

DRAFT

TERMS OF REFERENCE FOR PLANNING, DESIGN, CONSTRUCTION SUPERVISION AND EVALUATION OF NEW WATER SUPPLY SCHEMES IN KHYBER PAKHTUNKHWA UNDER ADP NO. 215& 216/130240&130241

GENERAL

The services of qualified consultancy firms having sufficient experience in the relevant fields are required by PHED for feasibility study, project formulation, planning designing, PC-1 preparation, tendering, bids evaluation, construction supervision including quality control, verification of measurement, contractor's bills and evaluation of drinking water supply schemes. The consultancy work includes, but not limited to; selection, design and evaluation of water source, treatment works, transmission line, distribution system, reservoirs, pumping machinery and energization based on evaluation of alternative energy sources.

A. DESIGN

i) Data Collection

The consultant shall collect available data reports and population based on census report or actual house counting with appropriate persons per house @ inter-census projection growth rate per annum and shall be projected for 20 years planning horizon starting from the year 2013.

ii) Topographic Survey & Investigation

The survey work shall consist of field survey for preparing contour mapping, leveling and route survey for the proposed rising main/supply main and other system components along with long section. The survey should also indicate all existing infrastructure including tube wells, pipelines, drains, sewer lines, gas lines, telephone and electric cables/poles. The consultant shall also find sustainable and safe water source in consultation with PHE field staff and community.

iii) Design Stage

For design of the water supply system, the consultant shall adopt PHED approved design criteria.

PC-I/detailed estimate shall be prepared according to the approved rates.

1. Detail design and selection of pipe route and pipe material for main transmission and distribution system.
2. Projected population for a design period of 20 years to be based on actual growth of the project area.
3. Minimum terminal pressure of 10 meter is to be adopted and type of pipe be designed in conformity with maximum permissible pressure and soil formation.

4. 15 – 30 gpcd water consumption rate be taken as per criteria depending upon the socio-economic condition of the area and water availability.
5. Hazen William formula will be used for finding friction in pipelines design of pipeline.
6. Tube well will be designed by keeping in view water table depth, aquifer having potable water, gravel pack and proper shrouding by sieve analysis, after carrying out resistivity survey in the area.
7. Detail design along with justification of reservoirs in the project area if required.
8. Proper treatment including chlorination where required should be considered.
9. Carry out calculations for escalation and de-escalation

Tender documents

The consultant shall prepare following documents as part of the tender documents:

- i. Bill of Quantities
 - ii. Detailed Drawings
 - iii. Technical Specification for each payable item
 - iv. Contract documents comprising of;
 - Invitation of bid
 - Instructions to bidder
 - Form of contract
 - General condition of contract
 - Special condition of contract
 - v. Rate analysis of items not included in approved rates
 - vi. PC-I proforma including engineers cost estimate 10 sets
 - vii. Detailed cost estimate for technical sanction 5 sets
 - viii. Land acquisition
 - ix. Soft copies of all documents mentioned above 3 CDs each
10. Any other activity or components to be included on the instructions of the Client.

The successful bidder will provide performance bank guarantee equal to 10% of bid amount or as provided in the Special Conditions of Contract valid after final completion of the assignment by PHED.

For Rehabilitation Of Existing Schemes

In case of rehabilitation of existing water supply schemes, the following additional activities to be carried out by the consultants:

- i. Assessment of the capacity and quality of existing water sources
- ii. Additional water sources to be developed
- iii. A detailed map of existing water supply scheme including location and capacity of tube wells/water sources, supply main/rising main, reservoirs, distribution system.
- iv. No. of house connections.
- v. Marking of low pressure and un-served areas
- vi. Condition of existing infrastructure including water sources, pipe lines and civil works and need for repair/reconstruction
- vii. Any other additional task related to design of the project.

B. SUPERVISION

During construction phase, the consultants, by furnishing qualified personnel and equipment if required, shall inter-alia provide following services as required under the conditions of Consultancy Agreement:-

1. Assisting the Client in evaluation of contractors bids
2. Supervise execution of work in the capacity of consultant's resident engineer qualified in relevant field to ensure execution of project in accordance with approved plans and PHE specifications.
3. Check and approve work plan/schedule submitted by the contractor.
4. Issue necessary instructions to the Contractor for and on behalf of the Client to assure orderly progress of work.
5. Carry out detailed inspection and supervision of all phases of construction and give recommendations to the Client to ensure that the work is in accordance with the plans and specifications.
6. Conduct and maintain proper record of tests on the different materials being used on the project as per international standard practices, verify the work in terms of quality and quantity of the construction / material used, by applying established engineering techniques and give his recommendations to the Client. Upon acceptability of the work, submit report to the Client at provisional and at final acceptance stages.
7. Make measurements of the work done in connection with the preparation of provisional and final payment certificates. Detailed measurements shall be verified by the Resident Engineer of the Consultants as duplicate record and shall be attached with the Contractor's bills. All the measurements and payments of the work done will be certified by the Consultant on measurement book / payments documents.
8. Assistance in preparation of payment documents and certification of such documents in accordance with the accepted standards.

9. Preparation of Project Inception Report, monthly progress report and submission thereof to the Client showing progress of work as compared to schedule. The monthly report shall be submitted until the 5th day of the subsequent month.
10. Review the design of civil, electrical and mechanical components of the scheme and suggest amendments/recommendations wherever required.
11. Review the Contract Documents and suggest suitable amendments / recommendations if required and prepare variation orders resulting due to changes in the design/route alignments of pipelines or any other component of the scheme.
12. Review of all the projects in the light of technically sanctioned estimate issued by the department and preparation & submission of revised technical estimate, if required.
13. To prepare and submit Project Completion Reports (PC-IV) of the project.
14. To Conduct mid-term and final evaluation of the project in line with the Client requirements.
15. Any other additional task related to execution of projects.