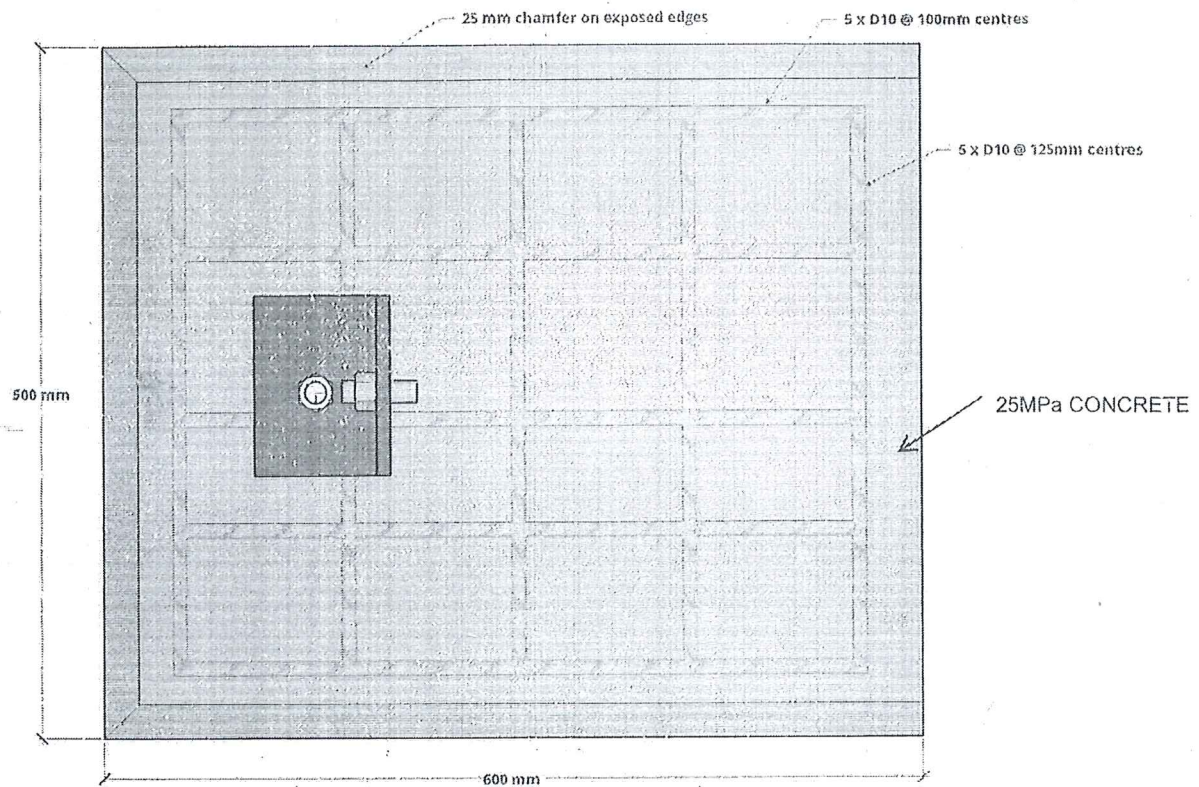


Storage Container Foundation Details

230321-SK-C0001 R0

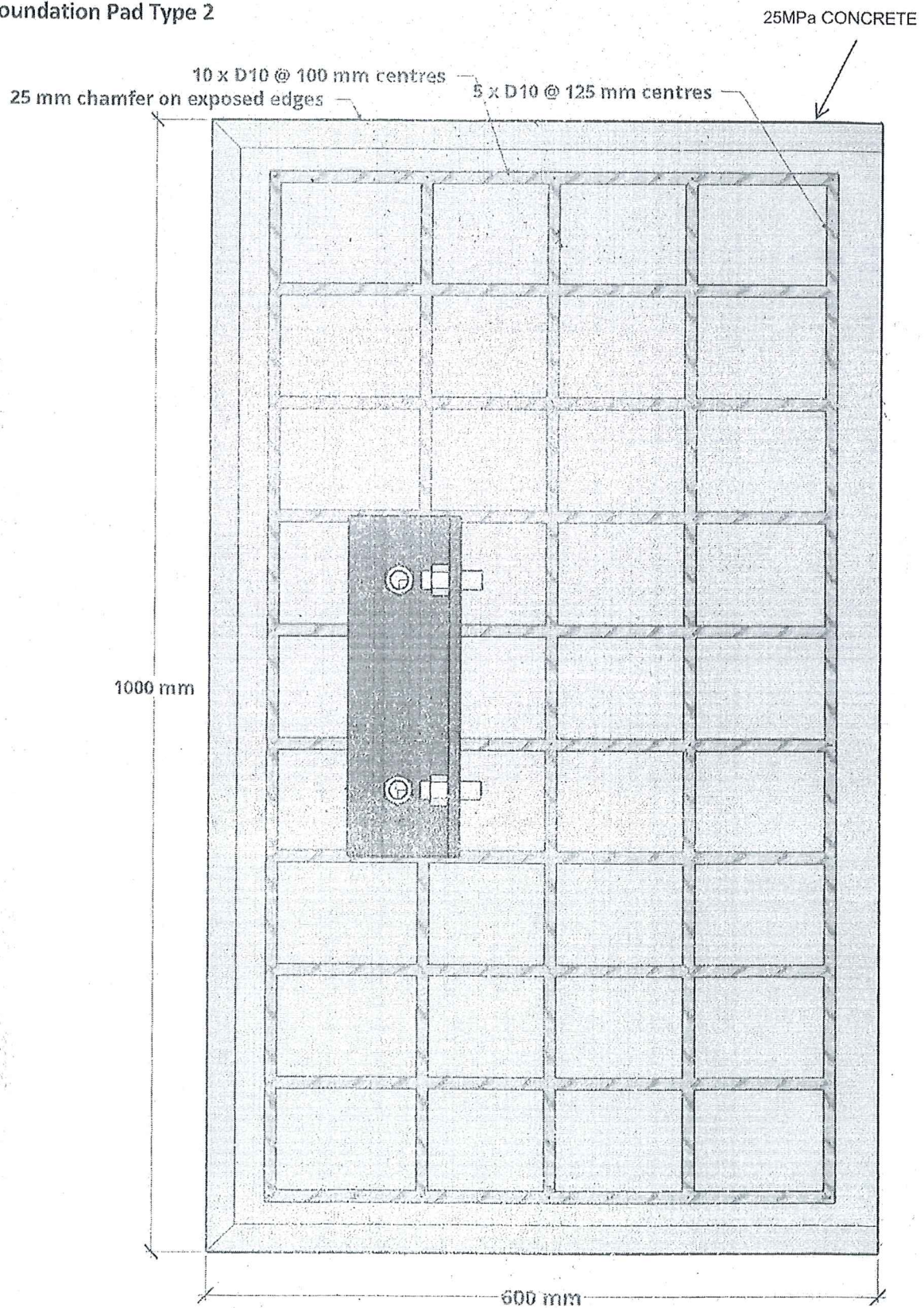
26/05/2023

Foundation Pad Type 1



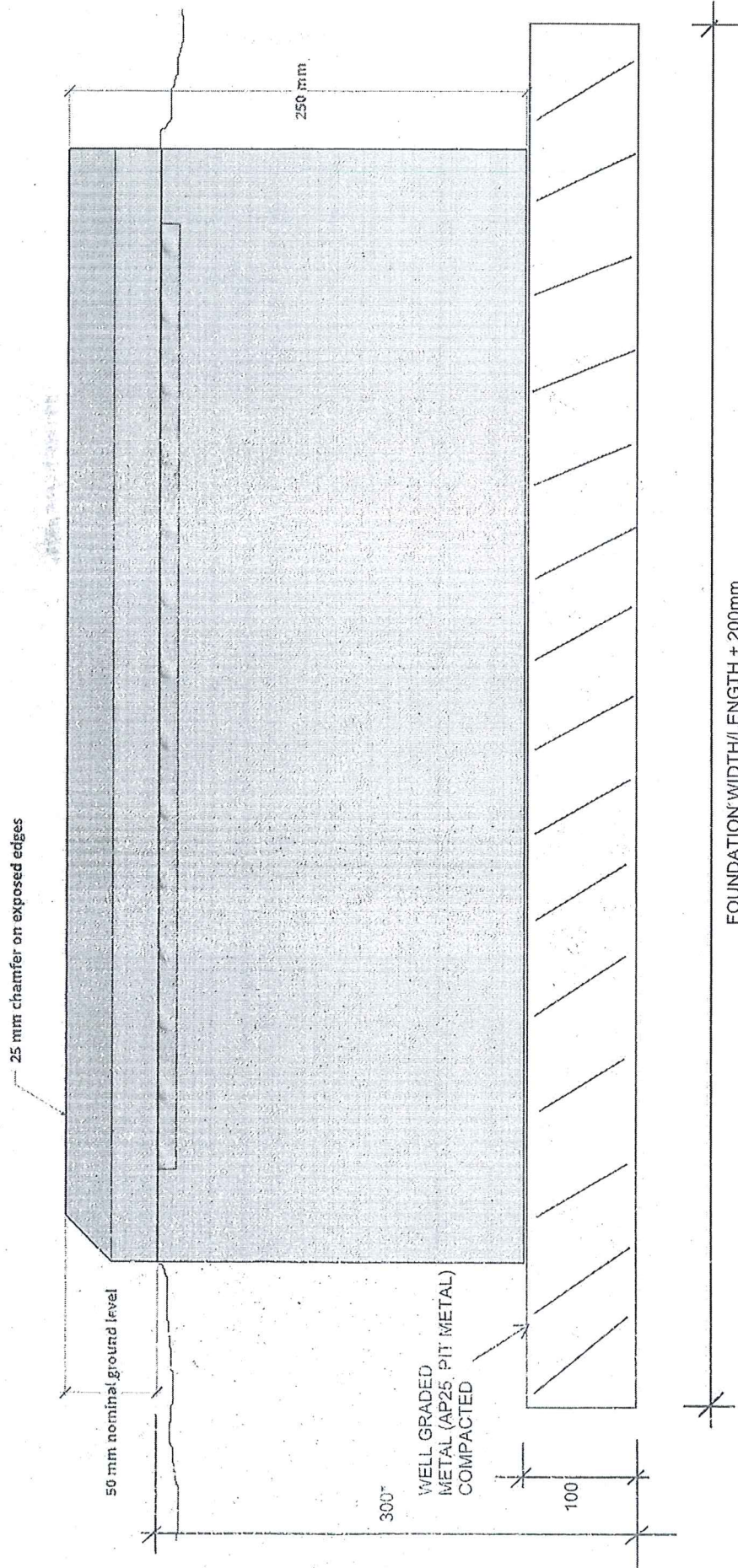
- 50mm SIDE and TOP COVER TO REINFORCING
- ALL REINFORCING TO BE MINIMUM GRADE 300E
- ALL CONCRETE WORK TO COMPLY WITH NZS 3109 - CONCRETE CONSTRUCTION

Foundation Pad Type 2



- 50mm SIDE and TOP COVER TO REINFORCING
- ALL REINFORCING TO BE MINIMUM GRADE 300E
- ALL CONCRETE WORK TO COMPLY WITH NZS 3109 - CONCRETE CONSTRUCTION

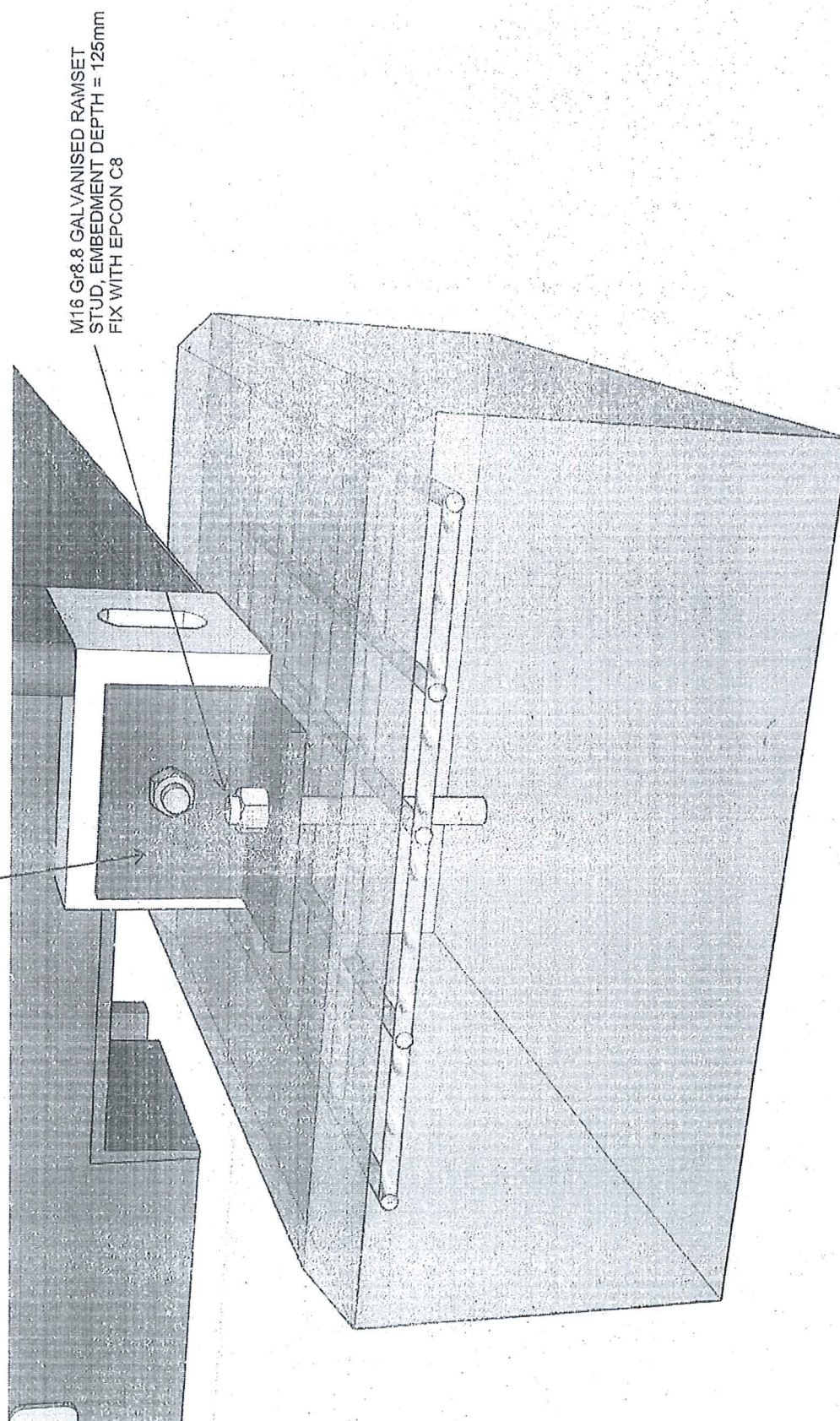
Pad Elevation



*REMOVE ORGANIC DARK BROWN TOPSOIL TO A DEPTH OF APPROXIMATELY 300mm AS PER GEOTECH REPORT RECOMMENDATIONS.

HOLD DOWN BRACKET EX 100 X 10EA Gr 300

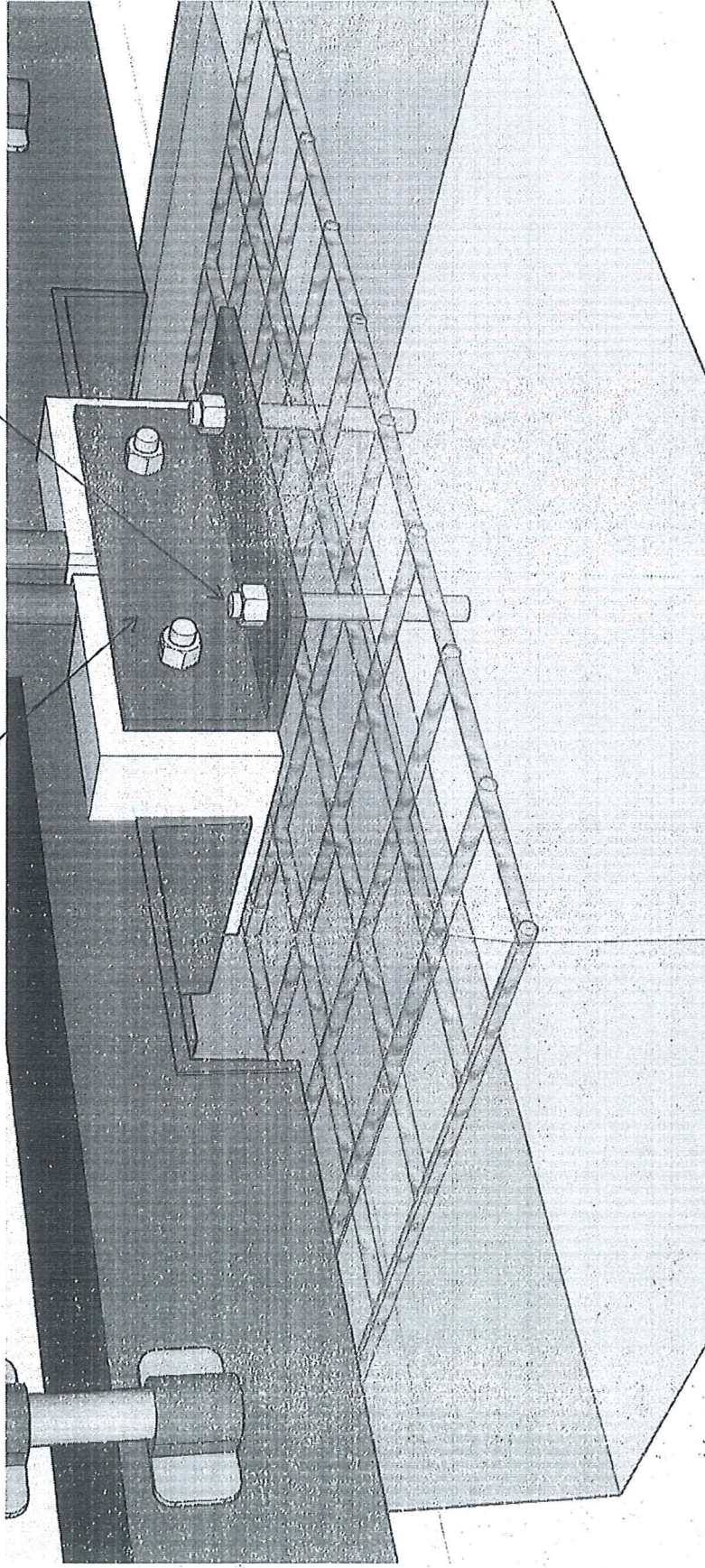
Pad Type 1 Assembly



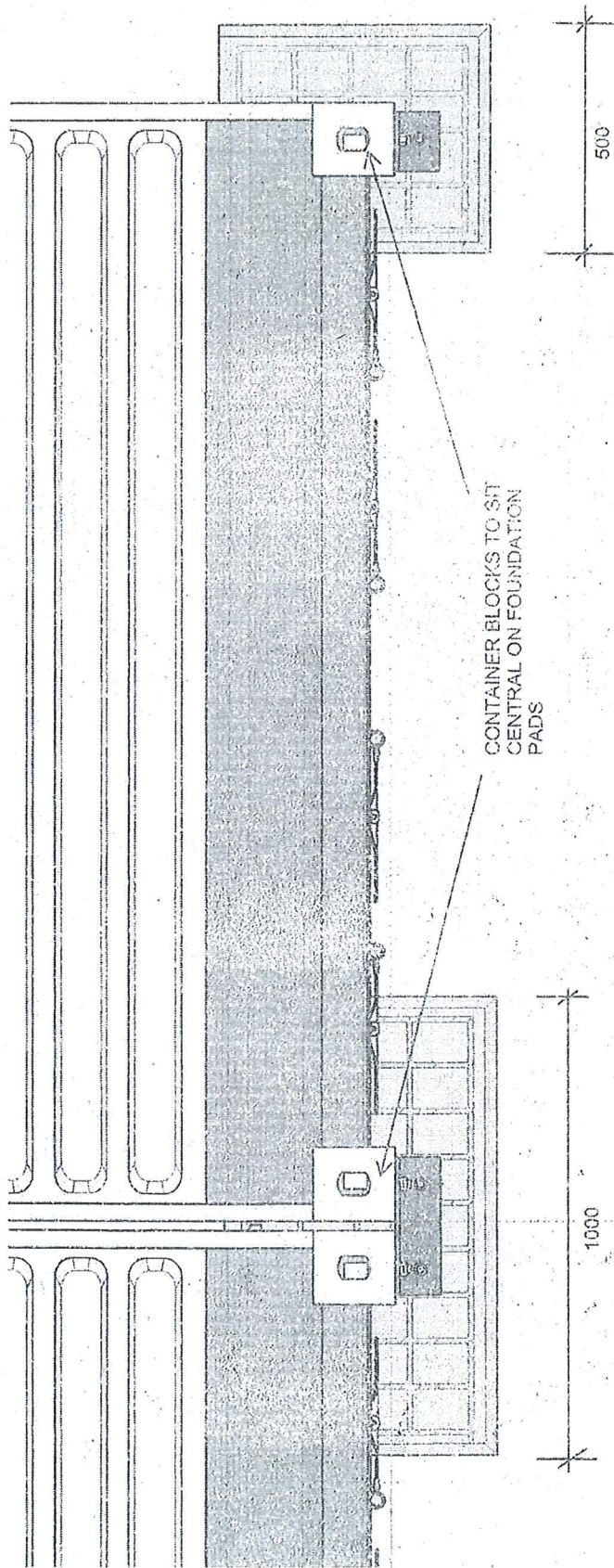
M16 Gr8.8 GALVANISED RAMSET
STUD, EMBEDMENT DEPTH = 125mm
FIX WITH EPCON C8

HOLD DOWN BRACKET EX 100 X 10EA Gr 300

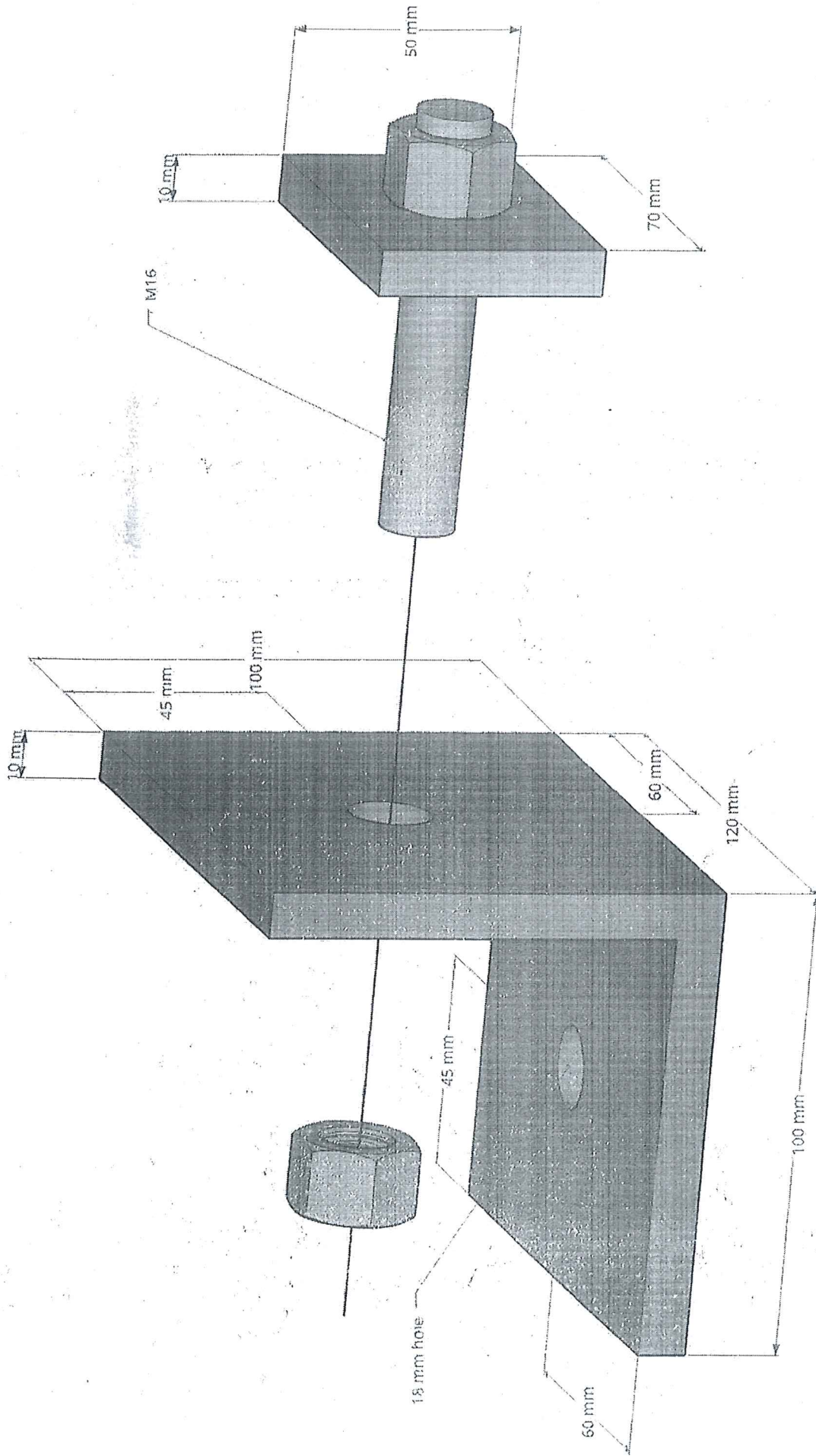
Pad Type 2 Assembly

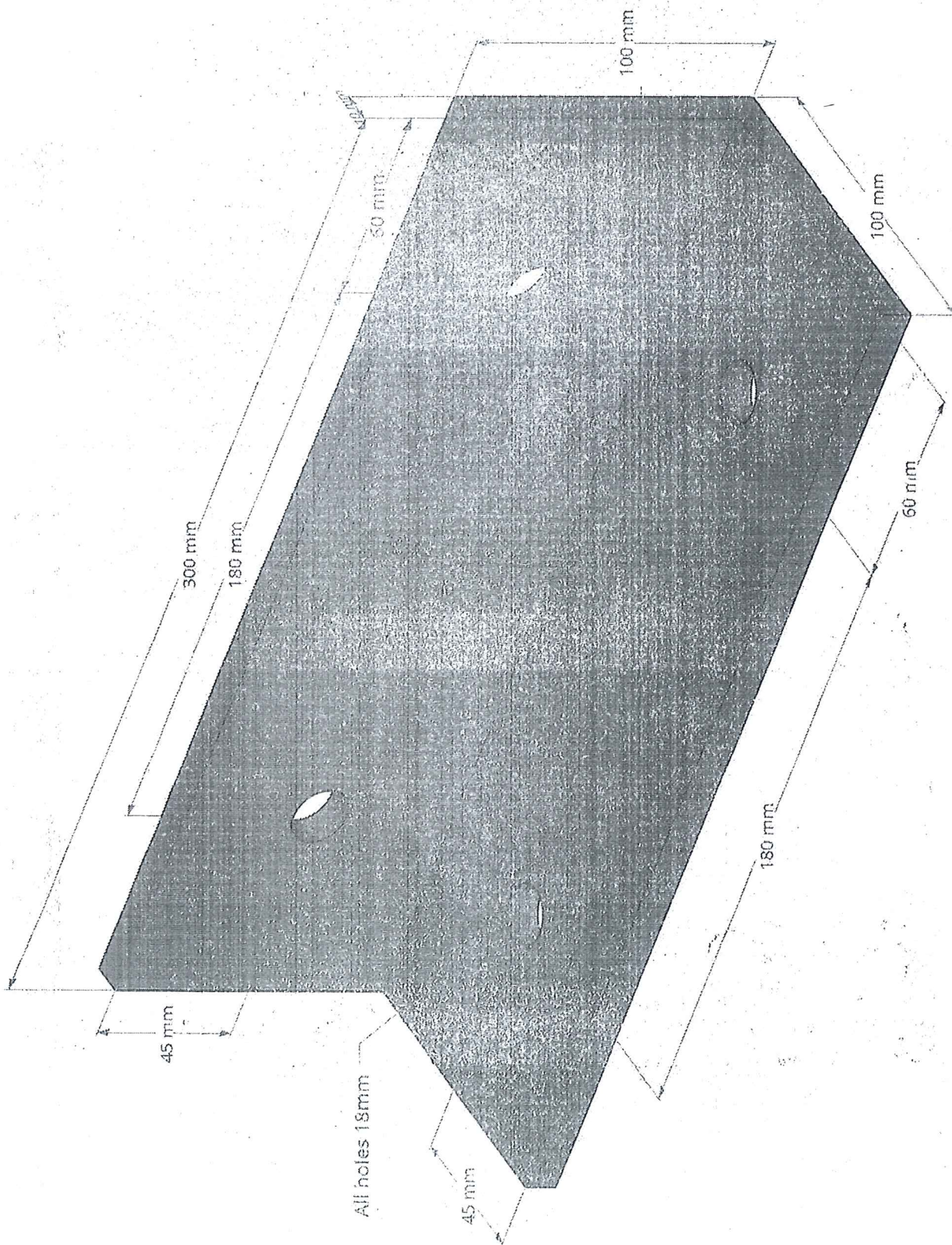


Container Assembly Plan



Bracket Details





Non-Cracked Concrete - ChemSet Anchor Stud Design Calculator

European Technical Assessment: ETA-10/0309

Design Methods: AS 5216:2018 (formerly TS101) or EN 1992-4 (formerly ETAG/TR029)



Non-Cracked Concrete - EPCON™ C8 Xtrem™



Anchor Type: Threaded Rod - Gr 8.8 Anchor Size $d_b = M 16$

Input Description (Strength Limit State Design)	Input Data (per anchor)	Plan View - Generic (Dimensions in mm)	Project Details												
1. Number of anchors (n)	n = 2		Project Name:-												
2. Anchor Spacing (a)	a = 180 mm		Container Storage												
3. Concrete Edge Distance (e)	e = 160 mm		Project Site Address:-												
4. Concrete Cylinder Strength (f'c)	f'c = 25 MPa		Lake Road, Leeston												
5. Cracked Conc. (C) or Non-Cracked (N)	C or N N		Company Name:-												
6. Effective Depth (h > 6x d _b)	h = 125 mm		Design Identification:-												
7. Anchor Stud size (d _b) - M10 → M30	d _b = 16 mm		M16 HD Bolts												
8. Concrete Edge Distance Corner (e ₁)	e ₁ = 210 mm		Date:-												
9. Internal to a row (I) or end of row (E)	I or E E row		21/04/2023												
10. Dry Hole (D) or Flooded hole (F)	D or F D														
11. Min Concrete Sub'te Thickness (b _m)	b _m = 161 mm	ChemSet™ Anchor Stud "Specification"	EPCON™ C8 Xtrem™ "Specification"												
12. Anchor Stud Grade (5.8, 8.8, 316 SS)	Grade = 8.8 Gr	Typ Gr 8.8 Thr'd Rod M16 x 160 mm long	Part No. C8-450												
13. Fixture Thickness (t)	t = 10 mm	<table border="1"> <thead> <tr> <th>Notes</th> <th>Capacity Reduction Factors</th> </tr> </thead> <tbody> <tr> <td>Drill d_h = 18</td> <td>Conc Tension 1/1.5 = φ_{tc} = 0.66</td> </tr> <tr> <td>Fixture d_f = 18</td> <td>Conc Shear 1/1.5 = φ_{sc} = 0.67</td> </tr> <tr> <td></td> <td>Steel Tension 1/1.5 = φ_{st} = 0.67</td> </tr> <tr> <td></td> <td>Steel Shear 1/1.5 = φ_{ss} = 0.67</td> </tr> </tbody> </table>	Notes	Capacity Reduction Factors	Drill d _h = 18	Conc Tension 1/1.5 = φ _{tc} = 0.66	Fixture d _f = 18	Conc Shear 1/1.5 = φ _{sc} = 0.67		Steel Tension 1/1.5 = φ _{st} = 0.67		Steel Shear 1/1.5 = φ _{ss} = 0.67	Direction of Shear		
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	Steel Shear 1/1.5 = φ _{ss} = 0.67														
14. Effective Length (L _e)	L _e = 135 mm		Design Load - α												
15. Design Tensile Load-per anchor (N*)	N* = 8 kN		α = 0° - towards edge α = 180° - away from edge												
16. Design Shear Load-per anchor (V*)	V* = 5 kN														
17. Direction of Shear design load (α)	α = 0														
18. Sustained Load (SUS or N/A)	SUS or N/A N/A														
19. Service Temperature (°C)	-40°C to +40°C														
Output Description (Strength Limit State Design)	Output Data (per anchor)	Elevation View - Generic (Dimensions in mm)	Anchor Loaded												
DESIGN O.K. <table border="1"> <thead> <tr> <th>Des. Pullout & CONC. Tensile Capacity</th> <th>φN_{ut} = 28.1 kN</th> </tr> </thead> <tbody> <tr> <td>Design STEEL Tensile Capacity</td> <td>φN_{us} = 82.1 kN</td> </tr> <tr> <td>Design CONC. Edge Shear Capacity</td> <td>φV_{uc} = 24.4 kN</td> </tr> <tr> <td>Design STEEL Shear Capacity</td> <td>φV_{us} = 50.9 kN</td> </tr> <tr> <td>Design Pryout Failure</td> <td>φV_{up} = 79.0 kN</td> </tr> <tr> <td>Drill hole diameter</td> <td>d_h = 18 mm</td> </tr> </tbody> </table>		Des. Pullout & CONC. Tensile Capacity	φN _{ut} = 28.1 kN	Design STEEL Tensile Capacity	φN _{us} = 82.1 kN	Design CONC. Edge Shear Capacity	φV _{uc} = 24.4 kN	Design STEEL Shear Capacity	φV _{us} = 50.9 kN	Design Pryout Failure	φV _{up} = 79.0 kN	Drill hole diameter	d _h = 18 mm		
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SHEAR O.K. <table border="1"> <tbody> <tr> <td>Design Shear Capacity</td> <td>φV_{ut} = 24.4 kN</td> </tr> <tr> <td>Shear Design Check</td> <td>V*/φV_{ut} = 0.20 < 1</td> </tr> </tbody> </table>		Design Shear Capacity	φV _{ut} = 24.4 kN	Shear Design Check	V*/φV _{ut} = 0.20 < 1										
Design Shear Capacity	φV _{ut} = 24.4 kN														
Shear Design Check	V*/φV _{ut} = 0.20 < 1														
COMBINED TENSION SHEAR O.K. Combined Check - N*/φN _{ut} + V*/φV _{ut} = 0.49 < 1.2															
Anchor Size	d _b	Metric													
Drill hole diameter	d _h	(mm)	N/A 12 14 18 22 26 35 N/A												
Stressed Area	A _s	(mm²)	N/A 53 84 157 245 353 561 N/A												
Anchor Stud Yield Strength	f _y	(MPa)	N/A 640 640 640 640 640 640 N/A												
Steel Tensile Capacity	φN _{us}	(kN)	N/A 28.2 41.9 82.1 123.9 179.5 299.2 N/A												
Steel Shear Capacity	φV _{us}	(kN)	N/A 17.5 26.0 50.3 76.8 111.3 165.5 N/A												
Edge distance for no conc. cone reduction	e _c	(mm)	N/A 1.5xh 1.5xh 1.5xh 1.5xh 1.5xh 1.5xh N/A												
Anchor spacing for no conc. cone reduction	a _c	(mm)	N/A 3xh 3xh 3xh 3xh 3xh 3xh N/A												
Absolute Minimum edge dist. & anc'r spac.	e _m & a _m	(mm)	N/A 50 60 80 100 120 150 N/A												
Effective Depth - h		Design tensile capacity φN _{ut} (kN per anchor) Based on edge distance (e _c) and anchor spacing (a _c) for no conc. cone reduction													
65	(mm)	N/A													
70	(mm)	N/A 17.9													
80	(mm)	N/A 21.9													
90	(mm)	N/A 25.9	26.1												
100	(mm)	N/A 28.2	30.6												
110	(mm)	N/A 29.2	36.3												
120	(mm)	N/A 28.2	40.2												
125	(mm)	N/A 28.2	41.9												
150	(mm)	N/A 28.2	41.9												
160	(mm)	N/A 28.2	41.9												
170	(mm)	N/A 28.2	41.9												
190	(mm)	N/A 28.2	41.9												
210	(mm)	N/A 28.2	41.9												
240	(mm)	N/A 28.2	41.9												
280	(mm)	N/A 28.2	41.9												
350	(mm)	N/A 28.2	41.9												
450	(mm)	N/A 28.2	41.9												
550	(mm)	N/A 28.2	41.9												

The design engineer should ensure the structural element is capable of supporting these loads. Refer to Ramset® Specifiers Anchoring Resource Book NZ Ed7 for more information or explanation of Tech. Data.

ITW Australia Pty. Ltd. ABN 63 004 735 063 trading as Ramset®. © Copyright 2019

PROJ No. 230321

PROJECT CONTAINER SUPPORTS

ACTIVITY DD

SUBJECT PLY IN BEARING

REVISION	DATE	BY	CHECKED	APPROVED
0	16-05-23	CAC		

SHEET 1 OF 1

Design bearing force due to bolt in shear: $V_f = (723^2 + 204^2)^{0.5}$
 $= 751 \text{ kN}$

bracket HD = 100 x 10 EA

$$V_f = 32 \times d_f \times t_p \times f_{up} \quad \text{eq 9.3.2.1(1)}$$

Bolt size = M16

$$V_f = a_s \times t_p \times f_{up}$$

$d_f = 16 \text{ mm}$

$$V_f = 32 \times 16 \times 10 \times 460 = 235 \text{ kN}$$

$t_p = 10 \text{ mm}$

$$V_{f2} = 44 \times 10 \times 460 = 193.6 \text{ kN}$$

$f_{up} = 460 \text{ MPa}$

use the lower

$a_s = 46 \text{ mm}$

$$\phi V_{f2} < C_1 = 0.9 \times 193.6$$

$\phi = 0.9$

$$= 174 \text{ kN} \geq V_f$$

$C_1 = 1$

OK in bearing

 info@cseng.nz	Project				Job Ref.	
	Storage Container Development				230321-CAL-S0003	
	Section				Rev	
	Foundation Pads & Hold Down Bracket				0	
	Calc. by	Date				
	CSEng	26/05/2023				

Appendix E – Geotech

10/05/2023

1774

Alistair Clarke

Attention: Alistair Clarke

By Email: awclarke46@gmail.com



76 Moffat Drive, Lincoln, 7608, NZ

+64 27 221 2937

sichard@landformprojects.com

www.landformprojects.com

Dear Alistair

Re: Factual Ground Condition Report for Proposed Container Storage Units at Lot 1 Leeston Lake Rd, Leeston.

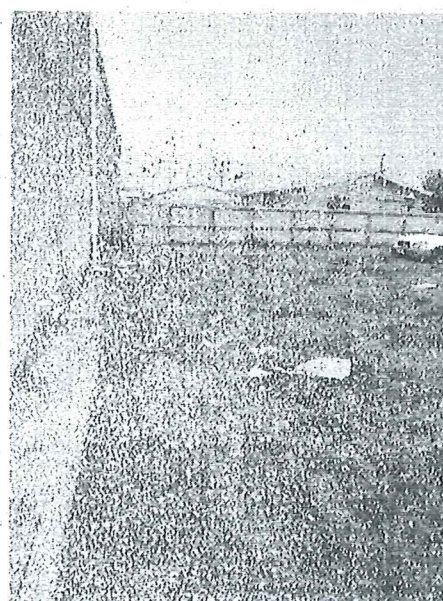
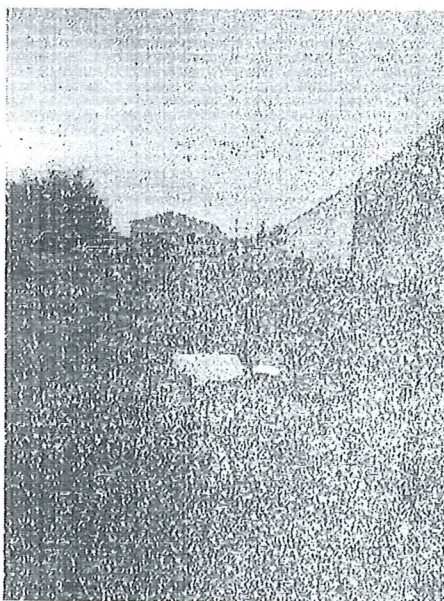
Overview

You have engaged Landform Projects Ltd to provide a Factual Ground Condition Report in support of a Building Consent application for 16 No. Steel 20ft Container Units, non-habited, on a concrete ground slab (Importance Level 1 (IL1)). Total area of containers approximately 40m x 6m (as indicated on site) at Lot 1 Leeston Lake Rd, Leeston. The containers are designated as 'storage' and we understand the proposed foundations are to excavate the footprint area and replace with compacted gravel fill, then construct a concrete slab on-grade.

The attached Site Plan (refer Sheet. 1 attached) shows the indicative proposed container locations (approximate only, as indicated on site) and the location of various ground investigation points and site features.

The Property (LOT 1 DP 34054, approx. 0.2Ha) is situated in an urban area approximately 250m south east Leeston centre.

The area proposed for the containers is currently a vacant lot (grassed) however a carpark from the adjacent sections extends into this plot (refer photo below). Six hand auger holes and scale tests were conducted on the 'natural' ground surface, in the location of the proposed containers.



PROPOSED SITE for Container Units

To prepare this factual report we have accessed online hazard maps and geotechnical resources, including:

- Canterbury Maps: Property Search
- GNS 1:250,000 Geological Maps
- Ecan Liquefaction Assessment Area Map (2012)
- MBIE Residential Foundation Technical Categories
- New Zealand Geotechnical Database (No nearby data available)
- Ecan Well logs (M36/2147, M36/5626 – see attached)

The area is mapped as “Rural & Unmapped” for MBIE Technical Categories. Liquefaction Assessment Area Map (Ecan: 2012) shows the area as “Damaging Liquefaction Unlikely”.

This report does not assess the Technical Category (TC) classification and does not directly address liquefaction potential and risk beyond the assessments publicly available, as described above. However, given the Ecan Assessment, sub-surface soils (sits over dense gravel at shallow depth), and depth to ground water it can be inferred that liquefaction is not a significant hazard for this construction on this site.

To confirm site specific shallow ground conditions, Landform Projects Ltd logged 6 ‘site specific’ shallow Hand Auger Boreholes and 6 Scala Penetrometer Tests to refusal on or in natural gravel between 0.7m to 1.8m depth (gravels encountered between 0.5 – 0.6m deep). Nominal surface R.L. is indicated at 19.0 (m NZVD2016), however this is approximate only (from Lidar) and no levels survey has been undertaken by us on site. Refer Site Investigation Plan (Sheet. 1) and Shallow Investigation Logs (HA01– HA04) attached.

From these Investigations and observations, we can report:

- It was found that **300kPa ultimate bearing capacity** under static load (per Stockwell 1977) is present from the base of the surface Organic Silt FILL, typically at 0.3m – 0.35m depth below ground surface in the area of the proposed containers, providing:
 - **All organic ‘topsoil’ (dark brown) and/or fill soils are removed** under the ground slab & footings.
- Natural soils below the surficial topsoil/fill layers, were found to be generally firm to stiff SILT (trace organics) overlying medium dense to dense Gravel at 0.5 – 0.6m depth below typical natural ground level. Well logs indicate these gravels are continuous to depths of at least 10m below ground level.
- The water table was not encountered. Well logs indicate water levels of nominally 1.5m in the area, which would be within the gravel layers at this site.
- **No other subsurface natural hazards¹** were observed that would warrant reporting or design by a Chartered Professional and/or Geo-technical Engineer for the construction proposed for this site.
- **Standard foundation** (essentially per NZS3604), for **300 kPa bearing** are suitable for this construction on this site.

¹ Site specific shallow subsurface geotechnical hazards only are considered in this Factual Ground Condition Report. Tsunami, inundation, contamination, wind, snow, seismic, fire, and liquefaction assessment are expressly excluded from consideration.

Investigations, Results and Observations

Project Details and General Observations					
Job Number:	1774	Investigated by:	R. Wise, Landform Projects Ltd.	Date:	01/05/2023
Client	Alistair Clarke				
Site Location	Lot 1 Leeston Lake Rd, Leeston				
Legal Description	LOT 1 DP 34054				
BC #	[unknown]				
Proposed Construction	- Prefabricated steel 20ft containers - Reinforced concrete foundations and ground slab				
Other observations	- Overall property is generally flat with a gently slope towards the south-east, - Proposed container locations are currently partly occupied by a asphalt carpark (to be partially removed).				
Desktop Investigations - Observations					
Investigations, Reports, Liquefaction Hazard Assessments, & TC Classifications (by others)	- Liquefaction is not considered a significant hazard for this construction on this site.				
Canterbury Maps:	- Quaternary Holocene alluvial deposits				
GNS 1:250,000 Geo Maps Historical Aerials	- Historically Farming (pasture, cropping) and Industrial.				
Ecan Liquefaction Assessment – 2012: 2013 Maps	- "Damaging Liquefaction Unlikely"				
MBIE Residential Technical Categories	- "Rural/Un-mapped"				
Ecan Well Logs	- Well log M36/2147 shows Silts to 2.4m depth overlying continuous Silty and Sandy GRAVEL. Gravel continues for full depth of borehole 10.7m. - Well log M36/5626 shows 100mm basecourse overlying continuous Silty and Sandy GRAVEL. Gravel continues for full depth of borehole 5.5m - Groundwater level measured during drilling at 1.5m and 1.6m depth below ground level, respectively.				
NZGD Online Database	- 20 Leeston Lake Rd, 130m south of proposed site. 3 Handauger boreholes and scalas indicate Silty Organic Topsoil to 0.3m, overlying soft to medium Silts to between 0.7m to 1.15m, then medium dense Gravel.				
Site Specific Investigations - Observations and Results					
6 x Hand Auger Boreholes (Refer HA01 - HA06 attached)	SOIL LOGS				
	Depth (m)	Typical Soil Type			
	0.0 - 0.3m	Organic SILTY TOPSOIL, brown, soft, moist			
	0.3 - 0.6m	SILT, trace organics, yellow brown, firm to stiff, moist, non plastic.			
	0.6 - 0.8m	No further penetration due to GRAVEL, very dense, moist			
Below: Gravel continues to full depth of Well logs M36/2147, M36/5626, up to 10.7m depth					
6 x Scala Penetrometer Tests (TP01, HA01 - HA03)	Depth (m)	Test Results			
	Silt (approx. 0.3 - 1.0m)	> 300kPa, below surficial Topsoil (and Fill)			
Water Level	Water Well Logs indicate Water levels at 1.5m.b.g.l (refer Logs attached)				

Conformance with NZS3604: 2011 <i>NOTE: The proposed structures are shipping containers, therefore NZS3604 may not specifically apply. However this section is included as a reference point, regardless.</i>	
Criteria (Generally as per NZS 3604: 2011)	Conformance with NZS3604: 2011 (and MBEI guidelines etc. where applicable)
Any observed shrink-swell, organic and/or other sub-soil natural hazards within depths that may affect this construction on this site? Liquefaction hazard considerations? Technical Category (if known)?	- No observed shrink-swell, significant organic and/or other sub-soil natural hazards within depths that may affect this construction on this site. - Groundwater was not encountered and is shown in well logs to be at 1.5m.b.g.l. typically (in gravel). - Potential for liquefaction and associated hazards and Site Specific Technical Category, have been NOT been assessed in this report – however given other hazard assessments, soil types, and water levels; it can be inferred that liquefaction is not a significant hazard for this construction on this site.
No other site-specific geotechnical hazards observed (e.g. sloping ground, retaining)?	- N/A – Flat, generally level site
No observed site-specific, shallow, sub-surface hazards² requiring Specialist Engineering reporting.	- No other subsurface natural hazards² were observed that would warrant reporting or design by Chartered Professional and/or Geo-technical Engineer.
Conformance with 300kPa ultimate bearing capacity under static conditions as defined in NZS 3604:2011 sec 3.1.3 and by the method to determine bearing capacity as provided in Stockwell (1977)?	- From the above observations and tests carried out on this site it can be concluded that the ground conditions do conform with the requirements of NZS3604: 2011² and 300kPa ultimate bearing capacity (under static conditions) is present at and below the proposed Founding depths (approx. 0.3m) and below the Topsoil (dark brown soils – to be removed) as defined in NZS 3604:2011 sec 3.1.3 and by the method to determine bearing capacity as provided in Stockwell (1977)
- Landform Projects Ltd assumes: Standard inspections (if and as) required for BC conditions, are carried out at the time of construction (by others, e.g. Council) to ensure foundation construction complies with the design drawings, regulations and specifications, and that ground conditions are consistent with this report. Landform Projects Ltd has not been instructed to carry out inspections, and no Producer Statements will be issued by us. - If different ground conditions are encountered during construction, please contact Landform Projects Ltd on (027) 2212987.	

² Site specific shallow subsurface geotechnical hazards only are considered in this Factual Ground Condition Report. Tsunami, inundation, contamination, wind, snow, seismic, fire, and detailed liquefaction assessment (if moderate to high liquefaction risk is identified from factual observations) are expressly excluded from consideration.

Conformance with NZS3604: 2011 <i>NOTE: The proposed structures are shipping containers, therefore NZS3604 may not specifically apply. However this section is included as a reference point, regardless.</i>	
Criteria (Generally as per NZS 3604: 2011)	Conformance with NZS3604: 2011 (and MBEI guidelines etc. where applicable)
Any observed shrink-swell, organic and/or other sub-soil natural hazards within depths that may affect this construction on this site? Liquefaction hazard considerations? Technical Category (if known)?	- No observed shrink-swell, significant organic and/or other sub-soil natural hazards within depths that may affect this construction on this site. - Groundwater was not encountered and is shown in well logs to be at 1.5m.b.g.l. typically (in gravel). - Potential for liquefaction and associated hazards and Site Specific Technical Category, have been NOT been assessed in this report – however given other hazard assessments, soil types, and water levels; it can be inferred that liquefaction is not a significant hazard for this construction on this site.
No other site-specific geotechnical hazards observed (e.g. sloping ground, retaining)?	- N/A – Flat, generally level site
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BOREHOLE LOG

Hole #

HA01

Project: Lot 1 Leeston Lake Rd
For: Alistair Clarke
Project #: 1543499.050, 5154034.290
Co-ordinates: 1543499.050, 5154034.290
Drill method: Hand Auger
Hole depth: 10.60

Grid system: NZTM2000 (E, N)
Contractor: LFP
Equipment: HA + SP

LFP Ref #: 1774
Date started: 1/05/2023
Date finished: 1/05/2023
R.L.: 19.0 m NZVD(2016)
Logged by: VT
Checked By: RBW

R.L. (m)	STRATA DESCRIPTION	USCS	Stop	DEPTH (m)	Geological UNIT	Water & Piece	Shear Vane (kPa)	Scala Penetrometer blows/100mm (calculated)	Scala Penetrometer mm/blow
19.0	Organic SILT (possibly FILL?), trace fresh organics, trace sand, trace gravel, brown, soft, moist, non plastic; Sand, fine; Organics, rootlets; Gravel, fine, rounded, greywacke.	OL	X	0.0	TOP SOIL				
18.5	SILT, trace organics, trace gravel, yellow brown, mottled orange, firm to stiff, moist, non plastic; Organics, decayed, rootlets; Gravel, fine to medium, greywacke.	ML	X	0.5	QUATERNARY				
18.0	E.O.H. No further progress due to inferred gravel.			1.0					
17.5				1.5					
17.0				2.0					
16.5				2.5					
16.0				3.0					
15.5				3.5					
15.0				4.0					
14.5				4.5					
14.0				5.0					

Notes: R.L. approximate only
No static groundwater encountered

Borehole logged in accordance with the "Guidelines for the Classification and Description of Soil and Rock for Engineering Purposes" Dec 2005 16265.
R.L. is inferred and/or interpolated unless otherwise stated.

Shear Vane performed and corrected as per NZGS Guidelines.
Scala Penetrometer Test carried out to NZS 4402: Test 6.5.2 & field measured as mm per blow(s).

BOREHOLE LOG

Hole #

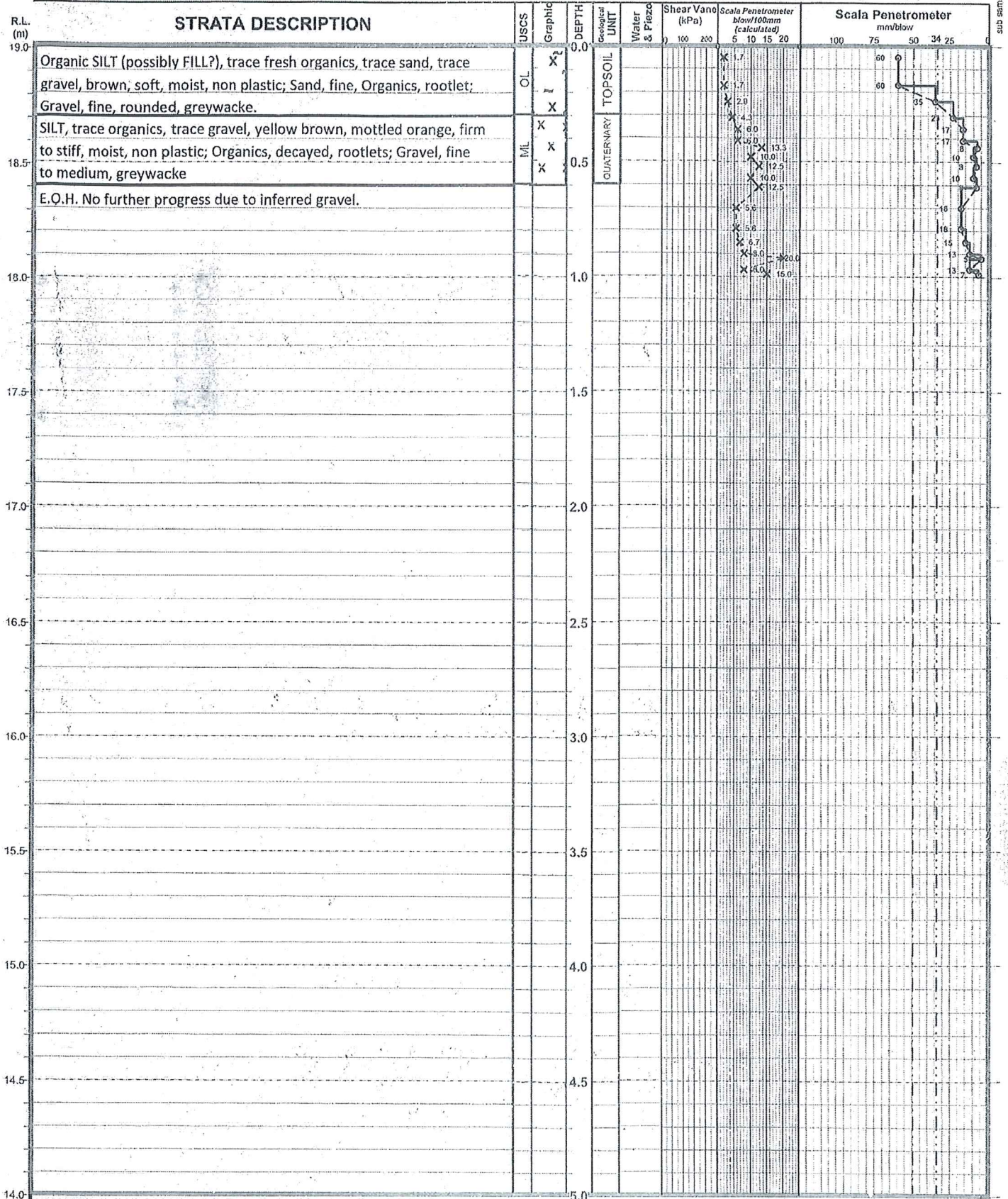
HA02

Project: Lot 1 Leeston Lake Rd
For: Alistair Clarke

Project #:
Co-ordinates: 1543504.286, 5154033.519
Drill method: Hand Auger
Hole depth: 0.60

Grid system: NZTM2000 (E, N)
Contractor: LFP
Equipment: HA + SP

LFP Ref #: 1774
Date started: 1/05/2023
Date finished: 1/05/2023
R.L.: 19.0 m NZVD(2016)
Logged by: VT
Checked By: RBW



Notes: R.L. approximate only
No static groundwater encountered.

Borehole logged in accordance with the "Guidelines for the Classification and Description of Soil and Rock for Engineering Purposes" Dec 2005 NZGS.
R.L. is inferred and/or interpolated unless otherwise stated.

Shear Vane performed and corrected as per NZGS Guidelines.
Scala Penetrometer Test carried out to NZS 4402: Test 6.5.2 & field measured as mm per blow(s).

BOREHOLE LOG

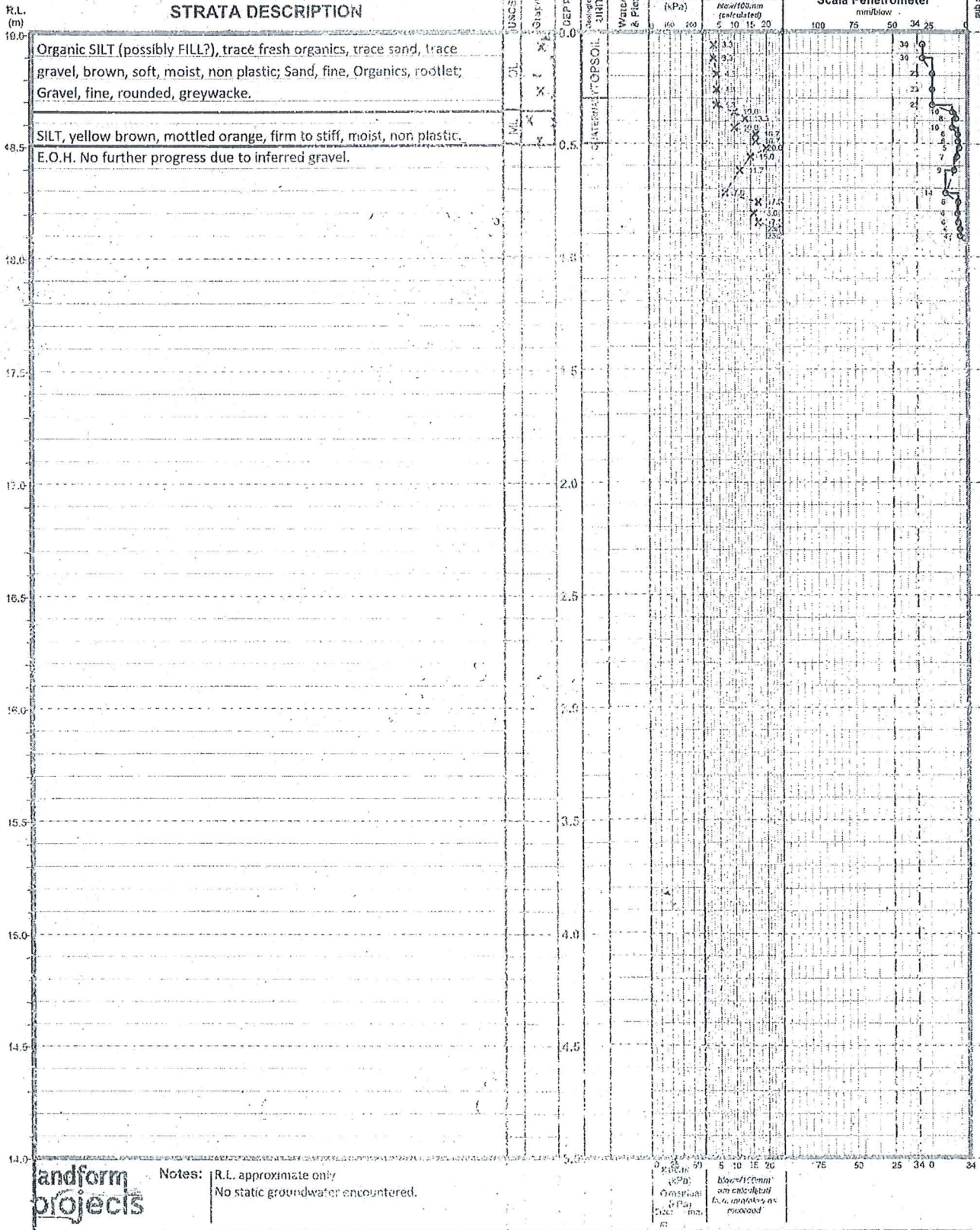
Hole #

HA03

Project: Lot 1 Leeston Lake Rd
 For: Alistair Clarke
 Project #:
 Co-ordinates: 1540503.758, 5154026.885
 Drill method: Hand Auger
 Hole depth: 0.50

Grid system: NZTM2000 (E, N)
 Contractor: LFP
 Equipment: HA + SP

LFP Ref #: 1774
 Date started: 1/05/2023
 Date finished: 1/05/2023
 R.L.: 19.9 m NZVD(2016)
 Logged by: VT
 Checked By: RBW



BOREHOLE LOG

Hole #

HA04

Project: Lot 1 Leeston Lake Rd

For: Alistair Clarke

Project #:

Co-ordinates: 1543512.786, 5154025.706

Drill method: Hand Auger

Hole depth: 0.60

Grid system: NZTM2000 (E, N)

Contractor: LFP

Equipment: HA + SP

LFP Ref #: 1774

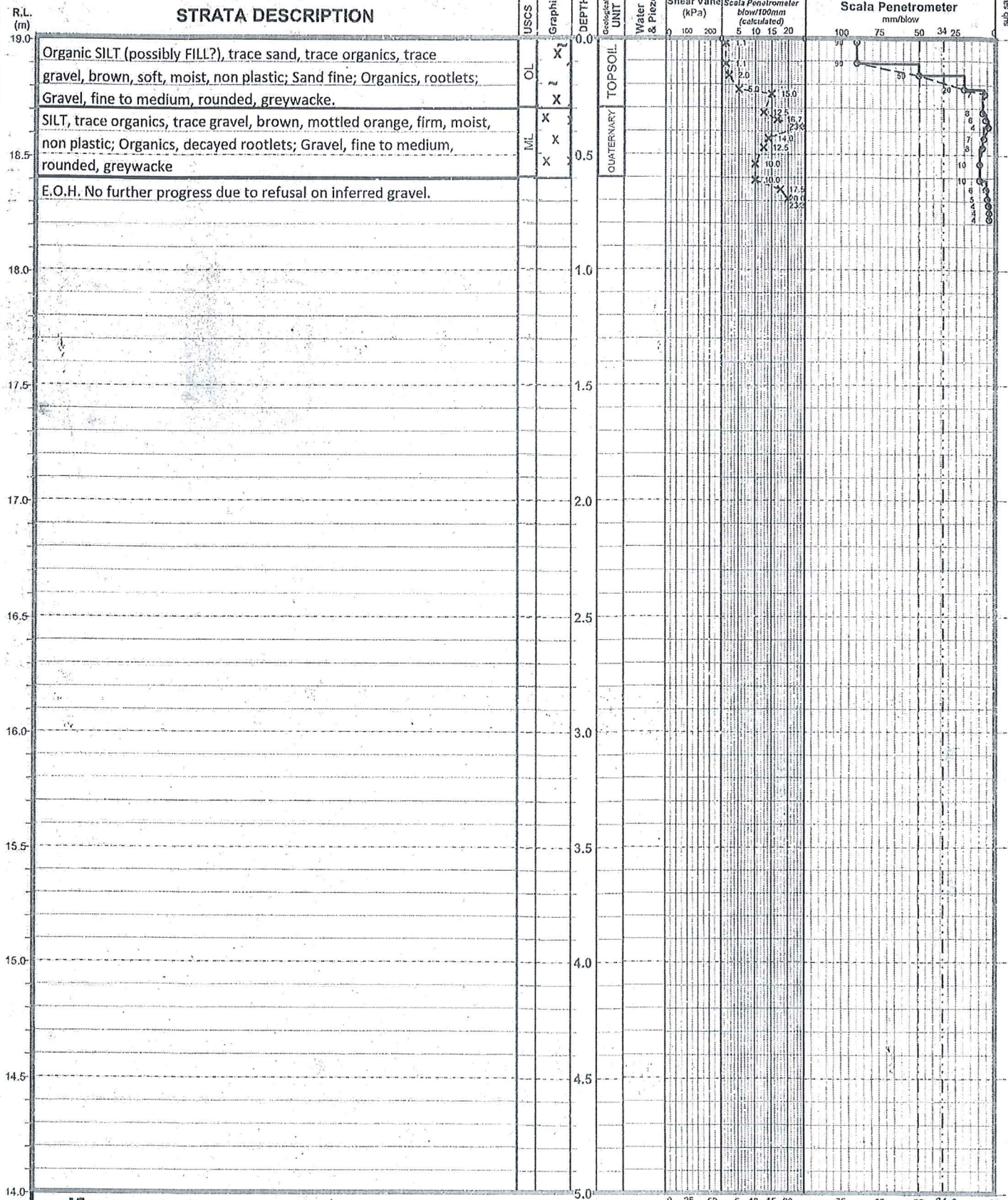
Date started: 1/05/2023

Date finished: 1/05/2023

R.L.: 19.0 m NZVD(2016)

Logged by: VT

Checked By: RBW



Notes: R.L. approximate only
No static groundwater encountered.

Borehole logged in accordance with the "Guidelines for the Classification and Description of Soil and Rock for Engineering Purposes" Dec 2005 NZGS.
R.L. is inferred and/or interpolated unless otherwise stated.

Shear Vane performed and corrected as per NZGS Guidelines.
Scala Penetrometer Test carried out to NZS 4402: Test 6.5.2 & field measured as mm per blow(s).

Project: Lot 1 Leeston Lake Rd
For: Alistair Clarke

Project #: 1543512.786, 5154025.706
Co-ordinates: Hand Auger
Drill method: 0.60
Hole depth:

Grid system: NZTM2000 (E, N)
Contractor: LFP
Equipment: HA + SP

LFP Ref #: 1774
Date started: 1/05/2023
Date finished: 1/05/2023
R.L.: 19.0 m NZVD(2016)
Logged by: VT
Checked By: RBW

R.L. (m)	STRATA DESCRIPTION	USCS	Graphic	DEPTH	Geological UNIT	Water & Piezo	Shear Vane (kPa)	Scala Penetrometer blow/100mm (calculated)	Scala Penetrometer mm/blow	sub sam
19.0				0.0			100 200	5 10 15 20	100 75 50 34 25	
	Organic SILT (possibly FILL?), trace sand, trace organics, trace gravel, brown, soft, moist, non plastic; Sand fine; Organics, rootlets; Gravel, fine to medium, rounded, greywacke.	OL	X	0.0	TOPSOIL					
	SILT, trace organics, trace gravel, brown, mottled orange, firm, moist, non plastic; Organics, decayed rootlets; Gravel, fine to medium, rounded, greywacke	ML	X	0.5	QUATERNARY					
	E.O.H. No further progress due to refusal on inferred gravel.									
18.0				1.0						
17.5				1.5						
17.0				2.0						
16.5				2.5						
16.0				3.0						
15.5				3.5						
15.0				4.0						
14.5				4.5						
14.0				5.0						

landform projects

Notes: | R.L. approximate only
| No static groundwater encountered.

Borehole logged in accordance with the "Guidelines for the Classification and Description of Soil and Rock for Engineering Purposes" Dec 2005 NZGS.
R.L. is inferred and/or interpolated unless otherwise stated.

Shear Vane performed and corrected as per NZGS Guidelines.
Scala Penetrometer Test carried out to NZS 4402: Test 6.5.2 & field
measured as mm per blow(s).

Project: Lot 1 Leeston Lake Rd
For: Alistair Clarke
Project #:
Co-ordinates: 1543519.012, 5154016.272
Drill method: Hand Auger
Hole depth: 0.60

Grid system: NZTM2000 (E, N)
Contractor: LFP
Equipment: HA + SP

LFP Ref #: 1774
Date started: 1/05/2023
Date finished: 1/05/2023
R.L.: 19.0 m NZVD(2016)
Logged by: VT
Checked By: RBW

R.L. (m)	STRATA DESCRIPTION	USCS	Graphic	DEPTH (m)	Geological UNIT	Water & Piezo	Shear Vane	Scala Penetrometer	Scala Penetrometer
							(kPa)	blow/100mm (calculated)	mm/blow
							0 100 200	5 10 15 20	100 75 50 34 25 0
19.0	Organic SILT (possibly FILL?) trace fresh organics, trace gravel, brown, soft, moist, non plastic; Organics, rootlets; Gravel, fine, rounded, greywacke.	OL	X	0.0	TOPSOIL				
	SILT, trace gravel, trace organics, yellow brown, mottled orange, soft to firm, moist, non plastic; Gravel, fine to medium, rounded, angular, greywacke.	ML	X	0.5	QUATERNARY				
18.5	E.O.H. No further progress due to refusal on inferred gravel.								
18.0				1.0					
17.5				1.5					
17.0				2.0					
16.5				2.5					
16.0				3.0					
15.5				3.5					
15.0				4.0					
14.5				4.5					
14.0				5.0					

landform projects

Notes: | R.L. approximate only
| No static groundwater encountered.

Borehole logged in accordance with the "Guidelines for the Classification and Description of Soil and Rock for Engineering Purposes" Dec 2005 NZGS.
R.L. is inferred and/or interpolated unless otherwise stated.

Shear Vane performed and corrected as per NZGS Guidelines.
Scala Penetrometer Test carried out to NZS 4402: Test 6.5.2 & field
measured as mm per blow(s).

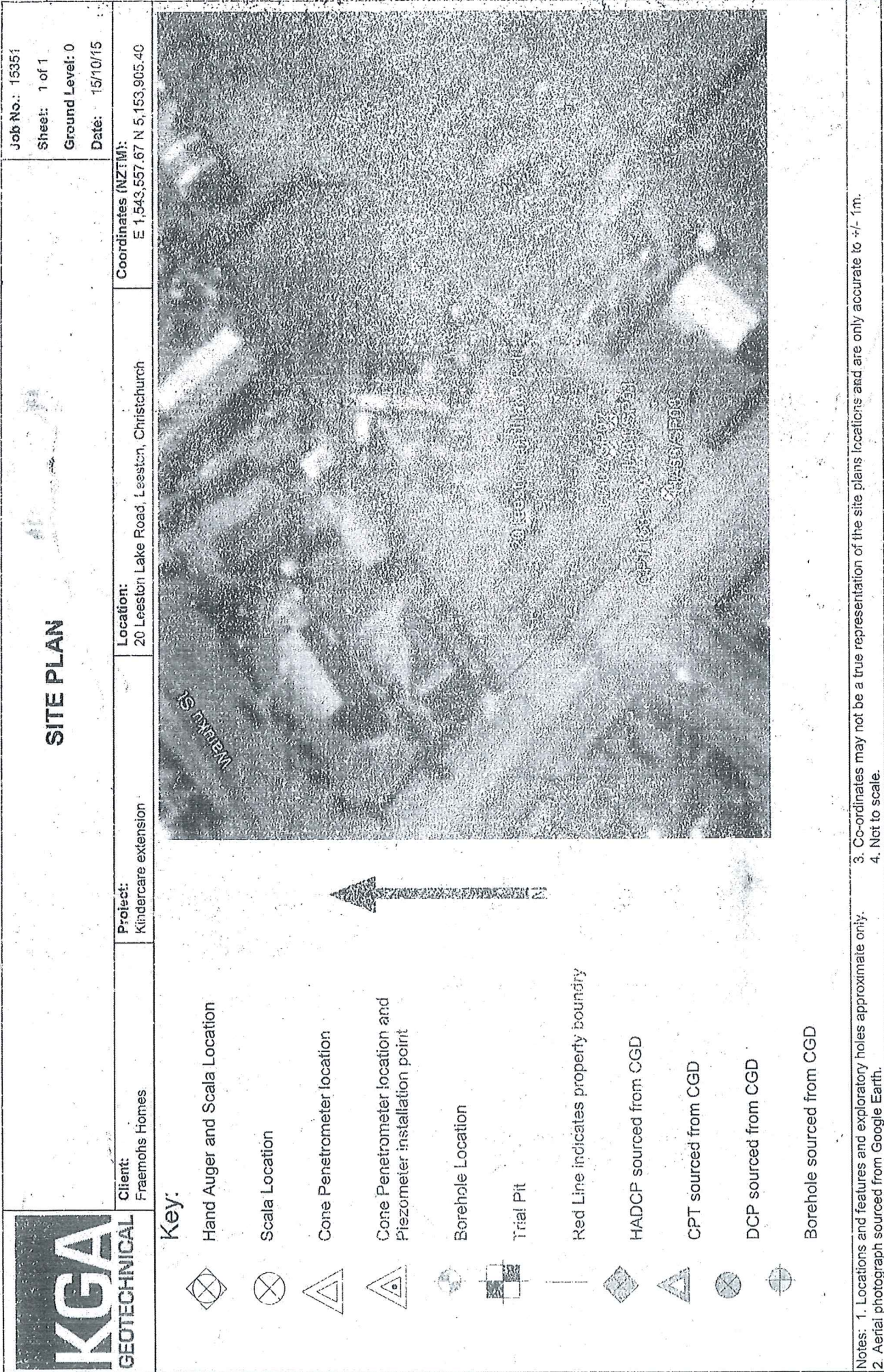
Borelog for well M36/2147

Grid Reference (NZTM): 1543412 mE, 5153995 mN
 Location Accuracy: 50 - 300m
 Ground Level Altitude: 19.8 m +MSD Accuracy: < 2.5 m
 Driller: McMillan T T
 Drill Method: Cable Tool
 Borelog Depth: 10.7 m Drill Date: 01-Feb-1999



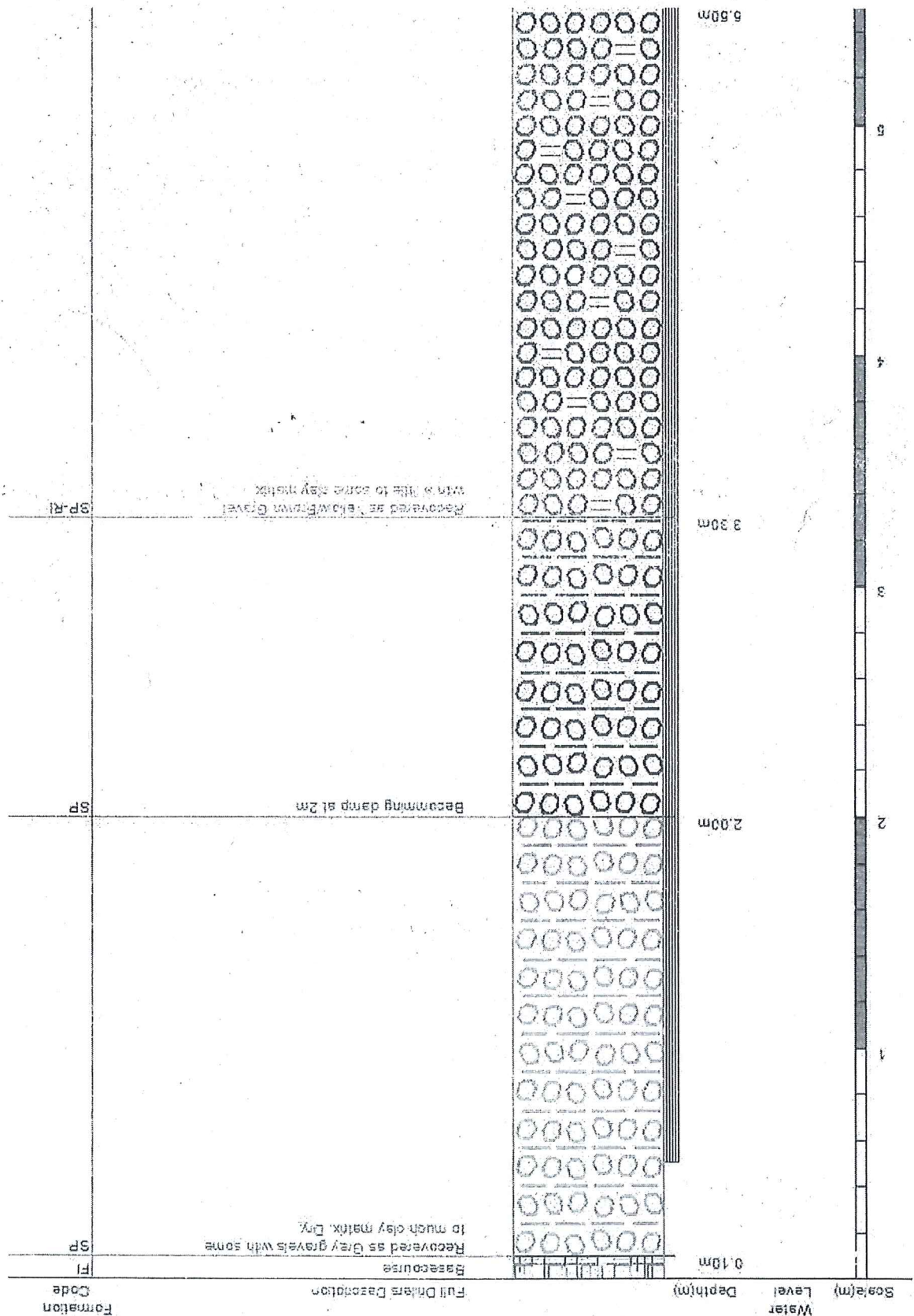
**Environment
 Canterbury**
 Regional Council
 Raukawa, Te Anau, Waitaha

Scale(m)	Water Level	Depth(m)	Full Drillers Description	Formation Code
		0.30m	Gravel and earth	SP
			Clay	SP
		2.40m	Dark grey sand and gravel	SP-R1
5		5.69m	Blue gravel, sand and clay with	R1
		7.53m	Brown gravels and sand	R1
10		10.70m		





Borelog for well M36/5626
 Grid Reference (NZTM): 1543352 mE, 5154006 mN
 Location Accuracy: 10 - 50m
 Ground Level Altitude: 19.9 m +MSD Accuracy: ± 2.5 m
 Driller: Clemence Drilling Contractors
 Drill Method: Rotary/Percussion
 Borelog Depth: 5.5 m Drill Date: 29-Apr-1998



HAND AUGER AND SCALA LOG						Job No.:	15351
Client: Fraemohs Homes						Hole No.:	HA01/SP01
Project: Kindercare extension						Date:	15/10/2015
Location: 20 Leeston Lake Road, Leeston, Christchurch						Logged By:	HH
Coordinates: E 1543562.1, N 5153890.0						Sheet:	1 of 1
Ground Level: -							
RL	Subsurface Conditions	Depth (m)	Groundwater	Geological Unit	Graphic Log	Scala Penetrometer (blows / 50mm)	Vane Shear Strength (refer notes for details)
	SILT with trace organics and trace sand; dark brown; dry; low plasticity. Organics are amorphous. Sand is fine.			TOPSOIL			
	SILT; brown mottled orange speckled red; dry; low plasticity.	0.5	Groundwater Not Encountered	SPRINGSTON FORMATION (TERRESTRIAL)			
	1.0m: End of hole (unable to penetrate)	1.0					

Notes & Abbreviations

Soils logged in accordance with 'The guidelines for the classification and description of soil and rock for engineering purposes' December 2005, NZGS. Co-ordinates are in NZTM unless otherwise specified.

Water

- ▼ Standing Water Level
 ▽ Water Level At Time Of Drilling
 ◁ Out Flow ▷ In Flow

Shear Vane

- Corrected as per NZGS Guidelines
 Vane No.:
 UTP = Unable To Penetrate
 + = Peak Exceeded
 - = No Result

Other Comments



HAND AUGER AND SCALA LOG

Job No.: 15351

Client: Fraemohs Homes

Hole No.: HA02/SP02

Project: Kindercare extension

Date: 15/10/2015

Location: 20 Leeston Lake Road, Leeston, Christchurch

Logged By: HH

Coordinates: E 1543556.5, N 5153890.3

Ground Level: -

Sheet: 1 of 1

RL	Subsurface Conditions	Depth (m)	Groundwater:	Geological Unit	Graphic Log	Scala Penetrometer (blows / 50mm)	Vane Shear Strength (refer notes for details)
	SILT with trace organics and trace sand; dark brown; dry; low plasticity. Organics are amorphous. Sand is fine.			TOPSOIL			
	SILT; brown mottled orange speckled red; dry; low plasticity.	0.5	Groundwater Not Encountered	SPERMATION FORMATION (TERRES FIRM.)			
	1.2m. End of hole (unable to penetrate)	1.0					

Notes & Abbreviations

Soils logged in accordance with 'The guidelines for the classification and description of soil and rock for engineering purposes' December 2005, NZGS. Co-ordinates are in NZTM unless otherwise specified.

Water	Shear Vane	Other Comments
▽ Standing Water Level	Corrected as per NZGS Guidelines	
▽ Water Level At Time Of Drilling	Vane No.: UTP = Unable To Penetrate	
↙ Out Flow ↘ In Flow	1 = Peak Exceeded - = No Result	

Produced with Core-OS

KGA
GEOTECHNICAL

Printed: 16/10/2015 9:44:04 a.m.

HAND AUGER AND SCALA LOG		Job No.: 15351
Client: Fraemohs Homes		Hole No.: HA03/SP03
Project: Kindercare extension		Date: 15/10/2015
Location: 20 Leeston Lake Road, Leeston, Christchurch		Logged By: HH
Coordinates: E 1543549.5, N 5153879.5		Sheet: 1 of 1
		Ground Level: -

RL	Subsurface Conditions	Depth (m)	Groundwater	Geological Unit	Graphic Log	Scala Penetrometer (blows / 50mm)	Vane Shear Strength (refer notes for details)
	SILT with trace organics and trace sand; dark brown; dry; low plasticity. Organics are amorphous. Sand is fine.			TOPSOIL		0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 2 6 3 3 3 3	
	SILT; brown mottled orange speckled red; dry; low plasticity.	0.5	Groundwater Not Encountered	SPRINGSTON FORMATION (TERRESTRIAL)		3 2 2 2 1 1 2 3	
	0.7m: End of hole (unable to penetrate)					7 11 16 16 >>	
		1.0					

Notes & Abbreviations

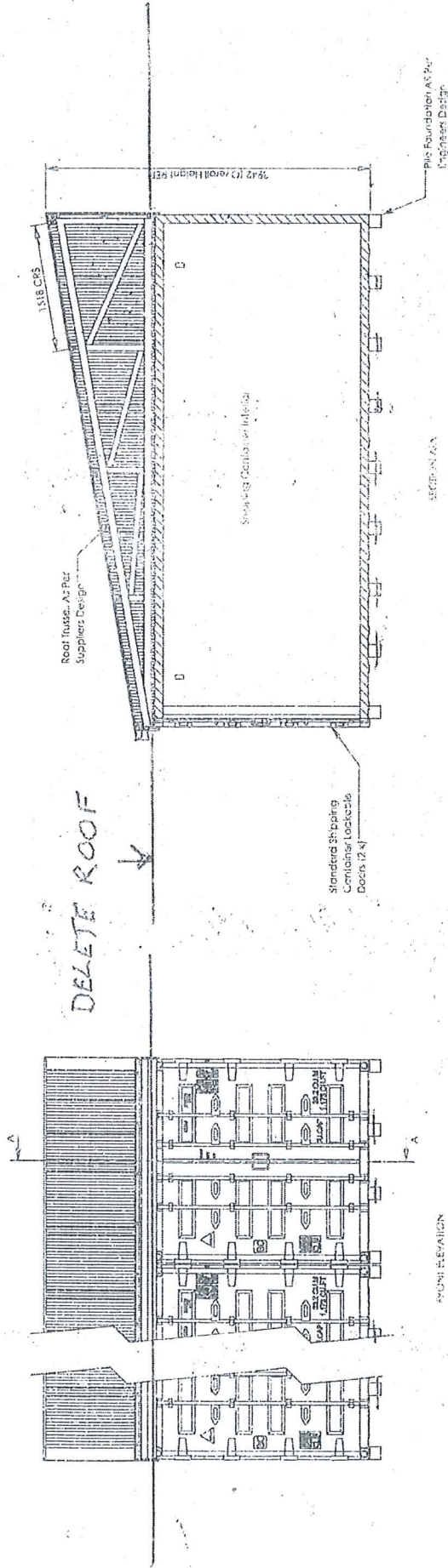
Soils logged in accordance with 'The guidelines for the classification and description of soil and rock for engineering purposes' December 2005, NZGS. Co-ordinates are in NZTM unless otherwise specified.

Water	Shear Vane	Other Comments
☒ Standing Water Level ☒ Water Level At Time Of Drilling ☒ Out Flow ☒ In Flow	Corrected as per NZGS Guidelines Vane No.: UTP = Unable To Penetrate + = Peak Exceeded - = No Result	



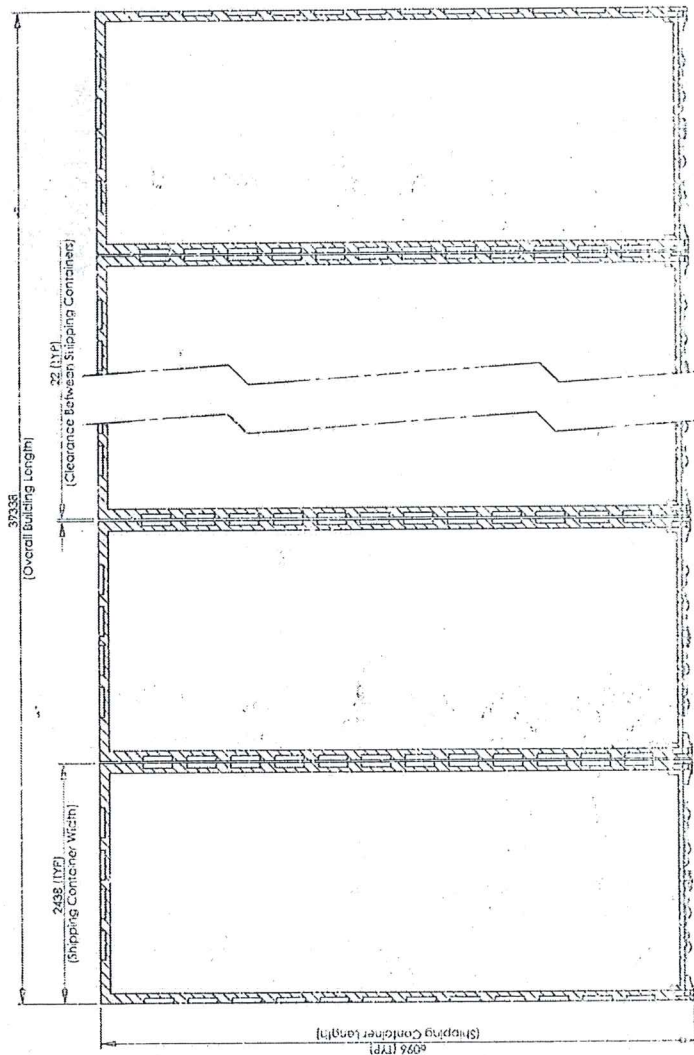
DO NOT SCALE DRAWING. IF IN DOUBT, PLEASE ASK

NOTES: Roof Pitch 10°
Long run coloured corrugate roofing
Approved roofing underlay
94.47° radius @ 1518 CTS
Trusses as per manufacturer @ 1785 CTS

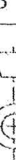


STORAGE BUILDING LEESTON FOR AW & MI CLARKE		DESIGNED: A W CLARKE		CROSS SECTION Storage Building Leeston	
		Checked: A W Clarke			
		Approved: A W Clarke			
		All Dimensions In mm Unless Otherwise Stated			
1	01/08/2022	J.Clarke	Initial Release	Scale: 1:50	Sheet: A3
Rev	Date	Rev'd By	Revision Note	Sheet 4 of 8	Drawing Number: 34054-1
					Rev: 01

DO NOT SCALE DRAWING. IF IN DOUBT, PLEASE ASK.



FLOOR PLAN AREA = 240m²
(Note Shipping Containers Are Sectioned Through Side Walls)

Rev		Date	Rev'd By	Revision Note	STORAGE BUILDING LEESTON FOR AW & MI CLARKE						Designed: A W Clarke Checked: A W Clarke Approved: A W Clarke All Dimensions in mm, Unless Otherwise Stated			FLOOR PLAN Storage Building Leeston			Rev:			
1	01/08/2022	J.Clarke	Initial Release											Scale: 1:50			Sheet: A3	Sheet 2 of 8	Drawing Number: 34854-1	01

DO NOT SCALE DRAWING, IF IN DOUBT, PLEASE ASK

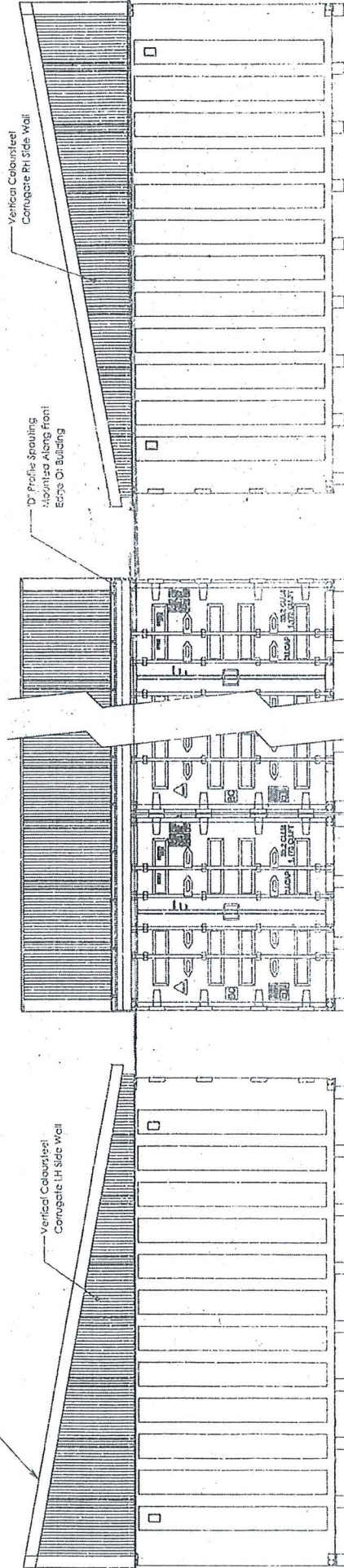
~~DELETE ROOF~~

10' Coloured Corrugate Roof

Vertical Coloured Corrugate LH Side Wall

D' Profile Sprocket Mounted Along Front Edge Of Building

Vertical Coloured Corrugate RH Side Wall



LEFT ELEVATION

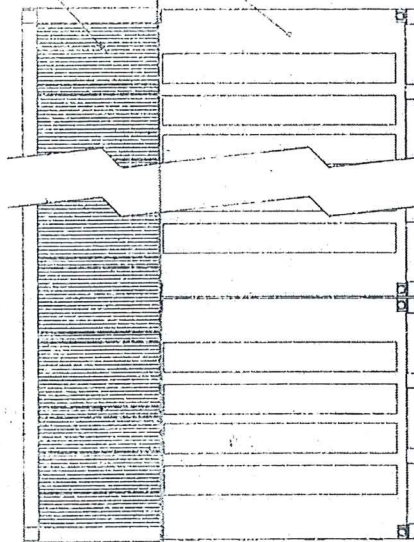
FRONT ELEVATION

RIGHT ELEVATION

~~DELETE ROOF~~

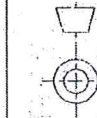
Vertical Coloured Corrugate Rear Wall

Sprocket Sprocket Mounted Along Back Edge Of Building



REAR ELEVATION

STORAGE BUILDING
LEESTON
FOR AW & MI CLARKE



Designed: A W Clarke

Checked: A W Clarke

Approved: A W Clarke

All Dimensions in mm Unless Otherwise Stated

ELEVATIONS
Storage Building Leeston

Sheet 3 of 8
Drawing Number:
34054-1

Rev. 01

Rev	Date	Revd By	Initial Release	Revision Note
1	01/08/2022	J. Clarke	Initial Release	