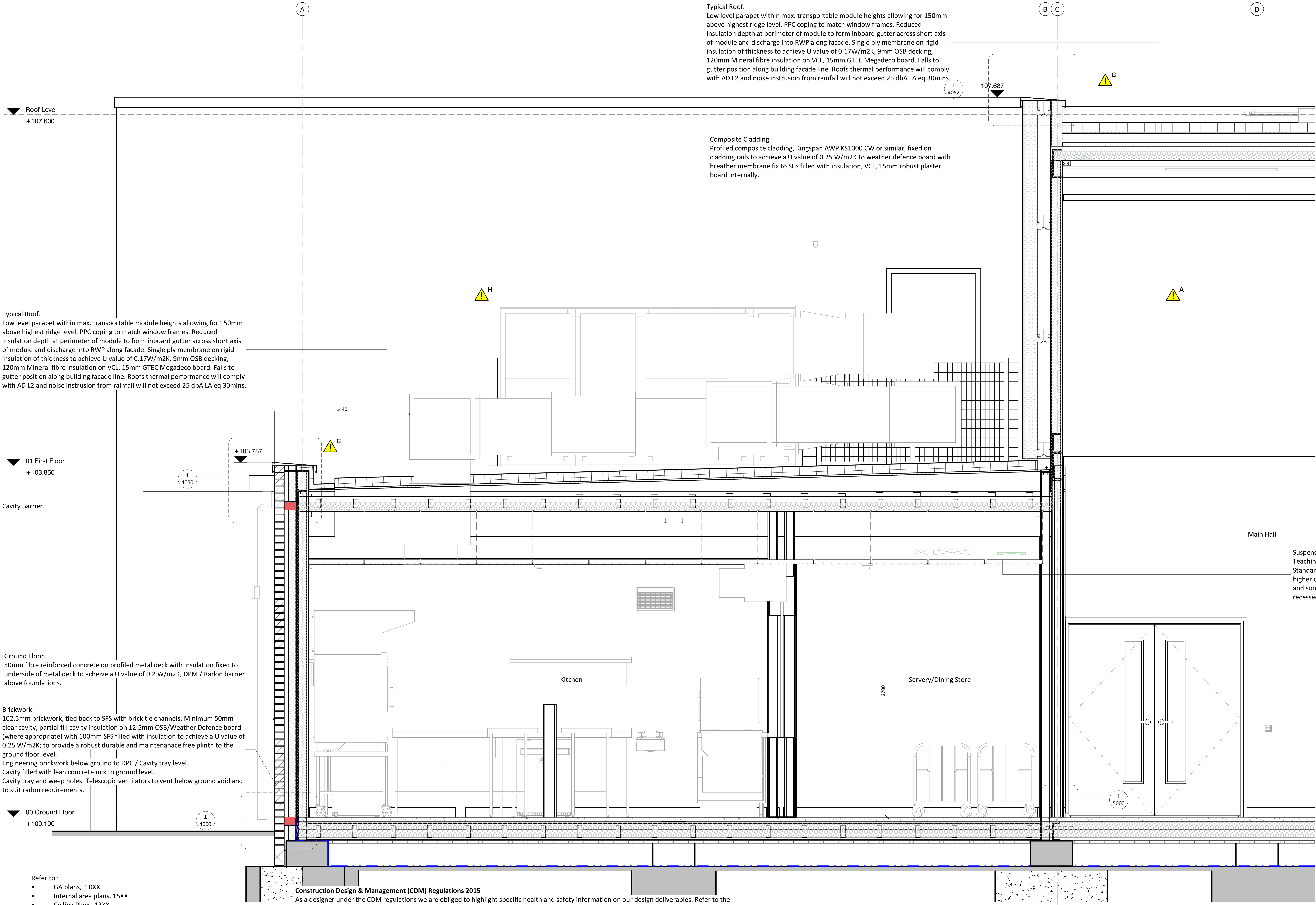


Typical Roof.
Low level parapet within max. transportable module heights allowing for 150mm above highest ridge level. PPC coping to match window frames. Reduced insulation depth at perimeter of module to form inboard gutter across short axis of module and discharge into RWP along facade. Single ply membrane on rigid insulation of thickness to achieve U value of 0.17W/m2K, 9mm OSB decking, 120mm Mineral fibre insulation on VCL, 15mm GTEC Megadeco board. Falls to gutter position along building facade line. Roofs thermal performance will comply with AD L2 and noise instrusion from rainfall will not exceed 25 dbA LA eq 30mins.

Composite Cladding.
Profiled composite cladding, Kingspan AWP KS1000 CW or similar, fixed on cladding rails to achieve a U value of 0.25 W/m2K to weather defence board with breather membrane fix to SFS filled with insulation, VCL, 15mm robust plaster board internally.

Typical Roof.
Low level parapet within max. transportable module heights allowing for 150mm above highest ridge level. PPC coping to match window frames. Reduced insulation depth at perimeter of module to form inboard gutter across short axis of module and discharge into RWP along facade. Single ply membrane on rigid insulation of thickness to achieve U value of 0.17W/m2K, 9mm OSB decking, 120mm Mineral fibre insulation on VCL, 15mm GTEC Megadeco board. Falls to gutter position along building facade line. Roofs thermal performance will comply with AD L2 and noise instrusion from rainfall will not exceed 25 dbA LA eq 30mins.

Suspended Ceiling.
Teaching spaces to have lay-in grid suspended ceilings with recessed luminaires. Standard floor to floor heights allows for classroom ceiling heights of 2700mm, higher ceilings are achieved by stacking modules. Offices, staff rooms, corridors and some specialist teaching to have lay-in grid suspended ceiling incorporating recessed luminaires..

Ground Floor.
50mm fibre reinforced concrete on profiled metal deck with insulation fixed to underside of metal deck to acheive a U value of 0.2 W/m2K, DPM / Radon barrier above foundations.

Brickwork.
102.5mm brickwork, tied back to SFS with brick tie channels. Minimum 50mm clear cavity, partial fill cavity insulation on 12.5mm OSB/Weather Defence board (where appropriate) with 100mm SFS filled with insulation to achieve a U value of 0.25 W/m2K; to provide a robust durable and maintenanace free plinth to the ground floor level.
Engineering brickwork below ground to DPC / Cavity tray level.
Cavity filled with lean concrete mix to ground level.
Cavity tray and weep holes. Telescopic ventilators to vent below ground void and to suit radon requirements..

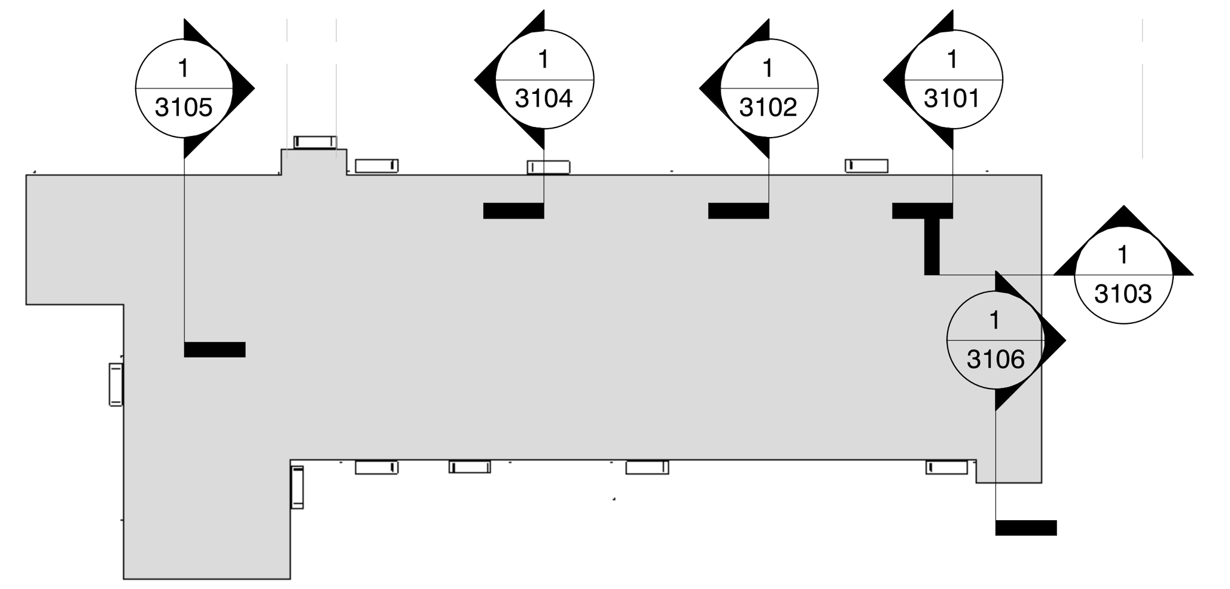
Refer to :

- GA plans, 10XX
- Internal area plans, 15XX
- Ceiling Plans, 13XX
- GA elevations, 20XX
- GA Sections, 30XX
- Construction sections, 31XX
- Site sections, 39XX
- External Envelope details, 40XX
- Finishes plans, 46XX
- Internal details, 50XX
- Sanitary, 53XX
- Stairs, 58XX
- Lifts, 59XX
- Materials, finishes and components, 77XX
- Fire strategy plans, 81XX
- Site flexibility & adaptability strategy plans, 83XX
- Cleaning and maintenance strategy plans, 84XX
- Internal Supervision Strategy plans, 85XX

0 5 10 m

Construction Design & Management (CDM) Regulations 2015
As a designer under the CDM regulations we are obliged to highlight specific health and safety information on our design deliverables. Refer to the designers hazard register for further information on project safety risks.
Note, not all hazards listed below relate to all drawings. Refer to Hazard symbols on drawings

- A — Double height area. Works overhead, ensure suitable overhead protection netting, permits, scaffold etc. during works.
- B — Full height staircores - works and stair installation overhead.
- C — Lift opening between floors - ensure suitably covered during construction.
- D — Recess in slab - trip hazard until partitions and finishes installation
- E — Rooflights - ensure careful methodology for installation. Openings through roof to be guarded during construction.
- F — Lower level kitchen roof - ensure roof edge guarded during construction
- G — Low parapets - Roof edge to be guarded by scaffolding during construction
- H — M&E plant on roof - method for lifting needs to be employed.
- I — Large glazed screens - ensure suitable method for installation established and minimise operative handling.



0mm 50mm 100mm

Strip Sections General Notes

Drawing to be read in conjunction with:
- **11XXX Series_Setting Out**
- **13XXX Series_Reflected Ceiling Plans**
- **21XXX Series_Elevations Setting Out**
- **40XXX Series_External Details**
- **50XXX Series_Internal Details**
- **NBS Specification**
- **Structural details and specifications**
- **MEP details and specifications**
- **Site Investigation Report**

Dimensions with * indicate measurement to gridline.

External Walls: Target U-value is 0.25W/m².K
Roofs: Target U-value is 0.17W/m².K
Exposed Ground Floor: Target U-value is 0.20W/m².K
Windows: Target U-value is 1.78W/m².K

Cavity Barrier
Polymeric Membranes

FFL = Finished Floor Level
SSL = Structural Slab Level
FCL = Finished Ceiling Level

STATUS	REV	DATE	DESCRIPTION
S4	P03	18.08.20	Drawing number amended. CP Submission.

CLIENT
Caledonian Modular

REVISED BY
RB

CHECKED BY
RW

ORIGINATOR NO
153608

CONSULTANT
STRIDE TREGLOWN
www.stridetreglown.com

PROJECT
Buckton Fields Primary School
Village of Boughton, Brampton Lane
Northampton
NN6 8AA

DRAWING TITLE
Construction Section - Through Main Hall and Kitchen

SUITABILITY STATUS
S4 : SUITABLE FOR STAGE APPROVAL

SCALE
As indicated @ A1

PROJECT | ORIGINATOR | ZONE | LEVEL | TYPE | ROLE | CLASS. | NUMBER
FS0816-STL-XX-SE-DR-A-00-3105

REVISION
P03

0mm 50mm 100mm

STATUS	REV	DATE	DESCRIPTION
S4	P01	23.09.20	CP Clarifications

CLIENT
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WD

CHECKED BY
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ORIGINATOR NO
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CONSULTANT
STRIDE TREGLOWN
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PROJECT
Buckton Fields Primary School
Village of Boughton, Brampton Lane
Northampton
NN6 8AA

DRAWING TITLE
Internal views - Main Hall and Infant Classroom

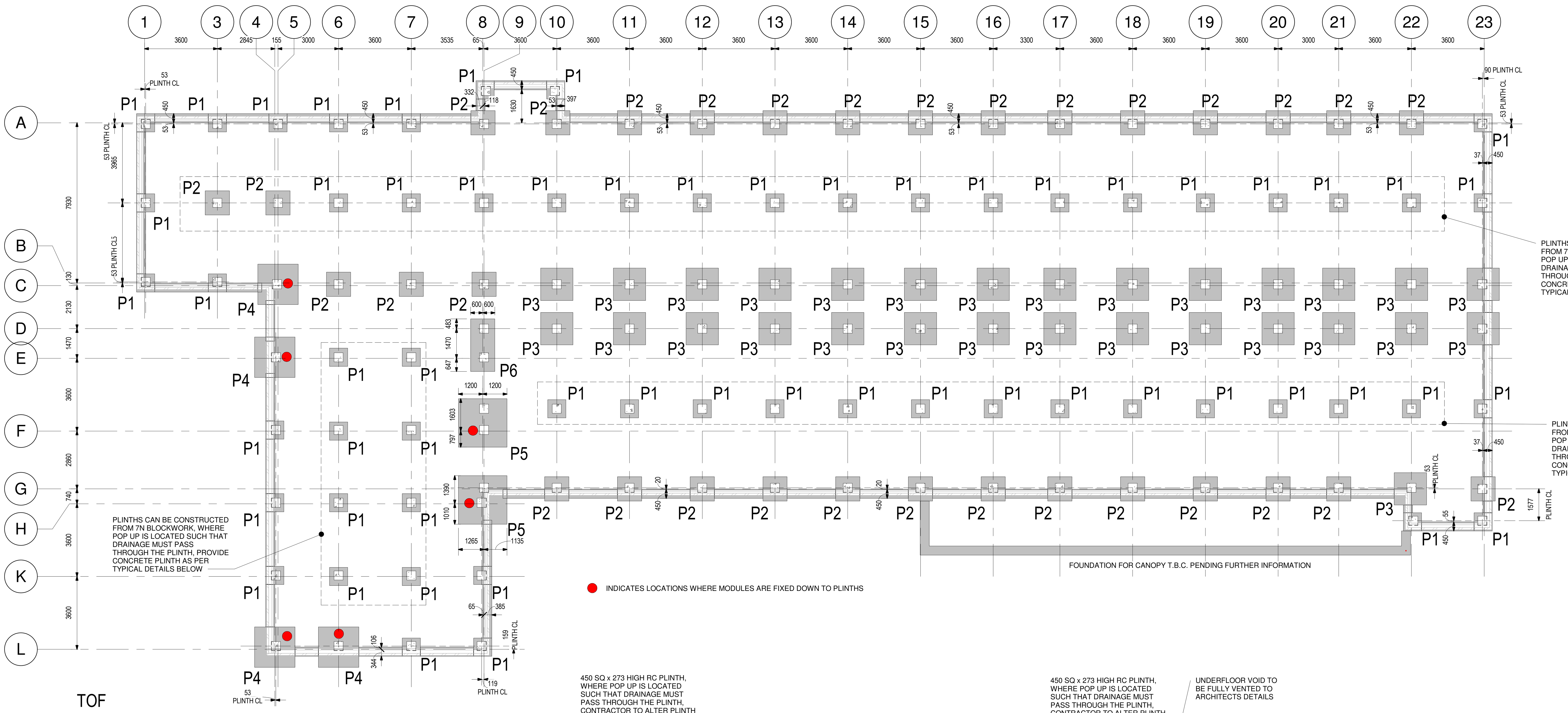
SUITABILITY STATUS
S4 : SUITABLE FOR STAGE APPROVAL

SCALE
N.T.S @ A1

PROJECT | ORIGINATOR | ZONE | LEVEL | TYPE | ROLE | CLASS. | NUMBER
FS0816-STL-XX-XX-VS-A-00-0604

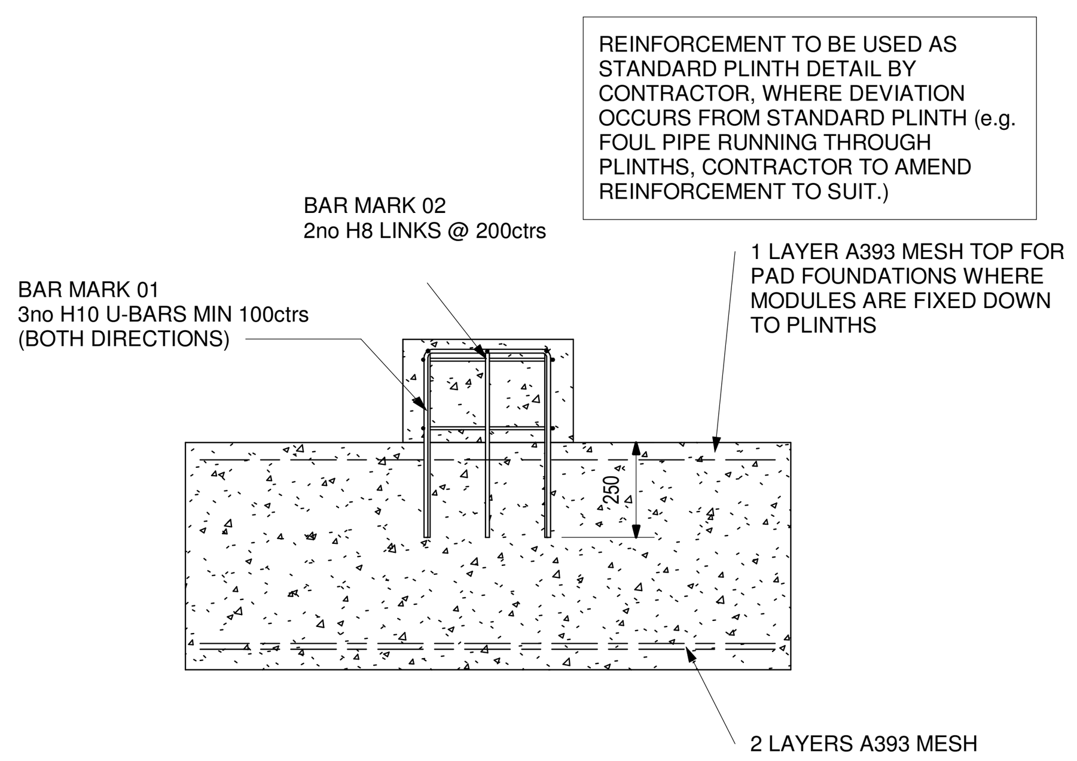
REVISION
P01

NOTE: TO BE READ IN CONJUNCTION WITH AWP DRAINAGE LAYOUT & DETAILS



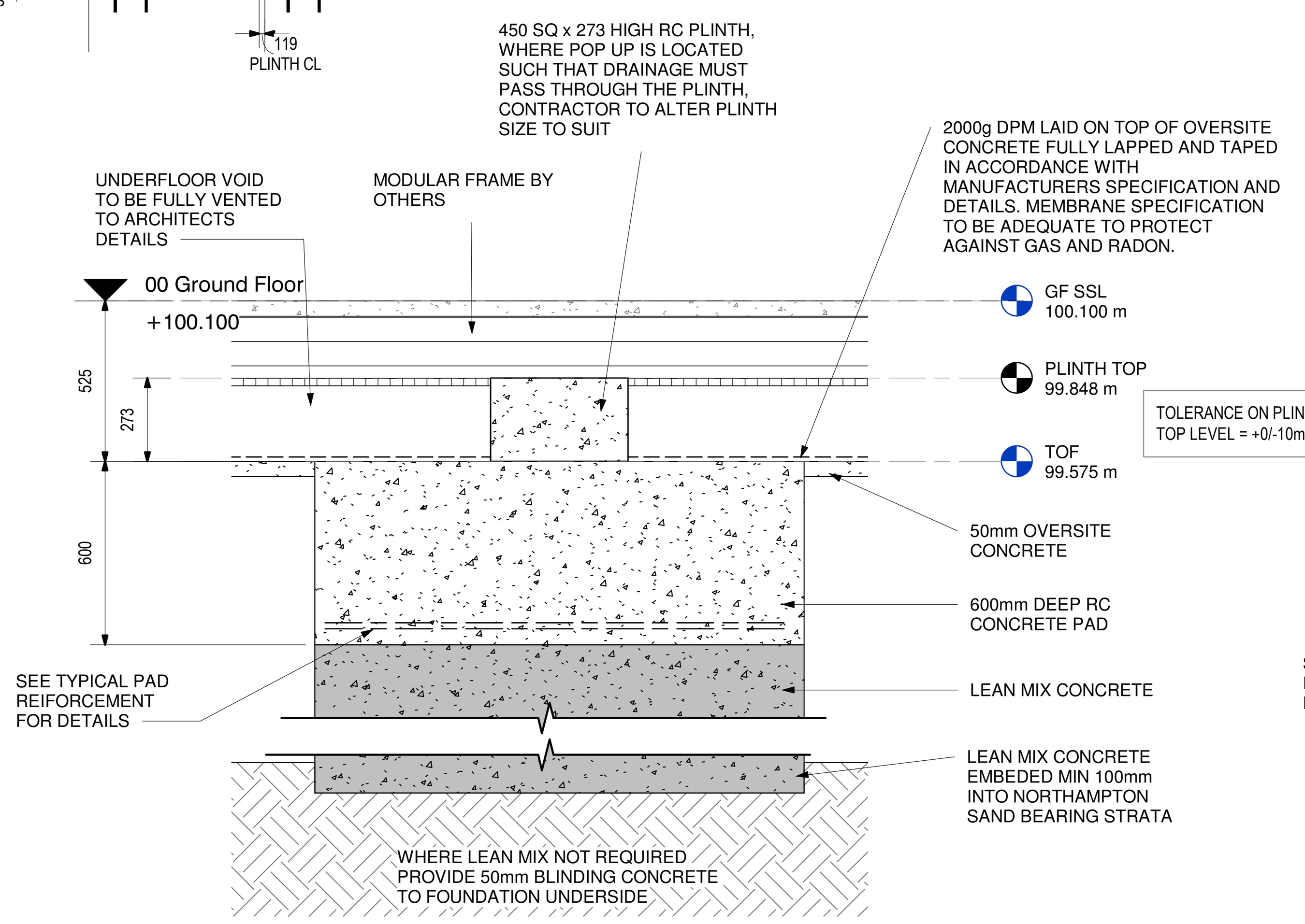
TOF

Scale:- 1 : 125



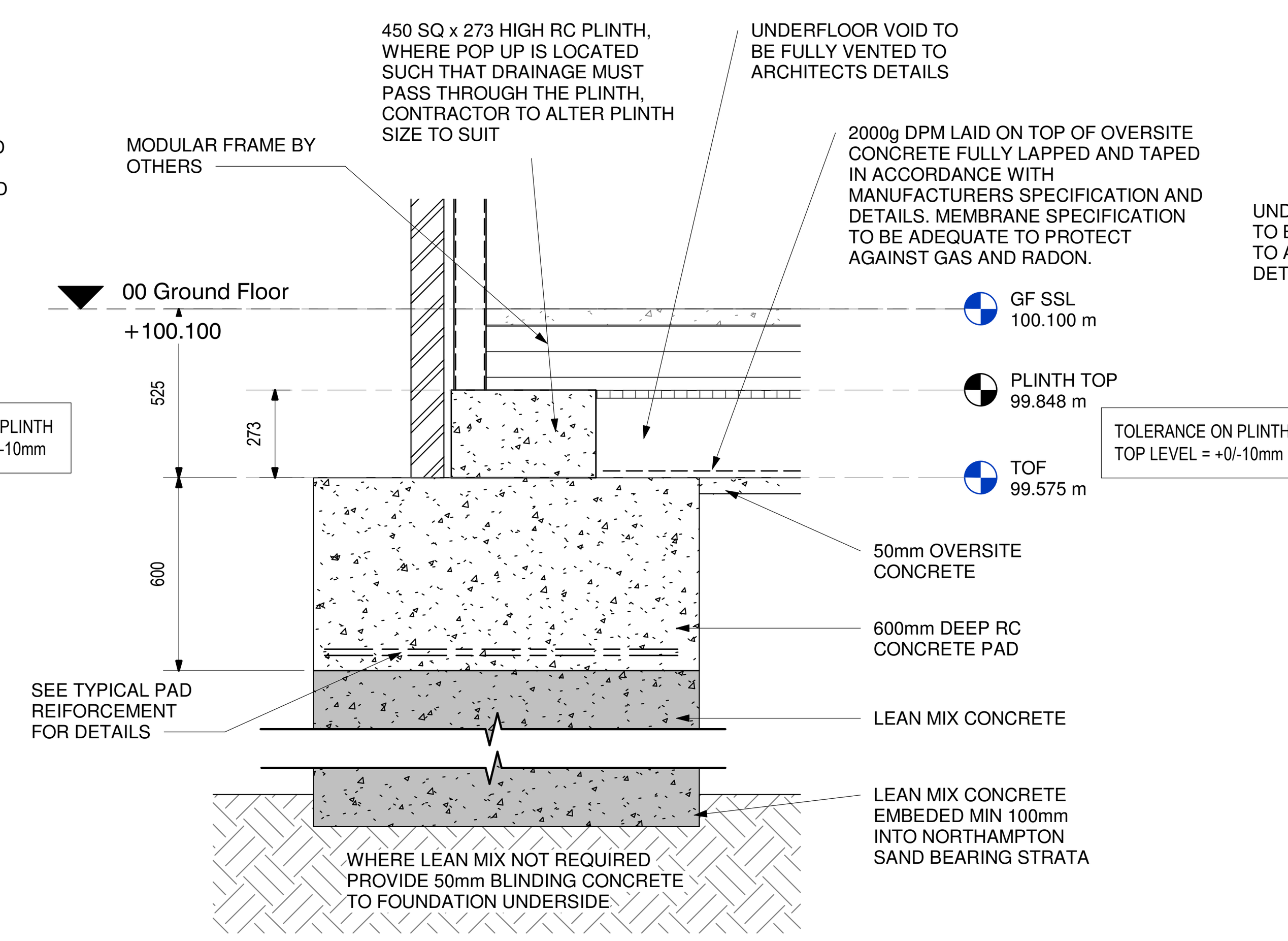
TYPICAL PAD REINFORCEMENT DETAIL

Scale:- 1 : 20



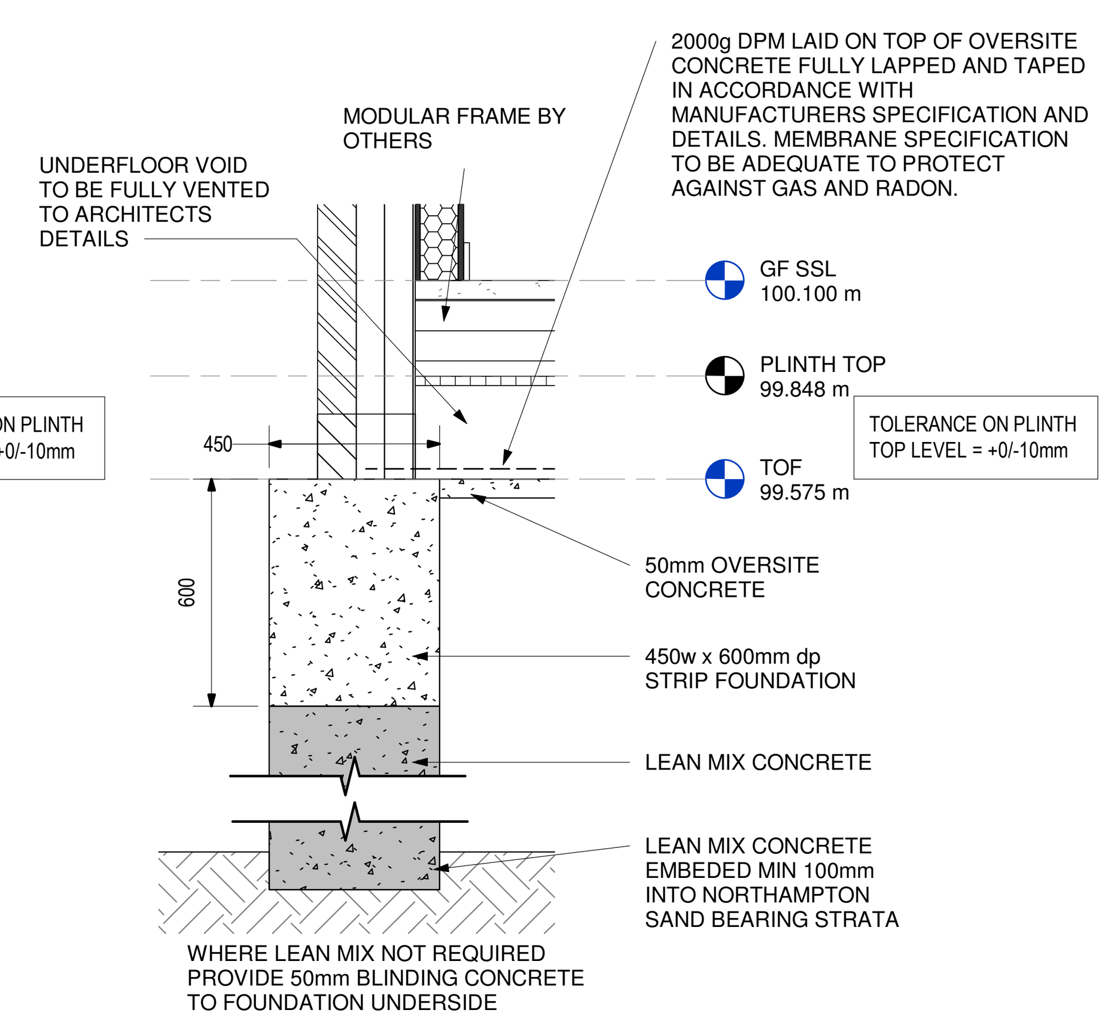
TYPICAL INTERNAL PAD GENERAL SECTION

Scale:- 1 : 20



TYPICAL PERIMETER PAD DETAIL

Scale:- 1 : 20



TYPICAL PERIMETER STRIP DETAIL

Scale:- 1 : 20

PAD Foundation Schedule

PAD REF	No.	Width	Length	Depth	Reinforcement
P1	58	900	900	600	2 Layers mesh Bottom
P2	32	1200	1200	600	2 Layers mesh Bottom
P3	29	1600	1600	600	2 Layers mesh Bottom
P4	4	2000	2000	1000	3 Layers mesh Bottom, 1 Layer mesh top
P5	2	2400	2400	1200	3 Layers mesh Bottom, 1 Layer mesh top
P6	1	1200	2600	600	2 Layers mesh Bottom

PLINTH REINFORCEMENT SCHEDULE

Member	Bar mk	Type	Quantity	Bar Length	Shape	A	B	C	D	E
	1	H10	6	1293 mm	21	497 mm	334 mm	497 mm	0 mm	0 mm
	2	H8	2	1450 mm	51	350 mm	350 mm	47 mm	47 mm	0 mm

SCHEDULE IS PER PLINTH, CONTRACTOR TO ALLOW FOR PROJECT SPECIFIC NUMBER OF PLINTHS

1. This drawing has been prepared in accordance with the scope of CML's appointment with its clients and is subject to the terms and conditions of that appointment. CML accepts no liability for any use of this document other than by its client and only for the purposes for which it was prepared and provided.

2. This drawing is to be read in conjunction with all other relevant drawings and specifications for this project and apparent inconsistencies brought to the attention of the Project Design Manager.

3. Do not scale directly from drawing - if in doubt ask!

NOTES:

CONCRETE

C01. Concrete grades to be designated concretes in accordance with B.S. 8500:
Blinding GEN1
Foundations RC25/30

C02. All formed surfaces to have a finish obtained by the proper use of formwork or moulds of timber, plywood, plastics, concrete or steel. Except where noted otherwise.

C03. All unformed surfaces to have a finish obtained by tamping across the full width of the surface to produce a uniform texture, with uniform ridges not exceeding 6mm in height and slope no more than 5mm in 10m. The surface should then be worked with a power float to produce a smooth uniform finish free from float marks.

C04. Immediately after compaction, concrete shall be protected from rain, rapid temperature change, frost and drying out. Also maintain the concrete above 5 degrees Celsius in cold weather. The methods used shall be in accordance with B.S. 8110, or approved by the Engineer.

C05. The contractor shall make a set of four 150mm test cubes from a sample taken from a single batch from each 10m3 of concrete or from each days supply if less than this.

C06. Where air-entrained concrete is shown on the drawing the average air content of the concrete to be 4.0%.

C07. Principles of concrete member setting out are as follows:
Columns and beams to be centred on grid UNO.
Intermediate beams to be positioned centrally between beams UNO.
Slab edge 150mm off beam centreline UNO.

REINFORCEMENT

R01. Ribbed bar reinforcement (H bars) to be Grade B500B, deformed Type 2.

R02. Tying wire to be 1.6mm diameter black annealed iron wire.

R03. Nominal covers to BS 8500-1 (tolerance 10mm):
Top 50mm
Sides 50mm
Bottom 50 mm

R04. Tension lap lengths generally 40 x bar diameter, minimum 300mm.

R05. Provide suitable proprietary stools, spacers and chairs as necessary to provide adequate support to the reinforcement. Tie securely to maintain the specified cover.

R06. Spacing of reinforcement to be adjusted locally as required in particular to avoid holes, pockets, sockets, recesses and holding-down bolts.

HAZARD IDENTIFICATION - REINFORCEMENT
HR01. The contractor is to ensure that all projecting reinforcement is to be capped or otherwise protected during the construction phase to minimise site hazards.

NOTE: FOUNDATIONS TO BEAR INTO MEDIUM TO DENSE NORTHAMPTON SAND FORMATION LEVEL. APPROX DEPTH RANGES BETWEEN 500mm - 1600mm BELOW EXISTING GROUND LEVELS, REQUIRED ALLOWABLE BEARING PRESSURE = 150kN/m²

REV	REASON FOR REVISION	DATE	BY	CHK
P4	Membrane amended; plinth tolernce note added	13.08.20	KR	MC
P3	Pads altered,CP Issue	02.07.20	SW	MC
P2	DPM altered to 3000g	21.04.20	sw	MC
P1	FIRST ISSUE	07.04.20	SW	MC

Caledonian

CLIENT:
Caledonian Modular

PROJECT REF:
Buckton Fields

DESCRIPTION:
Foundation Layout and details

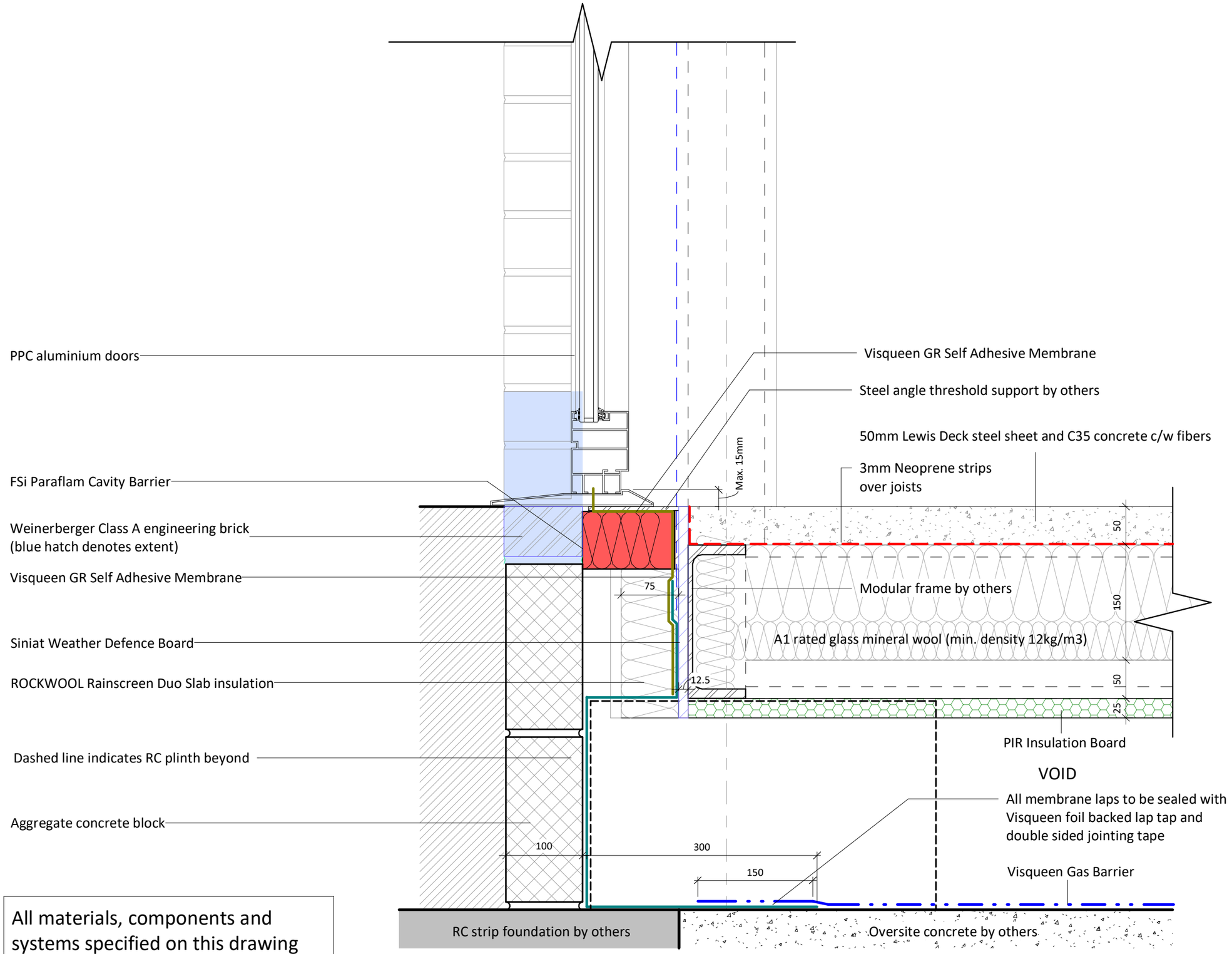
DOCUMENT REFERENCE No:

Ref	Orig	Zone	Level	Type	Role	Element Chrono No.
FS0816	AWP	00	xx	DR	S	20 - 7301

SCALE @ A1: As indicated | REV: P4
CONTRACT NUMBER: FS0816 | DATE: 07.04.20
INFORMATION STATUS: CP ISSUE

SUBCONTRACTOR COMPANY TRADE NAME: Alan Wood & Partners
SUBCONTRACTOR CONTRACT REF. No: 43241

0mm 50mm



All materials, components and systems specified on this drawing may be substituted with a comparable product if necessary

External Envelope General Notes

Drawing to be read in conjunction with (when available):
- **11XXX Series_Setting Out**
- **31XXX Series_Construction Sections**
- **NBS Specification**
- **Structural details and specifications**
- **MEP details and specifications**
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External Walls: Target U-value is 0.25W/m².K
Roofs: Target U-value is 0.17W/m².K
Exposed Ground Floor: Target U-value is 0.20W/m².K
Windows: Target U-value is 1.78W/m².K

Air Tightness
Primary air tightness line to external sheathing board.
Secondary air tightness line to vapour control layer.

Fire and Acoustics
Details to be checked & reconfirmed by Acoustician and Fire Engineer.

Gas
Ground floor damp proof membrane to provide radon protection in accordance with **BRE Report BR211 (2015)** *Radon: Protective measures for new buildings*

Installation
Plasterboard installation to be in accordance with Caledonian standard Plasterboard Specification Document. All products installed in accordance with manufacturer's instructions.

Steel Framing
Stud layout shown is indicative only. Setting out and coordination with wall tie spacings by others.

Wall Ties
Minimum embedment 75mm for all wall ties.
Wall tie arrangement shown is indicative only. For structural requirements, connections and spacings refer to Structural Engineer's masonry support and tie details.

Element to be measured and/or installed on site

STATUS	REV	DATE	DESCRIPTION
S4	P02	13.08.20	CP Submission
S3	P01	26.06.20	Issued for CML comment

CLIENT
Caledonian Modular

REVISED BY
RB

CHECKED BY
RW

ORIGINATOR NO
153608

CONSULTANT
STRIDE TREGLOWN
www.stridetreglown.com

PROJECT
Buckton Fields Primary School
Village of Boughton, Brampton Lane
Northampton
NN6 8AA

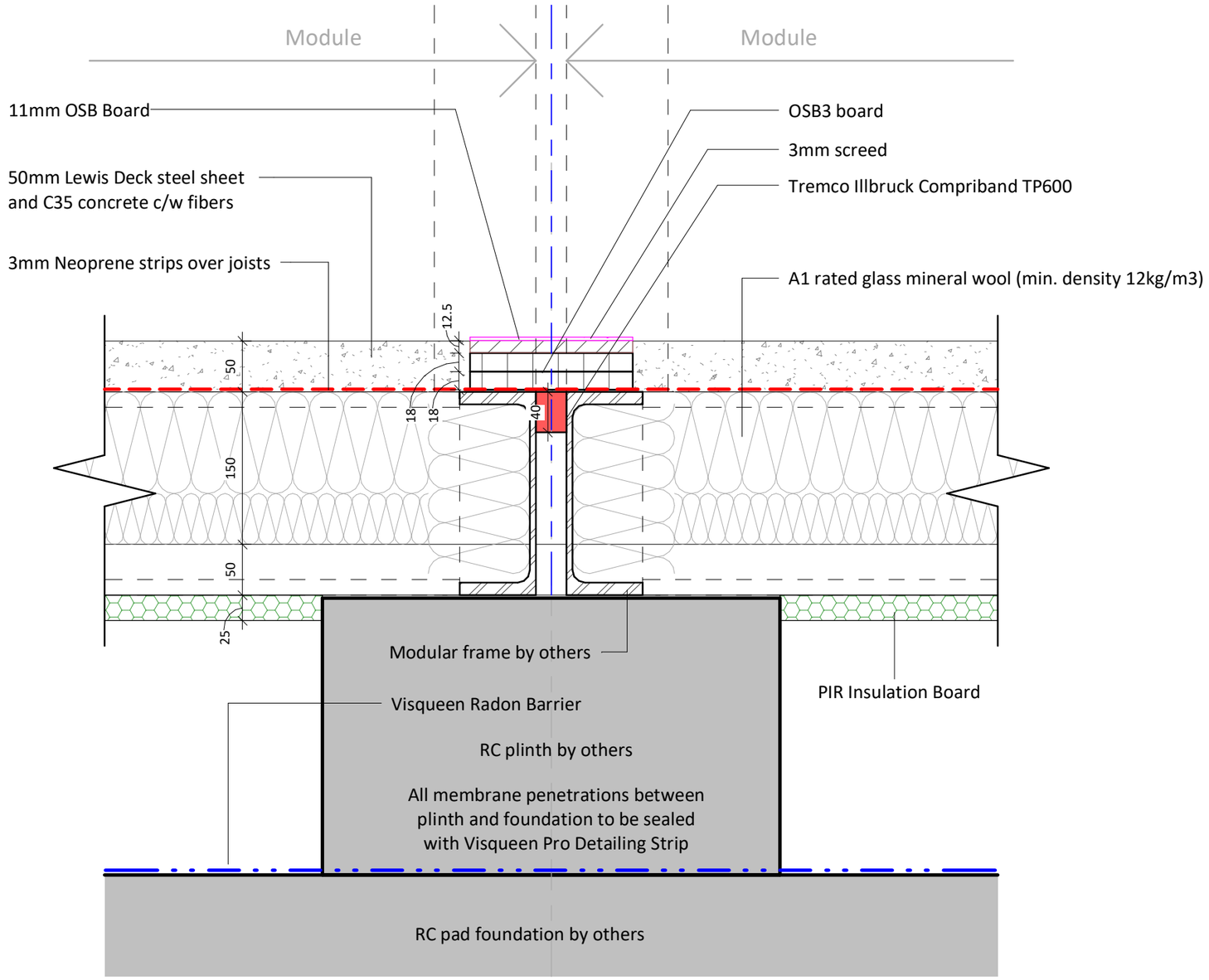
DRAWING TITLE
Section Detail - External Door Threashold

SUITABILITY STATUS
S4 : SUITABLE FOR STAGE APPROVAL

SCALE
1 : 5 @ A3

PROJECT | ORIGINATOR | ZONE | LEVEL | TYPE | ROLE | CLASS. | NUMBER
FS0816-STL-XX-XX-DR-A-00-4002

REVISION
P02



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0mm 50mm

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STATUS	REV	DATE	DESCRIPTION
S4	P02	13.08.20	CP Submission
S3	P01	26.06.20	Issued for CML comment

CLIENT
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STRIDE TREGLOWN
www.stridetreglown.com

PROJECT
Buckton Fields Primary School
Village of Boughton, Brampton Lane
Northampton
NN6 8AA

DRAWING TITLE
Section Detail - Module Joint

SUITABILITY STATUS
S4 : SUITABLE FOR STAGE APPROVAL

SCALE
1 : 5 @ A3

PROJECT | ORIGINATOR | ZONE | LEVEL | TYPE | ROLE | CLASS. | NUMBER
FS0816-STL-XX-XX-DR-A-00-4003

REVISION
P02

Proposed North Elevation
1 : 100

KEY

1. Composite cladding - Navy RAL 5003 Kingspan or similar.
2. Rainscreen cladding - warm grey and dark warm grey or similar. James Hardie Hardiepanel or similar.
3. Brickwork - buff "Village Harvest Multi" or similar. Forterra or similar.
4. Roof Plant enclosure - black metal fencing
5. Flat roof entrance canopy. Roof to be flat roof construction with Navy RAL Facia and Powdercoated metal columns also RAL 5003.
6. Canopy to provide covered area to reception classroom - clear polycarbonate roof panels to allow light into the spaces below. Powdercoated metal structure and columns RAL 5003 Navy.

Proposed South Elevation
1 : 100

Refer to :

- GA plans, 10XX
- Internal area plans, 15XX
- Ceiling Plans, 13XX
- GA elevations, 20XX
- GA Sections, 30XX
- Construction sections, 31XX
- Site sections, 39XX
- External Envelope details, 40XX
- Finishes plans, 46XX
- Internal details, 50XX
- Sanitary, 53XX
- Stairs, 58XX
- Lifts, 59XX
- Materials, finishes and components, 77XX
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- Site flexibility & adaptability strategy plans, 83XX
- Cleaning and maintenance strategy plans, 84XX
- Internal Supervision Strategy plans, 85XX

0 5 10 m

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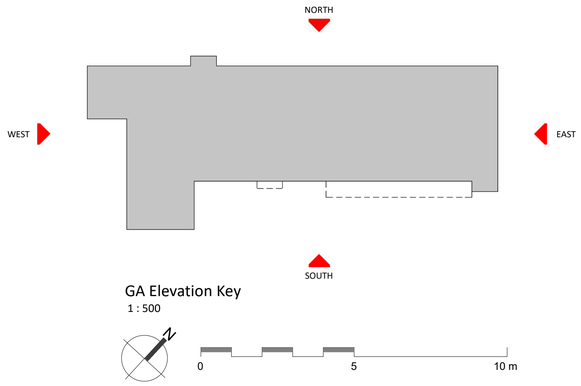
- D Recess in slab - trip hazard until partitions and finishes installation
- E Rooflights - ensure careful metholodogy for installation. Openings through roof to be guarded during construction.
- F Lower level kitchen roof - ensure roof edge guarded during construction
- G Low parapets - Roof edge to be guarded by scaffolding during construction
- H M&E plant on roof - method for lifting needs to be employed.
- I Large glazed screens - ensure suitable method for installation established and minimise operative handling.



GA Elevation Key
1 : 500

0 5 10 m

STATUS	REV	DATE	DESCRIPTION
S4	P11	18.08.20	Drawing number amended. CP Submission.

CLIENT
Caledonian Modular

REVISED BY
JL

CHECKED BY
RB

ORIGINATOR NO
153608

CONSULTANT
STRIDE TREGLOWN
www.stridetreglown.com

PROJECT
Buckton Fields Primary School
Village of Boughton, Brampton Lane
Northampton
NN6 8AA

DRAWING TITLE
Proposed Elevations (North & South)

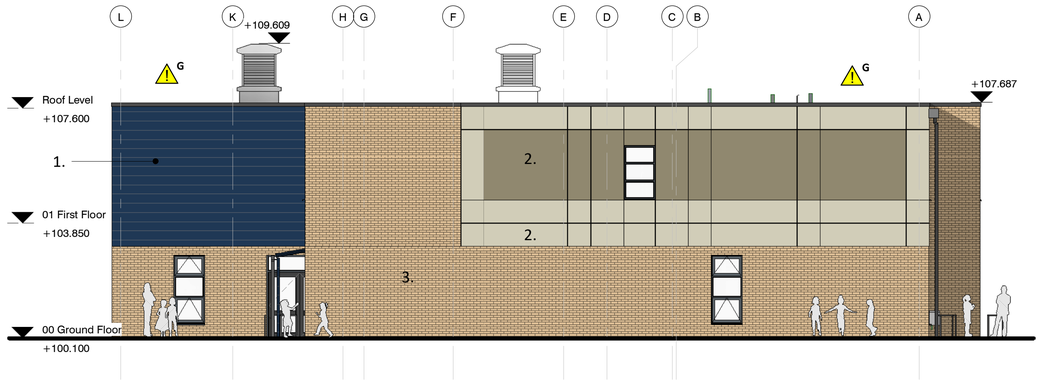
SUITABILITY STATUS
S4 : SUITABLE FOR STAGE APPROVAL

SCALE
As indicated @ A1

PROJECT | ORIGINATOR | ZONE | LEVEL | TYPE | ROLE | CLASS. | NUMBER
FS0816-STL-XX-EL-DR-A-00-2000

REVISION
P11

0mm 50mm 100mm



Proposed East Elevation
1 : 100

Proposed West Elevation
1 : 100

KEY

1. Composite cladding - Navy RAL 5003 Kingspan or similar.
2. Rainscreen cladding - warm grey and dark warm grey or similar. James Hardie Hardiepanel or similar.
3. Brickwork - buff "Village Harvest Multi" or similar. Forterra or similar.
4. Roof Plant enclosure - black metal fencing
5. Flat roof entrance canopy. Roof to be flat roof construction with Navy RAL Facia and Powdercoated metal columns also RAL 5003.
6. Canopy to provide covered area to reception classroom - clear polycarbonate roof panels to allow light into the spaces below. Powdercoated metal structure and columns RAL 5003 Navy.

Refer to :

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- Ceiling Plans, 13XX
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- GA Sections, 30XX
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0 5 10 m

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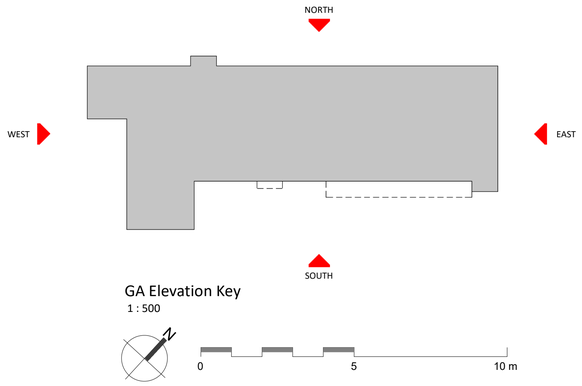

GA Elevation Key
1 : 500

0 5 10 m

STATUS	REV	DATE	DESCRIPTION
S4	P10	18.08.20	Drawing number amended. CP Submission

CLIENT
Caledonian Modular

REVISED BY
JL

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ORIGINATOR NO
153608

CONSULTANT
STRIDE TREGLOWN
www.stridetreglown.com

PROJECT
Buckton Fields Primary School
Village of Boughton, Brampton Lane
Northampton
NN6 8AA

DRAWING TITLE
Proposed Elevations (East & West)

SUITABILITY STATUS	SCALE
S4 : SUITABLE FOR STAGE APPROVAL	As indicated @ A1

PROJECT | ORIGINATOR | ZONE | LEVEL | TYPE | ROLE | CLASS. | NUMBER	REVISION
FS0816-STL-XX-EL-DR-A-00-2001	P10

Proposed North Elevation
1 : 100

KEY

1. Composite cladding - Navy RAL 5003 Kingspan or similar.
2. Rainscreen cladding - warm grey and dark warm grey or similar. James Hardie Hardiepanel or similar.
3. Brickwork - buff "Village Harvest Multi" or similar. Forterra or similar.
4. Roof Plant enclosure - black metal fencing
5. Flat roof entrance canopy. Roof to be flat roof construction with Navy RAL Facia and Powdercoated metal columns also RAL 5003.
6. Canopy to provide covered area to reception classroom - clear polycarbonate roof panels to allow light into the spaces below. Powdercoated metal structure and columns RAL 5003 Navy.

Proposed South Elevation
1 : 100

Refer to :

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- Internal area plans, 15XX
- Ceiling Plans, 13XX
- GA elevations, 20XX
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0 5 10 m

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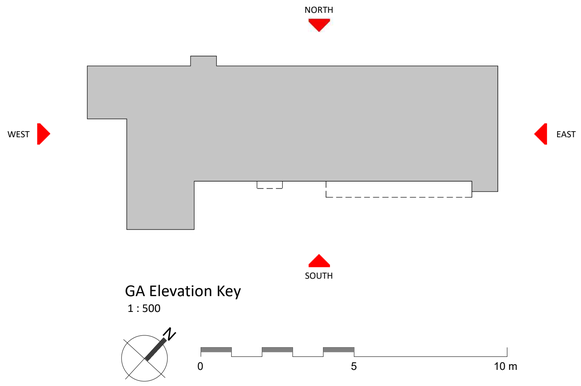
- B Full height staircores - works and stair installation overhead.
- C Lift opening between floors - ensure suitably covered during construction.
- D Recess in slab - trip hazard until partitions and finishes installation
- E Rooflights - ensure careful metholodogy for installation. Openings through roof to be guarded during construction.
- F Lower level kitchen roof - ensure roof edge guarded during construction
- G Low parapets - Roof edge to be guarded by scaffolding during construction
- H M&E plant on roof - method for lifting needs to be employed.
- I Large glazed screens - ensure suitable method for installation established and minimise operative handling.



GA Elevation Key
1 : 500

0 5 10 m

STATUS	REV	DATE	DESCRIPTION
S4	P11	18.08.20	Drawing number amended. CP Submission.

CLIENT
Caledonian Modular

REVISED BY
JL

CHECKED BY
RB

ORIGINATOR NO
153608

CONSULTANT
STRIDE TREGLOWN
www.stridetreglown.com

PROJECT
Buckton Fields Primary School
Village of Boughton, Brampton Lane
Northampton
NN6 8AA

DRAWING TITLE
Proposed Elevations (North & South)

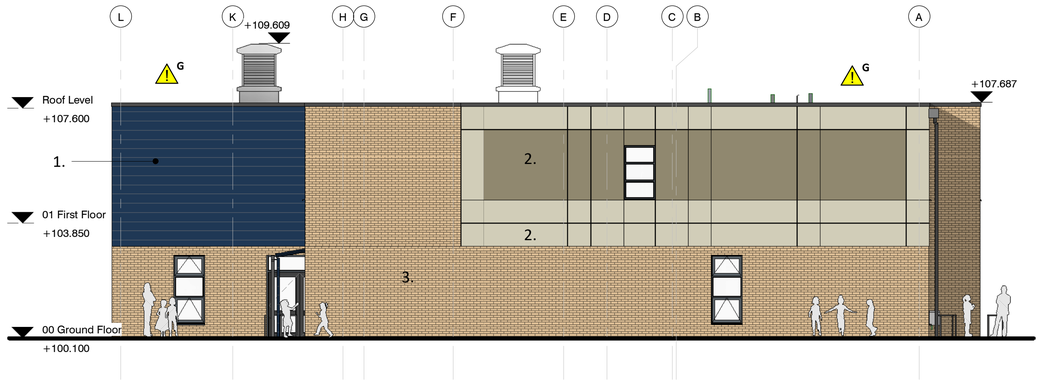
SUITABILITY STATUS
S4 : SUITABLE FOR STAGE APPROVAL

SCALE
As indicated @ A1

PROJECT | ORIGINATOR | ZONE | LEVEL | TYPE | ROLE | CLASS. | NUMBER
FS0816-STL-XX-EL-DR-A-00-2000

REVISION
P11

0mm 50mm 100mm



Proposed East Elevation
1 : 100

Proposed West Elevation
1 : 100

KEY

1. Composite cladding - Navy RAL 5003 Kingspan or similar.
2. Rainscreen cladding - warm grey and dark warm grey or similar. James Hardie Hardiepanel or similar.
3. Brickwork - buff "Village Harvest Multi" or similar. Forterra or similar.
4. Roof Plant enclosure - black metal fencing
5. Flat roof entrance canopy. Roof to be flat roof construction with Navy RAL Facia and Powdercoated metal columns also RAL 5003.
6. Canopy to provide covered area to reception classroom - clear polycarbonate roof panels to allow light into the spaces below. Powdercoated metal structure and columns RAL 5003 Navy.

Refer to :

- GA plans, 10XX
- Internal area plans, 15XX
- Ceiling Plans, 13XX
- GA elevations, 20XX
- GA Sections, 30XX
- Construction sections, 31XX
- Site sections, 39XX
- External Envelope details, 40XX
- Finishes plans, 46XX
- Internal details, 50XX
- Sanitary, 53XX
- Stairs, 58XX
- Lifts, 59XX
- Materials, finishes and components, 77XX
- Fire strategy plans, 81XX
- Site flexibility & adaptability strategy plans, 83XX
- Cleaning and maintenance strategy plans, 84XX
- Internal Supervision Strategy plans, 85XX

0 5 10 m

Construction Design & Management (CDM) Regulations 2015
As a designer under the CDM regulations we are obliged to highlight specific health and safety information on our design deliverables. Refer to the designers hazard register for further information on project safety risks.
Note, not all hazards listed below relate to all drawings. Refer to Hazard symbols on drawings

- A Double height area. Works overhead, ensure suitable overhead protection netting, permits, scaffold etc. during works.
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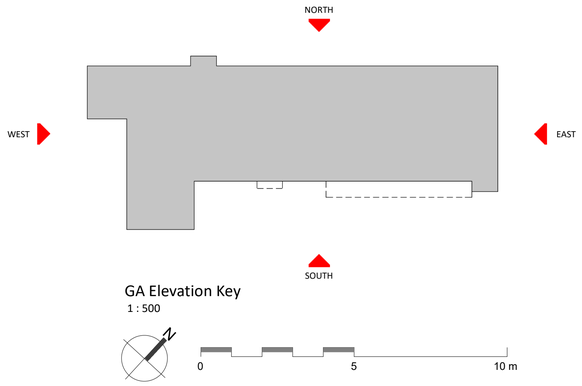

GA Elevation Key
1 : 500

0 5 10 m

STATUS	REV	DATE	DESCRIPTION
S4	P10	18.08.20	Drawing number amended. CP Submission

CLIENT
Caledonian Modular

REVISED BY
JL

CHECKED BY
RB

ORIGINATOR NO
153608

CONSULTANT
STRIDE TREGLOWN
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PROJECT
Buckton Fields Primary School
Village of Boughton, Brampton Lane
Northampton
NN6 8AA

DRAWING TITLE
Proposed Elevations (East & West)

SUITABILITY STATUS	SCALE
S4 : SUITABLE FOR STAGE APPROVAL	As indicated @ A1

PROJECT | ORIGINATOR | ZONE | LEVEL | TYPE | ROLE | CLASS. | NUMBER	REVISION
FS0816-STL-XX-EL-DR-A-00-2001	P10

Buckton Fields Primary School

Fire Safety Strategy – CP submission

Caledonian Modular

Job No:	1025843
Doc Ref:	FS0816-CNS-XX-XX-RP-FE-00-0001
Revision:	P03
Revision Date:	23 June 2020

Project title	Buckton Fields Primary School	**Job Number**
Report title	Fire Safety Strategy – CP submission	1025843

Document Revision History

Revision Ref	Issue Date	Purpose of issue / description of revision
P01	09 April 2020	First issue
P02	21 April 2020	Revised to reflect updated plans
P03	23 June 2020	CP submission
P04	13 August 2020	Revised cavity barrier in external walls provisions based on modular construction rationalisation

Document Validation (latest issue)

13/08/2020	13/08/2020	13/08/2020
X T Sofroniev	X C Bennett	X C Bennett
Principal author	Checked by	Verified by
Signed by: Sofroniev, Teodor	Signed by: Bennett, Colin	Signed by: Bennett, Colin

Executive Summary

Cundall have been commissioned by Caledonian Modular to develop the fire strategy for Buckton Fields Primary School. The objective of this report is to:

- Demonstrate to the statutory authorities how the relevant fire safety requirements of the Building Regulations will be satisfied;
- Provide advice to the design team/contractor to ensure that they can incorporate any fire safety requirements into the aspects of the design they are responsible for;
- Provide relevant fire safety information to assist those responsible for the management of the building and the safety of the occupants.

Key elements of the fire strategy for Buckton Fields Primary School are:

- The recommendations of BS 9999 2017: *Fire Safety in the design management and use of buildings – Code of practice have been used as a basis for the design*.
- The means of escape for the building will be designed based on the simultaneous evacuation of the entire building;
- Automatic detection and alarm system with a minimum category of L2 to BS 5839-1 will be installed as well as manual call points;
- Emergency lighting will be provided in accordance with BS 5266-1 and BS EN 1838. The system will be a self-contained, maintained system with a duration of not less than 180 minutes, due to the potential for the School to be used outside of normal hours;
- The elements of structure will be provided with not less than 30 minutes fire resistance;
- Escape routes serving two exits will be subdivided by fire resisting construction. Rooms considered to represent a high fire risk will also be enclosed in fire resisting construction;
- Access for a fire service vehicle will be provided to not less than 15 % of the building perimeter

Contents

1.0

Introduction

1.0 Introduction

Cundall have been commissioned by Caledonian Modular to develop the fire strategy for Buckton Fields Primary School.

1.1 Objective of the report and assumptions

The objective of this report is to:

- Demonstrate to the statutory authorities how the relevant fire safety requirements of the Building Regulations will be satisfied;
- Provide advice to the design team/contractor to ensure that they can incorporate any fire safety requirements into the aspects of the design they are responsible for;
- Provide relevant fire safety information to assist those responsible for the management of the building and the safety of the occupants.

This report is to be read in conjunction with fire strategy drawings FS0816-STL-XX-GF-DR-A-00-8100, FS0816-STL-XX-01-DR-A-00-8101 and FS0816-STL-XX-RF-DR-A-00-8102 produced by Stride Treglown.

For the purposes of this Strategy, it has been assumed that fire is an accidental event and that there is a single seat of fire. No account is taken of the potential for arson, which may typically be characterised by multiple seats of fire and the use of accelerants. However, it should be recognised that a number of the fire safety measures provided will also help to reduce the risk and consequences of arson, e.g. compartmentation, etc.

There is also no reliance placed on the fire service for rescue from the building; the assumption being that people should be able to escape from the building using their own unaided efforts.

The dimensions given for the escape routes in this Strategy are the minimum required for the stated population. Wider doors and corridors may be required to satisfy other legislation, such as Part M of Schedule 1 to the Building Regulations, or for functional reasons. Therefore, wider doors etc., will be able to accommodate larger numbers of people.

It has been assumed that all building work will be carried out in accordance with Regulation 7 of the Building Regulations. Therefore, to ensure that the proposed fire safety system detailed within this report achieve the appropriate fire performance, it is recommended that all products, components, materials or structures relating to the fire strategy are installed using competent companies/persons and, where applicable, third party accreditation/certification.

Additional measures may be required for the purpose of property protection and business continuity, which are outside the scope of the Building Regulations. We do not expect there to be any additional measures required, however, it is recommended that the Client and their insurers are also consulted together with any other relevant parties. This fire strategy also does not address any environmental effects resulting from a fire within the building.

1.2 Building description

Buckton Primary School is a new build primary school which will be located in the Village of Boughton, off Brampton Lane, Northampton. It will comprise two storeys and will accommodate primarily 15 teaching spaces, a studio and a main hall. The building will be served by two protected stairs and will have a height to topmost (First) occupied floor of 3.75 m. The plan area of the school is approximately 1,230 m^2.

A site plan showing the school and the proposed site is shown on Figure 1.

Figure 1: Buckton Fields Primary School site layout

2.0

Applicable legislation and guidance

2.0 Applicable legislation and guidance

2.1 Legislation

2.1.1 Building Regulations 2010

With few exceptions, all buildings built in England and Wales must comply with the England and Wales Building Regulations 2010.

The Building Regulations do not require anything to be done except for the purpose of securing reasonable standards of health and safety for persons in or about buildings, and for the conservation of energy in buildings. They cannot be applied retrospectively and make no recommendations relating to property protection, loss prevention or business continuity.

In England and Wales, the Regulations relating to fire safety are expressed in the form of six functional requirements, these being:

- Requirement B1 Means of warning and escape;
- Requirement B2 Internal fire spread (linings);
- Requirement B3 Internal fire spread (structure);
- Requirement B4 External fire spread;
- Requirement B5 Access and facilities for the fire service; and
- Regulation 38 Fire safety information.

2.1.2 Regulatory Reform (Fire Safety) Order 2005

All existing fire safety legislation, except that relating to the Building Regulations, has been gathered together under a single Order. This Order encompasses the previous requirements made under the Fire Precautions Act 1971 and the Fire Precautions (Workplace) Regulations 1997 and extends them to include a requirement to take precautions to safeguard other persons who may be affected by a fire in a building. This legislation is based on a risk-appropriate compliance and requires a fire risk assessment to be carried out once the building has been occupied.

This strategy document may be used as the basis for the fire risk assessment.

2.1.3 Licencing Act 2003

Where a building, or parts thereof, is intended for the staging of a licensable activity or regulated entertainment, a premises licence is required. The local licencing authority may impose specific requirements on the arrangement and use of such a space, including matters relating to fire safety of persons on those requirements of the Building Regulations and/or the Regulatory Reform (Fire Safety) Order 2005 should satisfy any licencing requirements, however there may be additional measures required to satisfy the requirements of this Act.

2.1.4 Construction (Design and Management) Regulations 2015

Projects undertaken in Great Britain and Northern Ireland are subject to the requirements of the Construction (Design and Management) Regulations 2015 (CDM). The objective of CDM Regulations is to reduce risk to health and safety during construction and maintenance of construction sites and occupied buildings.

To fulfil their duties under the CDM Regulations, the contractor should ensure, so far as reasonably practicable, the early installation and operation of fire protection measures contained within this report and any others required as part of the Contractor's construction phase fire safety plan.

Where any conclusions or recommendations, contained in this report, may result in significant or unusual risks during the construction, operation, maintenance or refurbishment of the proposed building, these will have been assessed in accordance with CDM Regulations 11 and 18 (duties for designers) and will be captured in the project risk register.

2.2 Design guidance

The guidance presented in this report has been based on the recommendations of BS 9999:2017: *Fire Safety in the design management and use of buildings – Code of practice* and the associated British and European Standards (BS and EN respectively).

The recommendations of BS 9999 are based largely on fire engineering principles and allow a greater degree of flexibility in the design when compared to other standards, such as Approved Document B: *Fire safety*. Using this approach will result in a more efficient and cost-effective design, without compromising on fire safety.

As with all British Standard Codes of Practice, BS 9999 provides guidance and recommendations relating to its subject matter. It does not contain mandatory clauses or prescriptive requirements, and it is acceptable to develop alternative solutions from the recommendations made, provided such alternative designs are supported by adequate evidence that the functional requirements of the Building Regulations will be met, and other aspects of BS 9999 are not compromised.

The Standard also acknowledges that in some circumstances it may be necessary to use one guidance document to supplement another and confirms that this is acceptable provided the overall approach is fully integrated into the final design solution.

Where an alternative approach has been taken, this is highlighted in the relevant section of the report, along with the necessary information to demonstrate compliance with the relevant requirements.

3.0

Risk profile

3.0 Risk profile

BS 9999 uses the concept of risk profiling when determining the adequacy of fire safety measures within a building. The risk profile can be determined for any building, areas or room within a building, depending on the occupant characteristics and the anticipated rate of fire growth associated with the contents of that building or space.

The concept provides a great deal of flexibility as it enables each space to be designed according to the profile of the occupants and the risk posed by the combustible contents within that space.

The occupancy characteristics reflects the familiarity of the occupants with the building layout and whether they can be expected to be awake or asleep at the time of a fire.

The fire growth rate is slightly more complicated in that it refers to the qualitative rates of fire growth. The various categories of occupancy characteristic and fire growth rate and their descriptions are provided in Table 1.

Table 1: Summary of occupancy characteristics and fire growth rates

Occupancy Characteristic		Fire Growth Rate	
A	Occupants who are awake and familiar with the building	**1**	*Slow* fire growth - Evenly distributed low-level fire load, small discrete packets of fuel or material of limited combustibility
B	Occupants who are awake and unfamiliar with the building	**2**	*Medium* fire growth - Evenly distributed low to mid-level fire load comprising a mix of combustible materials
C	Occupants who are likely to be asleep	**3**	*Fast* fire growth - Stacked combustibles, some small quantities of materials other than materials of limited combustibility, process, manufacturing or storage of combustible materials.
D	Occupants receiving medical care	**4**	*Ultra-fast* fire growth - Medium to large quantities of combustible materials, high racked storage, flammable gas or liquid storage

For schools, it is generally expected, during normal school hours, that both pupils and staff will be awake and familiar with the building. Although there may be visitors present, it is expected that these will be accompanied by members of staff and sufficient signage and/or induction information will be provided, such that visitors can be considered familiar with the building and the evacuation procedures. Therefore, the building can be classified as having an Occupancy Characteristic A (occupants are awake and familiar with the building).

It is also expected that the Hall will be used outside of normal hours by members of the public. During this time, there could be a sizeable number of occupants that are not familiar with the building or the evacuation procedures. During these times the hall can be classified as having an Occupancy Characteristic B (occupants are awake but unfamiliar with the building).

A *Medium* fire growth rate will be assumed for the building and this is typically representative of the type of combustibles found in schools. This will be applicable for both normal and out of hours use. There may be area / rooms of the building that have combustibles and materials that could be associated with a higher growth rate, e.g. plant rooms, science rooms. However, these spaces will be enclosed in fire resisting construction and therefore it is not considered necessary to classify the whole school with the higher fire growth rate.

Based on the above, the risk profile for the building will be considered to be A2 during normal use. The ground floor contains the hall and when used outside of normal hours will be considered as a B2 risk profile. During this time, it is not expected that other areas of the building will be occupied.

4.0

Fire safety systems

4.0 Fire safety systems

4.1 Automatic fire detection and alarm systems

The minimum recommended fire alarm system for this building is a manual fire alarm, comprising solely of manual call points and sounders. However, it is considered that automatic fire detection would be beneficial for the following reasons:

- It will provide an early warning to occupants, particularly where a fire occurs in a space that is unoccupied.
- As part of the measures to address inner room situations, where occupants of the inner room may not be aware of a fire in the access room.
- To operate and control fire safety systems described elsewhere in this report, etc.

Therefore, an automatic fire detection system will be provided in accordance with BS 5839-1. The details of the proposed system are summarised below.

It is expected that the relevant designers and installers will develop the design of the system and will be responsible for providing the necessary certification and obtaining the necessary approvals. Where a variation is required to the recommendations of BS 5839-1, these will be identified and agreed with all relevant parties to ensure that the objectives of this fire strategy are satisfied.

4.1.1 Category of system and coverage

The fire detection and alarm system will provide a level of coverage to satisfy the recommendations of a Category L2 system. This will require detection to be provided all circulation routes, rooms located off escape routes and any other high-risk fire rooms.

4.1.2 Type and location of detectors

Optical type smoke detectors will be provided throughout the building, with the exception of rooms that may contain naked flames, or within which smoke, steam, dust or aerosol can be expected as part of the normal ambient conditions, kitchens, science laboratories, etc. In these cases, heat detectors, or other suitable device to minimise spurious alarms will be provided. However, heat detectors are not suitable for use within escape routes or circulation routes and optical type smoke detectors will be provided throughout these areas.

4.1.3 Manual call points

Type A (direct operation) manual call points, designed in accordance with BS EN 54-11 and installed in accordance with BS 5839-1, will be located at all storey and final exits, such that it is impossible for persons to leave the building without passing a call point. Additional call points may be required depending travel distances, and localised fire risks. Call points will be located approximately 1.4 m above the floor.

To prevent the potential for malicious use of call points, a transparent hinged cover can be provided.

4.1.4 Audible and visual alarms

The alarm signal will be distinct from any other alarms or signals used and the audibility of the alarm signal will not be less than 65 dB(A) throughout all accessible areas of the building, although this may be reduced to 60 dB(A) in enclosures of no more than 60 m^2 in area. Where the background noise is greater than 60 dB(A), the sound pressure level of the alarm signal will be 5 dB above this level, but not greater than 120 dB(A).

In addition to audible alarms, visual alarms satisfying the recommendations of BS 5839-1 will be provided in areas where it is anticipated that persons with impaired hearing may be located in relative isolation.

Rooftop plant areas will be provided with both audible and visual alarms as required.

4.1.5 Connection to other systems

Any systems that are designed to operate automatically in the event of a fire, provide an input to the fire alarm panel, or are required to shut down will be connected to the fire alarm system. Such systems will include:

- Automatic hold open devices to fire doors;
- HVAC systems, e.g. closing of dampers, shutting down of fans;
- Shut off valves to gas systems;
- Electronic access control systems will release where located on egress routes;
- Lifts will return to ground, the doors open, and the lift landing controls will be disabled. Where the fire alarm is located at ground, the lifts will terminate at first floor.

4.1.6 Cause and effect

A full fire alarm cause and effects matrix for the fire alarm system will be created by those responsible for the design of the fire alarm system. This will be produced during the design stage of the system and agreed with the building management, and relevant authorities, prior to commissioning and handover.

The matrix will include the evacuation arrangements detailed in Section 5.1 of this report and all devices and systems connected to the fire alarm system and describe how the system is designed to operate. This will then be used as part of the commissioning process and any future fire alarm testing and maintenance. Any changes and modifications to the system will require the fire alarm cause and effects matrix to be updated accordingly.

4.2 Fire suppression systems

No fire suppression systems are proposed for the building and for the purposes of Building Regulations, the fire strategy has been designed based on no sprinklers or suppression systems being provided.

4.3 Emergency lighting systems

Emergency lighting will be provided in accordance with BS 5266-1 and BS EN 1838. The system will be a self-contained, maintained system with a duration of not less than 180 minutes, due to the potential for the school to be used outside of normal hours.

Emergency luminaries will be provided to the following areas:

- All internal circulation areas, open plan areas greater than 60 m^2 in area and any windowless accommodation;
- At every storey exit and exit door from the building;
- External escape routes and external areas in the immediate vicinity of exits;
- In all escape stairs to ensure that, each flight receives direct light. Lighting to escape stairs should be on a separate circuit from that supplying other parts of the system;
- Close to (typically within two meters of) all fire safety, or other safety equipment;
- All toilets accommodation greater than 8 m^2 in area; and
- All plantrooms.

4.4 Access control systems

Any egress doors fitted with a lock or fastening will be readily operated, without the use of a key and without having to manipulate more than one mechanism. Where the door is likely to be used by more than 60 persons, panic hardware complying with BS EN 1125 will be installed on the side approached by persons making their escape.

Any electrically powered locks will automatically unlock on activation of the fire alarm system; on loss of power; system error, and on activation of a manual door release conforming to BS EN 54-11 (Type A), located adjacent to the door on the side approached by occupants making their escape.