

HOSPITAL DESIGN  
*SERVICES DRAWINGS*  
Client: Ministry of Health



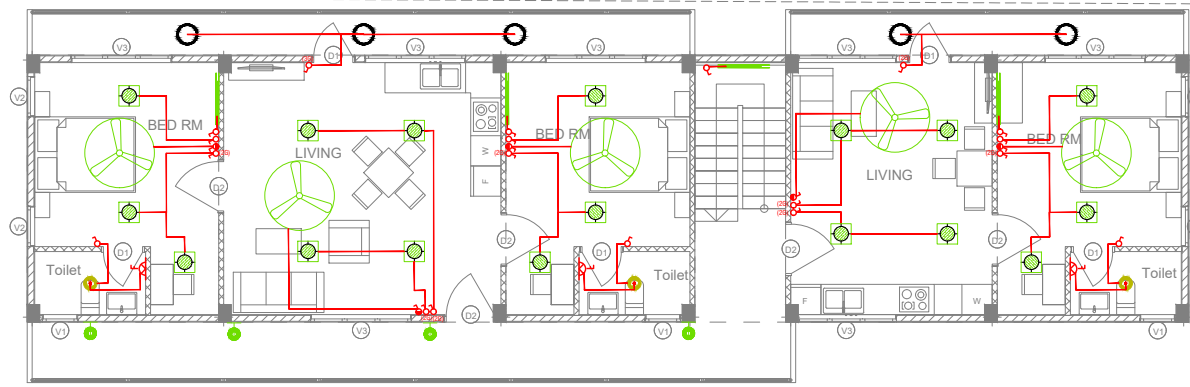
RIYAN PRIVATE LIMITED  
T: +9603315040 F: +9603107776  
E: info@riyan.com.mu  
W: www.riyan.com.mu  
3rd Floor, H. Azam, Aramarammugus, Malé

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#### LIGHTING LEGEND

- LED RECESSED LIGHT TYPE 1 (18W)
- LED STRIP COVER LIGHT IP65 (8W)
- LED RECESSED LIGHT TYPE 2 (12W)
- 600 X 600 LED SQUARE DIFFUSER WITH T5 FITTINGS (12W)
- LED RECESSED LIGHT TYPE 3 (12W)
- LED DOWN LIGHT (18W) - WEATHER PROOF
- FLEX. POWER OUTLET W/ COVER PLATE (EXHAUST FAN)
- CEILING FAN (52" - 54")
- LED OUTDOOR WALL LIGHT UP/DWN (8W) - WEATHER PROOF
- LED SPKE LIGHT (3W)
- OUTDOOR WALL LIGHT 12W - WEATHER PROOF
- LIGHTING SWITCH
- FAN SWITCH
- LIGHTING CABLE
- TROFFER DIFFUSER WITH T5 FITTING (28W)
- LED INDOOR WALL LIGHT UP/DWN (8W)

#### LIGHTING NOTES

- ALL LIGHTS TO BE CONNECTED TO THEIR RESPECTIVE DB
- ALL CORRIDOR LIGHTS AND OUTDOOR LIGHTS ARE TIMMERD
- CONTRACTOR TO PREPARE SHOP DRAWINGS AND GET APPROVAL FROM CONSULTANT/PROJECT MANAGER FOR ALL LIGHTS, SWITCHES, DB, PANEL BOARD AND OTHER RELEVANT LIGHTING AND POWER POINT LOCATIONS INCLUDING CONDUITING AND WIRING AND TO BE VERIFIED AT SITE PRIOR TO CONSTRUCTION

#### FIRST FLOOR LIGHTING PLAN

SCALE 1:100

Hospital Design  
Client: Ministry of Health

Project Number: 62387MCH  
Date: October 2022  
Architect: Zuhairah Abdul Majid  
Engineer: Nishesh Karmel Paragjan,  
Sriharan Mohamed Ewan,  
Saravanan Sundharalingam & Mark Kern Brito

Rev no  
Date



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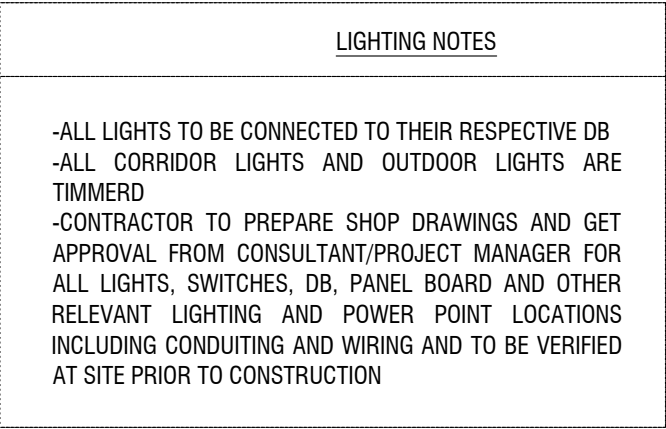
T: +9603750491 F: +9603307076  
E: info@ryan.com.mv  
W: www.ryan.com.mv  
3rd floor, 11, Azam, Ameenmagan, Malé

Title: First Floor  
Lighting Layout

Page: EL-02 /03

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**Hospital Design**  
**Client: Ministry of Health**

**Project Number:** DPM/2023/09/04  
**Design Consultant:** Ozarize

**Architect:** Zunabun Abdul Majid  
**Engineer:** S  
**Services:** Niteshesk Kumar Purnajan,  
Ibrahim Mohamed Ekan,  
Ibrahim Mohamed Ekan



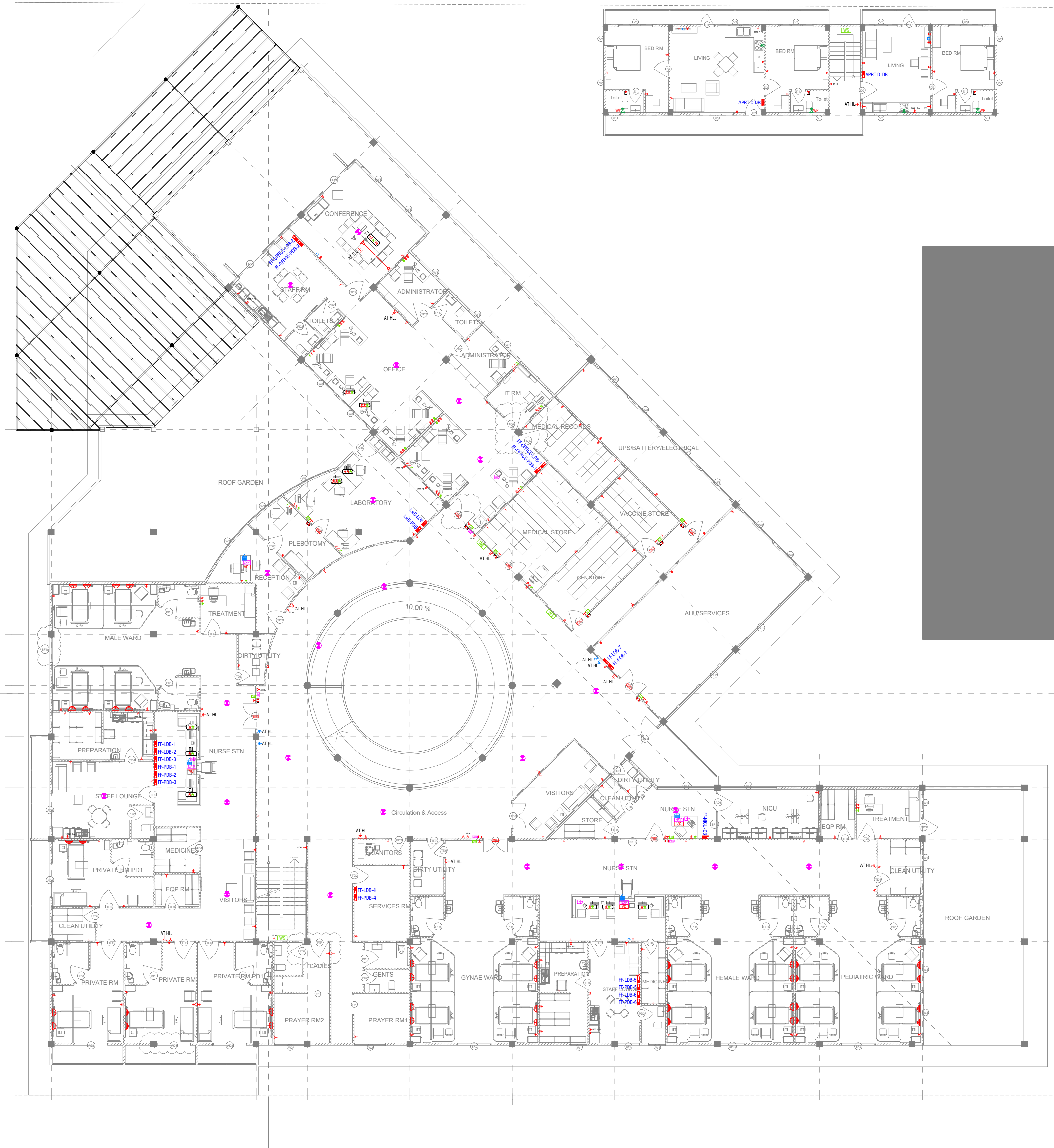
**RIYANI PARTNER LIMITED**

Tel : +96031310449 Tel : +9603130776  
E : [info@riyani.com.my](mailto:info@riyani.com.my)  
W : [www.riyani.com.my](http://www.riyani.com.my)  
3rd floor, H. Azman, 4th floor, Karamiah, Malaka

**Title:** Ground Floor  
Power Layout

**Page:** EP-01 /03





- LIGHTING LEGEND
- TWO GANG TV SOCKET OUTLET
- 13A POWER OUTLET (300MM FROM F.F.L)  
(ABOVE FALSE CEILING FOR TOKEN MONITORS)
- 13A TWIN SOCKET OUTLET (300MM FROM F.F.L)
- 13A UPS SOCKET OUTLET (300MM FROM F.F.L)
- POWER OVER ETHERNET OUTLET
- 15A POWER OUTLET
- VGA CABLE FOR PROJECTOR
- PROXIMITY CARD READER
- EXIT SWITCH
- DISTRIBUTION BOX
- 13A SOCKETS FOR TOILETS (1500 F.F.L)
- WEATHER PROOF POLYCARBONATE ENCLOSURE
- PAGING MIC
- VOLUME CONTROLLER
- WALL SPEAKERS AT CEILING LEVEL
- EMERGENCY DOOR RELEASE
- NURSE STATION PANEL ROOM INDICATOR
- ELECTROMAGNETIC LOCK
- DOOR BELL BUTTON
- DOOR BELL RECEIVER
- HONE SPEAKER
- CEILING SPEAKER
- 8 POWER POINTS ON ENVIROM VERTICAL  
HEADWALLS CALL POINT TO NURSES STATION:  
INTEGRATED IN ENVIROM BEDHEAD TRUNK
- THEATER CONTROL PANEL  
(INCLUDES TELEPHONE UNIT, FIRE ALARM  
STROBE, MEDICAL GAS INDICATOR UNIT)
- T.I TABLE INTEGRATED OR F.F.L OUTLETS
- C.L CEILING LEVEL OUTLETS
- H.L HIGH LEVEL OUTLETS ON WALL

- POWER NOTES
- ALL POWER POINTS CONNECTED TO THE RESPECTIVE DB

- CONTRACTOR TO PREPARE SHOP DRAWINGS AND GET APPROVAL FROM CONSULTANT/PROJECT MANAGER FOR ALL LIGHTS, SWITCHES, DB, PANEL BOARD, EAC, REQUIRED ISOLATORS, ACV SERVICES AND OTHER RELEVANT LIGHTING AND POWER POINT LOCATIONS INCLUDING CONDUITING AND WIRING AND TO BE VERIFIED AT SITE PRIOR TO CONSTRUCTION

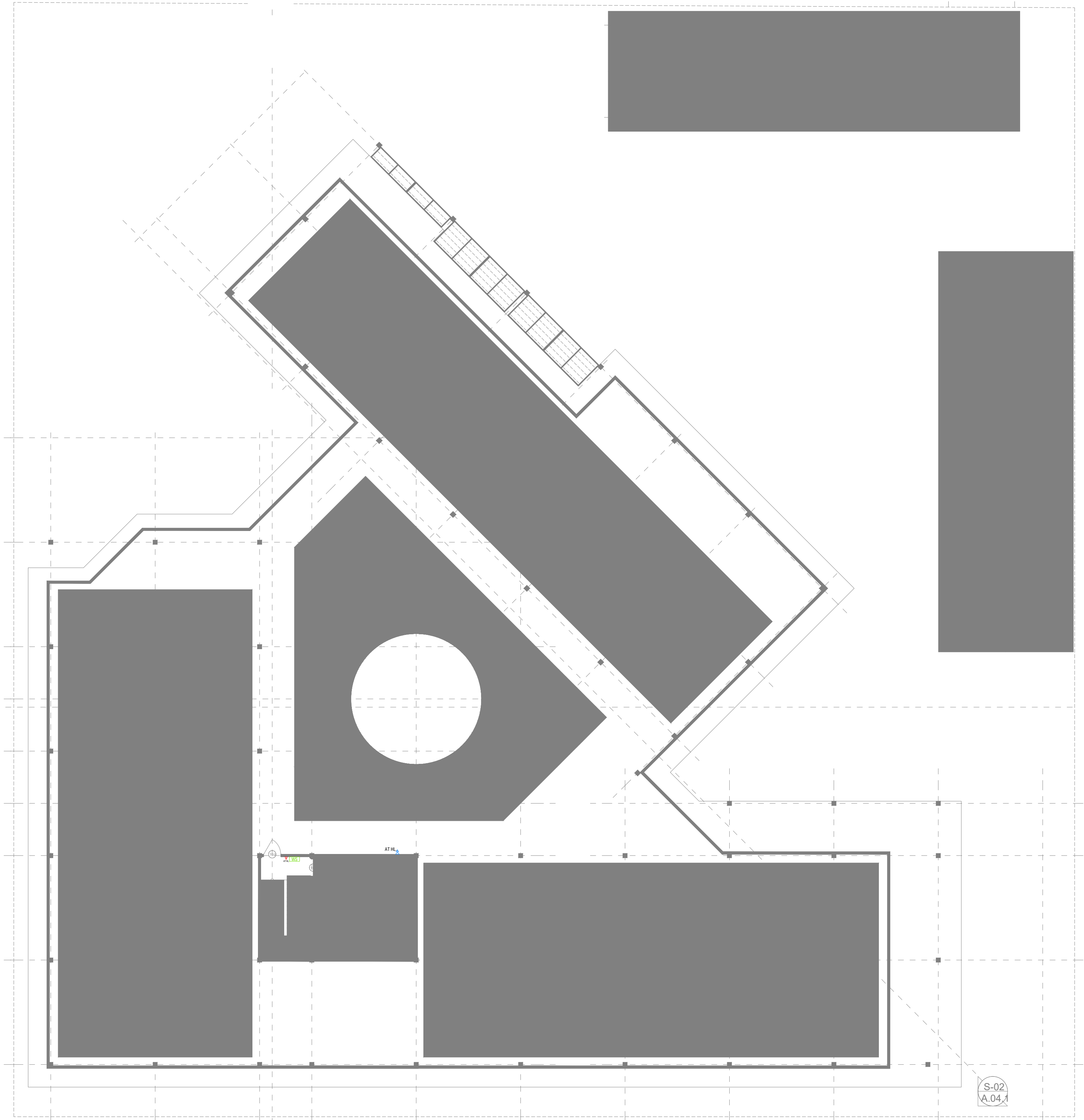
- CONTRACTOR SHALL BE RESPONSIBLE TO MODIFY, CHANGE, REROUTE, RELOCATE THE LIGHTING AND POWER POINTS AS PER THE SITE CONDITIONS AND SUBMIT SHOP DRAWING FOR APPROVAL PRIOR TO CONSTRUCTION

- CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE ELECTRICAL POWER REQUIREMENTS AND POWER POINTS FOR MECHANICAL VENTILATION DEVICES TO ELECTRICAL CONTRACTOR

- OT, RADIOLOGY, ECG/EEG AND SCAN ROOMS' POWER CONSUMPTION IS IN GENERAL. CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE WITH RELEVANT EQUIPMENT MANUFACTURERS REGARDING EQUIPMENT POWER CONSUMPTION.

FIRST FLOOR POWER PLAN

SCALE 1:100



LIGHTING LEGEND	
	TWO GANG TV SOCKET OUTLET
	13A POWER OUTLET (300MM FROM F.F.L.) (ABOVE FALSE CEILING FOR TOKEN MONITORS)
	13A TWIN SOCKET OUTLET (300MM FROM F.F.L.)
	13A UPS SOCKET OUTLET (300MM FROM F.F.L.)
	POWER OVER ETHERNET OUTLET
	15A POWER OUTLET
	VGA CABLE FOR PROJECTOR
	PROXIMITY CARD READER
	EXIT SWITCH
	DISTRIBUTION BOX
	13A SOCKETS FOR TOILETS (1500 F.F.L.)
	WEATHER PROOF POLYCARBONATE ENCLOSURE
	PAGING MIC
	VOLUME CONTROLLER
	WALL SPEAKERS AT CEILING LEVEL
	EMERGENCY DOOR RELEASE
	NURSE STATION PANEL ROOM INDICATOR
	ELECTROMAGNETIC LOCK
	DOOR BELL BUTTON
	DOOR BELL RECEIVER
	HONE SPEAKER
	CEILING SPEAKER
	8 POWER POINTS ON ENVIROM VERTICAL HEADWALLS CALL POINT TO NURSES STATION: INTEGRATED IN ENVIROM BEDHEAD TRUNK
	THEATER CONTROL PANEL (INCLUDES TELEPHONE UNIT, FIRE ALARM STROBE, MEDICAL GAS INDICATOR UNIT)
	T.I TABLE INTEGRATED OR F.F.L OUTLETS
	C.L CEILING LEVEL OUTLETS
	H.L HIGH LEVEL OUTLETS ON WALL

POWER NOTES	
- ALL POWER POINTS CONNECTED TO THE RESPECTIVE DB	
- CONTRACTOR TO PREPARE SHOP DRAWINGS AND GET APPROVAL FROM CONSULTANT/PROJECT MANAGER FOR ALL LIGHTS, SWITCHES, DB, PANEL BOARD, EAC, REQUIRED ISOLATORS, ACV SERVICES AND OTHER RELEVANT LIGHTING AND POWER POINT LOCATIONS INCLUDING CONDUITING AND WIRING AND TO BE VERIFIED AT SITE PRIOR TO CONSTRUCTION	
- CONTRACTOR SHALL BE RESPONSIBLE TO MODIFY, CHANGE, REROUTE, RELOCATE THE LIGHTING AND POWER POINTS AS PER THE SITE CONDITIONS AND SUBMIT SHOP DRAWING FOR APPROVAL PRIOR TO CONSTRUCTION	
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Hospital Design  
Client: Ministry of Health

Project Number: 632387MCH	Date: October 2022	Rev no	Date
Architect: Zuhairah Abdul Majid	Engineer: Nishesh Karmel Puranjani	--	-----
Structural: Ibrahim Mohamed Ewan	Servicing: Sundharalingam & Mark Kern Brito	--	-----



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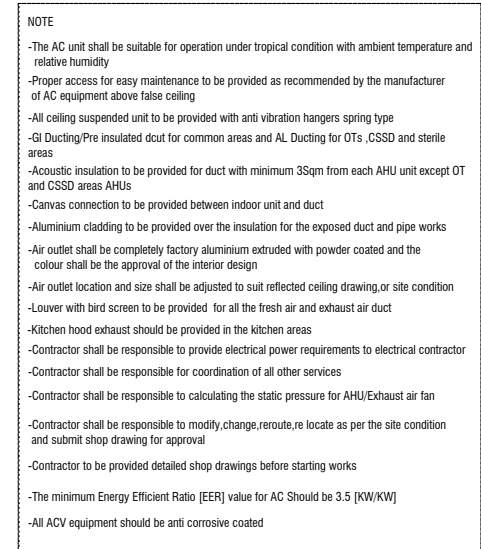
t: +9603375049 f: +9603330776  
e: info@ryan.com.mv  
w: www.ryan.com.mv  
3rd floor, 11, Azumi, Ameeramega, Malé

Title: Terrace Floor  
Power Layout

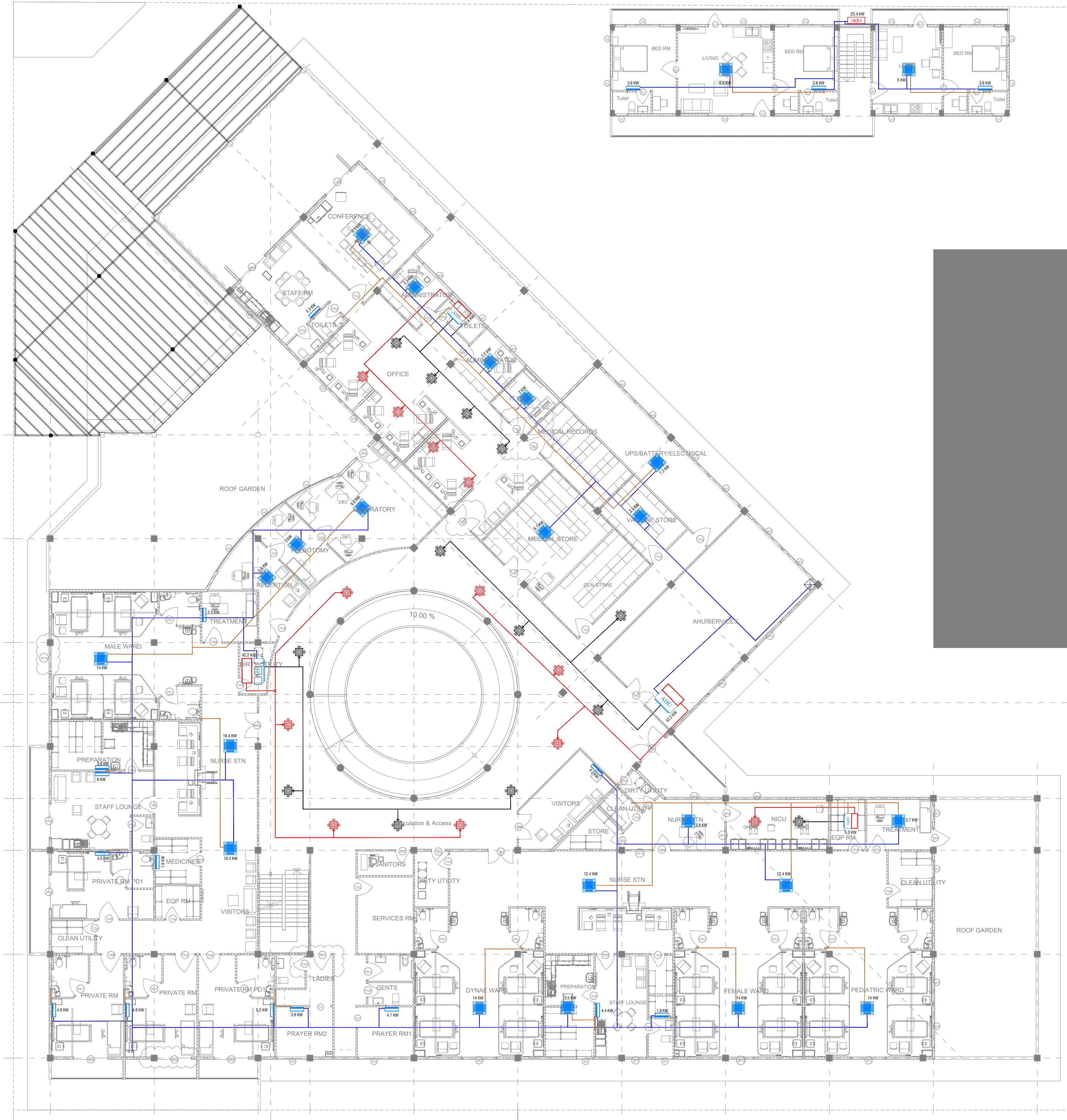
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ACV LEGEND & ABBREVIATION	
	AIR HANDLING UNIT
	WALL MOUNTED UNIT
	CASSETTE UNIT
	OUTDOOR UNIT [TOP DISCHARGE]
	OUTDOOR UNIT [SIDE DISCHARGE]
	CEILING MOUNTED EXHAUST FAN
	FRESH AIR/EXHAUST AIR FAN [DUCT IN LINE]
	WALL MOUNTED FAN
	REFRIGERANT PIPES WITH INSULATION
	AC DRAIN PIPES WITH INSULATION
	SUPPLY AIR DUCT WITH THERMAL INSULATION
	RETURN AIR DUCT WITH THERMAL INSULATION
	EXHAUST AIR DUCT
	FRESH AIR DUCT
	VOLUME CONTROL DAMPER
	SUPPLY AIR DIFFUSER WITH DAMPER
	RETURN AIR DIFFUSER WITH DAMPER
	EXHAUST AIR GRILL
	150MM WIDTH SUPPLY AND RETURN AIR GRILL
T/B	TO BELOW
T/A	TO ABOVE
F/A	FROM ABOVE
F/B	FROM BELOW
AHU	AIR HANDLING UNIT
TFA	TREATED FRESH AIR HANDLING UNIT
ODU	OUT DOOR UNIT

**SPECIFICATION FOR VRF/VRV**

**Outdoor Unit**  
An cooled VRF / VRV system working in R410A / R-407C or equivalent refrigerant. The system shall be suitable to operate on 3 phase, 380-415 V, 50Hz AC power supply & shall comprises with multiple no's of inverter, digital scroll/screw compressors, air cooled condenser fan with motor, microprocessor control panel, starter controls for all scroll compressors and condenser fan motors along with internal control and power wiring, cooling coil with internally interconnected refrigerant pipes, charging port and all other required accessories & hardware's. The entire unit shall be with weather resistant powder coating paint for withstanding all ambient conditions for continuous outdoor operation

**Indoor unit**  
Air Conditioning Units suitable for mounting inside false ceiling/wall hang, each comprising of cooling coil, blower with motor, electronic expansion valve, filter, insulated connection of refrigerant circuit, provision for fresh air intake during, condensate water drain pump with electronic level sensor, including wireless remote controller etc.

**Air Handling Unit (DX type)**  
AHU having GI double skin (0.6/0.8 mm thick) sandwich panel (PU injected foam with 45 mm thick, minimum density 40-50 kg/cu.m) with thermal break aluminium profile and heavy duty unit base. Air Handling Units complete with, dc coil (copper), motor, SSW/DOWN fan, pre filter (MERV 7/8) and fine filters (MERV 13).

**Air Handling Unit (DX type) for OT, NICU, Labour room, Sterile Areas and Accidents and Emergencies**  
AHU having GI double skin (0.6/0.8 mm thick) sandwich panel (PU injected foam with 45 mm thick, minimum density 40-50 kg/cu.m) with thermal break aluminium profile and heavy duty unit base. Air Handling Units complete with, dc coil (copper), motor, SSW/DOWN fan, pre filter (MERV 7/8), fine filters (MERV 13) and HEPA Filter (H14).

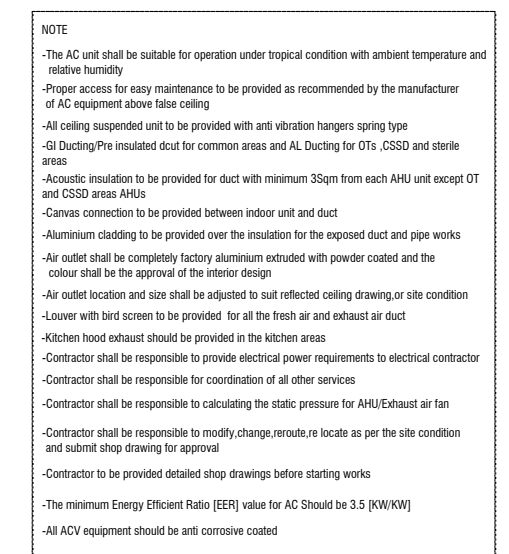
**NOTE**

- The AC unit shall be suitable for operation under tropical condition with ambient temperature and relative humidity
- Proper access for easy maintenance to be provided as recommended by the manufacturer of AC equipment above false ceiling
- All ceiling suspended unit to be provided with anti vibration hangers spring type
- All Ducting/Pipe insulated duct for common areas and AL Ducting for OTs, CSSD and sterile areas
- Acoustic insulation to be provided for duct with minimum 35gm from each AHU unit except OT and CSSD areas (MHA)
- Canvas connection to be provided between indoor unit and duct
- Aluminium cladding to be provided over the insulation for the exposed duct and pipe works
- Air outlet shall be completely factory aluminium extruded with powder coated and the colour shall be the approval of the interior design
- Air outlet location and size shall be adjusted to suit reflected ceiling drawing or site condition
- Lower with bird screen to be provided for all the fresh air and exhaust air duct
- Kitchen hood exhaust should be provided in the kitchen areas
- Contractor shall be responsible to provide electrical power requirements to electrical contractor
- Contractor shall be responsible for coordination of all other services
- Contractor shall be responsible to calculating the static pressure for AHU/Exhaust air fan
- Contractor shall be responsible to modify change, reroute/re locate as per the site condition and submit shop drawing for approval
- Contractor to be provided detailed shop drawings before starting works
- The minimum Energy Efficient Ratio (EER) value for AC Should be 3.5 (KW/KW)
- All ACV equipment should be anti corrosive coated

FIRST FLOOR AC LAYOUT  
SCALE 1:100

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ACV LEGEND & ABBREVIATION	
	AIR HANDLING UNIT
	WALL MOUNTED UNIT
	CASSETTE UNIT
	OUTDOOR UNIT (TOP DISCHARGE)
	OUTDOOR UNIT (SIDE DISCHARGE)
	CEILING MOUNTED EXHAUST FAN
	FRESH AIR/EXHAUST AIR FAN (DUCT IN LINE)
	WALL MOUNTED FAN
	REFRIGERANT PIPES WITH INSULATION
	AC DRAIN PIPES WITH INSULATION
	SUPPLY AIR DUCT WITH THERMAL INSULATION
	RETURN AIR DUCT WITH THERMAL INSULATION
	EXHAUST AIR DUCT
	FRESH AIR DUCT
	VOLUME CONTROL DAMPER
	SUPPLY AIR DIFFUSER WITH DAMPER
	RETURN AIR DIFFUSER WITH DAMPER
	EXHAUST AIR GRILL
	150MM WIDTH SUPPLY AND RETURN AIR GRILL
T/B	TO BELOW
T/A	TO ABOVE
F/A	FROM ABOVE
F/B	FROM BELOW
AHU	AIR HANDLING UNIT
TFA	TREATED FRESH AIR HANDLING UNIT
ODU	OUT DOOR UNIT

**SPECIFICATION FOR VRF/VRV**

**Outdoor Unit**  
Air cooled VRF / VRV system working in R410A / R-407C or equivalent refrigerant. The system shall be suitable to operate on 3 phase, 380-415 V, 50Hz AC, power supply & shall comprises with multiple no's of inverter, digital scroll/screw compressors, air cooled condenser fan with motor, microprocessor control panel, starter controls for all scroll compressors and condenser fan motors along with internal control and power wiring, cooling coil with internally interconnected refrigerant pipes, charging port and all other required accessories & hardware's. The entire unit shall be with weather resistant powder coating paint for withstanding all ambient conditions for continuous outdoor operation

**Indoor unit**  
Air Conditioning Units suitable for mounting inside false ceiling/wall hang, each comprising of cooling coil, blower with motor, electronic expansion valve, filter, insulated connection of refrigerant circuit, provision for fresh air intake ducting, condensate water drain pump with electronic level sensor, including wireless remote controller etc.

**Air Handling Unit (DX type)**  
AHU having GI double skin (6/0.8 mm thick) sandwich panel (PU injected foam with 45 mm thick, minimum density 40-50 kg/cu.m) with thermal break aluminium profile and heavy duty unit base. Air Handling Units comply with, dx coil (copper), motor, SLOW/DOWN fan, pre filter (MERV 7/8) and fine filters (MERV 13).

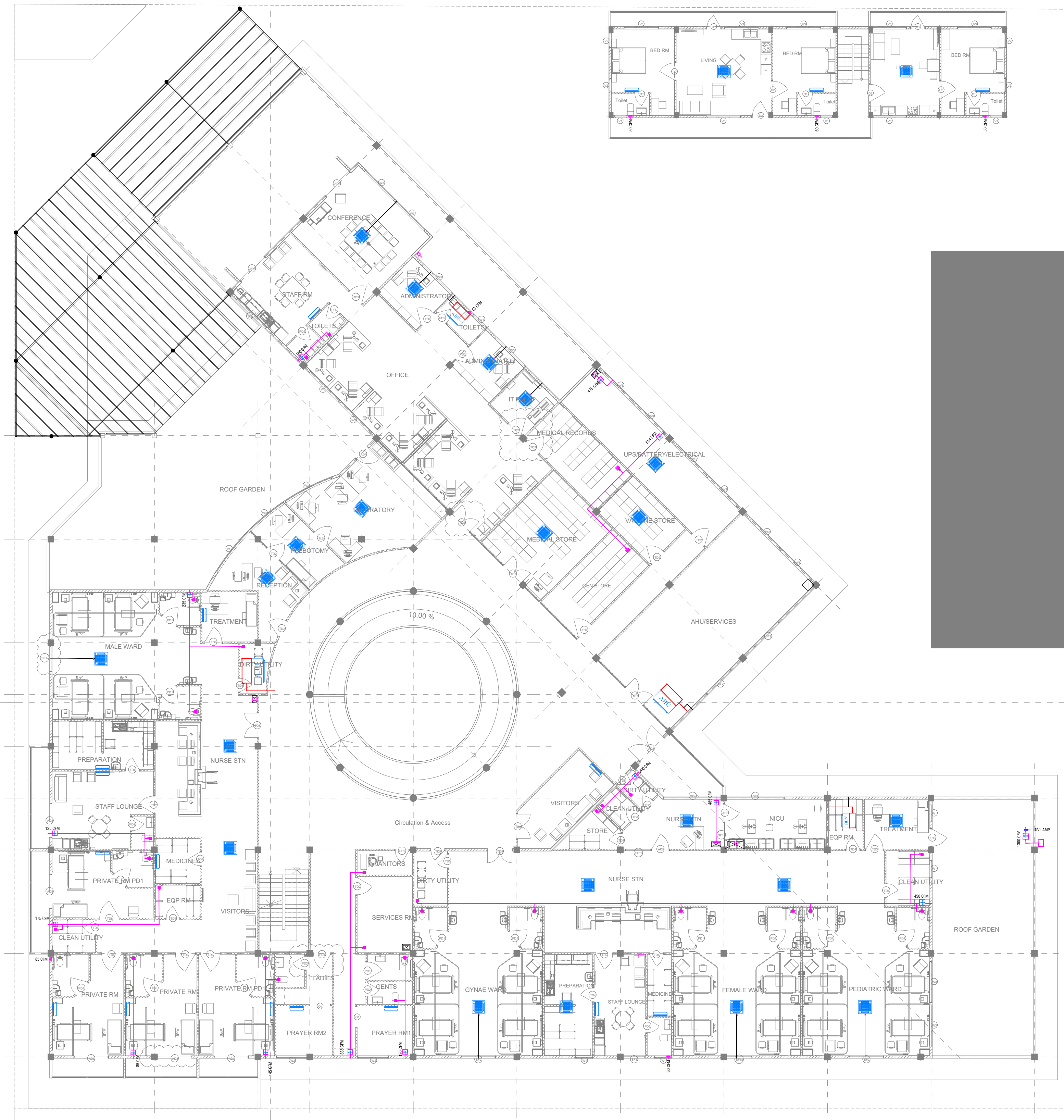
**Air Handling Unit (DX type)**  
AHU having GI double skin (6/0.8 mm thick) sandwich panel (PU injected foam with 45 mm thick, minimum density 40-50 kg/cu.m) with thermal break aluminium profile and heavy duty unit base. Air Handling Units comply with, dx coil (copper), motor, SLOW/DOWN fan, pre filter (MERV 7/8), fine filters (MERV 13) and HEPA filter(H14).

**NOTE**

- The AC unit shall be suitable for operation under tropical condition with ambient temperature and relative humidity
- Proper access for easy maintenance to be provided as recommended by the manufacturer of AC equipment above false ceiling
- All ceiling suspended unit to be provided with anti vibration hangers spring type
- GI Ducting/Pne insulated duct for common areas and AL Ducting for OTs, CSSD and sterile areas
- Acoustic insulation to be provided for duct with minimum 35gm from each AHU unit except OT and CSSD areas AHUs
- Canvas connection to be provided between indoor unit and duct
- Aluminium cladding to be provided over the insulation for the exposed duct and pipe works
- Air outlet shall be completely factory aluminium extruded with powder coated and the colour shall be to the approval of the interior design
- Air outlet location and size shall be adjusted to suit reflected ceiling drawing or site condition
- Lower with bird screen to be provided for all the fresh air and exhaust air duct
- Kitchen hood exhaust should be provided in the kitchen areas
- Contractor shall be responsible to provide electrical power requirements to electrical contractor
- Contractor shall be responsible for coordination of all other services
- Contractor shall be responsible to calculating the static pressure for AHU/Exhaust air fan
- Contractor shall be responsible to modify change/relocate as per the site condition and submit shop drawing for approval
- Contractor to be provided detailed shop drawings before starting works
- The minimum Energy Efficient Ratio (EER) value for AC should be 3.5 (R/NK/W)
- All ACV equipment should be anti corrosive coated

**GROUND FLOOR VENTILATION LAYOUT**  
SCALE 1:150





ACV LEGEND & ABBREVIATION	
	AIR HANDLING UNIT
	WALL MOUNTED UNIT
	CASSETTE UNIT
	OUTDOOR UNIT (TOP DISCHARGE)
	OUTDOOR UNIT (SIDE DISCHARGE)
	CEILING MOUNTED EXHAUST FAN
	FRESH AIR/EXHAUST AIR FAN (DUCT IN LINE)
	WALL MOUNTED FAN
	REFRIGERANT PIPES WITH INSULATION
	AC DRAIN PIPES WITH INSULATION
	SUPPLY AIR DUCT WITH THERMAL INSULATION
	RETURN AIR DUCT WITH THERMAL INSULATION
	EXHAUST AIR DUCT
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	VOLUME CONTROL DAMPER
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T/B	TO BELOW
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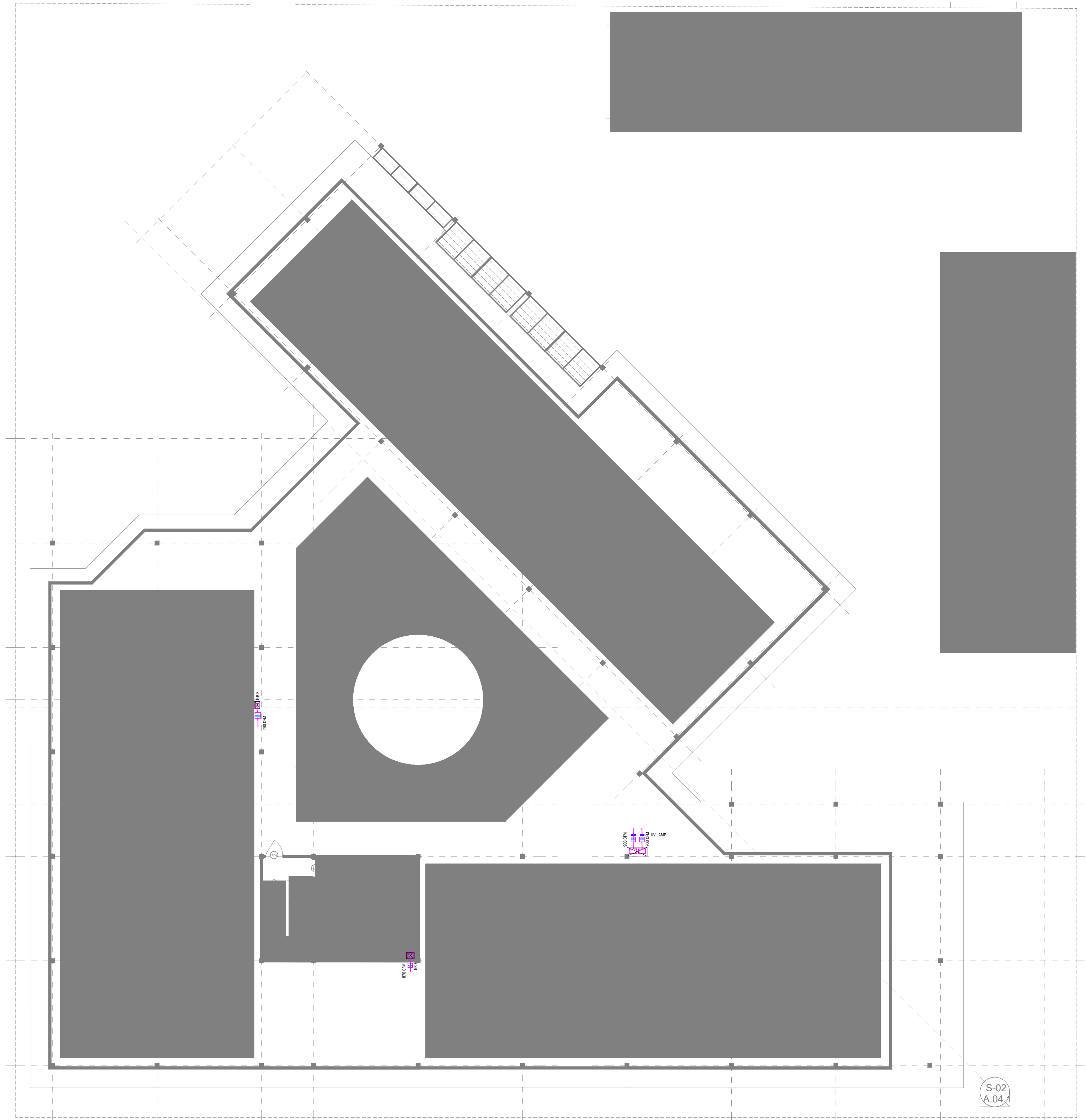
**Indoor unit**  
Air Conditioning Units suitable for mounting inside false ceiling/wall hang, each comprising of cooling coil, blower with motor, electronic expansion valve, filter, insulated connection of refrigerant circuit, provision for fresh air intake ducting, condensate water drain pump with electronic level sensor, including wireless remote controller etc.

**Air Handling Unit (DX type)**  
AHU having 10 double skin (0.6/0.8 mm thick) sandwich panel (PU injected foam with 45 mm thick, minimum density 40-50 kg/cu.m) with thermal break aluminium profile and heavy duty unit base. Air Handling Units complete with, dc coil (copper), motor, SSW/ODW fan, pre filter (MERV 7/8) and fine filters (MERV 13).

**Air Handling Unit (DX type) for OT, ICU, Labour room, Sterile Areas and Accidents and Emergencies**  
AHU having 10 double skin (0.6/0.8 mm thick) sandwich panel (PU injected foam with 45 mm thick, minimum density 40-50 kg/cu.m) with thermal break aluminium profile and heavy duty unit base. Air Handling Units complete with, dc coil (copper), motor, SSW/ODW fan, pre filter (MERV 7/8), fine filters (MERV 13) and HEPA filter(H14).

**NOTE**

- The AC unit shall be suitable for operation under tropical condition with ambient temperature and relative humidity.
- Proper access for easy maintenance to be provided as recommended by the manufacturer of AC equipment above false ceiling.
- All ceiling suspended unit to be provided with anti vibration hangers spring type.
- All Ducting/Pre insulated duct for common areas and AL Ducting for OTs, CSSD and sterile areas.
- Acoustic insulation to be provided for duct with minimum 35mm from each AHU unit except OT and CSSD areas AHUs.
- Curves connection to be provided between indoor unit and duct.
- Aluminium cladding to be provided over the insulation for the exposed duct and pipe works.
- Air outlet shall be completely factory aluminium extruded with powder coated and the color shall be the approval of the interior design.
- Air outlet location and size shall be adjusted to suit reflected ceiling drawing or site condition.
- Lower with bird screen to be provided, for all the fresh air and exhaust air duct.
- Kitchen hood exhaust should be provided in the kitchen areas.
- Contractor shall be responsible to provide electrical power requirements to electrical contractor.
- Contractor shall be responsible for coordination of all other services.
- Contractor shall be responsible to calculating the static pressure for AHU/Exhaust air fan.
- Contractor shall be responsible to modify/change/relocate locate as per the site condition and submit shop drawing for approval.
- Contractor to be provided detailed shop drawings before starting works.
- The minimum Energy Efficient Ratio (EER) value for AC Should be 3.5 (BWHKW).
- All ACV equipment should be anti corrosive coated.



ACV LEGEND & ABBREVIATION	
	AIR HANDLING UNIT
	WALL MOUNTED UNIT
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	OUTDOOR UNIT (SIDE DISCHARGE)
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	REFRIGERANT PIPES WITH INSULATION
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	SUPPLY AIR DUCT WITH THERMAL INSULATION
	RETURN AIR DUCT WITH THERMAL INSULATION
	EXHAUST AIR DUCT
	FRESH AIR DUCT
	VOLUME CONTROL DAMPER
	SUPPLY AIR DIFFUSER WITH DAMPER
	RETURN AIR DIFFUSER WITH DAMPER
	EXHAUST AIR GRILL
	150MM WIDTH SUPPLY AND RETURN AIR GRILL
T/B	TO BELOW
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**SPECIFICATION FOR VRF/VRV**

**Outdoor Unit**  
Air cooled VRF / VRV system working in R410A / R - 407C or equivalent refrigerant. The system shall be suitable to operate on 3 phase, 380-415 V, 50Hz AC power supply & shall comprises with multiple no's of inverter, digital scroll/screw compressors, air cooled condenser fan with motor, microprocessor control panel, starter controls for all scroll compressors and condenser fan motors along with thermal control and power wiring, cooling coil with internally interconnected refrigerant pipes, charging port and all other required accessories & hardware's. The entire unit shall be with weather resistant powder coating paint for withstanding all ambient conditions for continuous outdoor operation

**Indoor unit**  
Air Conditioning Units suitable for mounting inside false ceiling/wall hang, each comprising of cooling coil, blower with motor, electronic expansion valve, filter, insulated connection of refrigerant circuit, provision for fresh air intake ducting, condensate water drain pump with electronic level sensor, including wireless remote controller etc

**Air Handling Unit (GX type)**  
AHU having GI double skin (0.6/0.8 mm thick) sandwich panel ( PU injected foam with 45 mm thick, minimum density 40-50 kg/cu.m) with thermal break aluminium profile and heavy duty unit base. Air Handling Units complete with, oil coil (copper), motor, SSW/ODOW fan, pre filter (MERV 7/8) and fine filters (MERV 13).

**Air Handling Unit (GX type) for OT,NCU, Labour room,Sterile Areas and Accidents and Emergencies**  
AHU having GI double skin (0.6/0.8 mm thick) sandwich panel ( PU injected foam with 45 mm thick, minimum density 40-50 kg/cu.m) with thermal break aluminium profile and heavy duty unit base. Air Handling Units complete with, oil coil (copper), motor, SSW/ODOW fan, pre filter (MERV 7/8), fine filters (MERV 13) and HEPA Filter(H14)

**NOTE**

- The AC unit shall be suitable for operation under tropical condition with ambient temperature and relative humidity.
- Proper access for easy maintenance to be provided as recommended by the manufacturer of AC equipment above false ceiling
- All ceiling suspended unit to be provided with anti vibration hangers spring type
- GI Ducting/Pre insulated duct for common areas and AL Ducting for OTs, CSSD and sterile areas
- Acoustic insulation to be provided for duct with minimum 35qin from each AHU unit except OT and CSSD areas AHUs
- Cavies connection to be provided between indoor unit and duct
- Aluminium cladding to be provided over the insulation for the exposed duct and pipe works
- Air outlet shall be completely factory aluminium extruded with powder coated and the colour shall be the approval of the interior design
- Air outlet location and size shall be adjusted to suit reflected ceiling drawing or site condition
- Louver with bird screen to be provided for all the fresh air and exhaust air duct
- Kitchen hood exhaust should be provided in the kitchen areas
- Contractor shall be responsible to provide electrical power requirements to electrical contractor
- Contractor shall be responsible for coordination of all other services
- Contractor shall be responsible to calculating the static pressure for AHU/Exhaust air fan
- Contractor shall be responsible to modify change/relocate/locate as per the site condition and submit shop drawing for approval
- Contractor to be provided detailed shop drawings before starting works
- The minimum Energy Efficient Ratio (EER) value for AC Should be 3.5 [kW/kW]
- All ACV equipment should be anti corrosive coated

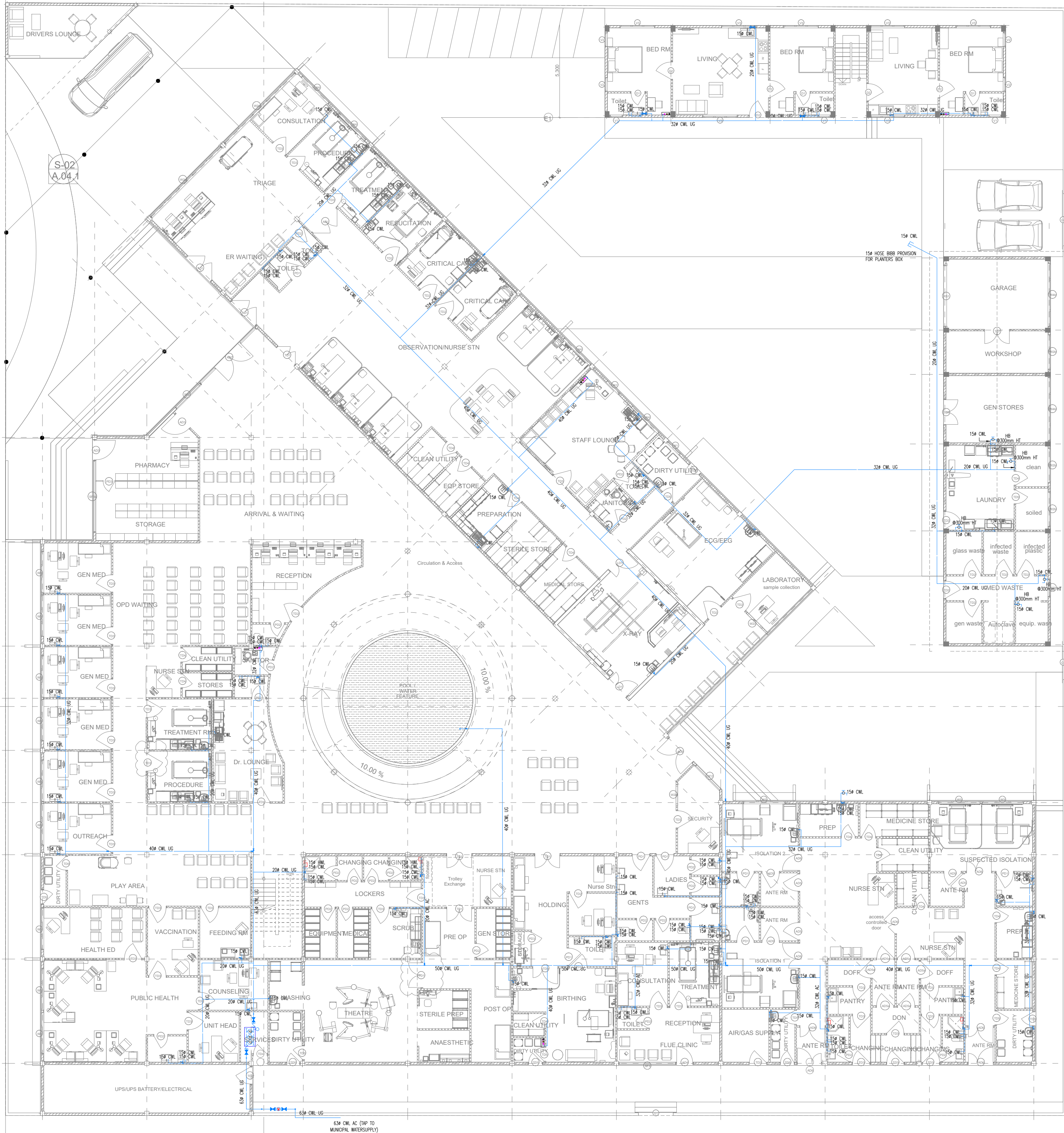
Hospital Design  
Client: Ministry of Health

Project Number: 622387MCH  
Date: October 2022  
Architect: Zuhairah Abdul Majid  
Engineer: Nishesh Kamel Puranjani  
Surveyor: Ibrahim Mohamed Ewan  
Saraoneing Sundharalingam & Mark Kern Brito

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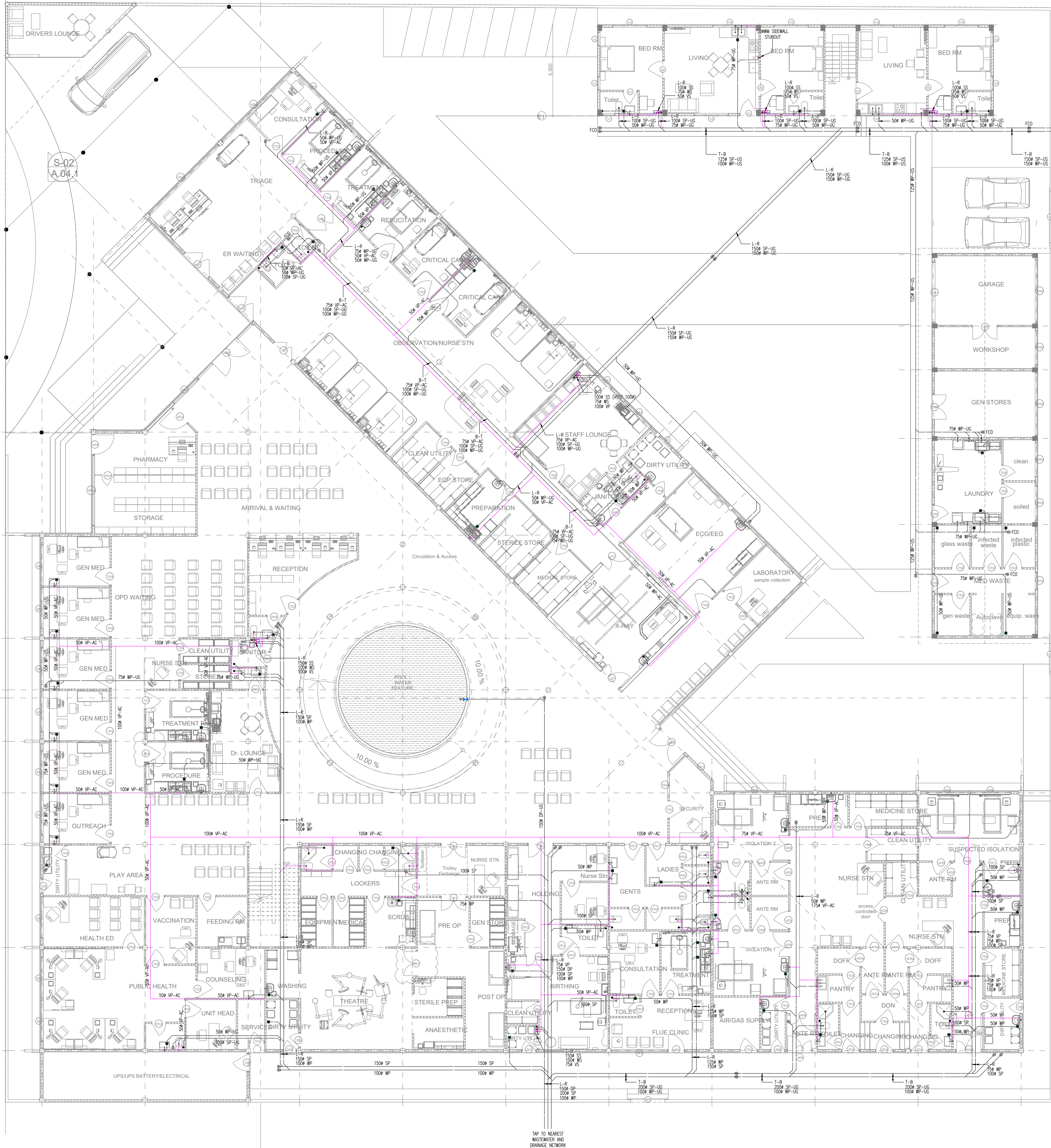


GROUND FLOOR PLUMBING LAYOUT  
SCALE 1:150  
1 2 3 4 5



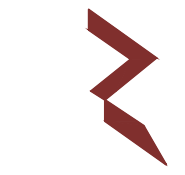






GROUND FLOOR DRAINAGE LAYOUT  
SCALE 1:150

Hospital Design  
Client: Ministry of Health



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E: info@ryan.com.mv  
W: www.ryan.com.mv  
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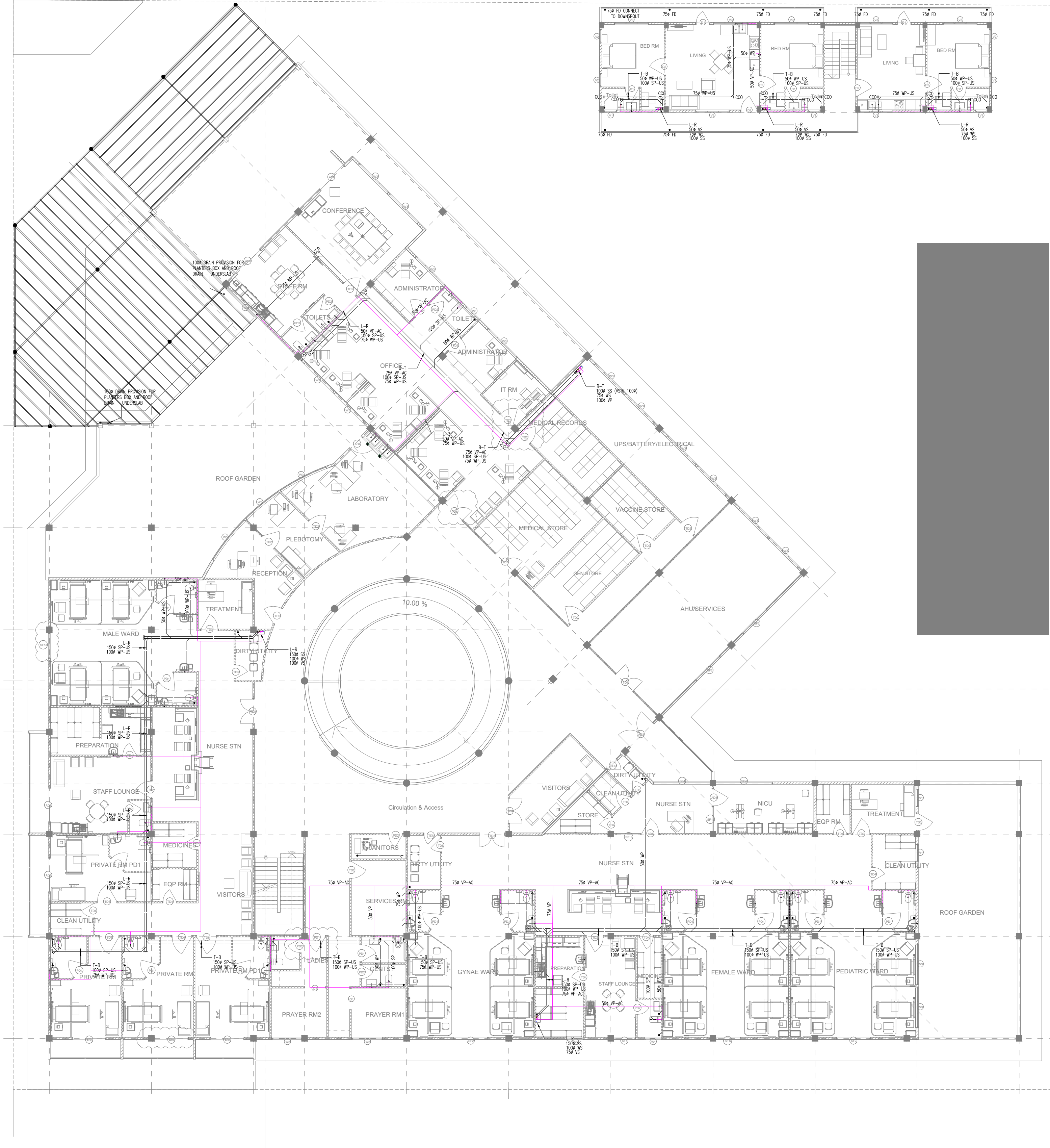
Title: Ground Floor  
Drainage Layout

Page: DR-01/03

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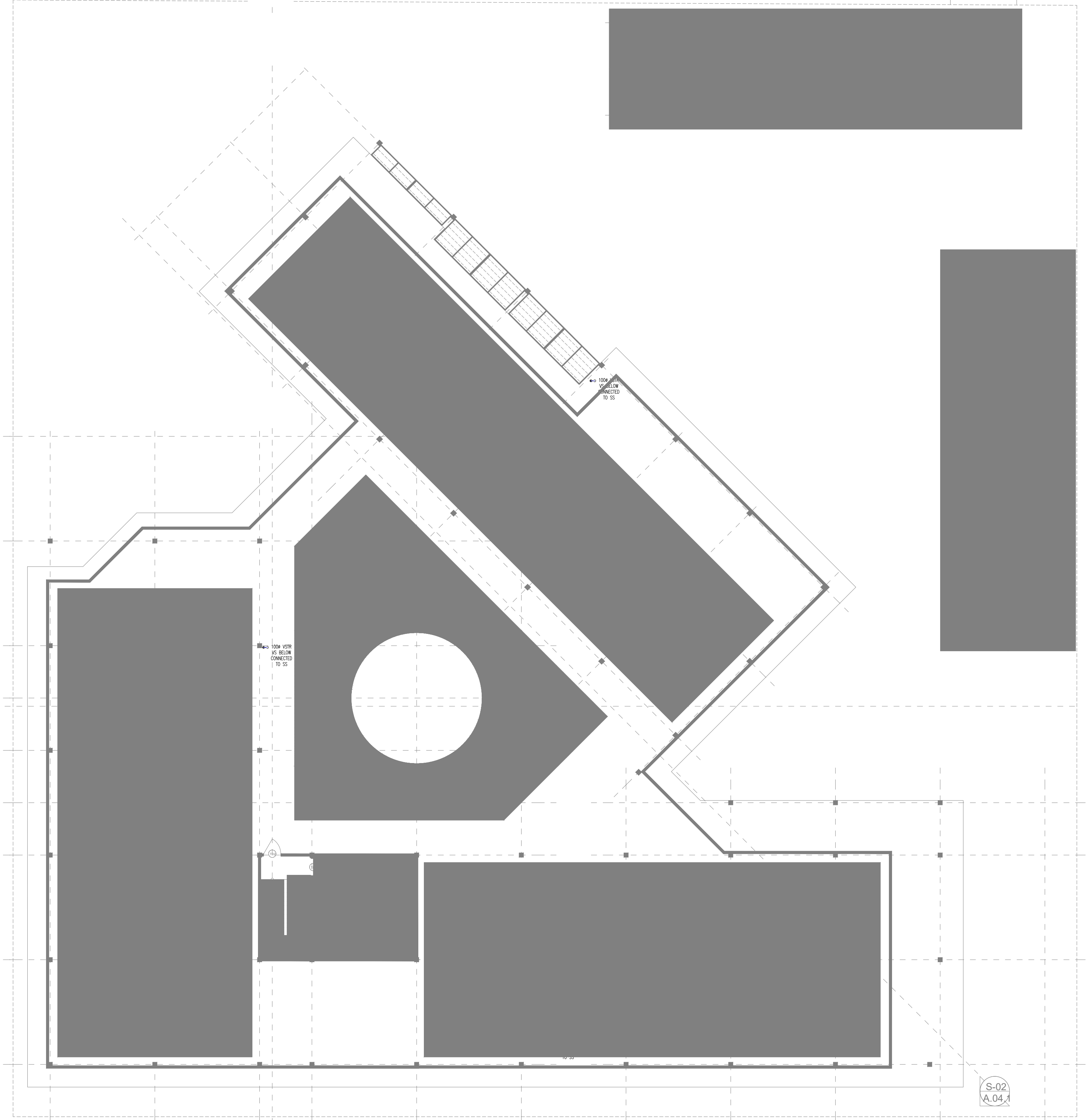




FIRST FLOOR DRAINAGE LAYOUT  
SCALE 1:100

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TERRACE FLOOR DRAINAGE LAYOUT  
SCALE 1:150  
0' 25' 1' 2' 3' 4'

Hospital Design  
Client: Ministry of Health

Project Number: 622387MCH  
Date: October 2022  
Architect: Zuhairah Abdul Majid  
Engineer: Nithesh Karmel Purayyan  
Surveyor: Ibrahim Mohamed Ewan  
Saraonary Sundharanigam & Mark Kern Brito

Rev no  
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Date  
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3rd floor, 11, Azim, Ameenemogga, Malé

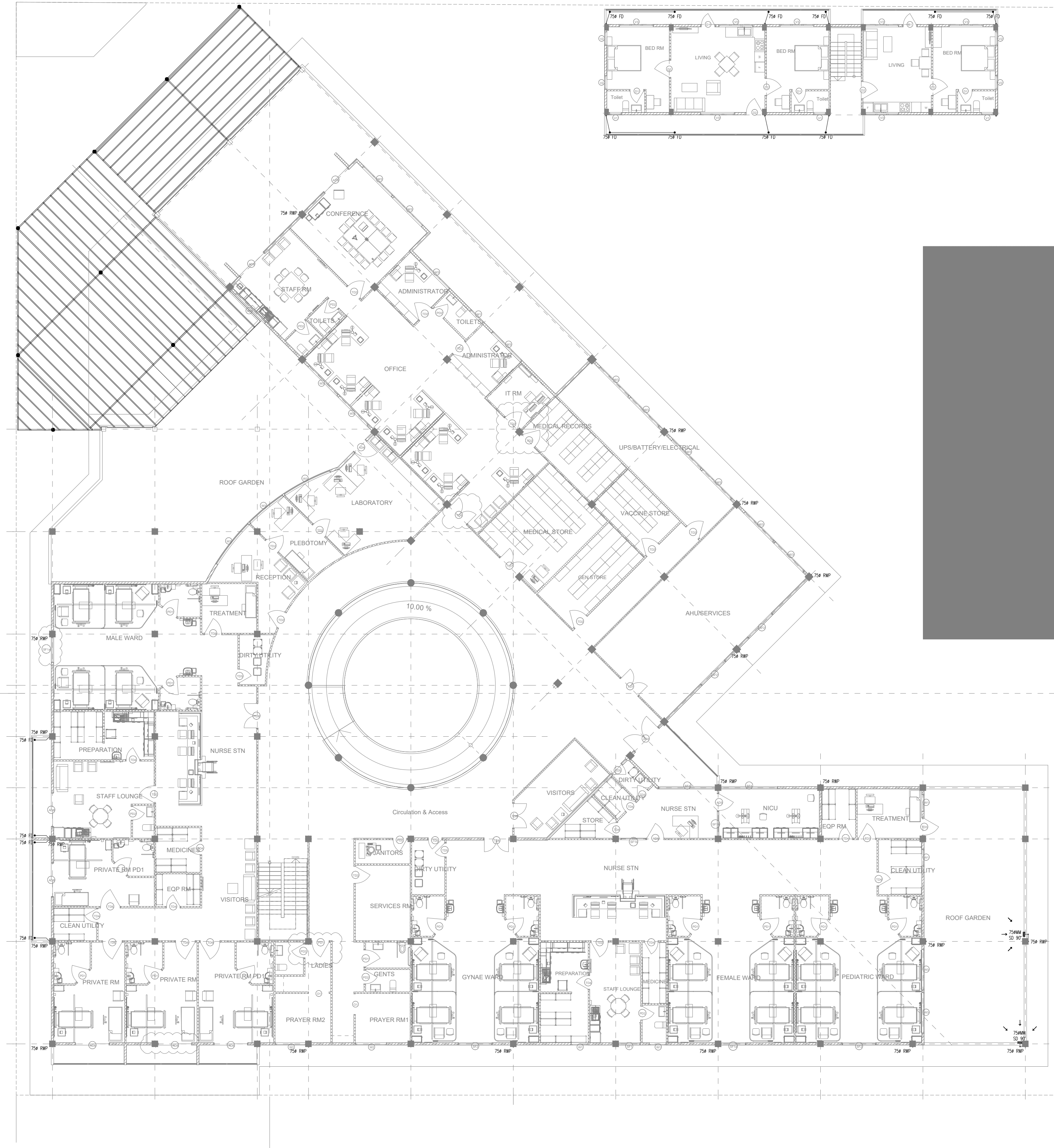
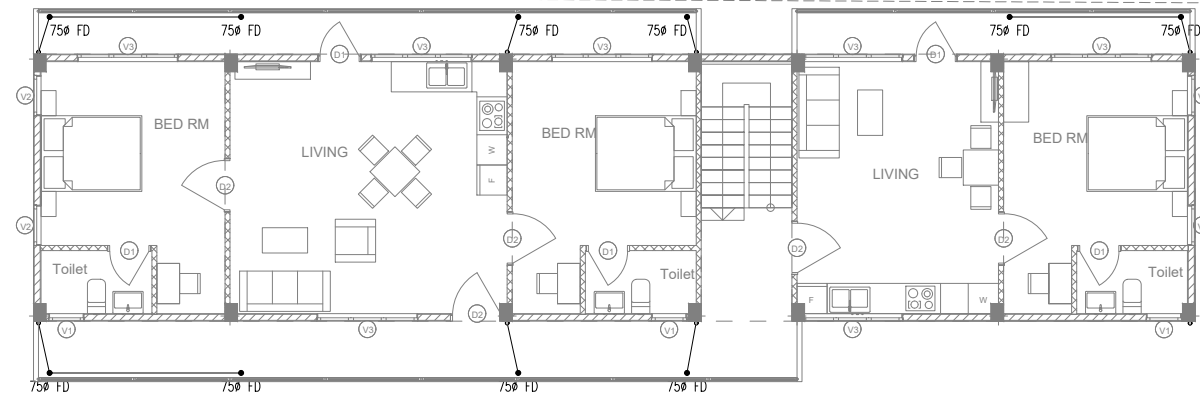
Title: Terrace Floor  
Drainage Layout

Page: DR-03 /03

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FIRST FLOOR STORM LAYOUT  
SCALE 1:150

Hospital Design  
Client: Ministry of Health

Project Number: 62387MCH  
Date: October 2022  
Architect: Zuhairah Abdul Majid  
Engineer: Nishesh Kamel Puranjani  
Surveyor: Ibrahim Mohamed Ewan  
Safwaning Sundharalingam & Mark Kern Brito

Rev no	Date
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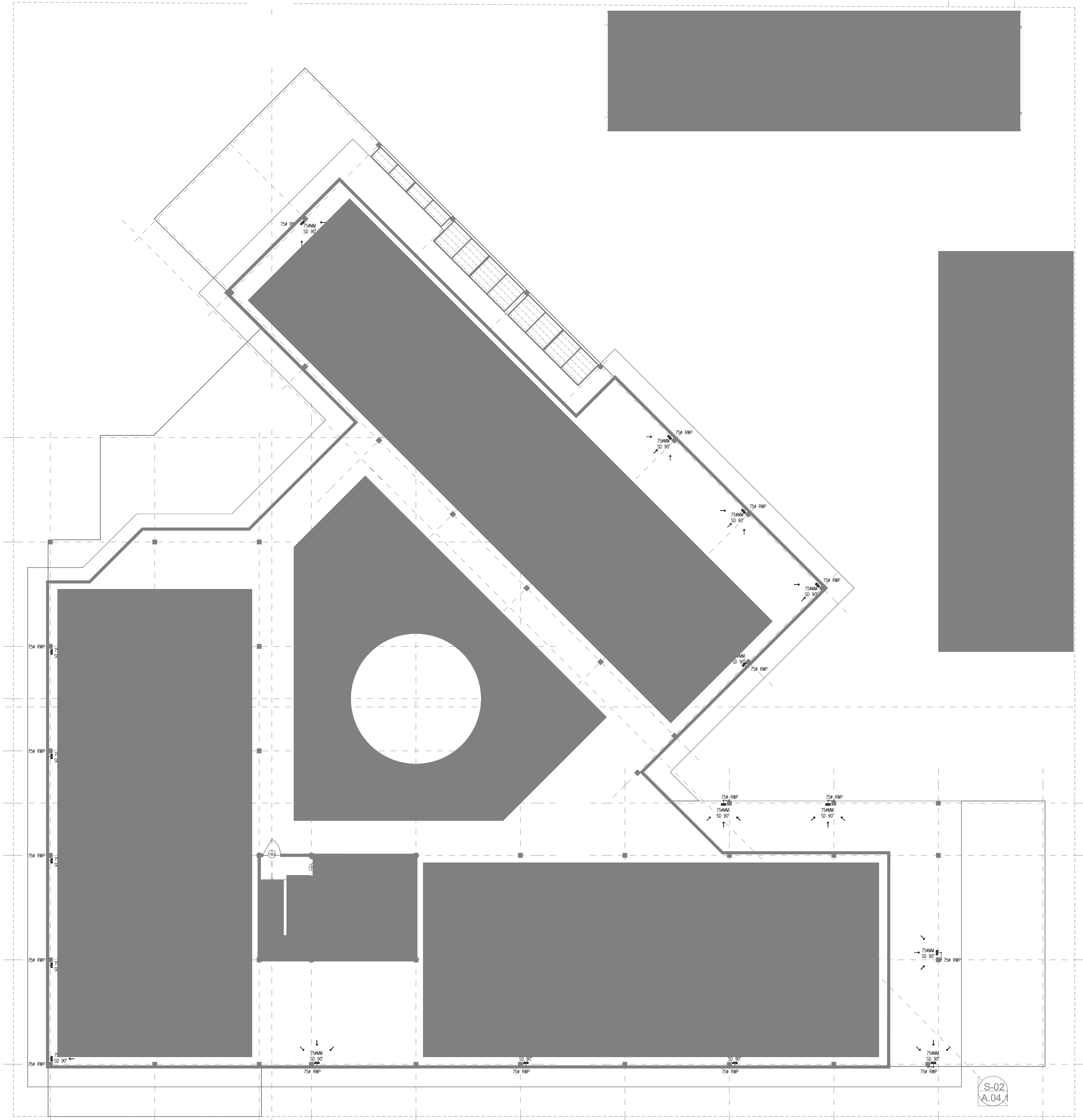
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Title: First Floor  
Storm Layout

Page: ST-02 /03

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TERRACE FLOOR STORM LAYOUT  
SCALE 1:150  
0' 1' 2' 3' 4'

Hospital Design  
Client: Ministry of Health

Project Number: 622387MCH  
Date: October 2022  
Architect: Zuhairah Abdul Majid  
Engineer: Nithesh Karmel Purusajan  
Surveyor: Ibrahim Mohamed Ewan  
Saraonang Sundharalingam & Mark Kern Brito

Rev no  
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Date  
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3rd floor, H. Azim, Amereemagala, Malé

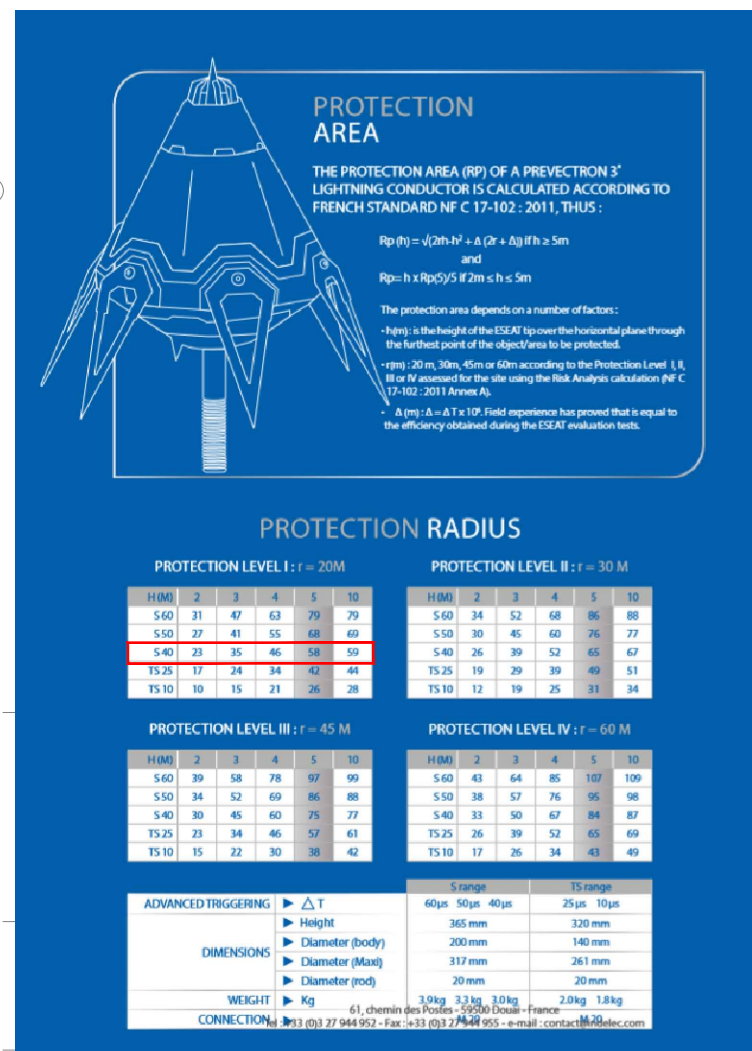
Title: Terrace Floor  
Storm Layout

Page: ST-03 /03

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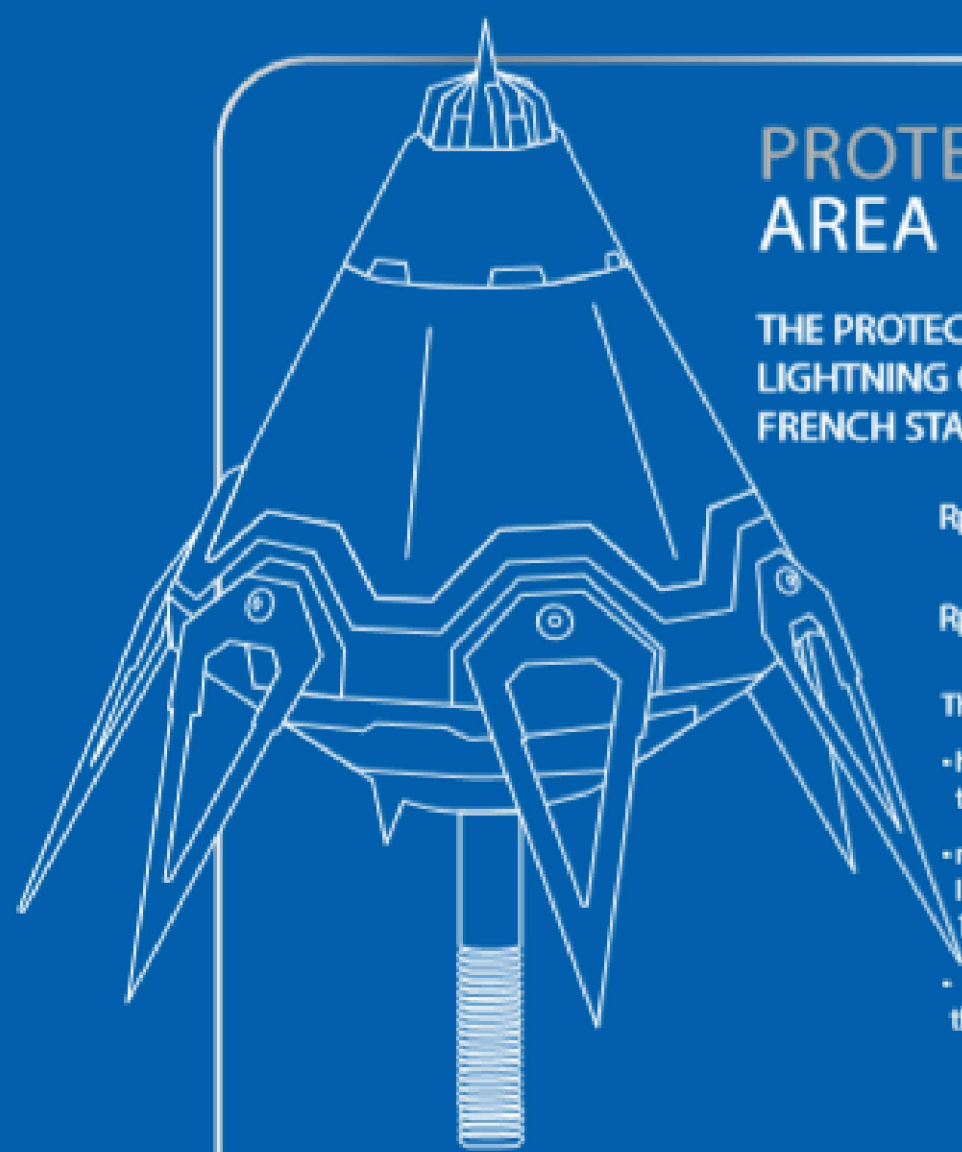






**TERRACE FLOOR LIGHTING  
PROTECTION LAYOUT**  
SCALE 1:150





# PROTECTION AREA

THE PROTECTION AREA (RP) OF A PREVETRON 3\* LIGHTNING CONDUCTOR IS CALCULATED ACCORDING TO FRENCH STANDARD NF C 17-102 : 2011, THUS :

$$R_p(h) = \sqrt{(2rh-h^2 + \Delta(2r+\Delta))}$$
 if  $h \geq 5m$   
and  
$$R_p = h \times R_p(5)/5$$
 if  $2m \leq h \leq 5m$

- The protection area depends on a number of factors :
- $h(m)$  : is the height of the ESEAT tip over the horizontal plane through the furthest point of the object/area to be protected.
  - $r(m)$  : 20 m, 30m, 45m or 60m according to the Protection Level I, II, III or IV assessed for the site using the Risk Analysis calculation (NF C 17-102 : 2011 Annex A).
  - $\Delta(m)$  :  $\Delta = \Delta T \times 10^\circ$ . Field experience has proved that is equal to the efficiency obtained during the ESEAT evaluation tests.

# PROTECTION RADIUS

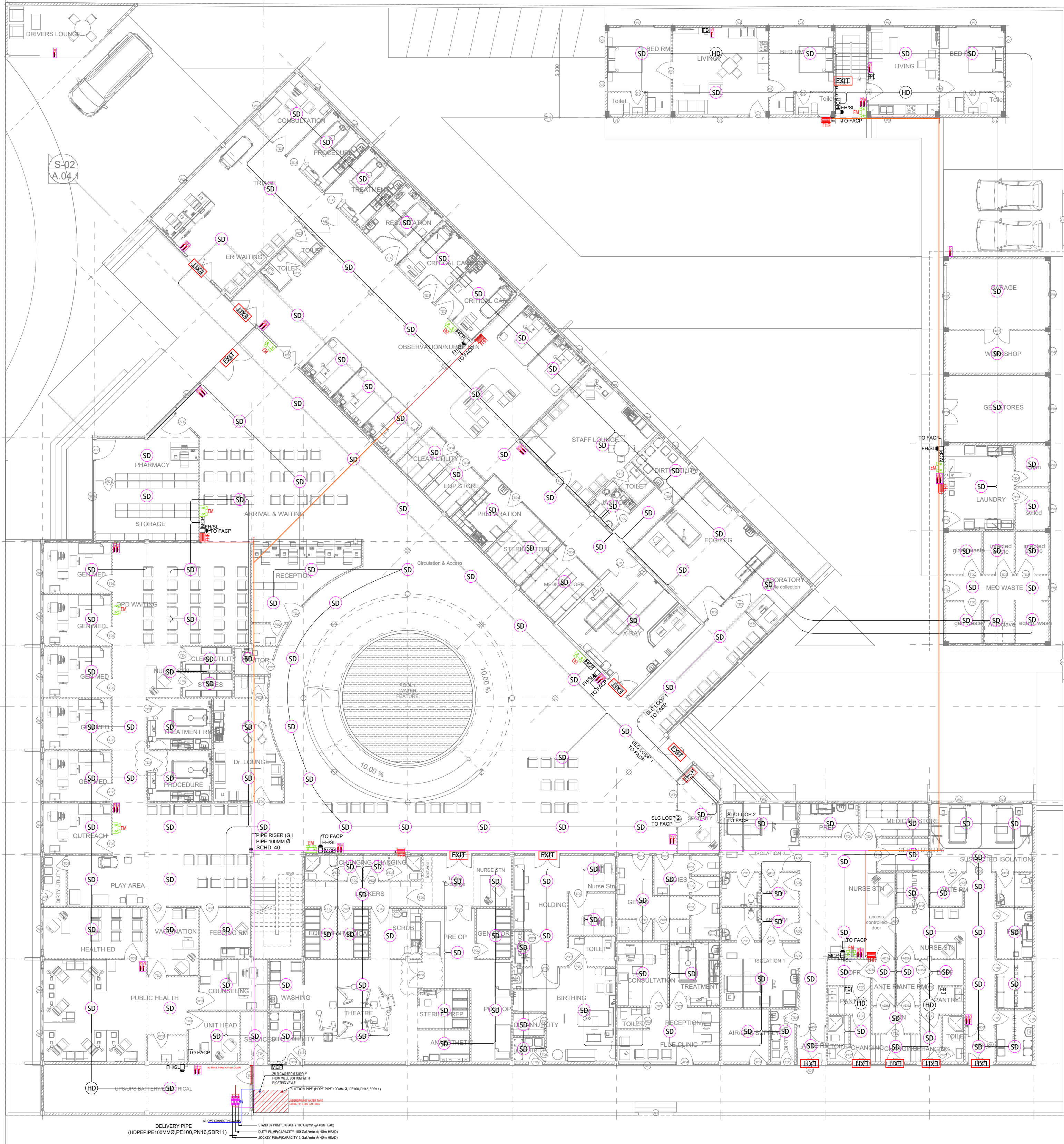
PROTECTION LEVEL I : r = 20M						PROTECTION LEVEL II : r = 30 M					
H (M)	2	3	4	5	10	H (M)	2	3	4	5	10
S 60	31	47	63	79	79	S 60	34	52	68	86	88
S 50	27	41	55	68	69	S 50	30	45	60	76	77
S 40	23	35	46	58	59	S 40	26	39	52	65	67
TS 25	17	24	34	42	44	TS 25	19	29	39	49	51
TS 10	10	15	21	26	28	TS 10	12	19	25	31	34

PROTECTION LEVEL III : r = 45 M						PROTECTION LEVEL IV : r = 60 M					
H (M)	2	3	4	5	10	H (M)	2	3	4	5	10
S 60	39	58	78	97	99	S 60	43	64	85	107	109
S 50	34	52	69	86	88	S 50	38	57	76	95	98
S 40	30	45	60	75	77	S 40	33	50	67	84	87
TS 25	23	34	46	57	61	TS 25	26	39	52	65	69
TS 10	15	22	30	38	42	TS 10	17	26	34	43	49

ADVANCED TRIGGERING		S range		TS range	
DIMENSIONS	▶ $\Delta T$	60µs	50µs 40µs	25µs	10µs
	▶ Height	365 mm		320 mm	
	▶ Diameter (body)	200 mm		140 mm	
	▶ Diameter (Maxi)	317 mm		261 mm	
WEIGHT	▶ Diameter (rod)	20 mm		20 mm	
	▶ Kg	3.9kg 3.3 kg 3.0 kg		2.0kg 1.8 kg	
CONNECTION		61, chemin des Postes - 59500 Douai - France			

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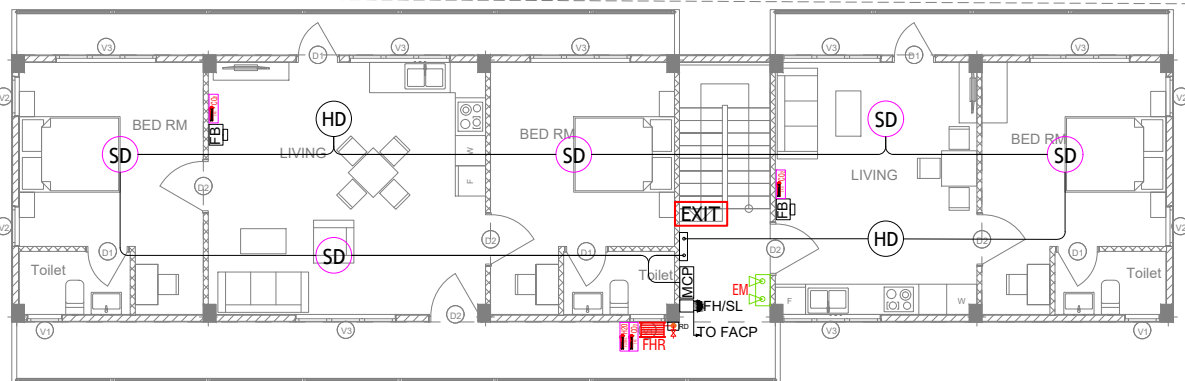




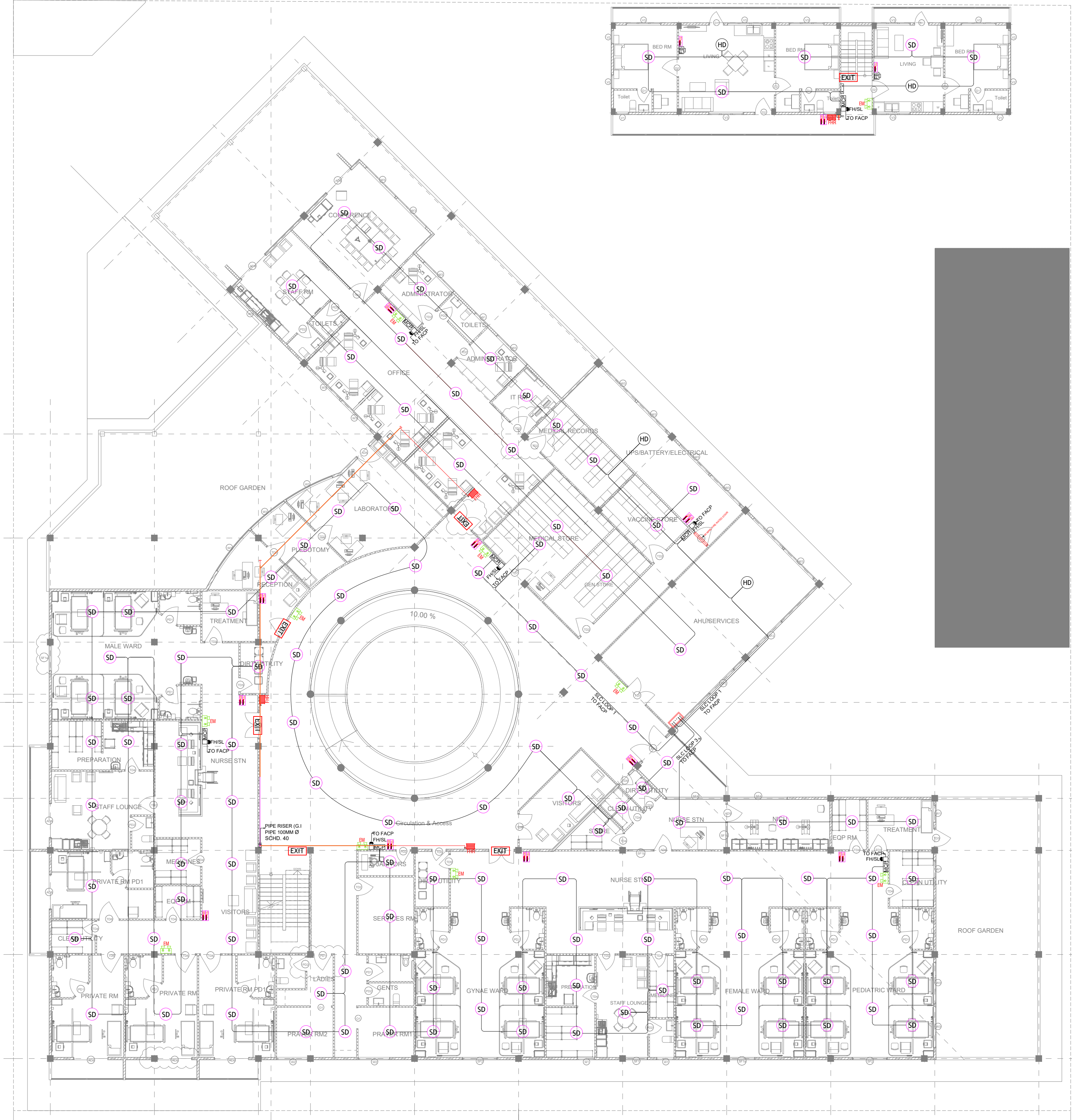
LEGEND : FDP SYSTEM		
1	SMOKE DETECTOR - ADDRESSABLE/ANALOG	SD
2	HEAT DETECTOR - ADDRESSABLE/ANALOG	HD
3	FIRE ALARM CONTROL PANEL	FACP
4	FIRE MANUAL CALL POINT	MCP
5	FIRE ALARM SOUNDER WITH STROBE LIGHT 95DB	FHSL
6	FIRE RESISTANT CABLE 1.5MM² X 2 CORE	
7	FIRE BLANKET	FB
8	FIRE EXTINGUISHERS - 9 LTRS H2O & 2KG Co2	FE
9	FIRE EXTINGUISHERS - 50KG TROLLEY DCP & 2KG DCP	FE
10	FIRE HOSE REEL W/ 25mm HOSE & 30 METERS	FHR
11	EMERGENCY LIGHT	EL
12	EXIT SIGNS LIGHT W/ BACK UP BATTERIES	EXIT
13	MWSC WATER METER	M
14	25 MMø AIR RELEASE VALVE	ARV
15	PVC PIPE - 40MMø CONNECTION TO FILL FIRE TANK	
16	PIPE RISER - GI PIPE 100MMø, SCHEDULE 40	GI 100
17	PIPE RISER - GI PIPE 25MMø, SCHEDULE 40	GI 25
18	PIPE RISER - GI PIPE 50MMø, SCHEDULE 40	GI 50
19	PIPE RISER - GI PIPE 25MMø, SCHEDULE 40	GI 25
20	PIPE HDPE 100MMø, PE100, PN16, SDR11	HDPE 100
21	FIRE PUMP SYSTEM CONSIST OF ELECTRICAL DUTY PUMP & DIESEL STAND BY PUMP - PUMPS CAPACITY IS 100 GPM @ 40M HEAD - JOCKEY PUMPS IS 3 GPM @ 40m HEAD	FPS
22	FIRE RATED DOOR - 90 MINS.	FRD

GROUND FLOOR FDP LAYOUT  
SCALE: 1:150



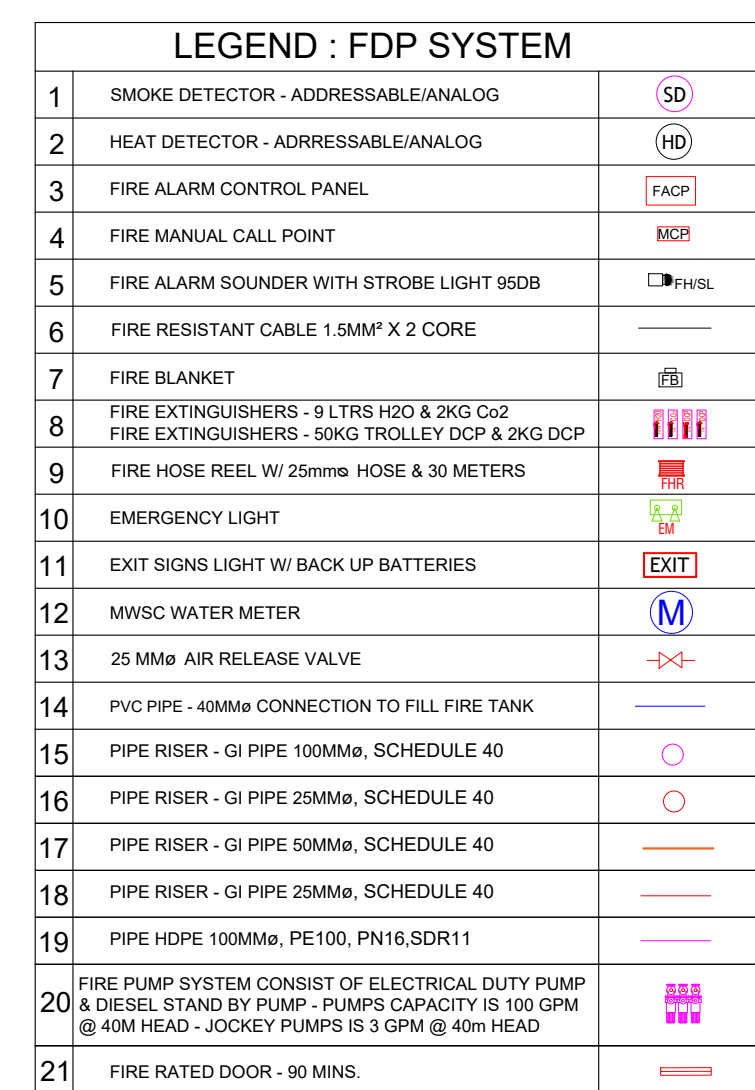


LEGEND : FDP SYSTEM		
1	SMOKE DETECTOR - ADDRESSABLE/ANALOG	SD
2	HEAT DETECTOR - ADDRESSABLE/ANALOG	HD
3	FIRE ALARM CONTROL PANEL	FACP
4	FIRE MANUAL CALL POINT	MCP
5	FIRE ALARM SOUNDER WITH STROBE LIGHT 95DB	FHSL
6	FIRE RESISTANT CABLE 1.5MM² X 2 CORE	
7	FIRE BLANKET	FB
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8	FIRE EXTINGUISHERS - 50KG TROLLEY DCP & 2KG DCP	
9	FIRE HOSE REEL W/ 25mm HOSE & 30 METERS	FR
10	EMERGENCY LIGHT	EL
11	EXIT SIGNS LIGHT W/ BACK UP BATTERIES	EXIT
12	MWSC WATER METER	M
13	25 MMø AIR RELEASE VALVE	
14	PVC PIPE - 40MMø CONNECTION TO FILL FIRE TANK	
15	PIPE RISER - GI PIPE 100MMø, SCHEDULE 40	
16	PIPE RISER - GI PIPE 25MMø, SCHEDULE 40	
17	PIPE RISER - GI PIPE 50MMø, SCHEDULE 40	
18	PIPE RISER - GI PIPE 25MMø, SCHEDULE 40	
19	PIPE HDPE 100MMø, PE100, PN16, SDR11	
20	FIRE PUMP SYSTEM CONSIST OF ELECTRICAL DUTY PUMP & DIESEL STAND BY PUMP - PUMPS CAPACITY IS 100 GPM @ 40M HEAD - JOCKEY PUMPS IS 3 GPM @ 40m HEAD	
21	FIRE RATED DOOR - 90 MINS.	




FIRST FLOOR FDP LAYOUT  
SCALE 1:100





**Hospital Design**  
**Client:** Ministry of Health  
**Project Number:** R22BPHCH  
**Date:** October 2022  
**Architect:** Zuhairah Abdul Majid  
**Engineer:** S Nithesh Kamel Pungaj,  
Islam Mohamed Evans,  
Suresh Kumar & Mark Kevin Brown

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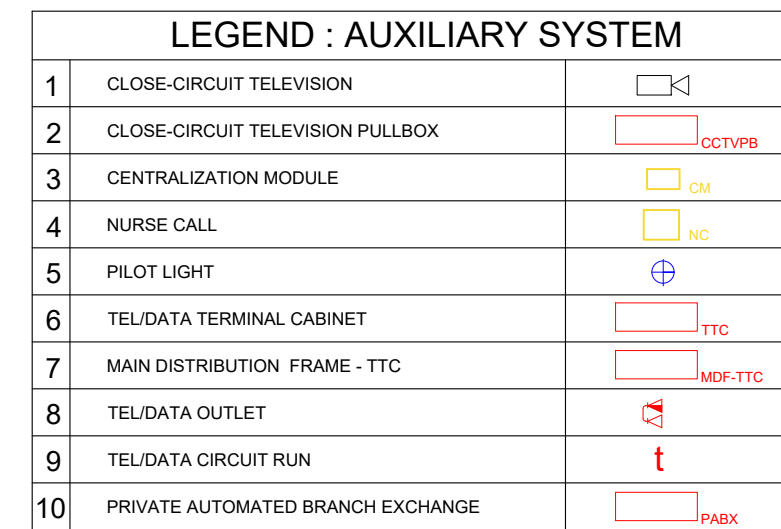
  
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3rd floor, H. Alwan, Al-Haramayyeh, Male'

**Title:** Terrace Floor  
FDP Layout

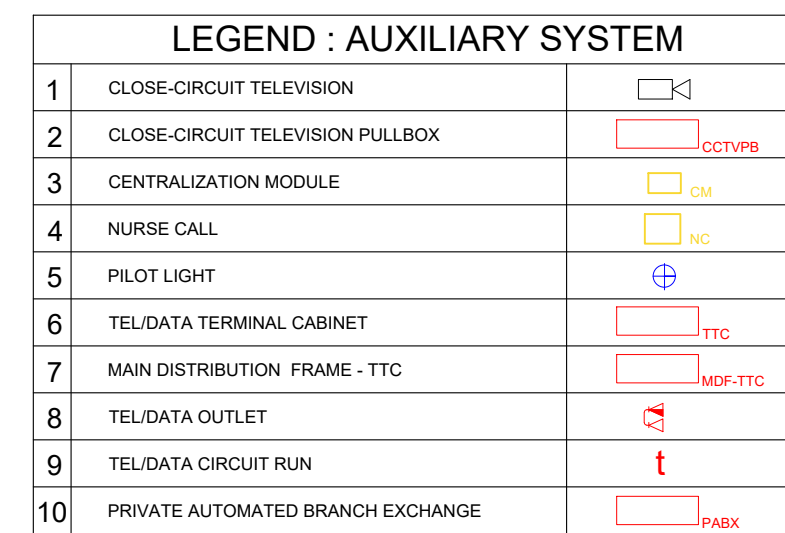
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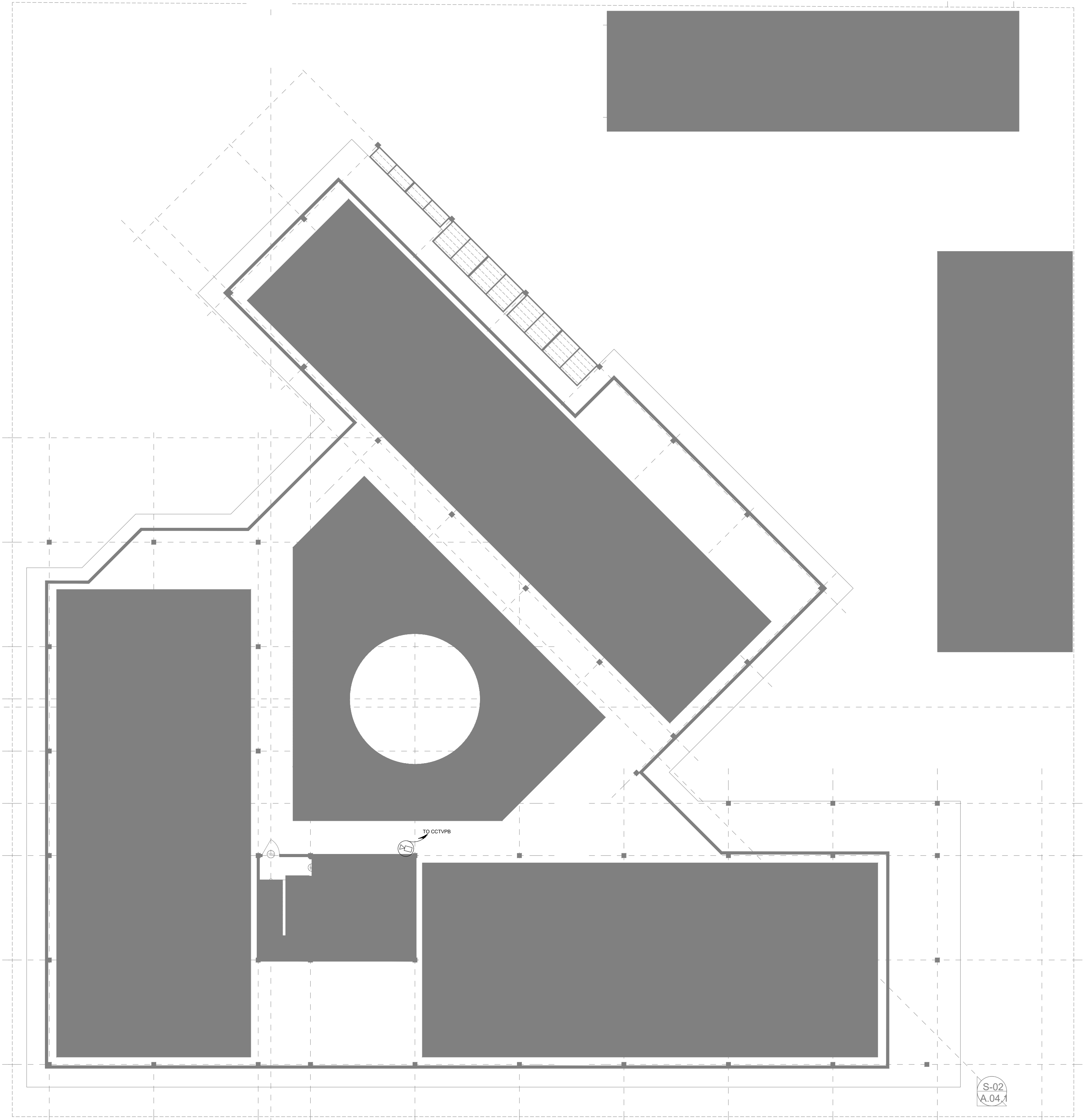


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<b>Rev no</b>	<b>Date</b>
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LEGEND : AUXILIARY SYSTEM		
1	CLOSE-CIRCUIT TELEVISION	
2	CLOSE-CIRCUIT TELEVISION PULLBOX	
3	CENTRALIZATION MODULE	
4	NURSE CALL	
5	PILOT LIGHT	
6	TEL/DATA TERMINAL CABINET	
7	MAIN DISTRIBUTION FRAME - TTC	
8	TEL/DATA OUTLET	
9	TEL/DATA CIRCUIT RUN	
10	PRIVATE AUTOMATED BRANCH EXCHANGE	

S-02  
A.04.1

TERRACE FLOOR  
INFORMATION & COMMUNICATION TECHNOLOGY / SECURITY  
SCALE 1:150

Hospital Design  
Client: Ministry of Health

Project Number: 6323874/CH  
Date: October 2022  
Architect: Zuhairah Abdul Majid  
Engineer: Nihesh Karmel Purusjan  
Surveyor: Ibrahim Mohamed Ewan  
Saraanang Sundharalingam & Mark Kern Brito

Rev no	Date
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RYAN PRIVATE LIMITED

t : +9603375049 f : +9603330776  
e : info@ryan.com.mv  
w : www.ryan.com.mv  
3rd floor, 11, Azam, Ameenemogga, Malé

Title: Terrace Floor

ICT- Security Layout

Page: ICT-03 /03

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**Project Name:** Hospital Design

04.10.2022

# Documentation

## Customer Details

Company

Customer Number

Contact person

Address

Phone

Fax

E-Mail

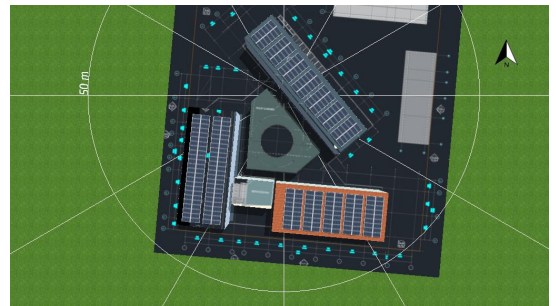
## Project Data

Project Name Hospital Design

Offer no.

Project Designer

Address





## Project Overview

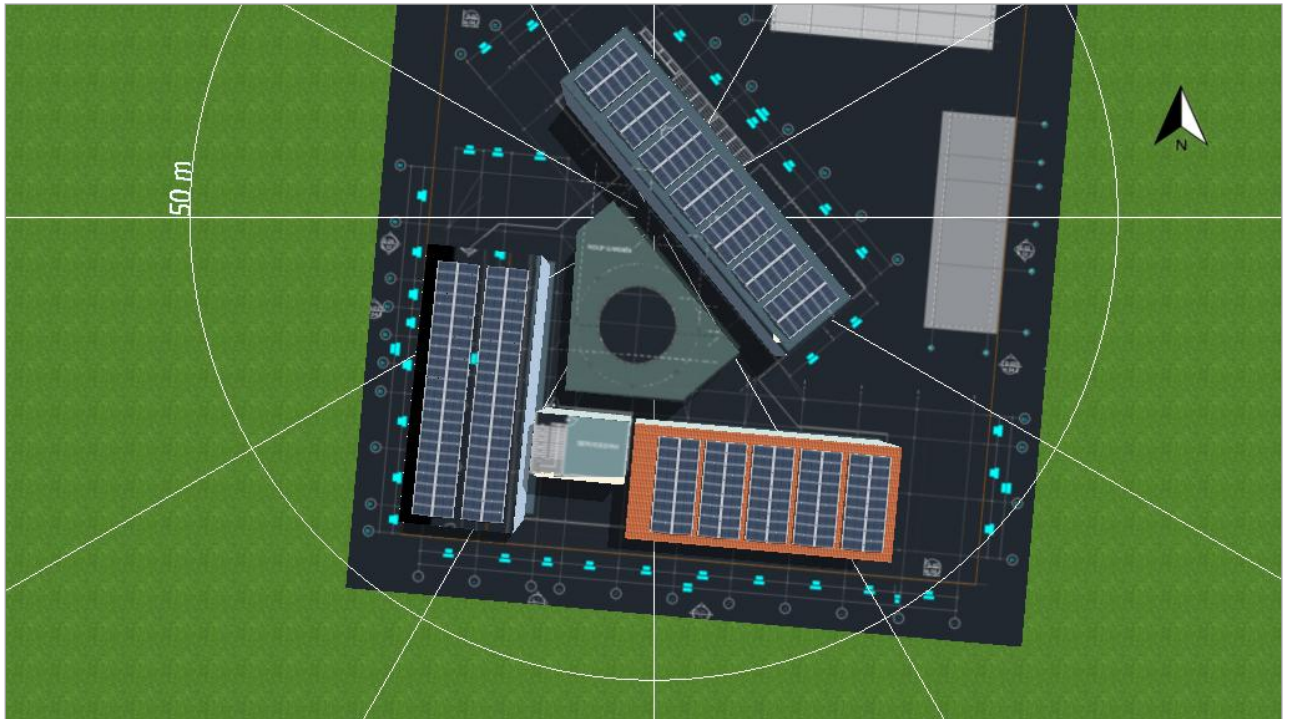


Figure: Overview Image, 3D Design

## PV System

### 3D, Grid-connected PV System

Climate Data	MDV (1996 - 2015)
Values source	Meteonorm 8.1(i)
PV Generator Output	122,85 kWp
PV Generator Surface	590,2 m <sup>2</sup>
Number of PV Modules	270
Number of Inverters	3

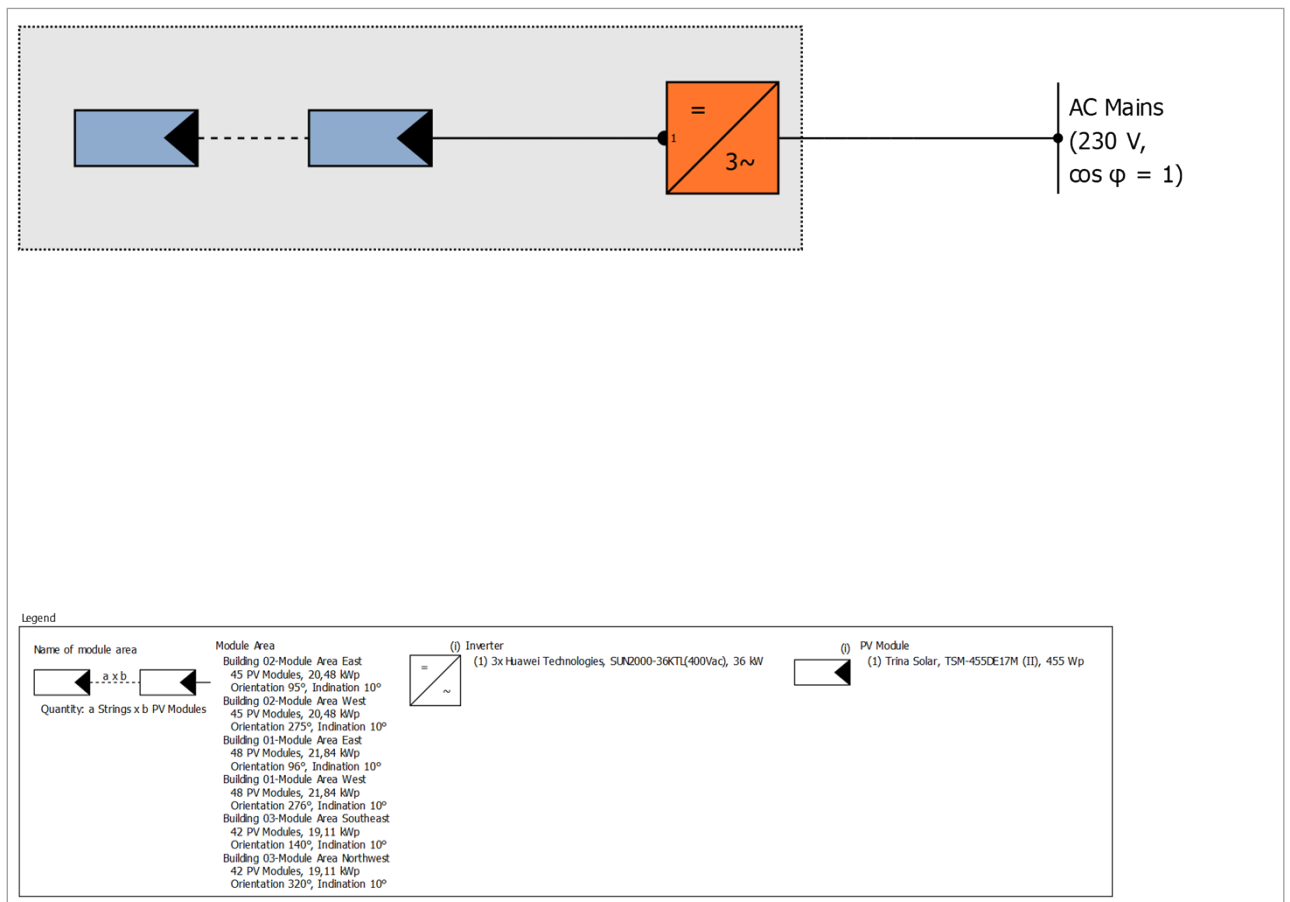


Figure: Schematic diagram

## Production Forecast

### Production Forecast

PV Generator Output	122,85 kWp
Spec. Annual Yield	1 557,51 kWh/kWp
Performance Ratio (PR)	79,41 %
Yield Reduction due to Shading	0,7 %/Year
Grid Feed-in	191 370 kWh/Year
Grid Feed-in in the first year (incl. module degradation)	188 718 kWh/Year
Standby Consumption (Inverter)	30 kWh/Year
CO <sub>2</sub> Emissions avoided	89 930 kg / year

The results have been calculated with a mathematical model calculation from Valentin Software GmbH (PV\*SOL algorithms). The actual yields from the solar power system may differ as a result of weather variations, the efficiency of the modules and inverter, and other factors.



# Set-up of the System

## Overview

### System Data

Type of System	3D, Grid-connected PV System
----------------	------------------------------

### Climate Data

Location	MDV (1996 - 2015)
Values source	Meteonorm 8.1(i)
Resolution of the data	1 h
Simulation models used:	
- Diffuse Irradiation onto Horizontal Plane	Hofmann
- Irradiance onto tilted surface	Hay & Davies

## Module Areas

### 1. Module Area - Building 02-Module Area East

#### PV Generator, 1. Module Area - Building 02-Module Area East

Name	Building 02-Module Area East
PV Modules	45 x TSM-455DE17M (II) (v1)
Manufacturer	Trina Solar
Inclination	10 °
Orientation	East 95 °
Installation Type	Mounted - Roof
PV Generator Surface	98,4 m²

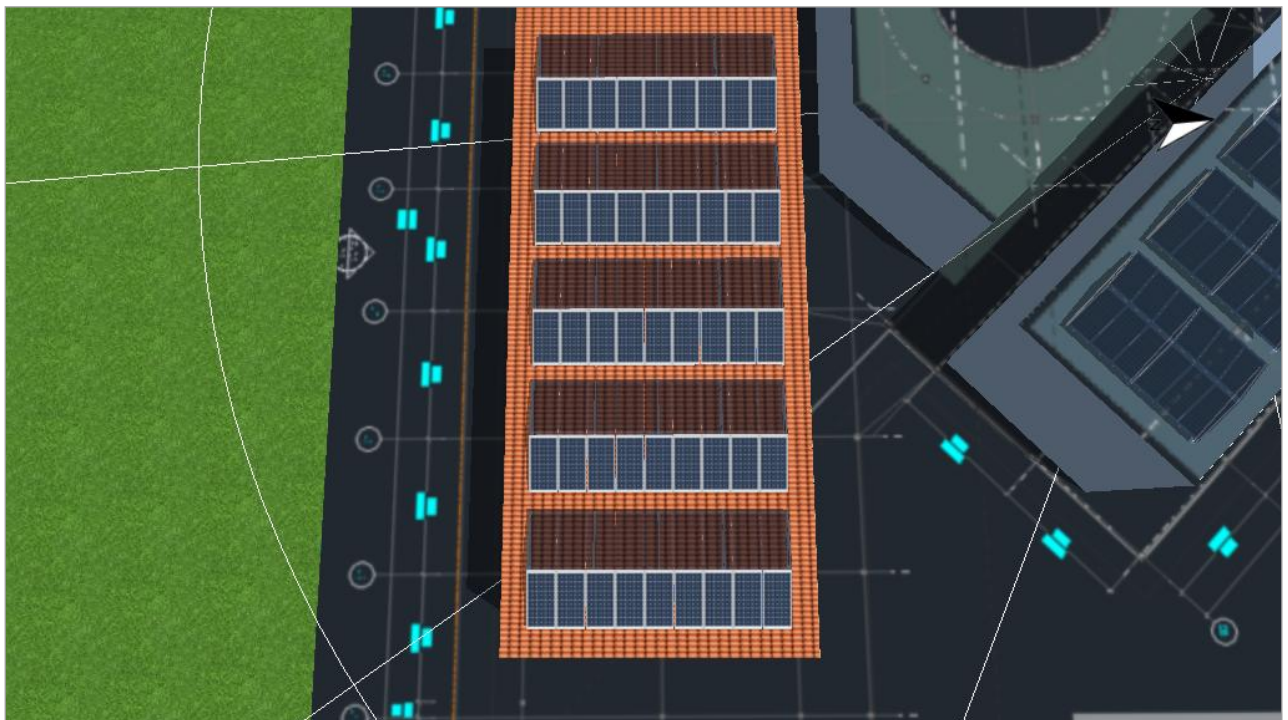


Figure: 1. Module Area - Building 02-Module Area East

## Degradation of Module, 1. Module Area - Building 02-Module Area East

Characteristic curve	Exponential
Remaining power (power output) after 1 year	97,5 %
Remaining power (power output) after 30 years	83 %

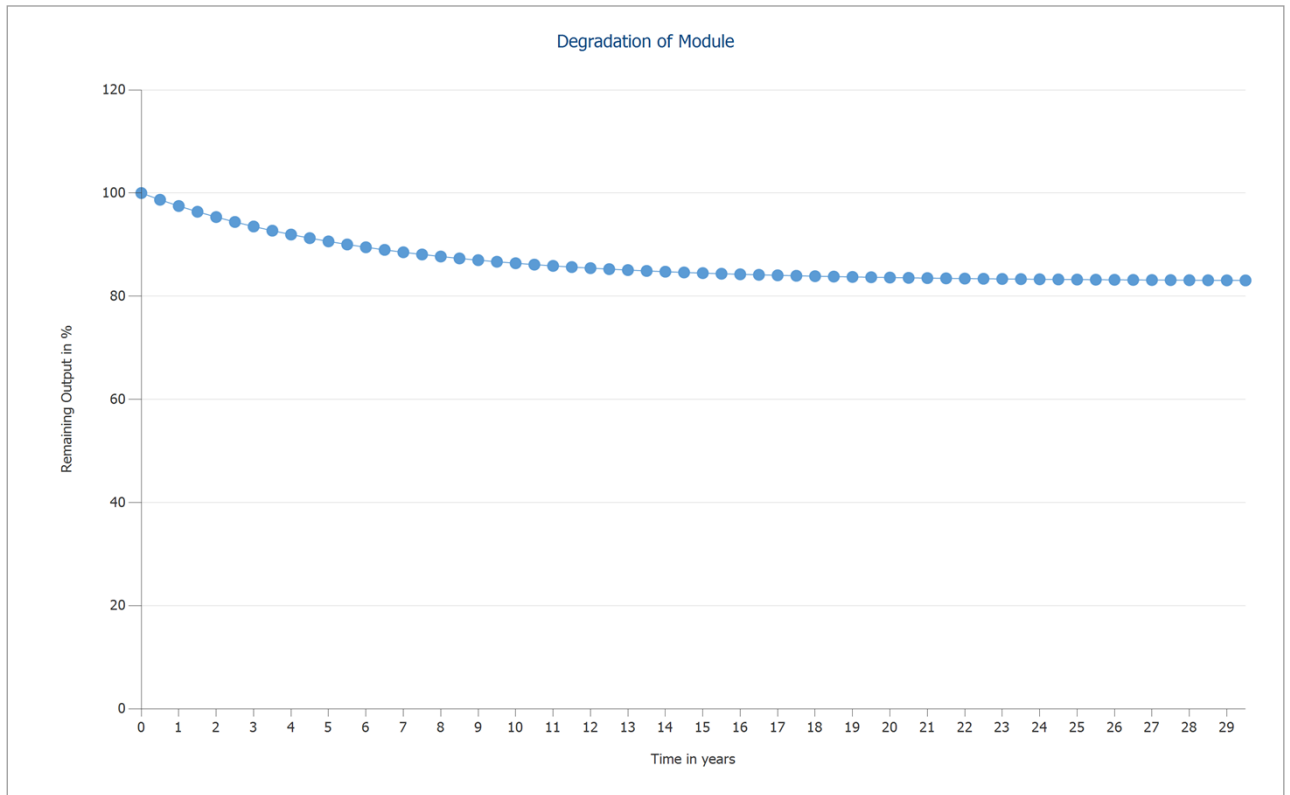


Figure: Degradation of Module, 1. Module Area - Building 02-Module Area East



### 2. Module Area - Building 02-Module Area West

#### PV Generator, 2. Module Area - Building 02-Module Area West

Name	Building 02-Module Area West
PV Modules	45 x TSM-455DE17M (II) (v1)
Manufacturer	Trina Solar
Inclination	10 °
Orientation	West 275 °
Installation Type	Mounted - Roof
PV Generator Surface	98,4 m <sup>2</sup>

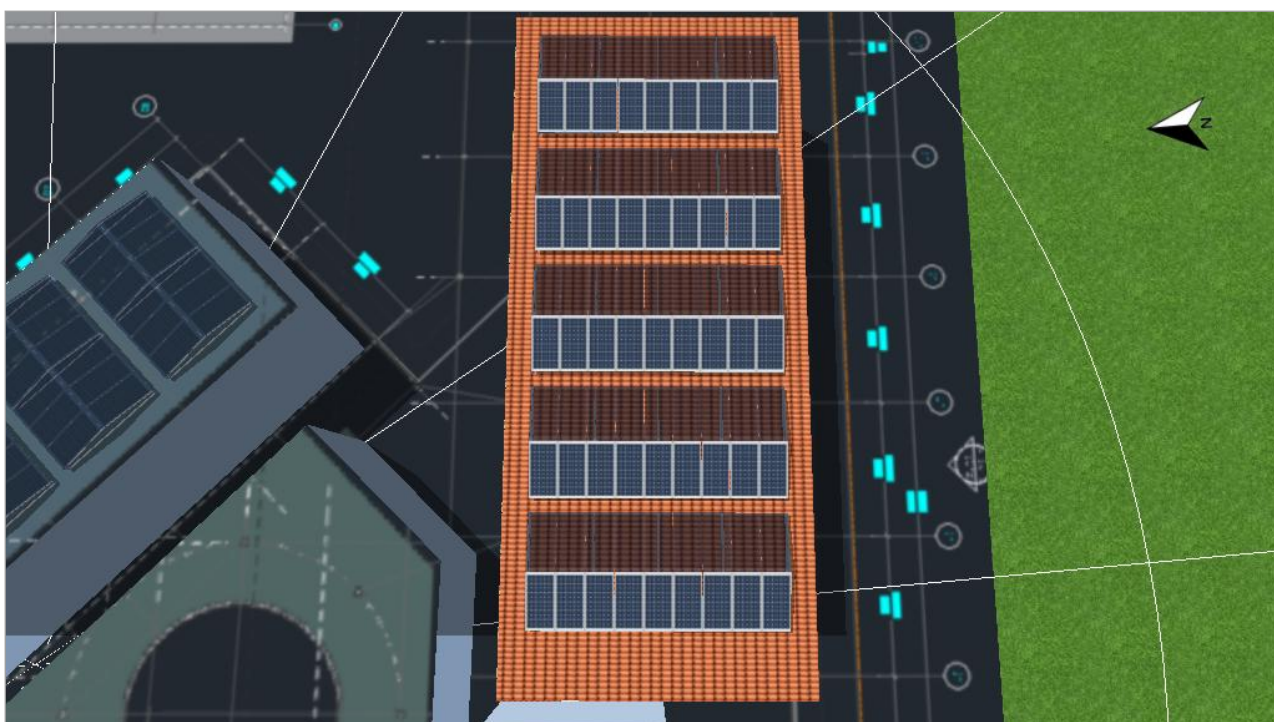


Figure: 2. Module Area - Building 02-Module Area West

## Degradation of Module, 2. Module Area - Building 02-Module Area West

Characteristic curve	Exponential
Remaining power (power output) after 1 year	97,5 %
Remaining power (power output) after 30 years	83 %

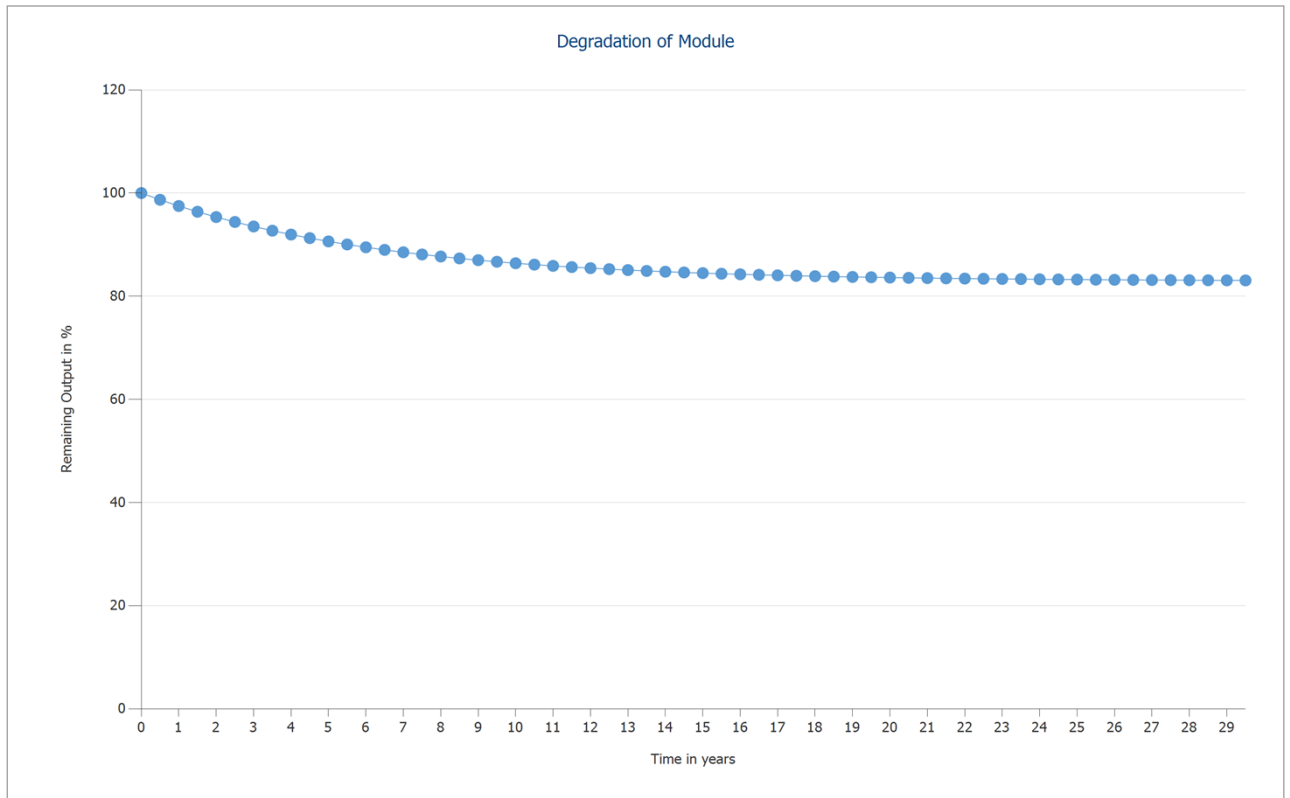


Figure: Degradation of Module, 2. Module Area - Building 02-Module Area West



### 3. Module Area - Building 01-Module Area East

#### PV Generator, 3. Module Area - Building 01-Module Area East

Name	Building 01-Module Area East
PV Modules	48 x TSM-455DE17M (II) (v1)
Manufacturer	Trina Solar
Inclination	10 °
Orientation	East 96 °
Installation Type	Mounted - Roof
PV Generator Surface	104,9 m²

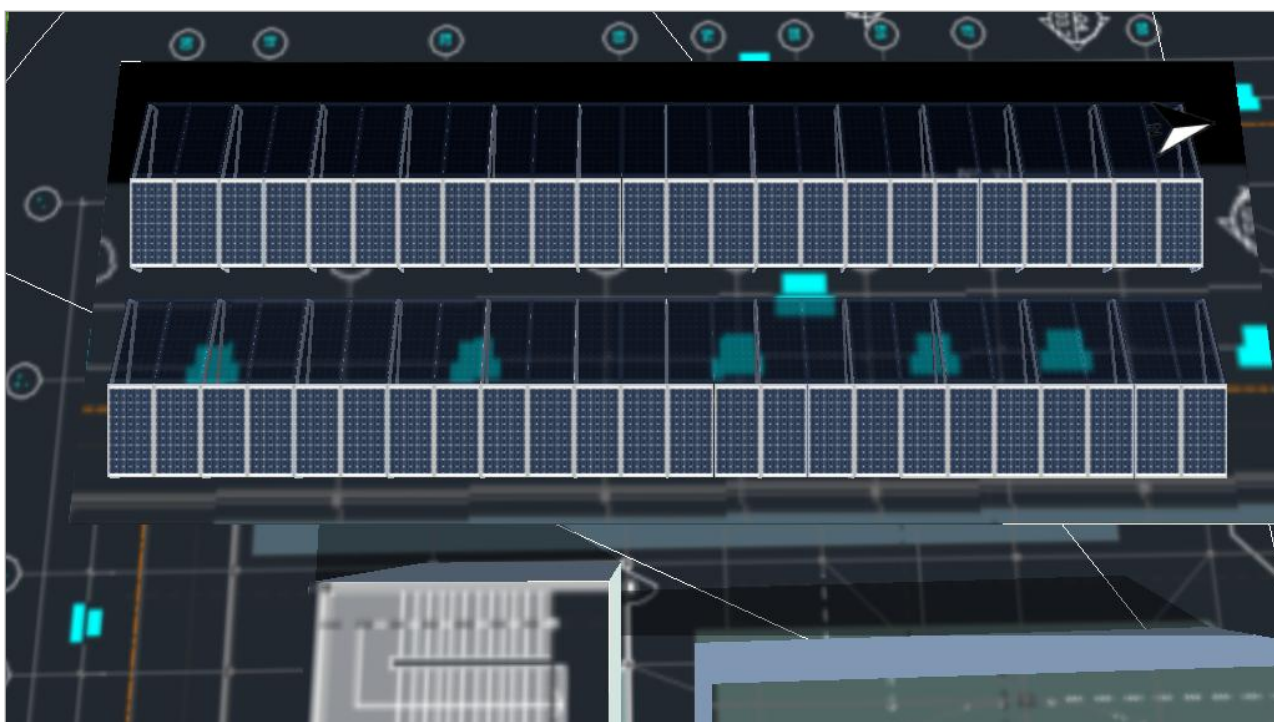


Figure: 3. Module Area - Building 01-Module Area East

## Degradation of Module, 3. Module Area - Building 01-Module Area East

Characteristic curve	Exponential
Remaining power (power output) after 1 year	97,5 %
Remaining power (power output) after 30 years	83 %

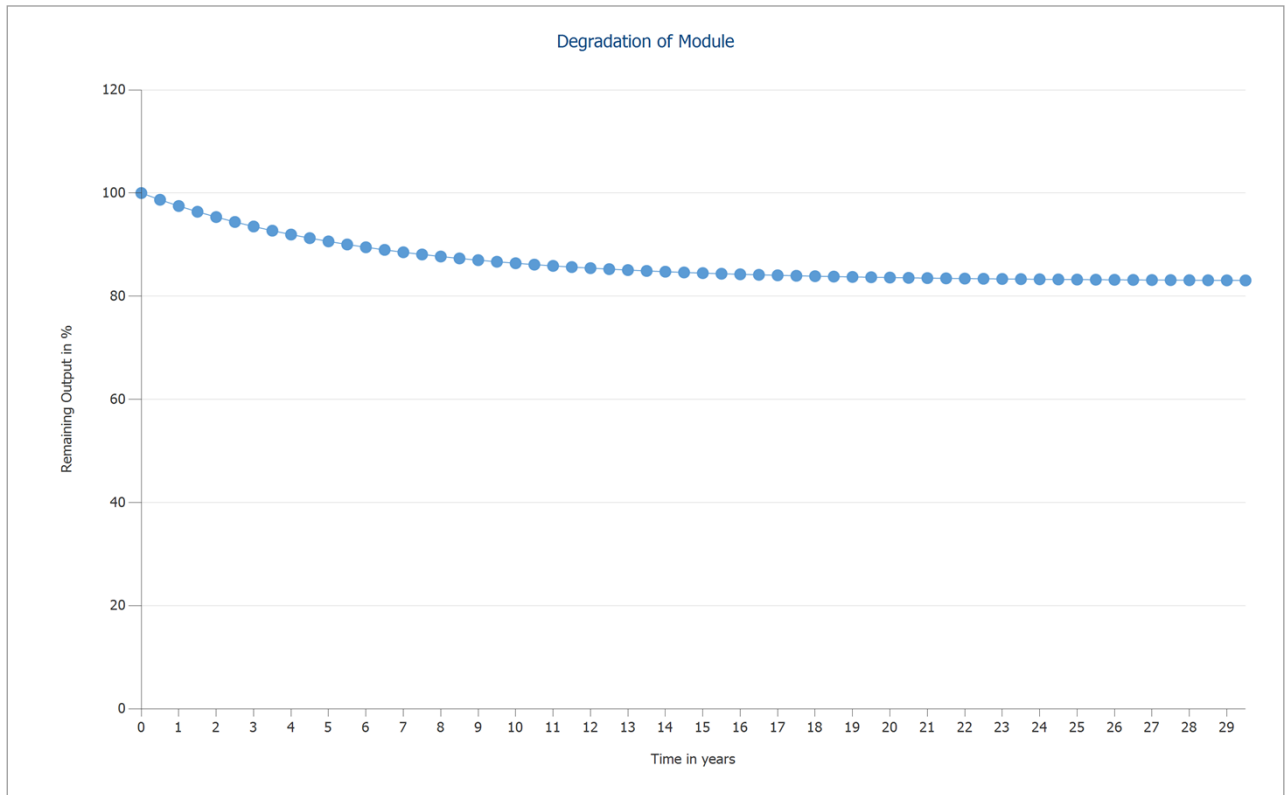


Figure: Degradation of Module, 3. Module Area - Building 01-Module Area East



### 4. Module Area - Building 01-Module Area West

#### PV Generator, 4. Module Area - Building 01-Module Area West

Name	Building 01-Module Area West
PV Modules	48 x TSM-455DE17M (II) (v1)
Manufacturer	Trina Solar
Inclination	10 °
Orientation	West 276 °
Installation Type	Mounted - Roof
PV Generator Surface	104,9 m²



Figure: 4. Module Area - Building 01-Module Area West

### Degradation of Module, 4. Module Area - Building 01-Module Area West

Characteristic curve	Exponential
Remaining power (power output) after 1 year	97,5 %
Remaining power (power output) after 30 years	83 %

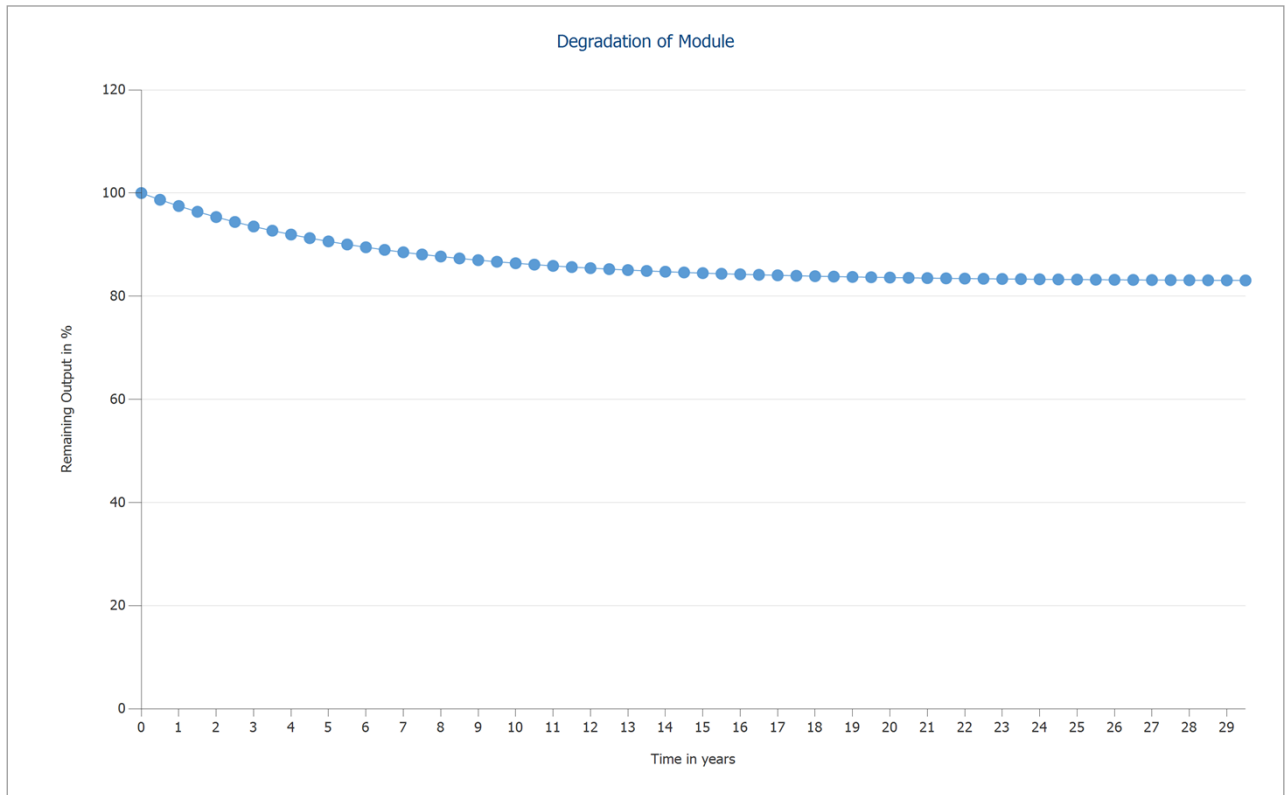


Figure: Degradation of Module, 4. Module Area - Building 01-Module Area West



### 5. Module Area - Building 03-Module Area Southeast

#### PV Generator, 5. Module Area - Building 03-Module Area Southeast

Name	Building 03-Module Area Southeast
PV Modules	42 x TSM-455DE17M (II) (v1)
Manufacturer	Trina Solar
Inclination	10 °
Orientation	Southeast 140 °
Installation Type	Mounted - Roof
PV Generator Surface	91,8 m²

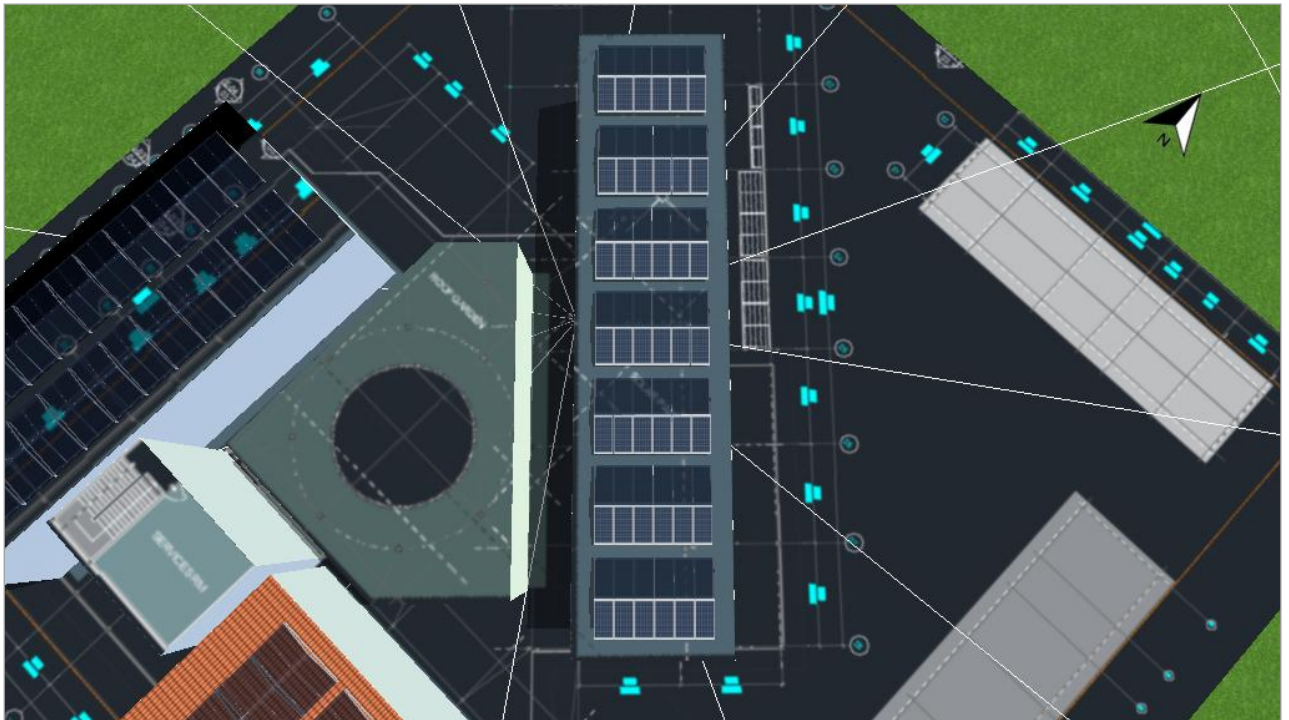


Figure: 5. Module Area - Building 03-Module Area Southeast

## Degradation of Module, 5. Module Area - Building 03-Module Area Southeast

Characteristic curve	Exponential
Remaining power (power output) after 1 year	97,5 %
Remaining power (power output) after 30 years	83 %

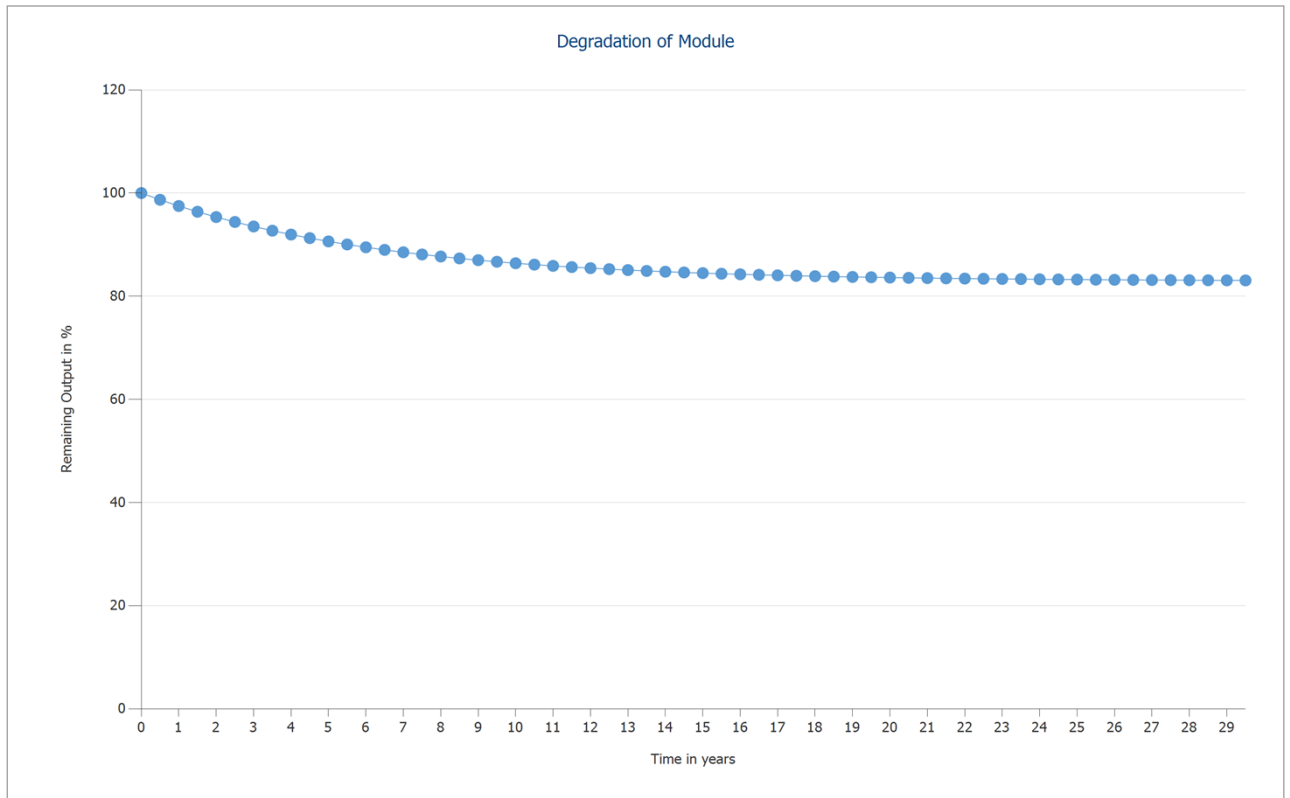


Figure: Degradation of Module, 5. Module Area - Building 03-Module Area Southeast



### 6. Module Area - Building 03-Module Area Northwest

#### PV Generator, 6. Module Area - Building 03-Module Area Northwest

Name	Building 03-Module Area Northwest
PV Modules	42 x TSM-455DE17M (II) (v1)
Manufacturer	Trina Solar
Inclination	10 °
Orientation	Northwest 320 °
Installation Type	Mounted - Roof
PV Generator Surface	91,8 m²

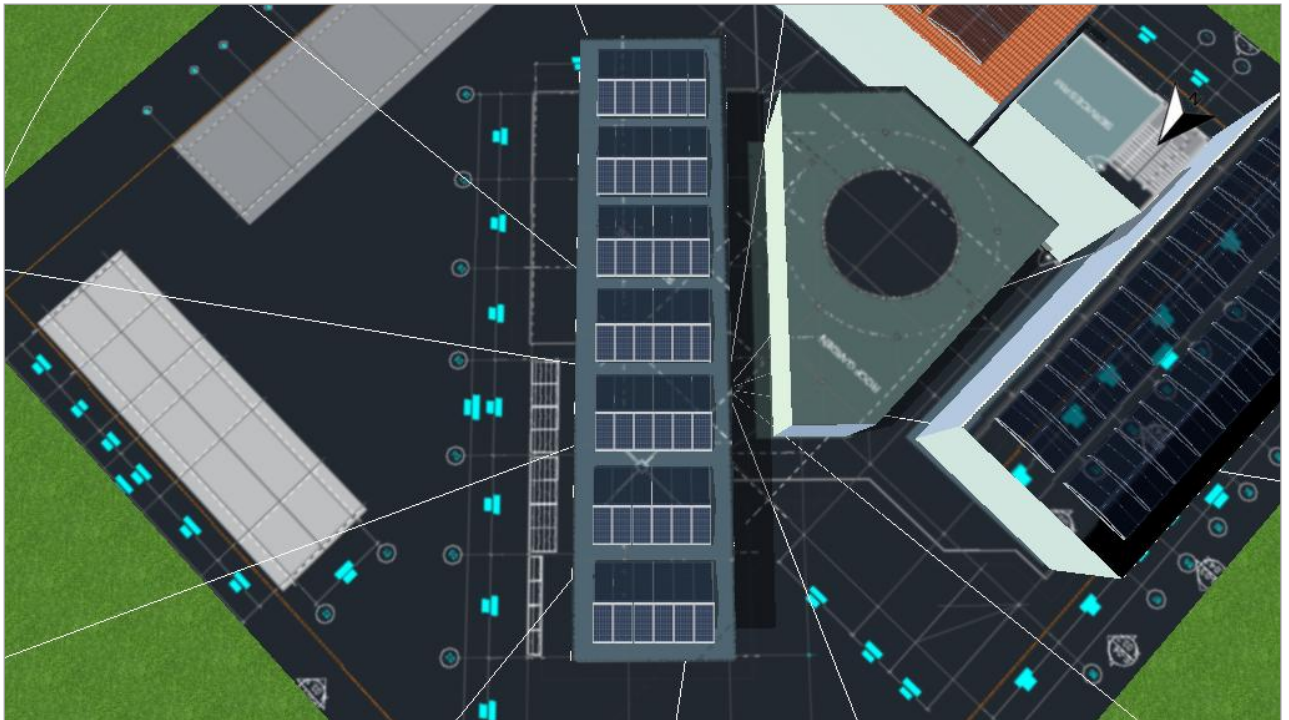


Figure: 6. Module Area - Building 03-Module Area Northwest

### Degradation of Module, 6. Module Area - Building 03-Module Area Northwest

Characteristic curve	Exponential
Remaining power (power output) after 1 year	97,5 %
Remaining power (power output) after 30 years	83 %

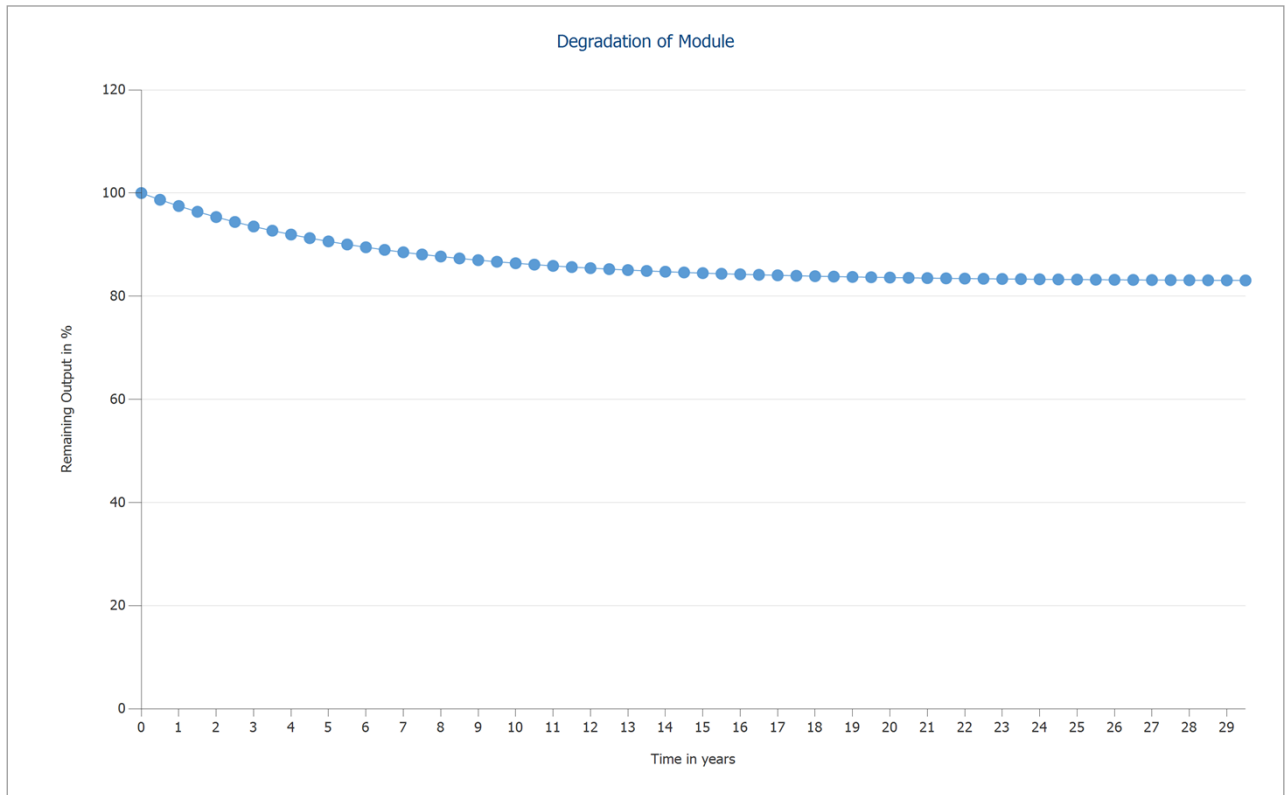


Figure: Degradation of Module, 6. Module Area - Building 03-Module Area Northwest



## Horizon Line, 3D Design

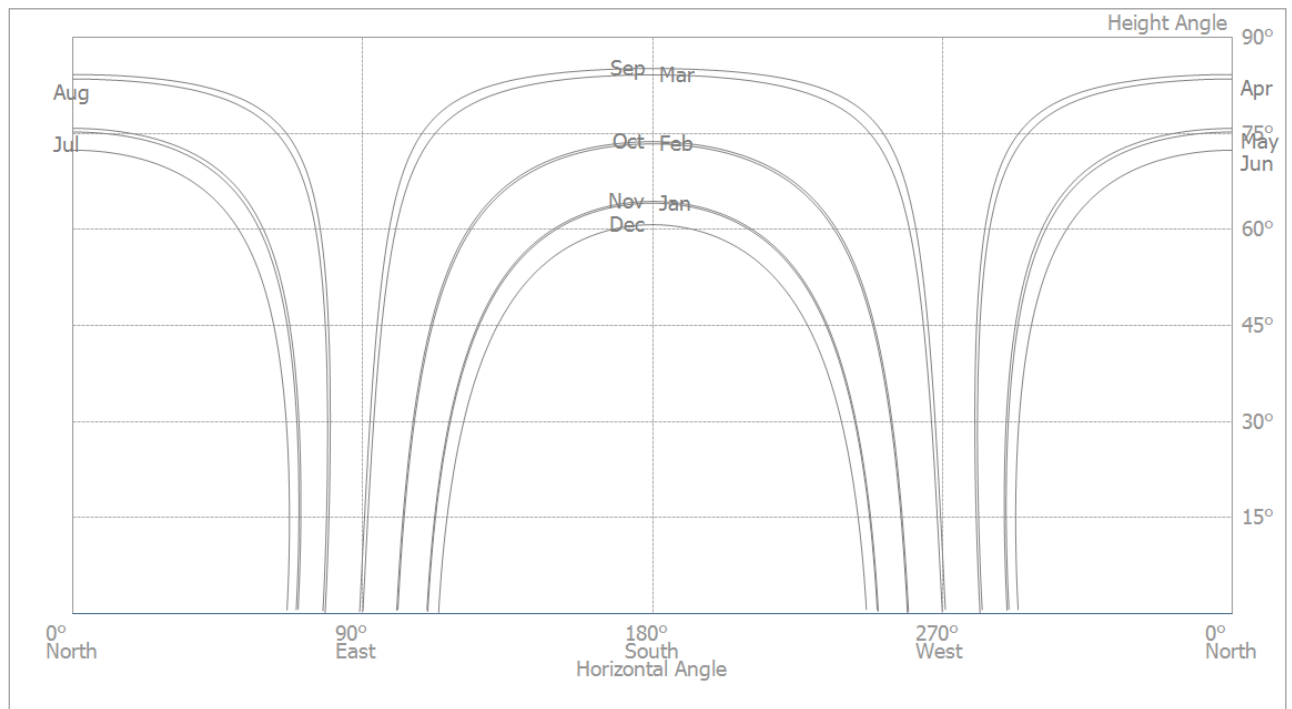


Figure: Horizon (3D Design)

## Inverter configuration

### Configuration 1

Module Areas	Building 02-Module Area East + Building 02-Module Area West
Inverter 1	
Model	SUN2000-36KTL(400Vac) (v1)
Manufacturer	Huawei Technologies
Quantity	1
Sizing Factor	113,8 %
Configuration	MPP 1: 2 x 15
	MPP 2: 1 x 15
	MPP 3: 2 x 14
	MPP 4: 1 x 17

### Configuration 2

Module Areas	Building 01-Module Area East + Building 01-Module Area West
Inverter 1	
Model	SUN2000-36KTL(400Vac) (v1)
Manufacturer	Huawei Technologies
Quantity	1
Sizing Factor	121,3 %
Configuration	MPP 1: 2 x 15
	MPP 2: 1 x 18
	MPP 3: 2 x 15
	MPP 4: 1 x 18

## Hospital Design

### Configuration 3

Module Areas	Building 03-Module Area Southeast + Building 03-Module Area Northwest
Inverter 1	
Model	SUN2000-36KTL(400Vac) (v1)
Manufacturer	Huawei Technologies
Quantity	1
Sizing Factor	106,2 %
Configuration	MPP 1: 2 x 13
	MPP 2: 1 x 16
	MPP 3: 2 x 13
	MPP 4: 1 x 16

## AC Mains

### AC Mains

Number of Phases	3
Mains voltage between phase and neutral	230 V
Displacement Power Factor (cos phi)	+/- 1

# Simulation Results

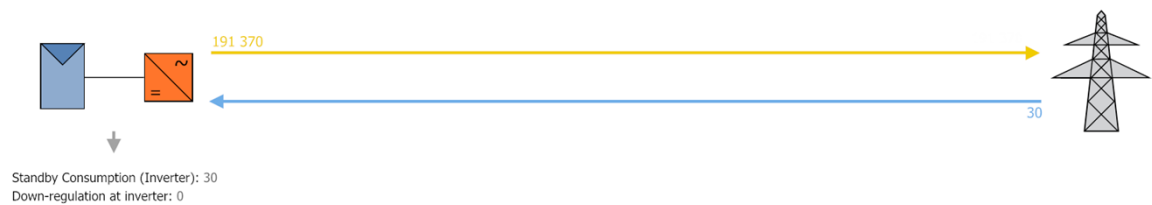
## Results Total System

### PV System

PV Generator Output	122,85 kWp
Spec. Annual Yield	1 557,51 kWh/kWp
Performance Ratio (PR)	79,41 %
Yield Reduction due to Shading	0,7 %/Year
Grid Feed-in	191 370 kWh/Year
Grid Feed-in in the first year (incl. module degradation)	188 718 kWh/Year
Standby Consumption (Inverter)	30 kWh/Year
CO <sub>2</sub> Emissions avoided	89 930 kg / year

### Energy Flow Graph

Project: Maafaru Hospital



All values in kWh  
Small deviations in the totals can occur due to rounding  
created with PV\*SOL

Figure: Energy flow



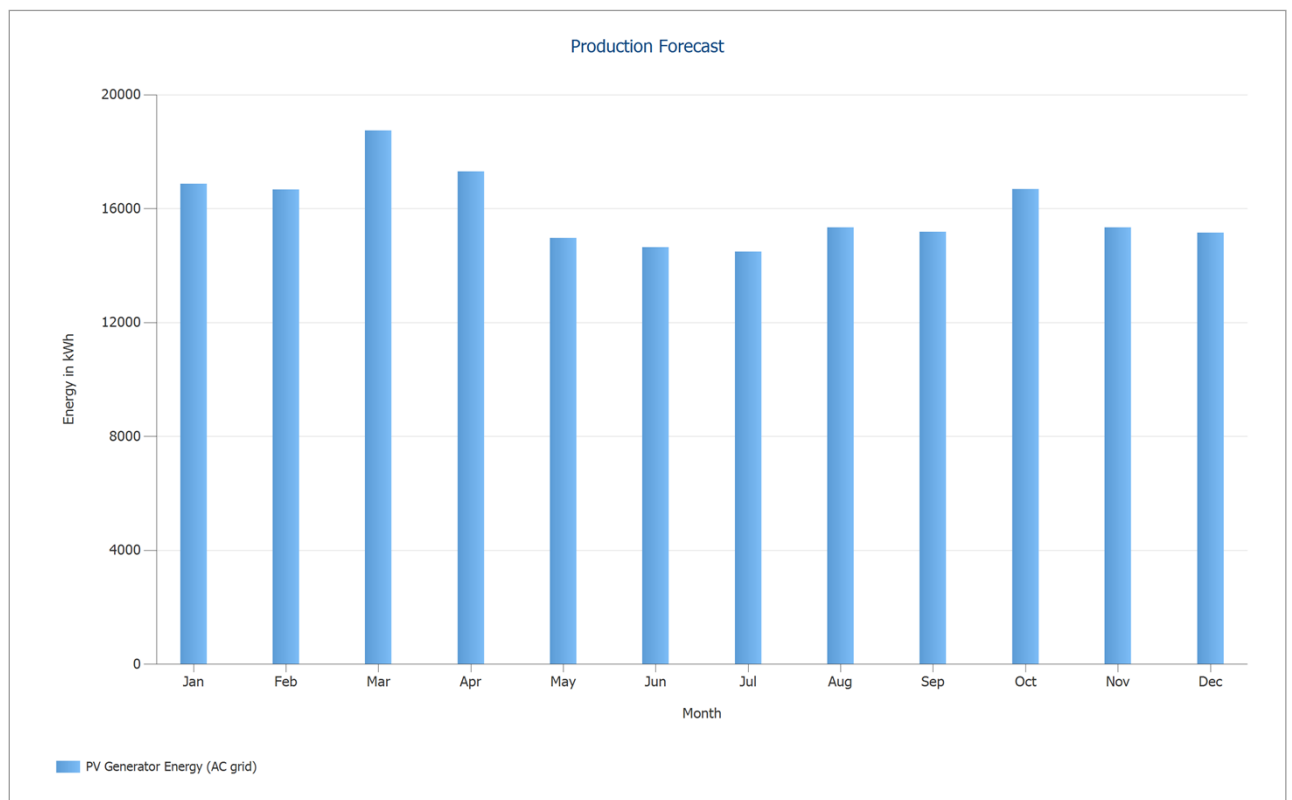


Figure: Production Forecast

## Results per Module Area

### Building 02-Module Area East

PV Generator Output	20,48 kWp
PV Generator Surface	98,37 m <sup>2</sup>
Global Radiation at the Module	1798,00 kWh/m <sup>2</sup>
Global Radiation on Module without reflection	1960,99 kWh/m <sup>2</sup>
Performance Ratio (PR)	79,86 %
PV Generator Energy (AC grid)	32111,73 kWh/Year
Spec. Annual Yield	1568,34 kWh/kWp

### Building 02-Module Area West

PV Generator Output	20,48 kWp
PV Generator Surface	98,37 m <sup>2</sup>
Global Radiation at the Module	1784,93 kWh/m <sup>2</sup>
Global Radiation on Module without reflection	1952,52 kWh/m <sup>2</sup>
Performance Ratio (PR)	79,20 %
PV Generator Energy (AC grid)	31707,69 kWh/Year
Spec. Annual Yield	1548,61 kWh/kWp

### Building 01-Module Area East

PV Generator Output	21,84 kWp
PV Generator Surface	104,93 m <sup>2</sup>
Global Radiation at the Module	1798,65 kWh/m <sup>2</sup>
Global Radiation on Module without reflection	1961,57 kWh/m <sup>2</sup>
Performance Ratio (PR)	79,12 %
PV Generator Energy (AC grid)	33947,96 kWh/Year
Spec. Annual Yield	1554,39 kWh/kWp

## Hospital Design

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### Building 01-Module Area West

PV Generator Output	21,84 kWp
PV Generator Surface	104,93 m <sup>2</sup>
Global Radiation at the Module	1789,36 kWh/m <sup>2</sup>
Global Radiation on Module without reflection	1957,60 kWh/m <sup>2</sup>
Performance Ratio (PR)	79,42 %
PV Generator Energy (AC grid)	34003,74 kWh/Year
Spec. Annual Yield	1556,95 kWh/kWp

### Building 03-Module Area Southeast

PV Generator Output	19,11 kWp
PV Generator Surface	91,82 m <sup>2</sup>
Global Radiation at the Module	1819,44 kWh/m <sup>2</sup>
Global Radiation on Module without reflection	1983,69 kWh/m <sup>2</sup>
Performance Ratio (PR)	79,86 %
PV Generator Energy (AC grid)	30317,41 kWh/Year
Spec. Annual Yield	1586,47 kWh/kWp

### Building 03-Module Area Northwest

PV Generator Output	19,11 kWp
PV Generator Surface	91,82 m <sup>2</sup>
Global Radiation at the Module	1758,45 kWh/m <sup>2</sup>
Global Radiation on Module without reflection	1933,90 kWh/m <sup>2</sup>
Performance Ratio (PR)	79,11 %
PV Generator Energy (AC grid)	29281,44 kWh/Year
Spec. Annual Yield	1532,26 kWh/kWp

## PV System Energy Balance

### PV System Energy Balance

<b>Global radiation - horizontal</b>	<b>2 001,52 kWh/m<sup>2</sup></b>	
Deviation from standard spectrum	-20,02 kWh/m <sup>2</sup>	-1,00 %
Ground Reflection (Albedo)	3,01 kWh/m <sup>2</sup>	0,15 %
Orientation and inclination of the module surface	-25,17 kWh/m <sup>2</sup>	-1,27 %
Module-independent shading	-0,95 kWh/m <sup>2</sup>	-0,05 %
Reflection on the Module Interface	-166,81 kWh/m <sup>2</sup>	-8,52 %
<b>Global Radiation at the Module</b>	<b>1 791,58 kWh/m<sup>2</sup></b>	
	1 791,58 kWh/m <sup>2</sup>	
	x 590,242 m <sup>2</sup>	
	= 1 057 466,90 kWh	
<b>Global PV Radiation</b>	<b>1 057 466,90 kWh</b>	
Soiling	0,00 kWh	0,00 %
STC Conversion (Rated Efficiency of Module 20,84 %)	-837 045,84 kWh	-79,16 %
<b>Rated PV Energy</b>	<b>220 421,05 kWh</b>	
Module-specific Partial Shading	-1 041,76 kWh	-0,47 %
Low-light performance	-3 337,19 kWh	-1,52 %
Deviation from the nominal module temperature	-16 399,05 kWh	-7,59 %
Diodes	-41,25 kWh	-0,02 %
Mismatch (Manufacturer Information)	-3 992,04 kWh	-2,00 %
Mismatch (Configuration/Shading)	-311,19 kWh	-0,16 %
<b>PV Energy (DC) without inverter down-regulation</b>	<b>195 298,58 kWh</b>	
Failing to reach the DC start output	-6,38 kWh	0,00 %
Down-regulation on account of the MPP Voltage Range	-0,23 kWh	0,00 %
Down-regulation on account of the max. DC Current	-38,91 kWh	-0,02 %
Down-regulation on account of the max. DC Power	0,00 kWh	0,00 %
Down-regulation on account of the max. AC Power/cos phi	-89,18 kWh	-0,05 %
MPP Matching	-113,21 kWh	-0,06 %
<b>PV energy (DC)</b>	<b>195 050,68 kWh</b>	
<b>Energy at the Inverter Input</b>	<b>195 050,68 kWh</b>	
Input voltage deviates from rated voltage	-165,27 kWh	-0,08 %
DC/AC Conversion	-3 515,45 kWh	-1,80 %
Standby Consumption (Inverter)	-29,92 kWh	-0,02 %
Total Cable Losses	0,00 kWh	0,00 %
<b>PV energy (AC) minus standby use</b>	<b>191 340,04 kWh</b>	
<b>PV Generator Energy (AC grid)</b>	<b>191 369,96 kWh</b>	