ORGANIZATIONAL SETUP
The Chief Engineer, Quality Control & Research with its headquarters at Bhubaneswar is looking after the works of the following two aspects of Water Resources Department QC & A by the Implementing Agency.
1. Quality Control and Research
2. Hydrometry (Surface Water)

QUALITY CONTROL
The Quality Control Organisation functions with two Directorates and ten territorial Quality Control Divisions to look after quality control and assurance of different civil construction works under Major, Medium & Minor Irrigation sectors. One Executive Engineer is exclusively looking after the work of Model Studies for Hydraulic structures.
- Apart from aforesaid setup, another eleven nos. of Quality Control Divisions functioning separately under the administrative and technical control of different project authorities
for looking after Quality Control and Assurance of respective projects.

- Project implementation Authority is responsible for all arrangements that are necessary for quality control measures and quality management. Assurance of quality of the works under execution is the prime responsibility of the concerned field Engineers in charge of construction. Whereas, the Quality Control organisation is assisting the project authority to ensure that different components of Civil Construction works are being executed in accordance with the prescribed codal specifications. In addition to the above, the organisation also suggests possible remedial measures, if warranted, to ensure execution of works in line with the drawings and specifications.

Activities

1. Inspection of construction works at different locations from quality assurance point of view, collect samples for testing in the departmental laboratory and conduct field tests and certify suitability of materials for use in different works.

2. Conduct different tests on construction materials and finished items of work in the departmental laboratory, carry out analysis and communicate test results and findings to the project authorities.

3. Formulating design mix for different grades of concrete in the departmental laboratory.

4. Conduct quality control audit of all the works carried out by each division at post construction stage during monsoon season by constituting technical teams.

5. Imparting training to the field level officers to make them well conversant in carrying out the field level testing.

6. Accompany State Quality Monitors (SQMs) during their field visit.

7. Conducting physical model studies for different water resources structures prior to their implementation to verify its operational hydraulic behaviour at post construction stage and communicate the test results to the design organisation, which in turn enables the designer to check as to whether the test results corroborating the design consideration, needs revision of design and drawing based on the findings of the model studies.

Test Conducted in Laboratories.

A. Concrete Section.

1. Cement
   a. Consistency
   b. Fineness
   c. Initial Setting time.
   d. Final Setting Time.
   e. Compressive Strength-
      i. for 3 days
      ii. for 7 days
      iii. for 28 days

2. Course Aggregate.
   a. Sieve Analysis
   b. Impact
   c. Elongation
   d. Water Absorption
   e. Flakiness
   f. Specific Gravity
   g. Abrasion

3. Fine Aggregate
   a. Sieve Analysis
   b. Silt and Clay
   c. Specific Gravity
   d. Fineness Modulus

4. Design Mix.
   a. Concrete Cubes:
      Compressive Strength-
      i. for 7 days
      ii. for 28 days

5. Concrete Cubes of Different Mix.
   Compressive Strength-
   i. for 7 days
   ii. for 28 days
6. **Hard Stone & Hard Granite Boulders.**
   a. Abrasion
   b. Water Absorption
   c. Specific Gravity
d. Soundness
e. Crushing Strength
f. Impact Value

B. **Soil Section.**
   1. Soil
      a. Proctor Compaction
      b. Liquid Limit
c. Plastic Limit
d. Dry Density
e. Moisture Content
f. Bulk Density (in situ)
g. Grain Size Analysis
h. Permeability
   i. Specific Gravity
   j. Swelling Pressure
   k. Triaxial Shear Test (R)
l. Triaxial Shear Test (Q)
m. Mechanical Analysis

2. **Moorum**
   a. Gradation
   b. Liquid Limit
c. Plastic Limit

3. **Bricks**
   a. Water Absorption
   b. Compressive Strength
   C. **Steel.**
      a. Unit Weight
      b. Elongation
c. Ultimate tensile strength
d. Dimensional tolerance

D. **Chemical.**
   a. pH value
   b. F.I. conductivity
c. Total dissolved solid
d. Phenolph Alkalinity
e. Hydroxyl (OH2)
f. Carbonate (CO3)
g. Bicarbonate (HCO3)
h. Chloride (Cl)
i. Sulphate (SO4)
j. Calcium (Ca)
k. Magnesium (Mg)
l. Total Hardness
m. B.O.D

These test facilities are available at Hirakud Research Station, Hirakud.
These test facilities are available at Q.C. Divn., Cuttack.

**Table - 4.15.1**

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Annual Report 2018-19
State Quality Monitoring Cell (SQMC)

State Quality Monitoring Cell (SQMC) has been constituted under the control of the Chief Engineer, Quality Control & Research. The SQMC engages individual experts in the related field to serve as State Quality Monitors (SQMs) and performs its task through State Quality Monitors (SQMs). The State Quality Monitors are independent of the Project Implementation Units and inspect the work on a sample basis to ensure that the Quality Management System is operating satisfactorily in the field. Throughout the process of ensuring and establishing proper Quality Control and Assurance, the Project Implementation Unit will be interacting with SQMC.

All the works were visited by the State Quality Monitors (SQMs) on random basis and carried out necessary quality assurance. During the period SQMs were entrusted with the quality monitoring work, which they have carried during the working season. Presently more emphasis has been given for Quality Monitoring of Ongoing Works.

During the financial year 2018-19, (up to 31 st March) work list of 3002 nos. of works has been received from different PMUs out of which 482 nos. of works were inspected by the State Quality Monitors (SQMs) as per the agreement no. basis and carried out necessary quality assurance inspection. The SQMC has been functioning with 8 nos. of SQMs at present during the Financial year 2018-19.

Table - 4.15.2
Status of ATR under in different basins for Financial Year 2018-19

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<tr>
<th>Sl. No.</th>
<th>Name of Basin</th>
<th>No. of works (as per list received from PMU) during 2018-19</th>
<th>No. of work inspected by SQM</th>
<th>ATR asked for</th>
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<td><strong>88</strong></td>
<td><strong>25</strong></td>
<td><strong>63</strong></td>
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Photographs of State Quality Monitors Examining Quality Control Activities

Balance work of earth dam including approach road with all structures to right and left earth dam of Ret Irrigation Project

Work under KIP to earth dam

Inspected the work of Chikiti Irrigation Division

Improvement to Candapada Minor and Neepur Minor of Pipili Irrigation Project

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