

## **STATEMENT OF WORK AND TECHNICAL DESCRIPTION OF THE GOODS**

### **Context:**

NCA Afghanistan is implementing a lifesaving WASH project for IDPs comprises of WASH in schools, WASH in Health Centers, and four water supply schemes containing of RCC reservoir, bore well, distribution main and sub pipes and House to House connection stand tapes. Access to Improved Water and Sanitation Facilities Program funded by AHF in order to improve the access to potable water and sanitation facilities to Internally displaced peoples, and conflict affected host communities in need in Sherzaad and Hesarak districts of Nangarhar province.

NCA is currently seeking a reputable, licensed suppliers for construction of water supply systems in the targeted schools and clinics of Hesarak and Sherzaad districts of Nangarhar province. The aim of this tender is to fix the prices of water supply schemes. The quantities and description will be provided in technical description part of this document.

### **Type of Services**

The services required under this RFQ is to provide NCA with construction of water supply systems containing bore wells with compression drilling method according to the soil texture up to depth required and accepted by NCA engineer in charge, water reservoir, equipped with solar powered water supply system from bore wells to reservoir.

### **Scope of Work (SOW):**

The scope works for this RFQ is as bellow:

- Drilling of bore wells with technic according to the soil type of targeted villages with its development, casing, well testing for yield (mix discharge) and compressor test if required.
- Construction of RCC water reservoirs with volume of 20 CUM capacity elevated reservoir in selected villages.
- Solar water pumping system to pump water from bore well to reservoirs with completer accessories stated in the specifications and drawings.
- Connector pipes with all connections.
- Training community maintenance workers for each water supply schemes

The works should be accomplished accordingly to specification and design given. Changes to be made in accordance with NCA technical engineer in charge and vivid reason and approval.

### **Protection:**

During the contract period, when work is not in progress, the boreholes shall be kept capped in such a manner as to prevent the entrance of outside materials. The Contractor shall remove any excess matter at his own expense. The work to be done considering safety measures in place e.g. avoid child labour, explosive material and other practices with is not in line with OSHA (Occupational Safety and Health Administration) standards.

### **Visibility:**

All project sites shall be marked with at least one project sign board. The contractor has to ensure that the sign board will contain at least the following message:

“This project is completed by NCA; and the Logo of the NCA, back donor and IP should be displayed.

**“Failed” (Unsuccessful) Borehole:**

The bore well can be considered as negative after confirmation of NCA technical engineer in charge for the following reasons.

- A borehole having no water bearing zones/aquifers and confirmed from all stockholders.
  - A Borehole that has insufficient discharge (less than 1.5 liters/second) for 8 hours of continuous pumping test.
  - For any reasons, contractor is unable to continue drilling and complete the construction of borehole to the identified depth, then this borehole is deemed to be an “uncompleted” borehole.
1. Boreholes failed due to Contractor not following the specification and techniques: In such cases the cost responsibility falls on contractor. The technical issue causing the failure of borehole will be assessed by NCA engineer.
    - For any reasons, contractor is unable to continue drilling and complete the construction of borehole to the identified depth, then this borehole is deemed to be an “incomplete” borehole.
    - If the Contractor chooses to deviate from standard procedure, BoQ or the agreed method of drilling and wishes to adopt any other procedure or techniques that involves any additional cost and time required, it will be done so entirely at the Contractor's own risk and cost.
    - In case of incomplete (failed) boreholes in such circumstances, no payment shall be made for that borehole either for drilling or materials that cannot be salvaged, and the rig's unproductive time spent in case if the well is failed because of the contractor not meeting the contractual obligations, technical issues from the contractor's side, and not following the instructions provided by the technical team on the ground.
  2. If all technical specifications of the contract are assessed to have been met, by the NCA and contractor engineers, and the well is still not bearing water at a sufficient quantity to fulfil the specified pump test, then the cost of the well will be born by NCA.

**Delivery date:**

Since the project nature is emergency, the contractors should try much to implement it in short period with the quality required. The implementation plans of contractors to be reviewed by technical committee of NCA and to be evaluated for project implementation.

**Project deliverable:**

The contractor is to submit deliverables required for project implementation and monitoring such as, water quality tests, yield test report progress review reports and slump test of Concrete and compressor test for bore well.

**Technical staff**

NCA requires supplier to have at least 6 staff dedicated to this project implementation comprises of a technical engineer ensuring quality and quantity of work, and 4 social workers ensuring social issues arising in the community. In the meantime, NCA staff will be in their support for technical and contextual issue.

**Monitoring and reporting**

The contractor should clarify report the progress of work every week to NCA and ADA staff in charge. In the meantime, ADA and NCA stockholders specifically PRRD technical staff will have regular field visits for ensuring quality of the project. In case any problems arising, contractor should inform NCA immediately and to try to convince stockholder through community mobilizations skills. NCA will designate one of its staff to coordinate with the contractor to regularly monitor the drilling of borehole, construction process, and installation of items.

NCA will undertake on-the-spot checks and monitoring of the progress and quality of the work. The contractor must inform NCA technical team from the project's milestones so that together with the contractor, NCA conducts the monitoring of the above-mentioned activities.

#### **Specification of Electricity Appliance.**

**Solar panels:** This project is containing solar panels which should be Lorentz Ankara Solar / Grundfos Solvis brands or equivalent to these specified standards which should be verified by NCA and MRRD technical team prior to installation. the power of each of solar panels are 250 watt with range of abatements temperature 230-270 k and power tolerance 5-7 % with tilt angle 40-35 degree and MPPC= 9.5 Amp and 39.5 voltage of potential differentiate.

#### **Concrete.**

This project is designed based on ASTM standard and includes both PCC and RCC concrete, the steel bars for RCC should be Tashkent / Khan steel or equivalent to these specified standards with grade 60 and yield 60 kg per square centimetre and will be verified by NCA/IP technical team prior reinforcement. The mixing methodology of concrete must be by mixer machine based on mix design considering local strengthen of concrete materials. The prepared concrete must be used within 30 min and after it would be expired and not allowed to use. The mix design should be by MANAK and by weight of gravel, sand, cement and water.

The materials used in concrete shall be proportionate by weight following the standard cement/sand/aggregate mix ratios as follows: -

For reinforced concrete mix - 1:1:2 mix ratio only for footing and columns –

For reinforced concrete mix - 1:1.5:3 mix ratio for beams, slab, and peaks. –

For plain/mass concrete mix - 1:1.5:3 mix ratio –

For brick masonry mortar mix- 1:4 Mix ratio –

For plastering mortar mix- 1: 2 Mix ratio –

For stone masonry mortar mix- 1:3 Mix ratio The aggregates mix, cement, and water content ratio shall be selected to obtain the best results for compressive strength, density, water tightness & durability, workability, and finish quality. The concrete mix must be such that the design is compatible with the minimum water content ratio to give each grade adequate concrete workability.

The grades of concrete for the various works shall be as noted on the drawings and as below: C25: all reinforced concrete (foundations, slabs, etc.) - Characteristics compressive strength at 28days: 250kg/cm - Minimum cement content: 280 kg/m - Max free water content ratio: 0.40 - Max nominal size of aggregates: 25mm After placement, the concrete shall be vibrated by mechanical means. The vibration method is to be approved by the WASH Site Engineer/works personnel before the operation. The vibrated and consolidated concrete is finished by towelling or floating the surface to a smooth and flat finish. Following placement, vibration, and finishing work to the concrete and after the initial set has occurred not to damage the surface of the concrete, appropriate measures, approved by the site Engineer/Works personnel are to be implemented to cure the concrete for a minimum period of 14 days. Where concrete previously placed as part of the works is to be butted, jointed, or raised with the addition of further concrete, except in the case where the initial concrete is blinding concrete, the first concrete surface must be suitably prepared by the scabbling, i.e., removing the laitance (fine concrete surfacing) before placement of the other concrete. The method is to be approved by the Site Engineer/Works personnel. After scabbling, the concrete shall be a thoroughly wetted and thin layer of 1:2 cement: sand mortar applied before pouring the new concrete. Steel reinforcement shall be positioned with a clearance or 40mm to the face of the concrete unless otherwise directed by the Engineer/Works personnel or shown in the Contract drawings. Formwork for the concrete shall be to the approval of the NCA Engineer and shall not allow grout loss from the concrete mix. Prior to the concrete placement, the formwork is to be inspected and all harmful materials removed to the approval of the NCA and ADA WASH Engineer/Works personnel. The Contractor must undertake no mixing or placement of concrete without prior permission by the NCA or ADA WASH Engineer.

Steel reinforcement shall be the correct diameter, as shown on the drawings. The bars shall be clean and free from rust. They shall be securely fixed with wire before placing the concrete. The minimum cover to reinforcement shall be 25mm

Once mixed, concrete shall be used immediately. Any concrete, which had been allowed to achieve its initial set, shall not be placed. Concrete shall be placed in layers with a maximum thickness of 250mm. Each layer shall be properly compacted with a vibrator or at least by a wooden (or any other) rammer. When placing on old or set concrete, the surface of the old concrete shall be thoroughly cleaned and wetted with water. If the surface is smooth, it must be chipped to form a suitable key. Old concrete shall be painted with liquid cement prior to placing new concrete.

Sufficient water is required for concrete to harden through hydration. The concrete must be kept moist or "cured" to ensure that it does not dry out. Poorly cured concrete will shrink or crack, and not achieve its full strength. Concrete shall be cured by covering in plastic sheets. Spraying with water, covering with wet Sand, or other methods proposed by the Contractor and approved by the Engineer. The Contractor shall ensure that all concrete is adequately cured. Curing shall start as soon as the concrete has been poured and shall continue until curing is complete after 28 days. otherwise, the concrete will be rejected, and all the main and associated costs would be on contractor.

**Cement.**

Fresh Cement (Cherat or equivalent - Portland 400 or 500) shall be delivered to the site in prime powder form and sealed bags. It shall be kept clean and dry until usage. Partially used bags of cement shall be stored in a dry place until required. Any partially used bags, which have become damp, shall be rejected. The Contractor will store the empty bags for the NCA technical team count and dispose of them by the Contractor.

**Bricks.**

Shall be obtained from an approved source and of uniform color, size (10\*11\*22) cm, and shape. Bricks shall have smooth rectangular faces with sharp straight, right-angle edges. Maximum absorption shall not be more than 15% of its dry weight on immersion in water for 24 hours. Minimum crushing strength shall be 140 kg/cm<sup>2</sup>.

**Stone:**

Stone shall be hard, sound, free from decay and weathering. Stones with porous matter or with boulder skin shall be rejected. The size of stones shall not be less than 15cm in any direction. Cement and sand for cement mortar shall be of standard specification. According to the local experiercer and research the stone from Kama district or Surkhrud Shamsha poor with unformed faces and size match the requirements.

**Safety.**

The contractor should provide sufficient safety measures for skilled and unskilled labors and other hired workers on the Project site, the contractor should provide all required PPEs (personal protection equipment) to their workers and labors such as Safety glasses, Safety shoes, safety helmet cap, Gloves, and safety vest coat. If a labor injured/died in time of work in the project all the responsibilities go to the company and NCA doesn't have any responsibility in it at any case.

**Frames/Ing.**

Frames should be from new and smooth surface plywood with no crakes or dotes in it. During framing rotary metallic stands should be used and no wooden pole stanchion is allowed due to construction norms and safety issues. It is worth mentioning that in case breaching any construction rules in framing no paid of frames should be made to the contractor.

**Quality of works & Technical specification:**

Full specifications can be found as ANNEXES: NCA will not accept any items of construction below than specifications provided under Annex. NCA will evaluate monitoring and evaluate activities based on international standard through inspection, verification and testing. Its mentionable, that any changes in the specification should be made in accordance with NCA technical team instructions and agreement.