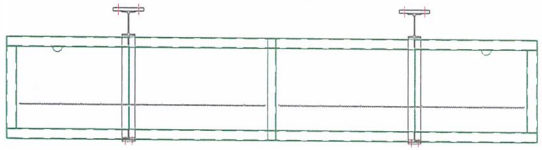
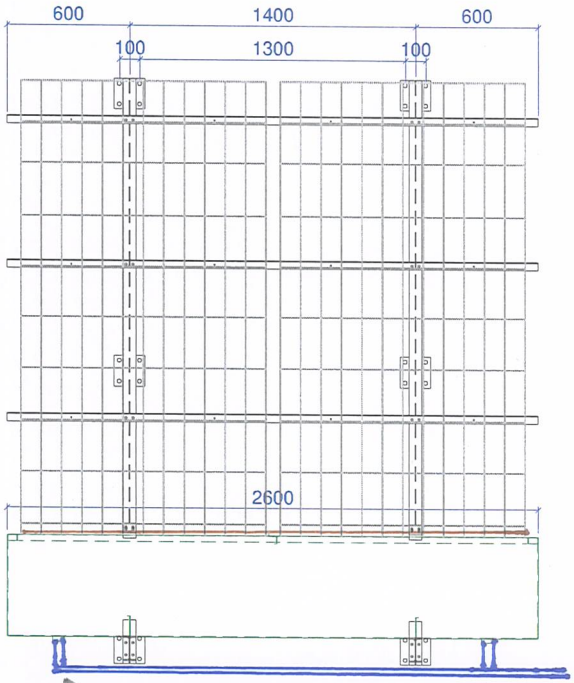
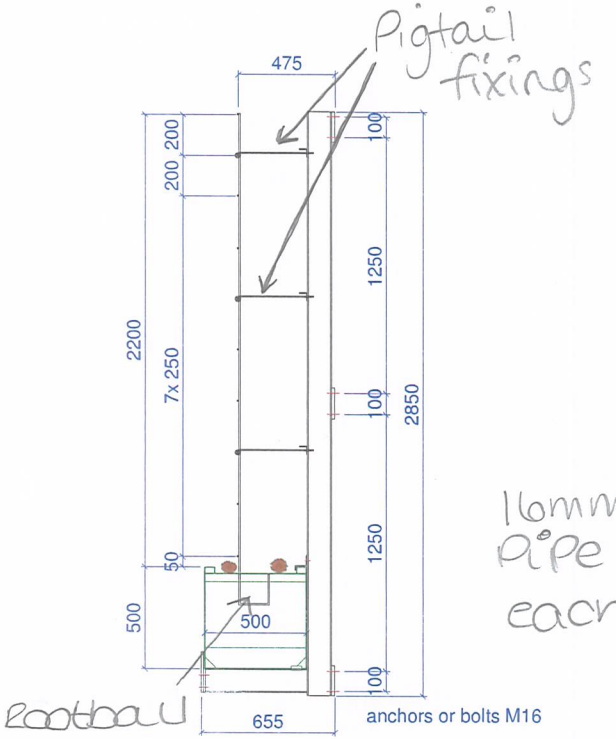
1.4 Subcontractor drawings







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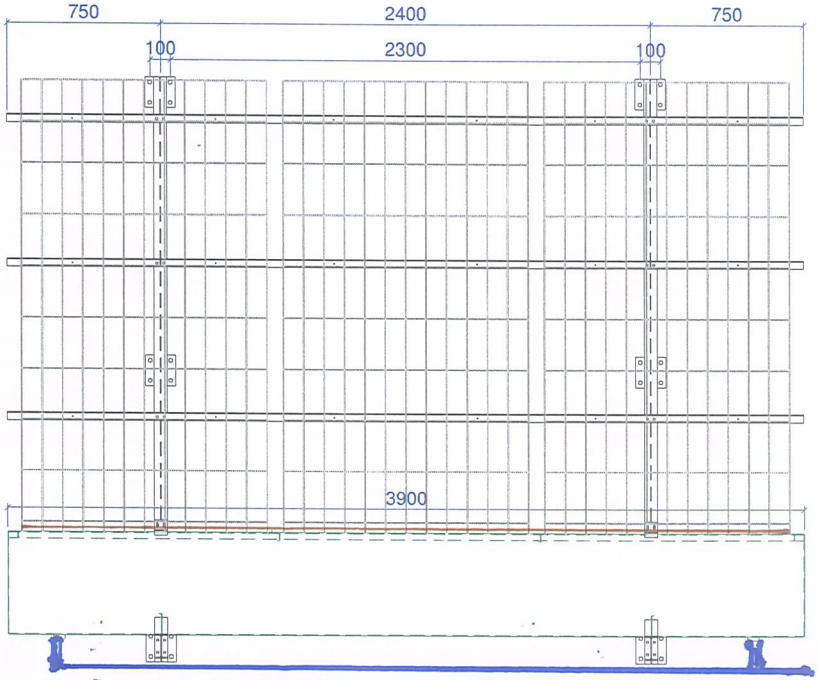

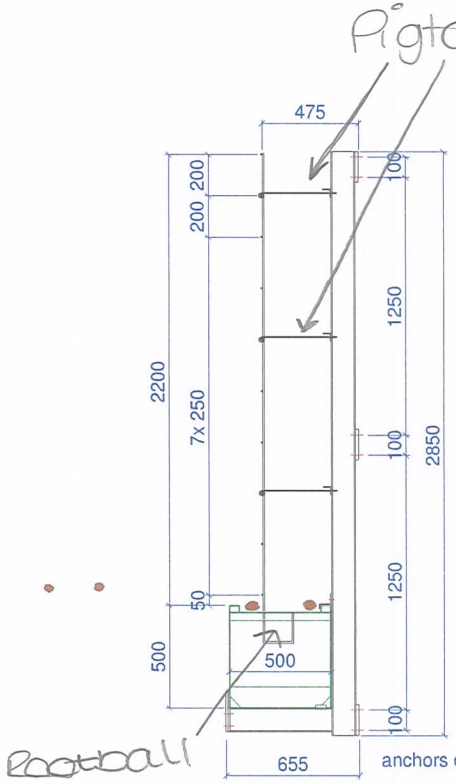

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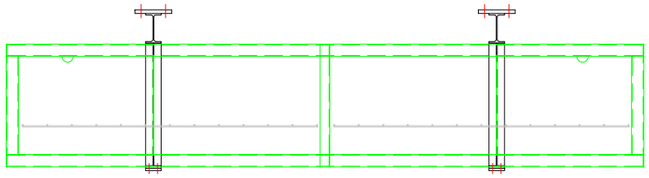
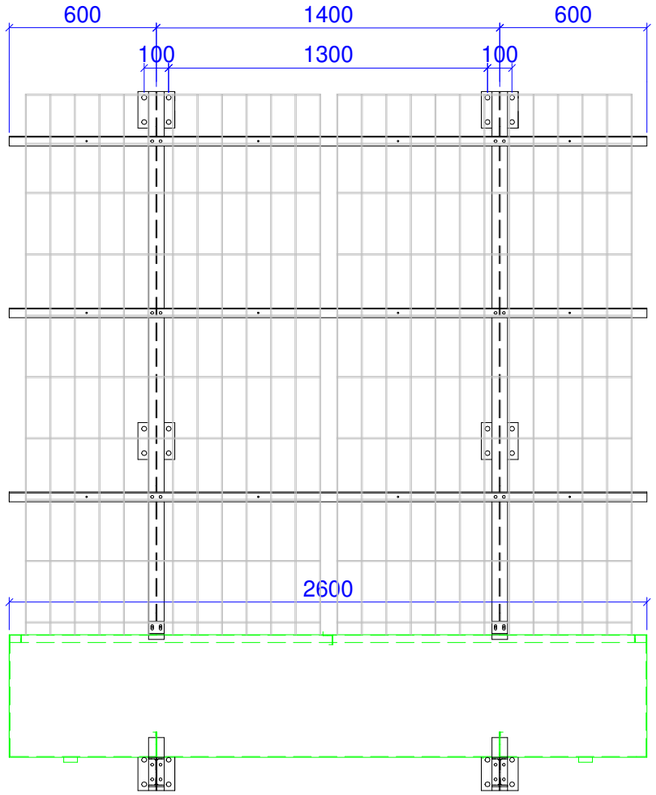
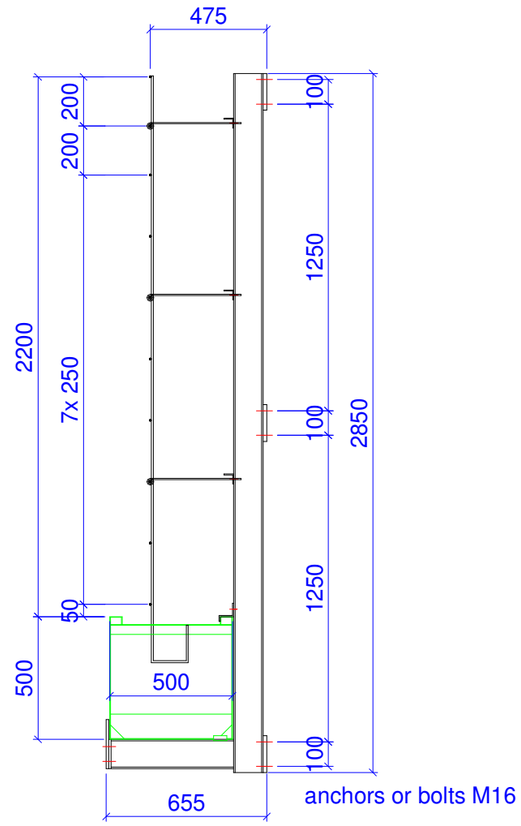
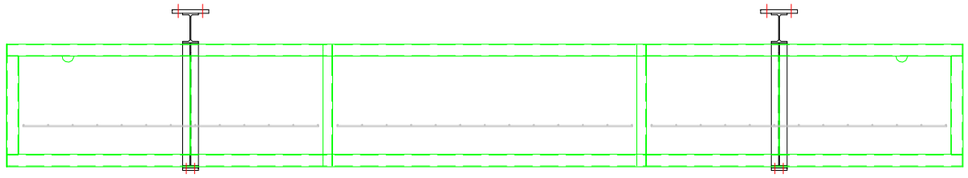


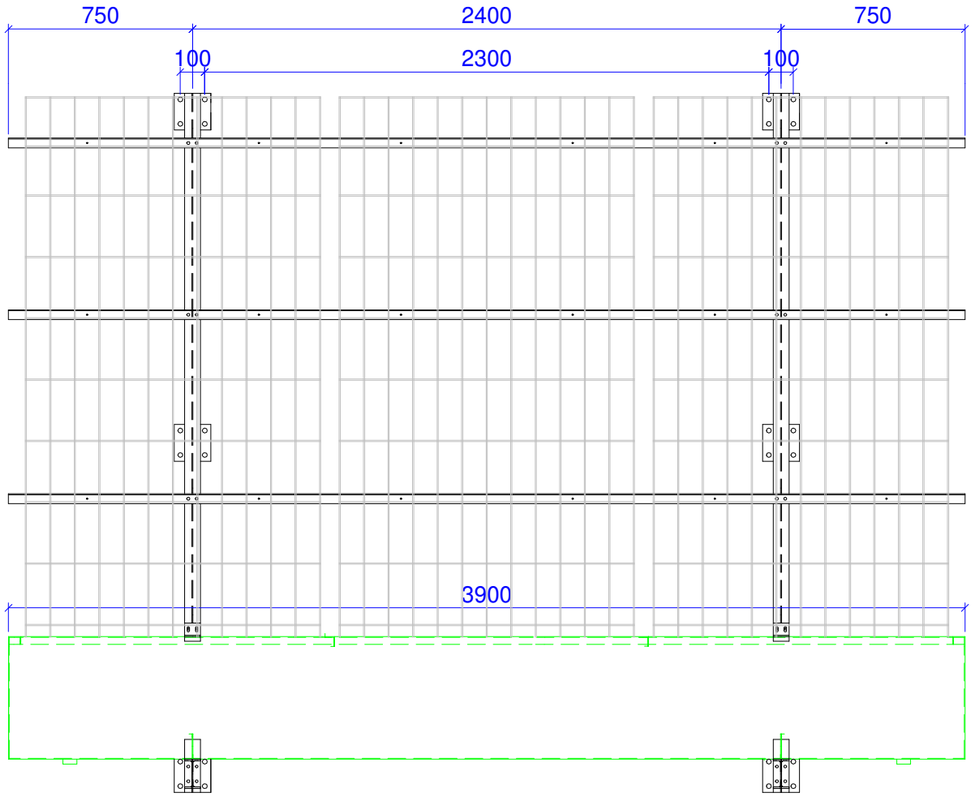


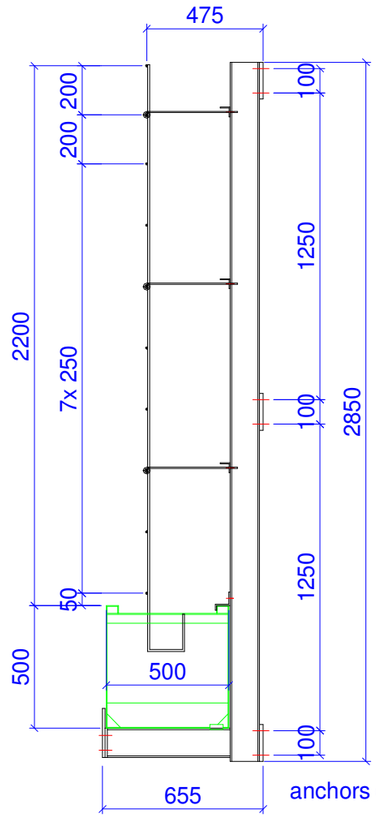


weight of the WallPlanter in normal condition approximately 835 kg
maximum weight approximately 965 kg

SCALE : 1:25	DRAWN : F.W.	REMARKS:	
UNITS : mm	SEEN :		
DATE : 251114	CHANGED :		
MOBILANE BV LEERSUM	NAME: Principal setup of WallPlanter 2600/2200	NUMBER: WP-2600/2200	A3







anchors or bolts M16

weight of the WallPlanter in normal condition approximately 1250 kg
maximum weight approximately 1450 kg

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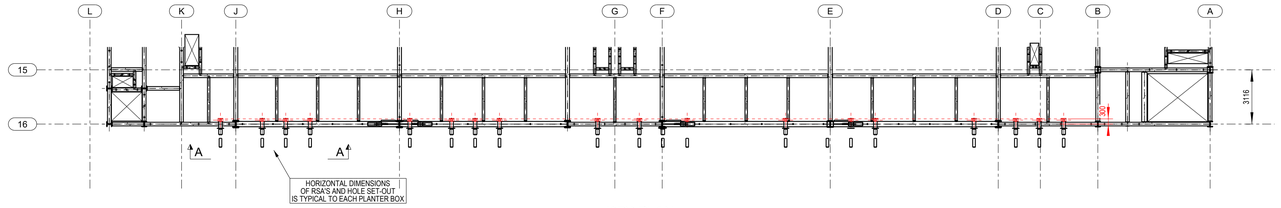
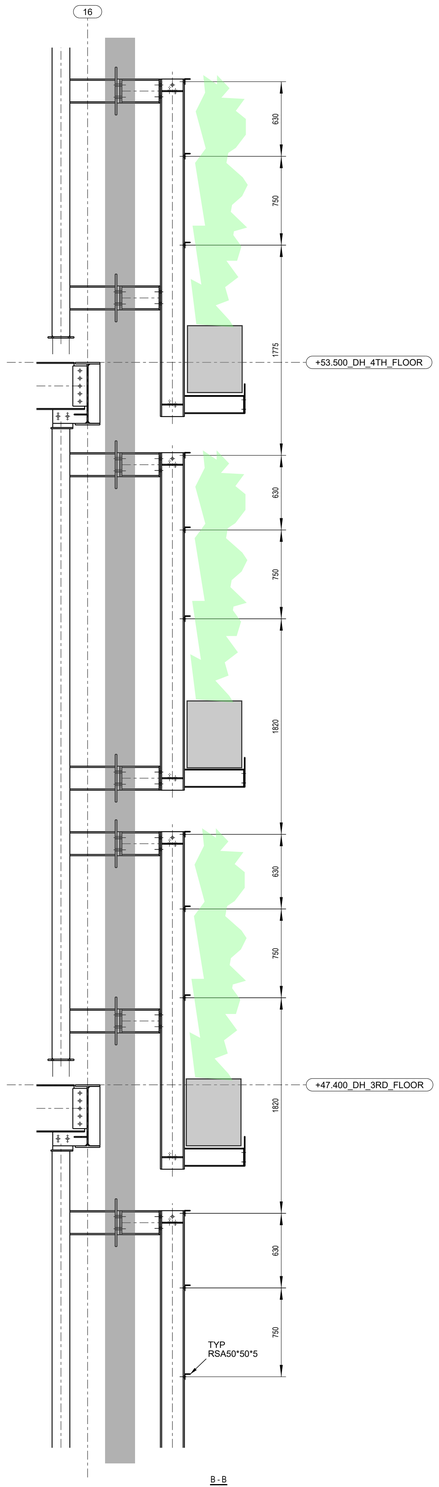
MOBILANE BV LEERSUM	NAME: Principal setup of WallPlanter 3900/2200	NUMBER: WP-3900/2200	A3

1.5 Subcontractor Case study photos

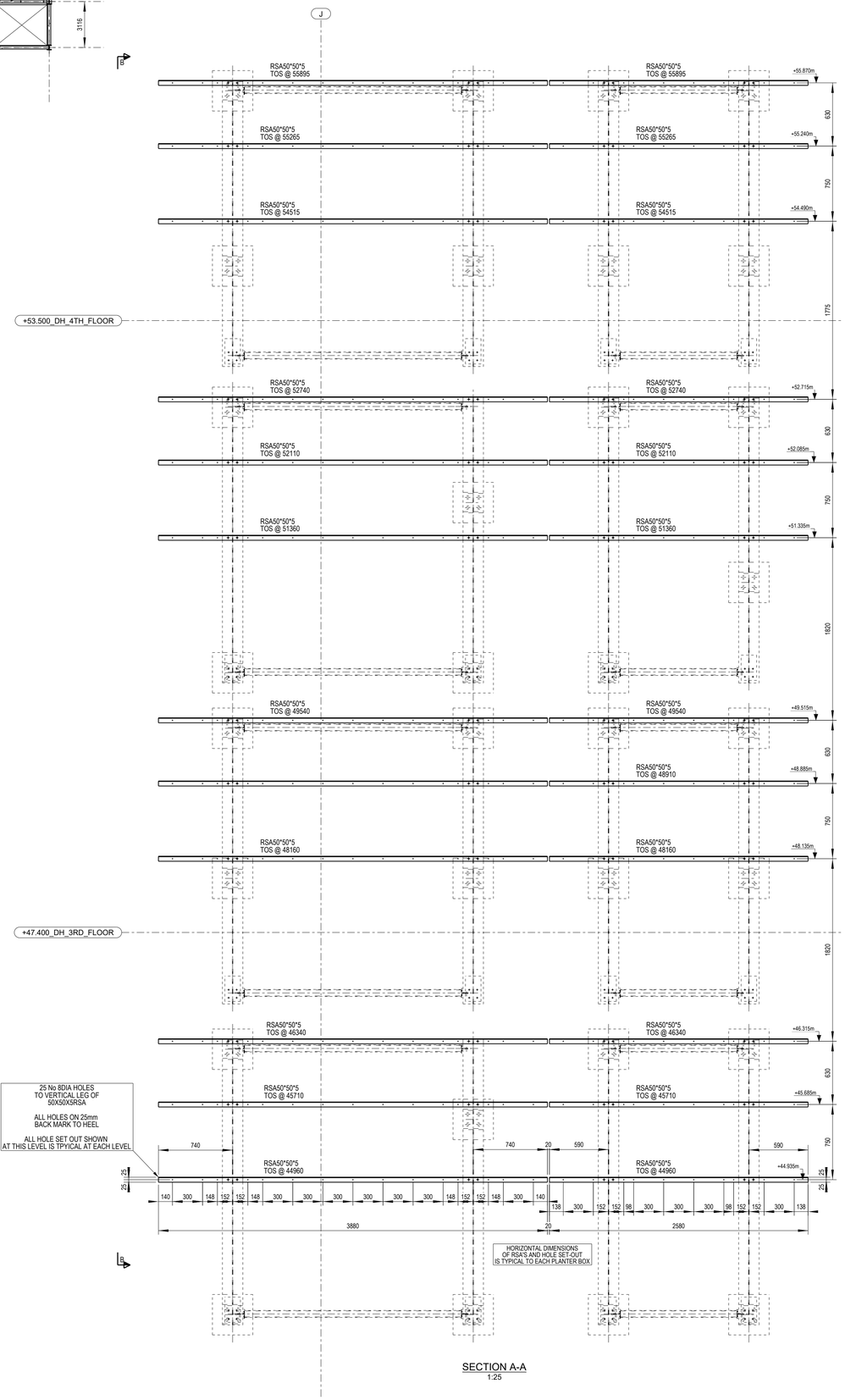
1.7 Supporting structure for green wall



KEY PLAN
1:170



B - B
1:25



SECTION A-A
1:25

Stop - Before you start any work

Think - Consider your safety in what you are about to do.

Act - Carry out the work safely wearing the correct PPE.

Review - Can you do it safer next time?

Notes:

DO NOT SCALE THIS DRAWING.
WORK TO FIGURED DIMENSIONS ONLY.
ALL DIMENSIONS IN MILLIMETRES (mm)

ALL STEELWORK TO BE FABRICATED TO EXC 3

STEELWORK GRADES:
TYPICAL COLUMNS TO BE GRADE S460M
(EXCLUDING COLUMNS ABOVE ROOF - S355JO)

DATA HALL/OFFICE COLUMNS IN BRACED BAYS
WITH FLANGES 35mm THICK AND ABOVE
TO BE GRADE S460ML

GANTRY COLUMNS IN BRACED BAYS TO BE S460ML

EXTERNAL GANTRY AND PLANT DECK BEAMS
W/ FLANGES 18mm & THINNER TO BE GRADE S355JO
W/ FLANGES 19mm-39mm THICK TO BE GRADE S355J2
W/ FLANGES 40mm & THICKER TO BE GRADE S355N/K2

INTERNAL OFFICE AND DATA HALL BEAMS
W/ FLANGES 23mm & THINNER TO BE GRADE S355JO
W/ FLANGES 24mm & THICKER TO BE GRADE S355J2

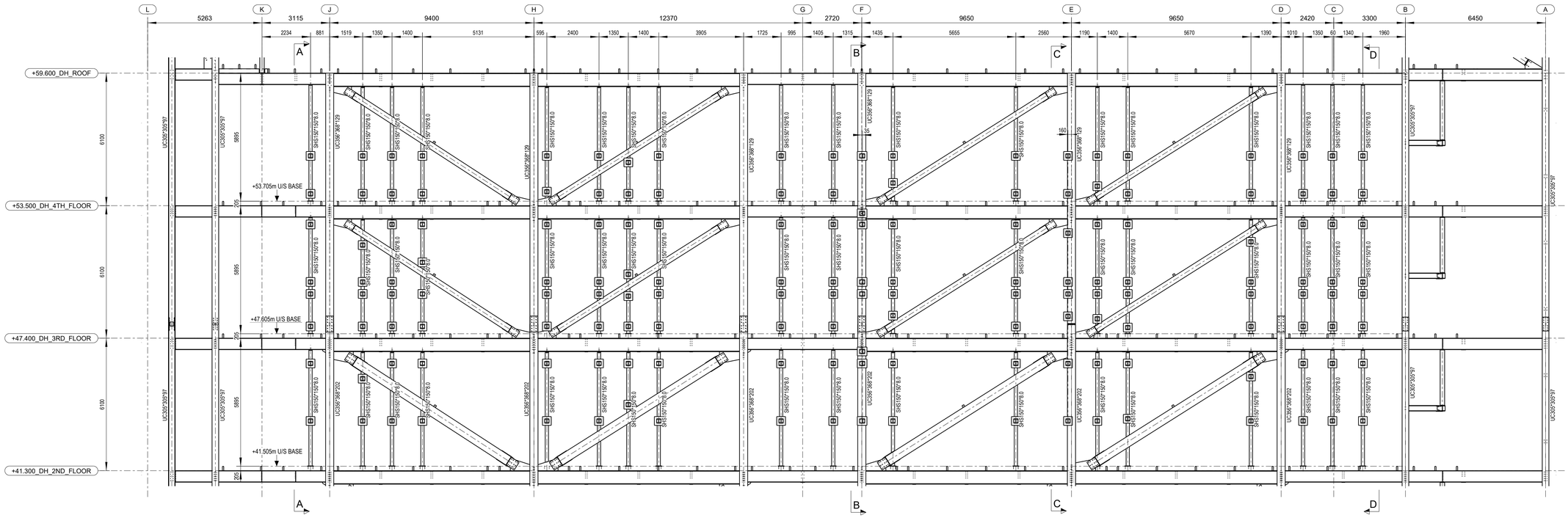
PFC'S TO BE GRADE S355JO U.N.O

RSA'S TO BE GRADE S355JR U.N.O

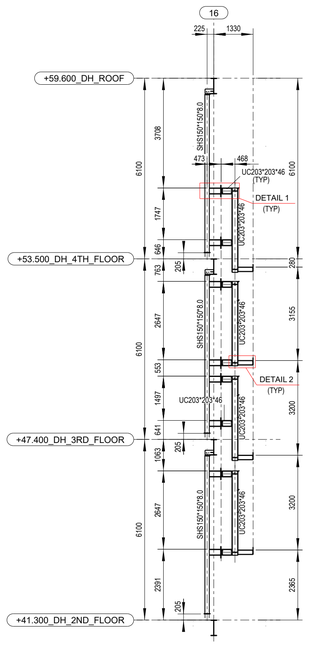
GANTRY RSA'S TO BE GRADE S355JO U.N.O

PLATE GIRDERS TO BE GRADE S355J2 U.N.O

HOLLOW SECTIONS - S355J2H



ELEVATION GRID 16
1:100



SECTION A - A
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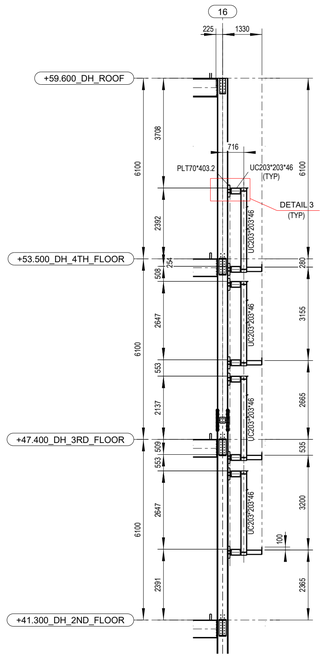

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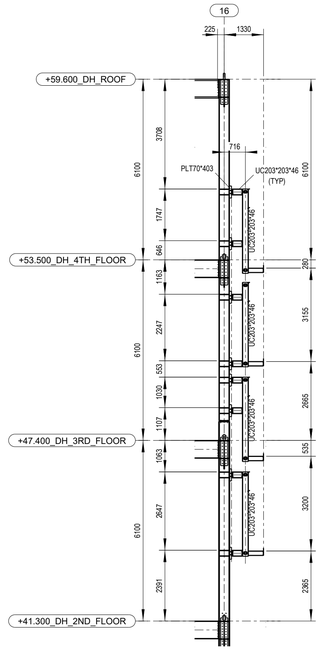

SECTION C - C
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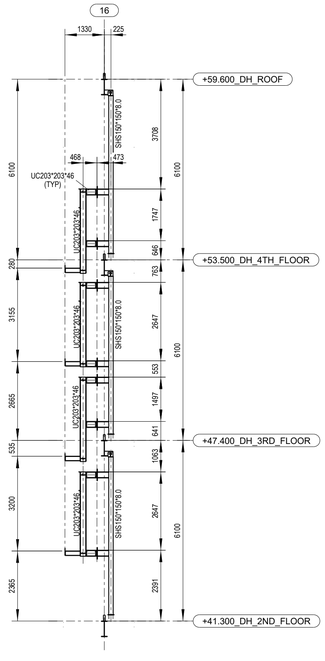

SECTION D - D
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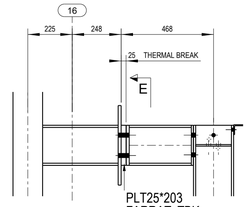
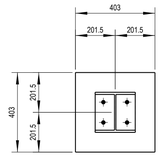


DETAIL 1
1:15



SECTION E - E
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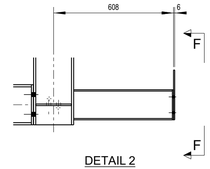

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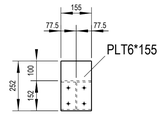

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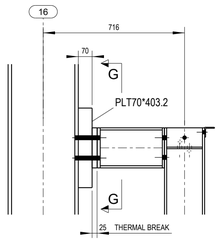

DETAIL 3
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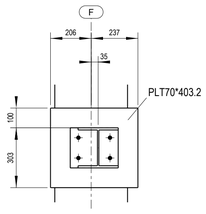

SECTION G - G
1:15

Stop - Before you start any work

Think - Consider your safety in what you are about to do.

Act - Carry out the work safely wearing the correct PPE.

Review - Can you do it safer next time?

Notes:

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ALL DIMENSIONS IN MILLIMETRES (mm)

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INTERNAL OFFICE AND DATA HALL BEAMS
W/ FLANGES 23mm & THINNER TO BE GRADE S355JO
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PFC'S TO BE GRADE S355JO U.N.O

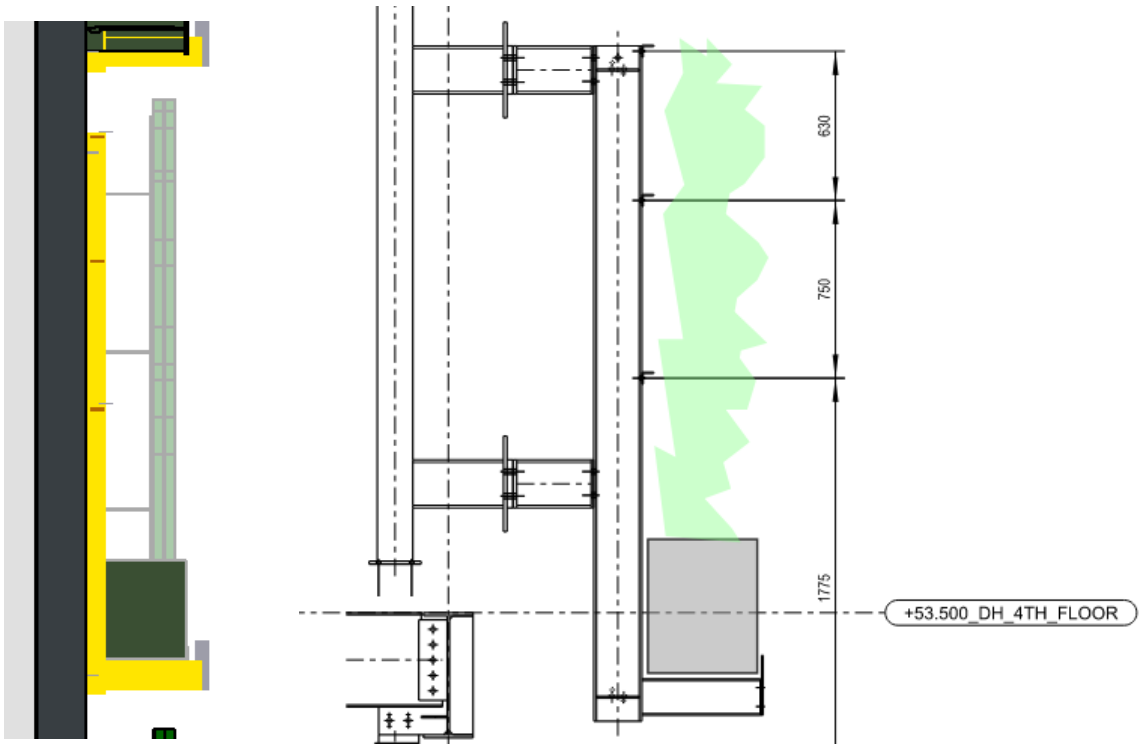
RSA'S TO BE GRADE S355JR U.N.O

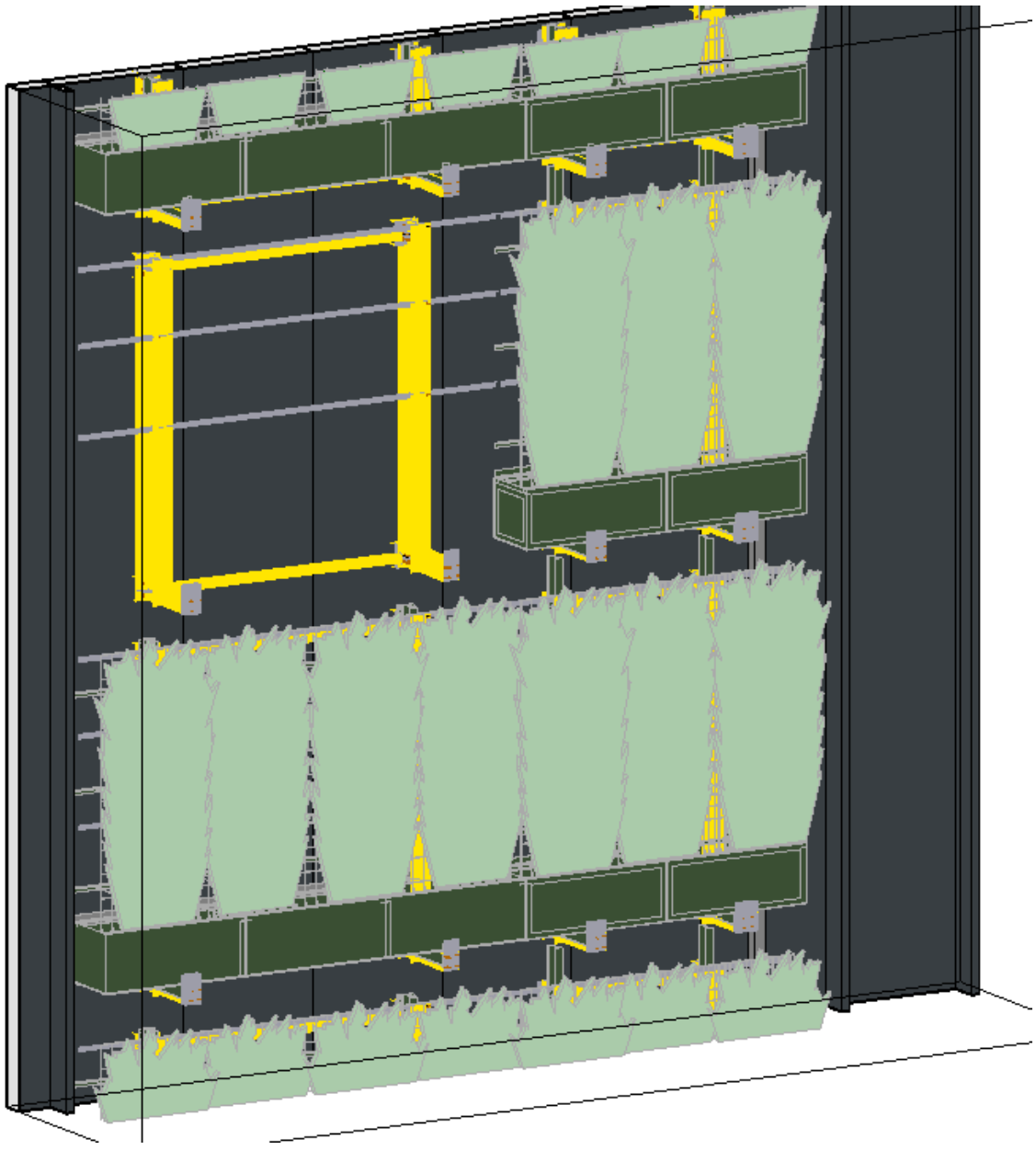
GANTRY RSA'S TO BE GRADE S355JO U.N.O

PLATE GIRDERS TO BE GRADE S355J2 U.N.O

HOLLOW SECTIONS - S355J2H

Stucture supporting green wall





1.8 Maintenance schedule

NWA plc

Chartered Architects

COLT

LONDON 4

Maintenance Schedule for Living Walls

Project Ref:	**0493**
Doc Ref:	**XX-ZZ-SH-A living Wall Maintenance Schedule**
Revision:	**A**
Revision Date:	**23RD March 2022**

Project title	Colt London 4	**Job Number**
Report title	Maintenance Schedule for Living Walls	0493

Document Revision History

Revision Ref	Issue Date	Purpose of issue / description of revision
A	23rd March 2022	First Issue

Document Validation (latest issue) A

Colt Data Centre – Maintenance Schedule

Monthly Visits

- Overall inspection of the wall in general
- Check moisture levels
- Check that the irrigation system is working correctly
- Adjust irrigation setting as and when seasonally required
- Check the wellbeing of plants and check for common pests and disease
- Carry out any necessary remedial works of the living wall
- Plant replacement for any natural failing plan
- Remove any decay foliage or weeds
- Prune when the plants seasonally require attention
- Sweep, leaving area clean, tidy, and free from debris
- The main objective of the monthly visit is to ensure the irrigation system is working as it should be

Quarterly Visits

- To include all the above of high-level planting


NWA plc
Chartered Architects

SECTION 4: Fire report extract for compliance with green wall ratings

Building Compliance without Complexity

Fire Strategy Report

RIBA Stage 4a Report (rev A) - New Data Centre

DCS20109-BWE-DC-XX-XX-RP-N-70006

at

Springfield Industrial Estate, Beaconsfield Road, Hayes,

Middlesex

Prepared on behalf of:

Black and White Engineering

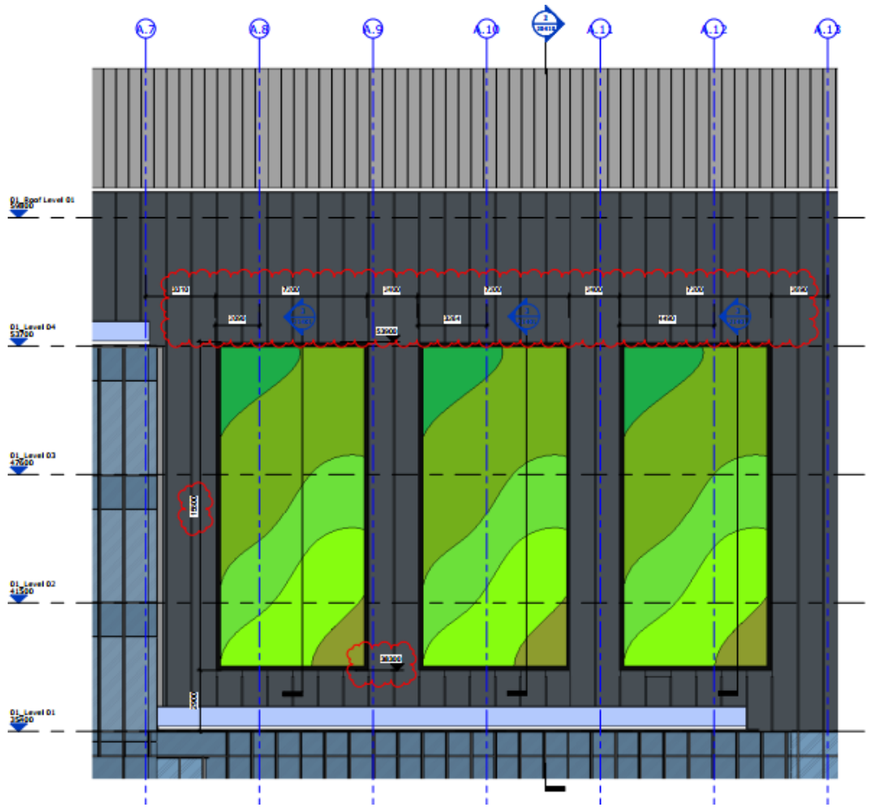


Figure 10 - South Elevation

14.10 Green Wall Guidance

Department for Communities and Local Government guidance titled “Fire Performance of Green Roofs and Walls” dated August 2013 is used for the design of the proposed green walls. The green wall system will need to adhere to the recommendations of this guidance. This is summarised as follows:

- As this is external requirement B2 does not apply as this refers to internal linings, which will not impact the green walls as the floor layouts are in accordance to Part B2.
- Fire stopping is applied at floor level between the compartment floor and external wall - this fire stopping is to match the 90 minutes fire resistance performance requirements applicable to the floor. Please note that products sold as cavity barriers are not required to meet this level of performance and so may not prove to be suitable. The protected wall and fire breaks between the floors achieve the minimum 90minutes required. The cavity barriers are for spread of fire through the cavity between the external wall and green wall structure.
- If a cavity is formed behind the green wall cavity barriers will need to be provided within this cavity at floor level and vertically at the centres described in table 7. The wall construction and any fire stopping achieved between the floors are to provide compartmentation from the inside and the green wall is not expected to be ignited from the inside. Ignition is not expected on the outside as the wall is 12m off ground level with no other sources nearby and lightning protection should be provided (or assess for likely hood of lightning strike).
- Test evidence is needed to show that the green wall can meet the guidance contained in Table 12.1 of Approved Document B Volume 2 - 2019.

Additionally, as these facades are not sufficiently far from the boundary to have 100% unprotected areas as described in the aforementioned document, the risk of fire spread to adjoining sites needs to be mitigated. The AWFSS will in combination with the internal compartmentation will reduce the risk of a fire affecting the green wall. In addition to this all the cladding of the data halls on these elevations will achieve 90 minutes fire resistance when measured from the inside (to further reduce the risk of fire igniting the green walls) and the walls will be constructed from materials that meet the requirements of Regulation 7 of the Building Regulations to prevent the wall contributing to the fire should the green wall ignite. See paragraph 13.10.2 below showing the boundary distances and unprotected areas allowed.

Some items built into external walls or forming part of specified attachments do not need to meet the requirement to be non-combustible. They are:

- Cavity trays when used between two leaves of masonry;
- Any part of a roof (other than any part of a roof which falls within paragraph (iv) of regulation 2(6)) of The Building Regulations 2010 as amended if that part is connected to an external wall;
- Door frames and doors;
- Electrical installations;
- Insulation and water proofing materials used below ground level;
- Intumescent and fire stopping materials where the inclusion of the materials is necessary to meet the requirements of Part B of Schedule 1;
- Membranes which achieve a minimum classification of European Class B-S3, d0;
- Seals, gaskets, fixings, sealants and backer rods;
- Thermal break materials where the inclusion of the materials is necessary to meet the thermal bridging requirements of Part L of Schedule 1; or
- Window frames and glass (spandrel and infill panels must meet the requirement described above).

Thermal breaks are small elements used as part of the external wall construction to restrict thermal bridging. There is no minimum performance for these materials. However, they should not span compartments and should be limited to the minimum required to restrict the thermal bridging (the principal insulation is not to be regarded as thermal a thermal break).

14.10.1 South Elevation – MobiLane, MobiPanel system

The area of green wall on the south elevation has three panels which are approximately 15.6m x 7.2m, with an overall aggregate of unprotected area to this wall is 112.32 x 3 = 336.96m^2. These panels are located between floor levels 01 to 04 as these have compartment floors. The length of the wall on this elevation is 32.1m.

Using the enclosed rectangle method in BRE187 the percentage is calculated by dividing the overall area between the compartments (each floor having 90 minutes floor compartments) = 18.3m high x 32.1 wide = 587.43m^2.
The aggregate area of the unprotected green wall attached to this elevation are 336.96m^2, therefore the total percentage of unprotected area to section of wall = 336.96/587.43 x 100 = 57%,

Table G in BRE 187 is used for an enclosing rectangle of 21m high. As the unprotected area is over 50%, the next nearest percentage is 60% which requires a boundary distance of 21.5m.
The boundary has a minimum distance of 20m.

The BRE document paragraph 2.1.7 accepts that with functional suppression system which is designed and installed to the relevant standards which are to BS EN 12845:2015+A1:2019. This enables the boundary distance to be halved from 21.5m to 10.75m. This would therefore comply with the relevant boundary distances for unprotected area.

14.10.2 East Elevation – MobiLane Wall Planter system

The area of green wall on the east elevation is proposed to use various panels of with the maximum panel size being 2.2m x 1.8m. A total area of combined panels having an area of 83.75m² the total aggregate area would be 335m². The green walls are located between level 02 and Roof level 01 giving an overall height of 18.3m. The length of the building is 59m.

Using the enclosed rectangle method in BRE187 the percentage is calculated by dividing the overall area between the compartments (each floor having 90 minutes floor compartments) = 18.3m high x 59.0 wide = 1079m².
The aggregate area of the unprotected green walls wall attached to this elevation are 335m², therefore the total percentage of unprotected area to section of wall = 335/1079 x 100 = 31%

Table G in BRE 187 is used for an enclosing rectangle of 21m high. As the unprotected area is over 30%, the next nearest percentage is 40% which requires a boundary distance of 19.5m.
The boundary has a minimum distance of 11m.

The BRE document paragraph 2.1.7 accepts that with functional suppression system which is designed and installed to the relevant standards which are to BS EN 12845:2015+A1:2019. This enables the boundary distance to be halved from 19.5m to 9.75m. This would therefore comply with the relevant boundary distances for unprotected area.

14.10.3 Green Wall Classifications

The proposed systems for the East and South elevations are as follows:

South elevation – MobiPanel FR test document reference number 2021-Efectis-R000817 defines the reaction to fire classification with the procedures described in BS EN 13501-1:2018 is given a classification of B-s2, d0.
East elevation – MobiLane Wallplanter, test document reference number JN/JN//Y 2832-5E-RA-001 defines the reaction to fire classification with the procedures described in BS EN 13501-1:2018, is given a classification of B-s1, d0.

The wall planters on the East elevation have been tested to smaller areas due to the size of the test equipment. These are considered acceptable for the following reasons:

- Each singular panels have their own water supply.
- Each panel are to be watered using an automatic irrigation system keeping them moist.
- All panels are to be spaced apart.
- These panels are placed on the outside of the external wall with a minimum of 90 – 120minutes fire protection on both sides.
- The building is to have suppression system installed throughout.
- Lightning protection is to be provided to the building to avoid lightning strikes on the building.
- The panels are minimum 12m from ground level and therefore have no other ignition sources.

BS9999:2017 figure 47 (e) any building with a boundary more than 1.0m from the boundary allows for C-s3,d2 below 18m and B-s3,d2 above 18m.

14.10 Please refer to paragraph 6 for the walls of the fuel storage building.

14.11 Concealed spaces or cavities in the construction of the building provide a ready route for smoke and flame spread, especially in voids above and below ceilings/floors. Where smoke or flames could be concealed it potentially presents a greater danger.

Location of cavity	Class of surface/ product exposed in cavity		Maximum dimensions in any direction (m)
National Class		**European Class**	
Between roof and ceiling	Any	Any	20
Any other cavity	Class 0 or class 1	Class A1 or Class A2-s3, d2 or Class B-s3, d2 or Class C-s3, d	20
Not class 0 or 1	Not any of the above classes		10

Table 7: Maximum dimensions of cavities

14.12 Figure 11 below shows where cavity barriers should be provided. Cavity barriers should be provided to close the edges of cavities, including around openings.

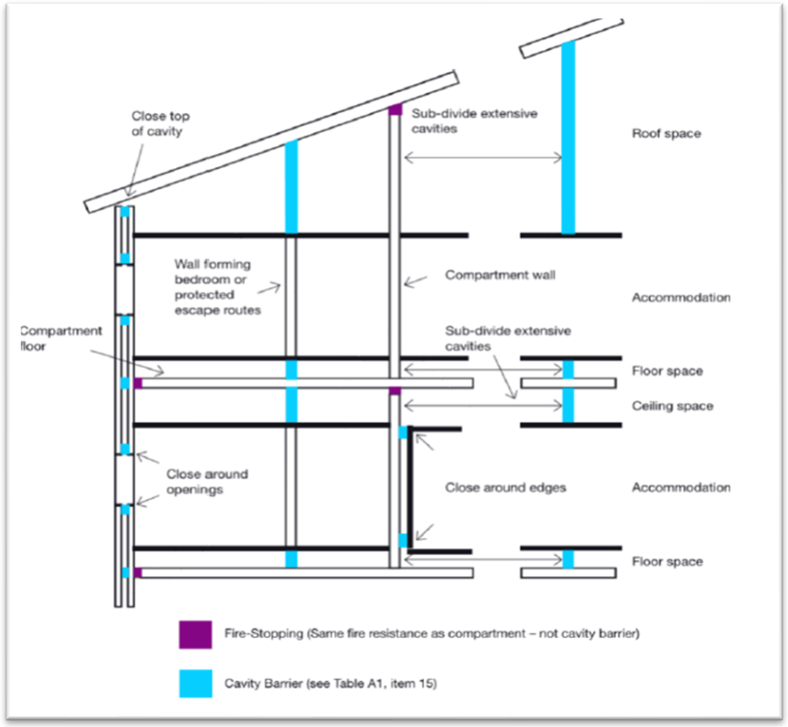


Figure 11 - Typical locations for cavity barriers