TTW Structural Civil Traffic Façade

Structural Schematic Design Report

For Grey House Precinct (GHP)
Pymble Ladies' College

Prepared for PLC / 25st June 2021

211007/SAAA

Taylor Thomson Whitting (NSW) Pty Ltd (ACN 113 578 377)
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Contents

1.0 Existing Site

Taylor Thomson Whitting (NSW) Pty Ltd have been commissioned to undertake the structural services associated with the design for the Grey House Precinct (GHP) Pymble Ladies' College at 20 Avon Road, Pymble NSW 2073. The building consists of 4 -5 storeys with a concrete slab on ground, suspended post tensioned concrete slab and steel light weight roof framing. East side of building slab on ground is one level below the west side of building. New north veranda will form an access from the new building to the existing Goodlet House building.

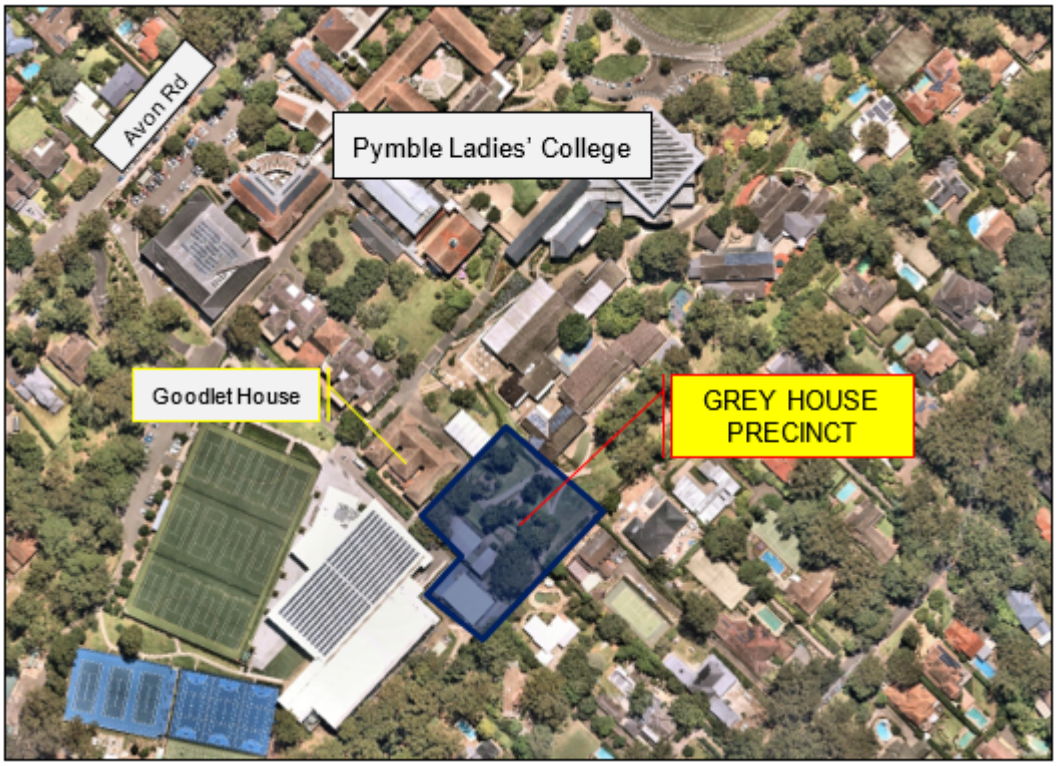

Figure 1.1 Site location

1.1 Geological and Subsurface Conditions

The geotechnical investigation for GHP has been carried out in two stages, the first stage dated 8 February 2021 and additional investigation was carried out on 8 April 2021, both results are presented in the Geotechnical report Ref 337755SCrpt2 dated on 26 April 2021 produced by JK Geotechnics.

The report details a study of the soil landscape, geological maps and results of eleven (11) bore holes. However only seven (7) bore holes are within the proposed site with valid results, which are BH 201, BH202, BH203, BH204, BH301, BH302 and BH101. Bore hole locations are shown in Figure 1.2.

The site itself was positioned on a north-easterly facing hillside with an overall slope of about 7°. To the east of the site the sloping lawns continued down to the east.

Class 4 and 5 Weathered bed rock was encountered at depth ranging from 1.2m (BH201) to 4m (BH202) below residual silty clay, class 3 or better siltstone bedrock founded at depth of 5m (BH203, BH302, BH301) and depth of 10.2m (BH202).

Ground water monitoring well was installed in BH302 over thirteen days, the ground water was measured at depth of 6m (RL113.7m) below the B.E.L of slab on ground.

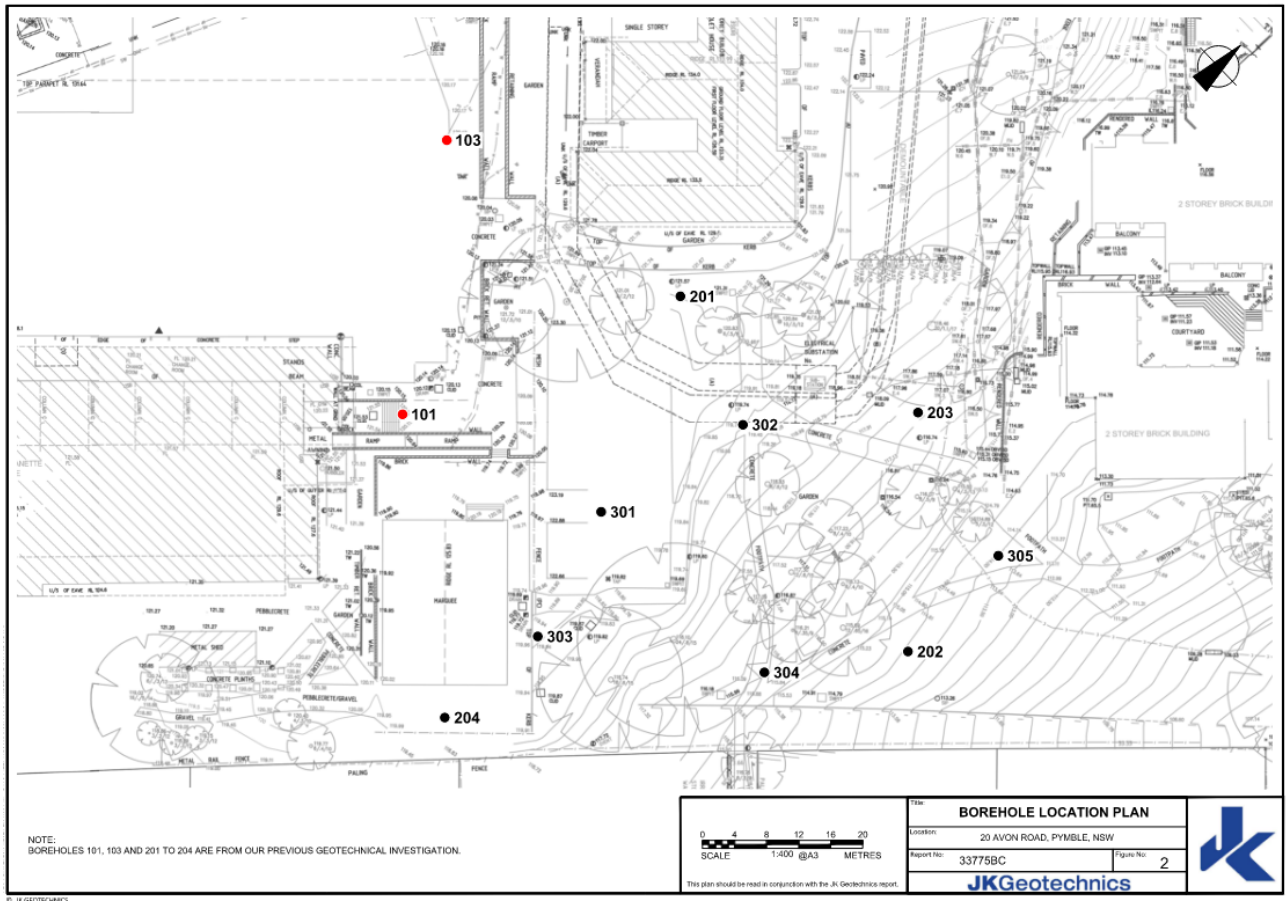

Figure 1.2 Bore hole location from JK Report 337755SCrpt2 dated on 26 April 2021

2.0 Design Standards and Parameters

2.1 Design Standards

The structural design will be in accordance with the latest revision of all relevant Australian Design Standards, Codes and other statutory requirements. As a minimum requirement, the design shall be based on, but not limited to;

NUMBER	EDITION	TITLE
AS/NZS 1170.0	2002	Structural design actions Part 0: General Principles
AS/NZS 1170.1	2011	Structural design actions Part 1: Permanent, imposed and other actions
AS/NZS 1170.2	2002	Structural design actions Part 2: Wind actions
AS 1170.4	2007	Structural design actions Part 4: Earthquake loads
AS 2159	2009	Piling – Design and installation
AS 3600	2018	Concrete Structures
AS 3700	2011	Masonry Structures
AS 4100	1998	Steel Structures

2.2 Loading

2.2.1 Permanent Loads

The permanent loads which have been assumed at this stage are below. Structural self-weight will be applied in accordance with the relevant construction and member sizes.

Area	Services (kN/m^2)	Ceiling (kN/m^2)	Finish (kN/m^2)	Partitions (kN/m^2)
Classrooms	0.2	0.1	0.3	0.4
Kitchen/Dining	0.2	0.1	1.3	0.4
Courtyard	0.2	0.1	2.2	0
Dance studio/Physio	0.2	0.1	0.5	0.2
Light weight roof	0.1	0.1	0.3	0
Street Awning	0.1	0.1	0.2	0

In the initial feasibility study, average total SDL has been taken as 1.1kPa, the actual load is TBC upon confirmation of break up of space usage, i.e. classroom, storage.

Note: Initially no allowance for blockwork partitions, a green roof option, with maximum 300mm soil, has been provided.

Façade load assumed to be 1kPa on elevation.

2.2.2 Imposed Actions - Live Loads

Design floor live loadings are to generally satisfy the minimum provisions of AS 1170.1 and in particular the following:

Area	Uniformly Distributed Actions	Concentrated Actions
Classrooms	3.0 kPa	2.7 kN
Stairs/Corridors/Kitchen/Dining/Laundry/storage/Courtyard	4.0 kPa	4.5 kN
Dance studio/Physio/Hall/Plantroom	5.0 kPa	4.5 kN
Toilet/Change room/Planter	2.0 kPa	4.5 kN
Light weight roof	0.25 kPa	1.4 kN
Street Awning	0.25 kPa	1.8 kN

Live Load reduction will be applied to applicable occupancy types in accordance with AS1170.1.

2.2.3 Wind Loads

Wind loads are in accordance with AS1170.2 and based on the following parameters:

Region:	A2
Importance Level (BCA Table B1.2a):	3
Annual probability of exceedance (BCA Table B1.2b):	1:1000 (ultimate) 1:25 (serviceability)
Regional Wind Speed: Ultimate limit states -	V1000 = 46 m/s
Serviceability limit states -	V25 = 37 m/s
Terrain Category (all directions):	3

2.2.4 Earthquake Loads

Buildings that are being refurbished may be required to have upgraded structure to meet the current earthquake requirements. A BCA consultant would be able to confirm for which zones on this project this upgrade is required and where it may be avoided. Certain buildings that only have minor works occurring may be able to avoid additional structural works required by this upgrade.

New buildings will be designed for earthquake loading.

Earthquake loadings shall be in accordance with AS1170.4 – 2007 (Earthquake actions in Australia) and AS/NZS1170.0 – 2002.

Hazard Factor (Z):	0.08
Site Sub-Soil Class:	B_e (Buildings founded in soil)
Importance Level (BCA Table B1.2a):	3
Annual probability of exceedance (BCA Table B1.2b):	1:1000
Earthquake Design Category:	EDC II

2.2.5 Barriers

Barriers including parapets, balustrades and railings are to be designed in accordance with Table 3.3 of AS/NZS 1170.1.

2.3 Serviceability

2.3.1 Deflection Limits

Vertical loads

Deflection limits for the floor plate designs to be generally as follows.

	Maximum Floor Deflection Limit			
	Dead	**Incremental**	**Live**	**DL + LL**
Floors supporting masonry walls	Span/360	Span/1000 [1.]	Span/500	Span/300 (25mm max.)
Other floor areas	Span/360 (20mm max.)	N/A	Span/500	Span/300 (25mm max.)
Steel Roof	Span/360 (25mm max.)		Span/300	Span/250 (25mm max.)

[1.] Areas supporting normal weight masonry partitions.

Horizontal loads

Lateral sway limits

Overall - H/500

Inter storey drift to be limited in accordance with earthquake code requirements.

2.3.2 Vibration limits

Typical floor plates are expected to be designed to suit standard typical footfall vibration limits for the usage in question, i.e. classroom, dance studio. Also satisfy the requirements in Acoustic report.

2.4 Durability

For concrete elements this will be achieved by specifying all elements in accordance with section 4 of AS 3600 which sets out requirements for plain, reinforced and post tensioned concrete structures and members with a design life of 40 to 60 years. Exposure classifications are as follows

Exposure Classification	Elements
A2	Internal
B1	In Ground & External

In ground exposure may be required to be changed depending on results of a geotechnical investigation of soil contaminants.

Protective coatings to structural steel elements shall comply with AS/NZS 2312 and ISO 2063 for the long-term protection category.

2.5 Fire rating

A fire rating period of 2hrs is required to all suspended structure.

New concrete structure would resolve fire rating by adopting minimum element sizes and axis distance to the centre of the primary tension steel.

Steel structure would require application of a fire rated coating, options could include vermiculite spray, intumescent coatings and boardings. Careful consideration of required maintenance and inspection requirements needs to be made with the use of fire rated coatings.

Buildings on which substantial works will be performed will be required to obtain a 2hr FRL. It would be prudent to obtain advice from a BCA consultant to verify the limit of works at which the FRL will need to be upgraded/instated.

3.0 Scope of works

The structural scope includes the development and delivery of detailed design documentation in accordance with the NCC and relevant Australian Standards, coordinated with engineering services and architectural design documentation. This project includes demolition of existing buildings and construct a new building.

3.1 Demolition

Across the sites, there a are number of buildings that are proposed to be demolished. These buildings are deemed unsuitable to suit future purpose.

Dilapidation reports to adjacent existing buildings are recommended prior to construction work on site.

3.2 New construction

The Grey House Precinct (GHP) building will be built in the proposed site. New external stairs and veranda will create access to the existing adjacent buildings.

4.0 Proposed Structure of New Buildings

4.1 Footings

In general, the strip and pad footings will be adopted to bear on bedrock, presuming a minimum bearing capacity of 800kPa to maximum of 3500kPa. Bored piles will be used for where the footing can not reach the minimum bearing capacity.

4.2 Ground Floor Slab

Slab on ground will be founded on allowable bearing pressure of minimum of 100kPa engineering fill.

4.3 Batters and Retaining Structure

The proposed development introduces a slab on ground with a finished floor level of RL114.1 at east side and RL of 118 at west side of building. As shown in the Figure 1.3 and 1.4, due to the defects in the bedrock, Geotechnical engineer recommended to form the temporary batters no steeper than 1 vertical : 1 Horizontal.

Retaining wall RW1 and RW2 are retaining the soil and surcharge loads at locations below which will be laterally supported by foundation and suspended floors.

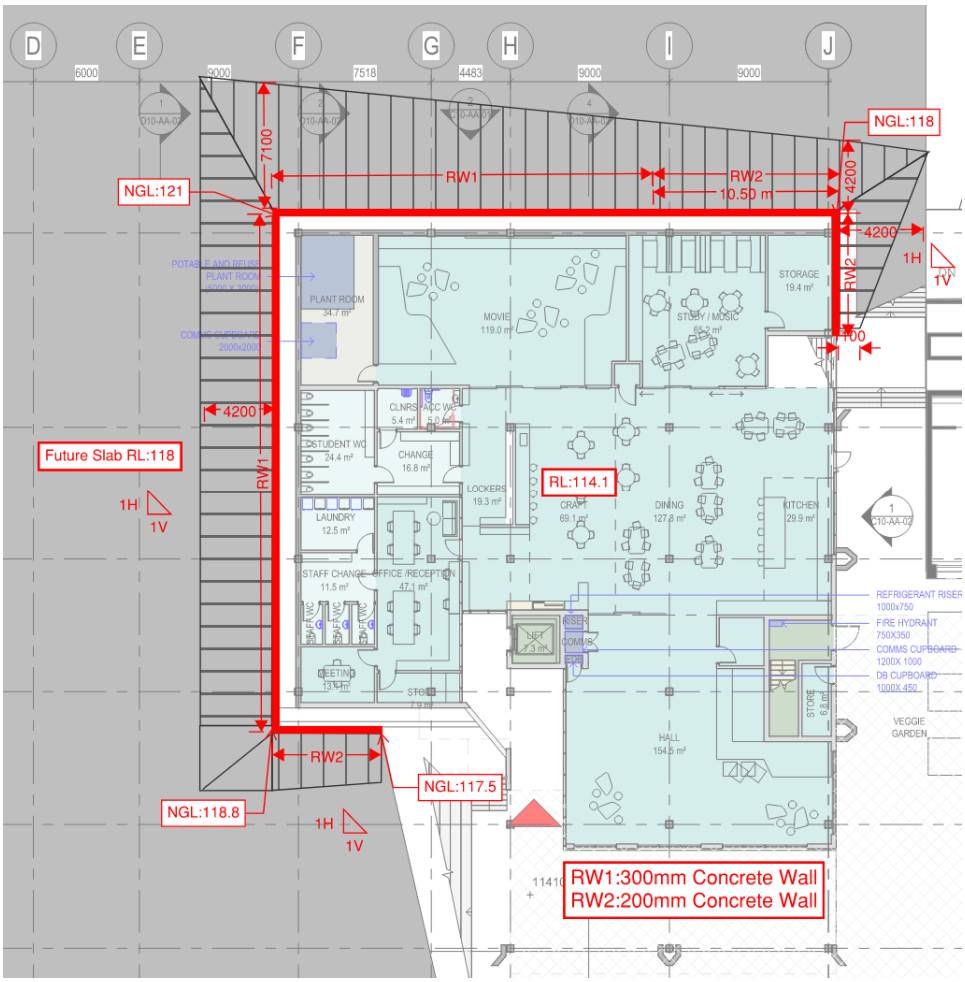

Figure 4.3 Shoring and Retaining system at L00

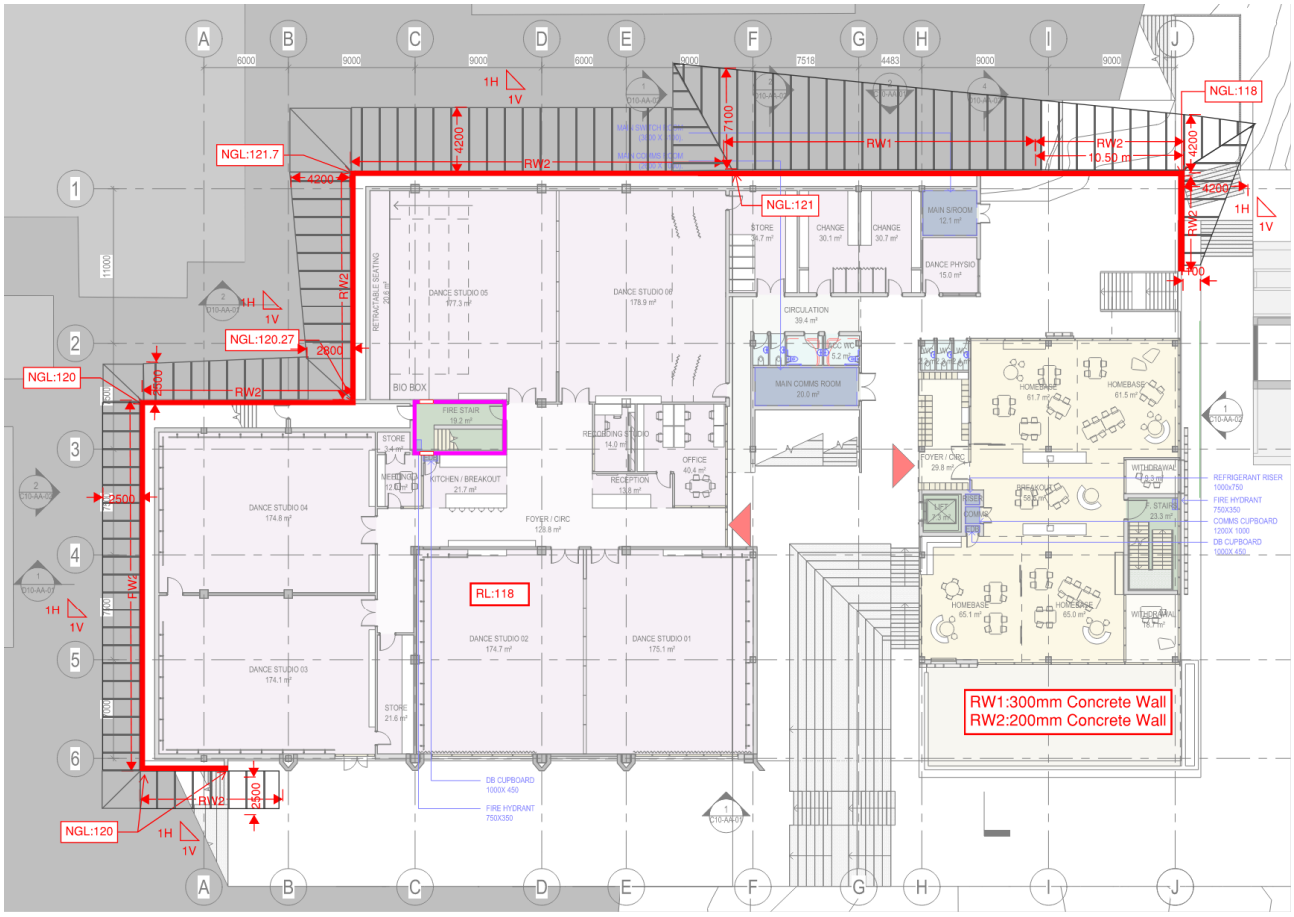

Figure 4.4 Shoring and Retaining system at L01

4.4 Structural Floors

The banded system is adopted for the suspended post tensioned slabs for large span and transfer loads, which supported by concrete columns.

4.5 Vertical System

The vertical support system is proposed to comprise a grid of structural columns and load bearing walls with a banded suspended floors spanning onto them.

4.6 Lateral Stability

It is envisaged that lateral stability will be provided to the proposed development through a combination of the one stair core at west side and one lift cores with a stair core at east side throughout the full height of building. (refer Figure 1.5 below for the location of primary stability elements in pink). The concrete floor system and braced roof will act as a rigid diaphragm, transferring lateral loads such as wind back to the vertical stability elements.

Figure 4.5 Arrangement of lateral stability elements

5.0 Further queries

The proposed temporary batters and retaining walls are based on the bore hole log and information from geotechnical report. The extent of temporary batters may vary subject to the findings on site.

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Engineer

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Technical Director

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APPENDIX A

Structural Schematic Sketches

6000 9000 9000 6000 9000 6000 6000 9000 9000

200 THICK STAIR ON GRADE,
F'C 32MPA, REO 125KG/M3

TEMPORARY
BATTER FOR NEW
RETAINING WALL

EXTERNAL SLAB ON GROUND 120 THICK ON 100 BASECOURSE AND VAPOUR BARRIER
SLAB JOINT AT 6M MAX, F'C 32MPA, REO 80KG/M3

INTERNAL SLAB: STIFFERNED RAFT 100 THICK ,400X300 RIB AT 4M CES, F'C 32MPA, REO 100KG/M3

COLUMNS: 400X400 ,F'C40MPA, REO 200KG/M3
FOOTINGS: 1800X1800X800 PAD FOOTING, F'C 32MPA, REO 150KG/M3

LIFT WALLS 200 THK, F'C 40MPA, REO 150KG/M3
FOOTINGS: 4000X5000X800 PAD FOOTING, F'C 32MPA, REO 150KG/M3

STAIR CORE: 200 THK, F'C 40MPA, REO 150KG/M3
FOOTINGS: 8000X5000X800 PAD FOOTING, F'C 32MPA, REO 150KG/M3

RETAINING WALL, 290RC BLOCK ,F'C 40MPA, REO 100KG/M3

FACADE SUPPORT TBC

POTABLE AND REUSE PLANT ROOM (5000 X 3000).

COMMS CUPBOARD 2000x2000

PLANT ROOM 34.7 m²
MOVIE 119.5 m²
STUDY / MUSIC 66.0 m²
STORAGE 19.4 m²
CLNRS ACC WC 5.4 m² 5.1 m²
STUDENT WC 24.4 m²
CHANGE 16.8 m²
LOCKERS 31.3 m²
CRAFT 78.1 m²
DINING 127.1 m²
LAUNDRY 12.5 m²
MEETING 11.5 m²
KITCHEN 31.1 m²
STAFF WC 2.4 m²
OFFICE /RECEPTION 42.6 m²
STAFF CHANGE 12.8 m²
STORAGE 13.1 m²
LIFT 7.5 m²
HALL 163.8 m²
FIRE STAIR 23.1 m²
COVERED OUTDOOR PLAY 140.5 m²
114101

-100
-100
-100

DN

REFRIFERANT RISER 1200x600
FIRE HYDRANT 750X350
DB CUPBOARD 1000X 450
VEGGIE GARDEN

2 D10-AA-01
2 C10-AA-02
1 D10-AA-01
C10-XX-03
1 C10-AA-01

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A B C D E F G H I J

EXTERNAL SLAB ON GROUND 120 THICK ON 100 BASECOURSE AND VAPOUR BARRIER
SLAB JOINT AT 6M MAX, F'C 32MPA, REO 80KG/M3

INTERNAL SLAB: STIFFERNED RAFT 100 THICK
,400X300 RIB AT 4M CES, F'C 32MPA, REO 100KG/M3

COLUMNS:
400X400 ■ ,F'C40MPA, REO 200KG/M3
FOOTINGS: 1800X1800X800 PAD FOOTING, F'C 32MPA, REO 150KG/M3
600X600 ■ ,F'C40MPA, REO 200KG/M3
FOOTINGS: 2400X2400X800 PAD FOOTING, F'C 32MPA, REO 150KG/M3

LIFT WALLS 200 THK, F'C 40MPA, REO 150KG/M3
FOOTINGS: 4000X5000X800 PAD FOOTING, F'C 32MPA, REO 150KG/M3

STAIR CORE: 200 THK, F'C 40MPA, REO 150KG/M3
FOOTINGS: 8000X5000X800 PAD FOOTING, F'C 32MPA, REO 150KG/M3

RETAINING WALL, 290RC BLOCK ,F'C 40MPA, REO 100KG/M3

MAIN SWITCH ROOM (3800 X 3300).
MAIN COMMS ROOM (3800 X 3300).
REFRIGERANT RISER 1200x600
FIRE HYDRANT 750X350
DB CUPBOARD 1000X 450
COMMS CUPBOARD 2000x1000
DB CUPBOARD 1000X 450
door
RETRACTABLE SEATING 13.4 m²
DANCE STUDIO 05 182.3 m²
DANCE STUDIO 06 180.8 m²
FIRE STAIR 18.7 m²
RECORDING STUDIO 14.7 m²
OFFICE 41.0 m²
MEETING 14.1 m²
KITCHEN / BREAKOUT 24.6 m²
RECEPTION / FOYER 40.4 m²
DANCE STUDIO 04 174.9 m²
FOYER / CIRCULATION 102.5 m²
DANCE STUDIO 02 174.8 m²
DANCE STUDIO 01 173.3 m²
DANCE STUDIO 03 174.3 m²
STORE 21.7 m²
STORE 34.4 m²
CHANGE 30.3 m²
CHANGE 30.9 m²
PHYSIO 20.6 m²
CIRCULATION 38.6 m²
TOILET 9.5 m²
ACCESS 5.4 m²
MAIN C/ROOM 12.7 m²
MAIN S/ROOM 13.6 m²
400x600 stair beam
200
400x600 stair beam
LIFT 7.5 m²
FOYER / CIRC Not Enclosed
HOMEBASE 57.8 m²
HOMEBASE 60.4 m²
BREAKOUT / CIRC 46.5 m²
WITHDRAWAL 12.6 m²
F. STAIR 24.3 m²
HOMEBASE 69.7 m²
HOMEBASE 73.7 m²
WITHDRAWAL 20.1 m²
300x600 slab fold
-100
wall under
300x600 slab fold
-100
OUTDOOR LEARNING 126.3 m²
400x600 edge beam
C10-XX-09
1 C10-AA-01
200 THICK STAIR ON GRADE, F'C 32MPA, REO 125KG/M3

SUSPENDED SLAB: 180/200, BAND BEAM 400x2400 UNO
PT RATE 4.5KG/M2, REO RATE 45KG/M3 F'C 40MPA
COLUMNS: 400x400, F'c 40MPA, REO 200kg/m3
STAIR/LIFT CORE 200 THICK, F'C 40MPA, REO 150KG/M3

FACADE AND LANDSCAPE SUPPORT TBC

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A B C D E F G H I J

-100
300x600 slab fold
4-5 CLASS (PRE-K)
55.5 m²
STAFF WC
3.5 m²
STORE
8.6 m²
STAFF ROOM
35.8 m²
STAFF OFFICE
20.1 m²
KITCHEN
14.9 m²
LAUNDRY
7.7 m²
DIRECTOR OFF
14.9 m²
TOILET
4.8 m²
-50
STORE
4.8 m²
DB CUPBOARD
1000X 450
4-5 CLASS (PRE-K)
53.7 m²
2400
REFRIFERANT RISER
1200x600
COMMS CUPBOARD
1000x2000
F. STAIRS
9.2 m²
SERVICES
5 m²
PIAZZA / CIRC
142.2 m²
RECEPTION
13.2 m²
MEETING
11.9 m²
WC
AWC
-50
230
122602
450x600 edge beam
Line up top of stair to grid
250 THICK STAIR F'C 40MPA, REO 125KG/M3
200 THICK STAIR ON GRADE, F'C 32MPA, REO 125KG/M3
D10-AA-01
2
lightweight awning
300x600 slab fold
ACC WC
4.2 m²
WC
2.1 m²
WC
2.2 m²
-50
180
230
HOMEBASE
52.1 m²
HOMEBASE
54.4 m²
400x600 edge beam
FOYER / CIRC
39.7 m²
WITHDRAWAL
12.3 m²
REFRIFERANT RISER
1200x600
FIRE HYDRANT
750X350
DB CUPBOARD
1000X 450
BREAKOUT / CIRC
62.0 m²
LIFT
7.5 m²
F. STAIRS
24.1 m²
HOMEBASE
69.8 m²
HOMEBASE
82.9 m²
400x600 edge beam
lightweight awning
OUTDOOR PLAY
385.4 m²
3-4/5 CLASS
57.6 m²
STORE
9.6 m²
2-3/4 CLASS
50.3 m²
AIRLOCK
9.7 m²
0-2 CLASS
23.2 m²
0-2 CLASS
28.5 m²
SLEEP
12.5 m²
PLAY
53.8 m²
TOILET
11.0 m²
-50
TOILET
11.0 m²
-50
COVERED OUTDOOR PLAY
197.5 m²
300x600 slab fold
450x600 edge beam
C10-XX-05
1
C10-AA-01
+ RL 115.93
SUSPENDED SLAB: 200, BAND BEAM 450x2400,
TRANSFER BEAM 800/900X2400
PT RATE 8.5KG/M2, REO RATE 65KG/M3 F'C 40MPA
COLUMNS: 400x400, F'c 40MPA, REO 200kg/m3
STAIR/LIFT CORE 200 THICK, F'C 40MPA, REO 150KG/M3
FACADE AND LANDSCAPE SUPPORT TBC
SUSPENDED SLAB: 180/200, BAND BEAM 400/450x2400 UNO
PT RATE 4.5KG/M2, REO RATE 45KG/M3 F'C 40MPA
COLUMNS: 400x400, F'c 40MPA, REO 200kg/m3
STAIR/LIFT CORE 200 THICK, F'C 40MPA, REO 150KG/M3
FACADE AND LANDSCAPE SUPPORT TBC
TTW Structural Civil Traffic Façade
Date:11/06/2021
A B C D E F G H I J

6000 9000 9000 6000 9000 6000 6000 9000 9000

400x600 edge beam

lightweight awning

lightweight awning

400x600 edge beam

STEM LAB 65.0 m²

STEM STORE 9.4 m²

OFFICE 12.5 m²

STAFF ROOM 72.4 m²

MEETING 10.4 m²

STAFF WC WC WC 2.1 m² 2.1 m² 2.1 m²

-50

DB CUPBOARD 1000X 450

STEM LAB 71.3 m²

BREAKOUT / CIRC 152.2 m²

CHANGE 22.0 m²

230

WC WC WC 2.0 m² 2.0 m² 2.0 m²

-50

600

CIRCULATION 240.9 m²

ACC WC WC WC 4.2 m² 2.1 m² 2.3 m²

-50

230

HOMEBASE 57.2 m²

HOMEBASE 55.2 m²

REFRIFERANT RISER 1200x600

COMMS CUPBOARD 1000x2000

F. STAIRS 20.2 m²

STORE 8.5 m²

FOYER / CIRC 63.3 m²

FOYER / CIRC 40.0 m²

WITHDRAWAL 11.1 m²

REFRIFERANT RISER 1200x600

FIRE HYDRANT 750X350

DB CUPBOARD 1000X 450

LIFT 7.5 m²

BREAKOUT / CIRC 57.1 m²

HOMEBASE 66.0 m²

400

180

400

180

400

180

400

2400 typ

600x1200

180

400

2400

HOMEBASE 69.1 m²

WITHDRAWAL 8.6 m²

WITHDRAWAL 8.4 m²

HOMEBASE 57.9 m²

HOMEBASE 64.1 m²

HOMEBASE 64.3 m²

180

400

F. STAIRS 24.0 m²

WITHDRAWAL 18.8 m²

600x1200

400x600 edge beam

400x600 edge beam

SUSPENDED SLAB: 180, BAND BEAM 400x2400 UNO
PT RATE 4.5KG/M2, REO RATE 45KG/M3 F'C 40MPA
COLUMNS: 400x400, F'c 40MPA, REO 200kg/m3
STAIR/LIFT CORE 200 THICK, F'C 40MPA, REO 150KG/M3

FACADE AND LANDSCAPE SUPPORT TBC

2 D10-AA-01

2 C10-AA-02

1 D10-AA-01

1 C10-AA-01

C10-XX-03

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A B C D E F G H I J

6000 9000 9000 6000 9000 6000 6000 9000 9000

450X600 edge beam

allow plinths
for PV panel

allow for strip drain

400x600 edge beam

SOLAR PVs

2B WARD 20.6 m²
1B WARD 9.4 m²
CONSULT 15.1 m²
CONSULT 15.1 m²
CONSULT 15.1 m²
SHW 3.8 m²
RISER 1.4 m²
F. STAIRS 20.2 m²
CIRCULATION 104.0 m²
RETREAT 14.4 m²
WAITING 16.4 m²
COURTYARD 59.1 m²
RECEPTION 17.1 m²
MEDICATION 8.8 m²
CLNRS 5.4 m²
COMMS 2.0 m²
PLANT 113.7 m²
SHW/WC 4.8 m²
SHW/WC 5.4 m²
2B WARD 16.2 m²
2B WARD 16.5 m²
1B WARD 10.5 m²
LINEN 1.5 m²
CONSULT 15.2 m²
SHARED RETREAT 42.9 m²
VOID
ACC WC 3.8 m²
WC 3.8 m²
CONSULT 15.9 m²
CONSULT 15.5 m²
CONSULT 15.4 m²
ROOF TERRACE 24.2 m²
CIRCULATION 75.6 m²
COURTYARD 39.4 m²
RETREAT 11.4 m²
LIFT 7.5 m²
PRINT/STORE 8.2 m²
STAFF / KITCHEN 16.5 m²
F. STAIRS 23.7 m²
RECORDS 7.1 m²
RETREAT 25.0 m²
CONSULT 16.2 m²
CONSULT 15.1 m²
CONSULT 15.1 m²
CONSULT 14.9 m²
MEETING 26.4 m²

REFRIFERANT RISER 1200x600
FIRE HYDRANT 750X350
DB CUPBOARD 1000X 450
COMMS CUPBOARD 1000x2000

REFRIFERANT RISER 1200x600
FIRE HYDRANT 750X350
DB CUPBOARD 1000X 450

600x1200
600x1200
600x1200

400x600 edge beam
400x600 edge beam

allow concrete plinths
under mech/hyd plants

SUSPENDED SLAB: 180/200, BAND BEAM 400/450x2400 UNO
PT RATE 5.0KG/M2, REO RATE 50KG/M3 F'C 40MPA
COLUMNS: 400x400, F'c 40MPA, REO 200kg/m3
STAIR/LIFT CORE 200 THICK, F'C 40MPA, REO 150KG/M3

FACADE AND LANDSCAPE SUPPORT TBC

2 C10-AA-02
1 D10-AA-01
2 D10-AA-01
C10-XX-03
C10-AA-01

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A B C D E F G H I J

6000 9000 9000 6000 9000 6000 6000 9000 9000

rationalise
skylight shape?

ATRIUM TO BE COVERED WITH SKYLIGHT
SKYLIGHTS TO COURTYARDS TBC

2
D10-AA-01

2
C10-AA-02

1
D10-AA-01

SOLAR PVs

SOLAR PVs

shift skylight?

D10-XX-03

CONCRETE OPTION: 180 SLAB, BAND BEAM 300x2400 UNO
PT RATE 5.0KG/M2, REO RATE 50KG/M3 F'C 40MPA

STEEL OPTION: STRUCTURAL STEEL 30KG/M2

FACADE SUPPORT TBC

1
C10-AA-01

TTW Structural Civil Traffic Façade
Date:11/06/2021

A B C D E F G H I J