



# ORGANIZATION FOR RELIEF DEVELOPMENT ORD

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## INVITATION TO BID

ITB No.: AFG/ORD/24/16

**Bid Documents for**

### **Construction of Water Wells and Wells Rehabilitation**

Location: Keshendeh District, Balkh Province, Afghanistan

**ISSUANCE DATE: 31 October 2024**

**(Deadline for Submission of Bid): November 13, 2024, 16:00hrs (Afghanistan local time)**

Please ensure to sign the registration sheet at the ORD office while submitting the sealed Bid!

**Subject:** Invitation to Bid  
**Project Name:** Construction of Water Wells and Well Rehabilitation  
**Invitation to Bid No.:** AFG/ORD/24/16  
**Location:** Keshendeh District, Balkh Province, Afghanistan  
**Issuance Date:** October 31, 2024  
**Closing Date:** November 13, 2024

## **INTRODUCTION OF ORD**

Organization for Relief Development (ORD) is a non-governmental, non-profit, and non-political organization that has been established in 2010, and registered in Kabul, Afghanistan with the Islamic Republic of Afghanistan. ORD plays a critical role in providing management services for peacebuilding, humanitarian assistance, and development operations. These activities help suffering people in troubled parts of Afghanistan. ORD's mission is to expand the capacity of its partners to implement peacebuilding, humanitarian, and development operations that matter to people in need. Working in some of Afghanistan's most challenging environments, ORD's vision is to always satisfy stakeholders with management services that meet better standards of quality, speed, and cost-effectiveness. By assisting its development partners, ORD makes significant, tangible contributions to results on the ground. For further information on ORD, its mandate, and operations please see <http://www.ord.org.af>.

### **1. INVITATION TO BID**

The Organization for Relief Development (ORD) is the implementing partner of the DANISH COMMITTEE FOR AID TO AFGHAN REFUGEES (DACAAR) for the Humanitarian WASH for vulnerable, remote, and underserved communities in Afghanistan project in the Keshendeh district Balkh Province, Afghanistan. The Construction of five Water Wells and 10 Well Rehabilitation is a part of this project.

### **REQUIREMENTS**

**ORD**, invites qualified companies, duly registered with the Ministry of Industry and Commerce govt of Afghanistan, to submit their sealed bids for the afore-mentioned project "Construction of five Water Wells and 10 Wells Rehabilitation" as per the attached BoQ of Annex – 7 ).

Furthermore, it is recommended that this (ITB) and its mandatory annexes be read and filled in thoroughly. Failure to comply with the requirements of bid submission will be at the Bidder's own risk, bids that are not substantially responsive to the requirements of the Bidding Documents will be rejected.

### **2. REQUESTS FOR CLARIFICATION**

Bidders are required to submit any request for clarification or any question in respect of this ITB by e-mail to the Procurement Unit at [procurement.kabul@ord.org.af](mailto:procurement.kabul@ord.org.af)

Any prospective bidder requiring any clarification in respect of the Bidding Documents may notify the Employer in writing at [procurement.kabul@ord.org.af](mailto:procurement.kabul@ord.org.af) The request for clarification must reach the Employer no later than 4 days before the closing date of the bid. The Employer will respond to any request for clarification that he receives earlier than 4 days prior to the deadline for submission of bids.

The deadline for receipt of questions is 15:00 hrs local time on 9<sup>th</sup> November 2024. Bidders are requested to

keep all questions concise.

Please do not send bids to the above email address. Only queries and questions on this ITB can be sent to the subject line email (**Construction of five Water Wells and 10 Well Rehabilitation – AFG/ORD/24/16**).

ORD will compile the questions received and plans to respond to such questions shortly after the closing date/time for clarifications. At its discretion, ORD may copy any reply to a particular question to all other invited bidders at once.

Your bid documents shall be prepared in English.

Please submit your bid using the Annexes provided. Bids not conforming to the requested formats may not be taken into consideration.

### **3. ELIGIBLE BIDDERS:**

4.1 This Invitation for Bids is open to all interested companies who have registered with the government of Afghanistan and have valid licenses.

4.2 The company, organization, or individual is not listed in the sanction and embargo list of the UN Security Council.

4.3 The company, organization, or individual is not legally barred from the procurement process on the grounds of previous violations of regulations on fraud and corruption.

4.4 The company, organization, or individual will not be contracted for considerable portions of the contract as an enterprise economically intertwined with persons conducting the tender.

4.5 The bidder shall be an Afghan company or individual.

### **4. COST OF BIDDING**

The bidders shall bear all costs associated with the preparation and submission of their respective bids and the Employer will in no case be responsible or liable for those costs, regardless of the conduct or outcome of the bidding process.

### **5. TIMEFRAME FOR SUPPLY, DELIVERY & Installation**

The intended project including all related work and activities require to be completed according to the following timeframe:

No.	Task	Timeframe
1	Construction of five Water Wells, and Rehabilitation of 10 Water Wells	35 calendar days

The Bidding Documents, in addition to the invitation for bids, are those stated below, and all documents shall be signed /stamped by the bidder or his legally authorized representative and returned to the address according to the Bidding Documents.

## 6. ITB Documents

The following annexes form an integral part of this Invitation to Bid:

- Annex- 1: Vendor Registration Form
- Annex- 2: Summary of Relevant Work Experience with Evidence documents
- Annex-3: Personnel Resources
- Annex-4: Equipment & Machinery
- Annex- 5: Bid Form
- Annex- 6: Declaration of Undertaking
- Annex- 7: Financial Offer Form (Bill of Quantity)
- Annex-8: Technical Drawings

Prices must be quoted for all items in the Bill of Quantities.

The bidders are expected to carefully examine the contents of all the above documents.

Failure to comply with the requirements of bid submission will be at the Bidder's own risk, bids that are not substantially responsive to the requirements of the Bidding Documents will be rejected.

## 8. PREPARATION OF BID

### a. Content of the Technical Bid

The submitted bid must include the following formation. Failure to supply all requested information or comply with the specific formats may disqualify the bidder from consideration Failure to comply may risk disqualification. The technical bid should contain all the information required.

Your technical bid should be concisely presented and structured in the following order to include, but not necessarily be limited to, the following information:

- Vendor Registration Form in accordance with Annex - 1.
- Summary of relevant work experience in accordance with Annex - 2.
- Bid Form in accordance with Annex - 5.
- Declaration of undertaking in accordance with Annex -6.
- Copy of valid business license.
- General Past Performance/ Work Experience: List of ongoing and completed three projects with provable evidence documents (copy of the contracts).
- Experience in similar projects: Provide copies of the signed and stamped contracts of at least three (3) completed similar WASH projects. Providing a simple list of past performance is not acceptable.
- Company profile with relevant experience with (list and copy of the contract for similar completed projects provided to UN/NGO entities, with a copy of the valid business license
- Confirm that your proposal is valid for 60 calendar days from the closing date of this ITB in the Bid Form as Annex -5.
- Qualification and experience of the proposed key and technical personnel particularly the project manager and site engineer for completing the project.

- Proposed equipment and machinery list with provable evidence documents for implementation of the project.
- Proposed time schedule and the timeframe that the contractor should be supplying and delivering the required goods in compliance with the required timeframe. The proposed schedule shall be prepared in calendar days including all the necessary main activities e.g., Construction Work, sample selection & approval, provision, packing, transportation, delivery, etc.

**b. Content of the Financial Bid Price**

- All prices shall be stated with applicable tax (in accordance with the current tax laws of the government of Afghanistan, and all other relevant provisions of the same law).
  - All unit prices shall be indicated in the space provided in the price sheet (BoQ). The bidder must sign and officially stamp the Financial Offer Form or (BoQ).
  - The offer should follow the given structure and prices shall be quoted in Afghani (AFN)
  - The Financial bid price is to be submitted as per the BoQ & Financial Offer Form (Annex - 7). Bids that have a different price structure may not be accepted.
  - All Annexes of the bid are to be properly completed, signed, and stamped.
- c. **Bid Validity Period: Bids shall be valid for 60 calendar days** from the date of submission. A bid valid for a shorter period shall be rejected by ORD on the grounds that it is non-responsive. In exceptional circumstances, prior to the expiry of the original bid validity period, the Employer may request that the bidders extend the period of validity for a specified additional period which shall in no case be more than the original bid validity period. The request and the responses thereto shall be made in writing.

**d. Alternative Bid**

Alternative bids are not allowed to be attached.

**9. SUBMISSION OF BID**

- a. Deadline for submission of bid:

The closing date for submission of bids is the **13<sup>th</sup> of November 2024, 16:00hrs** (Afghanistan local time). Late bids shall be rejected, and electronic submission is not allowed.

In case of emergencies and formal holidays, it's extendable for one day more than bidders can submit their offers for tomorrow of the closing date for submission of the bid.

- b. Bids must be received by the Employer at the address specified no later than the deadline.
- c. Bids with the charge payable will not be accepted, nor will arrangements be undertaken to collect the bids from any delivery point other than that specified above. Bidders shall bear all expenses incurred in the preparation and delivery of bids. No claims will be entertained for a refund of such expenses.

**10. MODIFICATION, SUBSTITUTION, AND WITHDRAWAL OF BIDS**

The bidder may modify or withdraw its bid after the bid's submission, provided that the written notice of the modification, including substitution or withdrawal of the bids, is received by the Employer prior to the deadline for submission of bids.

The Bidder's modification or withdrawal notice shall be prepared, sealed, marked, and dispatched. No bid may be modified by a bidder after the deadline for the submission of bids.

## **11. BID OPENING AND EVALUATION**

### **12.1 Bid Opening**

The opening of the bid will be held on 14 November 2024 at 10:00 am local time. The bid opening will take place at: ORD Main Office, Kabul City Kabul Province

### **12.2 Process to be Confidential.**

Information relating to the examination, clarification, evaluation, and post-qualification of bids and recommendations for the award of a contract shall not be disclosed to bidders or any other the person not officially concerned with such process before the announcement of the bid evaluation report.

Any effort by a bidder to influence ORD in the examination, evaluation, comparison, and post-qualification of the bids or contract award decisions may result in the rejection of its bid.

### **12.3 Examination of Bids and Determination of Responsiveness**

Prior to the detailed evaluation of bids, the Employer will determine whether each bid is substantially responsive to the requirements of the Bidding Documents.

A substantially responsive bid is one which meets the eligibility criteria; has been properly signed; and conforms to all the terms, conditions, and specifications of the bidding documents, without material deviation or reservation.

### **12.4 Technical and Financial Evaluation**

Bids will be evaluated in accordance with the following technical criteria. The evaluation is made on a technical and financial basis. The percentage assigned to each component is determined in advance as follows:

The Technical bid documents will be evaluated by using the following two stages of criteria:

1. Eligibility Criteria (Non-Complaint or fail will be disqualified) as per the following Table:

#	Eligibility Criteria (Pass & Fail)	Max Points Obtainable	
<b>1 - First Stage Evaluation: PASS / FAIL Criteria</b>		<b>Pass</b>	<b>Fail</b>
1	Submission of a valid business license, registered with the Ministry of Commerce.	Pass	Fail
2	Accepts proposal validity of 60 calendar days from the closing date of this ITB (confirm the bid validity in bid form annex 5).	Pass	Fail
3	Submits of all bid documents with annexes are to be properly completed, signed, and stamped.	Pass	Fail
4	Declaration Undertaken is provided, signed & stamped.	Pass	Fail

2. Technical Evaluation Criteria (Non-compliant / failed bidder will not be considered for technical & financial evaluation.

<b>2 - Second Stage Evaluation:</b>		<b>Scoring Criteria</b>
1.	Valid business license registered with the Ministry of Commerce	10
2	<b>General Past Performance/ Work Experience:</b> List of ongoing and completed three projects with provable evidence documents (copy of the contracts).	20
3	<b>Experience in similar projects:</b> Provide copies of the signed and stamped contracts of at least three (3) completed similar WASH projects. Providing a simple list of past performance (list of projects) is not acceptable.	30
4	Qualification and experience of the proposed key and technical personnel particularly the project manager and site engineer for completing the project.	10
5	The proposed equipment and machinery list with the submission of provable evidence for implementation of the project and only the list will not be scored.	20
6	<b>Work plan (time schedule):</b> Bidder's proposed time schedule and the timeframe for construction of the intended water wells and water supply networks.	5
7	<b>Updated Bank Statements:</b> submission of the bidder's updated bank statement should be in the last three months.	5
<b>Total</b>		<b>100</b>

To proceed to further stages of the evaluation process, the submitted technical proposal must obtain at least 60 points or above of the total technical obtainable score, 100 points.

### **12.5 Financial Bid:**

The most advantageous bid determined based on this procedure after the correction of any arithmetic errors will win the contract.

The lowest bid price alone is generally not decisive.

If a bid price appears to be unusually low in relation to the services/work to be rendered the bidder will be requested to submit a written breakdown of his price calculation. If after review of the notes submitted by the bidder, reasonable doubts persist as to whether the required goods and works can be provided at the rates offered and if this is reasonably expected to pose a considerable risk to the performance of the contract, the bid in question will have to be excluded.

**12.6 Selection Criteria:** Technically compliant offer from the qualified and competent bidder at the lowest cost, meeting technical requirements, quality, and time.

### **12.7 Notification of Award**

Prior to the expiration of the period of bid validity, the Employer will notify the successful bidder in writing or where necessary by phone that his/her bid has been accepted.

## **12.8 Award of Contract**

Prior to the expiration of the period of bid validity, ORD shall send the successful letter to the winning bidder for the signing of the contract/purchase order which constitutes the notification of award.

## **12.9 Performance Guarantee**

The standard form amount of performance bond acceptable to the employer shall be a Bank Guarantee. The successful bidder shall furnish to the Employer a Performance Bond in the form of the amount of 10 % value of the contract.

## **12. Payment Schedule**

All services included in this ITB, and the subsequent contract will be paid as per the executed amount of work at each stage of completion. All payments will be made in the currency of offer (and PO) and in accordance with the ORD General Conditions for the Purchase of Services.

Payment will be made through crossed cheque or cash in the name of the bidder's/supplier's established business account with a scheduled bank. Tax at source will be deducted from all payments made to the bidder/supplier as per government rules and regulations unless a valid exemption certificate is provided by the bidder/supplier. Partial payment will be released in a similar manner.

Furthermore, the supplier must present full documents to the buyer of the successful provision of equipment to the center to claim the amount. No advance payment shall be made.

Invoices will be settled after the completion and acceptance of the milestone deliverables.

All payments shall be technically endorsed by the ORD Project Manager / Procurement and approved by the ORD Director or Deputy Director.

## **13.1 Advance Payments**

Advance payments are not applicable for this tender and subsequent contract.

ORD has zero-tolerance for fraud. Fraud is any act or mission that intentionally misleads, or attempts to mislead, obtain a benefit, or avoid an obligation.

### **Attachments:**

- Annex 1: Vendor Registration Form
- Annex2: Summary of relevant work experience
- Annex 3: Personnel Resources
- Annex 4: Equipment & Machinery
- Annex 5: Bid Form
- Annex-6: Declaration of undertaking
- Annex-7: Financial Offer Form / Bill of Quantity (BoQ)
- Annex 8: Technical Drawings



**VENDOR REGISTRATION FORM****Company Details and General Information**

The information provided in response to this questionnaire will be held confidential by ORD for use only in Supplier Evaluation and not disclosed to any outside party without your prior written consent. Please provide the following information:

1. Name of supplier	
2. Address of supplier	
3. Contact name	
4. Telephone number	
5. Mobile number	
6. Email address	
7. Website address	
8. What are your opening hours/days?	
9. Company registration number	
10. Year of company registration	
11. Please attach company registration documentation	
12. Annual turnover of your company	
13. Number of employees in your company	
14. Name of bank	
15. Bank details	
16. What products and services do you supply?	
17. Are you able to provide samples of your goods?	
18. What warranties/repair services do you offer?	
19. Please provide references of other aid agency customers you have supplied with goods or services.	
21. Do you have a health and safety policy?	

It should be noted that the answers you provide to this questionnaire might influence your potential relationship with ORD. Following completion, signature, and submission of this questionnaire, any subsequent changes must be submitted to ORD in writing immediately.

### SUMMARY OF RELEVANT CAPABILITY, EXPERIENCE, AND PAST PERFORMANCE

Include projects that best illustrate your experience relevant to this (ITB) or similar activities, sorted by decreasing order of completion date.

Projects should have been undertaken in the past three years. Projects undertaken in the past five years may be taken into consideration at the discretion of the evaluation panel.

No.	Project Title and Description of Activities	Location Province/District	Client Name/ Email/Tel #	Cost in US\$/AFN	Start Dates	End Dates	Completed Schedule (Yes/No)	Subcontract or or Prime Contractor?
1								
2								
3								
4								
5								

Bidder may attach their summary of relevant experience list as computerized that received goods and/or services of a nature similar to the requirements of this ITB.

**Annex 3: Personnel Resources** – Please list your organization’s key personnel in the below tables  
**Table (1):**

**1.1 Number of Staff:**

	Managerial	Technical	Operative	Administrative	Other (specify)
<b>Nos.</b>					

**1.2 List the key and technical staff** (not more than five persons)

Key and technical Personnel				
No	Name	Position	Date of Joining company	Year of Experience
Proposed staff for completion of the intended project				
Name	title	Years with company	Experience & Job responsibility	

**1. Staff CVs** – Please provide your company organization chart and CVs for all key and technical personnel (CVs for the listed personnel in Table 1.2 is mandatory).

1	Name:	
2	Gender	
2	Nationality	
3	Position in the organization:	
4	Education	
5	Work experience [Starting with present position, list in reverse order with name of organization and position held by staff)	

**Annex 4: Equipment and Machinery:** please provide the list with the submission of provable evidence.

**Table (3)**

<b>Equipment</b>					
Type / Description / Model	Size /Capacity	Number	Current Location	Own or Leased	Age

**ITB No.: AFG/ORD/24/16**

**Project Name: Construction of Water Wells and Rehabilitation of Water Wells in Keshendeh District, Balkh Province.**

**Company Name:** \_\_\_\_\_

**To:** ORD Main office

Dear Sir / Madam,

1. Having examined the Conditions of Contract, and Bill of Quantities, and all other documents received with the Invitation to Bid for the execution of the Works in connection with the above named Project, we, the undersigned offer to execute and complete such Works and remedy any faults and defects therein in conformity with the conditions spelled out in the aforementioned documents for the sum of as mentioned in Price Proposal.  
Or such other sums as may be ascertained in accordance with the said conditions.
2. We undertake, if our Tender is accepted, to commence the Works within the time required in the contract conditions, and to complete the whole of the Works comprised in the contract within the time stated in the Contract Conditions.
3. We agree to abide by this Bid for the period of **60 calendar days** from the submission/opening date stated in the Invitation to Bid and it shall remain binding upon us and may be accepted at any time before the expiration of that period.
4. Unless and until a Contract Agreement is signed, this Bid, together with your written acceptance thereof, shall constitute a binding contract between.
5. We understand that you are not bound to accept the lowest or any Bid you may receive.

Dated:     /     /

Signature:..... in the capacity of .....

duly authorized to sign Bid for and on behalf of

.....  
(Bidder name and address in block capitals)

## Declaration of Undertaking

Invitation to Bid No.: AFG/ORD/24/16

Project Name: Construction of Water Wells and Rehabilitation of Water Wells in Keshendeh District, Balkh Province.

We underscore the importance of a free, fair, and competitive procurement process that precludes fraudulent use. In this respect we have neither offered nor granted, directly or indirectly, any inadmissible advantages to any public servants or other persons in connection with our bid, nor will we offer or grant any such incentives or conditions in the present procurement process or, in the event that we are awarded the contract, in the subsequent execution of the contract.

We also underscore the importance of adhering to minimum social standards ("Core Labour Standards") in the implementation of the project. We undertake to comply with the Core Labour Standards ratified by the country of Afghanistan.

We will inform our staff about their respective obligations and about their obligation to fulfill this declaration of undertaking and to obey the laws of the country of Afghanistan.

We also declare that our company/all members of the consortium has/have not been included in the list of sanctions of the United Nations, nor of the EU, nor in any other list of sanctions and affirm that our company/all members of the consortium will immediately inform the client if this situation should occur at a later stage.

We acknowledge that, in the event that our company (or a member of the consortium) is added to a list of sanctions that is legally binding upon the client, the client is entitled to exclude our company/the consortium from the procurement procedure and, if the contract is awarded to our company/the consortium, to terminate the contract immediately if the statements made in the Declaration of Undertaking were objectively false or the reason for exclusion occurs after the Declaration of Undertaking has been issued.

Date:     /     /

Name of company: \_\_\_\_\_

Signature: \_\_\_\_\_ Mobile No. \_\_\_\_\_

Seal: \_\_\_\_\_ Email address \_\_\_\_\_

# Organization For Relief Development (ORD)

## Financial Offer Form (BoQ)



**Project Name:** Humanitarian WASH for vulnerable, remote, and underserved communities in Afghanistan

**Project Code:** ECHO/-AS/BUD/2024/91008

**Task:** Construction of Five Water Wells

**Location:** Keshنده District, Balkh Province, Afghanistan.

**Date:** October 31, 2024

**Annex: 7**

S.No	ITEM DETAILS	UNIT	Quantity	Unit Cost [AFN]	Amount [AFN]
1	Well drilling by heavy percussion rig machine (Well Dia between 10 -12 inches)	M	60		
2	Gravel Packing (2-6mm) rounded, sorted and washed river gravel	M <sup>3</sup>	4		
3	Clay Packing (Imprevious Clay)	M <sup>3</sup>	1		
4	Small tools and other consumable like rope, screw and glue, end cap...etc	Lump sum	1		
5	PVC Pipe ( C Class) 4 inches diameter	M	48		
6	PVC Screen ( C Class) 4 inches diameter	M	16		
7	PVC Rasing Main 63mm	M	64		
8	Complete water quality analysis test	test	1		
9	Pamir Hand Pump with installation work and material	Complete Set	1		
10	Cement	50kg/Bag	10		
11	Construction of Well Apron in accordance with Design	all required material/complete work	1		
<b>Sub Total for Construction of one Water Well</b>					
<b>Grand Total for Construction of Five Water Wells</b>			<b>5</b>		

Total Price in words:

Company Name: \_\_\_\_\_

Date: \_\_\_\_\_

Signature (Name / Position): \_\_\_\_\_

Stamp / Seal: \_\_\_\_\_

Mobile No: \_\_\_\_\_

# Organization For Relief Development (ORD)

## Financial Offer Form (BoQ)



**Project Name:** Humanitarian WASH for vulnerable, remote, and underserved communities in Afghanistan

**Project Code:** ECHO/-AS/BUD/2024/91008

**Task:** Water Wells Rehabilitation

**Location:** Keshنده District, Balkh Province, Afghanistan.

**Date:** October 31, 2024

**Annex: 7**

S.No	ITEM DETAILS	UNIT	Quantity	Unit Cost [AFN]	Amount [AFN]
1	PVC Raising Main (4 Inch)	Per meter	10		
2	Ordinary Portland Cement	50 kg Bag	1		
3	Hand pump fast wearing spare parts	Standard set from supplier	1		
4	Distribution network spare parts	Multiple spare parts	1		
5	Soak pit (Make one meter depth and 70cm dia.)	100cm deep x 70cm wide	1		
6	Afridev deep well hand pump	standard set	1		
7	Shipments (loading and unloading)	labor			
8	HTH Chlorine powder	grams	10		
9					
10					
11					
<b>Sub Total for one Water Well Rehabilitation</b>					
<b>Grand Total for ten Water Well Rehabilitation</b>			<b>10</b>		

Total Price in words:

Company Name: \_\_\_\_\_

Date: \_\_\_\_\_

Signature (Name / Position): \_\_\_\_\_

Stamp / Seal: \_\_\_\_\_

Mobile No: \_\_\_\_\_





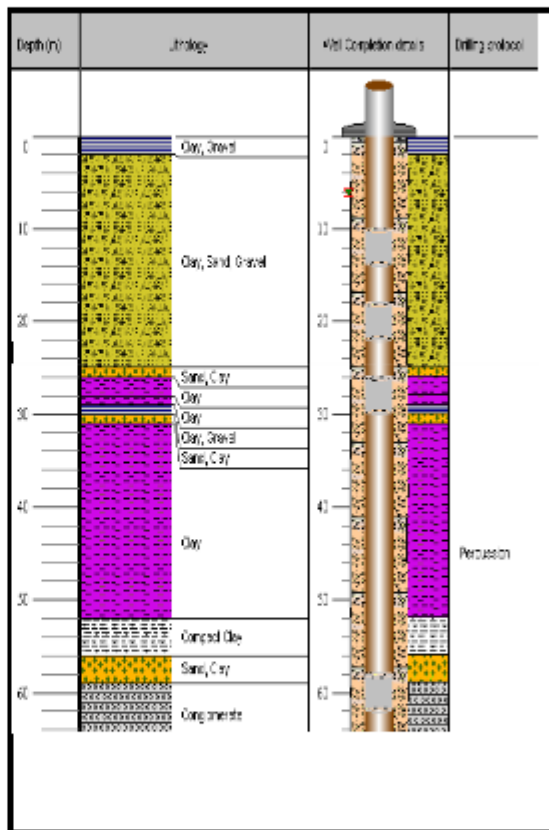
Annex – H2 – Technical Design Tube Well



**WATER SUPPLY AND SANITATION PROGRAM  
TUBE WELL PROJECT  
TUBE WELL DESIGN**

Project Name: \_\_\_\_\_ Province \_\_\_\_\_  
 Project Code: \_\_\_\_\_ District \_\_\_\_\_  
 Date: \_\_\_\_\_ Village \_\_\_\_\_  
 LAT: \_\_\_\_\_ LON: \_\_\_\_\_  
 EC: 682  $\mu\text{s}/\text{cm}$   $\mu\text{s}/\text{cm}$  pH: 7.26 Scale: \_\_\_\_\_

S/NO	Well Data	
1	Well Number	0
2	Starting Date	
	Completion Date	
3	Depth of Well (m)	64
4	Diameter of Well (inch)	12
5	Type of Pipe & Screen	PVC (C Class)
6	Diameter of Pipe and Screen (inch)	4
7	Interval of Screen (m)	10-14, 18-22, 28-30, 58-62
8	Interval of Pipe (m)	0-10, 14-18, 22-28, 30-58, 62-64
9	Length of Pipe (m)	44
10	Size of Screen Slot (mm)	1.5
11	Length of Screen (m)	20
12	Static Water Level (m)	8
13	Discharge (Lit/Sec)	
14	Draw Down (m)	
15	Size of Gravel (mm)	2-6
16		



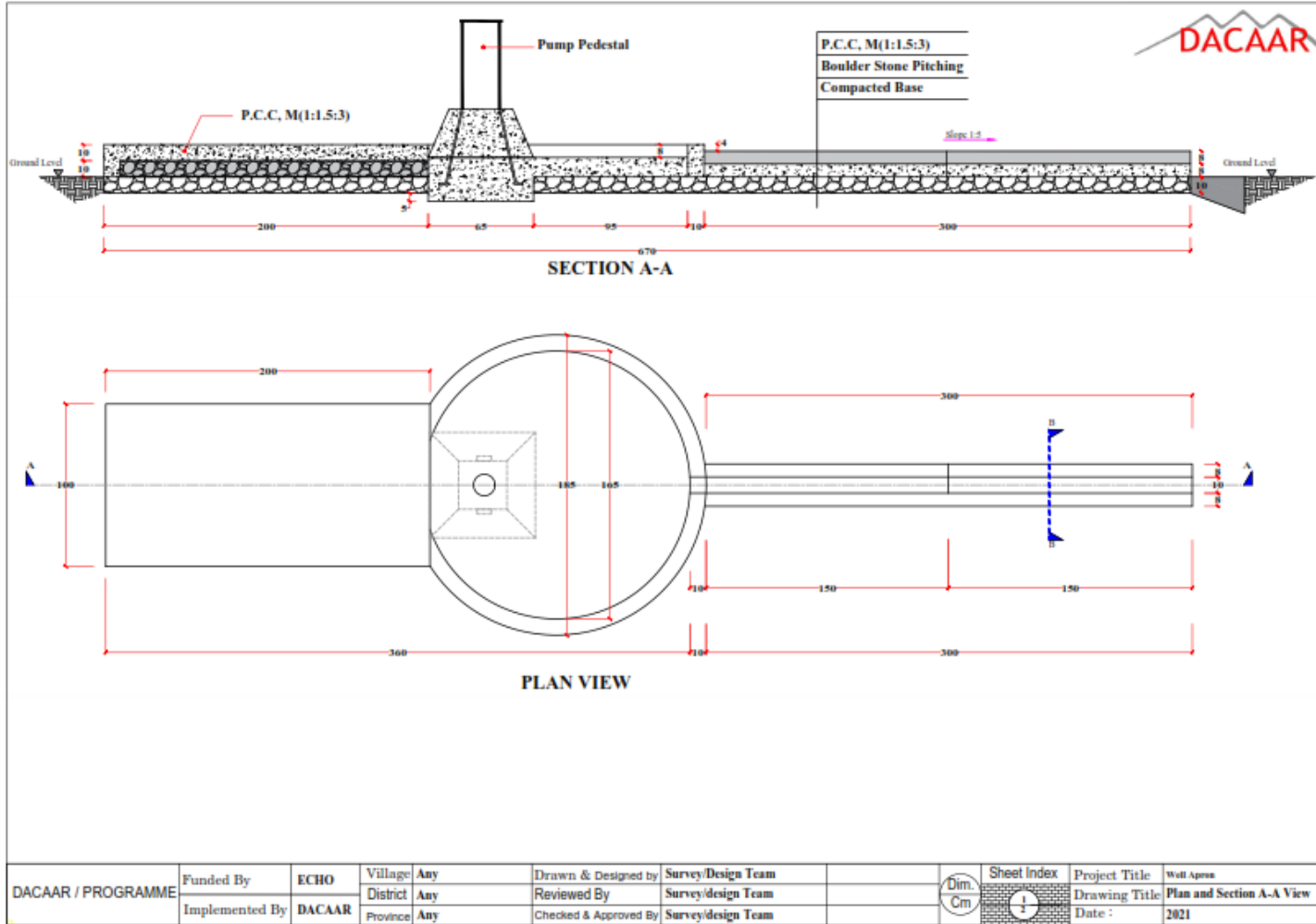
Engineer Name: \_\_\_\_\_

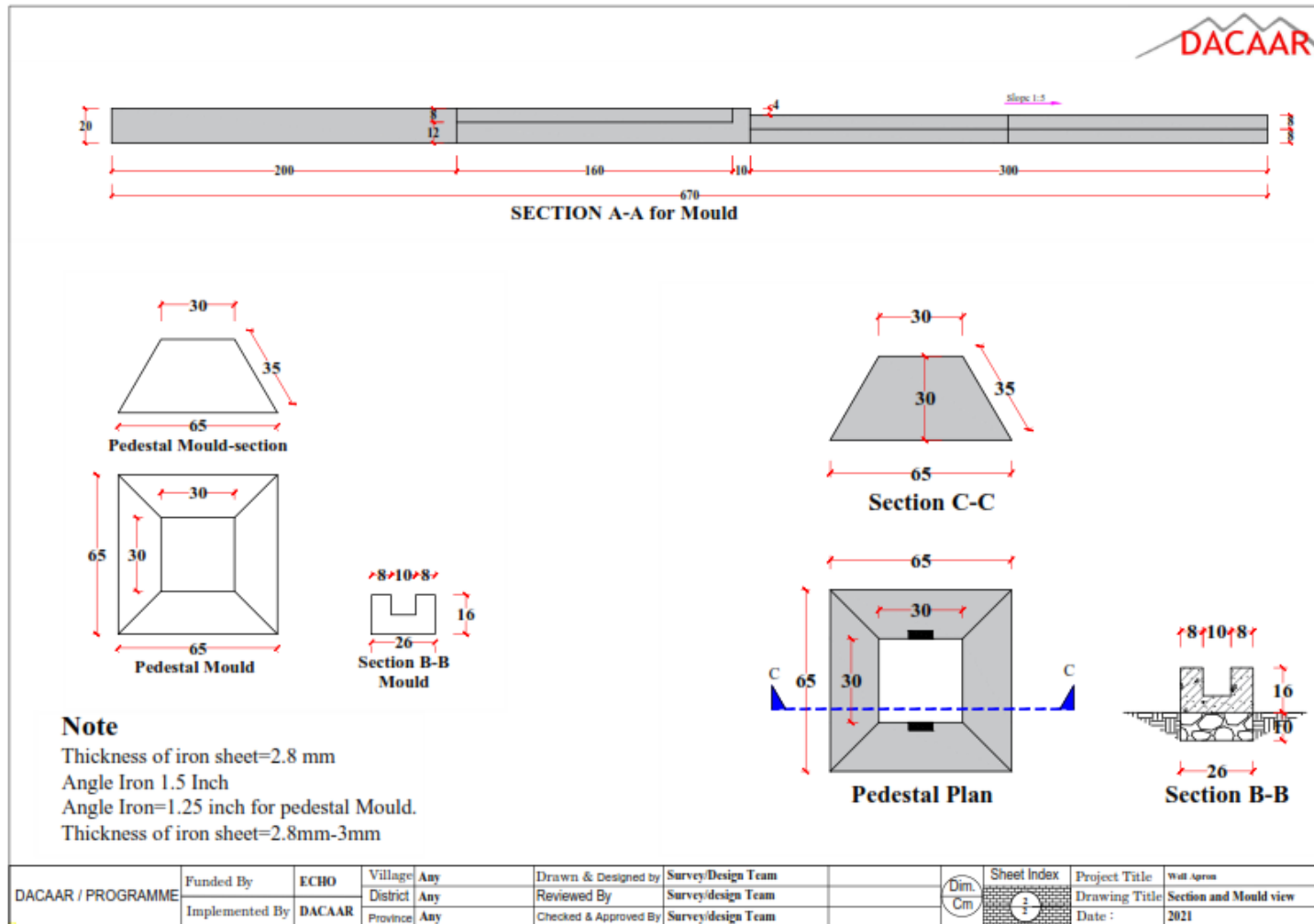
Remarks: \_\_\_\_\_



**DACAAR**

Well Apron







Annex –F- DACAAR Water Quality Parameters

DACAAR WATER QUALITY ANALYSIS REPORT							
<b>Project</b>		<b>Source</b>		<b>Analysis n.</b>			
<b>Province</b>		<b>District</b>		<b>Village</b>			
<b>Latitude</b>		<b>Longitude</b>		<b>Sampled date &amp; time</b>			
				<b>Sampled by:</b>			
Physical parameters				WHO recd	ANSA recd		
EC	µmoh/cm			1500	3000		
TDS *	mg/l	0.688		1000	2000	* From Conductivity	
ORP	mV						
Turbidity	NTU			5	5	≠ 1 for chlorination	
pH				6.5 - 8	6.5 - 8.5	≠ 8 for chlorination	
WT	°C			-	-		
Chemical determination		Speciminhokimeter Printed 10000 Speciminhokimeter HA-CH NH 3500					
Anions		mg/l	conv	meq	WHO recd	ANSA recd	Comments
Total Alkalinity (as CaCO <sub>3</sub> )					-	-	
Alkalinity P (as CaCO <sub>3</sub> )					-	-	
Alkalinity M (as CaCO <sub>3</sub> )					-	-	
Bicarbonate	HCO <sub>3</sub> <sup>-</sup>		0.01639		-	-	
Carbonate	CO <sub>3</sub> <sup>2-</sup>		0.03333		-	-	
Hydroxide	OH <sup>-</sup>		0.05880		-	-	
Chloride	Cl <sup>-</sup>		0.02820		250	250	Taste
Sulphate	SO <sub>4</sub> <sup>2-</sup>		0.02082		250	250	Taste
Sulphite	SO <sub>3</sub> <sup>2-</sup>		0.02498		-	-	
Sulphide	S <sup>2-</sup>		0.06250		-	-	
Fluoride	F <sup>-</sup>		0.05263		1.5	1.5	Fluorosis
Nitrate	NO <sub>3</sub> <sup>-</sup>		0.01613		50	50	Blue baby syndrome
Nitrite	NO <sub>2</sub> <sup>-</sup>		0.02174		0.2 - 3	3	long - short term exposure
Phosphate	PO <sub>4</sub> <sup>3-</sup>		0.03159		-	-	
Boron	B		0.09247		2.4	2.4	Testicular lesions
Bromide	Br <sup>-</sup>		0.01251		-	-	
Cations		mg/l	conv	meq	WHO recd	ANSA recd	
Total Hardness (as CaCO <sub>3</sub> )					300	500	Taste and incrustation
Calcium Hardness (as CaCO <sub>3</sub> )					-	-	
Sodium	Na		0.04348		200	200	Taste
Potassium	K <sup>+</sup>		0.02558		-	-	
Calcium	Ca <sup>2+</sup>		0.0489		-	-	
Chromium	Cr <sup>6+</sup> <small>as</small>		0.11539		0.05	0.05	Carcinogenic
Magnesium	Mg <sup>2+</sup>		0.08224		-	-	
Ammonium	NH <sub>4</sub> <sup>+</sup>		0.05543		1.5 - 35	-	Odour - taste threshold
Manganese	Mn <sup>2+</sup>		0.03641		0.4	-	> 0.1 affects taste and stains laundry
Copper	Cu <small>total</small>		0.03148		2	2	Taste
Aluminum	Al <small>total</small>		0.1112		-	0.2	
Total Iron	Fe <sup>2+</sup> and Fe <sup>3+</sup>		0.03581		0.3	0.3	Taste and odour
Total Arsenic	As <sup>3+</sup> and As <sup>5+</sup>				0.01	0.05	
Lead	Pb				0.01	0.01	
Zinc	Zn <sup>2+</sup>		0.03059		3	3	Taste
Other components		mg/l			WHO recd	ANSA recd	
Silica		SiO <sub>2</sub>			-	-	
Hydrogen Sulphide		H <sub>2</sub> S			0.100	-	Taste and odour
Residual Chlorine		Cl <sub>2</sub>			0.2-0.5	0.2-0.5	
Bacteriological Determination					WHO recd	ANSA recd	
H <sub>2</sub> S determination		Y/N			N	-	
Total Coliforms		Col/100 ml			0	-	(incubation time: 24 hrs @ 37°)
Fecal coliforms (e-Coli)		Col/100 ml			0	0	(incubation time: 24 hrs @ 44°)
Comments & recommendations							SAR

Analyzed by: .....

Checked by: .....

Date: .....

Date: .....