

World Vision International

World Vision Afghanistan



Faryab Zonal Office

WASH Sector
DAWAM WASH Project

Design and Estimation of Solar Powered Water Supply Network

Project Name: Taheri Haji Saleh Village Water Supply System Design

Village: Taheri Haji Saleh

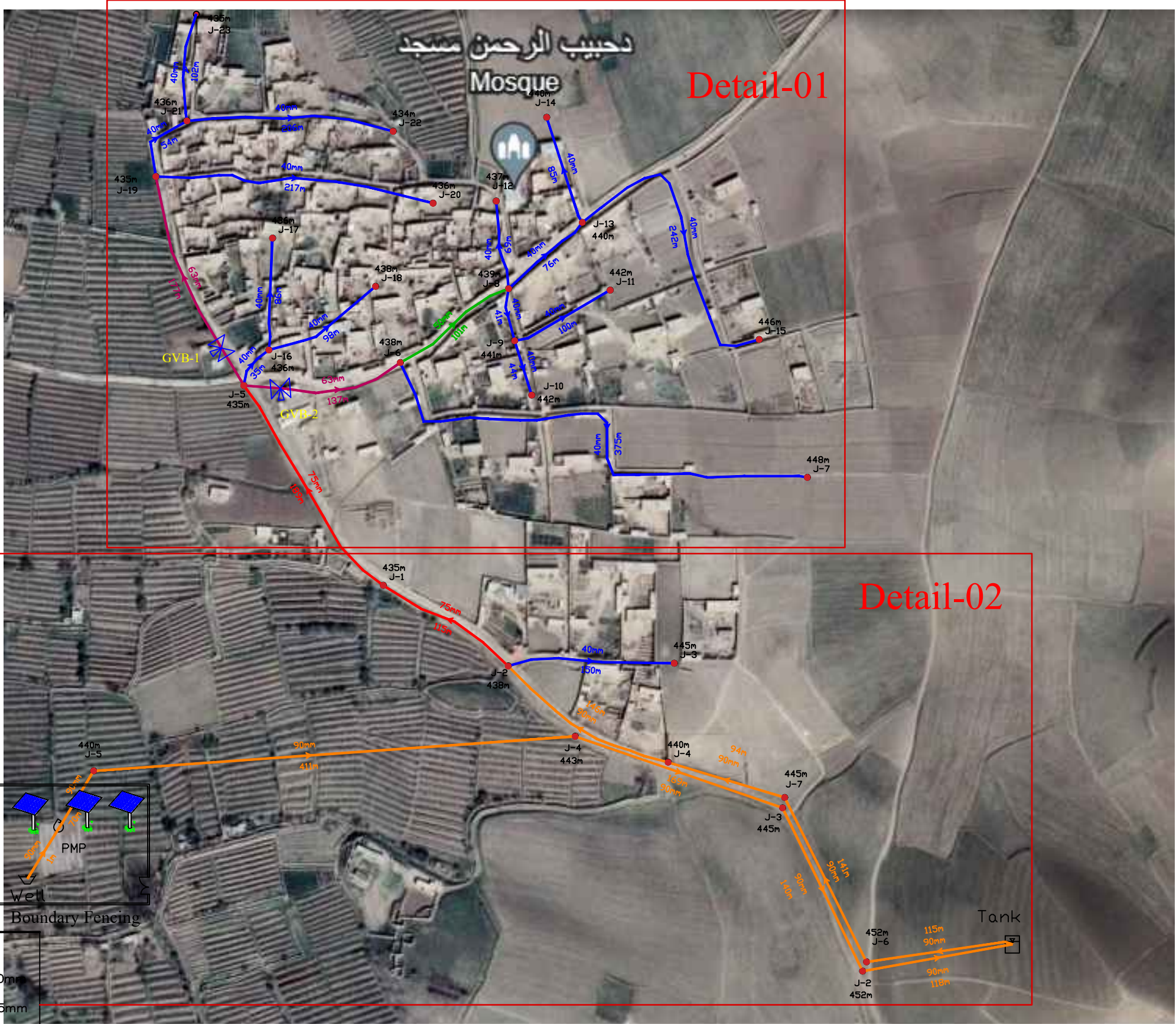
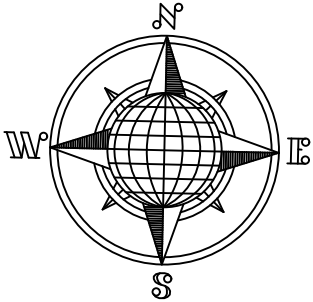
District: Dawlat Abad

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Project Information

Number of Families	213
Number of House Holds(Meter)	123
Well Discharge Required	3.34 l/s
Length of Network	6.51 km
Work Days	60 days
RCC Ground Tank	40 M3
Well Depth	100 m



Legend

	Ground Tank		Ø90mm
	Bore Well		Ø75mm
	Solar Stand		Ø63mm
	Submersible		Ø50mm
	GVB		Ø40mm
	Gate Valve Box		
Flow = L/s Velocity = m/s Pressure = m H ₂ O			

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Water Supply Network Coordinates

NO	Description	Easting	Northing	Elevation
1	Bore Well	672185	4027698.8	440m
2	Water Tank	672928.5	4027559	471m
3	PV System	672185	4027698.8	440m

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Detail-01





Detail-02

Ground Tank

Bore Well

Solar Stand

Submersible

GVB

Gate Valve Box

Flow = L/s

Velocity = m/s

Pressure = m H2O

Ø90mm

Ø75mm

Ø63mm

Ø50mm

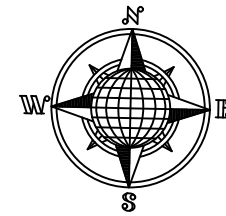
Ø40mm

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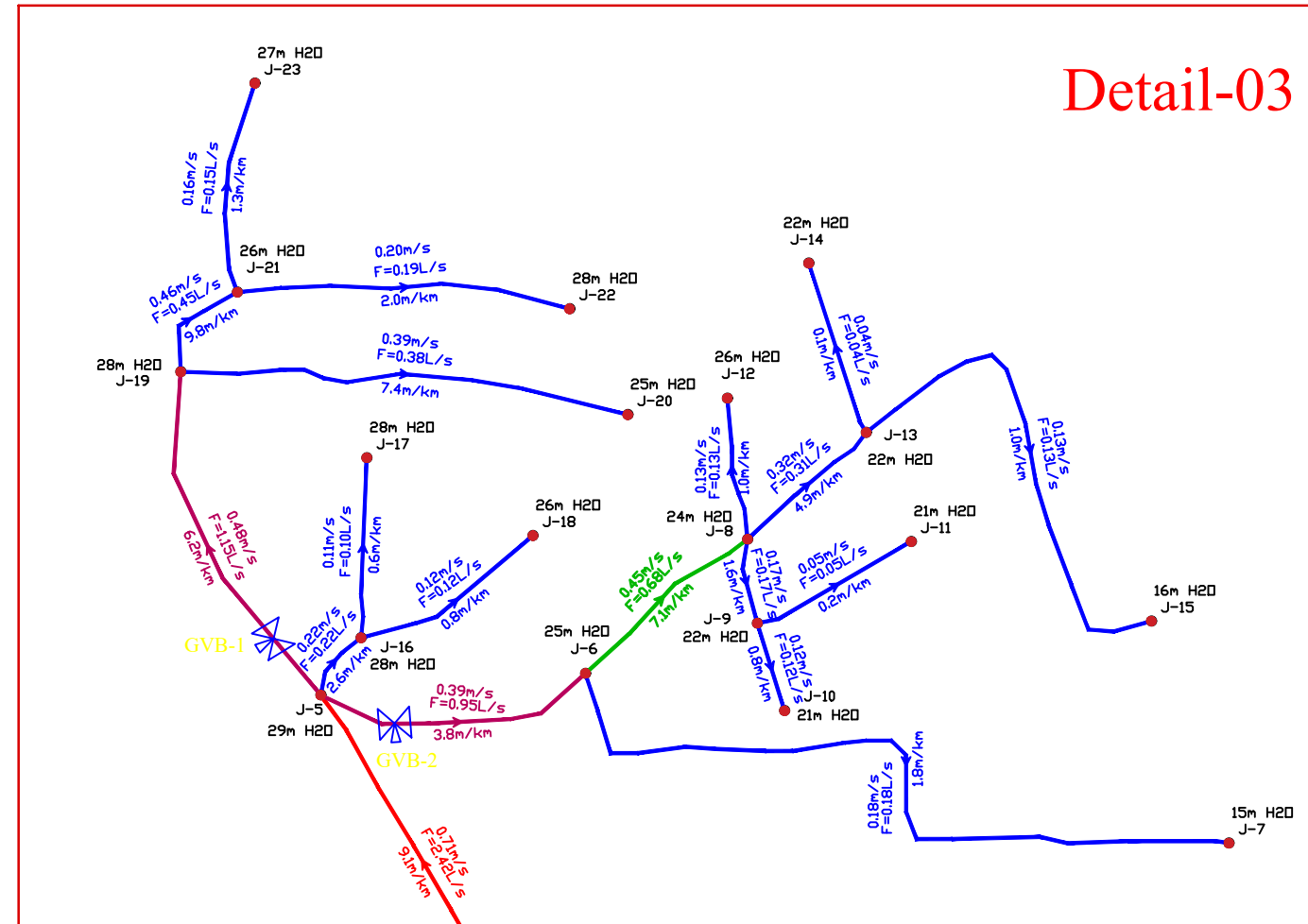
Yama Hewadmal

	SURVEYED BY	Eng. Ansar Kazimi	CHECKED BY	WASH Coordinator	SCALE	4YVWZ86SQ-1X202LZ	SHEET NO.	03/16	PROVINCE	Faryab	PROJECT NAME:	Taheri Haji Saleh Solar Water Supply Pipe Scheme
	DESIGNED BY	Eng. Ansar Kazimi	REVIEWED BY	WASH Advisor	DATE				DISTRICT	Dawlat Abad	DRAWING TITLE:	Length, Diameter & Elevation
	DRAWN BY	Eng. Ansar Kazimi	APPROVED BY	Project Director/Manager	DRAWING NO.				VILLAGE	Taheri Haji Saleh village		

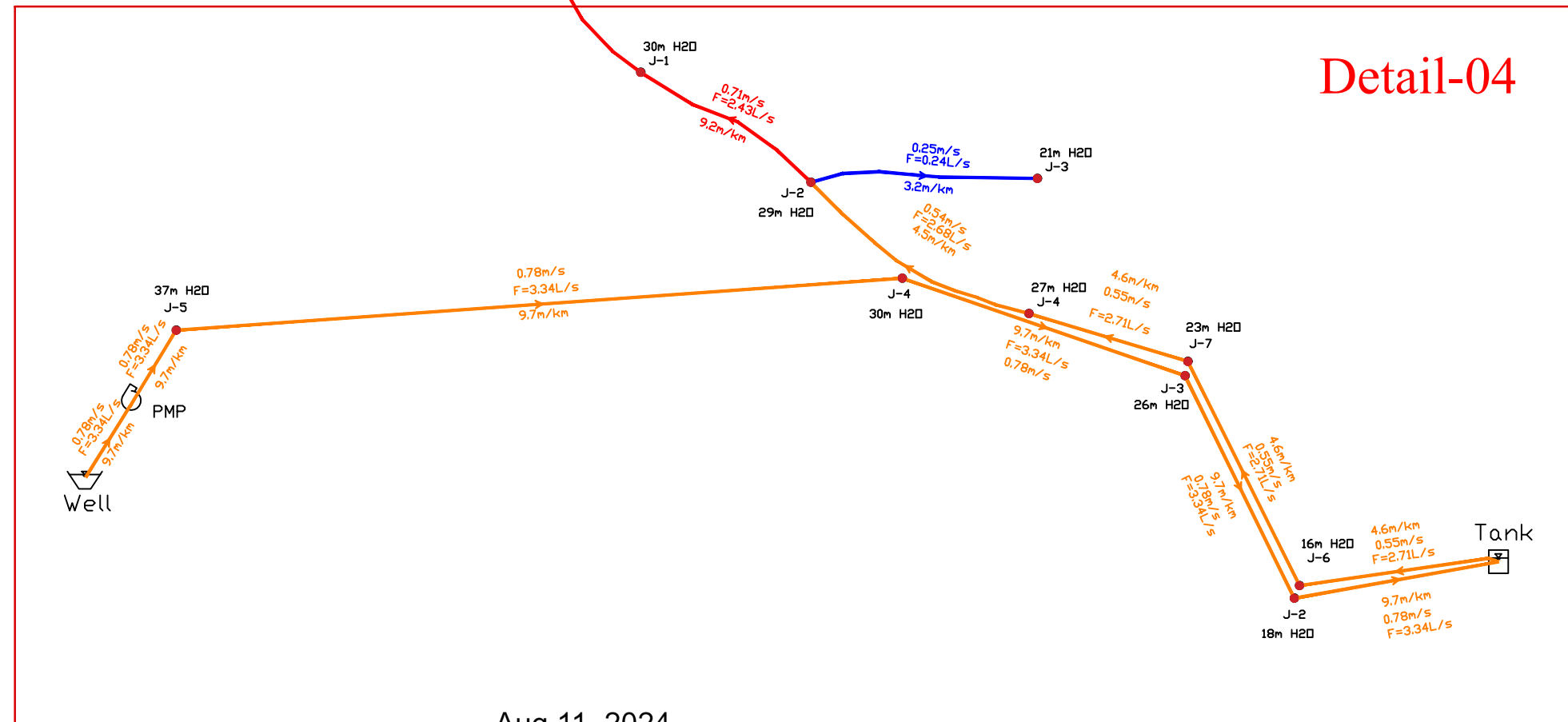
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Detail-03



Detail-04



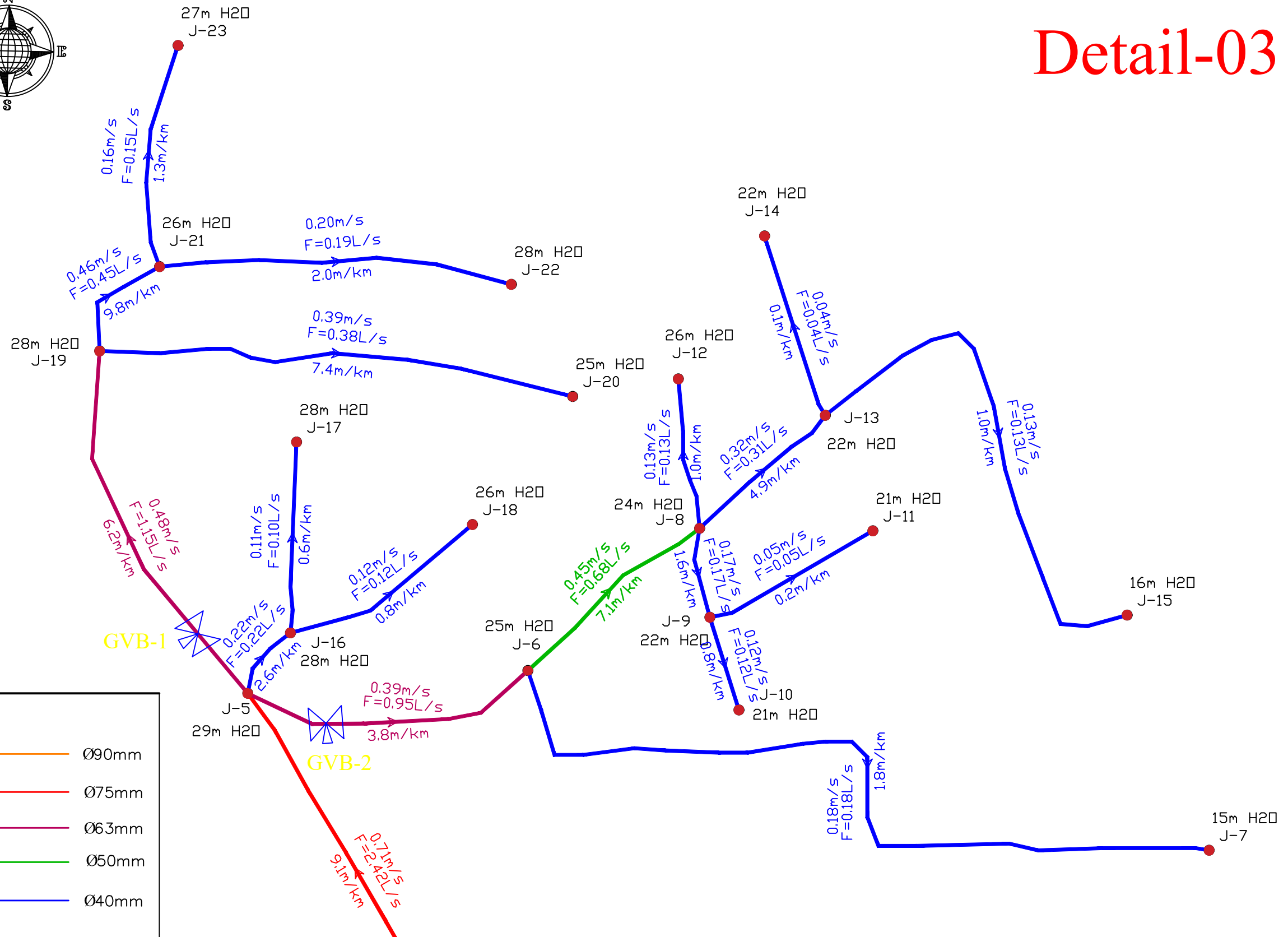
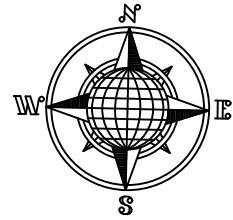
Legend

	Ground Tank		Ø90mm
	Bore Well		Ø75mm
	Solar Stand		Ø63mm
	Submersible		Ø50mm
	Gate Valve Box		Ø40mm
Flow = L/s Velocity = m/s Pressure = m H2O			

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Detail-03



Legend

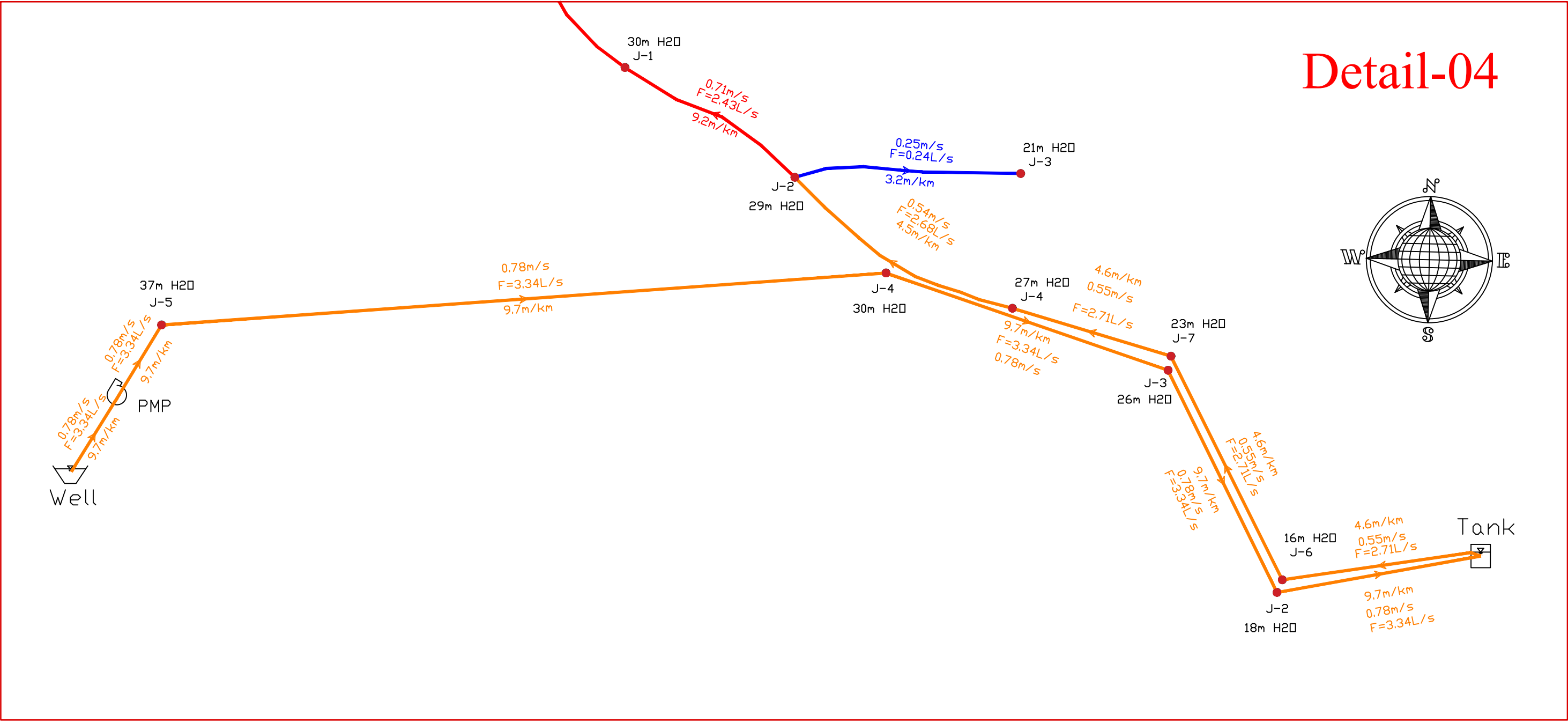
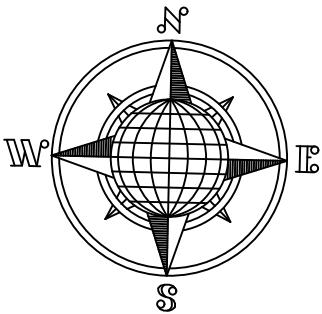
- Ground Tank
- Bore Well
- Solar Stand
- Submersible
- Gate Valve Box
- Ø90mm
- Ø75mm
- Ø63mm
- Ø50mm
- Ø40mm

Flow = L/s Velocity = m/s Pressure = m H2O

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Detail-04



Legend

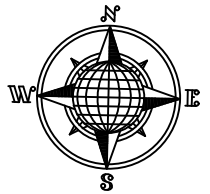
	Ground Tank	Ø90mm
	Bore Well	Ø75mm
	Solar Stand	Ø63mm
	Submersible	Ø50mm
	GVB	Ø40mm
	Gate Valve Box	
Flow = L/s Velocity = m/s Pressure = m H2O		

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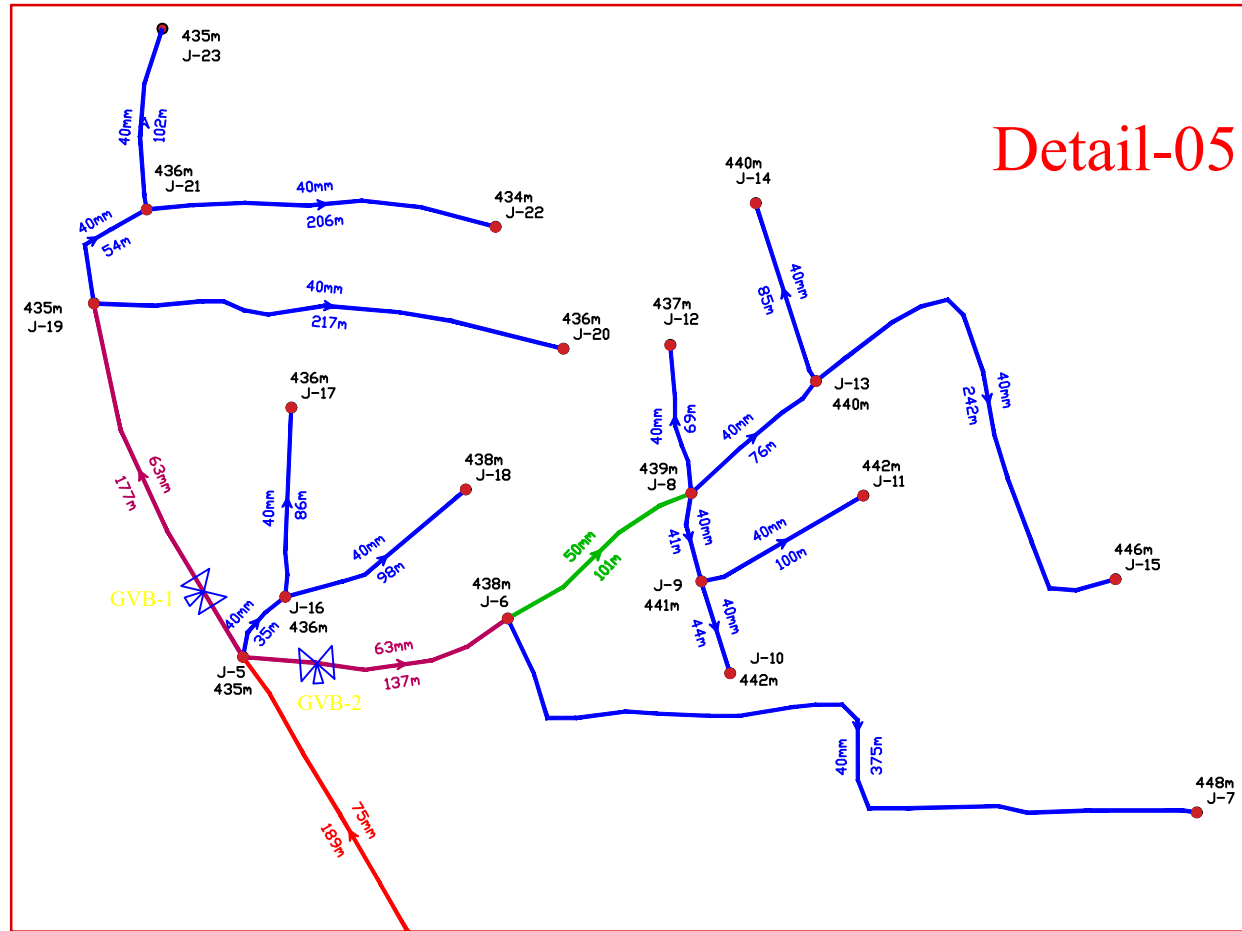
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	DESIGNED BY	Eng. Ansar Kazimi	REVIEWED BY	WASH Advisor	DATE				DISTRICT	Dawlat Abad	DRAWING TITLE:	Pressure, Flow, Velocity and Headloss Gradient
	DRAWN BY	Eng. Ansar Kazimi	APPROVED BY	Project Director/Manager	DRAWING NO.				VILLAGE	Taheri Haji Saleh village		

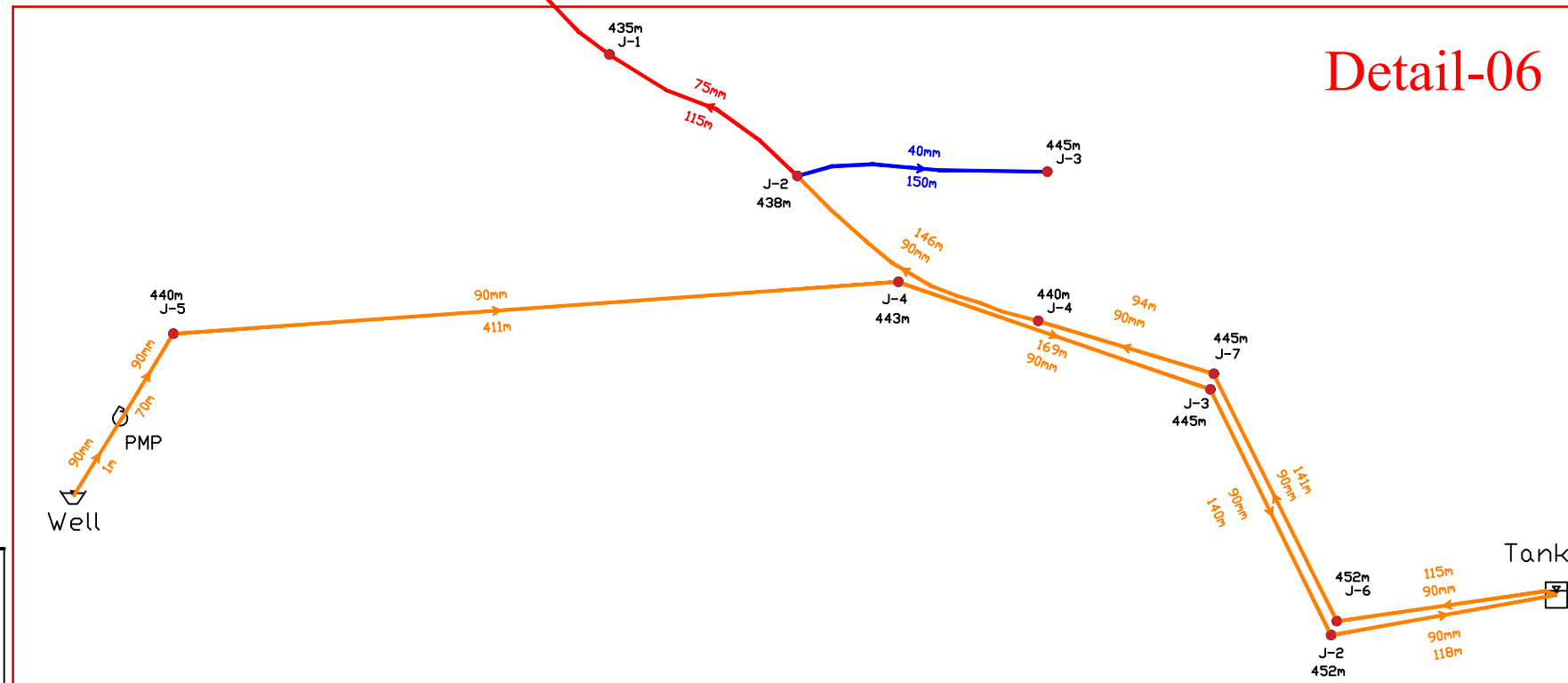
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Detail-05



Detail-06



Legend

- Ground Tank
 - Bore Well
 - Solar Stand
 - Submersible
 - GVB
 - Gate Valve Box
- Flow = L/s Velocity = m/s Pressure = m H2O

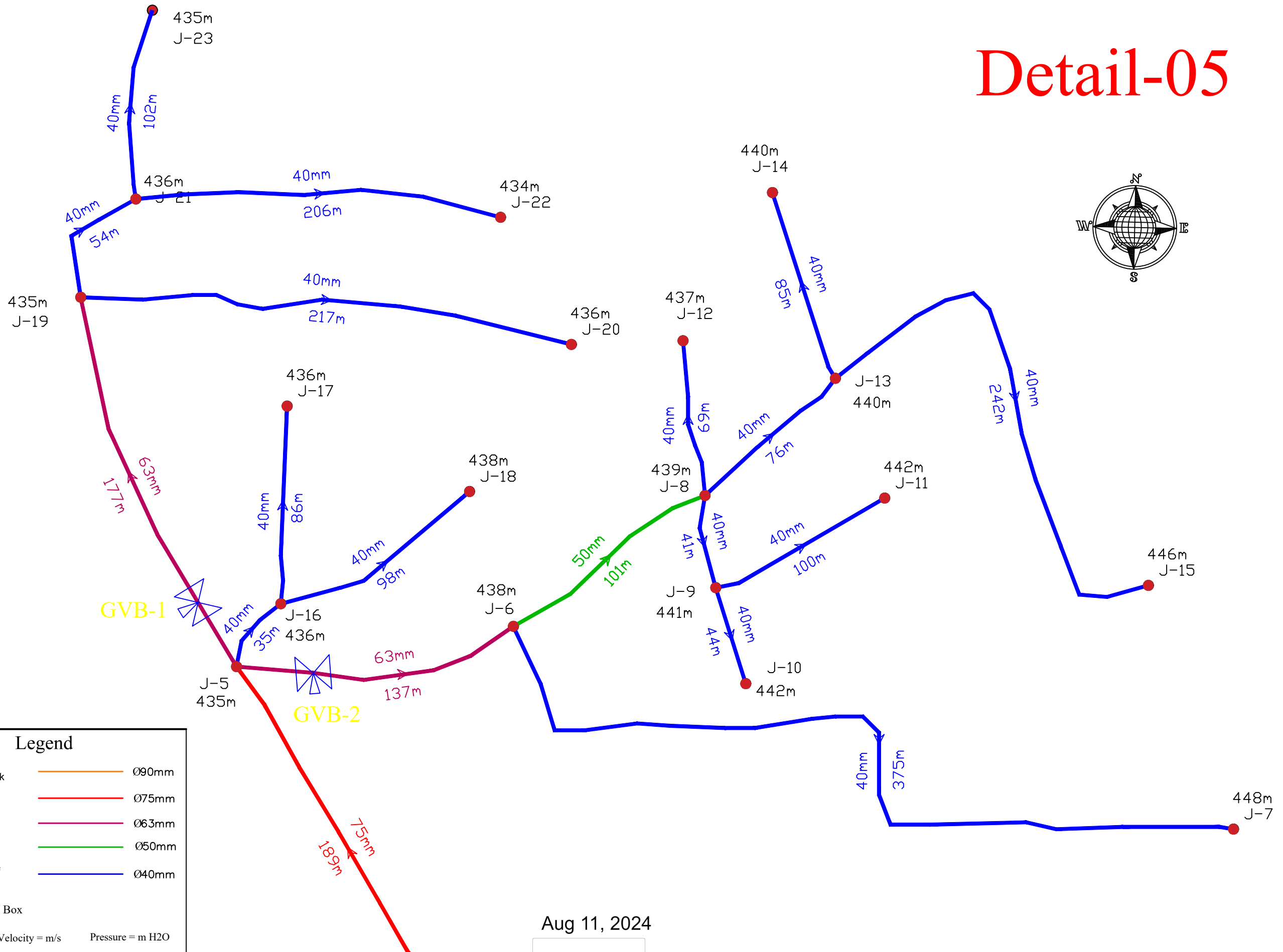
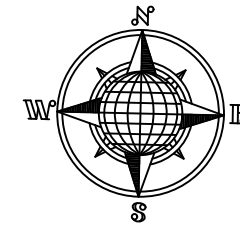
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	DRAWN BY	Eng. Ansar Kazimi	APPROVED BY	Project Director/Manager	DRAWING NO.				VILLAGE	Taheri Haji Saleh village		

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Detail-05



Legend

- Ground Tank
 - Bore Well
 - Solar Stand
 - Submersible
 - GVB
 - Gate Valve Box
- Flow = L/s Velocity = m/s Pressure = m H2O

SURVEYED BY Eng. Ansar Kazimi
DESIGNED BY Eng. Ansar Kazimi
DRAWN BY Eng. Ansar Kazimi

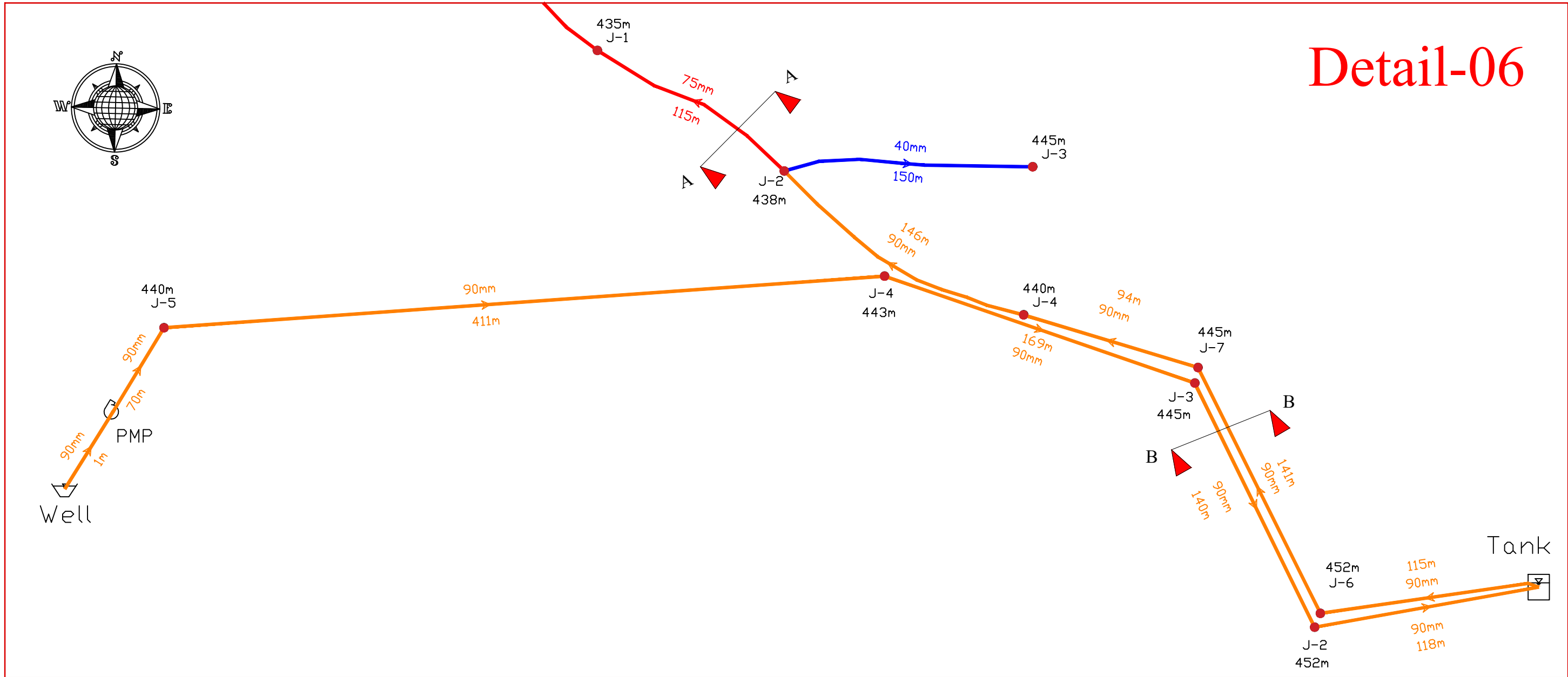
CHECKED BY WASH Coordinator
REVIEWED BY WASH Advisor
APPROVED BY Project Director/Manager

SCALE 4YVZ85Q-1X282LZ
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SHEET NO. 08/16
DRAWING NO.

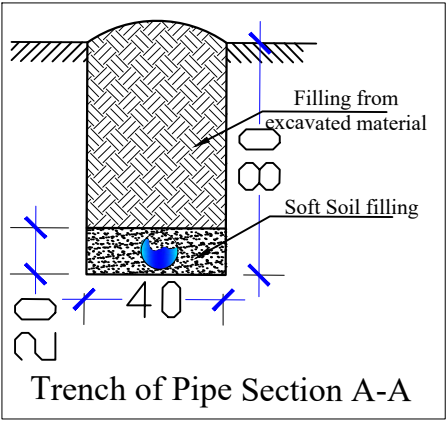
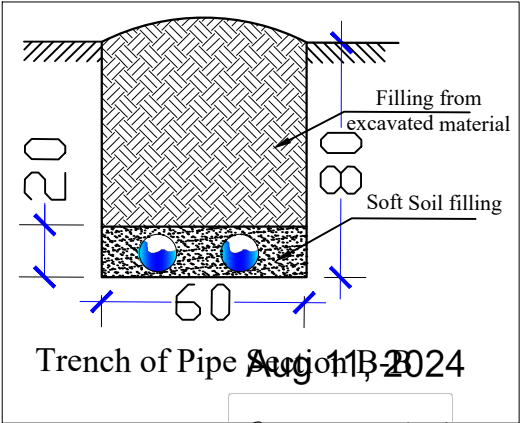
PROVINCE Faryab
DISTRICT Dawlat Abad
VILLAGE Taheri Haji Saleh village

PROJECT NAME: Taheri Haji Saleh Solar Water Supply Pipe Scheme
DRAWING TITLE: Length, Diameter & Elevation

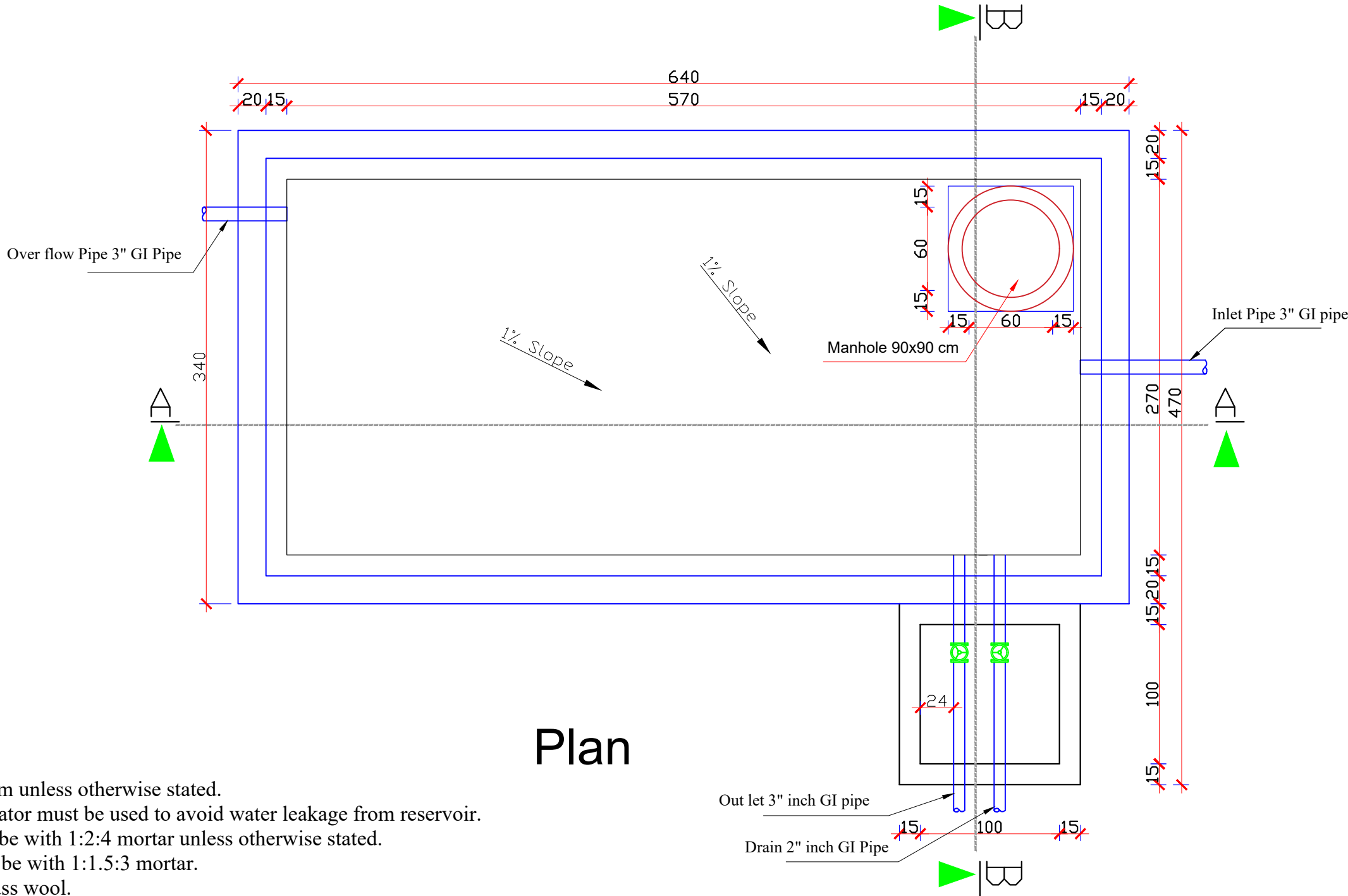
Detail-06



Legend	
	Ground Tank
	Bore Well
	Solar Stand
	Submersible
	GVB
	Gate Valve Box
Flow = L/s Velocity = m/s Pressure = m H2O	
	Ø90mm
	Ø75mm
	Ø63mm
	Ø50mm
	Ø40mm



RCC Ground Reservoir Plan



Note:

- 1- All dimensions are in cm unless otherwise stated.
- 2- During RCC work vibrator must be used to avoid water leakage from reservoir.
- 3- All PCC works should be with 1:2:4 mortar unless otherwise stated.
- 4- All RCC works should be with 1:1.5:3 mortar.
- 5- Isolation material is glass wool.
- 7- Curing must be continued upto 28 days.
- 8- Clear and Clean water must be used every where.
- 9- The inlet, outlet, overflow and washing pipes should be adjusted according to site condition.

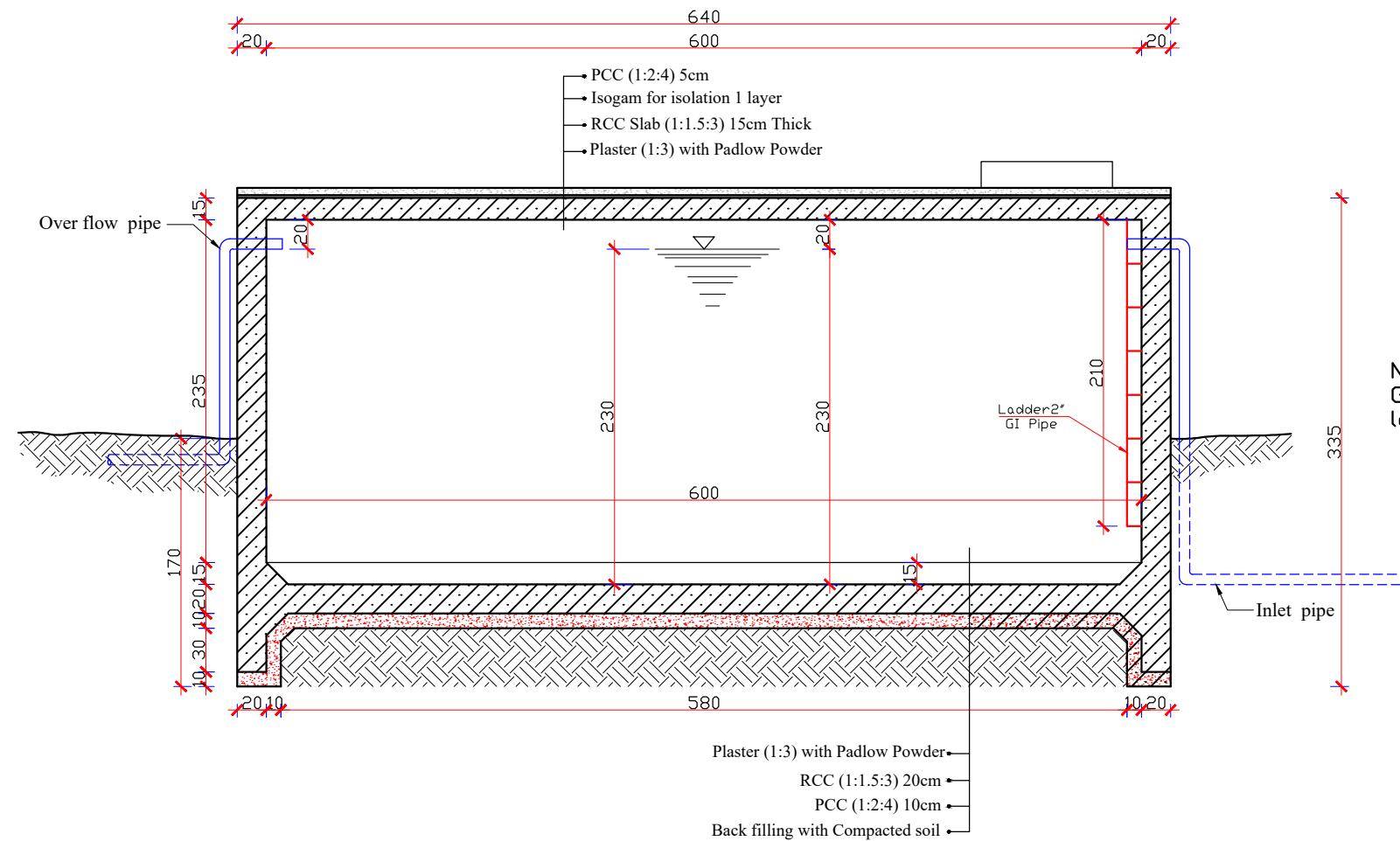
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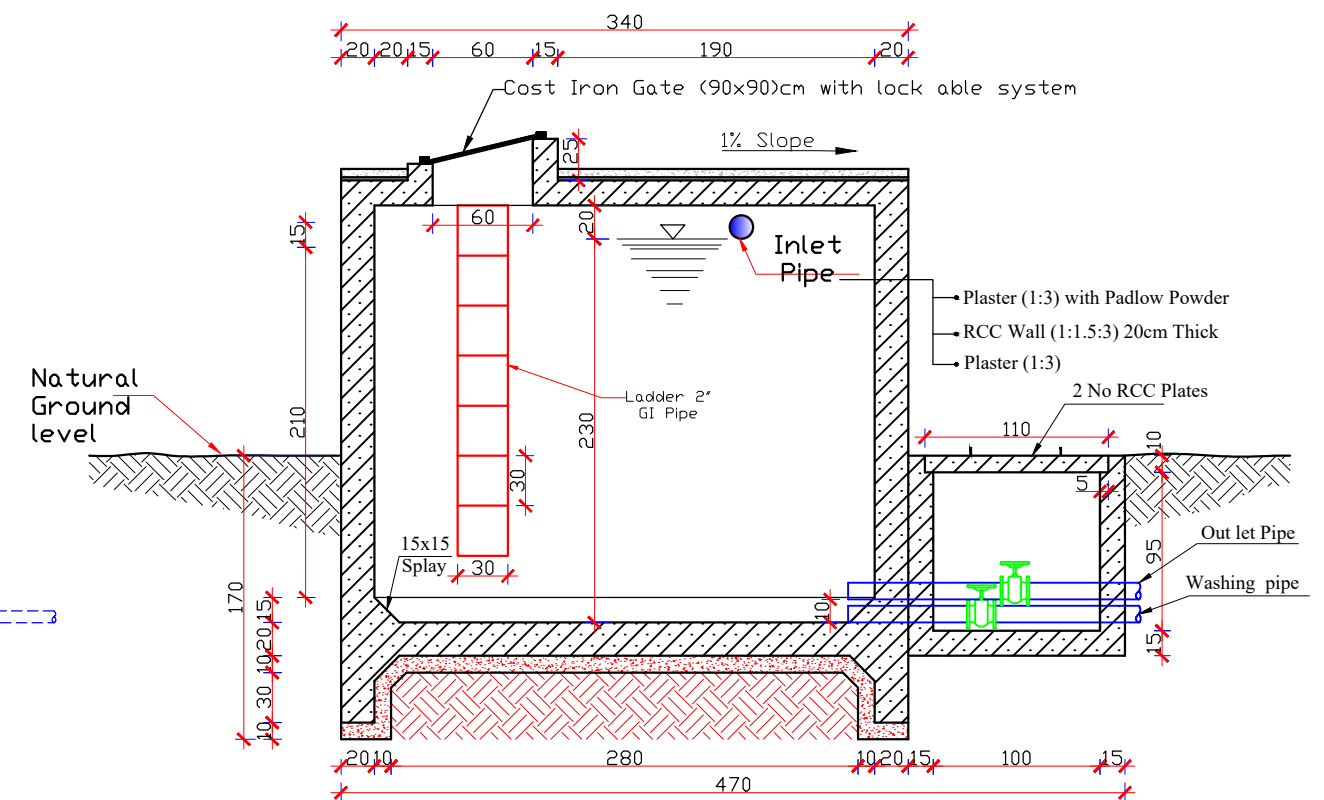
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RCC Ground Reservior Sections



Section A-A



Section B-B

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Aug 11, 2024

SHEET
NO.

PROVINCE	Faryab
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DISTRICT	Dawlat Abad
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VILLAGE	Taheri Haji Saleh village
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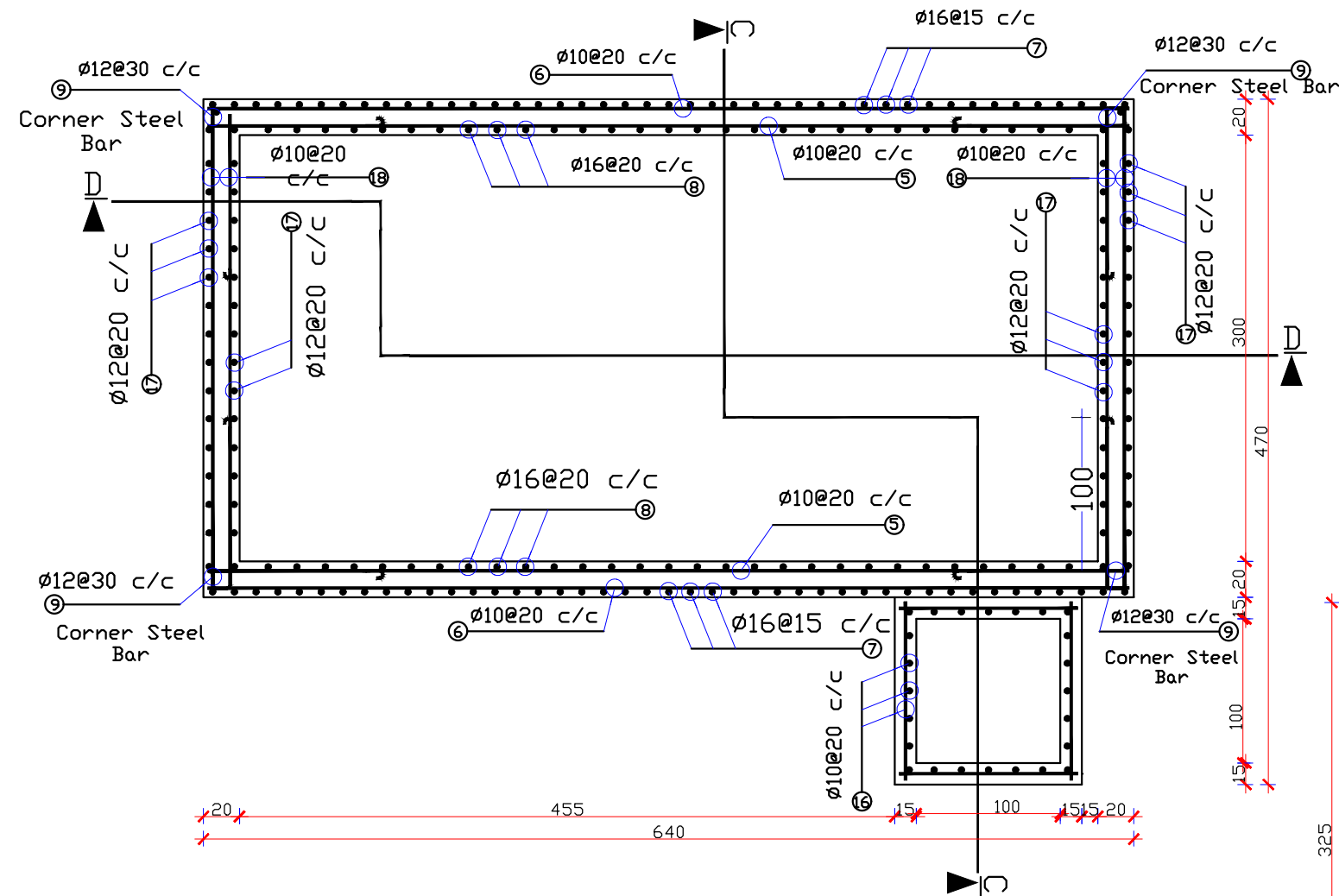
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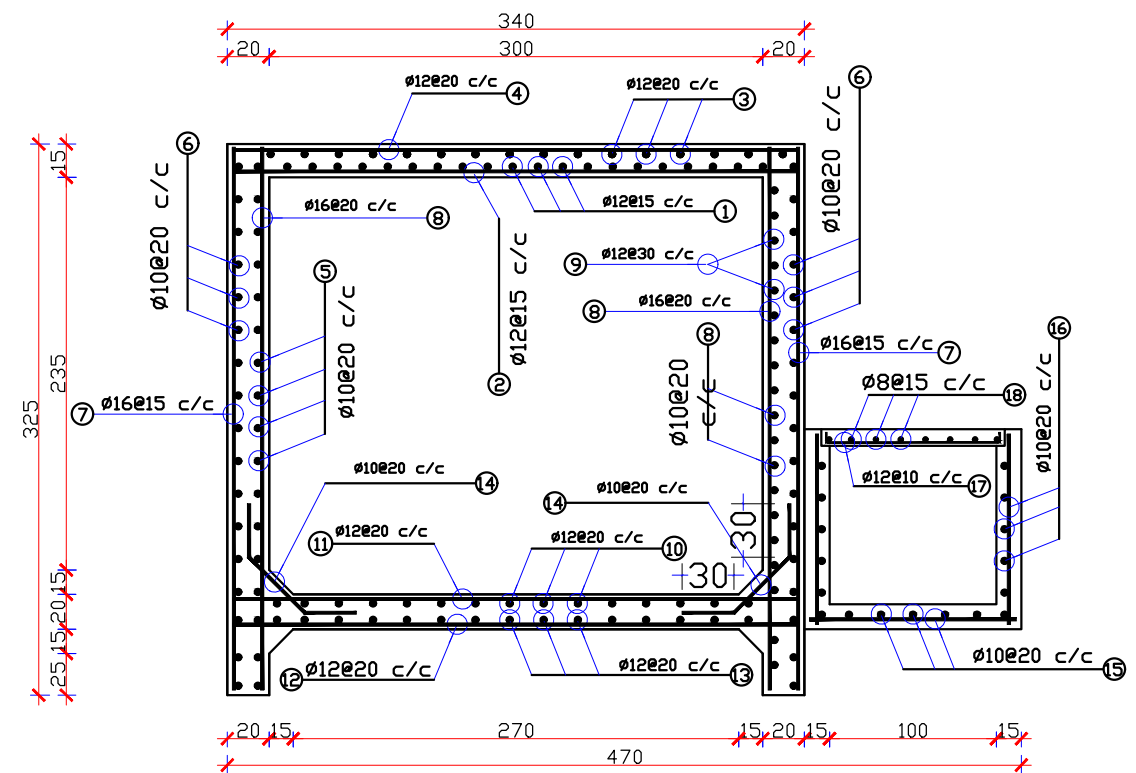
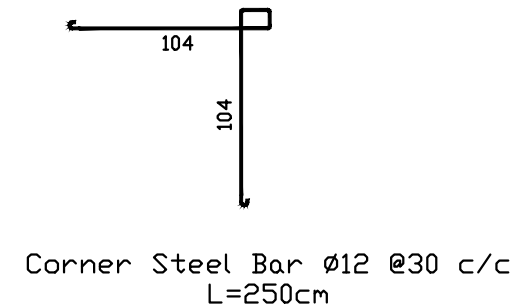
DRAWING TITLE:

RCC Ground Reservoir Section

Ground Reservoir Reinforcement Details



Reinforcement Plan



Section C-C








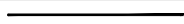
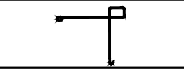
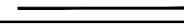
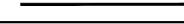
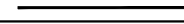

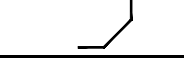






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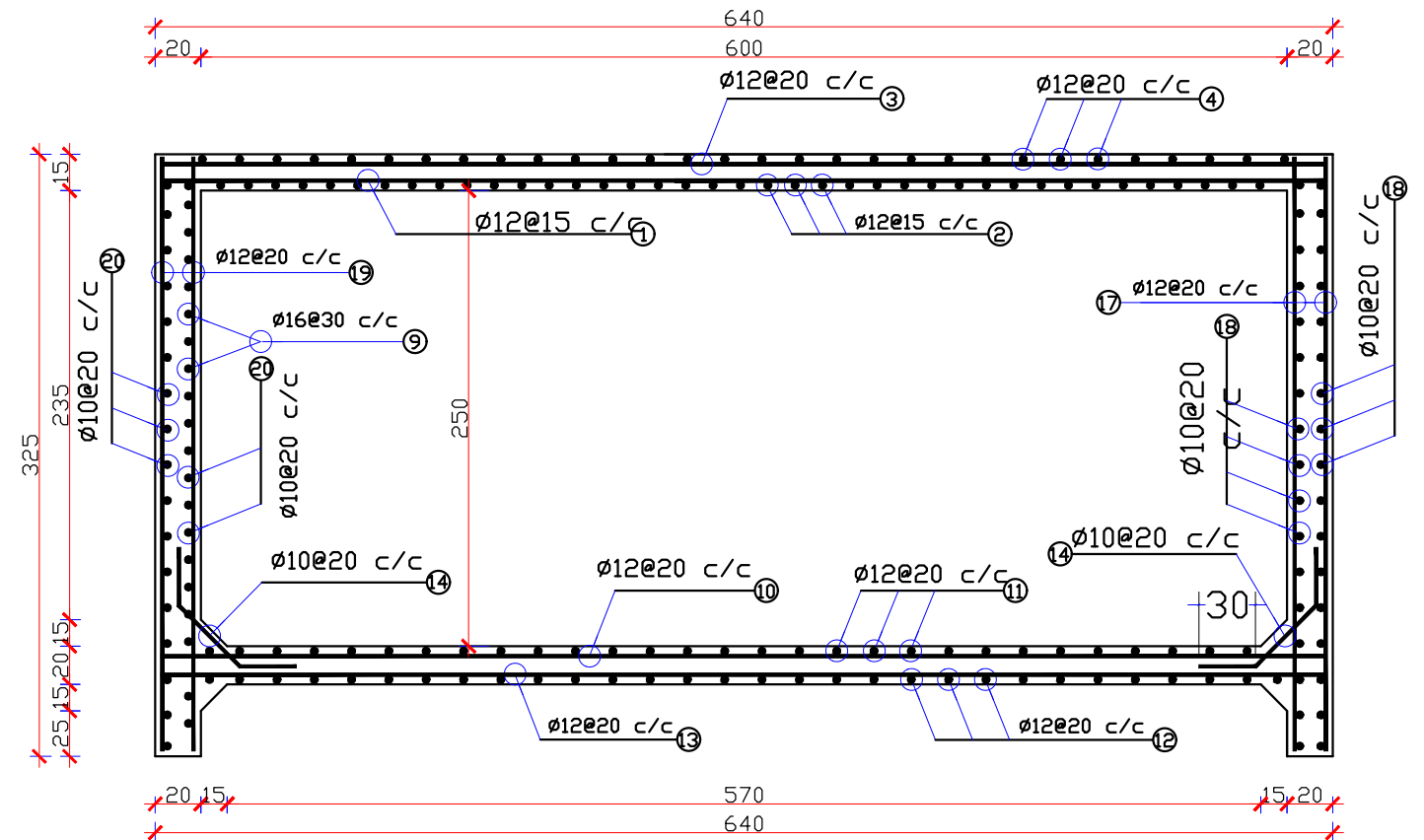
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Ground Reservior Reinforcement Details

STEEL BAR SCHEDULE FOR 40 CUBIC METER RCC WATER RESERVOIR

Shape of bar	Bar No	Bar Dia (mm)	Number of Bar	Total Number	Length (m)	Total Leng (m)	Weight (kg/m)	Total weight (kg)	Total weight+5%(kg)
	1	12	1x22	22	6.35	139.7	0.888	124.05	130.25
	2	12	1x42	42	3.35	140.7	0.888	124.94	131.19
	3	12	1x18	18	6.35	114.3	0.888	101.49	106.57
	4	12	1x32	32	3.35	107.2	0.888	95.19	99.95
	5	10	2x17	34	6.35	215.9	0.617	133.21	139.87
	6	10	2x17	34	6.35	215.9	0.617	133.21	139.87
	7	16	2x42	84	3.2	268.8	1.578	424.20	445.37
	8	16	2x31	62	3.2	198.4	1.578	313.07	328.80
	9	12	4x11	44	2.5	110	0.888	97.68	102.56
	10	12	1x16	16	6.35	101.6	0.888	90.22	94.73
	11	12	1x31	31	3.35	103.85	0.888	92.22	96.82
	12	12	1x31	31	3.35	103.85	0.888	92.22	96.82
	13	12	1x16	16	6.35	101.6	0.888	90.22	94.73
	14	10	1x91	91	1.1	100.1	0.617	61.76	64.84
	15	10	2x7	14	1.25	17.5	0.617	10.79	11.34
	16	10	8x7	56	1.1	61.6	0.617	38.00	39.90
	17	10	1x10	10	1.15	11.5	0.617	7.09	7.45
	18	8	1x8	8	1.15	9.2	0.395	3.63	3.81
	19	12	4x16	64	3.2	204.8	0.888	181.86	190.9
	20	12	4x16	64	3.4	217.6	0.888	193.23	202.89
Total Weight of Steel Bar +5% (Kg)								2529 kg	


Bar Dia (mm)	Total Length (m)	Weight (kg/m)	Total weight (kg)	Total weight +5% (kg)
8	85.3	0.395	33.69	35.378
10	622.5	0.617	384.08	403.28
12	1445.2	0.888	1283.33	1347.5
16	467.2	1.578	737.24	774.1



Section D-D

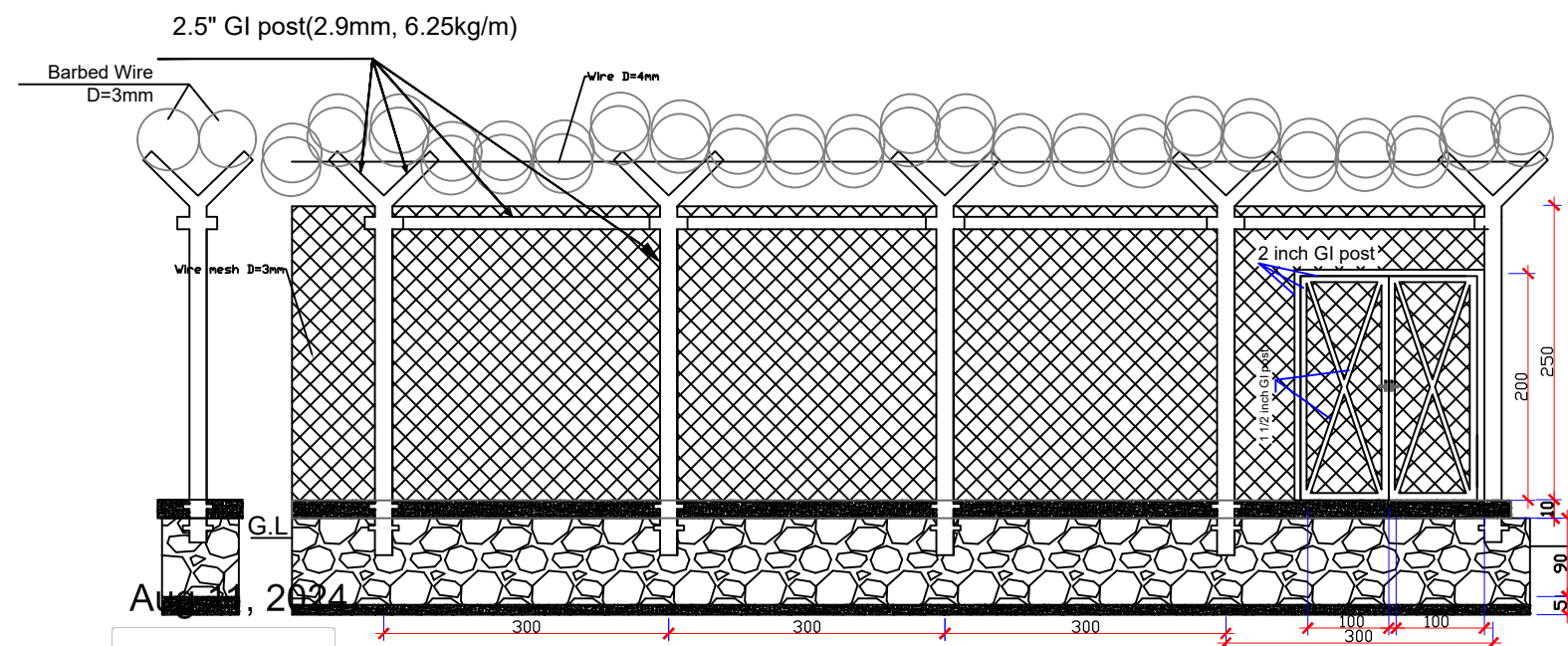
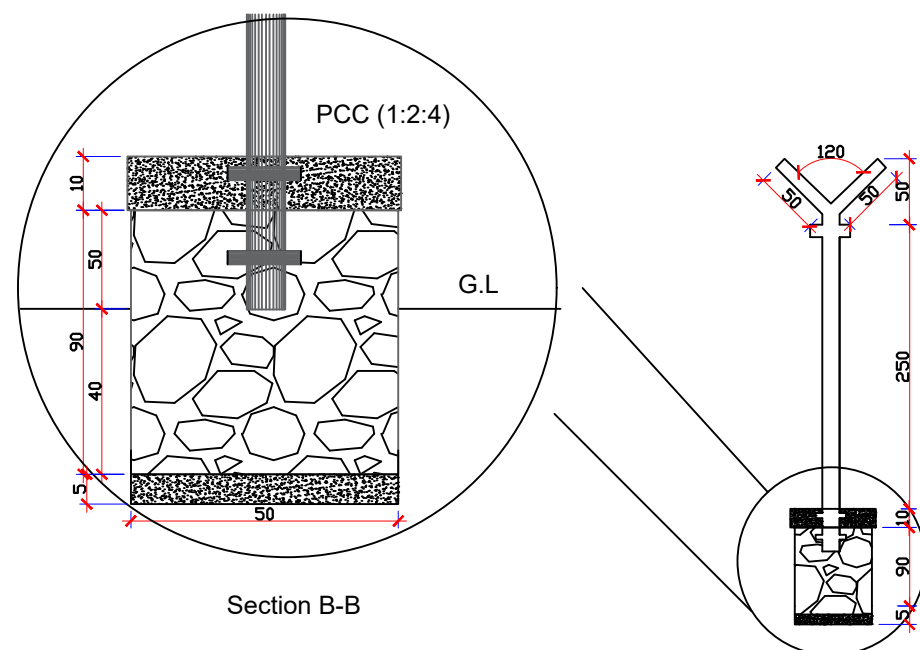
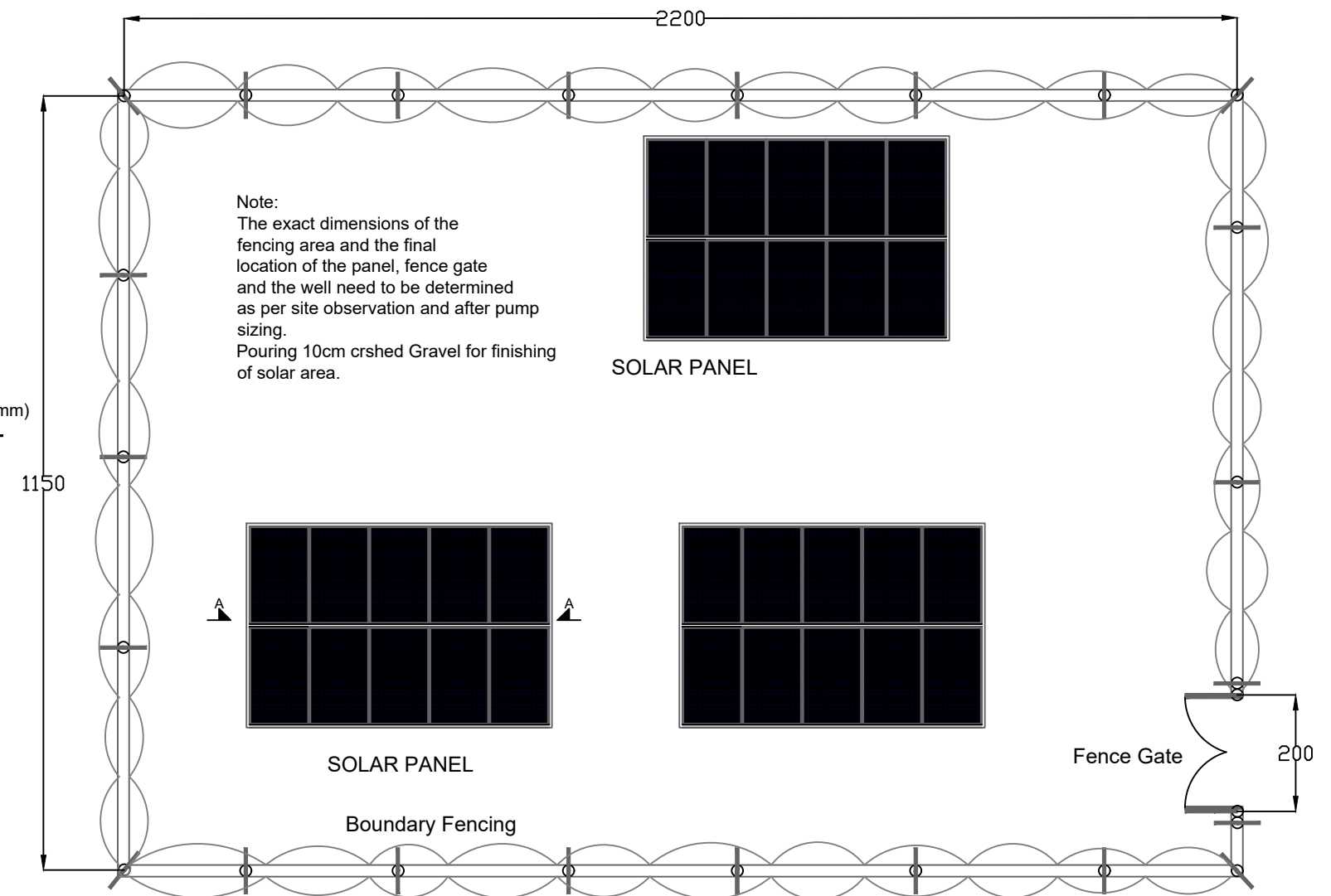
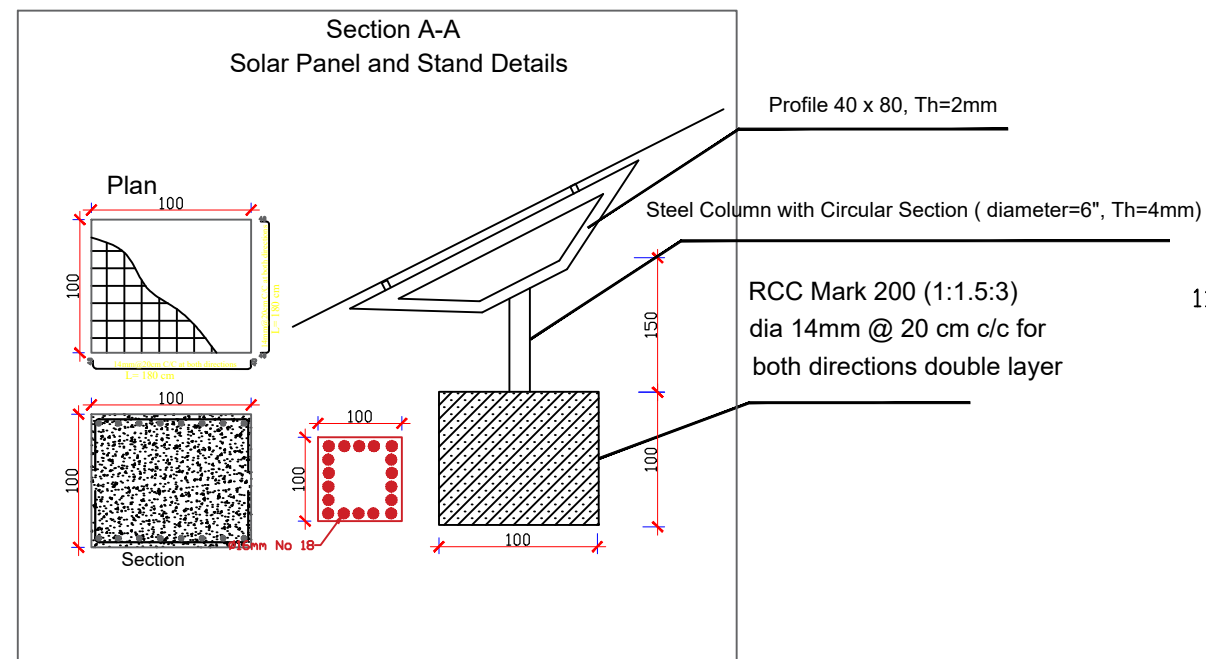
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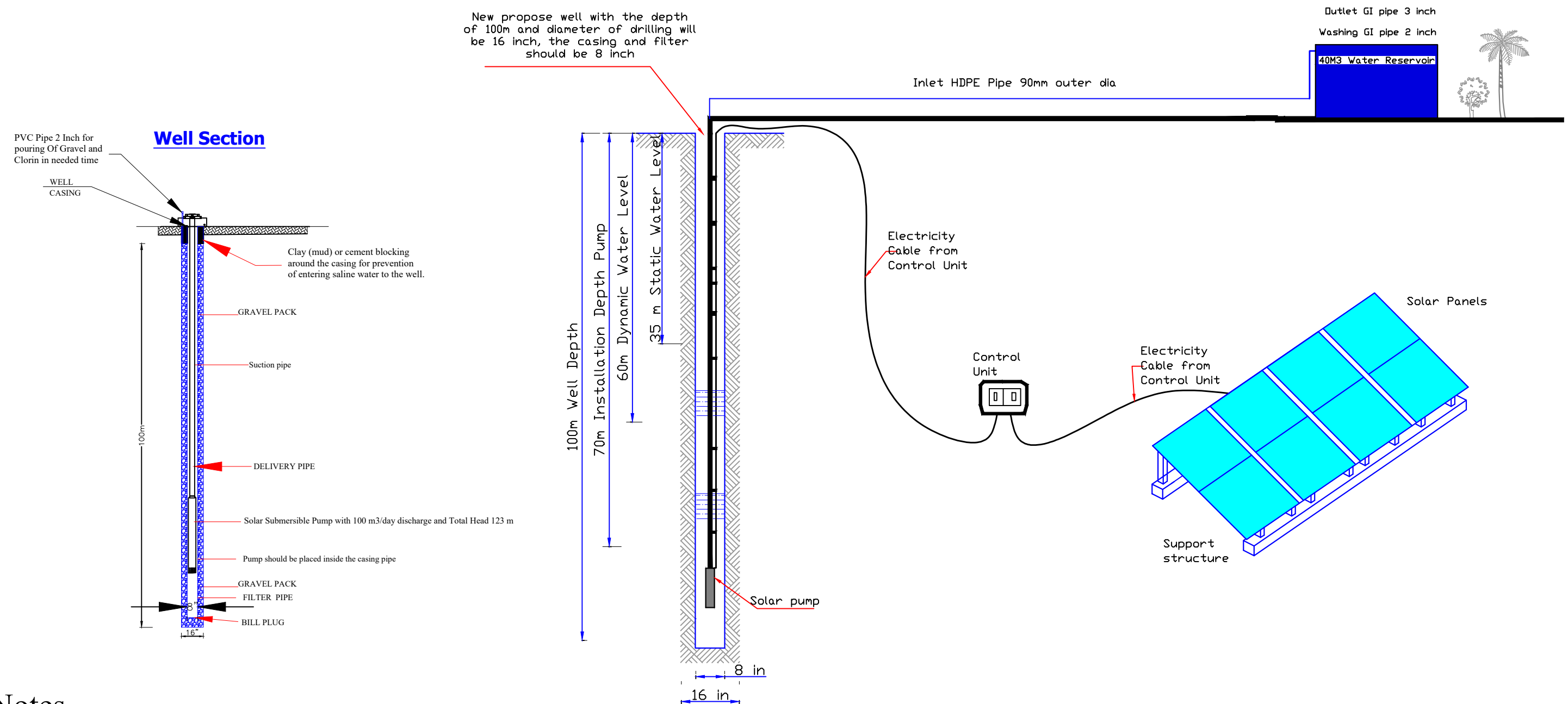
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	DESIGNED BY	Eng. Ansar Kazimi	REVIEWED BY	WASH Advisor	DATE				DISTRICT	Dawlat Abad	DRAWING TITLE:	Ground Reservior Details
	DRAWN BY	Eng. Ansar Kazimi	APPROVED BY	Project Director/Manager	DRAWING NO.				VILLAGE	Taheri Haji Saleh village		

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Boundary Fencing Plan and Details



Water Well Section



Notes

- Each drilled strata depth should be noted and soil sample should be kept in a sample box separately .
- Pump test for 8 hours.
- the depth of filter pipe has considered based on the previous experience . the true depth will be determined after well practical drilling.

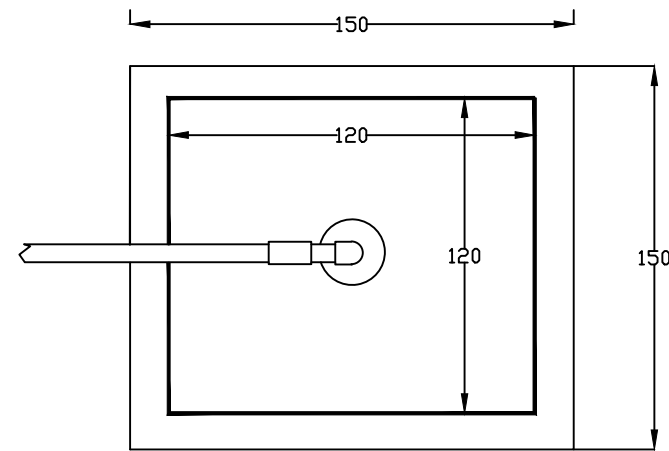
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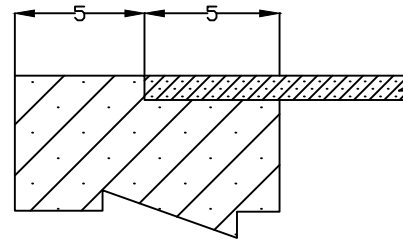
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Well Protection Box and Stand Post Details

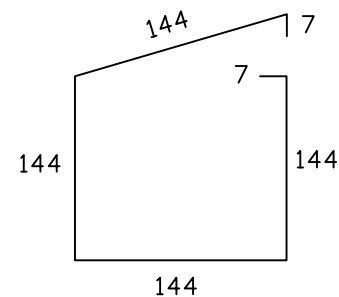


Well Protection Box Plan



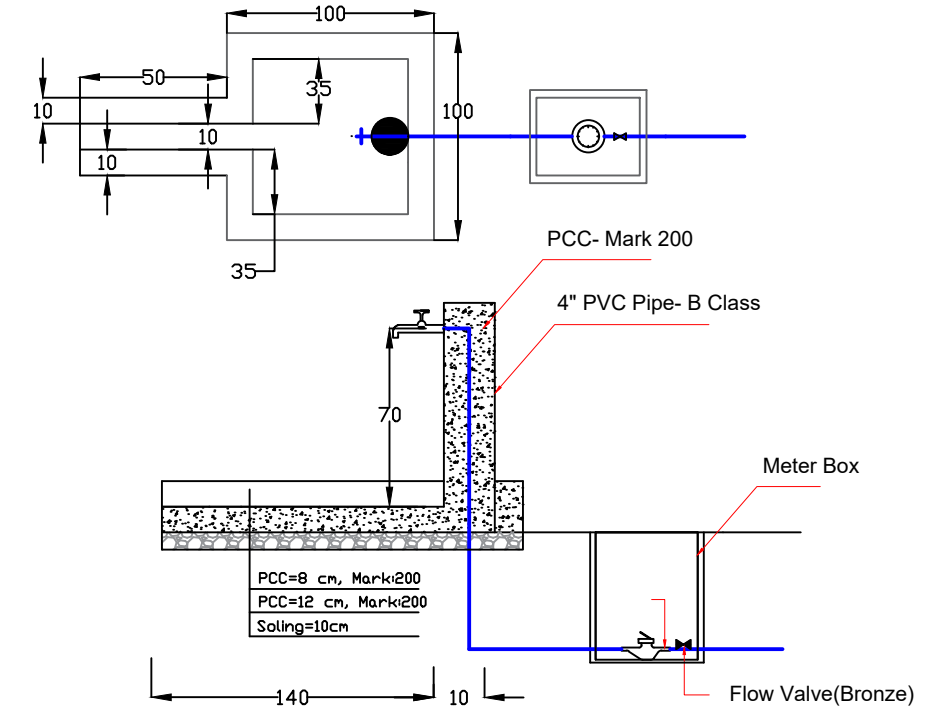
Details-1

Strips 808@20 cm/cm

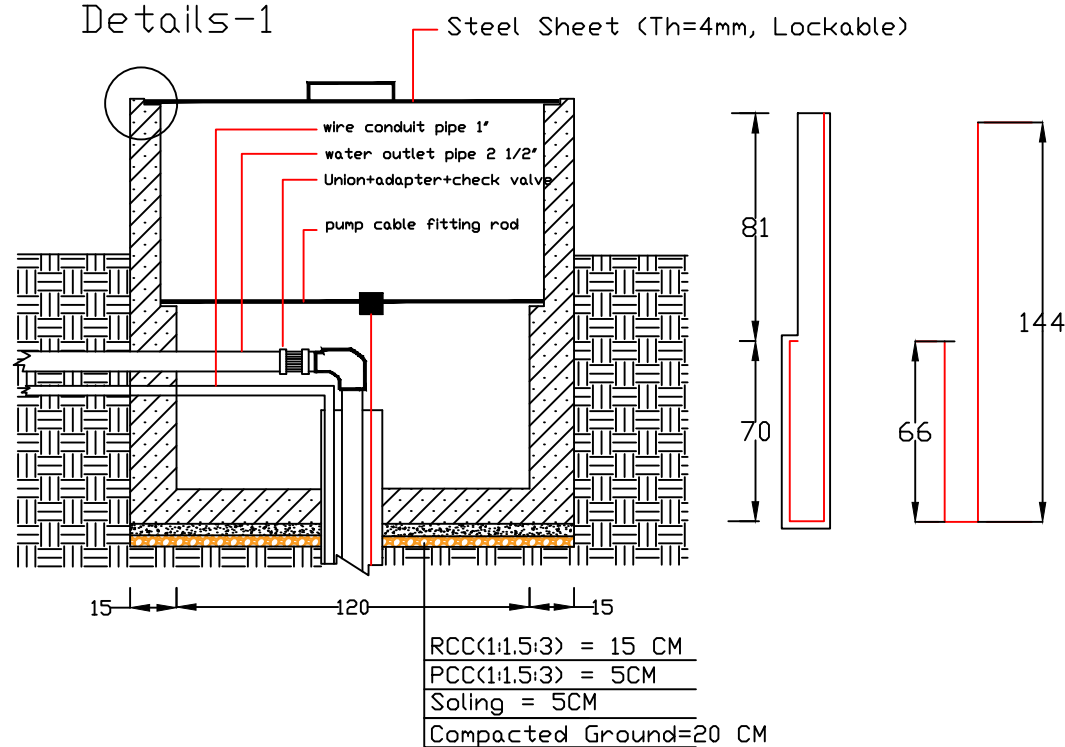


Longitudinal 808@20 cm/cm

Stand Post Details

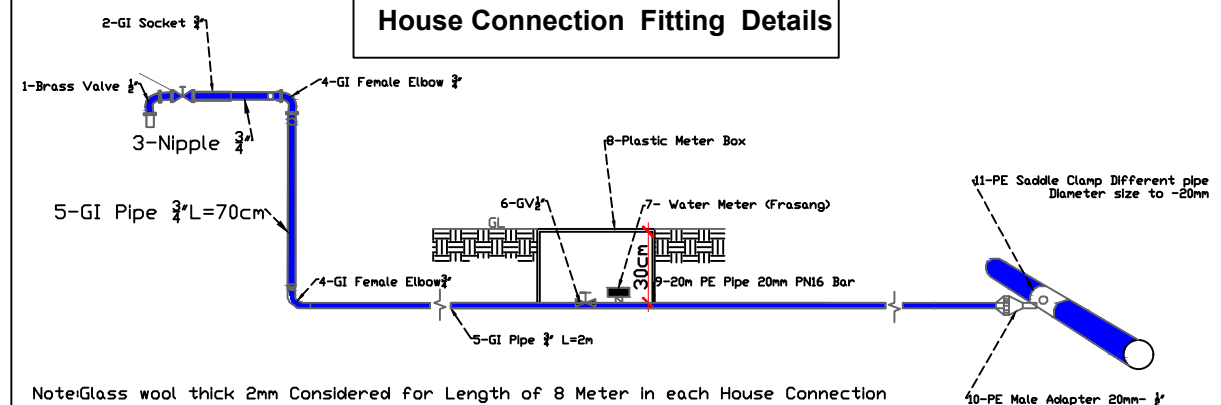


Details-1



Well Protection Box Section View

House Connection Fitting Details



Note: Glass wool thick 2mm Considered for Length of 8 Meter in each House Connection

TABLE-1 (TP FITTINGS DETAILS for TP 1)

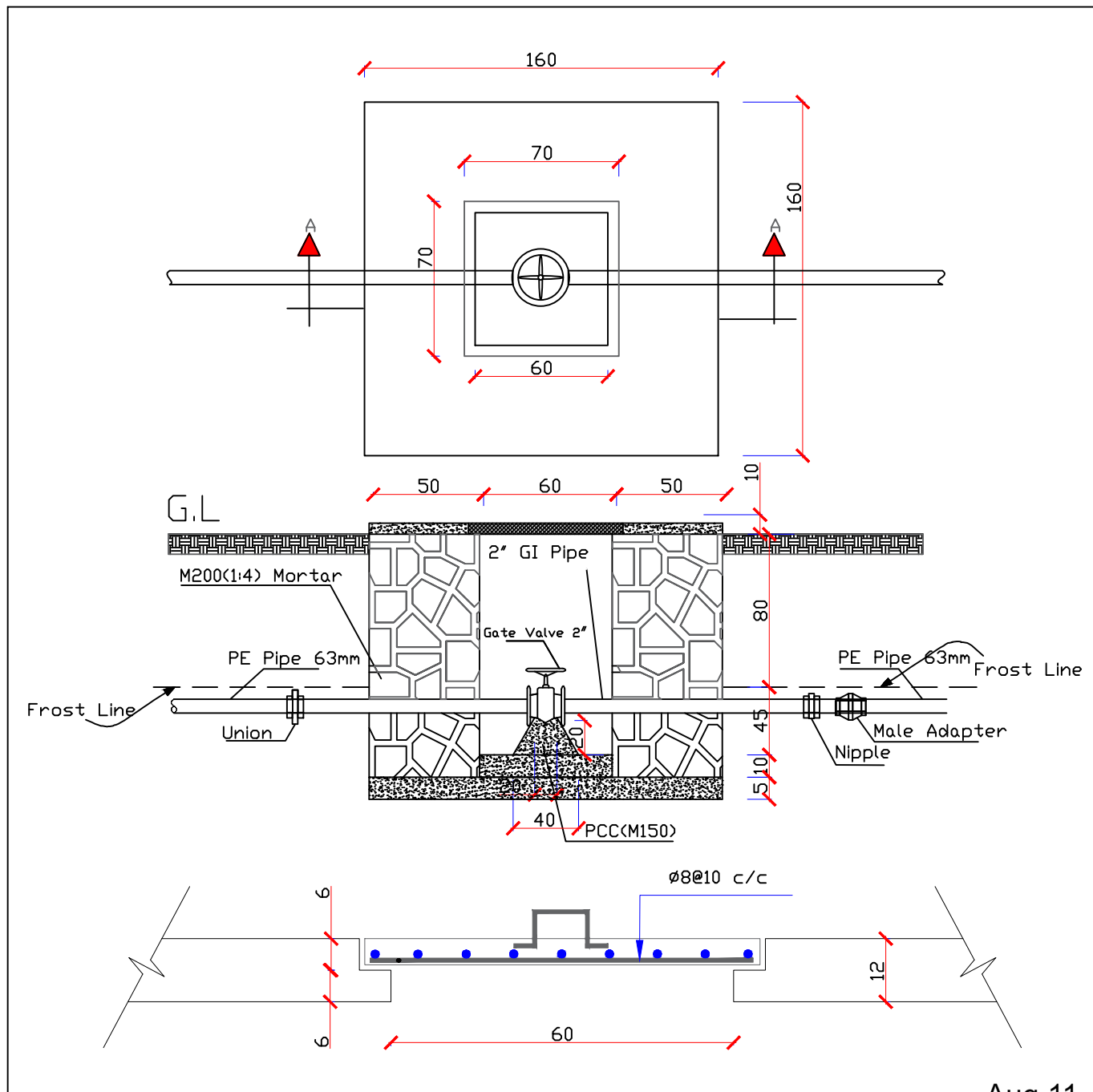
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1	GI Tap 1/2"	No	1	1	
2	GI Socket 3/4"	No	1	1	
3	Nipple 3/4"	No	1	1	
4	GI Female Elbow 3/4"	No	2	2	
5	GI Pipe 3/4"	M	3	3	
6	Stainless Steel GV 1/2"	No	1	1	
7	Water Meter (Frasang)	No	1	1	
8	Plastic Meter Box	No	1	1	
9	PE Pipe 20mm PN16 Bar	M	20	20	
10	PE Male Adapter 20mm- 3/4"	No	1	1	
11	PE Saddle Clamp Different pipe Diameter size to ~20mm	No	1	1	

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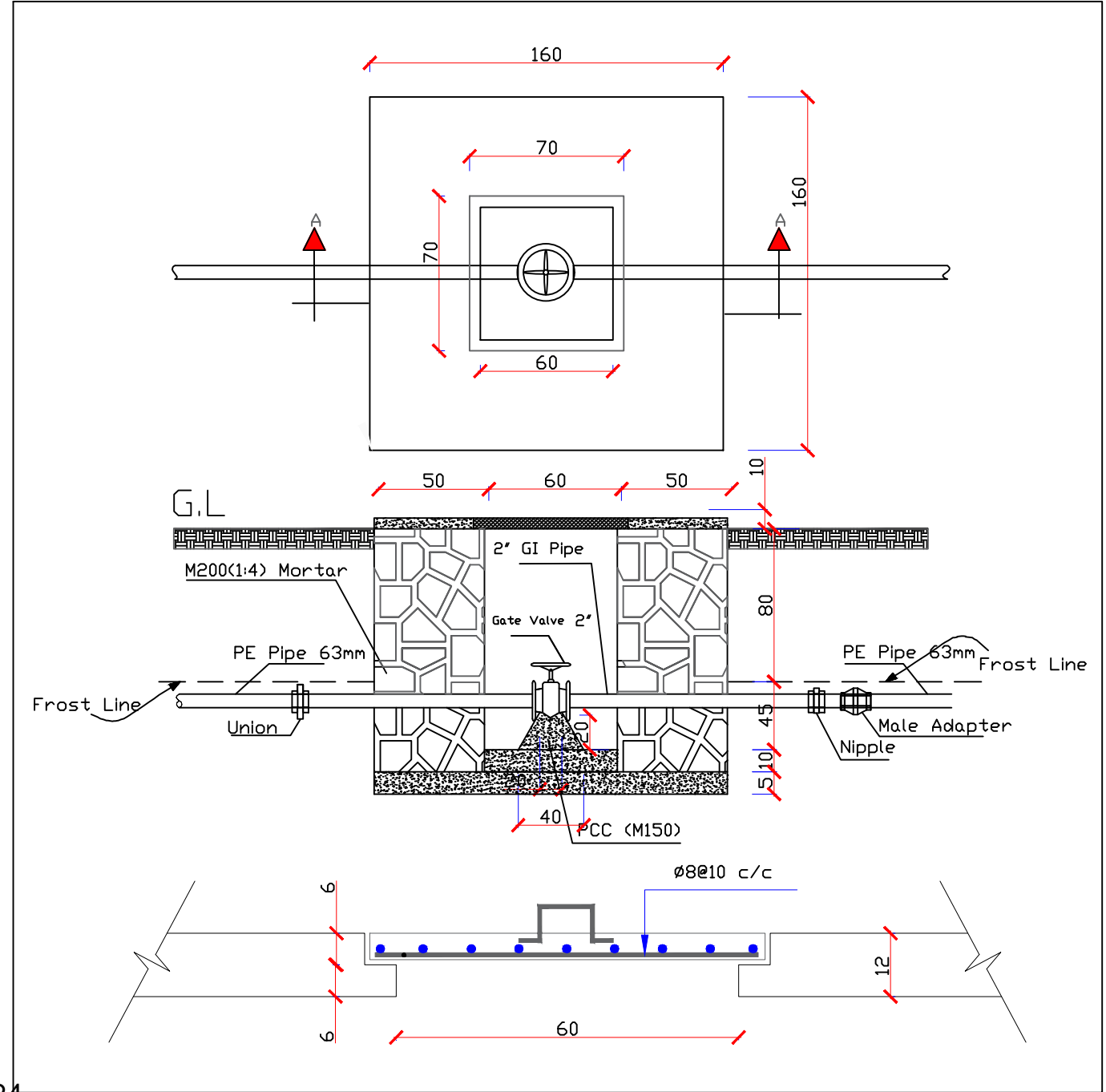
Yama Hewadmal

Gate Valve Box Details

Gate Valve Box-1 Details



Gate Valve Box-2 Details



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	SURVEYED BY	Eng. Ansar Kazimi	CHECKED BY	WASH Coordinator	SCALE	4YVZ865Q-1X0262LZ	SHEET NO.	17/17	PROVINCE	Faryab	PROJECT NAME:	Taheri Haji Saleh Solar Water Supply Pipe Scheme
	DESIGNED BY	Eng. Ansar Kazimi	REVIEWED BY	WASH Advisor	DATE				DISTRICT	Dawlat Abad	DRAWING TITLE:	Gate Valve Box Details
	DRAWN BY	Eng. Ansar Kazimi	APPROVED BY	Project Director/Manager	DRAWING NO.				VILLAGE	Taheri Haji Saleh village		

Aug 11, 2024

Submittal Data

PROJECT:	UNIT TAG:	QUANTITY:
REPRESENTATIVE: _____	TYPE OF SERVICE:	DATE: _____
ENGINEER:	SUBMITTED BY:	DATE:
CONTRACTOR:	APPROVED BY:	DATE:
	ORDER NO.:	DATE:

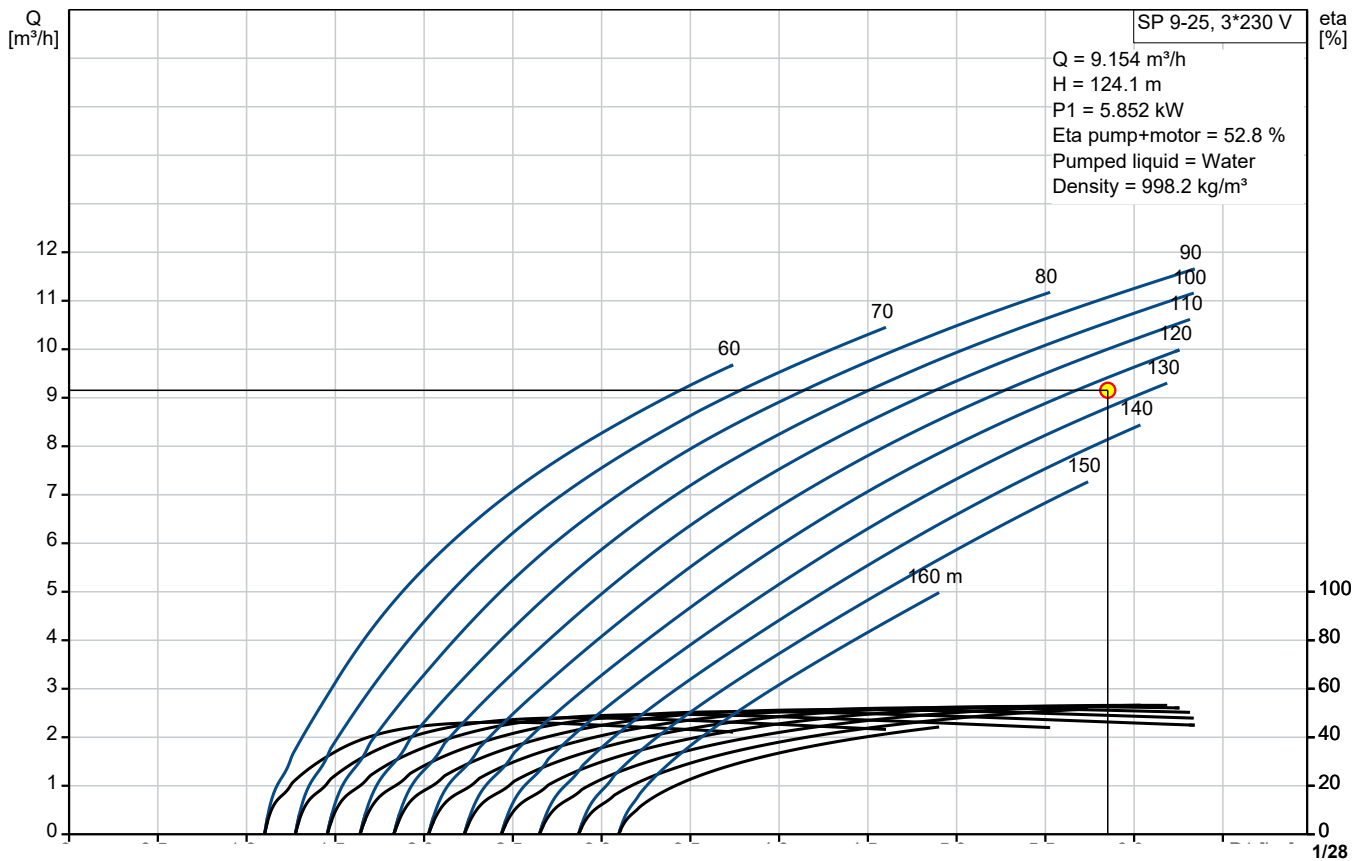


SP 9-25

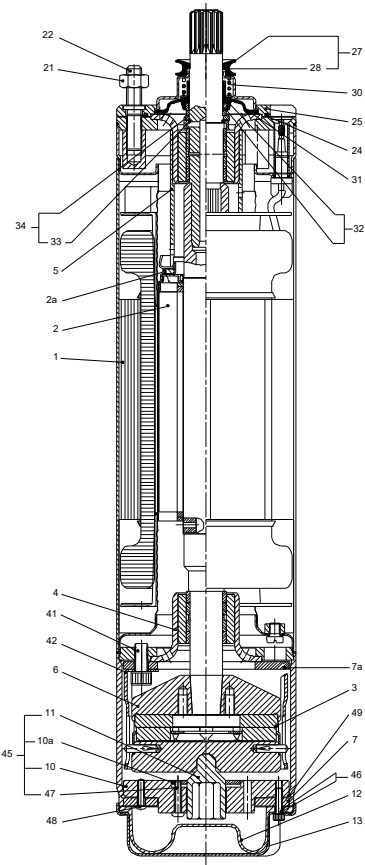
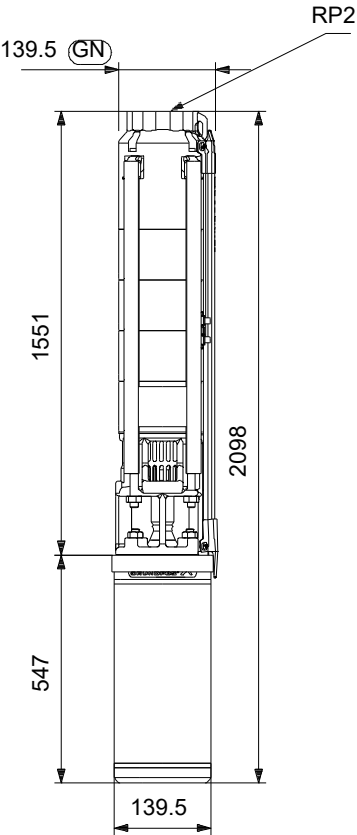
Grundfos SP are submersible borehole pumps, designed for pumping groundwater. Grundfos SP are all stainless-steel pumps, and they are available in 3 material grades. The pumps are suitable for boreholes in sizes ranging from 4" over 6" and 8" to 10". The motor sizes for the pumps are available in 0.37-250 kW.

Note! Product picture may differ from actual product

Conditions of Service	Pump Data	Motor Data
Liquid: Water	Liquid temperature range: -15 .. 40 °C Product number: 98699039	Rated power - P2: 5.5 kW Rated voltage: 220-230 V Mains frequency: 50 Hz Enclosure class: IP68 Insulation class: F Motor protection: NONE Thermal protection: EXT. Motor type: MS6000



Submittal Data



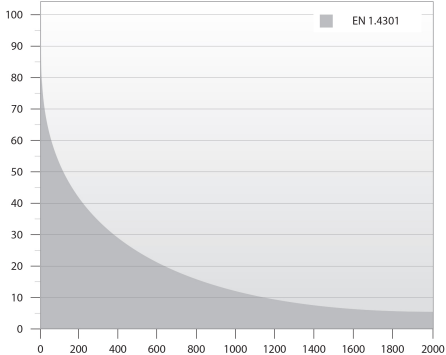
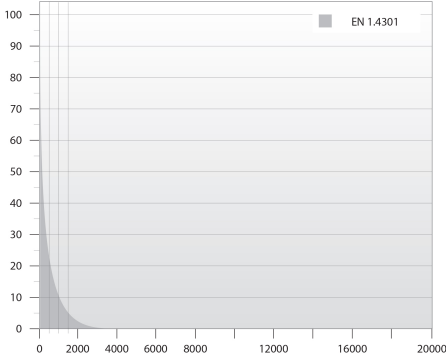


Materials:

- Impeller: Stainless steel
- Impeller: AISI 304
- Impeller: EN 1.4301
- Motor: Stainless steel
- Motor: DIN W.-Nr. 1.4301
- Motor: AISI 304


Project:
Reference Number:

Client:
Client Number:
Contact:

Qty.	Description
1	<p>SP 9-25</p>  <p>Note! Product picture may differ from actual product</p> <p>Product No.: 98699039</p> <p>Submersible borehole pump, suitable for pumping clean water. Can be installed vertically or horizontally. All steel components are made in stainless steel, EN 1.4301 (AISI 304), that ensures high corrosive resistance. This pump carries drinking water approval.</p> <p>The pump is fitted with a 5.5 kW MS6000 motor with sand shield, mechanical shaft seal, water-lubricated journal bearings and a volume compensating diaphragm. The motor is a canned type submersible motor offering good mechanical stability and high efficiency.</p> <p>The motor is fitted with the Grundfos Tempcon sensor that, by use of powerline communication together with a MP204 control panel, enables temperature monitoring.</p> <p>The motor is for direct-on-line starting (DOL).</p> <p>Further product details</p> <p>The pump is suitable for applications similar to the following:</p> <ul style="list-style-type: none"> - raw-water supply - irrigation - groundwater lowering - pressure boosting - fountain applications. <p>The Grundfos SP pump is renowned for its high efficiency and already complies with the requirements of the Minimum Efficiency Index, and therefore Grundfos is amongst the best in class within submersible pumps.</p>  <p>Pump</p> <p>All pump surfaces that are in contact with pumped liquids are made in stainless steel which makes them corrosion- and wear-resistant. The corrosion diagram below shows the capabilities of the pump and motor in relation to the temperature in Celsius (y-axis) and the concentration of chloride in ppm (x-axis).</p> <div>   </div>

Project:
Reference Number:

Client:
Client Number:
Contact:

Qty.	Description
1	<p>The elastomer parts in the pump offer good wear resistance and long service intervals. The bearings are made of LSR (Liquid Silicone Rubber), sealing rings are made of TPU (Thermoplastic Poly-Urethane) and the non-return valve is made of NBR (Nitrile-Butadiene Rubber).</p> <p>The special elastomer material of the bearings offers increased resistance to sand and other abrasive particles (from 50 to 150 mg/l).</p> <p>In case the pump is used for pumping water with high content of hydrocarbons or solvents, Grundfos offers FKM rubber parts (Fluorocarbon) which are oil and temperature-resistant up to 90 °C.</p> <p>The pump is built with octagonal bearings with sand flush channels that minimise wear. As wear of the pump is inevitable, the pump design allows for easy replacement of all internal wear parts (bearings, impeller, wear rings and seal rings) to maintain high performance and a long lifetime.</p> <p>The suction interconnector is fitted with a strainer to prevent large particles from entering the pump. The suction interconnector is designed to comply with NEMA standards for motor mounting/dimensions.</p> <p>Motor</p> <p>The stator is hermetically encapsulated in stainless steel and the windings are embedded in polymer compound. This results in high mechanical stability, optimum cooling and reduces the risk of short circuits in the windings.</p> <p>The shaft seal faces are ceramic/carbon. The material combination provides good dry-running resistance. Together with the shaft seal housing, the sand shield forms a labyrinth seal, which during normal operating conditions prevents penetration of sand particles into the shaft seal.</p> <p>The motor is fitted with the Grundfos Tempcon temperature sensor device that includes a NTC-resistor which senses the temperature.</p> <p>The resistor is built-in close to the winding.</p> <p>The temperature is converted into a high-frequency signal which is sent via the submersible drop cable and which can be converted into a temperature reading by means of Grundfos MP204.</p> <p>The MP204 is an electronic motor protection device that also monitors the supply network quality to protect the submersible motor against supply network disturbances.</p>  <p>Liquid: Pumped liquid: Water Liquid temperature range: -15 .. 40 °C</p> <p>Technical: Pump speed on which pump data are based: 2900 rpm Rated flow: 9 m³/h Rated head: 132.1 m Shaft seal for motor: CER/CARNBR Approvals: CE,EAC,UKCA,SEPRO,MOROCCO Approvals for drinking water: ACS,DM174 Curve tolerance: ISO9906:2012 3B Motor version: T40 Return valve: YES</p> <p>Materials: Pump: Stainless steel EN 1.4301 AISI 304</p>



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Qty.	Description
1	<p>Impeller: Stainless steel EN 1.4301 AISI 304</p> <p>Motor: Stainless steel DIN W.-Nr. 1.4301 AISI 304</p> <p>Installation:</p> <p>Maximum ambient pressure: 60 bar Maximum operating pressure: 60 bar Maximum outlet pressure: 16.5 bar Type of connection: Rp Size of connection: 2 inch Motor diameter: 6 inch Minimum borehole diameter: 145 mm</p> <p>Electrical data:</p> <p>Motor type: MS6000 Motor flange design: NEMA Rated power - P2: 5.5 kW Power (P2) required by pump: 5.5 kW Mains frequency: 50 Hz Rated voltage: 3 x 220-230 V Rated current: 24.4-24.8 A Starting current: 510-530 % Cos phi - power factor: 0.78-0.73 Rated speed: 2880-2900 rpm Start. method: DOL Enclosure class (IEC 34-5): IP68 Insulation class (IEC 85): F Built-in temp. transmitter: Y Length of cable: 5 m Power cable type: FLAT Motor No: 78105511 Windings: Enamelled</p> <p>Others:</p> <p>Minimum efficiency index, MEI \geq: 0.70 Net weight: 56.2 kg Gross weight: 90.4 kg Shipping volume: 0.264 m³ Environmental approvals: WEEE</p>

Project:
Reference Number:

Client:
Client Number:
Contact:

Qty.	Description
------	-------------

30	<p>GF 270</p>  <p>Note! Product picture may differ from actual product</p> <p>Product No.: 99299012</p> <p>The GF 270 is a polycrystalline solar module. The module is equipped with MC4 plugs for easy connection and comes as 30 pieces per pallet without individual packing. It must be mounted on a support structure, tilted at an angle ensuring optimum utilization of the solar energy.</p> <p>Liquid: Pumped liquid: Water</p> <p>Installation: Range of ambient temperature: -40 .. 85 °C</p> <p>Electrical data: Maximum power point voltage: 31.6 V Open circuit voltage: 38.4 V Max power point current: 8.76 A Module shortcut current: 9.11 A Maximum power output: 270 W Solar module type: POLYCRYSTALLINE</p> <p>Others: Brand: GRUNDFOS Net weight: 18.3 kg Shipping volume: 2 m³</p>
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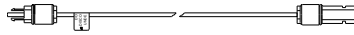
Date: 01/05/2024

Project:
Reference Number:

Client:
Client Number:
Contact:

Qty.	Description
------	-------------

1	Product name: Wire kit array to control box (MC4)
---	---



Note! Product picture may differ from actual product

Product No.: [98257868](#)

Product No: 98257868

EAN number: 5711492200964



Company name: World Vision International
Created by: DAWAM WASH Team
Phone:

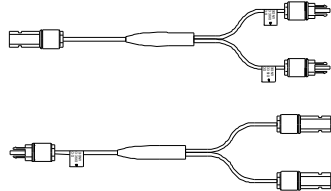
Date: 01/05/2024

Project:
Reference Number:

Client:
Client Number:
Contact:

Qty.	Description
------	-------------

2	Product name: Wire kit array to array (MC4)
---	---



Note! Product picture may differ from actual product

Product No.: [98257892](#)

Product No: 98257892

EAN number: 5711492201152

Project:
Reference Number:

Client:
Client Number:
Contact:

Qty.	Description
------	-------------

1	RSI 3x208-240V IP66 7.5kW 31A
---	-------------------------------



Note! Product picture may differ from actual product

Product No.: [99090637](#)

Renewable Solar Inverter RSI is an off-grid solar inverter to enable end-user to use solar power for a wide range of water applications.

RSI is customized specifically to be compatible with Grundfos pumps.

With the built-in MPPT and various protection software, it delivers an efficient and reliable solar system solution.

- 3-phase 208V, 380V or 440V
- Quick setup wizard
- Preconfigured inputs
- Build-in MPPT (Maximum power point tracking)
- AC and DC power source compatible
- Solar solution for up to 250kW

RSI offers the following inputs and output:

- RS-485 Modbus RTU/TCP
- 6 Digital inputs, preconfigured for solar application
- 2 Signal relays, RUN/FAULT

Liquid:

Pumped liquid: Water

Technical:

Approvals and markings: CE

Installation:

Range of ambient temperature: -10 .. 60 °C

Relative humidity: 100 %

Electrical data:

Rated power - P2: 7.5 kW

Mains frequency: 50 / 60 Hz

Rated voltage: 3 x 208 - 240 V

Enclosure class (IEC 34-5): IP66

Rated voltage output AC: 220 V

Voltage input DC: 400 V

Rated current output AC: 31 A

Udc: 230 V

Others:

Net weight: 14.9 kg

Gross weight: 16.3 kg



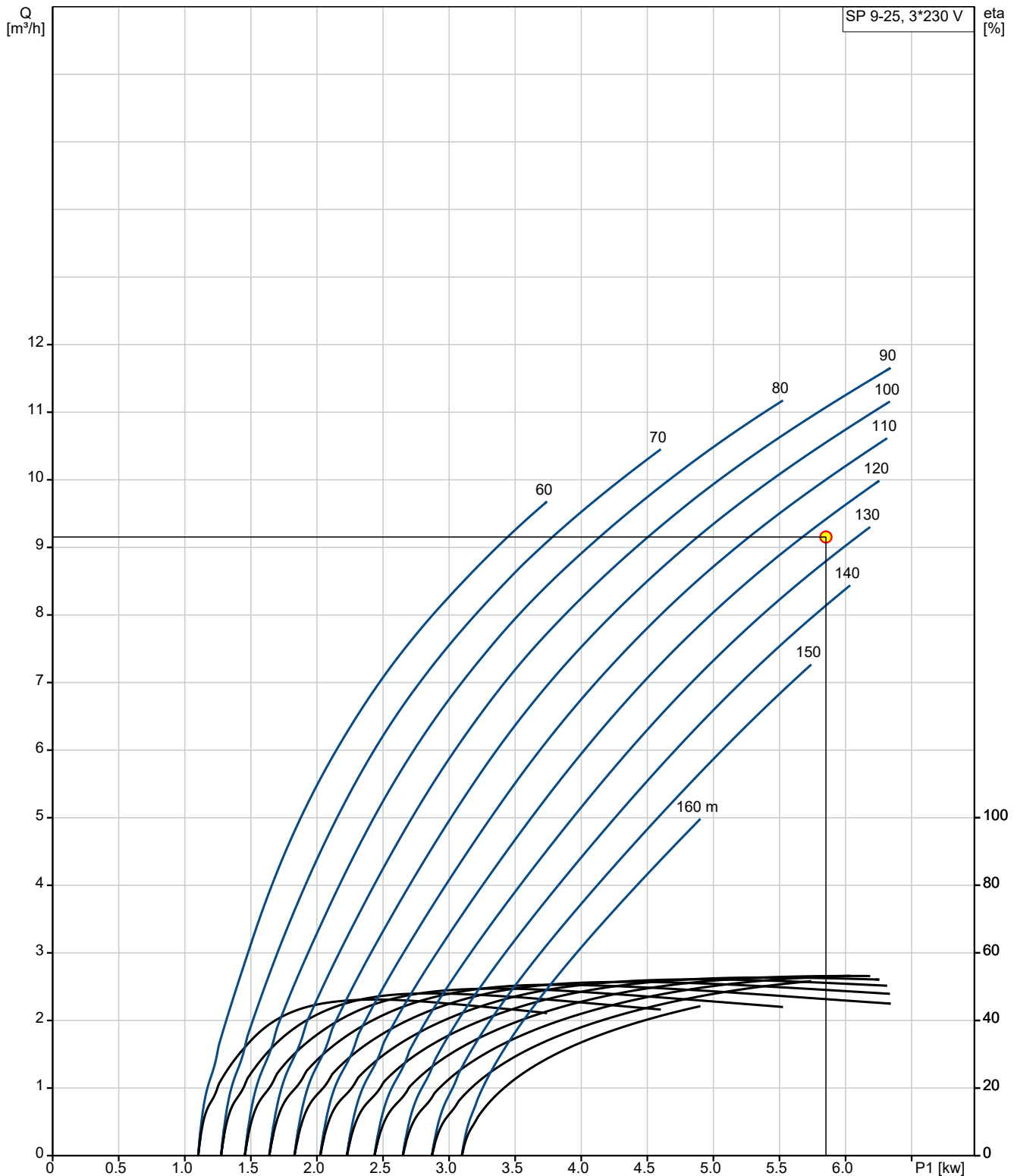
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Created by: DAWAM WASH Team
Phone:

Date: 01/05/2024

Project:
Reference Number:

Client:
Client Number:
Contact:

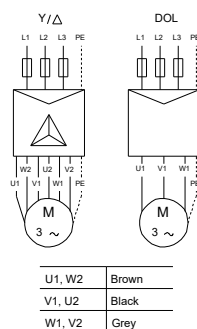
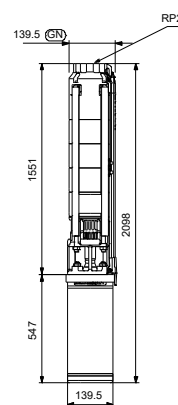
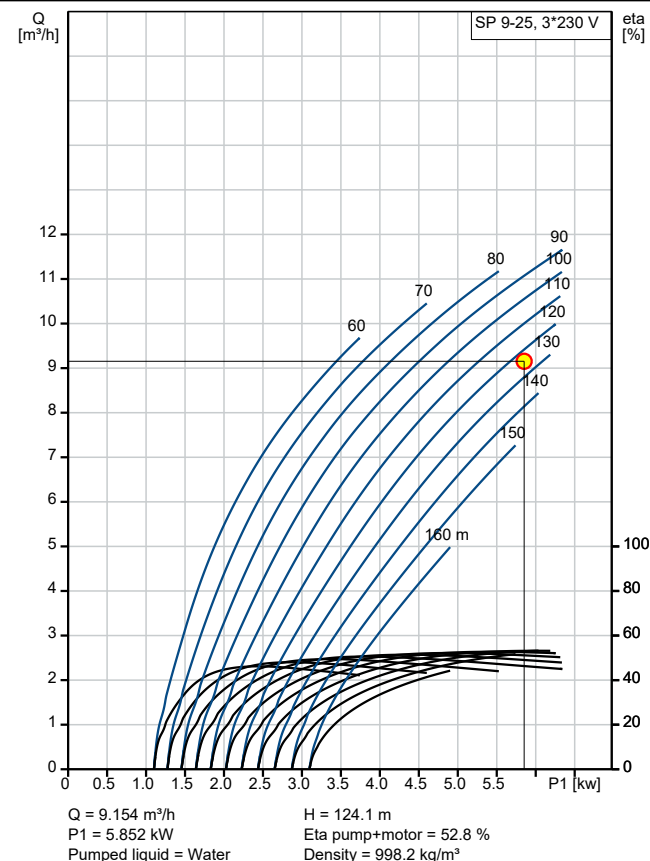
98699039 SP 9-25



Project:
Reference Number:

Client:
Client Number:
Contact:

Description	Value
General information:	
Product name:	SP 9-25
Product No:	98699039
EAN number:	5712600105614
Technical:	
Pump speed on which pump data are based:	2900 rpm
Rated flow:	9 m³/h
Rated head:	132.1 m
Stages:	25
Number of reduced-diameter impellers:	NONE
Shaft seal for motor:	CER/CARNBR
Approvals:	CE,EAC,UKCA,SEPRO,MOR OCCO
Approvals for drinking water:	ACS,DM174
Curve tolerance:	ISO9906:2012 3B
Model:	A
Motor version:	T40
Return valve:	YES
Materials:	
Pump:	Stainless steel
Pump:	EN 1.4301
Pump:	AISI 304
Impeller:	Stainless steel
Impeller:	EN 1.4301
Impeller:	AISI 304
Motor:	Stainless steel
Motor:	DIN W.-Nr. 1.4301
Motor:	AISI 304
Installation:	
Maximum ambient pressure:	60 bar
Maximum operating pressure:	60 bar
Maximum outlet pressure:	16.5 bar
Type of connection:	Rp
Size of connection:	2 inch
Motor diameter:	6 inch
Minimum borehole diameter:	145 mm
Liquid:	
Pumped liquid:	Water
Liquid temperature range:	-15 .. 40 °C
Electrical data:	
Motor type:	MS6000
Motor flange design:	NEMA
Rated power - P2:	5.5 kW
Power (P2) required by pump:	5.5 kW
Mains frequency:	50 Hz
Rated voltage:	3 x 220-230 V
Rated current:	24.4-24.8 A
Starting current:	510-530 %
Cos phi - power factor:	0.78-0.73
Rated speed:	2880-2900 rpm
Start. method:	DOL
Enclosure class (IEC 34-5):	IP68
Insulation class (IEC 85):	F





Company name: World Vision International
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Date: 01/05/2024

Project:
Reference Number:

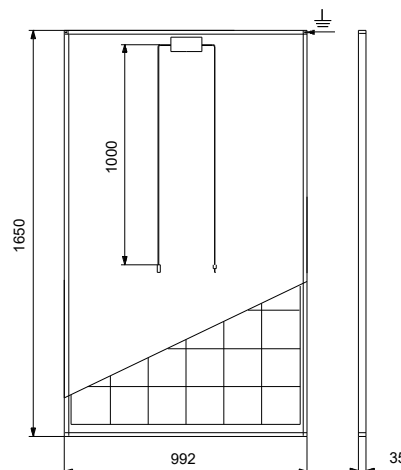
Client:
Client Number:
Contact:

Description	Value
Built-in motor protection:	NONE
Thermal protec:	EXT.
Built-in temp. transmitter:	Y
Length of cable:	5 m
Power cable type:	FLAT
Motor No:	78105511
Cable number:	96164209
Windings:	Enamelled
Others:	
Minimum efficiency index, MEI ≥:	0.70
Net weight:	56.2 kg
Gross weight:	90.4 kg
Shipping volume:	0.264 m ³
Environmental approvals:	WEEE

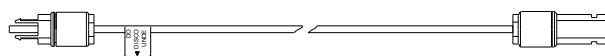
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Reference Number:

Client:
Client Number:
Contact:

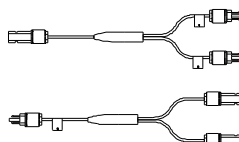
Description	Value
General information:	
Product name:	GF 270
Product No:	99299012
EAN number:	5713826826093
Installation:	
Range of ambient temperature:	-40 .. 85 °C
Liquid:	
Pumped liquid:	Water
Electrical data:	
Maximum power point voltage:	31.6 V
Open circuit voltage:	38.4 V
Max power point current:	8.76 A
Module shortcut current:	9.11 A
Maximum power output:	270 W
Solar module type:	POLYCRYSTALLINE
Others:	
Brand:	GRUNDFOS
Net weight:	18.3 kg
Shipping volume:	2 m ³



Description	Value
General information:	
Product name:	Wire kit array to control box (MC4)
Product No:	98257868
EAN number:	5711492200964

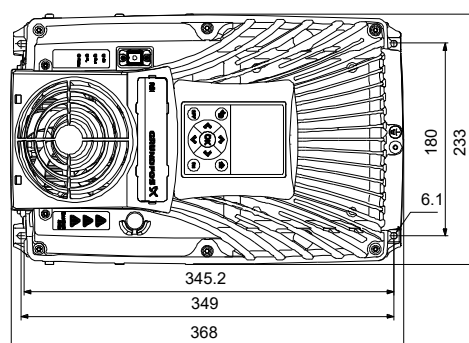
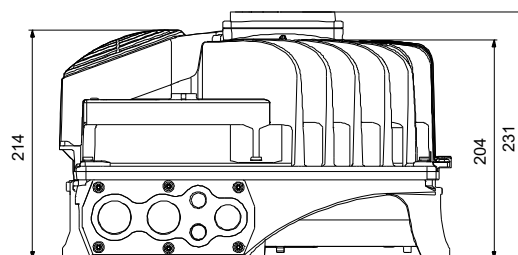


Description	Value
General information:	
Product name:	Wire kit array to array (MC4)
Product No:	98257892
EAN number:	5711492201152



Description	Value
General information:	
Product name:	RSI 3x208-240V IP66 7.5kW 31A
Product No:	99090637
EAN number:	5712606580453

Technical:	
Approvals and markings:	CE
Installation:	
Range of ambient temperature:	-10 .. 60 °C
Relative humidity:	100 %
Liquid:	
Pumped liquid:	Water
Electrical data:	
Rated power - P2:	7.5 kW
Mains frequency:	50 / 60 Hz
Rated voltage:	3 x 208 - 240 V
Enclosure class (IEC 34-5):	IP66
Rated voltage output AC:	220 V
Voltage input DC:	400 V
Rated current output AC:	31 A
Udc:	230 V
Others:	
Net weight:	14.9 kg
Gross weight:	16.3 kg





Company name: World Vision International
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Date: 01/05/2024

Project:
Reference Number:

Client:
Client Number:
Contact:

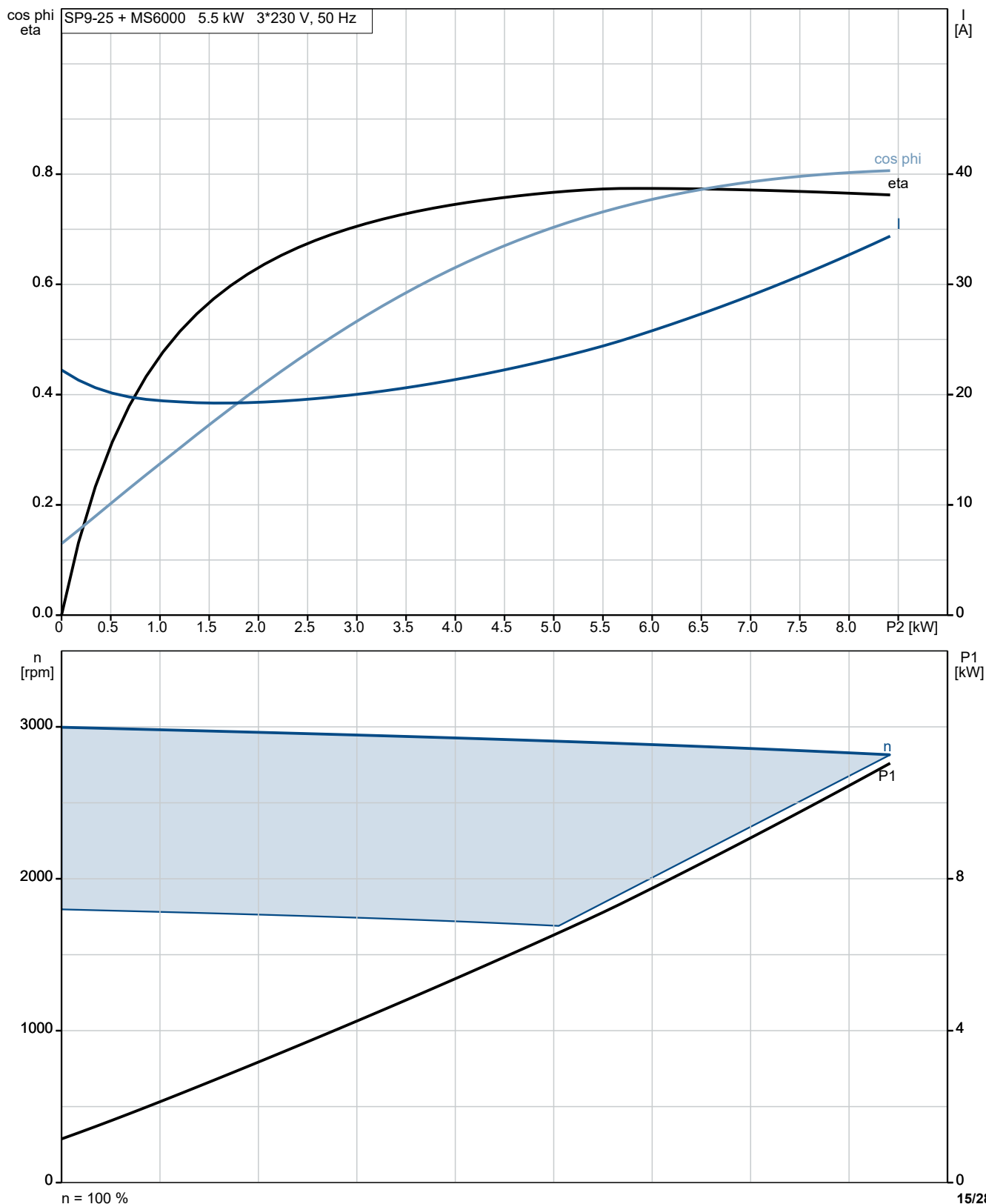
Description	Value
General information:	
Product name:	OTDCP16, Circuit Breaker, 16Amp
Product No:	98341686
EAN number:	5711493289296

Description	Value
General information:	
Product name:	OVR PV 40-1000 P, Surge Protection
Product No:	98341687
EAN number:	5711493289302

Project:
Reference Number:

Client:
Client Number:
Contact:

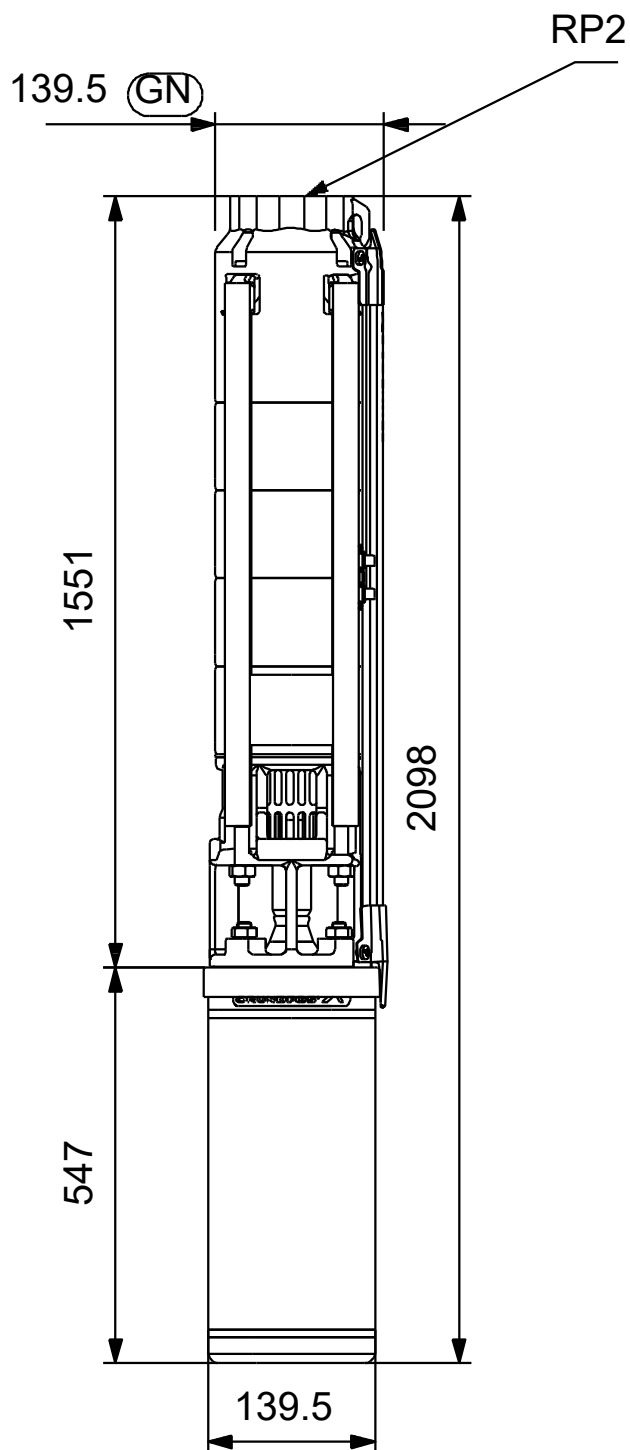
98699039 SP 9-25



Project:
Reference Number:

Client:
Client Number:
Contact:

98699039 SP 9-25





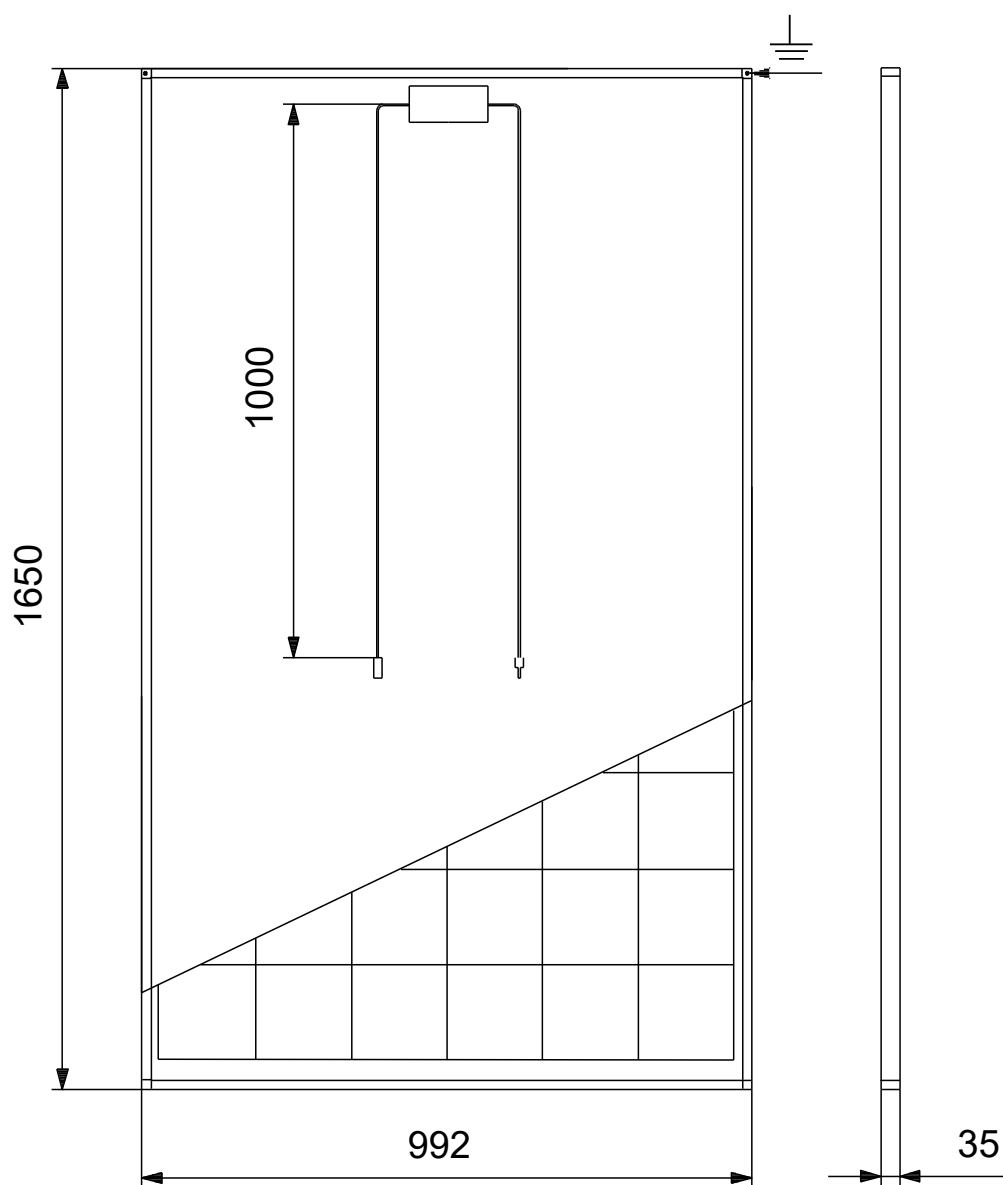
Company name: World Vision International
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Phone:

Date: 01/05/2024

Project:
Reference Number:

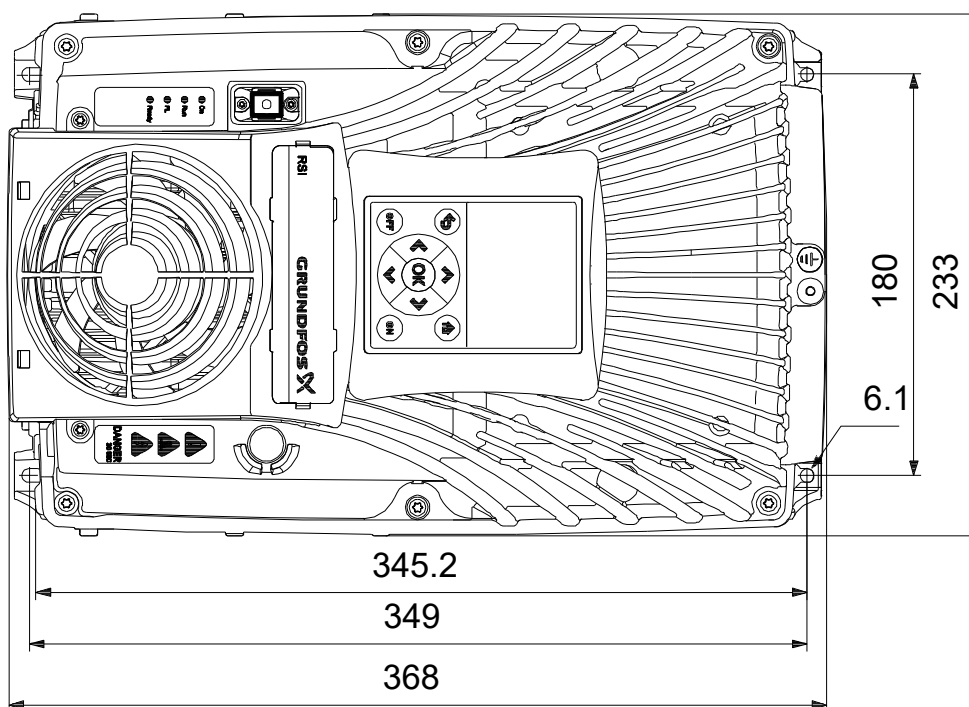
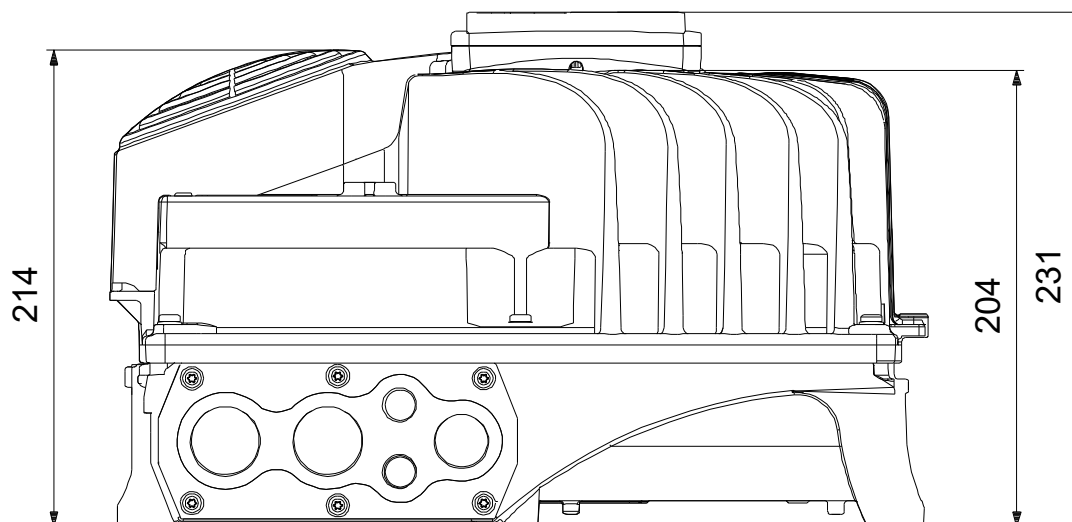
Client:
Client Number:
Contact:

99299012 GF 270



Note! All units are in [mm] unless others are stated.
Disclaimer: This simplified dimensional drawing does not show all details.

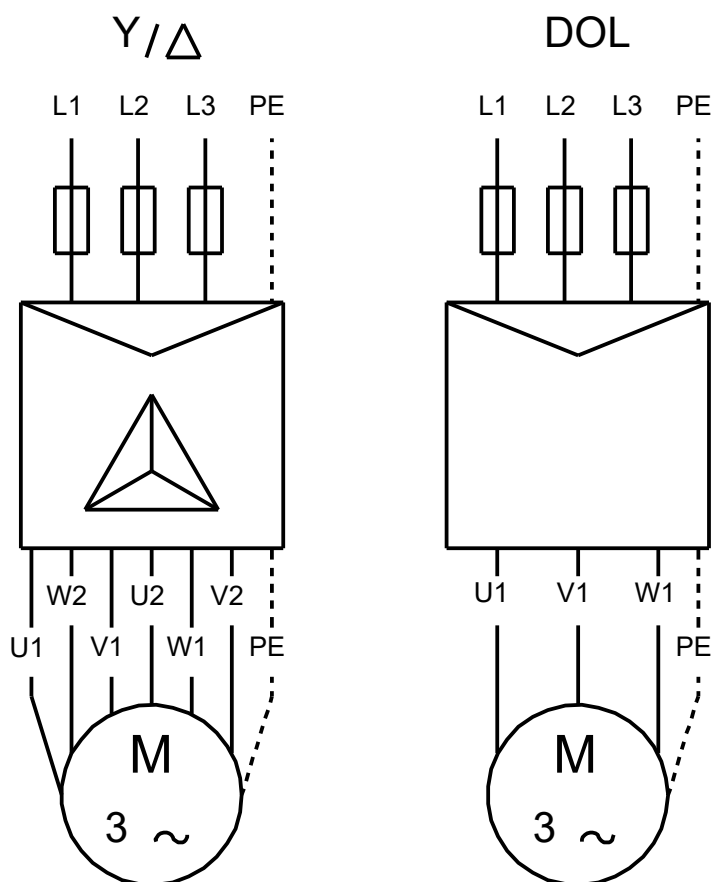
99090637 RSI 3x208-240V IP66 7.5kW 31A



Project:
 Reference Number:

Client:
 Client Number:
 Contact:

98699039 SP 9-25

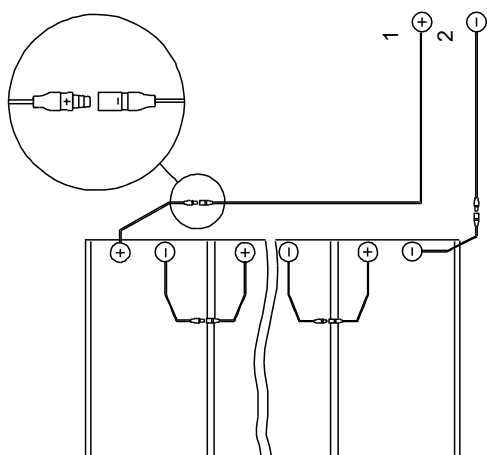
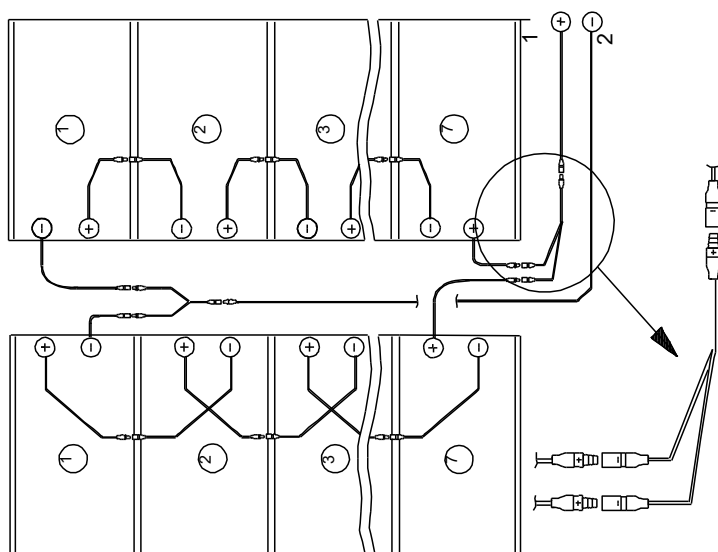


U1, W2	Brown
V1, U2	Black
W1, V2	Grey

Project:
Reference Number:

Client:
Client Number:
Contact:

99299012 GF 270





Company name: World Vision International
Created by: DAWAM WASH Team
Phone:

Date: 01/05/2024

Project:
Reference Number:

Client:
Client Number:
Contact:

98699039 SP 9-25

Input - summary

Water volume (max): 105 m³/day
Month for sizing: July
Static lift above ground: 40 m
Dynamic water level: 80 m
Sun tracking: Yes (single (polar) axis)
Location: Faryab, Afghanistan
Latitude: 35.9204 DD, Longitude: 64.7823 DD

Products

Pump: SP 9-25, 1 x 98699039
Solar module: GF 270, 30 x 99299012
Wire kit, array to control box: 1 x 98257868
Wire kit, array to array: 2 x 98257892
Switch box / control unit: RSI 3x208-240V IP66 7.5kW 31A, 1 x 99090637
Switch box / control unit: OTDCP16, Circuit Breaker, 16Amp, 3 x 98341686
Switch box / control unit: OVR PV 40-1000 P, Surge Protection, 1 x 98341687

Sizing results - summary

Water production, Peak flow and Price

Total water production per year: 36200 m³
Avg. water production per day: 99.3 m³/day
Average water production per watt per day: 12.3 l/Wp/day

Solar module configuration:

Number of solar modules in series: 10, in parallel: 3
Solar array rated power: 8.1 kW
Solar array rated volts: 316 V
Sun tracking: Yes (single (polar) axis)
Tilt angle: 35 deg.

Typical performance at solar radiation 800 W/m²

Flow: 9.2 m³/h
Total head: 124.1 m

Cables and pipes:

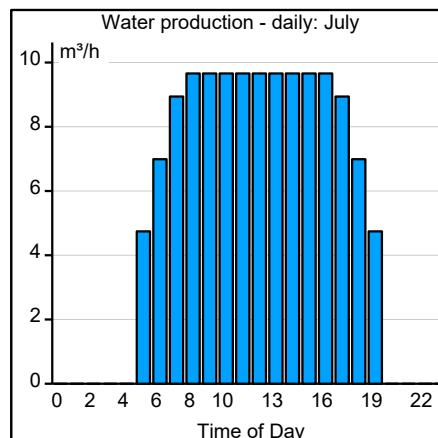
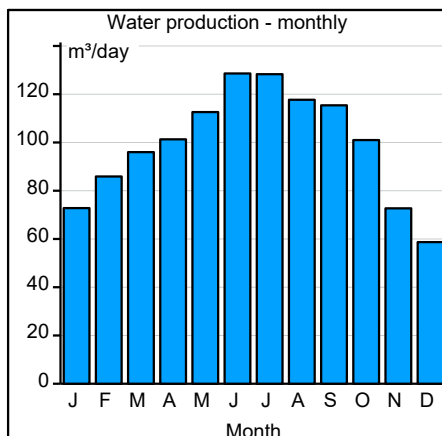
Pump cable length: 120 m
Pump cable size: 12 mm²
Total cable loss: 2.7 %

Material, riser pipe: PEH
Pipe size (inner diameter), riser pipe: Ø 90 (79.2 mm)
Material, discharge pipe: PEH
Pipe size (inner diameter), discharge pipe: Ø 90 (79.2 mm)
Pipe length of riser pipe: 70 m
Pipe length of discharge pipe: 950 m
Friction loss, discharge pipe: 6.66 m
Friction losses: 4.079 m

System performance - monthly average

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Water production [m ³ /day]	72.8	85.9	96	101.3	112.6	128.6	128.3	117.7	115.4	101	72.7	58.7
Energy production Solar [kWh/day]	49.0	61.9	71.3	72.8	81.1	95.9	96.7	91.5	93.3	79.7	53.1	40.2
Radiation horizontal [kWh/m ² day]	3.2	4.3	6.0	6.9	8.5	9.8	9.7	8.9	7.6	5.7	3.5	2.6
Radiation tilt [kWh/m ² day]	6.0	7.7	9.1	9.6	11.0	13.3	13.5	12.7	12.6	10.5	6.7	4.9
Avg. Temp. [°C]	-7.0	-5.8	0.0	6.9	12.2	16.4	17.9	16.6	12.5	7.0	2.3	-3.8

Data location: Latitude: 35 DD, Longitude: 65 DD





Company name: World Vision International
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Date: 01/05/2024

Project:
Reference Number:

Client:
Client Number:
Contact:

98699039 SP 9-25

Location Map

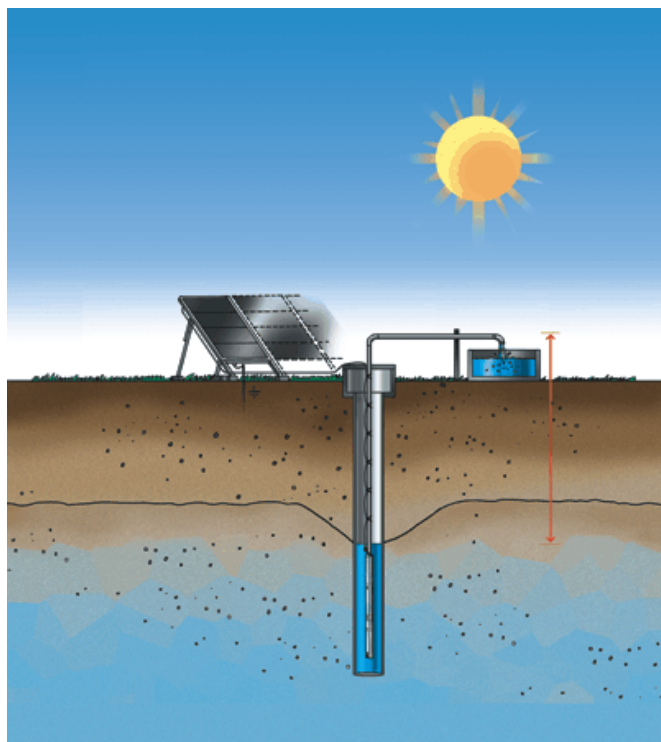


Location: Faryab, Afghanistan
Latitude: 35.9204 DD, Longitude: 64.7823 DD

Project:
Reference Number:

Client:
Client Number:
Contact:

Installation and Input



Sizing Results

Water production, Peak flow and Price

Total water production per year: 36200 m³
 Avg. water production per day: 99.3 m³/day
 Average water production per watt per day: 12.3 l/Wp/day

Solar module configuration:

Number of solar modules in series: 10, in parallel: 3
 Solar array rated power: 8.1 kW
 Solar array rated volts: 316 V
 Sun tracking: Yes (single (polar) axis)
 Tilt angle: 35 deg.

Typical performance at solar radiation 800 W/m²

Flow: 9.2 m³/h
 Total head: 124.1 m

Cables and pipes:

Pump cable length: 120 m
 Pump cable size: 12 mm²
 Total cable loss: 2.7 %

Material, riser pipe: PEH

Pipe size (inner diameter), riser pipe: Ø 90 (79.2 mm)

Material, discharge pipe: PEH

Pipe size (inner diameter), discharge pipe: Ø 90 (79.2 mm)

Pipe length of riser pipe: 70 m

Pipe length of discharge pipe: 950 m

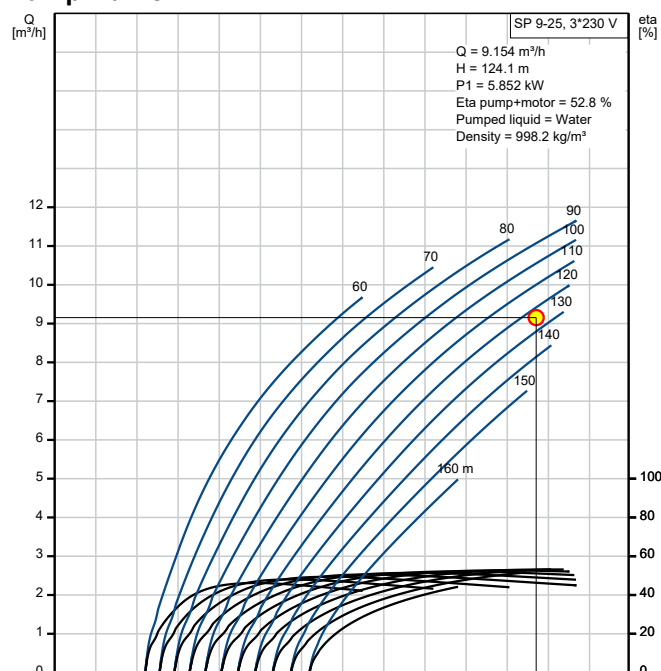
Friction loss, discharge pipe: 6.66 m

Friction losses: 4.079 m

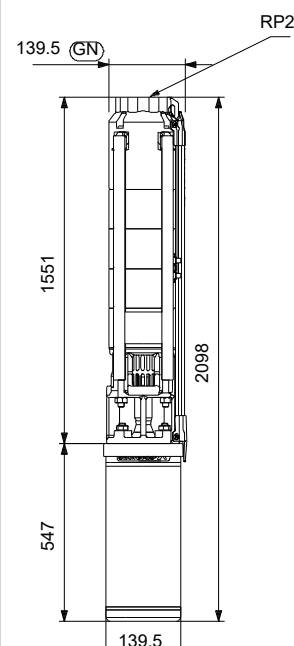
Location: Faryab, Afghanistan

Latitude: 35.9204 DD, Longitude: 64.7823 DD

Pump Curve



Dimensional Drawing





Company name: World Vision International
Created by: DAWAM WASH Team
Phone:

Date: 01/05/2024

Project:
Reference Number:

Client:
Client Number:
Contact:

Order Data:

Position	Your pos.	Product name	Amount	Product No	Total
		SP 9-25	1	98699039	
		GF 270	30	99299012	
Wire_Kit ToControl		Wire kit array to control box (MC4)	1	98257868	
Wire_Kit Array_Arr ay		Wire kit array to array (MC4)	2	98257892	
Box		RSI 3x208-240V IP66 7.5kW 31A	1	99090637	
Box		OTDCP16, Circuit Breaker, 16Amp	3	98341686	
Box		OVR PV 40-1000 P, Surge Protection	1	98341687	