



**Report of the  
Comptroller and Auditor General of India  
on  
Economic Sector  
for the year ended 31 March 2018**



लोकहितार्थ सत्यनिष्ठा  
Dedicated to Truth in Public Interest



**Government of Madhya Pradesh**  
*Report No. 1 of the year 2020*



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## **PREFACE**

This Report for the year ended 31 March 2018 has been prepared for submission to the Governor of Madhya Pradesh under Article 151 of the Constitution of India.

The Report contains significant results of the Compliance audits of the Departments of the Government of Madhya Pradesh under Economic Sector including Departments of Forest, Public Works and Water Resources. However, Departments under General, Social and Revenue Sectors are excluded and are covered in the Reports on the General, Social and Revenue Sectors.

The instances mentioned in this Report are among those which came to notice in the course of test audit for the period 2017-18 as well as those which came to notice in earlier years but could not be reported in previous Audit Reports. Instances relating to the period subsequent to year 2017-18 have also been included, wherever related and necessary.

The audit has been conducted in conformity with the Auditing Standards issued by the Comptroller and Auditor General of India.



# Overview



## Overview

This Report contains major findings arising out of Compliance Audits of various Departments under the Economic Sector of the Government of Madhya Pradesh conducted during 2017-18. The Report is structured in two chapters. Chapter I provides general information about audited entities, audit coverage and responses of the Government to the Audit Inspection Reports/Audit Reports. Chapter II of Report contains findings of Audit on 'Execution of work through Turnkey Contracts in Water Resources Department' and 10 Audit Paragraphs. The audit findings included in the Report have total money value of ₹ 1,096.80 crore involving issues of systemic deficiencies, irregular expenditure, avoidable extra expenditure, etc.

The audit has been conducted in conformity with the Auditing Standards of the Comptroller and Auditor General of India. Audit samples have been drawn based on statistical sampling. The specific audit methodology adopted has been mentioned in the Audit report. The audit conclusions have been drawn and recommendations have been made taking into consideration the views of the Government. A summary of the main audit findings is presented in this overview.

## Compliance Audit

### 2.1 Audit on execution of work through Turnkey Contracts in Water Resources Department

The Water Resources Department switched over from Percentage Rate Contract to Turn Key Contract (TKC), with aim to complete the irrigation projects in a prescribed time schedule with a lump sum fixed price.

The Department awarded 64 TKCs, costing ₹ 7,530.25 crore since 2010-11 to 2017-18, out of which 22 TKCs were sampled for audit. The audit of Execution of work through TKCs in WRD was conducted covering the period from 2013-14 to 2017-18. As of March 2019, the WRD incurred an expenditure of ₹ 3,729.79 crore since 2010-11 on 22 selected TKCs. The Audit was conducted to evaluate the achievements of implementation of TKC's objective along with development of irrigation potential.

A compliance audit of execution of work through Turnkey Contracts in Water Resources Department during the period 2013-18 revealed the following:

#### *Non-adherence to time schedule for execution of works*

Out of 22 selected TKCs, only one TKC was completed within the stipulated period and two were running on time. The remaining TKCs were either completed/terminated in extended period or delayed. Thus, the objective of timely completion of the Project could not be achieved.

*(Paragraph 2.1.8.1)*

#### *Non-achievement of Irrigation Potential*

Against the plan to develop 3,14,090 ha of CCA, only 1,47,648 ha (47.00 per cent) was developed from these TKCs, despite incurring expenditure of ₹ 2,672.33 crore (88.72 per cent).

*(Paragraph 2.1.8.2)*

***Non-preparation of Standard Bidding Document***

TKC began in 2010 however SBD is not prepared even after lapse of nine years, as a result instances of irregular reduction of Performance Security amounting to ₹ 102.66 crore, less retention of Security in Sip-Kolar Link Project amounting to ₹ 4.87 crore, irregular inclusion of Price adjustment clause extra financial burden of ₹ 124.53 crore, etc. were observed by audit.

***(Paragraph 2.1.4.1)***

***Non-completion of Projects***

An expenditure of ₹ 568.50 crore was incurred up to March 2019 on Bhanpura Canal Project and Garoth Micro Irrigation Project, remained infructuous due to non-construction of the Twin Inlet Barrel, resulting in failure to irrigate the targeted land of 34,754 ha and affecting the livelihood of 44,154 farmers. Further, an expenditure of ₹ 123.46 crore, incurred on the Sip Kolar Link Project remains infructuous due to non-completion of weirs and tunnel and also the purpose to irrigate 6,100 ha land remains unachieved.

***(Paragraph 2.1.6.1)***

***Deviation from approved drawings and design***

An amount of ₹ 11.67 crore was excess paid to Contractor due to construction of 21 Cart Tracks in place of 20 Village Road Bridges.

***(Paragraph 2.1.6.2)***

***Irregular revision of payment schedule***

Undue benefit of ₹ 66.04 crore was given to Contractors by injudiciously amending the payment schedule post awarding of tenders thereby making it unequitable for the participants in four TKCs. Further, undue benefit of ₹ 3.61 crore was given to Contractor in the Bhanpura Canal Unit-II by merging the cost of trial run, commissioning and maintenance in the other components. Premature release of 50 *per cent* cost of operation and maintenance amounting to ₹ 1.51 crore before completion of Defect liability period up to May 2021.

***(Paragraph 2.1.6.3)***

***Excess payment for work not done***

Instances of excess payment of ₹ 3.68 crore to Contractor due to construction of steel aqueducts instead of Reinforced Cement Concrete (RCC) aqueducts, excess payment of ₹ 10.88 crore due to non- construction of some part of the works and excess payment of ₹ 8.92 crore due to less development of command area were observed.

***(Paragraph 2.1.6.9)***

***Lack of quality control in cement concrete works***

Against the requirement of 563 test of CC lining and structures, only 30 tests were conducted by the Contractor which were also beyond the acceptable criteria and canal lining was found damaged in various reaches.

***(Paragraph 2.1.7.2)***

### **Recommendations**

The Department should prepare a uniform Standard Bidding Document (SBD); adhere to contract terms and conditions; fix accountability for extra payments and unreasonable relaxation of contract provisions; limit the payments as per actual work done in a phase-wise completion/ development of command area; besides also ensuring comprehensive monitoring and strengthening of Quality Control and Supervision mechanism.

### **2.2 Audit Paragraphs**

Audit has reported on several significant deficiencies in critical areas which impact the effectiveness of the State Government. Some important findings arising out of Compliance Audit (10 paragraphs) feature in the Report. These observations relate to non-compliance with rules and regulations, audit on propriety of action, cases of expenditure without adequate justification and failure of oversight/governance as mentioned below:

#### **Forest Department**

Unauthorised execution of non-forestry work in Reserved forest in violation of Forest (Conservation) Act and without environment clearance resulted in unauthorised use of public fund amounting to ₹ 1.02 crore.

*(Paragraph 2.2.1)*

Incorrect application of rates and incorrect computation of leviabale charges towards *Aastha-mulak*, Human Resource Development; Monitoring, Evaluation and Supervision Charges resulted in short demand and short recovery of ₹ 93.80 lakh.

*(Paragraph 2.2.2)*

Failure of the Forest Department in commencement of work of Catchment Area Treatment Plan for Pench Valley Group Water Supply Project which involved construction of Mandhan Dam by Public Health Engineering Department, despite remitting the amount by the user agency, not only resulted in the blockage of money but has the potential to adversely affect the live storage capacity of the dam due to the silting of eroded soil also. This, consequently, will affect the entire project and the environment.

*(Paragraph 2.2.3)*

#### **Public Works Department**

Non-adherence to the standard specifications led to execution of below specification Cement Concrete Pavement work amounting to ₹ 1.14 crore.

*(Paragraph 2.2.4)*

On the basis of suspected fraudulent invoices, excess payment of ₹ 22.50 lakh was made to Contractor on account of machineries expected to be deployed on the work.

*(Paragraph 2.2.5)*

### **Water Resources Department**

Extra cost amounting to ₹ 2.47 crore due to unwarranted execution of Low-Density Polyethylene (LDPE) film and superfluous laying of concrete sleepers below cement concrete lining, with Paver machine.

***(Paragraph 2.2.6)***

Adoption of incorrect rates in the estimate for earth work of canal and providing extra lead resulted in extra cost of ₹ 1.18 crore

***(Paragraph 2.2.7)***

Incorrect adoption of rates for Cement Concrete lining of canal resulted in extra cost of ₹ 1.14 crore in five canal works.

***(Paragraph 2.2.8)***

Inclusion of inadmissible lead for transportation of Narmada sand in estimates led to extra cost of ₹ 23.70 crore to the Government.

***(Paragraph 2.2.9)***

Rates given in USR 2009 for CC lining of M-15 grade with Paver machine are inclusive of all leads and lifts for cement, sand, metal, etc., but separate lead on all materials was considered while preparing estimates. Thus, due to inclusion of inadmissible lead, an extra cost of ₹ 10.75 crore was incurred.

***(Paragraph 2.2.10)***

**Chapter I**  
**Introduction**



## CHAPTER-I

### INTRODUCTION

#### 1.1 About this Report

This report contains the results of Compliance Audits of various Departments under Economic Sector of the Government of Madhya Pradesh conducted during 2017-18 in compliance with the CAG's audit mandate under Article 151 of the Constitution of India and the CAG's (Duties, Powers and Conditions of Service) Act, 1971.

This Report aims to assist Madhya Pradesh Legislative Assembly to ensure executive accountability and to improve the process of governance and public service delivery by various Departments.

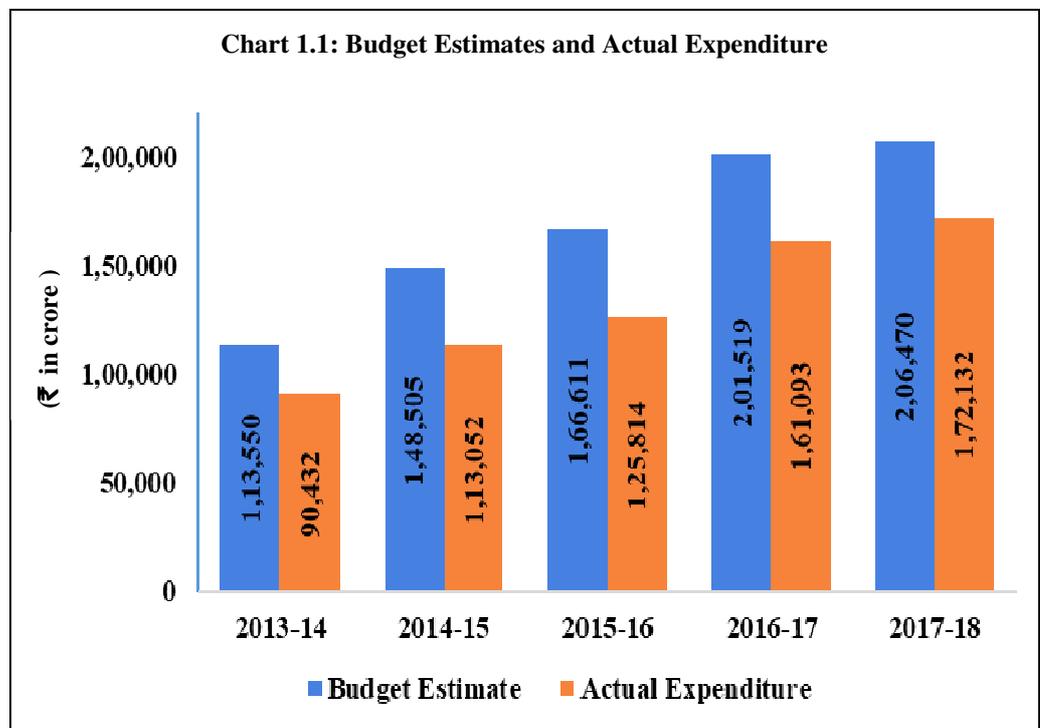
The layout of the Report is as under:

1. **Chapter I:** General information about the audited entities.
2. **Chapter II:** Audit on "Execution of work through Turnkey Contracts in Water Resources Department" and 10 Audit paragraphs.

#### 1.2 Profile of audited entities

Seventeen out of total 53 Departments in Madhya Pradesh fall under the Economic Sector. These Departments are headed by Additional Chief Secretaries/Principal Secretaries, who are assisted by Commissioners/ Directors and subordinate officers under them.

The trend of budget estimate and actual expenditure of the State Government during 2013-18 is as detailed in **Chart 1.1**.



(Source: Appropriation Accounts of respective years)

The trend of expenditure of five major Departments under Economic Sector during 2015-16 to 2017-18 is given in **Table 1.1**.

**Table 1.1: Expenditure of major Departments under Economic Sector**

(₹ in crore)			
Department	2015-16	2016-17	2017-18
Public Works	6,319.77	8,253.99	8,172.01
Water Resources	5,954.12	7,423.14	7,042.41
Farmer Welfare & Agriculture Development	1,926.30	4,734.91	5,362.35
Forest	2,035.77	2,159.63	2,277.47
Narmada Valley Development Department	1,381.18	1,986.45	2,535.84

(Source: Data collected from Finance Department, Government of Madhya Pradesh)

### 1.3 Audit Coverage

During the year 2017-18, the Accountant General (Economic and Revenue Sector Audit), Madhya Pradesh conducted compliance audits of 449 out of total 1,495 auditable units under 17 Departments pertaining to the Economic Sector along with Audit on “Execution of work through Turnkey Contracts in Water Resources Department”.

### 1.4 Response of the Government to Audit

Audit affords four stage opportunity to the audited units/Departments to elicit their views on audit observations, viz.

- **Audit Memos:** Issued to the head of the audited unit during the field audit to be replied during the audit itself.
- **Inspection Reports:** Issued within a month of the completion of audit to be replied by the head of audited unit within four weeks.
- **Draft Paragraphs:** Issued to Head of the Departments, under whom the audited unit functions, for submission of departmental views within six weeks for consideration prior to their being included in the Audit Report.
- **Exit Conference:** Opportunity is given to Head of Departments and State Government to elicit Departmental/Government's views on the audit observations prior to finalisation of the Audit Report.

In all these stages, Audit strives to provide full opportunity to audited units/Heads of Departments/State Government to provide rebuttals and clarifications and only when departmental replies are not received or are not convincing, the audit observations are processed for inclusion in the Inspection Report or Audit Report, as the case may be. However, it has been noticed that the audited units/ Departments, in most of the cases, do not submit timely and satisfactory reply addressing audit concerns as indicated below:

#### 1.4.1 Inspection Reports (IRs)

A detailed review of IRs issued up to March 2018 to 1,495 Drawing and Disbursing Officers (DDOs) pertaining to 17 Departments revealed that 25,123 paragraphs contained in 6,231 IRs were outstanding for settlement for want of convincing replies as on 31 March 2019. Of these, the DDOs submitted initial replies against 23,049 paragraphs contained in 5,974 IRs while, in respect of 2,074 paragraphs contained in 257 IRs, there was no response from DDOs.

The status of outstanding IRs is given in **Table 1.2**.

**Table 1.2: Outstanding IRs and Paragraphs (issued up to 31 March 2018) as on 31 March 2019**

Sl. No.	Period	No. of outstanding IRs (per cent)	No. of outstanding Paras (per cent)
1	2017-18	465 (08)	3,539 (14)
2	1 year to 3 years	1,447 (23)	8,063 (32)
3	3 years to 5 years	930 (15)	3,909 (16)
4	More than 5 years	3,389 (54)	9,612 (38)
<b>Total</b>		<b>6,231</b>	<b>25,123</b>

During 2017-18, seven meetings of Audit with departmental officers (Audit Committee Meetings) were held, in which 299 IRs and 1,972 Paras were settled.

#### **1.4.2 Compliance Audit**

For the present Audit Report 2017-18, Audit on “Execution of work through Turnkey Contracts in Water Resources Department” and 10 Draft Paragraphs were forwarded to the Administrative Secretaries concerned to elicit their views on the audit observations. No replies have been received till January 2020 for three out of 10 Audit Paragraphs, despite repeated reminders.

#### **1.5 Action taken on earlier Audit Reports**

According to the rules of procedure for the internal working of the Public Accounts Committee (PAC), the Administrative Departments were to initiate *suo moto* action on all Audit Paragraphs and Performance Audit/Compliance Audit paragraphs featuring in the Comptroller and Auditor General’s Audit Reports, regardless of whether these are taken up for examination by the PAC or not. They were also to furnish detailed Action Taken Notes (ATNs), duly vetted by audit, indicating the remedial action taken or proposed to be taken by them.

During the years 2011-12 to 2016-17, 108 audit paragraphs were reported in the Audit Reports on Economic Sector. Of these, PAC had taken up 50 paragraphs for discussion and 48 paragraphs for written reply, while 10 audit paragraphs of the year 2016-17 are yet to be selected either for oral discussion or for written reply by the PAC. Out of 17 recommendations of PAC on these paragraphs, Government has taken action on five recommendations as on April 2019 as detailed in **Table 1.3**.

**Table 1.3: Status of PAC discussion, Madhya Pradesh, Vidhan Sabha**

Status	Audit Report on Economic Sector for the year 2011-12 to 2016-17
Total no. of Audit Paras	108
Taken up by PAC for oral discussion	50
Taken up by PAC for submission of written reply	48
Recommendations made by PAC	17 (Nine paras under oral discussion + Eight paras for written reply)
Action taken by the Department	05 (Three paras under oral discussion + Two paras for written reply)

## 1.6 Recoveries at the instance of Audit

The audit findings involving recoveries that came to notice in the course of test audit of accounts of the Departments of the State Government were referred to various departmental Drawing and Disbursing Officers (DDOs) for confirmation and further necessary action under intimation to audit.

During 2017-18, recovery of ₹ 1,426.36 crore was pointed out in audit. During the same period, the DDOs concerned had effected recovery of ₹ 36.48 crore in respect of recovery pointed in current year. A summary of a few cases of recoveries pointed out and effected are given in **Table 1.4**.

**Table 1.4: Recoveries pointed out by audit and accepted/recovered by the Departments**  
(₹ in crore)

Department	Particulars of recoveries noticed	Recoveries pointed out in Audit and accepted by the Departments during 2017-18			Recoveries effected during 2017-18	
		Number of cases	Pointed out	Accepted	Number of cases	Amount involved
Water Resources Department	Financial aid to the Contractor due to non-recovery of price adjustment	01	27.24	21.28	01	21.28
	Excess payment to Contractor due to non-deduction of rates for execution of contraction grooves in place of PVC strips at joints in canal lining	01	0.61	0.61	01	0.61
Public Works Department	Extra cost due to non-incorporation of amendments in the agreement.	01	0.98	0.98	01	0.98
	Undue advantage to the Contractor due to non-recovery of price adjustment.	01	0.72	0.72	01	0.72
	Excess payment to Contractor for extra cement.	01	0.46	0.46	01	0.46
Forest Department	Incorrect computation of Supervision Charges from user agency resulted in short recovery.	01	0.26	0.26	01	0.26

## **Chapter II**

### **Compliance Audit**

- 2.1 Audit on Execution of work through Turnkey Contracts in Water Resources Department**
- 2.2 Audit Paragraphs**



**Chapter-II**

**Compliance Audit**

**Water Resources Department**

**2.1 Execution of work through Turnkey Contracts in Water Resources Department**

**Highlights**

<b>Why CAG did this audit</b>	<b>What CAG found</b>
<p>The Water Resources Department (WRD) adopted the system of awarding works on Turnkey Contract (TKC) basis from 2010, with the aim to complete the work in a prescribed time schedule with a fixed contract price. In TKC, the Contractor undertakes the single point responsibility for survey, preparation of Land Acquisition (LA) cases/ forest clearance proposals and getting clearance in scheduled time from the Authorities concerned. This Audit was undertaken to examine (i) whether planning, design, estimation and tendering process were as per laid down norms; (ii) whether LA cases were prepared and submitted timely, and pursued properly; (iii) whether the Contractor had completed the entire work as per the approved drawings and designs, in a time-bound manner, and as per the quoted contract price; and, (iv) whether quality control and monitoring mechanism was effective.</p>	<p>The WRD awarded 64 TKCs, since 2010-11 to 2017-18, out of which 22 TKCs were selected including four TKCs of three irrigation projects, namely, i) Bhanpura Canal, ii) Garoth Micro Irrigation, and iii) Sip-Kolar Link.</p> <p>The Standard Bidding Document for TKCs was not prepared even after lapse of nine years. Instances of arbitrary reduction of Performance Security (PS), inclusion of Price Adjustment (PA) clause, cases of inflated estimation and deficient tendering process were found.</p> <p>Irregular payment for temporary LA and excess reimbursement for LA and other assets, was found.</p> <p>Cases of non-completion of projects, deviations from approved designs, irregular revisions of payment schedules, release of PS before ending of the defect liability period, irregular grants of Secured Advance, short forfeiture of Contractor's deposits after termination of contracts, short deduction of cost of hard rock, excess payment to Contractor for work not done and incorrect regulation of rates for altered quantities, were found.</p> <p>Cases of execution and acceptance of below-specification works and improper monitoring by the Department were found.</p> <p>Non-completion of Contracts (except One TKC) even after delay up to 76 months, development of 1,47,648 ha (47.00 per cent) against the planned Culturable Command Area (CCA) of 3,14,090 ha, despite incurring</p>
<b>What CAG Recommends</b>	
<p>The Department should prepare a uniform Standard Bidding Document (SBD); adhere to contract terms and conditions; fix accountability for extra payments and unreasonable relaxation of contract provisions; limit the payments as per actual work done in a phase-wise completion/development of command area; besides also ensuring comprehensive</p>	

monitoring and strengthening of Quality Control and Supervision mechanism.	expenditure of ₹ 2,672.33 crore (88.72 per cent) was found.
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<b>Key facts</b>	
<b>Objective of Turnkey Contract</b>	<ul style="list-style-type: none"> <li>• Firm lump sum fixed price.</li> <li>• Single source responsibility.</li> <li>• Completion of work in fixed time.</li> <li>• Operation and Maintenance for the period up to three years.</li> </ul>
<b>Out of 64 TKCs 22 TKCs were randomly selected for the Audit</b>	<ul style="list-style-type: none"> <li>• An expenditure of ₹ 3,729.79 crore was incurred on 22 TKCs up to March 2019 out of a total of 64 TKCs.</li> </ul>

<b>Subject</b>	<b>Findings</b>
<b>Non-preparation of Standard Bidding Document (Paragraph 2.1.4.1)</b>	<ul style="list-style-type: none"> <li>• TKC began in 2010 however SBD is not prepared even after lapse of nine years.</li> <li>• Irregular reduction of Performance Security ₹ 102.66 crore.</li> <li>• Less retention of Security in Sip-Kolar Link Project ₹ 4.87 crore.</li> <li>• Irregular inclusion of Price Adjustment clause ₹ 124.53 crore.</li> </ul>
<b>Inflated estimation (Paragraph 2.1.4.2)</b>	<ul style="list-style-type: none"> <li>• ₹ 13.39 crore additionally included in the estimates of five TKCs.</li> <li>• ₹ 11.04 crore superfluously included in the estimates of three TKCs.</li> </ul>
<b>Tendering Process (Paragraph 2.1.4.3)</b>	<ul style="list-style-type: none"> <li>• Deficient publishing of Notice Inviting Tenders in the Newspapers.</li> <li>• Non-availability of documents related to assessing of the physical and financial capacity of the bidders.</li> <li>• ₹ 2.43 crore undue benefit to the Contractors due to irregular modification in the scope of work in the Notice Inviting Tenders.</li> </ul>
<b>Land Acquisition (Paragraphs 2.1.5.1 and 2.1.5.2)</b>	<ul style="list-style-type: none"> <li>• ₹ 1.50 crore inadmissible payment to the Contractor for temporary LA.</li> <li>• ₹ 49.70 lakh excess reimbursed for land and pipelines.</li> </ul>
<b>Non-completion of Projects (Paragraph 2.1.6.1)</b>	<ul style="list-style-type: none"> <li>• An expenditure of ₹ 568.50 crore was incurred up to March 2019 on Bhanpura Canal Project and Garoth Micro Irrigation Project, remained infructuous due to non-construction of the Twin Inlet Barrel, resulting in failure to irrigate the targeted land of 34,754 ha and affecting the livelihood of 44,154 farmers.</li> <li>• An expenditure of ₹ 123.46 crore, incurred on the Sip Kolar Link Project remains infructuous</li> </ul>

	due to non-completion of weirs and tunnel and also the purpose to irrigate 6,100 ha land remains unachieved.
<b><i>Deviation from approved drawings and design (Paragraph 2.1.6.2)</i></b>	<ul style="list-style-type: none"> <li>• An amount of ₹ 11.67 crore was paid in excess to Contractor due to construction of 21 Cart Tracks in place of 20 Village Road Bridges.</li> </ul>
<b><i>Irregular revision of payment schedule (Paragraph 2.1.6.3)</i></b>	<ul style="list-style-type: none"> <li>• Undue benefit of ₹ 66.04 crore was given to Contractors by injudiciously amending the payment schedule in four TKCs.</li> <li>• Undue benefit of ₹ 3.61 crore was given to Contractor in the Bhanpura Canal Unit-II by merging the cost of trial run, commissioning and maintenance in the other components.</li> <li>• Premature release of 50 per cent cost of operation and maintenance amounting to ₹ 1.51 crore before completion of Defect liability period up to May 2021.</li> </ul>
<b><i>Irregular releasing of Performance Security (Paragraph 2.1.6.4)</i></b>	<ul style="list-style-type: none"> <li>• An amount of ₹ 8.16 crore of Performance Security was prematurely released.</li> </ul>
<b><i>Irregular grant of Secured Advance (Paragraph 2.1.6.5)</i></b>	<ul style="list-style-type: none"> <li>• An amount of ₹ 3.54 crore as Secured Advance was irregularly paid to Contractor.</li> </ul>
<b><i>Short forfeiture of deposits of Contractor (Paragraph 2.1.6.6)</i></b>	<ul style="list-style-type: none"> <li>• An amount of ₹ 3.98 crore was short forfeited from Contractor after termination of the contract.</li> </ul>
<b><i>Short deduction of cost of hard rock (Paragraph 2.1.6.7)</i></b>	<ul style="list-style-type: none"> <li>• An amount of ₹ 5.62 crore was short deducted from Contractor for the excavated hard rock.</li> </ul>
<b><i>Irregular issue of Central Excise Duty exemption certificate (Paragraph 2.1.6.8)</i></b>	<ul style="list-style-type: none"> <li>• Undue benefit of ₹ 1.70 crore was given to Contractor due to irregular recommendation for issue of Central Excise Duty exemption certificate.</li> </ul>
<b><i>Excess payment for work not done (Paragraph 2.1.6.9)</i></b>	<ul style="list-style-type: none"> <li>• Excess payment of ₹ 3.68 crore to Contractor due to construction of steel aqueducts instead of Reinforced Cement Concrete (RCC) aqueducts.</li> <li>• Excess payment of ₹ 10.88 crore due to non-construction of some part of the works.</li> <li>• Excess payment of ₹ 8.92 crore due to less development of command area.</li> </ul>
<b><i>Non-regulation of rates for altered quantities and item (Paragraph 2.1.6.10)</i></b>	<ul style="list-style-type: none"> <li>• Excess payment of ₹ 4.33 crore due to less execution of work as per contract.</li> <li>• Excess payment of ₹ 3.35 crore due to use of CC M-20 in place of CC M-25.</li> </ul>

<b><i>Use of crushed sand in place of Narmada sand (Paragraph 2.1.6.11)</i></b>	<ul style="list-style-type: none"> <li>• Undue benefit of ₹ 9.57 crore due to use of Crushed sand in place of Narmada sand.</li> </ul>
<b><i>Payments to Contractors without recording detailed measurements (Paragraph 2.1.6.12)</i></b>	<ul style="list-style-type: none"> <li>• In six TKCs, Contractor payments were released without recording detailed measurement of the work.</li> </ul>
<b><i>Execution of below specification cement concrete work (Paragraphs 2.1.7.1 and 2.1.7.2)</i></b>	<ul style="list-style-type: none"> <li>• Beyond the specification, Plain Cement Concrete (PCC) M-10 was used for execution of sleepers/canal lining and structures etc., in three TKCs.</li> <li>• Test results of the CC was found beyond the acceptable criteria in work of Barna Feeder canal.</li> <li>• Against the requirement of 563 test of CC lining and structures, only 30 tests were conducted by the Contractor which were also beyond the acceptable criteria and canal lining was found damaged in various reaches.</li> </ul>
<b><i>Non-adherence to time schedule for execution of works (Paragraph 2.1.8.1)</i></b>	<ul style="list-style-type: none"> <li>• Out of 22 selected TKCs, only one TKC was completed within the stipulated period and two were running on time. The remaining TKCs were either completed/ terminated in extended period or delayed. But no Liquidated Damage was imposed.</li> </ul>
<b><i>Non-achievement of Irrigation Potential (Paragraph 2.1.8.2)</i></b>	<ul style="list-style-type: none"> <li>• Against the plan to develop 3,14,090 ha of CCA, 1,47,648 ha (47 per cent) only was developed from these TKCs, despite incurring expenditure of ₹ 2,672.33 crore (88.72 per cent).</li> </ul>

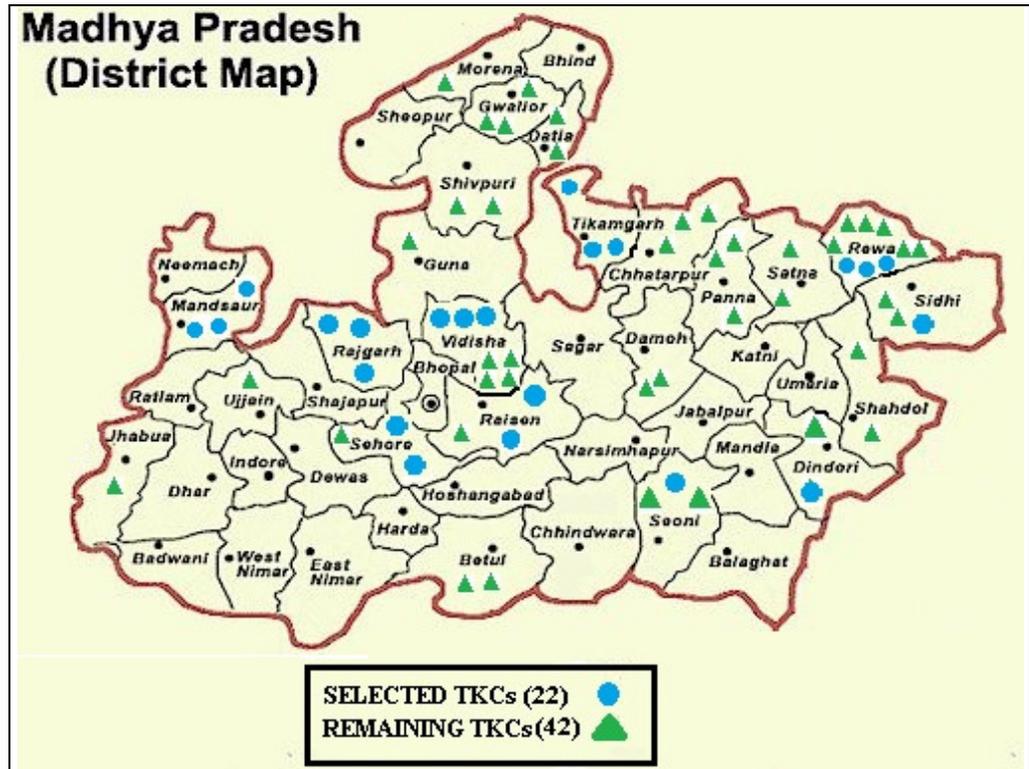
### **2.1.1 Introduction**

The Water Resources Department (WRD) is responsible for planning, designing, survey, construction and maintenance of major, medium and minor irrigation projects and development of water resources.

In WRD, along with the regular system of award of works on Percentage Rate Contract (PRC), the system of awarding works on Turnkey Contract (TKC) basis was introduced in 2010. From January 2018, the Department has adopted the system of TKC basis for execution of all irrigation projects.

In TKC, the Contractor undertakes the single point responsibility for survey, preparation of Land Acquisition (LA) cases/ forest clearance proposals and getting clearance in scheduled time from the Authorities concerned. The aim is to complete the work in a prescribed time schedule with a fixed contract price. The price includes planning, preparing the drawings and design, execution and quality control, along with commissioning, trial run, operation and maintenance for a period up to three years of the executed work.

The Department awarded 64 TKCs, costing ₹ 7,530.25 crore since 2010-11 to 2017-18. Out of which 22 TKCs were sampled, as shown below in the map.



### 2.1.2 Organisational Set-up

The WRD is headed by an Additional Chief Secretary at the Government level. The Engineer-in-Chief (E-in-C) is the technical advisor and Administrative Head of the Department, who is assisted by 14 Chief Engineers (CE), 45 Superintending Engineers (SE) and 137 Executive Engineers (EE), who are responsible for construction and maintenance of the Major/ Medium/ Minor irrigation projects in Madhya Pradesh. The Organogram of the Department is given in **Appendix 2.1**.

### 2.1.3 Scope and Methodology of Audit

The audit of Execution of work through TKCs in WRD was conducted covering the period from 2013-14 to 2017-18. As of March 2019, the WRD incurred an expenditure of ₹ 3,729.79 crore since 2010-11 on 22 selected TKCs as detailed in **Appendix 2.2**, including four TKCs of three irrigation projects, namely, i) Bhanpura Canal, ii) Garoth Micro Irrigation Project, and iii) Sip-Kolar Link Project. The audit objectives were to ascertain:

- whether survey, planning, design, estimation and tendering process of the projects were as per laid down norms;
- whether LA cases were prepared and submitted timely to Authorities concerned, and pursued properly; whether the Contractor had completed the entire work as per the approved drawings and designs, in a time-bound manner, and as per the quoted contract price; and,
- whether quality control and monitoring mechanism was effective.

Most of the audit observations are of a nature that may reflect similar errors/omissions in other TKCs of the concerned State Government/ Department, but were not covered in the test check conducted during the year. The Department/Government may, therefore, like to internally examine all other TKCs with a view to ensuring that they are functioning as per requirement and rules.

The objectives, criteria, scope of audit and methodology were explained to the E-in-C, WRD, during the meeting held on 06 December 2018. The draft Audit Report was forwarded to Department on 04 June 2019. The audit findings were also discussed on 30 August, 2019 in the Exit Conference held with the Deputy Secretary, WRD at Government level. The reply of the Government to the Draft Audit Report received in January 2020 which has been suitably included in the Report.

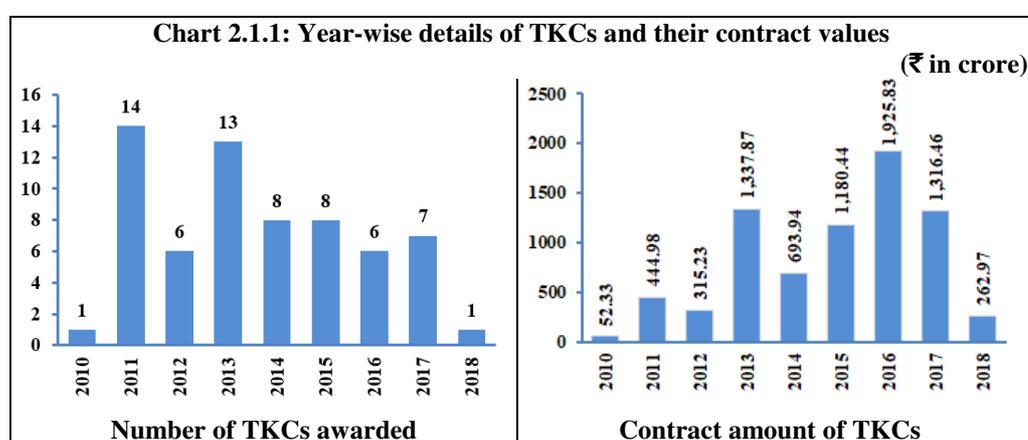
**Audit Findings**

The audit findings are discussed in the following paragraphs:

**2.1.4 Whether planning, design, estimation and tendering process were as per norms laid down?**

For every work, proper planning and correct estimation are required before awarding the work, to ensure timely execution of the work and avoidance of cost overrun. The Department adopted (2010) the TKC system as against the traditional system of award of contract, viz. PRC, with the aim of speedy completion of work in time-bound manner for a fixed contract price.

The details of the TKCs and their contract values are given in the **Chart 2.1.1** below:



(Source: Records of WRD)

As evident from the above charts, initially the Department had awarded more number of TKCs having less contract amount. However, in later years, the Department awarded lesser number of TKCs but having greater contract amount. This indicates that the Department had shown trust in awarding the work on TKC basis.

During the audit, 22 TKCs were analysed to assess whether planning for the implementation of TKCs was as per laid down norms. TKC began in 2010 however, preparation of Standard Bidding Document (SBD) is still under process even after lapse of nine years. Multiple cases of variations in the

clause of Performance Security (PS) and irregular inclusion of Price Adjustment (PA) clause were noticed in the TKCs, as a consequence of not having standard guidelines in the form of SBD.

The E-in-C and CEs concerned were responsible for non-preparation of SBD, before initiating the TKC.

#### **2.1.4.1 Consequences of non-preparation of SBD**

According to para 2.089 of the Madhya Pradesh Works Department (MPWD) Manual, all agreements must be executed on standard forms but they may be modified to suit local requirements with the consent of the State Government. The MPWD Manual provides mainly three types of contracts, viz. Percentage rate contract<sup>1</sup>, Item rate contract<sup>2</sup> and Lump sum contract<sup>3</sup>. The WRD, while entering into the TKC system of execution of works, did not prepare a SBD for works and adopted the standard lump sum tender document with modifications, for which due approvals from Law Department and Finance Department were not obtained. The SBD for TKCs was not finalised till March 2019. As a result, varied clauses for PS and PA were adopted, as discussed in the succeeding paragraphs.

- **Irregular reduction of Performance Security**

As per standard procedure of the Notice Inviting Tender (NIT), prescribed in the MPWD Manual, adopted by the Works Department and applicable in WRD also, PS equal to five *per cent* of contract amount is to be obtained from the successful bidder. The clauses as well as terms and conditions exhibited in the NIT shall form part of the agreement.

Further, NIT provided for the deduction and retention of Security Deposit (SD) at the rate of five *per cent* from each running payment of the Contractor. This deduction and retention was to be continued until the total deducted amount (including PS) did not exceed 10 *per cent* of the contract amount.

Audit observed (November 2018) that in the NITs of 10 TKCs out of 22 sampled, the above standard procedure of PS and retention of SD at the rate of five *per cent* from each running payment was followed. However, in the NITs of remaining 12, the same was reduced to two *per cent* or five *per cent* of contract amount or ₹ one crore, whichever was less, by the E-in-C without recording any justification. In the absence of a SBD, correct methodology in line with MPWD Manual, adopted by WRD was also not found to be adopted in TKCs. Consequently, different divisions adopted different standards instead of at least following WRD practice as detailed in Standard Procedure for NIT. Due to this, divisional offices received PS of ₹ 43.86 crore against the receivable of ₹ 146.52 crore. This resulted in undue benefit of ₹ 102.66 crore to the Contractors as detailed in **Appendix 2.3**. Besides, the purpose of safeguarding the interest of the Government was also compromised to that extent.

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<sup>1</sup> Under Percentage rate contract, the Contractor is required to offer his rate (below or above or at par) to carry out the work.

<sup>2</sup> Under Item rate contract, the Contractor has to quote item wise rates to carry out the work.

<sup>3</sup> Under Lump sum contract, the Contractor has to quote lump sum price to carry out all the work.

Further, in Sip-Kolar Link Project, the EE retained only ₹ 5.49 crore<sup>4</sup> against the total retainable amount of PS and SD of ₹ 10.36 crore<sup>5</sup>, and the work was terminated (January 2018) due to abnormal delay of 42 months by Contractor in execution of work. This resulted in undue financial benefit of ₹ 4.87 crore to the Contractor and equivalent loss to the Government.

On being pointed out in audit, the Government replied (January 2020) that the contracts were on TKC basis which included survey, planning, design and execution of all components of project, including running and operation. Hence, to promote competition and to obtain reasonable competitive bid prices, the amount of PS was revised to five *per cent* of contract amount or ₹ one crore, whichever was less, as per order issued by E-in-C's office in March 2011, although the circular was applicable to item rate tenders.

The reason given by the Government regarding blanket reduction of PS as to promote competition, and to obtain reasonable competitive bids is not acceptable because open bidding, *per se*, provides for competition. Further, as aforesaid, the PS was not revised uniformly in the contracts. Moreover, as the Government's reply that revision in PS was done so as to promote competition is contentious because out of 22 sampled TKCs, revision of PS was done only in 12 TKCs thereby leaving the rest. Further, the blanket reduction of PS, without even any request from the Contractors, resulted in undue benefits to the turnkey Contractors. This unapproved modification resulted in loss to the Government and failure in safeguarding the interest of the Government.

- ***Irregular inclusion of Price Adjustment clause in the NIT***

In TKC, the objective is to complete the work within a prescribed time schedule at a fixed contract price.

Further, as per Government of Madhya Pradesh (GoMP), Public Works Department (PWD) order (January 2014)<sup>6</sup>, which was applicable for all Works Departments including WRD, PA clause was applicable only to the contracts awarded on PRC, having Probable Amount of Contract (PAC) more than ₹ 10 crore. As this clause was applicable only to the contracts awarded on PRC, the same was not applicable to the contracts awarded on TKC.

Audit observed (January 2019) that contrary to the above order, in seven TKCs out of 22 sampled, the clause of PA was included in the NIT unilaterally by the E-in-C, without any request from the bidders or feed-back from the field divisions. This resulted in an extra financial burden of ₹ 124.53 crore, as detailed in **Appendix 2.4**, on account of PA.

The Government stated (January 2020) that the PA clause had been included to get realistic price, as price quoted by Contractor was as per prevailing rates and the work proposed in the contract was to be got completed in time. It was further stated that the PA is applicable to all tenders having PAC more than ₹ 10 crore. However, the SBD for TKC is being prepared with the provision of PA clause.

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<sup>4</sup> ₹ 1.0 crore PS + ₹ 4.49 crore SD (as deducted by the Department) = ₹ 5.49 crore.

<sup>5</sup> ₹ 5.78 crore (PS, at the rate of five *per cent* of contract amount of ₹ 115.50 crore) + ₹ 4.58 crore (SD, at the rate of five *per cent* of paid amount of ₹ 91.52 crore) = ₹ 10.36 crore.

<sup>6</sup> Issued by the GoMP, PWD vide No. F 53/16/2012/19/Plan dated 01/01/2014.

The reply of the Government does not appear to be correct as the said condition of PAC more than ₹ 10 crore pertained to PRC only. Audit further noticed that even after having PA clauses, the contracts<sup>7</sup> were not completed on time. Out of seven TKCs having PA clause, only one TKC was completed within the stipulated time. Thus, inclusion of clause of PA led to additional payment to Contractors over and above the fixed contract amount quoted by the Contractors, which was against the objective of TKC and the completion of contracts could not be achieved timely.

#### **Conclusion**

Undue benefits were extended to the Contractors in the form of less receipt of PS and additional payment for PA due to non-preparation of SBD and to that extent purpose of awarding TKC was not served.

#### **Recommendation**

The Department should prepare a uniform SBD for TKC according to provisions of MPWD manual with due concurrence of Law Department and Finance Department before entering into TKCs, to avoid undue benefit to the Contractors by ensuring timely completion.

#### **2.1.4.2 Extra cost due to inflated estimation by the Department**

Paragraph 2.028 of the MPWD Manual provides that an officer according the technical sanction to an estimate is responsible for the soundness of the design and for incorporating all the items required for inclusion in the estimate with reference to drawing.

During the audit, estimates of 22 TKCs were analysed with reference to applicable norms (Unified Schedule of Rates and rates analysis) and audit observed cases of inflated estimations, viz. inclusion of irregular lead for material in Cement Concrete (CC) lining work, additional rates for erection and commissioning of gates, incorrect rates for earthwork in canal construction and incorrect estimation of length of tunnel, which led to extra cost of ₹ 24.43 crore to the Government.

Audit findings are discussed in the succeeding paragraphs.

- According to Chapter 25 of Unified Schedule of Rates (USR), effective from 1 February 2009, the rates for providing plain CC lining of M-15 grade with Paver machine<sup>8</sup> (item No. 2525) includes all leads<sup>9</sup> and lifts<sup>10</sup> for all materials.

Audit observed (January 2019) that in five TKCs, additional rates for lead of metal, sand and cement was included in the estimates of CC lining with Paver machine. This resulted in extra cost of ₹ 13.39 crore<sup>11</sup>.

<sup>7</sup> Bansujara Canal Work and Garoth Micro Irrigation Project.

<sup>8</sup> Paver machine is an equipment which is used for laying of uniform layer of Cement Concrete in canal lining work.

<sup>9</sup> Lead is an average distance between sites of material and are of execution/disposal.

<sup>10</sup> Lift is vertical distance between levels of execution from the ground.

<sup>11</sup> ₹ 0.56 crore (Agt. No. 06/2015-16, EE LBC Dn. Bari) + ₹ 0.75 crore (Agt. No. 01/2015-16, EE Bansujara Dam Dn. Tikamgarh) + ₹ 1.41 crore + ₹ 8.83 crore (Agt. No. 02/2011-12 and 03/2013-14, EE, Teonthar Canal Dn. Rewa) + ₹ 1.84 crore (Agt. No. 03/2014-15, EE Bansujara Canal Dn. Baldevgarh, Tikamgarh) = ₹ 13.39 crore.

The EEs concerned replied that the transportation charges of materials, like metal and sand, have been added in the estimates for the actual distance as per USR.

The reply is not acceptable as the rate of CC lining with Paver machine are inclusive of all leads and lifts and the contentions of the EEs concerned are, therefore, incorrect.

- Similarly, in three TKCs, estimates were inflated by adding superfluous items for erection and commissioning of Radial Crest Gates, shuttering for CC/RCC work (Kundaliya dam), separate rate for excavation for earthwork (Bansujara canal) and by non-reduction of the cost of ₹ 1.80 crore for decreased length of tunnel from 5,940 m to 5,670 m (Sip-Kolar Link Project) prior to NIT. The rates of these items are inclusive of aforesaid activities. Therefore, addition of the extra rates for these items was superfluous. This resulted in extra cost of ₹ 11.04 crore, as detailed in **Appendix 2.5**.

The CE, EE, Sub-Divisional Officer (SDO) and Sub-Engineer concerned were responsible for inclusion of superfluous items and non-reduction of cost of decreased length of tunnel.

The Government stated (January 2020) that item of the USR does not include form work to that extent to which works are to be executed in concrete dam. Additional 15 *per cent* cost was added in the estimate for test and trial run of the radial gates. The length of tunnel of Sip-Kolar Project was based on departmental survey. The contractor had finalised alignment and length according to his own design as he got flexibility to change the design, subject to approval by the Department. The works were executed accordingly and there were no undue benefits given to the contractors.

The reply of the Government is incorrect as the estimates were inflated by adding superfluous items for which rates were already included in the work, as mentioned in **Appendix 2.5**. However, the rate analysis of aforesaid items, as committed by the Government during the exit conference, had not been provided to audit.

Further, in the Sip-Kolar Link Project, length of the tunnel was reduced by the Contractor after due approval from the CE, but cost of the same was not reduced proportionately by the CE concerned. Incorrect application/non-regulation of rates resulted in extra cost on the works.

#### **Conclusion**

Due to addition of superfluous items and misapplication of rates in various items, the estimates of TKCs were inflated, resulting in extra cost to the Department.

#### **2.1.4.3 Tendering Process**

Audit analysed 20<sup>12</sup> tenders to assess whether the tendering process was as per laid down norms. Issues like deficient publishing of NITs in the Newspapers, non-availability of documents relating to Physical and Financial capacity, and irregular modification in the clauses of NIT were observed by the audit.

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<sup>12</sup> Records of two tenders i.e. Earthwork of Mahan Main Canal (Agt. No. 02/2010-11, EE Mahan Canal, Sidhi) and Teonthar Lift Canal (Agt. No. 02/2010-11, EE Teonthar Canal, Rewa) were not provided to Audit.

Audit findings are discussed in the succeeding paragraphs.

**I. Deficiencies regarding publishing of Notice Inviting Tenders in the Newspapers**

According to a PWD circular (July 2013)<sup>13</sup>, which was adopted by the WRD in December 2013, tender costing more than ₹ 10 crore should be published in maximum three editions of three National Newspapers, having two Hindi and one English edition.

Audit observed (January 2019) that in 18 out of 20 NITs, against the above norms, only nine paper cutting of single editions for publishing of NITs were found on the records which were made available to audit. Further, it was also seen that though the checklists submitted to Tender Evaluation Committee mentioned that these NITs had been published in a maximum of 12 editions of the newspapers through Director, Public Relation, MP, Bhopal as detailed in **Appendix 2.6**, but proof for the same was neither produced to audit nor found in records made available. This indicates that wide publicity through print media was probably not done.

The Government stated (January 2020) that publication of tenders in newspapers is confirmed by the Director, Public Relation, MP, Bhopal.

The reply of the Government is not factually correct as the same were neither actually produced to audit nor attached with the reply, as stated.

**II. Non-availability of documents related to assessing of the physical and financial capacity of the bidders**

Audit observed (December-2018) that in three tenders of canal works of Sagad and Sanjay Sagar Medium Projects, documents related to assessing of the Physical and Financial capacities, viz. past experience, details of work in hand, balance sheet, income tax return, etc., of the bidders, were neither found on record nor made available to audit. Thus, financial capacity of the bidder remained unascertained.

The CE (Procurement) and the Assistant Engineer concerned were responsible for upkeep of such records.

The Government stated (January 2020) that on the requisition of audit, the required documents was produced to audit on 30 January 2019 for verification.

Reply is not factually correct as no such documents were provided to audit.

**III. Irregular modification in the scope of work in the NIT without reducing cost, resulting in undue benefit to the Contractor**

According to the estimate (April 2016) of Garoth Micro Irrigation Project<sup>14</sup>, cost of Railway/Road crossings (₹ 2.12 crore) and cost of Transmission lines/Service lines for Pump houses and Transmission lines for Solar power plant were inclusive in total project cost of ₹ 379.43 crore. However, at the time of approving and floating NIT (April 2016), a condition was inserted that the cost of such crossings and transmission lines for the pump houses and solar power

<sup>13</sup> Issued by the GoMP, PWD vide No. F 53/16/2012/19/Plan/4067 dated 01 July 2013.

<sup>14</sup> Micro irrigation is a system, where irrigation is done from buried piped canal by using lesser water through sprinklers or drip.

plant<sup>15</sup> will be reimbursed to Contractor after certification by appropriate authority.

Audit observed (December 2018) that an expenditure of ₹ 1.76 crore<sup>16</sup> was incurred for construction of Railway/ Road crossings and Transmission lines/ Service lines through other agencies/Authorities by the WRD instead of getting it done through the Contractor. The Solar Power Plant was not installed by the Contractor as of January 2019. This resulted in undue benefit to the Contractor.

The Government stated (January 2020) that an amount of ₹ 85.06 lakh for Railway/ Road Crossing was deducted while working out the PAC for tender.

The reply of the Government is not factually correct as against the estimated cost of ₹ 2.12 crore for Railway/Road crossings, only ₹ 85.06 lakh was reduced from the PAC and rest of the amount of ₹ 1.27 crore was paid irregularly to the Contractor without executing the aforesaid works.

- Audit observed that in the NIT (September 2011) of Sip-Kolar Link Project, the component of operation and maintenance of the system for three years after completion of work was kept at 1.5 *per cent* of the contract amount. But during the pre-bid meeting, on request of the Contractor, the E-in-C reduced<sup>17</sup> the period of operation and maintenance to one year and percentage of component from 1.5 *per cent* to 0.5 *per cent*. The rest one *per cent* of cost was merged with other components of the payment schedule instead of reducing the cost from PAC. This resulted in undue benefit of ₹ 1.16 crore (one *per cent* of contract cost of ₹ 115.50 crore) to the Contractor without executing the actual work.

The E-in-C, CE and EE concerned were responsible for amending the clause of NITs and providing undue benefit to the Contractors.

The Government stated (January 2020) that the operation and maintenance period was reduced to one year during pre-bid meeting and all bidders were aware of this fact. Any small variation in the estimated amount does not affect the costing process of the contractors.

The reply of the Government is not acceptable because the objective of the TKC regarding operation and maintenance for a period of at least three years was compromised. Besides, in case the reply is taken at face value, there was no reason then to merge the extra one *per cent* (1.5 minus 0.5 *per cent*) with other components, instead of reducing it from the PAC.

The culpability of the E-in-C is, therefore, even more.

### **Conclusion**

Tendering process was deficient as wide publicity through print media was not done and modifications in the clauses of NIT extended undue benefits to the Contractors.

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<sup>15</sup> Revised vide amendment No.01 dated 06/05/2016 of NIT.

<sup>16</sup> Railway and other Contractor ₹ 1.38 crore + ₹ 0.38 crore through Electrical and Mechanical wing of the WRD and MPEB = ₹ 1.76 crore.

<sup>17</sup> Vide amendment No. 2 of October 2011.

### 2.1.5 Whether the LA cases were prepared and submitted timely to LA authority and pursued properly for speedy acquisition of land?

Land Acquisition here means to acquire land for the purpose of construction of assets in an irrigation project by compensating to the owner of the land. In TKC, it is the responsibility of Contractor to prepare, process and pursue the LA cases up to their final award.

Audit analysed 22 TKCs to assess whether the laid down norms for LA were followed.

Audit findings are discussed in the succeeding paragraphs.

#### 2.1.5.1 *Inadmissible payment for temporary LA*

According to clause 5 of the NIT of the Bhanpura Canal (Unit-I), all the temporary and permanent LA cases should have been prepared by the Contractor and cost of the temporary LA, if any, shall be paid by the Contractor himself.

Audit observed (January 2019) that contrary to the aforesaid provision, an amount of ₹ 1.50 crore was paid to the Contractor for temporary LA, after due approval (December 2014) from the CE. This resulted in inadmissible payment to the Contractor.

The Government stated (January 2020) that the amount paid to the Contractor for temporary LA is within the agreement amount and no separate amount was paid to farmers.

The reply of the Government is not acceptable as there is no such provision of temporary land acquisition in the agreement.

#### 2.1.5.2 *Reimbursement of excess amount to the Contractor for LA*

The WRD issued (January 2016) a special package for acquisition of land and allied assets for Mohanpura Multi-Purpose Project. According to this, a lump sum payment for acquisition of land, wells, tube wells and pipelines is to be made at the rate of ₹ 10 lakh per ha, ₹ two lakh per well, ₹ one lakh per tube well and ₹ one lakh per pipeline respectively. Further, payment of pipeline would not be admissible when payment of wells/ tube wells is made.

In the work of Left Bank Canal of Mohanpura Multi-Purpose Project, an amount of ₹ 3.94 crore was reimbursed to the Contractor for acquisition of 29.049 ha land comprising of 16 wells, three tube wells and 32 pipelines.

Audit observed (December 2018) that contrary to the aforesaid guideline, the Contractor was irregularly reimbursed for LA at the rate of ₹ 11.16 lakh per ha. Further, in additions to reimbursement for compensation of 11 wells, irregular reimbursement of 16 pipelines was also made to the same well owners. This resulted in excess reimbursement of ₹ 49.70 lakh<sup>18</sup> to the Contractor.

The Project Director, Project Administrator, Project Manager and Assistant Manager were responsible for such inadmissible/excess reimbursement.

<sup>18</sup> ₹ 49.70 lakh = (29.049 ha of land × ₹ 1.16 lakh) + ₹ 16.00 lakh for 16 pipeline.

The Government stated (January 2020) that the payment was made in accordance with the guidelines of special package after verification of the revenue record.

The reply of the Government is not acceptable as the guidelines of the special package were not followed. Also, the reply does not address the matter raised by audit directly and does not show how that excess payment was as per the package.

**Conclusion**

The process of LA was deficient as excess payments were made to the Contractors against the contractual provisions and norms of WRD.

**Recommendation**

The Department should fix accountability for inadmissible payment of LA and may examine inadmissible payment from a vigilance angle.

**2.1.6 Whether the Contractor had completed the entire work as per the approved drawings and designs, in a time-bound manner and as per the quoted contract price?**

Contract Management is the process of systematically and efficiently managing contract creation and execution as per approved drawings and designs, as well as analyses for the purposes of maximising financial and operational performance, and minimising risk.

During the audit, 22 TKCs were analysed to assess whether the Contractor had completed the entire work as per the approved drawings and designs, in a time-bound manner and at quoted contract price as per laid down norms. Audit observed cases of non-completion of projects, deviations from approved designs, irregular revisions of payment schedules, release of PS before ending of the defect liability period, irregular grants of Secured Advance, short forfeiture of Contractors' deposits after termination of contracts, short deduction of cost of hard rock, excess payment to Contractor for work not done and incorrect regulation of rates for altered quantities.

Audit findings are discussed in the succeeding paragraphs.

**2.1.6.1 Non-completion of projects awarded completely on TKC basis**

For over-all impact analysis, three selected irrigation projects (having four TKCs) awarded entirely on TKC basis, viz. Bhanpura Canal Project, Garoth Micro Irrigation Project and Sip-Kolar Link Project were audited.

Shortcomings noticed during the audit are elaborated in succeeding paragraphs.

**I. Bhanpura Canal Project and Garoth Micro Irrigation Project**

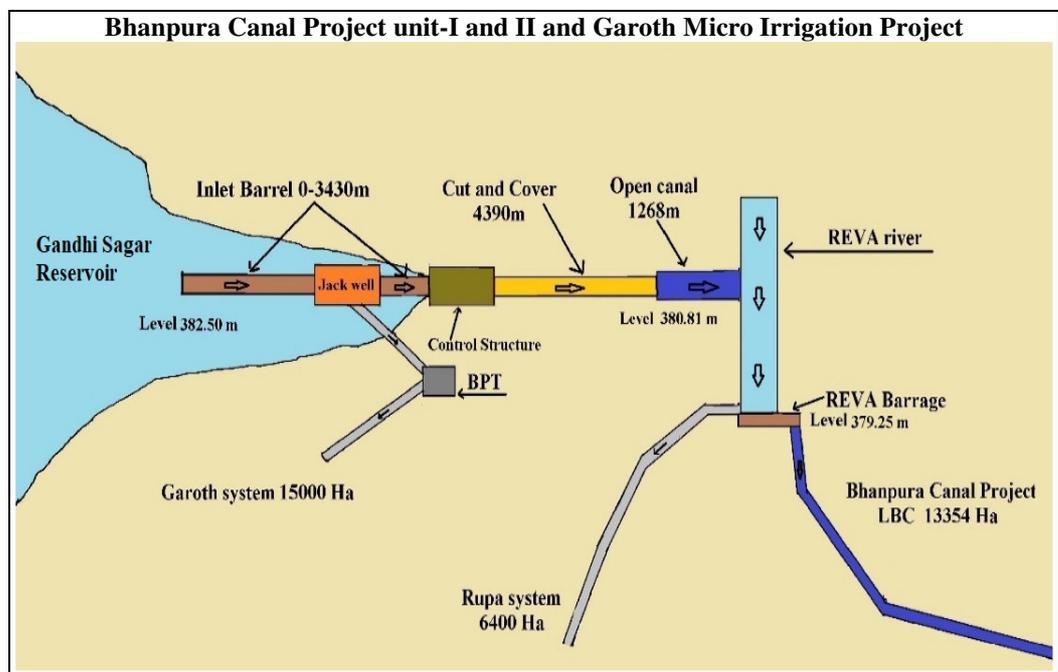
The Bhanpura Canal Project and Garoth Micro Irrigation Project were planned (August 2013) for providing total irrigation in 34,754 ha<sup>19</sup> land of Bhanpura and Garoth Tehsils of Mandsaur district. The source of water for both the Projects is Gandhi Sagar (GS) Reservoir, which was a joint venture of Madhya

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<sup>19</sup> 13,354 ha (Bhanpura Canal Project) + 21,400 ha (Garoth Micro Irrigation Project) = 34,754 ha.

Pradesh and Rajasthan. The minimum water level of GS Reservoir had never gone below the level of 384.37 metre during the past 30 years.

It was noticed that both the projects were to be fed through a structure<sup>20</sup> within the submergence of the GS Reservoir. The structure was designed to be constructed at 382.50 metre, which was below the minimum water level of Reservoir during the past 30 years. The Department kept the Twin Inlet Barrel below the lowest water level as to ensure uninterrupted water supply for the irrigation projects even when water level of the GS Reservoir is at the historically lowest mark. Construction of intake structure and Twin Inlet Barrel was awarded (January, 2014) to a Contractor at a cost of ₹ 117.50 crore when the water level was 394.91 m. The work was to be completed by January 2017. However, owing to higher water level at 399.8 m, which would have involved pumping out more water than estimated, and therefore would result in increasing the cost, the Contractor completed all other works in July 2017, except the construction of Twin Inlet Barrel. On being



asked by the Department to complete the remaining work, the Contractor approached the Arbitrator. Subsequently, the Arbitrator ordered the Department to finalise the work and issue Completion Certificate to the Contractor without getting the Twin Inlet Barrel constructed completely. Though the EE had an opportunity to appeal against decision of the Arbitrator but he did not avail. Hence, the work was still incomplete in July 2019 despite the payment of ₹ 100.02 crore for the work already completed.

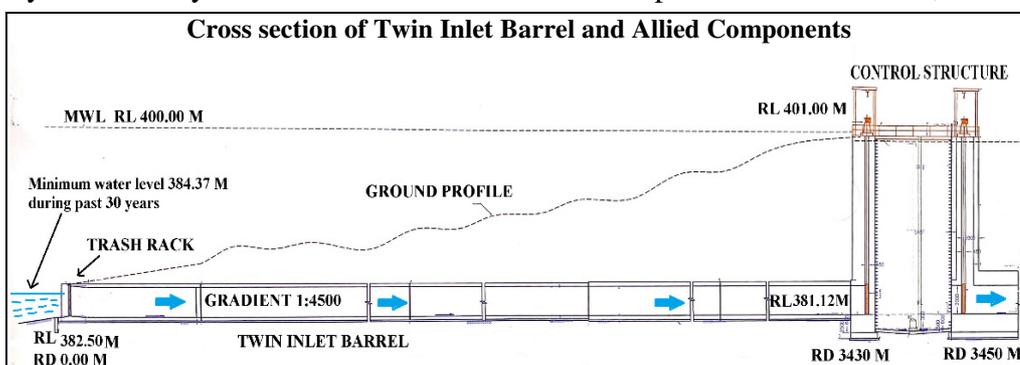
The following issues were noticed during audit of the work executed by the aforesaid Contractor:

- As per Contractor's estimate, the cost of the Twin Inlet Barrel was ₹ 25.54 crore. Till the finalisation of the contract (March 2017) with incomplete barrel, the Contractor was paid an amount of ₹ 100.02 crore (85.12

<sup>20</sup> 3,430 m long Twin Reinforced Cement Concrete (RCC) Barrel and a Jack Well.

per cent of contract cost) for construction of control structure, cut and cover, open canal and barrage at Reva River, rendering the expenditure unfruitful in the overall scheme of things, until and unless the Twin Inlet Barrel, the critical component, was completely constructed;

- According to the DPR, requirement of water to irrigate 13,354 ha from Bhanpura Canal Project and 21,400 ha from Garoth Micro Irrigation Project was 8.50 cumecs and 7.10 cumecs respectively. Against the total required water of 15.60 cumecs, the Department's planned intake capacity was only 11.43 cumecs water. Thus, there was short planning of 4.17 cumecs water by the Department. Further, the size of barrel was also reduced by the Contractor, which would, therefore, be able to carry 11.25 cumecs<sup>21</sup> of water only. This resulted in overall shortfall in carrying capacity by 4.35 cumecs, leading to decrease in irrigation potential of 13,111<sup>22</sup> ha;
- River training<sup>23</sup> work of Reva River for lowering the levels of the River was not done by the Turnkey Contractor. WRD executed the same work by incurring extra expenditure of ₹ 1.38 crore which should have been executed by the Turnkey Contractor and should have been part of the TKC itself;



- Balance work of incomplete Twin Inlet Barrel was awarded (April, 2018) to another Contractor at cost of ₹ 20.73 crore. This work was to be completed by August, 2019. Even after the delay of almost three years, Department has failed to get Twin Inlet Barrel constructed.
- An expenditure of ₹ 568.50 crore (90.43 per cent), against the total cost of ₹ 628.65 crore, has been incurred up to March 2019 on both the projects. The expenditure remained infructuous for the last 29 months from the initial completion (July 2016) due to non-construction of the Twin Inlet Barrel which is the most critical structure to intake water from reservoir for providing envisaged uninterrupted irrigation. This has resulted in failure to irrigate the targeted land of 34,754 ha and affected the livelihood of 44,154 farmers.

The Project Director, PA, Project Manager and Assistant Manager concerned were responsible for design of less capacity and reduction in size of Twin Inlet Barrel.

The Government stated (January 2020) that only necessary portion of inlet barrel had been constructed where depth of cutting was very high and probability of sliding and choking of the open channel was there. Up to Jack

<sup>21</sup> Reduced size of Twin Inlet Barrel = 3 m × 2.5 m × 2 × (3/4 capacity) = 11.25 cumecs.  
<sup>22</sup> 21,400 ha/7.10 cumecs × 4.35 cumecs = 13,111 ha (on prorata basis for micro irrigation).  
<sup>23</sup> To maintain the gradient of River for smooth flow of water through gravity.

well, water requirement was 15.51 cumecs and after Jack well, requirement of water will be 10.51 cumecs. The inlet barrel was not designed for Gravity flow but designed for pressurised flow system. Size of inlet barrel was 3 X 3 m as per approved drawing and there is no reduction in size. River training work of Reva River was neither included in the DPR nor in the tender. Hence, it was awarded separately. Even work is not completed, irrigation will not be impacted and full irrigation will be done. Therefore, remaining work of inlet barrel will not have much impact on irrigation.

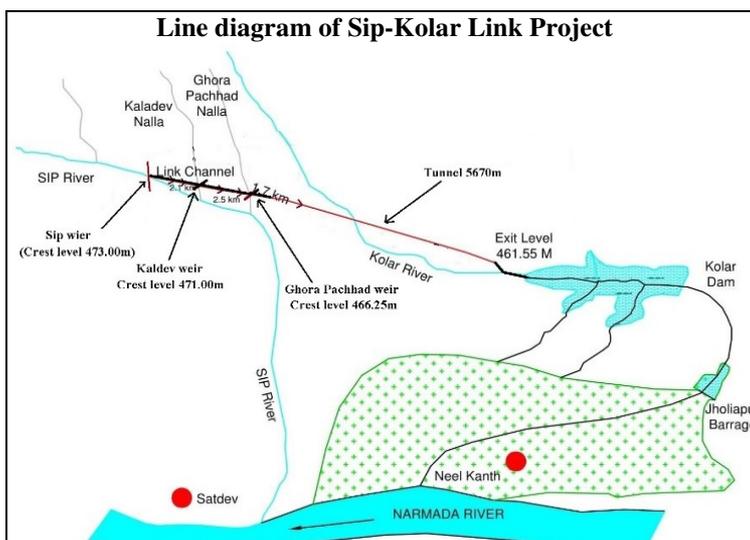
The reply of the Government is an afterthought as Twin Inlet Barrel is the most critical structure, which has to intake water from the reservoir for providing envisaged uninterrupted irrigation. Construction of Twin Inlet Barrel in piecemeal against the design was a temporary arrangement for the purpose of trial run and fulfil the immediate requirement of irrigation from the project. This will adversely impact the irrigation due to less and interrupted water supply. Thus, optimum utilisation of water as designed will only be possible after completion of entire Barrel as envisaged in DPR. Due to delay in construction even after lapse of more than three years, projects remained incomplete and consequently target to irrigate 34,754 ha land involving 44,154 farmers remained unfulfilled. Further, construction of Twin Inlet Barrel in piecemeal there is possibility of deterioration of incomplete structures due to collapsible strata and it cannot be treated as pressurised flow system as it was designed for gravity flow system. As regards reduction in discharge capacity it is evident from design submitted by the contractor that Twin Inlet Barrel level was raised to 383.5 m against original plan of 382.5 m and size of barrel was also reduced from 3m X 3 m to 3m X 2.5 m, (as per detailed measurement). Being a turnkey contract, River training work cannot be awarded separately and should have been done by the Contractor. The Contractor was responsible for execution of incidentals and all necessary works not shown or specified but reasonably implied to be necessary for the proper completion and functioning of the works. Therefore, contrary to the assertions of the Government, the Reva River training work was to be done by the TKC Contractor, and the money now paid to the other Contractor for the same work is an excess expenditure of the Government defeating the object of achieving results through a TKC with the same contractor.

## **II. Sip-Kolar Link Project**

The main objective of the Sip-Kolar Link Project is to divert 34.36 mcm water in the Kolar Reservoir for irrigation in 6,100 ha land. It was to be achieved by constructing weirs at Sip River, Kaldev Nalla and Ghora Pachhar River; and a 12.45 km long diversion channel of about 10 cumecs capacity at head. The diversion channel includes construction of a 5.94 km long tunnel of 3.3 m diameter, along with other structures. The Project was initially planned to be completed by December 2013 on Turnkey basis, which was revised to June 2014 as per award of work.

Audit observed that the physical and financial targets to be achieved were fixed by the Department from time to time, but the Contractor could not achieve any of the targets and original Contractor was blacklisted (January 2018) due to non- completion of work in extended period. However, the Department is getting the remaining work executed through the sub-Contractor. As of January 2019, the project components were lagging, ranging

from 0.5 to 49 per cent even after passing of more than four years beyond the revised date of completion as mentioned in **Appendix 2.7**.



Further, during joint inspection (February 2019) along with departmental officers and the Contractor's representative, it was noticed that besides non-completion of all the components, some of the work, like earthen flank of Kaldev weir,

canal in fractions and parts of the tunnel work, were not completed.

The Government stated (January 2020) that forest land was diverted in July 2014 after completion of stipulated period of 30 months. The work was hampered due to ban on sand mining during *Namami Devi Narmada Yatra* between December 2016 and May 2017. The tunnel was passing through red bole area where progress could be achieved only 0.5 to 1.0 metre per day. The balance work will be completed by the March 2020.

The reply of the Government is not acceptable as out of 25.40 ha land, 25.029 ha private land was acquired till March 2012 and 39.91 ha forest land was acquired in July 2014. Before awarding the contract, the contractor was well known to the facts that the red bole area was there and accordingly he participated in the bid. Ban on sand mining was only for less than six months which was a short period. Further, the Contractor failed to complete the work in five years even after acquisition of forest land.

Thus, due to non-completion of weirs, tunnel and open channel by the Contractor, the purpose to irrigate 6,100 ha land through Sip-Kolar Link Project was defeated even after expenditure of ₹ 123.46 crore. The whole purpose of the TKC, to complete the work in time at fixed cost, was lost in this case.

#### 2.1.6.2 Deviation from approved drawings and designs

According to the Technical Circular for irrigation works in Madhya Pradesh, Chapter VII of E-in-C publication: 70/1, the overall canal section should be free from any obstruction/ construction, so that water could reach up to tail end of the canal.

In the detailed estimate of Teonthar Lift Irrigation Scheme, 25 Village Road Bridges (VRBs) were provisioned across the main canal, at a cost of ₹ 4.11 crore, ranging from ₹ 10.97 lakh to ₹ 23.97 lakh each. As per revised payment schedule (August 2018), the Department paid an aggregate amount of ₹ 14.70 crore (15.5 per cent of the contract cost of ₹ 94.86 crore) for these five VRBs and 21 Cart Tracks to the Contractor. As per the Contractor's executed

quantities and rates of USR, approximate cost of Cart Tracks comes to ₹ 1.35 lakh each.

However, only five VRBs were constructed by the Contractor and he was paid ₹ 2.74 crore<sup>24</sup> against the estimated cost of ₹ 81.71 lakh for those five specific VRBs, resulting in extra payment of ₹ 1.92 crore.

Further, in place of remaining 20 VRBs, the Contractor constructed 21 Cart Tracks<sup>25</sup> of Hume pipes instead and the Department paid ₹ 11.95 crore<sup>26</sup> against the admissible amount of ₹ 28.35 lakh (₹ 1.35 lakh × 21 Cart Tracks). This resulted in excess payment of ₹ 11.67 crore to the Contractor.

Execution of “Cart Track” instead of VRBs was not only against the provisions of specification but also lessened the water-way due to construction of these ‘Cart Tracks’ at 21 points of the canal, as shown in the picture below:



The CE, EE, SDO and Sub-Engineer concerned were responsible for deviation from the drawings and designs.

The Government stated (January 2020) that the term Cart Tracks had been used as synonym to VRB and there was no material deviation in as built drawings. Furthermore, the design discharge of Cart Track is more than actual required discharge.

The reply of the Government is incorrect as execution of Cart Tracks was beyond the scope of the contract. As built drawings of the VRBs and Cart Tracks were neither produced to audit not provided with the reply. Moreover, the payment made for the Cart Tracks was much higher what was admissible under the specifications.

### **2.1.6.3 Undue benefit to the Contractor by irregular revision of payment schedules**

Clause 106 of the agreement stipulates that the Contractor’s price bid shall be divided among components of works to their respective percentage as stipulated in the ‘Schedule of Payment - Appendix-F’. These components shall be further divided into appropriate sub-components and their stages for the purpose of payments and the sum of all stages of particular component should be equal to the percentage of that component shown in payment schedule. The detailed schedule of payments was to be approved by the CE.

<sup>24</sup> (₹ 44.03 lakh × 3 VRBs) + (₹ 71.13 lakh × 2) = ₹ 2.74 crore.

<sup>25</sup> The Department termed a canal crossing structure as “Cart Track”, made of Hume pipe across the canal.

<sup>26</sup> Paid for Cart Tracks 10 × ₹ 71.13 lakh = ₹ 711.30 (A) and 11 × ₹ 44.03 lakh = ₹ 484.33 lakh (B), Total (A) + (B) = ₹ 1195.63 lakh say 11.95 crore.

- Audit observed (December 2018) that in four TKCs, the CEs injudiciously amended the percentage of components on higher side on the request of the Contractors, such as, by increasing the component of Survey from one *per cent* to two *per cent* and earthwork from 29.75 *per cent* to 45 *per cent* in the work of construction of Bahuti Canal and Mahan Canal respectively. The payment schedules were changed post awarding of tenders thereby making it unequitable for the participants. Since, Survey and earthwork are done at the outset, this resulted in release of more money to the Contractor upfront. In short, this tantamounted to heavily benefiting the contractors unduly, amounting to ₹ 66.04 crore<sup>27</sup>.
- In the Bhanpura Canal Unit-II, the payment schedule was divided into five components. The component of trial run, commissioning and maintenance up to defect liability period of three years was fixed at five *per cent* (₹ 3.61 crore) of contract amount. The CE, NT Basin however deleted this component while approving the payment schedule and merged its cost with rest of the components without any reason on record for doing it by overriding provisions of agreement as aforesaid. This resulted in undue benefit of ₹ 3.61 crore to the Contractor;
- In the Barna Feeder Canal, at the time of approval of payment schedule, before completion of the work, the CE deleted (September 2017) the component of trial run testing, operation and maintenance for the period up to defect liability period of two years, as well as reduced the cost of the component by ₹ 3.49 crore. This would release the Contractor from the obligation of carrying out the aforesaid important task one year earlier than contracted, as well as give him undue financial benefit;
- In the work of Bilgaon Medium Project, just after completion (May 2018) of the work, the EE prematurely released (June 2018) ₹ 1.51 crore, 50 *per cent* cost of operation and maintenance, which was to be released after completion of defect liability period (May 2021) of three years. This resulted in undue benefit to Contractor.

The CEs and EEs concerned were responsible for providing undue benefit to the Contractors by irregular revision of payment schedule.

The Government stated that according to directives of the E-in-C (December 2013), payment schedule can be revised at four occasions as per layout, drawing & design approved by the CE. As the Payment schedule was not based on the detailed investigations, the said revisions were done as per actual design & drawing, on the request of contractor. In case of Bhanpura Project, it was stated that the amount of defect liability and trial commissioning was withheld and was released only after completion of work and trial and commissioning. Further, in case of Bilgaon Project, it was stated that technically irrigation was started through under construction distribution system hence the test and trial period automatically commenced.

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<sup>27</sup> ₹ 4.03 crore (Agt. No. 16/2013-14, EE, Keoti Canal Dn. Rewa) + ₹ 16.01 crore (Agt. No. 02/2010-11, EE Mahan Canal Dn. Sidhi) + ₹ 23.71 crore (Agt. No. 02/2011-12, EE, Teonthar Canal Dn. Rewa) + ₹ 22.29 crore (Agt. No. 03/2013-14, EE, Teonthar Canal Dn. Rewa) = ₹ 66.04 crore.

The reply of the Government is not correct because as per provision of the agreement, the CE was not empowered for revision of payment schedule. This made it unequitable for other bidders who originally bid for these contracts. Further, the risk involved in reducing the defect liability period from three to two years had not been safeguarded. No amount was withheld from the contractors bills in case of Bhanpura Project and full payment was released in the month of February 2018. Further, partially completed distribution system was used for irrigation, from an incomplete project (Bilgaon). Considering this as a commencement of test run and trial is against the conditions of contract.

#### **2.1.6.4 Irregular releasing of Performance Security before defect liability period**

According to Clause 12 of the agreements, the bank guarantee of the PS shall remain valid for 90 days beyond the defect liability period. The deposits of the Contractor shall be refunded only after completion of the defect liability period.

Audit observed (January 2019) that in two TKCs<sup>28</sup>, PS of ₹ 8.16 crore was released just after completion of the work within two to five months, which was to be released 90 days beyond the completion of the defect liability period of three years. This resulted in an undue advantage to the Contractors.

The EEs concerned were responsible for providing undue benefit to the Contractors on account of premature release of the PS.

The Government stated (January 2020) that in case of Bilgaon project, PS was released in July 2018 only after issuance of completion certificate in May 2018, and payment of final bill. Before releasing, it was ensured that the work was duly completed in all respects and irrigation from the system was started. Further, in case of Teonthar lift canal, it was stated that the irrigation was started from 2016, and hence, PS was released in January 2019 as per agreement.

The reply of the Government is misleading as the Bilgaon project was completed in May 2018, while the work of Teonthar lift canal was completed in February 2018, and the PS was released in July 2018. The PS was refundable only beyond 90 days of completion of defect liability period of three years. Hence, the risk involved up to defect liability period of three years was not safeguarded.

#### **2.1.6.5 Irregular grant of Secured Advance**

According to clause 32.0 of the agreement, any advance payment, Secured Advance, Mobilisation and Machinery Advance was not allowed under the contract.

Audit observed (January 2019) that contrary to the provision, in Sip-Kolar Link Project, after due sanction from the CE, the EE irregularly granted (October 2017) Secured Advance of ₹ 3.54 crore to the Contractor with 1.25 per cent interest per month. Up to January 2018, the Division recovered

<sup>28</sup> ₹ 5.50 crore (Agt. No. 02/2011-12, Teonthar Canal) + ₹ 2.66 crore (Agt. No.09/2015-16, Bilgaon Canal) = ₹ 8.16 crore.

₹ one crore and thereafter no further recovery was made. An amount of ₹ 3.13 crore<sup>29</sup> was outstanding with the Contractor as on March 2019.

The Government accepted the audit contention that stated (January 2020) that the remaining amount of ₹ 1.87 crore was yet to be recovered from the contractor. Final recovery is awaited (December 2019).

#### **2.1.6.6 Short forfeiture of deposits of Contractor after termination of contract**

Clause 92.4 of the contract stipulates that the Engineer may rescind the contract and the SD, including PS, of the Contractor shall stand forfeited and be absolutely at the disposal of the Government.

In two TKCs<sup>30</sup>, audit observed (December 2018) that contracts were terminated but the Department had forfeited only ₹ 3.80 crore against the Contractor's entire deposits of ₹ 7.78 crore available with the divisions. Thus there is possibility of extending undue benefit to the Contractors and short deposit of ₹ 3.98 crore<sup>31</sup> in Government Account.

The Government stated (January 2020) that the work of Sip-Kolar Project had not been rescinded and the work was in progress, while ₹ one crore had been forfeited by the EE, Upper Tilwara.

Reply of the Government was not factually correct as work of Sip-Kolar Project was being executed through sub-contractor as original contractor was black listed. Further, in both the cases, entire deposits along with PS available with the Divisions, were not recovered. The action was against the provision of agreements, there is a possibility of extending undue benefit to the Contractors in future.

#### **2.1.6.7 Short deduction of cost of hard rock**

According to clause 36.0 of Section II, Volume II of the agreement, the hard rock received from the excavation as and where available shall be issued to the Contractor at the issue rate. Further, as per USR, 1.3 times of the quantity of hard rock excavated shall be recorded in the Books of Account.

Audit observed (December 2018) that in the work of Mahan Main Canal and Mohanpura Left Bank Canal, the Contractors excavated 4,57,746.85 cum hard rock and as per aforesaid provision of USR, 1.3 times of excavated hard rock, i.e. 5,95,070.90 cum, was to be accounted for in the books and cost of the same was to be recovered at issue rate, as prescribed in the contract. However, the cost of this excavated hard rock, ₹ 5.62 crore<sup>32</sup>, was not recovered by the PA /EE from the Contractors.

The Government accepted the contention of audit regarding non-recovery of cost of hard rock and stated that recovery of ₹ 4.06 crore had been done and

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<sup>29</sup> ₹ 2.54 crore (remaining of the Secured Advance) + ₹ 58.85 lakh (Interest up to March 2019) = ₹ 3.13 crore.

<sup>30</sup> Sip-Kolar Link Project and canal of Upper Tilwara Project.

<sup>31</sup> ₹ 7.78 crore {₹ 5.49 crore (₹ 1.0 crore PS + ₹ 4.49 crore SD) + ₹ 2.29 crore (₹ 1.0 crore PS + ₹ 1.29 crore SD)} – ₹ 3.80 crore (₹ 2.80 crore + ₹ 1.0 crore) = ₹ 3.98 crore.

<sup>32</sup> ₹ 1.83 crore (1,21,811.3 cum × ₹ 150 per cum, Agt. No. 02/2010-11 Mahan Canal Dn. Sidhi) + ₹ 3.79 crore (4,73,259.6 cum × ₹ 80 per cum, Agt. No. 02/2014-15, PMU, Rajgarh) = ₹ 5.62 crore.

all the balance recoveries shall be done from the final bill of the contractor and be credited to the requisite head of account.

Out of total recovery of ₹ 4.06 crore mentioned in Government's reply, only ₹ 2.56 crore were found to have been recovered while no document regarding recovery of ₹ 1.50 crore was produced to audit. The action regarding placing of recovered cost of hard rock in deposit instead of crediting it into requisite head of account, and recovery of the remaining amount of ₹ 3.06 crore<sup>33</sup> is awaited.

**2.1.6.8 Benefit of Central Excise Duty exemption certificate availed by the contractor not reduced from the contract value**

According to condition No. 104 (b) and 111.1 of General Conditions of Contract (GCC), the bid price quoted by the Contractor shall be deemed to be inclusive of the Sales Tax, Commercial Tax, Income Tax, Service Tax, Labour Cess, duties, royalties and other taxes whatsoever on all material that the Contractor will have to purchase for performance of this contract and the contract price shall not be adjusted for such costs.

Audit observed (December 2018) that on the recommendation of EE, the Collector, Mandsaur issued Central Excise Duty exemption certificate under Central Excise Notification 03/2004. Accordingly, the Contractor purchased Mild Steel/ Ductile Iron and High Density Polyethylene pipes, of various diameter, costing ₹ 13.57 crore without paying Central Excise Duty at the rate of 12.50 *per cent*. However, same was to be reduced from the contract value, resulting in undue financial benefit of ₹ 1.70 crore to the Contractor and loss to the Government.

The Government stated (January 2020) that recommendation for exemption from Central Excise Duty was made by the PIU, Shamgarh and exemption certificate under Central Excise Notification 03/2004 was issued by the Collector, Mandsaur.

The action of recommendation for grant of exemption from Excise Duty was contrary to the GCC, as it was inclusive of all taxes, as aforesaid. The benefit of exemption was thus irregularly given to the Contractor after his entry into the contract.

**2.1.6.9 Excess payment to the Contractors for work not done**

According to clause 106.9 of GCC, the payment shall be released only as per work done and respective component of work has been completed and /or levels of works concerned, are achieved.

- In two TKCs<sup>34</sup>, the Contractor had to construct three RCC aqueducts at estimated cost of ₹ 4.41 crore. But while submitting the payment schedule for approval, the Contractor had reduced the cost of those aqueducts to ₹ 2.32 crore in his proposal. The Contractor had not constructed those aqueducts. The Department got the aqueducts constructed of Steel (pipe) structure through another Contractor at a cost of ₹ 73.12 lakh (16.55 *per cent* of the estimated cost) only and recovered this cost from the original

<sup>33</sup> ₹ 5.62 crore - ₹ 2.56 crore = ₹ 3.06 crore.

<sup>34</sup> Agt. No. 02/2011-12 and Agt. No. 03/2011-12, EE, Sanjay Sagar Bah River Division, Ganjbasoda.

Contractor. However, the entire contract amount, including cost of these aqueducts ₹ 4.41 crore, was paid to the Contractor after finalisation of work. This resulted in an excess payment of ₹ 3.68 crore (503 per cent excess of the actually incurred cost) to the original Contractor.

The E-in-C, CE and EE concerned are responsible for non-revision of rates for work not done by the original Contractor.

The Government stated (January 2020) that in order to provide early irrigation facilities to cultivators, execution of Steel (pipe) aqueducts instead of RCC barrel was got done from another Contractor after due approval from the E-in-C. The cost of steel pipe aqueducts was recovered from the original Contractor. The payment was made to the original Contractor as per approved payment schedule.

While the construction of steel aqueducts at lesser rates through the other Contractor is admissible, the Department should not have made any payment on this matter to the original Contractor. However, not only did the Department pay the original Contractor for this un-executed work, but also paid him the higher rates as per estimated cost of ₹ 4.41 crore, instead of ₹ 2.32 crore as projected by the original Contractor himself.

The Department thus failed to stop the excess payment to the original Contractor, who got paid at the inflated rate without executing the work at all. Thus, the reply of the Government is not acceptable.

- Similarly, in three TKCs<sup>35</sup>, the Contractors had not executed some part of the work, but the works were still finalised by the Department. The full value of contract price was paid to those Contractors without deducting the cost of ₹ 10.88 crore of unexecuted works.

- In the work of Upper Tilwara Lower Bank Canal, the Contractor had to develop 4,680.53 ha of command area at a contract cost of ₹ 33.10 crore, but he developed 2,381 ha of command area only. The payment of ₹ 25.76 crore was made to the Contractor without limiting it with the actual cost of ₹ 16.84 crore<sup>36</sup> for the developed area. This resulted in excess payment of ₹ 8.92 crore.

These resulted in excess payments of ₹ 19.80 crore as detailed in **Appendix 2.8**.

The CEs and EEs concerned were responsible for releasing payment to the Contractors without executing entire work.

The Government stated (January 2020) that in Teonthar Canal, the supplementary lifts were replaced by balancing wells accompanied by electric pumps with a view to avoid cost of transmission line, and that the contractor was paid only after the execution of work. In the case of Upper Tilwara Project, it was stated that the payment was made on the basis of actual execution of work.

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<sup>35</sup> Agt. No. 02/2011-12, EE, Teonthar Canal Division, Rewa; Agt. No. 01/2012-13, EE, Bansujara Dam Division, Tikamgarh; Agt. No. 06/2015-16, EE, Barna LBC Division, Bari.

<sup>36</sup> ₹ 16.84 crore (payable, ₹ 33.10 crore × 2381 ha /4680.528 ha).

The reply of the Government is not acceptable as the payments were made without regulating the payment for non-executed items and for non-developed command area.

### 2.1.6.10 Excess payment due to incorrect and non-regulation of rates for altered quantities and item

In the construction of the Kundaliya Multi-Purpose Major Dam, the scope of work (No. 14 of NIT) stipulates that the foundation of concrete blocks of the dam is to be laid at Reduced Level (RL) of 350.95 m which is indicative and as per preliminary exploration done by the Department. If the foundation is to be laid below/ above RL 350.95 m, the additional/subtracted quantities for excavation, concrete and steel will be paid/ recovered at clubbed rate plus/minus quoted percentage of the bidder.

Audit observed (December 2018) that actual foundation levels were decreased in 12 blocks and increased in six blocks from the designed RL of 350.95 m, due to which quantities of excavation, concrete and steel were decreased, but the payment for overall decrease in quantities for excavation, concrete (M:20) and steel was not regulated as per the above clause of the agreement. This resulted in extra cost of ₹ 4.33 crore as given in **Table 2.1.1**.

**Table 2.1.1: Details of excess payment due to non-regulation of rates for altered quantities and items**

Item	Overall decreased quantity	Rate paid (estimated rate – 13.848 per cent)	Excess payment (₹)
Excavation	9,247.483 cum	216.793	20,04,790
Concrete (M: 20)	9,247.483 cum	3,759.280	3,47,63,878
Steel in MT at the rate of two per cent	184.95 MT	35,454.680	65,57,343
<b>Total</b>			<b>4,33,26,011</b>

Besides the above, it was also seen that as per technical sanction, item of CC M:25 at the rate of ₹ 4,030.47 per cum was to be executed in foundation. The item of M:25 was replaced with M:20. As per USR, rates of M:25 and M:20 were ₹ 3,549 and ₹ 2,720 per cum respectively. Thus, there was a difference of ₹ 829 per cum in rates of these items but while making payment Department reduced the rate by ₹ 271.19 per cum only. This resulted in an excess payment of ₹ 3.35 crore<sup>37</sup> to the Contractor.

Thus, the Contractor was paid a total excess amount of ₹ 7.68 crore (₹ 4.33 crore + ₹ 3.35 crore) due to non-regulation of rates for altered quantities and rate difference for substituted item of CC M:20.

The Project Director, PA, Project Manager and Assistant Manager concerned were responsible for non-regulation of rates for deviated quantity/item of work.

The Government stated (January 2020) that recovery of overall decrease of concrete (M:20) and excavation for level difference in foundation shall be deducted from the final bill of the contractor. However, there was no provision of Steel in the foundation portion, and that the deduction for Steel on account of level difference in foundation was not applicable. Further, regarding the

<sup>37</sup> 75,592.327 cum (84,839.81-9,247.483) × ₹ 443.01(₹ 829 less tender premium 13.848 per cent - ₹ 271.19) = ₹ 3,34,88,157 say ₹ 3.35 crore.

excess payment for CC M:20, the Government stated that it being a TKC, the contractor was free to submit his own drawing and design as per specification subject to approval by the CE. After approval of drawing and design, component-wise payment was approved by the CE, and the payment was made to the contractor after execution of work.

The Government's contention that there was no provision of Steel in the foundation portion cannot be accepted, as detailed in **Table 2.1.1**. Thus, deduction for Steel on account of level difference in foundation should also be done from the final bill of the contractor. Further, as higher specification item of M:25 was substituted with lower specification item of M:20, audit cannot vouchsafe that the quality of the work will be as envisaged, even if it is as per the approved drawings and designs.

#### ***2.1.6.11 Undue benefit to the Contractor due to use of crushed sand in place of Narmada sand***

In construction of the Kundaliya Multi-Purpose Major Dam, audit observed that provision of 2,22,812.94 cum Narmada sand with distance of 100 km at the rate of ₹ 507.78 per cum was made in the estimate for CC/ RCC work. However, the Contractor executed CC work with crushed sand of 2,18,717.23 cum by crushing the quarried stone at dam site. Thus, provision of 100 km lead was unwarranted. As the estimated cost was driver of cost quoted by the Contractor, therefore it resulted in undue benefit of ₹ 9.57 crore<sup>38</sup> to the Contractor.

The Government stated (January 2020) that the contention of audit is not correct as sand of both types, either natural or crushed may be used for construction work. In this case, test results of the crushed sand at site fulfil the grading and other requirements of Indian Standards and found suitable for design of concrete mixes and use of the same was permitted by the Department. Hence the contractor used identical quality of sand, manufactured at site. The audit has not included the cost of sand manufacturing and transportation of sand.

The reply of the Government is incorrect as cost of cement, metal and sand was already inclusive in item of concrete work, and payment for concrete item was not under objection of audit. But inclusion of cost of lead of 100 Km for transportation of sand separately in the estimates, which was manufactured at site and payment made for the same was objected by audit. Further, according to agreement, the contractor shall arrange at his own cost tools and plant and machine required for proper execution of work, hence no additional investment on machinery shall be considered. Reasonability of rates has been evaluated on the basis of estimated cost, which was inflated by incorporating inadmissible lead of sand. Further, the use of crushed sand was irregularly allowed, against the provision of the contract.

#### ***2.1.6.12 Payments to Contractors without recording detailed measurements***

According to clause 106.10 of Turnkey agreements, the Contractor shall record joint measurements for work carried out as per procedure laid down by

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<sup>38</sup> ₹ 9.57 crore = {(2,18,717.23 cum × ₹ 507.78 per cum) less 13.848 tender *per cent*}.

the Department for the purpose of keeping record and the same shall be got checked from competent authority before payment. All hidden measurement shall be got 100 *per cent* checked by the competent authority before payment.

For the purpose of making payment to the Contractor, abstract of quantities of executed items has to be prepared on the basis of detailed measurements, and recorded in the Measurement Books (MB). In the absence of detailed measurements, evaluation of the executed quantities as per drawings and designs cannot be ascertained.

The E-in-C had also issued a clarification (March 2015) to all CEs reiterating that there was no clause in the TKC nor any para in the MPWD manual which exempts recording of measurements in the MBs in TKCs.

Audit observed that in six TKCs<sup>39</sup> pertaining to four Divisions, contrary to the above clause and instruction of the E-in-C, payments were released to the Contractors without recording detailed measurements of work. The EEs, SDOs and Sub-Engineers concerned were accountable for irregularity in recording of measurements.

The Government stated (January 2020) that in case of Sanjay Sagar Project, no payment was made without recording detailed measurement in the MB.

The reply of the Government does not address the audit contention as recording of measurements in MBs was not done, as ascertained by audit. Payment should only be made after recording the detailed measurements.

#### **Conclusion**

Contract Management and execution of work was deficient as there were many instances of non-completion of the projects within the time schedule, deviations from designs, undue benefit to the Contractors, viz. irregular revision of payment schedule, short forfeiture of Contractors' deposits, excess payment to the Contractors for works not done, changes in the scopes of work and irregular recommendation for grant of exemption from Central Excise Duty, etc.

#### **Recommendation**

The Department officials ensure adherence of contract terms and conditions by the Contractor. The departmental officials should be made accountable for extra payments and unreasonable relaxation of contract provisions. The Department should ensure comprehensive monitoring and oversight to prevent slippages in works and Department officials should be made to enforce contracts.

#### **2.1.7 Whether quality control and supervision mechanism were in existence and utilised properly during construction?**

#### **Quality Control and supervision mechanism**

Quality Control in construction involves compliance with minimum standards of material and workmanship in order to ensure the performance of the facility

<sup>39</sup> EE, Keoti Canal Division, Rewa (Agt. No. 16/2013-14), EE, Mahan Canal Division, Sidhi (Agt. No. 02/2010-11), EE, Sanjay Sagar Bah River Project, Ganjbasoda (Agt. No. 02/2011-12 and 03/2011-12), EE, Teonthar Canal Division, Rewa (Agt. No. 02/2011-12 and 03/2013-14).

as per the design and specifications. Supervision is the process of ensuring quality workmanship, review of work progress at site and sample verification of test reports.

During the audit of 22 TKCs, the effectiveness of quality control and supervision was analysed with reference to applicable norms. Audit observed cases of execution of below-specification works and improper monitoring.

Audit findings are discussed in succeeding paragraphs.

#### **2.1.7.1 Irregular execution of below specification cement concrete work**

According to para 6.1.2 of the IS code 456, minimum grade of Plain Cement Concrete (PCC)/ RCC shall be M:15 grade and M:20 respectively. Concrete grade lower than M:15 may be used only for lean concrete, foundations for masonry walls or temporary RCC constructions.

Audit observed that contrary to the above provision, in three TKCs, Contractors had prepared design for execution of sleepers, canal/ tunnel lining, construction of structures with grade of PCC M:10 and the same was approved by the CEs. This resulted in execution of below-specification works amounting ₹ 32.26 crore<sup>40</sup>.

The Government stated that provision for use of Concrete M:10 was still in the Departmental specifications and USR, and that wherever required, use of CC M:10 was permitted looking to the overall economy of the Project.

The reply of the Government is not factually correct as the design with the use of PCC M:10 was approved against the provision of IS-456 as aforesaid, and that the execution of below-specification work may hamper the life of the structures.

#### **2.1.7.2 Lack of quality control in cement concrete works**

According to para 16.1 of the IS-Code 456, the mean compressive strength of CC of M:15 and above grade, determined from any group of four consecutive test results, must exceed from the characteristic strength by at least 03 N/mm<sup>2</sup> and 04 N/mm<sup>2</sup> respectively.

- Audit observed (December 2018) that in Barna Feeder Canal, compressive strength for design mix CC for M: 15, M: 20, M: 25, M: 30 and M: 35 after 28 days was found less than the acceptable criteria of 18.0N/mm<sup>2</sup>, 24.0N/mm<sup>2</sup>, 29.0N/mm<sup>2</sup>, 34.0 N/mm<sup>2</sup> and 39.0 N/mm<sup>2</sup> respectively. This resulted in execution of CC work costing ₹ 22.75 crore below the acceptable criteria of mean compressive strength, as detailed in **Table 2.1.2**.

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<sup>40</sup> ₹ 16.81 crore (Bhanpura Canal) + ₹ 10.63 crore (Sip-Kolar Link Project) + ₹ 4.82 crore (Bansujara Canal) = ₹ 32.26 crore.

**Table 2.1.2: Statement showing details of acceptance of below specification CC work  
(Amount in ₹)**

Item	Work	Mean Compressive Strength (N/mm <sup>2</sup> )				Quantity paid (cum)	Rate per cum	Amount
		As per Design Mix	Acceptable	As per test reports				
				Min	Max			
M:15	Structures	20.35/20.77	18.0	15.13	17.48	19,253.95	7,945.68	15,29,85,765
M: 20		27.5	24.0	18.35	23.0			
M: 25		32.1	29.0	25.1	27.6			
M: 30		39.82	34.0	30.0	32.2			
M: 35		44.45	39.0	36.09	36.8			
M:15	Lining	20.35	18.0	15.31	17.09	14,738.06	5,053.51	7,44,78,934
<b>Total</b>							<b>22,74,64,699</b>	

The EE replied that the last results obtained were more than the designed strength. Hence, it is acceptable.

The reply of the EE is not factually correct because as per test results of the CC lining, the compressive strength was much less than the acceptable criteria.

- Audit observed that in the work of Teonthar Lift Canal, 56301.87 cum of M: 15 grade concrete was used for CC lining and construction of structures. The work had been completed (February 2018) and the PS was released (July 2018) by the EE much before the defect liability period of three years. During the site visit, it was noticed that the canal lining had deteriorated at various reaches, as explicit in the pictures below:



During checking of records related to quality control, it was noticed that against the minimum requirement of 563 tests<sup>41</sup>, only 30 tests were conducted for determining the compressive strength. It was also seen from the test results that compressive strengths of CC lining was below than the required strength of 18.0 N/mm<sup>2</sup>. This indicated that sub-standard work was accepted by the EE.

<sup>41</sup> One test per shift per mixer up to 100 cum work per day.

The EE replied that the test reports have been submitted by the Contractor as per the requirement.

The reply is not factually correct because the test results were not available as per the minimum requirement of 563 tests. Further, available test results of compressive strength of CC were not as per IS Code, which may have potentially serious implications, as shown in the above pictures. Moreover, the possibility of the rectification of work at Contractors' cost was also foregone, due to premature release of PS.

Moreover, in 12 TKCs, field laboratories were not established and in none of the selected TKCs squad teams, as detailed in **Appendix 2.9**, were formed to ensure quality control, day to day monitoring and supervision as per contractual provisions. In the absence of field laboratories and squad teams, quality control and day to day monitoring of works could not be ensured.

### Conclusion

The Department did not ensure the compliance of the specifications during the construction of canals and other works and accepted below specification works. The Department failed to ensure contractual provision related to establishment of field laboratories and formation of squad teams.

### Recommendation

As the Audit focussed only on the sampled units, the Department is advised to check all the structures, and fix the responsibility for early damage and examine below specification works from vigilance angle in all the works executed.

## 2.1.8 Impact of Turnkey Contracts

The 22 selected TKC were analysed to assess the impact in terms of final outcome. Audit findings are as follows.

### 2.1.8.1 Non-adherence to time schedule for execution of works

The concept of TKC was introduced with the aim to complete the work in prescribed time schedule. Audit observed that out of 22 selected TKCs, only one TKC<sup>42</sup> was completed within the stipulated period. The overall status of delay is given in **Table 2.1.3**.

**Table 2.1.3: Status of Turnkey Contracts**

Sl. No.	Status	Number of TKCs	Within stipulated time	Extended time	Period of delay (As on 31/03/2019)
1	Completed	7	1	6	4 to 72 months
2	Ongoing	11	2	9	2 to 76 months
3	Terminated	2	0	2	20 to 26 months
4	Incomplete final	1	0	1	8 months
5	Foreclosed	1	0	1	5 months
<b>Total</b>		<b>22</b>	<b>3</b>	<b>19</b>	

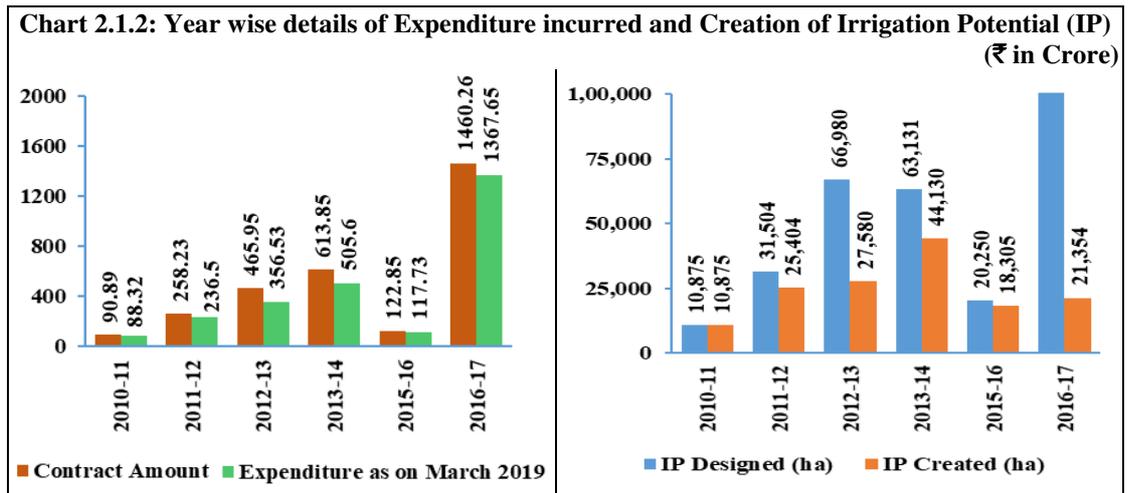
Despite slow progress in construction works, no penalty was imposed and time extensions were granted to Contractors in a routine manner without adequate analysis for the reasons of delays.

<sup>42</sup> Agt. No.02/2015-16 of Bhanpura Canal Project (Unit-II).

This shows that the Department has failed to fulfil the objective of developing irrigation potential within stipulated period by awarding contracts on TKC basis.

### 2.1.8.2 Non-achievement of Irrigation Potential

Audit observed that 17 selected TKCs of canal works were awarded with the aim to develop 3,14,090 ha of Culturable Command Area (CCA) up to July 2019. As of March 2019, CCA of 1,47,648 ha (47.00 per cent) only was developed from these TKCs, despite incurring an expenditure of ₹ 2,672.33 crore (88.72 per cent), as depicted in the **Chart 2.1.2:**



(Source: Records of Water Resources Department)

#### Recommendation

The Department should ensure that payments should be linked with phase-wise development of command area so that time and cost over-runs are better regulated and final achievement of irrigation potential better managed.

#### Conclusions

The Department switched over from PRC to TKC with aim to complete the work in a prescribed time schedule with a lump sum fixed price. This Thematic Audit was conducted to evaluate the achievement of implementation of TKCs objective along with development of irrigation potential.

While only one out of 22 test checked TKCs was completed in time, and two more running on schedule, none of the selected projects in their entirety have been completed even within the extended period, resulting in failure to irrigate the targeted irrigation 40,854 ha from these projects and creation of 1,50,542 ha irrigation potential from other TKCs. Moreover, several deficiencies in execution of selected projects and other TKCs, viz. undue benefits to the Contractors in form of less receipt of PS and inclusion of PA Clause due to non-preparation of SBD, extra cost due to inflated estimation, undue benefits to the Contractors due to irregular modification in the scope of work in the NITs, inadmissible payment for temporary LA, deviation from the approved drawings and designs, irregular revision of payment schedules, irregular release of PS before completion of the defect liability period, irregular grant of Secured Advance and short recovery thereof, short forfeiture of deposits of

the Contractors after termination of the contract, nonrecovery of Central Excise Duty exemption certificate benefit allowed to the contractor, excess payment for work not done, excess payment due to incorrect regulation of rates for altered quantities, and execution of below specification works, etc., were noticed. From the above shortcomings, it seems that terms and conditions of TKCs are more favourable towards Contractors.

***Summary of recommendations***

- *The Department may examine irregular reduction of PS, inclusion of PA clause in the NITs, inclusion of superfluous items/ misapplication of rates in the estimates and amendment in the NITs from a vigilance angle.*
- *The Department should fix accountability for these irregular payment/ undue benefit to the Contractors and examine these irregular payments from a vigilance angle. The Department may also ensure that payments to the Contractor are limited as per scope of work and actual work done, on the basis of recording of detailed measurements.*
- *To avoid the instances of execution of substandard work and delay in execution of work, the Department needs to strengthen the Quality Control and Supervision mechanism to a large degree.*

## 2.2 Audit Paragraphs

Compliance audit of transaction of the Government Departments, their field formulation brought out instances of lapses in management of resources and failures in the observance of the norms of propriety and economy. These have been presented in the succeeding paragraphs.

### FOREST DEPARTMENT

#### 2.2.1 Unauthorised execution of non-forestry work in Reserved forest

**Unauthorised execution of non-forestry work in Reserved forest in violation of Forest (Conservation) Act 1980 and without Environment Clearance resulted in unauthorised use of public fund amounting to ₹ 1.02 crore.**

The Forest (Conservation) Act, 1980 (FCA) provides that any forest land or any portion thereof may be used for any non-forestry purpose only with the prior approval of the Central Government. Further, the guidance document for taking up non-forestry activities in wildlife habitats, issued by the Government of India (GoI) in March 2011, specifies that Environmental Clearance for such activity will be subject to recommendation of Standing Committee of National Board for Wildlife (NBWL). Furthermore, the Madhya Pradesh Eco-tourism Board<sup>45</sup> (Board), which adheres to ecotourism policy, should also function in strict conformance with the provisions of the existing environmental laws.

During test-check of records (February 2018) of Joint Director, Pench Tiger Reserve (PTR) Seoni, audit noticed that a scheme of “Rural Home Stay” (RHS), in the name of ‘*Abhinav Yojna*’, was initiated by the Board to enhance eco-tourism by involving local villagers, so that the tourists can enjoy the local cultural activities in the ambience of a village. The scheme was planned at the forest village of Karmajhiri which is situated in the buffer zone<sup>46</sup> of the PTR, Seoni. In the scheme, it was proposed to select 10 houses of Karmajhiri village for the construction and development of a room and allied facilities in their present dwellings, using bamboo and other natural/temporary construction materials.

Audit scrutiny revealed that in view of the time involved in seeking the permission from Ministry of Environment and Forest (MoEF) for construction of RHS, the Board (August 2013) permitted to construct a Community Centre instead of RHS. Diversion of 0.0929 ha land in favour of President, Eco-Development Committee, Karmajhiri was approved by Deputy Director, PTR (March 2014), and an expenditure of ₹ 1.02 crore<sup>47</sup> was incurred thereafter (up to January 2018) on this activity.

<sup>45</sup> The Board was established in the year 2005 as an autonomous body under the Forest Department to promote Ecotourism in the State.

<sup>46</sup> Compartment RF 390B, situated in Ghatkohka forest range.

<sup>47</sup> Including expenditure by PTR ₹ 98.67; ₹ 3.35 lakh by the Board for consultancy and miscellaneous expenditure; total ₹ 1.02 crore.

Audit noticed that against the proposed eco-friendly home-stay, a commercial lodging/boarding centre of permanent nature was constructed in the name of



**Guest House constructed in the name of Community Centre at Karmajhiri**

Community Centre without obtaining Environmental Clearance. Such a non-forestry activity within the reserve forest and in the buffer area of the National Park tantamounts to misuse of powers by the Forest Department and was against the spirit of FCA. This was unauthorised use of public fund for unlawful construction at a cost of ₹ 1.02 crore.

The Government stated (February 2019) that the construction of the said Community Centre was carried out under section 3 (2) (m) of the Forest Rights Act, 2006 (FRA) wherein the diversion of forest land for the said purpose has been provided by the Central Government.

The reply is not acceptable as the re-naming of the structure from the earlier proposed “rural home-stay” to the “Community Centre for villagers” was a guise by the Department to construct new infrastructure for tourists by evading the stringent provisions of FCA, 1980. While the Government’s contention that a Community Centre can be created is not contested, audit scrutiny shows that the so-called Community Centre was never meant to be used as a Community Centre as envisaged in the FRA, leading to loose interpretation of the provisions under it, for the following reasons:

- It included four suite rooms, lounge, dining hall, etc., which were clearly meant for use by tourists, as such facilities do not form part of any community activity in a forest village;
- The records also confirm the commercial nature and intended use of the Community Centre, as the Forest Department specified its per day charges at ₹ 2,500 and ₹ 5,500 for domestic and foreign tourists respectively, and no concessional rates for the locals.

Further, during scrutiny of records (October 2018) in Divisional Forest Officer (General) {(DFO) (G)}, Sehore, Kathotiya village, a similar case was noticed wherein an unauthorised commercial lodging/ boarding Centre was constructed (during November 2013 to February 2015) at a cost of ₹ 46 lakhs in the name of a Community Centre. Thus, the possibility of replication of similar cases in other reserved forest areas cannot be ruled out as these are in total disregard to applicable provisions bypassing stringent provisions under FCA by taking shelter under the head ‘Community Centre’ which allows for relaxation from such provisions. In absence of clarity on definition of ‘Community Centre’, the Department had been able to construct the said structure. Thus, the Government must ensure that the intent of FCA does not get vitiated by loose interpretation of Section 3 (2) (m) of FRA, 2006 in order to boost commercial activities in the Forest area.

### 2.2.2 Short recovery due to incorrect computation of leviable charges

#### Loss of ₹ 93.80 lakh due to incorrect computation of leviable charges for Compensatory Afforestation.

As per the provisions under FCA 1980, charges towards Compensatory Afforestation (CA) as applicable shall be realised by the State Government from the User Agency and deposited in Ad-hoc Compensatory Afforestation Fund Management and Planning Authority (CAMPA) fund. Forest Department, Government of Madhya Pradesh had also issued guidelines (February 2002) for preparation of Project Report for CA, for collection of certain charges from the user agency. The Additional Principal Chief Conservator of Forest (Land-Management) (APCCF (LM)), in September 2011, clarified that, during estimation of schemes for CA, charges on account of *Aastha-mulak*<sup>48</sup>, Human Resource Development (HRD) and Monitoring and Evaluation (M&E) at the rate of 12 *per cent*, three *per cent* and 20 *per cent* respectively are required to be computed on overall cost of CA. After calculating these charges, Supervision Charge was to be computed on the grand total of the amount of CA at the rate of 10 *per cent* from all the agencies except the State Government. These charges were also leviable in case of Medicinal Plantation.

- (i) During scrutiny of records of DFO(G), Damoh (March 2017), we noticed that in two projects<sup>49</sup>, in-principle approvals were given by the appropriate authority, i.e. Ministry of Environment, GoI to Madhya Pradesh Road Development Corporation (MPRDC) (December 2016) and to Power Grid Corporation of India Ltd. (PGCIL) (October 2016), for diversion of 19.120 ha and 192.3637 ha respectively. For MPRDC, it was proposed to undertake CA for 20.720 ha while for PGCIL, plantation of medicinal plants was proposed in 41.432 ha (within Damoh Forest Division).

In these two approvals it was directed that, the charges of Net Present Value (NPV), CA and other leviable charges should be recovered from the user agency before the final approval by the GoI.

In test check of records of CA and Medicinal Plantation works, we noticed that the leviable charges on account of M&E, *Aastha-mulak*, HRD and Supervision Charges were wrongly calculated by the Department. As per direction of Chief Conservator of Forest (CCF) this computation was done, based on application of prescribed rates on one hectare cost of the total project cost instead of applying the specified percentage on total cost as detailed in **Appendix 2.10**. This incorrect application of rates has resulted in short demand and resultant short recovery of ₹ 93.80 lakh.

The DFO (G), Damoh stated (March 2017) that, these charges were computed on the direction of CCF, Sagar, circle Sagar (October 2016) in which it was directed that the charges of M&E (20 *per cent*), *Aastha-mulak* (12 *per cent*),

<sup>48</sup> Refers to Entry Point Activities undertaken to create community assets.

<sup>49</sup> For the project of widening/ construction of SH-48 Hata - Fatehpur - Rajpura - Silpuri - Darguwa two-lane road; and for another project of laying of 765 KV D/C Jabalpur pooling - Orai transmission line.

HRD (three *per cent*), and Supervision Charges (10 *per cent*) are to be computed on the per ha cost as calculated for the project.

The reply of DFO (G) is not accepted by us as the said order of CCF was contrary to the order issued earlier by the higher authority, i.e. by APCCF in September 2011. In this regard, we also sought clarification from APCCF (LM), in which it was clarified (02 April 2018) that the said charges were to be applied on the total cost of the project and not on per hectare cost. Moreover, these charges were also applicable on Medicinal Plantation as such.

- (ii) Further, during scrutiny of records of DFO (G), East Chhindwara (March 2018), we noticed that for the project<sup>50</sup>, the in-principle approval for the diversion of 165.528 ha forest land was accorded by the MoEF, GoI (May 2017) in favour of PGCIL at Narsinghpur and Chhindwara districts against which CA in 205 ha (in Chhindwara Forest Division) was proposed.

In this case also, we noted from the project report of CA that the calculation of supervision charges made by the Department was incorrect which resulted in short recovery of ₹ 26.34 lakh towards Supervision Charges from user agency.

On being pointed out by audit, DFO (G), East Chhindwara informed (April 2019) that the short recovery of ₹ 26.34 lakh of supervision charges had been recovered<sup>51</sup> from user agency.

Thus, the loss due to short levy and subsequent short realisation of the charges towards *Aastha-mulak*, M&E, HRD and Supervision charges amounting to ₹ 93.80 lakh also need to be recovered from other user agencies in DFO (G), Damoh. The recoveries of the same were awaited (December 2019).

The matter was referred to the Government (July 2018 and December 2019); despite repeated reminders, the reply has not been received (December 2019)

### **2.2.3 Blockage of Government money**

#### **Undue delay in execution of Catchment Area Treatment Plan for Mandhan Dam resulted in blockage of Government money.**

The environmental approval for the Pench Valley Group Water Supply Project in the Chhindwara District of Madhya Pradesh, was accorded by MoEF, Government of India, in March 1989 to the Public Health Engineering Department (PHED). The project also involved construction of Mandhan Dam. The approval contained a condition that “Action Plan in respect of Catchment Area Treatment Plan<sup>52</sup> (CATP) would be so drawn as to be completed before the completion of the aforesaid project.”

During test-check of records of the DFO(G), West Chhindwara, audit noticed that administrative approval for the aforesaid Project was accorded in August 1985, in which a total 61.685 ha of forest land was to be diverted in favour of the user agency. After a lapse of 25 years from the environmental approval

<sup>50</sup> Laying of 765 KV DC transmission line at Gadarwara STPS to Warora.

<sup>51</sup> Vide challan no.54 dated 15.10.2018.

<sup>52</sup> Catchment Area Treatment Plan includes understanding the soil erosion characteristics of the terrain and identifying/suggesting remedial measures to reduce the erosion rate. In this, the catchment area responsible for directly draining rivers, streams, etc., are treated to control soil erosion and resultant premature siltation of reservoir.

given in 1989, the project was revised by the user agency i.e. PHED, and in-principle approval for diversion of 29.975 ha of forest land was accorded by MoEF instead of the earlier envisaged area of 61.685 ha in January 2014. Formal approval was accorded in June 2014, which provided that required soil conservation measures, i.e. construction of CATP, should be taken up by the user agency on the basis of recommendation of the Geologist and Task Force.

Further, during the period between September 2012 and March 2013, the user agency, i.e. PHED, deposited an amount of ₹ 14.94 crore with the Forest Department for CATP and the same was transferred in Ad-hoc CAMPA<sup>53</sup> in accordance with the conditions stipulated in the approval (1989). It was found that neither the area nor the cost of CATP was estimated by the Forest Department with respect to the amended scope of the project in 2014. Thus, the amount for CATP, demanded from user agency, was arrived at without considering the present geographical and ecological condition. Moreover, despite remitting the amount by the user agency, the Department failed to start the work of CATP, though the same was required to be completed before completion of work of dam.

Thus, non-commencement of work of CATP not only resulted in the blockage of money but also has the potential to adversely affect the live storage capacity of the dam due to the silting of eroded soil. This, in turn, will affect the entire project and the environment. Further, in January 2019, Additional Principal Chief Conservator of Forest (Land Management) proposed to prepare the CATP at a revised cost of ₹ 7.24 crore. However, execution of CATP is still under planning stage (May 2019).

On this being pointed out in audit, the Government replied (August 2019) that as per PHED, the Project is 85 *per cent* complete and water storage was being done in full capacity. It was further replied that the work was in progress and submergence area would be decided by the year 2019. Hence, area of CATP can be decided only after completion of project. Furthermore, Nullha closure of the Dam was to be done. It was assured that after obtaining approval of State Level Operation Committee and sanction from the Government of India, the work of CATP will be started.

The reply is erroneous as water storage in a Dam can be done in full capacity only after Nullha closure. Full tank level and maximum water level of the tank, on the basis of which submergence area is estimated, are essential parts of Detailed Project Report. Hence it is not true that the Department had to wait till 2019 to decide the submergence area. Even after expiry of more than five years of approval of revised project plan, and after the user agency had already remitted the specified amount in Ad-hoc CAMPA, the Department had not even commenced the plan of CATP till date. Further, the activities included in CATP have a gestation period, and the soil conservation measures should have been taken simultaneously. Also, the condition of approval provides that the work of CATP was to be completed before completion of the Project. It is evident from the reply that even necessary approvals from Government had also not been obtained so far by the Department. Even if the CATP is implemented at a later stage, it will not be able to meet its objectives, as delay has an adverse impact on the environment.

<sup>53</sup> Compensatory Afforestation Fund Management Planning Authority.

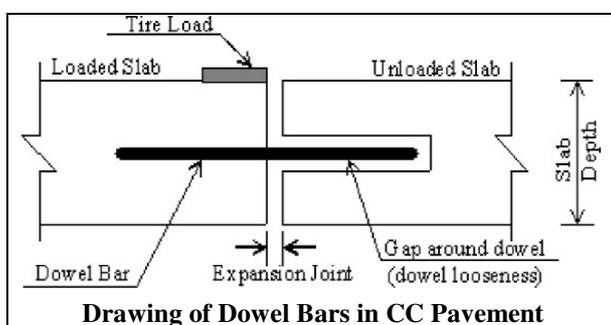
## PUBLIC WORKS DEPARTMENT

### 2.2.4 Below specification execution of Cement Concrete Pavement work

#### Non-adherence to the standard specifications led to execution of below specification Cement Concrete Pavement work amounting to ₹ 1.14 crore.

The Department awarded (October 2016) the work of construction of six cement concrete (CC) roads<sup>54</sup> to M/s Jain Stone Crusher on item rate basis for ₹ 4.78 crore (12.99 per cent below Schedule of Rate 2016) to be completed by October 2017. The work was completed (September 2017) and final bill for ₹ 4.06 crore was paid (May 2018) to the Contractor.

Section 7 of Standard Specifications and Code of Practice for Construction of Concrete Roads, Indian Road Congress (IRC: 58-2015) stipulates that great care is needed in the design and construction of joints in cement concrete pavements, as these are critical locations having significant effect on the pavement performance. Further, Section 7.2.1 provides that load transfer to



relieve part of the load stresses in edges and corner regions of pavement slabs at transverse joints is provided by means of mild steel round dowel bars. Again, note below Table 5 of IRC 58- 2015 stipulates that dowel bars are not satisfactory for slabs of small thickness and shall not

be provided for slab less than 200 mm thickness.

During scrutiny of records (September 2017) of Executive Engineer (EE), Public Works Department (PWD), Hoshangabad Division, we noticed that the CC pavement was designed with provision of 32 mm dowel bars in 200/250 mm thick CC pavement for total revised quantity of 5,553.80 cum with dowel bars in total quantity of 5.555 Metric Ton (MT) for all the six roads. The final bill was paid for execution of 5,365.906 cum of M-40 grade CC pavement in which only 2.783 MT of dowel bars were laid.

Further scrutiny revealed that in three roads<sup>55</sup>, no dowel bars were laid while executing total quantity of 2,282.81 cum, as detailed in **Appendix 2.11**, of CC pavement work by Contractor, and the same was not checked by the Department during execution of work. This led to not only non-adherence to the standard specifications but also to the execution of below specification CC

<sup>54</sup> Construction of Luchgaon to Umariya, Umariya to Papantiraha, Village Bhairapur – Jeeraveh-Nipaniya road to Hanuman Mandir road, Keolajhir CC road, Paretiya to Lohariya road, Berkehdi Basaniya Wear House Bharlay road.

<sup>55</sup> Construction of Luchgaon to Umariya, Umariya to Papantiraha, Village Bhairapur – Jeeraveh-Nipaniya Road to Hanuman Mandir Road.

pavement work amounting to ₹ 1.14 crore<sup>56</sup>.

In reply, the Engineer-in-Chief stated (September 2019) that in one road, where thickness of road was 250 mm, the dowel bars were not provided as traffic plying was less than the 450 commercial vehicles per day (CVPD), which is as per the prescriptions of IRC 58-2015. Whereas during the execution of other two roads, the thickness of the road was reduced up to 200 mm from estimated thickness of 250 mm due to less traffic plying on the road and hence, as per IRC specifications, dowel bars were not provided.

The reply was an afterthought as the estimates of all the six roads provisioned the execution of dowel bars in PQC work. Further, CVPD of all the six roads was less than 450, as provided by the division. The IRC specifications provide that dowel bars are to be laid when slab thickness is 200 mm or more, and the same do not prohibit the use of Dowel Bars in roads where traffic plying is less than 450 CVPD. Moreover, there is an internal contradiction in Department's reply, pointing to inconsistency in design of other three roads<sup>57</sup> in which, 2.783 MT of Dowel Bars were laid in execution of CC pavement work. This justifies the audit contention that the standards were not followed uniformly. Further, subsequent deviation from the estimates by the Department on the pretext of change in site condition of traffic itself questions the detailed estimates which form the basis of every execution.

The matter was referred to the Government (August 2018, December 2018), and subsequent reminders were issued; reply is still awaited (December 2019).

### **2.2.5 Excess payment by accepting suspected fraudulent invoices of the Contractor**

**On the basis of suspected fraudulent invoices, excess payment of ₹ 22.50 lakh was made to Contractor on account of machineries expected to be deployed on the work.**

The Department awarded the works of construction of "Heerapur - Chandero Road" and "Khargupura Tigela Sagar Wara Shah - Pathra Bizrodha road" to M/s Divine Infrastructure in September 2012 and February 2013 respectively at 6.60 *per cent* above PAC amounting to ₹ 6.32 crore and at 12.90 *per cent* above PAC amounting to ₹ 9.11 crore respectively.

As per the Schedule of Rates (SOR) issued by the Engineer-in-Chief, the rates for the item of Dry Lean Concrete (DLC) and Cement Concrete (CC) are inclusive of the charges of deployment of electronic sensor paver in the work. If electronic sensor paver is not deployed in DLC and CC work, the rates of the items are to be reduced by ₹ 150 per cum and ₹ 350 per cum respectively. Further, the conditions of the agreement provide that the bidder has to either produce the evidence of owning the equipment or of having made lease arrangements for employing the required equipment as per minimum

<sup>56</sup> Construction of un-reinforced, dowel jointed, plain cement concrete pavement M-40 grade, executed quantity without dowel bar for above three roads = 2,282.812 cum. Rate of execution of CC pavement construction = ₹ 5,726 per cum. Total cost of below specification work executed = 2,282.812 × 5,726 = ₹ 1,30,71,382 less ₹ 16,97,973 (Below 12.99 *per cent* tender premium) = ₹ 1,13,73,409.

<sup>57</sup> Keolajhir CC road, Paretiya to Lohariya road, Berkehdi (Basaniya Wear House) to Bharley road.

requirement for the construction of road work. Bidder can also give an undertaking that in case the work is awarded to them, suitable arrangements will be made by them for arranging the required equipment, prior to signing the agreements.

Audit scrutiny of records (February 2017) of Executive Engineer (EE), Public Works Department (PWD), Tikamgarh Division revealed that neither the Contractor deployed sensor paver finisher nor the division reduced the rate of such items as per the provisions of the SOR. Thus, an excess payment of ₹ 22.50 lakh on account of non-deployment of the required machinery was made to the Contractor as detailed in table below.

Table 2.2.1: Statement showing excess payment

Sl. No.	Name of the work	Item executed	Executed quantity (cum)	Rate recoverable (₹ per cum)	Amount (₹ in lakh)	Tender premium	Excess payment including tender premium (₹ in lakh)
1	2	3	4	5	6=5x4	7	8=6+Tender Premium
1.	Construction of Khargupura Tigela Sagar Wara Shah-Pathra Bizrodha road (Agreement No.- 95/12-13)	DLC	774.23	150	1.16	12.90 per cent above	1.31
		CC pavement M-30	3,958.18	350	13.85		15.64
2.	Construction of Heerapur- Chandero road (Agreement No.- 42/12-13)	DLC	612.86	150	0.92	6.60 per cent above	0.98
		CC pavement M-40	1,226.02	350	4.29		4.57
<b>Total</b>							<b>22.50</b>



**Sureliya Earth Movers.**  
Mfg: Road Construction Equipments · AN ISO 9001-2008 COMPANY

Name & Address Of Factory (Seller) M/s. Sureliya Earth Movers Plot No:2101/B, Phase : 3, G.I.D.C. Vatva Ahmedabad - 382445.		Invoice VAT TIN NO:24075701776 Dt:16/10/2008 C.S.T. TIN NO: 24575701776 Dt:16/10/2008 GSTIN No:24BPHP57610P123		Invoice No: 10/11-12 Date Of Issue: 17/08/2012	
Name & Address Of Consignees (Purchaser) To, M/s. DIVINE INFRASTRUCTURE C/o Reliance Petrol Pump Tikamgarh (M.P)		Ref Name: Mr. Anshul Khare Date:		Delivery Challan No:	
GSTIN NO: ECC NO: Oder Date:		Pre-Carriage by: Transport Name: L.R. No			
Description of Goods 01. "SEM" Make Fully Hydrostatics auto Electronic Sensor Paver Finisher machine with Auto Electronic Grade & Slope Controller Device Suitable for WMM & DLC & Bitumen Macadam Paving. Model No. SEM-550 Specifications: # Engine: Kirloskar Make Water Cooled Ele Start Diesel Engine, 125 H.P, 2300 RPM or Equivalent, 12 V DC, BS-III Approve # Traction And Conveyor Pump & Motor: Sauer Danfoss (Germany) or Equivalent # Slope & Grade Control (Sensor System): Moba Make Electronic Sensor Device with Auto & Manual Mode System # Hydraulic Oil Cooler Provide for Temperature Control of Oil # Differential Lock System are Provided # Rear Wheel 4 Nos of Pneumatic Tyre Size 10.00 x 20 # Paving Thickness: 10 mm (Min.) to 300 mm (Max) # Working Speed: 0 to 30 m/Min (Max) #Screed width: 2.5 Mtr Basic width, with Hydraulically Extendable up to 4.5 Mtr & Roll on Extn up to 5.5 Mtrs #Compaction & Tamping Drive by Imported Hyd. Motor #Machine Operated by imported Hydraulic Steering Control, #Control Panel & Driver Seat: Control Panel will be Sliding Type And Driver Site are Moving both side (Left & Right) #Auger: Auger Material are Ni-Hard /High Chromium Steel Material with 300mm Dia (12") Note: Transportation Charges will be Extra (Warranty period of Paver is 1 Year)		Vehicle No Qty/ Unit UNIT PRICE TOTAL PRICE			
Rupees: Forty Eight Lacs Only.		Sub Total Rs. 37,50,000/-			
For, Sureliya Earth Movers. Authorized Signatory		I.G.S.T 28 % Rs. 10,50,000/-			
Plot No: 2101, Phase-III, G.I.D.C., Vatva Ahmedabad-382445 (GUJ) Ph: +91 9928833707 Email: sureliyaearthmovers@gmail.com		GRAND TOTAL Rs. 48,00,000/-			

**Invoice dated 17.08.2012 showing inclusion of GST in Total Amount**

On this being pointed out, the Chief Engineer (CE), PWD, Sagar Zone while replying to the audit objection, appended the Contractor's invoice amounting to ₹ 48 lakh, in support of purchase of Electronic Sensor Paver machine, Model No. SEM 550 dated 17 August 2012 from the vendor. The scrutiny of invoice revealed that it was issued in August, 2012 but it was bearing Goods and Services Tax Identification Number (GSTIN) of the vendor. It is worth noting that in India, the Goods and Service Tax was first introduced only in July 2017. When this suspected fraudulent act was brought to the notice of the

No. & Kind of Packages		Description of Goods	Qty/ Unit	UNIT PRICE	TOTAL PRICE
01.		"SEM" Make Fully Hydrostatics auto Electronic Sensor Paver Finisher machine with Auto Electronic Grade & Slope Controller Device Suitable for WMM & DLC & Bitumen Macadam Paving. Model No: SEM-550 Specification: # Engine: Kirloskar Make Water Cooled Ele.Start Diesel Engine, 125 H.P. 2300 RPM or Equivalent 12 V DC, BS-III Approve # Traction And Conveyor Pump & Motor: Sauer Danfoss (Germany) or Equivalent # Slope & Grade Control (Sensor System): Moba Make Electronic Sensor Device with Auto & Manual Mode System # Hydraulic Oil Cooler Provide for Temperature Control of Oil # Differential Lock System are Provided # Rear Wheel 4 Nos of Pneumatic Tyre Size 10.00 x 20 # Paving Thickness: 10 mm (Min) to 300 mm (Max) # Working Speed: 0 to 30 m/Min (Max) # Screed width: 2.5 Mtr Basic width, with Hydraulically Extendable up to 4.5 Mtr & Bolt on Extn up to 5.5 Mtrs # Compaction & Tamping Drive by Imported Hyd. Motor # Machine Operated by Imported Hydraulic Steering Control. # Control Panel & Driver Seat: Control Panel will be Sliding Type And Driver Sit are Moving both side (Left & Right) # Auger: Auger Material are NI-Hard /High Chromium Steel Material with 300mm Dia (12") Note: Transportation Charges will be Extra (Warranty period of Paver is 1 Year)	01 Unit	Rs. 37,50,000/-	Rs. 37,50,000/-
Rupees: Thirty Eight Lakh Twenty Five Thousand Rupees Only				Sub Total	Rs. 37,50,000/-
For, Sureliya Earth Movers. Authorized Signatory				Output CST VAT 2% Agast C Form	Rs. 75,000/-
				GRAND TOTAL	Rs. 38,25,000/-

**Modified Invoice dated 17.08.2012 showing inclusion of CST VAT in Total Amount**

Department (May 2018), it justified the Contractor's invoice by forwarding another invoice (August 2018) bearing identical details as that of the previous one, except replacement of levy of IGST at the rate of 28 per cent by CST VAT at the rate of two per cent thereby reducing the amount of invoice from ₹ 48 lakh to ₹ 38.25 lakh.

The EE endorsed the Contractor's plea that while photocopying the invoice, the GST was erroneously included.

The replies are not acceptable because the photocopy machine can neither change the rates of the taxes nor can it

recalculate the amount. It is evident that such suspected fraudulent practices were adopted only in order to convince the Audit.

This suspected fraud is further substantiated with the fact that the purchases made by the Contractor for the year 2012-13 were verified from Commissioner, Commercial Tax, Sagar and no such purchases were found to be made by him. Further, the measurements were taken by the field engineers concerned without recording the non-utilisation of the machineries. Also, the divisional officer could not detect the non-deployment of the machinery and approved the measurements. The payment was released accordingly. It indicates the lax attitude of the Department towards quality of the work by benefitting the Contractor. Thus, the matter needs serious attention of the Government and appropriate action needs to be initiated.

Further, the Engineer-in-Chief (E-in-C) endorsed the reply of CE (January 2019) with copies of another invoice of March 2010, showing the price of machine as ₹ 35.70 lakh including two per cent VAT.

So, while it was seen from earlier bills/invoices that the Paver machine was purchased in August 2012, the current invoice shows it to have been purchased in March 2010. As such, the veracity of the claim of purchase, and more particularly, the usage of the specific machine in the works cannot be vouchsafed, given the constantly shifting invoice details with respect to the Paver machine.

Thus, it appears as if these invoices are being produced merely to satisfy Audit's queries, without much material basis in facts. Where there is no uniformity in the auditee's stand as to whether machine purchased in 2010 or 2012 was used, there can be no conclusive evidence whether the same machine had been used in the works, or not. As such, Audit continues to hold its earlier contention that excess payment was made to the Contractor by accepting suspected fraudulent invoices to belatedly prove that Paver machine was used in the works.

Furthermore, in September 2019, E-in-C assured that the action will be taken against the Contractor for providing misleading information and against the EE for not verifying the same. As assured by the Department (September 2019), updated position needs to be intimated.

**Recommendation**

The Department may examine excess payment made to the Contractor by accepting suspected fraudulent invoices from a vigilance angle.

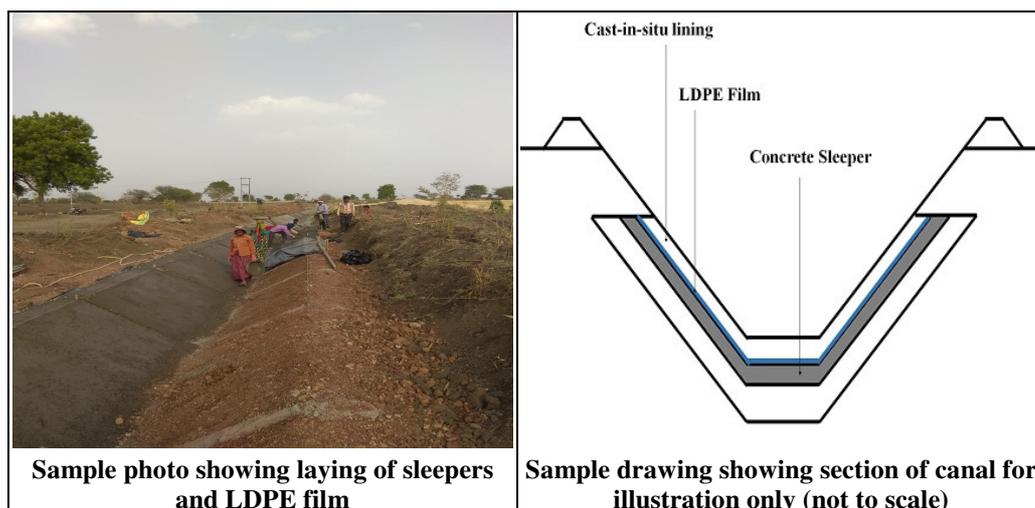
The matter was referred to the Government (November 2018) and subsequent reminders were issued; but reply has not been received (December 2019).

**WATER RESOURCES DEPARTMENT**

**2.2.6 Extra cost amounting to ₹ 2.47 crore due to unwarranted execution of Low-Density Polyethylene film and laying of concrete sleepers.**

**Extra cost amounting to ₹ 2.47 due to unwarranted execution of Low-Density Polyethylene film (LDPE) film and superfluous laying of concrete sleepers below cement concrete lining with Paver machine.**

The Executive Engineer, Lower Sihawal Canal Division, Churhat, Distt. Sidhi (EE) awarded (04 February 2012) the work of "Cement Concrete (CC) lining with Paver machine from RD km 15.24 to RD km 75.12 of Sihawal Main canal with Polyvinyl Chloride (PVC) joints, Low-Density Polyethylene (LDPE) film, C.N.S. Layer with Longitudinal and Transverse sleepers as per specification and testing of swelling pressure, permeability test complete with specification, maintenance and repair of canal Earth work and lining work up to three years after completion of work under Bansagar Project" to M/s S.N. Pandey construction Pvt. Ltd. for ₹ 42.56 crore (11.15 per cent below tender amount). The Work Order was issued to the Contractor on 29 February 2012. The work was completed and payment for total value of work done of ₹ 33.99 crore was made vide 38<sup>th</sup> and final bill in May 2016.



Scrutiny of records (August 2017) revealed the following deficiencies in the execution of the above work:

**2.2.6.1 Incorrect provision and unwarranted execution of LDPE film in canal lining using Paver machine led to an extra cost of ₹ 1.31 crore.**

Specifications for irrigation Projects - Lining of Canals (December 1995) stipulate that “A plastic membrane of LDPE film of suitable thickness may be used below the concrete lining in sides and in beds where the subgrade of the lining is of pervious materials, like murrum, etc., so as to prevent absorption of water in subgrade from green concrete, during placement on the subgrade. However, the Superintending Engineer shall decide whether the polyethylene film shall be used or not in case of every individual work”.

As per the instructions issued (7 February 2012) by E-in-C, Water Resources Department (WRD), in consultation with the office of Chief Engineer, Bureau of Designs (BODHI), the use of LDPE film is prohibited when the work of CC lining is to be executed using Paver machine.

During scrutiny of records, audit noticed that the clubbing statement of the item of “Providing and laying plain CC lining of M-15 grade with Paver machine in canal bed and side slope” was inclusive of item of providing and fixing LDPE film below CC lining” on 7,32,917.590 sqm area at the rate of ₹ 28 per sqm. Since the work of lining was provided and executed using Paver machine, therefore, the provision for laying LDPE film below CC lining was unwarranted and against the instructions of the E-in-C, which led to an extra cost of ₹ 1.31 crore<sup>58</sup> to the work.

The Government replied (September 2019) that the irrigation specifications do not prohibit the use of LDPE film in CC lining executed by paver machine.

<sup>58</sup> Total quantity of CC lining paid with LDPE film = 39,523.435cum.  
Average thickness of CC lining = 0.075m.  
Area in which LDPE film was executed = 39,523.435/0.075 = 5,26,979.13 sqm.  
Amount involved in laying LDPE film = 5,26,979.13 × 28 = ₹ 1,47,55,416.  
Extra cost minus tender premium = ₹ 1,47,55,416 - ₹ 1,47,55,416 × 11.15/100 = ₹ 1,31,10,187.

However, the Government agreed that some instances of the LDPE getting struck in paver machine were observed.

The reply of the Government is not acceptable as it was categorically clarified by the E-in-C in 2012, that the item of LDPE film was to be deleted if Paver machine was used in lining. Also, even after issuance of the clarification, the Department took almost four years to incorporate the same in the ongoing agreement. Further, sanction of extra item of CC lining (February 2016), without item of LDPE film, itself confirms that the LDPE film was unwarranted.

**2.2.6.2 Superfluous laying of concrete sleepers below CC lining with Paver machine led to an avoidable extra cost of ₹ 1.16 crore to the Government.**

As per irrigation specifications, concrete sleepers are required to be laid below construction joints when concrete lining is to be laid in alternate panels so that the joints shall rest on midpoint of sleepers. CC lining with Paver machine is laid in continuous manner and not in alternate panel hence sleepers need not be provided where CC lining is to be executed using Paver machine. It was further clarified (07 February 2012) by E-in-C also.

It was observed that the work of “Cement Concrete (CC) lining with Paver machine” included item of “providing and placing cement concrete sleepers”. There was no need of providing sleepers as the work of CC lining of canal was to be executed with Paver machine. Further, it was noticed that the provision of Concrete sleepers was made in the estimates and a quantity of 4,058.85 cum<sup>59</sup> had been executed. Payment of ₹ 1.16 crore<sup>60</sup> was made to the Contractor accordingly.

The Government replied (September 2019) that the construction joints are firmed by providing in situ sleeper in bed and slope under the joints. In case of lining by Paver machine, use of CC sleepers below construction joints is essential. Irrigation specifications do not prohibit the use of CC sleepers below construction joints.

The reply is not acceptable because as per clarification issued by E-in-C (February 2012) in consultation of Office of the Chief Engineer Bureau of Designs (Bodhi), execution of concrete sleepers is not required when the work of lining is executed using Paver machine. Moreover, sanction of new extra item of CC lining (February 2016), without Concrete sleepers, itself confirms that the item of Concrete sleepers was unwarranted, which led to avoidable extra cost.

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<sup>59</sup> 2,344.93 cum of Longitudinal sleepers + 1,713.92 cum of Transverse sleepers.

<sup>60</sup> Rate of Longitudinal sleepers = ₹ 3,036 per cum (Item 2507B(a) of SOR).

Rate of Transverse sleepers = ₹3,436 per cum (2507B(b) of SOR).

Extra cost = 2,344.93 × 3,036 + 1,713.92 × 3,436 = ₹ 1,30,08,236.60.

Extra cost after deducting tender premium = ₹ 1,15,57,818.22.

### 2.2.7 Extra cost due to application of incorrect rates for earth work

#### Adoption of incorrect rates for earth work of canal and providing extra lead resulted in extra cost of ₹ 1.18 crore.

The Department awarded<sup>61</sup> two separate works for construction of minor canal work of Datuni tank project and construction of distributory & minor canal with lining and structures of Datuni project in February 2015 and June 2015 respectively.

As per item 415 (A) of Unified Schedule of Rate (USR) 2009 (as amended in January 2010) of Water Resources Department (WRD), the rates for earth work for bunds in hearing or casing with approved soil with all lifts and leads beyond 0.50 km but up to two km is ₹ 54 per cum whereas the rates for the same work with all lifts and leads beyond two km is ₹ 64 per cum.

During scrutiny (July 2017) of records of Executive Engineer (EE), WRD, Dewas, we noticed that the Clubbing Statement prepared by the Sub-Engineer, checked by the EE and approved by the Chief Engineer included clubbed rate<sup>62</sup> for earth work at the rate of ₹ 54 per cum considering all lifts and leads beyond 0.50 km and up to two km, whereas it included an enhanced rate of ₹ 72.52 per cum for the same work beyond two km (by providing extra lead for earth work) as against the admissible rate of ₹ 64 per cum. Consequently, the clubbed rate of ₹ 116.02 and ₹ 146.72 per cum were worked out by the Department for execution of earth work based on the estimated quantities of the two agreements. Thus despite having a composite item in the USR 2009 having a rate of ₹ 64 per cum for works with all lifts and leads beyond two km, the Department considered higher rates for lead beyond two km. Thus, adoption of incorrect rate in the estimate resulted in extra cost of ₹ 1.18 crore as detailed in **Appendix 2.12**.

On this being pointed out, the Government replied (September 2019) that the PAC is decided on the basis of Technical Sanction for the work and is accorded by the competent authorities. Further, the said tenders were called on Item Rate tender document. The Government also replied that Clubbing statement is not provided to any bidder and these documents are not made part of bid document, and hence it is not the basis for Contractor to quote the rates.

The reply is not acceptable because as the contract is percentage rate contract, inclusion of incorrect rates of the item will directly affect the cost of the work. Despite the fact that when a complete item 415 (A) with composite rate of earth work for all lifts and leads beyond two km was provided in the USR (as amended in January 2010), the Department still decided to include enhanced rates, thereby incurring an extra cost of ₹ 1.18 crore.

<sup>61</sup>

Agreement No.	Tendered value	Scheduled Period of completion	Current status
05/2014-15	8.34 crore (14.23 per cent above PAC)	12 months	10 <sup>th</sup> and final RA bill of ₹ 5.89 crore paid (July 2017)
01/2015-16	11.97 crore (10 per cent above PAC)	Nine months	In progress and 22 <sup>nd</sup> RA Bill of ₹ 11.69 crore paid (Feb 2019)

<sup>62</sup> Rates of various items of USR are clubbed to derive rate of a complete item of work to be executed by the Contractor.

## 2.2.8 Extra cost due to application of incorrect rates

### **Incorrect adoption of rates for CC lining resulted in extra cost of ₹ 1.14 crore in five canal works.**

Para 2.006 of Madhya Pradesh Works Department (MPWD) Manual stipulates that for every work, a properly detailed estimate must be prepared for the sanction of the competent authority (known as Technical Sanction to the estimates). Detailed estimates are prepared after detailed survey and investigation. The estimated cost is assessed by including the items and the rates given in USR issued by WRD. Any incorrect input of the items or the rates may result in extra cost, excess payment or extending undue benefit to the Contractors.

During audit of five contracts being executed in two Divisions<sup>63</sup>, we observed that in three works, despite the provision of M-15 Grade CC work for canal lining, M-10 Grade CC work was executed and paid for a richer M-15 Grade CC work. Further, two works were provisioned and executed with in-situ sleepers for M-10 Grade CC in spite of M-10 Grade lining in Nominal Mix CC, an economic design mix, available in USR-2009. The details are as follows:

(i) WRD awarded the work of construction of canal lining, structures and all allied works of Sagad Medium Project, Ukayla Canal Project and Balrampur Canal Project to three different Contractors under three agreements as detailed in **Appendix 2.13**.

Audit scrutiny (March 2018) of records of EE, Sanjay Sagar (Bah) Medium Project, Ganjbasoda, revealed that the estimates for three canal projects were prepared by including M-15 Grade CC for canal lining and accordingly the unit rates of items were derived in the clubbing statements (estimate) prepared by the division. However, erroneously in the G-schedule<sup>64</sup> of the agreements, the provision of M-10 Grade CC was made for construction of CC lining. The Contractor actually executed the canal lining work with M-10 Grade CC. However, the payment was made as per the rate actually derived for the M-15 Grade CC, being a richer grade of concrete and costlier than M-10 Grade CC. Thus, the payment was made to the Contractor for an item which was actually not executed by him, therefore resulting in an excess payment of ₹ 0.55 crore as detailed in **Appendix 2.14**.

(ii) Similarly, the Department awarded two works to two different Contractors for construction of CC lining in the canals of Datuni tank project as detailed in **Appendix 2.13**.

Audit scrutiny (March 2018) of records of the EE, Water Resources Division, Dewas, revealed that for both the works, the estimates for canal lining were prepared with the provision of rates available for M-10 Grade CC with 20 mm graded stone ballast which was actually applicable for in-situ sleepers despite the rate for M-10 Grade lining in Nominal mix CC as well as design mix being available in USR 2009. The works were executed and the Department paid the

<sup>63</sup> EE, Sanjay Sagar (Bah) Medium Project, Ganjbasoda and EE, Water Resources Division, Dewas.

<sup>64</sup> G-schedule is based on clubbing statement and payments are made on the basis of G-schedule of contract agreement.

enhanced rate of lining (at the rate of sleeper), and the responsibility for incorrect adoption of rates lies on the EE.

Thus, despite availability of rates for in-situ lining of M-10 Grade CC work in the USR 2009, the Department prepared the estimate and made payment to the Contractor considering the higher rates meant for in-situ sleeper, resulting in excess payment of ₹ 0.59 crore as detailed in **Appendix 2.14**.

On this being pointed out, the Government stated (January 2019) that the tenders for the said projects were called on Item Rate tender document. The clubbing statement is prepared by the competent authority on the basis of detailed estimate. The clubbing statement is not provided to any bidder and the same is not made part of the Bid document. The Contractors bid their quotes based on nomenclature of items given in the G-schedule and specifications appended with the document. It was specifically mentioned that clubbing statement is not made part of the tender document and hence, it is not the basis for Contractor to quote their rates.

The reply of the Government is not acceptable because the rates in G-schedule are derived from the clubbing statement, which is the basis of estimates, and is thus, eventual driver of the cost. The items required for the said works in estimates were different from and costlier than those taken in the agreement. Moreover, the Government's reply does not address the audit contention of erroneous action of adoption of incorrect item from clubbing statement to the G-schedule.

Thus, the estimates based on incorrect clubbed rates led to extra expenditure of ₹ 1.14 crore in five canal works.

### **2.2.9 Extra cost due to inadmissible lead**

#### **Inadmissible lead for transportation of Narmada sand led to extra cost of ₹ 23.70 crore to the Government.**

The Department awarded (March 2014) the work of construction of central spillway, earthen dam, sluice, Reinforced Cement Concrete bridge and its allied works and supply and erection of radial gates for Mohanpura project at the cost of ₹ 415.87 crore which was 14.40 *per cent* below the estimated cost of ₹ 485.83 crore based on USR effective from February 2009. The estimate for the work was prepared on the basis of rates of items given in USR clubbed with lead of materials. The work was completed and final bill was paid (March 2018) for the total value of work done amounting to ₹ 442.82 crore.

Audit scrutiny (March 2018) of the records of the EE, Mohanpura Project Division, Rajgarh (Biaora) revealed that in the estimates of the above work, the rates for all concrete work was arrived at by considering the use of Narmada sand. A lead of 225 km for Narmada sand at the rate of ₹ 901.53 per cum was taken in the clubbing statement for arriving at unit rate of concrete works. It was observed that as per the approved concrete mix design, crushed fine aggregates were used in the work. This clearly indicates that the Contractor instead of using high quality Narmada sand, used manufactured crushed sand obtained by crushing metal. However, the clubbing statement also included the lead of five km for metal at the rate of ₹ 109.20 per cum. The same lead should have been provided for crushed sand as it was being manufactured by the Contractor within five km of the construction site. Due to

use of manufactured crushed sand obtained from the crushing metal at site itself, the lead of 225 km for Narmada sand at the rate of ₹ 901.53 per cum was inadmissible; and instead, a lead of five km at the rate of ₹ 98.28 per cum<sup>65</sup> should be considered.

Cement Concrete work of various grades for 8,34,237.01 cum was executed by the Contractor and lead of ₹ 26.60 crore was paid for 3,44,677.97 cum of sand against the payable lead of ₹ 2.90 crore as detailed in **Appendix 2.15**. Thus, an extra cost of ₹ 23.70 crore was incurred by the Department besides inflating the estimates by adopting irregular lead of 225 km for sand.

The Government stated (April 2019) that the Contractor had used same and identical quality of manufactured crushed sand manufactured at site by incurring extra cost of crushed plant machinery. Further, the clubbing statement is prepared for calculating estimated cost and is not open to Contractor.

The reply is not acceptable as the estimate and USR are the eventual driver of the cost of any work and any deviation/over-estimation leads to extra cost. Further, the Department paid lead of 225 km on sand, thereby extending unintended benefit to the Contractor, despite being aware of the fact that the Contractor was not utilising the Narmada sand as per the contract, but was instead utilising the sand manufactured at work site.

#### **2.2.10 Extra cost due to inclusion of inadmissible lead of materials**

**Inadmissible leads of materials provided separately in the work of complete item of Cement Concrete lining in canal with Paver machine led to extra cost of ₹ 10.75 crore.**

As per para 2.028 of the MPWD Manual, an officer according the technical sanction to an estimate is responsible for incorporating all the items required for inclusion in the estimate.

The Department awarded five works to Contractors<sup>66</sup> in four different divisions under the CE, Ganga Basin, Rewa as detailed in **Appendix 2.16** and **Appendix 2.17**. The works included item of Cement Concrete (CC) lining of M-15 grade with Paver machine in canal bed, side slopes and curvature. The estimates of these works were prepared as per the rates given in Unified Schedule of Rates (USR) 2009 which were approved by the CE. The USR 2009 provides item of plain CC lining of M-15 grade with Paver machine in canal which includes all leads and lifts of all materials.

Audit scrutiny of the records of the Executive Engineers (EE) of the four divisions<sup>67</sup> revealed that although the rates given in USR 2009 for CC lining of M-15 grade with Paver machine are inclusive of all leads and lifts for cement, sand, metal etc., separate lead on all materials was considered while

<sup>65</sup> As per Chapter 29 of USR, 2009; Lead for transportation of metal for a distance up to five km is ₹ 109.20 per cum. Rates as percentage of metal transportation rate per cum = ₹ 98.28 (90 per cent of ₹ 109.20 for sand).

<sup>66</sup> M/s CMM Infraprojects Ltd., M/s ANS Construction Ltd., M/s Sarla Mantena MP Joint Venture and M/s S.N. Pandey Constructions (I) Pvt. Ltd.

<sup>67</sup> EE, Lower Purwa Canal Dn. No.2, WRD, Satna (December 2017), EE, Upper Purwa Canal Dn. WRD, Rewa (June 2017), EE, Mahan Canal Division, Sidhi (July 2017), EE, Lower Sihawal Canal Division, Churhat, District Sidhi (August 2017).

preparing estimates and deriving rates for the work of CC lining with Paver machine in bed, side slope and curvature. Accordingly, the Contractor was paid for this item. Thus, due to inclusion of inadmissible lead of various materials in the CC lining work of canal with Paver machine, an extra cost of ₹ 10.75 crore was incurred as detailed in **Appendix 2.16**.

The Government stated (December 2019) that the works were awarded to bidders to open competitive bids and every bidder was free to quote his rates for all items of works. The estimate and clubbing statements are not provided to any bidder and are not the part of the tender document. It was further stated that the works had been executed as per item mentioned in G-schedule of the agreement and payment made to the contractor on their quoted rates for complete item of work.

The reply is not acceptable because the rates provided in the USR 2009 for the work of CC lining with M-15 grade concrete with Paver machine, are inclusive of all leads and lifts of all materials and hence, as specified in USR, payment of the same is not admissible. The EE, SDO and Sub Engineer, who prepared the estimate and the CE, who granted technical sanction to the estimate are responsible for preparation of inflated estimate and consequent additional expenditure of ₹ 10.75 crore.

**Bhopal**  
The 7 July 2020

  
**(BIJIT KUMAR MUKHERJEE)**  
Accountant General (Audit-II)  
Madhya Pradesh

**Countersigned**

**New Delhi**  
The 15 July 2020

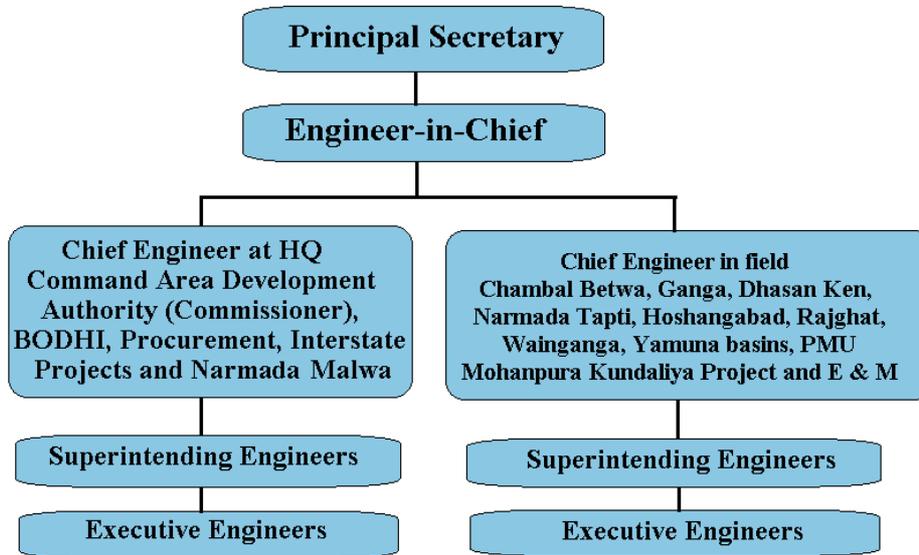
  
**(RAJIV MEHRISHI)**  
Comptroller and Auditor General of India



# Appendices



**Appendix 2.1**  
**Organisation Set-up of the Water Resources Department**  
(Reference: Paragraph 2.1.2, Page No. 9)



**Appendix 2.2**

**Statement showing particulars of Turnkey Contract audited in Thematic Audit**

**(Reference: Paragraph 2.1.3, Page no. 9)**

**(₹ in crore)**

Sl. No.	Name of the Division	Name of the work (Agreement Number)	Name of the contractor	Date of work order	PAC	Contract Amount	Stipulated Period	Status of the work	Total expenditure
<b>Irrigation Projects fully awarded on Turnkey basis (Selected for overall analysis)</b>									
1	PMU, Shamgarh	Garoth Micro Irrigation Project (08/2016-17)	Offshore Infrastructures Ltd. Mumbai	11.07.2016	377.75	354.96	30 months including rainy season i.e. 10.01.2019	Ongoing	316.28
2	PMU, Shamgarh	Bhanpura Canal Unit-I (05/2013-14)	Sadbhav Engineering Ltd. Ahmedabad	31.01.2014	107.51	117.50	30 months including rainy season i.e. 30.07.2016	Incomplete final on 31.03.2017	100.02
3	PMU, Shamgarh	Bhanpura Canal Unit-II (02/2015-16)	Phaloudi Construction & Infrastructure Pvt. Ltd., Indore	04.12.2015	63.99	72.24	30 months including rainy season i.e. 03.06.2018	Completed on 30.05.2017	81.49
4	EE, Sip-Kolar Link Project, Rehti	Sip-Kolar Link Project (25/2011-12)	M/s Costal Project Ltd., Hyderabad	02.01.2012	93.70	115.50	30 months including rainy season i.e. 01.07.2014	Ongoing	111.61
<b>Total (A)</b>					<b>642.95</b>	<b>660.20</b>			<b>609.40</b>
<b>Turnkey Contracts selected through sampling for Thematic Audit</b>									
1	EE Bansujara Project Canal Dn., Baldevgarh, Tikamgarh	LBC Bansujara Lift (01/2016-17)	M/s L & T Ltd., Chennai	20.07.2016	829.72	896.50	36 months including rainy season i.e. 10.01.2019	Ongoing	826.95
2	PMU, Mohanpura Kundaliya Project, Rajgarh	LBC Mohanpura (02/2014-15)	M/S Larsen & Toubro	05.02.2015	534.15	486.72	36 months including rainy season i.e. 04.02.2018	Ongoing	465.83
3	PMU, Mohanpura Kundaliya Project, Rajgarh	RBC Mohanpura (01/2016-17)	M/s Offshore Infrastructure Ltd.	13.06.2016	363.00	491.52	36 months including rainy season i.e. 12.06.2019	Ongoing	459.21

(₹ in crore)

Sl. No.	Name of the Division	Name of the work (Agreement Number)	Name of the contractor	Date of work order	PAC	Contract Amount	Stipulated Period	Status of the work	Total expenditure
4	EE Keoti Canal Dn., Rewa	Construction of Bahuti Canal Project (16/2013-14)	M/s Sadbhav Engineering Ltd., Ahmedabad	30.09.2013	439.09	428.00	36 months including rainy season i.e. 29.09.2016	Ongoing	318.58
5	PMU, Mohanpura Kundaliya Project, Rajgarh	Kundaliya Major Multipurpose Project (01/2015-16)	M/s Dilip Buildcon Ltd., Bhopal	05.05.2015	313.40	270	48 months including rainy season i.e. 04.05.2019	Ongoing	265.08
6	EE Teonthar Canal Dn., Rewa	Construction of Tames Main Canal RD 9.60 to 69.50 (03/2013-14)	M/s HES Infra Pvt. Ltd., Hyderabad	01.10.2013	228.89	225.79	36 months including rainy season i.e. 30.09.2016	Ongoing	163.56
7	EE Bansujara Project Canal Dn., Baldevgarh, Tikamgarh	LBC Bansujara (03/2014-15)	M/s A.N.S. Construction Ltd., New Delhi	17.12.2014	336.74	386.54	36 months including rainy season i.e. 16.12.2017	Foreclosed on 02.03.2016 by Department	144.16
8	EE Teonthar Canal Dn., Rewa	Teonthar Lift Canal from 0 to 23 km (02/2011-12)	M/s HES Infra Pvt. Ltd., Hyderabad	05.11.2011	96.32	94.84	15 months including rainy seasons i.e. 04.02.2013	Completed on 05.02.2018	94.84
9	EE, Mahan Canal Dn., Sidhi	Mahan Main Canal from RD 28.56 to 57.05 km (02/2010-11)	M/s HES Infra Pvt. Ltd., Hyderabad	07.03.2011	102.73	90.89	22 months including rainy season i.e. 06.01.2013	Ongoing	88.32
10	EE, Barna LBC Dn., Bari	Structures of Main Canal and LBC (05/2013-14)	M/s Monte Carlo Ltd., Ahmedabad	08.08.2013	72.00	82.37	36 months including rainy, Kharif and Rabi Season i.e. 07.08.2016	Completed on 06.12.2016	82.37
11	EE, WRD Dn., Dindori	Earthwork, Structure and CC lining in distributaries minor and sub minors of Bilgon Medium Project (09/2015-16)	M/s Sarthi Construction, Gwalior	11.12.2015	45.04	53.10	24 months including rainy season i.e. 10.12.2017	Completed on 24.05.2018	60.48
12	EE, Barna LBC Dn., Bari	Construction on turnkey basis for creating additional 10,000 ha command area from Barna LBC system (06/2015-16)	M/s Sarthi Construction, Gwalior	22.06.2015	61.22	69.75	36 months including rainy, Kharif and Rabi Season i.e. 21.06.2018	Ongoing	57.25

(₹ in crore)

Sl. No.	Name of the Division	Name of the work (Agreement Number)	Name of the contractor	Date of work order	PAC	Contract Amount	Stipulated Period	Status of the work	Total expenditure
13	EE, Bansujara Dam Dn., Tikamgarh	Harpura Irrigation Project (01/2012-13)	M/s A.N.S Construction Ltd., New Delhi	11.06.2012	34.53	37.95	18 Months including rainy season i.e. 10.12.2013	Completed on 25.06.2017	37.95
14	EE, Tilwara LBC Dn., Keolari, Distt. Seoni	RD No. 15.00 km to RD no. 31.62 km with minor and sub-minor (04/2013-14)	M/s H.E.S. Infra Pvt. Ltd. & Mantena Construction Pvt. Ltd. Hyderabad	05.11.2013	33.58	33.10	18 Months including rainy season i.e. 04.05.2015	Terminated on 14.08.2017	25.76
15	EE, WRD Dn., Sehore	Canal Network of Ghoghara Complex Medium Project (72/2011-12)	M/s K.E.C. International Ltd., Mumbai	30.12.2011	26.52	25.99	17 Months including rainy season i.e. 29.05.2013	Terminated on 08.01.2015	8.15
16	EE, Sanjay Sagar Bah River Dn., Ganjbasoda	Construction of Dist., minors and sub-minors from 16.00 to 17.00 km and 22.50 to 24.00 km of Main Canal excluding Main Canal of Sagad Medium Project (07/2011-12)	M/s K.E.C. International Ltd., Mumbai	04.05.2011	7.52	7.70	18 Months including rainy season i.e. 03.11.2012	Ongoing	7.70
17	EE, Sanjay Sagar Bah River Dn., Ganjbasoda	Construction of Main Canal from 8.20 to 12.30 km command its distributaries, minor sub-minor of Sanjay Sagar Medium Project (03/2011-12)	M/s K.E.C. International Ltd., Mumbai	04.05.2011	7.42	7.65	18 Months including rainy season i.e. 03.11.2012	Completed on 10.05.2014	7.65
18	EE, Sanjay Sagar Bah River Dn., Ganjbasoda	Construction of Main Canal from 4.50 km to 8.20 km and its distributaries, minors and sub-minors of Sanjay Sagar Medium Project (02/2011-12)	M/s K.E.C. International Ltd., Mumbai	04.05.2011	6.45	6.55	18 Months including rainy season i.e. 03.11.2012	Completed on 05.05.2014	6.55
<b>Total (B)</b>					<b>3,538.32</b>	<b>3,694.96</b>			<b>3,120.39</b>
<b>Grand Total (A+B)</b>					<b>4,181.27</b>	<b>4,355.16</b>			<b>3,729.79</b>

## Appendix 2.3

## Statement showing undue benefit to Contractor due to short receipt of Performance Security

(Reference: Paragraph 2.1.4.1, Page No. 11)

(₹ in crore)

Sl. No.	Name of Division	Agreement Number	Contract Amount	Performance Security		
				Required, i.e. five per cent of Contract Amount	As obtained by Department	Short Receipt
1	EE, Sip-Kolar Link Project Division Nasrullaganj at Camp-Rehti	25/2011-12	115.50	5.78	1.00	4.78
2	PA, Shamgarh Suwasra Project Implementation	05/2013-14	117.50	5.88	1.00	4.88
3	Unit, Shamgarh, Distt. Mandsaur	08/2016-17	354.96	17.75	7.10	10.35
4	EE, Keoti Canal Division, Rewa	16/2012-13	428.00	21.40	1.00	20.40
5	EE, Barna LBC Dn., Bari	05/2013-14	82.37	4.12	1.00	3.12
6		06/2015-16	69.75	3.49	1.00	2.49
7	EE, WR Dn., Sehore	72/2011-12	25.99	1.30	1.00	0.30
8	EE, Teonthar Canal Dn., Rewa	02/2011-12	94.84	4.74	1.00	3.74
9		03/2013-14	225.79	11.29	1.00	10.29
10	EE, Bansujara Canal Dn., Tikamgarh	01/2016-17	896.50	44.83	17.93	26.90
11	PMU, Mohanpura Kundaliya Project, Rajgarh	01/2016-17	491.52	24.58	9.83	14.75
12	EE, Tilwara LBC Dn., Keolari	04/2013-14	33.10	1.66	1.00	0.66
<b>Total</b>				<b>146.82</b>	<b>43.86</b>	<b>102.66</b>

### Appendix 2.4

#### Statement showing details of payment of Price Adjustment

(Reference: Paragraph 2.1.4.1, Page No. 12)

(₹ in crore)

Sl. No.	Name of the division	Name of work	Agreement No.	Payment of Price Adjustment
1	PMU, Mohanpura Kundaliya Project, Rajgarh	Mohanpura LBC Canal Lift Irrigation System	02/2014-15	0.73
2		Mohanpura RBC Canal Lift Irrigation System	01/2016-17	35.55
3		Kundaliya Major Multipurpose project, Rajgarh	01/2015-16	2.27
4	EE Bansujara Project Canal Division, Baldevgarh, Tikamgarh	Bansujara Project Left Bank Main Canal for micro irrigation of the CCA 75000 ha	01/2016-17	50.25
5		LBC system for Bansujara Project to irrigate 60000ha	03/2014-15	-2.8
6	PA, Shamgarh Suwasra Project Implementation Unit, Shamgarh, District, Mandsaur	Bhanpura Canal Unit-II	02/2015-16	3.46
7		Garoth micro irrigation project	08/2016-17	35.07
<b>Total</b>				<b>124.53</b>

## Appendix 2.5

## Statement showing details of extra cost paid to the contractor

Reference: Paragraph 2.1.4.2, Page No. 14)

Name of the Division	Agreement No.	Item of work	Quantity	Unit	Rate Paid (₹)	Payable Rate (₹)	Extra Rate (₹)	Extra Cost (₹)	Reason for Inflated estimate
1	2	3	4	5	6	7	8 = 6-7	9 = 4 × 8	10
Project Administrator, Mohanpura Kundaliya Project Monitoring Unit, Rajgarh	02/2014-15	Addition of 15 per cent extra rate for erection and commissioning in Radial Gate	1,718.63	MT	93,085.70	79,122.85	13,962.85	2,39,96,973	As per USR, rates of Radial Crest Gates are inclusive of Design/Drawing, fabrication, supply and erection and additionally not payable.
		Addition of extra rate for Shuttering in CC work	4,50,061.48	Cum	50.83	0	50.83	2,28,76,625	As per USR, rate for shuttering was inclusive in the cost of cement concrete work.
EE, Bansujara Canal Division, Baldevgarh, Tikamgarh	03/2014-15	Earthwork in canal and dam with all leads and lifts	9,63,056.00	Cum	46.25	0	46.25	4,45,41,340	As per USR, rates for earthwork are inclusive of excavation, carting of excavated soil and laying in the layers. The excavation was to be treated as quarry. In this case, excavation of utilizable soil which was used in earthwork was paid separately.
EE, Sip Kolar Link Project Camp at Rehti	25/2011-12	Tunnel work	270.00	m	95,419.61	25,147.08	70,272.53	1,89,73,583	Before the NIT, cost of the tunnel was increased (June 2011) by ₹ 18.99 crore on the plea that half of the tunnel passes through red bole and fractured rock area, and require support system. After award of work, it was decided (May 2013) to reduce the length of tunnel by 270 m on the same plea. But, the rate of tunnel per m was not regulated in the estimate.
<b>Total</b>								<b>11,03,88,521</b>	

**Appendix 2.6**

**Statement showing details of NIT advertised in Newspapers as per Director, Public Relation**

**(Reference: Paragraph 2.1.4.3(I), Page No. 15)**

Sl. No.	System Tender No.	Name of work	NIT advertised in Newspapers as claimed by the Department		Newspaper cutting produced to Audit
			National level	State level	
1	5252	Construction of Garoth pressurised Micro-Irrigation system for 21400 ha	6	4	1
2	5069	Mohanpura Right Bank Pressurised Irrigation Project	5	5	1
3	5096 & 5283	Construction of Tunnel of Bhanpura Canal	6	8	0
4	756	Construction of Main Canal from 16.00 km to 17.00 km and 22.50 km to 24.00 km and its distributaries, minor and sub-minor of Sanjay Sagar Bah Medium Project	8	7	0
5	317, 901, 2408, 2986, 3681	Construction of Bhanpura Main Canal distributary, minor and sub-minor of Bhanpura Canal project for irrigation of CCA 12500 ha including running maintenance and testing of whole canal system for one year together with defect liability period of 36 month on turnkey basis	12	5	1
6	1374	Sip Kolar Link Project	0	2	2
7	9065	Construction of RD No. 15.00 km to RD no. 31.62 km with minor and sub-minor and masonry lining work from turnkey system Ag. No. 4/DL of 2013-14 dated 03.11.2013	5	8	0
8	1461	Construction of Main Canal, distributary, minor and sub minor of Ghoghara complex medium project in Sehore District.	9	7	0
9	2527	Planning, Design-drawing, estimation and construction on turnkey basis for creating additional 10,000 ha command area from Barna LBC system	5	5	0
10	1783	Harpura Irrigation Project	7	9	0
11	1116	Construction of LBC system from Bansujara dam including work required for excavation, earthwork, lining and const. of structures of Main Canal, distributaries, minors and sub minors to irrigate 60000 ha.	8	0	0
12	5093	Supplying of water by constructing balance Reservoir/distribution chamber at RD 30900 m of Bansujara Project LBMC	5	5	0
13	3607	Construction of earthwork structure and cast in situ CC lining in distributaries minor and sub minors of Disnet work of Bilgon Medium Project	8	10	0
14	4503	Construction of Tames Main Canal RD 9.60 km to 69.50 km, Mahan Distributary and Chilla Branch Canal and their distribution network	8	9	0
15	4985	Construction of Bahuti Canal Project	7	7	0
16	4240	Design-Drawing, Estimation and Construction on Turnkey Basis of Barna Project Common main Canal's and Left Bank Main Canal's hydraulic structures in 27 nos.	4	10	0
17	752	Construction of Main Canal from 8.20 km to 12.30 km command its distributaries, minor sub-minor	8	8	2
18	751	Construction of Main Canal from 4.50 km to 8.20 km and its distributaries, minor sub-minor	8	8	2
<b>Total</b>			<b>119</b>	<b>117</b>	<b>9</b>

## Appendix 2.7

### Status of work of Sip-Kolar Link Project

(Reference: Paragraph 2.1.6.1(II), Page No. 22)

(Quantity in cum)

Sl. No.	Particulars	Total quantity	Quantity executed up to date	Quantity balance up to date	Executed quantity in percentage	Balance quantity percentage
<b>1</b>	<b>Sip weir</b>					
	Concrete work	58750	56700	2050	96.5	3.5
<b>2</b>	<b>Kaldev weir</b>					
	Earth work (Earthen Dam)	40000	32500	7500	81.3	18.7
	Concrete work	13100	11300	1800	86.3	13.7
<b>3</b>	<b>Ghorapachar wier</b>					
	Concrete work	12075	12015	60	99.5	0.5
<b>4</b>	<b>Canal &amp; Structure</b>					
	Earth work	220000	216700	3300	98.5	1.5
	Concrete work	37500	32450	5050	86.5	13.5
<b>5</b>	<b>Tunnel work (length in meter)</b>					
	Driving work	5670	5670	0	100.0	0.0
	Lining work					
	(a) Gantry Lining	5643	5001	642	88.6	11.4
	(b) Bed Lining	5670	2890	2780	51.0	49.0

**Appendix 2.8**

**Statement showing the details of Excess payments due to change in the scope of work and payment for work not done**

**(Reference: Paragraph 2.1.6.9, Page No. 28)**

Sl. No.	Name of work (Agreement No.)	Description of work not executed	Reasons	Amount (₹ in crore)
1	Teonthar Lift Canal, (02/2011-12)	Balance earthwork of Main Canal, structures and lining of existing minors, supplementary lifts, sub-minors and renovation of Rajapur Canal	Not completed by the contractor.	7.75
2	Harpura Canal, (01/2012-13)	Distributaries and minors	Due to non-providing the land and refusal by the farmers.	1.90
3	Development of additional command area of 10,000 ha, (06/2015-16)	Service road/ Inspection path	Deletion by the contractor.	1.23
4	Upper Tilwara LBC (04/2013-14)	The Contractor had to develop 4680.528 ha of command area. But he developed 2381 ha of command area only	The work was terminated due to slow progress of work and the payment was not regulated accordingly.	8.92 (25.76-16.84)
			<b>Total</b>	<b>19.80</b>

### Appendix 2.9

Statement showing the details of non-formation of Squad Team and Field Laboratories

(Reference: Paragraph 2.1.7.2, Page No. 34)

Sl. No.	Name of the Division	Agreement No.	Squad Team	Field Lab
1	PA, PMU, Shamgarh	05/2013-14	No	No
2		02/2015-16	No	No
3		08/2016-17	No	No
4	EE, Sip-Kolar Link Project, Rehti, Sehore	25/2011-12	No	No
5	EE, Mahan Canal Dn., Sidhi	02/2010-11	No	No
6	EE, WR Dn., Sehore	72/2011-12	No	No
7	EE, WR Dn., Dindori	09/2015-16	No	No
8	EE, Teonthar Canal Dn., Rewa	02/2011-12	No	No
9		03/2013-14	No	No
10	EE, Bansujara Canal Dn. Baldevgrah,	01/2016-17	No	Yes
11	Tikamgarh	03/2014-15	No	Yes
12	EE, Bansujara Dam Dn. Tikamgarh	01/2012-13	No	Yes
13	EE, Sanjay Sagar Bah River Project, Ganjbasoda	02/2011-12	No	No
14		03/2011-12	No	No
15		07/2011-12	No	No
16	EE Barna LBC Dn. Bari, Raisen	06/2015-16	No	Yes
17		05/2013-14	No	Yes
18	PMU, Mohanpura and Kundaliya Project, Rajgarh	02/2014-15	No	Yes
19		01/2016-17	No	Yes
20		01/2015-16	No	Yes
21	EE, Keoti Canal Dn. Rewa	16/2013-14	No	Yes
22	EE, Tilwara LBC Dn., Keolari	04/2013-14	No	Yes

**Appendix 2.10**

**Statement showing details of Short Realisation of charges**

**(Reference: Paragraph 2.2.2, Page No. 39)**

(Amount in ₹)

Sl. No.	Details	Particulars of calculation	Hata-Fatehpur-Silpuri-Darguwa two lane road (Case-I)	765 KV double circuit Jabalpur-poling Urai transmission line (Case-II)
1	Total estimated Project cost for CA (without fixed charges)	-	82,86,000	1,68,85,000
<b>Amount actually charged from User Agency:</b>				
2	One hectare project cost for CA	Total cost/total land affected: For case 1: ₹ 82,86,000/20.720 ha = ₹ 3,99,903 For case 2: ₹ 1,68,85,000/41.432 ha = ₹ 4,07,535	3,99,903	-
3	Monitoring and Evaluation	20 per cent of one ha estimated cost i.e. Sl. No.2	79,981	81,507
4	Aastha-Mulak	12 per cent of one ha estimated cost i.e. Sl.No.2	47,988	48,904
5	Human Resource Development	Three per cent of total estimated cost i.e. Sl. No 2	11,997	12,226
6	Supervision Charge	At the rate of 10 per cent of total project cost including Sl. No 3, 4 and 5 i.e. for case 1: 10 per cent of (82,86,000 + 79,981 + 47,988+ 11,997) = 8,42,597 i.e. for case 2: 10 per cent of (1,68,85,000 + 81,507+48,904+12,226) = 17,02,764	8,42,597	-
7	Total amount actually charged from user agency	Sum of Sl. No. 1, 3, 4, 5 and 6	92,68,563	1,87,30,401
<b>Amount to be charged from User Agency as per audit:</b>				
8	Monitoring and Evaluation	20 per cent of total estimated cost i.e. Sl. No. 1	16,57,200	33,77,000
9	Aastha-Mulak	12 per cent of total estimated cost i.e. Sl. No. 1	9,94,320	20,26,200
10	Human Resource Development	Three per cent of total estimated cost i.e. Sl. No. 1	2,48,580	5,06,550
11	Supervision Charge	At the rate of 10 per cent of total project cost including Monitoring and Evaluation, Aastha-Mulak, HRD charges	11,18,610	22,79,475
12	Total chargeable amount	Sum of Sl. No. 1, 8, 9, 10 and 11	1,23,04,710	2,50,74,225
<b>Short Realisation = Sl. No. 12 - Sl. No.7</b>			30,36,147	63,43,824
<b>Total Short Realisation</b>			<b>93,79,971</b>	

## Appendix 2.11

## Statement showing non-execution of Dowel Bars in Cement Concrete Pavement

(Reference: Paragraph 2.2.4, Page No. 42)

Sl. No.	Name of road (approved thickness of Cement Concert Pavement)	Provisioned CC Length (In Km)	Scheduled Quantity of Dowel Bar (In MT)	Reach wise execution (In meter)	CC executed in Road length (In Km)	Quantity of M- 40 grade CC Executed (In cum)
1.	Bhiraopur–Jeeraveh-Nipaniya-Hanuman mandir road (250 mm)	0.400	0.287	0-260	0.435	243.75
				260-360		93.75
				360-435		70.312
2.	Luchgaoun to Umariya road (200 mm)	1.420	1.176	0-1360	1.400	1,020.00
				1360-1400		30
3.	Umariya to Paapan tiraha (200 mm)	1.000	1.272	0-1000	1.100	750
				1000-1100		75
<b>Total</b>		<b>2.820</b>	<b>2.735</b>		<b>2.935</b>	<b>2,282.812</b>

**Appendix 2.12**

**Statement showing extra cost due to application of incorrect rates for Earth Work**

(Reference: Paragraph 2.2.7, Page No. 49)

(Quantities in cum and Amount in ₹)

Clubbed items as per schedule	Clubbed rate as per estimate			Clubbed rate payable			Difference in Unit Rate
	Quantity	Rate	Amount	Quantity	Rate	Amount	
<b>Agreement No.5 /2014-15</b>							
Earth work of bund in hearting or casing with approved soil, including dressing, breaking clods, layers of 15 cm thickness, cutting and finishing U/S and D/S slopes of Bunds	49,636.26	54	26,80,358.04	24,636.26	54	13,30,358.04	
(i) All lifts and leads beyond 0.50 km to two km of all materials and all other charges but excluding watering and compaction							
(ii) All lifts and leads beyond two km of all materials and all other charges but excluding watering and compaction				25,000	64	16,00,000.00	
Extra lead beyond two km	25,000	72.52	18,13,000				
Compaction of earth work (excluding watering)	49,636.26	8	3,97,090.08	49,636.26	8	3,97,090.08	
Watering earth work with lead up to 100 m	49,636.26	13	6,45,271.38	49,636.26	13	6,45,271.38	
Lead of water for earth one kilometer	49,636.26	4.5	2,23,363.17	49,636.26	4.5	2,23,363.17	
<b>Total</b>	<b>49,636.26</b>		<b>57,59,082.67</b>	<b>49,636.26</b>		<b>41,96,083</b>	
<b>unit rate</b>		<b>116.03</b>			<b>84.54</b>		
<b>Rate including Tender premium 14.23 per cent above</b>		<b>132.54</b>			<b>96.57</b>		<b>35.97</b>
<b>Executed quantity</b>							<b>51,120.84</b>
<b>(A) Excess payment for the executed quantity</b>							<b>18,38,817</b>
<b>Agreement No.1 /2015-16</b>							
Earth work of bund in hearting or casing with approved soil, including dressing, breaking clods, layers of 15 cm thickness, cutting and finishing U/S and D/S slopes of Bunds	1,88,651	54	1,01,87,154	25,503	54	13,77,162	
(i) All lifts and leads beyond 0.50 km to two km of all materials and all other charges but excluding watering and compaction							
(ii) All lifts and leads beyond two km of all materials and all other charges but excluding watering and compaction				1,63,148	64	1,04,41,472	
Extra lead beyond two km	1,63,148	72.52	1,18,31,493				
Compaction of earth work (excluding watering)	1,88,651	8	15,09,208	1,88,651	8	15,09,208	
Watering earth work with lead up to 100 m	1,88,651	13	24,52,463	1,88,651	13	24,52,463	
Lead of water for earth two kilometre	188,651	9	16,97,859	1,88,651	9	16,97,859	
<b>Total</b>	<b>1,88,651</b>		<b>2,76,78,177</b>	<b>1,88,651</b>		<b>1,74,78,164</b>	
<b>Unit Rate</b>		<b>146.72</b>			<b>92.65</b>		
<b>Rate including Tender premium 10.00 per cent above</b>		<b>161.39</b>			<b>101.91</b>		<b>59.47</b>
<b>Executed quantity</b>							<b>1,67,632.59</b>
<b>(B) Excess payment for the executed quantity</b>							<b>99,69,110.13</b>
<b>Total Excess payment (A + B)</b>							<b>1,18,07,927</b>

**Appendix 2.13**  
**Statement showing project-wise details of the works**  
**(Reference: Paragraph 2.2.8, Page No. 50)**

<b>Name of the Project</b>	<b>Contractor</b>	<b>Agreement No.</b>	<b>PAC</b>	<b>Contract amount</b>	<b>Payment made</b>
Sagad Medium Project	M/s Phaludi constructions & Infrastructure Pvt. Ltd.	09/2013-14	₹ 25.01 crore	₹ 27.48 crore (i.e. 9.88 per cent above PAC)	₹ 23.09 crore paid vide 29 <sup>th</sup> Running Bill
Ukayla Canal Project	M/s Harsiddhi Construction co. Jhansi	7/2014-15	₹ 6.51 crore	₹ 7.49 crore (i.e. 15 per cent above PAC)	₹ 6.12 crore paid vide 22 <sup>nd</sup> Running Bill
Balrampur Canal Project	M/s K N Narang, Bhopal	03/2014-15	₹ 6.36 Crore	₹ 7.31 crore (i.e. 14.90 per cent above PAC)	₹ 5.10 crore paid vide 35 <sup>th</sup> Running Bill
Datuni Tank Project (Canal Work)	M/s PC & IPL Indore (Joint Venture of M/s Phaloudi Construction & Infrastructure PVT Ltd Indore and Krupanidhi construction Vadodara	13/2013-14	₹ 38.38 crore	₹ 45.62 crore (i.e. 18.89 per cent above PAC)	₹ 46.98 crore paid vide 42 <sup>nd</sup> and Final Bill
Minor Canal Work, Datuni Tank Project (Phase II)	M/s Rajendra Singh Chandrawat	05/2014-15	₹ 7.30 crore	₹ 8.34 crore (i.e. 14.23 per cent above PAC)	₹ 5.89 crore paid vide 10 <sup>th</sup> & Final Bill

**Appendix 2.14**

**Statement showing Clubbed rate paid and Clubbed rate payable**

**(Reference: Paragraph 2.2.8, Page No. 50)**

(Quantities in cum and amount in ₹)

USR Item no.	Item	Quantity	Rate paid	Amount	Rate payable	Amount	Difference in unit rate
<b>Sagad Medium Project, Agreement no. 9/2013-14</b>							
<b>Canal Bed</b>							
2512 (c)	Nominal Mix M-15	1,827.18	2,646.00	48,34,718.28	-	-	3,375.26 - 3,072.26 = 303.00
2512 (a) (i)	Design Mix M-10	1,827.18	-	-	2,302.00	42,06,168.36	
2531 (ii)	Extra for 20 mm metal	1,827.18	93.00	1,69,927.74	-	-	
2531 (i)	Extra for 20 mm metal	1,827.18	-	-	134.00	2,44,842.12	
725 (xi)	Extra for black trap basalt	1,827.18	33.80	61,758.68	33.80	61,758.68	
2902	Lead for metal	1,553.10	250.20	3,88,585.62	250.20	3,88,585.62	
2902	Lead for sand	785.68	791.28	6,21,692.87	791.28	6,21,692.87	
2902	Lead for cement	401.99	225.18	90,520.11	225.18	90,520.11	
		1,827.18		61,67,203.30		56,13,567.76	
Clubbed Rate			61,67,203.30/1,827.18 = 3,375.26		56,13,568.16/1,827.18 = 3,072.26		
Executed Quantity = 1,737.193 cum							
<b>Extra Cost (A) = 1,737.193 × 303 = 5,26,370 + 9.88 per cent Tender Premium = ₹ 5,78,375</b>							
<b>Canal Side Slopes</b>							
2512 (d)	Nominal Mix M-15	5,012.57	3,175.00	1,59,14,909.75	-	-	3,904.26 - 3,446.26 = 458
2512 (a) (ii)	Design Mix M-10	5,012.57	-	-	2,676.00	1,34,13,637.32	
2531 (ii)	Extra for 20 mm metal	5,012.57	93.00	4,66,169.01	-	-	
2531 (i)	Extra for 20 mm metal	5,012.57	-	-	134.00	6,71,684.4	
725 (xi)	Extra for black trap basalt	5,012.57	33.80	1,69,424.87	33.80	1,69,424.9	
2902	Lead for metal	4,260.69	250.20	10,66,024.64	250.20	10,66,024.6	
2902	Lead for sand	2,155.41	791.28	17,05,532.82	791.28	17,05,532.8	
2902	Lead for cement	1,102.76	225.18	2,48,319.50	225.18	2,48,319.5	
		5,012.57		1,95,70,380.59		1,72,74,623.5	
Clubbed Rate			1,95,70,380.59/5,012.57 = 3,904.26		1,72,74,623.5/5,012.57 = 3,446.26		
Executed Quantity = 5,084.915							
<b>Extra Cost (B) = 5,084.915 × 458 = 23,28,891.07 + 9.88 per cent Tender Premium = ₹ 25,58,986</b>							
<b>Balrampur Canal Project, Agreement no. 03/2014-15</b>							
<b>Canal Bed</b>							
2512 (c)	Nominal Mix 1:2:4	749.79	2,646.00	19,83,944.34	-	-	3,414.93 - 3,111.93 = 303
2512 (a) (i)	Design Mix M-10	749.79	-	-	2,302.00	17,26,016.6	
2531 (ii)	Extra for 20 mm metal	749.79	93.00	69,730.47	-	-	
2531 (i)	Extra for 20 mm	749.79	-	-	134.00	1,00,471.9	

(Quantities in cum and amount in ₹)

USR Item no.	Item	Quantity	Rate paid	Amount	Rate payable	Amount	Difference in unit rate
	metal						
2902	Lead for metal	674.81	273.70	1,84,695.50	273.70	1,84,695.5	
2902	Lead for sand	337.40	885.78	2,98,862.17	885.78	2,98,862.2	
2902	Lead for cement	115.46	201.33	23,245.56	201.33	23,245.6	
		749.79		25,60,478.04		23,33,291.7	
Clubbed Rate				25,60,478.04/749.79 = 3,414.92		23,33,291.7/749.79 = 3,111.92	
Executed Quantity = 286.561 cum							
<b>Extra Cost (C) = 286.561 × 303 = 86,827.98 + 14.90 per cent Tender Premium) = ₹ 99,765</b>							
<b>Canal Side Slopes</b>							
2512(d)	Nominal Mix M-15	1,197.55	3,175.00	38,02,221.25	-	-	3,943.93 -3,485.93 = 458
2512(a) (ii)	Design Mix M-10	1,197.55	-	-	2,676.00	32,04,643.8	
2531(ii)	Extra for 20 mm metal	1,197.55	93.00	1,11,372.15	-	-	
2531(i)	Extra for 20 mm metal	1,197.55	-	-	134.00	1,60,471.7	
2902	Lead for metal	1,077.79	273.70	2,94,991.12	273.70	2,94,991.1	
2902	Lead for sand	538.89	885.78	4,77,337.98	885.78	4,77,338.0	
2902	Lead for cement	184.42	201.33	37,129.28	201.33	37,129.3	
		1,197.55		47,23,051.79		41,74,573.9	
Clubbed Rate				47,23,051.79/1,197.55 = 3,943.92		41,74,573.9/1,197.55 = 3,485.92	
Executed Quantity = 1,088.015							
<b>Extra Cost (D) = 1,088.015 × 458 = 4,98,310.87 + 14.90 per cent Tender Premium = ₹ 5,72,559</b>							
<b>Ukayala Canal Project, Agreement no. 07/2014-15</b>							
<b>Canal Bed</b>							
2512(c)	Nominal Mix CC 1:2:4	557.78	2,646.00	14,75,885.88	-	-	3,414.93 -3,111.93 = 303
2512(a) (i)	Design Mix M-10	557.78	-	-	2,302.00	12,84,009.6	
2531(ii)	Extra for 20 mm metal	557.78	93.00	51,873.54	-	-	
2531(i)	Extra for 20 mm metal	557.78	-	-	134.00	74,742.5	
2902	Lead for metal	502.00	273.70	1,37,397.40	273.70	1,37,397.4	
2902	Lead for sand	251.00	885.78	2,22,330.78	885.78	2,22,330.8	
2902	Lead for cement	85.89	201.33	17,292.23	201.33	17,292.2	
		557.78		19,04,779.83		17,35,772.5	
Clubbed Rate				19,04,779.83/557.78 = 3,414.93		17,35,772.5/557.78 = 3,111.93	
Executed Quantity = 540.08 cum							
<b>Extra Cost (E) = 540.08 × 303 = 1,63,644.24 + 15 per cent Tender Premium = ₹ 1,88,191</b>							
<b>Canal Side Slopes</b>							
2512(d)	Nominal Mix M-15	2,215.19	3,175.00	70,33,228.25	-	-	3,943.93 - 3,485.93 = 458
2512(a) (ii)	Design Mix M-10	2,215.19	-	-	2,676.00	59,27,848.44	
2531(ii)	Extra for 20 mm metal	2,215.19	93.00	2,06,012.67	-	-	

(Quantities in cum and amount in ₹)

USR Item no.	Item	Quantity	Rate paid	Amount	Rate payable	Amount	Difference in unit rate
2531(i)	Extra for 20 mm metal	2,215.19	-	-	134.00	2,96,835.46	
2902	Lead for metal	1,993.67	273.70	5,45,667.48	273.70	5,45,667.00	
2902	Lead for sand	996.83	885.78	8,82,972.08	885.78	8,82,972.00	
2902	Lead for cement	341.13	201.33	68,679.70	201.33	68,680.00	
		2,215.19		87,36,560.18		77,22,002.90	
Clubbed Rate				87,36,560.18/2,215.19 = 3,943.93		77,22,003.2/2,215.19 = 3,485.93	
Executed Quantity = 2,846.61 cum							
<b>Extra Cost (F) = 2,846.61 × 458 = 10,14,557.02 + 15 per cent Tender Premium = ₹ 14,99,310</b>							
<b>Datuni Tank Project (Canal Work), Agreement no. 13/2013-14</b>							
<b>Canal Bed</b>							
2507(A) (a)	Nominal Mix CC 1:3:6 for in-situ sleepers	6,350.61	2,471.00	1,56,92,357.31	-	-	
2512(e) (i) + 2531 (i)	Nominal Mix CC 1:3:6 for canal lining	6,350.61	-	-	2,309.00	1,46,63,558.5	
<b>Canal Side Slopes</b>							
2507(A) (b)	Nominal Mix CC 1:3:6 for in-situ sleepers	23,943.49	2,873.00	6,87,89,646.77	-	-	
2512(e)(ii) + 2531 (i)	Nominal Mix CC 1:3:6 for canal lining	23,943.49	-	-	2,663.00	6,37,61,513.9	3,250.54 - 3,050.60 = 199.94
2902	Lead for cement	4,665.29	468.18	21,84,195.47	468.18	21,84,195.5	
2902	Lead for sand	13,632.35	349.38	47,62,870.44	349.38	47,62,870.4	
2902	Lead for metal	27,264.69	197.21	53,76,869.51	197.21	53,76,869.5	
	Lead for water	30,294.10	55.00	16,66,175.50	55.00	16,66,175.5	
		30,294.10		9,84,72,115.01		9,24,15,183.3	
Clubbed Rate				9,84,72,115.01/30,294.10 = 3,250.53		9,24,15,183.3/30,294.10 = 3,050.60	
Executed Quantity = 23,424.522 cum							
<b>Extra Cost (G) = 23,424.522 × 199.94 = 46,83,498.92 + 18.89 per cent Tender Premium = ₹ 55,68,212</b>							
<b>Minor Canal Work, Datuni Tank Project (Phase II), Agreement no. 05/2014-15</b>							
<b>Canal Bed</b>							
2507(A)(a) + 2531 (i)	Nominal Mix CC 1:3:6 for in-situ sleepers	1,160.78	2,605.00	30,23,831.90	-	-	
2512(a)(i) (a) + 2531(i)	Design Mix M-10	1,160.78	-	-	2,436.00	28,27,660.1	3,075.32 - 2,906.32 = 169
2902	Lead for cement	178.76	523.53	93,586.22	523.53	93,586.2	
2902	Lead for sand	522.35	349.38	1,82,498.64	349.38	1,82,498.6	
2902	Lead for metal	1,044.70	197.20	2,06,014.84	197.20	2,06,014.8	
2902	Lead for water	1,160.78	55.00	63,842.90	55.00	63,842.9	
		1,160.78	3,075.32	35,69,774.51	2,906.32	33,73,598.1	
Executed Quantity = 704.57 cum							
<b>Extra Cost (H) = 704.57 × 169 = 1,19,004.56 + 14.23 per cent Tender premium = ₹ 1,36,016</b>							

(Quantities in cum and amount in ₹)

USR Item no.	Item	Quantity	Rate paid	Amount	Rate payable	Amount	Difference in unit rate
<b>Canal Side Slopes</b>							
2512(d) + 2531(i)	Design Mix CC 1:3:6 for in-situ sleepers	2,904.92	2,966.00	86,15,992.72	-	-	3,436.32 - 3,280.32 = 156
2512(a)(i)(b) + 2531(i)	Design Mix M-10	2,904.92	-	-	2,810.00	81,62,825.20	
2902	Lead for cement	447.36	523.53	2,34,206.38	523.53	2,34,206.4	
2902	Lead for sand	1,307.21	349.38	4,56,713.03	349.38	4,56,713.00	
2902	Lead for metal	2,614.43	197.20	5,15,565.60	197.20	5,15,565.6	
2902	Lead for water	2,904.92	55.00	1,59,770.60	55.00	1,59,770.6	
		2,904.92		99,82,248.33		95,29,080.8	
Clubbed Rate			99,82,248.33/2,904.92		95,29,080.8/2,904.92		
			= 3,436.32		= 3,280.32		
Executed Quantity= 1,676.25 cum							
<b>Extra Cost (I) = 1,676.25 × 156 = 2,61,495 + 14.23 per cent Tender Premium = ₹ 2,98,706</b>							
<b>Extra cost in Part (i) = A+B+C+D+E+F = ₹ 54,97,186</b>							
<b>Extra cost in Part (ii) = G+H+I = ₹ 58,66,918</b>							
<b>Total Extra Cost = (i) + (ii) = ₹ 1,13,64,104</b>							

**Appendix 2.15**

**Statement showing extra cost due to inadmissible lead**

**(Reference: Paragraph 2.2.9, Page No. 52)**

Sl. No.	Grading of Concrete	Quantity of sand considered for lead in one cum of concrete (in cum) for deriving unit rate	Executed quantity of Concrete (in cum)	Quantity of sand for which lead paid (in cum)	Lead paid at the rate of ₹ 901.53 (₹)	Lead payable at the rate of ₹ 98.28 (₹)	Extra cost on work (₹)
1	2	3	4	5 = 3 × 4	6 = 5 × ₹ 901.53	7 = 5 × ₹ 98.28	8 = 6 - 7
1.	M-20 controlled concrete for PCC with graded metal of 40 mm	0.41	68,325.17	28,013.32	2,52,54,848.11	27,53,149.06	2,25,01,699.05
2.	M-15 controlled concrete for PCC with graded metal of 40 mm	0.43	5,12,362.70	2,20,315.94	19,86,21,428.94	2,16,52,650.53	17,69,68,778.40
3.	M-25 controlled concrete for RCC with graded metal of 40 mm	0.38	1,95,277.90	74,205.61	6,68,98,583.22	72,92,927.31	5,96,05,655.91
4.	M-25 controlled concrete for RCC with graded metal of 20 mm	0.38	15,562.14	5,913.61	53,31,299.71	5,81,189.91	47,50,109.80
5.	M-30 controlled concrete for RCC with graded metal of 40 mm	0.38	42,709.13	16,229.47	1,46,31,353.55	15,95,032.25	1,30,36,321.30
<b>Total</b>			<b>8,34,237.04</b>	<b>3,44,677.95</b>	<b>31,07,37,513.53</b>	<b>3,38,74,949.06</b>	<b>27,68,62,564.46</b>
<b>Total applying Tender Premium (14.40 per cent below)</b>					<b>26,59,91,311.58</b>	<b>2,89,96,956.40</b>	<b>23,69,94,355.18</b>

## Annexure 2.16

## Extra cost due to considering additional lead for the lining work by Paver machine

(Reference: Paragraph 2.2.10, Page No. 52)

Sl. No.	Name of Division	Name of work	Contract amount (₹ in crore)	Quantity of CC executed for lining in bed and slope (in cum)	Rate of CC adopted (₹ per cum)	Rate to be adopted without considering lead of material (₹ per cum)	Difference in rate (₹ per cum)	Extra cost (₹)	Extra cost with tender premium (₹)
1	2	3	4	5	6	7 (As per Annexure B)	8=6-7	9=5×8	10=9+ Tender Premium
1.	EE, Upper Purwa Canal division, Rewa	Balance work of CC lining from RD 0 Km to 31,000 Km of Purwa Main Canal (Agreement No. 03/2015-16)	33.32 (19.11 per cent above PAC)	20,512.937	3,654.88	3,218.88	436.00	89,43,718.37	1,06,52,862.95
2.	EE, Lower Purwa Canal division, Satna	CC lining by paver machine in Purwa Main Canal from RD 31 Km to 90.06 Km (Agreement No. 04/2012-13)	51.41 (4.78 per cent above PAC)	78,160.765	4,971.36	4,443.06	528.30	4,12,92,332.15	4,32,66,105.63
		Construction of CC lining of Purwa Main Canal from 90.06 Km to 132.390 Km and Pathanda distributor, tail minor by Paver and manual (Agreement No. 01/2016-17)	39.24 (19.95 per cent above PAC)	2,301.730 (Bed) 10,518.510 (Slope)	3,551.80	3,106.00 (Bed) 3,256.00 (Slope)	445.80	10,26,088.22	12,30,792.82
3.	EE, Mahan Canal Division, Sidhi	Construction of Mahan Main Canal from RD 26.870 to 27.170 Km, RD 28.575 to 30.650 Km, RD 30.80 to 35.630 Km, RD 35.730 to 39.890 Km, RD 40.350 to 47.600 Km, Total length - 18.615 Km (Agreement No. 02/2013-14)	12.91 (12.49 per cent above PAC)	8,430.38	3,852.49	3,409.12	443.37	37,38,083.57	42,04,951.25
4.	EE, Lower Sihawal Canal, Division Churhat, Sidhi	Cement Concrete (CC) lining with Paver machine from RD km 15.24 to RD km 75.12 of Sihawal Main Canal with Polyvinyl Chloride (PVC) joints, Low-Density Polyethylene (LDPE) film, C.N.S. Layer with Longitudinal and transverse sleeper as per specification and testing of swelling pressure, permeability test complete with specification, maintenance and repair of canal Earth work and lining work up to three years after completion of work under Bansagar Project" (Agreement No. 02/2011-12)	42.56 (11.15 per cent below PAC)	39,523.435 20,230.43	5,296.723 4,911.63	4,500.12 4,104.77	796.603 806.86	3,14,84,486.89 1,63,23,125	2,79,73,966.60 1,45,03,096.34
<b>Total Extra Cost</b>									<b>10,75,18,110.00</b>

**Annexure 2.17**

**Calculation of Clubbed rate without additional lead of material**

(Reference: Paragraph 2.2.10, Page No. 52)

Sl. No.	Name of work	Rate Paid				Rate payable				
		SOR item No./ Name	Quantity	Rate	Amount	Item	Quantity	Rate	Amount	
		1	2	3	4=2×3	5	6	7	8=6×7	
<b>1.</b>	<b>EE, Upper Purwa Canal Division, Rewa (Agreement No. 03/2015-16)</b>									
	Balance work of CC lining from RD 0 km to RD 31 km of Purwa Main Canal	Canal lining in bed	10,755.37	3,106.00	3,34,06,179	Canal lining in bed	10,755.37	3,106	3,34,06,179	
		Canal lining in slope	32,670.00	3,256.00	10,63,73,520	Canal lining in slope	32,670.00	3,256	10,63,73,520	
		Lead for metal	36,911.25	250.20	92,35,195	Lead for metal	Not Payable			
		Lead for sand	18,672.75	428.58	80,02,767	Lead for sand				
		Lead for cement	9,553.50	177.48	16,95,555	Lead for cement				
		<b>Total</b>	<b>43,425</b> (Quantity of concrete in CC lining in bed and slope)		<b>15,87,13,216</b>	<b>Total</b>	<b>43,425</b> (Quantity of concrete in CC lining in bed and slope)			<b>13,97,79,699</b>
		<b>Clubbed rate = 15,87,13,216/43,425 =3,654.88</b>					<b>Clubbed rate = 13,97,79,699/43,425 =3,218.88</b>			
<b>2.</b>	<b>EE, Lower Purwa Canal Division, Satna (Agreement No. 04/2012-13)</b>									
	Cement concrete lining by Paver Machine from RD 31.00 km to 90.06 km of Purwa Main Canal with PVC joints, CNS layer	PVC strip	6,52,399.03	96.00	6,26,30,306.88	PVC strip	6,52,399.03	96.00	6,26,30,306.88	
		Mechanised trimming	8,27,524.26	10.50	86,89,004.73	Mechanised trimming	8,27,524.26	10.50	86,89,004.73	
		Safety ladder	2,170.80	3,219.00	69,87,805.20	Safety ladder	2,170.80	3,219.00	69,87,805.20	
		Lead for metal	1,845.18	250.20	4,61,664.04	Lead for metal	1,845.18	250.20	4,61,664.04	
		Lead for sand	933.44	570.78	5,32,788.88	Lead for sand	933.44	570.78	5,32,788.88	
		Lead for water	2,375.70	27.50	65,331.75	Lead for water	2,375.70	27.50	65,331.75	
		Lead for cement	477.57	267.48	1,27,740.42	Lead for cement	477.57	267.48	1,27,740.42	
		Free drainage sand filling	22,353.52	105.00	23,47,119.60	Free drainage sand filling	22,353.52	105.00	23,47,119.60	
		lead of sand	22,353.52	570.78	1,27,58,942.15	lead of sand	22,353.52	570.78	1,27,58,942.15	
		contraction grooves	49,673.72	17.00	8,44,453.24	contraction grooves	49,673.72	17.00	8,44,453.24	
		Lining in bed	9,917.87	3,106.00	3,08,04,904.22	Lining in bed	9,917.87	3,106.00	3,08,04,904.22	
		lining in slope	61,108.75	3,256.00	19,89,70,090.00	lining in slope	61,108.75	3,256.00	19,89,70,090.00	
		Transportation charge of water to prepare mix	71,025.94	27.50	19,53,213.35	Transportation charge of water to prepare mix	Not Payable			
		Lead for metal	60,372.62	250.20	1,51,05,229.52	Lead for metal				
		Lead for sand	30,541.50	570.78	1,74,32,477.37	Lead for sand				
Lead for cement	15,625.86	267.48	41,79,605.03	Lead for cement						

Sl. No.	Name of work	Rate Paid				Rate payable			
		SOR item No./ Name	Quantity	Rate	Amount	Item	Quantity	Rate	Amount
		1	2	3	4=2×3	5	6	7	8=6×7
		<b>Total</b>	<b>73,197.42</b> (Quantity of concrete in CC lining in bed and slope)		<b>36,38,90,676.39</b>	<b>Total</b>	<b>73,197.42</b> (Quantity of concrete in CC lining in bed and slope)		<b>32,52,20,151.11</b>
		<b>Clubbed rate = 36,38,90,676.39/73,197.42= 4,971.36</b>				<b>Clubbed rate = 32,52,20,151.11/73,197.42 = 4,443.05</b>			
<b>3.</b>	<b>EE, Lower Purwa Canal Division, Satna (Agreement No. 01/2016-17)</b>								
Construction of Cement concrete lining of Purwa Main Canal from 90.06 Km to 132.390 Km and Pathanda distributor, tail minor by Paver & manual	Lining in bed		5,525.80	3,106.00	1,71,63,134.80	Lining in bed	5,525.80	3,106	1,71,63,134.80
	Lead for metal		4,696.93	144.20	6,77,297.31	Lead for metal			
	Lead for sand		2,376.09	602.28	14,31,071.49	Lead for sand			
	Lead for cement		1,215.68	267.00	3,24,586.56	Lead for cement			
	Lead for water		5,525.80	5.50	30,391.90	Lead for water			
	<b>Total</b>		<b>5,525.80</b> (Quantity of concrete in CC lining in Bed)		<b>1,96,26,482.05</b>	<b>Total</b>	<b>5,525.80</b> (Quantity of concrete in CC lining in Bed)		<b>1,71,63,134.80</b>
	<b>Clubbed rate= 1,96,26,482.05/5,525.80 = 3,551.79</b>					<b>Clubbed rate=1,71,63,134.80/5,525.80 = 3,106</b>			
	Lining in slope		22,442.61	3,256.00	7,30,73,138.16	lining in slope	22,442.61	3,256.00	7,30,73,138.16
	Lead for metal		19,076.22	144.20	27,50,790.92	Lead for metal			
	Lead for sand		9,650.32	602.28	58,12,194.73	Lead for sand			
Lead for cement		4,937.37	267.00	13,18,277.79	Lead for cement				
Lead for water		22,442.61	5.50	2,33,434.00	Lead for water				
<b>Total</b>		<b>22,442.61</b> (Quantity of concrete in CC lining in slope)	<b>3,706.69</b>	<b>8,31,87,835.60</b>	<b>Total</b>	<b>22,442.61</b> (Quantity of concrete in CC lining in slope)		<b>7,30,73,138.16</b>	
<b>Clubbed Rate = 8,31,87,835.60/22,442.61 = 3,706.69</b>					<b>Clubbed Rate = 7,30,73,138.16/22,442.61 = 3,256.00</b>				
<b>4.</b>	<b>EE, Mahan Canal, Sidhi (Agreement No. 02/2013-14)</b>								
Mahan Main Canal from RD 26.870 to 27.170 km, RD 28.575 to 30.650 km, RD 30.80 to 35.630 km, RD 35.730 to	Canal lining in bed		4,188.37	3,295.00	1,38,00,679	Canal lining in bed	4,188.37	3295	1,38,00,679
	Canal lining in slope		13,319.03	3,445.00	4,58,84,058	Canal lining in slope	13,319.03	3445	4,58,84,058
	Lead for metal		14,881.29	223.70	33,28,945	Lead for metal			
	Lead for sand		7,528.18	309.78	23,32,080	Lead for sand			
	Lead for cement		3,851.63	545.58	21,01,371	Lead for cement			
	<b>Total</b>		<b>17,507.40</b> (Quantity of concrete in CC lining in bed and slope)		<b>6,74,47,133</b>	<b>Total</b>	<b>17,507.40</b> (Quantity of concrete in CC lining in bed and slope)		<b>5,96,84,738</b>

Sl. No.	Name of work	Rate Paid				Rate payable								
		SOR item No./ Name	Quantity	Rate	Amount	Item	Quantity	Rate	Amount					
		1	2	3	4=2×3	5	6	7	8=6×7					
	39.890 km, RD 40.350 to 47.600 km, Total length - 18.615 km	<b>Clubbed rate =6,74,47,133/17,507.40 = 3,852.49</b>				<b>Clubbed rate =5,96,84,738/17,507.40 = 3,409.11</b>								
<b>5.</b>	<b>EE, Lower Sihawal Canal, Division Churhat, Sidhi</b>													
		SOR item no. 2526	640098.95	10.5	67,21,038.975	SOR item no. 2526	640098.95	10.5	67,21,038.98					
		SOR item no. 2507(B)(a)	4365.39	3036	132,53,324.04	SOR item no. 2507(B)(a)	4365.39	3036	132,53,324.04					
		SOR item no. 2507(B)(b)	8006.918	3436	275,11,770.25	SOR item no. 2507(B)(b)	8006.918	3436	275,11,770.25					
		SOR item no. 2510(B)	893.292	3219	28,75,506.95	SOR item no. 2510(B)	893.292	3219	28,75,506.95					
		SOR item no. 2520	732917.59	28	205,21,692.52	SOR item no. 2520	732917.59	28	205,21,692.52					
		SOR item no. 2525(I)	10986.188	3106	341,23,099.93	SOR item no. 2525(I)	10986.188	3106	341,23,099.93					
		SOR item no. 2525(II)	41906.611	3256	1364,47,925.42	SOR item no. 2525(II)	41906.611	3256	1364,47,925.42					
		SOR item no. 2527	579608.46	96	556,42,412.16	SOR item no. 2527	579608.46	96	556,42,412.16					
		SOR item no. 2514(a)	36700.92	17	6,23,915.64	SOR item no. 2514(a)	36700.92	17	6,23,915.64					
	For 39,523.435 cum of CC, (executed without LDPE)	Reach 15.24 km to 48.775 km	Lead of Concrete	66,158.398	27.50	18,19,355.95	<b>Not payable</b>							
			Lead of Metal	32,668.348	471.8	154,12,926.59								
			Lead of Sand	16,526.341	526.680	87,04,093.28								
			Lead of Cement	8,455.337	507.780	42,93,451.02								
		Reach 48.775 km to 75.12 km	Lead of Metal	23,566.290	533.400	125,70,259.09								
			Lead of Sand	11,921.770	570.780	68,04,707.88								
			Lead of Cement	6,099.510	507.780	30,97,209.19								
			<b>Total</b>	<b>66,158.398</b> (Quantity of concrete in CC lining in Bed)		<b>35,04,22,688.9</b>					<b>Total</b>	<b>66,158.398</b> (Quantity of concrete in CC lining in Bed)		<b>29,77,20,685.88</b>
			<b>Clubbed rate= 35,04,22,688.9/66,158.398 = 5,296.72</b>								<b>Clubbed rate= 29,77,20,685.87/66,158.398 = 4,500.12</b>			
		For 20,230.34 cum of CC(executed	SOR item no. 2525(i)	6,015.00	3,106.00	1,86,82,590.00					SOR item no. 2525(i)	6,015.00	3,106.00	1,86,82,590.00
		SOR item no. 2525(ii)	13,400.53	3,256.00	4,36,32,125.68	SOR item no. 2525(ii)	13,400.53	3,256.00	4,36,32,125.68					
		SOR item no. 2510(B)	814.81	3,219.00	26,22,879.83	SOR item no. 2510(B)	814.81	3,219.00	26,22,873.39					

Sl. No.	Name of work	Rate Paid				Rate payable				
		SOR item No./ Name	Quantity	Rate	Amount	Item	Quantity	Rate	Amount	
		1	2	3	4=2×3	5	6	7	8=6×7	
	without LDPE)	SOR item no. 2527	1,60,261.18	96.00	1,53,85,073.28	SOR item no. 2527	1,60,261.18	96.00	1,53,85,073.28	
		SOR item no. 2526	2,58,873.73	10.50	27,18,174.17	SOR item no. 2526	2,58,873.73	10.50	27,18,174.17	
		<b>Lead</b>				<b>Not payable</b>				
		Water (One km)	20,230.34	28.00	5,66,449.52					
		Metal (79 km)	18,895.79	471.80	89,15,033.72					
		Sand (106 km)	8,699.05	526.68	45,81,614.07					
		Cement (100 km)	4,450.68	507.78	22,59,963.75					
		<b>Total</b>	<b>20,230.34</b> (Quantity of concrete in CC lining in Bed)		<b>9,93,63,904.02</b>	<b>Total</b>	<b>20,230.34</b> (Quantity of concrete in CC lining in Bed)		<b>8,30,40,836.52</b>	
		<b>Clubbed rate= 9,93,63,904.0/20,230.34= 4,911.62</b>					<b>Clubbed rate=8,30,40,836.52/20,230.34 = 4,104.76</b>			





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