GREVILLE STREET 20-23 – GROUND LOAD SUMMARY FOR CROSSRAIL

1. INTRODUCTION

The existing structure at 20-23 Greville street is a 5-story office building that was constructed in the 70's. The existing building will be expanded by a rear concrete extension and a 2-storey top extension made from timber. The existing building and the part of the rear extension that is located over the current lightwell are supported onto an existing concrete raft foundation, while the part of the rear extension that is outside the existing raft will be supported on new pile foundations.

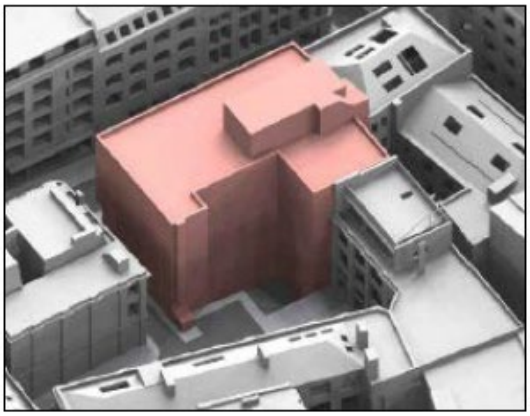
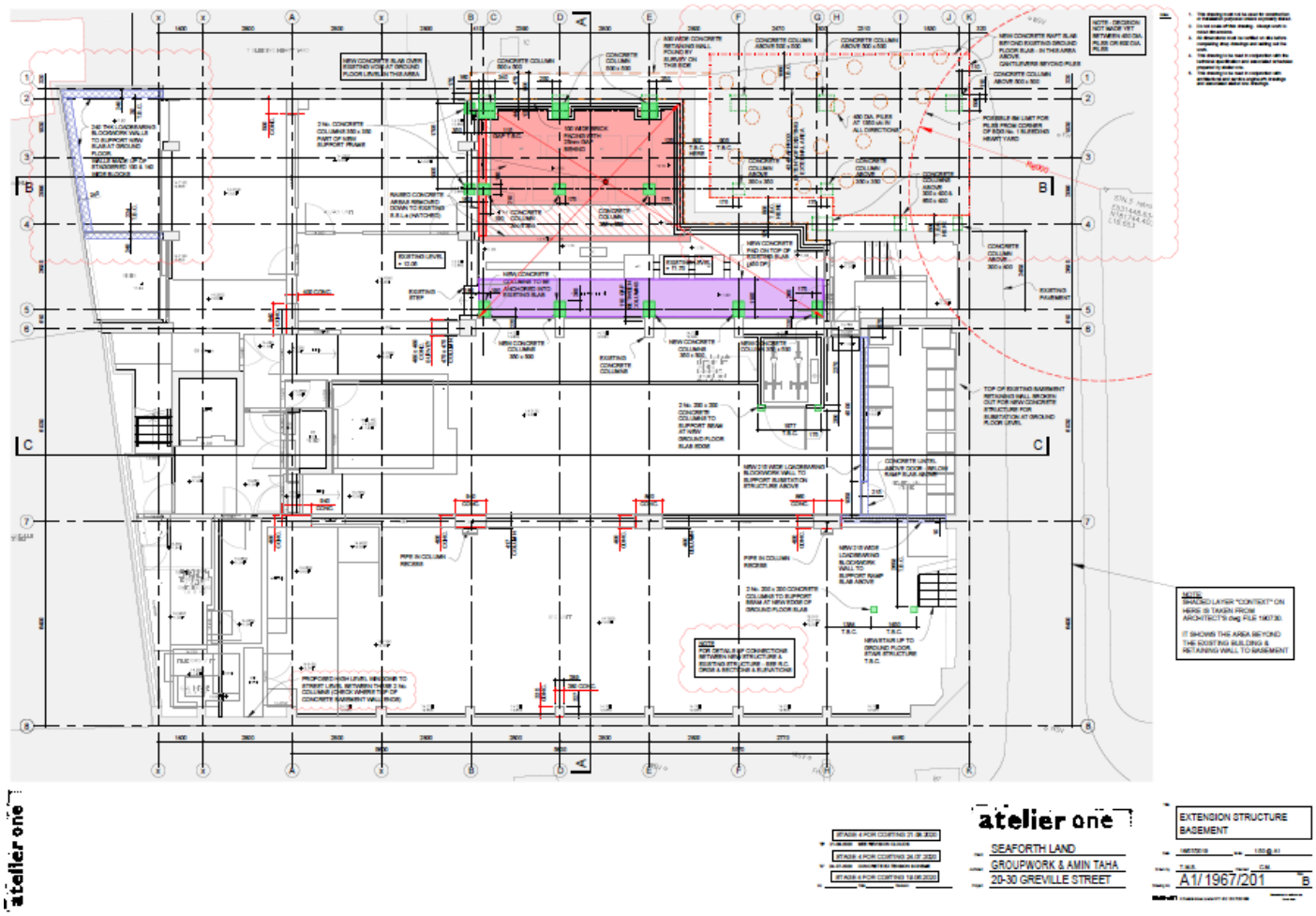
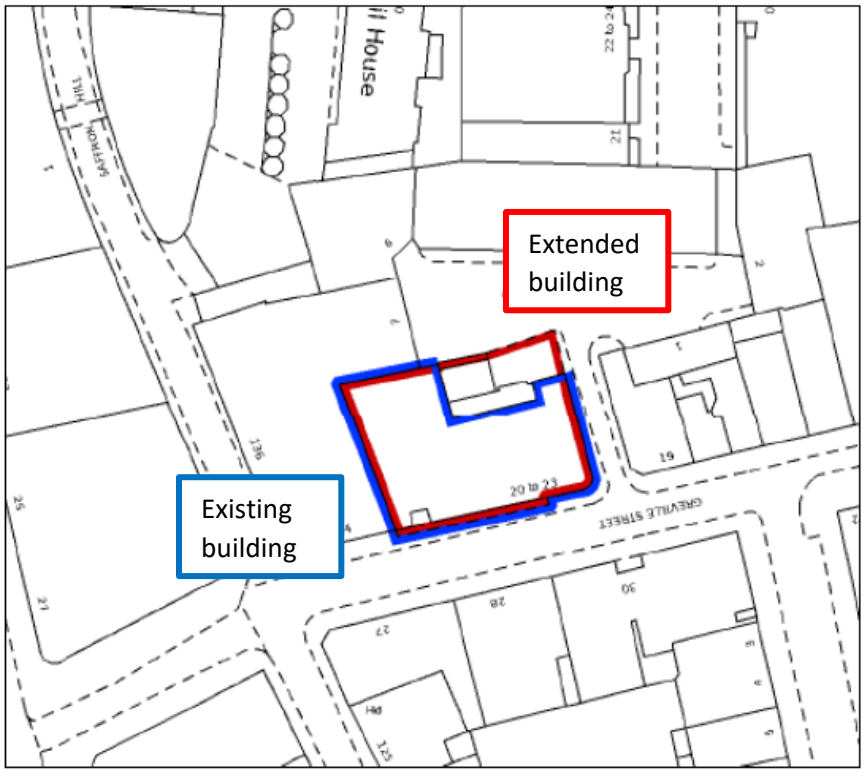


Figure 1 – Existing Site

Figure 2 – Proposed Site


atelier one
SEAFORTH LAND
GROUPWORK & AMIN TAHA
20-30 GREVILLE STREET
EXTENSION STRUCTURE BASEMENT
A1/1967/201
B


Extended building
Existing building
GREVILLE STREET
SEAFORTH HILL
20 to 23
22 to 24

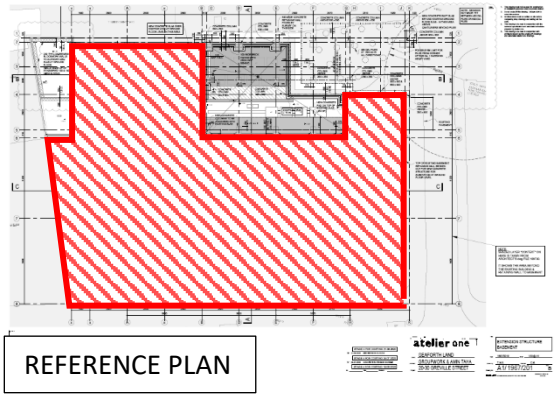
2. OVERALL BEARING PRESSURE

2.1. EXISTING BUILDING

Total load:

1DL+1SDL	34041 kN
1DL+1LL+1SDL	40520 kN
1DL+1LL+1SDL+SL	40786 kN

Area: 390 m2



REFERENCE PLAN

Bearing pressure:

1DL+1SDL	87 kN/m2
1DL+1LL+1SDL	104 kN/m2
1DL+1LL+1SDL+SL	104 kN/m2

2.2. DURING DEMOLITION

Total load:

1DL	26477 kN

Area: 390 m2

Bearing pressure:

1DL 67 kN/m2

2.3. EXTENDED BUILDING

Total load:

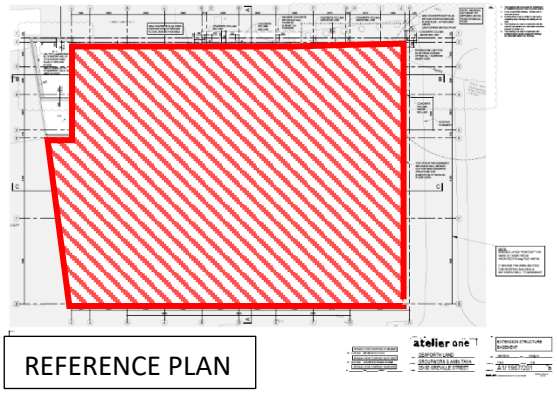
1DL+1SDL	45430 kN

(Existing structure: 34041 kN + Timber extension: 2325 kN + Concrete addition: 6405 kN + Cladding: 2659 kN)

1DL+1LL+1SDL	52762 kN
1DL+1LL+1SDL+SL	53019 kN
Area:	490 m2

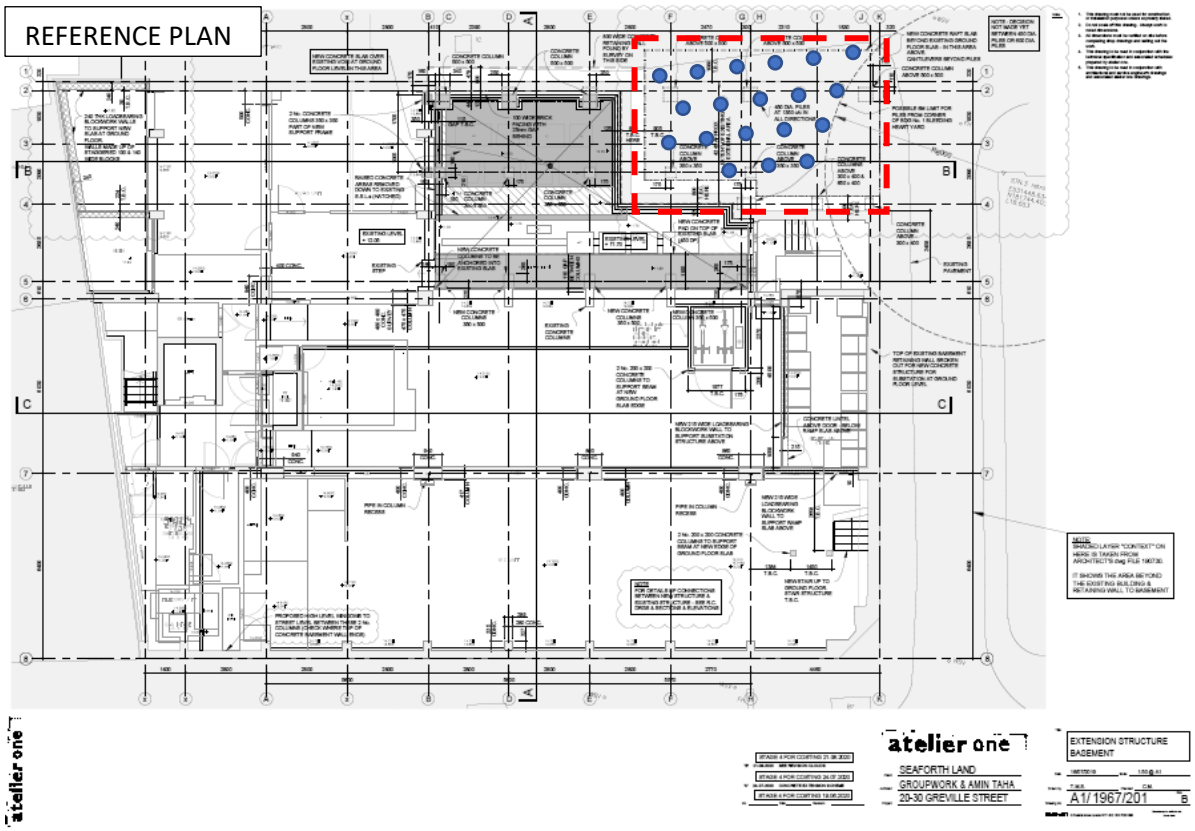
Bearing pressure:

1DL+1SDL	93 kN/m2
1DL+1LL+1SDL	108 kN/m2
1DL+1LL+1SDL+SL	108 kN/m2



REFERENCE PLAN

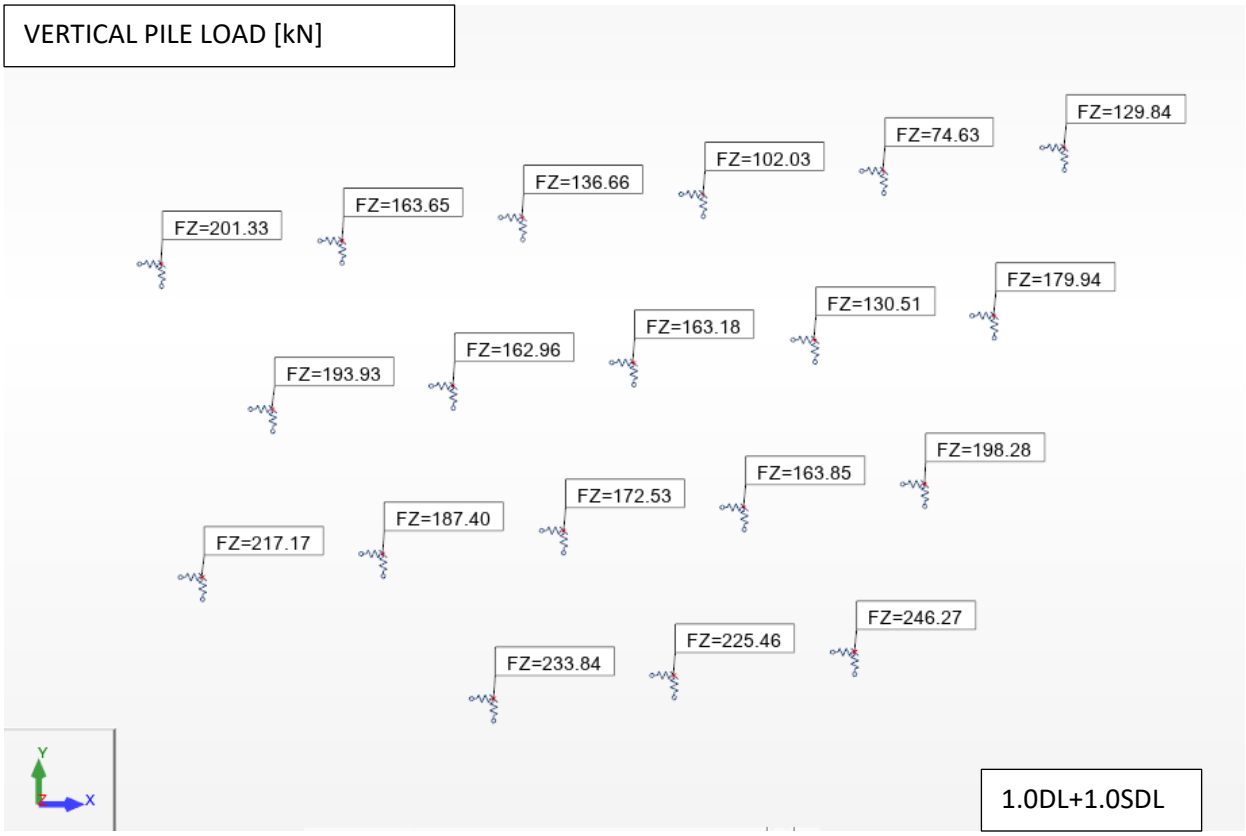
3. PILE LOADS



Pile Dia.	Pile Lght	Total Capacity (DA1-C2)
(mm)	(m)	(kN)
300	10	99
	15	187
450	10	161
	15	295
600	10	231
	15	414

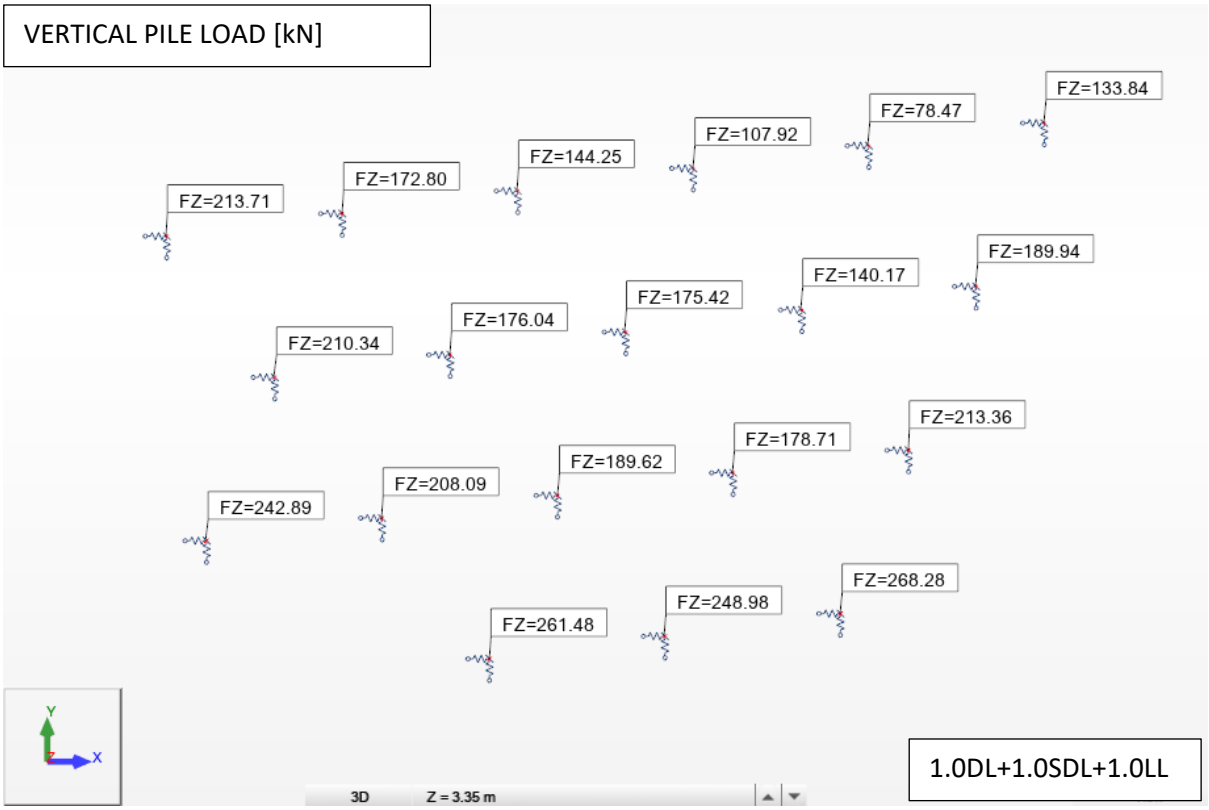
Pile capacities given by Subcontractor

VERTICAL PILE LOAD [kN]

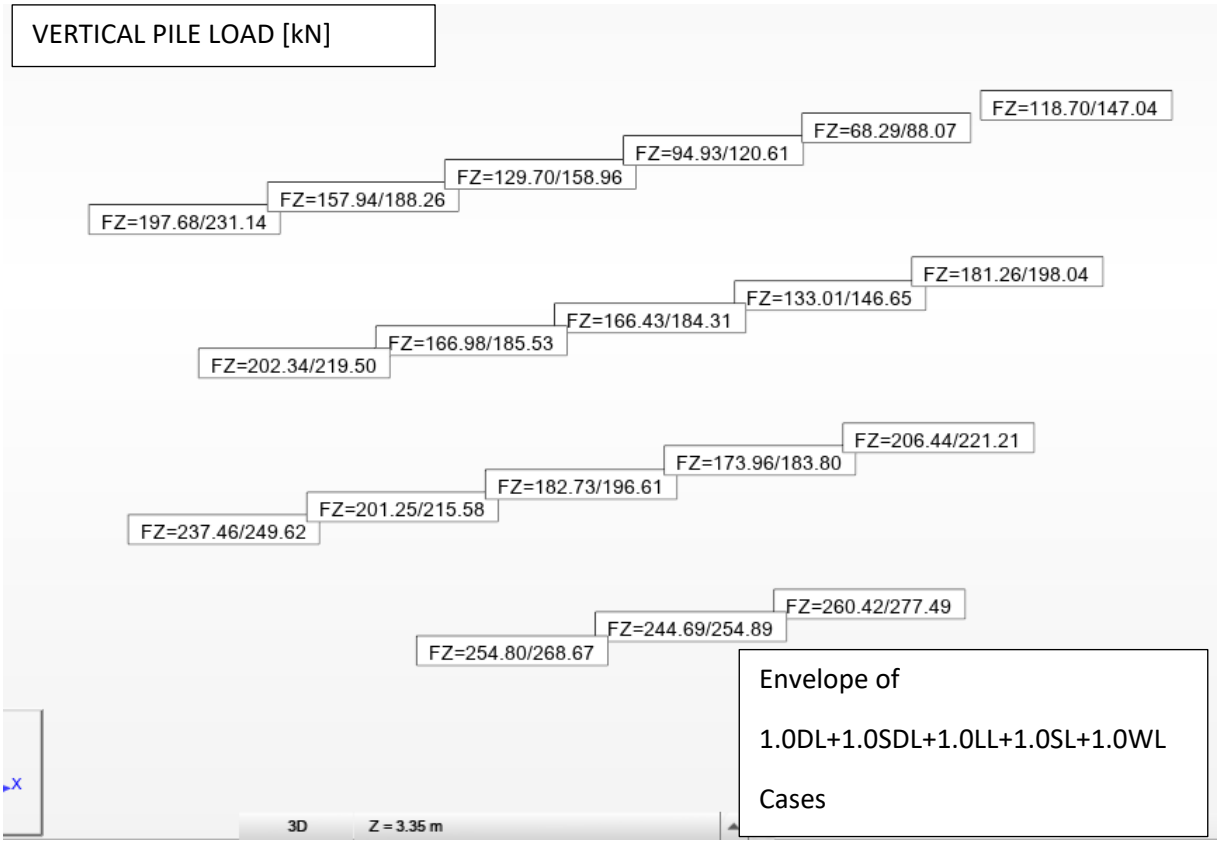


1.0DL+1.0SDL

VERTICAL PILE LOAD [kN]



1.0DL+1.0SDL+1.0LL


VERTICAL PILE LOAD [kN]
FZ=118.70/147.04
FZ=68.29/88.07
FZ=94.93/120.61
FZ=129.70/158.96
FZ=157.94/188.26
FZ=197.68/231.14
FZ=181.26/198.04
FZ=133.01/146.65
FZ=166.43/184.31
FZ=166.98/185.53
FZ=202.34/219.50
FZ=206.44/221.21
FZ=173.96/183.80
FZ=182.73/196.61
FZ=201.25/215.58
FZ=237.46/249.62
FZ=260.42/277.49
FZ=244.69/254.89
FZ=254.80/268.67
Envelope of
1.0DL+1.0SDL+1.0LL+1.0SL+1.0WL
Cases
3D
Z = 3.35 m