2/269 Dead Horse Lane,
Mansfield, VIC
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REQUEST FOR INFORMATION

DATE: 24/05/2023

CLIENT:
WINTERBROOK LODGE
30 THE AVENUE, MT BULLER
VICTORIA 3273

PROJECT:
PROPOSED UNDERCROFT STOREROOM & CARPARK @ WINTERBROOK LODGE MT BULLER

BACKGROUND:

We have been requested by the client ("Winterbrook Lodge") and the architect (Interlandi Mantesso Architects) to provide further information regarding the applicability of a preliminary geotechnical and foundation report completed by Taylor Consulting Engineers on behalf of Phil Styles & Associates Pty Ltd (PSA0266-01 16 Nov 2022) for further on-site works, namely the proposed carparking structure.

The original reports intention was to gather a geotechnical understanding of the founding material that lay under the proposed storage area and sauna. The findings of this report lead to the works being founded of moderately weathered granite capable of a bearing capacity of 10,000kPa.

RECOMMENDATION:

It is our professional opinion that the geotechnical and foundation report prepared in November 2022 is applicable to the proposed carpark works and any recommendations/findings within may be utilised in the further design of the car parking structure. The car parking site is located merely metres away from the sauna/storage area site and thus with a high amount confidence we can assume the same founding material of moderately weathered granite capable of a bearing capacity of 10,000kPa will be located at this site.

If you have any further questions or queries, feel free to contact me to discuss.

GUY PHILIP TAYLOR
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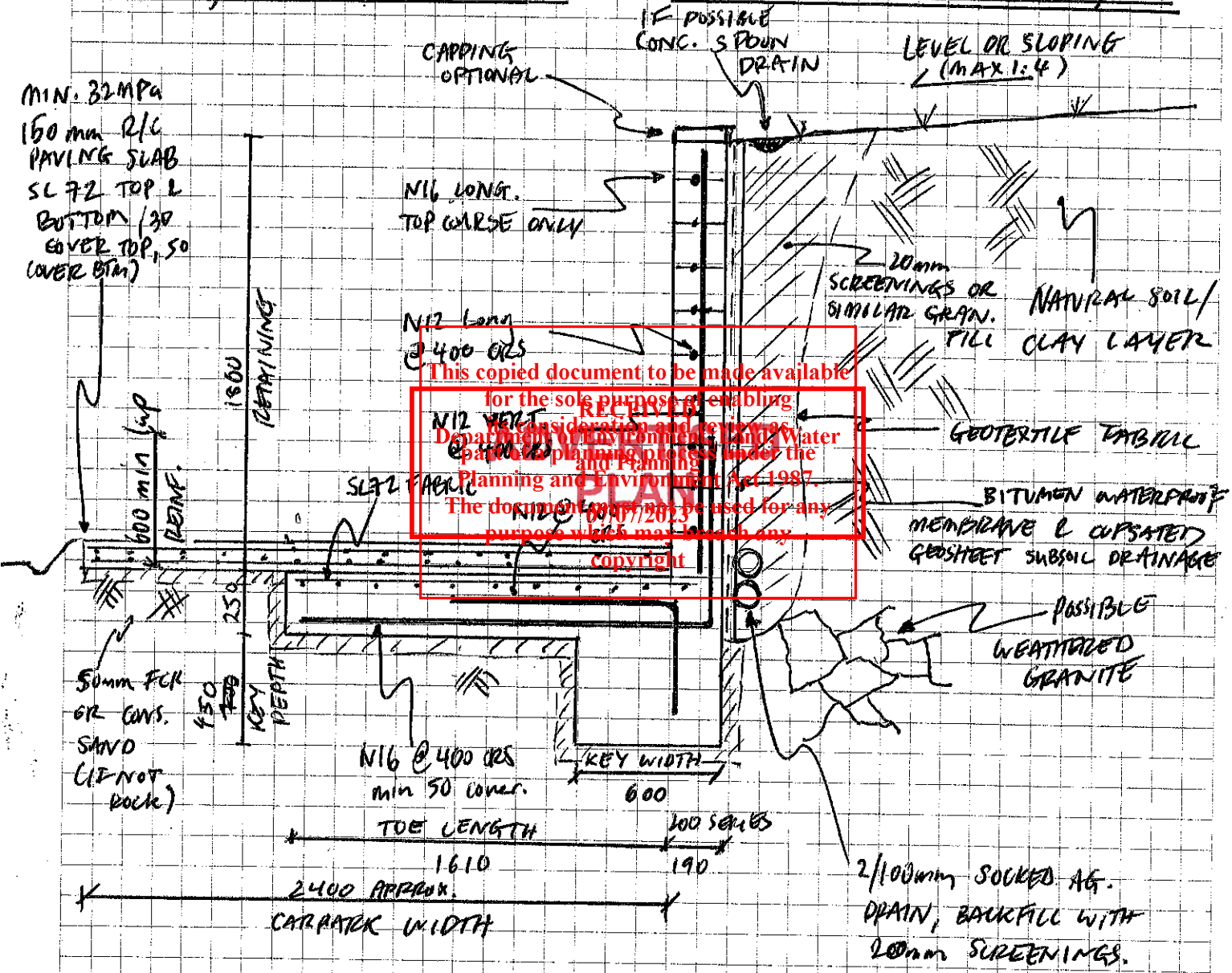
TAYLOR
CONSULTING ENGINEERS

CALCULATIONS PAGE

PROJECT: WINTERBROOK - TCE2013 -2023	**DATE:** 26/5/23	ASG
TITLE: RETAINING WALL DESIGN	**SHEET:** 1 of 2	

Retaining Height ≈ 1780mm — 200 Series Blockwork Corefilled



NOTE: DUE TO SNOW EXPOSURE, MIN. 32 MPa CONCRETE TO BE USED THROUGHOUT CONSTRUCTION.

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MANSFIELD 3722

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Website www.tayloreng.com.au

TCE2013-2023 WINTERBROOK
RETAINING WALL DESIGN
26/5/23 ASG

Proposed Project
Address of Project
Architect

Page:
Project No.: 19-0001
Designed: ASG

RW01

RETAINING WALLS V5.04

Taylor Consulting Engineers

Wall:	**(RW01) 1800mm retaining height, 190mm thick (With key)**	
Loads:	**Surcharge = 5.00kPa, Drained**	
Footing:	**1800mm long (overall), 0mm overhang (behind wall), 250mm deep**	
Stability:	**M*o = 15.5kNm < øMr = 27.6kNm**	**OK (0.56)**
Sliding:	**V*slide = 20.2kN < øVr = 21.9kN**	**OK (0.92)**
Wall:	**M*wall = 11.0kNm, V*wall = 16.1kN, Design factor Φn = 1.1**	
Bearing:	**Max. bearing pressure = 26kPa < Allowable = 150kPa**	**OK (0.17)**

Geometry

Wall assumed fully drained

Retaining height (z) = 1800 mm (= Wall height)
Risk class = A (A),(B),(C) - Minimal damage and loss of access - Table 1.1
Backfill type = 1 Class(1), Class(2), (U)ncontrolled, (I)n-situ - Table 5.1(A)

Soil parameters

Internal friction (ø) = 30 ° (0° ≤ ø ≤ 45°)
Incline (β) = 5 ° (0° ≤ β ≤ 45°) 1 in 11.4
Soil weight (γ) = 18.0 kN/m³
Cohesion (c) = 0 kPa
Friction coefficient (μ) = 0.577

Use passive = Y (Y)es,(N)o
Manual Kp value = 0.00 0 for default
Soil depth to Ignore = 0 mm (for passive)

Allowable bearing = 150 kPa

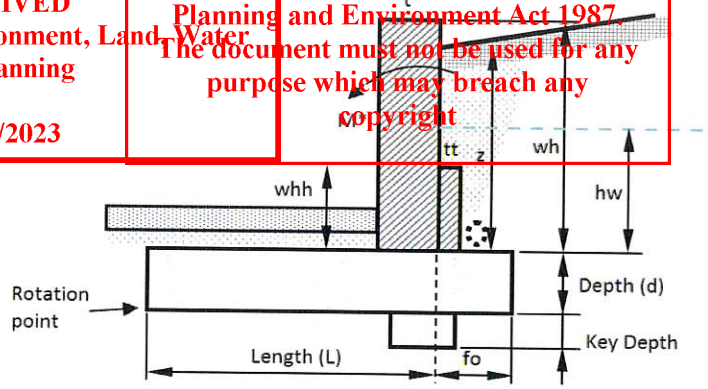
Slab overlay (ts) = mm
Soil overlay (tsl) = mm

Wall

Wall thickness (t) = 190 mm
Wall height (wh) = 1800 mm (= Retaining height)
Add'l thickness (tt) = mm (behind wall)
Add'l th. height (whh) = mm (behind wall)
Add'l th. on soil side = Y (Y)es,(N)o
Wall Wt (Wwt) = 25 kN/m³

Footing

Footing depth (d) = 250 mm
End thickness (d2) = 0 mm (0 = no taper)
Footing length (L) = 1800 mm excluding overhang
Overhang (fo) = 0 mm additional to length
Key depth (key) = 450 mm (sliding only)
Key length (klen) = 600 mm
Key position from heel/back (kpos) = 0 mm (to face)



Design loads - Appendix J - AS4678 & Section 4

Surcharge Min. = 2.5 kPa min. (Table 4.1)
Surcharge (S) = 5.0 kPa
Water height (hw) = 0 mm (over footing, 0=no water)

Earth factor = 1.25 (1.25)
Water pressure = 1.00 (1.00)
Live load factor = 1.50 (1.50 - 0.0 for stabilising effect)
Stabilising = 0.80 AS 4678 - Appendix J2

Additional Loads at top of wall:

Overturning (Ma) = 0.00 kNm/m
Thrust (Va) = 0.00 kN/m
Load factor = 1.50
Ma* = 0.00 kNm/m
Va* = 0.00 kN/m
(Moment/Thrust about top wall)
Additional dead load (Pv) = 0.00 kN/m

Material design factors - Section 5

Φuc =	0.90	c*=c*Φuc =	0 kPa	Cl 5.2.1			
Φuo =	0.95	ø* =	28.7 °	Cl 5.2.2		ø* =	0.502 rad
Design factor (Φn) =	1.10	Table 5.2					
	Ka =	0.355					
	Kp =	2.797					

Depth of tension zone = 0 mm
Acting soil height (ha) = 1800 mm

Sliding (Limit mode U1)

Sliding (V*slide/Φn) =	20.21 kN/m at base	
Passive resistance of footing and key =	12.33 kN/m	
Sliding resistance = μ*Wt =	15.06 kN/m	
Total resistance (øVr) =	21.92 kN/m	OK (0.92)

Bearing

Total (Wt) =	26.10 kN/m	
Overturning moment (Mot = Mo + Mb) =	6.02 kNm/m	
Ecc = Mot / Wt =	230 mm	Ecc ≤ (L+fo)/6, Within kern
Minimum bearing pressure (q.min) =	3.4 kPa	
Maximum bearing pressure (q.max) =	25.6 kPa	OK (0.17)
y =	0 mm	