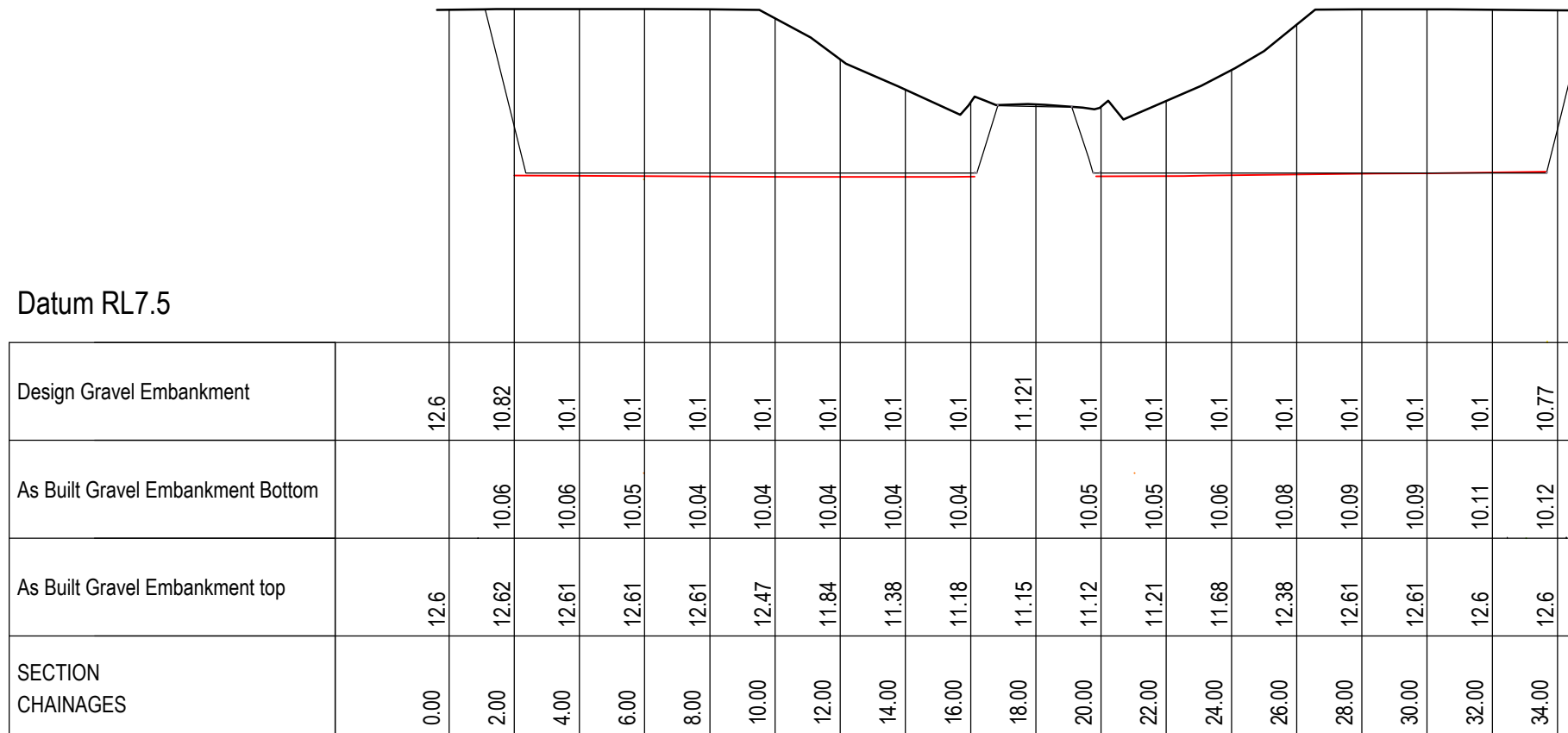


Appendix F

Gravel Embankment

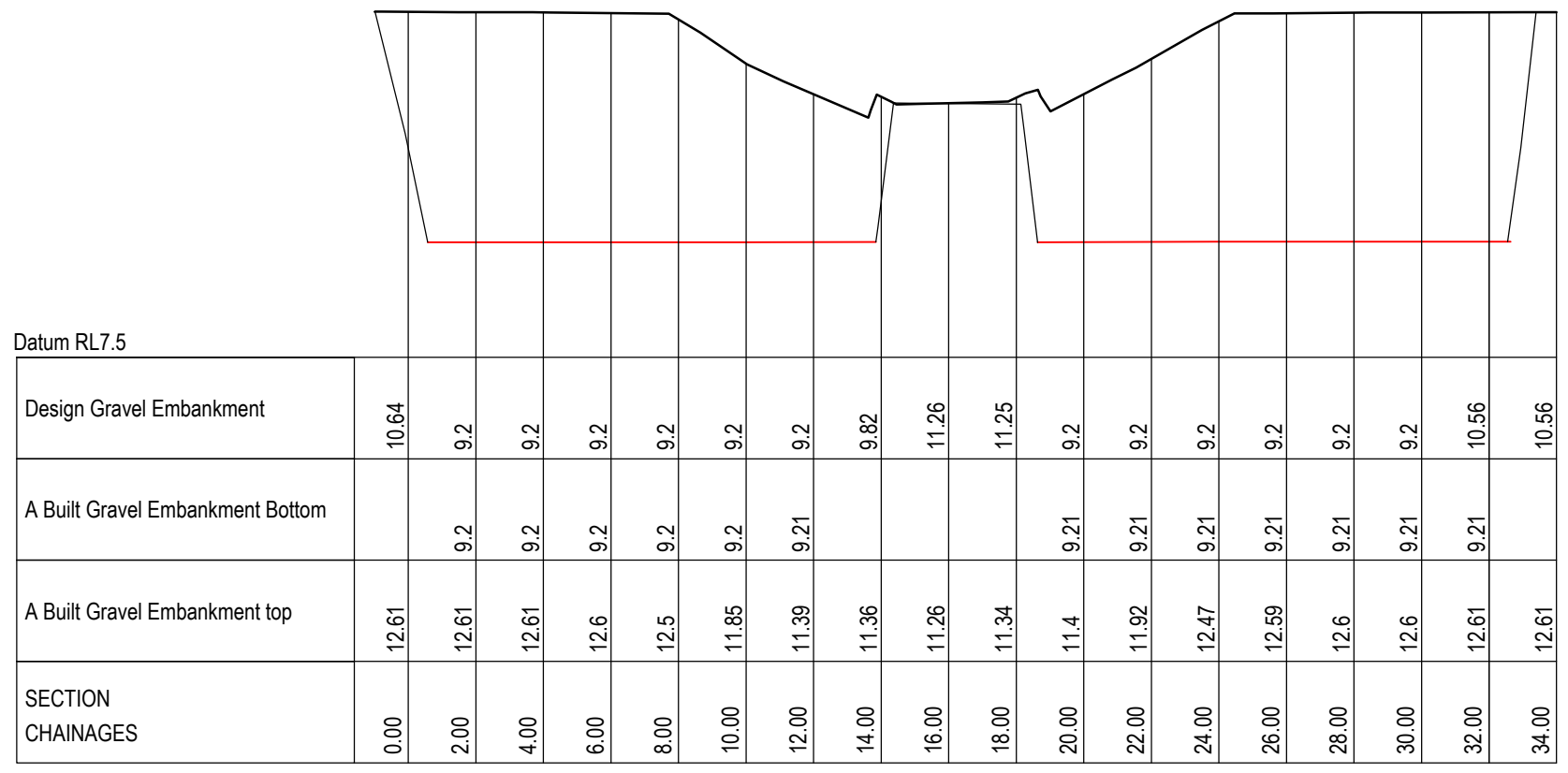
Asbuilts



As Built Gravel Embankment Section X7

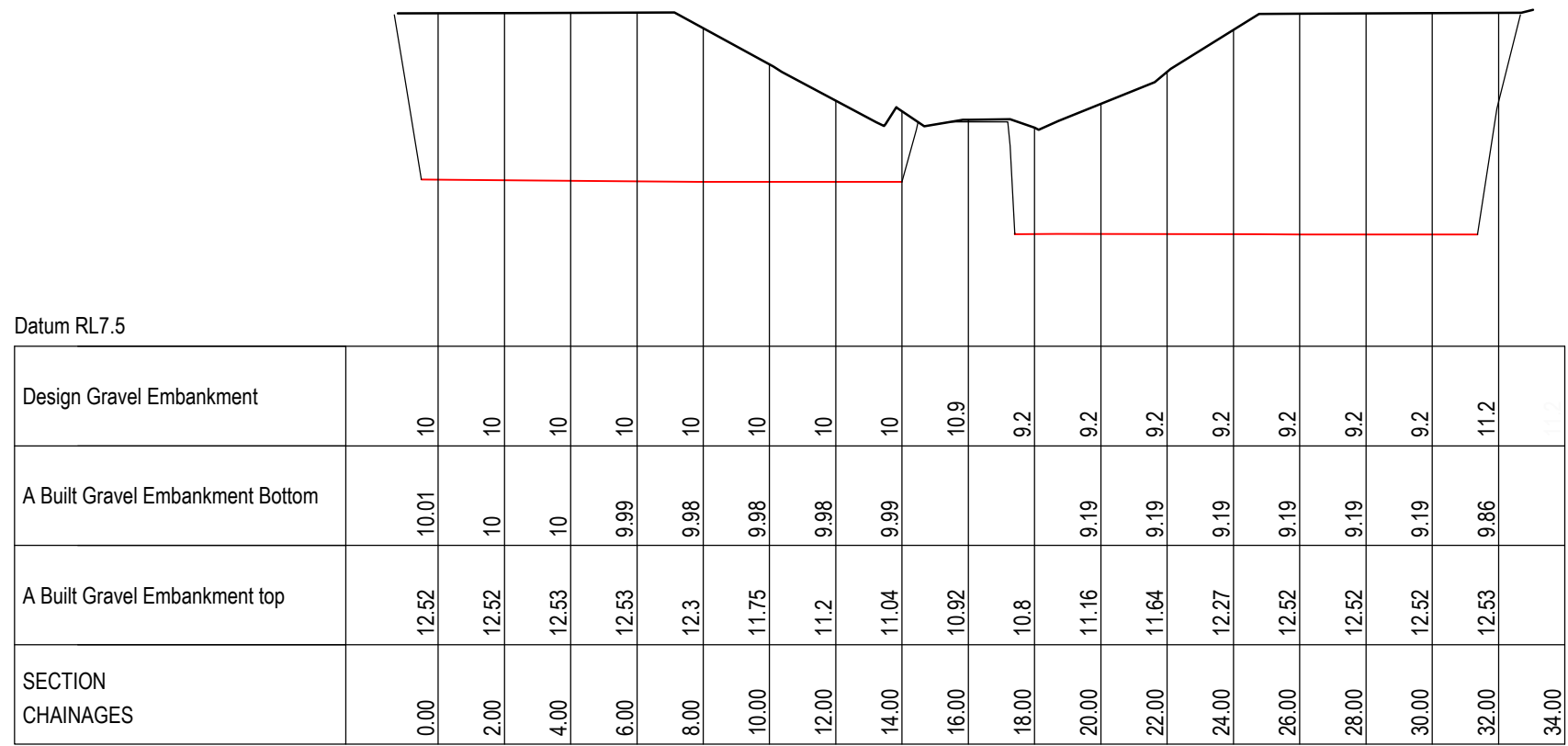
HORIZONTAL 1:200

VERTICAL 1:100

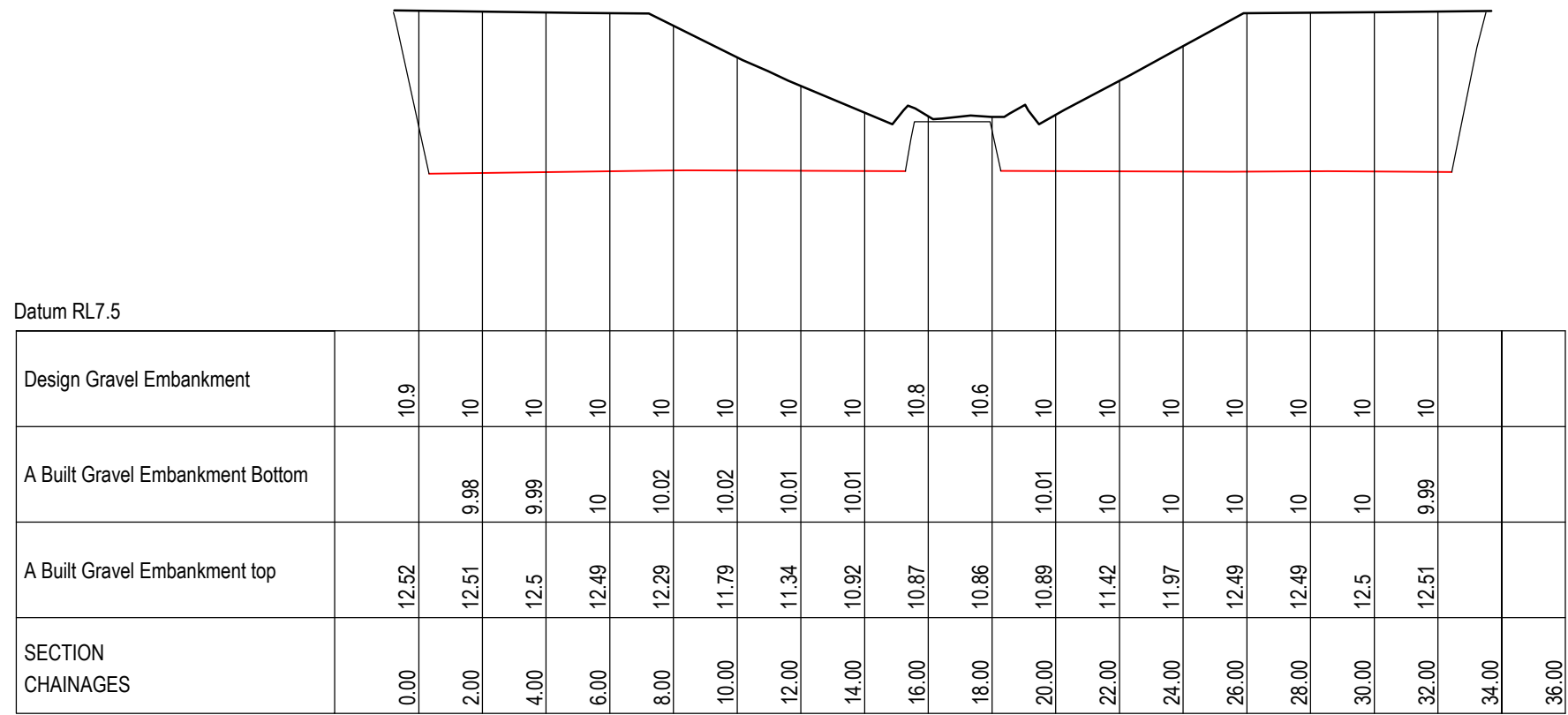


XS12
 HORIZONTAL 1:200
 VERTICAL 1:100

Datum RL7.5	
Design Gra	
A Built Gra	
A Built Gra	
SECTION CHAINAGE	

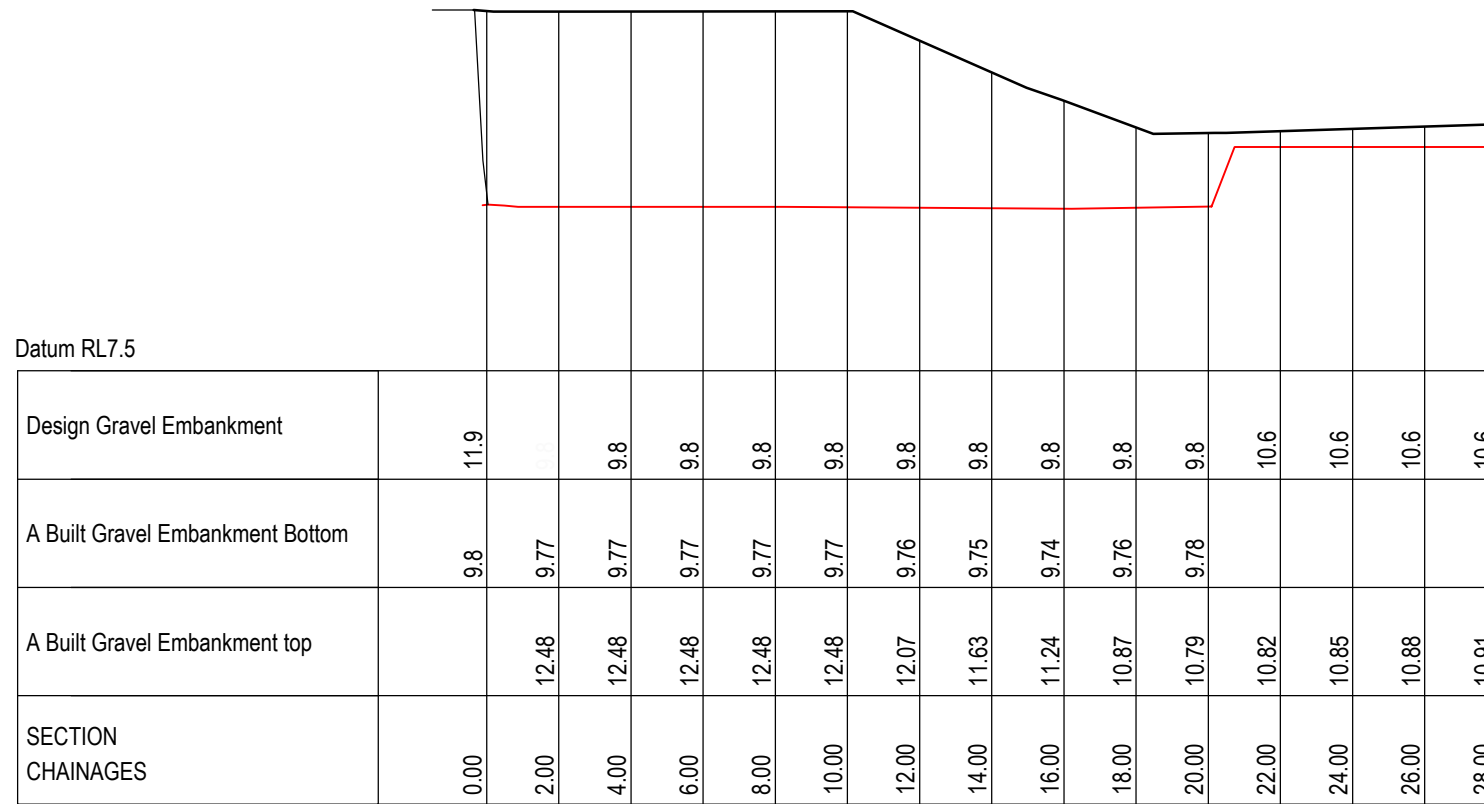


XS13->XS13
HORIZONTAL 1:200
VERTICAL 1:100



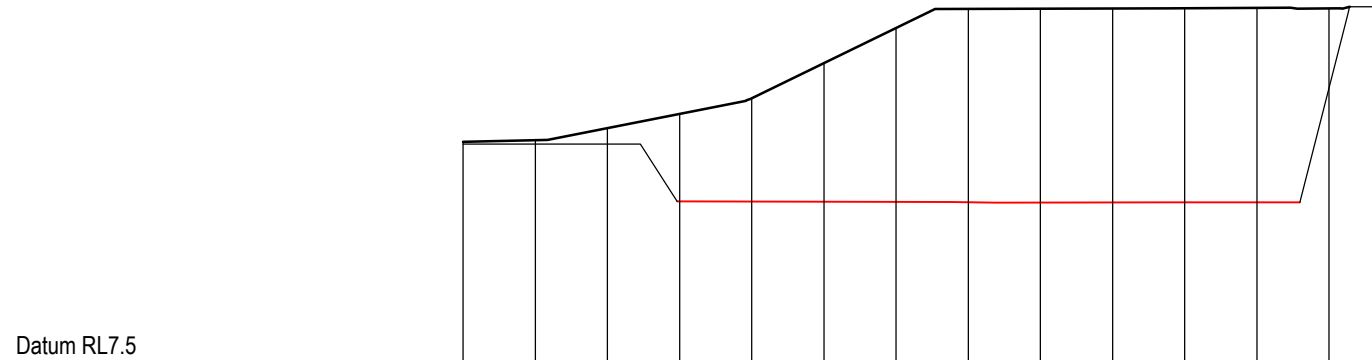
Datum RL7.5

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



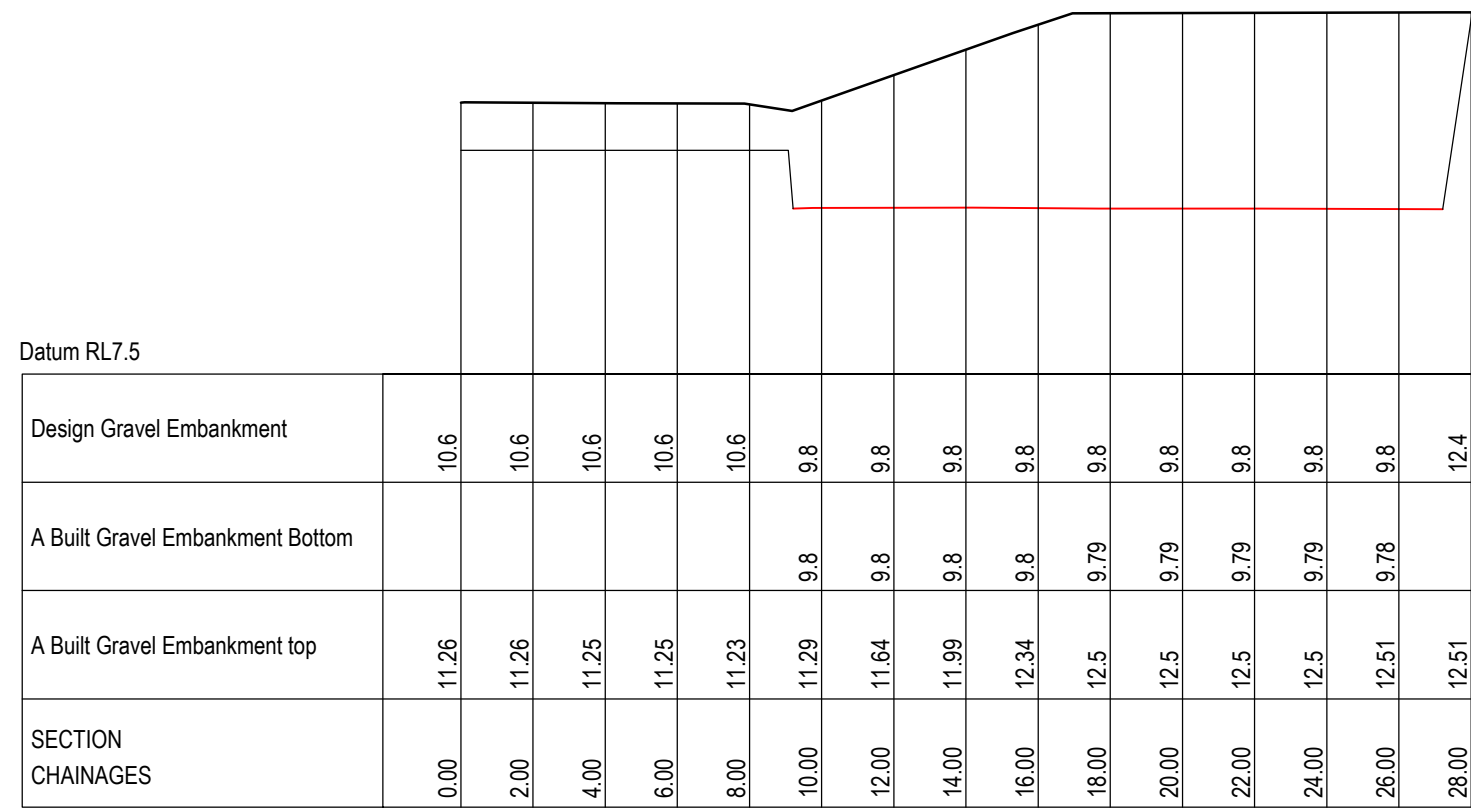
Datum RL7.5

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



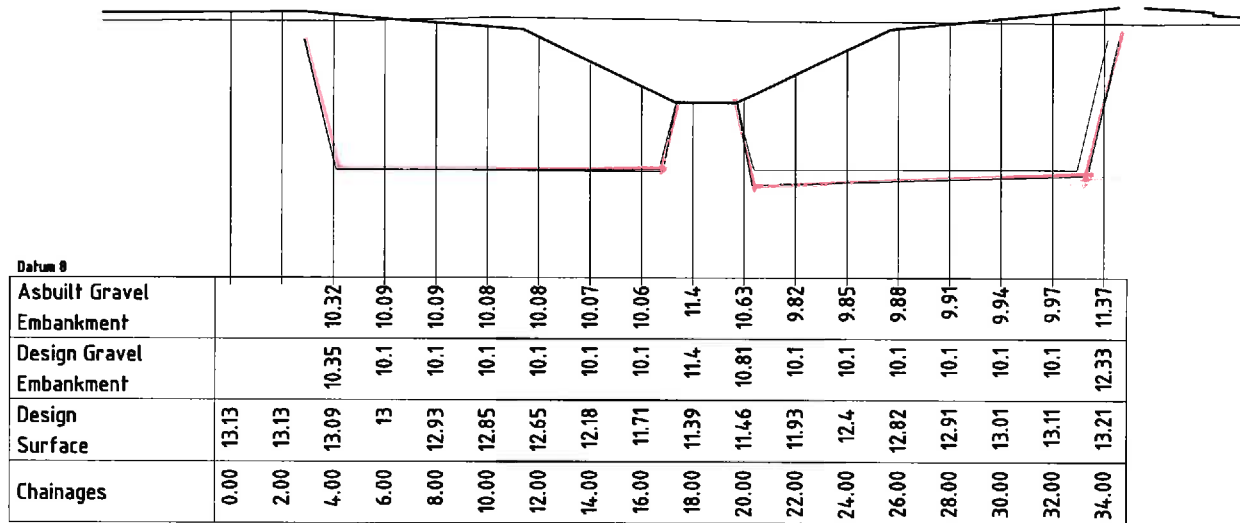
Design Gravel Embankment		10.6	10.6	10.6	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	11.4
A Built Gravel Embankment Bottom					9.81	9.8	9.8	9.8	9.8	9.79	9.79	9.79	9.79	9.79	9.79	9.79	9.79	9.79
A Built Gravel Embankment top		10.63	10.65	10.82	11.02	11.23	11.72	12.21	12.47	12.48	12.48	12.48	12.49	12.48	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

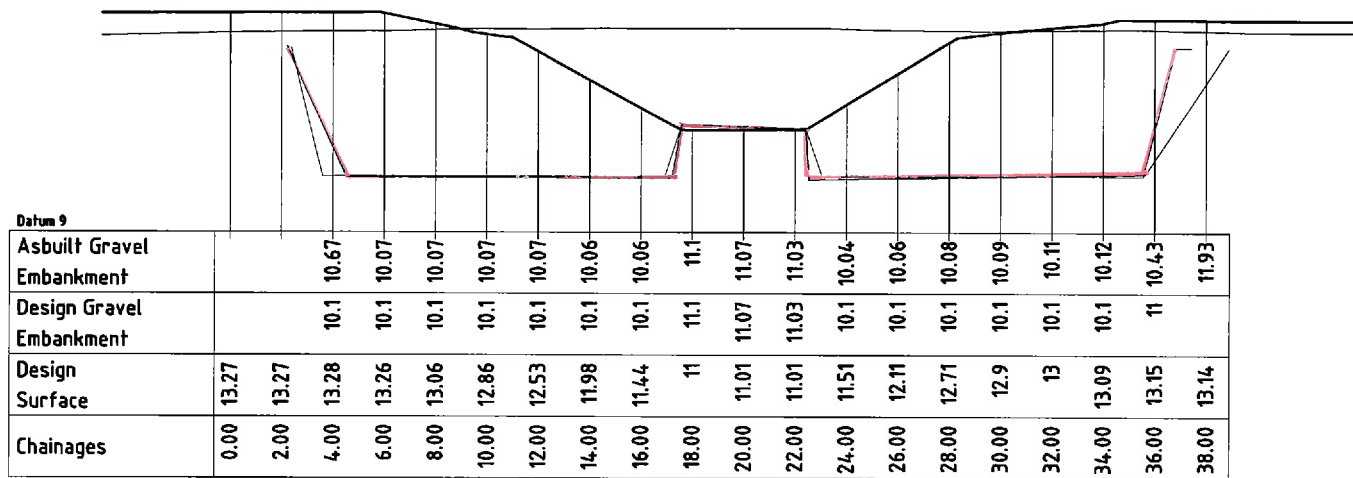
XS17->XS17
 HORIZONTAL 1:200
 VERTICAL 1:100



AB EW 150330 EMBANKMENT SUBGRADE SECTIONS->Section 4

HORIZONTAL 1:200

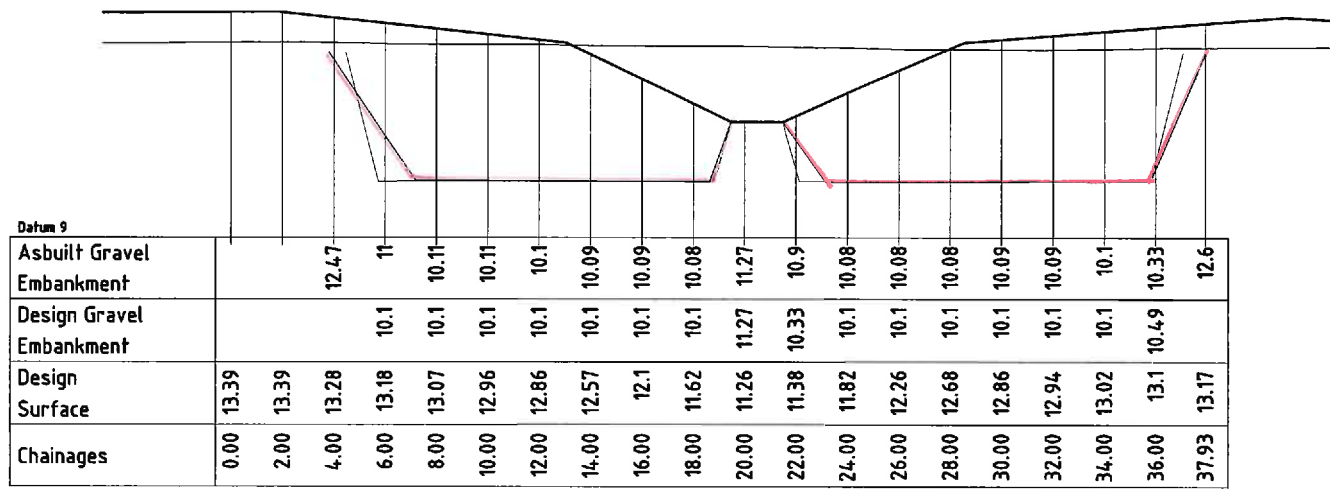
VERTICAL 1:100



AB EW 150330 EMBANKMENT SUBGRADE SECTIONS->Section 5

HORIZONTAL 1:200

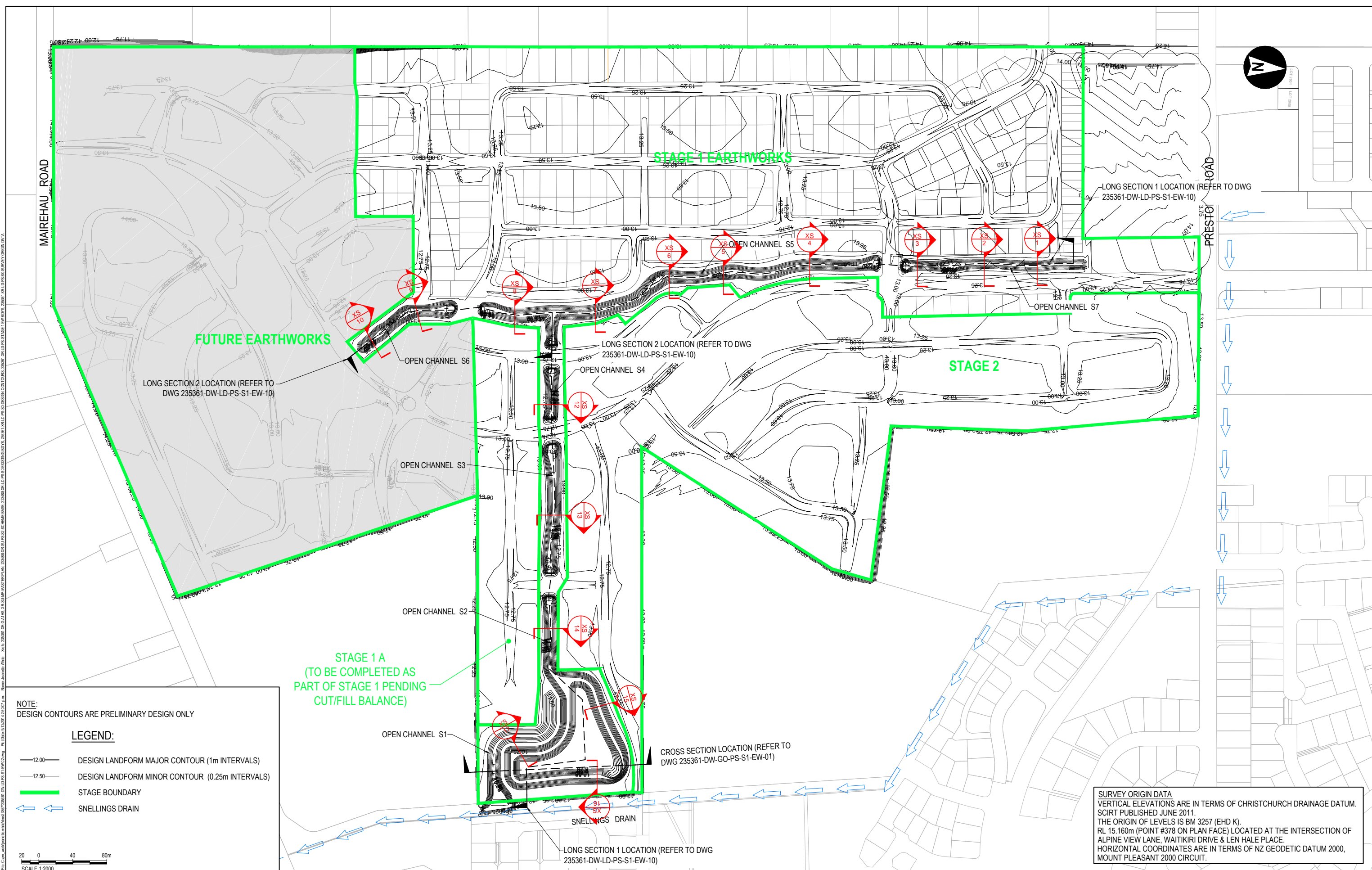
VERTICAL 1:100



AB EW 150330 EMBANKMENT SUBGRADE SECTIONS->Section 6

HORIZONTAL 1:200

VERTICAL 1:100



NOTE:
DESIGN CONTOURS ARE PRELIMINARY DESIGN ONLY

LEGEND:

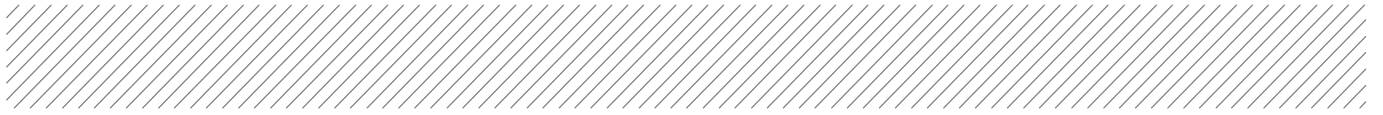
- 12.00 — DESIGN LANDFORM MAJOR CONTOUR (1m INTERVALS)
- 12.50 — DESIGN LANDFORM MINOR CONTOUR (0.25m INTERVALS)
- STAGE BOUNDARY
- ← SNELLINGS DRAIN

SCALE 1:2000

SURVEY ORIGIN DATA
VERTICAL ELEVATIONS ARE IN TERMS OF CHRISTCHURCH DRAINAGE DATUM. SCIRT PUBLISHED JUNE 2011.
THE ORIGIN OF LEVELS IS BM 3257 (EHD K).
RL 15.160m (POINT #378 ON PLAN FACE) LOCATED AT THE INTERSECTION OF ALPINE VIEW LANE, WAITIKIRI DRIVE & LEN HALE PLACE.
HORIZONTAL COORDINATES ARE IN TERMS OF NZ GEODETIC DATUM 2000, MOUNT PLEASANT 2000 CIRCUIT.



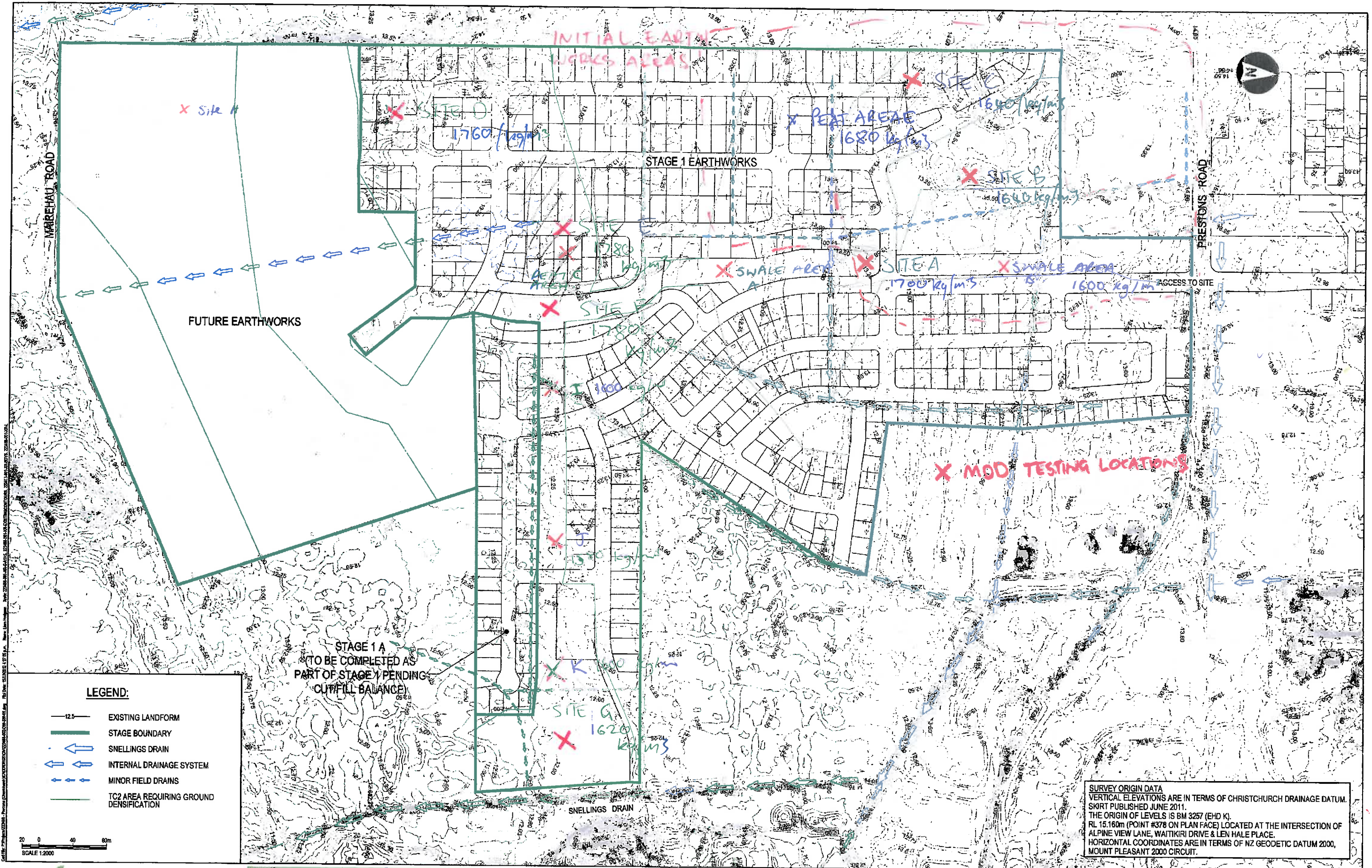
REV	DATE	REVISION DETAILS	APPROVED	DRAWN	DESIGNED	PROJECT	CONSTRUCTION
2	05/12/14	ISSUE FOR INFORMATION	KASHBY	L.O'SULLIVAN	S.HUSBAND	PRESTONS SOUTH	PROJECT No. 235361
1	09/10/13	FOR CONSTRUCTION	KASHBY	W.NEL			SCALE 1:2000 @ A1
						TITLE	SIZE A1
						EARTHWORKS STAGE 1 DESIGN LANDFORM	DRAWING No. LD-PS-S1-EW-02
							REV 2



Appendix G

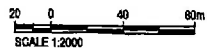
Compaction Curves

Master copy



LEGEND:

- 12.5 — EXISTING LANDFORM
- STAGE BOUNDARY
- SNELLINGS DRAIN
- INTERNAL DRAINAGE SYSTEM
- MINOR FIELD DRAINS
- TC2 AREA REQUIRING GROUND DENSIFICATION



STAGE 1 A
TO BE COMPLETED AS
PART OF STAGE 1 PENDING
CUT/FILL BALANCE

SURVEY ORIGIN DATA
VERTICAL ELEVATIONS ARE IN TERMS OF CHRISTCHURCH DRAINAGE DATUM,
SHORT PUBLISHED JUNE 2011.
THE ORIGIN OF LEVELS IS BM 3257 (EHD K),
RL 15.160m (POINT #378 ON PLAN FACE) LOCATED AT THE INTERSECTION OF
ALPINE VIEW LANE, WAITIKIRI DRIVE & LEN HALE PLACE.
HORIZONTAL COORDINATES ARE IN TERMS OF NZ GEODETIC DATUM 2000,
MOUNT PLEASANT 2000 CIRCUIT.

aurecon
www.aurecongroup.com

CDL LAND
NEW ZEALAND LIMITED

REV | DATE | REVISION DETAILS

1 09/10/19 FOR CONSTRUCTION

APPROVED

KASHBY

DESIGNED	S HUSBAND
CHECKED	W NEL
APPROVED	
KASHBY	DATE 09/10/19
KASHBY	

PROJECT
PRESTONS SOUTH
TITLE
**EARTHWORKS STAGE 1
EXISTING LANDFORM**

CONSTRUCTION

PROJECT No	235361
SCALE	1:2000 @ A1
DRAWING No	LD-PS-S1-EW-01
SIZE	A1
REV	1

Test Report

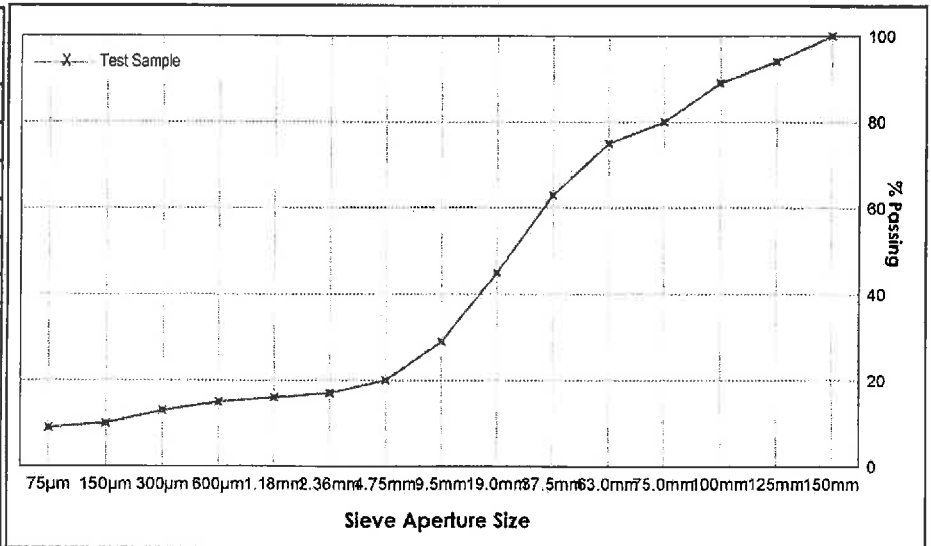
Client: K.B. Contracting & Quarries Limited
Address: PO Box 19746, Woolston, Christchurch 8241
Client Ref: Not Advised
Job Location: New Quarry
Material: Pit run
Material Source: KB's Quarries McLeans Island

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.

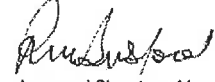
Report No: MDD:CAN14S-12828
Issue No: 1

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.

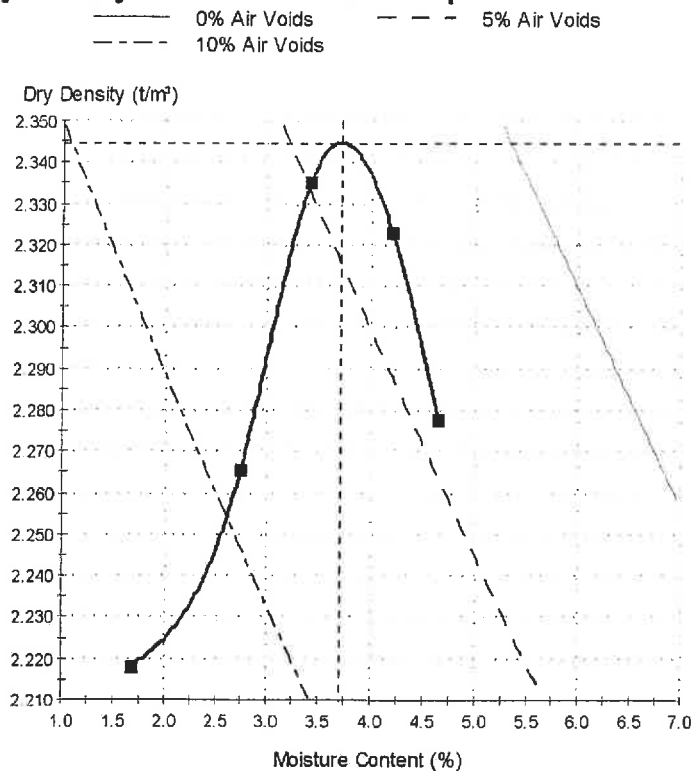
Approved Signatory: Max Burford
 (Supervisor)
 IANZ Accreditation No:200
 Date of Issue: 25/06/14

Sample Details

Sample ID: CAN14S-12828
Material: Pit Run
Site/Sampled From: KB's McLeans Island Quarry
Specification: No Specification (Coarse)
Sampling Method: Stated to be NZS 4407:1991 2.4.6.2.1
Technician: Greg Orr

Client Sample ID: Lab Ref 1381/14
Sample Source: Field Sample [Taken From Site]
Date Sampled: 20/06/2014
Sampled By: Advised - See Comments
Date Tested: 25/06/2014
Sampling Endorsed?: No

Dry Density - Moisture Relationship



Test Results

————— NZS 4402:1986 Test 4.1.3 - 1986 —————
Maximum Dry Density (t/m³): 2.34
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

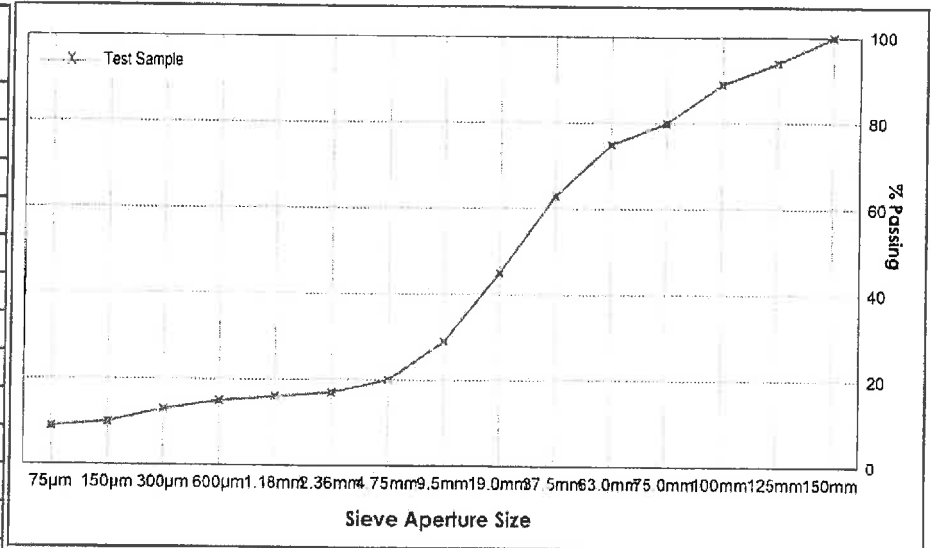
Test Report

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


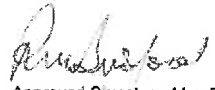


All tests reported herein have been performed in accordance with the laboratory's scope of accreditation. This report may not be reproduced except in full.

Report No: MDD:CAN14S-12828

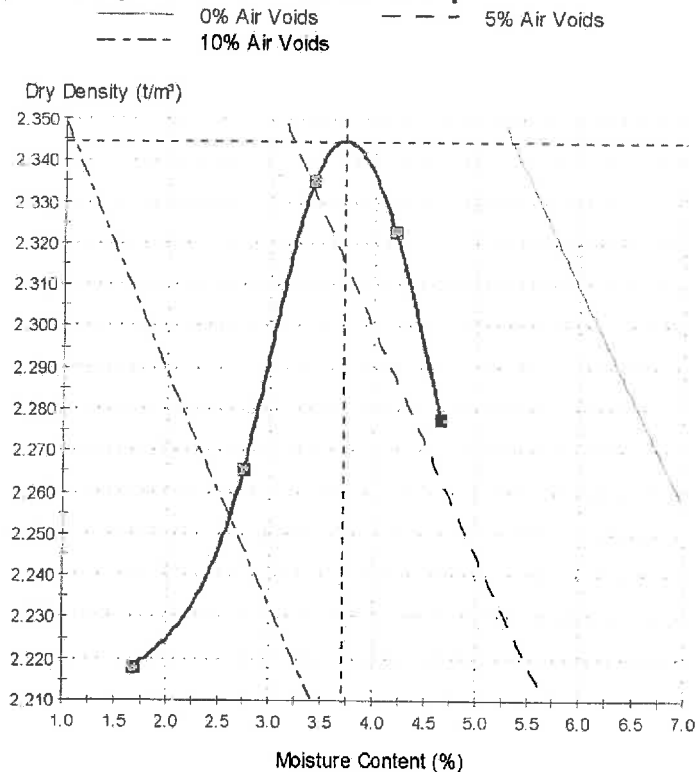
Issue No: 1

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



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.



Max Burford

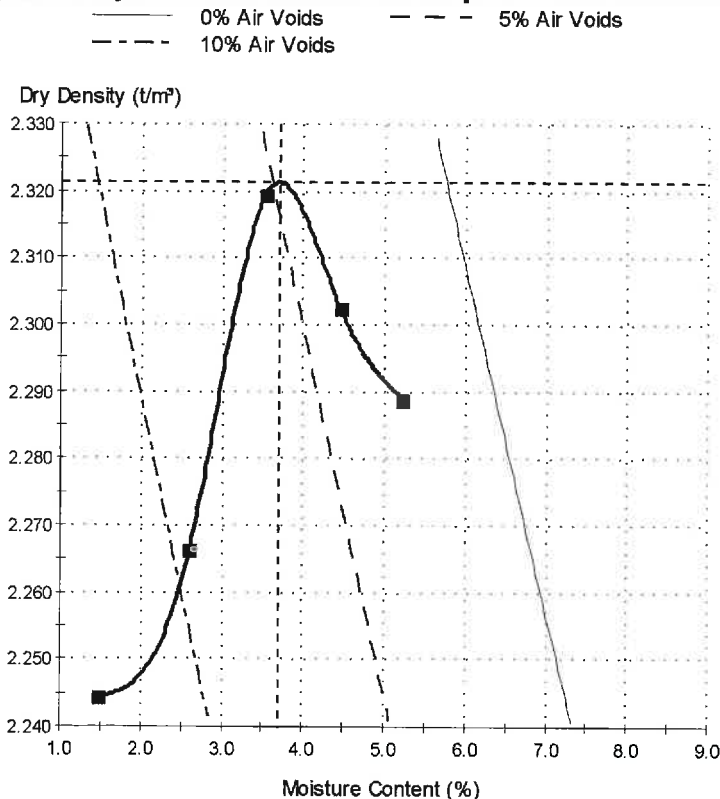
Approved Signatory: Max Burford
 (Supervisor)
 IANZ Accreditation No:200
 Date of Issue: 03/06/14

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

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.

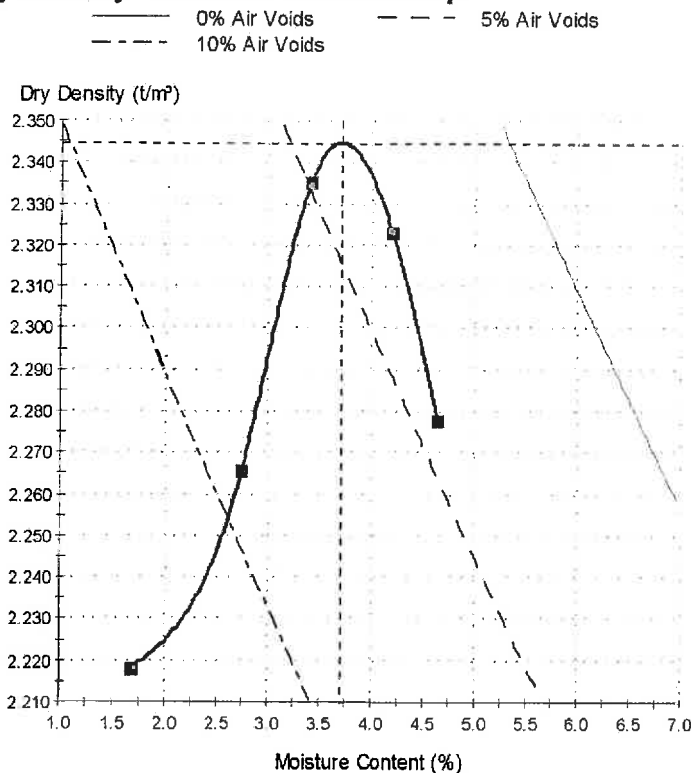
IANZ
 ACCREDITED LABORATORY

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

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

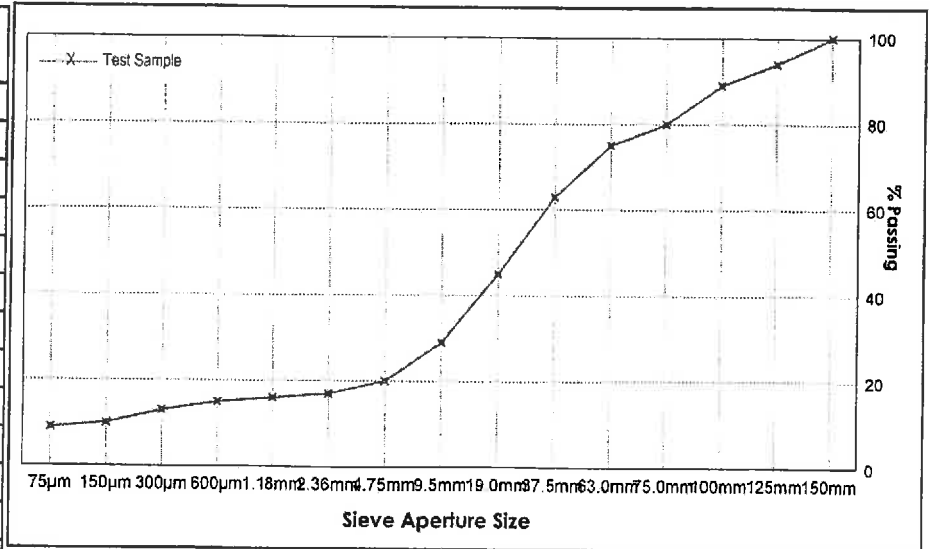
Sample Date: 11-Oct-2013 11:00
Sampled By: Declan McGowan
Laboratory No: C13/2221
Report No: 158619
Report Date: 18-Oct-2013
Replacement
 Page 1 of 1

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


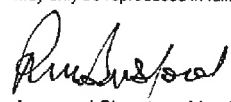
Craig Kelly
 Approved Signatory
 Laboratory Technician
 IANZ Accreditation No: 439
 Date of Issue: 10/04/92



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.

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	

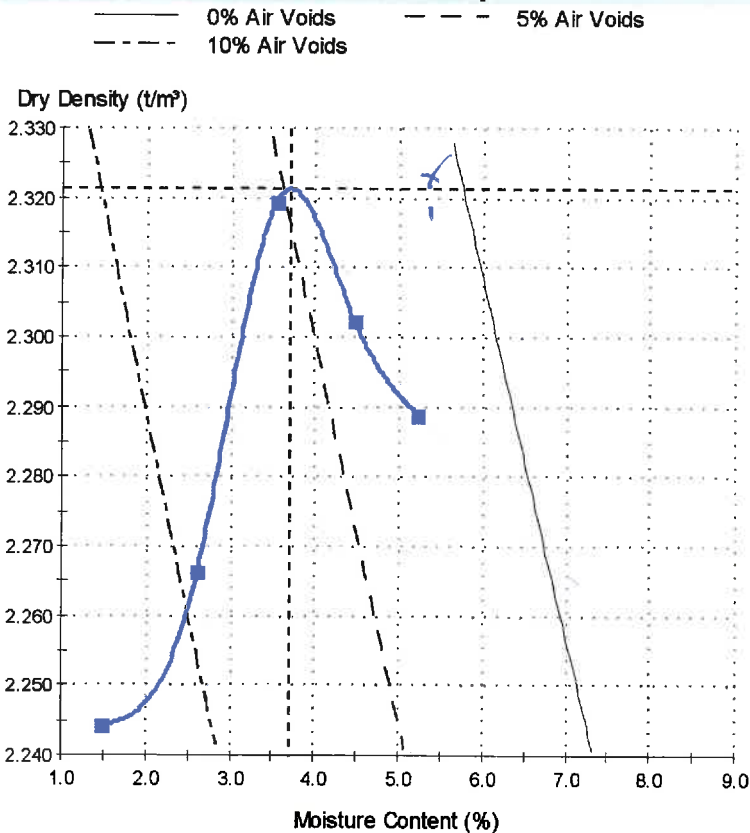
Maximum Dry Density Report

Client: Toni O'Regan City Care Limited PO Box 7669 Sydenham Christchurch 8240	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.
Project: QA Testing - City Care Ltd	  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

CITY CARE LABORATORY

~~PREPARED~~

Nuclear Density Test – Backscatter
 Nuclear Density Test (NZS 4407:1991 Test 4.2.2)

Lab Reference: (1601 114)
 (Test Number / Year)

Material: PIT RUN MCLAINS ISLAND Gauge Used: 65636
 Location: CDL PRESTONS. WEST SIDE LIFT II 4
 Client: KBS. Contact Name: A HODGSON.
 Tested By: L.S. Date of Test: 11-7-14 Count Time: ~~Fast~~ (Normal) Slow

Minimum PPE Required: Hard Hat Safety Glasses Gloves Carried Hi Vis Sun Protection

Familiar with City Care Health and Safety Plan:

1. All Worksites 7. Laboratory 30. All Vehicles and Plant 4. Office Work

(Eliminate / Isolate / Minimise) Any Site Specific Hazards and controls taken? (Sign into site, working plant, traffic etc.)

PLATEAU TEST

Target Density: 2340 Lab Ref: _____ Date of Issue: _____

Moisture Standard: 693 Density Standard: 2313.

Site Number	Dry Density (kg/m³)	Dry Density (corrected)	Wet Density (kg/m³)	Wet Density (corrected)	Moisture Content (%)	Moisture Content (corrected)	Percent Compaction	
	ROLLER TYPE		BOMAG.	WEIGHT	28000 KS.			
			WET	STATIC.				
1	x2	2162	2160	2275	2280	5.2	5.0	92.4
2	x4	2181	2180	2287	2290	4.9	5.0	93.2
3	x6	2186	2190	2291	2290	4.8	5.0	93.4
4	x8	2254	2250	2360	2360	4.7	4.5	96.3
5	x10	2252	2250	2370	2370	5.2	5.0	96.2
7	x12	2279	2280	2397	2400	5.2	5.0	97.4
8	x14	2267	2270	2381	2380	5.0	5.0	96.9
9	x16	2271	2270	2384	2380	5.0	5.0	97.0
10	x18	2262	2260	2368	2370	4.7	4.5	96.7
11	x20	2308	2310	2431	2430	5.4	5.5	98.6
12	x22	2313	2310	2429	2430	5.0	5.0	98.8
13	x24	2259	2260	2368	2370	4.8	5.0	96.6
14	x26	2224	2220	2346	2350	5.2	5.0	95.1
		2244	2240	2359	2360	5.1	5.0	95.9

Notes:

PRELIMINARY

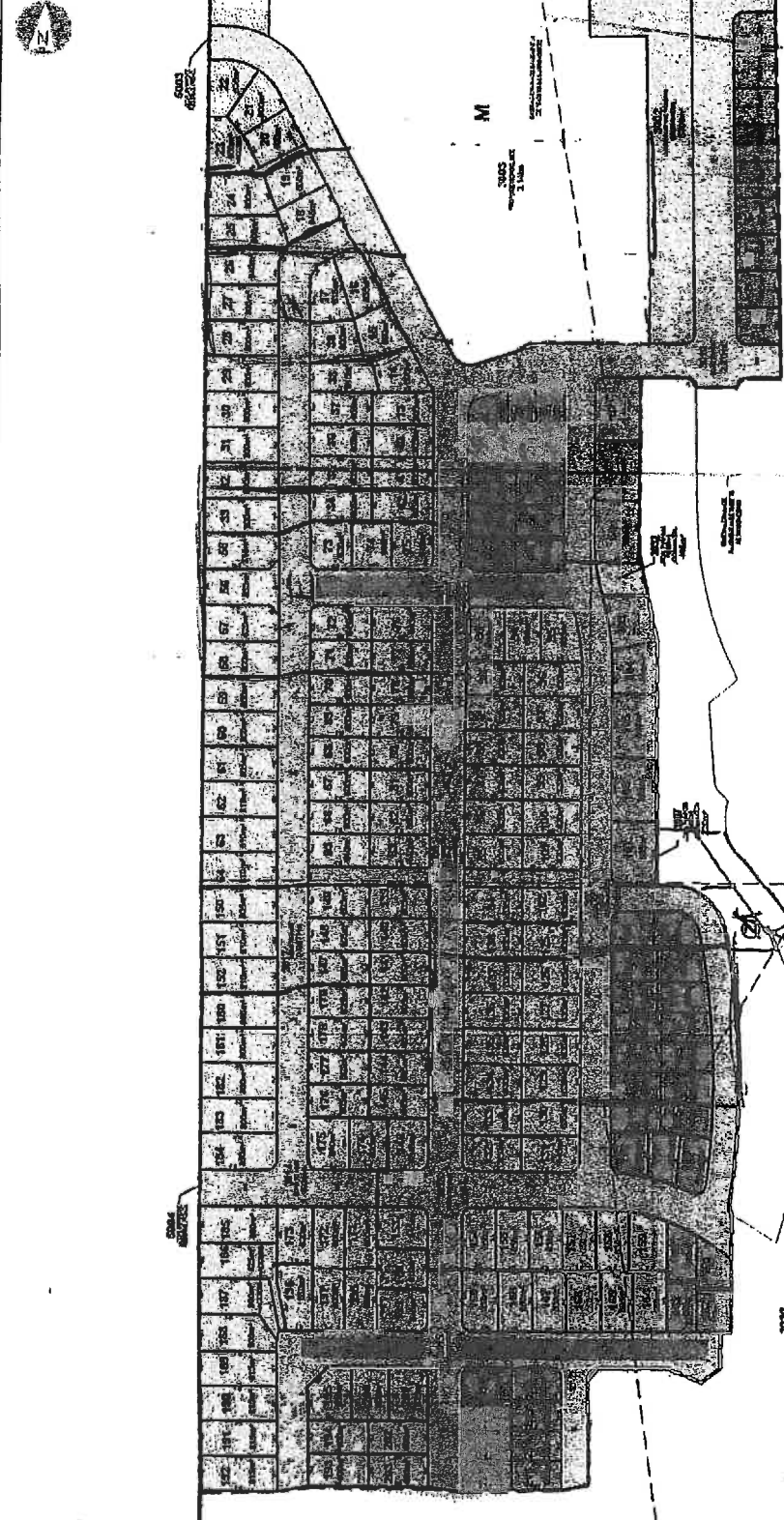
160114

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 40-50m²
- PROPOSED RESIDENTIAL ALLOTMENTS 20-40m²
- PROPOSED RESIDENTIAL ALLOTMENTS 10-20m²
- PROPOSED RESIDENTIAL ALLOTMENTS 5m² & OTHER

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PROCESSED SUBDIVISION OF PLOTS 3716, 3717, 3718, 3719, 3720, 3721, 3722, 3723, 3724, 3725, 3726, 3727, 3728, 3729, 3730, 3731, 3732, 3733, 3734, 3735, 3736, 3737, 3738, 3739, 3740, 3741, 3742, 3743, 3744, 3745, 3746, 3747, 3748, 3749, 3750, 3751, 3752, 3753, 3754, 3755, 3756, 3757, 3758, 3759, 3760, 3761, 3762, 3763, 3764, 3765, 3766, 3767, 3768, 3769, 3770, 3771, 3772, 3773, 3774, 3775, 3776, 3777, 3778, 3779, 3780, 3781, 3782, 3783, 3784, 3785, 3786, 3787, 3788, 3789, 3790, 3791, 3792, 3793, 3794, 3795, 3796, 3797, 3798, 3799, 3800, 3801, 3802, 3803, 3804, 3805, 3806, 3807, 3808, 3809, 3810, 3811, 3812, 3813, 3814, 3815, 3816, 3817, 3818, 3819, 3820, 3821, 3822, 3823, 3824, 3825, 3826, 3827, 3828, 3829, 3830, 3831, 3832, 3833, 3834, 3835, 3836, 3837, 3838, 3839, 3840, 3841, 3842, 3843, 3844, 3845, 3846, 3847, 3848, 3849, 3850, 3851, 3852, 3853, 3854, 3855, 3856, 3857, 3858, 3859, 3860, 3861, 3862, 3863, 3864, 3865, 3866, 3867, 3868, 3869, 3870, 3871, 3872, 3873, 3874, 3875, 3876, 3877, 3878, 3879, 3880, 3881, 3882, 3883, 3884, 3885, 3886, 3887, 3888, 3889, 3890, 3891, 3892, 3893, 3894, 3895, 3896, 3897, 3898, 3899, 3900, 3901, 3902, 3903, 3904, 3905, 3906, 3907, 3908, 3909, 3910, 3911, 3912, 3913, 3914, 3915, 3916, 3917, 3918, 3919, 3920, 3921, 3922, 3923, 3924, 3925, 3926, 3927, 3928, 3929, 3930, 3931, 3932, 3933, 3934, 3935, 3936, 3937, 3938, 3939, 3940, 3941, 3942, 3943, 3944, 3945, 3946, 3947, 3948, 3949, 3950, 3951, 3952, 3953, 3954, 3955, 3956, 3957, 3958, 3959, 3960, 3961, 3962, 3963, 3964, 3965, 3966, 3967, 3968, 3969, 3970, 3971, 3972, 3973, 3974, 3975, 3976, 3977, 3978, 3979, 3980, 3981, 3982, 3983, 3984, 3985, 3986, 3987, 3988, 3989, 3990, 3991, 3992, 3993, 3994, 3995, 3996, 3997, 3998, 3999, 4000



WEST SIDE
LIFT #4
PLATEAU TEST

COMPREP BY: CPT. DESIGN & CONSTRUCTION
DATE: 15/06/2015

TOTAL AREA: 13,000m²

PREPARED BY: K. M. SHERIDAN
DATE: 15/06/2015

NOTES:
1. THIS PLAN IS A PRELIMINARY PLAN AND IS SUBJECT TO FINAL SURVEY.
2. AREAS AND DIMENSIONS ARE APPROXIMATE ONLY & SUBJECT TO FINAL SURVEY.

EASEMENT X DIAGRAM

SCALE 1:1000

0 50 100m

PIT RUN - MINORS QUARRY

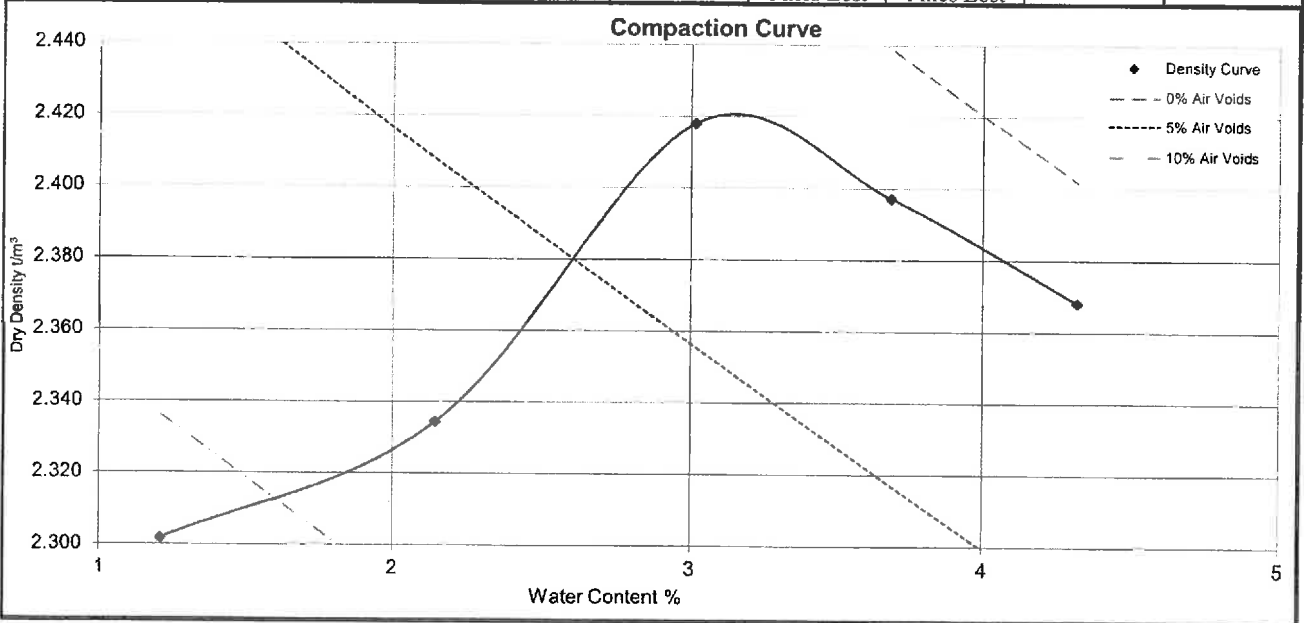
**DRY DENSITY / WATER CONTENT RELATIONSHIP
VIBRATING COMPACTION**



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.
 This report may only be reproduced in full

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.



Max Burford

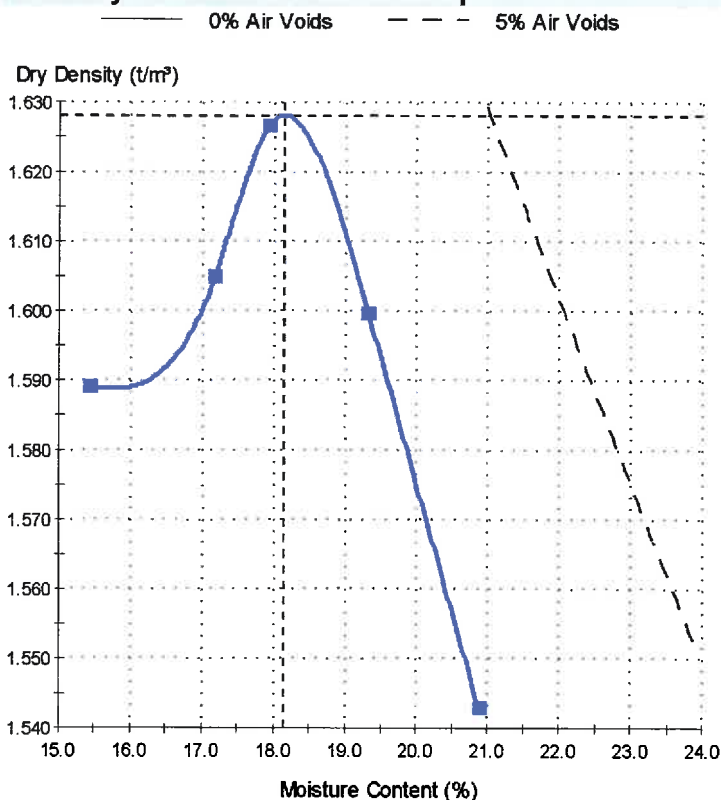
Approved Signatory: Max Burford
 (Supervisor)
 IANZ Accreditation No:200
 Date of Issue: 07/11/14

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.



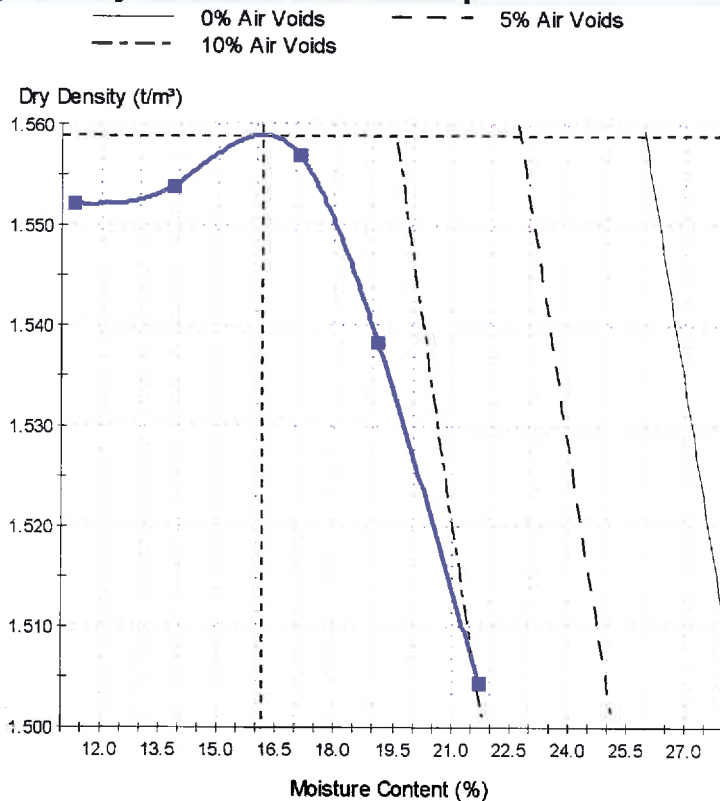
Max Burford
Approved Signatory: Max Burford
(Supervisor)
IANZ Accreditation No:200
Date of Issue: 11/06/14

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.

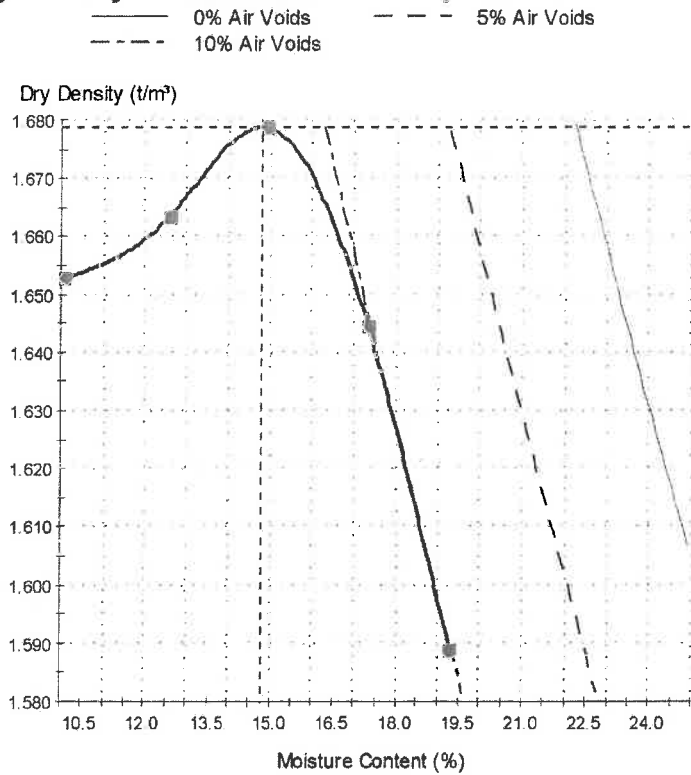


Max Burford
 Approved Signatory: Max Burford
 (Supervisor)
 IANZ Accreditation No.200
 Date of Issue: 11/04/14

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

Dry Density - Moisture Relationship



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


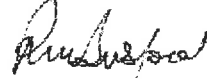
Maximum Dry Density Report

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

 Christchurch 8240

Project: QA Testing - City Care Ltd

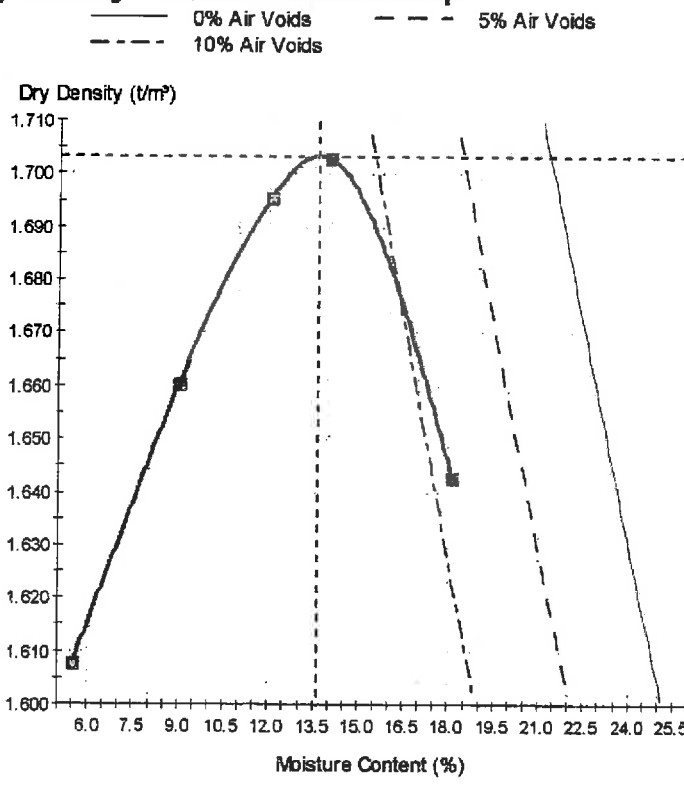
The test (s) reported herein (unless indicated) have been performed in accordance with the laboratory's scope of accreditation. Results only apply to samples as received. This report must be reproduced in full.

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

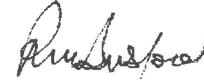
Maximum Dry Density Report

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.

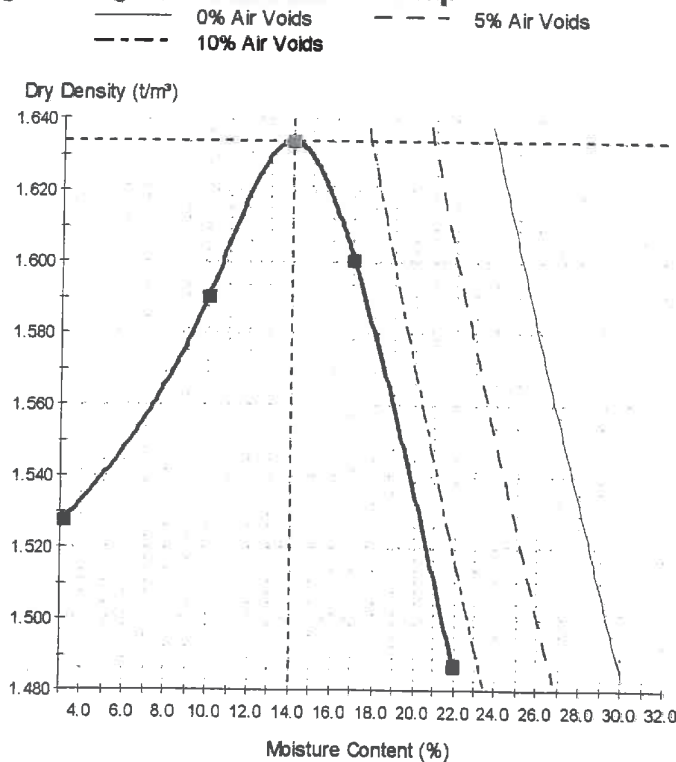
Approved Signatory: Max Burford
 (Supervisor)
 IANZ Accreditation No:200
 Date of issue: 06/03/14

Sample Details

Sample ID: CAN14S-05061
Material: BEACH SAND
Site/Sampled From: Prestons Road Alpine V Site B
Specification: No Specification
Sampling Method: As Received - Not Accredited
Technician: Daniel Daly

Client Sample ID: 0429/14 Site B
Sample Source: Field Sample [Taken From Site]
Date Sampled: 25/02/2014
Sampled By: Advised - See Comments
Date Tested: 06/03/2014
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

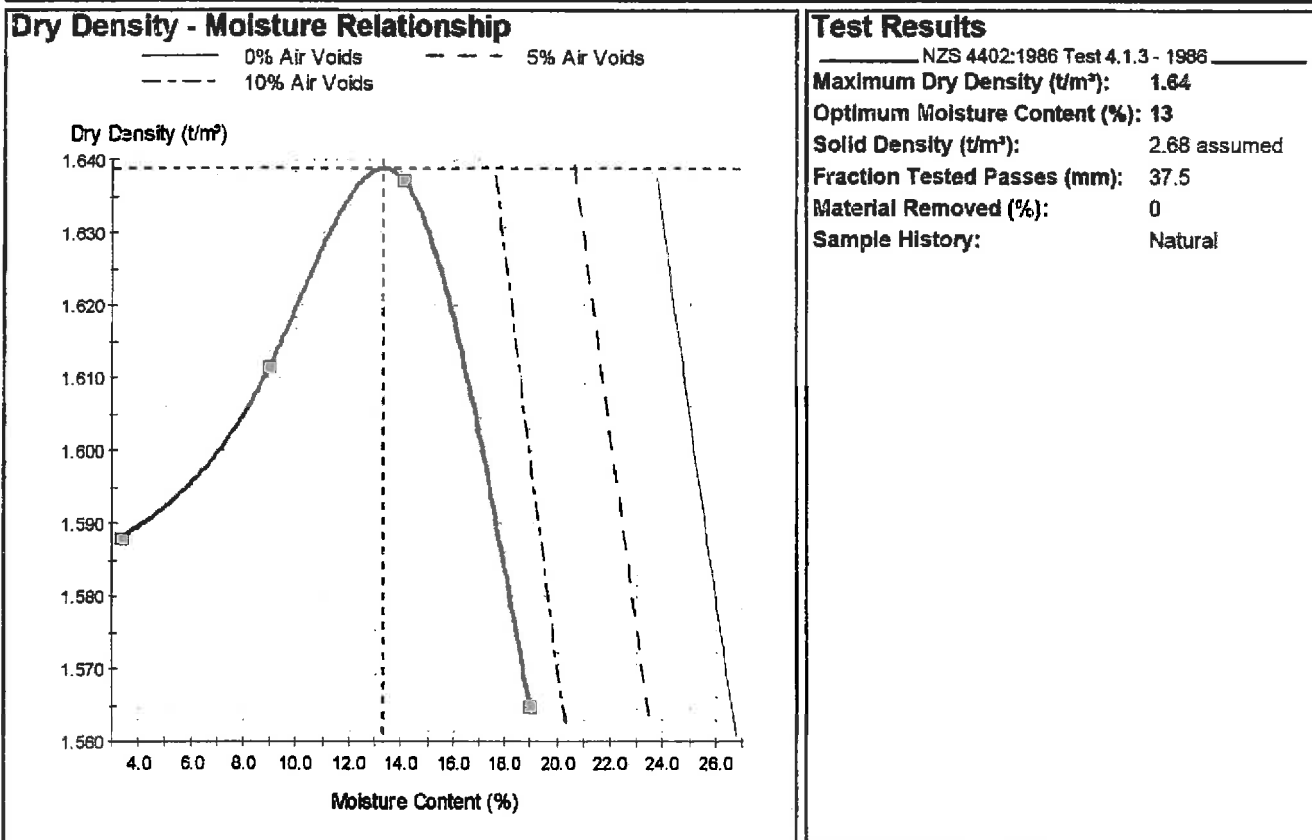
Report No: MDD:CAN14S-05062

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: 06/03/14
--	---

Sample Details	
Sample ID: CAN14S-05062	Client Sample ID: 0430/14 Site C
Material: BEACH SAND	Sample Source: Field Sample [Taken From Site]
Site/Sampled From: Prestons Road Alpine V Site C	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



Comments 35% MEDIUM SAND 50% fine sand & 15% silt

Report No: MDD:CAN14S-08055


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

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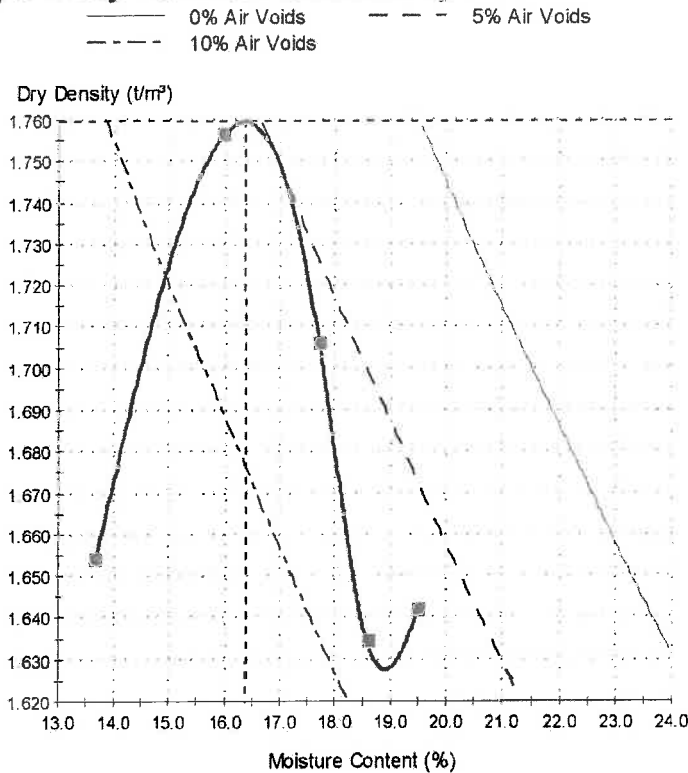
Max Burford
 Approved Signatory: Max Burford
 (Supervisor)
 IANZ Accreditation No 200
 Date of Issue: 11/04/14

Sample Details

Sample ID: CAN14S-08055
Material: Silty Sand
Site/Sampled From: CDL Prestons Road Site D
Specification: No Specification
Sampling Method: As Received - Not Accredited
Technician: Greg Orr

Client Sample ID: 0826/14 - MF, LS
Sample Source: Miscellaneous Material Source
Date Sampled: 02/04/2014
Sampled By: Mark Foster
Date Tested: 11/04/2014
Sampling Endorsed?: No

Dry Density - Moisture Relationship



Test Results

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

Maximum Dry Density (t/m³): 1.76
Optimum Moisture Content (%): 16
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 medium FINE SAND with some silt
 1% coarse sand 29% medium sand with 50% FINE SAND and 20% silt

Report No: MDD:CAN14S-07948
Issue No: 1


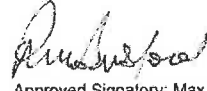
Maximum Dry Density Report

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.

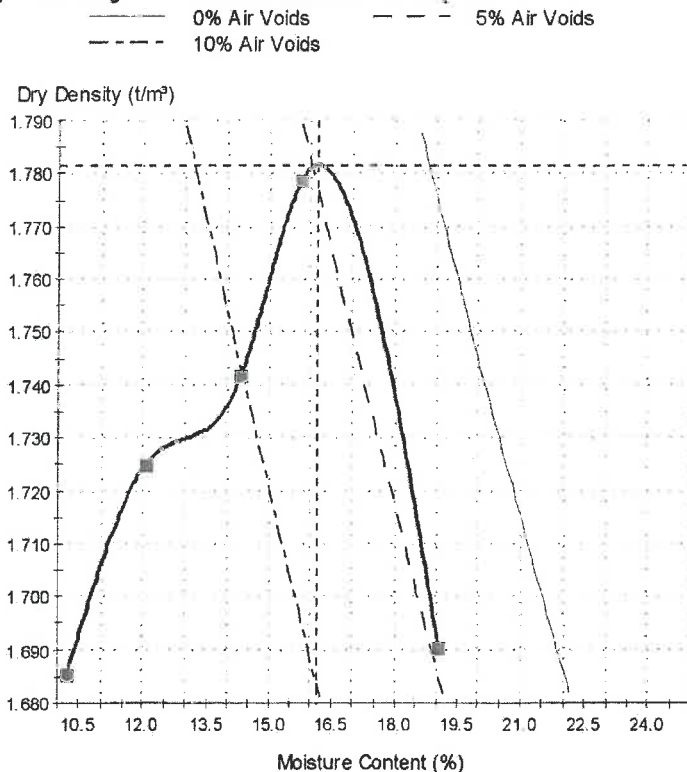



Approved Signatory: Max Burford
 (Supervisor)
 IANZ Accreditation No:200
 Date of Issue: 11/04/14

Sample Details

Sample ID:	CAN14S-07948	Client Sample ID:	0827/14 - MF, LS
Material:	Silty Sand	Sample Source:	Miscellaneous Material Source
Site/Sampled From:	CDL Prestons Road, Site E	Date Sampled:	02/04/2014
Specification:	No Specification	Sampled By:	Mark Foster
Sampling Method:	As Received - Not Accredited	Date Tested:	09/04/2014
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): 1.78

Optimum Moisture Content (%): 16

Solid Density (t/m³): 2.68

Fraction Tested Passes (mm): 37.5

Material Removed (%): 0

Sample History: Natural

Comments

Material is best described as silty FINE SAND
 30% silt and 70% fine sand

Report No: MDD:CAN14S-08057
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.



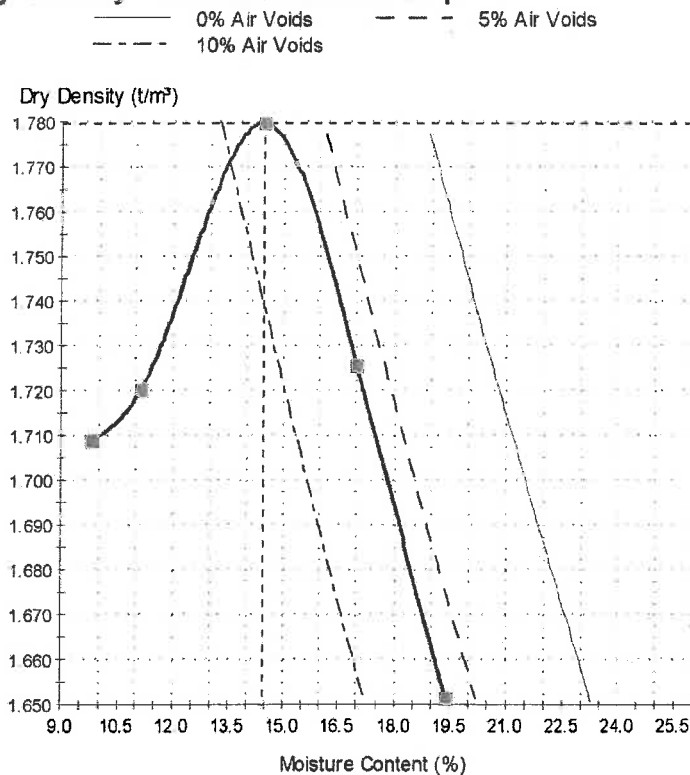

Approved Signatory: Max Burford
 (Supervisor)
 IANZ Accreditation No:200
 Date of Issue: 11/04/14

Sample Details

Sample ID: CAN14S-08057
Material: Silty SAND
Site/Sampled From: CDL Prestons Road Site F
Specification: No Specification (Fine)
Sampling Method: As Received - Not Accredited
Technician: Greg Orr

Client Sample ID: 0828/14 - MF, LS
Sample Source: Field Sample [Taken From Site]
Date Sampled: 02/04/2014
Sampled By: Mark Foster
Date Tested: 11/04/2014
Sampling Endorsed?: No

Dry Density - Moisture Relationship



Test Results

——— NZS 4402:1986 Test 4.1.3 - 1986 ———
Maximum Dry Density (t/m³): 1.78
Optimum Moisture Content (%): 14
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 silty FINE SAND
 28% silt 70% fine sand and 2% medium sand

Report No: MDD:CAN14S-08006
Issue No: 1

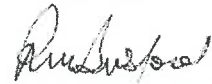
Maximum Dry Density Report

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.

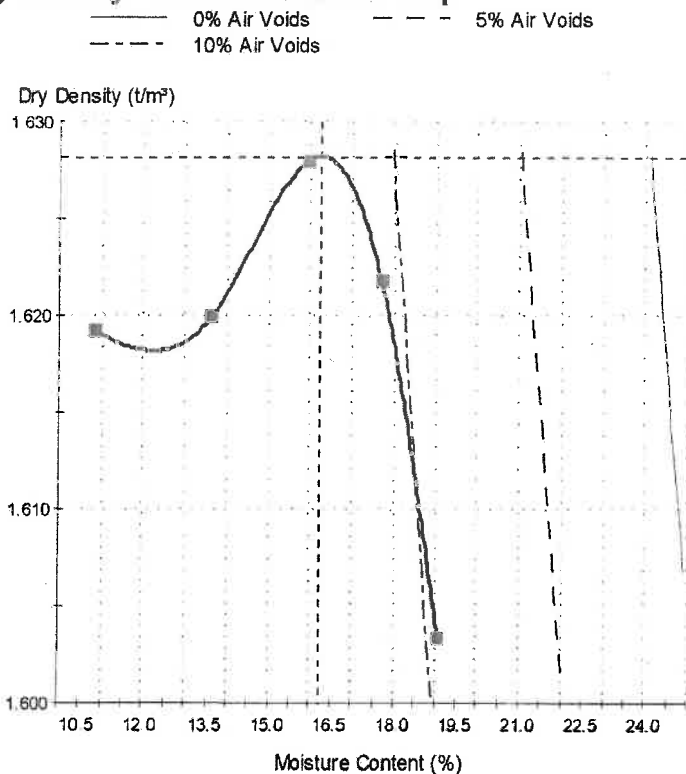



Approved Signatory: Max Burford
 (Supervisor)
 IANZ Accreditation No:200
 Date of Issue: 11/04/14

Sample Details

Sample ID:	CAN14S-08006	Client Sample ID:	0829/14 - MF, LS
Material:	BEACH SAND	Sample Source:	Field Sample [Taken From Site]
Site/Sampled From:	CDL Prestons Road, Site G	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

Dry Density - Moisture Relationship



Test Results

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

Maximum Dry Density (t/m³): 1.62

Optimum Moisture Content (%): 16

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 BEACH SAND
 55% medium sand with 43% fine sand with 2% silt

Report No: MDD:CAN14S-25525

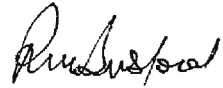
Issue No: 1

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.

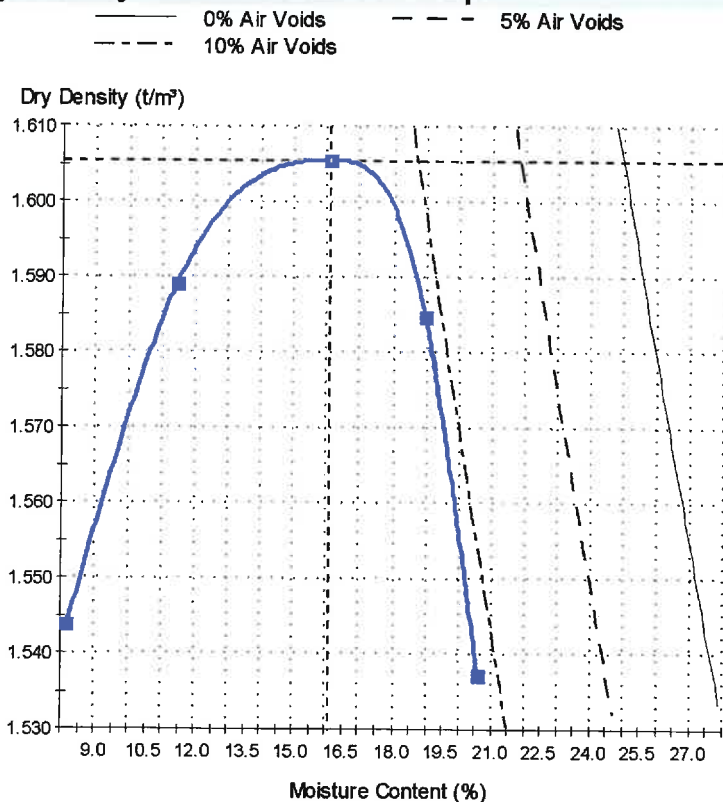



Approved Signatory: Max Burford
 (Supervisor)
 IANZ Accreditation No:200
 Date of Issue: 15/12/14

Sample Details

Sample ID:	CAN14S-25525	Client Sample ID:	3092/14
Material:	Sand	Sample Source:	Field Sample [Taken From Site]
Site/Sampled From:	Test Site # 1	Date Sampled:	08/12/2014
Specification:	No Specification (Fine)	Sampled By:	Advised - See Comments
Sampling Method:	Not Advised - Not Accredited	Date Tested:	15/12/2014
Technician:	Marc Bos	Sampling Endorsed?:	No

Dry Density - Moisture Relationship



Test Results

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

Maximum Dry Density (t/m³):	1.60
Optimum Moisture Content (%):	16
Solid Density (t/m³):	2.68 assumed
Fraction Tested Passes (mm):	37.5
Material Removed (%):	0
Sample History:	Natural

Comments

Sampled by LS



Report No: MDD:CAN14S-25526

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

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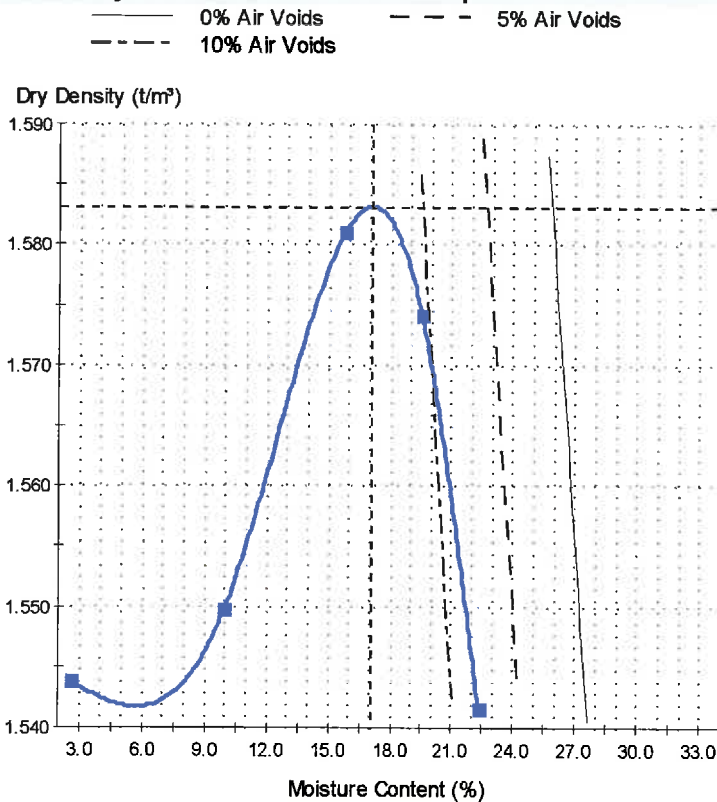
Max Burford

Approved Signatory: Max Burford
 (Supervisor)
 IANZ Accreditation No:200
 Date of Issue: 15/12/14

Sample Details

Sample ID: CAN14S-25526	Client Sample ID: 3093/14
Material: Sand	Sample Source: Field Sample [Taken From Site]
Site/Sampled From: Site # J	Date Sampled: 08/12/2014
Specification: No Specification (Fine)	Sampled By: Advised - See Comments
Sampling Method: As Received - Not Accredited	Date Tested: 15/12/2014
Technician: Marc Bos	Sampling Endorsed?: No

Dry Density - Moisture Relationship



Test Results

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

Maximum Dry Density (t/m³): 1.58

Optimum Moisture Content (%): 17

Solid Density (t/m³): 2.68 assumed

Fraction Tested Passes (mm): 37.5

Material Removed (%): 0

Sample History: Natural

Comments

Sampled by LS

Report No: MDD:CAN14S-25527

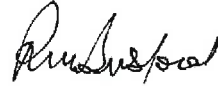
Issue No: 1

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.

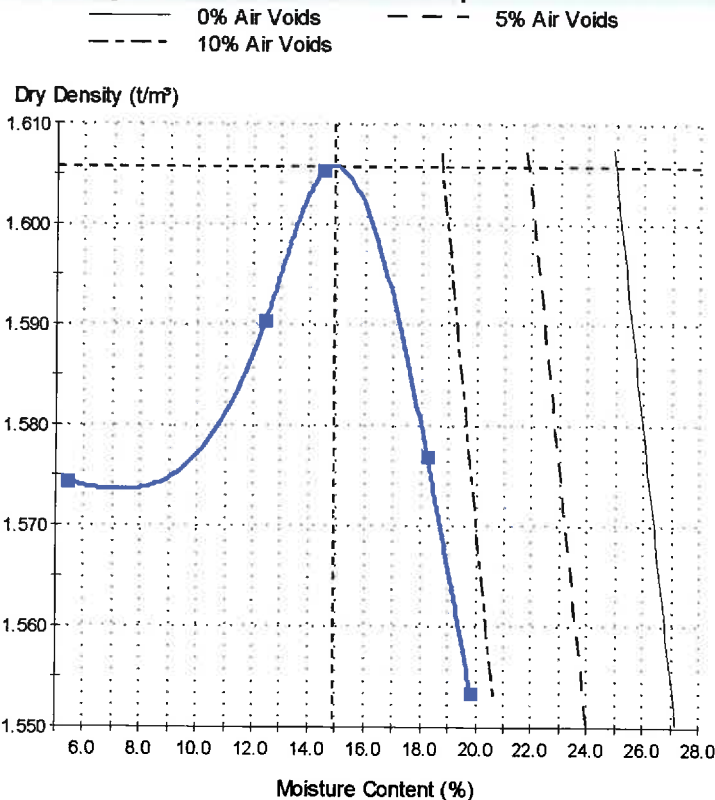



Approved Signatory: Max Burford
 (Supervisor)
 IANZ Accreditation No:200
 Date of Issue: 15/12/14

Sample Details

Sample ID: CAN14S-25527	Client Sample ID: 3094/14
Material: Sand	Sample Source: Field Sample [Taken From Site]
Site/Sampled From: CDC Prestons Sample K	Date Sampled: 08/12/2014
Specification: No Specification (Fine)	Sampled By: Advised - See Comments
Sampling Method: As Received - Not Accredited	Date Tested: 15/12/2014
Technician: Marc Bos	Sampling Endorsed?: No

Dry Density - Moisture Relationship



Test Results

NZS 4402:1986 Test 4.1.3 - 1986

Maximum Dry Density (t/m³): 1.60

Optimum Moisture Content (%): 15

Solid Density (t/m³): 2.68 assumed

Fraction Tested Passes (mm): 37.5

Material Removed (%): 0

Sample History: Natural

Comments

Sampled by LS

SWALE AREA A

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-11317

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

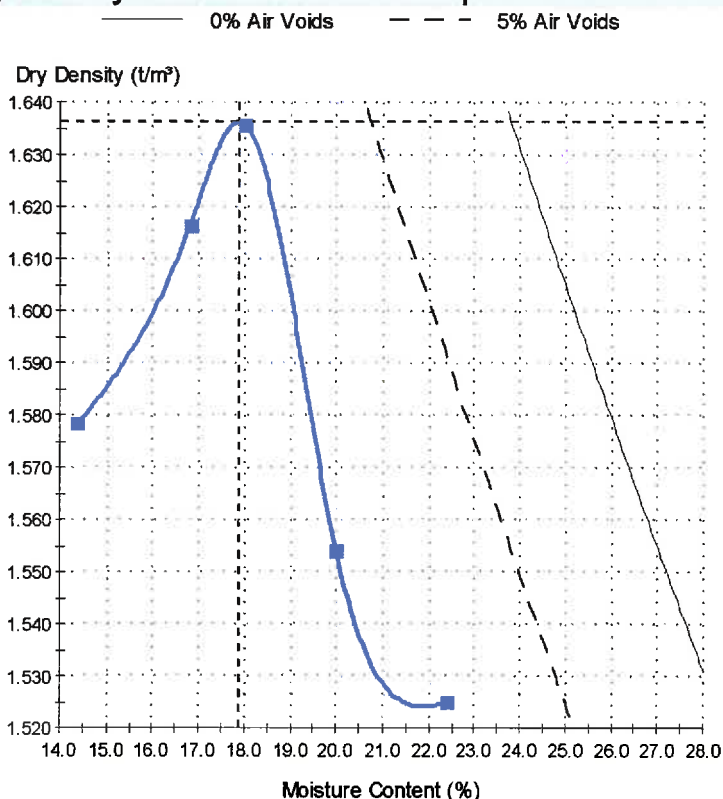
Approved Signatory: Max Burford
 (Supervisor)
 IANZ Accreditation No:200
 Date of Issue: 30/05/14

Sample Details

Sample ID: CAN14S-11317
Material: BEACH SAND
Site/Sampled From: CDL Prestons Rd, Swale Area A
Specification: No Specification
Sampling Method: As Received - Not Accredited
Technician: Atu Rova

Client Sample ID: Lab Ref 1181/14
Sample Source: Field Sample [Taken From Site]
Date Sampled: 27/05/2014
Sampled By: Mark Foster
Date Tested: 30/05/2014
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 (%): 18
Solid Density (t/m³): 2.68 assumed
Fraction Tested Passes (mm): 37.5
Material Removed (%): 0
Sample History: Natural

Comments

The material is best described as FINE SAND with less 5% of medium sand and silt

Report No: MDD:CAN14S-15900



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.

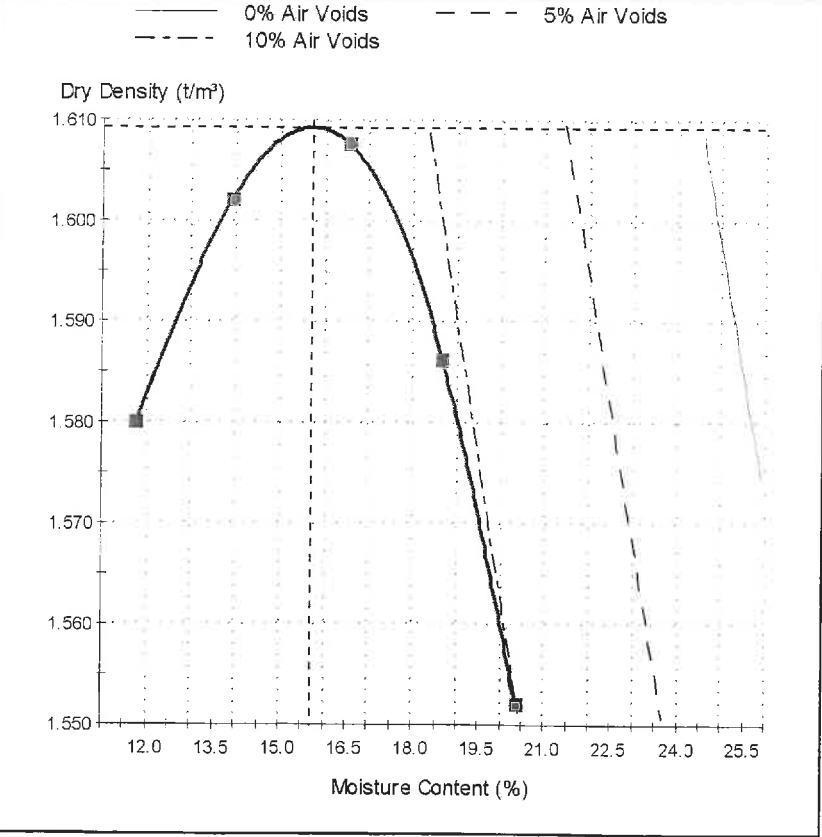



Approved Signatory: Max Burford
 (Supervisor)
 IANZ Accreditation No:200
 Date of Issue: 13/08/14

Sample Details

Sample ID: CAN14S-15900	Client Sample ID: Lab ref:1833/14
Material: BEACH SAND	Sample Source: Field Sample [Taken From Site]
Site/Sampled From: CDL Prestons Road Swale Area B	Date Sampled: 07/08/2014
Specification: No Specification	Sampled By: Advised - See Comments
Sampling Method: Stated to be NZS 4407:1991 2.4.6.2.2	Date Tested: 13/08/2014
Technician: Max Burford	Sampling Endorsed?: No

Dry Density - Moisture Relationship



Test Results

— NZS 4402:1986 Test 4.1.3 - 1986 —

Maximum Dry Density (t/m³): 1.60

Optimum Moisture Content (%): 16

Solid Density (t/m³): 2.66 assumed

Fraction Tested Passes (mm): 37.5

Material Removed (%): 0

Sample History: Natural

Comments

Sampled by RR
 Material is best described as FINE SAND with minor medium sand