

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: Ganj Village Water Supply System Design

Village: Ganj
District: Gurziwan

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Ansar Kazimi

Aug 8, 2024

Gyana Hewardmal

WV

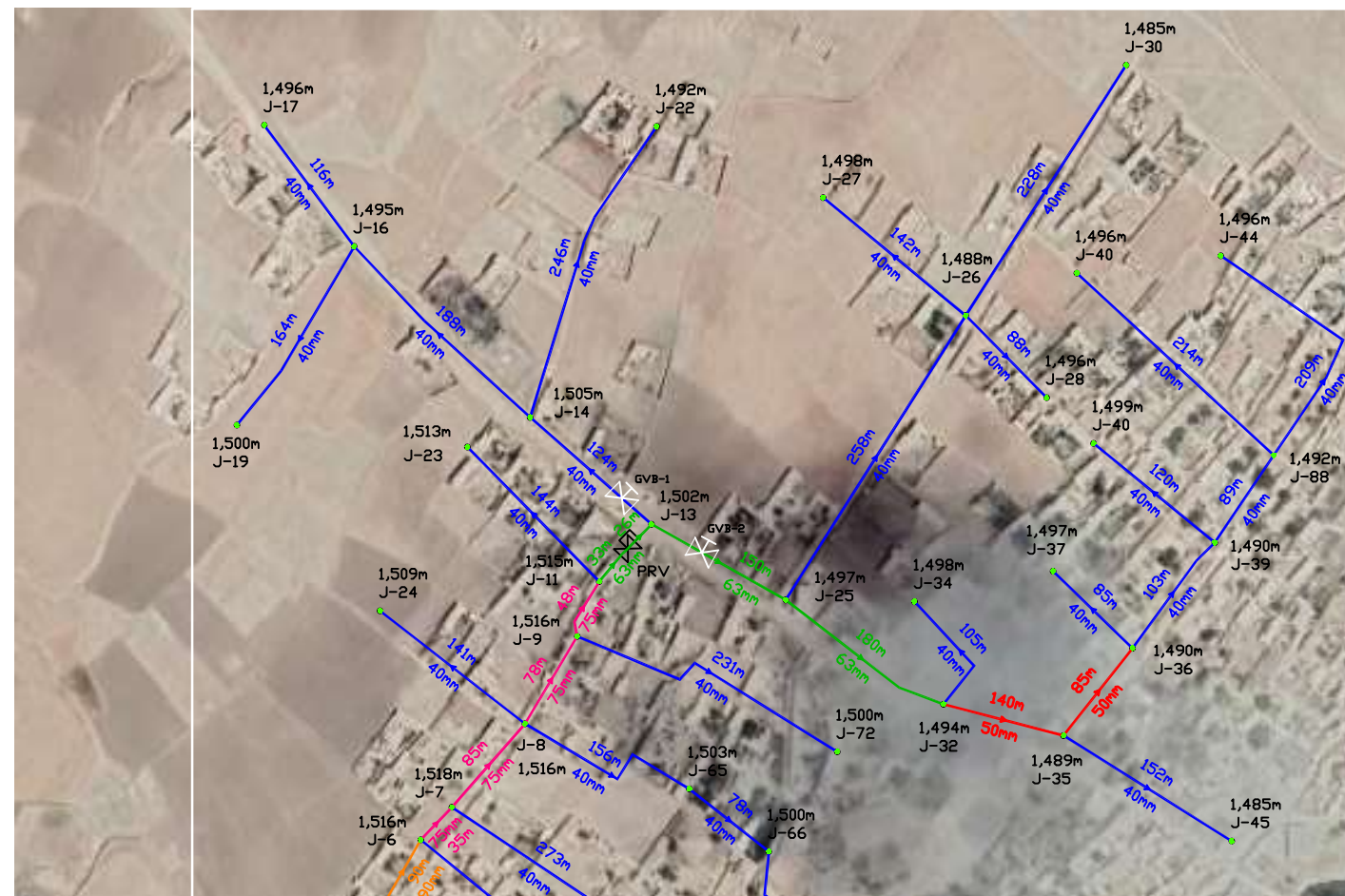
Aug 8, 2024

Aug 11, 2024

Project Information

Number of Families	253
Number of House Holds(Meter)	240
Well Discharge Required	3.9 l/s
Length of Network	11.53 km
Work Days	60 days
RCC Elevated Tank	35 M3
Well Depth	100 m

مسجد حضرت عمر
Mosque



Legend

PRV

Pressure Reducing Valve

Elevated Tank

Ø90mm

Bore Well

Ø75mm

Solar Stand

Ø63mm

Ø50mm

GVB

Submersible

Ø40mm

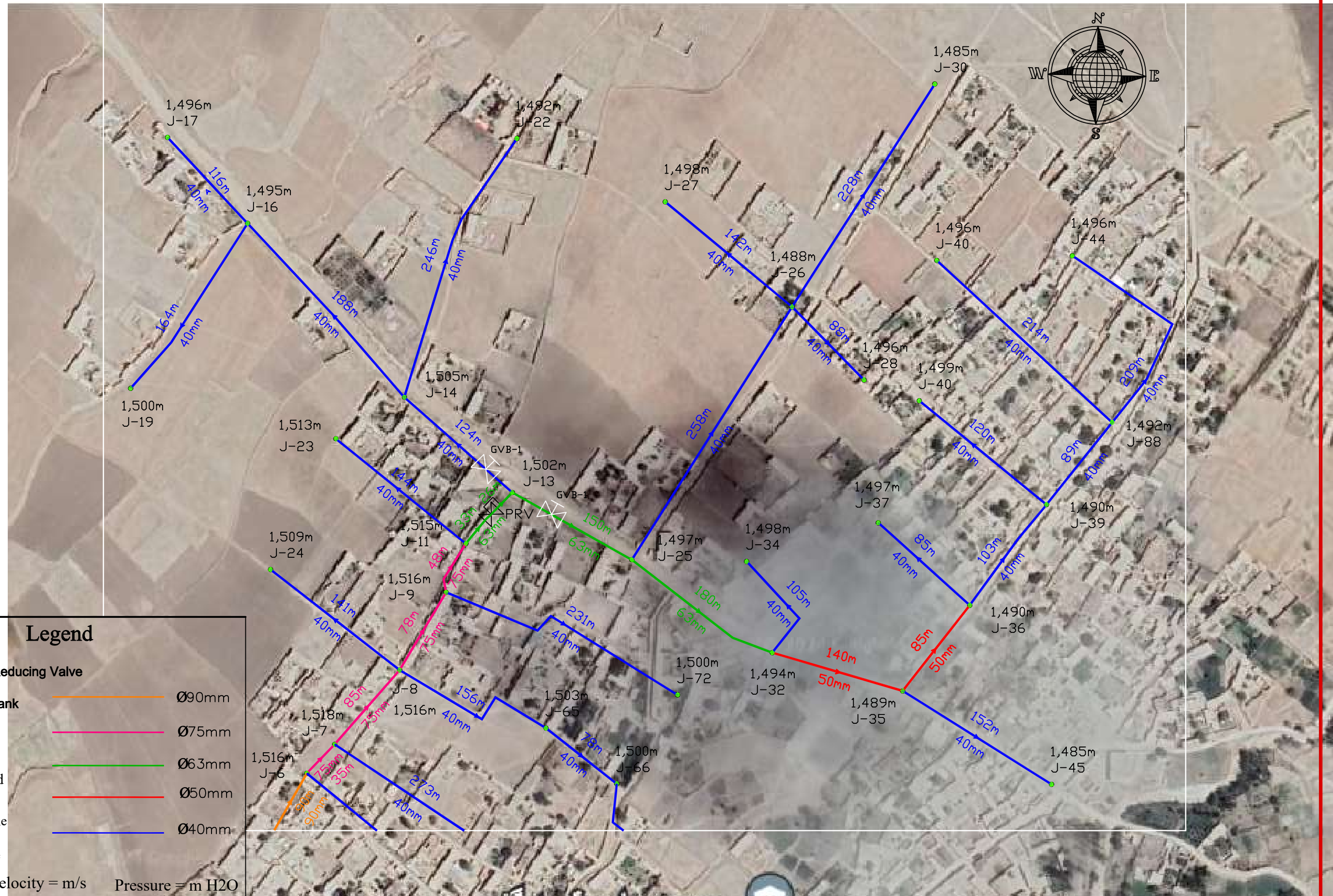
Gate Valve

Flow = L/s

Velocity = m/s

Pressure = m H₂O

Section-01



Section-02



Legend

PRV

Elevated Tank

Bore Well

Solar Stand

Submersible

Gate Valve

Pressure Reducing Valve

Ø90mm

Elevated Tank

Ø75mm

Bore Well

Ø63mm

Solar Stand

Ø50mm

Submersible

Ø40mm

Gate Valve

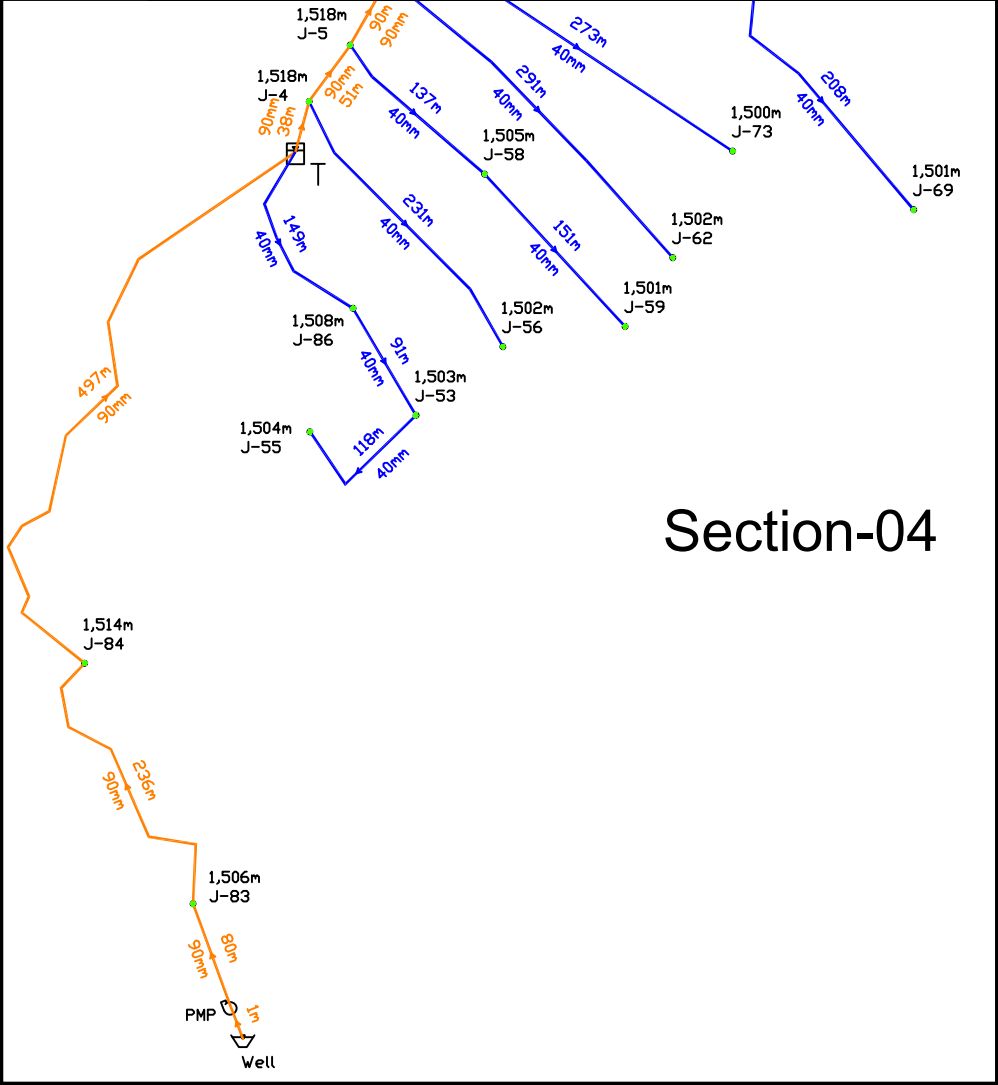
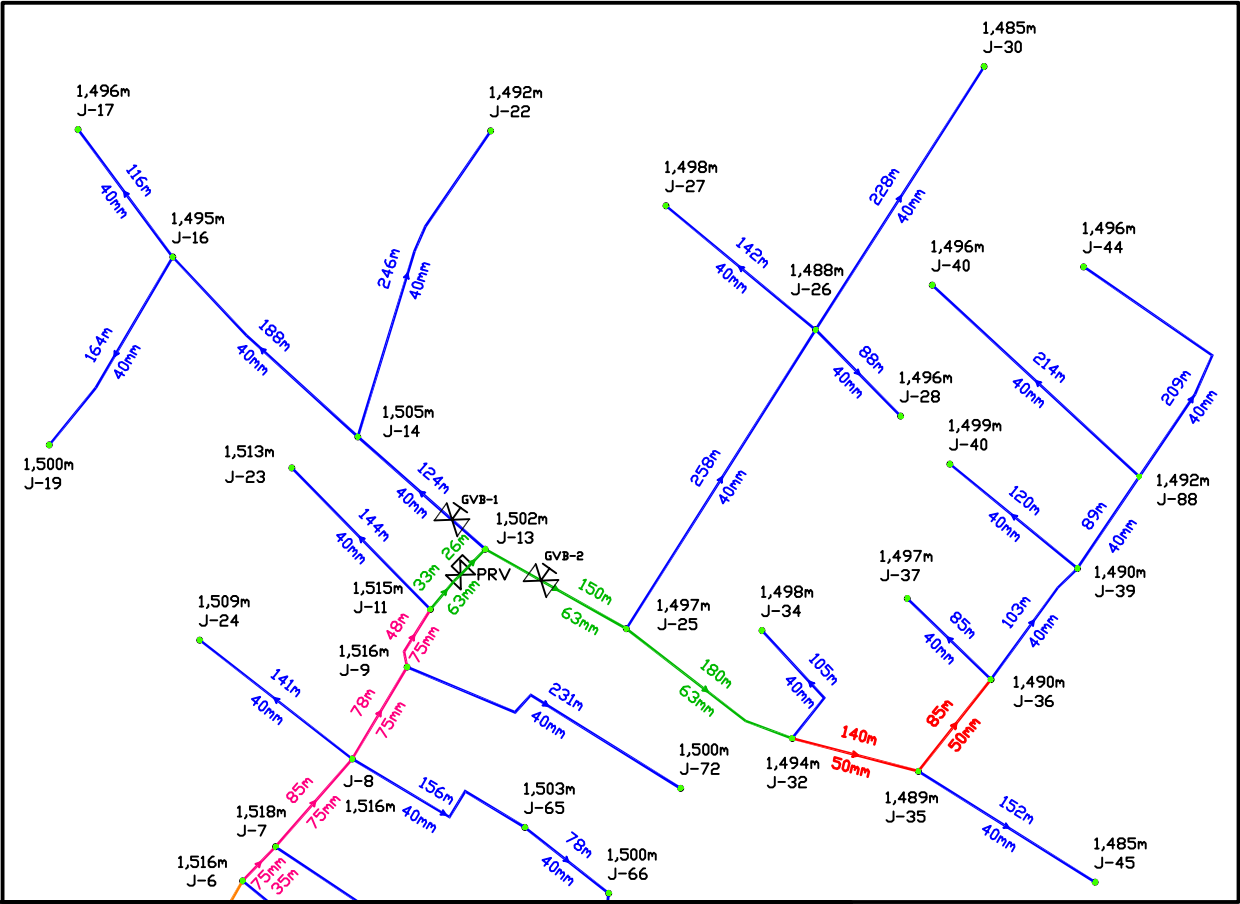
Flow = L/s

Velocity = m/s

Pressure = m H2O



Section-03



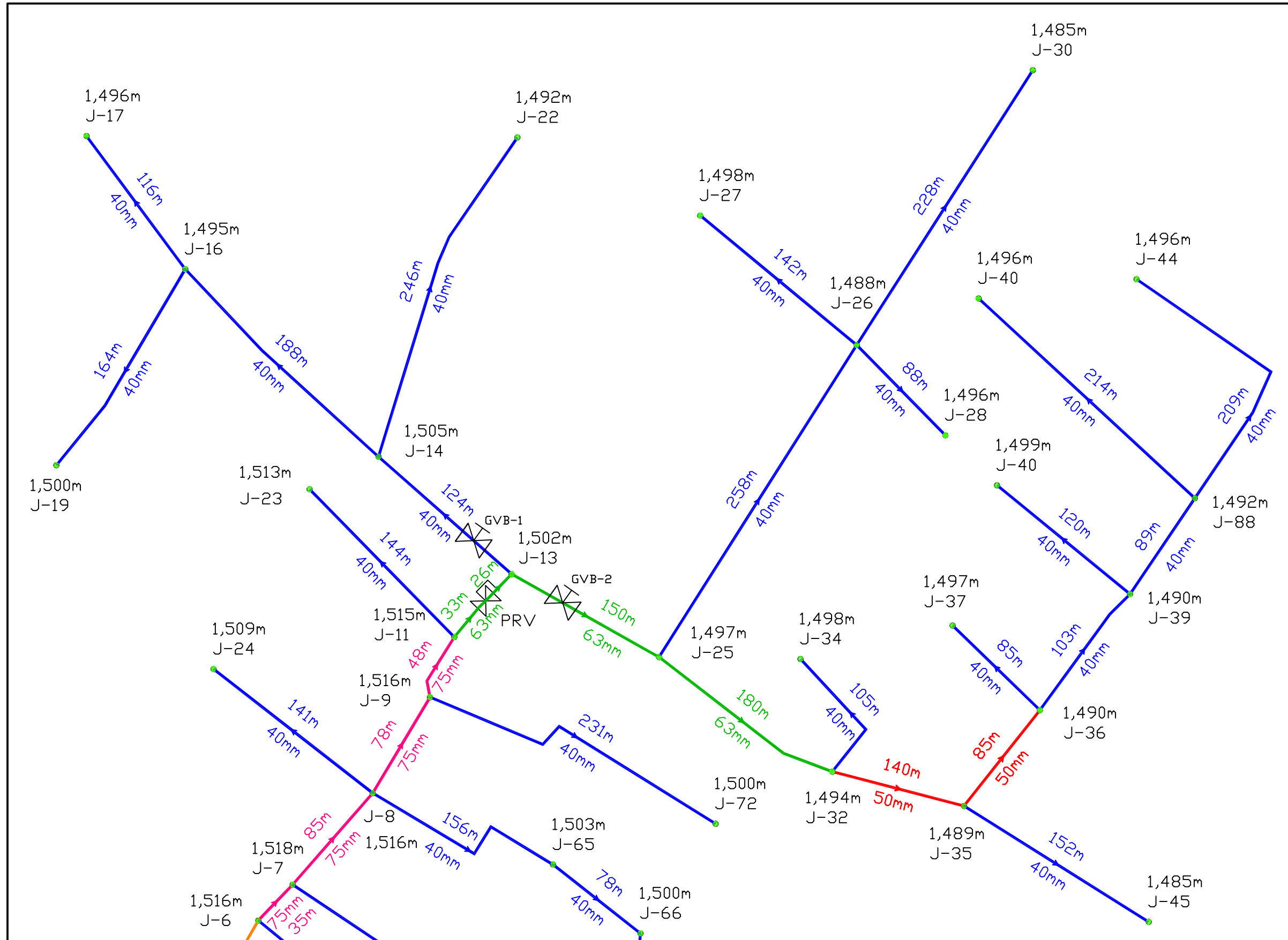
Section-04

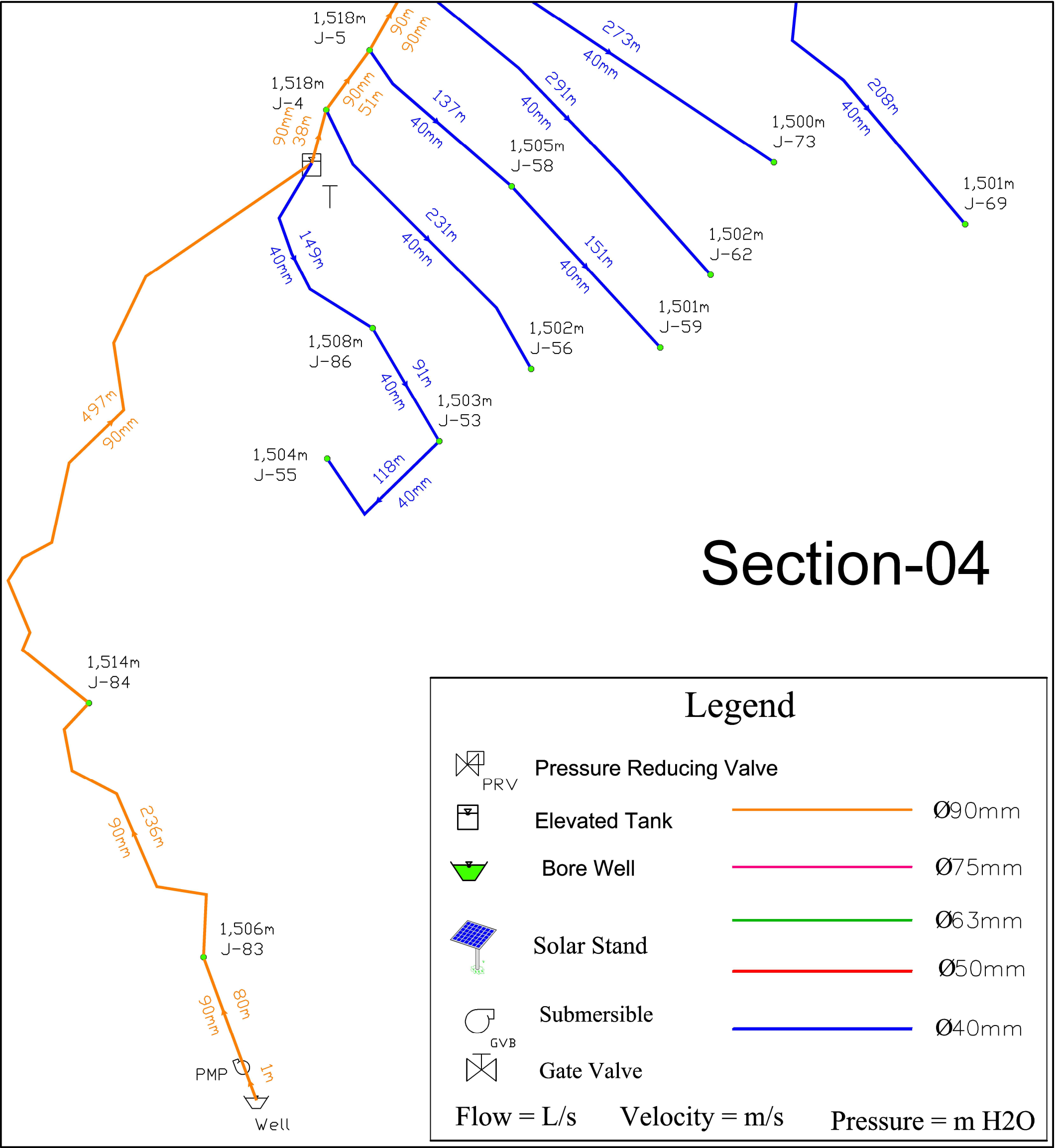
Legend

- PRV Pressure Reducing Valve
 - Elevated Tank
 - Bore Well
 - Solar Stand
 - Submersible
 - Gate Valve
- Flow = L/s Velocity = m/s Pressure = m H2O

Water Supply Network Coordinates				
NO	Description	Latitude	Longitude	Elevation
1	Bore Well	35.6762	65.12522	1506 m
2	Water Tank	35.67688	65.12497	1521 m
3	PV System	35.681011	65.12608	1512 m

Section-03



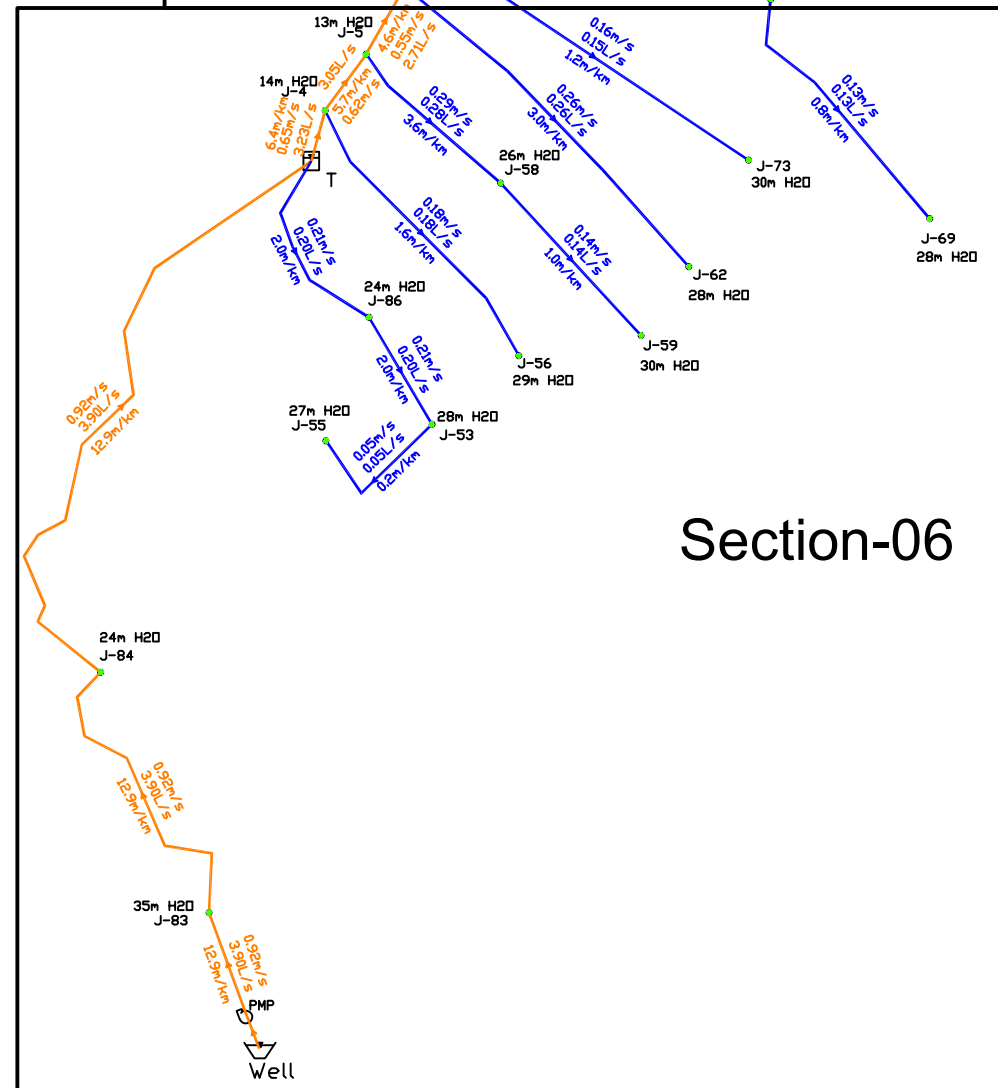
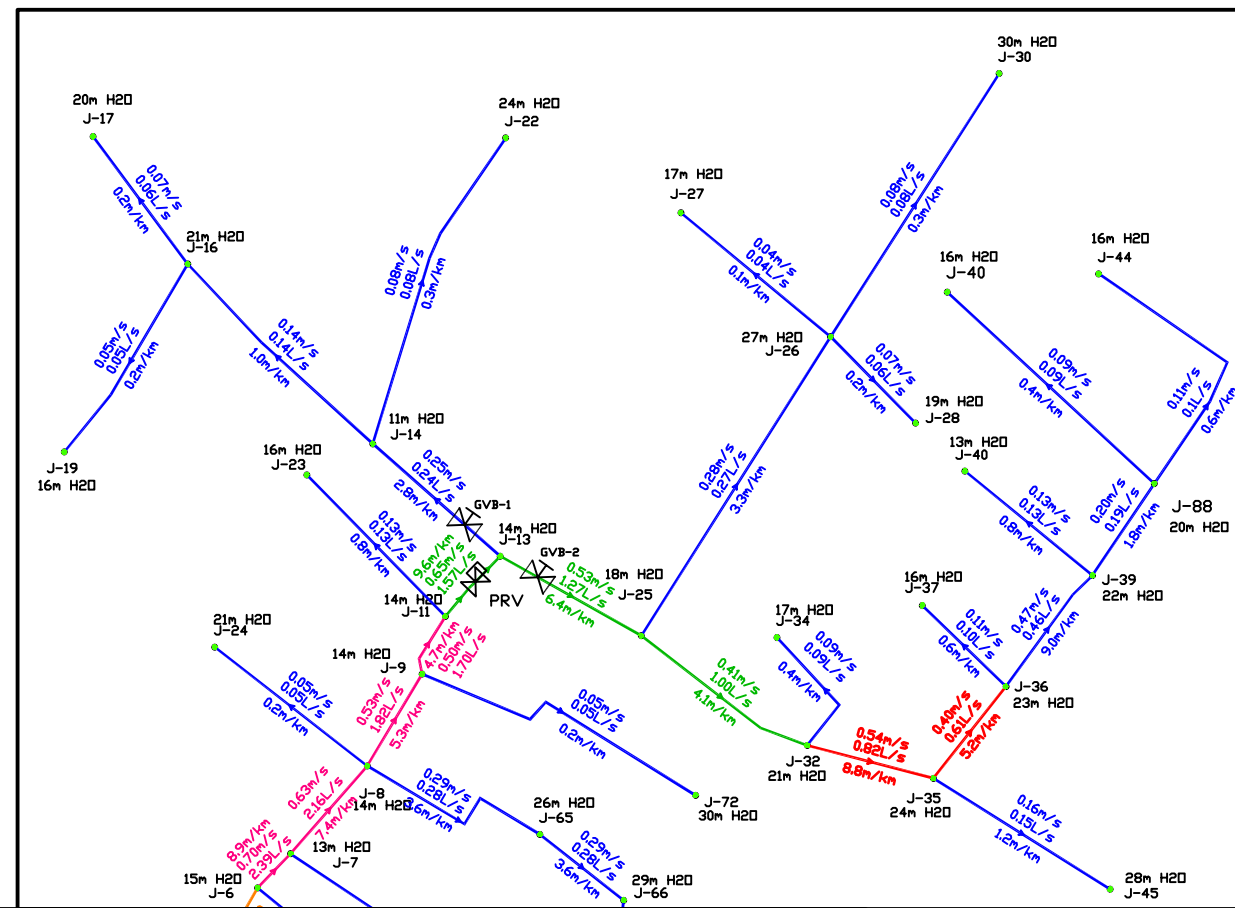


Yama Hewardmal

Aug 8, 2024



Section-05

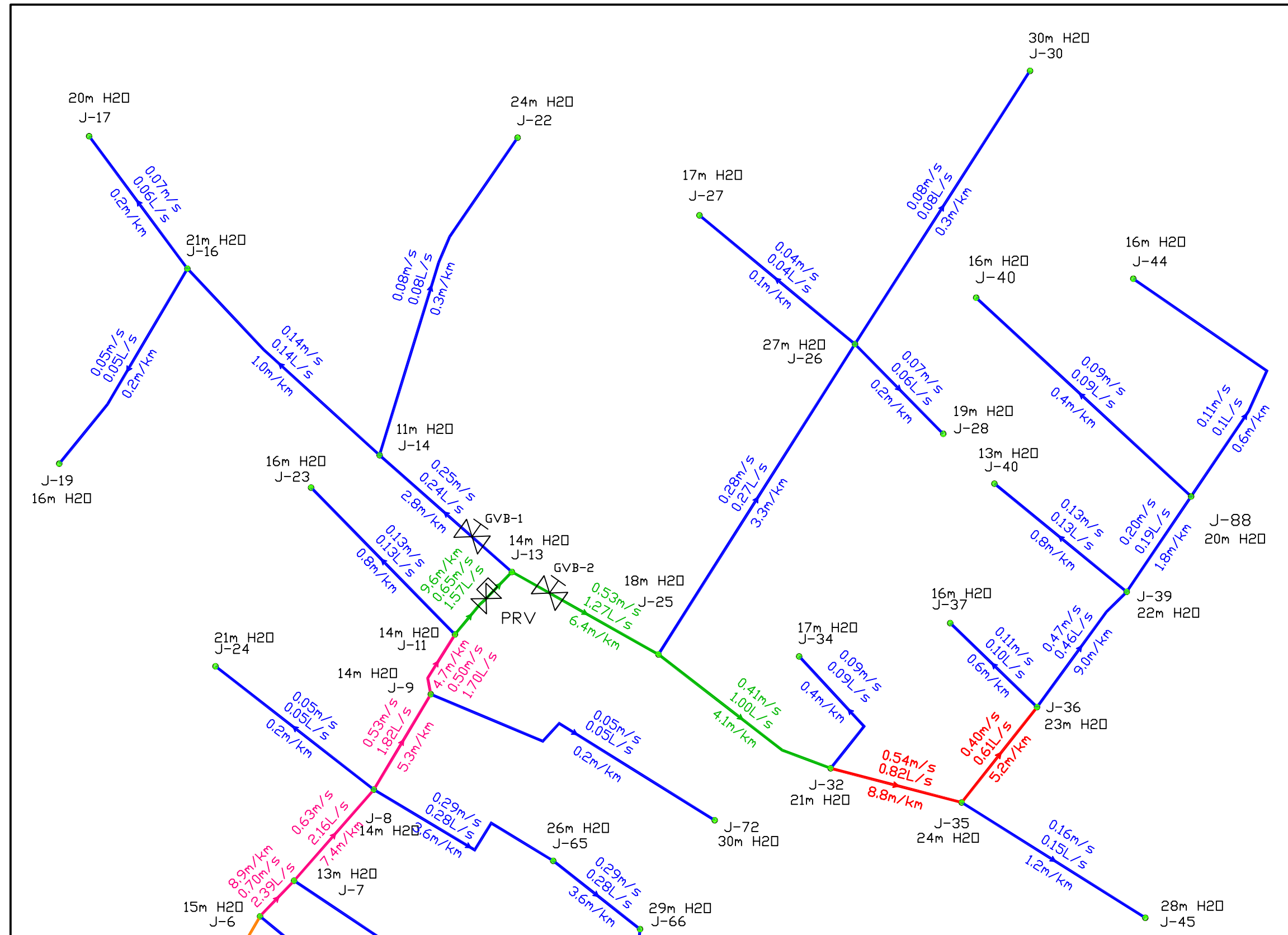
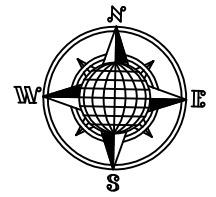


Section-06

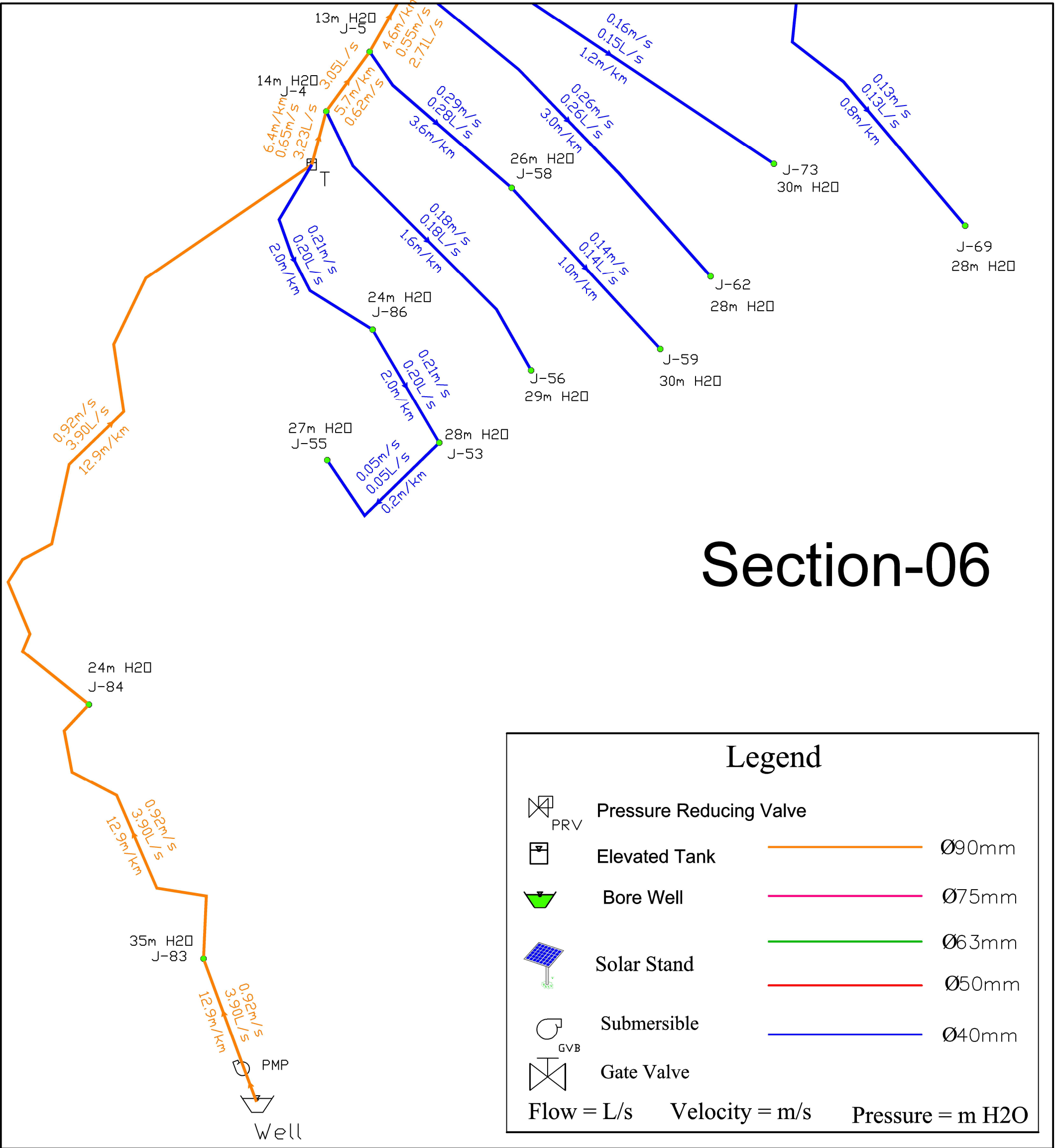
Legend

- PRV Pressure Reducing Valve
 - Elevated Tank
 - Bore Well
 - Solar Stand
 - Submersible
 - Gate Valve
- Flow = L/s Velocity = m/s Pressure = m H2O

Section-05



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





Section-06

Legend

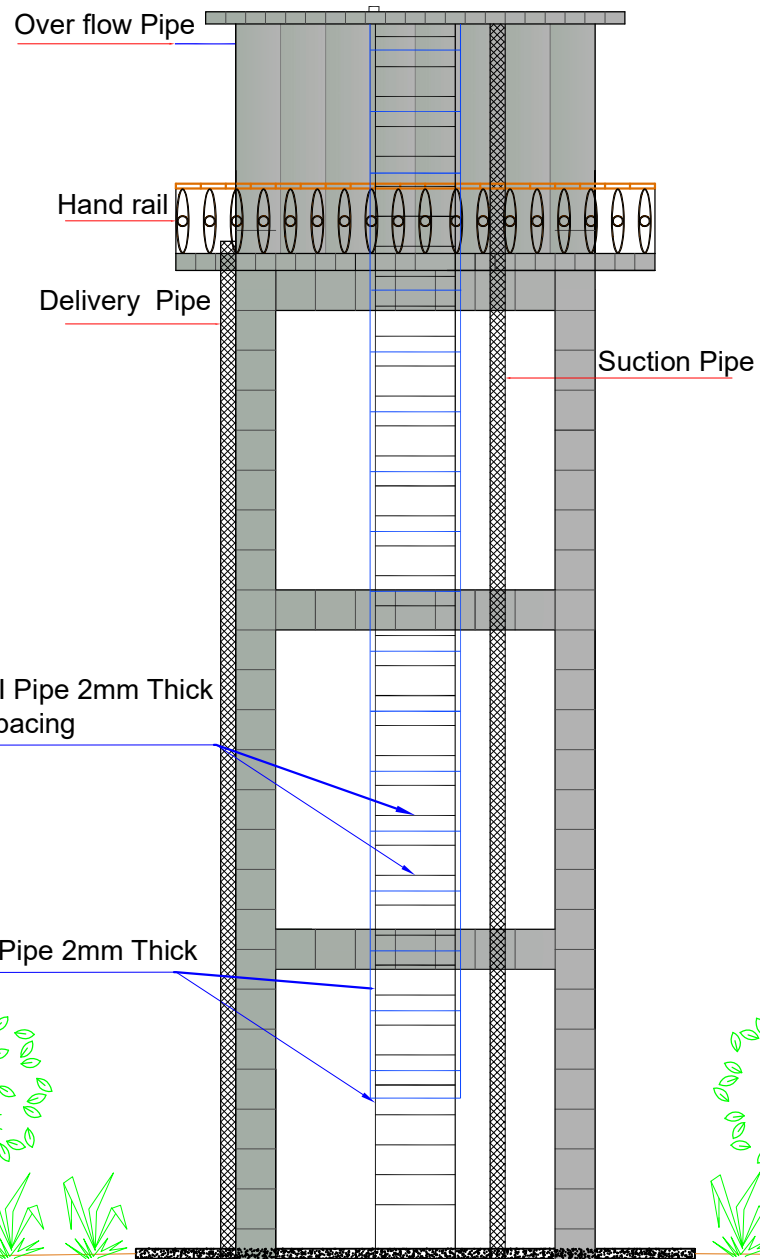
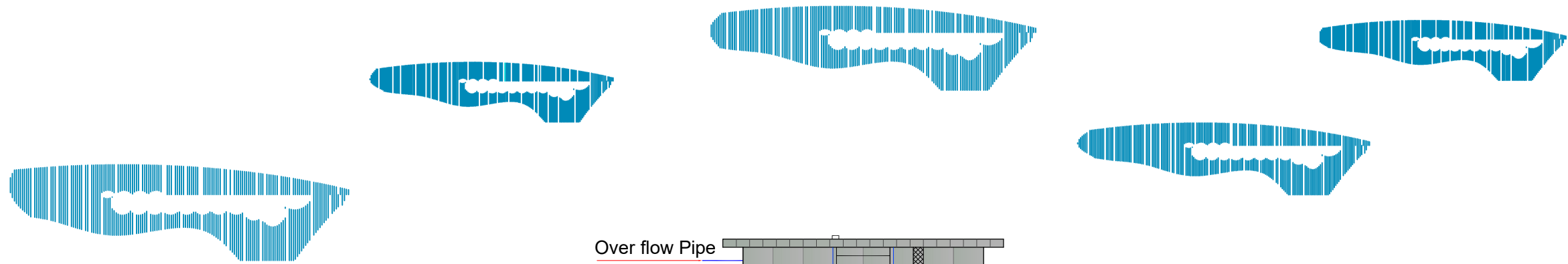
- PRV Pressure Reducing Valve
 - Elevated Tank
 - Bore Well
 - Solar Stand
 - Submersible
 - Gate Valve
 - Ø90mm
 - Ø75mm
 - Ø63mm
 - Ø50mm
 - Ø40mm
- Flow = L/s Velocity = m/s Pressure = m H2O

Aug 8, 2024

	SURVEYED BY	Eng. Sayed Masood Tural	CHECKED BY	WASH Coordinator	SCALE			PROVINCE	Faryab	PROJECT NAME: Ganj Solar Water Supply Pipe Scheme
	DESIGNED BY	Eng. Ansar Kazimi	REVIEWED BY	WASH Ad	DATE			DISTRICT	Gurziwan	
	DRAWN BY	Eng. Ansar Kazimi	APPROVED BY	Project Director/Manager	DRAWING NO.			VILLAGE	Ganj village	
DRAWING TITLE: Pressure, Velocity, Flow, Headloss										

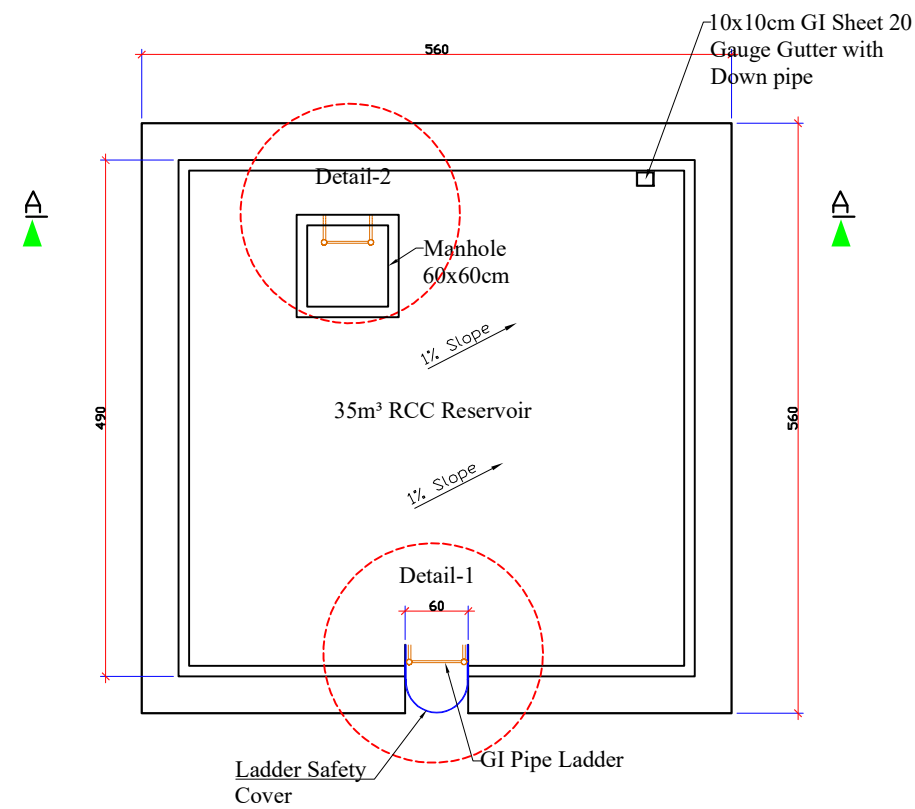
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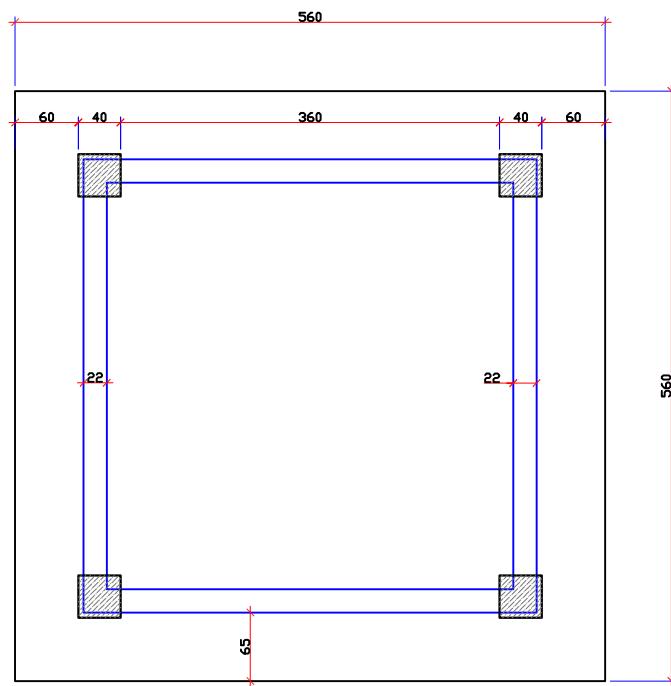


- Note:**
- 1- All dimensions are in cm unless otherwise stated.
 - 2- During RCC work vibrator must be used to avoid water leakage from reservoir.
 - 3- All PCC works should be with M200 (200kg/cm²) unless otherwise stated.
 - 4- All RCC works should be with M250 (250kg/cm²).
 - 5- Delivery and Sanction pipes should be Isolated with glass wool.
 - 6- Curing must be continued up to 28 days.
 - 7- Clear and Clean water must be used every where.
 - 8- The inlet, outlet, overflow and washing pipes should be adjusted according to site condition.
 - 9- Bearing Capacity Assumed 1.5kg/cm²

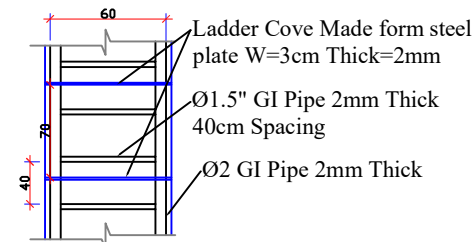
Elevation of Elevated Water Tank



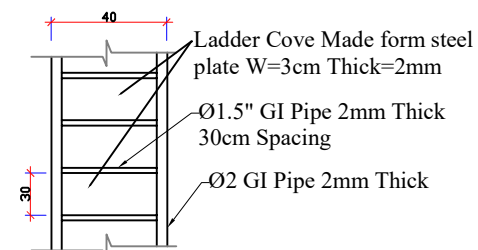
1 TANK ROOF PLAN
SCALE 1:100



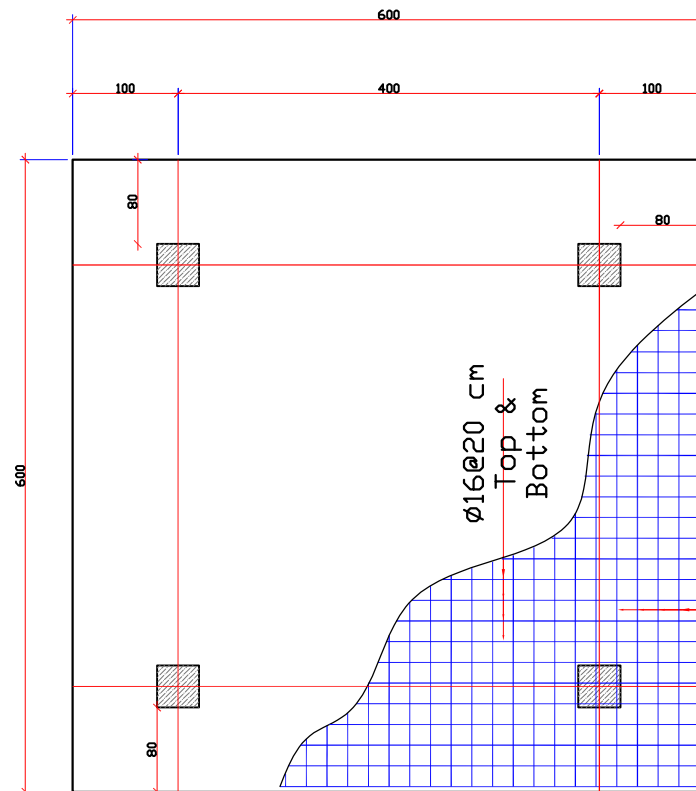
1 TANK FLOOR PLAN
SCALE 1:100



1 Detail -1
SCALE: NTA



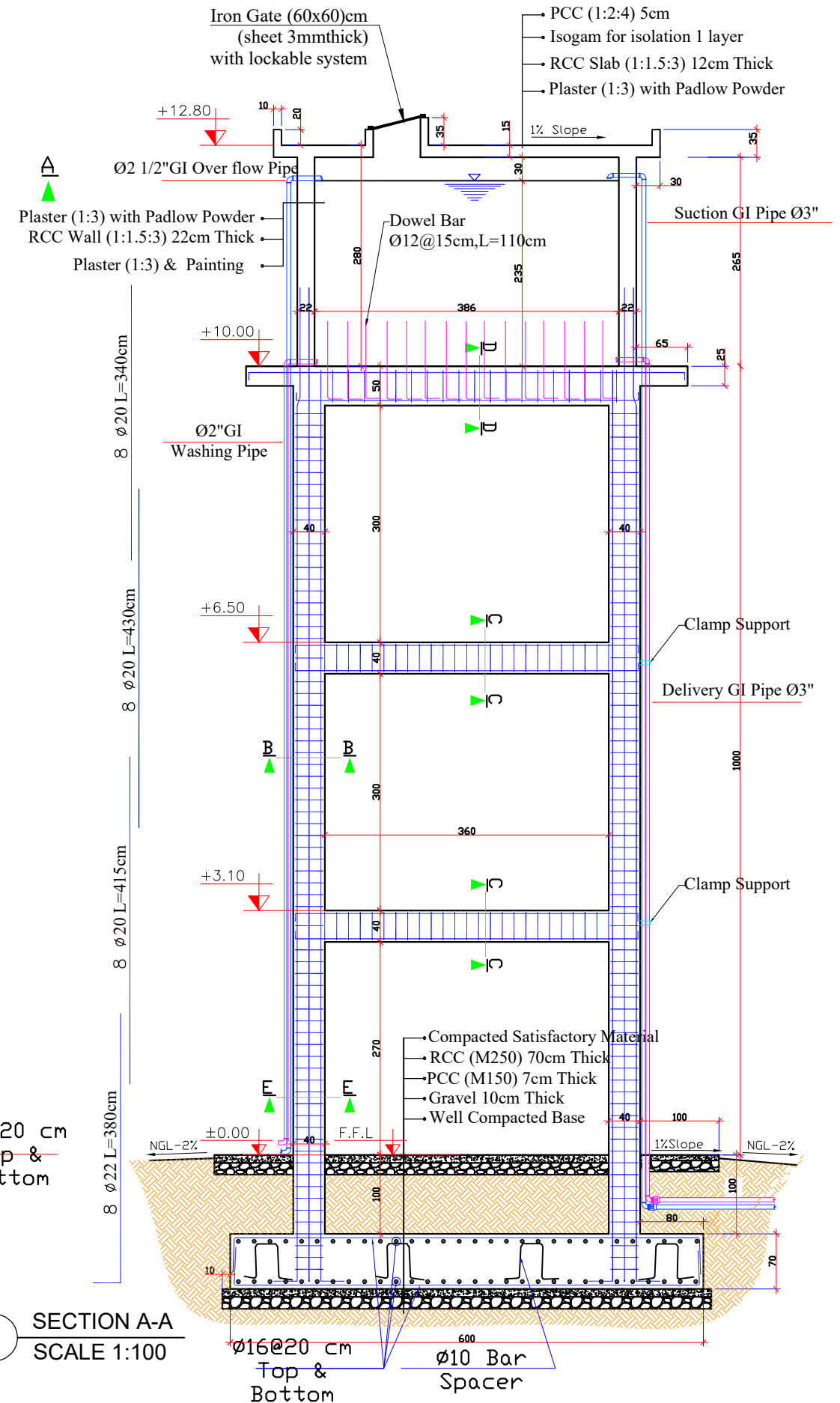
1 Detail -2
SCALE: NTA



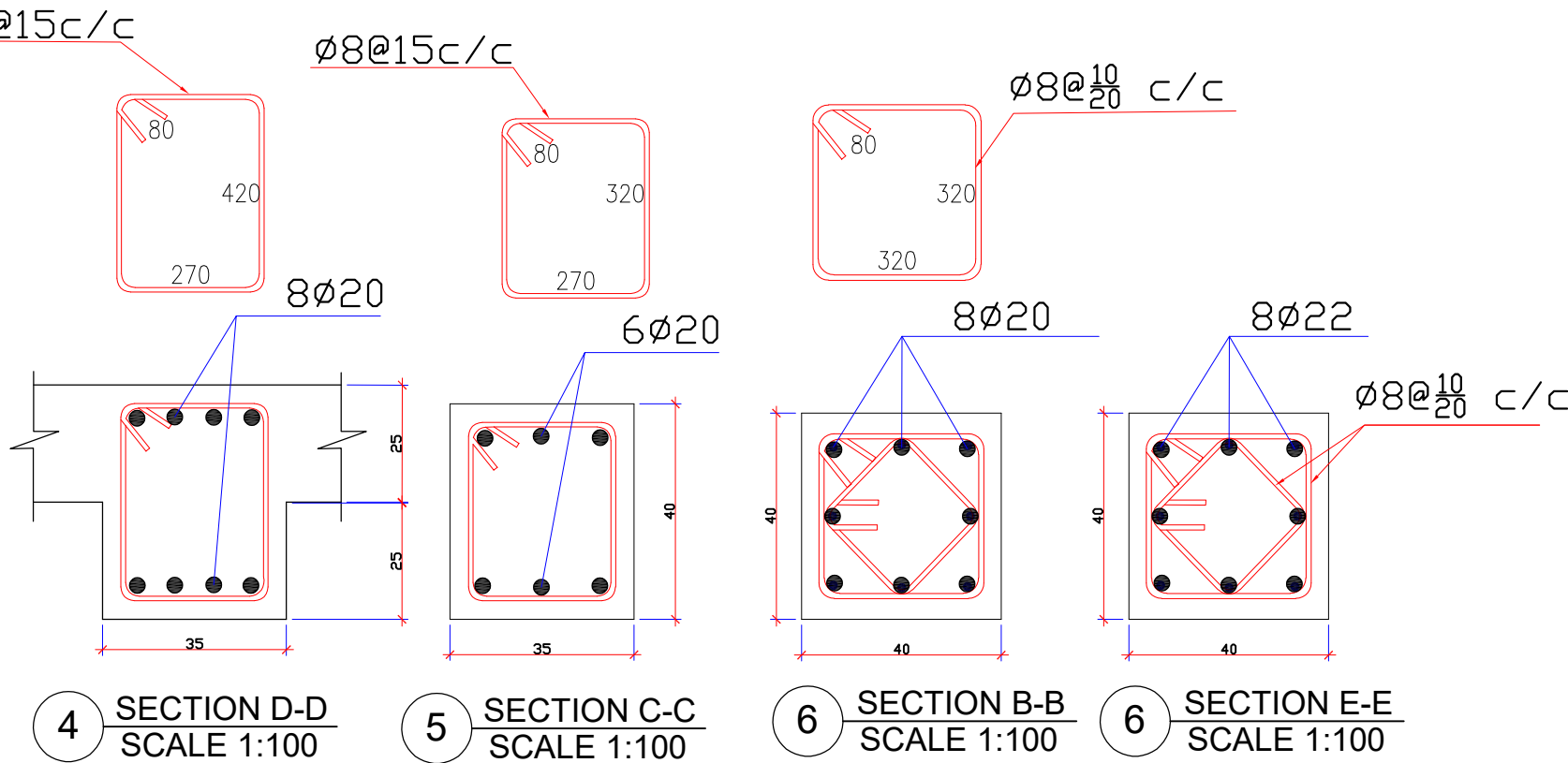
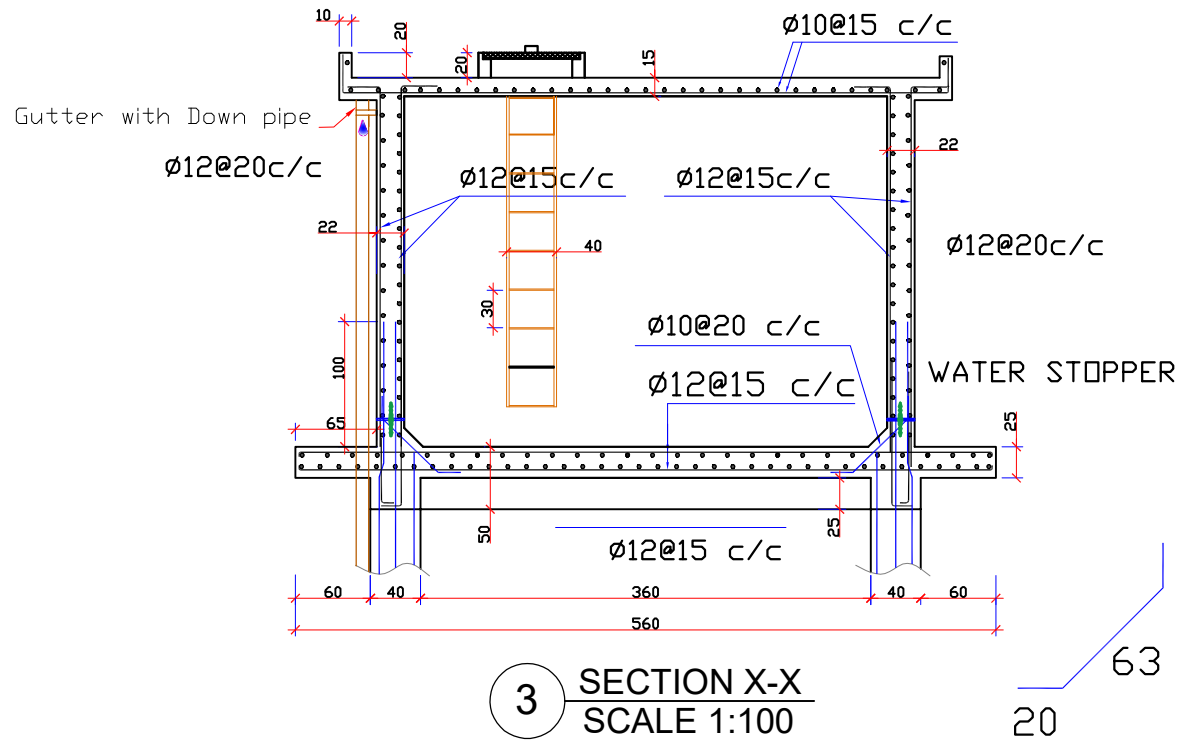
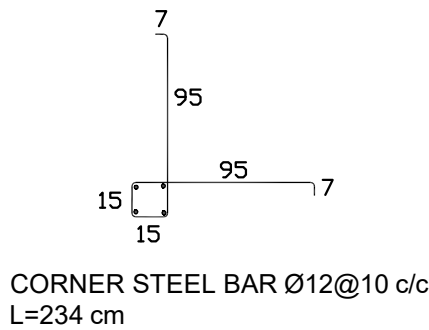
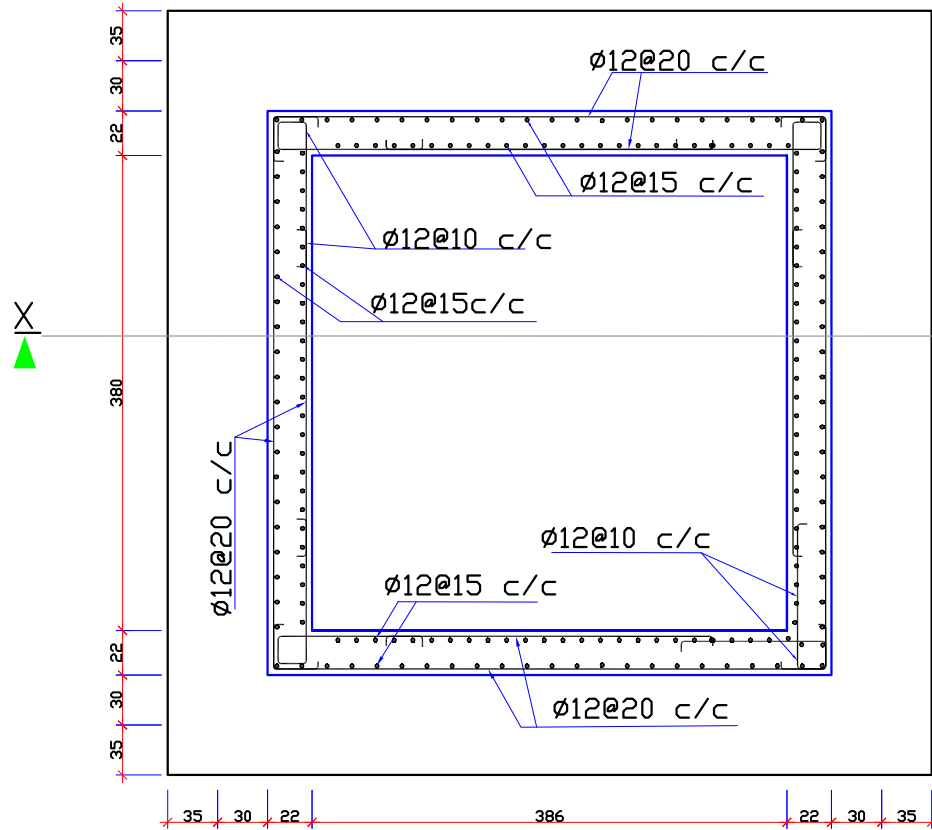
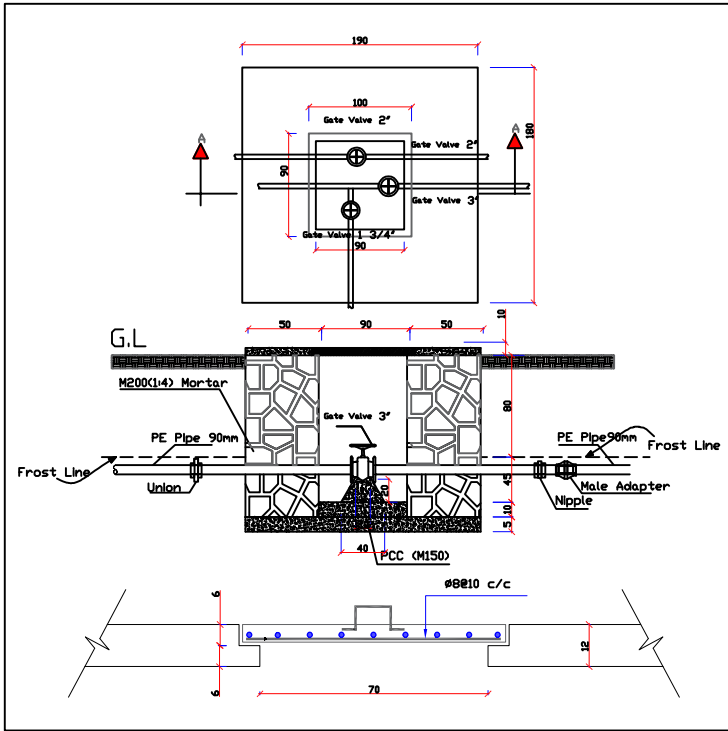
2 FOOTING REINFORCEMENT PLAN
SCALE 1:100

Ø16@20 cm Top & Bottom

3 SECTION A-A
SCALE 1:100

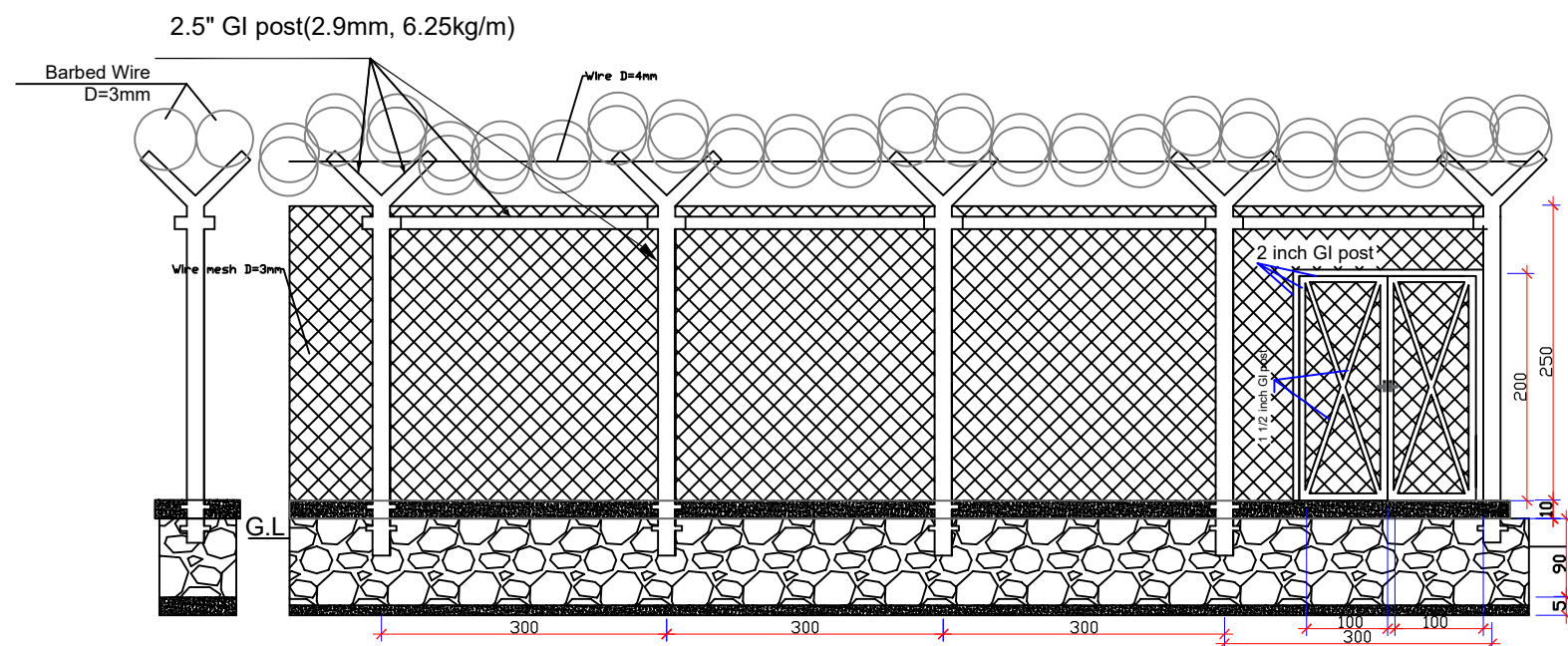
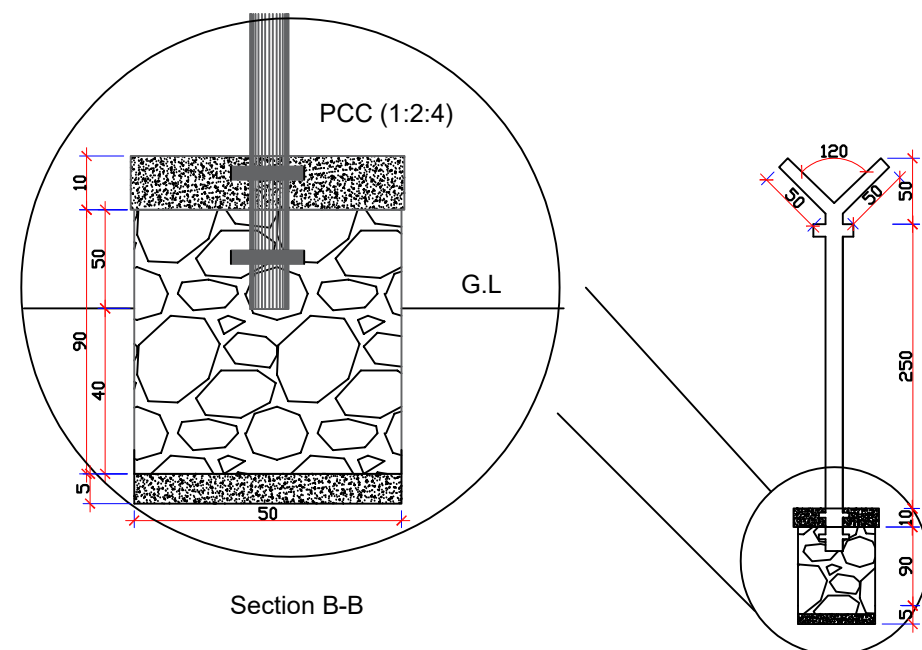
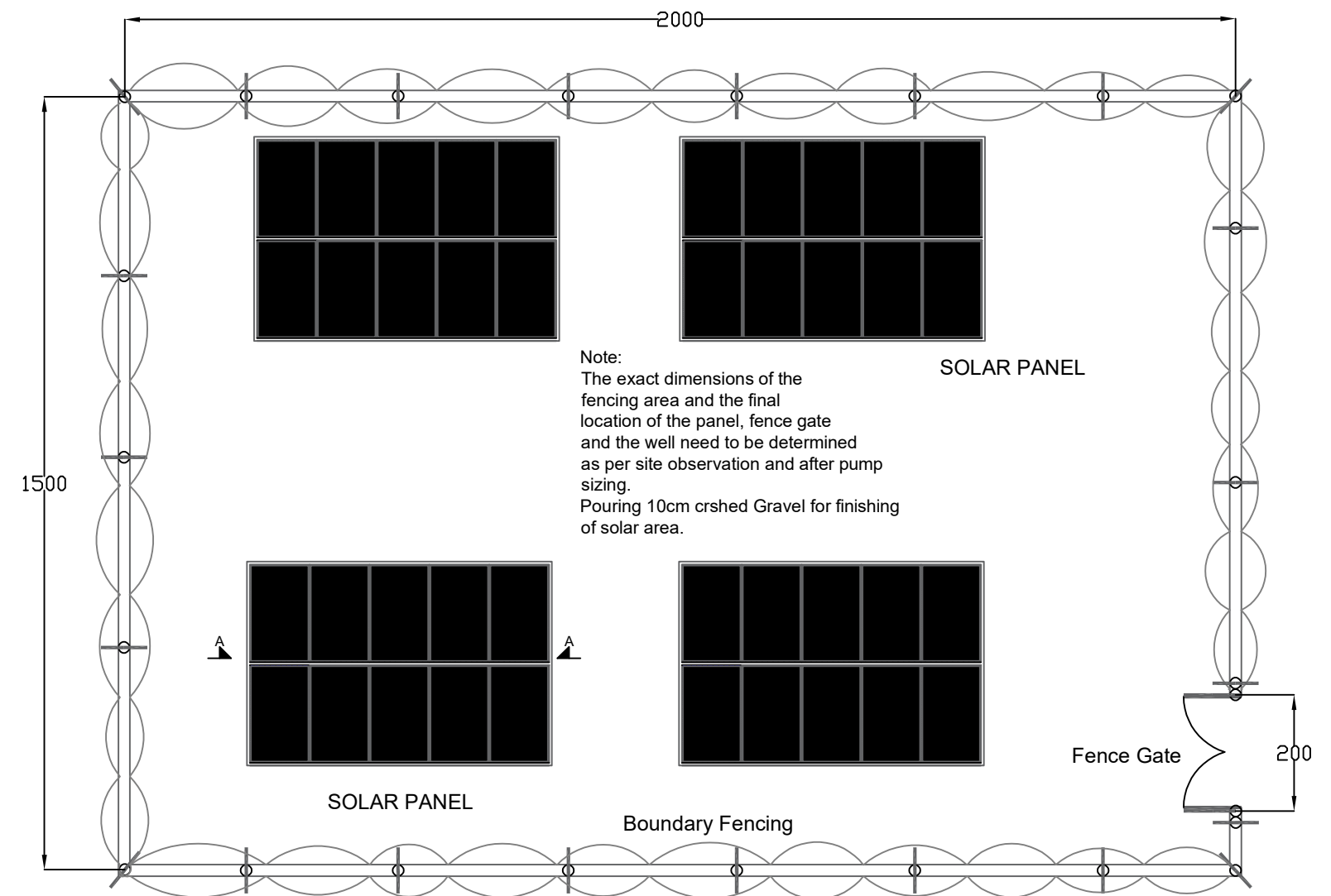
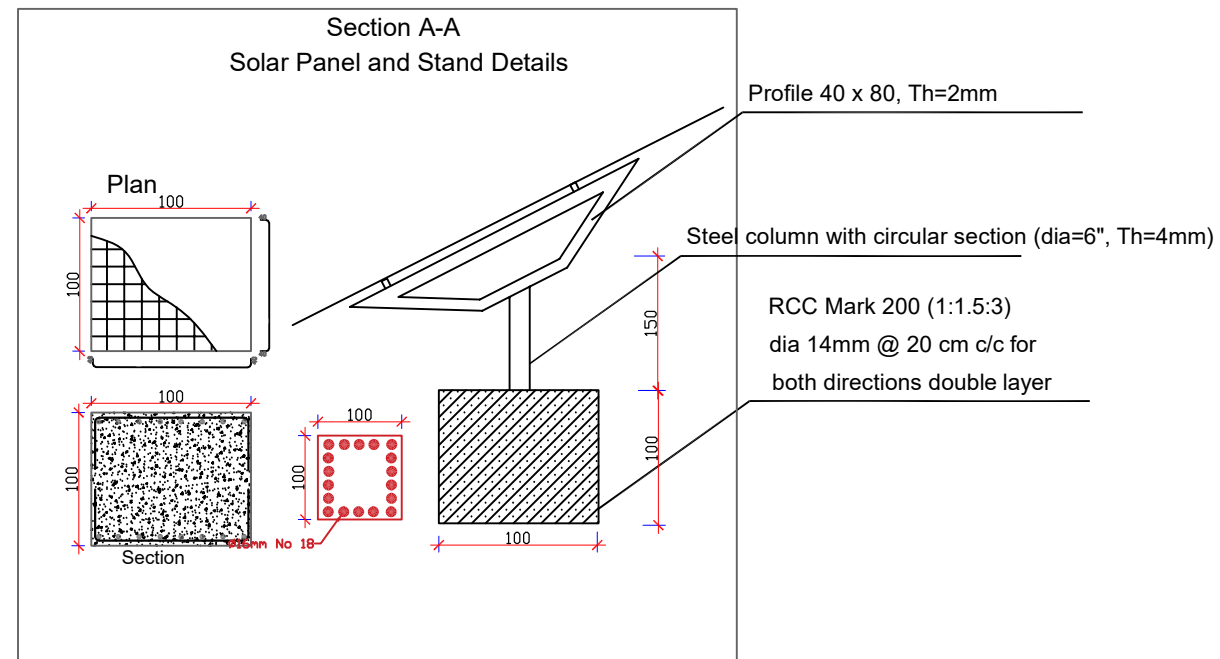


Main Gate Valve Box Details



NOTE:
THE COLUMN'S STIRRUPS SPACING AT JOINT AND LONGITUDINAL BAR
OVERLAPPING LOCATION TO BE CONSIDERED AT 10cm SPACE AND THE REST AT
20cm.

Boundary Fencing Plan and Details



Water Well Section

PVC Pipe 2 Inch for pouring Of Gravel and Clorin in needed time

Well Section

New propose well with the depth of 100m and diameter of drilling will be 16 inch, the casing and filter should be 8 inch

Inlet HDPE Pipe 90mm outer dia

WELL CASING

Clay (mud) or cement blocking around the casing for prevention of entering saline water to the well.

GRAVEL PACK

Suction pipe

DELIVERY PIPE

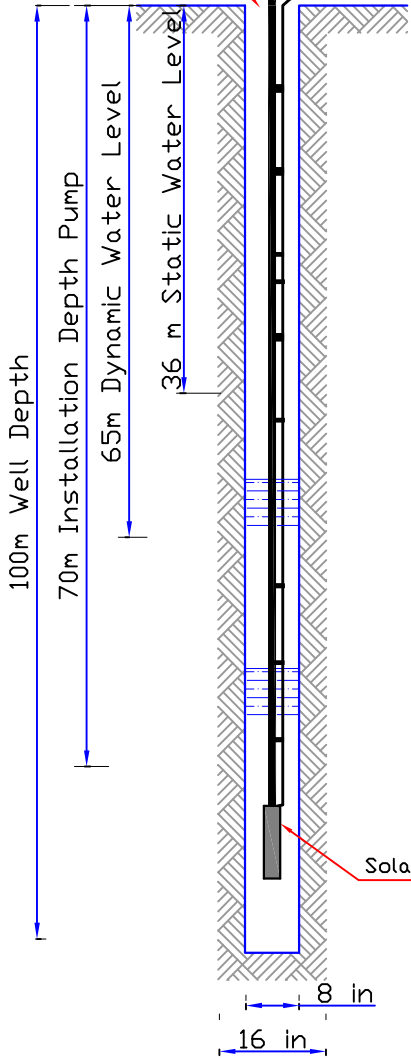
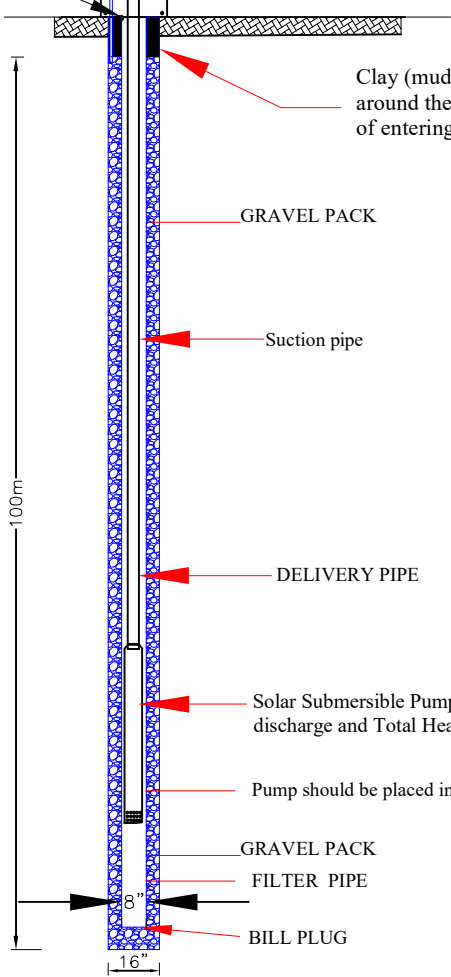
Solar Submersible Pump with 107.4 m³/day discharge and Total Head 130.9 m

Pump should be placed inside the casing pipe

GRAVEL PACK

FILTER PIPE

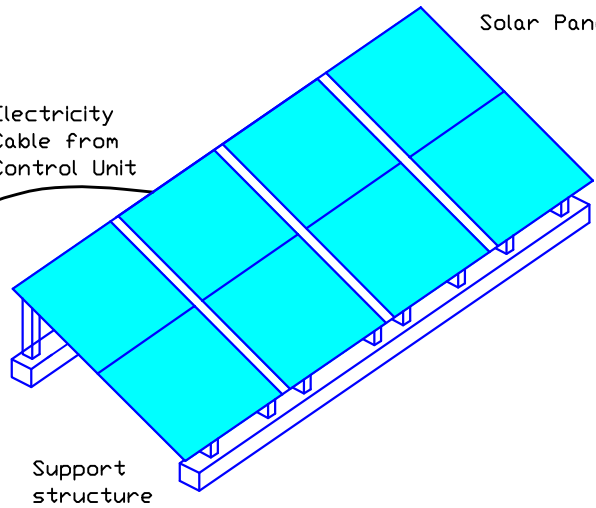
BILL PLUG



Electricity Cable from Control Unit



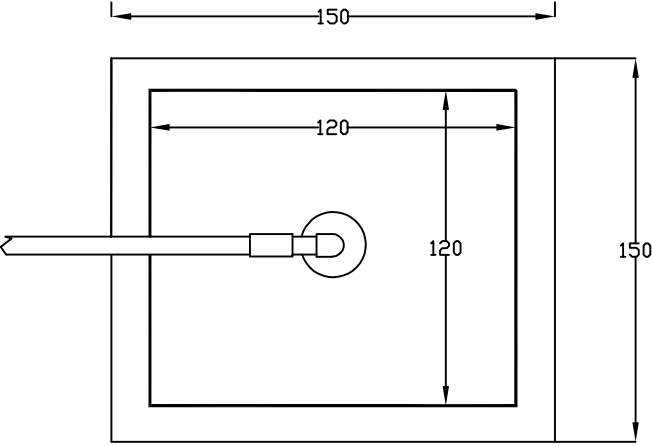
Electricity Cable from Control Unit



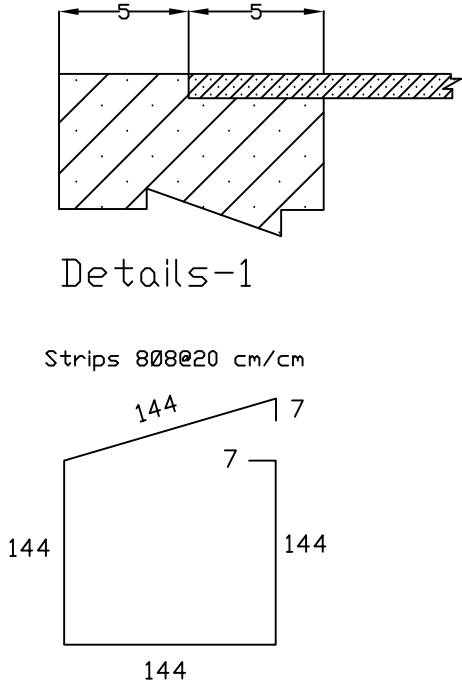
Notes

- 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.

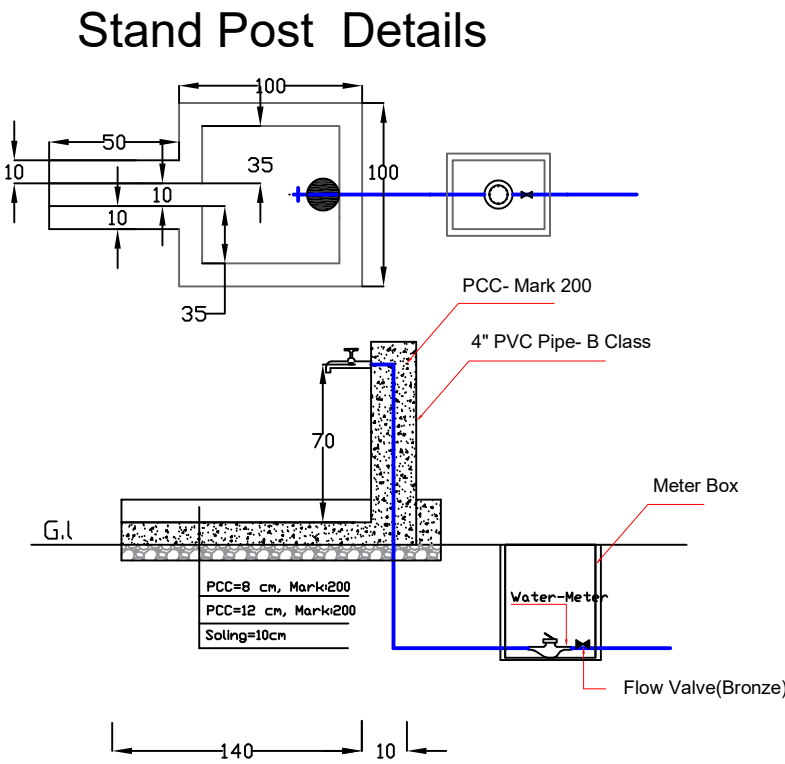
Well Protection Box and Stand Post Details



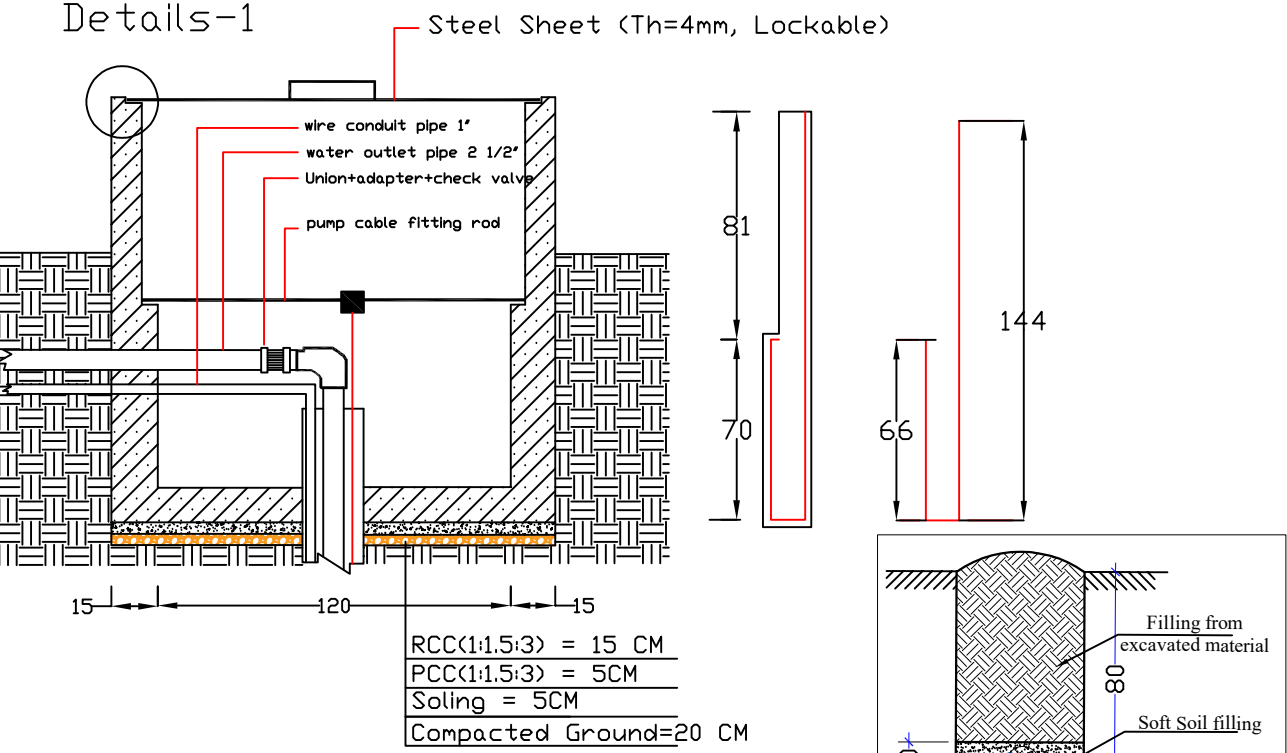
Well Protection Box Plan



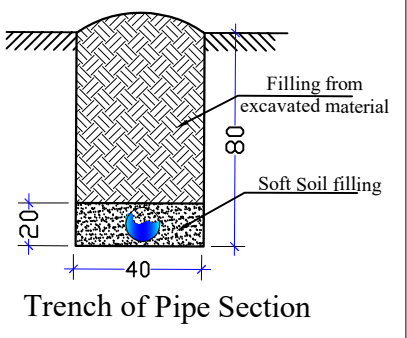
Details-1



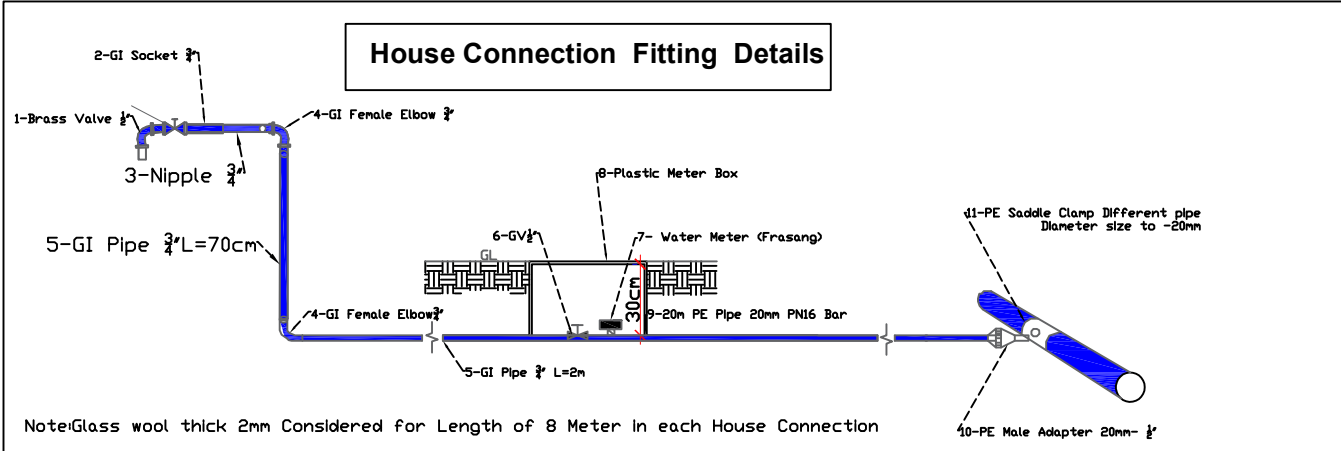
Stand Post Details



Well Protection Box Section View



Trench of Pipe Section

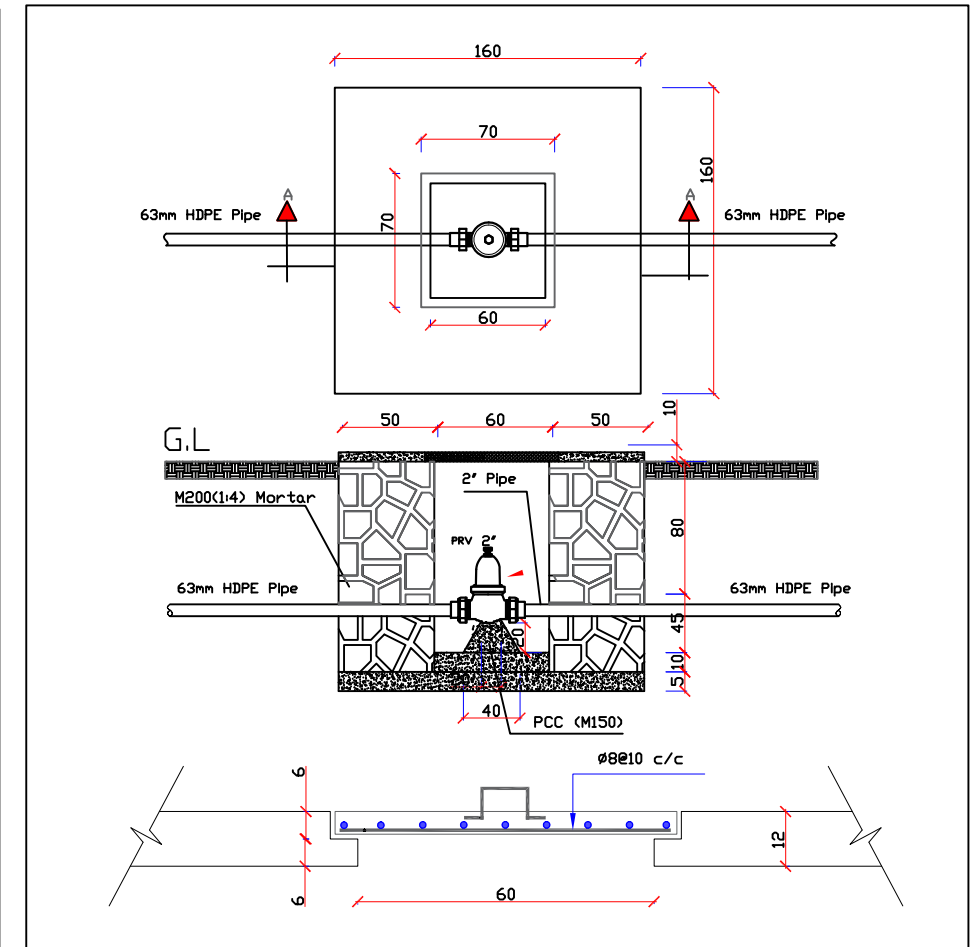


House Connection Fitting Details

TABLE-1 (TP FITTINGS DETAILS for TP 1)

No	Description	Unit	Quantity/tap	Total	Remarks
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	

PRV Box- Details



Submittal Data

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

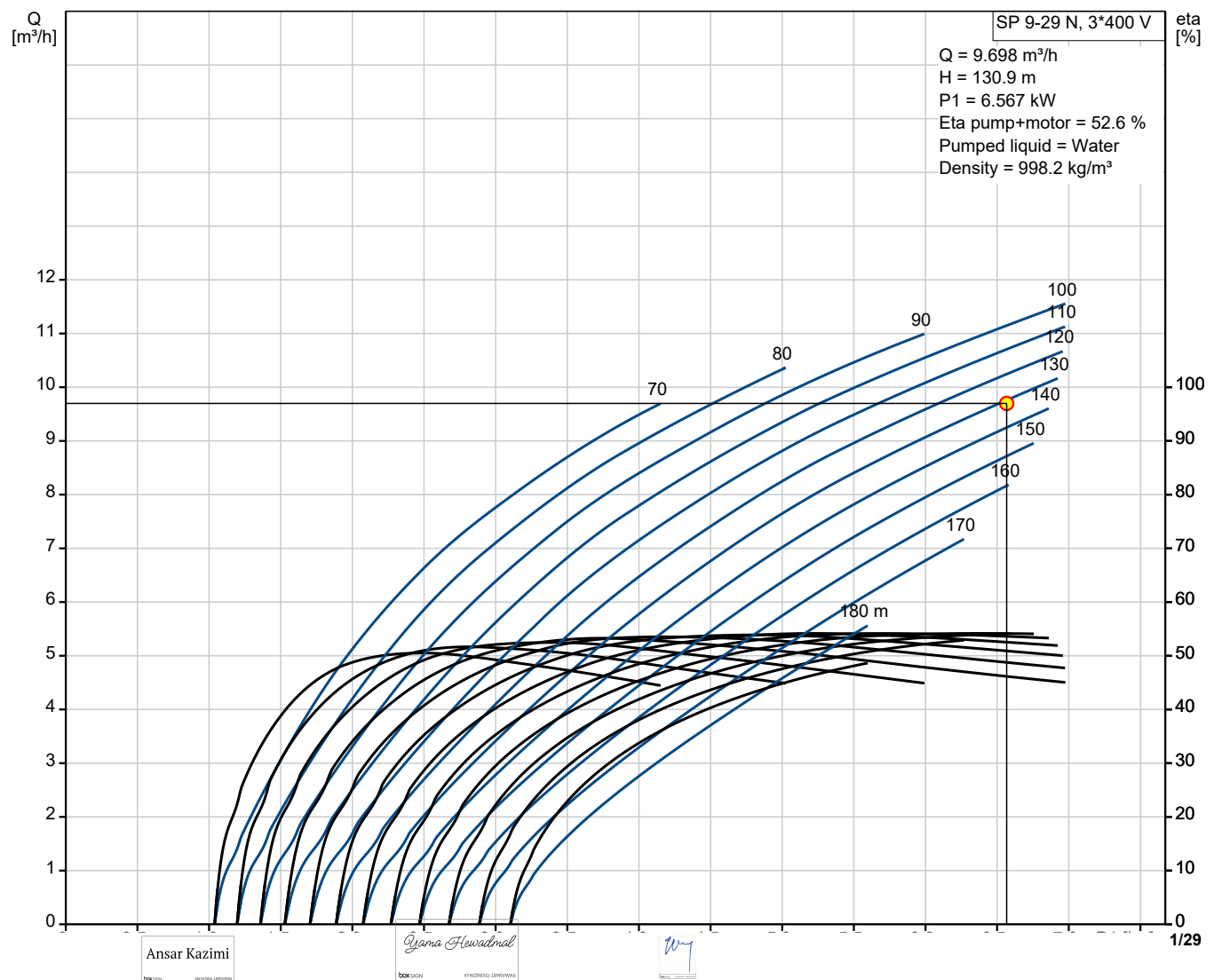


SP 9-29 N

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: 98699090	Mains frequency: 50 Hz Enclosure class: IP68

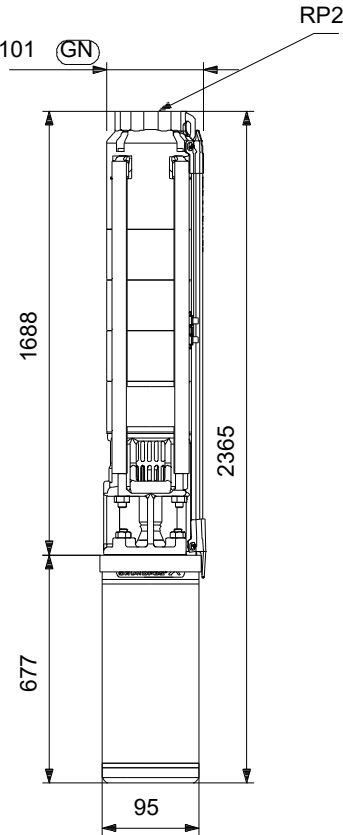


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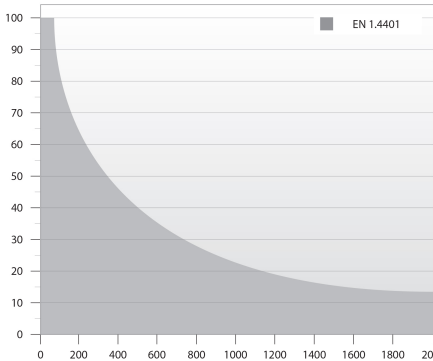
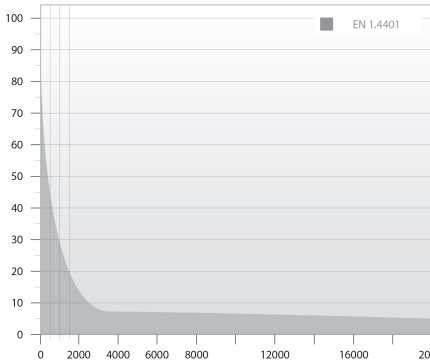
Submittal Data



Materials:
Impeller: Stainless steel
Impeller: AISI 316
Impeller: EN 1.4401

Project:
Reference Number:

Client:
Client Number:
Contact:

Qty.	Description
1	<p>SP 9-29 N</p>  <p>Note! Product picture may differ from actual product</p> <p>Product No.: 98699090</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 1.4401 (AISI 316), that ensures high corrosive resistance.</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 - mining applications - off-shore 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 style="display: flex; justify-content: space-around;">   </div>

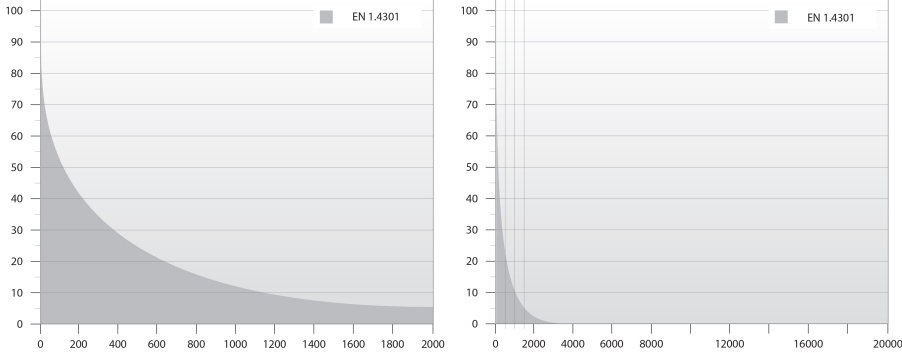
Ansar Kazimi

Yasmin Hammad

W

Project:
Reference Number:

Client:
Client Number:
Contact:

Qty.	Description
1	<div>  <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). The special elastomer material of the bearings offers increased resistance to sand and other abrasive particles (from 50 to 150 mg/l). 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. 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. 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>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: 153.4 m Approvals: CE,EAC,UKCA,SEPRO,MOROCCO Approvals for motor: CE,EACMOROCCO,UKCA,SEPRO Curve tolerance: ISO9906:2012 3B Motor version: T40 Return valve: YES</p> <p>Materials: Pump: Stainless steel EN 1.4401 AISI 316 Impeller: Stainless steel EN 1.4401 AISI 316 Motor: Stainless steel EN 1.4539 Shaft seal: SiC/SiC</p> </div>






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

Date: 12/05/2024

Project:
Reference Number:

Client:
Client Number:
Contact:

Qty.	Description
1	<p>Installation:</p> <p>Maximum ambient pressure: 60 bar Maximum operating pressure: 60 bar Maximum outlet pressure: 19 bar Type of connection: Rp Size of connection: 2 inch Motor diameter: 4 inch Minimum borehole diameter: 105 mm</p> <p>Electrical data:</p> <p>Motor type: MS4000 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 380-400-415 V Rated current: 13-13-13.4 A Starting current: 470-500-510 % Cos phi - power factor: 0.85-0.81-0.76 Rated speed: 2840-2860-2880 rpm Method of start: Direct-on-line (DOL) Enclosure class (IEC 34-5): IP68 Insulation class (IEC 85): F Built-in motor protection: NONE Thermal protection: External Built-in temp. transmitter: Yes Length of cable: 2.5 m Power cable type: FLAT Motor No: 7C193711 Windings: Enameled</p> <p>Others:</p> <p>Minimum efficiency index, MEI \geq: 0.70 Net weight: 46.9 kg Gross weight: 82.2 kg Shipping volume: 0.295 m³ Environmental approvals: WEEE</p>
	<div><div> Ansar Kazimi</div><div> Ayana Husein</div><div> W. V. International</div></div> <div><div>Aug 8, 2024</div><div>Aug 8, 2024</div><div>Aug 11, 2024</div></div>

Project:
Reference Number:

Client:
Client Number:
Contact:

Qty. Description

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GF 270



Note! Product picture may differ from actual product

Product No.: [99299012](#)

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.

Liquid:

Pumped liquid: Water

Installation:

Range of ambient temperature: -40 .. 85 °C

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 m³

Ansar Kazimi
Signature

Ayana Hewanmal
Signature

WV
Signature

Aug 8, 2024

Aug 8, 2024

Aug 11, 2024



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

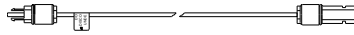
Date: 12/05/2024

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

Ansar Kazimi

Aug 8, 2024

Ayana Husein

Aug 8, 2024

WV

Aug 11, 2024



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

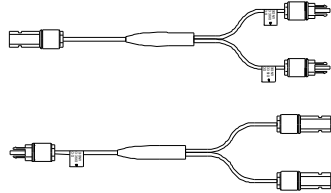
Date: 12/05/2024

Project:
Reference Number:

Client:
Client Number:
Contact:

Qty.	Description
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1	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
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1	RSI 3x380-440V IP66 7.5kW 16A
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Note! Product picture may differ from actual product

Product No.: [99044352](#)

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 380 - 440 V

Enclosure class (IEC 34-5): IP66

Rated voltage output AC: 380 V

Voltage input DC: 800 V

Rated current output AC: 16 A

Udc: 400 V

Ansar Kazimi

Yana Hewadmal

W

Others:

Net weight: 14.9 kg

Gross weight: 16.3 kg


Aug 8, 2024

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Project:
Reference Number:

Client:
Client Number:
Contact:

Qty.	Description
1	<p>Sine-wave filter</p>  <p>Note! Product picture may differ from actual product</p> <p>Product No.: 96754976</p> <p>Sine wave filters have a high degree of filtering, resulting in a high reduction of the stress on the motor insulation system. At the same time, they reduce the acoustic noise from the motor.</p> <p>Motor losses are reduced due to the fact that a sine-wave filter converts the output pulses of the frequency converter into at sine-wave-shaped. The result is a sine-wave-shaped current and reduced motor noise.</p> <p>Maximum cable length with sine-wave filter is 300 m.</p> <p>Output filters are used for reducing the voltage stress on the motor windings and the stress on the motor insulation system as well as for decreasing acoustic noise from a frequency-controlled motor.</p>

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DAWAM WASH TEAM

Ayana Hewanmal
DAWAM WASH TEAM

WV
WORLD VISION INTERNATIONAL

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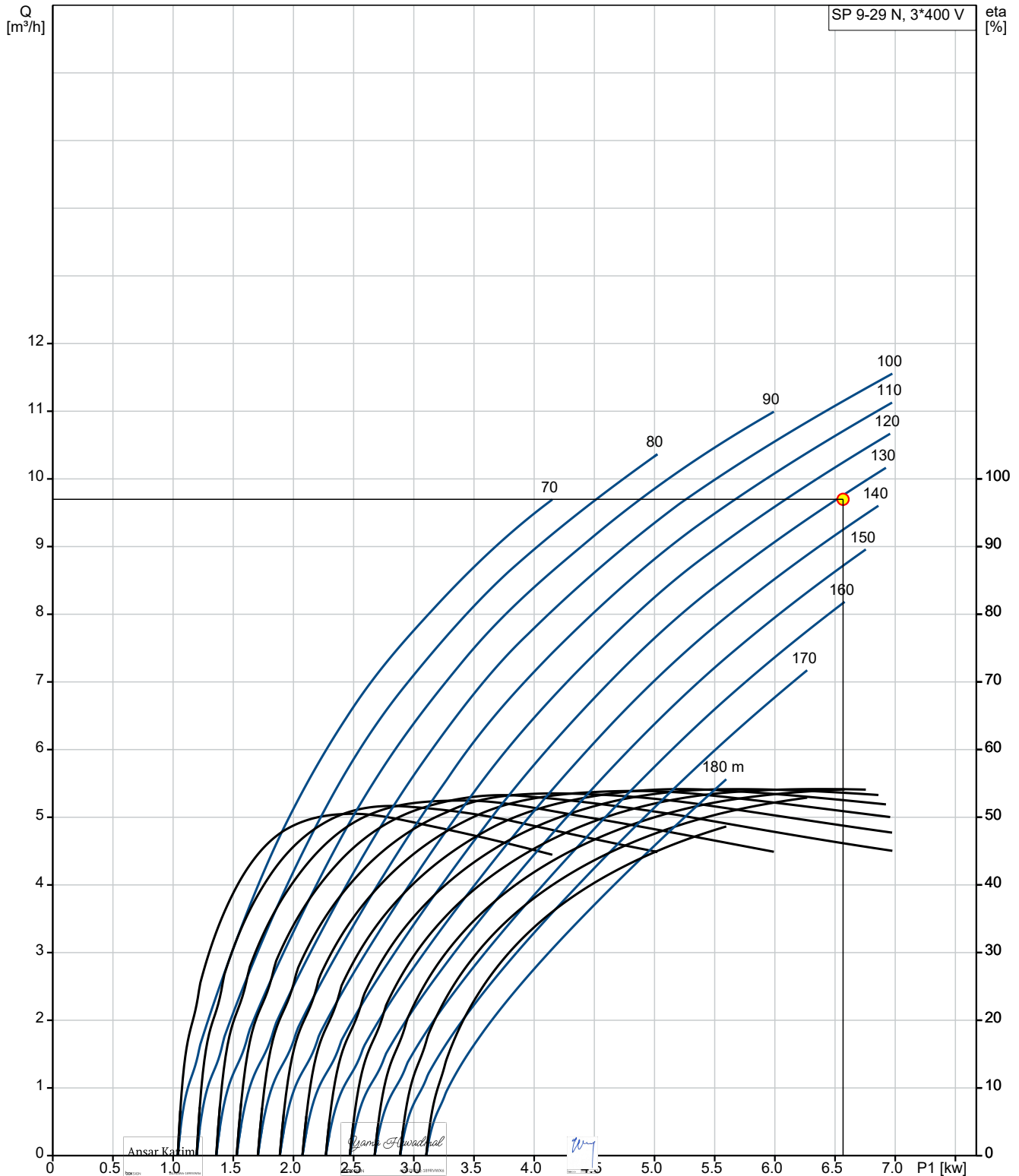
Aug 8, 2024

Aug 11, 2024

Project:
Reference Number:

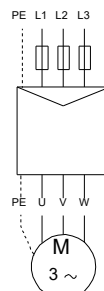
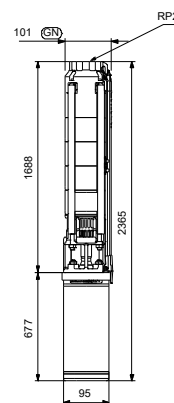
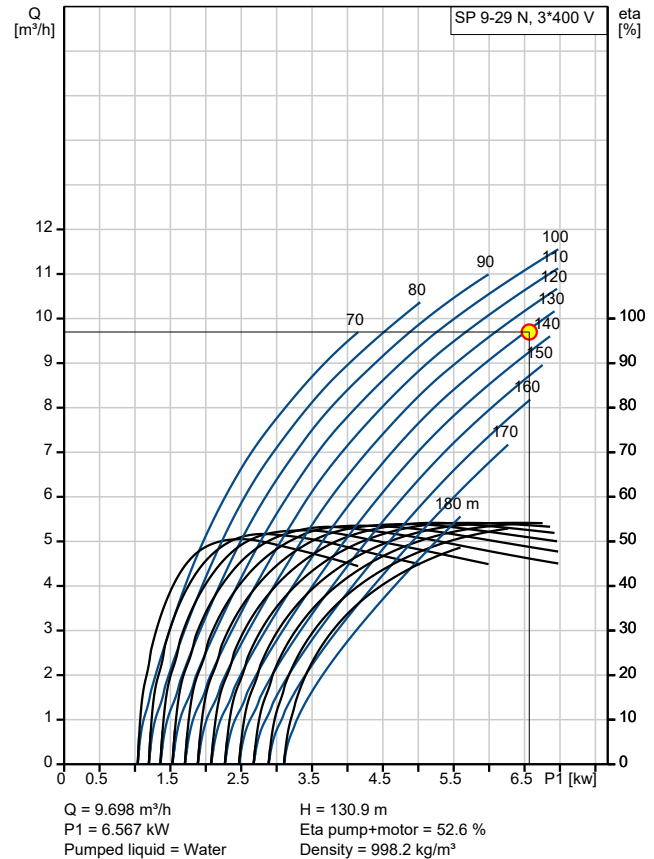
Client:
Client Number:
Contact:

98699090 SP 9-29 N



Project:
Reference Number:Client:
Client Number:
Contact:

Description	Value
General information:	
Product name:	SP 9-29 N
Product No:	98699090
EAN number:	5712600106635
Technical:	
Pump speed on which pump data are based:	2900 rpm
Rated flow:	9 m ³ /h
Rated head:	153.4 m
Stages:	29
Number of reduced-diameter impellers:	NONE
Approvals:	CE,EAC,UKCA,SEPRO,MOR OCCO
Approvals for motor:	CE,EACMOROCCO,UKCA,S EPRO
Curve tolerance:	ISO9906:2012 3B
Model:	B
Motor version:	T40
Return valve:	YES
Materials:	
Pump:	Stainless steel
Pump:	EN 1.4401
Pump:	AISI 316
Impeller:	Stainless steel
Impeller:	EN 1.4401
Impeller:	AISI 316
Motor:	Stainless steel
Motor:	EN 1.4539
Shaft seal:	SiC/SiC
Installation:	
Maximum ambient pressure:	60 bar
Maximum operating pressure:	60 bar
Maximum outlet pressure:	19 bar
Type of connection:	Rp
Size of connection:	2 inch
Motor diameter:	4 inch
Minimum borehole diameter:	105 mm
Liquid:	
Pumped liquid:	Water
Liquid temperature range:	-15 .. 40 °C
Electrical data:	
Motor type:	MS4000
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 380-400-415 V
Rated current:	13-13-13.4 A
Starting current:	470-500-510 %
Cos phi - power factor:	0.85-0.81-0.76
Rated speed:	2840-2860-2880 rpm
Method of start:	Direct-on-line (DOL)
Enclosure class (IEC 34-5):	IP68
Insulation class (IEC 85):	F
Built-in motor protection:	NONE



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Project:
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Client:
Client Number:
Contact:

Description	Value
Thermal protection:	External
Built-in temp. transmitter:	Yes
Length of cable:	2.5 m
Power cable type:	FLAT
Motor No:	7C193711
Cable number:	99411260
Windings:	Enameled
Others:	
Minimum efficiency index, MEI ≥:	0.70
Net weight:	46.9 kg
Gross weight:	82.2 kg
Shipping volume:	0.295 m³
Environmental approvals:	WEEE

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Yana Hewadmal

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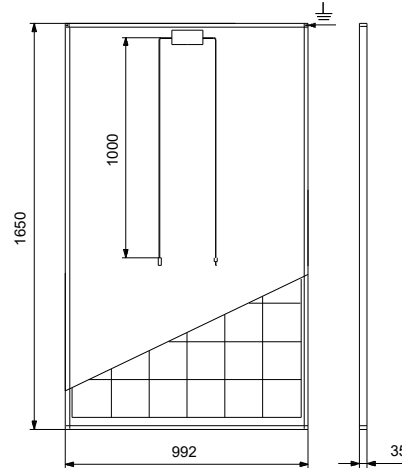
WV

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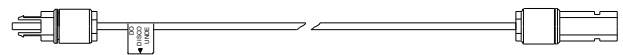
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Reference Number:

Client:
Client Number:
Contact:

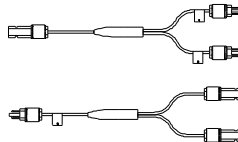
Description	Value
General information:	
Product name:	GF 270
Product No:	99299012
EAN number:	5713826826093
Installation:	
Range of ambient temperature:	-40 .. 85 °C
Liquid:	
Pumped liquid:	Water
Electrical data:	
Maximum power point voltage:	31.6 V
Open circuit voltage:	38.4 V
Max power point current:	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



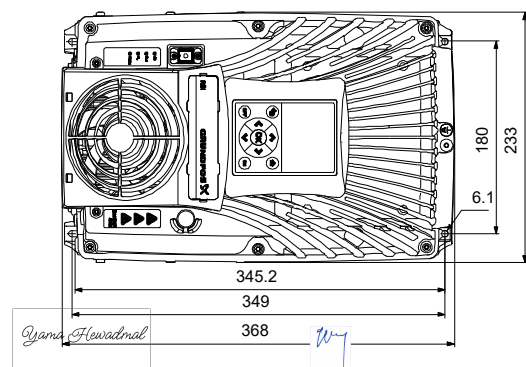
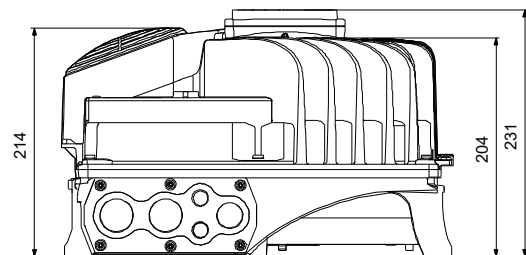
Description	Value
General information:	
Product name:	Wire kit array to control box (MC4)
Product No:	98257868
EAN number:	5711492200964



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 3x380-440V IP66 7.5kW 16A
Product No:	99044352
EAN number:	5712605678670
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 380 - 440 V
Enclosure class (IEC 34-5):	IP66
Rated voltage output AC:	380 V
Voltage input DC:	800 V
Rated current output AC:	16 A
Udc:	400 V
Others:	
Net weight:	14.9 kg
Gross weight:	16.3 kg





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Phone:

Date: 12/05/2024

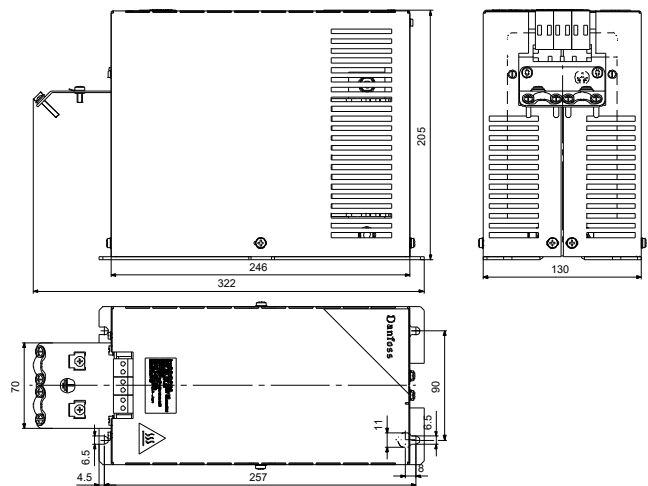
Project:
Reference Number:

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

Description	Value
General information:	
Product name:	Sine-wave filter
Product No:	96754976
EAN number:	5700838641080
Installation:	
Mounted on:	Wall
Electrical data:	
Mains frequency:	60 Hz
Rated voltage:	x 200-500 V
Rated current:	16 A
Rated current at 120 Hz:	12 A
Enclosure class (IEC 34-5):	IP20
Cable size:	4 mm ²
Inductor loss:	125 W
Others:	
Net weight:	9.1 kg
Danish VVS No.:	382997017
Finnish LVI No.:	9414026



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Qyama Hewadmal

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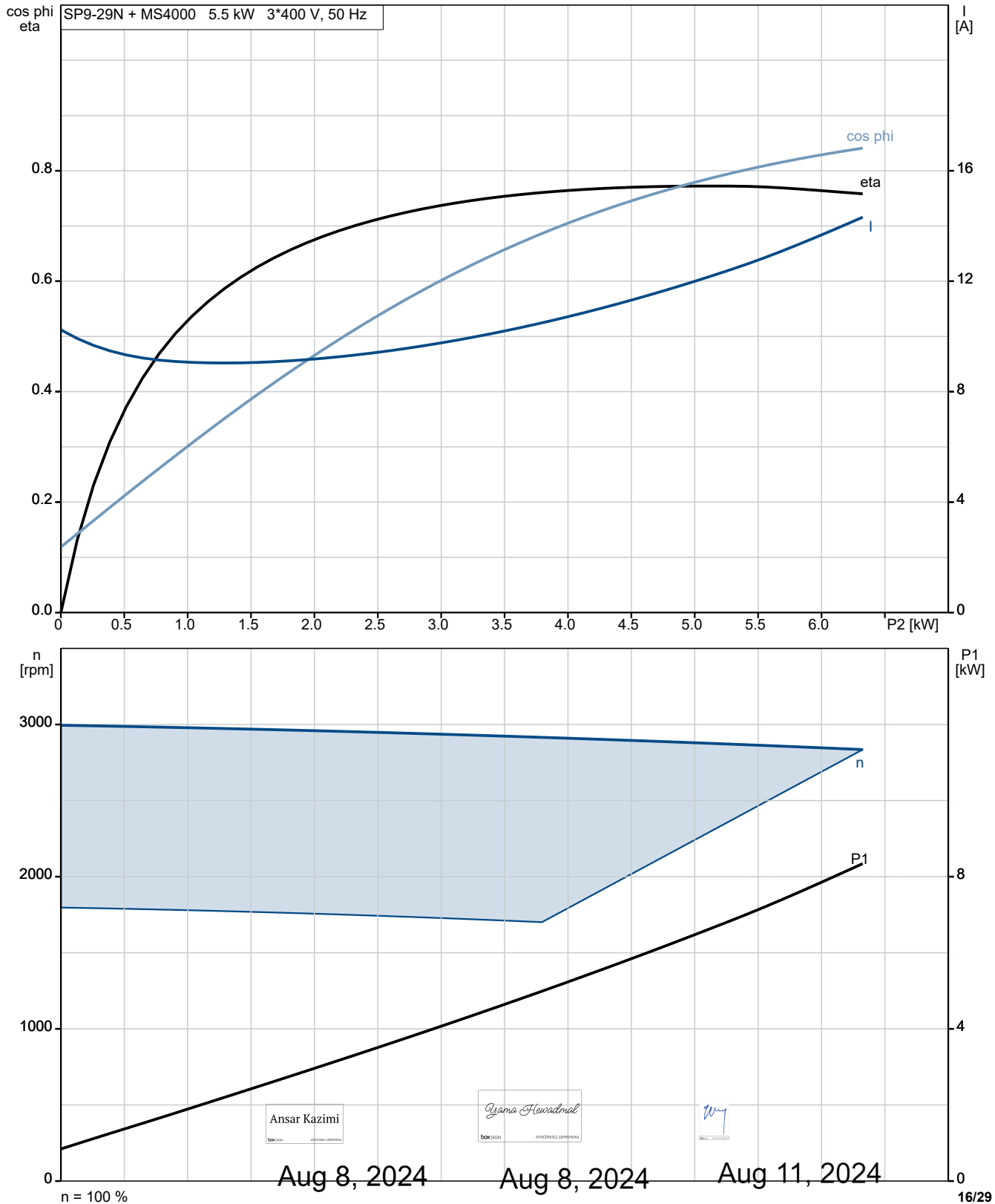
Aug 8, 2024

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Project:
Reference Number:

Client:
Client Number:
Contact:

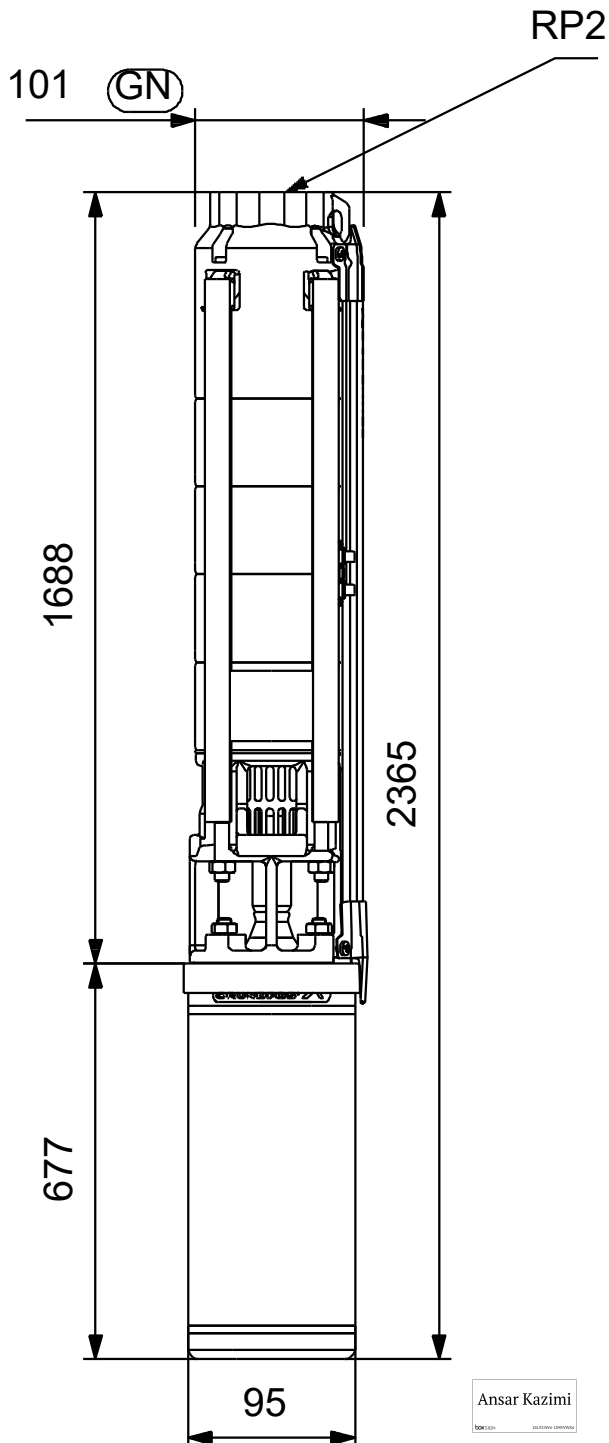
98699090 SP 9-29 N



Project:
Reference Number:

Client:
Client Number:
Contact:

98699090 SP 9-29 N



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Yana Hewadmal

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



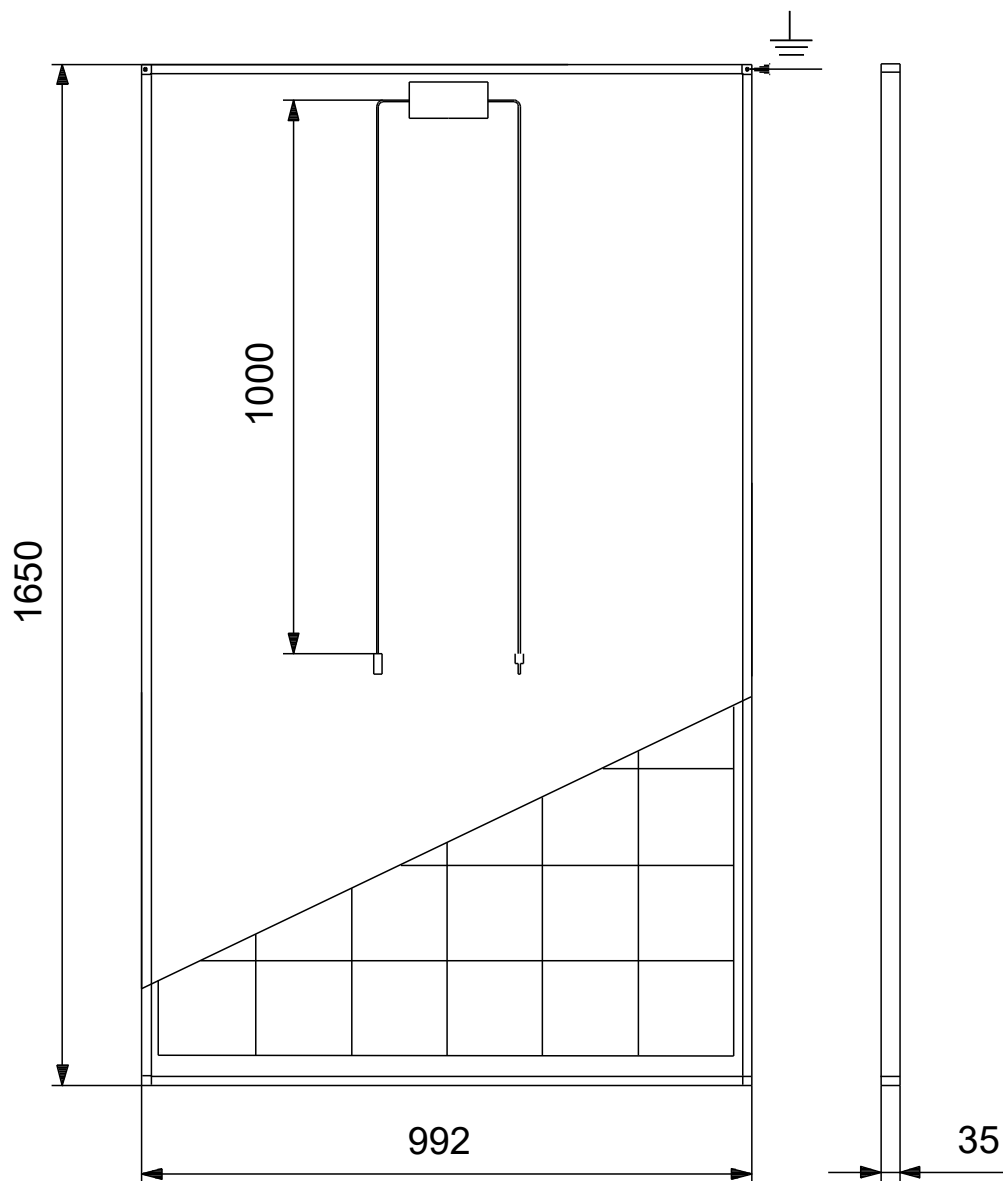
Company name: World Vision International
Created by: DAWAM WASH Team
Phone:

Date: 12/05/2024

Project:
Reference Number:

Client:
Client Number:
Contact:

99299012 GF 270



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Yama Hewadmal
10/11/2024

WV
10/11/2024

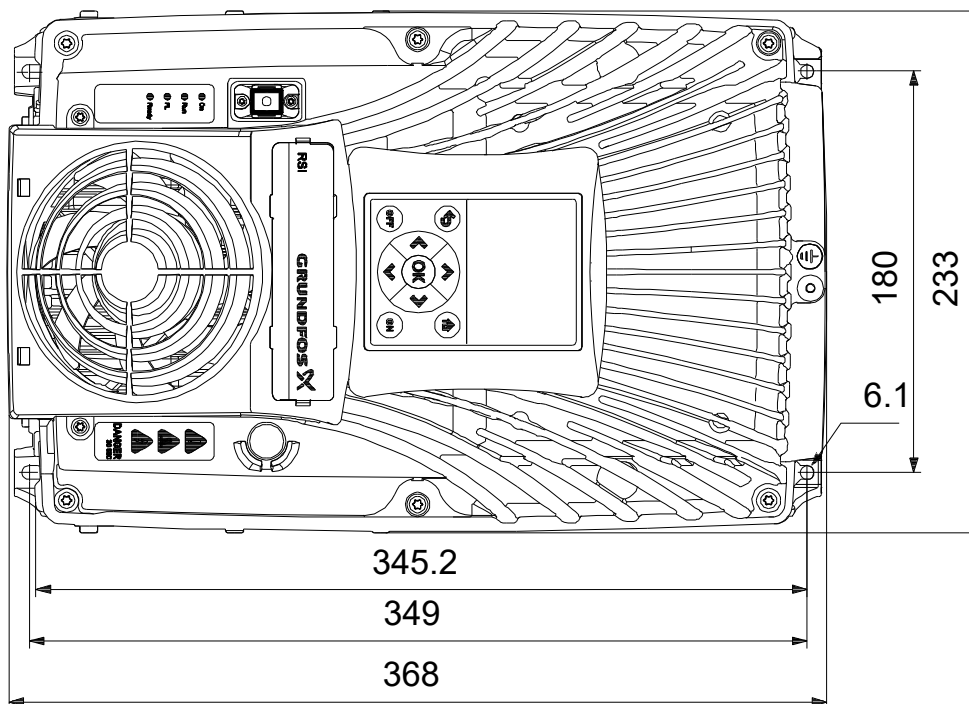
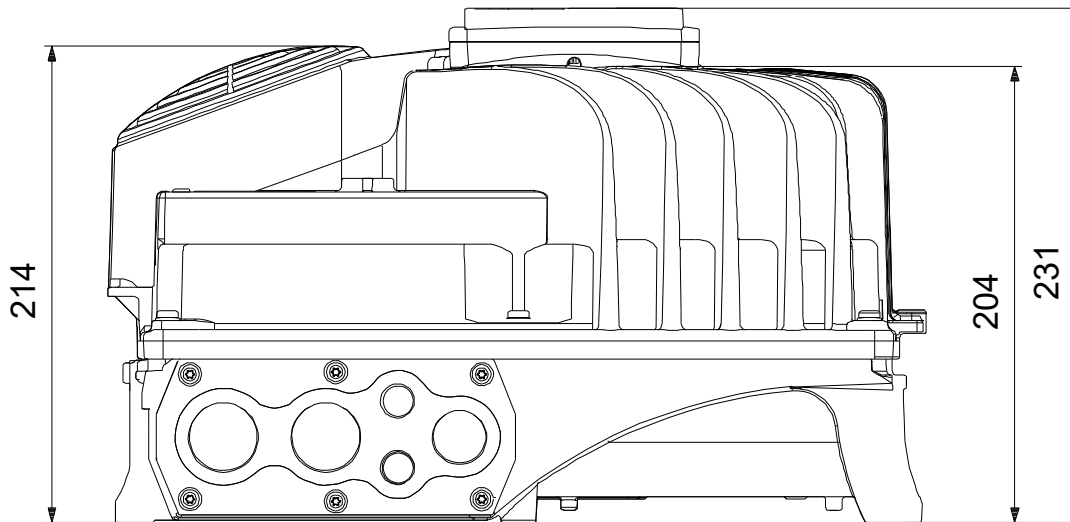
Aug 8, 2024

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Note! All units are in [mm] unless others are stated.
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99044352 RSI 3x380-440V IP66 7.5kW 16A



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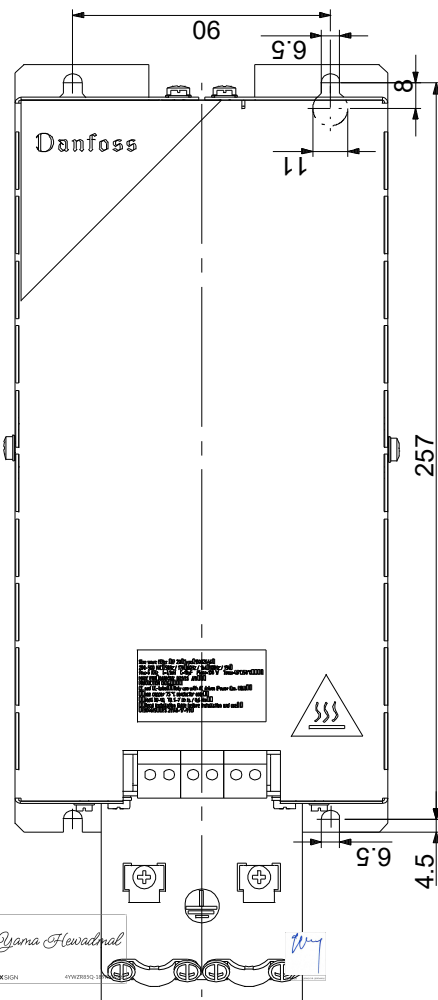
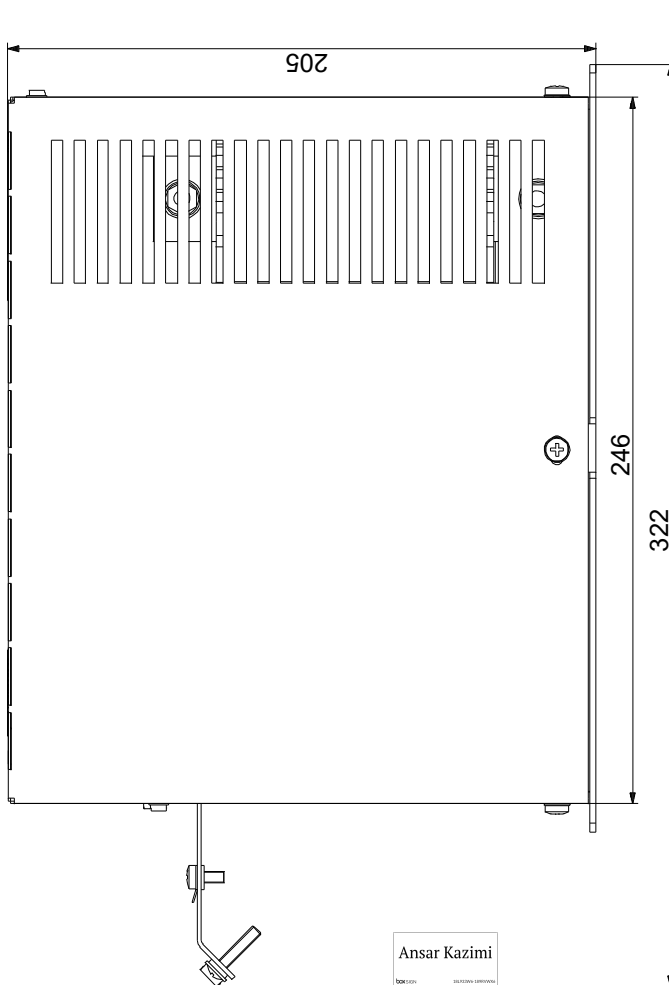
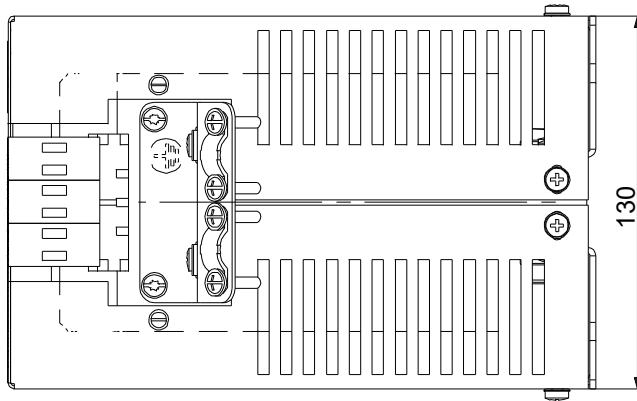
Aug 11, 2024

Note! All units are in [mm] unless others are stated.
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Project:
Reference Number:

Client:
Client Number:
Contact:

96754976 Sine-wave filter



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Note! All units are in [mm] unless others are stated.
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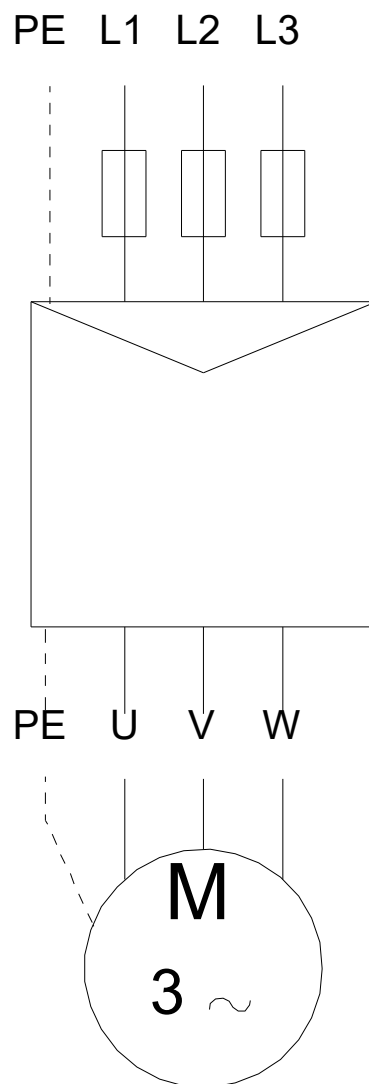
Company name: World Vision International
Created by: DAWAM WASH Team
Phone:

Date: 12/05/2024

Project:
Reference Number:

Client:
Client Number:
Contact:

98699090 SP 9-29 N



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Project:
Reference Number:

Client:
Client Number:
Contact:

98699090 SP 9-29 N

Input - summary

Water volume (max): 118 m³/day
 Month for sizing: July
 Static lift above ground: 37 m
 Dynamic water level: 90 m
 Sun tracking: Yes (single (polar) axis)
 Location: Gurziwan, Faryab, Afghanistan
 Latitude: 35.7125 DD, Longitude: 65.2256 DD

Products

Pump: SP 9-29 N, 1 x 98699090
 Solar module: GF 270, 36 x 99299012
 Wire kit, array to control box: 1 x 98257868
 Wire kit, array to array: 1 x 98257892
 Switch box / control unit: RSI 3x380-440V IP66 7.5kW 16A, 1 x 99044352
 Switch box / control unit: OTDCP16, Circuit Breaker, 16Amp, 2 x 98341686
 Switch box / control unit: OVR PV 40-1000 P, Surge Protection, 1 x 98341687
 Others: Sine-wave filter, 1 x 96754976

Sizing results - summary

Water production, Peak flow and Price

Total water production per year: 39200 m³
 Avg. water production per day: 107.4 m³/day
 Average water production per watt per day: 11 l/Wp/day

Solar module configuration:

Number of solar modules in series: 18, in parallel: 2
 Solar array rated power: 9.72 kW
 Solar array rated volts: 569 V
 Sun tracking: Yes (single (polar) axis)
 Tilt angle: 35 deg.

Typical performance at solar radiation 800 W/m²

Flow: 9.7 m³/h
 Total head: 130.9 m

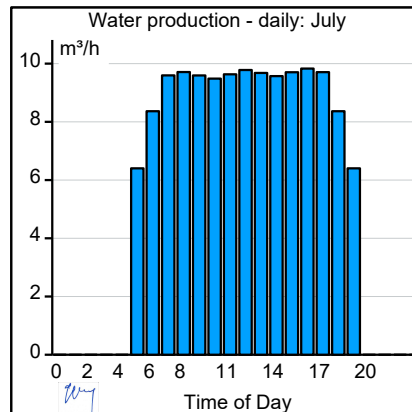
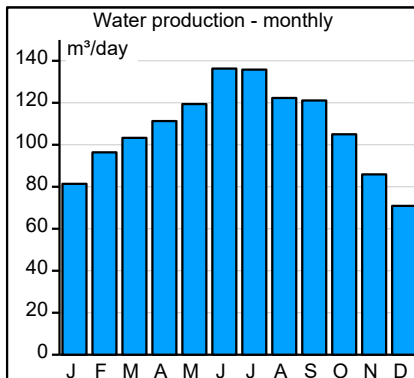
Cables and pipes:

Pump cable length: 230 m
 Pump cable size: 10 mm²
 Total cable loss: 2.3 %
 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: 85 m
 Pipe length of discharge pipe: 800 m
 Friction loss, discharge pipe: 6.986 m
 Friction losses: 3.919 m

System performance - monthly average

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Water production [m ³ /day]	81.4	96.4	103.3	111.3	119.4	136.3	135.8	122.3	121.1	105	85.9	70.9
Energy production Solar [kWh/day]	58.6	74.2	85.7	87.6	97.6	115.5	116.5	110.2	112.2	95.7	63.5	48.1
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





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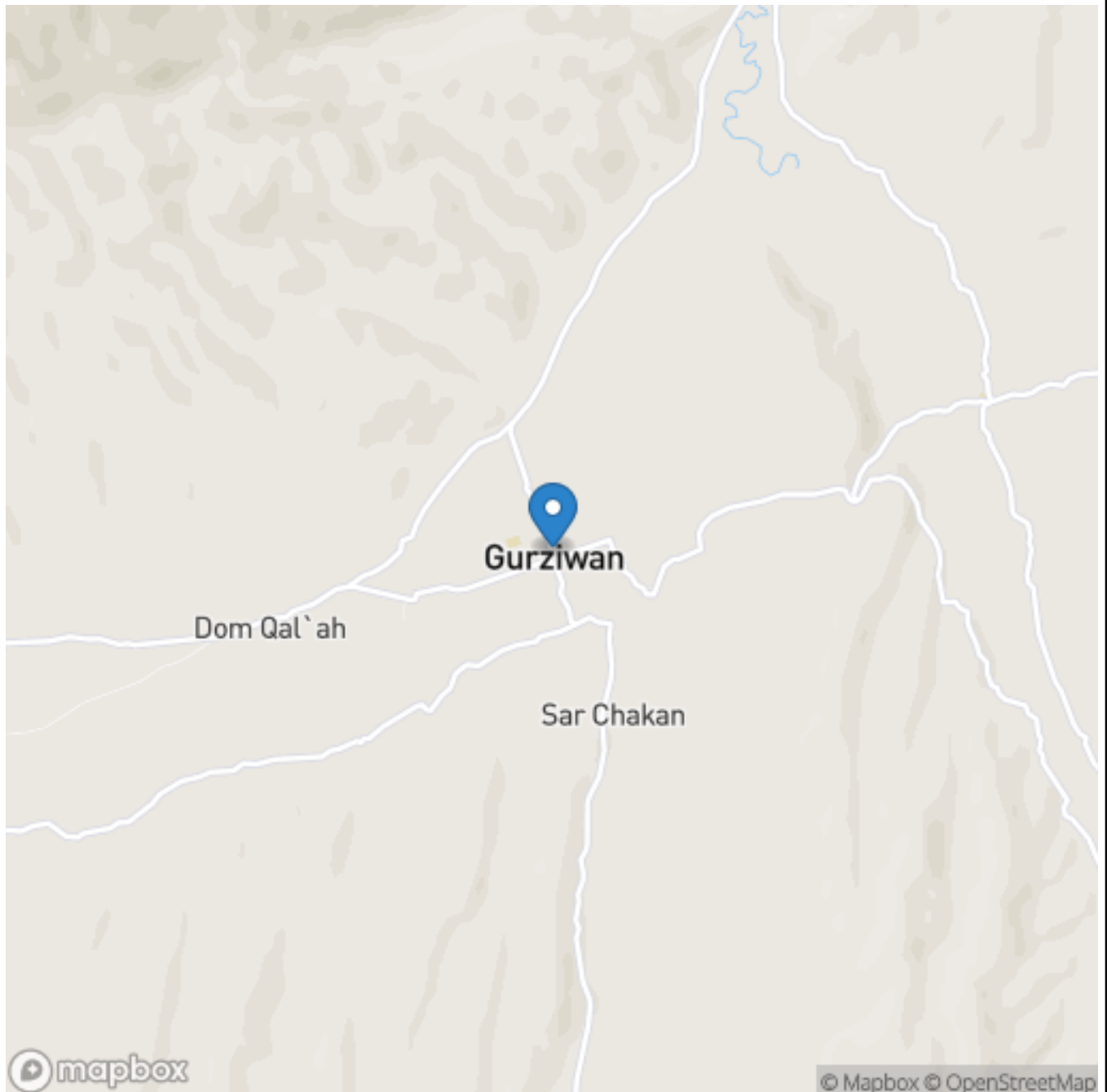
Date: 12/05/2024

Project:
Reference Number:

Client:
Client Number:
Contact:

98699090 SP 9-29 N

Location Map



Location: Gurziwan, Faryab, Afghanistan
Latitude: 35.7125 DD, Longitude: 65.2256 DD



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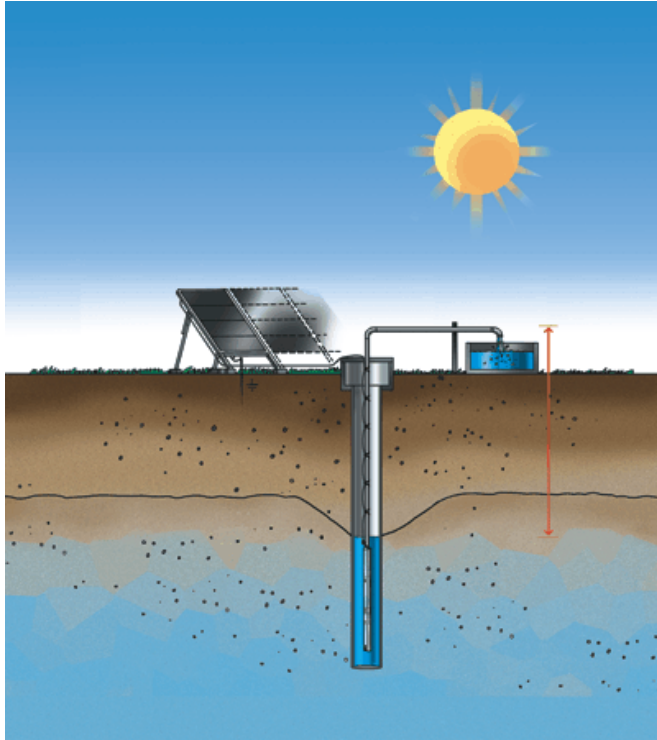


Aug 11, 2024

Project:
Reference Number:

Client:
Client Number:
Contact:

Installation and Input



Sizing Results

Water production, Peak flow and Price

Total water production per year: 39200 m³
 Avg. water production per day: 107.4 m³/day
 Average water production per watt per day: 11 l/Wp/day

Solar module configuration:

Number of solar modules in series: 18, in parallel: 2
 Solar array rated power: 9.72 kW
 Solar array rated volts: 569 V
 Sun tracking: Yes (single (polar) axis)
 Tilt angle: 35 deg.

Typical performance at solar radiation 800 W/m²

Flow: 9.7 m³/h
 Total head: 130.9 m

Cables and pipes:

Pump cable length: 230 m
 Pump cable size: 10 mm²
 Total cable loss: 2.3 %

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: 85 m

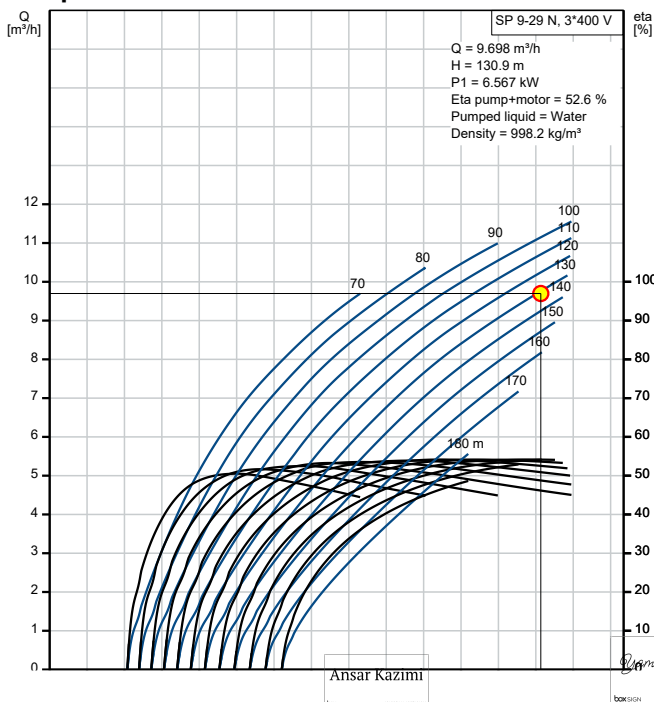
Pipe length of discharge pipe: 800 m

Friction loss, discharge pipe: 6.986 m

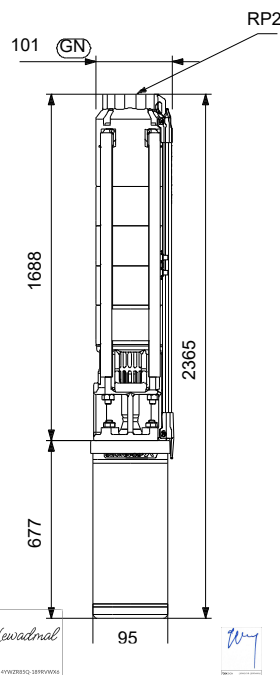
Friction losses: 3.919 m

Location: Gurziwan, Faryab, Afghanistan
 Latitude: 35.7125 DD, Longitude: 65.2256 DD

Pump Curve



Dimensional Drawing



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

Date: 12/05/2024

Project:
Reference Number:

Client:
Client Number:
Contact:

Order Data:

Position	Your pos.	Product name	Amount	Product No	Total
		SP 9-29 N	1	98699090	
		GF 270	36	99299012	
Wire_Kit ToControl		Wire kit array to control box (MC4)	1	98257868	
Wire_Kit Array_Arr ay		Wire kit array to array (MC4)	1	98257892	
Box		RSI 3x380-440V IP66 7.5kW 16A	1	99044352	
Box		OTDCP16, Circuit Breaker, 16Amp	2	98341686	
Box		OVR PV 40-1000 P, Surge Protection	1	98341687	
sine_wav e_filter		Sine-wave filter	1	96754976	

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