volume VR (cm3)	Δ _v V60-V30	Δ _v Vsn-Vsn-1	Steps	Pressure PR (MPa)	Time Second	Volume VR (cm3)	Pressure (Corrected)	Δ _v V60-V30	Δ _v Vsn-Vsn-1	Steps	Pressure PR (MPa)	Time Second	Volume VR(cm3)	Pressure (Corrected)	Δ _v V60-V30	Δ _v Vsn-Vsn-2			
1	0.00	15	0	0	0	1	0	15	0	0.00	0	0										
		30	0					30	0												60	0
		60	0					60	0													
2	0.05	15	17	10	35	2	0.05	15	3	0.07	3	10										
		30	25					30	7												60	10
		60	35					60	10													
3	0.10	15	60	7	40	3	0.10	15	15	0.11	0	5										
		30	68					30	15												60	15
		60	75					60	15													
4	0.15	15	85	10	40	4	0.20	15	25	0.20	1	13										
		30	105					30	27												60	28
		60	115					60	28													
5	0.20	15	140	10	55	5	0.3	15	35	0.29	2	12										
		30	160					30	38												60	40
		60	170					60	40													
6	0.25	15	195	30	70	6	0.40	15	50	0.37	3	15										
		30	210					30	52												60	55
		60	240					60	55													
7						7	0.5	15	67	0.45	2	17										
		30	70					30	70												60	72
		60	72					60	72													
8						8	0.60	15	85	0.50	5	23										
		30	90					30	90												60	95
		60	95					60	95													
9						9	0.7	15	110	0.58	10	30										
		30	115					30	115												60	125
		60	125					60	125													
10						10	0.8	15	145	0.65	5	30										
		30	150					30	150												60	155
		60	155					60	155													
11						11	0.9	15	185	0.70	10	55										
		30	200					30	200												60	210
		60	210					60	210													
12						12	1	15	250	0.77	25	85										
		30	270					30	270												60	295
		60	295					60	295													
13						13	1.10	15	330	0.82	40	95										
		30	350					30	350												60	390
		60	390					60	390													
14																						
15																						
16																						

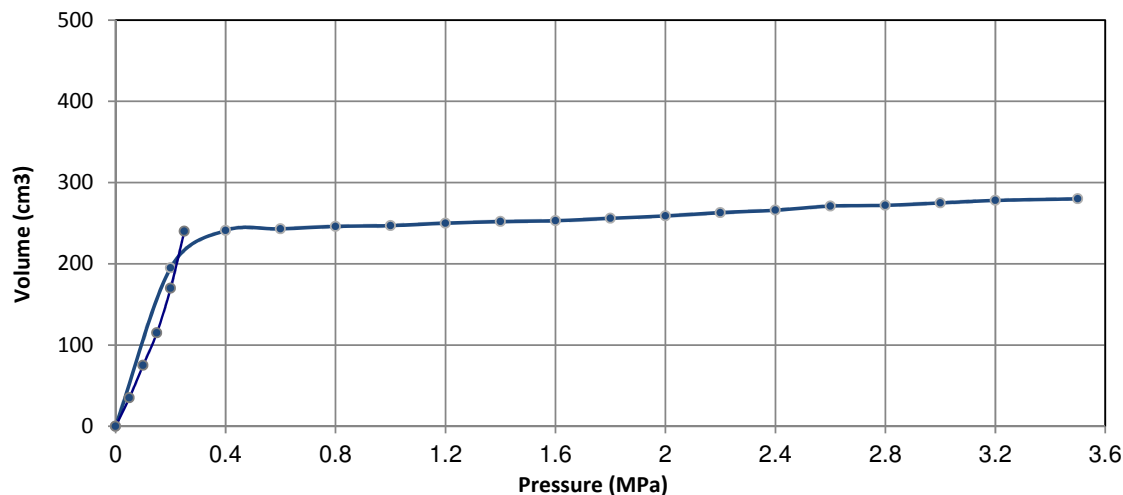
Pressuremeter Testing in Soils

ASTM D4719

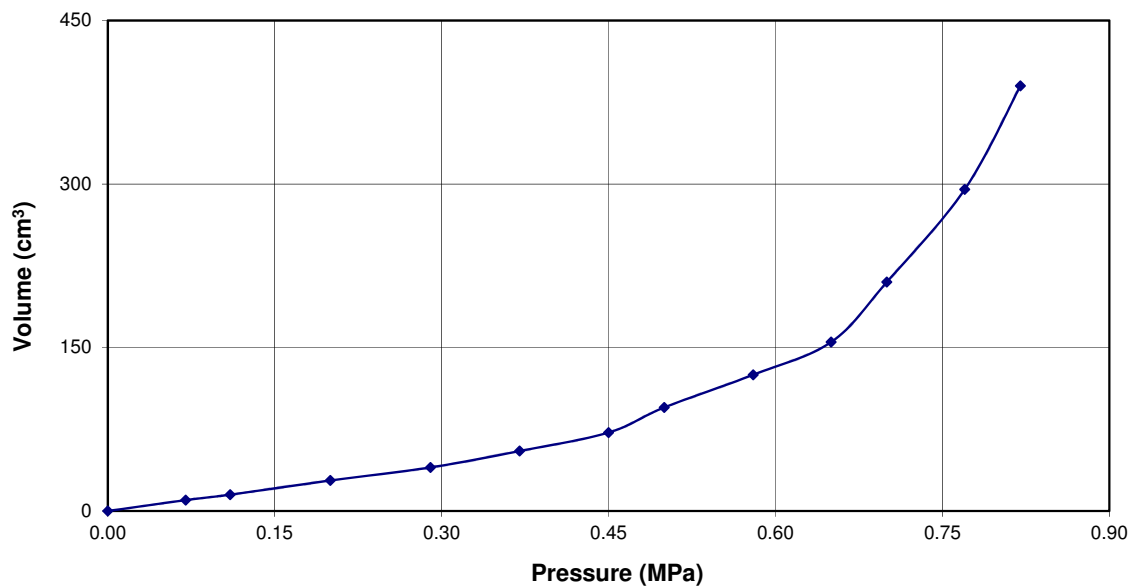
Boring No.: BH-138	Type of Soil: Clay	Project : Lamerd Aluminum Co
Boring Diameter : 66 mm	Drilling Method : Coring	Client : NFC
Depth of Stage : 4.0 to 6.0	Depth of Probe center Point (m): 5.00	Location : lamerd
Test Method : A Equal pressure increment method ☒	Type of Tube : 63mm O.D.Slotted	Date: 2015.05.06
B Equal volume increment method ☐	G.W.L.:	Time : 9:00
Hydrostatic Pressure on probe (P_w)(MPa) : 0.005		Page: 2

Volume of measuring portion of the unflated probe at 0 volume reading at ground surface , cm^3 (V_o) :535

Calibration Chart



Pressuremeter Test Chart



Calculated by: Z.Khalili

$E_{\text{menard}} = 7.7$ MPa

$P_0 = 0.37$ MPa

$P_L = 0.97$ MPa

Pressuremeter Testing in Soils

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Boring No.: BH-138	Type of Soil: Clay	Project : Lamerd Aluminum Co
Boring Diameter : 66 mm	Drilling Method : Coring	Client : NFC
Depth (m): 9.0 to 11.00	Depth of Probe Center Point (m): 10.00	Location : lamerd
Test Method : A Equal pressure increment method ☒ B Equal volume increment method ☐	Type of Tube : 63 mm O.D.Slotted	Date: 2015.05.06
Hydrostatic Pressure on probe (MPa) : 0.0050	G . W . L . :	Time : 11:30
	Vi : 0 cm3	Page: 1

Volume of measuring portion of the uninflated probe at 0 volume reading at ground surface , cm³ (V_o) : 535

Calibration Data						Pressuremeter Test Data								Pressuremeter Test Data							
Steps	Pressure PR (MPa)	Time Second	Volume VR (cm3)	Δ _v V60-V30	Δ _v Vsn-Vsn-1	Steps	Pressure PR (MPa)	Time Second	Volume VR (cm3)	Pressure (Corrected)	Δ _v V60-V30	Δ _v Vsn-Vsn-1	Steps	Pressure PR (MPa)	Time Second	Volume VR(cm3)	Pressure (Corrected)	Δ _v V60-V30	Δ _v Vsn-Vsn-2		
1	0.00	15	0	0	0	1	0	15	0	0.00	0	0									
		30	0					30	0												
		60	0					60	0												
2	0.05	15	17	10	35	2	0.05	15	12	0.15	1	15									
		30	25					30	14												
		60	35					60	15												
3	0.10	15	60	7	40	3	0.10	15	31	0.20	5	25									
		30	68					30	35												
		60	75					60	40												
4	0.15	15	85	10	40	4	0.15	15	45	0.25	5	12									
		30	105					30	47												
		60	115					60	52												
5	0.20	15	140	10	55	5	0.2	15	65	0.30	5	23									
		30	160					30	70												
		60	170					60	75												
6	0.25	15	195	30	70	6	0.25	15	85	0.35	5	20									
		30	210					30	90												
		60	240					60	95												
7						7	0.3	15	105	0.40	7	22									
								30	110												
								60	117												
8						8	0.35	15	125	0.45	9	25									
								30	133												
								60	142												
9						9	0.4	15	152	0.50	5	23									
								30	160												
								60	165												
10						10	0.45	15	180	0.55	10	30									
								30	185												
								60	195												
11						11	0.5	15	205	0.60	10	30									
								30	215												
								60	225												
12						12	0.55	15	240	0.65	10	35									
								30	250												
								60	260												
13						13	0.60	15	275	0.70	15	40									
								30	285												
								60	300												
14						14	0.65	15	315	0.75	15	35									
								30	320												
								60	335												
15																					
16																					

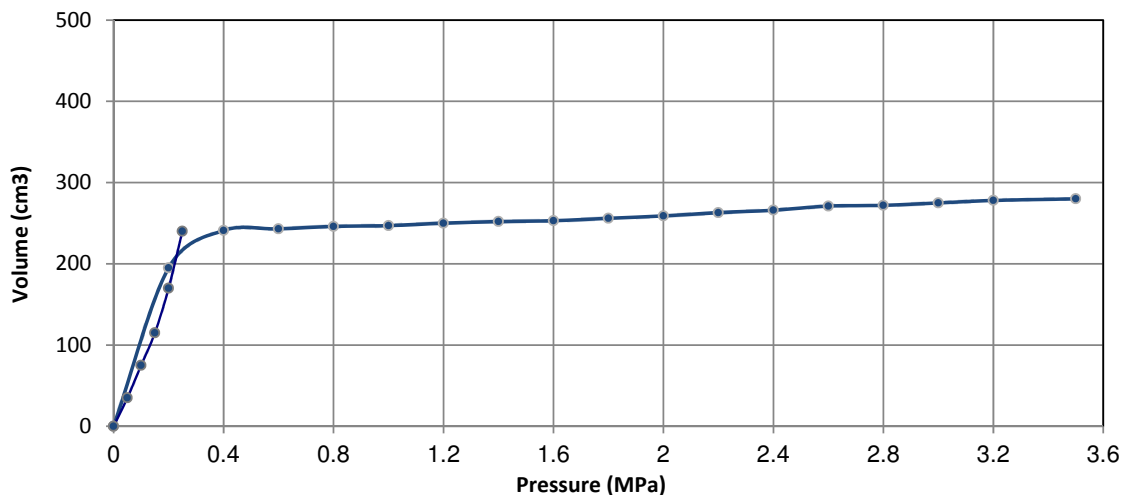
Pressuremeter Testing in Soils

ASTM D4719

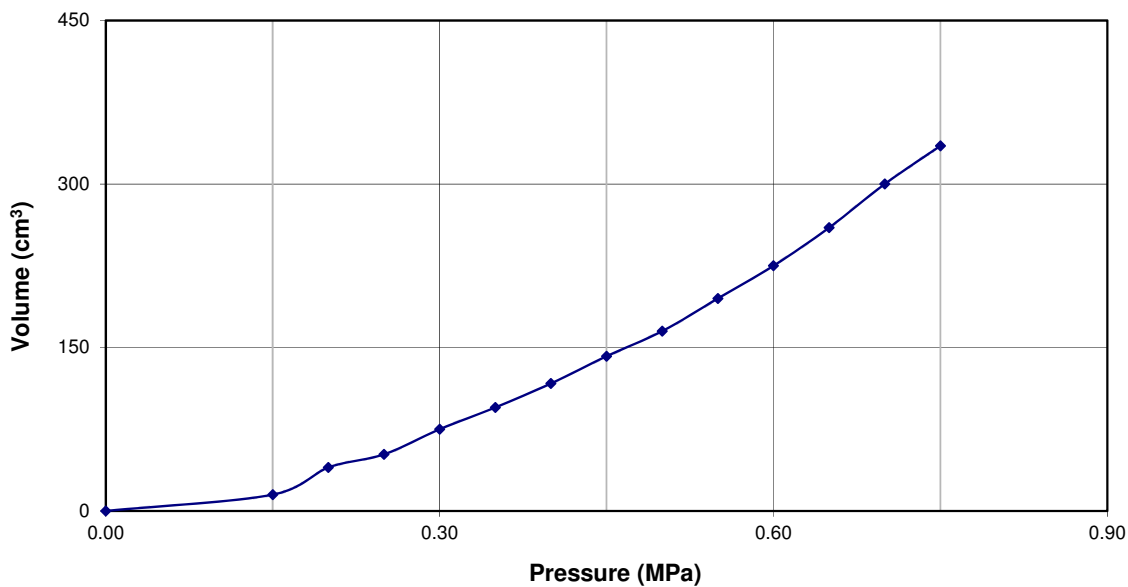
Boring No.: BH-138	Type of Soil: Clay	Project : Lamerd Aluminum Co
Boring Diameter : 66 mm	Drilling Method : Coring	Client : NFC
Depth of Stage : 9.0 to 11.0	Depth of Probe center Point (m): 10.00	Location : lamerd
Test Method : A Equal pressure increment method ☒	Type of Tube : 63mm O.D.Slotted	Date: 2015.05.06
B Equal volume increment method ☐	G.W.L.:	Time : 11:30
Hydrostatic Pressure on probe (P_w)(MPa) : 0.005		Page: 2

Volume of measuring portion of the unflated probe at 0 volume reading at ground surface , cm^3 (V_o) :535

Calibration Chart



Pressuremeter Test Chart



Calculated by: Z.Khalili

$E_{menard} = 6.6$ MPa

$P_0 = 0.20$ MPa

$P_L = 0.97$ MPa



Pressuremeter Testing in Soils

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Boring No.: BH-138	Type of Soil: Clay	Project : Lamerd Aluminum Co
Boring Diameter : 66 mm	Drilling Method : Coring	Client : NFC
Depth (m): 14.0 to 16.00	Depth of Probe Center Point (m): 15.00	Location : lamerd
Test Method : A Equal pressure increment method ☒ B Equal volume increment method ☐	Type of Tube : 63 mm O.D.Slotted	Date: 2015.05.06
Hydrostatic Pressure on probe (MPa) : 0.0050	G . W . L . : Vi : 0 cm3	Time : 16:10
		Page: 1

Volume of measuring portion of the uninflated probe at 0 volume reading at ground surface , cm³ (V_o) : 535

Calibration Data						Pressuremeter Test Data								Pressuremeter Test Data												
Steps	Pressure PR (MPa)	Time Second	Volume VR (cm3)	Δ _v V60-V30	Δ _v Vsn-Vsn-1	Steps	Pressure PR (MPa)	Time Second	Volume VR (cm3)	Pressure (Corrected)	Δ _v V60-V30	Δ _v Vsn-Vsn-1	Steps	Pressure PR (MPa)	Time Second	Volume VR(cm3)	Pressure (Corrected)	Δ _v V60-V30	Δ _v Vsn-Vsn-2							
1	0.00	15	0	0	0	1	0	15	0	0.00	0	0														
		30	0					30	0																	
		60	0					60	0																	
2	0.05	15	17	10	35	2	0.05	15	5	0.20	0	7														
		30	25					30	7																	
		60	35					60	7																	
3	0.10	15	60	7	40	3	0.10	15	15	0.25	2	15														
		30	68					30	20																	
		60	75					60	22																	
4	0.15	15	85	10	40	4	0.20	15	32	0.35	5	20														
		30	105					30	37																	
		60	115					60	42																	
5	0.20	15	140	10	55	5	0.3	15	55	0.45	2	20														
		30	160					30	60																	
		60	170					60	62																	
6	0.25	15	195	30	70	6	0.40	15	82	0.55	5	33														
		30	210					30	90																	
		60	240					60	95																	
7						7	0.5	15	115	0.65	5	30														
		30	120					30	120																	
		60	125					60	125																	
8						8	0.60	15	145	0.75	5	30														
		30	150					30	150																	
		60	155					60	155																	
9						9	0.7	15	180	0.85	5	40														
		30	190					30	190																	
		60	195					60	195																	
10						10	0.8	15	220	0.95	5	40														
		30	230					30	230																	
		60	235					60	235																	
11						11	0.9	15	275	1.05	10	60														
		30	285					30	285																	
		60	295					60	295																	
12						12	1	15	320	1.15	8	38														
		30	325					30	325																	
		60	333					60	333																	
13																										
14																										
15																										
16																										

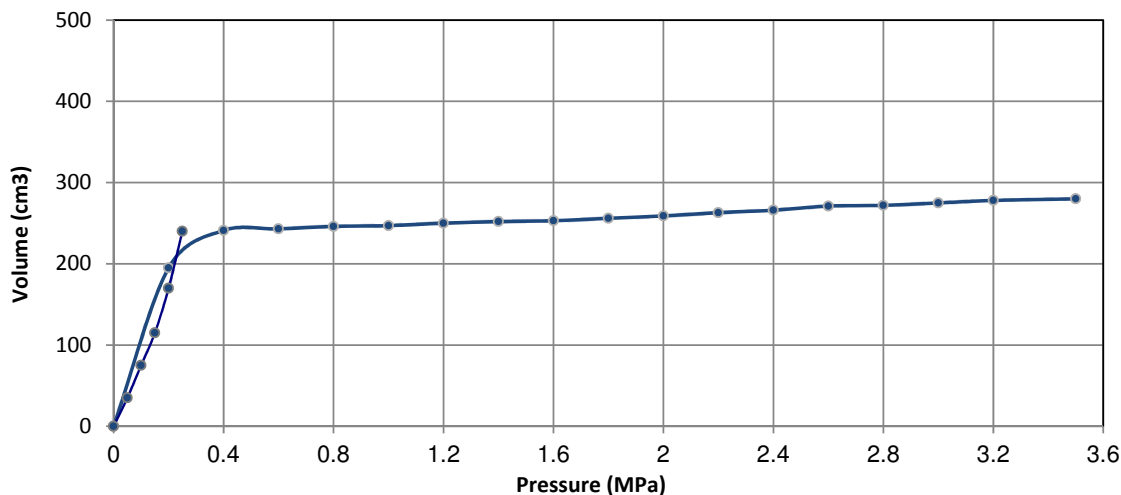
Pressuremeter Testing in Soils

ASTM D4719

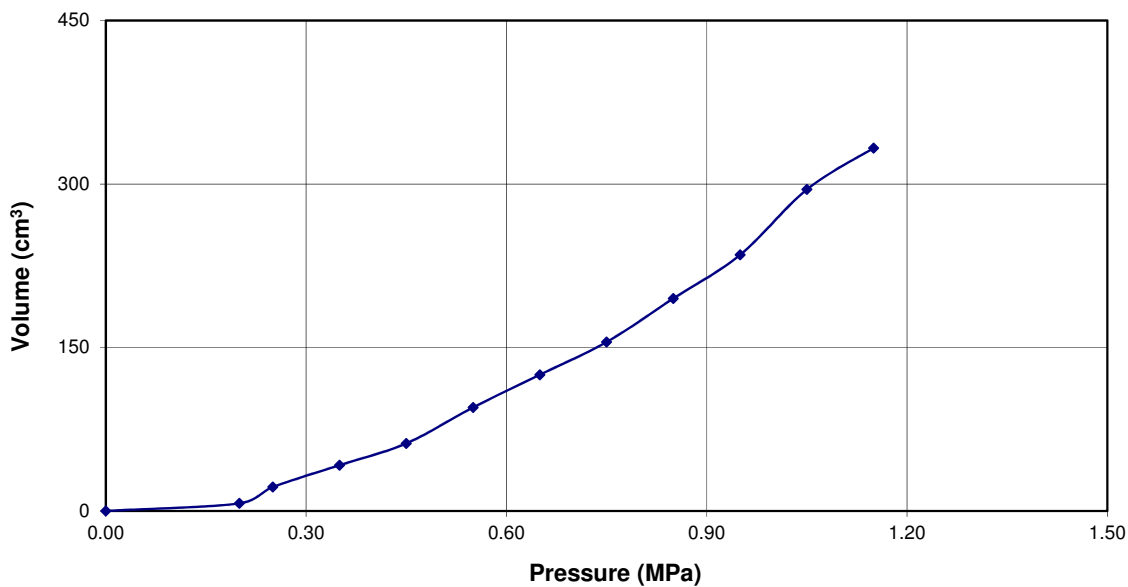
Boring No.: BH-138	Type of Soil: Clay	Project : Lamerd Aluminum Co
Boring Diameter : 66 mm	Drilling Method : Coring	Client : NFC
Depth of Stage : 14.0 to 16.0	Depth of Probe center Point (m): 15.00	Location : lamerd
Test Method : A Equal pressure increment method ☒	Type of Tube : 63mm O.D.Slotted	Date: 2015.05.06
B Equal volume increment method ☐	G.W.L.:	Time : 16:10
Hydrostatic Pressure on probe (P_w)(MPa) : 0.005		Page: 2

Volume of measuring portion of the unflated probe at 0 volume reading at ground surface , cm^3 (V_o) :535

Calibration Chart



Pressuremeter Test Chart



Calculated by: Z.Khalili

$E_{menard} = 8.0$ MPa

$P_0 = 0.35$ MPa

$P_L = 1.61$ MPa



Pressuremeter Testing in Soils

ASTM D 4719

Boring No.: BH-138	Type of Soil: Clay	Project : Lamerd Aluminum Co
Boring Diameter : 66 mm	Drilling Method : Coring	Client : NFC
Depth (m): 19.0 to 21.00	Depth of Probe Center Point (m): 20.00	Location : lamerd
Test Method : A Equal pressure increment method ☒ B Equal volume increment method ☐	Type of Tube : 63 mm O.D.Slotted	Date: 2015.05.06
Hydrostatic Pressure on probe (MPa) : 0.0050	G . W . L . : Vi : 0 cm3	Time : 18:00
		Page: 1

Volume of measuring portion of the unflated probe at 0 volume reading at ground surface , cm³ (V_o) : 535

Calibration Data						Pressuremeter Test Data							Pressuremeter Test Data									
Steps	Pressure PR (MPa)	Time Second	Volume VR (cm3)	Δ _v V60-V30	Δ _v Vsn-Vsn-1	Steps	Pressure PR (MPa)	Time Second	Volume VR (cm3)	Pressure (Corrected)	Δ _v V60-V30	Δ _v Vsn-Vsn-1	Steps	Pressure PR (MPa)	Time Second	Volume VR(cm3)	Pressure (Corrected)	Δ _v V60-V30	Δ _v Vsn-Vsn-2			
1	0.00	15	0	0	0	1	0	15	0	0.00	0	0										
		30	0					30	0													
		60	0					60	0													
2	0.05	15	17	10	35	2	0.10	15	10	0.30	0	10										
		30	25					30	10													
		60	35					60	10													
3	0.10	15	60	7	40	3	0.20	15	30	0.40	5	30										
		30	68					30	35													
		60	75					60	40													
4	0.15	15	85	10	40	4	0.30	15	65	0.50	10	40										
		30	105					30	70													
		60	115					60	80													
5	0.20	15	140	10	55	5	0.4	15	100	0.60	5	35										
		30	160					30	110													
		60	170					60	115													
6	0.25	15	195	30	70	6	0.50	15	140	0.70	10	45										
		30	210					30	150													
		60	240					60	160													
7						7	0.6	15	190	0.80	10	55										
								30	205													
								60	215													
8						8	0.70	15	250	0.90	20	75										
								30	270													
								60	290													
9						9	0.8	15	305	1.00	30	60										
								30	320													
								60	350													
10																						
11																						
12																						
13																						
14																						
15																						
16																						

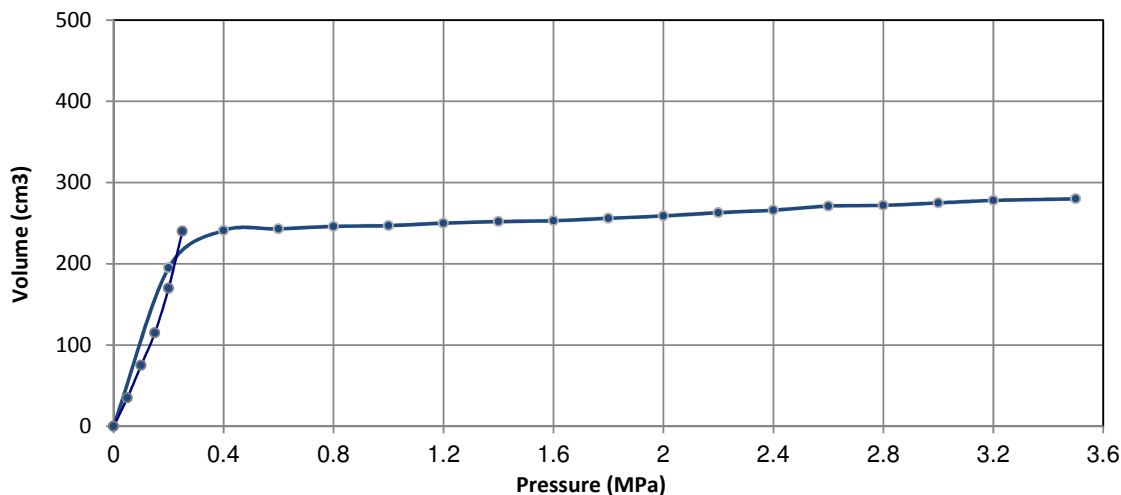
Pressuremeter Testing in Soils

ASTM D4719

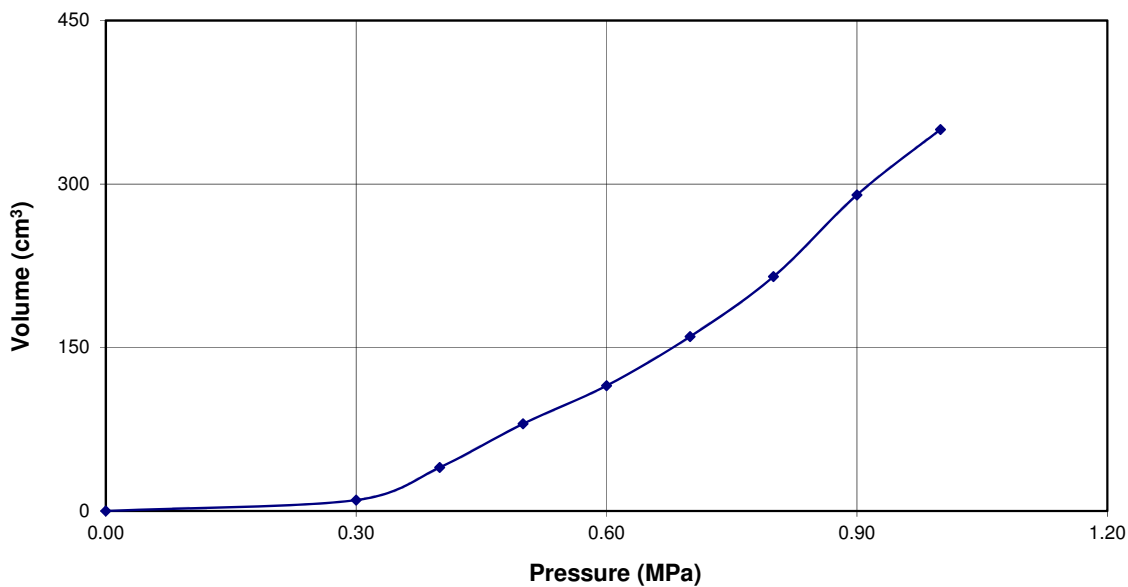
Boring No.: BH-138	Type of Soil: Clay	Project : Lamerd Aluminum Co
Boring Diameter : 66 mm	Drilling Method : Coring	Client : NFC
Depth of Stage : 19.0 to 21.0	Depth of Probe center Point (m): 20.00	Location : lamerd
Test Method : A Equal pressure increment method ☒	Type of Tube : 63mm O.D.Slotted	Date: 2015.05.06
B Equal volume increment method ☐	G.W.L.:	Time : 11:30
Hydrostatic Pressure on probe (P_w)(MPa) : 0.005		Page: 2

Volume of measuring portion of the unflated probe at 0 volume reading at ground surface , cm^3 (V_o) :535

Calibration Chart



Pressuremeter Test Chart



Calculated by: Z.Khalili

$E_{\text{menard}} = 5.0$ MPa

$P_0 = 0.40$ MPa

$P_L = 1.38$ MPa

Pressuremeter Testing in Soils

ASTM D 4719

Boring No.: BH-138	Type of Soil: Clay	Project : Lamerd Aluminum Co
Boring Diameter : 66 mm	Drilling Method : Coring	Client : NFC
Depth (m): 24.0 to 26.00	Depth of Probe Center Point (m): 25.00	Location : lamerd
Test A Equal pressure increment method ☒ Method : B Equal volume increment method ☐	Type of Tube : 63 mm O.D.Slotted	Date: 2015.05.07
Hydrostatic Pressure on probe (MPa) : 0.0050	G . W . L . : Vi : 0 cm3	Time : 8:00
		Page: 1

Volume of measuring portion of the unflated probe at 0 volume reading at ground surface , cm³ (V_o) : 535

Calibration Data						Pressuremeter Test Data								Pressuremeter Test Data						
Steps	Pressure PR (MPa)	Time Second	Volume VR (cm3)	Δ _v V60-V30	Δ _v Vsn-Vsn-1	Steps	Pressure PR (MPa)	Time Second	Volume VR (cm3)	Pressure (Corrected)	Δ _v V60-V30	Δ _v Vsn-Vsn-1	Steps	Pressure PR (MPa)	Time Second	Volume VR(cm3)	Pressure (Corrected)	Δ _v V60-V30	Δ _v Vsn-Vsn-2	
1	0.00	15	0	0	0	1	0	15	0	0.00	0	0	17	1.5	15	330	1.42	10	65	
		30	0					30	0						30	345				
		60	0					60	0						60	355				
2	0.05	15	18	12	37	2	0.05	15	5	0.27	5	10								
		30	25					30	5											
		60	37					60	10											
3	0.10	15	45	5	13	3	0.10	15	20	0.30	5	15								
		30	45					30	20											
		60	50					60	25											
4	0.15	15	73	15	45	4	0.20	15	30	0.40	3	10								
		30	80					30	32											
		60	95					60	35											
5	0.20	15	110	25	55	5	0.3	15	40	0.46	0	5								
		30	125					30	40											
		60	150					60	40											
6	0.25	15	190	15	85	6	0.40	15	45	0.55	0	10								
		30	220					30	50											
		60	235					60	50											
7						7	0.5	15	60	0.63	0	10								
								30	60											
								60	60											
8						8	0.60	15	75	0.70	2	17								
								30	75											
								60	77											
9						9	0.7	15	95	0.77	5	23								
								30	95											
								60	100											
10						10	0.8	15	110	0.85	3	15								
								30	112											
								60	115											
11						11	0.9	15	130	0.95	2	20								
								30	133											
								60	135											
12						12	1	15	155	1.04	2	27								
								30	160											
								60	162											
13						13	1.10	15	180	1.10	2	25								
								30	185											
								60	187											
14						14	1.2	15	210	1.20	3	28								
								30	212											
								60	215											
15						15	1.3	15	245	1.29	5	40								
								30	250											
								60	255											
16						16	1.40	15	280	1.37	5	35								
								30	285											
								60	290											

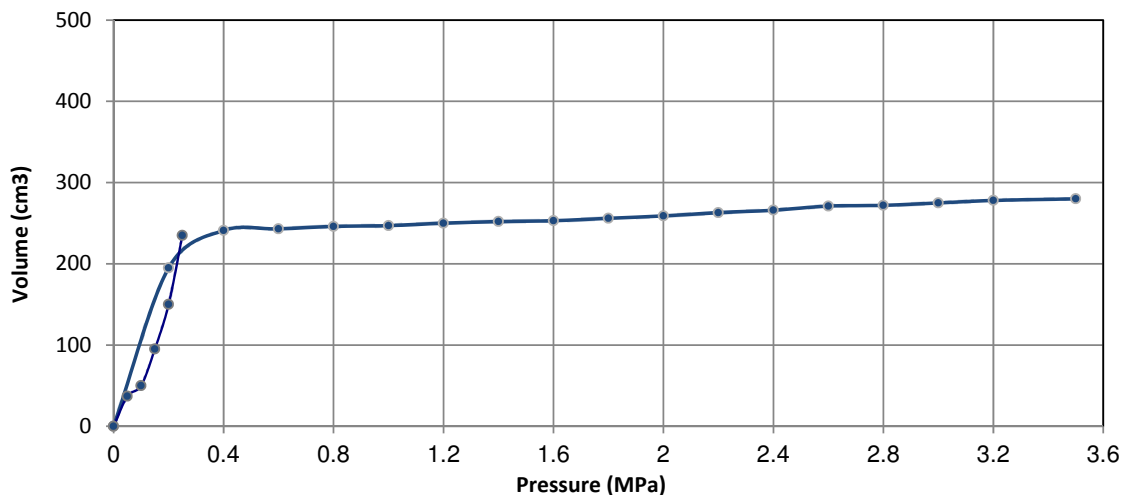
Pressuremeter Testing in Soils

ASTM D4719

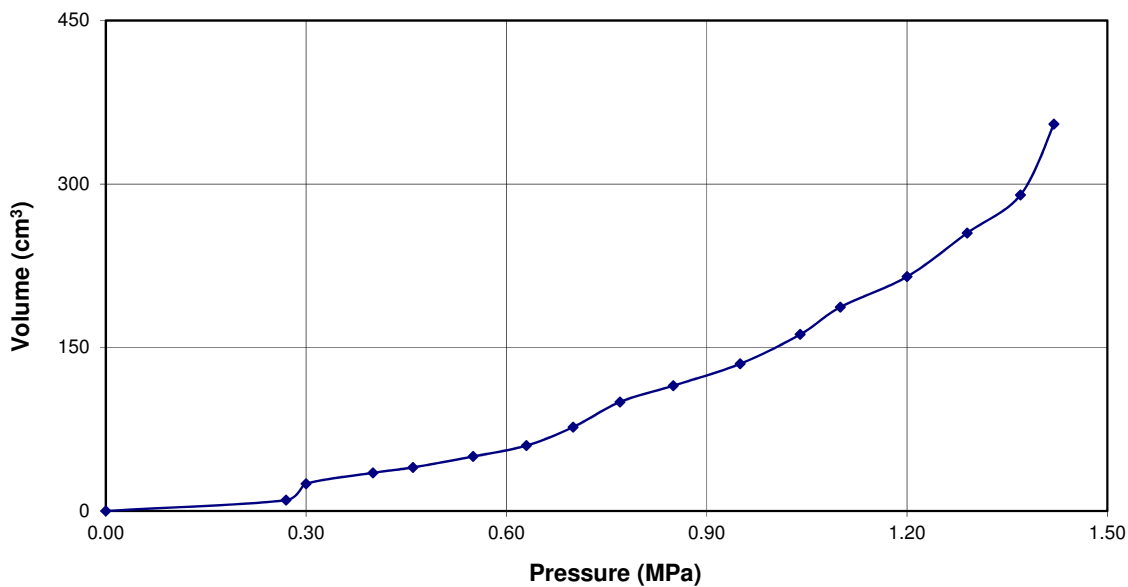
Boring No.: BH-138	Type of Soil: Clay	Project : Lamerd Aluminum Co
Boring Diameter : 66 mm	Drilling Method : Coring	Client : NFC
Depth of Stage : 24.0 to 26.0	Depth of Probe center Point (m): 25.00	Location : lamerd
Test Method : A Equal pressure increment method ☒	Type of Tube : 63mm O.D.Slotted	Date: 2015.05.07
B Equal volume increment method ☐	G.W.L.:	Time : 8:00
Hydrostatic Pressure on probe (P_w)(MPa) : 0.005		Page: 2

Volume of measuring portion of the unflated probe at 0 volume reading at ground surface , cm^3 (V_o) :535

Calibration Chart



Pressuremeter Test Chart



Calculated by: Z.Khalili

E_{menard} = 14.7 MPa

P_0 = 0.40 MPa

P_L = 1.93 MPa

Pressuremeter Testing in Soils

ASTM D 4719

Boring No.: BH-138	Type of Soil: Clay	Project : Lamerd Aluminum Co
Boring Diameter : 66 mm	Drilling Method : Coring	Client : NFC
Depth (m): 29.0 to 31.00	Depth of Probe Center Point (m): 30.00	Location : lamerd
Test A Equal pressure increment method ☒ Method : B Equal volume increment method ☐	Type of Tube : 63 mm O.D.Slotted	Date: 2015.05.07
Hydrostatic Pressure on probe (MPa) : 0.0050	G . W . L . : Vi : 0 cm3	Time : 20:00
		Page: 1

Volume of measuring portion of the uninflated probe at 0 volume reading at ground surface , cm³ (V_o) : 535

Calibration Data						Pressuremeter Test Data								Pressuremeter Test Data						
Steps	Pressure PR (MPa)	Time Second	Volume VR (cm3)	Δ _v V60-V30	Δ _v Vsn-Vsn-1	Steps	Pressure PR (MPa)	Time Second	Volume VR (cm3)	Pressure (Corrected)	Δ _v V60-V30	Δ _v Vsn-Vsn-1	Steps	Pressure PR (MPa)	Time Second	Volume VR(cm3)	Pressure (Corrected)	Δ _v V60-V30	Δ _v Vsn-Vsn-2	
1	0.00	15	0	0	0	1	0	15	0	0.00	0	0								
		30	0					30	0											
		60	0					60	0											
2	0.05	15	20	15	40	2	0.05	15	5	0.35	3	10								
		30	25					30	7											
		60	40					60	10											
3	0.10	15	60	10	35	3	0.10	15	20	0.40	0	12								
		30	65					30	22											
		60	75					60	22											
4	0.15	15	90	7	32	4	0.20	15	30	0.50	0	13								
		30	100					30	35											
		60	107					60	35											
5	0.20	15	135	5	43	5	0.3	15	45	0.60	5	15								
		30	145					30	45											
		60	150					60	50											
6	0.25	15	205	30	120	6	0.40	15	60	0.70	3	15								
		30	240					30	62											
		60	270					60	65											
7						7	0.5	15	75	0.80	2	15								
								30	78											
								60	80											
8						8	0.60	15	90	0.90	5	15								
								30	90											
								60	95											
9						9	0.7	15	105	1.00	3	15								
								30	107											
								60	110											
10						10	0.8	15	120	1.10	5	20								
								30	125											
								60	130											
11						11	0.9	15	140	1.20	3	15								
								30	142											
								60	145											
12						12	1	15	160	1.30	5	25								
								30	165											
								60	170											
13						13	1.10	15	190	1.40	8	35								
								30	197											
								60	205											
14						14	1.2	15	220	1.50	5	25								
								30	225											
								60	230											
15						15	1.3	15	249	1.60	5	30								
								30	255											
								60	260											
16						16	1.40	15	290	1.70	10	60								
								30	310											
								60	320											

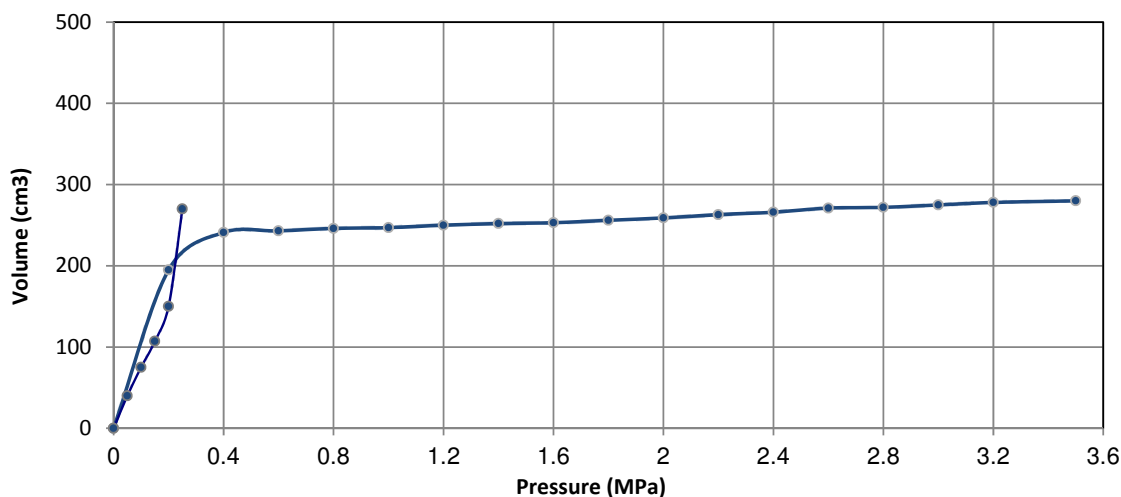
Pressuremeter Testing in Soils

ASTM D4719

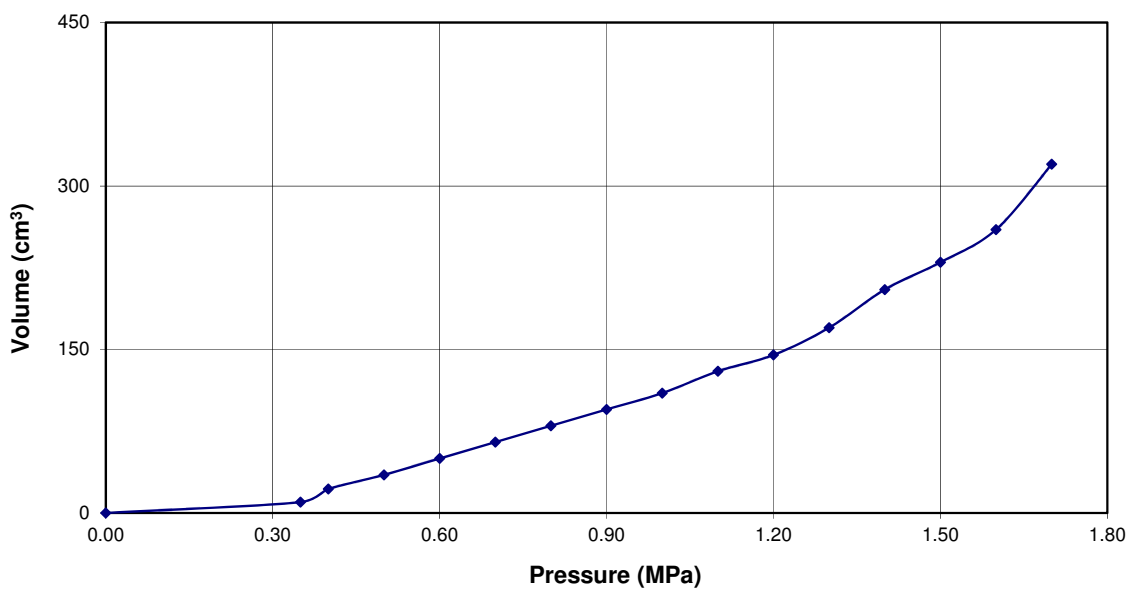
Boring No.: BH-138	Type of Soil: Clay	Project : Lamerd Aluminum Co
Boring Diameter : 66 mm	Drilling Method : Coring	Client : NFC
Depth of Stage : 29.0 to 31.0	Depth of Probe center Point (m): 30.00	Location : lamerd
Test Method : A Equal pressure increment method ☒	Type of Tube : 63mm O.D.Slotted	Date: 2015.05.07
B Equal volume increment method ☐	G.W.L.:	Time : 20:00
Hydrostatic Pressure on probe (P_w)(MPa) : 0.005		Page: 2

Volume of measuring portion of the unflated probe at 0 volume reading at ground surface , cm^3 (V_o) :535

Calibration Chart



Pressuremeter Test Chart



Calculated by: Z.Khalili

$E_{menard} = 11.1$ MPa

$P_0 = 0.40$ MPa

$P_L = 2.41$ MPa

Pressuremeter Testing in Soils

ASTM D 4719

Boring No.: BH-289	Type of Soil: Clay	Project : Lamerd Aluminum Co
Boring Diameter : 66 mm	Drilling Method : Coring	Client : NFC
Depth (m): 4.0 to 6.00	Depth of Probe Center Point (m): 5.00	Location : lamerd
Test A Equal pressure increment method ☒ Method : B Equal volume increment method ☐	Type of Tube : 63 mm O.D.Slotted	Date: 2015.05.04
Hydrostatic Pressure on probe (MPa) : 0.0050	G . W . L . :	Time : 10:30
	Vi : 0 cm3	Page: 1

Volume of measuring portion of the unflated probe at 0 volume reading at ground surface , cm³ (V_o) : 535

Calibration Data						Pressuremeter Test Data								Pressuremeter Test Data						
Steps	Pressure PR (MPa)	Time Second	Volume VR (cm3)	Δ _v V60-V30	Δ _v Vsn-Vsn-1	Steps	Pressure PR (MPa)	Time Second	Volume VR (cm3)	Pressure (Corrected)	Δ _v V60-V30	Δ _v Vsn-Vsn-1	Steps	Pressure PR (MPa)	Time Second	Volume VR(cm3)	Pressure (Corrected)	Δ _v V60-V30	Δ _v Vsn-Vsn-2	
1	0.00	15	0	0	0	1	0	15	0	0.00	0	0	17	0.9	15	250	0.95	16	70	
		30	0					30	257											
		60	0					60	273											
2	0.05	15	30	5	45	2	0.05	15	15	0.10	0	15	17	1.0	15	320	1.05	25	77	
		30	40					30	325											
		60	45					60	350											
3	0.10	15	75	3	41	3	0.10	15	20	0.15	2	7								
		30	83					30	20											
		60	86					60	22											
4	0.15	15	115	11	56	4	0.15	15	30	0.20	2	10								
		30	131					30	30											
		60	142					60	32											
5	0.20	15	150	7	30	5	0.2	15	35	0.25	0	3								
		30	165					30	35											
		60	172					60	35											
6	0.25	15	205	30	88	6	0.25	15	40	0.30	3	10								
		30	230					30	42											
		60	260					60	45											
7						7	0.3	15	50	0.35	3	10								
								30	52											
								60	55											
8						8	0.35	15	60	0.40	3	10								
								30	62											
								60	65											
9						9	0.4	15	72	0.45	2	12								
								30	75											
								60	77											
10						10	0.45	15	84	0.50	5	13								
								30	85											
								60	90											
11						11	0.5	15	95	0.55	6	13								
								30	97											
								60	103											
12						12	0.55	15	112	0.60	4	16								
								30	115											
								60	119											
13						13	0.60	15	130	0.65	1	14								
								30	132											
								60	133											
14						14	0.65	15	142	0.70	5	19								
								30	147											
								60	152											
15						15	0.7	15	160	0.75	4	14								
								30	162											
								60	166											
16						16	0.80	15	190	0.85	8	37								
								30	195											
								60	203											

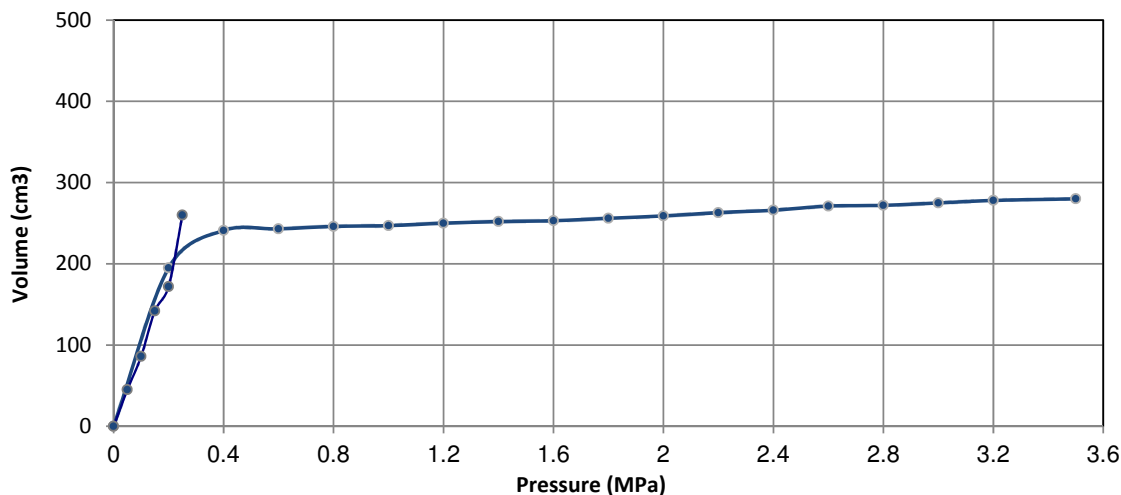
Pressuremeter Testing in Soils

ASTM D4719

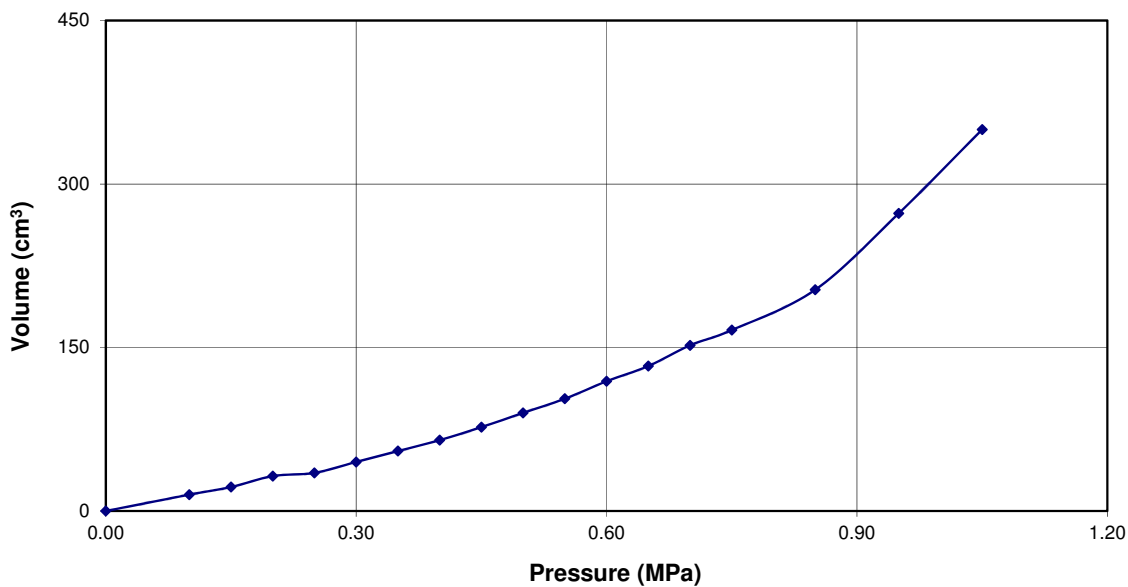
Boring No.: BH-289	Type of Soil: Clay	Project : Lamerd Aluminum Co
Boring Diameter : 66 mm	Drilling Method : Coring	Client : NFC
Depth of Stage : 4.0 to 6.0	Depth of Probe center Point (m): 5.00	Location : lamerd
Test Method : A Equal pressure increment method ☒	Type of Tube : 63mm O.D.Slotted	Date: 2015.05.04
B Equal volume increment method ☐	G.W.L.:	Time : 10:30
Hydrostatic Pressure on probe (P_w)(MPa) : 0.005		Page: 2

Volume of measuring portion of the unflated probe at 0 volume reading at ground surface , cm^3 (V_o) :535

Calibration Chart



Pressuremeter Test Chart



Calculated by: Z.Khalili

$E_{menard} = 8.0$ MPa

$P_0 = 0.30$ MPa

$P_L = 1.38$ MPa



Pressuremeter Testing in Soils

ASTM D 4719

Boring No.: BH-289	Type of Soil: Clay	Project : Lamerd Aluminum Co
Boring Diameter : 66 mm	Drilling Method : Coring	Client : NFC
Depth (m): 9.0 to 11.00	Depth of Probe Center Point (m): 10.00	Location : lamerd
Test Method : A Equal pressure increment method ☒ B Equal volume increment method ☐	Type of Tube : 63 mm O.D.Slotted	Date: 2015.05.04
Hydrostatic Pressure on probe (MPa) : 0.0050	G . W . L . : Vi : 0 cm3	Time : 11:30
		Page: 1

Volume of measuring portion of the unflated probe at 0 volume reading at ground surface , cm³ (V_o) : 535

Calibration Data						Pressuremeter Test Data								Pressuremeter Test Data						
Steps	Pressure PR (MPa)	Time Second	Volume VR (cm3)	Δ _v V60-V30	Δ _v Vsn-Vsn-1	Steps	Pressure PR (MPa)	Time Second	Volume VR (cm3)	Pressure (Corrected)	Δ _v V60-V30	Δ _v Vsn-Vsn-1	Steps	Pressure PR (MPa)	Time Second	Volume VR(cm3)	Pressure (Corrected)	Δ _v V60-V30	Δ _v Vsn-Vsn-2	
1	0.00	15	0	0	0	1	0	15	0	0.00	0	0								
		30	0					30	0											
		60	0					60	0											
2	0.05	15	30	5	45	2	0.05	15	10	0.15	0	10								
		30	40					30	10											
		60	45					60	10											
3	0.10	15	76	3	41	3	0.10	15	22	0.20	7	22								
		30	83					30	25											
		60	86					60	32											
4	0.15	15	115	11	56	4	0.15	15	50	0.25	10	33								
		30	131					30	55											
		60	142					60	65											
5	0.20	15	150	7	30	5	0.2	15	75	0.30	7	22								
		30	165					30	80											
		60	172					60	87											
6	0.25	15	205	30	88	6	0.25	15	105	0.35	15	43								
		30	230					30	115											
		60	260					60	130											
7						7	0.3	15	150	0.40	15	45								
								30	160											
								60	175											
8						8	0.35	15	195	0.45	17	47								
								30	205											
								60	222											
9						9	0.4	15	250	0.50	15	58								
								30	265											
								60	280											
10						10	0.45	15	295	0.55	18	45								
								30	307											
								60	325											
11																				
12																				
13																				
14																				
15																				
16																				

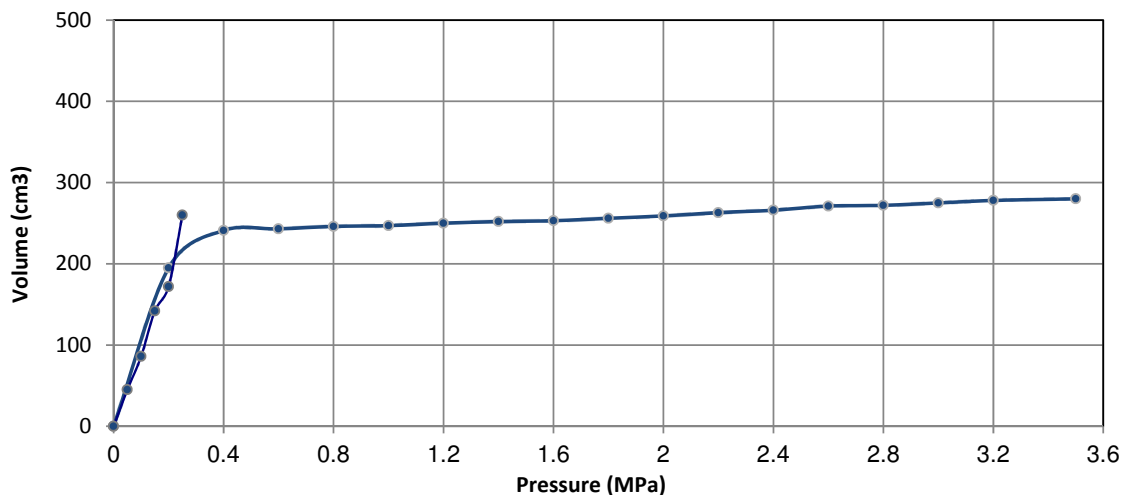
Pressuremeter Testing in Soils

ASTM D4719

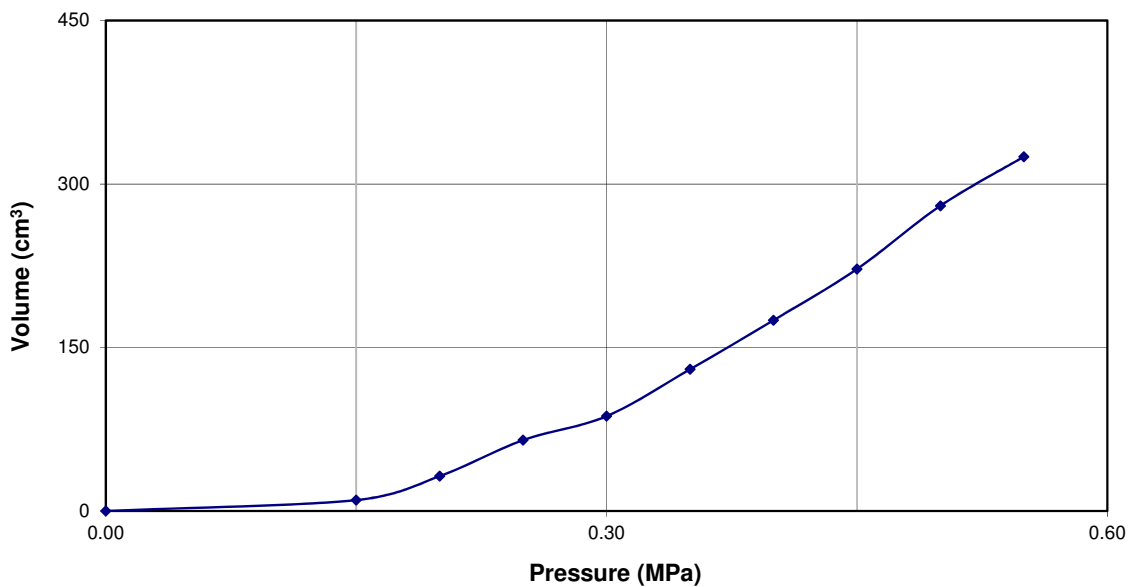
Boring No.: BH-289	Type of Soil: Clay	Project : Lamerd Aluminum Co
Boring Diameter : 66 mm	Drilling Method : Coring	Client : NFC
Depth of Stage : 9.0 to 11.0	Depth of Probe center Point (m): 10.00	Location : lamerd
Test Method : A Equal pressure increment method ☒	Type of Tube : 63mm O.D.Slotted	Date: 2015.05.04
B Equal volume increment method ☐	G.W.L.:	Time : 11:30
Hydrostatic Pressure on probe (P_w)(MPa) : 0.005		Page: 2

Volume of measuring portion of the unflated probe at 0 volume reading at ground surface , cm^3 (V_o) :535

Calibration Chart



Pressuremeter Test Chart



Calculated by: Z.Khalili

$E_{menard} = 3.8$ MPa

$P_0 = 0.30$ MPa

$P_L = 0.74$ MPa

Pressuremeter Testing in Soils

ASTM D 4719

Boring No.: BH-289	Type of Soil: Clay	Project : Lamerd Aluminum Co
Boring Diameter : 66 mm	Drilling Method : Coring	Client : NFC
Depth (m): 14.0 to 16.00	Depth of Probe Center Point (m): 15.00	Location : lamerd
Test Method : ☒ A Equal pressure increment method ☐ B Equal volume increment method	Type of Tube : 63 mm O.D.Slotted	Date: 2015.05.04
Hydrostatic Pressure on probe (MPa) : 0.0050	G . W . L . :	Time : 16:00
	Vi : 0 cm3	Page: 1

Volume of measuring portion of the unflated probe at 0 volume reading at ground surface , cm³ (V_o) : 535

Calibration Data						Pressuremeter Test Data								Pressuremeter Test Data							
Steps	Pressure PR (MPa)	Time Second	Volume VR (cm3)	Δ _v V60-V30	Δ _v Vsn-Vsn-1	Steps	Pressure PR (MPa)	Time Second	Volume VR (cm3)	Pressure (Corrected)	Δ _v V60-V30	Δ _v Vsn-Vsn-1	Steps	Pressure PR (MPa)	Time Second	Volume VR(cm3)	Pressure (Corrected)	Δ _v V60-V30	Δ _v Vsn-Vsn-2		
1	0.00	15	0	0	0	1	0	15	0	0.00	0	0									
		30	0					30	0												
		60	0					60	0												
2	0.05	15	30	5	45	2	0.05	15	2	0.20	1	5									
		30	40					30	4												
		60	45					60	5												
3	0.10	15	76	3	41	3	0.10	15	10	0.23	0	5									
		30	83					30	10												
		60	86					60	10												
4	0.15	15	115	11	56	4	0.20	15	20	0.31	5	15									
		30	131					30	20												
		60	142					60	25												
5	0.20	15	150	7	30	5	0.3	15	35	0.40	5	15									
		30	165					30	35												
		60	172					60	40												
6	0.25	15	205	30	88	6	0.40	15	55	0.48	5	20									
		30	230					30	55												
		60	260					60	60												
7						7	0.5	15	75	0.55	0	20									
								30	80												
								60	80												
8						8	0.60	15	100	0.61	3	25									
								30	102												
								60	105												
9						9	0.7	15	125	0.70	5	30									
								30	130												
								60	135												
10						10	0.8	15	150	0.75	5	25									
								30	155												
								60	160												
11						11	0.9	15	190	0.81	5	40									
								30	195												
								60	200												
12						12	1	15	225	0.90	5	40									
								30	235												
								60	240												
13						13	1.1	15	270	0.97	10	50									
								30	280												
								60	290												
14						14	1.2	15	320	1.07	20	60									
								30	330												
								60	350												
15																					
16																					

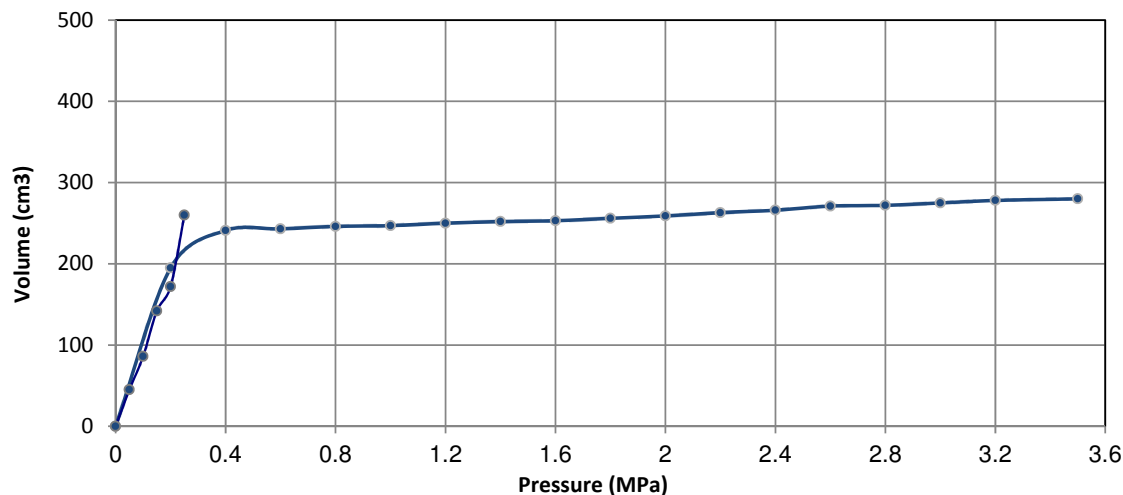
Pressuremeter Testing in Soils

ASTM D4719

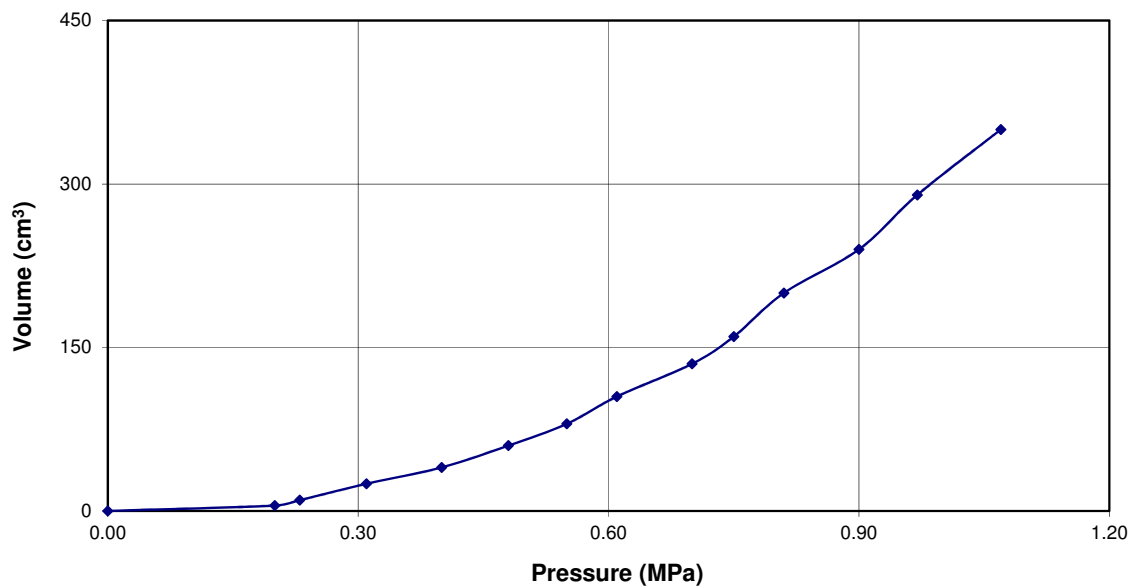
Boring No.: BH-289	Type of Soil: Clay	Project : Lamerd Aluminum Co
Boring Diameter : 66 mm	Drilling Method : Coring	Client : NFC
Depth of Stage : 14.0 to 16.0	Depth of Probe center Point (m): 15.00	Location : lamerd
Test Method : A Equal pressure increment method ☒	Type of Tube : 63mm O.D.Slotted	Date: 2015.05.04
B Equal volume increment method ☐	G.W.L.:	Time : 16:00
Hydrostatic Pressure on probe (P_w)(MPa) : 0.005		Page: 2

Volume of measuring portion of the unflated probe at 0 volume reading at ground surface , cm^3 (V_o) :535

Calibration Chart



Pressuremeter Test Chart



Calculated by: Z.Khalili	$E_{menard} = 5.8$	MPa
	$P_0 = 0.48$	MPa
	$P_L = 1.38$	MPa

Pressuremeter Testing in Soils

ASTM D 4719

Boring No.: BH-289	Type of Soil: Clay	Project : Lamerd Aluminum Co
Boring Diameter : 66 mm	Drilling Method : Coring	Client : NFC
Depth (m): 19.0 to 21.00	Depth of Probe Center Point (m): 20.00	Location : lamerd
Test Method : A Equal pressure increment method ☒ B Equal volume increment method ☐	Type of Tube : 63 mm O.D.Slotted	Date: 2015.05.04
Hydrostatic Pressure on probe (MPa) : 0.0050	G . W . L . :	Time : 17:30
	Vi : 0 cm3	Page: 1

Volume of measuring portion of the unflated probe at 0 volume reading at ground surface , cm³ (V_o) : 535

Calibration Data						Pressuremeter Test Data								Pressuremeter Test Data						
Steps	Pressure PR (MPa)	Time Second	Volume VR (cm3)	Δ _v V60-V30	Δ _v Vsn-Vsn-1	Steps	Pressure PR (MPa)	Time Second	Volume VR (cm3)	Pressure (Corrected)	Δ _v V60-V30	Δ _v Vsn-Vsn-1	Steps	Pressure PR (MPa)	Time Second	Volume VR(cm3)	Pressure (Corrected)	Δ _v V60-V30	Δ _v Vsn-Vsn-2	
1	0.00	15	0	0	0	1	0	15	0	0.00	0	0								
		30	0					30	0											
		60	0					60	0											
2	0.05	15	30	5	45	2	0.05	15	2	0.25	3	5								
		30	40					30	2											
		60	45					60	5											
3	0.10	15	76	3	41	3	0.10	15	10	0.28	3	10								
		30	83					30	12											
		60	86					60	15											
4	0.15	15	115	11	56	4	0.20	15	25	0.35	2	17								
		30	131					30	30											
		60	142					60	32											
5	0.20	15	150	7	30	5	0.3	15	50	0.44	2	20								
		30	165					30	50											
		60	172					60	52											
6	0.25	15	205	30	88	6	0.40	15	67	0.50	5	23								
		30	230					30	70											
		60	260					60	75											
7						7	0.5	15	95	0.56	5	30								
								30	100											
								60	105											
8						8	0.60	15	125	0.65	5	30								
								30	130											
								60	135											
9						9	0.7	15	150	0.70	5	25								
								30	155											
								60	160											
10						10	0.8	15	190	0.75	7	47								
								30	200											
								60	207											
11						11	0.9	15	235	0.85	15	58								
								30	250											
								60	265											
12						12	1	15	285	0.92	20	50								
								30	295											
								60	315											
13																				
14																				
15																				
16																				

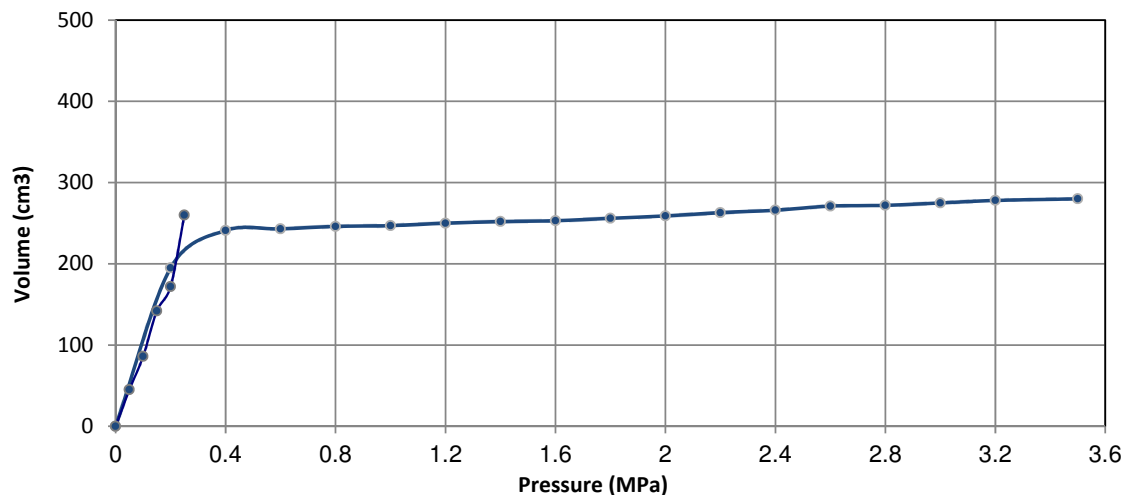
Pressuremeter Testing in Soils

ASTM D4719

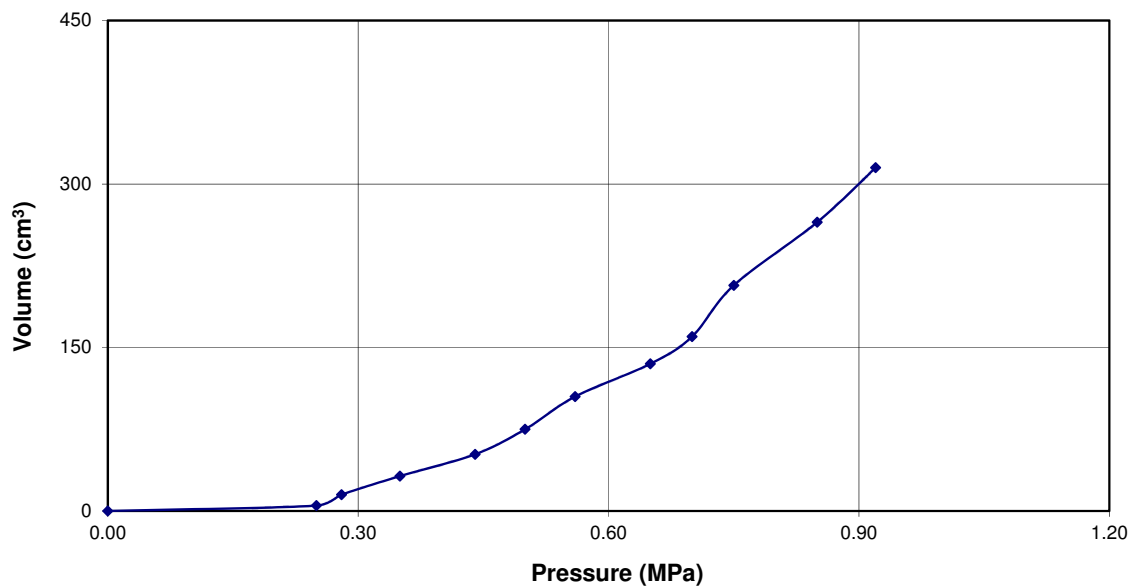
Boring No.: BH-289	Type of Soil: Clay	Project : Lamerd Aluminum Co
Boring Diameter : 66 mm	Drilling Method : Coring	Client : NFC
Depth of Stage : 19.0 to 21.0	Depth of Probe center Point (m): 20.00	Location : lamerd
Test Method : A Equal pressure increment method ☒	Type of Tube : 63mm O.D.Slotted	Date: 2015.05.04
B Equal volume increment method ☐	G.W.L.:	Time : 17:30
Hydrostatic Pressure on probe (P_w)(MPa) : 0.005		Page: 2

Volume of measuring portion of the unflated probe at 0 volume reading at ground surface , cm^3 (V_o) :535

Calibration Chart



Pressuremeter Test Chart



Calculated by: Z.Khalili	$E_{\text{menard}} = 7.1$	MPa
	$P_0 = 0.35$	MPa
	$P_L = 1.21$	MPa

Pressuremeter Testing in Soils

ASTM D 4719

Boring No.: BH-289	Type of Soil: Clay	Project : Lamerd Aluminum Co
Boring Diameter : 66 mm	Drilling Method : Coring	Client : NFC
Depth (m): 24.0 to 26.00	Depth of Probe Center Point (m): 25.00	Location : lamerd
Test A Equal pressure increment method ☒ Method : B Equal volume increment method ☐	Type of Tube : 63 mm O.D.Slotted	Date: 2015.05.04
Hydrostatic Pressure on probe (MPa) : 0.0050	G . W . L . : Vi : 0 cm3	Time : 18:30
		Page: 1

Volume of measuring portion of the uninflated probe at 0 volume reading at ground surface , cm^3 (V_o) : 535

Calibration Data						Pressuremeter Test Data								Pressuremeter Test Data						
Steps	Pressure PR (MPa)	Time Second	Volume VR (cm3)	Δ _v V60-V30	Δ _v Vsn-Vsn-1	Steps	Pressure PR (MPa)	Time Second	Volume VR (cm3)	Pressure (Corrected)	Δ _v V60-V30	Δ _v Vsn-Vsn-1	Steps	Pressure PR (MPa)	Time Second	Volume VR(cm3)	Pressure (Corrected)	Δ _v V60-V30	Δ _v Vsn-Vsn-2	
1	0.00	15	0	0	0	1	0	15	0	0.00	0	0								
		30	0					30	0											
		60	0					60	0											
2	0.05	15	30	5	45	2	0.10	15	2	0.35	0	2								
		30	40					30	2											
		60	45					60	2											
3	0.10	15	76	3	41	3	0.20	15	7	0.43	3	8								
		30	83					30	7											
		60	86					60	10											
4	0.15	15	115	11	56	4	0.30	15	15	0.51	5	15								
		30	131					30	20											
		60	142					60	25											
5	0.20	15	150	7	30	5	0.4	15	33	0.60	5	15								
		30	165					30	35											
		60	172					60	40											
6	0.25	15	205	30	88	6	0.50	15	55	0.68	3	20								
		30	230					30	57											
		60	260					60	60											
7						7	0.6	15	75	0.75	3	20								
								30	77											
								60	80											
8						8	0.70	15	88	0.82	5	20								
								30	95											
								60	100											
9						9	0.8	15	110	0.90	5	20								
								30	115											
								60	120											
10						10	0.9	15	135	1.00	8	25								
								30	137											
								60	145											
11						11	1.0	15	160	1.05	7	27								
								30	165											
								60	172											
12						12	1.1	15	190	1.10	8	28								
								30	192											
								60	200											
13						13	1.2	15	220	1.20	8	35								
								30	227											
								60	235											
14						14	1.3	15	255	1.29	15	40								
								30	260											
								60	275											
15						15	1.4	15	300	1.35	10	40								
								30	305											
								60	315											
16																				

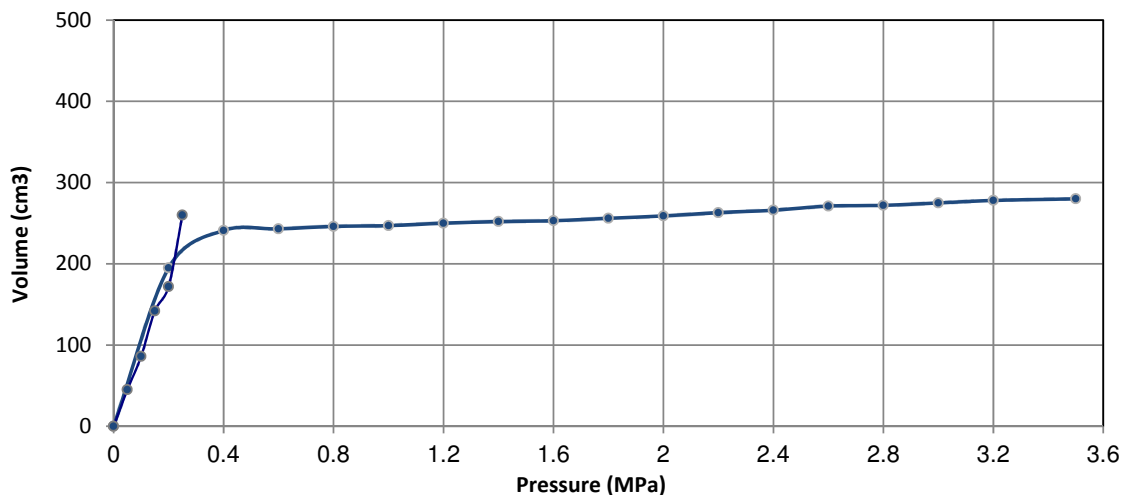
Pressuremeter Testing in Soils

ASTM D4719

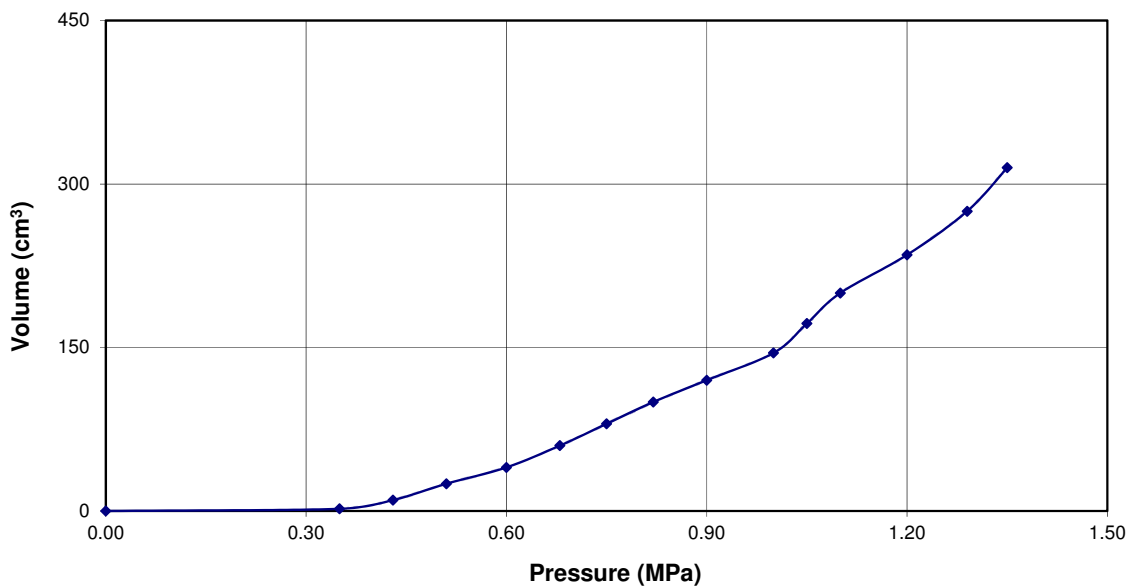
Boring No.: BH-289	Type of Soil: Clay	Project : Lamerd Aluminum Co
Boring Diameter : 66 mm	Drilling Method : Coring	Client : NFC
Depth of Stage : 24.0 to 26.0	Depth of Probe center Point (m): 25.00	Location : lamerd
Test Method : A Equal pressure increment method ☒	Type of Tube : 63mm O.D.Slotted	Date: 2015.05.04
B Equal volume increment method ☐	G.W.L.:	Time : 18:30
Hydrostatic Pressure on probe (P_w)(MPa) : 0.005		Page: 2

Volume of measuring portion of the unflated probe at 0 volume reading at ground surface , cm^3 (V_o) :535

Calibration Chart



Pressuremeter Test Chart



Calculated by: Z.Khalili

$E_{menard} = 7.0$ MPa

$P_0 = 0.51$ MPa

$P_L = 1.93$ MPa

Pressuremeter Testing in Soils

ASTM D 4719

Boring No.: BH-289		Type of Soil: Clay		Project : Lamerd Aluminum Co
Boring Diameter : 66 mm		Drilling Method : Coring		Client : NFC
Depth (m): 29.0 to 31.00		Depth of Probe Center Point (m): 30.00		Location : lamerd
Test Method : A Equal pressure increment method ☒ B Equal volume increment method ☐		Type of Tube : 63 mm O.D.Slotted		Date: 2015.05.05
Hydrostatic Pressure on probe (MPa) : 0.0050		G.W . L . : Vi : 0 cm3		Time : 8:00 Page: 1

Volume of measuring portion of the unflated probe at 0 volume reading at ground surface , cm^3 (V_0) : 535

Calibration Data						Pressuremeter Test Data								Pressuremeter Test Data							
Steps	Pressure PR (MPa)	Time Second	Volume VR (cm3)	Δ _v V60-V30	Δ _v Vsn-Vsn-1	Steps	Pressure PR (MPa)	Time Second	Volume VR (cm3)	Pressure (Corrected)	Δ _v V60-V30	Δ _v Vsn-Vsn-1	Steps	Pressure PR (MPa)	Time Second	Volume VR(cm3)	Pressure (Corrected)	Δ _v V60-V30	Δ _v Vsn-Vsn-2		
1	0.00	15	0	0	0	1	0	15	0	0.00	0	0	17	1.5	15	305	1.49	10	35		
		30	0					30	0						30	310					
		60	0					60	0						60	320					
2	0.05	15	15	5	25	2	0.05	15	3	0.35	0	5									
		30	20					30	5												
		60	25					60	5												
3	0.10	15	50	7	42	3	0.10	15	7	0.38	0	2									
		30	60					30	7												
		60	67					60	7												
4	0.15	15	85	10	38	4	0.20	15	10	0.46	2	5									
		30	95					30	10												
		60	105					60	12												
5	0.20	15	130	25	65	5	0.3	15	20	0.55	3	13									
		30	145					30	22												
		60	170					60	25												
6	0.25	15	190	20	65	6	0.40	15	35	0.61	3	15									
		30	215					30	37												
		60	235					60	40												
7						7	0.5	15	52	0.70	4	19									
								30	55												
								60	59												
8						8	0.60	15	70	0.76	5	21									
								30	75												
								60	80												
9						9	0.7	15	90	0.85	2	15									
								30	93												
								60	95												
10						10	0.8	15	110	0.91	5	25									
								30	115												
								60	120												
11						11	0.9	15	130	1.00	5	25									
								30	140												
								60	145												
12						12	1	15	155	1.10	5	20									
								30	160												
								60	165												
13						13	1.10	15	185	1.15	5	30									
								30	190												
								60	195												
14						14	1.2	15	210	1.25	10	30									
								30	215												
								60	225												
15						15	1.3	15	245	1.34	5	30									
								30	250												
								60	255												
16						16	1.40	15	275	1.42	5	30									
								30	280												
								60	285												

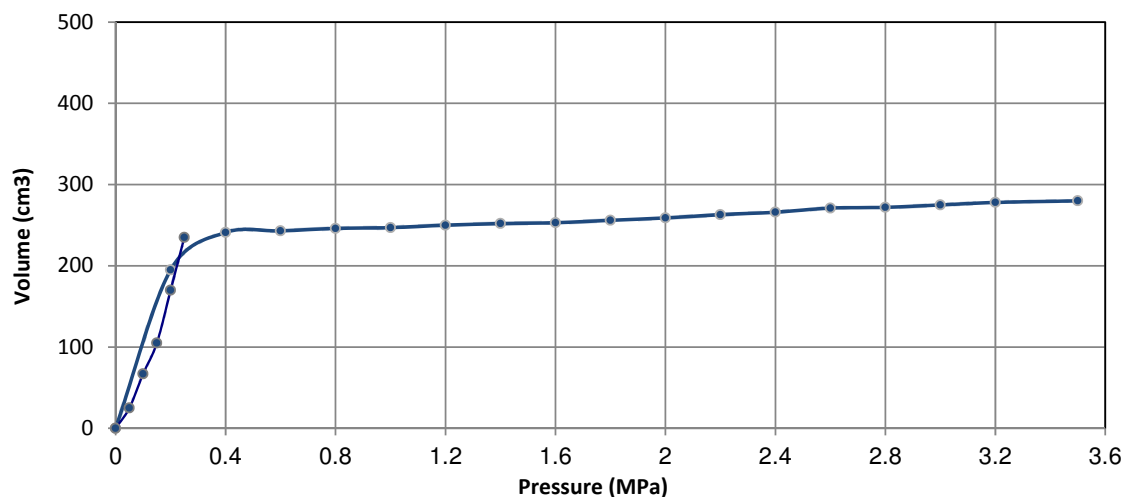
Pressuremeter Testing in Soils

ASTM D4719

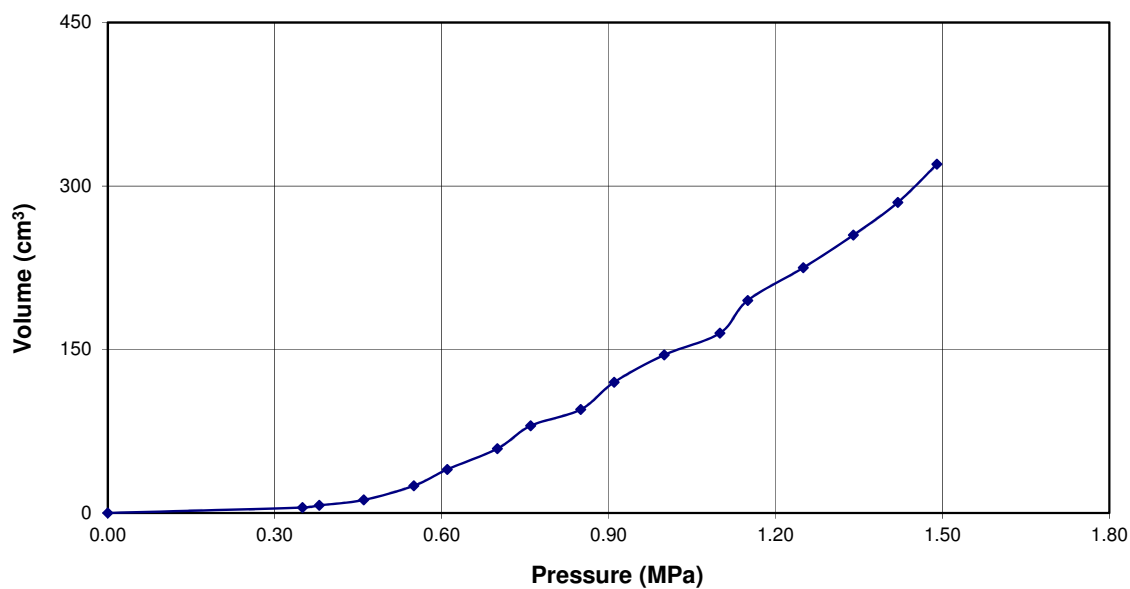
Boring No.: BH-289	Type of Soil: Clay	Project : Lamerd Aluminum Co
Boring Diameter : 66 mm	Drilling Method : Coring	Client : NFC
Depth of Stage : 29.0 to 31.0	Depth of Probe center Point (m): 30.00	Location : lamerd
Test Method : A Equal pressure increment method ☒	Type of Tube : 63mm O.D.Slotted	Date: 2015.05.05
B Equal volume increment method ☐	G.W.L.:	Time : 8:00
Hydrostatic Pressure on probe (P_w)(MPa) : 0.005		Page: 2

Volume of measuring portion of the unflated probe at 0 volume reading at ground surface , cm^3 (V_o) :535

Calibration Chart



Pressuremeter Test Chart



Calculated by: Z.Khalili	$E_{menard} = 7.0$	MPa
	$P_0 = 0.55$	MPa
	$P_L = 1.93$	MPa



Pressuremeter Testing in Soils

ASTM D 4719

Boring No.: BH-338		Type of Soil: Clay	Project : Lamerd Aluminum Co																	
Boring Diameter : 66 mm		Drilling Method : Coring	Client : NFC																	
Depth (m): 4.0 to 6.00		Depth of Probe Center Point (m): 5.00	Location : lamerd																	
Test Method : A Equal pressure increment method ☒ B Equal volume increment method ☐		Type of Tube : 63 mm O.D.Slotted	Date: 2015.04.28																	
Hydrostatic Pressure on probe (MPa) : 0.0050		G . W . L . : Vi : 0 cm3	Time : 12:00																	
			Page: 1																	
Volume of measuring portion of the unflated probe at 0 volume reading at ground surface , cm ³ (V _o) : 535																				
Calibration Data					Pressuremeter Test Data			Pressuremeter Test Data												
Steps	Pressure PR (MPa)	Time Second	Volume VR (cm3)	Δ_v V60-V30	Δ_v Vsn-Vsn-1	Steps	Pressure PR (MPa)	Time Second	Volume VR (cm3)	Pressure (Corrected)	Δ_v V60-V30	Δ_v Vsn-Vsn-1	Steps	Pressure PR (MPa)	Time Second	Volume VR (cm3)	Pressure (Corrected)	Δ_v V60-V30	Δ_v Vsn-Vsn-2	
1	0.00	15	0	0	0	1	0	15	0	0.00	0	0								
		30	0					30	0											
		60	0					60	0											
2	0.05	15	10	3	15	2	0.05	15	40	0.02	15	65								
		30	12					30	50											
		60	15					60	65											
3	0.10	15	40	20	55	3	0.10	15	90	0.03	0	25								
		30	50					30	90											
		60	70					60	90											
4	0.15	15	95	30	75	4	0.15	15	95	0.05	5	10								
		30	115					30	95											
		60	145					60	100											
5	0.20	15	170	20	65	5	0.2	15	100	0.10	0	5								
		30	190					30	105											
		60	210					60	105											
6	0.25	15	235	35	80	6	0.30	15	115	0.20	2	12								
		30	255					30	115											
		60	290					60	117											
7						7	0.4	15	130	0.30	8	28								
								30	137											
								60	145											
8						8	0.50	15	160	0.36	5	25								
								30	165											
								60	170											
9						9	0.6	15	190	0.44	5	30								
								30	195											
								60	200											
10						10	0.7	15	225	0.50	10	40								
								30	230											
								60	240											
11						11	0.8	15	270	0.59	20	60								
								30	280											
								60	300											
12																				
13																				
14																				
15																				
16																				

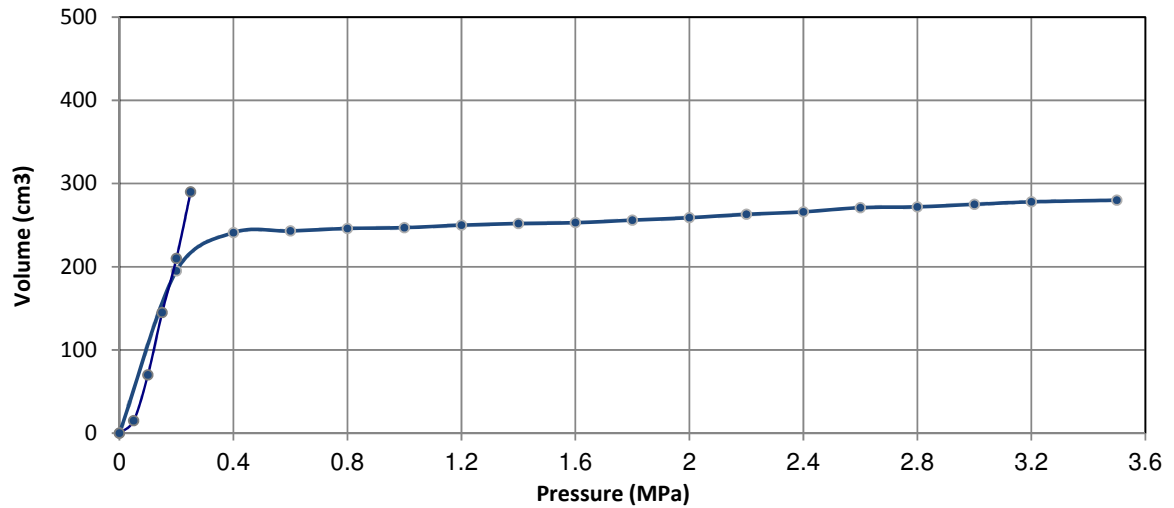
Pressuremeter Testing in Soils

ASTM D4719

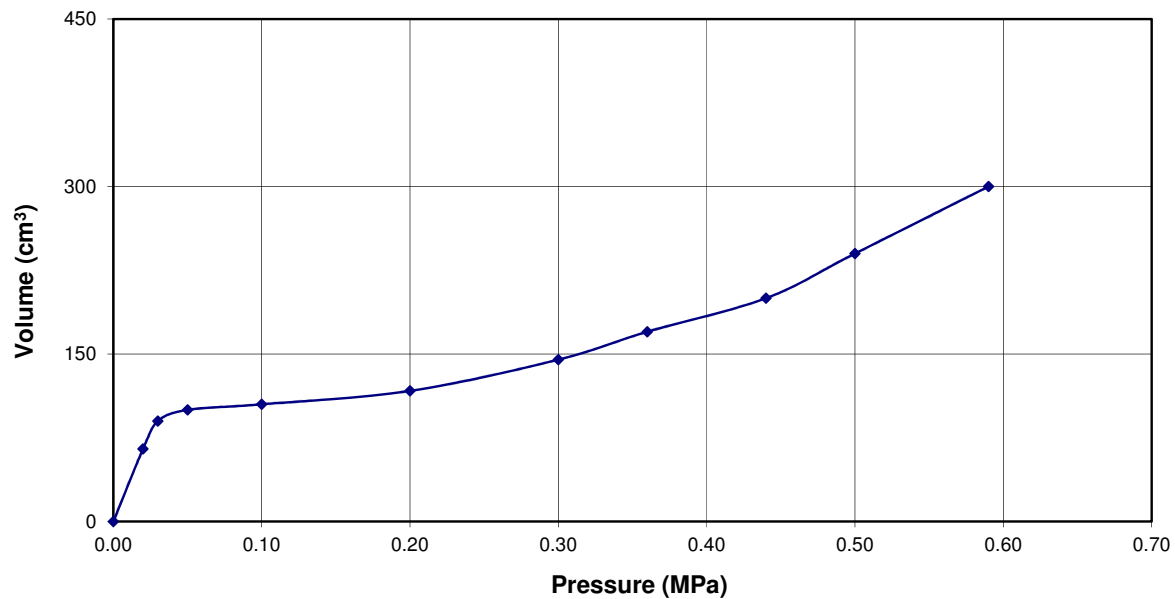
Boring No.: BH-338	Type of Soil: Clay	Project : Lamerd Aluminum Co
Boring Diameter : 66 mm	Drilling Method : Coring	Client : NFC
Depth of Stage : 4.0 to 6.0	Depth of Probe center Point (m): 5.00	Location : lamerd
Test Method : A Equal pressure increment method ☒	Type of Tube : 63mm O.D.Slotted	Date: 2015.04.28
B Equal volume increment method ☐	G.W.L.:	Time : 12:00
Hydrostatic Pressure on probe (P_w)(MPa) : 0.005		Page: 2

Volume of measuring portion of the unflated probe at 0 volume reading at ground surface , cm^3 (V_o) : 535

Calibration Chart



Pressuremeter Test Chart



Calculated by: Z.Khalili

$E_{menard} = 15.6$ MPa

$P_0 = 0.05$ MPa

$P_L = 0.88$ MPa

Pressuremeter Testing in Soils

ASTM D 4719

Boring No.: BH-338	Type of Soil: Clay	Project : Lamerd Aluminum Co
Boring Diameter : 66 mm	Drilling Method : Coring	Client : NFC
Depth (m): 9.0 to 11.00	Depth of Probe Center Point (m): 10.00	Location : lamerd
Test A Equal pressure increment method ☒ Method : B Equal volume increment method ☐	Type of Tube : 63 mm O.D.Slotted	Date: 2015.04.29
Hydrostatic Pressure on probe (MPa) : 0.0050	G . W . L . : Vi : 0 cm3	Time : 9:00
		Page: 1

Volume of measuring portion of the unflated probe at 0 volume reading at ground surface , cm³ (V_o) : 535

Calibration Data						Pressuremeter Test Data							Pressuremeter Test Data						Pressuremeter Test Data			
Steps	Pressure PR (MPa)	Time Second	Volume VR (cm3)	Δ _v V60-V30	Δ _v Vsn-Vsn-1	Steps	Pressure PR (MPa)	Time Second	Volume VR (cm3)	Pressure (Corrected)	Δ _v V60-V30	Δ _v Vsn-Vsn-1	Steps	Pressure PR (MPa)	Time Second	Volume VR(cm3)	Pressure (Corrected)	Δ _v V60-V30	Δ _v Vsn-Vsn-2			
1	0.00	15	0	0	0	1	0	15	0	0.00	0	0										
		30	0					30	0													
		60	0					60	0													
2	0.05	15	10	3	15	2	0.05	15	5	0.10	5	15										
		30	12					30	10													
		60	15					60	15													
3	0.10	15	40	20	55	3	0.10	15	20	0.13	0	10										
		30	50					30	25													
		60	70					60	25													
4	0.15	15	95	30	75	4	0.15	15	30	0.17	5	20										
		30	115					30	40													
		60	145					60	45													
5	0.20	15	170	20	65	5	0.2	15	50	0.20	0	10										
		30	190					30	55													
		60	210					60	55													
6	0.25	15	235	35	80	6	0.25	15	65	0.24	0	15										
		30	255					30	70													
		60	290					60	70													
7						7	0.3	15	80	0.28	5	15										
								30	80													
								60	85													
8						8	0.35	15	95	0.30	3	15										
								30	97													
								60	100													
9						9	0.4	15	115	0.35	0	20										
								30	120													
								60	120													
10						10	0.45	15	130	0.40	3	15										
								30	132													
								60	135													
11						11	0.5	15	150	0.44	3	20										
								30	152													
								60	155													
12						12	0.6	15	156	0.50	7	32										
								30	180													
								60	187													
13						13	0.70	15	192	0.58	10	38										
								30	215													
								60	225													
14						14	0.8	15	235	0.65	10	40										
								30	255													
								60	265													
15						15	0.9	15	275	0.70	25	60										
								30	300													
								60	325													
16																						

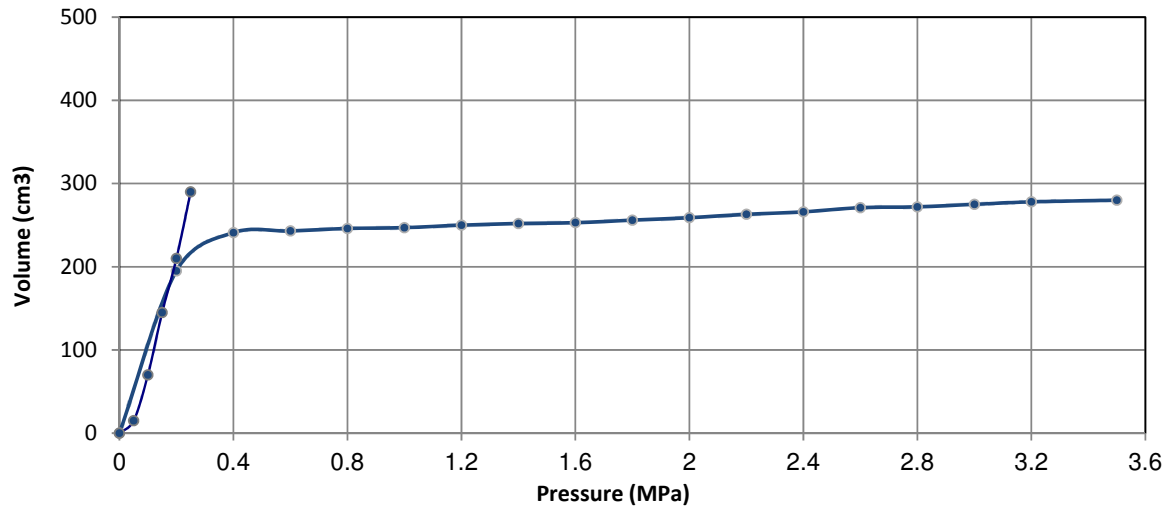
Pressuremeter Testing in Soils

ASTM D4719

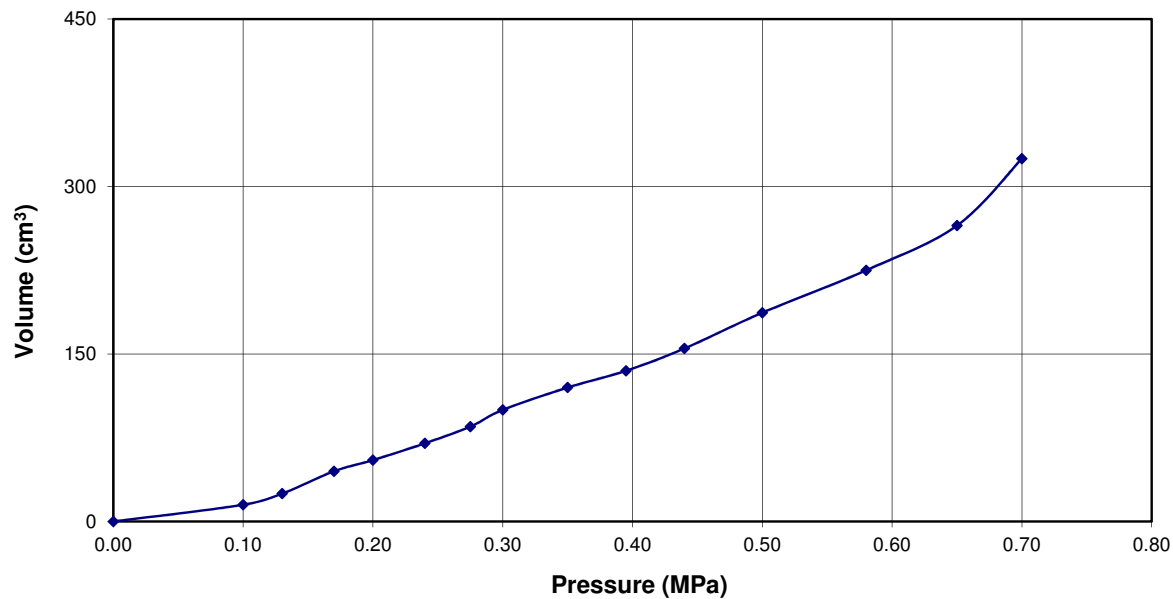
Boring No.: BH-338	Type of Soil: Clay	Project : Lamerd Aluminum Co
Boring Diameter : 66 mm	Drilling Method : Coring	Client : NFC
Depth of Stage : 9.0 to 11.0	Depth of Probe center Point (m): 10.00	Location : lamerd
Test Method : A Equal pressure increment method ☒	Type of Tube : 63mm O.D.Slotted	Date: 2015.04.29
B Equal volume increment method ☐	G.W.L.:	Time : 9:00
Hydrostatic Pressure on probe (P_w)(MPa) : 0.005		Page: 2

Volume of measuring portion of the unflated probe at 0 volume reading at ground surface , cm^3 (V_o) :535

Calibration Chart



Pressuremeter Test Chart



Calculated by: Z.Khalili

$E_{\text{menard}} = 5.4$ MPa

$P_0 = 0.17$ MPa

$P_L = 0.97$ MPa

Pressuremeter Testing in Soils

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Boring No.: BH-338	Type of Soil: Clay	Project : Lamerd Aluminum Co
Boring Diameter : 66 mm	Drilling Method : Coring	Client : NFC
Depth (m): 14.0 to 16.00	Depth of Probe Center Point (m): 15.00	Location : lamerd
Test A Equal pressure increment method ☒ Method : B Equal volume increment method ☐	Type of Tube : 63 mm O.D.Slotted	Date: 2015.04.29
Hydrostatic Pressure on probe (MPa) : 0.0050	G . W . L . : Vi : 0 cm3	Time : 11:00
		Page: 1

Volume of measuring portion of the uninflated probe at 0 volume reading at ground surface , cm³ (V_o) : 535

Calibration Data						Pressuremeter Test Data								Pressuremeter Test Data							
Steps	Pressure PR (MPa)	Time Second	Volume VR (cm3)	Δ _v V60-V30	Δ _v Vsn-Vsn-1	Steps	Pressure PR (MPa)	Time Second	Volume VR (cm3)	Pressure (Corrected)	Δ _v V60-V30	Δ _v Vsn-Vsn-1	Steps	Pressure PR (MPa)	Time Second	Volume VR(cm3)	Pressure (Corrected)	Δ _v V60-V30	Δ _v Vsn-Vsn-2		
1	0.00	15	0	0	0	1	0	15	0	0	0	0									
		30	0					30	0												
		60	0					60	0												
2	0.05	15	10	3	15	2	0.05	15	5	0.15	3	10									
		30	12					30	7												
		60	15					60	10												
3	0.10	15	40	20	55	3	0.10	15	15	0.17	2	10									
		30	50					30	18												
		60	70					60	20												
4	0.15	15	95	30	75	4	0.15	15	27	0.21	0	10									
		30	115					30	30												
		60	145					60	30												
5	0.20	15	170	20	65	5	0.2	15	35	0.25	5	15									
		30	190					30	40												
		60	210					60	45												
6	0.25	15	235	35	80	6	0.30	15	60	0.33	5	25									
		30	255					30	65												
		60	290					60	70												
7						7	0.4	15	85	0.41	5	25									
								30	90												
								60	95												
8						8	0.50	15	110	0.50	5	25									
								30	115												
								60	120												
9						9	0.6	15	140	0.58	4	27									
								30	143												
								60	147												
10						10	0.7	15	170	0.66	10	38									
								30	175												
								60	185												
11						11	0.8	15	200	0.74	5	30									
								30	210												
								60	215												
12						12	0.9	15	230	0.81	15	35									
								30	235												
								60	250												
13						13	1.00	15	265	0.90	5	30									
								30	275												
								60	280												
14						14	1.1	15	310	0.97	10	50									
								30	320												
								60	330												
15																					
16																					

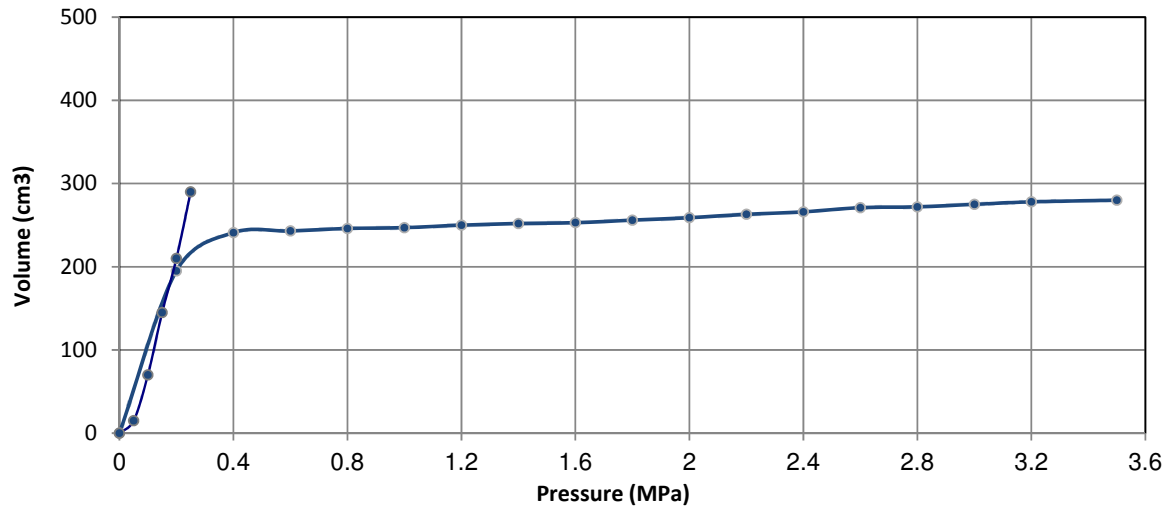
Pressuremeter Testing in Soils

ASTM D4719

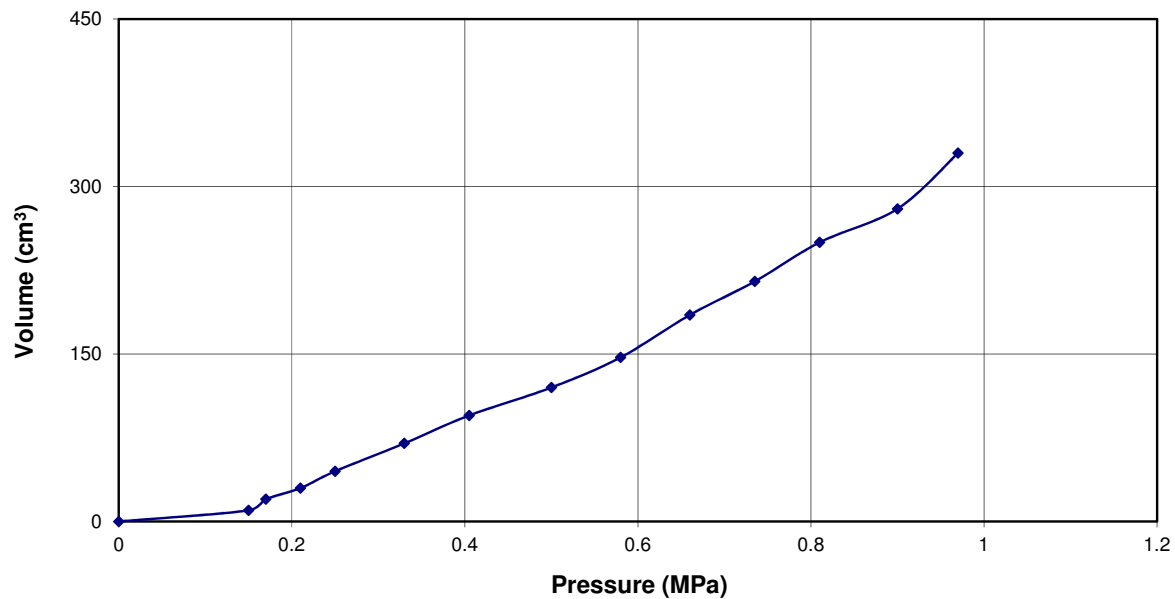
Boring No.: BH-338	Type of Soil: Clay	Project : Lamerd Aluminum Co
Boring Diameter : 66 mm	Drilling Method : Coring	Client : NFC
Depth of Stage : 14.0 to 16.0	Depth of Probe center Point (m): 15.00	Location : lamerd
Test Method : A Equal pressure increment method ☒	Type of Tube : 63mm O.D.Slotted	Date: 2015.04.29
B Equal volume increment method ☐	G.W.L.:	Time : 11:00
Hydrostatic Pressure on probe (P_w)(MPa) : 0.005		Page: 2

Volume of measuring portion of the unflated probe at 0 volume reading at ground surface , cm^3 (V_o) : 535

Calibration Chart



Pressuremeter Test Chart



Calculated by: Z.Khalili

$E_{\text{menard}} = 6.1$ MPa

$P_0 = 0.17$ MPa

$P_L = 1.38$ MPa



Pressuremeter Testing in Soils

ASTM D 4719

Boring No.: BH-338	Type of Soil: Clay	Project : Lamerd Aluminum Co
Boring Diameter : 66 mm	Drilling Method : Coring	Client : NFC
Depth (m): 19.0 to 21.00	Depth of Probe Center Point (m): 20.00	Location : lamerd
Test Method : A Equal pressure increment method ☒ B Equal volume increment method ☐	Type of Tube : 63 mm O.D.Slotted	Date: 2015.04.29
Hydrostatic Pressure on probe (MPa) : 0.0050	G . W . L . : Vi : 0 cm3	Time : 15:00
		Page: 1

Volume of measuring portion of the unflated probe at 0 volume reading at ground surface , cm³ (V_o) : 535

Calibration Data						Pressuremeter Test Data							Pressuremeter Test Data							Pressuremeter Test Data		
Steps	Pressure PR (MPa)	Time Second	Volume VR (cm3)	Δ _v V60-V30	Δ _v V _{sn} -V _{sn-1}	Steps	Pressure PR (MPa)	Time Second	Volume VR (cm3)	Pressure (Corrected)	Δ _v V60-V30	Δ _v V _{sn} -V _{sn-1}	Steps	Pressure PR (MPa)	Time Second	Volume VR(cm3)	Pressure (Corrected)	Δ _v V60-V30	Δ _v V _{sn} -V _{sn-2}			
1	0.00	15	0	0	0	1	0	15	0	0	0	0										
		30	0					30	0													
		60	0					60	0													
2	0.05	15	10	3	15	2	0.05	15	5	0.22	0	5										
		30	12					30	5													
		60	15					60	5													
3	0.10	15	40	20	55	3	0.10	15	10	0.25	0	5										
		30	50					30	10													
		60	70					60	10													
4	0.15	15	95	30	75	4	0.20	15	25	0.32	5	25										
		30	115					30	30													
		60	145					60	35													
5	0.20	15	170	20	65	5	0.3	15	50	0.40	5	25										
		30	190					30	55													
		60	210					60	60													
6	0.25	15	235	35	80	6	0.40	15	70	0.46	5	15										
		30	255					30	70													
		60	290					60	75													
7						7	0.5	15	92	0.55	5	25										
								30	95													
								60	100													
8						8	0.60	15	125	0.65	10	40										
								30	130													
								60	140													
9						9	0.7	15	165	0.70	15	50										
								30	175													
								60	190													
10						10	0.8	15	220	0.75	10	50										
								30	230													
								60	240													
11						11	0.9	15	290	0.83	15	75										
								30	300													
								60	315													
12																						
13																						
14																						
15																						
16																						

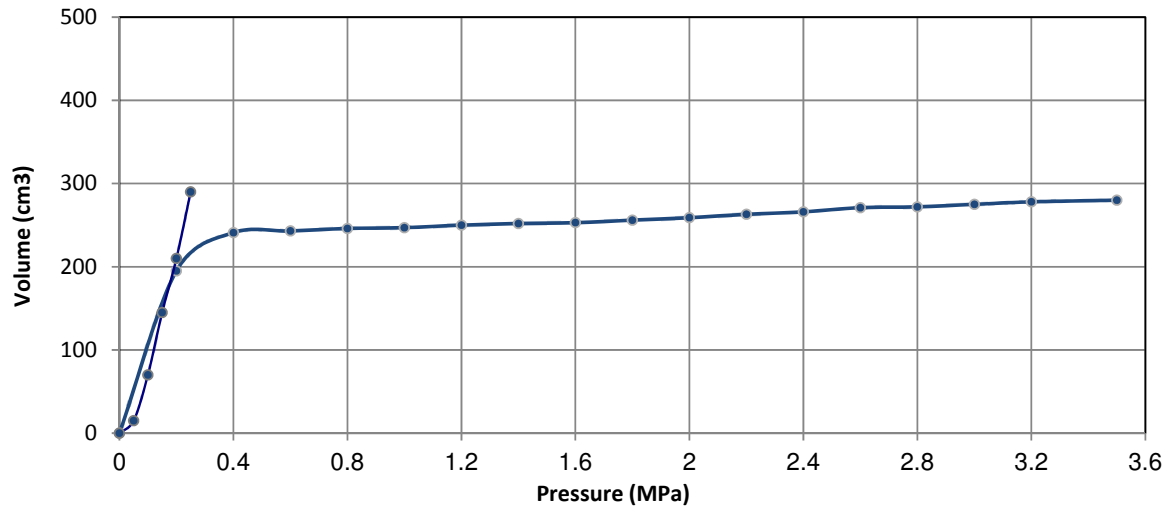
Pressuremeter Testing in Soils

ASTM D4719

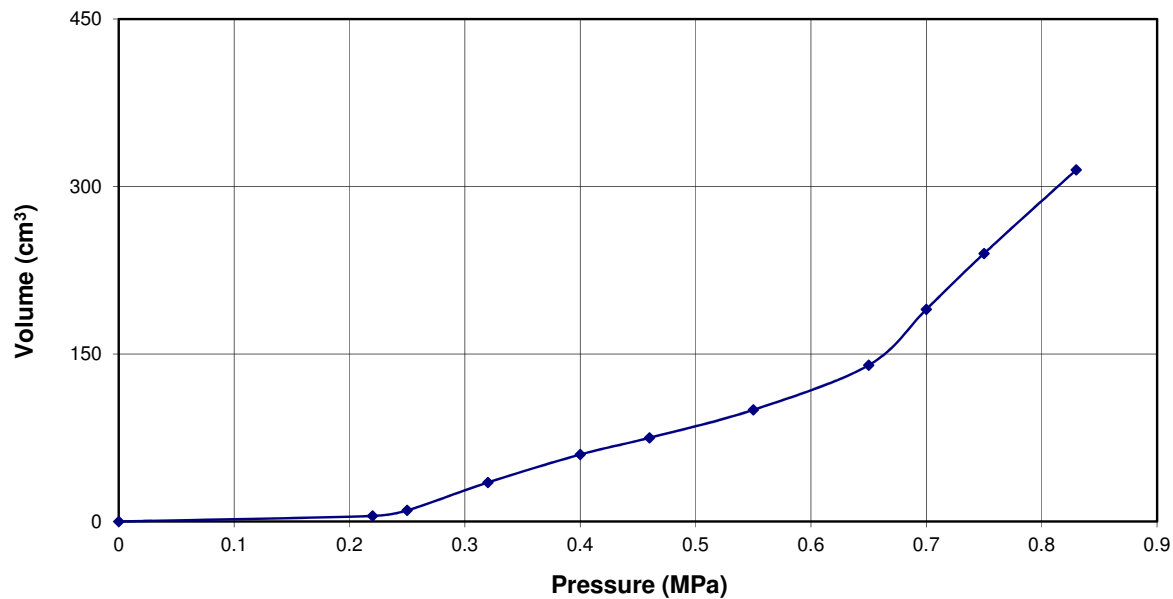
Boring No.: BH-338	Type of Soil: Clay	Project : Lamerd Aluminum Co
Boring Diameter : 66 mm	Drilling Method : Coring	Client : NFC
Depth of Stage : 19.0 to 21.0	Depth of Probe center Point (m): 20.00	Location : lamerd
Test Method : A Equal pressure increment method ☒	Type of Tube : 63mm O.D.Slotted	Date: 2015.04.29
B Equal volume increment method ☐	G.W.L.:	Time : 15:00
Hydrostatic Pressure on probe (P_w)(MPa) : 0.005		Page: 2

Volume of measuring portion of the unflated probe at 0 volume reading at ground surface , cm^3 (V_o) : 535

Calibration Chart



Pressuremeter Test Chart



Calculated by: Z.Khalili

$E_{\text{menard}} = 6.3$ MPa
 $P_0 = 0.25$ MPa
 $P_L = 1.21$ MPa

Pressuremeter Testing in Soils

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Boring No.: BH-338		Type of Soil: Clay	Project : Lamerd Aluminum Co
Boring Diameter : 66 mm		Drilling Method : Coring	Client : NFC
Depth (m): 24.0 to 26.00		Depth of Probe Center Point (m): 25.00	Location : lamerd
Test Method : A Equal pressure increment method ☒ B Equal volume increment method ☐		Type of Tube : 63 mm O.D.Slotted	Date: 2015.04.29
Hydrostatic Pressure on probe (MPa) : 0.0050		G . W . L . :	Time : 16:00
		Vi : 0 cm3	Page: 1

Volume of measuring portion of the unflated probe at 0 volume reading at ground surface , cm³ (V_o) : 535

Calibration Data						Pressuremeter Test Data								Pressuremeter Test Data								
Steps	Pressure PR (MPa)	Time Second	Volume VR (cm3)	Δ _v V60-V30	Δ _v Vsn-Vsn-1	Steps	Pressure PR (MPa)	Time Second	Volume VR (cm3)	Pressure (Corrected)	Δ _v V60-V30	Δ _v Vsn-Vsn-1	Steps	Pressure PR (MPa)	Time Second	Volume VR(cm3)	Pressure (Corrected)	Δ _v V60-V30	Δ _v Vsn-Vsn-2			
1	0.00	15	0	0	0	1	0	15	0	0.0	0	0										
		30	0					30	0													
		60	0					60	0													
2	0.05	15	10	3	15	2	0.10	15	5	0.31	0	5										
		30	12					30	5													
		60	15					60	5													
3	0.10	15	40	20	55	3	0.20	15	12	0.40	3	10										
		30	50					30	12													
		60	70					60	15													
4	0.15	15	95	30	75	4	0.30	15	25	0.46	5	20										
		30	115					30	30													
		60	145					60	35													
5	0.20	15	170	20	65	5	0.4	15	50	0.55	7	25										
		30	190					30	53													
		60	210					60	60													
6	0.25	15	235	35	80	6	0.50	15	75	0.62	5	25										
		30	255					30	80													
		60	290					60	85													
7						7	0.6	15	100	0.70	10	30										
								30	105													
								60	115													
8						8	0.70	15	130	0.80	5	25										
								30	135													
								60	140													
9						9	0.8	15	165	0.85	3	30										
								30	167													
								60	170													
10						10	0.9	15	195	0.95	5	40										
								30	205													
								60	210													
11						11	1.0	15	245	1.0	5	50										
								30	255													
								60	260													
12						12	1.1	15	290	1.08	10	50										
								30	300													
								60	310													
13																						
14																						
15																						
16																						

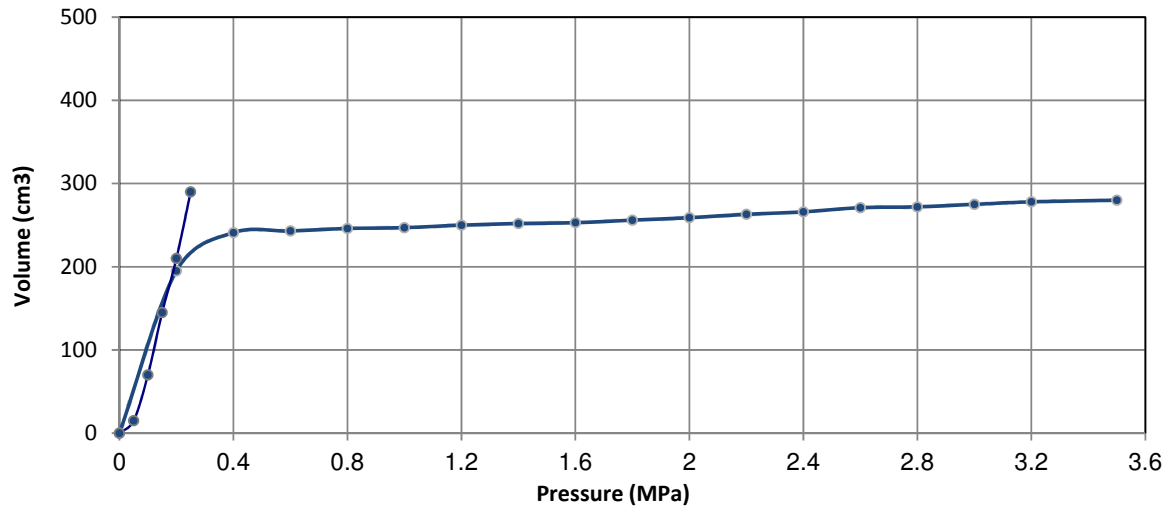
Pressuremeter Testing in Soils

ASTM D4719

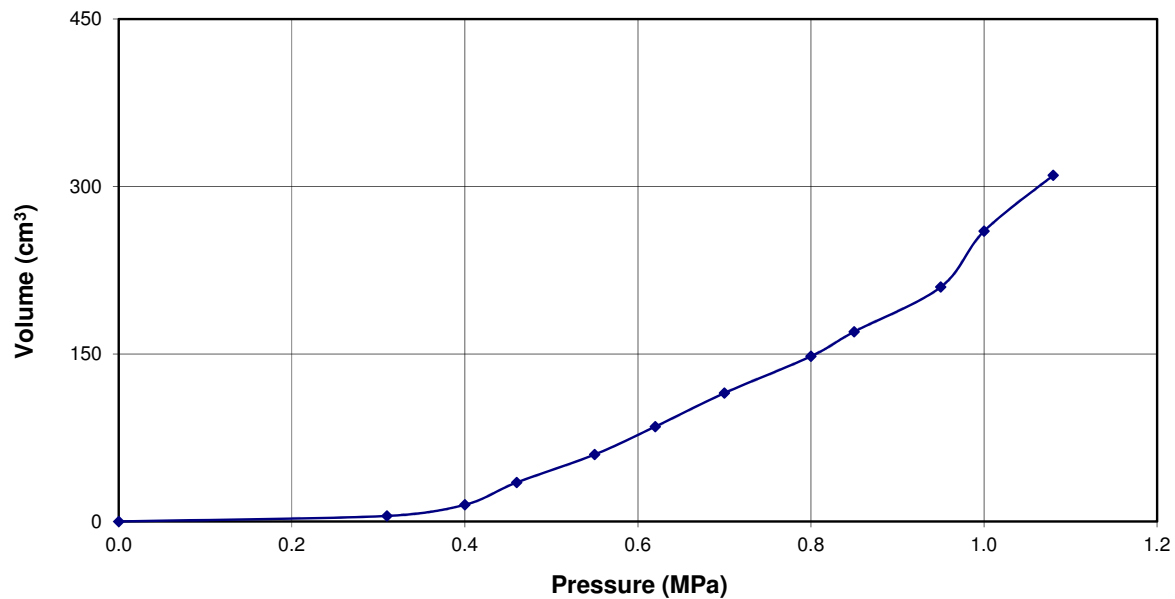
Boring No.: BH-338	Type of Soil: Clay	Project : Lamerd Aluminum Co
Boring Diameter : 66 mm	Drilling Method : Coring	Client : NFC
Depth of Stage : 24.0 to 26.0	Depth of Probe center Point (m): 25.00	Location : lamerd
Test Method : A Equal pressure increment method ☒	Type of Tube : 63mm O.D.Slotted	Date: 2015.04.29
B Equal volume increment method ☐	G.W.L.:	Time : 16:00
Hydrostatic Pressure on probe (P_w)(MPa) : 0.005		Page: 2

Volume of measuring portion of the uninflated probe at 0 volume reading at ground surface , cm^3 (V_o) : 535

Calibration Chart



Pressuremeter Test Chart



Calculated by: Z.Khalili

$E_{\text{menard}} = 5.7$ MPa

$P_0 = 0.46$ MPa

$P_L = 1.61$ MPa

Pressuremeter Testing in Soils

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Boring No.: BH-338	Type of Soil: Clay	Project : Lamerd Aluminum Co
Boring Diameter : 66 mm	Drilling Method : Coring	Client : NFC
Depth (m): 29.0 to 31.00	Depth of Probe Center Point (m): 30.00	Location : lamerd
Test Method : A Equal pressure increment method ☒ B Equal volume increment method ☐	Type of Tube : 63 mm O.D.Slotted	Date: 2015.04.29
Hydrostatic Pressure on probe (MPa) : 0.0050	G . W . L . : Vi : 0 cm3	Time : 18:00
		Page: 1

Volume of measuring portion of the uninflated probe at 0 volume reading at ground surface , cm³ (V_o) : 535

Calibration Data						Pressuremeter Test Data								Pressuremeter Test Data							
Steps	Pressure PR (MPa)	Time Second	Volume VR (cm3)	Δ _v V60-V30	Δ _v Vsn-Vsn-1	Steps	Pressure PR (MPa)	Time Second	Volume VR (cm3)	Pressure (Corrected)	Δ _v V60-V30	Δ _v Vsn-Vsn-1	Steps	Pressure PR (MPa)	Time Second	Volume VR(cm3)	Pressure (Corrected)	Δ _v V60-V30	Δ _v Vsn-Vsn-2		
1	0.00	15	0	0	0	1	0	15	0	0	0	0									
		30	0					30	0												
		60	0					60	0												
2	0.05	15	10	3	15	2	0.20	15	20	0.42	8	30									
		30	12					30	22												
		60	15					60	30												
3	0.10	15	40	20	55	3	0.30	15	36	0.50	2	10									
		30	50					30	38												
		60	70					60	40												
4	0.15	15	95	30	75	4	0.40	15	65	0.57	10	45									
		30	115					30	75												
		60	145					60	85												
5	0.20	15	170	20	65	5	0.5	15	90	0.65	3	13									
		30	190					30	95												
		60	210					60	98												
6	0.25	15	235	35	80	6	0.60	15	113	0.75	5	22									
		30	255					30	115												
		60	290					60	120												
7						7	0.7	15	135	0.81	15	40									
								30	145												
								60	160												
8						8	0.80	15	165	0.90	5	10									
								30	165												
								60	170												
9						9	0.9	15	185	1.00	3	23									
								30	190												
								60	193												
10						10	1	15	210	1.06	10	37									
								30	220												
								60	230												
11						11	1.1	15	240	1.15	10	30									
								30	250												
								60	260												
12						12	1.2	15	280	1.25	5	30									
								30	285												
								60	290												
13						13	1.30	15	310	1.30	10	40									
								30	320												
								60	330												
14																					
15																					
16																					

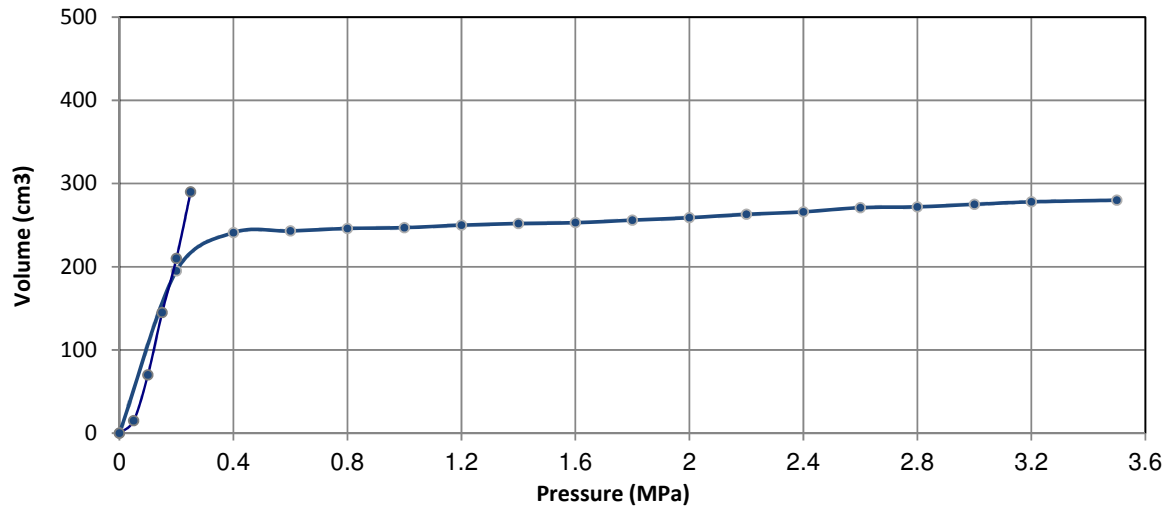
Pressuremeter Testing in Soils

ASTM D4719

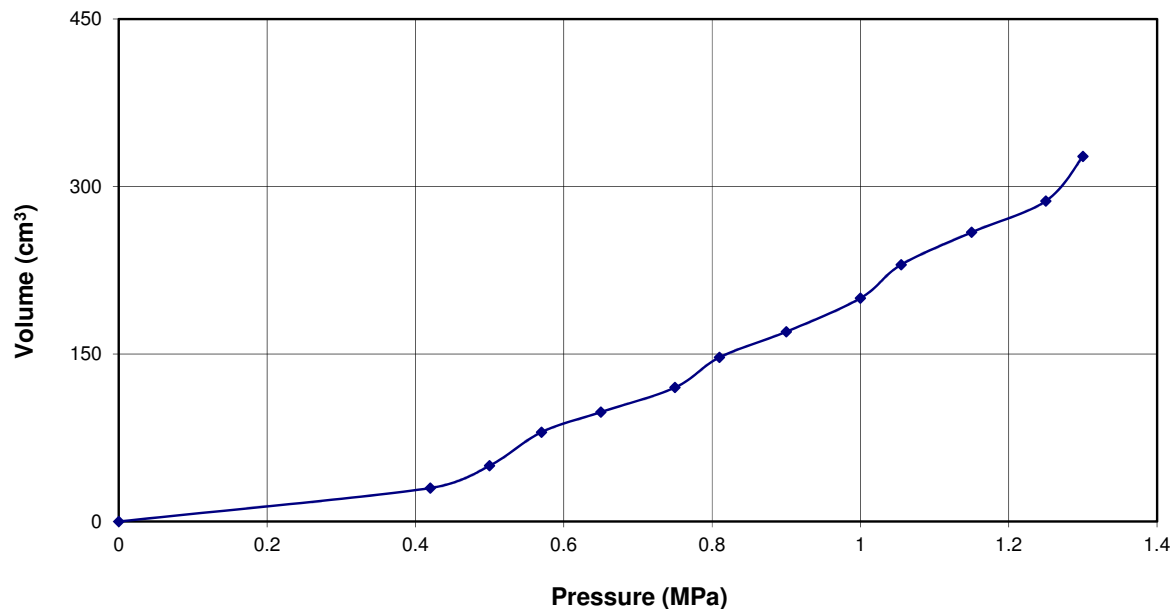
Boring No.: BH-338	Type of Soil: Clay	Project : Lamerd Aluminum Co
Boring Diameter : 66 mm	Drilling Method : Coring	Client : NFC
Depth of Stage : 29.0 to 31.0	Depth of Probe center Point (m): 30.00	Location : lamerd
Test Method : A Equal pressure increment method ☒	Type of Tube : 63mm O.D.Slotted	Date: 2015.04.29
B Equal volume increment method ☐	G.W.L.:	Time : 18:00
Hydrostatic Pressure on probe (P_w)(MPa) : 0.005		Page: 2

Volume of measuring portion of the uninflated probe at 0 volume reading at ground surface , cm^3 (V_o) :535

Calibration Chart



Pressuremeter Test Chart



Calculated by: Z.Khalili

$E_{menard} = 7.8$ MPa

$P_0 = 0.57$ MPa

$P_L = 1.93$ MPa