



Har Ghar Jal
Jal Jeevan Mission



TATA CONSULTING ENGINEERS LIMITED

ENGINEERING A BETTER TOMORROW™
SINCE 1962

MAHESH SAVANT-BHONSLE
TEAM LEADER – TCE JJM PROJECT



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Jal Jeevan Mission Project - Experience

Quality & Safety Observations – Action plan for Improvement

MAHESH SAVANT-BHONSLE
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Experience in Water sector



60 YEARS of Technical Excellence

\$35+B Worth projects under management

3000+ ENGINEERS across all domains

25000+ MLD Water & waste-water treatment done

**9 States 15 Smart Cities
24,000 Crores CAPEX**

**TCE in India Engineered:
1 in every 3 light bulbs
1 in every 5 taps providing water
20 out of 90 Smart Cities**

DELHI

- Association with DJB on multiple projects

GUJARAT

- PMC for all projects across state in water supply, Sewerage for GWSSB
- Saurashtra Irrigation Branch Canal Pumping Stations
- Ahmedabad Water Supply Schemes

MAHARASHTRA

- Association with MCGM for more than 30 years
- Water project in Nanded, Nagpur

KARNATAKA

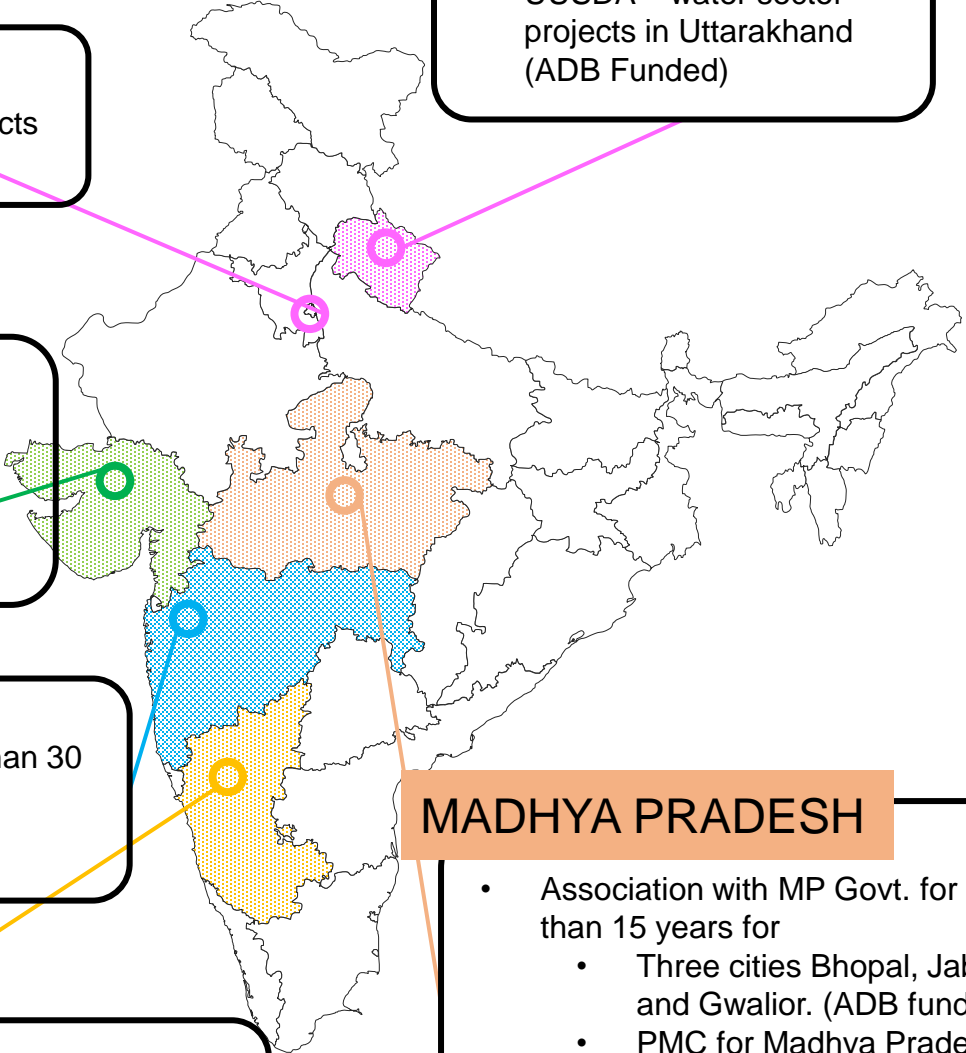
- Association with BWSSB for water supply and sewerage projects in Karnataka (Funded by JICA)

UTTARAKHAND

- UUSDA – water sector projects in Uttarakhand (ADB Funded)

MADHYA PRADESH

- Association with MP Govt. for more than 15 years for
 - Three cities Bhopal, Jabalpur and Gwalior. (ADB funded)
 - PMC for Madhya Pradesh Urban Services Improvement Program (MPUSIP) ADB funded.
 - Amrut 2.0 for Central Zone



INDEX

- 01 TCE – Introduction w.r.t Water supply Projects
- 02 QUALITY Observations
- 03 Actions taken to Improve on Quality
- 04 Further actions to improve Quality



Concrete Joints - Undulations in Surface -
Due to poor quality of formwork material



Water Retaining Structure – ESR - Concrete
Joints – Leakage through Joints due to wrong
practices of concreting, compaction and not
using Water stopper.



Valve Chambers
Due to non-standard material use
and poor skillset



Concrete Mixing – Unregulated Mix
Proportions, Mixing on ground instead of MS
Tray, Use of Volumetric Mix.



No Proper or sufficient Concrete Cover for Reinforcement



Insufficient excavation depth / soil cover for Piping work resulting in insufficient cushioning for Pipes.

QUALITY – Repetitive Observations



No Proper Lapping Provision for Reinforcement bars



Improper Stacking of material

QUALITY – Repetitive Observations – Plumbing & Electrical



Electrical cable – Required minimum 4 core with 10 Sq. mm. cable of copper wire – random sizes seen in use



- Stud bolts were to be used instead of machine bolts
- Flange gasket – sometimes not used
- Poor welding joints, line and levels for pipes

QUALITY – Repetitive Observations – Plumbing & Electrical



Required enclosed panel board / DB board with proper Gland for cabling work



- Required proper provision of earth pit chambers
- Required PVC conduit for cabling work instead of open / direct buried cable laying



- Required approved make / brand of air valve.
- Required proper provision of air valve at every 500-meter minimum interval.
- Required minimum 1.50 Meter height of air valve.



Required all electrical connection routed through ELCB/ RCCB of 30ma with use of industrial top

QUALITY – Repetitive Observations - Major



- Major Honeycombing in Concreting
- Curing not happening on regular interval
- Line, Plumb of RCC work is not Proper
- No PCC below RCC work
- Joint of Brickwork & RCC work – Not proper, Not treated properly.
- Plastering Quality is very Poor
- Materials like Aggregates, Sand, Bricks etc. – Not as per Specifications or poor in quality.
- Formwork getting use is of poor Quality.
- Dimensions of RCC structures is not as per approved drawings
- Compaction of Earthwork is not proper.
- Waterproofing Quality is not proper
- Hydro testing of Piping not being done

Action Taken to Improve Quality



- Third party Inspections as per Stages mentioned
- Preparation of Detailed Third-Party Inspection reports vetted by SWSM – Mumbai Office
- Issuing Site Instruction on Quality issues with suggested rectifications to Contractors with CC to ZP – team to ensure immediate corrective actions.
- Follow up for liquidation of earlier Site Instructions; Escalate to ZP team if not done
- Compliance of Quality Issues recorded with Corrective action details along with Photos.
- All Reports & Compliance details uploaded on TCE SmartSITE App – This enables reference to the TCE – JJM team for future inspections.
- Submitting detailed Weekly report to SWSM Mumbai Office with all updates on a) No. of Inspection done, b) Report submitted & compliance done – Scheme wise.



Further Actions to Improve Quality



A. ACTIONS FOR BETTER QUALITY

- Use of Latest technology or Material –Water stopper, Waterproofing etc.
- Use of Good formwork, Use of Vibrator for better compaction.
- Mix of Concrete – Required Proportion (Volumetric), Water cement ratio & use of proper mixing technique.
- Use of Good Quality material with proper testing & reports.

A. AWARENESS ABOUT QUALITY

- Discussions & presentations regarding Good Quality work for Contractors, PMC & ZP Junior Team.

B. TRAINING OF ALL STAKEHOLDERS

- Training regarding points get check in Third Party Inspection.
- Training regarding Procedure to work with Good quality.
- Training regarding Good Quality & Bad Quality works.
- Training regarding how to improve further Quality

Importance of HSSE (Health, Safety, security & Environments)

1. Use of PPEs (Helmet, Jacket & safety shoes etc.)
2. Use of Steel / Aluminum ladders during construction of ESR/ GSR work
3. Use of safety harness belt during work at height.
4. Require hard barricading along to excavated pit
5. Required all electrical connection routed through ELCB/ RCCB of 30ma with use of industrial top Plug and to avoid any type of joint in cables.
6. Have awareness about Safety on site.





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THANK YOU

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TEAM LEADER - TCE