

Maradhoo Feydhoo & Feydhoo Sewerage Project, Maldives  
Package 2

SECTION 8  
Employer's Requirement

December 2015

---

## Contents

<b>I. Employer's Requirement - Part-1 .....</b>	<b>2</b>
1. Scope of Work .....	2
2. Technical Proposal .....	2
3. Tender Drawings .....	3
4. Topographic survey .....	3
5. Working Drawings .....	3
6. Additional Work .....	4
7. Discrepancies in alignment .....	4
8. Contractor's Facilities .....	4
9. Surveying Equipment .....	5
10. Laboratory and Laboratory testing .....	5
11. Operation and Maintenance Manuals .....	5
12. Contractor's operations at site with specific reference to dewatering .....	5
13. Location of pipelines .....	6
14. Training the O&M personnel .....	6

## I. EMPLOYER'S REQUIREMENT

- |                       |  |
|-----------------------|--|
| 1. Scope of Work      | <ol style="list-style-type: none"> <li>1. There is no sewerage system in S. Maradhoofeydhoo &amp; Feydhoo at present. It is proposed to construct a conventional piped sewerage system, comprising gravity mains and pumping stations leading sewage to a disposal pump station. Collected sewage shall be discharged to sea through a sea outfall, after passing through a screening plant and grit chamber.</li> <li>2. The contractor shall construct the system starting from the inspection chamber in each plot and end it with the sea outfall/ recharge drains and pipelines.</li> <li>3. The nominal diameter of pipes in gravity system is 150mm and they will be of Polyethylene. There are 3 types of pumping stations namely; lift-stations, intermittent pump stations and an outfall discharge pump station with the pumping mains diameter varying from 125mm OD to 160mm OD.</li> <li>4. The contractor shall finalise the location of inspection chambers within the plots after consulting the house owner and getting the house owner's agreement to such location.</li> <li>5. The Sewage treatment plant will be designed and constructed at the designated location in phase-2 which is not included in this Work.</li> </ol>   |
| 2. Technical Proposal | <ol style="list-style-type: none"> <li>6. The Technical Proposals shall include documentary evidence of the conformity of the plant and services to the Bidding Documents. These documents could be in the form of literature, drawings and data. These shall furnish (a) a detailed description of the essential technical and performance characteristics of the plant and services, including the functional guarantee of the proposed plant in response to the Specification(b) a list giving full particulars, including available source of spare parts, special tools etc necessary for the proper and continuing function of the plant for the period named in the BDS following completion of the plant in accordance with the contract(c) a commentary on the employer's Specification in the ERQ document and adequate evidence demonstrating the substantial responsiveness of its plant and services to the given Specification.</li> <li>7. The bidders shall note that the standards for workmanship, materials and equipment designated by the Employer in the bidding document are intended to be descriptive (establishing standards of quality and performance) only and not restrictive. The Bidder may substitute alternative standards, brand names and or catalogues in its bid, provided that it demonstrates to the employer's satisfaction that the substitutes are substantially equivalent or superior to the standards designated in the Specification.</li> <li>8. The Technical proposals shall clearly state the location where the nominees of the employer shall receive 'in-plant' training. The proposals shall demonstrate that the bidder understands the Employer's requirements as regards training and shall conform to these requirements</li> </ol> |

as set out in these Employer's Requirements, Bid Data and Employer's Particular Conditions of Contract.

- |  |   |
|--|---|
| <p>3.           Tender Drawings</p>    | <p>9. The drawings issued with these Tender Documents are Tender Drawings. Tender Drawings are prepared in such detail as are necessary to give a comprehensive idea of the works. These drawings may be, to suit the site requirements clarified subsequent to the tender, modified, expanded or replaced subsequent to opening of tender. The Tender Drawings if stands finalized at the time of executing the agreement, together with additional drawings and / or modified drawings, signed and made part of the contract will be called contract drawings. Any questions or alterations affecting the requirements or information on the Contract Drawings shall be submitted in writing to the Engineer and shall be reviewed by the Engineer.</p>   |
| <p>4.           Topographic survey</p> | <p>10. The immediately upon commencement of the Contract the Contractor shall arrange for a topographic survey of all the sewer main routes. Spot levels shall be taken at least at 10 m intervals and at 2m along each cross section at these intervals. Every manhole position shall be marked and their ground level taken. The Survey shall be done with reference to bench marks in the Survey Drawings in the Tender Drawings. The contractor shall submit the Topographic surveys to the Engineer who will then cross check the levels with that of the tender drawings and make necessary adjustments. The cost of topographic surveys shall be included in the priced items of BoQ</p>   |
| <p>5.           Working Drawings</p>   | <p>11. The Contract Drawings shall be supplemented by working drawings or shop drawings prepared by the Contractor which are required for the execution of the works. These working drawings shall include, piping drawings, reinforcement details such as bar bending schedules, manhole schedules, setting out details, layouts, utility relocation and protection if any, and any other detail the Engineer may ask during construction.</p> <p>12. All drawings shall be computerized and shall be submitted both in hard copy as well as digital data.</p> <p>13. Contractor shall prepare survey drawings of the sewer alignment. Existing ground levels shall be taken at intervals not exceeding 10 m. Information related to all existing structures, obstructions and services should be located in the survey drawing.</p> <p>14. Approval by the Engineer of the Contractor's working drawings shall not relieve the Contractor from responsibility for the accuracy of dimensions and details, nor shall such mutual agreement and compliance to his working drawings constitute an acceptance by the Employer of the correctness and adequacy of the drawings.</p> <p>15. Working drawings as required or as directed by the Engineer shall be prepared and submitted by the Contractor sufficiently in advance. All working drawings shall be checked by the Engineer and work can commence only upon getting approval of the working drawing.</p> <p>16. Delays to work by reason of lack of approvals of working drawings and shop drawings are deemed to be a risk the Contractor is taking with full</p> |

knowledge and no compensation shall be claimed by the Contractor or none given by the Employer, on account of such delay.

17. The costs of furnishing working drawings shall be included in the rates for various paying items given in the Schedule of Quantities and Rates. In this respect the Contractor shall employ his Engineers and AutoCAD Draughtsmen specifically for planning and preparation of working drawings. The Contractor shall also provide as part of the mobilization to site, a latest model pentium Computer and software together with new colour printer, for the preparation of his working Drawings. The Engineer shall have access to this Computer.
6. Additional Work
  18. Any additional works, instructed during the Contract Period and within the Contract Amount, will be paid as per Bill of Quantity rates and it shall not be considered as a cause for the Contractor to claim for delay, incurred overhead, mobilization etc.
7. Discrepancies in alignment
  19. Discrepancies in alignment and levels etc., noticed during construction and/or on completion shall be rectified by the Contractor at his own cost; Engineer's approval does not relieve the Contractor of his responsibilities.
8. Contractor's Facilities
  20. The successful Bidder is to provide and maintain a site office at a location approved by the Engineer in consultation with the Employer.
  21. The Contractor shall submit to the Engineer his proposed layout of the site office for approval. The site office must be ready for use within 15 days from the date of work order or delivery of materials at site, which ever is earlier.
  22. The Contractor shall store daily updated progress information on a computer at the site office, for the review of the Engineer. A hard copy of this information shall also be presented in pictorial charts to readable scale. If the engineer demands a copy of the same shall be submitted to the engineer and another copy to the Employer.
  23. Throughout the whole period as specified below during which the site office is being occupied and used by the Contractor, he shall provide, pay for all charges and maintain at his own expense electricity, water and telephone facilities for the site office.
  24. The Contractor shall provide sufficient water tanks to ensure constant supply of potable water for the site office at all times.
  25. The Contractor shall provide acceptable septic tank with connections for sewage disposal. This shall be at a distance of more than 10m from any building.
  26. The Contractor shall keep the site office clean and tidy.
  27. The site office with all those provisions mentioned above shall be provided and maintained by the Contractor throughout the whole construction period until three months after the issuance of the Preliminary Handing Over Certificate or until all the work required under the Contract are in the opinion of the Engineer 100% (one hundred

percent) completed, which ever period is the later one.

28. The office and its facilities will not, however, be removed from the site without prior written approval of the Engineer
9. Surveying Equipment
  29. The Contractor shall provide, at his own expense three approved sets of surveying and measuring equipment at the site for the sole use of the Surveyors of the Project. One set shall be made available for the Engineer upon request. The set shall consist of (i) One Total Station, (ii) One pogo with reflector, (iii) One big tripod (iv) One small tripod (v) Two fibre glass tape (cased 30 m ) (vi) Four steel pocket tape 3 m long (vii) Two surveying umbrellas (viii) Ten ranging rods 2.5 m long (ix) Required numbers of level books and field books.
  30. All accessories and assistance required for setting out, measuring etc. shall be supplied as and when required by the Engineer or his representative. The contractor shall be solely responsible for the maintenance of all such instruments and equipments and shall ensure that they are at all times in good condition. All the surveying equipments shall remain the property of the Contractor till the end of the Contract. The Contractor is obliged to replace any instrument or part thereof damaged during the Contract Period.
10. Laboratory and Laboratory testing
  31. The Contractor shall provide at site and maintain during the entire contract period a Laboratory for testing of concrete or alternatively make arrangements for getting the concrete cubes made at site, tested in an approved laboratory away from the site. If in case the Contractor opts for making alternative arrangements, then the laboratory proposed should be got inspected and approved by the Engineer within 30 days of commencement of work.
11. Operation and Maintenance Manuals
  32. The contractor shall submit to the engineer the Operation and maintenance Manuals of all plants and Equipment provided/ installed through this Contract. The Contractor shall Such Manuals shall be compiled into one bound volume. The Manual shall also include one set of all drawings, selected in consultation with the Engineer. However, this Volume of Operation and Maintenance shall not replace the As- built Drawings to be submitted by the Contractor.
12. Contractor's operations at site with specific reference to dewatering
  33. The contractor is expected to cause the least amount of disturbance to the ground water in the project area. Efforts shall be made for laying pipes done under water without dewatering the trenches. A method of laying pipes with least disturbance to ground water is outlined in the Specifications on pipe laying. The contractor is expected to try this method or any other method which will avoid dewatering of pipe trenches. The contractor shall excavate drains along Ameene Magu for receiving the good water from dewatering of trenches. These drains shall be as per the Standard Detail Drawings. The Drains shall avoid all crossings of minor roads joining Ameene Magu.

13. Location of pipelines
34. The gravity sewer lines are to be laid along the centre line of roads. The pressure mains shall be laid one metre away from the boundary walls. The pressure main location could change in the field due to the existence of other services. The contractor shall not have any claim on account of realignment of pressure mains or gravity mains. There shall be many roads having more than one pipeline. The contractor has to ensure that his work programme causes the least disturbance to the inhabitants while excavating trenches for pipelines.
14. Training the O&M personnel
35. The contractor shall assist the employer in recruiting a team of trainees locally to operate and maintain the sewerage system (A schedule of trainees is given in the Appendix -1 to the Particular Conditions of Contract). The contractor shall train the Process operators, not less than two in number, in a STP elsewhere with the same process offered in the island, for a period of not less than 6 months. The remaining trainees shall be trained in the Sewerage system in Male, for which the Contractor shall make all arrangements. The contractor shall assign duties to the team members on their return and help develop a feeling ownership and allegiance to the Works. The cost of all training shall be included in the Contract Sum. The trainees' salaries shall be paid by the employer from the date of their recruitment.
36. The contractor, 6 months into the contract period, shall prepare and submit to the Engineer, a Maintenance planning programme.
37. This programme shall have guide lines for (i) administration (ii) maintenance budgeting (iii) equipment identification codes (iv) maintenance reporting (v) performance monitoring
38. The contractor shall arrange periodic workshops, at least three in the course of the contract period, to train the employer's staff in the preparation of maintenance schedules and implementation of maintenance programme. The training shall be conducted by experienced STP maintenance engineers. The training shall cover the operation and maintenance of all equipment that shall be used in the maintenance of the works.
39. The contractor shall actively involve the trainees in the installation of the works, pre-commissioning tests and tests upon completion.
40. The Contractor shall submit a monthly report to the Engineer, on the assignments given to and progress made by the trainees. The employer shall make the trainees' tenure permanent only upon getting a recommendation to that effect from the Contractor.