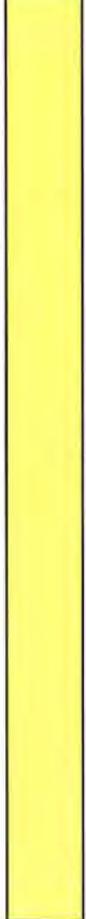
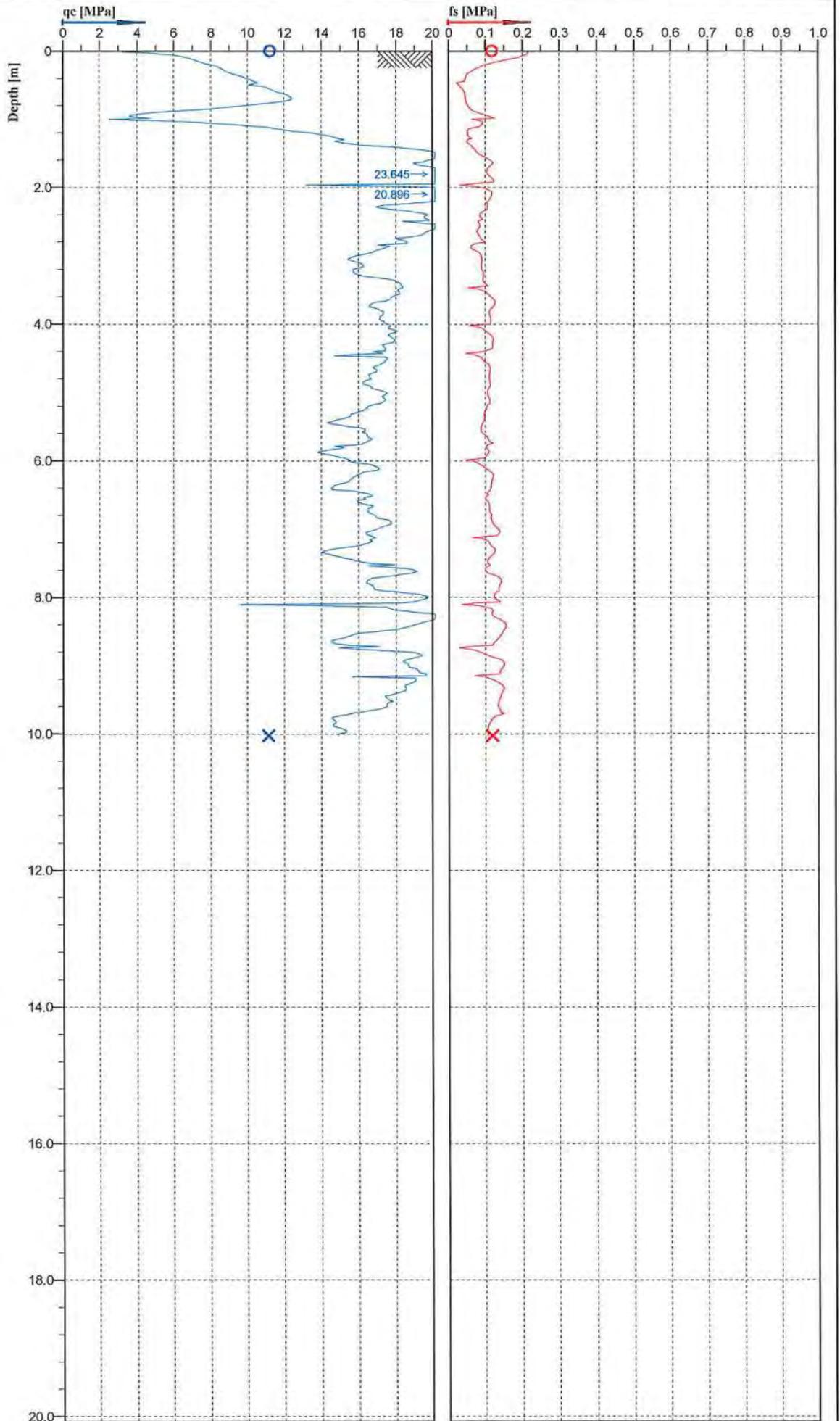


Classification by
Robertson 1986

Silty clay to clay (4)



Sand (9)



PRO-DRILL
SPECIALIST DRILLING ENGINEERS

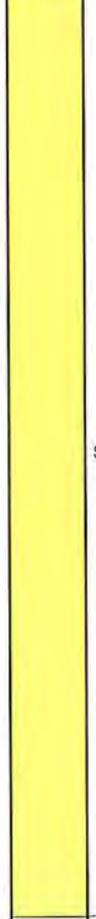


Cone No: 4488
Tip area [cm²]: 10
Sleeve area [cm²]: 150

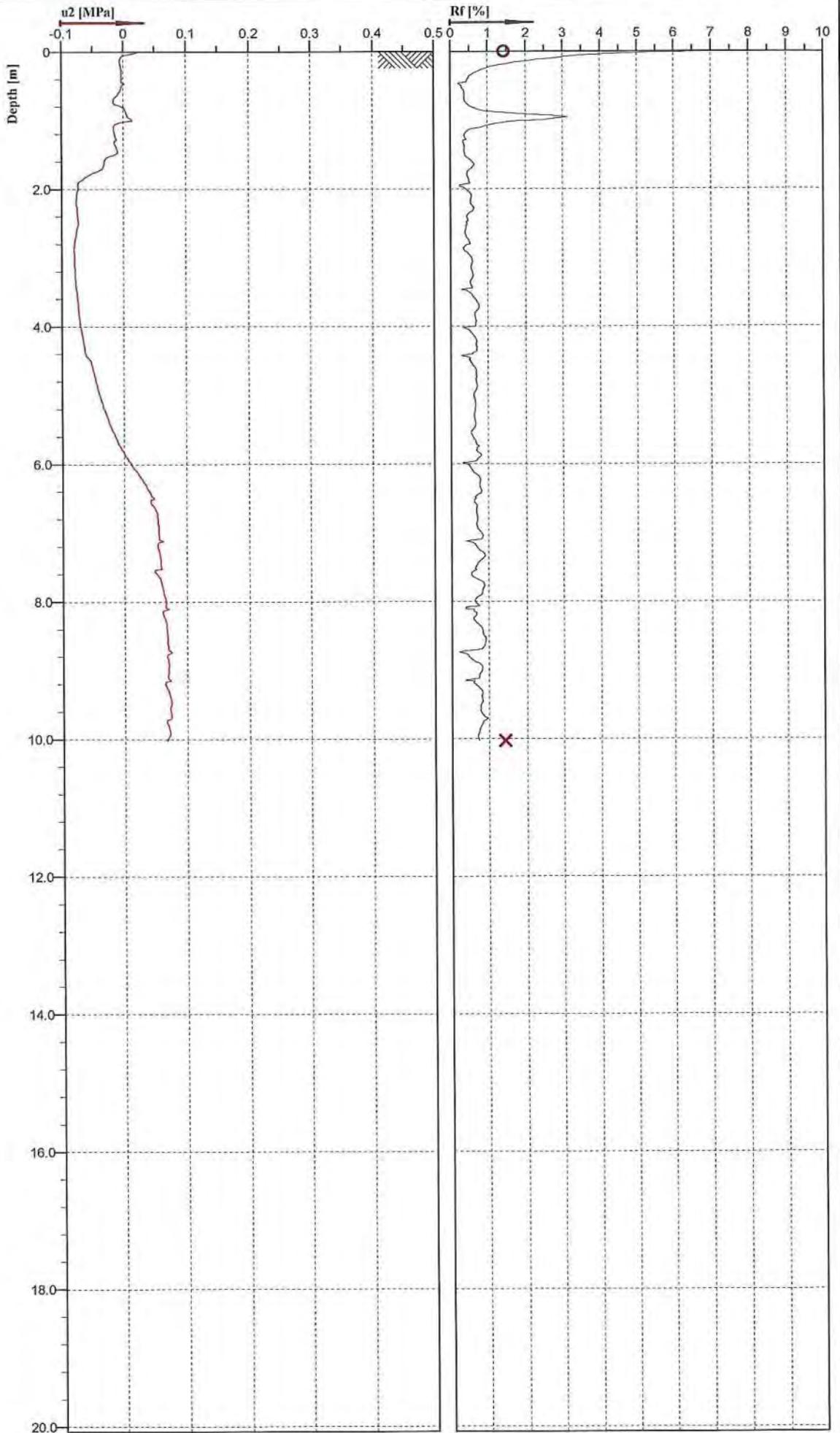
Location:	CHCH	Position:	X: 0.00 m, Y: 0.00 m	Ground level:	0.00	Test no:	6341C
Project ID:		Client:	Aurecon	Date:	16/10/2014	Scale:	1 : 80
Project:	PRESTONS SOUTH			Page:	1/1	Fig:	
				File:	PrestonsSouthCPT6341C.cpt		

Classification by
Robertson 1986

Silty clay to clay (4)



Sand (9)



PRO-DRILL
SPECIALIST DRILLING ENGINEERS

Cone No: 4486
Tip area [cm²]: 10
Sleeve area [cm²]: 150



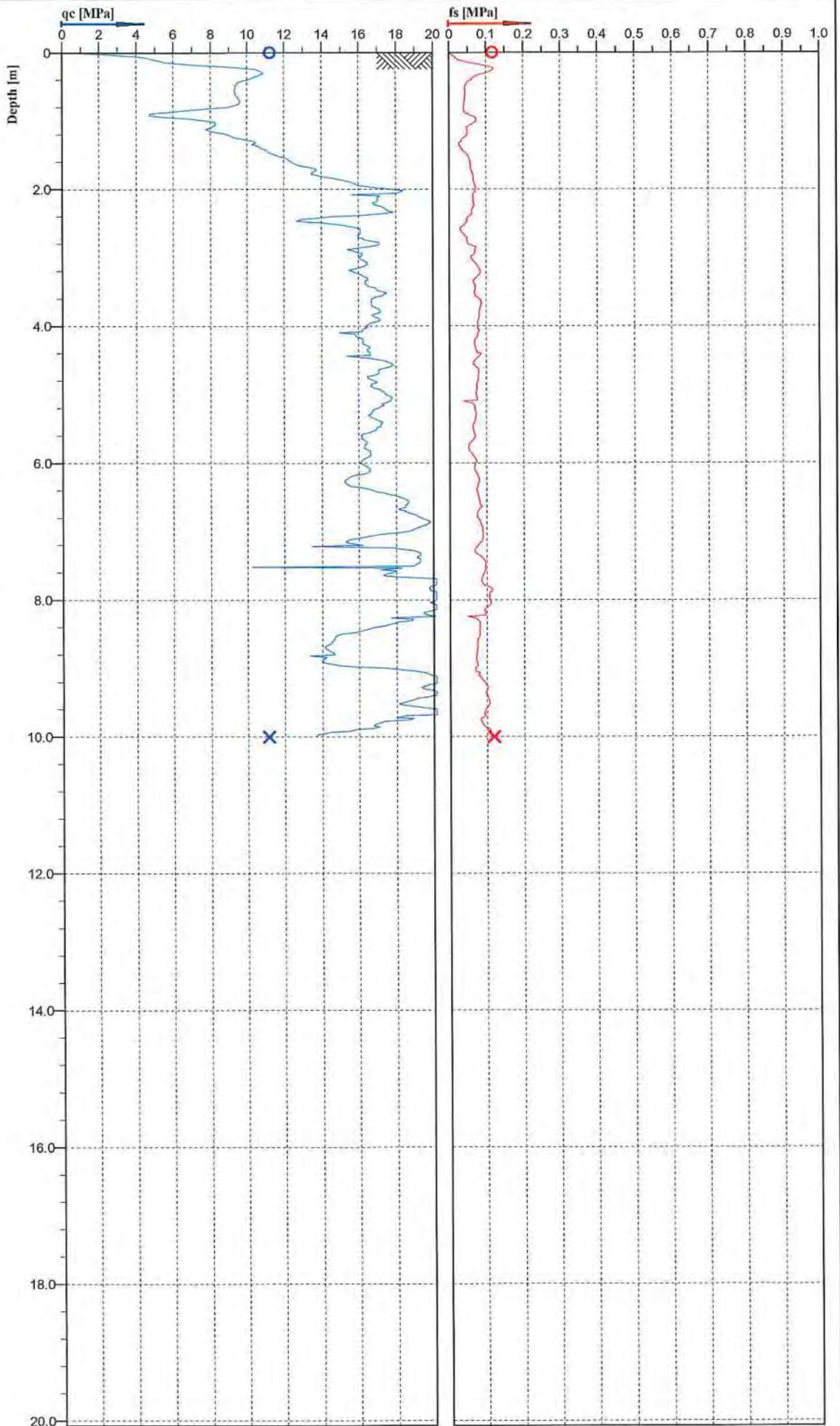
Location:	CHCH	Position:	X: 0.00 m, Y: 0.00 m	Ground level:	0.00	Test no:	6341C
Project ID:		Client:	Aurecon	Date:	16/10/2014	Scale:	1 : 80
Project:	PRESTONS SOUTH			Page:	1/1	Fig:	
				File:	PrestonsSouthCPT6341C.cpt		

Classification by
Robertson 1986

Silty sand to sandy silt (7)



Sand (9)



PRO-DRILL
SPECIALIST DRILLING ENGINEERS

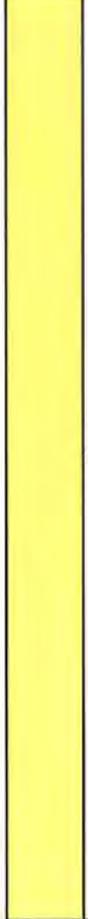


Cone No: 4486
Tip area [cm²]: 10
Sleeve area [cm²]: 150

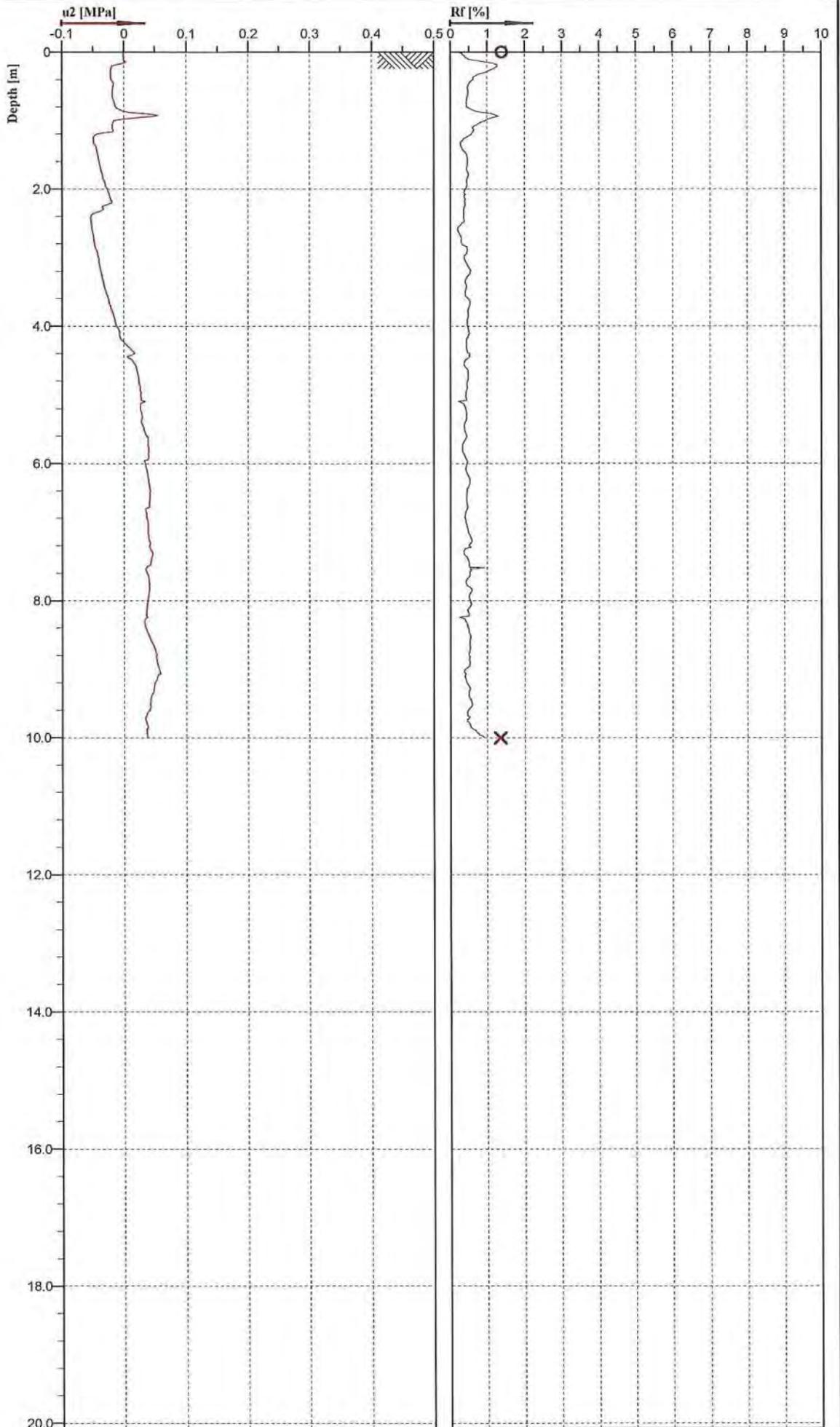
Location:	CHCH	Position:	X: 0.00 m, Y: 0.00 m	Ground level:	0.00	Test no:	6351C
Project ID:		Client:	Aurecon	Date:	16/10/2014	Scale:	1 : 80
Project:	PRESTONS SOUTH			Page:	1/1	Fig:	
				File:	PrestonsSouthCPT6351C.cpt		

Classification by
Robertson 1986

Silty sand to sandy silt (7)



Sand (9)

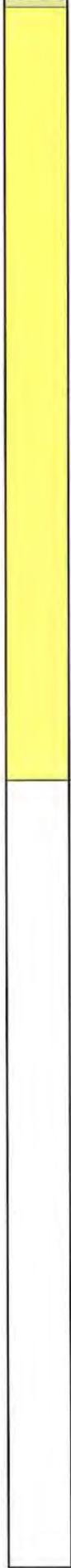


Cone No: 4486
Tip area [cm²]: 10
Sleeve area [cm²]: 150

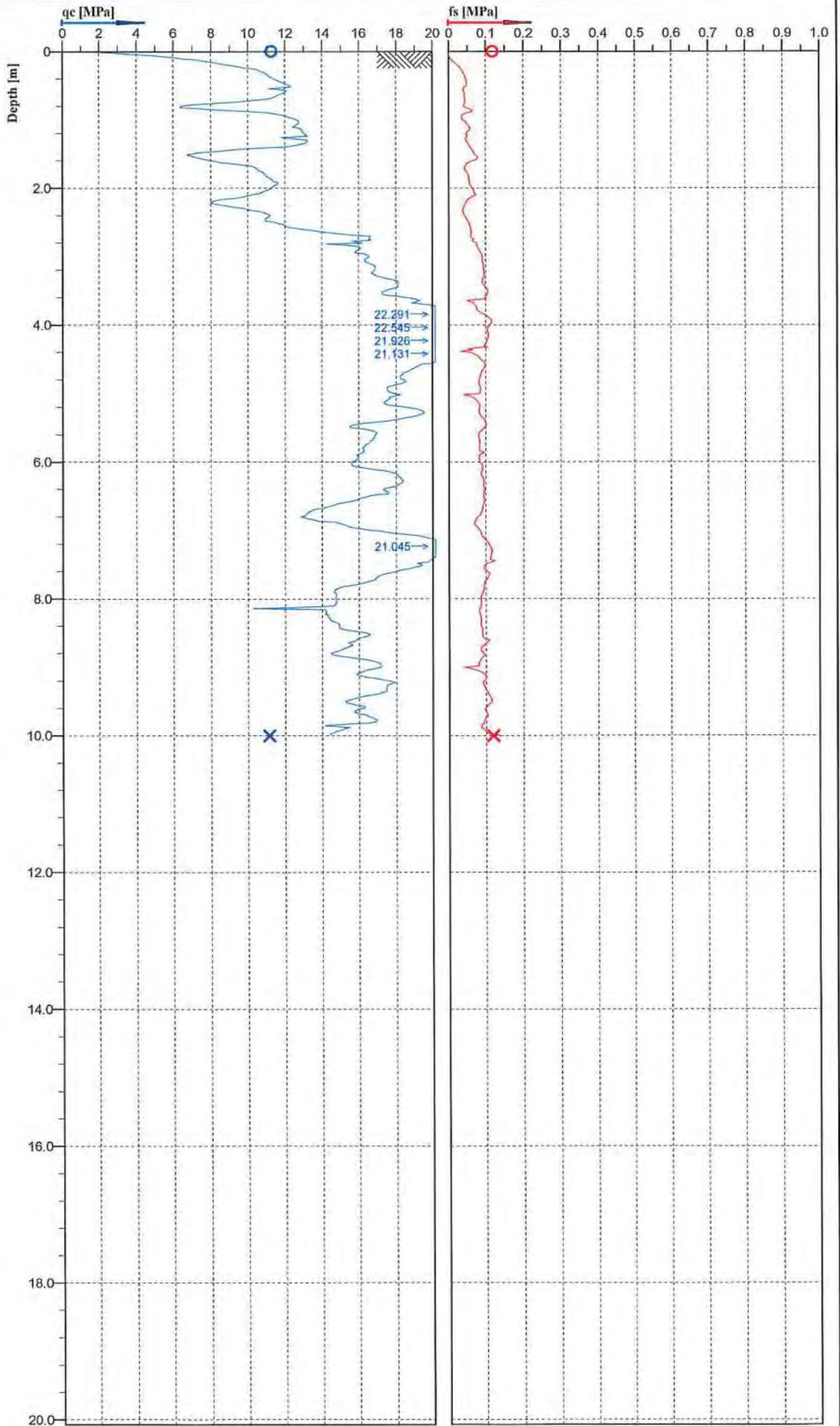
PRO-DRILL
SPECIALIST DRILLING ENGINEERS

Location: CHCH	Position: X: 0.00 m, Y: 0.00 m	Ground level: 0.00	Test no: 6351C
Project ID:	Client: Aurecon	Date: 16/10/2014	Scale: 1 : 80
Project: PRESTONS SOUTH		Page: 1/1	Fig:
		File: PrestonsSouthCPT6351C.cpt	

Classification by
Robertson 1986



Sand (9)



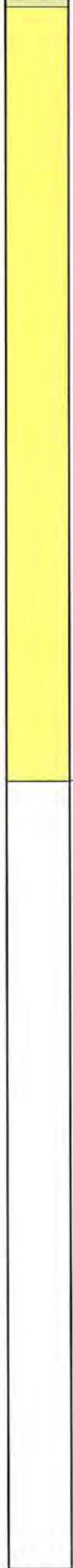
PRO-DRILL
SPECIALIST DRILLING ENGINEERS



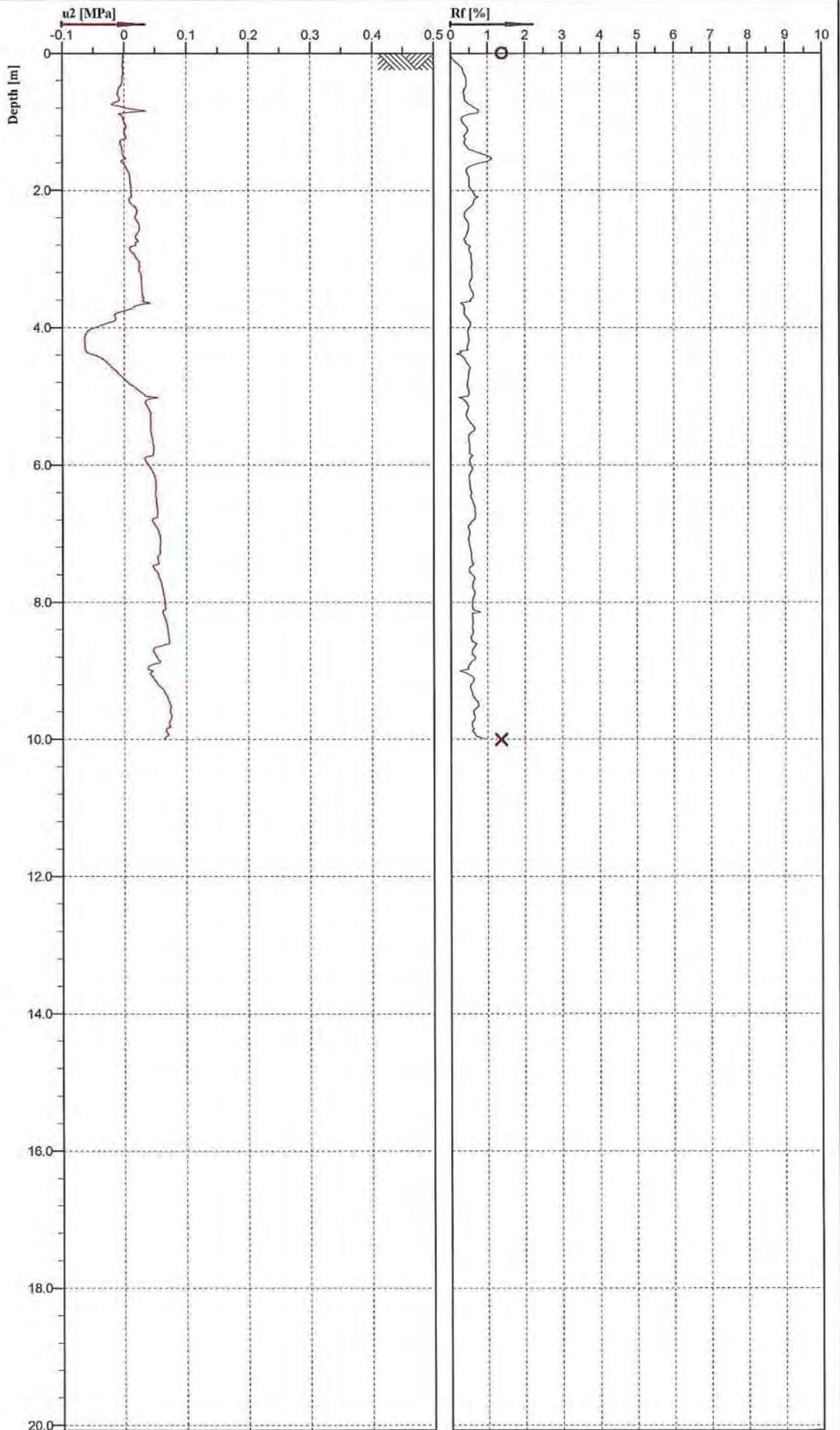
Cone No: 4486
Tip area [cm²]: 10
Sleeve area [cm²]: 150

Location:	CHCH	Position:	X: 0.00 m, Y: 0.00 m	Ground level:	0.00	Test no:	6361C
Project ID:		Client:	Aurecon	Date:	16/10/2014	Scale:	1 : 80
Project:	PRESTONS SOUTH			Page:	1/1	Fig:	
				File:	PrestonsSouthCPT6361C.cpt		

Classification by
Robertson 1986



Sand (9)



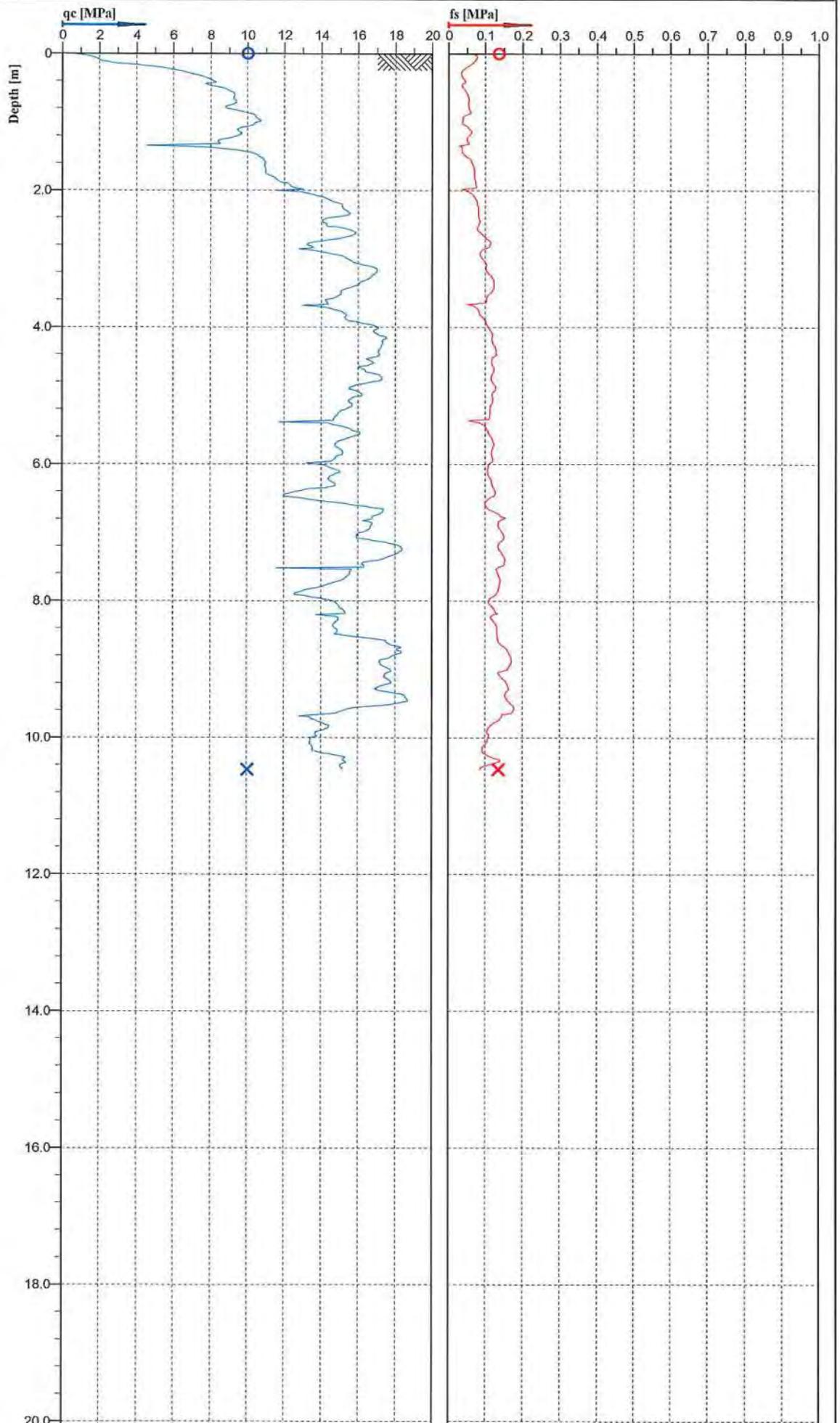
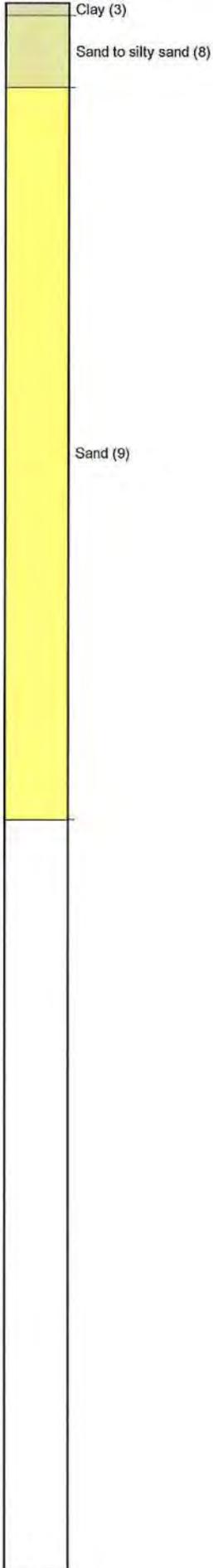
PRO-DRILL
SPECIALIST DRILLING ENGINEERS



Cone No: 4486
Tip area [cm²]: 10
Sleeve area [cm²]: 150

Location:	CHCH	Position:	X: 0.00 m, Y: 0.00 m	Ground level:	0.00	Test no:	6361C
Project ID:		Client:	Aurecon	Date:	16/10/2014	Scale:	1 : 80
Project:	PRESTONS SOUTH			Page:	1/1	Fig:	
				File:	PrestonsSouthCPT6361C.cpt		

Classification by
Robertson 1986



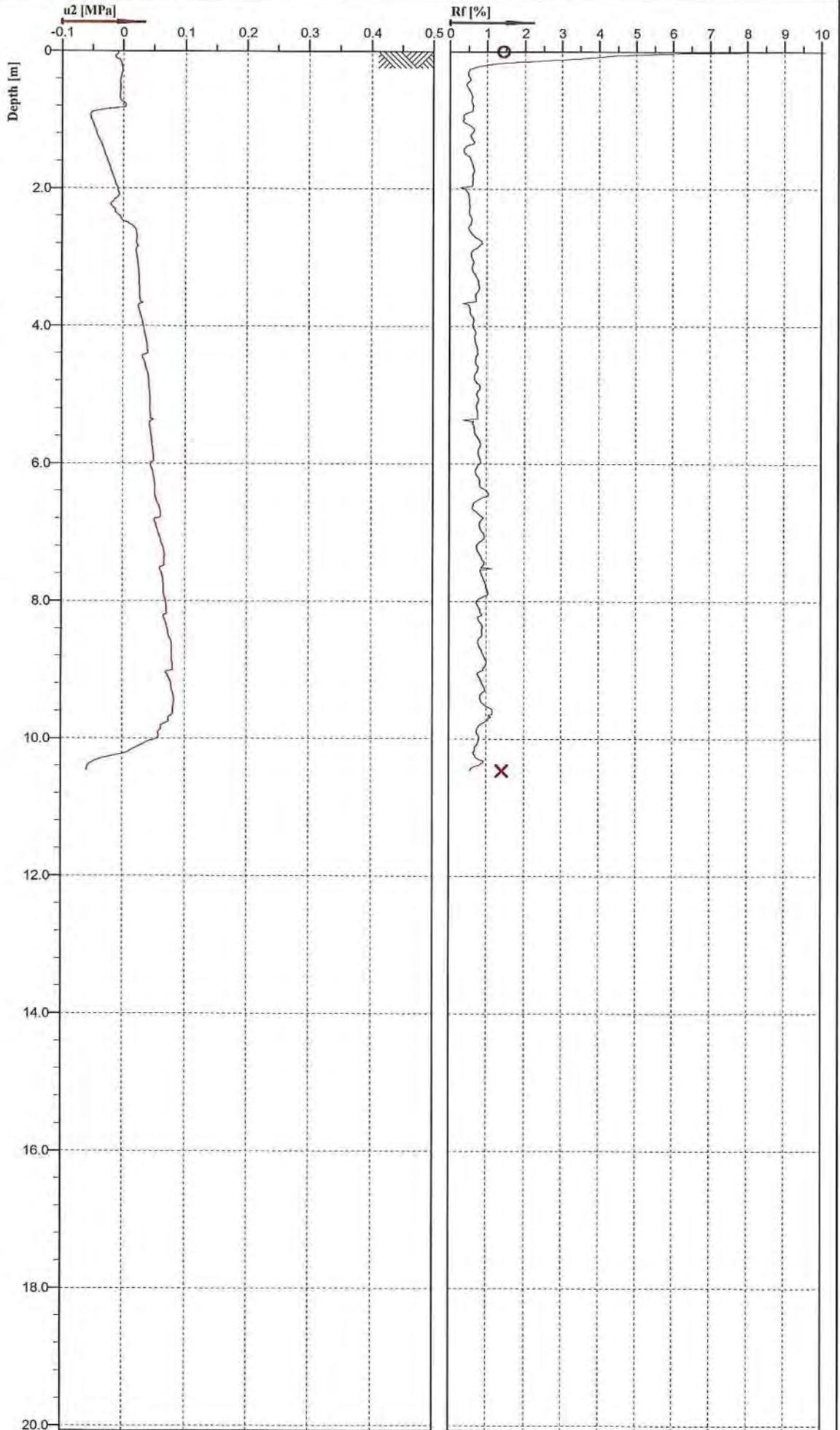
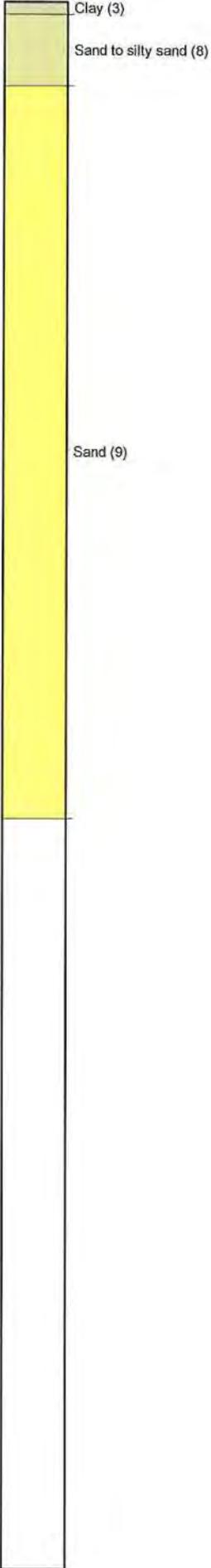
PRO-DRILL
SPECIALIST DRILLING ENGINEERS

Cone No: 4439
Tip area [cm²]: 10
Sleeve area [cm²]: 150



Location: CHCH	Position: X: 0.00 m, Y: 0.00 m	Ground level: 0.00	Test no: 637
Project ID:	Client: AURECON	Date: 7/11/2014	Scale: 1 : 80
Project: PRESTONS SOUTH		Page: 1/1	Fig:
File: PrestonsSouthCPT637-.cpt			

Classification by
Robertson 1986



PRO-DRILL
SPECIALIST DRILLING ENGINEERS

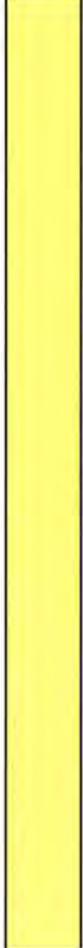
Cone No: 4439
Tip area [cm²]: 10
Sleeve area [cm²]: 150



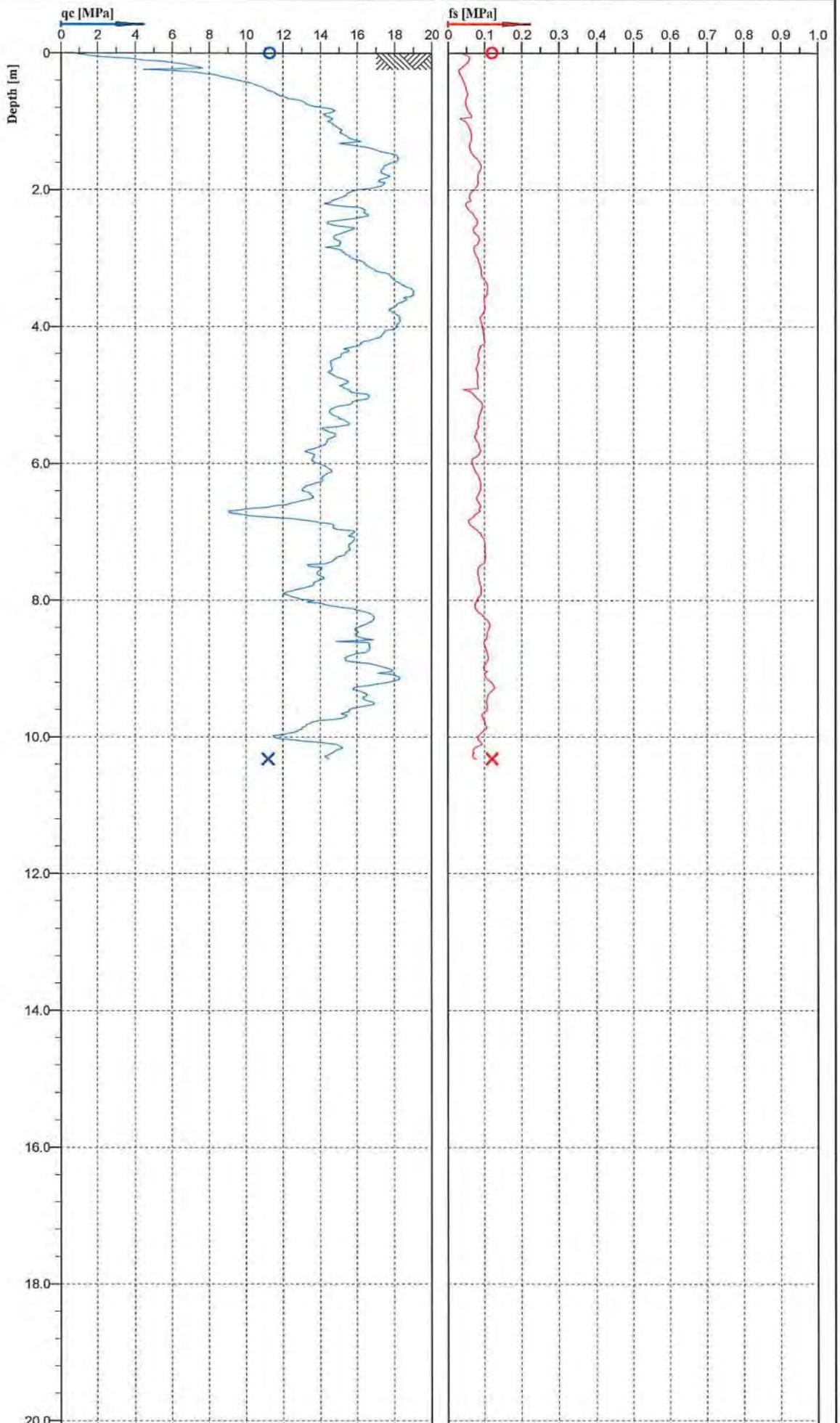
Location:	CHCH	Position:	X: 0.00 m, Y: 0.00 m	Ground level:	0.00	Test no:	637
Project ID:		Client:	AURECON	Date:	7/11/2014	Scale:	1 : 80
Project:	PRESTONS SOUTH			Page:	1/1	Fig:	
				File:	PrestonsSouthCPT637-.cpt		

Classification by
Robertson 1986

Clayey silt to silty clay (5)



Sand (9)



PRO-DRILL
SPECIALIST DRILLING ENGINEERS



Cone No: 4486
Tip area [cm²]: 10
Sleeve area [cm²]: 150

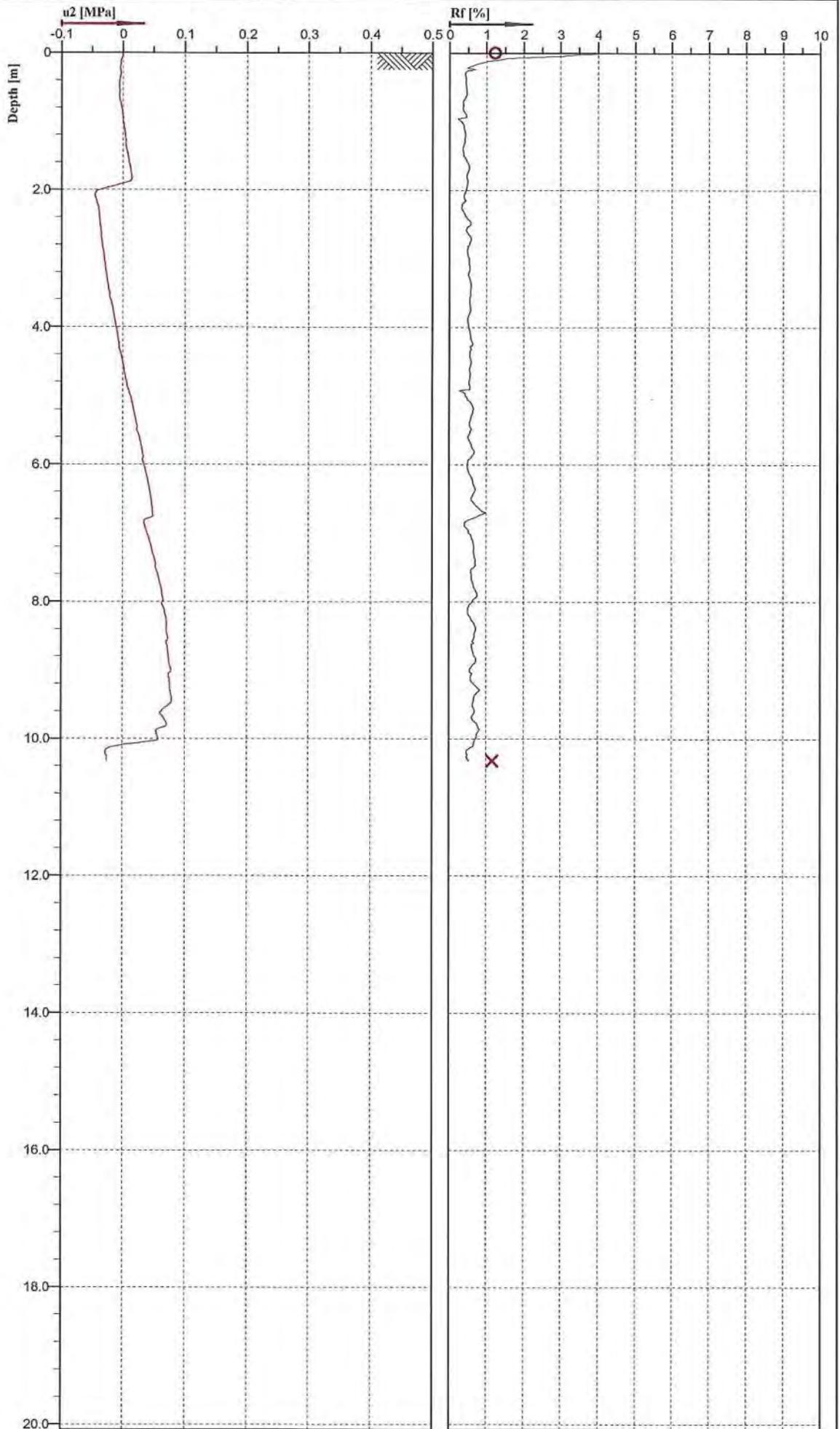
Location:	CHCH	Position:	X: 0.00 m, Y: 0.00 m	Ground level:	0.00	Test no:	6381C
Project ID:		Client:	Aurecon	Date:	2/10/2014	Scale:	1 : 80
Project:	PRESTONS SOUTH			Page:	1/1	Fig:	
				File:	PrestonsSouthCPT6381C.cpt		

Classification by
Robertson 1986

Clayey silt to silty clay (5)



Sand (9)



Cone No: 4486
Tip area [cm²]: 10
Sleeve area [cm²]: 150

PRO-DRILL
SPECIALIST DRILLING ENGINEERS

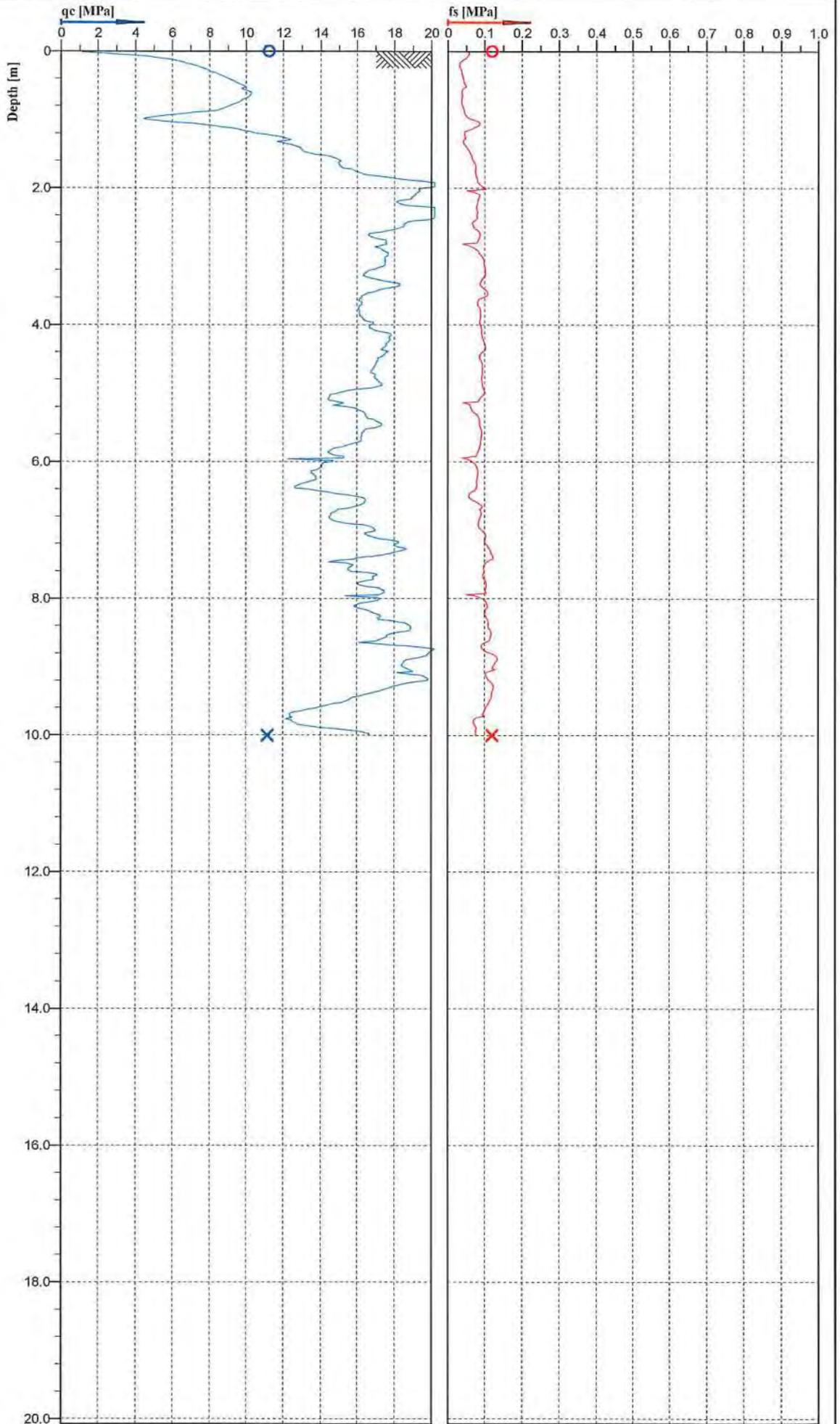
Location:	CHCH	Position:	X: 0.00 m, Y: 0.00 m	Ground level:	0.00	Test no:	6381C
Project ID:		Client:	Aurecon	Date:	2/10/2014	Scale:	1 : 80
Project:	PRESTONS SOUTH			Page:	1/1	Fig:	
				File:	PrestonsSouthCPT6381C.cpt		

Classification by
Robertson 1986

Clayey silt to silty clay (5)



Sand (9)



PRO-DRILL
SPECIALIST DRILLING ENGINEERS

Cone No: 4486
Tip area [cm²]: 10
Sleeve area [cm²]: 150



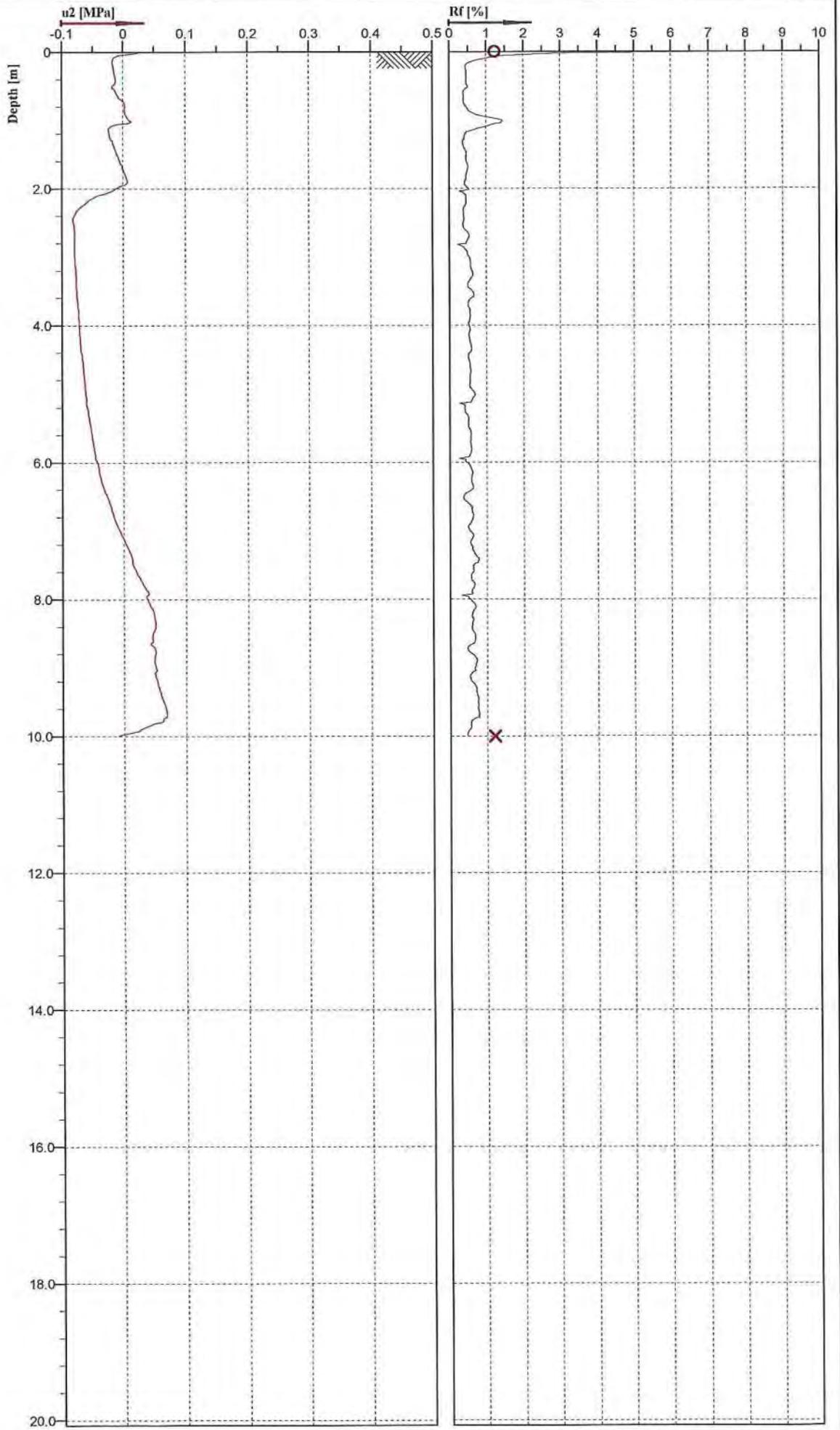
Location:	CHCH	Position:	X: 0.00 m, Y: 0.00 m	Ground level:	0.00	Test no:	6391C
Project ID:		Client:	Aurecon	Date:	2/10/2014	Scale:	1 : 80
Project:	PRESTONS SOUTH			Page:	1/1	Fig:	
				File:	PrestonsSouthCPT6391C.cpt		

Classification by
Robertson 1986

Clayey silt to silty clay (5)



Sand (9)



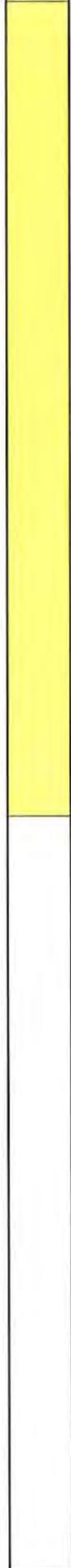
PRO-DRILL
SPECIALIST DRILLING ENGINEERS

Cone No: 4486
Tip area [cm²]: 10
Sleeve area [cm²]: 150

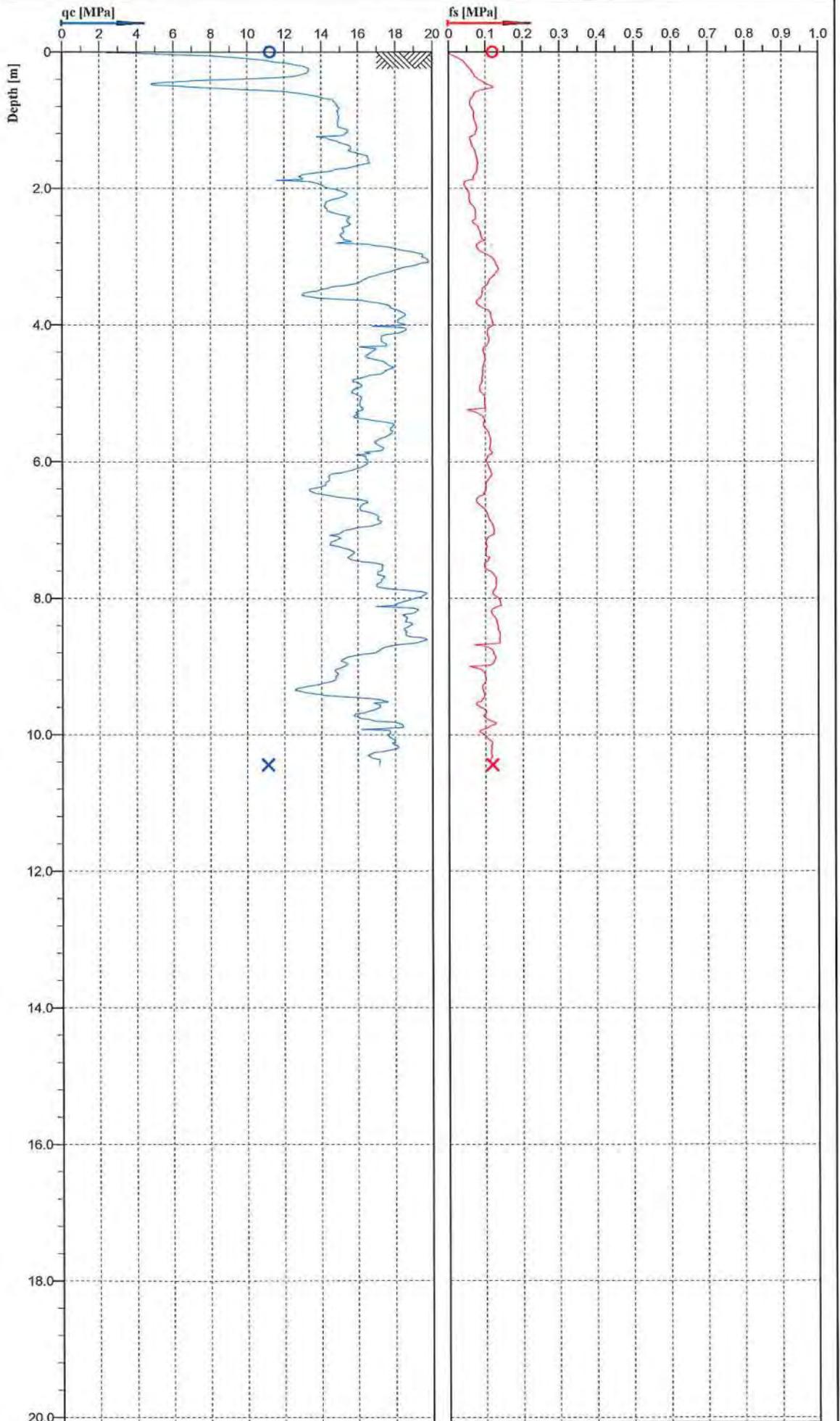


Location: CHCH	Position: X: 0.00 m, Y: 0.00 m	Ground level: 0.00	Test no: 6391C
Project ID:	Client: Aurecon	Date: 2/10/2014	Scale: 1 : 80
Project: PRESTONS SOUTH		Page: 1/1	Fig:
		File: PrestonsSouthCPT6391C.cpt	

Classification by
Robertson 1986



Sand (9)



PRO-DRILL
SPECIALIST DRILLING ENGINEERS



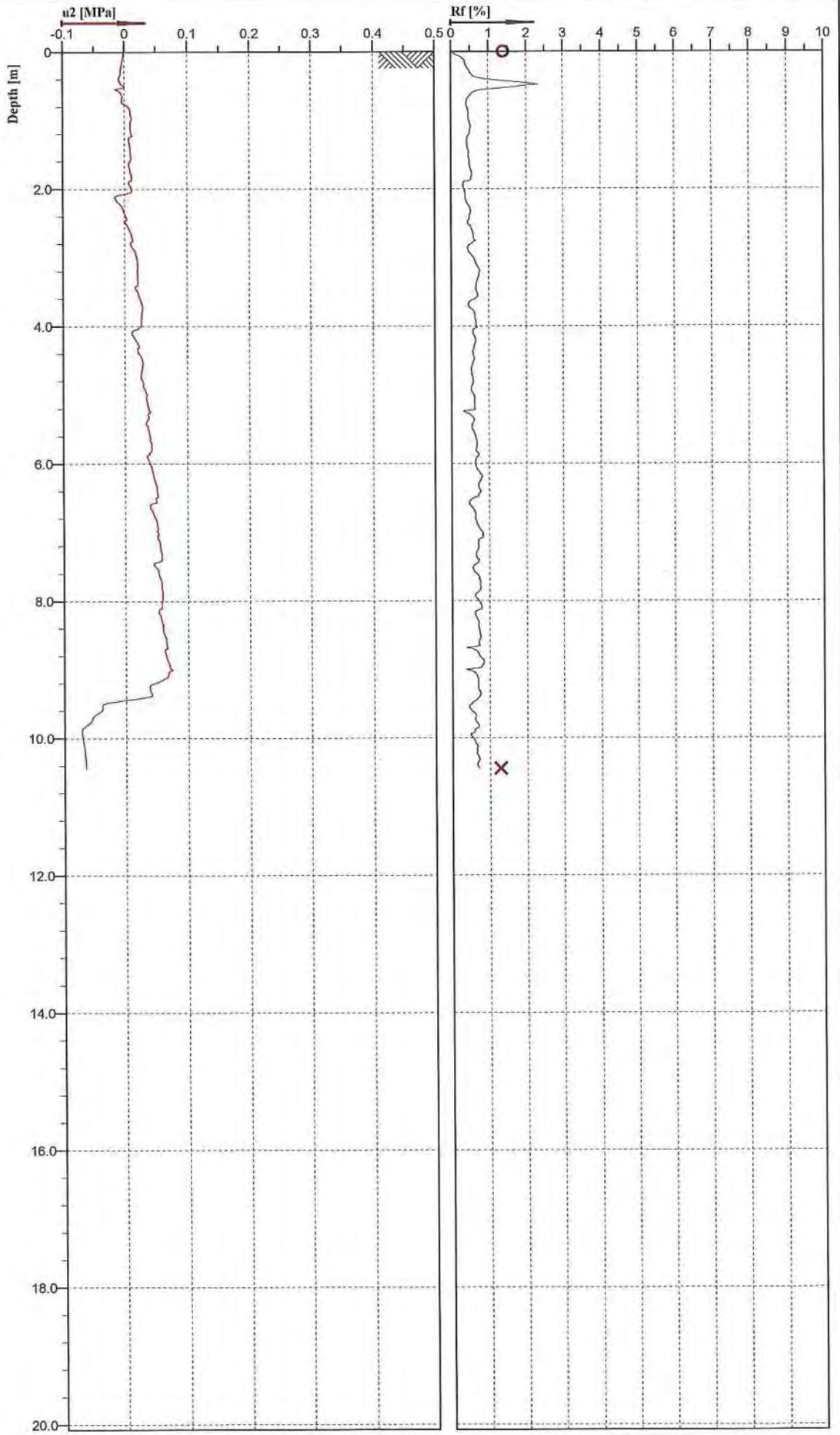
Cone No: 4486
Tip area [cm²]: 10
Sleeve area [cm²]: 150

Location:	CHCH	Position:	X: 0.00 m, Y: 0.00 m	Ground level:	0.00	Test no:	640IC
Project ID:		Client:	Aurecon	Date:	16/10/2014	Scale:	1 : 80
Project:	PRESTONS SOUTH			Page:	1/1	Fig:	
				File:	PrestonsSouthCPT640IC.cpt		

Classification by
Robertson 1986



Sand (9)



PRO-DRILL
SPECIALIST DRILLING ENGINEERS

Cone No: 4486
Tip area [cm²]: 10
Sleeve area [cm²]: 150

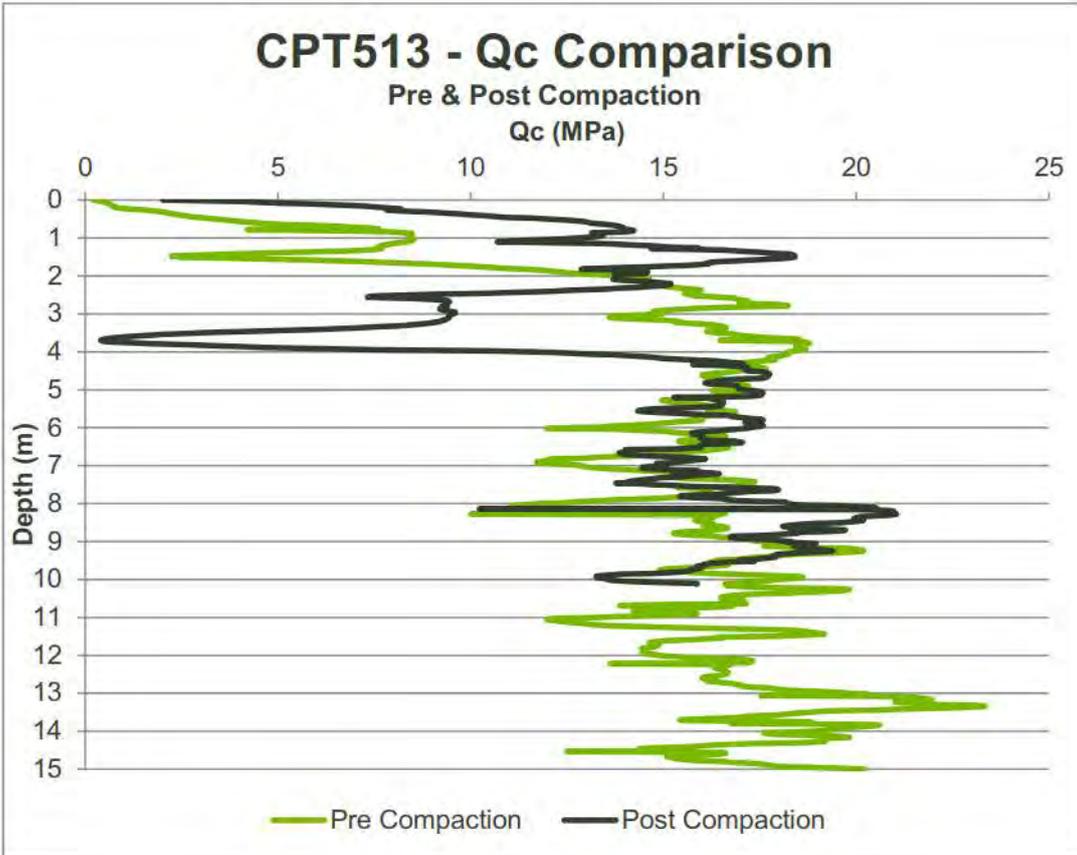
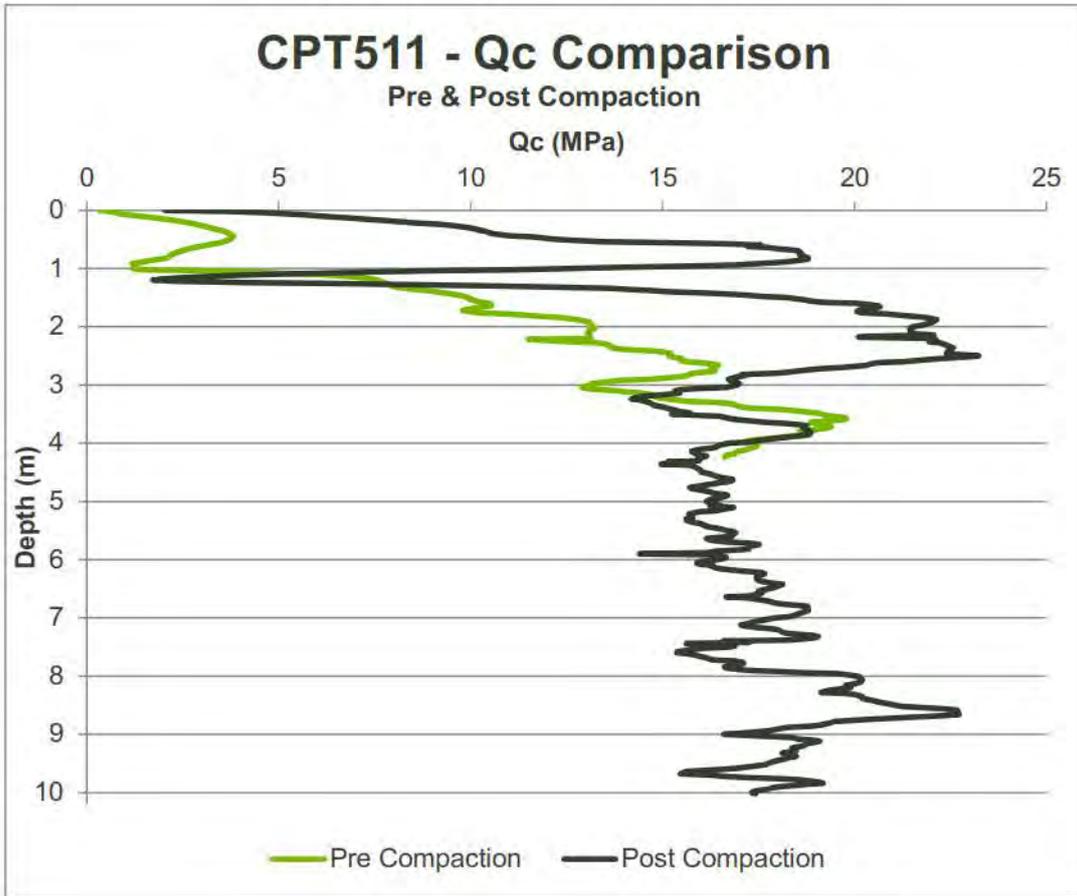


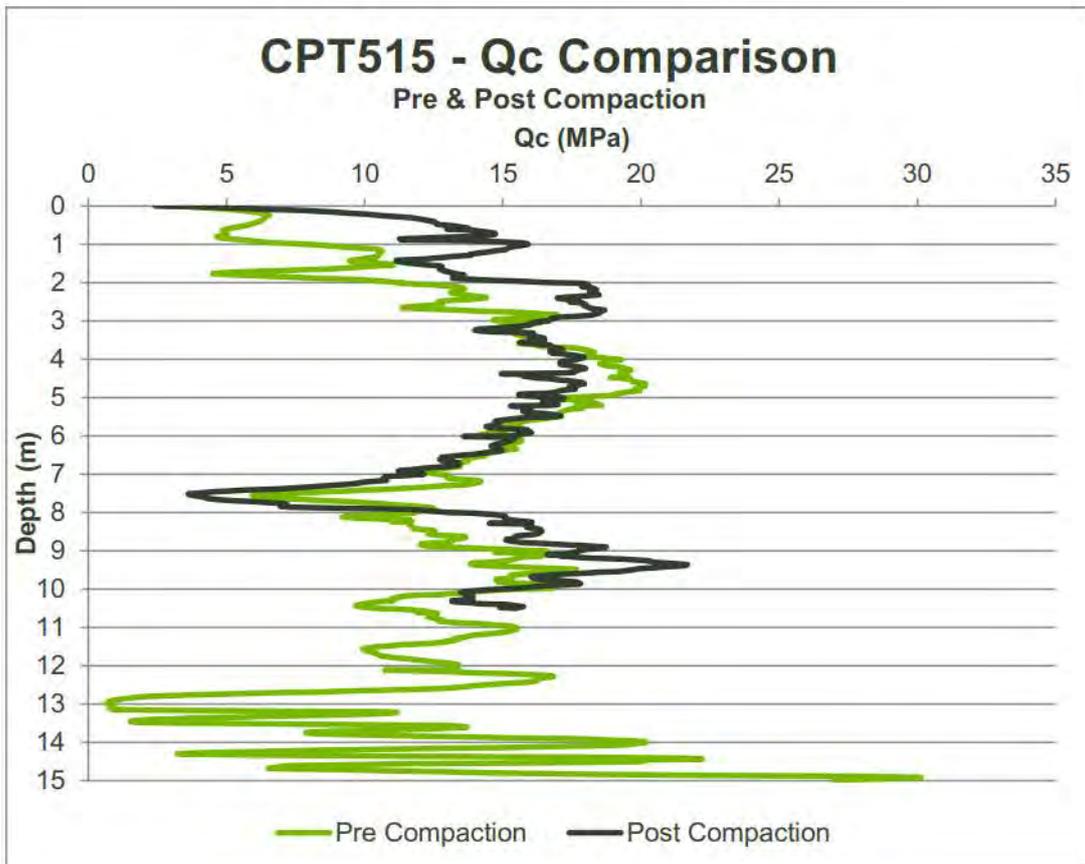
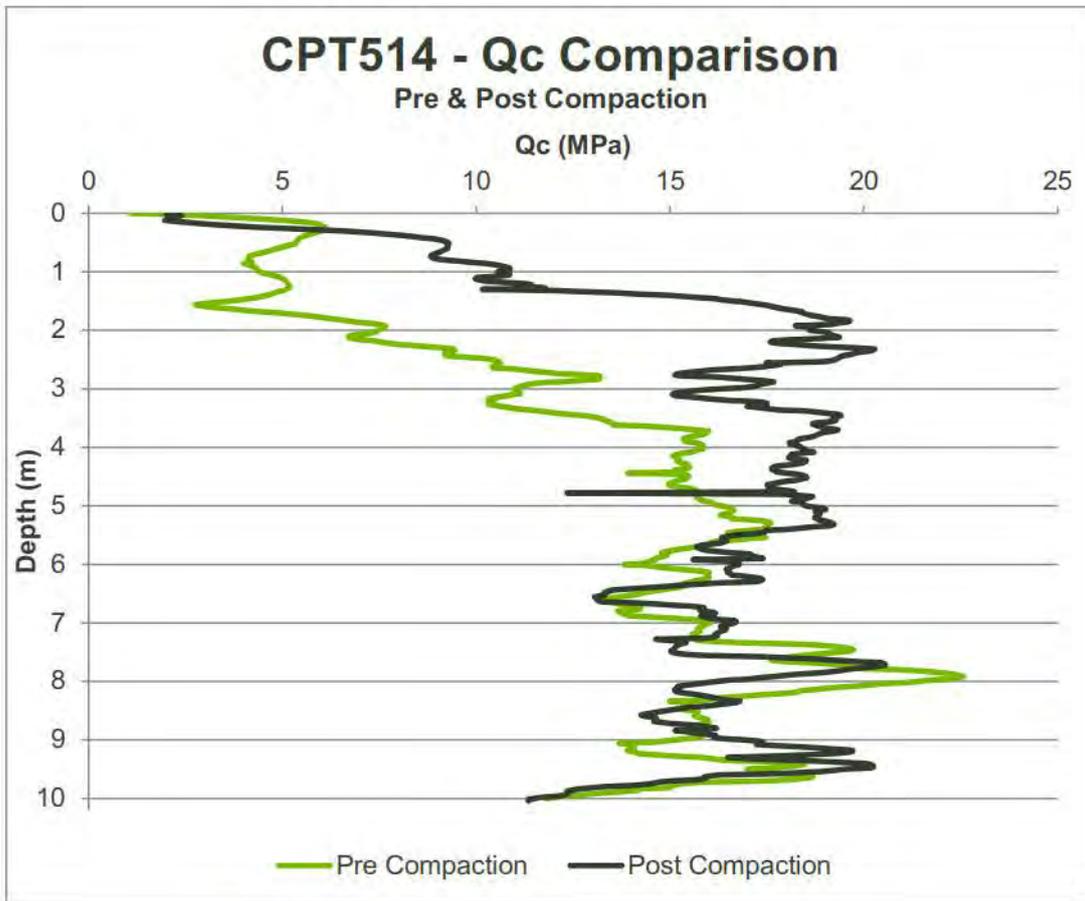
Location: CHCH	Position: X: 0.00 m, Y: 0.00 m	Ground level: 0.00	Test no: 640IC
Project ID:	Client: Aurecon	Date: 16/10/2014	Scale: 1 : 80
Project: PRESTONS SOUTH		Page: 1/1	Fig:
		File: PrestonsSouthCPT640IC.cpt	

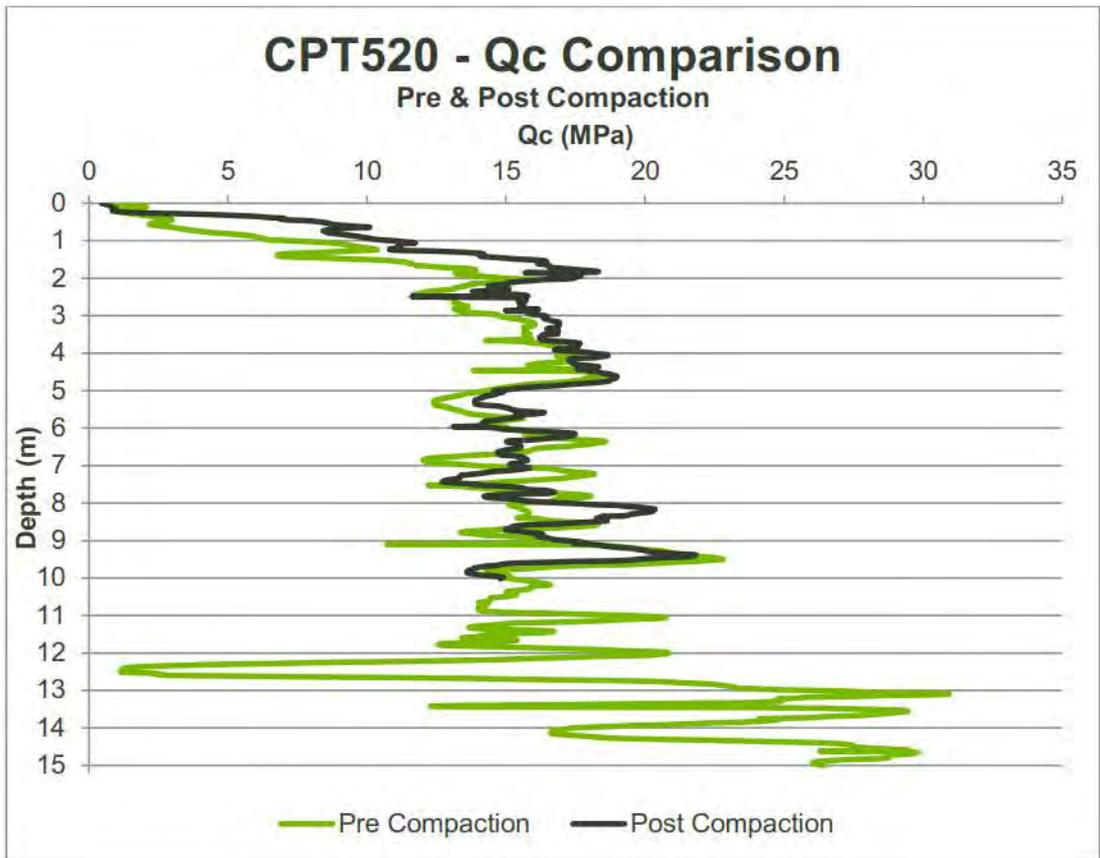
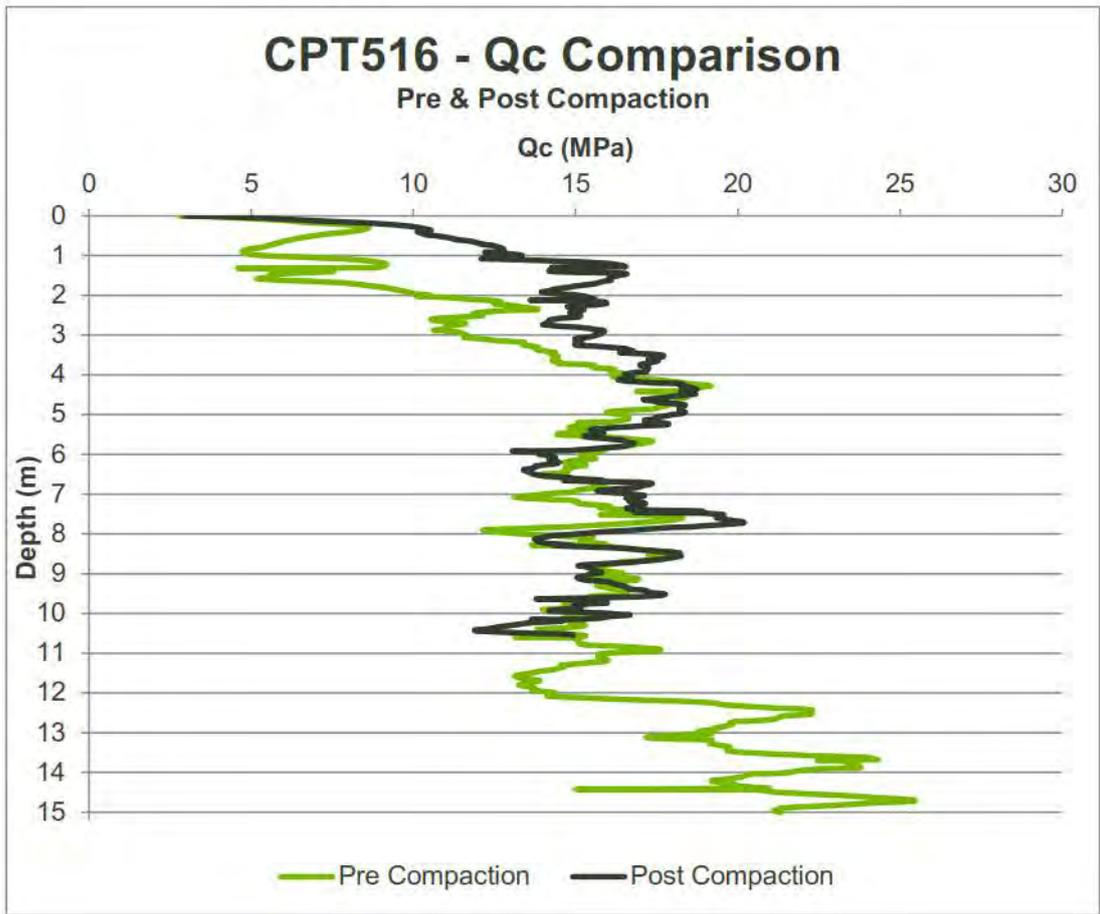


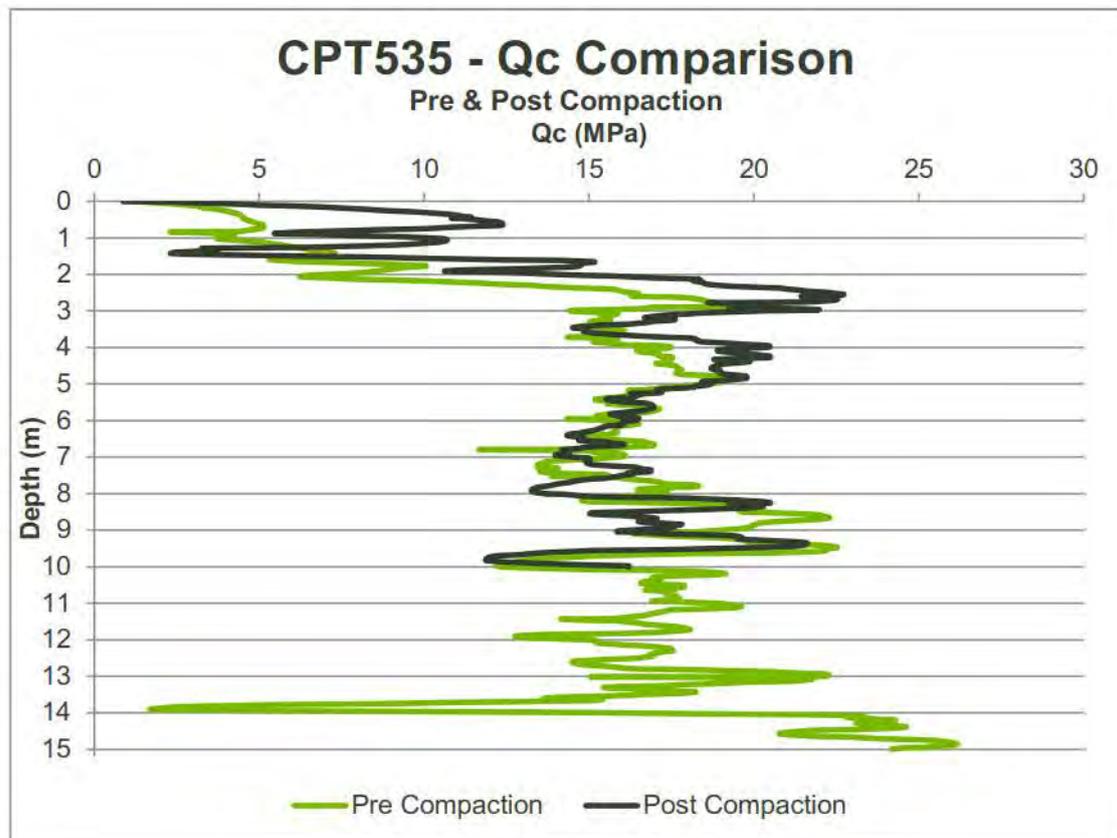
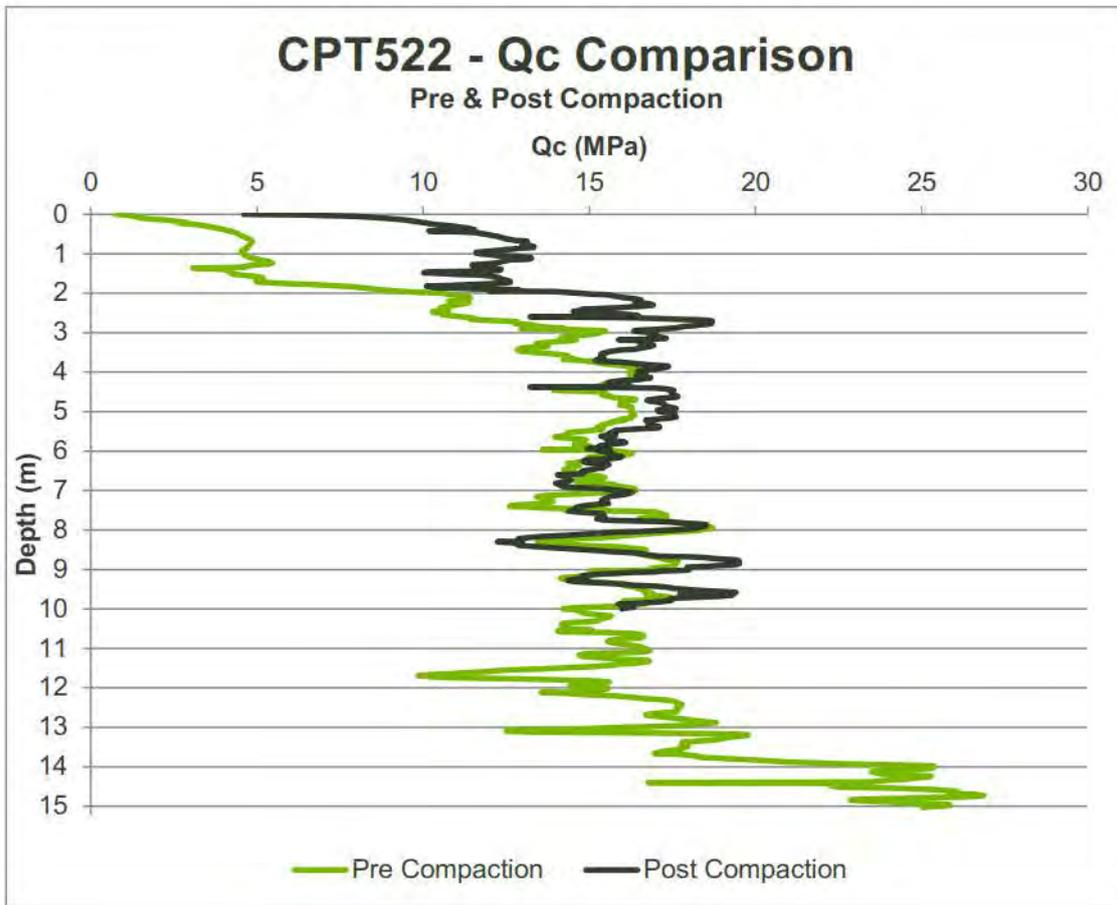
Appendix E

Qc Comparisons



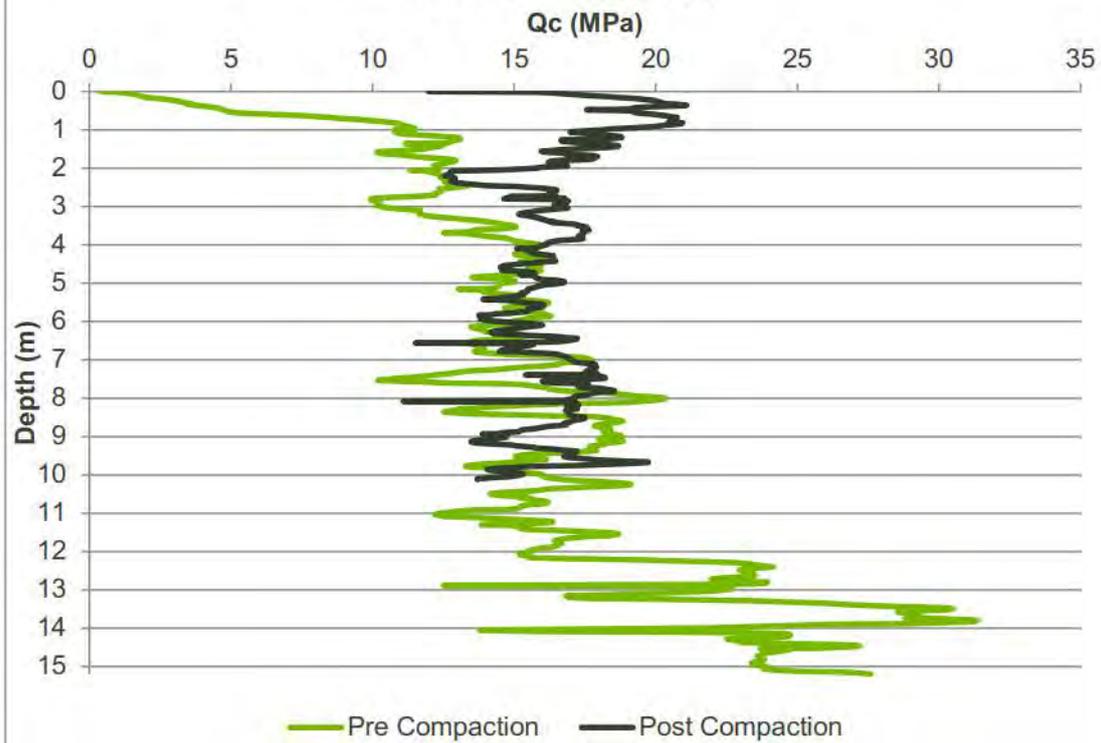






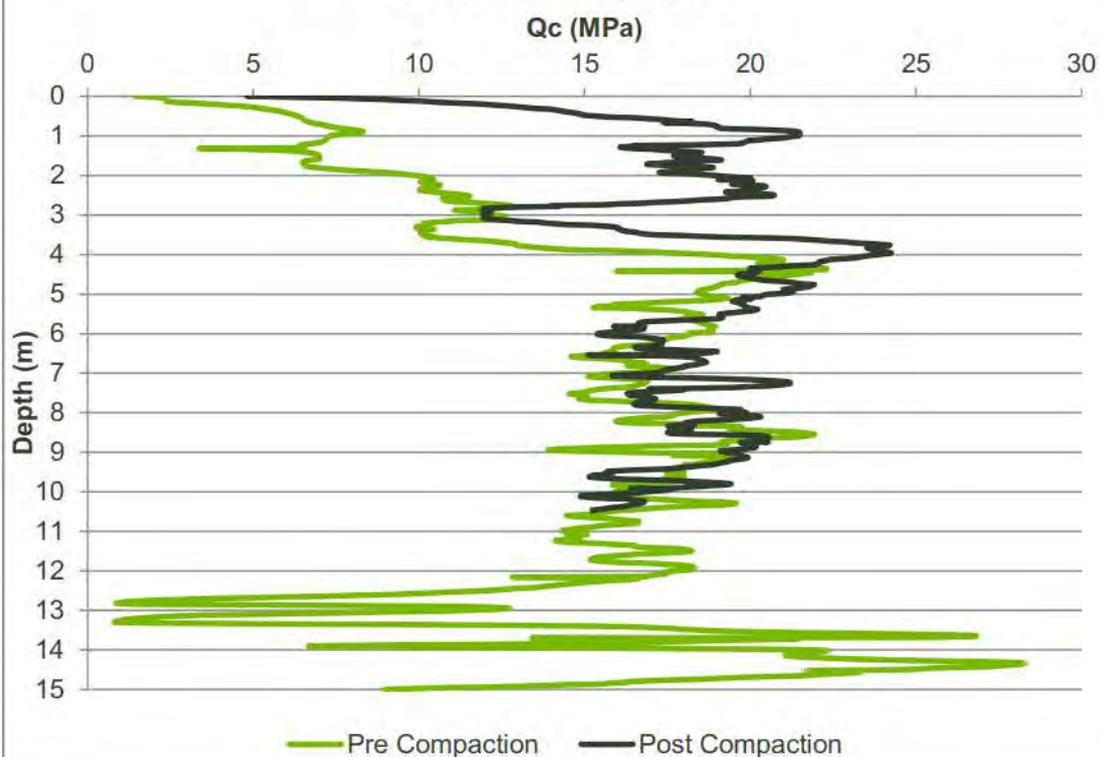
CPT537 - Qc Comparison

Pre & Post Compaction



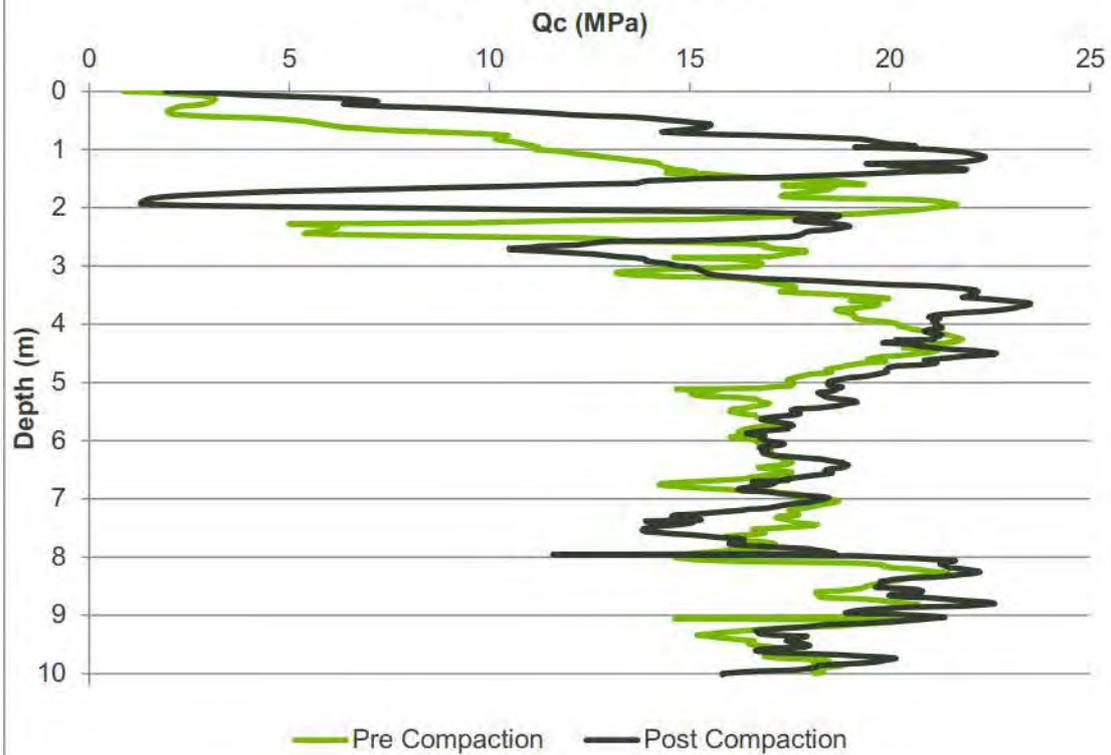
CPT538 - Qc Comparison

Pre & Post Compaction



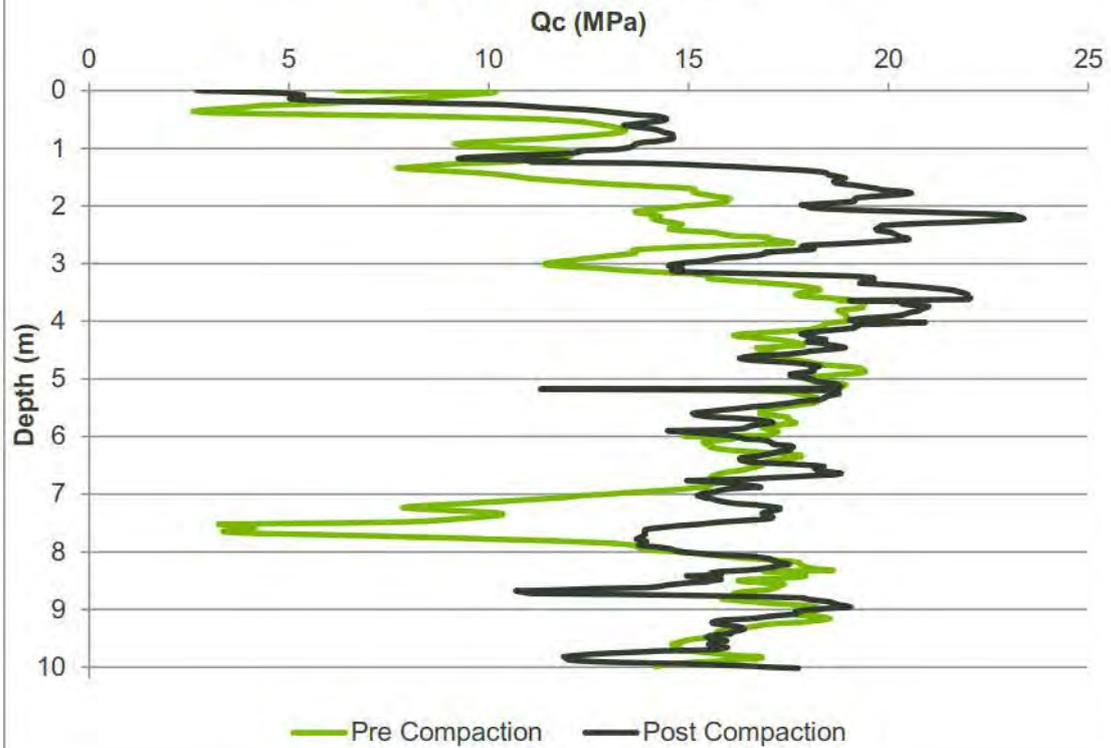
CPT539 - Qc Comparison

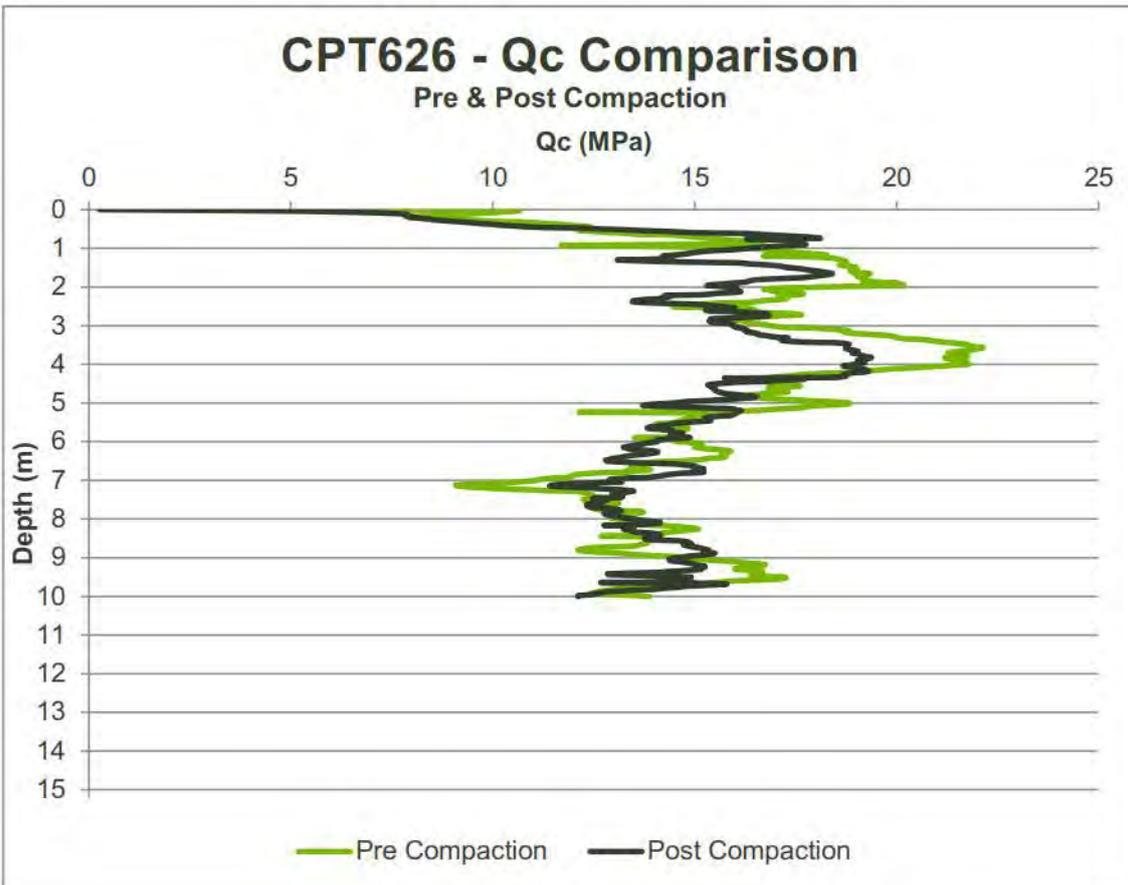
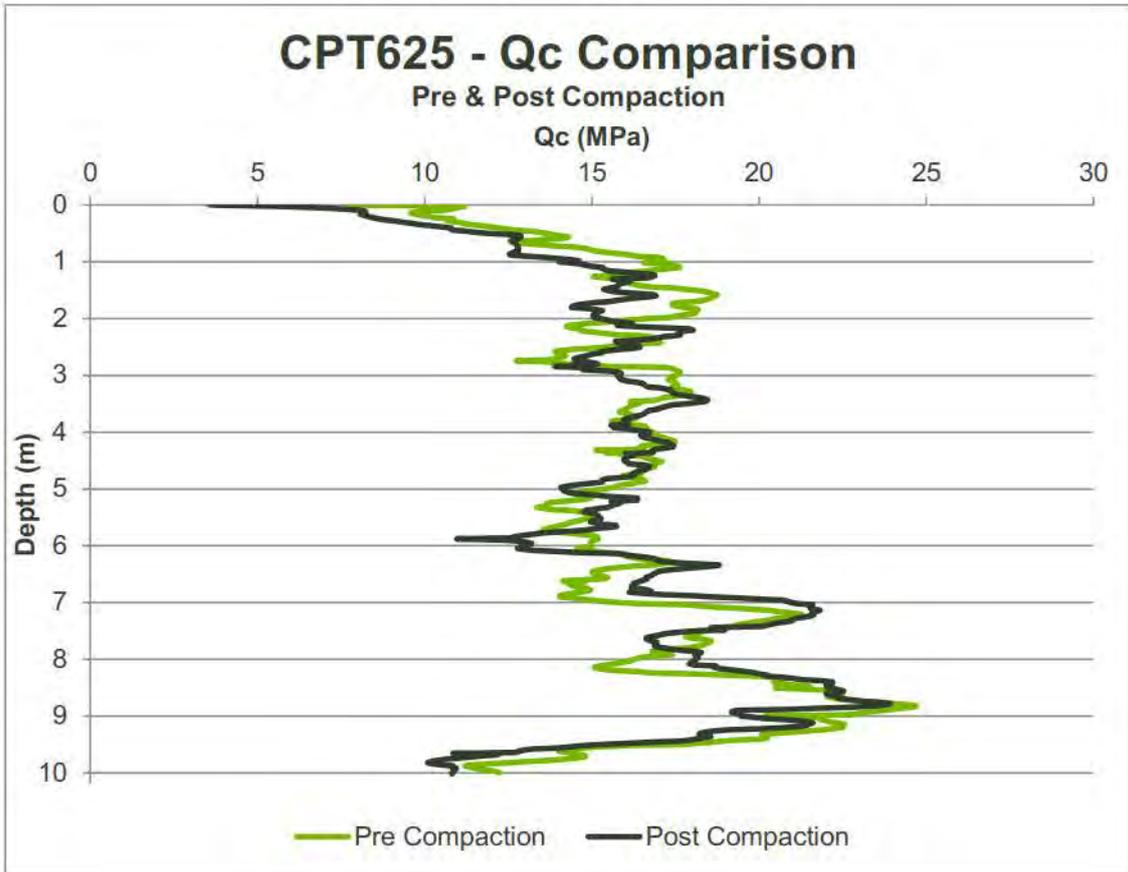
Pre & Post Compaction

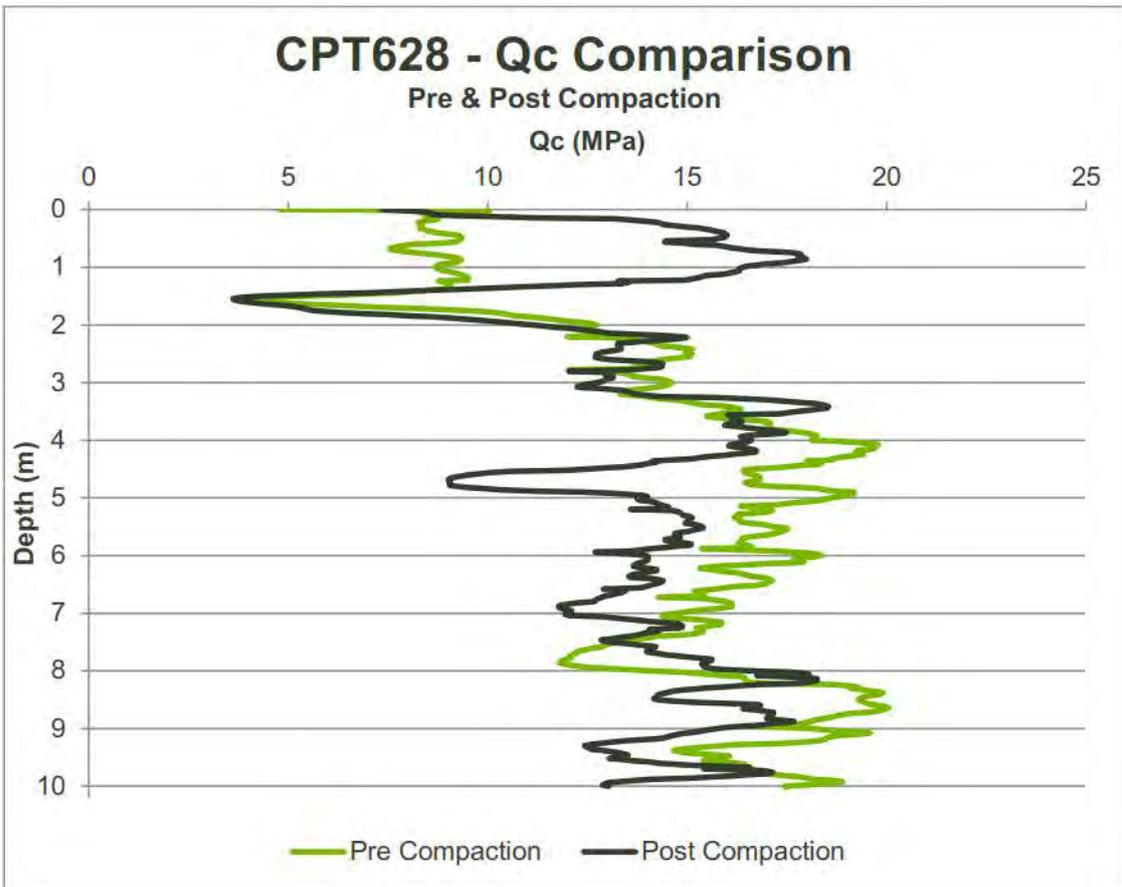
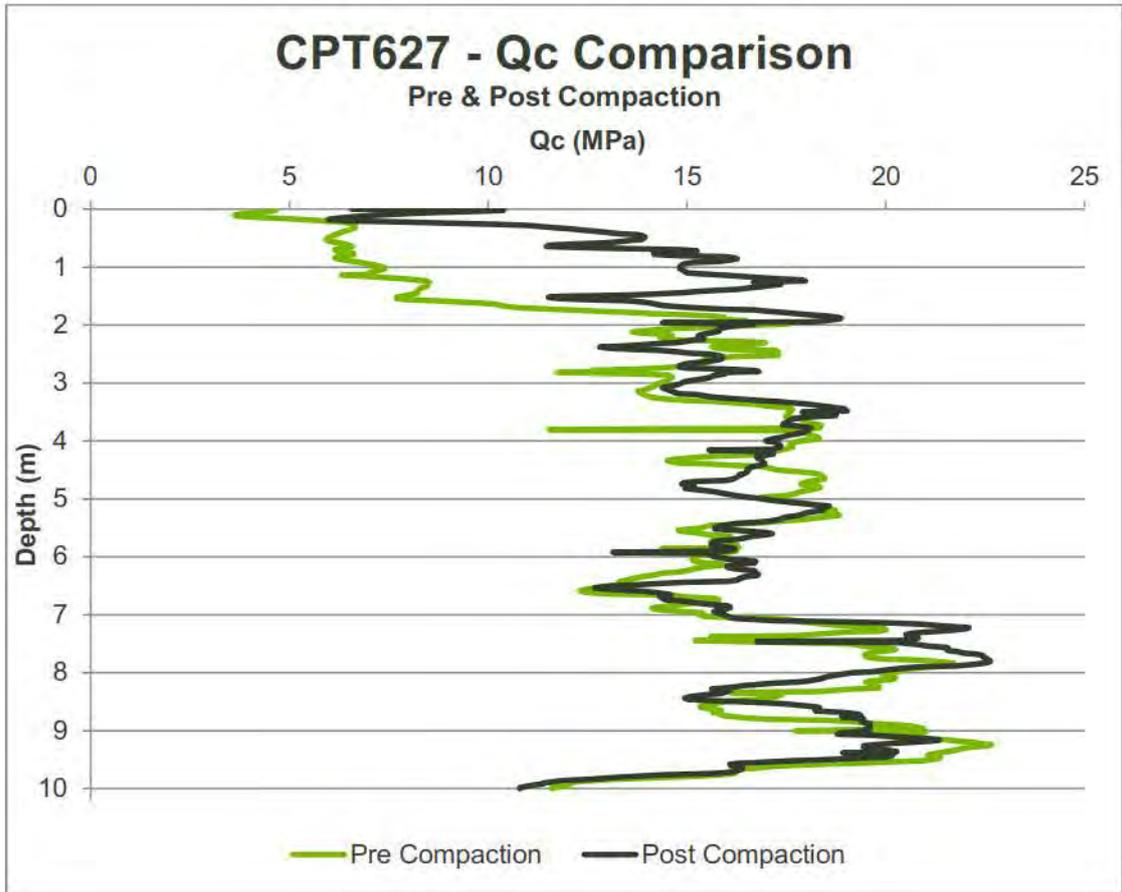


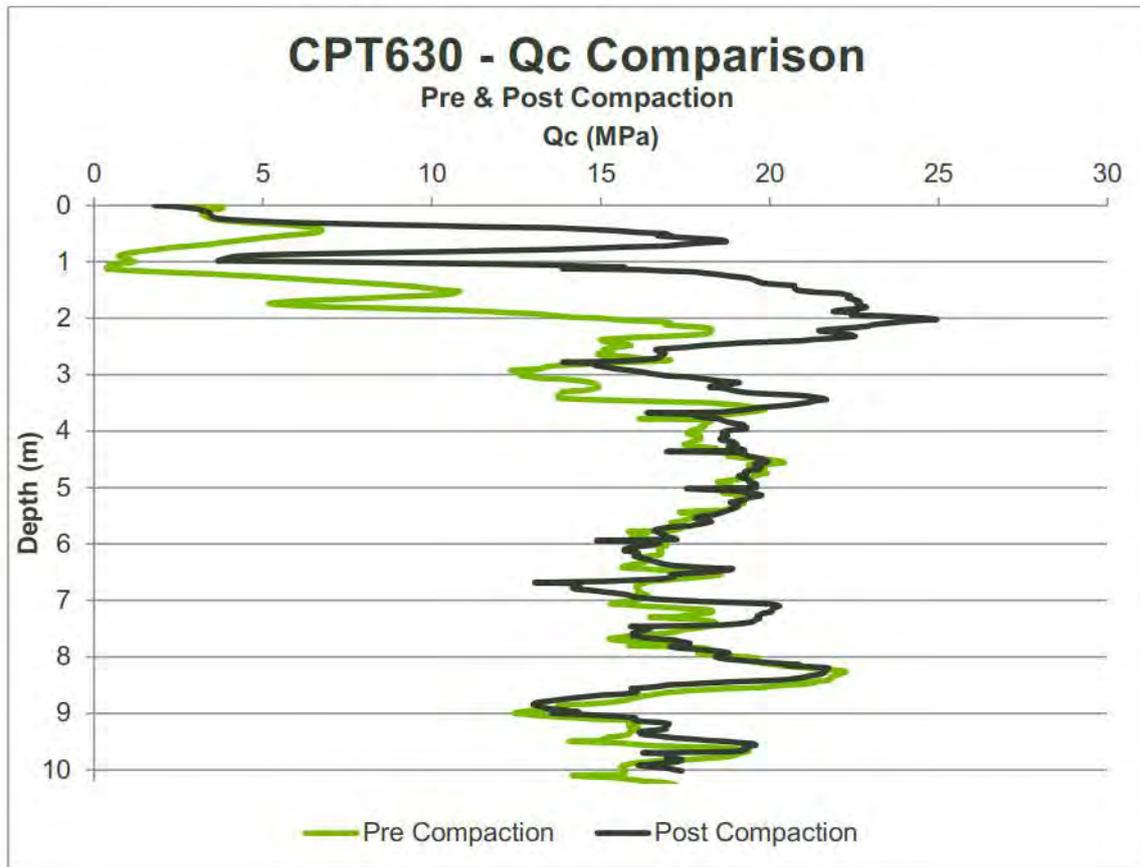
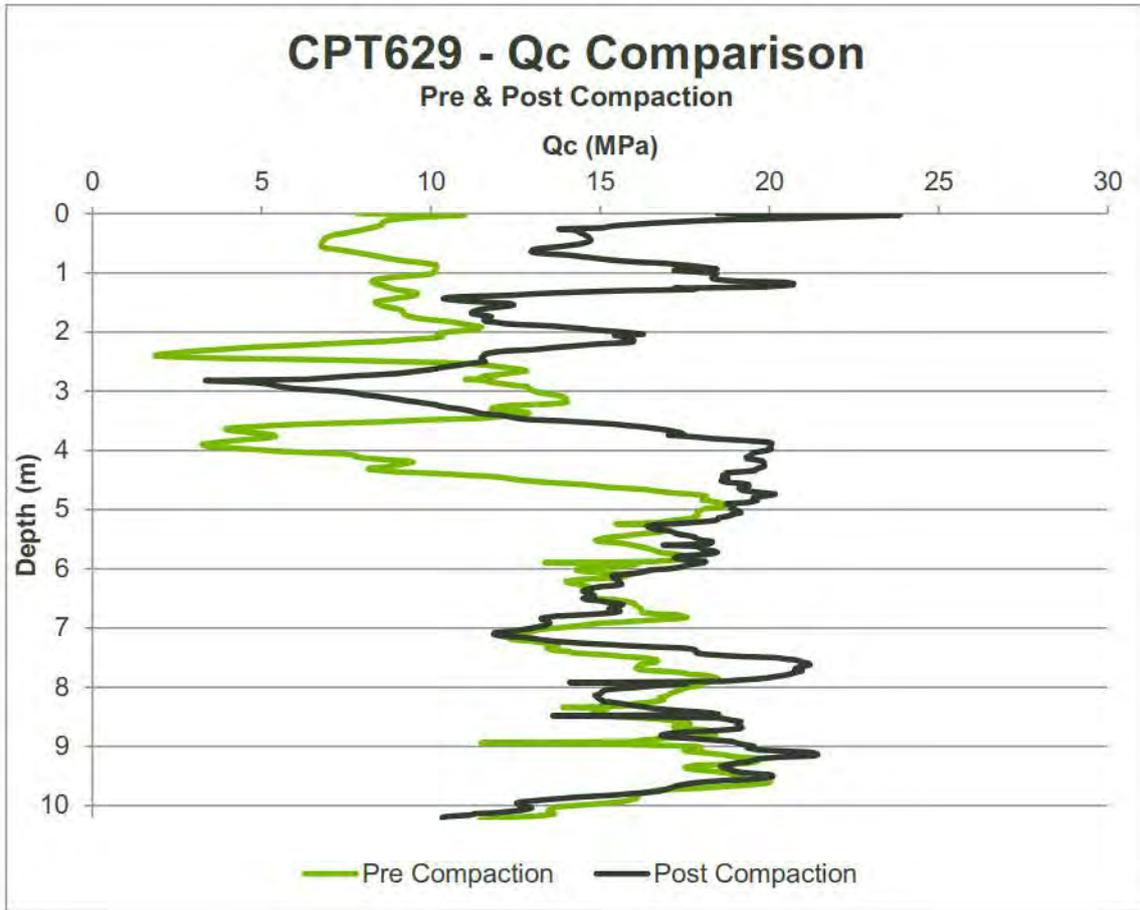
CPT614 - Qc Comparison

Pre & Post Compaction

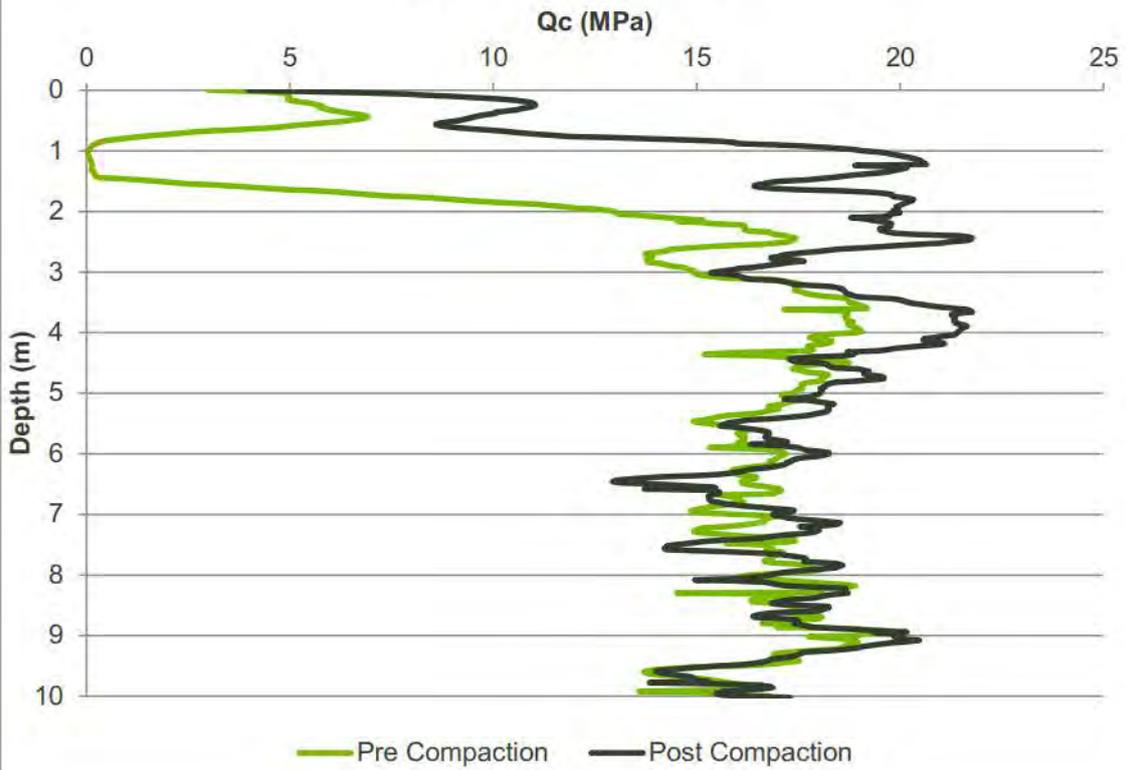




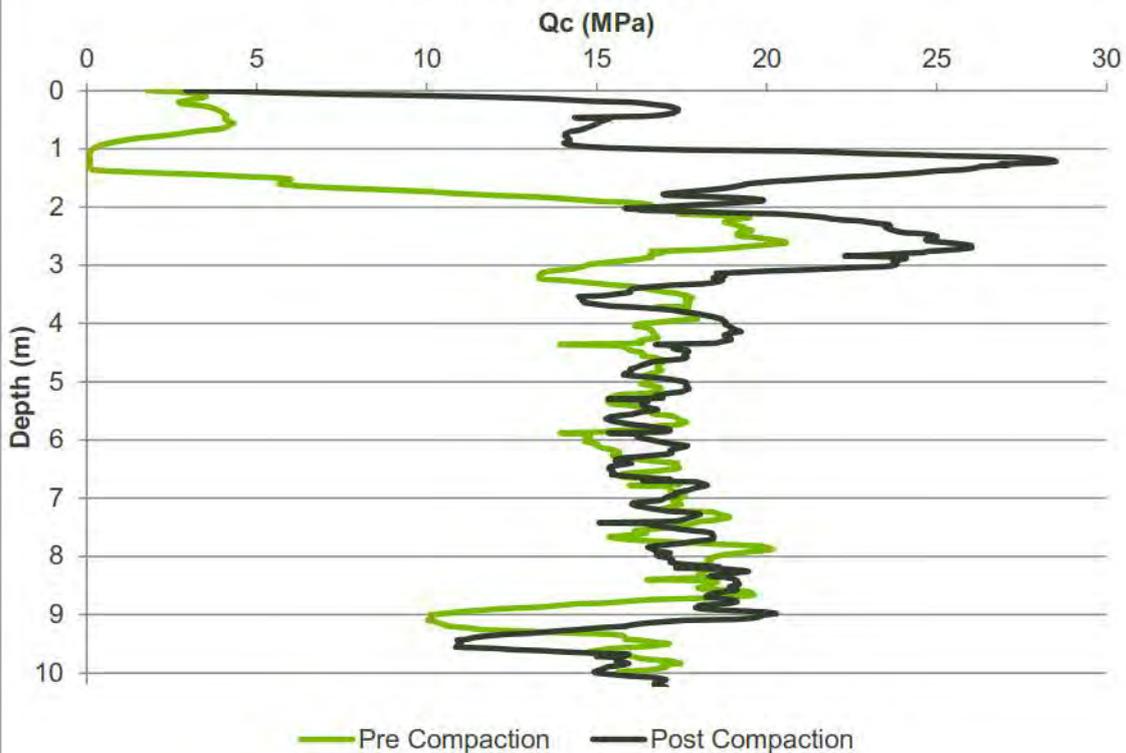




CPT631 - Qc Comparison Pre & Post Compaction

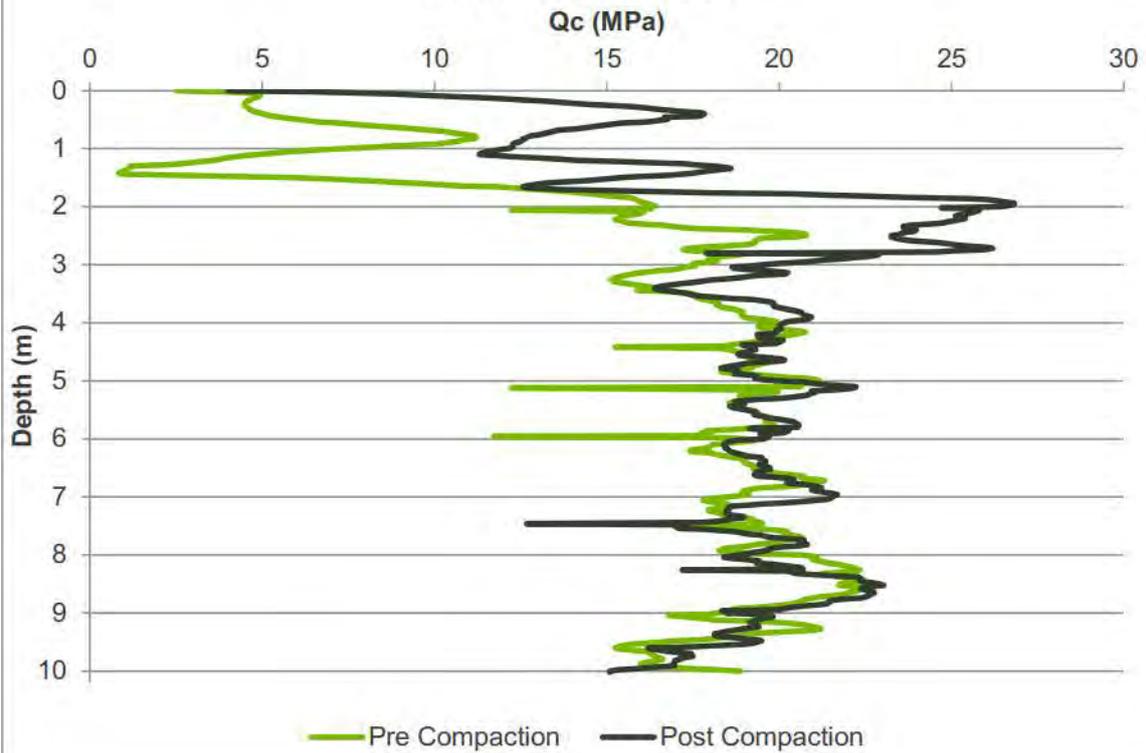


CPT632 - Qc Comparison Pre & Post Compaction



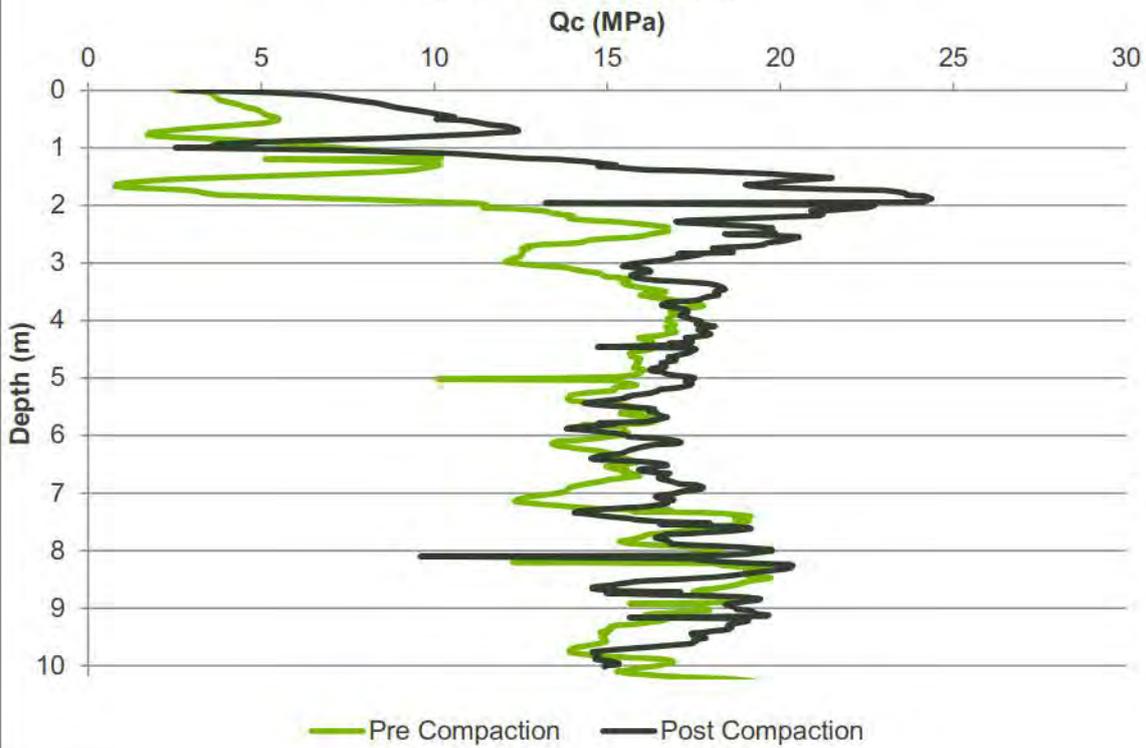
CPT633 - Qc Comparison

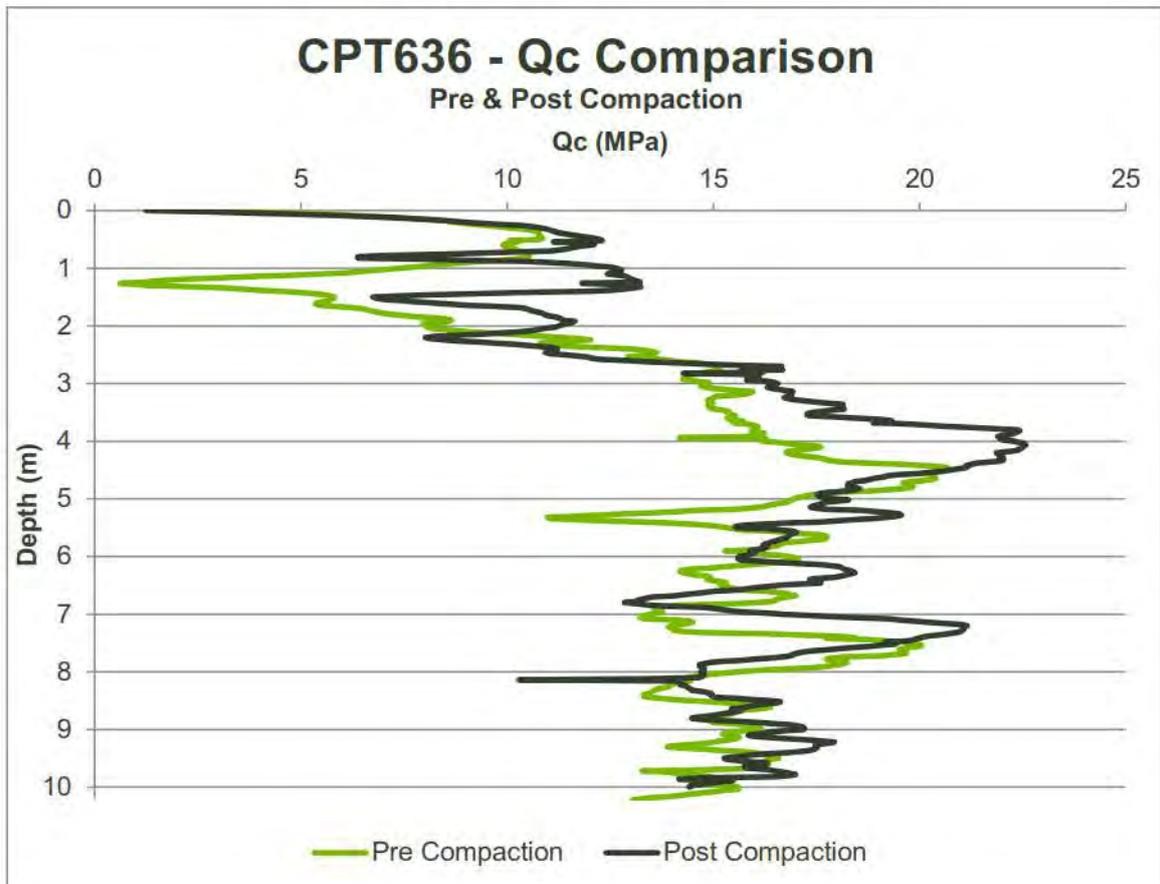
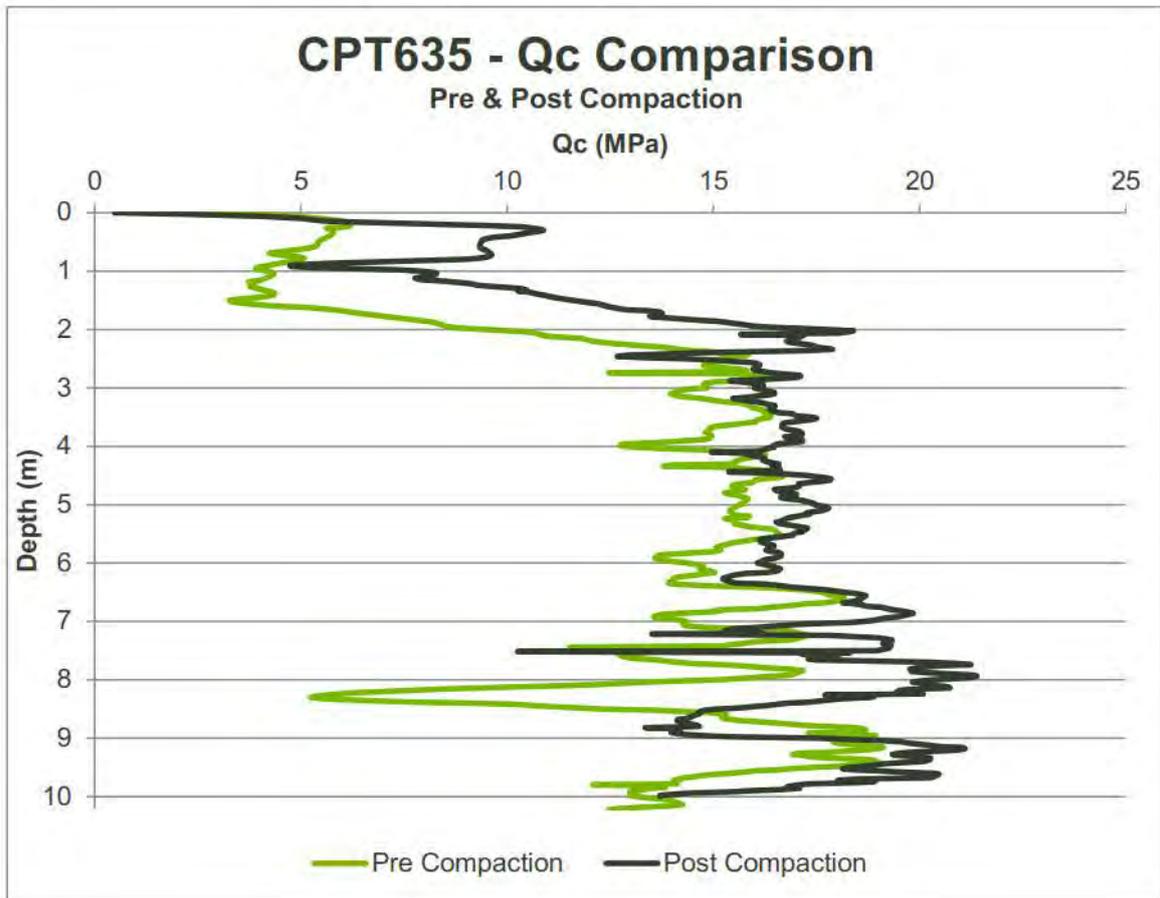
Pre & Post Compaction



CPT634 - Qc Comparison

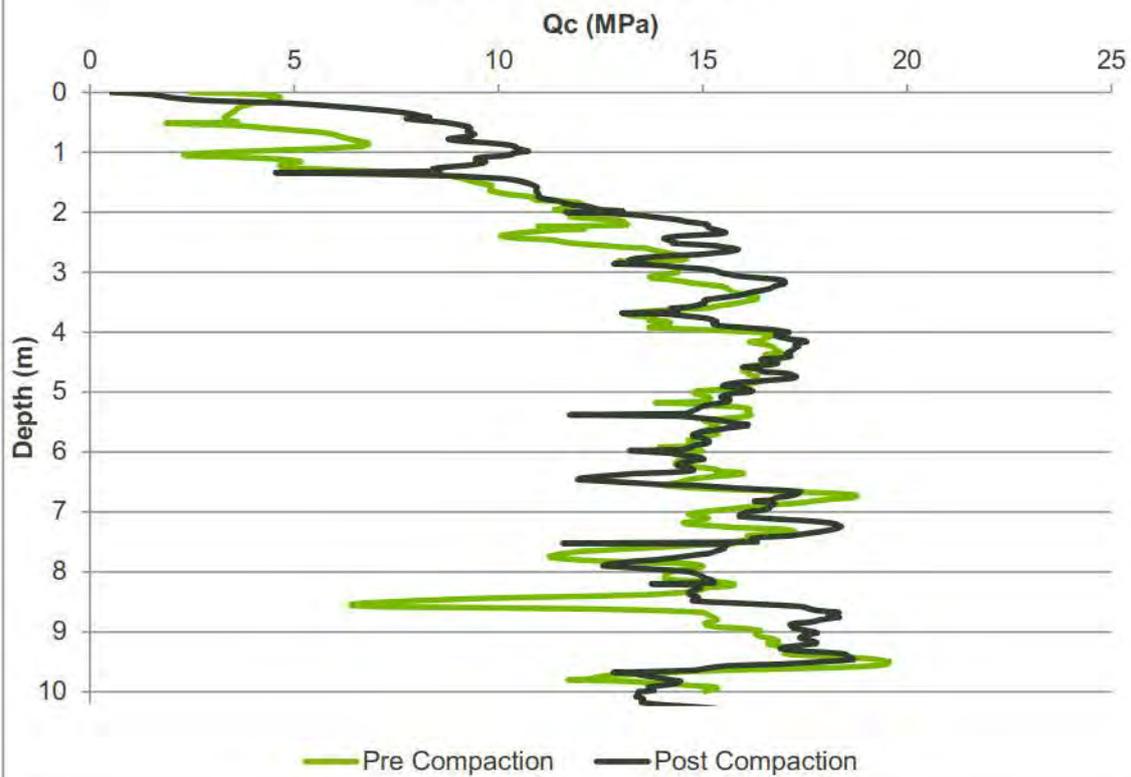
Pre & Post Compaction





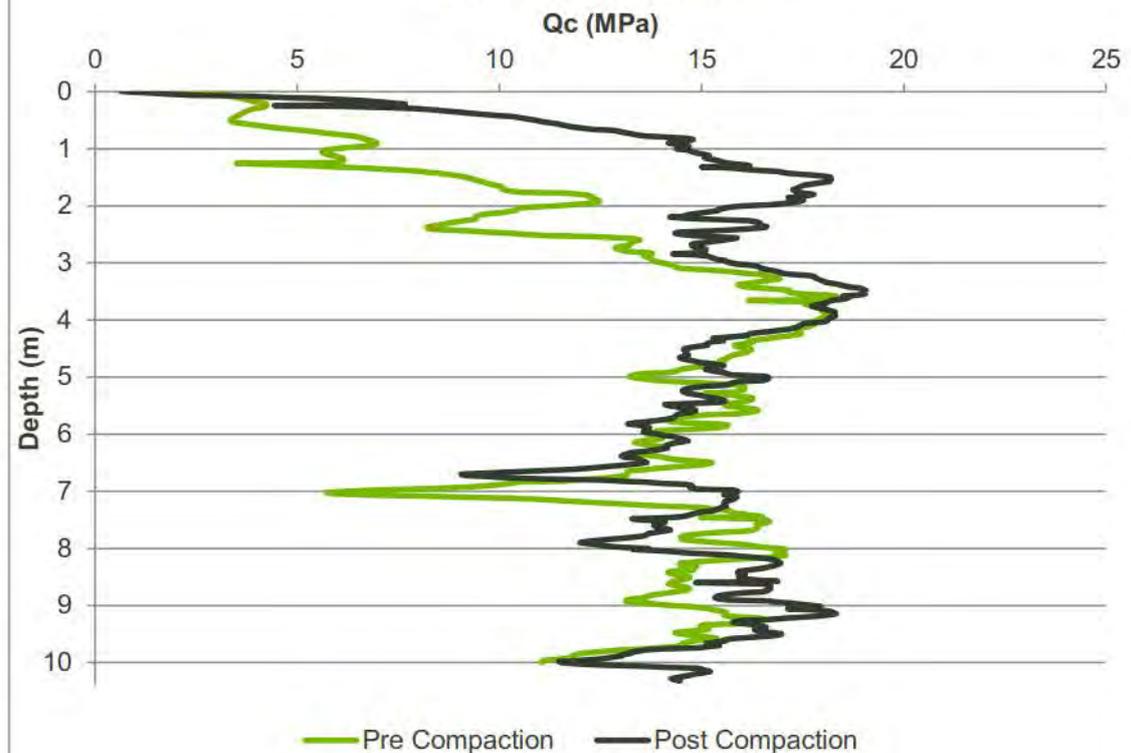
CPT637 - Qc Comparison

Pre & Post Compaction

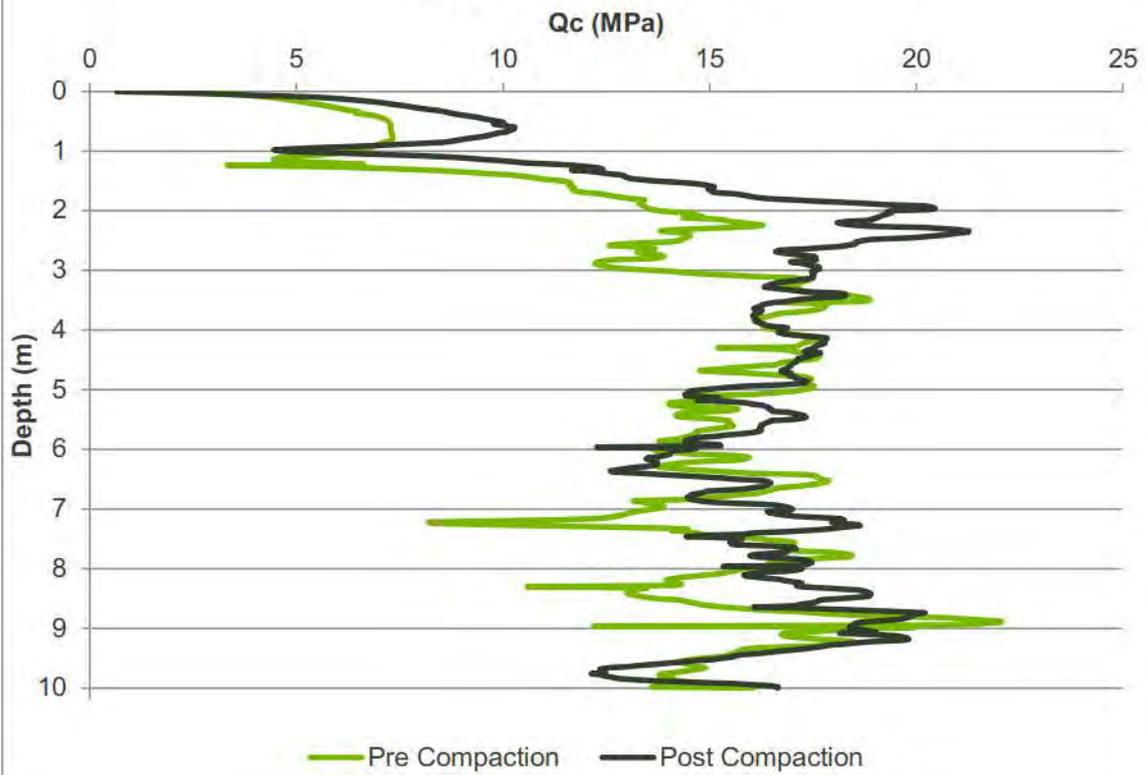


CPT638 - Qc Comparison

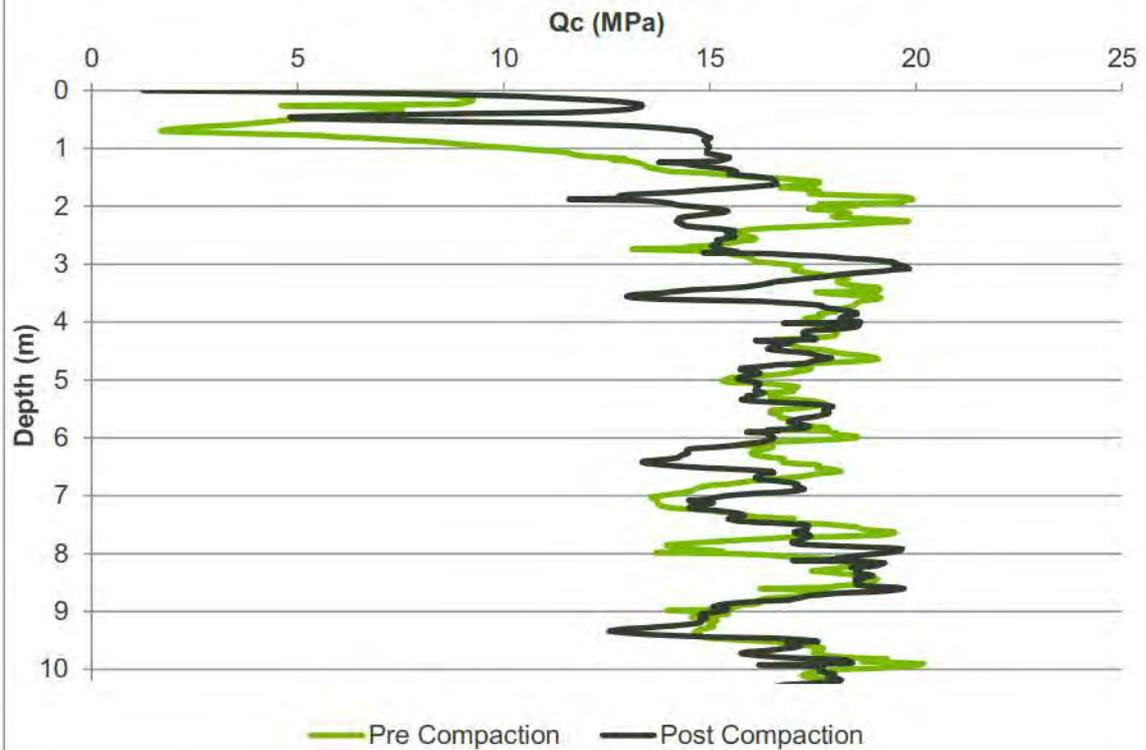
Pre & Post Compaction



CPT639 - Qc Comparison Pre & Post Compaction



CPT640 - Qc Comparison Pre & Post Compaction

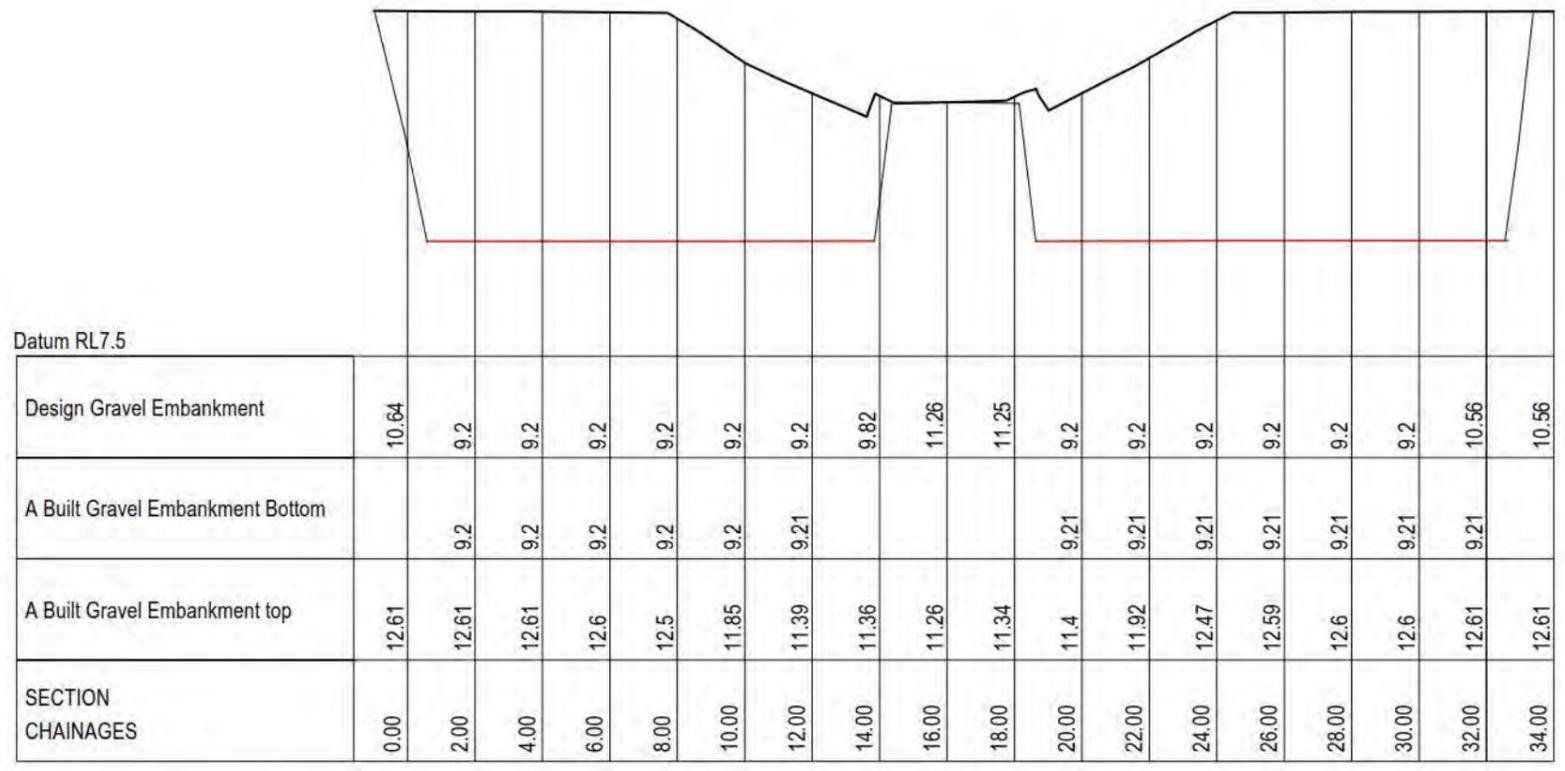




Appendix F

Gravel Embankment

Asbuilts



Datum RL7.5

Datum RL7.5

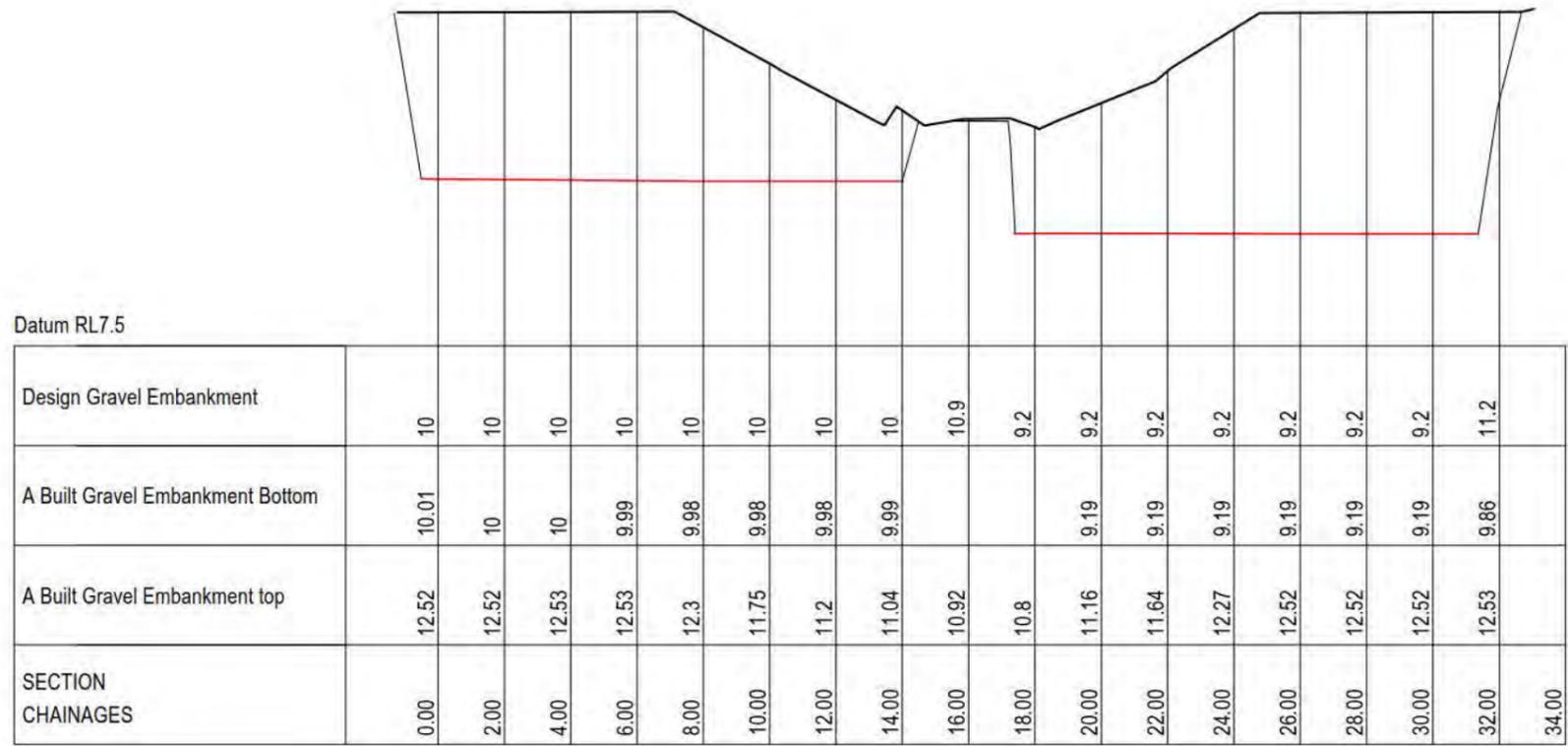
Design Gra

A Built Gra

A Built Gra

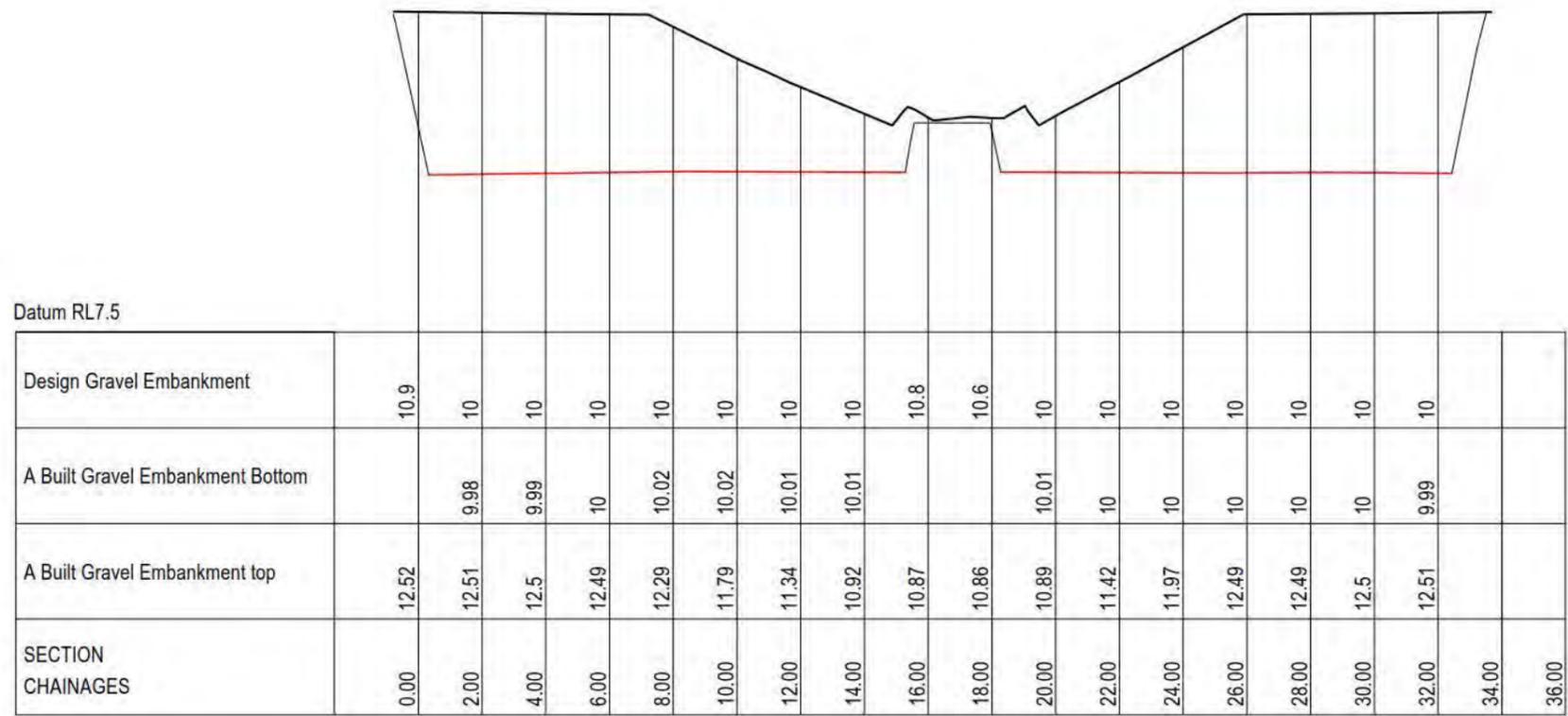
SECTION
CHAINAGE

XS12
HORIZONTAL 1:200
VERTICAL 1:100



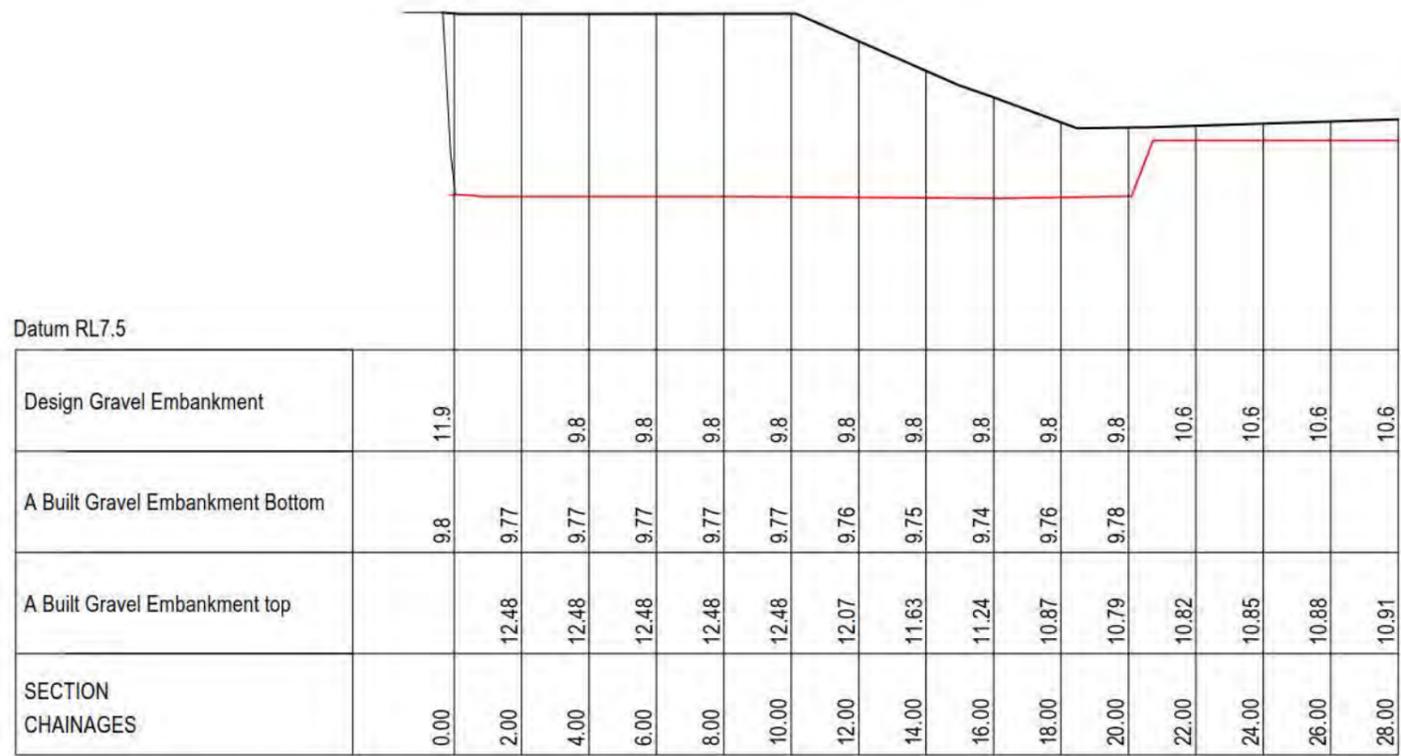
Datum RL7.5

XS13->XS13
HORIZONTAL 1:200
VERTICAL 1:100

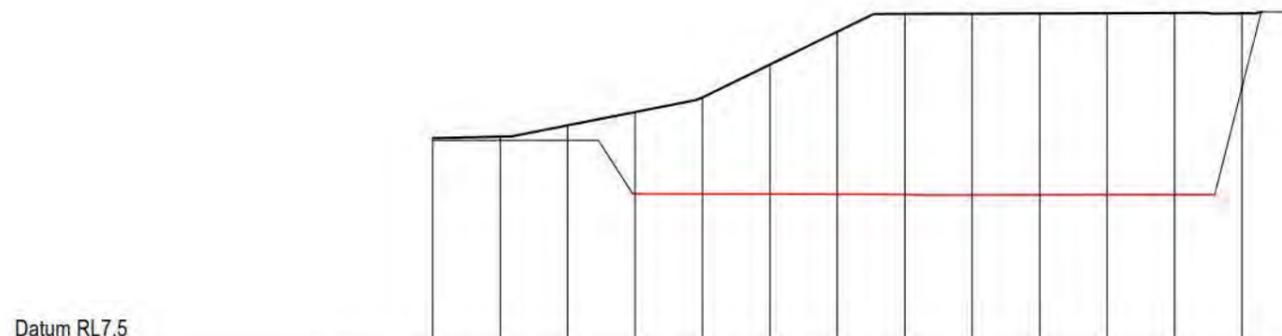


Datum RL7.5

XS14->XS14
HORIZONTAL 1:200
VERTICAL 1:100



XS15->XS15
HORIZONTAL 1:200
VERTICAL 1:100



Datum RL7.5

Design Gravel Embankment		10.6	10.6	10.6	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	11.4
A Built Gravel Embankment Bottom					9.81	9.8	9.8	9.8	9.8	9.79	9.79	9.79	9.79	9.79	9.79	9.79	9.79	9.79
A Built Gravel Embankment top		10.63	10.65	10.82	11.02	11.23	11.72	12.21	12.47	12.48	12.48	12.48	12.48	12.49	12.48	12.48	12.48	
SECTION CHAINAGES		0.00	2.00	4.00	6.00	8.00	10.00	12.00	14.00	16.00	18.00	20.00	22.00	24.00				

XS16->XS16

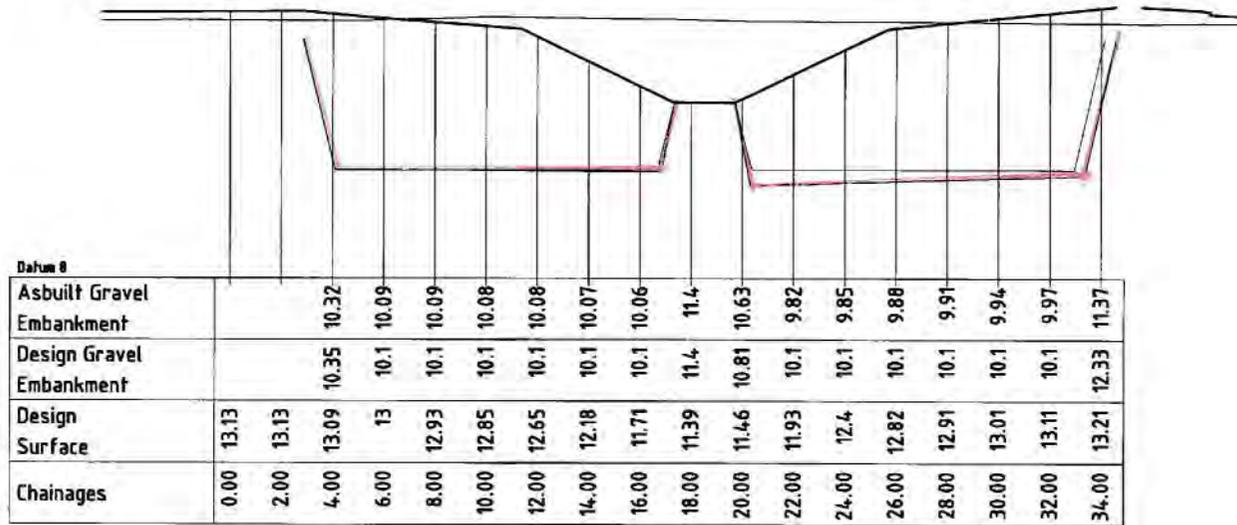
HORIZONTAL 1:200

VERTICAL 1:100



Datum RL7.5

XS17->XS17
 HORIZONTAL 1:200
 VERTICAL 1:100



AB EW 150330 EMBANKMENT SUBGRADE SECTIONS->Section 4

HORIZONTAL 1:200

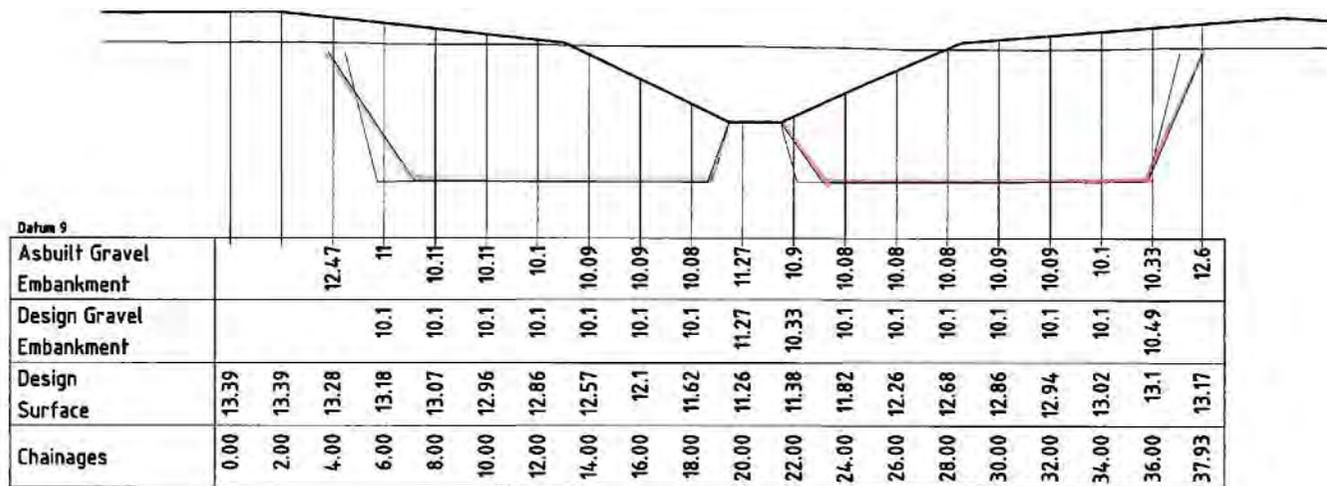
VERTICAL 1:100



AB EW 150330 EMBANKMENT SUBGRADE SECTIONS->Section 5

HORIZONTAL 1:200

VERTICAL 1:100



AB EW 150330 EMBANKMENT SUBGRADE SECTIONS->Section 6

HORIZONTAL 1:200

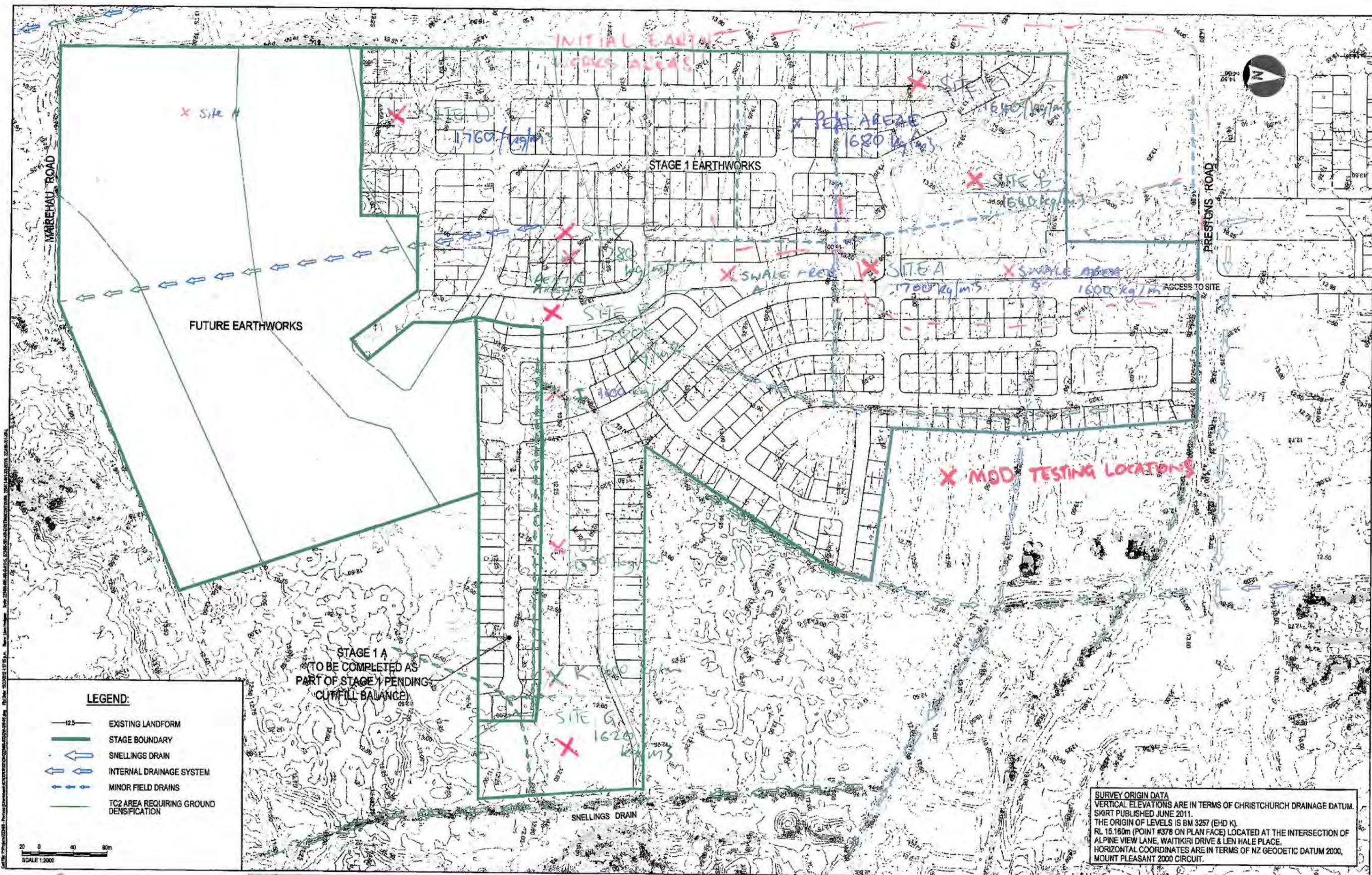
VERTICAL 1:100



Appendix G

Compaction Curves

Master copy



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CDL LAND
 NEW ZEALAND LIMITED

REV	DATE	REVISION DETAILS
1	09/10/13	FOR CONSTRUCTION

APPROVED	DESIGNED	CHECKED
KASHBY	L'O'SULLIVAN	S HUSBAND
DATE 09/10/13		

PRESTONS SOUTH
EARTHWORKS STAGE 1
EXISTING LANDFORM

PROJECT No.	SCALE	DATE
235361	1:2000 @ A1	09/10/13

LD-PS-S1-EW-01 1

Test Report

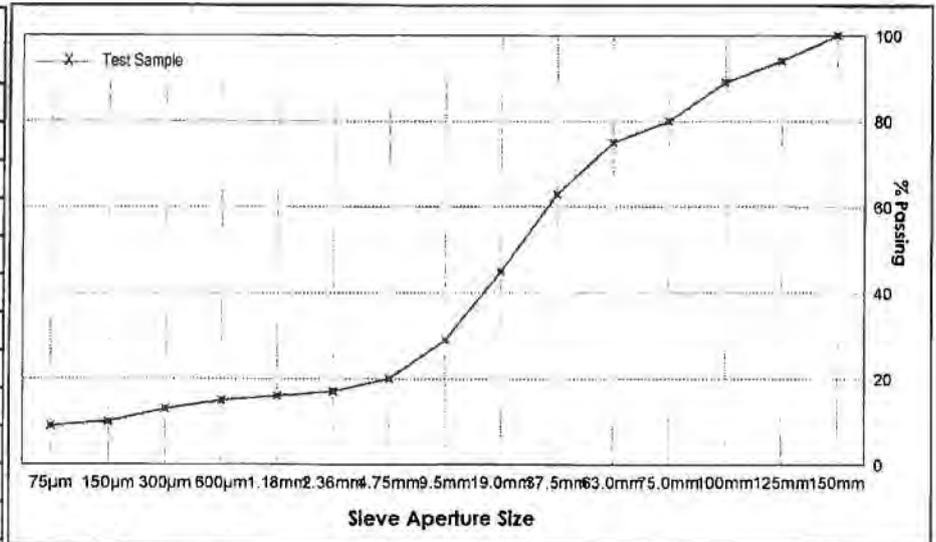
Client: K.B. Contracting & Quarries Limited
Address: PO Box 19746, Woolston, Christchurch 8241
Client Ref: Not Advised
Job Location: New Quarry
Material: Pit run
Material Source: KB's Quarries McLeans Island

Sample Date: 11-Oct-2013 11:00
Sampled By: Declan McGowan
Laboratory No: C13/2221
Report No: 158619
Report Date: 18-Oct-2013
Replacement
 Page 1 of 1

This report supersedes and replaces Report No: 158610

Test Methods: 1 The Particle-Size Distribution - Preferred Method by Wet Sieving NZS 4407:1991 Test 3.8.1

Sieve Size (BSS)	Percent passing	Specification
125mm	94	
100mm	89	
75.0mm	80	
63.0mm	75	
37.5mm	63	
19.0mm	45	
9.5mm	29	
4.75mm	20	
2.36mm	17	
1.18mm	16	
600µm	15	
300µm	13	
150µm	10	
75µm	9	



Test Date:

14/10/2013

Notes

Test results apply to sample as received.
 Percent passing finest sieve obtained by difference.
 Sample received in a damp condition.
 Date of sample receipt: 11-Oct-13

Craig Kelly
 Approved Signatory
 Laboratory Technician
 IANZ Accreditation No: 439
 Date of Issue: 10/04/92



All tests reported herein have been performed in accordance with the laboratory's scope of accreditation. This report may not be reproduced except in full.

Report No: MDD:CAN14S-12828

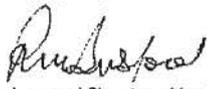
Issue No: 1

Maximum Dry Density Report

Client: Toni O'Regan
 City Care Limited
 PO Box 7669
 Sydenham
 Christchurch 8240

Project: QA Testing - City Care Ltd

The test (s) reported herein (unless otherwise indicated) have been performed in accordance with the laboratory's scope of accreditation. This report may only be reproduced in full.

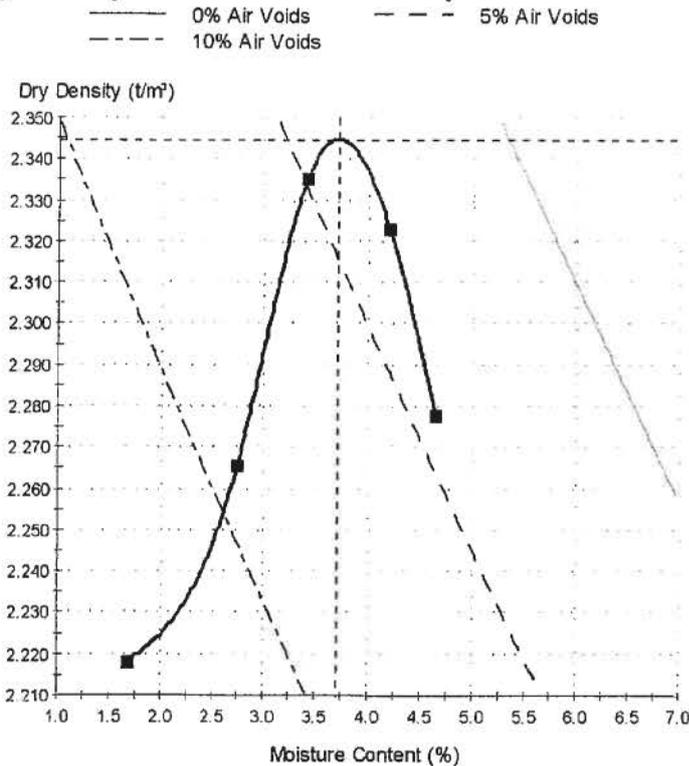



Approved Signatory: Max Burford
 (Supervisor)
 IANZ Accreditation No:200
 Date of Issue: 25/06/14

Sample Details

Sample ID: CAN14S-12828	Client Sample ID: Lab Ref 1381/14
Material: Pit Run	Sample Source: Field Sample [Taken From Site]
Site/Sampled From: KB's McLeans Island Quarry	Date Sampled: 20/06/2014
Specification: No Specification (Coarse)	Sampled By: Advised - See Comments
Sampling Method: Stated to be NZS 4407:1991 2.4.6.2.1	Date Tested: 25/06/2014
Technician: Greg Orr	Sampling Endorsed?: No

Dry Density - Moisture Relationship



Test Results

————— NZS 4402:1986 Test 4.1.3 - 1986 —————

Maximum Dry Density (t/m³): 2.34
Optimum Moisture Content (%): 3.8
Solid Density (t/m³): 2.68 assumed
Fraction Tested Passes (mm): 37.5
Material Removed (%): 12
Sample History: Natural

Comments

Sampled by C Gould

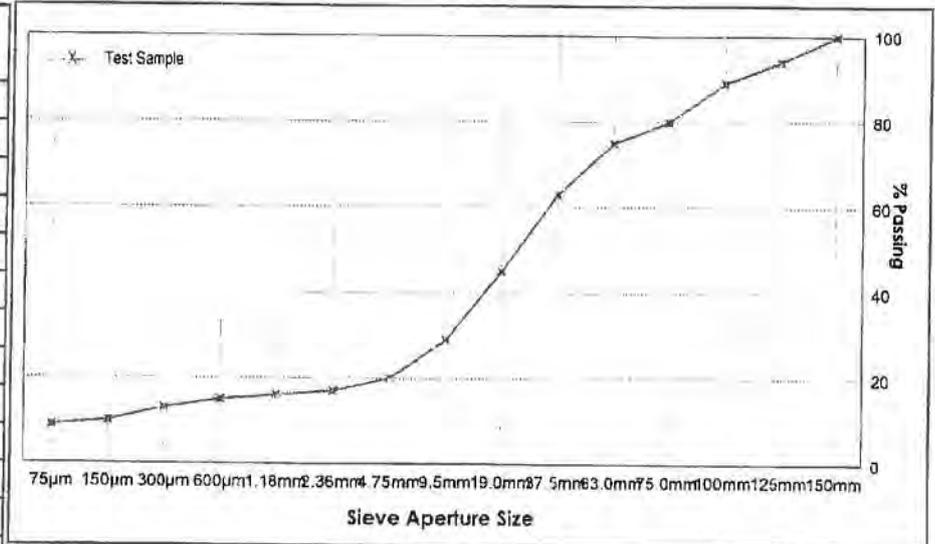
Test Report

Client:	K.B. Contracting & Quarries Limited	Sample Date:	11-Oct-2013	11.00
Address:	PO Box 19746, Woolston, Christchurch 8241	Sampled By:	Declan McGowan	
Client Ref:	Not Advised	Laboratory No.:	C13/2221	
Job Location:	New Quarry	Report No.:	158619	Replacement
Material:	Pit run	Report Date:	18-Oct-2013	Page 1 of 1
Material Source:	KB's Quarries McLeans Island			

This report supersedes and replaces Report No: 158610

Test Methods: 1 The Particle-Size Distribution - Preferred Method by Wet Sieving NZS 4407.1991 Test 3.8.1

Sieve Size (BSS)	Percent passing	Specification
125mm	94	
100mm	89	
75.0mm	80	
63.0mm	75	
37.5mm	63	
19.0mm	45	
9.5mm	29	
4.75mm	20	
2.36mm	17	
1.18mm	16	
600µm	15	
300µm	13	
150µm	10	
75µm	9	



Test Date:

14/10/2013

Notes

Test results apply to sample as received.
 Percent passing finest sieve obtained by difference.
 Sample received in a damp condition.
 Date of sample receipt: 11-Oct-13

Craig Kelly
 Approved Signatory
 Laboratory Technician
 IANZ Accreditation No: 439
 Date of Issue: 10/04/92



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Report No: MDD:CAN14S-12828

Issue No: 1

Maximum Dry Density Report

Client: Toni O'Regan
City Care Limited
PO Box 7669
Sydenham

Christchurch 8240

Project: QA Testing - City Care Ltd

The test(s) reported herein (unless otherwise indicated) have been performed in accordance with the laboratory's scope of accreditation. This report may only be reproduced in full.

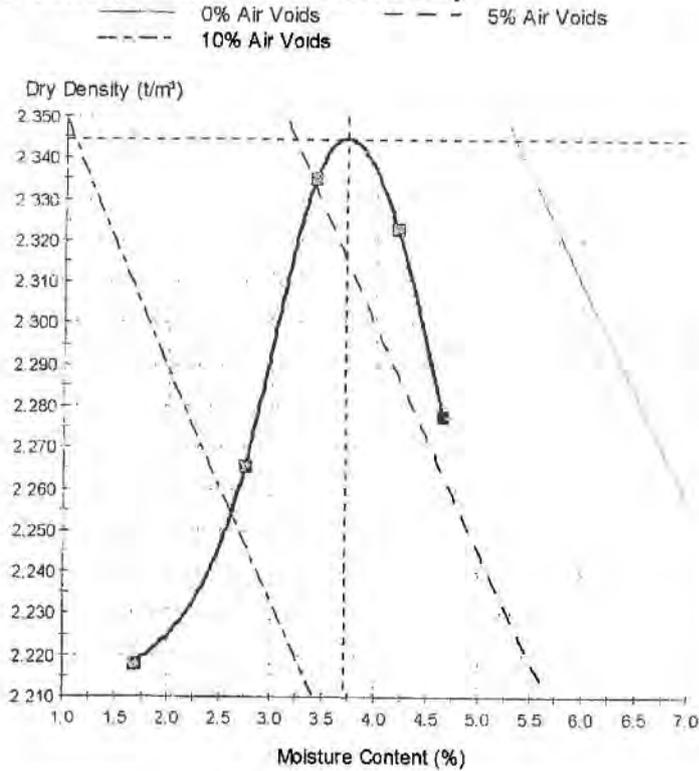
IANZ
ACCREDITED LABORATORY

Max Burford
Approved Signatory: Max Burford
(Supervisor)
IANZ Accreditation No:200
Date of Issue: 25/06/14

Sample Details

Sample ID: CAN14S-12828	Client Sample ID: Lab Ref 1381/14
Material: Pit Run	Sample Source: Field Sample [Taken From Site]
Site/Sampled From: KB's McLeans Island Quarry	Date Sampled: 20/06/2014
Specification: No Specification (Coarse)	Sampled By: Advised - See Comments
Sampling Method: Stated to be NZS 4407:1991 2.4.6.2.1	Date Tested: 25/06/2014
Technician: Greg Orr	Sampling Endorsed?: No

Dry Density - Moisture Relationship



Test Results

————— NZS 4402:1986 Test 4.1.3 - 1986 —————

Maximum Dry Density (t/m³): 2.34

Optimum Moisture Content (%): 3.8

Solid Density (t/m³): 2.68 assumed

Fraction Tested Passes (mm): 37.5

Material Removed (%): 12

Sample History: Natural

Comments

Sampled by C Gould

Report No: MDD:CAN14S-11472

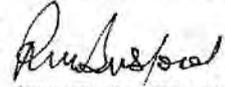
Issue No: 1

Maximum Dry Density Report

Client: Toni O'Regan
 City Care Limited
 PO Box 7669
 Sydenham
 Christchurch 8240

Project: QA Testing - City Care Ltd

The test (s) reported herein (unless otherwise indicated) have been performed in accordance with the laboratory's scope of accreditation. This report may only be reproduced in full.

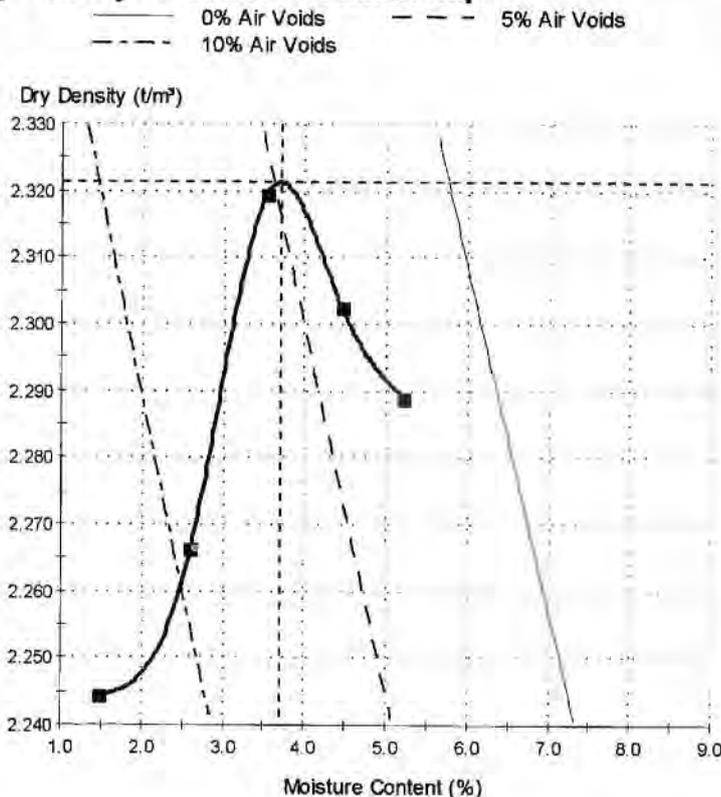
Approved Signatory: Max Burford
 (Supervisor)
 IANZ Accreditation No:200
 Date of Issue: 03/06/14

Sample Details

Sample ID: CAN14S-11472
Material: Pit Run
Site/Sampled From: KB Quarry Scalped over 53mm
Specification: No Specification
Sampling Method: Stated to be NZS 4407:1991 2.4.6.2.2
Technician: Greg Orr

Client Sample ID: 953081
Sample Source: Miscellaneous Material Source
Date Sampled: 29/05/2014
Sampled By: Advised - See Comments
Date Tested: 03/06/2014
Sampling Endorsed?: No

Dry Density - Moisture Relationship



Test Results

————— NZS 4402:1986 Test 4.1.3 - 1986 —————

Maximum Dry Density (t/m³): 2.32
Optimum Moisture Content (%): 3.6
Solid Density (t/m³): 2.68 assumed
Fraction Tested Passes (mm): 37.5
Material Removed (%): 14
Sample History: Natural

Comments

Sampled by Toni O'Regan

PIT RUN - McLEANS ISLAND



Canterbury Laboratory

325 Pound Rd, Yaldhurst, Christchurch
 PO Box 16-064, Christchurch 8441
 Telephone: +64 3 349 9142
 Facsimile: +64 3 349 9143
 www.fultonhogan.com
 0800 LABORATORY

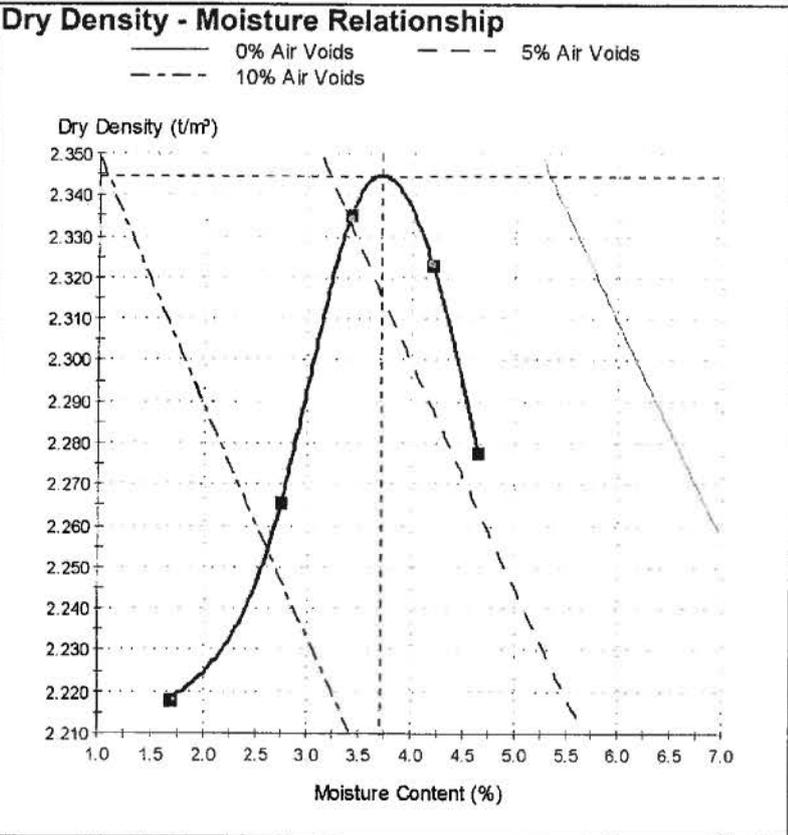
Report No: MDD:CAN14S-12828

Issue No: 1

Maximum Dry Density Report

<p>Client: Toni O'Regan City Care Limited PO Box 7669 Sydenham Christchurch 8240</p> <p>Project: QA Testing - City Care Ltd</p>	<p>The test (s) reported herein (unless otherwise indicated) have been performed in accordance with the laboratory's scope of accreditation. This report may only be reproduced in full.</p> <p>IANZ ACCREDITED LABORATORY</p> <p><i>Max Burford</i> Approved Signatory: Max Burford (Supervisor) IANZ Accreditation No: 200 Date of Issue: 25/06/14</p>
---	--

<p>Sample Details</p> <p>Sample ID: CAN14S-12828</p> <p>Material: Pit Run</p> <p>Site/Sampled From: KB's McLeans Island Quarry</p> <p>Specification: No Specification (Coarse)</p> <p>Sampling Method: Stated to be NZS 4407:1991 2.4.6.2.1</p> <p>Technician: Greg Orr</p>	<p>Client Sample ID: Lab Ref 1381/14</p> <p>Sample Source: Field Sample [Taken From Site]</p> <p>Date Sampled: 20/06/2014</p> <p>Sampled By: Advised - See Comments</p> <p>Date Tested: 25/06/2014</p> <p>Sampling Endorsed?: No</p>
--	--



Test Results

————— NZS 4402:1986 Test 4.1.3 - 1986 —————

Maximum Dry Density (t/m³): 2.34

Optimum Moisture Content (%): 3.8

Solid Density (t/m³): 2.68 assumed

Fraction Tested Passes (mm): 37.5

Material Removed (%): 12

Sample History: Natural

Comments

Sampled by C Gould

PIT RUN - MCLEANS ISLAND



CHRISTCHURCH LABORATORY

397 Mcleans Island Road, Harewood
P O Box 11-326, Sockburn, Christchurch 8443
Phone: (03) 359-0752, Fax (03) 359-1909

Test Report

Client: K.B. Contracting & Quarries Limited
Address: PO Box 19746, Woolston, Christchurch 8241
Client Ref: Not Advised
Job Location: New Quarry
Material: Pit run
Material Source: KB's Quarries McLeans Island

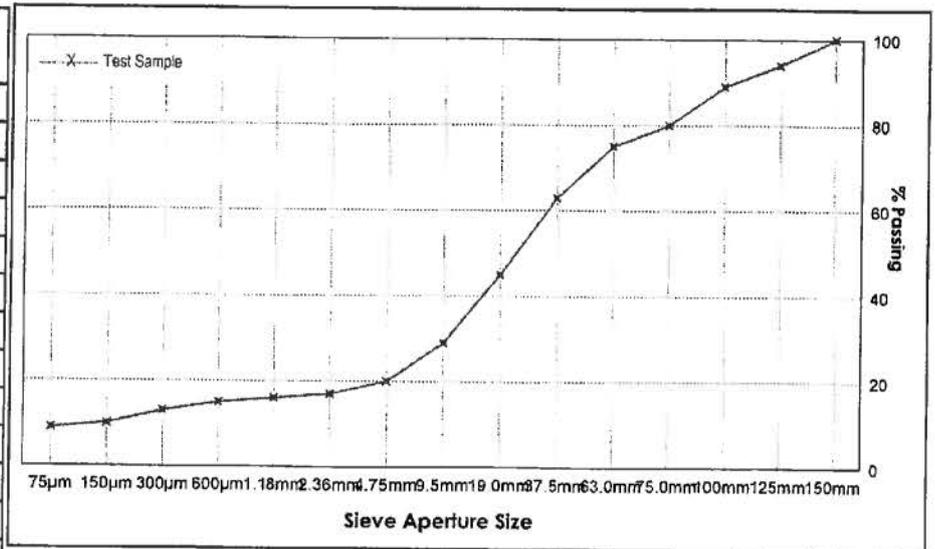
Sample Date: 11-Oct-2013 11:00
Sampled By: Declan McGowan
Laboratory No: C13/2221
Report No: 158619
Report Date: 18-Oct-2013
Replacement Page 1 of 1

This report supersedes and replaces Report No: 158610

Test Methods: 1 The Particle-Size Distribution - Preferred Method by Wet Sieving

NZS 4407:1991 Test 3.8.1

Sieve Size (BSS)	Percent passing	Specification
125mm	94	
100mm	89	
75.0mm	80	
63.0mm	75	
37.5mm	63	
19.0mm	45	
9.5mm	29	
4.75mm	20	
2.36mm	17	
1.18mm	16	
600µm	15	
300µm	13	
150µm	10	
75µm	9	



Test Date:

14/10/2013

Notes

Test results apply to sample as received.
Percent passing finest sieve obtained by difference.
Sample received in a damp condition.
Date of sample receipt: 11-Oct-13

Craig Kelly
Approved Signatory
Laboratory Technician
IANZ Accreditation No: 439
Date of Issue: 10/04/92



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Job	Prestons Subdivision								
Job No.	235361								
Title	Compaction estimation for Oversize Particles								
Derived using equation from Navfac p7.2-50									
<u>For Vibrating Compaction</u>									
Source material	Mcleans Island Gravel								
Fraction greater than 37.5mm	0.4				40 %				Grains size greater than 37.5mm
Laboratory MDD	2.34 t/m3								
Laboratory OMC	3.8 %								
First Calculation	0.98								
Second Calculation	0.41								
Adjusted MDD	2.39 t/m3								
Laboratory MDD % of Adjusted MDD	102.08								
98% of Adjusted MDD	2.34 t/m3								
95% of Adjusted MDD	2.27 t/m3				2.2932				96

Maximum Dry Density Report

Client: Toni O'Regan
 City Care Limited
 PO Box 7669
 Sydenham

 Christchurch 8240

Project: QA Testing - City Care Ltd

The test (s) reported herein (unless otherwise indicated) have been performed in accordance with the laboratory's scope of accreditation. This report may only be reproduced in full.

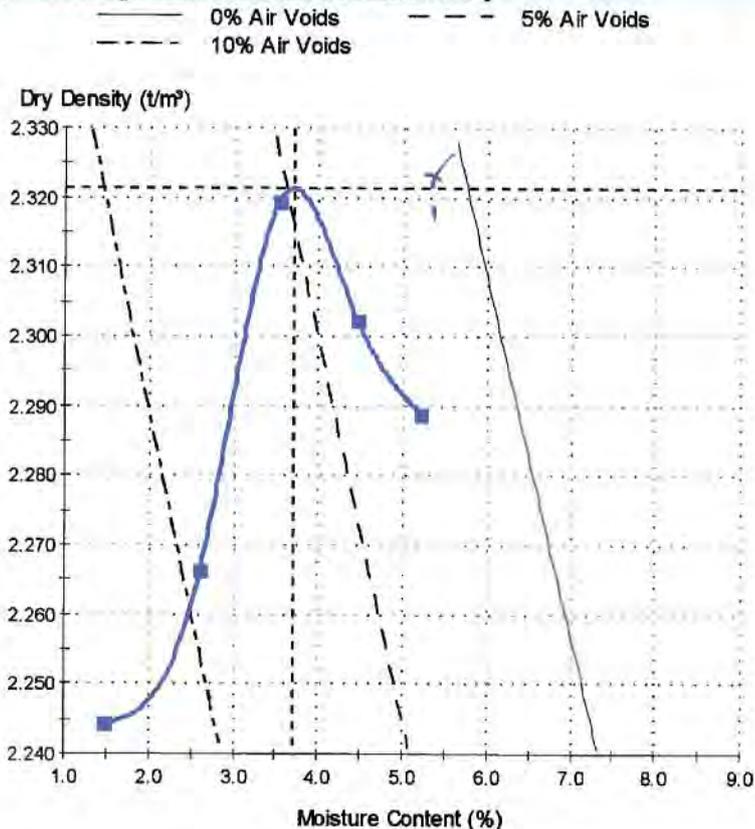


Max Burford
 Approved Signatory: Max Burford
 (Supervisor)
 IANZ Accreditation No:200
 Date of Issue: 03/06/14

Sample Details

Sample ID: CAN14S-11472	Client Sample ID: 953081
Material: Pit Run	Sample Source: Miscellaneous Material Source
Site/Sampled From: KB Quarry Scalped over 53mm	Date Sampled: 29/05/2014
Specification: No Specification	Sampled By: Advised - See Comments
Sampling Method: Stated to be NZS 4407:1991 2.4.6.2.2	Date Tested: 03/06/2014
Technician: Greg Orr	Sampling Endorsed?: No

Dry Density - Moisture Relationship



Test Results

————— NZS 4402:1986 Test 4.1.3 - 1986 —————

Maximum Dry Density (t/m³): 2.32

Optimum Moisture Content (%): 3.6

Solid Density (t/m³): 2.68 assumed

Fraction Tested Passes (mm): 37.5

Material Removed (%): 14

Sample History: Natural

Comments

Sampled by Toni O'Regan

PRELIMINARY

160114

LEGEND

- PROPOSED STAGING ROADS
- PROPOSED GREEN ROADS
- PROPOSED RECREATION & WALKWAY RESERVES
- PROPOSED RESERVES FOR STORMWATER PURPOSES
- PROPOSED ALLOWANCES FOR COMMERCIAL PURPOSES
- PROPOSED ALLOWANCES FOR FURTHER INTENSIVE RESIDENTIAL DEVELOPMENT
- PROPOSED RESIDENTIAL ALLOTMENTS - 40-80%
- PROPOSED RESIDENTIAL ALLOTMENTS - 80-100%
- PROPOSED RESIDENTIAL ALLOTMENTS - 100%+

SHEET 2

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PRESTONS SOUTH

PROPOSED SUBDIVISION OF
PRESTONS SOUTH LOT 21 OF 2798
LOT 21 PRESTONS SOUTH OF 88884
& LOT 1 OF 79476

DATE: 13/04/2015
DRAWN BY: K. J. J. J. J.
CHECKED BY: J. J. J. J. J.
SCALE: 1:1000
PROJECT NO: 223488
JOB NO: 223488
JOB NAME: PRESTONS SOUTH
JOB TYPE: SUBDIVISION
JOB STATUS: PRELIMINARY
JOB LOCATION: PRESTONS SOUTH
JOB CLIENT: KANSER
JOB ADDRESS: SUITE 51-52/53/54/55/56/57/58/59/60/61/62/63/64/65/66/67/68/69/70/71/72/73/74/75/76/77/78/79/80/81/82/83/84/85/86/87/88/89/90/91/92/93/94/95/96/97/98/99/100/101/102/103/104/105/106/107/108/109/110/111/112/113/114/115/116/117/118/119/120/121/122/123/124/125/126/127/128/129/130/131/132/133/134/135/136/137/138/139/140/141/142/143/144/145/146/147/148/149/150/151/152/153/154/155/156/157/158/159/160/161/162/163/164/165/166/167/168/169/170/171/172/173/174/175/176/177/178/179/180/181/182/183/184/185/186/187/188/189/190/191/192/193/194/195/196/197/198/199/200/201/202/203/204/205/206/207/208/209/210/211/212/213/214/215/216/217/218/219/220/221/222/223/224/225/226/227/228/229/230/231/232/233/234/235/236/237/238/239/240/241/242/243/244/245/246/247/248/249/250/251/252/253/254/255/256/257/258/259/260/261/262/263/264/265/266/267/268/269/270/271/272/273/274/275/276/277/278/279/280/281/282/283/284/285/286/287/288/289/290/291/292/293/294/295/296/297/298/299/300/301/302/303/304/305/306/307/308/309/310/311/312/313/314/315/316/317/318/319/320/321/322/323/324/325/326/327/328/329/330/331/332/333/334/335/336/337/338/339/340/341/342/343/344/345/346/347/348/349/350/351/352/353/354/355/356/357/358/359/360/361/362/363/364/365/366/367/368/369/370/371/372/373/374/375/376/377/378/379/380/381/382/383/384/385/386/387/388/389/390/391/392/393/394/395/396/397/398/399/400/401/402/403/404/405/406/407/408/409/410/411/412/413/414/415/416/417/418/419/420/421/422/423/424/425/426/427/428/429/430/431/432/433/434/435/436/437/438/439/440/441/442/443/444/445/446/447/448/449/450/451/452/453/454/455/456/457/458/459/460/461/462/463/464/465/466/467/468/469/470/471/472/473/474/475/476/477/478/479/480/481/482/483/484/485/486/487/488/489/490/491/492/493/494/495/496/497/498/499/500/501/502/503/504/505/506/507/508/509/510/511/512/513/514/515/516/517/518/519/520/521/522/523/524/525/526/527/528/529/530/531/532/533/534/535/536/537/538/539/540/541/542/543/544/545/546/547/548/549/550/551/552/553/554/555/556/557/558/559/560/561/562/563/564/565/566/567/568/569/570/571/572/573/574/575/576/577/578/579/580/581/582/583/584/585/586/587/588/589/590/591/592/593/594/595/596/597/598/599/600/601/602/603/604/605/606/607/608/609/610/611/612/613/614/615/616/617/618/619/620/621/622/623/624/625/626/627/628/629/630/631/632/633/634/635/636/637/638/639/640/641/642/643/644/645/646/647/648/649/650/651/652/653/654/655/656/657/658/659/660/661/662/663/664/665/666/667/668/669/670/671/672/673/674/675/676/677/678/679/680/681/682/683/684/685/686/687/688/689/690/691/692/693/694/695/696/697/698/699/700/701/702/703/704/705/706/707/708/709/710/711/712/713/714/715/716/717/718/719/720/721/722/723/724/725/726/727/728/729/730/731/732/733/734/735/736/737/738/739/740/741/742/743/744/745/746/747/748/749/750/751/752/753/754/755/756/757/758/759/760/761/762/763/764/765/766/767/768/769/770/771/772/773/774/775/776/777/778/779/780/781/782/783/784/785/786/787/788/789/790/791/792/793/794/795/796/797/798/799/800/801/802/803/804/805/806/807/808/809/810/811/812/813/814/815/816/817/818/819/820/821/822/823/824/825/826/827/828/829/830/831/832/833/834/835/836/837/838/839/840/841/842/843/844/845/846/847/848/849/850/851/852/853/854/855/856/857/858/859/860/861/862/863/864/865/866/867/868/869/870/871/872/873/874/875/876/877/878/879/880/881/882/883/884/885/886/887/888/889/890/891/892/893/894/895/896/897/898/899/900/901/902/903/904/905/906/907/908/909/910/911/912/913/914/915/916/917/918/919/920/921/922/923/924/925/926/927/928/929/930/931/932/933/934/935/936/937/938/939/940/941/942/943/944/945/946/947/948/949/950/951/952/953/954/955/956/957/958/959/960/961/962/963/964/965/966/967/968/969/970/971/972/973/974/975/976/977/978/979/980/981/982/983/984/985/986/987/988/989/990/991/992/993/994/995/996/997/998/999/1000/1001/1002/1003/1004/1005/1006/1007/1008/1009/1010/1011/1012/1013/1014/1015/1016/1017/1018/1019/1020/1021/1022/1023/1024/1025/1026/1027/1028/1029/1030/1031/1032/1033/1034/1035/1036/1037/1038/1039/1040/1041/1042/1043/1044/1045/1046/1047/1048/1049/1050/1051/1052/1053/1054/1055/1056/1057/1058/1059/1060/1061/1062/1063/1064/1065/1066/1067/1068/1069/1070/1071/1072/1073/1074/1075/1076/1077/1078/1079/1080/1081/1082/1083/1084/1085/1086/1087/1088/1089/1090/1091/1092/1093/1094/1095/1096/1097/1098/1099/1100/1101/1102/1103/1104/1105/1106/1107/1108/1109/1110/1111/1112/1113/1114/1115/1116/1117/1118/1119/1120/1121/1122/1123/1124/1125/1126/1127/1128/1129/1130/1131/1132/1133/1134/1135/1136/1137/1138/1139/1140/1141/1142/1143/1144/1145/1146/1147/1148/1149/1150/1151/1152/1153/1154/1155/1156/1157/1158/1159/1160/1161/1162/1163/1164/1165/1166/1167/1168/1169/1170/1171/1172/1173/1174/1175/1176/1177/1178/1179/1180/1181/1182/1183/1184/1185/1186/1187/1188/1189/1190/1191/1192/1193/1194/1195/1196/1197/1198/1199/1200/1201/1202/1203/1204/1205/1206/1207/1208/1209/1210/1211/1212/1213/1214/1215/1216/1217/1218/1219/1220/1221/1222/1223/1224/1225/1226/1227/1228/1229/1230/1231/1232/1233/1234/1235/1236/1237/1238/1239/1240/1241/1242/1243/1244/1245/1246/1247/1248/1249/125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PIT RUN - MINORS QUARRY

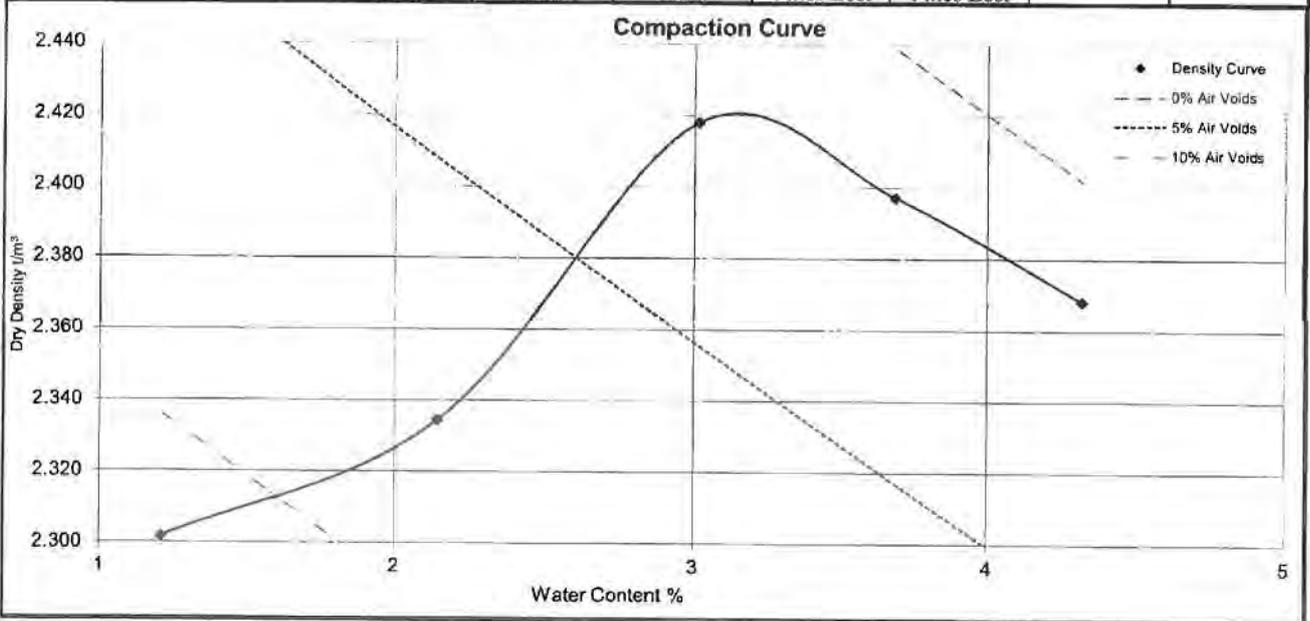
**DRY DENSITY / WATER CONTENT RELATIONSHIP
VIBRATING COMPACTION**



Project : Quality Assurance
 Location : Prestons Road Subdivision
 Client : Coffey Geotechnical
 Contractor : Not Advised
 Sampled by : S Gardner
 Date sampled : 11 June 2014
 Sampling method : Not Advised
 Sample description : Pit Run
 Sample condition : Damp as Received
 Solid density : 2.68 t/m³ (Assumed)
 Source : Prestons Road-KB's Quarries

Project No : 6-JCOFF.14/6LC
 Lab Ref No : 13379
 Client Ref No : A Wills

Test Results								
Maximum dry density	2.42	t/m ³	Natural water content		-			%
Optimum water content	3.2	%	Fraction tested		Passing 37.5mm Test Sieve			
Sample ID	1%	2%	3%	4%	5%			
Bulk density t/m ³	2.330	2.385	2.491	2.486	2.470			
Water content %	1.2	2.1	3.0	3.7	4.3			
Dry density t/m ³	2.302	2.334	2.418	2.397	2.368			
Sample condition	Dry Firm	Moist Firm	Moist Hard	Wet Fines Lost	Saturated Fines Lost			



Test Methods	Notes
Compaction NZS 4402 : 1986 : Test 4.1.3	

Date tested : 13 June 2014
 Date reported : 19 June 2014

Sampling is not covered by IANZ Accreditation. Results apply only to sample tested.
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IANZ Approved Signatory *[Signature]*
 Designation : Senior Civil Engineering Technician
 Date : 19 June 2014



Report No: MDD:CAN14S-22802

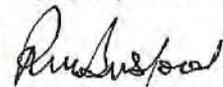
Issue No: 1

Maximum Dry Density Report

Client: Toni O'Regan
 City Care Limited
 PO Box 7669
 Sydenham
 Christchurch 8240

Project: QA Testing - City Care Ltd

The test (s) reported herein (unless otherwise indicated) have been performed in accordance with the laboratory's scope of accreditation. This report may only be reproduced in full.

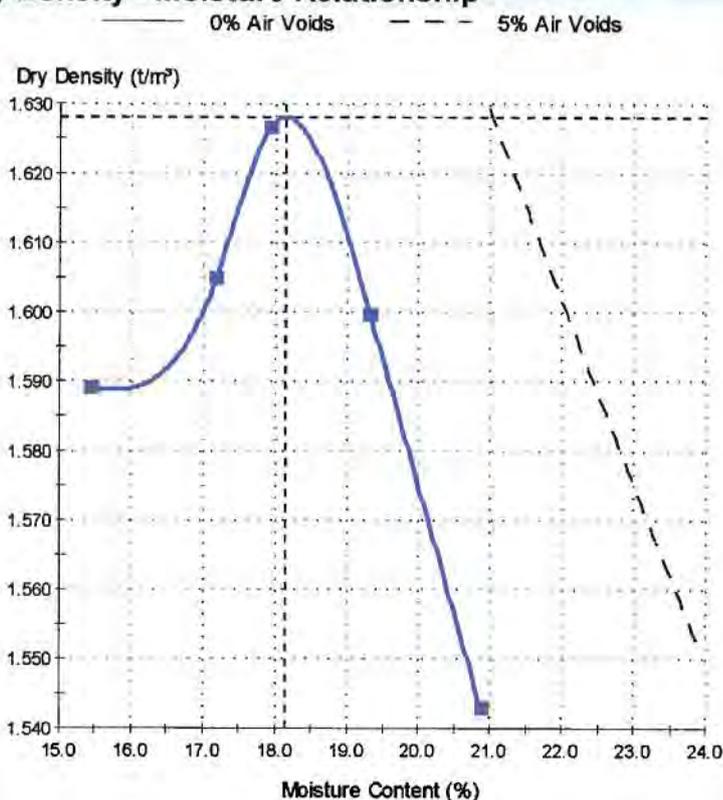
Approved Signatory: Max Burford
 (Supervisor)
 IANZ Accreditation No:200
 Date of Issue: 07/11/14

Sample Details

Sample ID: CAN14S-22802
Material: BEACH SAND
Site/Sampled From: Ex CDL Prestons Road Lot 3096
Specification: No Specification
Sampling Method: As Received - Not Accredited
Technician: Max Burford

Client Sample ID: Lab Ref 2685/14
Sample Source: Field Sample [Taken From Site]
Date Sampled: 30/10/2014
Sampled By: Advised - See Comments
Date Tested: 07/11/2014
Sampling Endorsed?: No

Dry Density - Moisture Relationship



Test Results

NZS 4402:1986 Test 4.1.3 - 1986

Maximum Dry Density (t/m³): 1.62
Optimum Moisture Content (%): 18
Solid Density (t/m³): 2.68 assumed
Fraction Tested Passes (mm): 37.5
Material Removed (%): 0
Sample History: Natural

Comments

Sampled by Toni O'Regan

PEAT AREA C

Canterbury Laboratory

325 Pound Rd, Yaldhurst, Christchurch
PO Box 16-064, Christchurch 8441
Telephone: +64 3 349 9142
Facsimile: +64 3 349 9143
www.fultonhogan.com
0800 LABORATORY



Report No: MDD:CAN14S-12043

Issue No: 1

Maximum Dry Density Report

Client: Toni O'Regan
City Care Limited
PO Box 7669
Sydenham

Christchurch 8240

Project: QA Testing - City Care Ltd

The test (s) reported herein (unless otherwise indicated) have been performed in accordance with the laboratory's scope of accreditation. This report may only be reproduced in full.



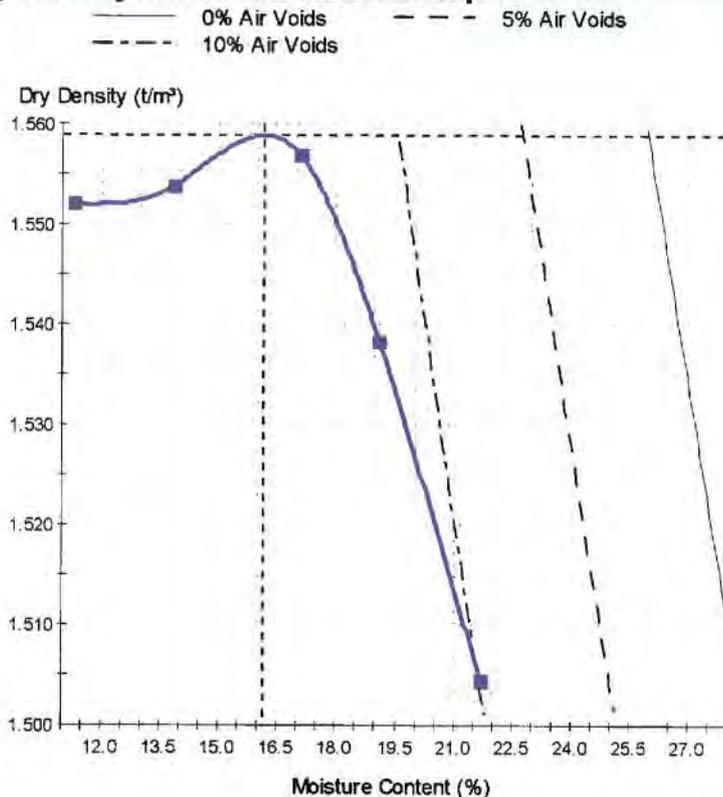
Max Burford
Approved Signatory: Max Burford
(Supervisor)
IANZ Accreditation No:200
Date of Issue: 11/06/14

Sample Details

Sample ID: CAN14S-12043
Material: BEACH SAND
Site/Sampled From: CDL Prestons Rd Peat Area C
Specification: No Specification
Sampling Method: As Received - Not Accredited
Technician: Daniel Daly

Client Sample ID: Lab Ref 1322/14
Sample Source: Field Sample [Taken From Site]
Date Sampled: 06/06/2014
Sampled By: Not Advised
Date Tested: 11/06/2014
Sampling Endorsed?: No

Dry Density - Moisture Relationship



Test Results

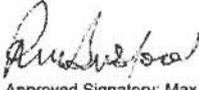
————— NZS 4402:1986 Test 4.1.3 - 1986 —————
Maximum Dry Density (t/m³): 1.56
Optimum Moisture Content (%): 16
Solid Density (t/m³): 2.62 assumed
Fraction Tested Passes (mm): 37.5
Material Removed (%): 0
Sample History: Natural

Comments

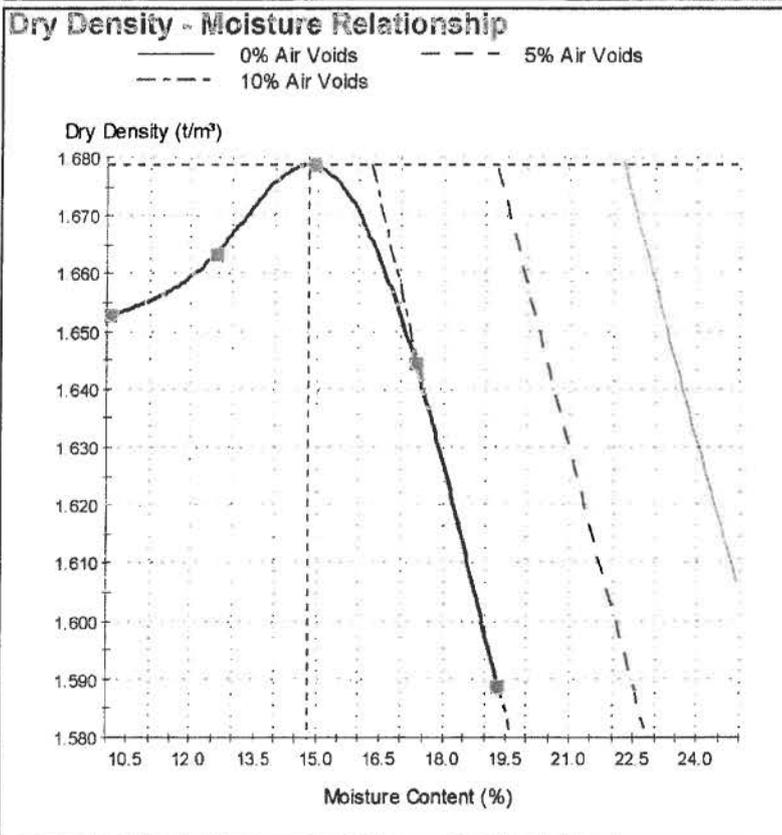
Material is beach sand with a trace of organic

Report No: MDD:CAN14S-08017
Issue No: 1

Maximum Dry Density Report

Client: Toni O'Regan City Care Limited PO Box 7669 Sydenham Christchurch 8240 Project: QA Testing - City Care Ltd	The test (s) reported herein (unless indicated) have been performed in accordance with the laboratory's scope of accreditation. Results only apply to samples as received. This report must be reproduced in full.   Approved Signatory: Max Burford (Supervisor) IANZ Accreditation No.200 Date of Issue: 11/04/14
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Sample Details	
Sample ID: CAN14S-08017	Client Sample ID: 0830/14 - MF, LS
Material: BEACH SAND	Sample Source: Field Sample [Taken From Site]
Site/Sampled From: CDL Prestons Road, Peat Area E	Date Sampled: 02/04/2014
Specification: No Specification	Sampled By: Mark Foster
Sampling Method: As Received - Not Accredited	Date Tested: 11/04/2014
Technician: Greg Orr	Sampling Endorsed?: No



Test Results

————— NZS 4402:1986 Test 4.1.3 - 1986 —————

Maximum Dry Density (t/m³):	1.68
Optimum Moisture Content (%):	15
Solid Density (t/m³):	2.68 assumed
Fraction Tested Passes (mm):	37.5
Material Removed (%):	0
Sample History:	Natural

Comments

 Material is best described as FINE SAND with some medium sand and rare silt
 23% medium sand with 72% FINE SAND and 5% silt

Report No: MDD:CAN14S-05060

Issue No: 1

Maximum Dry Density Report

Client: Toni O'Regan
 City Care Limited
 PO Box 7669
 Sydenham
 Christchurch 8240

Project: QA Testing - City Care Ltd

The test (s) reported herein (unless indicated) have been performed in accordance with the laboratory's scope of accreditation. Results only apply to samples as received. This report must be reproduced in full.

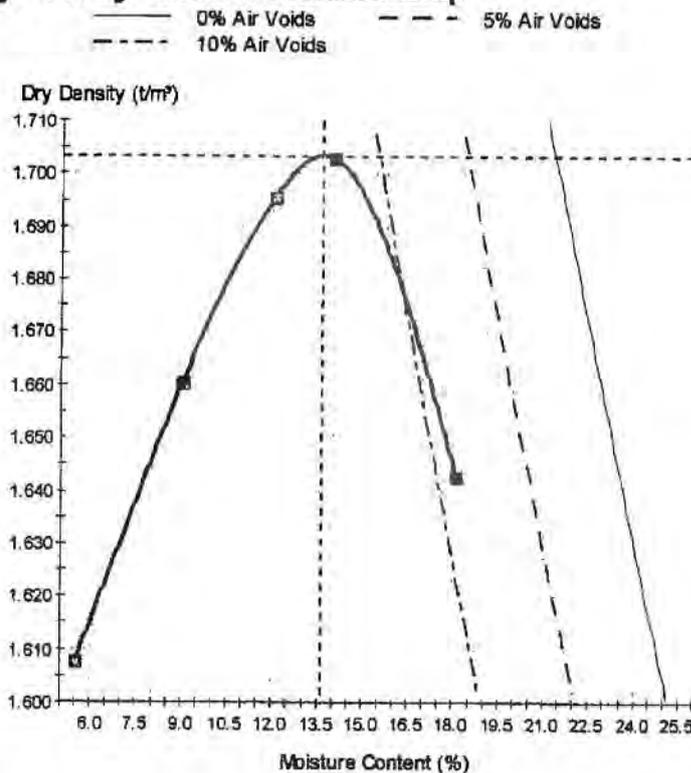


Max Burford
 Approved Signatory: Max Burford
 (Supervisor)
 IANZ Accreditation No:200
 Date of Issue: 06/03/14

Sample Details

Sample ID: CAN14S-05060	Client Sample ID: 0428/14 Site A
Material: BEACH SAND	Sample Source: Field Sample [Taken From Site]
Site/Sampled From: Prestons Road Alpine V Site A	Date Sampled: 25/02/2014
Specification: No Specification	Sampled By: Advised - See Comments
Sampling Method: As Received - Not Accredited	Date Tested: 06/03/2014
Technician: Daniel Daly	Sampling Endorsed?: No

Dry Density - Moisture Relationship



Test Results

NZS 4402:1986 Test 4.1.3 - 1986

Maximum Dry Density (t/m³): 1.70
Optimum Moisture Content (%): 14
Solid Density (t/m³): 2.68 assumed
Fraction Tested Passes (mm): 37.5
Material Removed (%): 0
Sample History: Natural

Comments

80% MEDIUM SAND 18% fine sand & 2% silt

Report No: MDD:CAN14S-05061

Issue No: 1

Maximum Dry Density Report

Client: Toni O'Regan
 City Care Limited
 PO Box 7669
 Sydenham
 Christchurch 8240

Project: QA Testing - City Care Ltd

The test (s) reported herein (unless indicated) have been performed in accordance with the laboratory's scope of accreditation. Results only apply to samples as received. This report must be reproduced in full.

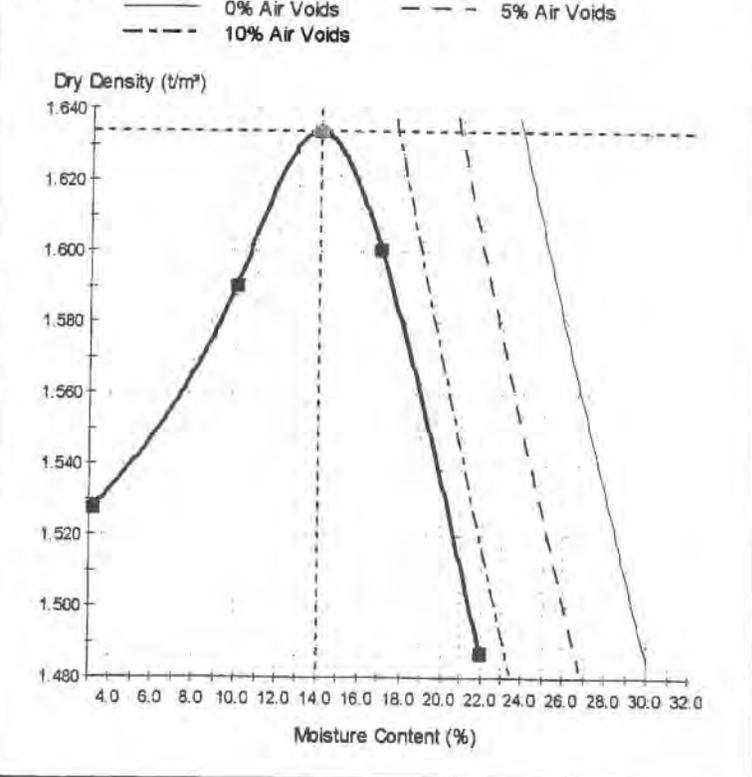
IANZ
 ACCREDITED LABORATORY

Max Burford
 Approved Signatory: Max Burford
 (Supervisor)
 IANZ Accreditation No:200
 Date of Issue: 06/03/14

Sample Details

Sample ID: CAN14S-05061	Client Sample ID: 0429/14 Site B
Material: BEACH SAND	Sample Source: Field Sample [Taken From Site]
Site/Sampled From: Prestons Road Alpine V Site B	Date Sampled: 25/02/2014
Specification: No Specification	Sampled By: Advised - See Comments
Sampling Method: As Received - Not Accredited	Date Tested: 06/03/2014
Technician: Daniel Daly	Sampling Endorsed?: No

Dry Density - Moisture Relationship



Test Results

————— NZS 4402:1986 Test 4.1.3 - 1986 —————

Maximum Dry Density (t/m³): 1.64

Optimum Moisture Content (%): 14

Solid Density (t/m³): 2.68 assumed

Fraction Tested Passes (mm): 37.5

Material Removed (%): 0

Sample History: Natural

Comments

50% MEDIUM SAND 46% fine sand & 4% silt