



## Design and Estimation of WASH Project

*Project Name: Rehabilitation of Solar Power Water supply network*

**Village:** Speen Jumat  
**District:** Khogyana  
**Province:** Ningarhar  
**Funded by:** LDSCAU  
**Implemented by:** International Medical Corps (IMC)  
**Implementing Date:** 2024- 2025 Year

### Brief Information

- No. of beneficiaries: 2800 individuals, 400 Families
- Type of ground: 3 to 4
- No. of Stand Posts: 30
- Size & type of Reservoir: 20 m<sup>3</sup> R.C.C Elevated Tank
- Length of Water Supply Network: 1890 m
- Type of Project: Combined Pumping & Gravity System
- Total working days: 60 Days
- Project Location GPS: Latitude, long: 34.347124°, 70.181282°

Prepared By: IMC WASH Design Team

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### **PROJECT SUMMARY INFORMATION**

**Project Title:** Rehabilitation and extension of existing Solar powered water supply network to Conflict and Natural Disasters affected targeted populations in Ningarhar Province.

**Project Objectives:** Improve access to clean drinking water for populations in Speen Jumat village of Khogyana District, Ningarhar Province.

**Project implementation area:** Speen Jumat , Khogyana District of Ningarhar Province Afghanistan.

**Targeted Population:** 400 families that become (2800 individuals)

**Donor:** LATTER-DAY SAINT CHARITIES AUSTRALIA (LDSA)

**Project Implementer:** International Medical Corps (IMC)

### **ACTIVITIES DISCRIPTIONS**

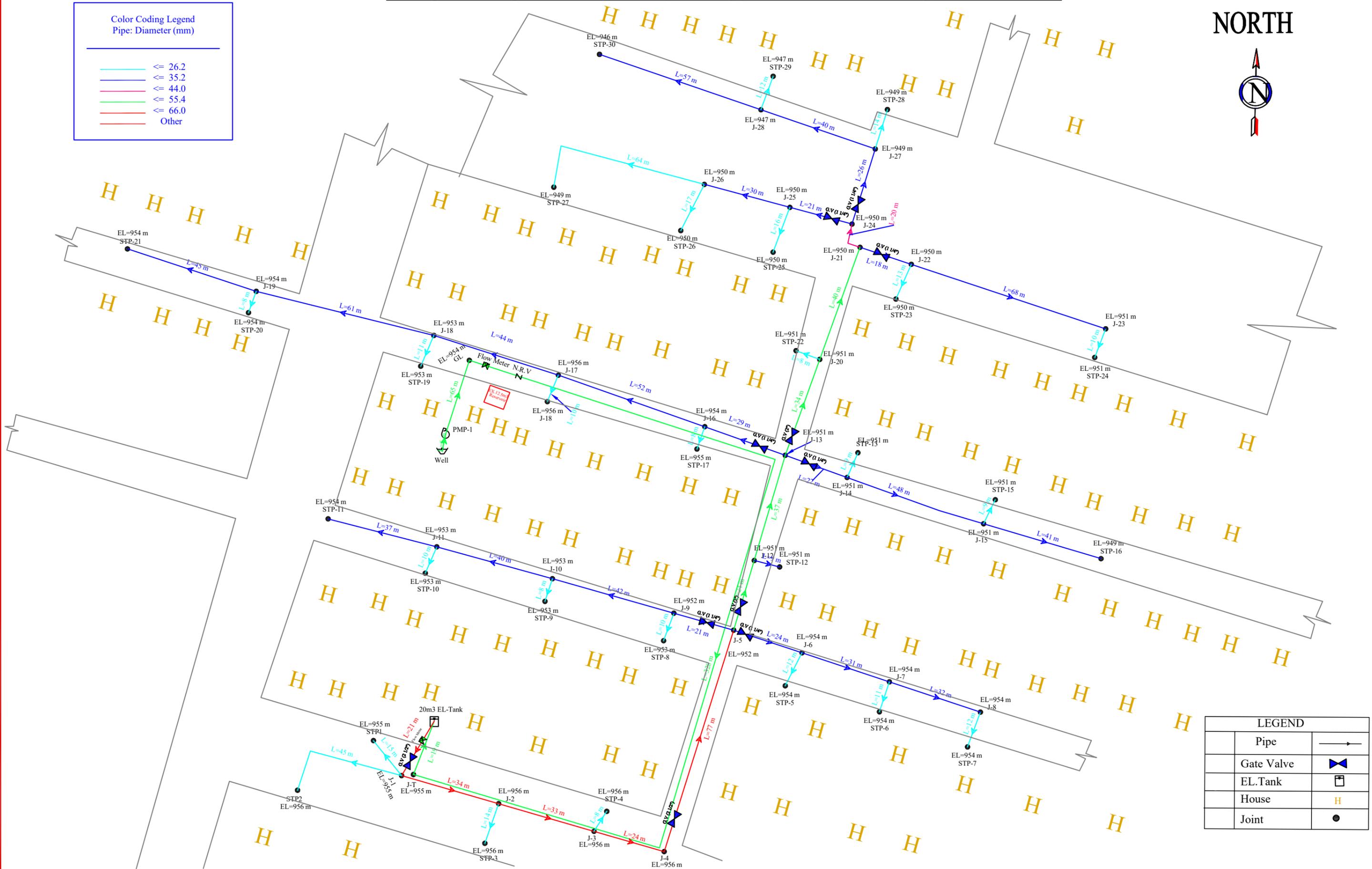
1. Pum test: should be done on existing well at least for 8 hours and data should be recorded.
2. Construction of 20 M3 elevated R.C.C water tank in accordance to the BoQs and drawings with all required activities.
3. Supply and installation of PV system according to the BoQs with all required activities.
4. Rehabilitation of existing well protection box according to the BoQs with all required activities.
5. Construction of 1 Gate valve & flow meter box according to BoQs with all required activities.
6. Construction of 5 Gate valve box according to the BoQ with all required activities.
7. Rehabilitation of of 1 existing stand taps and construction of 1new sock pit for the existing 1 stand taps according to the BoQs and drawings with all required activities.
8. Construction of 29 new stand taps with its sock pit according to the BoQ and drawings with all required activities.
9. Installation of distribution line from reservoir to stand taps with all required pipes, fittings, excavation and filling according to the BoQ and all required activities.

# Site plan of Speen Jumat Village, Khogyana District of Ningarhar Province

NORTH



Color Coding Legend	
Pipe: Diameter (mm)	
<span style="color: cyan;">—</span>	≤ 26.2
<span style="color: blue;">—</span>	≤ 35.2
<span style="color: magenta;">—</span>	≤ 44.0
<span style="color: green;">—</span>	≤ 55.4
<span style="color: red;">—</span>	≤ 66.0
<span style="color: orange;">—</span>	Other



LEGEND	
Pipe	
Gate Valve	
EL-Tank	
House	
Joint	

FUNDED BY:	LDSCAU	SURVEYED BY	WASH Design Team	CHECKED BY	Head of Department	SCALE	1:1125/A3	SHEET NO.	PROVINCE	Ningarhar	PROJECT NAME	<b>Water Supply Project</b>	
INTERNATIONAL MEDICAL CORPS (IMC) PROGRAM DEPARTMENT WASH UNIT	DESIGNED BY	WASH Design Team	REVIEWED BY	WASH Advisor	DATE	02.09.2024	DISTRICT		Khogyana	DRAWING TITLE	Site Plan		
	DRAWN BY	WASH Design Team	APPROVED BY	WASH Advisor	DRAWING NO.		VILLAGE	Speen Jumat					

# Satellite Image Site plan of Speen Jumat Village, Khogyana District of Ningarhar Province

NORTH



**Color Coding Legend**  
Pipe: Diameter (mm)

Light Blue	≤ 26.2
Blue	≤ 35.2
Green	≤ 44.0
Yellow	≤ 55.4
Red	≤ 66.0
Other	Other



FUNDED BY:	LDSCAU	SURVEYED BY	WASH Design Team	CHECKED BY	Head of Department	SCALE	1:1125/A3	SHEET NO.	PROVINCE	Ningarhar	PROJECT NAME	<b>Water Supply Project</b>	
INTERNATIONAL MEDICAL CORPS (IMC) PROGRAM DEPARTMENT WASH UNIT	DESIGNED BY	WASH Design Team	REVIEWED BY	WASH Advisor	DATE	02.09.2024	DISTRICT		Khogyana	DRAWING TITLE	Satellite Image Site Plan		
	DRAWN BY	WASH Design Team	APPROVED BY	WASH Advisor	DRAWING NO.		VILLAGE	Speen Jumat					



## Water Supply network, Source & Water Pump calculation sheet

<b>Province :</b> Ningarhar	<b>District :</b> Khogyanai	<b>Village :</b> Speen Jumat	<b>Type of project: Combined (Pumping &amp; gravity system)</b>
Beneficiaries =	400	House Hold (Families)	
School students =	0	person	
clinic patients =	0	Patient	
Population Growth =	2.2	%	
Design Period =	0	Years <b>( This is existing water supply network )</b>	
Design population =	400	Total Beneficiaries = 2800	Person $P_n = P(1+PG/100)^n$
water demand /Capita =	25	Lpcd	
water demand per Patient =	0	Lpcd	
water demand for student =	0	Lpcd	
Peak Daily coefficient =	1.3		
Peak Hourly coefficient =	2.5		
Average daily demand =	70000	Lit/day =	0.8101852 Lit/Sec
Design water demand =	227500	Lit/day =	2.6331019 Lit/Sec, for network
Discharge of water from source in case of be spring or have power for 24 hr must be:			70 m <sup>3</sup> /day , 2.917 m <sup>3</sup> /hr & 0.81019 Lit/Sec
Discharge of water from source in case of using Solar power for solar irradiation hours must be:			<b>70.00 m<sup>3</sup>/day, 8.750 m<sup>3</sup>/hr &amp; 2.43056 Lit/Sec</b>
Daily average solar Irradiation for current location of the project is	8	Hour/day	it is depend on location of the project.
Q of Pump for daily average solar irradiation hours of the annual days =		70.00 m <sup>3</sup> /day, 8.75 m <sup>3</sup> /hour &	2.430556 Lit/Sec
Demand of water per family for designated period =		568.75 Lit/day, 0.00658 Lit/sec	
Demand of Water for School =	0	m <sup>3</sup> /day	
Demand of Water for Clinic =	0	m <sup>3</sup> /day	

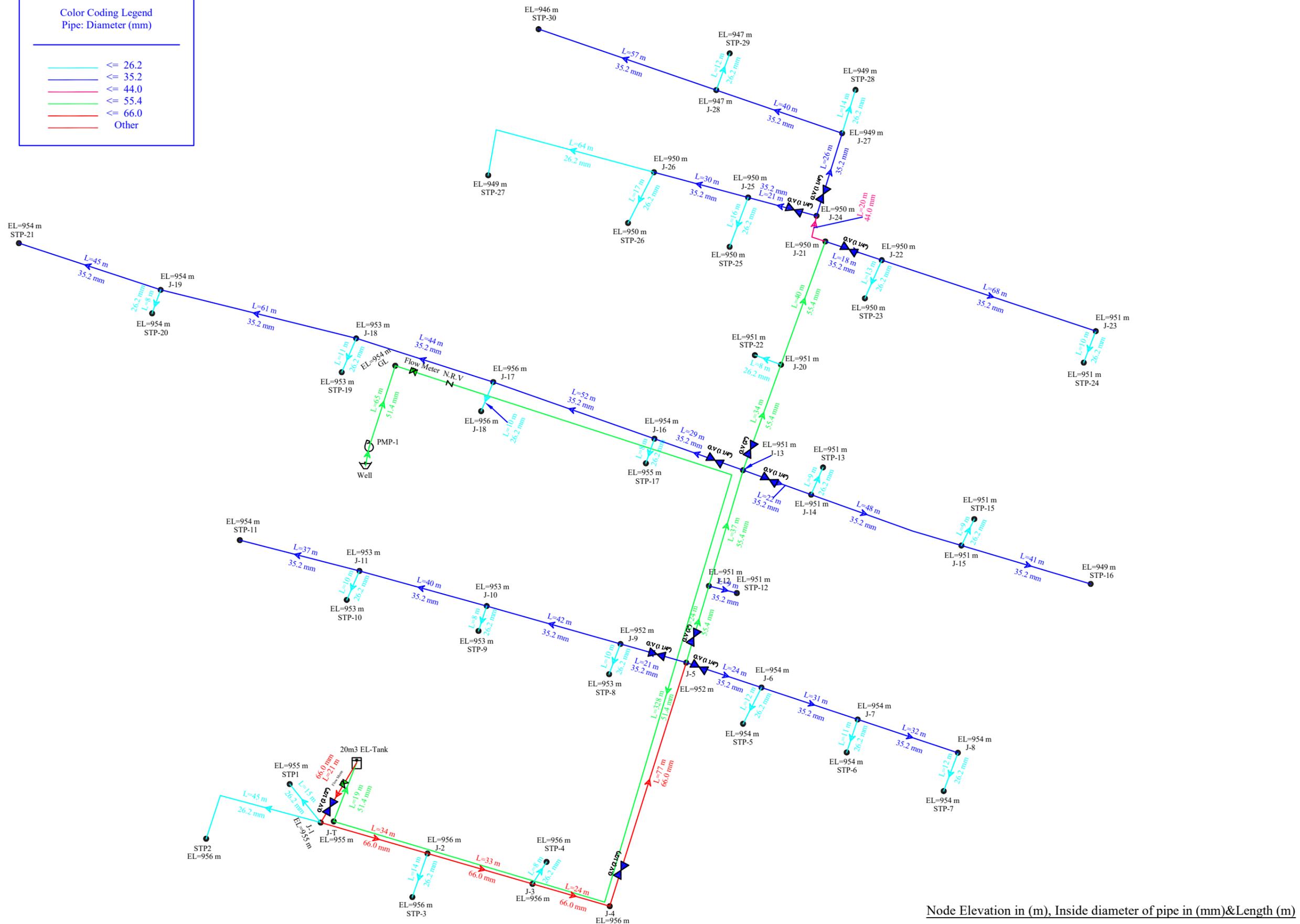
Note: before calculation of the pump and solar pump system we conducted pump test of the existing well to determine yield of existing well, yield of the existing well was 2.5Lit/Sec, so we designed other parameters of the network according to the discharge water from well.

# Hydraulic Design of Speen Jumat Village, Khogyana District of Ningarhar Province

NORTH



Color Coding Legend	
Pipe: Diameter (mm)	
<span style="color: cyan;">—</span>	≤ 26.2
<span style="color: blue;">—</span>	≤ 35.2
<span style="color: magenta;">—</span>	≤ 44.0
<span style="color: green;">—</span>	≤ 55.4
<span style="color: orange;">—</span>	≤ 66.0
<span style="color: red;">—</span>	Other



Node Elevation in (m), Inside diameter of pipe in (mm)&Length (m)

FUNDED BY:	LDSCAU	SURVEYED BY	WASH Design Team	CHECKED BY	Head of Department	SCALE	1:1125/A3	SHEET NO. 1/2	PROVINCE	Ningarhar	PROJECT NAME	Water Supply Project	
INTERNATIONAL MEDICAL CORPS (IMC) PROGRAM DEPARTMENT WASH UNIT	DESIGNED BY	WASH Design Team	REVIEWED BY	WASH Advisor	DATE	02.09.2024	DISTRICT		Khogyana	DRAWING TITLE	Hydraulic Design		
	DRAWN BY	WASH Design Team	APPROVED BY	WASH Advisor	DRAWING NO.		VILLAGE	Speen Jumat					

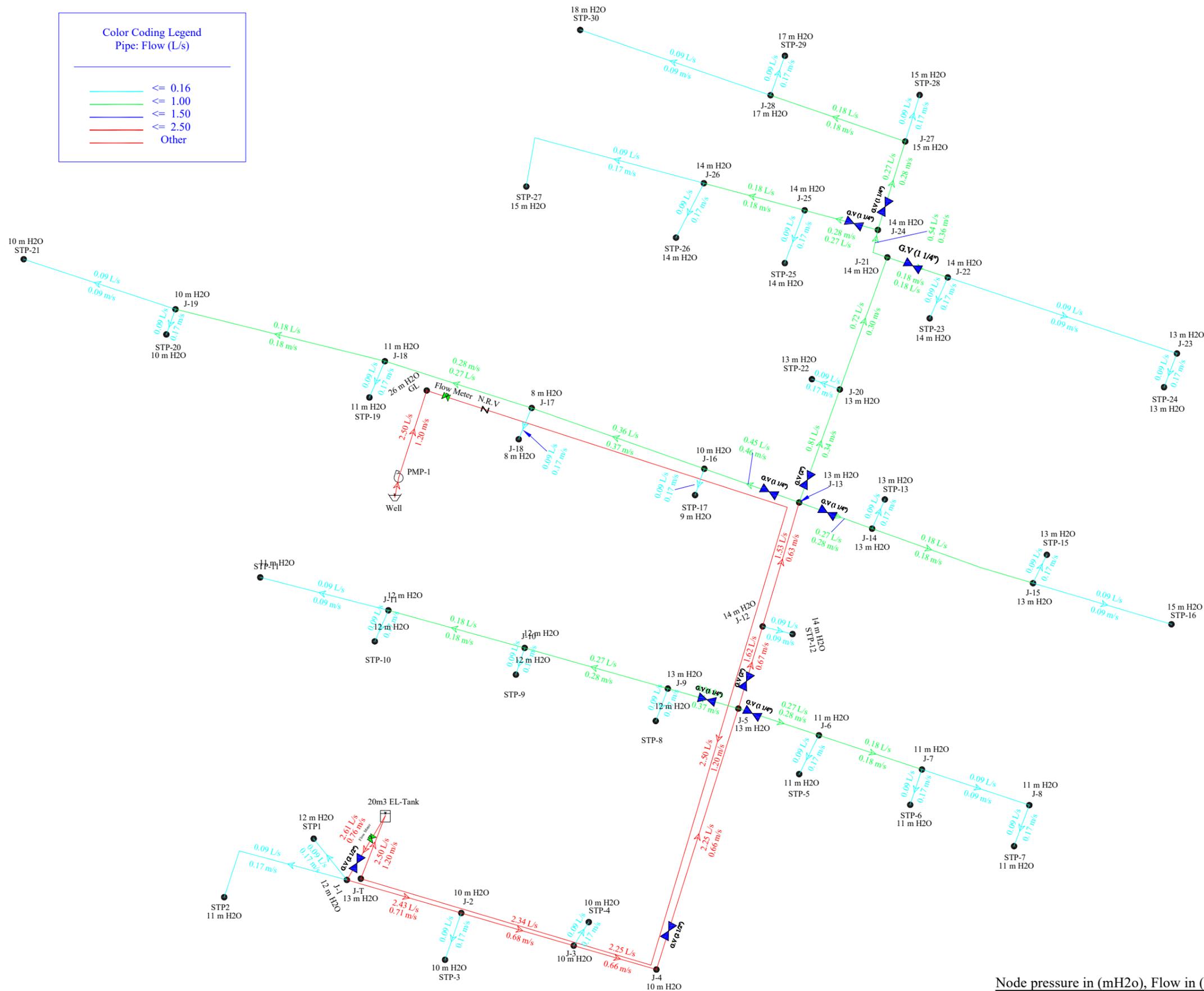
# Hydraulic Design of Speen Jumat Village, Khogyana District of Ningarhar Province

NORTH



**Color Coding Legend**  
Pipe: Flow (L/s)

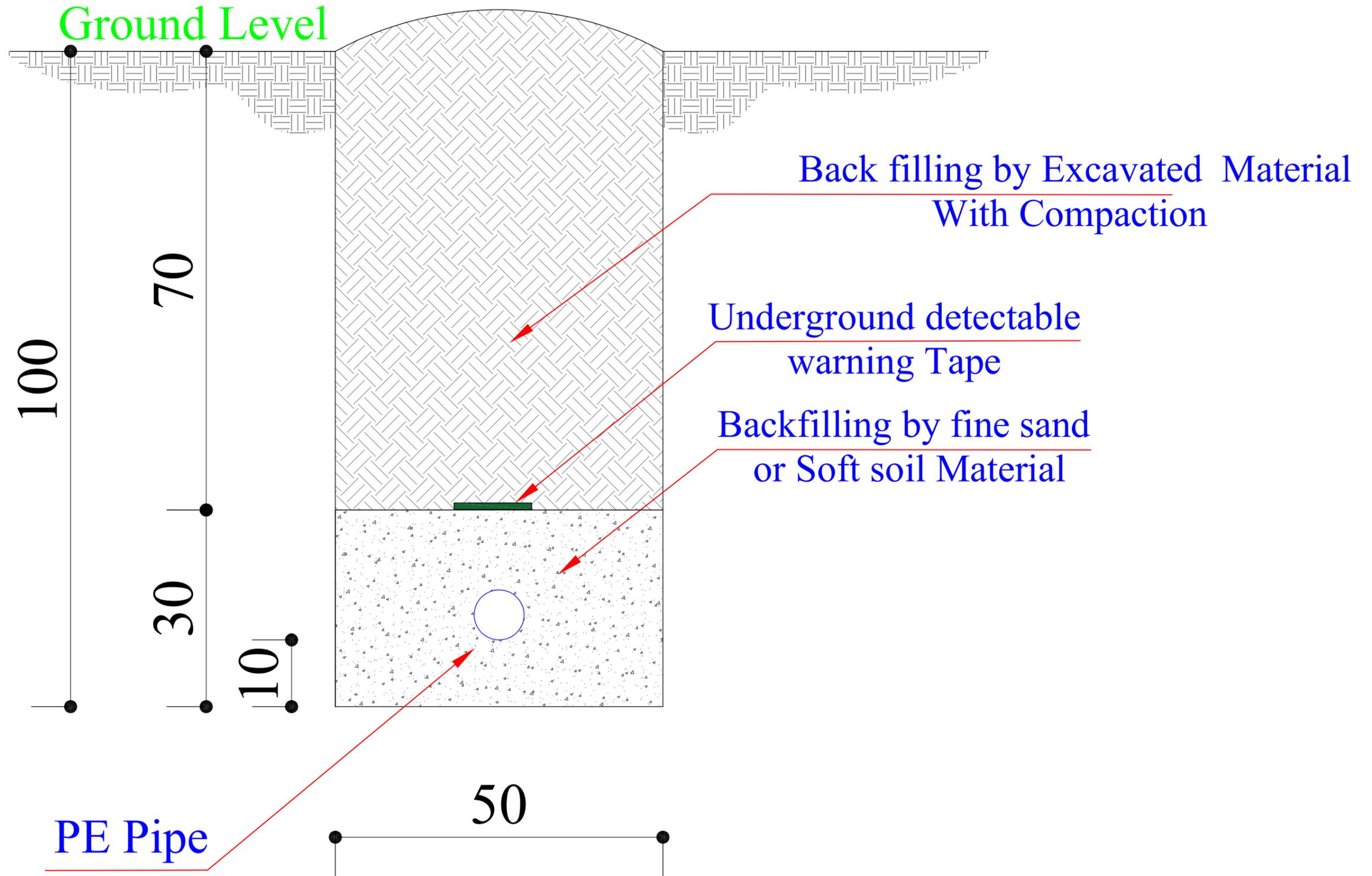
- ≤ 0.16
- ≤ 1.00
- ≤ 1.50
- ≤ 2.50
- Other



Node pressure in (mH2o), Flow in (L/S) & Velocity in (m/s)

FUNDED BY:	LDSCAU	SURVEYED BY	WASH Design Team	CHECKED BY	Head of Department	SCALE	1:1125/A3	SHEET NO.	PROVINCE	Ningarhar	PROJECT NAME	Water Supply Project	
INTERNATIONAL MEDICAL CORPS (IMC) PROGRAM DEPARTMENT WASH UNIT	DESIGNED BY	WASH Design Team	REVIEWED BY	WASH Advisor	DATE	02.09.2024	DISTRICT		Khogyana	DRAWING TITLE	Hydraulic Design		
	DRAWN BY	WASH Design Team	APPROVED BY	WASH Advisor	DRAWING NO.		VILLAGE		Speen Jumat				

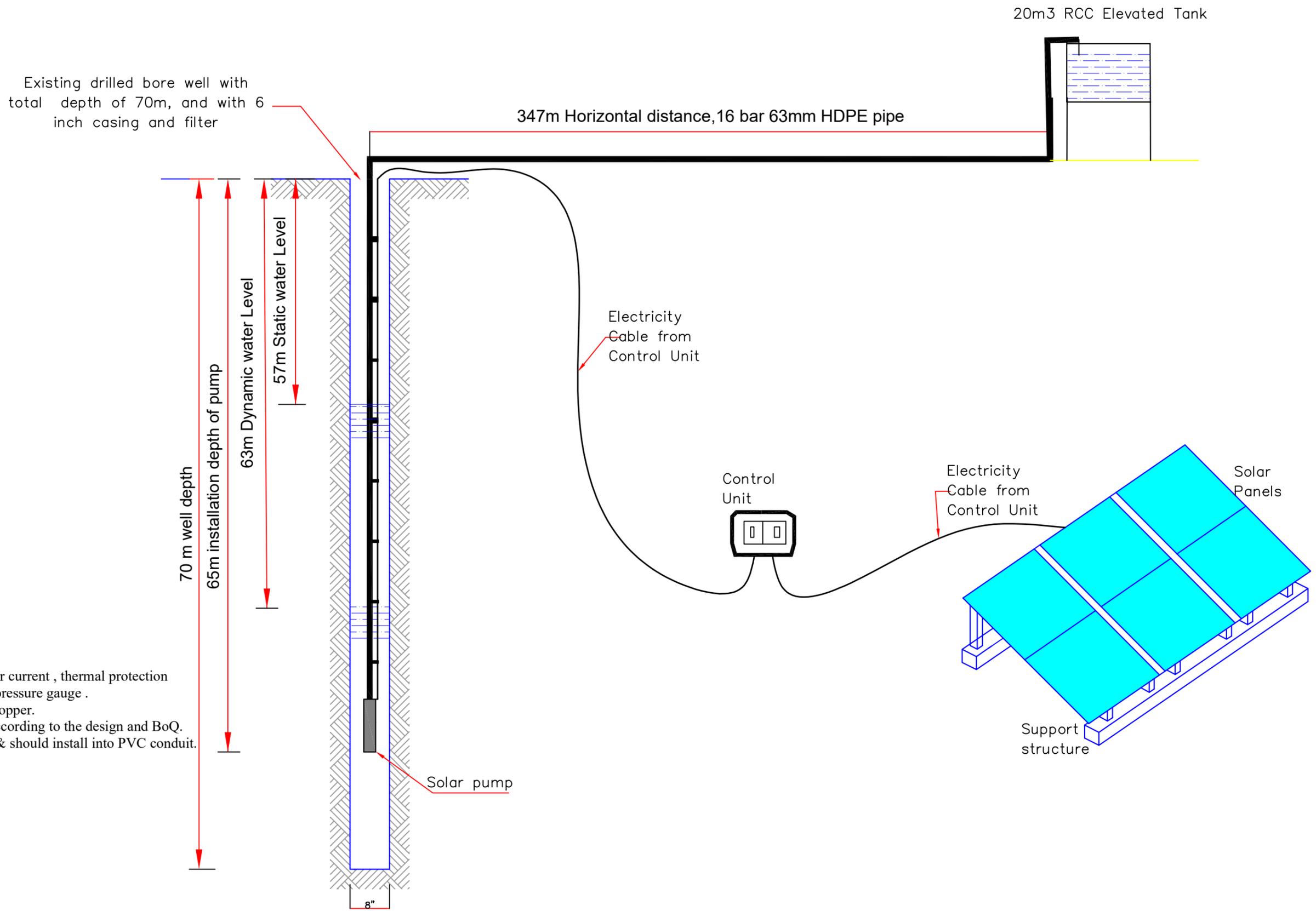
# Pipe -Trench Detail



Note: All dimension are in Cm.

FUNDED BY:	LDSCAU	SURVEYED BY	WASH Team	CHECKED BY	Head of Department	SCALE		SHEET NO. 1/1	PROVINCE	Ningarhar	PROJECT NAME	Rehabilitation of Water Supply Project	
INTERNATIONAL MEDICAL CORPS (IMC) PROGRAM DEPARTMENT WASH UNIT	DESIGNED BY	WASH Team	REVIEWED BY	WASH Advisor	DATE	01.09.2024	DISTRICT		Khogyana	DRAWING TITLE	Pipe Trench		
	DRAWN BY	WASH Team	APPROVED BY	WASH Advisor	DRAWING NO.		VILLAGE	Speen Jumat					

# Typical Site plan for existing Water supply network



**Note:**

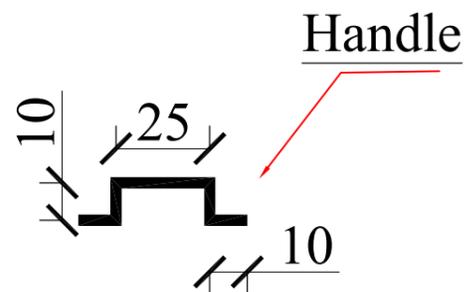
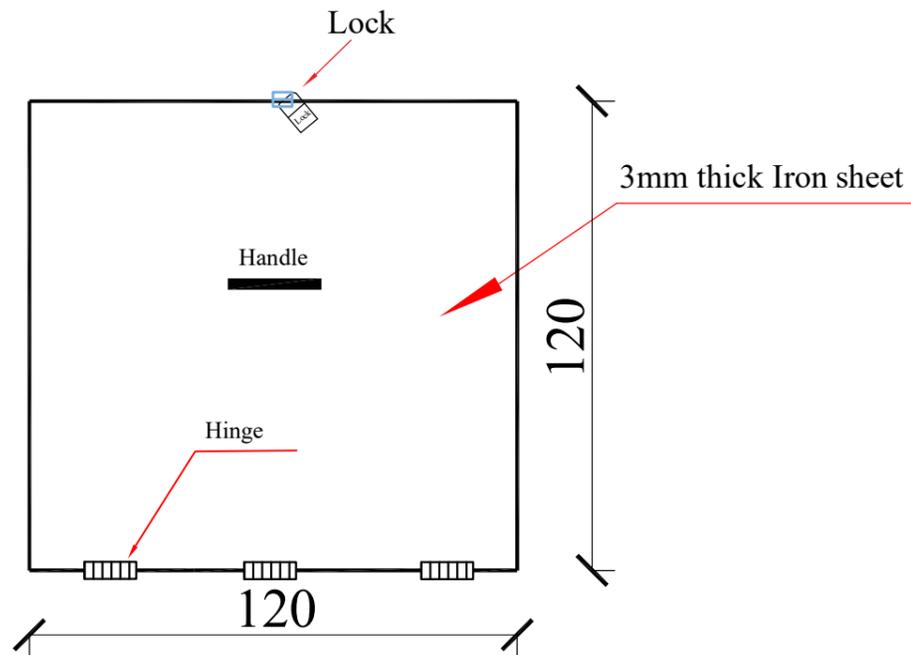
1. The control box must include over current , thermal protection connector for float switch or use pressure gauge .
2. Grounding Rod must be install copper.
3. Type of electrical cable should according to the design and BoQ.
4. Electrical Cable must be copper & should install into PVC conduit.

FUNDED BY:	LDSCAU	SURVEYED BY	WASH Team	CHECKED BY	Head of Department	SCALE		SHEET NO.	1/1	PROVINCE	Ningarhar	PROJECT NAME	Rehabilitation of Water Supply Project
INTERNATIONAL MEDICAL CORPS (IMC) PROGRAM DEPARTMENT WASH UNIT		DESIGNED BY	WASH Team	REVIEWED BY	WASH Advisor	DATE	01.09.2024			DISTRICT	Khogyana	DRAWING TITLE	Site plan of Solar pump system
		DRAWN BY	WASH Team	APPROVED BY	WASH Advisor	DRAWING NO.				VILLAGE	Speen Jumat		

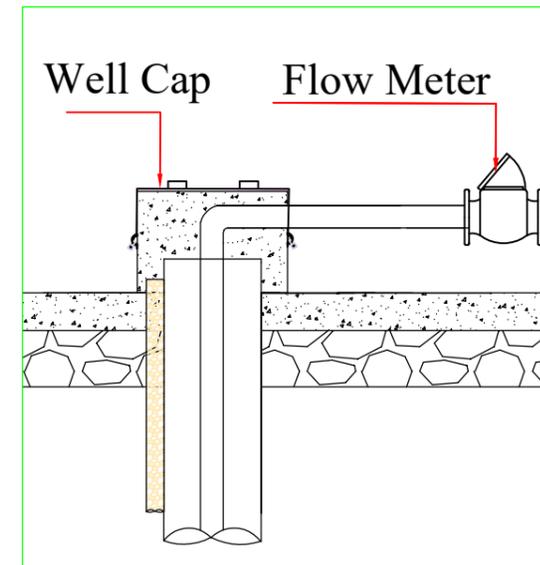


# Plan of slab & View of Well to rehabilitate

Plan of slab 3mm Iron Sheet



View of well Cap



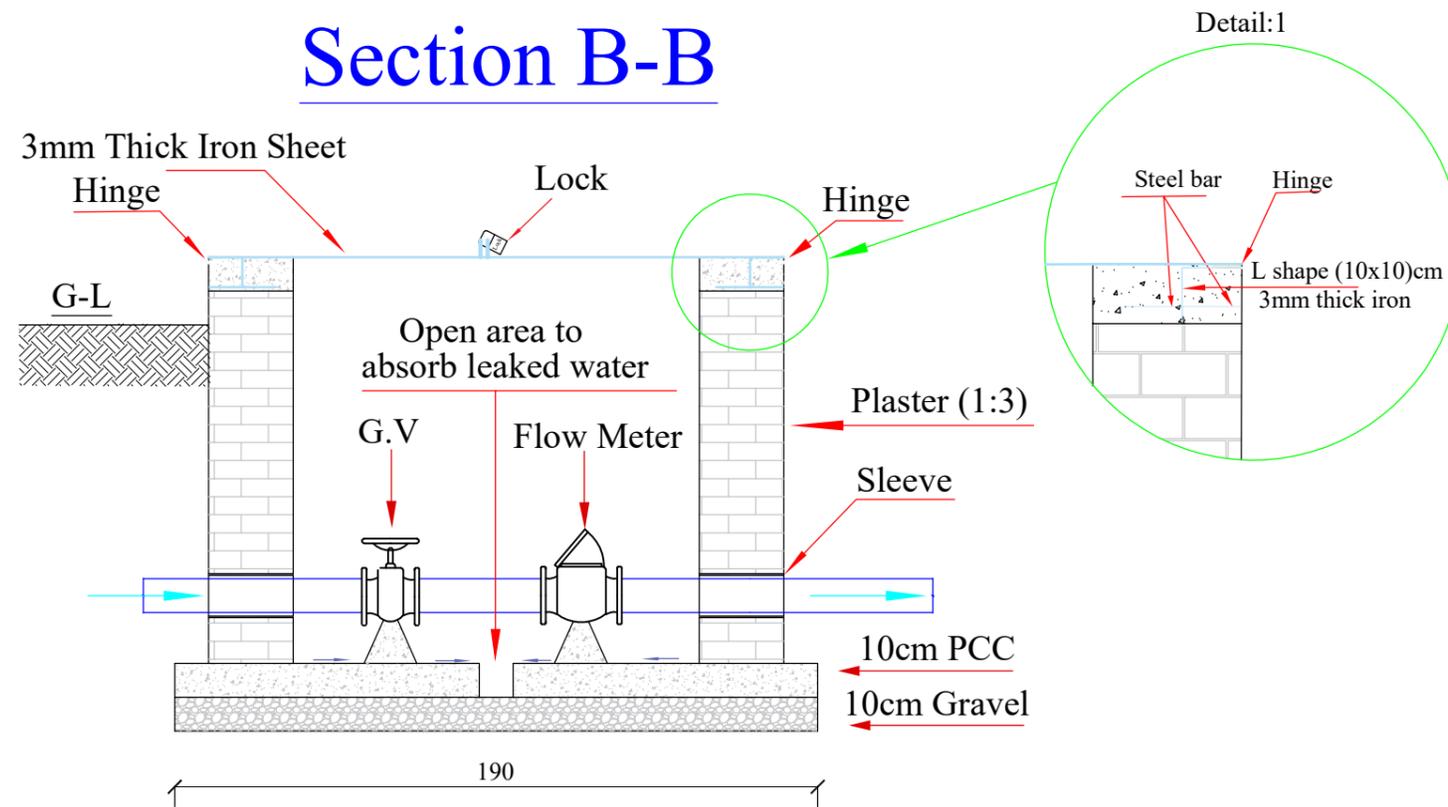
Note: All dimension are in Cm.

FUNDED BY:	LDSCAU	SURVEYED BY	IMC WASH Team	CHECKED BY	Head of Department	SCALE		SHEET NO. 1/1	PROVINCE	Ningarhar	PROJECT NAME	Rehabilitation of Water Supply Project
INTERNATIONAL MEDICAL CORPS (IMC) PROGRAM DEPARTMENT WASH UNIT	DESIGNED BY	IMC WASH Team	REVIEWED BY	WASH Advisor	DATE	01.09.2024	DISTRICT		Khogyana	DRAWING TITLE	Rehabilitation of well box	
	DRAWN BY	IMC WASH Team	APPROVED BY	WASH Advisor	DRAWING NO.		VILLAGE		Speen Jumat			

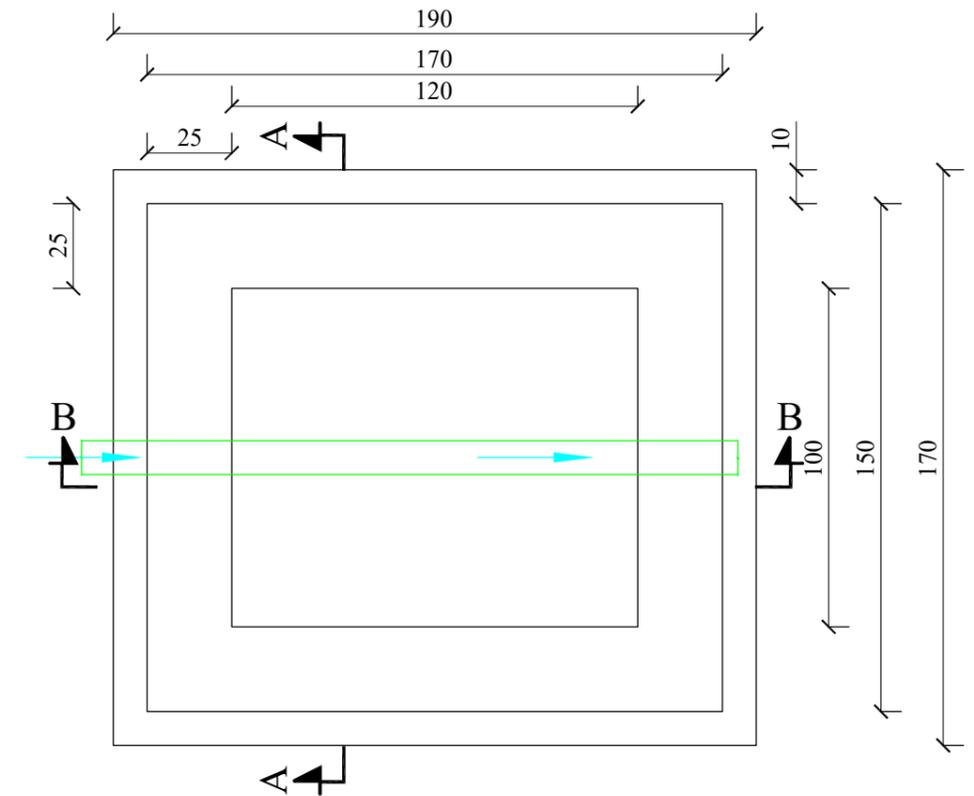


# Design and Details of Flow meter & Gate Valve Box

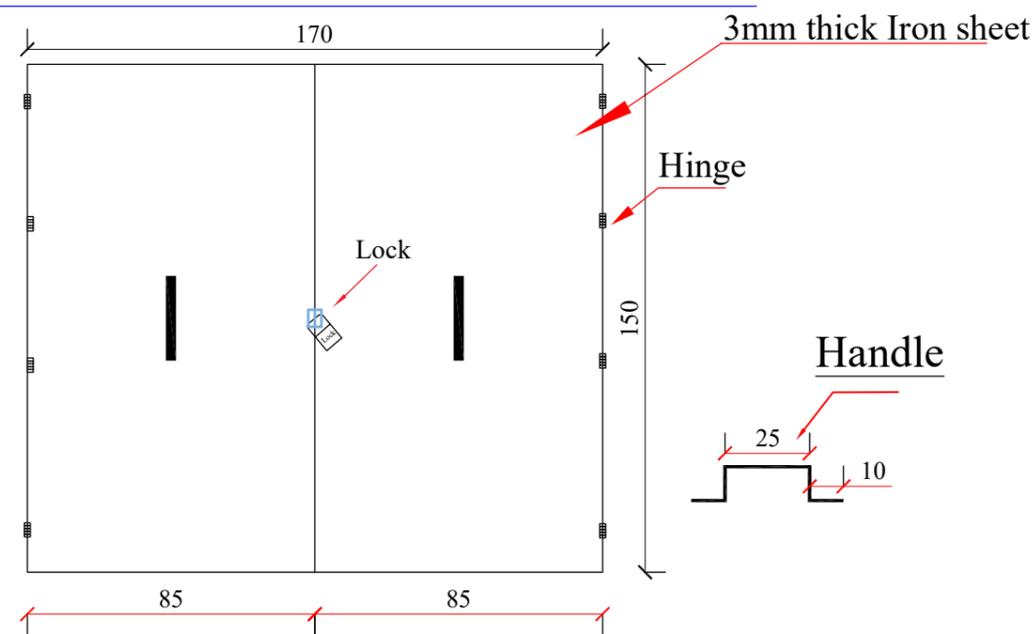
## Section B-B



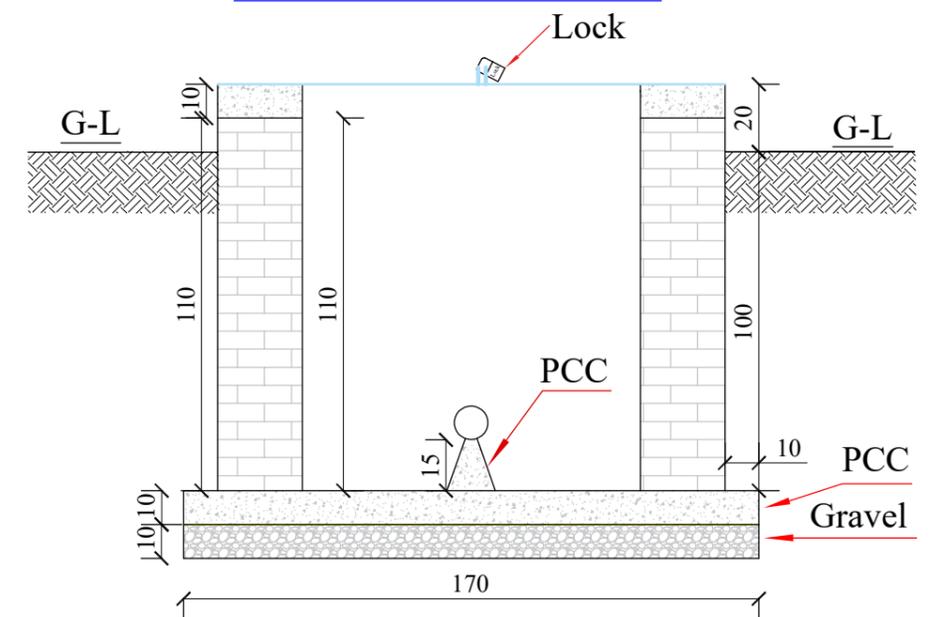
## Plan of G.V & Flow Meter Box



## Plan of slab 3mm Iron Sheet



## Section A-A



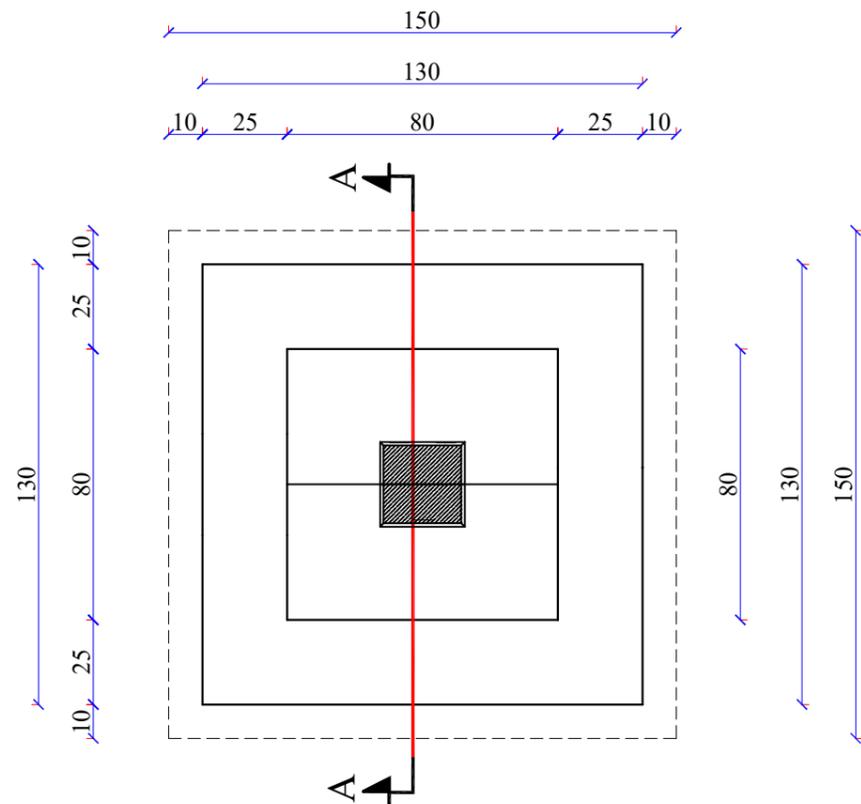
Note: All dimension are in Cm.

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INTERNATIONAL MEDICAL CORPS (IMC) PROGRAM DEPARTMENT WASH UNIT	DESIGNED BY	IMC WASH Team	REVIEWED BY	WASH Advisor	DATE	01.09.2024	DISTRICT		Khogyana	DRAWING TITLE	Flow Meter & Gate Valve Box	
	DRAWN BY	IMC WASH Team	APPROVED BY	WASH Advisor	DRAWING NO.		VILLAGE		Speen Jumat			

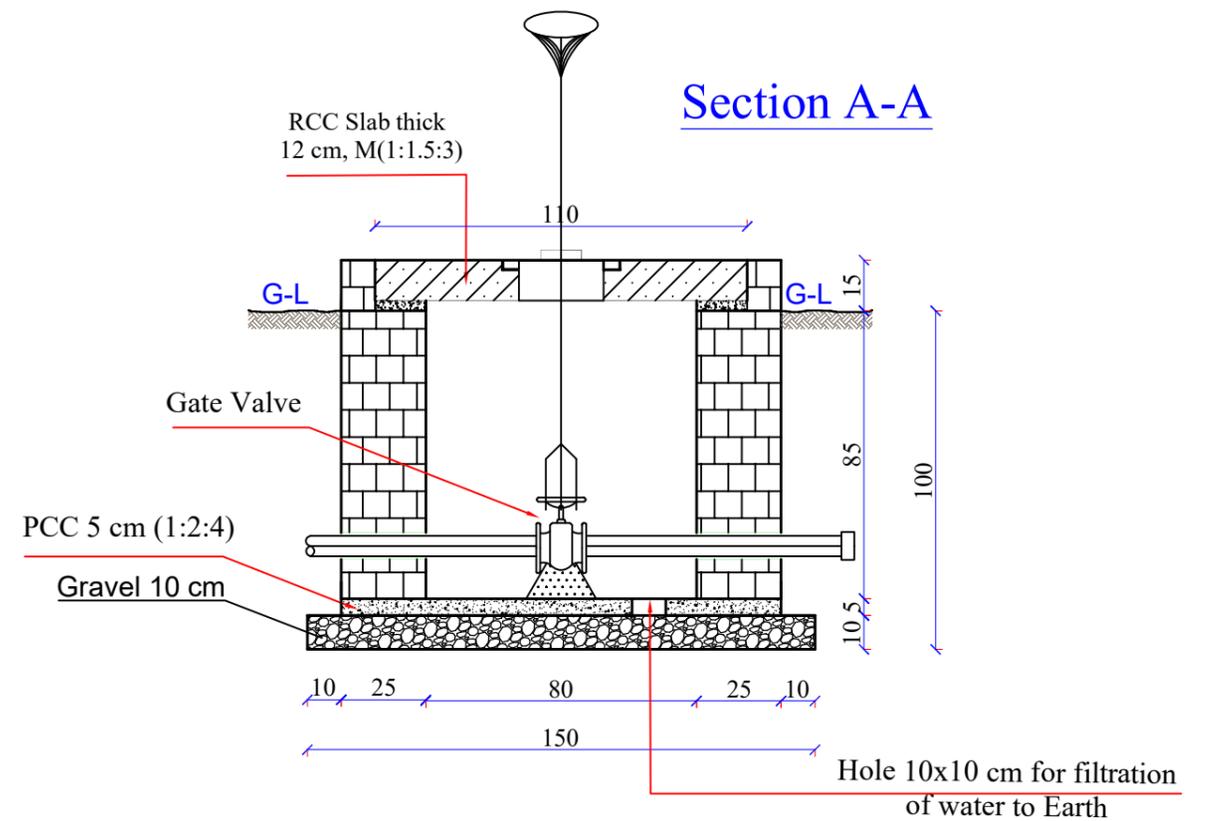


# Design and Details of Gate Valve Box

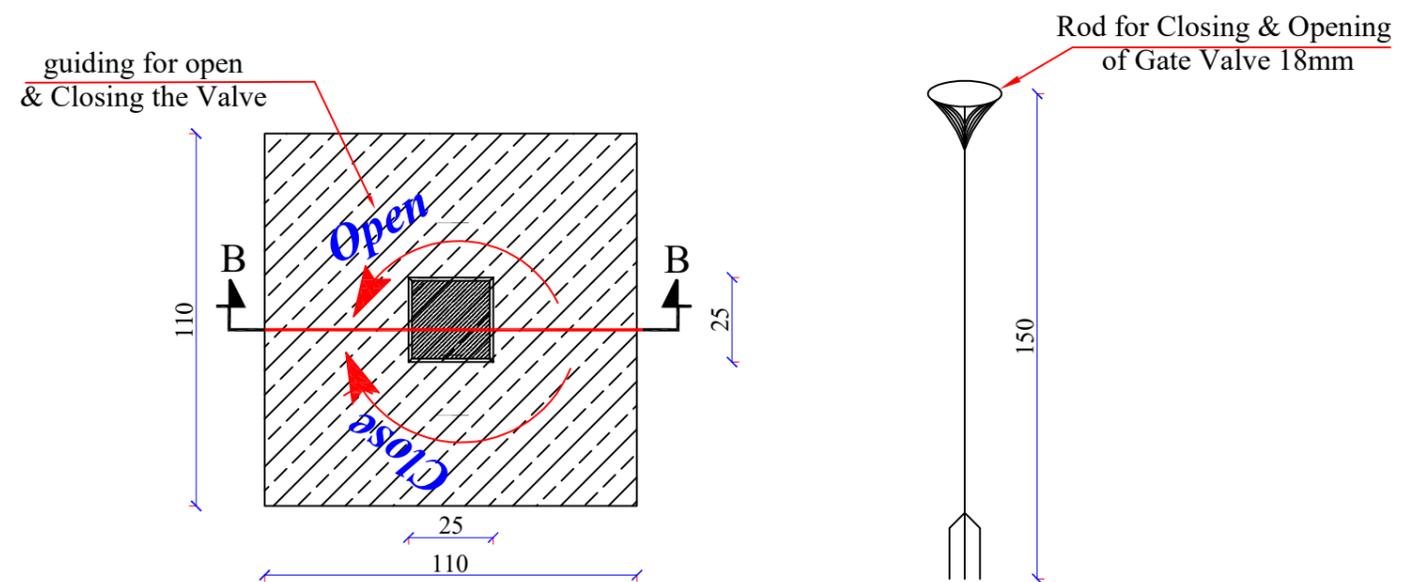
Plan of Gate Valve Box.



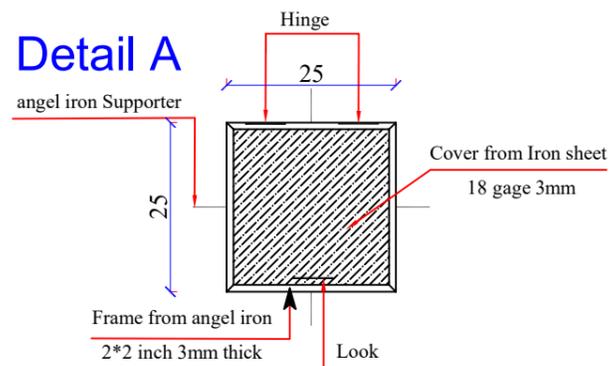
Section A-A



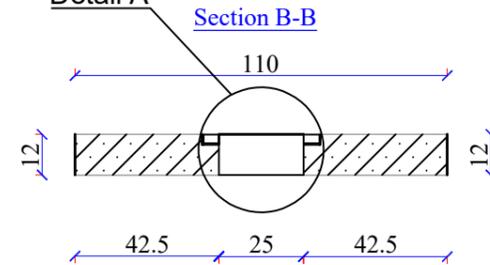
Plan of Slab



Detail A



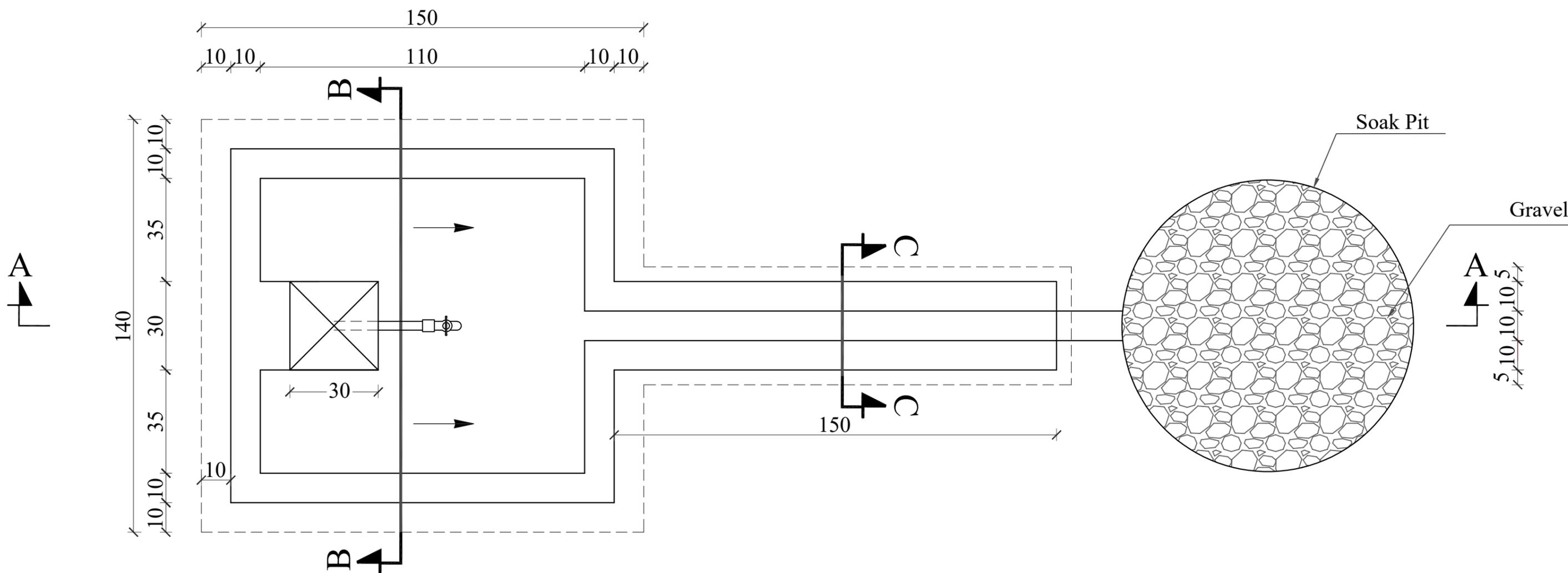
Detail A



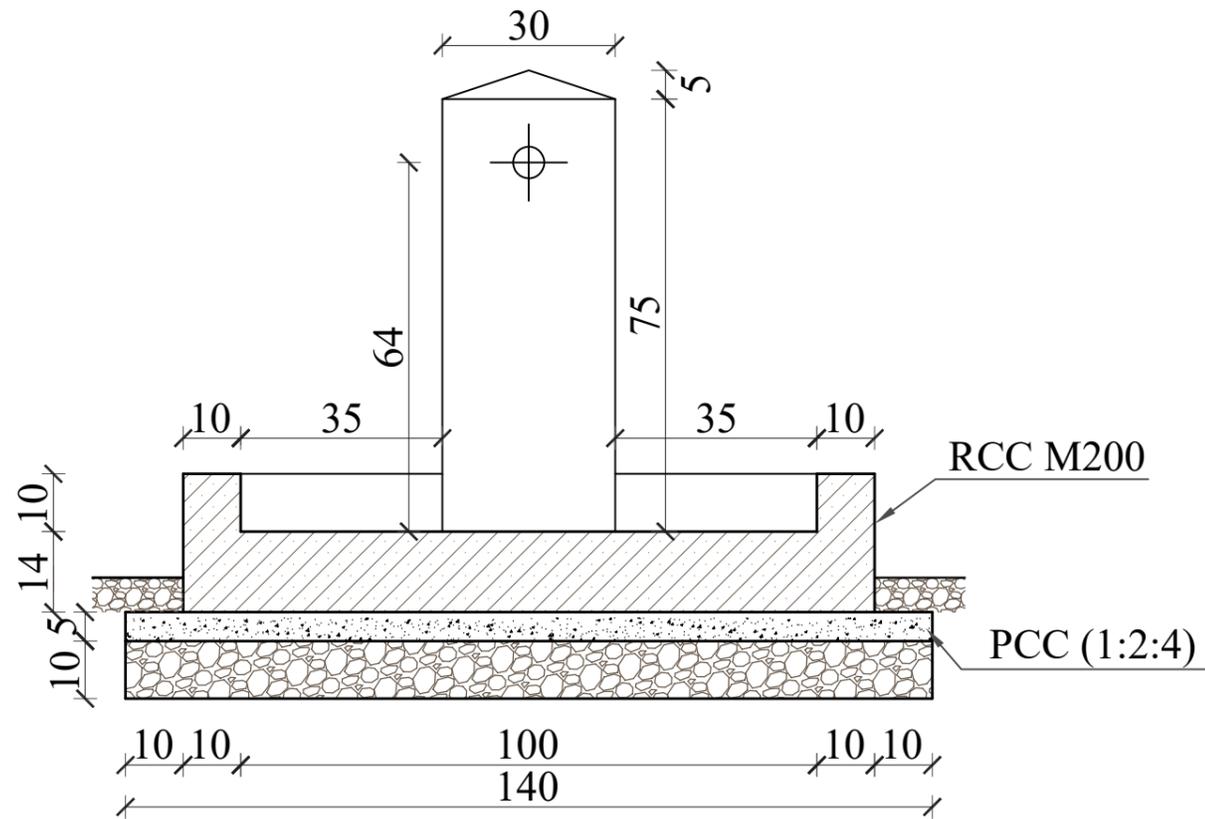
Note: All dimension are in Cm.

FUNDED BY:	LDSCAU	SURVEYED BY	IMC WASH Team	CHECKED BY	Head of Department	SCALE		SHEET NO.	1/1	PROVINCE	Ningarhar	PROJECT NAME	 Rehabilitation of Water Supply Project
INTERNATIONAL MEDICAL CORPS (IMC) PROGRAM DEPARTMENT WASH UNIT	DESIGNED BY	IMC WASH Team	REVIEWED BY	WASH Advisor	DATE	01.09.2024		DISTRICT	Khogyana	DRAWING TITLE	Gate Valve Box		
	DRAWN BY	IMC WASH Team	APPROVED BY	WASH Advisor	DRAWING NO.		VILLAGE	Speen Jumat					

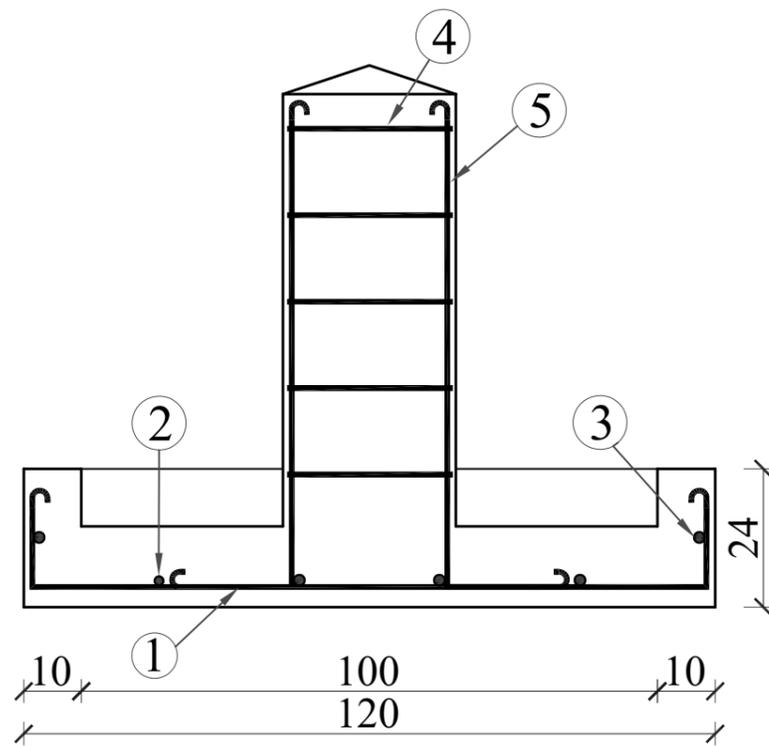
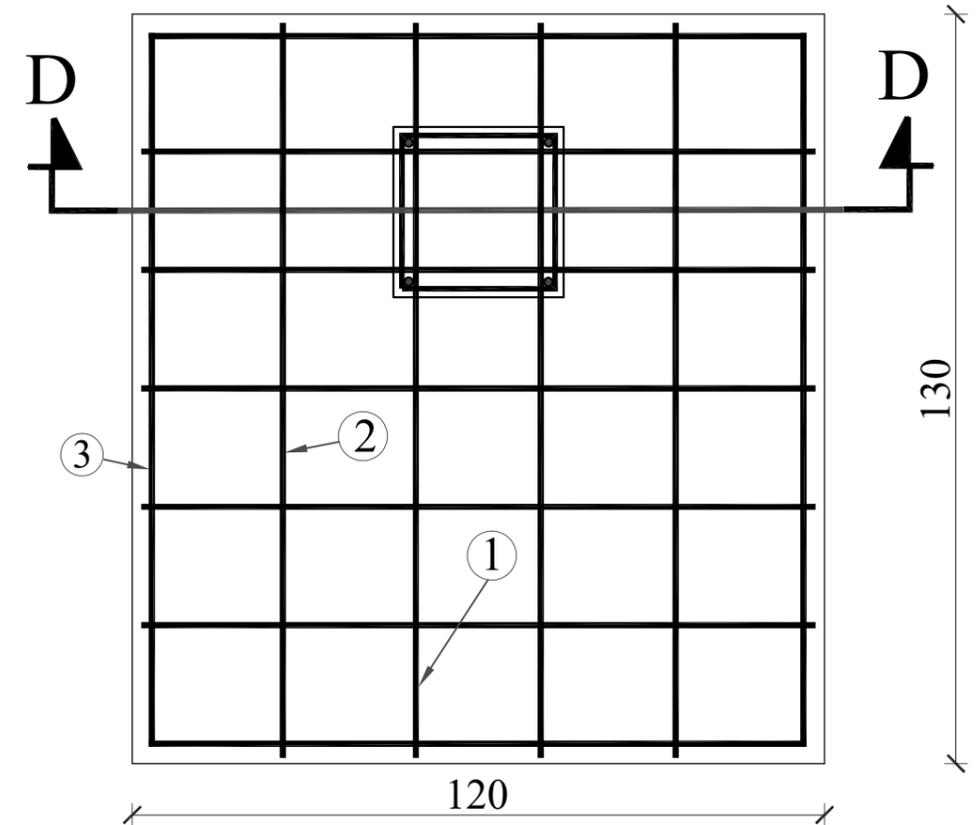
# Stand Tap



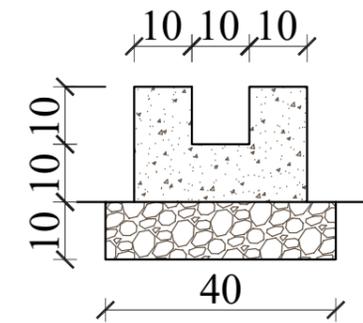
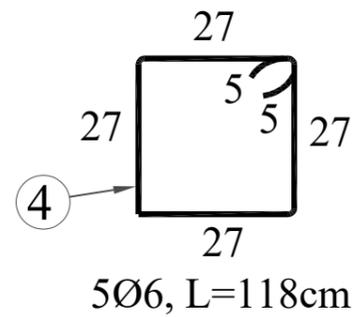
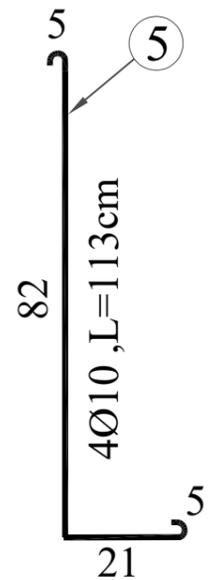
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INTERNATIONAL MEDICAL CORPS (IMC) PROGRAM DEPARTMENT WASH UNIT	DESIGNED BY	WASH Team	REVIEWED BY	WASH Advisor	DATE	01.09.2024	DISTRICT	Khogyana	DRAWING TITLE	Stand post				
DRAWN BY	WASH Team	APPROVED BY	WASH Advisor	DRAWING NO.		VILLAGE	Speen Jumat							



Section B-B



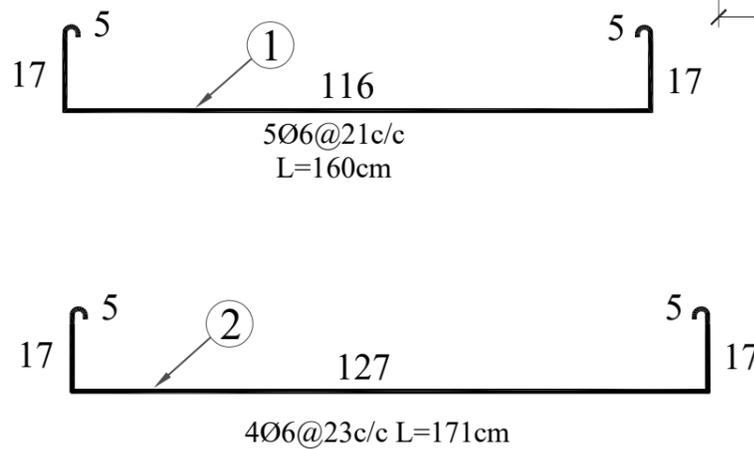
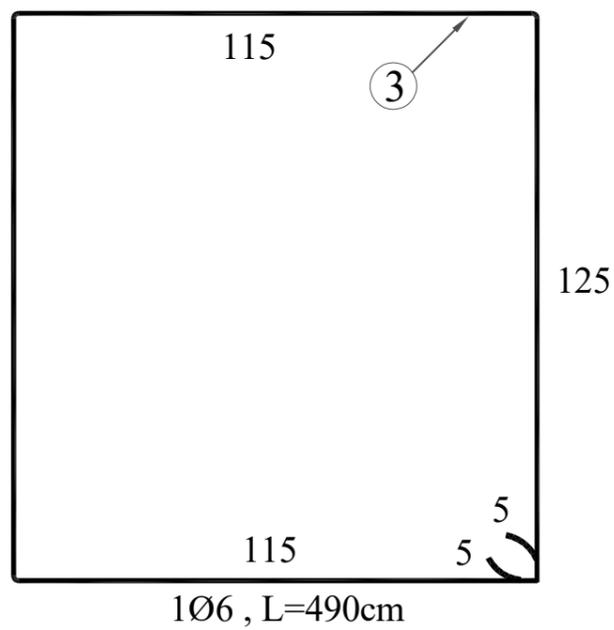
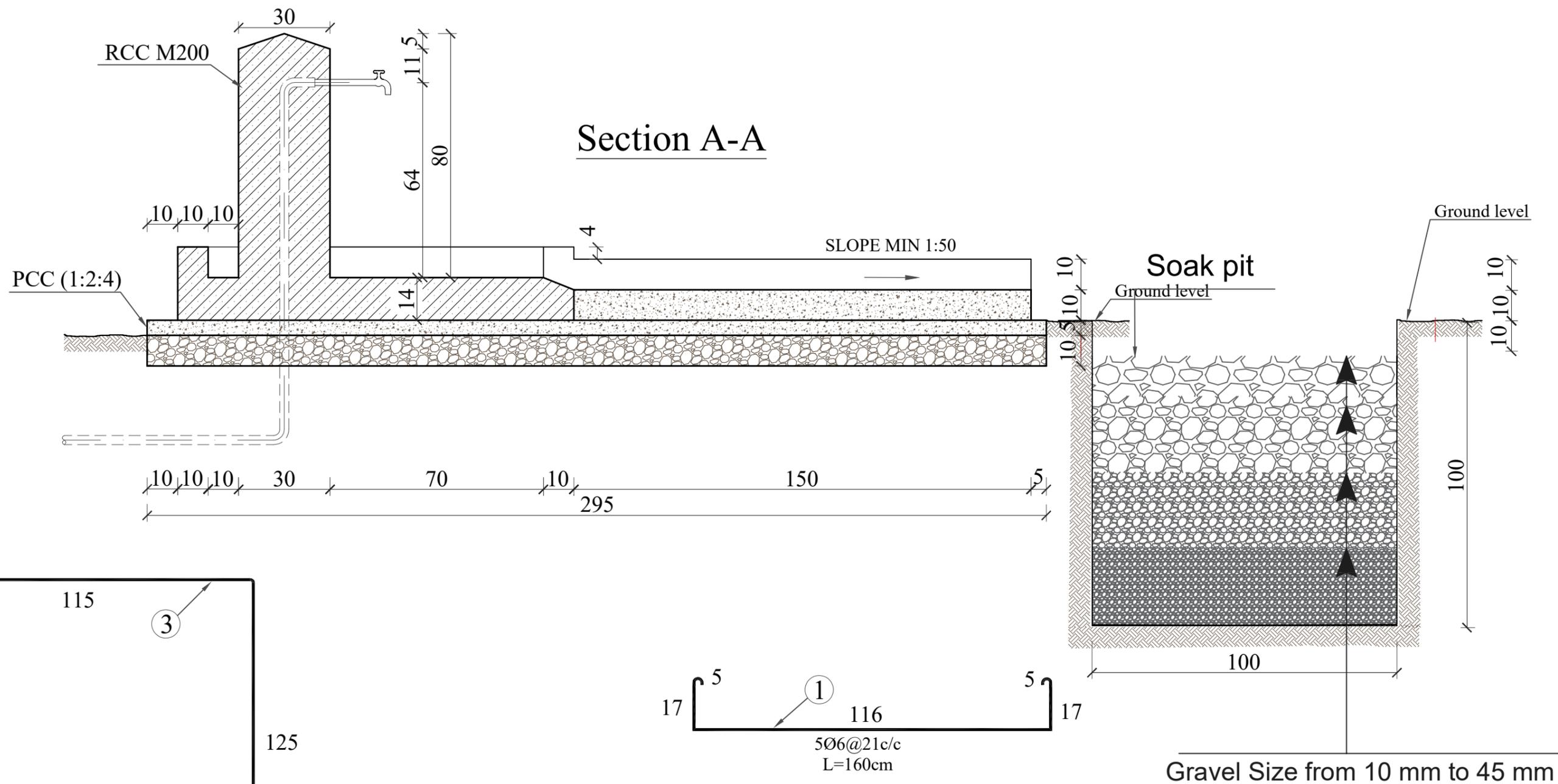
Section D-D



Section C-C

FUNDED BY:	LDSCAU	SURVEYED BY	WASH Team	CHECKED BY	Head of Department	SCALE		SHEET NO. 2/3	PROVINCE	Ningarhar	PROJECT NAME Rehabilitation of Water Supply Project	
INTERNATIONAL MEDICAL CORPS (IMC) PROGRAM DEPARTMENT WASH UNIT	DESIGNED BY	WASH Team	REVIEWED BY	WASH Advisor	DATE	01.09.2024	DISTRICT		Khogyana	DRAWING TITLE		Stand post
	DRAWN BY	WASH Team	APPROVED BY	WASH Advisor	DRAWING NO.		VILLAGE		Speen Jumat			



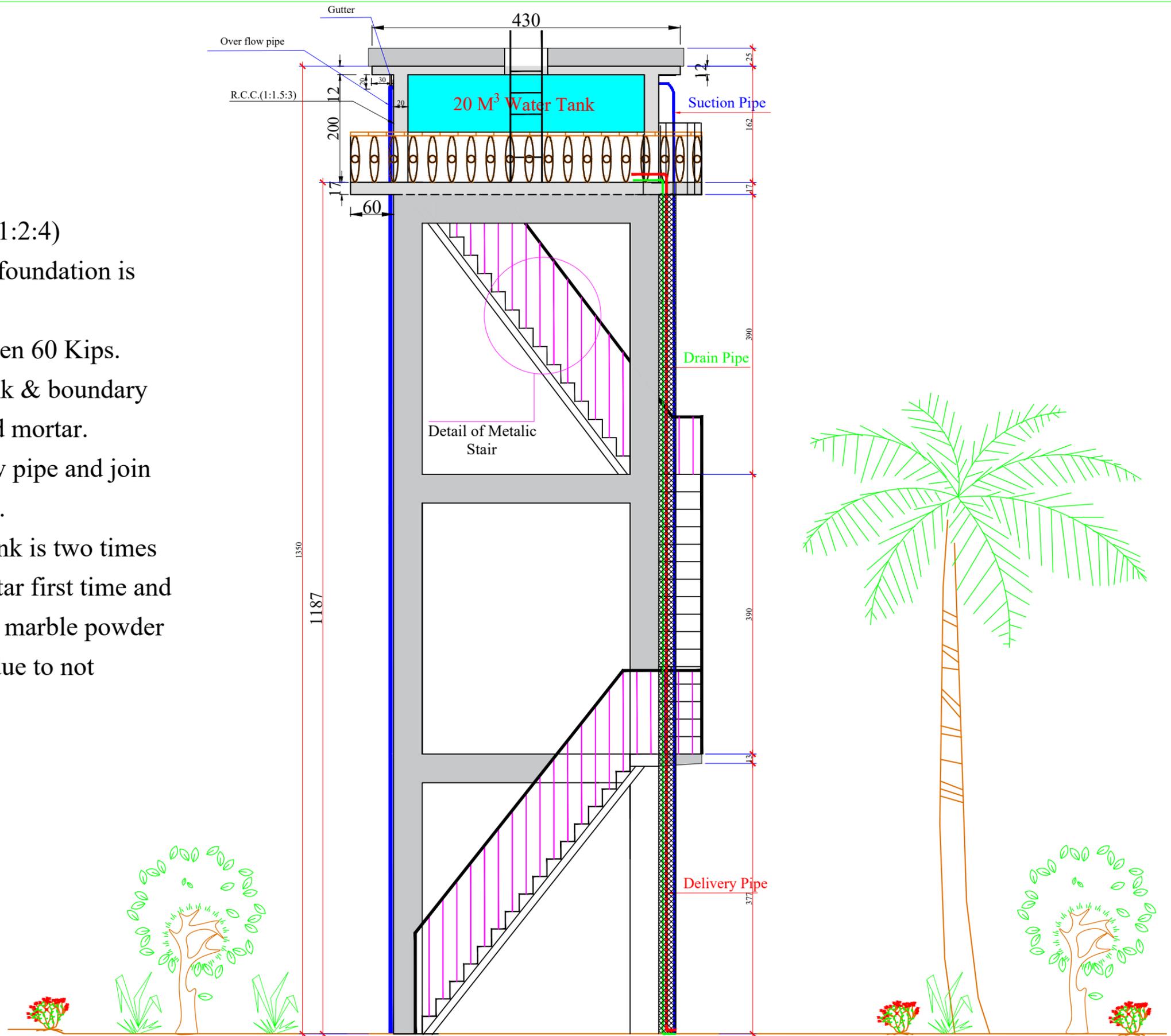


Gravel Size from 10 mm to 45 mm

FUNDED BY:	LDSCAU	SURVEYED BY	WASH Team	CHECKED BY	Head of Department	SCALE		SHEET NO.	PROVINCE	Ningarhar	PROJECT NAME	Rehabilitation of Water Supply Project
INTERNATIONAL MEDICAL CORPS (IMC) PROGRAM DEPARTMENT WASH UNIT	DESIGNED BY	WASH Team	REVIEWED BY	WASH Advisor	DATE	01.09.2024	DISTRICT		Khogyana	DRAWING TITLE	Stand post	
	DRAWN BY	WASH Team	APPROVED BY	WASH Advisor	DRAWING NO.		VILLAGE		Speen Jumat			

Note:

- All dimension are in cm.
- Mark of concrete M(1:1.5:3).
- Mark of Plain concrete PCC M(1:2:4)
- Safe bearing capacity of Soil in foundation is not less then 2 kg/cm<sup>2</sup>.
- Steel bar Mark Grade not less then 60 Kips.
- Plastering work of Elevated Tank & boundary Wall with M(1:4) cement + sand mortar.
- Gutter should join with overflow pipe and join 2m down than roof slab of Tank.
- Inside plastering of Elevated Tank is two times with M(1:3) cement + sand mortar first time and second time M(1:1:1) cement + marble powder + zero # stone (Cheps) mortar due to not leakages in the future



Funded by: LDS  
 INTERNATIONAL MEDICAL CORPS (IMC)  
 PROGRAM DEPARTMENT  
 WASH UNIT

Drafted and Design BY: IMC/WASH Team  
 Review and Checked by: Head of Department  
 Review and Approved by: WASH Advisor

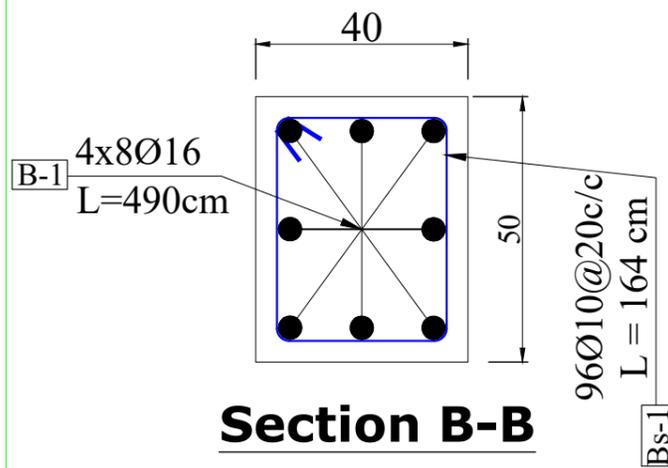
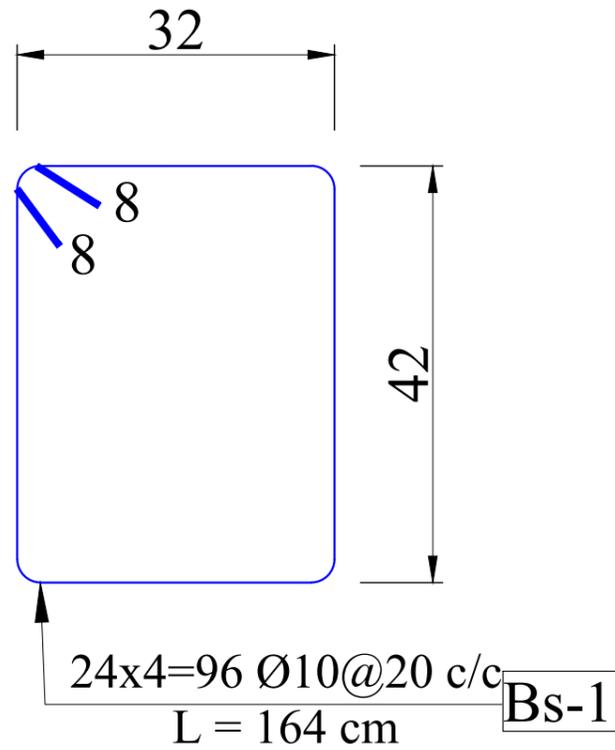
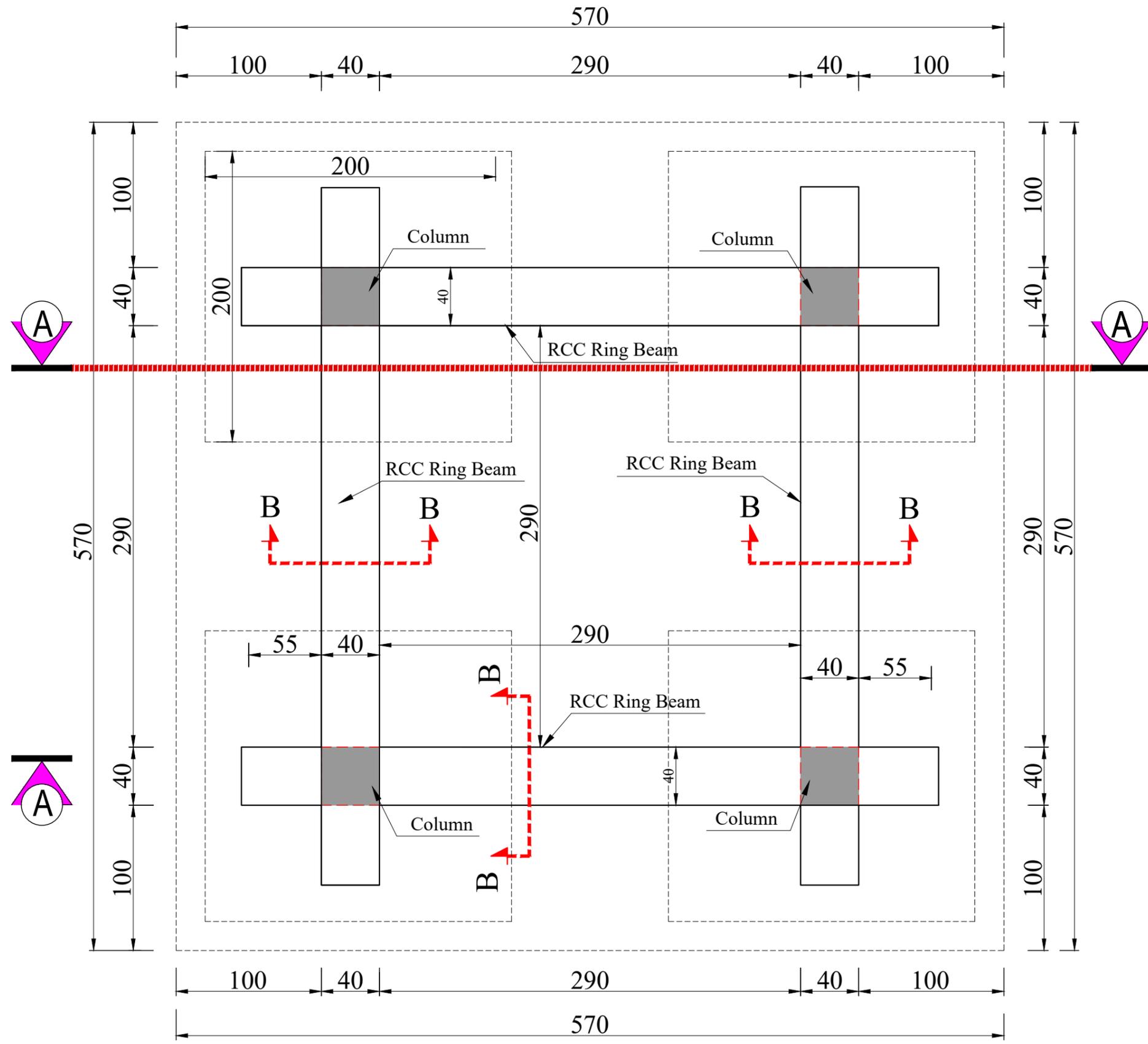
Province: Ningarhar  
 District: Khogyana  
 Village: Speen jumat

Date: Aug/2024  
 Scale: A3-shown  
 Unit: Centimeters

Drawing Title: Elevated 20 M3 Tank  
 Sheet Title: Front View  
 Sheet #: 01



# Foundation Plan of Elevated Water Tank



Funded by: LDS  
INTERNATIONAL MEDICAL CORPS (IMC)  
PROGRAM DEPARTMENT  
WASH UNIT

Drafted and Design BY: IMC/WASH Team  
Review and Checked by: Head of Department  
Review and Approved by: WASH Advisor

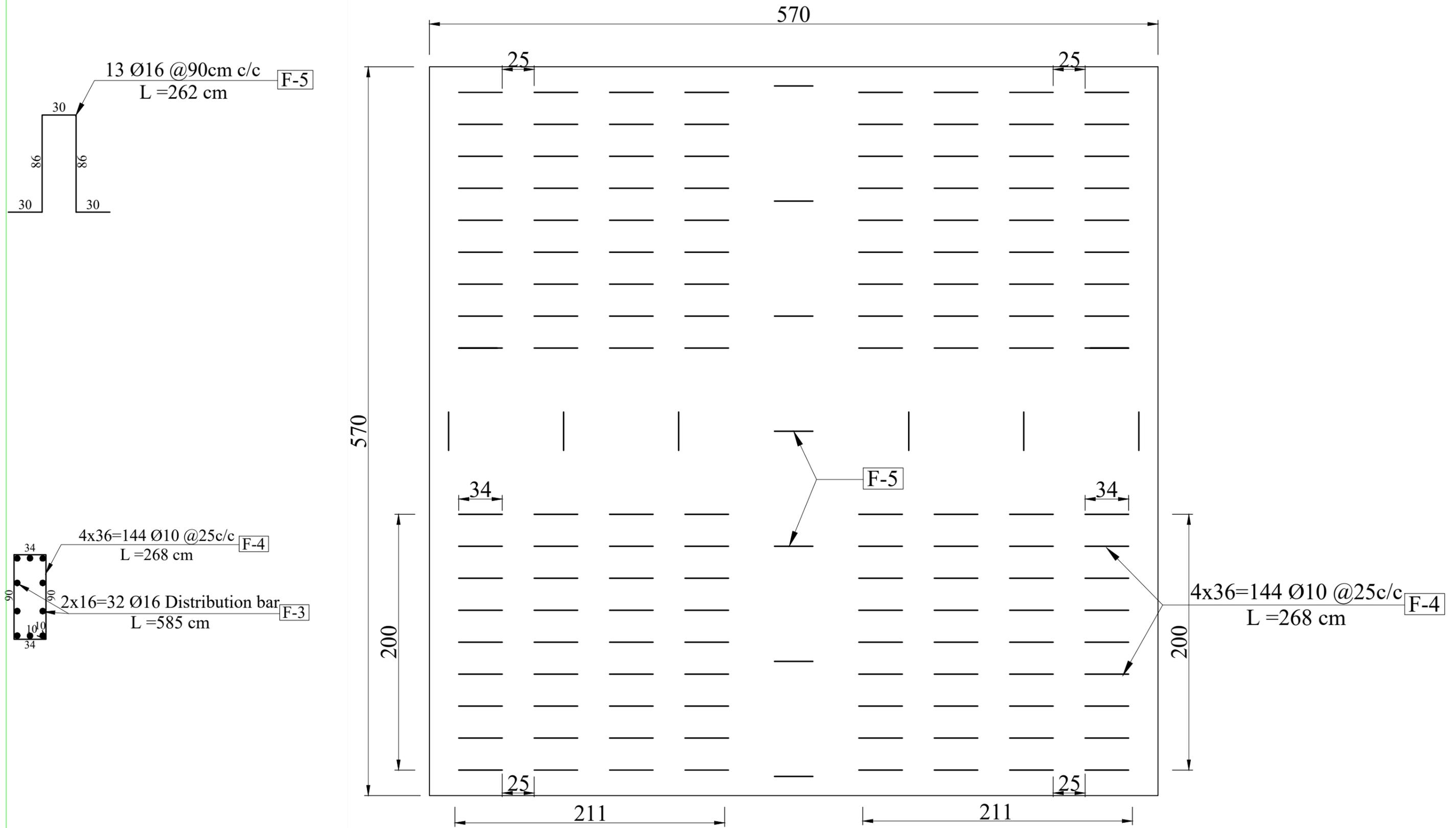
Province: Ningarhar  
District: Khogyana  
Village: Speen jumat

Date: Aug/2024  
Scale: A3-Shown  
Unit: Centimeters

Drawing Title: Elevated 20 M3  
Sheet Title: Foundation Plan  
Sheet #: -----



# Reinforcement Plan of Footing



Funded by: LDS  
 INTERNATIONAL MEDICAL CORPS (IMC)  
 PROGRAM DEPARTMENT  
 WASH UNIT

Drafted and Design BY: IMC/WASH Team  
 Review and Checked by: Head of Department  
 Review and Approved by: WASH Advisor

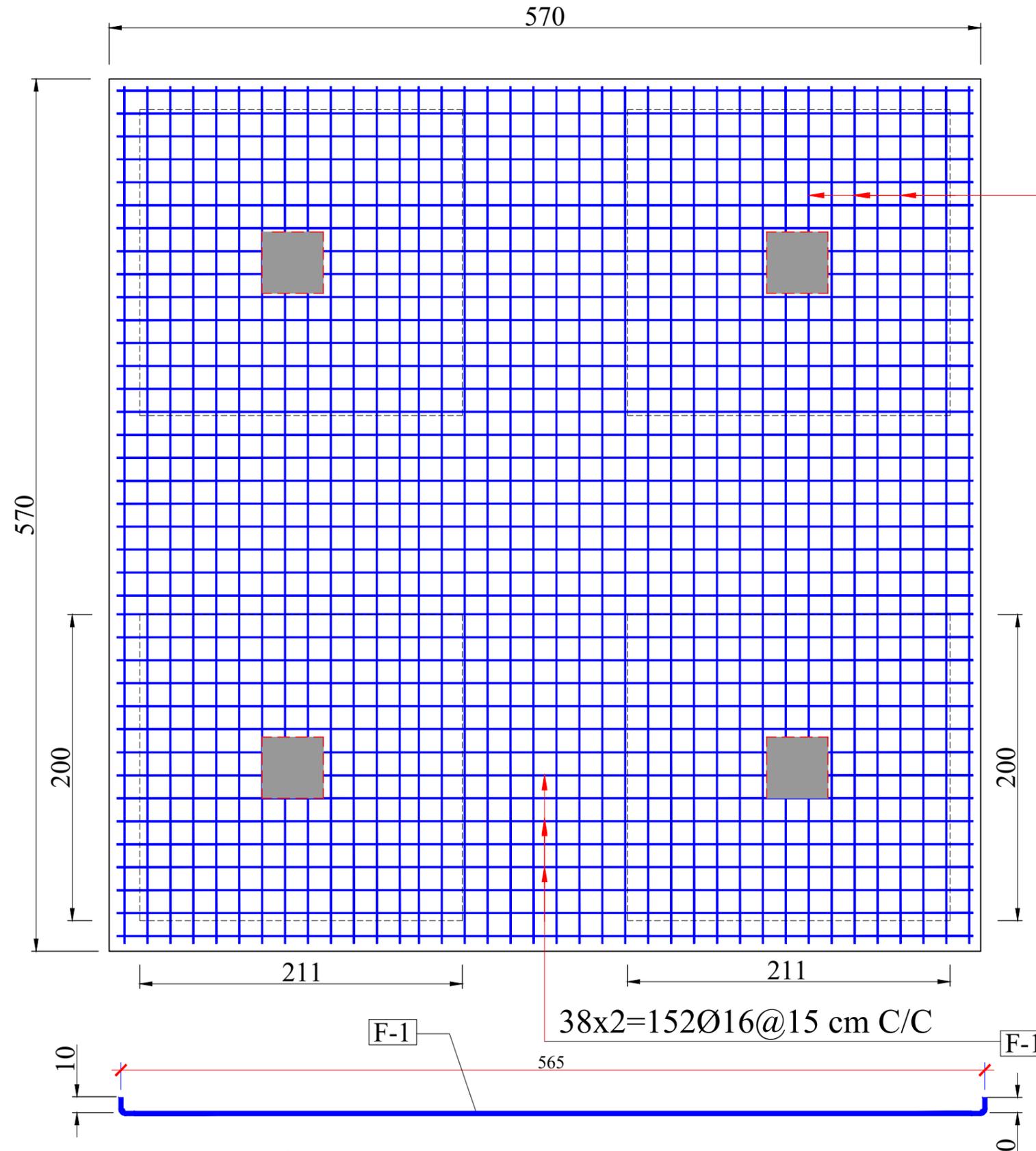
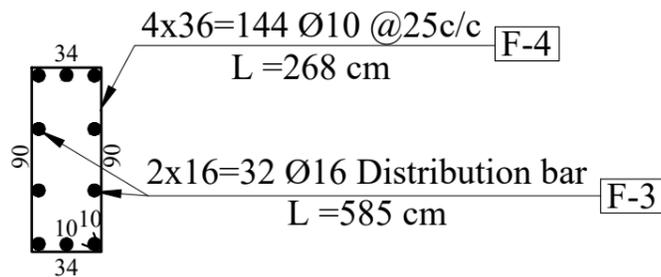
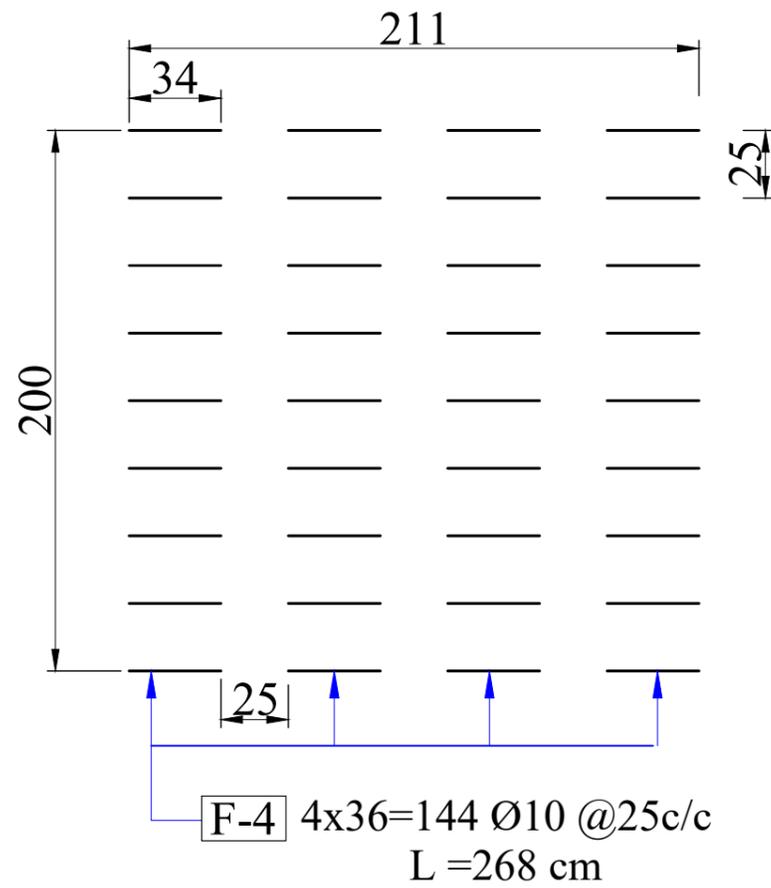
Province: Ningarhar  
 District: Khogyana  
 Village: Speen jumat

Date: Aug/2024  
 Scale: A3-Shown  
 Unit: Centimeters

Drawing Title: Elevated 20 M3  
 Sheet Title: Foundation Reinfor.  
 Sheet #: -----



# Reinforcement Plan of Footing



Funded by: LDS  
INTERNATIONAL MEDICAL CORPS (IMC)  
PROGRAM DEPARTMENT  
WASH UNIT

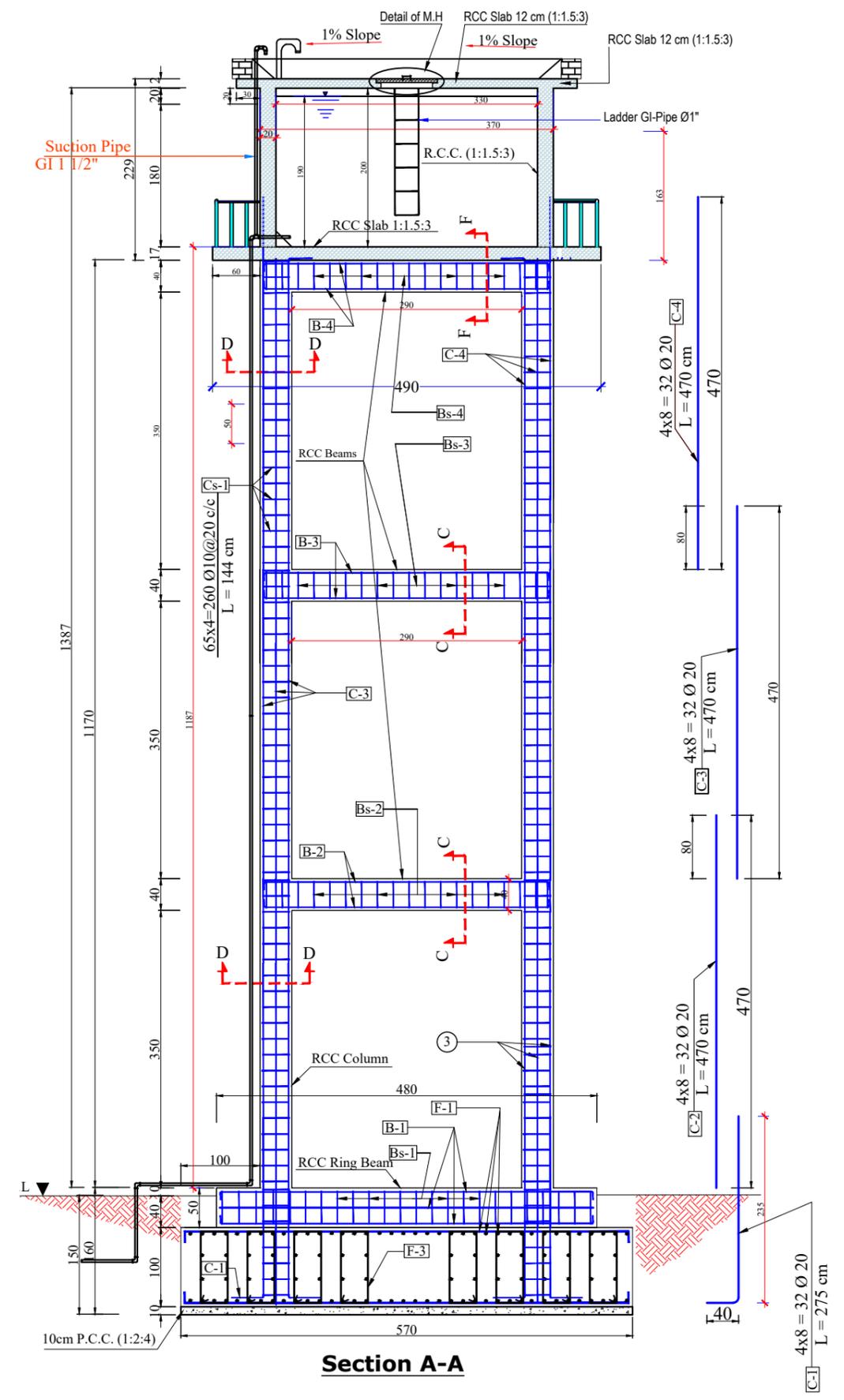
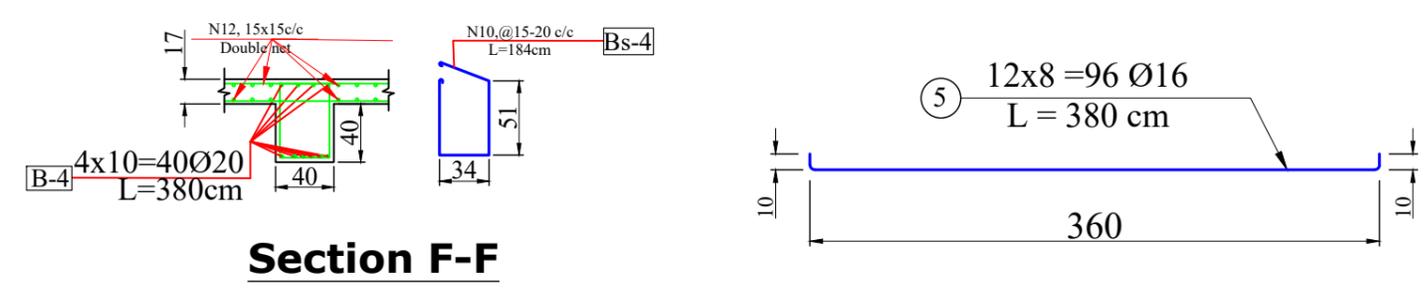
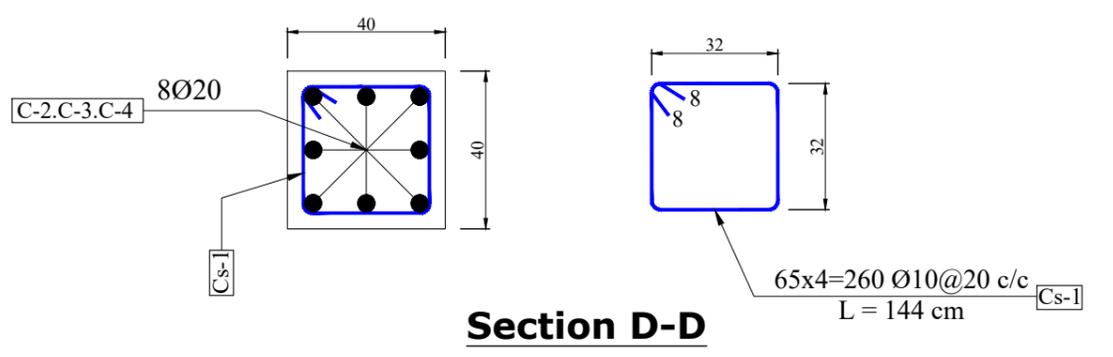
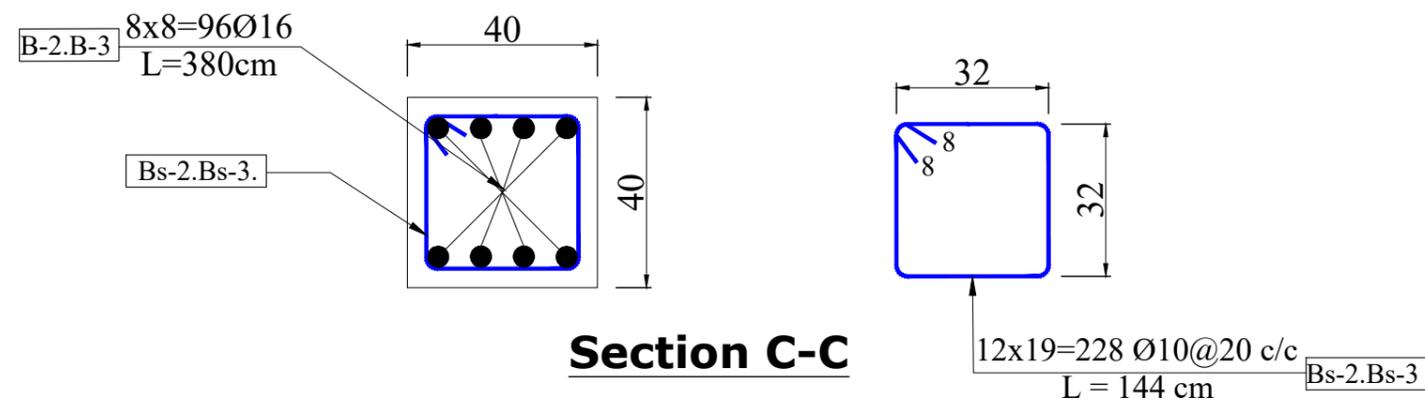
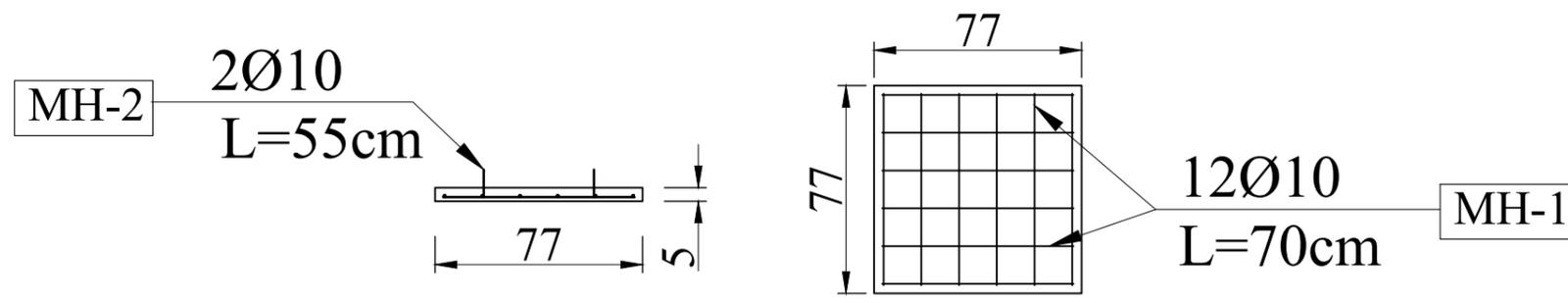
Drafted and Design BY: IMC/WASH Team  
Review and Checked by: Head of Department  
Review and Approved by: WASH Advisor

Province: Ningarhar  
District: Khogyana  
Village: Speen jumat

Date: Aug/2024  
Scale: A3-Shown  
Unit: Centimeters

Drawing Title: Elevated 20 M3  
Sheet Title: Foundation Reinf.  
Sheet #: -----





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PROGRAM DEPARTMENT  
WASH UNIT

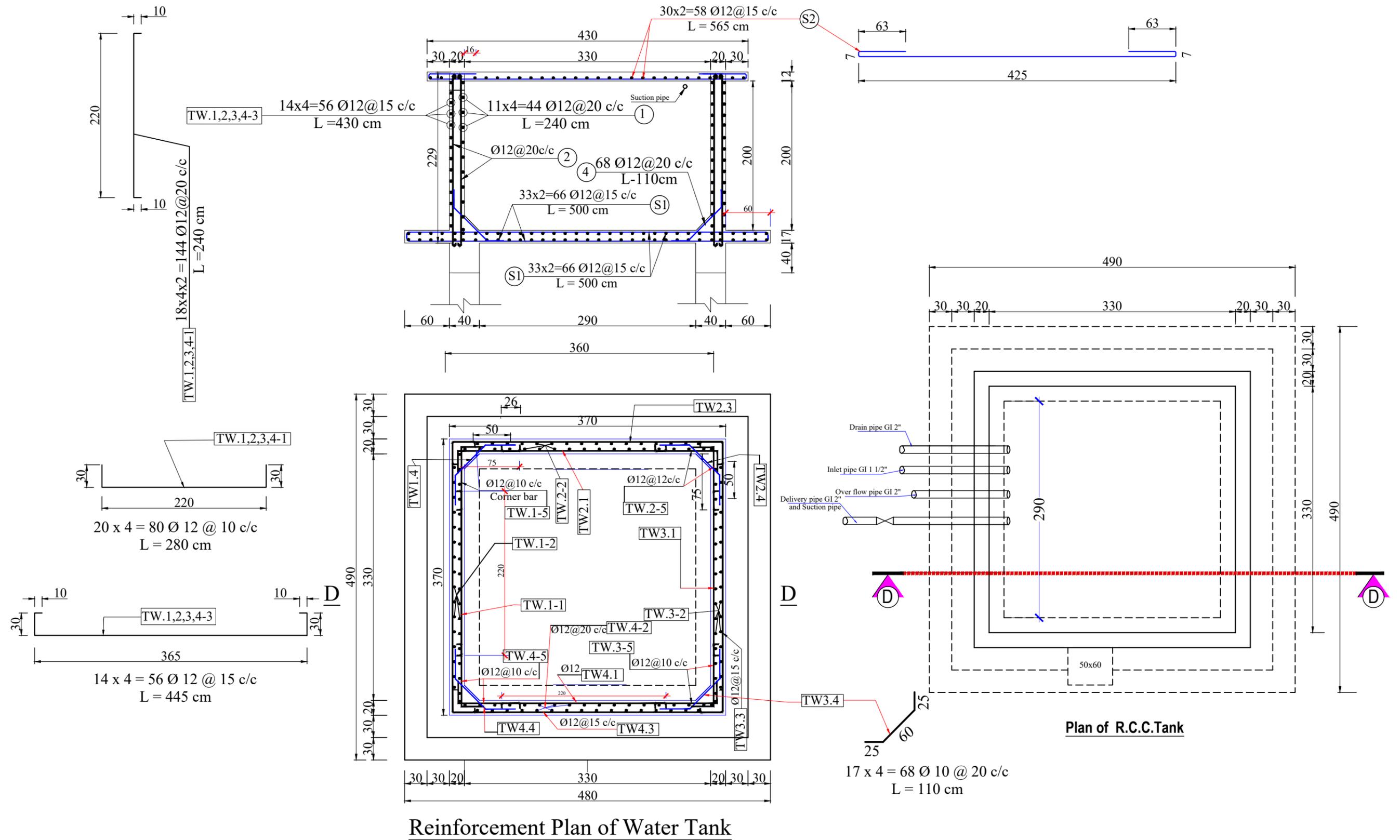
Drafted and Design BY: IMC/WASH Team  
Review and Checked by: Head of Department  
Review and Approved by: WASH Advisor

Province: Ningarhar  
District: Khogyani  
Village: Speen jumat

Date: Aug/2024  
Scale: A3-Shown  
Unit: Centimeters

Drawing Title: Elevated 20 M3  
Sheet Title: Section A-A  
Sheet #: -----





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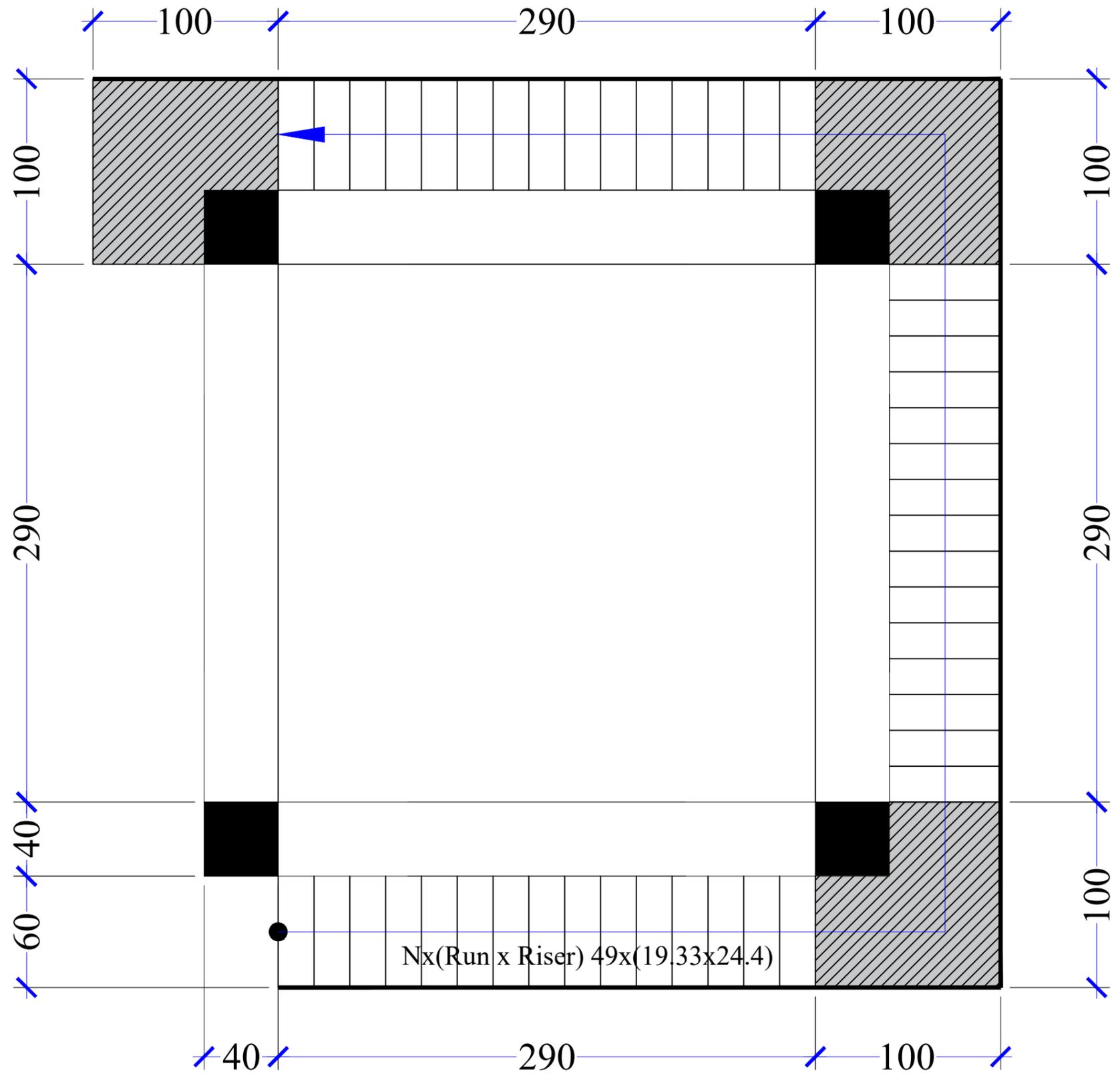
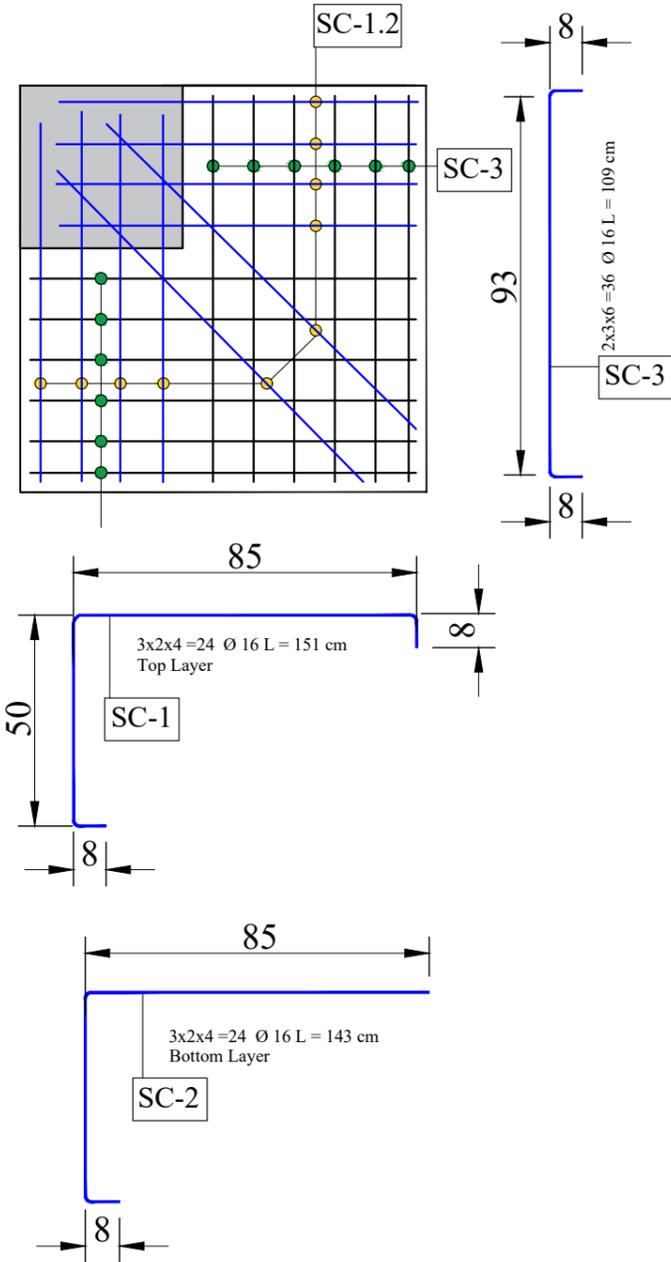
Province: Ningarhar  
 District: Khogyana  
 Village: Speen jumat

Date: Aug/2024  
 Scale: A3-Shown  
 Unit: Centimeters

Drawing Title: Elevated 20 M3  
 Sheet Title: Tank Reinfo.  
 Sheet #: -----



### Stair Case Landing Reinforcement Details



## Stair Case Plan

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 WASH UNIT

Drafted and Design BY: IMC/WASH Team  
 Review and Checked by: Head of Department  
 Review and Approved by: WASH Advisor

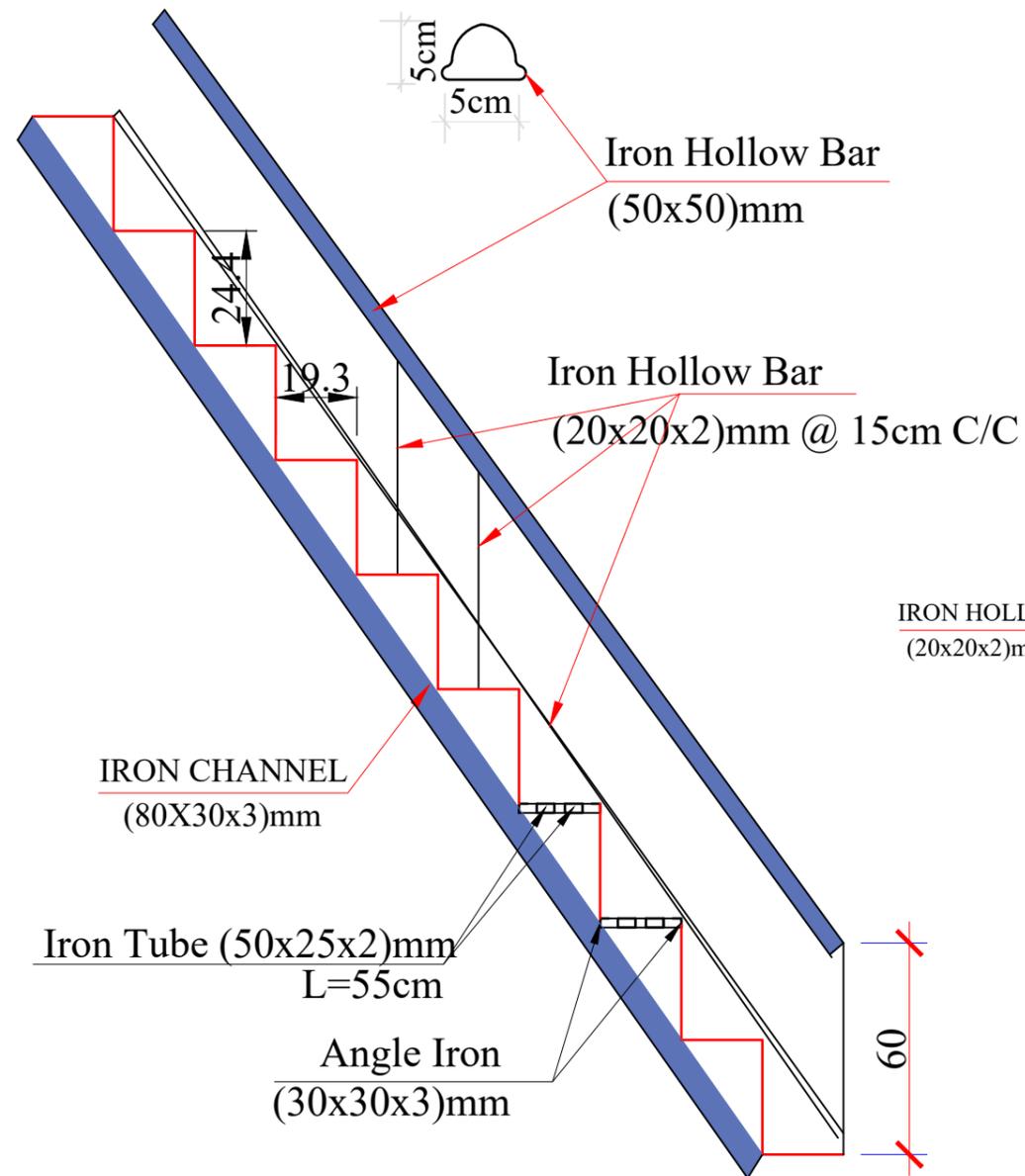
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 District: Khogyana  
 Village: Speen jumat

Date: Aug/2024  
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 Unit: Centimeters

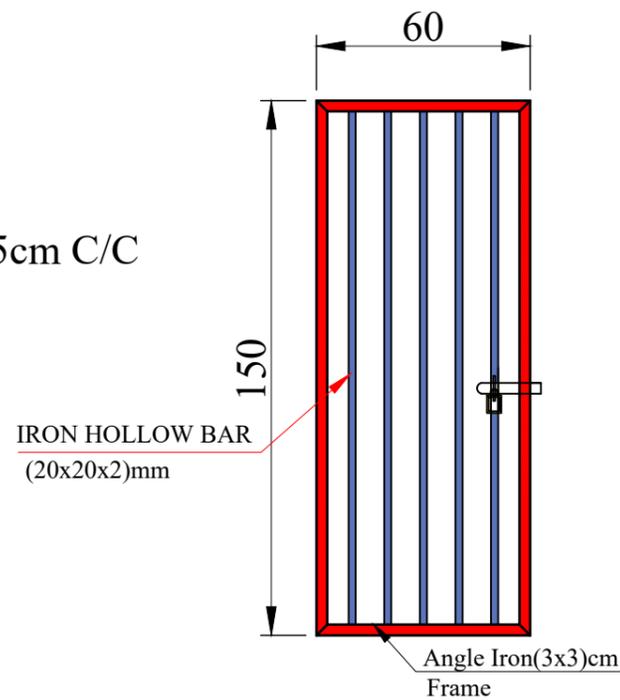
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 Sheet Title: Stair Plan  
 Sheet #: -----



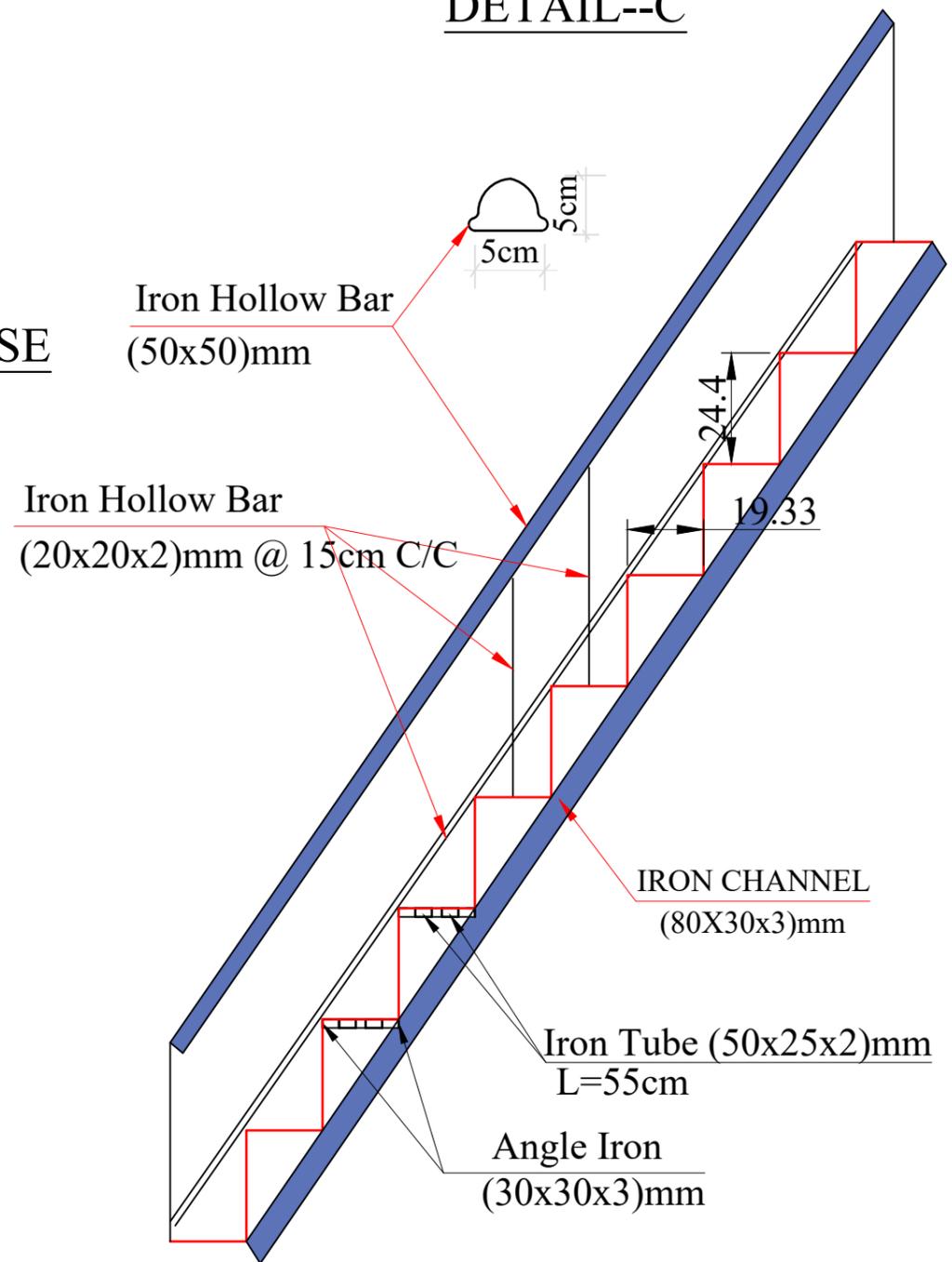
**DETAIL--B**



**DOOR FOR STAIR CASE**



**DETAIL--C**



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Review and Approved by: WASH Advisor

Province: Ningarhar  
District: Khogyana  
Village: Speen jumat

Date: Aug/2024  
Scale: A3-Shown  
Unit: Centimeters

Drawing Title: Elevated 20 M3  
Sheet Title: Stair Section  
Sheet #: -----



IMC

Rehabilitation of Solar power Water Supply Network Project, Speen jumat Village, Khogyana District of Ningharhar Province

Pipe and Fitting Schedule

Pipe				Fittings												Remarks
Location	Length (m)	Diameter (inch/mm)	Type of pipe	Gate Valve	Flow Meter	Non-Return Valve	Straight Coupler	Socket	Nipple	Union	Elbow/Bend	Reducer	Tee	MTA	Saddle Clamp	
Main line (from well to Reservoir) and distribution system																
Well -G.L	65	63	PE16 bar								1					1 No paddle flange
GL-J-Tank	328	63	PE16 bar		(2 1/2")1	2")1		2	2							
	15	2"	GI		(2")1			2	2	2	4			(63x2")1		Inlet pipe of Reservoir
El-Tank-J1	13	2 1/2"	GI													Outlet pipe of Reservoir
	28	2"	GI													Drain & Overflow pipe
	21	75	PE10 bar	(2 1/2")1	(2 1/2")1			4	4		2		(75x50x75)1	(75x2 1/2")1		
J1-STP-1	15	32	PE16 bar									(50x32)	(32x32x32)1			
	3	3/4"	GI	(3/4)"1				2	2		2			(25x3/4")1		
J1-STP2	45	32	PE16 bar													
	3	3/4"	GI	(3/4)"1				2	2		2			(25x3/4")1		
J1-J2	34	75	PE10 bar													
J2-STP3	14	32	PE16 bar													(75x32)1
	3	3/4"	GI	(3/4)"1				2	2					(25x3/4")1		
J2-J3	33	75	PE10 bar										(40x32x40)1			
J3-STP4	8	32	PE16 bar													(75x32)1
	3	3/4"	GI	(3/4)"1				2	2					(25x3/4")1		
J3-J4	24	75	PE10 bar								1					
J4-J5	77	75	PE10 bar	(2 1/2")1					2							(75x40)1
J5-J6	24	40	PE10 bar	(1 1/4")1					2				(40X32X40)1			
J6-STP5	12	32	PE16 bar													
	3	3/4"	GI	(3/4)"1				2	2					(25x3/4")1		
J6-J7	31	40	PE10 bar										(40x32x40)1			
J7-STP6	11	32	PE16 bar													
	3	3/4"	GI	(3/4)"1				2	2					(25x3/4")1		
J7-J8	32	40	PE10 bar										(40x32x40)1			End Cup 40mm
J8-STP7	12	32	PE16 bar													
	3	3/4"	GI	(3/4)"1				2	2					(25x3/4")1		
J5-J9	21	40	PE10 bar	(1 1/4")1					2				(40x32x40)1		(75x40)1	

Pipe				Fittings												Remarks
Location	Length (m)	Diameter (inch/mm)	Type of pipe	Gate Valve	Flow Meter	Non-Return Valve	Straight Coupler	Socket	Nipple	Union	Elbow/Bend	Reducer	Tee	MTA	Saddle Clamp	
J9-STP-8	10	32	PE16 bar													
	3	3/4"	GI	(3/4)"1				2	2					(25x3/4")1		
J9-J10	42	40	PE10 bar										(40x32x40)1			
J10-STP-9	8	32	PE10 bar													
	3	3/4"	GI	(3/4)"1				2	2					(25x3/4")1		
J10-J11	40	40	PE10 bar										(40x32x40)1			
J11-STP-10	10	32	PE16 bar													
	3	3/4"	GI	(3/4)"1				2	2					(25x3/4")1		
J11-STP=11	37	40	PE10 bar													End Cup 40mm
J5-J12	24	63	PE10 bar	(2")1					2			(75x63)			(63x32)1	
J12-STP12	9	32	PE16 bar													
J12-J13	37	63	PE10 bar										(63x40x63)2			
J13-J14	32	40	PE10 bar	(1 1/4)"1					2				(40x32x40)1			
J14-STP-13	9	32	PE16 bar													
	3	3/4"	GI	(3/4)"1				2	2					(25x3/4")1		
J14-J15	48	40	PE10 bar										(40x32x40)1			
J15--STP-15	9	32	PE16 bar													End Cup 40mm
	3	3/4"	GI	(3/4)"1				2	2					(25x3/4")1		
J15--STP-16	41	40	PE10 bar													End Cup 40mm
	3	3/4"	GI	(3/4)"1				2	2					(25x3/4")1		
J13-J16	29	40	PE10 bar	(1 1/4)"1					2				(40x32x40)1			
J16-STP-17	8	32	PE16 bar													
	3	3/4"	GI	(3/4)"1				2	2					(25x3/4")1		
J16-J17	52	40	PE10 bar										(40x32x40)1			
J17-STP-18	10	32	PE10 bar													
	3	3/4"	GI	(3/4)"1				2	2					(25x3/4")1		
J17-J18	44	40	PE10 bar										(40x32x40)1			
J18-STP-19	11	32	PE16 bar													
	3	3/4"	GI	(3/4)"1				2	2					(25x3/4")1		
J18-J19	61												(40x32x40)1			
J19-STP-20	8	32	PE16 bar													
	3	3/4"	GI	(3/4)"1				2	2					(25x3/4")1		

Sunday, September 8, 2024

## Speen jomat

### Solar pumping project

#### Parameter

Location:	Afghanistan, Jalalabad (34° North; 70° East)	Water temperature:	25 °C		
Required daily output:	72 m³; Sizing for average month	Dirt loss:	2.0 %	Motor cable:	412 m
Pipe type:	-	Total dynamic head:	87 m	Pipe length:	-

#### Products

Quantity	Details
PSk3-7 C-SJ12-15	1 pc. Submersible pump system including controller with DataModule, motor and pump end
LC325-P72	32 pc. 10,400 Wp; 16 x 2 modules; 34 ° tilted
Motor cable	412 m 16 mm² 3-phase cable for power and 1-phase cable for ground
Accessories	1 set Well Probe V2, Pressure Switch

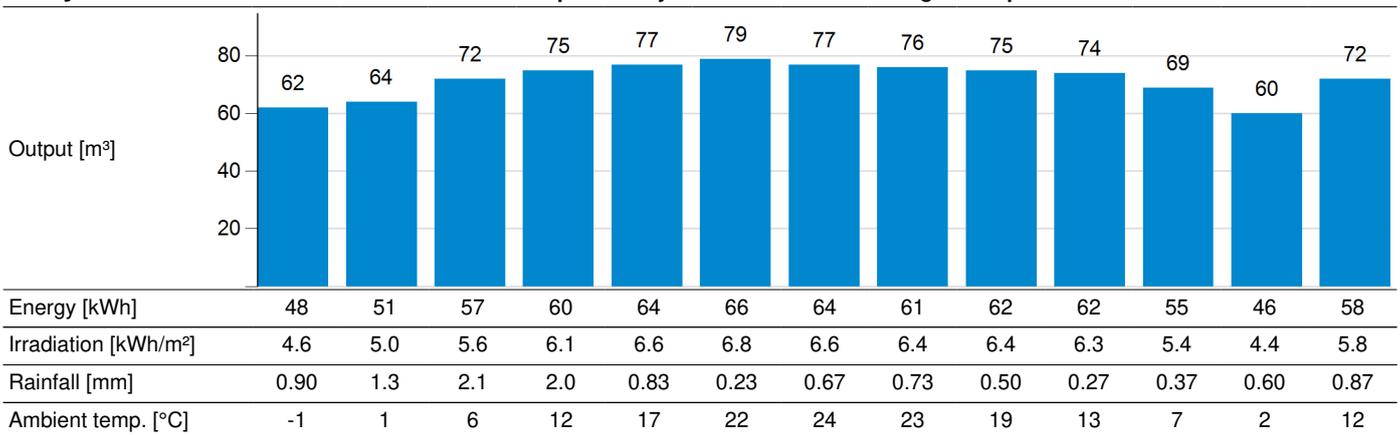
#### SunSwitch setting in PumpScanner

min. 300 W/m²

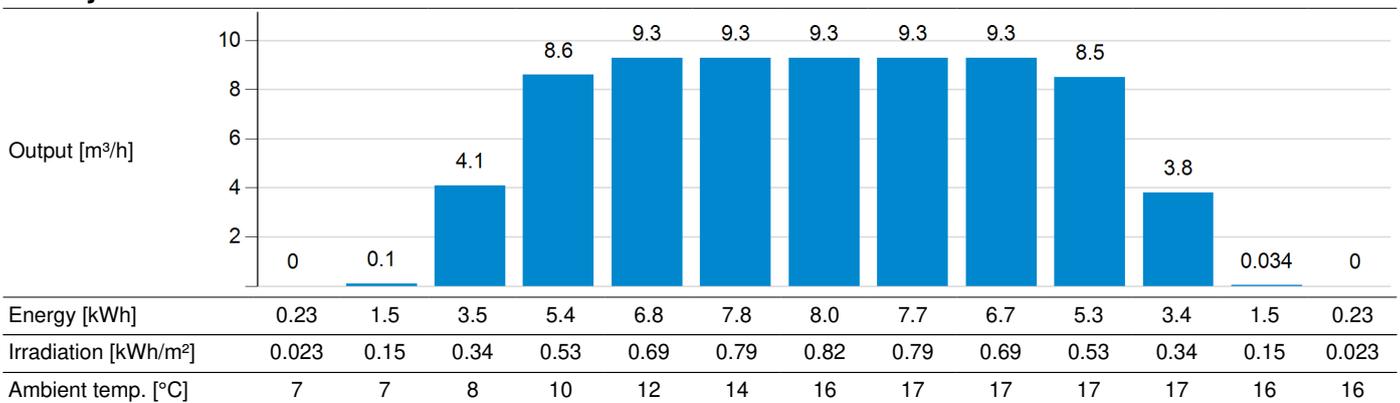
#### Daily output in average month

72 m³

#### Daily values



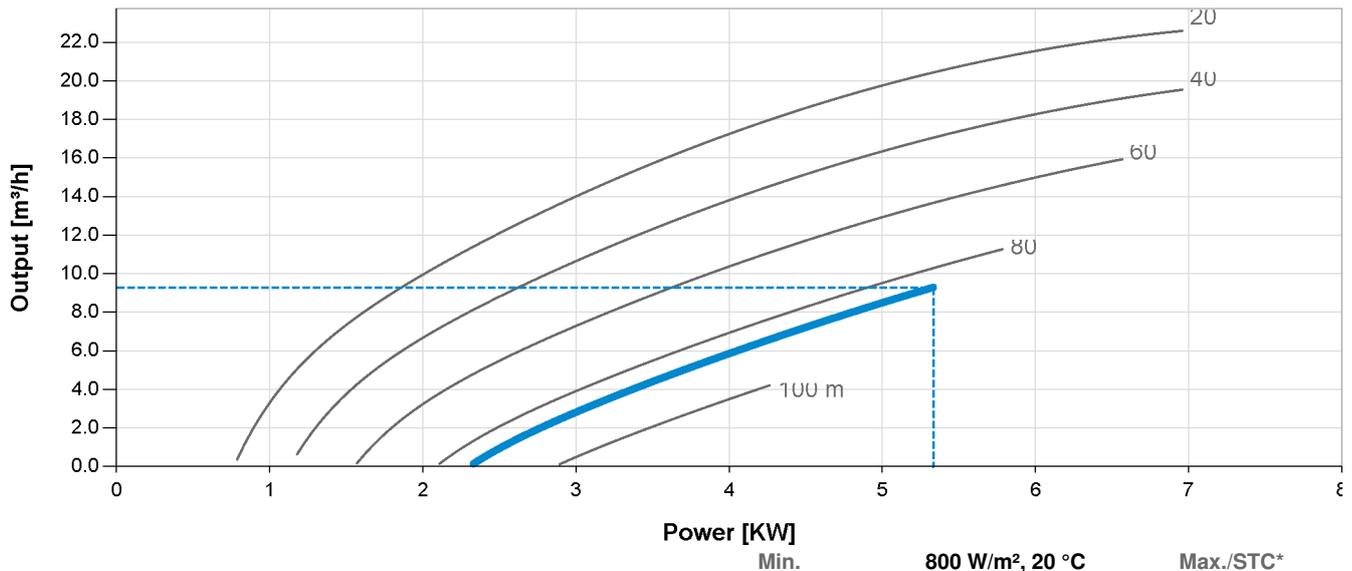
#### Hourly values



Sunday, September 8, 2024

**Speen jomat**

Solar pumping project

**System characteristic**


		Min.	800 W/m², 20 °C	Max./STC*
<b>PV generator</b>	Cell temperature	[°C]	46	25
	Temperature loss	[%]	6.1	-
	Dirt loss	[%]	2.0	-
	Pmax	[Wp]	7,660	10,400
	Vmp	[V]	563	600
	Imp	[A]	14	17
	Voc	[V]	661	734
	Isc	[A]	14	18
	Pout	[W]	5,510	-
	Vout	[V]	630	-
	Iout	[A]	8.5	-
<b>Motor cable</b>	Power loss	[%]	1.2	2.4
<b>Pump systems</b>	Motor power	[W]	2,330	5,330
	Motor voltage	[V AC]	359	380
	Motor current	[A]	4.6	9.9
	Motor speed	[rpm]	2,680	3,010
	Frequency	[Hz]	47	53
	Flow rate	[m³/h]	0.16	9.3
	Efficiency	[%]	1.7	40

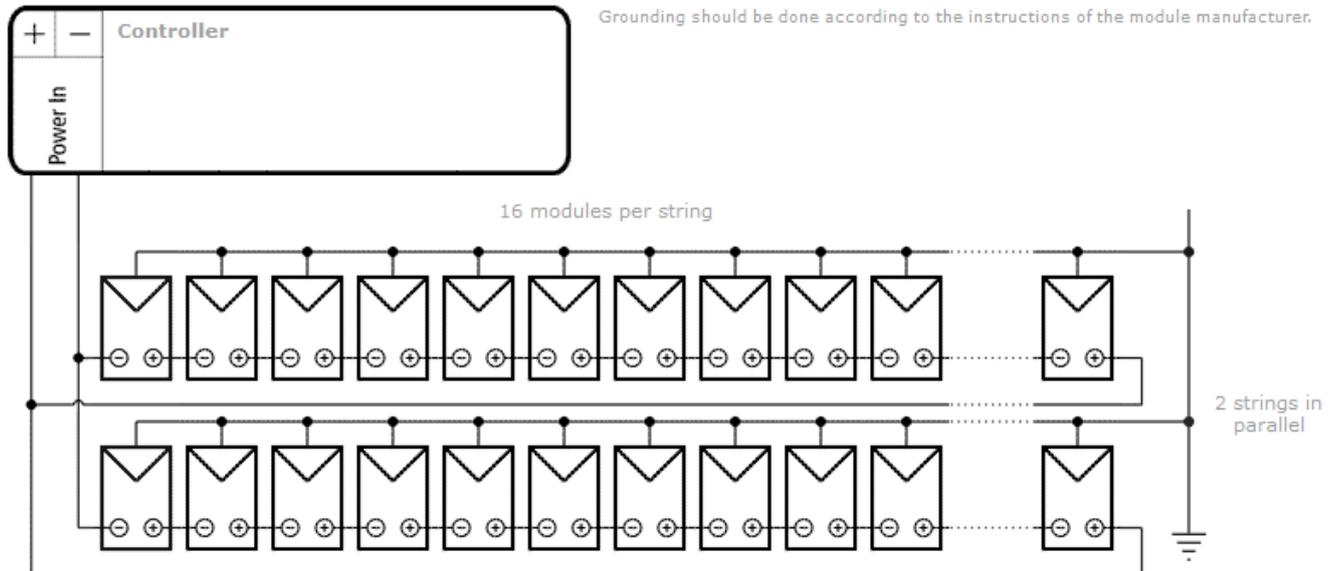
\*STC: Standard test conditions for photovoltaic modules, 1000 W/m² solar irradiance, 25 °C cell temperature

Sunday, September 8, 2024

## Speen jomat

Solar pumping project

## Wiring diagram

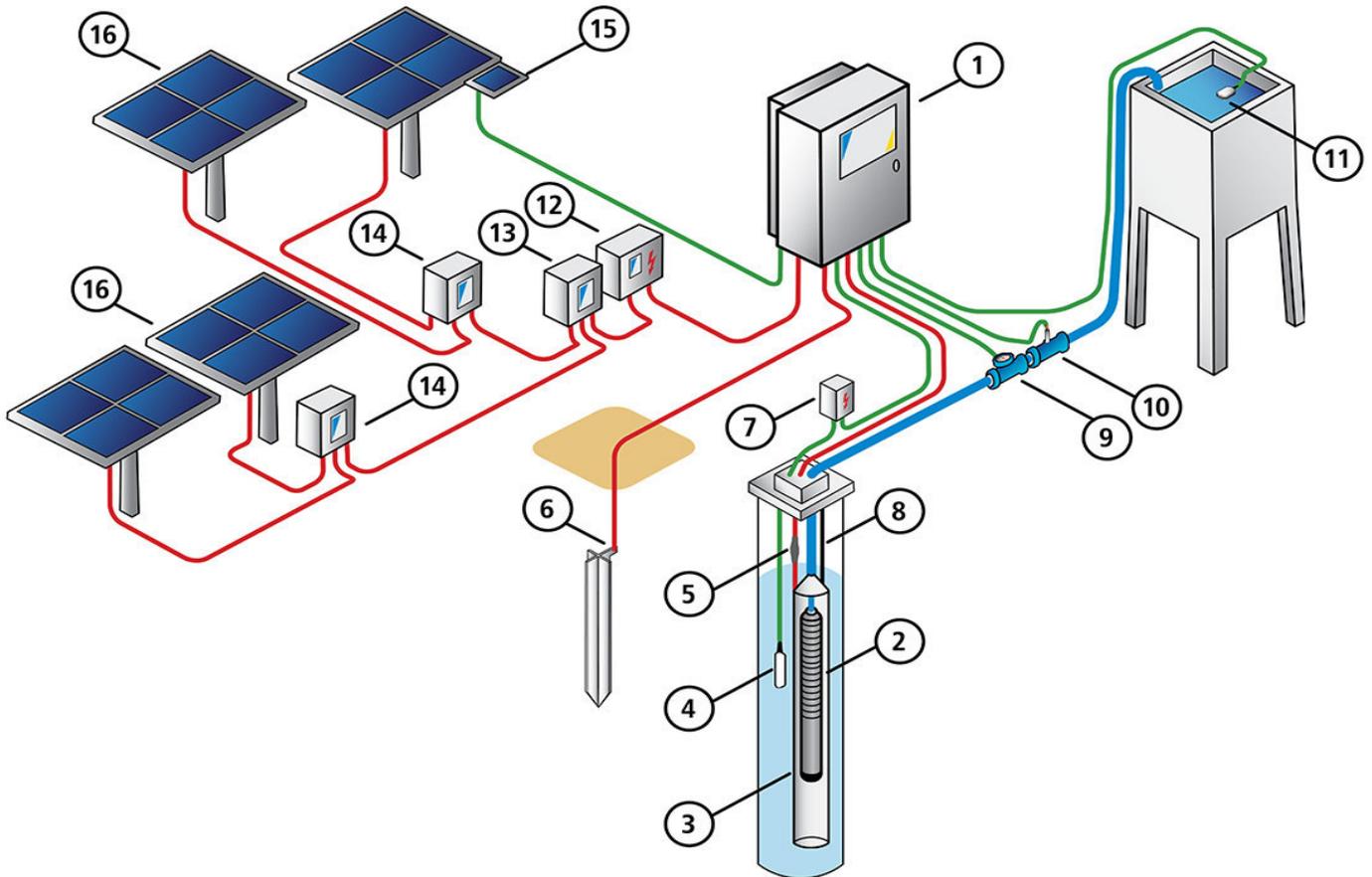


Sunday, September 8, 2024

## Speen jomat

Solar pumping project

### System Layout



1: PSk2 Controller

2: Submersible Pump

3: Stilling Tube

4: Well Probe

5: Cable Splice Kit

6: Grounding Rod

7: Surge Protector\*

8: Safety Rope

9: Water Meter

10: Pressure Sensor

11: Float Switch

12: PV Protect

13: PV Combiner

14: PV Disconnect

15: PV Module for Sun Switch

16: PV Generator

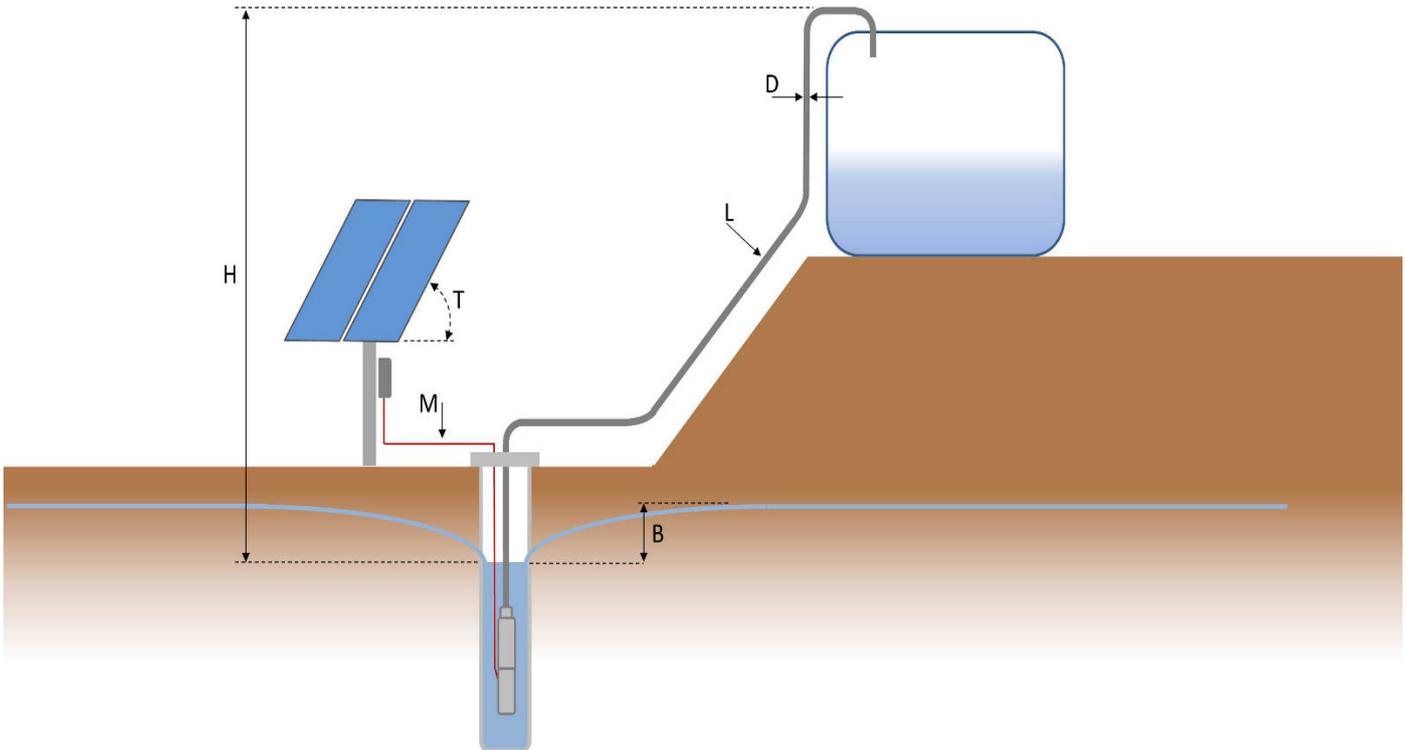
\*It is recommended to install a Surge Protector at each controller sensor input.

Sunday, September 8, 2024

## Speen jomat

Solar pumping project

### Sizing Layout



<b>H (Static head):</b>	Vertical height from the dynamic water level to the highest point of delivery.
<b>B (Drawdown):</b>	Lowering of water level depending on flow rate and recovery rate of the well.
<b>D (Pipeline inner diameter)</b>	
<b>L (Pipe length):</b>	Entire pipeline from the pump outlet to the point of delivery. Ellbows and armatures must be added as an equivalent length of pipeline.
<b>M (Motor cable):</b>	The cable between controller and pump unit.
<b>T (Tilt angle):</b>	Angle of the PV generator surface from the horizontal plane.

# PSk3-7 C-SJ12-15

## Solar Submersible Pump System for 4" wells

### System Overview

Head	max. 100 m
Flow rate	max. 23 m³/h

### Technical Data

#### Controller PSk3-7

- High efficiency solar pump controller
- Integrated hybrid power functions to mix solar with grid / generator power
- Integrated MPPT (Maximum Power Point Tracking)
- Multiple analogue and digital sensor
- Simple configuration with LORENTZ Assitant App
- Onboard data logging and system monitoring with real-time and historic data views
- Inbuilt water applications to manage your pumping system
- SunSensor included for unique pump and motor protection
- Active temperature management

Power	max. 8.3 kW
Input voltage	max. 850 V
Optimum Vmp**	> 575 V
Motor current	max. 13 A
Efficiency	max. 98 %
Ambient temp.	-25...60 °C
Enclosure class	IP66

#### Motor AC DRIVE SUB 4" 5.5kW

- Highly efficient 3-phase AC motor
- Frequency: 25...53 Hz
- Premium materials, stainless steel: AISI 304
- No electronics in the motor

Efficiency	max. 84 %
Motor speed	1,400...3,020 rpm
Power factor	0.83
Insulation class	F
Enclosure class	IP68
Submersion	max. 150 m

#### Pump End PE C-SJ12-15

- Non-return valve
- Premium materials, stainless steel: AISI 304
- Centrifugal pump

Efficiency	max. 52 %
------------	-----------

#### Pump Unit PU7k C-SJ12-15 (Motor, Pump End)

Borehole diameter	min. 4,0 in
Water temperature	max. 30 °C****

### Standards



2006/42/EC, 2004/108/EC, 2006/95/EC

IEC/EN 61702:1995, IEC/EN 62253 Ed.1

The logos shown reflect the approvals that have been granted for this product family. Products are ordered and supplied with the approvals specific to the market requirements.

\*\*Vmp: MPP-voltage under Standard Test Conditions (STC): 1000 W/m² solar irradiance, 25 °C cell temperature

\*\*\*\*Special solutions available for >30 °C, please consult your distributor

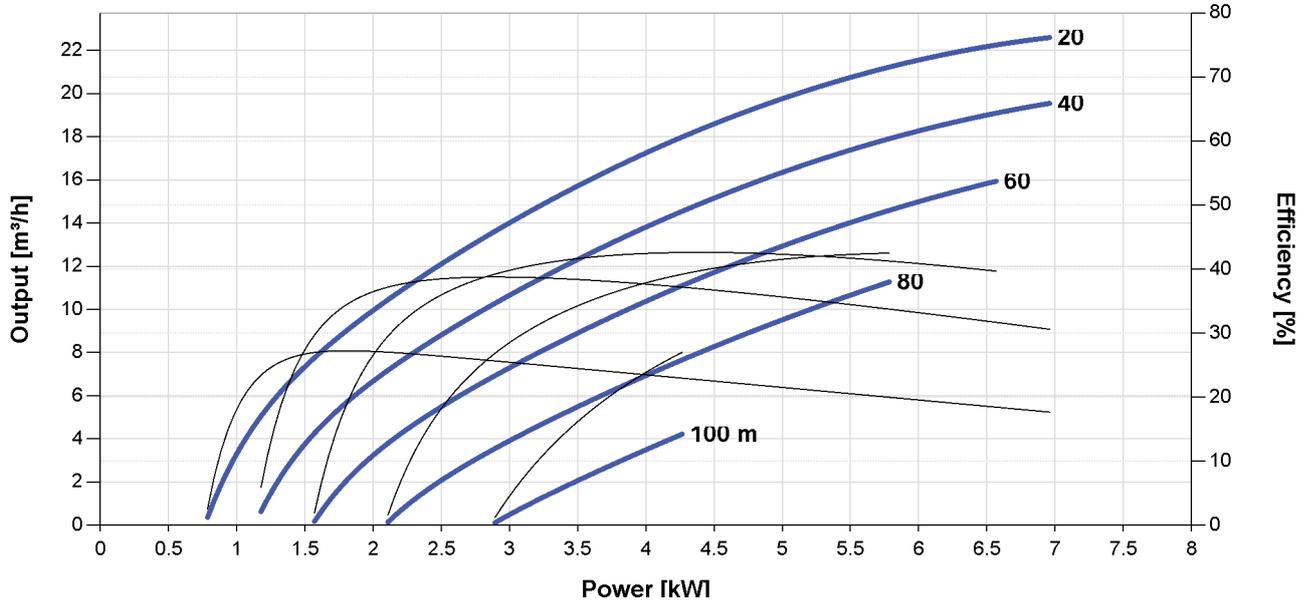


# PSk3-7 C-SJ12-15

Solar Submersible Pump System for 4" wells

## Pump Chart

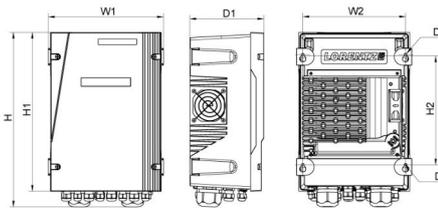
Vmp\* > 575 V



## Dimensions and Weights

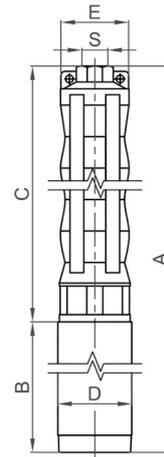
### Controller

H = 428 mm  
 H1 = 390 mm  
 H2 = 270 mm  
 W1 = 280 mm  
 W2 = 250 mm  
 D = 6.0 mm  
 D1 = 180 mm



### Pump Unit

A = 1,925 mm  
 B = 740 mm  
 C = 1,185 mm  
 D = 96 mm  
 E = 100 mm  
 S = 2 in



	Net weight
Controller	
Pump Unit	63 kg
Motor	25 kg
Pump End	38 kg

\*Vmp: MPP-voltage under Standard Test Conditions (STC): 1000 W/m² solar irradiance, 25 °C cell temperature

# Well Probe V2

## Mechanical float switch for dry run protection of LORENTZ solar pumps

The well probe provides a reliable method of run dry protection for LORENTZ pumps. The well probe detects that water is present within a well, tank or other water source. The well probe is typically attached to the riser pipe above the pump and connected to the controller. When the well probe becomes dry (water level is below the probe) the pump switches off to avoid dry running.

### Order Information

Item no.: 19-000005    Product name: Well probe sensor V2

### Features

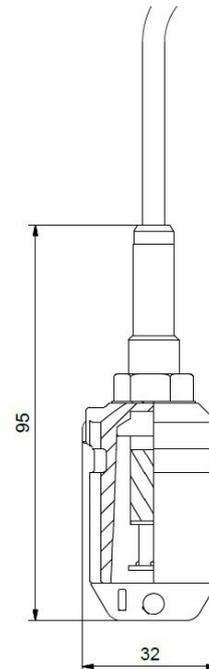
- Reliable dry run protection
- Simple to install using 3 cable ties
- Improved tolerance to dirt
- Splicing kit and cable ties for fixing are included

### Technical Data

- Max. operating temperature 55°C
- Enclosure class: IP68
- Submersion depth: max 50 m (164 ft)
- Cable length: 1.5 m
- Wire size: 2 x 0.50 mm<sup>2</sup> or AWG 20, waterproofed
- Must be mounted in a vertical position
- Meets the requirements for CE

### Dimensions / Weight

- Packaging dimensions: 255 x 170 x 40 mm  
10.0 x 6.7 x 1.6 in
- Total weight: 0.1 kg / 0.2 lbs



# Pressure Switch

## Device for Water Pressure Detection in Applications with LORENTZ Solar Pump Systems

The switch can be used to detect the water level within a tank. When the water level in the tank reaches the maximum, the pressure will increase and the LORENTZ Controller will stop the pump and indicates Tank Full LED.

### ORDER INFORMATION

- **Item no.:** 19-000310    **product name:** Pressure Switch 1-5bar

### FEATURES

- Reliable water pressure detection
- Simple to install
- Trouble free operation
- Corrosion-free

### TECHNICAL DATA

- Pressure range between 1 and 5 bar
- 2x cable gland  $\varnothing$  5-9mm
- G 1/4" pipe thread
- Meets the requirements for CE



### DIMENSION/WEIGHT

- Packaging dimensions: 130 x 105 x 65 mm  
5.1 x 4.2 x 2.6 in
- Total weight: 0.5 kg / 1 lbs

