



## **Quality Control Plan for STAR Program Infrastructure Projects**

<b>Date:</b>	26 August 2022
<b>Description:</b>	Quality control plan for the construction and completion of; borehole, steel elevated water reservoir and sanitation system

### **1.0 Introduction**

To insure quality, MERCY CORPS has developed these guidelines for the construction of Boreholes and Water supply infrastructure and Sanitation Systems in the Herat, Afghanistan. These guidelines are designed as generic templates that must be modified in line with the design, BOQ and specifications of each particular water Project bearing in mind the overall objectives of MERCY CORPS. The contractor must be made aware of this plan during the Kick-off meeting.

### **1.1 Purpose and Scope**

This inspection Plan is developed to ensure that this project is carried out with best quality practices. The Plan also specifies the quality system requirements applicable to all personnel who manage, perform and verify work affecting quality for the construction of the Latrines, boreholes, Plumbing/pump installation, steel water reservoir, Pipe network, solarization/mechanization and water points in various locations in Herat Province - whether they are employed directly or indirectly. It is applicable throughout the entire Project and to all parties participating in the Project Execution.

### **1.2 Terms, Definitions and Abbreviations**

<b>COMPANY</b>	The owner of the CONTRACT and in this instance; <b>MERCY CORPS</b>
<b>CONTRACTOR</b>	The Company to whom the CONTRACT WORK has been Awarded and in this instance ( ..... )
<b>PROJECT</b>	<b>WASH Projects. under STAR Program</b>



- ☐ **Accept:** approved: Acknowledge, by signature, initial or stamp and date, that a document or activity has been evaluated and confirmed to meet stated requirement.
- ☐ **Document:** Any written or pictorial information, describing Specifying, reporting or certifying activities, requirements, Procedures or results.
- ☐ **ITP:** a document which sets out the specific operational techniques and activities with the relevant acceptance criteria aimed at monitoring a process and at eliminating causes of unsatisfactory performance at relevant stages of the work and/or services. All the ITP forms required for different activities are itemized in the Inspection and Test Plan Chart. **This chart must be signed off by the Contractor and the WASH team at the Kick-off meeting.**
- ☐ **Hold point = H:** This is mandatory notification to MERCY CORPS. All activities at this level must not proceed without the approval and presence of MERCY CORPS inspection/technical team/Staff.
- ☐ **Review = R:** Notification Evaluation is not required. Inspection of documents and procedures for the execution of works with the materials and activities involved for the purpose of acceptance or rejection documented by signature, initial or stamp and date.
- ☐ **Witness point = W:** A prior notification to MERCY CORPS is mandatory. All activities at this level may proceed by the contractor if MERCY CORPS is not present at the stipulated time provided there is no rescheduling or cancellation from MERCY CORPS.
- ☐ **RANDOM INSPECTION:** Notification is not required. Sufficient representative materials and components are selected and examined to satisfy that these activity or material conform to required specifications and are free from defects.
- ☐ **Contractor Engineer:** A qualified personnel of the contractor with proven/certified Knowledge on the Project. **It is compulsory that the personnel are present and manages the project through the lifespan of the project.** All technical communications would be done between MERCY CORPS Engineer and the Contractor Engineer.



### **1.3 NOTIFICATIONS**

MERCY CORPS shall be given advance notice (at least a day before) prior to all activities during official work days (Sunday to Thursday). 48 hours advance notice for weekends and public holiday works via e-mail. All inspection, test and construction activities identified as Hold point's activities cannot be carried out during the weekend without prior notification and approval via email or phone call by MERCY CORPS's Supervising Engineer. It is the responsibility of the contractor to ensure the MERCY CORPS Engineer is Pre-informed before a Hold Point activity is carried out.

### **1.4 SIGN-OFF/APPROVAL**

Witness points shall be signed off by the Contractor and MERCY CORPS. However, if MERCY CORPS is absent they would be required to sign afterwards where applicable.

Hold Points shall be signed-off by the contractor and MERCY CORPS after the activity has been completed or before the activity starts. As applicable, before proceeding with any further works.

All relevant tests/inspections forms must be made available by Contractor or MERCY CORPS Engineer and signed-off on the spot immediately after tests/inspections or activity has been carried out by the contractor and MERCY CORPS.

### **1.5 NON-CONFORMANCE REPORT (NCR):**

A non-conformance report documents the details of a non-conformance (default in specification) identified in a quality audit or other process/activity review. The objective of the report is to make a clear, identifiable and concise definition of the problem so that corrective action can and will be initiated by the contractor mostly before any other activity is continued. This document is used to officially inform the contractor & Supply chain on a breach in the implementation of the project as to required contractual specifications. A contractor must avoid NCR's as 3 NCR's in one project means the contractor can be blacklisted after investigations. After MERCY CORPS engineer spots a probable case of Non-conformance,



Contract/PR No:				<b>INSPECTION/TEST and SUPERVISION PLAN CHART</b>			
Title of ITP CHART: <b>Borehole Construction</b>							
Location where ITP is Applicable:				Date:		Contractor Name	
S/N	Description of QA Activity	Inspection Level			Responsible eMERCY CORPS Staff	QC Form to be used to Verify Compliance	Comments/Remarks
		Cont		MC			
1	Mobilization Checklist	H		H	Field Engineer /Site Supervisor	Borehole Mobilization Plan	
2	Inspection of All materials to be Installed	H		H	Field Engineer /Site Supervisor	Material Inspection Report	
3	Drilling Activity	H		H	Field Engineer /Site Supervisor	Borehole Construction Report	Before installation
4	During Concreting (Foundation/Slabs Etc)	H		H	Field Engineer /Site Supervisor	Concrete inspection Form	
5	Plumbing installation for Tank Storage	H		W	Field Engineer /Site Supervisor	Plumbing Works Inspection Form Storage Tank Installation	
6	Solar Submersible Pump Installation	H		H	Field Engineer /Site Supervisor	Pump Installation Form	
7	Solar PV system and Electrical Power installation.	H		H	Field Engineer /Site Supervisor	Solar panel's & Generator Installation Form	
8	Inspection of the Water Quality	H		H	Field Engineer /Site Supervisor	Water Quality Inspection Form	
<b>Key for Inspection</b>		(Name) _____ Sign: _____ Date: _____ <b>Contractor:</b>					
<b>I</b> = Random Inspection <b>R</b> = Review Records <b>W</b> = Witness (mandatory notification) <b>H</b> = Mandatory Hold Point							
		Approved: (Name) _____ Sign: _____ Date: _____ <b>MERCY CORPS</b>					



## BOREHOLE MOBILIZATION CHECKLIST

Project Name/Contract Number:		Date:	
S/N	Activity	Checklist	Comment
1	Contract	Contract signed	
2	Drilling plan	Drilling work plan submitted and approved	
3	Community Liaison	Explain details of drilling process.	
		Community member roles, contributions and responsibilities	
		Exchange details of main contact persons or community/Camps representatives.	
		Driller's representative introduced to the Community	
4	Equipment is appropriate and in working condition	Check the Suitability of Drilling rods	
		Check if Hammers and bits are of the right diameter (measure).	
		Temporary casing diameter is correct.	
5	Samples of materials meet with technical specifications	Sample box	
		Casing and screen (measure length and diameter)	
		Filter pack and gravel materials	
		Screen	

<b>INSTPECTED BY</b>	<b>MERCY CORPS REPRESENTATIVE</b>	Input Name, Position, Signature and Date
	<b>CONTRACTOR REPRESENTATION</b>	Input Name, Position, Signature and Date



## BOREHOLE CONSTRUCTION REPORT

Community Name:				GPS:			
Contract Number:				BH NO:			
Name of Contractor:				Date:			
1	Type of Equipment Used						
2	Drilling Method Used						
3.	Is cement grout (1:3) seal placed to a minimum depth of 1.5 from ground surface?						
3.	Is the Borehole Vertically Aligned? (AWWA: Allowable deviation of (2/3) well's inside diameter per 100 ft. depth)			YES		NO	
4	Drilling Start Time:			Drilling Completion Time.			
5	Is Contractor Engineer on Site?			YES		NO	
6	Is Casing Diameter as per drawing.	YES	NO	Was the Casing Capped		YES	NO
7	Total Depth Drilled			Total Depth Cased			
8	Screen Diameter/slot size						
	How much is Screen Length?						
9	How much is the depth below surface that filter pipe installed?						
10	Gravel Packing:	YES	NO	Grain Size Used			
11	Depth Water was Struck?						
12	Was Equipment lost in The Well?			YES	NO	If yes What?	
13	Bore Hole Development		Start Time:	Finish Time			
CONCLUSION/General Comments on the overall quality of Works <i>(to be filled by the MERCY CORPS Engineer)</i>							
SUPERVISED BY: _____ <div style="display: flex; justify-content: space-between; width: 100%;"> <span>NAME (Contractor Engineer)</span> <span>Signature</span> <span>Date</span> </div>							
SUPERVISED BY: _____ <div style="display: flex; justify-content: space-between; width: 100%;"> <span>NAME (MERCY CORPS Engineer/Supervisor)</span> <span>Signature</span> <span>Date</span> </div>							



		CONCRETE INSPECTION FORM	
DATE OF POUR:			
CONCRETE GRADE(MIX): 1:2:4			
DESCRIPTION	CONTRACTOR ACCEPTANCE	MERCYCORPS ACCEPTANCE	REMARKS
<b>1.0 FORMWORK</b>			
Is Formwork Aligned?			
Is there Adequate Access			
Check Dimensions as per Design.			
<b>2.0 REINFORCEMENT</b>			
Are the Re-bars free from excessive Rust			
Is the Spacing Correct			
Is the Concrete Cover as Per Specification			
Are all Tie wires in place and correctly Tied?			
Correct Numbers of bars in the reinforcement			
Are the Reinforcement bars of the correct size <i>(according to Spec)</i>			
<b>3.0 GENERAL</b>			
Is the Pour site clean and free from all Debris			
Are there any Vibratory Pokers or materials for Compaction?			
Confirm Mix Ratio(1:2:4-Cement:River Sand: Gravel)			
Is the water used in concrete pure and drinkable?			
What is the source of water used in concrete?			
Confirm that 6 cylindrical samples of concrete are taken per each 20 cum of fresh concrete?			
Is the fresh concrete temperature within the Specification range			
Is slump test result satisfactory/ within the range of Specification.			
Confirm that concrete cylindrical samples crushed for 7 and 28 days and the result meets the required concrete mark			
<b><u>CONCRETE REPAIR POST POUR</u></b>			
DESCRIPTION OF DEFECT:			
<b>NB: ALL REPAIR IS MANDATORY HOLD POINT</b>	<b>CONTRACTOR ACCEPTANCE</b>	<b>MERCYCORPS ACCEPTANCE</b>	
CONCRETE DEFECT INSPECTION			
SURFACE PREPARATION INSPECTION			
MATERIALS EQUIPMENT AND TESTING			
POST REPAIR INSPECTION			
<p>SIGNED: _____</p> <p>Contractor (cont.) _____ Name _____ Date _____</p> <p>SIGNED: _____ Witness _____</p> <p>(MERCY CORPS) _____ Name _____ Date _____</p>			



		<b>WATER TANK (IRON WORKS) CHECKLIST</b>		FORM NO: CONTRACT NO:	
ITEMS TO BE CHECKED BEFORE APPROVAL IS GIVEN				CHECK/Accept	
				CONTRACTOR	MERCY CORPS
<b>Steel Members</b>					
Is the water tank tested for leakage for minimum of 48 hours?					
Is the water disinfected before filling the tank and putting it in service?					
Confirm availability of Certification for all steel members.					
Check for Dimension and thickness of Iron Box members as to Approved Designs					
Check for Size of Anchor Bolts, Base Plates and Gusset plates as to Approved Designs and specifications					
Check for Size and dimensions of Diagonal Brazing.					
<b>Dimensions of Members</b>					
Check For Dimensions and quantity and thickness of all Iron Members as to Design					
Check For Dimension of Iron Brazing					
Check for Alignment of Vertical and Horizontal Members (+/- 0.5 cm tolerance)					
<b>General</b>					
Confirm Each Tank is to required Capacity/Volume (10m3)					
Confirm that the thickness of Iron Sheet used for water tank is not less than 4mm.					
Confirm the Dimensions of Guard Rails is adequate and according to Specification					
Confirm Quality of Painting.					
Confirm the Quality and length of welding					
Confirm the Quality of the overall Workmanship					
Confirm MERCY CORPS Visibility is clearly Printed as Specified on Scope of works					
REMARK: ACCEPTABLE QUALITY OF WORKS <ul style="list-style-type: none"> <li>• YES</li> <li>• NO (LIST UNACCEPTABLE ITEMS AND EXPLAIN)</li> </ul>					
SIGN: _____ CONTRACTOR NAME: _____ DATE _____					
SIGN: _____ MERCY CORPS NAME: _____ DATE _____					





	<b>PLUMBING WORKS INSPECTION FORM –</b>		FORM NO: CONTRACT NO:
ITEMS TO BE CHECKED BEFORE APPROVAL IS GIVEN	CHECK/Accept		
	CONTRACTOR	MERCY CORPS	
<b>Plumbing/Piping</b>			
Confirm Pipe Quality/type to Specification			
Confirm Pipe Diameter as to Specifications			
Confirm pipe Cleanout			
<b>Pipe Connection Method</b>			
Confirm Pipe connection Method			
Confirm All pipe joint are free from leakages During operation			
Ensure Pipe cutting method does not compromise quality			
<b>General /Vales and Fittings</b>			
Check overall Pipe length for leakages			
Ensure quality of gate valves and non-return valves are of required quality/Spec			
Confirm Alignment of outlet and inlet Pipes to Steel Columns			
Ensure Pipes is embedded in Clean Soil and at least 60cm below ground level			
Check Installation of Water Flow Meters.			
REMARK/General Comments if Needed. ACCEPTABLE QUALITY OF WORKS  <div style="margin-left: 40px;"> <ul style="list-style-type: none"> <li>• YES</li> <li>• NO (LIST UNACCEPTABLE ITEMS AND EXPLAIN)</li> </ul> </div> <div style="text-align: center; margin-top: 10px;">□</div>			
SIGN: _____ <div style="display: flex; justify-content: space-between; width: 100%;"> <span>CONTRACTOR</span> <span>NAME:</span> <span>DATE</span> </div> SIGN: _____ <div style="display: flex; justify-content: space-between; width: 100%;"> <span>MERCY CORPS</span> <span>NAME:</span> <span>DATE</span> </div>			



## PUMP INSTALLATION FORM

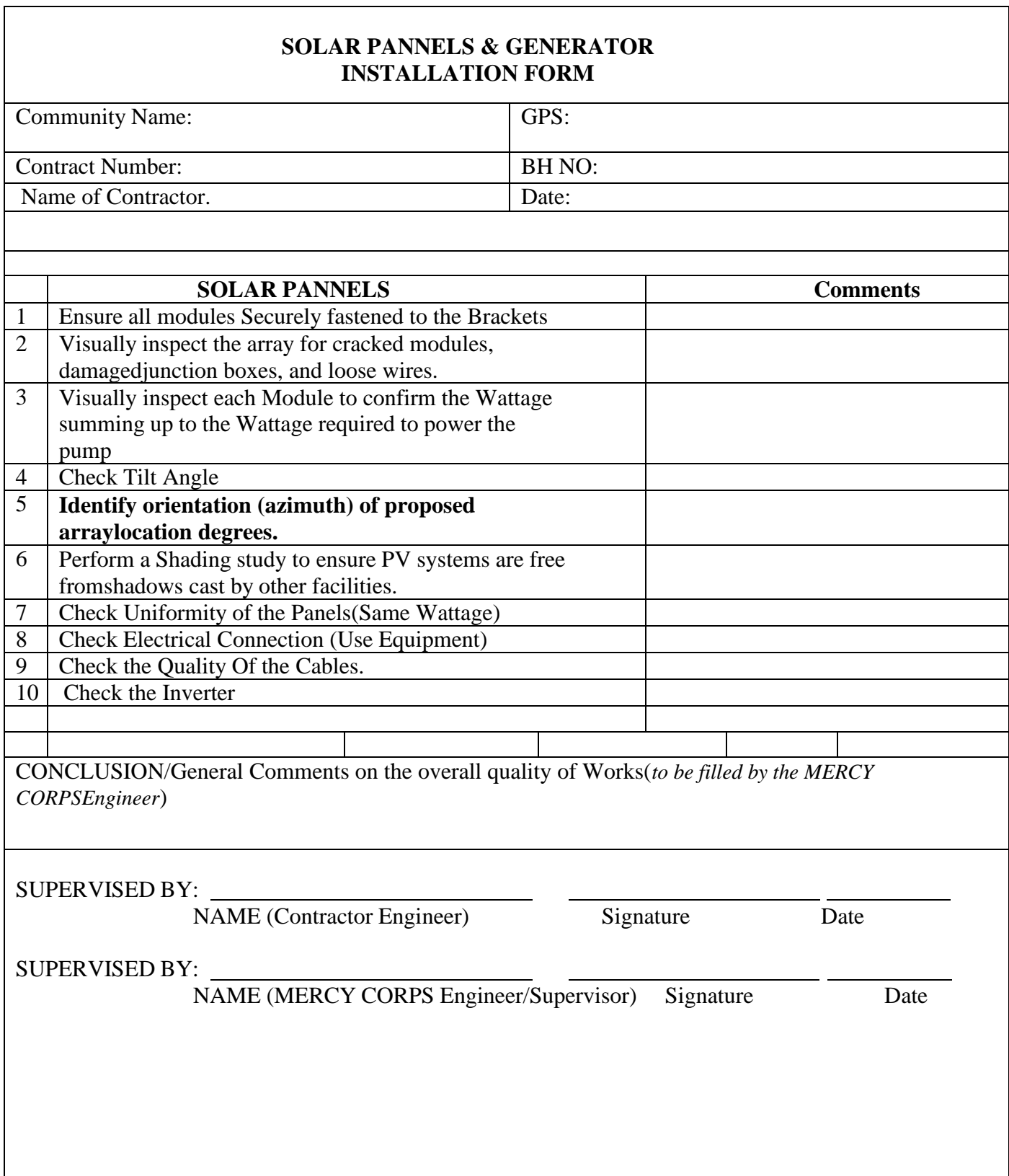
Community Name:	GPS:
Contract Number:	BH NO:
Name of Contractor.	Date:

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	PUMP Specifications	Comments
1	Type of Pump To be Installed	
2	Pump Capacity/ Specification(HP/KW)	
3	Pump installation Depth	
4	Check that the Pump Head Ratings Matches the Motor	
	<b>Plumbing Installation</b>	
4	Check Pipe Diameter	
5	Check Quality of Riser Pipes	
6	Check for Pump Safety Rope.	
7	Check the Quality and Capacity of the Cable used	

CONCLUSION/General Comments on the overall quality of Works( <i>to be filled by the MERCY CORPS Engineer</i> )
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SUPERVISED BY: _____ <div style="text-align: center;">NAME (Contractor Engineer)</div>	_____ <div style="display: flex; justify-content: space-around;"> <span>Signature</span> <span>Date</span> </div>
SUPERVISED BY: _____ NAME (MERCY CORPS Engineer/Supervisor)	_____ <div style="display: flex; justify-content: space-around;"> <span>Signature</span> <span>Date</span> </div>





	<b>WATER QUALITY INSPECTION CHECKLIST</b>		FORM NO: CONTRACT NO:
ITEMS TO BE CHECKED BEFORE APPROVAL IS GIVEN	CHECK/Accept		
	CONTRACTOR		MERCY CORPS
<b>Bacteriological Tests</b>			
H2S Test			
Filter Membranes Test			
<b>Chemical Tests</b>			
Arsenic Test			
Nitrate Test			
<b>Physical Tests</b>			
PH Test			
Turbidity Test			
Conductivity Test			
Free Residual Chlorine Test			
Total Chlorine Test			
REMARK: ACCEPTABLE QUALITY OF WORKS <ul style="list-style-type: none"> <li>• YES</li> <li>• NO</li> </ul> (LIST UNACCEPTABLE ITEMS AND EXPLAIN)			
SIGN:_____ <div>CONTRACTOR</div> NAME:_____ <div>DATE</div>			
SIGN:_____ <div>MERCY CORPS</div> NAME:_____ <div>DATE</div>			



**Contractor Non Conformance Report  
(NCR)**

Contractor Name:	<b>MERCY CORPS</b> Representative:
Contract Name:	Position:
Contractor's Representative:	Phone No :
Telephone:	Contract Location:
Signature: <span style="float: right;">Date:</span>	Signature: <span style="float: right;">Date:</span>

Details of Non Conformance	Action Required	Completion Date	Verification of Completion
Comments: Contractor is Advised to avoid further Non-conformances in the course of the Project as 2 NCR's in a Project could affect Contractors appraisal and ability to Secure another project with MERCY CORPS.			