

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

REPUBLIC OF YEMEN

Ministry of Water & Environment

Urban Water supply & Sanitation Project
(UWSSP)



الجمهورية اليمنية

وزارة المياه والبيئة

مشروع المياه والصرف الصحي للمدن الحضرية



Bait Bous (Al-Nahdeen) Water Distribution Network

(Genset and Control Room Drawings)

2023

GENSET AND CONTROL ROOM DRAWINGS

PROJECT:

SUPPLY, INSTALLATION AND CONSTRUCTION OF A WATER DISTRIBUTION NETWORK AND ELEVATED TANK FOR AL-NAHDEEN AREA

SANA'A CITY - YEMEN

FUNDED BY:

WORLD BANK GROUP

CONTRACT NO: IUS-AF-UWS-SAN-021

DWG NO.	D R A W I N G T I T L E
	COVER SHEET
G-00	LIST OF DRAWINGS
G-01	GENSET, CONTROL ROOM, AND TANK LAYOUT
G-02	ELEVATED TANK LAYOUT
ELECTRICAL GENERATOR PLANS	
C-01	GENERATOR GENERAL LAYOUT
S-01	GENERATOR SHELTER PLAN DETAILS
S-02	GENERATOR SHELTER ROOF PLAN DETAILS
S-03	GENERATOR SHELTERELEVATION DETAILS
S-04	STRUCTURAL DETAILS
S-05	STORAGE DIESEL TANK DETAILS
S-06	CONTROL ROOM DETAILES
S-07	FOOTING DETAILS
S-08	GROUND AND ROOF BEAMS DETAILS
S-09	POWER CABLES TRENCHES AND WELL HEAD
E-01	UNDER GROUND CABLE TRENCHES AND EARTHING DETAILS
E-02	ELECTRICAL DETAILS
E-03	SINGLE LINE DIAGRAM



REPUBLIC OF YEMEN
MINISTRY OF WATER AND
ENVIRONMENT

NOTE:



Project Name

Al-Nahdeen Water Distribution Network
and Elevated Tank

Drawing Title

Table of Drawings

Designed By:	Eng. Ameen Al-Maweri	Drawing No. G-00
Reviewed By:	Eng. Fares Hubaish	Scale As Shown
Approved By:	Eng. Mohammed Al-Maqdami	
Contract No	(IUS-AF-UWS-SAN-021)	Date 2023



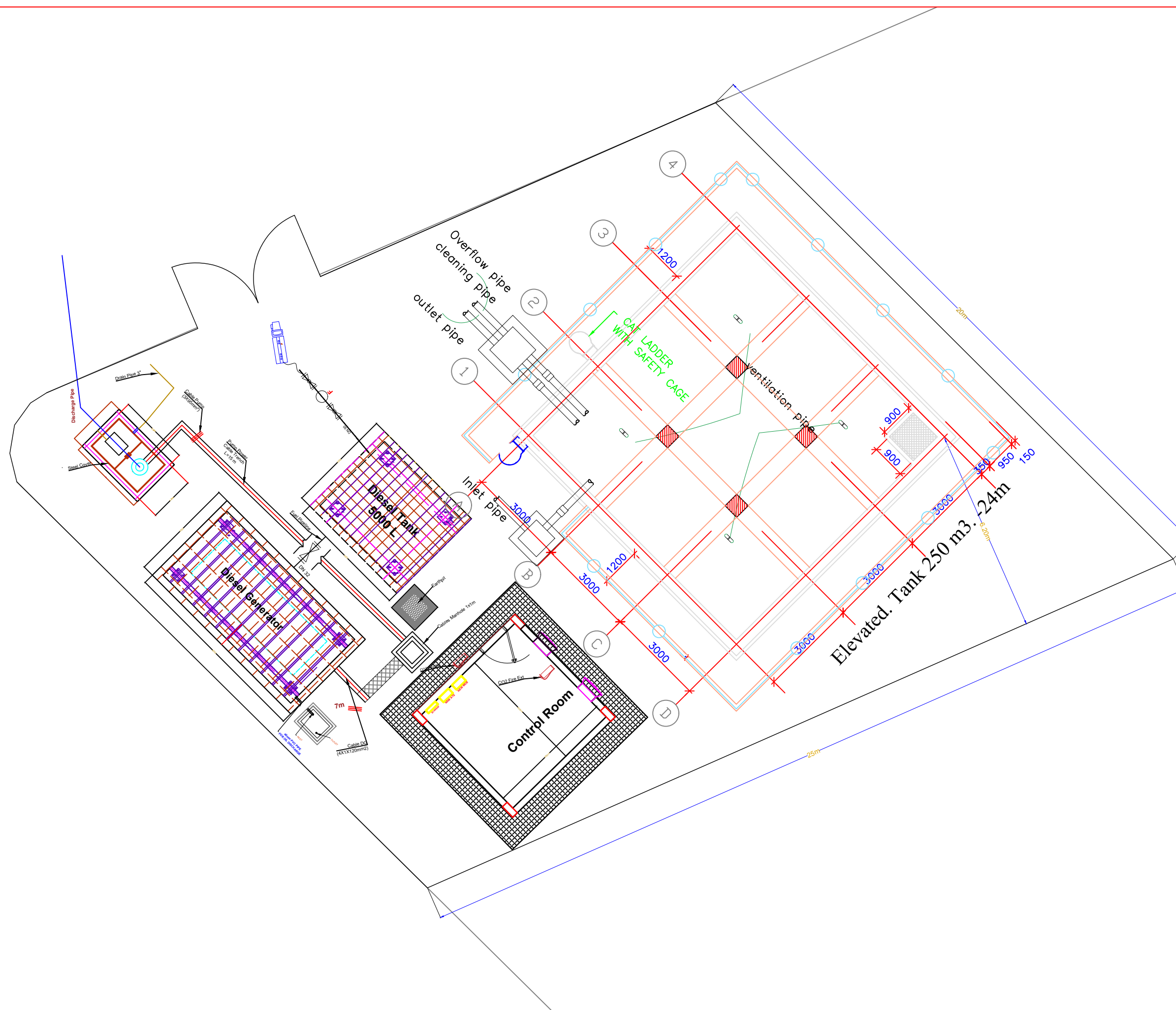
NOTE:



Al-Nahdeen Water Distribution Network and Elevated Tank

Genset and Control Room General Layout

Designed By:	Eng. Ameen Al-Maweri	Drawing No. G-01
Reviewed By:	Eng. Fares Hubaish	Scale As Shown
Approved By:	Eng. Mohammed Al-Maqdami	
Contract No	(IUS-AF-UWS-SAN-021)	Date 2023





REPUBLIC OF YEMEN
MINISTRY OF WATER AND
ENVIRONMENT

NOTE:



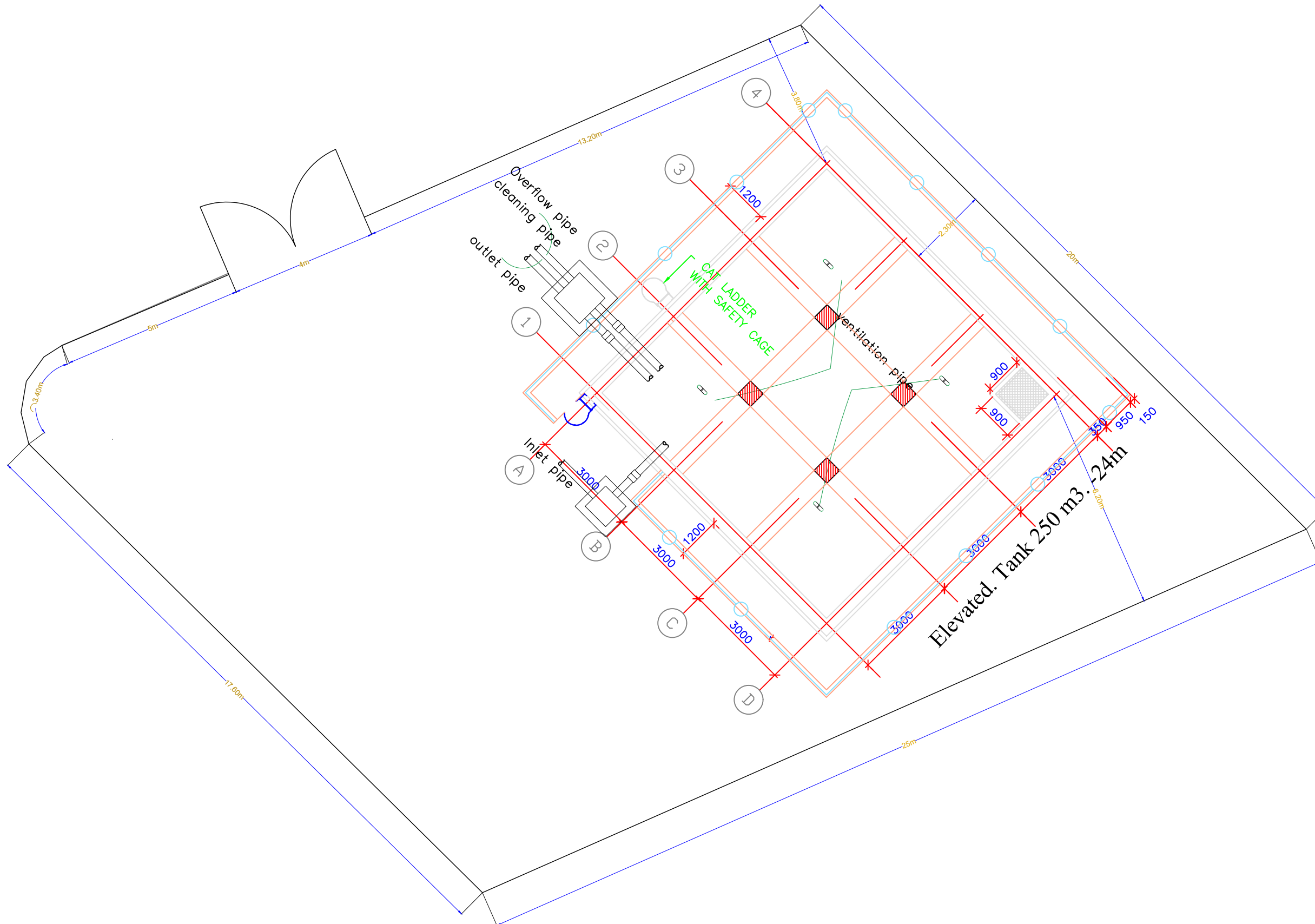
Project Name

Al-Nahdeen Water Distribution Network
and Elevated Tank

Drawing Title

Elevated Tank General Layout

Designed By:	Eng. Ameen Al-Maweri	Drawing No.	G-02
Reviewed By:	Eng. Fares Hubaish	Scale	As Shown
Approved By:	Eng. Mohammed Al-Maqdami		
Contract No	(IUS-AF-UWS-SAN-021)	Date	2023





REPUBLIC OF YEMEN
MINISTRY OF WATER AND
ENVIRONMENT

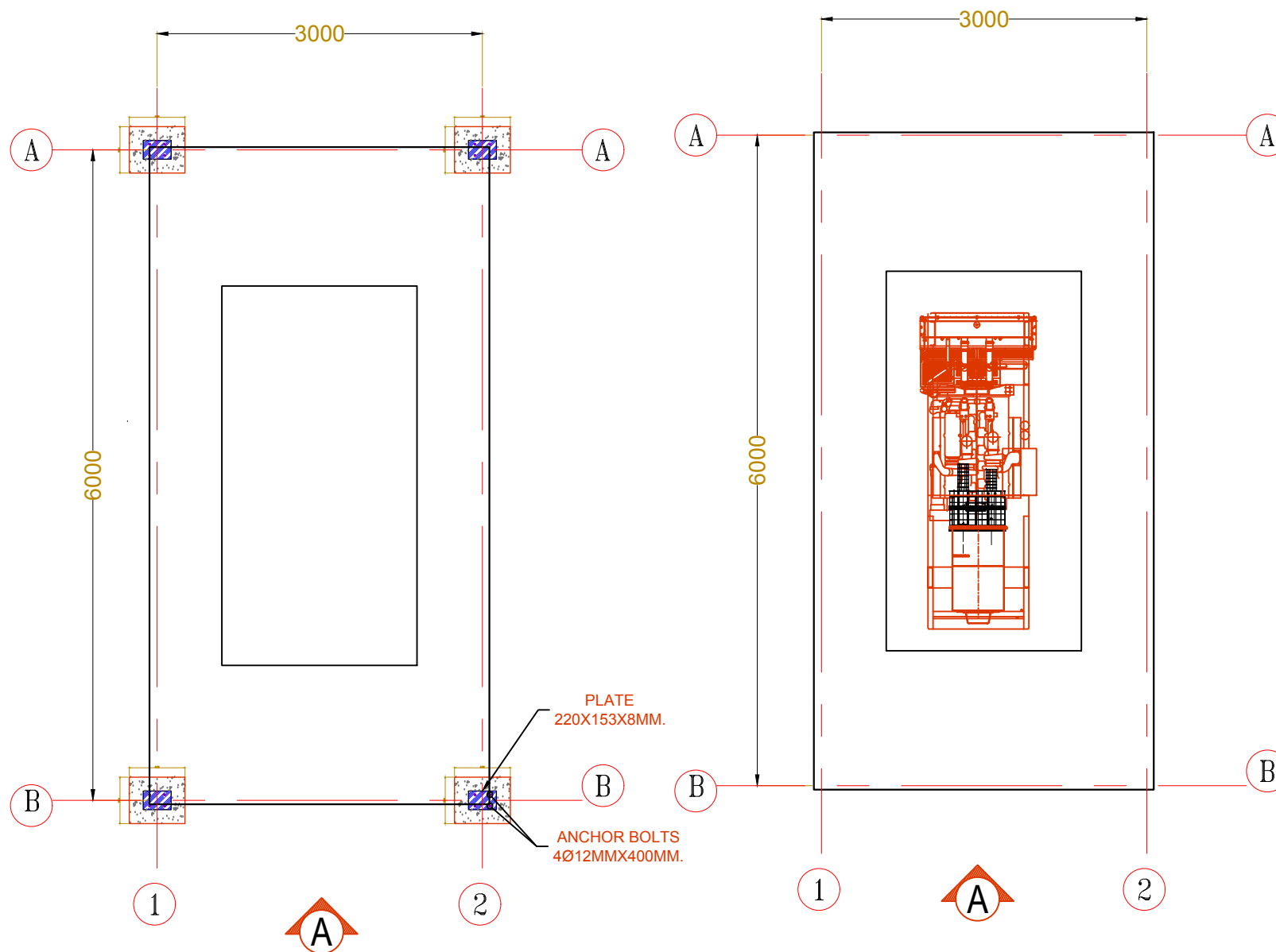
NOTE:



Project Name
Al-Nahdeen Water Distribution Network
and Elevated Tank

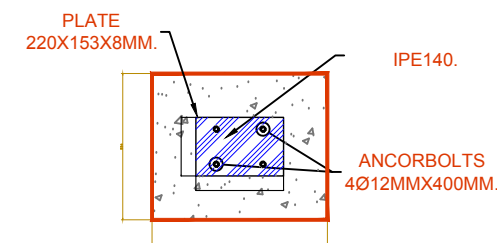
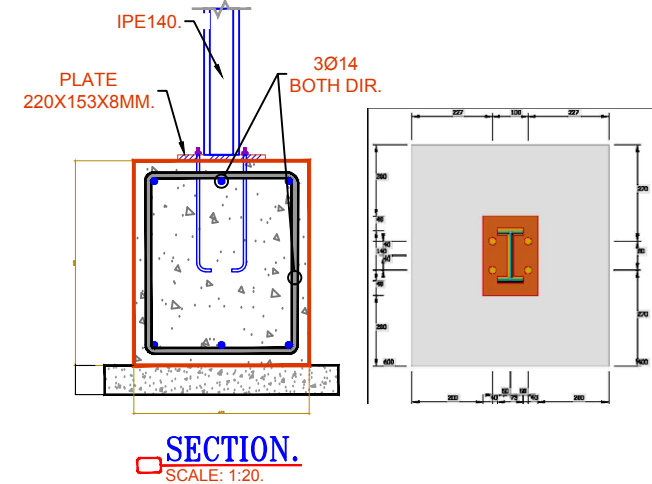
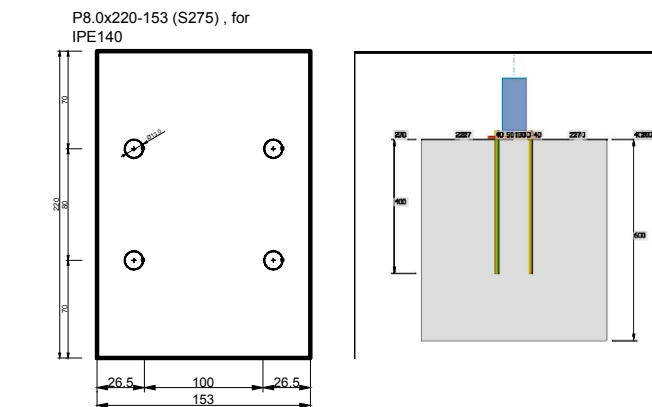
Drawing Title
Genset Shelter Plan Details

Designed By:	Eng. Ameen Al-Maweri	Drawing No.	S-01
Reviewed By:	Eng. Fares Hubaish	Scale	As Shown
Approved By:	Eng. Mohammed Al-Maqdami		
Contract No	(IUS-AF-UWS-SAN-021)	Date	2023



FOUNDATION PLAN DETAILS.

GENERATOR SHELTER PLAN DETAILS.
SCALE: 1/50.



PLAN DETAILS.



REPUBLIC OF YEMEN
MINISTRY OF WATER AND
ENVIRONMENT

NOTE:



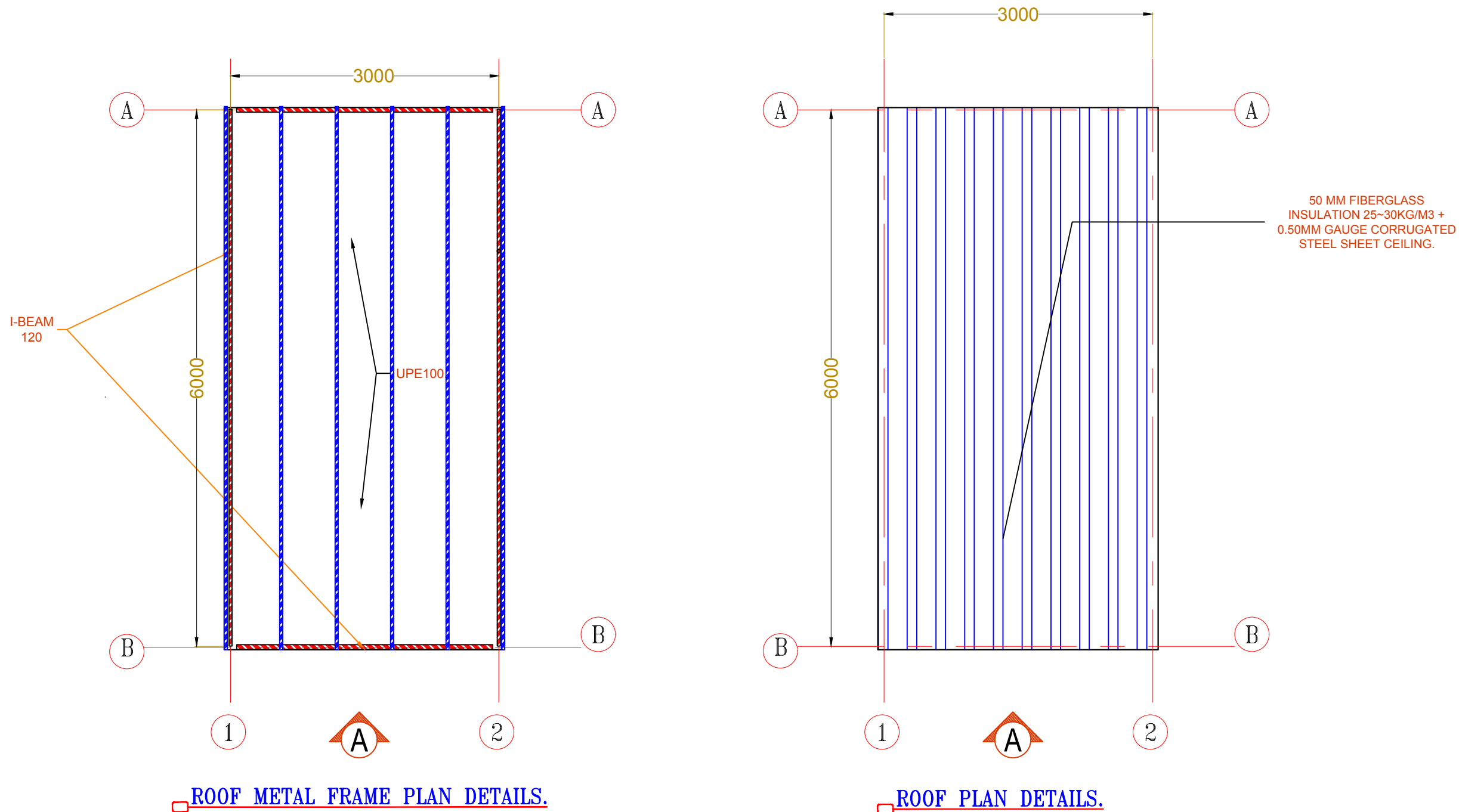
Project Name

Al-Nahdeen Water Distribution Network
and Elevated Tank

Drawing Title

Genset Shelter Roof Plan Details

Designed By:	Eng. Ameen Al-Maweri	Drawing No.	S-02
Reviewed By:	Eng. Fares Hubaish	Scale	As Shown
Approved By:	Eng. Mohammed Al-Maqdami	Date	2023
Contract No	(IUS-AF-UWS-SAN-021)		



ROOF METAL FRAME PLAN DETAILS.

ROOF PLAN DETAILS.

GENERATOR SHELTER ROOF PLAN DETAILS.
SCALE: 1/50.



REPUBLIC OF YEMEN
MINISTRY OF WATER AND
ENVIRONMENT

NOTE:



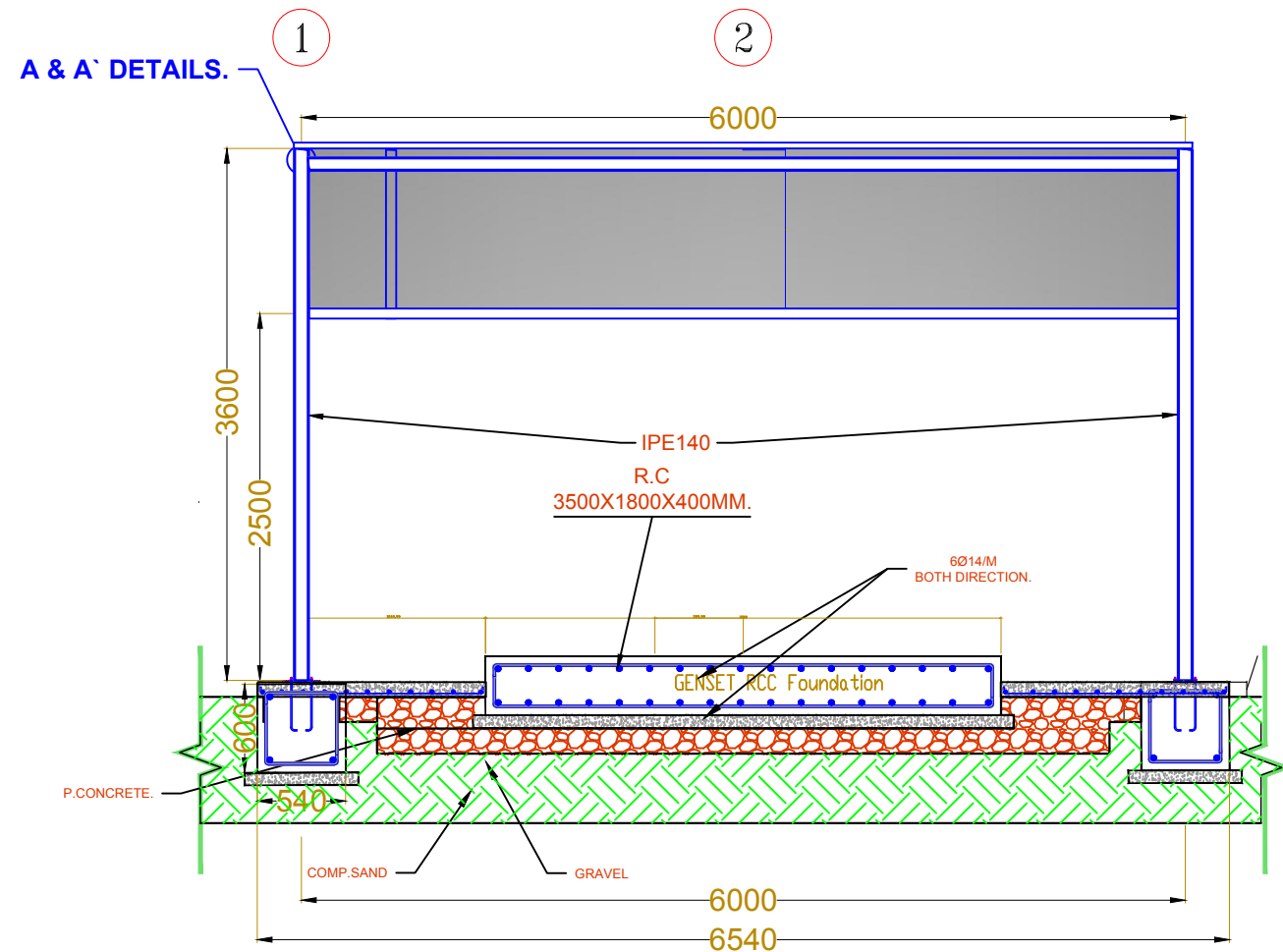
Project Name

Al-Nahdeen Water Distribution Network
and Elevated Tank

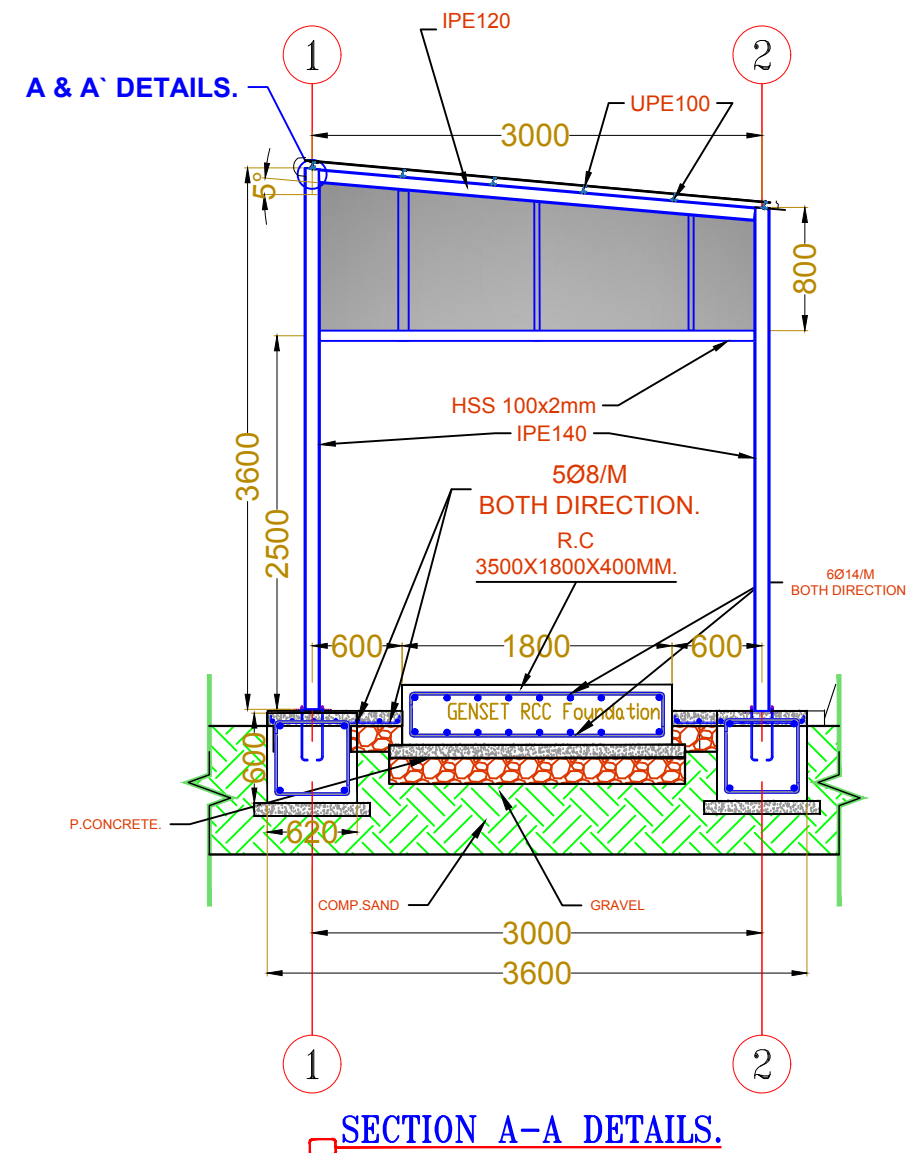
Drawing Title

Genset Shelter Elevation Detailing

Designed By:	Eng. Ameen Al-Maweri	Drawing No.	S-03
Reviewed By:	Eng. Fares Hubaish	Scale	As Shown
Approved By:	Eng. Mohammed Al-Maqdami		
Contract No	(IUS-AF-UWS-SAN-021)	Date	2023



GENERATOR SHELTER ELEVATION DETAILS.
SCALE: 1/50.





REPUBLIC OF YEMEN
MINISTRY OF WATER AND
ENVIRONMENT

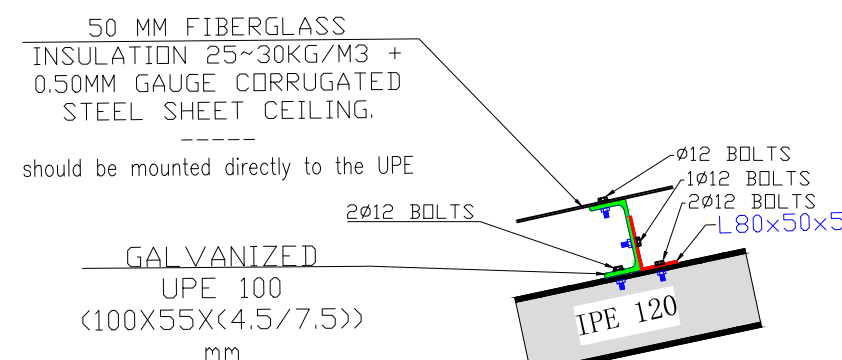
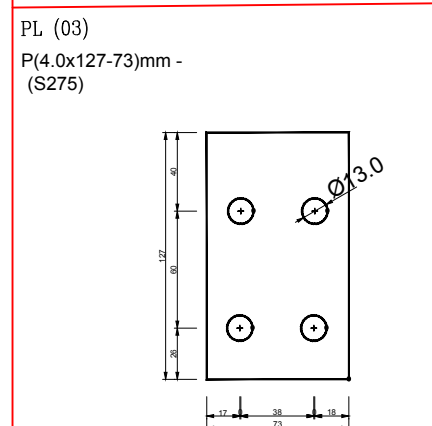
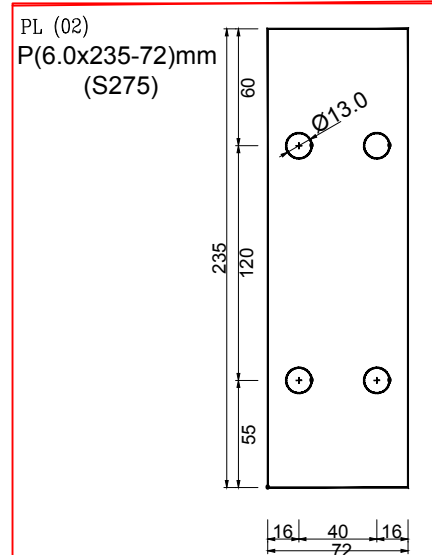
NOTE:



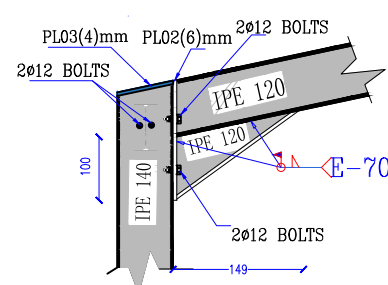
Project Name
Al-Nahdeen Water Distribution Network
and Elevated Tank

Drawing Title
Structural Detailing

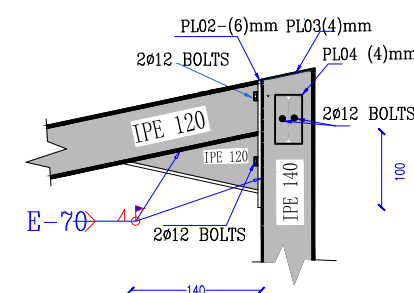
Designed By:	Eng. Ameen Al-Maweri	Drawing No.	S-04
Reviewed By:	Eng. Fares Hubaish	Scale	As Shown
Approved By:	Eng. Mohammed Al-Maqdami		
Contract No	(IUS-AF-UWS-SAN-021)	Date	2023



2 JOINT - DETAIL A
GENSET SHED DETAILS



2 JOINT - DETAIL B
STRUCTURE DETAILS



3 JOINT - DETAIL C
STRUCTURE DETAILS

REMARKS:

- ALL DIMENSIONS AND ELEVATIONS ARE IN CENTIMETERS AND METERS RESPECTIVELY, UNLESS OTHERWISE MENTIONED.
- ALL DIMENSIONS TO BE CHECKED AND CONFIRMED ON SITE BEFORE COMMENCEMENT OF ANY WORK.
- ANY DISCREPANCY TO BE REPORTED TO THE UNOPS SITE ENGINEER/ PROJECT MANAGER PROMPTLY BEFORE PROCEEDING.
- ALL OUTDOOR OUTLETS, SOCKET OR WIRING ACCESSORIES SHALL BE WEATHER PROOF TYPE.

DESIGN DATA OF LUBE OIL STORAGE TANK

TANK DESIGN DATA				MATERIALS AND SPECS			
1	NUMBER REQUIRED	ONE (1)		1	SHELL AND BOTTOM	ASTM A 36.	
2	NOMNAL CAPACITY cu.m	5		2	ROOF	ASTM A 36.	
3	DESIGN AND FAB CODE	API 650		3	INTERNAL STEEL	ASTM A 36.	
4	SP GRAVITY OF PRODUCT	0.89		4	EXTERNAL STEEL	ASTM A 36.	
5	OP PRESSURE	FLUID FULL		5	PIPE NOZZLE	ASTM A106 Gr.B	
6	DESIGN PRESS INT/EXT	WATER FULL KG/m ²		6	NOZZLE FLANGES	ASTM A105	
7	OP TEMPERATURE °C	AMBIENT		7	MANHOLE NOZZLES	ASTM A 516 Gr.60	
8	DESIGN TEMPERATURE °C	50 DEG C		8	M/H FLG & COVER	ASTM A 516 Gr.60	
9	HYDROSTATIC TEST	WATER FILLING		9	BOLTS AND STUDS	ASTM A307/A193 Gr.B7	
10	STRESS RELIEF	NIL		10	NUTS	ASTM A307/A193 Gr.B7	
11	RADIOGRAPHY JOINT EFFICIENCY	10 %	85 %	11	GASKETS	CAF 3mm THK.	
12	CORROSION ALLOWANCE	HEAD SHELL & (TOP) BOTTOM OTHERS		12	PAINTING	TWO EPOXY COATS (200 MICRON)	
		1.5	3.0	13	CONSTRUCTION	WELDED	
			3.0	14	INSPECTION	API 650	
				NOZZLE SCHEDULE			
				NOZZLE NO.	FLANGE SIZE & THK	EL. FROM BOTTOM PL	REMARKS
				N1 25	150 S.O RF	2.7	DFO INLET
				N2 65	150 S.O RF	0.2	DFO OUTLET
				N3 65	150 S.O RF	2.8	OVER FLOW
				N4 65	150 S.O RF	-0.2	DRAIN
				N5 80	150 S.O RF	-	VENT (ROOF)
				N6 600	AS PER API 650	-	ROOF MANHOLE
				N7 80	150 S.O RF	-	LEVEL SWITCH
				AS PER CODE API 650 / AS 800			
ADDITIONAL ACCESSORIES							
1	LADDER & HAND RAIL	YES					
2	LEVEL INDICATOR	YES					
3	EARTHING DEVICE	YES					
4	INSULATION	NO					
NOTES							
1. DISTANCE OF FLANGE FACE FROM OUTER SURFACE OF TANK PLATE SHALL BE AS PER API:650.				4. VENT PIPE SHALL BE STRAIGHT NECK TYPE AND SHALL BE ADEQUATELY SUPPORTED AND PROVIDED WITH NON CORROSIVE METAL WIRE MESH OF NOT LESS THAN 11 OPENING			
2. THE STIFFNERS USED SHALL BE CONTINUOUSLY WELDED TO THE TANK				5. TANK FABRICATOR SHALL PROVIDE 1.0m HIGH GAURD RAIL ON ROOF ALL ROUND THE TANK.			
3. LADDER SHALL BE PROVIDED AS PER DETAILED				6. TANK FABRICATOR SHALL PROVIDE SUITABLE COUNTER FLANGE,GASKETS, NUTS & BOLTS.			



REPUBLIC OF YEMEN
MINISTRY OF WATER AND
ENVIRONMENT

NOTE:



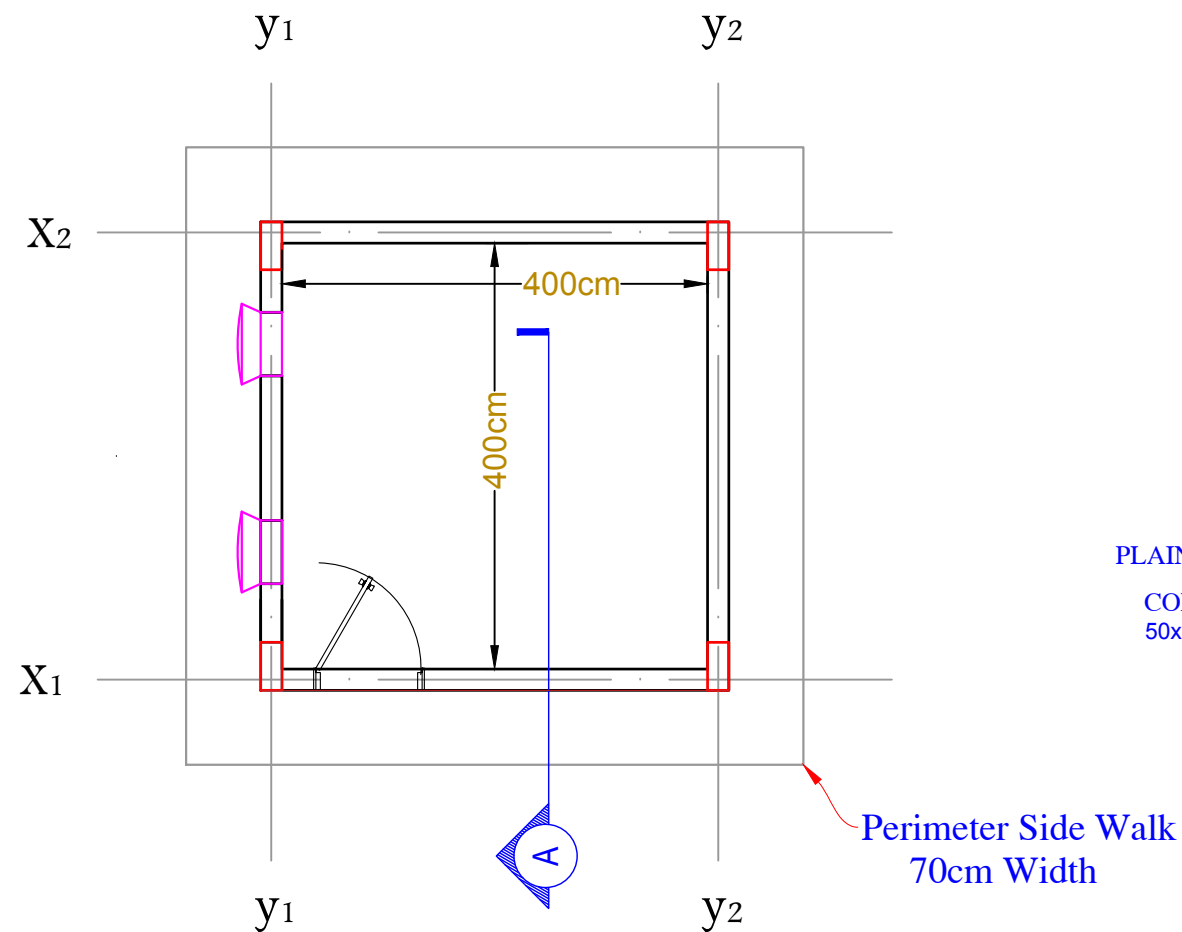
Project Name

Al-Nahdeen Water Distribution Network
and Elevated Tank

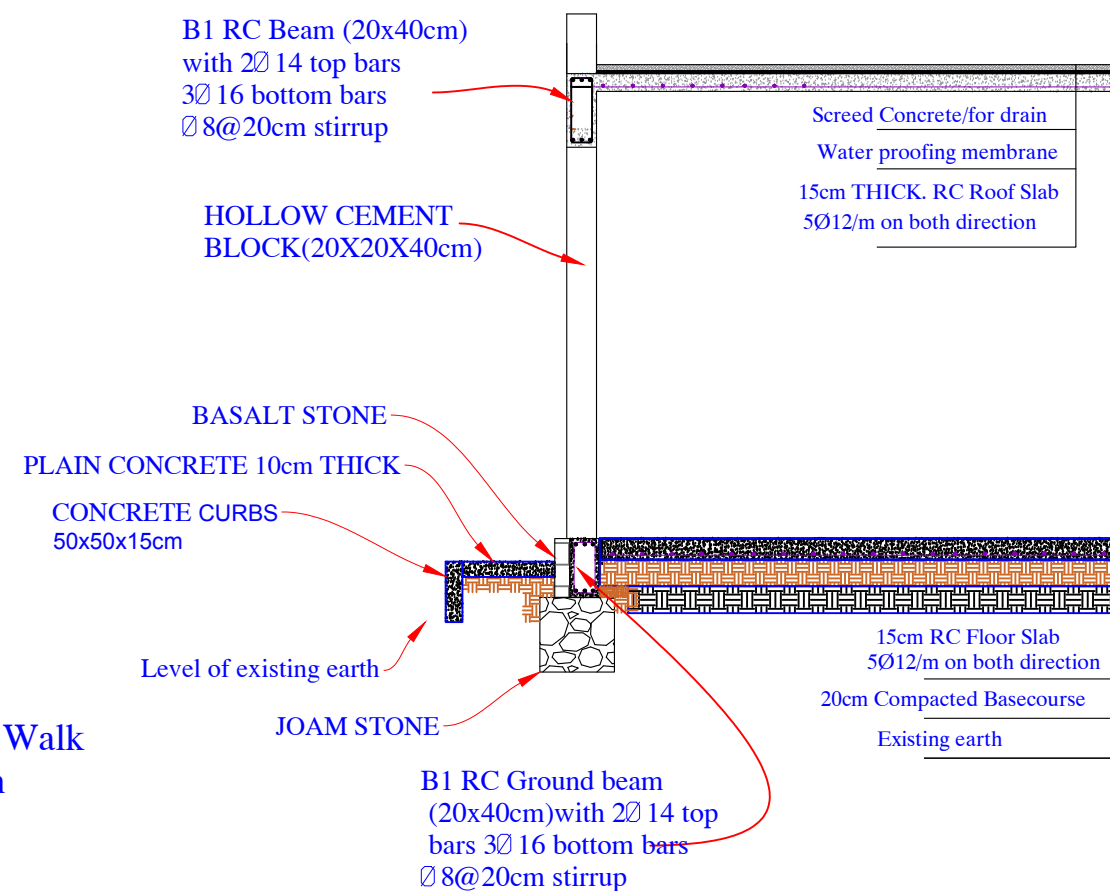
Drawing Title

Control Room Detailing

Designed By:	Eng. Ameen Al-Maweri	Drawing No.	S-06
Reviewed By:	Eng. Fares Hubaish	Scale	As Shown
Approved By:	Eng. Mohammed Al-Maqdami		
Contract No	(IUS-AF-UWS-SAN-021)	Date	2023



HORIZONTAL PLAN



SECTION A-A



REPUBLIC OF YEMEN
MINISTRY OF WATER AND
ENVIRONMENT

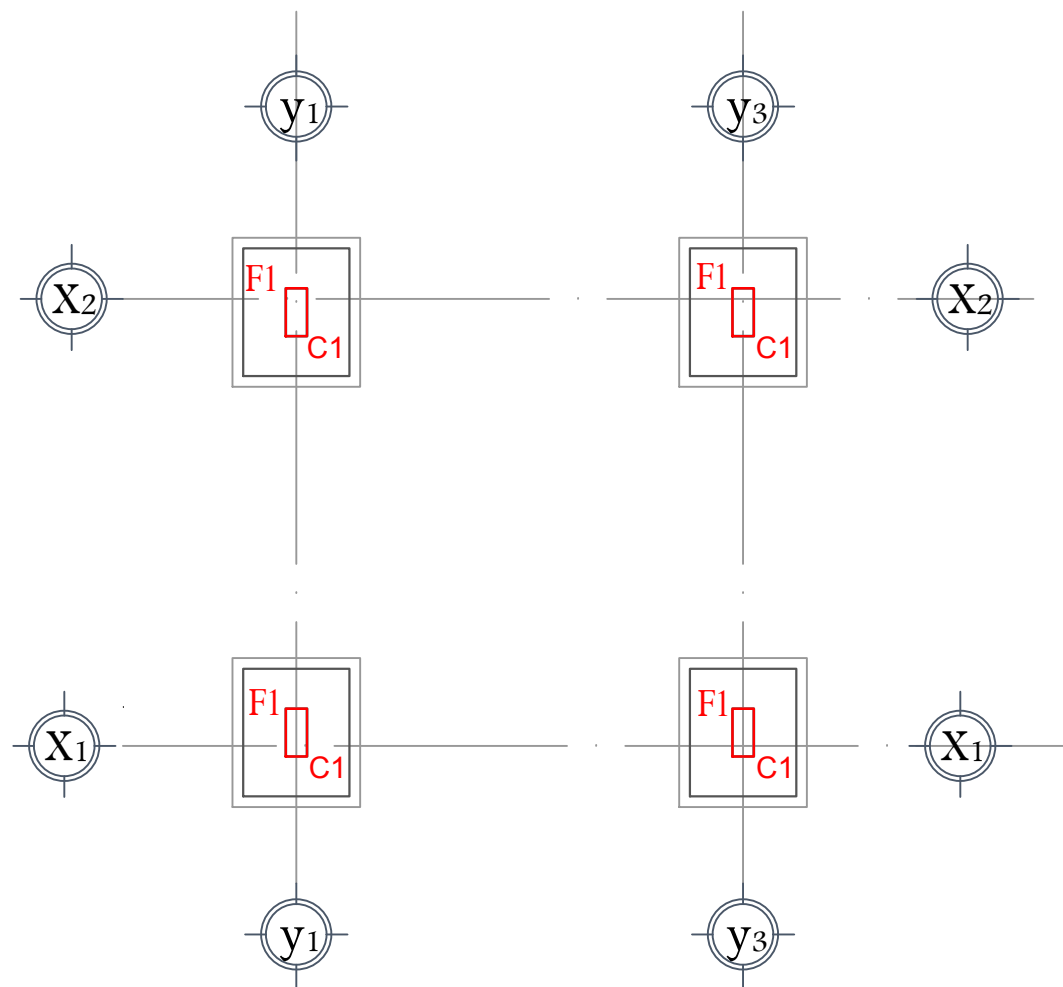
NOTE:



Project Name
Al-Nahdeen Water Distribution Network
and Elevated Tank

Drawing Title
Footings Detailing

Designed By:	Eng. Ameen Al-Maweri	Drawing No.	S-07
Reviewed By:	Eng. Fares Hubaish	Scale	As Shown
Approved By:	Eng. Mohammed Al-Maqdami	Date	2023
Contract No	(IUS-AF-UWS-SAN-021)		



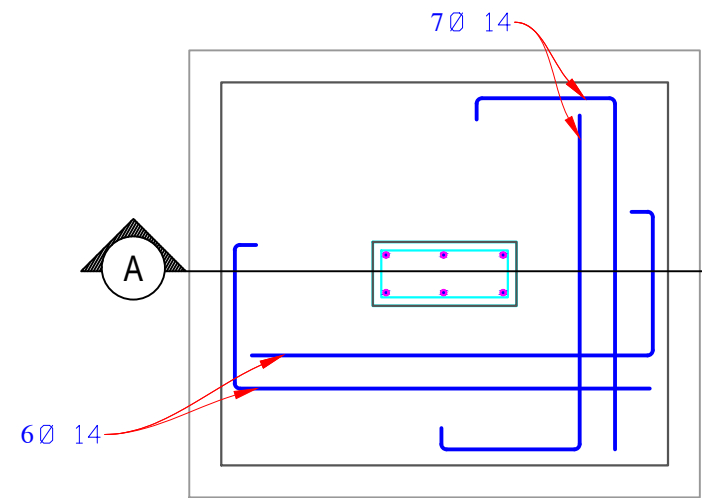
FOUNDATION PLAN

R.C Column TABLE DETAILS.

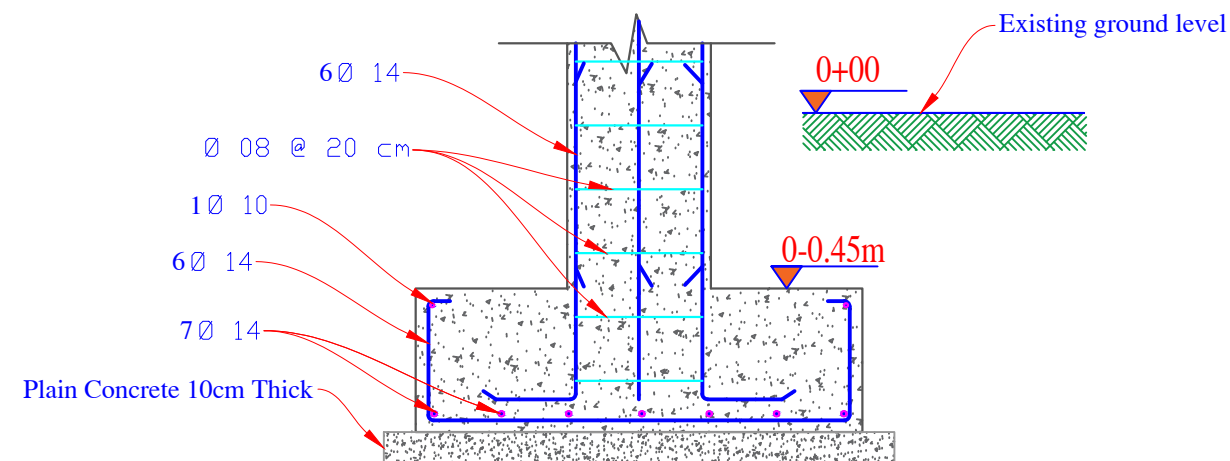
COLUMN NO	DIMENSIONS IN CM			REIN.	STIRRUPS
	LENGTH	WIDTH	HEIGHT		
C1	45	20	320	6 Ø 14	Ø 08@ 20 CM

R.C FOUNDATIONS TABLE DETAILS.

NO	DIMENSIONS IN CM			REINFORCEMENT BY DIRECTION.			
	LENGTH	WIDTH	HEIGHT	SHORT DIR.	hangers	LONG DIR.	hangers
F1	100	80	45	6 Ø 14	3 Ø 14	5 Ø 14	2 Ø 14



(F2) PLAN



SECTION A-A



REPUBLIC OF YEMEN
MINISTRY OF WATER AND
ENVIRONMENT

NOTE:



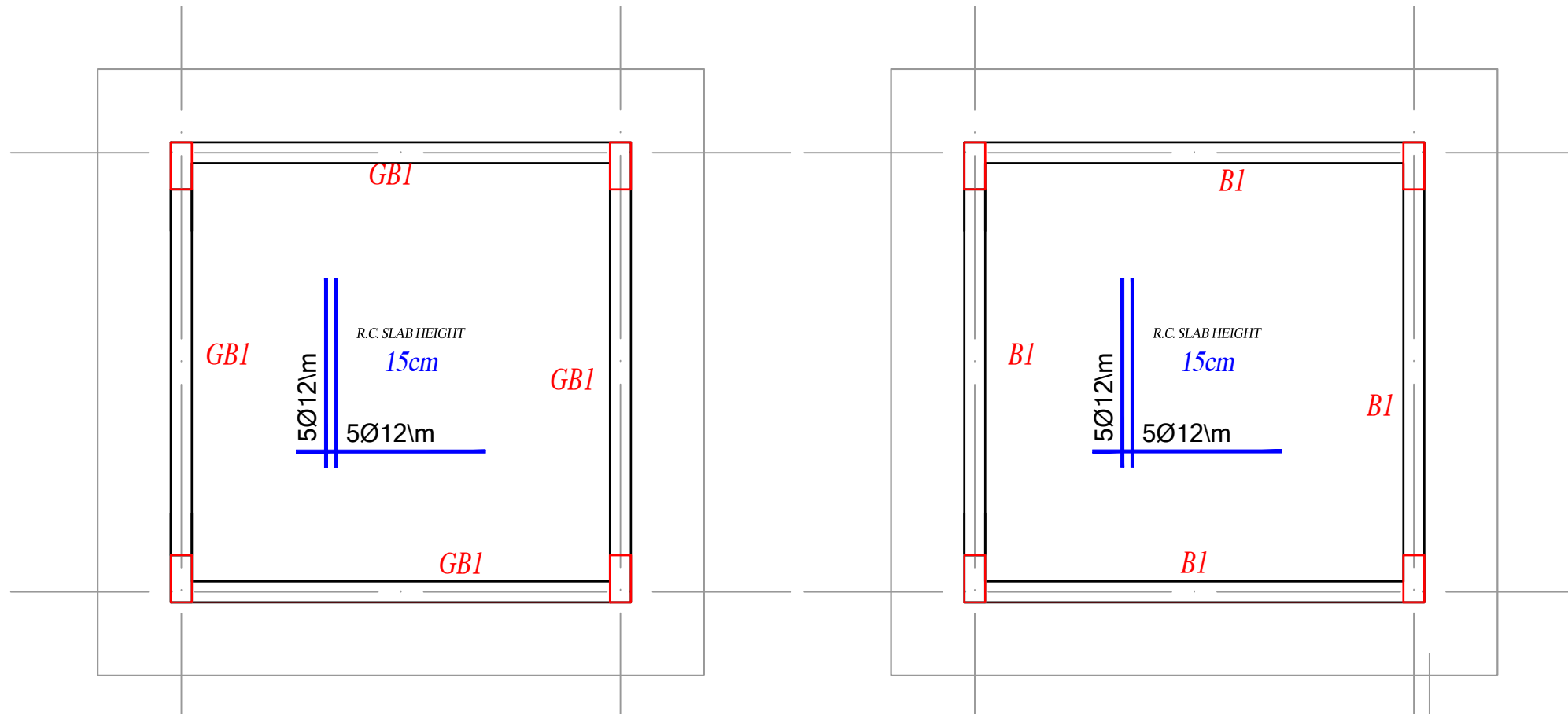
Project Name

Al-Nahdeen Water Distribution Network
and Elevated Tank

Drawing Title

Ground and Roof Beams Detailing

Designed By:	Eng. Ameen Al-Maweri	Drawing No.	S-08
Reviewed By:	Eng. Fares Hubaish	Scale	As Shown
Approved By:	Eng. Mohammed Al-Maqdami		
Contract No	(IUS-AF-UWS-SAN-021)	Date	2023



GROUND BEAM PLAN

BEAM & ROOF SLAB DETAILS

R.C GROUND BEAM TABLE DETAILS.

Beam NO	DIMENSIONS IN CM WIDTH HEIGHT	Top REIN.	Bot REIN.	STIRRUPS
B1&GB1	20 40	2 Ø 14	3 Ø 16	Ø08@ 20 CM

REMARKS:

1. ALL DIMENSIONS AND ELEVATIONS ARE IN CENTIMETERS AND METERS RESPECTIVELY, UNLESS OTHERWISE MENTIONED.
2. ALL DIMENSIONS TO BE CHECKED AND CONFIRMED ON SITE BEFORE COMMENCEMENT OF ANY WORK.
3. ANY DISCREPANCY TO BE REPORTED TO THE UNOPS SITE ENGINEER/ PROJECT MANAGER PROMPTLY BEFORE PROCEEDING.

NOTE:

ALL REINFORCED CONCRETE SHOULD BE OF C25



REPUBLIC OF YEMEN
MINISTRY OF WATER AND
ENVIRONMENT

NOTE:

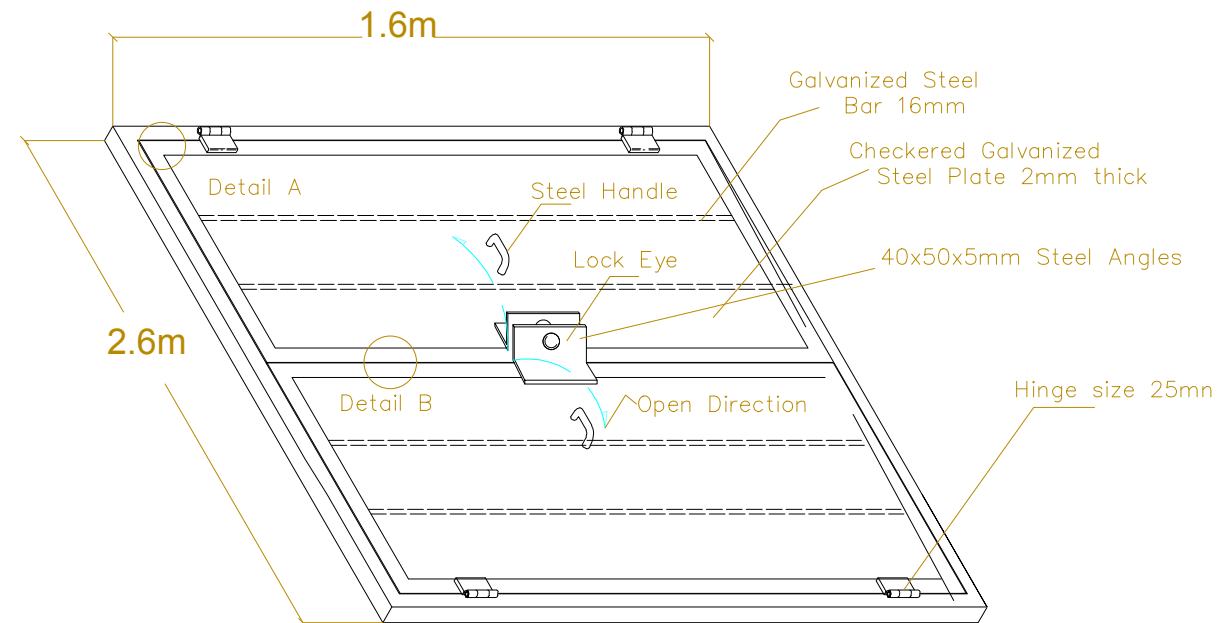
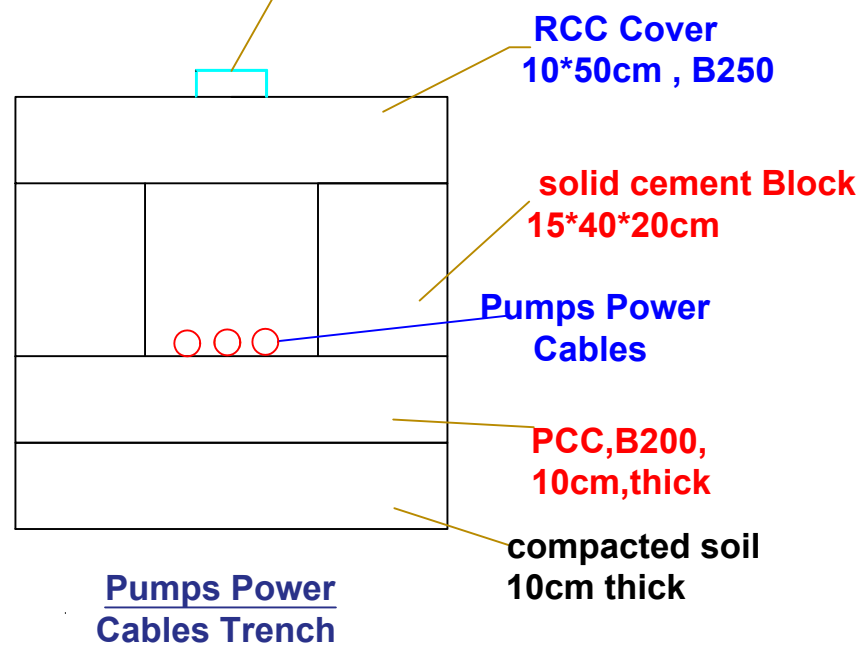


Project Name
Al-Nahdeen Water Distribution Network
and Elevated Tank

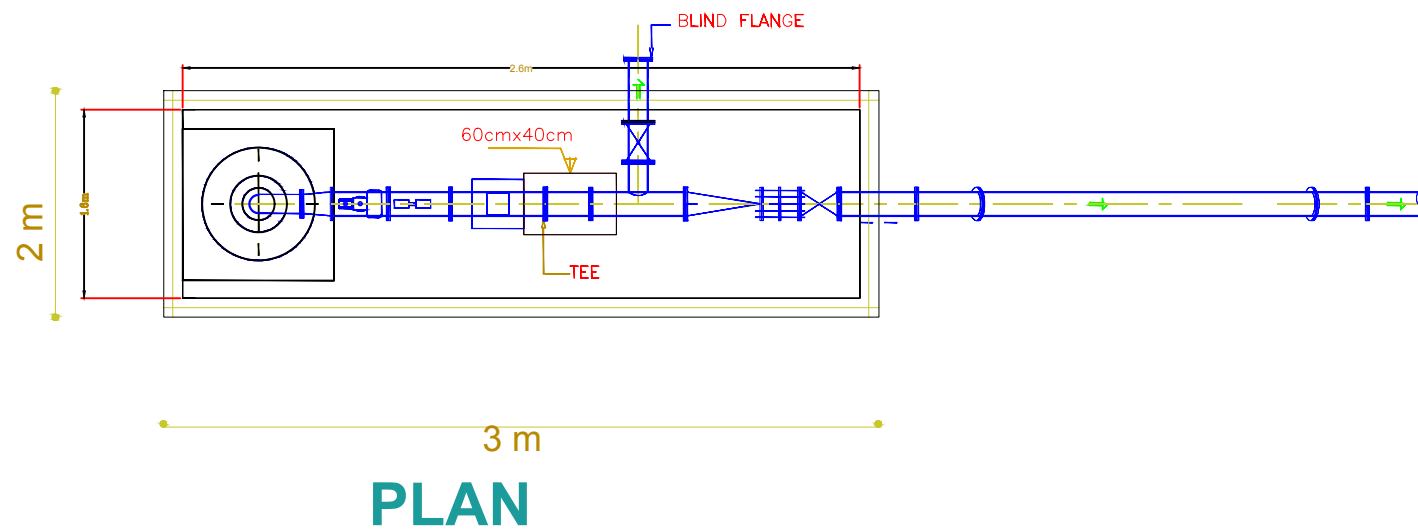
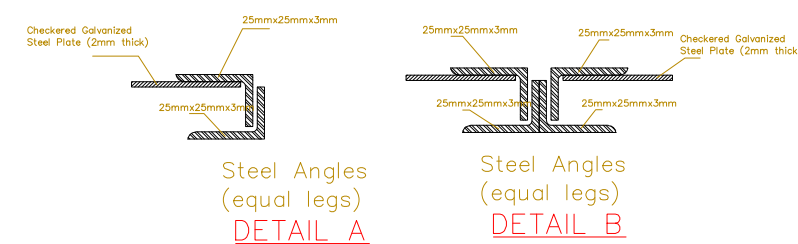
Drawing Title
Power Cables Trench and Well Head

Designed By:	Eng. Ameen Al-Maweri	Drawing No.	S-09
Reviewed By:	Eng. Fares Hubaish	Scale	As Shown
Approved By:	Eng. Mohammed Al-Maqdami		
Contract No	(IUS-AF-UWS-SAN-021)	Date	2023

Steel handle for lifting each cover has two,
and the max.cover length shall be not more than one meter.



Well Head Chamber Steel Cover Details



Pumps Power Cables Trench & well Head & cover of well



REPUBLIC OF YEMEN
MINISTRY OF WATER AND
ENVIRONMENT

NOTE:



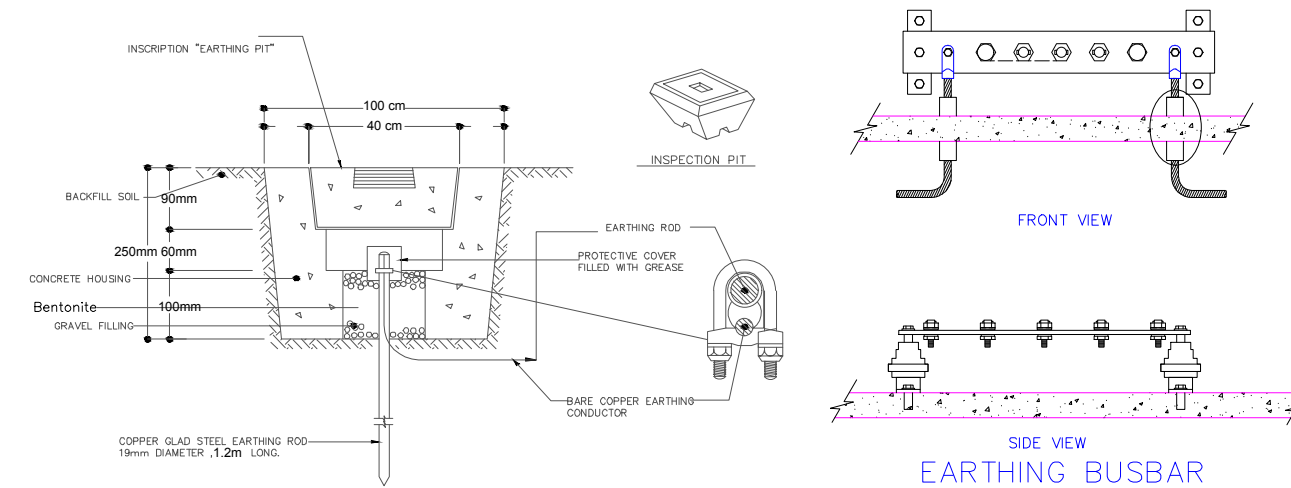
Project Name
Al-Nahdeen Water Distribution Network
and Elevated Tank

Drawing Title
Underground Cable Trench and
Earthing Plan Details

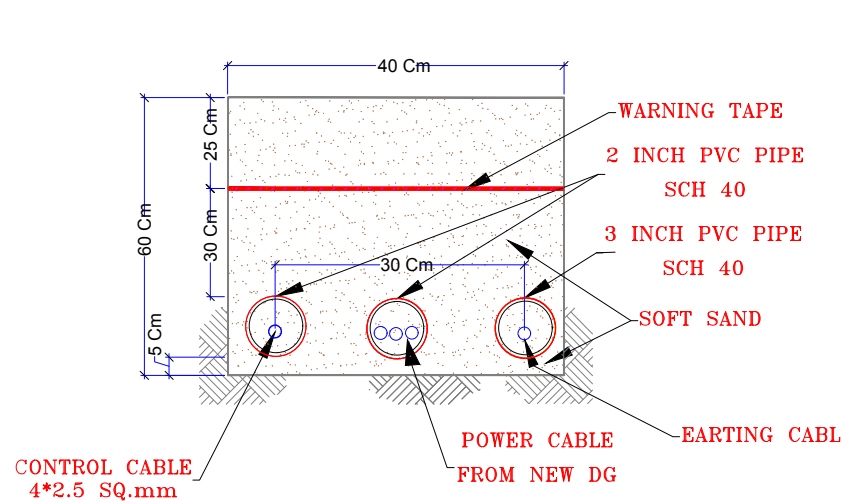
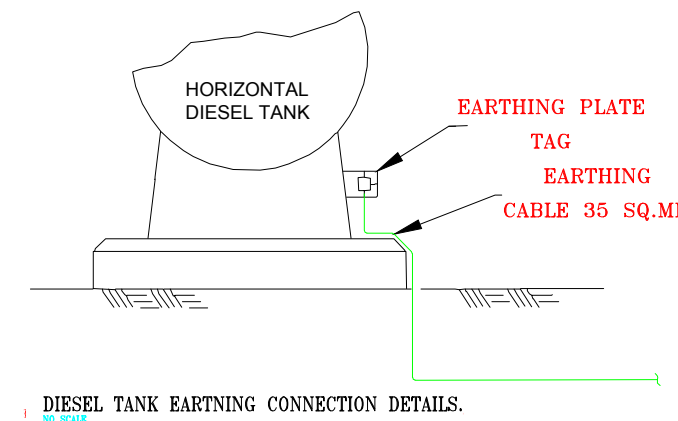
Designed By:	Eng. Ameen Al-Maweri	Drawing No.	E-01
Reviewed By:	Eng. Fares Hubaish	Scale	As Shown
Approved By:	Eng. Mohammed Al-Maqdami		
Contract No	(IUS-AF-UWS-SAN-021)	Date	2023

REMARKS:

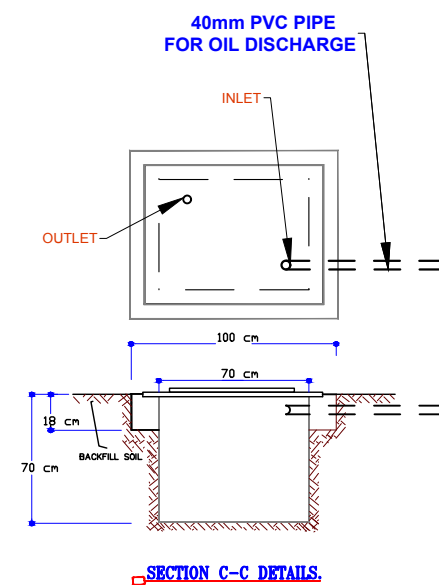
1. ALL DIMENSIONS AND ELEVATIONS ARE IN CENTIMETERS AND METERS RESPECTIVELY, UNLESS OTHERWISE MENTIONED.
2. ALL DIMENSIONS TO BE CHECKED AND CONFIRMED ON SITE BEFORE COMMENCEMENT OF ANY WORK.
3. ANY DISCREPANCY TO BE REPORTED TO THE UNOPS SITE ENGINEER/ PROJECT MANAGER PROMPTLY BEFORE PROCEEDING.
4. ALL OUTDOOR OUTLETS, SOCKET OR WIRING ACCESSORIES SHALL BE WEATHER PROOF TYPE.



Earth PIT DETAILS



POWER CABLE
TRENCH DETAILS



UNDERGROUND CABLE TRENCH AND EARTHING PLAN DETAILS.



REPUBLIC OF YEMEN
MINISTRY OF WATER AND
ENVIRONMENT

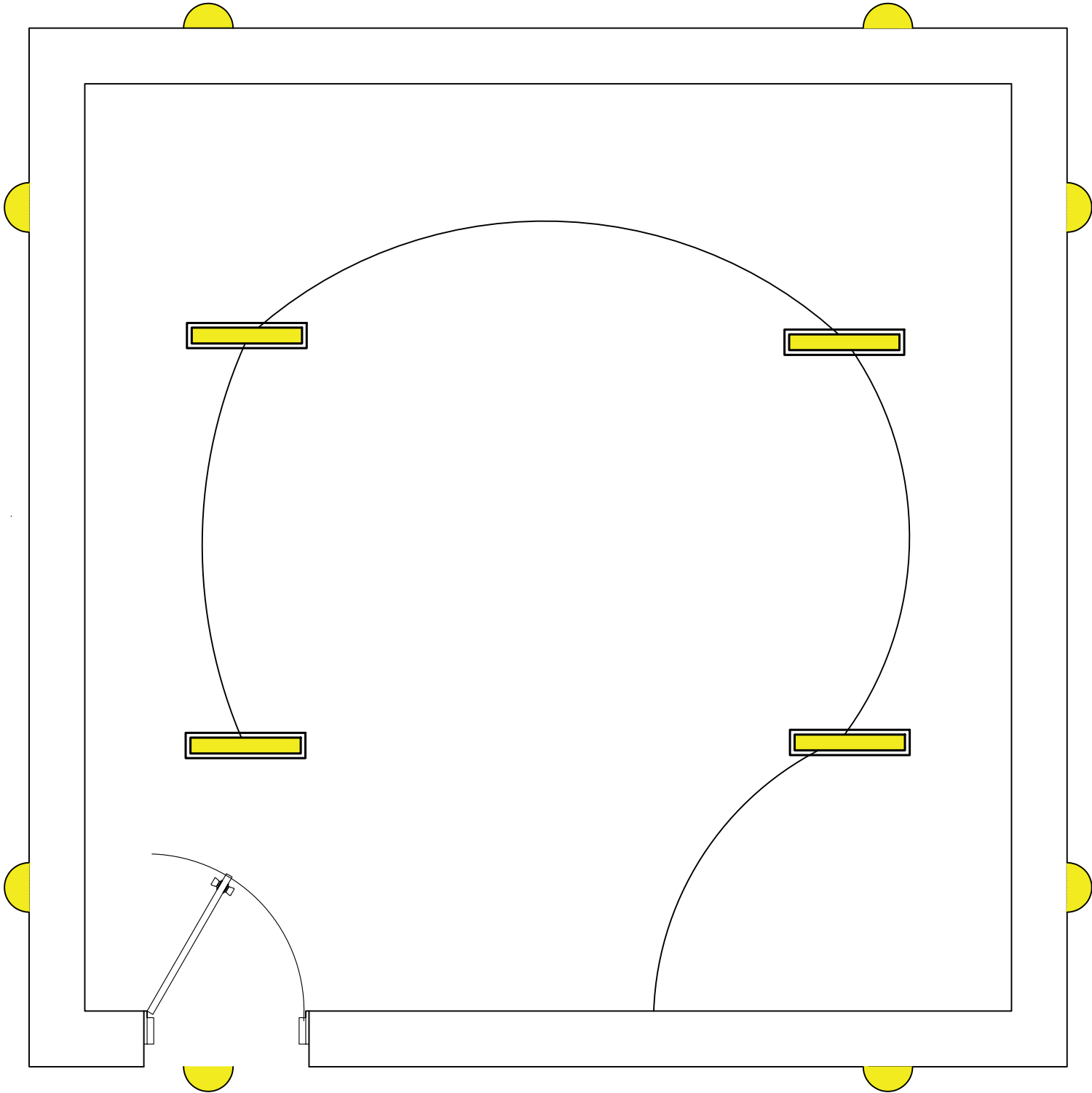
NOTE:



Project Name
Al-Nahdeen Water Distribution Network
and Elevated Tank

Drawing Title
Electrical Detailing

Designed By:	Eng. Ameen Al-Maweri	Drawing No.	E-02
Reviewed By:	Eng. Fares Hubaish	Scale	As Shown
Approved By:	Eng. Mohammed Al-Maqdami		
Contract No	(IUS-AF-UWS-SAN-021)	Date	2023

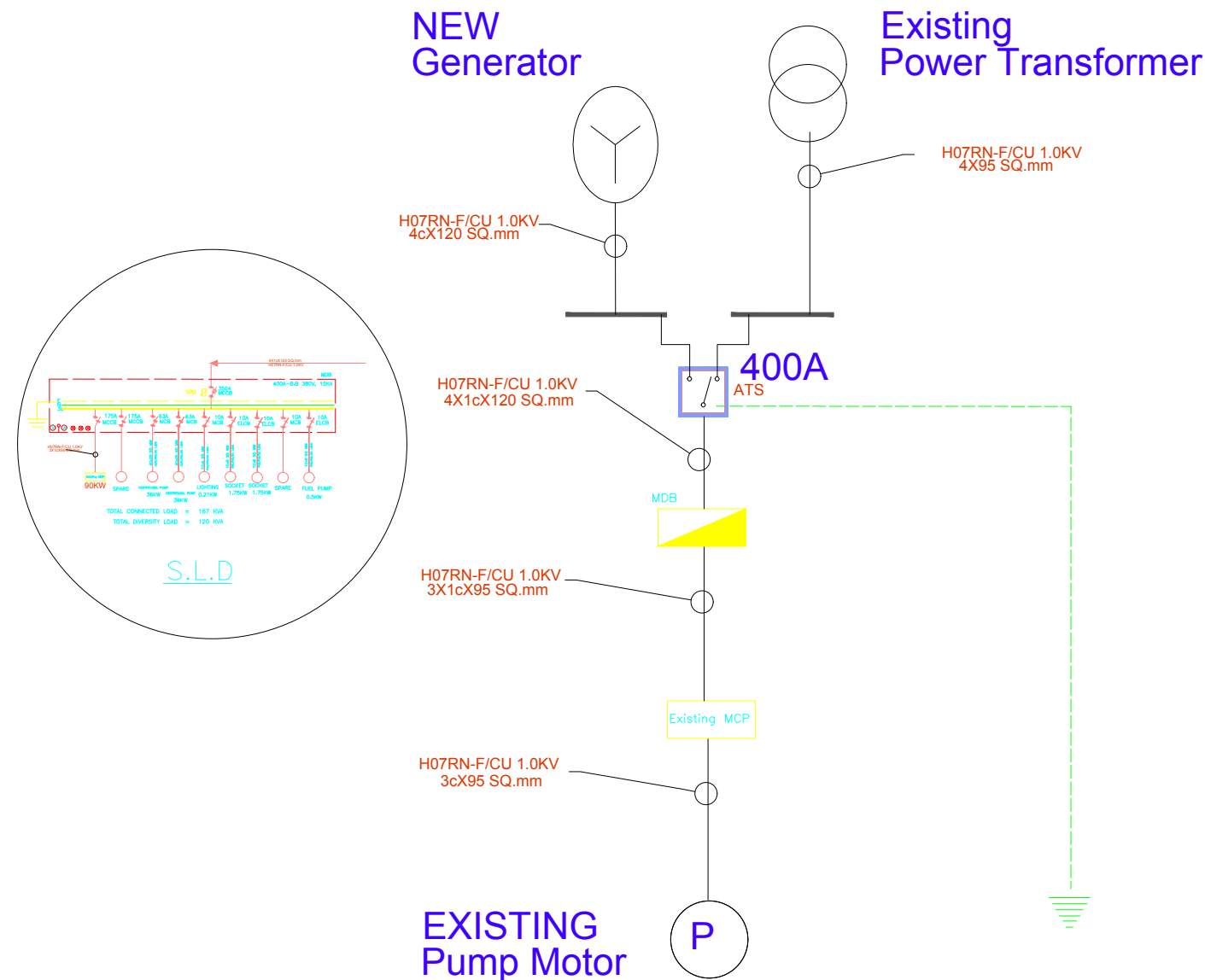


LEGEND:

SYMBOL	DESCRIPTION
	LED 600mm Lamp (20 W)
	SOCKET - 13A
	TWO POLE ONE-WAY SWITCH
	Outdoor LED Light, 30 W, 220V

REMARKS:

1. ALL DIMENSIONS AND ELEVATIONS ARE IN CENTIMETERS AND METERS RESPECTIVELY, UNLESS OTHERWISE MENTIONED.
2. ALL DIMENSIONS TO BE CHECKED AND CONFIRMED ON SITE BEFORE COMMENCEMENT OF ANY WORK.
3. ANY DISCREPANCY TO BE REPORTED TO THE UNOPS SITE ENGINEER/ PROJECT MANAGER PROMPTLY BEFORE PROCEEDING.
4. ALL OUTDOOR OUTLETS, SOCKET OR WIRING ACCESSORIES SHALL BE WEATHER PROOF TYPE.



SINGLE LINE DIAGRAM- SLD



REPUBLIC OF YEMEN
MINISTRY OF WATER AND
ENVIRONMENT

NOTE:



Project Name

Al-Nahdeen Water Distribution Network and Elevated Tank

Drawing Title

Single Line Diagram

Designed By:	Eng. Ameen Al-Maweri	Drawing No. E-03
Reviewed By:	Eng. Fares Hubaish	Scale As Shown
Approved By:	Eng. Mohammed Al-Maqdami	
Contract No	(IUS-AF-UWS-SAN-021)	Date 2023