

# ELECTRICAL DESIGNS AND DRAWINGS



OPERATIONAL EXCELLENCE FOR RESULTS THAT MATTER

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PROJECT


ENHANCING THE QUALITY OF SECONDARY SCHOOL EDUCATION  
THROUGH A HOLISTIC APPROACH IN ZANZIBAR,  
**CONSTRUCTION OF**  
**JONGOWE SECONDARY SCHOOL**  
**LABORATORY AND WASH FACILITIES**

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PROJECT NUMBER:		
DRAWING NUMBER:	G-E-001	REV
PROJECT STATUS:	TENDER DRAWINGS	00

	ELECTRICAL DRAWINGS LIST						
NUMBER	DRAWING TITLE & DESCRIPTION	DRAWING SCALE	PAPER SIZE	PAGE	STAGE	ISSUE	REV.
G-E-00-	GENERAL INFORMATION						
G-E-001	COVER SHEET	NTS	A3	I	DESIGN REVIEW		
G-E-002	DRAWING LIST	NTS	A3	I	DESIGN REVIEW		
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G-E-006	SYMBOLS OF LIGHTING	NTS	A3	I	DESIGN REVIEW		
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NUMBER	DRAWING TITLE & DESCRIPTION	DRAWING SCALE	PAPER SIZE	PAGE	STAGE	ISSUE	REV.
LIGHTNING PROTECTION LAYOUT							
E-LP-00-	PLANS						
E-LP-001	LABORATORY ROOF PLAN LIGHTNING PROTECTION LAYOUT	I:75	A3	I	DESIGN REVIEW		
E-LP-002	SITE PLAN LIGHTNING PROTECTION LAYOUT	I:200	A3	I	DESIGN REVIEW		
E-LP-90-	LIGHTNING PROTECTION INSTALLATION - STANDARD DETAILS						
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DRAWING TITLE

ELECTRICAL DRAWING LIST

TECHNICAL SERVICES UNIT

		SIGN	DATE
DRAWN BY	SAMWEL O.		
CHECKED BY	ANTHONY A.		
APPROVED BY	PHILIP M.		
ISSUE DATE: MAY 2021		P.M.SIGNATURE	
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1.0 GENERAL

- 1.1 THE DESIGN DRAWINGS SHALL BE READ IN CONJUNCTION WITH THE RELEVANT SPECIFICATIONS AND ARCHITECTURAL, INTERIOR DESIGN, STRUCTURAL, CIVIL & MECHANICAL DRAWINGS AND SPECIFICATIONS.
- 1.2 THESE NOTES ARE GENERALLY APPLICABLE TO THE OVERALL SYSTEMS INSTALLATION. ANY ADDITIONAL NOTES ON INDIVIDUAL DRAWINGS WHICH ARE SUPPLEMENTARY TO THESE NOTES SHALL BE READ WITH THE INSTRUCTIONS STATED HEREIN.
- 1.3 THE FINAL POSITION OF ALL EQUIPMENT, PANELS, LUMINAIRES, DETECTORS, SWITCHES, OUTLETS AND OTHER ACCESSORIES SHALL BE COORDINATED WITH THE ARCHITECTURAL, MECHANICAL AND INTERIOR DESIGN DETAILS AND WILL BE APPROVED AT SITE BY THE ENGINEER.
- 1.4 UNLESS OTHERWISE SPECIFIED ALL EQUIPMENT AND MATERIALS TO BE USED SHALL BE SUITABLE AND RATED FOR THE SITE AMBIENT CONDITIONS.
- 1.5 ALL ELECTRICAL WORKS SHALL COMPLY WITH THE RELEVANT MINISTRY OF PUBLIC WORKS REGULATIONS, LATEST EDITION OF IEE WIRING REGULATIONS, INTERNATIONAL ELECTROTECHNICAL COMMISSION (IEC) STANDARDS AND ISO RECOMMENDATIONS.
- 1.6 THE INSTALLATION SHALL COMPLY IN ALL RESPECTS TO THE REQUIREMENTS OF THE MANUFACTURERS AND THE CODES REFERRED IN THE SPECIFICATIONS.
- 1.7 ANY EQUIPMENT DIMENSIONS AND ELECTRICAL LOAD STATED ON THE DRAWINGS SHALL BE COORDINATED/CONFIRMED WITH THE ACTUAL DIMENSIONS AND ACTUAL ELECTRICAL LOAD OF EQUIPMENT FROM RESPECTIVE MANUFACTURER(S).
- 1.8 ALL MATERIALS AND EQUIPMENT MUST BE OF THE BEST QUALITY AND ACCORDING TO THE LATEST INTERNATIONAL STANDARDS. THE CONTRACTOR SHALL SUBMIT SAMPLES AND CATALOGUES OF ALL MATERIALS AND OBTAIN ENGINEER'S APPROVAL BEFORE THE COMMENCEMENT OF ANY WORK.
- 1.9 IT SHALL BE THE CONTRACTOR'S SOLE RESPONSIBILITY TO LIASE WITH THE LOCAL ELECTRICITY SUPPLY AUTHORITY FOR THE ELECTRICITY SUPPLY CONNECTION TO THE FACILITY AND MAKE PROVISIONS IN INSTALLATION TO SATISFY THEIR REQUIREMENTS. THE SERVICES PROVIDED SHALL CONFORM IN ALL RESPECTS WITH THE LOCAL CODES AND REGULATIONS.
- 1.10 IT SHALL BE THE CONTRACTOR'S SOLE RESPONSIBILITY TO LIASE WITH LOCAL TELEPHONE AUTHORITY FOR THE REQUIRED TELEPHONE LINES TO THE FACILITY AND MAKE PROVISIONS IN INSTALLATION TO SATISFY THEIR REQUIREMENTS. THE SERVICES PROVIDED SHALL CONFORM IN ALL RESPECTS WITH THEIR STANDARDS/REGULATIONS.
- 1.11 THE LIGHTING, POWER AND LOW CURRENT SYSTEMS SHALL BE INSTALLED SEPARATELY FROM EACH OTHER. I.E. CONDUITS, RACEWAYS, WIRES, BOXES, ETC.

- 1.12 CABLE SIZES, MCB's,MCCBs AND ISOLATORS SHOWN ON THE DRAWINGS ARE BASED ON DESIGNED LOADS. THE CONTRACTOR SHALL PROVIDE THE SIZE OF CABLE, MCB, MCCB AND ISOLATOR BASED ON ACTUAL LOADS OF THE EQUIPMENT APPROVED BY THE ENGINEER.

- 1.13 FOR SPECIAL SYSTEMS, THE CONTRACTOR IS TO SUBMIT SHOP DRAWINGS PREPARED BY SPECIALISTS EXPERIENCED IN THE DESIGN OF THE RELEVANT SYSTEMS AND AS PER THE MANUFACTURERS REQUIREMENTS.

2.0 CABLES

- 2.1 ALL WIRES AND CABLES SHALL BE STRANDED COPPER CONDUCTORS, PVC INSULATED COMPLYING WITH BS 6004 OR XLPE INSULATED AS PER IEC 502 AS SHOWN ON DRAWINGS OR SCHEDULES, EXCEPT FOR INFLAMABLE/EXPLOSIVE AND OTHER EXCEPTIONAL SITUATIONS.
- 2.2 COLOUR CODE OF ELECTRICAL WIRES AND CABLES SHALL BE RED, YELLOW, BLUE, BLACK AND GREEN/YELLOW FOR LI, L2, L3, NEUTRAL AND EARTH RESPECTIVELY IN A THREE PHASE CONFIGURATION.
- 2.3 THE CONDUCTOR SIZES FOR ALL CABLES SHALL BE IN ACCORDANCE WITH THE PANEL BOARD/CABLE SCHEDULES AND SINGLE LINE DIAGRAMS.
- 2.4 THE MINIMUM SIZE OF ALL CIRCUIT CONDUCTORS SHALL BE COORDINATED WITH THE STARTING AND OPERATING CHARACTERISTICS OF THE EQUIPMENT THEY SERVE.
- 2.5 UNLESS OTHERWISE INDICATED, MINIMUM WIRE SIZE SHALL BE 2.5sqmm<sup>2</sup> FOR LIGHTING AND 2.5sqmm<sup>2</sup> FOR POWER.
- 2.6 LIGHTING AND SMALL POWER INSTALLATION SHALL BE CARRIED OUT USING SINGLE CORE PVC INSULATED WIRES IN RIGID PVC CONDUITS EMBEDDED IN CONCRETE.
- 2.7 ALL MULTICORE CABLES INSIDE THE BUILDING SHALL BE INSTALLED ON CABLE TRAYS OR CABLE LADDERS. RAISED SUN SHADES (COVERS) SHALL BE PROVIDED FOR ALL ROOF MOUNTED CABLE TRAYS/LADDERS.
- 2.8 THE WIRES/CABLES FOR LV CIRCUITS INSIDE BUILDINGS SHALL BE INSTALLED AT A MINIMUM DISTANCE OF 300MM FROM HOT WATER LINES AND 150MM FROM OTHER SERVICE PIPES.
- 2.9 WHERE EXTERNAL CABLES ARE DIRECT BURIED IN THE GROUND, THESE SHALL RUN THROUGH UNDERGROUND CONCRETE ENCASED UPVC DUCTS WHEN PASSING UNDER ROADS AND BUILDINGS.

3.0 CONDUITS, CABLE TRAYS AND TRUNKING

- 3.1 THE MINIMUM SIZE OF CONDUIT USED FOR ANY SYSTEM WIRING SHALL BE 20MM INTERNAL DIAMETER.
- 3.2 PVC CONDUITS SHALL BE HEAVY GAUGE, POLISHED AND SMOOTH INSIDE AND OUTSIDE, FLAME-RETARDANT AND SUITABLE FOR USE AT AMBIENT TEMPERATURE OF 50°C.
- 3.4 RIGID STEEL CONDUITS (RSC) SHALL BE HEAVY GAUGE, HOT DIP GALVANIZED TO CLASS 4 PROTECTION BOTH INSIDE AND OUTSIDE.
- 3.5 ALL PVC BOXES SHALL BE RIGID, FLAME-RETARDANT, SMOOTH AND ACCORDING TO LATEST STANDARDS/SPECIFICATIONS.
- 3.6 ALL STEEL BOXES SHALL BE HEAVY GAUGE, HOT DIP GALVANIZED ACCORDING TO LATEST STANDARDS/SPECIFICATIONS.
- 3.7 BRASS BUSHINGS AND RINGS SHALL BE USED TO SECURE STEEL CONDUITS WITH STEEL BOXES.
- 3.8 ALL STEEL COUPLERS SHALL BE PAINTED SUITABLY, IMMEDIATELY AFTER INSTALLATION.
- 3.9 NO CONDUIT RUN SHALL BE LONGER THAN 15M (STRAIGHT) OR WITH MORE THAN TWO 90° BENDS, OTHERWISE IT MUST BE PASSED THROUGH PULL OR DRAW BOX SUFFICIENT TO PERMIT EASY PULLING OF WIRES.
- 3.10 THE TOTAL FILL OF THE WIRES DRAWN IN CONDUIT SHALL BE AS PER IEE REGULATIONS AND NORMALLY NOT TO EXCEED 40% OF THE INTERNAL CROSS-SECTIONAL AREA OF THE CONDUIT.
- 3.11 ALL CONDUITS AND RECEWAYS PASSING THROUGH THE BUILDING EXPANSION JOINTS SHALL BE PROVIDED WITH EXPANSION JOINT COUPLING AND EXECUTED AS PER STANDARD DETAILS, APPROVED BY THE ENGINEER ON SITE.
- 3.12 ALL BENDS IN DUCTS, CONDUITS AND OTHER RACEWAYS SHALL BE SUITABLE TO ALLOW MINIMUM CABLE BENDING RADIUS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
- 3.13 ALL ENDS OF BURIED DUCTS AND CONDUITS SHALL HAVE BELL MOUTH PIPE ENDS AND SHALL BE SEALED BY A PROPRIETARY PIPE SEALING PRODUCT.
- 3.14 CABLE LADDERS AND CABLE TRAYS SHALL BE INSTALLED WHERE NECESSARY AND ARE NOT LIMITED TO WHAT IS SHOWN ON THE DRAWINGS. WIDTH, LENGTH, NUMBERS AND ROUTES OF CABLE TRAYS, LADDERS, PIPES AND OTHER CABLE RACEWAYS SHALL BE SHOWN ON SHOP DRAWINGS AS PER STANDARDS FOR APPROVAL.
- 3.15 WHERE OPENINGS ARE PROVIDED IN STRUCTURE TO CROSS CABLE TRAYS, PIPES, ETC. THE OPENING SHALL BE SEALED BY FIRE STOP MATERIAL SUITABLY RATED, AFTER INSTALLATION OF CABLES.



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DRAWING TITLE

ELECTRICAL NOTES  
SHEET 1 OF 2

TECHNICAL SERVICES UNIT

		SIGN	DATE
DRAWN BY	SAMWEL O.		
CHECKED BY	ANTHONY A.		
APPROVED BY	PHILIP M.		

ISSUE DATE: MAY 2021

P.M.SIGNATURE

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4.0WIRING DEVICES

- 4.1 THE LOCATION OF ALL SWITCHES, OUTLETS AND OTHER WIRING DEVICES SHALL BE COORDINATED WITH THE FURNITURE LAYOUTS/ID DRAWINGS ON SITE.
- 4.2 MOUNTING HEIGHTS FOR SWITCHES, SOCKETS, ETC., FROM THE CENTRE OF THE DEVICE TO ABOVE FINISHED FLOOR LEVEL SHALL BE AS FOLLOWS, UNLESS OTHERWISE SPECIFIED OR DIRECTED BY THE ENGINEER:

SWITCHES	1350MM AFFL
SOCKETS (STANDARD)	300MM AFFL
SOCKETS (HIGH LEVEL TV)	1800MM AFFL
SOCKETS (KITCHENETTE)	1200MM AFFL OR 300MM ABOVE WORK TOP
ISOLATORS/DISCONNECT SWITCHES	1600MM AFFL
DISTRIBUTION BOARDS (TOP OF DB)	1800MM AFFL
FIRE ALARM PANEL (MID OF PANEL)	1600MM AFFL

4.3 THE ELECTRICAL CONTRACTOR SHALL INDICATE THE EXACT LOCATION, HEIGHT,... ETC OF ALL OUTLETS ON HIS WORK SHOP DRAWINGS AFTER COORDINATING WITH THE EQUIPMENT SPECIALIST CONTRACTOR'S DETAIL DRAWINGS.

4.4 ALL SOCKET OUTLETS LOCATED ABOVE WORKTOPS SHALL BE MOUNTED 1200MM ABOVE FINISHED FLOOR LEVEL OR 300MM ABOVE WORK TOP AS APPROVED ON SITE.

4.5 WHERE OUTLET IS PROVIDED FOR CONNECTION TO A FIXED APPLIANCE BY MEANS OF A FLEXIBLE CABLE, THE RESPECTIVE OUTLET SHALL BE POSITIONED AS CLOSE AS PRACTICABLE TO THE CABLE ENTRY OF THE FIXED APPLIANCE.

4.6 ALL ELECTRICAL OPERATED PLANT AND EQUIPMENT SHALL BE PROVIDED WITH MEANS OF LOCAL ISOLATION INSTALLED AS CLOSE AS POSSIBLE TO THE EQUIPMENT BEING SERVED.

4.7 FOR EXACT LOCATION OF ISOLATORS AND DISCONNECT SWITCHES FOR PUMPS, AHUS, MCCS AND OTHER MECHANICAL/HVAC EQUIPMENT, THE CONTRACTOR SHALL COORDINATE WITH MECHANICAL WORKS.

4.8 ISOLATORS FOR HVAC EQUIPMENT SHALL BE HEAVY DUTY 'ON-LOAD' TYPE AND SUITABLY RATED, TAKING INTO CONSIDERATION NORMAL AND STARTING CURRENTS OF THE EQUIPMENT AND THE AMBIENT TEMPERATURE OF THE OPERATING AREA.

4.9 ALL ISOLATORS/EQUIPMENT INSTALLED IN WET AND/OR POSSIBLE WET LOCATIONS SUCH AS TOILETS, PUMP ROOMS, ROOF, EXTERNAL/EXPOSED AREAS, ETC. SHALL BE WEATHERPROOF TYPE TO APPROPRIATE IP RATING (MINIMUM IP-54).

5.0SWITCHGEAR/DISTRIBUTION BOARDS

- 5.1 ALL LIGHTING AND POWER DISTRIBUTION BOARDS (DB) SHALL BE FLUSH MOUNTED TYPE IN ALL PUBLIC AND CIRCULATION AREAS AND SURFACE MOUNTED IN ELECTRICAL/MECHANICAL AND PLANT ROOMS, UNLESS OTHERWISE INDICATED. THESE SHALL BE PROVIDED WITH LOCKABLE DOORS.
- 5.2 THE TOTAL LOAD ON THE THREE PHASES SHALL BE BALANCED AS EVENLY AS PROVIDED ON ALL SWITCHGEAR AND DISTRIBUTION BOARDS.

5.3 MINIATURE CIRCUIT BREAKERS (MCB) WITH APPROPRIATE SHORT CIRCUIT CURRENT RATING SHALL BE PROVIDED FOR LIGHTING, SWITCHED SOCKET OUTLETS, ELECTRIC WATER HEATERS/COOLERS, REFRIGERATORS, COOKERS, DOMESTIC WATER PUMPS AND SIMILAR EQUIPMENT.

5.4 THE OVERALL POWER FACTOR OF EVERY ELECTRICAL SUBSTATION SHALL BE MAINTAINED WITHIN THE RANGE OF 0.9 LAGGING AND UNITY. PROVIDE AUTOMATIC P.F. IMPROVEMENT PLANT.

5.5 THE CONTRACTOR HAS TO CHECK THE PHYSICAL DIMENSION OF THE PANELS WITH THE SPACE AVAILABILITY PRIOR TO PLACING THE ORDER. DRAWINGS FOR PANELS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL.

6.0LIGHTING

6.1 ALL LIGHTING FIXTURES SHALL BE PROVIDED WITH POWER SUPPLY.

6.2 ALL WIRING FOR LIGHTING INSTALLATIONS SHALL FOLLOW "LOOP-IN" SYSTEM.

6.3 ALL SELF CONTAINED TYPE EMERGENCY/EXIT LIGHTING FIXTURES SHALL BE PROVIDED WITH CHARGER/INVERTER MODULE AND BATTERY BACK UP FOR A MINIMUM OF 3 HOURS CONTINUOS OPERATION AND TO BE COMPATIBLE WITH EMERGENCY LIGHTING SYSTEM.

7.0EARTHING/GROUNDING

7.1 THE EARTHING SYSTEM SHALL FOLLOW THE PRINCIPLES OF TT SYSTEM I.E. SEPARATE EARTH AND NEUTRAL CONDUCTOR, AS SHOWN ON DRAWINGS. THE OVERALL SYSTEM EARTH RESISTANCE SHALL BE 1 OHM OR LESS.

7.2 EARTHING OF ELECTRICAL SUBSTATIONS SHALL BE PROVIDED IN ACCORDANCE WITH REGULATIONS.

7.3 PROVIDE COMPLETELY INDEPENDENT AND CLEAN EARTHING SYSTEM FOR LOW CURRENT/COMMUNICATION SYSTEMS, WHEN REQUIRED AS PER MANUFACTURER'S RECOMMENDATIONS OR LOCAL AUTHORITY REGULATIONS.

7.4 A SEPARATE GROUNDING CONDUCTOR SHALL BE RUN WITH EACH CIRCUIT. ALL LIGHTING FIXTURES, RECEPTACLES, SWITCHES, METALLIC JUNCTION BOXES AND FITTINGS SHALL BE EFFECTIVELY AND PROPERLY EARTHED.

7.5 EARTH CONTINUITY CONDUCTORS AND BONDING CONDUCTORS SHALL BE SINGLE CORE, PVC INSULATED.

7.6 EARTHING CONDUCTOR OF THE RESPECTIVE CIRCUIT SHALL RUN IN THE SAME TRENCH/PIPE/TRUNKING OR ON SAME CABLE TRAY/LADDER AS THE ASSOCIATED CABLE.

7.7 EXTRANEIOUS METALWORK AS METALLIC PIPES, DUCTING, CABLE TRAYS, METALWORK IN TOILETS, ETC. SHALL BE BONDED TO EARTHING SYSTEM BY PVC INSULATED CABLE IN ACCORDANCE WITH APPLICABLE STANDARDS.

8.0GENERATORS/MOTORS/MECHANICAL

8.1 THE CONTROLS OF STANDBY GENERATOR FEEDING FIRE PUMPS SHALL BE SO ARRANGED THAT THE GENERATOR SHALL CONTINUE RUNNING WHEN FM200 OR C02 GAS (FOR FIRE SUPPRESSION) IS RELEASED, UNLESS THE GENERATOR IS MANUALLY SHUTDOWN. A MANUAL SHUTDOWN SWITCH SHALL BE PROVIDED NEAR THE DOOR FOR SUCH GENERATOR.

8.2 DURING COMMERCIAL/NORMAL POWER FAILURE, ALL ELEVATORS SHALL BE AUTOMATICALLY SWITCHED OVER TO EMERGENCY SOURCE AND CALLED TO MAIN EGRESS LEVEL IN SEQUENCE. SAID OPERATION TO BE CARRIED OUT THROUGH ELEVATOR CONTROLS AS PER ELEVATOR SPECIFICATIONS.

8.3 ALL ROTATING MACHINERY OPERATED THROUGH STARTER SHALL HAVE A NO VOLTAGE RELEASE INCORPORATED WITHIN ITS STARTER PANEL.

8.4 ALL HVAC UNITS/PLANT/EQUIPMENT SUCH AS FCU'S, AHU'S, CONDENSING UNITS, CHILLERS, ETC. SHALL BE CONNECTED VIA SUITABLE ISOLATORS AND CONNECTION BOXES INSTALLED CLOSE TO THEM. PROVIDE UNDER VOLTAGE RELAYS AND AUTO RESET TIMER WITH ADJUSTABLE TIME SETTING BETWEEN 5 AND 10 MINUTES, FOR EACH UNIT.

9.0ELV SYSTEMS

9.1 ACTIVATION OF THE FIRE ALARM SYSTEM SHALL START AND SHUTDOWN HVAC PLANT, AS PER HVAC SPECIFICATIONS AND DRAWINGS. PROPER COORDINATION BETWEEN THE TWO SYSTEMS SHALL BE CARRIED OUT DURING EXECUTION.

9.2 ALL LOW CURRENT SYSTEMS WIRING AND CABLES SHALL BE AS PER THE SPECIFICATIONS AND MANUFACTURER'S/SUPPLIER'S RECOMMENDATIONS.


9.3 ALL CABLING/WIRING SERVING THE LIFE SAFETY SYSTEMS SUCH AS FIRE ALARM, SMOKE MANAGEMENT, FIRE PUMPS, ETC., SHALL BE THREE HOURS FIRE RATED AS PER NFPA.

9.4 SEPARATE CONDUIT SHALL BE RUN FOR EACH LOW CURRENT SYSTEM. MINIMUM SIZE OF CONDUIT SHALL BE 20MM DIA.

9.5 ALL LOW CURRENT CABLES SHALL BE LAID AT A DISTANCE OF NOT LESS THAN 300MM FROM LOW VOLTAGE POWER CABLES AND 600MM FROM MEDIUM VOLTAGE POWER CABLES.

9.6 ALL FIRE ALARM SYSTEM INSTALLATIONS INCLUDING WIRING AND DEVICES SHALL BE IN ACCORDANCE WITH NFPA 72 AND LOCAL CIVIL DEFENSE REQUIREMENTS.

9.7 ALL TELEPHONE AND DATA SYSTEM INSTALLATIONS INCLUDING WIRING AND DEVICES SHALL BE IN ACCORDANCE WITH EIA/TIA REGULATIONS AND LOCAL AUTHORITY REQUIREMENTS.



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



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SHEET 2 OF 2







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













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


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	LIGHTING ACCESSORIES
SYMBOL	DESCRIPTION
	10A 1GANG 1WAY LIGHT SWITCH
	10A 2GANG 1WAY LIGHT SWITCH
	10A 3GANG 1WAY LIGHT SWITCH
	10A 4GANG 1WAY LIGHT SWITCH
	10A INTERMEDIATE LIGHT SWITCH
	10A 1GANG 2WAY LIGHT SWITCH
	10A 2GANG 2WAY LIGHT SWITCH
	10A 3GANG 2WAY LIGHT SWITCH
PC	PHOTOCELL

	FIRE ALARM LEGEND
SYMBOL	DESCRIPTION
 FAB	FIRE ALARM BELL
 FABG	CALL POINT FIRE ALARM BREAK GLASS UNIT
 SD	SMOKE DETECTOR
 HD	ADDRESSABLE HEAT DETECTOR
 PB	PUSH BUTTON
 FACP	FIRE ALARM CONTROL PANEL


POWER LEGEND	
SYMBOL	DESCRIPTION
	13A SINGLE SWITCHED SOCKET OUTLET (LOW LEVEL)
	13A SINGLE SWITCHED SOCKET OUTLET (HIGH LEVEL)
	13A TWIN SWITCHED SOCKET OUTLET (LOW LEVEL)
	13A TWIN SWITCHED SOCKET OUTLET (HIGH LEVEL)
 W	13A WEATHER PROOF SWITCH
	45A COOKER CONTROL UNIT WITH 13A S/O ON COOKER UNIT
	JUNCTION BOX WITH 3x16A SOCKETS
 UPS	UNINTERRUPTED POWER SUPPLY (UPS)
 MDB	MAIN DISTRIBUTION BOARD
 DB	DISTRIBUTION BOARD
	ISOLATOR SWITCH
 CU	CONSUMER UNIT
 P	600 X 450 X 600 DEEP POWER MANHOLE COMPLETE HEAVY DUTY WATER PROOF CONCRETE COVER
 T	500 X 500 X 500 DEEP COMMUNICATION MANHOLE COMPLETE WITH HEAVY DUTY CAST IRON COVER ON PAVEMENTS AND DRIVE WAYS

	LIGHTNING PROTECTION LEGEND
SYMBOL	DESCRIPTION
	MULTIPLE AIR TERMINAL POINT WITH AIR TERMINAL BASE
	COMPENSATOR OF EARTH POTENTIAL TERMINAL BLOCK
	EARTH TERMINATION / INSPECTION PIT
	EARTH MAT

	TELEPHONE AND DATA SYSTEM LEGEND
SYMBOL	DESCRIPTION
	TELEPHONE / DATA OUTLET(LOW LEVEL)
	TELEPHONE / DATA OUTLET(HIGH LEVEL)
	500 X 500 X 600MM DEEP TELEPHONE / COMMUNICATIONS MANHOLE COMPLETE WITH HEAVY DUTY CONCRETE COVER
 M	MAIN DISTRIBUTION FRAME (MDF)
 C	I.T SERVER CABINET
 PABX	PRIVATE AUTOMATIC BRANCH EXCHANGE (PABX)
 PAS	PUBLIC ADDRESS SYSTEM CONTROL POINT
 SP	PUBLIC ADDRESS SYSTEM OUTLET POINT
 CAM	CCTV CAMERA
 WIFI-R/S	WIFI ROUTER / SWITCH IN DATA RACK
 WIFI-A	WIFI ACCESS POINT

	ABBREVIATIONS
ABBREV	DESCRIPTION
CL	CURRENT LIMITED
HG	HEAVY GAUGE
PVC	POLYVINYL CHLORIDE
BT	BOTTOM ENTRY
TT	TOP ENTRY
TT / BT	TOP AND BOTTOM ENTRY, TOP AND BOTTOM EXIT
CIR	CIRCUIT
TP / N OR TPN	TRIPLE POLE AND NEUTRAL
SP / N OR SPN	SINGLE POLE AND NEUTRAL
CU	CONSUMER UNIT
DB	DISTRIBUTION BOARD
LV	LOW VOLTAGE
SWG	STANDARD WIRE GAUGE
MM	MILLIMETRE
SQ MM	SQUARE MILLIMETRE

EMS	EMERGENCY STOP
SWA	STEEL WIRE ARMoured
AFFL	AFTER FINISHED FLOOR LEVEL / ABOVE FLOOR FINISHED LEVEL
MCB	MINIATURE CIRCUIT BREAKER
MCCB	MOULDED CASE CIRCUIT BREAKER
CP	CONTROL PANEL
BCC	BATTERY CHARGER CONTROLLER
CT	CURRENT TRANSFORMER
VT	VOLTAGE TRANSFOMER
C / W	COMPLETE WITH
AMF	AUTOMATIC MAINS FAILURE
ATS	AUTOMATIC TRANSFER SWITCH
ECC	EARTH CONDUCTIVE CONDUCTOR
A	AMPERE
KVA	KILOVOLT AMPERE
V	VOLT
UPS	UNINTERRUPTED POWER SUPPLY
HD	HEAT DETECTOR
SD	SMOKE DETECTOR
PABX	PRIVATE AUTOMATIC BRANCH EXCHANGE
SP	SPEAKER
TS	TIME SWITCH
PEC	PHOTOELECTRIC CELL
AB	ADAPTABLE BOX
JB	JUNCTION BOX
PIR	PASSIVE INFRARED
HM	HEAT MOTION DETECTOR
BG	BREAK GLASS
H / L	HIGH LEVEL
EPS	EMERGENCY POWER SUPPLY
UPVC	UNPLASTICISED POLYVINYL CHLORIDE
CCU	COOKER CONTROL UNIT
NTS	NOT TO SCALE
ELV	EXTRA LOW VOLTAGE
HG	HEAVY GAUGE
GI	GALVANISED IRON
AWTL	ABOVE WORKTOP LEVEL



OPERATIONAL EXCELLENCE FOR RESULTS THAT MATTER

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(KEMC), NAIROBI

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OFF UN AVENUE P.O. Box 783,  
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ENHANCING THE QUALITY OF SECONDARY SCHOOL EDUCATION THROUGH A HOLISTIC APPROACH IN ZANZIBAR,

CONSTRUCTION OF  
JONGOWE SECONDARY SCHOOL  
LABORATORY AND WASH FACILITIES

DRAWING TITLE

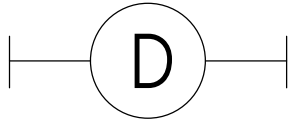


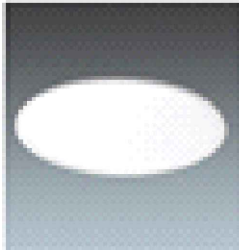
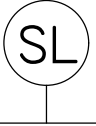

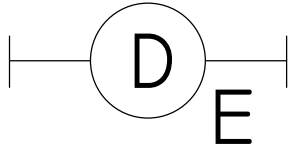



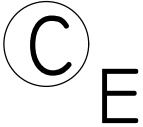
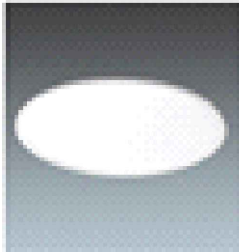
ELECTRICAL WORKS  
SCHEDULE OF SYMBOLS

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TYPE	SYMBOL	IMAGE	DESCRIPTION	MOUNTING
TYPE B			IXI8W I200MM LED FITTING COMPLETE WITH CAT 2 MIRROR-BRITE REFLECTOR WITH UNIFIED GLARE RATING OF 19 LED LAMP AS THOMSON LED(IXI750LM MIN.)	SURFACE MOUNTED
TYPE C			RECESSED I8WATTS LED PANEL DOWNLIGHTER WITH I85MM DIA CUT-OUT	CORRIDOR
TYPE SL			2IW IP44 DIE-CAST ALUMINUM LIGHT FITTING WITH CLEAR DIFUSSER AND COMPLETE WITH LAMP AS MASSIVE SUSSEX CAT 8I657/0I/30	RING BEAM
TYPE D			IXI8W I200MM LED FITTING COMPLETE WITH CAT 2 MIRROR-BRITE REFLECTOR WITH UNIFIED GLARE RATING OF 19 LED LAMP AS THOMSON LED(IXI750LM MIN.) WITH EMERGENCY KIT	SURFACE MOUNTED
TYPE EXIT			ULTRA-SLIM WHITE ALUMINUM BODIED NON-MAINTAINED LED EXIT SIGN WITH 3HR AUTONOMY ENGRAVED FIRE RETARDANT ACRYLIC SIGN BLADE, FOR SURFACE/SUSPENDED USE AND WITH ARROW DIRECTION TO SUIT ESCAPE ROUTE AS THORN VOYAGER LED EXIT SIGN	SUSPENDED FROM SLAB/CEILING ABOVE DOOR
TYPE 4			RECESSED I8WATTS LED PANEL DOWNLIGHTER WITH I85MM DIA CUT-OUT WITH EMERGENCY KIT	CORRIDOR

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CONSTRUCTION OF  
JONGOWE SECONDARY SCHOOL  
LABORATORY AND WASH FACILITIES

DRAWING TITLE

LIGHTING SCHEDULE

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LABORATORY AND WASH FACILITIES

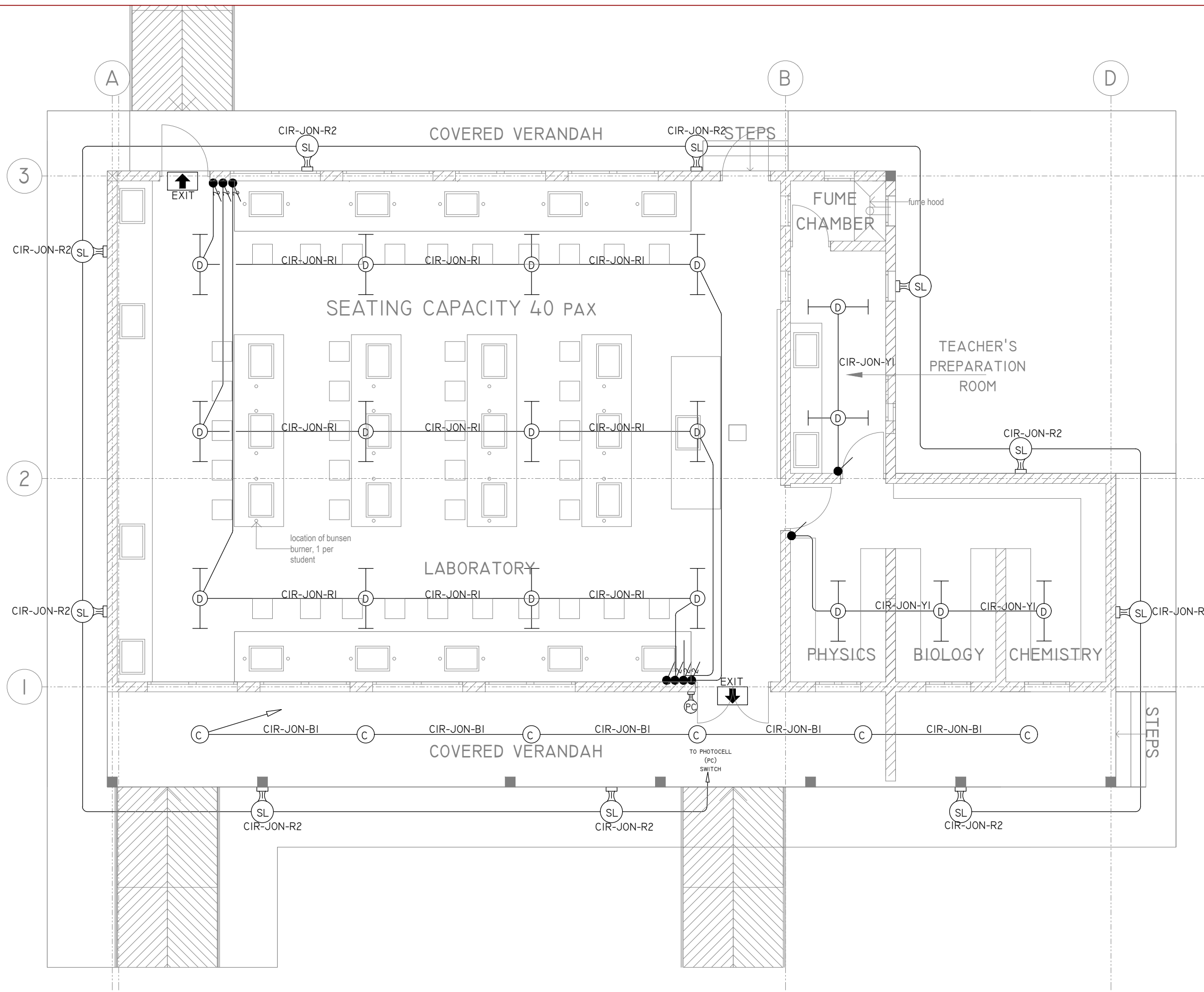
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LABORATORY FLOOR PLAN  
LIGHTING LAYOUT

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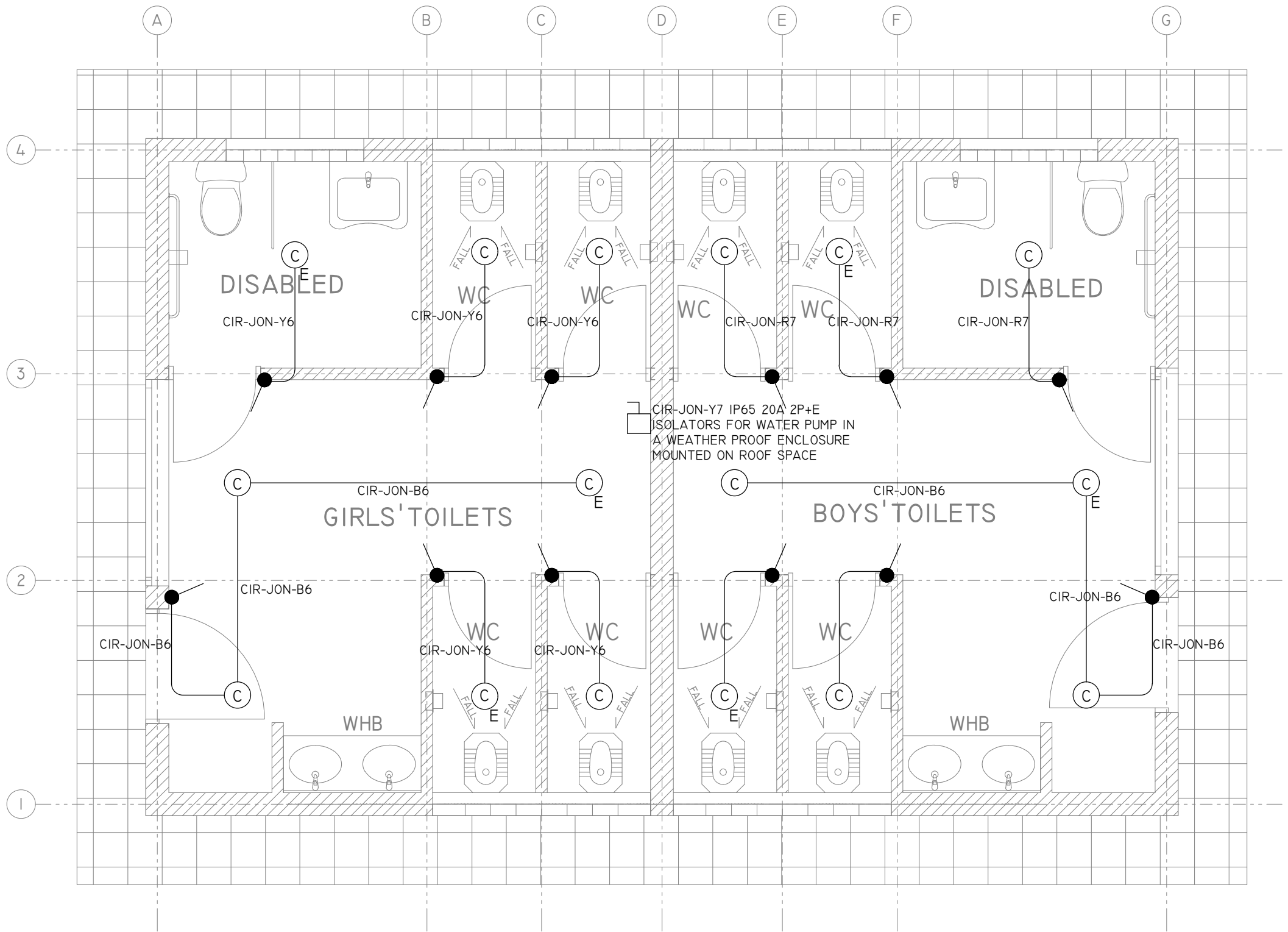
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GIRLS' AND BOYS' TOILET PLAN  
LIGHTING LAYOUT

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LABORATORY AND WASH FACILITIES

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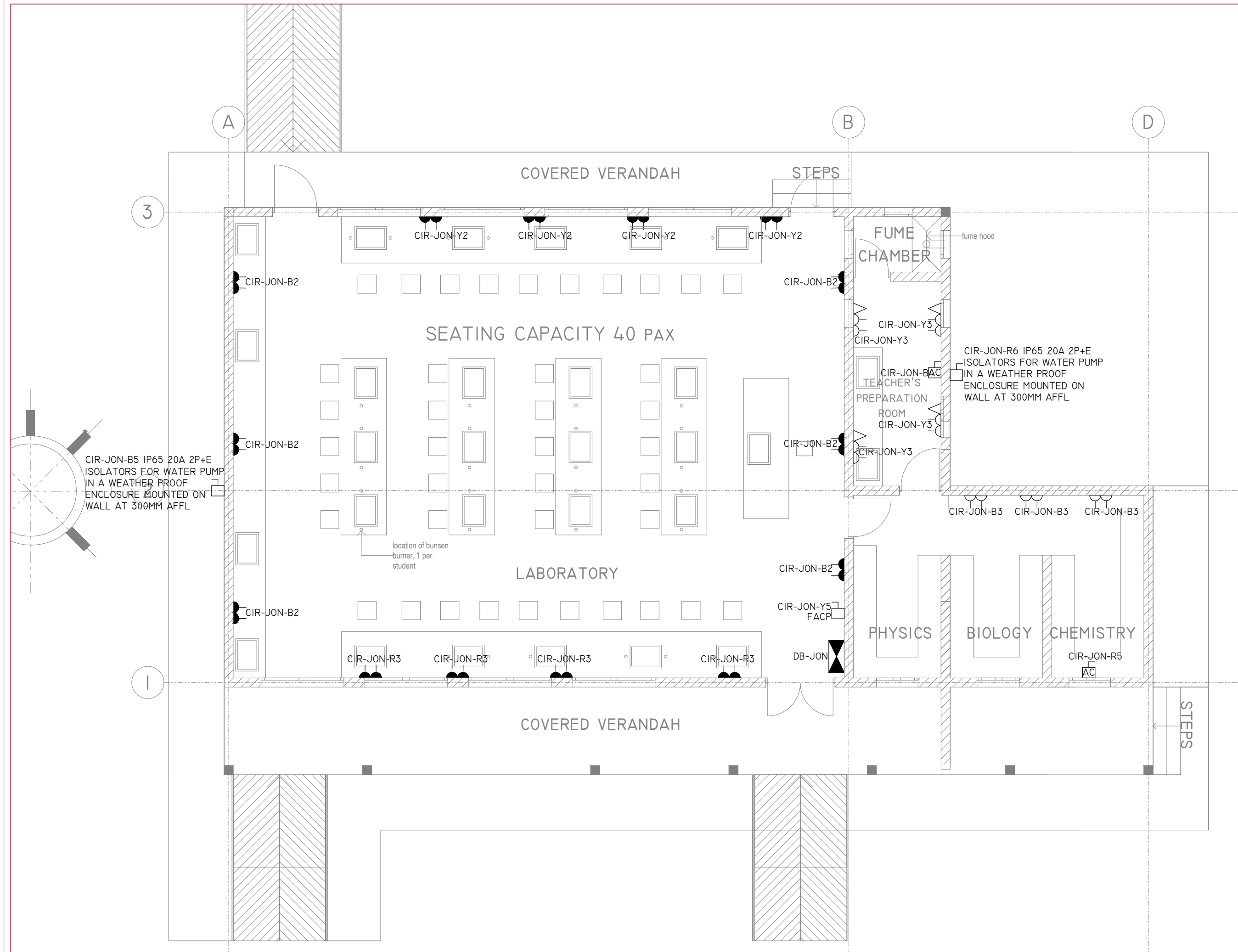
LABORATORY FLOOR PLAN  
POWER LAYOUT

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LABORATORY AND WASH FACILITIES

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LABORATORY FLOOR PLAN  
FIRE ALARM SYSTEM LAYOUT

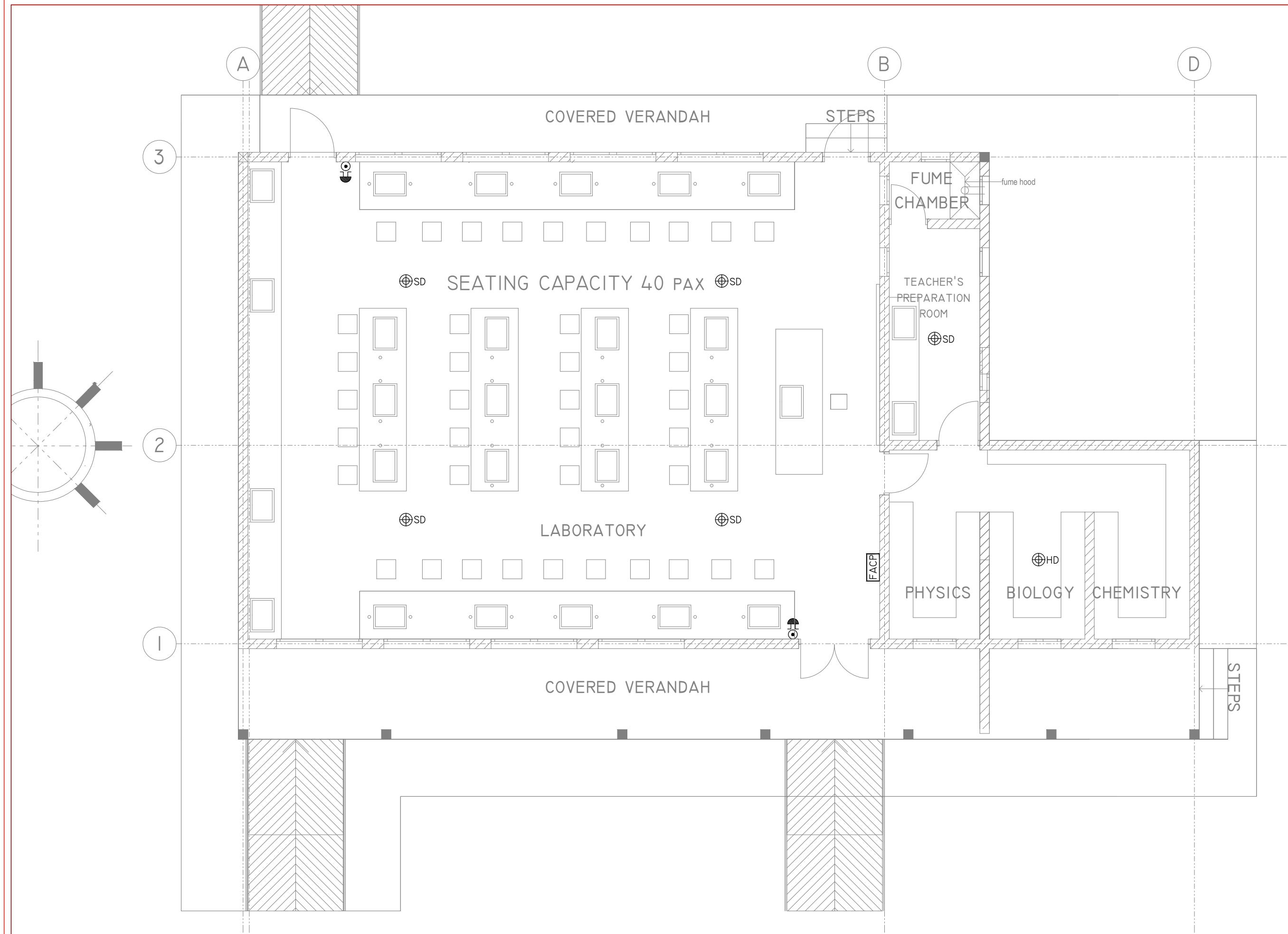
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LABORATORY AND WASH FACILITIES

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LABORATORY ROOF PLAN  
LIGHTNING PROTECTION LAYOUT

TECHNICAL SERVICES UNIT

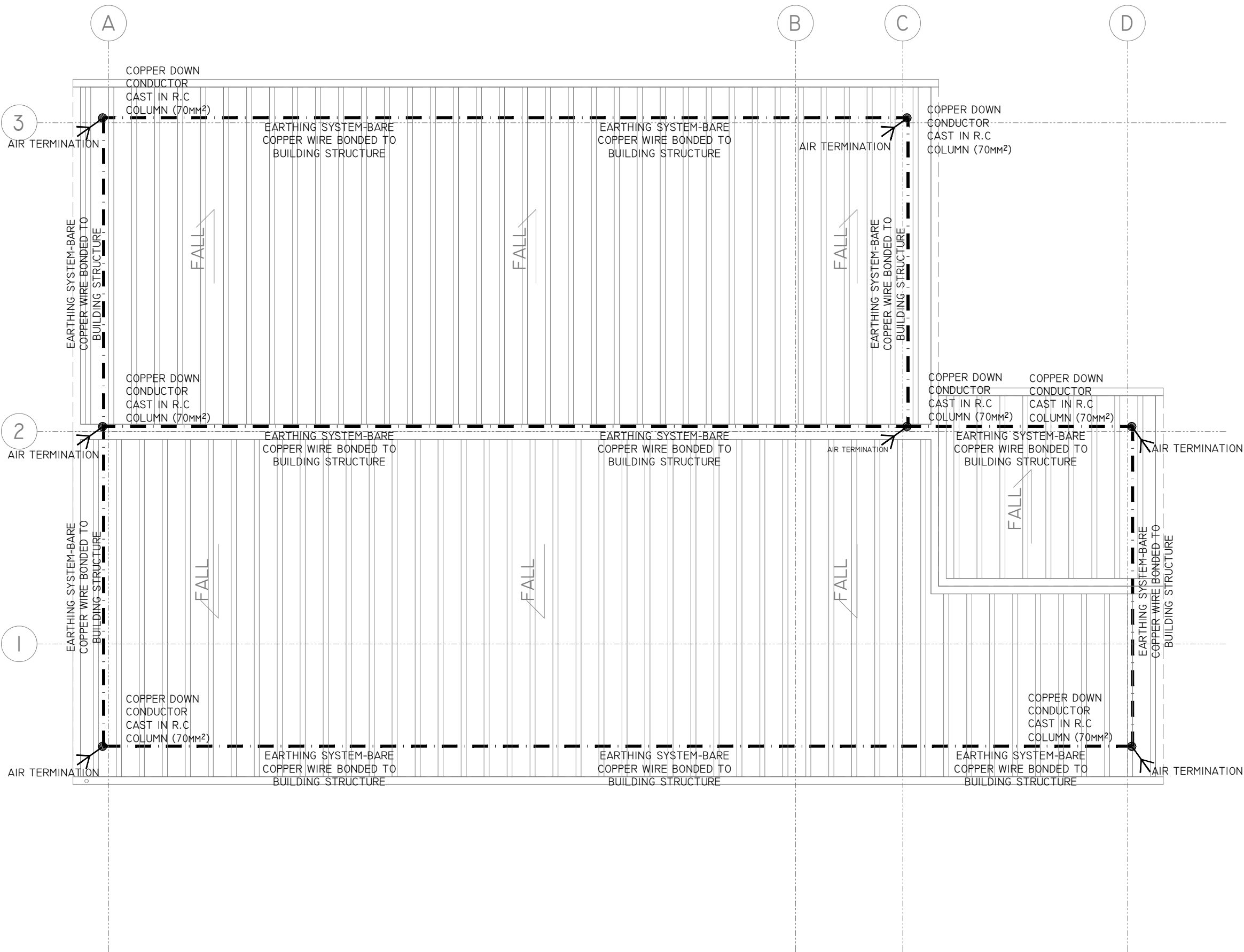
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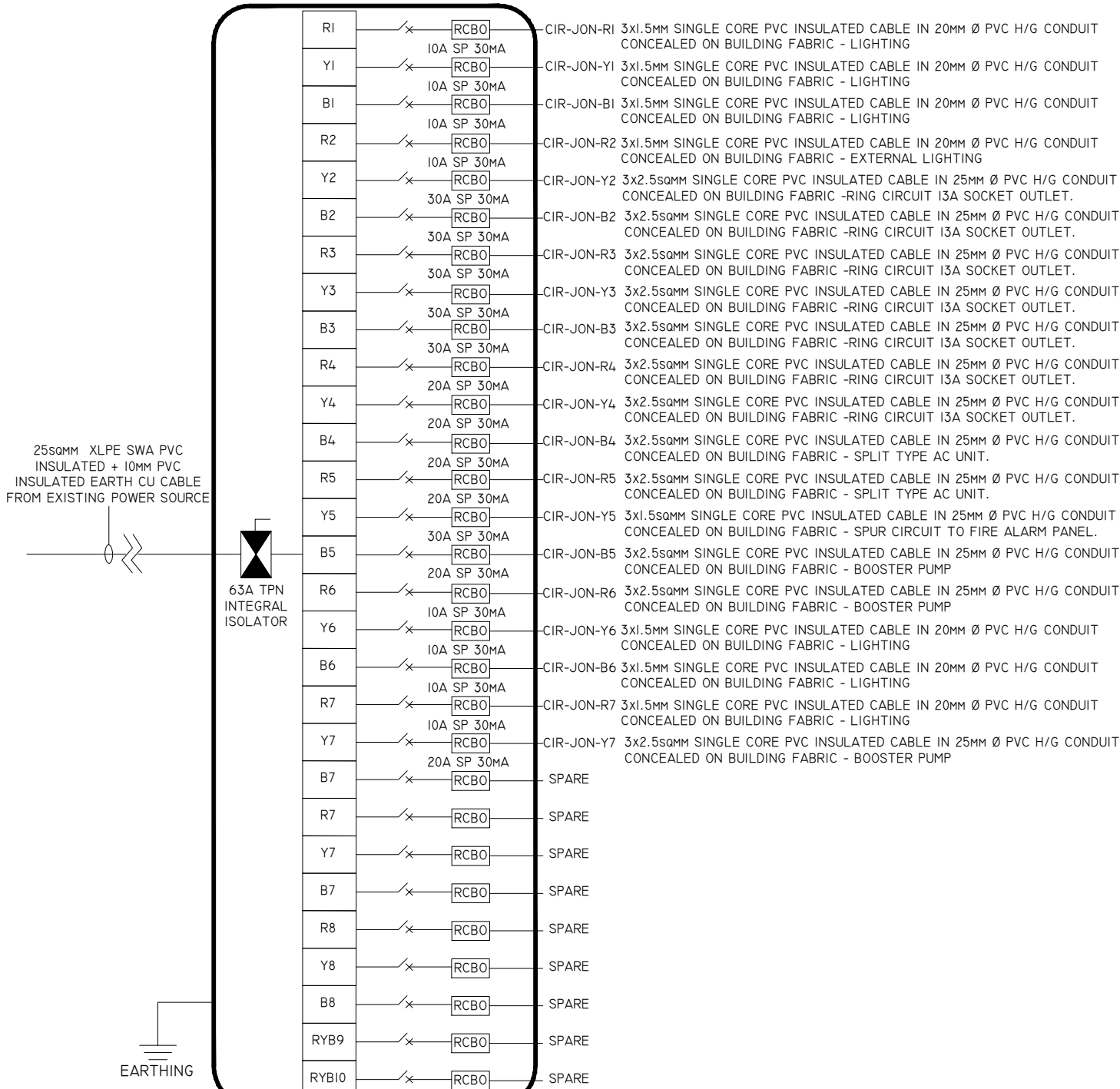
DRAWING TITLE  
  
DISTRIBUTION BOARD & FIRE  
ALARM SYSTEM SCHEMATIC  
DIAGRAM.

TECHNICAL SERVICES UNIT

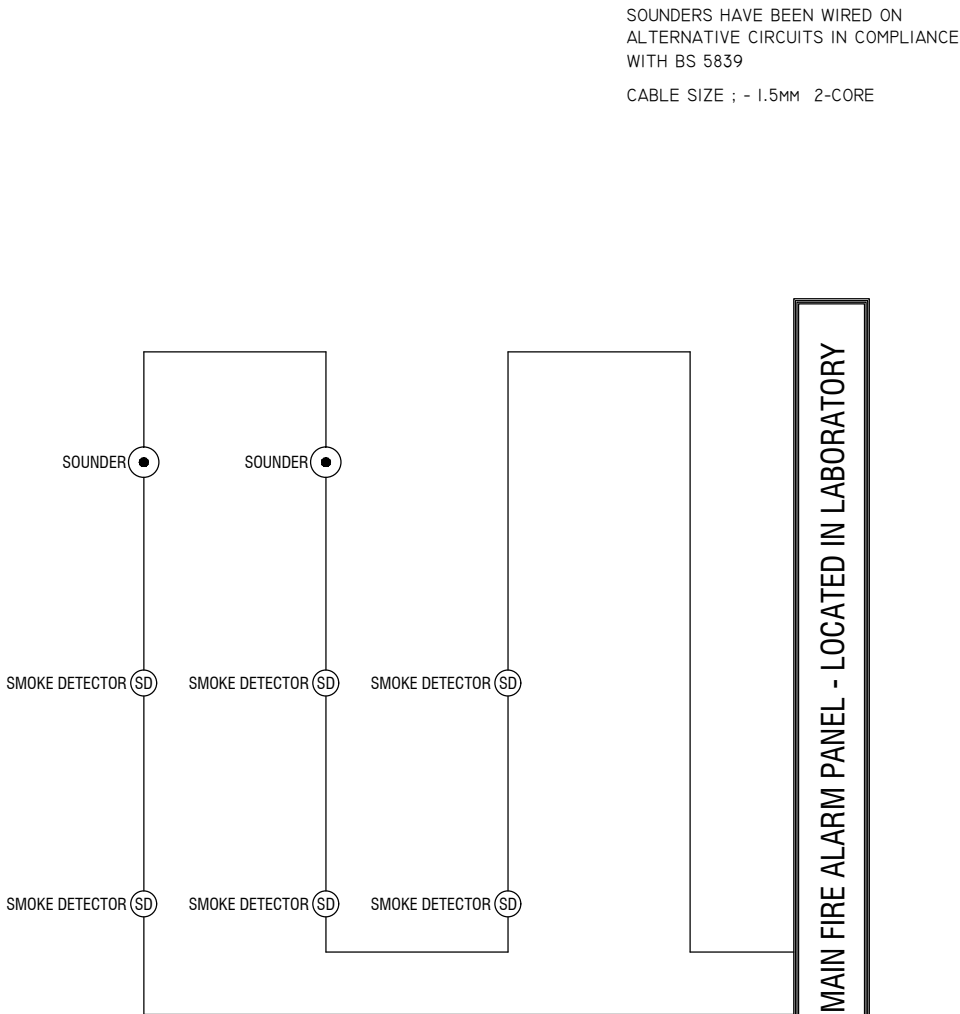
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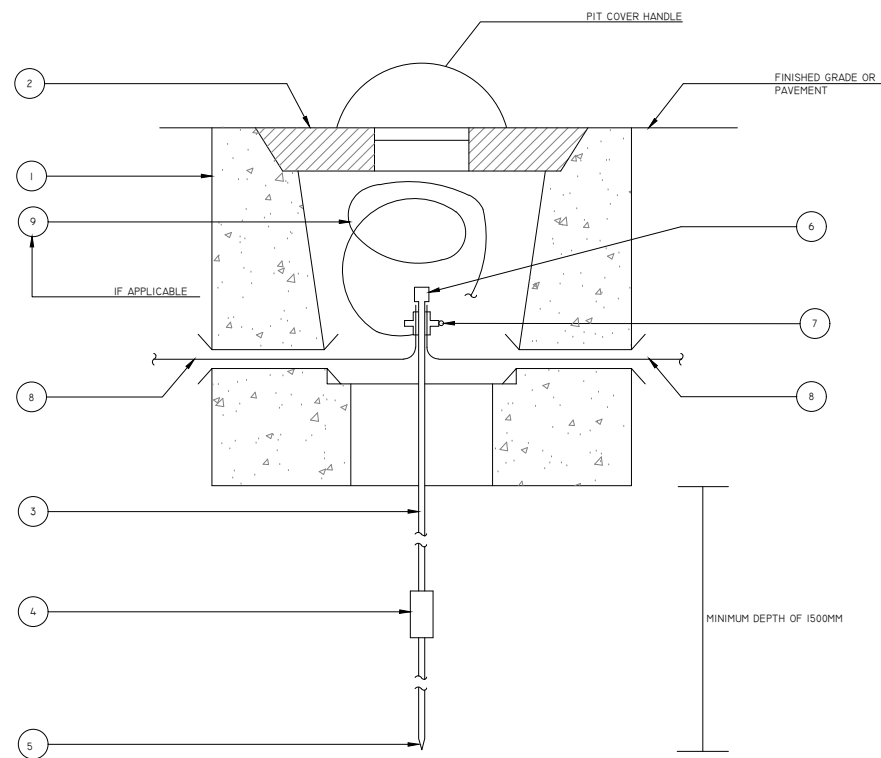
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10WAY 63A TPN RECESSED DISTRIBUTION BOARD DB-JON  
COMPLETE WITH INTEGRAL ISOLATOR



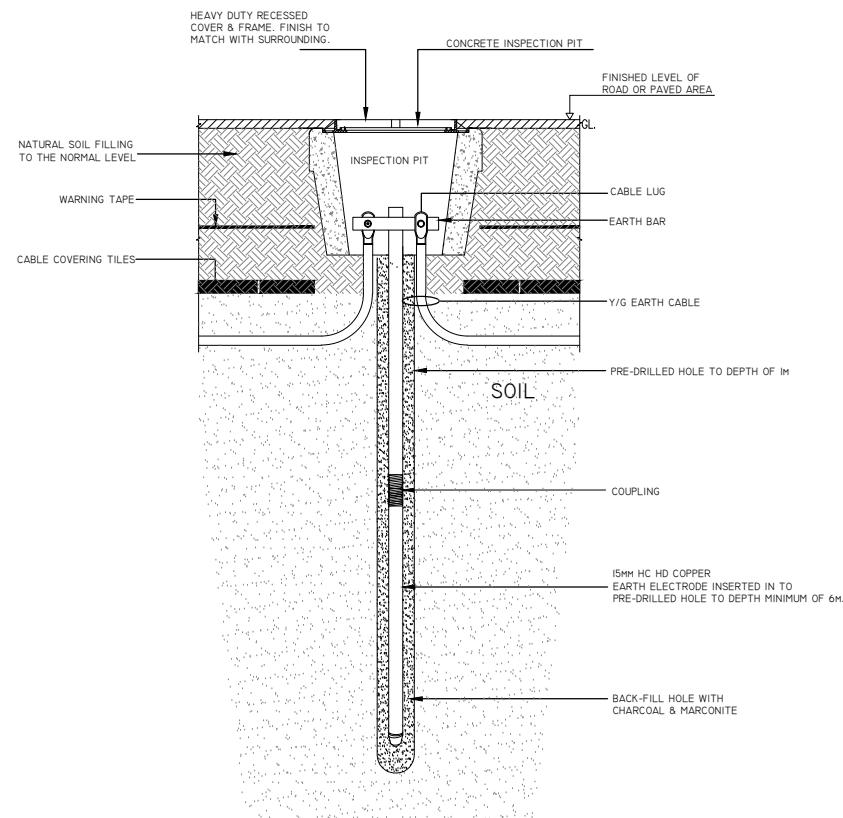
FIRE ALARM SYSTEM SCHEMATIC DIAGRAM



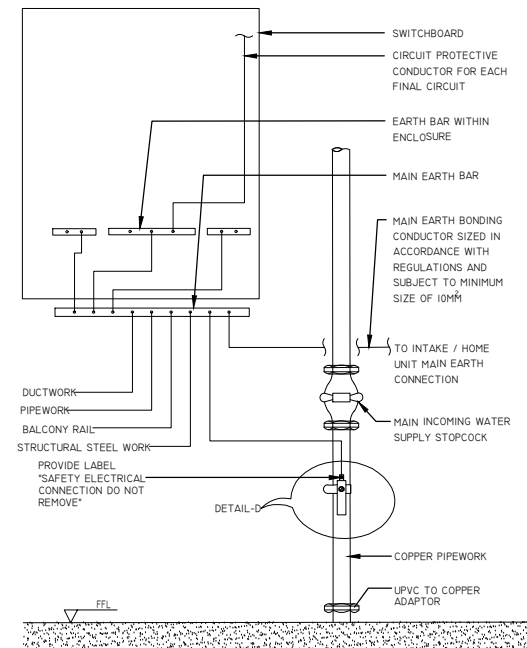
**EARTH ELECTRODE INSPECTION PIT  
TYPICAL INSTALLATION DETAIL**

- ① INSPECTION PIT, CONCRETE OR OF APPROVED EQUAL MATERIAL
- ② REMOVABLE PIT COVER, CAST IRON OR OF APPROVED EQUAL MATERIAL
- ③ EARTH ROD, Ø20MM COPPER CLAD STEEL, 3000MM LONG
- ④ EARTH ROD CONNECTOR
- ⑤ DRIVING TIP
- ⑥ DRIVING HEAD
- ⑦ ELECTRODE STRIP TO ROD CLAMP
- ⑧ EARTH ELECTRODE, 70SQ MM BARE COPPER CONDUCTOR
- ⑨ EARTHING CONDUCTOR OF THE FACILITY, 300MM COPPER-XLPEINSULATED WITH TWO OR THREE COIL TURNS OF APPROX. 250MM DIAMETER

**EARTHING STANDARD DETAILS**



**TYPICAL DETAIL OF EARTH PIT**



**TYPICAL EQUIPOTENTIAL  
BONDING CONNECTIONS**

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PROJECT

ENHANCING THE QUALITY OF SECONDARY SCHOOL EDUCATION THROUGH A HOLISTIC APPROACH IN ZANZIBAR,

**CONSTRUCTION OF JONGOWE SECONDARY SCHOOL LABORATORY AND WASH FACILITIES**

DRAWING TITLE

**EARTHING AND EQUIPOTENTIAL BONDING STANDARDS.**

**TECHNICAL SERVICES UNIT**

		SIGN	DATE
DRAWN BY	SAMWEL O.		
CHECKED BY	ANTHONY A.		
APPROVED BY	PHILIP M.		
ISSUE DATE:	MAY 2021	P.M.SIGNATURE	
DRAWING NUMBER:	E-LP-900	SCALE	PAPER SIZE
		NTS	A-3

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DRAWING TITLE	LIGHTNING PROTECTION DOWN CONDUCTOR AND EARTH PIT DETAIL
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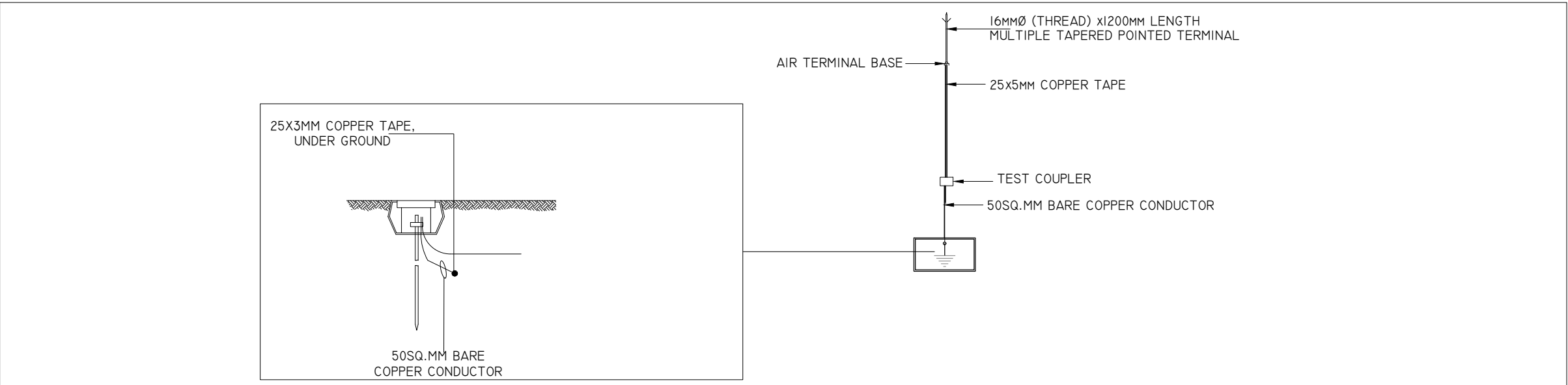
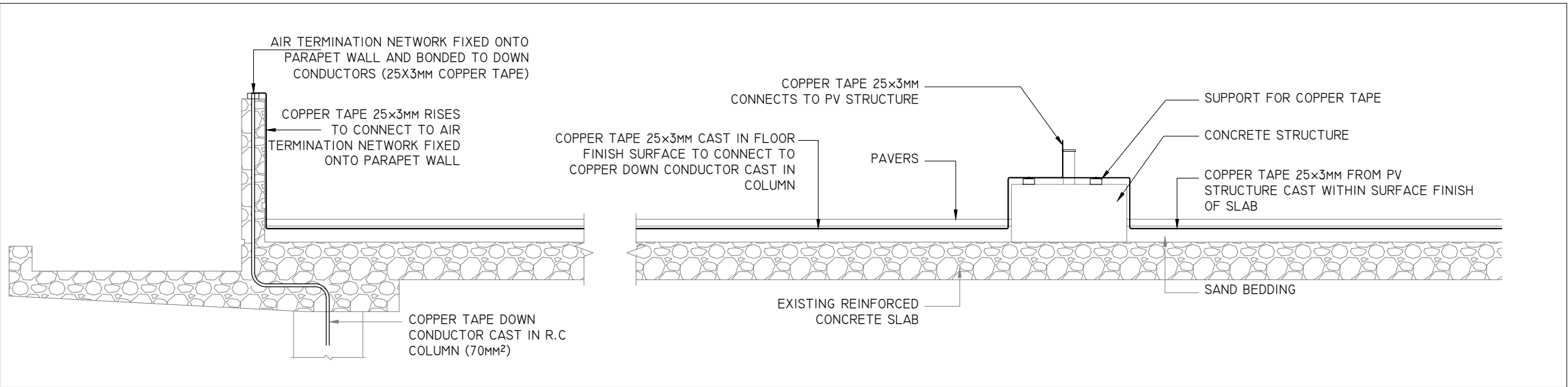
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APPROVED BY	PHILIP M.		

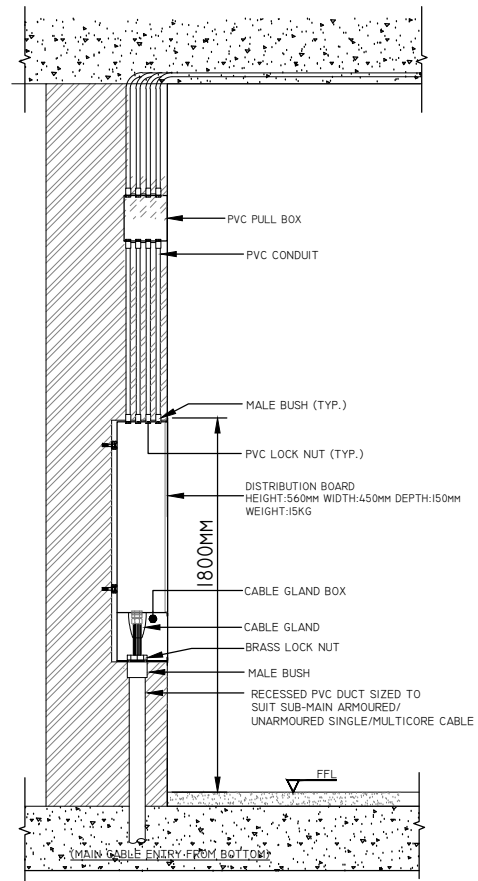
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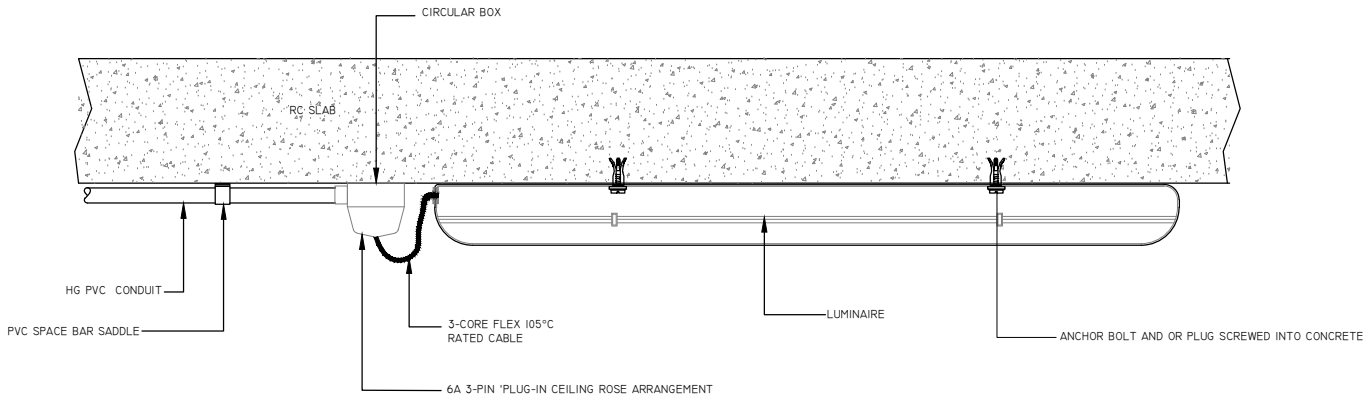
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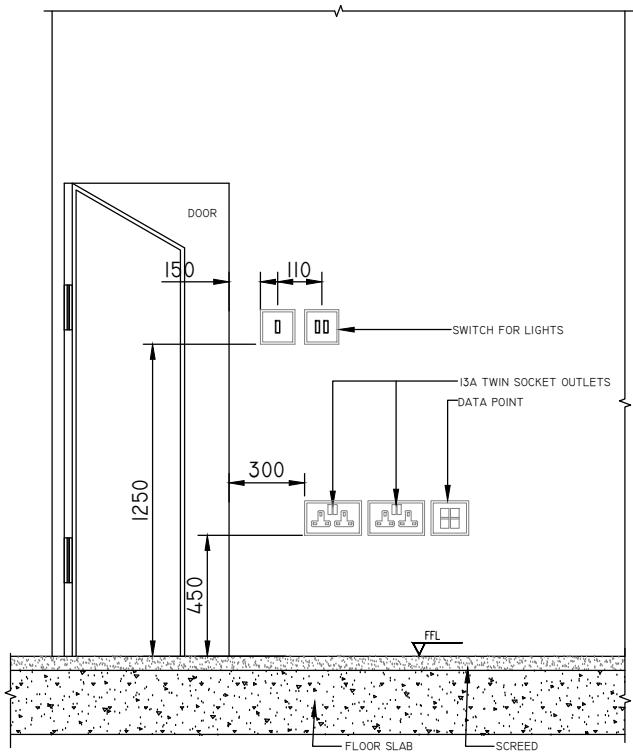




RECESSED MOUNTED DISTRIBUTION BOARD DETAIL



TYPICAL INSTALLATION DETAIL FOR SURFACE LED LUMINAIRE



TYPICAL STD. MOUNTING HEIGHT OF SWITCH AND OUTLETS.

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JONGOWE SECONDARY SCHOOL  
LABORATORY AND WASH FACILITIES

DRAWING TITLE

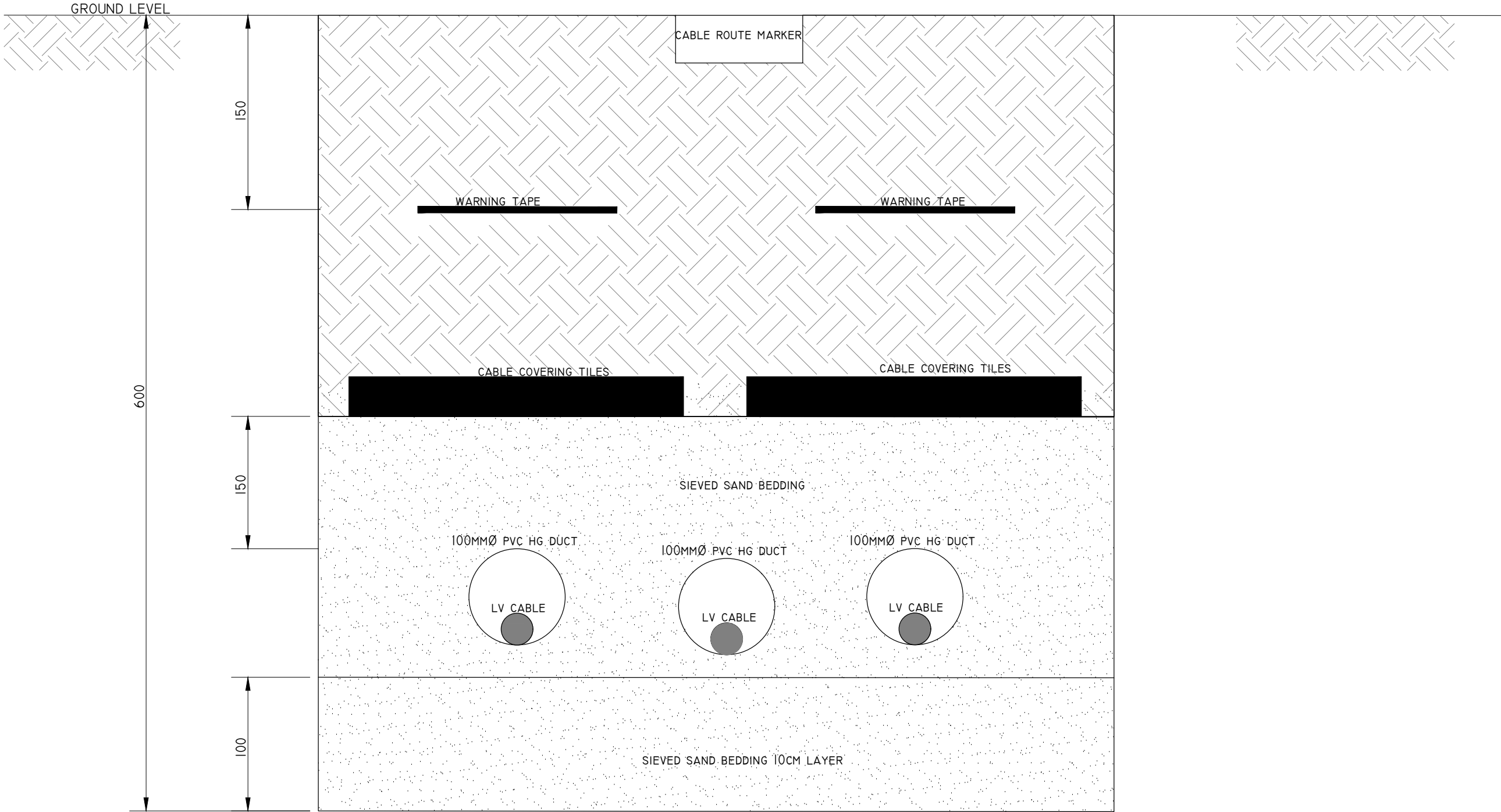
ELECTRICAL ACCESSORY &  
FITTINGS MOUNTING DETAILS

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DETAILS OF ELECTRICAL DUCTS AND CABLES BURIED UNDERGROUND

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DRAWING TITLE

TYPICAL UNDERGROUND DUCT DETAIL.

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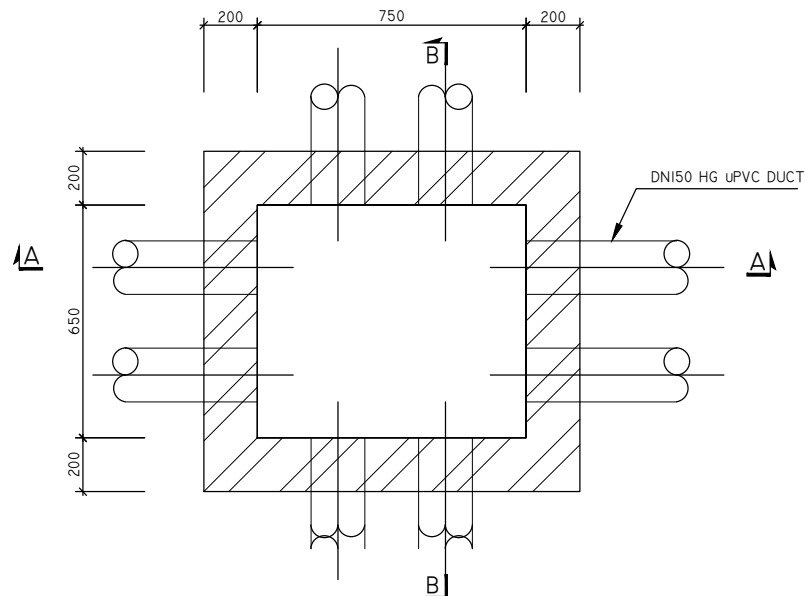
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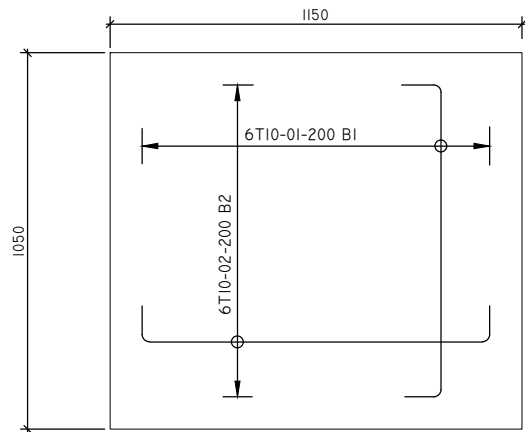
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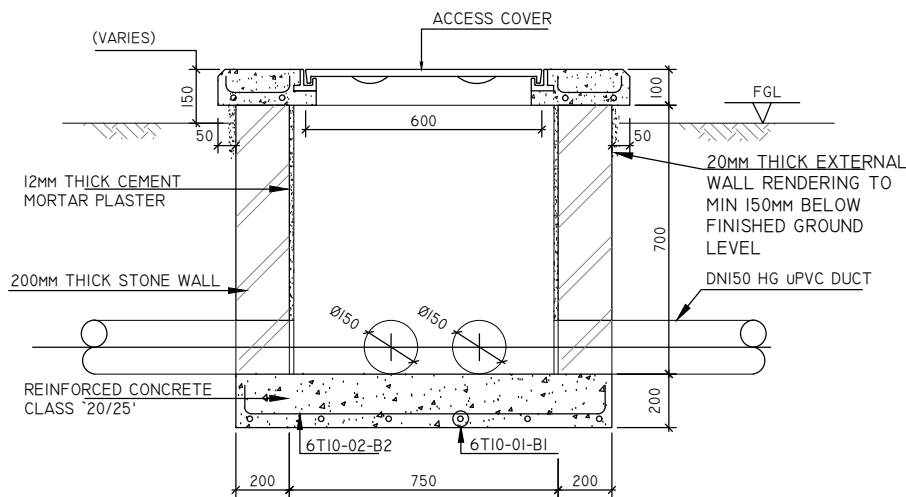
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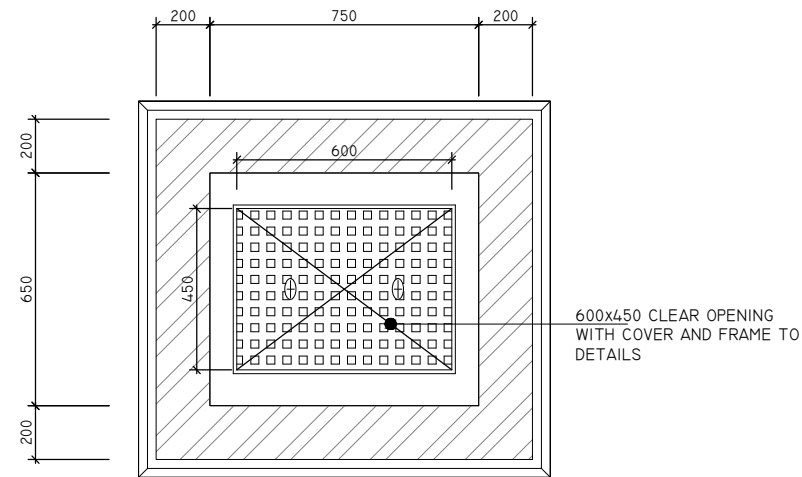
MANHOLE - BASE PLAN  
NTS



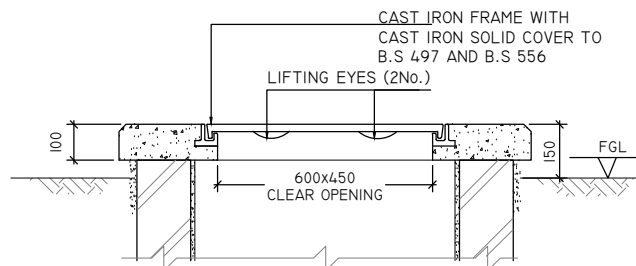
MANHOLE - BASE SLAB R.C DETAILS  
NTS



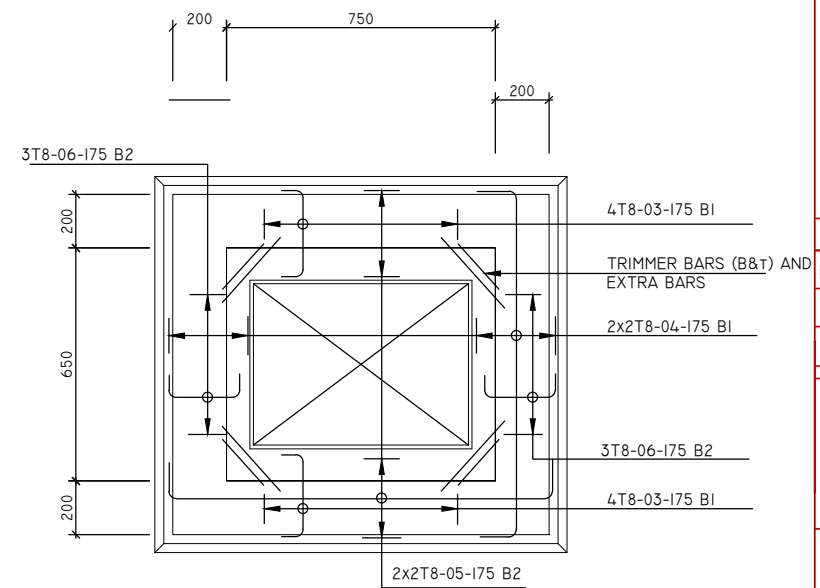
SECTION A - A  
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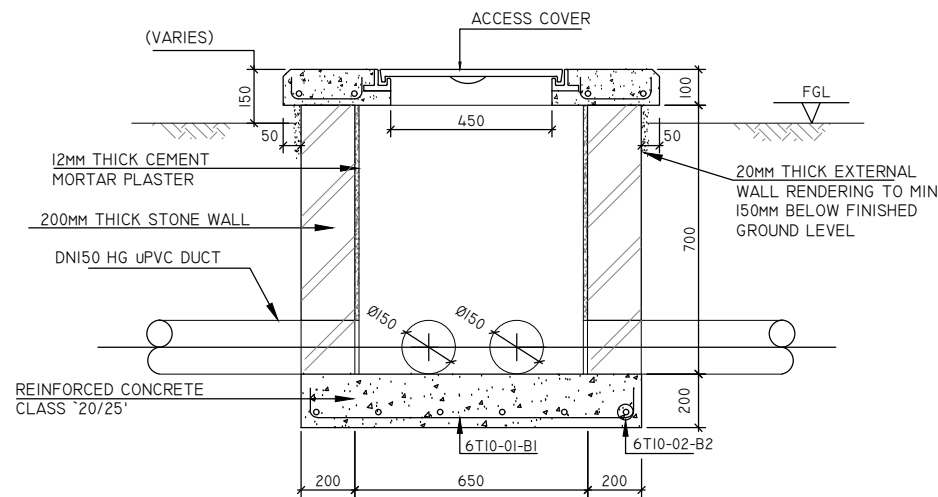
MANHOLE - ROOF PLAN  
NTS



ROOF COVER DETAILS  
NTS



MANHOLE - ROOF SLAB R.C DETAILS  
NTS



SECTION B - B  
NTS

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LABORATORY AND WASH FACILITIES**

DRAWING TITLE  
**TYPICAL ELECTRICAL MANHOLE  
DETAILS.**

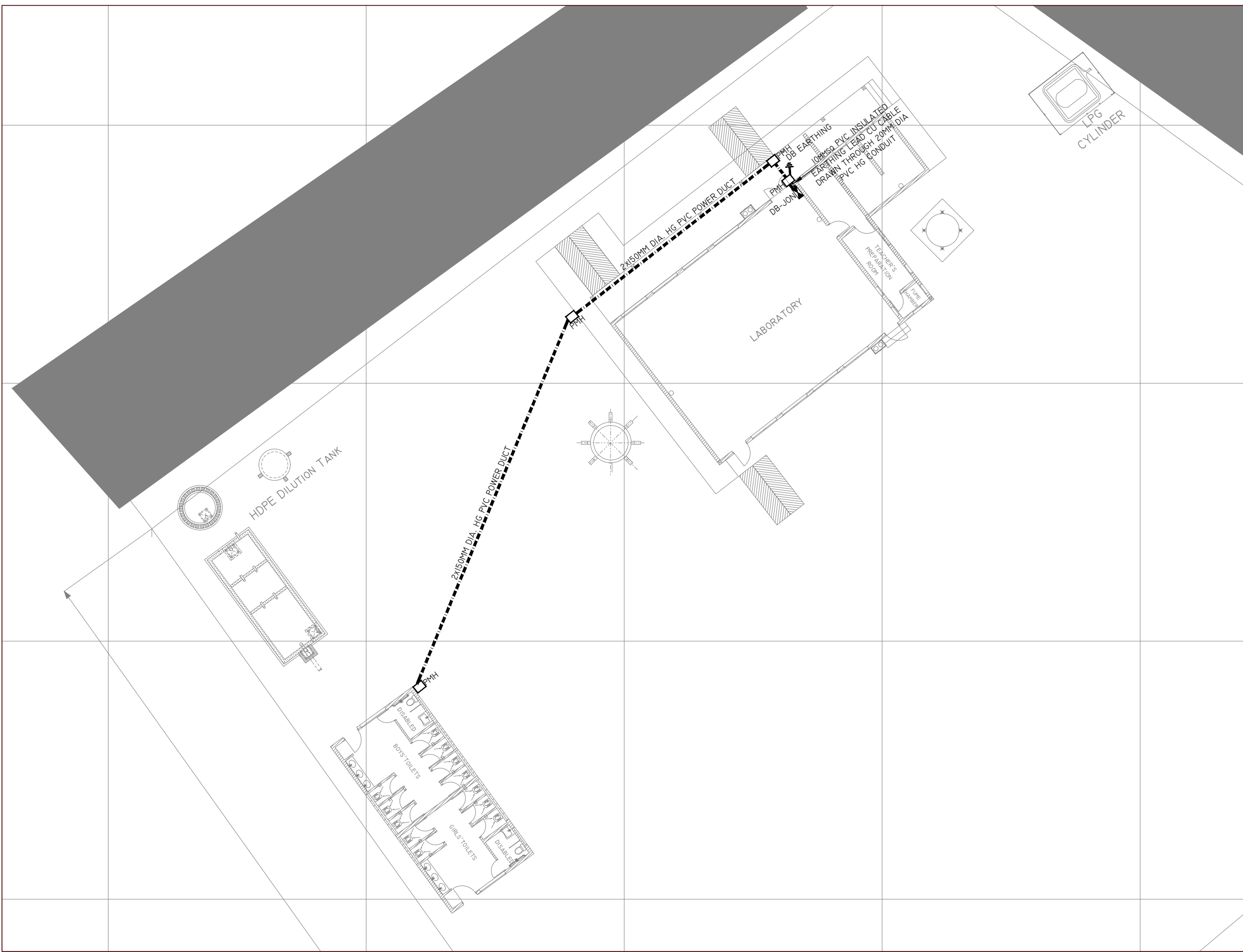
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**DRAWING TITLE**

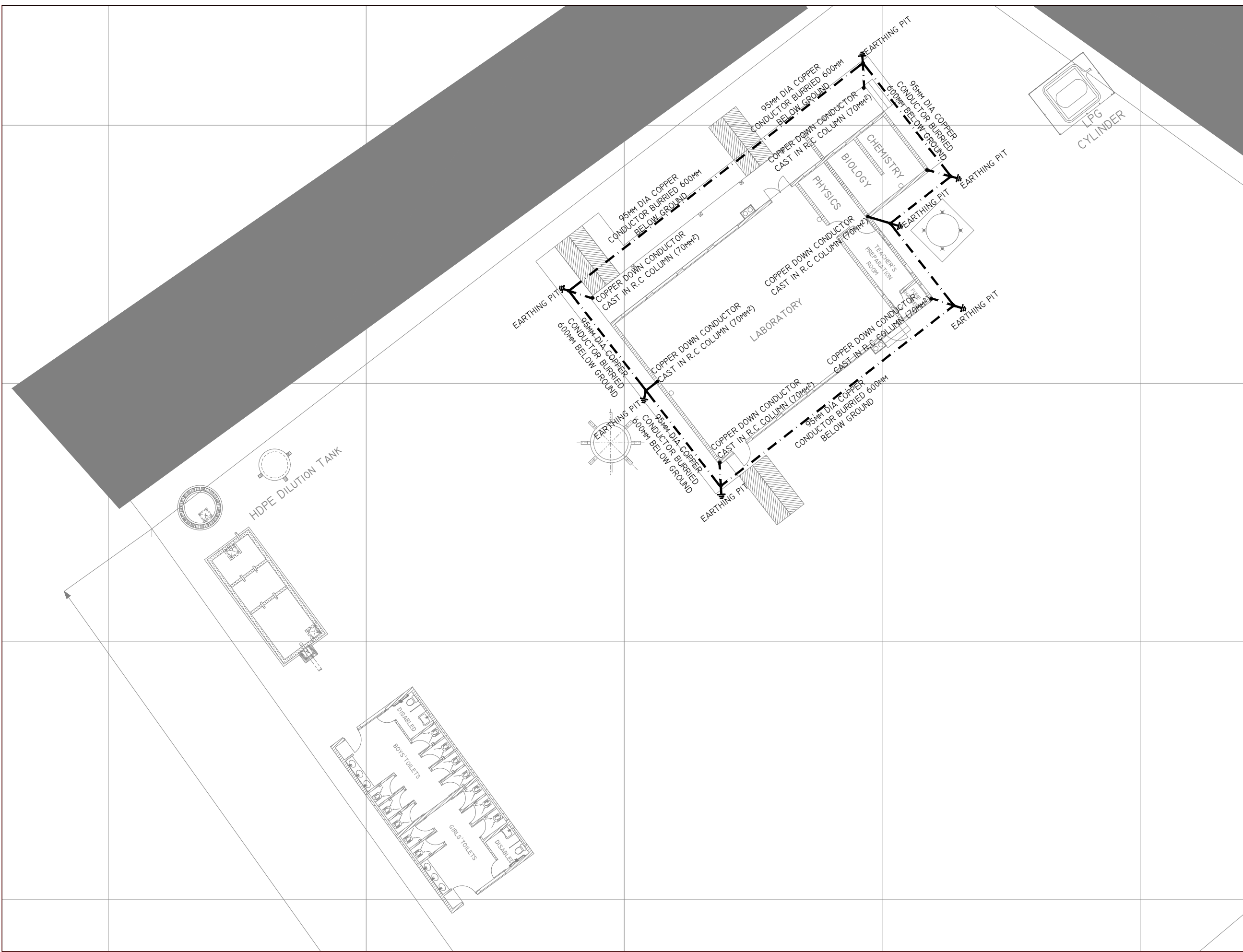
**SITE PLAN**  
**POWER RETICULATION LAYOUT**


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**LABORATORY AND WASH FACILITIES**

**DRAWING TITLE**

**SITE PLAN**  
**LIGHTNING PROTECTION LAYOUT**

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