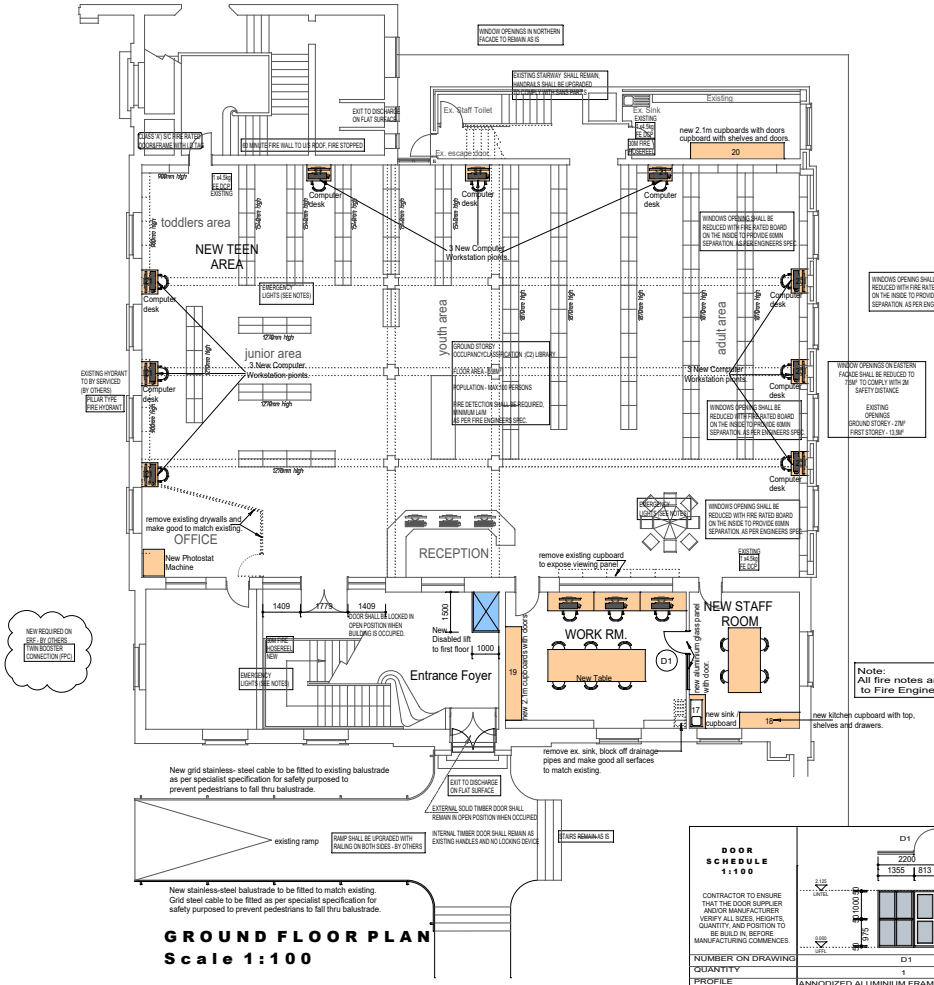
30. APPENDIX A – Architectural Specifications and Drawings

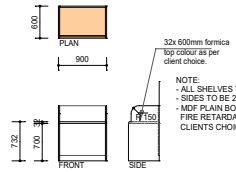
List of Drawings:

- STEL-LIB/2024/08/06-01
- STEL-LIB/2024/09/11-02
- STEL-LIB/2024/09/11-03
- STEL-LIB/2024/09/11-04
- STEL-LIB/2024/09/11-05
- STEL-LIB/2024/09/11-06

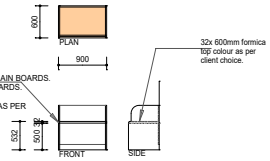


GROUND FLOOR PLAN
Scale 1:100

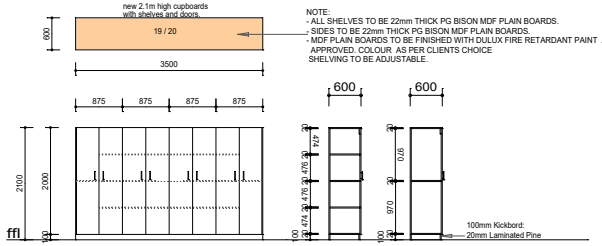
Note:
All fire notes and specifications to be read in conjunction to Fire Engineers drawings and specifications.



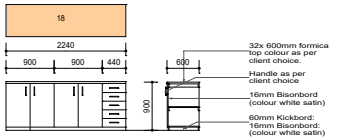
COMPUTER DESK No. 21
scale 1:50



JUNIOR COMPUTER DESK No. 21
scale 1:50



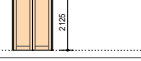
CUPBOARD DETAIL 19/20

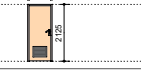


CUPBOARD DETAIL 18

DOOR SCHEDULE 1:100

CONTRACTOR TO ENSURE THAT THE DOOR SUPPLIER AND/OR MANUFACTURER VERIFY ALL SIZES, HEIGHTS, QUANTITY, AND POSITION TO BE BUILD IN, BEFORE MANUFACTURING COMMENCES.





	D1	D2	D3
NUMBER ON DRAWING			
QUANTITY	1	1	1
PROFILE	ANNODIZED ALUMINIUM FRAMED DOOR WITH SIDE PANELS COMPLETEWITH LAMINATED SAFETY GLAZING.ALL TO BE PURPOSE MADE TO FIT IN POSITION AS INDICATED.	CLASS B FIRE RATED HARDBOARD DOUBLE DOORS	2075 x 813 x 1.6mm PRESSED STEEL FRAME. WOOD SURFACE OF DOOR TO BE PRIMED WITH PINK WOOD PRIMER FOLLOWED BY A UNIVERSAL UNDERCOAT BEFORE APPLYING 2 COATS SILTHANE GLOSS ENAMEL FINISHING COAT AS APPROVED.
FINISHING	ANNODISED ALUMINIUM. BRONZE	2 HOUR FIRE RATED DOORS ARE PRE HUNG IN STEEL FRAME WITH STAINLESS STEEL HINGES. HARDBOARD DOOR SKINS - SUITABLE FOR PAINTING. 2 CONCEALED EDGES.	GLOSS ENAMEL AS APPROVED.
GLAZING	6.38mm LAMINATED SAFETY GLASS GLAZED TO ALUMINIUM SURFACE WITH CLIP ON GLAZING BEADS.	DOUBLE REBATED STEEL DOOR FRAME SUITABLE FOR A 230 WALL. 1.6MM MILD STEEL WITH 25MMX50MM REBATES & RED OXIDE PRIMER, WITH EITHER A 22MM SCREED OR A NO SCREED FINISH, WITH A CONVENTIONAL DRYWALL FIXING.	SABS APPROVED CHROME DOOR HANDLE SET COMPLETE WITH 2-LEVER LOCKSET.
GENERAL	SEAL ALLROUND WITH COLOUR MATCHED SILICON.	DOOR SIZE: 1511 X 2032 X 50MM SUPPLIED UNPAINTED CUSTOM MADE SIZES AVAILABLE ON REQUEST OPENS OUTWARDS UNLESS OTHERWISE SPECIFIED.	ALUMINIUM AIR LOUVER FITTED TO DOOR AS INDICATED TO MANUFACTURER SPECIFICATIONS.
FURNITURE	STANDARD HINGES, LOCKING DEVICES AND DOOR CLOSER AS SUPPLIED BY DOOR MANUFACTURER.	STAINLESS STEEL PANIC PUSH BAR, TWO POINT LOCKING, EN1125 AND EN1634 RATED	

DOOR SCHEDULE

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PROVINCIAL GOVERNMENT
WESTERN CAPE
DIRECTORATE: PROFESSIONAL & PROJECT MANAGEMENT SERVICES

Department:
INFRASTRUCTURE

Client:
STELLENBOSCH MUNICIPALITY

Project name:
STELLENBOSCH PLEIN STREET LIBRARY

Signed by:
Client:

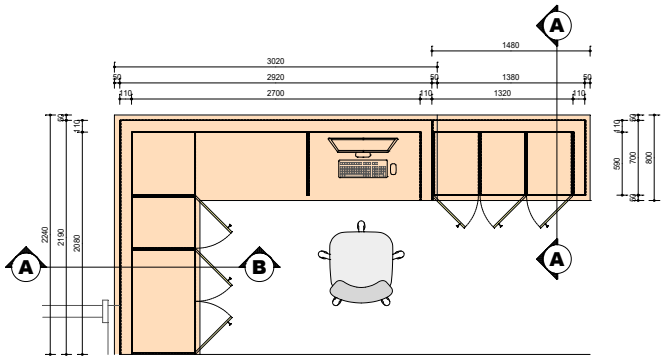
Architect:

Drawing title:
Ground floor layout Plan

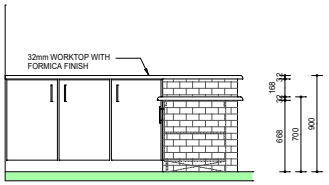
Date:	Oct 2024	Designed:	-
Stage:	4	Drawn:	N.F
Scale:	INDICATED	Checked:	B.V
Size:	A1	Revision:	02

Drwg. No:
STEL-LIB/2024/08/06 - 01

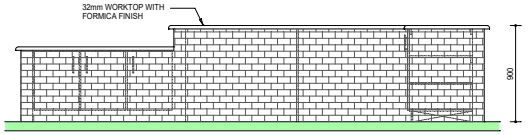
Issue:
STAGE 4



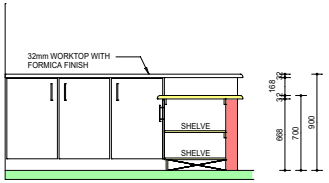
RECEPTION DESK PLAN VIEW
SCALE 1:25



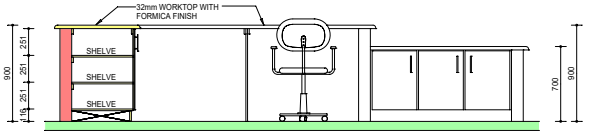
SIDE ELEVATION
SCALE 1:25



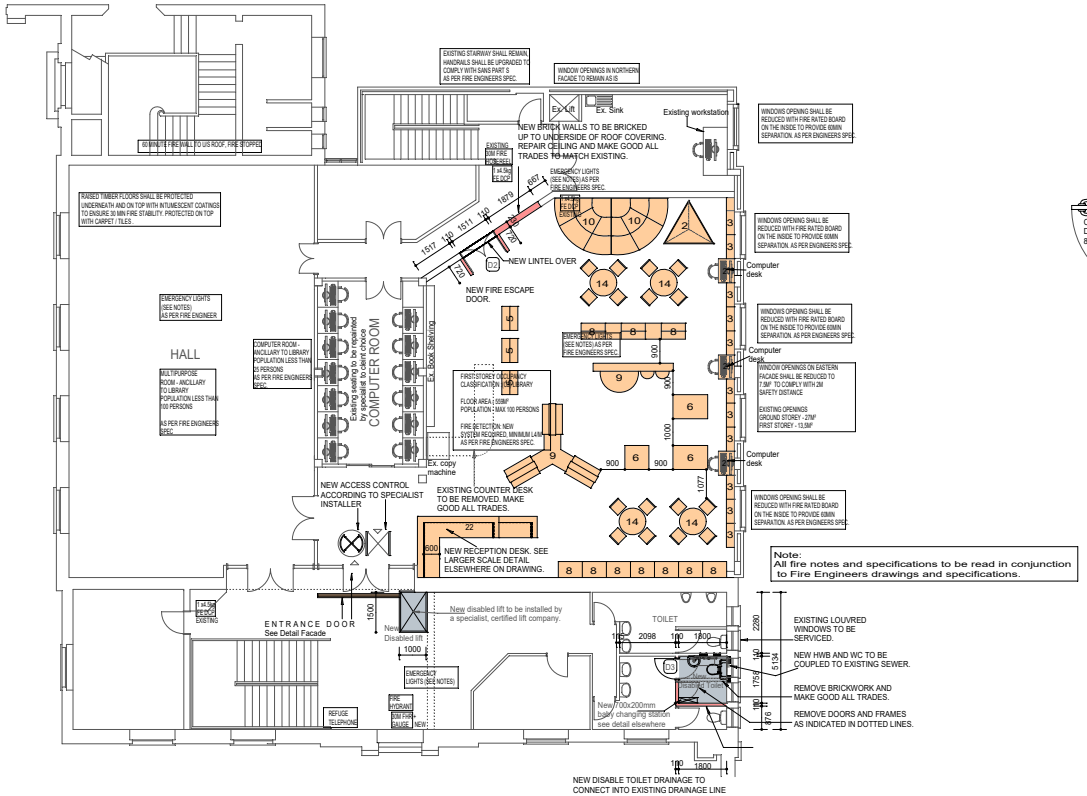
FRONT ELEVATION
SCALE 1:25



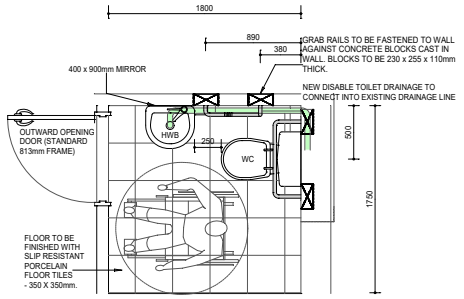
SECTION AA
SCALE 1:25



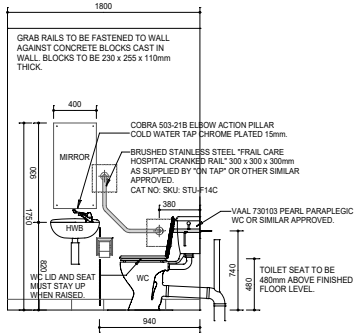
SECTION BB
SCALE 1:25



AS BUILT FIRST FLOOR PLAN LAYOUT
Scale 1:100



DISABLED TOILET
PLAN LAYOUT 1:25



ELEVATION A 1:25

Western Cape Government
FOR YOU
Infrastructure

PROVINCIAL GOVERNMENT
WESTERN CAPE
DIRECTORATE: PROFESSIONAL & PROJECT MANAGEMENT SERVICES

Department:
INFRASTRUCTURE

Client:
STELLENBOSCH MUNICIPALITY

Project name:
STELLENBOSCH PLEIN STREET LIBRARY: ERF 1966

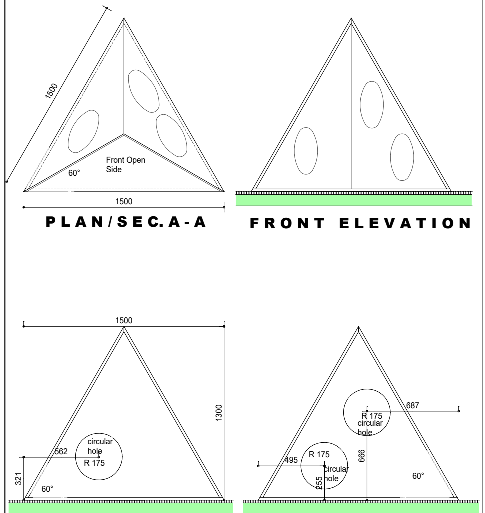
Signed by:
Client:
Architect:

Drawing title:
STELLENBOSCH LIBRARY FIRST FLOOR PLAN & LARGE SCALE DETAILS.

Date:	Oct 2024	Designed:	-
Stage:	4	Drawn:	NF
Scale:	INDICATED	Checked:	B.V
Size:	A1	Revision:	02

Drwg. No:
STEL-LIB/2024/09/11 - 02

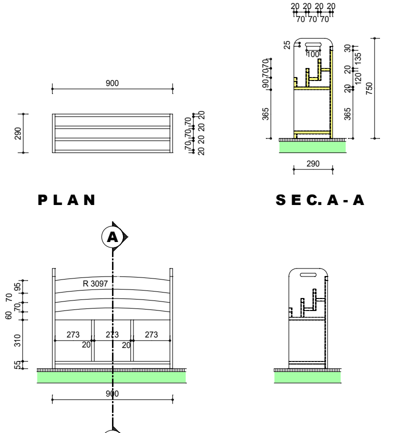
Issue:
STAGE 4



CUPBOARD No.2
Scale 1:20

NOTE:

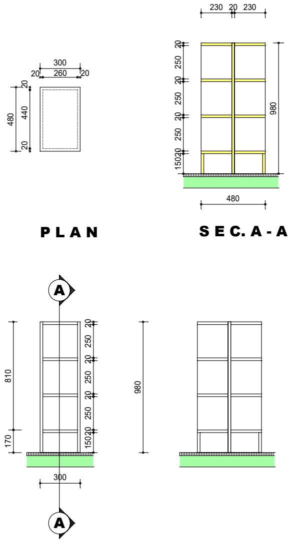
- ALL SHELVES TO BE 22mm THICK PG BISON MDF PLAIN BOARDS.
- SIDES TO BE 22mm THICK PG BISON MDF PLAIN BOARDS.
- MDF PLAIN BOARDS TO BE FINISHED WITH DULUX FIRE RETARDANT PAINT AS APPROVED. COLOUR AS PER CLIENTS CHOICE



CUPBOARD No.3
Scale 1:20

NOTE:

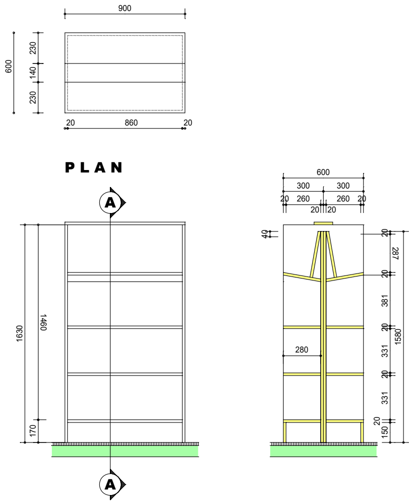
- ALL SHELVES TO BE 22mm THICK PG BISON MDF PLAIN BOARDS.
- SIDES TO BE 22mm THICK PG BISON MDF PLAIN BOARDS.
- MDF PLAIN BOARDS TO BE FINISHED WITH DULUX FIRE RETARDANT PAINT AS APPROVED. COLOUR AS PER CLIENTS CHOICE



CUPBOARD No.4
Scale 1:20

NOTE:

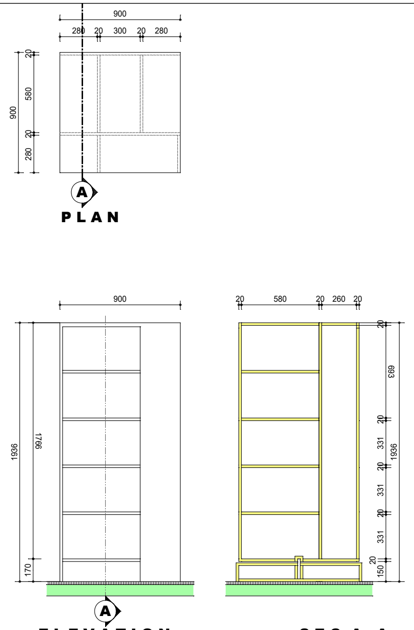
- ALL SHELVES TO BE 22mm THICK PG BISON MDF PLAIN BOARDS.
- SIDES TO BE 22mm THICK PG BISON MDF PLAIN BOARDS.
- MDF PLAIN BOARDS TO BE FINISHED WITH DULUX FIRE RETARDANT PAINT AS APPROVED. COLOUR AS PER CLIENTS CHOICE
SHELVING TO BE ADJUSTABLE.



CUPBOARD No.5
Scale 1:20

NOTE:

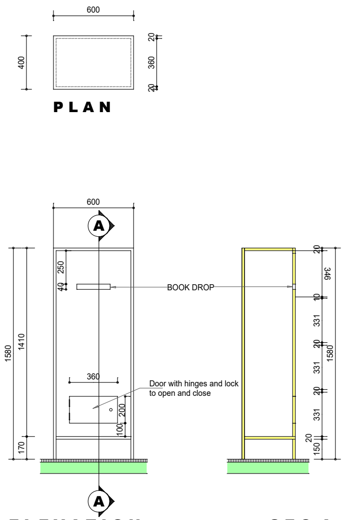
- ALL SHELVES TO BE 22mm THICK PG BISON MDF PLAIN BOARDS.
- SIDES TO BE 22mm THICK PG BISON MDF PLAIN BOARDS.
- MDF PLAIN BOARDS TO BE FINISHED WITH DULUX FIRE RETARDANT PAINT AS APPROVED. COLOUR AS PER CLIENTS CHOICE
SHELVING TO BE ADJUSTABLE.



CUPBOARD No.6
Scale 1:20

NOTE:

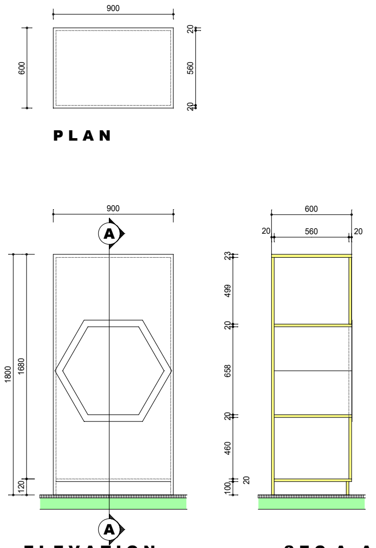
- ALL SHELVES TO BE 22mm THICK PG BISON MDF PLAIN BOARDS.
- SIDES TO BE 22mm THICK PG BISON MDF PLAIN BOARDS.
- MDF PLAIN BOARDS TO BE FINISHED WITH DULUX FIRE RETARDANT PAINT AS APPROVED. COLOUR AS PER CLIENTS CHOICE



CUPBOARD No.7
Scale 1:20

NOTE:

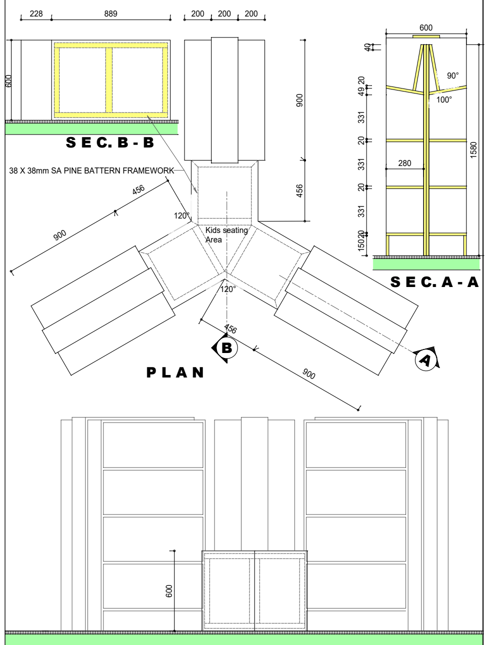
- ALL SHELVES TO BE 22mm THICK PG BISON MDF PLAIN BOARDS.
- SIDES TO BE 22mm THICK PG BISON MDF PLAIN BOARDS.
- MDF PLAIN BOARDS TO BE FINISHED WITH DULUX FIRE RETARDANT PAINT AS APPROVED. COLOUR AS PER CLIENTS CHOICE



CUPBOARD No.8
Scale 1:20

NOTE:

- ALL SHELVES TO BE 22mm THICK PG BISON MDF PLAIN BOARDS.
- SIDES TO BE 22mm THICK PG BISON MDF PLAIN BOARDS.
- MDF PLAIN BOARDS TO BE FINISHED WITH DULUX FIRE RETARDANT PAINT AS APPROVED. COLOUR AS PER CLIENTS CHOICE



CUPBOARD No.9
Scale 1:20

NOTE:

- ALL SHELVES TO BE 22mm THICK PG BISON MDF PLAIN BOARDS.
- SIDES TO BE 22mm THICK PG BISON MDF PLAIN BOARDS.
- MDF PLAIN BOARDS TO BE FINISHED WITH DULUX FIRE RETARDANT PAINT AS APPROVED. COLOUR AS PER CLIENTS CHOICE
SHELVING TO BE ADJUSTABLE.

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PROVINCIAL GOVERNMENT
WESTERN CAPE
DIRECTORATE: PROFESSIONAL & PROJECT MANAGEMENT SERVICES

Department: INFRASTRUCTURE

Client: STELLENBOSCH MUNICIPALITY

Project name: STELLENBOSCH PLEIN STREET LIBRARY

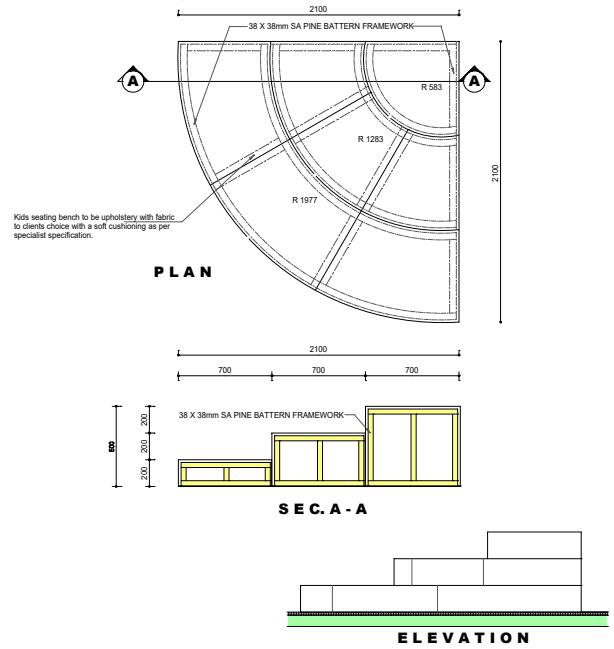
Signed by:
Client: ____________________
Architect: ____________________

Drawing title: STELLENBOSCH LIBRARY SHELVING DETAILS AND FURNITURE

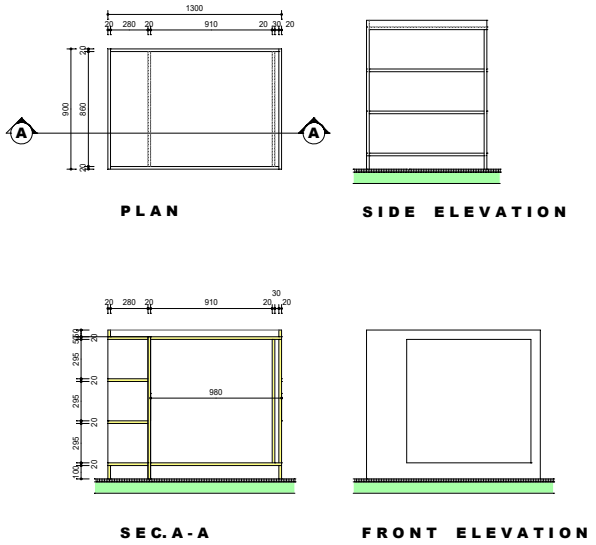
Date:	Oct 2024	Designed:	.
Stage:	4	Drawn:	N.F
Scale:	INDICATED	Checked:	B.V
Size:	A1	Revision:	02

Drwg. No: STEL-LIB/2024/09/11 - 03

Issue: STAGE 4



BENCH No.10
Scale 1:20



CUPBOARD No.13
Scale 1:20

NOTE:

- ALL SHELVES TO BE 22mm THICK PG BISON MDF PLAIN BOARDS.
- SIDES TO BE 22mm THICK PG BISON MDF PLAIN BOARDS.
- MDF PLAIN BOARDS TO BE FINISHED WITH DULUX FIRE RETARDANT PAINT AS APPROVED.
COLOUR AS PER CLIENTS CHOICE

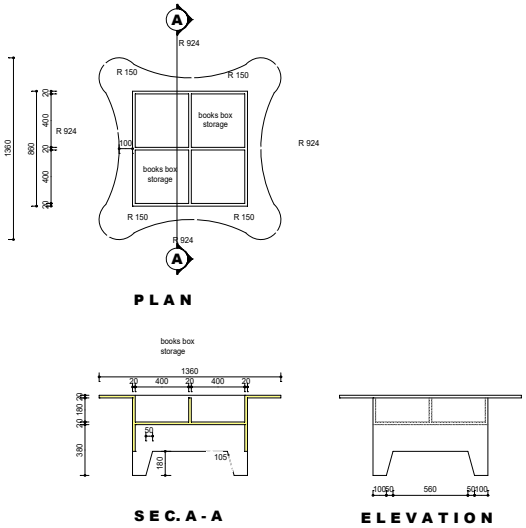
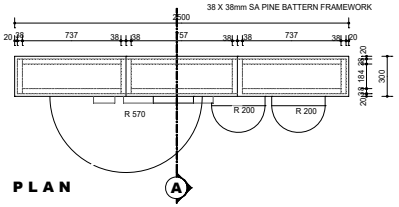
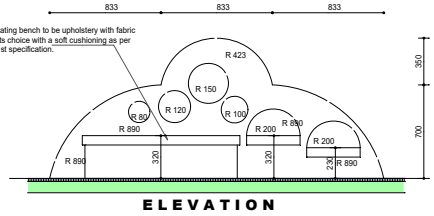


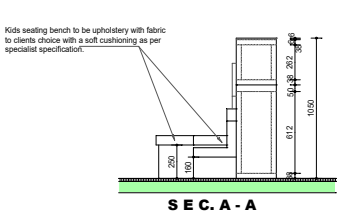
TABLE No.14
Scale 1:20

NOTE:

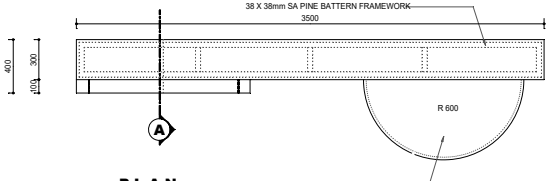
- ALL SHELVES TO BE 22mm THICK PG BISON MDF PLAIN BOARDS.
- SIDES TO BE 22mm THICK PG BISON MDF PLAIN BOARDS.
- MDF PLAIN BOARDS TO BE FINISHED WITH DULUX FIRE RETARDANT PAINT AS APPROVED.
COLOUR AS PER CLIENTS CHOICE

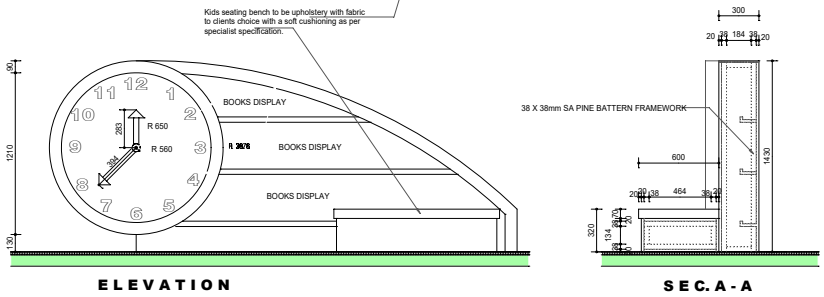






BENCH No.11
Scale 1:20





BENCH CUPBOARD No.12
Scale 1:20

Western Cape Government
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Transport & Infrastructure

PROVINCIAL GOVERNMENT
WESTERN CAPE
DIRECTORATE: PROFESSIONAL & PROJECT MANAGEMENT SERVICES

Department:
INFRASTRUCTURE

Client:
STELLENBOSCH MUNICIPALITY

Project name:
STELLENBOSCH PLEIN STREET LIBRARY

Signed by:
Client:

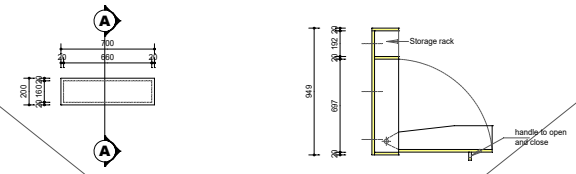
Architect:

Drawing title:
STELLENBOSCH LIBRARY SHELVING DETAILS AND FURNITURE

Date:	Oct 2024	Designed:	-
Stage:	4	Drawn:	N.F
Scale:	INDICATED	Checked:	B.V
Size:	A1	Revision:	02

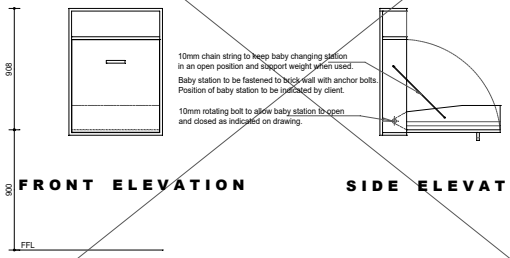
Drwg. No:
STEL-LIB/2024/09/11 - 04

Issue:
STAGE 4



PLAN

SEC.A-A

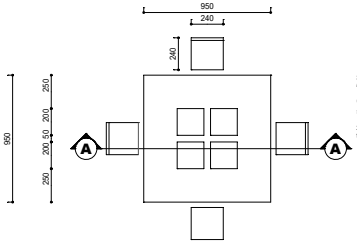


FRONT ELEVATION

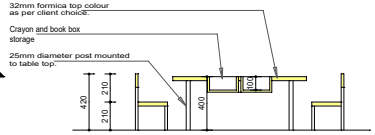
SIDE ELEVATION

BABY CHANGING STATION
No.15
Scale 1:20

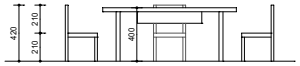
OMIT



PLAN



SEC.A-A



SIDE ELEVATION

TODDLER CHAIR AND TABLE 2-3 YEARS OLD
No.16
Scale 1:20

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PROVINCIAL GOVERNMENT
WESTERN CAPE
DIRECTORATE: PROFESSIONAL & PROJECT MANAGEMENT SERVICES

Department:
INFRASTRUCTURE

Client:
STELLENBOSCH MUNICIPALITY

Project name:
STELLENBOSCH PLEIN STREET LIBRARY

Signed by:
Client:

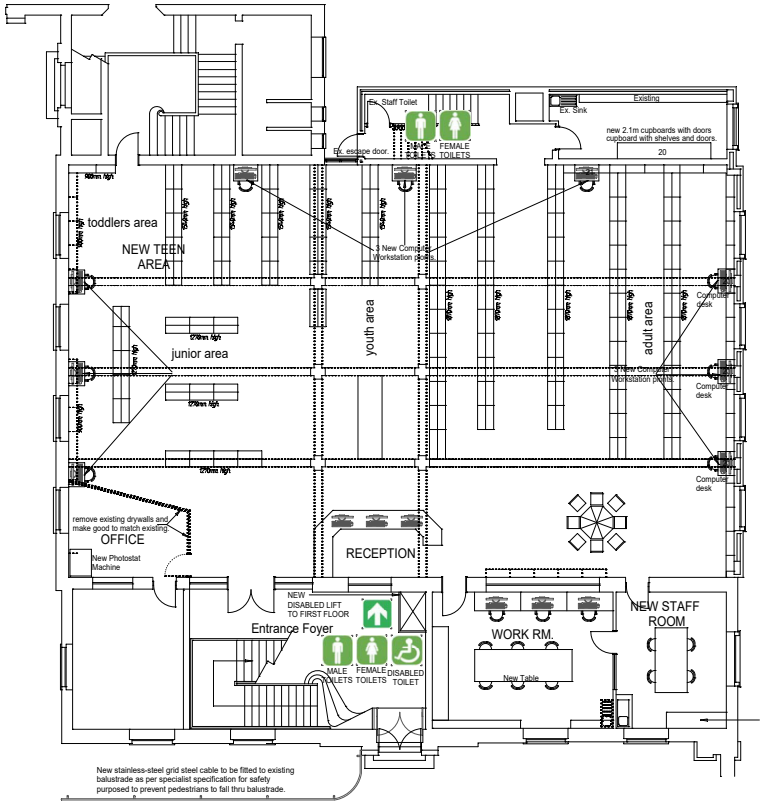
Architect:

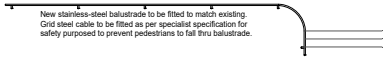
Drawing title:
STELLENBOSCH LIBRARY SHELVING DETAILS AND FURNITURE

Date:	Oct 2024	Designed:	-
Stage:	4	Drawn:	N.F
Scale:	INDICATED	Checked:	B.V
Size:	A1	Revision:	02

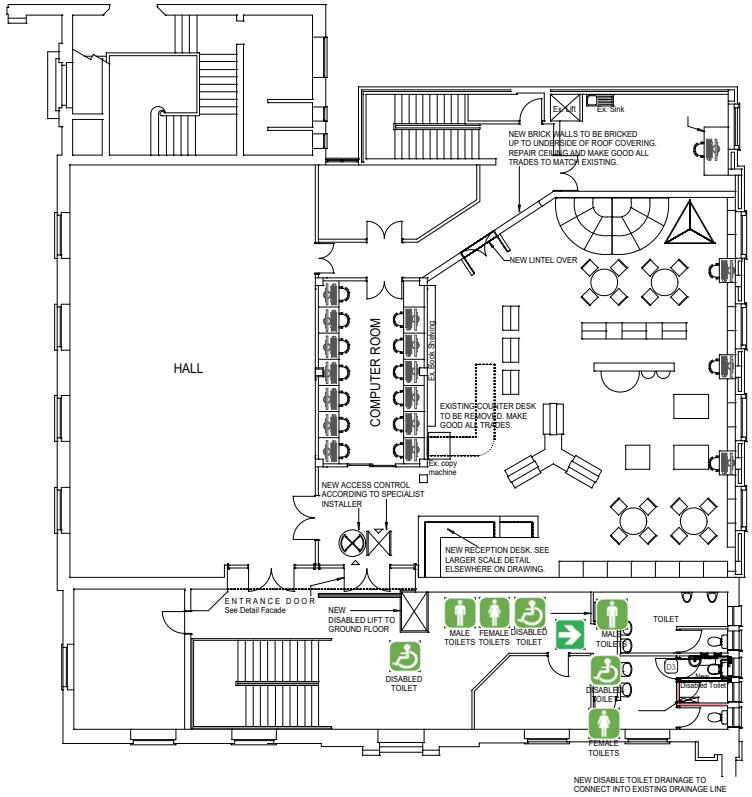
Dwng. No:
STEL-LIB/2024/09/11 - 05

Issue:
STAGE 4





GROUND FLOOR: ABLUTION SIGNAGE
Scale 1:100



FIRST FLOOR: ABLUTION SIGNAGE
Scale 1:100

Western Cape Government
FOR YOU

PROVINCIAL GOVERNMENT
WESTERN CAPE
DIRECTORATE: PROFESSIONAL & PROJECT MANAGEMENT SERVICES

Department:
INFRASTRUCTURE

Client:
STELLENBOSCH MUNICIPALITY

Project name:
STELLENBOSCH PLEIN STREET LIBRARY

Signed by:
Client:

Architect:

Drawing title:
ABLUTION SIGNAGE: GROUND & FIRST FLOOR.

Date:	Oct 2024	Designed:	-
Stage:	4	Drawn:	N.F
Scale:	INDICATED	Checked:	B.V
Size:	A1	Revision:	02

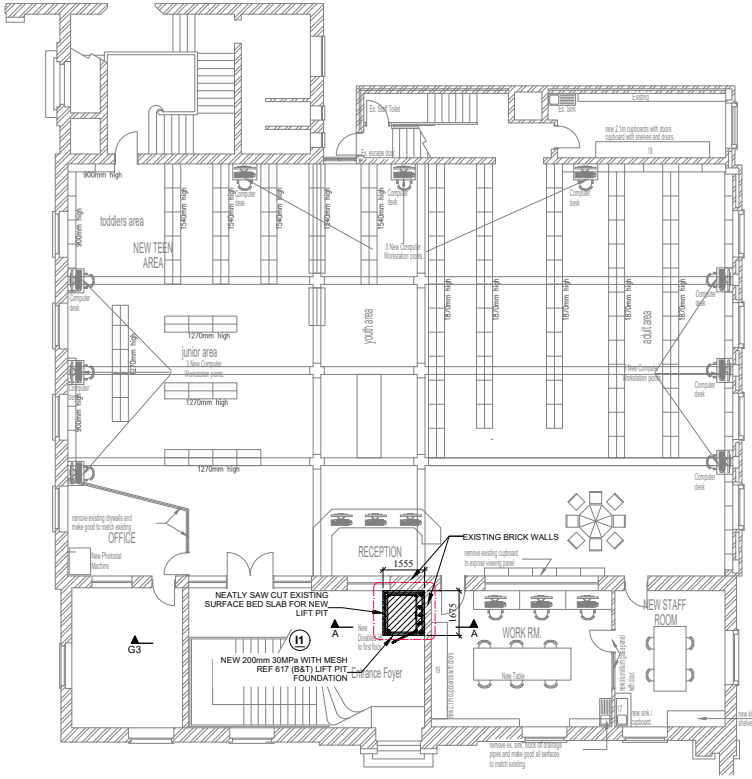
Drwg. No:
STEL-LIB/2024/09/11 - 06

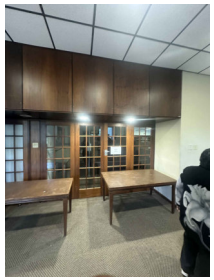
Issue:
STAGE 4

31. APPENDIX B – Structural Engineering Specifications and Drawings

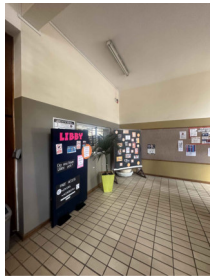
List of Drawings:

- 1195000-500 – GROUND AND FIRST FLOOR LAYOUT LIFT PIT LAYOUTS AND DETAILS

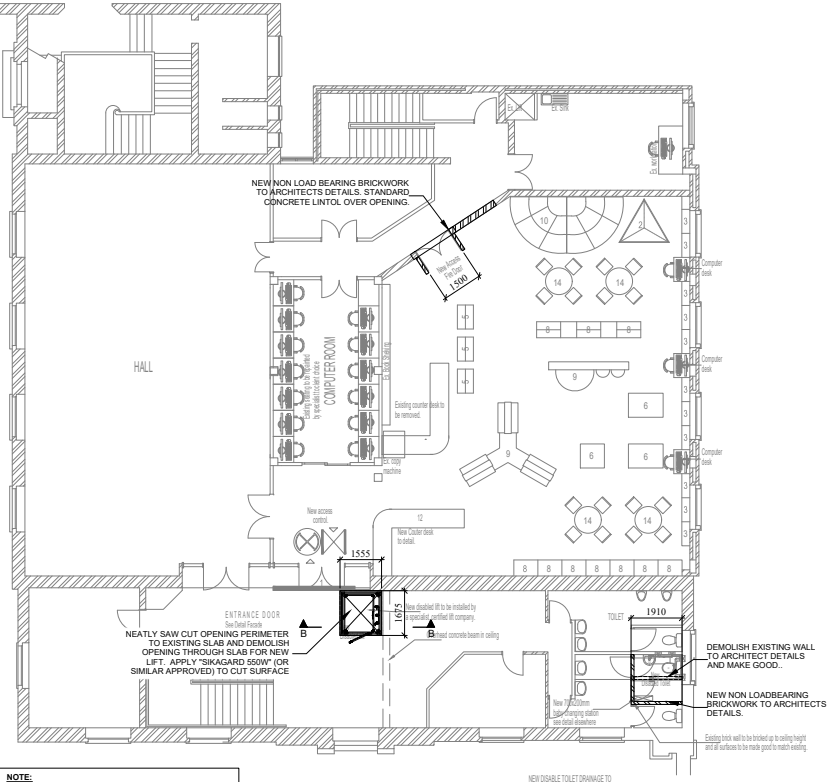




I2



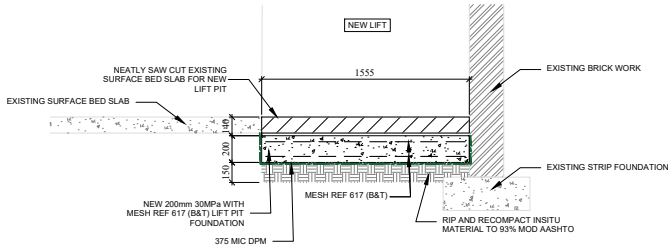
I1



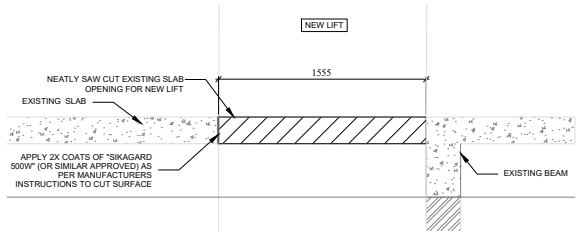
GROUND FLOOR LEVEL LAYOUT
1:100

NOTE:
NON DESTRUCTIVE CONCRETE SCAN EXISTING SLAB AREA FOR EXISTING REINFORCEMENT LAYOUT CONFIRMATION. PROVIDE TO ENGINEER FOR APPROVAL PRIOR CUTTING OPENING. SEE DETAIL RS1

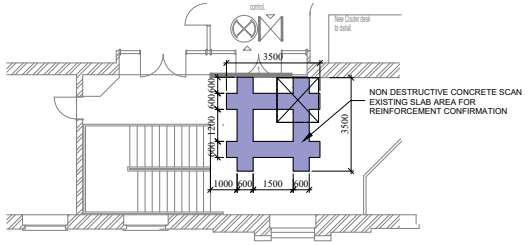
FIRST FLOOR LEVEL LAYOUT
1:100



SECTION A-A
1:20

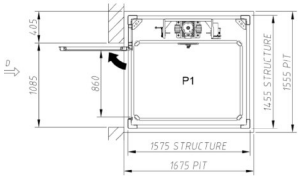


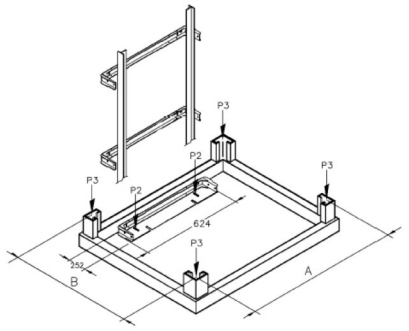
SECTION B-B
1:20



DETAIL RS1 - NON DESTRUCTIVE CONCRETE SCAN LAYOUT (FIRST FLOOR CONCRETE SLAB)
1:100

LIFT DETAILS - E10 VERTICAL PLATFORM LIFT





PROJECT DATA

Load capacity =	400	kg	A =	1430	mm
Platform width =	1400	mm			
Platform depth =	1000	mm	B =	1310	mm
Travel =	4000	mm			

"P2" IS THE MAXIMUM LOAD WITH THE SAFETY GEAR IN ACTION ON THE RAIL
THE LOAD IS DISTRIBUITED ON THE BASE PLATE (624x252)

P2 = 1563 Kg

"P3" SELF SUPPORTING STRUCTURE LOADS WITH GLASS LIFT SHAFTS ON THE FOUR SIDES OF THE STRUCTURE

P3 = 1174 Kg

NOTES:

1. CONCRETE STRENGTH: 30 MPa AT 28 DAYS.
2. COARSE AGGREGATE : 19mm.
3. PROPER CONCRETE SPACERS TO BE USED.
4. REINFORCING LAP LENGTH = 50 x Ø.
5. NO CONCRETE TO BE CAST WITHOUT THE APPROVAL OF THE ENGINEER.

QUALITY CONTROL TESTS TO BE DONE

A. COMPACTION TESTS IN-SITU:
1. DCP TEST REQUIRED TO CONFIRM INSITU SOIL COMPACTION.
2. TEST POSITION AT NEW LIFT PIT.
3. TESTS TO BE PERFORMED BY A SANAS APPROVED LABORATORY.
4. ALL COMPACTION RESULTS TO BE SUPPLIED TO THE ENGINEER AND MUST BE APPROVED BY THE ENGINEER.

B. CONCRETE CUBE TESTS:
1. 1 SET OF CUBES (2) REQUIRED FOR CONCRETE PLACED.
2. TESTS TO BE PERFORMED BY A SANAS APPROVED LABORATORY.
3. ALL CONCRETE TEST CUBES MUST BE SUPPLIED TO THE ENGINEER WITHIN 7 DAYS OF REACHING AGE (7 AND 28 DAYS) FOR APPROVAL.

REINFORCEMENT COVER:

ELEMENT	COVER
FOUNDATION	50mm ALL AROUND

FOR TENDER

0 — 100

100 MILLIMETRES ON ORIGINAL DRAWING

A BEFORE CONTRACT COMMENCES
A AFTER CONTRACT HAS COMMENCED

Nr.	DATE	AMENDMENTS
A	07/08/2024	FOR CONCEPT
B	12/09/2024	FOR DETAIL DESIGN
C	25/10/2024	FOR TENDER

CLIENT

STELLENBOSCH
STELLENBOSCH • PNIEL • FRANSCHHOEK
MUNISIPALITEIT • UMASIPALA • MUNICIPALITY

V3 CONSULTING ENGINEERS
T : +27 (0) 21 045 0060
E : capetown@v3consulting.co.za
Unit 214 & 215, The Cliffs Office Block 1, Niagara Way, Tyger Falls, Carl Cronje Drive, Bellville, Cape Town, 7530
CESA

PROJECT

UPGRADE OF PLEIN STREET LIBRARY

DRAWING DESCRIPTION : STRUCTURAL

GROUND AND FIRST FLOOR LAYOUT
LIFT PIT LAYOUTS AND DETAILS

DRAWING NO.

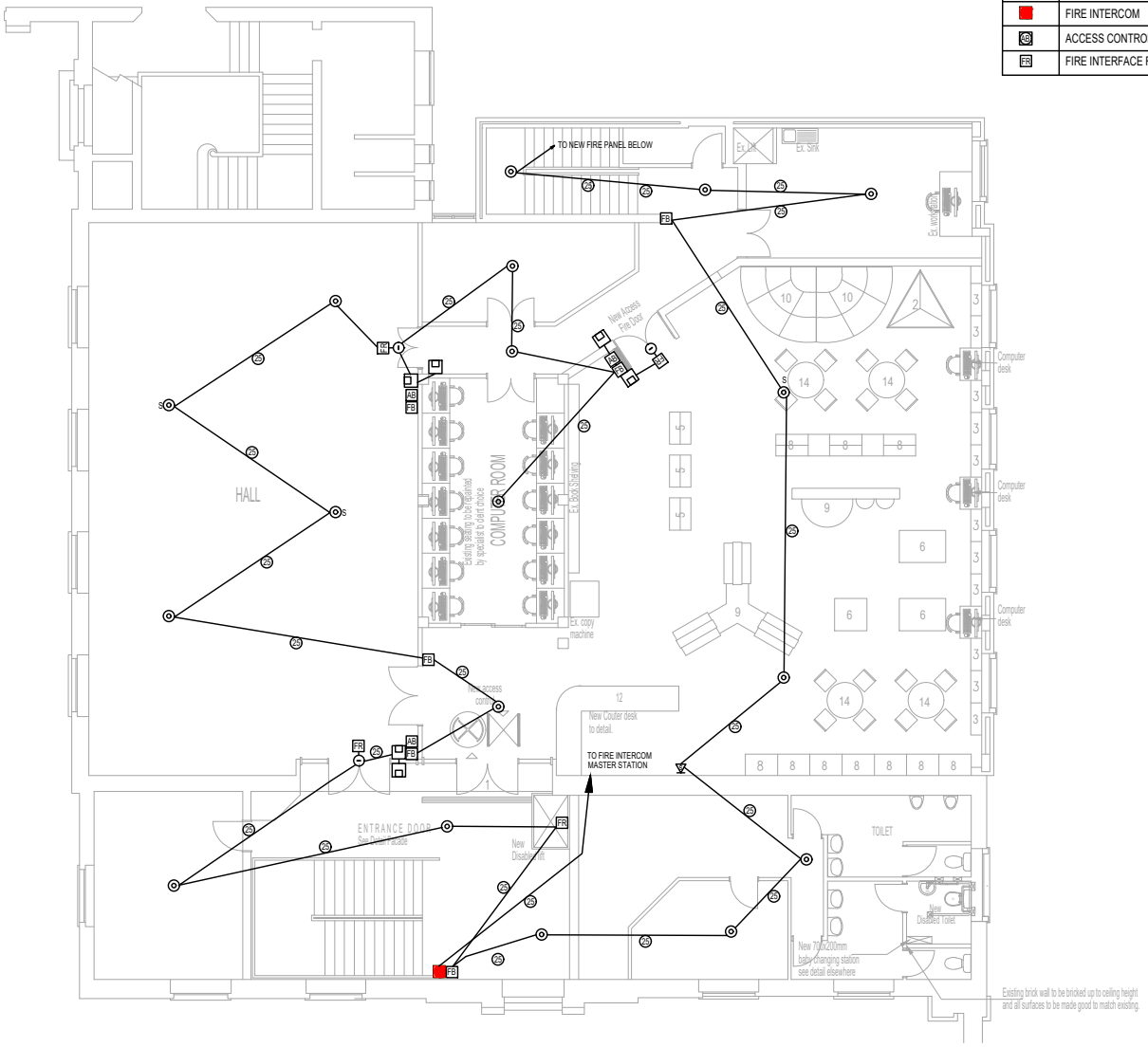
1195000-500 (C)

DESIGNED:	LM		CHECKED:	MdB	
DRAWN:	LM		SCALE:	AS SHOWN	A1
APPROVED:	M DE BEER PR ENG 20160054		DATE:	2024-10-25	
FILE PATH:	V3 \ CPT \ 1195000 \ 04 DOC PROC \ 04 DRAW				

32. APPENDIX C – Electrical Engineering Specifications and Drawings

List of Drawings:

- E5317-FG: GROUND FLOOR: FIRE DETECTION LAYOUT
- E5317-F1: FIRST FLOOR: FIRE DETECTION LAYOUT
- E5317-LG: GOUND FLOOR: LIGHTING LAYOUT
- E5317-L1: FIRST FLOOR: LIGHTING LAYOUT
- E5317-PG: GROUND FLOOR: POWER LAYOUT
- E5317-P1: FIRST FLOOR: POWER LAYOUT



LEGEND

FP	ADDRESSABLE FIRE PANEL
	FIRE SIREN AND STROBE
	ADDRESSABLE SMOKE DETECTOR
S	ADDRESSABLE SMOKE DETECTOR WITH SIREN
	FIRE BREAK GLASS UNIT
	FIRE INTERCOM
	ACCESS CONTROL BREAK GLASS UNIT
FR	FIRE INTERFACE RELAY

NOTES

REVISIONS/HERSIENINGS

REV HER	DETAIL	DATE DATUM	CAD CORRECT.

Client
Klient

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George 6530
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Fax:(044)874-6274

Krige Street/Straat 20
Stellenbosch 7600
Tel.(021)887-1859

Signed / Geteken ..... Pr.Tech.Eng. / Pr.Teg.Ing.

Project Title / Projek titel

PLEIN STREET LIBRARY

Drawing Title / Tekeningtitel

FIRST FLOOR: FIRE DETECTION LAYOUT

Scale / Skaal	Date / Datum	Drawn / Geteken	Designed / Ontwerp
1:100	2024-08-06		G.F.A.

Client Drawing Number / Kliënt Tekeningnommer

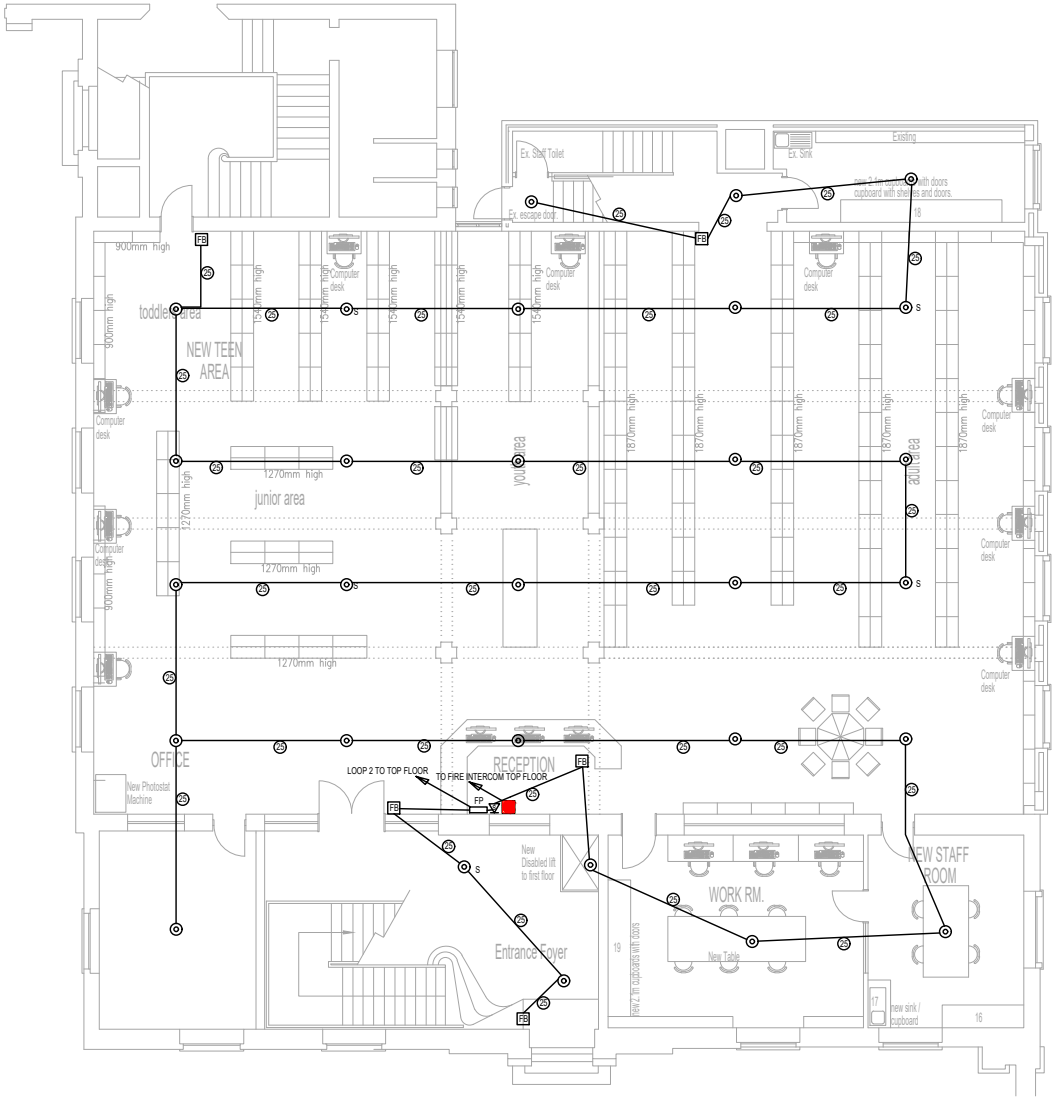
Drawing Number / Tekeningnommer

E5317/F1

Revision No. / Hersiening Nr.

LEGEND

FP	ADDRESSABLE FIRE PANEL
	FIRE SIREN AND STROBE
	ADDRESSABLE SMOKE DETECTOR
S	ADDRESSABLE SMOKE DETECTOR WITH SIREN
FB	FIRE BREAK GLASS UNIT
	FIRE INTERCOM
ACB	ACCESS CONTROL BREAK GLASS UNIT
FR	FIRE INTERFACE RELAY



NOTES

REVISIONS/HERSIENINGS

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Client
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Signed
Geteken ..... Pr.Tech.Eng. / Pr.Teg.Ing.

Project Title
Projek titel

PLEIN STREET LIBRARY

Drawing Title
Tekeningtitel

GROUND FLOOR: FIRE DETECTION LAYOUT

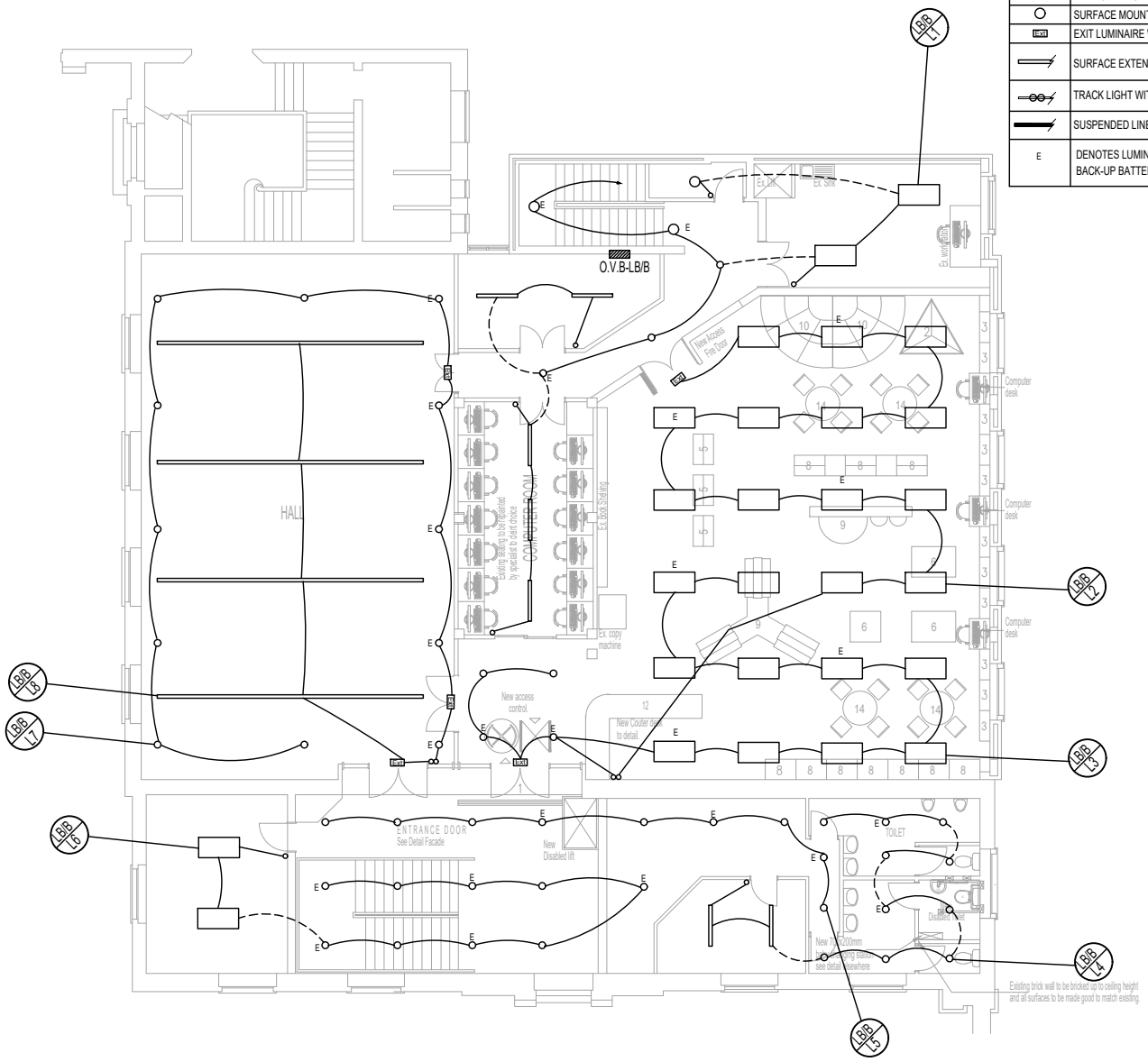
Scale Skaal	Date Datum	Drawn Geteken	Designed Ontwerp
1:100	2024-08-06		G.F.A.

Client Drawing Number
Klient Tekeningnommer

Drawing Number
Tekeningnommer

E5317/FG

Revision No.
Hersiening Nr.



LEGEND

	1200 x 600mm RECESSED LED PANEL
	1200mm SURFACE MOUNTED LINEAR LED
	LED DOWN LIGHT
	SURFACE MOUNTED LED BULK HEAD
EXIT	EXIT LUMINAIRE WITH DOWN LIGHT
	SURFACE EXTENDABLE LUMINAIRE
	TRACK LIGHT WITH 2 X LED SPOTS
	SUSPENDED LINEAR LED
E	DENOTES LUMINAIRE WITH 1HR EMERGENCY BACK-UP BATTERY

NOTES

REVISIONS/HERSIENINGS

REV HER	DETAIL	DATE DATUM	CAD CORRECT.

Client
Klient

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Signed / Geteken ..... Pr.Tech.Eng. / Pr.Teg.Ing.

Project Title / Projek titel

PLEIN STREET LIBRARY

Drawing Title / Tekeningtitel

FIRST FLOOR: LIGHTING LAYOUT

Scale / Skaal	Date / Datum	Drawn / Geteken	Designed / Ontwerp
1:100	2024-08-06		G.F.A.

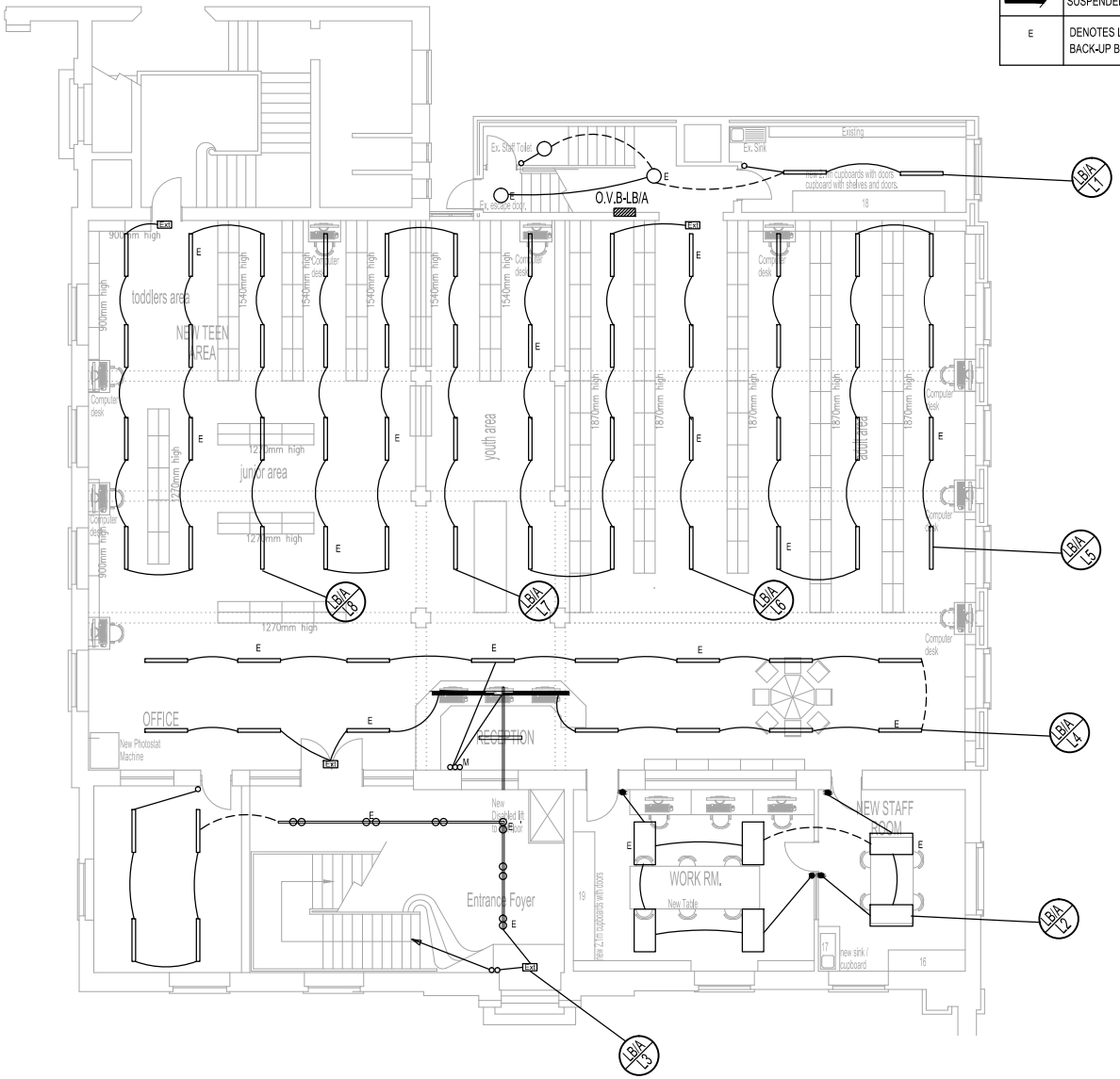
Client Drawing Number / Kliënt Tekeningnommer

Drawing Number / Tekeningnommer

E5317/L1

Revision No. / Hersiening Nr.

LEGEND	
	1200 x 600mm RECESSED LED PANEL
	1200mm SURFACE MOUNTED LINEAR LED
	LED DOWN LIGHT
	SURFACE MOUNTED LED BULK HEAD
EXIT	EXIT LUMINAIRE WITH DOWN LIGHT
	SURFACE EXTENDABLE LUMINAIRE
	TRACK LIGHT WITH 2 X LED SPOTS
	SUSPENDED LINEAR LED
E	DENOTES LUMINAIRE WITH 1HR EMERGENCY BACK-UP BATTERY



NOTES

REVISIONS/HERSIENINGS

REV HER	DETAIL	DATE DATUM	CAD CORRECT.

Client
Klient

de villiers & moore
CONSULTING ENGINEERS
Electrical, Mechanical, Fire

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Signed
Geteken ..... Pr.Tech.Eng.
Pr.Teg.Ing.

Project Title
Projek titel

PLEIN STREET LIBRARY

Drawing Title
Tekeningtitel

GROUND FLOOR: LIGHTING LAYOUT

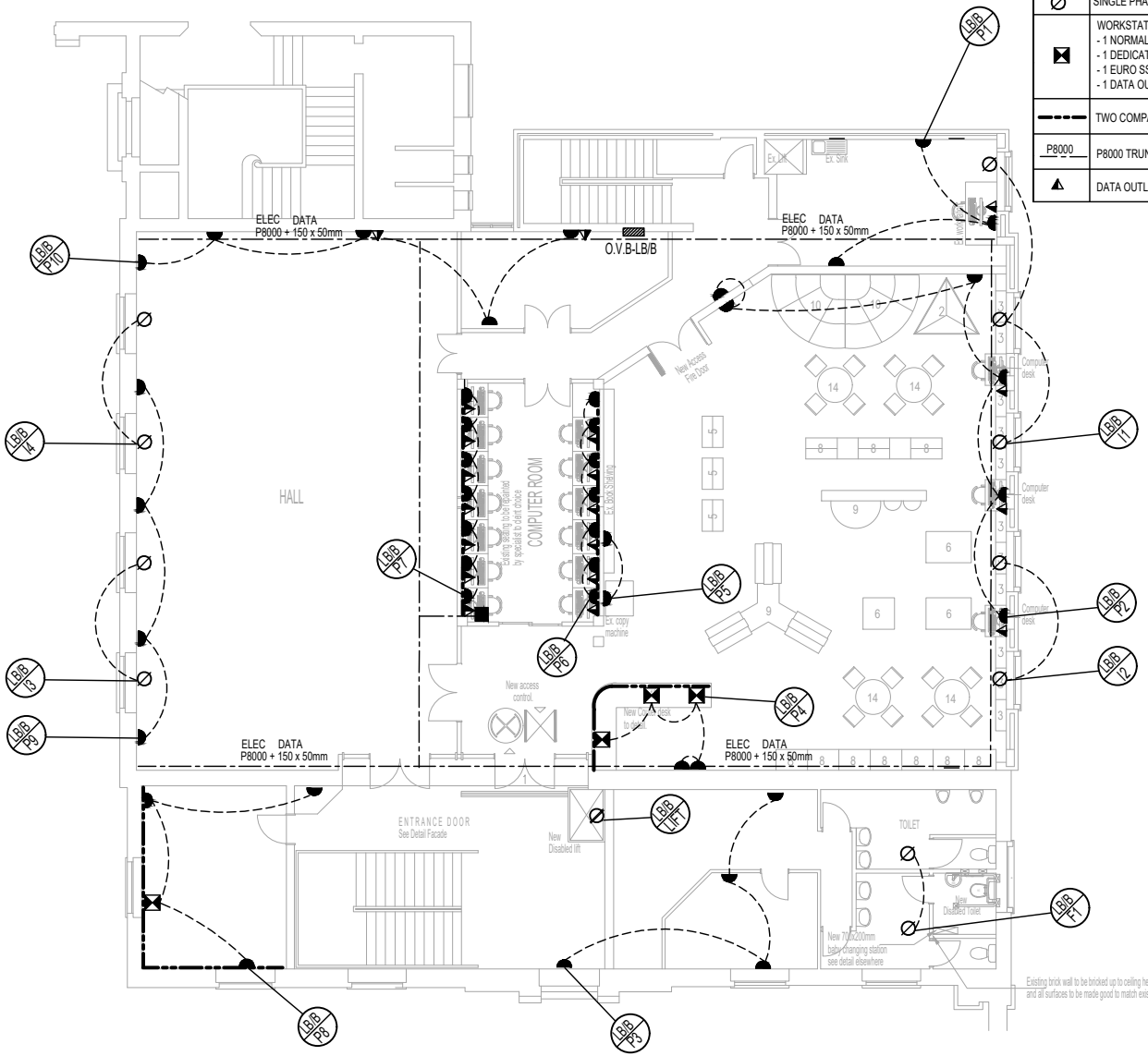
Scale Skaal	Date Datum	Drawn Geteken	Designed Ontwerp
1:100	2024-08-06		G.F.A.

Client Drawing Number
Kliënt Tekeningnommer

Drawing Number
Tekeningnommer

E5317/LG

Revision No.
Hersiening Nr.



LEGEND

▨	DISTRIBUTION BOARD'
◠	COMBINATION SOCKET OUTLET WITH SANS 164-1 AND 164-2
◢	DEDICATED SOCKET OUTLET
⊘	SINGLE PHASE ISOLATOR
⊠	WORKSTATION - 1 NORMAL SSO - 1 DEDICATED SSO - 1 EURO SSO - 1 DATA OUTLETS
▬ ▬ ▬	TWO COMPARTMENT POWER SKIRTING
P8000	P8000 TRUNKING INSTALLED AT HIGH LEVEL
▲	DATA OUTLET

NOTES

REVISIONS/HERSIENINGS

REV HER	DETAIL	DATE DATUM	CAD CORRECT.

Client
Klient

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Signed / Geteken ..... Pr.Tech.Eng. / Pr.Teg.Ing.

Project Title
Projek titel

PLEIN STREET LIBRARY

Drawing Title
Tekeningtitel

FIRST FLOOR:
POWER LAYOUT

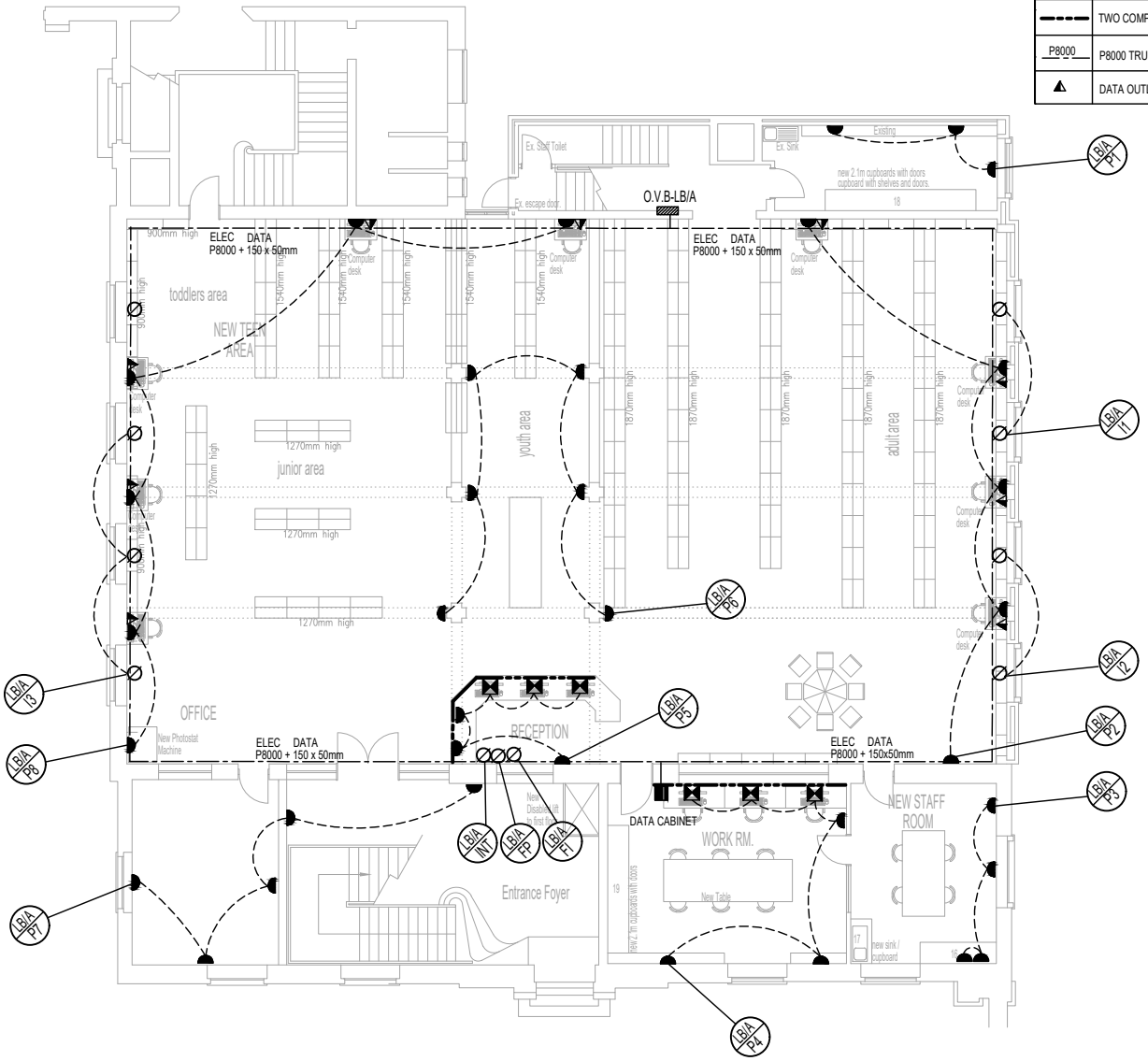
Scale Skaal	Date Datum	Drawn Geteken	Designed Ontwerp
1:100	2024-08-06		G.F.A.

Client Drawing Number
Klient Tekeningnommer

Drawing Number
Tekeningnommer

E5317/P1

Revision No.
Hersiening Nr.



LEGEND

	DISTRIBUTION BOARD'
	COMBINATION SOCKET OUTLET WITH SANS 164-1 AND 164-2
	DEDICATED SOCKET OUTLET
	SINGLE PHASE ISOLATOR
	WORKSTATION - 1 NORMAL SSO - 1 DEDICATED SSO - 1 EURO SSO - 1 DATA OUTLETS
	TWO COMPARTMENT POWER SKIRTING
P8000	P8000 TRUNKING INSTALLED AT HIGH LEVEL
	DATA OUTLET

NOTES

REVISIONS/HERSIENINGS

REV HER	DETAIL	DATE DATUM	CAD CORRECT.

Client
Klient

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Signed
Geteken
Pr.Tech.Eng.
Pr.Teg.Ing.

Project Title
Projek titel

PLEIN STREET LIBRARY

Drawing Title
Tekeningtitel

GROUND FLOOR: POWER LAYOUT

Scale Skaal	Date Datum	Drawn Geteken	Designed Ontwerp
1:100	2024-08-06		G.F.A.

Client Drawing Number
Klient Tekeningnommer

Drawing Number
Tekeningnommer

E5317/PG

Revision No.
Hersiening Nr.

de villiers & moore
CONSULTING ENGINEERS
Electrical, Mechanical, Fire

TENDER

PROJECT SPECIFICATION

FOR ELECTRICAL AND FIRE DETECTION INSTALLATION FOR THE UPGRADE OF PLEIN STREET LIBRARY STELLENBOSCH

CONSULTING ELECTRICAL ENGINEERS:

DE VILLIERS & MOORE
P O BOX 1175
STELLENBOSCH
7599

TEL: (021) 887 1859
FAX: (021) 887 6988
E-Mail: Stellenbosch@devmoore.co.za
Web Page: www.devmoore.co.za

STELLENBOSCMUNICIPALITY
STELLENBOSCH
7600

REF: E5317
DATE: OCTOBER 2024

PART B

ELECTRICAL INSTALLATION

PART B 1

SPECIFICATION GENERAL REQUIREMENTS

ELECTRICAL INSTALLATION

CLAUSE	DESCRIPTION	PAGE

---o0o---

PART B 1

SPECIFICATION GENERAL REQUIREMENTS

ELECTRICAL INSTALLATION

1 GENERAL

This section covers the general technical requirements for the equipment, materials, installation, testing, commissioning and maintenance of the electrical installation. These requirements shall be read in conjunction with "DETAILED REQUIREMENTS AND SCOPE OF WORK". Should any discrepancies or contradictions exist between this General Specification and the Detailed Specification then the latter shall take precedence.

2 DRAWINGS AND SPECIFICATIONS

The Contractor shall conform minutely to the drawings and Specifications and to any orders in writing which the Engineer may supply during the progress of the installation. Should any differences or contradictions exist in the documents or sub-sections of the documents, or should contradictions or differences exist between the scales, figures or dimensions used in the documents, it shall be the Contractor's responsibility to obtain clarification thereof from the Engineer, which written clarification shall be final and binding.

The positions of equipment shown on the drawings are approximate, and are to be checked by the Contractor before installation.

3. REGULATIONS

a) The installation shall be erected and tested in accordance with latest revised editions of the following regulations:

   i) The Machinery and Occupational Safety Act.

   ii) The Code of Practice for the Wiring of Premises, SABS 0142.

b) It shall be assumed that the Contractor is conversant with the above-mentioned requirements. Should any requirements, by-law or regulation, which contradicts the requirements of this document, apply or become applicable during erection of the installation, such requirement, by-law or regulation shall overrule this document and the Contractor shall immediately inform the Engineer of such a contradiction. Under no circumstances shall the Contractor carry out any variations to the installation in terms of such contradictions without obtaining the written permission to do so from the Engineer.

4. MATERIALS AND WORKMANSHIP

a) All materials and equipment required shall comply with the requirements of the appropriate specification of the South African Bureau of Standards, as amended and where the latter is not available it shall comply with the requirements of the appropriate British Standard Specification as amended, unless otherwise specified. All materials shall be of the best quality, unused, in good condition and complete.

The following SABS specifications apply:

Subject	SABS NO.
Busbar trunking	784
Busbars	1195
Cables - Heat resisting	529
Cables - Impregnated paper	97
Cables - PVC insulated	1507
Cables - XLPE	1339
Cables - Aerial Bundle	1416
Circuit breakers (MCCB's)	156
Conduit - Non-metallic	950
Conduit - Plain end	1007
Conduit - Screwed	162
Contactors	1092
Dimmers for lighting	1012
Distribution boards	1180
Distribution transformers	780
Earth-leakage units	767
Hot dip galvanising	763
Instruments - indicating	1299
Mini-substations	1029
Outlet boxes	1085
Outlet box cover plates	1084
Paint - Baked enamel	783
Paint - Gloss enamel	630
Preparation of steel for painting	064
Socket outlets & plugs - domestic	164
Socket outlets & plugs - industrial	1239
Switch isolators	152
Switches for lighting & appliances	163
Trenching & cable laying (as pipes)	1200
Wireways for cables	1197
Wiring of premises	0142

b) The installation shall be executed by Artisans in possession of an Installation Electrician's Certificate of Registration.

c) The Contractor shall, where requested to do so, submit samples of equipment and material to the Engineer for approval prior to installation. Samples may be retained in the Engineer's possession until the contract is completed after which they will be returned.

d) Any material considered faulty or incorrectly erected or badly fixed shall be replaced by the Contractor without any additional charges. The Contractor shall be held responsible for the correctness of all dimensions as set out.

e) The Engineer will inspect the installation from time to time during the progress of the work. Discrepancies will be pointed out to the Contractor and these shall be remedied at the Contractor's expense. Under no circumstances shall these inspections relieve the Contractor of his obligations in terms of these documents.

5. ARRANGEMENTS WITH THE SUPPLY AUTHORITY

a) The Contractor shall give all notices required by and pay all necessary fees, including any inspection fees, which may be due to the local Supply Authority unless specified to the contrary.

On production of the official account or receipt, only the nett amount of the fee charged by the Supply Authority for connection of the installation to the supply mains will be refunded to the Contractor by the Client.

b) It shall be the responsibility of the Contractor to make the necessary arrangements with the local Supply Authority at his own cost and to supply the labour, equipment and means to inspect, test and commission the installation to the satisfaction of the Local Supply Authorities.

c) The Contractor shall supply and install all notices and warning signs that are required by the relevant laws, regulations and/or the documents.

6. TESTING THE INSTALLATION

a) After completing the electrical installation or any particular section thereof, the Contractor shall provide all the necessary test equipment and assistance, so that the electrical installation can be tested to the complete satisfaction of the Engineer.

b) Tests of earth continuity, resistance, balancing of load on phases and polarity shall be done as laid down in the SABS 0142.

c) The Electrical Contractor shall make arrangements for all inspections and tests of the installation that may be required by the Engineer or the Supply Authority. He will be required to provide all instruments and equipment for these tests within the contract price.

7. CONDUIT

7.01 Conduit and Accessories

a) Conduit shall be PVC, galvanised steel or painted steel as specified in the Project Specification or on the drawings.

b) As an alternative to threaded conduit, plain-end (unthreaded) metallic conduit with accessories may be used. However, the Contractor shall be responsible for obtaining the approval of the local Authorities for the use of this system. The system must also be submitted to the Engineer for approval. All ends of plain-end conduit shall be treated with an adhesive recommended by the manufacturer, immediately prior to connection to accessories.

c) Flexible conduit shall be constructed from galvanised steel and shall be PVC sheathed equal or similar to the "KOPEX" manufacture. Flexible conduit and adaptors shall comply with BS 731 Part 1 where applicable. Flexible conduit shall only be used as specified and shall be installed in accordance with SABS 0142.

d) Circular boxes shall be of the long spout pattern, manufactured of malleable cast iron or pressed steel galvanised. The two cover fixing holes shall be diametrically opposite each other, drilled and tapped at 50 mm centres. Junction, draw-in and inspection boxes shall be of adequate size and shall be supplied with heavy gauge metal cover plates.

e) All switch boxes and socket outlet boxes shall be manufactured of pressed galvanised steel of at least 1 mm thickness. All boxes shall be fitted with the necessary lugs to suit standard flush mounted switches and socket outlets.

f) Only custom made conduit accessories shall be used with non-metallic conduit to ensure adaptability and a proper fit. The conduit system and accessories shall be approved by the Engineer.

7.02 Installation of Conduit

7.02.01 Installation in Concrete Slabs

a) In order not to delay building operations, the Contractor shall ensure that all conduits and accessories which are to be cast in concrete are placed in position in good time. The Contractor or his representative shall be in attendance when the concrete is cast.

b) As far as possible, conduits shall not be installed across expansion joints. Where this is unavoidable a conduit expansion joint shall be provided.

c) All round conduit boxes to be used in concrete, shall be of the deep type. No elbows and sharp bends will be allowed in the concrete slabs. Draw boxes shall be installed, so as to ensure that there are no more than two 90 degree bends between one end of a run and a draw box, or between draw boxes, and shall be so arranged, that they are accessible after completion of the work.

7.02.02 Surface Mounted Conduit

a) Conduits shall be concealed in the building finishes as far as possible. Where this is not possible or where otherwise specified, surface mounted conduits shall be installed in vertical or horizontal runs and only straight lengths shall be employed.

b) Conduit shall be installed on approved spacer saddles, which shall be firmly secured to the wall in accordance with SABS 0142.

c) The crossing of conduits shall be avoided. If such a crossing is necessary, one conduit only is to be off-set to permit the other conduit to run straight.

d) Only approved wall plugs shall be used.

e) All surface mounted conduits and accessories shall be painted with high quality enamel paint or as otherwise specified. The colour shall comply with the colour code specified for the installation or where no code has been specified, shall match the colour of the surrounding finishes.

7.02.03 Conduits in Roof Spaces

a) The installation of conduit in the open roof spaces above ceilings other than concrete, shall be carried out before the ceilings are painted.

b) Conduit in roof spaces shall be installed according to the shortest possible route and shall be secured at intervals not exceeding 1,2 m by means of saddles fixed to the roof timbers.

Draw boxes with metal covers shall be provided where required and shall be installed in such a way, that they can easily be inspected from above.

c) Under flat roofs in false ceilings or where there is less than 900 mm clearance, or in instances where the ceilings are insulated with glass wool or other insulating material impeding access, the conduit shall be installed in a manner which allows for wiring from below the ceilings. (Loop-in system)

7.02.04 Conduits in Brickwork

a) Conduits in brickwork shall be built into the wall and shall be offset to allow outlet boxes to be flush with the surface of the wall. Extension boxes will not be allowed.

b) Chasing of brickwork shall be carried out by the Electrical Contractor, who must ensure that the chase will not cause structural problems to the wall.

7.02.05 Conduit Terminations

a) Conduits shall be connected directly to draw boxes with spouted connections. Conduits shall be screwed tightly home and no threads shall be visible.

b) Threaded conduits shall be terminated by means of a brass female bush and two locknuts in pressed steel switchboards and distribution boxes, cable ducts, power skirting, etc. The conduit end shall only project far enough through the entry hole to accommodate the bush and locknut.

c) All threaded conduit ends shall be reamed and all joints tightly screwed. Only approved couplings shall be used. Running joints with long threads shall be kept to a minimum and locknuts shall be provided to ensure a strong mechanical and a continuous electrical joint.

d) All threaded joints shall be painted with a rust preventative. Where the galvanising has been damaged, the area shall first be cleaned and a coat of zinc base paint applied subsequently. Additional coats of paint shall only be applied after the undercoat has completely dried. All surface mounted non-galvanised metallic conduit must be painted.

7.02.06 Installation of Plain-end Metallic Conduit

As an alternative to the screwed conduit, plain-end conduit may be installed subject to the following additional conditions:

a) It shall comply with SABS 1007.

b) Bending and setting of plain-end conduit must be done with special benders and apparatus manufactured for this purpose and which are obtainable from the suppliers of the system. Damaged conduit resulting from the use of incorrect bending apparatus shall be completely removed and any wiring already drawn into such damaged conduits shall be completely renewed at the Contractor's expense.

c) Screwed conduit must be used in the following instances:

i) In flameproof installations.

ii) Load bearing conduit.

iii) For the suspension of luminaires

7.02.07 Installation of Non-metallic Conduit

Where specified for a particular service, non-metallic conduit may be installed under the following conditions:

a) All non-metallic conduits shall comply fully with SABS 950 and shall be installed in accordance with Appendix C of the same specification as well as SABS 0142.

b) Insulated heat-resistant boxes shall be used for outlets of totally enclosed luminaires and other fittings where excessive temperatures are likely to occur.

c) Luminaires and other fittings shall not be supported by non-metallic conduit or conduit boxes. These fittings shall be secured to the surrounding structure in a way that is acceptable to the Engineer. Boxes for incandescent fittings shall be installed rigidly and shall not allow the base of the fitting to move or turn (when screw-in lamp glasses are used).

d) The conduit shall be supported and fixed with saddles with a maximum spacing of 1 m, even in roof spaces (refer to SABS 0142). The Contractor shall supply and install all additional supporting timbers required.

e) An adhesive recommended by the manufacturer shall be applied to all ends immediately prior to connection to accessories.

f) It shall be possible to rewire the completed installation in the future without difficulty.

7.02.08 Installation of Flexible Conduit

a) In installations where the equipment has to be moved frequently to enable adjustment during normal operation, for the connection of motors or any other vibrating equipment, for the connection of thermostats and sensors on equipment, for stove connections and where otherwise required by the Engineer, flexible conduit shall be used for the final connection to the equipment. The final connection to luminaires on suspended ceilings shall be by flexible conduit.

b) Flexible conduit shall preferably be connected to the remainder of the installation by means of a draw box. The flexible conduit may be connected directly to the end of a conduit if an existing draw box is available within 2 m of the junction and if the flexible conduit can easily be rewired.

8. WIRING OF CONDUIT

a) Wiring may only be carried out after the conduit installation for a sub distribution board has been completed, but shall be finished before paintwork commences. No wires shall be drawn in before the conduits have been thoroughly cleaned of debris and moisture and fitted with the necessary bushes.

b) PVC insulated or equivalent copper conductors and green PVC insulated copper earth conductors shall be used exclusively.

The conductors shall be of high conductivity annealed stranded copper and the cores may be shaped or circular.

The insulation shall be general purpose PVC, 600/1 000 V grade.

c) Separate circuits are to be employed for lighting, power and plug circuits, with a maximum of two circuits per conduit. Conduit capacities as laid down in SABS 0142 shall in no case be exceeded.

d) All phase conductors shall be red, PVC insulated. Neutral conductors shall be black PVC insulated. All earth conductors shall be green-and-yellow PVC insulated. Switched phase conductors may be of another colour.

e) Wiring shall be executed according to the loop-in system and no joints shall be allowed inside the conduits.

f) When conductors are drawn through conduit, care shall be taken that they are not kinked or twisted. Care shall also be taken that the conductors do not come into contact with materials or surfaces that may damage or otherwise adversely affect the durability of the conductor.

g) When earth continuity conductors are looped between terminals of equipment, the looped conductor ends shall be ferruled with one longer conductor for connection to the equipment earth terminal. This is to ensure that the earth is continuous even with an outlet removed.

h) The following conductor sizes shall be used, except where stated otherwise:

Lighting circuits ..... 1,5 sq mm current conductors plus 1,5 sq mm copper earth conductor

16 Amp socket outlet circuits ..... 2,5 sq mm current conductors plus 2,5 sq mm copper earth conductor

Earthing of socket outlets, sodium vapour fittings and mercury vapour fittings .....2,5 sq mm

Stove circuit single phase ..... 10,0 sq mm current conductors plus 6,0 sq mm copper earth conductor

Stove circuit 3 phase..... 4,0 sq mm current conductors plus 2,5 sq mm copper earth conductor

Hot water cylinder ..... 4,0 sq mm current conductors plus 2,5 sq mm copper earth conductor

For long runs or unusual protection refer to SABS 0142 for load and earth conductor sizes.

9. ARMOURED CABLES

9.01 Low Voltage Cables (600/1 000 Volt)

Low voltage cables shall be rated at 600/1 000 volt and shall be PVC insulated copper conductors/PVC bedded/armoured/black extruded PVC outer sheath. The cables shall be manufactured in accordance with SABS 150 and shall only come from fresh stocks.

10. INSTALLATION OF ARMOURED CABLES

10.01 Cables in Soil

a) The Contractor shall be responsible for all trenching excavations unless specified to the contrary.

b) The Contractor shall acquaint himself with the position of all the existing services such as storm water pipes, water mains, sewer mains, gas pipes, telephone cables, etc. before any excavations are commenced. For this purpose he shall approach the Engineer, the local Municipal Authority and any other authority which may be involved, in writing.

c) The Contractor will be held responsible for damage to any existing services brought to his attention by the relevant authorities and shall be responsible for the cost of repairs.

d) The Contractor shall take all the necessary precautions and provide the necessary warning signs and/or lights to ensure the safety of the public and/or employees on site.

e) The Contractor shall ensure that the excavations will not endanger existing structures, roads, railways, other site constructions or other property.

f) Cable trench shall be excavated to a depth which will allow cables to be laid at the following depths measured from finished ground level to the centre line of the cable:

High voltage cable ..... 900 mm
Low voltage cable ..... 750 mm

The bottom of the trench shall be even and cables shall be bedded in river sand or sifted ground with a 75 mm layer below and a 75 mm layer on top of the cables, before backfilling the trenches. Where more than one cable is laid in the same trench, low voltage cables shall be laid with a minimum spacing of 75 mm between cables and high voltage cables shall be laid with a minimum spacing of 300 mm between cables. In addition cables shall be laid 150 mm from the sides of the trench. Cables shall generally be laid as for pipes in SABS 1200.

g) PVC "danger" strip shall be laid over all cables in accordance with the following prescriptions.

The colour of the danger strip shall be standard electrical orange. The strip shall have a minimum width of 300 mm and thickness of 150 micron and the following shall be printed on the strip at 1 m intervals:

"DANGER" "GEVAAR" "INGOZI"
Electrical "FLASH" sign in accordance with the MOS Act.

The danger strip shall be laid at a depth of 750 mm below ground level in the case of high voltage cables (or just below the low voltage cables). Where two high voltage cables are laid in the same trench, two danger strips must be provided because the cables should be 300 mm apart. An additional danger strip shall be provided over the low voltage cables at a depth of 600 mm below ground level

h) Materials encountered in the excavations for foundations, pipe trenches, manholes, planting of poles, stays and earthing generally shall, unless provision to the contrary is made hereinafter, be classified as in SABS 1200.

In the event of any dispute regarding the classification of material, the Engineer's decision in this connection shall be final.

i) Cables for telephones, communication systems and other low voltage systems (less than 50 V) shall be separated from power cables by at least 1 m. All control or pilot cables shall be laid at least 300 mm from power cables.

11. WALL PLUGS AND FIXING

a) It is the responsibility of the Contractor to position and securely fix conduits, ducts, cables and cable channels, switchboards, fittings and all other equipment or accessories as required for the installation. The Contractor shall provide and fix all supports, clamps, brackets, hangers and other fixing materials.

b) Where the fixing holes in brick or concrete walls are smaller than 10 mm diameter and where the mass of the equipment is less than 10 kg, plastic wall plugs may be used to fix conduits, cables and other equipment. Wooden plugs are not acceptable. Plugs installed in joints between bricks are not acceptable. A masonry drill of the correct size shall be used to drill holes for plugs. Round headed screws of the correct diameter to match the specific plug shall be used throughout.

c) For larger weights, plated expansion bolts shall be used.

12. LIGHT SWITCHES

The Contractor shall provide and install all the light switches.

a) All switches shall be suitable for mounting in 100 x 50 x 50 mm boxes, shall comply with SABS 163 and shall bear the SABS mark.

b) Switches shall be of rocker operated micro gap type rated at 16 A, 220/250 V.

c) Switches shall have protected terminals for safe wiring.

d) Watertight switches shall be used on exterior walls.

e) Ceiling switches shall be rated at 10 A, 220/250 V and shall be suitable for ceiling mounting on a round conduit box.

13. SOCKET OUTLETS

The Contractor shall provide and install all the socket outlets.

13.01 Flush and Surface Mounted Switched Sockets

a) All switched socket-outlets shall be suitable for mounting in 100 x 100 x 50 mm or 100 x 50 x 50 mm boxes, shall comply with SABS 164 and shall bear the SABS mark.

b) Switches shall be of the rocker operated micro gap type rated at 16 A, 220/250 V.

c) Terminals shall be enclosed for safe wiring.

d) Safety shutters shall be provided on live and neutral openings.

13.02 Installation of Light Switches and Socket Outlets

a) Switches and socket outlets shall be accurately positioned in accordance with the drawings. It is the Contractor's responsibility to ensure that all outlets are installed level and square, at the correct height from the floor and at the correct position relative to building lines and equipment positioned as specified. It is the Contractor's responsibility to determine the correct final floor level and ceiling level in conjunction with the Main Contractor.

b) All switches and socket outlets shall be fitted with standard metal cover plates. The colours of cover plates shall be as specified or shall otherwise match the surrounding finishes as closely as possible. Unless specified to the contrary, white cover plates shall be installed on painted walls. Cover plates in the same area shall have the same colour. Flush mounted cover plates shall overlap the draw-box and edges of the recess. Cover plates shall under no circumstances be cut unless authorised by the Engineer.

c) The sides of adjacent switches, plugs, pushbuttons, etc. shall be parallel or perpendicular to each other and uniformly spaced. A common escutcheon plate shall be placed around flush mounted outlets and accessories where the standard cover plates do not cover the cut-outs in the finishes.

Unless specified to the contrary, switches adjacent to doors shall be installed on the side containing the lock. If the position of the lock is not shown on the drawings, the position shall be verified before the switch-box is installed. Switch boxes in brick or concrete walls shall be installed 150 mm from the door frame. Light switches installed in partitions or door frames shall be of the narrow type designed for that purpose.

14. DISTRIBUTION BOARDS

a) Distribution boards with supplies up to 320 Amps shall comply with SABS 1180. Flush distribution boards shall comply with SABS 1180 Part I and Surface distribution boards with Part II. Flush distribution boards shall normally be 115 □ 5 mm deep but may be 165 □ 5 mm deep when special equipment must be accommodated.

b) Unless otherwise specified the following are required:

i) Doors with locks
ii) Conduit facilities at one conduit for every circuit including spare spaces
iii) Heights and width according to SABS 1180
iv) Spare spaces to have dummy covers
v) An additional 8-way neutral bar for each earth-leakage unit
vi) Distribution board name in white on black engraved strip above the door
vii) Circuit number labelling in white on black engraving on the front panel with a legend card holder fixed inside the door. The card holder shall contain three blank cards (two for future use).

c) If the single line or other diagrams or schedules do not indicate the number of spare spaces required, a 20% spare space allowance is to be made.

d) Earth leakage units are to comply with SABS 767.

e) Drawings for Approval

Two sets of the shop drawings for the switchboards shall be submitted to the Engineer for approval before the boards are manufactured.

f) Inspection

The Engineer shall be notified when the distribution boards are completed and before they are dispatched to the site, so that the boards can be inspected in the workshop.

15. METER BOX OR PANEL

Where applicable the Contractor shall provide a suitable enclosure to house the metering equipment of the Local Supply Authority. This enclosure shall be watertight and mounted at a height of 1,8 m measured to the top of the panel. The meter box or panel must be acceptable to the Supply Authority.

16. MOUNTING HEIGHTS OF SWITCHES, SOCKET OUTLETS AND DISTRIBUTION BOARDS, ETC.

Except where stated otherwise on the drawings, mounting heights shall be as follows:

a) Lighting switches: Centre line 1,4 m above finished floor level

b) Socket outlets: Centre line 0,3 m above finished floor level

c) Socket outlets and telephone outlets above worktops: Centre line 1,1 m above finished floor level or in the second tile above the worktop on tiled walls

d) Other telephone outlets: Centre line 0,3 m above finished floor level

e) Stove outlets: Isolator at 1,1 m and to side of stove with power outlet at 0,45m

f) Distribution Boards: Top edge of distribution board 2,0 m from finished floor level

g) Meter Panel: Top edge of meter panel 1,8 m above finished floor level or ground level if outside

h) Telephone of Intercom Distribution Panels: Centre line 1,3 m above finished floor level

Where the above-mentioned units or panels must be built into face brick walls, the heights shall be adjusted to the nearest joint in the face brick layers.

17. ELECTRIC LIGHT FITTINGS

17.01 Supply of Lighting Fittings

The Contractor shall supply and install the light fittings indicated on the drawings. The light fittings shall be of various types as described in the legend for light fittings.

17.02 Installation of Light Fittings

a) The mounting positions of luminaires shall be verified on site. All luminaires shall be placed symmetrically with respect to ceiling panels, battens, beams, columns or other architectural features of the space unless otherwise indicated. The layout as shown on the drawings shall generally be adhered to but any discrepancies or clashes with structural or other features must be referred to the Engineer, before commencing erection of the installation.

b) Cover plates shall be fitted over all draw boxes and outlets intended for luminaires that are not covered by the luminaire canopy, lamp holder, ceiling rose or similar accessories.

c) Where an outlet box or draw box provides the necessary support for a luminaire, all luminaires with the exception of fluorescent luminaires mounted against ceilings, shall be fixed directly to the box. Fluorescent luminaires and luminaires with a mass in excess of 10 kg shall, however, be suspended independently of the outlet box.

d) Where wooden blocks are used to suspend luminaires, ceiling battens shall not be cut. The wooden blocks shall be cut to fit around battens and shall be screwed to the ceiling.

e) Only self-tapping screws shall be used to suspend fluorescent fittings from the wooden bearers and wall plugs. Connections of the heavy brass terminal type in porcelain insulators shall be employed to make joints between the wiring of the fittings and the general wiring.

f) All fluorescent fittings shall be earthed.

g) PVC insulated conductors, unless protected by approved heat-resistant sheathing, shall not be used where the temperature of the insulation is likely to exceed 70°C. In unventilated luminaires or luminaires capable of housing incandescent lamps over 60 W, the interconnecting wiring from the lamp holder to the circuit wiring shall consist of silicon-rubber insulated conductors. Silicon-rubber insulated conductors shall be used exclusively in the case of high bay fittings. Refer also to the provisions of SABS 0142.

h) All recessed light fittings in suspended ceilings shall be connected to the conduit system by means of a 5 A plug-top at the end of a 1,5 m 1,5 mm 3-core flexible cord, plugged into a 5 A unswitched socket outlet installed in a deep round conduit box against the roof slab above the light fitting.

18. ELECTRIC HOT WATER CYLINDERS

Unless specified to the contrary elsewhere, the Main Contractor shall supply and install the hot water cylinders. The Contractor shall in all cases, wire and connect the hot water cylinders as specified. All hot water cylinders shall comply with the requirements of SABS 151.

19. CONNECTIONS TO EQUIPMENT

19.01 Connections to Hot Water Cylinders

a) The Contractor shall liaise with the Main Contractor to establish the type of hot water cylinders which will be supplied, as well as their positions, to enable the Contractor to determine draw box positions local to the hot water cylinders.

b) Each water heater shall be connected to a separate circuit with a separate earth conductor and protected by means of a circuit breaker.

c) The conduit from the switchboard to the water heater shall terminate in a draw box within 1 m of the water heater terminals. A local isolator which breaks all conductors, including the neutral, shall be mounted on this box. The connection from the isolator to the cylinder shall be in flexible conduit.

d) Before testing a water heater, the Contractor shall confirm with the Plumbing Contractor that the unit is filled with water.

19.02 Connections to Cooking Appliances

a) Unless specified to the contrary, the circuit connection to each cooking appliance shall be of the conductor sizes specified above.

b) A 60 A double pole or 30 A triple pole isolator flush mounted in a wall outlet box, shall be installed 1,1 m above floor level to the left or right of the appliance in accordance with SABS 0142. A white baked enamel cover plate shall be provided, situated wholly on the tiled or plastered surface as applicable.

c) 25 mm diameter conduit shall be installed from the isolator to terminate 450 mm above floor level behind the appliance position. The conduit end shall be approximately 75 mm long and shall face downwards. Connections from the conduit end to the appliance shall be installed in accordance with SABS 0142. Sufficient slack shall be provided in the flexible connection to move the appliance 750 mm away from its normal position for cleaning or maintenance.

d) Alternatively the 25 mm diameter conduit from the isolator shall terminate in a round outlet box 450 mm above floor level. A 45 A 3 pin socket outlet or 15 A 4 pin socket shall be mounted on the round draw box. The connection to the stove shall be long enough to enable the appliance to be moved 750 mm from its normal position for cleaning or maintenance.

e) Each appliance shall be connected to a separate circuit. A separate earth wire shall be provided for each appliance.

20. BALANCING OF LOAD

As the work progresses and on completion, the Contractor shall balance the load across the three phases.

21. EARTHING

a) General

The whole of the completed installation shall be effectively and efficiently earthed and bonded in accordance with the latest edition of SABS 0142 and to the requirements of the local Supply Authority.

The Tenderer shall allow in his tender price for the provision of earth mats, copper bonding straps, wiring and the proper bonding of the whole installation, including the bonding of the sheeting, downpipes, gutters, etc.

b) Main Earth

The main earth shall be installed in accordance with the requirements of Local Supply Authority and shall be to their approval and satisfaction. The resistance to earth shall not exceed 2 ohms.

c) Low Tension System

Where sub-distribution boards are fed by means of PVC conductors drawn in conduit, a separate copper conductor shall be taken from each board to the main distribution board, drawn in conduit together with the current conductors. The sizes of the earth conductors shall be one size smaller than the area of the current carrying conductors, unless otherwise specified.

Where armoured cable is used, an earth conductor shall be installed with the armoured cable, between the earth bars of the distribution boards involved. The sizes of the earth conductors shall be one size smaller than the areas of the current carrying conductors unless otherwise specified. If green PVC insulated conductors are available in the specified earth conductor sizes they shall be installed in preference to bare copper conductors.

All 16 Amp socket outlets, sodium and mercury vapour lighting fittings, fixed heaters and hot water cylinders shall be earthed by means of 2,5 sq mm green PVC insulated copper conductors.

All lighting switch outlet boxes, fluorescent fittings, etc., shall be provided with an earth stud, to which the earth wire lugs shall be bolted.

The earth conductor of every circuit shall be taken from the earth bar of the distribution board and shall be routed past all the outlets, without breaking the conductor, up to the last outlet on the circuit.

At each outlet, the earth wire shall be folded and a cable lug shall be crimped onto the folded end. The crimping lug shall then be bolted to the above-mentioned earth stud of the lighting fitting or outlet box.

All connections, locknuts, busbars etc. shall be securely tightened and the Contractor shall test the installation to ensure that the resistance of the earth path does not exceed the prescribed value.

d) Buildings

All metallic hot and cold water pipes and waste pipes shall be interconnected by means of 12,4 x 1,5 mm solid copper tapes, which shall be clamped with brass bolts and nuts. The tapes shall be fixed to the walls by means of brass screws at intervals not exceeding 250 mm. Earth clips shall be manufactured from 1,0 mm copper tape, which shall be at least 12,5 mm wide and which shall be supplied complete with 25 x 5 dia. brass bolts, washers and nuts. Clips shall be firmly clamped to pipes, without the use of additional packing's.

Metal roofs, gutters, down pipes etc. shall be interconnected in the same way. Roofs shall be connected at intervals not exceeding 15 m by means of a 4,0 sq mm bare copper wire. The common earth conductor shall be run under the roof, over its full length and shall be firmly fixed to the upper purlin. It shall be bonded to the main earth conductor of all distribution boards.

22. CHASES AND CONDUIT TO BE BUILT IN

a) All the conduits will be built in by the Main Contractor during the normal execution of the contract, but if chases are required, they shall be provided by the Electrical Contractor.

The Electrical Contractor will be responsible for supervision, to ensure that chases or the building in of conduits are executed in the correct manner.

b) If the Contractor neglects to install conduits during the normal construction period, with the result that additional chases are required, these chases will be provided by the Electrical Contractor, at no extra cost and he will be responsible for compensating the builder for additional plastering, painting etc.

c) Where variation orders are issued during the construction period, resulting in chases being required, these chases will be provided by the Electrical Contractor, for which he will be remunerated by the Client in accordance with approved variation prices.

d) Electrical materials to be built in must be supplied, placed and fixed in position by the Contractor when required to do so by the Builder or Main Contractor. The Contractor shall also ensure that these materials are installed in the correct positions.

e) Should the builder or Main Contractor not be available, it will be the Electrical Contractor's responsibility to provide chases and to cover conduits with plaster. The plaster is to be a 4 : 1 mixture of course sand and cement which shall finish 6 mm below the level of the surrounding plastering. Chases are to be sufficiently deep to ensure that the surface of the conduit is at least 12 mm below the final plaster surface.

23. TELEPHONE INSTALLATION

23.01 Main Telephone Distribution Board

a) The position of the main telephone distribution board, where required, shall be as shown on the drawings. The size shall be 450 x 450 mm unless otherwise specified on the drawings.

The board shall consist of a metal tray, architrave frame and hinged doors and shall be flush mounted in the position shown on the drawing(s).

A 20 mm thick soft wooden panel (fine grade pine to SABS 1098, without knots) shall be installed in the main telephone distribution board and shall cover the entire back of the board. Chipboard or similar materials are not acceptable.

b) All conduits and sleeves to telephone outlets or sub distribution boards in the buildings or on the site as well as the main incoming sleeves shall terminate at the main telephone distribution board as indicated on the drawing(s). An additional 20 mm dia. conduit shall lead to an independent earth spike (max. 3, 0 ohm resistance) with 6 mm wiring.

c) Where 100 x 100 x 50 mm draw boxes are specified as main or sub distribution boards, the boxes shall be flush mounted and provided with a cover plate. A wooden panel need not be provided in these cases.

23.02 Telephone Outlets

a) Telephone outlets in walls shall consist of flush mounted 100 x 100 x 50 mm draw boxes. Blank cover plates shall be fitted to all telephone outlets.

b) Telephone outlets shall be inter-connected and connected to the telephone distribution boards as shown on the drawings. Conduits shall be 25 mm diameter unless otherwise indicated on the drawings. Conduits provided for telephone services may not be used for any other purpose.

c) All conduits and all ducts or channels which do not have removable covers, shall be provided with galvanised steel draw wires.

24. PAINTING AND FINISHES

a) All painted material shall be stored on site in such a manner that the paintwork is not damaged, and the Contractor shall be held responsible for the good condition of both interior and exterior paintwork of equipment, during erection.

b) On completion of the contract, any damage that may have been done to plaster work, ceilings, floors, woodwork, etc., in the execution of the electrical contract, shall be rectified and made good by the Contractor at his own expense and to the satisfaction of the Engineer.

25. INSPECTION

a) The Contractor shall have the complete installation tested and approved by the local authorities where applicable.

b) The Contractor shall test all circuits with respect to:

i) Phase balance
ii) Insulation level
iii) Polarity
iv) Earthing

Once the Contractor has completed the installation, written notice shall be given to the Engineer in order that a mutually acceptable date can be arranged for a joint inspection and spot tests of the above.

During the course of the inspection, the Engineer or his representative will compile a list of items (if any) requiring further attention. A copy of this list will be provided to the Contractor who will have a period of 7 days in which to rectify the offending items of the installation.

The Contractor shall then provide written notice that he is ready for an inspection of the remedial work to the offending items.

This procedure will continue until the entire installation has been correctly completed to the satisfaction of the Engineer. However, the Contractor will bear the cost of inspections of remedial work if these inspections must be repeated more than twice.

26. COMPLETION

The installation will not be accepted until all tests have been conducted successfully and all "as built" drawings and manuals have been submitted to the Engineer.

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PART B2.1

ELECTRICAL INSTALLATION

DETAILED REQUIREMENTS AND SCOPE OF WORK

PART B2.1

ELECTRICAL INSTALLATION

DETAILED REQUIREMENTS AND SCOPE OF WORK

1. GENERAL

The work shall be carried out in strict accordance with Part 1 of this specification, titled "GENERAL REQUIREMENTS SPECIFICATION", and the Stellenbosch Municipality specification and Standards, unless otherwise specified in this section or on the drawings.

2. THE SITE

The Stellenbosch municipal library is situated in Plein Street adjacent to the Stellenbosch Town Hall.

3. COMMENCEMENT & COMPLETION

Refer to the Main Document Part A.

4. DRAWINGS

The Engineer's Drawings covering this Specification are:

Drawing No.

E5317/LG: GROUND FLOOR: LIGHTING LAYOUT
E5317/L1: FIRST FLOOR: LIGHTING LAYOUT
E5317/PG: GROUND FLOOR: POWER LAYOUT
E5317/P1: FIRST FLOOR: POWER LAYOUT
E5317/FG GROUND FLOOR: SMOKE DETECTION LAYOUT
E5317/F1: FIRST FLOOR: SMOKE DETECTION LAYOUT

During the execution of the contract, the Electrical Contractor shall record on a set of drawings, the installation "as installed". Specific information that should be noted is the positions of draw boxes, conduit and cable routes and instances where the installation and position of equipment deviate from the design. The above-mentioned set of drawings will be supplied by the Engineer, and the required information shall be indicated on these drawings in a clear intelligible manner. On completion of the contract, prior to the issue of the final certificate, the Electrical Contractor shall hand these marked-up drawings to the Engineer for the preparation of installation drawings. The Electrical Contractor shall make allowance in his tender price for the cost of marking up the drawings as described above.

5. SCOPE OF WORK

The contract entails electrical and electronic work associated with the refurbishment of the existing municipal library which is located on Plein Street next to the Stellenbosch Town Hall.

Work comprises of the following but not limited to: -

a) Strip out work
b) New Lighting and power installation
c) New Smoke Detection
d) Testing and commissioning of the above installation

6. DESCRIPTION OF WORK

The municipal Library is undergoing minor architectural renovations and upgrades. The electrical and smoke detection will form part of this upgrade.

A new lift is also being installed in the entrance foyer area to accommodate universal access to the upper floor.

7. STATUS OF DRAWING

The electrical drawings accompanying this document give a fair reflection of the work to be undertaken. The Architect's drawings shall be referenced for building details.

Should the electrical contractor require more detail he shall inform the Engineer timeously.

8. CUTTING OF CONCRETE & BRICKWORK

All drilling of holes and chasing of concrete and brickwork for electrical services shall be done by the electrical contractor.

9. EXISTING INFRASTRUCTURE

Electrical

The existing distribution boards are located at the back in stairwell areas. The existing distribution boards will be reused, tested and a new CoC issued. Old Fuchs type circuit breakers will be replaced with new CBI circuit breakers.

All circuits will be reused if deemed safe. Some circuits showed signs of overheating and shall be replaced where required.

Intruder Alarm

Existing intruder alarm infrastructure is installed but not operational. A new 8 Zone intruder alarm will be installed through out the library, i.e. PIR detectors, door and window magnets, etc. A new system has been specified in the BoQ just in case the existing is damaged.

Smoke Detection

No existing smoke detection system. New to be installed.

Data

Existing LAN cabinet is located in the room labelled "New Staff Room". Reticulation will be from the existing cabinet into Wireways to new respective points indicated on the drawings.

Note: The Electrical contractor will only install wireways to data points indicated on the drawings.

10. MAKING SAFE OF EXISTING ELECTRICAL SUPPLIES

The Electrical Contractor shall ensure that the electrical supplies feeding the respective areas which are being worked in are made safe before any work may commence**.**

11. EXISTING DISTRIBUTION BOARD

11.1 General

The existing distribution boards supplying the area is situated at the back in stairwell area. The positions of OVB-LB/A and OVB-LB/B is indicated on drawing E5317.

Existing circuits breakers shall be reused if deemed compliant.

The appointed contractor shall install the following CBI circuit breakers to match the existing if required for: -

Light Circuits	-	10Amp Single Pole Circuit Breaker -	1.5mm^2 x 1.5mm^2
Sockets	-	20Amp Single Pole Circuit Breaker -	2.5mm^2 x 2.5mm^2
Fan Isolators	-	30Amp Single Pole Circuit Breaker -	4.0mm^2 x 2.5mm^2
HVAC	-	30Amp Single Pole Circuit Breaker SC-	4.0mm^2 x 2.5mm^2

The electrical contractor shall replace all old Fuchs type circuit breakers/Isolators with new CBI circuit breakers.

Circuit breaker quantities are indicated in the BoQ.

12. LIGHTING

The electrical contractor shall supply and install new light fittings, recessed, suspended or surface mounted to ceilings and soffits as indicated on the drawings with appropriate fixing accessories.

Supplies to these lighting shall be derived from the existing respective distribution boards on the respective floors. The switching of lights shall be as indicated.

Emergency lighting shall be installed on the positions as indicated on the attached drawings.

Type 1: Surface mounted bulkhead 21W LED Similar or equal and approved to Lascon Genoa with white trim

Type 2: Surface mounted Seamless with integrated Linear LED light to make up 10.8m fixture similar and equal approved to Puck Seamless from Orbitx

Type 2E: Above fixture with emergency battery backup in 1200mm fitting

Type 3: 1200 x600 Recess LED Panel similar or equal and approved to Lascon LBP-24

Type 3E: Same as above with Emergency battery back-up.

Type 4: Track, similar or equal and approved to Lascon M track and accessories

Type 4.1:Track spot with GU10-7.5w LAMP similar or equall and approved to Lascon MT spot.

Type 5: Recess down lights with 7W LED, similar or equal and approved to Lascon Futura 1

Type 5E: Same as above with Emergency battery back-up

Type 6: Surface mounted Seamless with integrated Linear LED light to make up 7,2m fixture similar and equal approved to Puck Seamless from Orbitx

Type 7: Exit Luminaire with down light LED, similar or equal and approved to Lascon E10 emergency.

Type 8 - 1200mm Linear LED, similar to LASCON H-Pro Surface

Type 9 - 3800mm Suspended Linear LED with Aluminium extrusion, including suspension Kit similar to H-Pro

12.1 Existing Lighting

The electrical contractor shall safely remove all existing light fittings and deliver it to Stellenbosch Municipal stores.

13. CONDUITS, WIREWAYS & WIRING

The electrical installation shall be carried out in strict compliance with SANS-10142 with regard to wiring methods, circuits and equipment.

Wireways, types and sizes for all respective services are indicated.

13.1 Conduits

All exposed conduits shall be galvanised.

Conduits where possible shall be chased/build in walls and above ceilings subject to the limitations of SANS-10142. These conduits can all be PVC except for the fire detection wire ways.

The electrical contractor shall be responsible for all chasing required for electrical equipment.

Existing conduits in slabs and walls shall be reused as far as reasonably practical.

13.2 Wiring

All wiring shall be SANS approved PVC insulated copper conductors. Wiring sizes and details are reflected under clause 12.1 above.

Existing wiring shall be reused if deemed good to do so. Circuits which show signs of over heating shall be replaced with new.

The DB circuit breaker numbering, legend card and schematic diagram numbering shall all correspond.

The electrical contractor shall provide a laminated Legend card and single line diagram of the new revised distribution board.

13.3 Powerskirting

Powerskirting shall be OBO – From O - Line, 2 or 3 Compartment, White, PVC skirting as indicated on the drawing.

The contractor shall make use of pre-manufactured bends, end caps and splices. Vertical bends shall be purpose made to ensure a proper fit of both the body and the cover plates.

The upper compartment shall be reserved for electrical wiring. Wiring accessories shall be the cabtree/Onesto modular power accessories.

The lower compartment shall be reserved for data cabling. A maximum of 16 data cables are allowed per compartment. Data outlets shall comprise of a cradle and Clipsal adaptor cover plate.

13.4 Wireway

Wire mesh cable tray shall be used as indicated on the drawings and shall including all fixing accessories which is required. Tray dimensions are indicated on the drawings. Wire mesh trays shall have a grid spacing of 50 x 50mm.

14. SOCKET OUTLETS, SWITCHES AND ISOLATORS

14.1 General

All socket outlets, light switches and exposed isolators shall be Crabtree classic range.

All isolators located outside shall be weatherproof lockable isolators.

14.1.1 Socket outlets shall comply to the latest standard. Sockets shall have both outlets complying with 164-1 and 164-2.

14.1.2 All socket outlets, switches and isolators shall be labeled and shall refer back to distribution board circuits.

14.2 Data Outlets

The electrical contractor shall supply and install blank data outlet plates with Crabtree data cut outs. Sockets and keystones will be supplied by the data cabling contractor.

14.3 Occupancy Sensor

Occupancy sensors shall be Ultrasonic type with daylight linking and with minimum on time of 30min.

15. ACCESS CONTROL

No Access Control

16. DATA

The electrical contractor shall supply and install new data routes for data cabling as indicated on the drawing.

Wire ways will be medium duty wire mesh with 50 x 50mm bracing spacing. Tray sizes and types are indicated on the drawing.

A minimum conduit size of 25mm dia. shall be used for data wireways at positions indicated on the drawing. No smaller conduits will be accepted. Conduits will join data trays in with opening in the direction of LAN room which the area is being connected to and fixed to the underside of the tray with cable ties.

17. FIRE DETECTION

The electrical contractor shall supply and install all conduits, wireways and outlets for the Smoke Detection system as indicated on the drawings.

Conduits to Smoke detection outlets shall be via 25mm dia. galvanised conduits above ceilings and in walls. Wireways will be secure with appropriate fixing accessories.

18. INTRUDER ALARM

The electrical contractor shall supply and install all conduits, wireways and outlets for the burglar alarm system as indicated on the drawings.

Conduits for the burglar alarm shall be via 25mm dia. PVC conduits above ceilings and in walls. Wireways will be secure with appropriate fixing accessories.

19. EARTHING

19.1 General

The electrical installation shall be earthed in accordance with the General Technical Specification and SANS 10142.

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PARTB 2.2

FIRE DETECTION INSTALLATION

SECTION 2.2.1

FIRE DETECTION

GENERAL TECHNICAL SPECIFICATION

SECTION 2.2.1

FIRE DETECTION

GENERAL TECHNICAL SPECIFICATION

CONTENTS

SECTION 2.2.1

FIRE DETECTION

STANDARD TECHNICAL SPECIFICATIONS

1 INTRODUCTION

This Standard Technical Specification forms part of, and shall be read with, the Conditions of Contract, Supplementary Specification, schedules, drawings and other parts that form part of the tender/contract documents.

1.1 SCOPE

1.1.1 This Standard Technical Specification covers the general technical requirements for automatic fire detection systems and installations. The following aspects are covered:

(a) System requirements
(b) Equipment requirements
(c) Installation methods and materials
(d) Commissioning and handing over
(e) Documentation and drawings

1.1.2 The Supplementary Specification, drawings and schedules will take precedence over this Standard Technical Specification.

1.1.3 The Supplementary Specification, drawings and schedules shall be referred to for the specific requirements for the system.

1.2 DEFINITIONS

See also the definitions in EN 54-1 and BS 839-1.

a) Analogue Addressable System

In an analogue addressable system the control equipment receives analogue signals from the sensing devices in the system and knows with which sensing device it is communicating by reading the address of each sensing device.

b) Analogue

The term analogue refers to an electronic signal which can represent a large number (e.g. 256) of values. This signal can be in the form of a current level, pulses, frequency or any combination of these.

c) Addressable Device

A device is addressable if the control equipment can communicate with the device, or select such a device by sending an address to it.

d) Approved

Approved shall mean accepted by the Engineer for a specific installation. The does not keep a list of approved equipment, and equipment accepted for a specific installation does not necessarily imply approval or acceptance for another installation.

e) Access Levels

The levels of access applicable to the control panel. (These definitions modify those of BS 5838-4 in that level 4 is added and level 1 allows the silence function).

Level 1: No password or key: Access by members of the general public. In addition the "silence" function shall be accessible or operational.

Level 2: Password or key: Access by the person responsible for the system and trained on the system, and for system maintenance.

Level 3: Password or key: Access by persons trained to reconfigure the system.

Level 4: Password or key:

(a) Access by persons authorised by the system owner to allocate passwords to levels 2 and 3.

(b) Access by persons trained and authorised by the manufacturer to repair, or to alter the firmware, thereby changing its basic mode of operation.

f) Conventional System

A system is conventional if the control equipment determines the status of the zone wiring as follows:

Fault	:	low or no current
Normal	:	current within limits
Fire	:	high current
Short circuit	:	abnormally high current

i) Control Equipment. Unit. or Panel

The control equipment receives information from the field devices and displays information as described in BS 5839-4 or EN 54-2.

The following references have the same meaning:

- Control equipment
- Control unit
- Control panel
- Fire panel
- Fire alarm panel

j) Detector

That part of an automatic fire detection system which constantly, or at frequent intervals, monitors suitable phenomena, such as smoke, fire, heat, etc.

Detectors are also field devices

1.3 STANDARDS AND REGULATIONS

See Addendum "A" for a list of the applicable standards. In all cases the most recent amendments, of the standards, shall apply.

1.3.1 The completed system and its components shall be in accordance with the following regulations:

- The wiring of premises (SANS10142)
- Occupational Health and Safety Act (Act 85, 1993)
- Local municipal by-laws and regulations
- Local fire regulations
- Regulations of Telkom
- Regulations of the local electrical and gas supply authorities
- National Building Regulations Act No 103 of 1977 (SABS 0400)

1.3.2 The design of an automatic fire detection system, the equipment supplied for the system, and the installation of such equipment shall be in accordance with the Standards listed below. The equipment and components shall be deemed to have been tested and approved by a reputable and recognised international test laboratory to prove compliance with at least one or more of these Standards. Copies of test certificates shall be provided by tenderers with their tenders:

EN 54	:	Components of automatic fire detection systems
BS 5445	:	Components of automatic fire detection systems
BS 5839	:	Fire detection and alarm systems for buildings

1.3.3 Material for which an SABS specification exists, shall be in accordance with such a specification, and shall bear the SABS mark.

1.3.4 All equipment used shall originate from suppliers which have been certified in accordance with SABS ISO 9001 (ISO 9001) or SABS ISO 9002 (ISO 9002) for quality assurance. Copies of certificates of approval shall be provided by the tenderers with their tenders.

1.3.5 Equipment designed to BS 5446, Fire systems for residential premises, or similar other standards, are not acceptable.

1.4 DESIGN

1.4.1 Any uncertainty which may exist in regard to the specification requirements shall be submitted to the Engineer in writing.

1.4.2 The requirements and design standards of the specification shall be adhered to unless otherwise approved by the Engineer or its authorised representative in writing.

1.4.3 Small items of equipment forming part of a system are not covered by this specification. However, the Engineer still requires that the total system shall comply with the highest standard of the design and fire protection practice.

1.5 MATERIALS

1.5.1 All materials used on the contract shall be new and of the very best of their respective types and kind.

1.5.2 No equipment or parts older than 2 years, at the commencement of the contract, shall be installed in this system.

1.5.3 All equipment and parts used in a particular system shall originate from one supplier as far as practicable.

2 SYSTEM REQUIREMENTS

2.1 REMOTE INDICATOR LIGHTS

2.1.1 Detectors mounted in hidden areas, or areas which may be kept locked for specific reasons, shall each be provided with a permanently marked remote indicator LED light mounted in a conspicuous position on the wall outside the area and close to the point of entry into such areas. The method and equipment used to mount the remote LED shall be acceptable to the Engineer.

2.2 SOFTWARE

2.2.1 The requirements stipulated hereunder in connection with the availability and the usage of software for computer based equipment (not fire control panels) which is to be supplied to the Engineer in terms of the contract shall be adhered to:

a. Computer based systems shall not become unserviceable due to the loss of, or damage to software.

b. It shall be possible to reinstate software after maintenance or after possible damage to the software. Full back-ups must therefore be available on site.

2.2.2 Software shall be loaded when so required, even if the time at which the software is to be loaded, does not suit the supplier of the software.

2.2.3 The User shall also be able to reload software on systems without the assistance of the supplier or contractor.

2.2.4 The User will only be interested in reloading of software into a system for which the software was originally written, and not in the copying of software from one system to another.

2.2.5 Back-ups of software shall be supplied to the Engineer for future use.

2.2.6 The Engineer will use the original contractor or supplier of the system to reload software, whenever possible or practicable.

2.3 SCADA SOFTWARE

Software to be used for monitoring and reporting, or SCADA (Supervisory Control and Data Acquisition) application, shall comply with the following requirements:

2.3.1 The software shall be able to run on an MS-DOS based PC computer.

2.3.2 Software packages shall be approved by the Engineer for the installation.

2.3.3 The software shall not be system specific, i.e. it shall be compatible with a number of control panels on the market.

2.3.4 The software shall be available from a supplier other than the manufacturer of the equipment.

2.3.5 Upgrading of the software shall be possible at a later stage without changing the system configuration.

2.3.6 See Addendum “A” for some acceptable software.

2.4 FIRE ZONES

Devices shall be grouped into zones as follows, unless the zones are indicated on the drawings and/or Supplementary Specification:

2.4.1 A zone shall not have more than 20 field devices.

2.4.2 Each building shall have separate zones.

2.4.3 The roof space shall be on a separate zone or zones.

2.4.4 The floor area of a single zone shall not exceed 2000 m²

2.4.5 Every floor of a building larger than 300 m2 shall be on a separate zone.

2.4.6 Every area enclosed by fire walls shall be on a separate zone.

2.4.7 In analogue addressable system, each zone shall be enclosed by 2 line isolators.

2.5 SPARE CAPACITY

2.5.1 20% spare capacity shall be allowed in the design of the control panels, loops, zones, etc.

2.5.2 The control panel shall have facilities to accommodate a further two detector circuits, additional to the required number of zones, without having to replace or add additional cabinets (extensions) to the control panel, unless specified otherwise.

3 EQUIPMENT REQUIREMENTS

3.1 QUALITY OF EQUIPMENT

Only equipment complying with the following shall be used:

3.1.1 The equipment required under any contract shall be of the latest manufactured equipment of its kind on the market.

3.1.2 The equipment shall preferably be manufactured in the RSA, and equivalent or replacement equipment shall also be available in the RSA.

3.1.3 Replacement units shall be available for the equipment and the complete maintenance of equipment shall be undertaken in the RSA.

3.1.4 Equipment shall have been installed in the RSA in a similar installation as the one specified in the Supplementary Specification and shall have operated reliably and satisfactorily for at least 1 year.

3.1.5 Equipment shall exist of completely enclosed units and the units shall be vermin-proof.

3.1.6 All items of equipment shall be fitted with nameplates containing information, such as serial numbers, model numbers, type numbers, manufacturer's name, etc. This information, together with the description of each and every piece of equipment, shall be listed in the Maintenance Manual.

3.1.7 All components and PC boards shall also be marked with type numbers and descriptions and this information shall be contained in the Maintenance Manual.

3.1.8 No equipment without detailed specifications and/or testing results will be allowed.

3.1.9 All components of the system offered and installed, shall be available for a period of at least 15 years from the onset of the contract. A certificate of guarantee to this effect shall be submitted by the supplier of such components.

3.2 FIRE ALARM PANELS (CONTROL PANELS)

3.2.1 Control panels shall conform to BS 5839 part 4 or EN 54-2. See clause 1.3.2.

3.2.2 A control panel shall be able to function as a stand-alone unit, together with its own power supplies, and shall not be dependent on external control equipment, such as computers, for functioning.

3.2.3 Provision in the form of suitable terminals, connectors, or ports, shall be made on the control panel for the connection of peripheral equipment, such as computers, printers and interface equipment, to enable the accumulation of data generated by detectors and the control panel, to be used for future reference, or for the relaying thereof to remote monitor or control equipment.

3.2.4 Control panels shall be constructed for minimum power usage in both battery and mains power supply modes.

3.2.5 The control panel shall be of the wall mounted type, and shall also be suitable for mounting flush in a console, if so required in the Supplementary Specification.

3.2.6 Battery charging equipment mounted in the control panel, or elsewhere, shall be mounted in such a way that 230 Volt terminals and wiring and other mains voltage equipment are shielded against accidental contact. All shields shall be marked "230 VOLT".

3.2.7 No 230 Volt terminals shall be placed directly next to other terminals containing wiring at other voltages.

3.2.8 Reset of the control panel shall only be possible at access level 2.

3.2.9 Terminals shall be clearly grouped and marked with a label strip for identification, so as to simplify installation and connection of wires on site by installation personnel. All outgoing and incoming terminals, and all other equipment in the control panel, shall be suitably labelled to simplify maintenance and installation, and all panel mounted equipment shall likewise be labelled. Outgoing and incoming power and field wiring shall be individually, and correspondingly, numbered at each point of termination.

3.2.10 The control panel shall have knock-outs in the bottom plate thereof to terminate conduiting for all power cabling, and knock-outs in the top plate thereof to terminate conduiting for signal and other electronic cabling/wiring. Holes drilled on site for this purpose will not be acceptable.

3.2.11 All identification labels, as well as wire terminal numbers, shall be clearly shown on all wiring diagrams in the Maintenance Manual.

3.2.12 It shall be possible to silence the audible alarms without influencing the visual alarms or alarm transmissions to the Fire Brigade. This shall be possible at access level 1.

3.3 CONVENTIONAL FIRE ALARM PANELS (CONTROL PANELS)

3.3.1 Conventional Control panels shall be conformed to BS 5839-4 or EN 54-2. See clause 1.3.2.

3.3.2 The control panel shall be suitable to operate in conjunction with conventional detector heads or detector bases.

3.3.3 The control panel shall further have the facilities to execute the following functions:

a. Transmission of a general fire alarm to the Fire Brigade. Transmitting equipment shall however not be supplied with the control panel unless specifically specified in the Supplementary Specification.

b. Switching off of air conditioning equipment in case of a general fire alarm.

c. Closing of dampers over ventilation openings in case of a general fire alarm.

d. The connection of an external repeater panel for remote indication of fire and fault alarms.

e. A maintenance mode or ”one man test facility” for routine testing shall be possible where the control panel resets a fault or alarm condition a short time after the event. This will allow easy testing of the field devices. The control panel shall give a warning when it is in this mode.

3.4 ANALOGUE ADDRESSABLE FIRE ALARM PANELS (CONTROL PANELS)

3.4.1 Analogue Addressable Control panels shall conform to BS 5839-4 or EN 54-2. See clause 1.3.2.

3.4.2 Type of System

a. An analogue addressable system consists of a control panel connected to analogue addressable field devices.

The control panel continuously monitors a number of parameters of the field devices, makes decisions and takes actions based on the information received.

b. Sensing devices shall not switch into an alarm state. All decisions shall be taken by the control panel only.

c. To enable the system to be tailored to suit the protected building and to permit future changes, the alarm management shall be configurable from the control panel via a keypad. This configuration shall be maintained under power failure conditions in non-volatile memory.

d. The front panel of the control panel shall comprise a keyboard, alpha numeric display, text and indicator LEDs, etc. The occurrence and location of an event shall be displayed on the screen.

e) Outputs for communicating with devices such as remote text display units, graphic display units, computers, printers and intelligent mimic panels shall be provided where necessary.

f) Control panels shall incorporate facilities for operating as stand-alone units, or as part of a network with full communication capability.

g. Control panels shall be supplied complete with printout facilities. Only connections (a printer port and 24 Vdc power connector) for a portable printer shall be required, unless otherwise specified.

g) The control panel shall further have the facilities to execute the following functions:

a) Transmission of a general fire alarm to the Fire Brigade. Transmitting equipment shall not be supplied with the control panel unless specifically specified in the Supplementary Specification.
b) Monitored switching off of air conditioning equipment in case of a general fire alarm.
c) Monitored closing of dampers over ventilation openings, switching on of stairwell
d) pressure fans, etc. in case of a general fire alarm.
e) Monitored alarm outputs, e.g. sirens.
f) Monitored outputs and inputs for gas control panels.

i. Consecutive alarms shall be stored by the control panel in chronological order and shall have the ability to determine the priority order of alarms by means of repetitive receipt of data from detectors.

j. The transmission of all data shall be via a two-wire system, which shall carry both the supply voltage and the data.

k. The type of wire or cable used shall be suitable for the speed of data transmission so that signals can be carried over without losses or corrupted data. Wiring shall meet the requirements of the detection system manufacturer, which requirements shall be published in a formal wiring specification.

3.4.3 Ring (loop) Wiring

a. Wiring shall to be arranged in a return loop (ring), in such a manner that, in the event of an open circuit or a short occurring on the line, the control panel communicates with the detectors from both sides of the loop.

b. The arrangement shall be such that during an open or short circuit no more than 20 detectors shall be deactivated. To enable this, line isolators shall be provided on the line on each side of each zone.

3.4.4 Master Control Panel

a. The purpose of a master control panel will be to communicate with more than one satellite fire control panel, to simplify the central monitoring and control of the other satellite panels.

b. A master control panel will be required when two or more control panels are to be linked. This master control panel shall conform to all the requirements of the other control panels and shall be of the same manufacture as the other control panels.

c. The master control panel shall have its own battery back-up system.

d. All communication to computers, the Fire Brigade, etc. shall be handled by the master control panel.

e. All communication between satellite and central panels, as well as between satellite panels, shall utilise a protocol which verifies the receipt and accuracy of each message sent. Receipt of all messages shall be acknowledged by the receiving panel, and messages shall be retransmitted by the sending panel in the event of failure to receive such an acknowledgement. An industry standard method, such as a CRC check sum technique, or similar, shall be used to verify the accuracy of each message received. Messages received incorrectly shall be retransmitted by the sending panel. Retransmission shall continue until the receiving panel acknowledges receipt of a correctly received message. If, after a number of transmission attempts, the transmitting panel still does not receive an acknowledgement from the receiving panel, it shall register a fault signal.

3.4.5 Remote Display/Mimic Panels

a. Remote display/mimic panels, or fireman's panels, shall communicate with the control panel. No “hard wiring” to these panels will be allowed.

b. Remote panels shall function completely independently of the- control panels, and shall not affect the functioning of the control panels.

3.4.6 Programmability

a. The control panel shall be fully programmable through the keypad on the front of the panel, and through an RS 232 port by using a separate computer.

b. It shall be possible to make back-ups of the programmed data onto separate magnetic media by means of an external computer linked to an RS 232 port on the control panel.

3.4.7 Communications

a. Communications with other equipment, such as computers, shall be achieved through RS 232 ports using a fully documented public domain protocol. The protocol documentation shall also be included in the Maintenance Manual so that it will be possible for another party to communicate with the control panel without the approval of the control panel manufacturer.

b. All communications with other equipment shall be bi-directional, and at least the functions and displays available on the front of the control panel shall be possible through the communications port. Programming of the control panel by means of other equipment is not required (except as described earlier).

3.4.8 Local Printer

a. A printer shall be available as an option.

b. The printer shall provide a hard copy of the following:

- Alarms
- Faults
- Maintenance data
- Control panel operations
- Outputs Operated
- Configuration report
- Status report

b. The printer shall print out the following information for each alarm or signal:

1. Type of Alarm or Fault
2. Device Type
3. Device Number
4. Zone Number
5. User message
6. Day
7. Date
8. Time

1) It shall be possible to set the printer to print out alarms, faults, control panel operations, and outputs operated, either individually or- in any combination.

3.4.9 Device Addresses

a. Each sensing device shall be numbered individually and uniquely to correspond with its address on the control panel.

b. If a detector head is moved from its base to another base, the address of such a detector shall remain at its original location indicated on the control panel.

c. The address of each device shall be manually set to the desired value.

3.4.10 Display

a. The control panel shall be equipped with an alphanumeric display capable of displaying at least 80 characters.

b. A message of at least 40 characters long per device shall be programmable and displayable on the display.

c. The display of the following reports/information shall be possible:

- Device information
- List of devices isolated
- List of devices that need maintenance
- List of the most resent events
- I/O mapping
- Device messages

With reference to 3.4.9(0), the following will also be acceptable to the Engineer:

"If a detector head. is moved from. its base to another base, and this result, in the address being moved to another zone, then an alarm shall be generated in the control panel. This alarm can only be cancelled by replacing the head in its original zone.

3.4.11 Device Status

Addressable devices shall be polled by the control panel and the equipment condition and analogue status shall be read and stored in the control panel.

The varying status of each device shall be assessed by software algorithms and the control panel shall indicate the following conditions:

a. Analogue Detectors

Detector removed
Incorrect type of Detector
Detector failed
Detector contaminated
Pre-alarm
Fire Alarm
Detector healthy

b. Interface to contacts

Fire Alarm
Interface removed
Interface faulty
Contact wiring open circuit
Contact wiring short circuit
Contacts normal

3.5 POWER SUPPLY

3.5.1 Power supplies shall conform to BS 5839-4 or EN 54-4. See clause 1.3.2.

3.5.2 The Power pack of the control panel shall be able to accept an incoming 230 Volt single phase supply and shall be equipped with transformers, rectifiers, inverters, condensers and integrated circuits for the supply of stabilised power to the control panel equipment and detector circuits.

3.5.3 The power supply unit shall be equipped with over voltage protection and spike arresters to prevent damage to the equipment by lightning or other spikes, or damage due to over voltages.

3.5.4 The battery charger shall be able to deliver the full charging current to discharged batteries, and thereafter the charger shall automatically vary the charging current to the batteries as may be required by battery voltage conditions.

3.5.5 Batteries shall not be subjected to overcharging.

3.5.6 The battery charger shall be protected against reverse polarity and short circuits on the DC supply side.

3.5.7 The power pack of the control panel shall regulate the supply voltage to detectors so that detectors or bases are operated in their nominal supply voltage range.

3.5.8 Upon loss of mains power, the power supply unit shall automatically revert to battery power, where after the system shall remain fully operational for a period of 24 hours and shall be able to operate the total alarm load for a further period of 1 hour. The unit shall automatically revert back to mains power upon mains power restoration and manual resetting of the unit shall not be necessary.

3.5.9 The power supply shall be equipped with the following indications on the front of the unit:

a. "Mains On" : green LED
b. "Charger Fault" : amber LED

3.5.10 Batteries shall be mounted in a separate ventilated padlockable cubicle. Batteries shall be mounted in such a way that contamination of other equipment by batteries cannot take place. Batteries shall be in a special plastic container to contain any possible spillage.

3.5.11 Any supply fault, charging fault or low battery voltage shall be transmitted to the control panel so that an alarm can be generated.

3.5.12 No fuses or switches shall be accessible on the front of the power supply unit without opening the door.

3.5.13 Batteries shall be of the sealed lead acid type and the sizes of the batteries to be used shall be indicated on a label in the battery cubicle.

3.5.14 Batteries shall be charged to 85% of their capacity within 24 hours.

3.6 DETECTORS AND DETECTOR BASES IN GENERAL

3.6.1 lionization smoke detectors, optical smoke detectors and heat detectors are covered under this heading.

3.6.2 The detector base shall be such that the detector head is held firmly in the base by means of an insert and twist (bayonet) action.

3.6.3 Reverse polarity or faulty circuit wiring shall not cause damage to the detector head or base.

3.6.4 The detector base shall be suitable for surface mounting on a ceiling and shall fit on a 65 mm standard C-type electrical outlet box with fixing holes at 50 mm centres. Fixing lugs or holes in the base shall be substantial and shall withstand repeated insertion and removal of the head without damage.

3.6.5 The base shall be provided with wire terminals suitable for wire sizes up to 1,5 mm².

3.6.6 The wiring terminals of the unit shall be able to accept wiring lugs and shall be of the screw and clamp plate type to hold a lug firmly pressed against it's contact surface. Spring loaded push-in contacts will not be acceptable.

3.6.7 Terminals for circuit wiring shall be clearly marked.

3.6.8 The base shall be suitable for the connection of a remote indicator LED.

3.6.9 The detector or base shall be fitted with a local indicating LED, which shall flash/illuminate under an alarm condition.

3.7 CONVENTIONAL DETECTORS AND DETECTOR BASES

3.7.1 Conventional detectors and bases shall conform to BS 5445 or EN 54 or BS 5839. See clause 1.3.2.

3.7.2 It shall be possible to reset detectors from an alarm condition to normal by disconnecting the supply voltage to the unit.

3.7.3 Upon removal of a detector head, the control panel shall indicate that a head has been removed and also the zone where the head has been removed.

3.7.4 The base at end of circuit, in the case of radial circuits, shall be suitable to accept a termination resistor/circuit.

3.8 ANALOGUE ADDRESSABLE DETECTORS AND BASES

3.8.1 Analogue addressable detectors and bases shall conform to BS 5445 or EN 54 or BS 5839. See clause 1.3.2.

3.8.2 The removal of a detector from the base shall not affect the operation of other detectors on the line.

3.8.3 The control panel shall indicate when a detector head has been removed and also the address where it has been removed. Likewise it shall indicate when a wrong type of head is inserted in a base, as well as its address.

3.8.4 The detector shall be suitable to operate on a two-wire system carrying both power and signals for the operation of each and every detector in the system.

3.8.5 The detector shall be able to receive, and decode signals transmitted to it by the control panel. Upon receipt of a signal directed at its particular address, the detector shall transmit data back to the control panel for processing and storage thereof by the control panel. Such data transmitted shall represent the analogue values present in the electronic circuits of the detector head/base combination at that point of time.

3.8.6 The detector, when "addressed" by the control panel, shall transmit data to enable the control panel to deduce the following basic information:

a. The type of head generating the data (i.e. ionisation, optical, heat, etc.)
b. The address of the detector
c. The reference limits of calibration of the detector
d. The % visible or invisible combustion particles per meter present in the detector chambers at that point in time, or the temperature measured at the detector.

3.9 MANUAL CALL POINTS (BREAK GLASS UNITS)

3.9.1 Manual call point units shall be in accordance with BS 5839-2, except that it shall be resettable i.e. the front face of the unit shall not be a frangible element.

3.9.2 The unit shall be finished in RED.

3.9.3 The unit shall be large enough to cover a 65 mm conduit draw box when the unit is surface mounted.

3.9.4 Flush mounted units shall be provided with a special flush mounting box, which can accept electrical conduit terminations.

3.9.5 Surface mounted units shall be deep enough to terminate 20 mm conduits into the unit, and shall be mounted solidly on the wall by means of their back plates.

3.9.6 Addressable manual call point units shall be fitted with an address card, which will enable communication with the control panel.

3.9.7 The wiring terminals of the unit shall be able to accept wiring lugs, and shall be of the screw and clamp plate type to hold a lug firmly pressed against it's contact surface. Spring loaded push-in contacts will not be acceptable.

3.10 AUDIBLE ALARMS (SOUNDERS)

3.10.1 Sounders shall conform to BS 5839 part 1 and part 4.

3.10.2 The sounders shall operate off a 24 volt DC supply. Electronic sounders will be preferable.

3.10.3 The sound level for sounders and audible alarms shall be as follows:

- Audible indications (e.g. in the control panel) • 65 dB(A) at 1 m
- Evacuation sounders - at least 103 dB(A) at 1 m
- Outdoor sirens - 112 dB(A) at 1 m

3.10.4 The frequency, or major frequency in a two tone alarm, shall lie in the range of 500 to 1000 Hz.

3.11 FIRE BRIGADE SIGNALLING FACILITIES

3.11.1 The transmitting equipment, when required for the transmission of a general fire alarm to the local Fire Brigade, shall form an integral part of the fire control panel.

3.11.2 The transmitting equipment shall be fully compatible with the receiving equipment already installed at the Fire Brigade. Any facilities necessary to accomplish this compatibility shall be included in the transmitting equipment.

3.11.3 The output to the Fire Brigade shall be a monitored output.

3.11.4 The transmitting equipment shall not be supplied, unless specifically specified in the Supplementary Specification.

3.11.5 Even if the transmitting equipment is not specified in the Supplementary Specification, a appropriate port, or ports, shall be provided on the control panel for connecting any future transmitting equipment.

3.12 FLAME DETECTORS

All flame detectors designed to detect hydrocarbon fires shall comply with at least the following requirements, in addition to the specified standards:

3.12.1 Flaming fires shall be detected by the flame detector by detecting infra-red and/or ultraviolet radiation emitted from the flames.

Detectors that monitor only ultraviolet radiation will not be acceptable.

3.12.3 At least two different radiation frequencies shall be detected and analysed by the flame detector in order to increase the reliability of the detector in the presence of the following:

- Artificial light sources
- Sunlight
- Hot vibrating bodies

- Arc welding
- Lightning

3.12.4 Flame detectors shall be fitted with automatic self-test circuits which will simulate a fire condition by generating artificial radiation through the lenses. Dirty lenses shall, therefore, also generate a fault.

3.12.5 The flame detector shall be able to detect a 0,1 m2 petrol fire at a distance of 14 m.

3.12.6 Detection integration time shall be adjustable up to 30 seconds.

3.12.7 The detector shall have at least 50% sensitivity at a horizontal angle of 45° from the centre line.

4 INSTALLATION METHODS AND MATERIAL

4.1 DEVICES

4.1.1 The base of a detector shall always be mounted in the area which it protects so that the indicator LED can be seen from the doorway which normally provides access to the room. The indicator LED shall face towards the main entrance or lobby or side of main approach in the passage. See also clause 2.1.1.

4.1.2 Bases shall be provided with dust caps to protect the base against dust and dirt whilst construction work is in progress. This is only applicable to bases that contain electronic components.

4.1.3 Surface mounted units shall be solidly fixed to the wall by means of their back plates.

4.1.4 Manual call point units shall be mounted at 1,4m above finished floor level, unless otherwise specified in the Supplementary Specification.

4.2 CIRCUIT WIRING

4.2.1 The following methods are acceptable for the wiring of detector circuits:

a. Steel conduit and conduit accessories cast into, or built into, the building structure and wired with insulated conductors of a type which complies with the requirements of this specification.

b. Steel conduit and conduit accessories, surface mounted in building structures and wired with insulated conductors of a type approved by the Engineer.

4.2.2 Wires and cables may also be installed in wiring trunking and armoured cable may also be installed on cable racks, all as specified further herein.

4.2.3 Cables with stranded wires shall be terminated by the crimping on of lugs. No stranded wires without lugs will be accepted.

4.2.4 T-Junctions shall be made only in approved draw boxes at detector outlets.

4.2.5 Separate wiring installations for detector circuits, evacuation communication wiring, audible alarms, electrical lock wiring, card reader wiring, AC and DC power circuits, remote control circuits and monitor wiring, video cables, computer cables, etc., shall all be done in separate conduit- or trunking installations. Detector wiring shall not be installed together with any other wires in wireways.

4.2.6 Detector wiring may share the same draw boxes or expansion joint boxes with other fire fighting system wiring or security system wiring, but the boxes shall be subdivided by means of steel plates.

4.2.7 All electrical work and wiring associated with "FIRE DETECTION SYSTEMS" shall be carried out in compliance with the requirements of the "STANDARD SPECIFICATION FOR ELECTRICAL EQUIPMENT AND INSTALLATIONS FOR MECHANICAL SERVICES".

4.2.8 No wiring shall be installed vertically for more than 1,5 m. Cables installed over vertical distances of more than 1,5 m, shall be properly supported at intervals of less than 1,5 m.

4.3 ARMOURED CABLES

4.3.1 Armoured cables shall be used in sleeves, in cable tunnels and on cable racks or trays.

4.3.2 Armoured cables shall have twisted pairs and/or screens if so required in the wiring specification of the manufacturer of the equipment.

4.4 CONDUIT AND CONDUIT ACCESSORIES

4.4.1 The Contractor for the fire detection system shall be responsible for the supply and installation of all conduits, conduit accessories, wiring trunking and cable trays, as may be necessary or required for the system, unless specified otherwise in the Supplementary Specification.

4.4.2 conduit and conduit accessories shall be cast in, or built into, the building structure in new buildings. No surface mounting will be acceptable in new buildings or structures.

4.4.3 Surface mounted conduit and conduit accessory work will be allowed only in existing buildings.

4.4.4 Steel conduit and conduit accessories surface mounted on building structures, steelwork and woodwork, shall be done neatly and in straight lines and shall be saddled at 1 m centres with spacer saddles.

4.4.5 M4 machine screws shall be used for fixing of spacer saddles onto steelwork. Suitable holes shall be drilled and tapped in the steelwork for this purpose.

4.4.6 Steel conduit and conduit accessories, surface mounted in roof spaces of buildings or structures with pitch roofs, shall follow the roof structural elements.

4.4.7 The quality of materials and the methods of installation of steel conduit and conduit accessories shall be carried out in compliance with the requirements of the "STANDARD SPECIFICATION FOR ELECTRICAL EQUIPMENT AND INSTALLATIONS FOR MECHANICAL SERVICES" and SANS1 0142.

4.4.8 Conduit installations shall be done in such a way that detector circuit wiring can be done without interruption and without T-joints.

4.4.9 Round draw boxes for detectors shall be mounted hard against the ceiling in the case of false ceilings or ceilings of pitch roof buildings and detector bases shall be mounted against boxes so that no open wiring occurs anywhere in a conduit and wiring system.

4.4.10 No sprague tubing or PVC conduits shall be used in detector circuit wiring systems. Only flexible conduit which is not of the spiral type may be used in special applications.

4.5 WIRING TRUNKING

4.5.1 The quality of materials and the methods of installation of wiring trunking shall be carried out in compliance with the requirements of the "STANDARD SPECIFICATION FOR ELECTRICAL EQUIPMENT AND INSTALLATIONS FOR MECHANICAL SERVICES".

4.5.2 Trunking shall be fitted throughout with covers.

4.5.3 PVC wiring trunking may be used only to house detector circuit wiring, but then only as specified in the section "CIRCUIT WIRING" in the Specification and only with the type of cable as specified.

4.5.4 No wiring trunking may be used in microfilm vaults and in high risk areas such as fuel. oil. tyre. paint, wood. paper, cardboard box storage areas, record rooms, and vaults.

4.6 CABLE RACKS AND LADDERS

4.6.1 The quality of materials and the methods of installation of cable racks and ladders shall be carried out in compliance with the requirements of the "STANDARD SPECIFICATION FOR ELECTRICAL EQUIPMENT AND INSTALLATIONS FOR MECHANICAL SERVICES".

4.6.2 No cable racks and ladders may be used in microfilm vaults and in high risk areas such as fuel. oil. tvre. paint, wood. paper, cardboard box storage areas, record rooms, and vaults.

4.6.3 Armoured cable may be mounted on cable racks and ladders.

4.6.4 The type of wire or cable used shall be suitable for the speed of data transmission, so that signals can be carried over without losses or corrupted data.

4.7 LIGHTNING AND SURGE PROTECTION

4.7.1 All wiring going out from and coming into any building shall be fitted with suitable surge absorbers, which have been approved by the manufacturer of the equipment. This includes 230 V supplies, telephone lines and detector lines.

4.7.2 Special attention shall be given to the proper connecting and earthing of the system.

5 COMMISSIONING OF SYSTEMS

5.1 COMMISSIONING AND HANDING OVER TESTS

5.1.1 The testing of the system shall be done in the presence and to the satisfaction of the Engineer.

5.1.2 Tests shall include simulation of fire conditions in each zone to prove the efficiency of all aspects of the system to the satisfaction of the Engineer.

5.1.3 All equipment, material, etc., which may be necessary for these tests shall be supplied by the Contractor, including a suitable smoke generator.

5.1.4 The Contractor shall do his own complete commissioning tests before the actual first take-over tests are done. This is to satisfy himself that everything is working and is in accordance with the specification.

6 DOCUMENTATION, DRAWINGS AND MAINTENANCE

6.1 BLOCK PLAN

6.1.1 An approved block plan, indicating the zones and appropriate zone reference numbers, shall be installed at all control panels and repeater panels.

6.1.2 The block plan shall be discussed with the Fire Prevention Officer of the Engineer before manufacturing takes place.

6.1.3 The block plan shall have a professional appearance. Text shall be in English and at least one other official language to be decided in conjunction with the Engineer and the User Department. A freehand drawing or badly finished plan will not be acceptable.

6.1.4 The block plan shall clearly indicate the position of the zone in which a fire has started, when read together with the displays and indications on the control panel.

6.1.5 Non-fading material shall be used for the artwork. The block plan shall be mounted in a frame behind glass, or shall be covered with a transparent stick-on material, to protect the artwork.

6.1.6 The block plan shall be mounted in an approved position at the control panel.

6.1.7 For an addressable system, the addresses of all field devices shall be shown on the block plan.

6.1.8 The exact requirements of the panel and block plan will be specified in the Supplementary Specification.

6.2 TRAINING PROGRAM

6.2.1 Tenderers shall allow in their tender prices for a training course, to train on site at least four (4) persons, as nominated by the User Department from his own operating personnel. The training shall be adequate for the installation, to ensure that operating staff fully understand the system. During this period, the personnel shall be made fully conversant with the operation of, and daily maintenance required for, each item of equipment of the system. The training, especially on computer equipment and control panels, shall be of such a standard that will enable the User Department to carry out his own in-house training of other personnel.

6.2.2 The training course shall start only after first take-over inspection of the system.

6.2.3 The training course shall be carried out in the language medium as chosen by the User Department.

6.2.4 The Operating Manual of the contract shall include a full description of the contents of the training course, referred to in clause 6.2.1. above.

6.3 OPERATING INSTRUCTIONS

6.3.1 Instruction cards, indicating clearly the procedure to be followed in the event of a "FIRE" alarm, shall be supplied and framed under Perspex in approved teak or non-ferrous material frames. The instruction cards shall be in English and at least one other official language to be decided in conjunction with the Engineer and the User Department. The frame shall be neatly mounted on the walls alongside the control panel and external indicator panels respectively, where they can be clearly read.

6.3.2 In the case of the control panel, the instruction card shall also state clearly the procedure to be followed in the event of a "FAULT" alarm.

6.4 OPERATING MANUALS

6.4.1 Three complete sets of the Operating Manuals, in English, shall be provided to be used by the User's personnel who will operate the system. The Operating Manuals shall be in the form of plastic display binders, and shall contain the following:

a. Complete operating instructions.
b. Action to be taken during "FAULT" and "FIRE" conditions.
c. Names, telephone and facsimile numbers, and addresses of contact personnel.
d. Operating procedures, as contemplated in clause 6.3 hereof.

6.4.2 The Operating Manuals shall contain no technical information. This shall be included in the Maintenance Manuals.

6.4.3 A concept copy of the Operating Manual(s) shall be submitted to the Engineer, at least two (2) weeks prior to the anticipated first hand-over of the installation, for scrutiny and possible amendment.

6.4.4 First delivery of an installation will not be taken unless acceptable manuals are submitted prior to the first hand-over inspections.

6.5 MAINTENANCE MANUALS

6.5.1 Three complete sets of the Maintenance Manuals, in English only, shall be provided. The manuals shall contain the following:

a. A complete set of "as built" drawings of the contract, in a form acceptable to the Engineer. No drawings shall be smaller than A4 size. Large drawings shall be reduced to A3 or A4 size for inclusion in the manuals, provided they remain legible.

b. A complete set of "machine shop" drawings of the contract, showing dimensions, finishes, general arrangements of panels, consoles, computer assemblies, etc.

1. A complete set of wiring diagram drawings of all equipment, showing component identification, types and values.

2 d. block diagram drawing for each piece of equipment containing more than one PC board, showing the interconnections of boards, complete with connector and plug numbers, and PC board identification markings.

e. A complete list of all equipment containing the following information:

i. Name of the equipment (or description thereof).
ii. Serial number of equipment.
iii. Type number of equipment.
iv. Manufacturer of equipment.
v. Equivalent replacement model of equipment (where applicable).
vi. Names, addresses, telephone and facsimile numbers of firms supplying equipment.

f. A complete and comprehensive description of the operation of the system and of each individual piece of equipment.

g. A complete and comprehensive description of the maintenance of the system and of each individual piece of equipment in respect of daily, weekly, monthly or annual maintenance.

h. Advanced technical information of the system may also be bound into the Maintenance Manuals as additional information. Any literature not in the English language, shall have the English translation attached.

6.5.2 A concept copy of the Maintenance Manual(s) shall be submitted to the Engineer, at least two (2) weeks prior to the anticipated first hand-over of the installation for scrutinizing and possible amending.

6.5.3 First delivery of the installation will not be taken, unless acceptable manuals are submitted prior to the first hand-over inspections.

6.6 MAINTENANCE

6.6.1 Maintenance and Guarantee

a. The tenderer for this contract shall allow in his tender price for the maintenance of the complete installation for a period of twelve (12) months, starting from the date of the first take-over of the contract by the User Department.

b. It is a specific requirement of this contract that the Contractor shall allow for monthly inspection visits during the 12 month maintenance period, and that he shall submit full reports for each monthly visit. The reports shall contain the status of the system as well as the faults which occurred on the system during the previous month.

c. A log book shall be supplied by the Contractor. The log book shall be kept on site in charge of the responsible person appointed by the User Department for this purpose. The Contractor shall

complete the log book, showing all maintenance done by him, as well as repairs of faults which may have occurred.

d. The log book shall also contain the following information:

- Date
- Type of fault reported and by whom
- Date of fault report
- Work done
- Name and signature of person carrying out the work
- Name and signature of the person in charge of the site.

e. The log book shall be filled in in TRIPLICATE. One copy shall accompany the monthly report to the Engineer, one copy shall be for the Contractor's own use, whilst the third copy shall remain in the logbook as a record.

f. The Contractor shall also allow for a complete maintenance service of the system after every six (6) months, i.e. two such services in the twelve (12) month guarantee period. The logbook shall also be filled in and reports submitted for these services to the Engineer.

g. The reports shall be submitted to the within seven (7) days of the service. Serious faults shall immediately be reported to the Regional Representative and the Consulting Engineer by telephone.

h. No maintenance or repair work shall be done on site without the knowledge, and approval, of the responsible person in charge on the site.

6.6.2 Maintenance Program

a. The Contractor shall draw up a complete maintenance program document for the system, which shall enable the User Department to maintain the system on a daily basis. This program must be inserted into both the Operating Manuals and Maintenance Manuals.

b. This document shall be in English and at least one other official language to be decided in conjunction with the and User Department, and shall indicate clearly the steps to be taken to prevent failure of the system.

c. The normal maintenance, which is, for example, necessary for the maintenance of batteries in the system, shall be clearly indicated in the documentation in a separate section.

PARTB 2.2.2

SMOKE DETECTION INSTALLATION

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SCOPE OF WORK

1. GENERAL

The installation shall be erected and carried out in compliance with the most recent versions of:

a) SANS 10139

b) The local Municipal Bye-laws and Regulations as well as the regulations of the local Supply Authority.

c) The Occupational Health and Safety Act, Act No. 85 of 1993.

d) The Mines and Works Regulations, Government Notice No. R1609 of the 28th September 1962.

e) The National Building Regulations and Building Standards Act, Act No 103 of 1977.

f) The local fire regulations.

Should any requirements, bye-laws or regulation which contradicts this Specification, apply or become applicable during erection of the installation, such requirements, bye-laws or regulations shall overrule the Specification.

2. SCOPE OF WORK

The contract entails the supply, installation of a new addressable fire detection system which takes in: -

- Supply and Installation of new 2-Loop Kidde 2X-AT-F2 addressable fire Panel
- Supply and installation PH30 wiring, detectors, break glass unit, interfaces, line isolators, etc. in all refurbish areas as indicated on drawing E5317/FG and F1.
- Testing and commissioning of complete systems.

3. FIRE DETECTION SYSTEM

3.1 SYSTEM DESCRIPTION

The new Fire system shall operate as a double knock addressable system.

The fire system is interfaced with the lift and HVAC with in the building.

3.1.1 FIRE PANEL

A new 2-Loop Kidde 2X-AT-F2 addressable fire panel shall be supplied and installed by the appointed fire contractor on the position indicated on the drawing.

3.2 **DETECTORS**

The contractor shall supply and install addressable Optical smoke and heat detectors at the positions indicated on the drawings.

All smoke detectors shall be the colour white.

3.3 **BREAKGLASS**

The Fire Contractors shall install addressable break glass devices at the position indicated on the drawing.

The Electrical Contractor shall provide a system of drawboxes and conduits to these points.

All Breakglass units shall be the colour RED.

3.4 **ACCESS DOORS**

The contractor shall interface all access control doors with the fire detection system, so when a fire signal is obtained the maglocks will release automatically.

3.5 **LIFT**

The contractor shall interface the new lift with the new fire system, so when a fire signal is obtained the lift will automatically return to ground level and lift doors will remain open.

3.6 **HVAC**

All Fresh air fans and HVAC will be interface with the fire system, so when a fire signal is obtained the fresh air and HVAC systems will shut off.

4. FIRE AND REFUGE INTERCOM

The successful contractor shall supply and install a new Fire and Refuge intercom at the positions indicated on the drawing. The new Main Call station shall be located on ground floor at reception.

The fire and refuge intercom outstation will be located at the refuge area on the first floor.

5 AUDIBLE ALARMS (SOUNDERS)

5.1 Sounders shall conform to BS 5839 part 1 and part 4.

5.2 The sound level for sounders and audible alarms shall be as follows:

- Audible indications (e.g. in the control panel) • 65 dB(A) at 1 m
- Evacuation sounders - at least 103 dB(A) at 1 m
- Outdoor sirens - 112 dB(A) at 1 m

The frequency, or major frequency in a two tone alarm, shall lie in the range of 500 to 1000 Hz

5.6 CABLING

The Contractor shall supply and install **PH-30** ***"No Burn"*** Cable throughout the new installation. No FR20 cable shall be use for the fire detection system.

The Contractor shall install new cabling for the new smoke detectors and all other associated equipment. The Contractor shall use the new conduit system as the wire ways.

6. INTRUDER ALARM

6.1.1 System Description

The contractor shall supply and install a new 32 zone intruder system with communication link to protection services.

6.2 Intruder Panel

The contractor shall supply and install a new 8 zone intruder alarm panel at the position indicated on the drawing including battery backup for power failures.

6.3 Magnetic Contacts

The contractor shall supply and install new surface mounted magnetic contacts for both front and back doors.

6.4 PIR Sensors

The contractor shall supply and install new PIR sensors at the position indicated on the drawing. Sensors shall have a 12m detection range.

7. TESTING AND COMMISSIONING

7.1 COMMISSIONING AND HANDING OVER TESTS

7.1.1 The testing of all the systems shall be done in the presence and to the satisfaction of the Engineer.

7.1.2 Tests shall include simulation of fire and conditions intruder in the building to prove the efficiency of all aspects of the system to the satisfaction of the Engineer.

7.1.3 All equipment, material, etc., which may be necessary for these tests shall be supplied by the Contractor, including a suitable smoke generator.

7.1.4 The Contractor shall do his own complete commissioning tests before the actual first take-over tests are done. This is to satisfy himself that everything is working and is in accordance with the specification.

The Fire Contractor shall test the entire system as a whole on the completion of the installation and provide all relevant testing certificates.

PART B2.3

ACCESS CONTROL INSTALLATION

DETAILED REQUIREMENTS AND SCOPE OF WORK

1. GENERAL

The work shall be carried out in strict accordance with the following Standards and Requirements:

2. WIRE WAYS

All wire ways will be installed by the Electrical contractor under the supervision of the Electrical Engineer.

The access control contractor shall scrutinise the layout drawings and highlight any problem areas in good time and advise the Engineer accordingly.

3. DOORS REQUIRING ACCESS CONTROL

The doors requiring access control are indicated on the attached drawings and are existing doors.

Door Number as follows:-

Level 1: Door 1: Entrance to Hall
Level 1: Door 2: Exit from wall to back staircase
Level 1: Door 3: Exit from Library area to staircase

5 DOOR CONTROLLER AND BATTERY ENCLOSURE FOR ACCESS CONTROL DOORS

The door controller and battery enclosure shall be located on the safe side of the room to prevent tampering, above the ceiling at an accessible location for routine maintenance.

No door controller shall be installed lower than 2.2m or higher than 2.4m. Final positions of the enclosure shall be confirmed with the electrical engineer before installation.

6. MAGNETIC LOCKS

The contractor shall supply and install the following magnetic locks on the following types of doors:-

6.1 Timber doors: Magnetic claw lock for 300kg front mount with contact monitor.

7. BREAK GLASS UNITS

All access control doors shall be fitted with a 90mm x 90mm x 55mm green break glass units (DMN702G combo)

When the break glass is activated in an emergency situation the power supply to the maglock will be interrupted immediately.

8. Z- BRACKET

The contractor shall supply and install a purpose made Z-bracket to install the striker plate on.

It will be required that the contractor do all measurements on site to ensure the bracket is manufactured correctly.

The bracket shall be manufactured with treated Steele, with colour provided at the later stage.

9. ELECTRICAL WIREWAYS AND DEDICATED SOCKET OUTLET

All wire ways for access control shall be provided by the electrical contractor.

A dedicated socket outlet shall be installed in close proximity of the door controller at the position indicated on the electrical drawings.

10. ACCESS CONTROL HARDWARE (IMPRO)

10.1 General

System being used shall be Hikvision

10.2 Door Controller

Multi-function door controller - 1 door, Operating the maglock from Fingerprint-recognition, push-button or remote control, including robust tamper-proof enclosure and 12V power supply with back-up battery.
Similar and equal to Hikvision DS-K2601

10.3 Fingerprint Reader

Surface mounted reader with, access card (Mifare 1), and fingerprint recognition complete in robust, tamper-proof enclosure. Mounted on walls, door frames or concrete columns.
Similar to Hikvision DS-K1T804AEF

10.4 Power Supply

The access control contractor shall supply and install new power supplies for all doors.

10.5 Battery (Backup)

The access control contractor shall supply and install new deep cycle batteries for all access control doors. Batteries shall be12 V 17Ah (Model: GP 12170) CSB Deep Cycle Battery.

10.6 Call point/Break glass

The access control contractor shall supply and install new green break glass units for all doors. Break glass units shall be green DMN702G combo – W 90mm x L 90mm x D 55mm.

10.7 Junction Boxes

The access control contractor shall supply and install a new access control equipment enclosure for all access control equipment. The enclosure shall be ABB – UT10 – W 410mm x L 410mm x D 165mm.

Access control equipment for respective doors shall be housed in this junction box.

10.10 Keyswitch/Override Switch

An override switch shall be provided at the following doors:

Level 1: Door 1:
Level 1: Door 2:

These doors shall be a double “KB3 ON-OFF switch in a Slimline box”

Screw heads shall be drilled in the form of a hollow half circle afterwards to prevent tamper or screw driver us.

11. CABLING

11.1 General

Yellow Mylar Cable 2 Pair Shielded, Screened with 0.22mm core size (Red, Blue, Yellow and Green) shall be used for all RS485 communication connection accept for Card Reader and 12V Power Supply to door Controller. Cable wiring must be shielded inside to prevent cross talk and interference.

11.2 Fingerprint readers

Yellow or grey Mylar Cable 4 Pair Shielded, Screened with 0.22mm core size (Red, Blue, Yellow, Green, Brown, Orange/ Purple, Black and White) shall be used for Card Reader connections. Cable wiring must be shielded inside to prevent cross talk and interference.

11.3 12 Volt Power supply

White Cabtyre cable shall be used for 12 Volt power supply to the Door Controller connections.
No flex or other cabling will be accepted.

Note:
- All terminations to terminal shall be done with approved termination accessories, i.e. crimped lugs, etc.
- All wiring shall have colour coded sleeves.
- No connections shall be done with foil shieling or drain wire.

11.4 Marking van labelling

All wiring shall be clearly marked with appropriate labels. A label machine similar to Brother Labeller shall be used. Labels shall be black on yellow or black on white.

12. INSTALLATION

12.1 General

The entire installation shall be done in accordance to the manufactures specification and the relevant standards unless otherwise instructed by the engineer.

The access control equipment i.e., door controller and enclosure, power supply and surge protection device shall be installed in the ceiling space near the access control door. If no ceiling space is available the contractor shall installed the access equipment out of sight to prevent tampering. The proposed position shall be approved by the engineer prior to installation.

Card readers and green break glass units shall be flush mounted on positions indicated on the drawings. All wiring shall be clearly marked with a Brother or similar labeller. Labels shall be black on yellow or black on white.

12.2 Guarantee

The contractor shall guarantee the access control system for one year against defects in workmanship from the date of system acceptance.

The guarantee shall cover all cost associate with troubleshooting, repair and replacement of defective work, including labour costs, transportation, logging, materials and equipment.

12.3 Quality Assurance

The Installer or technician doing the installation must be certified access control installer and must provide prove before commencement or acceptance of the project or tender.

Quality Assurance must be done by the Contractor after each individual installation.

Contractor must at all times take care in doing work neatly and comply with the industry standards.

12.4 Commissioning

On completion of Work and prior to requesting an Acceptance test, the Contractor shall conduct a final inspection, and pre-test all equipment and system features.

The Contractor shall rectify any defects discovered as the result of the inspection and pre-test.

Quality Assurance check and inspection will be done separately or in collaboration with Contractor

Any portions of the Work found not to comply in compliance with the Specification will be rejected. And the contractor shall be asked to redo as specified.

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PART B4

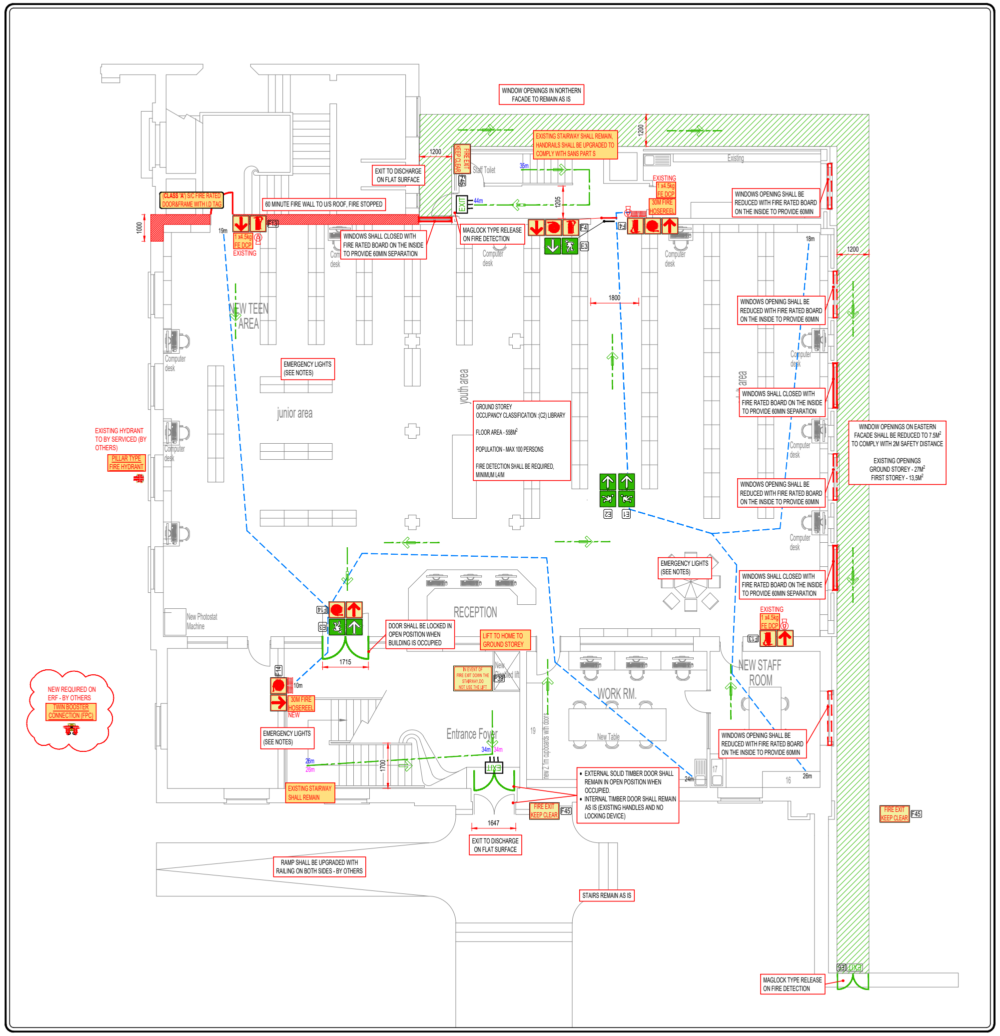
ELECTRICAL INSTALLATION

SCHEDULE OF QUANTITIES

33. APPENDIX D – Fire Engineering Specifications and Drawings

List of Drawings:

- M5317/RFD1: GROUND STOREY FIRE PLAN LAYOUT
- M5317/RFD2: FIRST STOREY FIRE PLAN LAYOUT
- M5317/RFD3: ROOF LAYOUT FIRE PLAN LAYOUT



GROUND STOREY

SCALE: 1:100

FIRE NOTES:

THE PROPOSED FIRE DESIGN AIMS TO COMPLY WITH SANS 10400: 2024.

OCCUPANCY CLASSIFICATION (C2) EXISTING LIBRARY BUILDING

BUILDING SHALL HAVE A STRUCTURAL STABILITY OF NOT LESS THAN 60 MINUTES.

OCCUPANCY SEPARATION OF 60 MINUTE FIRE RESISTANCE WILL BE PROVIDED BETWEEN LIBRARY AND ADJACENT BUILDING. ALL OCCUPANCY SEPARATING WALLS WILL BE BUILD TO THE UNDERSIDE OF THE ROOF COVERING/SLAB AND BE FIRE STOPPED (CERTIFIED BY THE APPLICATOR ON COMPLETION)

COMBUSTIBLE MATERIAL PENETRATING NEW FIRE WALL SHALL BE PROTECTED WITH AN INTUMESCENT COATING FOR 500MM ON EACH SIDE.

THE 1M FLAME PATH BARRIER SHALL BE MAINTAINED BETWEEN FLOOR LEVELS, DIVISIONS, TENANTS AND THE EXTERNAL PERIMETER (VERTICAL AND HORIZONTAL).

NEW CEILING AND INSULATION MATERIAL TESTED IN ACCORDANCE WITH SANS 10177 AND SANS 428.

AIR SUPPLY GRILLES OR RETURN-AIR INTAKE GRILLES OF COMBUSTIBLE MATERIAL - NOT MORE THAN 5% OF TOTAL AREA OF CEILING (INDIVIDUAL GRILLS NOT > 0.09M²)

CLASSIFICATION OF FITTED FLOOR COVERINGS / INTERNAL FINISHES (FIRE INDEX):
(C2) GENERAL AREAS - 3

THE USE OF COMBUSTIBLE MATERIAL SHALL BE PERMITTED FOR ANY DOOR, DOOR LEAF OR TRIM, DOOR FRAME OR WINDOW FRAME, PELMET, CHAIR RAIL, PICTURE RAIL OR SKIRTING (4.15.2).

THE MAXIMUM DIVISION AREA DOES NOT EXCEED 5000 M² FOR C2.

ALL FIRE ESCAPE DOORS WILL BE FITTED WITH APPROVED LOCKING DEVICES ONLY (PANIC BAR OR MAGNETIC LOCKS). THE USE OF MAGLOCK DEVICES IN LIEU OF PANIC BARS IN ESCAPE ROUTES IS ACCEPTABLE SUBJECT TO (A) FAILSAFE SYSTEMS MUST BE USED THAT WILL RELEASE AUTOMATICALLY IN FIRE CONDITIONS .

DOOR-CLOSERS: ALL FIRE RATED DOORS SHALL BE EQUIPPED WITH SELF-CLOSING DEVICES OR COORDINATED CLOSING DEVICE WERE REQUIRED.

ALL FIRE ESCAPE DOORS SHALL RELEASE / UNLOCK, ON THE RECEIPT OF A SIGNAL FROM THE FIRE DETECTION SYSTEM OR WHEN THE **POWER SUPPLY TO THE MAGNETIC LOCK** IS CUT.

ROOF SPACE BETWEEN THE CEILING AND ROOF COVERING SHALL BE DIVIDED BY MEANS OF NON-COMBUSTIBLE FIRE STOPS WITH A STABILITY AND INTEGRITY RATING OF AT LEAST 20 MINUTES INTO AREAS OF NOT MORE THAN 250 M² AREAS. THE DISTANCE BETWEEN FIRE STOPS SHALL NOT EXCEED 20 M

ESCAPE DISTANCES TO ACCESS DOORS IS WITHIN 45 M.

EXTERNAL ESCAPE ROUTES SHALL BE MADE COMPLIANT FREE FROM TRIPPING HAZARDS.

THE WIDTH OF THE ESCAPE PASSAGES ROUTES SHALL REMAIN AS IS. ALL FIRE ESCAPES DISCHARGE DIRECTLY TO OPEN SPACE .

DOORS ON ESCAPE ROUTES SHALL OPEN IN DIRECTION OF ESCAPE AND DISCHARGE ON LEVEL GROUND BEFORE CHANGE IN LEVEL.

EXISTING STAIRS AS PER SANS 10400 PART - S
CONTINUOUS HANDRAILS SHALL BE PROVIDED ON BOTH SIDES, WIDTH, HEIGHT BETWEEN LANDINGS, SOLID RISER, THREAD, NOSING (REFER TO DIAGRAM)

EXISTING RAMP AS PER SANS 10400 PART - S
RAMPS LESS THAN 600MM IN HEIGHT SHALL BE PROVIDED WITH SKIRTING RAIL OR UPSTAND TO PREVENT FALLING.

THRESHOLD TRANSITIONS BETWEEN FINISHED SURFACES SHOULD NOT EXCEED 5 MM IN HEIGHT.

MARKING AND SIGNPOSTING: ESCAPE ROUTES, STAIRWAYS AND RAMPS SHALL BE PROVIDED WITH EMERGENCY LIGHTING TO THE POINT OF DISCHARGE INTO A PUBLIC PLACE (50 LUX FOR 60 MIN 100 MM ABOVE FLOOR LEVEL). **(ELECTRICAL ENGINEER FINAL DESIGN) (EMERGENCY SUPPLY SHALL BE PROTECTED FOR 60 MINUTES)**

ALL SIGNS TO COMPLY WITH THE REQUIREMENTS CONTAINED IN SANS 1186-5. ALL SIGNS TO BE PHOTO-LUMINESCENT - FIXED / FRAMED (190 MM X 190 MM). ALL MANUAL CALL POINTS TO BE CLEARLY MARKED (F31)

INTERNALLY ILLUMINATED (BATTERY BACK-UP) "EXIT" LIGHTS WILL BE PROVIDED ABOVE THE FINAL FIRE EXIT DOORS (SANS APPROVED TYPE ONLY).

THE **FIRE DETECTION** AND MANUALLY ACTIVATED VISUAL AND AUDIBLE FIRE ALARM SYSTEMS SHALL BE INSTALLED IN ALL AREAS IN ACCORDANCE WITH SANS 10139 (CATEGORY L4/ M SYSTEM) (SAQCC DESIGN CERTIFICATE TO BE PROVIDED BY THE APPOINTED FIRE DETECTION DESIGNER)

THE FIRE DETECTION SHALL BE INTER CONNECTED WITH AUTOMATIC DOORS AND VENTILATION SYSTEMS / FANS (VENTILATION SYSTEMS TO SHUT DOWN IN FIRE CONDITIONS - DOUBLE KNOCK).

THE LIFT TO HOME TO GROUND IN FIRE CONDITIONS (INTERCONNECTED WITH FIRE DETECTION)

NEW NB100 WATER SUPPLY: WATER SUPPLY TO BE SUFFICIENT TO ENSURE FLOW RATES AND PRESSURES AS FOLLOWS: HOSE REELS - 0.5 LITRE/SECOND @ 300 KPA (TO COMPLY WITH PART W OF SANS 10400)

FIRE HOSE REELS SHALL BE INSTALLED AT A RATE OF 1 PER 500 M² (INSTALLED TO COMPLY WITH SANS 543 AND NBR WW SECTION). ADDITIONAL FIRE HOSE REELS WILL BE INSTALLED C/W WITH PRESSURE GAUGE AS SHOWN.

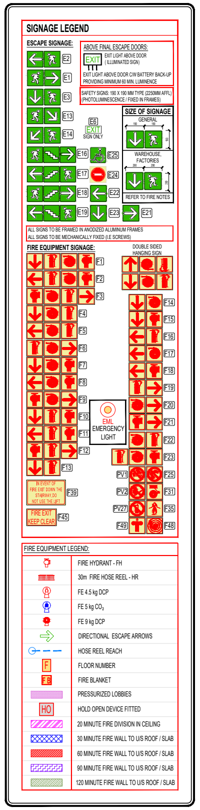
STORAGE TANKS (VOLUME OF 10 M³) OF WATER WITH A PUMPING SYSTEM SHALL BE PROVIDED IF THE MUNICIPAL PRESSURE IS FOUND TO BE INSUFFICIENT

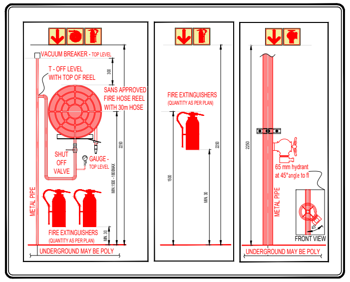
FIRE HYDRANTS: FIRE HYDRANTS AND TWIN BOOSTER SHALL BE INSTALLED AS INDICATED ON THE PLANS (1 HYDRANT PER LEVEL)

EXISTING PORTABLE FIRE EXTINGUISHERS: 1 X 4.5 KG DCP TYPE PER 200 M² INDICATED WITH THE CARRY HANDLE NOT MORE THAN 1500 MM FROM GROUND LEVEL.

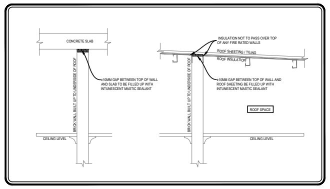
ALL PENETRATIONS / SERVICE SHAFTS SHALL BE FIRE STOPPED WHERE IT PASSES THROUGH FIRE RATED CONSTRUCTION (INDICATED IN COLOR ON THE DRAWINGS) **FIRE STOPPING TO BE CERTIFIED BY THE APPLICATOR ON COMPLETION** (USE HILTI , NULIFIRE, BRIGIT OR SIMILAR FIRE STOPPING SYSTEMS)

ALL MANUAL CALL POINTS SHALL BE PROVIDED WITH SIGNAGE. F31

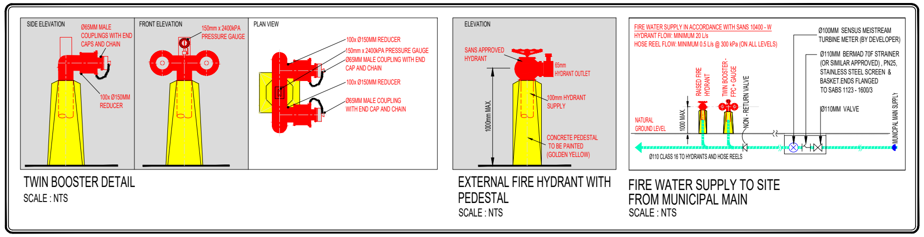




FIRE EQUIPMENT INSTALLATION DETAIL



TYPICAL FIRE STOPPING DETAIL



TWIN BOOSTER DETAIL

SCALE : NTS

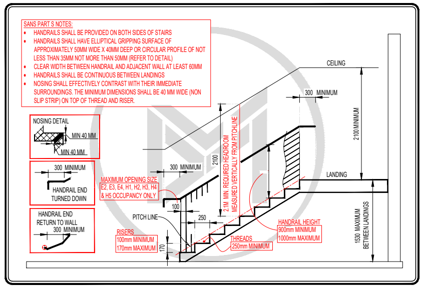
EXTERNAL FIRE HYDRANT WITH PEDESTAL

SCALE : NTS

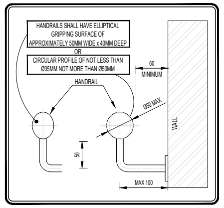
FIRE WATER SUPPLY TO SITE FROM MUNICIPAL MAIN

SCALE : NTS

FIRE WATER



STAIRWAY (PART S) - SECTION VIEW



HANDRAIL DETAIL

FOR APPROVAL

DE VILLIERS & MOORE

DATE ISSUED 17 SEPT 2024 DATUM UITG.

CONSULTING ENGINEERS/ RAADGEWENDE INGENIEURS

REV HER	DESCRIPTION	DATE DATUM	BY
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i	STAGE 4 - FOR APPROVAL	2024.10.31	IL

CLIENT
KLIENT

Stellenbosch Municipality

de villiers & moore
CONSULTING ENGINEERS
Electrical, Mechanical, Fire

HEAD OFFICE / HOOFKANTOOR

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PROJECT TITLE
PROJEK TITEL

STELLENBOSCH PUBLIC LIBRARY

PLEIN STREET

DRAWING TITLE
TEKENING TITEL

GROUND STOREY FIRE PLAN LAYOUT

SCALE SKAAL	DATE DATUM	DRAWN GETEKEN	DESIGNED ONTWERP
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M5317/RFD1

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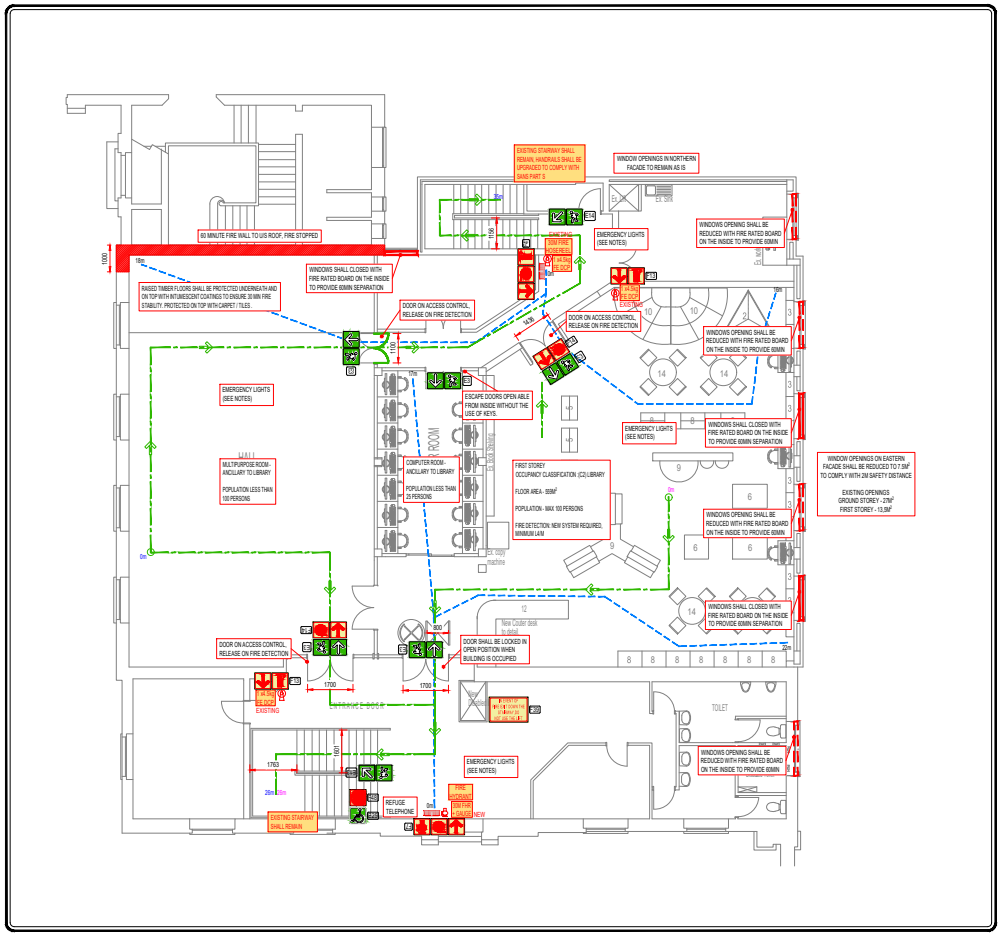

FIRST STOREY

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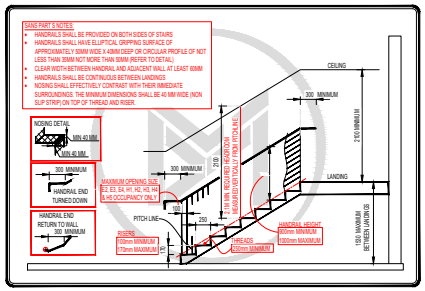
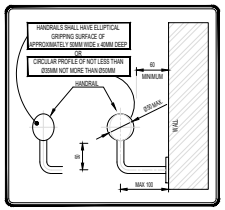


STAIRWAY (PART S) - SECTION VIEW



HANDRAIL DETAIL

FIRE NOTES:

THE PROPOSED FIRE DESIGN AIMS TO COMPLY WITH SANS 10400 203A

OCCUPANCY CLASSIFICATION (C2) EXISTING LIBRARY BUILDING

BUILDING SHALL HAVE A STRUCTURAL STABILITY OF NOT LESS THAN 60 MINUTES.

OCCUPANCY SEPARATION OF 60 MINUTE FIRE RESISTANCE WILL BE PROVIDED BETWEEN LIBRARY AND ADJACENT BUILDING. ALL OCCUPANCY SEPARATING WALLS WILL BE BUILD TO THE UNDERSIDE OF THE ROOF COVERINGS AB AND BE FIRE STOPPED (CERTIFIED BY THE APPLICATOR ON COMPLETION)

COMBUSTIBLE MATERIAL PENETRATING NEW FIRE WALL SHALL BE PROTECTED WITH AN INTUMESCENT COATING FOR 500MM EACH SIDE.

THE 90 FLAME PATH BARRIER SHALL BE MAINTAINED BETWEEN FLOOR LEVELS, DIVISIONS, TENANTS AND THE EXTERNAL PERIMETER (VERTICAL AND HORIZONTAL)

NEW CEILING AND INSULATION MATERIAL TESTED IN ACCORDANCE WITH SANS 10177 AND SANS 428.

AIR SUPPLY GRILLES OR RETURN AIR INTAKE GRILLES OF COMBUSTIBLE MATERIAL - NOT MORE THAN 6% OF TOTAL AREA OF CEILING (INDIVIDUAL GRILLS NOT > 0.05M²)

CLASSIFICATION OF FITTED FLOOR COVERINGS / INTERNAL FINISHES (FIRE INDEX):
(C2) - GENERAL AREAS - 3

THE USE OF COMBUSTIBLE MATERIAL SHALL BE PERMITTED FOR ANY DOOR, DOOR LEAF OR TRIM, DOOR FRAME OR WINDOW FRAME, PELMET, CHAIR RAIL, PICTURE RAIL OR SKIRTING (K 15.2)

THE MAXIMUM DIVISION AREA DOES NOT EXCEED 5000 M² FOR C2.

ALL FIRE ESCAPE DOORS WILL BE FITTED WITH APPROVED LOCKING DEVICES ONLY (PANIC BAR OR MAGNETIC LOCKS). THE USE OF MAGLOCK DEVICES IN LIEU OF PANIC BARS IN ESCAPE ROUTES IS ACCEPTABLE SUBJECT TO (A) FAILSAFE SYSTEMS MUST BE USED THAT WILL RELEASE AUTOMATICALLY IN FIRE CONDITIONS.

DOOR CLOSERS: ALL FIRE RATED DOORS SHALL BE EQUIPPED WITH SELF-CLOSING DEVICES OR COORDINATED CLOSING DEVICE WHERE REQUIRED.

ALL FIRE ESCAPE DOORS SHALL RELEASE / UNLOCK, ON THE RECEIPT OF A SIGNAL FROM THE FIRE DETECTION SYSTEM OR WHEN THE **POWER SUPPLY TO THE MAGNETIC LOCK** IS CUT.

ROOF SPACE BETWEEN THE CEILING AND ROOF COVERING SHALL BE DIVIDED BY MEANS OF NON-COMBUSTIBLE FIRE STOPS WITH A STABILITY AND INTEGRITY RATING OF AT LEAST 2/4 MINUTES INTO AREAS OF NOT MORE THAN 200 M² AREAS. THE DISTANCE BETWEEN FIRE STOPS SHALL NOT EXCEED 20 M

ESCAPE DISTANCES TO ACCESS DOORS IS WITHIN 45 M.

EXTERNAL ESCAPE ROUTES SHALL BE MADE COMPLIANT FREE FROM TRIPPING HAZARDS.

THE WIDTH OF THE ESCAPE PASSAGES ROUTES SHALL REMAIN AS IS. ALL FIRE ESCAPES DISCHARGE DIRECTLY TO OPEN SPACE.

DOORS ON ESCAPE ROUTES SHALL OPEN IN DIRECTION OF ESCAPE AND DISCHARGE ON LEVEL GROUND BEFORE CHANGE IN LEVEL.

EXISTING STAIRS AS PER SANS 10400 PART - S
CONTINUOUS HANDRAILS SHALL BE PROVIDED ON BOTH SIDES, WIDTH, HEIGHT BETWEEN LANDINGS, SOLID RISER, THREAD, NOSING (REFER TO DIAGRAM)

EXISTING RAMP AS PER SANS 10400 PART - S
RAMPS LESS THAN 600MM IN HEIGHT SHALL BE PROVIDED WITH SKIRTING RAIL OR UPSTAND TO PREVENT FALLING.

THRESHOLD TRANSITIONS BETWEEN FINISHED SURFACES SHOULD NOT EXCEED 5 MM IN HEIGHT.

MARKING AND SIGNPOSTING: ESCAPE ROUTES, STAIRWAYS AND RAMPS SHALL BE PROVIDED WITH EMERGENCY LIGHTING TO THE POINT OF DISCHARGE INTO A PUBLIC PLACE (50 LUX FOR 60 MIN 100 MM ABOVE FLOOR LEVEL) **(ELECTRICAL ENGINEER FINAL DESIGN) (EMERGENCY SUPPLY SHALL BE PROTECTED FOR 60 MINUTES)**

ALL SIGNS TO COMPLY WITH THE REQUIREMENTS CONTAINED IN SANS 11864. ALL SIGNS TO BE PHOTO LUMINESCENT - FIXED / FRAMED (150 MM X 150 MM). ALL MANUAL CALL POINTS TO BE CLEARLY MARKED (F31)

INTERNALLY ILLUMINATED (BATTERY BACK-UP) "EXIT" LIGHTS WILL BE PROVIDED ABOVE THE FINAL FIRE EXIT DOORS (SANS APPROVED TYPE ONLY).

THE **FIRE DETECTION** AND MANUALLY ACTIVATED VISUAL AND AUDIBLE FIRE ALARM SYSTEMS SHALL BE INSTALLED IN ALL AREAS IN ACCORDANCE WITH SANS 10139 (CATEGORY L4/ M SYSTEM) (SAQCC DESIGN CERTIFICATE TO BE PROVIDED BY THE APPOINTED FIRE DETECTION DESIGNER)

THE FIRE DETECTION SHALL BE INTER CONNECTED WITH AUTOMATIC DOORS AND VENTILATION SYSTEMS / FANS (VENTILATION SYSTEMS TO SHUT DOWN IN FIRE CONDITIONS - DOUBLE KNOCK).

THE LIFT TO HOME TO GROUND IN FIRE CONDITIONS (INTERCONNECTED WITH FIRE DETECTION)

NEW NB100 WATER SUPPLY: **WATER SUPPLY TO BE SUFFICIENT TO ENSURE FLOW RATES AND PRESSURES AS FOLLOWS**: HOSE REELS - 0.5 LITRE/SECOND @ 200 KPA (TO COMPLY WITH PART W OF SANS 10400)

FIRE HOSE REELS SHALL BE INSTALLED AT A RATE OF 1 PER 500 M² (INSTALLED TO COMPLY WITH SANS 543 AND NBR WW SECTION). ADDITIONAL FIRE HOSE REELS WILL BE INSTALLED C/W WITH PRESSURE GAUGE AS SHOWN.

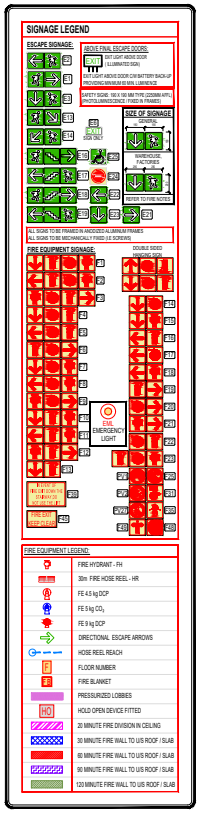
STORAGE TANKS (VOLUME OF 10 M³) OF WATER WITH A PUMPING SYSTEM SHALL BE PROVIDED IF THE MUNICIPAL PRESSURE IS FOUND TO BE INSUFFICIENT

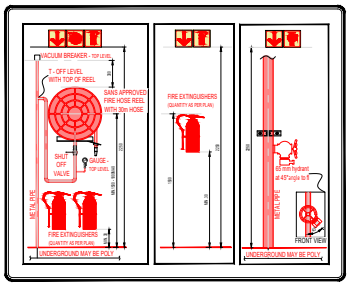
FIRE HYDRANTS: FIRE HYDRANTS AND TWIN BOOSTER SHALL BE INSTALLED AS INDICATED ON THE PLANS (1 HYDRANT PER LEVEL)

EXISTING PORTABLE FIRE EXTINGUISHERS: 1 X 4.5 KG DCP TYPE PER 200 M² INDICATED WITH THE CARRY HANDLE NOT MORE THAN 1500 MM FROM GROUND LEVEL

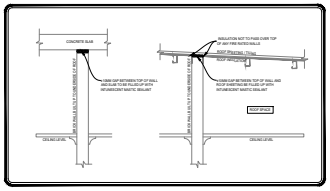
ALL PENETRATIONS / SERVICE SHAFTS SHALL BE FIRE STOPPED WHERE IT PASSES THROUGH FIRE RATED CONSTRUCTION (INDICATED IN COLOR ON THE DRAWINGS) **FIRE STOPPING TO BE CERTIFIED BY THE APPLICATOR ON COMPLETION** (SEE HILTI, NULFIRE, BRIGIT OR SIMILAR FIRE STOPPING SYSTEMS)

ALL MANUAL CALL POINTS SHALL BE PROVIDED WITH SIGNAGE F31





FIRE EQUIPMENT INSTALLATION DETAIL



TYPICAL FIRE STOPPING DETAIL

FOR APPROVAL

DE VILLIERS & MOORE

DATE ISSUED 17 SEPT 2024 DATUM UITG.

CONSULTING ENGINEERS/ RAADGEWENDE INGENIEURS

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i	STAGE 4 - FOR APPROVAL	2024.10.31	IL

CLIENT
KLIENT

Stellenbosch Municipality / Stellenbosch Munisipaliteit

de villiers & moore
CONSULTING ENGINEERS
Electrical, Mechanical, Fire

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PROJECT TITLE
PROJEK TITEL

STELLENBOSCH PUBLIC LIBRARY

PLEIN STREET

DRAWING TITLE
TEKENING TITEL

FIRST STOREY
FIRE PLAN LAYOUT

SCALE SKAAL	DATE DATUM	DRAWN GETEKEN	DESIGNED ONTWERP
1:100 @ A1	2024.08.06	IL	IL

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ARGITEK TEKENING NOMMER

DRAWING NUMBER
TEKENING NOMMER

M5317/RFD2

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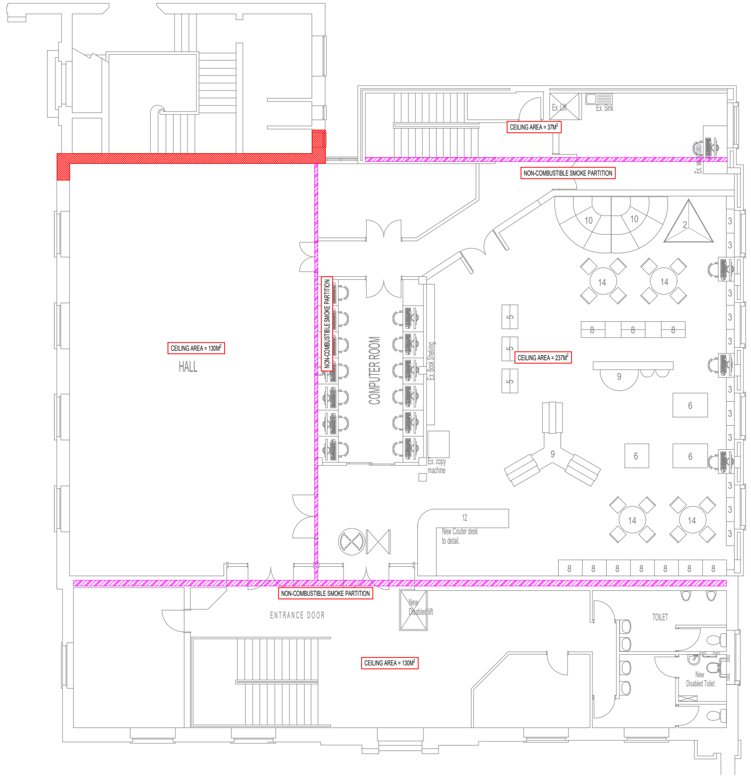


ROOF LAYOUT

SCALE: 1:100

FIRE NOTES:

THE PROPOSED FIRE DESIGN AIMS TO COMPLY WITH SANS 10400: 2024.

OCCUPANCY CLASSIFICATION (C2) EXISTING LIBRARY BUILDING

BUILDING SHALL HAVE A STRUCTURAL STABILITY OF NOT LESS THAN 60 MINUTES.

OCCUPANCY SEPARATION OF 60 MINUTE FIRE RESISTANCE WILL BE PROVIDED BETWEEN LIBRARY AND ADJACENT BUILDING. ALL OCCUPANCY SEPARATING WALLS WILL BE BUILD TO THE UNDERSIDE OF THE ROOF COVERING/SLAB AND BE FIRE STOPPED (CERTIFIED BY THE APPLICATOR ON COMPLETION)

COMBUSTIBLE MATERIAL PENETRATING NEW FIRE WALL SHALL BE PROTECTED WITH AN INTUMESCENT COATING FOR 500MM ON EACH SIDE.

THE 1M FLAME PATH BARRIER SHALL BE MAINTAINED BETWEEN FLOOR LEVELS, DIVISIONS, TENANTS AND THE EXTERNAL PERIMETER (VERTICAL AND HORIZONTAL).

NEW CEILING AND INSULATION MATERIAL TESTED IN ACCORDANCE WITH SANS 10177 AND SANS 428.

AIR SUPPLY GRILLES OR RETURN-AIR INTAKE GRILLES OF COMBUSTIBLE MATERIAL - NOT MORE THAN 5% OF TOTAL AREA OF CEILING (INDIVIDUAL GRILLS NOT > 0.09M²)

CLASSIFICATION OF FITTED FLOOR COVERINGS / INTERNAL FINISHES (FIRE INDEX):
(C2) GENERAL AREAS - 3

THE USE OF COMBUSTIBLE MATERIAL SHALL BE PERMITTED FOR ANY DOOR, DOOR LEAF OR TRIM, DOOR FRAME OR WINDOW FRAME, PELMET, CHAIR RAIL, PICTURE RAIL OR SKIRTING (4.15.2).

THE MAXIMUM DIVISION AREA DOES NOT EXCEED 5000 M² FOR C2.

ALL FIRE ESCAPE DOORS WILL BE FITTED WITH APPROVED LOCKING DEVICES ONLY (PANIC BAR OR MAGNETIC LOCKS). THE USE OF MAGLOCK DEVICES IN LIEU OF PANIC BARS IN ESCAPE ROUTES IS ACCEPTABLE SUBJECT TO (A) FAILSAFE SYSTEMS MUST BE USED THAT WILL RELEASE AUTOMATICALLY IN FIRE CONDITIONS .

DOOR-CLOSERS: ALL FIRE RATED DOORS SHALL BE EQUIPPED WITH SELF-CLOSING DEVICES OR COORDINATED CLOSING DEVICE WERE REQUIRED.

ALL FIRE ESCAPE DOORS SHALL RELEASE / UNLOCK, ON THE RECEIPT OF A SIGNAL FROM THE FIRE DETECTION SYSTEM OR WHEN THE **POWER SUPPLY TO THE MAGNETIC LOCK** IS CUT.

ROOF SPACE BETWEEN THE CEILING AND ROOF COVERING SHALL BE DIVIDED BY MEANS OF NON-COMBUSTIBLE FIRE STOPS WITH A STABILITY AND INTEGRITY RATING OF AT LEAST 20 MINUTES INTO AREAS OF NOT MORE THAN 250 M² AREAS. THE DISTANCE BETWEEN FIRE STOPS SHALL NOT EXCEED 20 M

ESCAPE DISTANCES TO ACCESS DOORS IS WITHIN 45 M.

EXTERNAL ESCAPE ROUTES SHALL BE MADE COMPLIANT FREE FROM TRIPPING HAZARDS.

THE WIDTH OF THE ESCAPE PASSAGES ROUTES SHALL REMAIN AS IS. ALL FIRE ESCAPES DISCHARGE DIRECTLY TO OPEN SPACE .

DOORS ON ESCAPE ROUTES SHALL OPEN IN DIRECTION OF ESCAPE AND DISCHARGE ON LEVEL GROUND BEFORE CHANGE IN LEVEL.

EXISTING STAIRS AS PER SANS 10400 PART - S
CONTINUOUS HANDRAILS SHALL BE PROVIDED ON BOTH SIDES, WIDTH, HEIGHT BETWEEN LANDINGS, SOLID RISER, THREAD, NOSING (REFER TO DIAGRAM)

EXISTING RAMP AS PER SANS 10400 PART - S
RAMPS LESS THAN 600MM IN HEIGHT SHALL BE PROVIDED WITH SKIRTING RAIL OR UPSTAND TO PREVENT FALLING.

THRESHOLD TRANSITIONS BETWEEN FINISHED SURFACES SHOULD NOT EXCEED 5 MM IN HEIGHT.

MARKING AND SIGNPOSTING: ESCAPE ROUTES, STAIRWAYS AND RAMPS SHALL BE PROVIDED WITH EMERGENCY LIGHTING TO THE POINT OF DISCHARGE INTO A PUBLIC PLACE (50 LUX FOR 60 MIN 100 MM ABOVE FLOOR LEVEL). **(ELECTRICAL ENGINEER FINAL DESIGN) (EMERGENCY SUPPLY SHALL BE PROTECTED FOR 60 MINUTES)**

ALL SIGNS TO COMPLY WITH THE REQUIREMENTS CONTAINED IN SANS 1186-5. ALL SIGNS TO BE PHOTO-LUMINESCENT - FIXED / FRAMED (190 MM X 190 MM). ALL MANUAL CALL POINTS TO BE CLEARLY MARKED (F31)

INTERNALLY ILLUMINATED (BATTERY BACK-UP) "EXIT" LIGHTS WILL BE PROVIDED ABOVE THE FINAL FIRE EXIT DOORS (SANS APPROVED TYPE ONLY).

THE **FIRE DETECTION** AND MANUALLY ACTIVATED VISUAL AND AUDIBLE FIRE ALARM SYSTEMS SHALL BE INSTALLED IN ALL AREAS IN ACCORDANCE WITH SANS 10139 (CATEGORY L4/ M SYSTEM) (SAQCC DESIGN CERTIFICATE TO BE PROVIDED BY THE APPOINTED FIRE DETECTION DESIGNER)

THE FIRE DETECTION SHALL BE INTER CONNECTED WITH AUTOMATIC DOORS AND VENTILATION SYSTEMS / FANS (VENTILATION SYSTEMS TO SHUT DOWN IN FIRE CONDITIONS - DOUBLE KNOCK).

THE LIFT TO HOME TO GROUND IN FIRE CONDITIONS (INTERCONNECTED WITH FIRE DETECTION)

NEW NB100 WATER SUPPLY: WATER SUPPLY TO BE SUFFICIENT TO ENSURE FLOW RATES AND PRESSURES AS FOLLOWS: HOSE REELS - 0.5 LITRE/SECOND @ 300 KPA (TO COMPLY WITH PART W OF SANS 10400)

FIRE HOSE REELS SHALL BE INSTALLED AT A RATE OF 1 PER 500 M² (INSTALLED TO COMPLY WITH SANS 543 AND NBR WW SECTION). ADDITIONAL FIRE HOSE REELS WILL BE INSTALLED C/W WITH PRESSURE GAUGE AS SHOWN.

STORAGE TANKS (VOLUME OF 10 M³) OF WATER WITH A PUMPING SYSTEM SHALL BE PROVIDED IF THE MUNICIPAL PRESSURE IS FOUND TO BE INSUFFICIENT

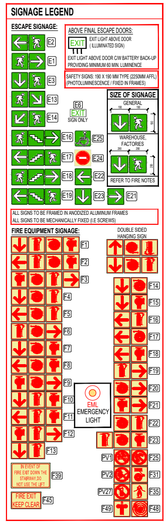
FIRE HYDRANTS: FIRE HYDRANTS AND TWIN BOOSTER SHALL BE INSTALLED AS INDICATED ON THE PLANS (1 HYDRANT PER LEVEL)

EXISTING PORTABLE FIRE EXTINGUISHERS: 1 X 4.5 KG DCP TYPE PER 200 M² INDICATED WITH THE CARRY HANDLE NOT MORE THAN 1500 MM FROM GROUND LEVEL.

ALL PENETRATIONS / SERVICE SHAFTS SHALL BE FIRE STOPPED WHERE IT PASSES THROUGH FIRE RATED CONSTRUCTION (INDICATED IN COLOR ON THE DRAWINGS) **FIRE STOPPING TO BE CERTIFIED BY THE APPLICATOR ON COMPLETION** (USE HILTI , NULIFIRE, BRIGIT OR SIMILAR FIRE STOPPING SYSTEMS)

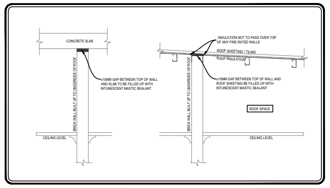
ALL MANUAL CALL POINTS SHALL BE PROVIDED WITH SIGNAGE. F31

SIGNAGE LEGEND



FIRE EQUIPMENT LEGEND:

- FIRE HYDRANT - FH
- 30m FIRE HOSE REEL - HR
- FE 4.5 kg DCP
- FE 5 kg CO_2
- FE 9 kg DCP
- DIRECTIONAL ESCAPE ARROWS
- HOSE REEL REACH
- F — FLOOR NUMBER
- FB — FIRE BLANKET
- PRESSURIZED LOBBIES
- HO — HOLD OPEN DEVICE FITTED
- 20 MINUTE FIRE DIVISION IN CEILING
- 30 MINUTE FIRE WALL TO U/S ROOF / SLAB
- 60 MINUTE FIRE WALL TO U/S ROOF / SLAB
- 90 MINUTE FIRE WALL TO U/S ROOF / SLAB
- 120 MINUTE FIRE WALL TO U/S ROOF / SLAB



TYPICAL FIRE STOPPING DETAIL

REV HER	DESCRIPTION	DATE DATUM	BY
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
i	STAGE 4 - FOR APPROVAL	2024.10.31	IL

CLIENT
KLIENT

Stellenbosch Municipality / Stellenbosch Munisipaliteit

de villiers & moore
CONSULTING ENGINEERS
Electrical, Mechanical, Fire

HEAD OFFICE / HOOFKANTOOR
P.O. BOX / POSBUS 472, DURBANVILLE 7551 — TEL: (021)976 3087, E-MAIL: admin@devmoore.co.za

BRANCH OFFICES / TAKKANTORE
P.O. BOX / POSBUS 1412, GEORGE 6530 — TEL: (044) 874 4496/7571, E-MAIL: dvmgeo@mweb.co.za
P.O. BOX / POSBUS 1175, STELLENBOSCH 7600 — TEL: (021) 887 1859, E-MAIL: stellenbosch@devmoore.co.za

PROJECT TITLE
PROJEK TITEL

STELLENBOSCH PUBLIC LIBRARY

PLEIN STREET

DRAWING TITLE
TEKENING TITEL

ROOF LAYOUT
FIRE PLAN LAYOUT

SCALE SKAAL	DATE DATUM	DRAWN GETEKEN	DESIGNED ONTWERP
1:100 @ A1	2024.08.06	IL	IL

ARCHITECT DRAWING NUMBER
ARGITEK TEKENING NOMMER

DRAWING NUMBER
TEKENING NOMMER
M5317/RFD3

REVISION HERSIENING: i

FOR APPROVAL
DE VILLIERS & MOORE
DATE ISSUED 17 SEPT 2024 DATUM UITG.
CONSULTING ENGINEERS/ RAADGEWENDE INGENIEURS

34. APPENDIX E – Occupational Health and Safety Specifications

Project Health and Safety Specification

In terms of Construction Regulations 2014

Project Consulting Engineers

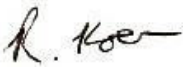
Landline: +27 21 045 0076
Mobile: +27 82 825 5050
Email: eduard.coetzee@v3consulting.co.za
Website: www.v3consulting.co.za
Address: Unit 214 & 215, 2nd Floor, The Cliffs Office Block 1, Niagara Way, Tyger Falls, Carl Cronje Drive, Bellville, 7530

Project Client

STELLENBOSCH MUNICIPALITY

Description of Project Works

UPGRADE OF PLEINSTREET LIBRARY IN STELLENBOSCH

Health and Safety Specification developed by:		**Project Client:**
Prepared by:	Reviewed by:	Received by:
Name: Barry van der Merwe Can-CHSA/199/2022	Name: Rocco Koen Pr. CHSA/110/2020	Name:
Signature: 	Signature: 	Signature:
Date: 2024/09/07	Date: 2024/09/07	Date:
Capacity: Can-CHSA	Capacity: Pr. CHSA	Capacity:

PROJECT HEALTH AND SAFETY SPECIFICATION

TABLE OF CONTENTS

PROFESSIONAL CONSTRUCTION HEALTH AND SAFETY AGENTS
Barry van der Merwe – Mobile: 076 926 3316
Email: barry@profsafe.co.za
Web Address: www.profsafe.co.za

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1.0 SPECIFIC PROJECT INFORMATION

1.1 INTRODUCTION AND DEFINITIONS

THE REQUIREMENTS OF THE CONSTRUCTION REGULATIONS 2014 (AND GUIDANCE NOTES OF 2017) HAVE BEEN IN EFFECT SINCE 7TH AUGUST 2014. THE REGULATIONS PLACE LEGAL DUTIES UPON PRINCIPAL CONTRACTORS AND CONTRACTORS. ALTHOUGH THIS HEALTH AND SAFETY SPECIFICATION INCLUDES MUCH OF THE CONTENT OF THE REGULATIONS, THE CONTRACTOR WILL BE DEEMED TO BE FAMILIAR WITH THE REQUIREMENTS OF THESE REGULATIONS, AND OTHER ASSOCIATED HEALTH AND SAFETY REGULATIONS, AND TO HAVE FACTORED IN ALL THE DUTIES PLACED UPON CONTRACTORS AND PRINCIPAL CONTRACTORS IN THE TENDER. A COPY OF THE REGULATIONS CAN BE VIEWED ON THE DEPARTMENT OF LABOUR'S WEBSITE.

PLEASE NOTE THAT THE TERMS "CONTRACTOR" AND "PRINCIPAL CONTRACTOR" HAVE THE SAME MEANING AS THAT IN THE CONSTRUCTION REGULATIONS AND ARE USED INTERCHANGEABLY IN THIS DOCUMENT, I.E., REFERENCES TO "CONTRACTOR" REFER TO PRINCIPAL CONTRACTOR AND/OR CONTRACTOR AS THE REGULATIONS PERTAIN TO THEIR FUNCTIONS.

This Health and Safety Specification contains clauses that are generally applicable to construction activities, as well as imposing pro-active controls associated with activities that impact on Health and Safety as it relates to work on site. Compliance to the requirements of the Occupational Health and Safety Act 1993 is an additional requirement of this Health and Safety Specification and is part of the Contractor's responsibility. The Client, and/or their agents, will monitor that all Contractors comply with the requirements of such legislation.

ALL REFERENCES TO CLIENT IN THIS HEALTH AND SAFETY SPECIFICATION ALSO REFER TO SAFETY AGENT, WHERE SO APPOINTED.

Definitions (as per the Construction Regulations 2014) applicable to this Health and Safety Specification:

"agent" means a competent person who acts as a representative for a Client;

"angle of repose" means the steepest angle of a surface at which a mass of loose or fragmented material will remain stationary in a pile on the surface, rather than sliding or crumbling away;

"bulk mixing plant" means machinery, appliances or other similar devices that are assembled in such a manner so as to be able to mix materials in bulk for the purposes of using the mixed product for construction work;

"client" means any person for whom construction work is being performed;

"competent person" means a person who has, in respect of the work or task to be performed, the required knowledge, training and experience and, where applicable, qualifications, specific to that work or task: Provided that where appropriate qualifications and training are registered in terms of the provisions of the National Qualification Framework Act, 2000 (Act No.67 of 2000), those qualifications and that training must be regarded as the required qualifications and training; and is familiar with the Act and with the applicable regulations made under the Act;

"Construction manager" means a competent person responsible for the management of the physical construction processes and the coordination, administration, and management of resources on a construction site;

"Construction site" means a workplace where construction work is being performed;

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"Construction supervisor" means a competent person responsible for supervising construction activities on a construction site;

"Construction vehicle" means a vehicle used as a means of conveyance for transporting persons or material, or persons and material, on and off the construction site for the purposes of performing construction work;
"Construction work" means any work in connection with –

- the construction, erection, alteration, renovation, repair, demolition or dismantling of or addition to a building or any similar structure; or
- the construction, erection, maintenance, demolition or dismantling of any bridge, dam, canal, road, railway, runway, sewer, or water reticulation system; or the moving of earth, clearing of land, the making of excavation, piling, or any similar civil engineering structure or type of work;

"Construction work permit" means a document issued in terms of regulation 3;

"Contractor" means an employer who performs construction work;

Note:

a) Includes organisations and or self-employed person that contracts with a client, principal contractor, or a contractor to carry out construction work.

"demolition work" means a method to dismantle, wreck, break, pull down or knock down of a structure or part thereof by way of manual labour, machinery, or the use of explosives;

"design" in relation to any structure, includes drawings, calculations, design details and specifications;

"designer" means a competent person who-

- prepares a design;
- checks and approves a design;
- arranges for a person at work under his or her control to prepare a design, including an employee of that person where he or she is the employer; or
- designs temporary work, including its components;
- an architect or engineer contributing to, or having overall responsibility for a design;
- a building services engineer designing details for fixed plant;
- a surveyor specifying articles or drawing up specifications;
- a contractor carrying out design work as part of a design and building project; or
- an interior designer, shopfitter, or landscape architect;

"ergonomics" means the scientific discipline concerned with the fundamental understanding of interactions among humans and other elements of a system, and the profession that applies theory, principles, data, and methods to design in order to optimise human well-being and overall system performance;

"excavation work" means the making of any man-made cavity, trench, pit, or depression formed by cutting, digging, or scooping;

"explosive actuated fastening device" means a tool that is activated by an explosive charge and that is used for driving bolts, nails, and similar objects for the purpose of providing fixing;

"fall arrest equipment" means equipment used to arrest a person in a fall, including personal equipment, a body harness, lanyards, deceleration devices, lifelines, or similar equipment;

"falsework" means a combined system of formwork and support work;

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"formwork" means temporary or permanent shutters used to form wet concrete into elements of a structure, and includes both horizontally and vertically placed shutters;

"fall prevention equipment" means equipment used to prevent persons from falling from a fall risk position, including personal equipment, a body harness, lanyards, lifelines, or physical equipment such as guard-rails, screens, barricades, anchorages, or similar equipment;

"fall protection plan" means a documented plan, which includes and provides for –

- all risks relating to working from a fall risk position, considering the nature of work undertaken;
- the procedures and methods to be applied in order to eliminate the risk of falling; and
- a rescue plan and procedures;

"fall risk" means any potential exposure to falling either from, off or into;

"health and safety file" means a file, or other record containing the information in writing required by these Regulations;

"health and safety plan" means a site, activity, or project specific documented plan in accordance with the Client's health and safety specification;

"health and safety specification" means a site, activity or project specific document prepared by the Client pertaining to all health and safety requirements related to construction work;

"material hoist" means a hoist used to lower or raise material and equipment, excluding passengers;

"medical certificate of fitness" means a certificate contemplated in regulation 7(8);

"mobile plant" means any machinery, appliance or other similar device that is able to move independently, and is used for the purpose of performing construction work on a construction site;

"National Building Regulations" means the National Building Regulations made under the National Building Regulations and Building Standards Act, 1977 (Act No. 103 of 1977), and promulgated by Government Notice No. R. 2378 of 30 July 1990, as amended by Government Notices No's R. 432 of 8 March 1991, R. 919 of 30 July 1999 and R. 547 of 30 May 2008;

"person day" means one normal working shift of carrying out construction work by a person on a construction site;

"principal contractor" means an employer appointed by the Client to perform construction work;

"Professional Engineer or Professional Certificated Engineer" means a person holding registration as either a Professional Engineer or Professional Certificated Engineer in terms of the Engineering Profession Act, 2000 (Act No. 46 of 2000);

"Professional Technologist" means a person holding registration as a Professional Engineering Technologist in terms of the Engineering Profession Act, 2000;

"provincial director" means the provincial director as defined in regulation 1 of the General Administrative Regulations, 2003;

"scaffold" means a temporary elevated platform and supporting structure used for providing access to and supporting workmen or materials or both;

"shoring" means a system used to support the sides of an excavation and which is intended to prevent the cave-in or the collapse of the sides of an excavation;

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"structure" means-

- any building, steel, or reinforced concrete structure (not being a building), railway line or siding, bridge, waterworks, reservoir, pipe or pipeline, cable, sewer, sewage works, fixed vessels, road, drainage works, earthworks, dam, wall, mast, tower, tower crane, bulk mixing plant, pylon, surface and underground tanks, earth retaining structure or any structure designed to preserve or alter any natural feature, and any other similar structure;
- any falsework, scaffold or other structure designed or used to provide support or means of access during construction work; or
- any fixed plant in respect of construction work which includes installation, commissioning, decommissioning, or dismantling and where any construction work involves a risk of a person falling;

"support work" means the temporary structure erected to support the formwork before the casting of a concrete element of a structure.

"suspended platform" means a working platform suspended from supports by means of one or more separate ropes from each support;

"temporary works" means any falsework, formwork, support work, scaffold, shoring or other temporary structure designed to provide support or means of access during construction work;

"the Act" means the Occupational Health and Safety Act, 1993 (Act No. 85 of 1993);

"tunnelling" means the construction of any tunnel beneath the natural surface of the earth for a purpose other than the searching for or winning of a mineral.

Reference should be made to the following documentation in conjunction with this Safety Specification (including existing surveys, drawings, and reports):

• Tender documents – Available	Heritage Architect Assessment - Available
• Site Boundary Plan – Available	Electrical Report & Drawings - Available
• Engineer Drawings – Available	Fire Safety Assessment & Drawings - Available
• Architect Drawings – Available	Asbestos Testing Report - Available

IMPORTANT NOTE:

This Health and Safety Specification has been prepared to comply with the requirements of the Construction Regulations 2014.

1.2 BACKGROUND TO THE HEALTH AND SAFETY SPECIFICATION

Historically, the Construction Industry has had a poor health and safety record. Due to the complex and potentially dangerous operations being undertaken, there is a high risk of incidents, accidents, and injuries. In many instances poor adherence to the Act and Regulations has resulted in severe consequences for Health and Safety performance. The Client is determined that the highest Health and Safety standards will prevail throughout the Contract and that there will be full commitment from all parties involved.

To achieve this goal the Client has arranged for the preparation of this Health and Safety Specification. The Health and Safety Specification sets out guidelines and minimum levels of awareness and guidance for Health and Safety requirements for the project. Contractual responsibility for adhering to these requirements rests with the Contractors. All employees are encouraged to be pro-active in compliance.

The Client is committed to ensuring the highest Health and Safety standards for all work undertaken within the Contract.

Contractors as employers are fully responsible and accountable for compliance with all Health and Safety requirements.

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IMPORTANT NOTE:

Compliance with the Occupational Health and Safety Act and Regulations shall not be limited to this Health and Safety Specification and definitions contained in this document.

Contractors shall be conversant with the requirements and effects of Health and Safety legislation upon their activities, particularly the Construction Regulations, 2014, and the Occupational Health and Safety Act, 1993, and to have made adequate resource in their tender submission to comply with all legislative requirements.

Failure to comply with the requirements of this Safety Specification will result in severe sanction and the severity of the sanction will depend on the severity of the noncompliance.

The Contractor's personnel will be responsible for the auditing of the implementation of the Health and Safety Specification and maintaining the document control and record systems associated with the Health and Safety Specification. The Client will arrange for Health and Safety audits to be conducted on site on their behalf to monitor health and safety compliance by contractors.

1.3 PURPOSE OF THE HEALTH AND SAFETY SPECIFICATION

The purpose of this site-specific Health and Safety Specification is to comply with legal requirements and to provide health and safety information about specific project risks known by the Client, Designer and Safety Agent to be applicable to this project. This document also provides minimum health and safety requirements, standards, and expectations that the contractor must adhere to.

The Contractor must take into account all information in this specification and ensure that their tenders include adequate resource and competence to deal with the matters detailed herein so that all relevant contents are dealt with in a way which is in compliance with legislation and the ethical concerns for the safeguarding of employees, contractors and other persons affected by the construction activities. Please note that a detailed OHS bill of quantities must be provided by the contractor on all Construction Work Permit projects. The Bill of Quantities will form part of the Construction Work Permit appellation presented to Department of Labour for approval.

The Health and Safety Specification will be implemented during construction of the works and any construction activity that the Client has control over.

This will also assist in ensuring that all the costs related to the compliance with Occupational Health Act 85 of 1993 and the Construction Regulations 2014, as well as this Health and Safety Specification, are taken into consideration at Tender stage.

No advice, approval of any document required by the Health and Safety Specification such as hazard identification and risk assessment action plans or any other form shall be construed as an acceptance by the Client of any obligation that absolves the Contractor from achieving the required level of performance and compliance with legal requirements.

Further, there is no acceptance of liability by the Client which may result from the Contractor failing to comply with the Health and Safety Specification unless the Client has issued an instruction to any requirement, i.e. the Contractor remains responsible for achieving the required performance levels.

1.4 IMPLEMENTATION OF THE HEALTH AND SAFETY SPECIFICATION

This Health and Safety Specification forms an integral part of the Contract, and Contractors shall make it an integral part of their Contracts with other Contractors and Suppliers. Contractors employed by the Client are

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to ensure that the provisions of the Health and Safety Specification are applied both on the site and in respect of all off-site activities relating to the project, in particular in transport activities and project dedicated off site fabrication works.

The Contractor shall enforce the provisions of the Health and Safety Specification amongst all Contractors and suppliers for the project.

The Contractor shall sign the acknowledgment on the last page of this safety specification that he/she has familiarized him/herself with the content of the Health and Safety Specification and shall comply with all obligations in respect thereof.

The successful Contractor will be required to compile a Health and Safety Plan based on the requirements of the Occupational Health Act 85 of 1993 and these Specifications, which will need to be approved by Client (or their appointed safety agent) prior to commencement with construction work.

1.4.1 Client Duties

In terms of the Construction Regulations 2014 the Client (or their Agent, where appointed) has legal duties. Where an Agent (refer to "definitions" section of this document) is appointed in terms of this project, these Health and Safety duties assigned will also apply.

All references to "Client" will apply to their appointed "Safety Agent", where so appointed, in this Health and Safety Specification.

The Client must:

- Prepare a baseline risk assessment for the construction work
- Prepare a suitable, sufficiently documented, and coherent site-specific Health and Safety specification for the intended construction work, based on the baseline risk assessment
- Include the health and safety specification in the tender documents
- Ensure that potential principal contractors submitting tenders have made adequate provision for the cost of health and safety measures
- Ensure that the principal contractor to be appointed has the necessary competencies and resources to carry out the construction work safely
- Take reasonable steps to ensure co-operation between all contractors appointed by the Client to enable each of those contractors to comply with the regulations
- Ensure, before work commences, that every principal contractor is registered and in good standing with the compensation fund, or with a licensed compensation insurer as contemplated in the Compensation for Occupational injuries and Diseases Act, 1993 (Act no 130 of 1993)
- Appoint each principal contractor in writing for the project, or part thereof
- Discuss and negotiate with the principal contractor the contents of the principal contractor's safety plan and thereafter finally approve that plan for implementation
- Ensure that a copy of the principal contractor's health and safety plan is implemented and maintained
- Ensure that periodic health and safety audits and document verification are conducted at intervals mutually agreed upon between the principal contractor and any contractor, but at least once every 30 days
- Ensure that a copy of the health and safety audit report is provided to the principal contractor within 7 days after the audit
- Stop any contractor from executing a construction activity which poses a threat to the health and safety of persons which is not in accordance with the principal contractor's health and safety plan for site
- Where changes are brought about to the design or construction work, make sufficient health and safety information and appropriate resources available to the principal contractor to execute the work safely

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- Ensure that the health and safety file is kept and maintained by the principal contractor.
- Where the Client requires additional work to be performed as a result of a design change or error in construction due to the actions of the Client, the Client must ensure that sufficient safety information and appropriate additional resources are available to execute the required work safely.
- Where more than one principal contractor is appointed, the Client must take reasonable steps to ensure co-operation between all principal contractors and contractors to ensure compliance with the Regulations
- Where the Client has appointed a Safety Agent for the project, their details for this project are contained in the Project Directory section of this health and safety specification.

1.4.2 Designer Duties

It must be noted that the Designer also has Health and Safety duties assigned in terms of the Construction Regulations. Where the contractor fulfils a design function in terms of this project (refer to "definitions" section of this document), these duties will also apply. Please refer to Regulation 6 of the Construction Regulations 2014.

Please note that the designer of temporary works must ensure that:

- all temporary works are adequately designed so that it will be capable of supporting all anticipated vertical and lateral loads that may be applied;
- the designs of temporary works are done with close reference to the structural design drawings issued by the contractor, and in the event of any uncertainty consult the contractor;
- all drawings and calculations pertaining to the design of temporary works are kept at the office of the temporary works designer and are made available on request by an inspector; and
- the loads caused by the temporary works and any imposed loads are clearly indicated in the design.

1.5 PROJECT DIRECTORY		
Project Client **Contact Person**	Stellenbosch Municipality Project Management Unit (PMU) Infrastructure Services Stellenbosch Municipality 135 Dorp Street, Stellenbosch, 7600 Mr. Andrè Slabbert Project Manager	**Tel:** +27 21 808 8444 **Cell:** +27 82 490 8587 **e-mail:**andre.slabbert@stellenbosch.gov.za
Architect **Contact Person**	Department of Infrastructure Western Cape Government **Address:** ISM Building, 27 Wale Street, 8th floor, Western Cape Mr. Brian Verwey	**Tel:** +27 21 483 3961 **Cell:** +27 83 448 8439 **e-mail:** Brian.Verwey@westerncape.gov.za
Consulting Engineer Name **Contact Person**	V3 Consulting Engineers Unit 214 & 215, 2nd Floor, The Cliffs Office Block 1, Niagara Way, Tyger Falls, Carl Cronje Drive, Bellville, 7530 Mr. Eduard Coetzee	**Tel:** +27 21 045 0076 **Cell:** +27 82 825 5050 **e-mail:**eduard.coetzee@v3consulting.co.za

Construction Safety Agent	PROFSAFE 24 Zinkwase Street, Hillside Estate, Moreletta Park, Pretoria	**Tel:** +27 76 926 3316 **Cell:** +27 76 926 3316 **e-mail**: barry@profsafe.co.za
Contact Person	Barry van der Merwe	

OTHER PARTIES DIRECTORY	
Department of Labour for submission of Annexure 2: Notification of Construction Work Provincial Office Cape Town – Mr. DG Juta 9 Long Street Cape Town	**Tel:** +27 21 441 8000 **e-mail:** darryl.juta@labour.gov.za **Cell:** +27 82 796 3528
Department of Labour Provincial Office Cape Town 9 Long Street Cape Town	**Tel:** +27 21 441 8000 **Fax**: +27 21 468 5510
Telecommunications, Water and Electricity. Contractor to refer all queries on location and nature of existing services to the Project Manager / Client **Company:** Stellenbosch Municipality	**Tel:** +27 21 808 8444 **e-mail:** andre.slabbert@stellenbosch.gov.za

1.6 PROJECT DETAILS

Description of Works

Upgrade of Stellenbosch Library, including:

- Alterations and upgrades to the ground floor and first floor;
- A Teenage / Student Section with a specific computer section;
- An Adult Section;
- A Reading Section;
- Create an open-plan workspace with Kitchen and Office;
- Provide disability access by installation of a new lift on the first floor;
- Renovate the entrance;
- New multi-functional layout for the Junior Section;
- Renovate the existing computer room into children's computer room;
- Alteration to toilet facilities to include a disabled toilet;
- Paintwork of the entire library;
- Service of all ironmongery;
- Adding data network connection points;
- Upgrade and service of air conditioning, furniture, signage, security and surveillance, electrical installation, and fire safety system.

The description of the project contained in the scope of work is merely an outline of the contract works and shall not limit the work to be carried out by the contractor under this contract.

Anticipated Construction Duration
±16 Months

Provisional Start Date
June 2024

Provisional Completion Date
September 2025

Construction Work Permit or Notification Required for the Project?
Yes

1.7 EXISTING ENVIRONMENT

Hazards particular to this project by virtue of location:

Access to the building site must be done via the existing main roads as far as possible. It is highly advised that all building materials must be offloaded and stored at the back of the building site.

Pedestrian and vehicle traffic can be expected on the site. All necessary preventative measures must be in place to protect the safety of members of the public, including:

- Potential instances of crime and protest action.
- Members of the Public.
- Fire risk.
- Existing residential and business areas.
- Heavy traffic flow.
- Existing underground services.
- Movement of commercial vehicles in the area.
- Closed skips to be used for the storage of debris and materials.
- Safety and Construction signage that clearly stipulates access routes, PPE that must be used (hardhats, safety shoes, ear and eye protection and high visibility vests) must be displayed.
- Clearly display emergency numbers and procedures.
- Safe work procedures for Traffic accommodation to be established.
- Extra care must be taken in marking all entrance and exist routs.
- No material may be used that is classified as a foreign object debris (ex: danger tape).
- Solid barricading of the site during construction period.

Overhead, Above Ground and Underground Services crossing the site:

Overhead: Overhead lines, all services found must be treated as live.

Underground: Existing services that will serve as connection points (Electrical Cables), all services found must be treated as live.

Ground level Existing services that will serve as connection points, all services found must be treated as live.

Service Drawings available: Please refer to Engineers drawings for all services.

Wayleaves required: Wayleave will be required for work under Eskom power lines.

Permits required: Permits for Hot works and Excavations entry to be completed daily as activity requires.

Isolations required: All electrical connection to be isolated as per Engineers' requirements.

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Existing structures on site and surrounding land use (with a significant impact on Health & Safety):
No employees are allowed outside of the working area. All workers to be clearly visible and easily identifiable, as works will take place near existing residential and business areas.

Existing ground conditions and ground survey report:
Existing asphalt access roads leading to and from site.

Existing Traffic Systems

Condition: Good condition access roads.

Restrictions to access: All delivery and construction vehicles to use the designated entrances as marked.

Speed restrictions: Recommended speed of 40km/H when in the delivery/working area.

1.8 AVAILABLE DRAWINGS

Refer to tender documentation.

1.9 PROJECT HEALTH AND SAFETY REQUIREMENTS

Members of the public:

Residential and Business community is nearby, and it is important to ensure the signage and awareness is visible on the site, that solid barricading on site must be implemented to ensure no contact is made with civil works and members of the public. Supervision must be on site at all times.

Safety Signs:

All signs must clearly indicate access routes and evacuation procedures. Required personal protective equipment for contractors to be clearly visible.

Plant on site:

All plant to follow construction regulation requirements. Daily inspection registers to be completed. No operator will be allowed on site without his/her medical, competency certificate and driver's license.

Working at Height:

All activities at height to be done as per fall protection plan and risk assessment. All documentation to be assessed and approved before work commences on height.

Electrical Installations:

Contractor to provide a method statement and risk assessment prior to work commencement.

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Environmental Management plan:

The contractor is to ensure that all workers adhere to environmental procedures. Care must be taken that all hazardous waste be disposed of as per National Environmental Management Waste Act (NEMWA) No. 59/2008 i.e. cement bags etc.

Access to the site will be gained at designated areas only:

Area will be barricaded off to prevent access by unauthorised personnel and members of the public. Existing residential housing and business activities must be taken into account when working in close proximity.

Demarcation of boundaries and excavations on the site:

The use of danger tape is discouraged and will be limited as far as possible. Brightly coloured droppers and coloured nylon cord/fencing wire with markers will be used. All excavations to follow construction regulations. Daily registers and permit to dig must be completed.

Traffic management:

Delivery of materials and the safe movement of construction vehicles will be controlled by means of a traffic management plan to alleviate any congestion or interference.

Working with Effluent:

Due to the type of work, exposure to raw sewerage is a possibility, all employees must be issued with the correct PPE when working in those areas and must receive Hepatitis Inoculations.

Lifting Operations:

All operators must provide copies of their competency, medical certificates, and driver's license. Loads must be slung by person with appropriate training and competence. Daily plant inspection registers must be completed, and records kept in the safety file. Rotating amber lights must be active when operating mobile cranes on site. Plant must be effectively separated from members of public and unauthorised personnel. Use trained flag persons as applicable. Exclusion zone under crane operations to be in operation as applicable.

Public access on to site:

Warning signage must be displayed at the entrances to site. The health and safety of members of public and road users must be a priority at all times and all necessary steps must be taken to prevent unauthorised entry to site and to protect members of the public from any dangers associated with the construction works being undertaken.

Fencing:

Fencing must ensure the minimizing of noise and dust on site. All safety signs must be displayed as per OHS Act and Regulation requirements.

Significant health and safety hazards identified by Client, Designer and Safety Agent:

Confined Spaces;
Excavations;
Fire;
Flammable Liquids / Gas;
Fragile Materials;

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Hazardous Substances;
Hot Works;
Members of Public;
Overhead Services (Working near);
Underground Services;
Working at Height;
Working with Effluent.

Other construction hazards that the contractor can reasonably expect are as follows:
Bricklaying;
Cable Terminations;
Compacting and Filling;
Concrete Works;
Cutting Off Disc;
Demolitions;
Electrical Commissioning;
Electric Tools and Electrical Installations;
Erection of Equipment such as breakers, Isolators, CT's, and VT's;
Hand tools;
Hydraulic Tools;
Laying of underground cables;
Lifting Operations;
Manhole Rings and Pipes Storage;
Manual Handling of General Items;
Material Hoist;
Mobile Crane;
Night Work;
Noise and Dust;
Painting;
Plant/Vehicle and Equipment Operation;
Plastering;
Plumbing;
Excavations;
Scaffold Erection / Dismantling;
Steel Erection;
Steel Fixing;
Tower (Mobile Aluminium Tower) Scaffolding;
Temporary Work (include False Work, Formwork, Support Work Scaffold and Shoring);
Working at Height (excluding scaffold).

NOTE: Please refer to end of this Health and Safety Specification for the baseline risk assessment for these hazards and risks.

ACTIVITIES REQUIRING APPROVED METHOD STATEMENTS

Please note that a method statement will be required for all high-risk activities on site. This will include but is not limited to:

- Rubble removal and environmental control;
- Construction and works execution of all high-risk activities;
- Delivery of materials to designated areas;
- Emergency Evacuation plans and procedures that will follow the appointed contractors' procedures,
- Site establishment;
- Excavation operations, if any;
- Working at hights.

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ACTIVITIES REQUIRING PERMITS (FOR HEALTH AND SAFETY PURPOSES)

Permit to Work with Electricity: Yes, permits to be in place prior to commencement of works.

Confined Space Permit: If applicable during construction operations.

Hot Works Permit: Yes, the Principal Contractor must manage all hot works operations formally.

Permit to Work under Power Lines: Yes, the Principal Contractor must manage all hot works operations formally.

Temporary Works: Yes, the Principal Contractor must manage all temporary works operations formally.

CONTRACTOR SAFETY OFFICER PROVISION

Records of safety audits undertaken by the Contractor's Safety Officer must be kept on site in the safety file and nonconformances reported by the Safety Officer to the Contractor's management team. All nonconformances identified by the Safety Officer and client's safety agent must be investigated and corrective action taken by the Contractor to prevent re-occurrence.

Please note that as from 7th August 2018 the safety officer must be professionally registered with the SACPCMP. Proof of registration with the SACPCMP must be provided.

If registered as a Candidate proof of mentorship and weekly visits by mentor must be available on site.

The requirement for this site is that a part time Safety Officer be appointed by the Contractor. Part time Safety Officer must visit site at least weekly.

MEDICAL CERTIFICATE OF FITNESS (ANNEXURE 3)

The contractor must ensure that their employees on site have a valid medical certificate of fitness, specific to the construction work being performed, issued by an occupational health practitioner in the form of an Annexure 3 template.

MANAGEMENT AND SUPERVISION OF CONSTRUCTION WORK

A principal contractor must, in writing, appoint one full-time competent person as the construction manager with the duty of managing all the construction work on a single site, including the duty of ensuring occupational health and safety compliance, and in the absence of the construction manager an alternate competent person must be appointed by the principal contractor. Proof of an all-inclusive assessment by the Principal Contractor of the Construction Manager's Competency in construction management and health and safety competency must be available in the Safety File.

The Construction Manager, Alternate Construction Managers, Assistant Construction Managers, and designated construction supervisor/s must, as a minimum, have training in Legal Liability, Construction Regulation 2014 and the OHS Act and Regulations.

TRAFFIC MANAGEMENT AND TRAFFIC SAFETY OFFICER PROVISION

The Traffic Management Plan must be approved by the Project Manager and as required, the Traffic Chief as per the National Road Traffic Act, No. 93 of 1996. The Traffic Safety Officer must have training as per Unit Standard 14561 or similar.

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ENVIRONMENTAL CONDITIONS

Contractor must take into account adverse weather conditions on site activities and implement control measures to mitigate risk. This includes risk of exposure to excessive heat, cold, rain, lightning, and wind. The open nature of the site works will not preclude any of the above.

ARRANGEMENTS FOR ACCESS, PARKING, DELIVERIES, ETC.

Access to site by Construction Vehicles: Access to be allocated by appointed principal contractor.

Access to site by Construction Workers and Visitors: Parking for visitors will be allocated by appointed contractor.

All service providers must sign a 37.2 Mandatory Agreement and must be inducted before they can be allowed on site.

ARRANGEMENTS FOR SITE CAMP, ABLUTIONS AND YARD

Site camp location and set up

- **Restrictions / requirements:**
- **Storage areas:**
- **Security:**

} Contractor to advise in consultation with Engineer / Professional Team

Ablutions and Welfare Arrangements

Contractor to supply ablutions and facilities in line with the Construction Regulations 2014, refer to section 2.31 of this health and safety specification regarding the below. Toilets should be provided with built in facilities for hand washing. Please note further that COVID-19, if applicable, control measures form an important part of ablutions provision on site i.e. soap and water/hand sanitiser, signage, etc:

- **Toilets:**
- **Washing facilities:**
- **Drinking Water:**

} Contractor to provide as per Regulations

- **Shelter:** } Contractor to provide as per Regulations

Mobile site facilities requirements:

A mobile toilet will be required for sites that cannot facilitate a permanent location for ablution units and must be available for each gender per location.

Teams are to ensure that the toilets are cleaned correctly and suitable for easy and hygienic uses and recorded on a daily register.

PROTECTION OF SITE AGAINST UNAUTHORISED ACCESS BY PUBLIC.

General Barricading of Site: Note that construction sites in built up areas adjacent to public walkway must be barricaded off and have controlled access points with the correct signs to indicate the site office for any relevant enquiries.

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Warning Notices: Construction warning signage must be prominently displayed to avoid unauthorised access to site and to warn of dangers associated with construction works.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

The Client requires the Contractor to ensure that employees (and others under his/her control) wear the following minimum PPE:

Overalls: Yes. As per Risk Assessment.

Safety Harnesses: Yes. As per Risk Assessment.

Hard Hats: Yes. As per Risk Assessment.

Reflective Vests: Yes. As per Risk Assessment.

Goggles / gloves / ear defenders / respiratory protection: Yes, as per Risk Assessment.

Safety Footwear: Yes. As per Risk Assessment.

Specialist Equipment (e.g. for confined Spaces): As per Risk Assessment. Confined spaces. Operations. Confined Spaces Rescue Equipment.

HAZARDOUS SUBSTANCES

The following materials and substances have, or may have, to be used in the works and are identified as potentially posing special health and / or safety hazards during the project. Appropriate measures will need to be specified for their control:

- Cement
- Certain Cleaning products
- Diesel
- Epoxies
- Hydraulic Oils
- Petrol

1.10 INTERFACE AND RESTRICTIONS BY CLIENT

Contractor must note that the following Client activities will continue during construction:

Members of public and visitors will have interaction with construction.
Members of public entering site and work areas.
Other contractors/service providers and their construction vehicles and mobile plant will be using the existing traffic routes for the duration of the construction work**.**

The following Client safety rules and/or requirements are to be observed:

All workers are to receive induction prior to commencement of work on site.
Other safety rules and requirements to be advised at induction.
Please also refer to tender document.

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Restrictions on times, access, or other restrictions by Client:

- Please refer to Client requirements regulations.
- Other restrictions may be advised at induction.
- The contractor must schedule and conduct his work activities in such a manner so as not to expose any employees or visitors to any hazards to their health and safety.
- Take measures as to ensure safety of pedestrian, employee and vehicular/plant traffic on site, traffic routes and access roads.
- Contractor only to conduct work after hours, over weekend and on public holidays with the permission of the Professional team.

1.11 Project Close Out

The Health and Safety files for the Principal Contractors and all Contractors require closure and handover to the Client at the completion of the project in the form of a consolidated safety file. The following list is an example of what should be included but is not exhaustive. The Safety Agent or the Client may require further information at the time of completion and the Principal Contractor is to ensure that all instructions are responded to. Documentation would include all health and safety related records from the start of the project. All records to be in hard copy or electronic format and submitted to the Safety Agent for approval in adequately formatted lists and folders. Layout should be logical and in the same order as in the site files.

Consolidated Health and Safety close out file requirements include:

- Health and safety specification (most recent version)
- Principal Contractor's health and safety plan/s
- Site safety organograms
- Legal appointments
- Notification to Department of Labour of commencement of work / Construction Work Permit
- Workman's Compensation Letters of Good Standing for the project
- Full safety files for all contractors as well as their close out reports
- List of all contractors who worked on site
- Letters of safety plan approval of contractors by the Principal Contractor
- Mandatory agreements (section 37.2 agreements)
- Incident and accident records / Occupational Disease records
- Contractor Nonconformance records
- Safety agent's audit reports
- Safety Officer reports
- Method Statements
- Risk assessments
- Safe work procedures
- Medical surveillance certificates of fitness. Medical records are to be kept according to the Occupational Health and Safety Act, as amended.
- All temporary works drawings (suspended beams/scaffolds, etc.)
- Copies of test results, policies, and procedures for environmental monitoring (silica, noise, dusts, etc.)
- Detailed registers of all material used
- Copies of all Checklists completed

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1.12 SAFETY FILE RETURN TO CLIENT
The consolidated Health and Safety Files for the Project is to be handed over by the Principal Contractor to the Client upon Project Completion in either hard copy or electronic format.

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2.0 FURTHER REQUIREMENTS

2.1 Duties of Principal Contractor / Contractor in terms of Construction Regulations 2014

A Principal Contractor must:

- provide and demonstrate to the Client a suitable, sufficiently documented, and coherent site-specific health and safety plan, based on the Client's documented health and safety specifications, which plan must be applied from the date of commencement of and for the duration of the construction work and which must be reviewed and updated by the principal contractor as work progresses;

- open and keep on site a health and safety file, which must include all documentation required in terms of the Act and these Regulations, which must be made available on request to an inspector, the Client, the Client's Safety Agent, or a Contractor; and

- on appointing any other contractor, in order to ensure compliance with the provisions of the Act –

    - provide contractors who are tendering to perform construction work for the principal contractor, with the relevant sections of the health and safety specifications pertaining to the construction work which has to be performed;

    - ensure that potential contractors submitting tenders have made sufficient provision for health and safety measures during the construction process;

    - ensure that no contractor is appointed to perform construction work unless the principal contractor is reasonably satisfied that the contractor that he or she intends to appoint, has the necessary competencies and resources to perform the construction work safely;

    - ensure prior to work commencing on the site that every contractor is registered and in good standing with the compensation fund or with a licensed compensation insurer as contemplated in the Compensation for Occupational Injuries and Diseases Act, 1993;

    - appoint each contractor in writing for the part of the project on the construction site

    - take reasonable steps to ensure that each contractor's health and safety plan is implemented and maintained on the construction site;

    - ensure that the periodic site audits and document verification are conducted at intervals mutually agreed upon between the principal contractor and any contractor, but at least once every 30 days;

    - stop any contractor from executing construction work which is not in accordance with the Client's health and safety specifications and the principal contractor's health and safety plan for the site or which poses a threat to the health and safety of persons;

- where changes are brought about to the design and construction, make available sufficient health and safety information and appropriate resources to the contractor to execute the work safely;

- discuss and negotiate with the contractor the contents of their health and safety plan and finally approve that plan for implementation;

- ensure that a copy of both the principal contractor and contractor's health and safety plan is available on request to an employee, an inspector, a contractor, the Client, or the Client's Safety Agent;

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- hand over a consolidated health and safety file to the Client upon completion of the construction work, to include a record of all drawings, designs, materials used and other similar information concerning the completed structure;

- in addition to the documentation required in the health and safety file include and make available a comprehensive and updated list of all the contractors on site accountable to the principal contractor, the agreements between the parties and the type of work being done;

- ensure that all his or her employees have a valid medical certificate of fitness specific to the construction work to be performed and issued by an occupational health practitioner in the form of Annexure 3.

A contractor must prior to performing any construction work-

- provide and demonstrate to the principal contractor a suitable and sufficiently documented health and safety plan, based on the relevant sections of the Client's health and safety specification, and provided by the principal contractor, which plan must be applied from the date of commencement of and for the duration of the construction work and which must be reviewed and updated by the contractor as work progresses;

- open and keep on site a health and safety file, which must include all documentation required in terms of the Act and these Regulations, and which must be made available on request to an inspector, the Client, the Client's Safety Agent, or the principal contractor;

- before appointing another contractor to perform construction work be reasonably satisfied that the contractor that he or she intends to appoint has the necessary competencies and resources to perform the construction work safely;

- co-operate with the principal contractor as far as is necessary to enable each of them to comply with the provisions of the Act;

- as far as is reasonably practicable, promptly provide the principal contractor with any information which might affect the health and safety of any person at work carrying out construction work on the site, any person who might be affected by the work of such a person at work, or which might justify a review of the health and safety plan.

Where a contractor appoints another contractor to perform construction work, the duties that apply to the principal contractor will apply to the contractor as if he or she were the principal contractor.

A principal contractor must take reasonable steps to ensure co-operation between all contractors appointed by the principal contractor to enable each of those contractors to comply with these Regulations.

No contractor may allow or permit any employee or person to enter any site unless that employee or person has undergone health and safety induction training pertaining to the hazards prevalent on the site at the time of entry.

A contractor must ensure that all visitors to a construction site undergo health and safety induction pertaining to the hazards prevalent on the site and must ensure that such visitors have the necessary personal protective equipment.

A contractor must always keep on his or her construction site records of the health and safety induction training and such records must be made available on request to an inspector, the Client, the Client's Safety Agent, or the Principal Contractor.

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A contractor must ensure that all his or her employees have a valid medical certificate of fitness specific to the construction work to be performed and issued by an occupational health practitioner in the form of Annexure 3 (a template of which can be found in the Construction Regulations, 2014).

2.2 Management and Supervision of Construction Work

A principal contractor must, in writing, appoint one full-time competent person as the construction manager with the duty of managing all the construction work on a single site, including the duty of ensuring occupational health and safety compliance, and in the absence of the construction manager an alternate must be appointed by the principal contractor. Proof of all-inclusive assessment of the Construction Manager's Competency in construction management and H & S competency must be available in the Safety File. The Construction Manager must, as a minimum, have a Construction Regulation course. No contractors may be left unsupervised on site by the principal contractor.

A principal contractor must upon having considered the size of the project, in writing appoint one or more assistant construction managers for different sections thereof: Provided that the designation of any such person does not relieve the construction manager of any personal accountability for failing in his or her management duties in terms of this regulation.

Where the construction manager has not appointed assistant construction managers, or, in the opinion of an inspector, a sufficient number of such assistant construction managers have not been appointed, that inspector must direct the construction manager in writing to appoint the number of assistant construction managers indicated by the inspector, and those assistant construction managers must be regarded as having been appointed.

No construction manager appointed in terms of the Regulations may manage any construction work on or in any construction site other than the site in respect of which he or she has been appointed.

A contractor must, after consultation with the Client and having considered the size of the project, the degree of danger likely to be encountered or the accumulation of hazards or risks on the site, appoint a full-time or part-time construction health and safety officer in writing to assist in the control of all health and safety related aspects on the site: Provided that, where the question arises as to whether a construction health and safety officer is necessary, the decision of an inspector is decisive.

No contractor may appoint a construction health and safety officer to assist in the control of health and safety related aspects on the site unless he or she is reasonably satisfied that the construction health and safety officer that he or she intends to appoint is registered with a statutory body approved by the Chief Inspector and has necessary competencies and resources to assist the contractor

A construction manager must in writing appoint construction supervisors responsible for construction activities and ensuring occupational health and safety compliance on the construction site. Proof of all-inclusive assessment of the Construction Supervisor's competency in construction supervision and H&S competency must be available in the Safety File. The Construction Supervisor must, as a minimum, have a supervision course as per Unit Standard 262845 (Civil Engineering), 119080 (Building Construction) and 262884 (Civil Engineering).

A contractor must, upon having considered the size of the project, in writing appoint one or more competent employees for different sections thereof to assist the construction supervisor, and every such employee has, to the extent clearly defined by the contractor in the letter of appointment, the same duties as the construction supervisor: Provided that the designation of such employee does not relieve the construction supervisor of any personal accountability for failing in his or her supervisory duties.

Where the contractor has not appointed such an employee, or, in the opinion of an inspector, a sufficient number of such employees have not been appointed, that inspector must instruct the employer to appoint the number of employees indicated by the inspector.

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No construction supervisor appointed may supervise any construction work on or in any construction site other than the site in respect of which he or she has been appointed: Provided that if a sufficient number of competent employees have been appropriately designated on all the relevant construction sites, the appointed construction supervisor may supervise more than one site.

2.3 Notification of Intention to Commence Construction Work

The Contractor shall notify the Provincial Director of the Department of Labour of the intention to commence construction work at least 7 days prior to the works commencing if the intended construction work will:

- Include excavation work;
- Include work at height where there is a risk of falling;
- Include the demolition of a structure.

This must be done on a form similar to an Annexure 2 (template of which can be found in the Construction Regulations, 2014). A copy of the notification letter to the Provincial Director shall be forwarded to the Client for record purposes.

2.4 Construction Work Permit

A client who intends to have construction work carried out, must at least 30 days before that work is to be carried out apply to the provincial director in writing for a construction work permit to perform construction work on projects that will –

1. exceed 365 days and will involve more than 3600 person days of construction work; or

2. the tender value limit is grade 7, 8 or 9 of the Construction Industry Development Board (CIDB) grading.

- Grade 7 = R60 000 000
- Grade 8 = R 200 000 000
- Grade 9 = No limit

A client must appoint a Construction Health and Safety Agent or Construction Health and Safety Manager to apply for this permit from the Provincial Director and construction work may not commence until the permit has been issued by the Provincial Director.

A copy of this permit will be required to be kept in the principal contractor's safety file, and the site-specific number issued by the Provincial Director must be displayed at the site entrance.

A client may appoint a Construction Health and Safety Agent, or Construction Health and Safety Manager based on the scope and risk profile of construction work to represent him/her on matters of health and safety. Provided that, where the question arises as to whether a Construction Health Safety Agent or a Construction Health and Safety Manager is necessary, the decision of an inspector is decisive.

The following minimum documentation will be required during the permit application process:

- Principal Contractor's Health and Safety Plan CR 5(1)(m)
- Baseline Risk Assessment CR 5(1)(a)
- Appointed Principal Contractor's Letter for Good Standing as per CR 5(1)(j)
- Issue Register signed by Designer CR 5 (1)(c)
- Issue Register signed by Principal Contractor
- Declaration signed by Designer CR 5(1)(d) and CV
- Principal Contractor made adequate provision for the cost of health and safety measures (Bill of Quantities) CR 5(1)(g)

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- Proof of Principal Contractor's competency and resources to carry out the construction work safely CR 5(1)(h)
- Appointment Letter for Construction Manager, CV, Certificates and List of projects
- Appointment Letter of Safety Officer & Safety Officer's Registration for SACPCMP
- Principal Contractor's Appointment Letter CR 5(1)(k), Company Profile and CIDB grading

After approval of the Construction Work Permit any changes made to the appointed persons on the annexure 1 must be submitted to Department of Labour for approval before the appointed persons are allowed to commence with their tasks.

PLEASE NOTE THAT THE CONSTRUCTION MANAGER (8(1)) NAMED ON THE CONSTRUCTION WORK PERMIT MUST BE THE SAME PERSON THAT ACTS AS THE CONSTRUCTION MANAGER ON SITE. IF THIS WILL NOT BE THE CASE FOR SOME REASON THEN THE SAFETY AGENT MUST BE NOTIFIED OF THE CHANGE BY THE PRINCIPAL CONTRACTOR AT LEAST 7 DAYS BEFORE THE CHANGE IS MADE SO THAT THE SAFETY AGENT CAN AMEND THE CONSTRUCTION WORK PERMIT APPLICATION AND ADVISE THE DEPARTMENT OF EMPLOYMENT AND LABOUR ACCORDINGLY.

2.5 Assignment of Contractor's Responsible Persons to Manage Health and Safety on Site

The Contractor shall submit management and supervisory appointments as well as any relevant appointments in writing (as stipulated by the Construction Regulations 2014 and the Occupational Safety and Health Act 1993), prior to commencement of work (refer to **Annexure B** at the end of this Health and Safety Specification).

2.6 Competency for Contractor's Responsible Persons

The Contractor's responsible persons shall be competent in health and safety and be familiar with the Occupational Health and Safety Act 1993, and applicable regulations. Valid proof of pertinent health and safety courses attended by such persons will be required to be presented to the Client.

2.7 Compensation of Occupational Injuries and Diseases Act 130 of 1993 (COIDA)

The successful Contractor shall submit to the Client a valid letter of good standing with the Compensation Insurer prior to appointment.

2.8 Occupational Health and Safety Policy

The Contractor shall submit their Health and Safety Policy, prior to construction commencement, signed by the Chief Executive Officer. The Policy must outline objectives and how they will be achieved and implemented within the company operations. The Policy must be communicated to all employees and proof thereof must be available in the Safety File.

2.9 Health and Safety Organogram

The Contractor shall submit an organogram, prior to construction commencement, outlining the Health and Safety Site Team that will be assigned to the project, if successful with the tender. In cases where appointments have not been made, the organogram shall reflect the position. The organogram shall be updated when there is a change in the site team.

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2.10 Risk Assessments

Baseline Risk Assessment

The Client shall cause a baseline risk assessment to be conducted by a competent person before the design process and tender process commence, and the assessed risks shall form part of the health and safety specifications.

The Contractor must, before commencement of any construction work, and during construction work, have risk assessments performed by a competent person appointed in writing, which risk assessments form part of the health and safety plan to be applied on the site and must include:

- The identification of the risks and hazards to which persons may be exposed to;
- An analysis and evaluation of the risks and hazards identified; based on a documented method
- A documented plan and applicable safe work procedures to mitigate, reduce or control the risks and hazards that have been identified;
- A monitoring plan; and
- A review plans.

The Contractor must ensure that, as far as is reasonably practicable, ergonomic related hazards are analysed, evaluated, and addressed in a risk assessment.

The Contractor must ensure that all employees under his control are informed, instructed, and trained by a competent person regarding any hazard and the related work procedures and/or control measures **before any work commences** and thereafter **at the times determined in the risk assessment monitoring and review plan of the relevant site.**

The Principal Contractor must ensure that all contractors are informed regarding any hazard that is stipulated in the risk assessment **before any work commences** and thereafter **at the times determined in the risk assessment monitoring and review plan of the relevant site.**

The Contractor must consult with the health and safety committee or with a representative trade union or representative group of employees if no health and safety committee exists, on the monitoring and review of the risk assessments for the site.

The Contractor must ensure that copies of risk assessment for this site are available on site for inspection purposes by interested parties (inspector, the Client, Client's Safety Agent, any contractor, any employee, a representative trade union, a health and safety representative or safety committee member.

A Contractor must review the relevant risk assessment where changes are affected to the design and/or construction that result in a change to the risk profile, or when an incident has occurred.

Preventative measures must first address the elimination of the hazard or risk. Should PPE be required to reduce risk, the equipment or clothing to be used must be SABS approved.

In general, the Contractor must ensure that the Risk Assessment involves identifying the hazards present in a work activity on site. This is followed by an evaluation of the extent of the risk involved taking into account those precautions already being taken.

The following general principle should be followed when conducting a risk assessment:

- All relevant risks and/or hazards should be systematically addressed;
- The risk assessment should address what actually happens in the workplace during the work activity;

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- All employees and those who may be affected must be considered, including maintenance staff, security guards, visitors, and Contractors;
- The risk assessment should highlight those groups and individuals who may be required to work alone or who have disabilities;
- The risk assessment process should take into account the existing safety measures and controls;
- The level of detail on a risk assessment should be appropriate to the level of risk.

2.11 Health and Safety Representative(s)

The Contractor shall ensure that Health and Safety Representative(s) is/are elected and trained to carry out his / her functions. The Safety Representative(s) must be democratically nominated, elected, and appointed in writing. The Health and Safety Representative(s) shall carry out regular inspections, keep records and report to the supervisor to take appropriate action. The Safety Representative(s) shall attend Health and Safety Committee Meetings. The Health and Safety Representative shall be part of the team that will investigate incidents, accidents, and non-conformances. The Safety Representative(s) must be (a) full time employee(s) who is/are acquainted with conditions and activities at that workplace or section thereof. The Safety Representatives must have Safety Representative training and must be capable of performing their duties.

2.12 Health and Safety Committee

Where two or more health and safety representatives have been appointed on site, the Contractor shall ensure that monthly health and safety meetings are held with such representatives and minutes are kept on record. Meetings must be organized and chaired by the Contractor's Health and Safety Committee Chairperson. Minutes of these meetings must be available for the employees of the contractor to refer to.

PLEASE NOTE THAT THE SAFETY AGENT MAY REQUIRE THAT THE PRINCIPAL CONTRACTOR CONVENES A SAFETY COMMITTEE MEETING ON SITE IN THE INTERESTS OF HEALTH AND SAFETY ON SITE. SUCH COMMITTEE MEETING MAY REQUIRE ATTENDANCE OF CONTRACTORS SAFETY OFFICERS/SAFETY REPRESENTATIVES, CONSTRUCTION SUPERVISION AND THE SAFETY AGENT.

2.13 Medical Certificate of Fitness

The contractor must ensure that their employees on site have a valid medical certificate of fitness, specific to the construction work being performed, issued by an occupational health practitioner in the form of an Annexure 3 template (refer to the Construction Regulations 2014 on the Department of Labour website for a sample of this form).

Employees required to perform work at heights or from fall risk position must be medically fit to perform such work, such employee's medicals must specify "Fall Risk" or "Working at heights" in the exposure section of the annexure 3 template.

2.14 Health and Safety Training

The Contractor shall quarterly conduct a training needs analysis to ascertain what health and safety training is required. A plan of action should be devised and forwarded to the Client for records. Once the identified people have attended the training, the Contractor must provide the Client with copies of certificates obtained.

2.14.1 Induction

No Contractor may allow or permit any employee or person to enter site unless they have undergone health and safety induction training pertaining to the hazards prevalent on site at the time of entry. This includes

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visitors to site. The Contractor must ensure that visitors to site have the necessary protective equipment (PPE). A copy of attendance registers of all employees who attend inductions shall be kept.

2.14.2 Awareness

The Contractor shall conduct periodic toolbox talks on site, weekly or before any hazardous work takes place. The talks shall cover the relevant activity, and an attendance register must be signed by all attendees. This record of who attended and the content of the topic will be kept on the site health a safety file as evidence of training.

2.15 Competency

After the Contractor has identified the training to be conducted as part of the competency requirement, and based on Risk Assessment, he shall send the relevant persons on appropriate courses and keep certificates of training for reference. Familiarity with the Health and Safety Act and Regulations is an integral part of the definition of competence. All training must be conducted by an accredited training provider and the certificates must display the applicable unit standards and the expiry dates thereof.

2.16 General Record Keeping

The Contractor shall keep and maintain Health and Safety records to demonstrate compliance with the Health and Safety Specification and the Occupational Health and Safety Act. The contractor shall ensure that all records of incidents, spot fines, training, etc. are kept on site. All documents shall be available for inspection by the Client, or the Department of Labour's Inspectors.

2.17 General Inspection, Monitoring and Reporting

The Contractor shall carry out inspections as required by this Health and Safety Specification, as well as by health and safety legislation.

2.18 Emergency Procedures

The Contractor shall submit a detailed Emergency Procedure for approval by the Client prior to commencement on site. The procedure shall detail the response plan including the following:

- List of key personnel;
- Details of emergency services;
- Actions or steps to be taken in the event of the emergency; and
- Information on hazardous materials / situations, including each material's hazardous potential impact or risk on the environment or human and measures to be taken in the event of an accident.

Emergency procedure(s) shall include, but shall not be limited to, fire, spills, accidents to employees, use of hazardous substances, dangers as a result of riot / service delivery protests / intimidation, etc. The Contractor shall advise the Client in writing of any on-site emergencies, together with a record of action taken, within 24 hours of the emergency occurring. A contact list of all service providers (Fire Department, Ambulance, Police, Medical and Hospital, etc.) must be maintained and available to site personnel.

2.19 First Aid Box and First Aid Equipment

The Contractor shall provide first aid box/es and appoint, in writing, First Aider(s) for this project in line with the results of the Contractor's risk assessment for the project, this health and safety specification as well as the provisions of the General Safety Regulations. The appointed First Aider(s) are to be sent for accredited first aid training before starting on site. Valid certificates are to be kept on site.

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- First Aid box/es must be adequately stocked at all times, accessible and be controlled by a qualified First Aider.
- Perishables to be checked and replaced when expired.
- Stock per content list as per the General Safety Regulations Annexure.
- Signage to be in place.
- To be numbered and sealed with name of first aider on or above the First aid box.
- Dressing logbook to be available in the first aid box.
- If more than 5 employees are present, there must be a first aid box available.
- Register to be checked by a Competent person.

If required by the Client, the Contractor shall have a stretcher on site to be used in case of a serious incident.

2.20 Accident / Incident Reporting and Investigation

The Contractor shall, in addition to the prescribed requirements of the Occupational Health and Safety Act and General Safety Regulations, investigate, record, and report all Section 24 reportable incidents to the Client within 24 hours of the incident occurring. Incident investigations shall be conducted by the Contractor's appointed Accident Investigator – this Investigator must be a competent person or persons who have sufficient knowledge to carry out an investigation.

In the event of a fatality or a permanent disabling injury the Contractor must submit proof of reporting of incident to Department of Labour as well as proof of preventative measures to the Client. The Client reserves the right to conduct investigations into any incidents that they deem fit and the Contractor is required to provide full co-operation in this regard.

2.21 Hazards and Potential Situations

The Contractor shall immediately notify other Contractors of any hazardous or potentially hazardous situations, which may arise during performance of the activities.

2.22 Occupational Health and Safety Signage

The Contractor shall ascertain and provide adequate on-site health and safety signage. This signage shall include, but shall not be limited to, Hard Hat / Helmet Area; Safety Shoes to be worn on site; Dust Masks to be worn in areas where there might be exposure to excessive dust; Ear Plugs / Muffs to be worn where there might be noise exposure over 85 dB; Gloves; Safety Goggles; Safety Harness, Workers in Excavation, traffic management, etc. The Contractor shall be responsible to maintain the quality and replacement of signage. Signage must comply with the requirements of SABS.

2.23 Management of Contractors by Principal Contractor

The Principal Contractor shall ensure that all contractors under his control are complying with the respective Health and Safety Plans, as well as Health and Safety Legislation.

2.24 Stacking of Materials

In addition to the provisions for the stacking of articles in the General Safety Regulations, 2003, the contractor must ensure that –

- a competent person is appointed in writing with the duty of supervising all stacking and storage on a construction site;
- adequate storage areas are provided;
- there are demarcated storage areas; and
- storage areas are kept neat and under control.

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2.25 Housekeeping and General Safeguarding on Construction Sites

A contractor must, in addition to compliance with the Environmental Regulations for Workplaces, 1987, promulgated by Government Notice No. R. 2281 of 16 October 1987, ensure that suitable housekeeping is continuously implemented on each construction site, including-

- the proper storage of materials and equipment;
- the removal of scrap, waste, and debris at appropriate intervals;
- ensuring that materials required for use, are not placed on the site so as to obstruct means of access to and egress from workplaces and passageways;
- ensuring that materials which are no longer required for use, do not accumulate on, and are removed from the site at appropriate intervals;
- ensuring that waste and debris are not disposed of from a high place with a chute, unless the chute complies with the requirements set out in the regulations;
- ensuring that construction sites in built-up areas adjacent to a public way are suitably and sufficiently fenced off and provided with controlled access points to prevent the entry of unauthorized persons; and
- ensuring that a catch platform or net is erected above an entrance or passageway or above a place where persons work or pass under or fencing off the danger area if work is being performed above such entrance, passageway, or place so as to ensure that all persons are kept safe in the case of danger or possibility of persons being struck by falling objects.

2.26 Construction V ehicles and Mobile Plant

A contractor must ensure that all construction vehicles and mobile plant:

- are of an acceptable design and construction;
- are maintained in a good working order;
- are used in accordance with their design and the intention for which they were designed, having due regard to safety and health;
- are operated by a person who-
  - has received appropriate training, is certified competent and in possession of proof of competency and is authorised in writing to operate those construction vehicles and mobile plant;
  - has a medical certificate of fitness to operate those construction vehicles and mobile plant, issued by an occupational health practitioner in the form of Annexure 3.
- have safe and suitable means of access and egress;
- are properly organized and controlled in any work situation by providing adequate signalling or other control arrangements to guard against the dangers relating to the movement of vehicles and plant, in order to ensure their continued safe operation;
- are prevented from falling into excavations, water, or any other area lower than the working surface by installing adequate edge protection, which may include guard-rails and crash barriers;
- are fitted with structures designed to protect the operator from falling material or from being crushed should the vehicle or mobile plant overturn;
- are equipped with an acoustic warning device which can be activated by the operator;
- are equipped with an automatic acoustic reversing alarm;
- are equipped with fire extinguishers (2.5 – 4.5 kg); and
- are inspected by the authorised operator or driver on a daily basis using a relevant checklist prior to use and that the findings of such inspection are recorded in a register kept in the construction vehicle or mobile plant.

A contractor must ensure that-

- no person rides or is required or permitted to ride on a construction vehicle or mobile plant otherwise than in a safe place provided thereon for that purpose;
- every construction site is organized in such a way that, as far as is reasonably practicable, pedestrians

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and vehicles can move safely and without risks to health;

- the traffic routes are suitable for the persons, construction vehicles or mobile plant using them, are sufficient in number, in suitable positions and of sufficient size;
- every traffic route is, where necessary, indicated by suitable signs;
- all construction vehicles and mobile plant left unattended at night, adjacent to a public road in normal use or adjacent to construction areas where work is in progress, have appropriate lights or reflectors, or barricades equipped with appropriate lights or reflectors, in order to identify the location of the vehicles or plant;
- all construction vehicles or mobile plant when not in use, have buckets, booms, or similar appendages, fully lowered, or blocked, controls in a neutral position, motors stopped, wheels chocked, brakes set, and ignition secured;
- whenever visibility conditions warrant additional lighting, all mobile plant are equipped with at least two headlights and two taillights when in operation;
- tools, material, and equipment are secured and separated by means of a physical barrier in order to prevent movement when transported in the same compartment with employees;
- vehicles used to transport employees have seats firmly secured and adequate for the number of employees to be carried; and
- all construction vehicles or mobile plant travelling, working, or operating on public roads comply with the requirements of the National Road Traffic Act, 1996.
- all plant and vehicles are be fitted with amber rotating beacons and reverse alarms.
- ALL construction site vehicles must be inspected daily especially if it has dangerous "items" (fuel, explosives, etc.) on vehicle, completed inspection registers must also be available for inspection.
- the vehicles must resemble the original manufacturer's product. Levers, alarms, and amber lights to be fitted to construction vehicle for notification of vehicle.
- fire extinguishers, signage, and licence disc to be correctly mounted and displayed.
- when the vehicle is stationary no key to be left in or on vehicle or plant.
- Drip tray must be present when stationary.

2.27 Electrical Installations and Machinery on Construction Sites

A contractor must, in addition to compliance with the Electrical Installation Regulations and the Electrical Machinery Regulations, ensure that –

- before construction commences and during the progress thereof, adequate steps are taken to ascertain the presence of and guard against danger to workers from any electrical cable or apparatus which is under, over or on the site;
- all parts of electrical installations and machinery are of adequate strength to withstand the working conditions on construction sites;
- the control of all temporary electrical installations on the construction site is designated to a competent person who has been appointed in writing for that purpose;
- all temporary electrical installations used by the contractor are inspected at least once a week by a competent person and the inspection findings are recorded in a register kept on the construction site; and
- all electrical machinery is inspected by the authorized operator or user on a daily basis using a relevant checklist prior to use and the inspection findings are recorded in a register kept on the construction site.

2.28 Use and Temporary Storage of Flammable Liquids on Construction Sites

A contactor must, in addition to compliance with the provisions for the use and storage of flammable liquids in the General Safety Regulations, 2003, ensure that –

- where flammable liquids are being used, applied, or stored at the workplace concerned, it is done in a manner that does not cause a fire or explosion hazard, and that the workplace is effectively ventilated;

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- no person smokes in any place in which flammable liquid is used or stored, and the contractor must affix a suitable and conspicuous notice at all entrances to any such areas prohibiting such smoking;
- an adequate amount of efficient fire-fighting equipment is installed in suitable locations around the flammable liquids store with the recognized symbolic signs;
- only the quantity of flammable liquid needed for work on one day is taken out of the store for use;
- all containers holding flammable liquids are kept tightly closed when not in actual use and, after their contents have been used up, are removed from the construction site, and safely disposed of;
- where flammable liquids are decanted, the metal containers are bonded and earthed; and
- no flammable material, including cotton waste, paper, cleaning rags or similar material is stored together with flammable liquids
- proper containers are to be used for fuel. Marked and labelled as per the content.
- diesel on site; more than 800 litres must have a certificate, fire safe certificate. Locked in a ventilated, secure area with a drip tray and have a designated, responsible person to use it.

2.29 Water environments

A contractor must ensure that where construction work is done over or in close proximity to water, provision is made for:

- preventing persons from falling into water; and
- the rescuing of persons in danger of drowning.

A contractor must ensure that where a person is exposed to the risk of drowning by falling into the water, the person is provided with and wears a lifejacket.

2.30 Fire precautions on Construction Sites

A contractor must, in addition to compliance with the Environmental Regulations for Workplaces, 1987, ensure that:

- all appropriate measures are taken to avoid the risk of fire;
- sufficient and suitable storage is provided for flammable liquids, solids, and gases;
- smoking is prohibited and notices in this regard are prominently displayed in all places containing readily combustible or flammable materials;
- in confined spaces and other places in which flammable gases, vapours or dust can cause danger-
  - only suitably protected electrical installations and equipment, including portable lights, are used;
  - there are no flames or similar means of ignition;
  - there are conspicuous notices prohibiting smoking;
  - oily rags, waste, and other substances liable to ignite are without delay removed to a safe place; and
  - adequate ventilation is provided;
- combustible materials do not accumulate on the construction site;
- welding, flame cutting, and other hot work are done only after appropriate precautions have been taken to reduce the risk of fire;
- suitable and sufficient fire-extinguishing equipment is placed at strategic locations or as may be recommended by the Fire Chief or local authority concerned, and that such equipment is maintained in a good working order;
- the fire equipment contemplated above is inspected by a competent person, who has been appointed in writing for that purpose, in the manner indicated by the manufacturer thereof;
- a sufficient number of workers are trained in the use of fire-extinguishing equipment;
- where appropriate, suitable visual signs are provided to clearly indicate the escape routes in the case of a fire;
- the means of escape is kept clear at all times;
- there is an effective evacuation plan providing for all -

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- persons to be evacuated speedily without panic;
- persons to be accounted for; and
- plant and processes to be shut down; and

- a siren is installed and sounded in the event of a fire.

2.31 Construction Employees' Facilities

A contractor must, in terms of the Construction Regulations 2014, provide:

- Shower facilities after consultation with the employees or employees' representatives, or at least one shower facility for every 15 persons;
- at least one sanitary facility for each sex and for every 30 workers;
- Toilets to be within walking distance
- Hygiene registers to be completed
- Proof of safe disposal of effulgent waste disposal certificates to be obtained
- changing facilities for each sex;
- and sheltered/shaded eating area.
- Protection from the Elements and raised off the ground.
- Every employer shall provide sanitary facilities at the workplace in accordance with the provisions of Parts F, P and Q of the National Building Regulations.
- Sufficient clean water for all employees. 500ml to each employee every hour.

A contractor must provide reasonable and suitable living accommodation for the workers at construction sites who are far removed from their homes and where adequate transportation between the site and their homes, or other suitable living accommodation, is not available.

2.32 Fall protection

The Contractor must:

- designate a competent person to be responsible for the preparation of a fall protection plan
- ensure that the fall protection plan contemplated above is implemented, amended where and when necessary and maintained as required; and
- take steps to ensure continued adherence to the fall protection plan.

A fall protection plan contemplated above must include:

- a risk assessment of all work carried out from a fall risk position and the procedures and methods used to address all the risks identified per location;
- the processes for the evaluation of the employees' medical fitness necessary to work at a fall risk position and the records thereof;
- a programme for the training of employees working from a fall risk position and the records thereof;
- the procedure addressing the inspection, testing, and maintenance of all fall protection equipment; and
- a rescue plan detailing the necessary procedure, personnel and suitable equipment required to affect a rescue of a person in the event of a fall incident to ensure that the rescue procedure is implemented immediately following the incident.

A contractor must ensure that a construction manager appointed under regulation 8(1) is in possession of the most recently updated version of the fall protection plan.

A contractor must ensure that all unprotected openings in floors, edges, slabs, hatchways, and stairways are adequately guarded, fenced, or barricaded or that similar means are used to safeguard any person from falling through such openings;

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Also that no person is required to work in a fall risk position, unless such work is performed safely as contemplated in above and fall prevention and fall arrest equipment are approved as suitable and of sufficient strength for the purpose for which they are being used, having regard to the work being carried out and the load, including any person, they are intended to bear; and securely attached to a structure or plant, and the structure of plant and the means of attachment thereto are suitable and of sufficient strength and stability for the purpose of safely supporting the equipment and person who could fall, and fall arrest equipment is used only where it is not reasonably practicable to use fall prevention equipment.

2.33 Temporary works

A contractor must appoint a temporary works designer in writing to design, inspect and approve the erected temporary works on site before use.

A contractor must ensure that all temporary works operations are carried out under the supervision of a competent person who has been appointed in writing for that purpose.

A contractor must ensure that:

- all temporary works structures are adequately erected, supported, braced, and maintained by a competent person so that they are capable of supporting all anticipated vertical and lateral loads that may be applied to them, and that no loads are imposed onto the structure that the structure is not designed to withstand;
- all temporary works structures are done with close reference to the structural design drawings, and where any uncertainty exists the structural designer should be consulted;
- detailed activity specific drawings pertaining to the design of temporary works structures are kept on the site and are available on request to an inspector, other contractors, the Client, the Client's Safety Agent, or any employee;
- all persons required to erect, move, or dismantle temporary works structures are provided with adequate training and instruction to perform those operations safely;
- all equipment used in temporary works structure are carefully examined and checked for suitability by a competent person, before being used;
- all temporary works structures are inspected by a competent person immediately before, during and after the placement of concrete, after inclement weather or any other imposed load and at least on a daily basis until the temporary works structure has been removed and the results have been recorded in a register and made available on site;
- no person may cast concrete, until authorization in writing has been given by the competent person contemplated above;
- if, after erection, any temporary works structure is found to be damaged or weakened to such a degree that its integrity is affected, it is safely removed or reinforced immediately;
- adequate precautionary measures are taken in order to:
  - secure any deck panels against displacement; and
  - prevent any person from slipping on temporary works due to the application of release agents;
- as far as is reasonably practicable, the health of any person is not affected through the use of solvents or oils or any other similar substances;
- upon casting concrete, the temporary works structure is left in place until the concrete has acquired sufficient strength to safely support its own weight and any imposed load, and is not removed until authorization in writing has been given by the competent person
- the foundation conditions are suitable to withstand the loads caused by the temporary works structure and any imposed load in accordance with the temporary works design.
- provision is made for safe access by means of secured ladders or staircases for all work to be carried out above the foundation bearing level;
- a temporary works drawing, or any other relevant document includes construction sequences and methods statements;
- the temporary works designer has been issued with the latest revision of any relevant structural design drawing;

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- a temporary works design and drawing is used only for its intended purpose and for a specific portion of a construction site; and
- the temporary works drawings are approved by the temporary works designer before the erection of any temporary works.

No contractor may use a temporary works design and drawing for any work other than its intended purpose.

2.34 Excavation

A contractor must:

- ensure that all excavation work is carried out under the supervision of a competent person who has been appointed in writing for that purpose; and
- evaluate, as far as is reasonably practicable, the stability of the ground before excavation work begins.

A contractor who performs excavation work:

- must take reasonable and sufficient steps in order to prevent, as far as is reasonably practicable, any person from being buried or trapped by a fall or dislodgement of material in an excavation;
- may not require or permit any person to work in an excavation which has not been adequately shored or braced: Provided that shoring and bracing may not be necessary where-
  - the sides of the excavation are sloped to at least the maximum angle of repose measured relative to the horizontal plane; or
  - such an excavation is in stable material: Provided that:
    - permission has been given in writing by the appointed competent person contemplated above upon evaluation by him or her of the site conditions; and
    - where any uncertainty pertaining to the stability of the soil still exists, the decision from a professional engineer or a professional technologist competent in excavations is decisive and such a decision must be noted in writing and signed by both the competent person and the professional engineer or technologist, as the case may be;
- must take steps to ensure that the shoring or bracing contemplated above is designed and constructed in a manner that renders it strong enough to support the sides of the excavation in question;
- must ensure that no load, material, plant, or equipment is placed or moved near the edge of any excavation where it may cause its collapse and consequently endangers the safety of any person, unless precautions such as the provision of sufficient and suitable shoring or bracing are taken to prevent the sides from collapsing;
- must ensure that where the stability of an adjoining building, structure or road is likely to be affected by the making of an excavation, steps are taken to ensure the stability of such building, structure or road and the safety of persons;
- must cause convenient and safe means of access to be provided to every excavation in which persons are required to work, and such access may not be further than six metres from the point where any worker within the excavation is working;
- must ascertain, as far as is reasonably practicable, the location and nature of electricity, water, gas, or other similar services which may in any way be affected by the work to be performed, and must before the commencement of excavation work that may affect any such service, take the steps that are necessary to render the circumstances safe for all persons involved;
- must ensure that every excavation, including all bracing and shoring, is inspected-
  - daily, prior to the commencement of each shift;
  - after every blasting operation (if applicable);
  - after an unexpected fall of ground;
  - after damage to supports; and
  - after rain,

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by the competent person, in order to ensure the safety of the excavation and of persons, and those results must be recorded in a register kept on site and made available on request to an inspector, the Client, the Client's Safety Agent, any other contractor or any employee;

- must cause every excavation which is accessible to the public or which is adjacent to public roads or thoroughfares, or whereby the safety of persons may be endangered, to be –
  - adequately protected by a barrier or fence of at least one metre in height and as close to the excavation as is practicable; and
  - provided with warning illuminants or any other clearly visible boundary indicators at night or when visibility is poor, or have resort to any other suitable and sufficient precautionary measure where this is not practicable;
- must ensure that all precautionary measures stipulated for confined spaces as determined in the General Safety Regulations, 2003, are complied with by any person entering any excavation;
- must, where the excavation work involves the use of explosives, appoint a competent person in the use of explosives for excavation, and must ensure that a method statement is developed by that person in accordance with the applicable explosive's legislation; and
- must cause warning signs to be positioned next to an excavation within which or where persons are working or carrying out inspections or tests.

2.35 Demolition Work

A contractor must appoint a competent person in writing to supervise and control all demolition work on site.

A contractor must ensure that before any demolition work is carried out, and in order to ascertain the method of demolition to be used, a detailed structural engineering survey of the structure to be demolished is carried out by a competent person and that a method statement on the procedure to be followed in demolishing the structure is developed by that person.

During a demolition, the competent person contemplated in above must check the structural integrity of the structure at intervals determined in the method statement contemplated in above, in order to avoid any premature collapses.

A contractor who performs demolition work must with regard to a structure being demolished, take steps to ensure that:

- no floor, roof or other part of the structure is overloaded with debris or material in a manner which would render it unsafe;
- all reasonably practicable precautions are taken to avoid the danger of the structure collapsing when any part of the framing of a framed or partly framed building is removed, or when reinforced concrete is cut; and
- precautions are taken in the form of adequate shoring or other means that may be necessary to prevent the accidental collapse of any part of the structure or adjoining structure;
- ensure that no person works under overhanging material or a structure which has not been adequately supported, shored, or braced;
- ensure that any support, shoring, or bracing contemplated above, is designed and constructed so that it is strong enough to support the overhanging material;
- where the stability of an adjoining building, structure or road is likely to be affected by demolition work on a structure, take steps to ensure the stability of such structure or road and the safety of persons;
- ascertain as far as is reasonably practicable the location and nature of electricity, water, gas, or other similar services which may in any way be affected by the work to be performed, and must before the commencement of demolition work that may affect any such service, take the steps that are necessary to render circumstances safe for all persons involved;
- cause every stairwell used and every floor where work is being performed in a building being demolished, to be adequately illuminated by either natural or artificial means;

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- cause convenient and safe means of access to be provided to every part of the demolition site in which persons are required to work; and
- erect a catch platform or net above an entrance or passageway or above a place where persons work or pass under or fence off the danger areas if work is being performed above such entrance, passageway, or place so as to ensure that all persons are kept safe where there is a danger or possibility of persons being struck by falling objects.

A contractor must ensure that no material is dropped to any point, which falls outside the exterior walls of the structure, unless the area is effectively protected.

No person may dispose of waste and debris from a high place by a chute unless the chute:

- is adequately constructed and rigidly fastened;
- if inclined at an angle of more than 45 degrees to the horizontal, is enclosed on its four sides;
- if of the open type, is inclined at an angle of less than 45 degrees to the horizontal;
- where necessary, is fitted with a gate at the bottom end to control the flow of material; and discharges into a container or an enclosed area surrounded by barriers.

A contractor must ensure that every chute used to dispose of rubble is designed in such a manner that rubble does not free-fall and that the chute is strong enough to withstand the force of the debris travelling along the chute.

A contractor must ensure that no equipment is used on floors or working surfaces unless such floors or surfaces are of sufficient strength to support the imposed loads.

Where a risk assessment indicates the presence of asbestos, a contractor must ensure that all asbestos related work is conducted in accordance with the Asbestos Regulations 2001.

Where a risk assessment indicates the presence of lead, a contractor must ensure that all lead related work is conducted in accordance with the Lead Regulations, 2001.

Where the demolition work involves the use of explosives, a method statement must be developed in accordance with the applicable explosives' legislation, by an appointed person who is competent in the use of explosives for demolition work and all persons involved in the demolition works must adhere to demolition procedures issued by the appointed person.

A contractor must ensure that all waste and debris are as soon as reasonably practicable removed and disposed of from the site in accordance with the applicable legislation.

2.36 Tunnelling

This section is not applicable at this stage of the project.

2.37 Scaffolding

A contractor must appoint a competent person in writing who must ensure that all scaffolding work operations are carried out under his or her supervision and that all scaffold erectors, team leaders and inspectors are competent to carry out their work as per the SANS 10085 of 2004.

A contractor using access scaffolding must ensure that such scaffolding, when in use, complies with the safety standards incorporated for this purpose into these Regulations under section 44 of the Act and SANS 10085. Scaffold must be:

- Level and balanced upon the correct footing such as base jacks, U-Jacks, and mobile wheels
- Have the correct Ledgers and bracing methods to secure the frames and Standards

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- To be fully boarded with the correct edge protection on both the 0.500m and 1 metre height per working platforms.
- Working platforms to be in accordance with the Tables 4 and 5 of the SANS 10085 for weight restrictions
- Have the correct access that is fitted within the scaffold and grants access to the working platforms and must be fitted with a trap door system.
- Secured with fastening methods such Reveal and fixed ties according to table 7 of SANS 10085. Buttresses to be used when required.
- signage must be displayed to indicate if the scaffold is safe or unsafe to use.
- Trestles to be built in accordance with section 10.16.1 of the SANS 10085 and safety requirements to be met by the scaffolding inspector and scaffold supervisors on site.

2.38 Bulk mixing plant

This section is not applicable at this stage of the project.

2.39 Rope Access Work

This section is not applicable at this stage of the project.

2.40 Hazardous Chemical Substances (HCS)

In addition to the requirements in the HCS Regulations, the principal contractor must provide proof in the Health and Safety Plan that:

- Material Safety Data Sheets (MSDS's) of the relevant materials / hazardous chemical substances are available prior to use by the contractor. All MSDS's shall be available for inspection by the agent at all times.
- Risk assessments are done at least once every 6 months.
- Exposure monitoring is done according to OESSM and by an Approved Inspection Authority (AIA) and that the medical surveillance programme is based on the outcomes of the exposure monitoring.
- How the relevant HCS's are being/going to be controlled by referring to:
  - Limiting the amount of HCS.
  - Limiting the number of employees.
  - Limiting the period of exposure.
  - Substituting the HCS.
  - Using engineering controls.
  - Using appropriate written work procedures.
- The correct PPE is being used.
- HCS are stored and transported according to SABS 072 and 0228.
- Training with regards to these regulations was given.

The Health and Safety plan should make reference to the disposal of hazardous waste on classified sites and the location thereof (where applicable).

The First Aider must be made aware of the MSDS and trained in how to treat HCS incidents appropriately.

2.41 Noise Induced Hearing Loss

Where noise is identified as a hazard the requirements of the NIHL regulations must be complied with and the following must be included / referred to in the Health and Safety Plan:

- Proof of training with regards to these regulations.
- Risk assessment done within 1 month of commencement of work.

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- That monitoring carried out by an AIA and done according to SABS 083.
- Medical surveillance programme established and maintained for the necessary employees.
- Control of noise by referring to:
- Engineering methods considered.
- Admin control (number of employees exposed) considered.
- Personal protective equipment considered/decided on.
- Describe how records are going to be kept for 40 years.

2.42 Explosives and Blasting

This section is not applicable at this stage of the project.

2.43 Personal Protective Equipment (PPE)

The Contractor shall carry out PPE or clothing needs analysis in accordance with his risk assessment, to determine the necessary PPE or clothing to be used during construction. The Contractor shall make provision to keep adequate quantities of appropriate, SABS approved PPE or clothing on site at all times.

The Contractor must ensure that personnel are trained in the correct use of PPE to be used.

The Contractor must ensure that lost, stolen, worn out or damaged PPE is replaced as required and receipt signed for by employees on site.

2.44 Asbestos

No Asbestos identified as per the BEAM Analytical report dated 22 July 2024.

2.45 Pressure Vessels (Including Gas Bottles)

The Contractor shall comply with Pressure Vessel Regulations, including:

- Providing competency and awareness training to the operators;
- Providing PPE or clothing;
- Providing and maintain appropriate signage in areas where pressure vessels are used, as applicable;
- Inspect equipment regularly and keep records of inspections;
- Providing appropriate firefighting equipment (Fire Extinguishers).
- Under pressure vessels to have the following in place:
  - Service date;
  - Seals on valves with no leaks and not broken;
  - flash arrestors;
  - Should be stored and chained together;
  - Oxygen / Acetylene bottles to have clips;
  - Signage to be visible;
  - Gauges in working condition and be visible;
  - Permits for use;
  - Pressure equip Regs 6. (1) The user shall ensure that the pressure equipment is operated and maintained within its design and operating parameters.

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2.46 Fire Extinguishers and Fire Fighting Equipment

The Contractor shall provide adequate, regularly serviced fire extinguishers located at strategic points on site. The Contractor shall keep spare serviced portable fire extinguishers. The Contractor shall have adequate persons trained or competent to use the Fire Fighting Equipment.

Safety signage shall be posted up in all areas where fire extinguishers are located.

2.47 Lifting Machinery and Tackle

The Contractor shall ensure that lifting machinery and tackle is inspected before use and on a monthly basis. The Contractor shall have lifting machinery and tackle inspector who will inspect the equipment at intervals required by the Driven Machinery Regulations, taking into account that:

- All lifting machinery and tackle have a safe working load clearly indicated;
- Regular inspection and servicing are carried out;
- Records are kept of inspections and of service certificates;
- Thorough examinations are carried out by competent personnel at the frequencies required by legislation;
- There is proper supervision in terms of guiding the loads which includes a trained banks man to direct and check lifting tackle if it is safe for use;
- Forklift to be inspected every year and lift plan every 2 years;
- Load test certificate to be no older than 6 months;
- Sufficient props to be used and max weight to be displayed;
- Slings to be checked with regard to integrity, chains, serial numbers, checked for tears, cuts links and all other materials;
- Hooks to be oiled, not in a fixed position and closed to prevent materials from slipping/falling off;
- Lifting equipment must be used for the scope of work carried out.

2.48 Ladders and Ladder work

The Contractor shall ensure that all ladders are numbered and inspected regularly keeping record of inspections. It should be noted that Aluminium ladders are preferred to wooden ladders.

2.49 General Machinery

The Contractor shall comply with the Driven Machinery Regulations, which include inspecting machinery regularly, appointing a competent person to inspect and ensure maintenance, issuing PPE or clothing and training those that use machinery and enforce compliance.

2.50 Portable Electrical Tools

The Contractor shall ensure that use and storage of all explosive actuating fastening devices and portable electrical tools are in compliance with relevant legislation.

The Contractor shall consider that:

- A competent person undertakes routine inspections;
- Only authorised persons use the tools;
- There is safe working procedures applied;
- Awareness training is carried out and compliance is enforced at all times; and
- PPE and clothing are provided and maintained.

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2.51 High Voltage Electrical Equipment

The Contractor shall ensure that, where the work is under, on or near high-voltage electrical equipment the Electrical Installation Regulations, together with safety instructions (Regulations of the Owner of the Equipment) are complied with. Such equipment includes:

- Eskom and the Local Authority equipment;
- The Contractor's own power supply; and
- Electrical equipment being installed but not yet taken over from a Contractor by The Client.

2.52 Public Health and Safety

The Contractor shall ensure that each person working on or visiting a site, and the surrounding community, shall be made aware of the dangers likely to arise from onsite activities and the precautions to be observed to avoid or minimize those dangers. Appropriate health and safety signage shall be posted at all times.

2.53 Night Work

The Contractor shall not undertake any night work without prior arrangement and a written permit from the Client. The Contractor shall ensure that adequate lighting is provided for all night work and failure to do so shall result in work being stopped.

2.54 Environmental Conditions and Flora and Fauna

The Contractor must be mindful of adverse weather conditions upon the health and safety of the workforce. This includes inclement weather, strong wind, heat stress, extreme cold, etc. The Contractor's risk assessment process must take into account the risks associated with such weather conditions. The same is true when working in an environment where there is a risk to employees' health and safety from presence of poisonous flora, or wildlife (including bees, snakes, etc). The Contractor's risk assessment process must take these risks into account.

2.55 Occupational Health

Exposure of workers to occupational health hazards and risks are quite common in any work environment, especially in construction. Occupational health hazards and risks exposure is a major problem and all Contractors are to ensure that proper health and hygiene measures are put in place to prevent exposure to these hazards and risks.

The occupational hazards and risks may enter the body in three ways:

- Inhalation through breathing e.g. cement dust;
- Ingestion through swallowing maybe through food intake;
- Absorption through the skin (pores) e.g. painting or use of thinners.

The contractor is required to ensure that all his personnel are medically fit prior to being allowed onto the work site.

All Contractors should ensure that Occupational Hygiene surveys are conducted as per the Occupational Health and Safety Act to ensure employees are not exposed to hazards. Risk Assessments should identify areas where surveys are to be conducted.

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2.56 Suspended Platforms

This section is not applicable at this stage of the project.

2.57 Material Hoists

This section is not applicable at this stage of the project.

2.58 Explosive Actuated Fastening Device

This section is not applicable at this stage of the project.

2.59 Confined Spaces

Confined space work must be closely monitored by a competent person appointed by the contractor, to include, but not restricted to, ensuring that the confined space is sufficiently ventilated prior to entry. Oxygen levels to be tested in confined space to ensure that it is safe for entry. Permit system to be in place to declare confined space safe for entry prior to entry. PPE must be worn (such as proper masks) if air supply is insufficient or not of sufficient quality.

Sufficient training must take place in use of all confined space monitoring and access equipment prior to any works commencing in such confined space. It is strongly recommended that a tripod and winch system be in place to afford easy access and egress and for emergency evacuation from the confined space (manholes and chambers). Please also refer to GSR5 on safety requirements for Work in Confined Spaces.

General safety Regulations 5.
(1) An employer or a user of machinery shall take steps to ensure that a confined space is entered by an employee or other person only after the air therein has been tested and evaluated by a person who is competent to pronounce on the safety thereof, and who has certified in writing that the confined space is safe and will remain safe while any person is in the confined space, taking into account the nature and duration of the work to be performed therein.

(2) Where the provisions of sub regulation (1) cannot be complied with the employer or user of machinery, as the case may be, shall take steps to ensure that any confined space in which there exists or is likely to exist a hazardous gas, vapour, dust or fumes, or which has or is likely to have, an oxygen content of less than 20 per cent by volume, is entered by an employee or other person only when-- (a) subject to the provisions of sub regulation (3), the confined space is purged and ventilated to provide a safe atmosphere therein and measures necessary to maintain a safe atmosphere therein have been taken; and (b) the confined space has been isolated from all pipes, ducts and other communicating openings by means of effective blanking other than the shutting or locking of a valve or a cock, or, if this is not practicable, only when all valves and cocks which are a potential source of danger have been locked and securely fastened by means of chains and padlocks.
(3) Where the provisions of sub regulation (2)(a) cannot be complied with, the employer or user of machinery shall take steps to ensure that the confined space in question is entered only when the employee or person entering is using breathing apparatus of a type approved by the chief inspector and, further, that-
(a) the provisions of sub regulation (2) (b) are complied with;
(b) any employee or person entering the confined space is using a safety harness or other similar equipment, to which a rope is securely attached which reaches beyond the access to the confined space, and the free end of which is attended to by a person referred to in paragraph (c);
(c) at least one other person trained in resuscitation is and remains in attendance immediately outside the entrance of the confined space in order to assist or remove any or persons from the confined space, if necessary; and

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(d) effective apparatus for breathing and resuscitation of a type approved by the chief inspector is available immediately outside the confined space.

(4) An employer or user of machinery shall take steps to ensure that all persons vacate a confined space on completion of any work therein.

(5) Where the hazardous gas, vapour, dust, or fumes contemplated in sub regulation (2) are of an explosive or flammable nature, an employer or user of machinery shall further take steps to ensure that such a confined space is entered only if –
(a) the concentration of the gas, vapour, dust, or fumes does not exceed 25 per cent of the lower explosive limit of the gas, vapour, dust, or fumes concerned where the work to be performed is of such a nature that it does not create a source of ignition; or
(b) such concentration does not exceed 10 per cent of the lower explosive limit of the gas, vapour, dust, or fumes where other work is performed.

2.60 Alcohol and drugs (GSR 2)

1. A contractor shall not permit any person who is or who appears to be under the influence of intoxicating liquor or drugs, to enter or remain at a site.

2. No employee shall be under the influence of or have in his or her possession or partake of or offer any other person intoxicating liquor or drugs.

3. An employer or a user, as the case may be, shall, in the case where a person is taking medicines, only allow such person to perform duties at the site if the side effects of such medicine do not constitute a threat to the health or safety of the person concerned or other persons at such site.

2.61 General Practices when Working at Heights

- No Homemade structures or ladders will be permitted on the project;
- Trestle tables are not to be fully extended and must be fully boarded, no drums to be used;
- Surroundings to be clear of rubble;
- Fall protection, fall prevention, and fall rescue plans to be in place and communicated to site employees;
- Ladders to be structurally sound and not broken and in accordance with GSR 13A;
- Only competent persons may be allowed to work at heights ;
- Correct personal protective equipment to be used (safety harness and lanyard) and edge protection / lifelines to be used;
- Anchor points to be in place and determined by an engineer. Anchor points must be pull tested prior to use;
- GSR (6) 6. No employer shall require or permit any person to work in an elevated position and no person shall work in an elevated position, unless such work is performed safely from a ladder or scaffolding, or from a position where such person has been made as safe as if they were working from scaffolding;
- Construction regulation 10 of 2014 to be implemented when working at heights and to prevent any person from falling from heights;
- Employees required to perform work at heights or from fall risk position must be medically fit to perform such work, such employee's medicals must specify "Fall Risk" or "Working at heights" in the exposure section of the annexure 3 template.

2.62 Ventilation and Lighting in the Workplace

Every employer shall cause every workplace in his undertaking to be lighted in accordance with the illuminance values specified in the Schedule to the General Safety Regulations:

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Provided that where specialised lighting is necessary for the performance of any particular type of work, irrespective of whether that type of work is listed in the Schedule or not, the employer of those employees who perform such work shall ensure that such specialised lighting is available to and is used by such employees.

The Contractor must ensure that:

- the average illuminance at any floor level in a workplace within five meters of a task is not less than one fifth of the average illuminance on that task;
- glare in any workplace is reduced to a level that does not impair vision;
- lighting on rotating machinery in such that the hazard of stroboscopic effects is eliminated; and
- luminaires and lamps are kept clean and, when defective, are replaced or repaired forthwith.

With a view to the emergency evacuation of indoor workplaces without natural lighting or in which persons habitually work at night, every employer shall, in such workplaces, provide emergency sources of lighting which are such that, when activated, an illuminance of not less than 0.3 lux is obtained at floor level to enable employees to evacuate such workplaces: Provided that where it is necessary to stop machinery or shut down plant or processes before evacuating the workplace, or where dangerous materials are present or dangerous processes are carried out, the illuminance shall be not less than 20 lux.

The contractor must ensure that the emergency sources of lighting prescribed above:

- are capable of being activated within 15 seconds of the failure of the lighting prescribed by sub regulation (1);
- will last long enough to ensure the safe evacuation of all indoor workplaces;
- are kept in good working order and tested for efficient operation at intervals of not more than three months; and
- where directional luminaires are installed, these are mounted at a height of not less than two meters above floor level and are not aimed between 10° above and 45° below the horizontal line on which they are installed.

The contractor must ensure that all rooms, stairways, passageways, gangways, basements, and other places where danger may exist through lack of natural light, to be lighted such that it will be safe.

The contractor must ensure that every workplace in his undertaking is ventilated either by natural or mechanical means in such a way that:

- the air breathed by employees does not endanger their safety;
- the time-weighted average concentration of carbon dioxide therein, taken over an eight-hour period, does not exceed one half per cent by volume of air;
- the carbon dioxide content thereof does not at any time exceed three per cent by volume of air;
- the prescribed exposure limits for airborne substances therein are not exceeded; and
- the concentration therein of any explosive or flammable gas, vapour or dust does not exceed the lower explosive limit of that gas, vapour, or dust.

2.63 Nuclear Density Gauge (Troxler)

This section is not applicable at this stage of the project.

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2.64 Ergonomics Regulation of 2019

"competent person" in relation to ergonomics, means a person who– (a) has in respect of the work or task to be performed the required knowledge, training and experience in ergonomics and, where applicable, qualifications specific to ergonomics: provided that where appropriate qualifications and training are registered in terms of the provisions of the National Qualifications Framework Act, 2008 (Act No. 67 of 2008), those qualifications and that training must be regarded as the required qualifications and training; and (b) is familiar with the Act and the applicable regulations made under the Act;

"ergonomic risk" means a characteristic or action in the workplace, workplace conditions, or a combination thereof that may impair overall system performance and human well-being;

"ergonomic risk assessment" means a programme, process, or investigation to identify, analyse, valuate, and prioritise any risk from exposure to ergonomic risks associated with the workplace;

"ergonomics" means the scientific discipline concerned with the fundamental understanding of interactions among humans and other elements of a system, and the profession that applies theory, principles, data, and methods to design in order to optimise human well-being and overall system performance;

The ergonomics regulations will apply to any employer or self-employed person who carries out work at the workplace who may expose any person to an ergonomic risk in the workplace and any designer, manufacturer, importer or supplier of machinery, plant, or work systems for the workplace.

An employer must, before the commencement of any work that may expose employees to ergonomic risks, have an ergonomic risk assessment performed by a competent person.

The ergonomic risk assessment must be done at intervals not exceeding two years and must include the following:

- a complete hazard identification and all persons who may be affected by the ergonomic risk;
- how employees may be affected by the ergonomic risks;
- the analysis and evaluation of the ergonomic risks;
- the prioritisation of ergonomic risks.

An employer must review the relevant ergonomic risk assessment if:

- such assessment is no longer valid;
- control measures are no longer effective;
- technological or scientific advances allow for more effective control methods;
- there has been a change in –
  - the work methods;
  - the type of work carried out; or
  - the type of equipment used to control the exposure; and
  - an incident occurs or medical surveillance reveals an adverse health effect, where ergonomic risks are identified as a contributing factor.

An employer must ensure that an employee is placed under medical surveillance, which is overseen by an occupational medicine practitioner, if:

- the ergonomic risk assessment referred to in regulation 6 indicates the need for the employee to be placed under medical surveillance; or
- an occupational health practitioner recommends that relevant employees must be under medical surveillance, in which case the employer may call upon an occupational medicine practitioner to ratify the appropriateness of such recommendation.

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An employer must ensure that the medical surveillance consists of:

- in the case of a new employee, an initial health examination before the employee commences employment or within 30 days of commencement of such employment;
- a periodic health examination informed by the ergonomic risk assessment, at intervals specified by an occupational medicine practitioner, but not exceeding two years; and
- an exit health examination informed by the ergonomic risk assessment.

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Both the Client and the Contractor have a duty in terms of health and safety legislation to do all that is reasonably practicable to make members of the public and others being affected by the construction processes aware of possible risks and put preventative measures in place to mitigate the risks. The public and/or visitors shall go through a brief health and safety induction detailing hazards and risks they may be exposed to and what measures are in place to control these hazards and risks.

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OTHER HEALTH AND SAFETY SPECIFICATION REQUIREMENTS

The contractor must be aware of the following additional requirements:

What	When	Output
Awareness training (Toolbox Talks)	At least weekly and before hazardous work is carried out	Attendance Register
Health and Safety Committee Meetings	Monthly	Minutes signed by the employer (Contractor) covering: a) Health and Safety Representative Checklist b) Safety report from Safety Officer and Safety Agent
Health and Safety Reports	Monthly	Report covering: a) Incidents/Accidents and Investigations b) Non-conformance c) Health and Safety Training d) HIRA Updates e) Internal and External Audits
General Inspections	As per Health and Safety Specification and OHSA	Report on Health and Safety Specification and OHSA compliance: a) Scaffolding b) Lifting Machinery c) Excavation
General Inspections	Monthly	Covering: a) Firefighting Equipment b) Portable Electrical Equipment c) Ladders
Record keeping	Ongoing	Covering: a) General complaints b) Fines c) General incidents d) MSDS e) Surveillance Medicals f) Inspection Register g) Dept of Labour Notices
Permits	Before commencement with certain activities	As stipulated by the Health and Safety Specification and the OHSA / Construction Regulations

Key:

OHSA – Occupational Health and Safety Act, 1993

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ANNEXURE A – REQUIREMENTS FOR THE HEALTH AND SAFETY PLAN ASSESSMENT

The Contractor must note that the information below is pertinent to the compilation of their safety plan response to this site-specific safety specification and it would be preferred if the Safety Plan is written in the order of the assessment documented below.

No	Item	Notes
1	**Project Directory**	Please state details of Project Client, Project Manager/Principal Agent, Safety Agent, Consulting Engineer, etc. (Name, address, contact details).
2	**Contractors Directory**	Please indicate if you will be using Contractors on this project, if yes, include their details, trade, and FEM details.
3	**Other Parties Directory**	Please indicate contact details for any services applicable (electricity, water, etc.) as well as Department of Labour and Emergency Services.
4	**Project Safety Statement**	The Project Safety Statement must be included in the Safety Plan.
5	**Health and Safety standards for the project (OHS Act, construction regulations, basic conditions of employment, etc.)**	Health and Safety standards must be included in the Safety Plan.
6	**Project Particulars**	Scope of works must be included in the Safety Plan. This is critical.
7	**Existing environment – Structures and Surroundings, Services (Electrical, Water, Sewerage, etc.), Traffic Arrangements, Parking, Access to Site, Storage of Plant and Materials**	Please include these items in the plan. The items must be Site Specific, the location of services and services that will be affected must be mentioned.
8	**Management Structure for safety on the Project**	A structured organogram with names of the responsible people must be included.
9	**Appointed Persons, Supervision**	The required appointments must be identified. A list of the appointed persons must be included in the Safety Plan.
10	**Security Procedures**	Please indicate if a security company will be appointed and include the contact information in the Safety Plan.
11	**Registers list and inspection frequency**	A list of the Inspection Registers that will be on file must be included in the Safety Plan.
12	**Design Co-ordination**	Please indicate your procedure for implementation of design changes by designer on the project, and the procedures for liaison and implementation of temporary works design on the project.
13	**Contractor Co-ordination**	Mention must be made of how Contractors will be co-ordinated on site to ensure that they work together and not adversely affected health and safety.

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No	Item	Notes
14	**Housekeeping, stacking and storage**	Housekeeping policies and procedures must be included in the Safety Plan.
15	**Waste Disposal Arrangements**	Waste disposal arrangements procedures must be included in the Safety Plan.
16	**Noise and dust control**	Please indicate if any noisy operations (more than 85 decibels) will be carried out and what measures will be used to reduce noise exposure to workforce.
17	**Training Requirements**	Training requirements must be identified and recorded.
18	**Plant and Equipment**	A list of plant and equipment to be used on site must be included in the Safety Plan.
19	**Safety Monitoring Arrangements**	The name, contact details and SACPCMP registration status of the Safety Officer must be included in the Safety Plan. State how often the Safety officer will be on site (note safety specification requirement in section 1.7).
20	**Information for Contractors**	State how information will be given to Contractors on site.
21	**Consultation/communication arrangements with Employees**	State how information will be given to employees e.g. notice board.
22	**Selection of Contractors Procedures**	Principal contractor must state what health and safety procedures they will use to assess the competence and resources of their contractors on site.
23	**Activities with risk to Health and Safety (Risk Assessment)**	A Baseline Risk Assessment must be included in the Safety Plan, it must address the Risks identified in the Safety Specification as well as the risk of any other hazards that the Principal Contractor is aware of that are relevant to the site.
24	**Hazardous Substances**	Must be listed in the Safety Plan and addressed in the Risk Assessment.
25	**First Aid and Medical Procedures**	Please indicate name of first aider, position of first aid box, location of nearest medical facility and emergency numbers.
26	**Fire and Emergency Procedures**	List of emergency telephone numbers must be drawn up and included in the Safety Plan. The position of Fire Extinguishers, Assembly Point location, fire drill frequencies, numbers of fire marshals, etc.
27	**Accident and Incident Reporting and investigation**	State the Accident and Incident Reporting and investigation procedures of your company.
28	**Welfare and Site Facilities**	Elaborate on toilets and eating areas, water provision, ablution provision, how will workers be protected during wet weather conditions etc.
29	**Site Rules**	The Site Rules must be included in the Safety Plan.
30	**Personal Protective Equipment**	The necessity must be identified by Risk Assessments, the required PPE for site risks.

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No	Item	Notes
31	**Health & Safety File arrangements**	Please indicate arrangements for the return of the Health and Safety File to the safety agent at the end of the project.

No	Item	Notes
32	**Method Statements/Safe System of Works**	A list of Method Statements/Safe System of Works must be included in Safety Plan for all High-risk activities.
33	**Permits and wayleaves**	List of activities that Principal Contractor anticipates will require permits and wayleaves (including those stated in the safety specification) to be included.
34	**Fall Prevention and Protection Plan and Fall Rescue Plan**	A copy of the Fall Prevention and Protection Plan, fall rescue plan and fall risk assessment must be included in the Safety Plan.
35	**Demolition method statement**	A copy of the Demolition Method Statement must be included in the Safety Plan.
36	**Confined spaces**	The Principal Contractors' procedures for managing access, egress and work in confined spaces must be specified in the Safety Plan. Includes permit procedures, air monitoring, PPE, etc.
37	**Safety Representatives and Safety Committees**	When a project has more than 20 employees a designated employee must be chosen by the labourers to represent them. A safety committee must be established if 2 or more safety representatives are appointed. Please note Safety Specification requirements regarding this section (section 2.12).
38	**Have the significant hazards from the safety specification been addressed?**	See section 1.9 of the Specifications and ensure practical measures have been detailed in the safety plan.
39	**Safety File - Safety Policies in File and Signed by 16(1) CEO.**	Safety Policies must be signed and explained to employees.
40	**Safety File - A copy of the valid Letter of Good standing from FEM / Workman's Compensation must be on file.**	A copy of the valid Letter of Good standing from FEM / Workman's Compensation must be on file.
41	**Safety File - Signed copy of the 37.2 Mandatary Agreement**	A 37.2 Mandatary Agreement needs to be signed between the Client and the Principal Contractor.
42	**Safety File - Appointment letter from Client (as well as 5.1.K)**	The Client must appoint the Principal Contractor in writing.
43	**Safety File – Notification / Permit**	A copy of the Annexure 2 Notification (and proof of submission) to Department of Labour must be available. This can be in the form of a Department stamp, email, or copy of Construction Work Permit.

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ANNEXURE B – LEGAL APPOINTMENTS

The contractor shall make the following appointments, as required:

Chief Executive Officer (OSH Act 16(1))
Contract Director/Manager (OSH Act 16(2))
Construction Manager (CR 8(1))
Construction Supervisor (CR 8(7))
Assistant Construction Supervisor (CR 8(8))
Construction Safety Officer (CR 8(5))
Safety Representative (where > 20 employees on site)
Temporary work Designer (CR 12(1))
Temporary work Supervisor (CR12(2))
Construction risk assessor (CR 9(1))
Demolition Supervisor (CR14(1))
Scaffold Supervisor (CR16(1))
Material Hoist Inspector (CR19(8)(a))
Material Hoist Operator (CR19(6))
Controller of Explosive Actuated Fastening Devices Nails, Cartridges or Studs Issue and Collection (CR21(2)(g)(1))
Construction Vehicle and Mobile Plant Operator (CR23(1)(d)(i))
Controller of Temporary Electrical Installations (CR24(c))
Stacking Supervisor (CR28(a))
Fire Extinguishing Equipment Inspector (CR29(h))
Fall Protection Plan Developer (CR 10(1)(a))
Incident Investigator (OSH Act 9(2))
Competent Person – Confined Spaces (GAR 5(1))

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ANNEXURE C - BASELINE RISK ASSESSMENT FOR PROJECT

Irrespective of the risk presented on site, it will be ensured that sufficient supervision is in place on site, that personnel are trained in accordance with legislation, including the requirement for site specific inductions on site to inform personnel on site of the risks and hazards applicable to the site. Site supervision is responsible for ensuring that the control measures required below are implemented on site.

	HAZARD	RISK	MINIMUM CONTROL MEASURES	RISK RATING High Medium Low
1.	Bricklaying	Caustic contamination with mortar Contact with sharp bladed tools	• Use only trained personnel • Safe means of access to be provided • Safe/Suitable working platform required when working at heights • PPE for mortar to include gloves where practicable and goggles/ masks where there is a risk of contamination	**Medium**
2.	Confined Spaces	Suffocation Fumes	• Ensure that confined space is sufficiently ventilated • Wear personal protective equipment such as proper masks if air supply insufficient or not of sufficient quality • Test oxygen levels in confined space to ensure that is safe for entry • Ensure that emergency procedures in place	**High**
3.	Cutting Off Disc	Noise Cuts from machine Fire (particularly at refuelling) Flying debris Blade shattering Contamination by fume created or exhaust fume	• Use competent personnel. • Hot works control- fire extinguisher, fire watchman. (Permit may be required) • PPE to include gloves, eye protection, hearing protection • Solid working position. • Clear working area • Correct grade of blade must be used. • Good ventilation to be provided (forced if necessary). • Changing of wheels to be by competent persons only • Cut off discs must not be used for grinding (grinding disc thicker) • Bystanders to wear hearing protection, as applicable	**Medium**
4.	Demolition	Falling materials Premature collapse of structure	• Ensure there is a current method statement in place • Ensure all emergency procedures are in place and all details are displayed • Ensure that structural demolition has been approved by the designer and site management • Personnel must be competent • Ensure at all times there is a safe means of access and egress • All personnel must wear suitable and sufficient Personal Protective Equipment, including head, eye, and skin protection	**High**
5.	Electrical Commissioning	Electric shock	• Personnel to comply with permits to work issued by Client • Personal protective equipment to be worn by employees to prevent electric shock • First aid treatment to be readily available • Only competent and trained persons may decommission or commission electrical equipment	**High**
6.	Electric Tools and Electrical Installations Electric Tools and Electrical Installations	Electric shock Fire Electric shock Fire	• Electric tools and installations to be in good condition • Inspect electric tools before use • Do not use electric tools in wet/damp conditions • Use personal protective equipment such as insulated gloves • Electrical installations register to be maintained, inspected by competent person	**High**
7.	Excavations (Working in and around)	Toxic fumes Collapse of trench walls/trapping Falling into excavation Collapse of adjacent structures	• Deep excavations / monitor air for toxic fumes • Prevent collapse by battering back sides to a safe angle or install temporary support • Protect vehicles from falling into excavations – provide barriers, signage, etc. as necessary • Beware of undermining of other structures (e.g. buildings, scaffolds) • Record excavation inspections by competent person on daily basis • Provide suitable means of access/egress in case of emergency.	**High**

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	HAZARD	RISK	MINIMUM CONTROL MEASURES	RISK RATING High Medium Low
			• Excavations formed by explosives must be accompanied by method statement approved by Client	
8.	Erection of Equipment such as breakers, Isolators, CT's, and VT's	Equipment may topple and fall and cause damage to equipment and injury to staff or staff may fall from heights Tools may fall from a height and cause injury to staff working on ground level	• Staff on ground level to move off when equipment is bolted to position • Work to be supervised by the Construction Supervisor • All bolts to be torqued to manufacture's specifications • FAS shall be used by all staff who are erecting the equipment and working on top of support structure • All staff on ground level must wear their hard hats	**Low**
9.	Fire	Injuries to workers, pedestrians, residents, road users, damage to property through fire	• No littering on site which could become fire hazard, maintain site in clean condition. • No fires to be lit on site. Have a working fire extinguisher at hand at all times. • No smoking or naked flame near flammable substances or in unauthorised areas • Ensure proper storage/use of Petrol/diesel/flammable substances – post warning notices	**Medium**
10.	Flammable Liquids and Gases (Use of)	Fire Explosion	• No littering on site which could become fire hazard, maintain site in clean condition. • Have a working fire extinguisher at hand at all times. • No smoking or naked flame near flammable substances or in unauthorised areas • Ensure proper storage/use of Petrol/diesel/flammable substances – post warning notices • Equipment must be in good condition, maintained • Personnel using substances must be trained in safe use and risks	**Medium**
11.	Fragile Materials	Person or items falling through fragile materials	• Staff must ensure that the; • Tools are correct for the job, • Tools are in good condition and suitably sharp, • Personnel must be competent in tool usage and tool safety • Lighting must be sufficient • Access is safe, the working platform is secured, leading edge is guarded • Operator is wearing all the necessary PPE	**Medium**
12.	Hand tools	Injuries caused by use of hand tool Impact with the tool Falls due to access problems Contamination with substance being worked	• Ensure: • Tool is correct for job • Tool is in good order and suitably sharp • Personnel must be competent/instructed in tool usage and tool safely • Lighting is sufficient • Access is safe, working platform is secure, leading edge is guarded • Operative is wearing all necessary PPE	**Low**
13.	Hazardous Substances	Injuries to workers through use of hazardous substances, e.g. injuries to eyes, skin, etc.	• Use substances in accordance with data sheet, particularly reference protective clothing required (example: gloves, goggles, etc.) • Know what First Aid measures are • Have welfare facilities available for washing of hands, etc.	**Low**
14.	Hot Works	Burns to eyes or other parts of the body	• Personal Protective Equipment to include eye, skin, and hearing protection • Respirator maybe be required where cutting galvanized steel or anywhere else toxic fumes and gases arise. Dust can also be a problem and forced ventilation may be required.	**Medium**
15.	Hydraulic tools such as power packs and crimps	Possible hand injuries due to moving machine parts Employees may also be injured should items unexpectedly be discharged from the machine	• Only skilled and competent staff to be allowed to operate the equipment • The equipment must be inspected before use to ensure that the equipment is safe for use • Safety guards must be installed and used • Staff who are required to operate the machines should be provided with PPE and be required to use the following personal protective equipment: a. Overalls, b. Safety boots,	**Medium**

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	HAZARD	RISK	MINIMUM CONTROL MEASURES	RISK RATING High Medium Low
			c. Eye protection, and d. Leather gloves where necessary	
16.	Laying of underground cables	Possible collapse of excavation Possible injury to staff due to the unsafe use of the truck mounted crane and hand-held tools Cable drum may pose a risk when rolling or when be moved Possible Injury to back when pulling cables Possible injury to staff due to trench covers falling on them	• Cables to be installed as per designers' specifications including taking in consideration the maximum load that can be lifting (Rigging study) • Staff to stand clear from cable holder being lifted or moved • Care shall be taken to ensure that excavations do not endanger existing foundations • All the necessary precautions shall be taken in consideration to prevent subsidence of soil which could result in damage to foundations • When working in close proximity to other life cables, it is recommended that the other cables must be temporarily covered using a "cable flash blanket" to reduce the risk of injuries in the event of a flash due to cable fault on one of the nearby cables	**Medium**
17.	Lifting Operations	Falling material Crushing by materials Hand injuries to the slinger Toppling crane	• Check test certificate • Check examination certificate • Check inspection have been carried out • Check certificates for lifting equipment (chains, slings, shackles, etc.) • Ensure lifting gear is rated to carry load (SWL) • Ensure materials being lifted are properly packaged and slung. • Be aware that there should be a minimum clearance of 600mm between any slewing parts of a crane and any fixed installation to prevent being trapped. • Access to the work area during lifting operations is to be restricted to those involved with and trained in the work in hand. Do not allow members of the public to gain access to the area. • Only trained banksmen to be used. • The crane driver and the banksman are to ensure that the signals given are clearly understood.	**Medium**
18.	Manhole Rings and Pipes Storage	Rolling of rings Collapse of pipes Crushing of persons Stockpile collapse	• Manhole rings must be stored flat to prevent them being rolled. • Banks of pipe stockpiles are not to be broken until they are ready for use. • Personnel must stand to the side when breaking bands so as not to be hit by falling pipes. • Pipes must be wedged to prevent rolling	**Medium**
19.	Manual Handling of General Items	Muscular skeletal injuries if the load is too heavy or awkward Operative falling/ tripping Contamination from the substance being carried Fall of material being carried	• Personnel should be aware of safe manual handling techniques • Personnel to wear Personal Protective Equipment when carrying items, e.g. safety footwear and gloves. • Ensure good housekeeping against tripping/fall hazards. • Operative to get assistance if load too heavy- team lift if necessary. • Utilise mechanical lifting and carrying aids where possible. • Personnel to ensure access equipment, ladders will take weight of operative and load being carried. • Personnel to ensure item being carried is properly bonded or is not liable to break apart whilst being manually handled.	**Medium**
20.	Material Hoist	Mechanical failure Overloading Hoist gateway being lifted, left open at landings	• Safe working limits to be indicated on hoist • Hoist operator to be trained and competent • Regular maintenance and inspections by competent person • Records of maintenance and inspections to be kept • Hoist gate should be fitted with mechanical and electrical interlock devices	**Medium**
21.	Members of Public – Protection of	Injury to member of public and road users from site works	• Barriers and signage to be in place • Workers must warn away any members of public from the works • Footpaths and bridges which are open to public must be closed off if in area of works or otherwise made safe so that no injury occurs to members of public • Traffic turning into site – traffic management and signage as required.	**Medium**

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	HAZARD	RISK	MINIMUM CONTROL MEASURES	RISK RATING High Medium Low
			• Signage to be on road at site entrance warning motorists that construction traffic turning into/out of site access. Keep roads free of mud where possible • Refer to plant risk assessment for details on plant safety precautions • NOTE: SIGNAGE TO BE POSTED ON SITE TO WARN OF CONSTRUCTION TRAFFIC MOVEMENTS. SAFE MEANS OF ACCESS FOR BOTH CONSTRUCTION TRAFFIC TO SITE AND PRIVATE HOMEOWNERS MUST BE AGREED.	
22.	Mobile Crane Erection and Dismantling and Use	Collapse of structure Overturning of structure Falling materials	• Ensure emergency procedures are in place and all operatives are aware of the details • Only use trained and competent operators for the erection and dismantling and use of cranes • Ensure crane driver is trained and holds certification as proof. Must have valid medical certificate of fitness. • Ensure there is safe means of access available at all times • Ensure the mobile crane driver has 360° vision if not ensure a fully trained banksman is used • Banksman to wear reflector vest to identify himself to the crane driver • Ensure all personnel wear suitable and sufficient personal protective equipment • Consider creating exclusion areas	**Medium**
23.	Night Work	Security Lighting	• The Contractor shall not undertake any night work without prior arrangement and a written permit from the Client. • The Contractor shall ensure that adequate lighting is provided for all night work and failure to do so shall result in work being stopped.	**Low**
24.	Noise and Dust	Breathing in dust can cause long term health problems, noise can damage hearing	• Wear respiratory and hearing protection. • Wetting and/or damping down to be used to minimise dust where possible. • Engineering Method's must be used to reduce noise to the minimum to compensate for neighbouring public and business activities.	**Medium**
25.	Overhead Services (Working near)	Contact with live services causing injury to personnel Damage caused to services	• Maintain safe clearance levels • Establish presence of any services via proper walk-through survey of site and/or means of service drawings • Wear personal protective clothing • Ensure height of plant/vehicles does not compromise or exceed clearance levels for overhead services • Obtain information on clearance levels from service provider	**Medium**
26.	Painting	Contact with paint	• Refer to safety data sheet for usage instructions, hazards and precautions required. • When working at height, refer to risk assessment addressing this hazard below.	**Low**
27.	Plant or Vehicles and Equipment Operation	Workers injured by passing traffic Road users and pedestrians at risk from plant operation Noise	• Implement traffic protection measures • Trained and competent operators must be used • Check plant and vehicles on daily basis before use and record inspections. Maintain vehicles in safe condition. • Medical certificates of fitness required for construction plant. • Crossing of road by construction vehicles or machines must be limited to the practical minimum • Plant and vehicles must be fitted with amber rotating beacons and reverse alarms. • Wear appropriate protective clothing/equipment, e.g. goggles, gloves, ear defenders, etc. as appropriate.	**High**
28.	Plastering	Falling materials Fall from height Contact with materials	• Ensure standard safety procedures are followed • Ensure there is a safe working area • Ensure safe access and egress • Ensure competent personnel are used	**Medium**
29.	Plumbing	Falling material Falling from height	• Ensure standard safety procedures are followed at all times • Only used trained and competent personnel	

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	HAZARD	RISK	MINIMUM CONTROL MEASURES	RISK RATING High Medium Low
		Fire Burns Exposure to lead fumes	• Ensure there is a safe working area at all times • Ensure materials are stored neatly • Ensure there is safe access and egress at all times • Ensure all personnel wear suitable and sufficient personal protective equipment • Consider a hot works permit system prior to commencing any hot works • Make sure emergency procedures are in place and ensure all personnel are aware of where to go in case of a fire	**Medium**
30.	Scaffold Erection/ Dismantling	Personnel falling from a height Items of scaffold falling onto personnel Scaffold collapsing onto those below	• Ensure • scaffold is designed to take the imposed loads • scaffolding is constructed properly • scaffold is not overloaded • scaffolders are fully trained • scaffolding is regularly checked by competent person and record of inspection retained. Written inspections to be recorded on weekly basis • scaffolders must adhere to the safe systems of work. • all fall arrest equipment to be checked and certified in good working order • that ALL understand the safe system of work	**High**
31.	Steel Erection	Falling from heights Falling components Contact injuries from falling equipment	• Adhere to all general precautions for working at heights • Barrier off/ exclude area below work • All lifting equipment to be inspected and records kept • All personnel to be trained and competent, and to wear clipped on safety harnesses when working on heights • Ensure that lifting equipment (slings, chains, shackles) are tested and test certificates kept on site • Only competent persons allowed to work with lifting equipment	**High**
32.	Steel Fixing	Back injuries caused by manual handling Eye injuries from tie wire Trips / falls Falling form height	• PPE must include safety boots and goggles • Manual handling training may be required • Care to be taken when working near overhead lines • Use only trained personnel • Provide safe means of access • Maintain and regularly inspect all lifting appliances and equipment • Cap starter bars to prevent injuries where feasible • Construct scaffold walkways to cross reinforcing mesh, as required	**Medium**
33.	Temporary Works – shoring, scaffold, falsework, formwork	Collapse of form work	• Wear personal protective equipment such as gloves and goggles • Formwork must be built by trained person and also be inspected by competent person and results entered into register on site	**Medium**
34.	Tower (Mobile Aluminium Tower) Scaffold	Overturning Falls	• Tower Scaffold to be on firm and level ground with wheels or feet properly supported • Height not to exceed 3 times the base dimension. i.e. 2x3m base tower not exceeding 6m • Erection must be done by competent person • Inspections must be done and records kept on site • Guard rails and Toe boards as per normal scaffolds	**Medium**
35.	Underground Services	Overturning Falls	• Make all necessary enquiries to establish what services are in the area. Consult drawings and advice from service provider (e.g. Municipality or ESKOM) when planning work. • Assume all service to be live (Unless confirmation is received to confirm that services are isolated or otherwise made safe). Do not work near live services without authorisation from site management. • Comply with the requirements of the safe system of work for underground services. • Where available, locate services with a locator • Hand dig around services	**Medium**

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	HAZARD	RISK	MINIMUM CONTROL MEASURES	RISK RATING High Medium Low
36.	Working at Height	Striking of buried services	• All access equipment is properly constructed (inspections record must be maintained) • Only trained personnel construct, dismantle or control the access equipment • All access equipment must have full toe boards and guardrails - comply with SANS 10085 on erection, use and dismantling of scaffolding • No access equipment may be loaded above the level of the guardrail • No access equipment to be loaded above its safe working load • Where work involves leaning out on an open leading edge, then all personnel are to be fitted with full body harness. The harness must be connected at all times • All fall arrest equipment to be correctly maintained • Ensure if ladders are being used for access, they are either footed or tied. Also, the ladder must be set at the correct level of 1 in 4 or approximately 75°	**High**
37.	Working with Effluent	Contact with effluent causing sickness or disease	• ensure good hygiene facilities • personnel to be competent in work activity • personnel to wear appropriate personal protective equipment such as goggles, overall, gloves and goggles	**Medium**

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ANNEXURE D – SAFETY SPECIFICATION AND BASELINE RISK ASSESSMENT ISSUE REGISTER

Date of Original Safety Specification Compilation	Compiled By	Issue Date
September 2024	Barry van der Merwe Can-CHSA/199/2022	07/09/2024

Revision Summary	Revised By	Revision Date

Acknowledgement:

I, _____ representing

_____ (Contractor), have satisfied myself with the content of this Health and Safety Specification and shall ensure that our employees and contractors on site comply with the requirements of this document, our safety documentation and health and safety legislation.

_____ _____

Signature of Contractor Date

Comments:

_____

_____

_____

_____

_____

_____

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SAFETY FILE TEMPLATE

SECTION 1:	LEGALLY REQUIRED DOCUMENTS
1.1	Registration with the Workmens Compensation valid and up to date
1.2	Registration with a Business Insurer, confirmation letter from current month
1.3	Client Specifications signed and kept in file
1.4	Notification of Construction Work completed and stamped by DoEL
1.5	SHE Plan is relevant to the project & signed
1.6	Updated copy of Construction Regulations 2014
1.7	Updated copy of OHS Act & Regulations
1.8	Section 37.2 agreement signed by both parties
1.10	Principal Contractor appointment letter signed by both parties
SECTION 2:	**LEGAL APPOINTMENTS**
2.1	Construction Manager (Project Manager)
2.2	Construction Health & Safety Officer
2.3	Construction Supervisor
2.4	Health & Safety Representative
2.5	First Aider
2.6	Excavation Supervisor
2.7	Fire fighting Equipment Inspector / Fire Prevention Officer
2.8	Risk Assessor
2.9	Incident & Accident Investigator
2.10	Hazardous Chemical Substances Coordinator / Supervisor
2.11	Stacking & Storage Supervisor
2.12	Ladder Inspector
2.13	Portable Electrical Equipment Inspector
2.14	Lifting Machinery & Equipment Inspector
2.15	Construction Vehicles & Mobile Plant Operators / Inspectors
2.16	Scaffold Inspector / Erector
2.17	Material Hoist inspector
2.18	Fall Protection Planner
2.19	Temporary Electrical Installations Inspector
2.20	Assistant Construction Manager
2.21	General Machinery Supervisor
SECTION 3:	**RISK ASSESSMENTS**
3.1	Provision has been made to make employees aware of the risks
3.2	Risk Assessment approved and signed by management
3.3	Risk Assessment applicable to the scope of work
3.4	Risk Assessment conducted for all activities
3.5	Risk Assessment has a methodology & matrix
3.6	Control measures identified
3.7	Provision for daily site task instruction / daily risk assessment

SECTION 4:	COMPETENCY
4.1	Construction Manager (Project Manager)
4.2	Assistant Construction Manager (Project Manager)
4.3	Construction Supervisor
4.4	Construction Health & Safety Officer
4.5	Risk Assessor
4.6	Incident & Accident Investigator
4.7	Excavation Supervisor
4.8	Temporary electrical installations inspector
4.9	Material Hoist Inspector
4.10	Lifting Machinery & Equipment Inspector
4.11	Construction Vehicles and mobile plant operators
4.12	General Machinery Supervisor
4.13	Scaffold Inspector
4.14	Fire Fighter
4.15	First Aider
4.16	Health & Safety Representative
4.17	Bulk Mixing Plant Supervisor (batch plant)
SECTION 5:	**HAZARDOUS CHEMICAL SUBSTANCES**
5.1	Hazardous Chemical Substances identified
5.2	16 point MSDS available for all hazardous chemicals
5.3	Chemicals used are stored on secondary containment
SECTION 6:	**SUBCONTRACTOR MANAGEMENT**
6.1	Provision made for the evaluation and approval of sub-contractors files
6.2	Provision made for monthly audits of sub-contractors
6.3	37.2 Agreement in place and signed
SECTION 7:	**TRAINING AND AWARENESS**
7.1	All employees inducted
7.2	Induction records available
7.3	Toolbox talks
SECTION 8:	**INSPECTIONS & MONITORING**
8.1	First Aid kits
8.2	Fire Fighting Equipment
8.3	Excavations
8.4	Scaffold
8.5	Construction Vehicles and Mobile Plant
8.6	Lifting Machinery
8.7	Lifting Tackle
8.8	Portable Electrical Equipment
8.9	General Machinery
8.10	Hand tools
8.11	Fall Protection Equipment
8.12	Health and Safety Representative
8.13	Ladders
8.14	PPE
SECTION 9:	**PROCEDURES & POLICIES**
9.1	Traffic management plan
9.2	Waste Management procedure developed

9.3	PPE Procedure & Issue
9.4	Incident & Accident Management Procedure
9.5	Emergency Procedure
9.6	Excavation Plan / Method Statement
9.7	Fall Protection Plan
9.8	Sub-contractor Management Procedure
9.9	OHS committee meetings & selection of safety reps
9.10	Training Plan / Matrix
9.11	Medical screening programme / policy / procedure
9.12	Confined space entry procedure
9.13	Handling and storage of hazardous chemicals
9.14	Lockout procedure
9.15	SHE Policy
9.16	Safe working procedure : Operating machinery
9.17	Safe working procedure : Operating construction vehicles & mobile plant
9.18	Safe working procedure : Operating portable electrical tools
9.19	Safe working procedure : Scaffolding
9.20	Safe working procedure : Using ladders
9.21	Safe working procedure : Hand tools
SECTION 10:	**MEDICAL SURVEILLANCE**
10.1	Pre-employment medical fitness tests conducted
10.2	Annexure 3 certificates available
SECTION 11:	**LIST OF PLANT, TOOLS & EQUIPMENT**
11.1	List of tools, plant and equipment submitted
11.2	Calibration certificates submitted (where required)
11.3	Licences of all vehicles submitted
11.4	Load test certificates of all lifting equipment submitted and are valid

35. APPENDIX F – Lift Details

ORDER :	ABR229	DATE: _____
CUSTOMER :	HANDS ON LIFTS	
FINAL USER :		STAMP AND SIGNATURE FOR ACCEPTANCE
RIF. :	STELLENBOSCH PUBLIC LIBRARY	
MODEL :	E10	_____

- PLEASE INDICATE:

CABIN WALLS COLOUR:	Lato Guide: GREY (Similinox) Dx: Transparent Sx: Nothing Fronte: Transparent
CABIN FLOORING COLOUR:	Dark grey
DOORS COLOUR:	P0 Sx: Grigio Antracite (RAL 7016) | P1 Sx: Grigio Antracite (RAL 7016)
STRUCTURE COLOUR:	RAL 7016

- IT IS EXTREMELY IMPORTANT THAT ALL THE SIZES INDICATED ARE ACCURATE AS IT IS NOT POSSIBLE TO CHANGE THE HEIGHT ONCE THE STRUCTURE HAS BEEN BUILT.

- BUILD THE PIT ACCORDING TO THE SIZES INDICATED ON DRAWING. THE ADJACENT FLOORING CAN BE FINISHIED UP TO THE STRUCTURE WHEN INSTALLATION IS COMPLETE.

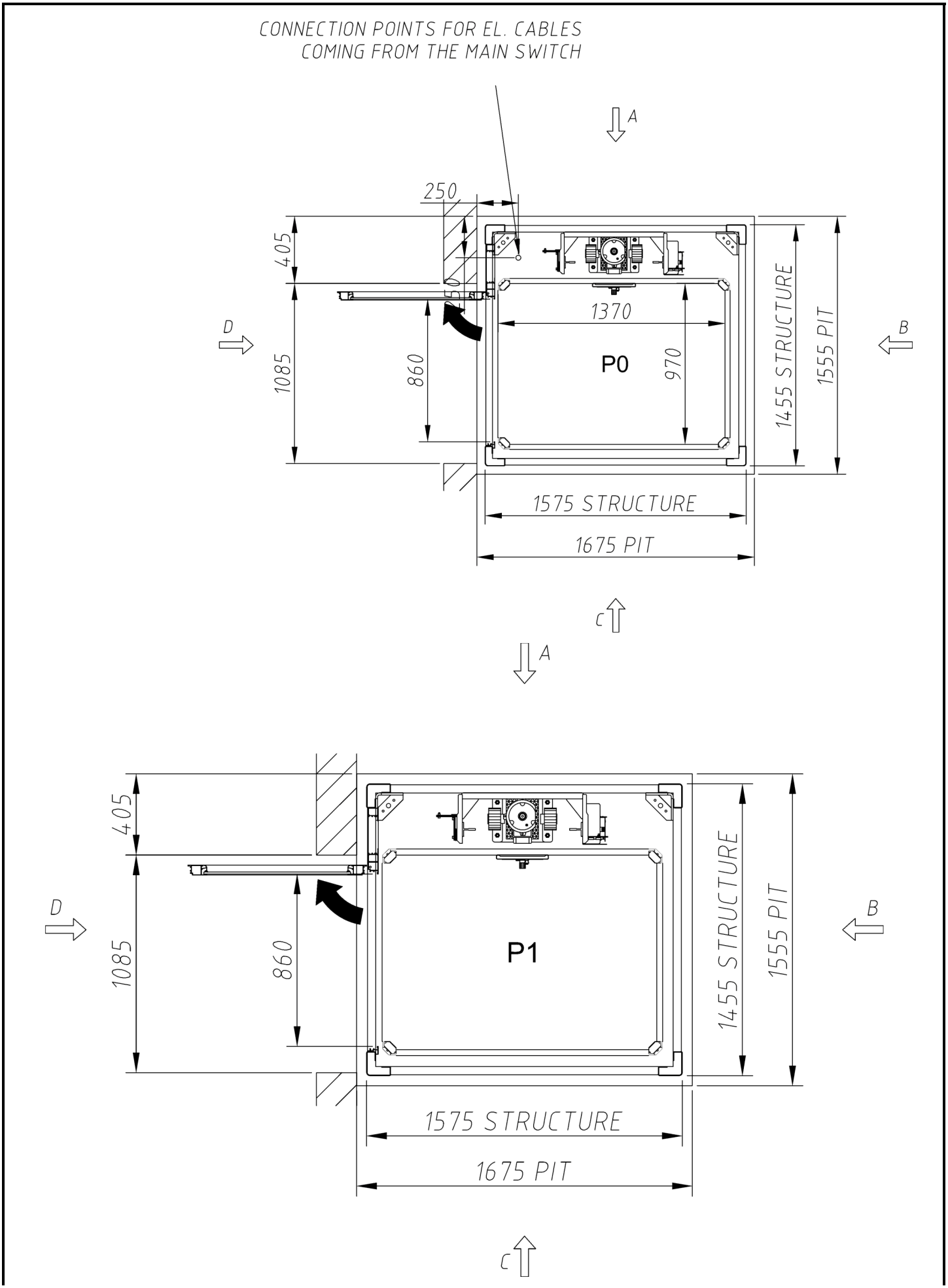
- PREARRANGE A ø40 LOOM CONNECTING THE PIT WITH THE SITE WHERE THW MAIN SWITCH IS LOCATED.

-PREARRANGE A HOLE OF PROPER SIZES IN THE PIT FOR THE DRAINAGE OF RAIN WATER

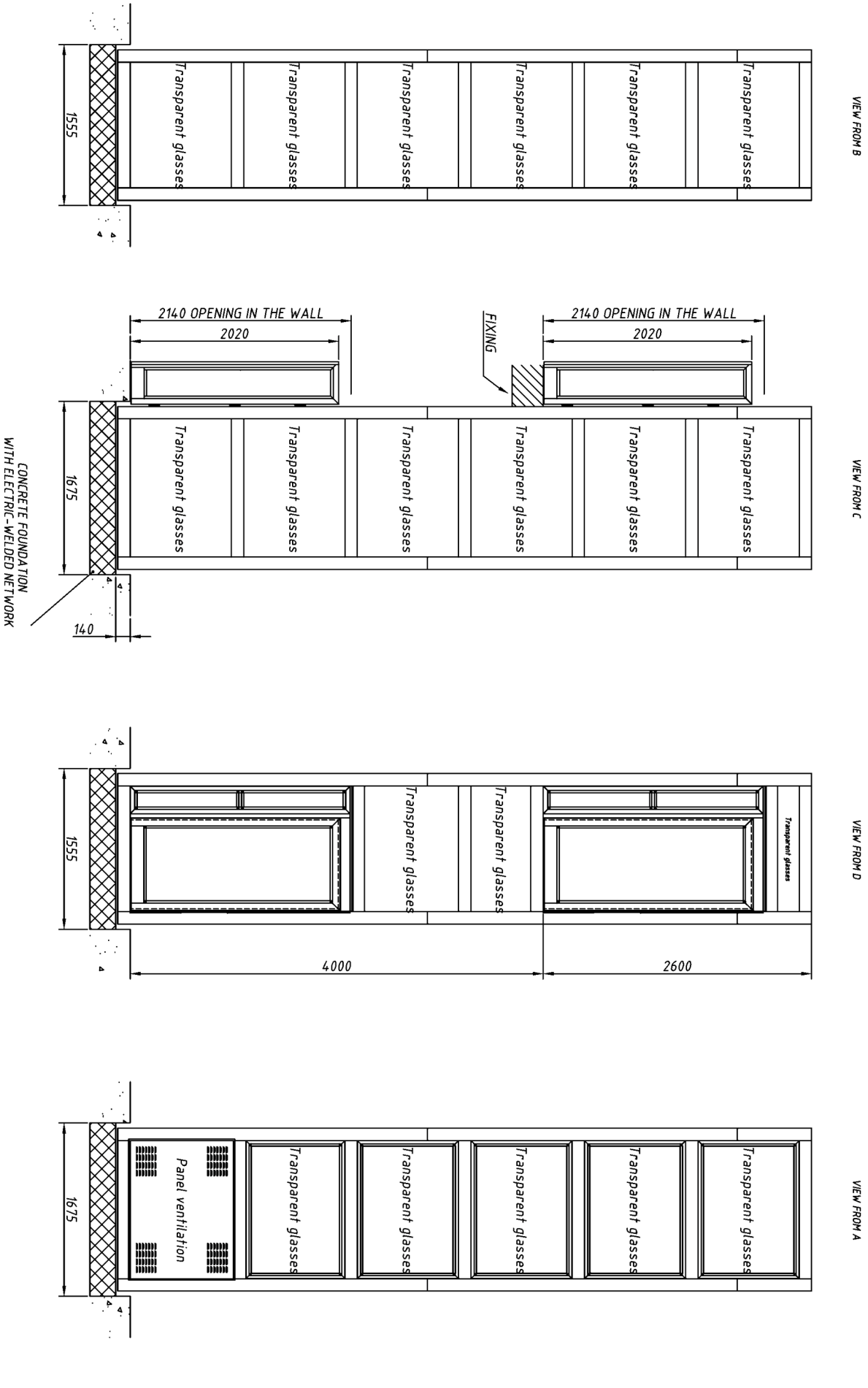
- THE STRUCTURE HAS TO BE FIXED TO THE FLOORS OF THE ARRIVAL LEVELS. AT LEAST ONE SIDE HAS TO BE FIXED IN ITS EXTERNAL POINTS AT EACH ARRIVAL LEVELS. IF THE FLOOR TO FLOOR EXCEEDS 3 METERS, YOU HAVE TO FIX TWO INTERMEDIATE POINTS.

- WE ALSO RECOMMEND YOU FIX ALSO THE UPPER PART OF THE STRUCTURE. THAT BECOMES MANDATORY IF THE UPPER PART IS HIGHER THAN 2.3 METRES.

- DRAWING FOR APPROVAL AND ACCEPTANCE OF COLLECTION WITHIN 30 DAYS FROM EQUIPMENT COMPLETION. DIFFERENTLY ORDER WILL BE CHARGED OF € 10,-/DAY UP TO MAX 60 DAYS - € 50,-/DAY IF OVER.


CONNECTION POINTS FOR EL. CABLES
COMING FROM THE MAIN SWITCH
A
250
405
1085
860
1370
970
P0
D
B
1455 STRUCTURE
1555 PIT
1575 STRUCTURE
1675 PIT
C
A
405
1085
860
P1
D
B
1455 STRUCTURE
1555 PIT
1575 STRUCTURE
1675 PIT
C

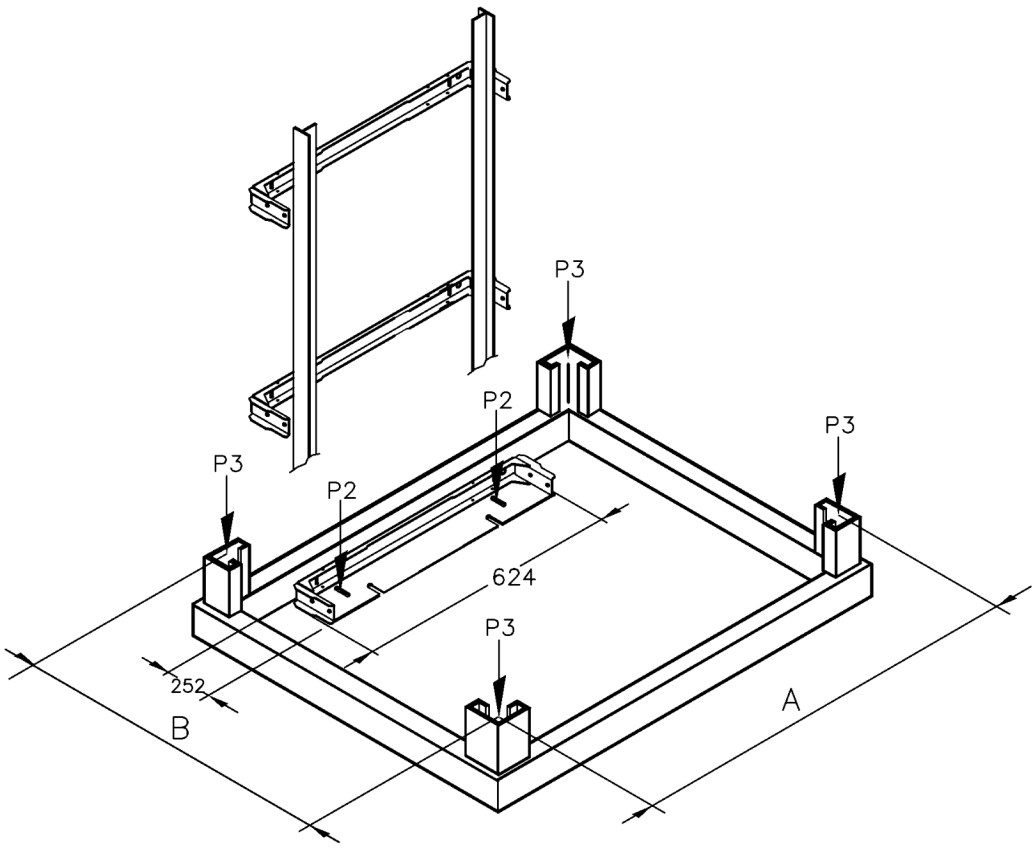
In respect of the Annex XXIII of the Regulations (UE) 833/2014, concerning restrictive measures in consideration of Russia's actions that destabilize the situation in Ukraine and subsequent amendments, which lists the products for which export to Russia is prohibited, the export to Russia and Belarus of this model is forbidden



VERTICAL PLATFORM LIFT Mod. E10

CLIENT: HANDS ON LIFTS ORDER: ABR229

LOADS ON THE BASE PLATE



PROJECT DATA

Load capacity =	400	kg	A =	1430	mm
Platform width =	1400	mm			
Platform depth =	1000	mm	B =	1310	mm
Travel =	4000	mm			

"P2" IS THE MAXIMUM LOAD WITH THE SAFETY GEAR IN ACTION ON THE RAIL
THE LOAD IS DISTRIBUITED ON THE BASE PLATE (624x252)

P2 = 1563 Kg

"P3" SELF SUPPORTING STRUCTURE LOADS WITH GLASS LIFT SHAFTS ON THE FOUR SIDES OF THE STRUCTURE

P3 = 1174 Kg

Norm: SR – Fuhrungsschiene DATE 07/24/2024

36. APPENDIX G – Bill of Quantities

Item No		Quantity	Rate	Amount	
	SECTION NO.1 **BILL NO.1** **PRELIMINARIES** **BUILDING AGREEMENT AND PRELIMINARIES** The JBCC Principal Building Agreement (May 2018 Edition 6.2) prepared by the Joint Building Contracts Committee shall be the applicable building agreement, amended as hereinafter described The JBCC Principal Building Agreement contract data form an integral part of this agreement The JBCC General Preliminaries (May 2018 Edition 6.2) published by the Joint Building Contracts Committee for use with the JBCC Principal Building Agreement (May 2018 Edition 6.2) shall be deemed to be incorporated in these bills of quantities, amended as hereinafter described The contractor is deemed to have referred to the abovementioned documents for the full intent and meaning of each clause The clauses in the abovementioned documents are hereinafter referred to by clause number and heading only. Where standard clauses or alternatives are not entirely applicable to this agreement such modifications, corrections or supplements as will apply are given under each relevant clause heading and such modifications, corrections or supplements shall take precedence notwithstanding anything to the contrary contained in the abovementioned documents Where any item is not relevant to this agreement such item is marked N/A (signifying "not applicable") Any items left unpriced will be understood to be provided for elsewhere and no claim for any extras out of such omission to price any item will be entertained				
	Carried Forward		R		

	Brought Forward		R		
	PREAMBLES FOR TRADES The General Preambles for Trades 2017 published by the Association of South African Quantity Surveyors shall be deemed to be incorporated in these bills of quantities and no claims arising from brevity of description of items fully described in the said General Preambles will be entertained Supplementary preambles and/or specifications are incorporated in these **bills of quantities** to satisfy the requirements of this project. Such supplementary preambles and/or specifications shall take precedence over the provisions of the Model Preambles The **contractor's** prices for all items throughout these **bills of quantities** shall take account of and include for all of the obligations, requirements and specifications given in the Model Preambles and in any supplementary preambles and/or specifications **STRUCTURE OF THIS PRELIMINARIES BILL** Section A : A recital of the headings of the individual clauses in the aforementioned **JBCC Principal Building Agreement (May 2018 Edition 6.2)** Section B : A recital of the headings of the individual clauses in the aforementioned **JBCC General Preliminaries (May 2018 Edition 6.2)** Section C : Any special clauses to meet the particular circumstances of the project				
	Carried Forward		R		

	Brought Forward		R	
	PRICING OF PRELIMINARIES			
	Should the contractor select Option A in the contract data for the adjustment of preliminaries, each item priced is to be allocated to one or more of the three categories "F", "V" or "T" as the case may be, where:			
	F = An amount which shall not be varied			
	V = An amount which shall be varied in proportion to the contract value as compared with the contract sum			
	T = An amount varied in proportion to the number of days extension to the date of practical completion to which the contractor is entitled with an adjustment of the contract value as compared to the number of days in the initial construction period			
	SECTION A: PRINCIPAL BUILDING AGREEMENT			
	Interpretation (A1-A7)			
A	Clause 1.0 - Definitions and interpretation			
	F:..... V:..... T:.....	Item		
B	Clause 2.0 - Law, regulations and notices			
	F:..... V:..... T:.....	Item		
C	Clause 3.0 - Offer and acceptance			
	F:..... V:..... T:.....	Item		
D	Clause 4.0 - Cession and assignment			
	F:..... V:..... T:.....	Item		
E	Clause 5.0 - Documents			
	F:..... V:..... T:.....	Item		
	Carried Forward		R	

	Brought Forward		R	
A	Clause 6.0 - Employer's agents			
	F:..... V:..... T:.....	Item		
B	Clause 7.0 - Design responsibility			
	F:..... V:..... T:.....	Item		
	Insurances and Securities (A8-A11)			
C	Clause 8.0 - Works risk			
	F:..... V:..... T:.....	Item		
D	Clause 9.0 - Indemnities			
	F:..... V:..... T:.....	Item		
E	Clause 10.0 - Insurances			
	F:..... V:..... T:.....	Item		
F	Clause 11.0 - Securities			
	F:..... V:..... T:.....	Item		
	Execution (A12-A17)			
G	Clause 12.0 - Obligations of the parties			
	F:..... V:..... T:.....	Item		
H	Clause 13.0 - Setting out			
	F:..... V:..... T:.....	Item		
I	Clause 14.0 - Nominated subcontractors			
	F:..... V:..... T:.....	Item		
J	Clause 15.0 - Selected subcontractors			
	F:..... V:..... T:.....	Item		
K	Clause 16.0 - Direct contractors			
	F:..... V:..... T:.....	Item		
	Carried Forward		R	

Section No. 1
Bill No. 1
Preliminaries

	Brought Forward		R	
A	Clause 17.0 - Contract instructions			
	F:..... V:..... T:.....	Item		
	Completion (A18-A24)			
B	Clause 18.0 - Interim completion			
	F:..... V:..... T:.....	Item		
C	Clause 19.0 - Practical completion			
	F:..... V:..... T:.....	Item		
D	Clause 20.0 - Completion in sections			
	F:..... V:..... T:.....	N/A		
E	Clause 21.0 - Defects liability period and final completion			
	F:..... V:..... T:.....	Item		
F	Clause 22.0 - Latent defects liability period			
	F:..... V:..... T:.....	Item		
G	Clause 23.0 - Revision of the date for practical completion			
	F:..... V:..... T:.....	Item		
H	Clause 24.0 - Penalty for late or non-completion			
	F:..... V:..... T:.....	Item		
	Payment (A25-A27)			
I	Clause 25.0 - Payment			
	F:..... V:..... T:.....	Item		
J	Clause 26.0 - Adjustment of the contract value and final account			
	F:..... V:..... T:.....	Item		
	Carried Forward		R	

	Brought Forward		R	
A	Clause 27.0 - Recovery of expense and/or loss			
	F:..... V:..... T:.....	Item		
	Suspension and termination (A28-A29)			
B	Clause 28.0 - Suspension by the contractor			
	F:..... V:..... T:.....	Item		
C	Clause 29.0 - Termination			
	F:..... V:..... T:.....	Item		
	Dispute resolution (A30)			
D	Clause 30.0 - Dispute resolution			
	F:..... V:..... T:.....	Item		
	Carried Forward		R	

	Brought Forward		R	
	SECTION B: PRELIMINARIES			
	Definitions and Interpretation (B1)			
A	Clause 1.1 - Definitions			
	F:..... V:..... T:.....	Item		
B	Clause 1.2 - Interpretation			
	F:..... V:..... T:.....	Item		
	Documents (B2)			
C	Clause 2.1 - Checking of documents			
	F:..... V:..... T:.....	Item		
D	Clause 2.2 - Provisional bills of quantities			
	F:..... V:..... T:.....	Item		
E	Clause 2.3 - Availability of construction information			
	F:..... V:..... T:.....	Item		
F	Clause 2.4 - Ordering of materials and goods			
	F:..... V:..... T:.....	Item		
	Previous work and adjoining properties (B3)			
G	Clause 3.1 - Previous work - dimensional accuracy			
	F:..... V:..... T:.....	Item		
H	Clause 3.2 - Previous work - defects			
	F:..... V:..... T:.....	Item		
I	Clause 3.3 - Inspection of adjoining properties			
	F:..... V:..... T:.....	Item		
	Carried Forward		R	

	Brought Forward		R		
	<u>The site (B4)</u>				
A	Clause 4.1 - Handover of site in stages				
	F:..... V:..... T:.....	Item			
B	Clause 4.2 - Enclosure of the works				
	F:..... V:..... T:.....	Item			
C	Clause 4.3 - Geotechnical and other investigations				
	F:..... V:..... T:.....	Item			
D	Clause 4.4 - Encroachments				
	F:..... V:..... T:.....	Item			
E	Clause 4.5 - Existing premises occupied				
	F:..... V:..... T:.....	Item			
F	Clause 4.6 - Services - known				
	F:..... V:..... T:.....	Item			
	<u>Management of contract (B5)</u>				
G	Clause 5.1 - Management of the works				
	F:..... V:..... T:.....	Item			
H	Clause 5.2 - Progress meetings				
	F:..... V:..... T:.....	Item			
I	Clause 5.3 - Technical meetings				
	F:..... V:..... T:.....	Item			
	<u>Samples, shop drawings, etc (B6)</u>				
J	Clause 6.1 - Samples of materials				
	F:..... V:..... T:.....	Item			
	Carried Forward		R		

	Brought Forward		R	
A	Clause 6.2 - Workmanship samples			
	F:..... V:..... T:.....	Item		
B	Clause 6.3 - Shop drawings			
	F:..... V:..... T:.....	Item		
C	Clause 6.4 - Compliance with manufacturer's instructions			
	F:..... V:..... T:.....	Item		
	Deposits and fees (B7)			
D	Clause 7.1 - Deposits and fees			
	F:..... V:..... T:.....	Item		
	Temporary services (B8)			
E	Clause 8.1 - Water			
	F:..... V:..... T:.....	Item		
F	Clause 8.2 - Electricity			
	F:..... V:..... T:.....	Item		
G	Clause 8.3 - Ablution and welfare facilities			
	F:..... V:..... T:.....	Item		
H	Clause 8.4 - Communication facilities			
	F:..... V:..... T:.....	Item		
	Prime cost amounts (B9)			
I	Clause 9.1 - Responsibility for prime cost amounts			
	F:..... V:..... T:.....	Item		
	Attendance on subcontractors (B10)			
J	Clause 10.1 - General attendance			
	F:..... V:..... T:.....	Item		
	Carried Forward		R	

Section No. 1
Bill No. 1
Preliminaries

	Brought Forward		R	
A	Clause 10.2 - Special attendance			
	F:..... V:..... T:.....	Item		
	General (B11)			
B	Clause 11.1 - Protection of the works			
	F:..... V:..... T:.....	Item		
C	Clause 11.2 - Protection/isolation of existing works and works occupied in sections			
	F:..... V:..... T:.....	Item		
D	Clause 11.3 - Security of the works			
	F:..... V:..... T:.....	Item		
E	Clause 11.4 - Notice before covering work			
	F:..... V:..... T:.....	Item		
F	Clause 11.5 - Disturbance			
	F:..... V:..... T:.....	Item		
G	Clause 11.6 - Environmental disturbance			
	F:..... V:..... T:.....	Item		
H	Clause 11.7 - Works cleaning and clearing			
	F:..... V:..... T:.....	Item		
I	Clause 11.8 - Vermin			
	F:..... V:..... T:.....	Item		
J	Clause 11.9 - Overhand work			
	F:..... V:..... T:.....	Item		
K	Clause 11.10 - Tenant installations by direct contractors			
	F:..... V:..... T:.....	N/A		
	Carried Forward		R	

Section No. 1
Bill No. 1
Preliminaries

	Brought Forward		R		
A	Clause 11.11 - Advertising				
	F:..... V:..... T:.....	Item			
	SECTION C: SPECIFIC PRELIMINARIES				
	DIRECT CONTRACTORS				
	Management and co-ordination of direct contractors				
B	On instruction by the employer the contractor is to permit a direct contractor(s) to execute and/or install work. The contractor will be responsible for the management and co-ordination of the direct contractor(s). Payment of the direct contractor(s) shall be the responsibility of the employer outside this agreement				
	The contractor shall allow the direct contractor(s), to use, free of charge, erected scaffolding, hoisting and cranage by arrangement by the principal agent, ablution facilities, water and power supply on the site, and shall not in any way hinder or prevent the execution of their work	Item			
	SUMMARY OF CATEGORIES				
C	Category : Fixed R.....				
	Category : Value R.....				
	Category : Time R.....	Item			
	Carried to Final Summary		R		
	Section No. 1 Bill No. 1 Preliminaries				

SECTION SUMMARY - Preliminaries

Bill No		Page No		Amount
1	Preliminaries	11		
	SUBTOTAL		R	
	Carried to Final Summary		R	

Section No. 1

Item No		Quantity	Rate	Amount	
	SECTION NO.2 **BILL NO.1** **ALTERATIONS** **PREAMBLES** For preambles refer to the "General Preambles for Trades (2017 Edition)" as prepared by the ASAQS **SUPPLEMENTARY PREAMBLES** **View site** Before submitting his tender the tenderer shall visit the site and satisfy himself as to the nature and extent of the work to be done and the value of the materials salvageable from the alterations. No claim for any variations of the contract sum in respect of the nature and extent of the work or of inferior or damaged materials will be entertained **General** The contractor shall carry out the whole of the works with as little mess and noise as possible and with a minimum of disturbance to tenants in the building and to adjoining premises and their tenants. He shall provide proper protection and provide, erect and remove when directed, any temporary tarpaulins that may be necessary during the progress of the works, all to the satisfaction of the principal agent Making good of finishes shall include making good of the brick and concrete surfaces onto which the new finishes are applied, where necessary The contractor will be required to take all dimensions affecting the existing buildings on the site and he will be held solely responsible for the accuracy of all such dimensions where used in the manufacture of new items (doors, windows, fittings, etc)				
	Carried Forward		R		

	Brought Forward			R	
	REMOVAL OF EXISTING WORK				
	Breaking up and removing reinforced concrete, including cutting off and removing reinforcement				
A	Cut concrete slab not exceeding 200mm thick before demolishing section of slab	m	12.96		
B	Surface bed	m3	1.04		
	Taking down and removing partitions, ceilings, etc				
C	Drywall partition not exceeding 3m high, including doors, glazed borrowed lights, etc	m	8.00		
D	Remove existing cupboard to expose viewing panel	m	5.00		
	Breaking down and removing brickwork, etc including doors and frames				
E	Half brick wall	m3	1.00		
	Taking out and removing sanitary fittings, tanks, geysers, etc, including disconnecting from pipes, traps, etc				
F	Stainless steel double bowl sink	No	1		
G	Vitreous china WC pan with cistern and flush pipe	No	3		
	Hack up and removing ceramic tiles including removing mortar bed or adhesive from concrete or brickwork and preparing surfaces for new screed, plaster, tile finish, etc				
H	Tiles to floors	m2	20.00		
	Carried Forward to Summary of Section No. 2			R	
	Section No. 2 Bill No. 1 Alterations				

Item No			Quantity	Rate	Amount	
	SECTION NO.2					
	BILL NO.2					
	EARTHWORKS					
	PREAMBLES					
	For preambles refer to the "General Preambles for Trades (2017 Edition)" as prepared by the ASAQS					
	SUPPLEMENTARY PREAMBLES					
	Carting away of excavated material					
	Descriptions of carting away of excavated material shall be deemed to include loading excavated material onto trucks directly from the excavations or, alternatively, from stock piles situated on the building site.					
	Testing					
	Prices for filling and compaction of surfaces are to include for all necessary density tests in accordance with SANS 1200D					
	EXCAVATION, FILLING, ETC OTHER THAN BULK					
	Excavations in earth not exceeding 2m deep					
A	Holes	m3	1.31			
	Extra over all excavations for carting away					
B	Surplus material from excavations and/or stock piles on site, to a dumping site to be located by the contractor	m3	1.31			
	Risk of collapse of excavations					
C	Sides of trench and hole excavations exceeding 1,5m deep	m2	3.24			
	Carried Forward			R		

	Brought Forward			R	
	FILLING ETC				
	Filling of coarse river sand supplied by the contractor, consolidated				
A	Under floors etc	m3	0.13		
	Carried Forward to Summary of Section No. 2			R	
	Section No. 2 Bill No. 2 Earthworks				

Item No			Quantity	Rate	Amount	
	SECTION NO.2					
	BILL NO.3					
	CONCRETE, FORMWORK AND REINFORCEMENT					
	PREAMBLES					
	For preambles refer to the "General Preambles for Trades (2017 Edition)" as prepared by the ASAQS					
	SUPPLEMENTARY PREAMBLES					
	Cost of tests					
	The costs of making, storing and testing of concrete test cubes as required under clause 7 "Tests" of SABS 1200 G shall include the cost of providing cube moulds necessary for the purpose, for testing costs and for submitting reports on the tests to the principal agent. The testing shall be undertaken by an independent firm or institution nominated by the contractor to the approval of the principal agent. (Test cubes are measured separately)					
	UNREINFORCED CONCRETE CAST AGAINST EXCAVATED SURFACES					
	15MPa/19mm concrete					
A	Surface blinding	m3	0.13			
	REINFORCED CONCRETE CAST AGAINST EXCAVATED SURFACES					
	30MPa/19mm concrete					
B	Surface bed	m3	0.52			
	TEST CUBES					
C	Making and testing set of three 150 x 150 x 150mm concrete strength test cube (Provisional)	No	1			
	Carried Forward			R		

	Brought Forward			R	
	CONCRETE SUNDRIES				
	Finishing top surfaces of concrete smooth with a wood float				
A	Surface beds, slabs, etc to falls	m2	2.62		
	REINFORCEMENT (PROVISIONAL)				
	Fabric reinforcement				
B	Type 617 fabric reinforcement in concrete slabs etc	m2	5.24		
	Carried Forward to Summary of Section No. 2			R	
	Section No. 2 Bill No. 3 Concrete, Formwork and Reinforcement				

Item No			Quantity	Rate	Amount	
	SECTION NO.2					
	BILL NO.4					
	MASONRY					
	PREAMBLES					
	For preambles refer to the "General Preambles for Trades (2017 Edition)" as prepared by the ASAQS					
	SUPPLEMENTARY PREAMBLES					
	Sizes in descriptions					
	Where sizes in descriptions are given in brick units, "one brick" shall represent the length and "half brick" the width of a brick					
	SUPERSTRUCTURE					
	Brickwork of NFP bricks (7 MPa nominal compressive strength) in class II mortar					
A	Half brick walls	m2	11.86			
B	One brick walls	m2	8.64			
	Closing cavities of hollow walls					
C	Closing 60mm cavities of hollow walls vertically with brickwork one brick wide	m	2			
	Brickwork reinforcement					
D	75mm Wide reinforcement built in horizontally	m	35			
E	150mm Wide reinforcement built in horizontally	m	25			
	Prestressed fabricated concrete lintels including necessary temporary supports					
F	110 x 75mm Lintels in lengths not exceeding 3m	m	1			
G	150 x 75mm Lintels in lengths not exceeding 3m	m	2			
	Carried Forward to Summary of Section No. 2			R		
	Section No. 2 Bill No. 4 Masonry					

Item No			Quantity	Rate	Amount	
	SECTION NO.2					
	BILL NO.5					
	WATERPROOFING					
	PREAMBLES					
	For preambles refer to the "General Preambles for Trades (2017 Edition)" as prepared by the ASAQS					
	SUPPLEMENTARY PREAMBLES					
	Waterproofing					
	Waterproofing of roofs, basements, etc shall be laid under a ten year guarantee by approved applicators					
	Descriptions of sheet or membrane waterproofing shall be deemed to include additional labour to turn-ups and turn-downs					
	All damp proof membranes to have a 250mm side lap, sealed with adhesive tape according to the manufacturer's specification					
	DAMPPROOFING OF WALLS AND FLOORS					
	One layer 375 micron "Consol Plastics Gunplas USB Green" waterproof sheeting sealed at laps with "Gunplas Pressure Sensitive Tape"					
A	Under surface beds	m2	2.62			
	JOINT SEALANTS ETC					
	Apply 2x coats of "Sikagard 500W" or similar approved as per manufacturers instructions to cut surface					
B	To cut surfaces	m2	1.29			
	Carried Forward to Summary of Section No. 2			R		
	Section No. 2 Bill No. 5 Waterproofing					

Item No			Quantity	Rate	Amount	
	SECTION NO.2					
	BILL NO.6					
	PLASTERING					
	PREAMBLES					
	For preambles refer to the "General Preambles for Trades (2017 Edition)" as prepared by the ASAQS					
	SUPPLEMENTARY PREAMBLES					
	Preparation of surfaces					
	Generally substrate surfaces to have good wood float, steel trowel or power floated finish conforming in evenness and level to required tolerance with minimum compressive strength of 20Mpa or above 25 N/mm² compressive strength					
	Movement joints, expansion joints, etc to be properly sealed and carried through the floor topping or screed					
	SCREEDS					
	Screeds steel trowelled, on concrete					
A	30mm Thick on floors and landings	m2	16			
	INTERNAL PLASTER					
	Cement plaster steel trowelled, on brickwork					
B	On walls	m2	41			
	Carried Forward to Summary of Section No. 2			R		
	Section No. 2 Bill No. 6 Plastering					

Item No			Quantity	Rate	Amount	
	SECTION NO.2					
	BILL NO.7					
	TILING					
	PREAMBLES					
	For preambles refer to the "General Preambles for Trades (2017 Edition)" as prepared by the ASAQS					
	SUPPLEMENTARY PREAMBLES					
	Patterns					
	Unless otherwise described, tiles shall be laid with continuous joints in both directions					
	Fixing					
	Ceramic, porcelain, marble and granite tiles are to be fixed and grouted with suitable adhesives and grouts as recommended by the manufacturer of the tiles					
	FLOOR TILING					
	350 x 350mm Porcelain floor tiles (PC R 300/m² excluding VAT) fixed with adhesive to screed (screed elsewhere) and flush pointed with tinted grout, all in strict accordance with the manufacturer's specifications					
A	On floors	m2	16			
	Carried Forward to Summary of Section No. 2			R		
	Section No. 2 Bill No. 7 Tiling					

Item No		Quantity	Rate	Amount	
	SECTION NO.2				
	BILL NO.8				
	PAINTWORK				
	PREAMBLES				
	For preambles refer to the "General Preambles for Trades (2017 Edition)" as prepared by the ASAQS				
	SUPPLEMENTARY PREAMBLES				
	All surfaces must be sound, clean and have a moisture content of less than 8% for walls generally and 3% for slabs/screeds etc				
	All coats to be thoroughly dry before subsequent coats are applied, and rubbed down smooth with sandpaper where and if necessary. Paint suppliers' specifications to be followed				
	Prepare previously painted surfaces and remove any loose and flaking residue by means of wire brushing and wash with sugar soap				
	Stop, fill, sand down and prepare wood surfaces before coats are applied				
	All timber doors and windows to be primed prior to installation				
	Sample panels of 2 x 2m size for all paint colours are to be presented on the walls and building for approval by the architect before any final paint orders are placed by the contractor. The cost of these sample panels is to be included in the rates for each paintwork item in this bill				
	PAINTWORK ETC TO NEW WORK				
	ON INTERNAL FLOATED PLASTER SURFACES				
	One coat alkali resistant primer and two coats superior quality acrylic emulsion paint for interior and exterior use				
A	Walls m2	41.00			
	Carried Forward		R		

	Brought Forward			R		
	PAINTWORK ETC TO PREVIOUSLY PAINTED WORK					
	ON INTERNAL FLOATED PLASTER SURFACES					
	Two coats superior quality acrylic emulsion paint for interior and exterior use					
A	Walls	m2	62.00			
	Carried Forward to Summary of Section No. 2			R		
	Section No. 2 Bill No. 8 Paintwork					

Item No		Quantity	Rate	Amount	
	SECTION NO.2				
	BILL NO.9				
	PROVISIONAL SUMS				
	PREAMBLES				
	For preambles refer to the "General Preambles for Trades (2017 Edition)" as prepared by the ASAQS				
	BUDGETARY ALLOWANCES				
A	Provide the sum of R35,000.00 (Thirty Five Thousand Rand) for the repair of ceilings and making good of trades to match existing complete	Item		35,000.00	
B	Provide the sum of R1,500.00 (One Thousand Five Hundred Rand) for mirrors	Item		1,500.00	
C	Provide the sum of R315,000.00 (Three Hundred and Fifteen Thousand Rand) for fire compliance	Item		315,000.00	
	PRIME COST AMOUNTS				
	Light fittings and fixtures				
D	Provide the prime cost amount of R420,000.00 (Four Hundred and Twenty Thousand Rand) for supplying light fittings and fixtures	Item		420,000.00	
E	Profit on above item		%		
	Sanitaryware				
F	Provide the prime cost amount of R20,000.00 (Twenty Thousand Rand) for supplying sanitaryware	Item		20,000.00	
G	Profit on above item		%		
	Carried Forward		R		

	Brought Forward		R	
	PROVISIONAL SUMS FOR NOMINATED/SELECTED SUBCONTRACT WORKS			
	Design, supply and install lift			
A	Allow the Provisional Amount of R750,000.00 (Seven Hundred and Fifty Thousand) for design, supply and installation of lift to be executed by a sub-contractor	Item		750,000.00
B	Add for profit if required		%	
C	Add for general attendance on sub-contractor		%	
	Fire water & services			
D	Allow the Provisional Amount of R50,000.00 (Fifty Thousand) for fire water & services installation to be executed by a sub-contractor	Item		50,000.00
E	Add for profit if required		%	
F	Add for general attendance on sub-contractor		%	
	Statutory signage			
G	Allow the Provisional Amount of R25,000.00 (Twenty Five Thousand) for statutory signage to be executed by a sub-contractor	Item		25,000.00
H	Add for profit if required		%	
I	Add for general attendance on sub-contractor		%	
	Electrical installation			
J	Allow the Provisional Amount of R540,000.00 (Five Hundred and Forty Thousand) for electrical installation to be executed by a sub-contractor	Item		540,000.00
K	Add for profit if required		%	
L	Add for general attendance on sub-contractor		%	
	Carried Forward		R	

Section No. 2
Bill No. 9
Provisional Sums

	Brought Forward		R	
	Smoke detection system			
A	Allow the Provisional Amount of R120,000.00 (One Hundred and Twenty Thousand) for smoke detection system to be executed by a sub-contractor	Item		120,000.00
B	Add for profit if required		%	
C	Add for general attendance on sub-contractor		%	
	Intruder alarm			
D	Allow the Provisional Amount of R50,000.00 (Fifty Thousand) for intruder alarm system to be executed by a sub-contractor	Item		50,000.00
E	Add for profit if required		%	
F	Add for general attendance on sub-contractor		%	
	Sanitaryware installation			
G	Allow the Provisional Amount of R15,000.00 (Fifteen Thousand) for sanitaryware installation to be executed by a sub-contractor	Item		15,000.00
H	Add for profit if required		%	
I	Add for general attendance on sub-contractor		%	
	Aluminium windows and doors			
J	Allow the Provisional Amount of R25,000.00 (Twenty Five Thousand) for aluminium windows and doors to be executed by a sub-contractor	Item		25,000.00
K	Add for profit if required		%	
L	Add for general attendance on sub-contractor		%	
	Joinery (Furniture, Fixtures and Equipment)			
M	Allow the Provisional Amount of R700,000.00 (Seven Hundred Thousand) for joinery (FF&E) to be executed by a sub-contractor	Item		700,000.00
N	Add for profit if required		%	
	Carried Forward		R	

Section No. 2
Bill No. 9
Provisional Sums

	Brought Forward		R		
A	Add for general attendance on sub-contractor		%		
	Joinery (Built-in)				
B	Allow the Provisional Amount of R65,000.00 (Sixty Five Thousand) for joinery (FF&E) to be executed by a sub-contractor	Item		65,000.00	
C	Add for profit if required		%		
D	Add for general attendance on sub-contractor		%		
	Timber doors and frames				
E	Allow the Provisional Amount of R20,000.00 (Twenty Thousand) for timber doors and frames to be executed by a sub-contractor	Item		20,000.00	
F	Add for profit if required		%		
G	Add for general attendance on sub-contractor		%		
	Carried Forward to Summary of Section No. 2		R		
	Section No. 2 Bill No. 9 Provisional Sums				

SECTION SUMMARY - Building Works

Bill No		Page No		Amount
1	Alterations	14		
2	Earthworks	16		
3	Concrete, Formwork and Reinforcement	18		
4	Masonry	19		
5	Waterproofing	20		
6	Plastering	21		
7	Tiling	22		
8	Paintwork	24		
9	Provisional Sums	28		
	SUBTOTAL		R	
	Carried to Final Summary		R	

Section No. 2

Section No	FINAL SUMMARY	Page No		Amount
1	Preliminaries	12		
2	Building Works	29		
	Sub-total		R	
	CONTINGENCY			
	Allow five per cent (5%) of the above sub-total for contingency	%		
	Sub-total		R	
	VALUE ADDED TAX			
	Allow fifteen per cent (15%) of the above sub-total for Value Added Tax	%		
	Sub-total		R	
	Carried to Form of Tender		R	