

PUBLIC WORKS DEPARTMENT
WATER RESOURCES ORGANISATION

**Detailed Project Report for the Strengthening of Central Quality Control lab and
Regional Quality Control Labs under IAMWARM Project in Tamilnadu**

Est. Amt. Rs.38.00lakhs

**Designs Circle,
Chepauk, Chennai -5**

Report accompanying the estimate for the Strengthening of Central Quality Control Lab and Regional Quality Control Lab under IAMWARM Project in Tamil Nadu.

Est. Rs.38.00 lakhs

The IAMWARM Project is aided by World Bank for Rs.2547 crore and the project s are in progress. The amount for Water Resources Department is Rs.1570 crore. This project is implemented for Rehabilitation and modernization of system tanks and non-system tanks and the supply channel in order to increase the food production.

The quality assurance has been much stressed upon in IAMWARM projects. Besides the same, ensuring effective quality control is the prime request for the sustainability of all projects.

In this connection, the main functions of the quality control lab essentiality of the equipments now required are briefed as below:

Quality Control Laboratory System

Main Function:

The lab system forms an important link of all project organization for quality assurance and quality control.

- To evaluate and monitor the inputs like materials, workmanship etc. by testing and inspection.
- To audit the quality of inputs such as constructed components by in-situ and lab testing

Organisation of Laboratories:

The W.R.O. is being serviced by a group of labs comprising of Central Quality Lab and Regional labs with field units under their supervision.

Functions of Central Quality Control Lab:

Functions of the Central Quality Control Lab has been visualized as the co-ordinating and referee laboratory as well as laboratory for special tests. Towards this some of the important activities of the laboratory are

- Co-ordinate the quality systems and all steps to ensure accuracy and reliability in testing in all laboratories.
- Carryout all failure analysis and diagnostic studies.
- Concrete mix design including review of mixes and conducting trial batch mixes, selection of admixtures and additives.
- Conduct tests for in-situ evaluation of efficiency of curing compounds.
- Undertake special tests on aggregate, concrete, soil etc.

To carryout the functions assigned, the Central Quality Control Lab has soil lab, concrete lab and chemistry lab.

Soil Lab

The soil lab is involved in soil investigation by properly planning and carrying out necessary field and lab tests

- To ascertain sub-soil properties to arrive at safe and economical design of foundation.

- To determine the suitability of soil for formation of embankment
- To determine the strength of earthen bund etc.

Concrete Lab

In the concrete lab, laboratory tests on the samples of construction materials like cement, sand etc. are being carried out. Some of the special tests being carried out in the lab are

- Concrete mix design
- Concrete mix proportions are designed based on the test results of the ingredients like cement etc.
- Non-destructive tests on hardened concrete structure elements.
- Conducting tests for the Research activities being carried out in SM&R Division.

Chemistry Lab

The chemical analysis of building materials by using BIS testing procedures is being carried out in the chemistry lab some of the important tests are

- Chemical analysis of cement, lime, soil, etc.
- Corrosive parameters of the sand and soil.
- Alkali reactivity in coarse aggregates and fine aggregates.
- Chemical properties of the soil to decide the type of cement to be used for the foundation.
- Degree of contamination of soil
- Water quality and lime leached out from the dams etc.
- Mix proportion of cement mortar and cement concrete.
- Vigilance and Anti-corruption samples.

1(4) Functions of Regional Labs:

The regional quality control labs co-ordinate with the respective region for the quality control in the works being carried out in the region;

- Testing aggregates
- Compressive strength test of site concrete
- Monitor compliance of quality trends and bring out instances of non-compliance for effective necessary corrective measures.
- Conducting investigation tests on new projects.

Equipments in the Laboratory:

The equipments available in the regional quality control lab and central quality control lab were purchased under WRCP funds, based on the suggestions of M/s. National Council for Cement and Building materials (N.C.C.B.M.) Haryana. The list of equipments available in the labs are enclosed.

Strengthening of Quality Control Laboratories (with utilizing the savings in the IAMWARM project due to variation in exchange rates) is one of the agreed actions in the wrap-up meeting chaired by the Finance Secretary on 17.09.2012 during the World Bank Mission from 10.09.2012 to 18.09.2012.

The Engineer-in-Chief, W.R.O., P.W.D., has instructed to send the proposal to upgrade the laboratories with essential equipments of latest specification. Accordingly details have been obtained from the Regions and a comprehensive proposal has been prepared for Rs. 2.00 crore.

Requirement of Additional Equipments

The Quality Control testing forms vital role in almost all the projects and various project works such as centrally sponsored works NABARD works JNNURM works etc. Hence the volume of quality tests by using quality control equipments increase rapidly. Hence, the regional quality control divisions come up with proposal for the procurement of essential equipments. Based on the same, Comprehensive proposal for the procurement of essential quality control equipments has been prepared for Rs.2.00 crores and submitted for getting approval from the World Bank.

Discussion with the World Bank Consultant

During the visit of World Bank Consultant, Mr.R.K.Malhotra from 19.10.2012 to 22.10.2012, regarding the finalisation of D.P.R.S. prepared for the utilization of the savings in the IAMWARM Project, the above proposal for Rs.2.00 crores has also been discussed on 22.10.2012.

The World Bank Consultant has advised to prune down the requirement of equipment to the extent which was essentially needed to cater for the on-going works and for the additional works being proposed within the project period.

The equipments that are cleared for the procurement by the World Bank Consultant have been listed out and the approximate cost based on the local market rate works out to Rs.38. lakhs the proposal has been sent to World Bank from MDPU for getting NOC from the World Bank.

Technical Clearance

The World Bank Consultant, Mr.R.K.Malhotra during the visit from 9.1.2013 to 11.1.2013 have accorded technical clearance for the above procurement for Rs.38.00 Lakhs (email dated 11.1.2013)

Future maintenance

The equipments procured by IAMWAEM savings fund will be maintained with the state funds after the IAMWARM project period so as to upkeep the equipments for the future projects.

General

In the proposal, provision is made for the fluctuation in rates, documentation charges etc. The estimate amount works out to Rs. 38 lakhs.

Head of Account:

The expenditure is to be incurred under the head of account 2701- Major and Medium Irrigation-03- Medium Irrigation (Commercial) – 204 – Rehabilitation works under TN IAMWARM Phase II - State Plan – Schemes in the Elventh five year plan PC – Strengthening of Institute for Offices under TN IAMWARM -19 M& E -01 Purchase (DPC2701 03 204 PC 1914)

Sd/

Superintending Engineer, PWD,
Designs Circle, WRO,
Chepauk, Chennai-5.

Estimate for the Strengthening of Central Quality Control lab and Regional Quality Control Labs under IAMWARM Project in Tamilnadu

Detailed Estimate

| S.No | Description | Regional Quality Control' | | | | Central Quality Control Lab | Total |
|------|---|---------------------------|--------|---------|------------|-----------------------------|-------|
| | | Chennai | Trichy | Madurai | Coimbatore | | |
| I | Supply and Erections of Automatic Compression Testing Machine – 2000KN capacity , Digital | 1 | | | 1 | 1 | 3 |
| II | <u>Procurement of Soil Lab Equipment</u> <u>a) Sieve Sets & Sieve Shaker</u> | | | | | | |
| | 1.Fine Aggregate sieve set with lid and pan (200 mm dia frame) | 10 | 1 | 3 | 1 | | 15 |
| | 2.Coarse Aggregate sieve set with lid and pan (300 mm dia frame) | 10 | 1 | 4 | | | 15 |
| | 3. Sieve Tray(75 micran) | | | | | 1 | 1 |
| | 4.Sieve Shaker (Motorized) | 1 | 1 | | 1 | | 3 |
| | <u>b) Soil Lab Equipments</u> | | | | | | |
| | 1. Standard Proctor apparatus | 2 | | | 1 | | 3 |
| | 2. Soil Core Cutter | | | 2 | 1 | | 3 |
| | 3. Casagrande's Liquid Limit Device | 2 | 1 | | 1 | | 4 |
| | 4. Rapid Moisture Meter | | 3 | 1 | 1 | | 5 |
| | 5. Supply and erection of Universal Automatic Compactor for soil compaction test | | | | | 1 | 1 |
| III | <u>Procurement of Concrete Lab equipments</u> | | | | | | |
| | 1.Vicat apparatus | 2 | 2 | | 2 | 1 | 7 |
| | 2.Slump Cone apparatus | 10 | | 1 | 2 | 1 | 14 |
| | 3.Concrete Mixer - Pan Type 40 litre capacity | | | | | 1 | 1 |
| | 4.Mortar Mixer Machine 5 litre capacity | | | | | 1 | 1 |
| | 5.Vibration Machine | | | | | 1 | 1 |
| | 6.Core Cutting and Grinding Machine | | | | | 1 | 1 |
| IV | <u>Procurement of Weighing Balances (Digital) & Concrete Cube mould</u> | | | | | | |
| | a) Weighing Balance (digital) | | | | | | |
| | 10 kg | 5 | 5 | 1 | 1 | - | 12 |
| | 50 kg | 1 | 1 | 1 | | | 3 |

| | | | | | | | |
|-------------|--|-----------|----------|----------|-----------|----------|-----------|
| | 5 kg with 0.5 gm. accuracy | | | | 1 | 2 | 3 |
| | 1 kg with 0.1 gm. accuracy | 1 | 1 | 1 | 1 | 2 | 6 |
| | b) Concrete Cube Mould | | | | | | |
| | 150 mm cube | 21 | - | 9 | 18 | - | 48 |
| | 70.7 mm cube | 9 | | 9 | 9 | | 27 |
| V | <u>Procurement of NDT Equipments</u> | | | | | | |
| | 1. Rebound Hammer(manual) | | 1 | | | | 1 |
| | 2.Logging Cover Meter | | | | | 1 | 1 |
| | 3. Concrete Coring System | | | | | 1 | 1 |
| VI | <u>Procurement of General Equipments</u> | | | | | | |
| | 1.Digital Vernier 150/0.01 caliper | | | | | 1 | 1 |
| | 2.Hot air Oven | 5 | | 1 | | | 6 |
| | 3.Micro wave Oven | | | | | 1 | 1 |
| | 4.Centrifuge Extractor | | 1 | | | | 1 |
| | 5. Transparant jar 250ml | 2 | 2 | 2 | 2 | 2 | 10 |
| | 6. . Transparant jar 500ml | 1 | 1 | 1 | 1 | 1 | 5 |
| VII | Upgradation and Computerization of Universal Testing Machine available in the Central Quality Control Lab at Tharamani , Chennai -113 | | | | | 1 | 1 |
| VIII | Fluctuation in rates | | | | | | LS |
| IX | Documentation charges | | | | | | LS |
| X | Provision for contingencies | | | | | | LS |
| XI | Provision for unforeseen item | | | | | | LS |

Sd/-

Superintending Engineer, PWD,
Designs Circle, WRO, Chennai-5.

Estimate for the Strengthening of Central Quality Control lab and Regional Quality Control Labs under IAMWARM Project in Tamilnadu

Abstract Estimate

| S.No | | Total Quantity | Rate | per | Amount |
|------|--|----------------|---------------|-------------|---------------|
| I | Supply and Erections of Automatic Compression Testing Machine – 2000KN capacity , Digital | 3 | 302500 | 1No | 907500 |
| II | <u>Procurement of Soil Lab Equipment</u> | | | | |
| | <u>a) Sieve Sets & Sieve Shaker</u> | | | | |
| | 1.Fine Aggregate sieve set with lid and pan (200 mm dia frame) | 15 | 8050 | 1set | 120750 |
| | 2.Coarse Aggregate sieve set with lid and pan (300 mm dia frame) | 15 | 4200 | 1set | 63000 |
| | 3. Sieve Tray (75 micran) | 1 | 2200 | 1No | 2200 |
| | 4.Sieve Shaker (Motorized) | 3 | 39500 | 1set | 118500 |
| | <u>b) Soil Lab Equipments</u> | | | | |
| | 1. Standard Proctor apparatus as per IS :2720 100 mm dia x127.3 mm height Rammer 2.6kg X 31 cm | 3 | 4200 | 1 No | 12600 |
| | 2. Soil Core Cutter | 3 | 3400 | 1No | 10200 |
| | 3. Casagrande's Liquid Limit Device as per IS:2720 part v (motorized) | 4 | 11100 | 1No | 44400 |
| | 4. Rapid Moisture Meter | 5 | 5200 | 1No | 26000 |
| | 5. Supply and erection of Universal Automatic Compactor for soil compaction test | 1 | 108100 | 1No | 108100 |
| | Total | | | | 505750 |
| III | <u>Procurement of Concrete Lab equipments</u> | | | | |
| | <u>a) Lab Equipments</u> | | | | |
| | 1.Vicat apparatus | 7 | 3750 | 1No | 26250 |
| | 2.Slump Cone apparatus | 14 | 2900 | 1No | 40600 |
| | 3.Concrete Mixer - Pan Type 40 litre capacity | 1 | 68800 | 1No | 68800 |

| | | | | | |
|-----------|--|-----------|---------------|------------|---------------|
| | 4.Mortar Mixer Machine 5 litre capacity | 1 | 81400 | 1No | 81400 |
| | 5.Vibration Machine | 1 | 61300 | 1No | 61300 |
| | 6.Core Cutting and Grinding Machine | 1 | 229500 | 1No | 229500 |
| | Total | | | | 507850 |
| IV | <u>Procurement of Weighing Balances (Digital) and concrete cube mould</u> | | | | |
| | a)Weighing Balance (Digital) | | | | |
| | 10 kg | 12 | 10500 | 1No | 126000 |
| | 50 kg | 3 | 15600 | 1No | 46800 |
| | 5 kg with 0.5gms accuracy | 3 | 10800 | 1No | 32400 |
| | 1. kg with 0.1gm accuracy | 6 | 10600 | 1No | 63600 |
| | <u>b)Concrete cube Moulds</u> | | | | |
| | 150 mm cube | 48 | 1400 | 1No | 67200 |
| | 70.7 mm cube | 27 | 1100 | 1No | 29700 |
| | Total | | | | 365700 |
| V | <u>Procurement of NDT Equipments</u> | | | | |
| | 1. Rebound Hammer(manual) | 1 | 130000 | 1No | 130000 |
| | 2.Logging Cover Meter | 1 | 135000 | 1No | 135000 |
| | 6.Concrete Coring System | 1 | 407857 | 1No | 407857 |
| | | | | | 672857 |
| VI | <u>Procurement of General Equipments</u> | | | | |
| | 1.Digital Vernier 150/0.01 caliper | 1 | 9700 | | 9700 |
| | 2.Hot air Oven | 6 | 42600 | | 255600 |
| | 3.Micro wave Oven | 1 | 17500 | | 17500 |
| | 4.Centrifuge Extractor | 1 | 38000 | | 38000 |
| | 5. Transparant jar 250ml | 10 | 575 | | 5750 |
| | 6. Transparant jar 500ml | 5 | 745 | | 3725 |

| | | | | | |
|-------------|---|-----------|---------------|--|----------------|
| | Total | | | | 330275 |
| VII | Upgradation and Computerization of existing Universal Testing Machine available in the Central Quality Control Lab at Tharamani , Chennai -113 | 1 | 469129 | | 469129 |
| VIII | Fluctuation in rates | LS | | | 15939 |
| IX | Documentation charges | LS | | | 15000 |
| X | Provision for contingencies | LS | | | 5000 |
| XI | Provision for unforeseen item | LS | | | 5000 |
| | Grand Total | | | | 3800000 |

(Rupees Thirty Eight lakhs only)

Sd/-
 Superintending Engineer, PWD,
 Designs Circle, WRO, Chennai-5.

GOVERNMENT OF TAMILNADU

PUBLIC WORKS DEPARTMENT

WATER RESOURCES ORGANISATION

NAME OF WORK:

Estimate for the work of Renovation of the office of the Superintending Engineer, P.W.D., W.R.O., Designs Circle, Drawing Branch, Administrative Branch and chamber of the Superintending Engineer (Civil and Electrical works) at Chepauk, Chennai-5.

Estimate Cost: Rs. 44 Lakhs

Designs Circle, W.R.O.,
Chepauk, Chennai – 5.

Estimate for the work of Renovation of the office of the Superintending Engineer, P.W.D., W.R.O., Designs Circle, Drawing Branch, Administrative Branch and chambers of the Superintending Engineer (Civil and Electrical works) at Chepauk, Chennai-5.

Estimate cost : Rs. 44 Lakhs

Necessity

The building was constructed long back and due to paucity of funds for the maintenance of building, the building is looking like a very old one and the walls have peeled off at many places and flooring also damaged. The staircase steps and side walls of staircase also are not in standards. The roof and partitions are seems in ugly manner.

Hence the building has to be renovated to have better look and to give good atmosphere to work in the office which provides all the irrigation design details through out the state.

Main Items provided in the estimate:

I. Civil works Rs. 25 lakhs

1. Laying ceramic tiles after dismantling the damaged floor tiles.
2. Providing brick partition walls by removing already damaged wooden partition walls.
3. False ceiling with Gypboard and providing cornice.
4. Providing wall paneling using water proof plywood on one side finish.
5. Providing doors and painting and varnishing.
6. Providing wash basins, toilet etc.

II. Electrical works Rs. 19 lakhs

1. Rewiring with copper wire, renewal of A.C. sweep ceiling fans. Power mains etc. – Rs.7 Lakhs.
2. Providing smoke detection and fire alarm system – Rs. 3.35 lakhs.
3. A.C. facilities - Rs. 8 lakhs.
4. Unforeseen items - 0.65 lakhs.

Superintending Engineer, P.W.D.,
Designs Circle, W.R.O.,
Chepauk, Chennai-5.

Estimate for the work of Renovation of the office of the Superintending Engineer, P.W.D., W.R.O., Designs Circle, Drawing Branch, Administrative Branch and chambers of the Superintending Engineer (Civil and Electrical works) at Chepauk, Chennai-5.

GENERAL ABSTRACT

| S.No. | Description | Amount |
|--------------|--------------------|-----------------|
| 1. | Civil Works | 25 Lakhs |
| 2. | Electrical Works | 19 Lakhs |
| | Grand Total | 44 Lakhs |

Sd/
Superintending Engineer, P.W.D.,
Designs Circle, W.R.O.,
Chepauk, Chennai-5.