

**GOVERNMENT OF PAKISTAN  
PLANNING COMMISSION**

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**PROJECT COMPLETION REPORT  
(PC-IV PROFORMA)**

1. **Name of the Project/Program/ Study** Establishment of Non-Destructive Testing Facilities at CWHR for Research, Assessment and Evaluation of Concrete Structures.  
  
**Location** Karachi, Sindh  
Council for Works and Housing Research,  
F-40, Hub River Road, SITE,  
Karachi-75730
2. **Sector** Science and Technology  
**Sub-sector**
3. **Sponsoring Ministry/ Agency** Ministry of Science and Technology  
Government of Pakistan, Islamabad.
4. **Executing Agency(s)** Council for Works and Housing Research.
5. **Agency for operation & maintenance after completion.** Council for Works and Housing Research
6. **Date of approval & approving Forum( DDWP/CDWP/ECNEC/ PDWP/OTHER)**
  - **Original** March 11, 2004, DDWP
  - **Revised** September 04, 2004 DDWP
7. **a) Implementation period**
  - **As per PC-I** 24 Months
  - **Actual** 57 Months**b) Extension(s) in the implementation period ( if any)** 2 Extensions. (See Annexure-I)

Rs. Millions

8	Capital cost	PC-I Cost ( approved)			Actual Expenditure		
		Local	Loan/* Grant	Total	Local	Loan/* Grant	Total
	• Original	11.5	NIL	11.5		NIL	
	• Revised	13.225	NIL	13.225	13.225	NIL	13.225

**Revised cost of Rs. 13.225 Millions approved by MoST  
vide Letter No. 12(7)/2003-DSA(P&D) dated 4.9.2007 (See Annexure-Ib)**

9.	Financing of the project	Local	Loan/ Grant**	Total
	• Federal share	13.225	NIL	13.225
	• Provincial share	NIL	NIL	NIL
	• Donors/ others	NIL	NIL	NIL
	<b>Total:</b>	<b>13.225</b>	<b>NIL</b>	<b>13.225</b>

\*\* mention the rupees exchange rate, if applicable

### 10. Project account

a) Nature of Account	Type	Date of opening	Lapsable/ Non-Lapsable
	PLA	NA	NA
	Current Account A/C 2720-4 ABL, Sher Shah Branch, Karachi	19.10.2004	Lapsable
	Saving Account	NA	NA
	Other (Assignment Account, NBP, Main Branch Karachi. A/C A-14)	5.5.2009	Lapsable
<b>b) Status of Account</b>			
	• If closed, mentioned the date	30.6.2009	
	• If not closed, mention the reason thereof & tentative closure date	NA	NA

### 11. Financial Phasing as per PC-I and expenditure

Rs. Millions

Year	Phasing as per PC-I		PSDP Allocations	Releases	*Expenditure
	Original	*Revised			
2004-2005	5.15	1.717	5.000	2.238	1.717
2005-2006	6.35	0.773	5.000	3.500	0.773
2006-2007	-	1.949	5.762	5.762	1.949
2007-2008	-	7.061	0	0	7.061
2008-2009	-	1.725	1.725	1.725	1.725
<b>TOTAL</b>	<b>11.5</b>	<b>13.225</b>		<b>13.225</b>	<b>13.225</b>

\* For approved Revised Cost See Annexure-I

## 12. Physical Targets & Achievements

S.#	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: <a href="http://www.cwhr.gov.pk">www.cwhr.gov.pk</a> 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.#	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	<p>Addition and alterations were made to an existing laboratory to house NDT facilities.</p> <p>A Structural Design Software Room added to facilitate design and drawing activities.</p> <p>Minor civil works were undertaken for housing the new 50KVA Gas Generator.</p> <p>Minor works carried out for providing Gas Connection to the Generator.</p>
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 /UNFORSEEN	LS	As and when required	<p>Misc expenditures were made that were not covered above.</p> <p>TA/DA of Project Director for project related tours and visits.</p>

\* attach/ Annex detailed information for each item separately

**SEE ANNEXURE-II**

**13. Item-wise Planned & actual expenditure**

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/ UNFORSEEN	0.300	0.300	-	0.6964	0.6964	-
<b>TOTAL</b>	<b>11.500</b>	<b>11.500</b>	<b>-</b>	<b>13.225</b>	<b>13.225</b>	<b>-</b>

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

#### 14. Recurring Cost After Completion Of The Project

(Rs. Million)

S.No	Components	PC-I Estimates*	Actual Expenditure
		Total	Total
1	REPAIR & MAINTENANCE OF EQUIPMENTS AND TOOLS	0.050	0.05
2	TRAINING OF MANPOWER	0.050	0.03
3	REPAIR OF FURNITURE, FIXTURES AND OFFICE EQUIPMENT	0.020	0.02
4	UPDATING TECHNICAL LITERATURE, STANDARDS AND SOFTWARE	0.020	0
5	DISSEMINATION AND MARKETING	0.050	0.04
6	TRANSPORT/POL	0.025	0.04
7	CONTINGENT STAFF	0.050	0.25
8	MATERIALS, SUPPLIES AND STATIONARY	0.020	0.01
9	MISCELLANEOUS	0.015	0.01
<b>Total:</b>		<b>0.300</b>	<b>0.450</b>

\*Mention source and agency responsible for financing the recurring cost after completion of the project:

***Recurring Expenditure to be met from income generated by the NDT studies on contract basis***

## 15. Achievement of Objectives

S.No	As Contained in the PC-I	Actual Achievement*
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>
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 18 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.	Over a period of 2 years an amount of (approx) Rs. 2.38 Millions were generated by conducting NDT Consultancies for various organizations.
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 35 students have availed the facilities for their graduate/post graduate researches.

\*Attach/ Annex detailed information for each objective separately

**SEE ANNEXURE-II**

### 16. Year –Wise Income From Services / Revenue Generation

Rs. Millions

YEAR	As contained in the PC-I	Actual
2007-08	Project Period	0.452
2008-09	Project Period	0.957
2009-10	Project Period	0.645
2010-11	Project Period	0.328
<b>TOTAL</b>	<b>0.3 per annum after completion of Project</b>	<b>2.382</b>

### 17. RBM Indicators as given in the PC-I

NA

### 18. List of Project Directors (PDs) till completion

S.No	Name & Designation	From	To
i.	Engr. Rukhsana Rahooja Principal Research Officer Council For Works and Housing Research.	September 2004	DATE

### 19. Impact After Completion Of The Project

The target group as envisaged in the PC-I were Researchers, Construction Industry and Academia. As evident from Annexure-I 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.



**20. Responsibility /Ownership Of Assets ( Procured / Acquired/ Developed ) After Completion Of The Project.**

- Indicate Agency : Council For Works and Housing Research, Karachi
- List of Assets : **See Annexure-III**

**21. Mechanism for Sustainability of Activities after Completion.**

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

- Regular servicing, repair, and calibration of equipment.
- To maintain inventory of spares and consumables essentially required for Non-Destructive Testing.
- Upgradation of facilities and expertise.
- Retention of trained manpower, at technician levels and semi-skilled level. 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. 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.
- 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.

**22. Quantifiable Benefits Of The Project**

- a) Financial
- b) Economic
- c) social
- d) Employment generation
- e) Environmental
- f) Any other

**SEE ANNEXURE-I**

**23. Financial / economic analysis**

a) Financial  
Net present worth  
Benefit cost ratio  
Internal financial rate of return  
Unit cost analysis

b) Economic  
Net present worth  
Benefit cost ratio  
Internal economic rate of return

**SEE Q. 16 and ANNEXURE-I**

**24. Project Implementation**

Whether the Project has been implemented as per approved scope of the project, if not positive detailed justification of variations.

The Project has been implemented as per approved scope of the project with approved re-appropriation and approved 15% enhancement in the total cost of the project, vide MoST letter No. 12(7)/2003-DSA(P&D) dated 4.9.2007.

**(SEE ANNEXURE-I)**

**25. Lessons Learned**

**a) Project Identification.**

The project was timely identified as awareness to rehabilitation and economic repairs for concrete structures is gaining importance, especially after the October 2005 earthquake and the devastation caused by the floods in 2010. Furthermore, Non-Destructive testing techniques are becoming equally significant as techniques for Quality Assurance and Quality Control of structures during construction as well.

**b) Project preparation**

Satisfactory

**c) Project Approval**

The DDWP approved the project in March 2004, however administrative approval was issued in September 2004 and funds were released in October 2004.

#### **d) Project Financing**

Project financing remained low, primarily due to delay in compliance of all formalities. The concept of Cash Plans was introduced for the first time and project implementers faced initial difficulties in completing the pre-requisites of Cash Plan. Hence the financing to the project was delayed. However, after training received, the principal investigators were able to complete formalities in time for securing releases against approved allocation of funds.

#### **e) Project Implementation**

The implementation 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.

### **26. Suggestions For Planning & Implementation Of Similar Projects**

The main components of the project were procurement of equipment 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 and  
Project Director  
October 12, 2011**