

SECTION 5: TERMS OF REFERENCE

PROJECT REVIEW & MONITORING AGENCY

TERMS OF REFERENCE FOR EMPLOYMENT OF CONSULTANTS

1. OBJECTIVE

Introduction

The objective is to employ a consulting firm to undertake third party inspection of the civil engineering works as described in the various Contract Documents under the BBMP Project. This involves, technical review of tender documents with respect to the proposed scheme, possible alternative, efficiency of scheme, etc. before forwarding to tendering and independent quality inspection and progress monitoring during execution. Two types of quality checks are envisaged:

1. Materials
2. Workmanship

Materials are to be selected for testing and shall be tested in the consultants own laboratory. The method of tested adopted will depend upon the type of test and shall be as per relevant BIS or International Standards. The consultant will undertake himself the workmanship inspection and tests.

It is proposed that the test be carried out totally randomly. These test are only complimentary to the statutory tests to be done by the Contractor. A program of inspection will be developed with the respective engineers in charge to ensure that defective workmanship is targeted.

Terms of payment will on a man-month basis in accordance with the employers terms and conditions.

2. SUPPORTING DOCUMENTATION

2.1 Supporting documents

The Contract Documents are the basis of all works to be undertaken under the BBMP Project. These are standard documents which will be made available to the Consultant. Part of the documents comprise the Standard Specifications in which the various requirements are described including references to the relevant Indian Standards.

In additional, the Contract Documents also refer to Special Specification which are specific to individual Contracts. This information will also be made available to the Consultant.

The Consultant with the consent of the Engineer, may also use any other quality assurance/quality control documents that are available including standard text books and manufacturer's literature as appropriate.

3. PART 1 - REVIEW OF THE PROJECT DETAILS

This involves technical review of the scheme, technical specification, the work methodology and time period of the project. The agency should adopt the latest project monitoring / management system. Necessary modifications, observations will have to be forwarded to PMC/BBMP for further review and incorporation. This also includes review of proposed utility shifting schemes.

PART 2 - TESTING OF MATERIALS

a. Civil and building works

The Standard specification contains lists of materials that may be tested in this own laboratory these cover the main heading of:

- o General civil and structural works
- o Road Materials

The consultant shall undertake the following:

- o Selected materials on a random basis for independent testing.
- o Dispatch the materials to his own laboratory as detailed below
- o Receive test reports and report finding to supervising staff

It is proposed that only materials that appear suspect are sent for testing as the Contractors are obliged to provide materials complying with Indian Standards. It is further proposed that the engineers in charge will identify what they consider are defective materials in consultation with the Consultant who will also use his own judgement during inspections.

b. Testing

The Consultant shall use his own testing laboratories for the soil mechanics, concrete testing, Bitumen testing and Non destructive testing. The tests to be carried out on materials is furnished in Annex "A".

PART 3 - QUALITY OF WORKMANSHIP

Workmanship shall cover all aspects of the work including but not limited to foundations, concrete structures including building works, infrastructure works, bridges, underpass, flyovers including precast segments, road work, etc.

Annex B contains general stages of inspections which should not be considered as limiting. The required standards of workmanship are described in the Standard and Special Specifications which should be referred to in all matters regarding the quality of the work. The Contractor will also produce his own quality monitoring systems and details of how he proposes to proceed with the works. This information will also be made available to the Consultants for use during work quality checks. The Consultant shall review the lists contained in the appendix and comment upon the contents particularly with respect to the requirement of the Standard Specifications.

The Consultant shall make unscheduled visits to ensure random surprise checks from time to time to the various works under construction including to the precast segments construction yard. During these visits he will spend time observing the Contractor's working practices. He will prepare a report on his visits directly on completion and on the same day as the visit takes place. This report will be submitted on the following day to the Chief Engineer with copy to Advisor to Commissioner, BBMP & PMC.

The Consultant shall make further visits as necessary to follow up particular areas of concern.

One of the main objectives are to point out to the respective Contractor's how improvements can be made to their working practices and to resolve difficulties in an amicable manner. It should be remembered that time is of the essence and that considerable judgement is required regarding quality aspects of the work. If contractors fail to heed advise or undertake work that is suspect which requires rectification or replacement the matter is to be immediately reported to the Chief Engineer with copy to Advisor to Commissioner, BBMP & PMC.

PART 4 - PROGRESS MONITORING

The consultant shall monitor the progress of work against the work program submitted by the contractor and report any delay in actual execution to the Engineer. He shall also suggest measures to improve the progress by appropriate adjustments in the scheduling of activities. He may also review the Contractor's work method statement.

4. METHODOLOGY

4.1 The Team

The team will comprise of a Team Leader, Senior Engineers and experienced field engineers. The Senior engineers should have specialisation in material testing, general construction and progress monitoring. The field engineers should have adequate experience in supervision/inspection of construction works. Each field engineer should inspect 2-3 works in a day, spend time to understand the activities, inspect the activities and note down observations. He has to take help of the Senior engineers in matters which call for special attention. In addition to field engineers visit, the Senior engineers should make random periodical visit to over view the Quality & progress of work. The necessary

material for testing shall be collected by the field engineer and forwarded to his own lab for testing.

The test reports along with comments should be a part of the inspection Reports.

Specialists in the consultant's head office will support the teams. Effective communication is essential between the teams in the field and those at the head office. It is expected that the specialists will visit certain sites to assist in determining methods to resolve construction problems and concerns.

4.2 Reporting

The consultant is required to report directly to the Chief Engineer. A copy of all correspondence should also be passed to the Project Management Consultants. The Engineer's Representative in charge of the works may also provide direction to the components of the work that should be independently inspect and tested.

The Consultant will prepare field reports in an agreed format on their inspections. This report will indicate the tests they have undertaken in the field, materials sent to laboratory testing as well as if considered appropriate advise on the rectification of defects. They will return to the particular problem until it is resolved to the satisfaction of the Employer.

Daily reports as well as a monthly report, which will consolidate the activities undertaken under each Contract will be prepared. Reports will be to an agreed format and will include photographs as well as reference to quality assurance procedures and norms.