

GOVERNMENT OF PAKISTAN
PLANNING COMMISSION

ANNUAL PERFORMANCE REPORT AFTER
COMPLETION OF PROJECT

PC-V PROFORMA

1. **Name of Project:** Establishment of Non-Destructive Testing Facilities at CWHR for Research, Assessment and Evaluation of Concrete Structures.

2. **Objectives & scope of project as per approved PC-I and state as to what extent the objectives have been met:**

| S. No. | Objectives As per approved PC-I | Actual Achievements |
|--------|---|---|
| i. | To establish facilities for non-destructive testing of concrete at CWHR, conforming to international standards. | <p>An existing laboratory at CWHR (measuring 1500 sq ft) was physically upgraded by making additions and alterations to set up a hi-tech NDT laboratory at CWHR.</p> <p>About 14 new major equipments were procured for the NDT Laboratory. Extensive trainings were imparted to at least 5 engineers, 5 technicians and laboratory support staff to operate the equipments at site as well as laboratory.</p> <p>Advanced software for structural analysis and design was added to the inventory of NDT laboratory.</p> <p>Some existing equipments were repaired, serviced and calibrated for use in the NDT Laboratory.</p> <p>Technical literature, relevant books were also added in the library of CWHR as reference materials for Non-Destructive Testing Methods.</p> |

| S. No. | Objectives As per approved PC-I | Actual Achievements |
|---------------|--|---|
| ii. | To conduct research on structural adequacies and durability of buildings, bridges and other civil engineering structures for their effective and economical repair, rehabilitation and conservation. | Conducted about 22 consultancies related to Non-Destructive Testing for assessing adequacy of different structures, including bridges, fly-overs, buildings, culverts and etc. |
| iii. | To provide services to the construction industry and generate revenue by offering NDT services at commercial level. | An amount of (approx) Rs. 2.682 Millions was generated by conducting NDT Consultancies for various organizations since February 2008. |
| iv. | To extend research facilities to universities for post graduate/post doctoral researches in the field of non-destructive testing of concrete. | Research facilities extended to undergraduate as well as postgraduate students of NED University of Engineering and Technology, Mehran University of Engineering and Technology and Sir Syed University of Engineering and Technology. Approximately 50 students have availed the facilities for their graduate/post graduate researches. |

3. Planned and actual recurring cost of the project, with details:

Rs. Millions

| S. No. | Components | PC-I Estimates | Actual Recurring Cost 2009-10 | Actual Recurring Cost 2010-11 |
|---------------|---|-----------------------|--------------------------------------|--------------------------------------|
| 1 | Repair & Maintenance of Equipments and Tools | 0.050 | 0.070 | 0.097 |
| 2 | Training of Manpower | 0.050 | 0.135 | 0.105 |
| 3 | Repair of Furniture, Fixtures & Office Equipment | 0.020 | 0.008 | 0.070 |
| 4 | Updating Technical Literature, Standards and Software | 0.020 | 0.008 | 0.078 |
| 5 | Dissemination and Marketing | 0.050 | 0.076 | 0.066 |
| 6 | Transport/POL | 0.025 | 0.098 | 0.030 |
| 7 | Contingent Staff | 0.050 | *0.201 | *0.136 |
| 8 | Materials, Supplies And Stationary | 0.020 | 0.028 | 0.005 |
| 9 | Miscellaneous | 0.015 | 0.005 | 0.013 |
| Total: | | 0.300 | 0.629 | 0.600 |

*See Footnote on Page No. 3

4. **Planned and Actual Manpower Employed:**

| S. No. | Designation | Planned No. of Manpower as Per PC-I | Actual No. of Manpower Involved |
|--------|---|-------------------------------------|--|
| 1. | Principal Research Officer/ Project Director (B-19). | 1 | Available |
| 2. | Senior Research Officer (B-18) | 1 | Not Available |
| 3. | Research Engineers/Research Officer (B-17). | 2 | One RO was available during the Project Period. One RE was available upto 2006 One RO and one RE are available after completion of project |
| 4. | Sub-Engineer (B-14) | 1 | Available |
| 5. | Research Assistant (B-13) | 1 | Available w.e.f. February, 2009 |
| 6. | Steno typist/Office Assistant B-12 or B-13/B-14 | 1 | Available |
| 7. | Junior Research Assistant / Technician (B-11) | 2 | Not Available |
| 8. | Lab Assistant (B-05) | 2 | Not Available |
| 9. | Lab Attendants (B-02) | 2 | Only One Available |
| 10. | Un-Skilled Workers | 4 | * 4 |

****04 Nos. Daily Wages Workers were hired for the project and after the completion of the project. They have been continued as DWW (These DWW are being used for maintenance of existing NDT equipments and for field work on NDT R&D/Consultancy work on commercial basis. Their salaries are being paid by the NDT Consultancy Head/Non-Development Head from 01.01.2009 till date).***

5. Planned and Actual Physical Output of the Project:

| S. No. | Items (as per PC-I) | Unit | PC-I Estimates | Actual Achievement |
|---------------|--|-------------|--|--|
| | 1 | 2 | 3 | 4 |
| 1a | New Equipment | Nos. | Procurement of 18 equipment, misc tools and accessories | All major equipment procured, installed and commissioned at CWHR. |
| 1b | Repair and Servicing of Existing Equipment | Nos. | To undertake repair work of existing 14 equipment and devices | Completed. |
| 2 | Training of Manpower | Nos. | To train 10 manpower in NDT methods | Existing manpower of CWHR trained for setting laboratory facilities, conducting NDT's, Courses, etc. |
| 3 | Furniture, Fixtures and Office Equipment | Nos. | To complete furnishing of the newly established facilities in the laboratory. | Miscellaneous items procured. |
| 4 | Technical Literature, Standards and Software | LS | To procure software, standards, codes of practices, manuals and related literature. | 5 Books, 3 Standards and 3 International Journals procured. Software: STAAD Pro 2006 (Structural Analysis and Design) procured and installed at NDT Laboratory. |
| 5 | Dissemination and Marketing | LS | Advertisements, printing, publishing and other activities related to promote marketing capabilities. | Advertisements published for tenders, procurements and introduction to NDT Services offered by CWHR. Web Site of CWHR: www.cwhr.gov.pk designed, registered and uploaded. Rates for different NDT services worked out and widely circulated Brochure prepared and printed for introducing NDT facilities at CWHR with an objective to encourage Contract Researches for NDT studies. |

| S. No. | Items (as per PC-I) | Unit | PC-I Estimates | Actual Achievement |
|--------|------------------------------------|------|--|---|
| | 1 | 2 | 3 | 4 |
| 6 | Transport / POL | LS | Procurement of One Jeep (1000cc) and POL for project related work | Purchased. |
| 7 | Minor Civil Works | LS | Minor addition/alteration and repair works to existing space required for NDT facilities | Addition and alterations were made to an existing laboratory to house NDT facilities. A Structural Design Software Room added to facilitate design and drawing activities. Minor civil works were undertaken for housing the new 50KVA Gas Generator. Minor works carried out for providing Gas Connection to the Generator. |
| 8 | Contingent Staff | Nos. | Employ on short term basis semi skilled and unskilled manpower | 4 Nos. daily wagers were engaged. |
| 9 | Materials, Supplies and Stationary | LS | Procure materials | Consumable items were procured as and when required. |
| 10 | Miscellaneous /Unforeseen | LS | As and when required | Misc expenditures were made that were not covered above. TA/DA of Project Director for project related tours and visits. |

6. Planned and Actual Income of the Project:

Rs. Millions

| YEAR | As contained in the PC-I | Actual |
|---------------------|--------------------------------|----------------|
| 2007-08 | Project Implementation Period | 0.452 M |
| 2008-09 | Project Completed in June 2009 | 0.957 M |
| 2009-10 | 0.3 M | 0.645 M |
| 2010-11 | 0.3 M | 0.328 M |
| 2011-2012 till date | 0.3 M | 0.300 M |
| TOTAL | 0.9 M | 2.682 M |

7. Planned and Actual benefits to the economy:

As per the approved PC-I, it was planned to establish a full fledged NDT laboratory at CWHR which would enhance the capability of CWHR to assess structural adequacy of existing structures such as building bridges and other civil engineering structures and to suggest rehabilitation measures. It was further anticipated that revenue will be generated by conducting research consultancy in the field of Non Destructive Testing.

Actual benefits accrued till date are reflected at Serial No. 6. wherein, it is evident that the project has been beneficial to the economy.

The project has contributed in dissemination of technical know-how related to NDT in Pakistan. CWHR was the pioneer public sector organization to acquire NDT facilities related with testing of Concrete structures. CWHR performed NDT on several structures of national importance including Manora Dry Dock, Pakistan International Container Terminal bridge, Right Bank Outfall Drain, Gulshan-e-Iqbal Flyover, EJHD Quaid-e-Azam International Airport, Concrete Double T-Beams at FOTCO Jetty Port Qasim, IBA University Building and PSQCA office building. The trainings imparted to different students and construction industry professionals have also helped in generation of awareness regarding importance of NDT in the country.

8. Planned and Actual Social Benefits:

The target group as envisaged in the PC-I were Researchers, Construction Industry and Academia. As evident the large number of trainings imparted to engineers and construction industry professionals, the facilities and capacity established through this project has benefited all the target groups.

The Non-Destructive Testing Facilities for testing concrete, established at CWHR through this project are unique in its kind and nowhere in Pakistan, such a wide range of hi-tech facilities with technical expertises are available under one roof.

Therefore, the impact of the Project has been very positive and beneficial to the target group.

9. **Planned and Actual Cost per unit produced/sold:**

Rs. Millions

| Items (as per PC-I) | PC-I Estimates | | | *Actual Expenditure | | |
|---|----------------|---------------|----------|---------------------|---------------|----------|
| | Total | Local | FEC | Total | Local | FEC |
| 1. Equipments and Tools | | | | | | |
| a. New Equipment | 6.500 | 6.500 | - | 9.4771 | 9.4771 | - |
| b. Repair And Servicing of Existing Equipment | 0.500 | 0.500 | - | 0.000 | 0.000 | - |
| 2. Training of Manpower | 1.000 | 1.000 | - | 0.206 | 0.206 | - |
| 3. Furniture, Fixtures and Office Equipment | 0.100 | 0.100 | - | 0.0794 | 0.0794 | - |
| 4. Technical Literature, Standards and Software | 0.500 | 0.500 | - | 0.3802 | 0.3802 | - |
| 5. Dissemination and Marketing | 0.400 | 0.400 | - | 0.4724 | 0.4724 | - |
| 6. Transport/POL | 0.850 | 0.850 | - | 0.7236 | 0.7236 | - |
| 7. Minor Civil Works | 0.450 | 0.450 | - | 0.423 | 0.423 | - |
| 8. Contingent Staff | 0.500 | 0.500 | - | 0.5595 | 0.5595 | - |
| 9. Materials, Supplies and Stationary | 0.400 | 0.400 | - | 0.1976 | 0.1976 | - |
| 10. Miscellaneous/ Unforeseen | 0.300 | 0.300 | - | 0.6964 | 0.6964 | - |
| TOTAL | 11.500 | 11.500 | - | 13.225 | 13.225 | - |

* **See Annexure-I for approval of Revised Cost of Rs. 13.225 M**

10. **Marketing Mechanism:**

Effective marketing strategy for publicizing the achievements of CWHR in the field of Non-Destructive Testing and to tap clients, researchers, practicing engineers for creating awareness of the facilities available at CWHR.

11. **Arrangement for maintenance of building & equipment:**

Indicate mechanism by which project activities will be continued on sustainable basis.

- Regular cleaning and maintenance of NDT Laboratory at CWHR premises.
- Regular servicing, repair and calibration of equipment.
- To maintain inventory of spares and consumables essentially required for Non-Destructive Testing.
- Up-gradation of existing facilities and expertise.

- Retention of trained manpower, at technician levels and semi-skilled level. Since specialized trainings are involved in operating sophisticated NDT equipments, the project staff must be made regular, to avoid losing trained staff that was hired against the project and trained. Unskilled workers hired on daily wages during the project period have gained sufficient experience of handling and operating equipment at site. The same manpower must be regularized as permanent employees of CWHR to retain the expertise and trained manpower for CWHR.

12. Whether output targets as envisaged in the PC-I have been achieved. If not, provide reasons:

Yes (As evidence detail see Annexure-II).

13. Lessons learned during the year in (2010 till date) :

a) Operation

The operation of the project faced a number of bottlenecks in the initial stages as mentioned above. However, on delegating full administrative and financial authority to the Principal investigator to function as Project Director, the impediments faced were reduced.

b) Maintenance

After completion of the project, equipments require regular servicing and maintenance including replacement with spares and regular procurement of consumables. Most of the expenditure for maintenance of equipment is met through the income generated by NDT Consultancy Works. Since the procurement process of spares is a continued process, it would be economical if these spare parts can be procured directly from the principals. Furthermore, the resources available with PCSIR Karachi Complex for regular repair, troubleshooting of minor defects in some equipment has been commendable.

c) Marketing

The marketing strategy employed during the project involved meetings with construction industry professional, presentations to different stakeholders including various government officials and setting up stalls at different conferences and exhibitions. As a result of the marketing activity, some business was acquired (which is in excess of the estimates made in PC-I). A continuous marketing effort is required to boost up market share. A lot of construction activity is going on in the market but the general awareness among construction industry professionals regarding the importance of NDT methods and techniques remains on the lower side.

d) **Management**

The existing management for the project is working smoothly and is satisfactory.

14. **Any change in project management during the year:**

There has been no change in the project management since the start of the project in September, 2004.

15. **Suggestions to improve projects performance:**

In case of delay in the implementation period of project escalation in cost should be added automatically in the subsequent release to meet market cost of different cities and accordingly the total cost of project be enhanced.

Timely release according to allocation of project should be ensured to avoid delay & for timely completion of project.

The main components of the project were procurement of equipments and training of manpower. For implementing similar projects, the project implementers must be well conversant with Public Procurement Rules so that equipment could be purchased timely.

Physical infrastructure for housing the equipment must be well thought and planned, so that idle time of equipment can be avoided.

Since specialized trainings are involved in operating sophisticated equipment, the project staff must be made regular, to avoid losing trained staff that was hired against the project and trained.

NAME AND DESIGNATION OF REPORTING OFFICER

ENGR. RUKHSANA RAHOOJA,
Principal Research Officer/ Project Director
May , 2012.