

Multipurpose Hall, At Hdh. Neykurandhoo School

Architectural & Structural Detail Drawings

Ministry of Education, Maldives

Date: Sunday, May 21, 2023

Project Number: #Project ID



Location Plan
1:450.68

Site Plan (source: google earth)
1:500

Location Plan & Site Plan

Overview :



Legend :

Notes :

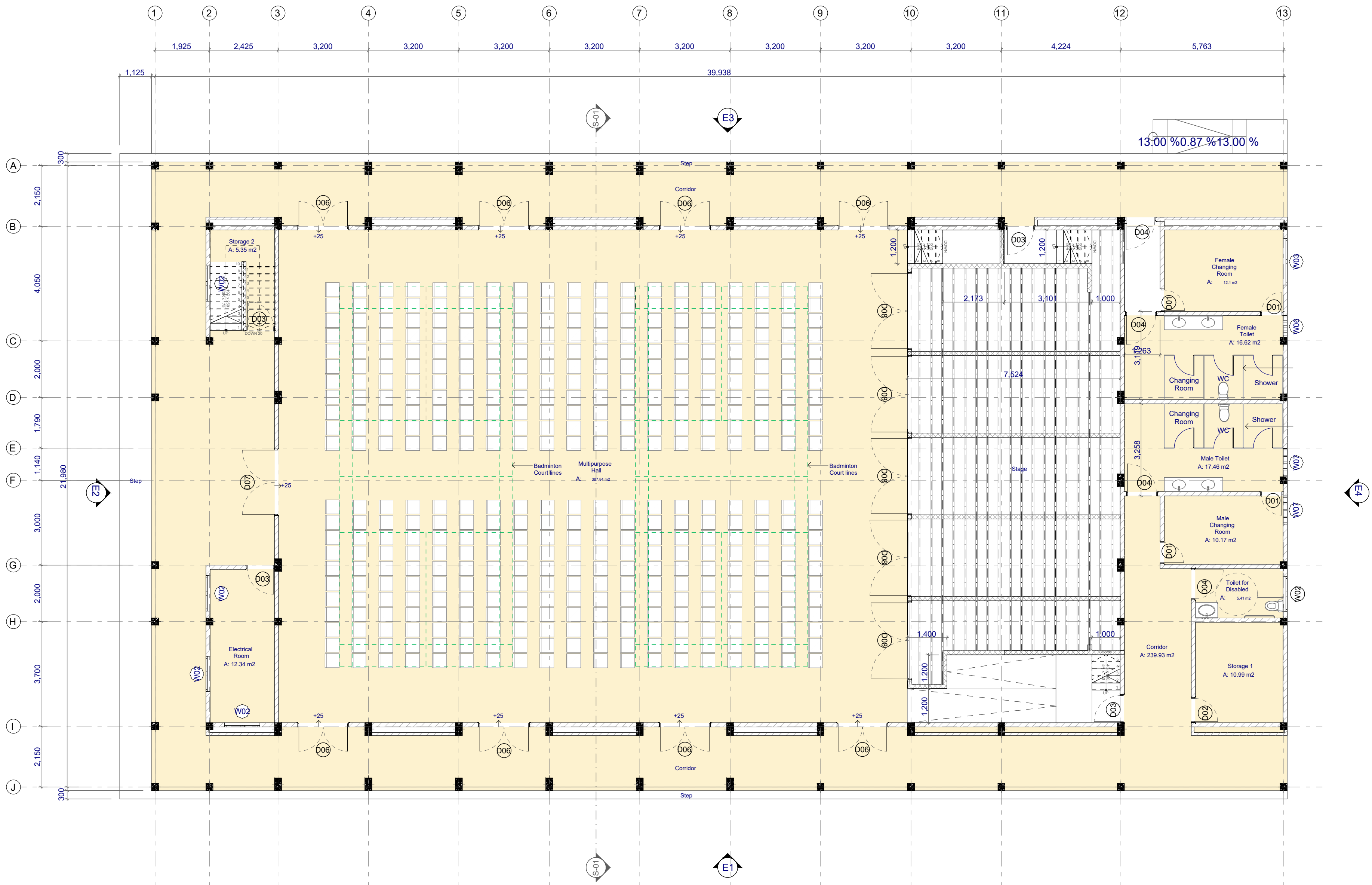
# REVISION	BY APP DATE			

Project :
Multipurpose Hall, At
Hdh. Neykurendhoo School

Client :
Ministry of Education, Maldives

Prepared by

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Overview :



Legend :

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Page Title
Ground Floor Plan

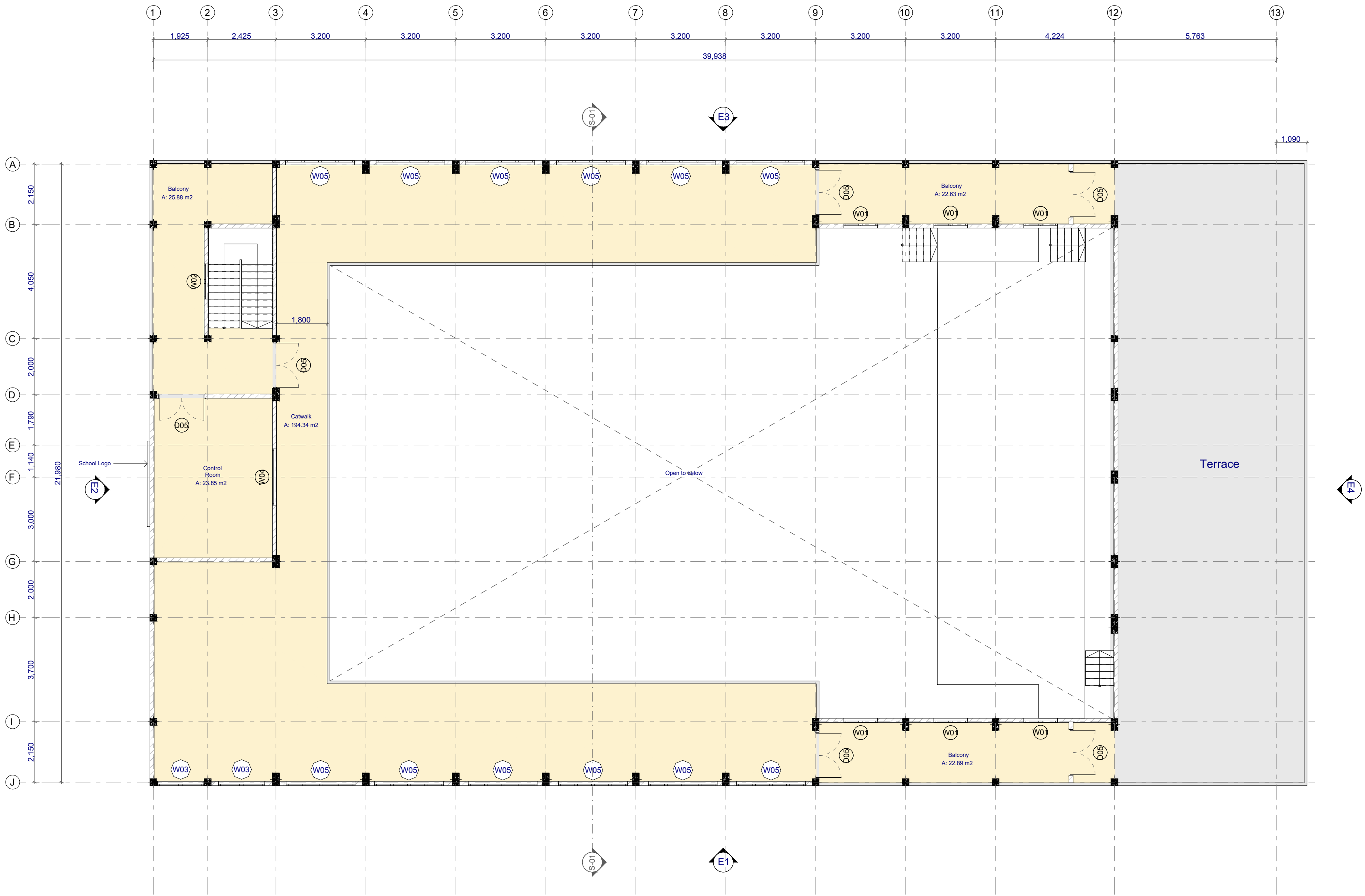
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Doc No : EP/BLD-AR/2022/08/AR-I04

Date : Sunday, May 21, 2023

FINISHES							
Home Story Name	Zone Name	Calculated Area	Floor Level	Floor Finishes	Ceiling Finishes	Ceiling Level	Wall Finishes
Ground Floor Level	Corridor	239.93	+325	600mm X 600mm Homogenous non-slip tiles over 50mm screeding	Cement board ceiling to be ground smooth in select paint finish	+3314	16mm plaster, applied with ground smooth finished with selected paint
Ground Floor Level	Electrical Room	12.34	+350	600mm X 600mm Homogenous non-slip tiles over 50mm screeding	Exposed slab soffit to be finished with ground smooth finish in selected paint	+3518	16mm plaster, applied with ground smooth finished with selected paint
Ground Floor Level	Female Changing Room	12.10	+325	300mm X 300mm Homogenous non-slip tiles over 50mm screeding	Gypsum board with timber frames	+3314	16mm plaster, applied with ground smooth finished with selected paint
Ground Floor Level	Female Toilet	16.62	+350	300mm X 300mm Homogenous non-slip tiles over 50mm screedin	Cement board ceiling to be ground smooth in select paint finish	+3314	300mm X 600mm Homogenous wall tiles
Ground Floor Level	Male Changing Room	10.17	+325	300mm X 300mm Homogenous non-slip tiles over 50mm screeding	Gypsum board with timber frames	+3314	16mm plaster, applied with ground smooth finished with selected paint
Ground Floor Level	Male Toilet	17.46	+350	300mm X 300mm Homogenous non-slip tiles over 50mm screeding	Cement board ceiling to be ground smooth in select paint finish	+3314	300mm X 600mm Homogenous wall tiles
Ground Floor Level	Multipurpose Hall	387.84	+350	Self Levelling cement floor screed with epoxy floor paint	Gypsum board with timber frames	+6807	16mm plaster, applied with ground smooth finished with selected paint
Ground Floor Level	Storage 1	10.99	+350	Self Levelling cement floor screed with bituminous waterproofing agent	Gypsum board with timber frames	+3314	16mm plaster, applied with ground smooth finished with selected paint
Ground Floor Level	Storage 2	5.35	+325	600mm X 600mm Homogenous non-slip tiles over 50mm screeding	Exposed slab soffit to be finished with ground smooth finish in selected paint	+3518	16mm plaster, applied with ground smooth finished with selected paint
Ground Floor Level	Toilet for Disabled	5.41	+325	600mm X 600mm Homogenous non-slip tiles over 50mm screeding	Cement board ceiling to be ground smooth in select paint finish	+3314	300mm X 600mm Homogenous wall tiles

Ground Floor Plan



Overview :



Legend :

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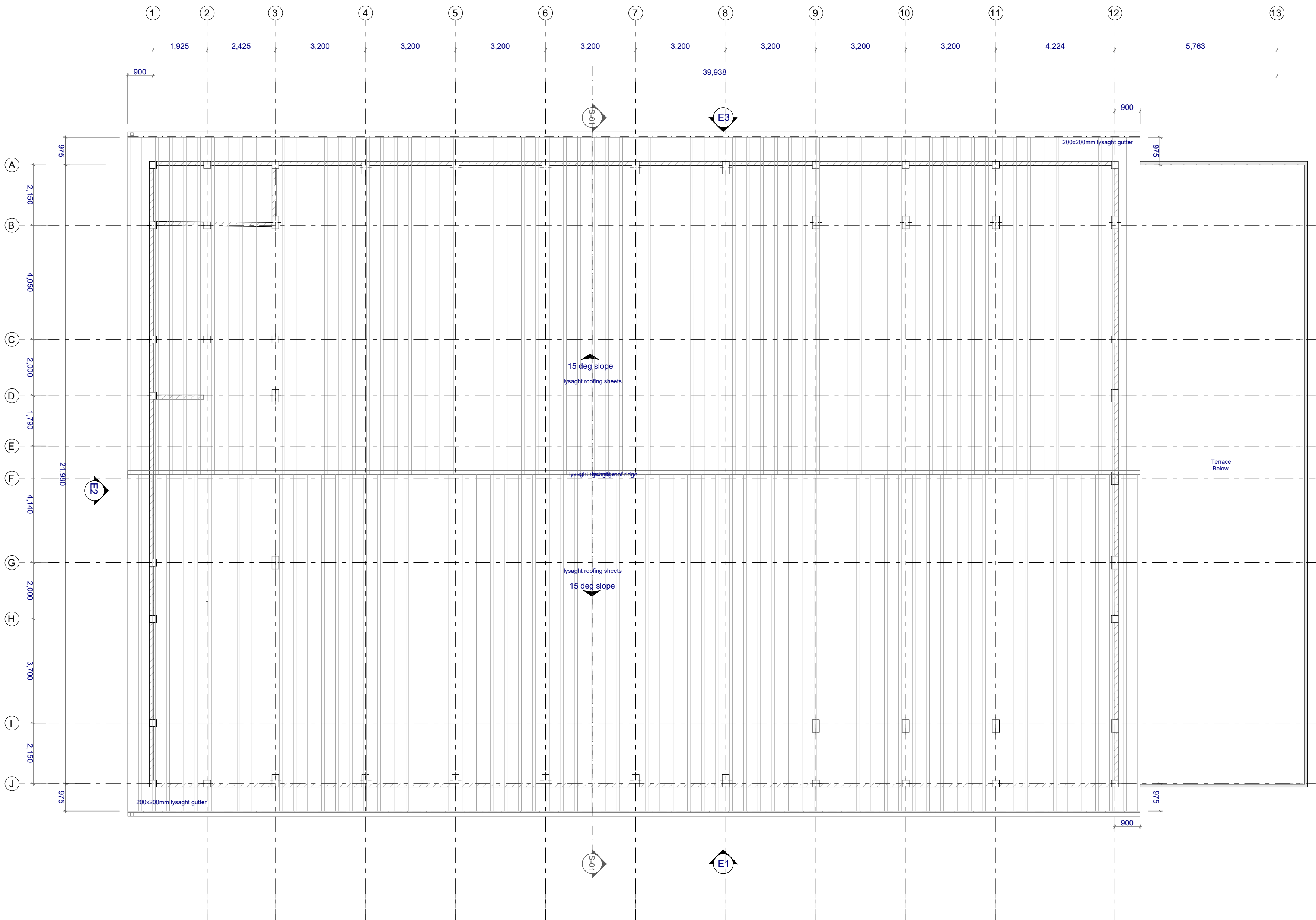
Page Title
1st Floor Plan

Scale : 1:100, 1:1

Doc No : EP/BLD-AR/2022/08/AR-I04

Date : Sunday, May 21, 2023

Home Story Name	Zone Name	Calculated Area	Floor Level	FINISHES		
				Floor Finishes	Ceiling Finishes	Wall Finishes
First Floor Level	Balcony	71.40	+3662	Self Levelling cement floor screed with bituminous waterproofing agent	Gypsum board with timber frames	+6807 16mm plaster, applied with ground smooth finished with selected paint
First Floor Level	Catwalk	194.34	+3687	Self Levelling cement floor screed with bituminous waterproofing agent	Gypsum board with timber frames	+6807 16mm plaster, applied with ground smooth finished with selected paint
First Floor Level	Control Room	23.85	+3712	600mm X 600mm Homogenous non-slip tiles over 50mm screeding	Gypsum board with timber frames	+6807 16mm plaster, applied with ground smooth finished with selected paint



Overview :



Legend :

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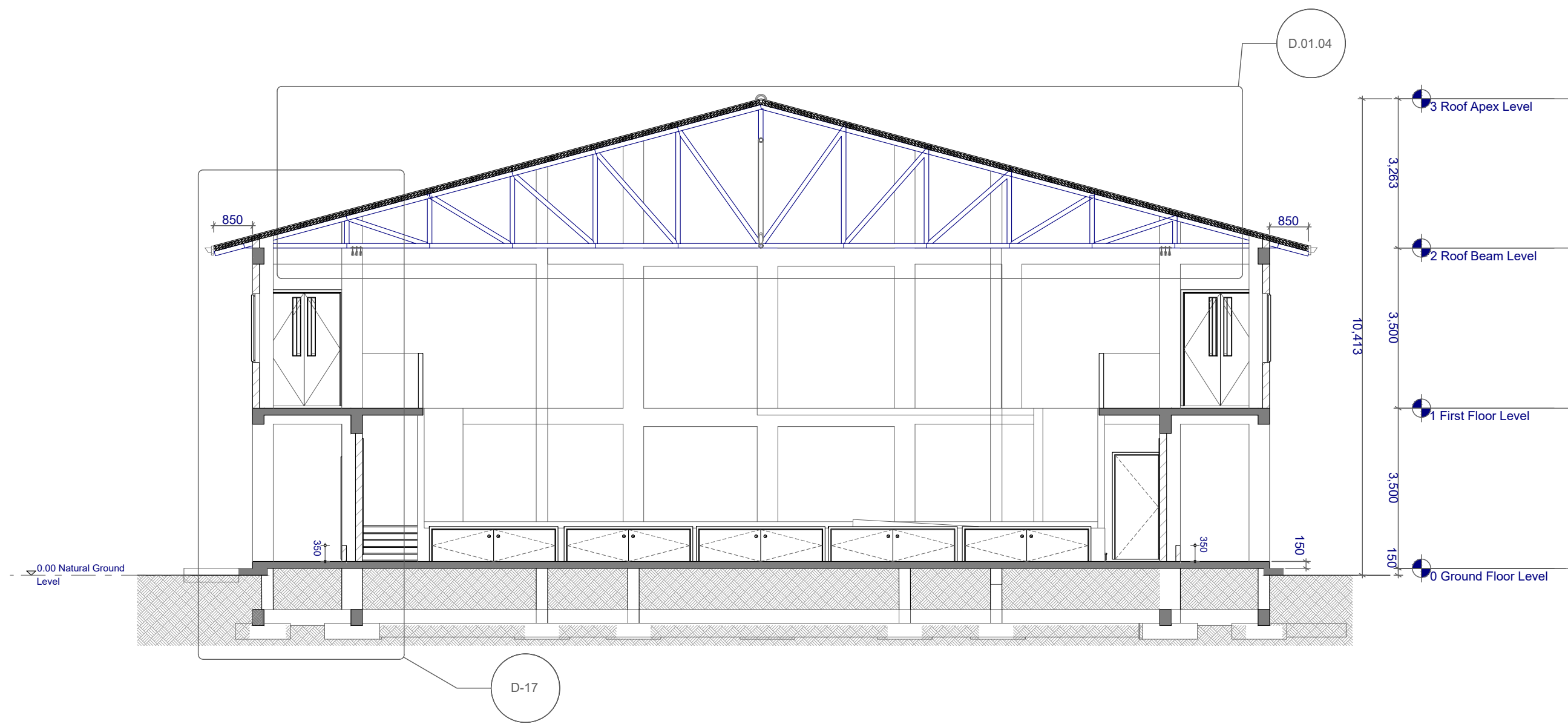
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Page Title
Roof Plan

Scale : 1:100

Doc No : EP/BLD-AR/2022/08/AR-104

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Overview :



Legend :

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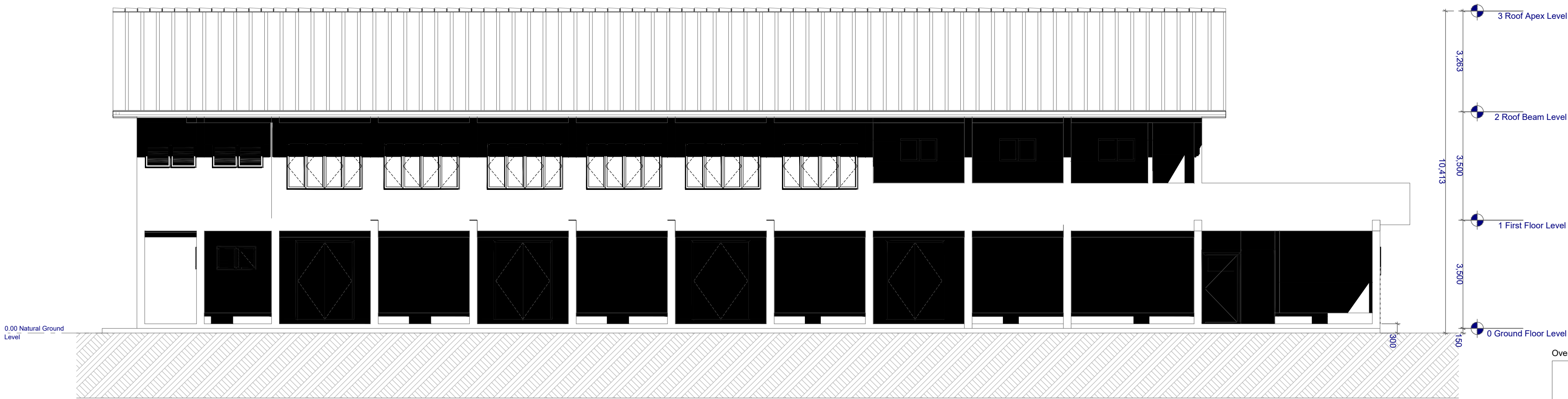
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Page Title
Section S1

Scale : 1:100

Doc No : EP/BLD-AR/2022/08/AR-I04

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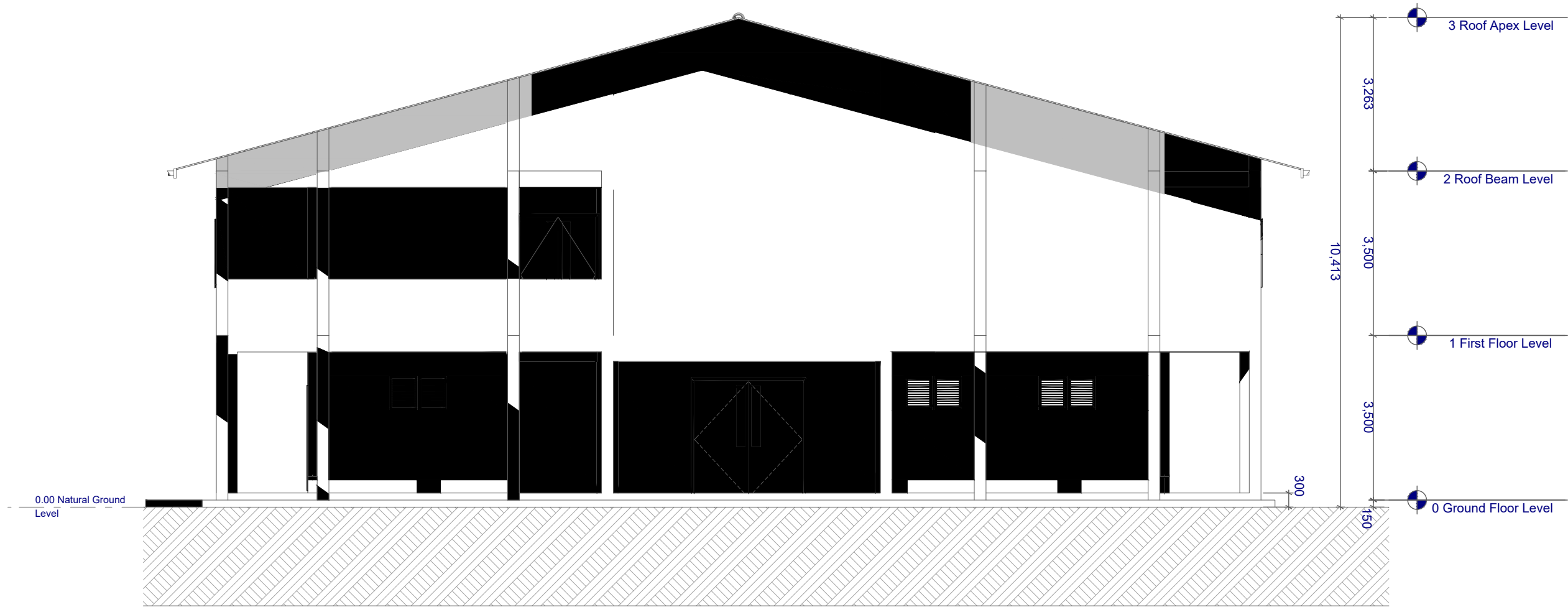


Elevation E1

Overview :



Legend :



Elevation E2

Notes :

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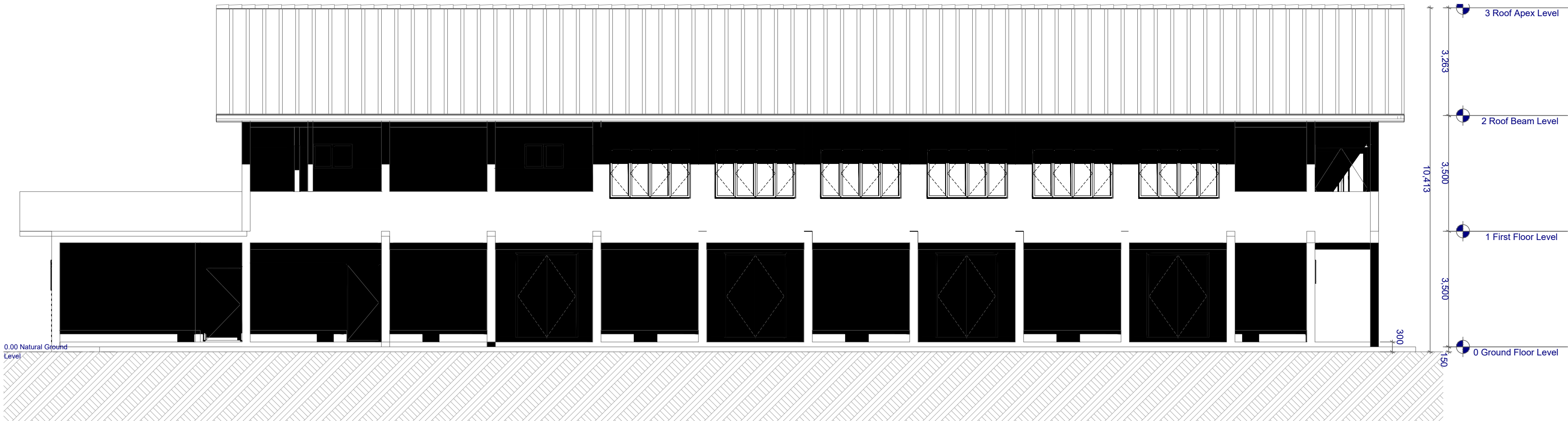
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Page Title
Elevation E1 & E2

Scale : 1:100

Doc No : EP/BLD-AR/2022/08/AR-I04

Date : Sunday, May 21, 2023

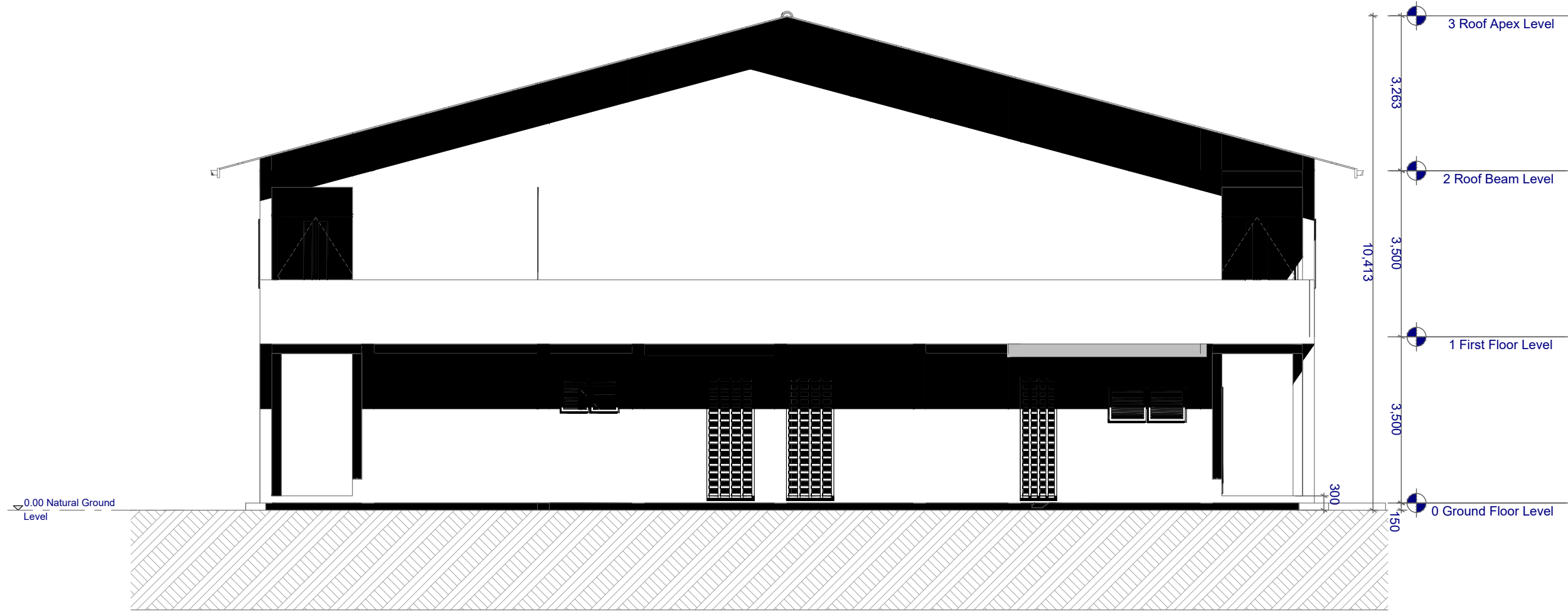


Elevation E3

Overview :



Legend :



Elevation E4

Notes :

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Page Title
Elevation E3 & E4

Scale : 1:100

Doc No : EP/BLD-AR/2022/08/AR-104

Date : Sunday, May 21, 2023

All Openings Schedule					
Element ID	D01	D02	D03	D04	D05
Quantity	4	1	4	4	6
W x H Size	800×2,200	900×2,300	1,000×2,300	1,100×2,200	1,650×2,500
Head Height	2,400	2,500	2,500	2,400	2,550
Sill Height	200	200	200	200	50
2D Symbol					
View from Side Opposite to Opening Side					
Frame Outside	Powder Coated Aluminium of selected colour finish	Powder Coated Aluminium of selected colour finish	Powder Coated Aluminium of selected colour finish	Powder Coated Aluminium of selected colour finish	Powder Coated Aluminium of selected colour finish
Glass	(No Glazing)	(No Glazing)	(No Glazing)	Clear Glass	Clear Glass
Leaf Outside	Powder Coated Aluminium cladding sheet of selected colour finish	Powder Coated Aluminium cladding sheet of selected colour finish	Powder Coated Aluminium cladding sheet of selected colour finish	Powder Coated Aluminium cladding sheet of selected colour finish	Powder Coated Aluminium cladding sheet of selected colour finish
Sash Outside	---	---	---	---	---

Door and Window Notes

Dimensions shown on DWG indicate effective openings of frame

All frame depth are 100mm
All door panel thicknesses are 35mm
All window manel thickness are 25mm
All frame edges shall be trimmed 3mm

All wooden components should be wood stained finish

All glazing should be of 6mm unless specified

External units must comply the following weather conditions:-
Wind pressure: 200 kg/sqm
Water tightness: 25 kg/sqm

All external frames / wall joints must be sealed with silicon sealant and the wedges trimmed with 12 X 12mm hardwood beading fixed to frames by brass nails

All hardware should be provided for the performance of all functions of the units

Hinges shall confirm to

- Door size more than 700X900mm
WD: 125mm X 2 sets
SD: 150mm X 3 sets
- Door size less than 700 X 1900mm
WD: 100mm X 2 sets
SD: 125mm X 2 sets

Locks shall be cylindrical with master key sets

Door knobs shall be 1000mm above FFL

Overview :



Legend :

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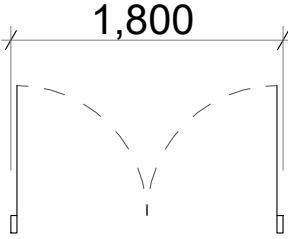
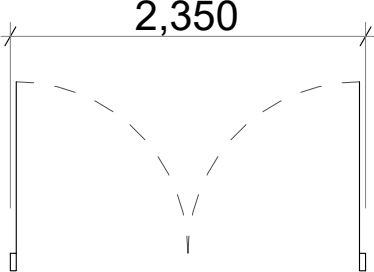
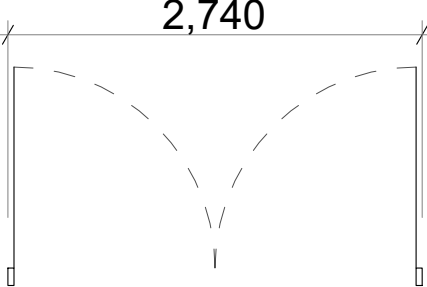
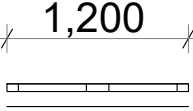
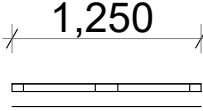
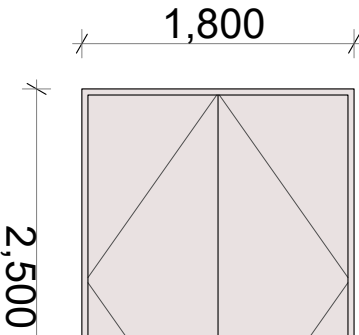
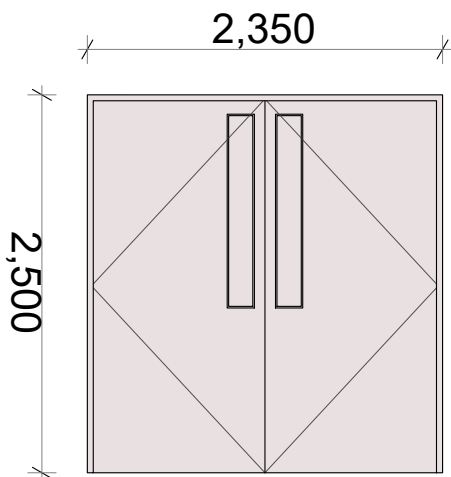
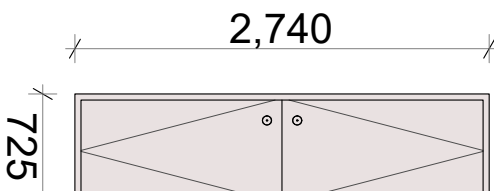
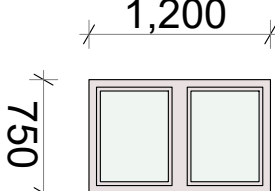
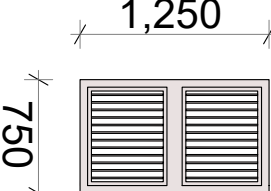
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Page Title
Door Window Schedule

Scale : 1:10, 2:1

Doc No : EP/BLD-AR/2022/08/AR-I04

Date : Sunday, May 21, 2023

All Openings Schedule					
Element ID	D06	D07	D08	W01	W02
Quantity	8	1	5	6	6
W x H Size	1,800×2,500	2,350×2,500	2,740×725	1,200×750	1,250×750
Head Height	2,800	2,550	875	2,650	2,650
Sill Height	300	50	150	1,900	1,900
2D Symbol					
View from Side Opposite to Opening Side					
Frame Outside	Powder Coated Aluminium of selected colour finish	Powder Coated Aluminium of selected colour finish	Powder Coated Aluminium of selected colour finish	Powder Coated Aluminium of selected colour finish	Powder Coated Aluminium of selected colour finish
Glass	(No Glazing)	Clear Glass	(No Glazing)	Clear Glass	(No Glazing)
Leaf Outside	Powder Coated Aluminium cladding sheet of selected colour finish	Powder Coated Aluminium cladding sheet of selected colour finish	Powder Coated Aluminium of selected colour finish	---	---
Sash Outside	---	---	---	Powder Coated Aluminium of selected colour finish	Powder Coated Aluminium of selected colour finish

Door and Window Notes

Dimensions shown on DWG indicate effective openings of frame

All frame depth are 100mm
All door panel thicknesses are 35mm
All window manel thickness are 25mm
All frame edges shall be trimmed 3mm

All wooden components should be wood stained finish

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External units must comply the following weather conditions:-
Wind pressure: 200 kg/sqm
Water tightness: 25 kg/sqm

All external frames / wall joints must be sealed with silicon sealant and the wedges trimmed with 12 X 12mm hardwood beading fixed to frames by brass nails

All hardware should be provided for the performance of all functions of the units

Hinges shall confirm to

- Door size more than 700X900mm
WD: 125mm X 2 sets
SD: 150mm X 3 sets
- Door size less than 700 X 1900mm
WD: 100mm X 2 sets
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Locks shall be cylindrical with master key sets

Door knobs shall be 1000mm above FFL

Overview :



Legend :

Notes :

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Page Title
Door Window Schedule

Scale : 1:10, 2:1

Doc No : EP/BLD-AR/2022/08/AR-104

Date : Sunday, May 21, 2023

All Openings Schedule					
Element ID	W03	W04	W05	W06	W07
Quantity	3	1	12	1	2
W x H Size	1,650×750	2,000×1,200	2,450×1,500	769×2,600	1,000×2,600
Head Height	2,450	2,400	2,500	2,650	2,650
Sill Height	1,700	1,200	1,000	50	50
2D Symbol					
View from Side Opposite to Opening Side					
Frame Outside	Powder Coated Aluminium of selected colour finish	Powder Coated Aluminium of selected colour finish	Powder Coated Aluminium of selected colour finish	Powder coated Aluminum (60 micron)	Powder coated Aluminum (60 micron)
Glass	(No Glazing)	Clear Glass	Clear Glass	---	---
Leaf Outside	---	---	---	---	---
Sash Outside	Powder Coated Aluminium of selected colour finish	Powder Coated Aluminium of selected colour finish	Powder Coated Aluminium of selected colour finish	Powder coated Aluminum (60 micron)	Powder coated Aluminum (60 micron)

Door and Window Notes

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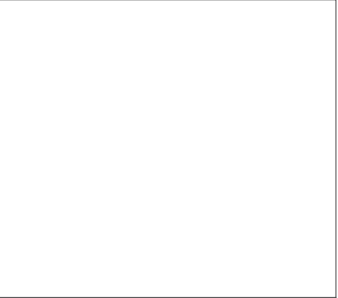
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Page Title
Door Window Schedule

Scale : 1:10, 2:1

Doc No : EP/BLD-AR/2022/08/AR-104

Date : Sunday, May 21, 2023

Venilation Schedule

Room Name	Room Area	Opening	Required Opening	Designed Opening	Opening %
Ground Floor					
Multipurpose Hall	383.26	D07, 8XD06, 2XD03	38.326	41.51	10.83
Toilet (F)	16.62	W06	1.662	1.67	10.05
Changing room (F)	12.10	W06	1.210	1.67	13.80
Toilet (M)	17.46	W07	1.746	2.25	12.89
Changing room (M)	10.17	W07	1.013	2.25	22.12
Toilet for Disabled	5.41	W02	0.541	0.75	13.86
Electrical Room	12.34	3XW02	1.234	2.25	18.23
Storage 1	Mechanical Ventilation				
Storage 2	Mechanical Ventilation				
First Floor					
Control Room	23.85	D03	2.385	3.862	16.19

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Page Title
Ventilation Schedule

Scale : 1:20

Doc No : EP/BLD-AR/2022/21/CD-T03/01
Date : Sunday, May 21, 2023

Rev No : Pg : A.05.4

1. General notes

- 1.1.Do not scale the drawings. All dimensions shall be read from the drawing or computed. Elevations are in millimeters, distances and reinforcement bar sizes are in millimeters.
- 1.2. In the interpretation of these drawings, indicated dimensions shall govern and distances or sizes shall not be scaled for construction purposes.
- 1.3. The contractor shall coordinate with the ar, se, ee and other utility and equipment plans for the exact size, number and locations of all sleeves or openings through floor slabs, beams and walls. Any discrepancies or conflict in the setting out lines, levels, details, locations, sizes, reinforcement etc. Of the structural member shall be brought to the attention of the engineer prior to commencement of work.
- 1.4. All reinforced concrete work shall be done in accordance with the british structural code of 60 or ec-en2 building code.
- 1.5. All structural steel work shall be done in accordance with the british structural code of 60 parts 1to 9 and ec-en3 in so far as they do not conflict with the local building code requirements.
- 1.6. All slabs, beams and other structural elements which are not indicated, detailed, designated or inadvertently omitted but are necessary to be coordinated with architectural and other allied engineering plans as well as to complete the structural works in accordance with the intent of the plans and specifications shall be brought up during pre-bids/meetings/negotiations. It is understood that the contractor has provided and included all these items in his bid.
- 1.7. The contractor shall produce shop drawings and schedules as required for completion of the works and record drawings of the as-built and builder works for the consultant's approval.
- 1.8. Contractor shall do full coordination between structural, architectural and mep drawings in wet areas to allow for drainage pipes.
- 1.9. All discrepancies shall be brought to the attention of the consultant engineer proceeding with the work on site.
- 1.10. All materials to be used in conjunctions shall comply with the requirements of the specified codes, standards and ordinance of relevant building authorities unless noted otherwise in the project specification and/or drawings.
- 1.11. All dimensions and levels shown on the drawings shall be verified by the contractor. Any discrepancies shall be brought to consultant's attention prior to construction.
- 1.12. The contractor shall ensure that during construction, no part of the structure is overstressed by excessive construction loads until their completion. Temporary bracing and propping to be provided were required.
- 1.13. Once the excavation is done to a specified depth, the bearing capacity of the soil shall be confirmed by relevant test, if the value is less than the design bearing capacity the engineer is to be informed immediately.
- 1.14. The contractor shall submit a method statement for all elements of work and shall not proceed until consultant's written approval is given. The method statement shall provide the contractor's preferable options where such options are available.
- 1.15. The contractor shall comply with all requirements of the local regulations and requirements of all concerned authorities.
- 1.16. Quality of concrete finish for all non-plastered columns and beams is to be in accordance with- fair faced concrete as reflected on the architectural drawings and specifications.
- 1.17. Any structural requirements specified by relevant authorities, which are not covered in notes and specifications are assumed to be duly considered by the contractor.
- 1.18. All typical details and notes shown on drawings shall apply unless noted otherwise. Typical detail may not necessary be indicated on the plans but shall still apply as shown or described in the details where particular details are noted on the drawings the specified details shall be used.
- 1.19. The design life of the structure of this project shall maintain a minimum 50 years life period. The primary structural components are to be designed and detailed to satisfy this requirement. Concrete mix supplier shall submit a life cycle analysis which reflect a50 years design life without maintenance, inspection and repair requirement during this period.

2. Concrete

- 2.1. All concrete works shall conform to the bs8110 or ec-en, a grade of c25/30 indicates that concrete shall have a fcu compressive strength of 30n/mm2 established from test cubes at 28 days equivalent to a compressive strength of 25n/mm2 established from cylinder tests at 28 days.
- concrete mix design shall comply with bs8500-1:2006 as follows:
- | Miz Number | 1 | 2 | 3 | 4 |
|----------------------------|--------|---------|--------|----------|
| Grade | C30/37 | C25/30 | C25/30 | C16/20 |
| Min cement content (kg/m³) | 380 | 340 | 340 | 300 |
| Cement Type | SRC | SRC/OPC | OPC | SRC/OPC |
| Max free W/C ratio | 0.4 | 0.45 | 0.45 | 0.55 |
| Slump | 75± 25 | 75± 25 | 75± 25 | 100 ± 25 |
| Aggregate | 20 | 20 | 20 | 20 |
- mix 1 - used in reinforced concrete works for structures at sea/exposed to sea, water retaining structures and tank structures.
- mix 2 - used in reinforced concrete works for ground level and below (sub-structutre) or any reinforced concrete works in contact with soil or water.
- mix 3 - used in reinforced concrete works above ground flr lvl (superstructure) for horizontal members (beams/slabs) and vertical members (columns/walls).
- mix 4 - used for plain concrete blinding and mass fill.
- 2.2. Contractor shall implement a trial mix in accordance with the project specifications & authority requirements. Trial mix results shall be submitted for engineer 's review & approval prior to commencing concreting.
- 2.3. Contractor shall submit the details of additives, plasticizers, micro silica, curing compounds, waterproofing agents, etc. Application should follow strictly the manufacturer recommendation. It is contractors responsibility to ensure that all constituents of concrete are compatible to each other.
- 2.4. Maximum percentage (by weight) of salt contents permissible in aggregates used for concrete, hollow blocks & hourdi blocks, etc, shall be as follows:
- a) acid soluble chlorides in aggregate - (fine 0.03%, coarse 0.02%)
- b) acid soluble sulphate in aggregate - (fine 0.3%, coarse 0.2%)
- 2.5. Concrete shall be cured by an approved means in accordance with the specifications.
- 2.6. Aggregates shall be from approved source and in accordance with the specifications.
- 2.7. Openings, sleeves:
- a) no holes, sleeves or penetrations be placed vertically or horizontally through beams unless approved by the engineer.
- b) no holes to be made in slabs unless approved by the engineer.
- 2.8. Construction joints:
- a) the contractor shall submit to the engineer for approval a plan marked up showing the location of all construction joints
- b) horizontal construction joints shall not be made in beams, unless approved by the consultant or engineers.
- c) vertical construction joints may be located at midspan of slabs or beams after reviewed and approved by the engineers.
- d) contractor shall submit shear friction and the additional required reinforcement calculation of construction joint at any location) for engineers review and approval.

3. Reinforcement

- 3.1. The reinforcement used in the reinforced concrete shall be round, deformed type 2 bars marked as (t) to indicate high yield strength of 460n/mm2 to bs4449 or type 500b to ec-en. The carbon equivalent of rebars should not exceed 0.51 for grade 460.
- 3.2. Reinforcement details shown are indicative. The contractor shall prepare detailed shop drawings & full bar schedules in accordance with the design drawings and shall be cut and bent in accordance with bs 8666 and aci 315-09 for the engineer's approval at least four weeks prior to commencement of reinforced concrete work and after coordinating with all concerned parties.
- 3.3. Lap lengths and anchorage lengths of reinforcement shall be as per bs 8110 and ec en. Additional lapping if required to be provided with engineer's approval. The minimum lap length of reinforcement shall be the maximum of (45 bar dia in general and 50 dia for tension) or the values of the table a.
- Table a : schedule of lap splices
- | Bar dia | lap splices length (mm) |
|---------|-------------------------|
| 10 | 500 |
| 12 | 600 |
| 16 | 800 |
| 20 | 1000 |
| 25 | 1250 |
- 3.4. Spacer bars in beams shall be a minimum t25 or the size of bar if greater at 1000mm c/c; chairs in slabs shall be a minimum t12@1000mm c/c; and minimum ties in walls shall be t8@1000mm c/c.
- 3.5. Clear cover to reinforcement including links, stirrups, and ties shall be as follows:
- A) structure in contact with ground
- Footings = 55mm
- Wall and column = 50mm
- Ground beam = 50mm
- Slab at ground level = 50mm
- B) super structure
- Columns = 40mm
- Beams = 35mm
- Slabs = 30mm
- Walls = 40mm
- All concrete elements in contact with water/splash zone = 50mm
- 3.6. Reinforcement bars to be cut, bent or adjusted to clear all openings and interfering structures to suit at site to the approval of the consultant or engineer.
- 3.7. For holes in slabs up to 300x300 sq., reinforcement is to be cut and replacement bars fixed adjacent to the hole extending 50x bar diameter beyond the hole.
4. Fire resistance
- 4.1. All structural concrete members between units on boundaries are designed to maintain fire resistance of 2 hours.

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Page Title
General Notes 01

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5. Cracking

5.1. The cracking of the structural concrete in general is restricted to 0.30mm.

6. Earthwork & foundations

6.1. Foundation detail design is based on the assumed safe allowable bearing capacity has been taken as 150kpa. The actual requirement for the foundation design is to be verified based on final geotechnical report for the project.

6.2. Excavations for foundations down to formation level shall be carried out by mechanical means, except for the last 100mm of excavation which is to be carried out by manual methods and recommended by geotechnical consultant.

6.3. The formation level of foundation is to be inspected and approved by the geotechnical engineer before commencement of the work.

6.4. Engineering fill (unless specified otherwise as a higher quality material) shall be selected well graded granular material approved by the engineer with a minimum soaked cbr of 15% compacted not exceeding 250mm in layers to 95% maximum dry density as per geotechnical investigation report recommendations in accordance with the specification. However, a minimum cover of 250mm back fill material shall be provided at the top of foundations below the blinding to cast against.

6.5. Efficient site drainage during and after construction of the project should be provided by the contractor.

6.6. Site inspection by a qualified engineer should be carried out after completion of the excavation works and after preparation of the proposed foundation level to ensure that the contact surface is free from any loose/soft layer and properly prepared for the foundation.

7. Concrete workmanship

7.1. All concrete without plaster shall be fair finish unless noted otherwise.

7.2. All concrete surface to have plaster are to be hacked to have an adequate surface key.

7.3. All concrete is to be cured by an approved method-water pounding or curing compound.

7.4. All types of construction joints in concrete shall be at a specified locations and approved by the engineers.

7.5. All substructure concrete works shall be protected with water proofing as per standard details & specifications.

7.6. All concrete shall be compacted using a mechanical vibration process.

7.7. 25x25mm chamfers to external corners and edges shall be provided in accordance with specifications and directed by the engineer.

8. Structural steel

8.1. All structural steel works shall be in accordance with bs 5950 parts 1 to 9 or ec-en3.

8.2. Maximum dimension of holes shall be in accordance with bs 5950 : part 1 : 2000 table 35, unless indicated otherwise.

8.3. The contractor shall provide whatever temporary ties or bracing necessary for a safe and proper erection of the steel structures.

8.4. Welding shall comply with bs en 1011-1: 2009, bs en 1011-2 : 2001 and bs bs en 1011-8 : 2004.

8.5. Contractor shall do a detailed design for aluminum shades and to submit full design calculations and detailed shop drawings for all steel sections and connections to the engineer for approval prior to commencement of fabrication.

8.6. All rolled products and plates shall conform to bs en 10025-2. Cold form welded structural hollow sections shall conform to bs en 10219-1. Hot finish hollow sections shall conform to bs 10210-1 unless noted otherwise on drawings.

8.7. All connections shall be made with minimum 2nos. Galvanized grade 8.8 to bs 3692 with a minimum diameter of 20mm and minimum yield strength of 627mpa and minimum ultimate strength of 765mpa and electrodes to bsd 639, unless noted otherwise.

8.8. Unless noted otherwise on the drawings, all connections shall be in accordance with the following minimum requirements:

A) all welds shall be at least 6mm continuous fillet welds all around.

B) all structural bolted connections should be galvanized minimum 85 micron and with a minimum of 2 bolts per connection. Purlin bolts shall be in accordance with the suppliers recommendations.

C) all gusset plates shall be at least 4mm thick.

D) all cap plates shall be at least 4mm thick.

E) all base plates shall be at least 4mm thick.

8.9. As minimum all structural steel members shall be shot blasted to sa 2.5, galvanized, primed & painted as below unless noted otherwise:

A) hot galvanization (dft 200micron)

B) primer coat to contain 2 coats of zinc rich epoxy primer (dft 75 micron)

C) top coat to contain 2 coats of polyurethane enamel paint (dft 125 micron)

8.10. All structural steel work shall be corrosion protected in accordance with the structural specifications.

8.11. All steel should conform to the following:

A) shs, rhs and chs sections bsen 10210 s275 fy=275mpa

B) all angles and channels u.n.o bsen 10025 s275 fy=275mpa

8.12. All steel columns to be central on grids or equally spaced between grids unless noted otherwise.

8.13. All steel beams to be central on grids or equally spaced between grids unless noted otherwise.

8.14. All steel dimensions are to center line of section unless noted otherwise.

8.15. All bracing is to be set out on the centroids of bracing members and on the center line of beams and columns unless noted otherwise.

8.16. Where bracing is shown offset from center of members the contractor shall design and provide all necessary stiffeners.

8.17. Contractor to provide all leader railing as required to support free edges not trimmed with cold formed or mild steel work. To be provided in accordance with architect's drawings.

8.18. Location of any connections, splices not shown in the drawings shall be submitted with design for engineer's approval. No splices shall be made unless shown in the drawings and as approved by the engineers.

8.19. Contractor shall do a full coordination between architecture and structural drawings for the steel support for shade elements, locations and sizing connections with structural concrete elements and sections. Care shall be taken to prevent dissimilar metal corrosion.

9. Masonry blocks

9.1. Design and construction of all blocks shall comply with bs 5628 : parts 1.2 & 3 : 1992 or en-ec6. The contractor shall submit a construction method statement prior to commencing the works.

9.2. Wall ties in accordance with bs 1248 - cp 121 part 1.73.

9.3. All block wall joints to manufacturers specifications.

9.4. All block work walls are to be considered as non-load bearing partitions unless noted otherwise in drawings.

9.5. Block walls shall be reinforced horizontally and vertically as per manufacturers requirements.

9.6. Masonry wall mechanical properties

young's modulus = 3.5e+006 kn/m2

poisson's ratio = 0.25

density = 20kn/m3

min.compressive strength = 3.5 mpa

10. Design & loading

10.1. Consultant design

design and construction of reinforced concrete structural members, shall be in accordance with bs8110 & ec-en2 and the structural steel members to bs 5950 & ec-en3.

10.2. Contractor design

the contractor is responsible for the design of all temporary works. (shoring for excavation, signage... Etc) and the following items of permanent secondary works. (subjected to engineers review and approval)

a) precast concrete elements

b) architectural facade and support steelwork

c) non load bearing feature columns

d) all secondary steel works

e) structural steelwork connections

f) structural support for mep services

g) shade structures

h) balustrade and crash barrier

i) structural glass

j) interior signage

the design of the primary structure is considering the interfaces with these structures) loading reactions, opening...etc.) And were detailed to accommodate these elements into the design.

the contractor shall submit a full detail design for the wall and boundary wall foundation, also the contractor to do full coordination between the structural foundation for villas (including the water tanks, and the boundary wall for clashes, the contractor shall produce shop drawings for the boundary walls for engineer's approval.

10.3. Loading

a) superimposed (dead loads & live loads) as per bs 6399 or en-ec1.

b) self-weight & densities as per bs 648 or en-ec1.

c) wind loads as per bs 6399 or en-ec1 (mean wind speed = 25m/s).

11. Timber

11.1. All timbers shall be in accordance with bs 5268 or ec-en5

11.2. All timber members sizes are indicative. Contractor shall coordinate with supplier and submit detail designs for all prefab timber structure for approval.

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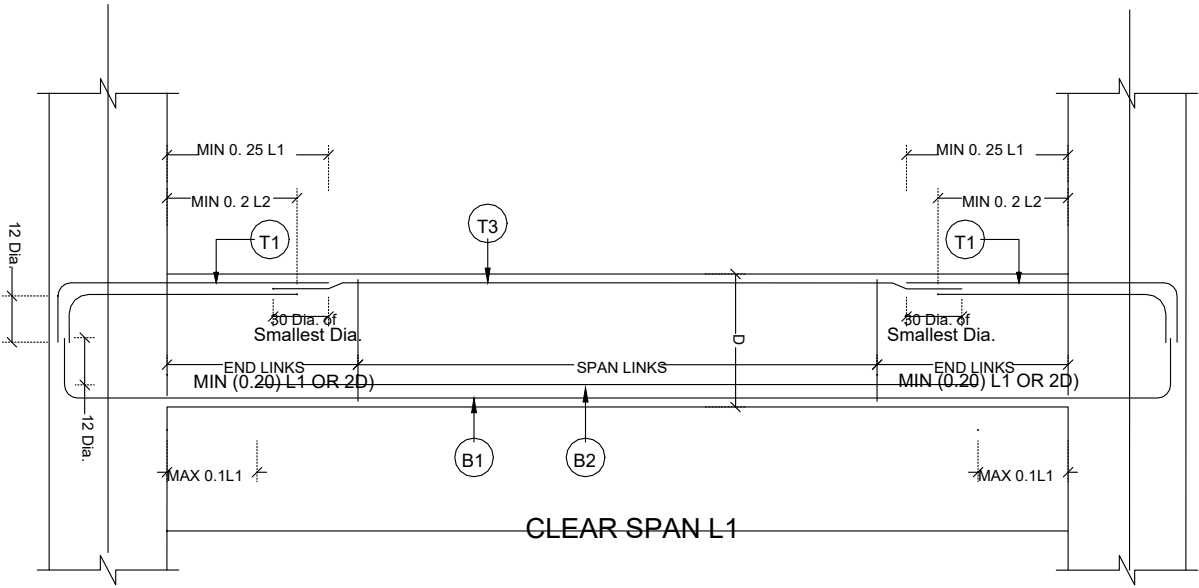
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Notes:

1. First stirrups location shall be s/2 from the face of the column/ support.
2. Place one b bar in each bottom corner and one t bar in each top corner of the stirrup cage.
3. Condition shown is at columns. Where beams and girder intersect, use typical interior girder section.
4. All bottom bars and top bars shall be placed in one layer unless two layers are noted in the beam schedule. Where to layers are noted provide 25 mm clear between layers. If two layers are noted place bar b1 above bar b and bar t above t1.
5. Length of exterior top bars are given only when straight bar occurs otherwise hooked bars are required.
6. Where a member is supported by a column, but has another member running perpendicular to it at the same column, the first stirrup spacing shall start from the face of the column and not from the face of the transverse beam.
7. Top & bottom reinforcement lapping of both main rebars can be ignored if the main rebars at left and right side of lapping location are identical.
8. For 'column width less or equal 2m l*="column width'/2. For 'column width' greater than 2m, l*=1m

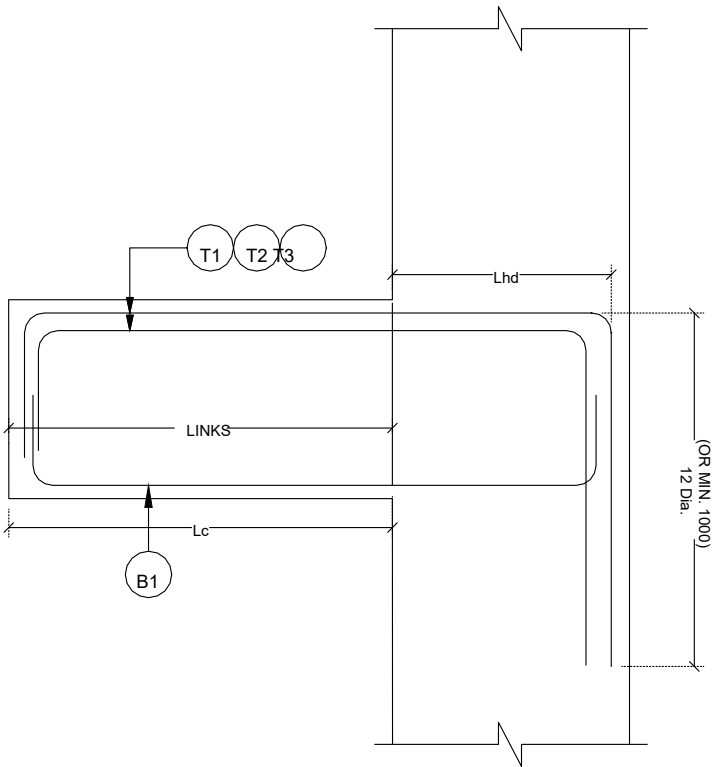
Supplementary abbreviations:

- B1 - continuous bottom bars.
B2 - additional bottom bars
CE - cantilevered end
D - depth of member, mm
EE - each end
EF - each face
FL - full length
EW - each way
H - aci standard hook
ITB - interior top bar
LE - left end
LG - length
P - paired stirrups
RE - right end
REM - remainder
S - side bars
T1 - top bars at internal supports
T2 - top bars at mid-span
T3 - top bars at end support
W - width of member, mm



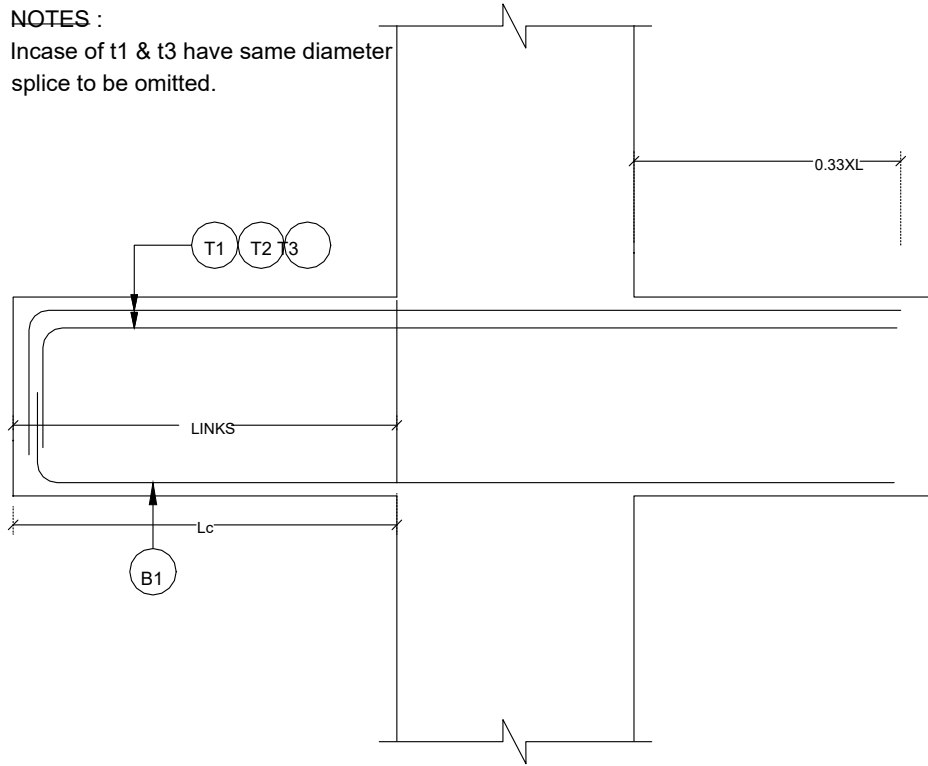
SIMPLE BEAM DETAILS

NTS



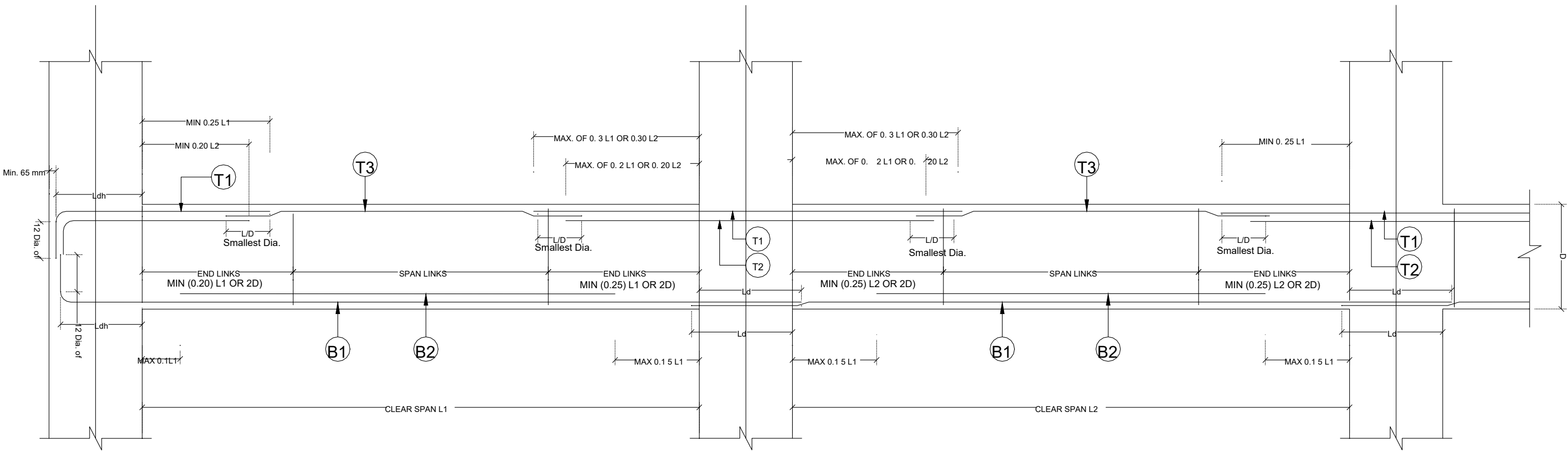
TYPICAL CANTELEVER BEAM FROM COLUMN

NTS



TYPICAL CANTELEVER BEAM CONTINUOUS

NTS



CONTINUOUS BEAM DETAILS

NTS

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Page Title
General Notes 03

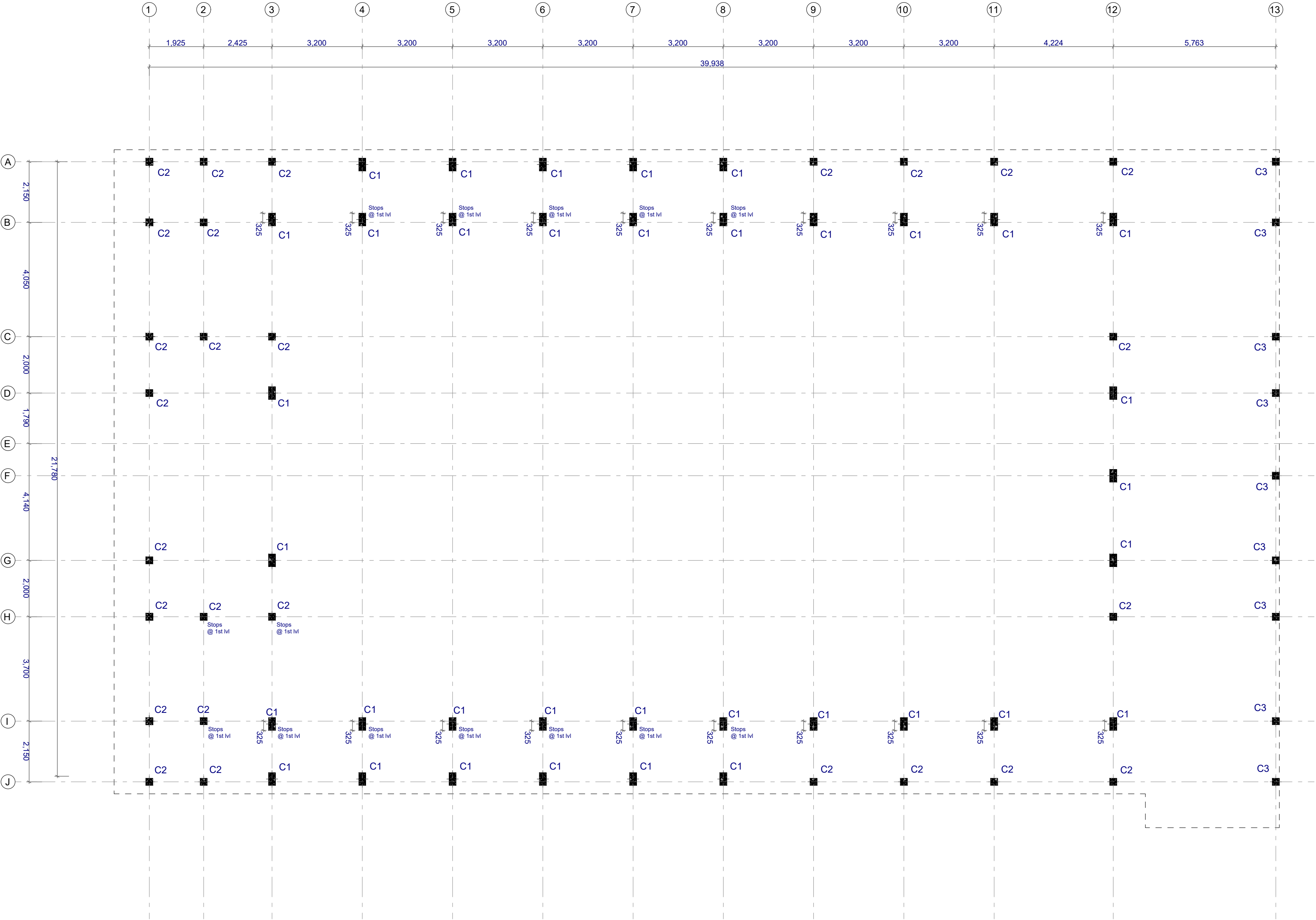
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Overview :



Legend :

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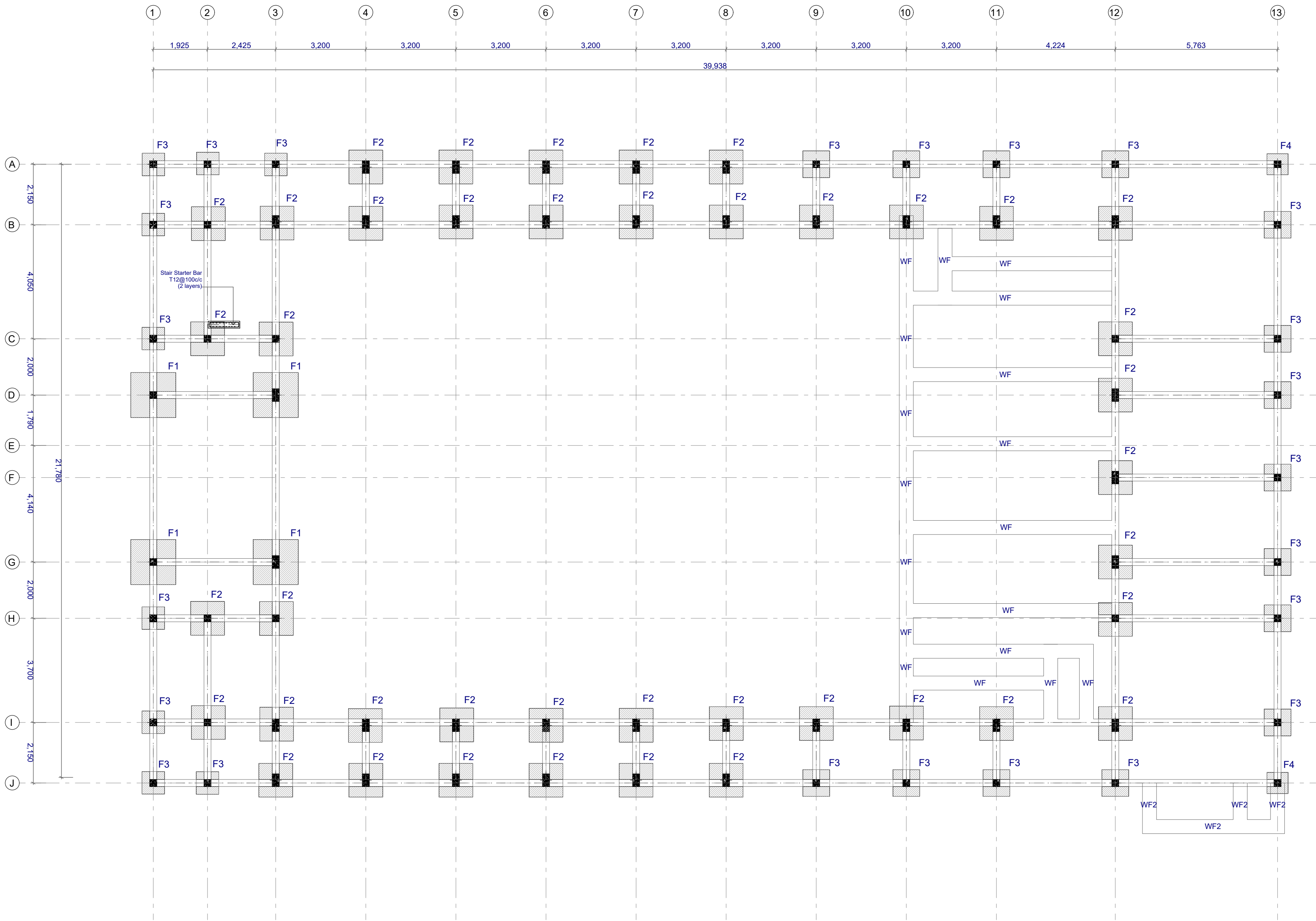
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Foundation Notes:

	Dimensions	Reinforcement	Foundation Depth
F1	1600X1600X350	T12@ 125C/C B/W (b)	1250mm
F2	1200X1200X350	T12@ 125C/C B/W (b)	1250mm
F3	950X950X300	T12@150C/C B/W (b)	1200mm
F4	750X750X300	T10@150C/C B/W (b)	1200mm

All tie beams are 'TB' (unless stated)
Ground Slab = 100mm thick RC slab on fill reinforced with T10@200C/C (B/W)

All Footings are to be laid on top of 50mm thick lean concrete
Add waterproofing admixture and apply waterproofing to all substructure (below ground elements)

Overview :



Legend :

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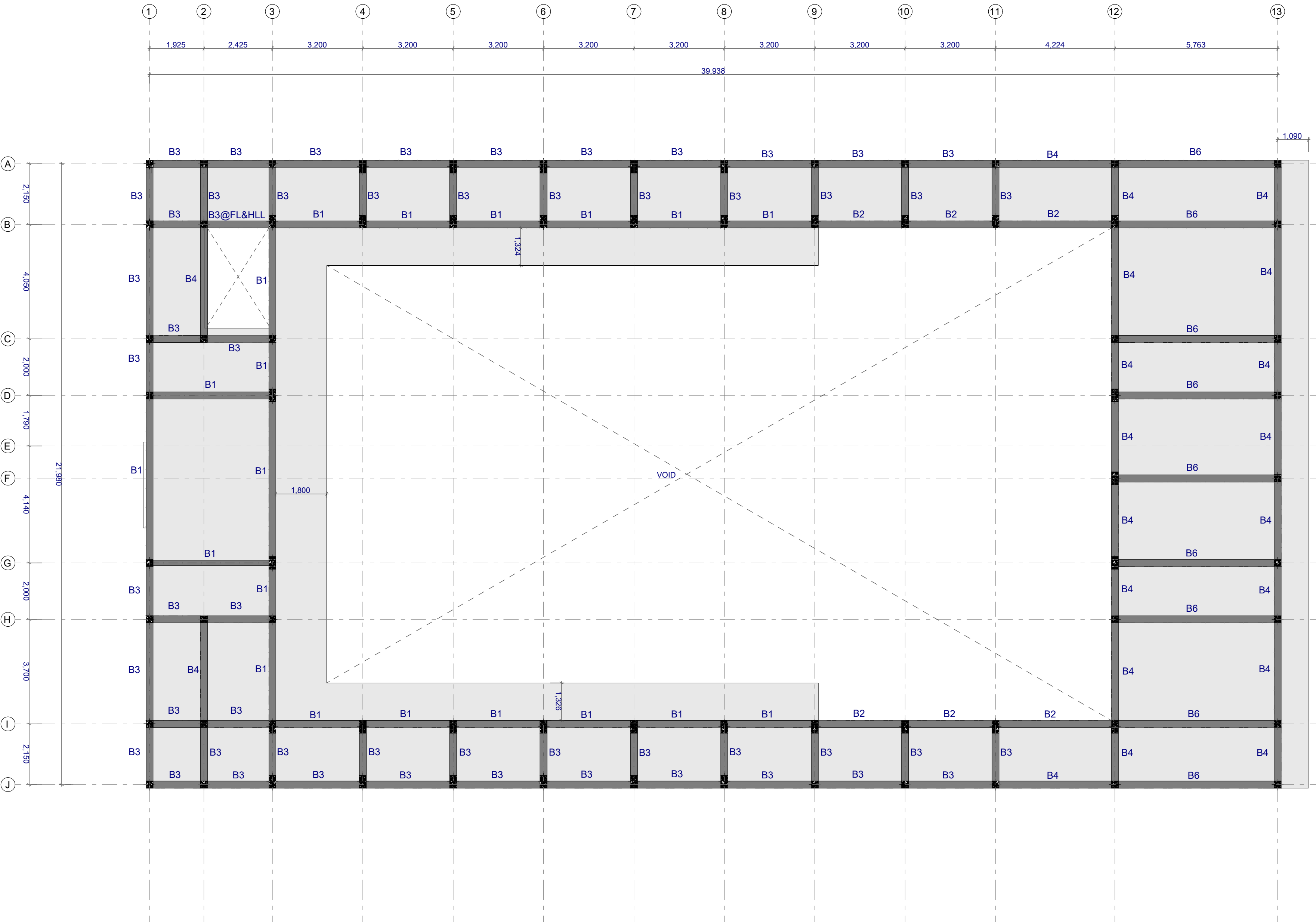
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Page Title
Foundation Plan

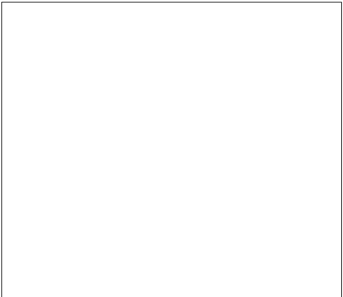
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Doc No : EP/BLD-AR/2022/08/AR-104

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Overview :



Legend :

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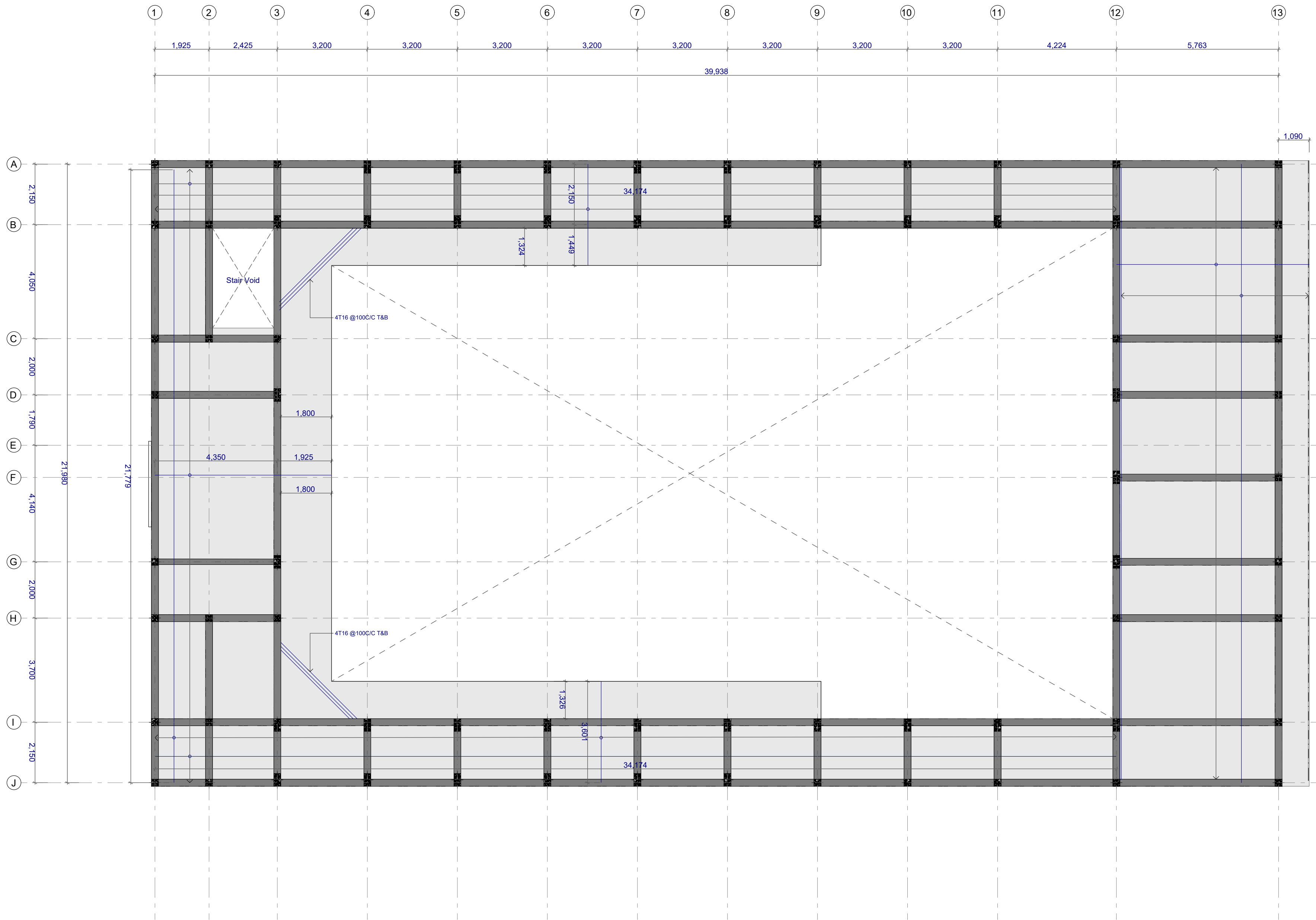
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Page Title
1st Floor Beam Plan
Scale : 1:100
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Notes:

- Slab Thickness: 185mm
- Slab Thickness: 150mm

Bottom Reinforcement: T10@150C/C B/W (Not shown)
Top Reinforcement: T12@100C/C (As shown, unless specified)
Distribution steel: T12@100C/C (Unless specified)
Reinforcement discontinuous at voids

Overview :



Legend :

Notes :

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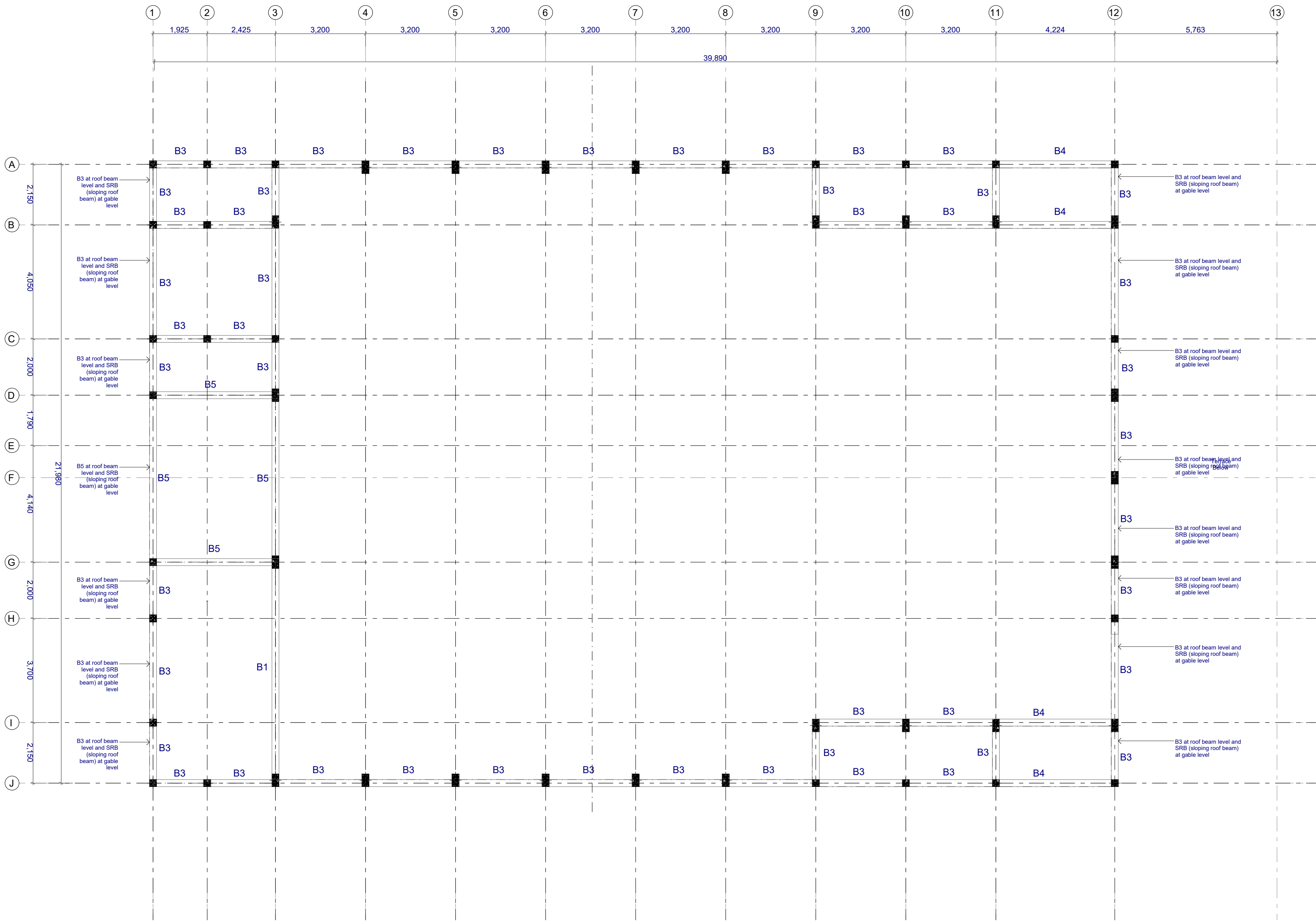
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Page Title
1st Floor Slab Reinforcement Plan

Scale : 1:100

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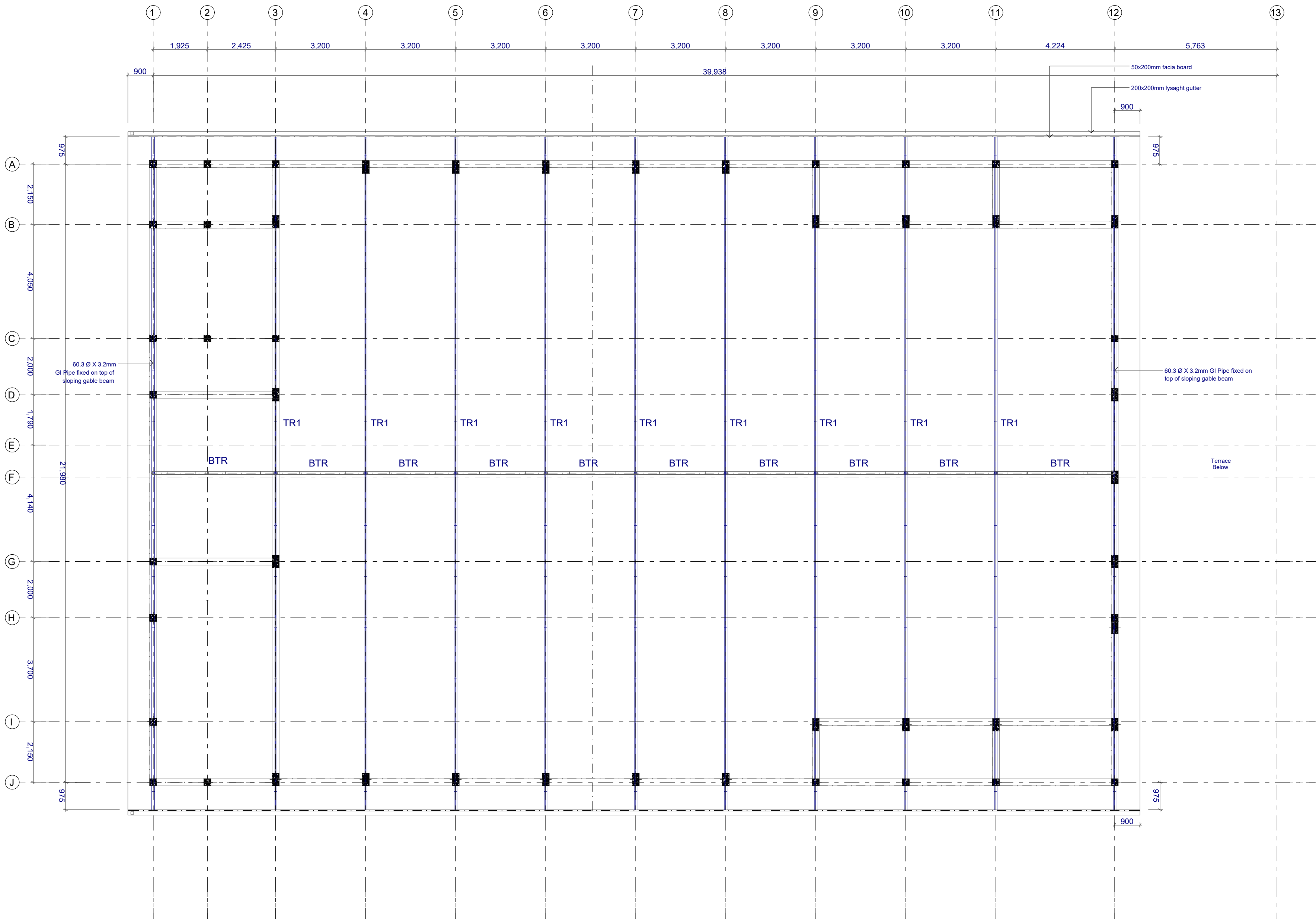
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Page Title
Roof Beam Plan

Scale : 1:100

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Overview :



Legend :

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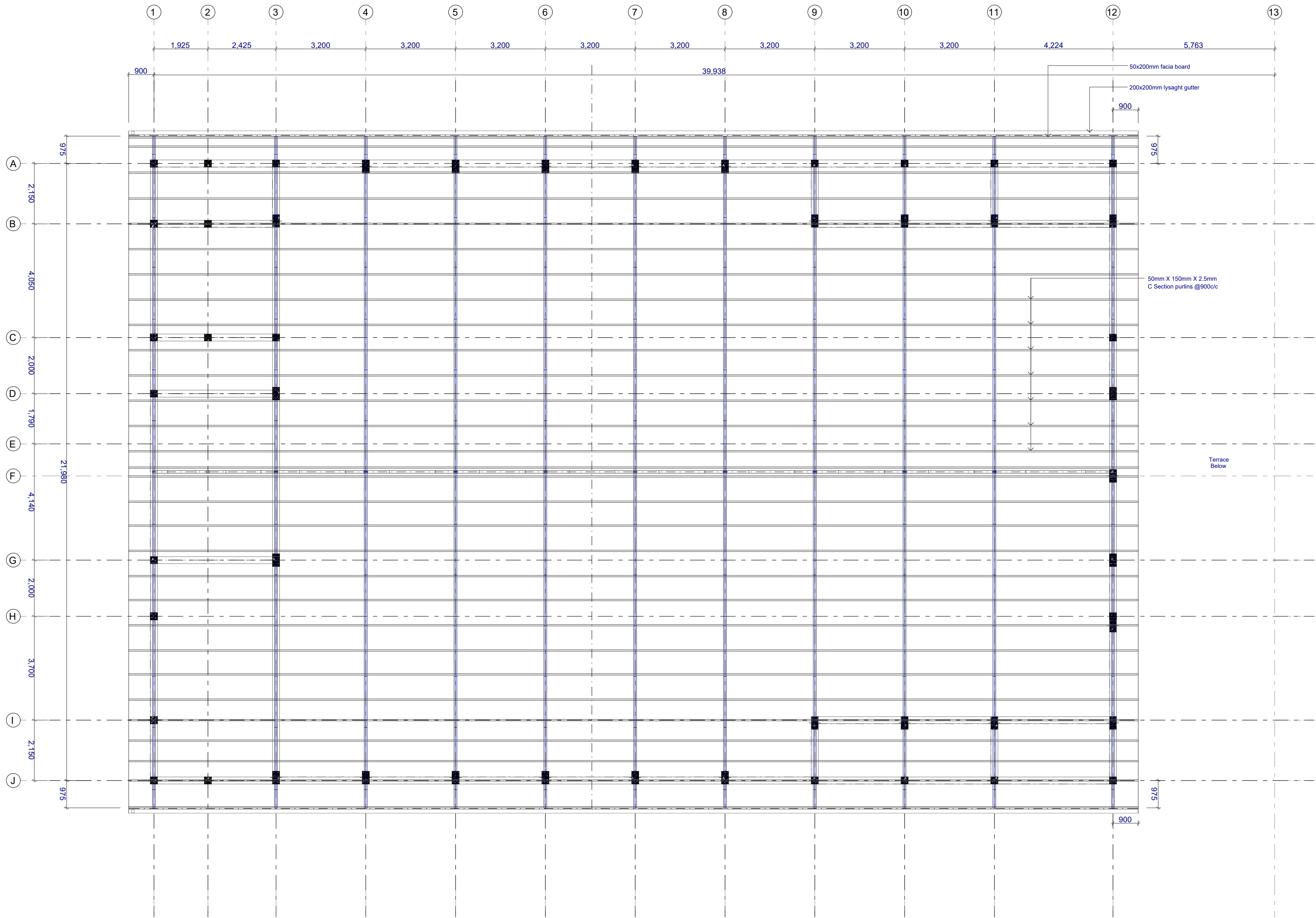
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Page Title
Truss Plan
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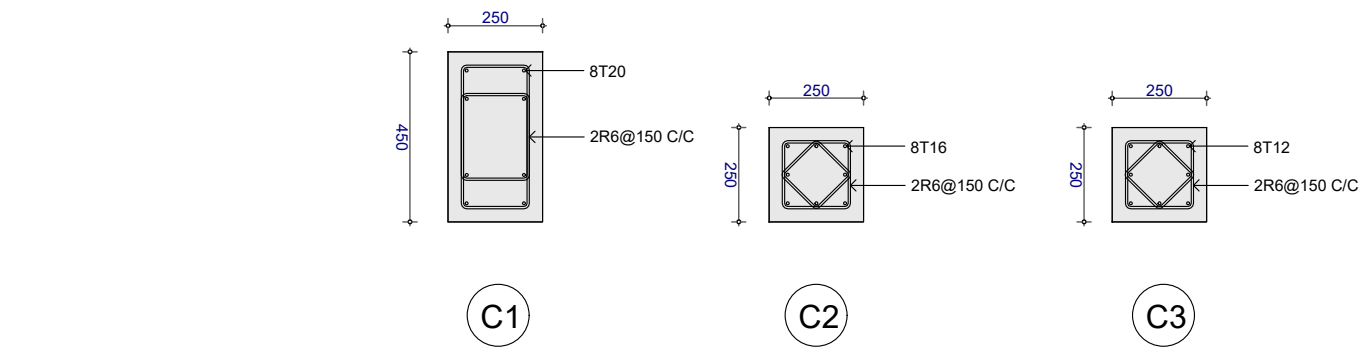
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Page Title
Roof Framing Plan

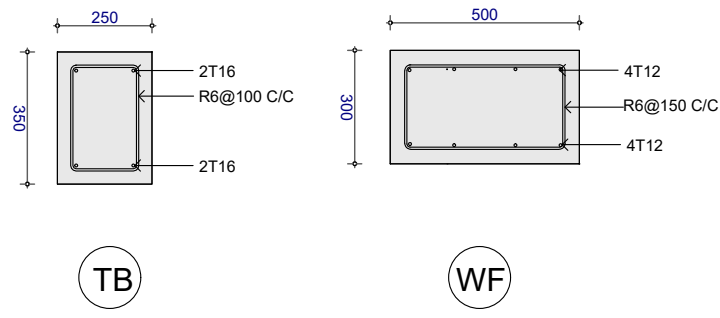
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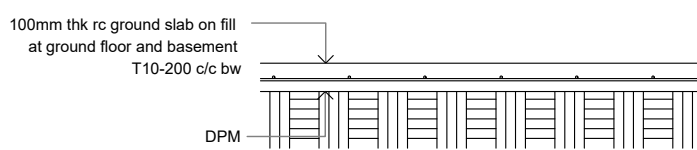
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Column Details
1:20

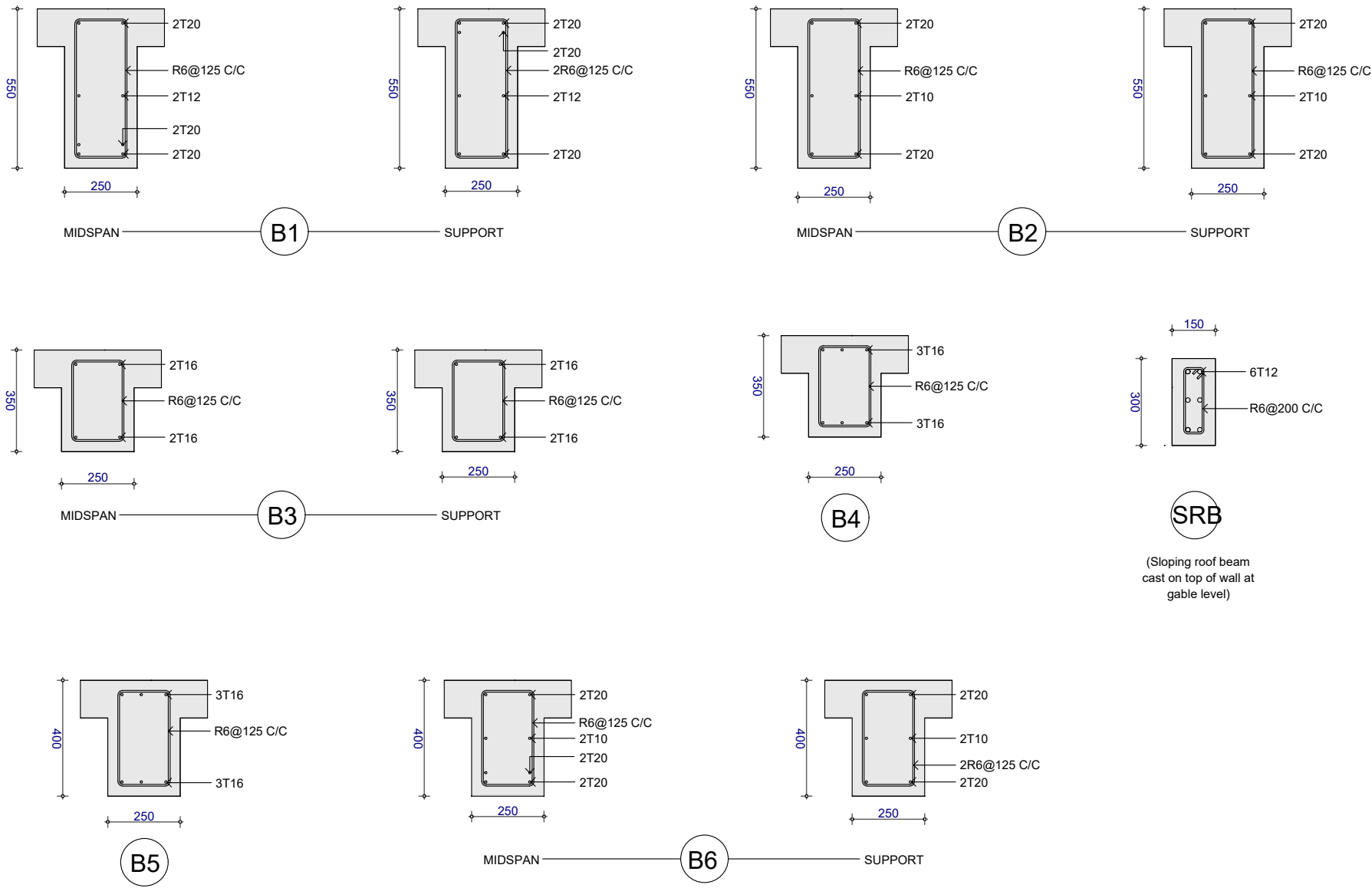


Tie Beam Details
1:20

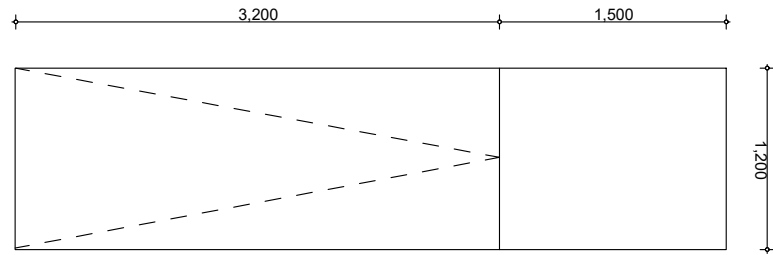


NOTE:
All cover blocks shall be casted using grade C25/30 concrete with 5-10mm aggregates
For slab, rebar spacer chairs spacing shall be minimum 1m spacing or 1no. per 1 sqm

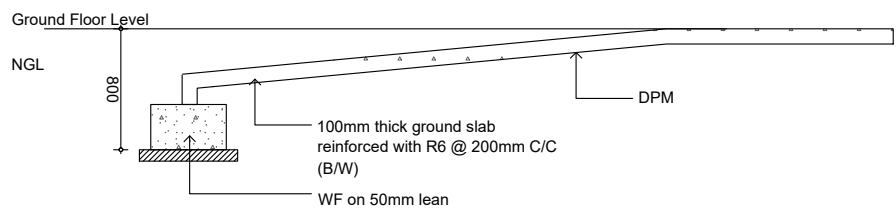
Typical Ground Slab Construction Detail
1:20



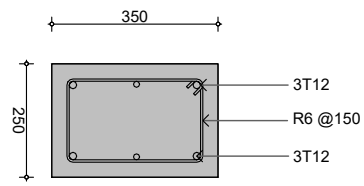
Beam Details
1:20



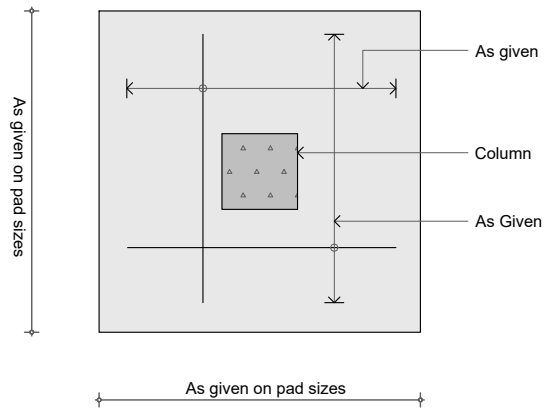
Ground Floor Ramp Plan View



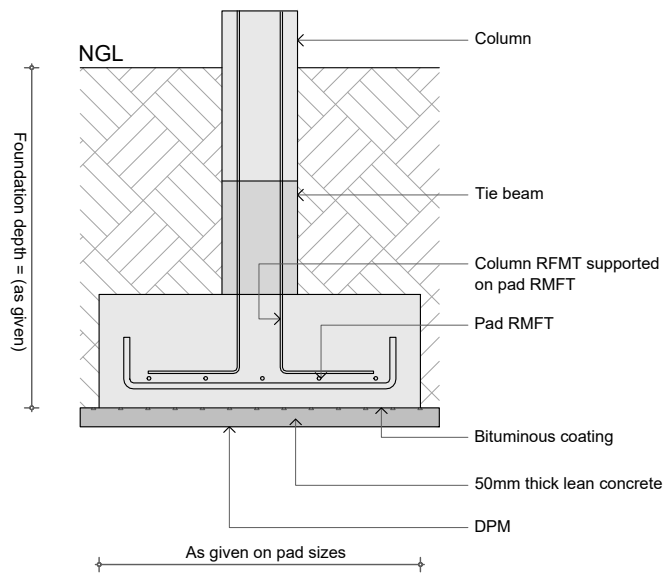
Ground Floor Ramp Elevation View



Wall Footing (WF2) Detail
Scale = 1:20



Plan View



Sectional View

Typical Footing Detail
1:20

Overview :



Legend :

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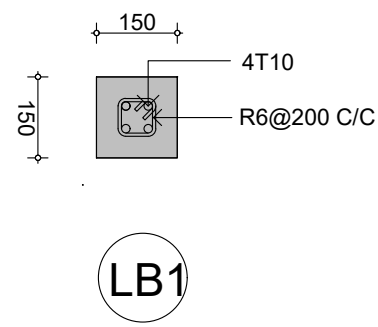
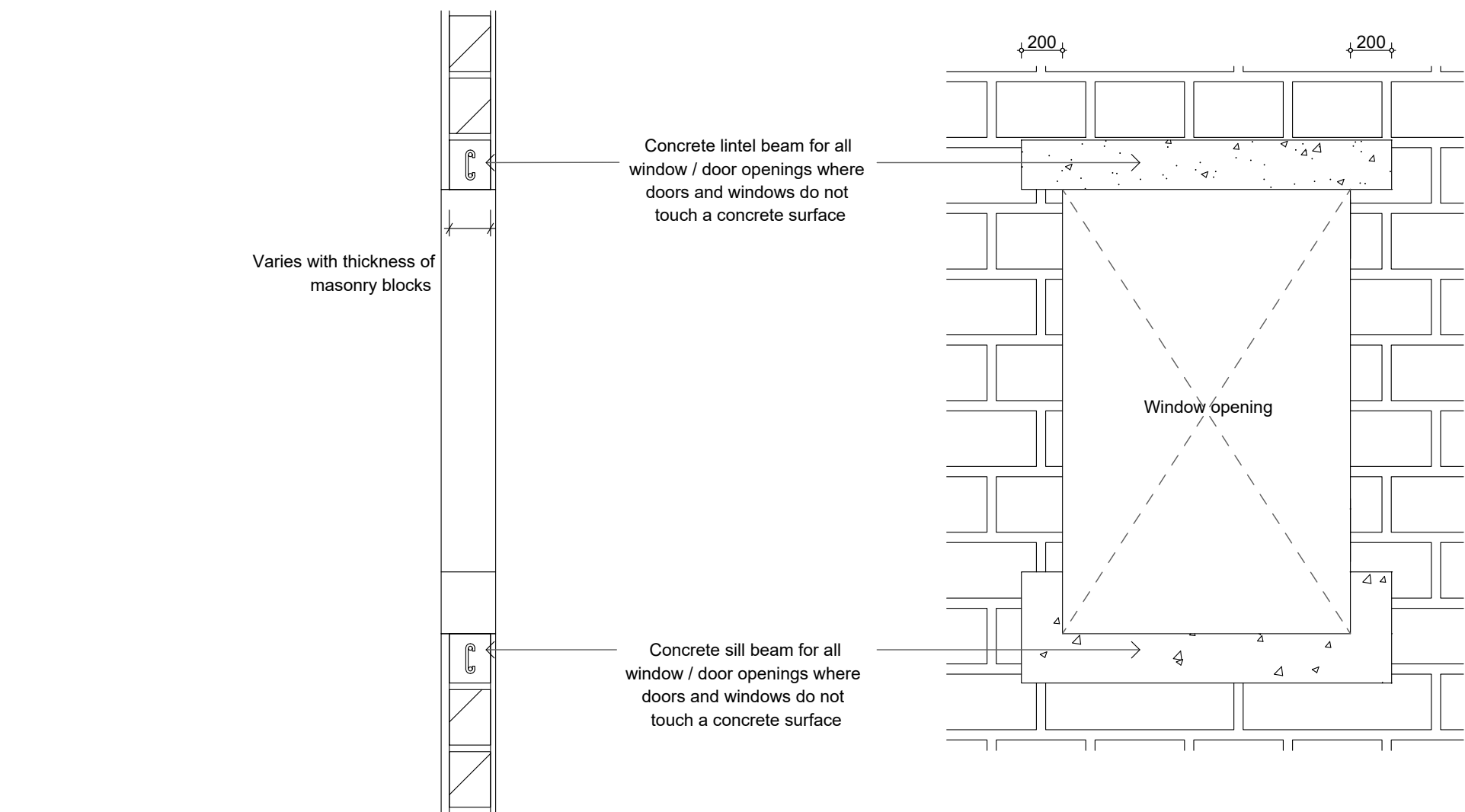
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Page Title
Structural Details 1

Scale : 1:20, 1:50

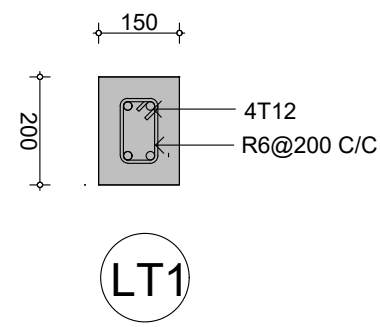
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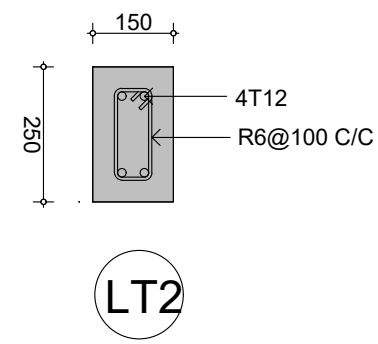
LB1

Sill Beam Detail
1:20



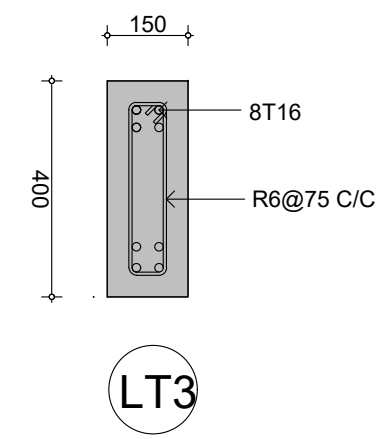
LT1

Lintels over all doors, windows
(that does not rise to beam level)
LT1 for windows < 1.5m



LT2

Lintels over all doors, windows
(that does not rise to beam level)
LT2 for windows > 1.5m & <3.0m



LT3

Lintels over all doors, windows
(that does not rise to beam level)
LT3 for windows > 3m & <6.0m

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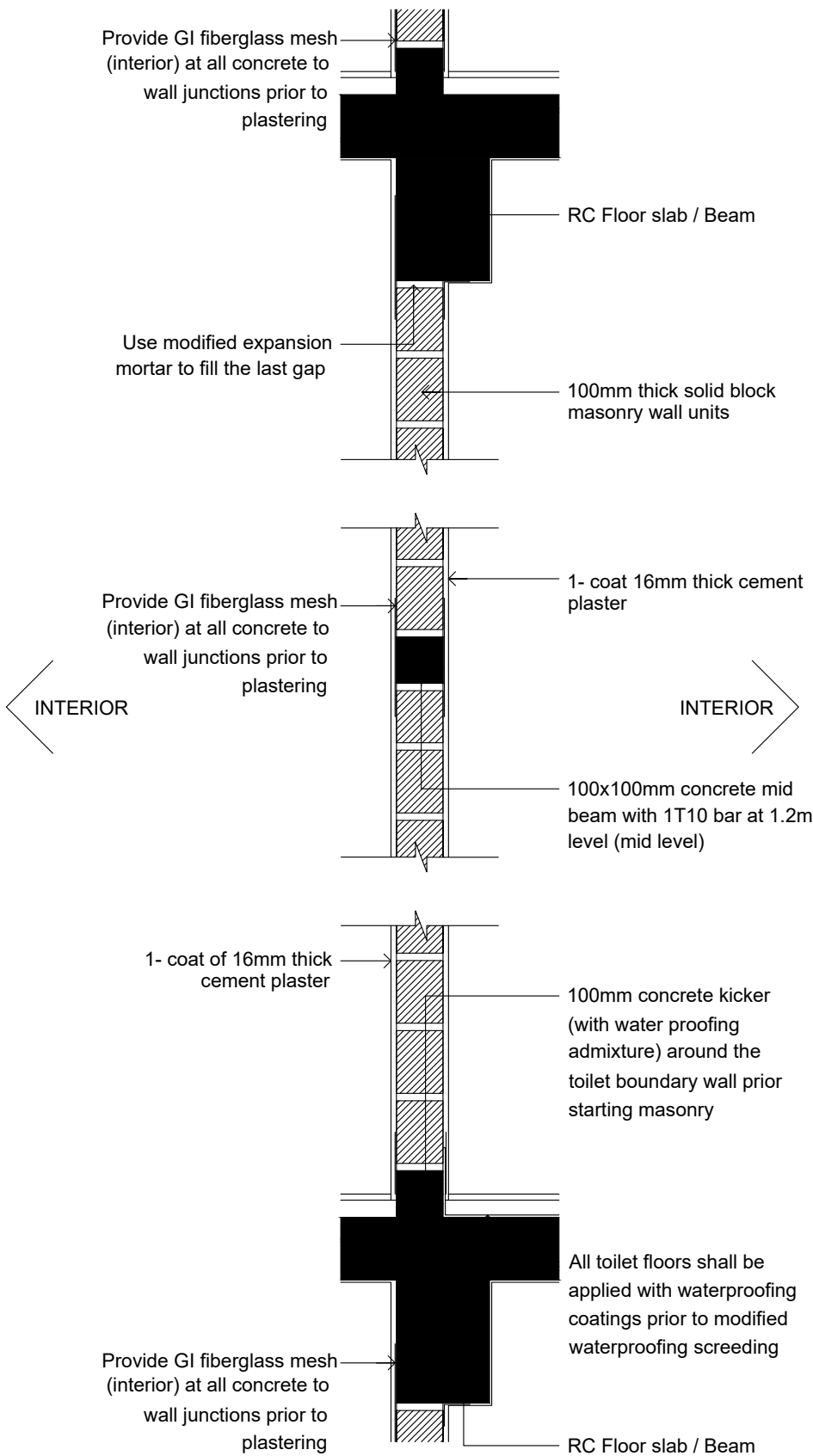
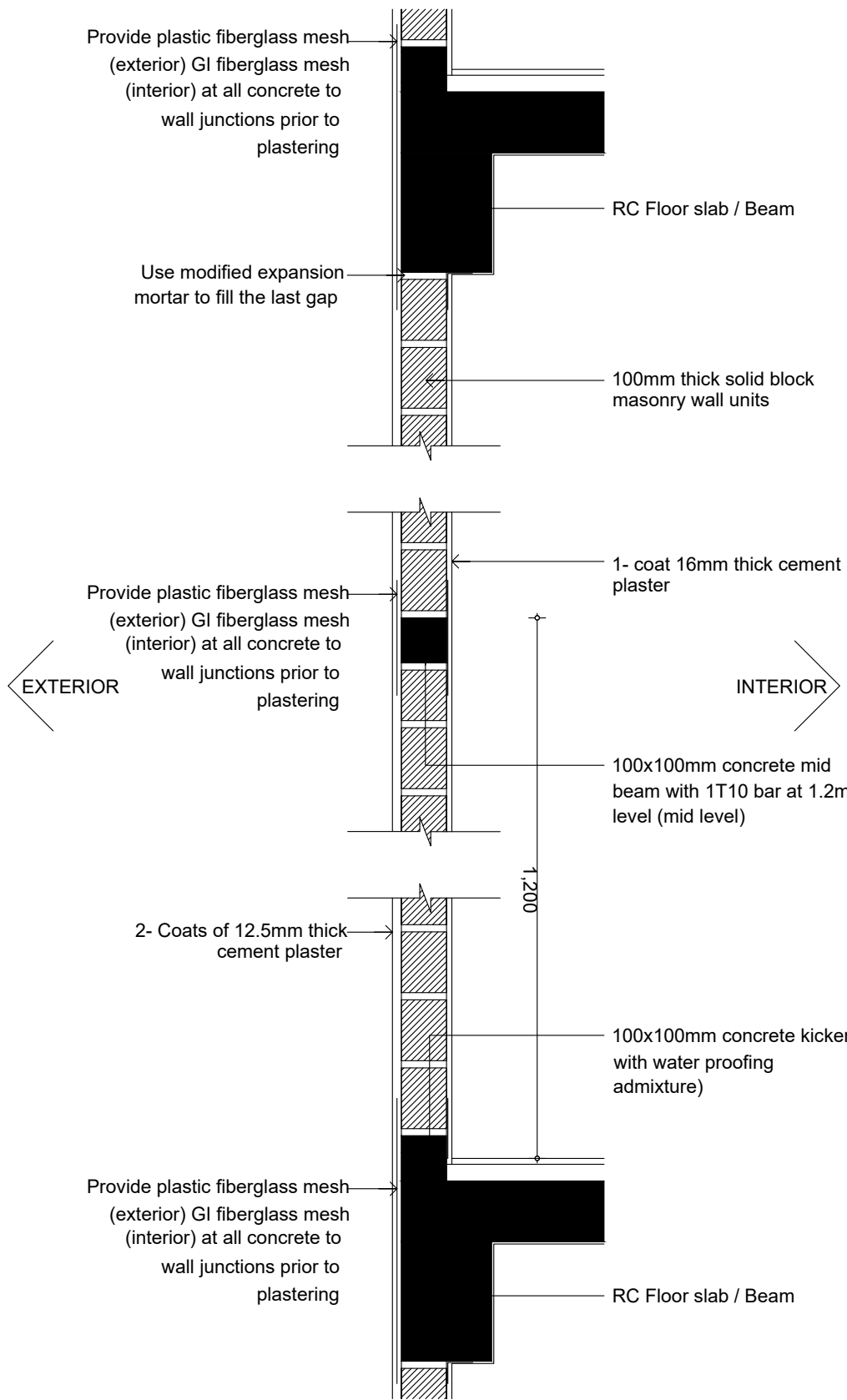
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Page Title
Opening Detail

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Note:

- * Concrete surfaces shall be thoroughly cleaned with water & applied with mastercast 141 or equivalent bonding mortar prior to plastering.
- * Plastering mortar mix shall be 1:4 (cement: sand) ratio.
- * Plaster mix shall be modified using fibre wool & mastercast 141 or equivalent plasticisers as per manufacturer's specification.
- * Height of placing blocks shall be maximum 1.2m per day.
- * After initial coat of plastering, water curing shall be provided for minimum 3 days & after final coat water curing shall be provided for 7 days.

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Page Title
Typical Wall Construction Detail

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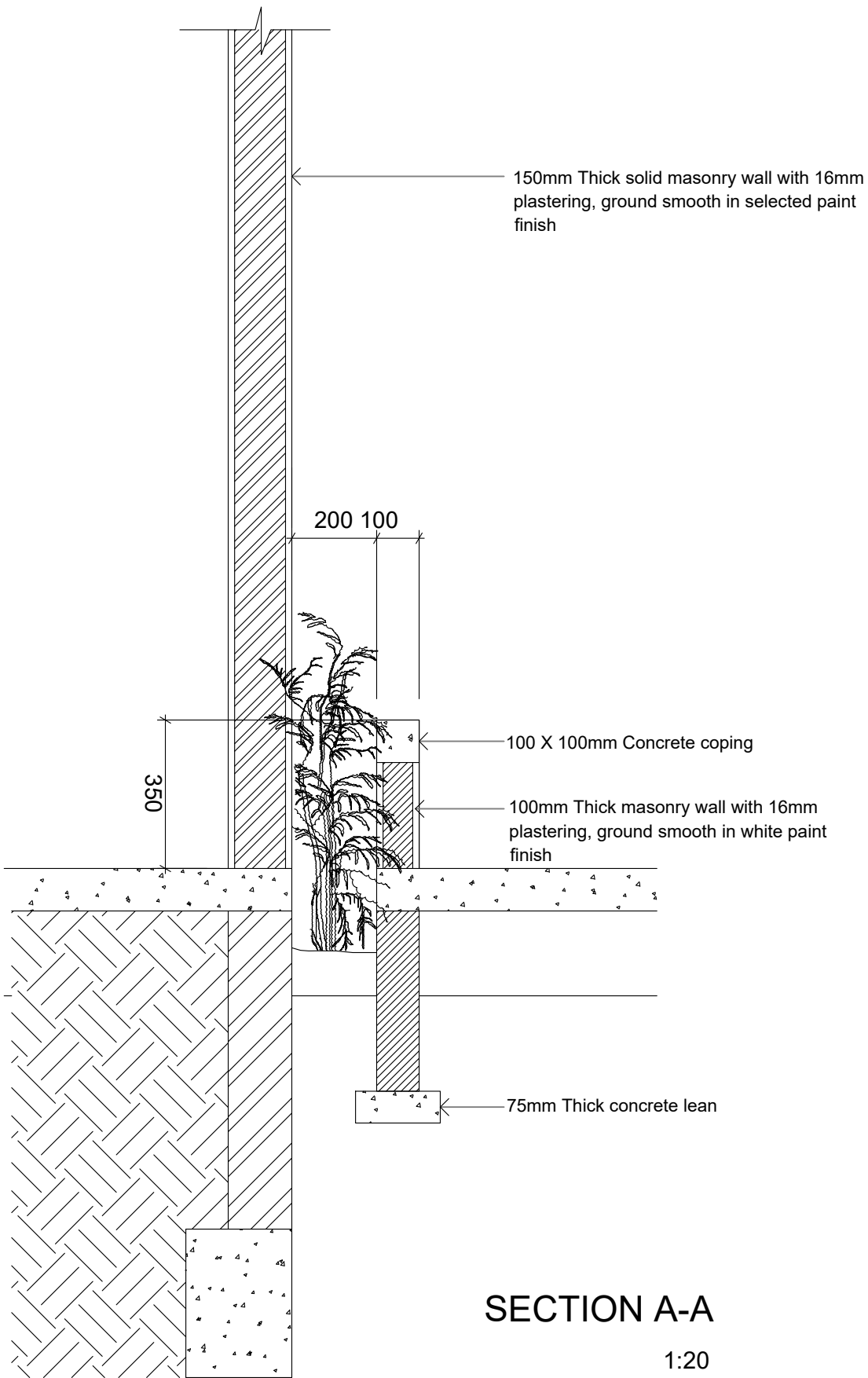
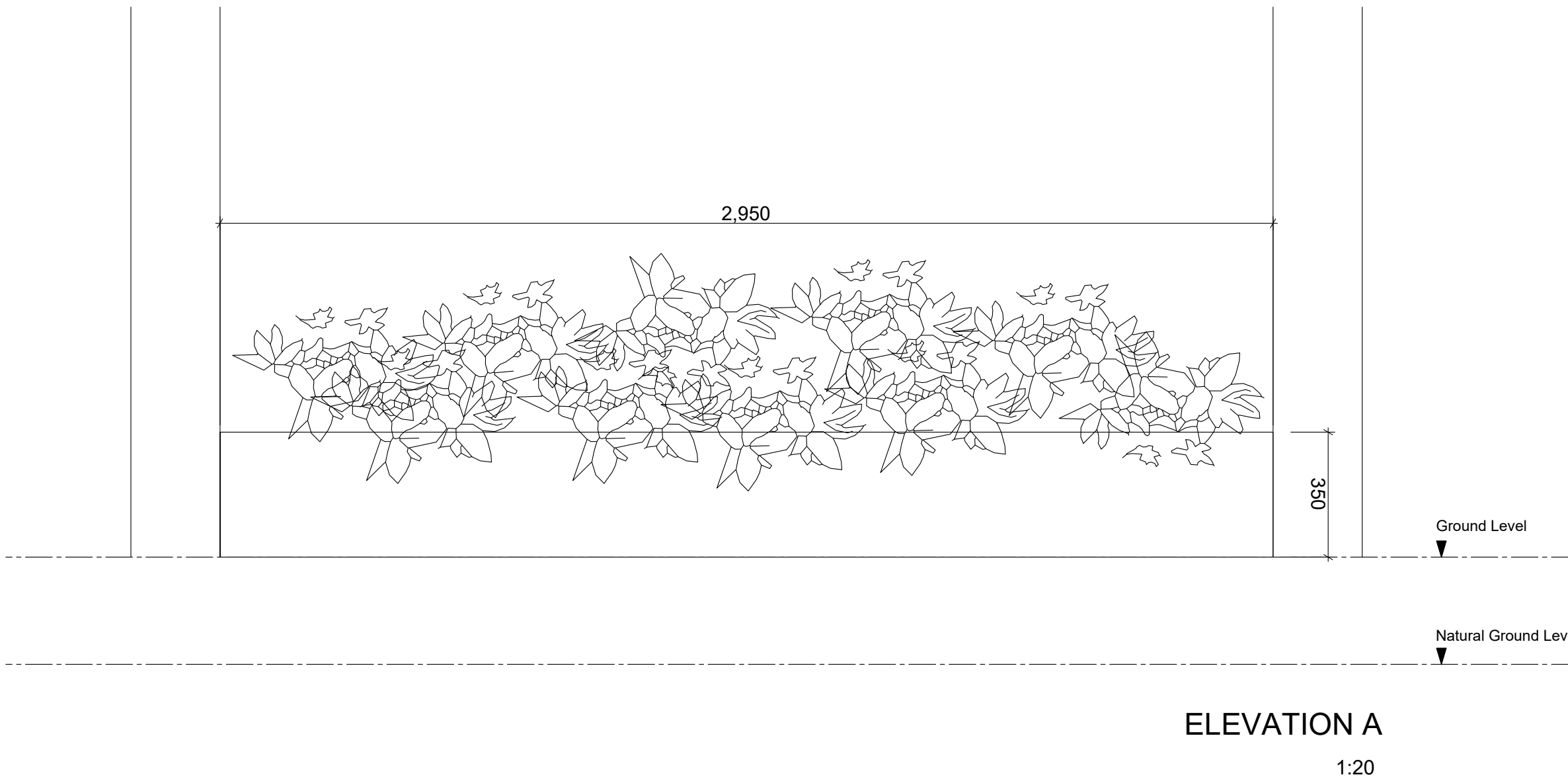
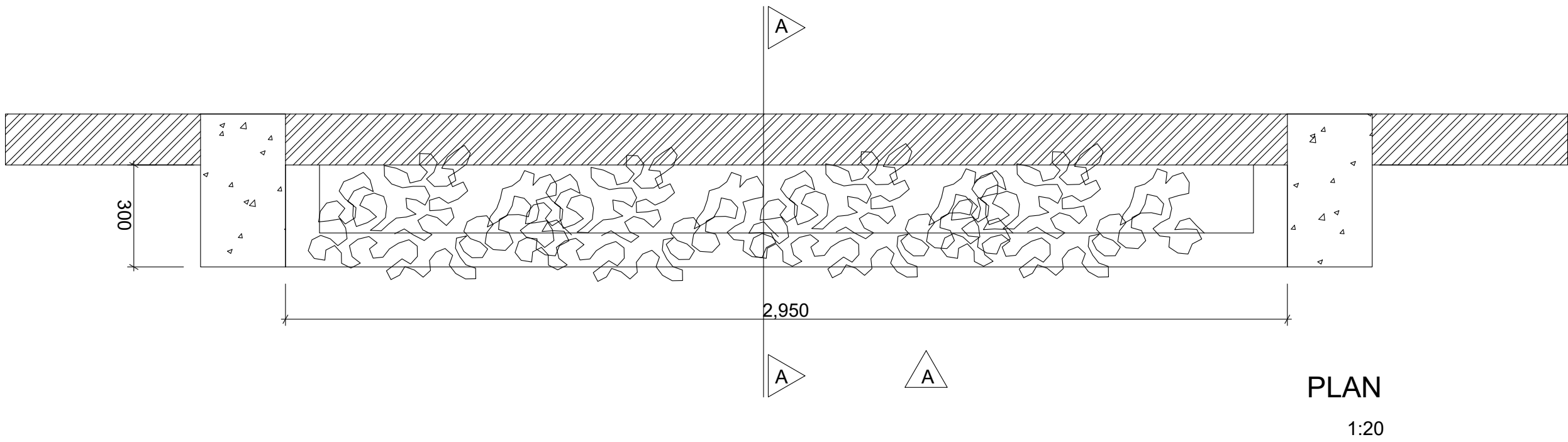
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Page Title
Main Stair Detail

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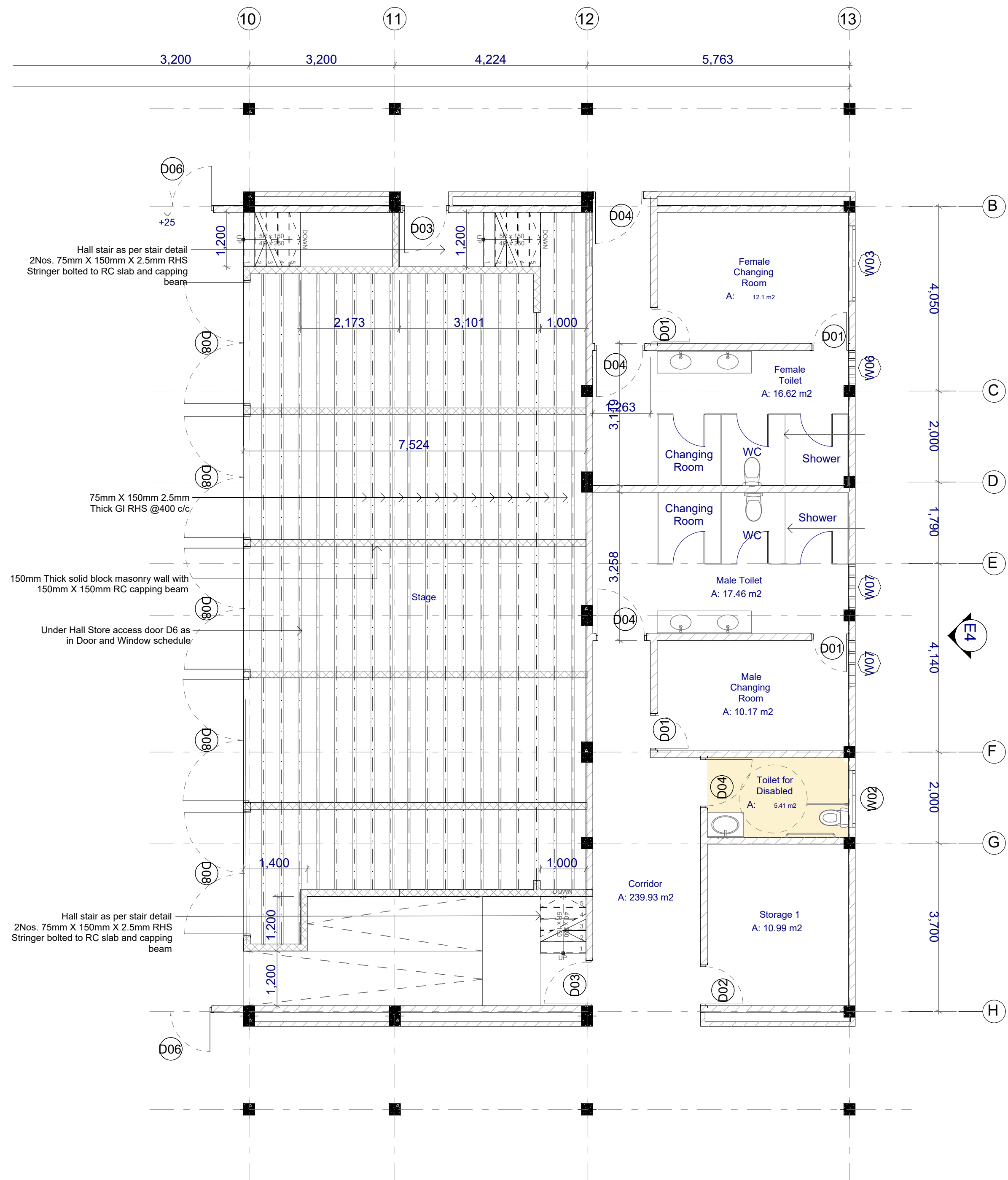
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Page Title
Planter Box Details

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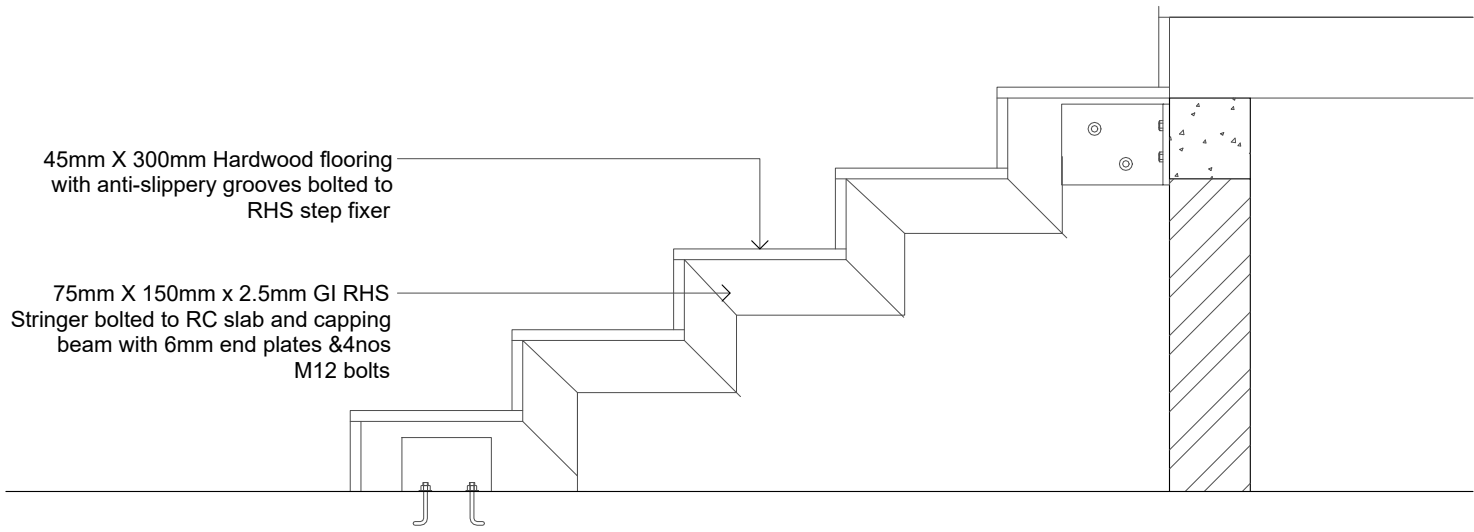
Page Title
Stage Framing Detail

Scale : 1:100

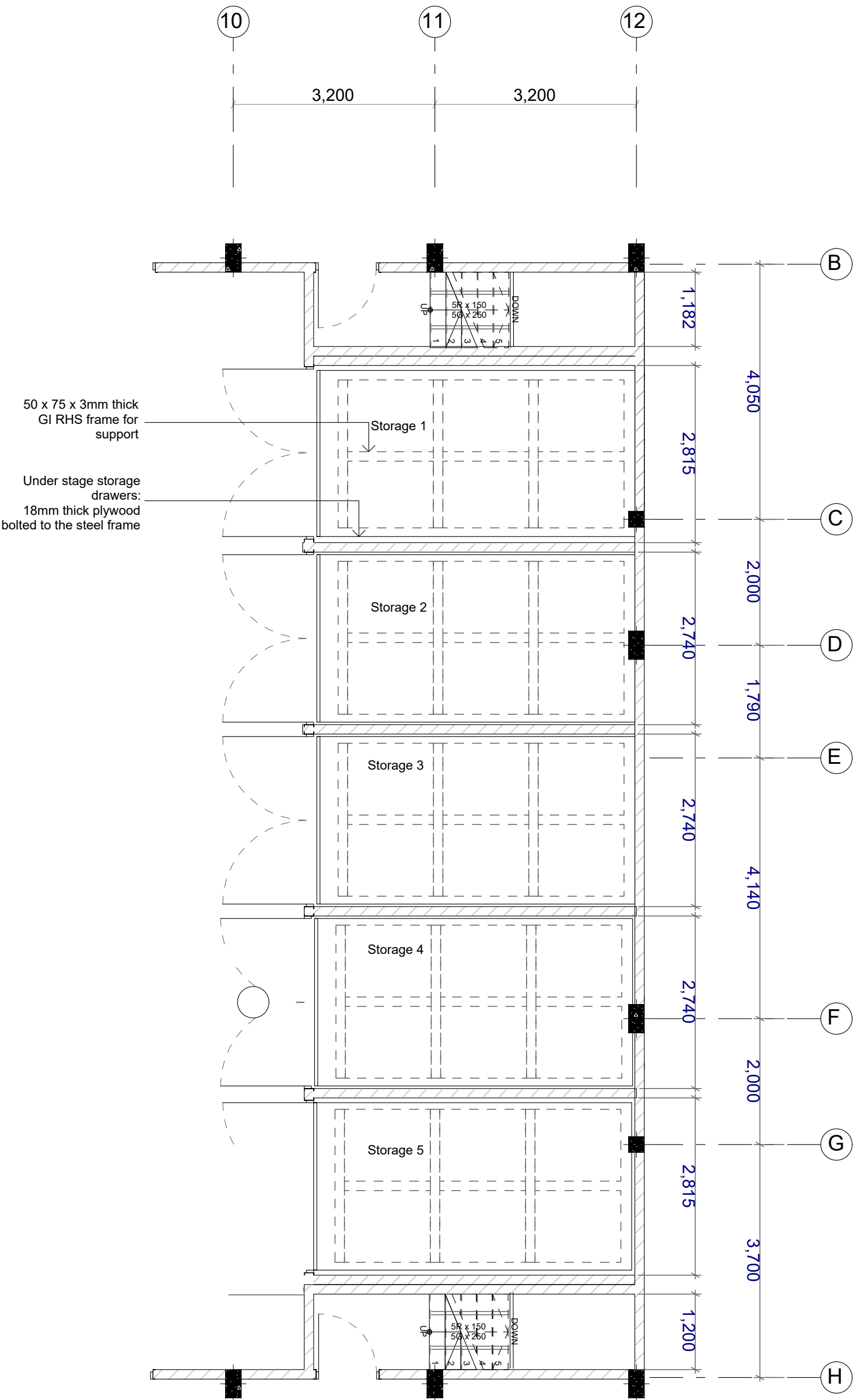
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Date : Sunday, May 21, 2023

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Stage Stair Detail
1:20



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Multipurpose Hall, At
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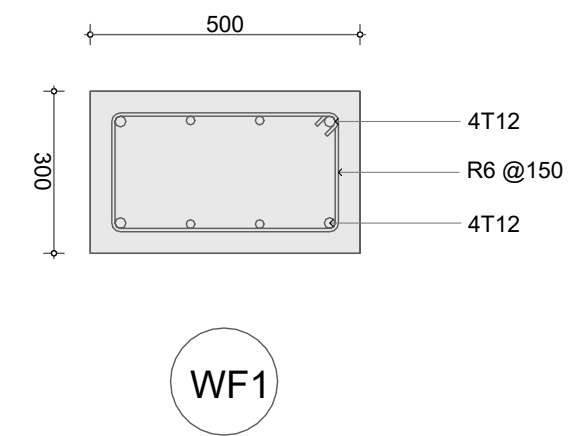
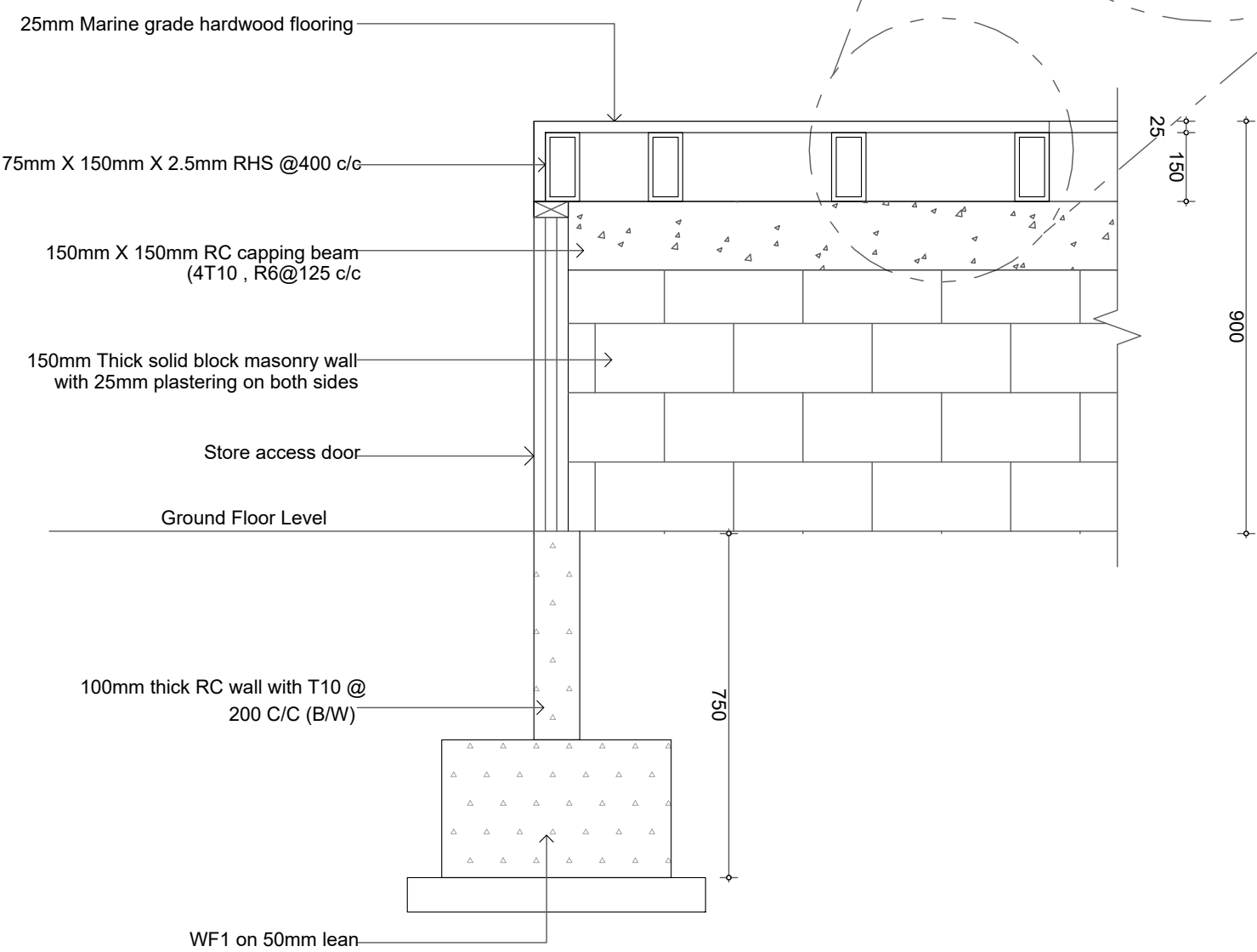
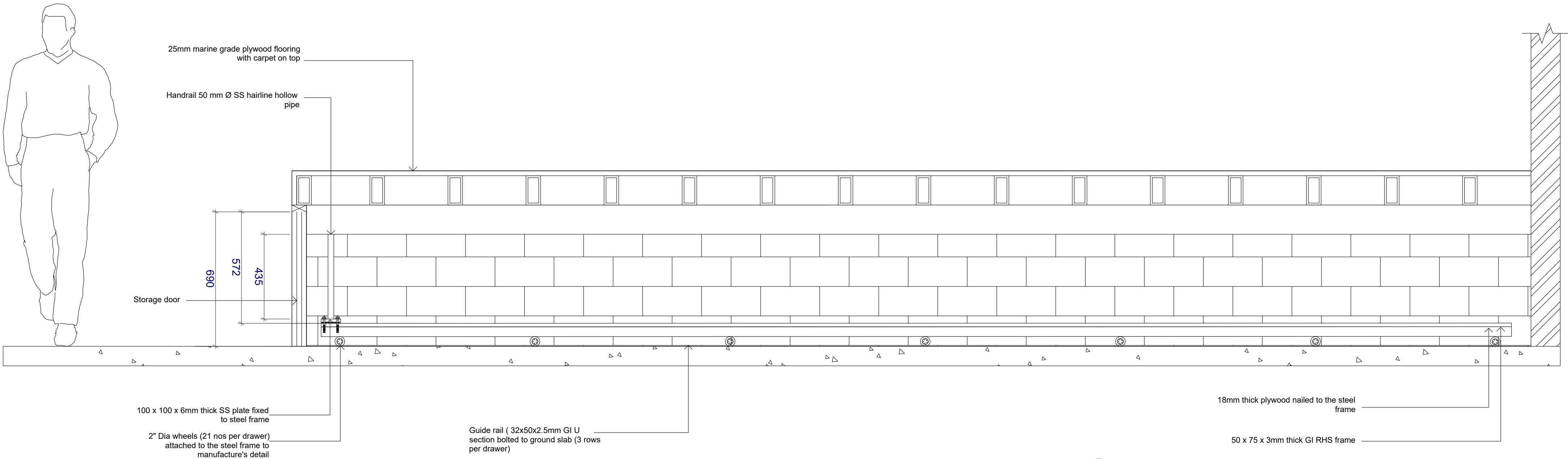
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Page Title
Stage Drawer Detail

Scale : 1:100, 1:20

Doc No : EP/BLD-AR/2022/21/CD-T03

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Wall Footing Detail

Scale = 1:20

Hall Section Detail

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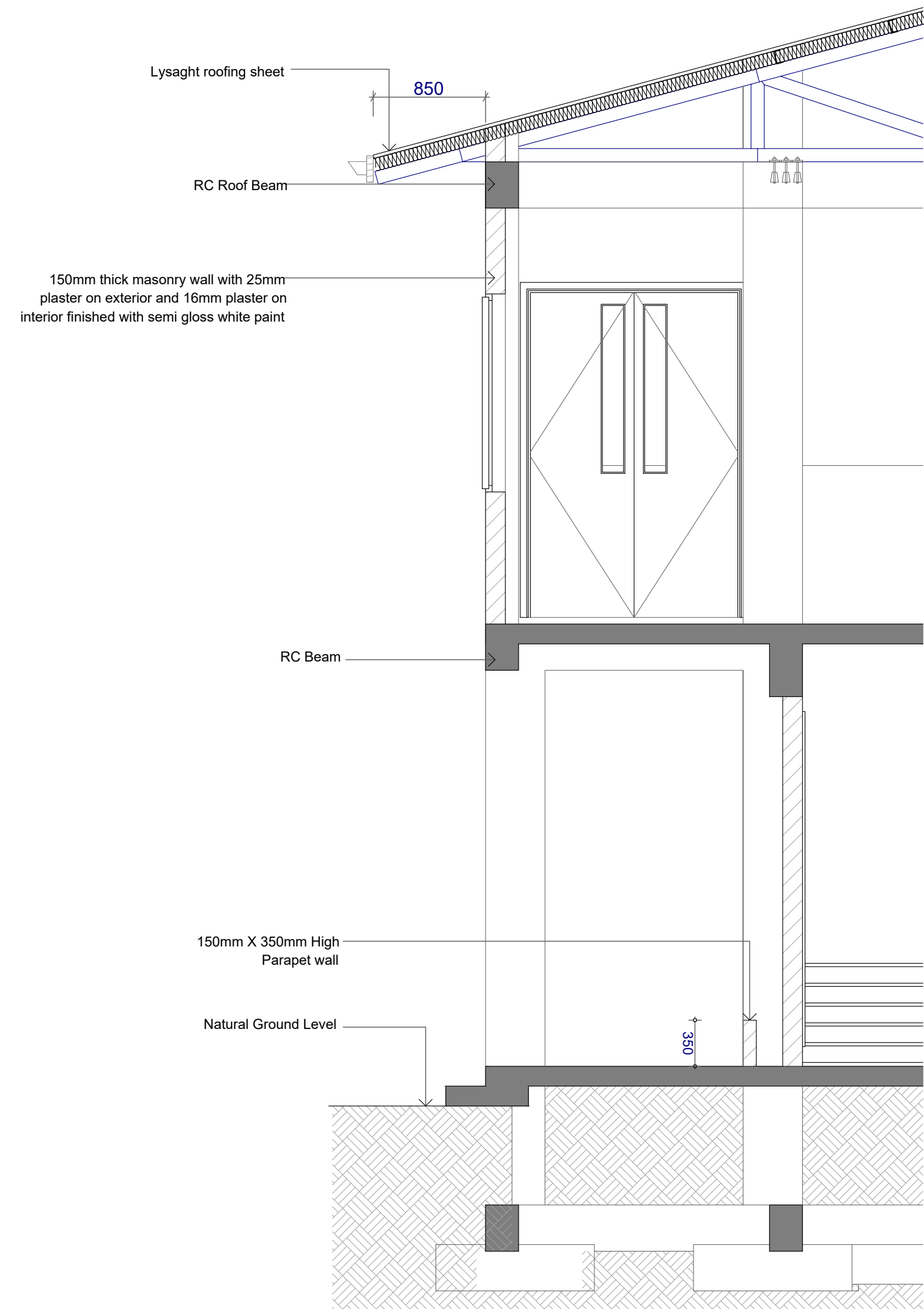
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Hall Section Detail

Scale : 1:100

Doc No : EP/BLD-AR/2022/21/CD-T03

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1:100



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Page Title
Top to Bottom Detail

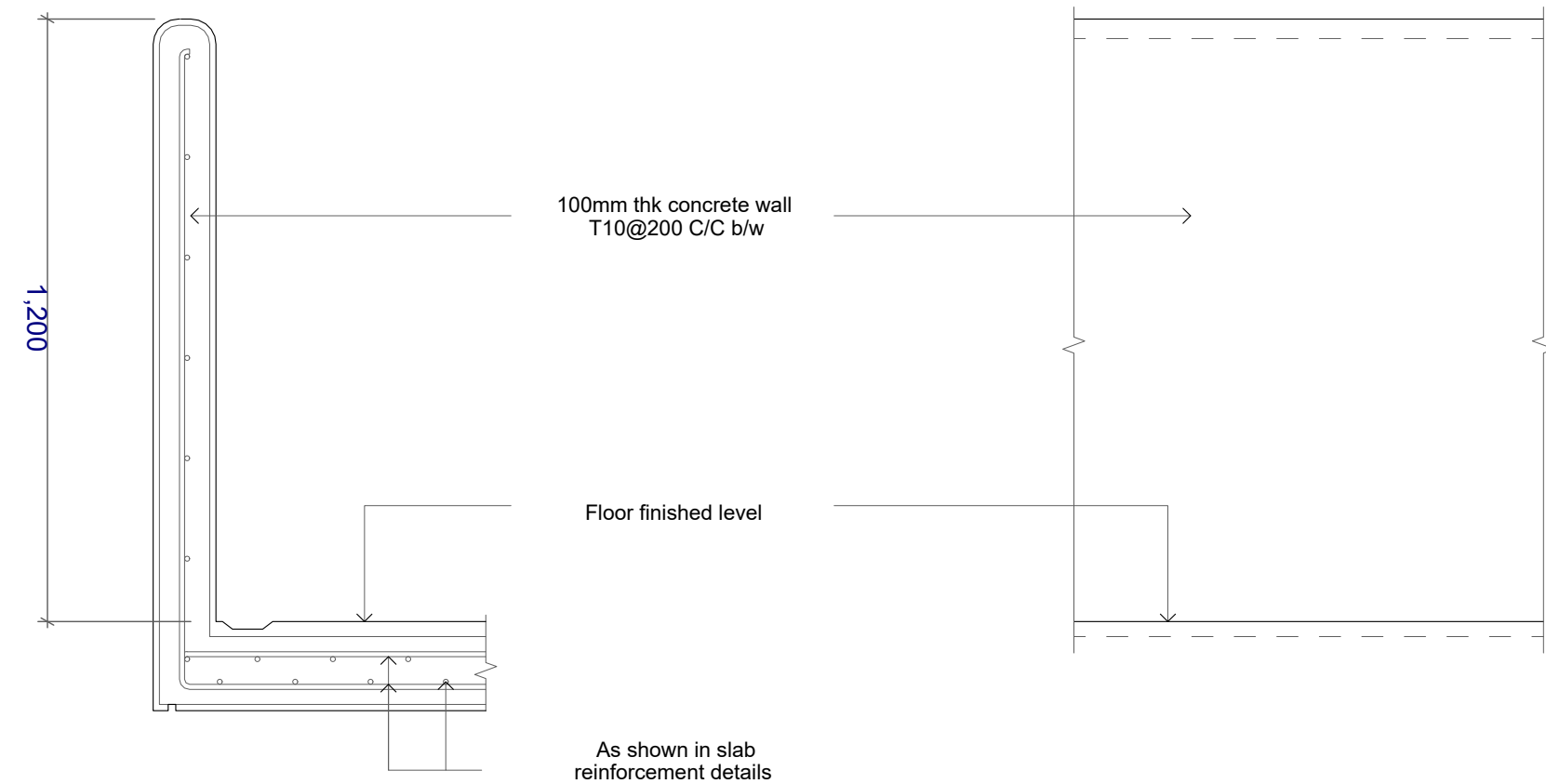
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Doc No : EP/BLD-AR/2022/21/CD-T01

Date : Sunday, May 21, 2023

Top to Bottom Detail

1:50



Sectional View

Elevation View

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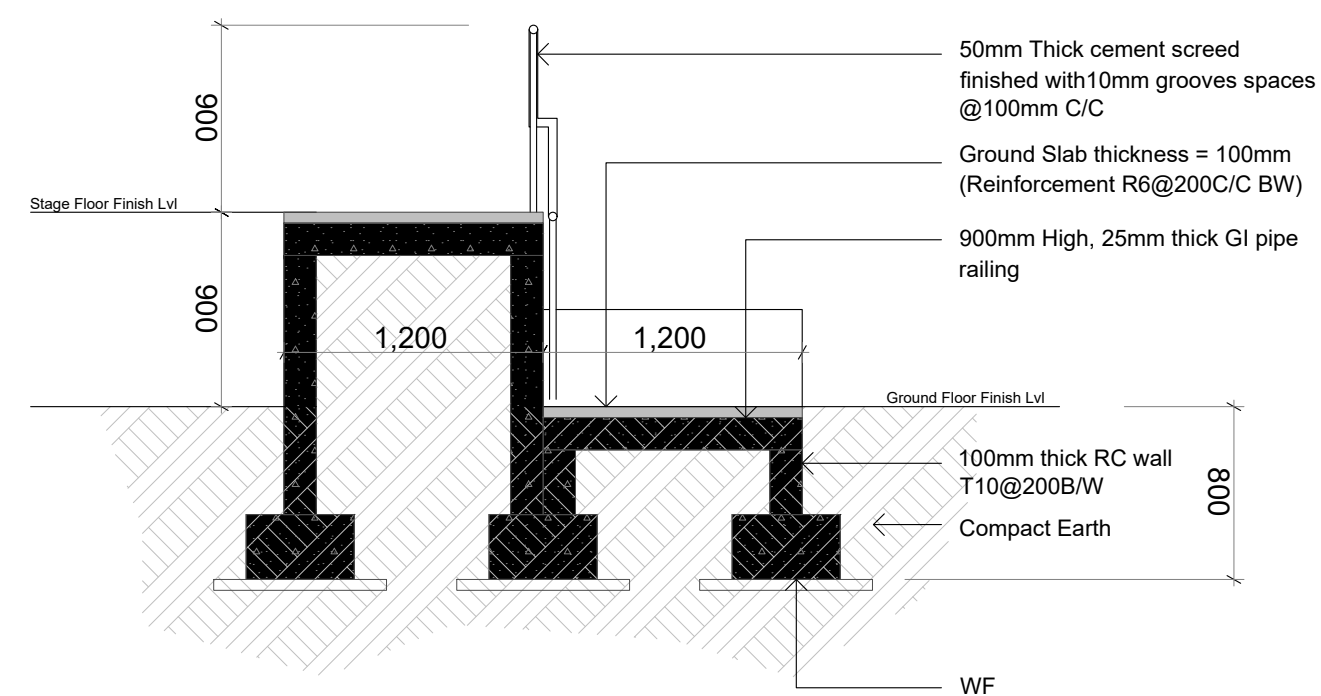
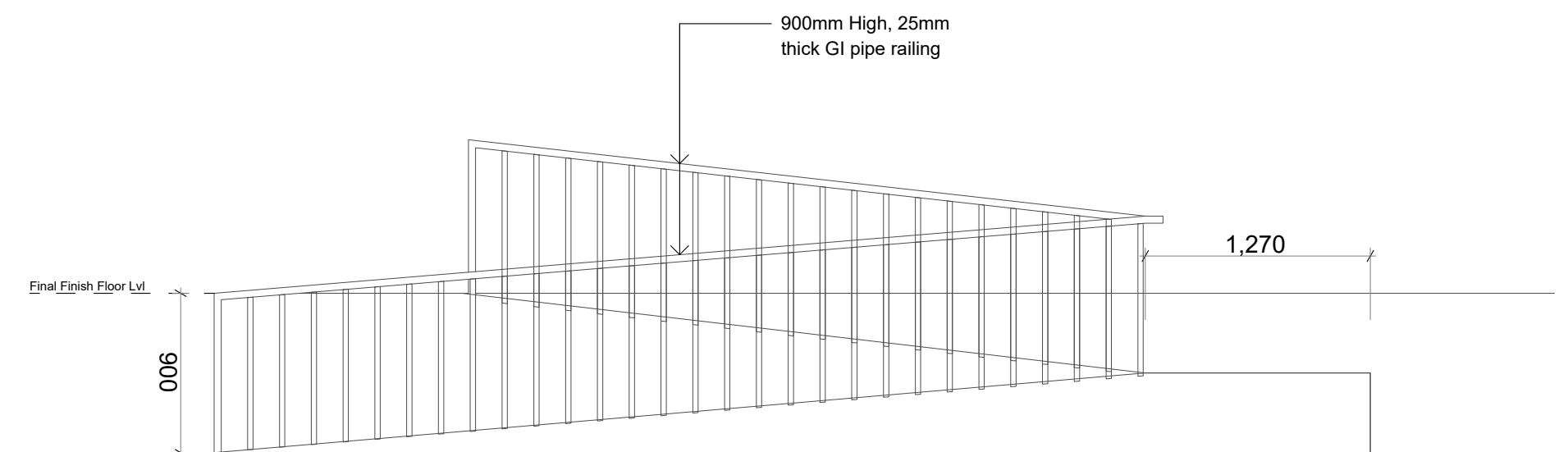
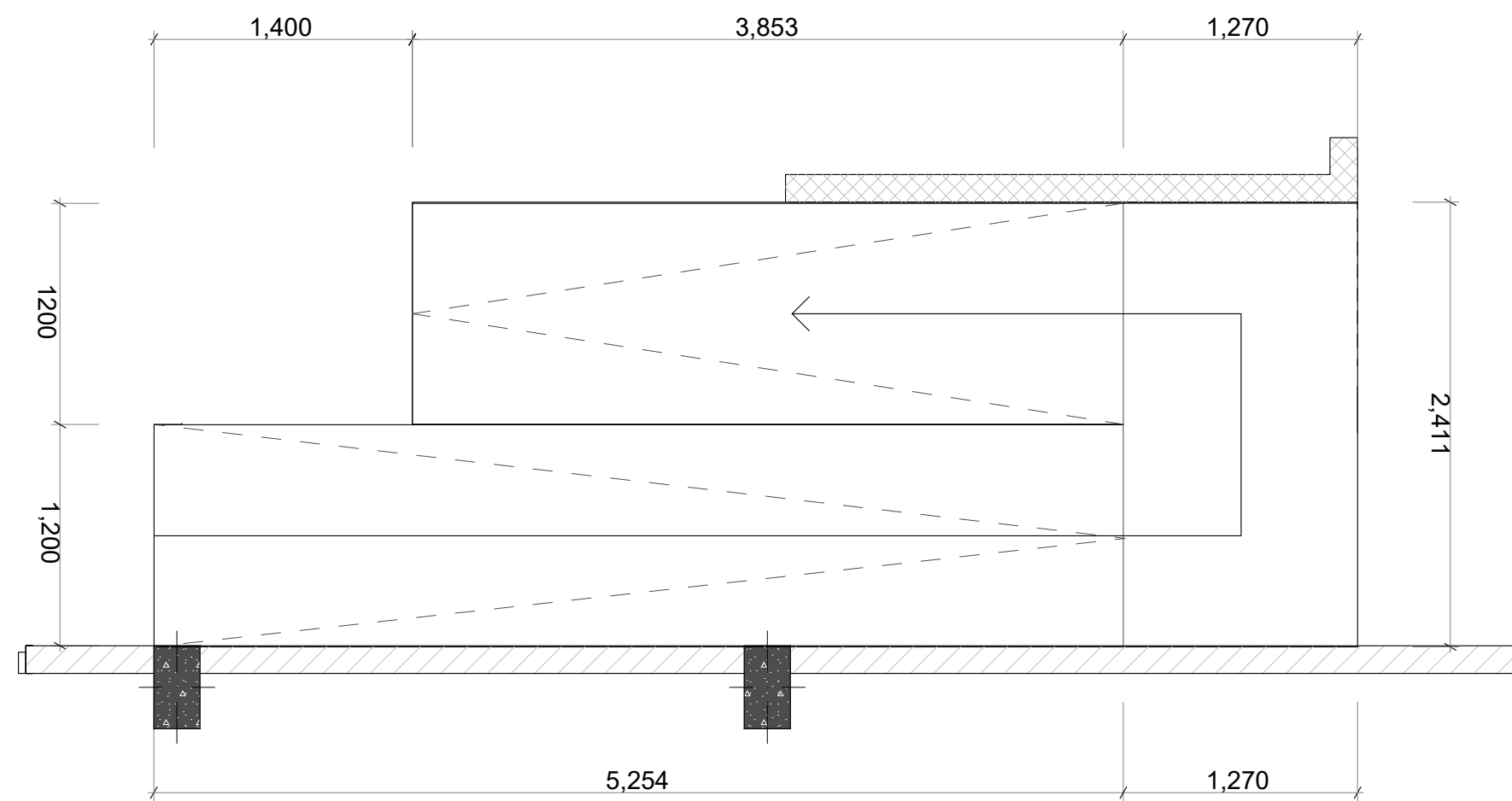
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Page Title
Balcony Detail

Scale : 1:20

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Page Title
Ramp Detail

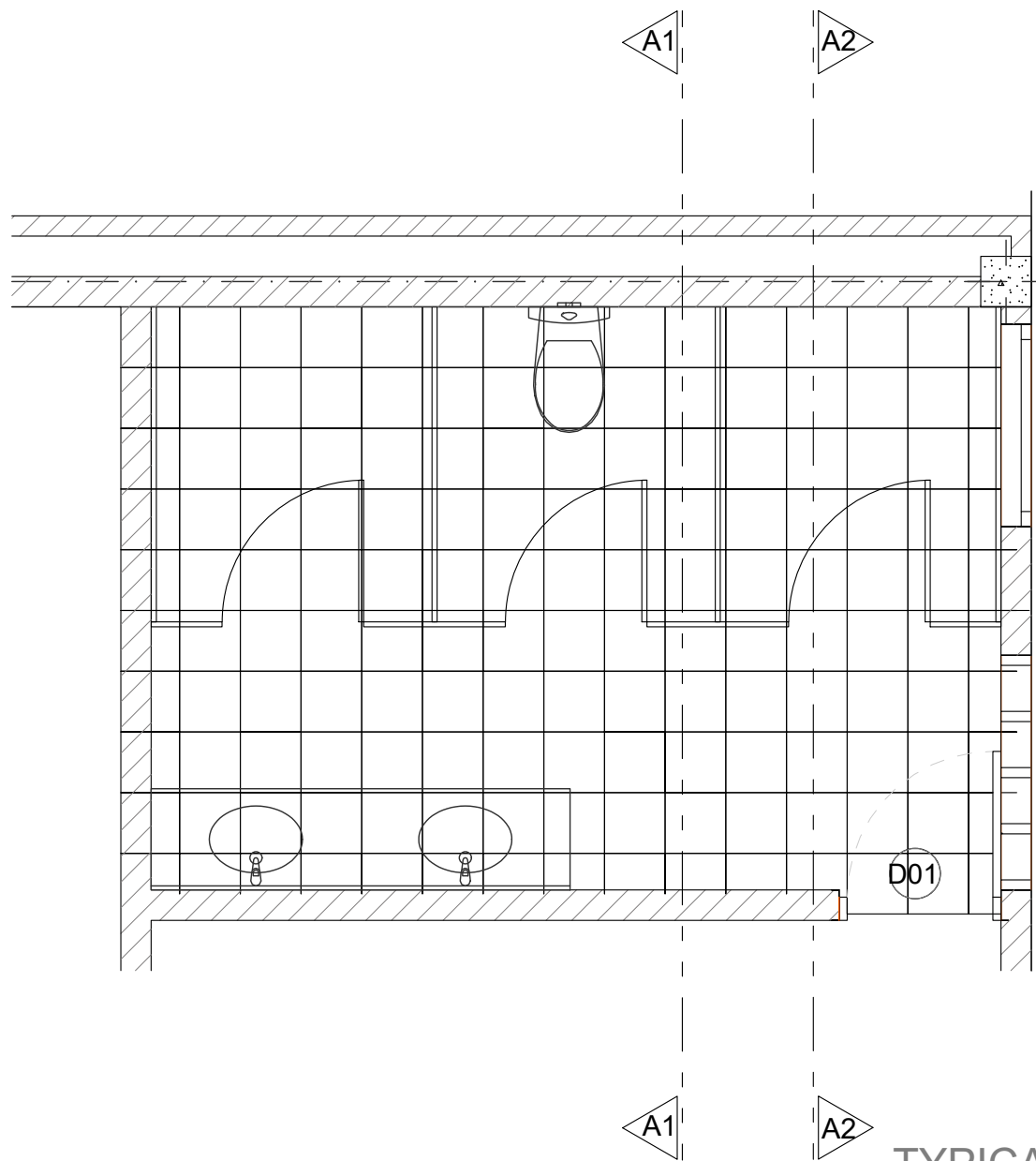
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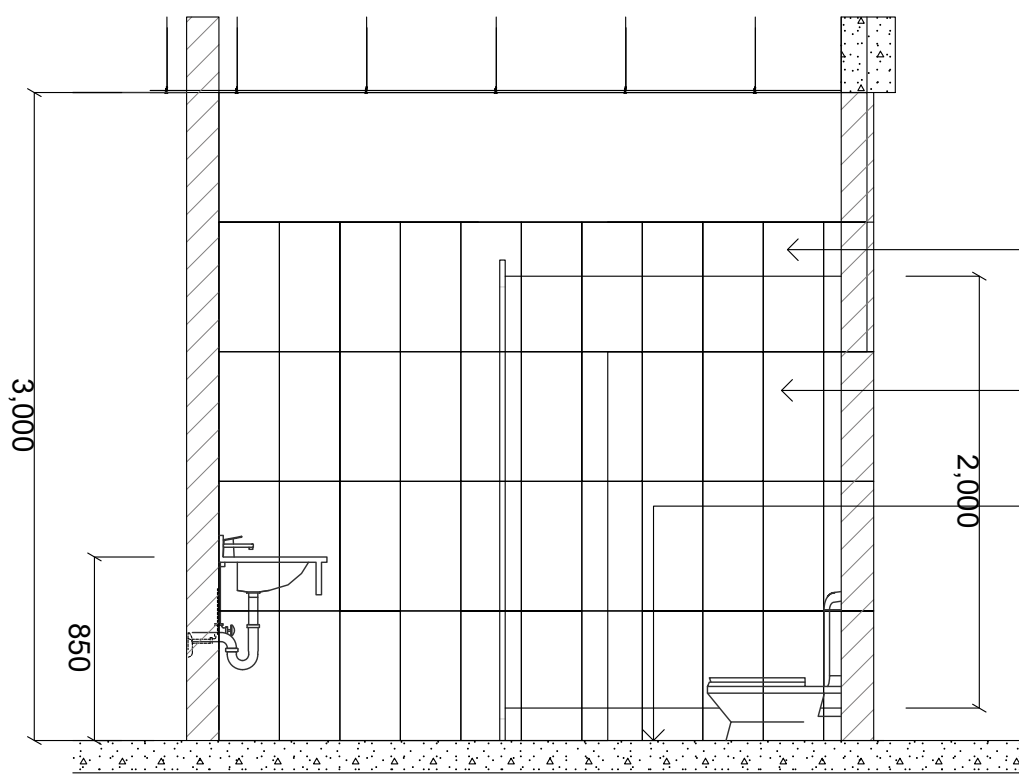
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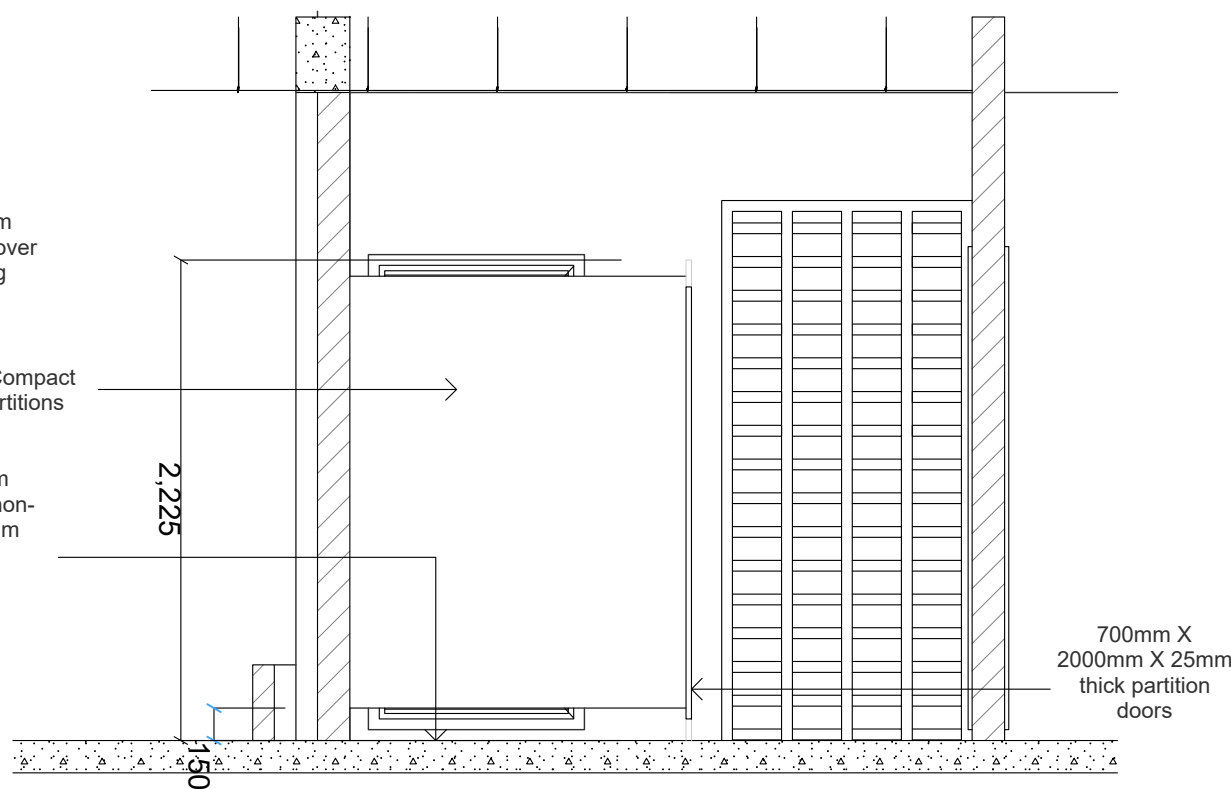
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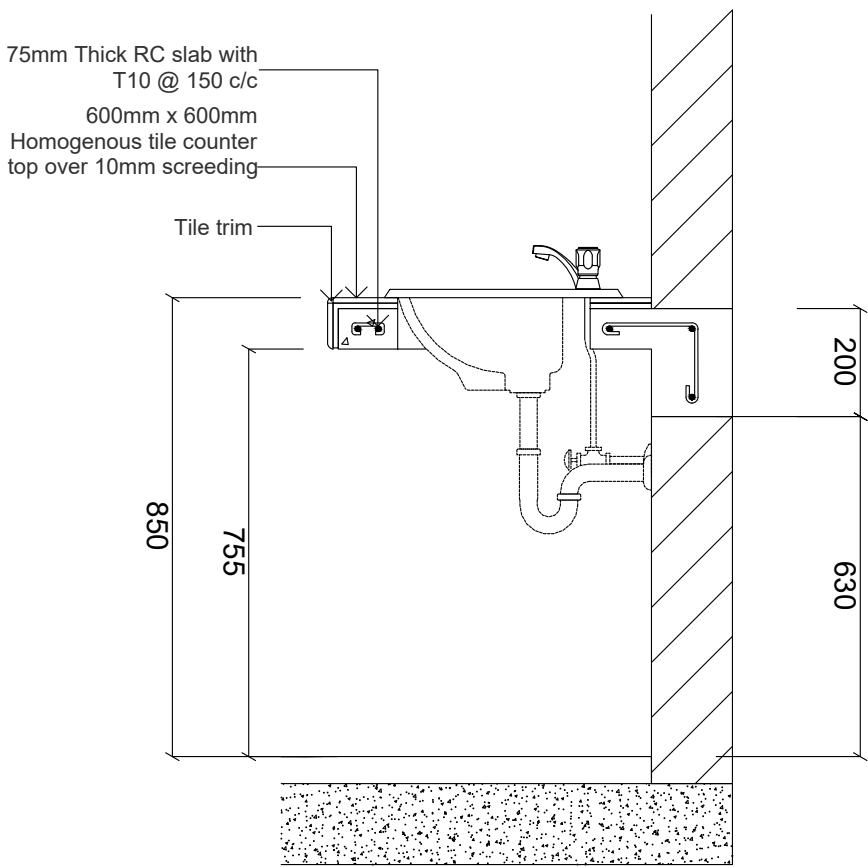
TYPICAL TOILET PLAN
1:50



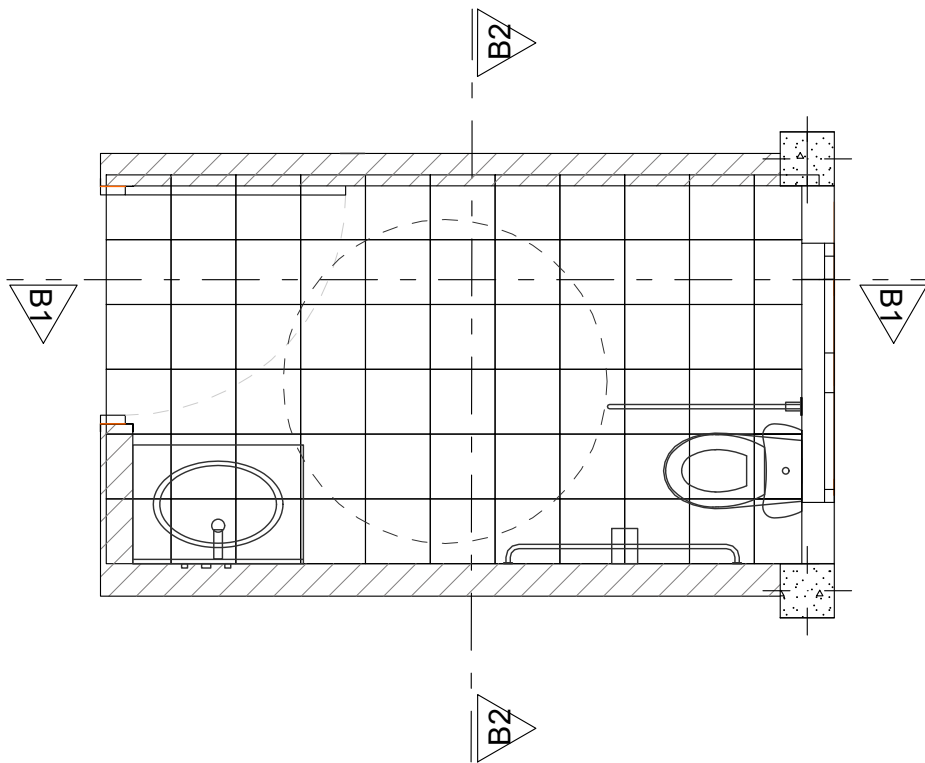
SECTION A1
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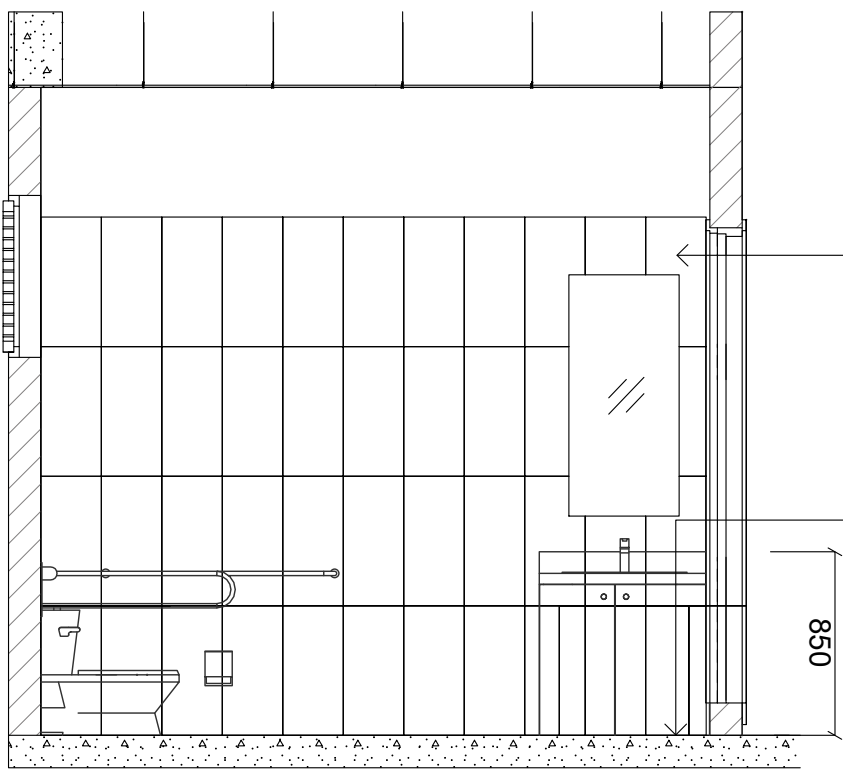
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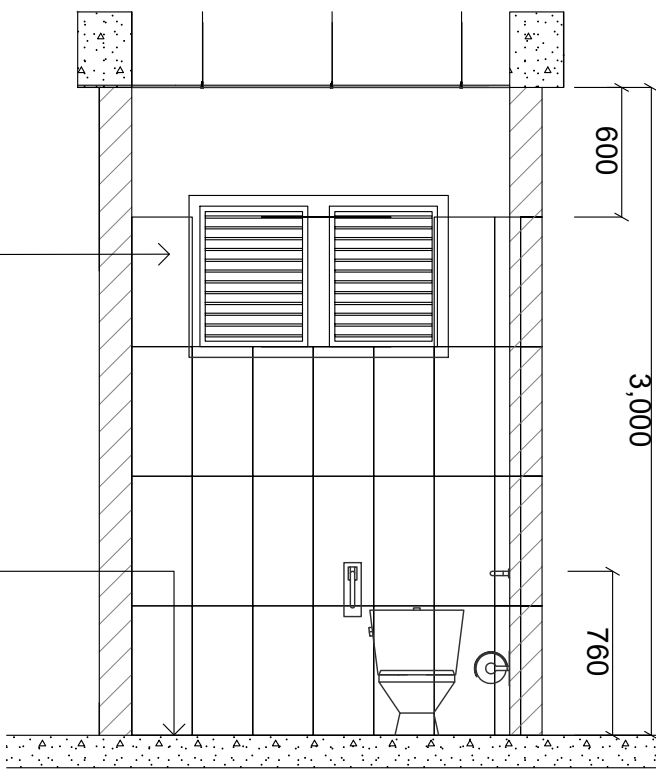
COUNTER TOP DETAILS
1:20



TOILET FOR PERSONS WITH
DISABILITIES DETAIL
1:50



SECTION B1
1:50



SECTION B2
1:50

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Page Title
Toilet Details

Scale : 1:50


Doc No : EP/BLD-AR/2022/21/CD-T03
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Multipurpose Hall, Hdh.Neykurandhoo School

BUILDING SERVICES DRAWINGS


Ministry of Education, Maldives


Legend


 13A Twin Socket


 13A Power Socket


 Distribution Board


 HL


 Telephone Outlet


 Computer Network Outlet

 Emergency Light

 Wall Mounted Speaker

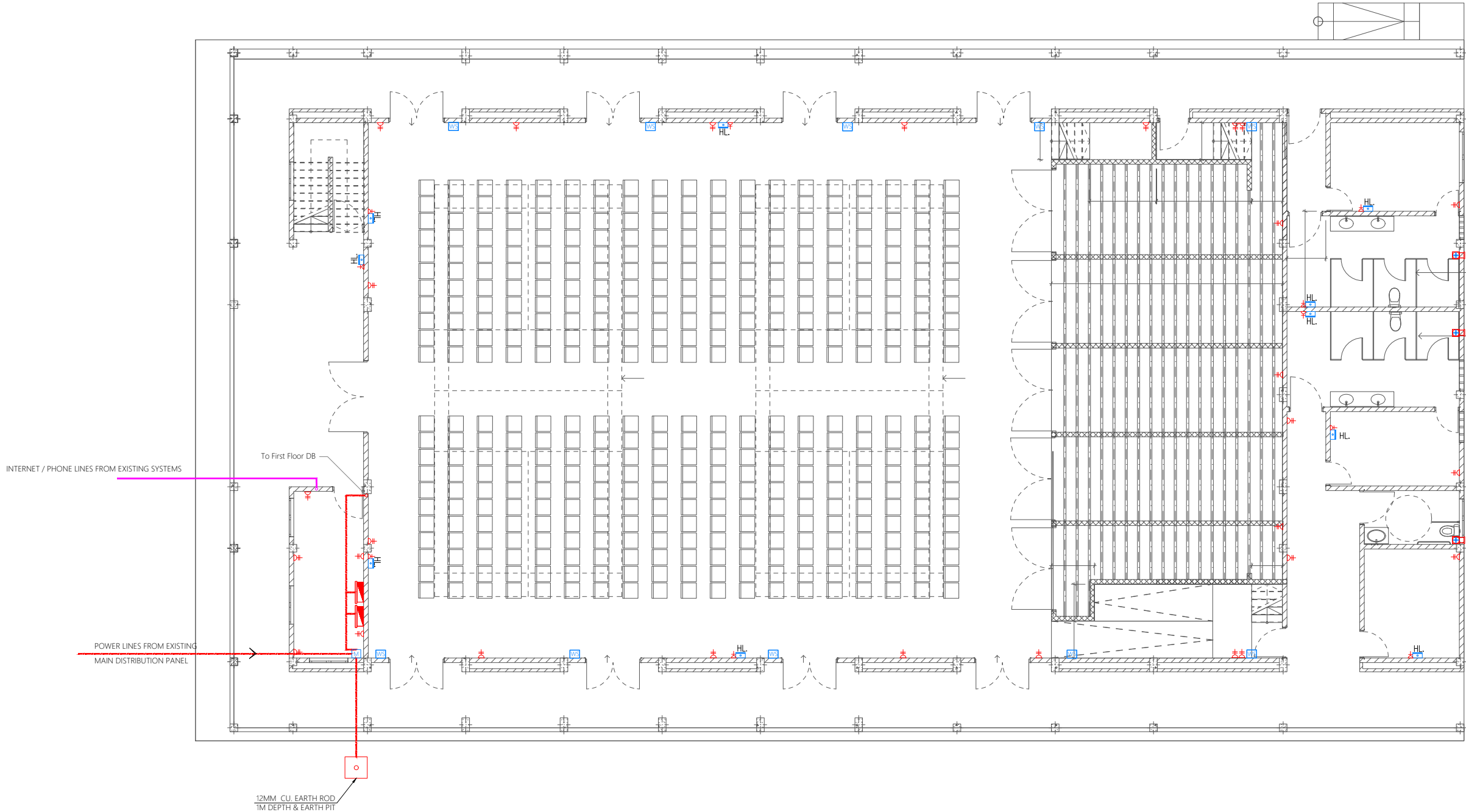
 Electricity Meter

 Public Address System

 Main Incoming Cable For Power PVC Duct Below Ground

Ceiling Mounted Exhaust Fan 90m3/hr

Notes: -
- All Twin Sockets At 300mm From F.F.L. Except Stated Otherwise
- All Computer, Telephone Points At 300mm From F.F.L.



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Page Title
Ground Floor Plan

Scale : A3 1:150

Doc No : -


Date :


Rev No : | **Pg :** PAC-01


GROUND FLOOR POWER AND ACV LAYOUT

1:150

Legend


 13A Twin Socket


 13A Power Socket


 Distribution Board


HL


High Level


 Telephone Outlet

 Computer Network Outlet

 Emergency Light

 Wall Mounted Speaker

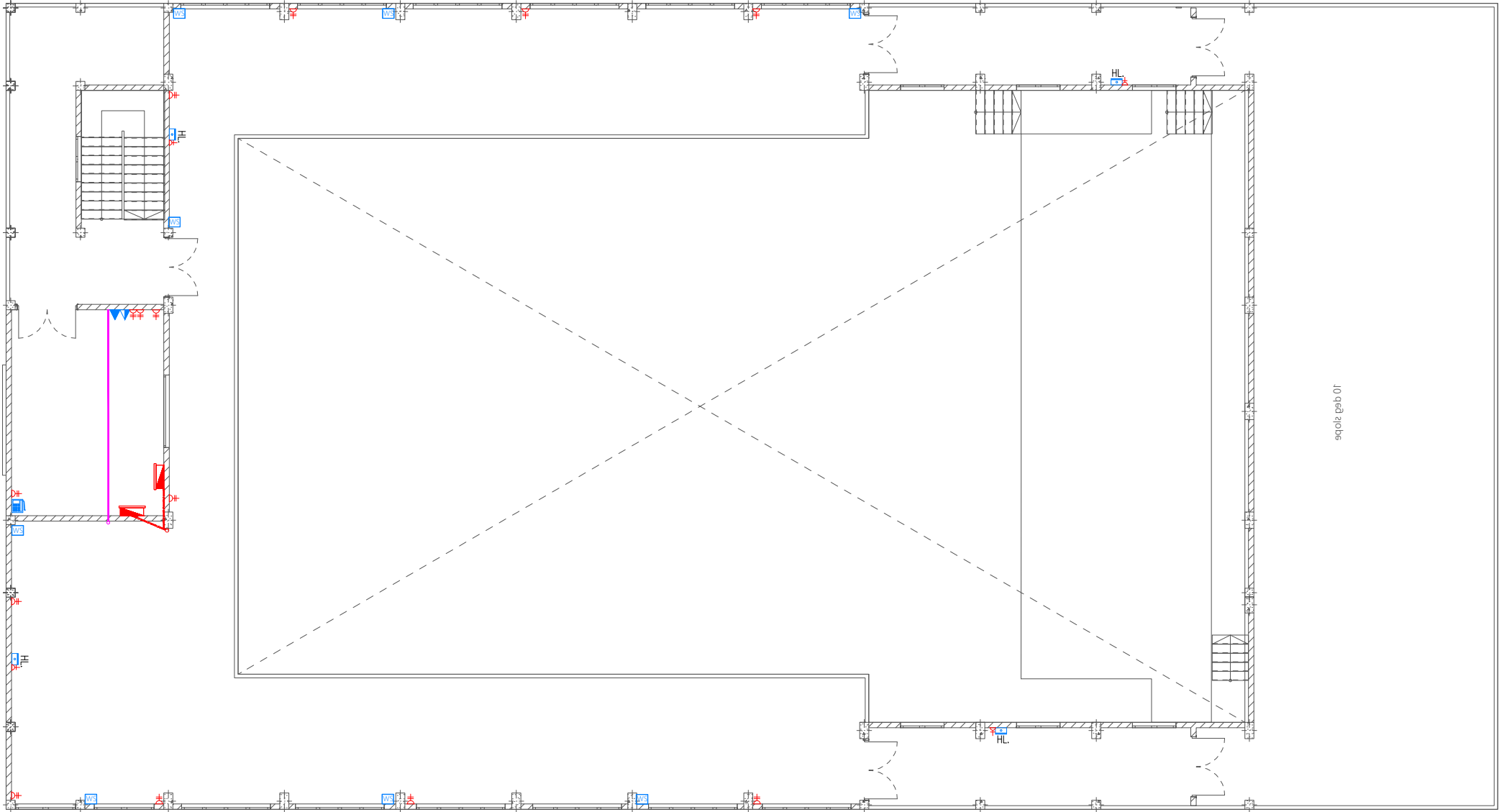
 Public Address System

 Main Incoming Cable For Power PVC Duct Below Ground

Notes :-

- All Twin Sockets At 300mm From F.F.L Except Stated Otherwise

- All Computer, Telephone Points At 300mm From F.F.L.



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Page Title
First Floor Plan

Scale : A3 1:150

Doc No : -













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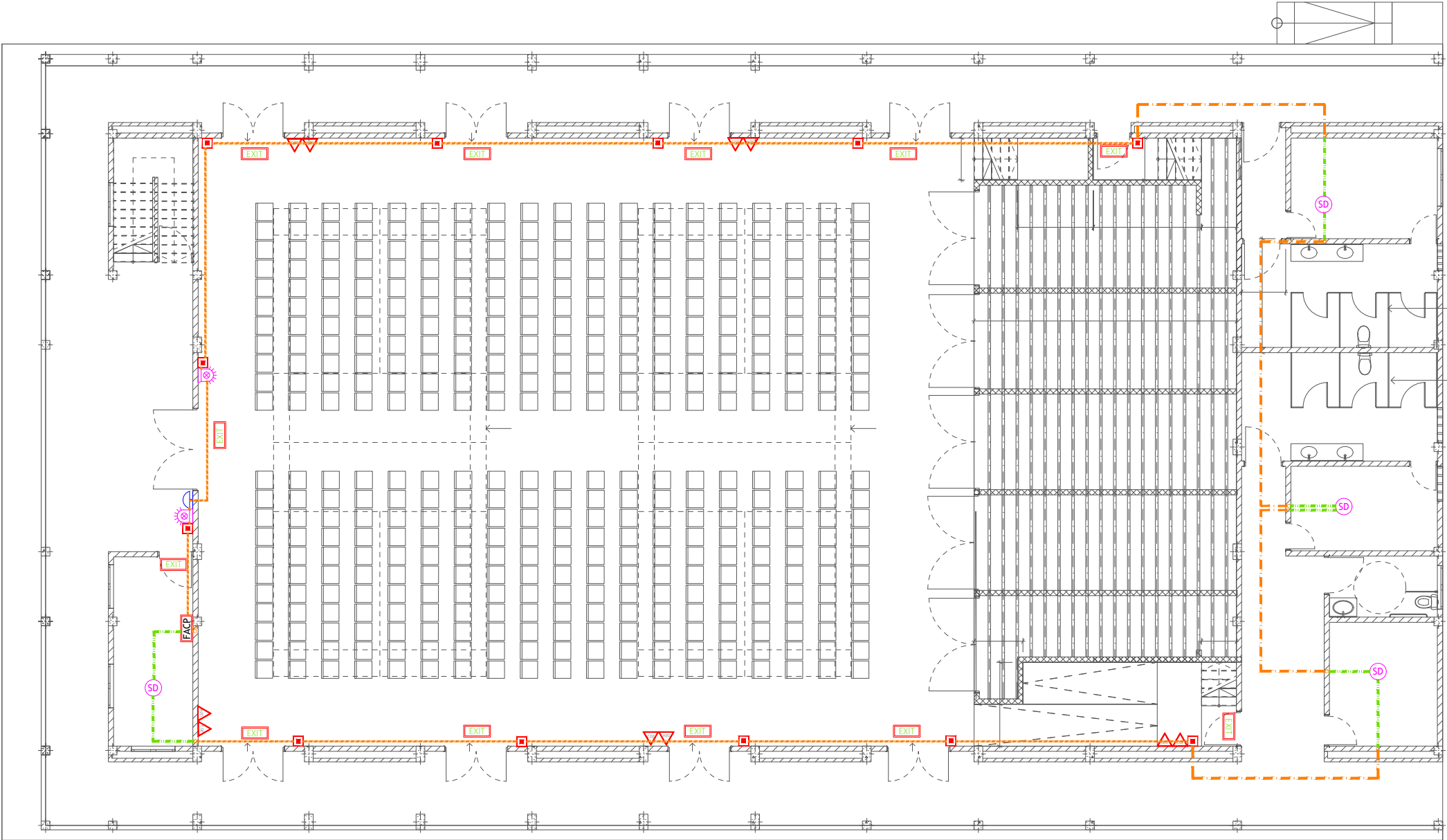
Rev No : Pg : PAC-02

FIRST FLOOR POWER AND ACV LAYOUT

1:150

Legend

-  CO₂ Extinguisher (load: 2kg) In Polycarbonate Enclosure
-  DCP Extinguisher (load: 6kg) In Polycarbonate Enclosure
-  H₂O Extinguisher (load: 9L) In Polycarbonate Enclosure
-  Manual Call Point (At 1200mm from F.F.L.)
-  Smoke Detector
-  Beacon
-  Sunder Bell
-  2.5mm² Fire Retardant Low Smoke (FRLS) Cables In FRLS Conduits (Running Underground)
-  2.5mm² Fire Retardant Low Smoke (FRLS) Cables In FRLS Conduits (Above False Ceiling or Through Slab)
-  Fire Alarm Control Panel
-  End Of Line Resistance
-  Exit Sign



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Page Title
Ground Floor Plan

Scale : A3 1:150

Doc No : –













Date :

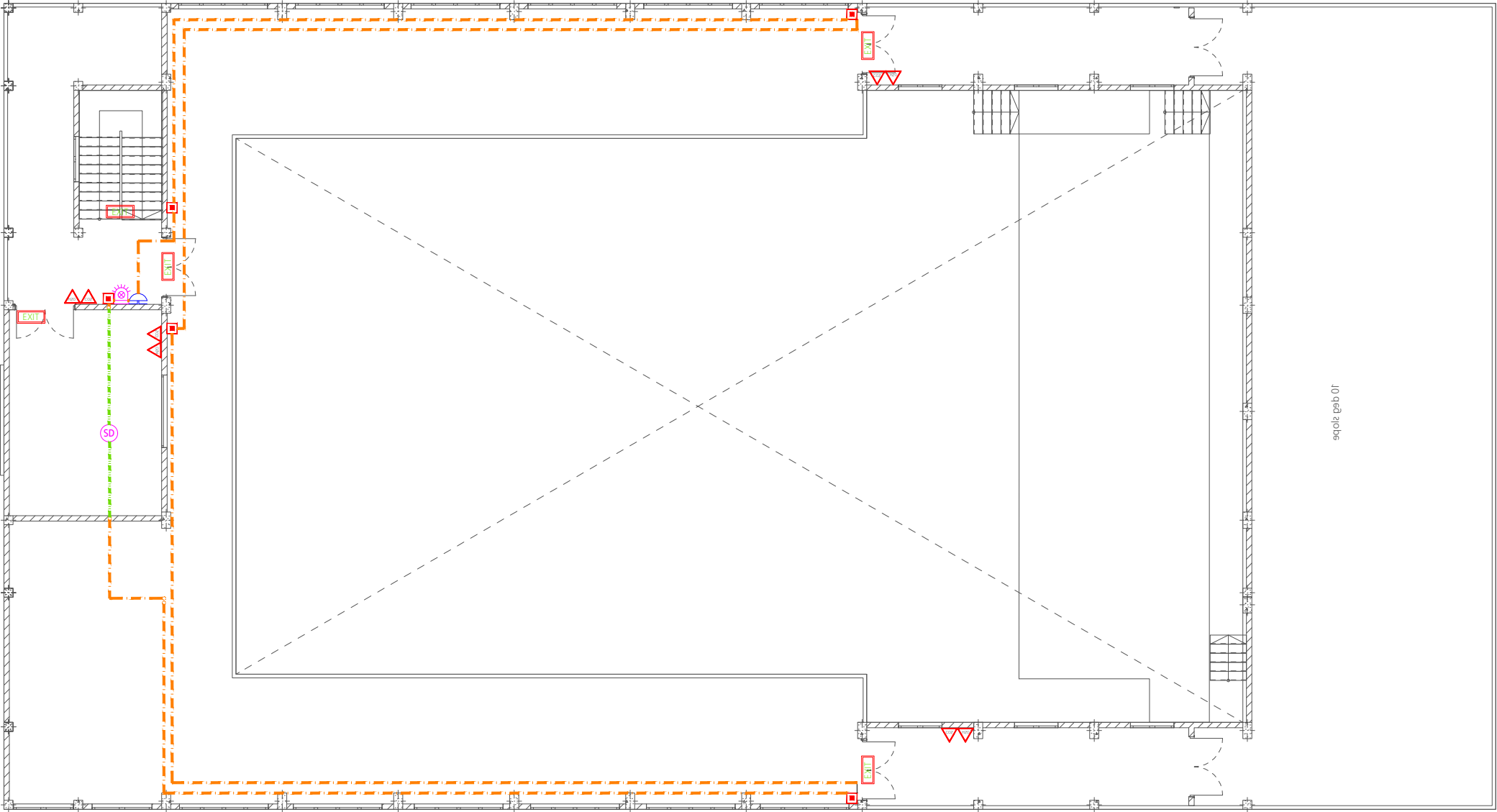
Rev No : | **Pg :** FDP-01

GROUND FLOOR FIRE DETECTION AND PROTECTION LAYOUT

1:150

Legend

-  CO₂ Extinguisher (load: 2kg) In Polycarbonate Enclosure
-  DCP Extinguisher (load: 6kg) In Polycarbonate Enclosure
-  H₂O Extinguisher (load: 9L) In Polycarbonate Enclosure
-  Manual Call Point (At 1200mm from F.F.L.)
-  Smoke Detector
-  Beacon
-  Sounder Bell
-  2.5mm² Fire Retardant Low Smoke (FRLS) Cables In FRLS Conduits (Running Underground)
-  2.5mm² Fire Retardant Low Smoke (FRLS) Cables In FRLS Conduits (Above False Ceiling or Through Slab)
-  Fire Alarm Control Panel
-  End Of Line Resistance
-  Exit Sign



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Page Title
First Floor Plan

Scale : A3 1:150

Doc No : –










Date :

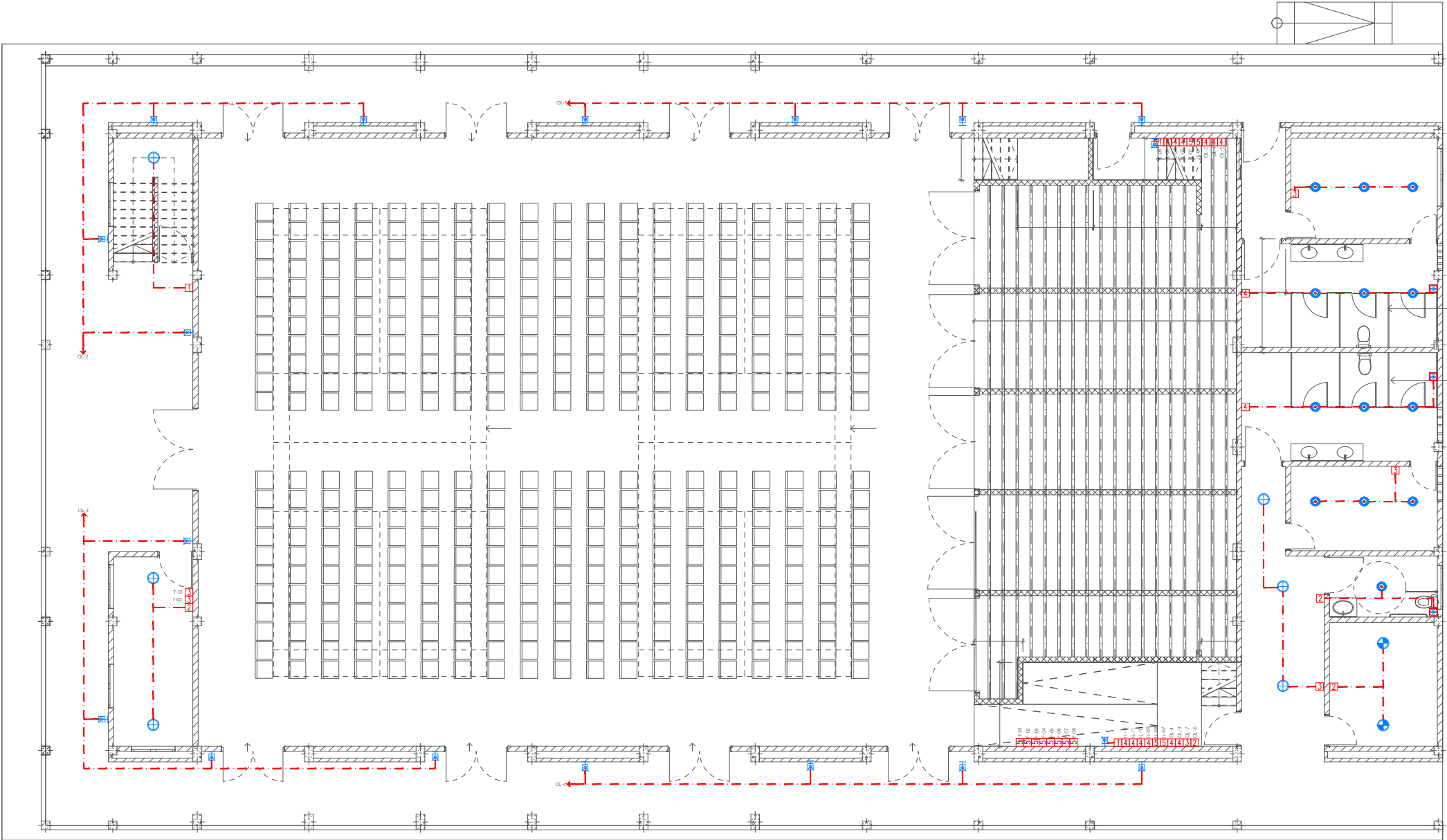
Rev No : | **Pg :** FDP-02

FIRST FLOOR FIRE DETECTION AND PROTECTION LAYOUT

1:150

Legend

-  Ceiling Light (18W)
-  Ceiling Light (12W)
-  Recessed Ceiling Light (12W)
-  Weather Proof Wall Light IP55 (12W)
-  Indoor Wall Light (18W)
-  2 x 50W PLL Tube Light
-  Light and Fan Switch (1 Gang - 5 Gang)
-  42" To 48" Ceiling Fan
-  Ceiling Mounted Exhaust Fan 90m3/hr



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Page Title
Ground Floor Plan

Scale : A3 1:150

Doc No : –

Date :

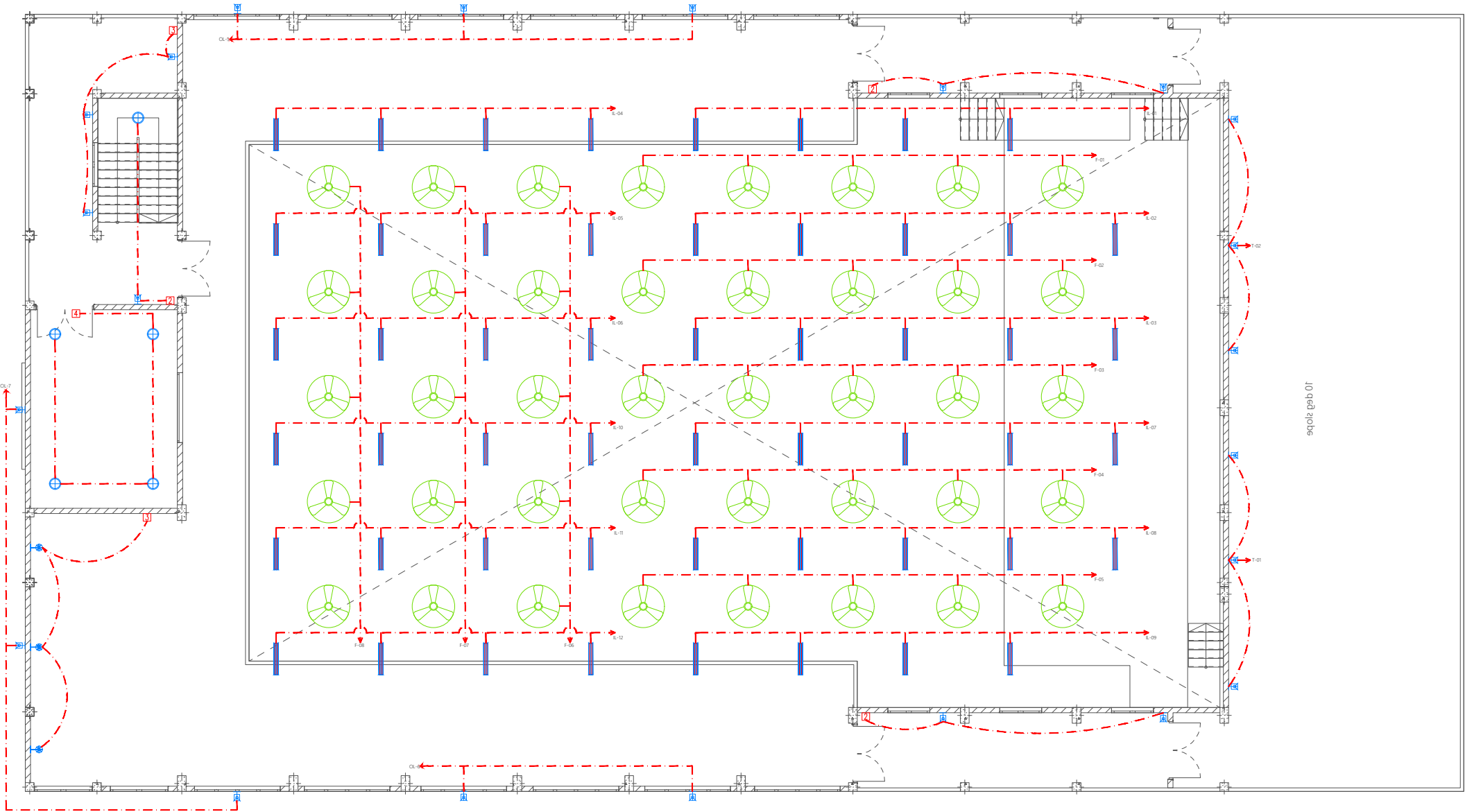
Rev No : | **Pg :** EL-01

GROUND FLOOR LIGHTING LAYOUT

1:150

Legend

- Ceiling Light (18W)
- Ceiling Light (12W)
- Recessed Ceiling Light (12W)
- Weather Proof Wall Light IP55 (12W)
- Indoor Wall Light (18W)
- 2 x 50W PLL Tube Light
- Light and Fan Switch (1 Gang - 5 Gang)
- 42" To 48" Ceiling Fan
- Ceiling Mounted Exhaust Fan 90m3/hr



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Page Title
First Floor Plan

Scale : A3 1:150

Doc No : –

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Rev No :

Pg : EL-02

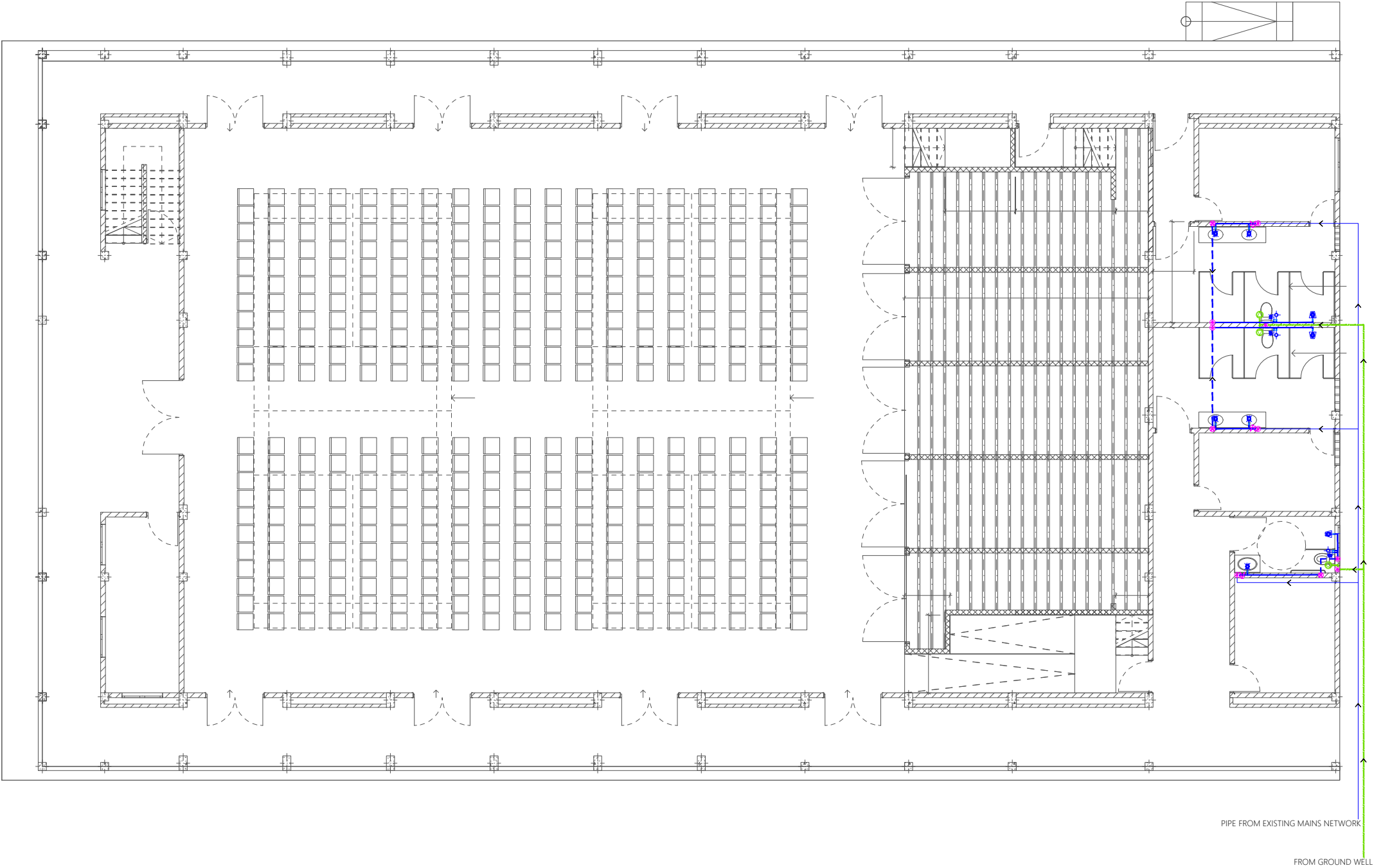
FIRST FLOOR LIGHTING LAYOUT

1:150

- Legend
- 16Ø Cold Water Supply To Basin Faucet
 - 16Ø Cold Water Supply To Bidet Shower
 - 16Ø Cold Water Supply To Head Shower
 - 16Ø Cold Water Supply To Cistern
 - Gate Valve
 - Rise In Wall
 - Drop In Wall
 - Angle Valve with cap for Ground Water Supply
 - 25Ø Cold Water Supply Pipes Running Underground
 - 20Ø Cold Water Supply Pipes Running In Wall
 - 20Ø Cold Water Supply Pipes Running Underground
 - 25Ø Ground Water Supply Pipes Running Above False Ceiling

Notes: -

- All Cold Water Pipes Should Be PVC
- Sll Hot Water Pipes Should Be PPR



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Page Title
Ground Floor Plan

Scale : A3 1:150

Doc No : -

Date :

Rev No : **Pg :** PL-01

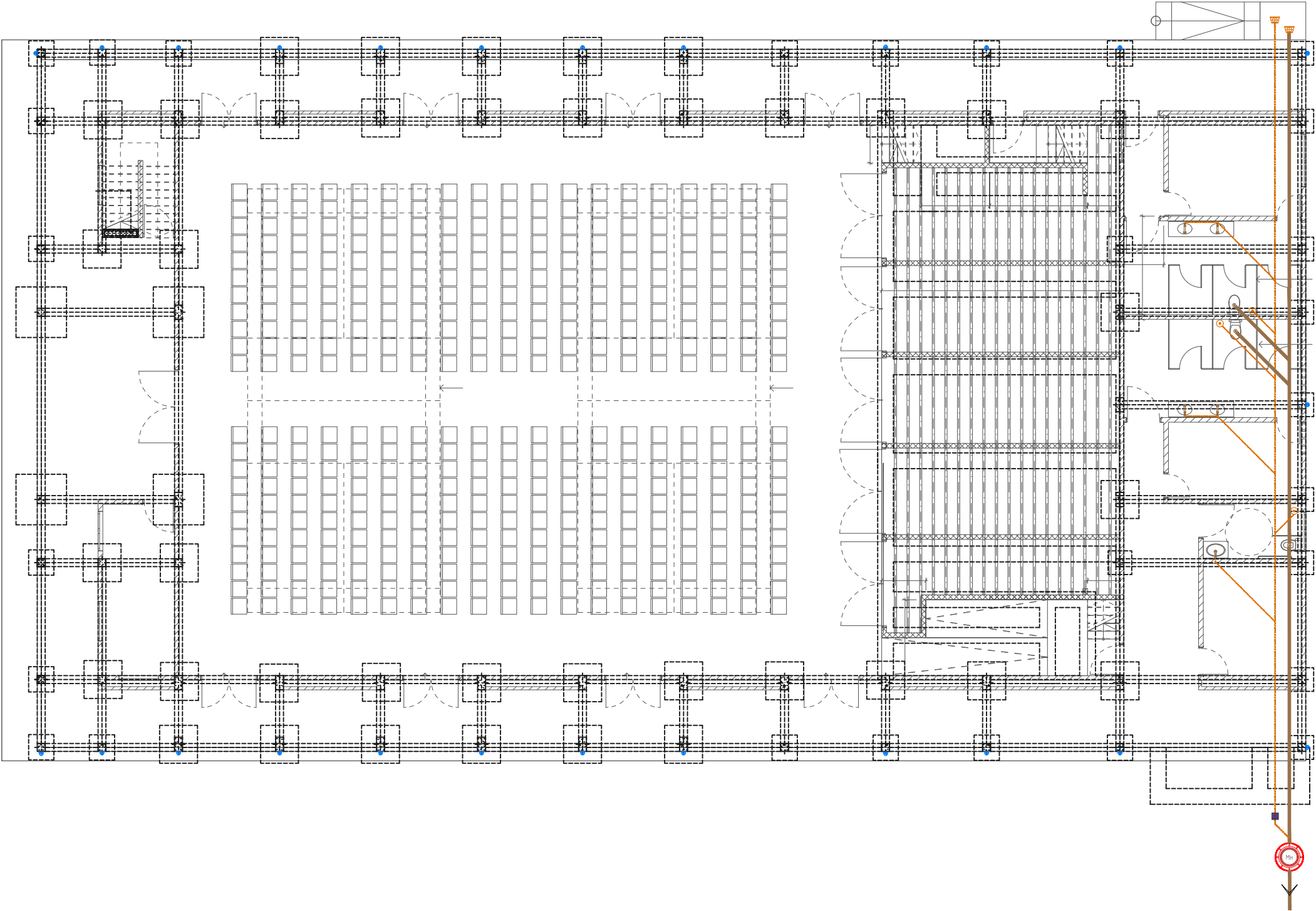
GROUND FLOOR PLUMBING LAYOUT

1:150

Legend

- Floor Drain
- Floor Gully
- 110Ø Soil Pipe (uPVC Pipe)
- 110Ø Soil Vent Pipe (uPVC Pipe)
- 82Ø Waste Pipe (uPVC Pipe)
- 82Ø Waste Vent Pipe (uPVC Pipe)
- 40Ø Waste Pipe (uPVC Pipe)
- 63Ø Manhole Vent Pipe (uPVC Pipe)
- 110Ø Rain Water Pipes (uPVC Pipe)
- 110Ø Rainwater Outlet
- 110Ø Rainwater Outlet Perforated Cowl
- Gully Trap
- Manhole
- Clean Out Point
- Bottle Trap

Notes: -
-All Drainage Pipes Should Have At A Slope Of 1/150
-All Floor Drains Should Have 'P' Traps



CONNECTED TO EXISTING MAIN SEWER NETWORK

GROUND FLOOR DRAINAGE LAYOUT

1:150

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Ground Floor Plan

Scale : A3 1:150

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Legend

Floor Drain

Floor Gully

110Ø Soil Pipe (uPVC Pipe)

110Ø Soil Vent Pipe (uPVC Pipe)

82Ø Waste Pipe (uPVC Pipe)

82Ø Waste Vent Pipe (uPVC Pipe)

40Ø Waste Pipe (uPVC Pipe)

63Ø Manhole Vent Pipe (uPVC Pipe)

110Ø Rain Water Pipes (uPVC Pipe)

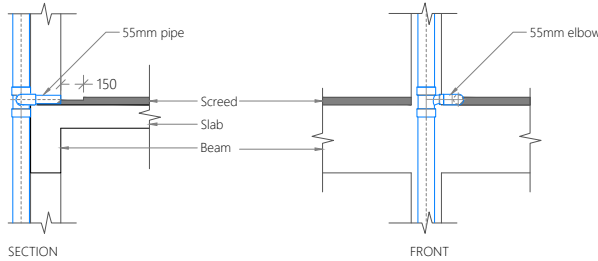
110Ø Rainwater Outlet

Bottle Trap

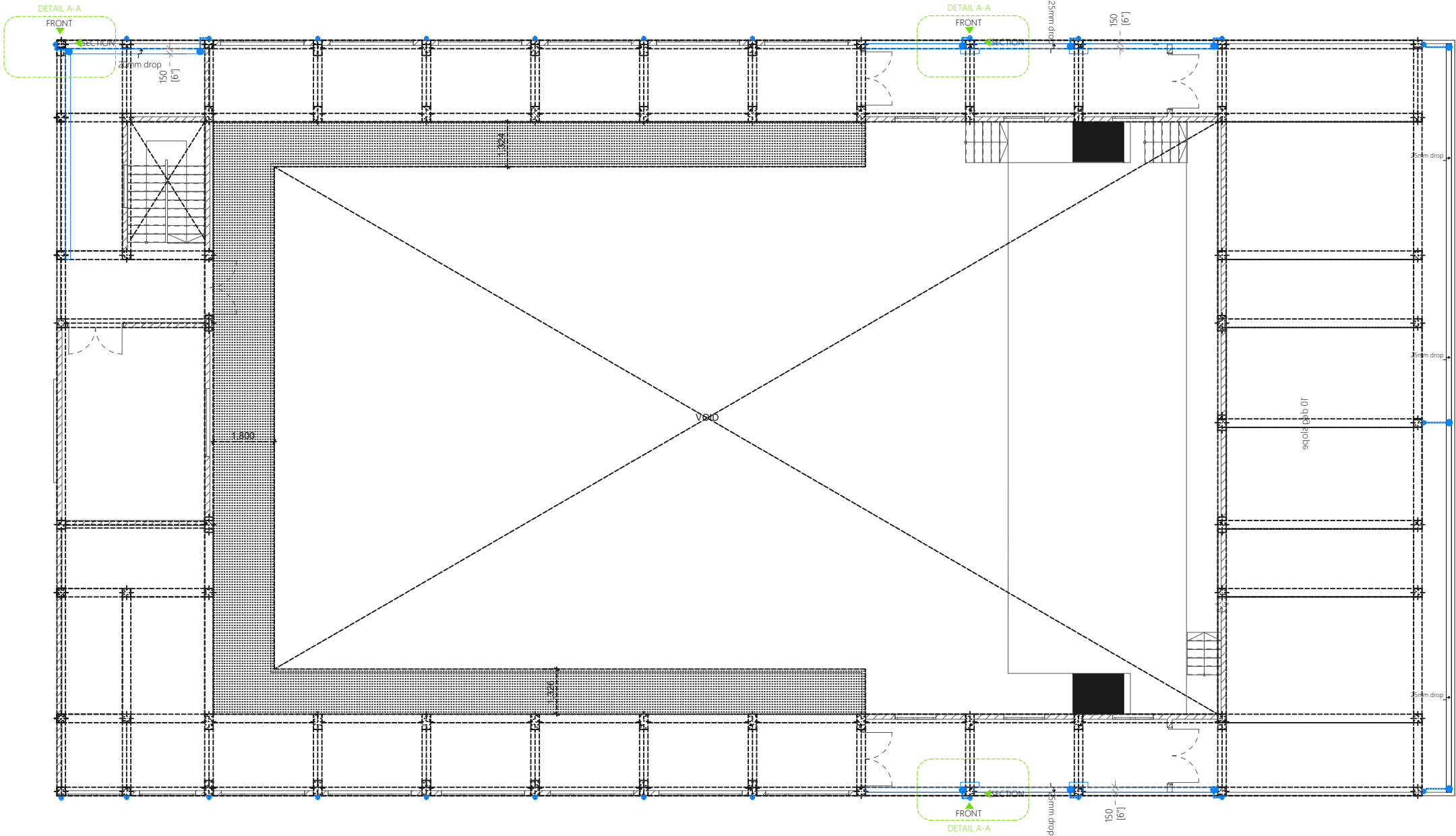
Notes: -

-All Drainage Pipes Should Have At A Slope Of 1/150

-All Floor Drains Should Have 'P' Traps



DETAIL A-A



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Page Title
First Floor Plan

Scale : A3 1:150

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FIRST FLOOR DRAINAGE LAYOUT

1:150

Legend

Floor Drain

Floor Gully

110Ø Soil Pipe (uPVC Pipe)

110Ø Soil Vent Pipe (uPVC Pipe)

82Ø Waste Pipe (uPVC Pipe)

82Ø Waste Vent Pipe (uPVC Pipe)

40Ø Waste Pipe (uPVC Pipe)

63Ø Manhole Vent Pipe (uPVC Pipe)

110Ø Rain Water Pipes (uPVC Pipe)

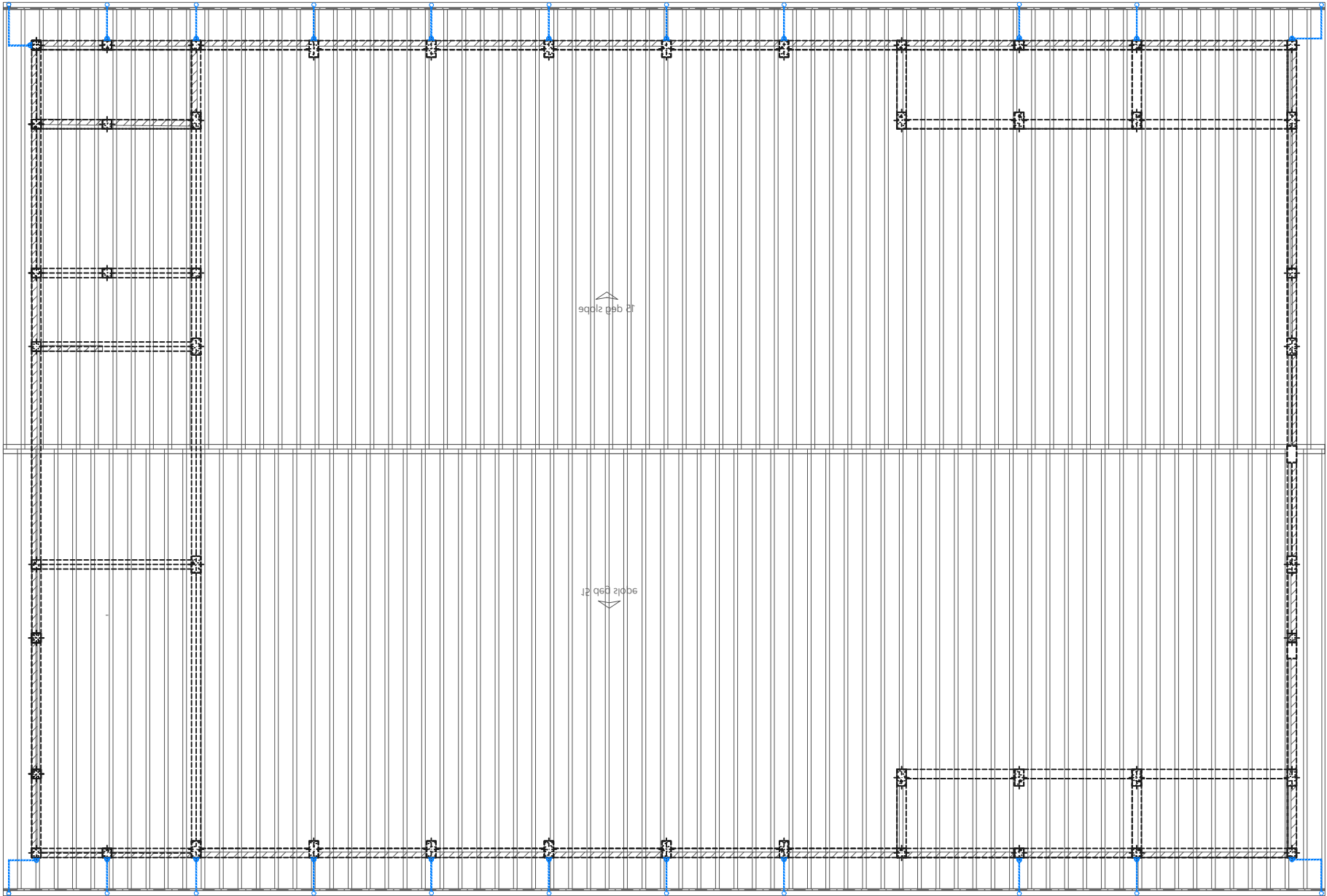
110Ø Rainwater Outlet

Bottle Trap

Notes: -

-All Drainage Pipes Should Have At A Slope Of 1/150

-All Floor Drains Should Have 'P' Traps



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Roof Plan

Scale : A3 1:150

Doc No : -

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Rev No : Pg : DR-03

ROOF DRAINAGE LAYOUT

1:150