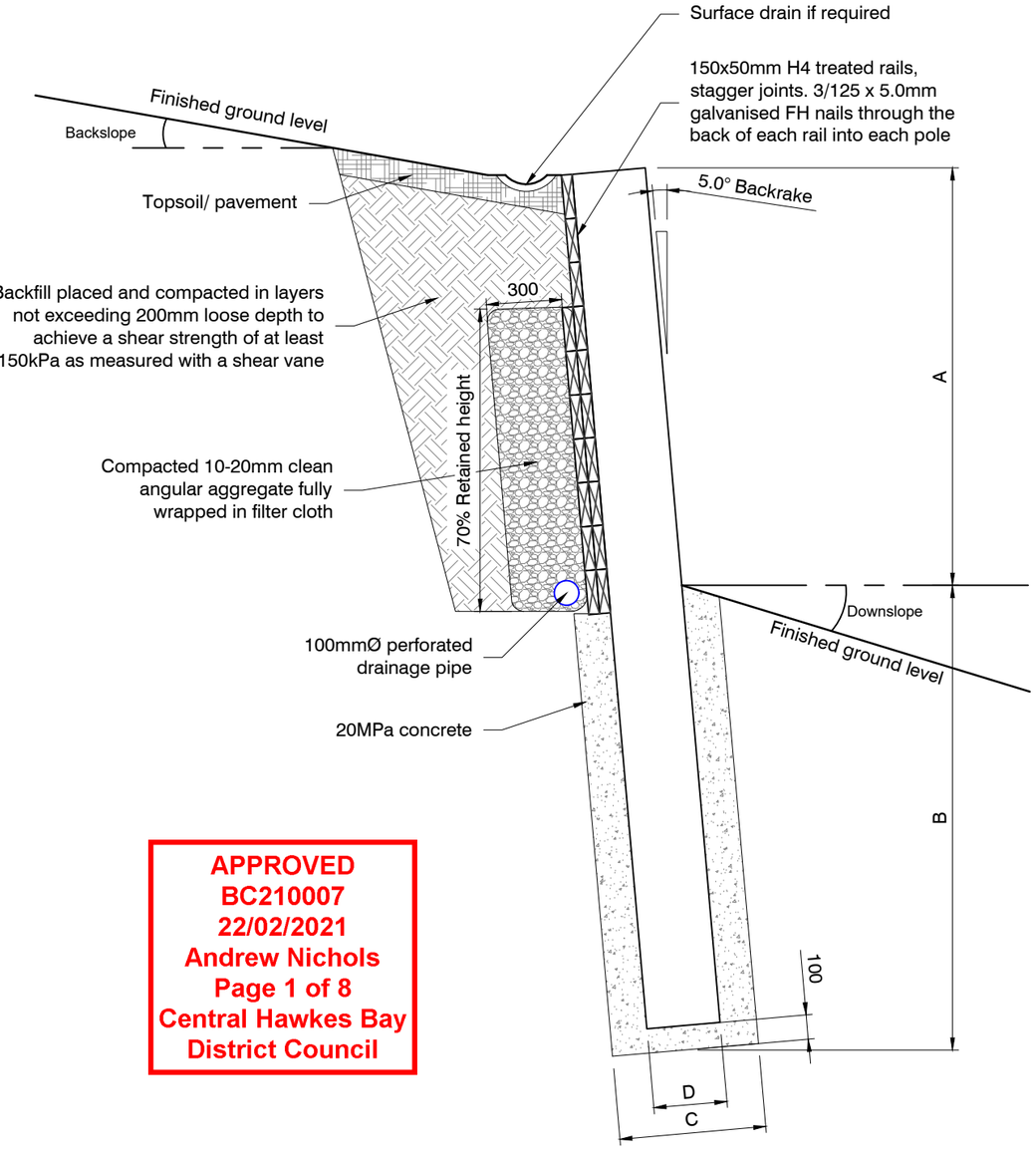
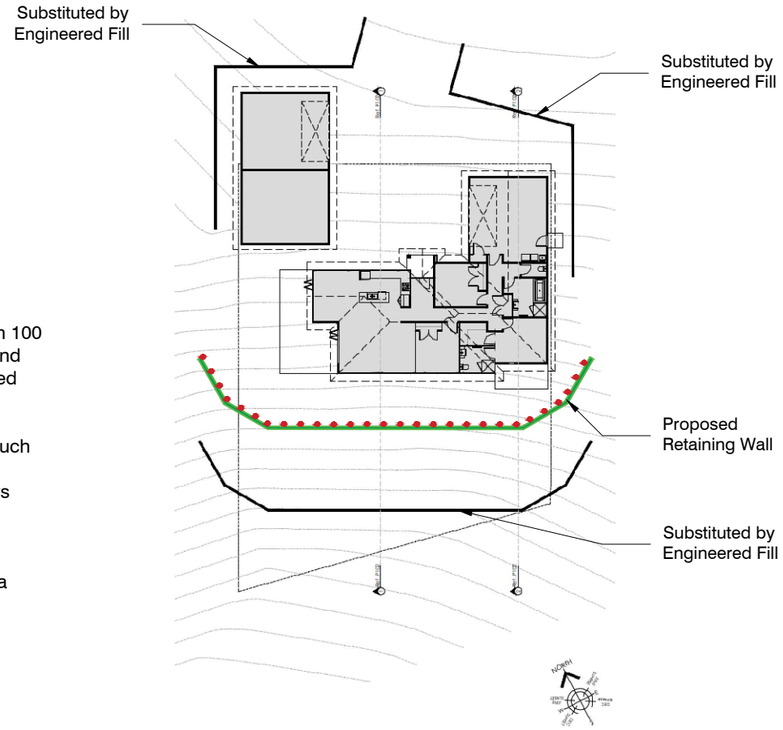


NOTE:

1. Pole spacing shown on the table are absolute maximums
2. Poles to be centered in the holes to ensure an equal amount of concrete around the pole for its full depth
3. All timber poles to be normal density poles (38MPa)
4. All timber poles to be H5 treated, backboards H4
5. Backboards are to span at least two bays
6. Joins in backboards to be staggered
7. All nails to be hot dipped galvanized 100 x 4mm Ø flat head
8. The subsoil drainage is to be laid with a positive fall of at least 1 in 100
9. Outlets from subsoil drains shall be constructed from solid pipe and are to discharge at a gradient not less than 1 in 100 to an approved location clear of the wall
10. Concrete to be 20MPa
11. Drainage metal is to be fully wrapped in a non-woven filter cloth such as "Bidim A19" or similar approved
12. Backfill should not be placed behind the wall until at least ten days after concreting
13. Backfill should be placed and compacted in layers not exceeding 200mm
14. A barrier is required along any length of retaining wall which has a retained height of 1.0m or greater

INSPECTIONS:
A producer statement construction (PS4) will only be issued if the following inspections have been carried out by the engineer responsible for issuing the ps4:

1. Location of the wall, excavation of the holes and allowable bearing capacity > 150kpa.
2. Placement of the poles prior to concrete being poured.
3. Inspection of the behind wall drainage prior to backfilling. The perforated drainage pipe needs to be sighted.
4. Final inspection.



PLAN VIEW - NOT TO SCALE

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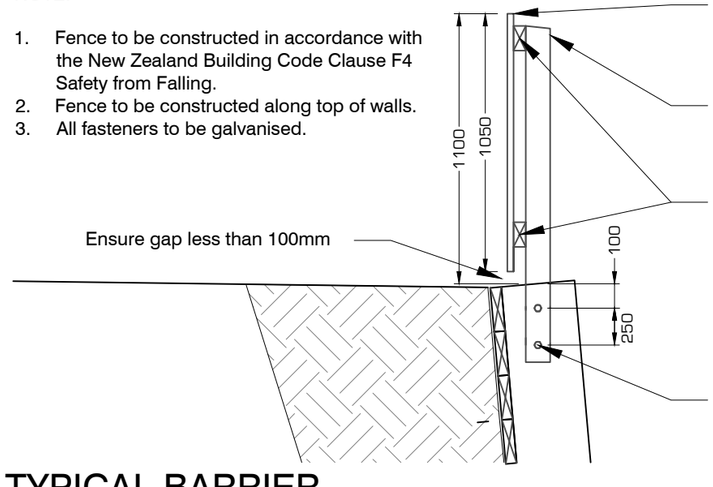
Retaining Wall				
A, Maximum retained height (mm)	B, Minimum embedment depth (mm)	C, Minimum borehole dia (mm)	D, Minimum pole dia, SED (mm)	Backboard details (required thickness at depth below top of wall)
1000	1000	300	150	50mm from 0mm, 100mm from 1200mm
1500	1500	400	200	50mm from 0mm, 100mm from 1200mm
2000	1900	450	250	50mm from 0mm, 100mm from 1200mm
2500	2400	500	300	50mm from 0mm, 100mm from 1200mm
3000	2900	600	350	50mm from 0mm, 100mm from 1200mm

Pole spacing ℄ to ℄ (mm)	Max. backslope angle (deg)	Max. downslope angle (deg)	Backrake angle (deg)
1200	5	0	5
Assumptions (see calcs):	Ka wall in good ground (150 kPa), 3 kPa variable surcharge		

NOTE:

1. Fence to be constructed in accordance with the New Zealand Building Code Clause F4 Safety from Falling.
2. Fence to be constructed along top of walls.
3. All fasteners to be galvanised.



TYPICAL BARRIER

Original Size = A3

CLIENT: Sally & Nathan Tritt

PROJECT: Retaining wall
300 Homewood Road, Waipawa

DRAWING TITLE: Details

LAND DEVELOPMENT & ENGINEERING LTD.

No.	REVISION	BY	DATE
0	FOR CONSTRUCTION	BD	02/12/2020

DESIGN:	BD
DRAWN:	BD
DATE:	02/12/'20
CHECKED:	TA
SCALE A3:	As shown

PROJECT STATUS: FOR CONSTRUCTION
PROJECT: 18533
SHEET: 1 of 1
DRAWING No: S1
REV: 0

Building Code Clause(s) B1

PRODUCER STATEMENT – PS1 – DESIGN

(Guidance on use of Producer Statements (formerly page 2) is available at www.engineeringnz.org)

ISSUED BY: LDE Ltd
(Design Firm)

TO: Sally & Nathan Tritt
(Owner/Developer)

TO BE SUPPLIED TO: Waipawa District Council
(Building Consent Authority)

IN RESPECT OF: Proposed Retaining Wall
(Description of Building Work)

AT: 300 Homewood Road
(Address)

Town/City: Waipawa (Address) **LOT** 2 **DP** 344960 **SO**

We have been engaged by the owner/developer referred to above to provide:

Engineering design of timber pole retaining wall
(Extent of Engagement)

services in respect of the requirements of Clause(s) B1 of the Building Code for:

☐ All or ■ Part only (as specified in the attachment to this statement), of the proposed building work.

The design carried out by us has been prepared in accordance with:

■ Compliance Documents issued by the Ministry of Business, Innovation & Employment B1/VM4, NZS3404 or
(verification method/acceptable solution)

☐ Alternative solution as per the attached schedule

The proposed building work covered by this producer statement is described on the drawings titled:

Retaining wall and numbered 18533 - S1-S2;
together with the specification, and other documents set out in the schedule attached to this statement.

On behalf of the Design Firm, and subject to:
(i) Site verification of the following design assumptions Bearing capacities as specified on drawings and geotech assumptions followed.
(ii) All proprietary products meeting their performance specification requirements;

I believe on reasonable grounds that a) the building, if constructed in accordance with the drawings, specifications, and other documents provided or listed in the attached schedule, will comply with the relevant provisions of the Building Code and that b), the persons who have undertaken the design have the necessary competency to do so. I also recommend the following level of construction monitoring/observation:

☐ CM1 ■ CM2 ☐ CM3 ☐ CM4 ☐ CM5 (Engineering Categories) or ☐ as per agreement with owner/developer (Architectural)

I, Tamlyn Adams (Name of Design Professional) am: ■ CPEng 1160180 # ☐ Reg Arch ..... #

I am a member of: ■ Engineering New Zealand ☐ NZIA and hold the following qualifications: CPEng, BEng
The Design Firm issuing this statement holds a current policy of Professional Indemnity Insurance no less than $200,000*.
The Design Firm is a member of ACENZ: ☐

SIGNED BY Tamlyn Adams (Name of Design Professional) (Signature) Tamlyn Adams cn=Tamlyn Adams, c=NZ, o=LDE Ltd, email=t.adams@lde.co.nz 2020.12.04 13:01:49 +13'00'

ON BEHALF OF LDE Ltd (Design Firm) Date 4/12/2020

Note: This statement shall only be relied upon by the Building Consent Authority named above. Liability under this statement accrues to the Design Firm only. The total maximum amount of damages payable arising from this statement and all other statements provided to the Building Consent Authority in relation to this building work, whether in contract, tort or otherwise (including negligence), is limited to the sum of $200,000.*

This form is to accompany **Form 2 of the Building (Forms) Regulations 2004** for the application of a Building Consent.

Project Reference: 18533
4 December 2020

Building Compliance and Consents
Waipawa District Council

Dear Sir/Madam

300 HOMEWOOD ROAD, WAIPAWA

COMPLIANCE WITH NZ BUILDING CODE CLAUSE B2 – DURABILITY

LDE has been requested to provide a PS1 for covering clause B2 – Durability of the New Zealand Building Code.
We are unable to provide this producer statement because the building code compliance documents issued by the Ministry of Business, Innovation and Employment contain no effective verification method for clause B2.
However, we can confirm that for the structural elements shown in our documentation, durability has been addressed as follows:

Material	Means of compliance	Application of standard
Concrete	B1/VM1	Covers have been selected in accordance with section 3 of NZS3101:2006 and clause 3.1 of NZBC compliance document B2/AS1.
Structural timber	B1/VM1	The timber has been specified in accordance with NZS3640:2004, NZS3602:2003 and Table 1A of B2/AS1. The quality of timber treatment is dependent on the QA systems of manufacturers, suppliers and the onsite contractors and sub-contractors. Refer to the contractor's PS3 and QA records where available.

SITE MAINTENANCE

Prompt repair of plumbing leaks should be undertaken. Blocked, broken or faulty sprouting should be attended to immediately. The discharge of uncontrolled surface water over the site and surrounding areas should be avoided at all costs.

We trust this provides the information that you require.
Sincerely
LDE Limited

Tamlyn Adams CPEng
Senior Structural Engineer
022 036 8743

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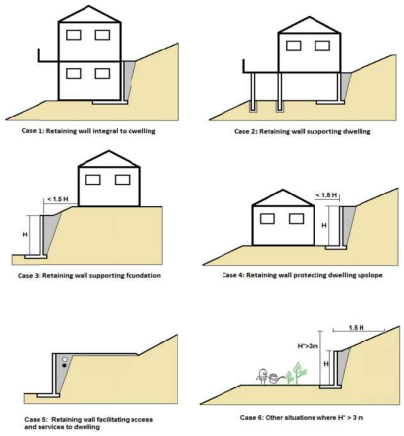
CANTILEVER RETAINING WALL CALCULATION SHEET

Client:	Sally & Nathan Tritt				
Project:	Retaining Walls			Wall Section:	3m
Address:	300 Homewood Road, Waipawa			Project No.:	18533
By:	BD	Date:	2/12/2020	Checked:	Date:

1.0 Lateral Earth Pressure Coefficients

The wall has been designed to support the a 5kPa Variable surcharge due to the proximity to the neighbouring boudary.



1.1 Design Parameters

Wall incline		=	5	°
Ground angle upslope	β_u	=	5	°
Ground angle downslope	β_d	=	0	°
Friction angle of retained soil (above wall)	ϕ'_u	=	32	°
Friction angle of retaining soil (below wall)	ϕ'_d	=	32	°
Friction angle of wall	δ	=	0	°
Cohesion of soil	c'	=	0	kPa

1.2 Seismic Parameters:

Site subsoil class			Class C	Shallow Soil
Seismic coefficient	Z	=	0.41	*Seismic factor for area, 0.36 Gisborne, 0.3 Christchurch, 0.13 Warkworth*
Performance requirement case	Case	=	4	*Figure 7 Guidance on seismic design of retaining structures for residential sites in Greater Christchurch*
Design for SLS/ULS		=	ULS	*Ultimate Limit State or Serviceability Limit State*
Topographic amplification factor	A(Topo)	=	1	*1 for average slopes < 15°, 1.2 Cliff features & Ridglines <30m, 1.4 if ridgeline > 30m*
Spectral shape factor	Ch(T)	=	1.33	*C(T) = Ch(T)*Z*R*N(T,D)*
Importance Level	IL	=	2	*Dependant on Performance Case*
Return period factor	Ruls	=	1	*1 for ULS Importance Level 2, 0.5 for ULS Importance Level 1, 0.33 for SLS Importance Leve*
Near fault factor	N(T,D)	=	1	*Generally 1 if for residential retaining walls*
Elastic site hazard spectrum for horiz loading	C(T)	=	0.545	
Intermediate calculation step	C(T). Atopo	=	0.545	
Wall displacement factor	Wd	=	0.4	*From MBIE Guidelines Table 2*
Elastic site hazard spectra for horizontal loading	kh	=	0.218	*kh=C(T,Atopo) . Wd*
Elastic site hazard spectra for vertical loading	kv		0	*Ignore, see Section 7.6.9 of Guidance on the seismic design of retaining structures for residential sites in Greater Christchurch*
Limiting factor of kh	kh;limit		0.62	*Above this value of kh (dependant on D), Kae resulting values are not usable, MBIE Appendix A Application of MO equations with high acceleration and/or back slope angle*
Kae okay to use?			OK	

1.3 Active Earth Pressure Coefficient Ka

Coulomb's Theory (Frictional)

$$K_a = \left(\frac{\frac{\sin(\alpha-\phi)}{\sin\alpha}}{\sqrt{\sin(\alpha+\delta)} + \sqrt{\left[\frac{\sin(\phi+\delta)\sin(\phi-\beta)}{\sin(\alpha-\beta)}\right]}} \right)^2$$

K_a = **0.289**

Rankine (Cohesive)

$$K_A = \tan^2(45-\phi'/2) - \frac{2c'}{\sigma'_v}\tan(45-\phi'/2)$$

K_a = **0.307**

3.1.4 Passive Earth Pressure Coefficient Kp

Rankine (Frictional)

$$Kp = \frac{1 + \sin\phi'}{1 - \sin\phi'}$$

K_p = **3.255**

3.1.5 At Rest Earth Pressure Coefficient Ko

Rankine (Frictional)

$$Ko = (1 - \sin\phi)\,.\,(1 + \sin\beta)$$

K_0 = **0.511**

3.1.6 Earthquake Earth Pressure Coefficient Kae

Mononobe-Okabe

$$K_{ae} = \frac{\cos^2(\varphi-\psi-\alpha)}{\cos\psi\cos^2\alpha\cos(\psi+\alpha+\delta)\left(1+\sqrt{\frac{\sin(\varphi+\delta)\sin(\varphi-\psi-\beta)}{\cos(\delta+\psi+\alpha)\cos(-\beta+\alpha)}}\right)^2}$$

K_{ae} = **0.459**

0.459 *If phi-beta-psi <= 0, sin(phi-beta-psi)=0*

3.1.7 Earthquake Earth Pressure Coefficient Kpe

Mononobe-Okabe

$$K_{pe} = \frac{\cos^2(\varphi-\psi+\alpha)}{\cos\psi\cos^2\alpha\cos(\psi-\alpha+\delta)\left(1-\sqrt{\frac{\sin(\varphi+\delta)\sin(\varphi-\psi+\beta)}{\cos(\delta+\psi-\alpha)\cos(\beta-\alpha)}}\right)^2}$$

K_{pe} = **3.148**

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Client:	Sally & Nathan Tritt				
Project:	Retaining Walls			Wall Section:	3m
Address:	300 Homewood Road, Waipawa			Project No.:	18533
By:	BD	Date:	2/12/2020	Checked:	Date:

2.0 Main Design

2.1 Wall Input Parameters

Location of wall	Residential		
Retained height	H	3.00	m
Length of lever arm	Hd	3.00	m
Depth to water table from surface	Dw	3.00	m
Use water pressure		No	
Spacing	s	1.20	m
Permanent Surcharge	Sg	0	kPa
Variable surcharge	Sq	3	kPa
Construction surcharge	Sc	5	kPa
Barrier Point load, unfactored	P	1.2	kN

2.2 Soil properties

Unit weight of soil (Eff)	γ'	18	kN/m^3
Unit weight of water	γw	10	kN/m^3

Ka	0.31	0.31
Kae	0.46	0.46

2.3 Load Factors

		Characteristic	Static	Earthquake	Ultimate Constructio n
Earth	Fe	1.0	1.5	1.0	1.0
Perm	G	1.0	1.2	1.0	1.0
Variable	Q	1.0	0.4	0.3	1.0

2.4 Lateral Force Calculation - Rankine Method

			Characteristic	Static	Earthquake	Construction		
Fe Earth Pressure								
Active Soil Force	LF.(0.5.Ka.γ.H^2)	P_{fe}	24.9	37.3	37.1	24.9	kN/m	*Force applied*
Point of application from base	D-H+H/3	a	1.00	1.00	1.00	1.00	m	*Distance from fixity*
G Permanent Surcharge								
Surcharge Force	LF.(Ka. Sg. H)	$P_{G:surcharge}$	0.0	0.0	0.0	0.0	kN/m	*Force applied*
Point of application from base	D-H+H/2	b	1.50	1.50	1.50	1.50	m	*Distance from fixity*
Q Variable Surcharge								
Surcharge Force	LF.(Ka. Sq. H)	$P_{Q;surcharge}$	2.8	1.1	1.2	4.6	kN/m	*Force applied*
Point of application from base	D-H+H/2	c	1.50	1.50	1.50	1.50	m	*Distance from fixity*
W Water Pressure								
Water Force	LF.(0.5.γw.H^2)	P_w	0.0	0.0	0.0	0.0	kN/m	*Force applied*
Point of application from base	(D-Dw)/3	d	0.00	0.00	0.00	0.00	m	*Distance from fixity*
B Barrier Loading								
Load from Barrier at post base	LF.P	P	1.0	1.5	0.0	0.0	kN/m	*Force applied*
Point of application from base	D	d	3.00	3.00	0.00	0.00	m	*Distance from fixity*

2.5 Bending moment (as free cantilever)

Earth base moment	LF.(0.5.Ka.γ.H2) * (D-H+H/3)	M_{fe}	24.9	37.3	37.1	24.9	kNm/m
Perm sur base moment	LF.(0.5.Ka.Sg.H) * (D-H+H/2)	$M_{g;\ surcharge}$	0.0	0.0	0.0	0.0	kNm/m
Variable surbase moment	LF.(0.5.Ka.Sq.H) * (D-H+H/2)	$M_{q;surcharge}$	4.1	1.7	1.9	6.9	kNm/m
Water base moment	LF.(0.5.γw.Hw2) * (D-Dw)/3	M_W	0.0	0.0	0.0	0.0	kNm/m
Barrier moment	LF*P*D	M_B	3.0	4.5	0.0	0.0	kNm/m
Total applied base moment	ΣM	M_{total}	32.0	43.5	39.0	31.8	kNm/m
Total applied base moment per pole	M_{total} . S	M*	38.4	52.2	46.8	38.2	kNm

2.6 Ground reaction force (as free cantilever)

Ground reaction due to soil		P_{fe}	24.9	37.3	37.1	24.9	kN/m
Ground reaction due to perm surch		$P_{G:surcharge}$	0.0	0.0	0.0	0.0	kN/m
Ground reaction due to vari surch		$P_{Q;surcharge}$	2.8	1.1	1.2	4.6	kN/m
Ground reaction due to water		P_w	0.0	0.0	0.0	0.0	kN/m
Barrier Horizontal force		P_B	1.0	1.5	0.0	0.0	kN/m
Total applied base reaction	ΣV	V_{total}	28.7	39.9	38.4	29.5	kN/m
Total applied base reaction per pole	V_{total} . S	V*	34.4	47.9	46.1	35.4	kN

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Client:	Sally & Nathan Tritt				
Project:	Retaining Walls			Wall Section:	3m
Address:	300 Homewood Road, Waipawa			Project No.:	18533
By:	BD	Date:	2/12/2020	Checked:	Date:

3.0 Timber Pole Design

3.1 Timber Pole Properties

Strength Reduction factor		$k_{Ø}$	0.8	
Duration of load factor	Static	k_1	0.6	
Duration of load factor	Earthquake	k_1	1	
Duration of load factor	Construction	k_1	0.8	
Load sharing factor		k_4	1	
Load sharing factor		k_5	1	
Stability factor		k_8	1	
Steaming factor		k_{20}	0.9	
Machine peeling factor 0.9 **Or** Machine shaving factor 0.85		k_{21}	0.9	
Bending strength		f_b	38	MPa
Shear strength		f_s	3.1	MPa
Timber density		ρ_t	350	kg/m^3

Min Pole diameter	Ø	350	mm
Elastic section modulus for section	Z	4209243	mm^3

3.2 Design Bending Moment And Shear Force Checks

3.3 Bending moment check

M* = See 2. Main design

Mu = $Z \cdot f_b \cdot k_{Ø} \cdot k_1 \cdot k_4 \cdot k_5 \cdot k_8 \cdot k_{20} \cdot k_{21}$

							Check applied < capacity
Static applied/capacity	M^*_{static}	52	$\varphi M_{u;static}$	62	kNm	OK	
Earthquake applied/capacity	M^*_{eq}	47	$\varphi M_{u;eq}$	104	kNm	OK	
Construction applied/capacity	M^*_{con}	38	$\varphi M_{u;con}$	83	kNm	OK	

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3.4 Shear force check (at base of retained height)

V* = From Section 3.2

Vu = $A \cdot fs \cdot k_{Ø} \cdot k_1 \cdot k_4 \cdot k_5 \cdot k_8 \cdot k_{20} \cdot k_{21}$

						Check applied < capacity
Static applied/capacity	V^*_{static}	48	$\varphi V_{u;static}$	116	kN	OK
Earthquake applied/capacity	V^*_{eq}	46	$\varphi V_{u;eq}$	193	kN	OK
Construction applied/capacity	V^*_{con}	35	$\varphi V_{u;con}$	155	kN	OK

3.5 Deflection check (at top of retained height)

Maximum applied deflection

Maximum applied deflection $\Delta^* = Pb^2/6EI * (3l - b)$

Maximum allowable deflection $\Delta allow = D/200$

		Earth pressures Fe	Permanent surcharge G	Variable surcharge Q	Water pressures W	
Equivalent force Characteristic (SLS)	P	25	0	3	0	kN
Distance to equivalent force	b	1.00	1.50	1.50	0.00	m

Youngs modulus for timber	E	9000	N/mm^2
Second moment of area for section	I	736617574	mm^4

						Check applied < capacity
Earth deflection applied/capacity	Δ^*_{static}	5.0	mm			
Perm sur deflection applied/capacity	Δ^*_{eq}	0.0	mm			
Variable sur deflection applied/capacity	Δ^*_{const}	1.2	mm			
Water deflection applied/capacity	Δ^*_{water}	0.0	mm			
Total expected deflection	Δ^*_{total}	6.2	mm	Δ_{allow}	15.0 mm	OK

Adopt 350mm SED pole, 38MPa 350kg/m3 at 1.2m centres

Client:	Sally & Nathan Tritt				
Project:	Retaining Walls			Wall Section:	3m
Address:	300 Homewood Road, Waipawa			Project No.:	18533
By:	BD	Date:	2/12/2020	Checked:	Date:

4.1 Backboard Design

4.2 Wall Input Parameters

Location of wall		Residential	
Retained height	H	3.00	m
Spacing	s	1.20	m
Permanent Surcharge	Sg	0	kPa
Variable surcharge	Sq	3	kPa
Construction surcharge	Sc	5	kPa
Breadth of backboards	Db	150	mm
Continuous backboards		Yes	

4.3 Soil properties

Unit weight of soil (Eff) γ' 18 kN/m3

		From Section 3.1	
Ka	0.307	0.31	Earth
Kae	0.459	0.46	Variable

4.4 Load Factors

	Characteristic	Static	Earthquake	Ultimate Constructio n
Fe	1.0	1.5	1.0	1.0
G	1.0	1.2	1.0	1.0
Q	1.0	0.4	0.3	1.0

4.3 Moment Capacity of Backboards

Bending strength	fb	7.5	N/mm2
Strength reduction	Ø	0.8	
Reduction	k1 static	0.6	
Reduction	k1 earthquake	1	
Reduction	k1 construction	1	
Reduction	k3	1	
Youngs Modulus	E	4800	N/mm2

Mu = Z . fb . kØ . k1 . k4 . k5 . k8 . k20 . k21

Z = bd2/6

Note *No1 framing fb = 7.5N/mm²*
VSG8 fb = 11.7N/mm²

Green No1 Framing used for bending strength and youngs modulus

Moment capacity o	50	mm backboards	Mu;50mm	0.23 kNm
Moment capacity o	100	mm backboards	Mu;100mm	0.90 kNm
Moment capacity o	150	mm backboards	Mu;150mm	2.03 kNm
Moment capacity o	200	mm backboards	Mu;200mm	3.60 kNm

4.4 Backboard Design Height

								Check Mu > M*	Deflection
50mm Backboards depth	1.20	m	Mu =	0.23	KNm	>	M* = 0.22 KNm	OK	5.57
100mm Backboards depth	4.95	m	Mu =	0.90	KNm	>	M* = 0.89 KNm	OK	2.80
150mm Backboards depth	5.10	m	Mu =	2.03	KNm	>	M* = 0.92 KNm	OK	0.85
200mm Backboards depth	5.10	m	Mu =	3.60	KNm	>	M* = 0.92 KNm	OK	0.85

Maximum applied deflection Δ* = Pb2/6EI * (3L - b) Δ*max = 5.6 mm

Maximum allowable deflection Δallow = D / 200 Δallow = 6.0 mm OK

Provide backboards to the above heights

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Project:	Retaining Walls					Wall Section:	3m
Address:	300 Homewood Road, Waipawa					Project No.:	18533
By:	BD	Date:	2/12/2020	Checked:		Date:	

5.0 Embedment Depth Design

5.1 Embedded into Cohesive Soil (Broms Method for Cohesive Material)

5.2 Equivalent Broms Forces & Moments per Pile

Broms equivalent forces per pile

Moment about base	M*total*s	M	38	52	47	38	kNm
Equivalent Applied Force	F*s	P	34	48	46	35	kN
Distance to applied force	M/P	f	1.12	1.09	1.02	1.08	m

5.3 Short free head pile design

Building Code Verification Method B1/VM4 Foundations

B1/VM4 Section 4.3.1

$$H_u = 9 s_u D_s \left[\sqrt{2[(f+L)^2 + (f+f_o)^2]} - (L + 2f + f_o)\right]$$

Amend 9 Sep 2010

Trial embedment		L	2.60	m	
Soil shear strength at base of piles down		Su	150	kPa	
Factor of safety on soil	Static	$Ø_{static}$	0.5	*B1/VM4*	*0.45-0.6*
strength (to reduce deflection)	EQ	$Ø_{eq}$	0.8	*B1/VM4*	*0.8-0.9*
Member diameter		Dm	0.350	m	
Hole diameter (D + conc surround)		Ds	0.600	m	
Unsupported length multiplier		S_{m1}	1.5	Ds	
Multiplier (Generally 9)		S_{m2}	9	*Generally 9*	
Spacing of piles		s	1.20	m	
Strength reduction for spacing	2.0 Use	Ø	0.5		

			Ultimate				
			Characteristic	Static	Earthquake	Constructio n	
Ultimate lateral capacity for pile		Hu	100	101	165	101	kN
Allowable lateral strength for pile		ØHu	50	50	83	51	kN
Check Applied force P < Ultimate lateral capacity of ground		ØHu	OK	OK	OK	OK	
Safety factor on embedment length	1.1	SF					
Required embedment		D1	2.86	2.86	2.86	2.86	m

Provide minimum embedment length of 2.9m

APPROVED
BC210007
22/02/2021
Andrew Nichols
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Central Hawkes Bay District Council