



Afghanistan Social improvement organization (ASIO)

Design and Estimation of Water Supply Project

Project Name: Solar Water supply.



Village: CHOPANI
District: AQTACH
Province: KUNDUZ

NO	DOCUMENT	NO. SHEETS
1	General information and technical specifications	7
2	Key plan+ Site plan	2
3	Hydraulic design	1
4	Drawing of well & Well protection	4
5	Drawing of Solar boundary wall + Detail	3
6	Drawing of 50m ³ RCC water reservoir	2
7	Drawing of Gate valve box, HH connection	2
8	Work plan	1
9	Survey form	

Brief Information

- ✓ No. Of families:150
- ✓ Propose depth of well= 120m
- ✓ No of HH = 150
- ✓ Total Length of PE pipe at network= 6255m
- ✓ Work day = 4538man day
- ✓ Duration Project= 6month

Prepared By: ASIO Design team.

General Information About Project Activities:

The village of Chopani is located in the Aqtach district of Kunduz province. In this village, there are 150 houses and 150 families living.

The activities planned for this network are as follows:

1. Hydrogeological evaluation and research (geophysics of the well area)
2. Drilling of new bore well
3. Construction of a well protection.
4. Construction of RCC reservoir with a capacity of 50 cubic meters.
5. installation of a solar pump system with all its accessories, with all technical specifications included in the estimate. In the estimate, first-class solar panels of excellent quality must be considered, ideally made in Germany or Italy. Otherwise, the price will be based on the installed materials.
6. The necessary pipes and fittings for the project, with details like quantity, type, and quality specified in the estimate.
7. Excavation and backfilling: All excavation and backfilling for trenches in this project should consider the areas and pipe diameters at dimensions of 1 meter by 50 centimeters.
It should be noted that there are several small channels and sometimes Calvert along the route where the pipes must be safely installed. This can be done by either burying the pipes deeper or using GI pipes with fiberglass insulation. All these considerations should be addressed before the contract is finalized. After the contract, work should proceed according to the specific needs of the area.
8. Extension of the network from the main pipe to the house.
9. It should be noted that the implementing company must thoroughly inspect the area before the contract to avoid any issues during implementation and ensure that the proposed estimate fully activates the network, providing prices based on site observations. If there are any problems with this estimate, they must be officially reported to the ASIO

معلومات راجع به فعالیت ها پروژه:

قریه چوپان در ولسوالی آفتاج ولایت کندوز موقعیت دارد در این قریه به تعداد 150 خانه میباشد که تقریبا بیشتر از 150 فامیل زنده گی مینمایند .

فعالیت های که در این شبکه در نظر گرفته شده است قرار ذیل میباشد.

- 1- تحقیقات جیوفزیک ساحه احداث چاه
- 2- حفاری چاه عمیق
- 3- اعمار ساختمان محافظ چاه .
- 4- اعمار ذخیره 50 متر مکعب کانکریتی
- 5- تهیه ونصب سیستم سولر پمپ با تمام محقات آن که تمام مشخصات تخنیکی آن درج برآورد میباشد . در برآورد سولر ها نوع درجه اول با کیفیت عالی در نظر گرفته شده است که باید ساخت جرمنی ویا ایتالوی باشد. در غیر آن قیمت برویت جنس نصب شده پرداخت میگردد.
- 6- پایپ وفتینگ مورد ضرورت در پروژه که جزئیات مانند مقدار ، نوعیت وکیفیت آن در برآورد واضیح ذکر گردیده است. وهمان مواد انتخاب شده تحت نظر نماینده ریاست انکشاف دهات واکستندر مربوطه تائید وبه ساحه انتقال داده شود.
- 7- **کندنکاری وپرکاری :** تمام کندنکاری وپرکاری ترینچ در این پروژه بادر نظر داشت ساحات وقطر پایپ ها با ابعاد یک متر در 50 سانتی متر در نظر گرفته شده است.
قابل ذکر است که در مسیر یکتعداد کانال های خورد ویا بعضا پلچک موقعیت دارد که باید پایپ ها مطابق ضرورت به شکل مصون عبود داده شود یا با عمق بیشتر ویا هم توسط پایپ جی آی وپشم شیشه ، تمام این موارد قبل از قرار داد در نظر گرفته شود. بعداز قرار داد طبق ضرورت ساحه باید کار گردد.
- 8- تمدید شبکه از پایپ عمومی الی خانه
- 9- قابل یاد آوری است شرکت تطبیق کننده باید قبل از قرار داد ساحه را دقیقا بررسی نمایند تا در جریان تطبیق کدام مشکل ایجاد نگردد وهمچنان باید مطمین گردد که با بیل احجام در نظر گرفته شده شبکه کاملا فعال میگردد وبرویت دید ساحوی قیمت ارایه نمایند. ودر صورتکه کدام مشکل این بیل احجام در نظر گرفته داشته باشد قبل از قرار داد برای نماینده ASIO بصورت

Name of project	Solar Water supply	Title	General information about Project and technical Specification for water supply projects.
Location	Chopani village, Aqtach, Kunduz province		

representative before the contract for reconsideration. Otherwise, the project must be executed in the field according to the following requirements.

Technical specifications:

- All reinforced concrete must be marked 200 with a ratio of 1:1.5:3 (cement: sand: gravel).
- All stonework must be done with a ratio of 1:4 (cement: sand).
- All unreinforced concrete must be marked 150 with a ratio of 1:2:4 (cement: sand: gravel).
- All plastering work must have a ratio of 1:3 (cement: sand).
- All waterproof plastering work must have a ratio of 1:3 (cement: sand), and at least 1 kilogram of waterproof powder should be mixed into one bag of cement.
- The reservoirs should be plastered from the inside with waterproof powder on all surfaces, and the roof of the reservoir should be covered with waterproofing material.
- The work for the foundation should have a ratio of 1:3 (cement: sand).
- The reservoirs should have a manhole or entrance door equipped with a lock to prevent contamination of the water.
- Water from the roof of the reservoir and all similar buildings must be drained to prevent rainwater or snow from damaging these buildings.
- There should be a metal ladder for access to the reservoir, which can be used in emergencies for descending into the building.
- Water used in construction must be completely clean and clear.
- Care for the concrete and watering it must continue for 28 days.

رسمی اخبار نمایند تا در مورد تجدید نظر صورت گیرد. در غیر آن باید پروژه مطابق خواسته های ذیل در ساحه تطبیق گردد.

مشخصات تخنیکي :

- تمام کانکریت سیخ دارباید مارک 200 داشته باشد که نسبت آن 1:1.5:3 (سمنت:ریگ: جغل) میباشد.
- تمام کار سنگ کاری باید بامصالح 1:4 (سمنت:ریگ) کارشود.
- تمام کانکریت بدون سیخ مارک 150 باشد که نسبت آن 1:2:4 (سمنت:ریگ:جغل) میباشد.
- تمام پلسترکاری باید نسبت 1:3 (سمنت:ریگ) داشته باشد.
- تمام کار پلسترکاری ضد نفوذ آب باید نسبت 1:3 (سمنت:ریگ) داشته باشد و حداقل 1 کیلوگرام پودر ضد نفوذ آب در یک بوری سمنت مخلوط گردد.
- ذخایر باید از طرف داخل تمام سطوح آن توسط پودر ضد نفوذ آب پلسترکاری گردد. وهمچنان بالای بام ذخیره ایزوگام شود.
- کارهنگاف کاری باید نسبت 1:3 (سمنت:ریگ) داشته باشد.
- ذخایر باید یک منهول یا دروازه ورودی داشته باشد که مجهز با دروازه باشد که قفل شود و از ملوث شدن آب جلوگیری شود.
- آب سقف ذخیره و تمام ساختمان های مشابه باید کشیده شود تا آب باران یا برف این ساختمان ها را تخریب ننماید.
- جهت ورود به ذخیره باید یک زینه فلزی جستی داشته باشد تا در وقت ضرورت جهت پائین شدن به این ساختمان از آن استفاده صورت گیرد.
- آب ایکه در کار های ساختمانی از آن استفاده صورت میگیرد باید کاملاً صاف و پاک باشد.

Name of project	Solar Water supply	Title	General information about Project and technical Specification for water supply projects.
Location	Chopani village, Aqtach, Kunduz province		

Technical Specifications for solar system

General

This specification is intended for solar PV water pumping systems in the range 400Wp to 50kWp. The configuration would generally be stand-alone systems, without batteries, with or without back-up electrical generator.

Many modern solar pumps can be operated selectively from different power supplied, for instance one of solar, or diesel generator, or even grid supply. These hybrid solar/diesel configuration systems are considered in the commissioning and acceptance procedures as pure solar systems. Larger pumping systems which can operate simultaneously from grid and solar, or diesel and solar, are specifically not covered.

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Location

1. The solar water pumps will be installed across various locations in Afghanistan supported by NCA project
2. Specific location will be specified while the sites for these installations are identified during project implementation.

Project Requirements

1. Solar Irradiance of 6 kWh/m²/day should be used to calculate solar PV output for Solar Module.
2. The water source that the water to be pumped is either from deep bore hole pumps and Low level springs.
3. Before supply and delivery of the pumps, details for matching required specifications will be provided.

General design requirements

The purpose of this specification is to maximize the following system characteristics:

- ✓ robustness and reliability of the installation

- مراقبت کار کانکریت و آب دادن به آن باید تا 28 روز ادامه پیدا کند.

مشخصات تخنیکي سیستم سولر :

Photovoltaic (PV) modules (Solar modules)

Certification standards

Compulsory certifications for crystalline modules:

- ✓ IEC 61215 (2005-04): Crystalline silicon terrestrial photovoltaic (PV) modules – Design qualification and type approval
- ✓ IEC 61701 Ed.2: Salt mist corrosion testing of photovoltaic (PV) modules

PV modules shall meet the following requirements:

Particular requirements

- ✓ The photovoltaic (PV) array shall consist of mono-crystalline, PERC mono-crystalline N-type mono crystalline modules. Note that thin film modules are not acceptable.
- ✓ High-power high-voltage modules are favored over low power low-voltage modules. To reduce the attractiveness of the modules to vandals, it is recommended that very large high-voltage modules are used (180Wp or greater, at 24-36V or greater). The number of cells per module offered shall be specified.
- ✓ Only one standard size of module (one manufacturer and model) shall be used to facilitate spares and parts management.

General requirements

- ✓ All PV modules within an array shall be of the same type and hence interchangeable.
- ✓ All material (Panels, water pump, inverter) must be compatible.
- ✓ All martial must be model Germany, Italian or EU.
- ✓ Modules supplied with the Solar Water Pumping systems shall have certificate as per international standard (Special requirements for testing of crystalline silicon photovoltaic (PV) modules) specifications.
- ✓ The efficiency of the PV modules should be minimum 20%.
- ✓ The terminal box on the module should have a provision for "Opening" for replacing the cable, if required.
- ✓ Module Junction should have protection class of IP68, module connector MC4 with 4 mm² cable with a length of 70% of module length.

Name of project	Solar Water supply	Title	General information about Project and technical Specification for water supply projects.
Location	Chopani village, Aqtach, Kunduz province		

- ✓ security of the system
- ✓ consistent and adequate performance of the system
- ✓ cost-effectiveness of water output over the system lifetime
- ✓ low maintenance of the system
- ✓ operation, maintenance and fault-finding simplicity (able to be performed by community operator without specialized tools)
- ✓ long life of the system
- ✓ adequate attention to backup services and parts availability over the system lifetime
- ✓ upgrade-ability
- ✓ minimal environmental impact and aesthetically pleasing

These characteristics will constitute the key criteria whereby tenders are evaluated, and are at the core of the system acceptance test. The onus rests on the bidder/contractor/supplier/installer to ensure that systems are optimally designed, configured, installed and supported in accordance with the above requirements.

Electrical performance

- A. The tolerance of rated output of the PV modules offered shall be positive only. Negative tolerances are not allowed.
- B. Crystalline modules shall have a bypass diode which is located in the PV module junction box so that they can be replaced without replacing the module. (Bypass diodes are installed to prevent hot-spots in modules, which occur often as a result of partial shading of modules. Shading may be more likely when anti-vandalism array-security brackets are used to fix modules into place).
- C. Module warranty: 25 years: The PV modules shall be warranted to retain at least 80 percent of its nominal rated output measured at STC for at least twenty-five years.

Labeling and documentation

- a) Labeling: Each module must be labeled indicating at a minimum:
 1. Manufacturer, Model Number, Serial Number,
 2. Maximum Power Point Watt Rating ($W_p \pm$ tolerance),
 3. Maximum Power Point Current,
 4. Maximum Power Point Voltage,
 5. Open Circuit Voltage and Short Circuit Current of each module.

Solar stand:

In all cases, the design of the mounting structure shall to ensure compliance with the

- ✓ Power temperature coefficient of PV modules shall be at most: $-0.043\%/K$
- ✓ Peak Power of individual module for the solar water pumps at STC must at least be 250 Wp or more. Use of PV module with higher power output is preferred. Module IV characteristics at STC, its temperature coefficient shall be provided for the module.
- ✓ Each module must be labeled indicating at a minimum: Manufacturer, Model Number, Serial Number, Maximum Power Point Watt Rating (W_p tolerance), Maximum Power Point Current, Maximum Power Point Voltage, Open Circuit Voltage and Short Circuit Current.
- ✓ The module framing should be such that it permits secure connection to the mounting structure, prevents edge damage and has the longevity to withstand environmental factors for the duration of the module warranty period. Modules frame minimum dimensions (35 x 35 mm and 1.7 mm)
- ✓ All PV modules used in the array offered for one project must be of same type, same model, same power rating and same manufacturer
- ✓ The module framing should be such that it permits secure connection to the mounting structure, prevents edge damage and has the longevity to withstand environmental factors for the duration of the module warranty period.

pump & motor

✓ Particular requirements

- 1) The motor/pump performance should match the system head/flow characteristics for optimum system performance. And must be compatible to panels and inverter.
- 2) It is preferred that it be made in Germany or Europe. If not found at market chose to recommend designer or field engineers. But IP must be 68
- 3) The motor/pump at system design operating point must have capacity for production of at least 15% more water by application of additional power to the motor. Motor/pump should be sized to handle the maximum power that can be produced by the array and power conditioning, plus at least 15%.
- 4) Any motor types are allowed provided that they meet system performance and system maintenance requirements.
- 5) Any pump types are allowed provided that they meet system performance and system maintenance requirements.
- 6) Only one brand of motor and one brand of pump hall be used to facilitate spares and parts management.
- 7) Non-return valves to be installed where pump type and header pipe volumes are such that significant backflow can occur, i.e. more than 2% of the daily water delivery.

Name of project	Solar Water supply	Title	General information about Project and technical Specification for water supply projects.
Location	Chopani village, Aqtach, Kunduz province		

requirements of: ✓ Orientation: array shall face the equator, and in cases where this is not possible a deviation of ✓ $\pm 15^\circ$ from equator orientation is acceptable. ✓ Try to arrange it according to the Drawing prepared. Of course with the advice of field engineer. ✓ Tilt: structure shall be mounted at a fixed angle to the horizontal. ✓ Shading: array location shall be chosen such that there will be no shading from trees, antennas, other building parts, etc. onto the PV modules between 08:30 and 16:00, in all seasons of the year. ✓ Concrete plinths of the structures may not damage or interfere with any existing structures nor interfere with local activities, plans or services. Structures must themselves be protected from mechanical damage. ✓ Sufficient space around the array mounting shall allow for additional structures should the system be upgraded in the future. Particular attention should be given to future shading from fencing or from the new array structures. Mechanical requirements ✓ Pumps shall be able to handle up to 5% suspended solids (50mg/litre) without damage and should have a 1mm screen around the inlet. Water quality tests (see Project Specification) are to be considered in this regard, for up to 15% suspended solids (150mg/litre). To minimize the effects of silting and wear of impellers on system performance, impellers should generally be manufactured from stainless steel, rather than from plastic/elastomer, but where necessary FKM rubber wear rings may be specified to achieve the long life. In all cases, impellers are to be changeable as they wear, preferably in the field. ✓ Submersible pumps must be able to operate at different submergence levels, since seasonal groundwater level variations can be significant in some parts of the country. Exact maximum depth of submergence is specified in the Project Specification. General requirements and electrical performance ✓ Pumps are to be high efficiency with certified performance curves. ✓ Variable speed pumps or with soft-start is preferred. ✓ The Solar Water Pumping system should use the following types of motor pump sets a) Surface Mounted motor pump set b) Submersible motor pump set.	Solar Pump Controller/Inverter: 1) Maximum Power Point Tracker (MPPT) embedded solar controller should be used to optimally utilize the power from Solar PV array and maximize the discharge. 2) Must be compatible with pump and panels. It is better if they are all from the same company. 3) It is preferable to have it made in Germany. Italian, EU. If it is not available on the market, another brand should be selected in consultation with the design engineer and the field engineer and submitted to the Ru-WatSIP/MRRD for approval. 4) Solar controller shall have IP 65 protection or have box. 5) Protection system with sensors should be incorporated in the controller to protect the solar water pump set against dry running, open circuit, accidental output short circuit, under voltage, reverse polarity, lightening arrestor. 6) Reliable DC circuit breaker suitable for switching DC power ON or OFF shall be provided in the solar pump controller. 7) Suitable size of UV cable shall be used in enough length for interconnection between solar PV array to the controller and the controller to the solar water pump set. 8) Controller shall be provided its specification with maximum input voltage, maximum current, and its maximum efficiency which should not be less than 95%. Electrical earthing 1) Systems which incorporate an inverter and AC distribution system require electrical system earthing. Earth leakage protection is additionally required. System electrical grounding shall only occur on the AC side of a system, where the AC neutral conductor is connected to the consumer earth conductor, at the input to the AC distribution board. Neither the positive nor the negative DC conductors are grounded. The maximum allowable earth fault impedance (Z_e) between consumer and earth terminal to earth electrode shall be 1.7 Ohms, including earth electrode connection (but excluding the earth electrode earth impedance). 2) All connections will be terminated with cable lugs crimped to the insulated stranded copper earth wire and bolted to structures, distribution boards and casings 3) All earth electrodes used shall be bare copper plated earth rods, of length at
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Name of project	Solar Water supply	Title	General information about Project and technical Specification for water supply projects.
Location	Chopani village, Aqtach, Kunduz province		

- ✓ The moto-pump set shall be mono block DC/AC centrifugal motor pump set with impeller mounted directly on the motor shaft and with appropriate mechanical seals which ensures zero leakage.
- ✓ The pump shall have the following built protection- dry run protection, over and under voltage protection, overload protection, temperature protection.
- ✓ The wire to water efficiency shall not be less than 50% and the performance curves for the pumps should be provided.
- ✓ Pump performance curve i.e. flow vs input pump power should be provided with its technical data sheet provided by the principal manufacturer.

Pressure-relief valves

In general, pressure relief valves are not required. However, at sites where control/globe or gate valves have been installed in combination with sensitive diaphragm pumps, and where sudden closure of such valves could cause pump damage, suitable pressure relief valves are to be installed at the control/gate valve inlet.

Further, at sites where water freezing is a possibility, positive displacement pumping systems must be installed with an additional, suitably rated pressure relief valve fitted to the pump to prevent damage to the pump in the event of pipe freezing. See Schedule of Drawings: DWG.STR.3. Location of main valves and metering for the typical layout.

least 1.5m. The spikes shall be driven vertically into the ground till buried to a depth of 300mm.

- 4) The maximum earth electrode earth impedance target is 100 ohms. This figure is sufficient to fulfil functions of (i) array lightning surge earth path, (ii) system bonding and equipment protection, and
- 5) (iii) enable earth leakage device fault tripping.
- 6) **Submersible Pump Motor Earthing**
- 7) The pump supplier may specify special requirements for submersible pump earthing which are compatible with its power conditioner. The pump itself may not be used as a systems or equipment earth electrode.

Water-meter

The water meters shall be a flow totalizer of a mechanical nature. The meter shall be robust and protected against external damage by a suitable cover. It shall be constructed of suitable corrosion resistant materials against internal damage. Water quality tests are to be considered in this regard.

The water meter should be a large bowl and preferably made in Turkey or Iran with high-quality brass.

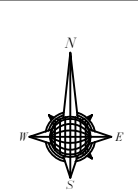
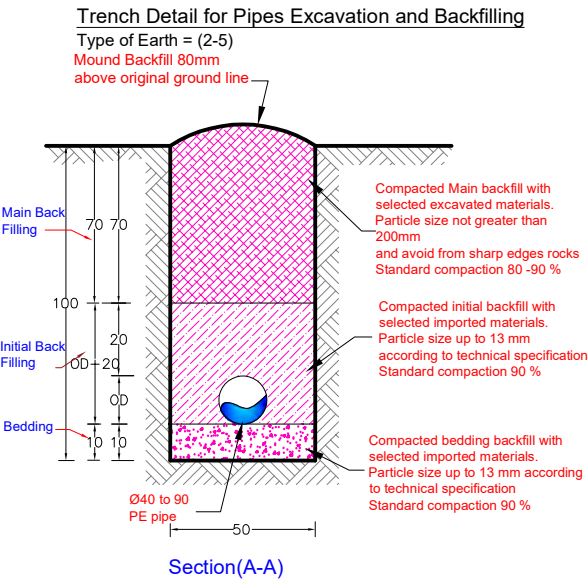
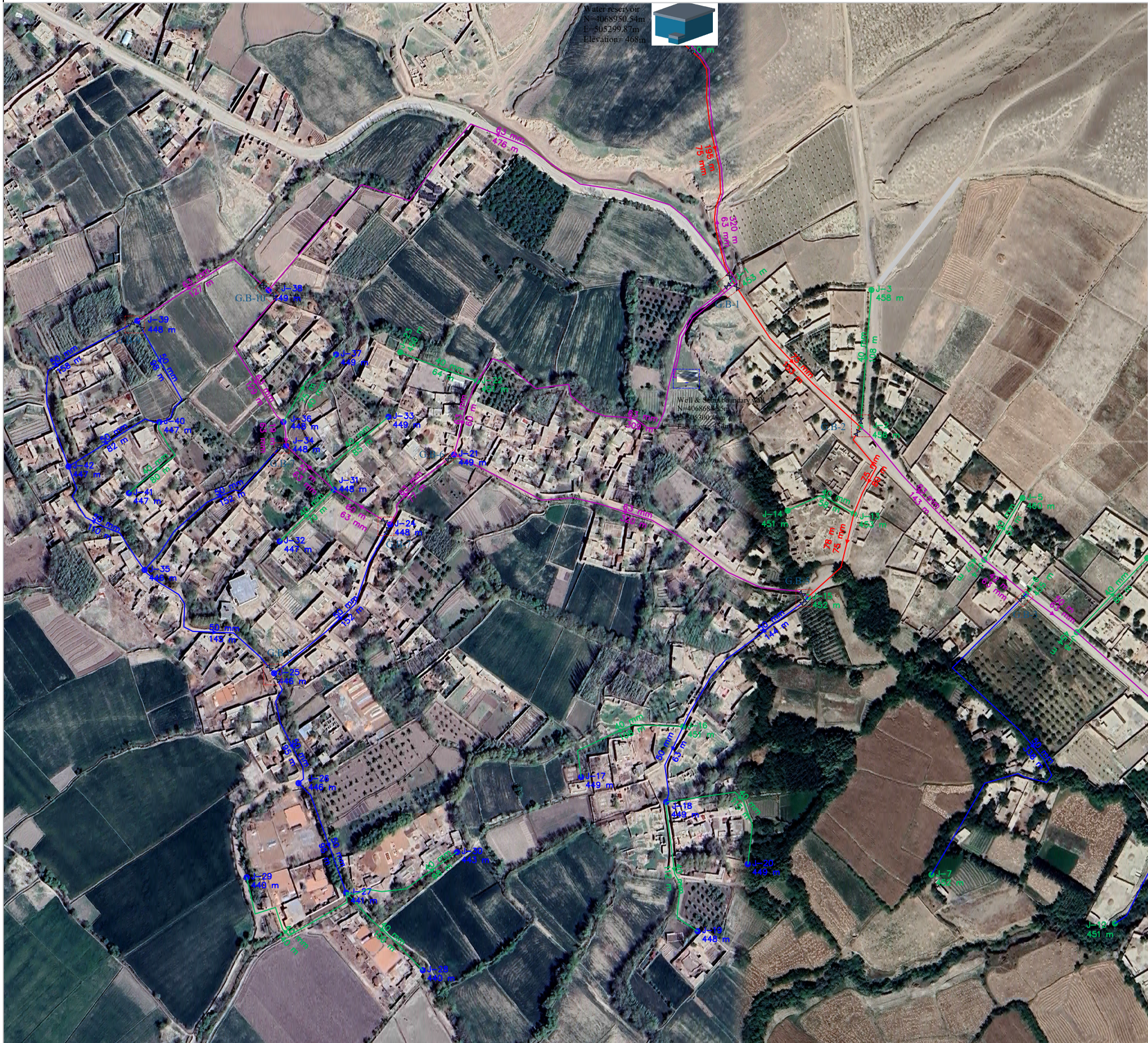
Note: All materials such as solar systems, pipe fittings, etc. must be selected in consultation with the designer and field engineer (Project manager) ASIO and then submitted to the MRRD for approval.

Name of project	Solar Water supply	Title	General information about Project and technical Specification for water supply projects.
Location	Chopani village, Aqtach, Kunduz province		

Key Plan of water supply project for Chopani Villages, Aqtash Distract, Kunduz Province

Kunduz

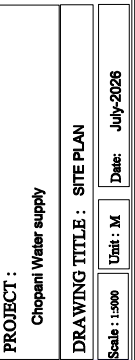
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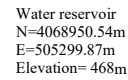
PROJECT :	Chopani Water supply	
	DRAWING TITLE :	SITE PLAN
REVIEWED BY	MRRD/Ru-WatSIP	Unit : M
		Date: July-2026
DESIGNED BY	NSA	Scale : 1:500

SURVEYED BY	Eng. M.Sadiq Sahil	REVIEWED BY	MRRD/Ru-WatSIP	APPROVED BY	NSA
DESIGNED BY	Design team	CHECKED BY	Design team		

Kunduz



Mound Backfill 80mm
above original ground line —



Well & Solar boundary wall
N=4068688.85m
E=505300.49m
Elevation= 454m

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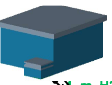
Eng. M.Sadiq Sahil	
Desion team	

Eng. M.Sadiq

Eng. M.Sadiq

Hydraulic sheet design of water supply project for Chopani Villages, Aqtash Distract, Kunduz Province

Water reservoir
N=4068950.54m
E=505299.87m
Elevation= 468m



1.5 m H2O

0.9 L/s

0.3 m/s

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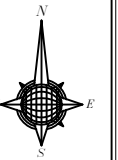
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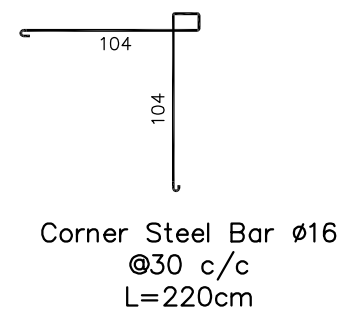
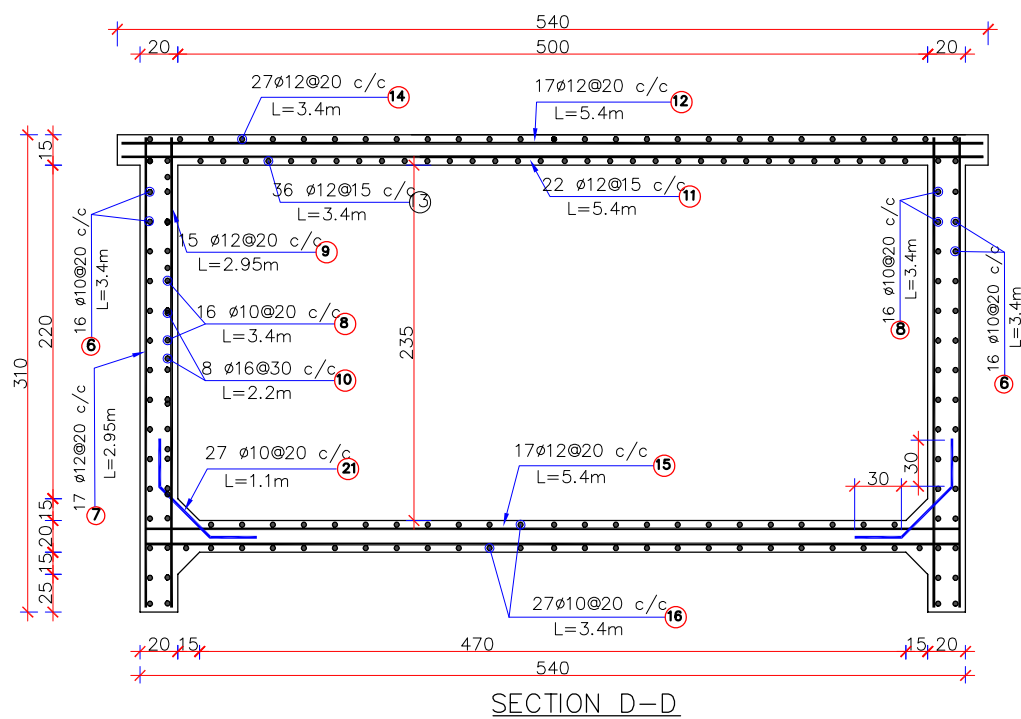


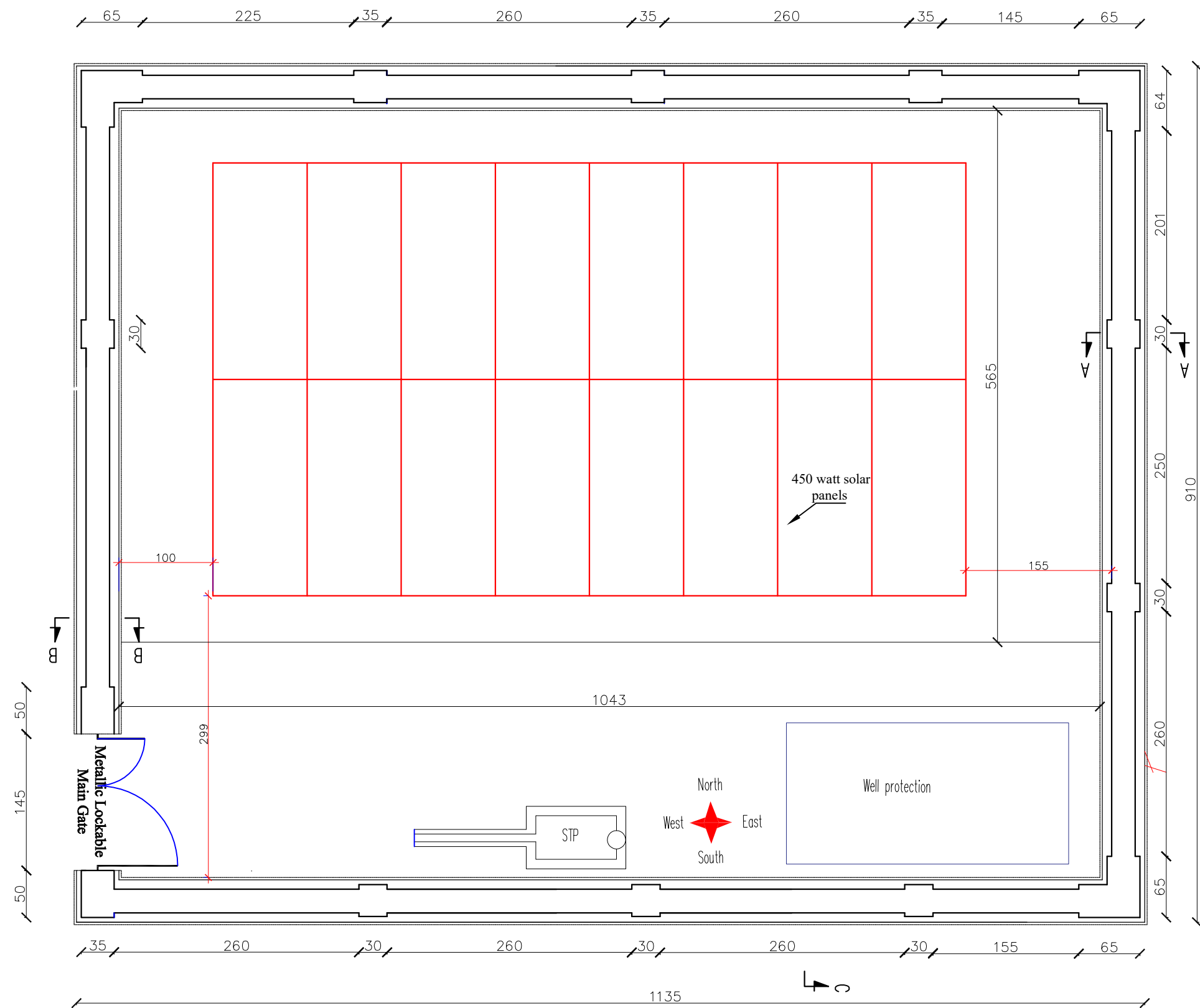
- Note:**
- 1- All dimensions are in cm unless otherwise stated.
 - 2- During RCC work vibrator must be used to avoid water leakage from reservoir.
 - 3- All PCC works should be with 1:2:4 mortar unless otherwise stated.
 - 4- All RCC works should be with 1:1.5:3 mortar.
 - 5- Isolation material is glass 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.

Chopani Water supply	
DRAWING TITLE : SITE PLAN	
Scale : 1:5000	Unit : M
Date: July-2026	

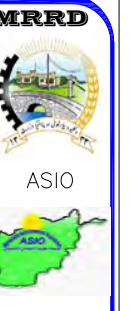
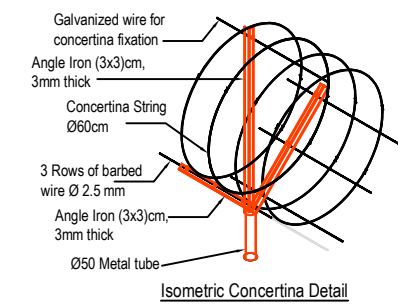
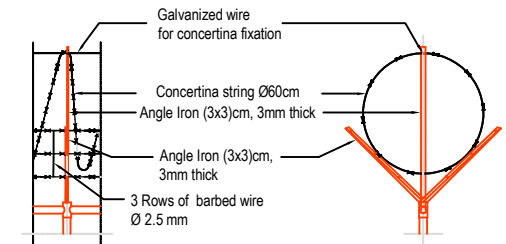
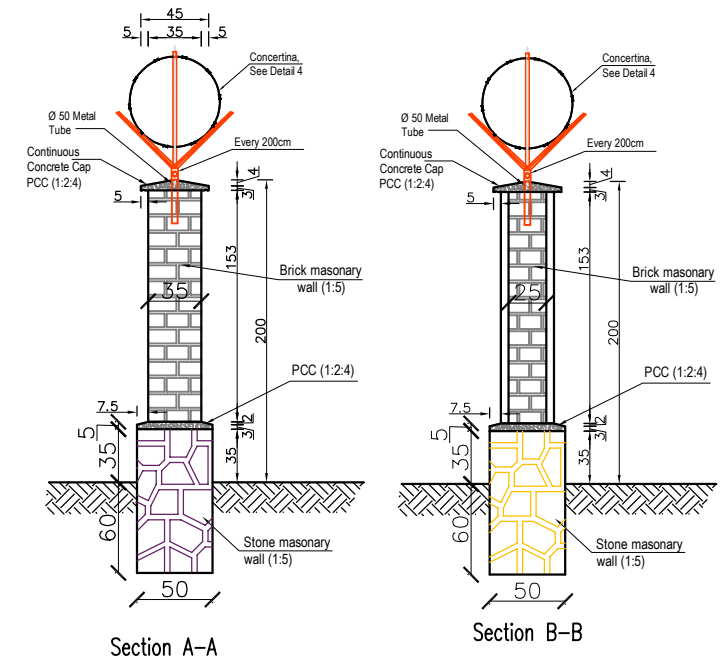
REVIEWED BY	<i>MRKD/Ku-WatSih</i>
APPROVED BY	<i>NSA</i>

DESIGNED BY	<i>Design team</i>
CHECKED BY	<i>Design team</i>





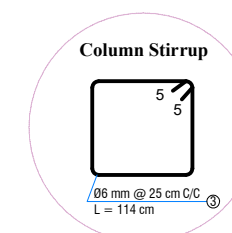
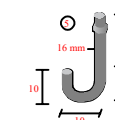
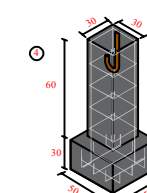
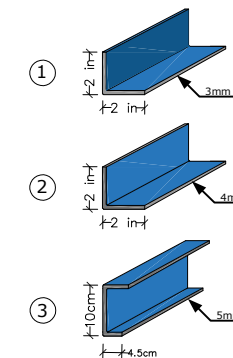
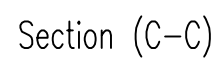
Plan of Boundary wall

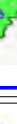


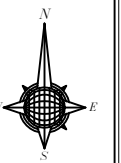
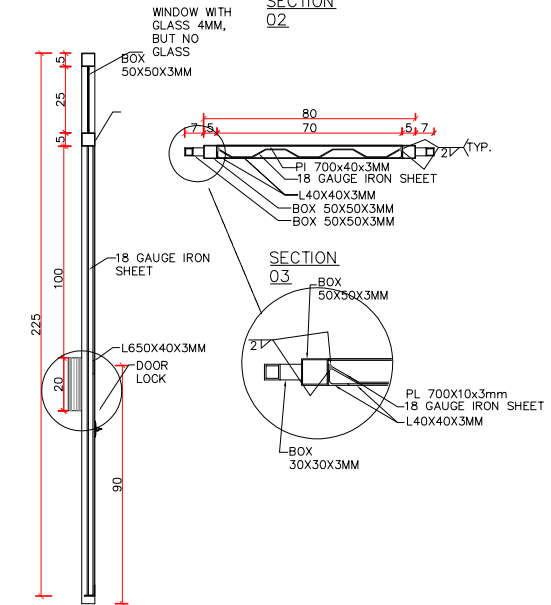
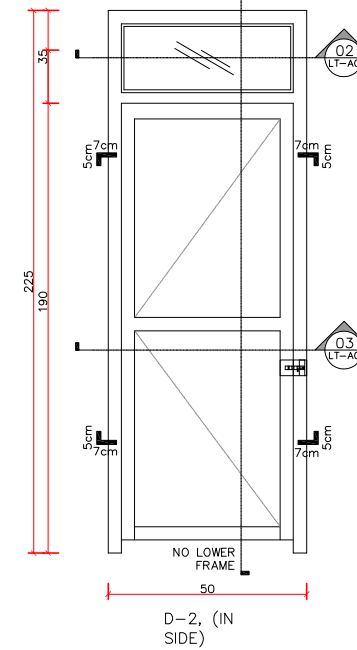
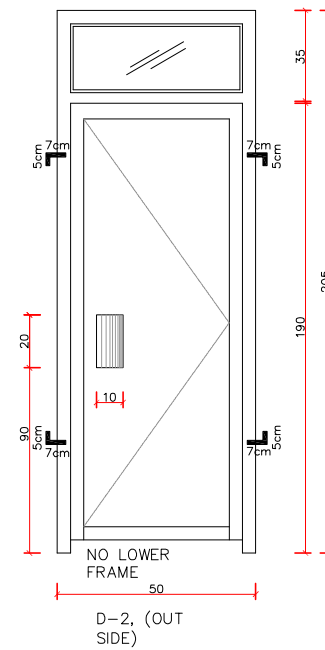
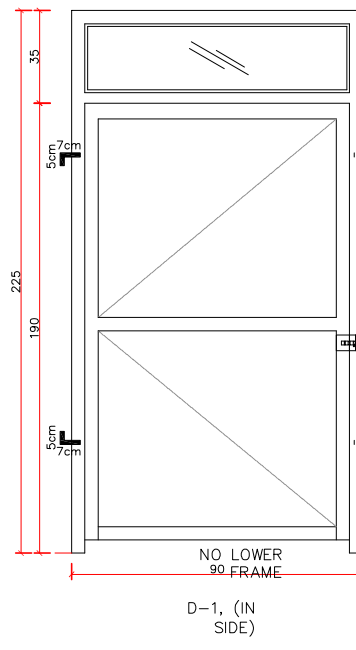
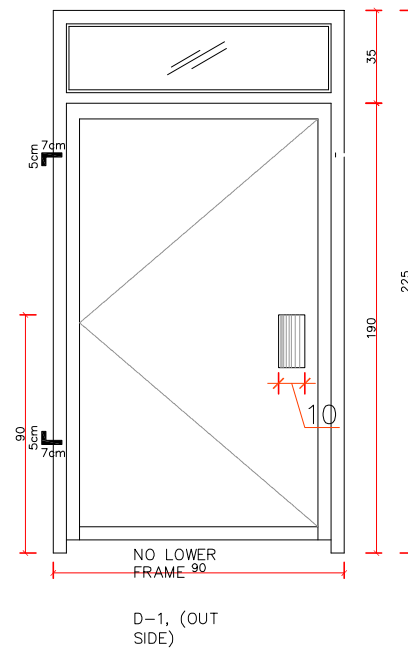
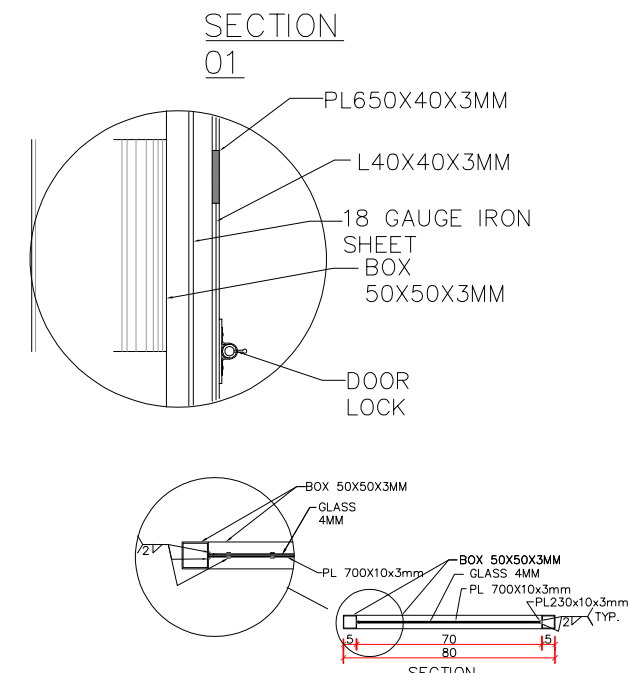
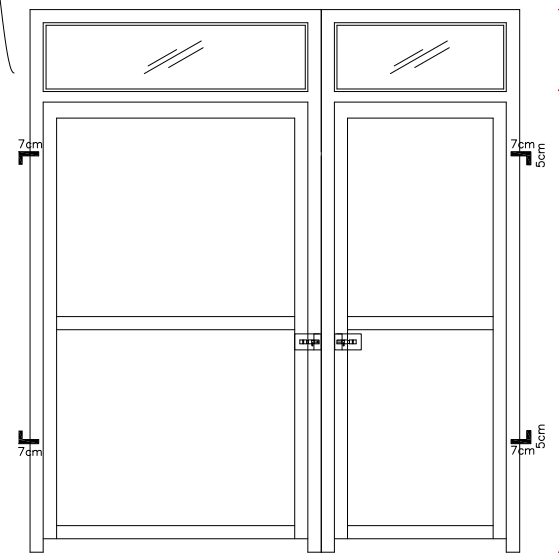
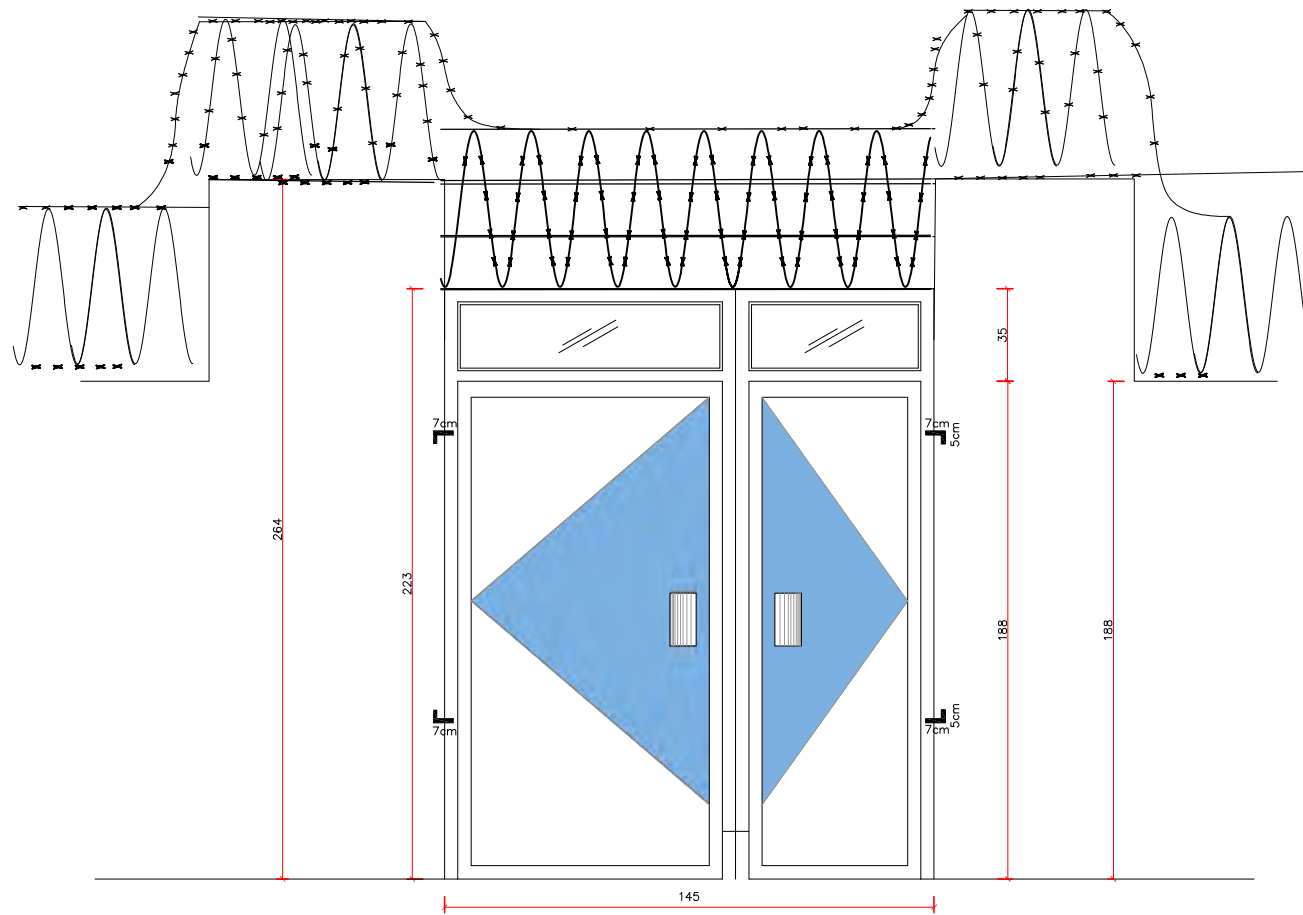
PROJECT :		Chopani Water supply
DRAWING TITLE :		SITE PLAN
Scale :	Unit :	Date :
1:1000	M	July-2026

MRRD/Ru-WatSIP		NSA
REVIEWED BY	APPROVED BY	

SURVEYED BY	DESIGNED BY	CHECKED BY
Eng. M.Sadiq Sahil	Design team	Design team



SURVEYED BY		<i>Eng. M.Sadiq Sahai</i>		REVIEWED BY	<i>MRRD/Ru-W/aSIP</i>	PROJECT : Chopani Water supply	 	 NCA			
DESIGNED BY		<i>Design team</i>							APPROVED BY	<i>NSA</i>	DRAWING TITLE : SITE PLAN
CHECKED BY		<i>Design team</i>									Scale : 1:5000 Unit : M Date : July-2026



PROJECT : Chopani Water supply
DRAWING TITLE : SITE PLAN
Scale : 1:500
Unit : M
Date : July-2026

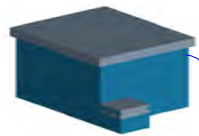
MRD/Ru-WatSIP
NSA

REVIEWED BY
APPROVED BY

Eng. M.Sadiq Sahil
Design team
Design team

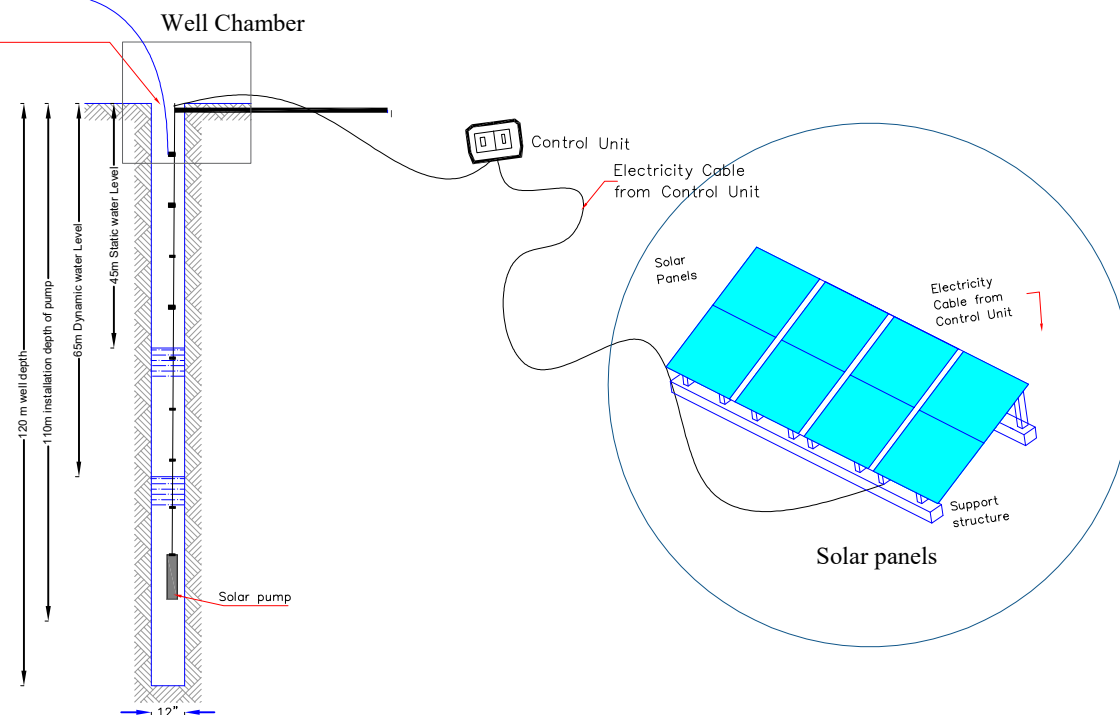
SURVEYED BY
DESIGNED BY
CHECKED BY

Typical drawing from well to Water reservoir & Solar pump system



50cub new water reservoir

Propose well with the depth of 120m and diameter of drilling 12 inch Rotary, the casing and filter 8 inch the water pump must be prepare 4inch compatible



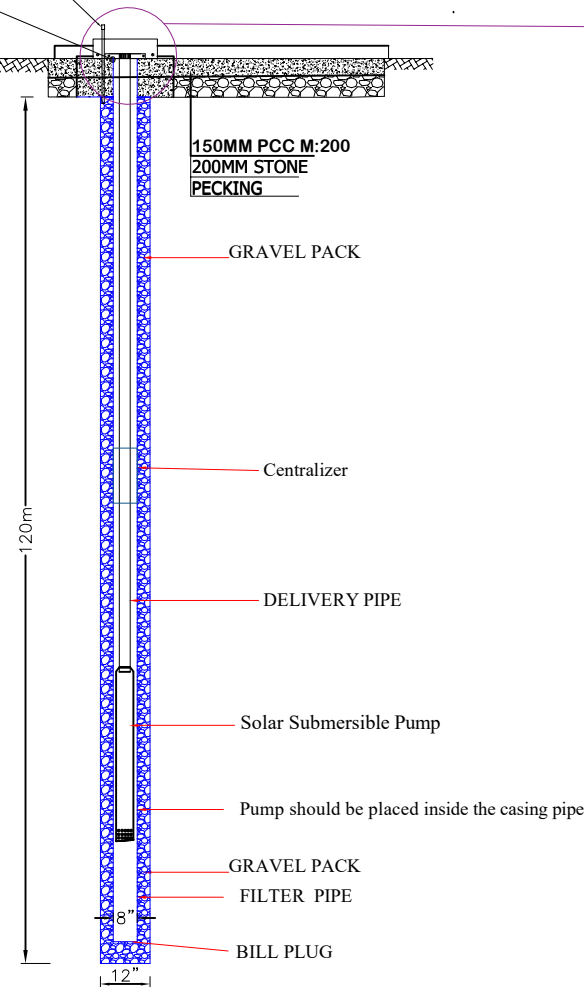
SURVEYED BY	M.Sadiq Sohail	CHECKED BY	ASIO design team	SCALE	As Shown	PROVINCE	Kunduz	PROJECT NAME	Solar water supply projects
DESIGNED BY	ASIO design Team	REVIEWED BY	MRRD	DATE	July/2026	DISTRICT	Aqtach	DRAWING TITLE	
DRAWN BY	ASIO design Team	APPROVED BY	NCA	DRAWING NO.		Village	Chopani		Well protection



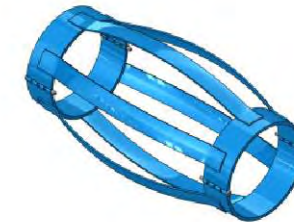
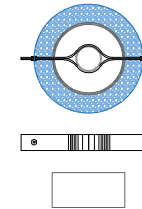
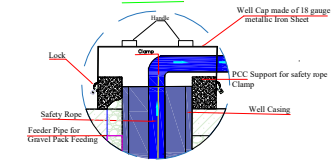
WELL SECTION

PVC Pipe 2inch for pouring of Gravel

WELL CASING



Detail: 1



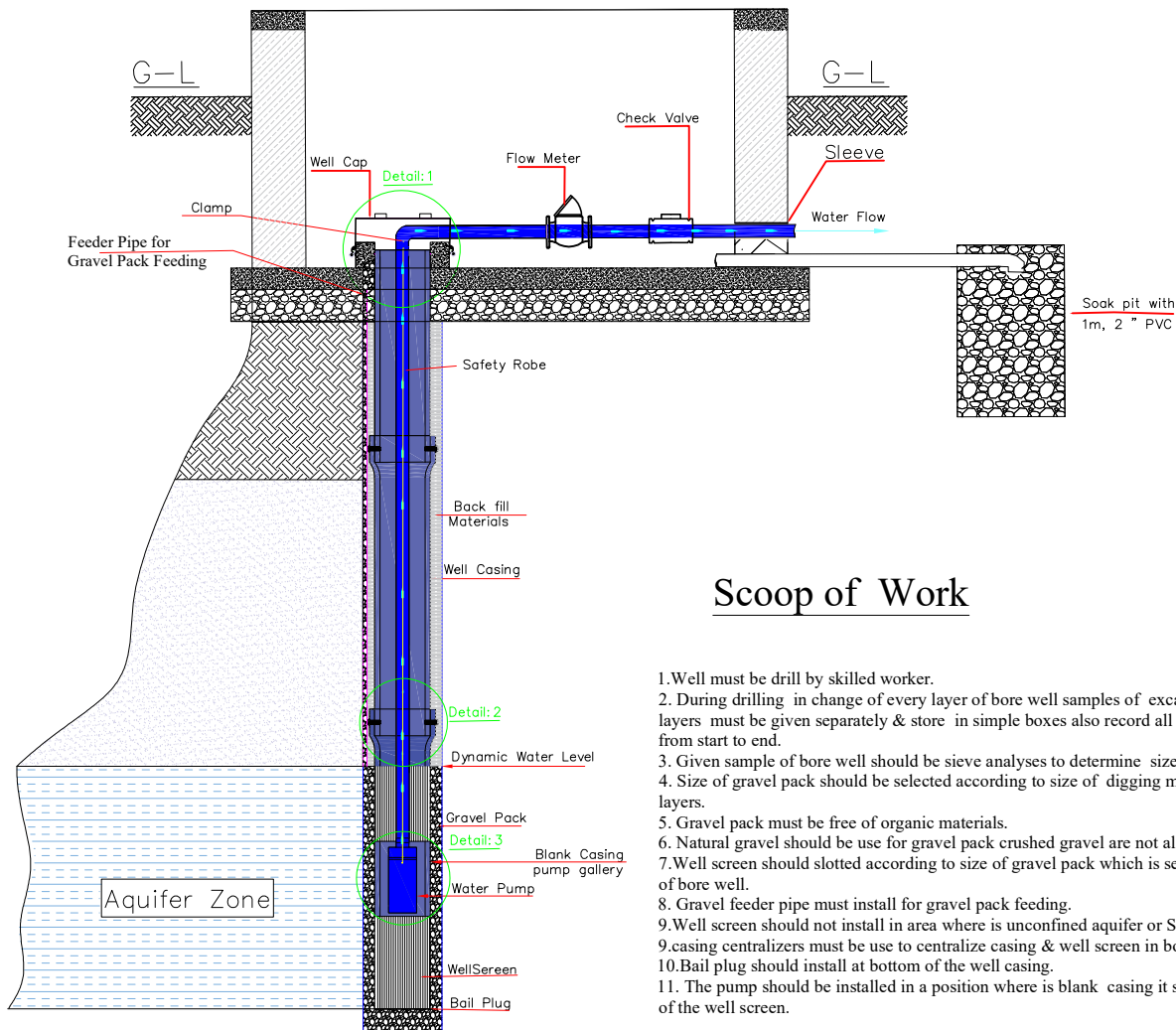
Notes

- 1-Well designed by WTSAN department.
- 2-The working pressure for pipes and valves will be 16 bar
- 3- If the ground stratum are made of bed rocks it no need for installation of casing pipes. if the stratum are made of Loss soil it should be stablized by installation casing pipes.
- 4-Each drilled strata depth should be noted and soil sample should be kept in a sample box separately .
- 5-Pump test for 8 hours.
- 6-the depth of filter pipe has considered based on the previous experience . the true depth will be determined after well practical drilling.

Centralizer is designed to provide optimal standoff in the wellbore for efficient mud and cement displacement. They can be run in cased or open holes and under-reamed sections. The heat-treated spring steel bows ensure maximum restoring forces and low starting forces. The welded hinged end design allows an easy installation over stop collars or casing collars.

	SURVEYED BY	M.Sadiq Sohail	CHECKED BY	AISO design team	SCALE	As Shown		PROVINCE	Kunduz	PROJECT NAME	
	DESIGNED BY	ASIO design Team	REVIEWED BY	MRRD	DATE	July/2026		DISTRICT	Aqtach	Solar water supply projects	
	DRAWN BY	ASIO design Team	APPROVED BY	NCA	DRAWING NO.			Village	Chopani	DRAWING TITLE	Well protection

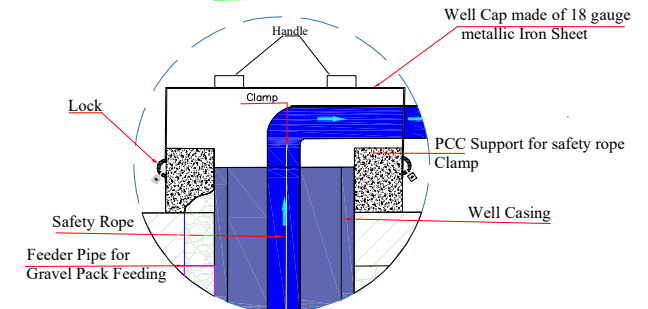
Details for Well Section



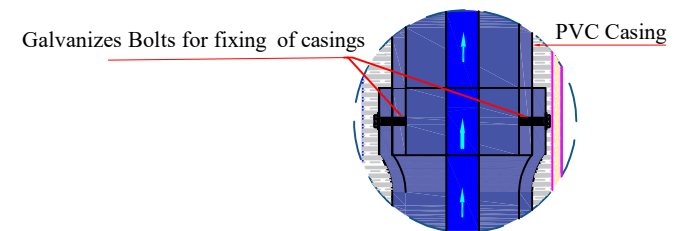
Scoop of Work

1. Well must be drill by skilled worker.
2. During drilling in change of every layer of bore well samples of excavated materials from each layers must be given separately & store in simple boxes also record all type of layers accurately from start to end.
3. Given sample of bore well should be sieve analyses to determine size of filter for well screen.
4. Size of gravel pack should be selected according to size of digging materials of the bore well layers.
5. Gravel pack must be free of organic materials.
6. Natural gravel should be use for gravel pack crushed gravel are not allowed to use for.
7. Well screen should slotted according to size of gravel pack which is selected due to desired layers of bore well.
8. Gravel feeder pipe must install for gravel pack feeding.
9. Well screen should not install in area where is unconfined aquifer or Soil & sandy layers.
9. casing centralizers must be use to centralize casing & well screen in bore well.
10. Bail plug should install at bottom of the well casing.
11. The pump should be installed in a position where is blank casing it should not be install in front of the well screen.

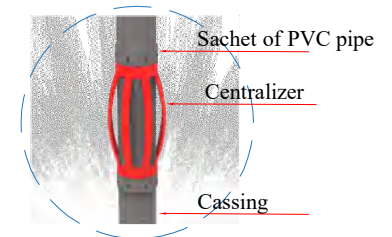
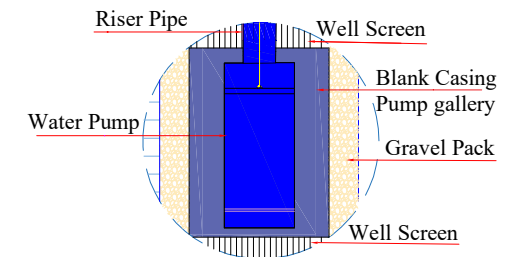
Detail:1



Detail:2



Detail:3

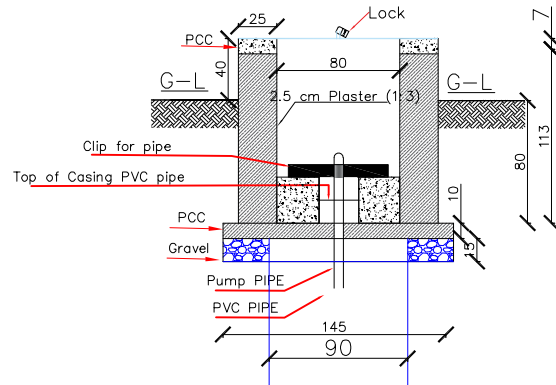


SURVEYED BY	M.Sadiq Sohail	CHECKED BY	AISO design team	SCALE	As Shown	PROVINCE	Kunduz	PROJECT NAME	Solar water supply projects
DESIGNED BY	ASIO design Team	REVIEWED BY	MRRD	DATE	July/2026	DISTRICT	Aqtach	DRAWING TITLE	
DRAWN BY	ASIO design Team	APPROVED BY	NCA	DRAWING NO.		Village	Chopani		Well protection

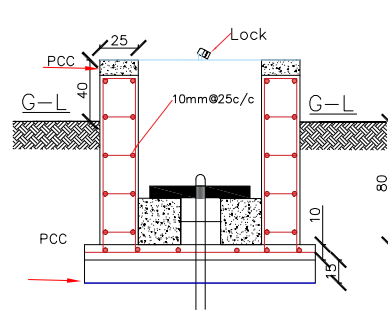


Plan & Section of Well Protection Box

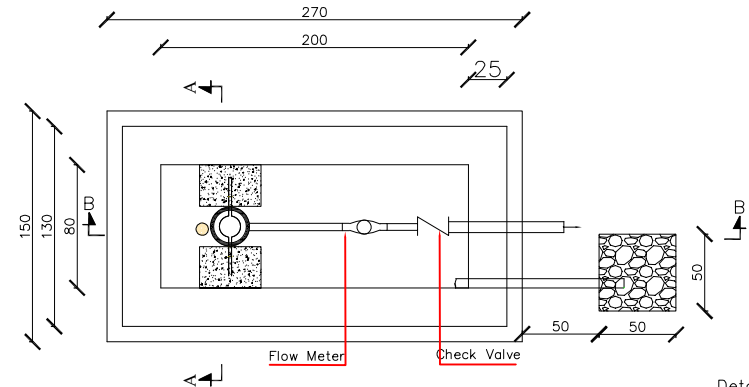
Section A-A



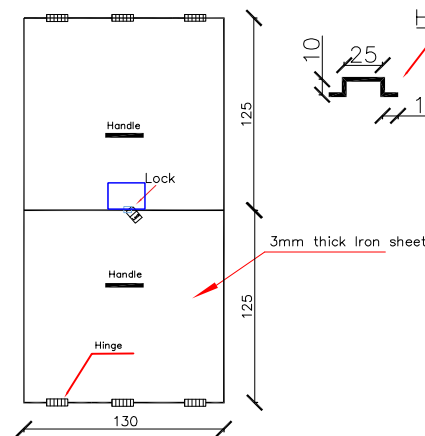
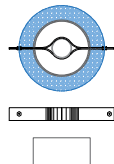
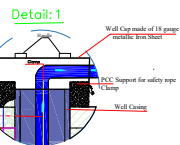
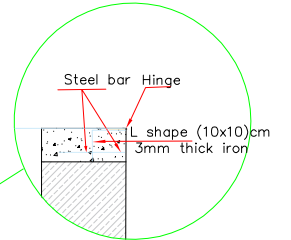
Section of Reinforcement



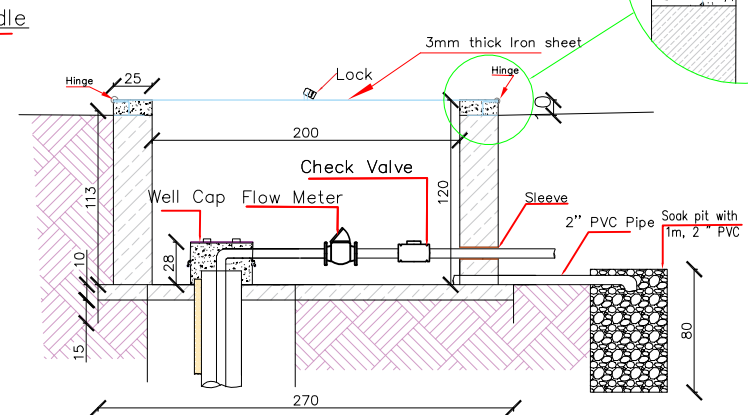
Plan of Well Protection .



Detail: 1



Plan of slab 3mm Iron Sheet



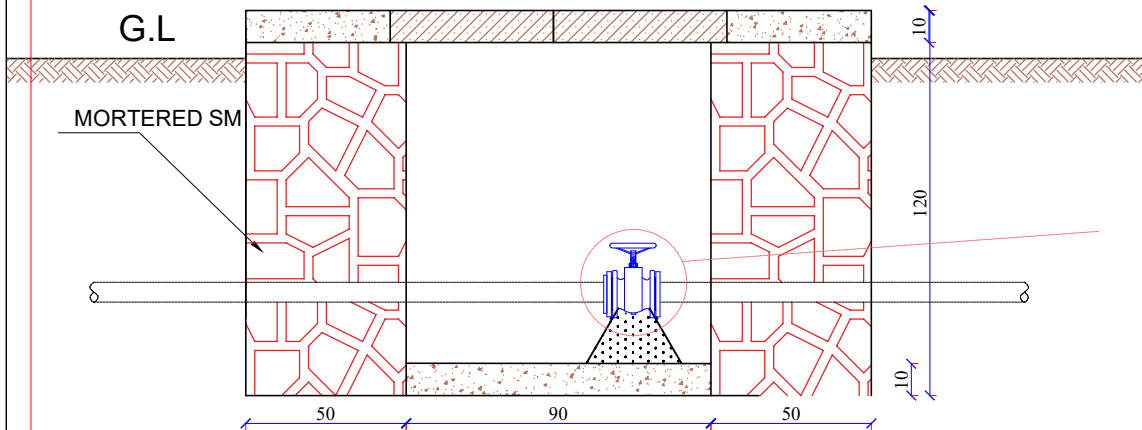
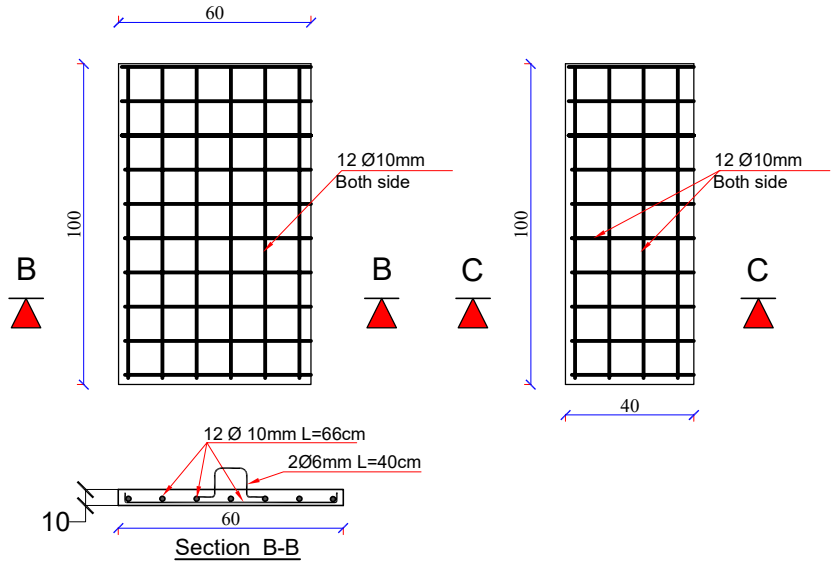
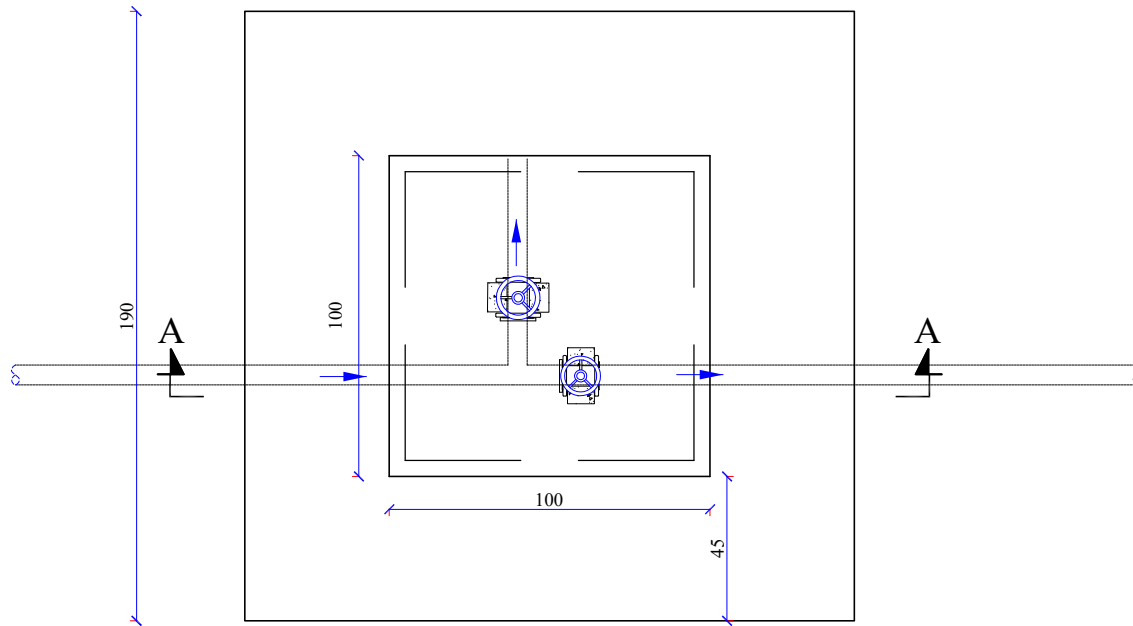
Section B-B

Note: All dimension are in Cm

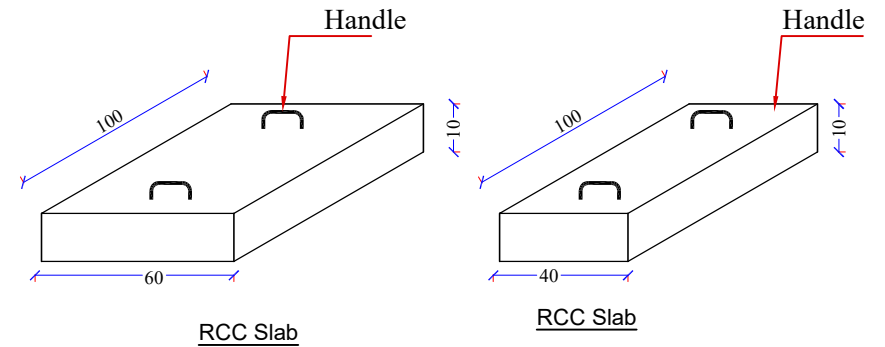


SURVEYED BY	M.Sadiq Sohail	CHECKED BY	ASIO design team	SCALE	As Shown	PROVINCE	Kunduz	PROJECT NAME	Solar water supply projects
DESIGNED BY	ASIO design Team	REVIEWED BY	MRRD	DATE	July/2026	DISTRICT	Aqtach	DRAWING TITLE	Well protection
DRAWN BY	ASIO design Team	APPROVED BY	NCA	DRAWING NO.		Village	Chopani		

Gate VALVE BOX



SECTION A - A



TYPICAL DIMENSIONS OF VALVE CHAMBER

S.NO.	DIAMETER OF VALVE (inch.)	DIMENSION (mm.) (L x B)
1.	2"-8"	1000 X1000



SURVEYED BY *M.Sadiq Sahil*
 DESIGNED BY *ASIO design team*
 DRAWN BY *ASIO design team*

CHECKED BY *ASIO design team*
 REVIEWED BY *MRRD*
 APPROVED BY *NCA*

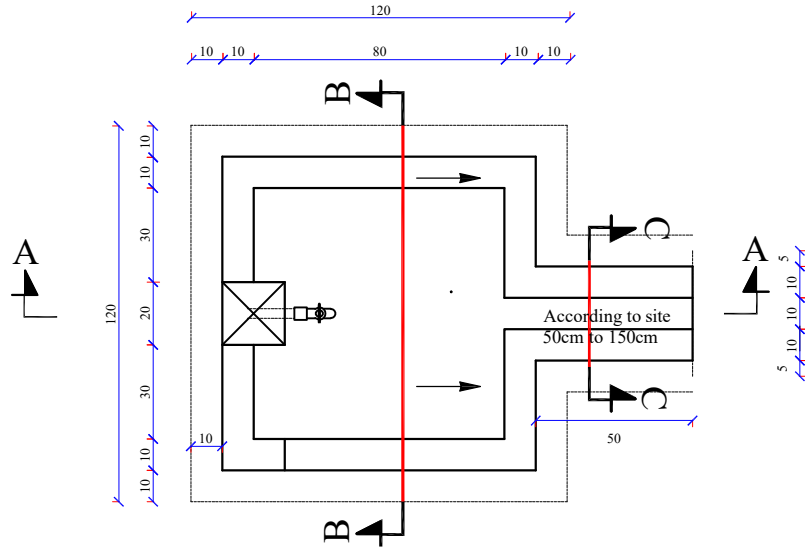
SCALE
 DATE *July/2026*
 DRAWING NO.

SHEET NO
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 1

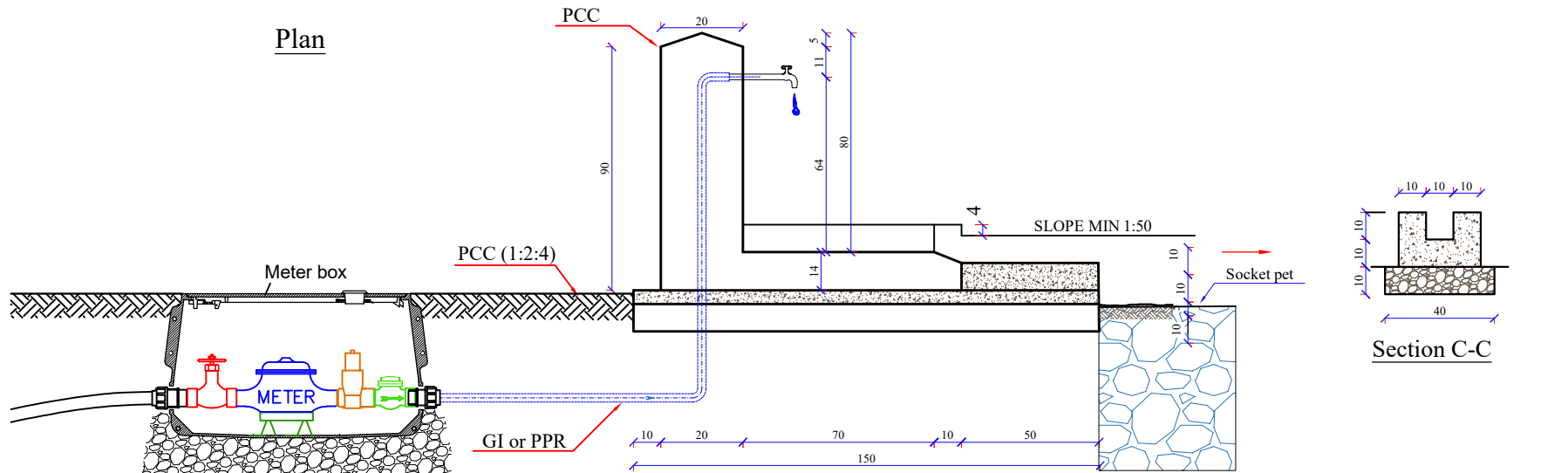
PROVINCE *Kunduz*
 DISTRICT *Aqtash*
 VILLAGE *Chopani*

PROJECT NAME *Solar water supply projects*
 DRAWING TITLE *Gate Valve Box*

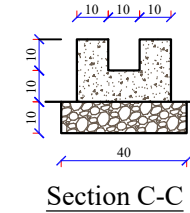
Stand Tap for House connection



Plan



Section A-A



Section C-C

Work plan for the Water Supply fo CHOPANI village , AQTACH District, KUNDUZ Province Pipe scheme project



S/N	Themes						First Month				Second Month				Third Month				Forth Month				five Months				6th Months				
No	List of Activities	Skilled labor	unskilled Labor	Unit	Qty	Work days	Week-1	Week-2	Week-3	Week-4	Week-5	Week-6	Week-7	Week-8	Week-9	Week-10	Week-11	Week-12	Week-13	Week-14	Week-15	Week-16	Week-17	Week-18	Week-19	Week-20	Week-21	Week-22	Week-23	Week-24	Week-25
1	Mobilization of Materials to Site	1	3	LS	1	6																									
2	Site installation of Contractor Remuneration for mobilisation, preparation of site, pump test	2	10	LS	1	6																									
3	Well drilling with Rotary machine with diameter of (12") in all soil stratum and sampling from every geological formations including clay for drilling	2	2	Job	1	35																									
4	Construction for 50 RCC Water reservoir	4	10	Job	1	42																									
5	Supply and installation of solar pump system	1	3	Job	1	24																									
6	Construction of Gate valve box	1	4	Job	1	18																									
7	Excavation, Laying, and Back filling of the pipe from water reservoir 50 m3 to end construction (installation pipe & fitting) and House connection from main pipe to inside houses	4	30	Job	1	102																									
8	Site Clearance and Hand over	1	5	Job	1	10																									

پلان کاری در مدت 6 ماه که توسط تعداد مجموعی کارگران غیر ماهر 3822 نفر و تعداد مجموعی کارگران ماهر 716 نفر تطبیق گردد. که در مجموع 4538 روز کاری برای مردم ایجاد میگردد.

کنترل کننده

مرور کننده

چک کننده

ترکیب دهنده