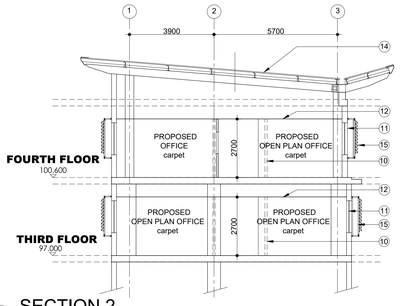


4 SECTION 2

1 : 100

WALL KEY

- BRICKWORK
- PARTITION
- EXISTING
- DEMOLISHED

KEY

1. Ex. toilet partitions to be removed and re used.
2. Ex. walls to be demolised and made good to match existing - walls to be retiled.
3. New brick walls - walls to be tiled
4. Existing paraplegic toilet repositioned
5. New wash hand basins and vanity top
6. All floors to be tiled - to architects selection
7. New kitchen counters to architects detail
8. Existing paraplegic door re-used.
9. New screens
10. Partition Walls to be Demolished
11. Existing Window
12. New Ceilings
13. New Partition Walls
14. Existing Roof
15. Existing external window louver

TOTAL SITE AREA	20 500 000 sqm
EX. TOTAL COVERAGE	160 906 sqm
EX. TOTAL FAR	469 497 sqm
PERMITTED COVERAGE	50 % 10 250 000 sqm
PERMITTED FAR	20 030 503 sqm
PROPOSED COVERAGE	NO ADDITIONAL COVERAGE
PROPOSED FAR	NO ADDITIONAL FAR

GENERAL NOTES

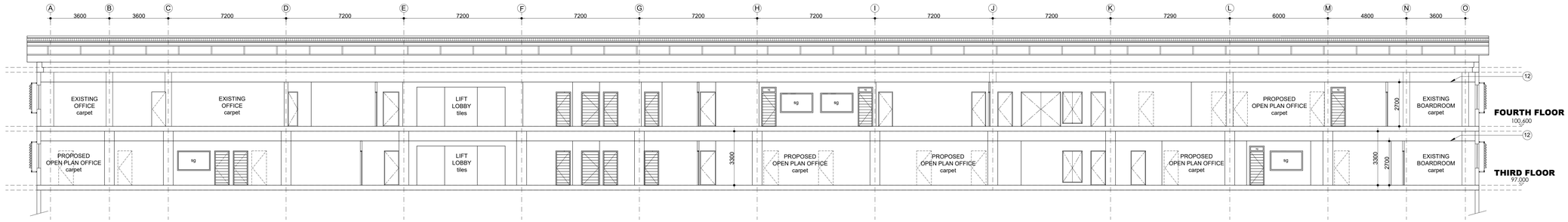
- All work is to be done in strict accordance with the SANS 10400.
- Figured dimensions to be taken in preference to scaled dimensions.
- Report any discrepancies direct to the architect before commencing with relevant work.
- All stair heights and balustrade lengths to be checked on site prior to manufacture of the same.
- This drawing is copyright and remains with the architect.
- Applicant / operator to apply for a "*scheduled trade permit*" prior to commencement of operations.

TOBACCO LEGISLATION
- No smoking permitted within all areas of the building.

DUCTS
- All ducts to have access panels to architect's detail.

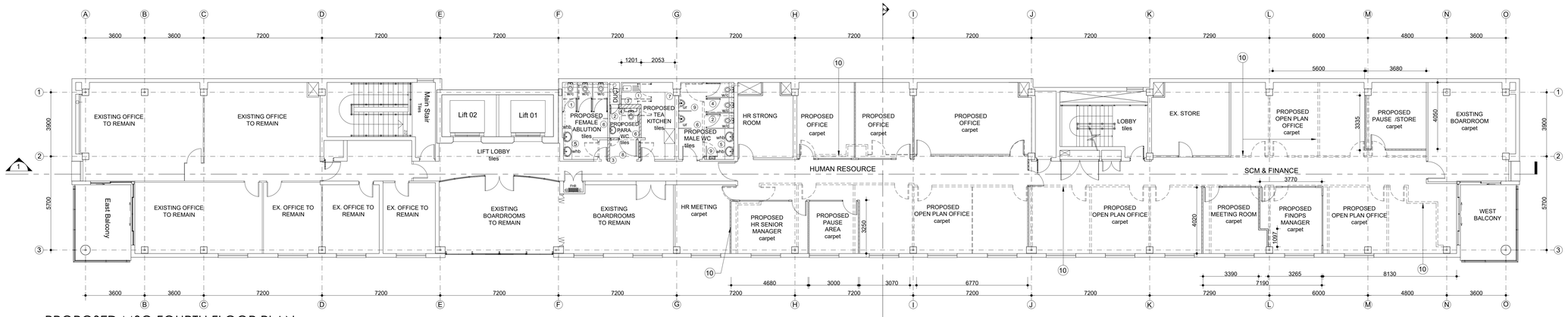
GENERAL SERVICES NOTES
- All plumbing to be carried out by a registered plumber.
- Position of metering units to be accessible to council and tenants at all times.
- Position of water meters to be approved by architect.
- Works to comply with fire, NBR and sans 10400 standards and by-laws.
- All electrical infrastructure to electrical engineers' details and requirements.
- All air-conditioning requirements to mechanical engineer and a/c specialist's details.

NOTE
All Works to comply with WHOA Environmental Management Plan.
No exposed drainage pipe work,conduit, trunking or cabling is permitted on external wall.
- Only low energy/ CFL light bulbs to be used.
- External light fittings, dark green, brown or black.
- External lighting "warm white" & intensity limited.
- Timer switches on conventional geysers.
- Geyser blankets on conventional geysers.
- use of dual flush toilets mandatory.



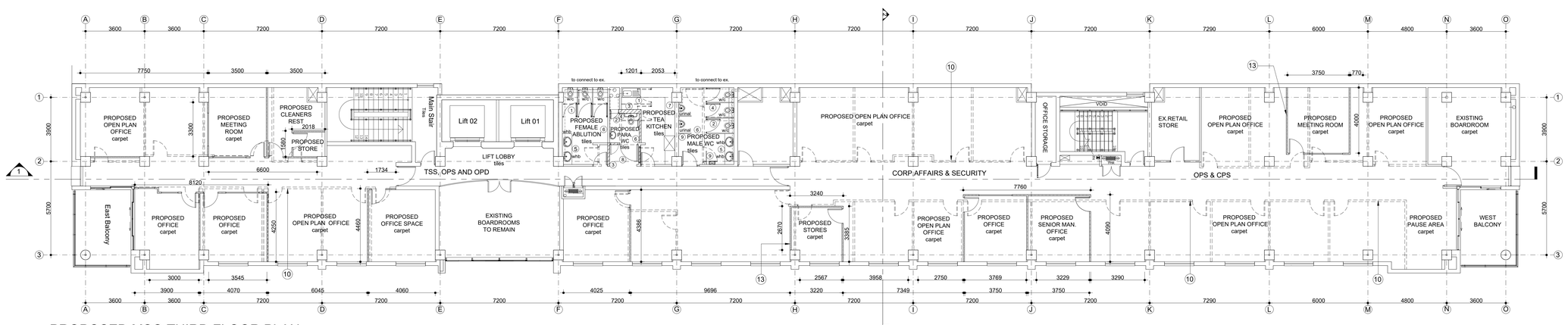
3 SECTION 1

1 : 100



2 PROPOSED MSO FOURTH FLOOR PLAN

1 : 100



1 PROPOSED MSO THIRD FLOOR PLAN

1 : 100

Client's Signature — Date

Architect's Signature — Date

Revision Schedule

Revision No.	Description	Date

SACAP REG No. 4013

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PROPOSED INTERNAL ALTERATIONS TO THIRD AND FOURTH FLOOR OF MSO OFFICES FOR THE AIRPORT COMPANY OF SOUTH AFRICA @ KING SHAKA AIRPORT PORTION 7 OF THE FARM LA MERCY AIRPORT NO . 15124

Sheet type	MSO OFFICE PLANS-SECTIONS
Scale	1 : 100
Drawn by	RP
Checked by	DD
Date	

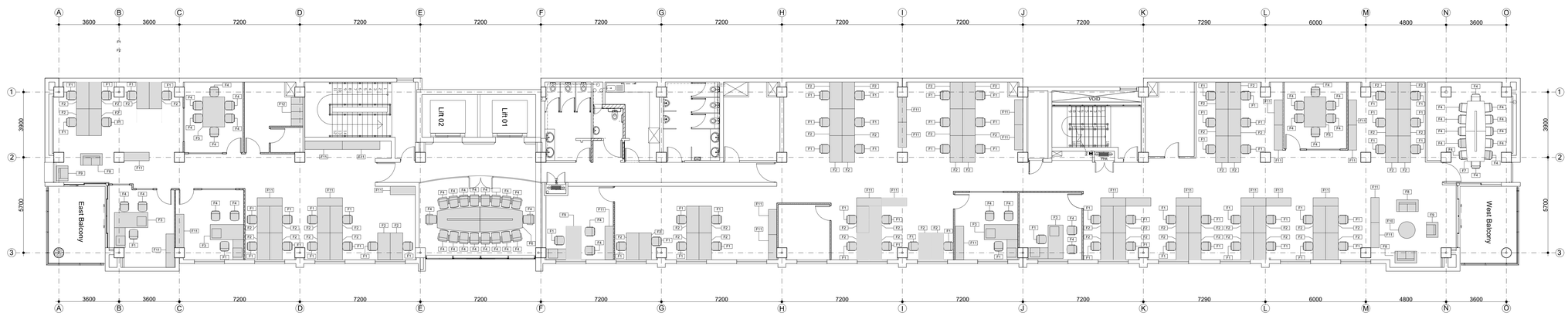
Project Number	Drawing Number	Rev
1090.17	1001	

FURNITURE LEGEND

NUMBER	TYPE	DESCRIPTION	CODE	QTY
F1	OFFICE CHAIR	Accent Operator Chair Adj Arms Single Lock Sync Mech Black/Black	ACCE22315	119
F2	MODULAR DESK	Top - Flexiline 1600mmx745mm Desktop Summer Oak Melamine	FLRA02480	112
		Support beam - Flexiline 1600mm Fixed Beam For 40x40 or 40x60 Black	FLRA05300	
		End legs - Flexiline 1515mm Double End Leg 40x40mm Black	FLRA05085	
		Screen front - Flexiline 1515mm Double End Leg 40x40mm Black	SCRE16214	
		Screen front - Plexi 50mm Bullet, Extended Pin & Plate for 6mm Front Screen	SCRE10765	
		Storage - Flexiline 1515mm Double End Leg 40x40mm Black	SIMP03180	
F3	WORKSTATION	Top - Flexiline 1515mm Desktop Summer Oak Melamine	FLRA02540	7
		Support beam - Flexiline 1515mm Double End Leg 40x40mm Black	FLRA05305	
		End legs - Flexiline 1515mm Double End Leg 40x40mm Black	FLRA05004	
		End legs - Flexiline 750mm Single Right Leg 40x40mm Black	FLRA05015	
		Modesty Panel - Flexiline 1515mm Double End Leg 40x40mm Black	MODE1079	
F4	BOARDROOM CHAIR	Hydra Arm Chair Black/Black	HYDR22404	106
		Hydra 4D Armrests	HYDR22800	
F5a	MEETING TABLE	Top - Flexiline 2400mmx1215mm Meeting Top Summer Oak Melamine	FLRA03080	3
		Support beam - Flexiline 2400mm Fixed Beam For 40x40 or 40x60 Black.	FLRA05315	
		End legs - Flexiline 1215mm Double End Leg 40x40mm Black	FLRA05120	
F5b	ROUND MEETING TABLE	Top - Flexiline 2400mmx1215mm Meeting Top Summer Oak Melamine	PAU52013	2
		Support beam - Flexiline 2400mm Fixed Beam For 40x40 or 40x60 Black.	FLRA05220	
		End legs - Flexiline 800mm Fixed Beam For 40x40 or 40x60 Black	FLRA05285	
F6	BOARDROOM TABLE	Barrel shape boardroom table with sandblasted glass inlay:5600 x 1400 - 16 seater.	TBC	2
F7	SMALL BOARDROOM TABLE	Balance 3200x1400mm Barrel Meeting Table Blk Summer Oak	BALA20703	2
F8	DOUBLE SEATER SOFA	Mondo 2 Seater Couch(Material TBC)	MOND223	5
F9	SINGLE SEATER SOFA	Mondo Arm Chair (Material TBC)	MOND221	3
F10	COFFEE TABLE	Eclipse Round Coffee Table 1000x400mm Black Frame Summer Oak Melamine top	ECLI20925	2
F11	FILING CABINET	Flexiline storage Summer Oak, Black frame, Bottom unit - 6 drawers, Middle unit - 6 pigeon hole, Top Unit - 2 hinged cupboard	FLEXS1131	51
F12	STEEL LOCKER	Factory Locker 4 Compartment Graphite	FACT64305	4

2 MSO-LVL4-FURNITURE LAYOUT

1 : 100



1 MSO-LVL3-FURNITURE LAYOUT

1 : 100

FOR CONSTRUCTION

archiTRONIC

REVISION SCHEDULE

REV NO	DESCRIPTION	DATE	ISSUED BY	ISSUED TO
1	QUANTITY OF F1 AMENDED	20-03-20		
	QUANTITY OF F2 AMENDED	20-03-20		
	QUANTITY OF F3 AMENDED	20-03-20		
	QUANTITY OF F4 AMENDED	20-03-20		
	QUANTITY OF F5a AMENDED	20-03-20		
	QUANTITY OF F9 AMENDED	20-03-20		
	QUANTITY OF F10 AMENDED	20-03-20		
	QUANTITY OF F11 AMENDED	20-03-20		
	F10 FINISH SPEC AMENDED	20-03-20		

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PROPOSED INTERNAL ALTERATIONS TO THIRD AND FOURTH FLOOR OF MSO OFFICES FOR THE AIRPORT COMPANY OF SOUTH AFRICA @ KING SHAKA AIRPORT PORTION 7 OF THE FARM LA MERCY AIRPORT NO . 15124

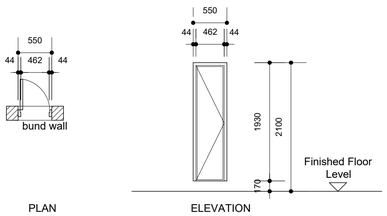
FURNITURE LAYOUT	
Scale	1 : 100
Drawn	RP
Checked by	VG
Date	
Project. number	1090.17

Drawing Number: 2950

Rev: 1

D8

NOTE: DOOR TO BE MIRRORED WHERE APPLICABLE

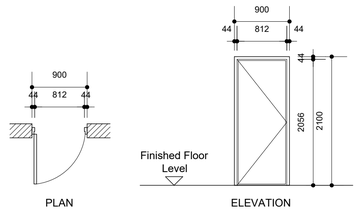


NOTE: ALL DIMENSIONS TO BE VERIFIED ON SITE BEFORE MANUFACTURING OF DOORS

DOOR TYPE	462 x1930 x 44mm SEMI SOLID hollow core door flush panel door.
FRAME	114 x 44mm standard galvanised mild steel single door frame built into brick wall with lugs.
GATE	None.
FINISH	Painted with 1 x coat of universal primer, and painted with 2 x coats of finishing paint (matt).Colour to follow.
IRONMONGERY	Refer to attached ironmongery schedule.
GLAZING	None.
QUANTITY	FLOOR LEVEL: Third Floor 1; Fourth Floor — TOTAL OFF: 1

D9

NOTE: DOOR TO BE MIRRORED WHERE APPLICABLE



NOTE: ALL DIMENSIONS TO BE VERIFIED ON SITE BEFORE MANUFACTURING OF DOORS

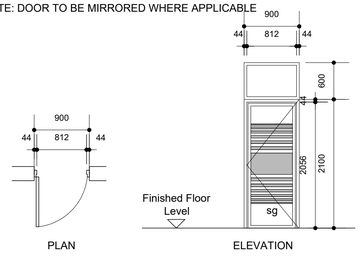
DOOR TYPE	812 x 2056 x 44mm SEMI SOLID hollow core flush panel door.
FRAME	Standard aluminium single door frame built into drywall partition with lugs.
GATE	None.
FINISH	Painted with 1 x coat of universal primer, and painted with 2 x coats of finishing paint (matt).Colour to follow.
IRONMONGERY	Refer to attached ironmongery schedule.
GLAZING	None.
QUANTITY	FLOOR LEVEL: Third Floor 1; Fourth Floor — TOTAL OFF: 1

2 DOOR SCHEDULE

1 : 50

D5

NOTE: DOOR TO BE MIRRORED WHERE APPLICABLE

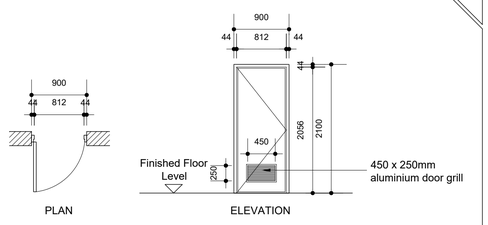


NOTE: ALL DIMENSIONS TO BE VERIFIED ON SITE BEFORE MANUFACTURING OF DOORS

DOOR TYPE	900x 2100 x 44mm aluminium framed single door with 600 fixed glazing panel above.
FRAME	44 system aluminium door frame as supplied by manufacturer complete with all fitments and friction stays. Ironmongery scheduled separately.
GATE	None.
FINISH	All aluminium to be NATURAL anodized.
IRONMONGERY	Refer to attached ironmongery schedule.
GLAZING	6.38mm clear LAMINATED safety glazing in accordance with SANS 10400 and AAAMSA regulations with vinyl sandblasting as shown.
QUANTITY	FLOOR LEVEL: Third Floor 6; Fourth Floor — TOTAL OFF: 6

D6

NOTE: DOOR TO BE MIRRORED WHERE APPLICABLE

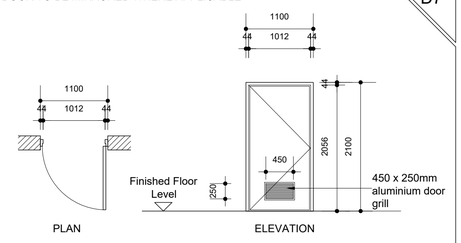


NOTE: ALL DIMENSIONS TO BE VERIFIED ON SITE BEFORE MANUFACTURING OF DOORS

DOOR TYPE	812 x 2056 x 44mm SEMI SOLID hollow core flush panel door.
FRAME	114 x 44mm standard galvanised mild steel single door frame built into brick wall with lugs.
GATE	None.
FINISH	Painted with 1 x coat of universal primer, and painted with 2 x coats of finishing paint (matt).Colour to follow.
IRONMONGERY	Refer to attached ironmongery schedule.
GLAZING	None.
QUANTITY	FLOOR LEVEL: Third Floor 3; Fourth Floor — TOTAL OFF: 3

D7

NOTE: DOOR TO BE MIRRORED WHERE APPLICABLE



NOTE: ALL DIMENSIONS TO BE VERIFIED ON SITE BEFORE MANUFACTURING OF DOORS

DOOR TYPE	1013 x 2032 x 44mm Semi Solid hollow core flush panel single paraplegic door.
FRAME	114 x 44mm standard galvanised mild steel single door frame built into brick wall with lugs.
GATE	None.
FINISH	Painted with 1 x coat of universal primer, and painted with 2 x coats of finishing paint (matt).Colour to follow.
IRONMONGERY	Refer to attached ironmongery schedule.
GLAZING	None.
QUANTITY	FLOOR LEVEL: Third Floor 1; Fourth Floor — TOTAL OFF: 1

1 DOOR SCHEDULE

1 : 50

FOR CONSTRUCTION

Client's Signature

Date

Architect's Signature

Date

Revision Schedule

Revision No.	Description	Date
1.	D9 NOS OFF REVISED	20/04/2020

SACAP REG No. 6012

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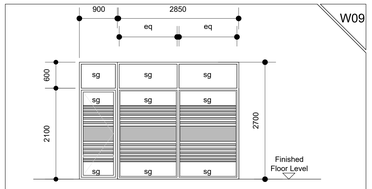
PROPOSED INTERNAL ALTERATIONS TO THIRD AND FOURTH FLOOR OF MSO OFFICES FOR THE AIRPORT COMPANY OF SOUTH AFRICA @ KING SHAKA AIRPORT PORTION 7 OF THE FARM LA MERCY AIRPORT NO . 15124

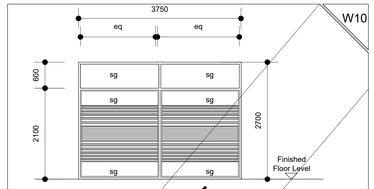
DOOR SCHEDULE TO THIRD FLOOR

Sheet type	DOOR SCHEDULE
Scale	AS SHOWN
Drawn by	RP
Checked by	DD
Date	

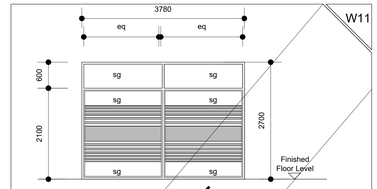
Project Number	Drawing Number	Rev
1090.17	4752	1



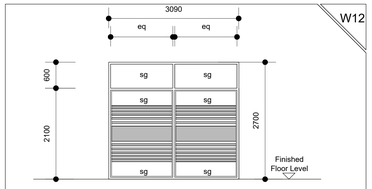
NOTE: TO BE FITTED ON PARTION WALLS BY SPECIALIST	
NOTE: ALL DIMENSIONS TO BE VERIFIED ON SITE BEFORE MANUFACTURING OF WINDOWS	
WINDOW TYPE	2850 x 2700mm aluminium framed, FIXED panel window with aluminium door as shown.
FRAME	44 Frame system aluminium frame as supplied by manufacturer complete with all fitments.
GLAZING	6.38mm clear LAMINATED safety glazing in accordance with SANS 10400 and AAAMSA regulations with vinyl sandblasting as shown.
FINISH	Frames to be natural anodised aluminium.
IRONMONGERY	As supplied by frame manufacturer.
QUANTITY	FLOOR LEVEL: First: 0, Second:, Ground: 0, Third : 1, Lower Ground: 0, Fourth: 0 — TOTAL OFF: **1**



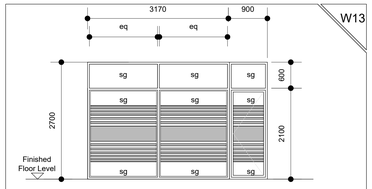
NOTE: TO BE FITTED ON PARTION WALLS BY SPECIALIST	
NOTE: ALL DIMENSIONS TO BE VERIFIED ON SITE BEFORE MANUFACTURING OF WINDOWS	
WINDOW TYPE	3750 x 2700mm aluminium framed, FIXED panel window
FRAME	44 Frame system aluminium frame panel as supplied by manufacturer complete with all fitments.
GLAZING	6.38mm clear LAMINATED safety glazing in accordance with SANS 10400 and AAAMSA regulations with vinyl sandblasting as shown.
FINISH	Frames to be natural anodised aluminium.
IRONMONGERY	Nil
QUANTITY	FLOOR LEVEL: First: 0, Second:, Ground: 0, Third : 1, Lower Ground: 0, Fourth: 0 — TOTAL OFF: **1**



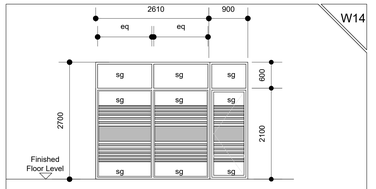
NOTE: TO BE FITTED ON PARTION WALLS BY SPECIALIST	
NOTE: ALL DIMENSIONS TO BE VERIFIED ON SITE BEFORE MANUFACTURING OF WINDOWS	
WINDOW TYPE	3780 x 2700mm aluminium framed, FIXED panel window
FRAME	44 Frame system aluminium frame panel as supplied by manufacturer complete with all fitments.
GLAZING	6.38mm clear LAMINATED safety glazing in accordance with SANS 10400 and AAAMSA regulations with vinyl sandblasting as shown.
FINISH	Frames to be natural anodised aluminium.
IRONMONGERY	Nil
QUANTITY	FLOOR LEVEL: First: 0, Second:, Ground: 0, Third : 1, Lower Ground: 0, Fourth: 0 — TOTAL OFF: **1**



NOTE: TO BE FITTED ON PARTION WALLS BY SPECIALIST	
NOTE: ALL DIMENSIONS TO BE VERIFIED ON SITE BEFORE MANUFACTURING OF WINDOWS	
WINDOW TYPE	3090 x 2700mm aluminium framed, FIXED panel window
FRAME	44 Frame system aluminium frame panel as supplied by manufacturer complete with all fitments.
GLAZING	6.38mm clear LAMINATED safety glazing in accordance with SANS 10400 and AAAMSA regulations with vinyl sandblasting as shown.
FINISH	Frames to be natural anodised aluminium.
IRONMONGERY	Nil
QUANTITY	FLOOR LEVEL: First: 0, Second:, Ground: 0, Third : 1, Lower Ground: 0, Fourth: 0 — TOTAL OFF: **1**



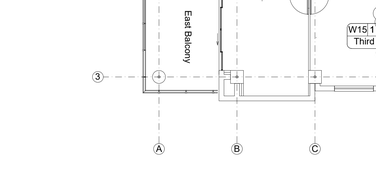
NOTE: TO BE FITTED ON PARTION WALLS BY SPECIALIST	
NOTE: ALL DIMENSIONS TO BE VERIFIED ON SITE BEFORE MANUFACTURING OF WINDOWS	
WINDOW TYPE	3170 x 2700mm aluminium framed, FIXED panel window with aluminium door as shown.
FRAME	44 Frame system aluminium frame as supplied by manufacturer complete with all fitments.
GLAZING	6.38mm clear LAMINATED safety glazing in accordance with SANS 10400 and AAAMSA regulations with vinyl sandblasting as shown.
FINISH	Frames to be natural anodised aluminium.
IRONMONGERY	As supplied by frame manufacturer.
QUANTITY	FLOOR LEVEL: First: 0, Second:, Ground: 0, Third : 1, Lower Ground: 0, Fourth: 0 — TOTAL OFF: **1**



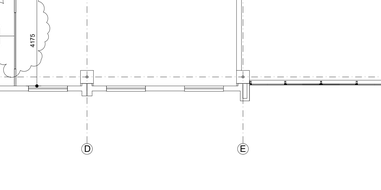
NOTE: TO BE FITTED ON PARTION WALLS BY SPECIALIST	
NOTE: ALL DIMENSIONS TO BE VERIFIED ON SITE BEFORE MANUFACTURING OF WINDOWS	
WINDOW TYPE	2610 x 2700mm aluminium framed, FIXED panel window with aluminium door as shown.
FRAME	44 Frame system aluminium frame as supplied by manufacturer complete with all fitments.
GLAZING	6.38mm clear LAMINATED safety glazing in accordance with SANS 10400 and AAAMSA regulations with vinyl sandblasting as shown.
FINISH	Frames to be natural anodised aluminium.
IRONMONGERY	As supplied by frame manufacturer.
QUANTITY	FLOOR LEVEL: First: 0, Second:, Ground: 0, Third : 1, Lower Ground: 0, Fourth: 0 — TOTAL OFF: **1**

3 WINDOW SCHEDULE

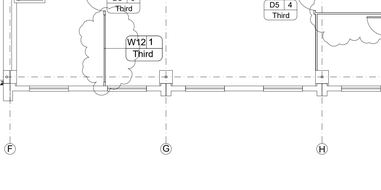
1 : 50



NOTE: TO BE FITTED ON PARTION WALLS BY SPECIALIST	
NOTE: ALL DIMENSIONS TO BE VERIFIED ON SITE BEFORE MANUFACTURING OF WINDOWS	
WINDOW TYPE	2600 x 2700mm aluminium framed, FIXED panel window
FRAME	44 Frame system aluminium frame panel as supplied by manufacturer complete with all fitments.
GLAZING	6.38mm clear LAMINATED safety glazing in accordance with SANS 10400 and AAAMSA regulations with vinyl sandblasting as shown.
FINISH	Frames to be natural anodised aluminium.
IRONMONGERY	Nil
QUANTITY	FLOOR LEVEL: First: 0, Second:, Ground: 0, Third : 4, Lower Ground: 0, Fourth: 0 — TOTAL OFF: **4**



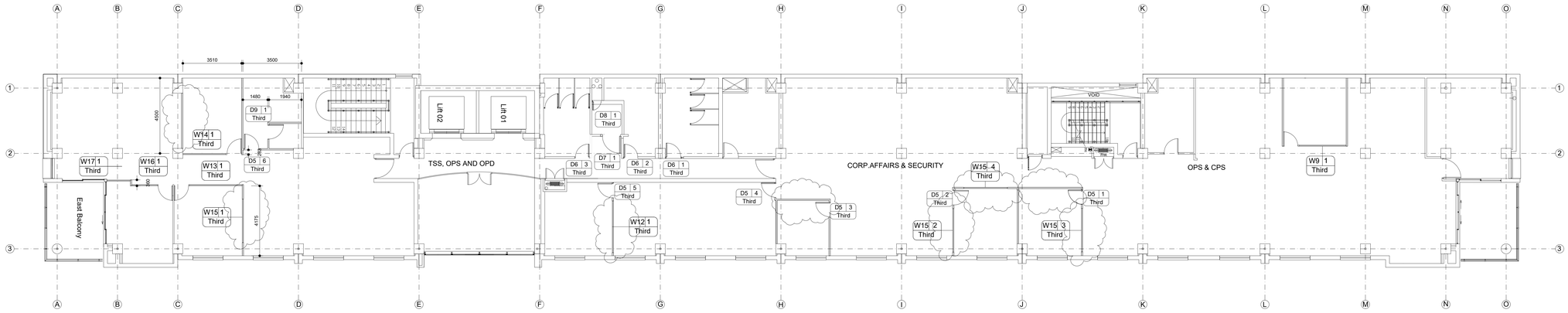
NOTE: TO BE FITTED ON PARTION WALLS BY SPECIALIST	
NOTE: ALL DIMENSIONS TO BE VERIFIED ON SITE BEFORE MANUFACTURING OF WINDOWS	
WINDOW TYPE	1550 x 2700mm aluminium framed, FIXED panel window with aluminium door as shown.
FRAME	44 Frame system aluminium frame as supplied by manufacturer complete with all fitments.
GLAZING	6.38mm clear LAMINATED safety glazing in accordance with SANS 10400 and AAAMSA regulations with vinyl sandblasting as shown.
FINISH	Frames to be natural anodised aluminium.
IRONMONGERY	As supplied by frame manufacturer.
QUANTITY	FLOOR LEVEL: First: 0, Second:, Ground: 0, Third : 1, Lower Ground: 0, Fourth: 0 — TOTAL OFF: **1**



NOTE: TO BE FITTED ON PARTION WALLS BY SPECIALIST	
NOTE: ALL DIMENSIONS TO BE VERIFIED ON SITE BEFORE MANUFACTURING OF WINDOWS	
WINDOW TYPE	1400 x 2700mm aluminium framed, FIXED panel window as shown.
FRAME	44 Frame system aluminium frame as supplied by manufacturer complete with all fitments.
GLAZING	6.38mm clear LAMINATED safety glazing in accordance with SANS 10400 and AAAMSA regulations with vinyl sandblasting as shown.
FINISH	Frames to be natural anodised aluminium.
IRONMONGERY	Nil
QUANTITY	FLOOR LEVEL: First: 0, Second:, Ground: 0, Third : 1, Lower Ground: 0, Fourth: 0 — TOTAL OFF: **1**

2 WINDOW SCHEDULE

1 : 50



1 THIRD FLOOR KEY PLAN

1 : 100

FOR CONSTRUCTION

Client's Signature — Date

Architect's Signature — Date

Revision Schedule

Revision No.	Description	Date
1	WINDOW 10 AND 11 OMITTED	09/2020
	WINDOW 15 NOS. INCREASED	
	WINDOW 12 REPOSITIONED.	

SACAP REG No. 4072

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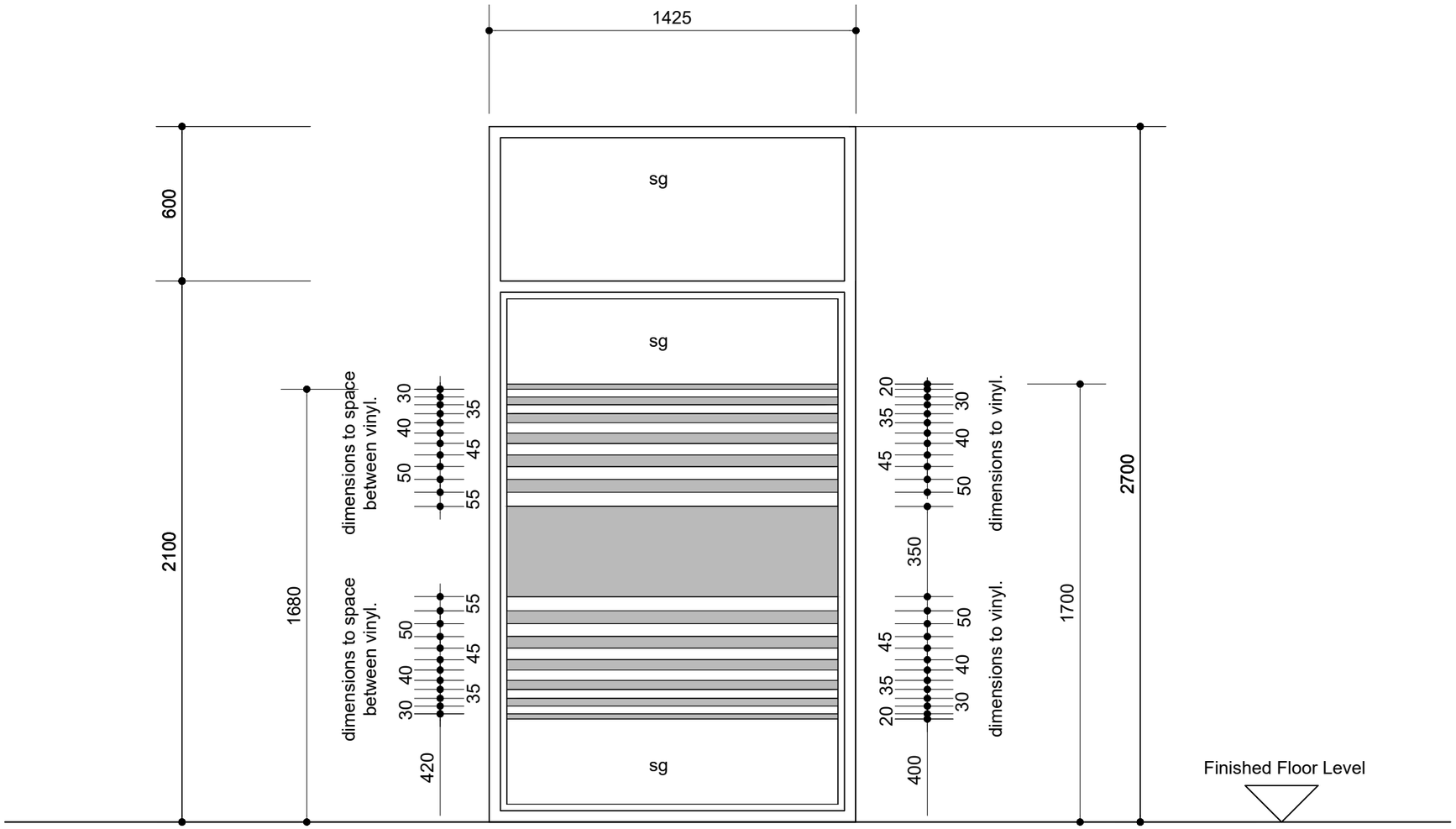
PROPOSED INTERNAL ALTERATIONS TO THIRD AND FOURTH FLOOR OF MSO OFFICES FOR THE AIRPORT COMPANY OF SOUTH AFRICA @ KING SHAKA AIRPORT PORTION 7 OF THE FARM LA MERCY AIRPORT NO . 15124

WINDOW SCHEDULE TO THIRD FLOOR

Sheet type	DOOR AND WINDOW KEY PLAN AND SCHEDULES
Scale	AS SHOWN
Drawn by	RP
Checked by	DD
Date	

Project Number	Drawing Number	Rev
1090.17	4751	1



1 TYPICAL VINYL STICKER LAYOUT.

1 : 20

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REVISION SCHEDULE

REV NO	DESCRIPTION	DATE	ISSUED BY	ISSUED TO

FLOOR PLANS	PAPER SIZE = A3
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PRAYER FACILITIES, STAFF REST AREA AND EXISTING MSO BUILDING

ELECTRICAL TECHNICAL SPECIFICATION

October 2019

Rev 02

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TITLE	**:**	**PRAYER FACILITIES, STAFF REST AREA AND EXISTING MSO BUILDING ELECTRICAL TECHNICAL SPECIFICATION**
Project Team	**:**	BVI Consulting Engineers (Pty) Ltd
Client	**:**	Airport Company South Africa (Pty) Ltd
BVI Project No	**:**	D33296.00
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For BVI Consulting Engineers (Pty) Ltd

Compiled by:	J Bhengu		10 – October - 2019
	Initials & Surname	Signature	Date
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Approved by:	Z Ntshangase		10 – October - 2019
	Initials & Surname	Signature	Date

Approval by Client

Approved by:			
	Initials & Surname	Signature	Date

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DOCUMENTS FORMING PART OF THIS SPECIFICATION

Documents forming part of this installation specification:

BVI DOC NO.	TITLE
	ELECTRICAL SPECIFICATION (THIS DOCUMENT)
	LUMINAIRE SCHEDULE

DOCUMENTS FORMING PART OF THIS SPECIFICATION

Documents forming part of this installation specification and obtainable from ACSA:

ACSA DOC NO.	TITLE
	IT PHYSICAL INFRASTRUCTURE STANDARDS & GUIDELINES

DRAWINGS FORMING PART OF THIS SPECIFICATION

Drawings forming part of this installation specification:

Proj.	No.	Rev.	Description	ACSA NUMBER

1. SCOPE OF WORK

This specification covers the manufacture, supply, delivery, offloading, installation, testing, commissioning and handing over of all the electrical works for Airport Company South Africa (ACSA) required for the proposed Additional Facilities and Renovations to Prayer Facilities, Staff Rest Area and Existing MSO Building in King Shaka International Airport location in La Mercy in the Province of KwaZulu Natal.

Site co-ordinates 29°37'0.37"S, 31° 6'6.98"E.

The attention of the Tenderer is drawn to the Bill of Quantities that forms an integral part of the specification and especially the following clauses:

Where the term “or other approved” is used in connection with proprietary materials or articles, it is to be understood that approval shall be at the sole discretion of the Engineer. Where brand or trade names are referred to in the Drawings and Bill of Quantities, these shall indicate the quality and type of material or fitting required and no substitution of materials so specified will be permitted, unless the authority of the Engineer has been obtained, in writing, before tenders close.

The drawings listed in the index form an integral part of this specification, but are issued for TENDER PURPOSES ONLY and are not intended to be used for construction without the prior written approval of the Client’s Representative.

The positioning of all equipment, light fittings, light switches, socket outlets etc. on the drawing, is schematic only and in some cases may not correspond to the actual layout of the buildings. The successful Tenderer shall be responsible for indicating the correct position of all electrical equipment on their working drawings to enable the Client’s Representative to produce “as built” drawings.

2.1 WORK INCLUDED

The successful Tenderer shall provide all labour, materials, equipment, tools and supervision to transport, assemble, erect, install, connect, test and place into service the complete electrical works. The works shall consist of, but are not limited to:

The supply and installation of new supply cables from the existing airport facilities to the new main 400V switchboard in Multi-Denominational Prayer Facility complete with terminations and joints.

Supply and installation of distribution boards complete terminations and joints.

Supply and installation of light fittings, light switches and switched socket outlets.

Supply and installation of isolators and fixed appliances.

Supply and installation complete with termination of conduit, wiring earthing, etc. where required.

Supply and installation of IT system, telecommunication, PA System, voice evacuation system and fire detection system.

Supply and installation of earthing and lightning protection complete with earth conductors, rods and lightning arrestors.

Tenderers are to allow for ALL work and materials indicated and implied on the drawings, whether indicated in the specification or not, to deliver a complete and operational project.

2.2 SPECIAL CONDITIONS

All work shall be done by an electrical contractor registered with the Electrical Contracting Association of South Africa (ECA) and Department of Labour.

The electrical contractor shall provide certified copies as proof of accreditation and registration with the ECA and Department of Labour prior to commencement at the site hand-over meeting and prior to commencement of any work.

Lightning protection soil resistivity tests, risk assessment, detail designs and installation work shall be done by a certified person and who are able to provide proof of successfully completed projects with contact details and references.

Electronic systems, detail designs and installation work shall be done by a competent certified person and who are able to provide proof of successfully completed projects with contact details and references.

Service Provider needs to be Commscope Certified.

2.3 SITE ESTABLISHMENT

The successful Tenderer shall provide all the facilities required to enable him to undertake the Contract Works.

2.4 STANDARDS AND CODES OF PRACTICE

All installation work shall comply with the following Specifications, Legal Requirements and Codes of Practice:

LEGISLATION, STANDARDS AND CODES OF PRACTICE – ELECTRICAL RELATED	
NUMBER	**TITLE**
OHSA	Occupation Health & Safety Act (act 85 of 1993), with Regulations included
BS 1363-2	13 A plugs, socket-outlets, adaptors and connection units – Specification for 13 A switched and un-switched socket-outlets
ISO 9001 – 9004	Quality Management Systems
ISO 3046-1	Part 1: Standard reference conditions, declarations of power, fuel and lubricating oil consumptions, and test methods
ISO 3046-3	Part 3: Test measurements
ISO 3046-4	Part 4: Speed governing
ISO 3046-5	Part 5: Torsional vibrations
ISO 3046-6	Part 6: Over speed protection
ISO 3046-7	Part 7: Codes for engine power
NRS 048-4	Quality of supply
NRS 0424-1	Diesel alternator set Part1: Diesel alternator sets for fixed installations-Preferred requirements for application their organisations by the DC and standby equipment representative user group.
SANS 10086-1	The installation, inspection and maintenance of equipment used in explosives atmospheres Part 1: Installations including surface installations on mines.
SANS 204	Energy efficiency in buildings
SANS 10108	The classification of hazardous locations and the selection of apparatus for use in such locations.
SANS 1012	Electric light dimmers
SANS 10142-1	The wiring of premises. Part 1: Low-voltage installations
SANS 1019	Standard voltages, currents and insulation levels for electricity supply
SANS 10198-1-14	The selection, handling and installation of electric power cables of rating not exceeding 33 kV. Parts 1 to 13
SANS 10199	The design and installation of earth electrodes
SANS 1029	Miniature substations
SANS 10292 (SABS 0292)	Earthing of low-voltage (LV) distribution systems.
SANS 10313	The protection of structures against lightning
SANS 1063	Earth rods, couplers and connections
SANS 1065-1 & 2	Metal conduits and fittings (screwed-end
SANS 1085	Wall outlet boxes for the enclosure of electrical accessories
SANS 1195	Busbars.
SANS 10114-1	Interior lighting Part 1: Artificial lighting of interiors
SANS 10114-2	Interior lighting Part 2: Emergency lighting
SANS 1213	Mechanical cable glands

SANS 1239	Plugs, socket-outlets and couplers for industrial purposes
SANS 1339	Electric cables – Cross-linked polyethylene (XLPE) insulated cables for voltages 3,8/6,6 kV to 19/33 kV
SANS 1411-1	Materials of insulated electric cables and flexible cords – Part 1: Conductors
SANS 1418-1	Aerial bundled conductor systems – Part 1: Cores.
SANS 1433-1	Electrical terminals and connectors – Part 1: Terminal blocks having screw and screw less terminals.
SANS 1433-2	Electrical terminals and connectors – Part 2: Flat push-on connectors.
SANS 1473-1	Low-voltage switchgear and control gear assemblies – Part 1: Type-tested, partially type-tested and specially tested assemblies with a rated short-circuit withstand strength above 10 kea
SANS 1507-1 Parts 1-6	Electric cables with extruded solid dielectric insulation for fixed installations (300/500 V to 1 900/3 300 V)
SANS 156	Moulded-case circuit-breakers
SANS 1574-3	Electric flexible cores, cords and cables with solid extruded dielectric insulation – Part 3: PVC-insulated cores and cables.
SANS 1574-5	Electric flexible cores, cords and cables with solid extruded dielectric insulation – Part 5: Rubber-insulated cores and cables.
SANS 1632-1	Batteries Part 1: General information-Definitions, abbreviations and symbols
SANS 164-0 parts 1 - 6	Plug and socket-outlet systems for household and similar purposes for use in South Africa
SANS 1665	Metal-clad switchgear for rated a.c. voltages above 1 kV and up to and including 36 kV – General requirements and methods of test
SANS 1765	Low-voltage switchgear and control gear assemblies (distribution boards) with a rated short-circuit withstand strength up to and including 10 kA
SANS 1777	Photoelectric control units for lighting (PECUs)
SANS 1799	Watt-hour meters – AC electronic meters for active energy
SANS 1874	Metal-enclosed ring main units for rated a.c. voltages above 1 kV and up to and including 24 kV.
SANS 1973-1	Part 1 Type tested Assemblies with Stated deviations and a rated short circuit withstand strength over 10kA
SANS 1973-3	Low-voltage switchgear and control gear ASSEMBLIES – Part 3: Safety of ASSEMBLIES with a rated prospective short-circuit current of up to and including 10 kA
SANS 1973-8	Low-voltage switchgear and control gear ASSEMBLIES – Part 8: Safety of minimally tested ASSEMBLIES (MTA) with a rated short-circuit current above 10 kA and a rated busbar current of up to and including 1 600 A a.c. and d.c
SANS 337	Stove couplers
SANS 529	Heat-resisting wiring cables
SANS 556-1	Low-voltage switchgear – Part 1: Circuit-breakers
SANS 60044-1 to 5	Instrument transformers – Part 1 to 5
SANS 60079 (all parts)	Electrical apparatus for explosive gas atmospheres
SANS 60137	Insulated bushings for alternating voltages above 1 000 V
SANS 60265-1	High-voltage switches – Part 1: Switches for rated voltages above 1 kV and less than 52 kV
SANS 60269-1	Low-voltage fuses
SANS 60282-1	High-voltage fuses – Part 1: Current-limiting fuses
SANS 60282-2	High-voltage fuses – Part 2: Expulsion fuses
SANS 60309-1	Plugs, socket-outlets and couplers for industrial purposes – Part 1: General requirements

SANS 60439-1 to 5	Low-voltage switchgear and control gear Assemblies Parts1 to 5
SANS 60502-4	Power cables with extruded insulation and their accessories for rated voltages from 1 kV (Um = 1,2 kV) up to 30 kV (Um = 36 kV) – Part 4: Test requirements on accessories for cables with rated voltages from 6 kV (Um = 7,2 kV) up to 30 kV (Um = 36 kV).
SANS 60529	Degrees of protection provided by enclosures (IP Code).
SANS 60669-1	Switches for household and similar fixed electrical installations – Part 1: General requirements.
SANS 60669-2-1/	Switches for household and similar fixed electrical installations – Part 2-1: Particular requirements – Electronic switches.
SANS 60896-21	Stationary Lead Acid Batteries Part 21: Valve regulated types- Methods of Test
SANS 60896-22	Stationary Lead Acid Batteries Part 21: Valve regulated types-Requirements
SANS 60947-2	Low-voltage switchgear and control gear – Part 2: Circuit-breakers
SANS 60947-3	Low-voltage switchgear and control gear – Part 3: Switches, disconnectors, switch-disconnectors and fuse combination units.
SANS 60947-4-1	Low-voltage switchgear and control gear – Part 4-1: Contactors and motor-starters – Electromechanical contactors and motor-starters
SANS 60947-4-2	Low-voltage switchgear and control gear – Part 4-2: Contactors and motor-starters – AC semiconductor motor controllers and starters.
SANS 60947-4-3	Low-voltage switchgear and control gear – Part 4-3: Contactors and motor-starters – AC semiconductor controllers and contactors for non-motor loads
SANS 60947-5-5	Low-voltage switchgear and control gear – Part 5-5: Control circuit devices and switching elements Electrical emergency stop device with mechanical latching function
SANS 60947-6-1	Low-voltage switchgear and control gear – Part 6-1: Multiple function equipment –Transfer switching equipment.
SANS 61000-3-4	Electromagnetic compatibility - Limitation of emission of harmonic currents in low-voltage power supply systems for equipment with rated current greater than 16 A
SANS 61000-4-7	General guide on harmonics and inter-harmonics measurements and instrumentation, for power supply systems and equipment connected thereto
SANS 61008-1	Residual current operated circuit-breakers without integral overcurrent protection for household and similar uses (RCCBs) – Part 1: General rules.
SANS 61084-1	Cable trunking and ducting systems for electrical installations – Part 1: General requirements.
SANS 61238-1	Compression and mechanical connectors for power cables for rated voltages up to 30 kV (Um = 36 kV) – Part 1: Test methods and requirements
SANS 61312-3	Protection against lightning electromagnetic impulse – Part 3: Requirements of surge protective devices (SPDs).
SANS 61347-2-2	Lamp control gear – Part 2-2: Particular requirements for d.c. or a.c. supplied electronic step-down convertors for filament lamps
SANS 61386-1	Conduit systems for cable management – Part 1: General requirements.
SANS 61386-21	Conduit systems for cable management – Part 21: Particular requirements – Rigid conduit systems
SANS 61386-22	Conduit systems for cable management – Part 22: Particular requirements – Pliable conduit systems.
SANS 61386-23	Conduit systems for cable management – Part 23: Particular requirements – Flexible conduit systems
SANS 61558-1	Safety of power transformers, power supplies, reactors and similar products – Part 1: General requirements and tests.
SANS 61641	Arc Testing
SANS 61643-1	Low-voltage surge protective devices – Part 1: Surge protective devices connected to low-voltage power distribution systems – Requirements and tests.

SANS 61643-12	Low-voltage surge protective devices – Part 12: Surge protective devices connected to low-voltage power distribution systems – Selection and application principles
SANS 62053-11	Electricity metering equipment (a.c.) – Particular requirements – Part 11: Electromechanical meters for active energy (classes 0,5, 1 and 2).
SANS 62053-21	Electricity metering equipment (a.c.) – Particular requirements – Part 21: Static meters for active energy (classes 1 and 2).
SANS 62271 All Parts	High-voltage switchgear and control gear
SANS 62305-1	Protection of structures against lightning Part 1: General principles
SANS 62305-1	Protection against lightning – Part 1: General principles.
SANS 62305-2	Protection against lightning – Part 2: Risk management.
SANS 62305-3	Protection against lightning – Part 3: Physical damage to structures and life hazard
SANS 62305-4	Protection against lightning – Part 4: Electrical and electronic systems within structures
SANS 767-1	Earth leakage protection units – Part 1: Fixed earth leakage protection circuit-breakers.
SANS 780	Distribution transformers
SANS 950	Un-plasticized polyvinyl chloride rigid conduit and fittings for use in electrical installations
SANS 60044-1	Instrument transformers Part 1: Current transformers
SANS 60044-2	Instrument transformers Part 2: Inductive voltage transformers
SANS 60265-1	High-voltage switches Part 1: Switches for rated voltages above 1 kV and less than 52 kV
SANS 62271-200	A.C. metal-enclosed switchgear and control gear for rated voltages above 1 kV and up to and including 52 kV
SANS 60439-1	Low-voltage switchgear and control gear assemblies Part 1: Type tested and partially type-tested assemblies
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SANS 60947-4	Low-voltage switchgear and control gear Part 4: Contactors and motor-starters
SANS 60947-5	Low-voltage switchgear and control gear Part 5: Control circuit devices and switching elements
SANS 60947-6	Low-voltage switchgear and control gear Part 6: Multiple function equipment
SANS 61439-1	LV Control-Gear and assemblies
SANS 60076 1-21	Power Transformers
SANS 10400	Code of Practice for the Application of the National Building Regulations (as amended)
	ACSA requirements
	Electricity Regulation Act, No 4 of 2006 (as amended)
	The National Building Regulations and Building Standards Act 1996 (Act 29 of 1996) (as amended)
	Local Municipal By-Laws and any special requirements of the local supply authority
	Energy Code of Conduct for all Government Buildings
	National and Local Authority Fire Regulations and SANS 10400-T: 2011 (Ed 3)
	ICASA Regulations
	Construction Regulations 2003
	The Local Government Act 1998 (Act 10 of 1998 (Gauteng), municipal by-laws and any special requirements of the local supply authority

	The Fire Brigade Services Act 2000 (Act 14 of 2000)
	The Post Office Act 1998 (Act 124 of 1998)
	The Electricity Act 1996 (Act 88 of 1996)
	The Regulations of the local Gas Board where applicable
	The National Water Act 1998 (Act no. 36 of 1998)
	The Water Services Act 1997 (Act no. 108 of 1997)
	The General Authorizations (Water act)
	The Environmental Conservation Act 1998 (Act no. 73 of 1989)
	The National Environmental Management Act 1998 (Act no. 107 of 1998)

2.5 CLIENT STANDARDS

In line with accepted practice, the Client has, from time to time, standardised on the supply of various items of equipment. The Tenderer shall undertake, and by the submission of his tender confirms that he has undertaken, to inform himself of the status of such standardisation requirements ruling at the time of tender, and any deviations from such standards shall be corrected by the successful Tenderer at his expense.

2.6 MAINTENANCE OF INSTALLATIONS

With effect from the date of the issue of the Completion (First Delivery Certificate) the successful Tenderer shall, at his own expense, undertake the regular servicing of the installation during the maintenance period and shall make all adjustments necessary for the correct operation thereof.

The maintenance period shall be 12 months.

If during the said period the installations are not in working order, due to the fault of the successful Tenderer, or if the installations develop defects, the successful Tenderer shall immediately upon being notified thereof take steps to remedy the defects and make any necessary adjustments.

Should such stoppages however become so frequent as to become troublesome, or should the installations otherwise prove unsatisfactory the successful Tenderer shall, if called upon by the Client, at his own expense, replace the affected part or the whole of the installations or such parts thereof as the Client may deem necessary with apparatus specified by the Client.

2.7 BALANCING OF LOAD

The successful Tenderer is required to balance the load as equally as possible over the multiphase supply where applicable.

2. LOW VOLTAGE PVC INSULATED CABLES (600-1000V)

Low voltage power cables shall be two, three or four core stranded plain annealed copper conductor, PVC insulated, PVC bedded, galvanised steel wire armoured, PVC sheathed, PVC/PVC/SWA-ECC/PVC type cable 600/1000V to SANS 1574 as amended.

All low voltage power cables shall be manufactured in strict accordance to SANS 1507 and shall bear the SABS mark on the outer sheath.

The insulation material shall comprise of PVC in accordance to SANS 1411: Part II as amended.

The bedding shall consist of a continuous impermeable of PVC extruded sheath to fit the core or cores closely and to fill the interstices between the cores of multi-core cables.

Where armouring is specified, the armouring shall consist of one layer of round galvanized steel wire in accordance with SANS 1411: Part IV. Aluminium strip or tape armouring is not acceptable.

Unless otherwise specified specifically, all multi-core cables shall include earth continuity conductor (ECC) in the armouring. Where required additional bare earth copper conductor shall be installed as specified.

All cable connections from 16mm² conductor sizes and larger shall be of the hexagonal crimp method using correct size and type of lugs, ferrule and matching crimp head dices. Smaller conductor sizes shall be done with indent crimp method with tools having the ratchet facility to ensure a full depth crimp.

All routine tests specified by SANS 1507 as amended shall be carried out on production runs of the cable. Two test certificates will be provided for each cable drum delivered to site.

Wooden cables drums shall be clearly marked on both sides in accordance with SANS 1507 as amended. Both ends of the cable on the wooden drum must be sealed to prevent penetration of moisture. Both ends of the cable shall furthermore be fixed to the flange of the drum to avoid loose coiling and mechanical damage. Cable drums shall be placed on firm, well-drained surfaces.

Cable ducting and trenches shall be in accordance with SANS 2001 PD3.

3. LOW VOLTAGE CABLE INSTALLATION

All low voltage cables shall be in accordance with the standard and detail specifications.

Cables shall be loaded, transported and off-loaded on wooden cable drums manufactured and supplied for the purpose by the cable manufacturer.

The transportation, loading, off-loading and installation of the cables shall be in strict accordance with the requirements of the cable manufacturer, this specification and relevant standards which shall be continuously supervised and controlled by a competent person who is well experienced in the handling and installation of cables.

Cables that are not terminated shall at all times be capped and sealed to protect the ends from the ingress of moisture and dirt.

Cables shall be installed in the routes specified. Cable lengths are nominal and shall not be used for ordering purposes. The Contractor shall be remunerated on actual lengths of cable installed. All wastage shall be for the account of the successful Tenderer.

All cables shall be rolled from the wooden cable drum such that the cable will not be subjected to twisting or tensions values exceeding the values specified by the manufacturer.

Cables laid in the same trench shall be laid parallel to each other and shall not cross over one another.

All cables shall be run in single un-spliced lengths and shall be drawn up and terminated in the distribution kiosk, distribution boards, plant or equipment as required. When complete, all cabling and wiring shall present a neat and tidy appearance.

No joints shall be allowed in cables unless specifically called for in the Bill of Quantities or unless the cable lengths exceed the maximum standard drum lengths supplied by the manufacturer or without the prior approval of the Engineer.

The minimum radius of bends in all cables shall be as per the manufacturer recommendation to ensure that the minimum bending radii of the cables are maintained at all times during and after installation. Failure to adhere to this requirement may result in the rejection of the particular cable.

Special care shall be taken during installation to avoid any damage to the sheaths of the cable. Rollers and pulling socks or other suitable means approved by the Engineer shall be used for installing the cables in trenches. The rollers shall be free of sharp edges and shall be spaced to prevent the cable from touching the ground during the pulling process. Corner rollers shall be used at each corner and where required bond pulling shall be used.

Where communication, instrument or signal type service cables run with power cables in the same trench, the minimum separation shall be 500mm. Where “signal” and power services cross, they shall be separated vertically by 500mm.

LV cables no less than 600mm below final ground level measured to the top of the cable.

The cables shall be laid in such a manner that the beginning of a drum shall be laid from the end of the previous drum to ensure that the lay of the cores remain the same. Low voltage cables shall overlap by at least 500mm.

All cables shall be fitted with the appropriate size lugs at the termination. Lugs and ferrules equal or greater the 16mm² shall be crimped with a hydraulic crimper only using a hexagon die.

All glands, lugs, fixers, nuts, bolts and other consumables are, where not specifically detailed in the Bill of Quantities, are to be included within the price for cable terminations.

Where cables cross under roadways, walkways, parking areas, paved areas and other services, and where cables enter buildings, the cables shall be installed in 110mm diameter Class 9 u-PVC pipes or as indicated on the drawings.

Every cable shall be marked on both ends by means of an approved type cable tag label on which the size of cable and its source or destination and cable number is punched. The label shall be installed around the outer PVC sheath immediately below the cable termination and gland.

4. CABLES IN TRENCHES

All cable trenches shall be routed as indicated on the drawings attached to this specification. Deviations shall only be permitted by prior consent of the Electrical Engineer or the issuing of revised drawings.

Trenches shall be straight and be cut as square as possible and the bottom made flat and free from stones or other hard projections. Where this is not possible, a 50mm layer of stone free sand shall be laid at the bottom of the trench to accommodate the cables. It must be presumed that, where trenching occurs within soft/hard rock, the trenching rate shall include for the stone free layer of soil. After installation, the cables shall be covered with a 100mm layer of fine, stone free soil prior to backfilling. The backfill shall be adequately compacted in layers of 250mm to the approval of the Electrical Engineer.

The minimum width of trenches shall be 300mm for one cable and 500mm for up to three unless otherwise specified.

Cables shall be laid at a minimum depth of 600mm (to top of cable) for cables rated 600/1000V, and 1 000mm (to top of cable) for cables rated greater than 1000V, below the adjoining final ground level, except where intersections take place with other services, adequate clearance between the services shall be allowed.

A cable marking tape shall be run 300mm above each cable. Where multiple services are installed within the same trench, two marker tapes shall be installed marking the width extremities of the trench. For cables rated greater than 1 000V, protective cable tiles shall be laid at 600mm above each main cable for the entire length of the cable trench.

The Tenderer shall excavate by hand due to limited access or the proximity of other services.

Special care shall be taken at intersections with other services. Any damage to other services shall be made good and paid for by the Contractor.

No excavated material shall be left closer than 300mm from the side of the excavation. The excavated material shall take up as small an area as possible with the safety of the workmen and Works taken into consideration.

The Tenderer shall maintain the excavation in a good condition, free of water, mud, loose ground, rocks, stones, gravel and other strange material until the cables are installed and the excavation is backfilled and completed.

The cable shall, after the completion of the trench, be laid with the minimum of delay so that the trench can be backfilled. Timeous arrangements shall be made that all cables be inspected by the Electrical Engineer prior to backfilling and closing trenches. The Tenderer shall be responsible

for informing the Electrical Engineer timeously, and non-inspected closed trenches may be required to be opened up for test inspections or may be rejected.

All open cable trenches shall be effectively barricaded so as to prevent people from falling into the trenches. Cable trenches within demarcated and fenced construction areas shall be barricaded with danger tape and maintained to be clearly visible to all construction activities.

5. CABLES IN SLEEVES

Pulling socks or other suitable means approved by the Engineer shall be used for the installation of cables in sleeves. Care shall be taken to ensure that the maximum allowed mechanical forces on the cables are not exceeded and that the sheaths are not damaged during installation. Furthermore, the Contractor shall ensure that the cables are not kinked or excessively bent while maintaining the minimum bending radius as specified by the manufacturer.

The Contractor shall use necessary precautions to ensure that all cables are not damaged at the mouth of cable sleeves.

The Contractor shall inspect the sleeves before installation of the cables to ensure and confirm that there are no sharp edges present that could cause damage to the sheaths.

Cables found with scratch marks or other forms of damage will be rejected and shall be replaced at the Contractor's cost.

Should long runs of cables in sleeves be encountered, it may be required to grease the cable with petroleum jelly or other non-aggressive compound to facilitate the installation. This will however be discussed with the Engineer prior to installation.

6. CABLES ON CABLE RACKING

Cables to be installed on cable racking shall be secured to the cable racking at intervals not exceeding 1m.

Cables with diameters larger than 50mm and cables in trefoil arrangement shall be secured by means of stainless steel bandit straps (over a PVC strap for the protection of sheath). Smaller cables shall be secured by means of PVC cable ties.

All cables shall be individually strapped, except for cables installed in trefoil format.

7. CABLE NUMBERING AND CORE IDENTIFICATION

Each cable shall be numbered by means of an approved type cable tag attached to both ends below each termination and gland. Each tag shall indicate the designation connected at the other end, cable size, number of cores, length, earth wire size and be easily readable after installation.

8. DISTRIBUTION BOARDS

The successful Tenderer shall be responsible for the design and installation of the distribution boards so as to ensure that they fit comfortably in the positions specified on the drawings, are easily maintained and the doors of the distribution boards can be fully opened.

The layouts and construction of all distribution boards shall be to the approval of the Engineer prior to ordering and manufacturing.

The distribution boards shall be of the flush / floor standing / surface mounting type/s. The distribution board tray shall be constructed of 2mm minimum thickness hot dip galvanised steel or folded 3CR12 sheet metal. Pre-punched knockouts for conduit shall be incorporated in the upper and lower sides of the distribution board tray prior to galvanising. The size of tray shall be determined by the number of circuits actually installed allowing for 30% additional circuit space and spare conduits installed from the distribution board to the ceiling void where the DB is built into a wall.

The architrave frame shall be constructed with square edges from minimum 2 mm thick 3CR12 steel and be powder coated. The architrave frame shall form a 25 mm border around the bonding tray and shall be fixed to the bonding tray in such a manner as to allow for adjustment for the inequalities in the wall finish. A minimum of 75 mm shall be allowed between the inside of the architrave frame and the equipment.

The distribution board cover shall be constructed of minimum 2mm thick folded 3CR12 steel and be powder coated. The distribution board cover shall have machine cut openings for the specified electrical equipment and as indicated on the single line diagrams. The distribution board cover shall furthermore be fitted with suitable handles to facilitate safe the removal of the cover.

Distribution boards shall be equipped with single/double hinged doors. The doors shall be constructed of 2 mm minimum thick 3CR12 steel and be powder coated. Where required, the doors shall be reinforced to ensure rigidity. The door shall be mounted flush in the architrave frame and will comply with the requirements detailed on the drawings.

The distribution boards shall be equipped with suitably sized tinned solid copper neutral and earth bars as required for earth leakage protected circuits and for the balancing of the circuits. Only one neutral conductor shall terminate in each clamp. 30% extra terminals shall be provided above those circuits actually installed.

Wiring shall be done by means of PVC insulated copper conductors with sizes to suit the relevant switchgear. The ends of the conductors shall be provided with suitably sized lugs, firmly crimped for connection to busbars.

The main/incoming isolator/circuit breaker shall be mounted at the left hand side of the distribution board. The isolators and circuit breakers shall comprise the list as shown on the single line diagram. Should the distribution board comprise of rows of equipment, then sufficient vertical space shall be allowed for between equipment for the bending and termination of conductors and cables. The earth leakage circuit breakers/isolators shall be 30mA sensitivity with a tolerance of +0 to -50%.

All metal doors shall be earthed bonded to the distribution board tray by means of an insulated copper strap, tooth washers, bolts and nuts.

Every circuit on each distribution board shall be clearly and legibly labelled. The legend shall be typed and circuit breaker numbering shall be of the engraved type.

All unequipped spaces in the distribution boards shall be fitted with dummy MCB's or approved cover plates.

uPVC sleeves installed shall cater for the cable size and the minimum bending radius on the sleeve with minimum 6 times the diameter of the sleeve.

Distribution boards shall be painted and labelled in accordance with the details as specified below:

	Normal Supply	**Essential Supply**	**UPS Supply**
Colour of Indoor Distribution Board	White or Beige	White or Beige but preferably Red	White or Beige but preferably Blue
Colour of Outdoor Distribution Board	Electric Orange colour B26 of SANS 10140 (Part II)	Electric Orange colour B26 of SANS 10140 (Part II)	Electric Orange colour B26 of SANS 10140 (Part II)
Colour of Face Plate	White or Beige (Indoor) Electric Orange (Outdoor)	Signal Red colour B26 of SANS 1091	Blue colour F06 of SANS 1091
Label Type	Black letters on White Ivorene label	White engraved letters on red Ivorene label	White engraved letters on blue Ivorene label
Label Fixing	Ivorene label to be glued with super glue or pop riveted to face plate or frame		
Distribution Board Label Details	Distribution Board name e.g. DB A	Distribution Board name e.g. DB AE	Distribution Board name e.g. DB AU
Face Plate Label Details	Distribution Board Name; Indication of Feeder source; Size of Feeder cable; Fault level; Rating of Distribution Board; Phase rotation		
Letter Font	Arial		
Letter Size	Distribution Board label 6mm Face Plate label 3mm		
Labelling of Cables	All incoming and outgoing cables must be labelled with Ivorene labels indicating the designation and size of the cable		

9. CONDUIT AND ACCESSORIES (PVC)

The conduit and wiring system shall include all conduit, draw boxes (where required), joints, elbows and other accessories required for the completion of the Contract Works. Consumables, including saddles, fixers, screws, conduit bushes, etc., are deemed to be included within the rates quoted. A minimum number of joints shall be permitted in any length of conduit run between draw boxes, switch socket outlets, luminaries, distribution boards, etc.

All the conduiting shall be done on the roof trusses (attached by means of saddles onto the bottom of the trusses) or on top of the ring beams or chased into walls or cast in concrete where applicable. The conduit work shall cater for face brick external wall finishes and plastered/face brick internal finishes to all buildings. No surface conduit shall be allowed and the successful Tenderer shall build conduits into the walls. Where services exit in face brick walls, the successful

Tenderer is to ensure that the conduit box or switch box is symmetrical with the nearest brick course.

The successful Tenderer shall be responsible for the conduit routing. Draw-boxes are to be provided in accordance with the Wiring Code and wherever necessary to facilitate easy wiring.

The successful Tenderer shall have a representative in attendance at all times when the casting of concrete slabs takes place, to ensure that no movement or damage to conduit occurs.

Unless other methods of installation are specified for certain circuits, the installation shall be in conduit throughout. No open wiring in roof spaces or elsewhere will be permitted.

The conduit and conduit accessories shall comply fully with the applicable SABS specifications and the conduit shall bear the mark of approval of the South African Bureau of Standards.

The bonding of PVC tubing to connectors, elbows or termination boxes shall be carried out using a good quality adhesive, rendering the pipe work completely watertight.

The loop in system shall be used throughout the installation. This means that all wiring shall be possible from below the ceiling and that no inspection or draw boxes shall be allowed in the ceiling space.

For light and socket outlet circuits, the conduit used shall have an external diameter of 20mm.

For telephone and LAN circuits, the conduit used shall have an external diameter of 25 or 32mm. In all other instances the sizes of conduit shall be in accordance with the Wiring Code for the specified number and size of conductors. For a single outlet point, a 25mm conduit must be installed and a 32mm to power skirting for every 5 or less outlet points.

Only one manufactured type of conduit and conduit accessories will be permitted throughout the installation.

Under no circumstances will conduit having a wall thickness of less than 1.6mm be allowed in screeding laid on top of concrete slabs.

Bending and setting of conduit must be done with special bending apparatus manufactured for the purpose and which are obtainable from the manufacturers of the conduit systems. Damage to conduit resulting from the use of incorrect bending apparatus or methods applied must, on indication by the Client's Representative, be completely removed and rectified, and any wiring already drawn into such damaged conduits must be completely renewed at the successful Tenderer's expense.

Flexible connections between conduit and appliance or other equipment shall be by means of flexible conduit.

Tenderers must ensure that general approval of the proposed conduit system to be used is obtained from the local electricity supply authority prior to the submission of their tender. Under no circumstances will consideration be given by the Engineer to any claim submitted by the

successful Tenderer that may result from a lack of knowledge in regard to the requirements of the supply authority.

The Contractor shall make himself familiar with the positions of all fittings, such as blackboards, pinning boards, cupboards, shelving, work-tops, etc, before commencing the conduit installation. The position of switches and socket outlets as indicated on the drawings are approximate only. The Contractor must verify that the final position of these will not be covered by the installation of the fittings referred to above, or come midway between the junction of any dadoes and upper wall finishes.

No extras will be entertained for moving switches or socket outlets as a result of the Contractor's failure to verify the final positions of the fittings or type of wall finish.

10. CONDUIT IN ROOF SPACES

Conduit in roof spaces shall be installed parallel or at right angles to the roof members and shall be secured at intervals not exceeding 1.5m by means of saddles screwed to the underside of the roof timbers.

Nails or crampets will not be allowed.

Where non-metallic conduit has been specified for a particular service, the conduit shall be supported and fixed with saddles with a maximum spacing of 450mm. The successful Tenderer shall supply and install all additional supporting timbers in the roof space as required.

Under flat roofs, in false ceilings or where there is less than 1m of clearance, or should the ceilings be insulated with glass wool or other insulating material, the conduit shall be installed in such a manner as to allow for all wiring to be executed from below the ceilings.

11. SURFACE MOUNTED CONDUIT

Wherever possible, the conduit installation is to be concealed in the building work, however, where unavoidable or otherwise specified, conduit installed on the surface must be plumbed or levelled and only straight lengths shall be used.

The use of inspection bends is to be avoided and instead the conduit shall be set uniformly and inspection couplings used where necessary.

Conduit will be secured on heavy duty approved spaced saddles rigidly secured to the mounting surface.

Alternatively, fittings, tees, boxes, couplings etc., are to be cut into the surface to allow the conduit to fit flush against the surface. Conduit is to be bedded into any wall irregularities to avoid gaps between the surface and the conduit.

Crossing of conduits is to be avoided; however, should it be necessary, purpose-made metal boxes are to be provided at the junction. The finish of the boxes and positioning shall be in keeping with the general layout.

Where several conduits are installed side by side, they shall be evenly spaced and grouped under one purpose-made saddle.

Distribution boards, draw-boxes, industrial switches and socket outlets etc., shall be neatly recessed into the surface to avoid double sets.

In situations where there are no ceilings the conduits are to run along the wall plates and the beams.

Only approved plugging materials such as aluminium inserts, fibre plugs, plastic plugs, etc, and round-head screws shall be used for fixing saddles, switches, socket outlets, etc., to walls. Wood plugs and the plugging in joints in brick walls are not acceptable.

No extras will be entertained for moving switches or socket outlets as a result of the Contractor's failure to verify the final positions of the fittings or type of wall finish.

12. WIRING

In general, all wiring used in installations shall be of at least 600/1000V grade in accordance with SABS 1507 and PVC insulated, subject to volt drop calculation results.

Light, ceiling fan and extractor fan circuits shall be wired with 1.5mm² 7 strand copper conductor PVC insulated wire, subject to volt drop calculation results.

Switched socket outlets and power points shall be wired with 2.5mm² 7 strand copper conductor PVC insulated wire, subject to volt drop calculation results.

Geyser, air conditioner and heater circuits shall be wired with 4mm² 7 strand copper conductor PVC insulated wire, subject to volt drop calculation results.

Stove and oven cooker circuits shall be wired with 6mm² 7 strand copper conductor PVC insulated wire, subject to volt drop calculation results.

Wiring for circuits not specified shall be according to SANS 10142-1.

Associated with every circuit, a stranded copper earth conductor shall be run and connected to the terminal of the appliance or outlet and on the installed earth bar within the distribution board. Wire sizes shall be as follows:

6mm² conductor	:	4mm² earth wire
4mm² conductor	:	2.5mm² earth wire
2.5mm² conductor	:	2.5mm² earth wire
1.5mm² conductor	:	2.5mm² earth wire

Where circuits are run in metal conduit, bare earth conductor shall be used and PVC insulated earth conductor shall be used for circuits run in PVC conduit.

13. POWER SKIRTING

The power skirting shall provide for all the services detailed on the layout diagrams, and shall be in accordance with the type specified in the legend, or equal approved. Wiring shall conform to the standards detailed within this specification. The power skirting shall be of the type detailed on the layout diagrams complete with all bends and end caps.

The per meter rate quoted for the supply of the power skirting shall include for all necessary covers, fitting mechanisms, fixers and consumables, but shall not include for switched socket, telephone or computer LAN outlets plus cover plates and other hardware fitted into the power skirting.

Conduits linking between sections of power skirting and between the power skirting and the relevant distribution boards shall be provided as per the requirements for plug, telephone and computer LAN circuits.

14. LIGHTING

19.1 LIGHTING CONDUIT WORK

Lighting circuits are to be conduited using 20mm conduit, and all lighting circuits are to be routed via the ceiling, either cast into the ceiling slab or saddled to roof trusses and brandering in the ceiling void. A separate circuit shall be run from the distribution board for each of the light circuits as indicated on the layout diagrams.

Light points are to consist of 60mm round boxes 32mm deep with side/back entry. Where a light point is to be cast into a ceiling slab a deep conduit box with extension ring shall be used to provide a 61mm deep conduit box.

For external wall mounted lighting the conduit shall be attached to the fitting in such a manner as to provide a weatherproof and vermin proof seal. Where a luminaire is to be installed on a face brick wall, conduit shall be chased into the inner skin or routed in the wall cavity, and shall only protrude at the position of the mounting, terminating in a conduit box over which the luminaire shall be mounted.

The light switch point shall consist of a galvanised pressed steel conduit box of dimensions 100mm x 50mm x 50mm deep recessed into the brickwork to allow for a flush mounting.

The successful Tenderer is to co-operate closely with the building contractor to ensure that luminaires are symmetrically positioned with regards to the ceiling pattern. The exact positioning of lights and switches is to be confirmed with the Client's Representative.

19.2 LIGHTING GENERAL

Lighting shall comply with the SABS standards where applicable. The luminaires specified are detailed in the Bill of Quantities and drawings and luminaire schedule. Where alternative luminaires and lamps are offered, the details shall be submitted with the tender. All alternatives shall be subject to the approval of the Client's Representative. Earth conductors shall be connected to the earthing terminal of all luminaires and in accordance with SANS 10142-1.

All luminaires shall be supplied complete with a first working fitting of the appropriate lamp in each lamp holder.

Each lighting circuit on the Distribution Board shall consist of a 16A single pole MCB of 2.5kA rupturing capacity, unless specified otherwise on the single line diagram.

Unless otherwise specified in the Bill of Quantities or the drawings, the light switches shall be of Clipsal Series 2000, Crabtree Diamond or other approved. The correct PVC cover plate shall be provided with the light switch and included in the rate for the light switch.

The colour coding of light switches shall be in accordance with the details as specified below:

	Normal Supply	**Essential/Emergency Supply**	**UPS Supply**
Colour of Cover Plate	White		
Colour of Switch Toggle	White	Red	Blue
Label Type	Black letters on White Ivorene label or engraved directly on the cover plate with Black infill	Red letters on White Ivorene label or engraved directly on the cover plate with Red infill	Blue letters on White Ivorene label or engraved directly on the cover plate with Blue infill
Label Fixing	Ivorene label to be glued with super glue or pop riveted to cover plate		
Cover Plate Label Details	Distribution Board name and circuit number feeding the switch e.g. DBA L1	Distribution Board name and circuit number feeding the switch e.g. DBAE LE1	Distribution Board name and circuit number feeding the switch e.g. DBAU LU1
Letter Font	Arial		
Letter Size	3mm		

19.3 FLUORESCENT AND LED LUMINAIRES

Tubular Fluorescent luminaires shall comply fully with SANS 1119 and all amendments as well as the additional requirements of this specification. Luminaires shall also bear the SANS mark of approval and the SANS 1464 safety mark.

Tubular fluorescent lamps light colour shall correspond to cool white i.e. colour 2 (4 300ºK) as defined in SABS 1041. Lamps shall comply with SABS 1041 and shall bear the SABS mark. Lamps shall be devoid of flicker and shall readily strike when switched on. The successful Tenderer is to hand over a fully operational system with all lamps in working order.

Fluorescent lamps are to be of the Osram or Phillips manufacture or other approved. All fluorescent lamps are to be controlled by electronic ballasts, which ballasts shall be matched to the lamps specified. T5 and LED lamp technology shall be used. Electronic dimmable control gear compatible with DALI shall be used for all office area lighting. Standard ECG shall be used for plant rooms and basement parking areas. **All LED luminaires shall not be less than LM97; B50 type; with a minimum of 50000 hours life and 5 year warranty**.

Fluorescent luminaires to be mounted on roof trusses shall be secured by means of two 40mm no.10 round head brass screws and washers. The luminaires shall be bonded to the conduit as defined previously.

19.4 LAMP HOLDERS

Lamp holders shall be of the type suitable for the relevant compact fluorescent or general lighting service lamp. The following standard lamps and lamp holders shall apply:

LAMP	7W PL	9W PL	11W PL	13W PLC	16W 2D	18W PLC	60/100E GLS
HOLDER	2G11	2G11	2G11	G24d-1	GR10q	G24d-2	E27, porcelain

NB: NO ALTERNATIVE LIGHT FITTINGS WILL BE ACCEPTED AFTER TENDER AWARD.

15. SWITCHED SOCKET OUTLETS (PLUGS)

Plug circuits are to be conduited using 20mm conduit, and all plug circuits are to be cast into the floor slab, unless circumstances specific to the installation require otherwise. A separate circuit shall be run from the distribution board for each of the plug circuits as indicated on the layout diagrams.

The plug point shall consist of a galvanised pressed steel flush/surface mounted conduit switch box of dimensions 100mm x 100mm x 50mm deep recessed into the brickwork to allow for a flush mounting.

Unless otherwise specified in the Bill of Quantities or the drawings, the socket outlets shall be of the round pin 16A rating double or single outlet type where indicated, similar in design and construction to the Clipsal Series 2000, Crabtree Diamond or other approved. The correct cover plate shall be provided with the switched socket outlet and included in the rate for the plug.

The colour coding of switched socket outlets shall be in accordance with the details as specified below:

	Normal Supply	Essential/Emergency Supply	UPS Supply
Colour of Cover Plate	White		
Colour of Switch Toggle	White	Red	Blue
Label Type	Black letters on White Ivorene label or engraved directly on the cover plate with Black infill	Red letters on White Ivorene label or engraved directly on the cover plate with Red infill	Blue letters on White Ivorene label or engraved directly on the cover plate with Blue infill
Label Fixing	Ivorene label to be glued with super glue or pop riveted to cover plate		
Cover Plate Label Details	Distribution Board name and circuit number feeding the socket outlet e.g. DB A/P1-1 Each socket outlet on a circuit shall be labelled	Distribution Board name and circuit number feeding the switch e.g. DB AE/PE1-1 Each socket outlet on a circuit shall be labelled	Distribution Board name and circuit number feeding the switch e.g. DB AU/PU1-1 Each socket outlet on a circuit shall be labelled
Letter Font	Arial		
Letter Size	3mm		
Earth Pin	Round		
Colour of Female Insert	White		

All switched socket outlets fed from circuits equipped with Earth Fault Monitoring equipment shall be equipped with double pole switches.

Dedicated switched socket outlets for computer equipment only, shall comply generally with those fed from the normal supply, but shall have red cover plates, switch toggles and female inserts, and shall only accept plugs with D-shaped earth pins.

All switched socket outlets shall comply with SABS 164 and shall be rated at 16A.

Not more than six 16A double switched socket outlets shall be connected to any one circuit without the approval of the Client's Representative.

Each power circuit on the distribution board shall consist of a 20A single pole MCB of the correct kA rupturing capacity as specified on the single line diagram.

Spurs and additions to any switched socket outlet circuit will not be accepted.

16. AIR CONDITIONER CIRCUITS

Air conditioner circuits are to be conduited using 25mm conduit, and all air conditioner circuits are to be are to be routed via the ceiling, either cast into the ceiling slab or saddled to roof trusses and brandering in the ceiling void. The circuit shall terminate in a 60mm round conduit box installed flush on the external wall and in such a manner as to provide a weatherproof and vermin proof seal. The conduit box shall be located at a point within 1.5m of the position at which the air conditioner condenser unit is to be mounted. A separate circuit shall be run from the distribution board for each of the air conditioner circuits as indicated on the layout diagrams. Unless specified otherwise in the Bill of Quantities, the successful Tenderer shall not be responsible for the supply and installation of the air conditioner units, but shall be responsible for the electrical connection to the air conditioner units.

Each air conditioner circuit on the Distribution Board shall, depending on the size of the air conditioning unit, consist of either a 30A 2 pole or a 30A 3 pole MCB of 5kA rupturing capacity, unless specified otherwise on the single line diagram.

A 30A 2 pole or 30A 3 pole weatherproof (IP65) enclosed type corrosion proof PVC encased isolating switch shall be mounted over the position of the external conduit box. The isolator shall have a 5kA rating, unless specified otherwise on the single line diagram.

Unless otherwise specified in the Bill of Quantities or the drawings, the isolator outlets shall be similar in design and construction to the Clipsal Series 2000, Crabtree Diamond or other approved. The correct PVC cover plate shall be provided with the isolator outlet and included in the rate.

17. EXTRACTOR FAN CIRCUITS

For extractor fans to be mounted in walls or windows, a 16A front entry two pole cord grip isolator shall be installed not further than 1.5m away from each extractor fan. The isolator shall be flush mounted on the wall adjacent to the fan.

For extractor fans mounted in ceilings, the 5A, 3 pin socket outlet mounted in a 63mm diameter round conduit box shall be installed not further than 1.5m away from the extractor fan. The extractor fan shall be fitted with a 5A, 3 pin plug.

For ducted extraction systems mounted in ceilings, a 16A two pole isolator shall be installed in a 100 x 100 x 50 conduit box not further than 1.5m from the fan motor. The fan motor shall be connected to the isolator using a flexible conduit connector.

Where indicated on the layout diagram, each extractor fan shall be wired into the light circuit of the room in which it is to be installed.

Unless otherwise specified in the Bill of Quantities or the drawings, the isolator outlets shall be similar in design and construction to the Clipsal Series 2000, Crabtree Diamond or other approved. The correct PVC cover plate shall be provided with the isolator outlet and included in the rate.

18. EQUIPMENT ISOLATORS

The colour coding of isolators located adjacent to items of fixed equipment as prescribed in SANS 10142-1 or elsewhere in this specification or drawings, shall be in accordance with the details as specified below:

	Normal Supply	Essential/Emergency Supply	UPS Supply
Colour of Cover Plate	White		
Colour of Isolator Toggle	White	Red	Blue
Label Type	Black letters on White Ivorene label or engraved directly on the cover plate with Black infill	Red letters on White Ivorene label or engraved directly on the cover plate with Red infill	Blue letters on White Ivorene label or engraved directly on the cover plate with Blue infill
Label Fixing	Ivorene label to be glued with super glue or pop riveted to cover plate		
Cover Plate Label Details	Distribution Board name and circuit number feeding the isolator e.g. DBA I1	Distribution Board name and circuit number feeding the isolator e.g. DBAE IE1	Distribution Board name and circuit number feeding the isolator e.g. DBA U/IU1-1
Letter Font	Arial		
Letter Size	3mm		

Where Blue isolator toggles are not obtainable and written approval was obtained from the Engineer, an isolator switch incorporating a Red or Blue neon or LED indicator may be used. Alternatively, a White isolator toggle may be used but the isolator toggle must be tagged with a non-removable Red or Blue sticker.

Unless otherwise specified in the Bill of Quantities or the drawings, the isolator outlets shall be similar in design and construction to the Clipsal Series 2000, Crabtree Diamond or other approved. The correct PVC cover plate shall be provided with the isolator outlet and included in the rate.

19. LAN CONNECTIONS

Where only one single local area network (LAN) extension point is required, no LAN distribution board is required. The riser shall run from the extension point to an appropriate point outside of the building.

The computer LAN is to be conduited using 25mm conduit and all LAN conduits are to be cast into the floor slab or connected to the communication trunking in the roof space (where provided).

All LAN extension points are to be installed flush in brick walls or in power skirting. The LAN extension point, where not in power skirting, shall consist of a galvanised pressed steel conduit switch box of dimensions 100mm x 50mm x 50mm deep, and fitted with a blank steel cover plate. The box shall be mounted with the 100mm side parallel to the floor.

Galvanised steel draw wires shall be installed into all conduits and sleeves with the ends secured to short lengths of loose conduit to prevent accidental removal.

NB: LAN Specifications Requirements:

- Service Provider needs to be Commscope Certified;
- Commscope certification to be submitted: (act 1, act2, act3);
- Copper tester Calibration Certificate to be submitted (Commscope certified ONLY);
- CFOT fibre certification required;
- Splice machine calibration Certificate to be submitted (Fujikura 70s and above);
- OTDR Fibre Test results on Completion;
- Hard and soft copy Floor plans on Completion;
- Testing and Labelling of all new and existing Lan points;
- Copper Test Results on all existing and New Lan Points (PDF);

All LAN installations to conform to ACSA standards and requirements as outlined in the document forming part of this specification.

20. TELEPHONE CONNECTIONS

Where only one single telephone extension point is required, no telephone distribution board is required. The riser shall run from the extension point to an appropriate point outside of the building.

Telephone circuits are to be conduited using 25mm and 32mm conduit and all conduits are to be cast into the floor slab, except for telephone connections in power poles and in power skirting where the power skirting is installed along dry walls.

All telephone extension points are to be installed flush in brick walls or in power skirting. The telephone extension point, where not in power skirting, shall consist of a galvanised pressed steel

conduit box of dimensions 100mm x 50mm x 50mm deep, and fitted with a blank steel cover plate. The box shall be mounted with the 100mm side parallel to the floor to enable looping to be performed.

Galvanised steel draw wires shall be installed into all conduits and sleeves with the ends secured to short lengths of loose conduit to prevent accidental removal.

Near completion of the installation, the successful Tenderer shall supply and install all telephone cabling in accordance with ACSA requirements.

21. FIRE DETECTION SYSTEM

The successful Tenderer shall be responsible for the design, supply, installation, commissioning and testing of the Fire Detection System. Designs to be approved by Engineer prior to installation.

All details, dimensions and instructions shown on any drawings, diagrams, and specifications quoted herein, shall be taken as forming part of this specification.

If there is any discrepancy between drawings and specifications, the specification shall take precedence.

A Contractor supplying goods for the first time shall obtain approval from the Engineer of advance samples before proceeding with the bulk of the contract. The Contractor must be a member of the FDIA (Fire Detector Installer Association) and ASIB (where sprinkler installations are required).

A fully addressable closed circuit fire detection system shall be installed (max 126 units per loop).

Supplementary specs, regulations and requirements

The design and installation of the Fire Detection System shall be done in accordance and comply with the latest relevant requirements of the following specifications as amended:-

- SANS 322: Fire detection and alarm systems for hospitals
- SANS 10400: The application of the National Building Regulations
- SANS 10139: Fire detection and alarm systems - System design, installation and servicing
- SANS 50054-1: Components of automatic fire detection systems Part 1: Introduction
- SANS 50054-2: Fire detection and alarm systems Part 2: Control and indicating equipment
- SANS 50054-3: Fire detection and alarm systems Part 3: Fire alarm devices - Sounders
- SANS 50054-4: Fire detection and alarm systems Part 4: Power supply equipment
- SANS 50054-5: Fire detection and alarm systems Part 5: Heat detectors - Point detectors
- SANS 50054-7: Fire detection and alarm systems Part 7: Smoke detectors - Point detectors using scattered light, transmitted light or ionization
- SANS 50054-11: Fire detection and alarm systems Part 11: Manual call points
- SANS 1411-5: Materials of insulated electric cables and flexible cords Part 5: Halogen-free, flame-retardant materials
- SANS 60331-21: Tests for electric cables under fire conditions - Circuit integrity Part 21: Procedures and requirements - Cables of rated voltage up to and including 0,6/1,0 kV
- SANS 1411-2: Materials of insulated electric cables and flexible cords Part 2: Polyvinyl chloride (PVC).

- SANS 950: Unplasticized polyvinyl chloride rigid conduit and fittings for use in electrical installations
- SANS 1200LC: Standardized specification for civil engineering construction Section LC: Cable ducts
- The Council of Fire Insurance Companies of South Africa

The Following Regulations Shall Also Apply:

- EN 54: European Norm: Fire Detection Systems
- ACT 85 of 1993: Occupational Health & Safety Act.
- ACT 103 of 1977: National building regulations Act.

The system shall also comply with the relevant requirements of one or more of the following bodies provided there is no conflict with any other requirement of this specification or S.A. regulations.

- VDS (the German Underwriters Association)
- The Fire Officer's Committee of the United Kingdom.
- The Council of Fire Insurance Companies of South Africa

Inspection

The Engineer reserves the right to arrange for the inspection of all goods forming the subject of any contract or order, at any stage before final acceptance and by any means it may think fit, and when such inspection is to be carried out, the relevant contracts, orders and sub-orders shall be endorsed accordingly.

When inspection at the Contractor's works or warehouse is specified, the authorised person shall have free access to the premises of the Contractor at all times during working hours; shall have liberty to inspect work which is the subject of the contract or order, at any stage of manufacture. The Contractor shall make good any work found defective or in any way not conforming with the terms of the contract or order. The Contractor shall afford all reasonable facilities for such access and inspection.

The Contractor shall supply, without charge all tools, gauges, templates and other equipment which may be required for checking the accuracy of the work, provide the labour necessary for inspecting the work in accordance with requirements specified in the contract of order and shall render all reasonable assistance in carrying out this checking and inspection.

The Contractor shall, without charge, prepare and supply all test pieces, samples and specimens, provide all labour and apparatus for carrying out tests and analyses in accordance with the terms of the contract or order and render all reasonable assistance in making such tests and analyses.

Certificate of Compliance

The Contractor shall indicate, section by section, whether or not his equipment complies in every respect with this specification.

If alternative equipment is submitted, all deviations from this specification shall be clearly stated.

Right of reservation

The Engineer reserves the right to accept certain parts of the self-addressable fire detection system only and not necessarily the complete system as a whole.

Undertaking by Contractor

The Contractor shall undertake to provide, as part of the following in respect of the equipment he has offered:

• All technical and other information, in English concerning the equipment.

• Proposals regarding the schematic lay-out of his equipment as part of the complete system in which it will function.

• The technical and other information on the drawings and in the technical manuals shall include:

a) Electrical input and output requirements
b) Installation instructions
c) Operations instructions
d) Circuit diagrams and component layouts
e) Routine testing information and requirements
f) System and equipment description

Samples

A sample of the items covered by this specification shall be submitted, if called for. The sample will be regarded as being identical to the item which has been submitted.

Scope

The specification covers the requirements for the design, delivery to site, installation, testing, commissioning and handing over in a working condition of a fire detection and alarm system.

The Contractor shall submit with this offer a detailed list of additional requirements he considers necessary in order to ensure that the installed system shall:

• be fully operational
• comply with the specifications mentioned above
• any other improvement the supplier may offer that can be to the benefit of the user.

General description

The fire detection system shall comprise a Central Station, connected to field devices, including fire detection devices, alarm devices and control devices, located throughout the protected building.

The central station shall continuously monitor the ambient status of all sensing devices, and initiate action when a fire or smoke condition is present.

The alarm management shall be field programmable to enable the system to be easily tailored to suit the protected building, and to permit future changes.

The system shall be fully modular in design to meet the user's requirements.

The central station shall have, visible on the front panel, zone LED's for "fire" and "fault" common LED's and controls, and a LCD display. The unit shall have facilities for interfacing with a micro-computer and desk printer.

The central station shall consist of a wall or rack mounted cabinet with key-lockable doors, glazed with clear Perspex. All lamps and controls shall be behind the Perspex.

Detailed description

The successful Tenderer shall be responsible for providing a link or interface to the local ACSA Fire Stations, building management system (if any) and air-conditioning systems.

The fire and smoke detection system shall comprise of various detectors to cover each area. A multi-zone fire detection control panel of the type ZITON, ARITECH or AST shall be installed to ACSA requirements. The panel shall be supplied with back up battery. The panel shall be fed from the Emergency Power distribution board by means of a 10A circuit breaker located in a glass fronted, lockable box positioned next to the distribution board.

The audible siren shall have strobe light and shall be of the type ROSHNEE.

The smoke and heat detectors shall be of the type APPOLO or ZITON.

The manual call point shall be of the type ZITON, ARITECH or AST.

PH120 type fire retardant cable to comply with SABS 150/SABS 168 or BS 6207 shall be used throughout the installation.

The cable shall be drawn/installed in a 20mm conduit or trunking.

The successful Tenderer shall provide a Compliance Certificate on completion of the Fire Detection System installation. Fire detection installations shall conform to ACSA standards and requirements.

Facilities

The transmission paths between the control unit and other external devices shall be a 2 wire circuit.

It shall be possible to couple the following devices/detectors to the control unit (Central Station).

- Automatic fire detectors
- Manual fire detectors
- Alarm devices (zoned)
- Remote signalling devices
- Control devices for automatic fire protection equipment e.g. FM200, Inergen or Argonite.

The central station shall accept the following types of fire sensing devices.

- Ionization smoke detectors
- Optical smoke detectors
- Heat detectors, fixed temperature, 58° C.
- Heat detectors, rate-of-rise, 58° C.
- Linear (beam type) smoke detectors.
- Manual "Break-Glass" units.

These circuits shall be continually and automatically monitored for open circuit, short circuit, earth leakage and detector removal. A single short circuit is to cause a maximum of 20 detectors in the system to be disabled, with the remaining detectors functioning normally. This is to be achieved by the use of line isolator units.

Line Isolators

Line isolators are to be located at intervals on the detector line. In the event of a line short circuit, the isolators on each side of the short must open and isolate the faulty section of wiring.

The isolators must be under software control. In the maintenance mode it must be possible to open or close isolators manually from the panel for test purposes.

A fault in any of the transmission paths shall cause a "Fault Alarm" to be indicated automatically in the central station.

Any change in the ambient condition of any receiver line shall automatically be updated and stored in the central station.

Monitoring of elements in an alarm line

The alarm threshold of every detector shall also vary in accordance with its idle state. This change shall be stored and continually updated in the central station.

Each element of an alarm line shall be continually and automatically monitored, individually. Any change in the ambient value of the element shall be updated and stored in the central station. When the value of an element reaches a level at which it will no longer perform its function, a "Fault Alarm" must be automatically indicated in the central station.

Such a fault indication shall not prevent a fire alarm in the line being detected and indicated.

Monitoring of zones

Each detection line shall be divisible into a maximum of 4 separate zones and a maximum of 20 devices per zone.

Each zone shall be clearly defined and indicated.

Each zone must have the facility to be monitored for a fire alarm condition from either manual or automatic detectors.

Alarm detection lines

Alarm/Detection lines may have a capacity of detectors or elements as decided upon by the manufacturer, but shall not have more than 127 detectors. These detectors/elements shall be freely distributed over any one of the individual alarm zones.

An alarm zone may only extend over a single fire zone and quick and precise identification of the seat of the fire must be possible.

An alarm line shall not extend beyond one floor except in the case of stairwells or lift shafts.

Each line shall be capable of monitoring functions.

An LCD display shall be provided for indicating the exact position of triggered detectors/elements in any line.

A triggered detector/element shall not cause any other detectors on the line to cease monitoring.

Each line must be capable of switching on/off air-conditioning plants, fans, etc. in case of an alarm, and cause plant facilities to be switched on/off via separate high or low voltage relays, or via a switching matrix.

In the specific zone where a fire has been detected it shall be possible to control equipment plant, fire dampers, etc. pertinent to that particular zone only.

Any detector, when triggered, shall be capable of causing a specific control function.

Every line shall have a "double-knock" function built-in, providing a specific control function capability whenever two detectors on the line are triggered.

Any individual zone or detector in an alarm line shall be capable of being isolated without affecting the operation of the remaining zones or detectors in the line and without raising a fire alarm. However, during this condition an isolation indication per zone, shall be displayed in the central station.

Signalling and annunciation

General

Fire and fault signals shall be indicated visually and audibly in the central station. The indications shall be such that fire alarms and fault warnings can be clearly distinguished visually and audibly.

The internal audible signal device may be the same for both fire alarms and fault warnings.

All zone visual indicators shall be dual LED's - i.e. one LED per zone for fire and one LED per zone for fault. Common LED's for "fire" and "fault" conditions shall be provided. No incandescent lamps shall be used.

A LCD display shall be provided which shall indicate specific information about the status of the system. In an alarm condition it must show details of the first received alarm, and if more than one detector is in alarm, it may be possible to call each piece of information to the display.

Similarly, the LCD display must show relevant information regarding faults or isolated devices.

A facility shall be provided for calling-up information to the display, such as maintenance functions or isolating detectors and zones.

An LED test button for testing the function of all LED's on the front panel.

An "Alarm-Accept" button for silencing the local panel buzzer.

A "Reset" button for restoring the system to normal.

Remote Annunciation
Facilities must be provided for remote indication and control of all functions.

The system must be able to interface with wall mounted mimic panels, as well as desk mounted micro-computers and printers. Block plans must be mounted on each floor of the installation.

Normal Condition
When the central station is in the normal operating condition without any alarms or faults being displayed, a green LED shall indicate visually that the power is turned on.

Fire Alarm Condition
A fire alarm shall be indicated in the central station as follows:

- An intermittent audible indication
- A flashing "Alarm" indication on a central panel common to all zones.
- The LCD display must indicate the details of the first received alarm, indicating line, zone and detector number.

The audible signal shall be capable of being switched off from outside the central station. However, the visual alarm shall only be accessible after the front panel of the central station or central panel has been unlocked.

After the alarm has been accepted, by operation of a switch, the central "Alarm" visual indicator shall cease flashing and become steady. The zone visual indicator shall continue to flash until the alarm is reset.

When a new alarm is received by the central station the common alarm indicator on the central panel must revert from a steady indication to a "Flashing" indication. The new alarm zone LED's shall also flash. No limitation shall exist for receiving a new alarm from another zone.

The control unit must have facilities for two independent Remote Signalling circuits. These circuits shall be suitable for potentially free or 24 Volt signalling and shall be monitored for short circuit, open circuit and earth leakage. They must be suitable for operating external alarm devices such as bells, hooters and visual flashing lamps.

A fire alarm shall be indicated outside the central station as follows:

Audible and optical alarm devices located as required throughout the building are triggered automatically and can only be switched off, after opening the central station.

Fault condition

Any fault warning shall be indicated in the central station as follows:

- A steady audible indication
- A steady "Fault" indicator on a central panel in the central station, common to all zones.
- One steady AMBER LED indicating the effected zones.
- A LCD display indicating the line number and detector number prior to where the fault occurs or the last functioning detector in the line. The audible signal shall be capable of being switched off from outside the central station. However, the visual alarm shall remain until the fault has been repaired.
- When a new fault condition is received by the central station, the audible alarm shall re-start automatically.
- An earth leakage indication shall be provided for the entire system.

Power failure

In the event of mains failure for a period in excess of 50 seconds, a power supply fault shall be indicated, audibly and visually, in the central station. The visual display shall be a separate AMBER LED. Any mains outages of less than 50 seconds shall automatically switch the load to the stand-by battery, but without an indication.

In the event of a fault occurring on the standby battery, even though it is not on load, a power supply fault shall be indicated, audibly and visually, in the central station. The visual indication shall consist of an AMBER LED.

System maintenance

General

The system shall be, as far as possible, self testing and maintenance free.

The control unit shall continually update the idle state of each detector, and indicate a "Maintenance Required" signal in the event that a detector sensitivity is too high or too low.

A log book must be supplied to log events and maintenance of the system.

Control Unit Test

The control unit shall have a test facility for the following:

- Simulation of short circuit, open circuit and fire alarm for each zone
- Individually.
- General simulation of earth leakage.
- LED test for all panel and zone LED's.

The control until shall have the facility for printing out, upon demand, the idle status of each detector on a line.

Field Tests

Detector Tests

The control unit shall allow for detector test and inspection by a single person.
The test alarms triggered on each detector by the inspecting person shall be indicated on the detector by a RED LED, and shall be automatically reset by the control unit. Alerting shall not take place.

Zones which are not switched to "inspection" mode shall remain ready for normal alarm procedure.

When testing lines equipped with only manual push button alarm boxes, it shall be possible for a single person to check each manual box individually for correct operation without disabling the function of the other alarm boxes in the line. An "Alarm Received" indication shall be transmitted by the central station to the push button under test, where it shall be indicated by a RED LED.

Alarm Tests

The control unit shall allow for the testing of all audible and visual alarm devices and control relays, to check correct functioning of these devices.

Acceptance Tests

The acceptance tests as stipulated in the "Acceptance Procedure for Fire detection Systems installed in Equipment Buildings" shall be strictly adhered to.

Where the system is installed elsewhere (non-technical buildings), the onus shall be on the Engineer/Contractor to stipulate the acceptance procedures. These procedures shall be for the user's approval.

System Power Supply

The output of the power supply shall be capable of sustaining an alarm from all the connected alarm lines simultaneously.

The power supply shall be an integral part of the control unit.

In the event of a failure of the 24V dc supply there shall be an automatic switch over to the stand-by battery supply without an interruption of the load and without activating a fire alarm.

The power supply unit shall be dimensioned in such a way, that it maintains the battery at fully charged state or is capable of re-charging the battery, discharged to cut-off voltage at the rated discharged current, to 80% of the achievable rated battery capacity within a period of 24h, besides supplying the power requirements of the alarm system in the idle condition.

The central control unit shall be protected against reverse polarity on the voltage supply side.

The unit shall be suitable for the use with a positively earthed dc power supply system.

Stand-By Battery

The stand-by battery must be capable of supplying the system in idle condition for the stated period of 24h plus an hour in alarm condition after the stated period.

The standby battery must be a maintenance free lead acid type.

Alarm Inputs from other sources

Alarm inputs from fire detectors and alarm initiating devices, which are provided by others, shall be incorporated by the Contractor to the central fire alarm monitoring system, provided by him.

Interface with Building Management System

The fire detection system shall be required to interface with the building management system. The protocol shall be specified in the detailed technical specification.

Guarantee

The contractor shall guarantee all equipment fitted for a period of 12 months. The guarantee shall include latent defects.

22. EARTHING AND LIGHTNING PROTECTION

General

All workmanship and materials used shall be of the highest standard and shall be carried out in accordance with the best modern practice, as determined by the Engineer.

The entire installation shall comply in every respect with the latest amended publication of the relevant specifications.

Definitions

Lightning Protection System

The whole system of conductors used to protect a structure from the effects of lightning.

Air Terminal

The part of a lightning protection system that is intended to intercept lightning discharges directly.

Down Conductor

A conductor that connects the air terminal (s) to the earth terminals (s).

Earth Terminal

The part of a lightning protection system that is intended to discharge lightning currents into the general mass of the earth.

Earthing Electrode

The part of an earth terminal which makes direct electrical contact with the earth.

Bond

A conductor that provides electrical connection between the lightning protection system and the metal work of the structure to be protected or between various parts of this metal work.

Joint

A mechanical junction between two conductors for purpose of providing electrical continuity between two parts of the lightning protection system.

Testing Joint

A joint in a down-conductor or in a bond connecting two sections of the lightning protection system so designed and situated as to enable measurements to be made of the resistance to earth or of electrical continuity of parts of the lighting protection system.

Detailed scope

The contractor shall have a specialist who will undertake the soil resistivity tests and submit a detail design based on soil resistivity results indicating the expected earth reading to the engineer for approval prior to commencement of the installation.

Each transformer shall have an earth mat that is connected to the earth point of the transformer.

The earth mat shall be provided by the successful Tenderer as close as possible to the distribution board. The earth electrode shall consist of 10mmØ solid copper conductor and treaded copper coated earth spikes bearing the SABS mark of approval. A minimum of 250µm copper coated mild steel threaded on both ends driven into the ground to a depth where the reading obtained on equipment as specified does not exceed 2Ω. The distribution board earth bar shall be connected to the earth by means of a bare stranded copper conductor of size equivalent to that of the main incoming cable.

Earth continuity between any point and an exterior earth connection shall be proven by a Meggar reading of zero, i.e. full continuity.

All light fittings, fixed appliances such as stoves, geysers, etc., switched socket outlets and steel or copper water pipes shall be suitably bonded to a good earth.

Should non-conductive water piping be used in buildings for hot or cold water, the geyser or heat pump earth must be bonded to the main earth in each distribution board and to the main water supply piping.

No exothermic weld connections are allowed.

The lightning protection system shall consist of an aluminium roof conductor system in the case of non-metallic roofs and metallic roofs with which do not conform with minimum SANS62305-3:2011 (as amended), linked via a series of aluminium down conductors to buried earth spikes and 10mmØ

solid copper trench earths. In the case of metallic roofs, that conform with minimum SANS requirements, the roof shall be bonded to the buried earth spikes and trench earths by means of down conductors. The down conductors shall be spaced at a maximum of 20m apart around the entire building.

All conductors shall be in accordance with the requirements of BSS 1474 or American Standards Specification 6063. All aluminium conductors shall have a cross-section area of not less than 50mm^2 (domestic dwelling only) or 70mm^2 for all other applications. The dimensions of flat section conductors shall be a minimum of 20mm x 3mm. Where conductors are mounted in stand-off guides, the cross-sectional area of the conductor shall be not less than 70mm^2 to give adequate mechanical strength.

The conductor shall be mounted in aluminium alloy guides conforming to the material specification given above. The guides shall allow for free longitudinal movement of the conductor to cater for expansion and contraction of the system caused by temperature variation. The minimum thickness of any part of the guide shall not be less than 3mm. The guides shall be securely attached to the structure using two stainless steel screws and plugs; the use of plated screws is not permitted.

The conductor system shall be supported in guides so that an air gap exists at all times between the aluminium and the surface of the structure, the guides being seated upon plastic or other similar insulating material. Should conductors be installed directly upon the surface of concrete or cement plaster, an insulating strip is to be installed over their entire length to prevent contact between the two surfaces. Guides shall be installed to support the conductor at intervals not exceeding 1.2m horizontally or 1.5m vertically.

No part of an aluminium conductor system shall be allowed to come into direct contact with concrete or cement plaster as this may cause the aluminium to corrode.

Where conductors are installed horizontally without deviation from a straight line over long distances, expansion loops shall be provided at distances not exceeding 30m. These expansion loops shall have a cross-sectional area which is at least equal to that of the conductor.

Where external down-conductors are installed in areas which are readily accessible to the public, the lower ends of the conductors shall be enclosed in a semi-rigid insulating material. In the case of a circular section conductor this shall comprise a 2m length of 20mm diameter conduit. The conduit shall be securely attached to the wall by means of galvanized heavy duty steel saddles fixed with stainless steel screws and plugs, spaced at intervals not exceeding 1m. The ends of the conduit shall not be sealed.

Standard Procedure to be followed by the Specialist Contractor

a. Conduct a risk assessment on various structures and equipment, as required by the SANS Code of Practice.

b. Conduct resistance test measurements at areas where existing earthing has been installed and measure earth termination points connected and disconnected.

c. Conduct soil resistivity surveys where new installations are intended by means of the Wenner and fall of potential method.

d. Analyse from the surveys whether the ground conditions are in any way corrosive as per the SANS Code of Practice.

e. Block plan/site plan drawing to be provided so that required earthing can be marked up to upgrade wherever necessary.

f. Once the survey has been conducted and drawings marked up, etc., to provide quotation to upgrade wherever necessary.

g. Supply and install materials to structures and equipment wherever upgrading or new system may be installed to SANS requirements.

h. Conduct final resistance test measurements in presence of authorized personnel and issue an Earthing & Lightning Protection Report and Certificate/s.

i. Provide detail design of the complete earthing system complete with SANS10313 Lightning Protection System Installation Safety Report for acceptance by the Engineer.

The acceptance letter will be submitted by the Engineer.

All test procedures and recommendations will fully comply with the SANS Code of Practice 10313: 2010 in conjunction with SANS 62305-1-2-3-4: 2011 and IEC 62305-1-2-3-4: 2010.

22.1 JOINTS ABOVE GROUND

Circular section aluminium conductors shall be jointed by aluminium ferrules or lugs which are securely crimped into place. Aluminium lugs shall be bolted together using 10mmØ aluminium bolts and washers. The material specification for these components shall conform to that laid down above. Alternatively, heavily tinned copper lugs and ferrules may be used. The lugs should be joined together by means of 10mmØ copper, brass or bronze bolts and washers. Care should be taken to inhibit corrosion where dissimilar metals are used by thoroughly cleaning the surfaces of the metal before assembly and subsequently sealing the joint with an inert tenacious compound or tape.

Flat section aluminium conductors shall be joined by double riveting, using aluminium rivets which comply with the material specification laid down above. Alternatively, 2 x 6mmØ stainless steel bolts, nuts and washers may be used. Fold over type bends will not be permitted.

Down-conductors are to be terminated approximately 200mm above finished ground level. Circular section aluminium is to be jointed to a 70mm^2 (50mm^2 in the case of domestic dwellings) stranded copper conductor by securely crimping in place two heavily tinned lugs and bolting these together using 10mm diameter copper, brass or bronze nuts, bolts and washers.

Under no circumstances shall aluminium conductors be buried in the ground.

22.2 JOINTS BELOW GROUND

A joint in the stranded copper conductor which forms part of the earthing system shall be made by using a crimped copper ferrule clamp (not lugs), two copper line taps of suitable dimensions. The

copper earth conductor shall be joined to an earth rod by clamping, using a standard earth rod clamp or copper line tap. No exothermic weld connections are allowed.

Joints made between dissimilar metals (i.e. copper conductor to galvanized steel water main), shall be thoroughly cleaned before assembly. They shall be rendered watertight using waterproof adhesive tape or a suitable compound for a minimum distance of 200mm in all directions from the joint.

22.3 BONDS

Where it is necessary to bond the aluminium conductor to any other metallic surface, this shall be done by bolting or riveting. When attaching aluminium to a dissimilar metal the joints are to be thoroughly cleaned and sealed to prevent corrosion.

22.4 AIR TERMINALS FOR NON-METALLIC PITCHED ROOFS

Aluminium conductors are to be installed along all ridges of roofs and projections such as dormer windows, etc., terminating at the ends with conductors running downwards over the surface of the roof and the eaves. Non-metallic chimneys shall be protected by means of a finial of sufficient length to cover the chimney within a 45° angle struck downwards from its point. Alternatively it should have a conductor installed in the form of a closed loop upon the upper surface. The conductors are to follow the outer contour of the stack and shall be bonded at a convenient point to the nearest component of the air terminal system.

This bond may run in a horizontal or downward direction, but under no circumstances shall any part of it run above horizontal.

Conductors may be dead-ended (i.e. have one end free and unbonded), providing that the length of such a conductor does not exceed 10m and that the unbonded end is either at the same level or higher than the bonded end. This technique may be used where ridge conductors are installed over dormer windows, etc.

In all cases where metallic gutters have been installed along the eaves of a pitched roof, these shall be bonded to the air terminal system. Where metallic gutters do not exist, however, a conductor shall be installed over the surface of the roof at eaves level to which the remainder of the air terminal system is to be bonded, with the following exceptions:

- Where the maximum distance from the ground level to the eaves of the building is less than 4m and the pitch of the roof is more than 1 in 2 (27° from the horizontal).
- Where the maximum distances from ground level to the eaves is less than 7m and the pitch of the roof is more than 1 in 1.5 (34° from the horizontal).
- Where the distance from the ground level to the eaves is more than 7m and the pitch of the roof is more than 1 in 1 (i.e. the included angle at the apex of the roof is less than 90°).

Under these circumstances eaves conductors need not be installed.

Any non-metallic objects which protrude above the general roof lines, such as Cape-Dutch gable ends, shall be protected as described above with a suitable air terminal system. Any metallic

objects which protrude above the general roof line, such as hot water expansion pipes shall be bonded as directly as possible to the nearest eaves conductor, gutter or other part of the lightning system.

These bonding conductors shall run in a horizontal or preferably a downward direction, from the vent pipe, etc., to the lightning protection system.

22.5 AIR TERMINALS FOR METALLIC PITCHED ROOFS

Buildings with roofs covered with electrically continuous metal sheets do not require separate air terminals but shall be earthed via down conductors generally as described in above. Any non-metallic objects projecting above the general roof line shall be separately protected as described above and bonded to the metal roof covering.

22.6 AIR TERMINALS FOR NON-METALLIC FLAT OR MONO-PITCHED ROOFS

For flat or mono pitched roofs of non-metallic construction the air terminal system shall consist of aluminium alloy conductors installed around the outer perimeter of each section of the roof structure. These conductors shall be installed on top of parapet walls if these exist. Lift motor rooms, tank rooms, penthouses, etc., which protrude above the general roof line shall have air terminal conductors installed around the outer perimeter of each roof slab or parapet wall. Any metallic objects which protrude above the roof line, such as expansion pipes, signs, flag poles, handrails, etc., shall be bonded directly to the nearest component of the lightning protection system.

It is not permissible for the ends of conductors to be bonded directly to the perimeter air terminal system if the latter is installed upon a parapet wall having a height exceeding 500mm above roof slab level. In these circumstances the conductors are to be bonded directly to the down conductors.

22.7 AIR TERMINALS FOR METALLIC FLAT OR MONO PITCHED ROOFS

Metallic flat or mono pitched roofs do not require separate air terminal conductors, providing that there is electrical continuity between the metallic roofing sheets. A metallic roof surrounded by a non-metallic parapet wall shall have conductors installed at the top of the parapet wall and these shall be bonded to the metallic roof at intervals not exceeding 20m. If the parapet wall is clad with metal over its upper surface, or a handrail is installed which affords good electrical continuity, separate air terminal conductors need not be installed. Under these circumstances the metal handrail or cladding shall be bonded to the metal roof covering at intervals not exceeding 20m.

All non-metallic covering such as slates, tiles, asbestos cement sheeting, etc., supported by a steel structure being electrically continuous throughout may be treated as being of a complete metal construction. In these circumstances no separate air terminal system need be installed providing the steel roof structure is bonded to earth at intervals given above.

22.8 DOWN CONDUCTORS FOR NON-METALLIC STRUCTURES

Down conductors shall be installed at regular intervals around structures and run as directly as possible between the air terminal and earthing system. They shall, where practicable, be positioned at the external corners of the structure. The maximum separating distance between down conductors around the perimeter of the structure shall not exceed 30m. In the case of very tall

buildings having a slender base (i.e. chimney stacks, water towers, etc.), a minimum of two down conductors shall be installed.

The lower ends of down conductors are to be terminated and bonded to the earthing system. Under no circumstances shall aluminium conductors be buried underground. Test joints shall be provided between the down conductors and earthing system. Down conductors shall run vertically between the air terminal and earthing systems. Where this is impracticable, their course may be deviated to run at any angle up to and including horizontal.

Where it is necessary to run conductors horizontally over the upper surface of a structural protrusion, such as an exposed concrete slab, the conductor may run down vertically over the edge of the slab and return to the main structure, so that the distance between the upper and lower conductors exceeds one third of the length of the horizontal run. Looped down conductors are not permitted. Down conductors shall not run over the underside of large overhangs which are less than 6m above ground level, or other areas where people are likely to be present during a thunder-storm.

External or internal metallic rainwater pipes may be used as down conductors providing these are of substantial section and are jointed by screwing one length into another or welding. Thin gauge galvanized steel pipes whose sections are held together by friction, rivets or screws shall not form part of a lightning protection system.

22.9 DOWN CONDUCTORS FOR REINFORCED CONCRETE FRAMED STRUCTURES

The steel reinforcement of this type of structure may be used in place of down conductors. Where the reinforcing system is used, the air terminal system shall be bonded to it at a maximum of 30m intervals using steel clamps. This bond may be achieved by clamping, with a steel clamp, a steel conductor to a selected reinforcing bar, the opposite end of this conductor shall terminate at a corrosion resistant metallic terminal such as Grade 316 stainless steel.

The reinforcing system of prefabricated concrete buildings shall not be used unless special provision is made for bonding the various prefabricated sections together.

The terminals should be mounted flush with the face of the concrete. An aluminium alloy bond shall then be taken from the air terminal system and be connected to the stainless steel terminal by means of a heavily tinned crimp lug for circular section aluminium, or a suitable bi-metallic joint in the case of flat section aluminium. A similar system shall be used to bond the reinforcing system at ground level to the earthing system at points directly below the air terminal bonds. Here copper conductors shall be used as the external bonding material.

Under no circumstances shall copper, or other non-ferrous material be allowed to come into contact with steel reinforcing bars, as this may cause severe corrosion and subsequent structural damage. The lightning protection system shall not be bonded to any part of the structure which is electrically isolated from the remainder of the building, i.e. cantilevered sections. In these circumstances, or where it is otherwise impracticable to use the reinforcing system, external down conductors shall be installed as above.

22.10 DOWN CONDUCTORS FOR STEEL FRAMED STRUCTURES

Where the framework of a building is constructed of structural steel columns, these may be used in place of down conductors providing the separating distance between them does not exceed 30m. The upper ends of the columns shall be bonded to the air terminal systems and the lower ends to the earthing system.

22.11 EARTHING BY MEANS OF VERTICALLY INSTALLED ROD TYPE ELECTRODES

Rod-type electrodes shall be driven into the ground at a position directly below each down connector. The maximum earthing resistance of each electrode or number of electrodes bonded to any one down conductor shall not exceed N x 30Ω, where N equals the total number of down conductors which are bonded to a common air terminal system, or 200Ω, whichever is the lower value.

The minimum horizontal separating distance between rod-type electrodes bonded together shall not be less than their installed depth. The upper ends of installed rod-type electrodes are to be terminated approximately 500mm below finished surface level. A 50mm^2 copper bonding conductor shall be installed to run between each earthing electrode system and the lower ends of the adjacent down conductors. A joint is to be made between each of these bonding conductors and the down conductors at a position approximately 200mm above finished ground level. These bonding conductors shall be installed in PVC conduit securely affixed to the wall. The length of this PVC conduit shall be approximately 600mm and shall be installed so that approximately 200mm protrudes above ground level, the remainder being buried into the soil.

22.12 EARTHING BY MEANS OF METALLIC WATER MAINS

Where two or three down conductors are installed the water mains may serve as an earth terminal for one of these. Where three of more down conductors are installed the water mains may serve as an earth terminal for two of these. Regardless of whether the water mains are used as an earth terminal or not, the incoming metal water pipe shall be bonded to the lightning protection earthing system underground.

22.13 EARTHING BY MEANS OF TRENCH TYPE ELECTRODES

Where the soil conditions prevent the satisfactory installation of rod-type electrodes, a trench earth system shall be installed. This method is to comprise a 70mm^2 stranded copper conductor installed horizontally into a trench at a depth of 500mm below finished ground level. The conductor is to follow the general outline of the structure to be protected and be installed 1m away from the outside walls. Where the building stands on rocky ground, the trench earth may be attached to the lower part of the wall in areas where rock protrudes through the soil. The conductor shall, however, be buried wherever possible as described above.

Each down conductor shall be bonded to the trench earth system as directly as possible by means of a copper conductor.

Trench earth systems shall have a maximum earth resistance of 30Ω. An isolated length of trench earth mat shall be bonded to the down conductor system in such a way as to reduce the length of dead-ends to the minimum.

Should trench earths be installed beneath pathways where people are likely to be present during a thunderstorm, a plastic, bitumastic or ceramic pipe shall be installed having a length similar to the width of the pathway and the trench earth conductor run inside it.

The maximum useful length of a dead-ended trench earth is 80m.

22.14 TESTS ON COMPLETION

The lighting protection of the installation shall comply with and shall be tested in accordance with SANS 10313. The installation shall be done by an approved and recognised specialist in the field of lightning protection and earthing.

The submitted price for the lightning protection system shall include all requirements for the detail design and entire installation, compliance with SANS 10313 and shall include all testing and the issue of safety and test certificates. Any additional cost required to enhance the earthing and lightning protection installation shall be paid direct from the project upon Clients approval or Clients representative.

23. IT NETWORK

The successful Tenderer shall refer to ACSA document forming part of this document regarding all relevant requirements pertaining to IT Network system design, supply, installation, testing and commissioning. Engineer's approval to be obtained prior to placing equipment orders and installation.

24. TESTING AND INSPECTION

The successful Tenderer shall comply with the relevant requirements concerning registration of electricians, registration of the works, testing and inspection.

The successful Tenderer shall ensure that all equipment is installed and tested in full compliance with the requirements of the manufacturers of the equipment so as to ensure that the guarantees offered by the manufacturers are not compromised. The successful Tenderer shall familiarise himself in detail with the manufacturer's requirements prior to the installation of the equipment, and, where necessary, the installation work shall be carried out under the supervision of the manufacturer/supplier.

The successful Tenderer shall carry out continuity, earth leakage, earth loop impedance and insulation tests to ensure that the installation is functional and safe.

A full functional test will be carried out on the installation for a period to determine the satisfactory working thereof after completion of the works and before first delivery is taken. During this period the installations will be inspected and the successful Tenderer shall make good, to the satisfaction of the Engineer, any defects that may arise.

The successful Tenderer shall provide all instruments and equipment required for testing and any water, power and fuel required for the commissioning and testing of the installations at completion.

The successful Tenderer shall on completion of the tests, submit, in terms of the OHS Act No.85 of 1993 (as amended), a completed and signed Certificate of Compliance for Electrical Installations to the Clients Representative.

On completion of the Contract Works, the successful Tenderer shall remove all dirt and debris arising from the Contract Works from site, paying particular attention to roof spaces.

Only Tenderers registered with the Electrical Contracting Board of South Africa in accordance with Regulation 5 of the Occupational Health and Safety Act will be accepted and permitted to do work under this Contract. The requirements of Regulation 5(2) will be strictly enforced, and are repeated for convenience purposes:

"5(2) The Electrical Contracting Board of South Africa shall, free of charge, register as an electrical contractor and enter into a register kept for that purpose the name of any person who applies therefore in terms of sub-regulation (1) and who

(a) has a fixed address and has a telephone listed in his name; and

(b) employs an accredited person on a full-time basis, or is himself an accredited person."

An "accredited person" is defined in the Regulations as "……a person registered in terms of Regulation (9) (of the Act) as an electrical tester for single phase, an installation electrician or a master installation electrician, as the case may be". If, for any reason whatsoever, the successful Tenderer fails to comply with these statutory requirements during the Contract period, after having been accepted initially to do work under this Contract, the services of the successful Tenderer will be terminated in accordance with Clause 56 of the Conditions of Contract.

25. DRAWINGS AND DOCUMENTATION

The successful Tenderer shall provide four sets of "as built" drawings and operational manuals for all equipment installed in terms of this specification, the drawings and Bill of Quantities. One set shall be provided to the Clients Representative and three to the Employer.

The maintenance and operational manuals must be complete with an index and be bound in a suitable hard cover binder such as Bantex A4 Ring Binders. The files must be provided with stiff dividers on which the relevant sections are indicated and are to be in printed or typed format. Drawings shall be housed in plastic pockets in the file, and only one (1) drawing per pocket will be allowed.

In addition all "as built" drawings must be stored on CD in .dwg format and must also be submitted with the manuals.

All schematic electrical "as built" drawings of distribution boards must be laminated and attached to the inside of the doors with double sided tape.

The main distribution board/electrical panel schematic diagram in the low voltage plant room or in other plant rooms as well as the schematic site reticulation layout, if applicable, must be suitably framed with Perspex and be mounted in the plant room in a position as indicated on site.

The maintenance and operational manuals must consist of the following sections where applicable to the project:

- Operations section, covering description of the system and functioning thereof, all starting up and stopping procedures, fault-finding procedures, pre-start checks and equipment running checks.

- Comprehensive data log sheets to be kept by the user of the system.

- General system description and general information schedules of plant and equipment, such as description of equipment, model number, capacity, electrical requirements of equipment, name and address of supplier, name of manufacturer.

- Design information: Design data sheet containing all design and selection parameters, calculations, selection curves, etc. Settings and values recorded during commissioning. Manufacturers' brochures, pamphlets, pump curves, etc.

- Maintenance data and schedules: The lapse of time between services and the description of service requirements for each part, piece of equipment or item installed under the Contract. This section must also include the detailed daily, weekly, monthly, three monthly, six monthly and yearly preventative maintenance instructions and checklists.

- Manufacturers' literature indication lubrication points, lubricants to be used and other data referred to above.

- Commissioning data of all equipment and systems with all set points listed in table format relating to the specific piece of equipment and/or system.

- All other data relating to other components forming part of the system/reticulation such as valves, diffusers, medical gas outlet points, etc.

- Critical spare parts list for all equipment.

- All test certificates (any certificates required in terms of the installations as pertaining to the project), compliance certificates, lightning protection certificates, certificates of construction of electrical panels.

- Schematic wiring diagrams and equipment ratings of all electrical panels and distribution boards.

- All "As-Built" drawings of mechanical and electrical installations pertaining to the project. "As-Built" drawings must be the true reflection of the installation as on site and must include the actual particulars of the equipment as installed on site and must be signed and dated by the responsible consultant and must be marked "AS BUILT".

- All "As-Built" drawings, including wiring diagrams, must be produced in Autocad format and be stored on CD as listed above.

* * * * * *







Prepared for:
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RECONFIGURATION AND REFURBISHMENT OF THE MAPLE BUILDING, RIVERWOODS OFFICE PARK, BEDFORDVIEW, AND TERMINAL B PIER OFFICES, O.R. TAMBO INTERNATIONAL AIRPORT, JOHANNESBURG

OFFICE DESIGN USER MANUAL

DRAFT REPORT

REVISION 03

Prepared by:

- TO BE NOTED -

- The "Office Design Manual" is issued for information purposes only.
- Furniture allowance has been by way of a Provisional Amount.
- Installed furniture is to match the specification of existing furniture to architect and client's approval.

DOCUMENT CONTROL

TITLE:	OFFICE DESIGN USER MANUAL		
ELECTRONIC FILE LOCATION:	P16002_REPORTS_04 OFFICE DESIGN USER MANUAL_REV 03-Office design user manual		
REPORT STATUS:	Draft		
REVISION NUMBER:	03		
CLIENT:	Airports Company South Africa (ACSA) P.O. Box 75480 Gardenview 2047		
CONSULTANT:	Delta Built Environment Consultants (Pty) Ltd P.O. Box 35703 Menlo Park 0102		
DATE:	September 2016		
REFERENCE NUMBER:	P16002 / R3578		
PREPARED BY:	Bredéll Brink	Candidate Architect	
REVIEWED BY:	Gustav van der Westhuysen	Architect	
APPROVED BY:	Marcel Kimoto	PR. Architect (PA)	
DISTRIBUTION LIST:	**COMPANY**	**NAME & SURNAME**	
	ACSA	Ms Tshegofatso Monyela	

RECORD OF REVISIONS

REV. NO.	STATUS	DESCRIPTION OF REVISION	REV. DATE
00	Ongoing	Issued for comments	11/03/2016
01	Ongoing	Issued for approval	21/04/2016
02	Ongoing	Issued for comments – Detail Design Phase	29/09/2016
03	Ongoing	Issued for comments – Tender Phase	29/09/2016

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EXECUTIVE SUMMARY

Delta Built Environment Consultants (Delta BEC) was appointed by Airports Company South Africa (ACSA) to provide architectural services and to act as the principal agent for the reconfiguration and rehabilitation of the Maple Building, Riverwoods Office Park as well as the Terminal B Pier Offices at O.R. Tambo International Airport (ORTIA), Johannesburg.

The Maple Building is currently occupied and functions as offices but ACSA requires that a better internal layout be implemented that will accommodate additional employees as well as future growth. The ORTIA offices have been vacant for some time and will require the same intervention.

The scope of works includes full architectural services, including additional services for Principal Agent and interior designer, and will be further discussed in the report. The following external consultants have been appointed by ACSA:

- Mechanical engineer: Element Consulting Engineers
- Electrical engineer: Element Consulting Engineers
- Fire engineer: Element Consulting Engineers
- Quantity surveyor: De Leeuw Group.

This report will serve as a manual for the refurbishment space types along with its proposed look and feel with finishes.

Once this report has been reviewed and approved by the client, it will serve to control and monitor the deliverables proposed.

This report is also referred to by the client's project management manual as the Office Design User Manual, but will officially be called the Concept Design Report as per the ACSA guidelines.

Please note: This is an ongoing report which reflects design assumptions as per the current project phase. As such, the document in its current state might not reflect the final approved design.

1 INTRODUCTION

1.1 PURPOSE OF REPORT

Following the concept 'look and feel' presentation on 29 February 2016, this document was produced to describe the proposed design elements and create a pallet for each function. A standardised pallet will ensure that a uniform precedent can be set across the ACSA hierarchy, with a standardised approach to all new and refurbished offices projects.

1.2 STRUCTURE OF REPORT

The report comprises the following sections:

- Section 2: Parameters
- Section 3: Elements
- Section 4: Design Methodology
- Section 5: Open Plan Workstations
- Section 6: General Managers' Offices
- Section 7: Group Executives and Directors' Offices
- Section 8: Reception
- Section 9: Board and Meeting Rooms
- Section 10: Informal Meeting Areas
- Section 11: Pause Areas
- Section 12: Kitchens
- Section 13: Ancillary Functions
- Section 14: Maple Building Proposal
- Section 15: Terminal Pier B – Office Floor Level Proposal.
- Section 16: Conclusion

2 PARAMETERS

2.1 INTRODUCTION

The Government Gazette (Vol. 483, September, No.27985) on norms and standards for office space planning was used as a basis to determine the dimensional parameters of each function. These norms and standards are considered to be a good measure for internal space planning, providing sufficient space for the full range of office types and its associated accommodations.

2.2 GOVERNMENT NORMS AND STANDARDS

Table 2-1 Government norms and standards

FUNCTION	SPATIAL REQUIREMENTS	NORM
Administration	Open-plan. Some local storage.	Workspace area should be between **6-8m²**
Technical & Management	Open-plan. Some layout space and/or space for large equipment such as drawing boards.	Workspace area should be between **8-16m²**
Senior Management	Open-plan or cellular offices. Requirement for some privacy and space for small meetings.	Workspace area should be between **16-20m²**
Executive Management	Cellular offices. Requirement for privacy and space for small meetings.	Workspace area should be between **20-25m²**

2.3 PROPOSED SPATIAL ALLOCATIONS

Through the client/consultant design discourse, the following proposed spatial allocations were determined which are applicable to the requirements of ACSA:

Table 2-2 Proposed spatial allocations

FUNCTION	OPEN PLAN/CELLULAR OFFICE	PROPOSED AREA (M²)
Open Plan Workstation	Open	2 m² (excl. circulation)
General Manager	Office	11 m²
Group Executive	Office	20 m²
Director (CEO, CFO, COO)	Office	25m²
Administrative Support	Open (in close proximity to executive office)	2 m² (excl. circulation)

FUNCTION	OPEN PLAN/CELLULAR OFFICE	PROPOSED AREA (M^2)
Printer	1 per 25 people OR as required	1 m^2 (excl. circulation)
Small meeting room	Enclosed: 8-seater	±20 - 25m^2
Medium Boardroom	Enclosed: 10 – 14-seater	±25 – 40m^2
Large Boardroom	Enclosed: 16 – 20-seater	±40 – 60m^2
Corporate Boardroom	Enclosed: 20 – 30-seater	±60 - 80m^2+
Kitchenette	Enclosed or as part of open plan or pause area 1 per 50 personnel	8 – 12m^2
Ablutions	At existing wet cores	Based on regulatory requirements
Disabled access ablutions	At existing wet cores, minimum one per floor	3.5 m^2
Store and records rooms	Enclosed	Varies depending on requirements or spatial constraints
Vertical circulation areas	As existing	As existing
Pause Areas	Estimated additional 10 – 15% of total area requirement	

3 ELEMENTS

3.1 OVERVIEW

The standardised design pallet for all ACSA office refurbishment projects is outlined below, under the following main headings:

- Floors
- Walls
- Partitions
- Doors
- Ceilings.

All of the elements listed above are not applicable to all types of office spaces, thus, the various applicable elements will be listed under each office type. The design pallet assigned to the specific office and room typologies is detailed in Section 4 below.

3.2 FLOORS

3.2.1 OVERVIEW

The general principles applied to the refurbishment project are as follows:

- Carpet tiles are to be laid on most office floor areas. An arrangement of colours and textures can create articulation between circulation floor space and working floor space. This will also serve to articulate enclosed offices from open plan space. Carpet tiles are the preferred finish on work station and cellular office floors. It is durable and easily replaceable if damaged or stained. This also lends itself to only replacing the damaged or worn out carpet tiles, as opposed to wall-to-wall carpets which require replacement in its entirety. Carpet protectors will be allowed for at each workstation to avoid wear and tear caused by office chair castors to floor finishes.
- Executive offices will have wall to wall broadloom carpets.
- Board and meeting rooms will all have similar floor finishes, preferably carpet tiles.
- Kitchens and kitchenettes in pause areas will be finished in tile for a more hygienic and practical implementation.
- Pause areas can have a more playful design approach for seating areas. This will distinguish area types from one another. Specific floor finishes selection will be done to avoid finished floor level variances where possible.

Figure 3-1 Monochrome carpets with subtle patterns

Figure 3-2 Multi-coloured carpets to de-lineate circulation routes vs. workspaces

Figure 3-3 Textured or patterned carpets with a more vibrant feel to avoid monotony

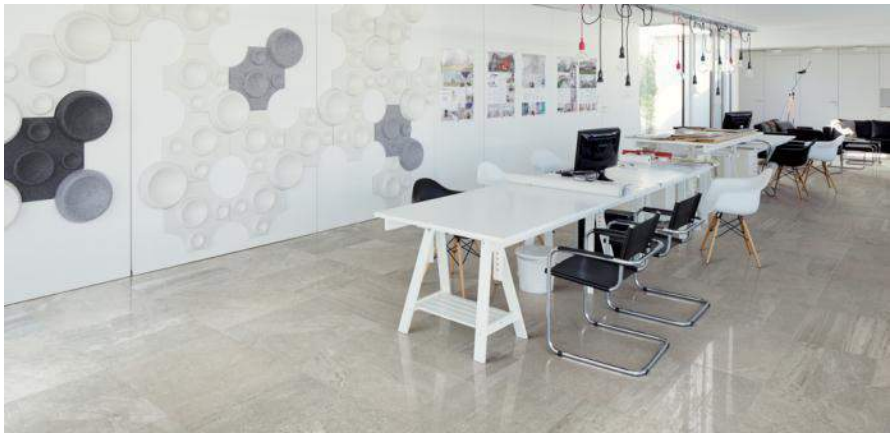


Figure 3-4 Tiles in wet areas such as ablutions and kitchenettes

3.3 WALLS

3.3.1 OVERVIEW

The following points encapsulate the design overview of wall surface applications;

- All interior work will follow the structural constraints of the existing building envelope and structural walls and columns. Where possible, non-load bearing walls can be removed to create larger, open plan spaces.
- In most cases, an enclosed office will be located against an external masonry wall which is part of the building envelope. These are important elements as they also house the windows and as such are not included in the scope of work for this project.
- The preferred design implementation would be to refurbish these walls in light coloured paint such as off-white. This will reflect natural light into the interior of the building to maximize daylighting into offices.

- In cases where an office has masonry walls on more than one side, one of these walls will be selected to be painted an accent colour. Colours of internal wall finishes will be in the white range, but shades to tie into ACSA branded colours.
- As a standard, all executive offices will receive one accent colour painted wall, preferably behind the executive's desk.
- For aesthetic accentuation in boardrooms and meeting rooms, 3D wall board panels are proposed. These panels come in a variety of textures and can be finished in a colour of choice.

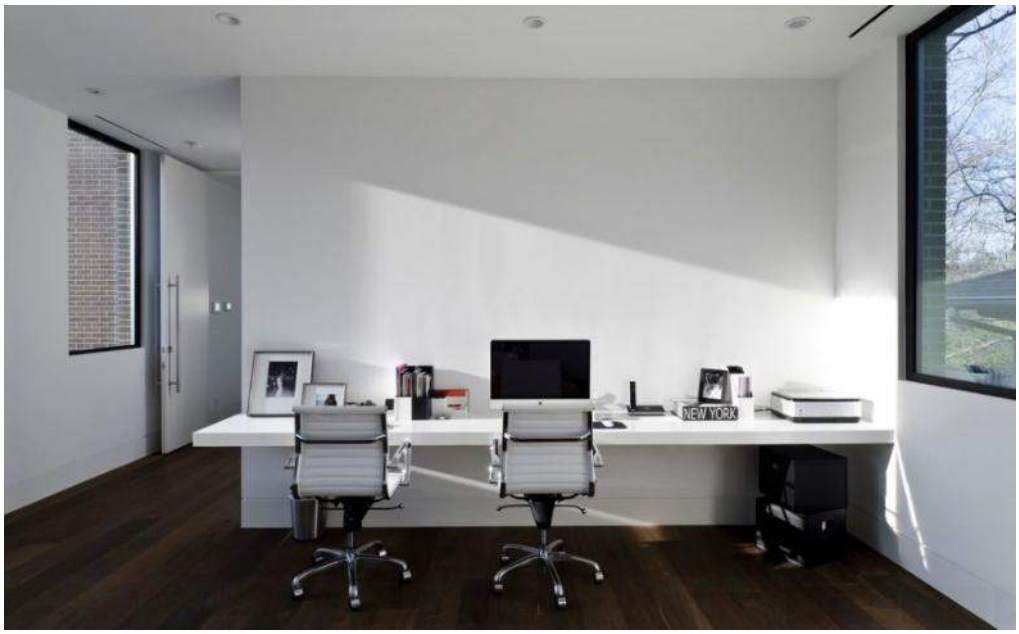


Figure 3-5 Monochrome paint schemes

Figure 3-6 Accent coloured painted walls

Figure 3-7 Graphics on wallpaper

Figure 3-8 3D wall panels

3.4 PARTITIONS

3.4.1 OVERVIEW

The following points encapsulate the design overview of partition applications;

- Partitions form barriers between cellular offices and open space, and in certain instances, create security thresholds between private and public space (at entrances leading from the main reception area as well as any other specifically requested secure office areas).
- Partitions are constructed as non-structural elements and therefore allow more freedom in design possibilities and eliminates excessive new loading to the existing structure.
- Selected low level partitions in open plan office areas will be constructed to form niches to receive shelving. These partitions, having a wider flat area on top, will be used for placing potted plants. This will not only add to the ambiance of the open plan areas, but also add to the visual screening achieved by these partitions, adding to privacy.
- In general, the open plan office area desks will have integrated modular privacy screens between adjoining desks.
- It is important to note that open plan office areas require an operational arrangement in terms of having filing done and desks tidied at close of business, while also being conscious of tidiness throughout working hours.
- Noise levels also need to be monitored and curbed during working hours to avoid undue disturbances.
- If required, all offices, boardrooms and meeting room spaces to be non-structural elements to be provided with sound insulation.

The images below give an impression of the different types of glass partitioning, of which selected types will be used for cellular office and boardroom enclosures.

Figure 3-9 Full-height, modular frosted glazing panels with anodized aluminium frames

Figure 3-10 Full-height frameless glazing panels

Figure 3-11 High partitions (not full height)

Figure 3-12 Low height partitions (use in open plan office)

3.5 DOORS

3.5.1 OVERVIEW

Door types and sizes are to be determined by the wall/partitioning in which they are located in.

- Doors in drywall partitioning will be varnished flush timber veneered doors, width to suit disabled access as per SANS 10400 Part S requirements and fire rating to suit SANS 10400 Parts S requirements.
- Doors to glazed partition enclosures will be in the same modular system and design as the glazing it is fitted into (i.e. with frames or frameless.).
- At this stage, no vision panelled doors are envisaged, however, should it become requirement, a standard will be set in terms of size and height of said vision panels.
- Toilet entrance doors will be fitted with a standardized anodized aluminium louvre to assist in mechanically ventilating the room it serves.
- WC cubicle doors will be flush panelled with an undercut to also assist in mechanical ventilation.
- Stairwell doors (where applicable) will be specified to satisfy SANS 10400 Part S & T requirements.

Figure 3-13 Timber doors (full height)

Figure 3-14 Glazed door (aluminium frame)

Figure 3-15 Glazed door (frameless)

3.6 CEILINGS

3.6.1 OVERVIEW

Ceilings are to be suspended grid-type ceiling tiles with associated ceiling grid suspension structure, creating ceiling voids which allows for mechanical ventilation, wet services and electrical reticulation, artificial lighting, and security fittings.

- In the larger open plan office areas, ceiling features such as bulkheads with light fittings, can differentiate between circulation space and working space.
- Bulk head details will be specifically used to create sufficient ceiling void space for mechanical and services reticulation.
- In relation to suspended grid ceilings, ceiling layouts will be done independent of room/wall layouts to allow for more plan flexibility should layouts be changed in the future.

Figure 3-16 Suspended ceilings

Figure 3-17 Bulkheads

4 DESIGN METHODOLOGY

4.1 TYPOLOGIES

All office spaces can be broken down into different typologies (or types of spaces). Each type has a different function and should be approached accordingly both in layout and aesthetic design.

A transition from traditional cellular offices to an open plan design requires a new interpretation of typologies which, together with client requirements such as pause and informal meeting areas, and offices for general managers and group executives, form the spatial accommodation list for ACSA office envelope.

The following is included in these typologies:

- Reception areas
- Waiting areas
- Boardrooms and meeting rooms
- Open plan workstation areas
- General managers' offices
- Group executive offices
- Informal meeting areas
- Pause areas
- Kitchens
- Storerooms and records rooms
- Server rooms.

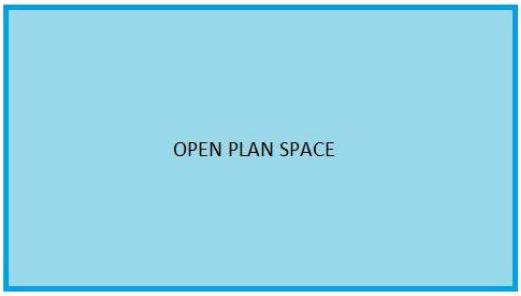
4.2 CONCEPT

The following design implementations form the key principles which ACSA wishes to exhibit in their office spaces:

- Hierarchical order
- Ease of accessibility
- Comfortability
- Transparency.

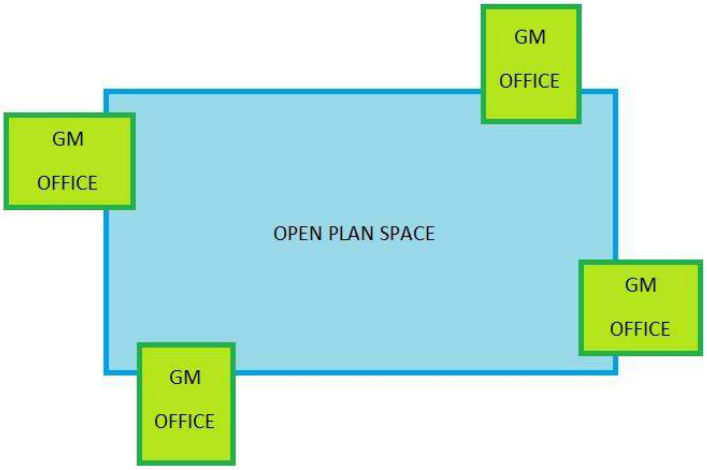
The following diagrams depict the methodology and how these principles are applied.

4.2.1 OPEN PLAN SPACE



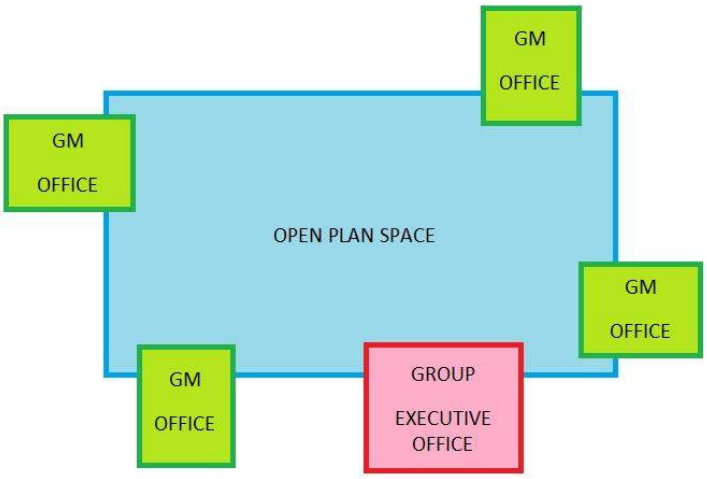
Typical open floor space is provided by removing all existing drywall partitions and non-structural walls. The majority of this space will be populated by open plan workstations and circulation routes.

4.2.2 GENERAL MANAGERS' OFFICES



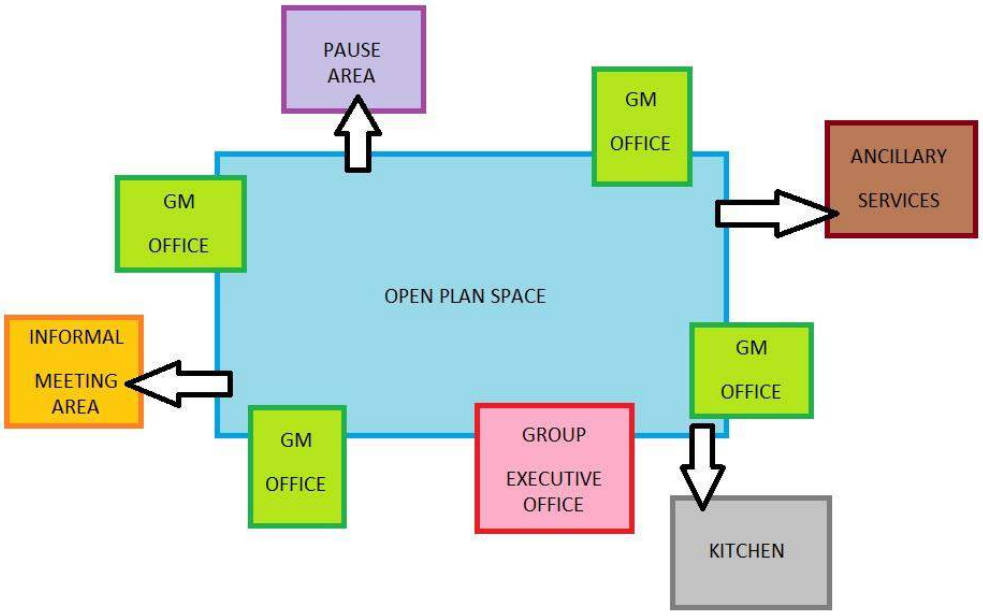
Offices are placed to envelop and contain open working space and should be easily accessible to staff members. Preferable offices need to be placed in close proximity to their applicable department in the open plan workstations.

4.2.3 GROUP EXECUTIVE OFFICES



Group executives are positioned with access to the entire department workforce (unless required to be located elsewhere).

4.2.4 ACCESS TO ANCILLARY SPACES



The entire department should have access to ancillary services such as:

- Kitchens
- Informal meeting areas
- Pause Areas
- Ancillary Services
    - Storerooms
    - Records rooms.

PLEASE NOTE: This diagrammatical interpretation form the parameters of the design concept. In practice, exact implementation might not be possible due to spatial restrictions or special requirements. Dedicated deliberation with ACSA will determine the appropriate response to spatial planning.

4.3 TYPICAL APPLICATION

For the purpose of illustrating a relevant application, the recent proposed refurbishment of the ACSA corporate office in Bedfordview, Johannesburg will be referred to.

- The typical floor plan layout below shows offices that grouped strategic pockets between departments to free up floor area in the centre of the floor plate for an open plan workstation environment.
- Informal meeting areas are located centrally to be easily accessible to staff members.
- Desks are arranged to be economical in space usage and rotated within the space allowance to result in a less formal but efficient open plan layout.
- Strategically placed planter topped partitions suggest subdivision of open plan areas and to create a threshold between circulation corridors and workstation areas.
- Shelving and storage integrated into circulation edge partitions add to flexibility, space efficiency and multi-functioning.
- Security thresholds are proposed at doors leading from the reception area to maximise security while not restricting flow behind these thresholds
- Kitchens are located close to the wet core for ease of access to existing service connections.
- Pause areas are located in articulated spaces adjacent to the balcony, allowing for minimal disturbance to working spaces.
- Furniture as standardised to suit employee function and level.

4.3.1 SPATIAL DESIGN – MAPLE BUILDING

5 OPEN PLAN WORKSTATIONS

5.1 OVERVIEW

The bulk of the available space in an open plan layout is allocated to employee workstations. Arrangement of workstations comes in various formations, usually determined by the structural parameters of the building envelope. Workstations comprise a proposed floor area allocated to an individual staff member. Each staff member must have a desk, chair, and carpet protector. One dustbin should be available for every two workstations to share. Depending on the need, storage space could be made available in close proximity with shelving or cabinets.

Potted plants will be located throughout office areas with the position and quantity determined by the applicable design.

5.1.1 TYPICAL LAYOUT

Typical design implementations include;

- Workstations are clustered in groups of three, back to back.
- Each group of three workstations have access to a stand-alone storage unit.
- Stand-alone storage units are placed side to side and serve in both directions.
- Planter boxes form the threshold between the workstations and the corridor.

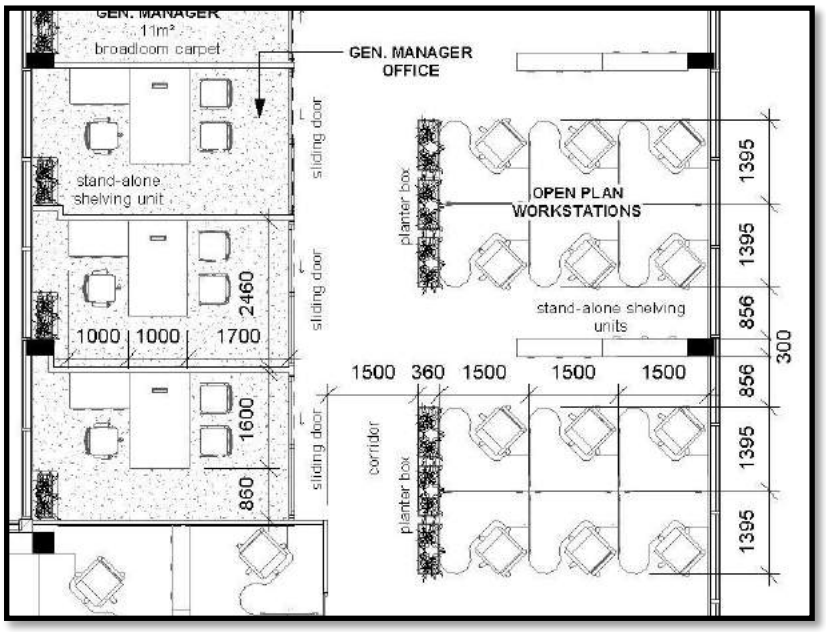


Figure 5-1 Typical layout of open plan workstations

5.2 CONCEPTUAL RENDERS

The following image shows a conceptual visualisation of typical open office space design and layout;

Figure 5-2 Typical open plan design

5.3 CONCEPTUAL PERSPECTIVE

Workstations are grouped in clusters with division created by stand-alone storage units and planters.

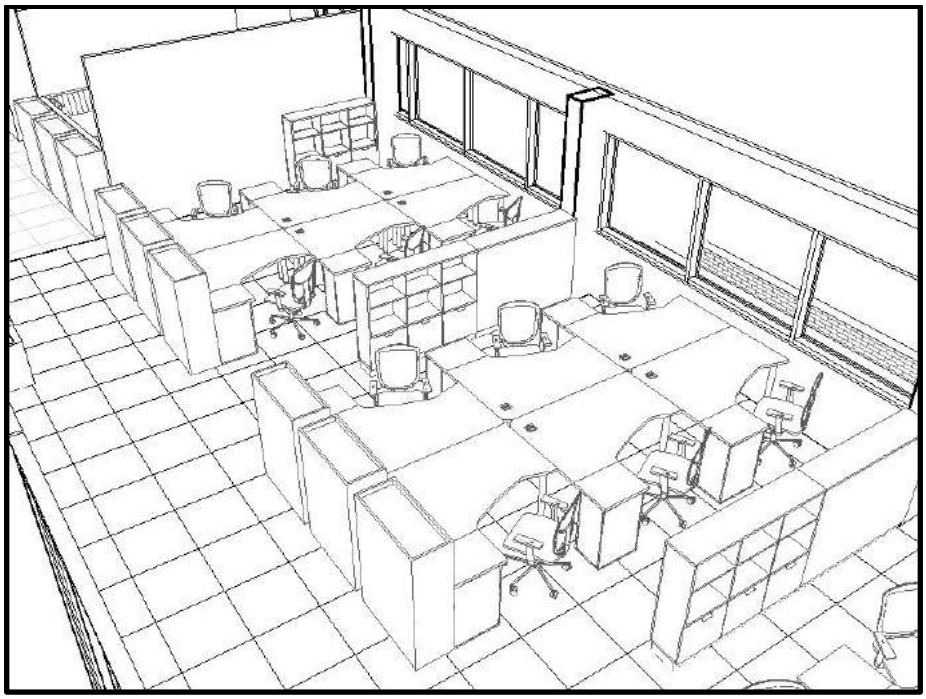


Figure 5-3 Workstation layouts

5.4 MATERIALS

5.4.1 FLOORS

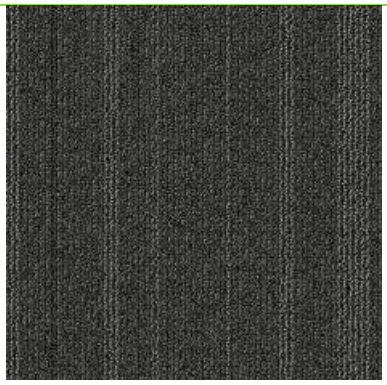
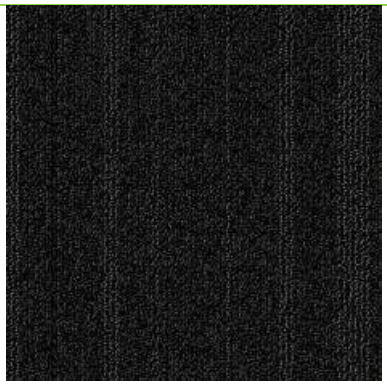
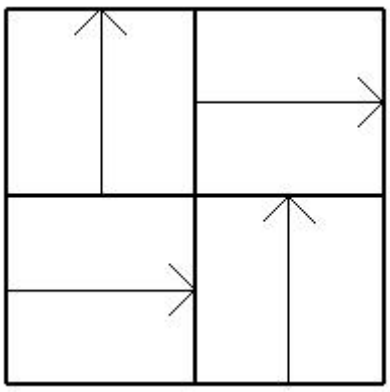
5.4.1.1 Carpet tiles

The majority of open plan floor areas should be covered by carpet tiles. Preferably heavy commercial tiles are used due to the amount of wear and tear from traffic from furniture. Carpet tiles are also easily replaceable when damaged.

The following colour scheme will fit in with the corporate branding of ACSA, but other options could also be proposed.

Table 5-1 Carpet tile specifications – FF-01

Drawing code	FF-01	
Manufacturer	Belgotex 'Crossfire'	
Specifications	Construction	Tufted Multi-Scroll Loop Pile
	Backing	NexBac
	Fibre Type	100% Stainproof SDX
	Total Thickness	8 mm (±0.5 mm)
	Use Classification	Heavy Commercial
	Fire index	2 (SANS 10177 – IV)
Dimensions	600 x 600 mm tiles	

Colours		Colour code: *Supersonic*
		Colour code: *Ash Grey*
		Colour code: *Dark Charcoal*
Installation pattern		Tessellated

5.4.1.2 Typical Application – Floor Finishes

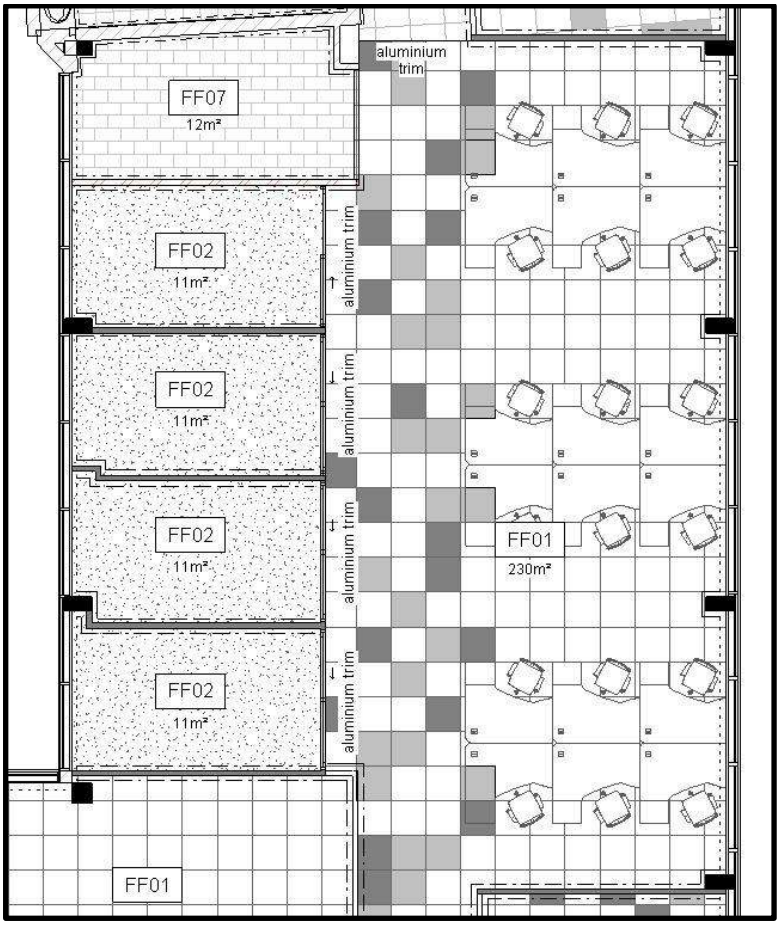


Figure 5-4 Typical Layout – Floor Finishes

Tile Colour Legend	Black tiles: Dark Charcoal Light Gray tiles: Supersonic (Blue) White tiles: Ash Grey

5.4.2 WALLS

5.4.2.1 Paints

Table 5-2 Paint specifications – PP-01

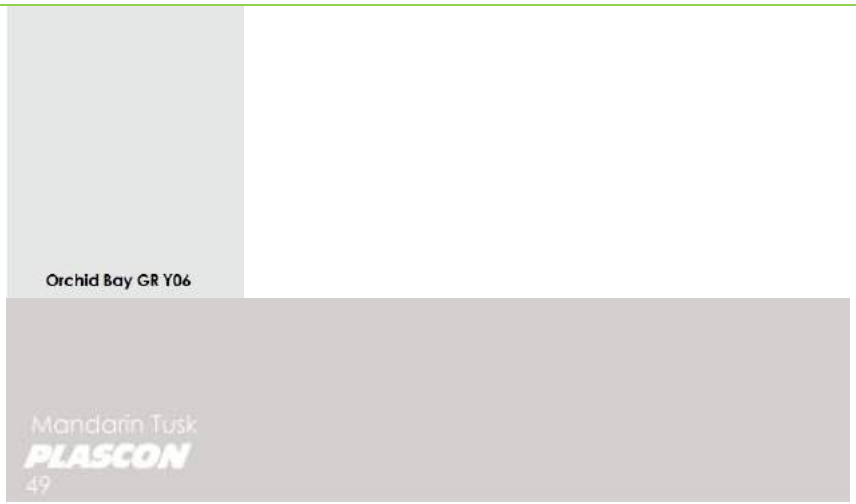
Drawing code	PP-01
Application	Full interior surface of existing masonry walls or as indicated on plan
Manufacturer	Plascon
Product colour code	*Orchid Bay GR Y06* OR *Mandarin Tusk 49* To be finalised after *in situ* sample approval
Sample	

Table 5-3 Paint specifications – PP-02

Drawing code	PP-02
Application	Full interior surface of existing concrete columns or as indicated on plan
Manufacturer	Plascon
Product colour code	*Paris Paving 53* To be finalised after *in situ* sample approval
Sample	

Table 5-4 Paint specifications – PP-03

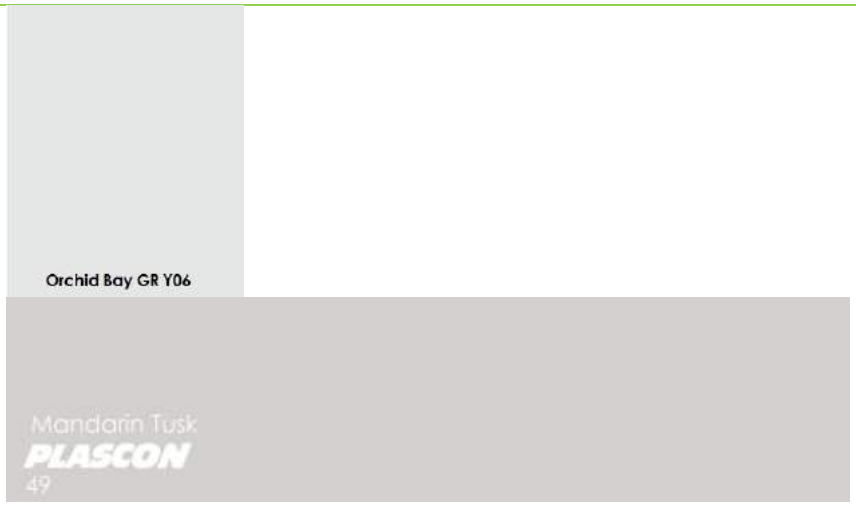
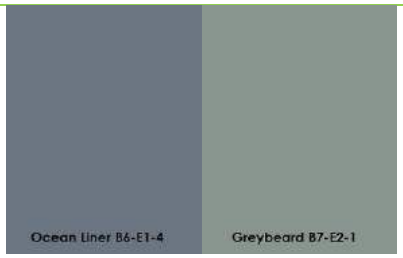
Drawing code	PP-03
Application	Full surface of new skimmed drywall partitions
Manufacturer	Plascon
Product colour code	*Orchid Bay GR Y06* OR *Mandarin Tusk 49* To be finalised after *in situ* sample approval
Sample	

Table 5-5 Paint specifications – PP-04

Drawing code	PP-04
Application	Full surface of new skimmed drywall partitions
Manufacturer	Plascon
Product colour code	*Dylan's Blue B5-A1-2* OR *Blue Bay B5-A1-3* To be finalised after *in situ* sample approval
Sample	

5.4.2.2 Wall Word Art

Table 5-6 Paint specifications – WA-01

Drawing code	WA-01
Application	Full surface of new skimmed drywall partitions
Manufacturer	Plascon – Background Specialist – Foreground
Background product colour code	*Dylan's Blue B5-A1-2* OR *Blue Bay B5-A1-3* To be finalised after *in situ* sample approval
Sample	
Application	Full surface of new skimmed drywall partitions
Foreground material 1	Plascon
Foreground product colour code	*Ocean Liner B6-E1-4* OR *Greybeard B7-E2-1* To be finalised after *in situ* sample approval
Sample	
Application	600 mm high stroke x full length of wall
Foreground material 1	Vinyl
Foreground product colour code	White Letters
Application	560 mm high stroke x full length of wall, over painted foreground material 1.

Example	

5.4.2.3 Typical Application – Wall Finishes

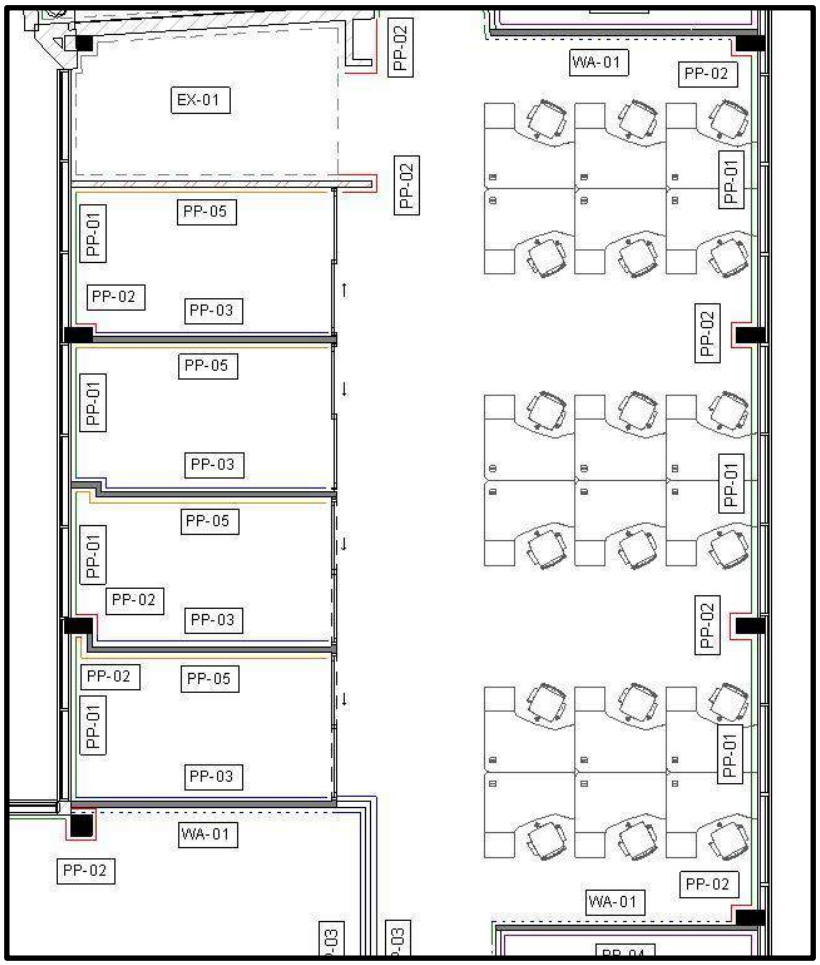
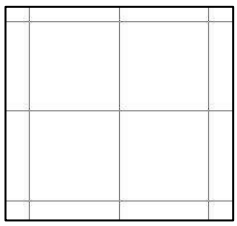
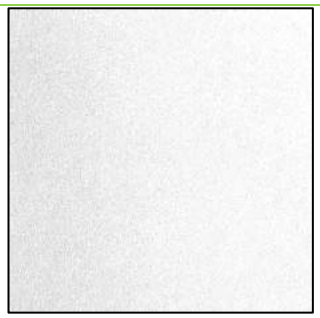


Figure 5-5 Typical Layout – Wall Finishes

5.4.3 CEILINGS

5.4.3.1 Suspended Grid Ceilings

Table 5-7 Ceiling specifications

Drawing code	Displayed as per drawing legend 
Application	To be installed to suspended ceiling grid frame
Manufacturer	As per specialist design
Board dimensions	600 x 600 mm
Thickness	12 mm
Material	Vinyl laminate
Finish	Shell White
Sample	

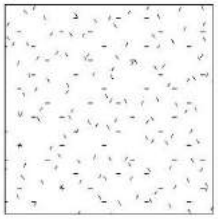
5.4.3.2 Plasterboard bulkheads

Table 5-8 Ceiling specifications

Drawing code	Displayed as per drawing legend 
Application	To be installed to suspended ceiling grid frame
Manufacturer	As per specialist design
Board dimensions	Varies
Thickness	12 mm
Material	Plasterboard
Finish	Skim and painted – White

5.4.3.3 Flush plastered nailed up ceilings

Table 5-9 Ceiling specifications

Drawing code	Displayed as per drawing legend 
Application	To be installed to suspended ceiling grid frame
Manufacturer	As per specialist design
Board dimensions	Varies
Thickness	12 mm
Material	Plasterboard
Finish	Skim and painted – White

5.4.3.4 Typical Application – Ceiling Finishes

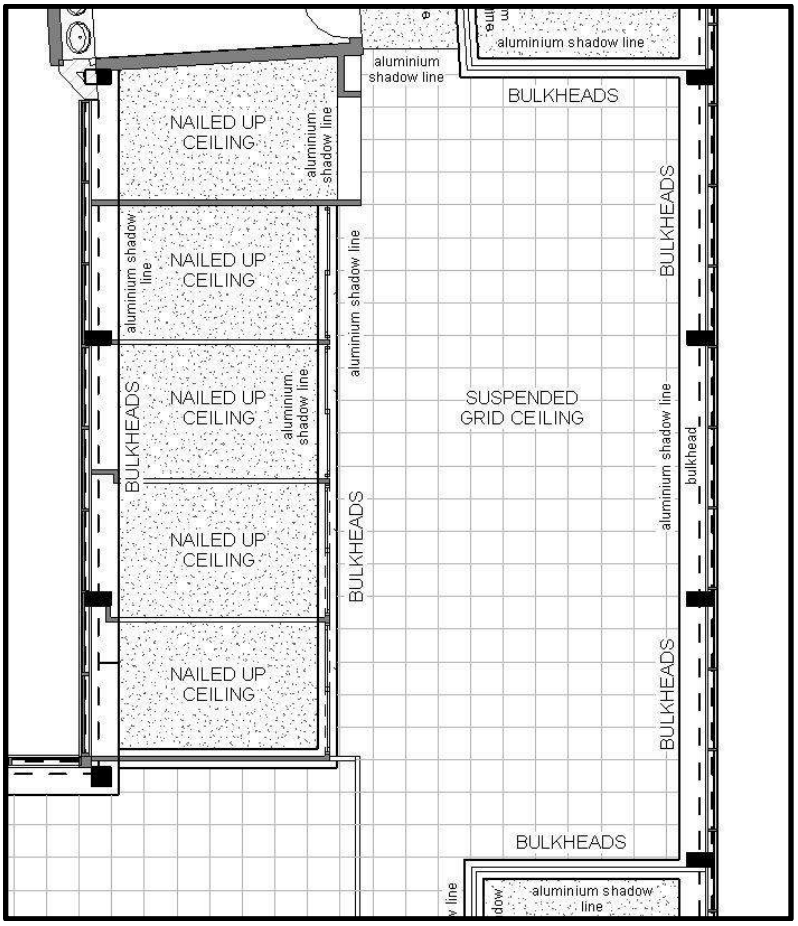


Figure 5-6 Typical Layout – Ceiling Finishes

5.5 FURNITURE

Furniture occupies a large part of the office floor space and is a crucial part of the day-to-day workings. Careful consideration should therefore be taken to ensure that furniture sizes are proportional to area sizes and that the space it occupies is comfortable to move in and around furniture pieces.

Material finishes should accentuate the design. Preferably, no accent colours are to be used on furniture pieces such as desks. Keep to neutral shades within the black, brown, grey and white spectrum when choosing an accent element of a desk along with the appropriate 'wood look' laminate. 'Wood look' laminate shades should also differ between open plan workstations, general managers, group executives and directors – preferably from 'lighter' to 'darker' tones.

Staff members should be comfortable in their work zones, therefore furniture ergonomical properties must be taken into account.

5.5.1 DESK

Table 5-10 Desk Specification

Manufacturer/Supplier	Cecil Nurse
Frame and legs product	*Bench work* range 6-Way 4-Way 3-Way 2-Way Single Appropriate formation determined by design layout

Product features	Adjustable frame lengths		
Frame and legs standard dimensions	Formation	Product code	Standard dimensions
	6-Way	BW4815	4800 (L) x 1500 (W) x 700 (H)
		BW5415	5400 (L) x 1500 (W) x 700 (H)
	4-Way	BW3215	3200 (L) x 1500 (W) x 700 (H)
		BW3615	3600 (L) x 1500 (W) x 700 (H)
	2-Way	BW1615	1600 (L) x 1500 (W) x 700 (H)
		BW1815	1800 (L) x 1500 (W) x 700 (H)
	Single	BWA1807	1200 - 1800 (L) x 1500 (W) x 700 (H)
		BWA2407	1800 - 2400 (L) x 1500 (W) x 700 (H)
	Custom sizes acceptable if so required by design parameters		
Frame and legs material	Steel		
Frame and legs finish	Black [BLK] Silver [SI] White [WH]		
Worktop product	*GLOBAL* Worktop		
Worktop standard thickness	25 mm		
Worktop features (Optional)	Standard rectangular Available with two cable outlets Rectangular with power gap		
Worktop standard dimensions	Product code		Dimensions
	GT1475		1400 (L) x 750 (W)
	GT1675		1600 (L) x 750 (W)
	GT1875		1800 (L) x 750 (W)
Worktop finish	Laminate Graphite Grey White Colour dependant on overall design look and feel		
Worktop material	Preferably medium density fibreboard (MDF)		

Notes	Similar products to be approved by architects, designers and ACSA

5.5.2 CHAIR

Table 5-11 Chair Specification

Manufacturer/Supplier	Cecil Nurse
Product	*DHL* High Back Chair
Materials	Black mesh back with lumbar support Moulded foam seat 5-star black moulded nylon base Seat upholstered in standard black fabric
Features	Synchronised mechanism Height adjustable arms with pivot function
Image	
Notes	Similar products to be approved by architects, designers and ACSA

5.5.3 SCREENS

Table 5-12 Screen Specification

Manufacturer/Supplier	Cecil Nurse	
Product	*GLOBAL* Perspex Screen	
Standard dimensions	Product Code	Dimensions
	GLS650	650 (W)
	GLS1500	1500 (W)
	GLS1700	1700 (W)
Materials	Perspex	
Finish	Colour dependant on overall design, look and feel.	
Features	Translucent	
Brackets	Dual Desk mounting brackets	
Image		
Notes	Similar products to be approved by Architects, designers and ACSA	

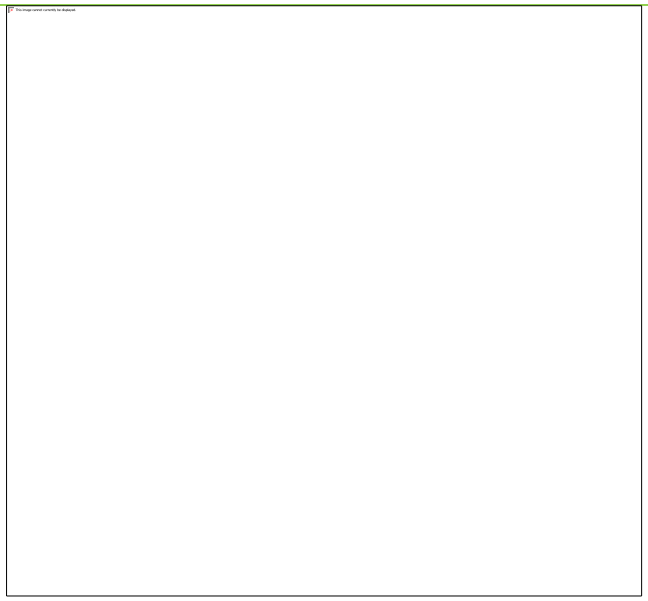
5.5.4 CARPET PROTECTOR

Table 5-13 Carpet Protector Specification

Manufacturer/Supplier	Cecil Nurse	
Product	*CURVE* Carpet protector	
Standard dimensions	Product Code	Dimensions
	CPC1350CL	1350 (L) x 1140 (W) – Curve
Materials	Perspex	
Features	Translucent	
Brackets	Dual Desk mounting brackets	
Image		
Notes	Similar products to be approved by Architects, designers and ACSA	

5.5.5 STAND-ALONE FURNITURE

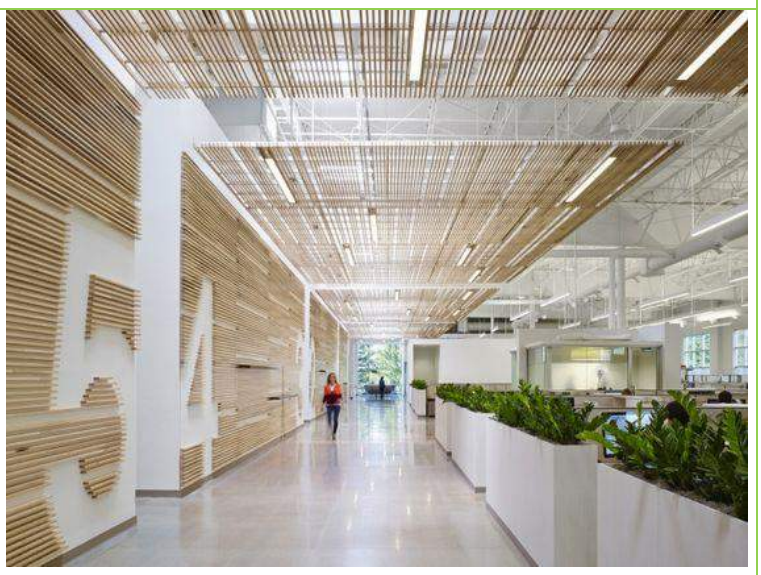
Table 5-14 Stand-alone Furniture Specification

Manufacturer/Supplier	Cecil Nurse
Product	Custom
Dimensions	1500 (L) x 400 (D) x 1200 (H)
Materials	Medium density fibreboard (MDF)
Features	Combination of three locker units and six pigeon hole units
Finish	Carcass: White laminate Locker Doors: Burnt Orange laminate Pigeon hole vertical and horizontal dividers: Grey laminate Colour dependant on overall design look and feel
Image	
Notes	Similar products to be approved by architects, designers and ACSA

5.6 ADDITIONAL ELEMENTS

5.6.1 CORRIDOR PLANTERS

Table 5-15 Corridor Planters Specification

Manufacturer/Supplier	Cecil Nurse
Product	Custom
Dimensions	850 (L) x 360 (W) x 1200 (H)
Materials	Medium density fibreboard (MDF)
Features	Combination of three locker units and six pigeon hole units
Finish	Carcass: White laminate Locker Doors: Burnt Orange laminate Pigeon hole vertical and horizontal dividers: Grey laminate Colour dependant on overall design look and feel
Image	
Notes	Similar products to be approved by architects, designers and ACSA

5.6.2 STAND-ALONE PLANTERS

Table 5-16 Stand-alone Planters Specification

Manufacturer/Supplier	Cecil Nurse
Product	*ANA Planter*
Dimensions	400 (W) x 400 (D) x 900 (H)
Materials	Polyethylene
Features	Fits 32 cm liner
Finish	Matte painted finish Colour dependant on overall design look and feel
Image	
Notes	Similar products to be approved by architects, designers and ACSA

5.6.3 SUSPENDED PLANTERS

Table 5-17 Suspended Planters Specification

Manufacturer/Supplier	Cecil Nurse
Product	*ANA Planter*
Dimensions	Various
Materials	Polyethylene
Features	Fits 32 cm liner
Finish	Matte painted finish Colour dependant on overall design look and feel
Image	
Notes	Similar products to be approved by architects, designers and ACSA

5.6.4 SMALL PLANTS

Table 5-18 Small Plants

Image	

6 GENERAL MANAGERS' OFFICES

6.1 OVERVIEW

Offices are provided to staff members in general manager (GM) positions.

Designers should use their professional discretion when planning the positions of offices in the layout. In the case of the Maples Building, the constrained building envelope required GM offices to be grouped together, to allow the maximum utilization of the remaining floor space for open plan workstations. The standard size for a GM office is 11 m², dictated by the existing spatial constraints and client requirements, and must be provided with a desk (with on-board storage), a chair, visitor's chairs, a carpet protector, bin and an additional stand-alone storage unit.

GM offices should be preferably located in close proximity to their responsible department or divisional open plan staff members.

The appropriate shape and dimension of the office will be determined by whether the office is installed as part of a new building design, or installed in an existing building as part of a refurbishment.

6.1.1 SPATIAL DESIGN – MAPLE BUILDING

6.1.2 TYPICAL LAYOUT

Typical design implementations include;

- The desk should be placed facing the door.
- The gap between the edge of the desk and the wall must be wheelchair accessible (check the latest SANS 10400 regulations).
- The stand-alone storage unit should not cover any part of the window glazing to allow for maximum natural light penetration into the office space.
- The desk should be long enough in its length for two visitors to comfortably sit on the opposite end.
- A sliding glass door should be used to limit operational space.

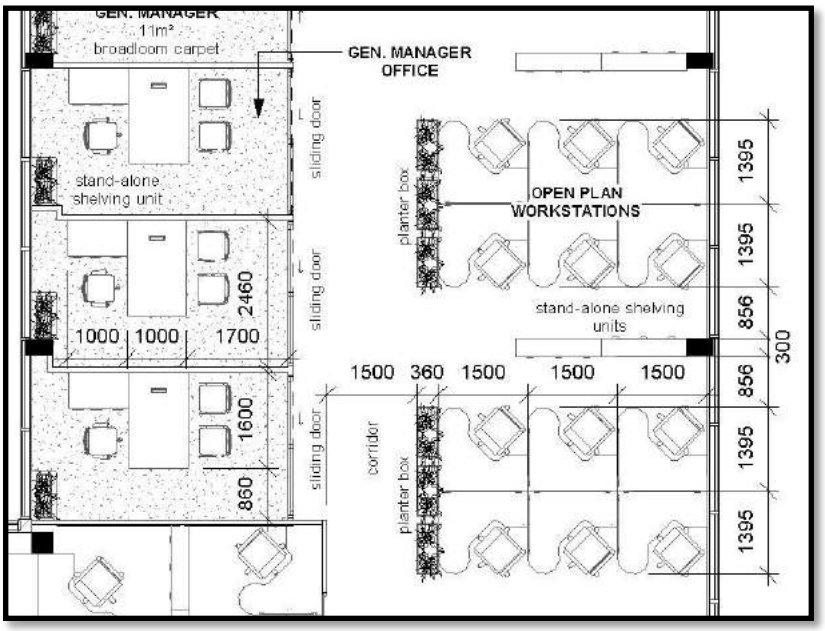


Figure 6-1 Typical layout of General Managers' offices

6.2 CONCEPTUAL RENDERS

The following image shows a conceptual visualisation of typical General Manager's office design and layout;

Figure 6-2 Typical General Managers Office

6.3 CONCEPTUAL PERSPECTIVE

General Managers can be grouped together to minimise intrusions into the open plan space.

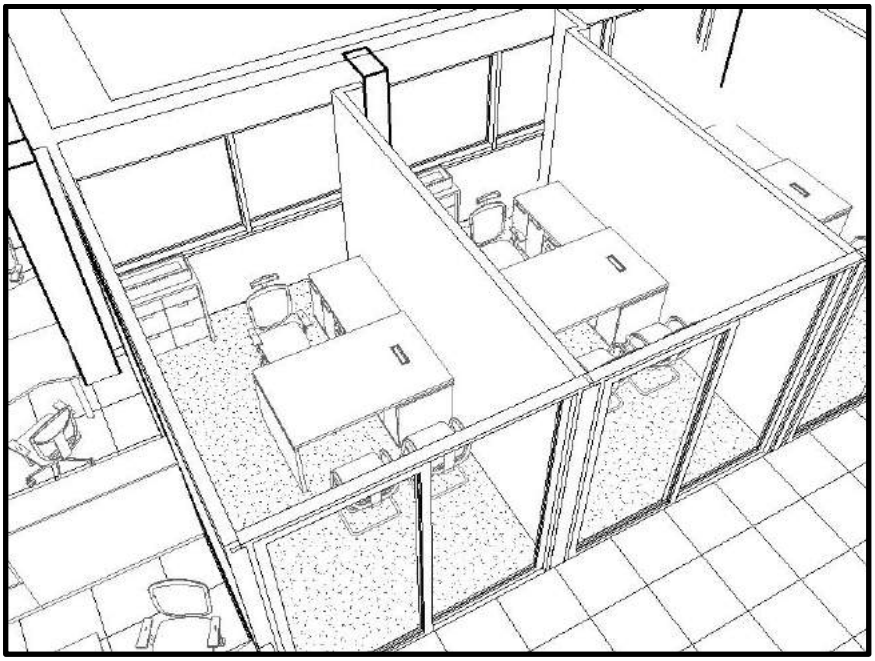


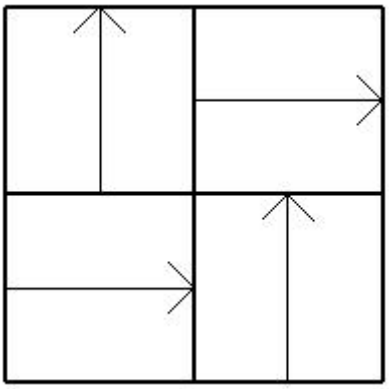
Figure 6-3 Typical General Managers Office

6.4 MATERIALS

6.4.1 FLOORS

6.4.1.1 Carpet Tiles

Table 6-1 Carpet Tile Specification – FF-02

Drawing code	FF-02	
Manufacturer	Belgotex 'Fringe'	
Specifications	Construction	Tufted Multi-Scroll Loop Pile
	Backing	NexBac
	Fibre Type	100% SMF (Polypropylene)
	Total Thickness	7 mm (±0.5 mm)
	Use Classification	General/Medium Commercial
	Fire index	2 (SANS 10177 – IV)
Dimensions	600 x 600 mm tiles	
Colours		Colour code: *Frill*
Installation pattern		Tessellated

6.4.1.2 Typical Application – Floor Finishes

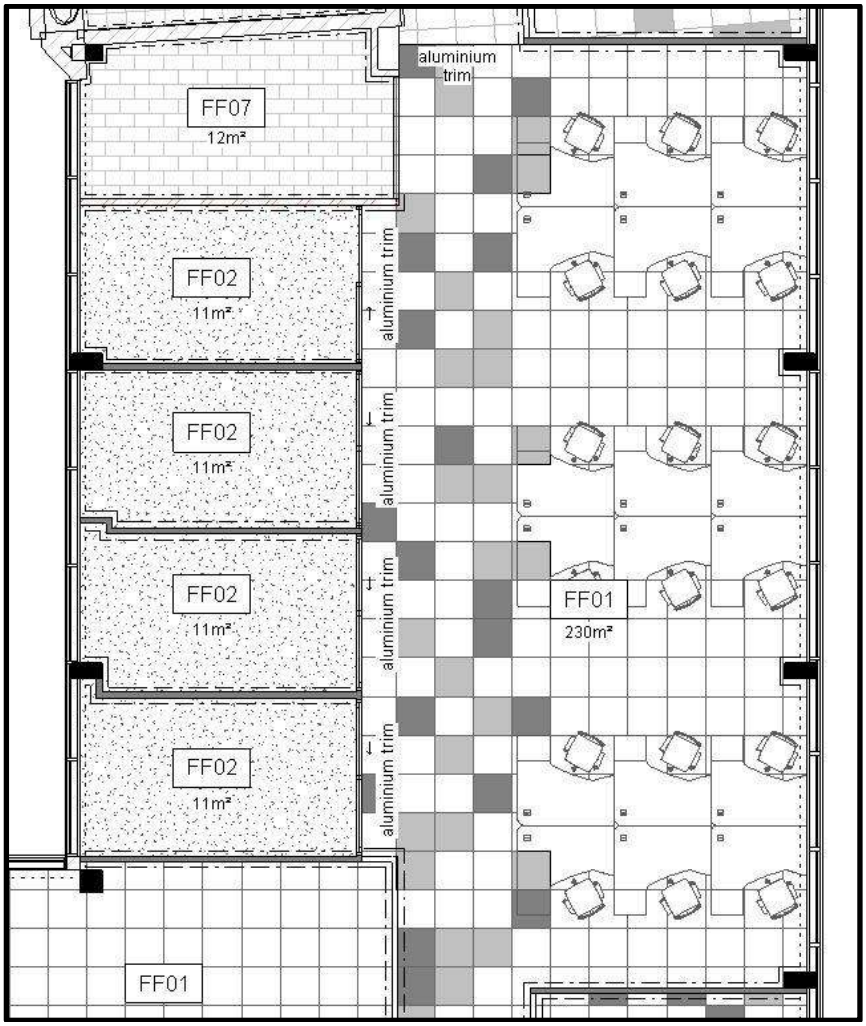


Figure 6-4 Typical Layout – Floor Finishes

6.4.2 WALLS

6.4.2.1 Paints

Table 6-2 Paint specifications – PP-01

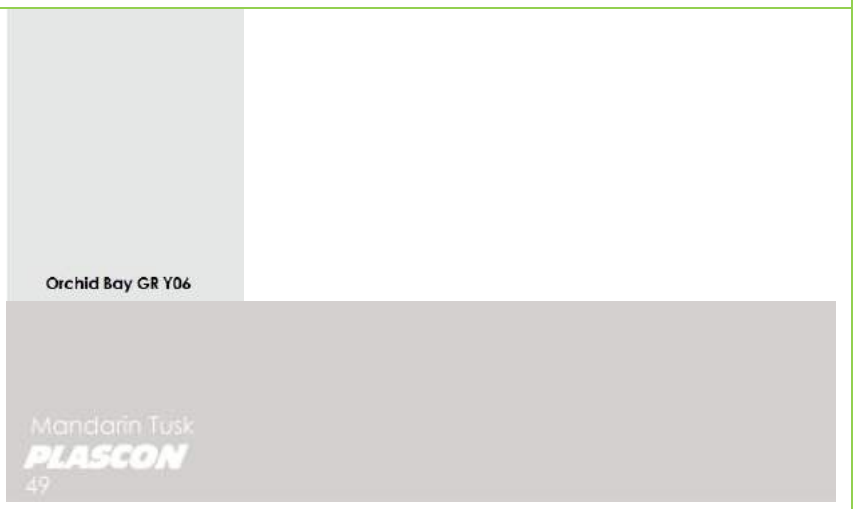
Drawing code	PP-01
Application	To full interior surface of existing masonry walls or as indicated on plan
Manufacturer	Plascon
Product colour code	*Orchid Bay GR Y06* OR *Mandarin Tusk 49* To be finalised after *in situ* sample approval
Sample	

Table 6-3 Paint specifications – PP-02

Drawing code	PP-02
Application	To full interior surface of existing concrete columns or as indicated on plan
Manufacturer	Plascon
Product colour code	*Paris Paving 53* To be finalised after *in situ* sample approval
Sample	

Table 6-4 Paint specifications – PP-03

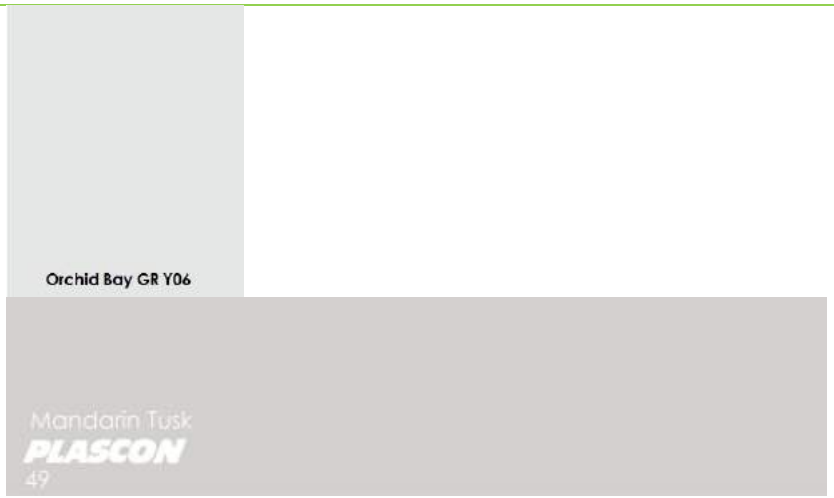
Drawing code	PP-03
Application	Full surface of new skimmed drywall partitions
Manufacturer	Plascon
Product colour code	*Orchid Bay GR Y06* OR *Mandarin Tusk 49* To be finalised after *in situ* sample approval
Sample	

Table 6-5 Paint specifications – PP-05

Drawing code	PP-05
Application	Full surface of new skimmed drywall partitions
Manufacturer	Plascon
Product colour code	*Dylan's Blue B5-A1-2* OR *Blue Bay B5-A1-3* To be finalised after *in situ* sample approval
Sample	

6.4.2.2 Typical Application – Wall Finishes

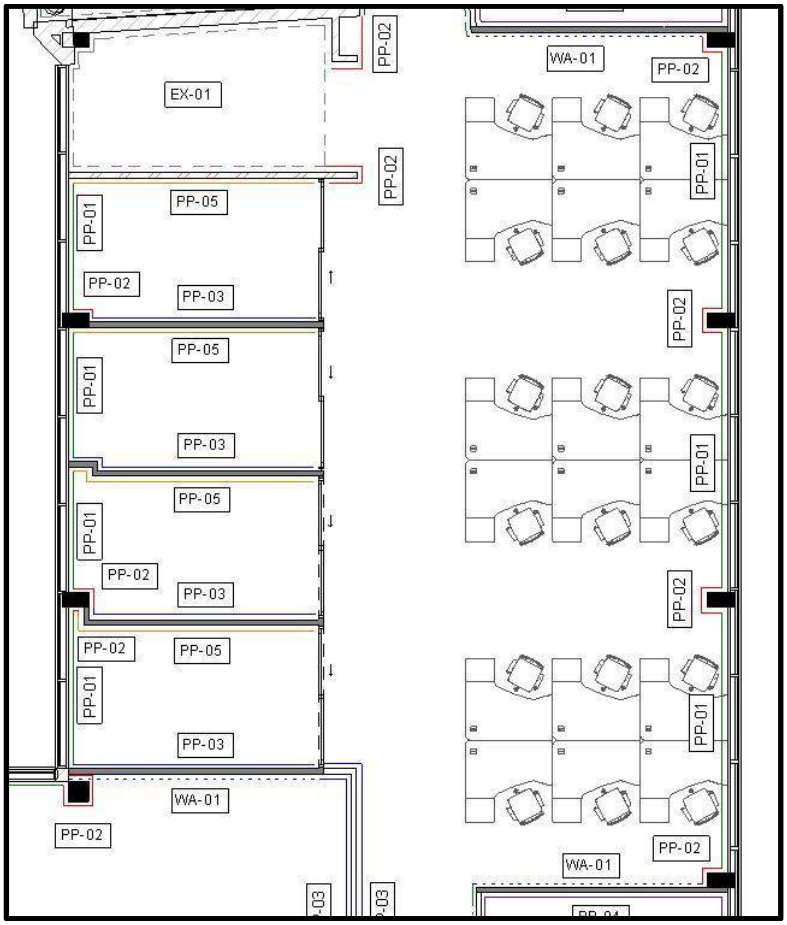


Figure 6-5 Typical Layout – Wall Finishes

6.4.3 PARTITIONS

6.4.3.1 Drywalls

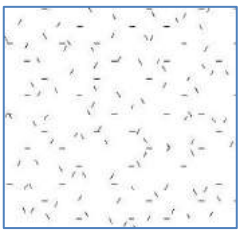
Table 6-6 Drywall Specifications

Material	Typically standard drywall
Specification	Height to underside of ceiling/bulkhead, depending on design
Application	Fixed to floor, painted and one feature coloured wall per office
Acoustics	Sound insulated requirement for all office partitioning.

6.4.4 CEILINGS

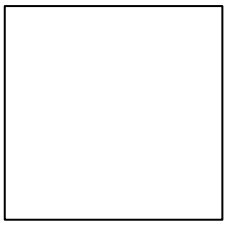
6.4.4.1 Suspended Flush Plaster Ceilings

Table 6-7 Ceiling specifications

Drawing code	Displayed on drawing legend 
Application	To be installed to suspended ceiling grid frame
Manufacturer	As per specialist design
Board dimensions	Varies
Thickness	12 mm
Material	Plasterboard
Finish	Skim and painted – white

6.4.4.2 Plasterboard bulkheads

Table 6-8 Ceiling specifications

Drawing code	Displayed on drawing legend 
Application	To be installed to suspended ceiling grid frame
Manufacturer	As per specialist design
Board dimensions	Varies
Thickness	12 mm
Material	Plasterboard
Finish	Skim and painted – White

6.4.4.3 Typical Application – Ceiling Finishes

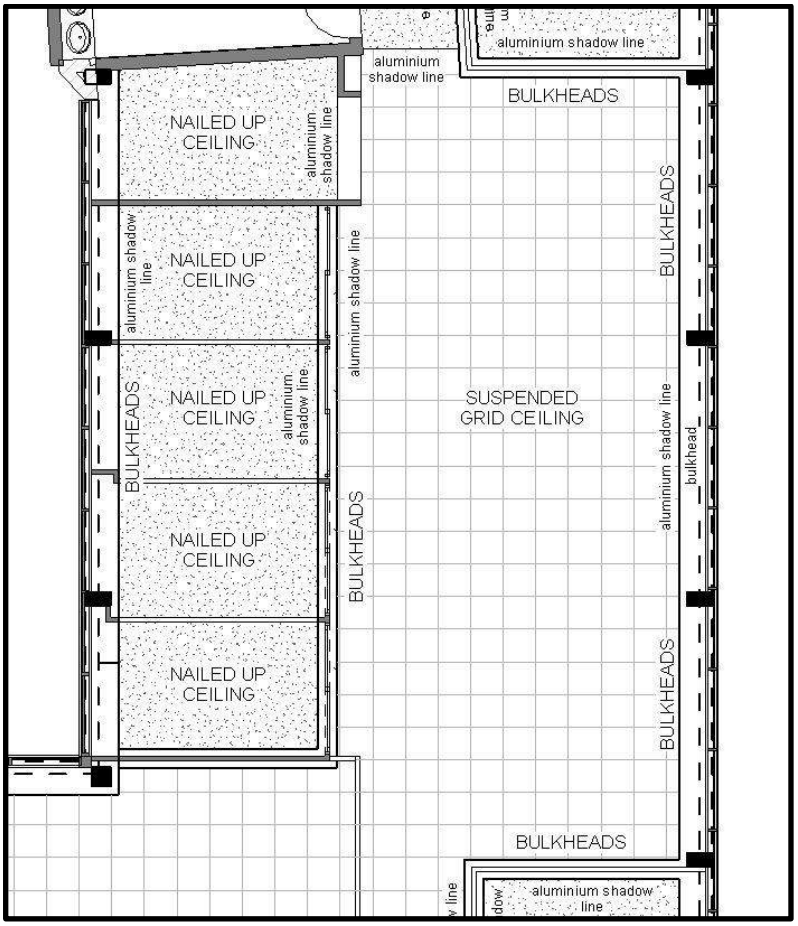


Figure 6-6 Typical Layout – Ceiling Finishes

6.5 FURNITURE

6.5.1 DESK

Table 6-9 Desk Specifications

Manufacturer/Supplier	Cecil Nurse	
Frame and legs product	*HEAD OFFICE* range, Executive Panel Leg Desk	
Standard dimensions	Product code	Standard dimensions
	HOE2020P	2000 (L) x 2000 (W) x 730 (H)
	Custom (used)	1800 (L) x 1600 (W) x 730 (H)
	Custom sizes acceptable if so required by design parameters	
Local storage	1 x pen and pencil drawer 1 x standard drawer 1 x deep filer 4 x hinged doors NOTE: include one internal shelf per two doors 1 x compartment with shelf	
Finish	Material 1: Laminate Material 2: Laminate Colour dependant on overall design look and feel	
Material	Preferably medium density fibreboard (MDF)	
Notes	Similar products to be approved by architects, designers and ACSA	

6.5.2 CHAIR

Table 6-10 Chair Specifications

Manufacturer/Supplier	Cecil Nurse
Product	*DHL* High Back Chair with headrest
Materials	Black mesh back with lumbar support Moulded foam seat 5-star black moulded nylon base Seat upholstered in standard black fabric
Features	Synchronised mechanism Height adjustable arms with pivot function
Image	
Notes	Similar products to be approved by architects, designers and ACSA

6.5.3 POWER DOCK

Table 6-11 Power Dock Specifications

Manufacturer/Supplier	Cecil Nurse *Slimline Omega*
Specification	Specification
• Recessed horizontal power dock • 1 x 3 Pin • 1 x SA 2 Pin • 2 x USB Charging • 2 x DATA CAT 6 female to female couplers • Requires input cable • Requires 100mm clearance under desk for gripping bracket • Dimensions: • 227 (L) x 55 (W) x 40 (D)	

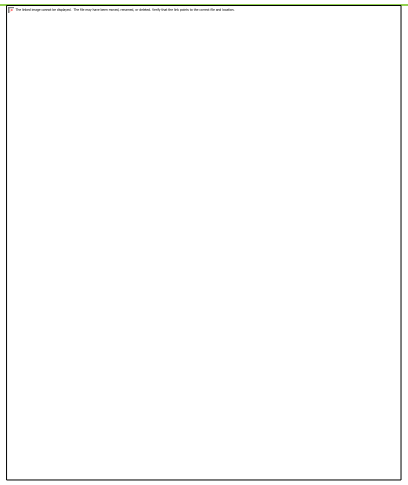
6.5.4 CARPET PROTECTOR

Table 6-12 Carpet Protector Specifications

Manufacturer/Supplier	Cecil Nurse	
Product	*CURVE* Carpet protector	
Standard dimensions	Product Code	Dimensions
	CPC1350CL	1350 (L) x 1140 (W) – Curve
Materials	Perspex	
Features	Translucent	
Brackets	Dual Desk mounting brackets	
Image		
Notes	Similar products to be approved by architects, designers and ACSA	

6.5.5 STAND-ALONE STORAGE

Table 6-13 Stand-alone Storage Specifications

Manufacturer/Supplier	Cecil Nurse
Product	Custom
Dimensions	800 (W) x 400 (D) x 900 (H)
Materials	Medium density fibreboard (MDF)
Features	Proposed setup: 2 x drawers, 1 x deep filer Outer frame thickness: 32 mm Internal drawers and filers to be 'suspended' from floor. Minimum 100 mm
Finish	Material 1: Laminate White Material 2: Laminate Grey Material 3: Laminate Havana (Cecil Nurse Exclusive) Colour dependant on overall design look and feel
Image	
Notes	Similar products to be approved by architects, designers and ACSA

6.5.6 VISITORS CHAIR

Table 6-14 Visitors Chair Specifications

Manufacturer/Supplier	Cecil Nurse
Product	*WIN* Visitors chair
Materials	Black painted sleigh frame Black mesh back Moulded foam seat Seat upholstered in standard black fabric
Image	
Notes	Similar products to be approved by architects, designers and ACSA

6.6 ADDITIONAL ELEMENTS

6.6.1 UNIT TOP PLANTER BOXES

Table 6-15 Unit Top Planter Box Specifications

Manufacturer/Supplier	Cecil Nurse
Product	*FREEWAY* Metal Planter Boxes
Dimensions	To match stand-alone storage unit
Finish	Silver or white painted finishes Colour dependant on overall design look and feel
Image	
Notes	Similar products to be approved by architects, designers and ACSA

6.6.2 SMALL PLANTS

Table 6-16 Small Plants

Image	

7 GROUP EXECUTIVES AND DIRECTORS OFFICES

7.1 OVERVIEW

Government norms and standards prescribe the workspace of an executive management office to be between 20 m² and 25 m². The appropriate shape and dimension of the office will be determined by whether the office is installed as part of a new building design, or installed in a pre-existing building.

GE locations are dependent on client's requirements. Executive staff members usually propose their office locations which are most suited to their everyday workings.

Each group executive office must be provided with a desk, chair, visitor's chairs, ample storage space, a meeting table and four additional meeting table chairs.

7.1.1 TYPICAL LAYOUT

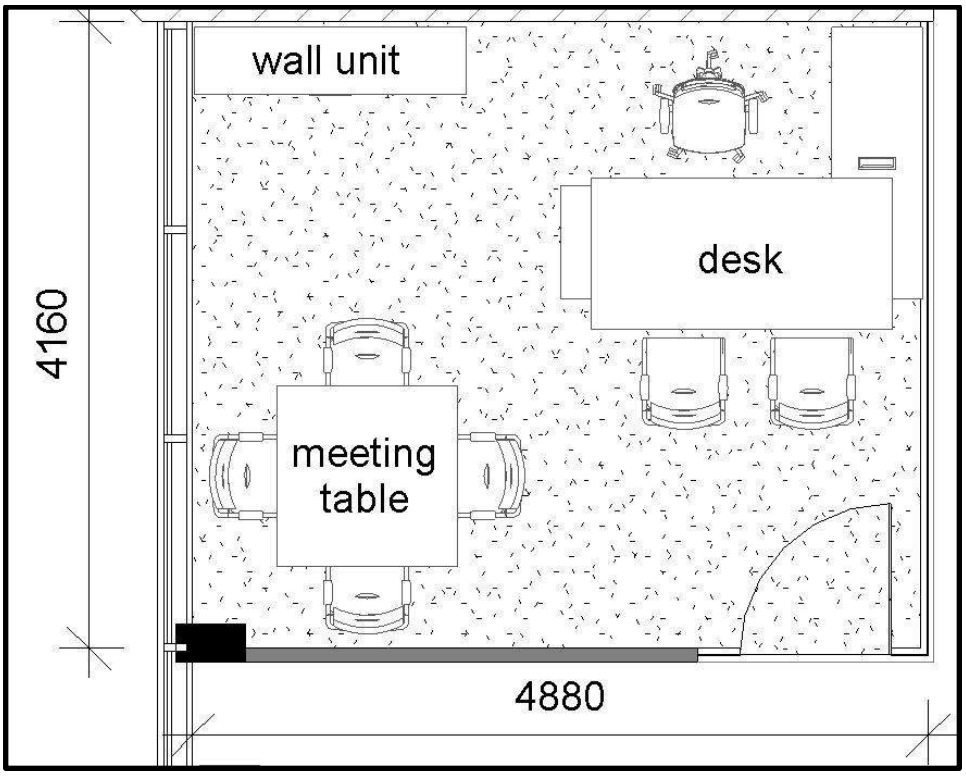


Figure 7-1 Typical layout of Group Executives offices

7.2 CONCEPTUAL PERSPECTIVE

Group Executives have larger offices big enough for a meeting. Full height glazing with sandblasted vinyl insures an increase level of privacy.

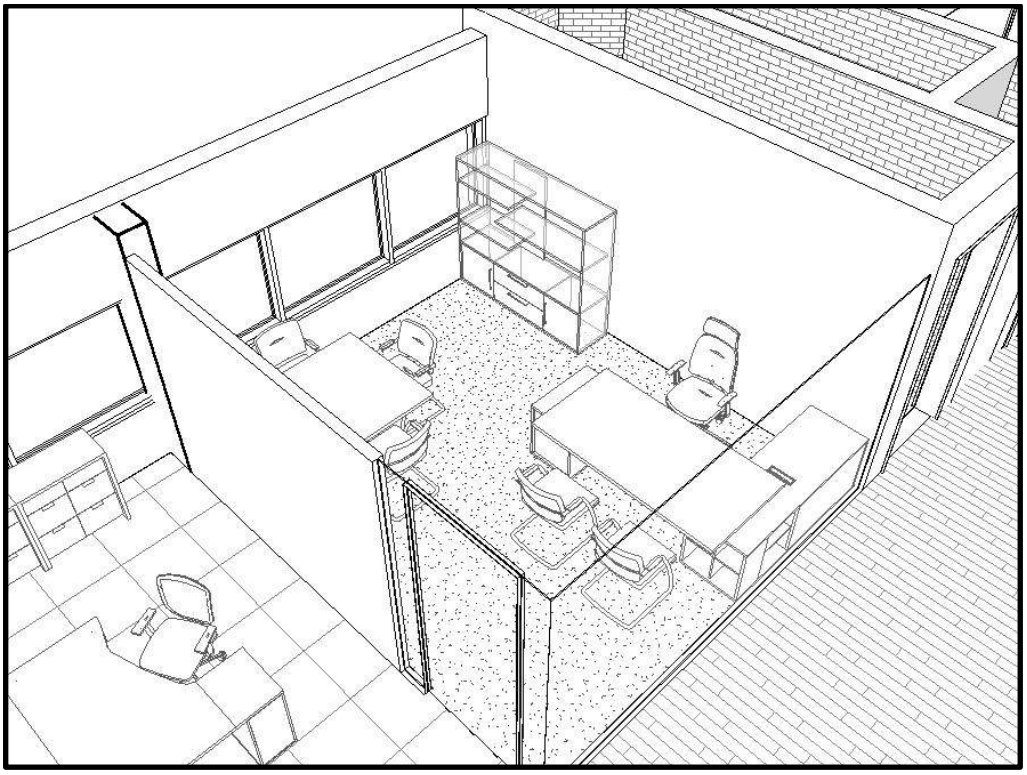


Figure 7-2 Typical layout of Group Executives offices

7.3 MATERIALS

7.3.1 FLOORS

7.3.1.1 Broadloom carpets

Table 7-1 Broadloom Specification – FF-03

Drawing code	FF-03	
Manufacturer	Belgotex 'Baltimore'	
Specifications	Construction	Tufted Cut Pile
	Fibre Type	Stainproof SDX
	Total Thickness	7 mm (±0.5 mm)
	Use Classification	Heavy Commercial
	Fire index	2 (SANS 10177 – IV)
Colours		Colour code: *Metallic*
Installation pattern		Broadloom wall-to-wall

7.3.2 WALLS

7.3.2.1 Paints

Table 7-2 Paint specifications – PP-01

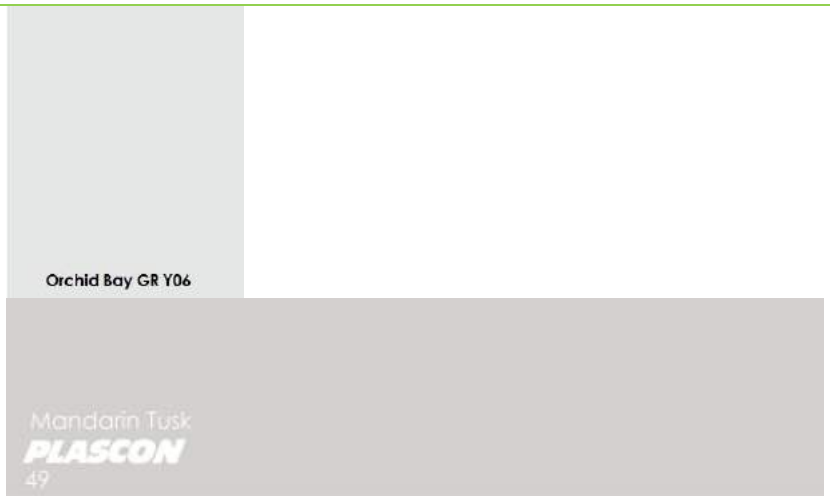
Drawing code	PP-01
Application	To full interior surface of existing masonry walls or as indicated on plan
Manufacturer	Plascon
Product colour code	*Orchid Bay GR Y06* OR *Mandarin Tusk 49* To be finalised after *in situ* sample approval
Sample	

Table 7-3 Paint specifications – PP-02

Drawing code	PP-02
Application	Full interior surface of existing concrete columns or as indicated on plan
Manufacturer	Plascon
Product colour code	*Paris Paving 53* To be finalised after *in situ* sample approval
Sample	

Table 7-4 Paint specifications – PP-03

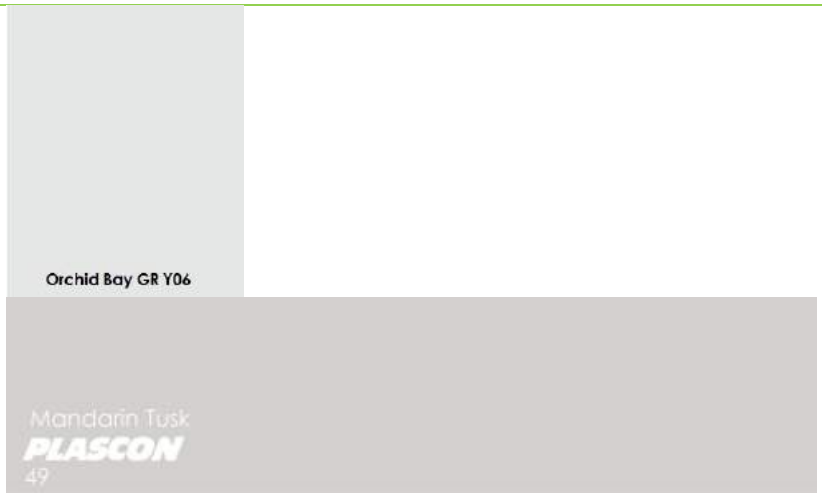
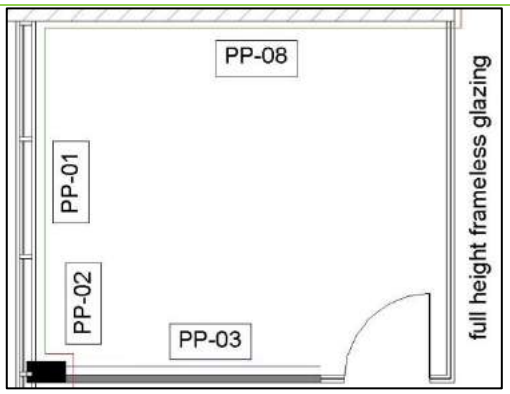
Drawing code	PP-03
Application	Full surface of new skimmed drywall partitions
Manufacturer	Plascon
Product colour code	*Orchid Bay GR Y06* OR *Mandarin Tusk 49* To be finalised after *in situ* sample approval
Sample	

Table 7-5 Paint specifications – PP-08

Drawing code	PP-08
Application	Full interior surface of existing masonry walls or as indicated on plan
Manufacturer	Plascon
Product colour code	To be finalised after *in situ* sample approval *Beach Wood Y3-D2-1*
Sample	

Typical Application	

7.3.3 PARTITIONS

7.3.3.1 Drywalls

Table 7-6 Drywall Specifications

Material	Typically standard drywall
Specification	Height to underside of ceiling/bulkhead, depending on design
Application	Fixed to floor, painted and one feature coloured wall per office
Acoustics	Sound insulated requirement for all office partitioning

7.3.3.2 Full height glazing

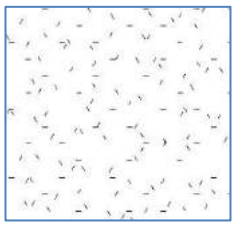
Table 7-7 Full Height Glazing Specifications

Specification	Frameless glazed panels
Application	Fixed to ceiling and floor, sandblasted vinyl to interior
Glazing	8 mm toughened safety glass
Sample	

7.3.4 CEILINGS

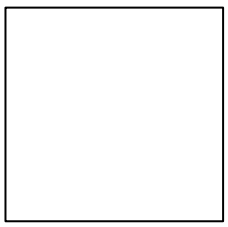
7.3.4.1 Suspended Flush Plaster Ceilings

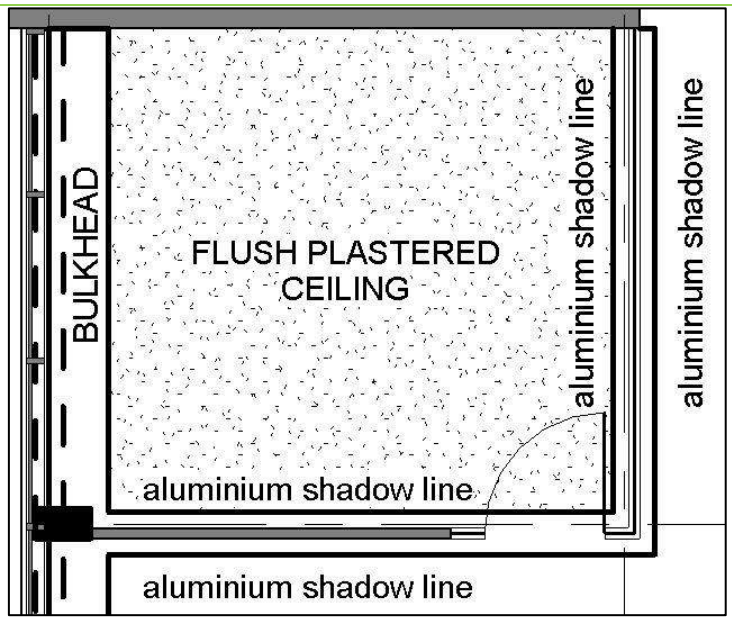
Table 7-8 Ceiling specifications

Drawing code	Displayed on drawing legend 
Application	To be installed to suspended ceiling grid frame
Manufacturer	As per specialist design
Board dimensions	Varies
Thickness	12 mm
Material	Plasterboard
Finish	Skim and painted – white

7.3.4.2 Plasterboard bulkheads

Table 7-9 Ceiling specifications

Drawing code	Displayed on drawing legend 
Application	To be installed to suspended ceiling grid frame
Manufacturer	As per specialist design
Board dimensions	Varies
Thickness	12 mm
Material	Plasterboard
Finish	Skim and painted – white

Typical Application	

7.4 FURNITURE

7.4.1 DESK

Table 7-10 Desk Specifications

Manufacturer/Supplier	Cecil Nurse	
Frame and legs product	*ECO-CENTRIC EXEC* range, Executive Desk	
Standard dimensions	Product code	Standard dimensions
	ECO2420AL	2400 (L) x 2000 (W) x 738 (H)
	Custom sizes acceptable if so required by design parameters	
Local storage	2 x 2 Wide deep filers. NOTE: Replace with vertical hinged doors with internal shelf 1 x Hinge Door CPU Compartment. NOTE: Internal shelf to be included 3 x Drawer Pedestal	
Finish	Material 1: Laminate Material 2: Laminate Colour dependant on overall design look and feel	
Material	Preferably medium density fibreboard (MDF)	
Notes	Similar products to be approved by architects, designers and ACSA	

7.4.2 POWER DOCK

Table 7-11 Power Dock Specifications

Manufacturer/Supplier	Cecil Nurse
Specification	*Horizontal Power Dock*
• Recessed • 1 x Switch • 1 x 3 Pin • 1 x 3 Pin (UPS) • 1 x SA 2 Pin • 2 x DATA CAT 6 female to female couplers • Requires input cable • Available in Black and Silver	

7.4.3 CHAIR

Table 7-12 Chair Specifications

Manufacturer/Supplier	Cecil Nurse
Product	*DHL* High Back Chair with headrest
Materials	Black mesh back with lumbar support Black bonded leather upholstery 5-star aluminium base
Features	Synchronised mechanism
Image	
Notes	Similar products to be approved by architects, designers and ACSA

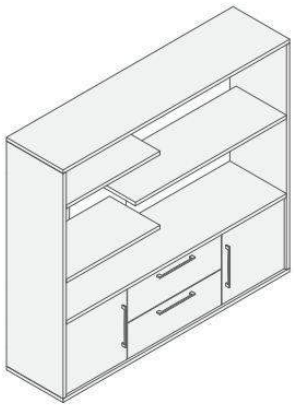
7.4.4 CARPET PROTECTOR

Table 7-13 Chair Specifications

Manufacturer/Supplier	Cecil Nurse	
Product	*CURVE* Carpet protector	
Standard dimensions	Product Code	Dimensions
	CPC1350CL	1350 (L) x 1140 (W) – Curve
Materials	Perspex	
Features	Translucent	
Brackets	Dual Desk mounting brackets	
Image		
Notes	Similar products to be approved by Architects, designers and ACSA	

7.4.5 STAND-ALONE STORAGE 1

Table 7-14 Stand-alone Storage 1 Specifications

Manufacturer/Supplier	Cecil Nurse
Product	*ECO-CENTRIC* Executive open wall unit TYPE A
Dimensions	1800 (W) x 450 (D) x 1600 (H)
Materials	Medium density fibreboard (MDF)
Features	Setup as per illustration
Finish	Wood grain carcass, panels and shelves: CN Exclusive Dark Oak Back panel, drawer and door fronts: Black Colour dependant on overall design look and feel
Image	
Notes	Similar products to be approved by Architects, designers and ACSA

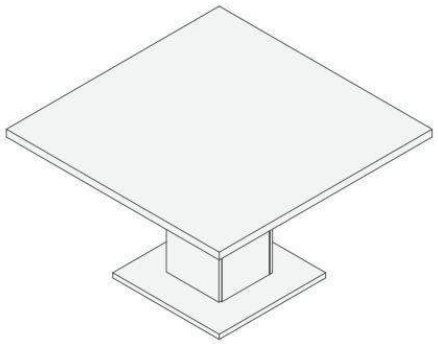
7.4.6 STAND-ALONE STORAGE 2

Table 7-15 Stand-alone Storage 2 Specifications

Manufacturer/Supplier	Cecil Nurse
Product	*DADO* Storage unit
Dimensions	2000 (W) x 440 (D) x 720 (H)
Materials	Preferably medium density fibreboard (MDF)
Features	Setup as per illustration
Finish	Carcass: Dark Oak Doors: Black Colour dependant on overall design look and feel
Image	
Notes	Similar products to be approved by architects, designers and ACSA

7.4.7 MEETING TABLE

Table 7-16 Meeting Table Specifications

Manufacturer/Supplier	Cecil Nurse
Product	*ECO-CENTRIC* Meeting Table
Dimensions	1200 (L) x 1200 (W) x 738 (H) 38 mm TOP
Product code	ECOR1212
Materials	Preferably medium density fibreboard (MDF)
Finish	Top: Dark Oak Base: Black Colour dependant on overall design look and feel
Image	
Notes	Similar products to be approved by architects, designers and ACSA

7.4.8 MEETING TABLE CHAIRS

Table 7-17 Meeting Table Chair Specifications

Manufacturer/Supplier	Cecil Nurse
Product	*DEFINE* Visitors chair
Materials	Chrome sleigh frame with black arm capping Black bonded leather upholstery
Image	
Notes	Similar products to be approved by architects, designers and ACSA

8 RECEPTION

8.1 OVERVIEW

A reception is an integral part of any office building. It is a public visitor's first introduction to a company and sets the tone for the corporate brand and the 'office environment' they are entering.

As such, the reception for ACSA has been designed to reflect a sense of professionalism and excellence.

The reception counter space must be prominent and display the ACSA identity, with a visitor's attention focussed on its presence.

A waiting area with soft seating and a coffee station must also be provided to keep guests comfortable.

8.1.1 TYPICAL LAYOUT

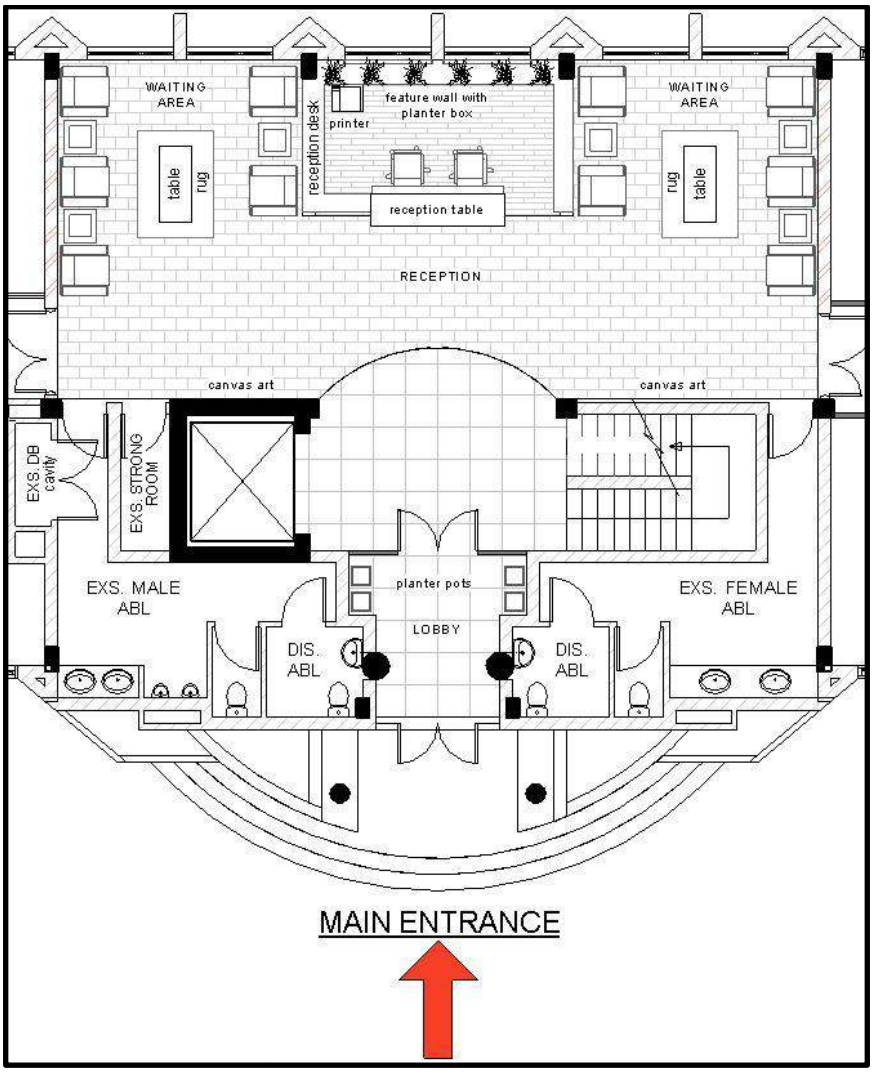


Figure 8-1 Typical layout of Reception Space

8.1.2 RECEPTION DESK LAYOUT

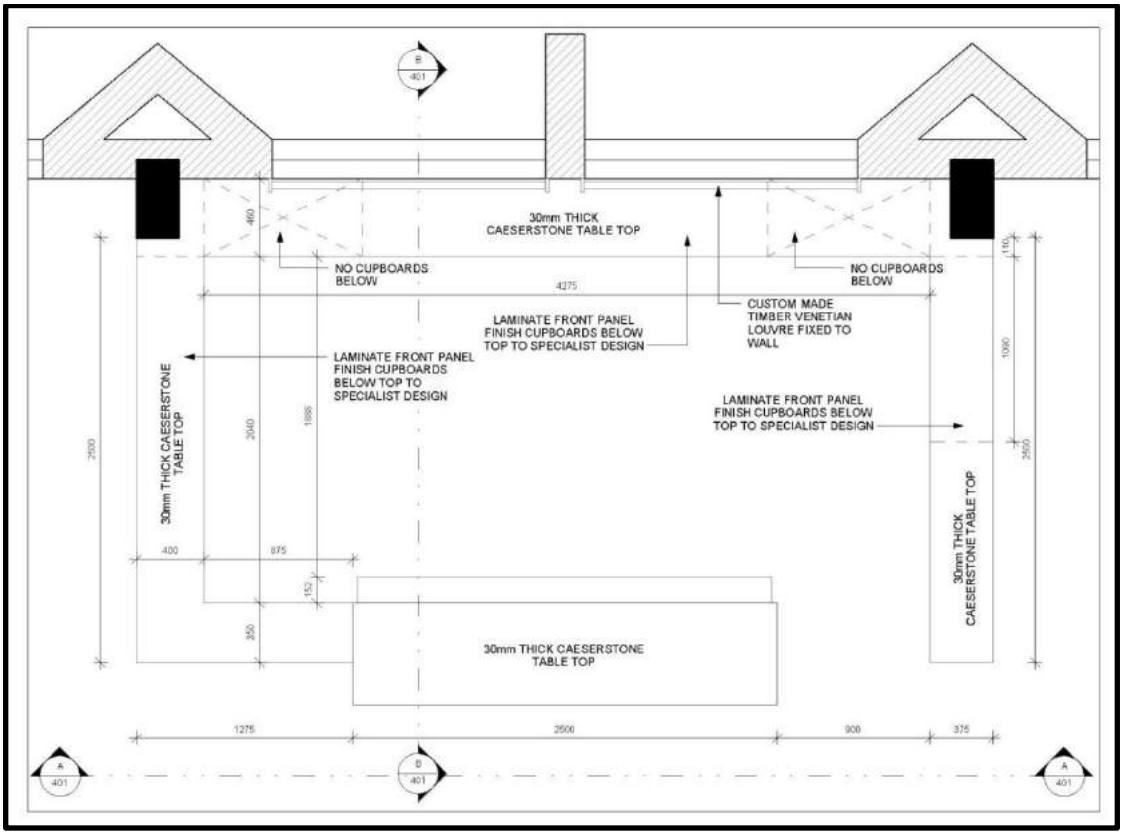


Figure 8-2 Reception Layout

8.1.3 RECEPTION DESK SECTION A-A

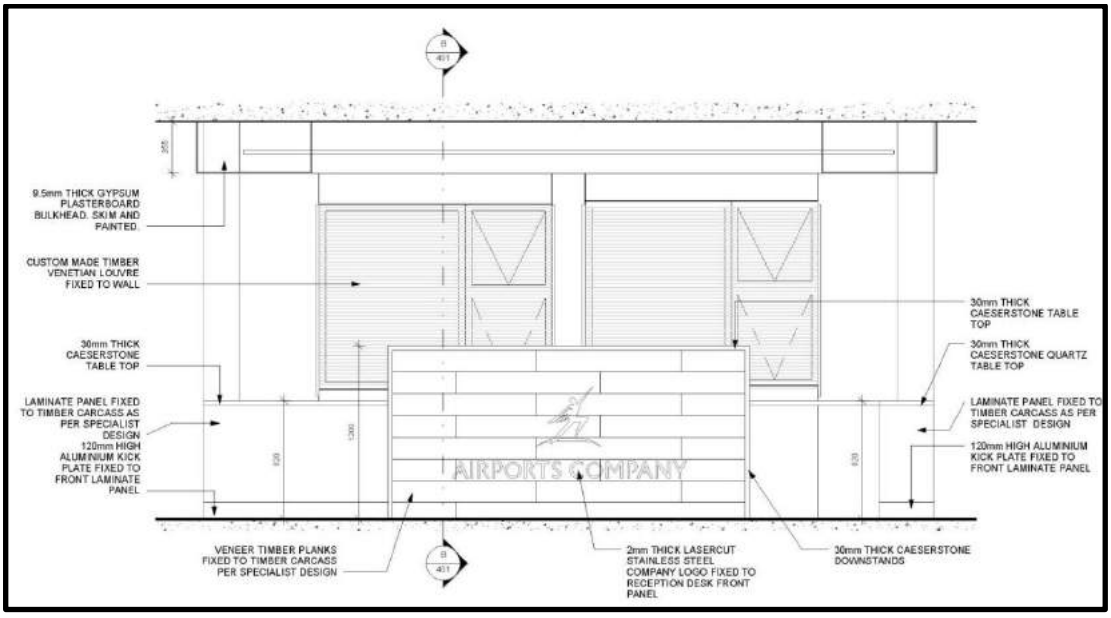


Figure 8-3 Reception space sectional drawing

8.1.4 RECEPTION DESK SECTION B-B

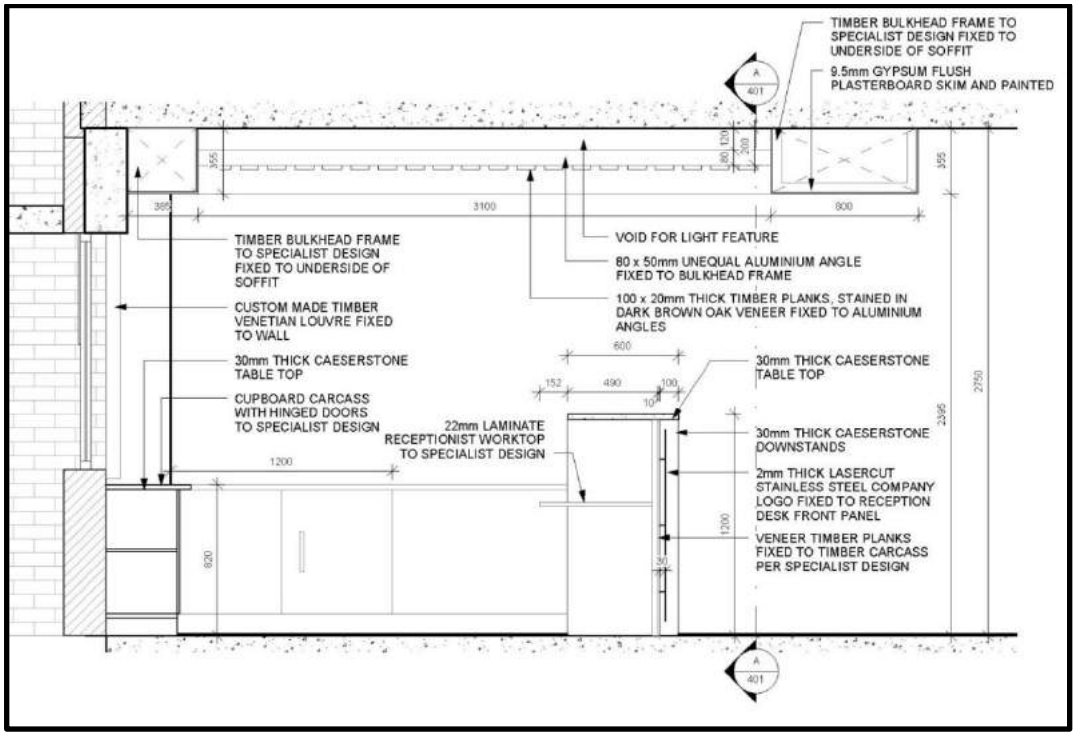


Figure 8-4 Reception space sectional drawing

8.2 CONCEPTUAL PERSPECTIVE

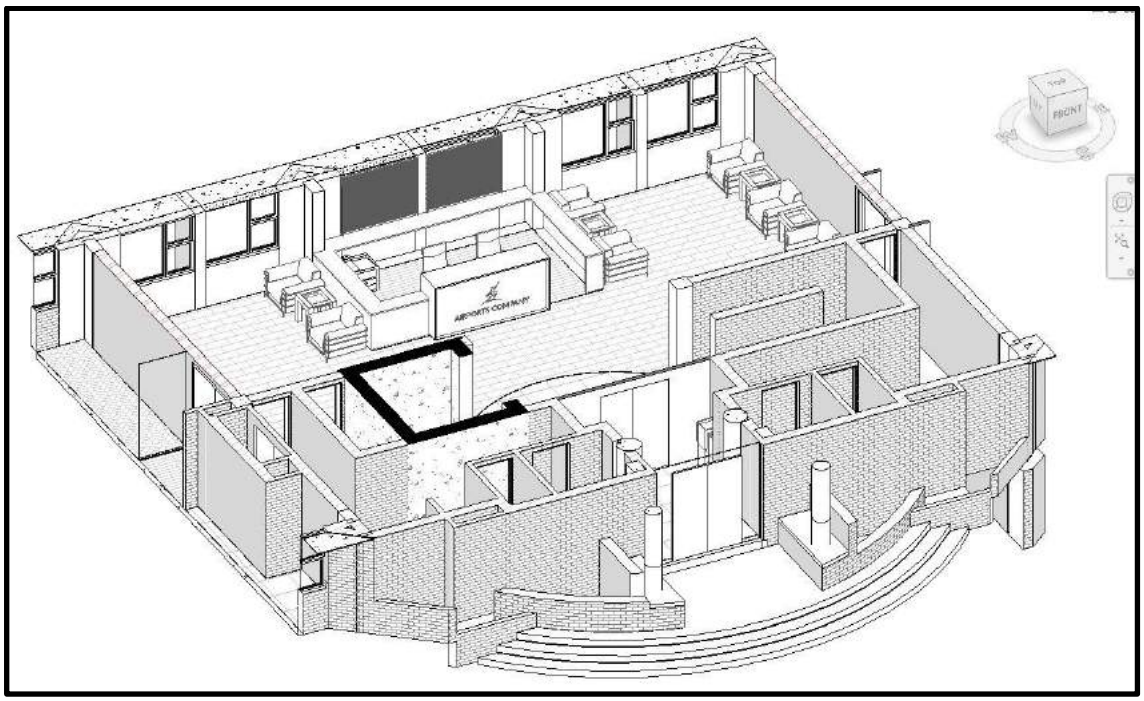


Figure 8-5 Sectional aerial perspective of the reception space at the Maple Building.

8.3 CONCEPTUAL RENDER

The following image shows a conceptual visualisation of typical Reception space;

Figure 8-6 Reception Render

8.4 MATERIALS

8.4.1 FLOORS

8.4.1.1 Porcelain Tiles

Table 8-1 Porcelain Tile Specification – FF-05

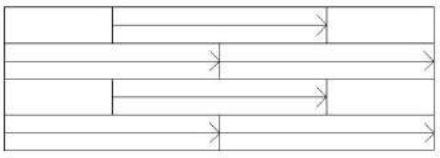
Drawing code	FF-05	
Manufacturer	Union Tiles 'Wood Grain'	
Specifications	Construction	Porcelain Tile
	Product Code	LW-TCH/115
	Size	150 mm x 900 mm
	Finish	'Wood Grain' Matte
Colours		
Installation pattern		Stretcher Bond

Table 8-2 Porcelain Tile Specification – FF-06

Drawing code	FF-06	
Manufacturer	Union Tiles 'Grey'	
Specifications	Construction	Full Body Porcelain Tile
	Product Code	LW-TR76-60
	Size	600 mm x 600 mm
	Finish	Grey 'Matte' Non Slip
Colours		
Installation pattern		Standard

Table 8-3 Porcelain Tile Specification – FF-07

Drawing code	FF-07	
Manufacturer	Union Tiles 'Grey'	
Specifications	Construction	Glazed Porcelain Tile
	Product Code	LW-VD/30
	Size	300 mm x 600 mm
	Finish	'Beige' Glazed Non Slip
Colours		
Installation pattern		Standard

8.4.1.2 Typical Application – Floor Finishes

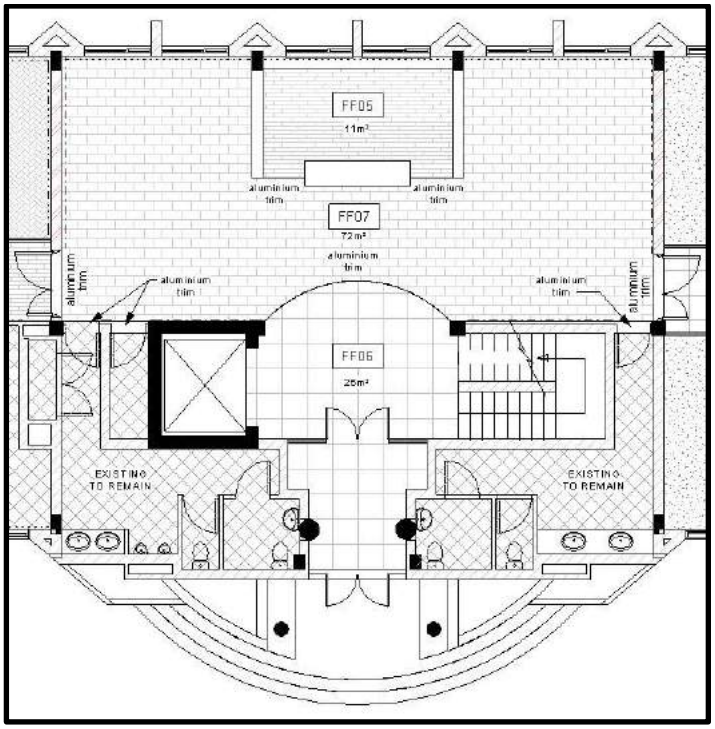


Figure 8-7 Typical Layout – Floor Finishes

8.4.2 WALLS

8.4.2.1 Paints

Table 8-4 Paint specifications – PP-01

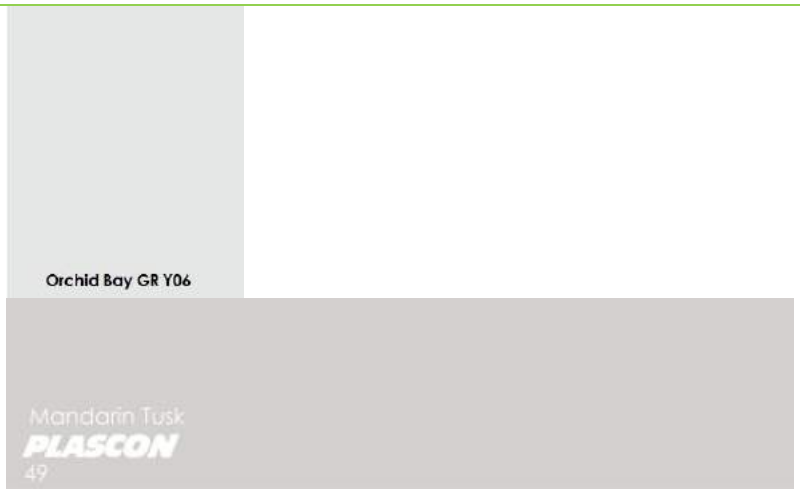
Drawing code	PP-01
Application	Full interior surface of existing masonry walls or as indicated on plan
Manufacturer	Plascon
Product colour code	*Orchid Bay GR Y06* OR *Mandarin Tusk 49* To be finalised after *in situ* sample approval
Sample	

Table 8-5 Paint specifications – PP-02

Drawing code	PP-02
Application	Full interior surface of existing concrete columns or as indicated on plan
Manufacturer	Plascon
Product colour code	*Paris Paving 53* To be finalised after *in situ* sample approval
Sample	

8.4.2.2 Wallpaper

Table 8-6 Paint specifications – WP-01

Drawing code	WP-01
Application	Full interior surface of new masonry or drywalls
Manufacturer	Specialist
Notes	To client's 'look and feel' requirements

8.4.2.3 Typical Application – Wall Finishes

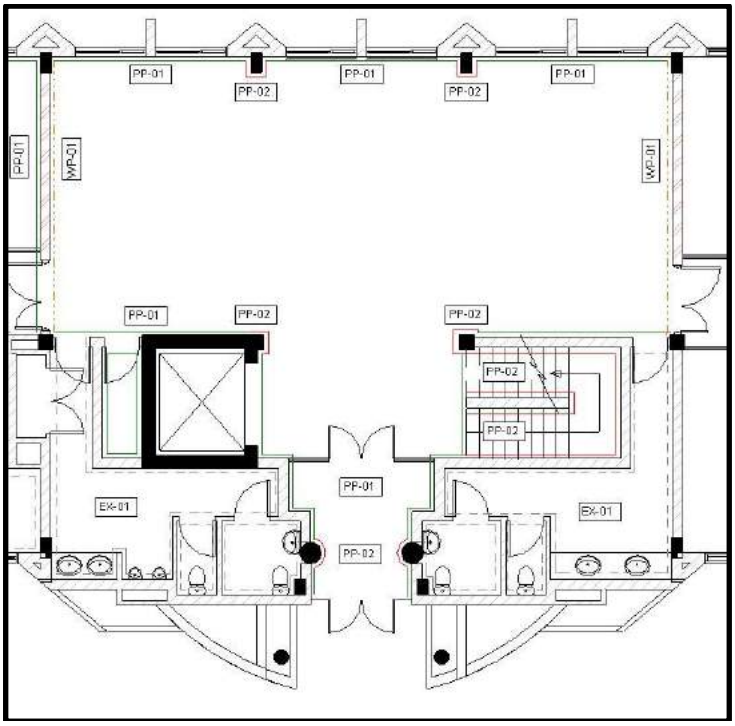
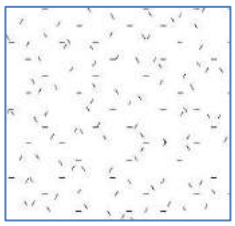


Figure 8-8 Typical Layout – Wall Finishes

8.4.3 CEILINGS

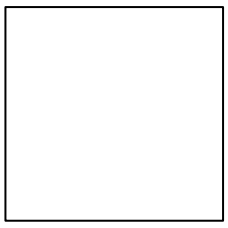
8.4.3.1 Suspended Flush Plaster Ceilings

Table 8-7 Ceiling specifications

Drawing code	Displayed on drawing legend 
Application	To be installed to suspended ceiling grid frame
Manufacturer	As per specialist design
Board dimensions	Varies
Thickness	12 mm
Material	Plasterboard
Finish	Skim and painted – White

8.4.3.2 Plasterboard bulkheads

Table 8-8 Ceiling specifications

Drawing code	Displayed on drawing legend 
Application	To be installed to suspended ceiling grid frame
Manufacturer	As per specialist design
Board dimensions	Varies
Thickness	12 mm
Material	Plasterboard
Finish	Skim and painted – White

8.4.3.3 Typical Application – Wall Finishes

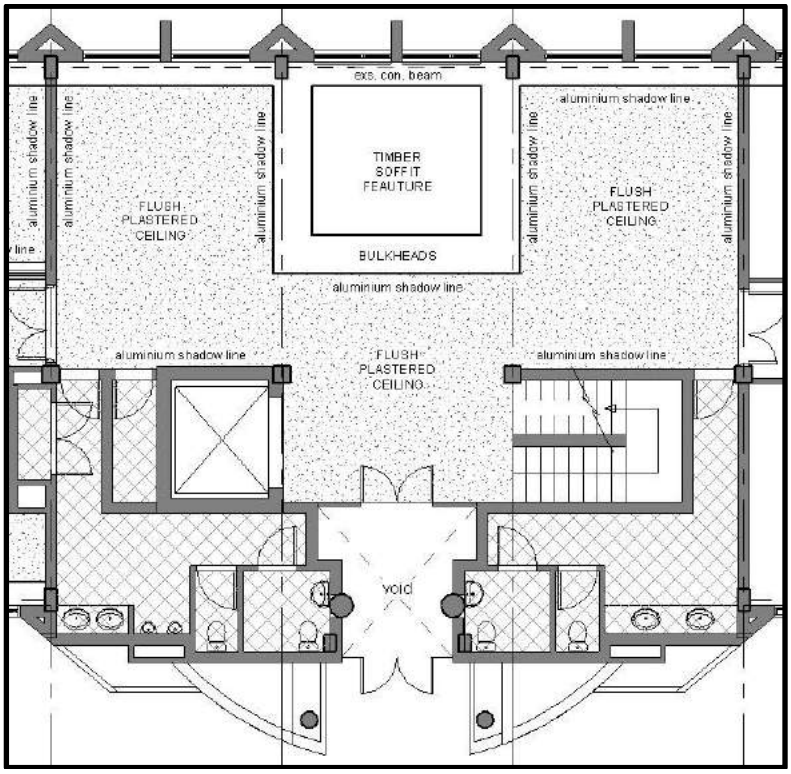


Figure 8-9 Typical Layout – Wall Finishes

8.5 FURNITURE

8.5.1 WAITING AREA CHAIRS

Table 8-9 Waiting Chair Specifications

Manufacturer/Supplier	Cecil Nurse
Product	*SLIM PROFILE* single-seater
Product code	SLP01
Dimensions	1080 (W) x 940 (D) x 760 (H)
Materials	Fitted seat with loose back cushion Chrome metal T-legs Upholstered in black leather-look
Image	
Notes	Similar products to be proposed, pending approval from ACSA

8.5.2 WAITING AREA SIDE TABLE

Table 8-10 Side Table Specifications

Manufacturer/Supplier	Cecil Nurse
Product	*URBAN LOOP* Side Table
Product code	UBLT600 – Top UBL600 – Base
Dimensions	600 (L) x 600 (W) x 520 (H)
Materials	25 mm top Black [BLK], Silver [SI] or White [WH] painted frame option
Finish	Black [BLK], Silver [SI] or White [WH] painted frame option Top to be laminate Colour dependant on overall design look and feel
Image	
Notes	Similar products to be proposed – pending approval from ACSA

8.5.3 WAITING AREA COFFEE TABLE

Table 8-11 Coffee Table Specifications

Manufacturer/Supplier	Cecil Nurse
Product	*URBAN LOOP* Coffee Table
Product code	UBLT1260 – Top UBL1260 – Base
Dimensions	1200 (L) x 600 (W) x 400 (H)
Materials	25 mm top Black [BLK], Silver [SI] or White [WH] painted frame option
Finish	Black [BLK], Silver [SI] or White [WH] painted frame option Top to be laminate Colour dependant on overall design look and feel
Image	
Notes	Similar products to be proposed – pending approval from ACSA

9 BOARDROOMS AND MEETING ROOMS

9.1 OVERVIEW

The boardroom and meeting room areas are the second most public part of the office environment and should speak the same design language as the reception space.

These areas should ideally be located in close proximity to the reception to limit unnecessary visitor movement through the building, as well as providing increased security.

9.1.1 TYPICAL PROXIMITY LAYOUT

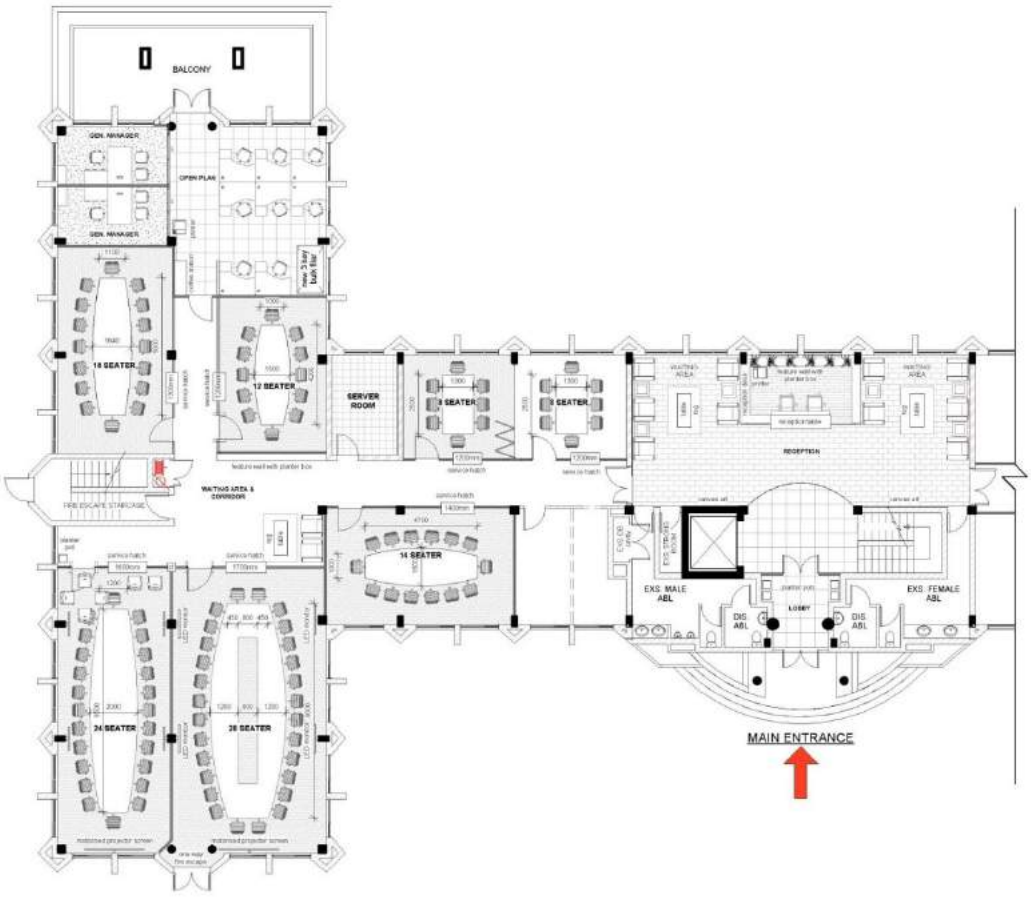
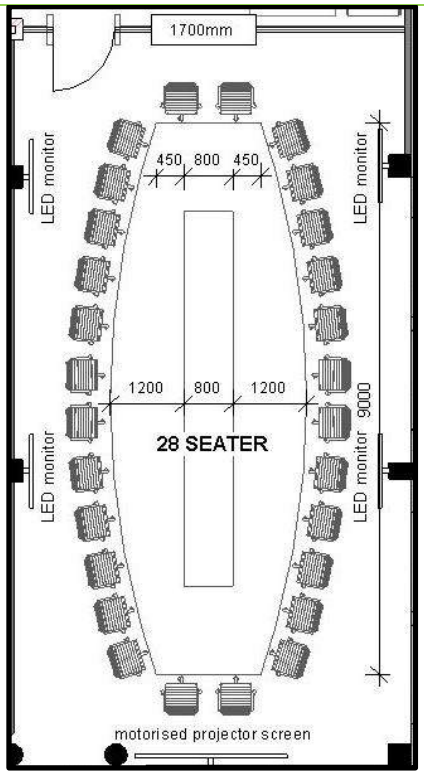


Figure 9-1 Reception / Board- and Meeting Rooms Proximity

9.2 FURNITURE

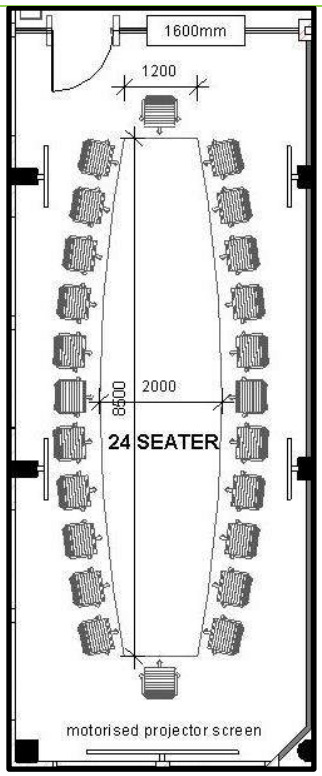
9.2.1 CORPORATE BOARDROOM TABLE

Table 9-1 Corporate Boardroom Table

Manufacturer/Supplier	Cecil Nurse
Product	Custom 28-seater
Dimensions	9000 (L) x 3200 (W) x 720 (H)
Materials	Oak Veneer
Finish	Stained – Medium brown
Image	
Notes	Similar products to be proposed, pending approval from ACSA

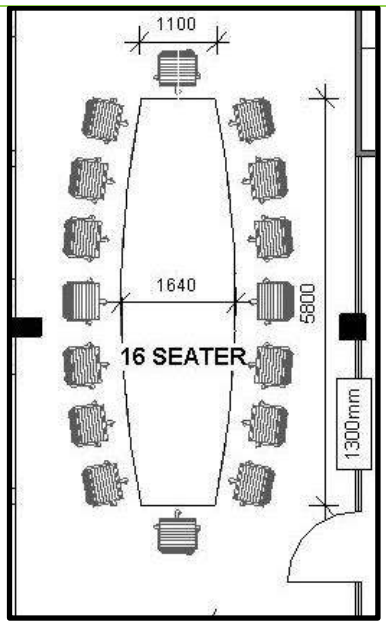
9.2.2 VCR BOARDROOM TABLE

Table 9-2 VCR Boardroom Table

Manufacturer/Supplier	Cecil Nurse
Product	Custom 24-seater
Dimensions	9000 (L) x 2000 (W) x 720 (H)
Materials	Oak Veneer
Finish	Stained – Medium brown
Image	
Notes	Similar products to be proposed, pending approval from ACSA

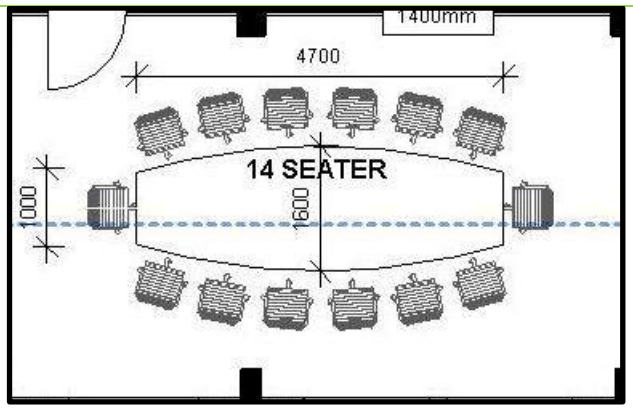
9.2.3 16-SEATER BOARDROOM TABLE

Table 9-3 16-Seater Boardroom Table

Manufacturer/Supplier	Cecil Nurse
Product	Custom 16-seater
Dimensions	5800 (L) x 1640 (W) x 720 (H)
Materials	Oak Veneer
Finish	Stained – Medium brown
Image	
Notes	Similar products to be proposed, pending approval from ACSA

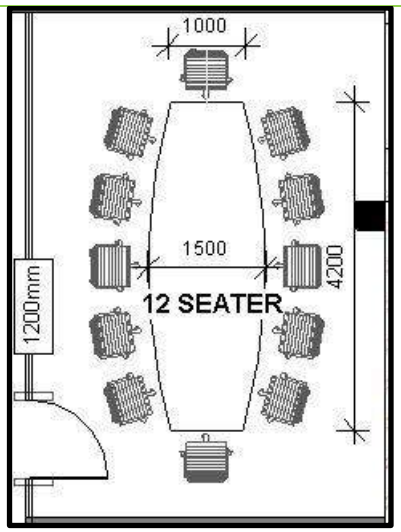
9.2.4 14-SEATER BOARDROOM TABLE

Table 9-4 14-Seater Boardroom Table

Manufacturer/Supplier	Cecil Nurse
Product	Custom 14-seater
Dimensions	4700 (L) x 1600 (W) x 720 (H)
Materials	Oak Veneer
Finish	Stained – Medium brown
Image	
Notes	Similar products to be proposed, pending approval from ACSA

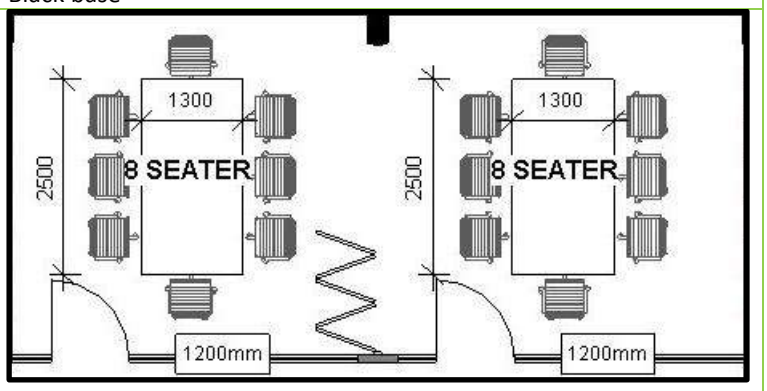
9.2.5 12-SEATER BOARDROOM TABLE

Table 9-5 12-Seater Boardroom Table

Manufacturer/Supplier	Cecil Nurse
Product	Custom 12-seater
Dimensions	4200 (L) x 1500 (W) x 720 (H)
Materials	Oak Veneer
Finish	Stained – Medium brown
Image	
Notes	Similar products to be proposed, pending approval from ACSA

9.2.6 8-SEATER BOARDROOM TABLE

Table 9-6 8-Seater Boardroom Table

Manufacturer/Supplier	Cecil Nurse
Product	Custom 8-seater
Dimensions	2500 (L) x 1300 (W) x 720 (H)
Materials	Walnut Laminate Black base
Image	
Notes	Similar products to be proposed, pending approval from ACSA. Optional folding/stacking door allows for room adaptability. Shape of desk allows desks to be joined for bigger meetings.

9.2.7 CHAIRS

Table 9-7 Chair Specifications

Manufacturer/Supplier	Cecil Nurse
Product	*RITZ CLASSIC* High Back Chair
Product code	RTZ01
Materials	Chrome loop arms 5-Star aluminium base Bonded leather upholstery – black
Features	Knee tilt mechanism
Image	
Notes	Similar products to be approved by architects, designers and ACSA

9.2.8 ACCESSORIES

Table 9-8 Flipchart Specifications

Manufacturer/Supplier	Cecil Nurse
Product	*FLIPCHART STANDARD* – Retail Pack
Product code	BD913A
Features	Non-magnetic surface Height adjusted telescopic legs with max overall height 1840 mm Self-adjusting hinge for centre leg Integrated pen tray Whiteboard markers (Bulletin 10 assorted colours) Newsprint (20 sheets)
Image	
Notes	Similar products to be approved by architects, designers and ACSA

9.2.9 POWER DOCK

Table 9-9 Power Dock Specifications

Manufacturer/Supplier	Cecil Nurse
Specification	*Horizontal Power Dock (VGA)*
• Recessed • 1 x Switch • 1 x 3 Pin • 1 x 3 Pin (UPS) • 1 x SA 2 Pin • 2 x DATA CAT 6 female to female couplers • 1 x VGA plate • 1 x HDMI plate • Requires input cable • Available in Black and Silver	

9.3 MATERIALS

9.3.1 FLOORS

9.3.1.1 Broadloom carpets

Table 9-10 Broadloom Specification – FF-03

Drawing code	FF-03	
Manufacturer	Belgotex 'Baltimore'	
Specifications	Construction	Tufted Cut Pile
	Fibre Type	Stainproof SDX
	Total Thickness	7 mm (±0.5 mm)
	Use Classification	Heavy Commercial
	Fire index	2 (SANS 10177 – IV)
Colours		Colour code: *Metallic*
Installation pattern		Broadloom wall-to-wall

9.3.2 WALLS

9.3.2.1 Paints

Table 9-11 Paint specifications – PP-04

Drawing code	PP-04
Specification	625 x 800mm Natural Plant Fiber, 100% Biodegradable Wall Panel (Product Code: Fg550bch-0043) Available At 3dboard Sa, fixed to wall surface strictly according to specialist installers recommendation. finish to be coloured paint, sprayed onto panel to specialist instruction.
Sample	

9.3.3 PARTITIONS

9.3.3.1 Full Height Glazing

Table 9-12 Full Height Glazing Specifications

Specification	Frameless glazed panels
Application	Fixed to ceiling and floor, sandblasted vinyl to interior
Glazing	8 mm toughened safety glass
Sample	

9.3.3.2 Drywalls

Table 9-13 Drywall Specifications

Material	Typically standard drywall
Specification	Height to underside of ceiling/bulkhead, depending on design
Application	Fixed to floor, painted and one feature coloured wall per office
Acoustics	Sound insulated requirement for all office partitioning.

9.3.3.3 Typical Application – Wall Finishes

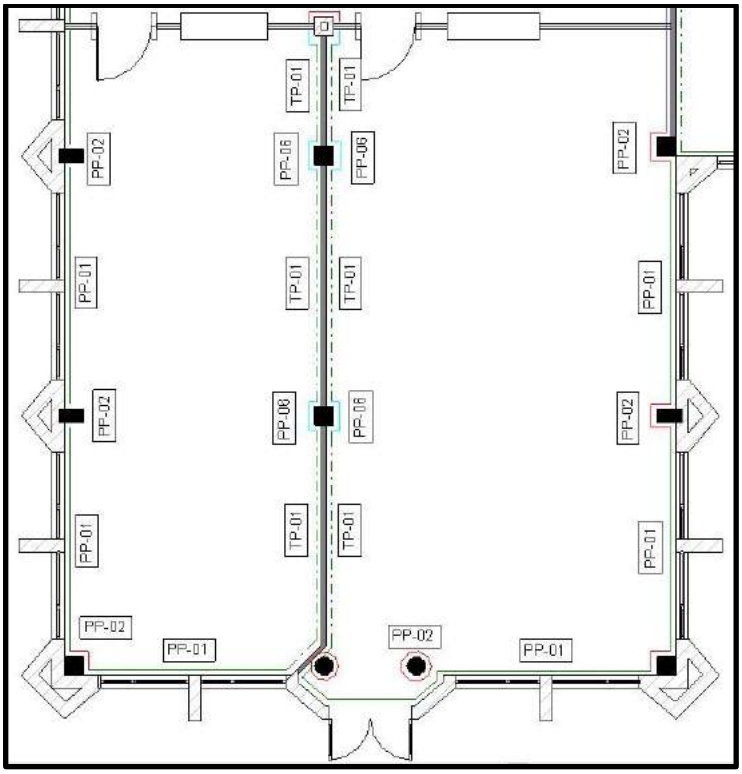


Figure 9-2 Typical Layout – Wall Finishes

9.3.4 DOORS

9.3.4.1 Size

Size	900 x 2550 mm high

9.3.4.2 Frame

Material	Frameless

9.3.4.3 Leaf

Material	8 mm toughened safety glass

9.3.4.4 Hinges and floor spring

Product	Dorma
Material	Stainless Steel
Pivot hinge	
Floor spring or other conventional proprietary hinge to suit screed depth	

9.3.4.5 Furniture 'Handle'

Product	Dorma
Material	Stainless steel
Handle	

9.3.4.6 Door closer

Product	Dorma
Material	Stainless steel
	

9.4 SERVICE HATCH

9.4.1.1 Overview

To limit disturbances in meetings, a proposal was made to include a service hatch into the frameless glazed façade of the boardroom or meeting room. The hatch element serves as a sliding window which can be operated externally by a service staff member. Once open, the staff member can place refreshments, coffee urns or food items onto a quartz top and immediately close down the panel. Additionally, cupboards on the internal façade of the service hatch provide storage space for crockery items.

Service hatch sizes need to be proportional to the size of the boardroom or meeting room.

9.4.1.2 Conceptual Perspective

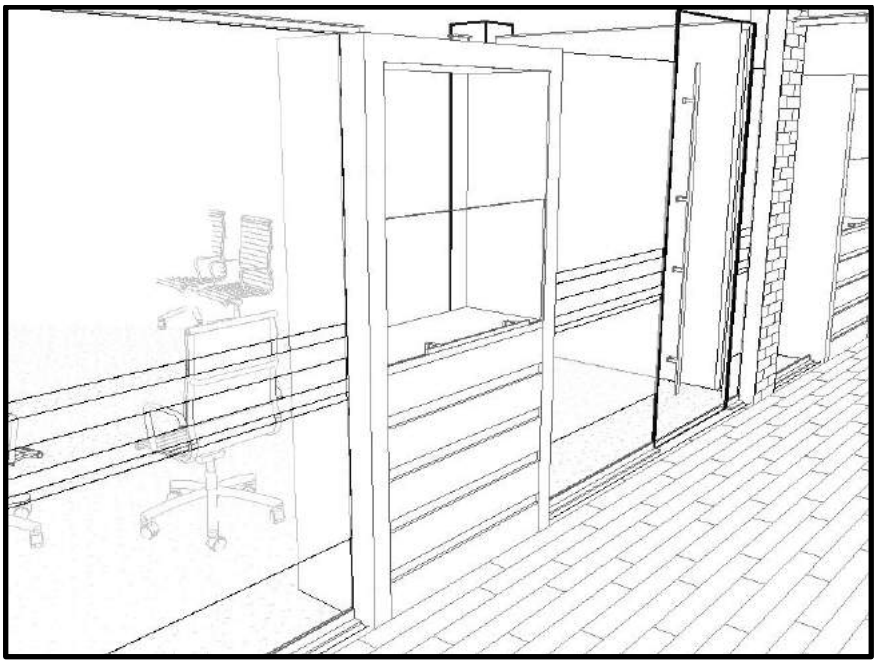


Figure 9-3 Service Hatch 3D

9.4.1.3 Typical Section

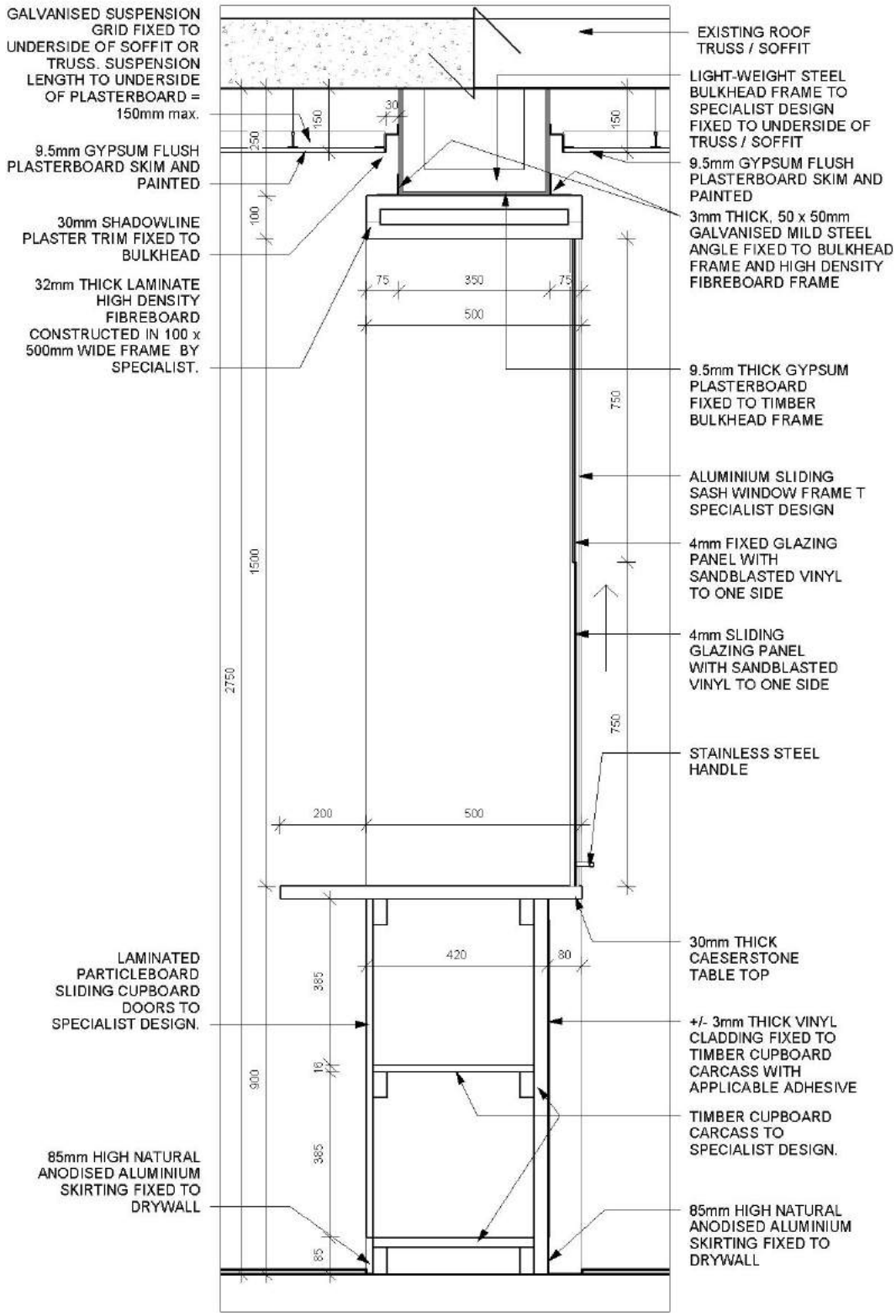


Figure 9-4 Service Hatch Typical Section

9.5 CONCEPTUAL EXTERIOR PERSPECTIVE

The following image shows a conceptual visualisation of a typical Board- and Meeting Room façade with the service hatch and sandblasted vinyl to the full height glazing;

Figure 9-5 External View of Board- and Meeting Rooms

9.6 CONCEPTUAL MEETING TABLE MOCK-UP

Figure 9-6 Mock up Meeting Table with Chairs

10 INFORMAL MEETING AREAS

10.1 OVERVIEW

Informal meeting areas provide an alternative, less formal meeting space for staff members to collaborate.

Soft seating poufs and couches allow for an adaptable space to fit the user requirements.

All spaces are provided with LED monitors, tables and writing boards.

Informal meeting spaces are positioned in the open plan layout for easy access by staff members.

Partitions facing the open plan working areas should be full height to reduce noise reflections into these areas.

10.1.1 TYPICAL LAYOUT

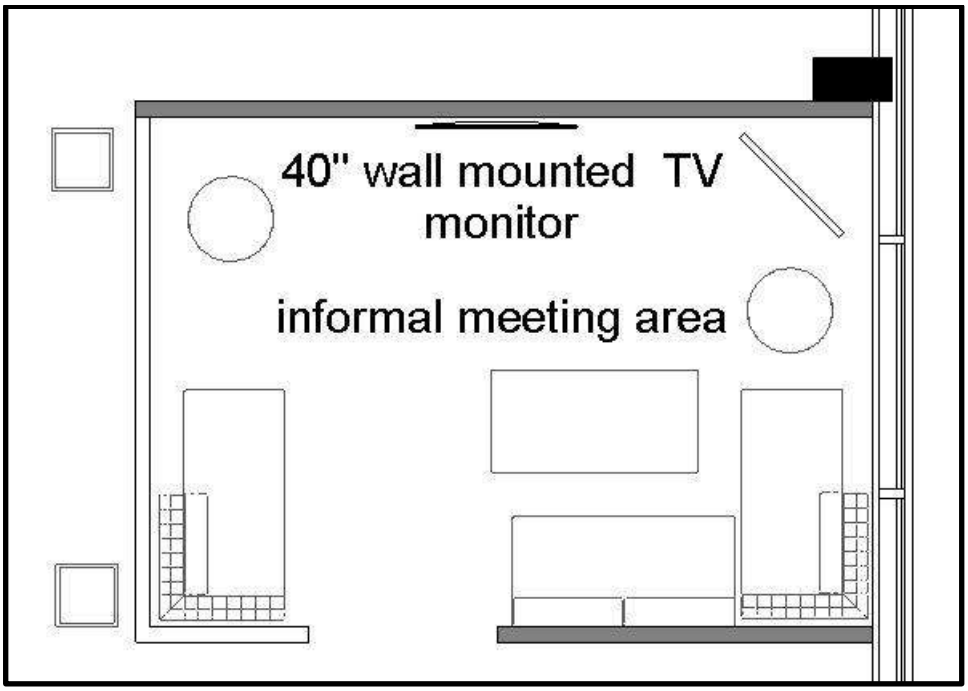


Figure 10-1 Typical Informal Meeting Area Layout

10.2 CONCEPTUAL PERSPECTIVE

The following image shows a conceptual visualisation of a typical Informal Meeting Area layout;

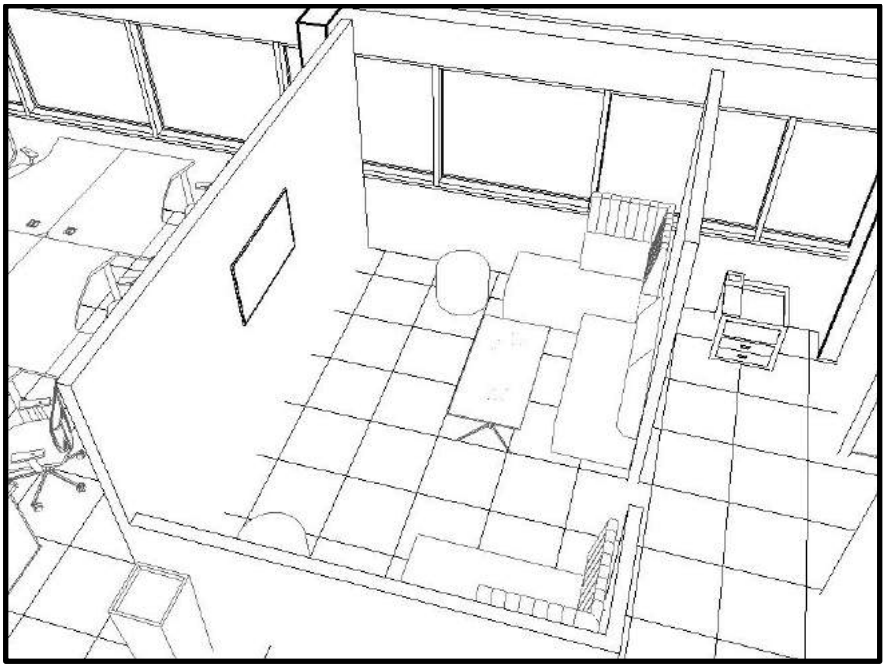


Figure 10-2 Typical Informal Meeting Area Layout – 3D

10.3 CONCEPTUAL MOCK-UPS

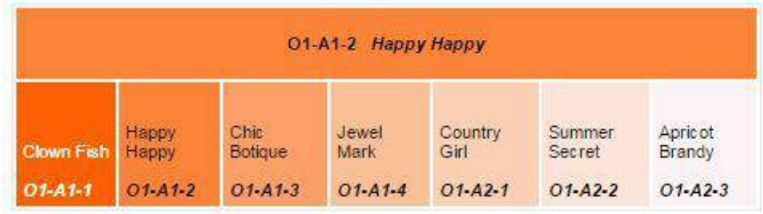
Figure 10-3 Informal Meeting Area Furniture

10.4 MATERIALS

10.4.1 WALLS

10.4.1.1 Paints

Table 10-1 Paint specifications – PP-04

Drawing code	PP-04
Application	Full interior surface of existing masonry or drywalls
Manufacturer	Plascon
Product colour code	*Happy Happy O1-A1-2* To be finalised after *in situ* sample approval
Sample	

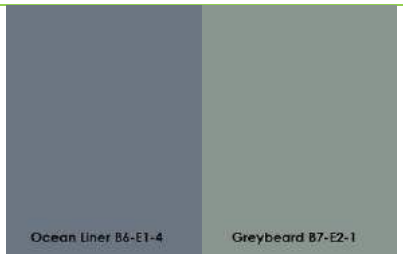
10.4.1.2 Vinyl Cladding

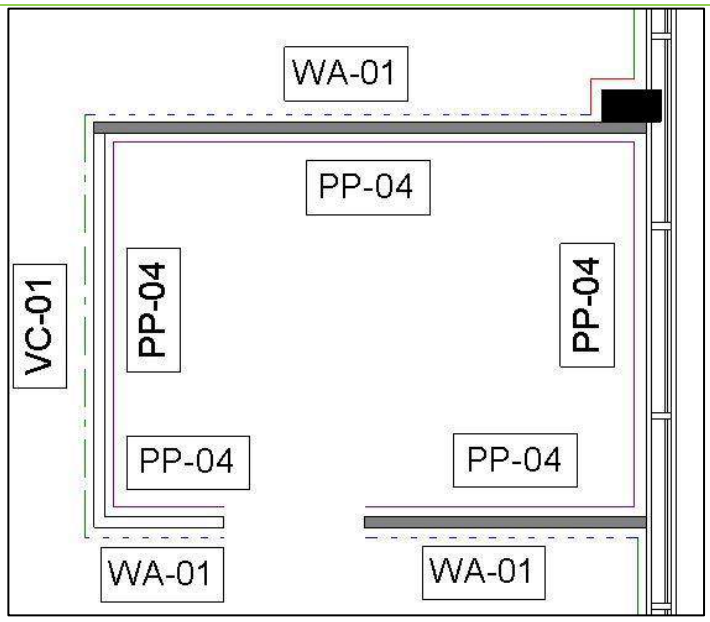
Table 10-2 Vinyl specifications – VC-01

Drawing code	VC-01
Application	Full surface of prepared drywall surface
Manufacturer/Supplier	Belgotex
Product colour code	'Kingswood'
Type of installation	Dry Back (Stick Down)
Overall thickness	2 mm
Plank size	182.88 mm x 1219.2 mm
Sample	

10.4.1.3 Wall Word Art

Table 10-3 Wall Word Art Specifications – WA-01

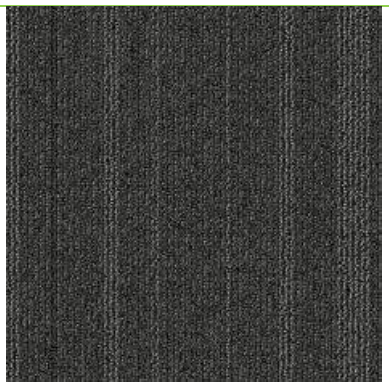
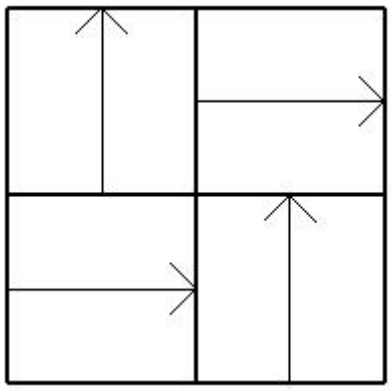
Drawing code	WA-01
Application	Full surface of new skimmed drywall partitions
Manufacturer	Plascon – Background Specialist – Foreground
Background product colour code	*Dylan's Blue B5-A1-2* OR *Blue Bay B5-A1-3* To be finalised after *in situ* sample approval
Sample	
Application	Full surface of new skimmed drywall partitions
Foreground material 1	Plascon
Foreground product colour code	*Ocean Liner B6-E1-4* OR *Greybeard B7-E2-1* To be finalised after *in situ* sample approval
Sample	
Application	600 mm high stroke x full length of wall
Foreground material 1	Vinyl
Foreground product colour code	White Letters
Application	560 mm high stroke x full length of wall, over painted foreground material 1.

Example	
Typical Application	

10.4.2 FLOORS

10.4.2.1 Carpet Tiles

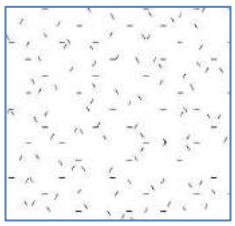
Table 10-4 Carpet Tile Specification – FF-01

Drawing code	FF-01	
Manufacturer	Belgotex 'Crossfire'	
Specifications	Construction	Tufted Multi-Scroll Loop Pile
	Backing	NexBac
	Fibre Type	100% Stainproof SDX
	Total Thickness	8 mm (±0.5 mm)
	Use Classification	Heavy commercial
	Fire index	2 (SANS 10177 – IV)
Dimensions	600 x 600 mm tiles	
Colours		Colour code: *Ash Grey*
Installation pattern		Tessellated

10.4.3 CEILINGS

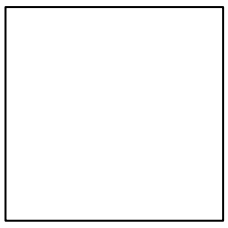
10.4.3.1 Suspended Flush Plaster Ceilings

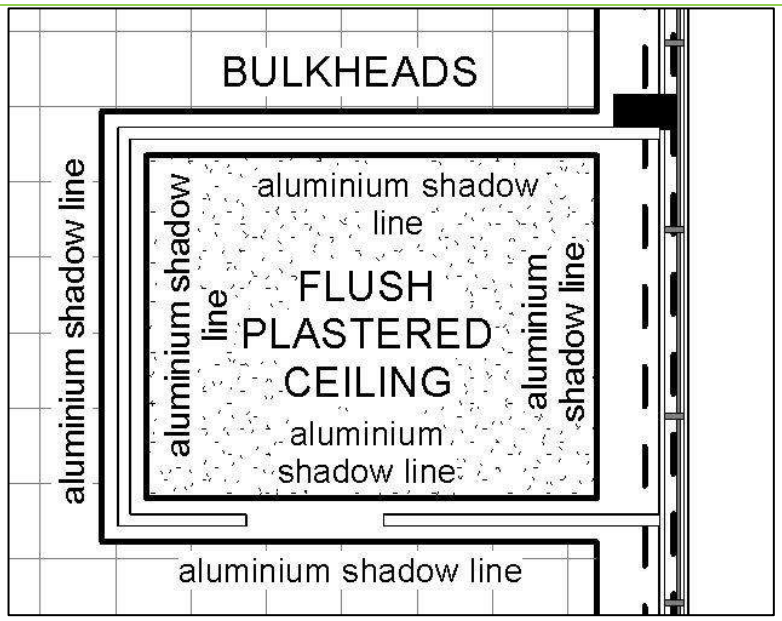
Table 10-5 Ceiling specifications

Drawing code	Displayed on drawing legend 
Application	To be installed to suspended ceiling grid frame
Manufacturer	As per specialist design
Board dimensions	Varies
Thickness	12 mm
Material	Plasterboard
Finish	Skim and painted – White

10.4.3.2 Plasterboard bulkheads

Table 10-6 Ceiling specifications

Drawing code	Displayed on drawing legend 
Application	To be installed to suspended ceiling grid frame
Manufacturer	As per specialist design
Board dimensions	Varies
Thickness	12 mm
Material	Plasterboard
Finish	Skim and painted – White

Typical Application	

10.5 FURNITURE

The following furniture pieces range in size and type and allow flexibility when designing the informal meeting area layout.

10.5.1 PUOF'S

Table 10-7 Puof Specifications

Manufacturer/Supplier	Cecil Nurse
Product	*KENSHO PUOF* – SMALL *KENSHO PUOF* – MEDIUM *KENSHO PUOF* – LARGE
Product code	SPPTALB0898 SPPTALB0899 SPPTALB0900
Finish	Two tone colours
Image	
Notes	Similar products to be proposed, pending approval from ACSA

10.5.2 BOOTH SEATING – 2 OR 3 SEATER

Table 10-8 Booth Seating Specifications

Manufacturer/Supplier	Cecil Nurse
Product	*HUSH* Booth Seating: 2-seater *HUSH* Booth Seating: 3-seater
Product code	HS140 HS180
Dimensions	1400 (W) x 800 (D) x 1200 (H) 1800 (W) x 800 (D) x 1200 (H)
Finish	Customers' own material Colour dependant on overall design look and feel
Image	
Notes	Similar products to be proposed, pending approval from ACSA

10.5.3 COFFEE TABLES

Table 10-9 Coffee Table Specifications

Manufacturer/Supplier	Cecil Nurse
Product	*ARUBA* Rectangular Coffee Table
Product code	ART1260
Dimensions	1260 (L) x 600 (W) x 390 (H)
Features	25 mm top with reverse chamfered edge
Finish	Anthracite [AN] or White [WH] metal legs Laminate top Colour dependant on overall design look and feel
Image	
Notes	Similar products to be proposed, pending approval from ACSA

10.5.4 ACCESSORIES

Table 10-10 Flip Chart Specifications

Manufacturer/Supplier	Cecil Nurse
Product	*FLIPCHART STANDARD* – Retail Pack
Product code	BD913A
Features	Non-magnetic surface Height adjusted telescopic legs with max overall height 1840 mm Self-adjusting hinge for centre leg Integrated pen tray Whiteboard markers (Bulletin 10 assorted colours) Newsprint (20 sheets)
Image	
Notes	Similar products to be approved by architects, designers and ACSA

11 PAUSE AREAS

11.1 OVERVIEW

Pause areas are important additions to the modern office setup. They provide staff members with a place to 'break-away' from their traditional office environment – to eat lunch, have some quiet time, or have an informal meeting. They also encourage social integration between employees outside of the constrictions of the work space.

Pause areas must be strategically located, some of which to be shared by two adjoining departments and some dedicated to departments, based on its location and accessibility. Noise pollution into working spaces should also be taken into account.

All pause areas should provide employees with basic kitchen facilities such as a mini fridge, cupboards, and a coffee station. Furniture should be durable and constructed from light materials to be easily moved around. Square tables allow for this adaptability.

Additionally, fun features such as foosball tables, mini golf or softball basketball nets could be introduced.

Pause area aesthetics should contrast the rest of the office look and feel. Playful colours and finishes accentuate the purpose of the space being purposefully designated to staff members.

11.1.1 TYPICAL LAYOUT

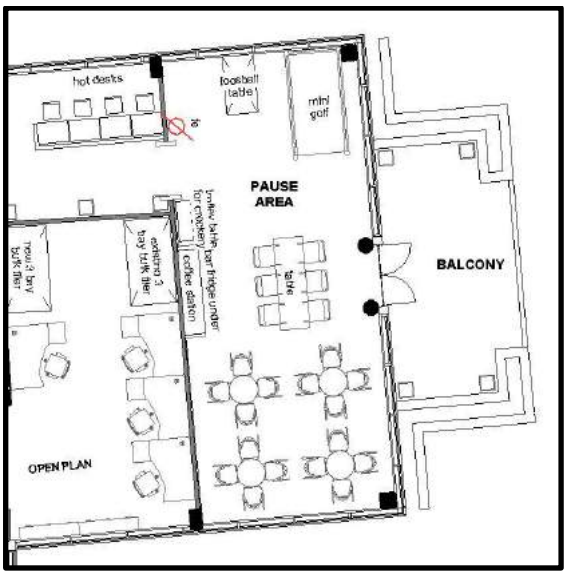


Figure 11-1 Typical Pause Area Layout

11.2 CONCEPTUAL RENDER

The following image shows a conceptual visualisation of a typical Pause Area layout;

Figure 11-2 Typical Pause Area Layout – Render

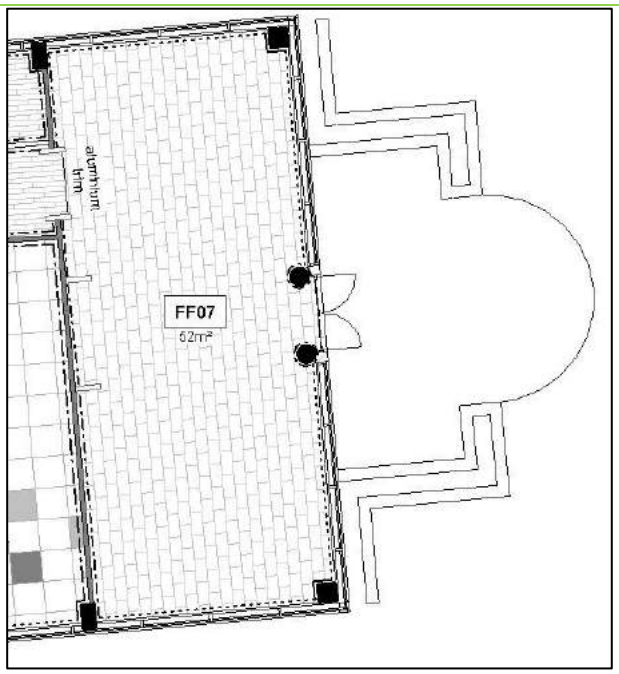
11.3 MATERIALS

11.3.1 FLOORS

11.3.1.1 Porcelain Tiles

Table 11-1 Porcelain Tile Specification – FF-07

Drawing code	FF-07	
Manufacturer	Union Tiles 'Grey'	
Specifications	Construction	Glazed Porcelain Tile
	Product Code	LW-VD/30
	Size	300 mm x 600 mm
	Finish	'Beige' Glazed Non Slip
Colours		
Installation pattern		Standard

Typical Application	

11.3.2 WALLS

11.3.2.1 Paints

Table 11-2 Paint specifications – PP-07

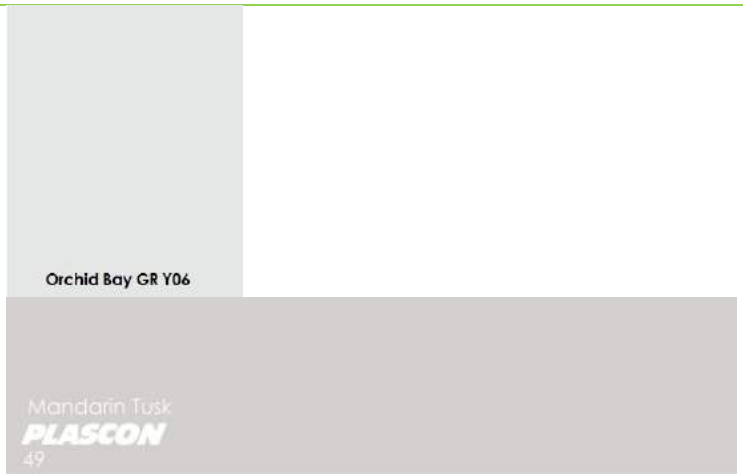
Drawing code	PP-07
Application	Full interior surface of existing masonry or drywalls
Manufacturer	Plascon
Product colour code	*Maiden Grass G1-B1-2* To be finalised after *in situ* sample approval
Sample	

Table 11-3 Paint specifications – PP-02

Drawing code	PP-02
Application	Full interior surface of existing concrete columns or as indicated on plan
Manufacturer	Plascon
Product colour code	*Paris Paving 53* To be finalised after *in situ* sample approval
Sample	

11.3.2.2 Wall Word Art

Table 11-4 Word Wall Art – WA-02

Drawing code	WA-02
Application	Full surface of new skimmed drywall partitions
Manufacturer	Plascon – Background Specialist – Foreground
Background product colour code	*Paris Paving 53* To be finalised after *in situ* sample approval
Sample	
Application	Full surface of new skimmed drywall partitions
Foreground material 1	Plascon
Foreground product colour code	*Orchid Bay GR Y06* OR *Mandarin Tusk 49* To be finalised after *in situ* sample approval
Sample	
Application	600 mm high stroke x full length of wall
Foreground material 1	Vinyl
Foreground product colour code	White Letters
Application	560 mm high stroke x full length of wall, over painted foreground material 1.

Example	 Fire exit POWERED BY PEOPLE Recognising that every employee has an equally important part to play in delivering the service. CUSTOMER FOCUS Focusing on each customer's specific needs. & Visions & Values REAL INTEGRITY Giving our best at all times in support of our colleagues and customers.

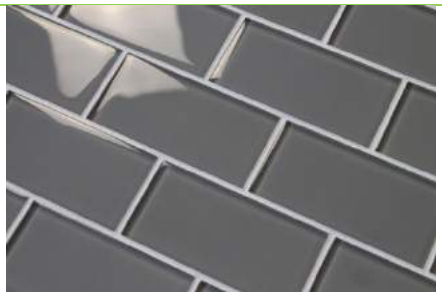
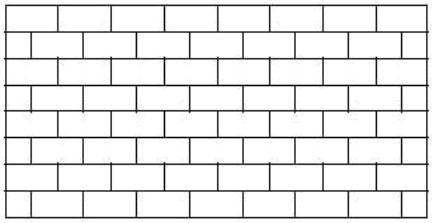
11.3.2.3 Timber Cladding

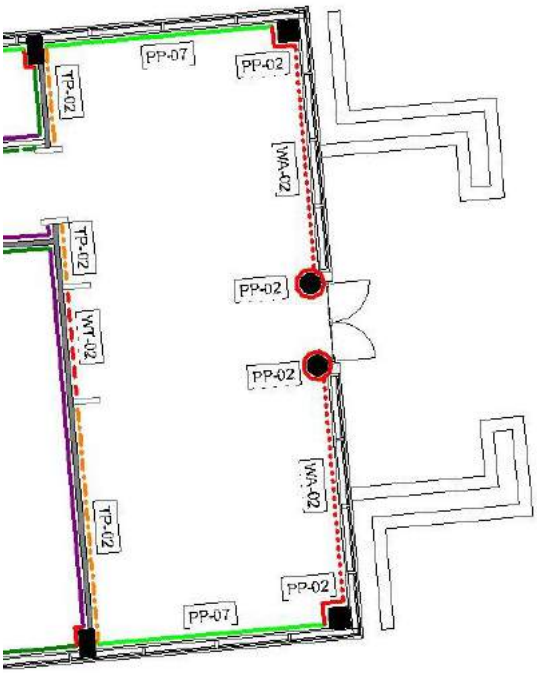
Table 11-5 Timber Cladding – TP-02

Drawing code	TP-02
Application	As per specialist design
Manufacturer	Specialist
Specification	100 mm wide x 22 mm thick Kiaat Timber Slats Wall Panel, spacing at 25 mm between slats. Silk matte finish to all Kiaat slats. Slats to be installed on 38 x 38 SABS timber frame to specialist design, fixed to supporting wall surface using applicable fixing methods.
Sample	

11.3.2.4 Wall Tiles

Table 11-6 Wall Tiles – WT-02

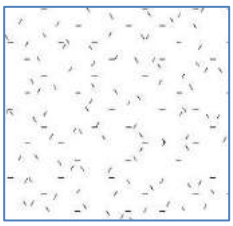
Drawing code	WT-02	
Specifications	Construction	'Subway' Ceramic Wall Tiles
	Size	75 x 150 mm
	Finish	Grey Gloss
Colours		
Installation pattern		Stretcher Bond

Typical Application	

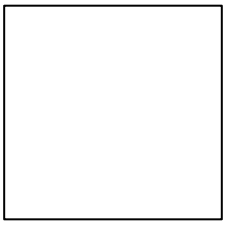
11.3.3 CEILINGS

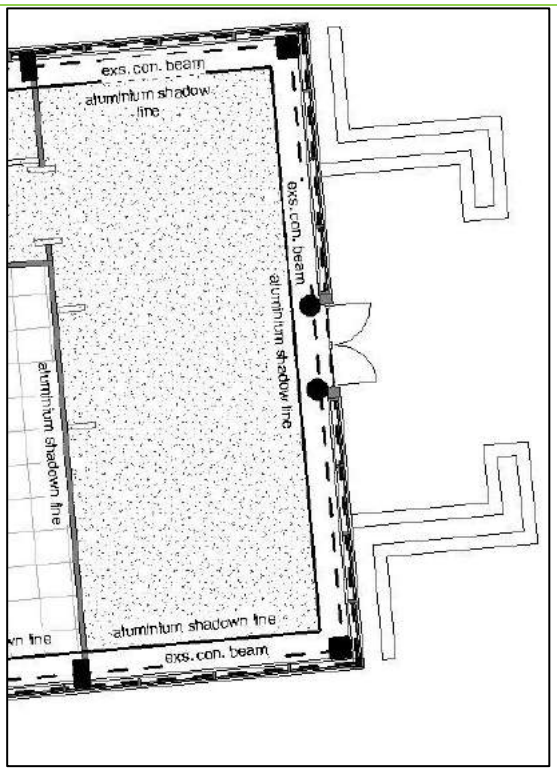
11.3.3.1 Suspended Flush Plaster Ceilings

Table 11-7 Ceiling specifications

Drawing code	Displayed on drawing legend 
Application	To be installed to suspended ceiling grid frame
Manufacturer	As per specialist design
Board dimensions	Varies
Thickness	12 mm
Material	Plasterboard
Finish	Skim and painted – White

11.3.3.2 Plasterboard bulkheads

Drawing code	Displayed on drawing legend 
Application	To be installed to suspended ceiling grid frame
Manufacturer	As per specialist design
Board dimensions	Varies
Thickness	12 mm
Material	Plasterboard
Finish	Skim and painted – White

Typical Application	

11.4 FURNITURE

11.4.1 CHAIRS

Table 11-8 Chair Specifications

Manufacturer/Supplier	Cecil Nurse
Product	*GIN* Armchair
Product code	GN06
Materials	Polypropylene shell Anodised aluminium legs
Features	UV resistant Stackable
Colour	Colour dependant on overall design look and feel
Image	
Notes	Similar products to be approved by architects, designers and ACSA

11.4.2 CANTEEN TABLES

Table 11-9 Canteen Table Specifications

Manufacturer/Supplier	Cecil Nurse
Product	*WERZALIT* Round Table with *TWISTABLE* Classic Dining Base
Product code	WZ700R TWC01
Dimensions	Top – round – 700 mm x 26 mm Base – Dining 720 (H)
Colour	Colour dependant on overall design look and feel
	
Notes	Similar products to be approved by architects, designers and ACSA

11.4.3 BARSTOOLS

Table 11-10 Barstool Specification

Manufacturer/Supplier	Cecil Nurse
Product	*BOBO* Barstool
Product code	BB07
Materials	Fibre glass filled polypropylene seat Chrome sleigh bar frame
Colour	Colour dependant on overall design look and feel
Image	
Notes	Similar products to be approved by architects, designers and ACSA

11.5 HOT DESKS

11.5.1 FLOATING DESKS

Table 11-11 Floating Desk Specification

Notes	Floating desk to be installed to specialist design. Requirements include: • Worktop to be laminated – medium density fibreboard (MDF). • Laminate tone and texture to match overall office design. • Dividers are required between each 'station'.

11.5.2 CHAIRS

Table 11-12 Floating Desk Specification

Manufacturer/Supplier	Cecil Nurse
Product	*FARO* Barstool
Product code	GN06
Materials	Polypropylene shell Anodised aluminium legs
Features	UV resistant Stackable
Colour	Colour dependant on overall design look and feel
Image	
Notes	Similar products to be approved by architects, designers and ACSA

12 KITCHENS

Kitchen design and layouts to must match client and user requirements.

13 ANCILLARY FUNCTIONS

13.1 STORE, STATIONARY, RECORDS AND SERVER ROOMS

Ancillary functions will be strategically spread around the office floors to user requirements, which are usually determined by the department occupants of each allocated space.

General specifications include:

- Applicable fire rating for partitions
- Applicable fire rating for doors
- Applicable door ironmongery for security purposes
- Floor finishes to be durable and able to handle heavy loads such as bulk filers.

- The general specifications for server rooms are as follows:
  - Design and specifications to specialist requirements
  - Location and quantity to specialist requirements

14 MAPLE BUILDING PROPOSAL

14.1 OVERVIEW

The corporate headquarters for ACSA is located in the Riverwoods Office Park in Bedfordview, Johannesburg. The Office Park consists of multiple buildings with ACSA currently fully occupying the Maples Building, and sections of the Oaks- and Willows Buildings. The Maples Building (along with the Terminal Pier B – Office Floor Level at O.R. Tambo International Airports) served as the initial spatial platform in which to compile a new design methodology for ACSA office typologies.

14.2 APPLICATION

14.2.1 MAPLE BUILDING PORTION PLAN

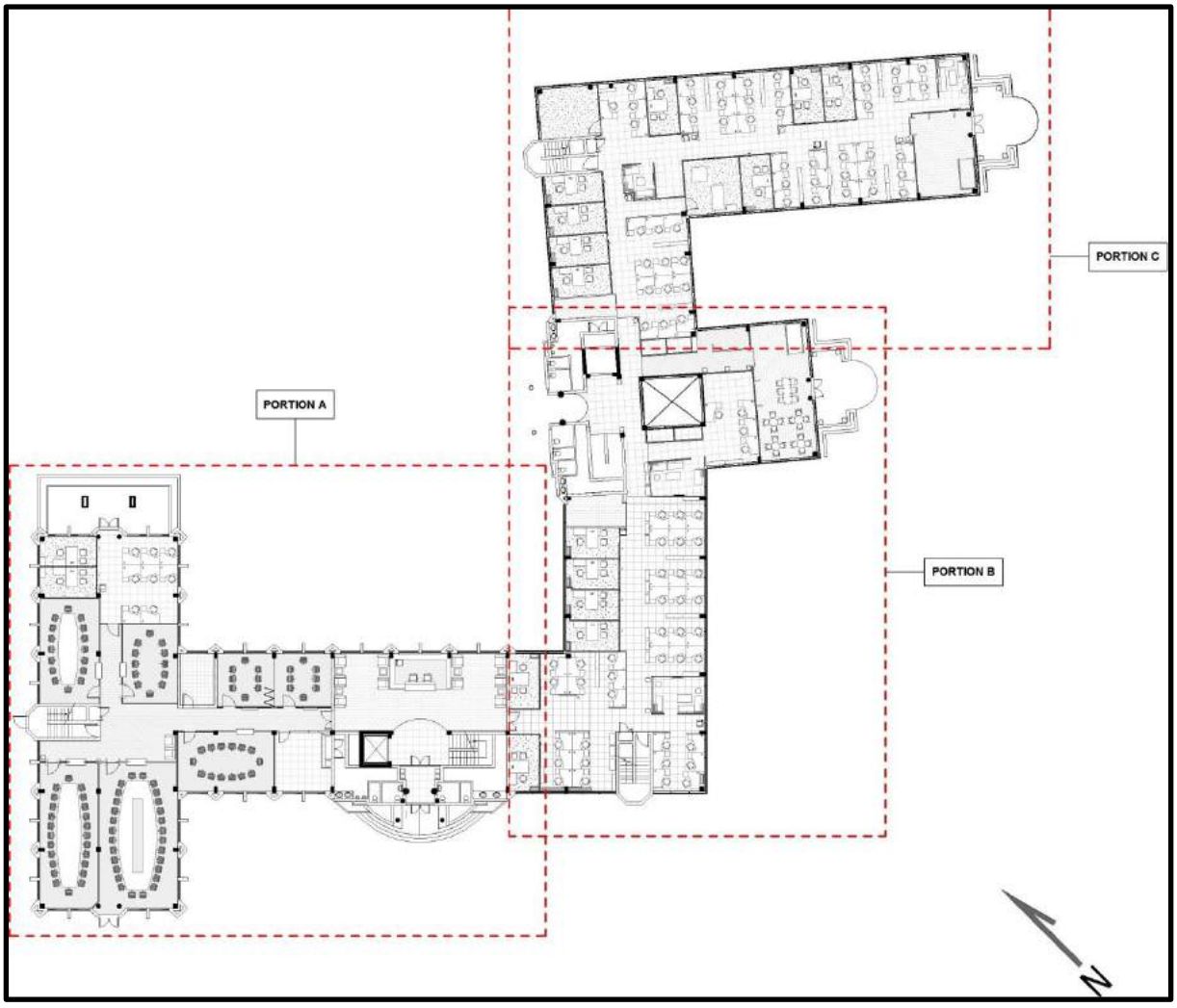
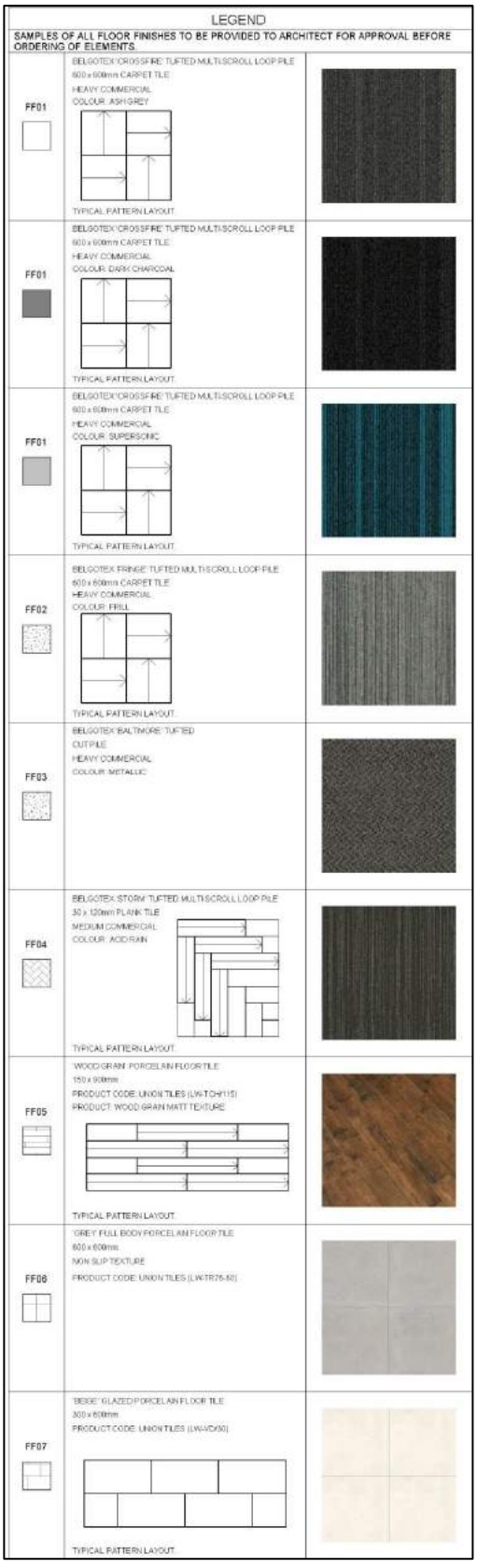


Figure 14-1 Maple Building Portion Plan

14.2.2 LEGENDS



WALL FINISHES LEGEND		
PAINT		
	PP-01	NEW TWO COATS PLASCON PAINT ON EXISTING PLASTERED AND PAINTED WALL. COLOUR CODE: PLASCON
	PP-02	NEW TWO COATS PLASCON PAINT ON EXISTING PLASTERED AND PAINTED COLUMN. COLOUR CODE: PLASCON
	PP-03	NEW PLASTER SKIM WITH TWO COATS PLASCON PAINT ON NEW GYPSUM BOARD DRYWALL. COLOUR CODE: PLASCON
	PP-04	NEW PLASTER SKIM WITH TWO COATS PLASCON PAINT ON NEW GYPSUM BOARD DRYWALL. COLOUR CODE: PLASCON
	PP-05	NEW PLASTER SKIM WITH TWO COATS PLASCON PAINT ON NEW GYPSUM BOARD DRYWALL. COLOUR CODE: PLASCON
	PP-06	NEW TWO COATS PLASCON PAINT ON EXISTING PLASTERED AND PAINTED COLUMN. COLOUR CODE: PLASCON
	PP-07	NEW TWO COATS PLASCON PAINT ON EXISTING PLASTERED AND PAINTED WALL. COLOUR CODE: PLASCON
	PP-08	NEW PLASTER SKIM WITH TWO COATS PLASCON PAINT ON NEW GYPSUM BOARD DRYWALL. COLOUR CODE: PLASCON
WALL TILES		
	WT-01	WALLTILES TYPE 1
	WT-02	WALLTILES TYPE 2
	WT-03	WALLTILES TYPE 3
	WT-04	WALLTILES TYPE 4
WALLPAPER		
	WP-01	WALLPAPER TYPE 1
	WP-02	WALLPAPER TYPE 2
TIMBER PANEL		
	TP-01	TIMBER PANEL CLADDING TYPE 1
	TP-02	TIMBER PANEL CLADDING TYPE 2
VINYL CLADDING		
	VC-01	VINYL CLADDING
WORD ART		
	WA-01	PAINT - WORD ART TYPE 1
	WA-02	PAINT - WORD ART TYPE 2
EXISTING		
	EX-01	EXISTING FINISH TO REMAIN

GENERAL NOTES

FOR EXSITING MASONRY WALLS AND COLUMNS:
PLASCON WALL & ALL TO EXISTING WATER BASED COATED INTERIOR CEMENT PLASTER.

REMOVE LOOSE AND PEELING PAINT BACK TO A FIRM EDGE BY SCRAPING, SANDING OR OTHER SUITABLE MEANS. FEATHER THE EDGES WITH 100 GRIT SANDPAPER AND ENSURE SURFACE IS DUST FREE.

REMOVE SURFACE CONTAMINANTS USING POLYCELL SUGAR SOAP SOLUTION - 500 G POLYCELL SUGAR SOAP POWDER (5017103) DISSOLVED IN 5 LITRES WATER, OR POLYCELL SUGAR SOAP LIQUID (5018010). FOR STUBBORN CONTAMINANTS USE HOT WATER IN THE ABOVE MIX AND A BRISTLE BROOM OR SCRUBBING BRUSH. RINSE WITH TAP WATER TO REMOVE ALL TRACES OF SUGAR SOAP AND ALLOW TO DRY.

ENSURE SURFACES ARE CLEAN, DRY AND SOUND. MOISTURE CONTENT NOT MORE THAN 8% MEASURED ON A DOSER HYGROMETER BD2 SCALE (OR EQUIVALENT) BEFORE PAINTING. APPLY PLASCON PLASTER PRIMER (UC 56), PROFESSIONAL PLASTER PRIMER (PP 700) OR PROFESSIONAL ALKALI RESISTANT PRIMER (PP 950) TO BARE AND REPAIRED AREAS. ALLOW 16 HOURS TO DRY. FINISH WITH TWO COATS WALL & ALL (WAA 1) WITH 2 HOURS DRYING TIME BETWEEN COATS, FOR A MAINTENANCE CYCLE OF 12 YEARS IN A C1 - INLAND ENVIRONMENT.

LEGEND

GENERAL NOTE: MEASURED FLOOR TO SOFFIT/TRUSS HEIGHT = ±2750mm

TYPE

PLASTERBOARD BULKHEADS

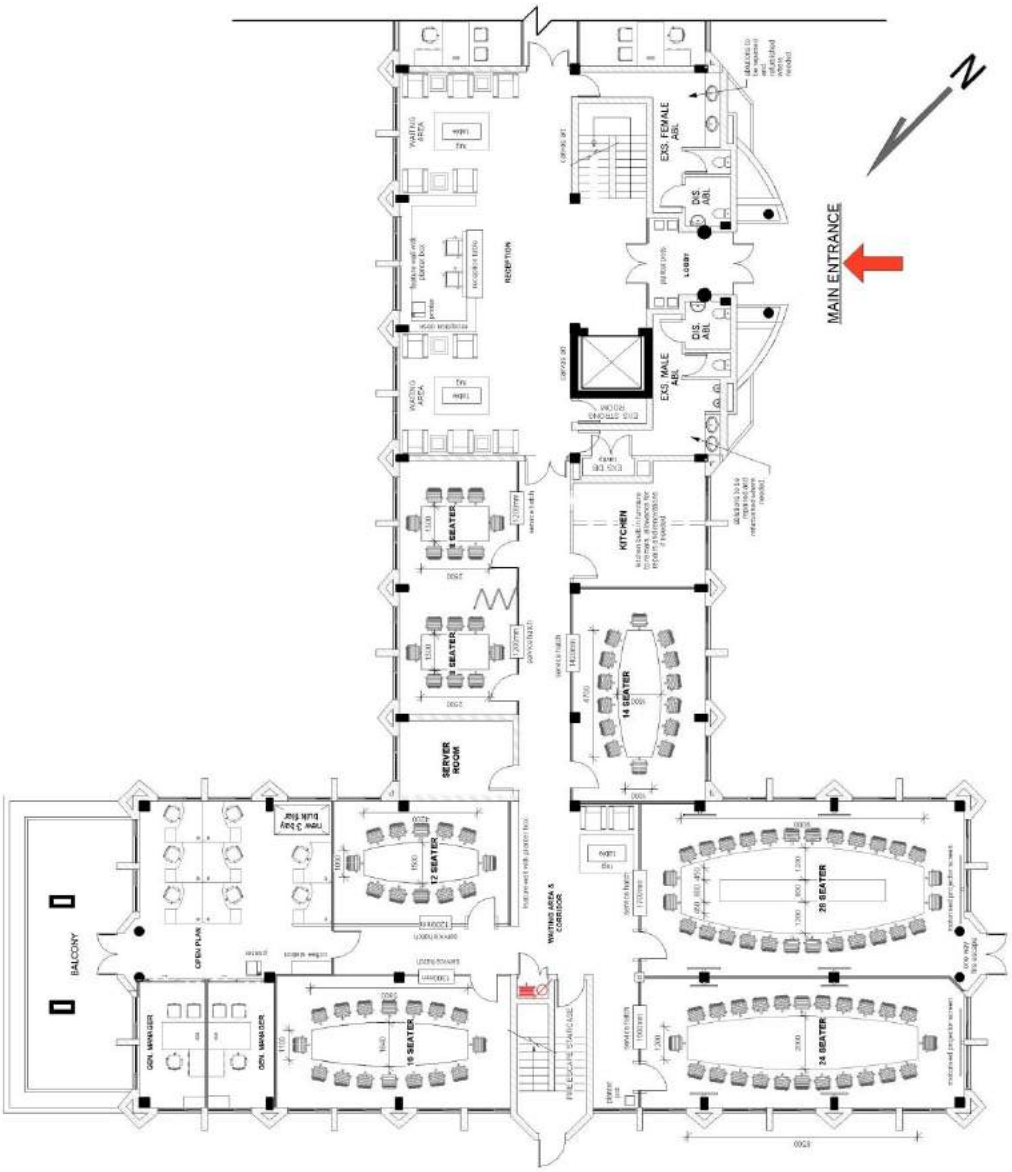
SUSPENDED PLASTERBOARD, SKIMMED AND PAINTED
COLOUR: WHITE

SUSPENDED 600 x 600mm GYPSUM BOARD CEILING
COLOUR: WHITE

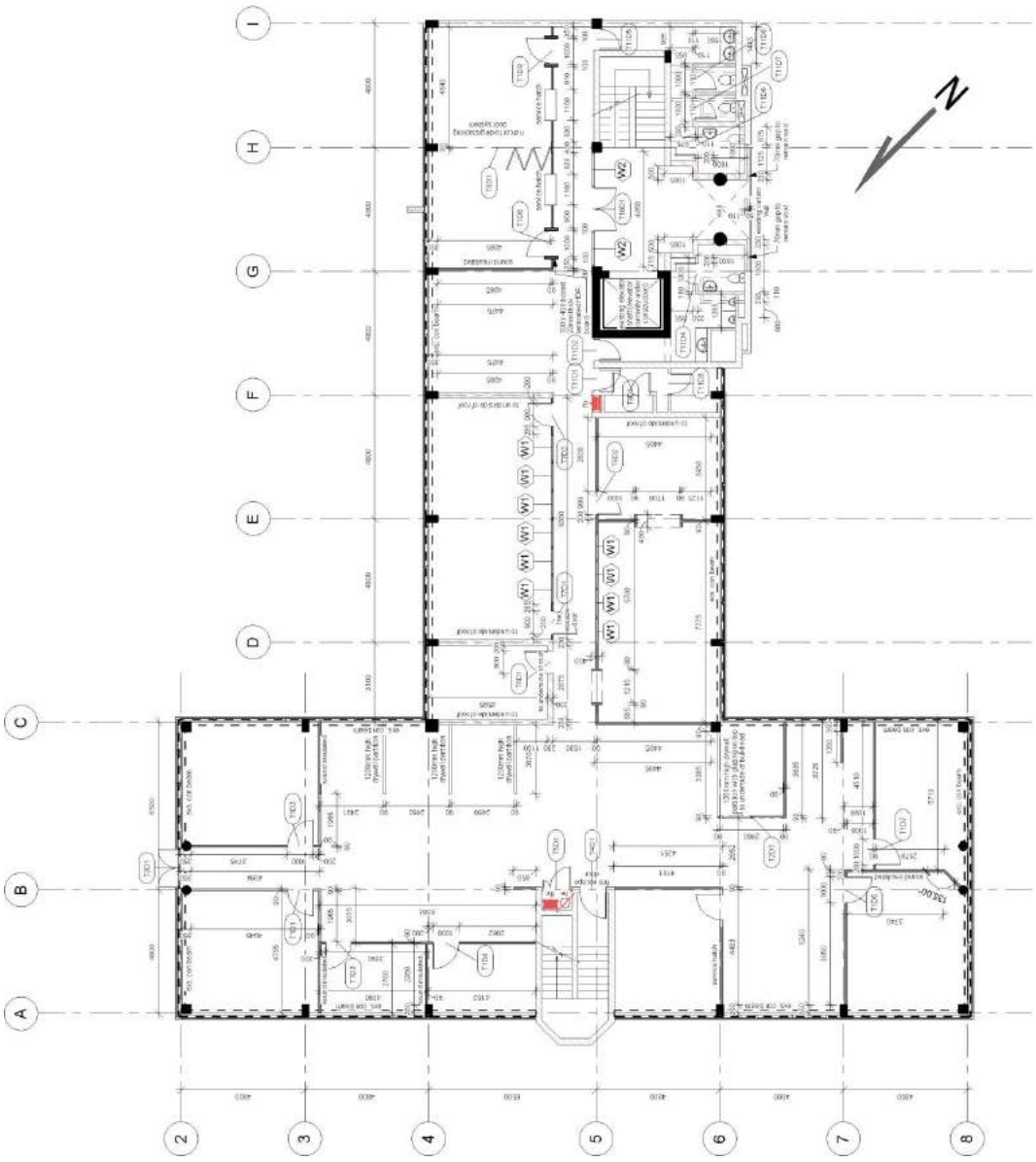
EXISTING CEILING TO REMAIN

EXCLUDED FROM SCOPE

14.2.3 First Floor – Portion A – Furniture Plan



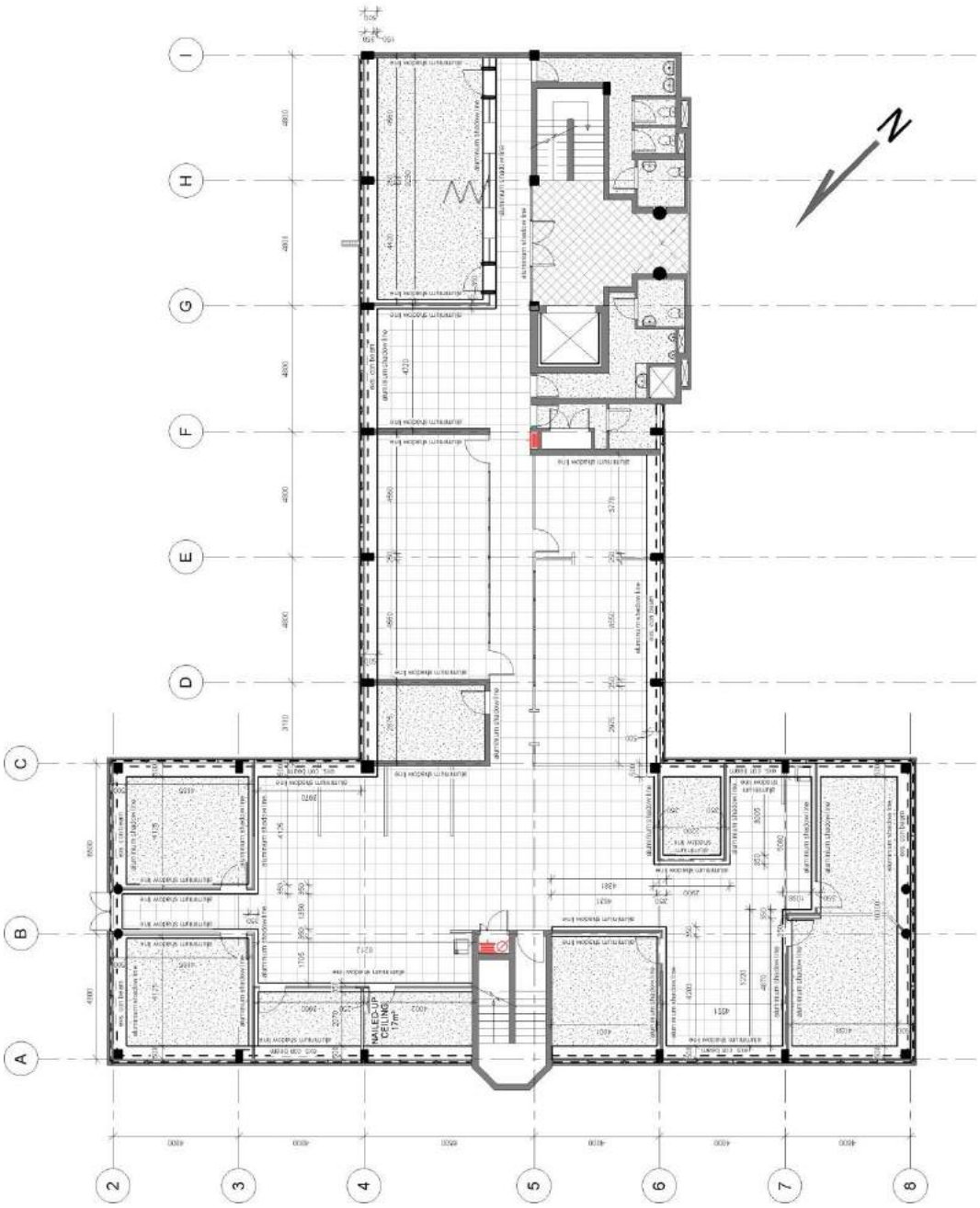
14.2.4 FIRST FLOOR – PORTION A – PARTITION PLAN



14.2.5 FIRST FLOOR – PORTION A – FLOOR FINISH PLAN

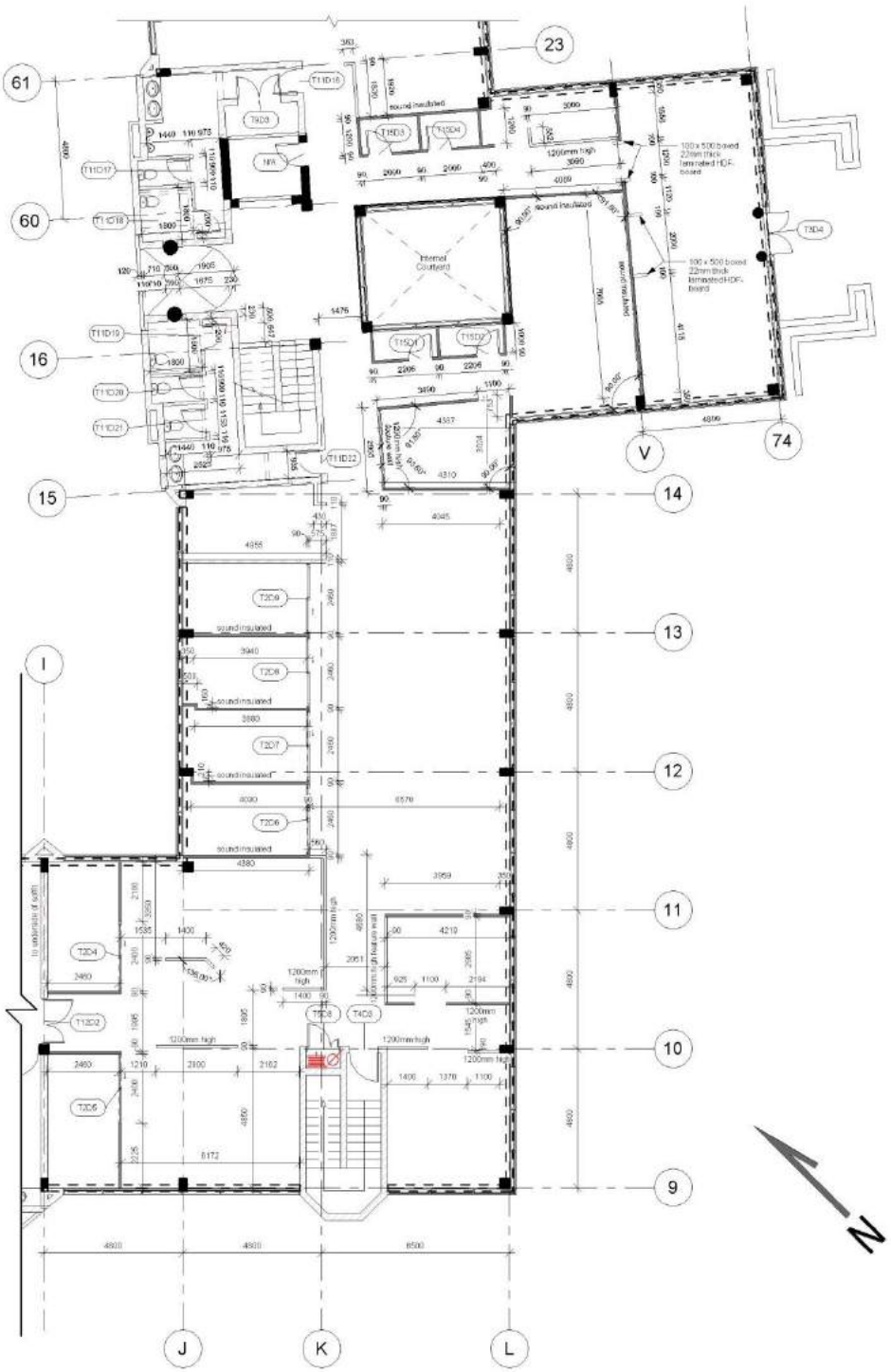
14.2.6 FIRST FLOOR – PORTION A – WALL FINISH PLAN

14.2.7 FIRST FLOOR – PORTION A – CEILING PLAN



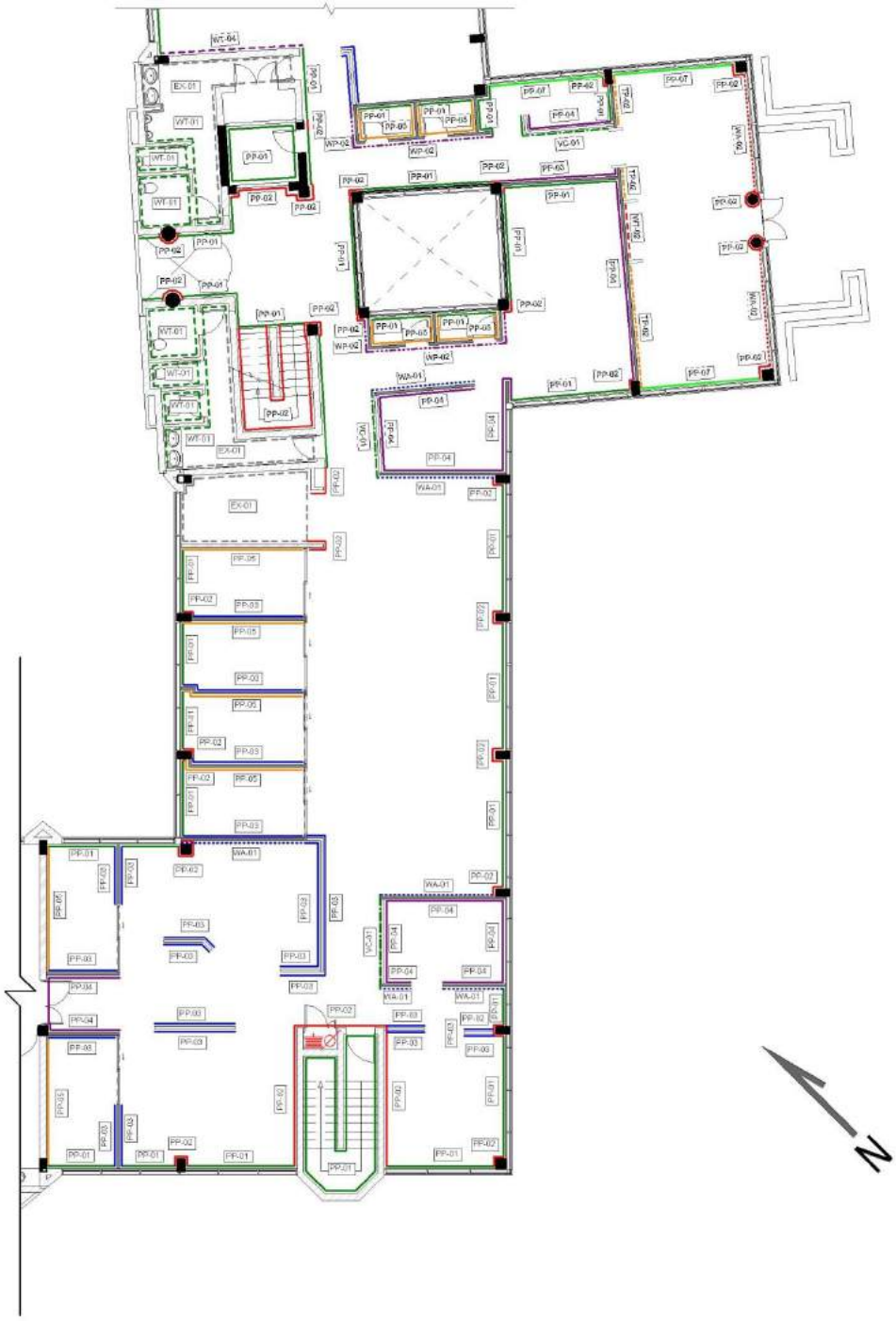
14.2.8 GROUND FLOOR – PORTION B – FURNITURE PLAN

14.2.9 GROUND FLOOR – PORTION B – PARTITION PLAN

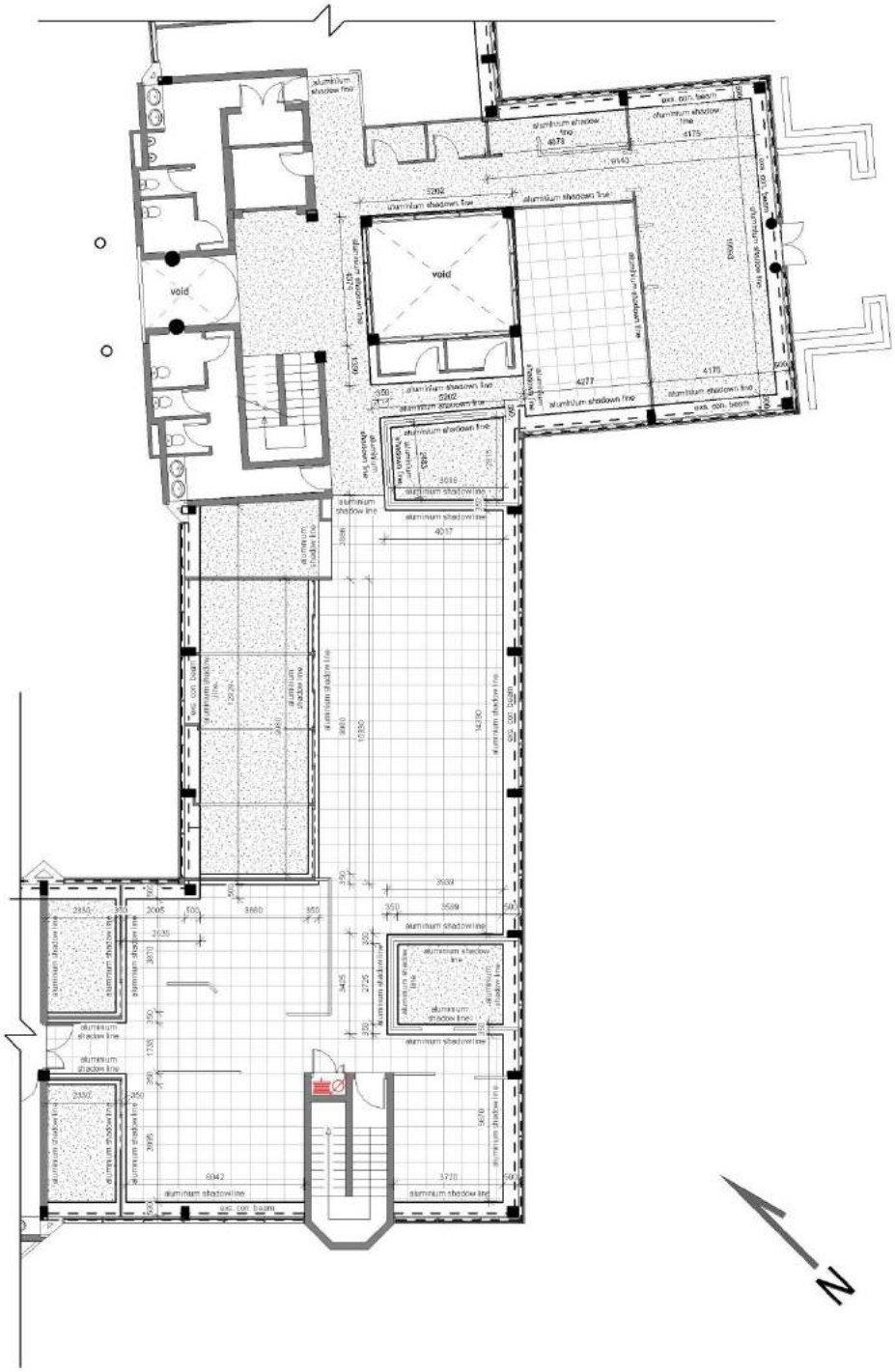


14.2.10 GROUND FLOOR – PORTION B – FLOOR FINISH PLAN

14.2.11 GROUND FLOOR – PORTION B – WALL FINISH PLAN

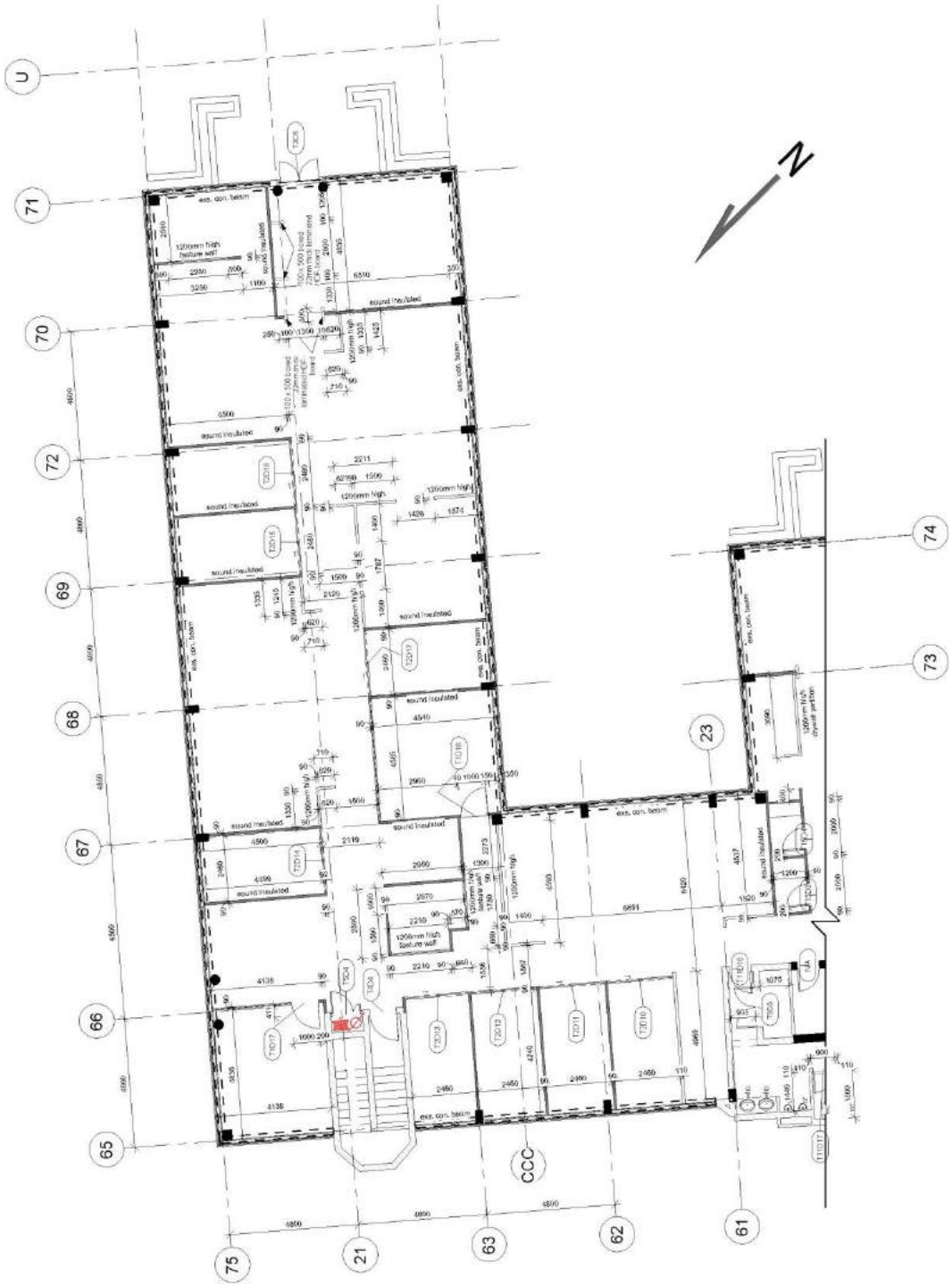


14.2.12 GROUND FLOOR – PORTION B – CEILING PLAN

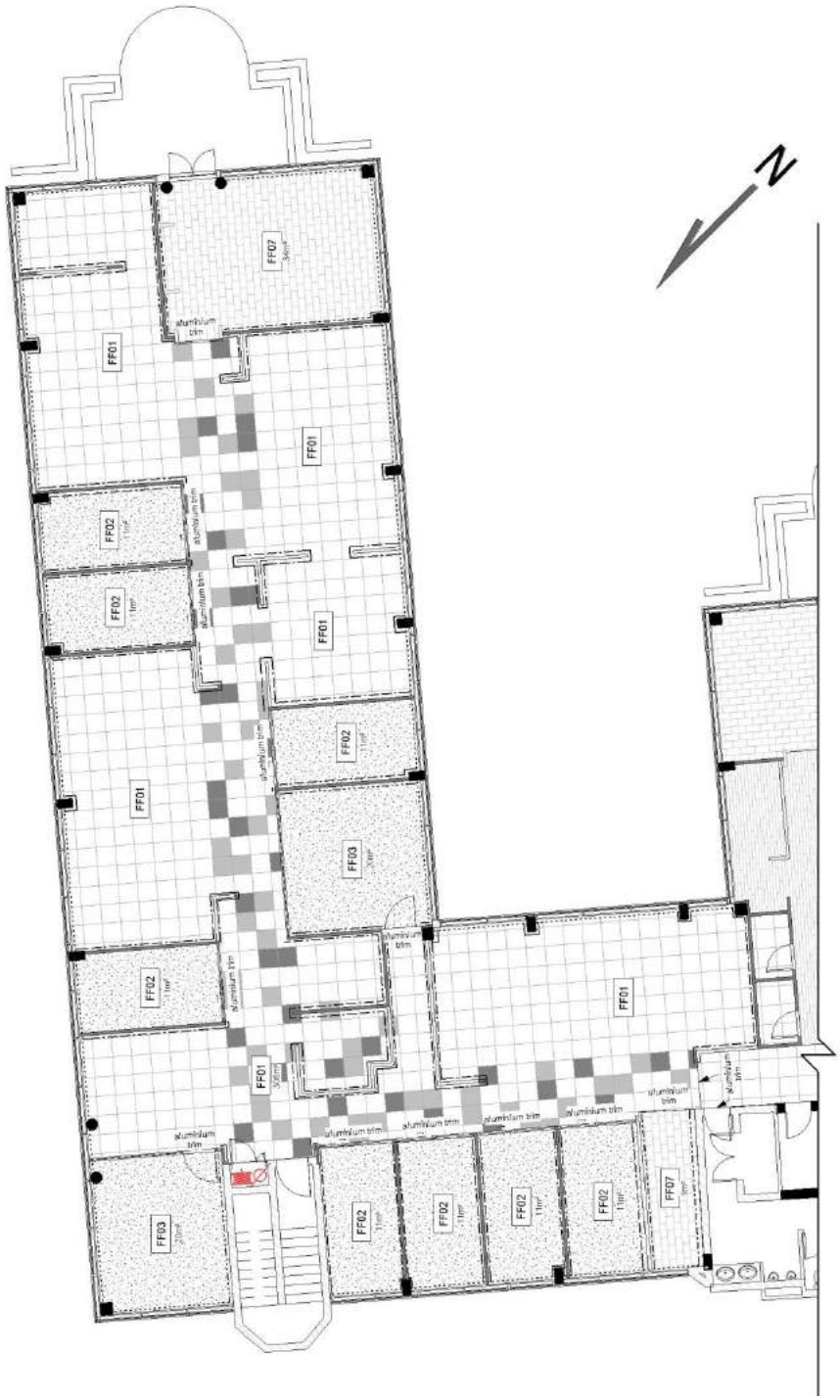


14.2.13 GROUND FLOOR – PORTION C – FURNITURE PLAN

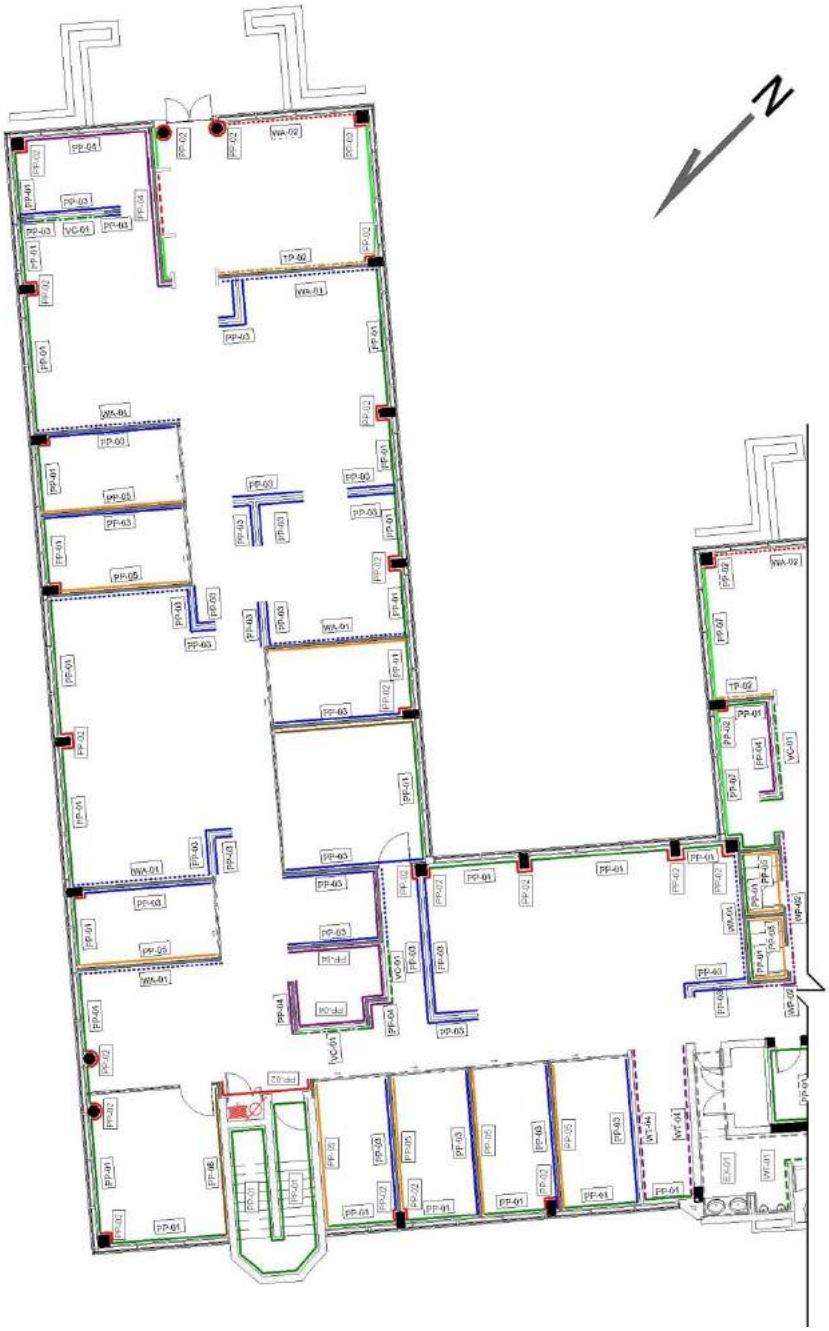
14.2.14 GROUND FLOOR – PORTION C – PARTITION PLAN



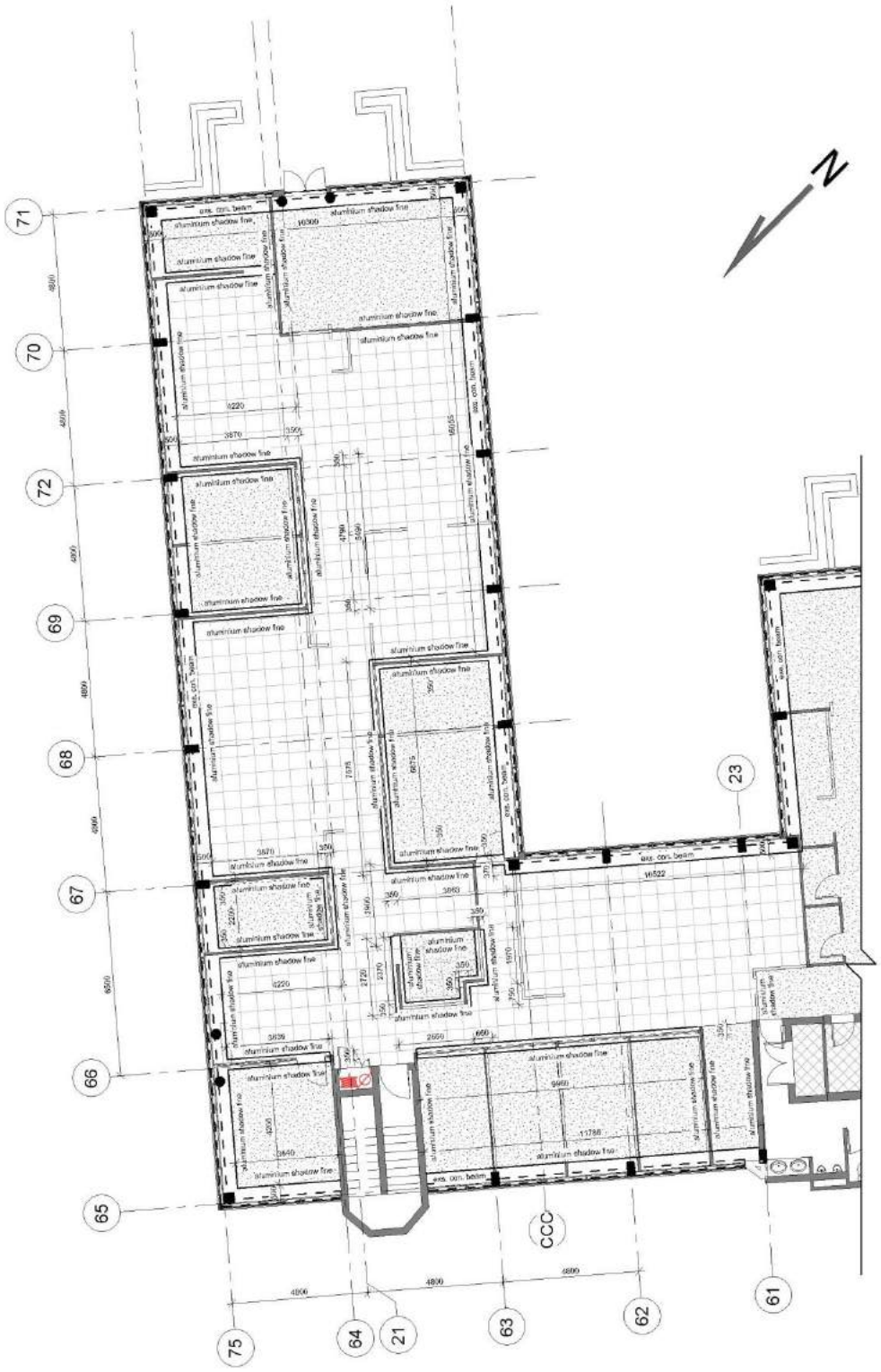
14.2.15 GROUND FLOOR – PORTION C – FLOOR FINISH PLAN



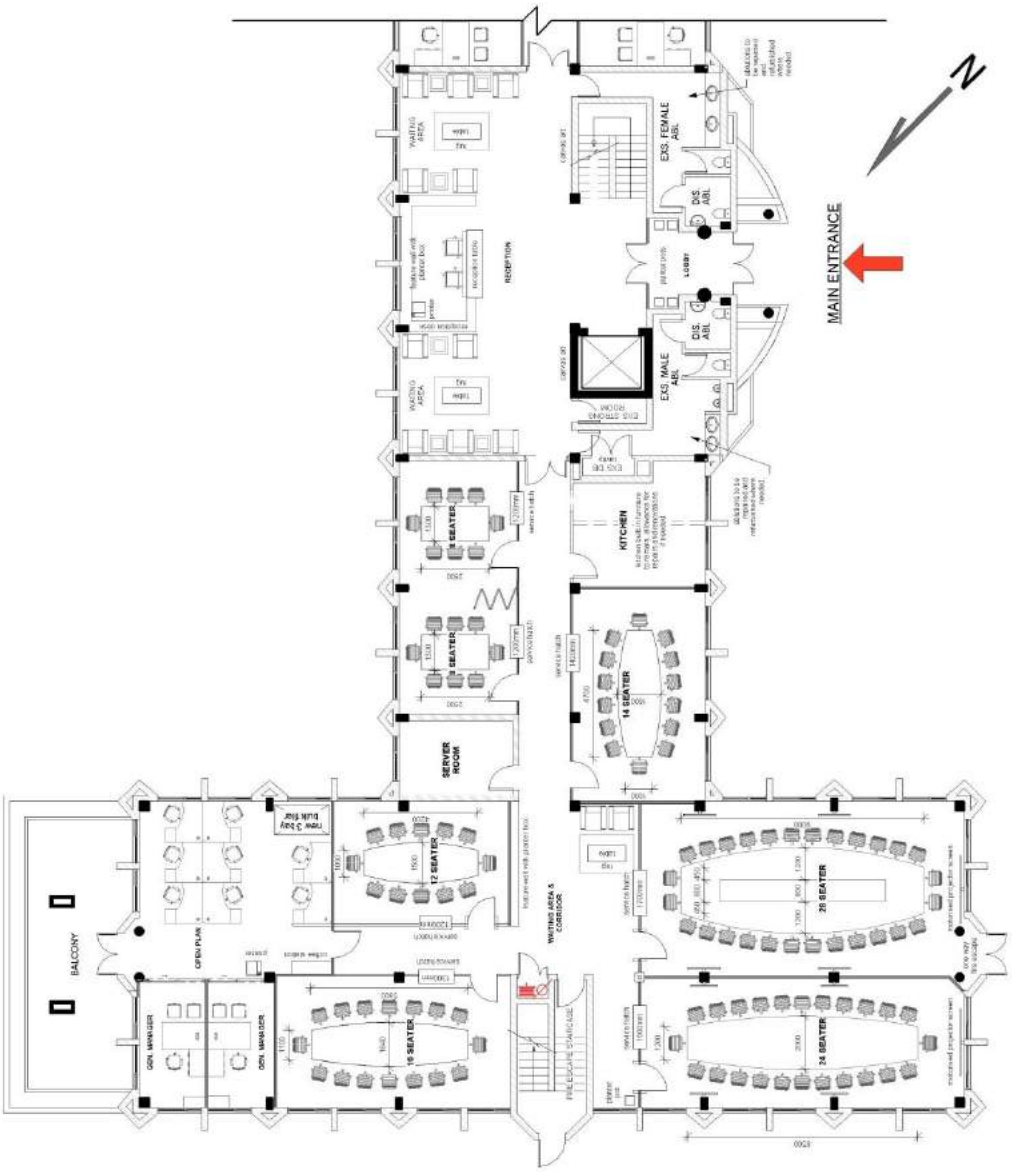
14.2.16 GROUND FLOOR – PORTION C – WALL PLAN



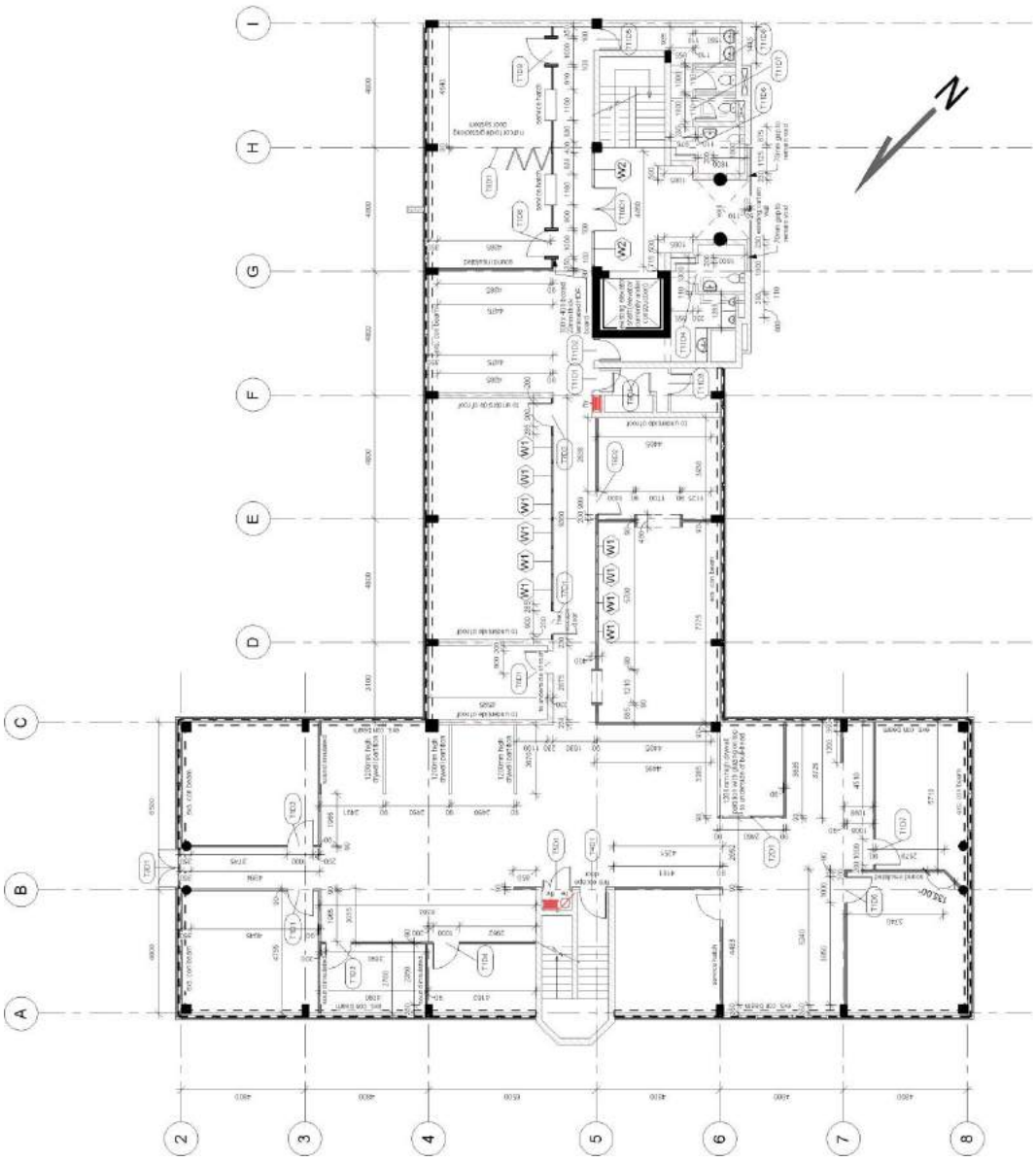
14.2.17 GROUND FLOOR – PORTION C – CEILING PLAN



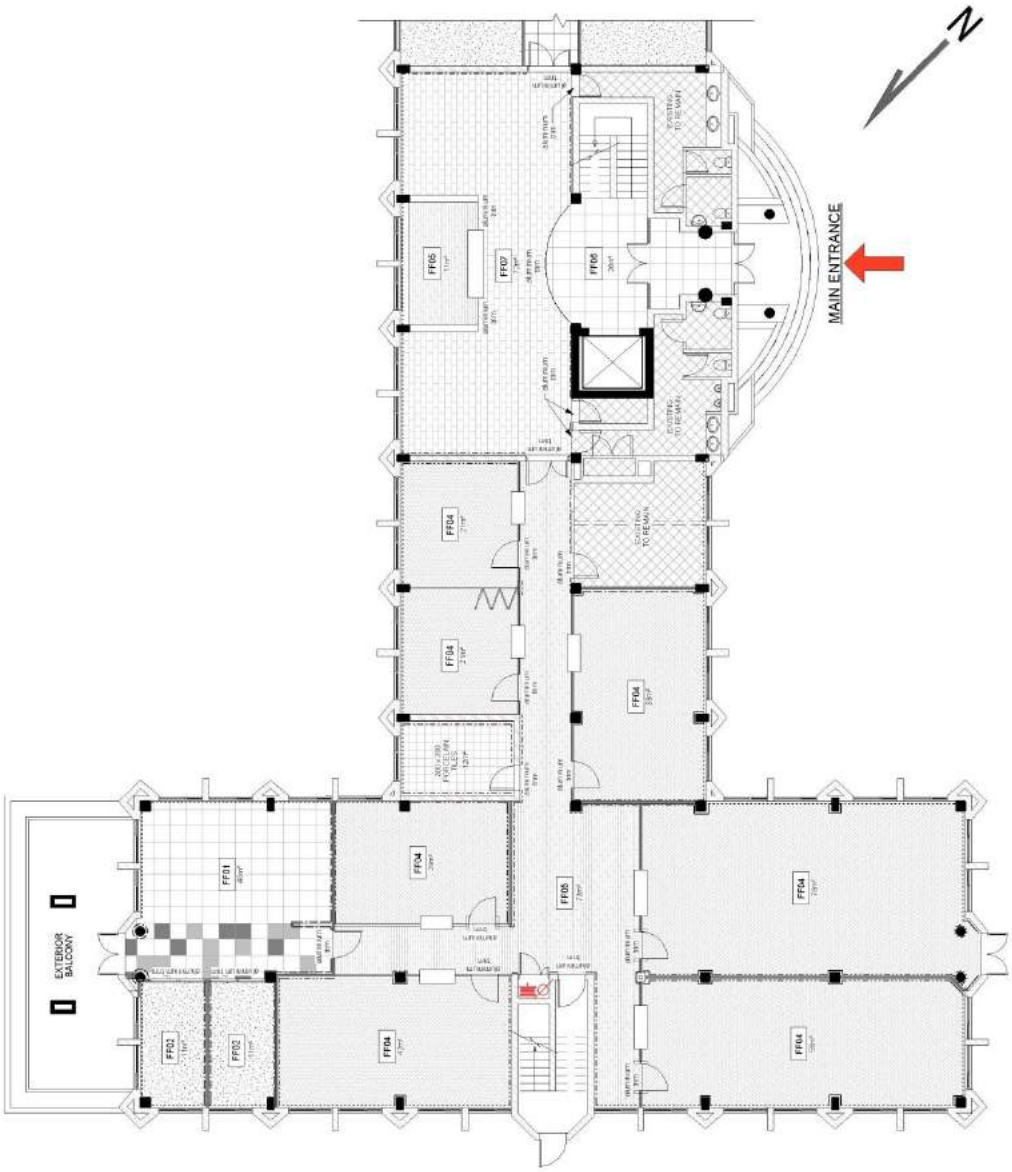
14.2.18 GROUND FLOOR – PORTION A – FURNITURE PLAN



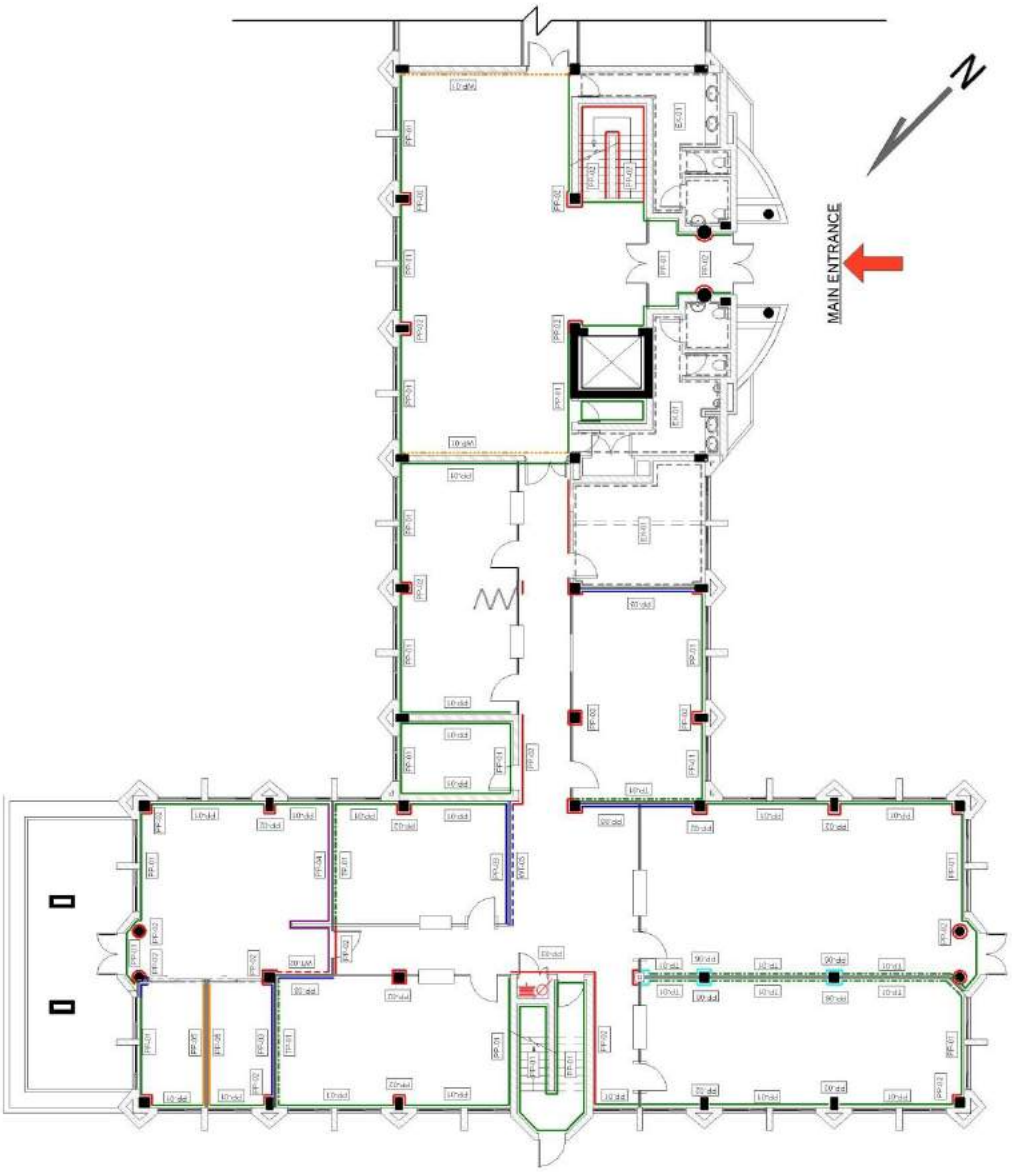
14.2.19 FIRST FLOOR – PORTION A – PARTITION PLAN



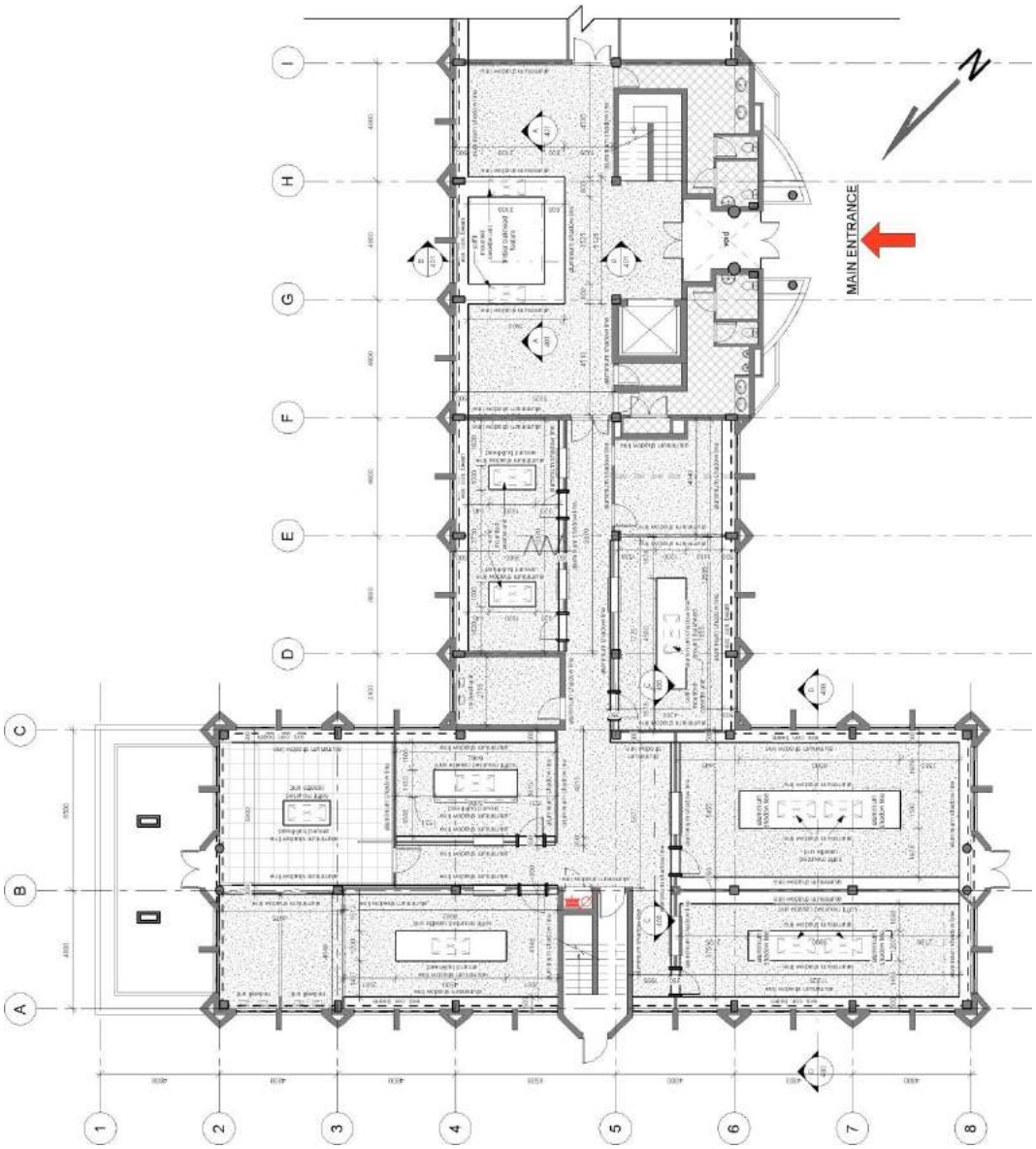
14.2.20 First Floor – Portion A – Floor Finish Plan



14.2.21 First Floor – Portion A – Wall Finish Plan

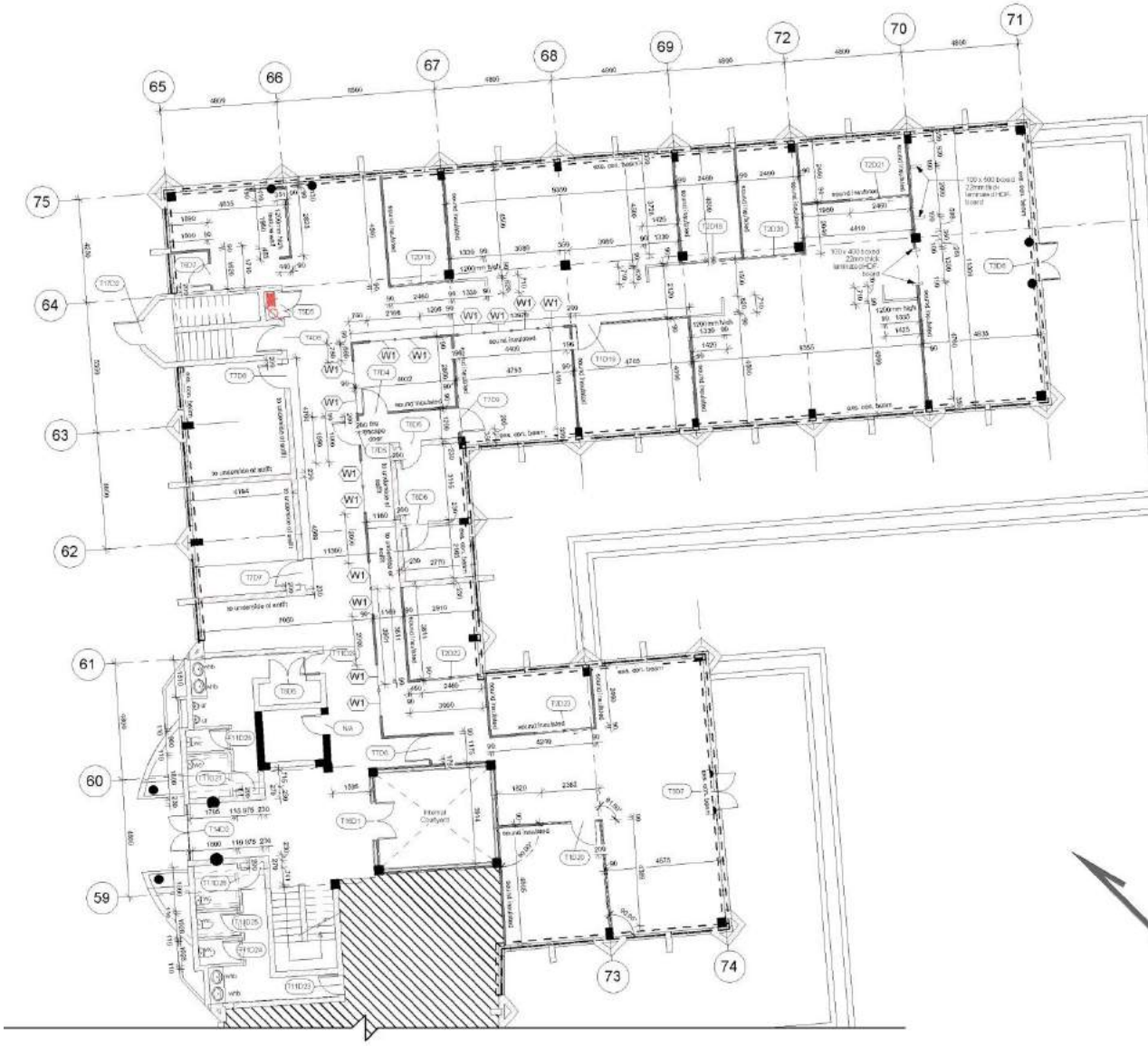


14.2.22 First Floor – Portion A – Ceiling Plan

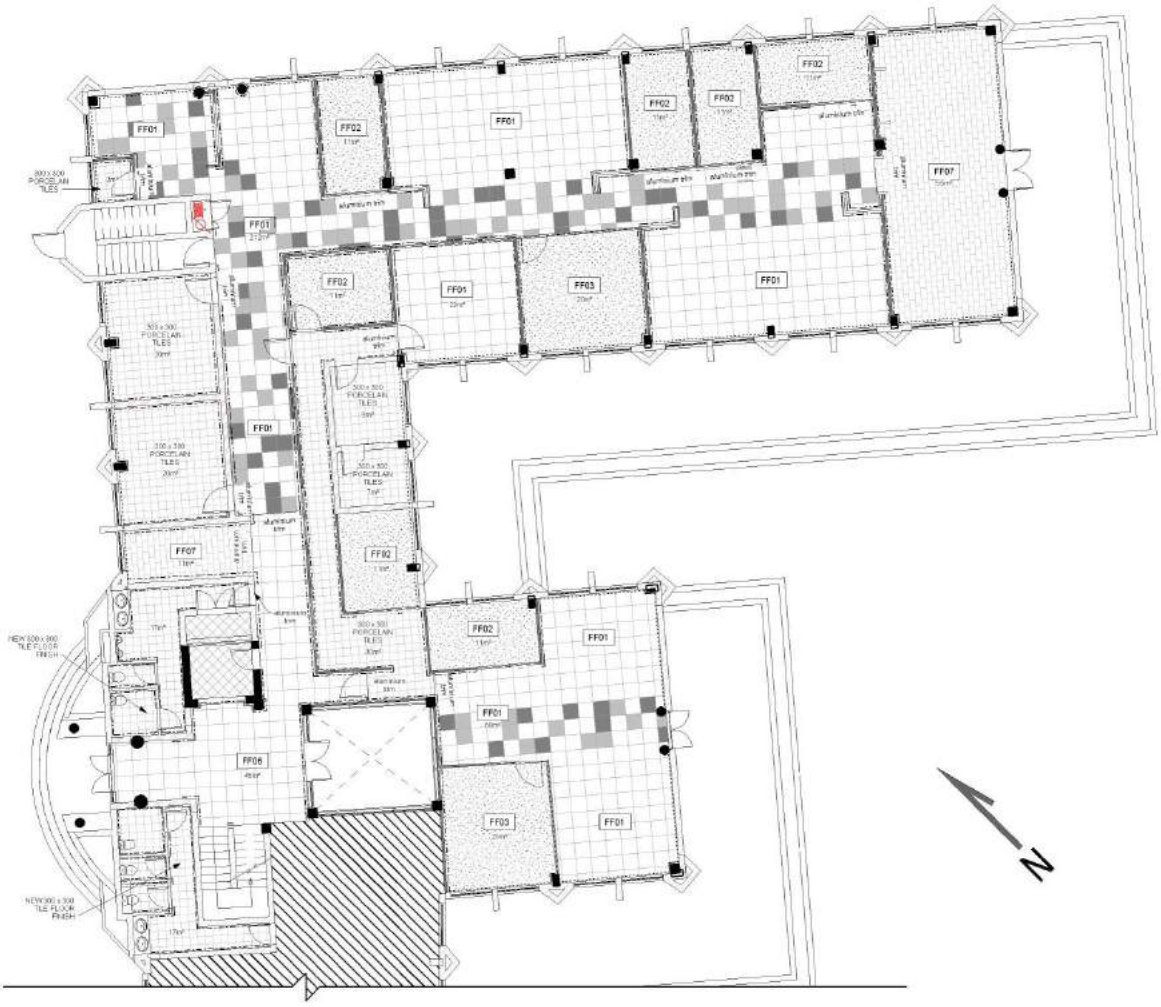


14.2.23 LOWER GROUND FLOOR – PORTION C – FURNITURE PLAN

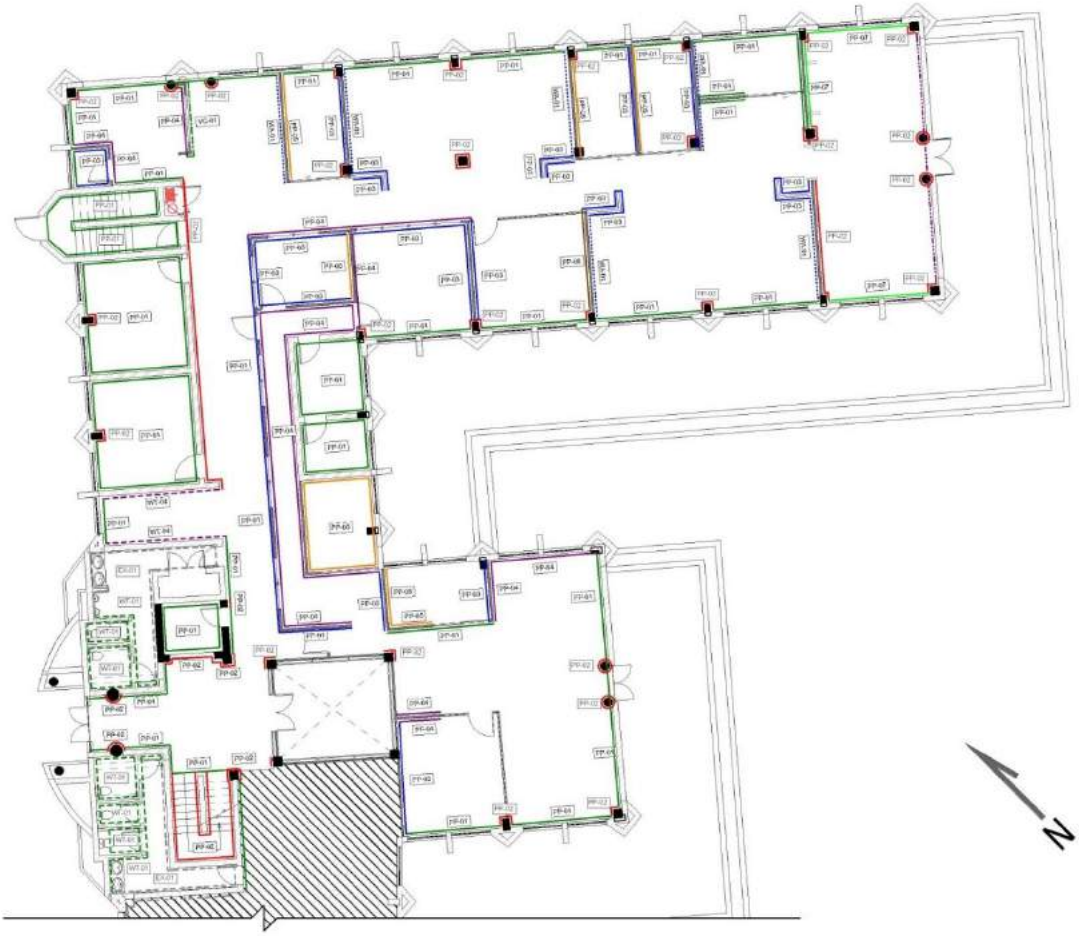
14.2.24 LOWER GROUND FLOOR – PORTION C – PARTITION PLAN



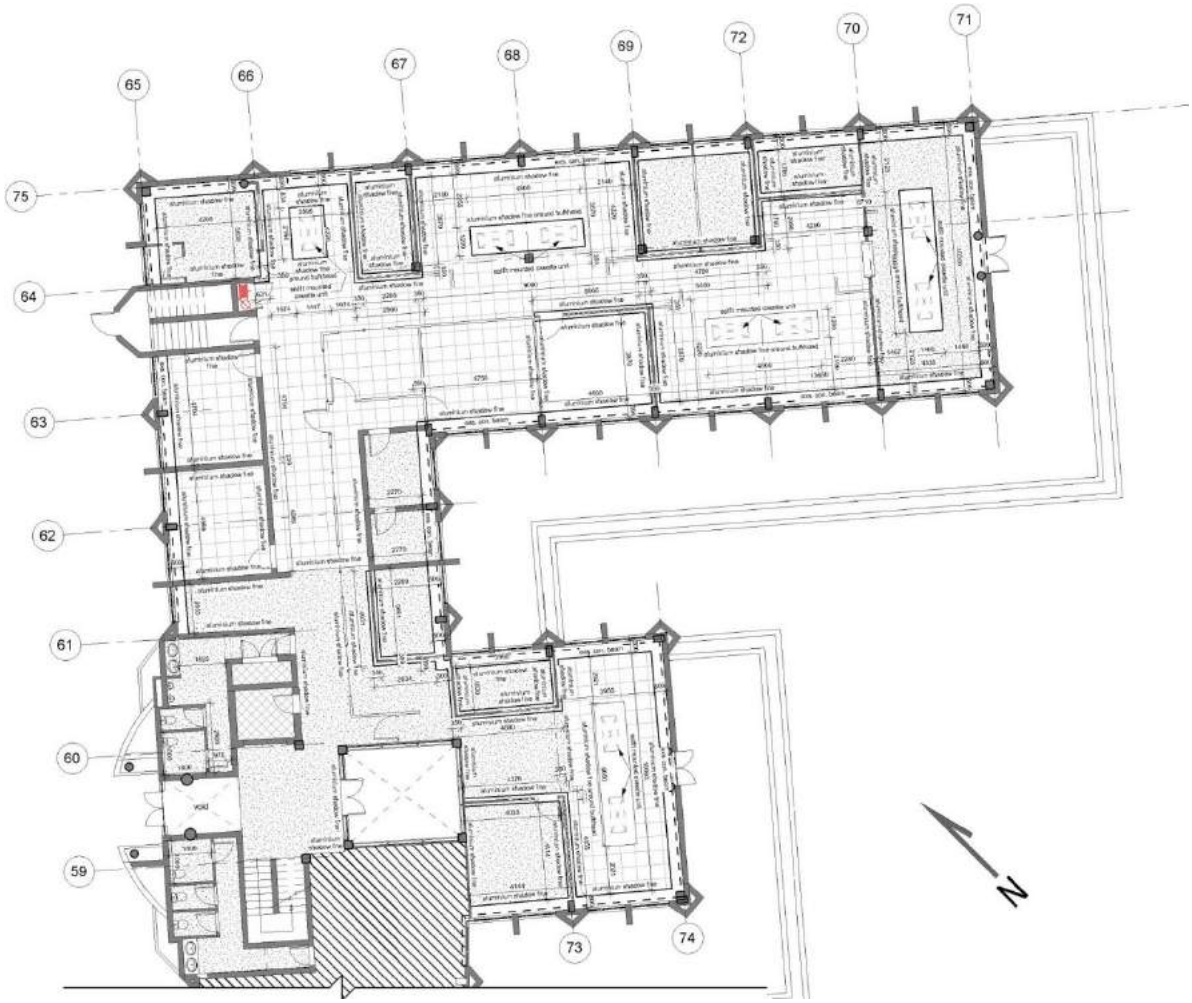
14.2.25 LOWER GROUND FLOOR – PORTION C – FLOOR PLAN



14.2.26 LOWER GROUND FLOOR – PORTION C – WALL FINISH PLAN

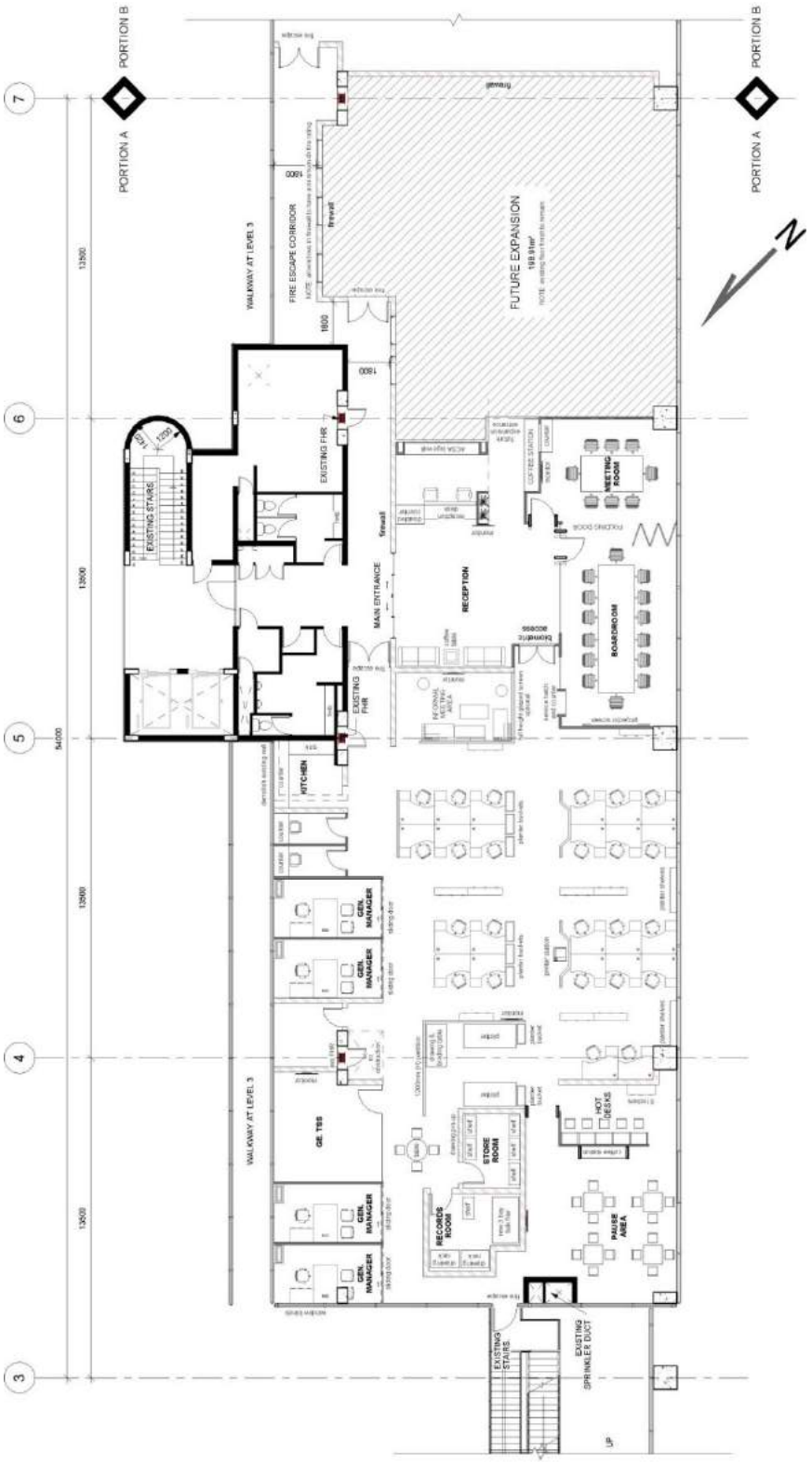


14.2.27 LOWER GROUND FLOOR – PORTION C – CEILING PLAN

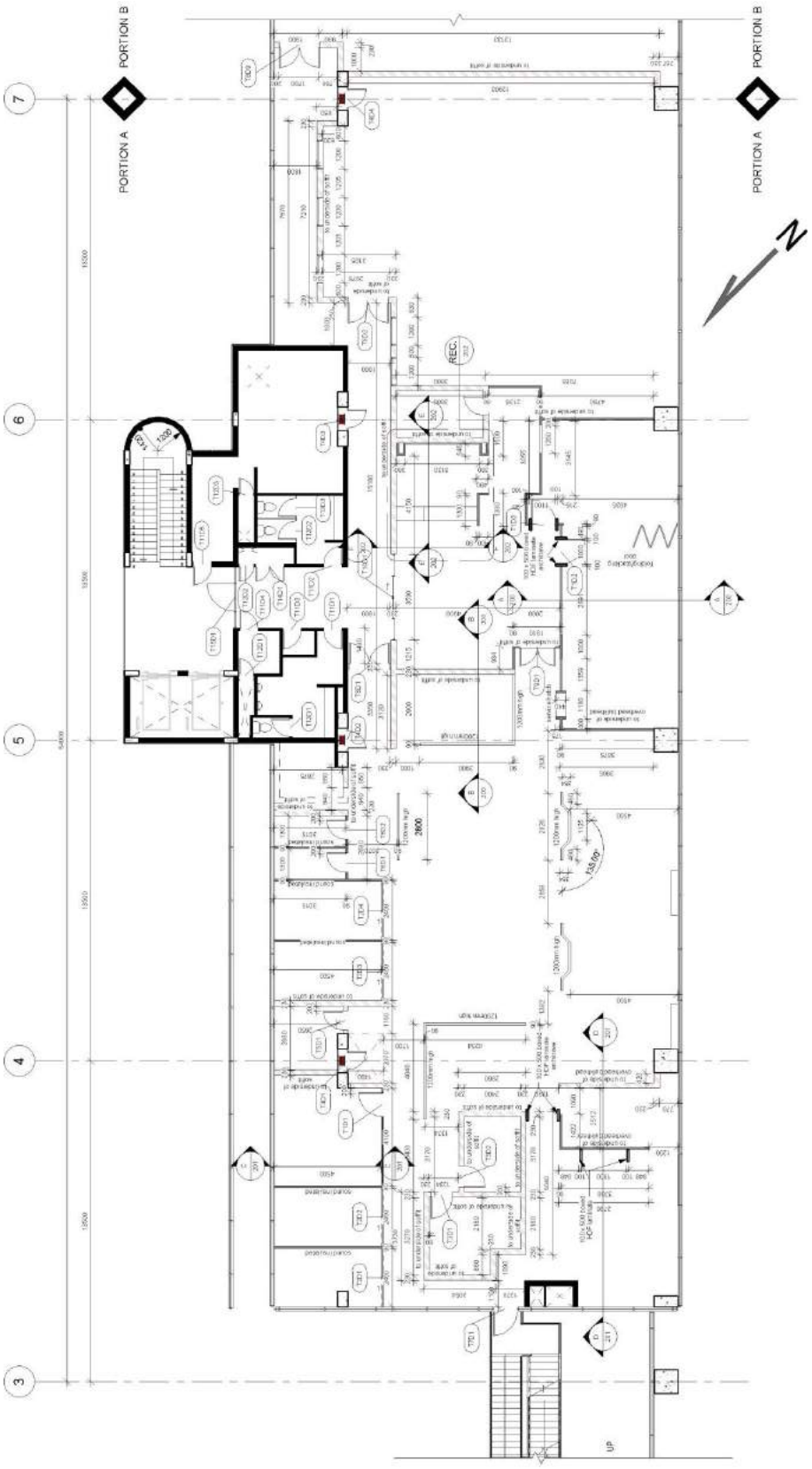


15 TERMINAL PIER B – OFFICE FLOOR LEVEL PROPOSAL

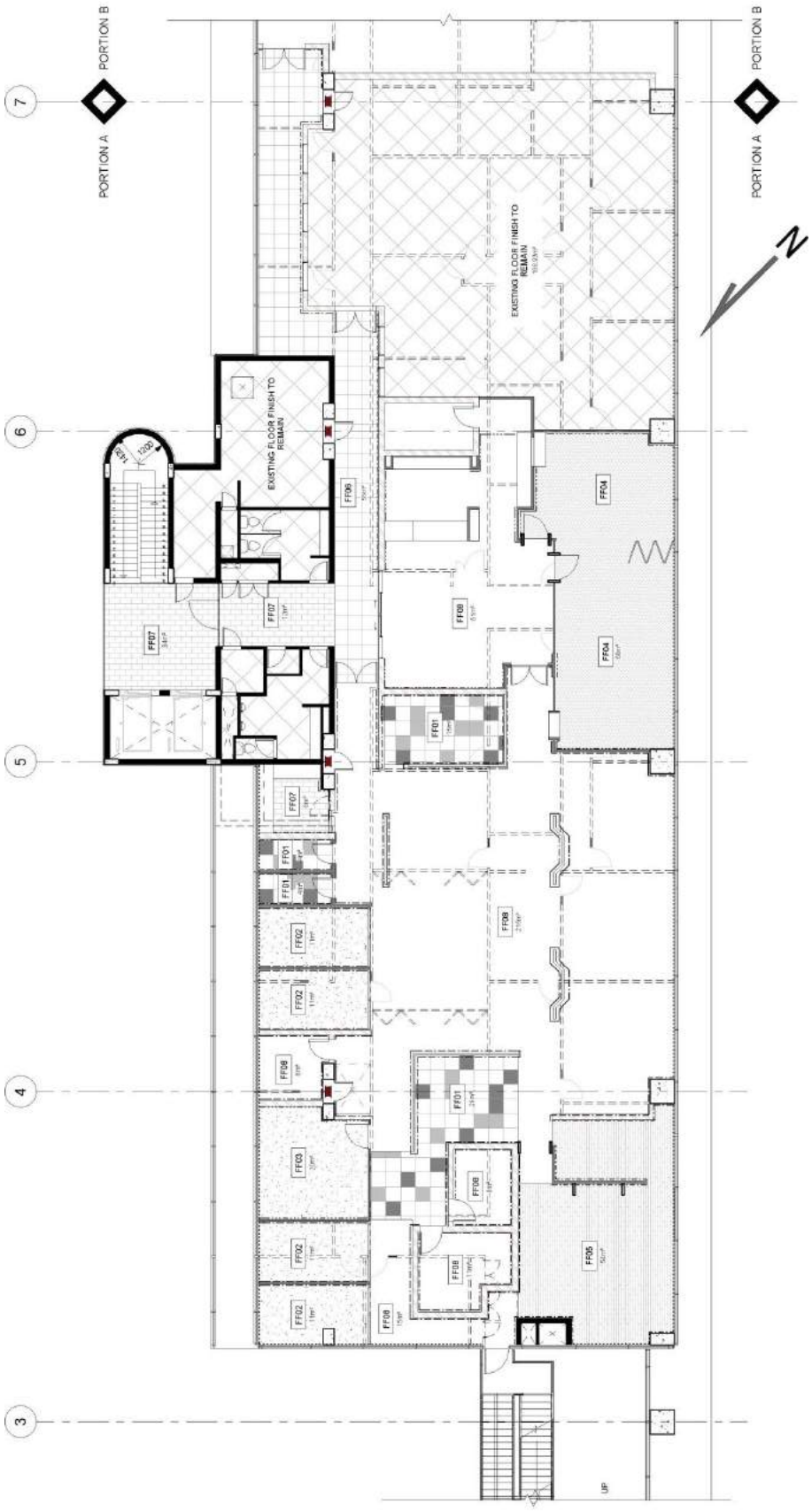
15.1.1 FURNITURE PLAN



15.1.2 PARTITION PLAN

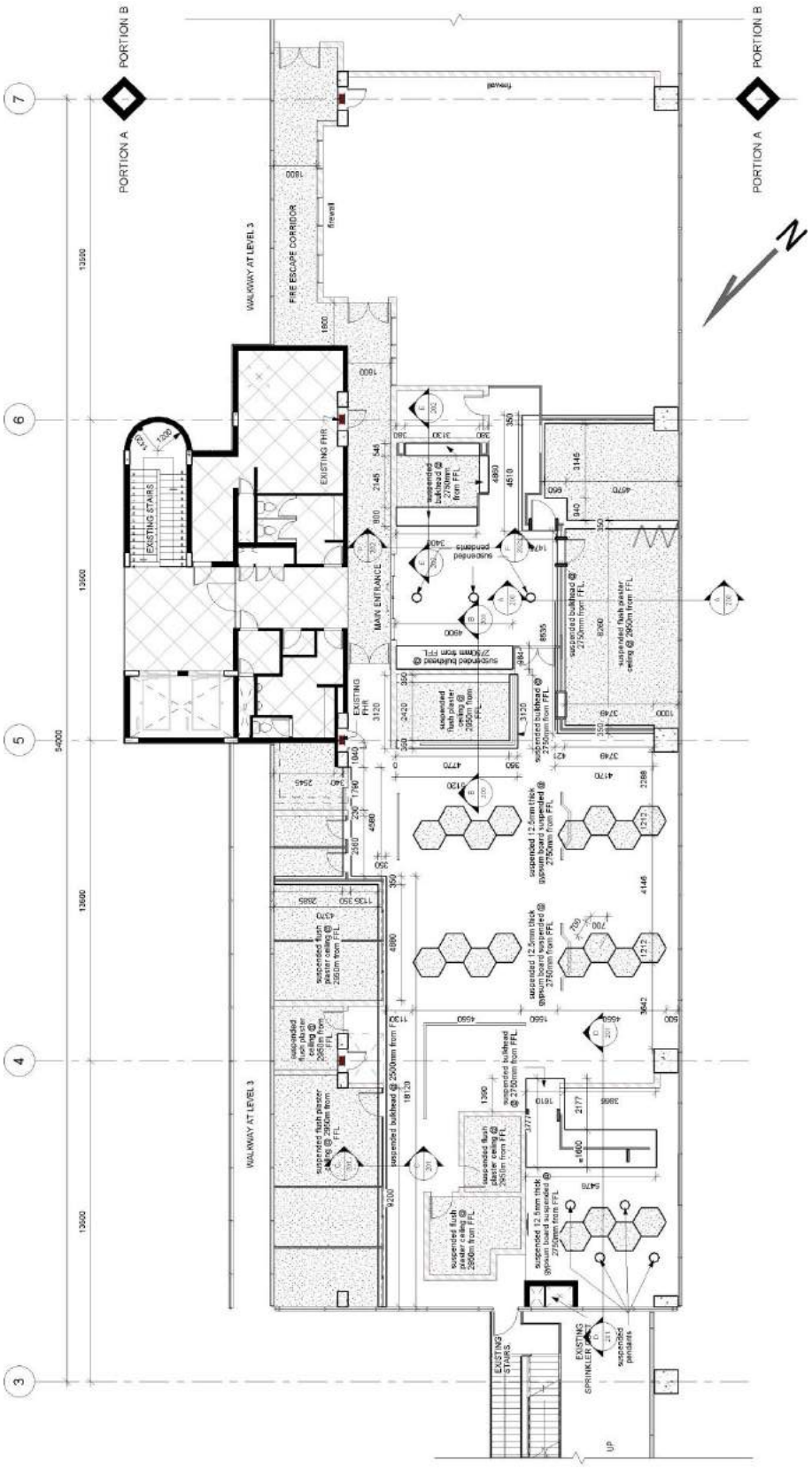


15.1.3 FLOOR FINISH PLAN

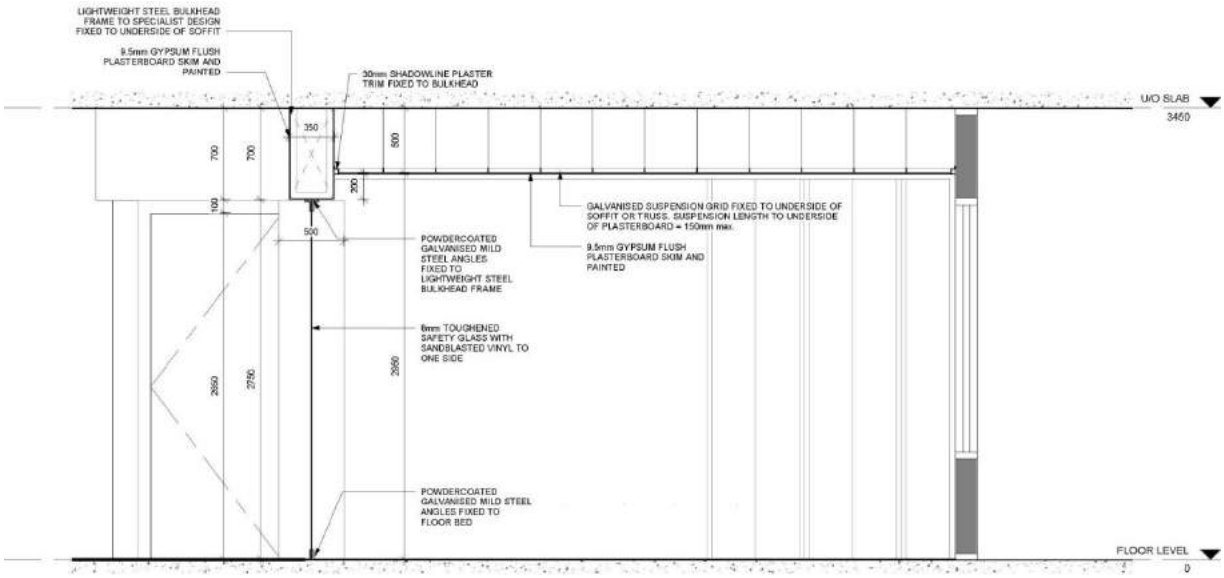


15.1.4 WALL FINISH PLAN

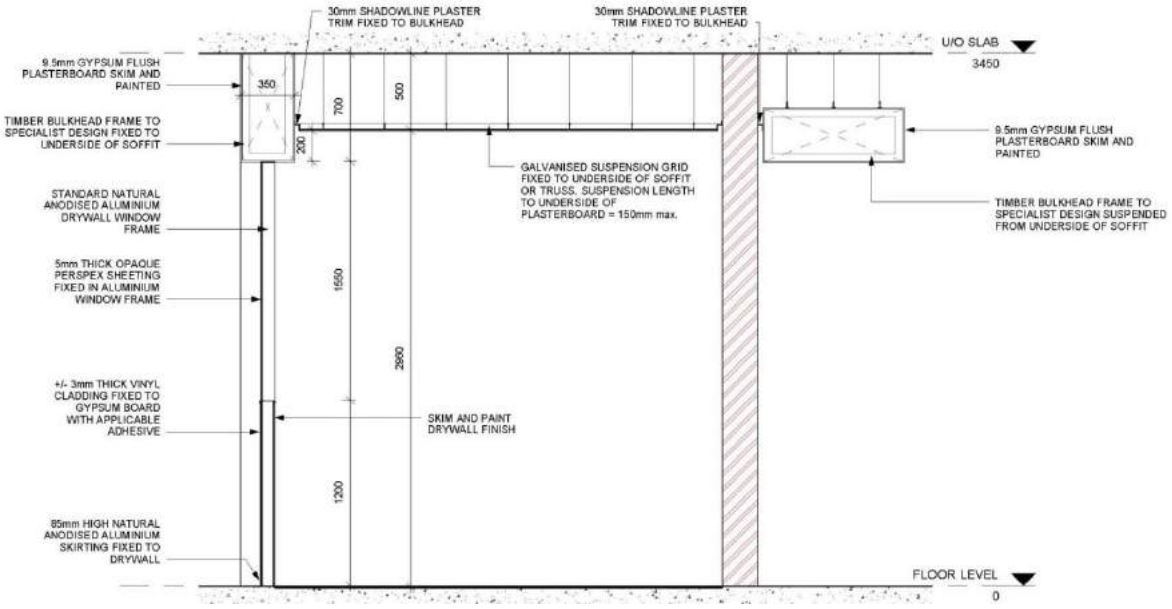
15.1.5 CEILING PLAN



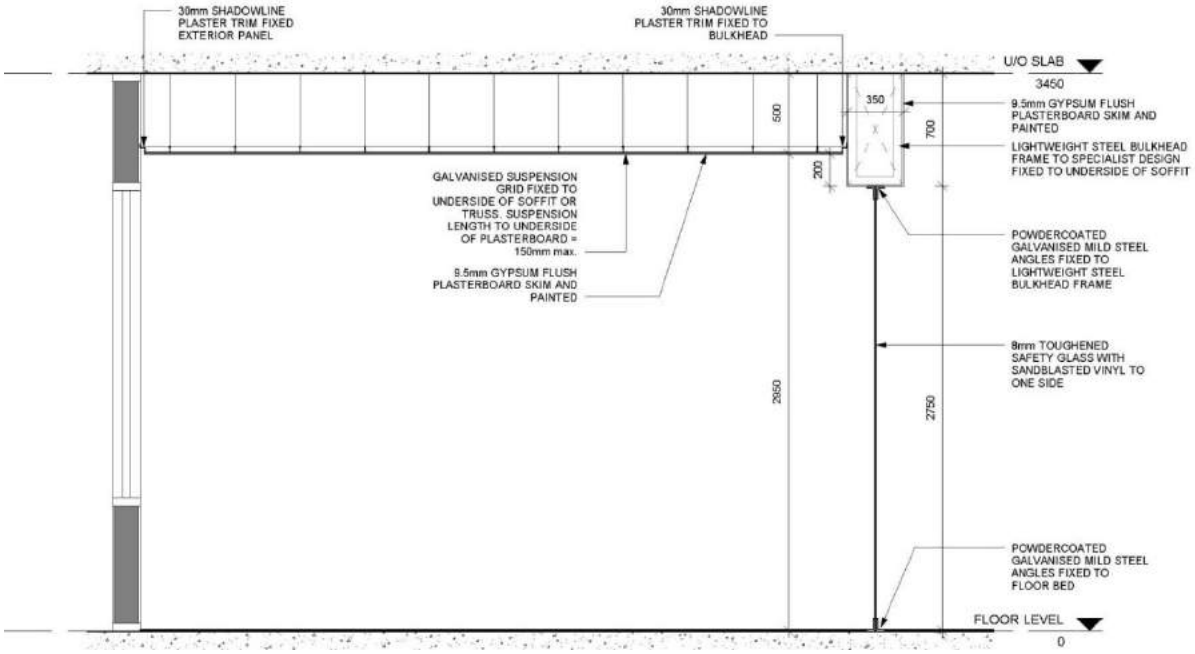
15.1.6 SECTION A-A



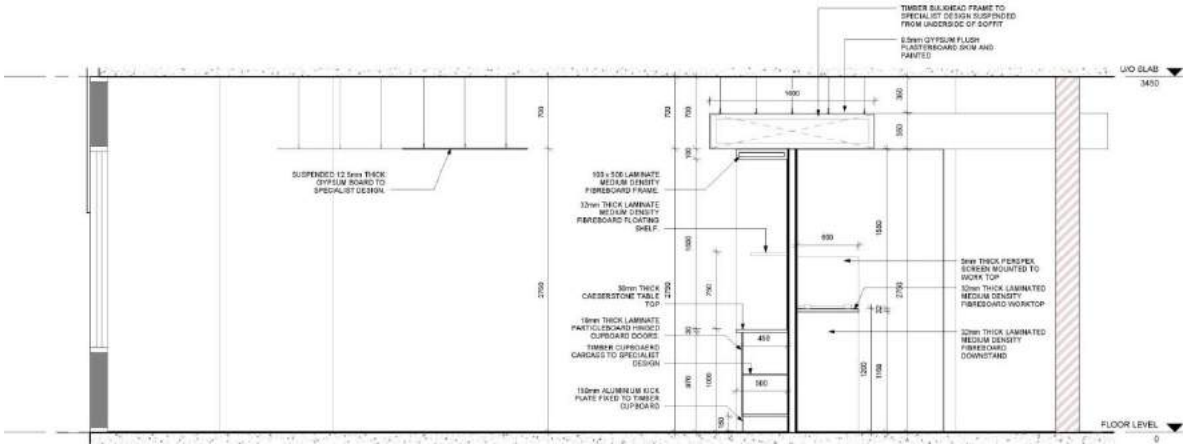
15.1.7 SECTION B-B



15.1.8 SECTION C-C



15.1.9 SECTION D-D



16 CONCLUSION

16.1 OVERVIEW

This document serves as a guideline for the internal office design for Airports Company South Africa.