ASSURING QUALITY OF IMPLEMENTATION UNDER JJM
THE ROLE OF THIRD PARTY INSPECTION AGENCY (TPIA)
Karnataka
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JJM Vision

Every rural household has drinking water supply in adequate quantity of prescribed quality on regular and long-term basis at affordable service delivery charges leading to improvement in living standards of rural communities.

Need and Aim of Quality Monitoring

Need

- Large Number of Works
- Spread of works in remote and rural areas
- Time bound completion of works
- Village level contractors with limited knowhow and resources
- Lack of skilled labours

Aim

- Construction material confirm to the prescribed Standards
- Quality Control is maintained at the time of construction
- Scheme last their full design life
- Minimum operation and maintenance cost
- Deliver the intended service.

Methods adopted in Quality Monitoring

Methods Adopted

1. Awareness to the Community
2. Checking of works by AEs/AEEs/EE of the department
3. Checking of works by TPIAs
4. Checking of works by officers from the State office
5. Checking of pipe material by an independent agency like CIPET
6. Checking of works by State Quality Monitors
7. Training to Consultants preparing PSR/DPRs
8. Training to Technical staff of the Department,
9. Training to Contractors and their engineers
10. Training to Plumbers , Masons and Electricians
11. Issue of Standard Drawings, Specifications and Estimates

Quality Definitions

Quality is conformity to standards and requirements to achieve excellence.

Quality Control (QC):

- A system of maintaining standards by reviewing, checking, inspecting and testing.

Quality Assurance (QA):

- The planned and systematic actions necessary to provide adequate confidence that the work will satisfy quality requirements.

Quality System (QS):

- A set of documented processes, which seek to provide confidence that the project outputs will fulfil all the requirements for which it is being planned.
- The Quality System should encompass the organization, human resources, materials, equipment, processes, inspections, testing and other parameters of the project. A key element of QS is the QA/QC Manual.

Quality Surveillance:

- At the project level, a review to ensure that the quality practices are implemented and documented in relation to the quality system; and
- At the contract package level, inspection and testing to ensure that the works executed meet the required quality standards.

Stages in Quality Monitoring

- **Stage 1: Village Action Plan**
  - Quality of Water Source
  - Requirement of the Villagers
  - Existing facilities
- **Stage 2 : DPR Preparation**
  - Appropriate specification
  - Appropriate material
  - Appropriate quantity estimation
- **Stage 3 : Tendering**
  - Transparent
  - Appropriate conditions
- **Stage 4 : Execution of works**
  - Continuous Monitoring
  - Quality in Material, workmanship
  - Tests as specified

Quality aspects - Execution of works

- Clear emphasis on Quality
  - Check list before implementation of the scheme
  - Service level benchmark for the infrastructure
  - Inspection of Quality of material used in project layout of structure,
  - Review of design
  - Work executed as per approved designs and quality assurance plan.
- Ensuring quality in implementation
  - In-house control
  - Third Party Agencies
  - Project Management Consultants
  - Quality Monitors at State Level
  - Vendor assessment of Manufacturers of major materials like pipes
  - Inspection by higher officers in the Department

Quality aspects - Execution of works

Tests on Materials :

- Samples to be collected by the independent agency
- State has empanelled CIPET for testing of HDPE pipes
- Mandated to have results checked before making payment

HDPE PIPE TESTS

- Dimensions
- Melt flow rate at 190^0 C/5 kg
- Density
- Reversion test
- Elongation test
- Carbon black content and dispersion
- Oxidation Induction Time
- Internal Pressure Creep rupture test for pipe for 48 hours at 80 degree Celsius

Third Party Inspection Agency

Objectives:

- To carry out inspection of all engineering works relating to
  - civil,
  - pipeline,
  - mechanical and
  - electrical components
- Sample checking of
    - test report of the materials used for construction;
    - Quality control measures adopted at the time of construction in the field;
    - Safety measures adopted at the time of construction in the field;
    - Payment for labour by the executing agency.
- Quantity and quality of works executed as per the bill for payment claimed
- Recommendations on the payment for the work executed.
- Functioning of the in-village infrastructure during trial run
- Safety measures adopted during the construction by the execution agency.
- Recommendation on quantity and quality of actual work executed for payment.

Third Party Inspection Agency

Activities:

- To ensure that the materials used in construction are as per the defined specifications.
- To ensure co-ordination with execution agency for timely completion of the work.
- To check and recommended for timely payment of executed work as per the relevant standards.
- To check and ensure proper laying of pipes to avoid future damage to pipes laid.
- To ensure that the water distribution pipe are laid above the sewer line / other utility lines
- To check the length/diameter of pipes laid as per approved DPR
- To ensure that the place of execution is restored to the original stage.
- To check all pipe appurtenances and various valves are fitted at designated locations.
- To check for proper usage and installation of materials as per the BIS Specifications.

Third Party Inspection Agency

Activities:

- To check and record that all materials procured adhere to the relevant India Standards.
- To ensure proper joining of pipes of different materials as per specifications
- To verify all connections/valves and check for any joint leakages before commencement of trial run;
- To check all the FHTCs are functional before trial and commissioning
- Recommend any shortcomings to ensure proper function of distribution system.
- To ensure that the agency in-charge engineer is present during hydro testing and during trial commissioning.
- To ensure a combined inspection along with GP/VWSC members for certifying a bill,

Third Party Inspection Agency

Reporting Requirement:

- Inception Report
- Monthly Progress Report :
  - 5th of every month
    - Physical Progress
    - Financial Progress;
    - Expenditure statement
    - Problems encountered (administrative, technical or financial)
    - Recommendations.
    - Variation orders proposed and approved
    - Status of claims or time extensions requested by Contractors.
    - Attendance sheet of the key technical personnel deployed in the field etc.
- Completion Report

Project Management Consultants

Objective :

- The PMC would be responsible for effecting Project completion within agreed timeline and cost frame.
- The scope includes verification of designs, quality monitoring of works,
- The scope also include maintenance of contract, and ensuring compliance with the Technical requirements
- The scope further include managing the progress as per the schedule and certification of works for payments.
- The duties and responsibilities of the PMC shall be in four phases;
  - a)Pre-construction phase
  - b)Construction phase
  - c)Trial run and commissioning phase
  - d)Post-construction phase
- The PMC shall act as an extended arm of the Department in the technical and contractual issues

Project Management Consultants

Sl. No.	Description of Role & Responsibility
A	**Pre-construction Phase:**
1	Analyze Client's project related requirements based on the agreement and approved DSR
2	Develop project control systems
3	Finalization of project organization chart.
4	Establishment of project communication and reporting system
5	Preparation of Works Breakdown Structure
6	Preparation of Project Master Schedule with base line
7	Preparing schedule of Designs, Drawings and deliverables
8	Feedback on the Master Budget of the project
9	Co-ordination and follow-up with the Department for their inputs
10	To identify and suggest consultants/designers for specialized requirements
11	Lead project meetings as necessary for review of progress
12	Review of technical specifications and Bill of Quantities (BOQ)
13	Monitoring the statutory approvals & liaison with the contractor and reporting the progress.
14	Constitute a team to inspect the project sites on day to day basis to determine the progress of mobilization
15	Monitor the progress of surveys and setting out
16	Establish EHS plan (Environment, Health and Safety) and adopt suitable measures to achieve the same
17	Review the design and construction drawing submitted by the contractor to be in compliance with the Technical Requirements and the Performance Standards stipulated as well as conformity to the Contractor's proposals

Project Management Consultants

B	**Construction Phase:**
1	Full time supervision of all construction works / activities for the project
2	To supervise, inspect, monitor and certify the works in conformity with the Requirements
3	Refinement of works breakdown structure
4	Monitoring the progress of work with the Master construction schedule
5	Adherence to the Master construction schedule
6	Prior flagging of anticipated bottlenecks and analysis of its reasons
7	Day to day correspondences including contractual issues
8	Prepare QA/QC plan and Method Statement
9	Quality assurance (Civil, Electrical, Mechanical, Automation) and ensure conformance to requirements
10	Testing of all the materials as per the Bureau of Indian Standards before implementing them
11	Scrutinize and check working drawings
12	Submitting Weekly and Monthly progress reports
13	Perform functions of certification of works for payments, adherence to project schedule
14	Organize Progress review meetings on weekly basis
15	Collect, review and maintain all the records of contractor’s daily progress reports.
16	Generate all the data / reports required on a periodic basis as stipulated in the contract agreement
17	Give opinion on contractual matter

Project Management Consultants

C	**Trial Run and Commissioning Phase**
1	Witness trial run and commissioning activity
2	Ensure the water reaches all the delivery points
3	Submit commissioning report
D	**Post-Construction Phase:**
1	Advice about probable date of Substantial Completion in case of delay
2	Preparing & addressing the schedule of defects / punch lists
3	Provide assistance in Testing and commissioning of the facility
4	Collection and integration of various O and M manuals, commissioning & test certificates
5	Assisting to Reconciliation and Certification of Final bills of contractors
6	Preparation of project close-out report including learning
7	Collate and verify all As-built drawings
8	Addressing any queries during the first 2 months of defects liability period
9	Co-ordination with the Contractors to rectify the defects during the defects liability period

State Quality Monitoring Cell

Cell

✓A State Quality Monitoring Cell established at State headquarters
✓Assists the Department on various quality issues and
✓Regularly monitor quality of works under taken across the state.
✓Adequate numbers of State Quality Monitors (SQMs) empanelled.

Team

✓ The team consists of experienced retired CE/SE/EE
✓ SQMs are required to maintain the highest personal and professional integrity
✓ The engineers in the team have vast experience in planning & execution
✓ Monitoring Cell assigns habitations/villages for visit and report in rotation.

Task

✓The State Quality Monitors are tasked to check the quantity, quality of works
✓ A questionnaire cum information collections sheet provided to SQMs
✓SQMs to interact with house owners and VWSC members for their feedback.
✓ Works are graded as S, SRI and US based on the evaluation

Follow up

✓ Immediately after the reports the field officers are intimated
✓ Work with SRI will be got rectified and other SQM deputed to verify and report
✓ Work with US will be got executed afresh and another SQM deputed ro verify.

SQMs Check List/ Information collection format

- Part I : This will be filled by the EE giving basic details of present progress of the work

- Part II: This consists of **6** Sub Parts

1: Village Information and Records

- Formation of VWSC
- Availability of VAP at GP Office
- Training to use FTK kit and its records
- Display of information board
- Awareness of JJM etc.

2: Water Source, Pumping machinery and Water Quality

- Yield from source and availability of source finding committee approval
- Recharge structures to bore wells
- Record of quality tests for raw water
- Contamination issues of water if any
- Pumping machinery
- Quality test for raising main including depth of pipe and quality of pipe

QMs Check List/ Information collection format

3 : Water Retaining Structures

- Physical check of progress
- Information painted on OHTs including logos, year construction, capacity etc. as per departmental guidelines
- Material test results and record of concrete cube test etc.

4: Distribution network

- Depth of pipeline laid in random location
- Type of pipe joints (electro fusion for HDPE pipes)
- Encasing of pipes crossing drains
- Pipe materials test report from CIPET
- Restoration of road cutting etc.

QMs Check List/ Information collection format

5 Functional House Hold Tap Connection

- Interaction with the users regarding quantity.
- Quality of water and regularity of water supply
- Quality of stand post, bib cocks, quality of water meter
- Marking of FHTCs
- Tap water connection to public institutions etc.

6 Functionality of Water Purifying Plants

- Functionality of water purifying plants
- Cleanliness and maintenance
- Har Ghar declaration
- Installation of bulk water meters at OHTs etc.

After inspection , Quality Monitors shall assign item wise grades such as,

S – Satisfactory

SRI – Satisfactory Requires Improvements and

U - Unsatisfactory

Performance Evaluation of State Quality Monitors

Assessment with the following aspects shall be covered:

- Whether the QM has carried out inspection as per the guidelines
- Whether there is any lack of application of mind by QM in recording observations;
- Whether there is a tendency to avoid desirable technical observations;
- Whether the QM has left inspection format incomplete without any reason;
- Whether the QM has filled up formats mechanically without appropriate testing
- Whether the QM has uploaded the quality grading abstracts and the requisite photos.

THANK YOU