

CARE International - HERAT

WASH Sector

WoBs Project

Khaja Abad and Baqi Abad, two adjacent villages in the Kushk Robat Sangi district of Herat province, have been severely impacted by recent earthquakes(Oct.2023). The communities currently lacks access to safe drinking water, relying instead on unprotected wells that pose significant health risks and have led to numerous severe illnesses. This project aims to address the critical need for clean water by constructing a solar-powered water supply network that will provide safe drinking water directly to each household, improving both public health and quality of life in the village.

Project Name: Construction of Solar Powered Water Supply Network

Province: Herat

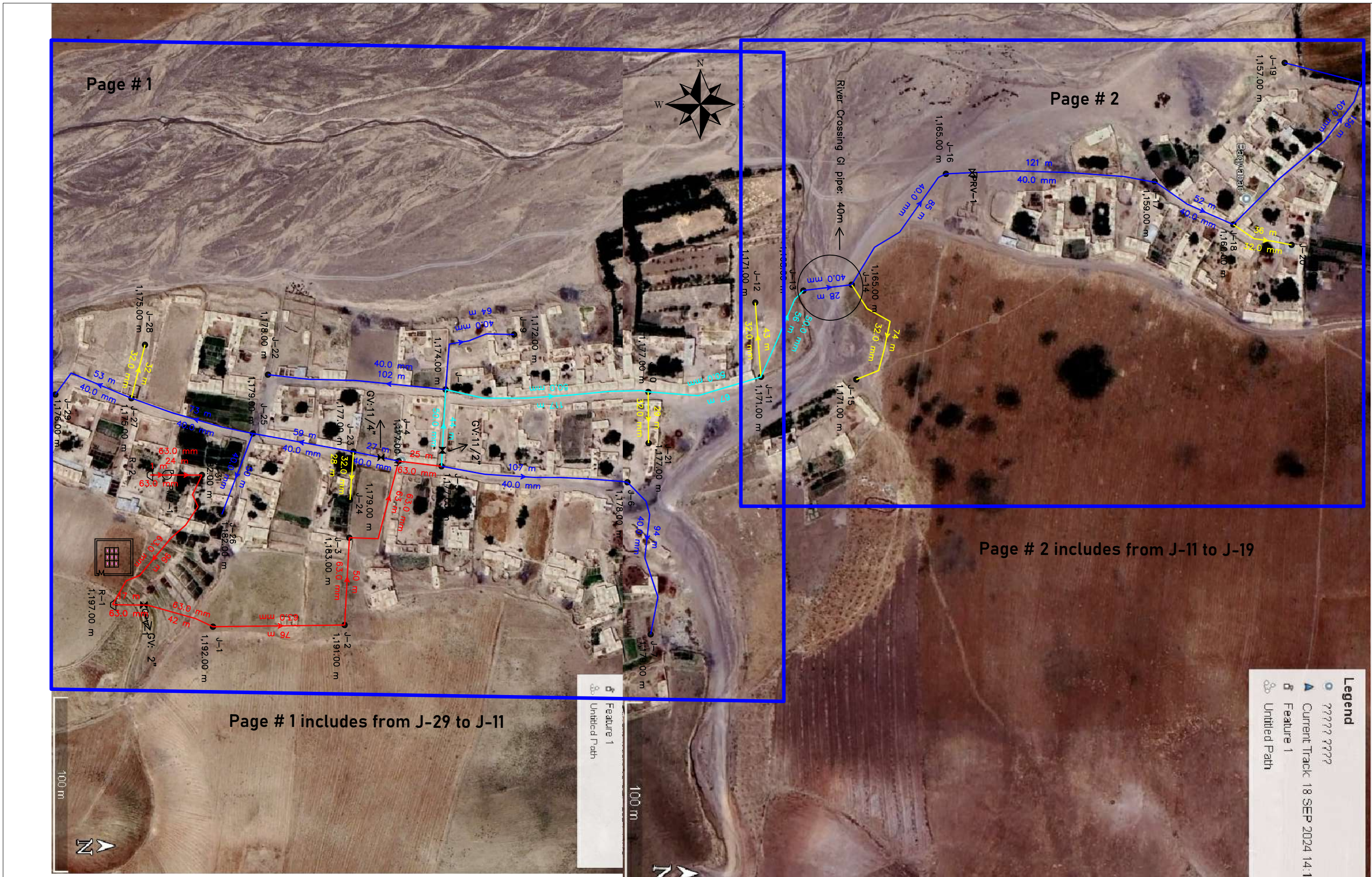
District:Kushk Robat Sangi

Village: Khaja Abad and Baqi Abad

Date of drawing: 02/Oct/2024

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| | | | | | | | | | | |
|--|--------------|----------------|--------------|----------------|------------|--------------------------|----------------|---|-----------------------------|------|
| | SURVEYED BY: | CARE WASH TEAM | CHECKED BY: | CARE WASH TEAM | PROVINCE: | HERAT | PROJECT NAME: | Construction of Solar Powered Water Network | All Dimensions are in (SI). | |
| | DESIGNED BY: | | REVIEWED BY: | | DISTRICTS: | Kushk Robot Sangi | DRAWING TITLE: | Key Plan | SCALE: | NTS |
| | DRAWING BY: | | APPROVED BY: | | VILLAGE: | Khaja Abad and Baqi Abad | | | SHEET NO: | 1/18 |



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HERAT

Kushk Robat Sangi

Khaja Abad and Baqi Abad

PROJECT NAME:
DRAWING TITLE:

Construction of Solar Powered Water Network

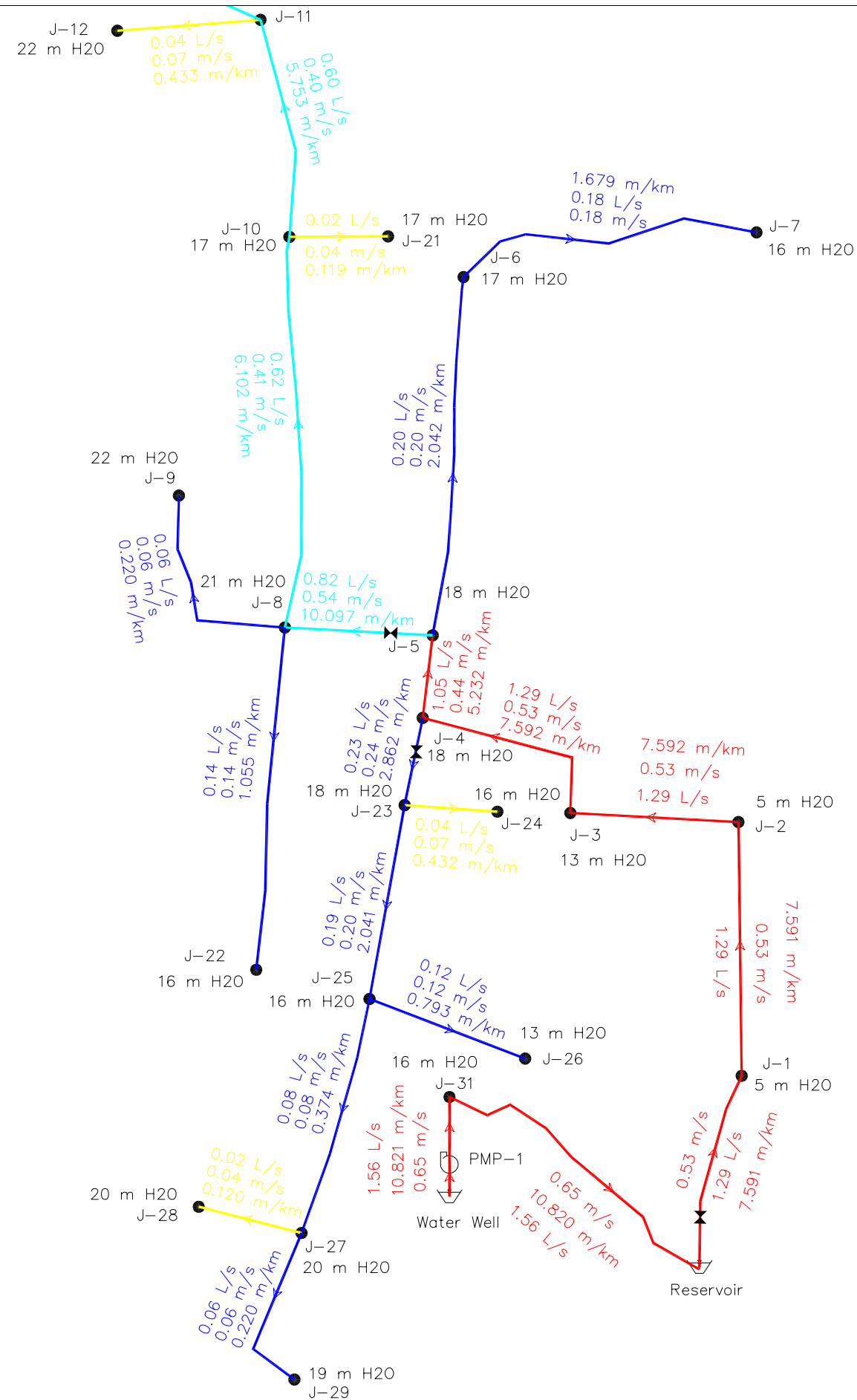
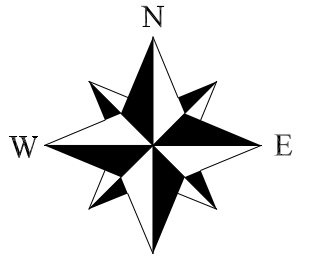
Site Plan page 1

All Dimensions are
in (SI).
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SHEET NO: 2/18



Note:

- Velocity : m/s
- Flow : l/s
- Head loss: m/km
- Pressure : m H2O



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VILLAGE:

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PROJECT NAME:

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Construction of Solar Powered Water Network

Hydraulic Design Page 1

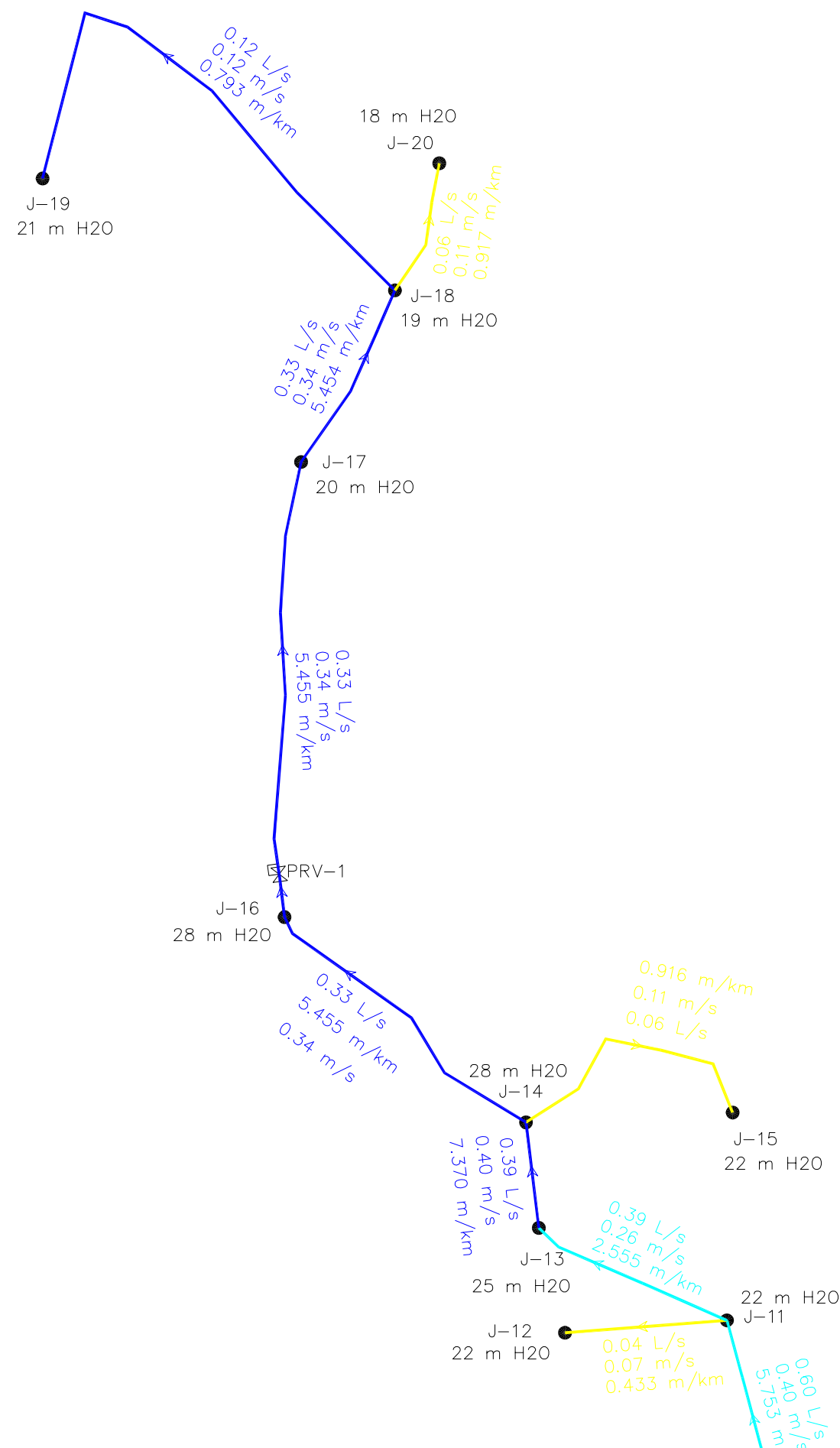
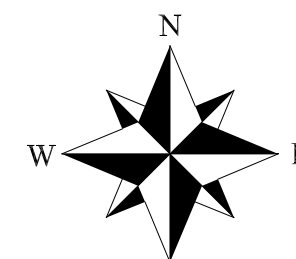
All Dimensions are in (SI).

SCALE: NTS

SHEET NO: 4/18

Note:

- Velocity : m/s
- Flow : l/s
- Head loss: m/km
- Pressure : m H2O



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PROJECT NAME:

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Construction of Solar Powered Water Network

Hydraulic Design Page 2

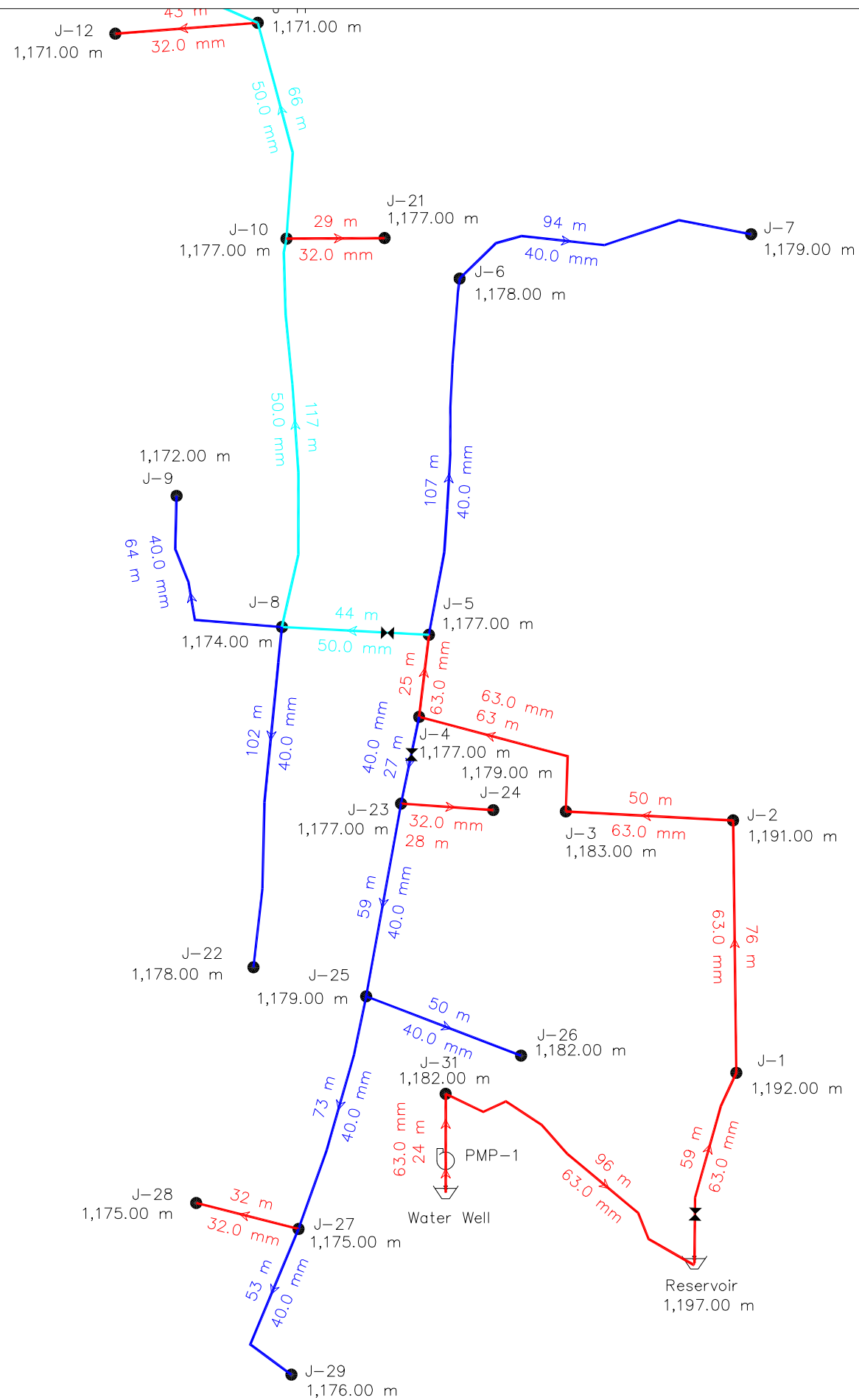
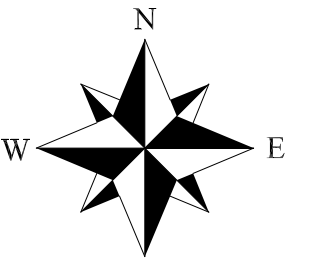
All Dimensions are in (SI).

SCALE: NTS

SHEET NO: 5/18

Note:

- Diameter : mm
- Length : m
- Elevation : m



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VILLAGE:

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Kushk Robat Sangi

Khaja Abad and Baqi Abad

PROJECT NAME:

DRAWING TITLE:

Construction of Solar Powered Water Network

Length and Diameter Page 1

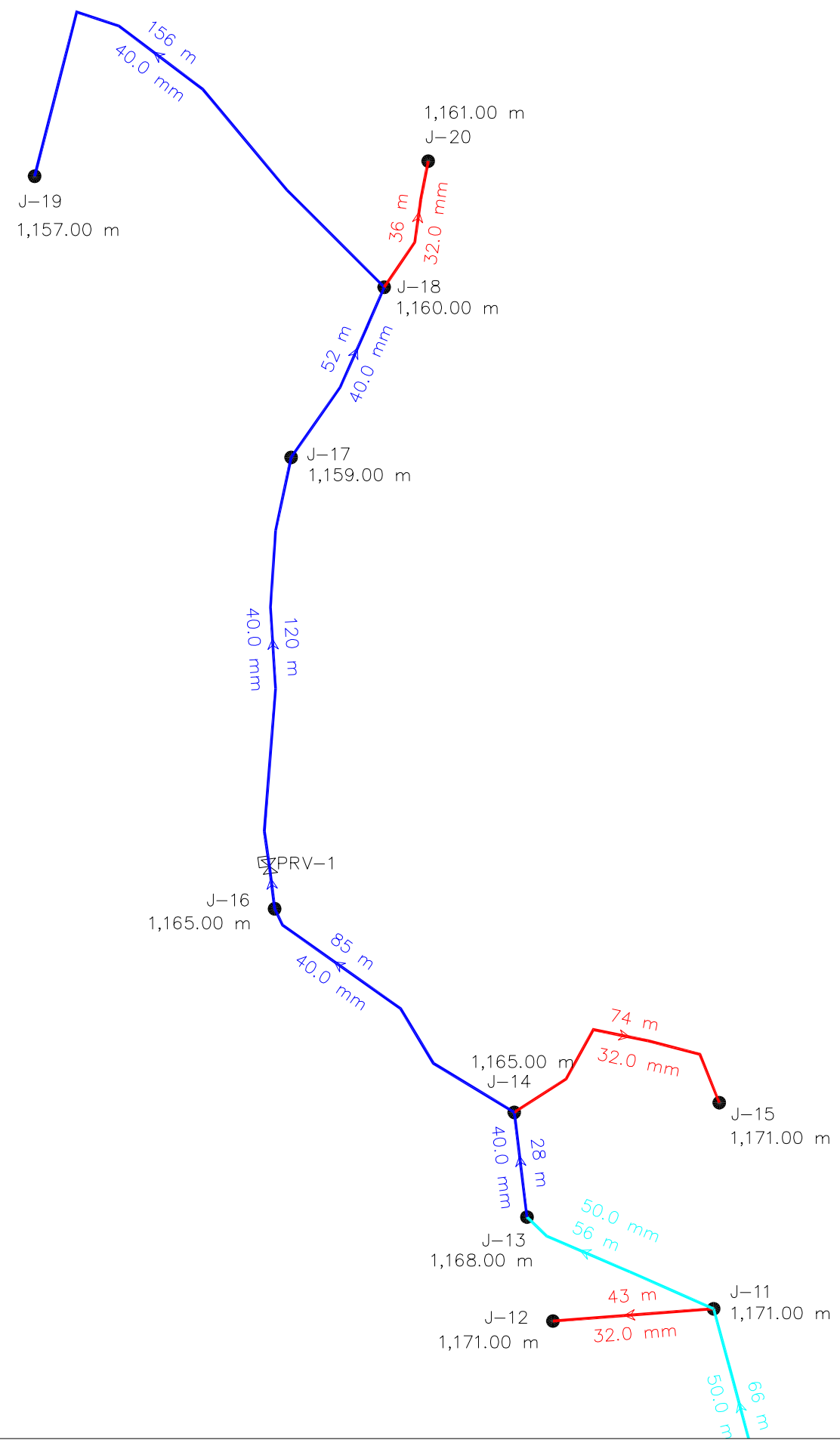
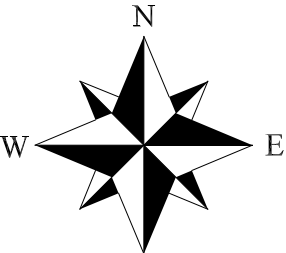
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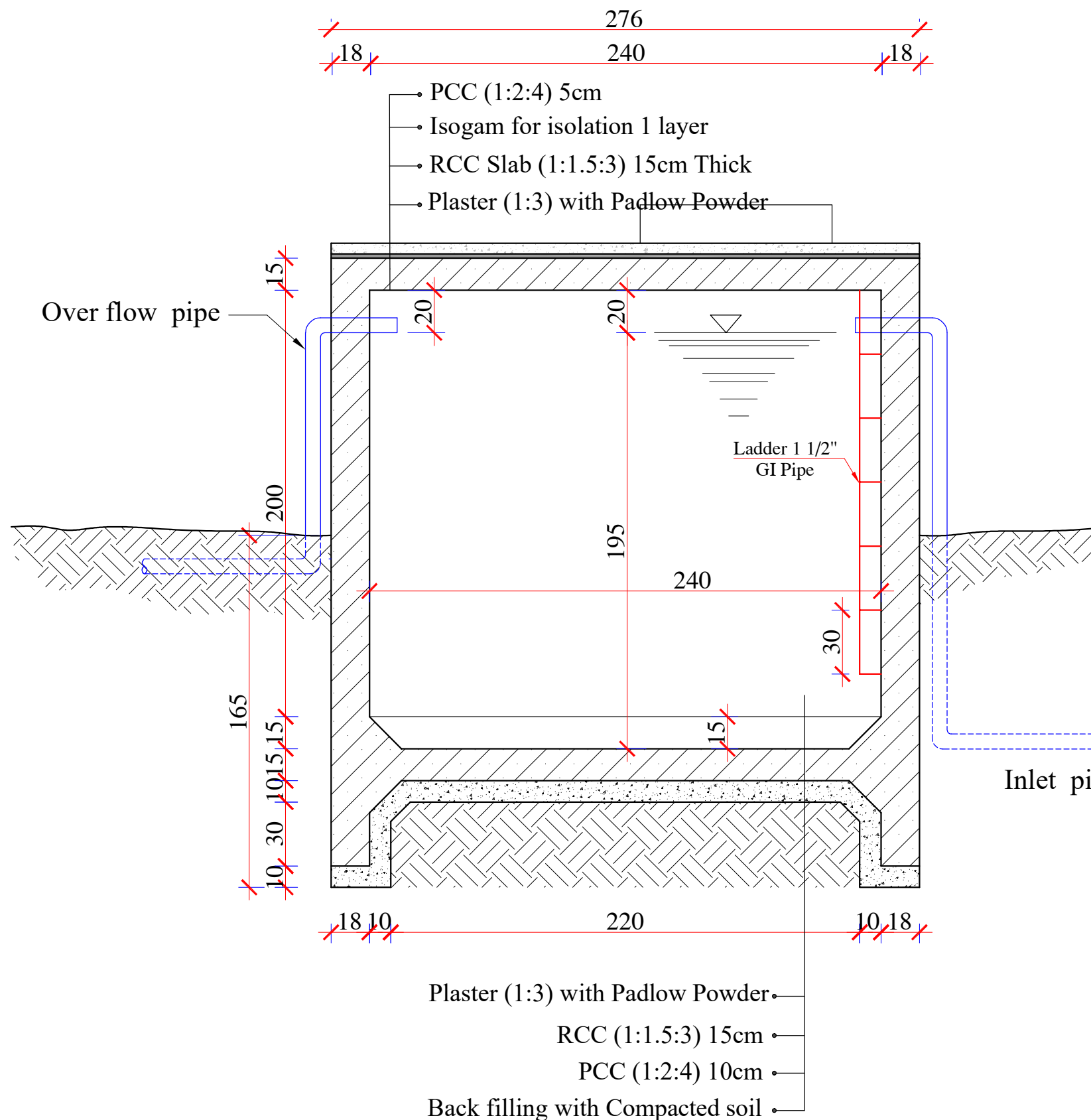
SCALE: NTS

SHEET NO:
6/18

Note:

- Diameter : mm
- Length : m
- Elevation : m





SECTION A-A

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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DISTRICTS:

VILLAGE:

HERAT

Kushk Robat Sangi

Khaja Abad and Baqi Abad

PROJECT NAME:

DRAWING TITLE:

Construction Solar Powered Water Network

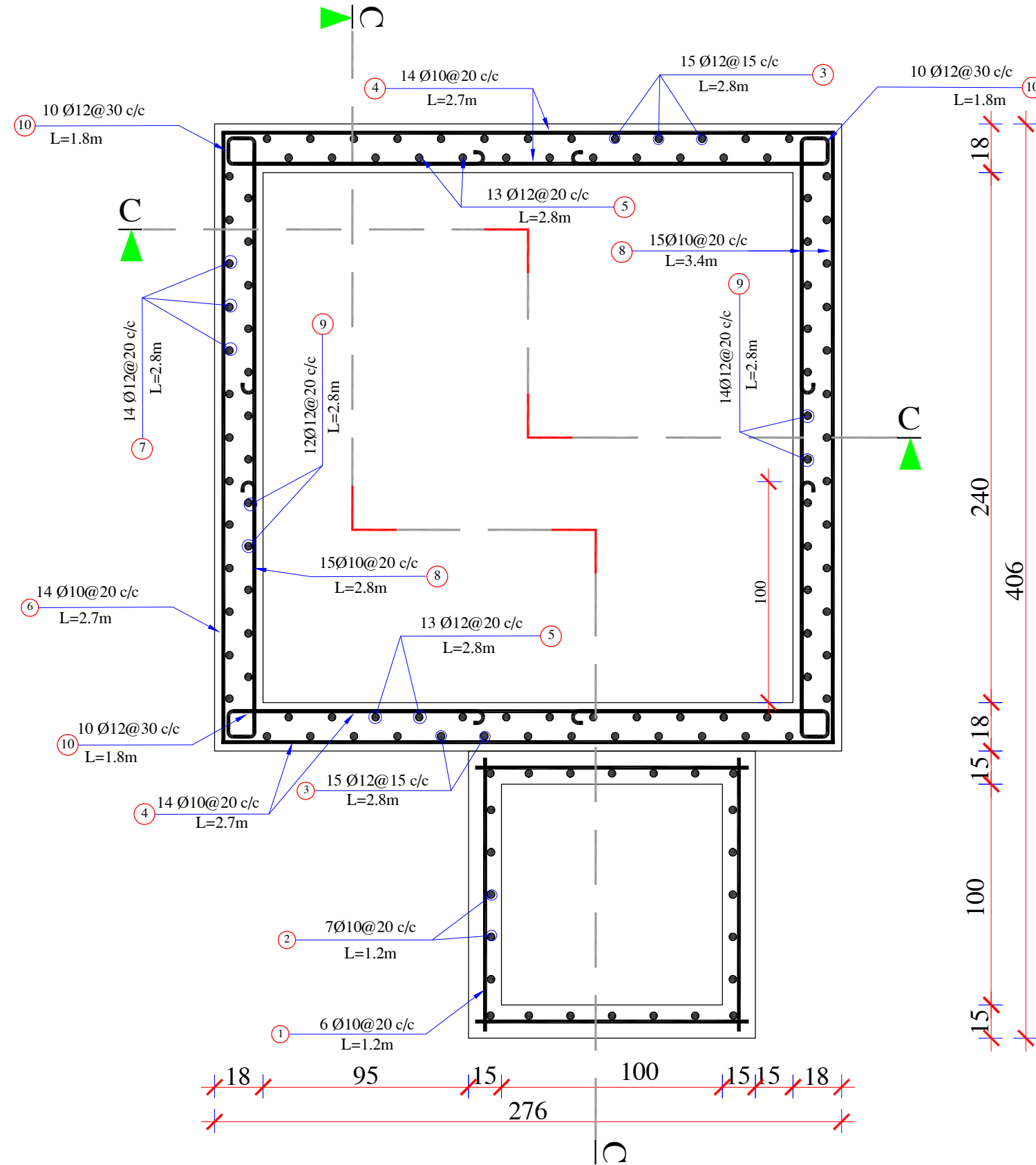
Reservoir 10cum

All Dimensions are in (SI).

SCALE: NTS

SHEET NO: 9/18

REINFORCEMENT PLAN



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DISTRICTS:

VILLAGE:

HERAT

Kushk Robat Sangi

Khaja Abad and Baqi Abad

PROJECT NAME:

DRAWING TITLE:

Construction Solar Powered Water Network

Reservoir 10cum













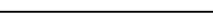

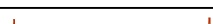

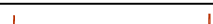




All Dimensions are in (SI).

SCALE: NTS

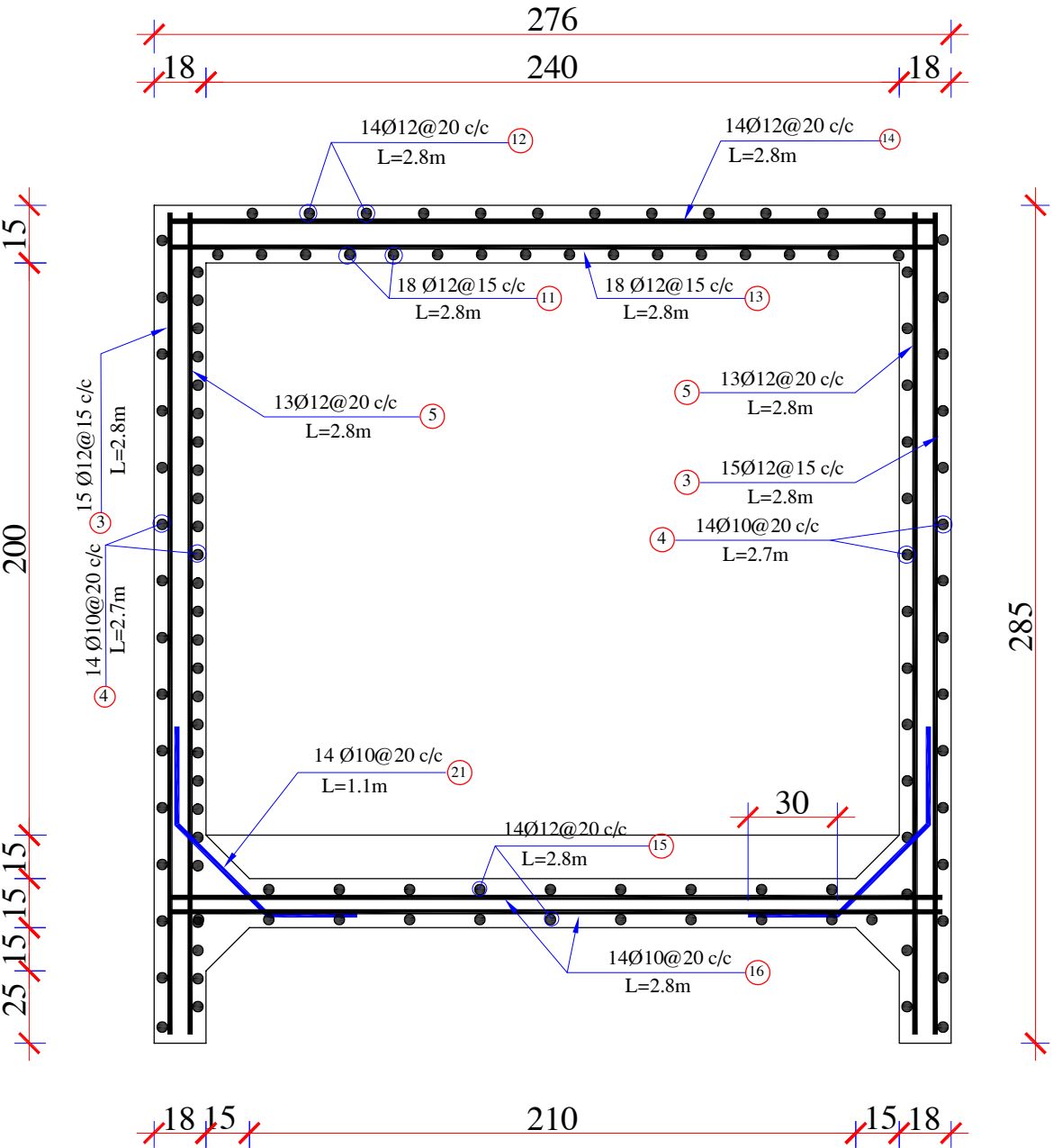
SHEET NO:

11/18

STEEL BAR SCHEDULE FOR 10 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 | 10 | 4x6 | 24 | 1.2 | 28.8 | 0.6166 | 17.76 | 18.65 |
|  | 2 | 10 | 4x7 | 28 | 1.2 | 33.6 | 0.6166 | 20.72 | 21.75 |
|  | 3 | 12 | 2x15 | 30 | 2.8 | 84 | 0.888 | 75 | 78.3 |
|  | 4 | 10 | 2x14 | 28 | 2.7 | 75.6 | 0.6166 | 46.62 | 49 |
|  | 5 | 12 | 2x13 | 26 | 2.8 | 72.8 | 0.888 | 64.64 | 67.9 |
|  | 6 | 10 | 2x14 | 28 | 2.8 | 78.4 | 0.6166 | 48.34 | 50.76 |
|  | 7 | 12 | 2x14 | 28 | 2.8 | 78.4 | 0.888 | 69.62 | 73.1 |
|  | 8 | 10 | 2x15 | 30 | 2.8 | 84 | 0.6166 | 51.79 | 54.38 |
|  | 9 | 12 | 2x12 | 24 | 2.8 | 67.2 | 0.888 | 59.67 | 62.66 |
|  | 10 | 12 | 40 | 40 | 1.8 | 72 | 0.888 | 64 | 67.13 |
|  | 11 | 12 | 1x18 | 18 | 2.7 | 48.6 | 0.888 | 43.15 | 45.31 |
|  | 12 | 12 | 1x14 | 28 | 2.8 | 78.4 | 0.888 | 69.62 | 73.1 |
|  | 13 | 12 | 1x18 | 18 | 2.8 | 100.8 | 0.888 | 89.51 | 79.48 |
|  | 14 | 12 | 1x14 | 14 | 2.8 | 39.2 | 0.888 | 34.81 | 31 |
|  | 15 | 12 | 2x14 | 28 | 2.8 | 78.4 | 0.888 | 68.2 | 62 |
|  | 16 | 10 | 2x14 | 28 | 2.8 | 78.4 | 0.6166 | 48.34 | 51 |
|  | 17 | 10 | 8 | 8 | 1.2 | 9.6 | 0.6166 | 5.91 | 6.22 |
|  | 18 | 10 | 8 | 8 | 1.2 | 9.6 | 0.6166 | 5.91 | 6.22 |
|  | 19 | 10 | 8 | 8 | 1.2 | 9.6 | 0.6166 | 5.91 | 6.22 |
|  | 20 | 10 | 8 | 8 | 1.2 | 9.6 | 0.6166 | 5.91 | 6.22 |
|  | 21 | 12 | 2x28 | 56 | 1.1 | 61.6 | 0.888 | 54.7 | 57.43 |
| Total Weight Bar +5% (Kg) | | | | | | | | 967.83 kg | |

| Bar Dia (mm) | Total Length (m) | Weight (kg/m) | Total weight (kg) | Total weight +5% (kg) |
|--------------|------------------|---------------|-------------------|-----------------------|
| 10 | 418 | 0.6166 | 257.54 | 270.42 |
| 12 | 748 | 0.888 | 664.2 | 697.41 |



SECTION C-C



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PROVINCE:

HERAT

DISTRICTS:

Kushk Robat Sangi

VILLAGE:

Khaja Abad and Baqi Abad

PROJECT NAME:

Construction Solar Powered Water Network

DRAWING TITLE:

Reservoir 10cum

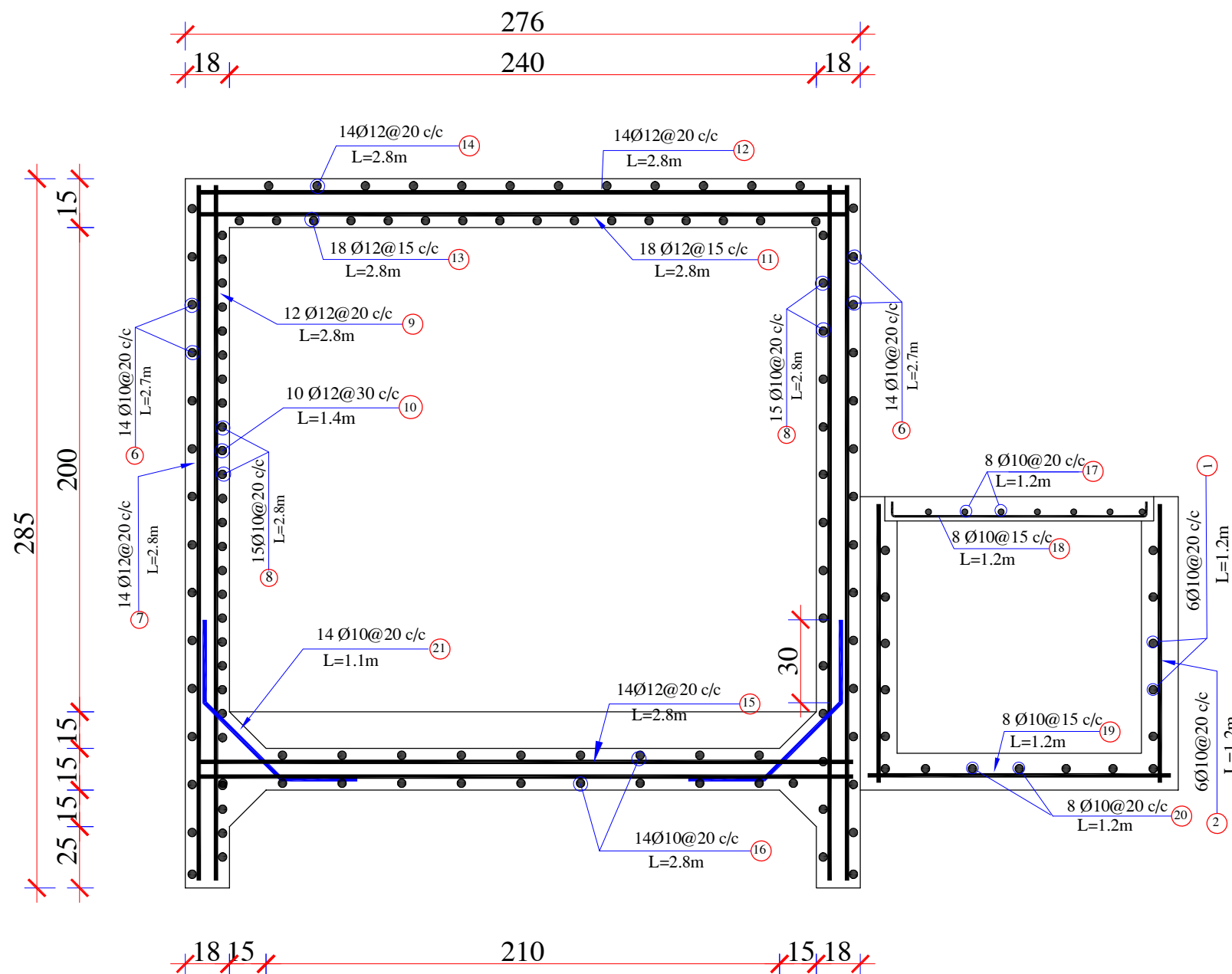
All Dimensions are

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SCALE: NTS

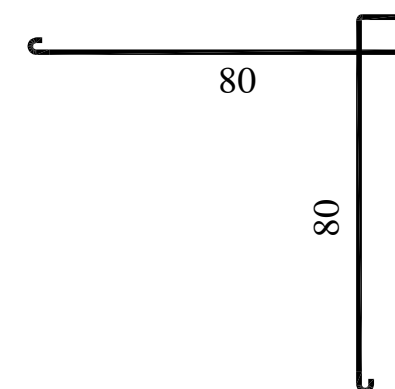
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SECTION D-D

Corner Steel Bar Ø12 @30 c/c
L=180cm



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VILLAGE:

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PROJECT NAME:

Construction Solar Powered Water Network

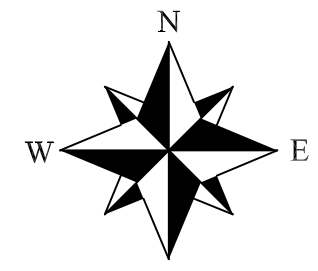
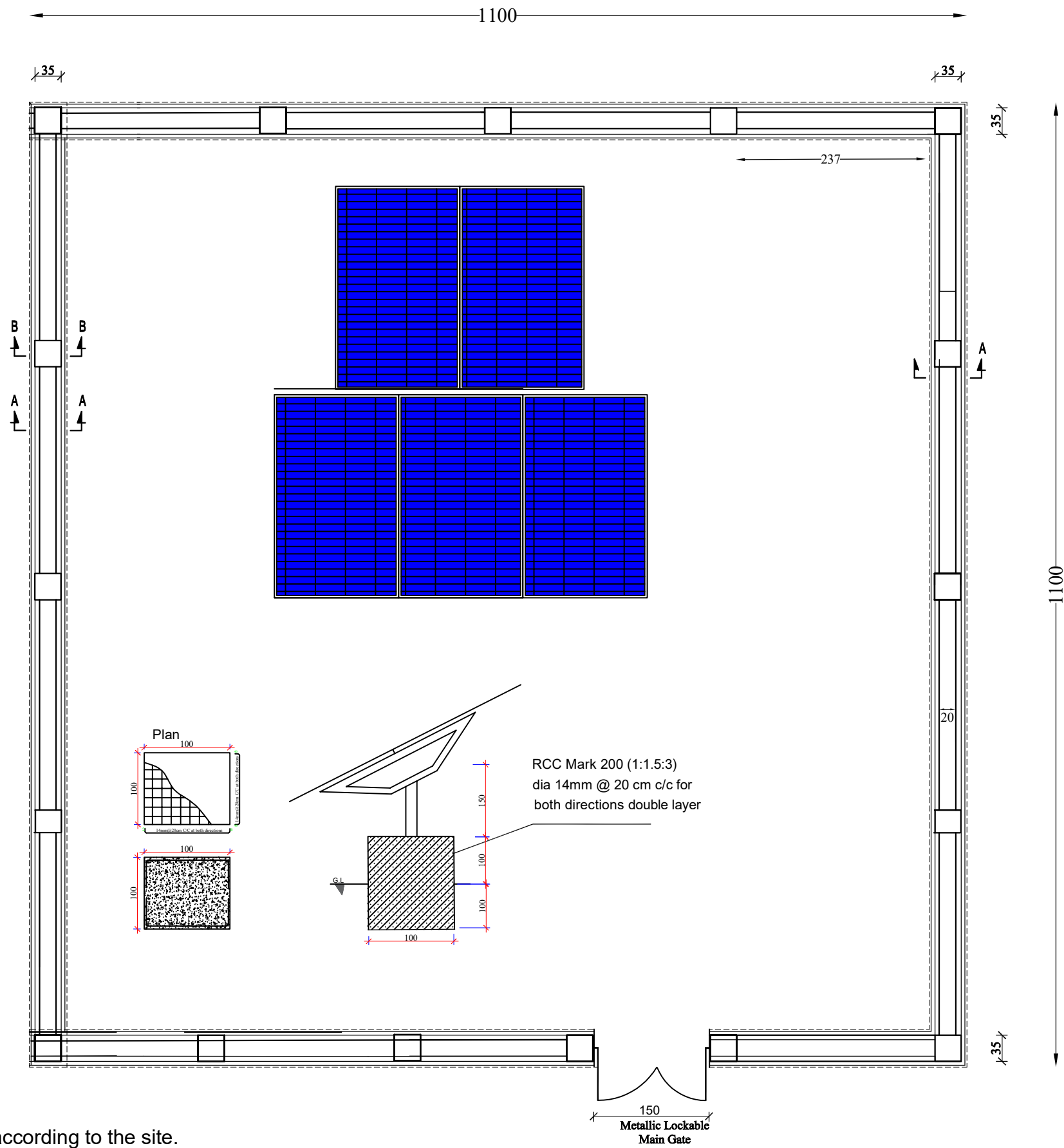
DRAWING TITLE:

Reservoir 10cum

All Dimensions are
in (SI).

SCALE: NTS

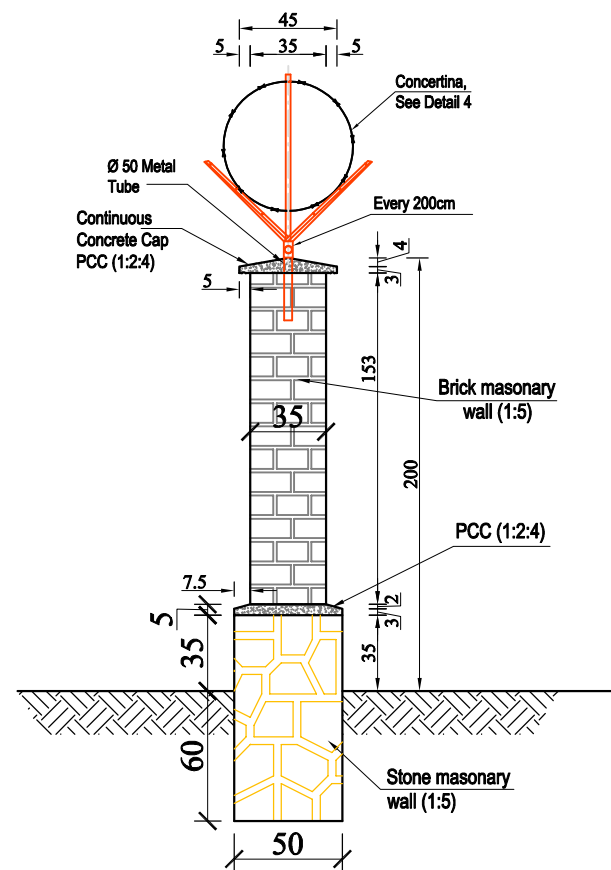
SHEET NO: 13/18



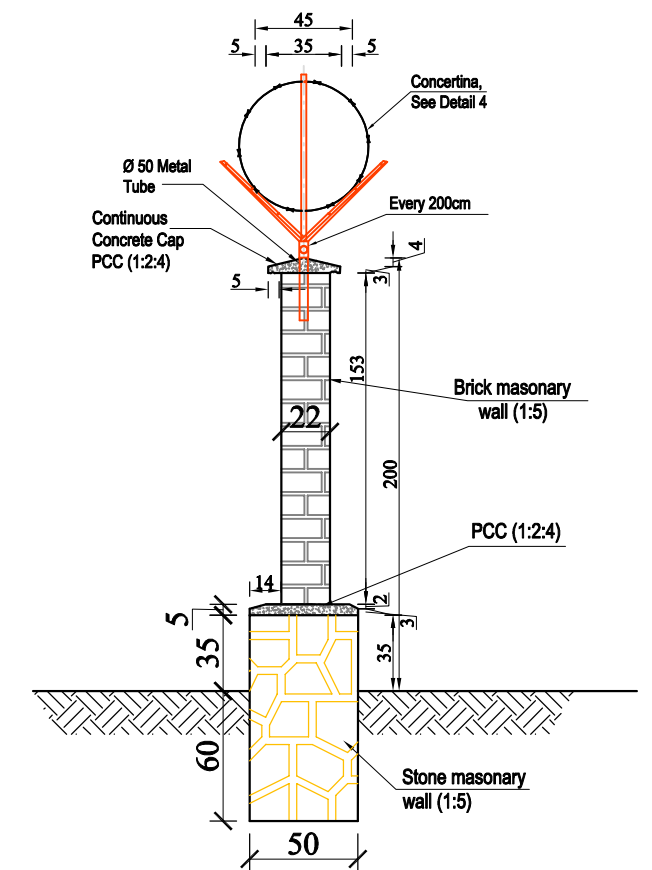
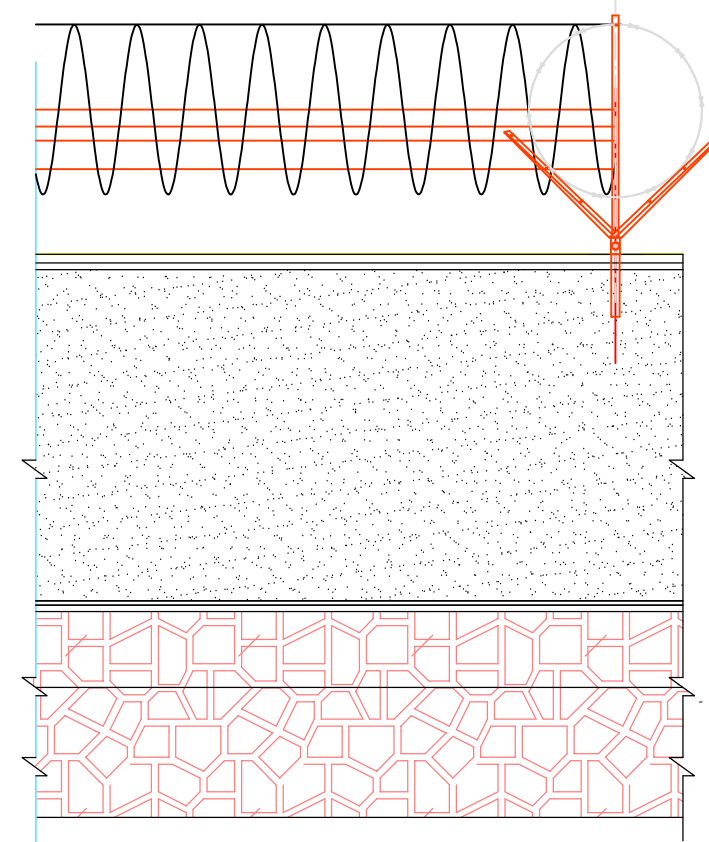
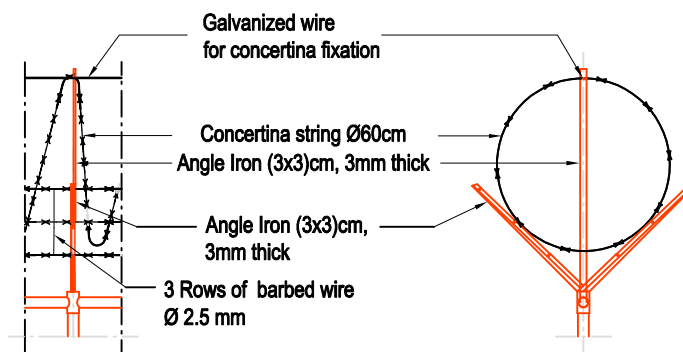
Note: The boundary door can be adjusted according to the site.



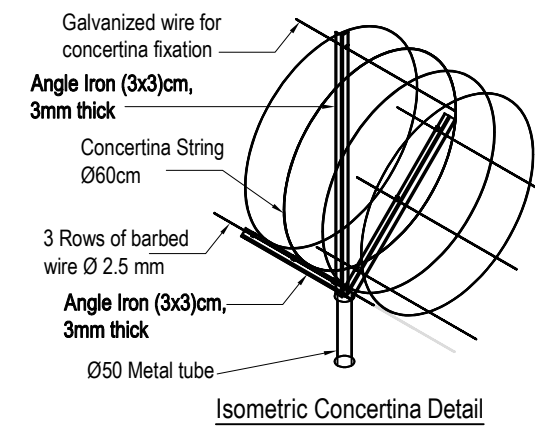
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| DRAWING BY: | | APPROVED BY: | | VILLAGE: | Khaja Abad and Baqi Abad | DRAWING TITLE: | Boundary Wall | SHEET NO: | <div>14/18</div> |



Section B-B



Section A-A



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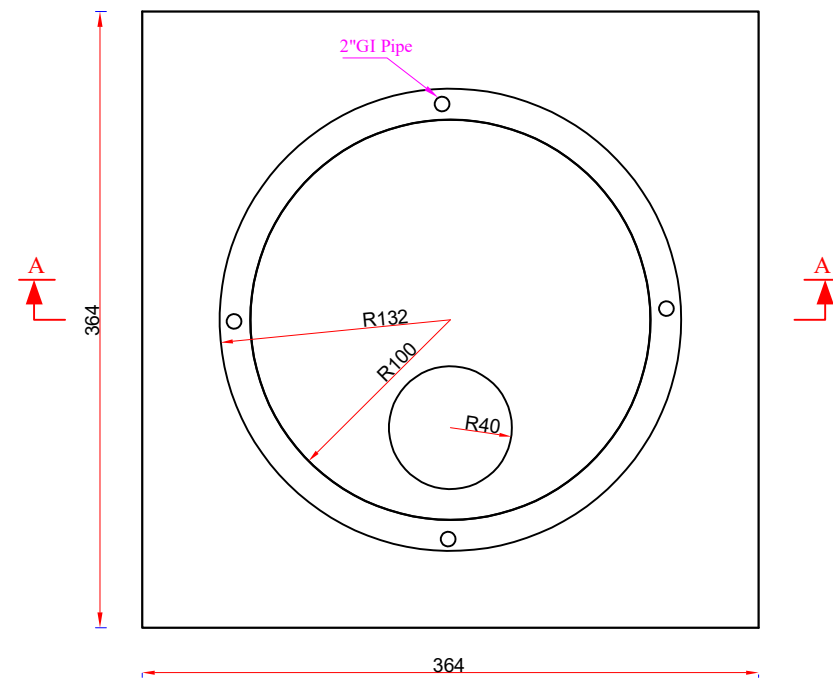
Khaja Abad and Baqi Abad

PROJECT NAME:
DRAWING TITLE:

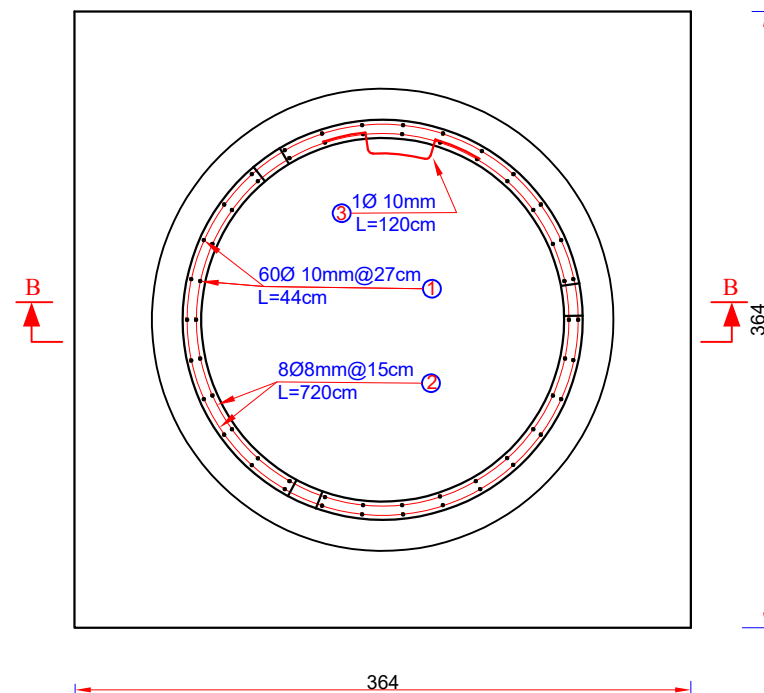
Construction Solar Powered Water Network

Boundary Wall

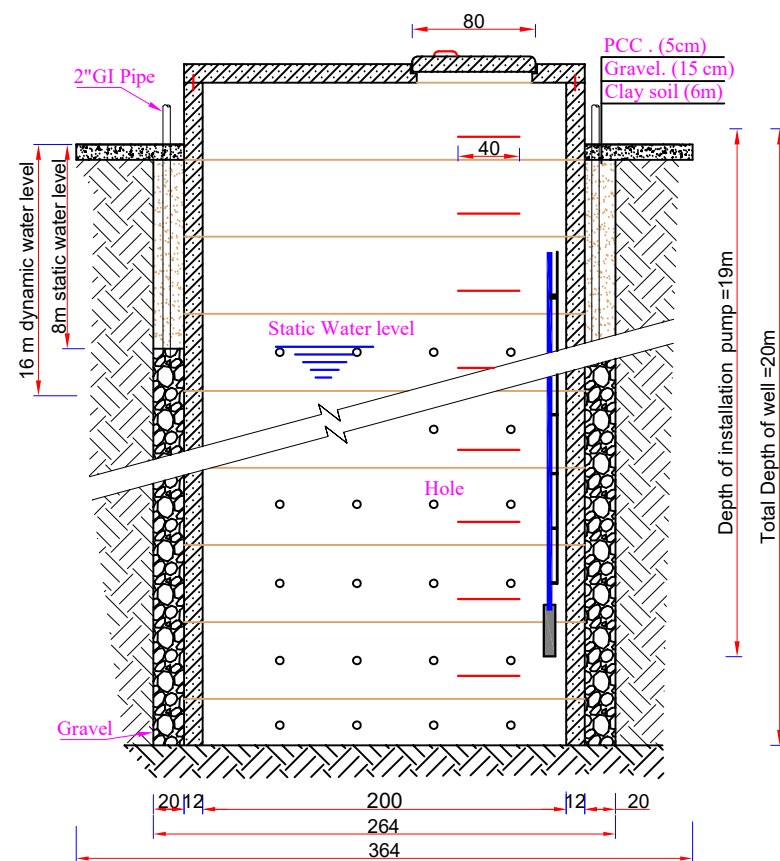
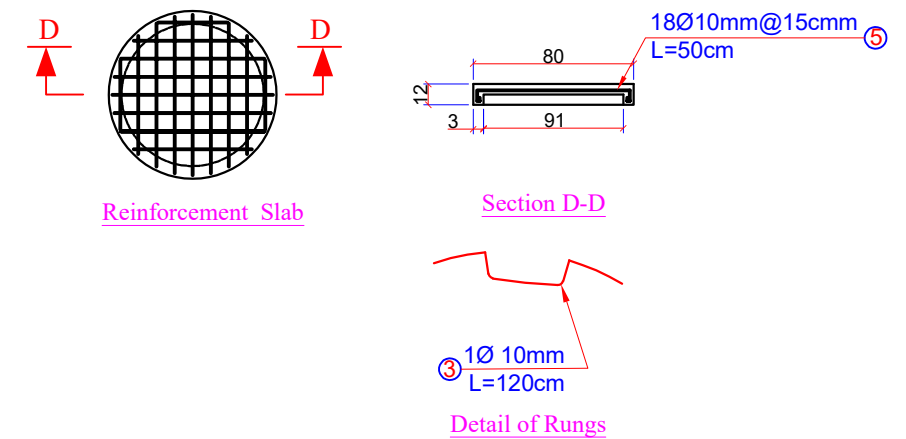
All Dimensions are
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SHEET NO: 15/18



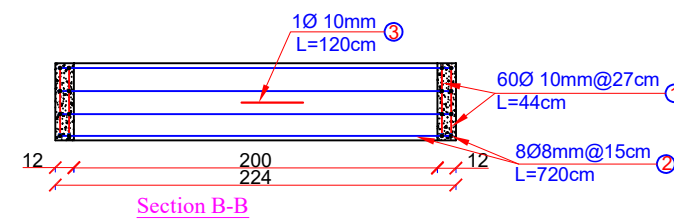
Well plan



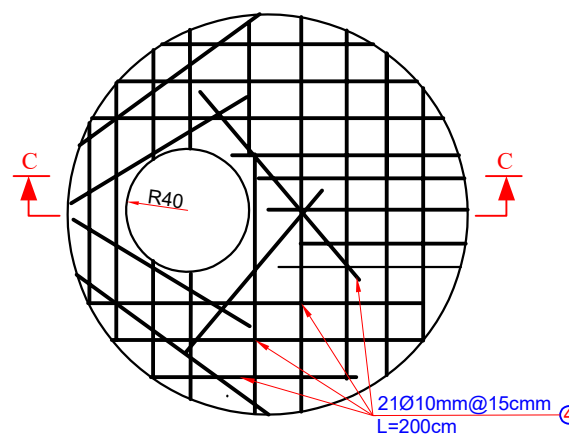
Concrete Ring Reinforcement Plan



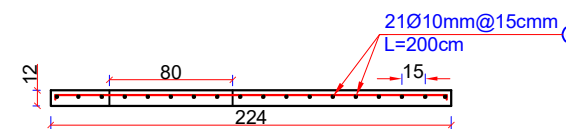
Section A-A



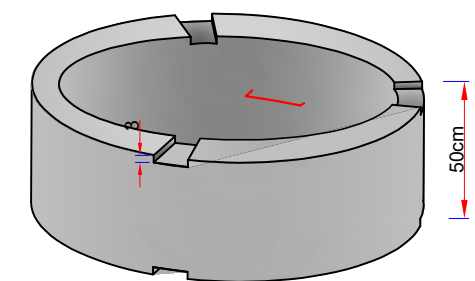
Section B-B



Reinforcement of well cover



Section C-C



Concrete Ring 3D

Note: There is 1m diameter well in site with enough discharge, that can be used as water source for this project, and need to be improved according to this drawing, or any other options like using the existing well if the pump test passed successfully according to the discharge of network.



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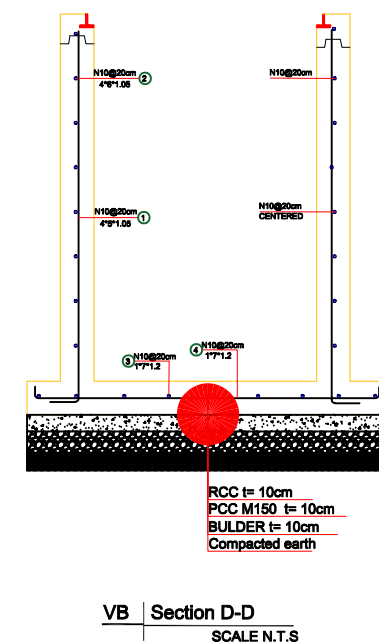
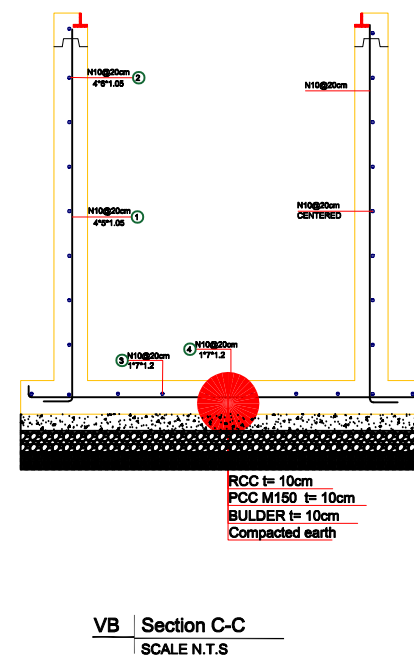
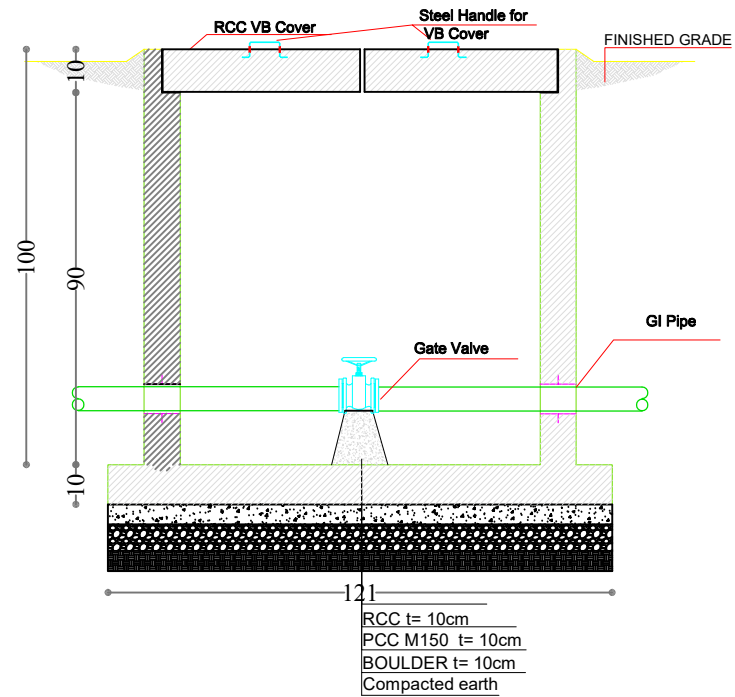
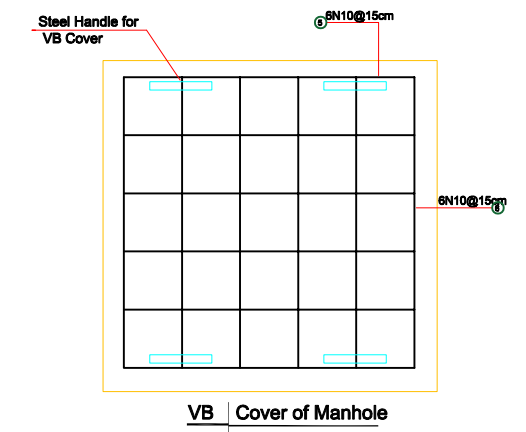
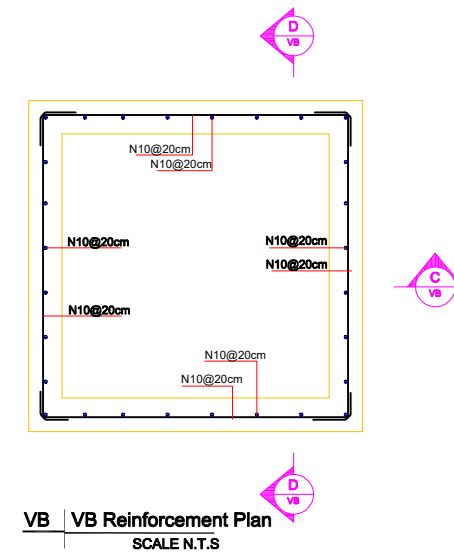
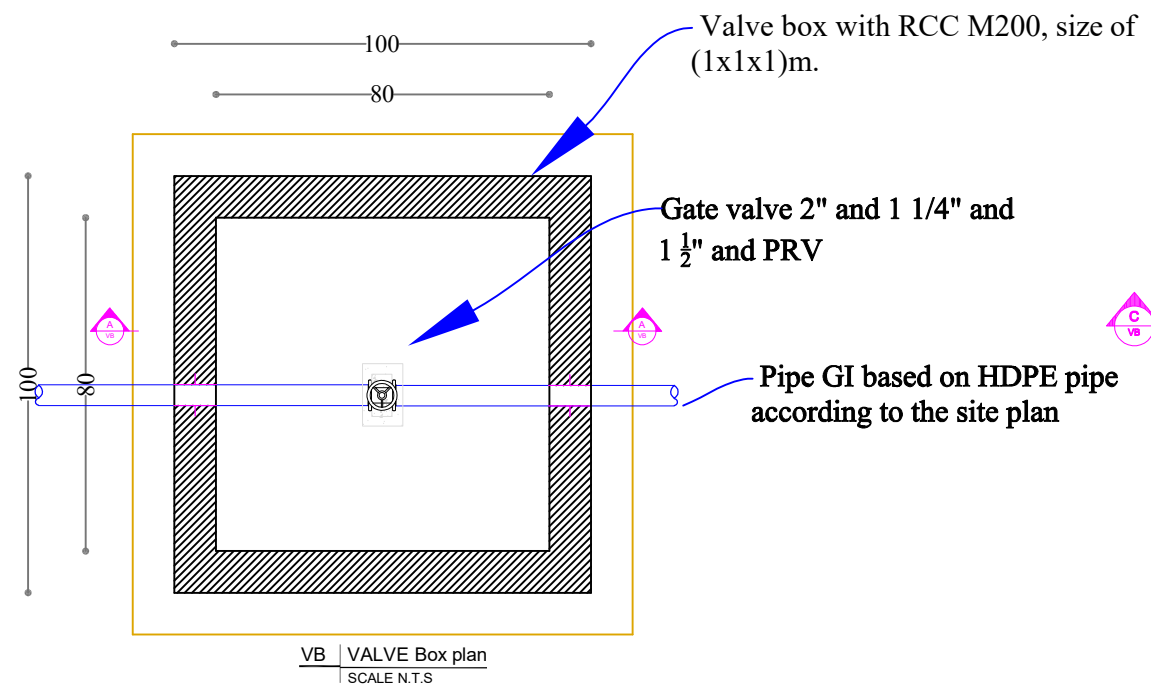
PROJECT
NAME:
DRAWING
TITLE:

Construction of Solar Powered Water
Network

Dug Well improvement

All Dimensions are
in (SI).
SCALE: NTS
SHEET
NO: 16/18

Valve Box Details



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PROJECT NAME:

DRAWING TITLE:

Construction of Solar Powered Water Network

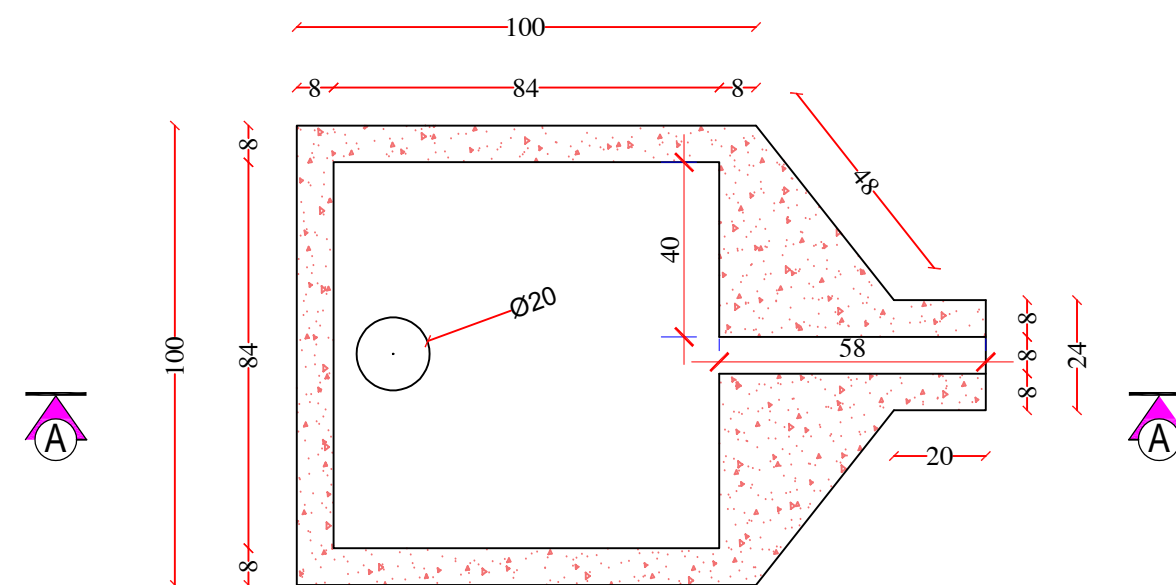
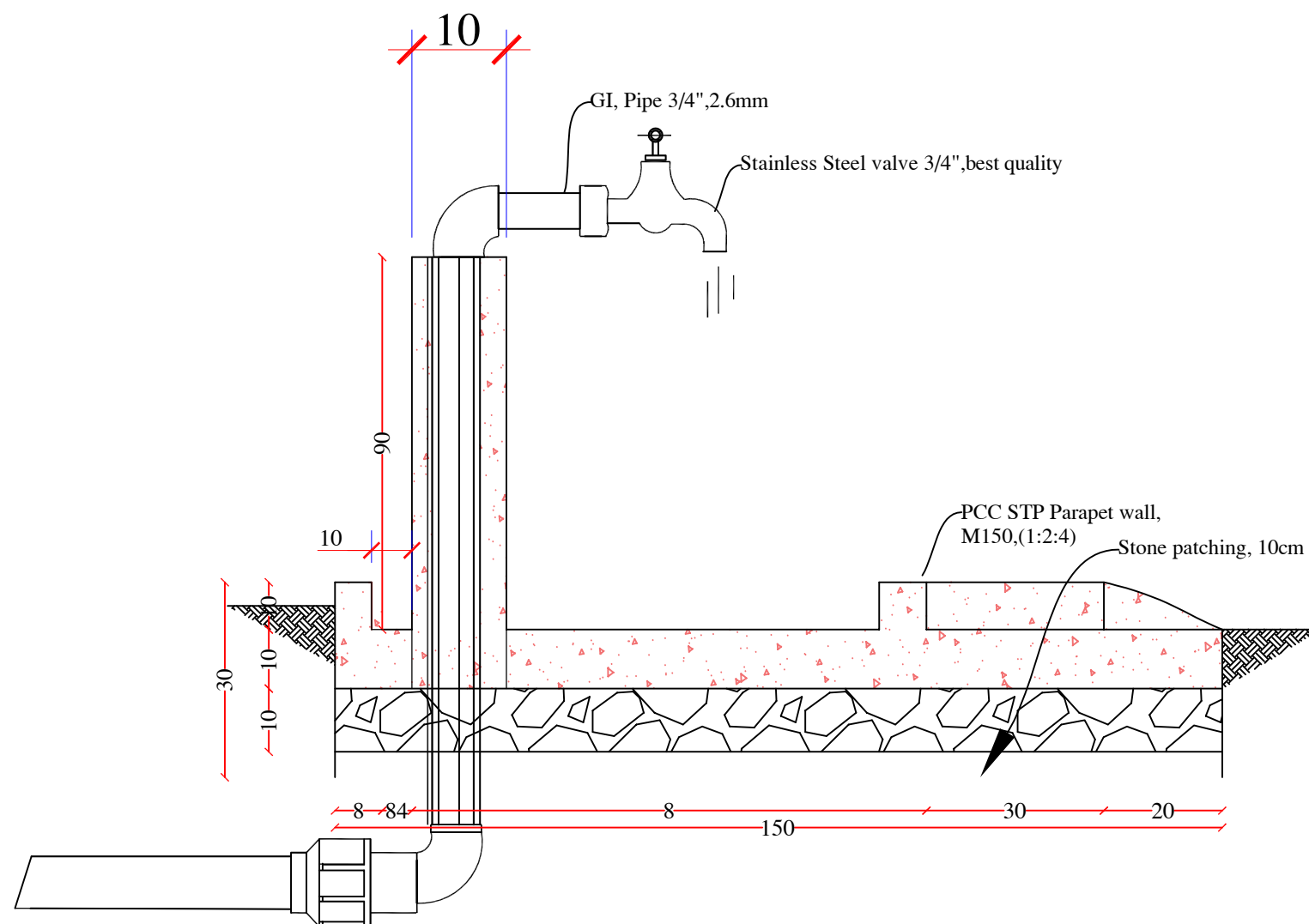
Valve Box Detail

All Dimensions are in (SI).

SCALE: NTS

SHEET NO:

17/18



Note: All stand taps should be made according to the drawings.
 Around all Stand, taps should be backfilled and use 5cm crush gravel.
 PCC work for STP and Apron Parapet wall should be M150(1:2:4).
 All STPs should be curing 7day.



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DISTRICTS:

VILLAGE:

HERAT

Kushk Robat Sangi

Khaja Abad and Baqi Abad

PROJECT NAME:

DRAWING TITLE:

Construction of Solar Powered Water Network

Stand Tap Detail

All Dimensions are in (SI).

SCALE: NTS

SHEET NO:

18/18

Bill of Quantity for Construction of Khaja Abad and Baqi Abad Villages' water supply Network

Province : Herat

Project : WoBs

District : Kushk Robat Sangi

Sector : WASH

Village : Khaja Abad and Baqi Abad

| No | Discriptions تشریحات | Unit واحد | Quantity مقدار | Cost/Unit (AFN) قیمت فی واحد | Total Cost (AFN) قیمت مجموعی | Remarks ملاحظات |
|---|--|----------------|----------------|------------------------------|------------------------------|-----------------|
| BoQ for improvement of existing (Well) | | | | | | |
| 1 | Widenning of existing well from 1m dia to (dia. 2.64m) based on drawing and 20m depth | m3 | 42.22 | | | |
| 2 | Supply and running cost of water pump for drying of water during the well digging | L.s | 1 | | | |
| 3 | RCC ring(inside dia : 200cm, outside dia : 224cm, hight 50cm) | No | 40 | | | |
| 4 | RCC Slab(Dia=2.24m thickness 12cm) | m3 | 0.473 | | | |
| 5 | Gravel Packing from sorted gravel round washed gravel the size of gravel should be determind after well drilling accordding to the sample of starta. | m ³ | 25.74 | | | |
| 6 | Back filling for Ring should be clay soil (mud) without gravel stone | m ³ | 4.9 | | | |
| 7 | Preparing the technical report of well drilling, preparing well strata technical data table and making design of well according to the taken strata (Location of Filter, Cassing and pump instalation depth). | Ls | 1 | | | |
| 8 | Pump test for determination of discharge of well and taking sample of water for quality test after water cleaning Under supervision of PRRD representative. | hour | 8 | | | |
| Sub-Total Cost for Well (AFN) | | | | | | |
| <p>Note: There is an existing well with 1m diameter with 20-22 meters depth, with a static water level anticipated at 15-18 meters in the area and should be improved according to drawing to 2.64m diameter and new RCC rings should be placed to the well, the inneir diameter of the well after ring installation would be 2m. The physical test parameters have been verified and approved by the PRRD representative during the project's survey stage.</p> <p>No further activities, such as the procurement of solar pumps and panels, construction of the reservoir, or the pipe network installation, should proceed until the successful completion of the water quality test and pump test. The minimum required water flow rate for the well is 1.45 liters per second. Should the flow rate during the pump test fall below this threshold, the CARE WASH department reserves the right to either adjust the project's specifications or cancel subsequent activities.</p> | | | | | | |
| BoQ for Solar pump system to Reservoir | | | | | | |
| 1 | Supply and installation of Submersible Water Pump European-made, or its equivalent IP(65-68) 4SR4/14 1.5HP 1.1Kw 220V, with min 2 years warranty Avg. water production per day: (5.25m ³ /h) 42m ³ /day, Total head: 41m Solar pump 1.1 KW according to the technical specification and requirement Contractor must submit manufacturer warranty for pump for a period not less than 2 years. Contractor must submit all the required certificates for solar pump Serial number of Solar pump should be certified by manufacturing company and the pump should be MRRD Approved brands | No | 1 | | | |
| 2 | Inverter(Hybrid) IP(65-68), 2.2kW 3 HP 220V with water proof metallic box and proper lock, The production company confirmation and all certificates are required, low noise, Support over-voltage, phase loss, Built-in start-stop button, operation easily.The inverter should provide required power from solar panels to the pump and run the system smoothly. MRRD preferred brands | NO | 1 | | | |
| 3 | Supply and installation of solar panels internationally certified by IEC, ISO, TUV and CE, Geran cells (455watt) Solar module type: POLYCRYSTALLINE or MONOCRYSTALLINE Water proof PV junction boxes IP68 for each array including DC Fuses, DC switch disconnectors, bus bars ,terminals, ducts or trays, supports & labels suitable to the PV arrays loads. Contractor must submit manufacturer warranty for solar panel for a period not less than 25 years. Contractor must submit all the required certificates for each PV solar panel from Serial number of PV Panel should be certified by manufacturing company and MRRD Approved brands | watt | 2275 | | | |
| 4 | Stand for solar panels, able to be rotated manually, Footing (1*1*2)m based on drawing with color, stand should be coated with anti-rust and high-quality color according to CARE engineer's advice. | set | 1 | | | |
| 5 | Well probe sensor | set | 1 | | | |
| 6 | Cable splice kit 2.5-6mm ² | set | 1 | | | |
| 7 | Earthing system, standard type as a safety measure from lightening arrestor to protect human life as well as equipment. | m | 1 | | | |
| 8 | Submersible pump drop cable from inverter to pump (4*4)mm2 | m | 60 | | | |
| 9 | Safety rope for holding of solar pump with 12mm dia | m | 30 | | | |
| 10 | Float switch (Mechanically Activated Device for water level detection) | No | 1 | | | |
| 11 | Cable (2*4)mm2 | m | 35 | | | |
| 12 | Electric conduit pipe for external power cables. | m | 45 | | | |
| 13 | Cable (3*1.5)mm2 | m | 200 | | | |
| 14 | Delivery and Installation Cost | set | 1 | | | |

| | | | | | | |
|---|--|----------------|-------|--|--|--|
| 15 | Supply and installation for pipe paddle flange diameter 4" (clip on the top of the well to hold up the riser main pipe) | No | 1 | | | |
| 16 | Supply and installation of all fitting for connection system from well to reservoir | Ls | 1 | | | |
| Sub-Total Cost for Solar panels and solar pump(AFN) | | | | | | |
| BoQ for Boundary wall of solar panels | | | | | | |
| 1 | Excavation in different ground types 3 | m ³ | 13.2 | | | |
| 2 | Stone masonry with cement- sand mortar M:1:5 | m ³ | 19 | | | |
| 3 | Plain Cement Concrete (PCC), M150 kg/cm2 (1:2:4) | m ³ | 2.92 | | | |
| 4 | Gravelling inside of boundary wall | m ³ | 6 | | | |
| 5 | Brick masonry with mortar 1:4 (cement - sand) | m ³ | 13.06 | | | |
| 6 | Plaster work with cement-sand inside and outside boundary wall | m ² | 244.8 | | | |
| 7 | Painting of wall inside and outside | m ² | 244.8 | | | |
| 8 | Pointing for out side and inside of Boundry wall with mortar 1:3 (cement -sand). M: 1:3 | m ² | 28 | | | |
| 9 | Supply and installation of metallic gate by 20 Gauge GI iron sheet with lock | m ² | 2.29 | | | |
| 10 | Supply and installation of Concertina wire on boundary wall of solar panel (complete) according to the drawing | m | 44 | | | |
| Sub-Total Cost for Boundary wall of solar panels (AFN) | | | | | | |
| BoQ for 10m3 (10000 lit) Reservoirs | | | | | | |
| 1 | Excavation for reservoir in ground all type of soil. | m ³ | 16.5 | | | |
| 2 | Back filling with soil and excavated material . | m ³ | 3 | | | |
| 3 | Plain Cement Concrete (PCC), M150.(1:2:4) | m ³ | 1.2 | | | |
| 4 | Reinforced Cement Concrete (RCC), M200 including steel bars and shuttering according to the drawings. | m ³ | 10 | | | |
| 5 | Plaster work with cement-sand + padlow powder M: 1:3 for inside. M: 1:3. | m ² | 26 | | | |
| 6 | Plaster work with cement-sand M: 1:3 for exterior wall.M: 1:3 | m ² | 20 | | | |
| 7 | Isogam insulation on roof of reservoir. | m ² | 8 | | | |
| 8 | Supply and installation of iron gate for reservoir manhole (iron 3mm thick) and lockable frame with all required activities and as per drawing. | No | 1 | | | |
| 9 | Supply and installation of 1 1/2" inch Galvanised Iron Ladder for reservoir with all required activites according to drawings. | No | 1 | | | |
| 10 | Supply and installation of Galvanized Iron pipe for the inlet and out let pipe Internal dia.2" | m | 6 | | | |
| 11 | Supply and installation of Galvanized Iron pipe for the over folw & washout pipe Internal dia.1 1/2" | m | 6 | | | |
| 12 | Supply and installation of Flanged Gate valve Nominal Diameter = 2" with two flange adapter including all necessary to complete this job | No | 1 | | | |
| 13 | Supply and installation of Flanged Gate valve Nominal Diameter = 1 1/2" with two flange adapter including all necessary to complete this job | No | 1 | | | |
| Sub-Total Cost for 1 No 10m3 (10000 lit) Reservoirs (AFN) | | | | | | |
| BoQ for Valve Box | | | | | | |
| 1 | Excavation for reservoir in ground all type of soil. | m ³ | 4.98 | | | |
| 2 | Compacted earth with boulder | m ³ | 0.768 | | | |
| 3 | Reinforced Cement Concrete (RCC), M 200kg/cm2 including steel bars and shuttering according to the drawings. | m ³ | 2.36 | | | |
| 4 | Plaster work with cement-sand, inside M: 1:3. | m ² | 6.8 | | | |
| Sub-Total Cost for 4 No valve box (AFN) | | | | | | |
| BoQ for River Crossing | | | | | | |
| 1 | Excavation of pipe trench for river crossing pipes laying in ground type 3 according to the drawing | m ³ | 40 | | | |
| 2 | Back filling of pipe trench by excavated material. | m ³ | 40 | | | |
| 3 | Supplying, installation, laying and fitting in place of GI pipe 1 1/2" for 40mm HDPE pipe | m | 40 | | | |
| 4 | Plain Cement Concrete (PCC), M150.(1:2:4) around GI pipe in river | m ³ | 15.36 | | | |
| Sub-Total Cost for river crossing (AFN) | | | | | | |
| BoQ for Distribution line (From Reservoir to House connection) | | | | | | |
| 1 | Excavation of pipe trench for distribution pipes laying in ground type 3 | m ³ | 1014 | | | |
| 2 | Back filling of pipe trench by excavated material. | m ³ | 1014 | | | |
| 3 | Supplying, installation, laying and fitting in place of High Density Polyethylene pipe (PE 100 PN 16 SDR 11), Outside Diameter: 32 mm, wall thickness 3 mm ,weight 0.278kg/m, Best quality. | m | 242 | | | |
| 4 | Supplying, installation, laying and fitting in place of High Density Polyethylene pipe (PE 100 PN 10 SDR 17), Outside Diameter: 40 mm, wall thickness 2.4 mm ,weight 0.29kg/m, Best quality. | m | 1070 | | | |
| 5 | Supplying, installation, laying and fitting in place of High Density Polyethylene pipe (PE 100 PN 10 SDR 17), Outside Diameter: 50 mm, wall thickness 3 mm ,weight 0.45kg/m, Best quality. | m | 283 | | | |

| | | | | | | |
|--|---|----|-----|--|--|--|
| 6 | Supplying, installation, laying and fitting in place of High Density Polyethylene pipe (PE 100 PN 10 SDR 17), Outside Diameter: 63 mm, wall thickness 3.8 mm ,weight 0.72 kg/m, Best quality. | m | 394 | | | |
| 7 | Supplying and installation of all required fittings for well | LS | 1 | | | |
| 8 | Supply and installation of PRV (Pressure Reducing Valve) Nominal Diameter = 1 1/4 " including all necessary to complete this job | No | 1 | | | |
| 9 | Supply and installation of Flanged Gate valve Nominal Diameter = 2 " with two flange adapter including all necessary to complete this job | No | 1 | | | |
| 10 | Supply and installation of Flanged Gate valve Nominal Diameter = 1 1/2 " mm with two flange adapter including all necessary to complete this job | No | 1 | | | |
| 11 | Supply and installation of Gate valve Nominal Diameter = 1 1/4 " mm with fitting including all necessary to complete this job | No | 4 | | | |
| 12 | House connection from main pipe to inside houses, public buildings (school, mosque and clinic) with its all accessories including 1/2" Saddle clamp, Elbow, Female threaded adapter, (MTA), Gate valve, Water meter, Non return valve, Water tap, Socket, 20mm HDPE pipe each and prefabricated heavy duty water meter box. | No | 60 | | | |
| Sub-Total Cost for distribution line (AFN) | | | | | | |
| BoQ for Miscellaneous Works: | | | | | | |
| 1 | Misceillaneous Works | Ls | 1 | | | |
| 2 | Delivery and Installation Cost | Ls | 1 | | | |
| 3 | Supply and installation of metallic sign board with (50*50*50)cm foundation | No | 1 | | | |
| Sub-Total Cost for Misceillaneous Works (AFN) | | | | | | |
| Total Cost (AFN) | | | | | | |



Technical Specification for Construction of Solar Powered Water Supply Network

مشخصات تخنیکي برای اعمار شبکه آبرسانی با
انرژی سولری

| | |
|----------------------------|--|
| Project Name: | WoBs project |
| Office: | CARE, Herat Sub office |
| Project Location: | Khaja Abad and Baqi Abad villages, Kushk Robat Sangi district |
| Contractor Company: | |
| Start Date: | |
| End Date: | |



Specification for construction of solar powered water supply network:

Location of project:

1. Province: Herat
2. District: Kushk Robat Sangi
3. Village: Khaja Abad and Baqi Abad

General information:

This project includes the construction of a water network, solar system, gate valve boxes, pipe scheme, and RCC elevated water reservoir with a capacity of 10000 liters.

This project is in Khaja Abad and Baqi Abad villages in one place, Kushk Robat Sangi district of Herat province, direct BNs in this project will be used 80 HH, the community currently relies on unsafe water sources from unprotected open wells, leading to various waterborne illnesses. The implementation of this project will significantly address the needs of the majority, providing access to safe and reliable water.

The goals of the project:

To provide fresh and clean water for the people of the mentioned village and prevent them from diseases.

Project parts:

1. Solar system
2. Inverter and pump
3. RCC reservoir
4. Water supply network

Water pump, solar system:

1. We use a SOLAR system pump for the rising of water from the well.
2. We use an INVERTER for the solar system water pump, according to the BOQ description and best quality.
3. Water pump should be according to the BOQ description, and all necessary equipment related to the water pump with 2 years warranty.
4. Solar panel should be certified with MRRD 455 watts, and according to the BOQ description. It has 25 years warranty.
5. Solar frame and its foundation should be prepared according to the attached map, BOQ description, and all necessary equipment.
6. Pipe PE which are used for water-raising should be PE 100, PN 16.
7. The diameter of the rope, which is used for the keeping of Water pump should not be less than 12 millimeters or as per BOQ description.

مشخصات تخنیکي در مورد اعمار شبکه آبرسانی سولری.

موقعیت پروژه:

ولایت: هرات
ولسوالی: کشک رباط سنگی
قریه: خاجه آباد و باقی آباد

معلومات عمومی:

این پروژه شامل اعمار شبکه آبرسانی سولری، وال بکس ها، پایپ دوانی، اعمار ذخیره با ظرفیت 10000 لیتر و دیوار محافظوی سولرها میباشد. موقعیت شبکه مذکور در قریه جات خاجه آباد و باقی آباد بصورت یکجایی، ولسوالی کشک رباط سنگی ولایت هرات میباشد که مستفیدین مستقیم پروژه 80 فامیل بوده اکثر مردم از آب های آشامیدنی غیر صحتی از چاه های سرباز استفاده میکردند که دچار مشکلات گوناگون میشوند و بالحداث این پروژه مشکلات زیادی این اهالی مرفوع میگردد.

هدف پروژه:

هدف از تطبیق این پروژه عبارت از تهیه آب آشامیدنی صحتی برای مردم قریه متذکره و جلوگیری از امراض میباشد.

جزای این پروژه:

1. سیستم سولر
2. پمپ و انورتر
3. ذخیره کانکریتی
4. پایپ لاین اساسی آب

واتر پمپ و سیستم سولر:

1. برای کشیدن آب از چاه، پمپ سولری در نظر گرفته شده است.
2. انورتر باید مطابق پمپ سولری از بهترین کیفیت مطابق مشخصات تخنیکي با امورات ایجابی میباشد.
3. پمپ سولری مطابق مشخصات تخنیکي با امورات ایجابی دارای 2 سال و رانتی میباشد.
4. سولر باید از کمپنی تایید شده وزارت انکشاف دهات، 455 وات، دارای 25 و رانتی مطابق مشخصات تخنیکي با امورات ایجابی میباشد.
5. چوکات سولر و تهداب ان باید از بهترین فلز مطابق نقشه و امورات ایجابی باید تهیه گردد.
6. پیپ که برای کشیدن آب از چاه به کار میرود باید از نوع 16 PE بار باشد و پایپ های های که برای انتقال آب استفاده میشود از نوع پایپ 10 PE بار باشد.
7. ریسمانی که برای محکم نگه داشتن واتر پمپ در نظر گرفته شده است باید قطر آن از 12 میلیمتر کمتر نباشد و مطابق توضیحات جدول برآورد باشد.

Water supply network:

1. Selection of pipeline should have uniform leveled downhill if possible.
2. It should be avoided from side mountain downhill and passing ways of streams and small rivers,
3. It should be avoided from illegal and community out of control lands
4. Short distance should be selected.
5. Excavation of pipeline should be at least 50cm width deep with a height of 100cm.
6. The beak of ventilation pipes should be covered with a net to prevent the entering of insects inside of the system.
7. The peaks of pipes should be bent down to prevent, not entering rain unclean water, or other things.
8. All the PE pipes must be standard pipe and its fittings are best quality according to the attached offer form and specifications.
9. All the network taps with fittings must be standard and best quality.
10. The contractor is responsible to hand over the project successfully to local people if the network is failed therefore, no money would be given to the Contractor Company and the company will be responsible for it.
11. In PE path fittings should be used not iron for heating.
12. Washing pipes should be placed at the lowest point of the network to prevent the sediment of pipes and the water not to being stopped in the network path.

Distributive pipes of taps:

1. All taps should be made with the concrete column, apron according to the drawing.
2. Tap place should not be a place for spreading of insects and disease
3. In this project house connection system for tap stand is used.
4. Each of the taps must have a meter to calculate the usage of water.

Pipes Specifications:

- PE 100 PN10Φ110mm wt.=6.6mm, weight =2.17kg/meter.
- PE 100 PN10Φ90mm wt.=5.4mm, weight =1.46kg/meter.
- PE 100 PN10Φ75mm wt.=4.5mm, weight =1.02kg/meter.
- PE 100 PN10 Φ63mm wt.=3.8mm, weight =0.721kg/meter.
- PE 100 PN10 Φ50mm wt.=3mm, weight =0.453kg/meter.
- PE 100 PN10 Φ40mm wt.=2.4mm, weight =0.295kg/meter.
- PE 100 PN16 Φ32mm wt. =3mm, weight =0.278kg/meter.
- PE 100 PN10 Φ25mm wt. =1.8mm, weight=0.137kg/meter

پایپ لاین اساسی آب :

1. انتخاب مسیر پایپ لاین که باید نشیب یک نواخت داشته باشد، اگر ممکن باشد حفظ گردد.
2. از کناره های پر نشیب تپه ها و عبور بیشمار جویها باید اجتناب شود.
3. عدم عبور از زمین هایکه دسترسی مشروع ندارند و یا هر زمین دیگر که خارج از کنترل استفاده کنندگان است، اجتناب صورت گیرد.
4. مسیر کوتاه باید انتخاب گردد.
5. کندنکاری های مسیر پایپ لاین اساسی باید از 50 سانتی متر عرض و عمق 100 سانتی متر کمتر نباشد و دفن پایپ به واسطه خاک صورت میگیرد.
6. دهن پایپ هواکش باید به واسطه جالی پوشانیده شود تا جلوگیری از دخول حشرات نماید.
7. سرپایپ ها بطرف پایین باید خم گردد تا از دخول آب باران و آب ملوث در شبکه جلوگیری گردد.
8. تمام پیپ ها فلزی همراه با فیتینگ های آن باید دارای کیفیت اعلی باشد.
9. تمام پیپ های پولی ایتلین استاندارد دارای کیفیت اعلی و مطابق به مشخصات ذکر شده ورق نر خدهی باشد.
10. تمام شیردهن ها برونزی و فیتینگ های پولی ایتلین شبکه استاندارد بوده و از بهترین کمپنی باشد.
11. شرکت قراردادی مکلف میباشد تا پروژه را کامیاب به مردم محل تسلیم دهد در صورتیکه شبکه ناکام باشد برای قراردادی پول تادیه نمیشود و مسئول خود شرکت میباشد.
12. در مسیر پایپ پولی ایتلین از فیتینگ ها استفاده شود نه از اتو.
13. در قسمت های پایینی مسیر شبکه باید پایپ شستشو گذاشته شود تا از رسوبات داخل پایپ و سبب بندش آب در شبکه نگردد.

نل های توزیعی شیردهن ها :

1. شیردهن ها باید پایه دار با صوفه کانکریتی آبرو مطابق نقشه.
2. ساحه شیردهن نباید جای شیوع حشرات و دیگر امراض شود.
3. درین پروژه از سیستم نل کشی خانه به خانه استفاده شده است.
4. شیردهن باید یک میتر برای محاسبه آب مصرفی داشته باشد.

خصوصیات پایپ ها:

- پیپ پولی ایتلین 100 قطر 110 ملی متر 10 بار که با ضخامت 6.6 ملی متر، وزن 2.17 کیلوگرام فی متر میباشد.
- پیپ پولی ایتلین 100 قطر 90 ملی متر 10 بار که با ضخامت 5.4 ملی متر، وزن 1.46 کیلوگرام فی متر میباشد.
- پیپ پولی ایتلین 100 قطر 75 ملی متر 10 بار که با ضخامت 4.5 ملی متر، وزن 1.02 کیلوگرام فی متر میباشد.
- پیپ پولی ایتلین 100 قطر 63 ملی متر 10 بار که با ضخامت 3.8 ملی متر، وزن 0.721 کیلوگرام فی متر میباشد.
- پیپ پولی ایتلین 100 قطر 50 ملی متر 10 بار که با ضخامت 3 ملی متر، وزن 0.453 کیلوگرام فی متر میباشد.

- پیپ پولی ایتلین 100 قطر 40 ملی متر 10 بار که با ضخامت 2.4 ملی متر، وزن 0.295 کیلوگرام فی متر میباشد.
- پیپ پولی ایتلین 100 قطر 32 ملی متر 16 بار که با ضخامت 3 ملی متر، وزن 0.278 کیلوگرام فی متر میباشد.
- پیپ پولی ایتلین 100 قطر 25 ملی متر 10 بار که با ضخامت 1.8 ملی متر، وزن 0.137 کیلوگرام فی متر میباشد.

Site Preparing for foundation lining:

1. After the contract the construction company should make level the project structures area.
2. If the project site has extra organic or inorganic material the contractor company is responsible for its moving for the site.
3. If the construction area has treed the contractor company is responsible for cutting trees with their roots from the

آماده کاری ساحه برای خط اندازی:

1. بعد از عقد قرارداد شرکت برنده مکلف میباشد تا ساحه که پروژه در آن اعمار میگردد کاملاً هموار نماید.
2. هرگاه در ساحه مواد اضافی عضوی و غیر عضوی موجود باشد شرکت مکلف میباشد تا مواد مذکور را از ساحه انتقال دهد.
3. بعد از مراحل فوق الذکر زمین آماده خط اندازی میگردد، و ناگفته نباید گذاشت که انجنیر شرکت مکلف به انداختن خط تهداب ها بوده و باید قبل از کندن کاری تهدابها خط اندازی هاباید به واسطه انجنیر دفتر پاملرنه چک گردد.

کندنکاری تهدابها:

- کندن کاری ها باید منظم و هم سطح باشد.
- هرگاه در جریان کندن کاری زمین متجانس نمیشود و در بعضی از قسمت ها خاک نرم (سست) مشاهده شود باید آن قسمت ها الی پیدا نمودن زمین کاملاً سخت ویا توسط ماشین تپک کاری نموده کندن کاری گردد.
- کندن کاری ها باید به واسطه انجنیرمسول دفتر پاملرنه چک گردد اگر در کار کندنکاری مشکلی موجود نبود برای شرکت اجازه کارنمودن داده شود و کانکریت شفته تهداب ریخته شود.

Foundation's excavation:

- The excavation should be regular and level.
- If in the excavation time the same place of land seems soft those places should be excavated until hard land.
- The excavation should be checked by CARE responsible engineer and if the excavation works has not any problems, then the Contractor Company will start the foundation PCC.

Concrete works:

1. The RCC should be prepared with a mixer machine and if the thickness of the concert will be more than 10cm vibrator should be used.
2. During concrete mixing measuring tool (Manak) should be used.
3. The old cement (more than three months) should not be used.
4. Best quality cement product of should be used in all RCC works and other parts.
5. The concrete should be provided in an iron tab, not on the soil land.
6. The river clean gravel should be used for concrete works and its size arranges with concert thickness and its diameter should not be more than 2cm.
7. The sand should be clean and washed and it must be without soil and organic materials.
8. Clean drinking water will be used for concrete mixing.
9. For the cover of steel bars should be used cement block with suitable thickness.
10. For separations of the soil layer from the concert layer plastic sheet should be used.

کانکریت ریزیها و قالب بندی:




1. کانکریت باید به واسطه مکسر تهیه گردد در صورتیکه ضخامت کانکریت از 10 سانتی متر زیاد باشد باید از ویراتور Vibrator استفاده صورت گیرد.
2. از منک برای ساخت مصالحه کانکریت استفاده شود.
3. از سمنت کهنه (ذخیره شده بالاتر از سه ماه) استفاده نشود.
4. از سمنت باکیفیت مارکیت در عناصر آهن کانکریت و غیره بخش های ساختمان استفاده گردد.
5. مصالحه کانکریت باید در گونی ها آهنی تهیه شود نه در زمین خاکی آماده گردد.
6. جغل کانکریت باید شسته شده دریایی بوده سایز آن بایه به اساس ضخامت کانکریت عیار گردد و قطر آن نباید از 2cm بزرگتر باشد.
7. ریگ شسته بوده و عاری از خاک و مواد عضوی باشد.
8. برای ساخت کانکریت باید از آب پاک و قابل آشامیدن استفاده شود.
9. برای قشر محافظوی مناسب سیخ گول، از قالب یا بلاکهای سمندی به ضخامت مناسب استفاده صورت گیرد.
10. برای جدایی لایه خاک از لایه کانکریت باید از لایه های پلاستیک استفاده شود تا شیریه کانکریت جذب خاک نگیرد.
11. تخته های که برای قالب بندی استفاده میشود باید دارای ضخامت حد اقل 2.5cm بوده و سطح آن صیقلی باشد دارای درز ها نباشد.

11. The shuttering should be checked before concrete pouring.
(The shuttering planks thickness should be at least 2.5cm and two sides of the planks should be smooth and clean to prevent concrete falling).
12. All shuttering should be checked by CARE responsible engineer before steel rebar work and concrete casting.
13. Use from high quality steel bar with above yield strength.
14. Steel bending should be worked according to attachment maps.
15. All concrete works should be kept wet for 20 days and when the concert surface can keep the water use cotton gunny for keeping humidity.
16. The concert should be used for one hour.

Concrete Mortar mark as below:

- | | |
|------------------------------|---------------------------------|
| 1. RCC M: 200 | 1: 1.5:3 (cement: sand: gravel) |
| 2. PCC M: 150 | 1: 2:4 (cement: sand: gravel) |
| 3. Stonemasonry | 1: 4 (cement: sand) |
| 4. Plaster of exterior walls | 1: 3(cement: sand) |
| 5. Plaster of interior walls | 1: 3 (cement: sand) |
| 6. Pointing of stone masonry | 1:3 (cement: sand) |

Cover to reinforcement bars should be as bellows:

- | | |
|---|--------|
|  Footings | 7 cm |
|  Columns | 2.5 cm |
|  Slabs | 1.5 cm |

Stonework with cement and sand mortar:

1. Stone used for the foundation will be mountain hard crashed stone (not river rounded stone).
2. Don't use limestones for construction works.
3. For all stone masonry works cement and sand mortar must be used.
4. The sand should be washed, clean, and without gravel and soil.
5. All around stone works should be filled with cement and sand mortar and no empty place exists around the stone.
6. All stone works should be kept wet with water for at least 14 days.
7. Construction joint is necessary for walls.

Plastering:




1. Plastering mortars are from sand and cement and for structures inside must use damp proof powders.
2. The sand should be washed, teeny, and completely without soil.
3. The plastering should be smooth and without waves.
4. All corners and walls should be right and vertical.

12. قالب بندی ها قبل از آغاز کار سیخ بندی و ریخت کانکریت به واسطه انجنیر دفتر پاملر نه چک گردد.
13. از سیخ گول باکیفیت مارکیت و کیفیت عالی استفاده گردد.
14. سیخ بندی ها باید مطابق نقشه های ضمیمه صورت گیرد.
15. تمام کانکریت ریزی ها به صورت متواتر به مدت 20 یوم مرطوب نگهداری شود در صورتیکه سطح قابلیت نگهداری آب را نداشته باشد از بوری های تار باخاطر مرطوب نگهداشتن آن استفاده شود.
16. مصالح کانکریت باید در جریان الی یک ساعت استفاده شود.

مارک مصالح قرار ذیل است:

- | | |
|--------------------------|----------------------------|
| 1. کانکریت M 200 | 1:1.5:3 (سمنت, ریگ و جغل) |
| 2. کانکریت 150 | 1:2:4 (سمنت و ریگ و جغل) |
| 3. سنگ کاری M300 | 1:4 (سمنت و ریگ) |
| 4. پلستر دیوار های خارجی | 1:3 (سمنت و ریگ) |
| 5. پلستر دیوار های داخلی | 1:3 (سمنت و ریگ) |
| 6. انگاف کاری | 1:3 (سمنت و ریگ) |

قشر محافظوی قرار ذیل در نظر گرفته شود:

- | | |
|--|-------|
|  تهداب ها | 7cm |
|  پایه ها | 2.5cm |
|  پوششها | 1.5cm |

سنگ کاری همراه با مصالحه سمنت و ریگ:

1. سنگ بکار رفته در تهداب ها باید کوهی و محکم باشد(سنگ دریایی لشم) نباشد.
2. از سنگ های آهکی استفاده نشود.
3. در سنگ کاری از مصالح سمنت و ریگ استفاده شود.
4. ریگ باید شسته و عاری از خاک, جغل (میده یا بزرگ) و مواد عضوی باشد.
5. تمام اطراف سنگ ها باید به مصالح سمنت و ریگ کاملاً پرکاری شود و خالی گاهی موجود نباشد.
6. تمام سنگکاری ها باید حد اقل 14 روز متواتر مرطوب نگهداری شود.
7. جاینتهای ساختمانی در نظر گرفته شود.

پلستر کاری :

1. مصالحه پلستر کاری ها از سمنت و ریگ میباشد در پلستر کاری کاری داخلی تمام ساختمانهای این پروژه بر علاوه از سمنت و ریگ از پودر ضد رطوبت نیز استفاده صورت گیرد.
2. ریگ باید شسته سرمه ای و کاملاً بدون خاک باشد.
3. پلستر کاری ها باید صیقلی و بدون موج باشد.
4. کنج ها عمودی راست و شاقولی باشد.

5. The surface of beams that have a horizontal view, should be regular and level.
6. All plastering should be kept wet at least for 14 days.
7. Providing Indifference Contractor Company that used dirty sand, didn't mix the mortar well, didn't keep wet and seems slit, all fewer quantity works should be demolished and they should work again.
8. Pointing works should be swell and beauty.

5. سطح گادر ها که نمای افقی داشته باشد باید منظم و هم سطح باشد.
6. تمام پلسترکاری ها باید حد اقل 14 روز متداوم مرطوب نگهداری شود.
7. در صورت سهل انگاری شرکت در قسمت استفاده از ریگ خاکدار درست مخلوط نکردن مصالح ساختمانی، مرطوب نگاه نداشتن پلستر کاریها و مشاهده شدن درزهای در پلسترکاریهای همان مقدار کار بی کیفیت تخریب گردیده و دوباره اعمار گردد.
8. انگاف سنگکاری باید برجسته و مقبول باشد.

Reservoir construction work:

1. The beak of overflow should be protected with net to prevent not entering anything inside
2. The reservoir construction should be in a stable area and partly smooth earth and should be made sure that the site is safe and will not face any land collapse and other damages according to engineering rules
3. Inside this building must be plastered and covered with anti-water powder plaster 1:3
4. The best covering of reservoir is necessary for the protection of water from pollution.
5. No leaks and cracks should not be observed in concrete

کار ساختمانی ذخیره:

1. دهنه پپ لبریزه باجالی محفوظ شود تا مداخله صورت نگیرد.
2. ساحه برای ذخیره باید در یک جای با ثبات و نسبتاً زمین هموار باشد و مطمئن شویم که مواجه به تخریبات و لغزش زمین واقع نخواهد شد
3. دیوارهای داخل ذخیره ضرورت دارد که از داخل خوب پلستر شده و با پلستر 1:3 ضدآب روکش شود.
4. پوشش خوب ذخیره برای مصون نگهداشتن آب از کثافات ضروری است.
5. هیچ لیکی یا درز در کانکریت باید ملاحظه نشود.

Backfilling of pipes

1. Backfilling of network path should be done during pipe placing except connections to be able to inspect and find the damages
2. The pipes should be covered as soon as possible, even one pipe must not be uncovered for a night on the path of the network
3. The pipes must not be placed till it is made sure that there is not any internal water blocking

پرکاری عقب پایپ ها (Back filling):

1. پرکاری مسیر شبکه در روزیکه پایپ ها گذاشته میشود انجام گیرد به استثنای اتصالات تا به بازرسی برای پیدا نمودن عوارض قادر شویم
2. یک پایپ را حتی برای یک شب در جرها بازو آشکار نگذارید، هر قدر زود ممکن است آنرا بپوشانید.
3. تا زمانیکه مطمئن نشوید که بندش داخلی وجود ندارد پایپ هارا وصل ننماید.

Main responsibilities of the contract company:

- In case of failure of the project, it is the responsibility of the contracted company and it is not entitled to receive payment.
- CARE International has considered the projects using standard materials that have high quality, so the contracting company is obliged to implement its standard.
- If quality materials are not available from the nearest local markets, the contracting company is obliged to provide quality materials from other markets in the provinces or abroad according to the accepted criteria.

مسئولیت های عمده و اساسی شرکت قرار دادی:

- در صورت ناکامی پروژه به هر عنوان مسئولیت آن بدوش شرکت قرار دادی بوده مستحق اخذ پول نمیشود.
- دفتر بین المللی پاملر نه پروژه ها را با استفاده از مواد استاندارد که دارای کیفیت عالی بوده در نظر گرفته است بنا شرکت قرار دادی مکلف به تعمیم و تطبیق معیاری آن میباشد.
- هرگاه مواد با کیفیت از نزدیکترین مارکیت های محل قابل دسترس نباشد شرکت قرار دادی مکلف است از سایر مارکیت های ولایات و یا هم خارج از کشور مواد با کیفیت را طبق معیارات قبول شده تهیه نماید.

Miscellaneous works:

1. The Contractor should select one local person with counsel of people to have him from start till the end of the project work and train him on damage points of the project because the local people would take the project maintenance responsibilities after the project is done.
2. For the normal progress of construction works and accurate supervision of the project the contractor is responsible to hire a civil engineer to be present in the field till the completion of the project.

کارهای متفرقه:

1. برای اینکه در آینده مردم مراقبت این شبکه را بعهده میگیرند ضروری است تا قرار دادی محترم يك نفر را به مشوره اهالی همراه خود الي ختم کار داشته و آموزش بدهد و از نقاط آسیب پذیر نیز آنرا آگاه نماید.
2. بخاطر پیشرفت نورمال کار های تخنیک و نظارت دقیق از پروژه باید شرکت قرار دادی یکنفر انجنیر خویش را در ساحه توظیف و تا ختم کار ساختمانی پروژه را مراقبت و نظارت نماید.

3. The work of the project will be implemented according to the plan proposed by the WASH Department of the CARE organization. If the work does not progress according to the plan, a notice will be given and it may lead to the disqualification of the contract company in the future.
4. The contractor is responsible for providing work safety conditions and all the laborers should wear a hat, shoes, glasses, and labor uniforms, as well as the labor shirt, which should be designed by the company's arm.

3. کار پروژه طبق پلان مطروحه دیپارتمنت واش دفتر پاملرنه تطبیق میگردد در صورت عدم پیشرفت کار مطابق پلان ، خطاریه داده خواهد شد و ممکن در آینده به واجد شرایط نشدن شرکت قراردادی بینجامد.
4. آماده ساختن شرایط و رعایت اصول تخنیک بی خطر به دوش شرکت قراردادی میباشد و باید تمام کارمندان این پروژه ملبس با موزه، کلاه، عینک ویونیفورم کارگری مجهز بوده و واسکت کارگران مزین به مارک شرکت باشد.